

**STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION
ROADWAY ENGINEERING
ROADWAY DESIGN SECTION**

MAY



2012

***CONSTRUCTION
STANDARD DRAWINGS***



Arizona Department of Transportation
ROADWAY ENGINEERING GROUP

MEMORANDUM

**To: All Users of the Construction
Standard Drawings (C-Stds)**

Date: May 2012

**From: Chris Cooper
Design Section Manager
Roadway Engineering Group**

Subject: C- Stds New 2012 Edition

The Construction Standard Drawings (C-Stds) have been revised and updated, and printed as a new, complete set. Users may view and print copies of the C-Stds at:

http://www.azdot.gov/highways/Roadway_Engineering/Roadway_Design/Construction_Standards/Drawings_Current/PDF/2007ConstructionStandardDrawings.pdf Hard copies in 11 x 17 and 8 ½ x 11 are available in Engineering Records (602-712-7498, 8216).

A listing of all of the revisions since the 2007 Edition can be reviewed at the above website. Some of the more significant revisions included with the May updates that should be reviewed prior to design and construction are:

- C-04.20 Downdrain Inlets require leaveouts around posts in concrete.
- C-05.10 Curb and Gutter – new 4" high Type E freeway curb added.
- C-05.30 Sidewalk Ramps - gutter pan to be transitioned to 5% max. at ramp entrance to meet ADA slope requirements.

Design personnel should incorporate the new C-Stds into their project plans. For projects at or near completion where the inclusion of the new standard drawings is not practical, the 1A Sheet must accurately reflect the drawings correct revision date. Construction personnel should review the drawing revisions for possible implementation on their projects.

The updated 1A sheet is available for your use at:

http://www.azdot.gov/highways/Roadway_Engineering/Roadway_Design/Construction_Standards/Index_Sheets/Index.asp

Any questions regarding the updated standards may be directed to Chris Cooper (602-712-8493) or Terry Otterness (-4285) in the Roadway Group.

C: Roadway Engineering Group
Valley Project Management
Statewide Project Management
Construction Group
Districts (10) – Construction Orgs, Permits, Development, Traffic
Bridge Group
Materials Group
Maintenance Group
Local Government Section
Engineering Technical Group
Contracts and Specifications Section
Engineering Consultants Section
FHWA
State Engineer Office

NOTICE TO READERS: REVISION DATES

This edition of the Roadway Construction Standard Drawings contains both format and engineering changes.

The format changes include font style and size, line weights and terminators, and placing information on the same levels as specified for plan sheets. These changes are universal for all sheets and are not noted. This edition is updated to 5/12 and is noted in the title block of each sheet.

Engineering changes have been made to some of the drawings since the last edition was issued in May 2007. These numbered changes are noted in the revision block in the upper left-hand corner of the affected sheets and referenced by circled numbers on the drawings.

Future engineering revisions will be noted in the revision and title blocks, and the 1A sheet.

Updates to the May, 2007 Construction Standard Drawings

1. November 1, 2007 Revised Standard Drawings C-07.02, C-21.10 and C-21.20
2. November 2, 2009 Revised Standard Drawings C-10.06, Sheets 1 and 2 of 2.
3. April 14, 2010 Revised Standard Drawing C-02.30.
4. May 24, 2010 Revised Standard Drawing C-07.04, Sheet 5 of 5.
5. May 24, 2010 Revised Standard Drawing C-08.20; revised Section A-A and Section B-B.

May 2012 Updates to the Construction Standard Drawings

1. C-01.10, Sheet 3 of 4, Symbol Legend: deleted Sanitary Sewer (1"=20') and Storm Drain (1"=20') and (1"=50').
2. C-01.10, Sheet 4 of 4, Symbol Legend: deleted Depressed Index and Intermediate Contour Lines.
3. C-01.30, Sheet 3 of 3, General Abbreviations: added Sight Distance, headlight.
4. C-03.10, Sheet 5 of 5, Ditches, Channels, Dikes and Berms, Headwall Berms: eliminated the 1' buffer zone between back of headwalls and the clear zone. Revised the Plan, Elevation, and Section Views to accurately display berm and slope graphics.
5. C-04.10, Sheet 2 of 2: revised "Leaveout" graphics in 'Plan View' and revised General Note 7 by adding non-cohesive material.
6. C-04.20, Sheet 1 of 2: revised General Note number (9) and reference in Section A-A.
7. C-04.20, Sheet 2 of 2, Downdrain, Embankment Double Inlet: revised "Leaveout" graphics in 'Inlet Plan View' and revised General Note 2 by adding non-cohesive material.
8. C-05.10, Curb & Gutter, Curb, Gutter: revised Curb & Gutter view for Types B, C, C-1 by adding Types E and E-1; revised Urban Freeway Curb & Gutter Table to include Types E and E-1 and added new column for Curb Width "c". Rearranged the Standard Drawing graphics.
9. C-05.12, Sheet 1 of 3, Curb & gutter Transitions: revised Section (Curb Width) for Curb & Gutter Application and in General Notes, revised Note to include Types E or E-1.

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- 10.C-05.12, Sheet 2 of 3, Curb & gutter Transitions: revised Type 2 - Curb & Gutter Transition Plan View gutter width designation to "c", and added "See Plans". This corresponds to the revision in the Table in C-05.10. Revised Note at upper-right of sheet to include Types E and E-1 curb & gutter.
 - 11.C-05.12, Sheet 3 of 3, Curb & gutter Transitions: revised Types 5 & 8 – Curb & Gutter Transitions to include Type E or E-1 Curb and Gutter.
 - 12.C-05.30, Sheets 1 through 7 of 7, Sidewalk Ramps: revised "Depressed Curb and Gutter" slope/depth criteria at ADA ramp.
 - 13.C-07.01, Sheet 2 of 2, PCCP Joints: revised "Median Barrier Joint" (AC Pavement on Back Side of Barrier) by adding dashed line in view and added Barrier Footing Concrete Thickness note (in General Notes) by adding 'F' notation.
 - 14.C-10.05, Sheets 1 and 2 of 2, W-Beam Guardrail, G4(Modified) With Freeway Curb and Gutter: revised Elevation and Section Views from 28 2/3" to 28 5/8" dimensions. This corresponds to the 5/8" gutter depression value listed in the Table in C-05.10 (not 2/3").
 - 15.C-10.20, Thrie-Beam Guardrail, G9, Blocked-out Steel Post, revised location of upper extension line for 20" dimension in Elevation View for G9 System.
 - 16.C-10.40, Concrete Median Barrier, 32" Type 'F', Cast-in-Place: revised Section A-A by adding filled square symbol and adding footing depth notes at end of General Notes.
 - 17.C-10.41, Concrete Median Barrier, 42" Type 'F', Cast-in-Place: revised Section A-A by adding filled square symbol and adding footing depth notes at end of General Notes.
 - 18.C-10.50, Sheet 1 of 2, Concrete Half Barrier, 32" Type 'F', Cast-in-Place: revised note defining footing depth in General Notes by removing 8" minimum requirement and adding 'match adjacent PCCP thickness'.
 - 19.C-10.55, Sheet 2 of 3, Concrete Half Barrier, 42" Type 'F' at Piers, Precast: in Section A-A, revised 3" dimension to 6".
 - 20.C-10.77, Concrete Half-barrier Transition, End Terminal, Curb and Gutter: revised Section A-A and B-B graphics and related note at bottom of General Notes.
 - 21.C-12.10, Fence, Sheet 1 of 5, Woven Wire: added Typical Fence Location view to sheet. Revised the General Note regarding placement of fence fabric and revised wording for ASTM *designation*.
 - 22.C-12.10, Fence, Sheet 2 of 5, Barbed Wire: added new General Note regarding fence wire placement and added Typical Fence Location View.

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- 23.C-12.10, Fence, Sheet 3 of 5, Types 1 and 2, Flood Gate: minor revisions to drawing graphics.
 - 24.C-12.10, Fence, Sheet 4 of 5, Flood Gate Installation: revised drawing graphics to view as if from the roadway centerline.
 - 25.C-12.10, Fence, Sheet 5 of 5, Miscellaneous Details: Moved Typical Fence Location View to Sheets 1 and 2 of 5, and additional graphical changes to 'Abutting Fence' views; revised graphics to view as if from the roadway centerline.
 - 26.C-12.20, Fence, Sheet 1 of 3, Fence, Chain Link, Type 1: New General Note 2 and added Typical Fence Location view.
 - 27.C-12.20, Fence, Sheet 2 of 3, Fence, Chain Link, Type 2: revised General Note 5.
 - 28.C-12.20, Fence, Sheet 3 of 3, Fence, Chain Link Gates: moved Typical Fence Location View to Sheet 1 of 3 and additional minor graphical changes.
 - 29.C-15.91, Sheet 1 of 2, Freeway Catch Basin Details: revised Section A-A for curb reference information.
 - 30.C-15.91, Sheet 2 of 2, Freeway Catch Basin Details: revised Table information to include Type E Curb.
 - 31.C-17.10, Rail Bank Protection for Drainageways, Types 1, 2 and 3: revised bolt specification in Rail Connection Detail by adding thread number and type.
 - 32.C-17.15, Rail Bank Protection at Abutments, Types 4, 5 and 6: revised bolt specification in Rail Connection Detail by adding thread number and type.
 - 33.C-17.20, Rail Bank Protection for Drainageways, Types 7, 8 and 9: revised wire gauge specification in 'Type 9 Bank Protection Elevation' view.
 - 34.C-18.10, Sheet 3 of 3, Manhole, Frame and Cover Details: modified Section A-A graphics for manhole cover seat. Modified Section of Frame dimensions and graphics. Modified Section B-B dimensions and graphics. Modified dimension and graphics in 'Bottom/Top View'. Revised bevel size from 1/8" to 3/16" per manufacturer's specifications.

C-STANDARDS FEEDBACK FORM

* Required Information

PROJECT: *Project Name/No.: _____

Route: _____ Milepost: _____ District: _____

C-STANDARD: *Number: _____ *Sheet No.: _____ Edition Yr.: _____

*COMMENT OR QUESTION: Use back of form for additional space

CONTACT INFORMATION: *Name: _____ *Mail Drop.: _____

*Phone No.: _____ Constr./Maint./Design ORG No.: _____

*E-mail Address: _____

For Office Use Only

ANALYSIS/EVALUATION: Use back of form for additional space

RECOMMENDATION/ACTION: Use back of form for additional space

CONSTRUCTION STANDARD DRAWINGS - INDEX

DRAWING NO.	TITLE	DRAWING NO.	TITLE
C-01.10	SYMBOL LEGEND (4 SHEETS)	C-10.00	GUARDRAIL MEASUREMENT LIMITS
C-01.30	GENERAL ABBREVIATIONS (3 SHEETS)	C-10.01	GUARDRAIL INSTALLATION, TYPE A AND REFLECTOR TAB
C-02.10	SLOPES, RURAL DIVIDED HIGHWAYS	C-10.02	GUARDRAIL INSTALLATION, TYPE B AND REFLECTOR TAB
C-02.20	SLOPES, RURAL UNDIVIDED AND FRINGE-URBAN HIGHWAYS	C-10.03	W-BEAM GUARDRAIL, G4(1W) AND G4(2W), BLOCKED-OUT TIMBER POST
C-02.30	SLOPES, MISCELLANEOUS ROADWAYS	C-10.04	W-BEAM GUARDRAIL, G4(1S), BLOCKED-OUT STEEL POST
C-03.10	DITCHES, CHANNELS, DIKES AND BERMS (5 SHEETS)	C-10.05	W-BEAM GUARDRAIL, G4(MODIFIED), WITH FREEWAY CURB & GUTTER (2 SHEETS)
C-04.10	SPILLWAY, EMBANKMENT (2 SHEETS)	C-10.06	W-BEAM GUARDRAIL, NESTED (2 SHEETS)
C-04.20	DOWNDRAIN, EMBANKMENT (2 SHEETS)	C-10.07	W-BEAM GUARDRAIL, BOLTED ANCHOR (2 SHEETS)
C-04.30	SPILLWAY LENGTH TABLE	C-10.08	W-BEAM GUARDRAIL, END ANCHOR
C-04.40	DOWNDRAIN LENGTH TABLE	C-10.20	THREE-BEAM GUARDRAIL, G9, BLOCKED-OUT STEEL POST
C-04.50	DOWNDRAIN ENERGY DISSIPATOR	C-10.30	GUARDRAIL TRANSITION, W-BEAM TO CONCRETE HALF BARRIER, 32" TYPE 'F'
C-05.10	CURB & GUTTER, CURB, AND GUTTER	C-10.40	CONCRETE MEDIAN BARRIER, 32" TYPE 'F', CAST-IN-PLACE
C-05.12	CURB & GUTTER TRANSITIONS (3 SHEETS)	C-10.41	CONCRETE MEDIAN BARRIER, 42" TYPE 'F', CAST-IN-PLACE
C-05.20	CONCRETE DRIVEWAYS & SIDEWALKS (2 SHEETS)	C-10.42	GLARE SCREEN, CONCRETE MEDIAN BARRIER (3 SHEETS)
C-05.30	SIDEWALK RAMP (7 SHEETS)	C-10.50	CONCRETE HALF BARRIER, 32" TYPE 'F' (2 SHEETS)
C-05.40	MEDIAN PAVING AND NOSE TAPER	C-10.51	CONCRETE HALF BARRIER, 32" TYPE 'F', WITH SIDEWALK
C-05.50	CONCRETE BUS BAY	C-10.52	CONCRETE HALF BARRIER, 32" TYPE 'F', WITH GUTTER
C-06.10	DRIVEWAY & TURNOUT LAYOUTS (2 SHEETS)	C-10.53	CONCRETE HALF BARRIER, 42" TYPE 'F', WITH GUTTER
C-07.01	PCCP JOINTS (2 SHEETS)	C-10.54	CONCRETE HALF BARRIER, 32" TYPE 'F' AT PIERS (3 SHEETS)
C-07.02	LOAD TRANSFER DOWEL ASSEMBLY	C-10.55	CONCRETE HALF BARRIER, 42" TYPE 'F' AT PIERS (3 SHEETS)
C-07.03	PCCP JOINT LOCATIONS, MAINLINE (8 SHEETS)	C-10.70	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL, 32" TYPE 'F' WITH CAISSONS (3 SHEETS)
C-07.04	PCCP JOINT LOCATIONS, RAMPS & CROSSROADS (5 SHEETS)	C-10.71	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL, 32" TYPE 'F' WITH CURB & GUTTER (2 SHEETS)
C-07.06	TRENCH BACKFILL AND PAVEMENT REPLACEMENT	C-10.72	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL, 42" TO 32" TYPE 'F' WITH CAISSONS (3 SHEETS)
C-08.20	PAVED GORE AREA	C-10.73	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL, 42" TO 32" TYPE 'F' WITH GUTTER (2 SHEETS)
		C-10.74	CONCRETE HALF-BARRIER TRANSITION, 42" TO 32" TYPE 'F'
		C-10.75	CONCRETE HALF-BARRIER TRANSITION, TYPE 'F' TANGENT DEPARTURE (2 SHEETS)
		C-10.76	CONCRETE HALF-BARRIER TRANSITION, TYPE 'F' AT RADIUS, 32" TO 0"
		C-10.77	CONCRETE HALF-BARRIER TRANSITION, END TERMINAL, CURB AND GUTTER
		C-11.10	ROADWAY CATTLE GUARD (4 SHEETS)
		C-11.20	CATTLE GUARD, DRAINAGE
		C-12.10	FENCE, WOVEN AND BARBED WIRE WITH GATES (5 SHEETS)
		C-12.20	FENCE, CHAIN LINK TYPES 1 AND 2 WITH GATES (3 SHEETS)
		C-12.30	FENCE, CHAIN LINK CABLE BARRIER (3 SHEETS)

CONSTRUCTION STANDARD DRAWINGS - INDEX

DRAWING NO.	TITLE	DRAWING NO.	TITLE
C-13.10	PIPE CULVERT INSTALLATION (2 SHEETS)	C-18.10	MANHOLES (3 SHEETS)
C-13.15	TYPICAL PIPE INSTALLATION	C-19.10	FORD, CONCRETE WALLS (2 SHEETS)
C-13.20	PIPE, REINFORCED CONCRETE END SECTION	C-21.10	SURVEY MONUMENT FRAME AND COVER
C-13.25	PIPE, CORRUGATED METAL END SECTION	C-21.20	SURVEY MARKER
C-13.30	PIPE AND PIPE ARCH, CORRUGATED METAL CONCRETE INVERT PAVING		
C-13.55	PIPE, CATTLE-VEHICLE PASS, MITERED END TREATMENT		
C-13.60	SLOTTED DRAIN DETAILS		
C-13.65	SLOTTED DRAIN, INSTALLATION DETAILS		
C-13.70	STORM DRAIN, CONNECTION DETAILS		
C-13.75	STORM DRAIN, OUTLET BARRIER GATE		
C-13.76	STORM DRAIN OUTLET AND STORM DRAIN PLUG		
C-13.80	PIPE COLLAR DETAILS		
C-15.10	CATCH BASIN, TYPE 1		
C-15.20	CATCH BASIN, TYPE 3 (3 SHEETS)		
C-15.30	CATCH BASIN, TYPE 4		
C-15.40	CATCH BASIN, TYPE 5 (2 SHEETS)		
C-15.50	CATCH BASIN, FRAME AND GRATE		
C-15.70	CATCH BASIN, MISCELLANEOUS DETAILS (2 SHEETS)		
C-15.75	CATCH BASIN, DROP INLET		
C-15.80	CATCH BASIN, FLUSH		
C-15.81	CATCH BASIN, SIDE SLOPE		
C-15.90	CATCH BASIN, MEDIAN DIKE (PRECAST)		
C-15.91	FREEWAY CATCH BASIN DETAILS (2 SHEETS)		
C-15.92	CATCH BASIN WITH TYPE 'F' CONCRETE HALF BARRIER (2 SHEETS)		
C-16.40	IRRIGATION SLEEVES		
C-17.10	RAIL BANK PROTECTION FOR DRAINAGEWAYS, TYPES 1, 2 & 3		
C-17.15	RAIL BANK PROTECTION AT ABUTMENTS, TYPES 4, 5 & 6		
C-17.20	RAIL BANK PROTECTION FOR DRAINAGEWAYS, TYPES 7, 8 & 9		

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING - REVISED ORDER OF FEATURES	RLF	5/07
2			
3			
4			

CONSTRUCTION DRAWING SYMBOLS

NEW FEATURES EXISTING FEATURES

National, State Boundary -----

Forest or Reservation Boundary -----

County Line -----

City Limits -----

Township or Range Line -----

Section Line -----

Quarter or Mid-Section Line -----

Sixteenth-Section Line -----

Right-of-Way Line -----

Property Line -----

Temporary Construction Easement -----

Access Control -----

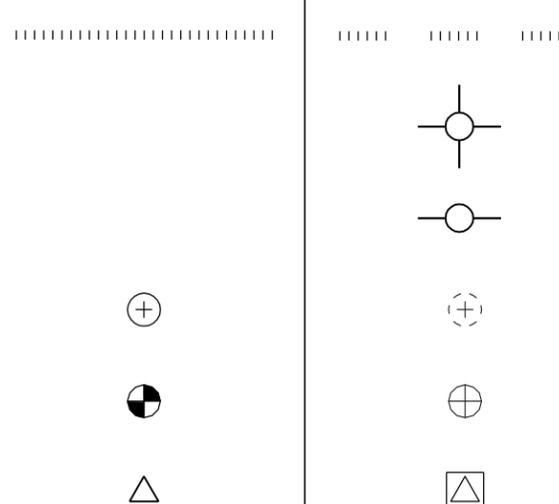
Section Corner -----

Quarter Corner -----

Survey Monument -----

Right-of-Way Marker -----

Angle Point or PI -----



Survey Control Point -----

Bench Mark -----

Centerline, Station Marks -----

Mile Post Marker -----

Sidewalk, Curb & Gutter w/Depressed Curb (1"=50' or larger) -----

Curb & Gutter with Depressed Curb (1"=100') -----

Curb, Single with Depressed Area -----

Pavement and Sidewalk Edge -----

Turnout -----

Top of Cut -----

Toe of Fill -----

Transition, Cut to Fill -----

Railroad Track (1"=50' or larger) -----

Railroad Track (1"=100') -----

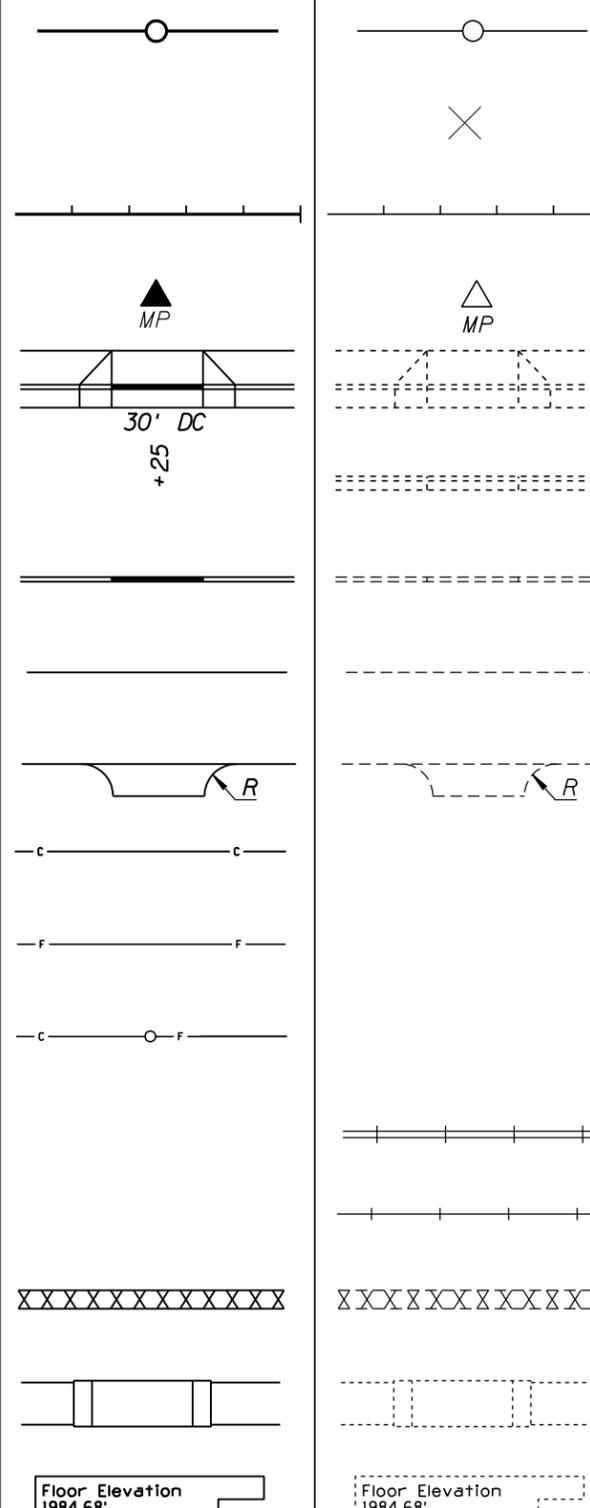
Bank Protection -----

Bridge -----

Building -----

CONSTRUCTION DRAWING SYMBOLS

NEW FEATURES EXISTING FEATURES



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[Signature]
APPROVED FOR DISTRIBUTION
[Signature]

STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
ROADWAY STANDARD DRAWINGS

REV. 5/12

DRAWING NO. C-01.10
Sheet 1 of 4

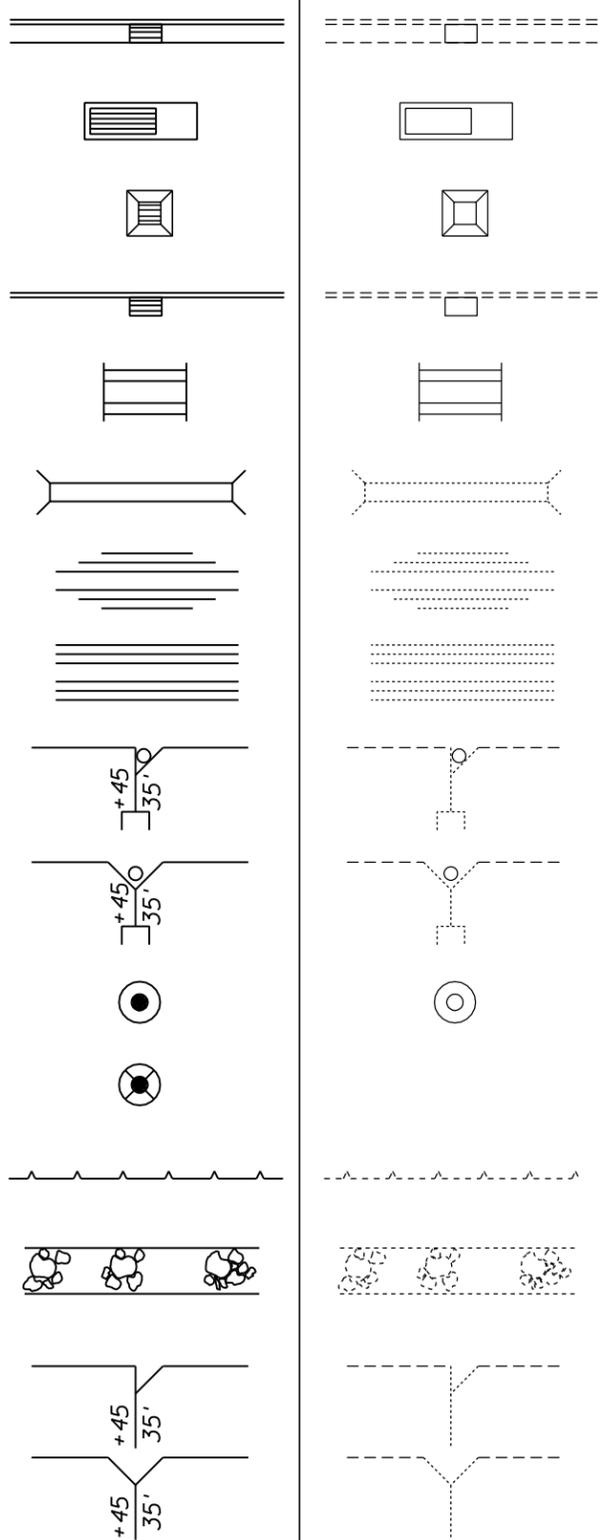
SYMBOL LEGEND

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD FROM C-01.11 TO C-01.10, SHEET 2 OF 4	RLF	9/04
2			
3			
4			

CONSTRUCTION DRAWING SYMBOLS

NEW FEATURES EXISTING FEATURES

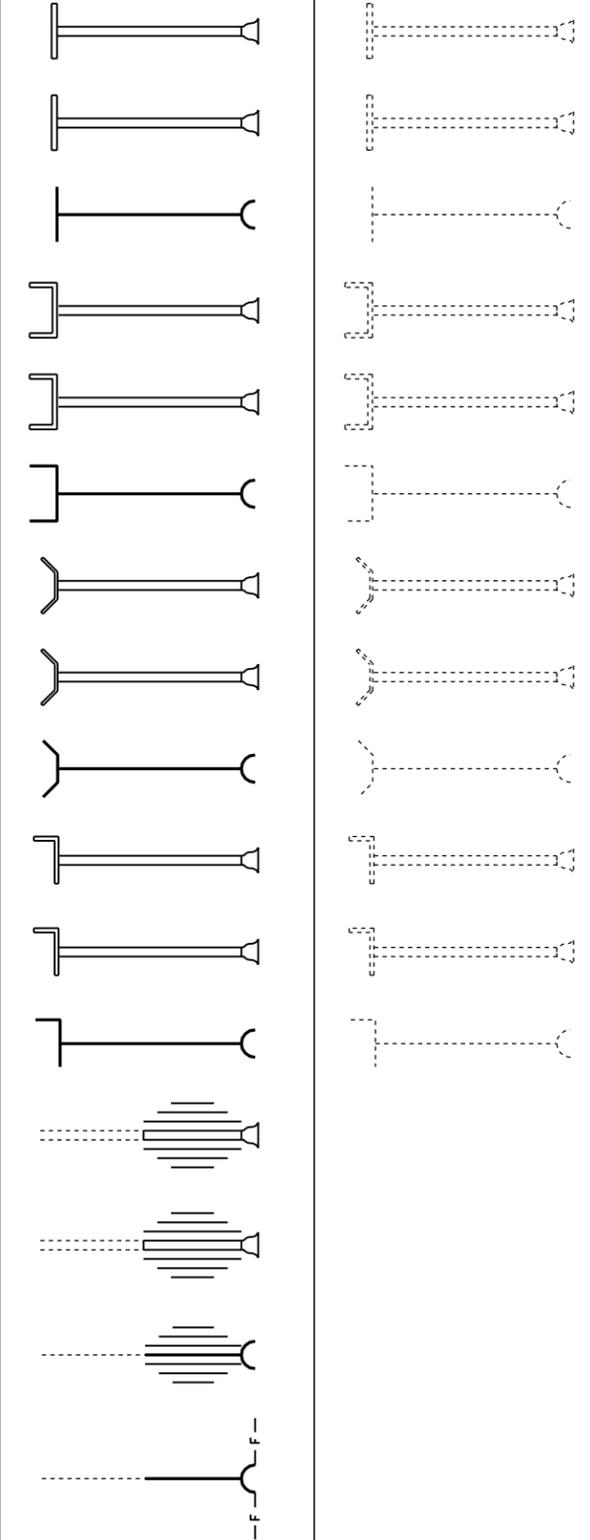
- Catch Basin, Curb & Gutter -----
- Catch Basin, Median Dike -----
- Catch Basin, Off Roadway, Flush -----
- Catch Basin, Single Curb -----
- Cattle Guard -----
- Concrete Box Culvert -----
- Dike, Median -----
- Dike -----
- Downdrain, one-way -----
- Downdrain, two-way -----
- Manhole -----
- Manhole, Frame & Cover, Reset -----
- Retaining Wall -----
- Rock Riprap -----
- Spillway, one-way -----
- Spillway, two-way -----



- Straight Hdwl w/End Sct, Pipe (1"=20') (All Dia) -----
- Straight Hdwl w/End Sct, Pipe (1"=50' or smaller) (Dia=42" and larger) -----
- Straight Hdwl w/End Sct, Pipe (1"=50' or smaller) (Dia=36" and smaller) -----
- "U" Hdwl w/End Sct, Pipe (1"=20') (All Dia) -----
- "U" Hdwl w/End Sct, Pipe (1"=50' or smaller) (Dia=42" and larger) -----
- "U" Hdwl w/End Sct, Pipe (1"=50' or smaller) (Dia=36" and smaller) -----
- Wing Hdwl w/End Sct, Pipe (1"=20') (All Dia) -----
- Wing Hdwl w/End Sct, Pipe (1"=50' or smaller) (Dia=42" and larger) -----
- Wing Hdwl w/End Sct, Pipe (1"=50' or smaller) (Dia=36" and smaller) -----
- "L" Hdwl w/End Sct, Pipe (1"=20') (All Dia) -----
- "L" Hdwl w/End Sct, Pipe (1"=50' or smaller) (Dia=42" and larger) -----
- "L" Hdwl w/End Sct, Pipe (1"=50' or smaller) (Dia=36" and smaller) -----
- Pipe Ext W/End Sct & Berm (1"=20') (All Dia) -----
- Pipe Ext W/End Sct & Berm (1"=20') (1"=50' or smaller) (Dia=42" and larger) -----
- Pipe Ext W/End Sct & Berm (1"=20') (1"=50' or smaller) (Dia=36" and smaller) -----
- Pipe Ext W/End Sct Roadway Widening (1"=20') -----

CONSTRUCTION DRAWING SYMBOLS

NEW FEATURES EXISTING FEATURES



APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SYMBOL LEGEND	DRAWING NO. C-01.10 Sheet 2 of 4

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD FROM C-01.12 TO C-01.10, SHEET 3 OF 4	RLF	9/04
2	DELETED SANITARY SEWER (1"=20')	RLF	5/12
3	DELETED STORM DRAIN (1"=20') & (1"=50')	RLF	5/12
4			

CONSTRUCTION DRAWING SYMBOLS

NEW FEATURES EXISTING FEATURES

Plan View, Bituminous Pavement -----



Plan View, Concrete Pavement -----



Plan View, Graded Surface -----



Plan View, Obliterate Pavement -----



Plan View, Wood -----



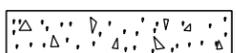
Section, Asphaltic Concrete Friction Course -----



Section, Bituminous Pavement -----



Section, Concrete -----



Section, Metal -----



Section, Wood -----



Section, Aggregate Base -----



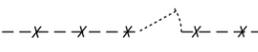
Section, Ground Line -----



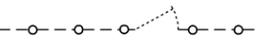
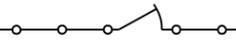
Ground Line Profile -----



Barbed Wire Fence & Gate -----



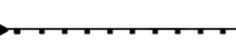
Chain Link Fence & Gate -----



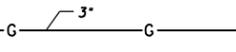
Guardrail & Flared End Terminal -----



Guardrail & Tangent End Terminal -----



Gas Line -----



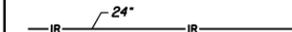
Irrigation Ditch, Concrete -----



Irrigation Ditch, Earth -----



Irrigation Line (1"=20') -----



Irrigation Line (1"=100') -----



Overhead Power/Joint-Use Line -----



Overhead Telephone Line -----



Sanitary Sewer (1"=100') -----

②



Storm Drain (1"=100') -----

③



Street Light and with Mast Arm -----



Telephone/Power Pedestal -----



Utility Pole with Down Guy and Anchor -----



Underground Power/Joint-Use Line -----



Underground Telephone Line -----



Water/Gas Meter Box -----



Water/Gas Valve -----



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STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
ROADWAY STANDARD DRAWINGS

REV.

5/12

SYMBOL LEGEND

DRAWING NO.

C-01.10
Sheet 3 of 4

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD FROM C-01.13 TO C-01.10, SHEET 4 OF 4	RLF	9/04
2	DELETED INDEX CONTOUR LINE	RLF	5/12
3	DELETED INTERMEDIATE CONTOUR LINE	RLF	5/12
4			

CONSTRUCTION DRAWING SYMBOLS

NEW FEATURES

EXISTING FEATURES

Water Line -----

Drainage Channel -----

Drainage Ditch -----

Major Wash -----

Minor Wash -----

± Grade, Profile -----

Hedge -----

Palm Tree -----

Shrubbery -----

Unclassified Tree -----

Sign, Single Post -----

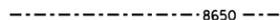
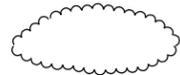
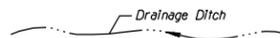
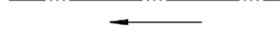
Sign, Multiple Post -----

Dimensions -----

Visible Outlines, Sections, etc. -----

Index Contour Line -----

Intermediate Contour Line -----



②

③

Block Wall (1" = 20') -----

Median Barrier -----

Fire Hydrant -----

Standpipe -----

Transmission Tower -----

Windmill -----

Mail Box -----

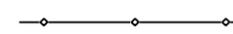
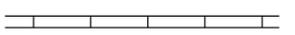
Flag Pole -----

North Arrow -----

CONSTRUCTION DRAWING SYMBOLS

NEW FEATURES

EXISTING FEATURES



N



APPROVED FOR DESIGN

APPROVED FOR DISTRIBUTION

STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
ROADWAY STANDARD DRAWINGS

REV.

5/12

SYMBOL LEGEND

DRAWING NO.

C-01.10
Sheet 4 of 4

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG FROM C-01.30 TO C-01.30, SHEET 1 OF 3	RLF	9/04
2			
3			
4			

WORDS

ABBREVIATION

A

Abutment	Abt
Acceleration	Acc
Acres	Ac
Aggregate	Agg
Aggregate Base	AB
Ahead	AHD, Ahd
Alternate	Alt
Aluminum	Al
American Association of State Highway and Transportation Officials	AASHTO
American Concrete Institute	ACI
American Institute of Steel Construction	AISC
American Road and Transportation Builders Association	ARTBA
American Society for Testing Materials	ASTM
Amount	Amt
Approach	Appr
Approximate	Approx
Asphalt	Asph
Asphalt Rubber	AR
Asphalt Rubber ACFC	ARACFC
Asphaltic Concrete	AC
Asphaltic Concrete Base	ABC
Asphaltic Concrete Friction Course	ACFC
Asphaltic Concrete Surface Course	ACSC
Avenue	AVE, Ave
Average Daily Traffic	ADT

B

Back	BK, Bk
Backfill	Bkfl
Balance	Bal
Bank Protection	BP, Bank Prt
Barbed Wire	BW
Bearing	Brg
Begin	Bgn
Begin Curb Return	BCR
Begin Full Super	BFS
Bench Mark	BM
Bevel or Beveled	Bev
Bituminous	Bit

WORDS

ABBREVIATION

B (cont)

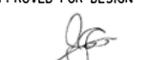
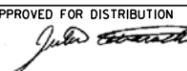
Bituminous Mixture	Bit Mix
Bituminous Surface Treatment	BST
Bituminous Treated Base	BTB
Black Steel Pipe	BSP
Borrow	Bor
Boulevard	BLVD, Blvd
Boundary	Bdry
Brass Cap	BC
Breakaway Cable Terminal	BCT
Bridge	Br
Building	Bldg
C	
Calculated	Calc
Cast-In-Place	C-I-P
Cast Iron	CI
Cast Iron Pipe	CIP
Catch Basin	CB
Cattle Guard	CG
Cement	Cem
Cement-Treated Base	CTB
Center	Ctr
Center Line	℄
Center to Center	C to C
Channel	Chan
Class	Cl
Clear	Clr
Column	Col
Compact or Compaction	Comp
Complete In Place	C in P
Concrete	Conc
Concrete Box Culvert	CBC
Concrete-Treated Base	CTB
Connection	Conn
Conduit	Cond
Construct or Construction	Cst
Continuous	Cont
Coordinate	Coord
Corner	Cor
Correction	Corr
Corrugated Aluminum Pipe	CAP

WORDS

ABBREVIATION

C (cont)

Corrugated High-Density Polyethylene Plastic Pipe	CHDPEPP
Corrugated Metal Pipe	CMP
Corrugated Steel Pipe	CSP
County	Co
Crossing	X-ING
Cross Section	X-SECT
Crown	Cr
Cubic	Cu
Cubic Feet Per Second	CFS
Cubic Yard or Cubic Yards	CY, Cu Yd
Culvert	Culv
Curb and Gutter, Curb & Gutter	C&G
Curve to Spiral	CS
D	
Deceleration	Dcl
Deflection	Def
Deflection of Total Curve	I
Degree of Curve	D
Delineator	Del
Delta	Δ
Depressed Curb	DC
Design Speed	Des Spd
Detail	Dtl
Diameter	Dia
Distance	Dist
Division	Div
Double	Dbl
Drain or Drainage	Drn
Drainage Area	DA
Drawing	Dwg
Drive	Dr
Driveway	Dwy
Ductile Iron Pipe	DIP
E	
Each	Ea
Easement	Esmt
East	E
Eastbound	EB

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	GENERAL ABBREVIATIONS	DRAWING NO. ① C-01.30 Sheet 1 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG C-01.31 TO C-01.30, SHEET 2 OF 3	RLF	9/04
2			
3			
4			

WORDS

ABBREVIATION

E (cont)

Edge of Pavement	EP
Electric, Electricity	Elec, E
Elevation	Elev
Embankment	Emb
End Curb Return	ECR
End Full Superelevation	EFS
Engineer	Engr
Entrance	Ent
Equation	EQ, Eq
Estimate	Est
Excavation	Exc
Existing	Exst
Expansion Joint	Exp Jt
Extend or Extension	Ext
External	Ext

F

Federal	Fed
Feet or Foot	Ft
Feet per Foot	/ft
Feet Per Second	FPS
Figure	Fig
Finish	Fin
Floor	Fl
Flow Line	FL
Footing	Ftg
Forest	Fst
Found	Fnd
Frame	Fr
Freeway	Fwy
Frontage	Frt
Furnish or Furnished	Furn
Future	Fut

G

Gas	G
Gas Meter	GM
Gas Valve	GV
Galvanize or Galvanized	Galv
Gauge	Ga
Government	Gov't
Grade	Gr
Grade Separation	GS

WORDS

G (cont)

Ground
Ground Compaction
Grubbing
Guard
Guardrail
Guardrail Extruder Terminal

H

Headwall
Height
Height of Instrument
Head Water
Highway
Horizontal
Horizontal Elliptical Reinforced Concrete Pipe

I

Improvement
Inch or Inches
Include, Included or Inclusive
Inside Diameter
Invert
Irrigation

J

Joint
Junction

L

Laboratory
Lateral
Left
Length or Length of Curve
Length of Normal Crown Removal
Length of Spiral
Length of Superelevation Runoff
Line

Linear or Lineal
Linear Feet

Location

M

Manhole
Material
Maximum
Median

ABBREVIATION

Gnd
Gnd Comp
Grb
Grd
GR
GET

Hdwl
Ht, H, h
HI
HW
Hwy
Horz
HERCP

Impr
In
Incl
ID
Inv
Irr

Jt
Jct

Lab
Lat

Lt
L

L _c
L _s

L _s
Ln

Lin
Lin Ft

Loc

MH
Mtl

Max
Med

WORDS

M (cont)

Mile or Miles
Mile Post
Miles Per Hour
Mineral Aggregate
Minimum
Miscellaneous
Modify or Modified
Monument
Mountain

N

National
Non-Reinforced Cast-In-Place Concrete Pipe
Normal Crown
North
Northbound
Number

O

Obllterate
Original
Outside Diameter
Overhead
Overpass

P

Parkway
Pavement
Pedestrian
Place
Point
Point of Compound Curvature
Point of Curvature
Point of Intersection
Point of Reverse Curvature
Point of Tangency
Point on Curve
Point on Semi-Tangent
Point on Spiral
Point on Tangent
Polyethylene

ABBREVIATION

MI
MP
MPH
MA
Min
Misc
Mod
Mon
Mt

Natl

NRCIPCP

NC

N

NB

No

Obl

Orig

OD

OH

OP

Pkwy

Pvmt

Ped

PI

Pt

PCC

PC

PI

PRC

PT

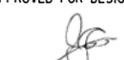
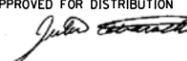
POC

POST

POS

POT

PE

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	GENERAL ABBREVIATIONS	DRAWING NO. C-01.30 Sheet 2 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG C-01.32 TO C-01.30, SHEET 3 OF 3	RLF	9/04
2	ADDED STOPPING SIGHT DISTANCE, HEADLIGHT	RLF	5/12
3			
4			

WORDS

ABBREVIATION

P (cont)

Polyvinyl Chloride	PVC
Portland Cement Concrete	PCC
Portland Cement Concrete Pavement	PCCP
Pounds	Lbs
Pounds Per Square Inch	PSI
Preliminary	Prelim
Prestress, Prestressed or Prestressing	PS
Project	Prj
Property Line	P/L
Proposed	Prop
Protection	Prt
Provision or Provide	Prv

Q

Quadrant	Quad
Quantity or Quantities	Quan
Quantity of Drainage Runoff	Q

R

Radius	R
Railroad	RR
Range	R
Reconstruct	Recst
Reference	Ref
Reinforced or Reinforcing	ReInf
Reinforced Concrete	RC
Reinforced Concrete Pipe	RCP
Reinforcing Bar	Rebar
Relocate, Relocation or Relocated	Reloc
Remove	Rem
Required	Reqd
Reservation	Resv
Residence	Res
Retain or Retaining	Ret
Revised or Revision	Rev
Right	Rt
Right-of-Way	R/W
Road	Rd
Roadway	Rdwy
Route	Rte
Rubber Gasket Reinforced Concrete Pipe	RGRCP

WORDS

S

Salvage
Section
Select Material
Sheet
Shoulder
Shrinkage
Sidewalk
② Sight Distance, headlight
Sight Distance, stopping
Single
Skew
South
Southbound
Special
Specification
Spiral Rate of Change
Spiral To Curve
Spiral To Tangent
Square
Square Feet
Square Yard
Standard
State Route
Station
Street
Structure or Structural
Subdivision
Subgrade
Subgrade Seal
Superelevation
Surface
Survey
Swell
Symmetrical

T

Tangent
Tangent Length
Tangent to Spiral
Telegraph

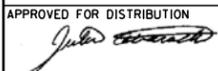
ABBREVIATION

Salv
Sct
SM
Sh
Shldr
Shr
S/W
SDh
SDs
Sgl
Sk
S
SB
Spcl
Spec
a
SC
ST
Sq
Sq Ft
Sq Yd
Std
SR
Sta
St
Str
Subdiv
SG
SS
e or Super
Surf
Sur
Sw
Sym
Tan
T
TS
Tlg

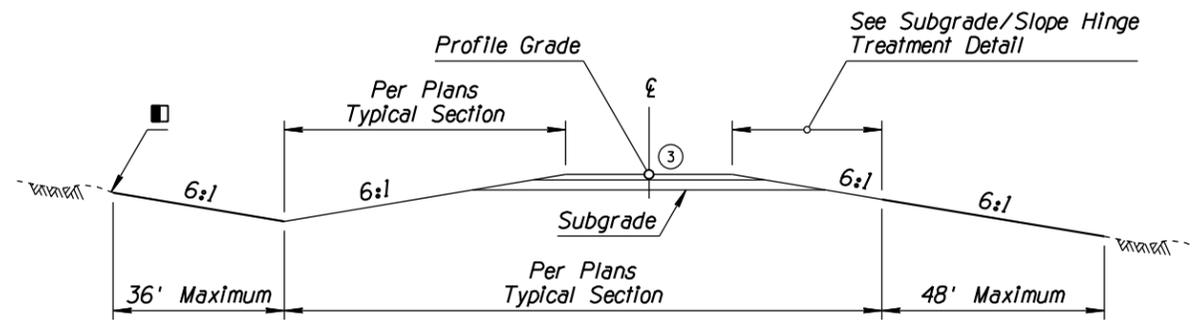
WORDS

T (cont)

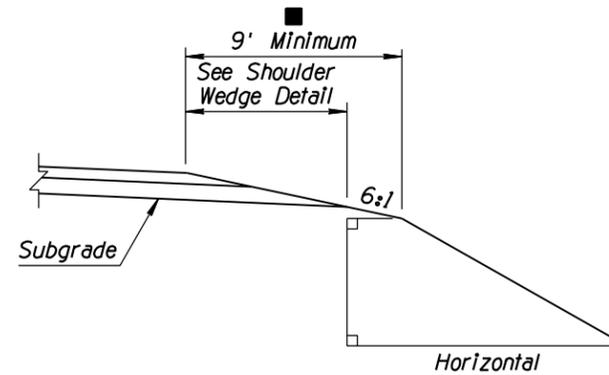
Telephone	Tel
Temporary	Temp
Temporary Construction Easement	TCE
Timber	Tbr
Top of Curb	TC
Topography	Topo
Township	T
Traffic Interchange	TI
Transition	Trns
Turning Point	TP
Turnout	TO
Typical	Typ
U	
Underground	Ugnd
Underpass	UP
V	
Variable	Var
Vertical	Vert
Vertical Curve	VC
Vertical Elliptical Reinforced Concrete Pipe	VERCP
Vertical Point of Intersection	VPI
Viaduct	Via
Vitrified Clay Pipe	VCP
Volume	Vol
W	
Water	W
Water Meter	WM
Water Valve	WV
Welded Wire Fabric	WWF
West	W
Westbound	WB
Western Wood Products Association	WWPA
Wide or Width	W
Wood	Wd
Y	
Yard	Yd

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	GENERAL ABBREVIATIONS	DRAWING NO. ① C-01.30 Sheet 3 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED TITLE	RLF	4/06
2	REVISED 'NOTE TO DESIGNERS'	RLF	7/06
3	MODIFIED SYMBOL	RLF	7/06
4			

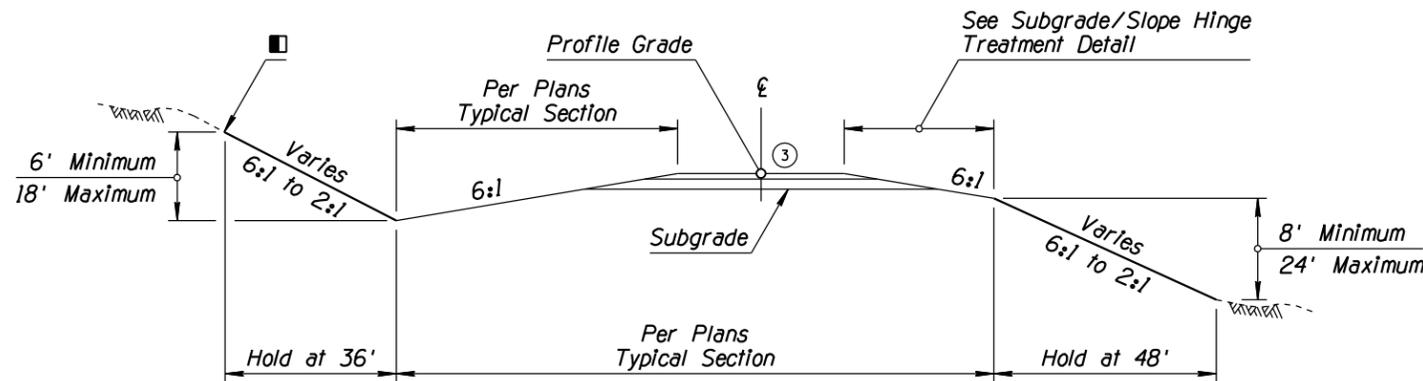


MINIMUM SLOPES

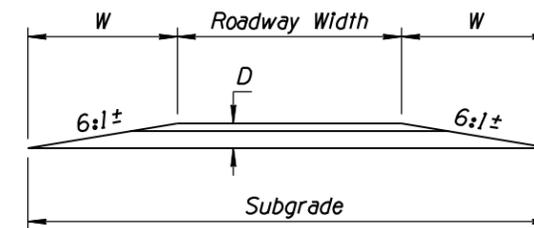


SUBGRADE/SLOPE HINGE TREATMENT DETAIL

- ### GENERAL NOTES
- Roadway width, cut ditch width, cross slope, and pavement structure section will be shown on project plans.
 - Pavement structure slope is nominal. Actual slope is controlled by (D). See Shoulder Wedge Detail.
 - Slopes beyond the pavement structure, such as embankment and cut slopes, are relative to horizontal.
 - For slope controls within interchange areas, see project plans.
 - When median slopes intersect, see project plans for controls.
 - These slopes are intended to be used with new or reconstructed roadways.



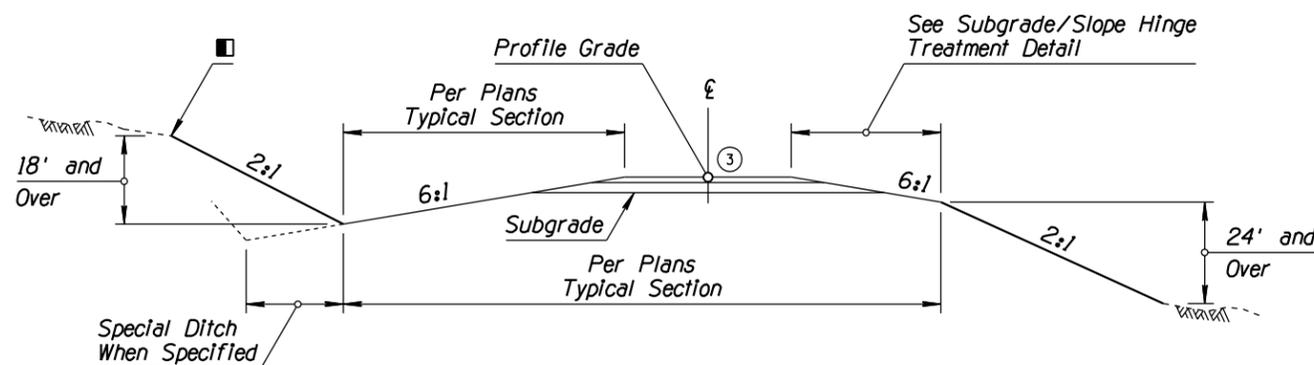
INTERMEDIATE SLOPES



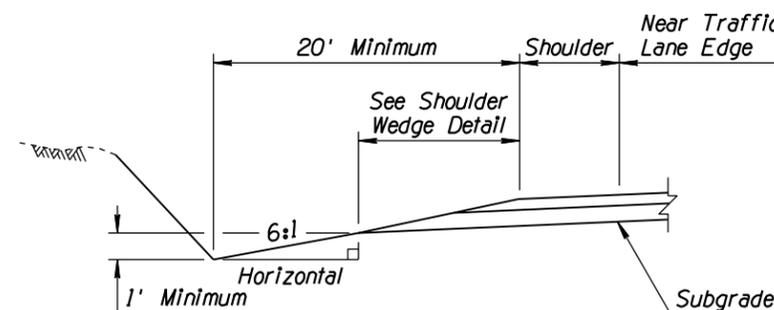
$W = D \times \text{Slope (6:1)}$
 $D = \text{Str Sct Depth (Ft) Excluding ACFC}$
 $\text{Subgrade} = 2 \times W + \text{Roadway Width}$

SHOULDER WEDGE DETAIL

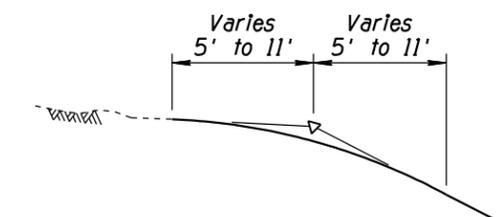
- ### NOTE TO DESIGNERS
- Required when guardrail is present on the project. Treatment shall be uniform throughout the project length. The 9' requirement may be waived under special conditions on projects without guardrail.



MAXIMUM SLOPES



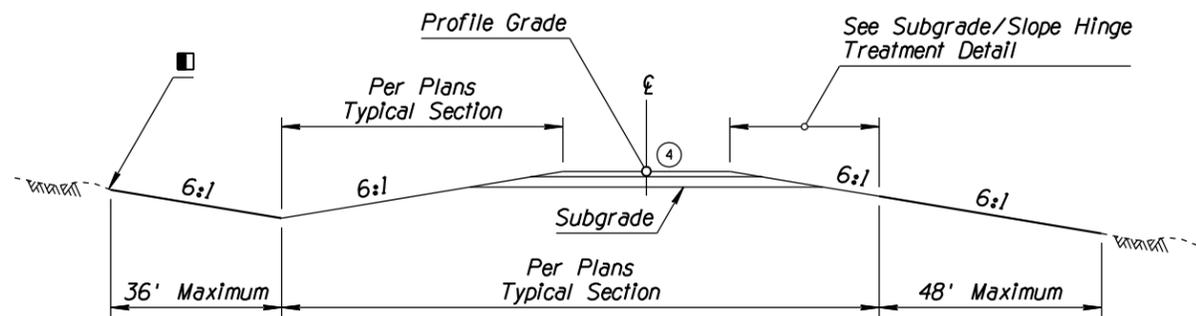
MINIMUM DITCH CONDITIONS DETAIL



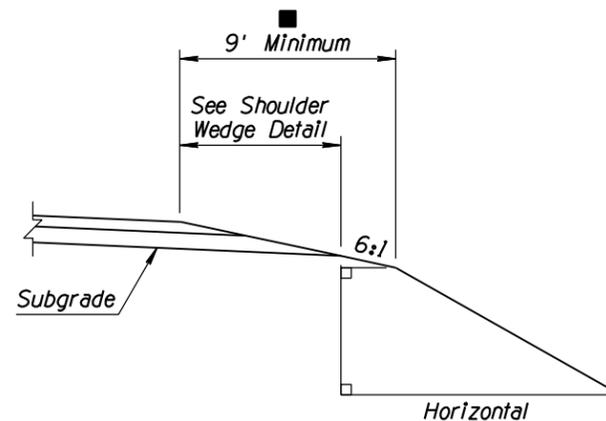
- ### SLOPE ROUNDING DETAIL
- Except in solid rock, or as directed by the Engineer, the intersection of roadway cut slopes with the ground surfaces shall be rounded.
 - For cuts up to 6', use 5' semi-tangents for slope rounding. For each additional foot of cut add 1' to semi-tangent to 11' maximum.

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	RURAL DIVIDED HIGHWAYS ①	DRAWING NO. C-02.10

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED TITLE	RLF	4/06
2	MODIFIED SLOPE CRITERIA	RLF	4/06
3	REVISED 'NOTE TO DESIGNERS'	RLF	7/06
4	MODIFIED SYMBOL	RLF	7/06

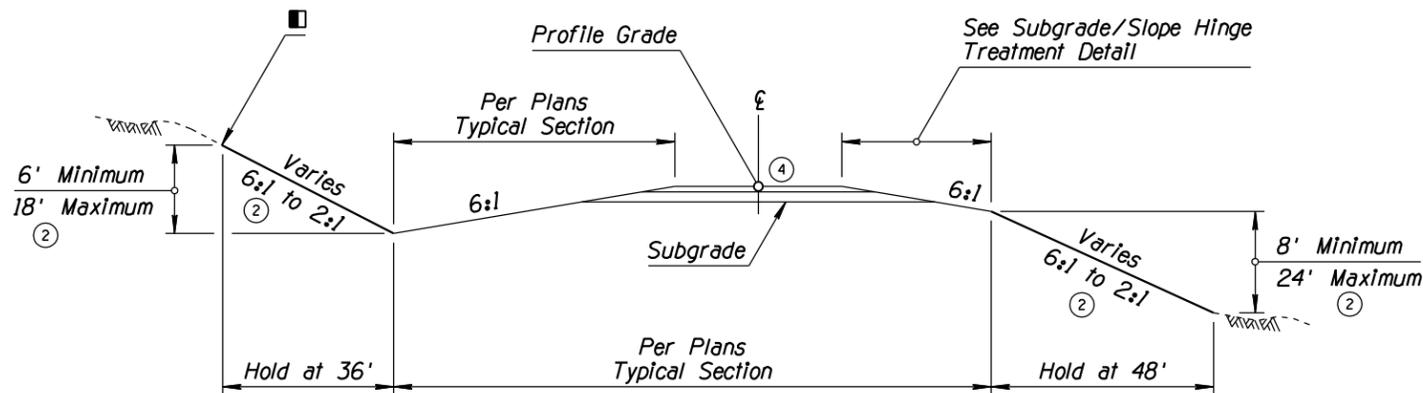


MINIMUM SLOPES

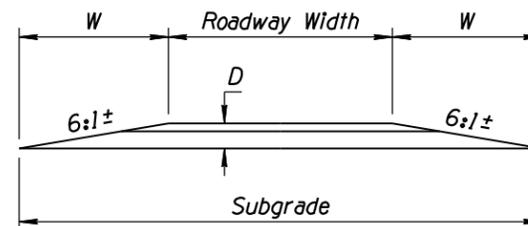


SUBGRADE/SLOPE HINGE TREATMENT DETAIL

- ### GENERAL NOTES
- Roadway width, cut ditch width, cross slope, and pavement structure section will be shown on project plans.
 - Pavement structure slope is nominal. Actual slope is controlled by (D). See Shoulder Wedge Detail.
 - Slopes beyond the pavement structure, such as embankment and cut slopes, are relative to horizontal.
 - When median slopes intersect, see project plans for controls.
 - These slopes are intended to be used with new or reconstructed roadways.



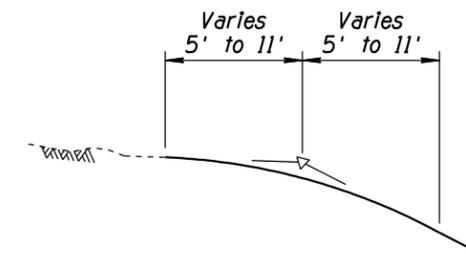
INTERMEDIATE SLOPES



$W = D \times \text{Slope } (6:1)$
 $D = \text{Str Sct Depth (Ft) Excluding ACFC}$
 $\text{Subgrade} = 2 \times W + \text{Roadway Width}$

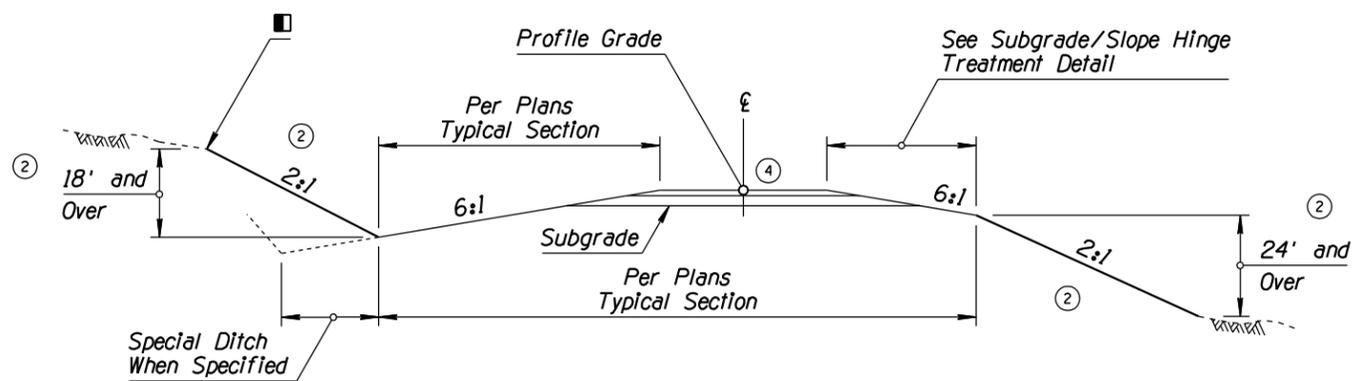
SHOULDER WEDGE DETAIL

- ### NOTE TO DESIGNERS
- Required when guardrail is present on the project. Treatment shall be uniform throughout the project length. The 9' requirement may be waived under special conditions on projects without guardrail.

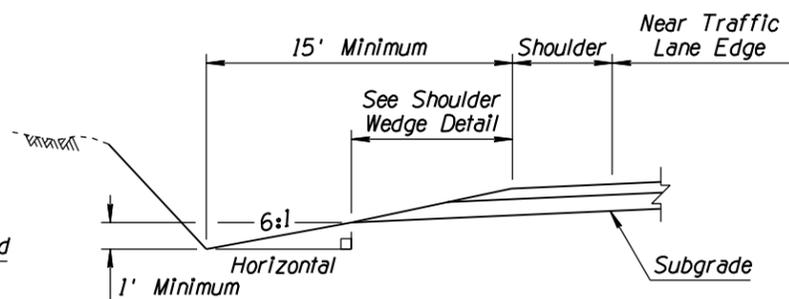


SLOPE ROUNDING DETAIL

- Except in solid rock, or as directed by the Engineer, the intersection of roadway cut slopes with the ground surfaces shall be rounded.
- For cuts up to 6', use 5' semi-tangents for slope rounding. For each additional foot of cut add 1' to semi-tangent to 11' maximum.



MAXIMUM SLOPES



MINIMUM DITCH CONDITIONS DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SLOPES RURAL UNDIVIDED AND FRINGE-URBAN HIGHWAYS	DRAWING NO. C-02.20

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED SLOPE DIMENSION	RLF	4/10
2			
3			
4			

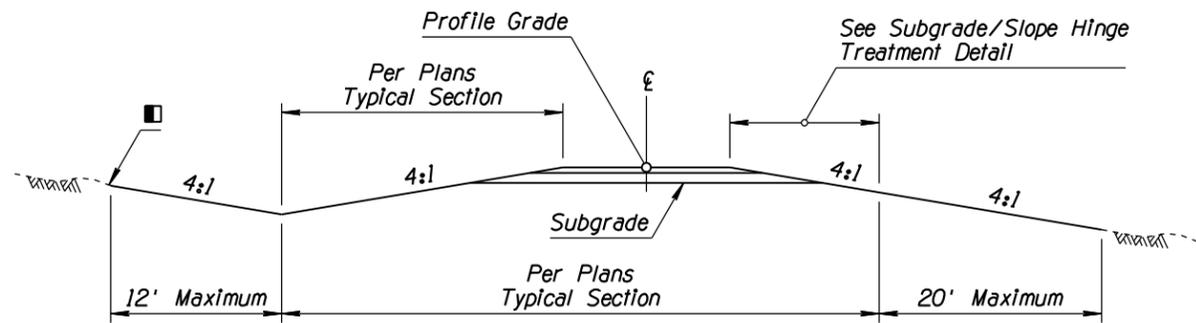
GENERAL NOTES

- Roadway width, cut ditch width, cross slope, and pavement structure section will be shown on project plans.
- Pavement structure slope is nominal. Actual slope is controlled by (D). See Shoulder Wedge Detail.
- Slopes beyond the pavement structure, such as embankment and cut slopes, are relative to horizontal.

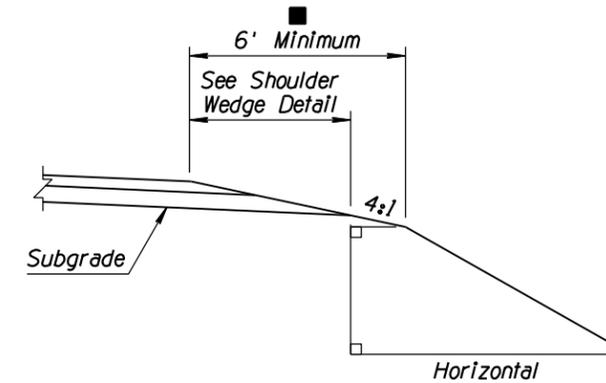
NOTE TO DESIGNERS

USAGE OF THIS STANDARD IS LIMITED IN ACCORDANCE WITH THE ROADWAY DESIGN GUIDELINES - CHAPTER 300.

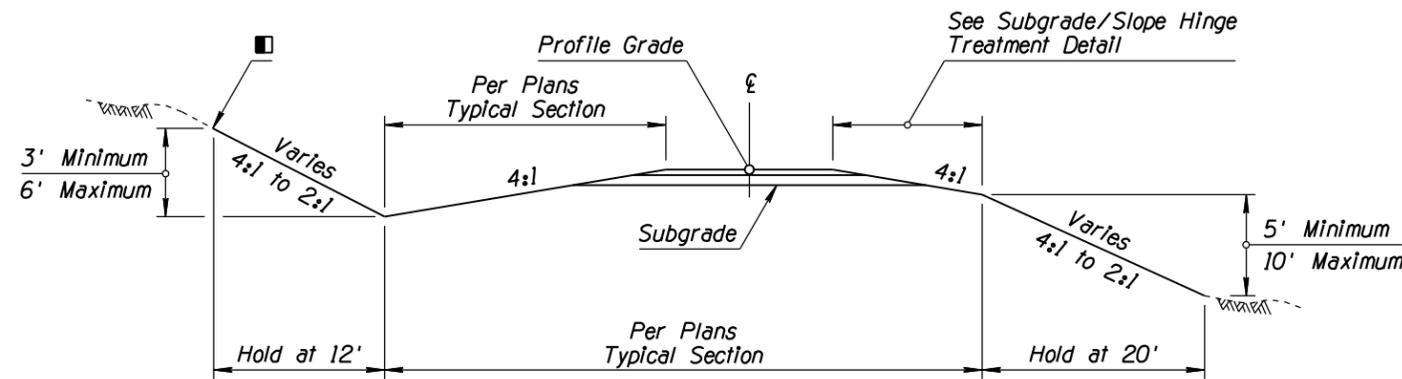
- Required when guardrail is present on the project. Treatment shall be uniform throughout the project length. The 6' requirement may be waived under special conditions on projects without guardrail.



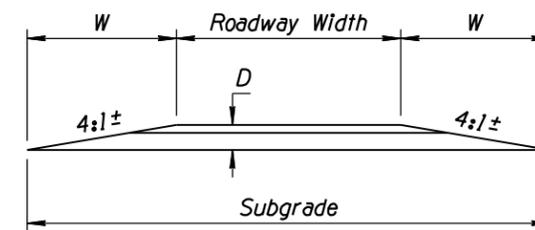
MINIMUM SLOPES



SUBGRADE/SLOPE HINGE TREATMENT DETAIL

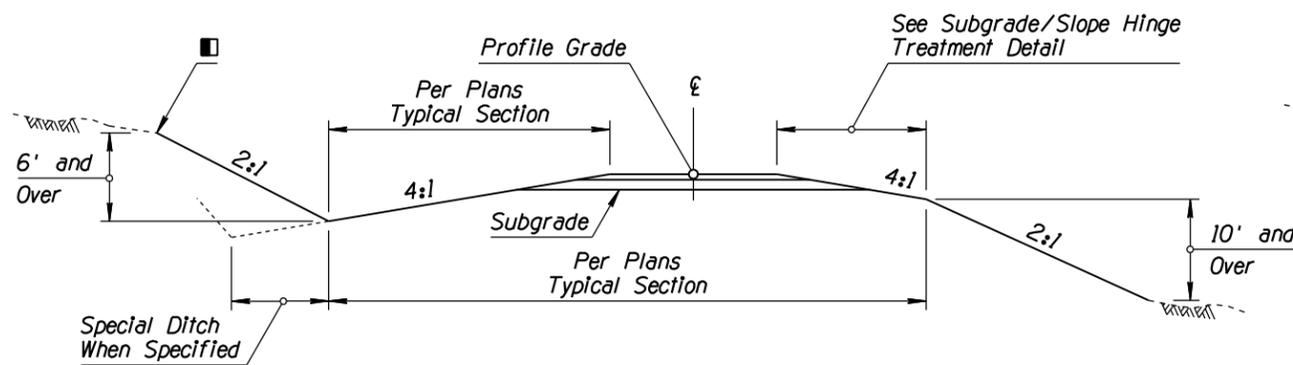


INTERMEDIATE SLOPES

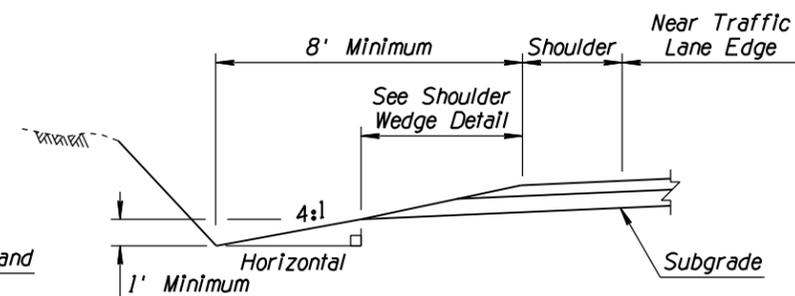


$W = D \times \text{Slope (4:1)}$
 $D = \text{Str Sct Depth (Ft) Excluding ACFC}$
 $\text{Subgrade} = 2 \times W + \text{Roadway Width}$

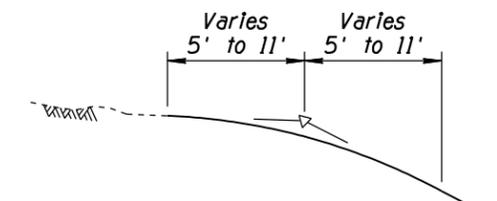
SHOULDER WEDGE DETAIL



MAXIMUM SLOPES



MINIMUM DITCH CONDITIONS DETAIL



SLOPE ROUNDING DETAIL

- Except in solid rock, or as directed by the Engineer, the intersection of roadway cut slopes with the ground surfaces shall be rounded.

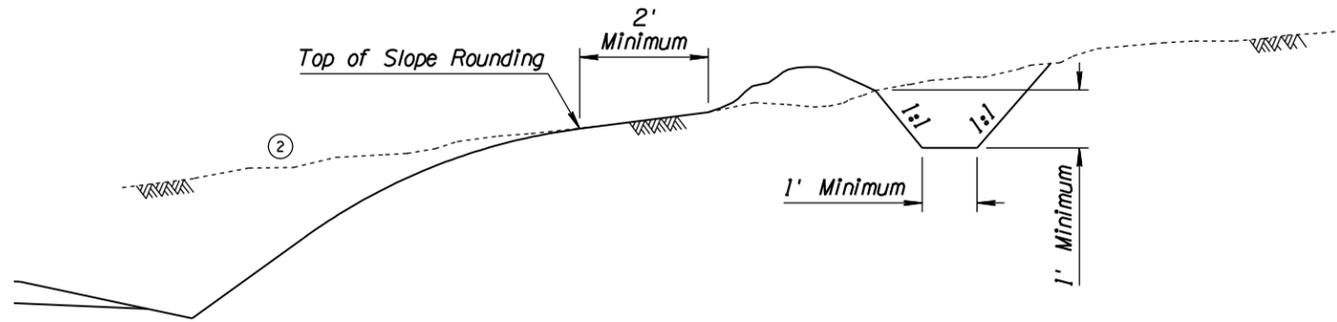
For cuts up to 6', use 5' semi-tangents for slope rounding. For each additional foot of cut add 1' to semi-tangent to 11' maximum.

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SLOPES MISCELLANEOUS ROADWAYS	DRAWING NO. C-02.30

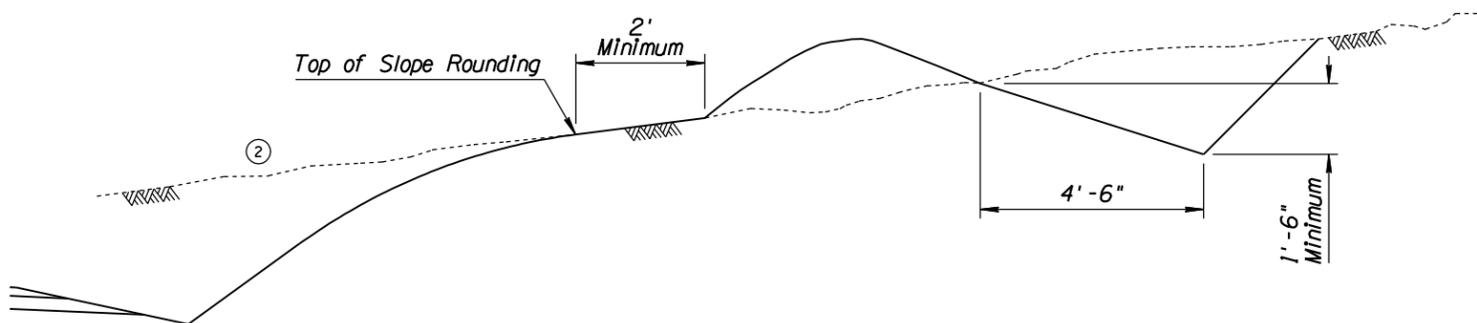
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SLOPE DESIGNATIONS	RLF	9/04
2	REVISED EXISTING GROUND-LINE SYMBOLOLOGY	RLF	9/04
3			
4			

GENERAL NOTES

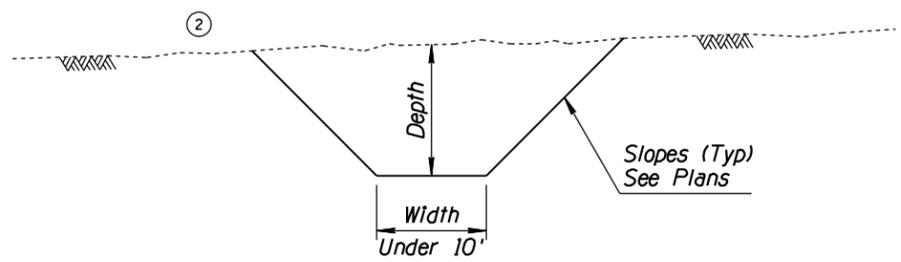
1. Dimensions of ditches and channels shall be shown on the plans as bottom width, depth and length.
2. Ditches and channels shall be constructed with a minimum grade to prevent erosion. Ditch outlet treatment shall be as provided on plans.



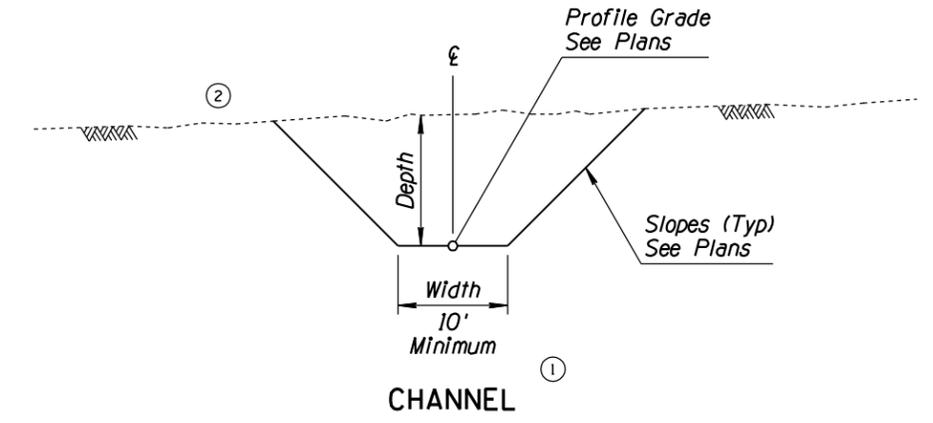
CROWN DITCH



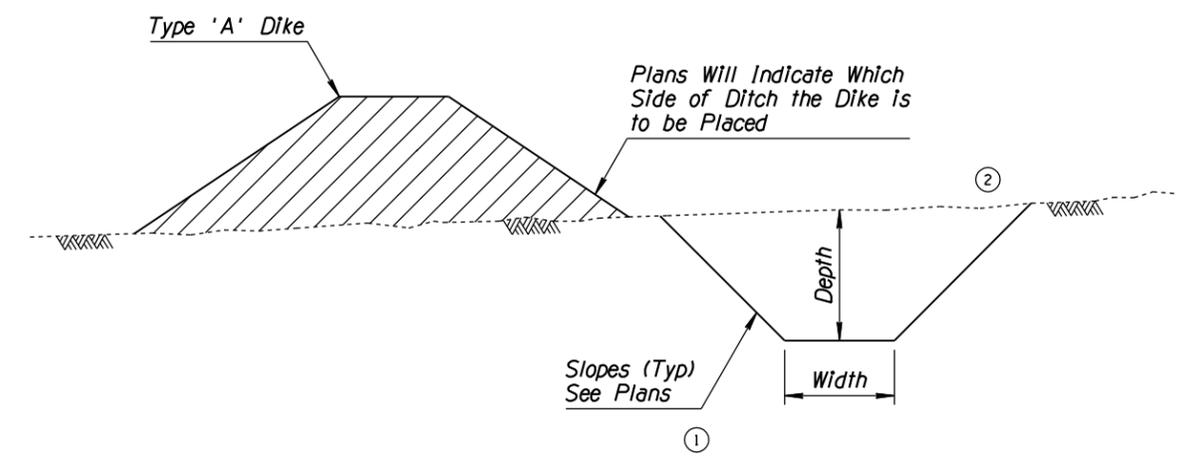
GRADER DITCH



DITCH



CHANNEL



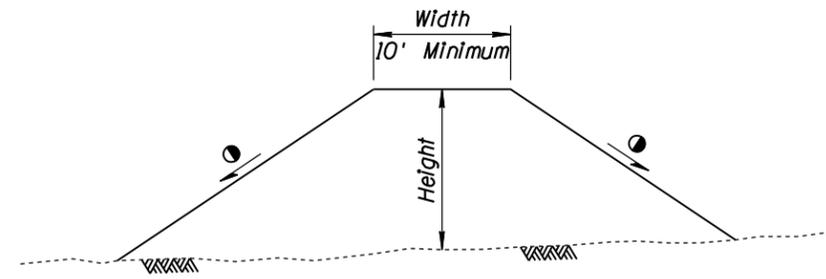
DITCH AND DIKE

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	DITCHES, CHANNELS, DIKES AND BERMS DITCHES AND CHANNELS	DRAWING NO. C-03.10 Sheet 1 of 5

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	DELETED SLOPE TABLE	RLF	9/04
2	DELETED GENERAL NOTE 2: REVISED SLOPE DESIGNATIONS	RLF	9/04
3			
4			

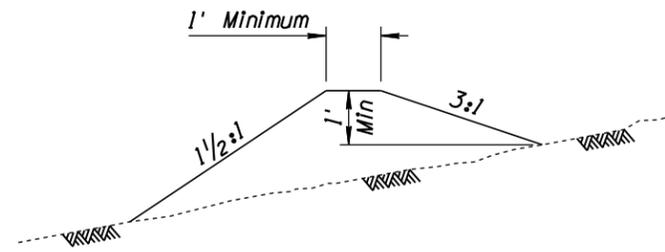
GENERAL NOTES

- Dimensions of dikes shall be shown on the plans as top width, height, length and top of dike elevation.
- ① Slope as Shown on Plans (10:1 Desirable)
 ② Slope as Shown on Plans

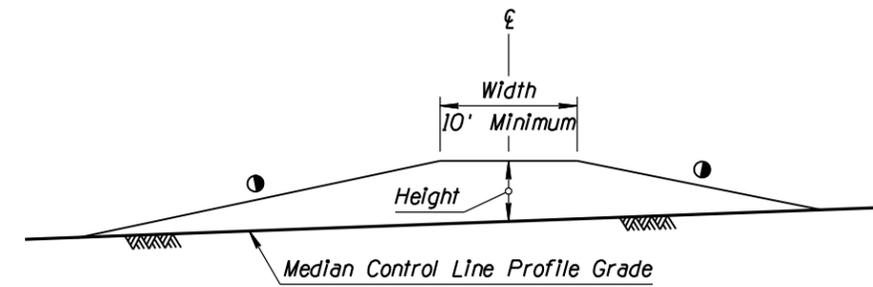


TYPE A DIKE

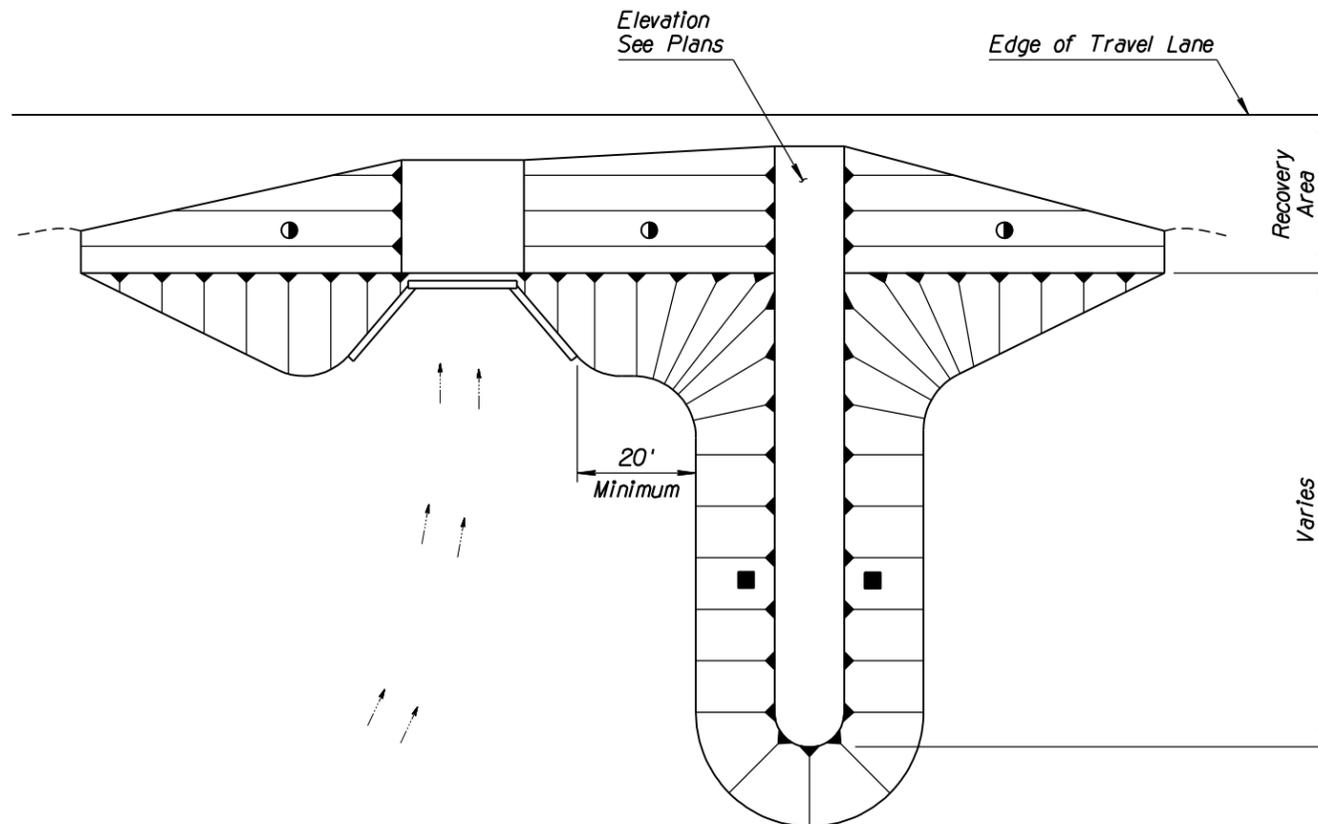
①



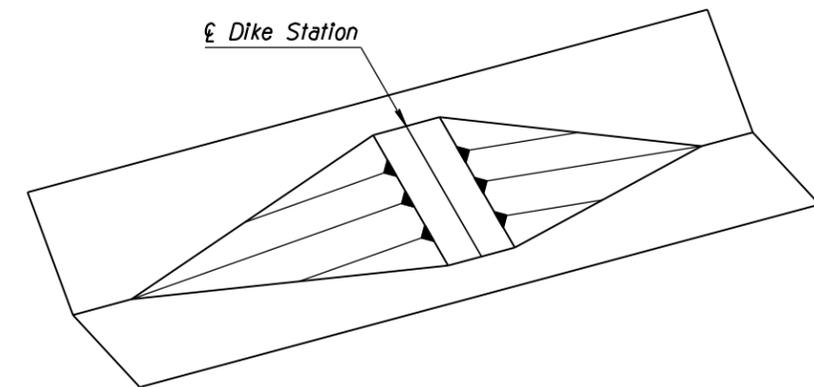
CROWN DIKE



TYPE B TRANSVERSE MEDIAN DIKE



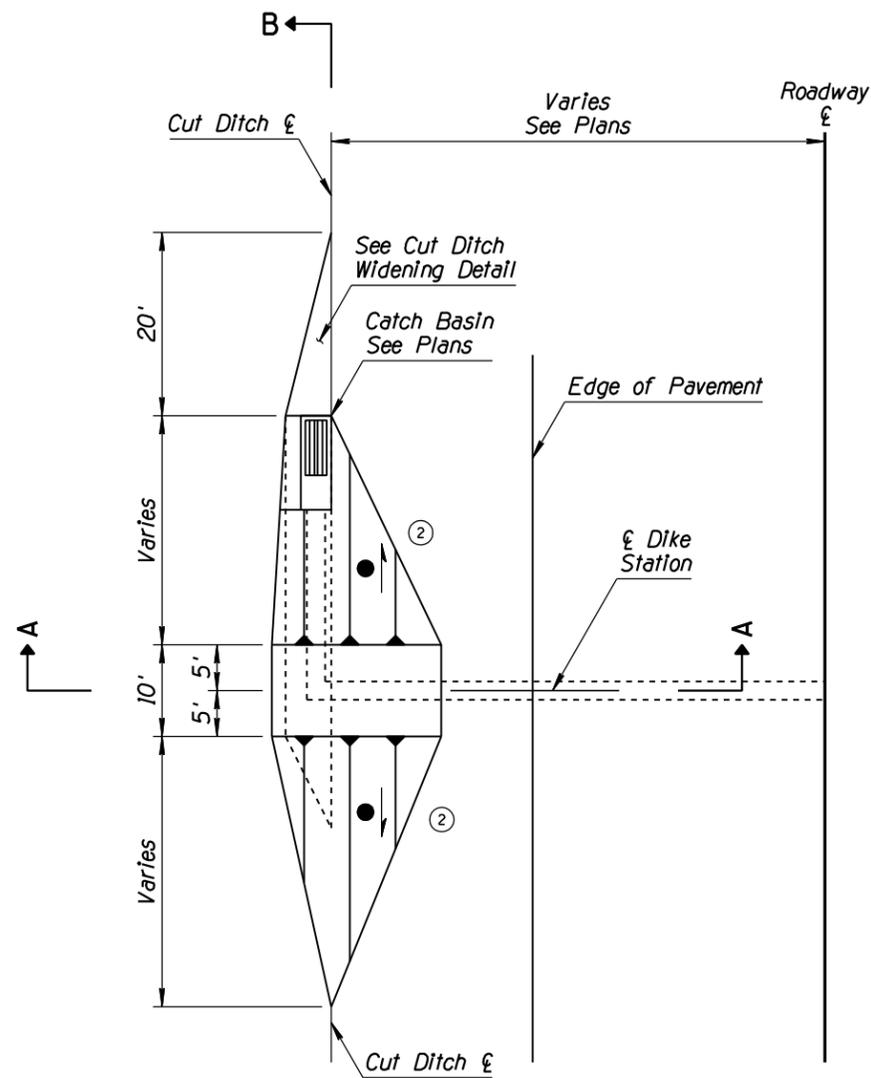
TYPICAL DIKE INSTALLATION AT STRUCTURE



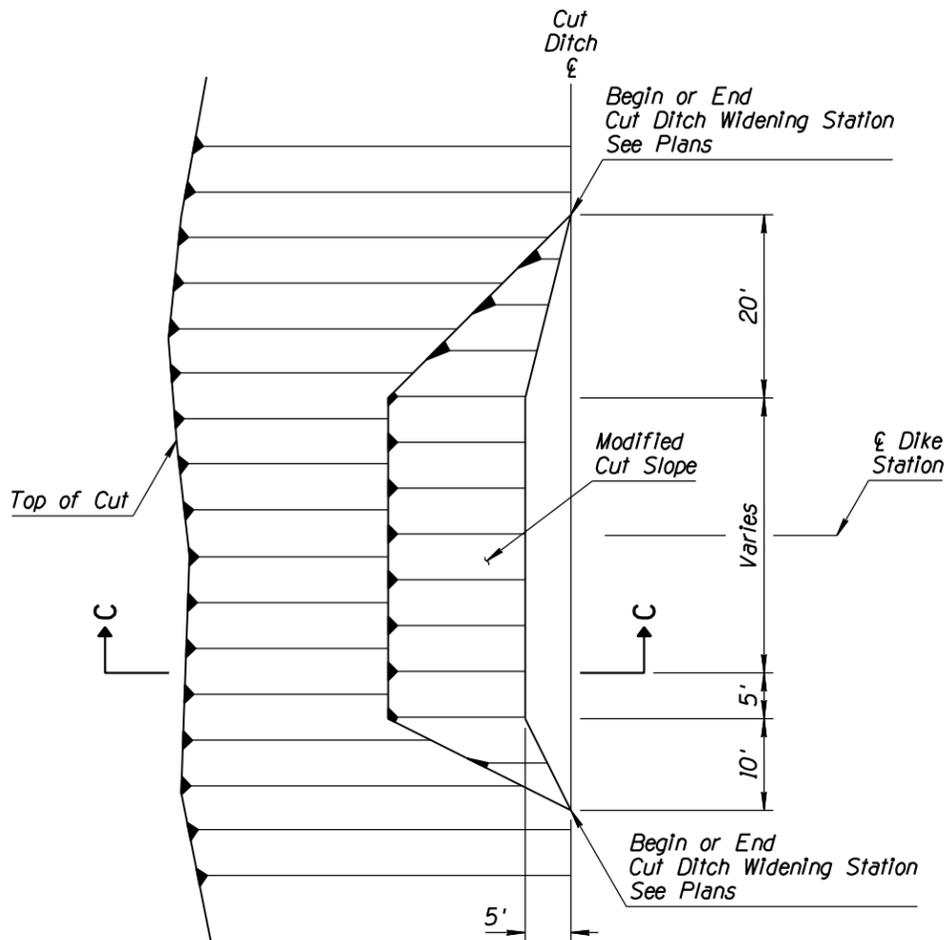
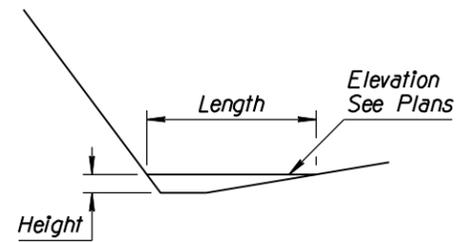
TYPICAL TRANSVERSE MEDIAN DIKE INSTALLATION

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	DITCHES, CHANNELS, DIKES AND BERMS DIKES	DRAWING NO. C-03.10 Sheet 2 of 5

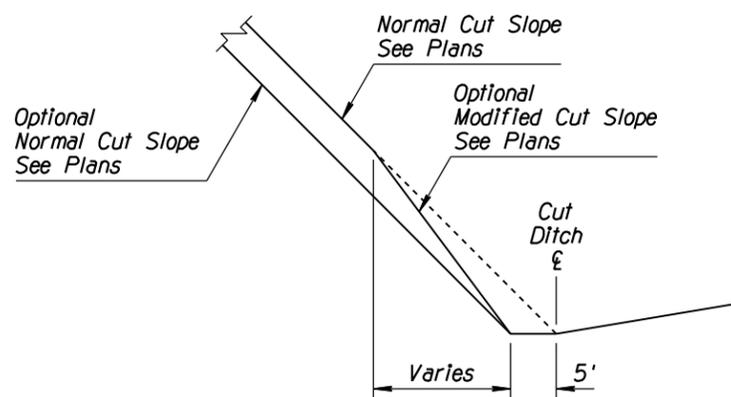
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED NEW GENERAL NOTE	RLF	9/04
2	REVISED SLOPE DESIGNATIONS	RLF	9/04
3			
4			



SECTION A-A



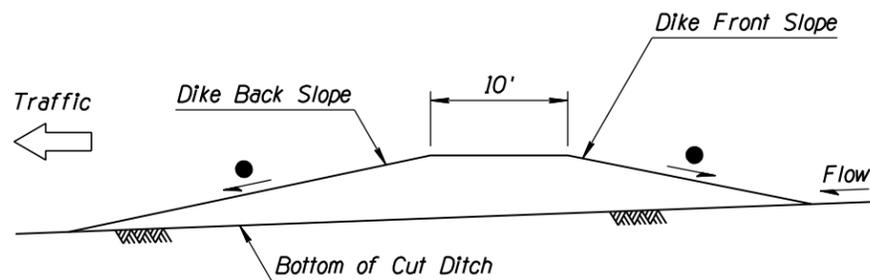
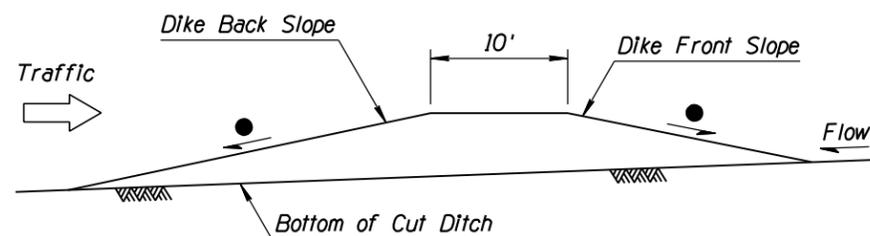
CUT DITCH WIDENING DETAIL



SECTION C-C

GENERAL NOTES

1. Dimensions for ditch dikes shall be shown on the plans as dike stationing, height, length, dike back slope and top of dike elevation.
2. Dimensions for cut ditch widening shall be shown on the plans as beginning and ending stations.
3. All slopes are given relative to the grade of the cut ditch at the toe intersection.
 - ①
 - ② ● 10:1 Desirable Slope



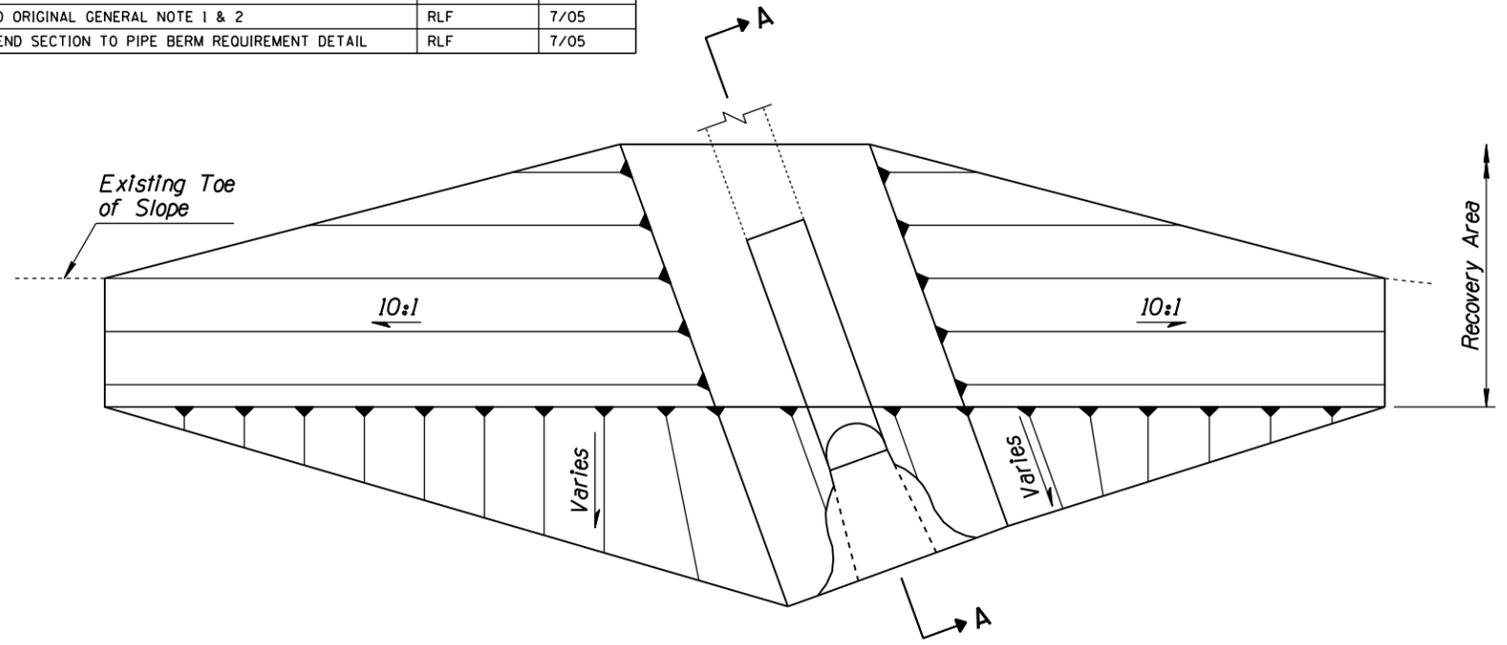
SECTION B-B

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	DITCHES, CHANNELS, DIKES AND BERMS DITCH DIKE	DRAWING NO. C-03.10 Sheet 3 of 5

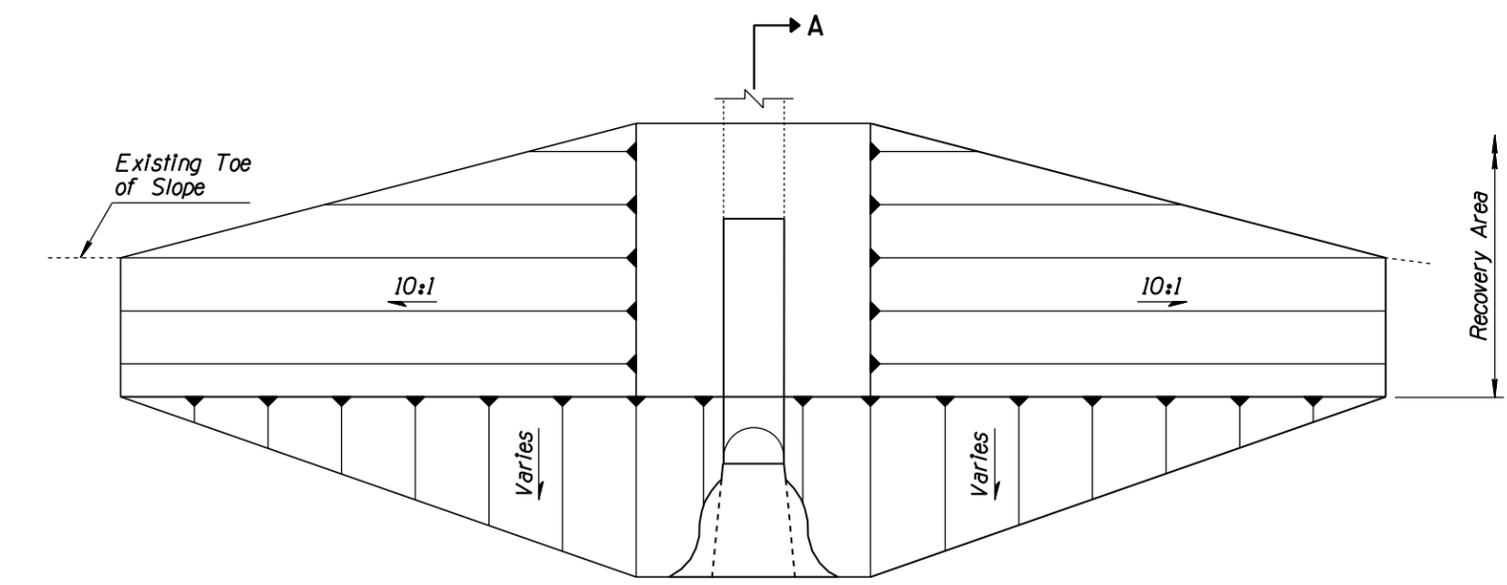
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SECTION A-A TITLE	RLF	7/05
2	DELETED SECTION A-A (WITHOUT END SECTION)	RLF	7/05
3	DELETED ORIGINAL GENERAL NOTE 1 & 2	RLF	7/05
4	ADDED END SECTION TO PIPE BERM REQUIREMENT DETAIL	RLF	7/05

GENERAL NOTES

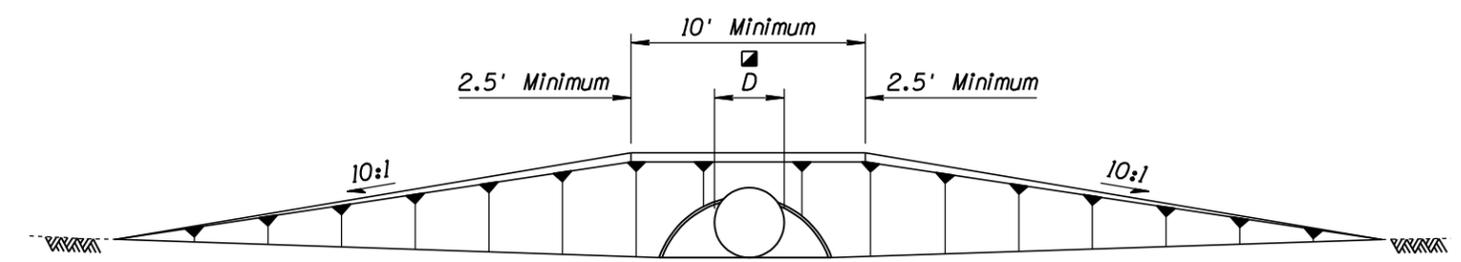
1. Berm construction shown is for pipe extensions. Berm construction similar for new pipe and multiple pipe installations. See Pipe Berm Requirement Detail.
2. If Point A is within the recovery area, then a pipe berm is required and Point B is set at the edge of the recovery area.
3. See Std Dwg C-13.15 for pipe backfill and bedding material limits.
 - Single Pipe Installation: D = Outside Diameter of Pipe
 - Multiple Pipe Installation: D = Outside Edge to Outside Edge of Pipes



SKewed PIPE PLAN

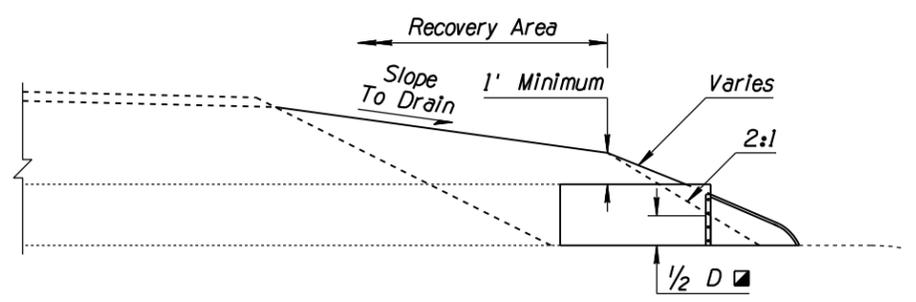


STRAIGHT PIPE PLAN

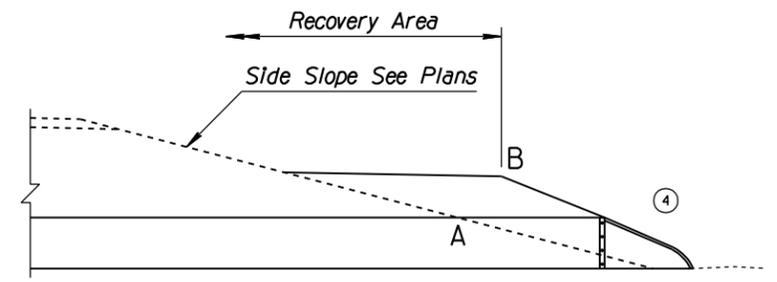


ELEVATION STRAIGHT PIPE

②



SECTION A-A



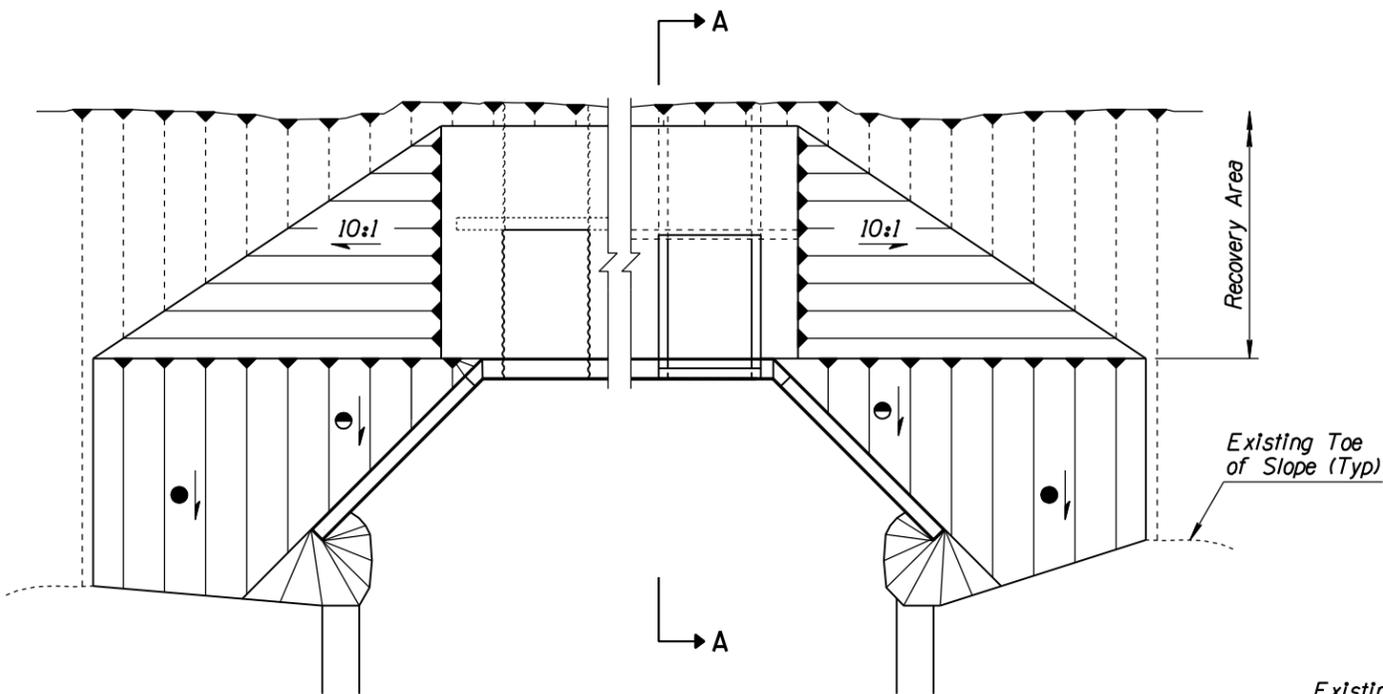
PIPE BERM REQUIREMENT DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	DITCHES, CHANNELS, DIKES AND BERMS PIPE BERMS	DRAWING NO. C-03.10 Sheet 4 of 5

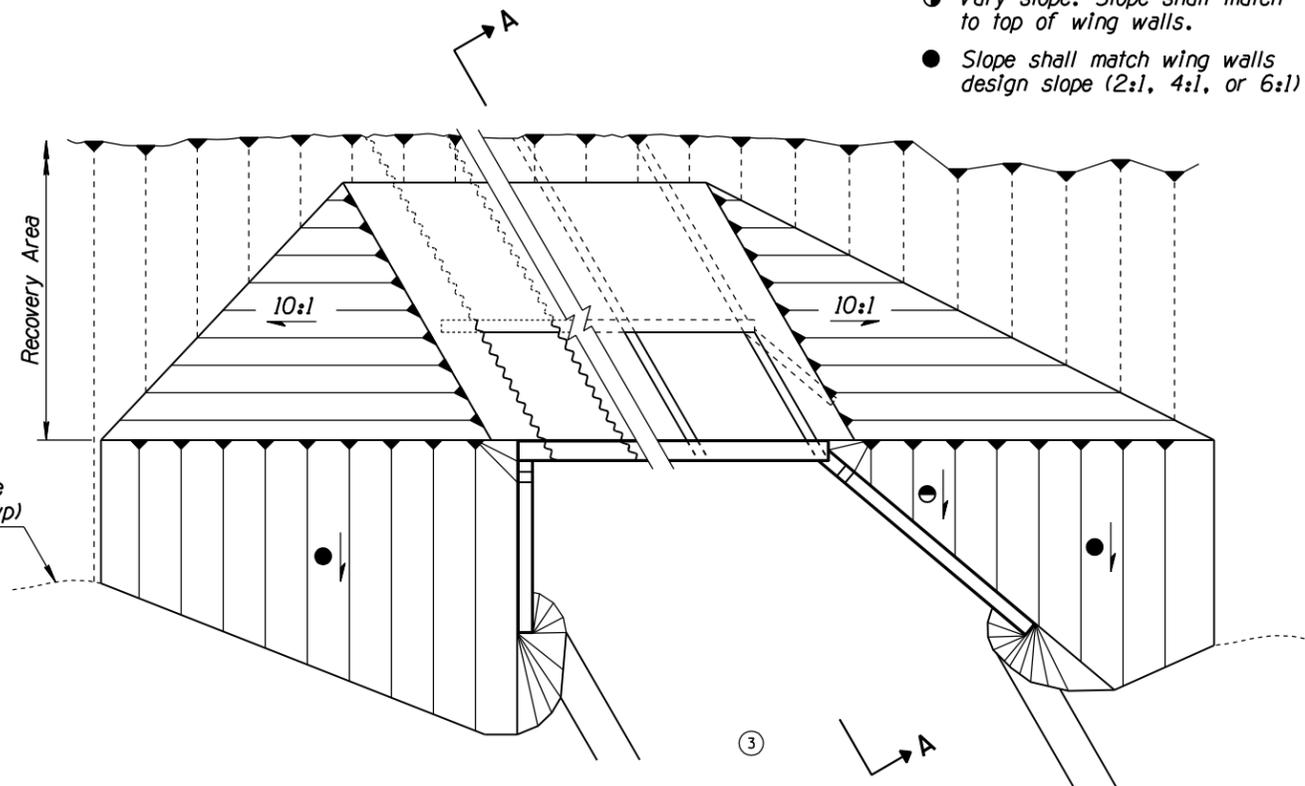
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REMOVED 1:1 SLOPE REQUIREMENT WITHIN RECOVERY AREA	RLF	5/12
3	REVISED BERM GRAPHICS	RLF	5/12
4			

GENERAL NOTES

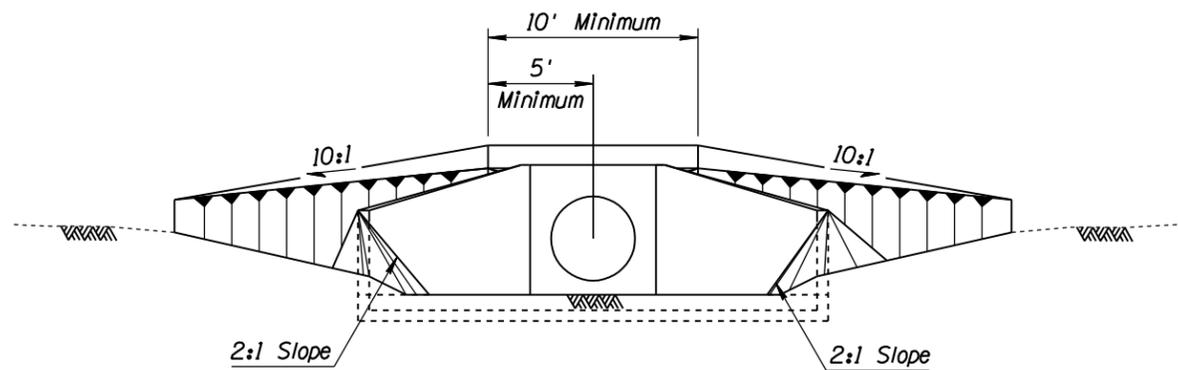
- Berm construction similar for box culvert and pipe with headwall.
- Berm construction shown is for extension of existing facilities. Berm construction similar for new facilities.
- See C-Standards and B-Standards for pipe and structure backfill limits.
 - ① Vary slope. Slope shall match to top of wing walls.
 - Slope shall match wing walls design slope (2:1, 4:1, or 6:1)



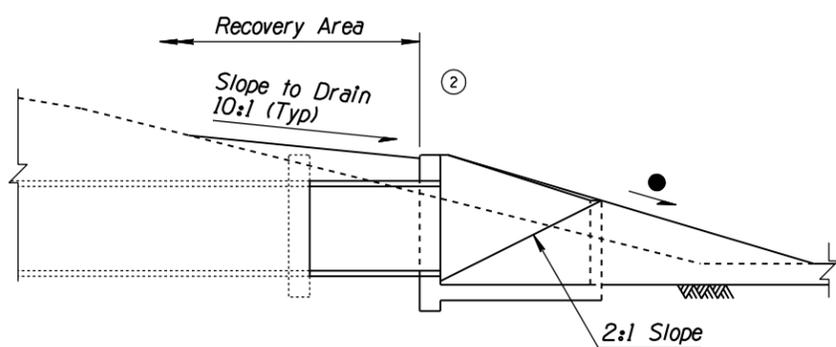
STRAIGHT HEADWALL PLAN
CBC OR PIPE WITH HEADWALL



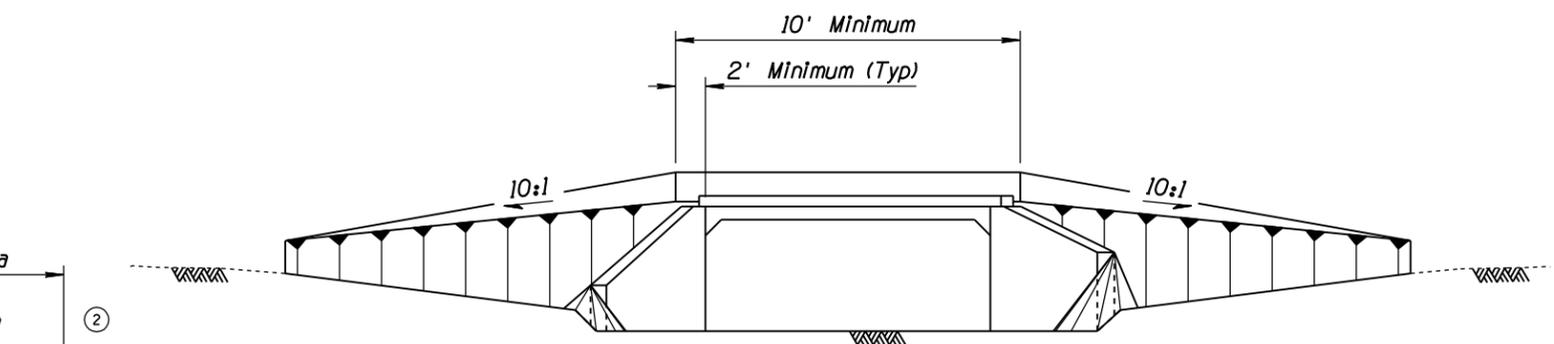
SKewed HEADWALL PLAN



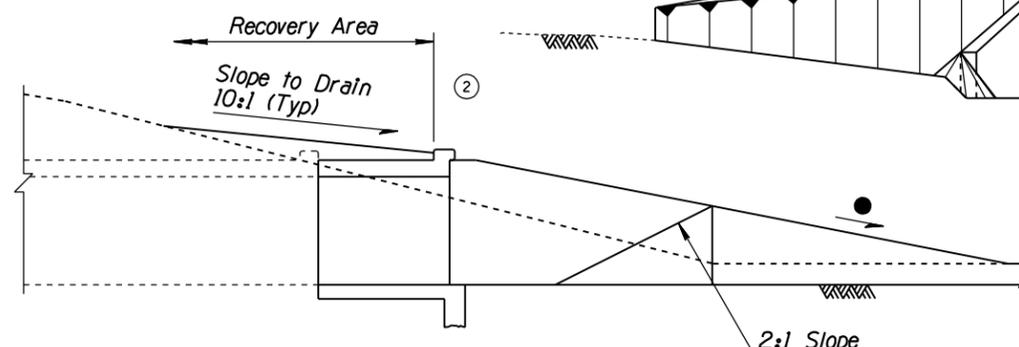
ELEVATION FOR PIPE ③



SECTION A-A (FOR PIPE WITH HEADWALL)



ELEVATION FOR CBC ③



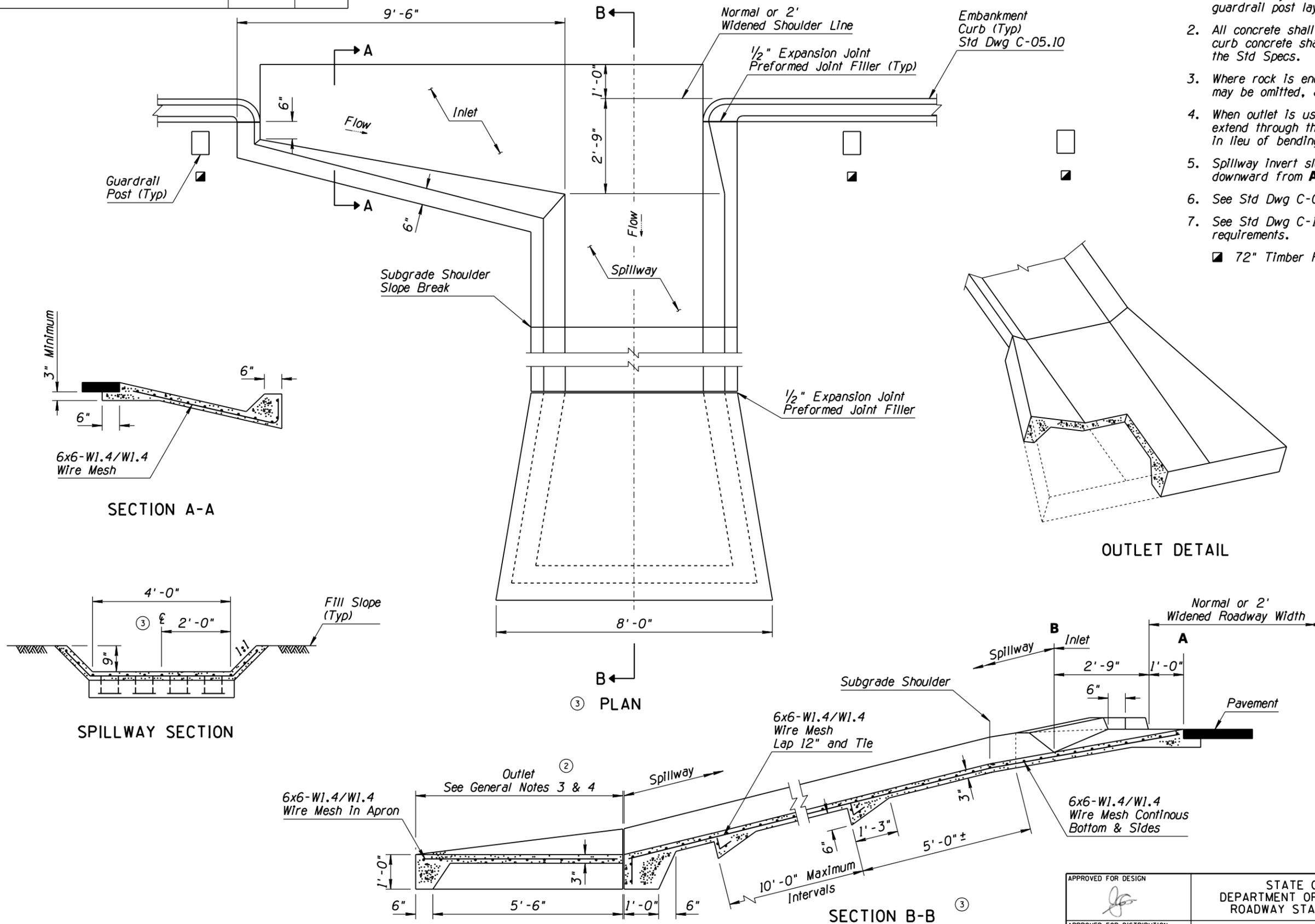
SECTION A-A (FOR CBC)

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	DITCHES, CHANNELS, DIKES AND BERMS HEADWALL BERMS	DRAWING NO. ① C-03.10 Sheet 5 of 5

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	7/05
2	CORRECTED GENERAL NOTE REFERENCE	RLF	5/07
3	MODIFIED PLAN AND SECTION VIEWS	RLF	5/07
4			

GENERAL NOTES

1. Location may be adjusted to accommodate guardrail post layout.
 2. All concrete shall be Class B. Embankment curb concrete shall be in accordance with the Std Specs.
 3. Where rock is encountered the outlet may be omitted, as approved by the Engineer.
 4. When outlet is used, the wire mesh shall extend through the joint into the outlet in lieu of bending into the key.
 5. Spillway invert slope shall be uniformly downward from A to B. See Section B-B.
 6. See Std Dwg C-04.30 for spillway length.
 7. See Std Dwg C-10.06 for nested guardrail requirements.
- 72" Timber Post



SECTION A-A

SPILLWAY SECTION

PLAN

OUTLET DETAIL

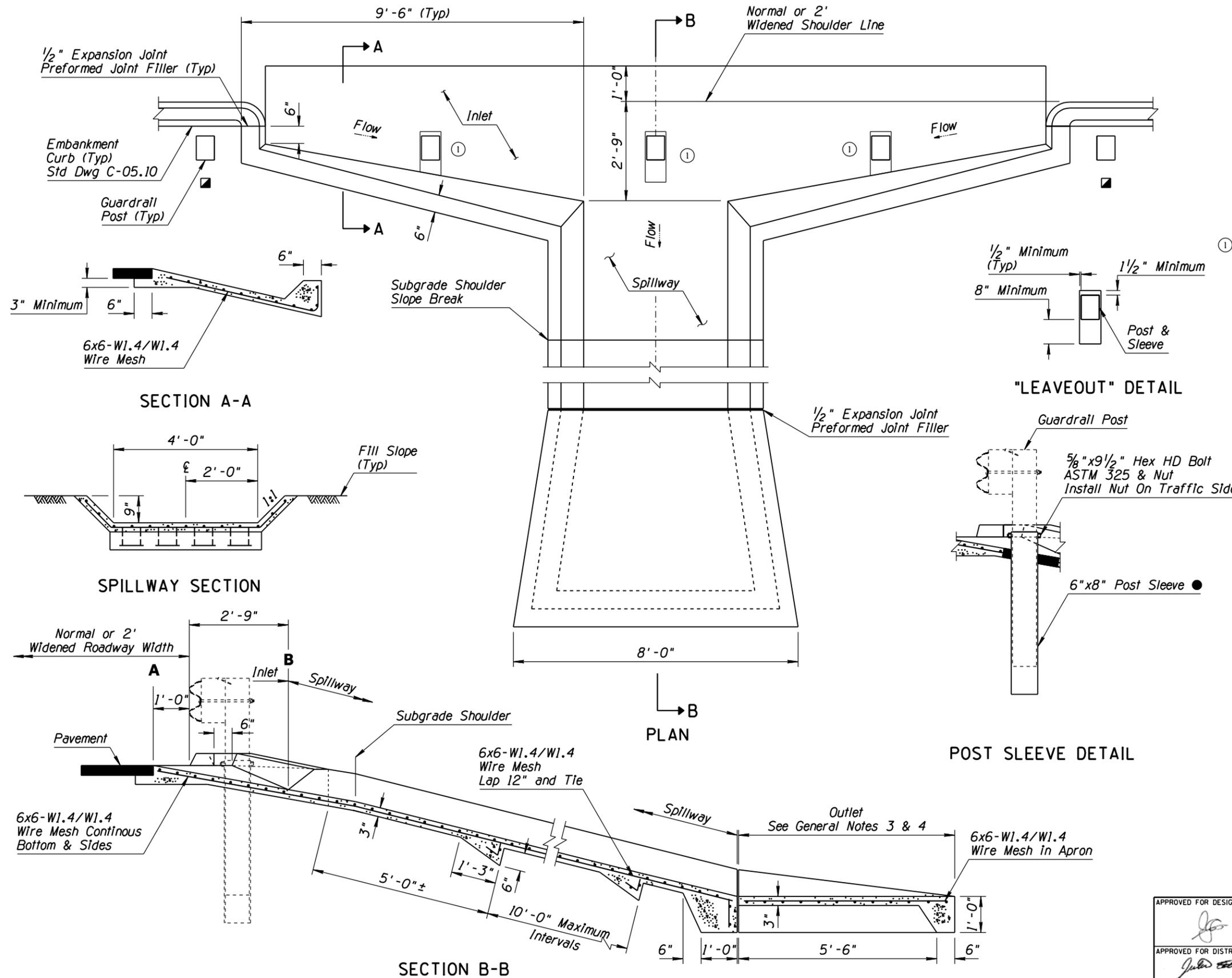
SECTION B-B

APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	SPILLWAY, EMBANKMENT SINGLE INLET	DRAWING NO. C-04.10 Sheet 1 of 2

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED GENERAL NOTE & LEAVEOUT GRAPHICS	RLF	5/12
2			
3			
4			

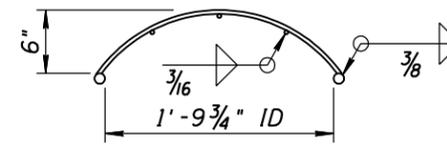
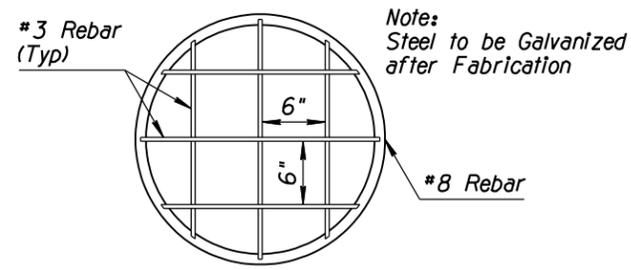
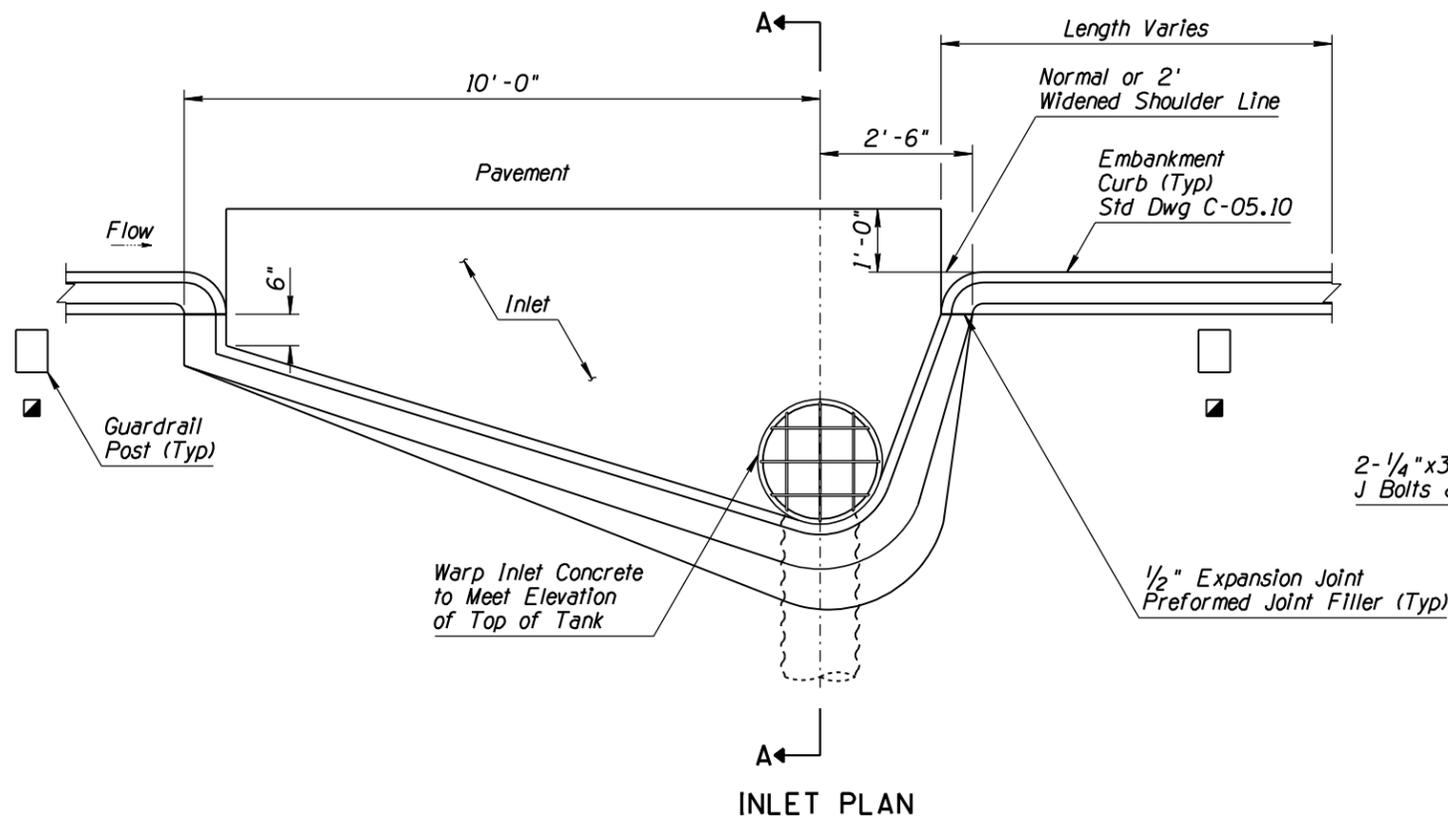
GENERAL NOTES

1. Location may be adjusted to accommodate guardrail post layout.
2. All concrete shall be Class B. Embankment curb concrete shall be in accordance with the Standard Specifications.
3. Where rock is encountered the outlet may be omitted, as approved by the Engineer.
4. When outlet is used, the wire mesh shall extend through the joint into the outlet instead of bending into the key.
5. Spillway invert slope shall be uniformly downward from A to B. See Section B-B.
6. See Std Dwg C-04.30 for spillway length.
7. All posts within the inlet shall have a "leaveout" for the full depth of the concrete. The "leaveout" shall measure a minimum of 1 1/2 inch in front and 1/2 inch on the sides, and extend in back to the toe of the curb. After guardrail installation, the "leaveout" shall be filled with a one-sack grout mix or alternate non-cohesive material as approved by the Engineer.
 - Length may be 4'-6" or 5'-0".



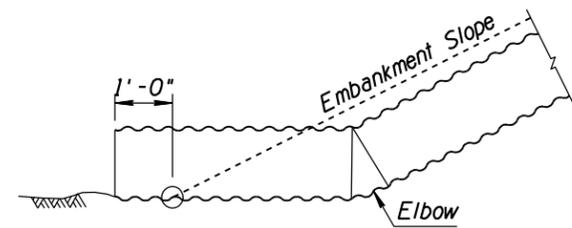
APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	SPILLWAY, EMBANKMENT DOUBLE INLET	DRAWING NO. ① C-04.10 Sheet 2 of 2

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED GENERAL NOTE NUMBER AND REISSUED STD DWG	RLF	5/12
2			
3			
4			

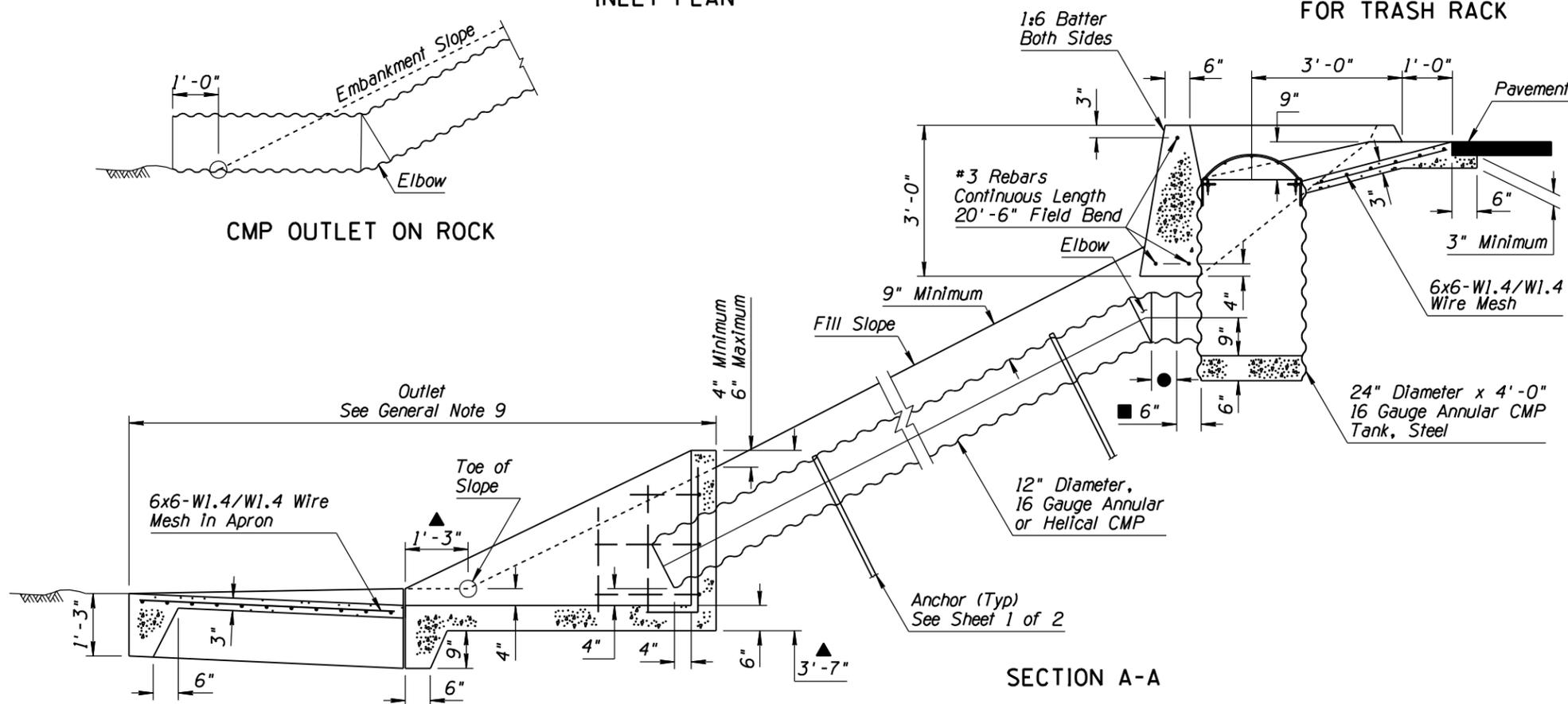


TRASH RACK DETAIL

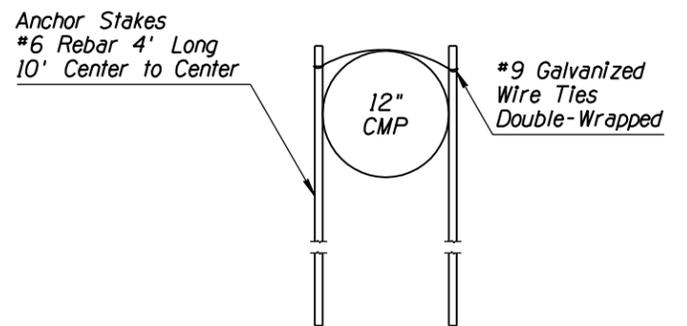
DETAIL ANGLE SUPPORTS FOR TRASH RACK



CMP OUTLET ON ROCK



SECTION A-A



ANCHOR DETAIL

GENERAL NOTES

1. Location may be adjusted to accommodate guardrail post location.
2. Tank, stub, trash rack and angle supports shall be shop fabricated, welded and galvanized in accordance with AASHTO M36.
3. Permissible couplings shall be mechanical, heat-shrinkable polyolatin sheet; one-piece lap-type neoprene sheet or slip seam; all minimum 12" width and minimum 18 gauge.
4. Inlet invert slope shall be uniformly downward from 1' inside of embankment curb base.
5. All concrete shall be Class B. Embankment curb concrete shall be in accordance with the Std Specs.
6. Round all exposed concrete corners.
7. See Std Dwg C-04.40 for down drain length.
8. See Std Dwg C-10.06 for nested guardrail requirements.
9. Where rock is encountered the outlet may be omitted, as approved by the Engineer.
 - Varies with subgrade slope and pavement structural thickness
 - ▲ Varies with fill slope and pipe cover
 - 72" Timber Post
 - 12" Diameter x 6", 16 Gauge Annular CMP Stub

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	DOWNDRAIN, EMBANKMENT SINGLE INLET	DRAWING NO. C-04.20 Sheet 1 of 2

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	5/07
2			
3			
4			

GENERAL NOTES

1. For spillway details, see Std Dwg C-04.10.

NOTE TO DESIGNERS

Use earthwork cross sections for more precise spillway lengths

APPROXIMATE LENGTH OF SPILLWAY (F+) -- C-02.10 & C-02.20 SLOPES

PAVEMENT STRUCTURAL SECTION THICKNESS (In)	EMBANKMENT SLOPE																
	6:1				VARIES FROM 6:1 TO 2:1						2:1						
	EMBANKMENT HEIGHT (FT)																
	5	6	7	8	10	12	14	16	18	20	22	24	26	28	30	32	
12	EMBANKMENT CURB AND SPILLWAYS ARE NOT USUALLY USED FOR THIS SLOPE CONDITION. USE THE FOLLOWING EQUATION WHEN EMBANKMENT CURB AND SPILLWAY ARE REQUIRED: APPROXIMATE SPILLWAY LENGTH IN FEET = (EMBANKMENT HEIGHT PLUS PAVEMENT STRUCTURAL SECTION THICKNESS) TIMES 6				50	51	51	52	52	52	52	SPILLWAYS ARE NOT USUALLY USED FOR THIS SLOPE CONDITION. USE THE FOLLOWING EQUATION WHEN A SPILLWAY IS REQUIRED: APPROXIMATE SPILLWAY LENGTH IN FEET = (EMBANKMENT HEIGHT PLUS PAVEMENT STRUCTURAL SECTION THICKNESS) TIMES 2					
14					51	51	52	52	52	52	53						
16					52	52	52	53	53	53	53						
18					53	53	53	53	53	53	53						
20					53	53	54	54	54	54	54						
22					54	54	54	54	54	54	54						
24					59	58	57	57	57	56	56						
26					59	58	58	57	57	57	56						
28					60	59	58	58	57	57	57						
30					61	60	59	58	58	57	57						
32	62	60	60	59	58	58	57										
34	63	61	60	59	59	58	58										
36	63	62	61	60	59	59	58										

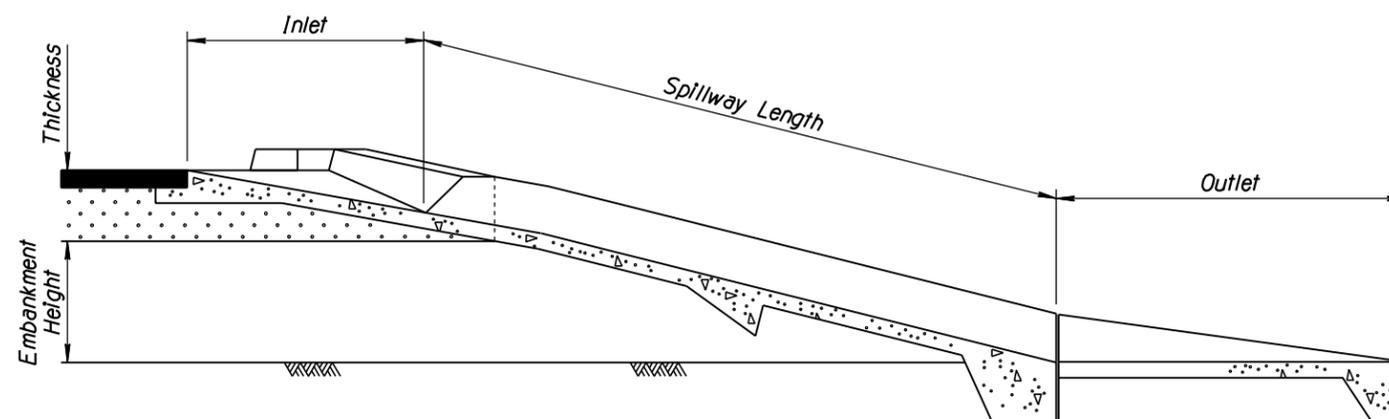
APPROXIMATE LENGTH OF SPILLWAY (F+) -- C-02.30 SLOPES

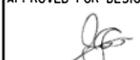
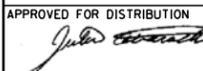
PAVEMENT STRUCTURAL SECTION THICKNESS (In)	EMBANKMENT SLOPE											
	4:1			VARIES FROM 4:1 TO 2:1						2:1		
	EMBANKMENT HEIGHT (FT)											
	3	4	5	6	7	8	9	10	12	14		
12	12	16	20	21	22	23	23	SPILLWAYS ARE NOT USUALLY USED FOR THIS SLOPE CONDITION. USE THE FOLLOWING EQUATION WHEN A SPILLWAY IS REQUIRED: APPROXIMATE SPILLWAY LENGTH IN FEET = (EMBANKMENT HEIGHT PLUS PAVEMENT STRUCTURAL SECTION THICKNESS) TIMES 2				
14	13	17	21	22	23	23	23					
16	14	18	22	22	23	23	24					
18	14	18	22	23	23	24	24					
20	15	19	23	24	24	24	24					
22	16	20	24	24	24	25	25					
24	16	20	24	25	25	25	25					
26	17	21	25	25	25	25	25					
28	18	22	26	26	26	26	26					
30	18	22	26	26	26	26	26					
32	19	23	27	27	27	27	27					
34	20	24	28	27	27	27	27					
36	20	24	28	28	28	28	27					

C-02.10 AND C-02.20 SLOPES

C-02.30 SLOPES

 Spillways are not usually used for these slope conditions



APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SPILLWAY LENGTH TABLE	DRAWING NO. C-04.30

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	5/07
2			
3			
4			

GENERAL NOTES

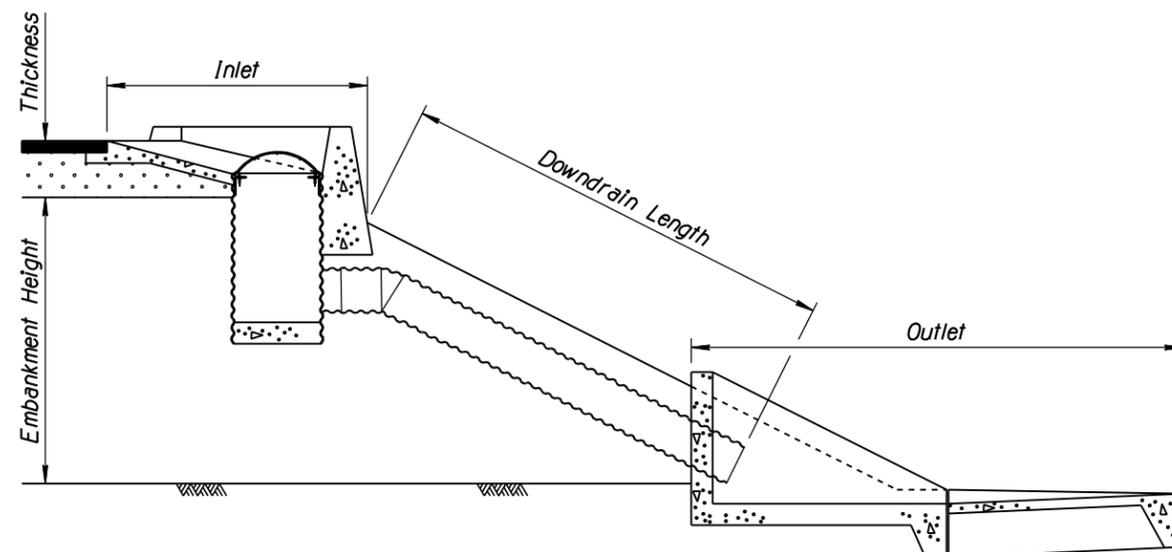
1. For downdrain details, see Std Dwg C-04.20.

NOTE TO DESIGNERS

Use earthwork cross sections for more precise downdrain lengths

APPROXIMATE DOWNDRAIN LENGTH (F+) - C-02.10 & C-02.20 SLOPES																
PAVEMENT STRUCTURAL SECTION THICKNESS (In)	EMBANKMENT SLOPE															
	6:1				VARIES FROM 6:1 TO 2:1								2:1			
	EMBANKMENT HEIGHT (FT)															
	5	6	7	8	10	12	14	16	18	20	22	24	26	28	30	32
12	EMBANKMENT CURB AND DOWNDRAINS ARE NOT USUALLY USED FOR THIS SLOPE CONDITION. USE THE FOLLOWING EQUATION WHEN EMBANKMENT CURB AND DOWNDRAINS ARE INSTALLED: APPROXIMATE DOWNDRAIN LENGTH (IN FEET) = (PAVEMENT STRUCTURAL SECTION AND EMBANKMENT HEIGHT MINUS 2) TIMES 6				62	60	58	57	56	55	55	54	50	54	58	62
14					63	61	59	58	56	56	55	52	50	54	58	62
16					64	61	59	58	57	56	55	55	51	55	59	63
18					65	62	60	59	57	56	56	55	51	55	59	63
20					66	63	61	59	58	57	56	55	51	55	59	63
22					66	63	61	60	58	57	56	56	52	56	60	64
24					67	64	62	60	59	58	57	56	52	56	60	64
26					68	65	62	61	59	58	57	56	52	56	60	64
28					69	65	63	61	60	58	57	57	53	57	61	65
30					70	66	63	62	60	59	58	57	53	57	61	65
32					70	67	64	62	60	59	58	57	53	57	61	65
34					71	67	65	63	61	60	59	58	54	58	62	66
36					72	68	65	63	61	60	59	58	54	58	62	66

C-02.10 AND C-02.20 SLOPES

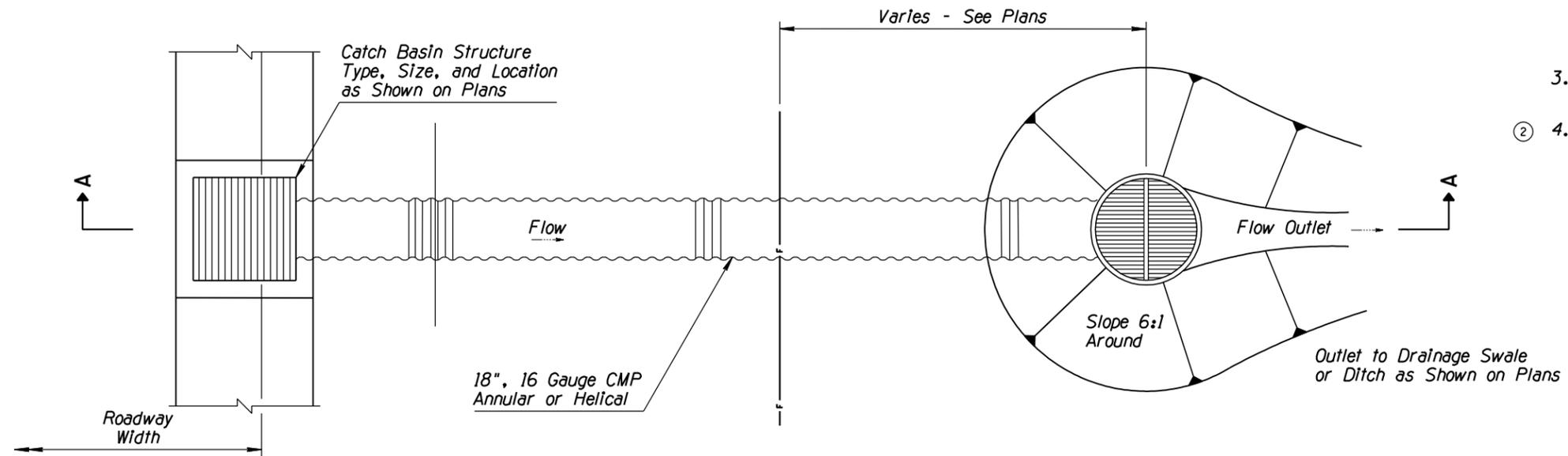


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	DOWNDRAIN LENGTH TABLE	DRAWING NO. C-04.40

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED PLAN & SECTION VIEW	RLF	9/04
2	ADDED NEW GENERAL NOTE	RLF	9/04
3			
4			

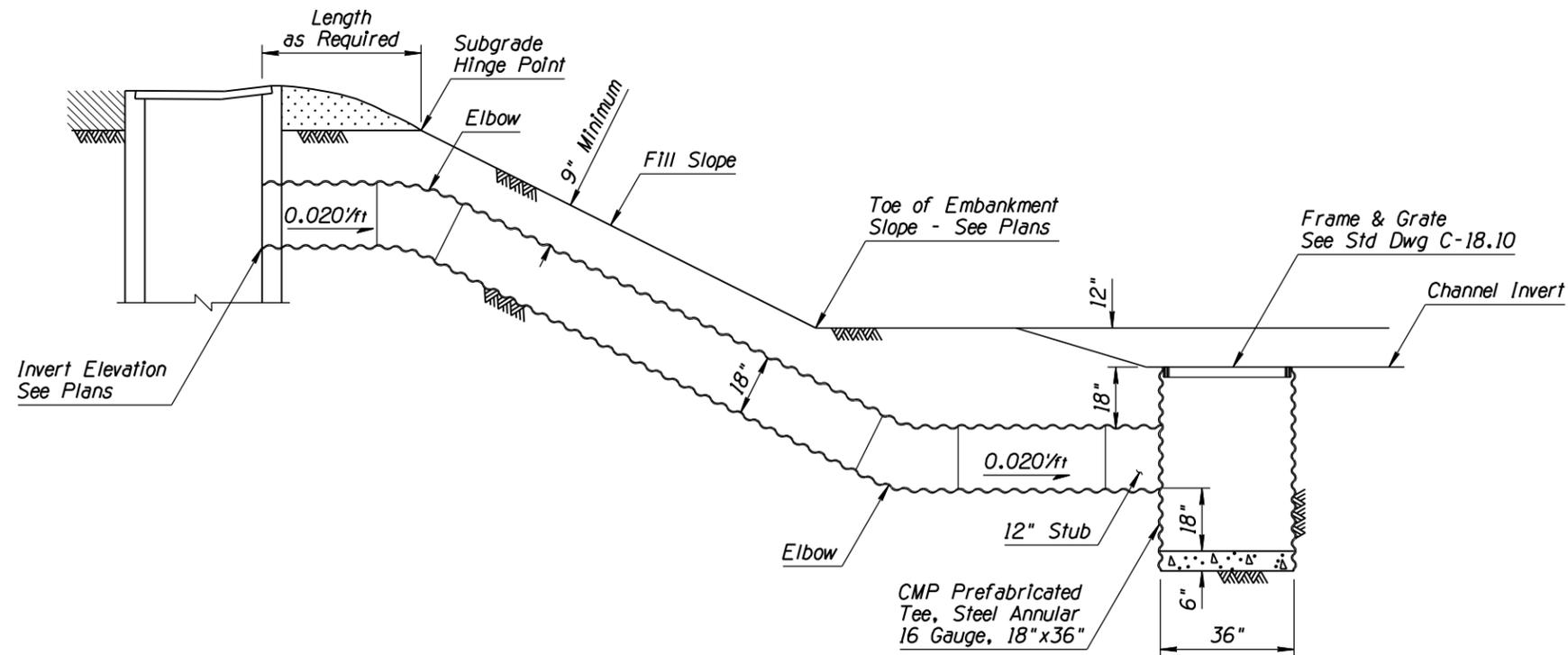
GENERAL NOTES

1. Stub shall have annular corrugation. Down drain piping beyond stub may be either annular or helical.
2. Couplings shall be mechanical heat-shrinkable polyolatin sheet; one piece lap-type neoprene sheet or slip seam; all 12" minimum width and 18 gauge minimum.
3. Maximum Q Allowable = 8 cfs
Minimum V Allowable = 1 fps
- ② 4. Concrete shall be Class B.



PLAN

①



SECTION A-A

①

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	DOWNDRAIN ENERGY DISSIPATOR	DRAWING NO. C-04.50

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	5/07
2	ADDED TYPE E & E-1 CURBS, REVISED TABLES & NOTE	RLF	5/12
3	REARRANGED STANDARD DRAWING GRAPHICS	RLF	5/12
4	ADDED NOTE AND REVISED VIEW	RLF	5/12

GENERAL NOTES

SINGLE CURB AND CURB & GUTTER

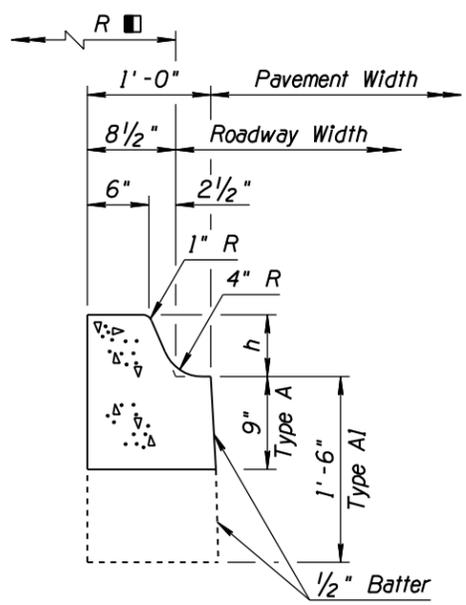
- Single curb and curb & gutter may be constructed by the use of forms or the concrete may be extruded.
 - When the pavement section slopes away from the gutter, the slope of the gutter shall match the pavement cross slope. Therefore, the gutter depression is not applicable.
 - Two-inch deep contraction joints shall be placed in the curb and the gutter at locations which match the joints in adjacent PCCP and at approximate 15' centers when adjacent to AC pavement. Joints shall be either hand-tooled or sawn.
 - Expansion joints shall be located at tangent points in curb returns, at structures and at maximum 60' intervals. The 1/2" joint filler shall extend the full depth of the concrete.
 - Concrete shall be finished with a steel trowel followed by brushing with a fine brush along the length of the curb and gutter.
 - All exposed edges and hand-tooled joints shall be finished with a tool having a 1/4" radius, or as noted on the plans.
 - Place AB under single curb, valley gutter, and curb & gutter when shown on plans
- ④ Gutter Depression shall be reduced at sidewalk ramps (C-05.30) to achieve a maximum gutter cross-slope of 5%.
- ② See Plans (6 inch typical)
- Curb Radius when shown on plans

EMBANKMENT CURB

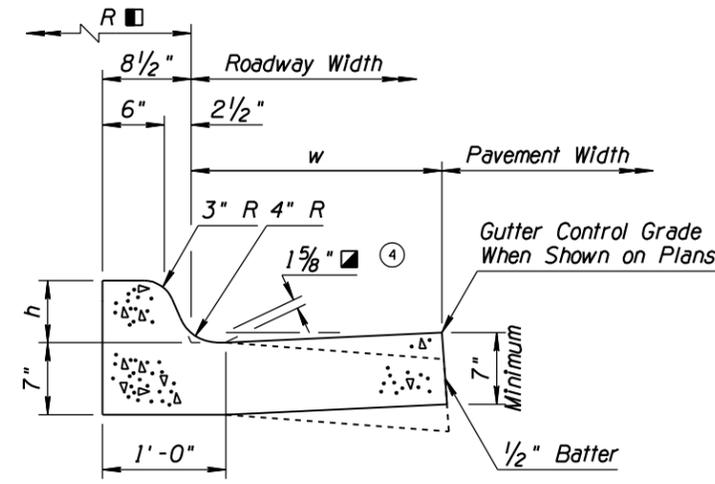
- No additional finishing will be required after extrusion or removal of the forms when the curb presents a neat appearance and the surface is uniform in texture and color.
- The curb shall conform to the cross section as shown except that the horizontal dimensions shall not vary more than 1/2".

Curb & Gutter Type	Curb Height h	Gutter Width w	Gutter Depression d
D		2'-0"	1 5/8"
D-1		2'-6"	1 3/4"
D-2		4'-6"	1 3/4"
D-3		2'-0"	N/A
G		2'-0"	1 5/8"

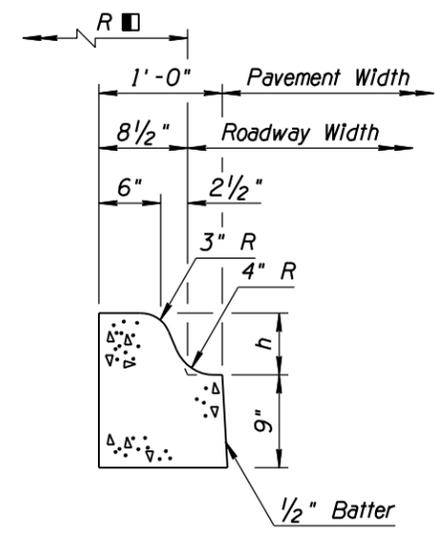
URBAN FREEWAY CURB & GUTTER				
Curb & Gutter Type	Curb Height h	Curb Width c	Slope	Gutter Depression d
B	6"	1'-6"	3:1	2"
C	3"	1'-6"	6:1	5/8"
C-1	3"	1'-6"	6:1	N/A
E	4"	2'-0"	6:1	5/8"
E-1	4"	2'-0"	6:1	N/A



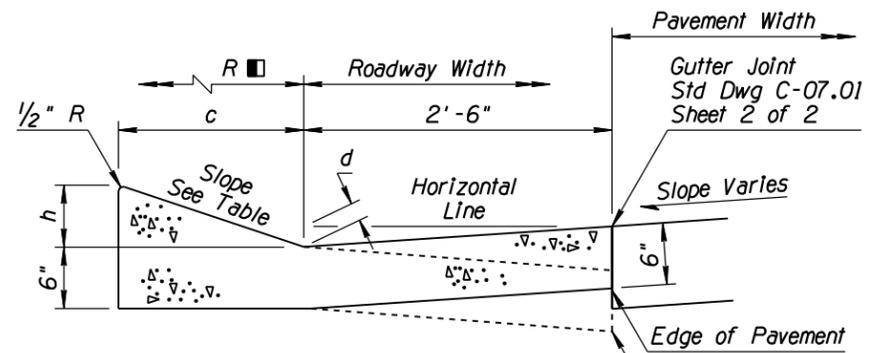
SINGLE CURB
TYPE A & AI



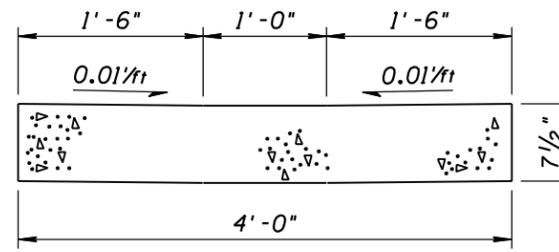
CURB & GUTTER
TYPE G



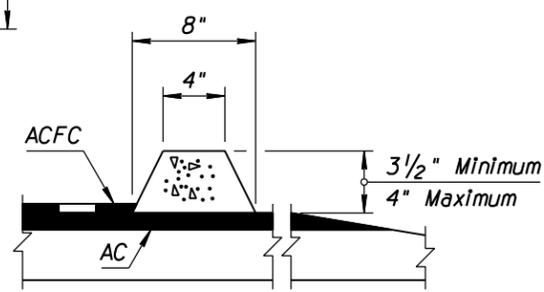
SINGLE CURB
TYPE G



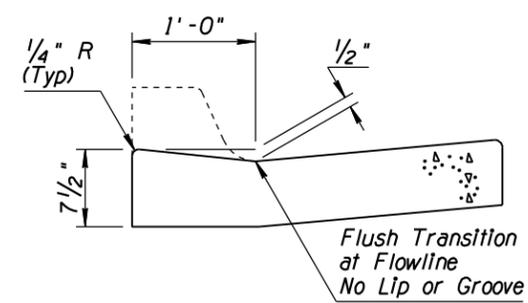
CURB & GUTTER
TYPE B, C, C-1, E & E-1



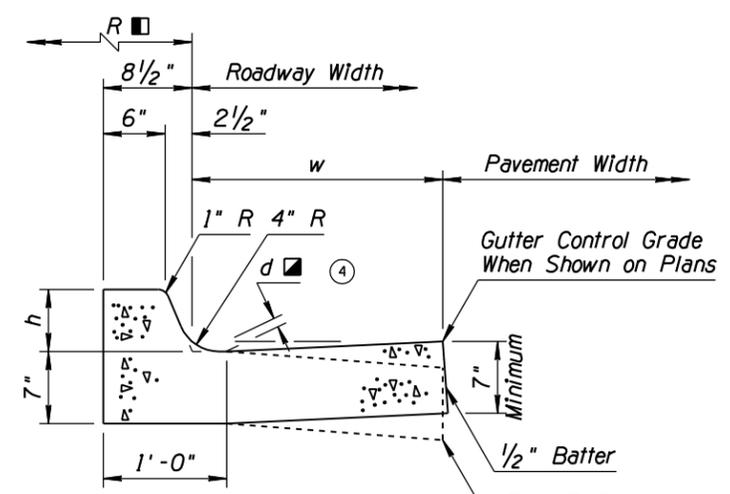
VALLEY GUTTER



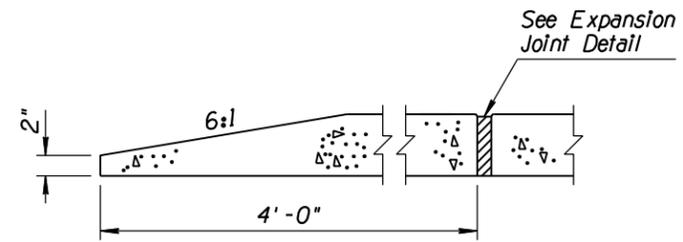
EMBANKMENT CURB



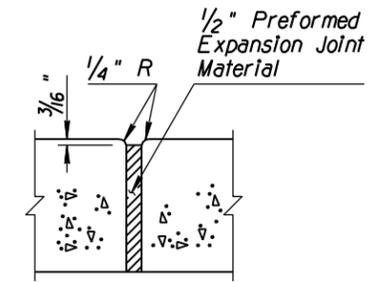
DEPRESSED CURB & GUTTER



CURB & GUTTER
TYPE D, D-1, D-2 & D-3



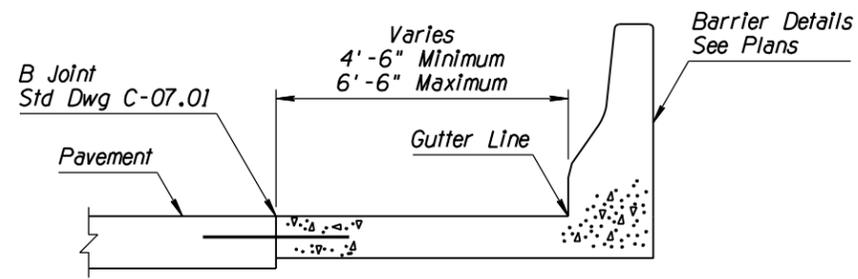
CURB TERMINAL SECTION



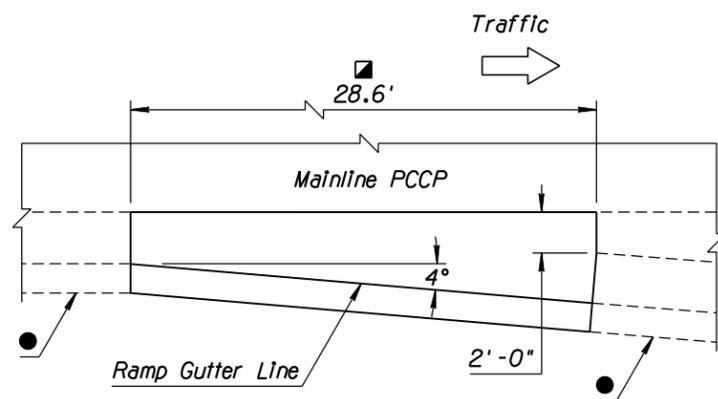
EXPANSION JOINT DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CURB & GUTTER CURB GUTTER	DRAWING NO. C-05.10

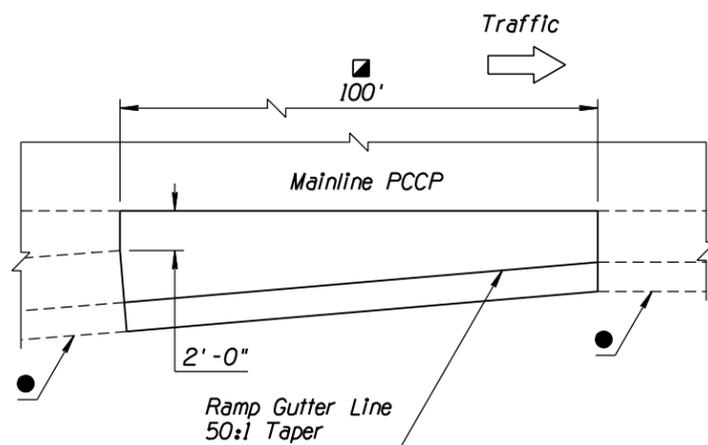
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	7/05
2	REVISED CURB WIDTH AND MODIFIED GENERAL NOTE	RLF	5/12
3			
4			



SECTION
CONCRETE BARRIER APPLICATION

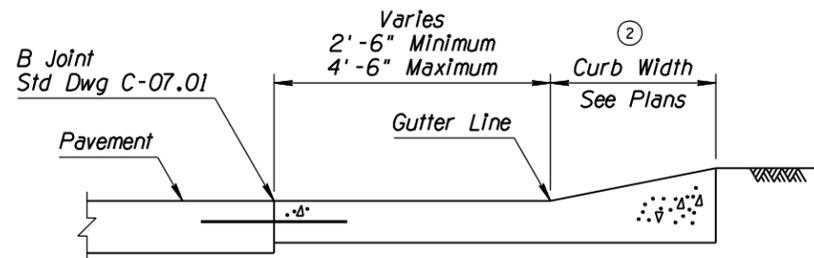


EXIT

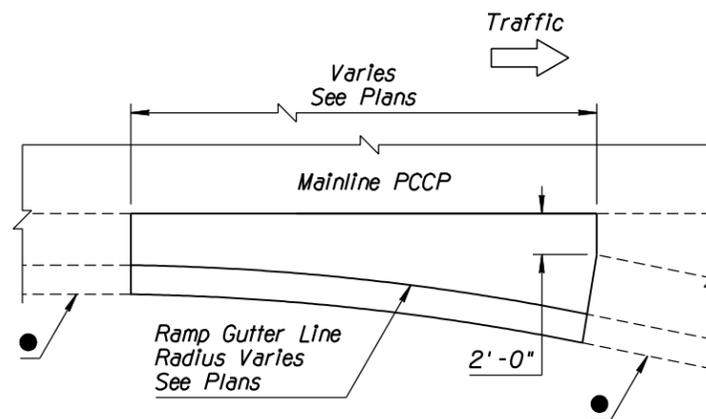


ENTRANCE

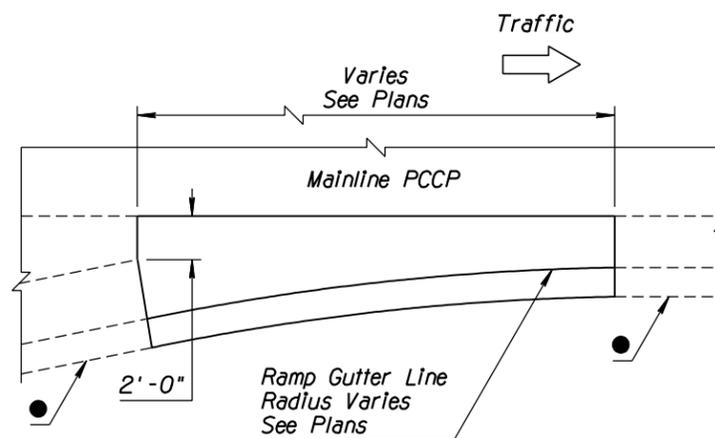
TYPE 1 - TAPER-TYPE GUTTER TRANSITIONS AT RAMPS
PLAN VIEW



SECTION
CURB & GUTTER APPLICATION



EXIT



ENTRANCE

TYPE 1 - PARALLEL-TYPE GUTTER TRANSITIONS AT RAMPS

PLAN VIEW

GENERAL NOTES

- All gutter flow lines shall be constructed to an accurate grade.
- See Slotted Drain Std Dwg C-13.60 and C-15.91 for curb & gutter with slotted drain.
- See Std Dwg C-05.10 for additional General Notes and dimensions.
- See Std Dwg C-07.04 for typical curb and gutter transition locations.

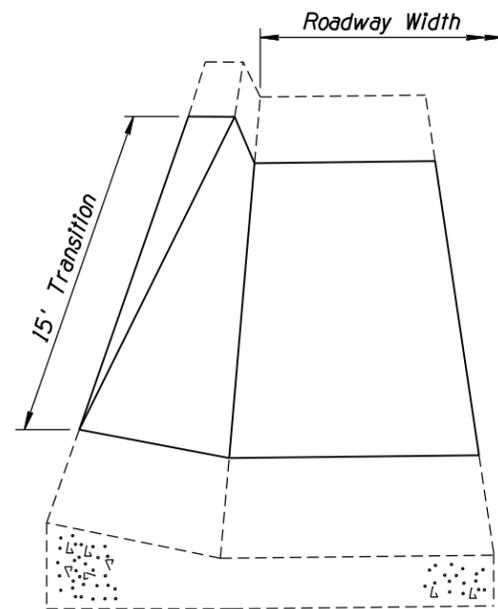
Dimension May Vary Where Transition Occurs on Curves: See Plans

Type 1 - Gutter Transition at Roadway Edge With Angle Point is Applicable With Concrete Half Barrier and Curb & Gutter Applications. Curb & Gutter Alternative is Shown

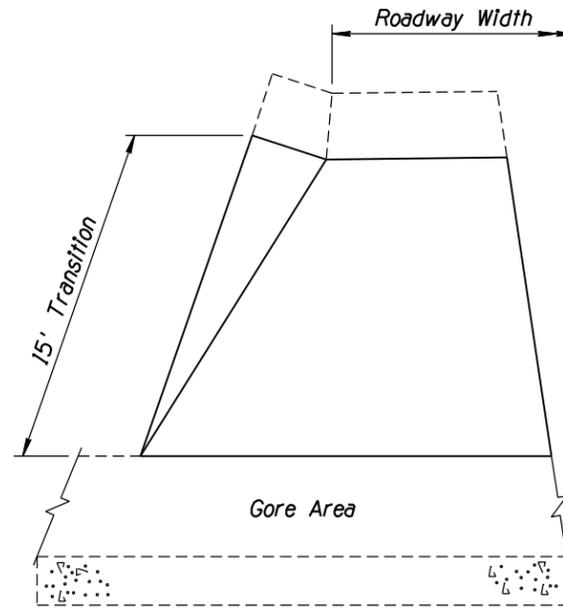
● Curb & Gutter - Type B, C, C-1, E or E-1 Std Dwg C-05.10

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CURB & GUTTER TRANSITIONS	DRAWING NO. ① C-05.12 Sheet 1 of 3

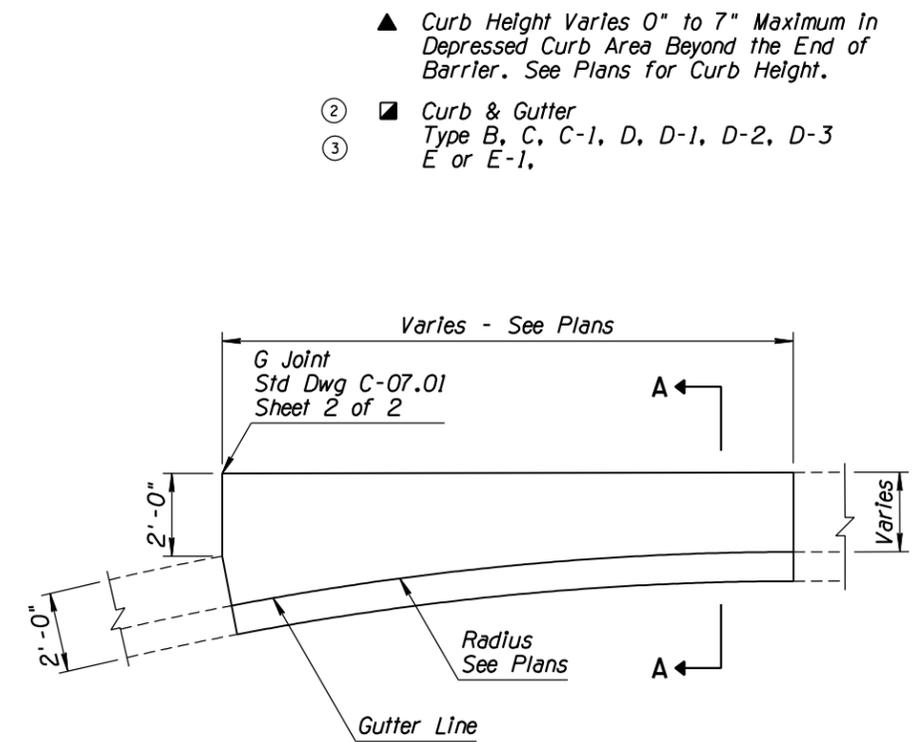
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	7/05
2	REVISED NOTE	RLF	4/06
3	REVISED CURB WIDTH AND MODIFIED NOTE	RLF	5/12
4			



PERSPECTIVE VIEW



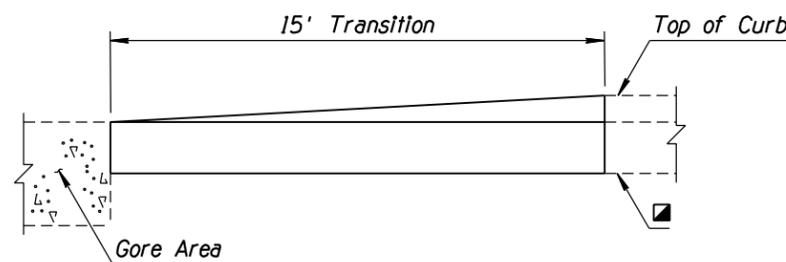
PERSPECTIVE VIEW



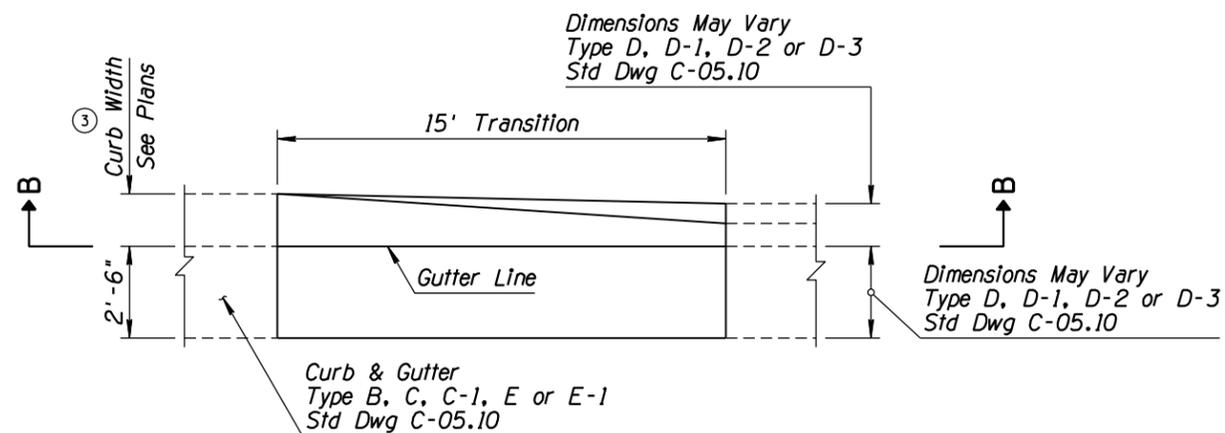
TYPE 4 - CURB & GUTTER TRANSITION



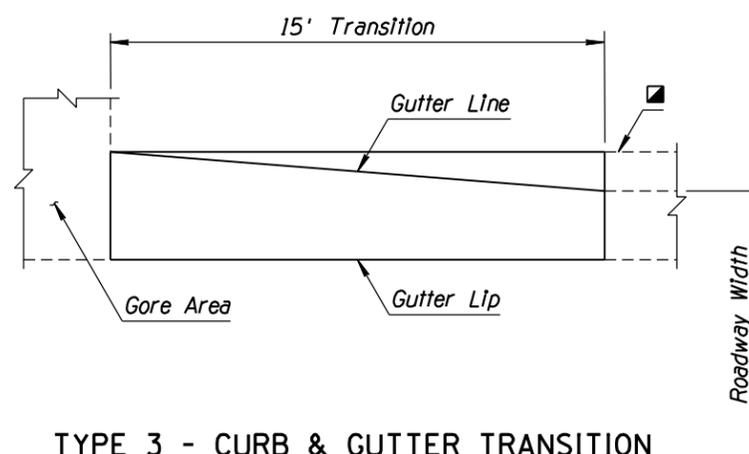
SECTION B-B



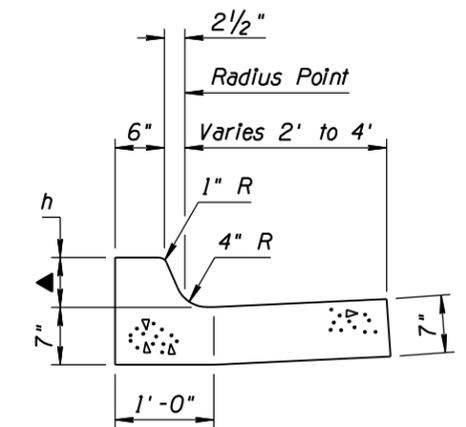
ELEVATION



TYPE 2 - CURB & GUTTER TRANSITION
PLAN VIEW



TYPE 3 - CURB & GUTTER TRANSITION
AT PAVED GORE
PLAN VIEW

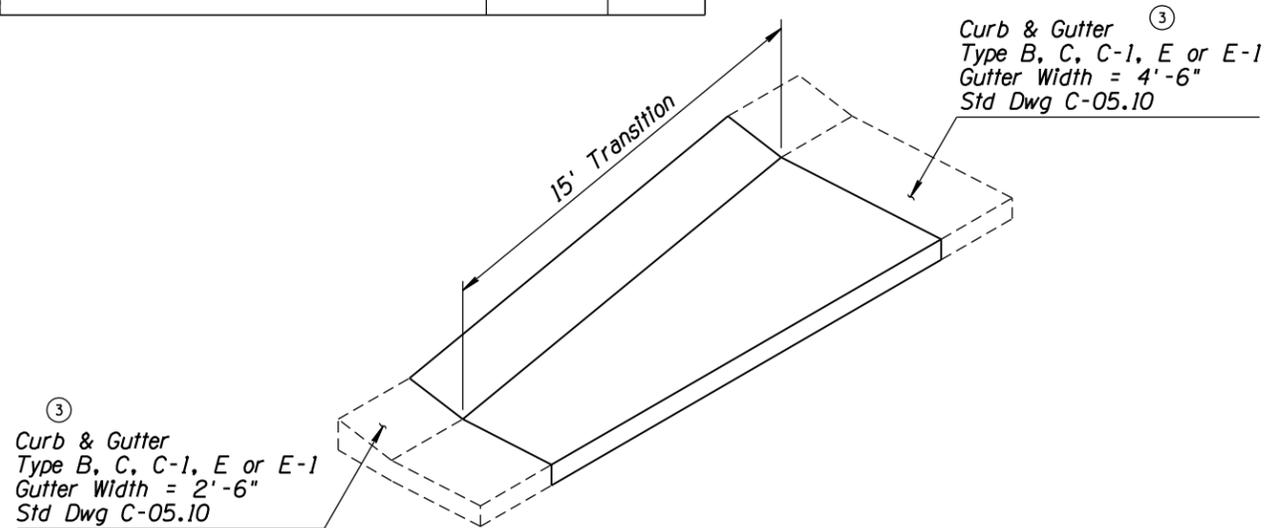


SECTION A-A

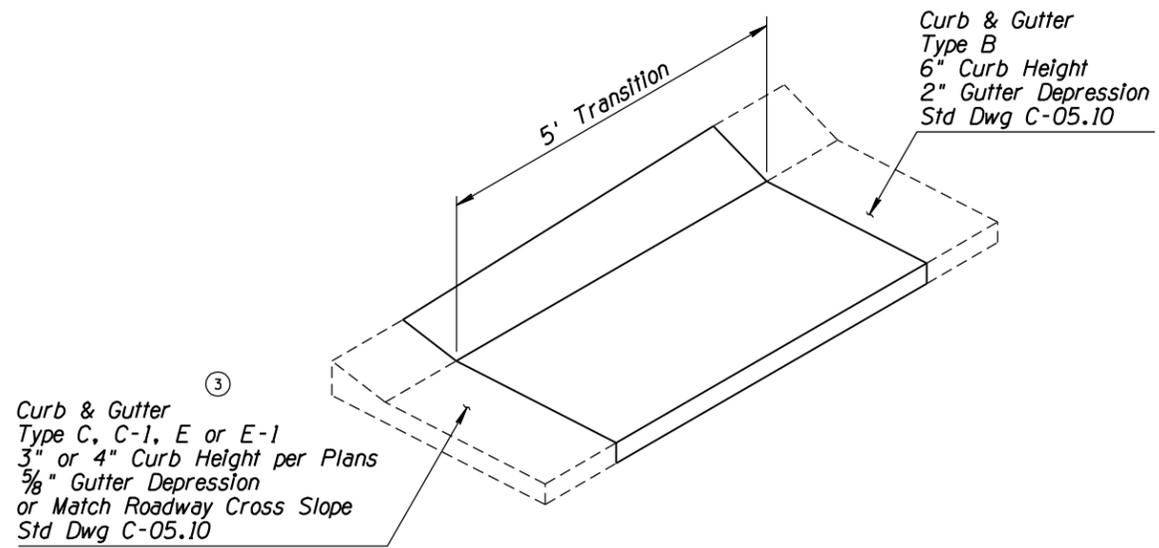
- ▲ Curb Height Varies 0" to 7" Maximum In Depressed Curb Area Beyond the End of Barrier. See Plans for Curb Height.
- ② ■ Curb & Gutter Type B, C, C-1, D, D-1, D-2, D-3 E or E-1.
- ③

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CURB & GUTTER TRANSITIONS	DRAWING NO. ① C-05.12 Sheet 2 of 3

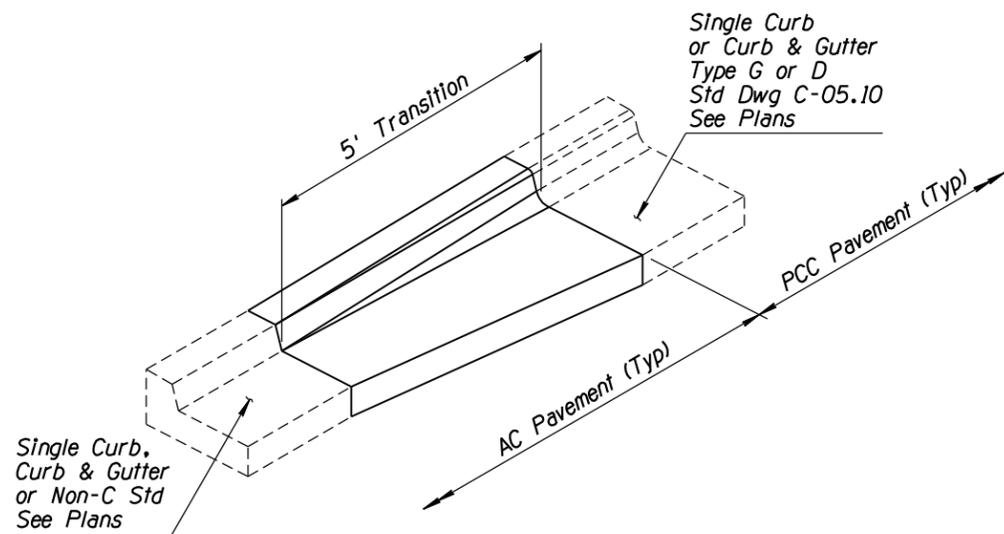
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD	RLF	9/04
2	REVISED DIMENSION	RLF	7/05
3	REVISED CURB & GUTTER NOTES	RLF	5/12
4			



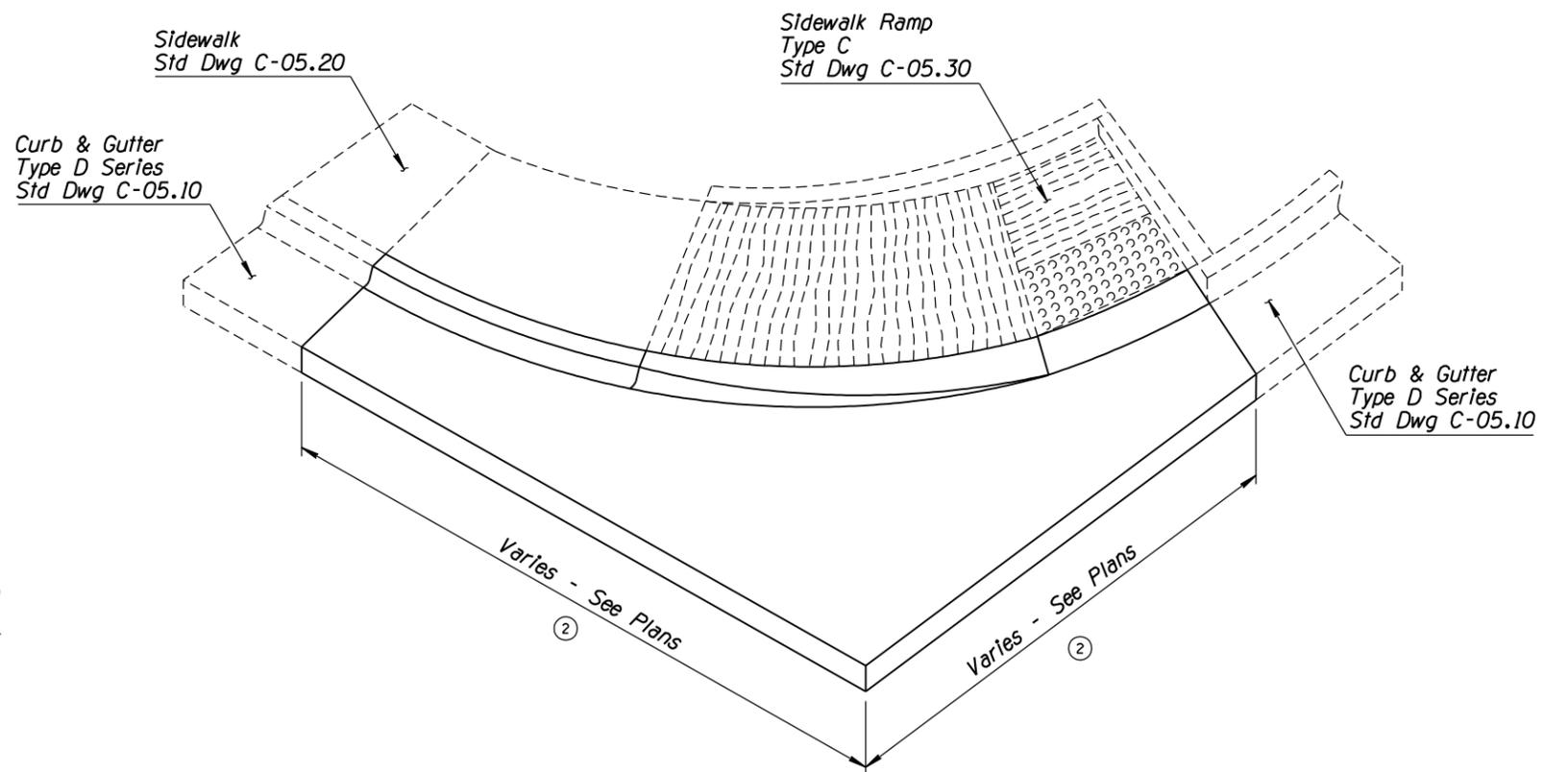
TYPE 5 - CURB & GUTTER TRANSITION



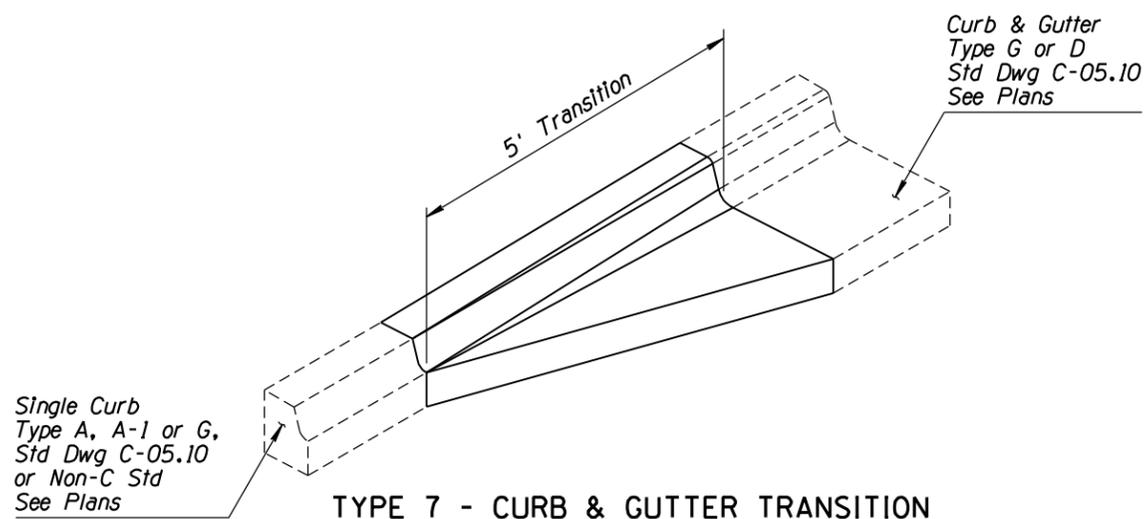
TYPE 8 - CURB & GUTTER TRANSITION



TYPE 6 - SINGLE CURB OR CURB & GUTTER TRANSITION (Curb & Gutter Shown)



TYPE 9 - CURB & GUTTER TRANSITION



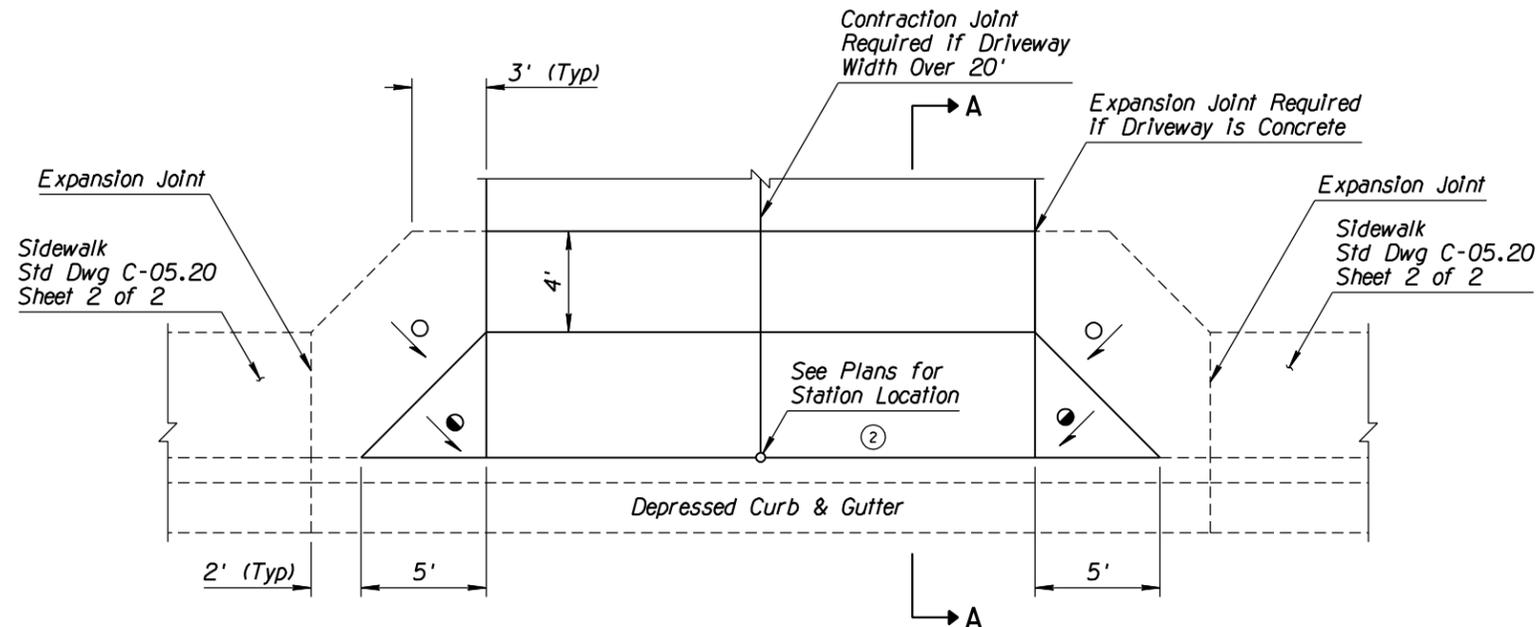
TYPE 7 - CURB & GUTTER TRANSITION

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CURB AND GUTTER TRANSITIONS	DRAWING NO. ① C-05.12 Sheet 3 of 3

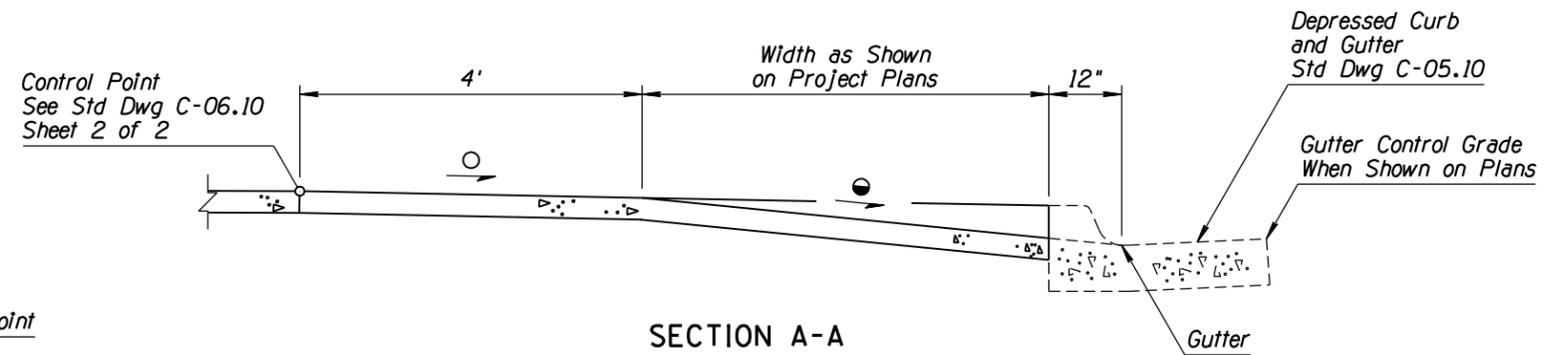
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REVISED NOTATION	RLF	7/05
3	ADDED GENERAL NOTE FOR AB REQUIREMENT	RLF	5/07
4			

GENERAL NOTES

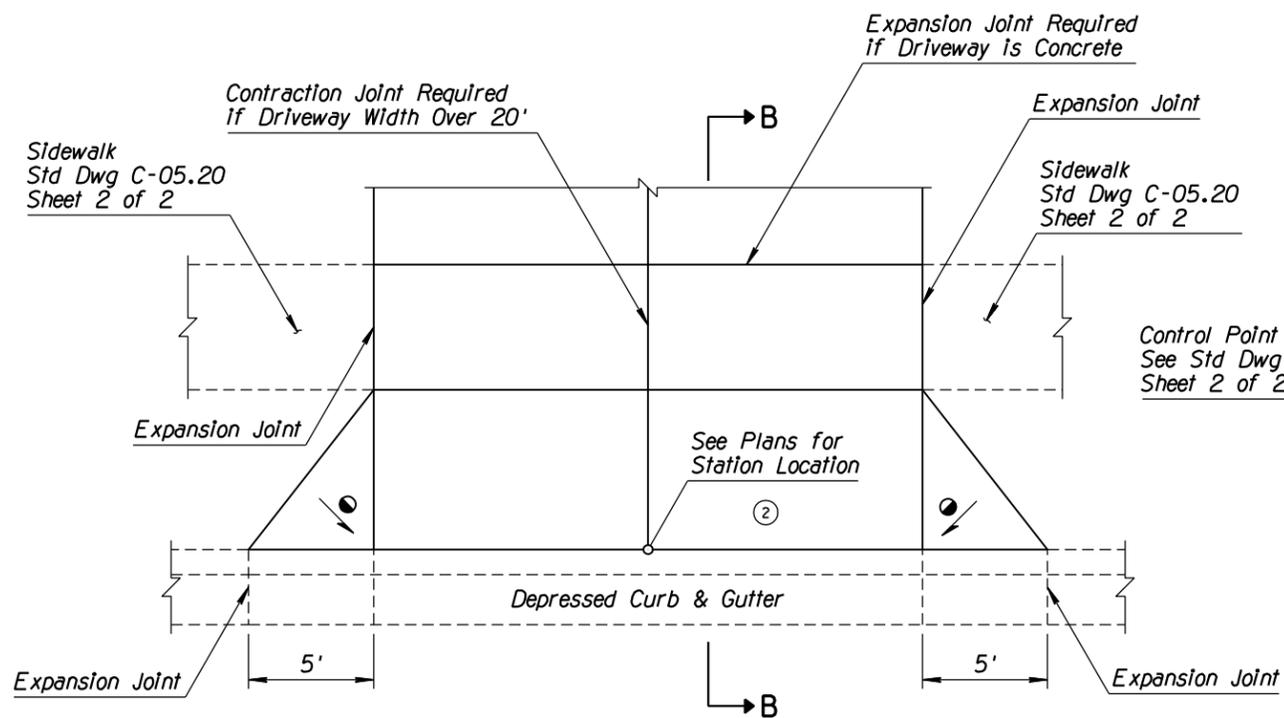
1. Unless otherwise specified, driveways shall be 6" thick.
2. Two-inch deep transverse contraction joints shall be placed in driveways if the driveway width is over 20'. If the driveway thickness is greater than 6", then the contraction joint depth shall be $T/3$, where T is the thickness of the driveway. Joints shall be either formed or sawn. Formed joints shall be finished with a tool having a 1/4" radius. See Sheet 2 of 2 for the Contraction Joint Detail.
3. Expansion joints shall be located between driveways and sidewalks and all abutting structures. The 1/2" joint filler shall extend the full depth of the concrete. See Sheet 2 of 2 for the Expansion Joint Detail.
4. Concrete shall be finished by means of a float, then steel trowelled and then broomed with a fine brush in a transverse direction.
5. Place AB under driveways when shown on plans.



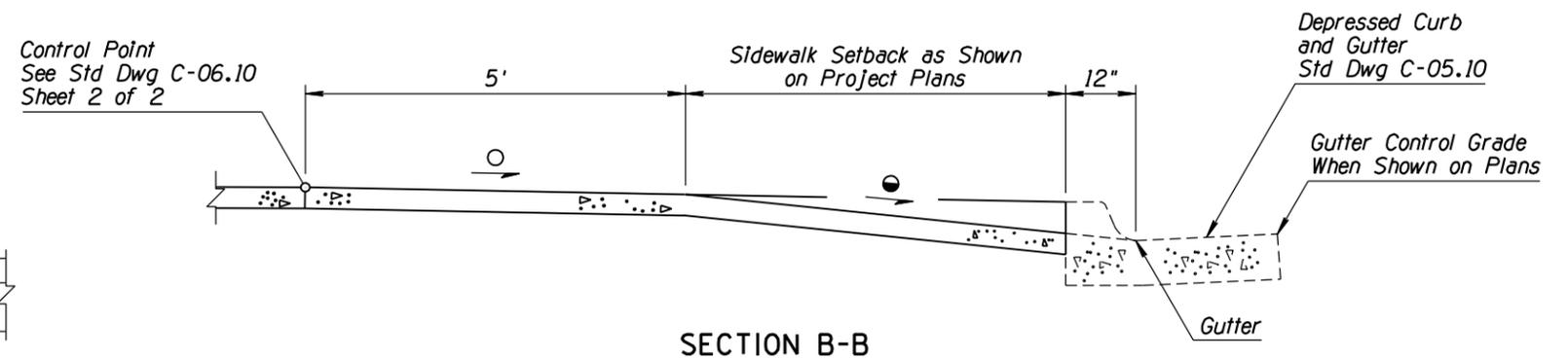
DRIVEWAY WITH SIDEWALK ADJACENT TO CURB



SECTION A-A



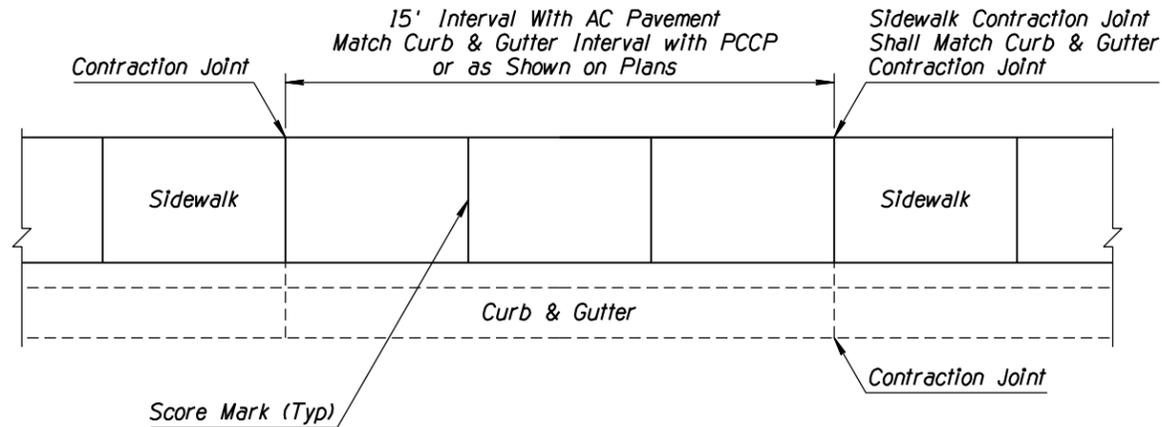
DRIVEWAY WITH SIDEWALK SETBACK



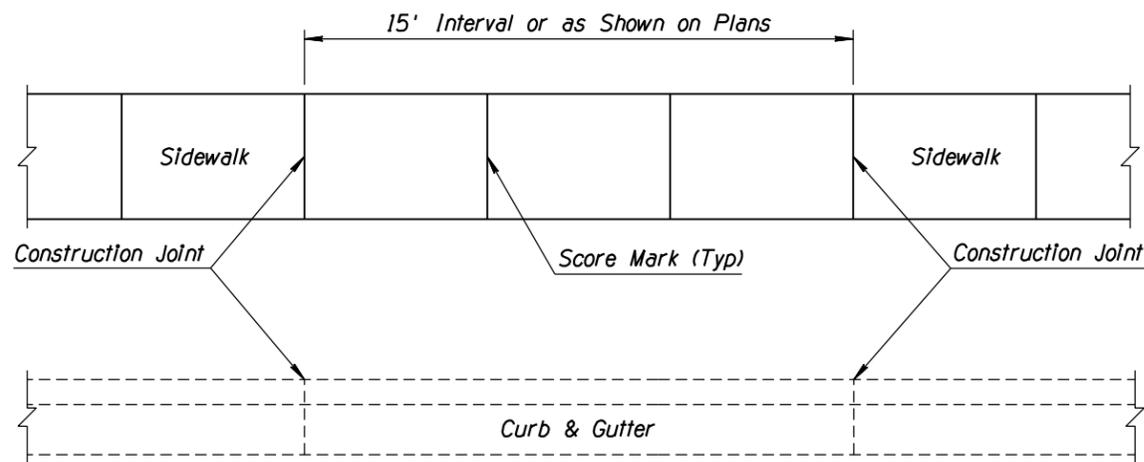
SECTION B-B

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE DRIVEWAYS & SIDEWALKS DRIVEWAYS	DRAWING NO. C-05.20 Sheet 1 of 2

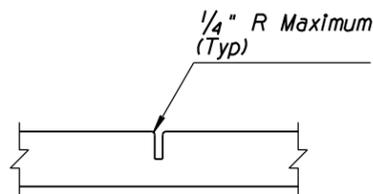
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	NEW GENERAL NOTE 5, REARRANGED 3, 4 & 5	RLF	9/04
2	ADDED SLOPE SPECIFICATIONS & REVISED SECTION VIEWS	RLF	7/05
3	ADDED GENERAL NOTE FOR AB REQUIREMENT	RLF	5/07
4			



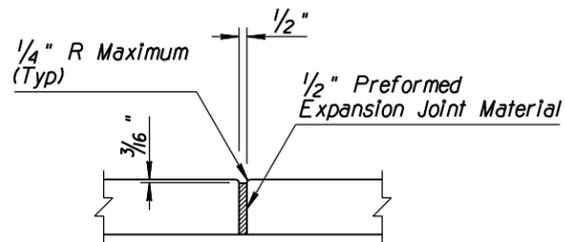
SIDEWALK ADJACENT TO CURB



SIDEWALK SETBACK FROM CURB



CONTRACTION JOINT DETAIL



EXPANSION JOINT DETAIL

① GENERAL NOTES

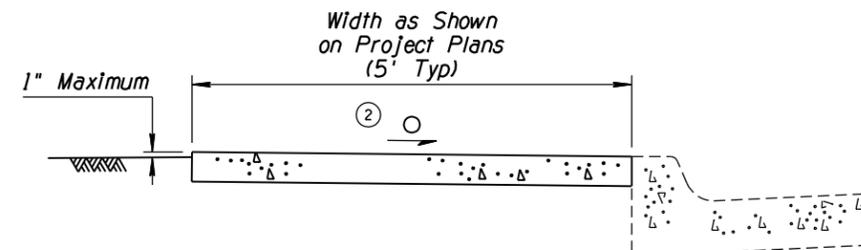
1. Unless otherwise specified, sidewalks shall be 4" thick.
2. One-inch deep transverse contraction joints shall be placed in sidewalks at intervals of approximately 15' or at a spacing that matches adjacent curb and gutter. If the sidewalk is over 7' in width, a 2" deep longitudinal contraction joint shall be placed in the center of the sidewalk. The maximum area of sidewalk without contraction joints or scoring lines shall be approximately 36 square feet. Joints shall be either formed or sawn. Formed joints shall be finished with a tool having a 1/4" radius.
3. Score marks shall be 1/4" in depth. They shall be placed at 5' spacing when the contraction joint interval is 15' and at 6' spacing when the contraction joint interval is 12'.
4. Expansion joints shall be located between sidewalks and driveways and all abutting structures. Expansion joints shall match the joints in the adjacent concrete pavement or existing concrete curb and sidewalk. Maximum length of sidewalk without an expansion joint shall be 60 transverse feet. The 1/2" joint filler shall extend the full depth of the concrete.
5. Concrete shall be finished by means of a float, then steel trowelled and then broomed with a fine brush in a transverse direction.
6. Place AB under sidewalks when shown on plans.

② LEGEND

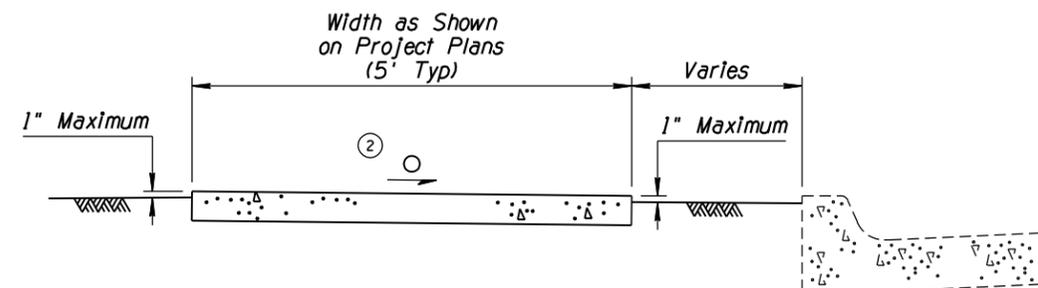
Minimum slope = 0.01 %/ft



Maximum slope = 0.02 %/ft



CONCRETE SIDEWALK ADJACENT TO CURB

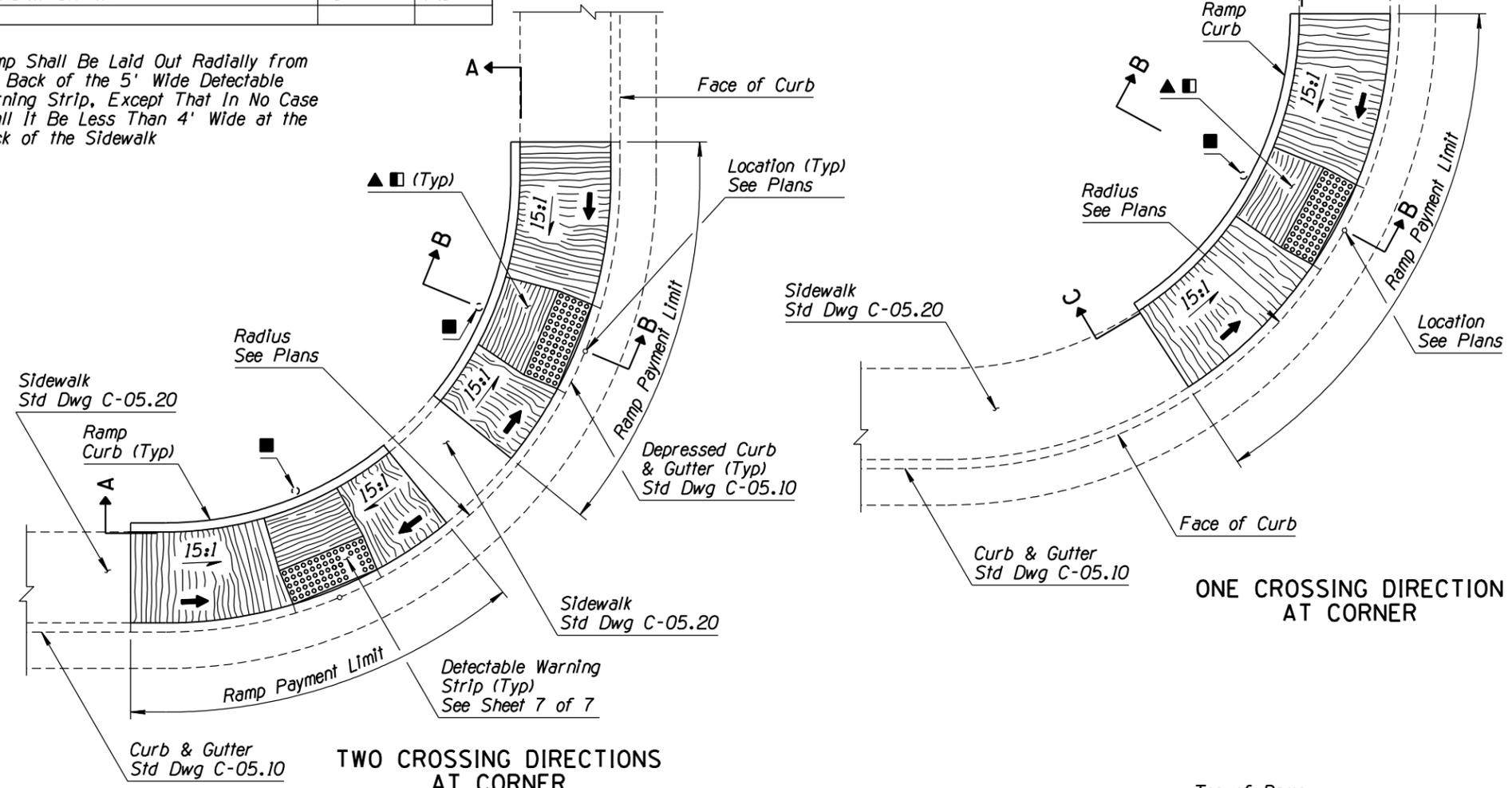


CONCRETE SIDEWALK SETBACK FROM CURB

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE DRIVEWAYS & SIDEWALKS SIDEWALKS	DRAWING NO. C-05.20 Sheet 2 of 2

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	5/07
2	ADDED NOTE & REVISED VIEW	RLF	5/12
3	REVISED DIMENSION LOCATION	RLF	5/12
4			

■ Ramp Shall Be Laid Out Radially from the Back of the 5' Wide Detectable Warning Strip, Except That In No Case Shall It Be Less Than 4' Wide at the Back of the Sidewalk

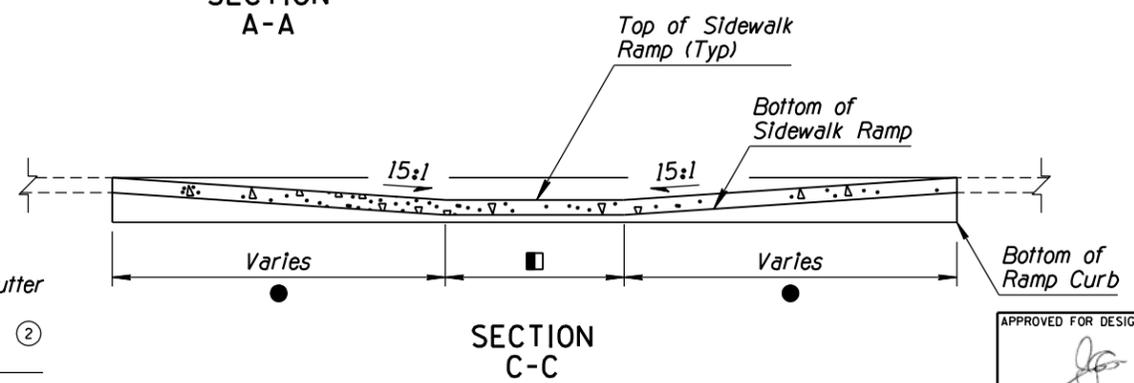
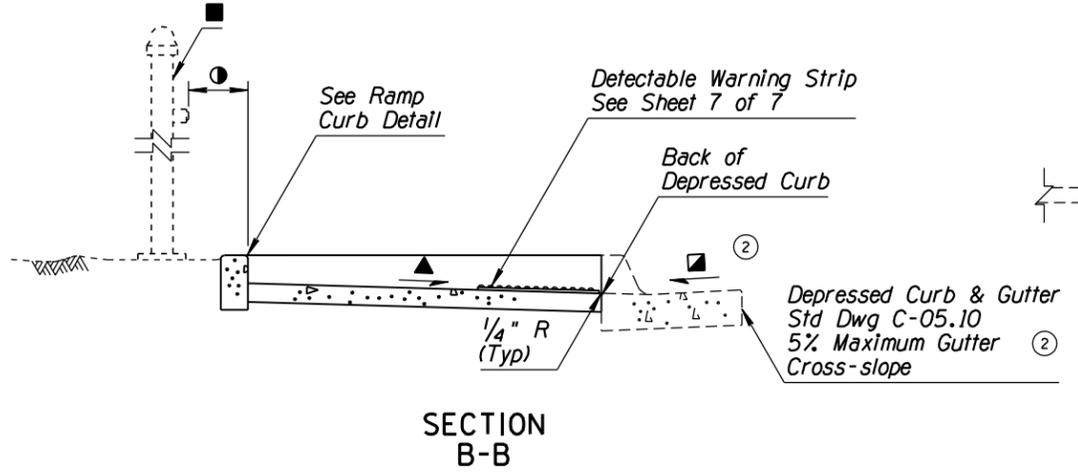
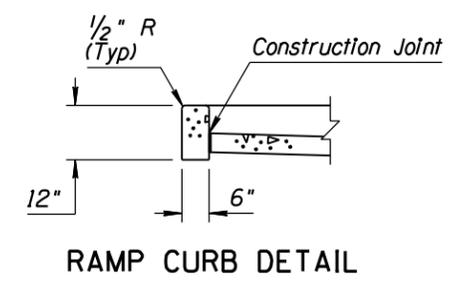
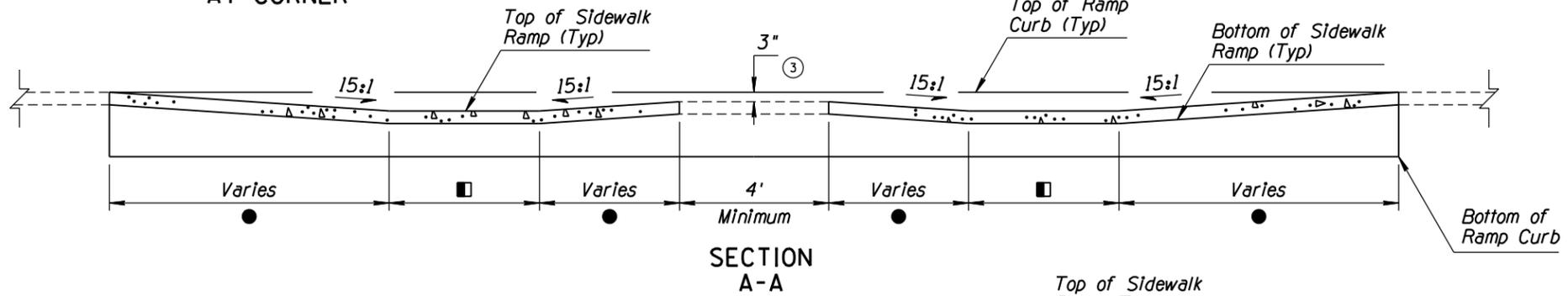


GENERAL NOTES

- Ramp centerline shall be radial from the face of the curb at the Sidewalk Ramp Control Point.
 - For ramps 15-ft long or less, the 15:1 slope governs. If a 15:1 slope results in a ramp length longer than 15-ft, the 15:1 slope may be waived and the ramp length held at 15-ft, regardless of the slope.
 - Drainage inlets should not be located within the marked crosswalks, or if crosswalks aren't marked, within the area a standard marked crosswalk would enclose.
 - Concrete shall receive a rough broom finish as shown.
 - See Std Dwgs C-05.10 and C-05.20 for joint details.
- See Note 2
 - ① 10" Maximum to Face of Pedestrian Push Button
 - Pedestrian Push Button Pole When Shown on Traffic Plans. See Traffic Signal Plans for Additional Information

LEGEND

- ▲ Minimum Slope = 100:1 (0.01 %/ft)
- Maximum Slope = 50:1 (0.02 %/ft)
- ② ■ Maximum Slope = 20:1 (0.05 %/ft)



PARALLEL SIDEWALK RAMP

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. ① 5/12
APPROVED FOR DISTRIBUTION 	SIDEWALK RAMP TYPE A	DRAWING NO. C-05.30 Sheet 1 of 7

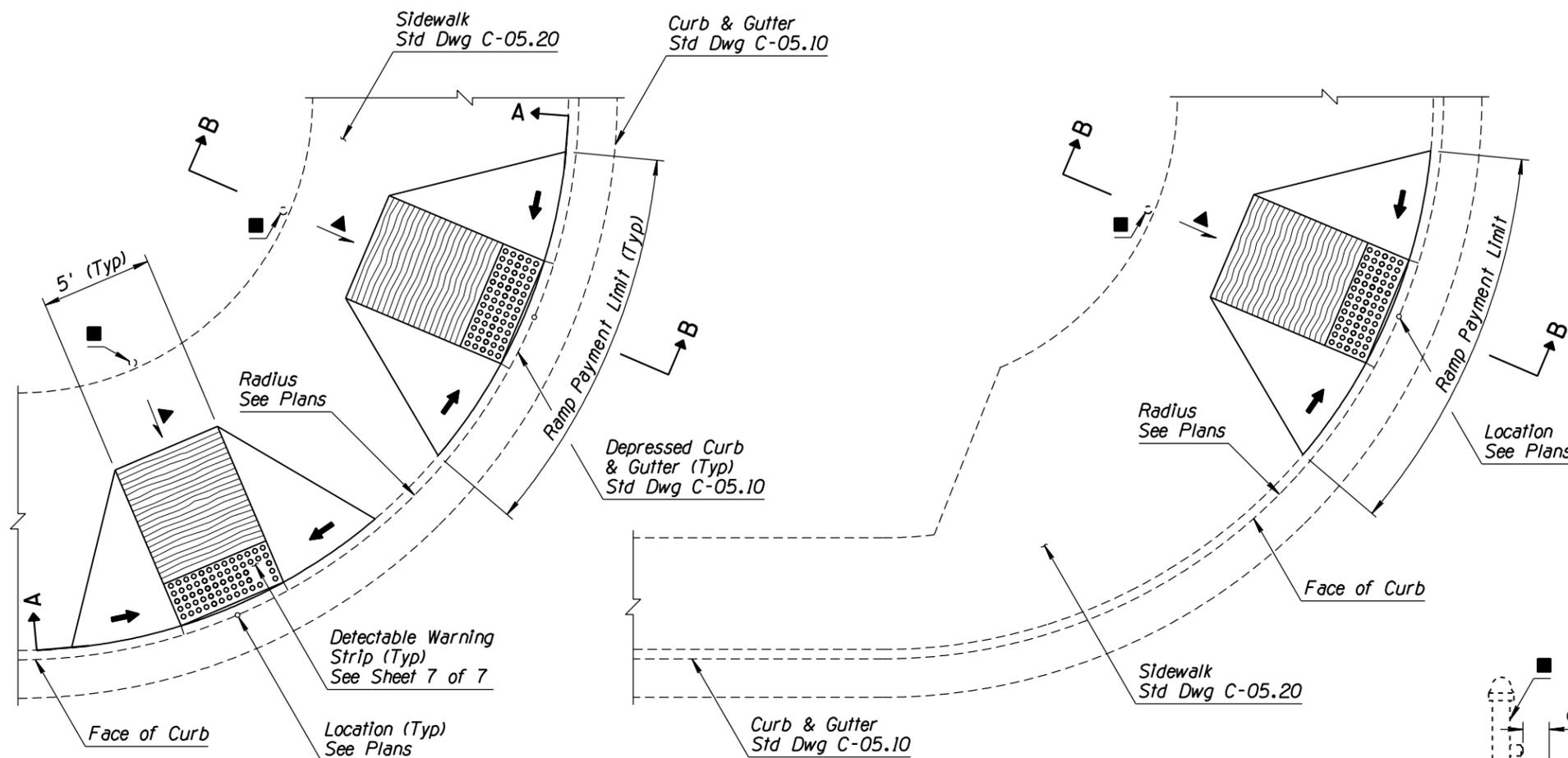
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED NOTE, REVISED VIEW & REISSUED STANDARD DRAWING	RLF	5/12
2			
3			
4			

GENERAL NOTES

- Ramp centerline shall be radial from the face of the curb at the sidewalk ramp control point.
 - For ramps 15-ft long or less, the 15:1 slope governs. If a 15:1 slope results in a ramp length longer than 15-ft, the 15:1 slope may be waived and the ramp length held at 15-ft, regardless of the slope.
 - Drainage inlets should not be located within the marked crosswalks, or if crosswalks aren't marked, within the area a standard marked crosswalk would enclose.
 - Concrete shall receive a rough broom finish as shown. The side slope wings do not receive a broom finish.
 - The Engineer may approve replacing the side slope wing with a curb at a location where access to the side of a ramp run is blocked by a pole, utility box, other obstruction, or by a non-accessible surface such as a dirt planter strip.
 - See Std Dwg C-05.10 and C-05.20 for joint details.
- Pedestrian Push Button Pole When Shown on Traffic Plans. See Traffic Signal Plans for Additional Information
 - ① 10" Maximum to Face of Pedestrian Push Button

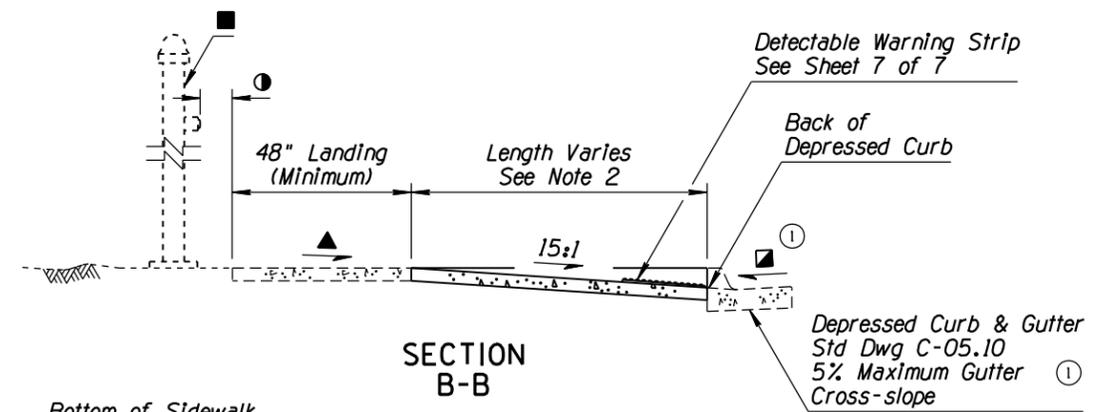
LEGEND

- ▲ Minimum Slope = 100:1 (0.01 %/ft)
- ▲ Maximum Slope = 50:1 (0.02 %/ft)
- ① ■ Maximum Slope = 20:1 (0.05 %/ft)

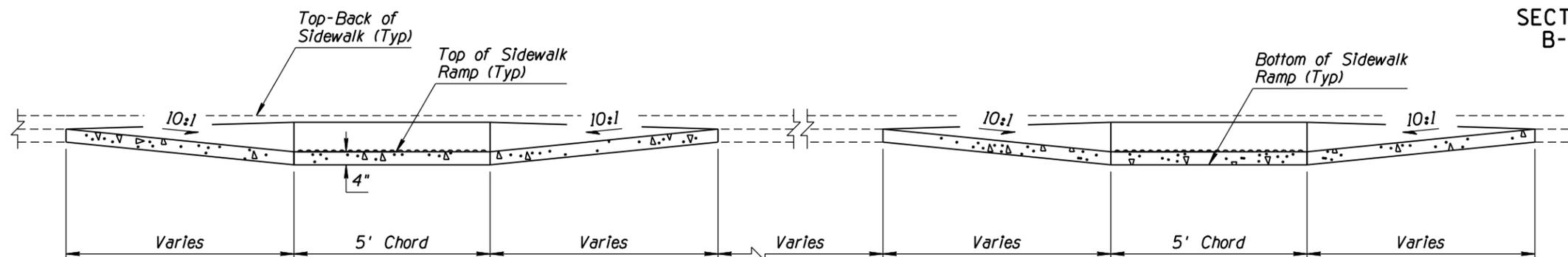


TWO CROSSING DIRECTIONS AT CORNER

ONE CROSSING DIRECTION AT CORNER



SECTION B-B



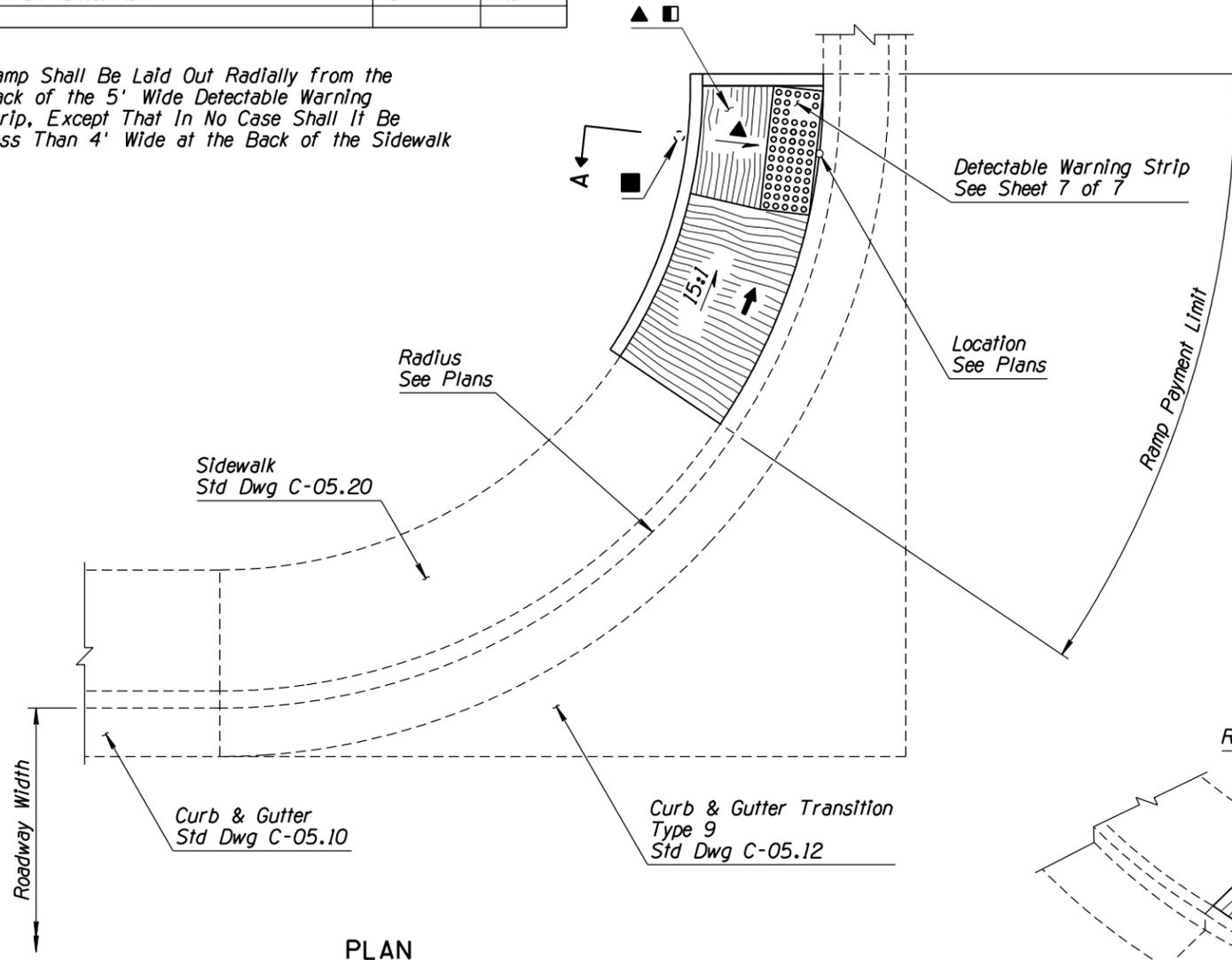
SECTION A-A

PERPENDICULAR CURB RAMP

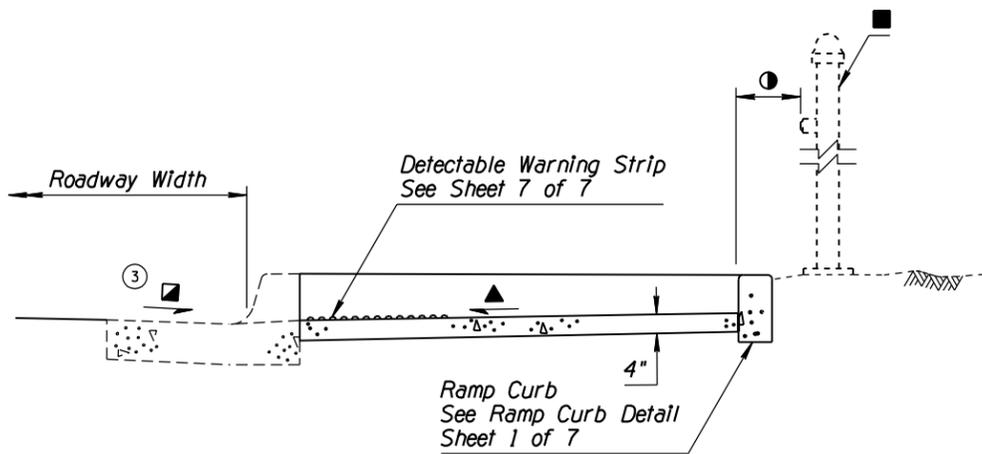
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SIDEWALK RAMP TYPE B	DRAWING NO. C-05.30 Sheet 2 of 7

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED GENERAL NOTE 3: SLOPES & LENGTHS	RLF	11/06
2	DELETED GENERAL NOTE 8	RLF	5/07
3	ADDED NOTE & REVISED VIEW	RLF	5/12
4			

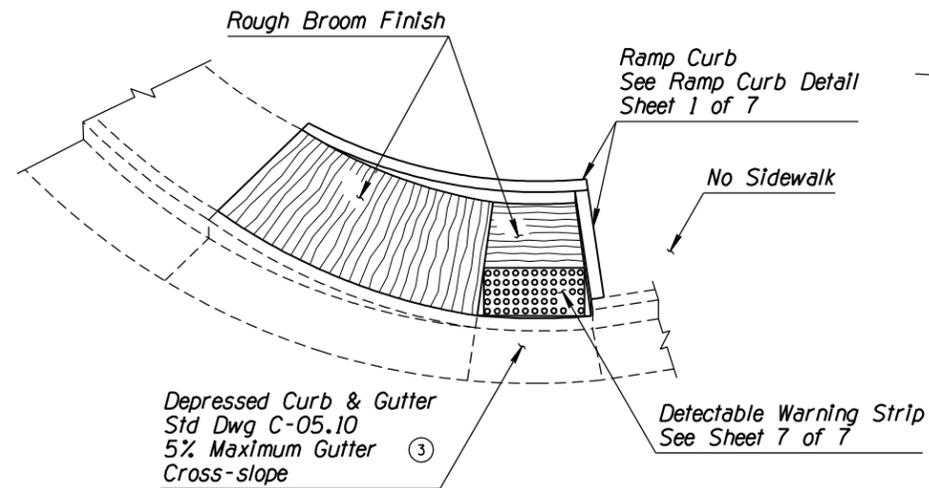
■ Ramp Shall Be Laid Out Radially from the Back of the 5' Wide Detectable Warning Strip, Except That In No Case Shall It Be Less Than 4' Wide at the Back of the Sidewalk



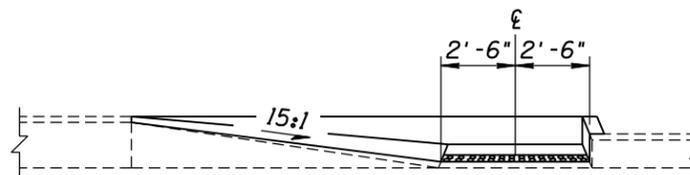
PLAN



SECTION A-A



PERSPECTIVE



ELEVATION
DEPRESSED CURB AT SIDEWALK RAMP

GENERAL NOTES

- For use where sidewalk is not continuous.
- Ramp centerline shall be radial from the face of the curb at the Sidewalk Ramp Control Point.
- ① For ramps 15-ft long or less, the 15:1 slope governs. If a 15:1 slope results in a ramp length longer than 15-ft, the 15:1 slope may be waived and the ramp length held at 15-ft, regardless of the slope.
- The top of the Ramp Curb along the back of the Sidewalk Ramp shall match the elevation of the adjacent back of sidewalk and run parallel to the Sidewalk Ramp. The Ramp Curb along the side of the Sidewalk Ramp shall match the elevation at the back of the Curb & Gutter and the back of Ramp Curb.
- Drainage inlets should not be located within the marked crosswalks, or if crosswalks aren't marked, within the area a standard marked crosswalk would enclose.
- Concrete shall receive a rough broom finish as shown.
- See Std Dwgs C-05.10 and C-05.20 for joint details.
- ② ■ Pedestrian Push Button Pole When Shown on Traffic Plans. See Traffic Signal Plans for Additional Information
- ③ 10" Maximum to Face of Pedestrian Push Button

LEGEND

- ▲ Minimum Slope = 100:1 (0.01 %/ft)
- Maximum Slope = 50:1 (0.02 %/ft)
- Maximum Slope = 20:1 (0.05 %/ft)
- ③

SIDEWALK RAMP AT SIDEWALK TERMINUS

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SIDEWALK RAMP TYPE C	DRAWING NO. C-05.30 Sheet 3 of 7

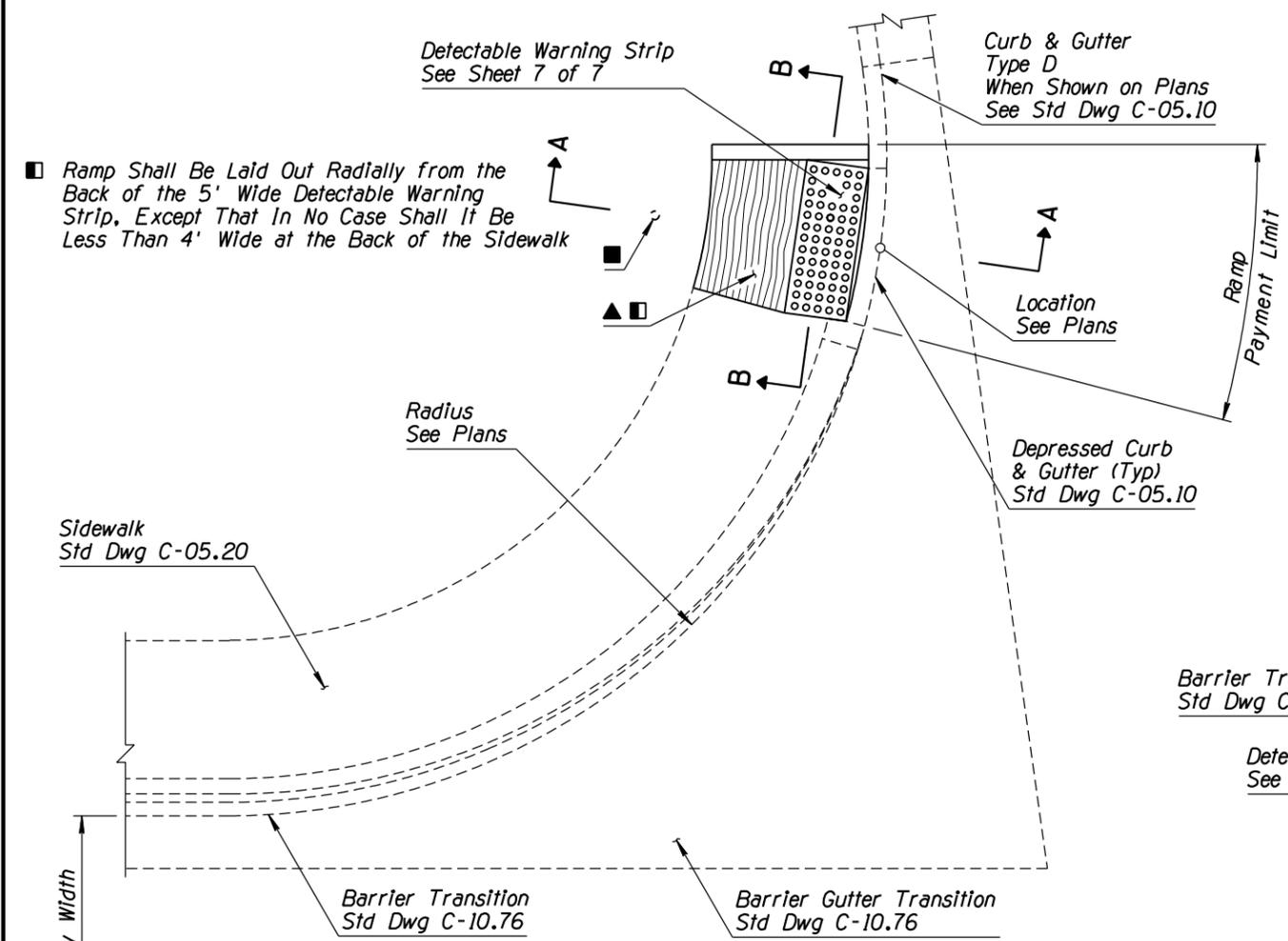
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	4/06
2	DELETED GENERAL NOTE 7	RLF	5/07
3	REVISED VIEW: REMOVED CURB	RLF	5/07
4	ADDED NOTE & REVISED VIEW	RLF	5/12

GENERAL NOTES

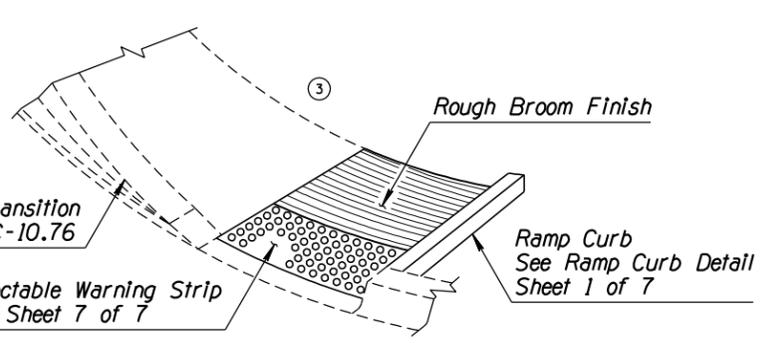
- For use where sidewalk is not continuous.
 - Ramp centerline shall be radial from the face of the curb at the Sidewalk Ramp Control Point.
 - The top of the Ramp Curb along the back of the Sidewalk Ramp shall match the elevation of the adjacent back of sidewalk and run parallel to the Sidewalk Ramp. The Ramp Curb along the side of the Sidewalk Ramp shall match the elevation at the back of the Curb & Gutter and the back of Ramp Curb.
 - Drainage inlets should not be located within marked crosswalks, or if crosswalks aren't marked, within the area a standard marked crosswalk would enclose.
 - Concrete shall receive a rough broom finish as shown.
 - See Std Dwg C-05.10 and C-05.20 for joint details.
- Pedestrian Push Button Post When Shown on Traffic Plans. See Traffic Signal Plans for Additional Information
 - ② 10" Maximum to Face of Pedestrian Push Button

LEGEND

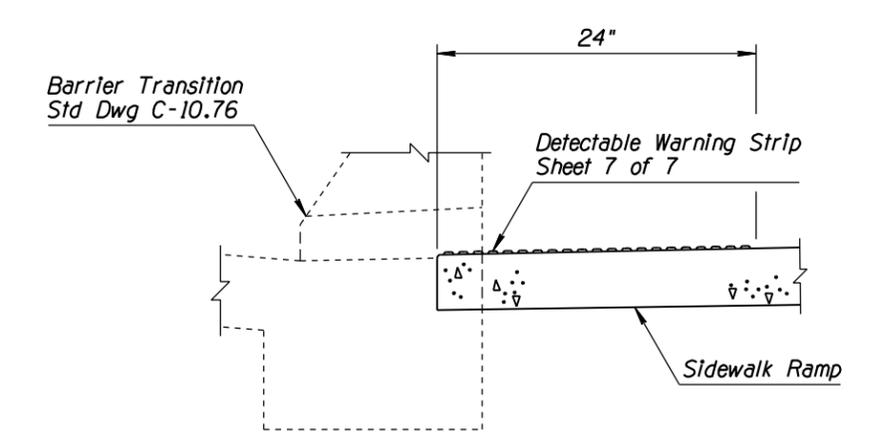
- ▲ Minimum Slope = 100:1 (0.01' /ft)
- ➔ Maximum Slope = 50:1 (0.02' /ft)
- Maximum Slope = 20:1 (0.05' /ft)
- ④



PLAN

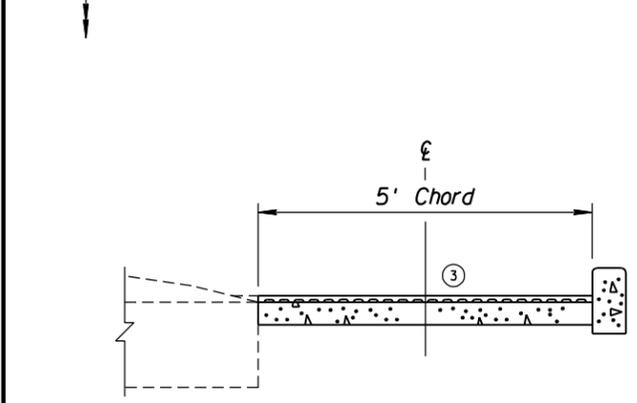


PERSPECTIVE

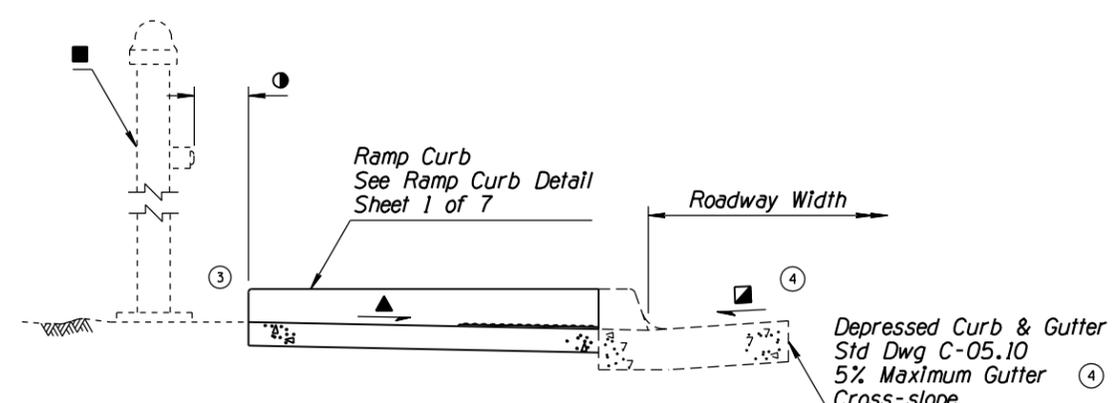


DETAIL

SIDEWALK RAMP AT SIDEWALK TERMINUS SIDEWALK BEHIND BARRIER



SECTION B-B



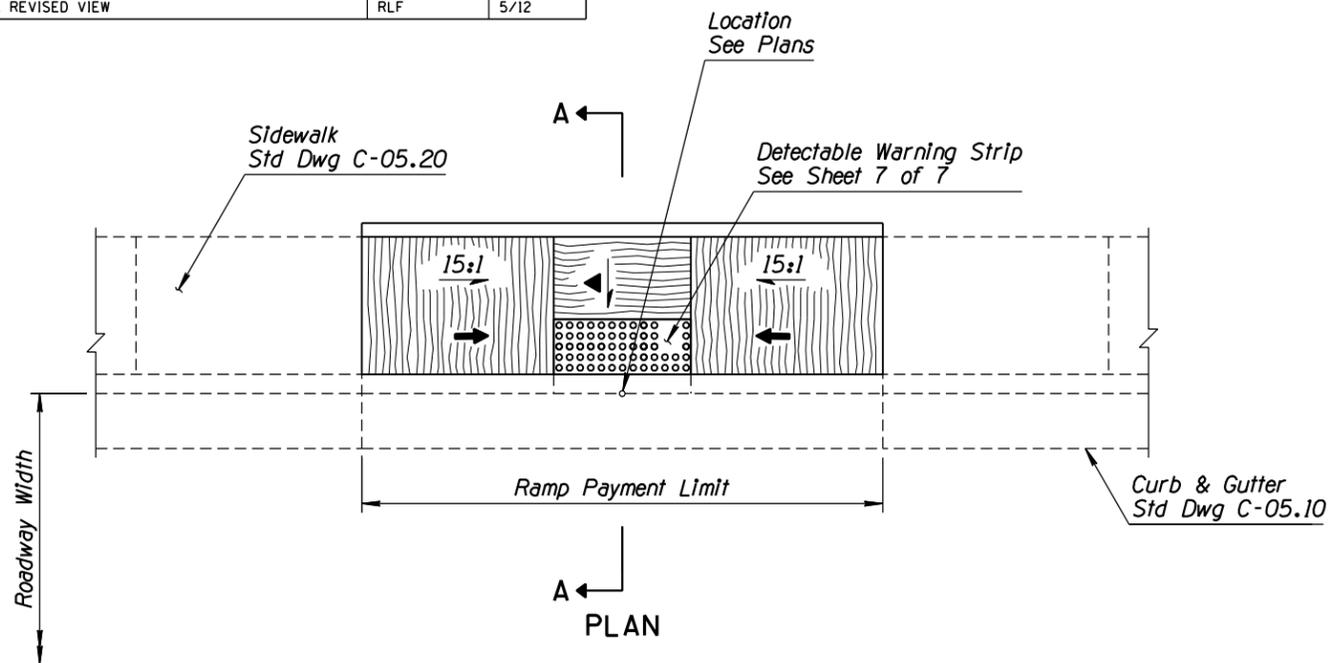
SECTION A-A

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SIDEWALK RAMP TYPE D	DRAWING NO. ① C-05.30 Sheet 4 of 7

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	4/06
2	REVISED GENERAL NOTE	RLF	4/06
3	DELETED GENERAL NOTE 9	RLF	5/07
4	ADDED NOTE & REVISED VIEW	RLF	5/12

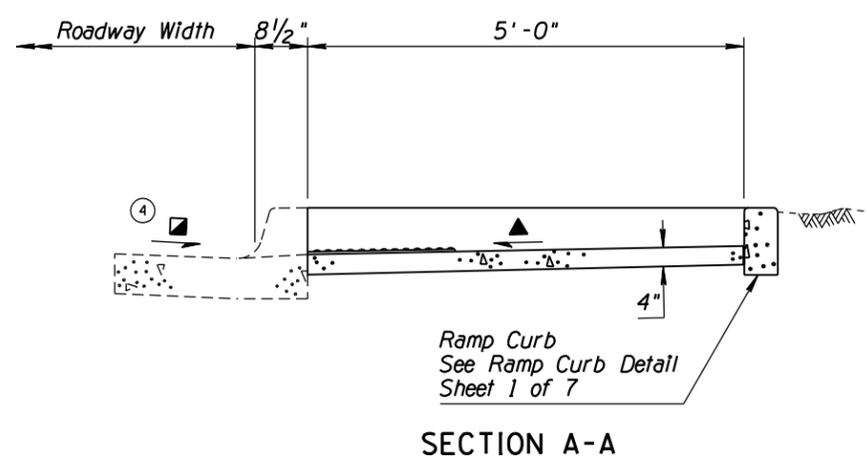
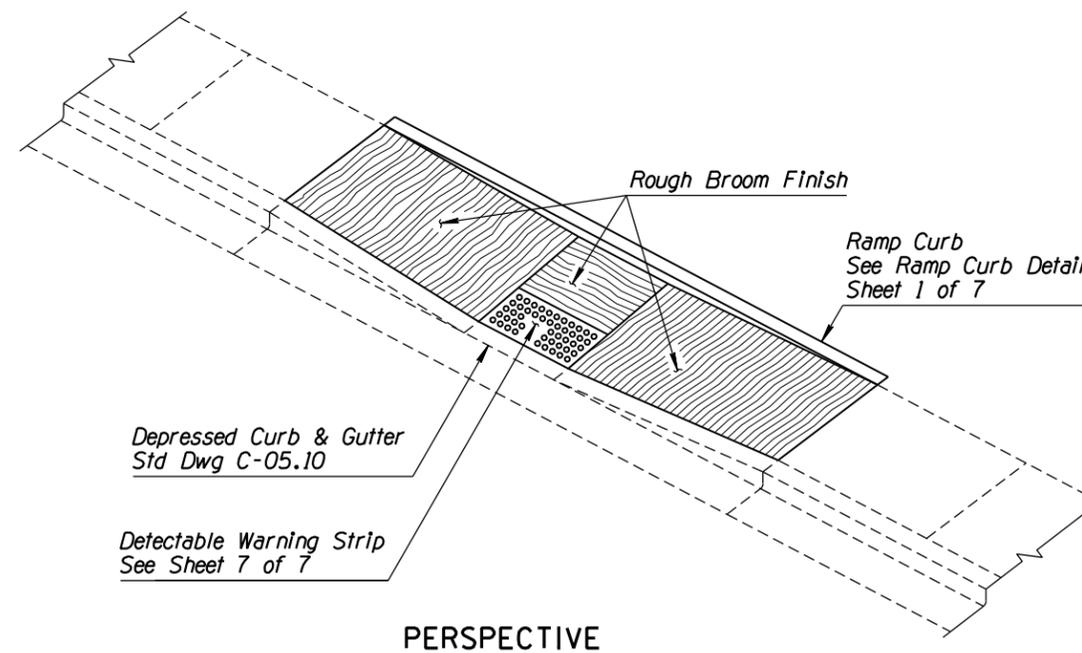
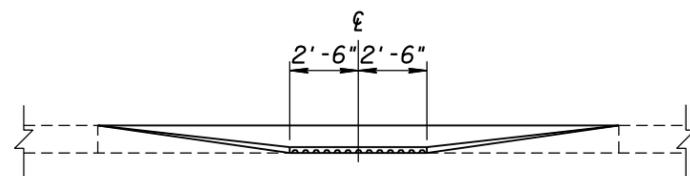
GENERAL NOTES

- For use at mid-block locations.
- Ramp centerline shall be perpendicular to the face of the curb at the Sidewalk Ramp Control Point.
- For ramps 15-ft long or less, the 15:1 slope governs. If a 15:1 slope results in a ramp length longer than 15-ft, the 15:1 slope may be waived and the ramp length held at 15-ft, regardless of the slope.
- For sidewalk widths greater than shown on C-05.20, the overall Sidewalk Ramp depth shall match the sidewalk width.
- Ramp curb height to match elevation at back of adjacent sidewalk.
- Drainage inlets should not be located within the marked crosswalks, or if crosswalks aren't marked, within the area a standard marked crosswalk would enclose.
- Concrete shall receive a rough broom finish as shown.
- See Std Dwg C-05.10 and C-05.20 for joint details.



LEGEND

- Minimum slope = 100:1 (0.01 %/ft)
- Maximum slope = 50:1 (0.02 %/ft)
- Maximum Slope = 20:1 (0.05 %/ft)

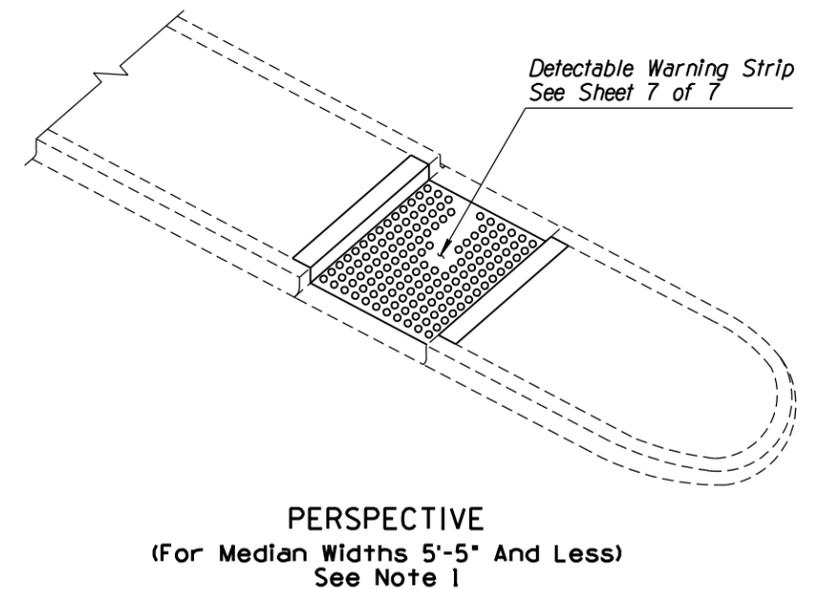
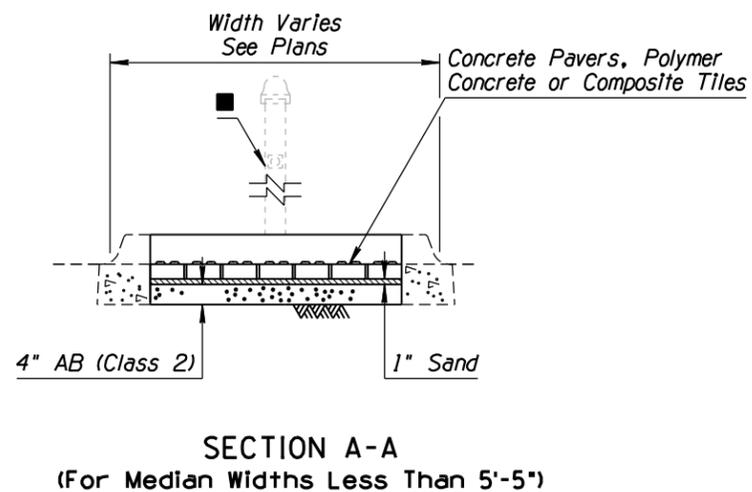
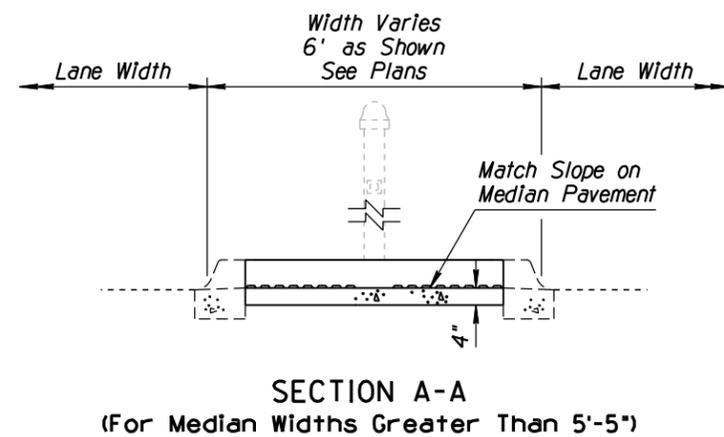
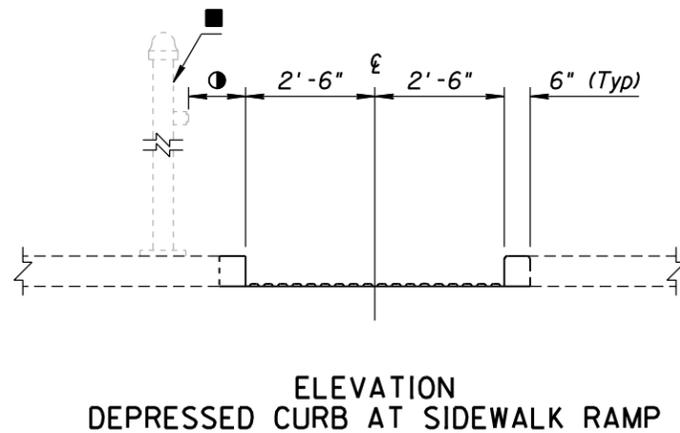
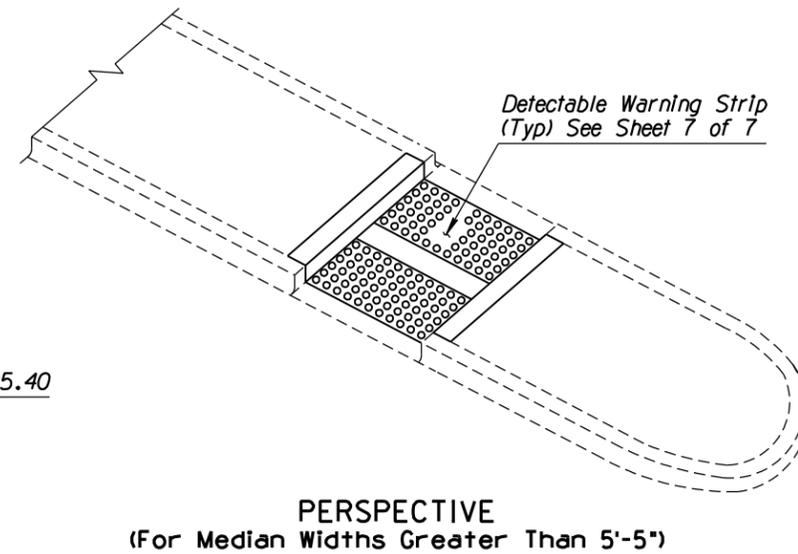
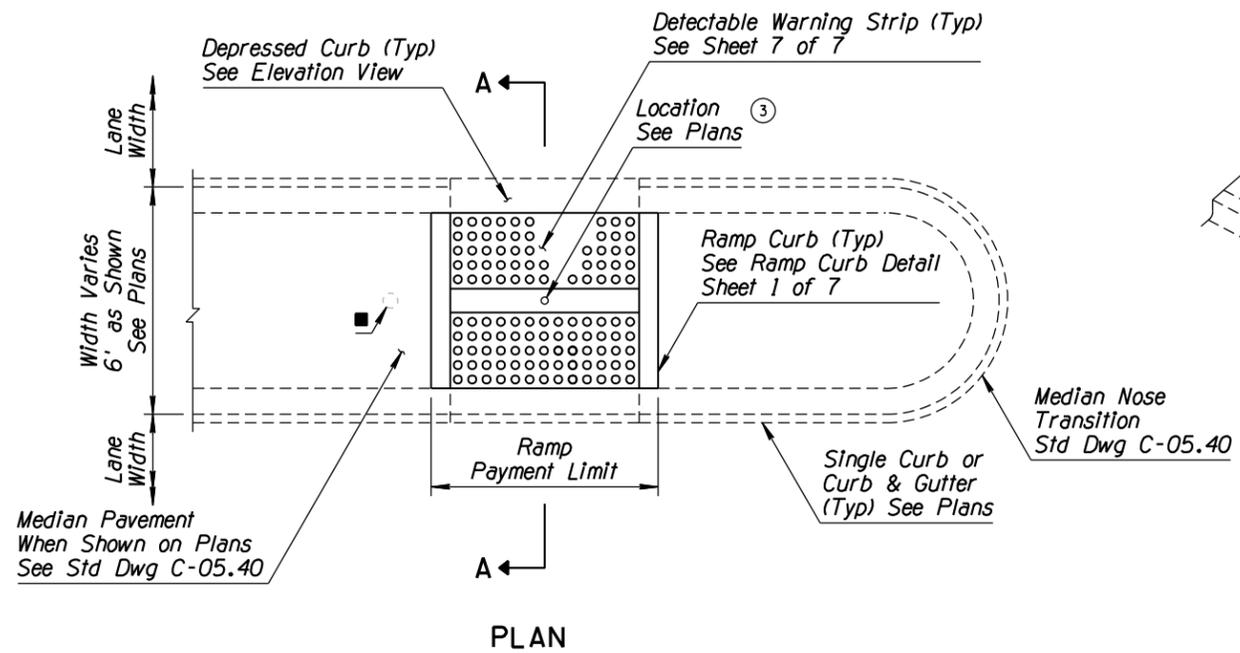


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SIDEWALK RAMP TYPE E	DRAWING NO. ① C-05.30 Sheet 5 of 7

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD AS SHEET 6 OF 7	RLF	9/04
2	ADDED GENERAL NOTE 4	RLF	7/05
3	REVISED NOTE	RLF	7/05
4	DELETED GENERAL NOTE 4	RLF	5/07

GENERAL NOTES

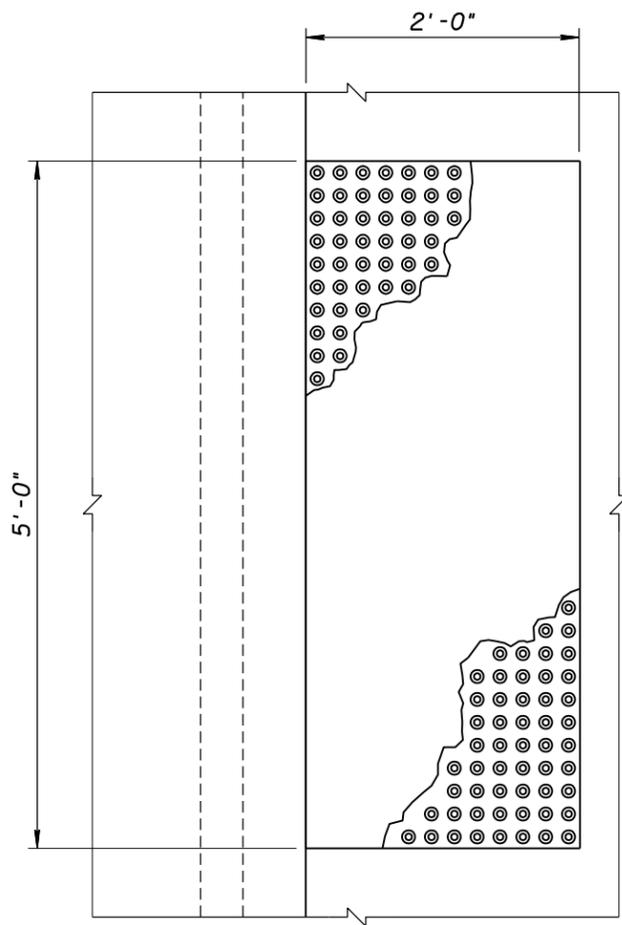
- For median widths 5'-5" and less, the Detectable Warning Strip shall be continuous from back-of-curb to back-of-curb. The Detectable Warning Strip shall not extend beyond the back of curb. Modular units such as bricks or tiles shall be used to construct the Detectable Warning Strip. Partial domes at the edge of the Strip shall be ground flush with the brick or tile surface.
 - Use Type A1 curb if median is to be landscaped.
 - Single curb shown; see plans for Curb & Gutter application.
- (2) ■ Pedestrian Push Button Pole When Shown on Plans. See Traffic Signal Plans for Additional Information
 (4) ● 10" Maximum to Face of Pedestrian Push Button



SIDEWALK RAMP AT MEDIAN ISLAND CROSSING

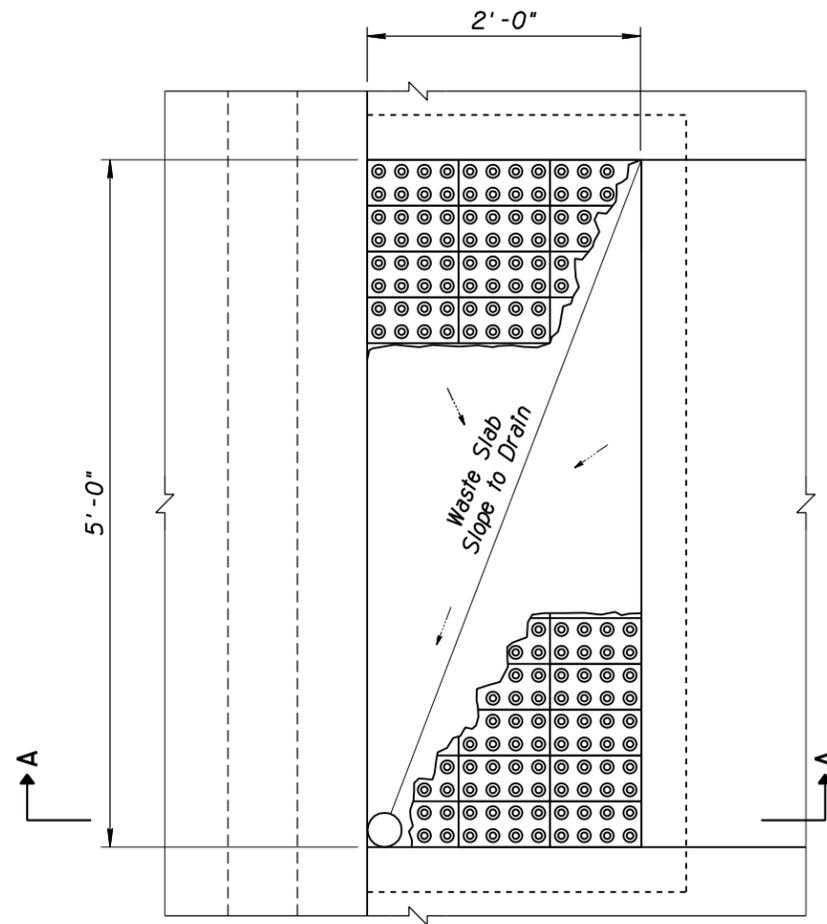
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SIDEWALK RAMP TYPE F	DRAWING NO. C-05.30 Sheet 6 of 7

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED VIEW & REISSUED STANDARD DRAWING	RLF	5/12
2			
3			
4			



DETECTABLE WARNING STRIP

PLAN



DETECTABLE WARNING STRIP
BRICK OPTION

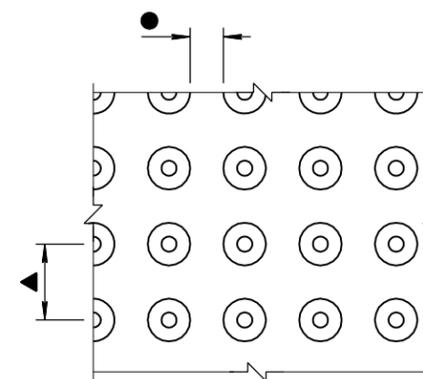
PLAN

GENERAL NOTES

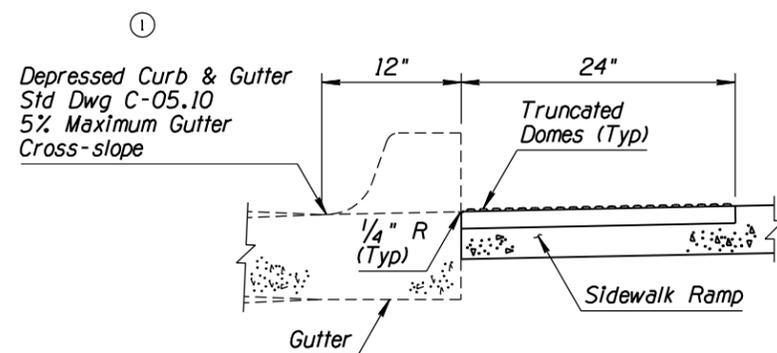
1. Drain shall be placed in low corner and filled with coarse aggregate (AASHTO N43 Size 7) securely tied in a long-life geotextile sack.

LEGEND

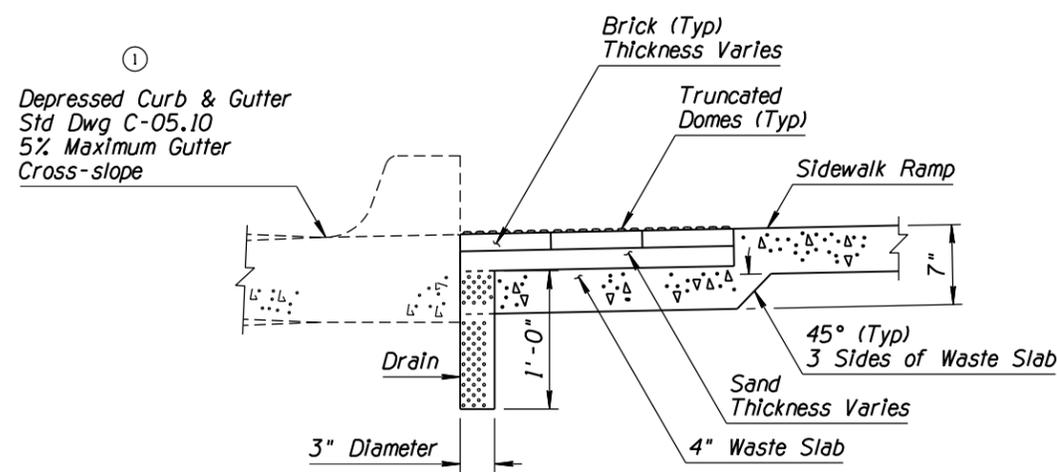
- 1/16" Minimum (Typ) (0.65 in. Minimum ADA Actual)
- ▲ 1 5/8" to 2 3/8" (Typ) (1.6 in. to 2.4 in. ADA Actual)
- 7/8" to 1 3/8" (Typ) (0.9 in. to 1.4 in. ADA Actual)
- 50% to 65% of ■



TEXTURE PATTERN DETAIL

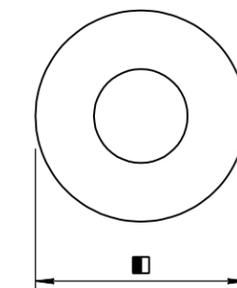


SECTION

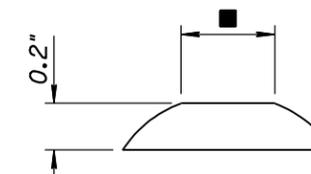


DETECTABLE WARNING STRIP
BRICK OPTION

SECTION A-A



TRUNCATED DOME
DETAIL



TRUNCATED DOME
ELEVATION

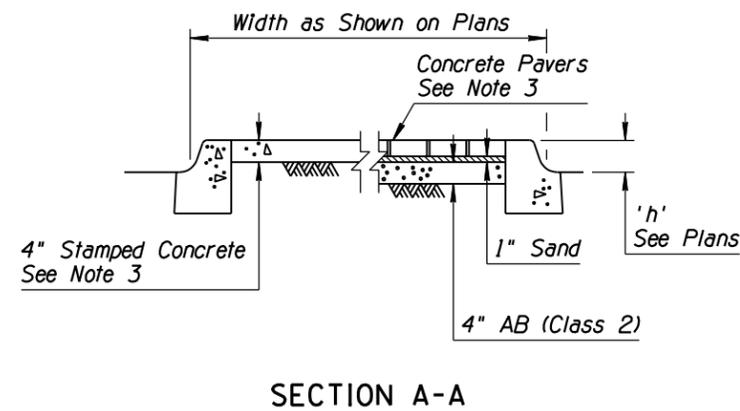
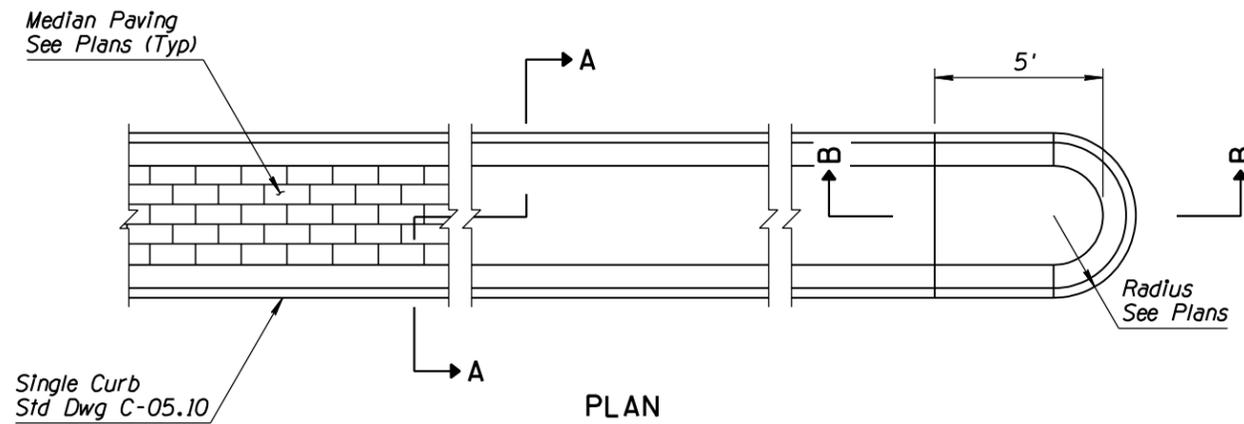
DETECTABLE WARNING STRIP DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SIDEWALK RAMP DETECTABLE WARNING STRIP	DRAWING NO. ① C-05.30 Sheet 7 of 7

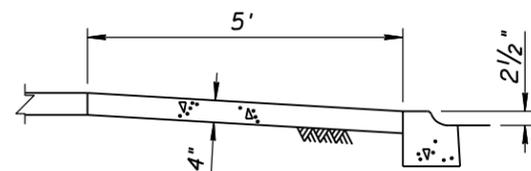
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2			
3			
4			

GENERAL NOTES

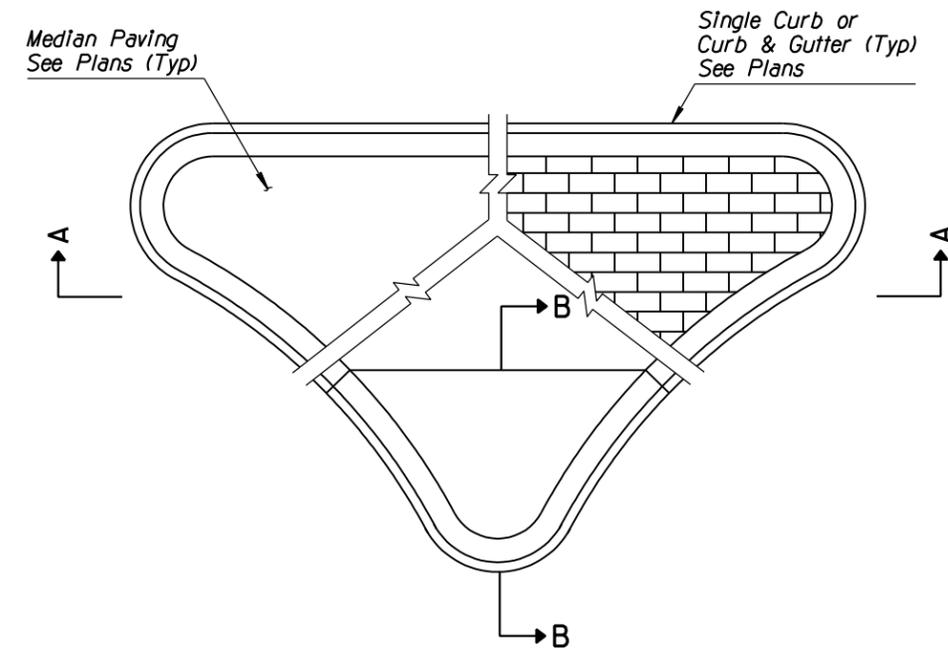
1. Traffic signal foundations, traffic sign foundations and pull boxes for traffic signs and traffic signals shall be installed prior to placement of median paving.
2. See Std Dwg C-05.10 and C-05.20 for joint requirements.
3. Decorative median paving may be stamped concrete, concrete pavers, or as specified on the project plans.
4. Decorative median paving shall not be placed on a median nose transition or on a median island on a structure.
5. A 4"x6" concrete header shall be used to end decorative paving at locations when concrete sidewalk ramps are not present.
6. Median nose transitions shall not be placed on departure ends of raised medians.
7. See Bridge Group Plans for raised median on structures.
8. Median paving shall be Class B concrete.



SECTION A-A



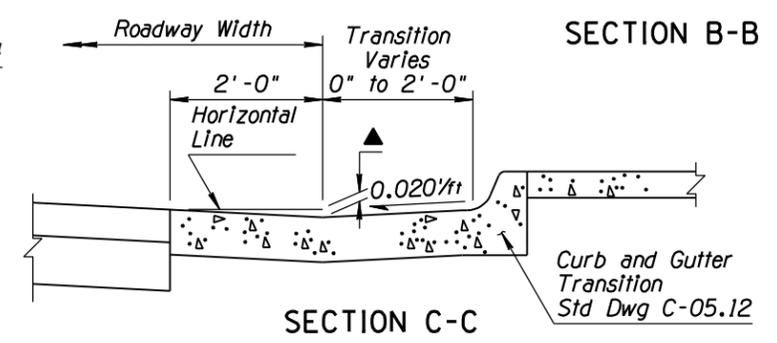
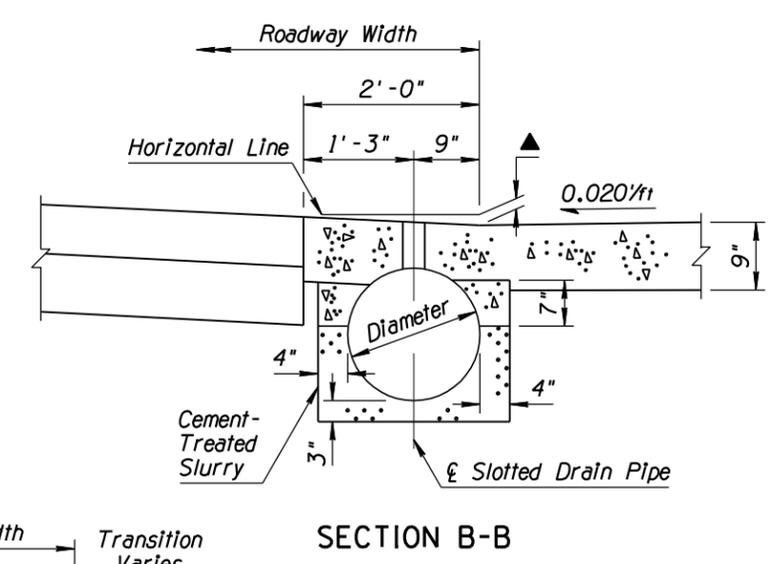
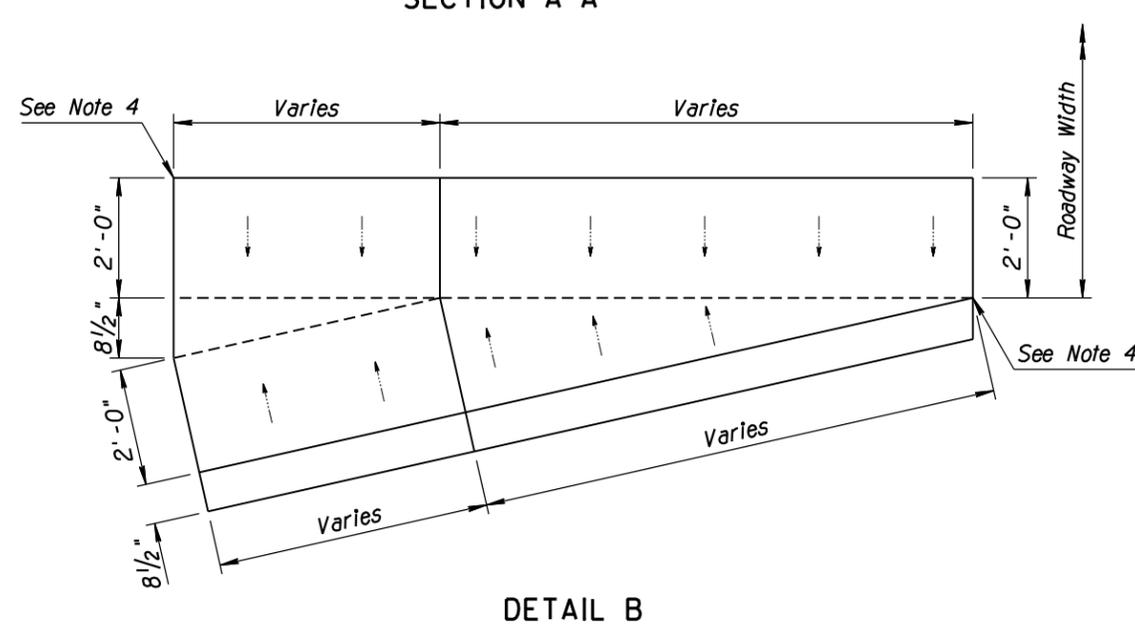
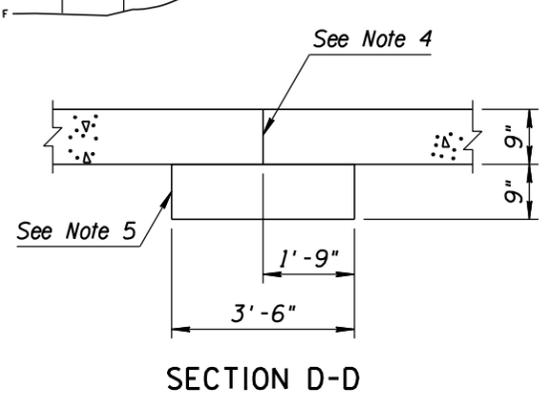
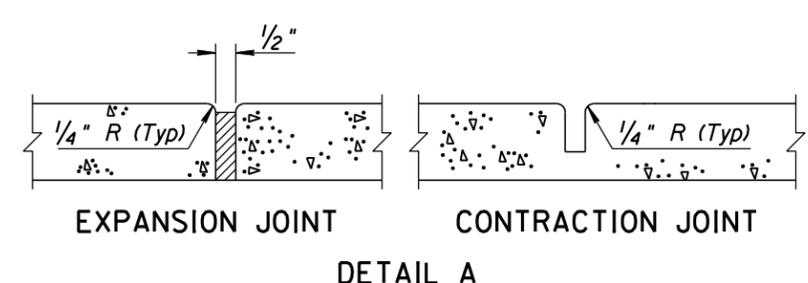
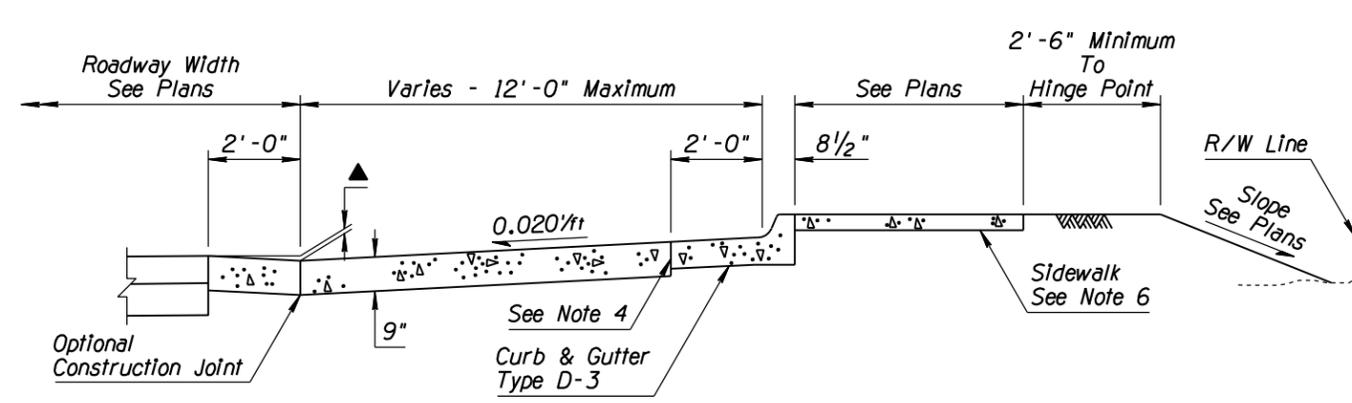
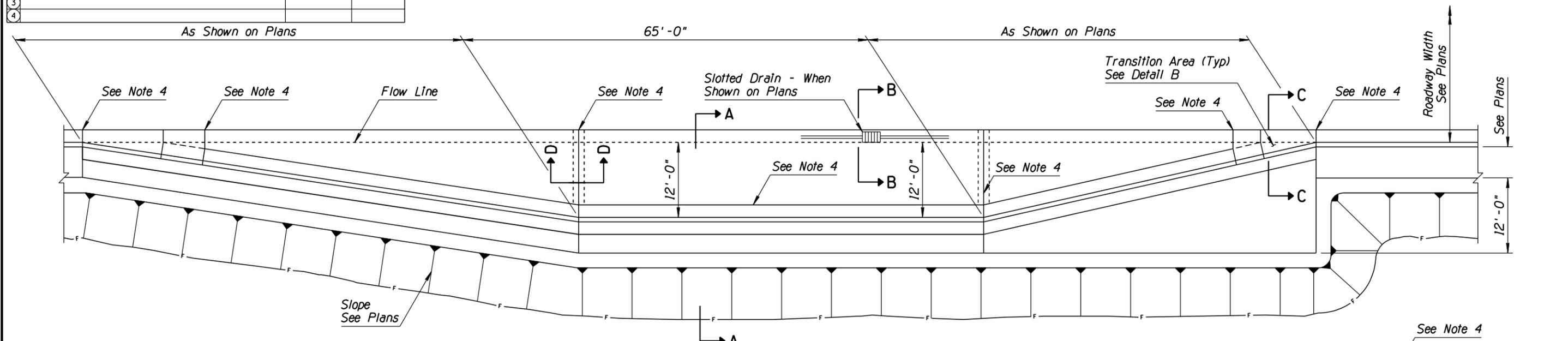
SECTION B-B



NOSE LAYOUT

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	MEDIAN PAVING AND NOSE TAPER	DRAWING NO. ① C-05.40

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	5/07
2			
3			
4			



- GENERAL NOTES**
1. The PCCP surfaces within the bus bay area shall be textured transversely. Surface texturing to conform to Std Spec 401.
 2. Transverse weakened-plane joints shall be constructed at a maximum spacing of 15' and shall align with joints in the concrete curb and gutter.
 3. For additional data on slotted drains, see Std Dwg C-13.60.
 4. For 1/2" expansion joint with preformed joint fillers, see Detail A.
 5. Concrete pad to be poured separately from concrete bus bay pavement.
 6. For sidewalk construction details, see Std Dwg C-05.20.
- ▲ See Plans: match the adjacent gutter depression

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. ① 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE BUS BAY	DRAWING NO. C-05.50

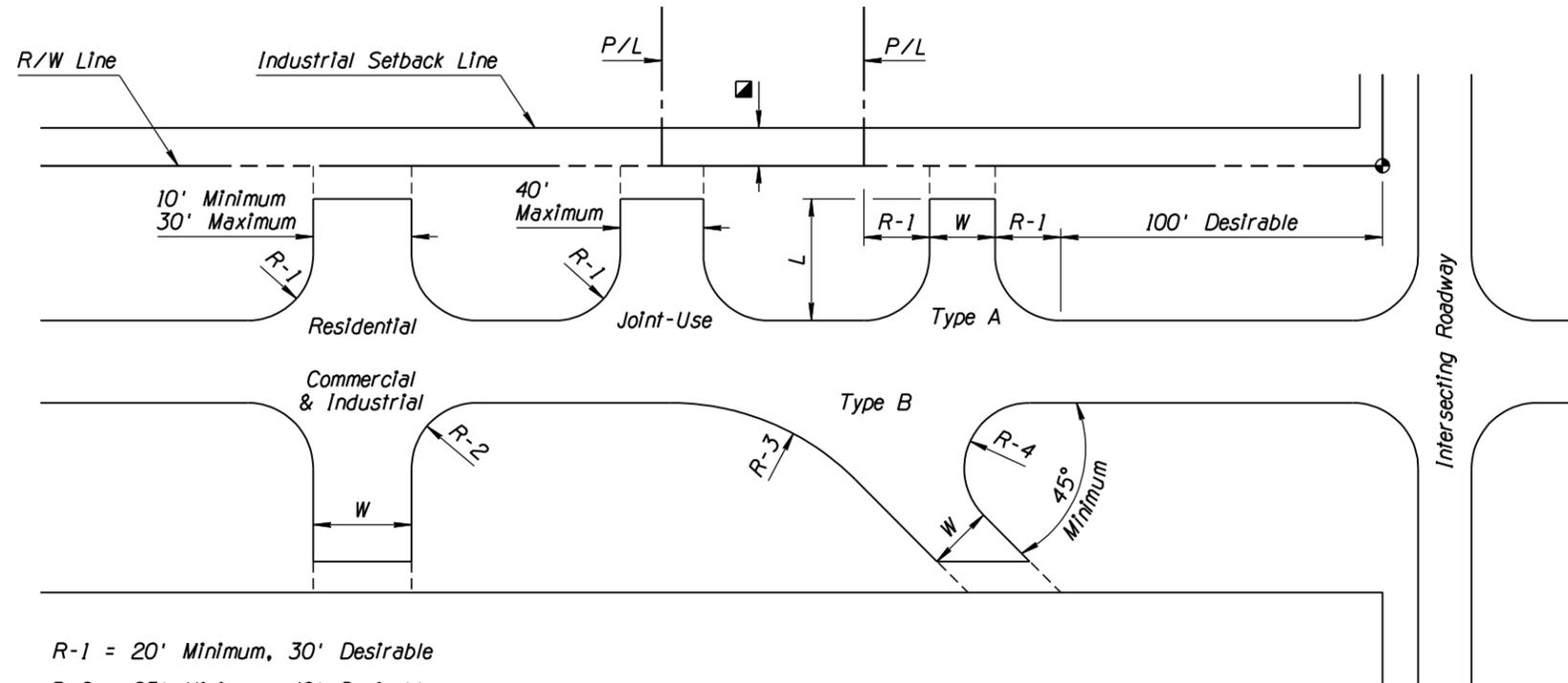
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED NOTE & REMOVED PREVIOUS TYPE B TURNOUT	RLF	9/04
2			
3			
4			

GENERAL NOTES

1. Driveway types:

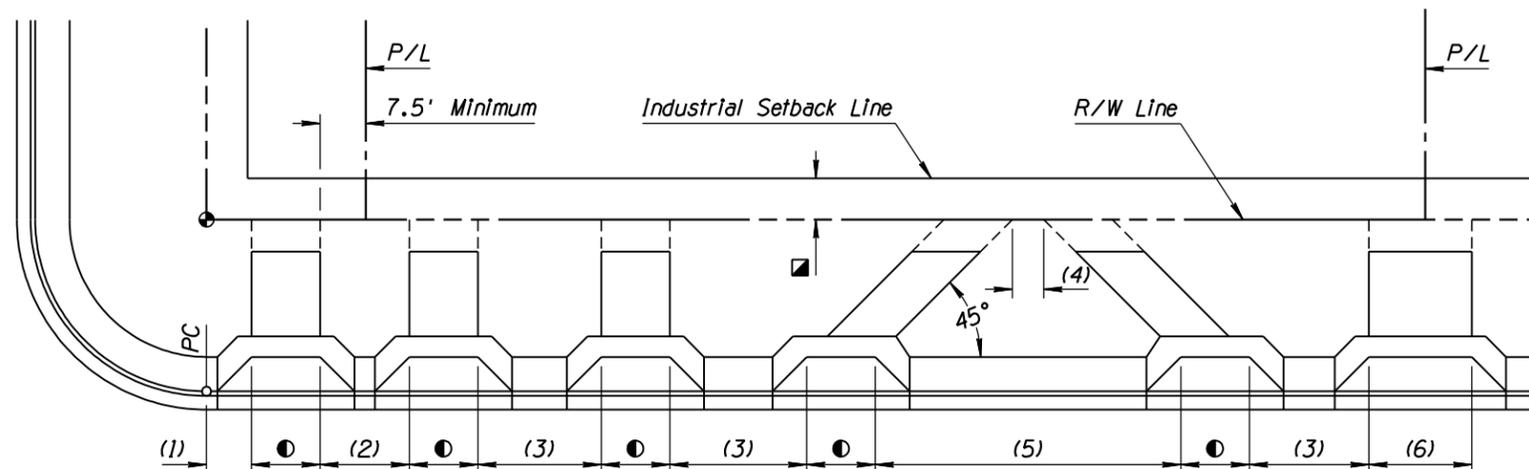
- Residential* - one providing access to a single family residence, to a duplex, or to an apartment building containing five or fewer dwelling units.
- Commercial* - one providing access to an office, retail or institutional building or to an apartment building having more than five dwelling units.
- Industrial* - one directly serving a substantial number of truck movements to and from loading docks of an industrial facility, warehouse or truck terminal.

- ① 2. Joint-use driveways may become desirable for landowners of adjacent properties to service both properties. If this is the case, only one of the two adjacent landowners need apply for the access permit, but a recorded joint-use easement, signed by all parties involved, must accompany the application form. The property line can be located anywhere, in reference to the driveway, depending on mutual agreement.
- ① 3. Driveways for high volume traffic generators shall be approved individually by Regional Traffic Engineering or the Traffic Engineering Group.
- ① 4. Driveways with curb returns in urban areas shall be installed only with the approval of Regional Traffic Engineering or the Traffic Engineering Group.
5. Driveways and depressed curbs shall be located as noted on plans or as directed by the Engineer.
6. Drainage structures shall be provided under driveways where necessary.
7. Dimensions indicated as minimum shall be avoided whenever possible in favor of those indicated as desirable.
- ① 8. The Type "A" turnout is the preferable turnout design. Type "B" shall only be used when absolutely necessary.
9. Paved turnouts & plan notations will be W x L, surface material, type and standard. Example: 20' x 30' ACTO, Type A, Std Dwg C-06.10. Show radius (R) graphically.
10. Construction of curb, gutter, sidewalk and drainage facilities in urban areas by the permittee along that portion of the highway frontage under permit application, may be a stipulation of the permit approval if there appears to be reasonable need.
11. Excavation or embankment for turnouts shall be included in quantities for main roadways.
12. Base material shall be the same as that shown for main roadway, unless otherwise noted.
13. Desirable sideslope for rural turnouts is 6:1.



- R-1 = 20' Minimum, 30' Desirable
- R-2 = 25' Minimum, 40' Desirable
- R-3 = 80'
- R-4 = 20' Minimum
- W = 25' Minimum, 40' Maximum
- - See Proper City or County Regulation

RURAL DEVELOPMENTS



- | | | |
|--------------------------------|--|---|
| (1) 10' Minimum, 20' Desirable | (5) One-Way Couplet for Use Only on One-Way Roadways | ● Residential - 10' Minimum, 30' Maximum |
| (2) 15' Minimum | | ● Commercial - One-Way: 15' Minimum, 30' Maximum
Two-Way: 25' Minimum, 40' Maximum |
| (3) 25' Minimum, 40' Desirable | (6) 40' Maximum Joint-Use Driveways | ● Industrial - 20' Minimum, 40' Maximum |
| (4) 40' Minimum | | |

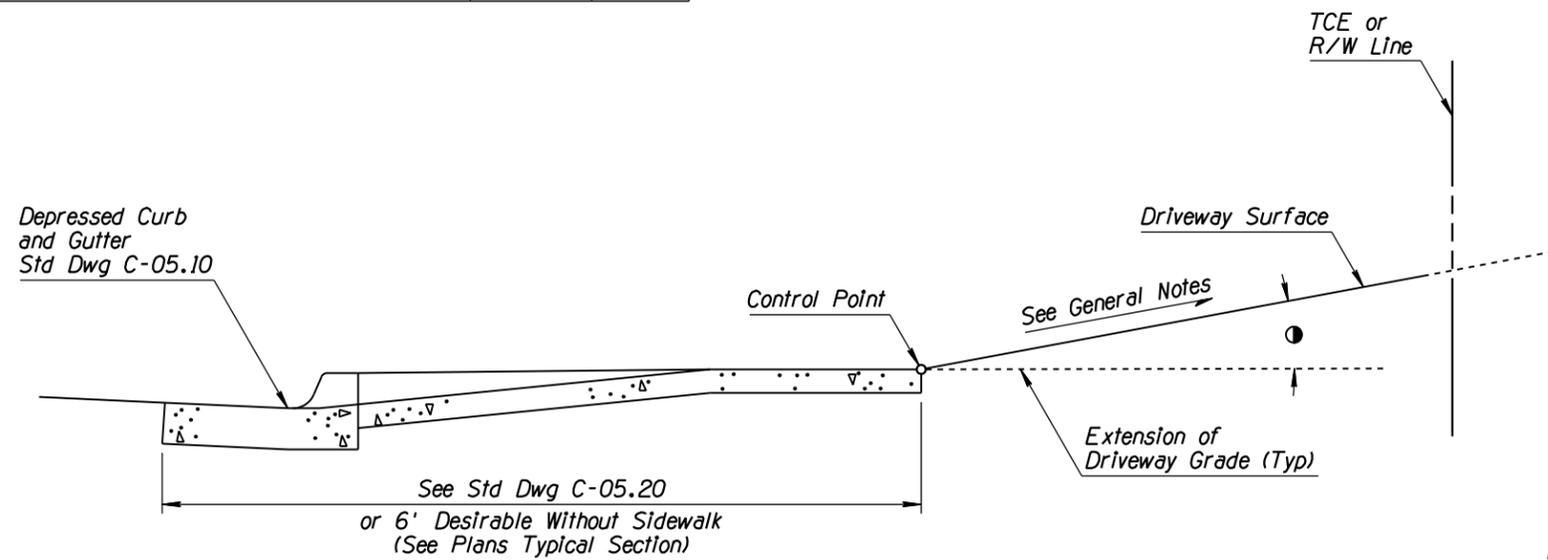
URBAN DEVELOPMENTS

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	DRIVEWAY & TURNOUT LAYOUTS	DRAWING NO. C-06.10 Sheet 1 of 2

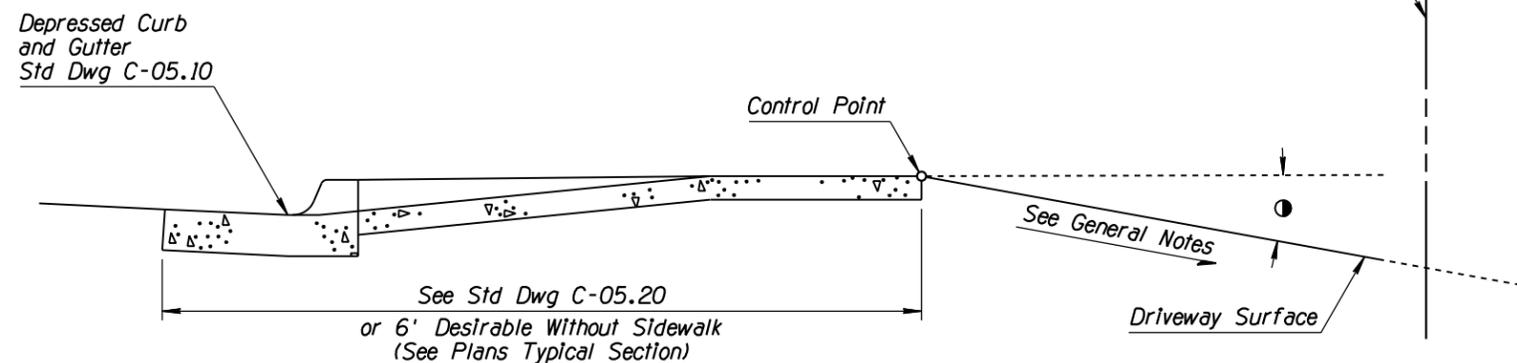
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	7/06
2			
3			
4			

GENERAL NOTES

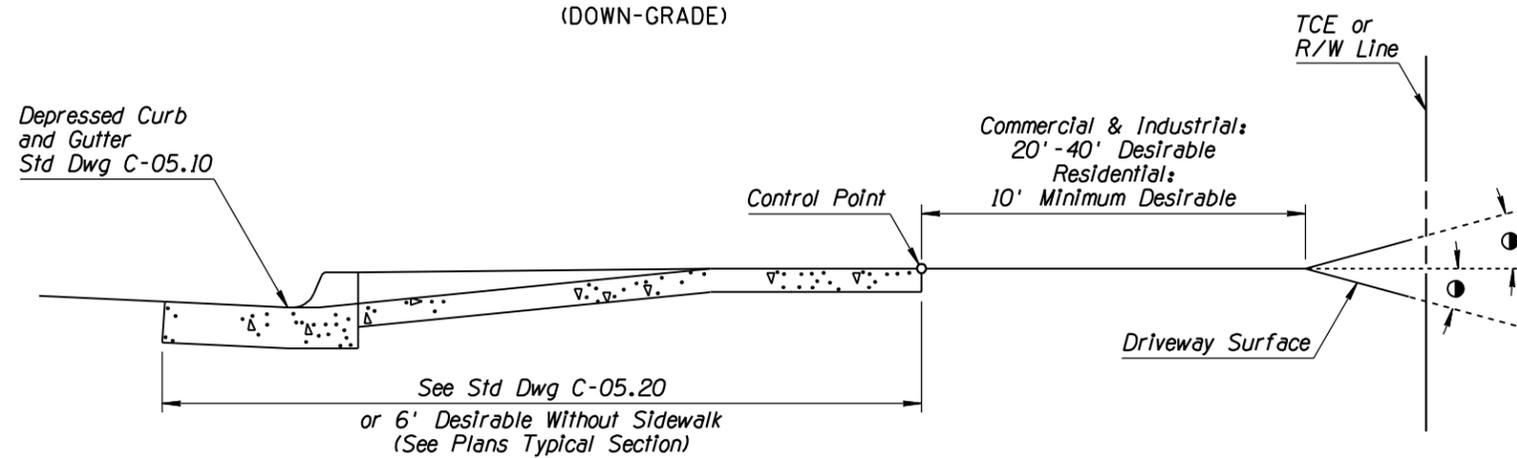
1. Grade as shown on plans or as negotiated between property owner and Engineer.
 2. When field conditions require modifications to plans, contact design engineer for assistance.
 3. See Sheet 1 of 2 for all other General Notes.
- Break angle greater than 6% requires a vertical curve, L=10' minimum. Vertical curve shall not encroach on roadway or sidewalk.



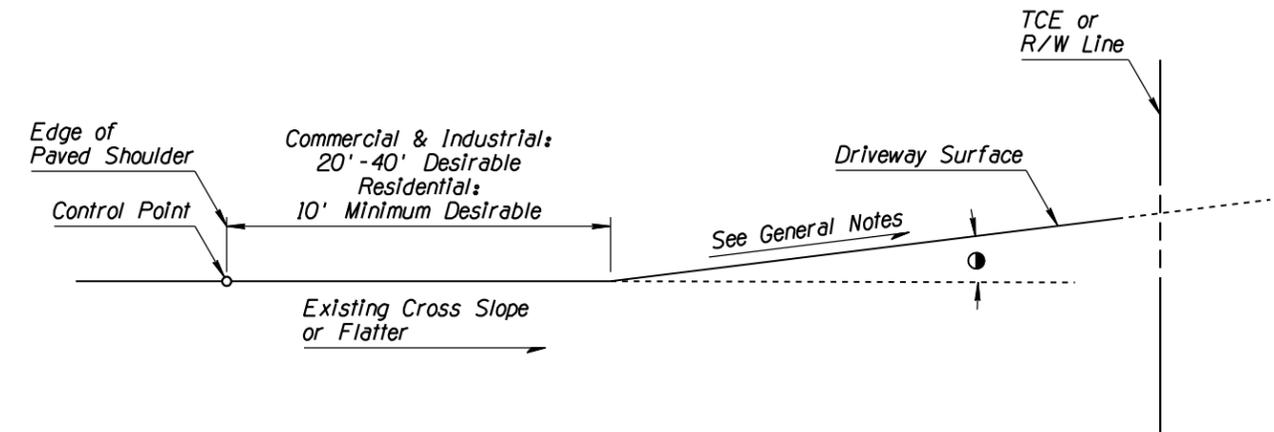
**URBAN CROSS SECTION
(UP-GRADE)**



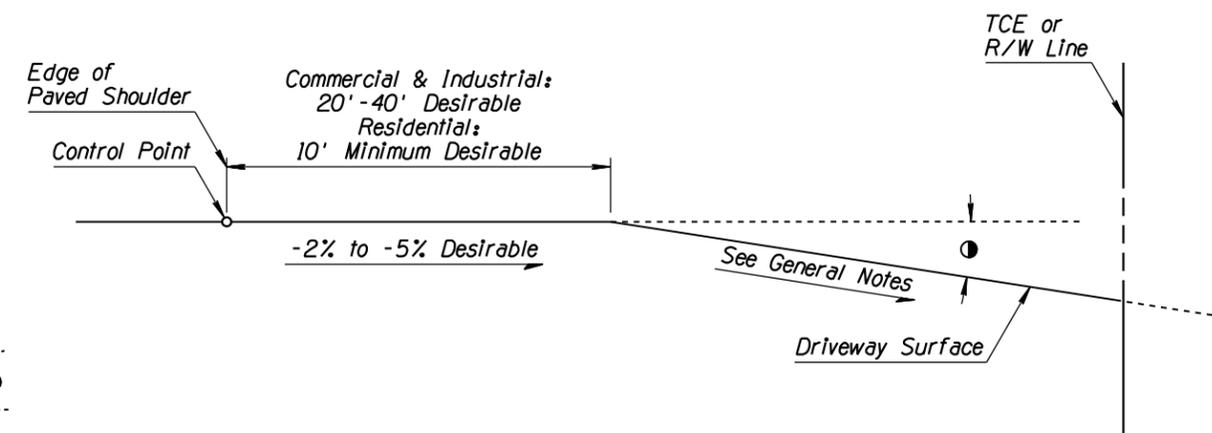
**URBAN CROSS SECTION
(DOWN-GRADE)**



DESIRABLE URBAN CROSS SECTION



**RURAL CROSS SECTION
(UP-GRADE)**



**RURAL CROSS SECTION
(DOWN-GRADE)**

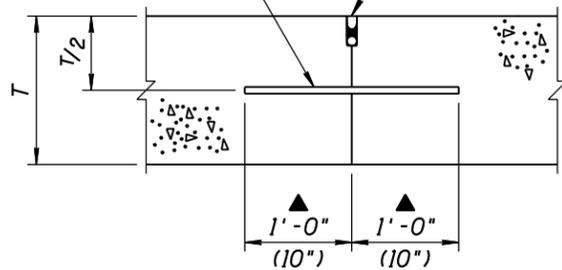
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	DRIVEWAY & TURNOUT LAYOUTS	DRAWING NO. C-06.10 Sheet 2 of 2

①

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED DEFINITION FOR 'PE'	RLF	9/04
2	REVISED DIMENSION FORMAT	RLF	7/05
3	REMOVED 'INITIAL SAWCUT' NOTATION	RLF	7/05
4			

5/8" Diameter Epoxy Coated Smooth Dowels
2'-6" Center to Center

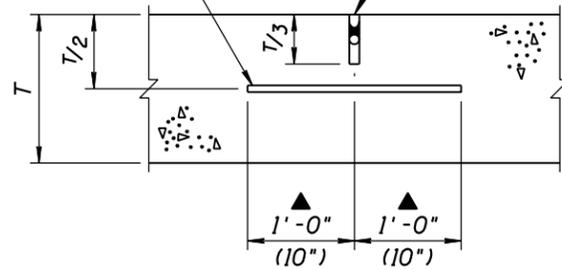
Saw and Seal
See Construction Joint
Saw And Seal Detail



LONGITUDINAL CONSTRUCTION JOINT
LC Joint

#5 Rebar
2'-6" Center to Center

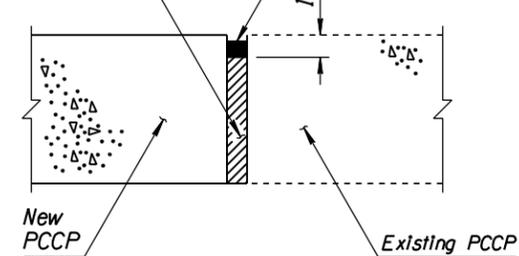
Saw and Seal
See Weakened-Plane Joint
Saw And Seal Detail



LONGITUDINAL WEAKENED-PLANE JOINT
LWP Joint

1/2" Preformed Expansion Joint Material

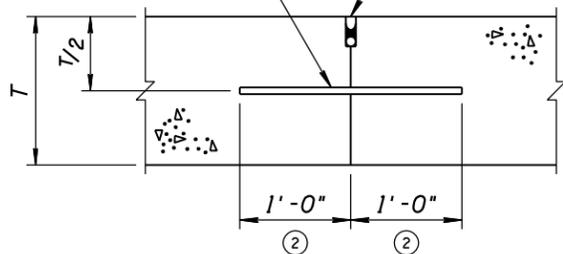
Silicone Sealant
Recess 1/4" From
Pavement Surface



EXPANSION JOINT
H Joint

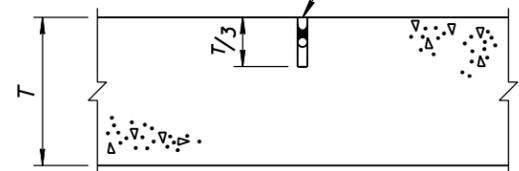
1 1/2" Diameter Epoxy Coated Smooth Dowels
1'-0" Center to Center

Saw and Seal
See Construction Joint
Saw And Seal Detail



TRANSVERSE CONSTRUCTION JOINT
TC Joint
Non-Skewed & Skewed Joints

Saw and Seal
See Weakened-Plane Joint
Saw And Seal Detail

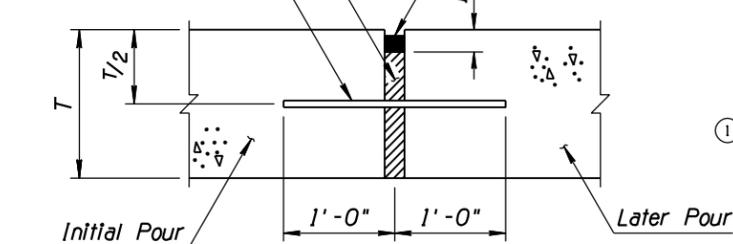


TRANSVERSE WEAKENED-PLANE JOINT
TWP Joint
W/O Load Transfer Dowel Assemblies

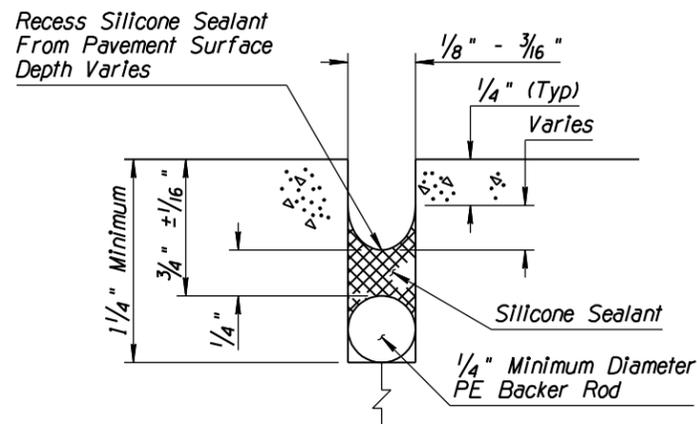
1/2" Preformed Expansion Joint Material

1 1/2" Diameter Epoxy Coated Smooth Dowel
1'-6" Center to Center

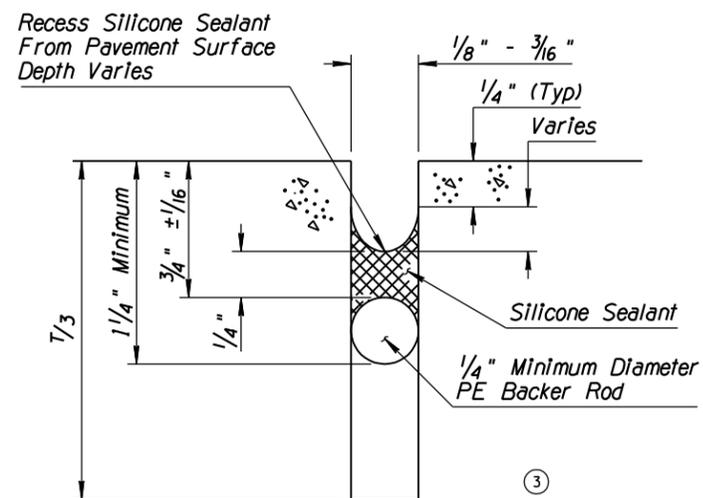
Silicone Sealant
Recess 1/4" From
Pavement Surface



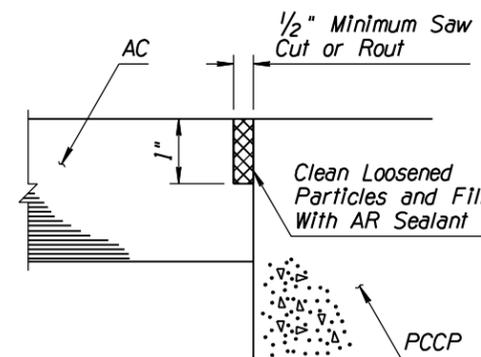
EXPANSION JOINT
E Joint



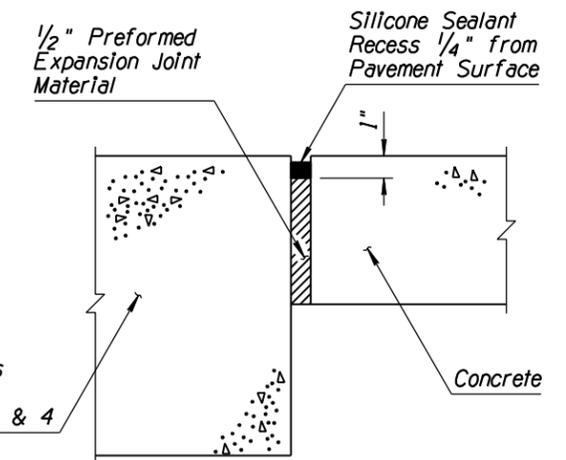
**CONSTRUCTION JOINT
SAW AND SEAL DETAIL**



**WEAKENED-PLANE JOINT
SAW AND SEAL DETAIL**



AC/PCCP EDGE-SEAL JOINT
S Joint
(Where Specified on Plans)



EXPANSION JOINT
K Joint (See Notes 3 & 4)

GENERAL NOTES

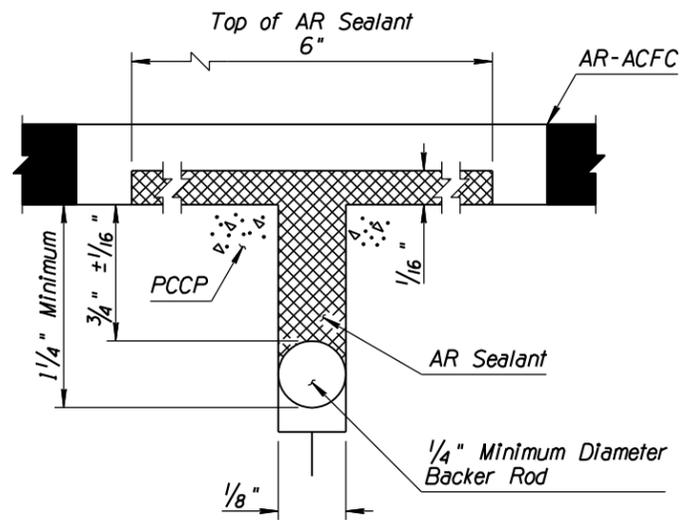
- When load transfer dowel assemblies are required, use dimensions shown in ()'s. See Assembly Placement And Edge Clearance Detail, Std Dwg C-07.02.
- In slip form type pavement construction, LWP joints shall be used. In fixed form construction either LWP or LC joints may be used.
- K joints shall be constructed around the complete perimeter of miscellaneous structures, or as directed by the Engineer.
- Miscellaneous structures include, but are not limited to, catch basins, sign structure foundations, piers, abutments, barrier transitions, slotted drains and other concrete facilities, constructed within the right-of-way.

JOINT ABBREVIATIONS

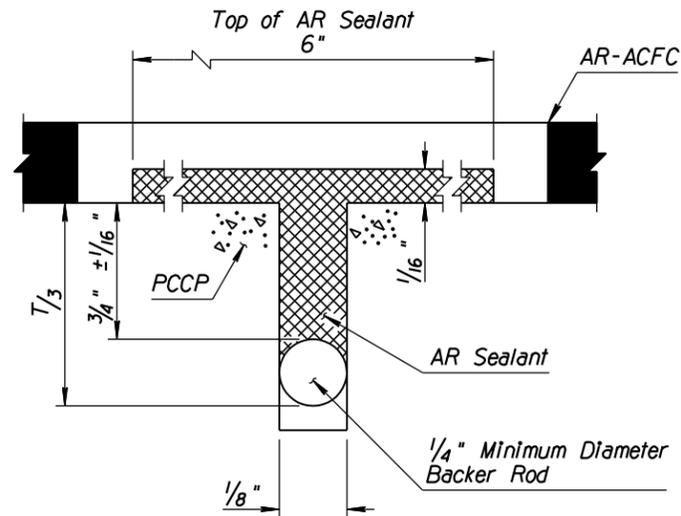
- LWP - Longitudinal Weakened-Plane Joint
- TWP - Transverse Weakened-Plane Joint
- LC - Longitudinal Construction Joint
- TC - Transverse Construction Joint
- E, H, K - Expansion Joints
- S - AC/PCCP Edge-Seal Joint
- T - PCCP Thickness
- ① PE - Polyethylene

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINTS	DRAWING NO. C-07.01 Sheet 1 of 2

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	7/05
2	REVISED SECTION VIEW AND NOTE	RLF	5/12
3			
4			



LONGITUDINAL CONSTRUCTION JOINT DETAIL (WITH AR-ACFC)



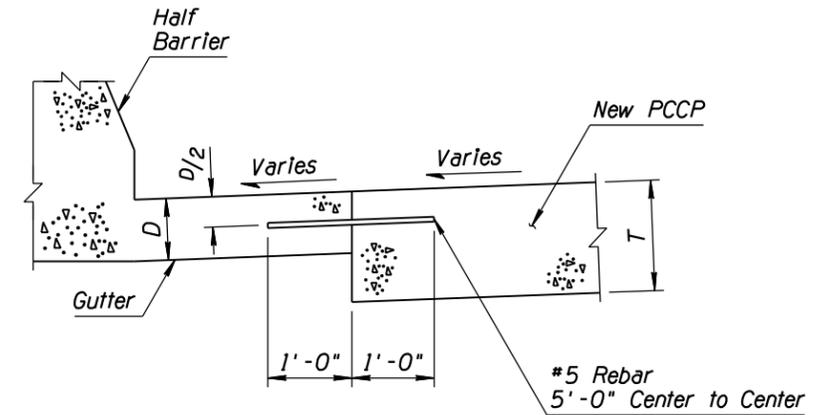
WEAKENED-PLANE JOINT DETAIL (WITH AR-ACFC)

GENERAL NOTES

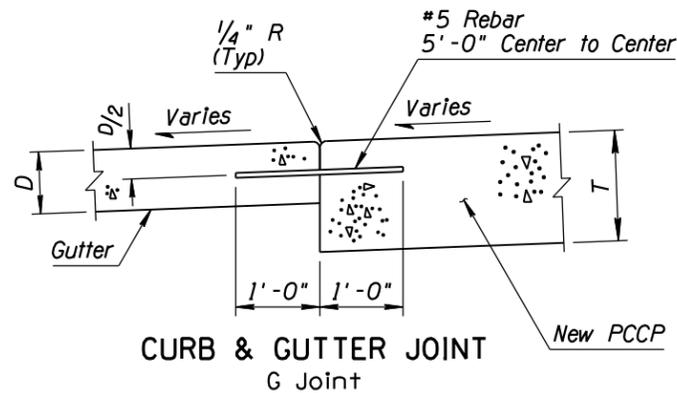
1. Joints are generally shown with pavement sloping toward the joint.

JOINT ABBREVIATIONS

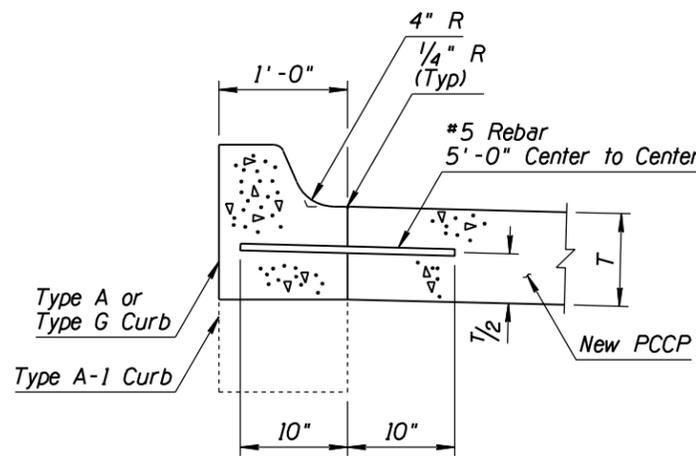
- G - Gutter Joint
- T - PCCP Thickness
- D - Gutter Thickness
- B - Barrier Joint
- ② F - Barrier Footing Concrete Thickness (Full-depth Concrete Shown)



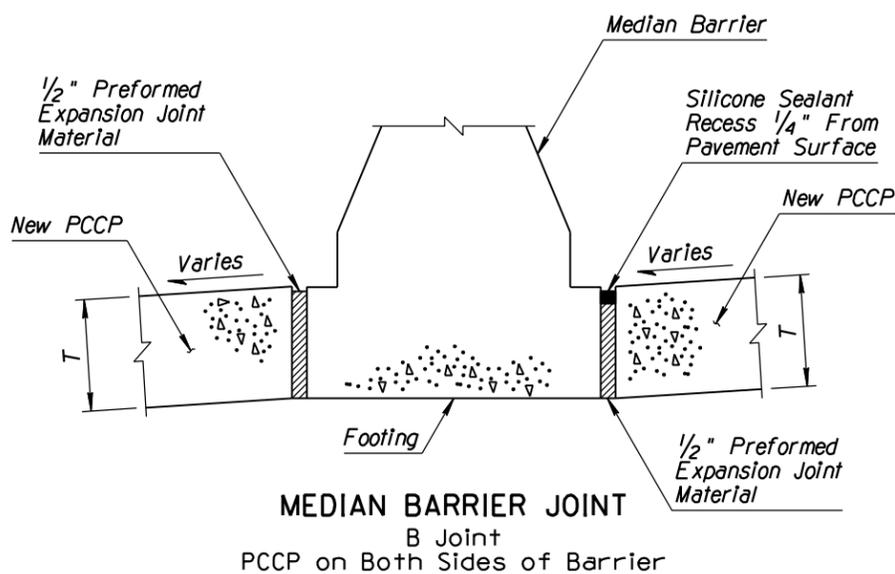
HALF BARRIER JOINT B Joint



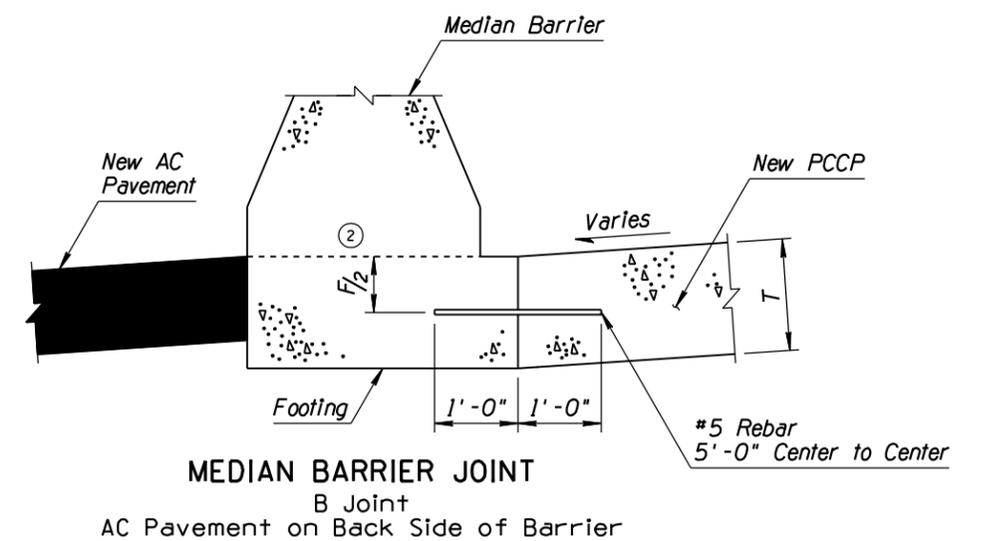
CURB & GUTTER JOINT G Joint



SINGLE CURB JOINT A Joint



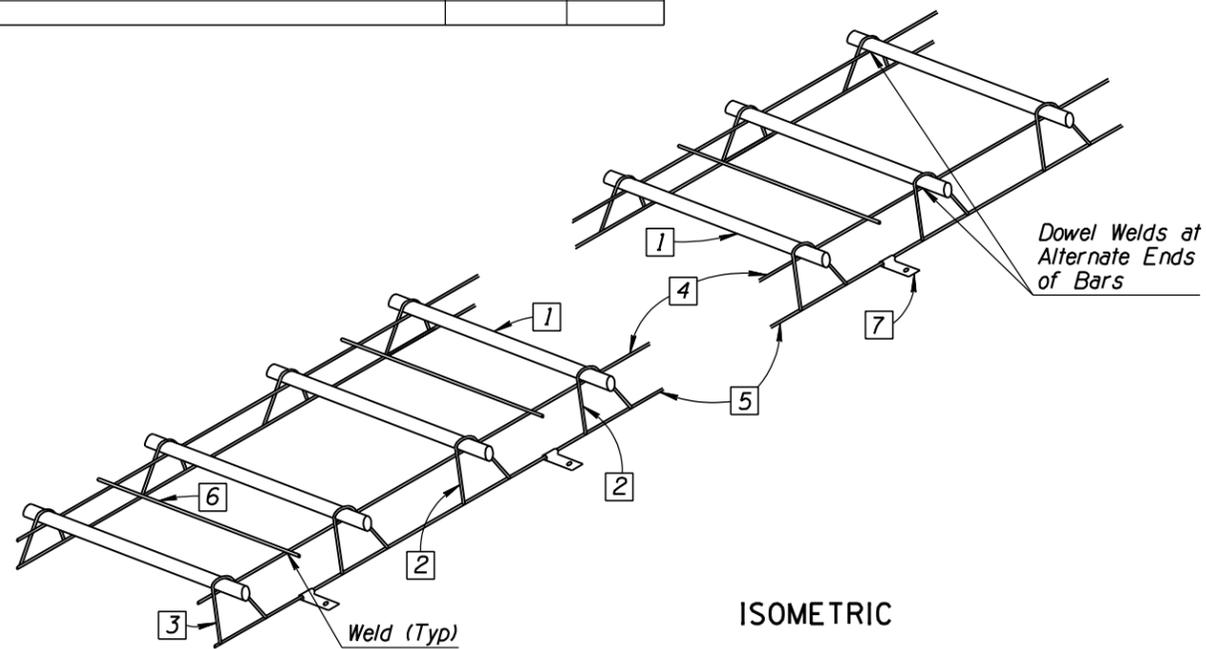
MEDIAN BARRIER JOINT B Joint PCCP on Both Sides of Barrier



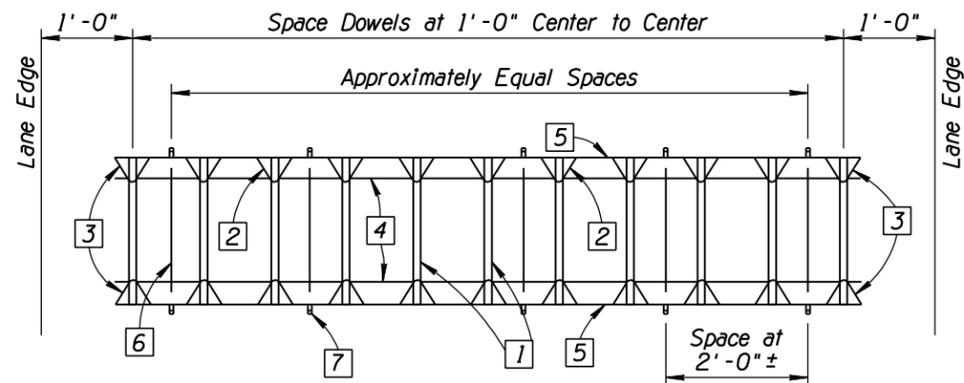
MEDIAN BARRIER JOINT B Joint AC Pavement on Back Side of Barrier

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINTS	DRAWING NO. C-07.01 Sheet 2 of 2

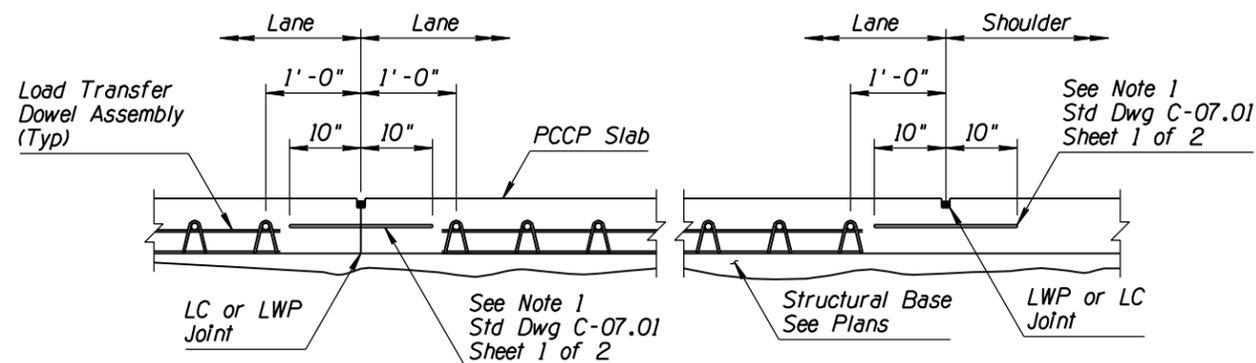
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	INSERTED NEW GENERAL NOTE 1, RENUMBERED ALL NOTES	RLF	11/07
2			
3			
4			



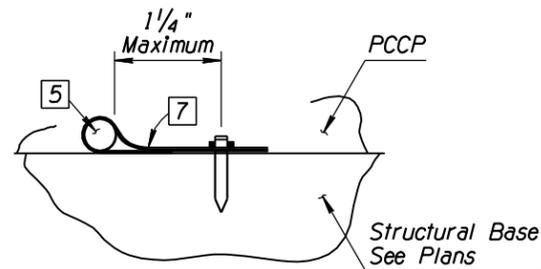
ISOMETRIC



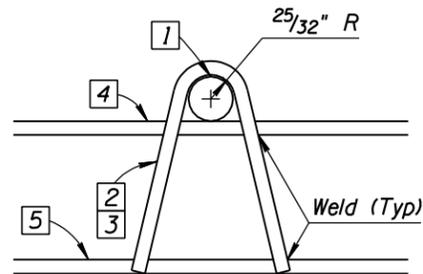
PLAN VIEW
LOAD TRANSFER DOWEL ASSEMBLY



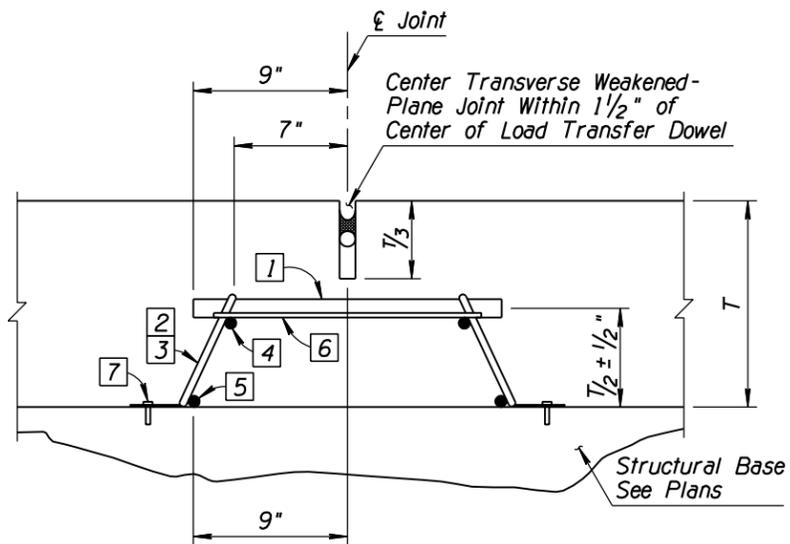
PLACEMENT AND EDGE CLEARANCE DETAIL



ANCHOR STRAP DETAIL



END AND INTERMEDIATE LEG DETAIL



TRANSVERSE WEAKENED-PLANE JOINT WITH
LOAD TRANSFER DOWEL ASSEMBLY

	Lane Width (Ft)		
	12	14	16
(Ft-In)	10-4	12-4	14-4

GENERAL NOTES

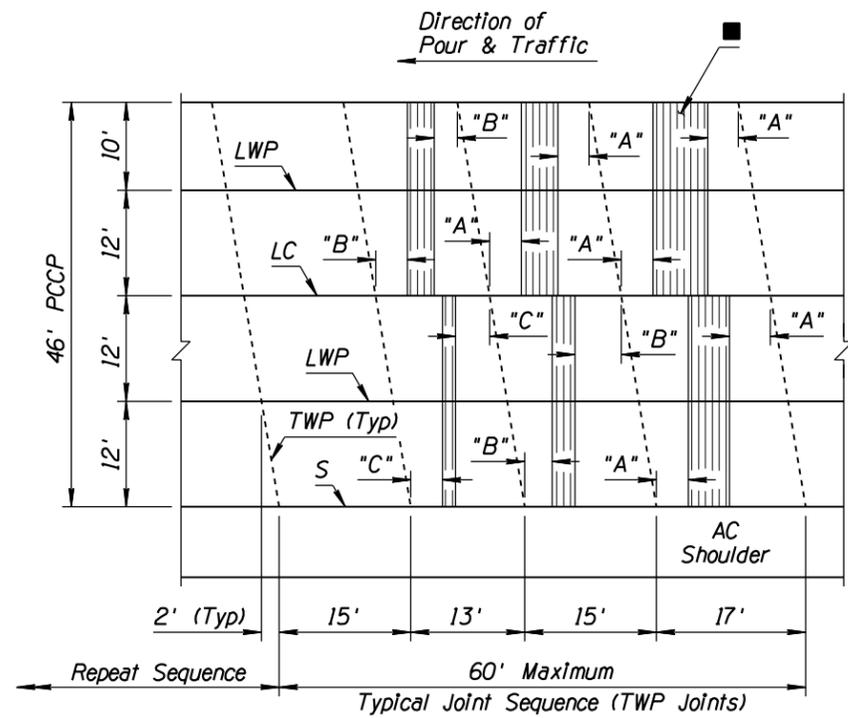
- ① 1. Load transfer dowel assemblies may be used when permitted in the project specifications.
 2. Load transfer dowel assemblies are used with non-skewed, mainline PCCP joints.
 3. When used, load transfer dowel assemblies are to be placed at each transverse weakened-plane joint on the traveled lanes as shown on the plans.
 4. See Std Dwgs C-07.01 through C-07.04 for additional information.
 5. See plans or Std Dwgs C-07.03 through C-07.04 for transverse joint spacing.
 6. See plans for pavement thickness less than 12" or greater than 14".
- Load transfer dowel assembly shall be assembled from the following materials:
(See Quantity Table)

- 1 Dowel bars - 1 1/2" diameter x 1'-6" plain round bars with coating. See Special Provisions.
- 2 Intermediate legs - 2 gauge or W-5.5 wire.
- 3 End legs - 2 gauge or W-5.5 wire.
- 4 Upper space bar - 2 gauge or W-5.5 wire x ①. (See Dimension Table)
- 5 Lower space bar - 2 gauge or W-5.5 wire x ①. (See Dimension Table)
- 6 Tie bars - W-1.5 wire x 16".
- 7 Anchor strap - 1"x3" steel strap, 0.079 thick. Place with a 1/2" minimum length steel nail for LCB, 4" minimum length steel nail for ACB or AB, 0.145 diameter ASTM A227 Class 1 with 1/4" head or washer.

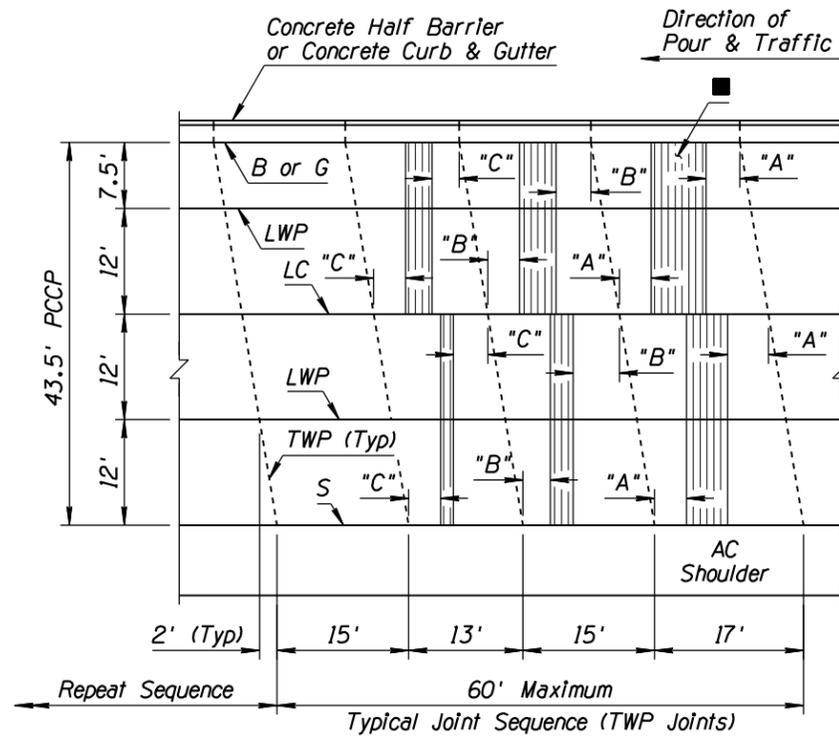
Item No	Lane Width (Ft)		
	12	14	16
1	11	13	15
2	18	22	26
3	4	4	4
4	2	2	2
5	2	2	2
6	5	6	7
7	10	12	14

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	LOAD TRANSFER DOWEL ASSEMBLY	DRAWING NO. C-07.02

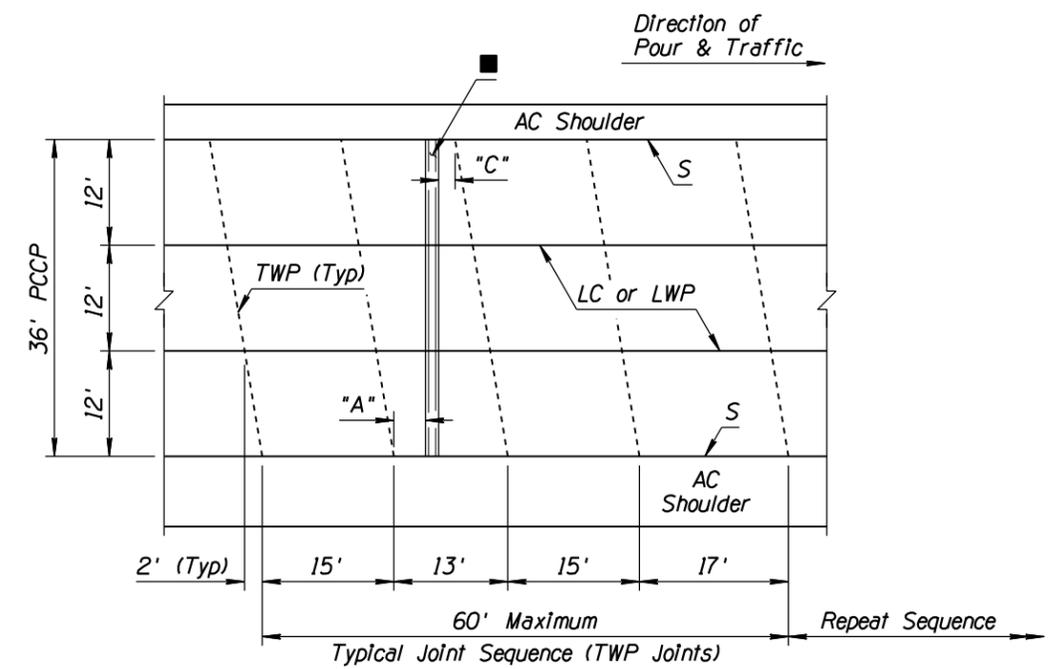
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED JOINT ANGLE FOR CURB & GUTTER	RLF	9/04
3	REVISED TITLE	RLF	9/04
4			



PLAN
46' PCCP



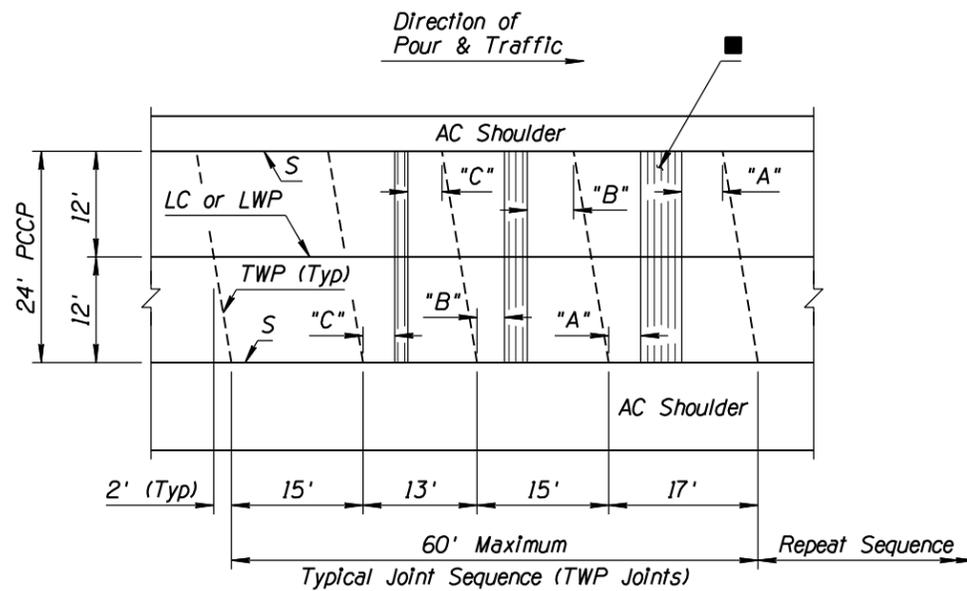
PLAN ②
43.5' PCCP



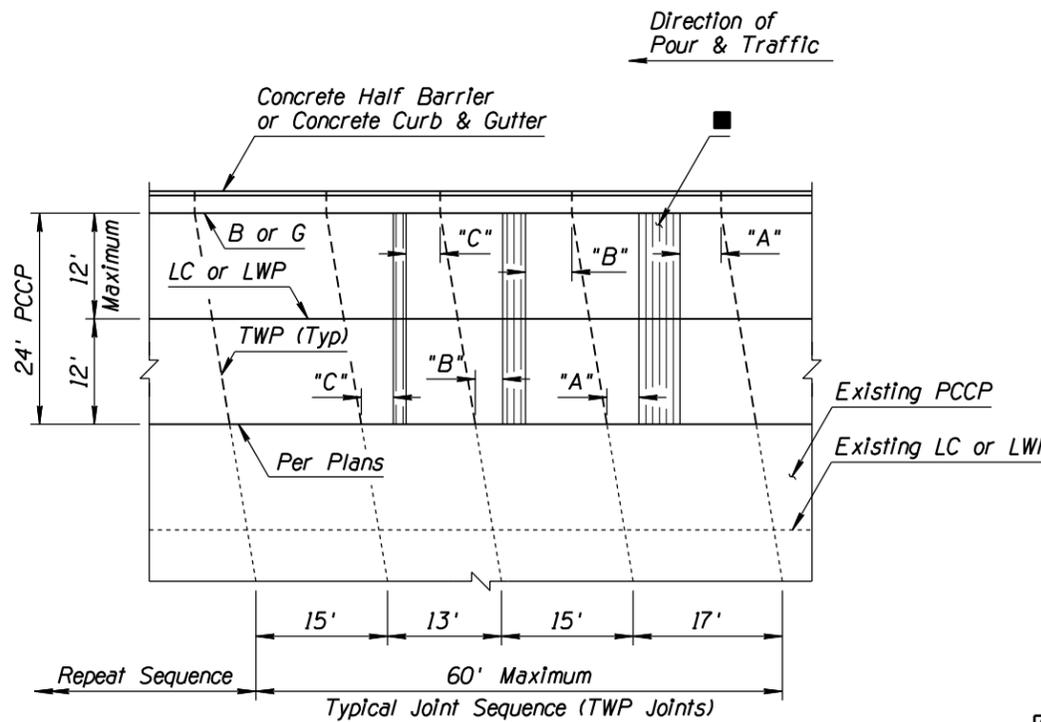
PLAN
36' PCCP

GENERAL NOTES

- ① 1. LC and LWP joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
 2. Skewed PCCP joints shall be used when load transfer dowel assemblies are not required.
 3. "A" shall equal 4' minimum (Typ)
"B" shall equal 3' minimum (Typ)
"C" shall equal 2' minimum (Typ)
 4. See Std Dwg C-07.01 for PCCP joints and additional notes.
 5. All transverse joints shall align with joints in adjacent slabs.
 6. See Std Dwg C-05.10 for curb and gutter joint requirements.
 7. At intersection of side roads or streets, joints shall be placed to give the intersection a symmetrical appearance while conforming to the cross section of the intersecting road or street.
 8. The rebars in the LWP & LC joints shall be placed no greater than 1'-3" from the TC joint.
 - ① 9. LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.
- Transverse Construction Joint (TC) Allowable Limits (Typ)



PLAN
24' PCCP



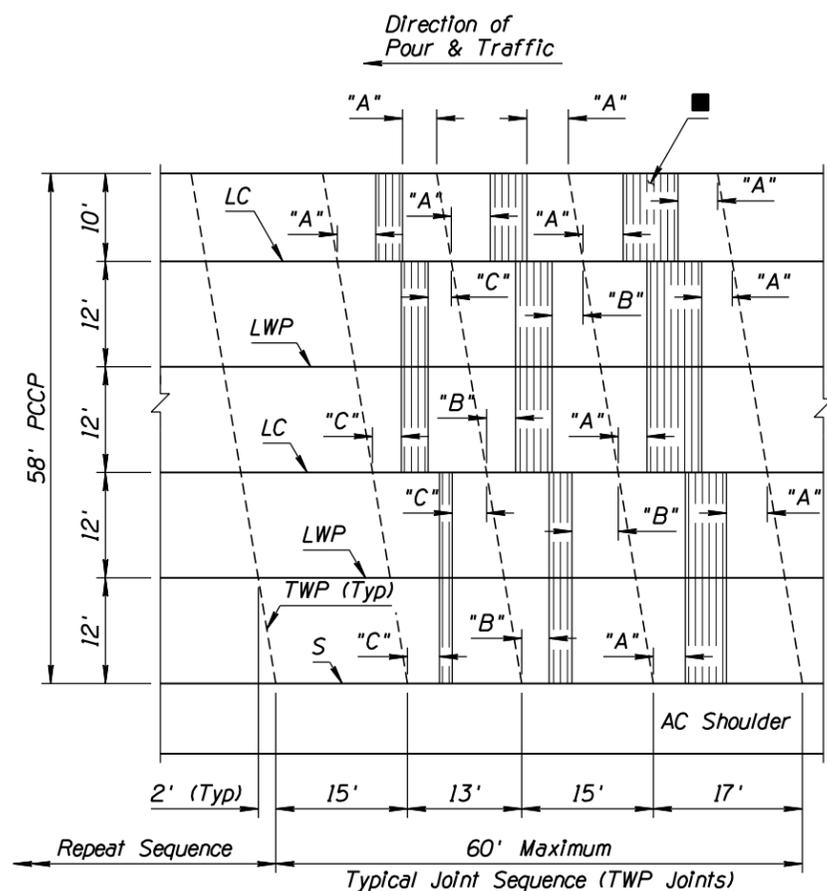
PLAN ②
24' PCCP
(WIDENING)

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS MAINLINE SKEWED JOINTS ③	DRAWING NO. C-07.03 Sheet 1 of 8

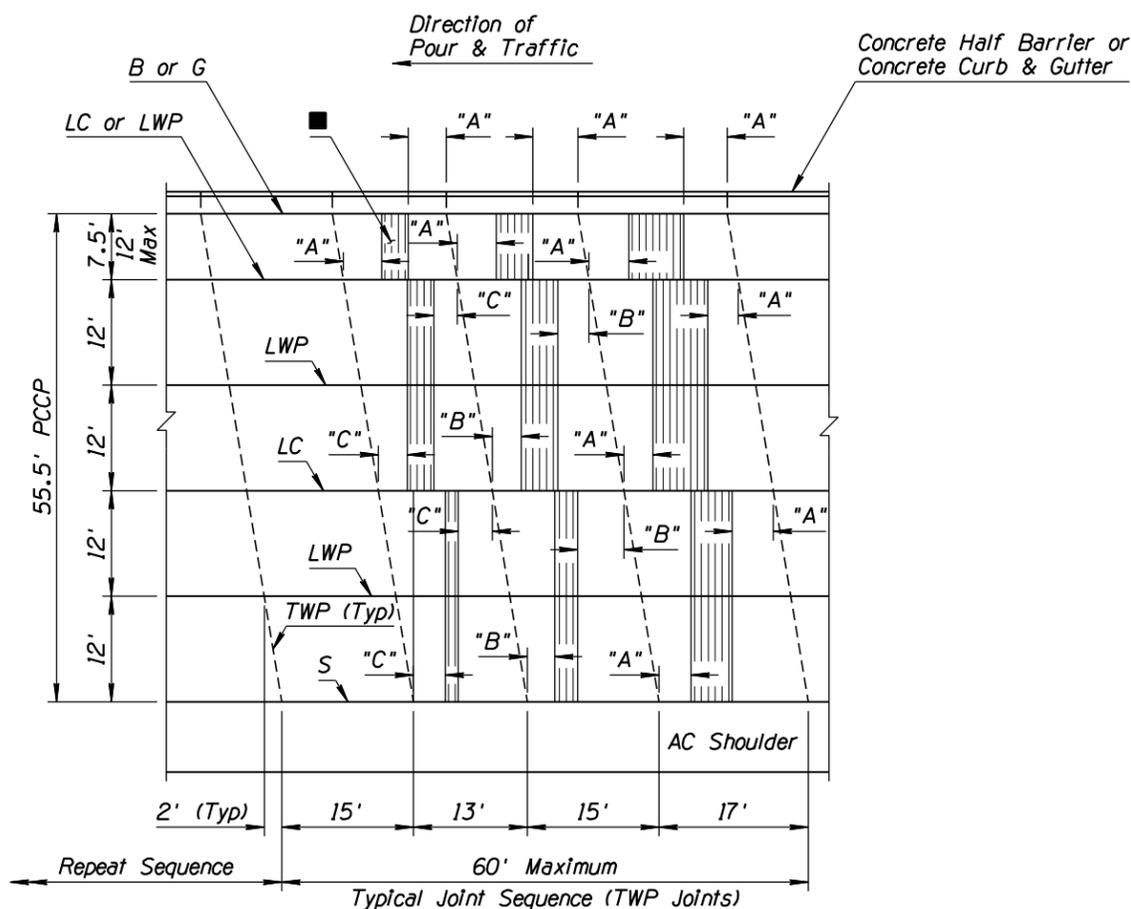
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED JOINT ANGLE FOR CURB & GUTTER	RLF	9/04
3	REVISED TITLE	RLF	9/04
4			

GENERAL NOTES

- ① 1. LC and LWP joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
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"C" shall equal 2' minimum (Typ)
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 5. All transverse joints shall align with joints in adjacent slabs.
 6. See Std Dwg C-05.10 for curb and gutter joint requirements.
 7. At intersection of side roads or streets, joints shall be placed to give the intersection a symmetrical appearance while conforming to the cross section of the intersecting road or street.
 8. The rebar in the LWP & LC joints shall be placed no greater than 1'-3" from the TC joint.
 - ① 9. LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.
- Transverse Construction Joint (TC) Allowable Limits (Typ)



PLAN
58' PCCP



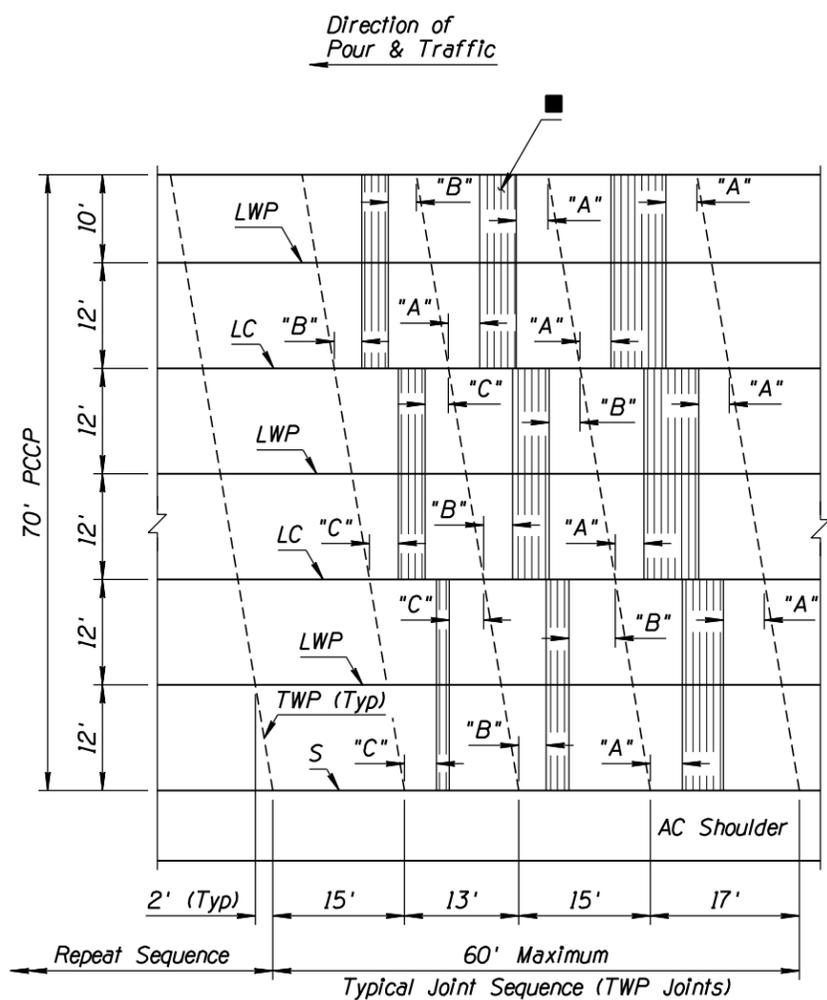
PLAN ②
55.5' PCCP

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS MAINLINE SKEWED JOINTS ③	DRAWING NO. C-07.03 Sheet 2 of 8

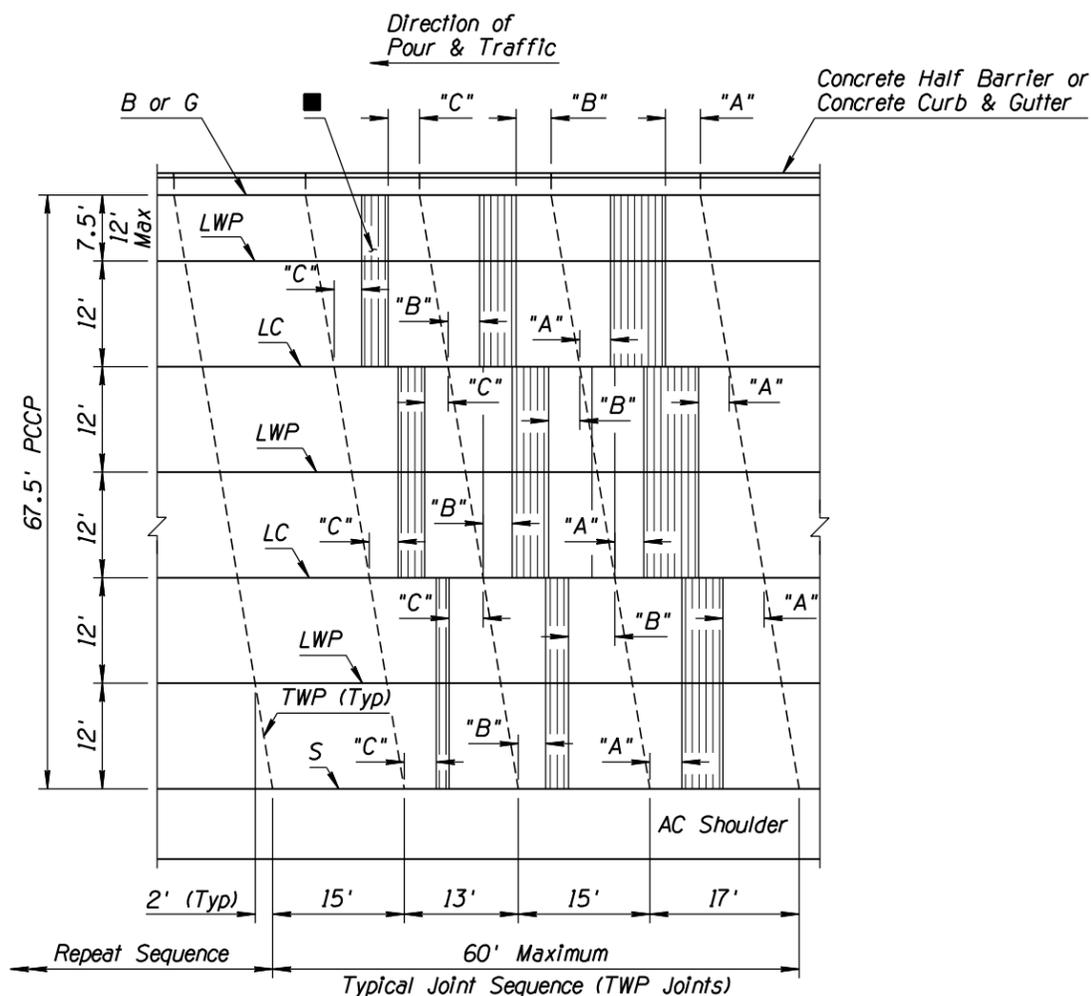
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED JOINT ANGLE FOR CURB & GUTTER	RLF	9/04
3	REVISED TITLE	RLF	9/04
4			

GENERAL NOTES

- ① 1. LC and LWP joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
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 4. See Std Dwg C-07.01 for PCCP joints and additional notes.
 5. All transverse joints shall align with joints in adjacent slabs.
 6. See Std Dwg C-05.10 for curb and gutter joint requirements.
 7. At intersection of side roads or streets, joints shall be placed to give the intersection a symmetrical appearance while conforming to the cross section of the intersecting road or street.
 8. The rebars in the LWP & LC joints shall be placed no greater than 1'-3" from the TC joint.
 - ① 9. LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.
- Transverse Construction Joint (TC) Allowable Limits (Typ)



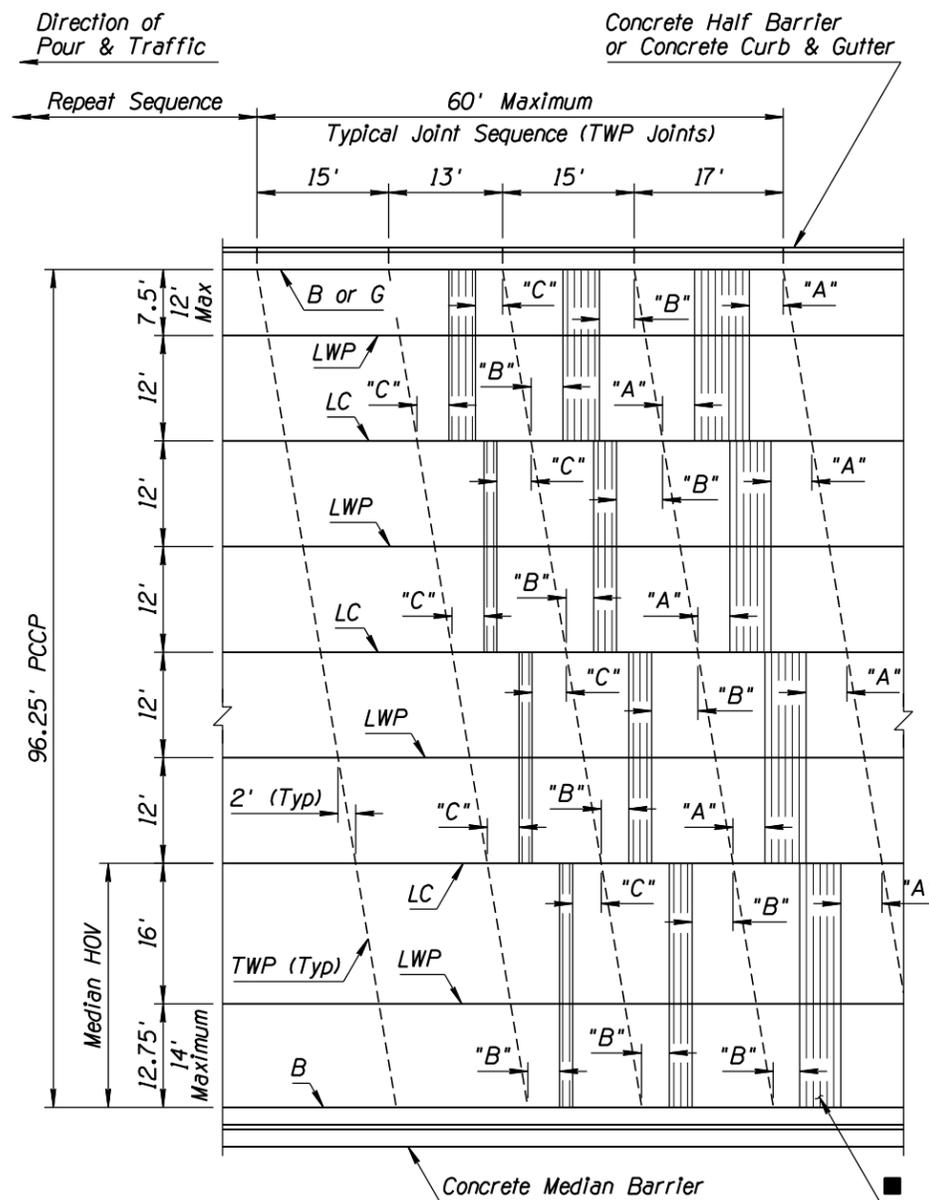
PLAN
70' PCCP



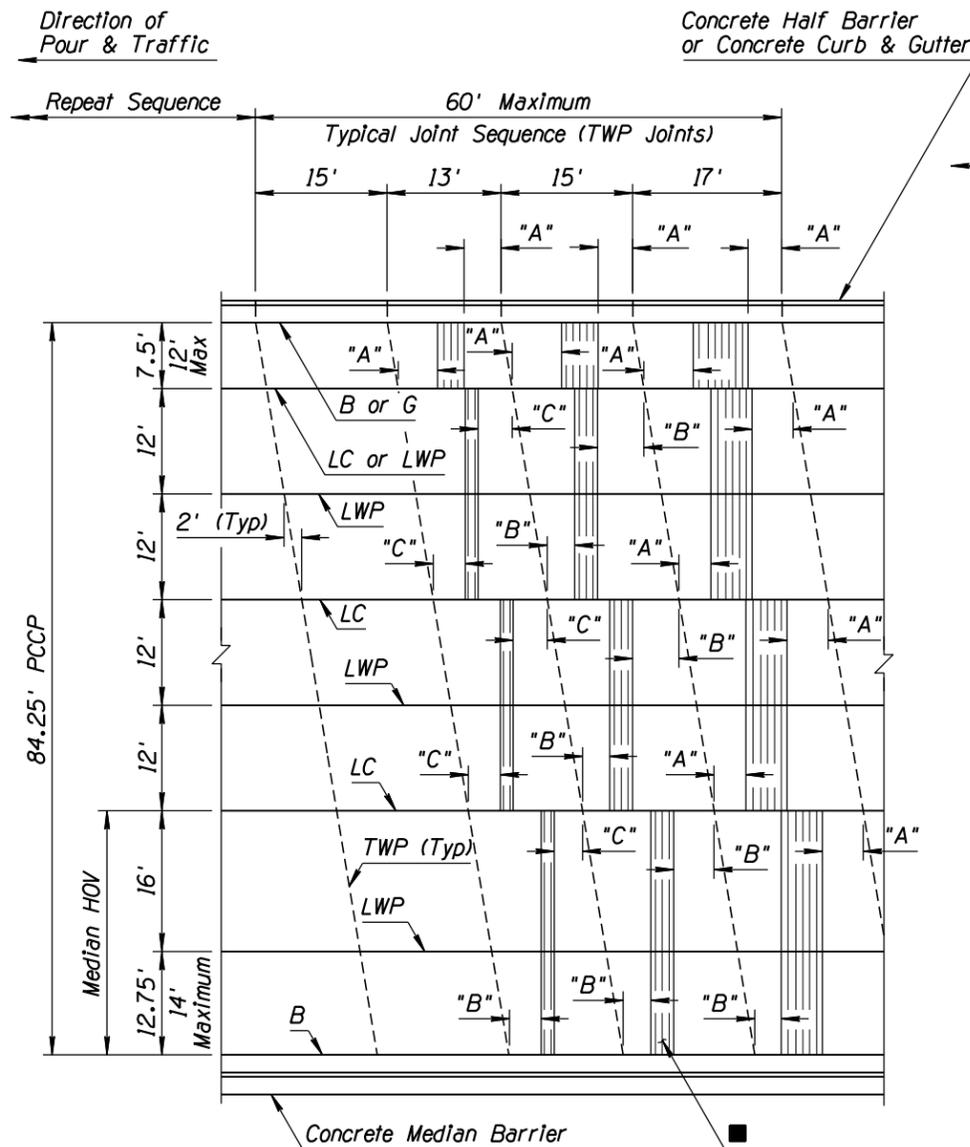
PLAN
67.5' PCCP

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS MAINLINE SKEWED JOINTS	DRAWING NO. C-07.03 Sheet 3 of 8

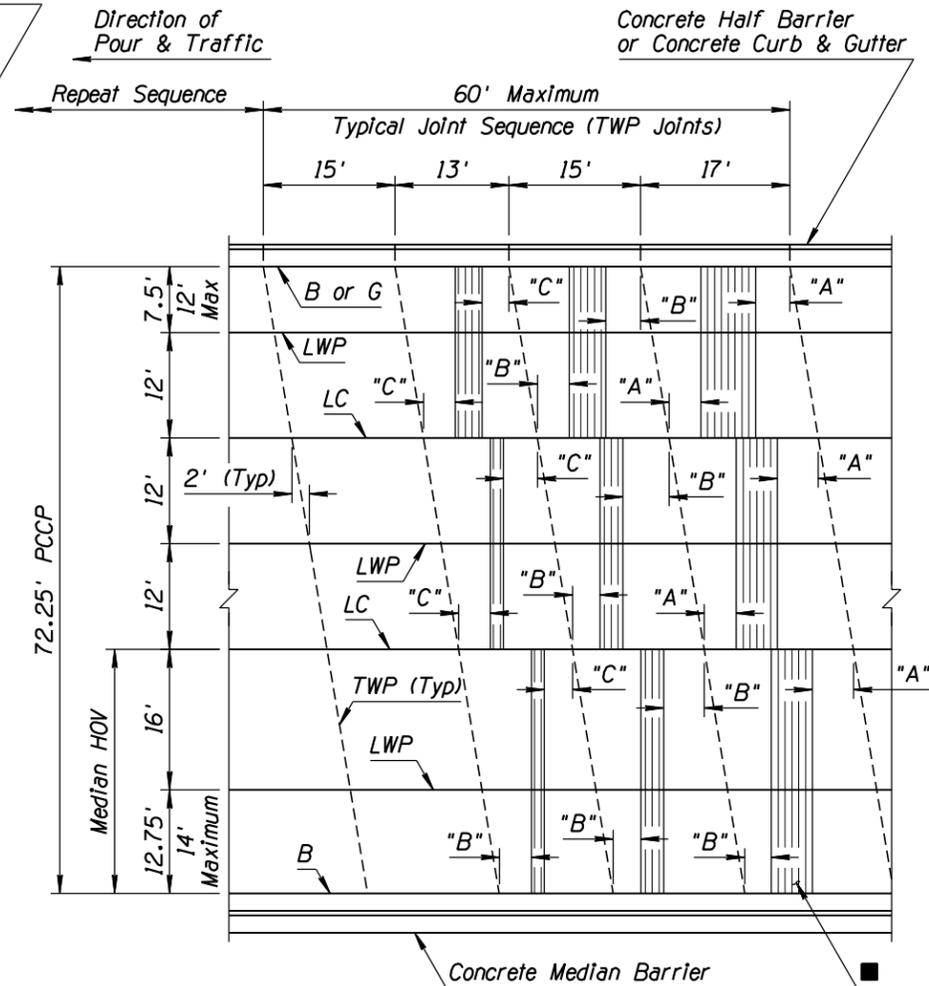
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED JOINT ANGLE FOR CURB & GUTTER	RLF	9/04
3	REVISED TITLE	RLF	9/04
4			



PLAN ②
96.25' PCCP



PLAN ②
84.25' PCCP



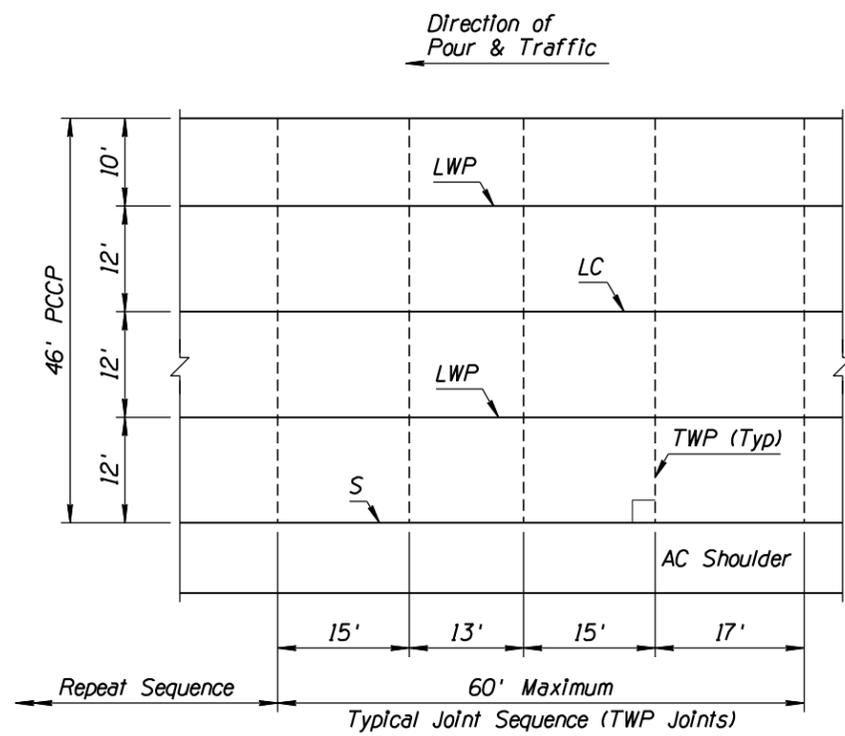
PLAN ②
72.25' PCCP

GENERAL NOTES

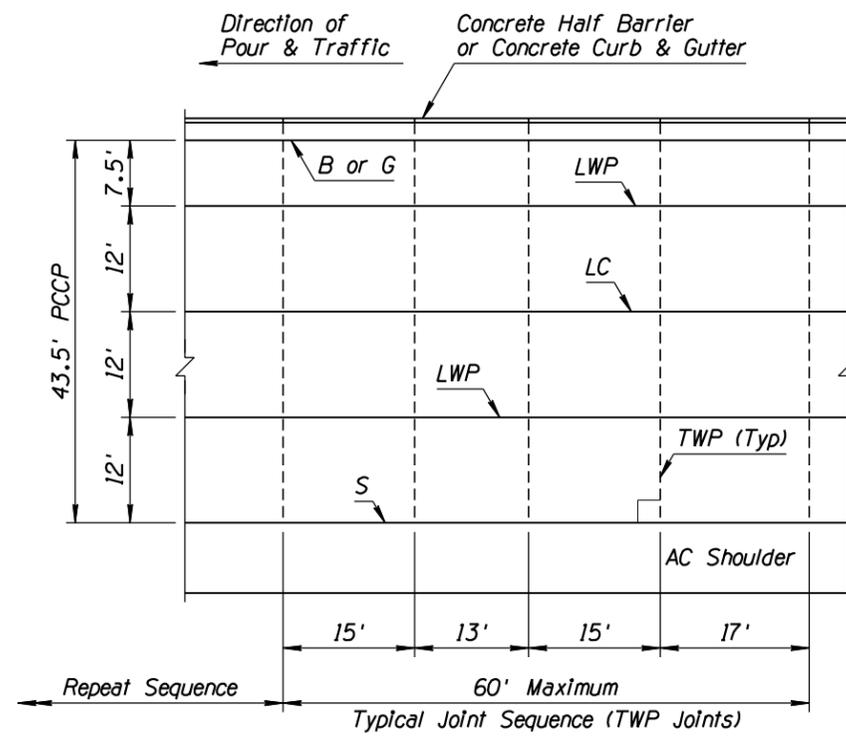
- ① 1. LC and LWP joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
2. Skewed PCCP joints shall be used when load transfer dowel assemblies are not required.
3. "A" shall equal 4' minimum (Typ)
"B" shall equal 3' minimum (Typ)
"C" shall equal 2' minimum (Typ)
4. See Std Dwg C-07.01 for PCCP joints and additional notes.
5. All transverse joints shall align with joints in adjacent slabs.
6. See Std Dwg C-05.10 for curb and gutter joint requirements.
7. At intersection of side roads or streets, joints shall be placed to give the intersection a symmetrical appearance while conforming to the cross section of the intersecting road or street.
8. The rebars in the LWP & LC joints shall be placed no greater than 1'-3" from the TC joint.
- ① 9. LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.
 - Transverse Construction Joint (TC) Allowable Limits (Typ)

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS MAINLINE SKEWED JOINTS ③	DRAWING NO. C-07.03 Sheet 4 of 8

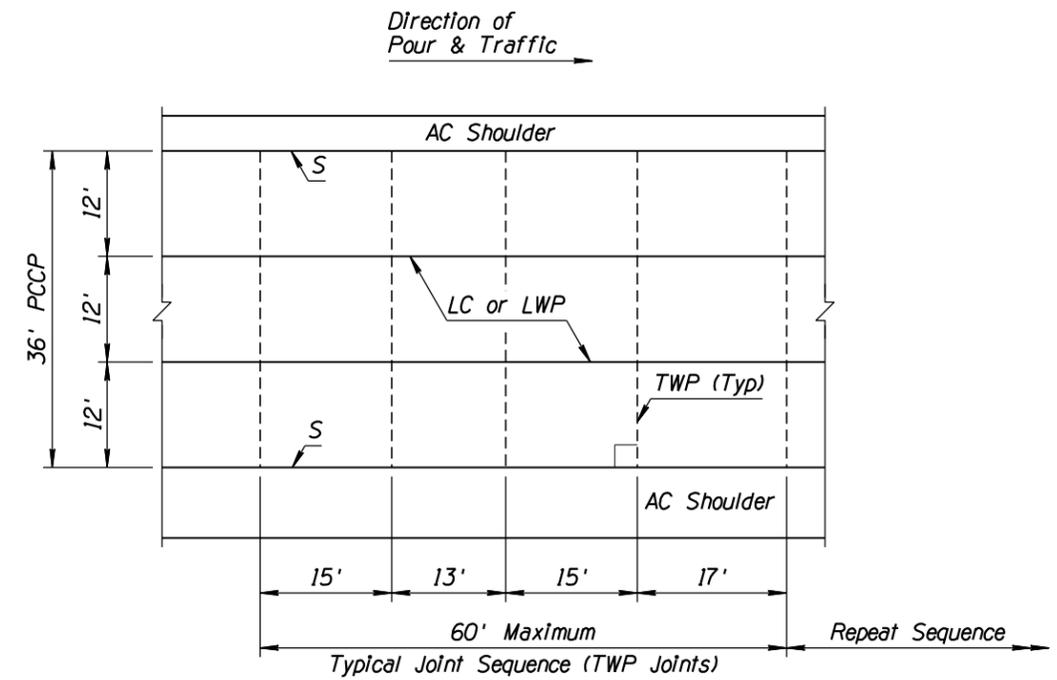
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED TITLE	RLF	9/04
3			
4			



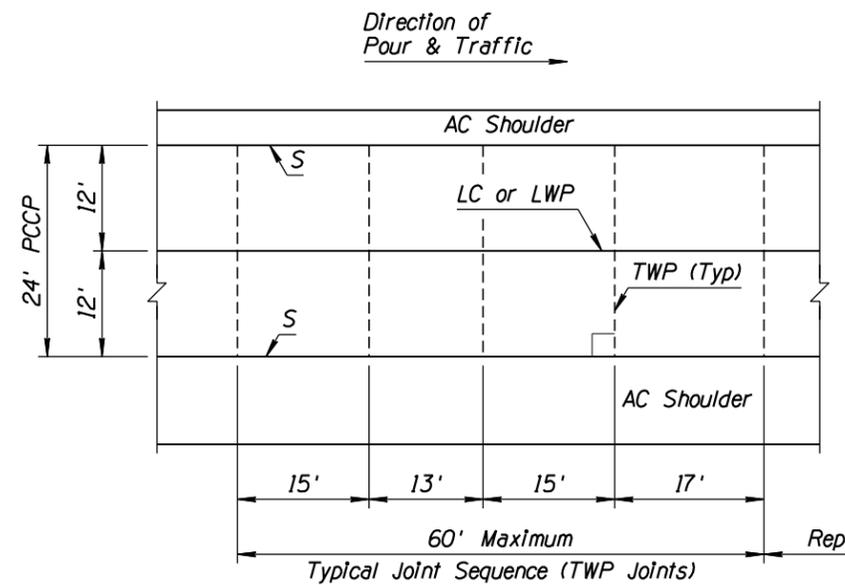
PLAN
46' PCCP



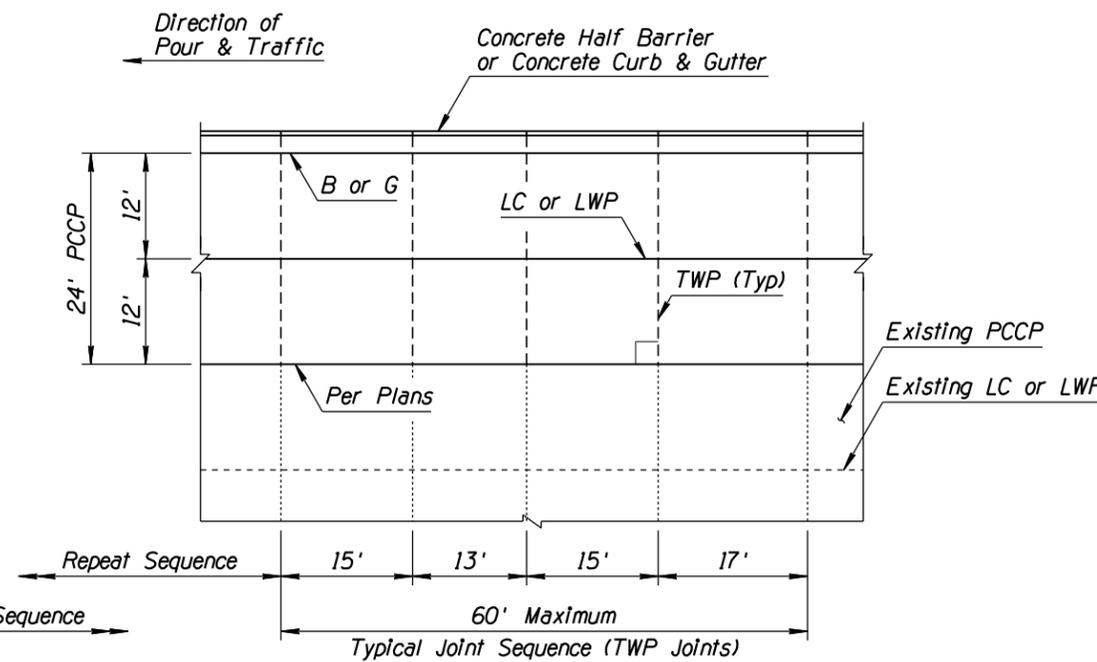
PLAN
43.5' PCCP



PLAN
36' PCCP



PLAN
24' PCCP



PLAN
24' PCCP
(WIDENING)

GENERAL NOTES

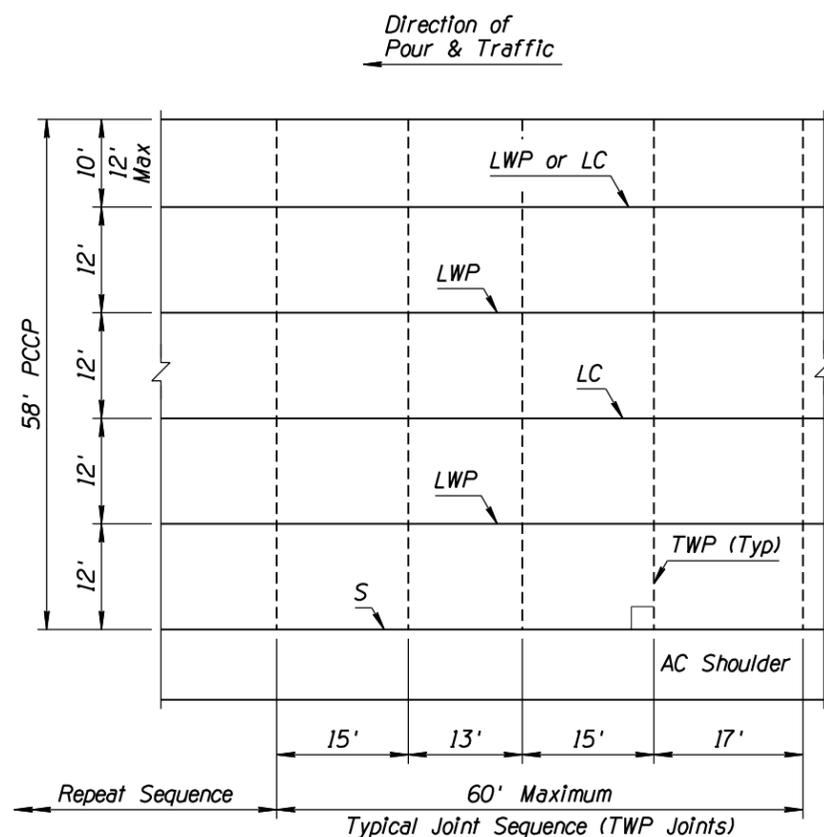
- ① 1. LC and LWP joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
2. Non-skewed PCCP joints shall be used with load transfer dowel assemblies.
3. See Std Dwg C-07.01 for PCCP joints and additional notes.
4. All transverse joints shall align with joints in adjacent slabs and are perpendicular (90°) to the longitudinal joints.
5. At intersection of side roads or streets, joints shall be placed to give the intersection a symmetrical appearance while conforming to the cross section of the intersecting road or street.
6. See Std Dwg C-05.10 for curb and gutter joint requirements.
7. The rebars in the LWP & LC joints shall be placed no greater than 1'-3" from the TC joint.
8. Transverse weakened-plane joint shall be constructed at least 6'-0" from a transverse construction joint.
- ① 9. LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS MAINLINE NON-SKEWED JOINTS ②	DRAWING NO. C-07.03 Sheet 5 of 8

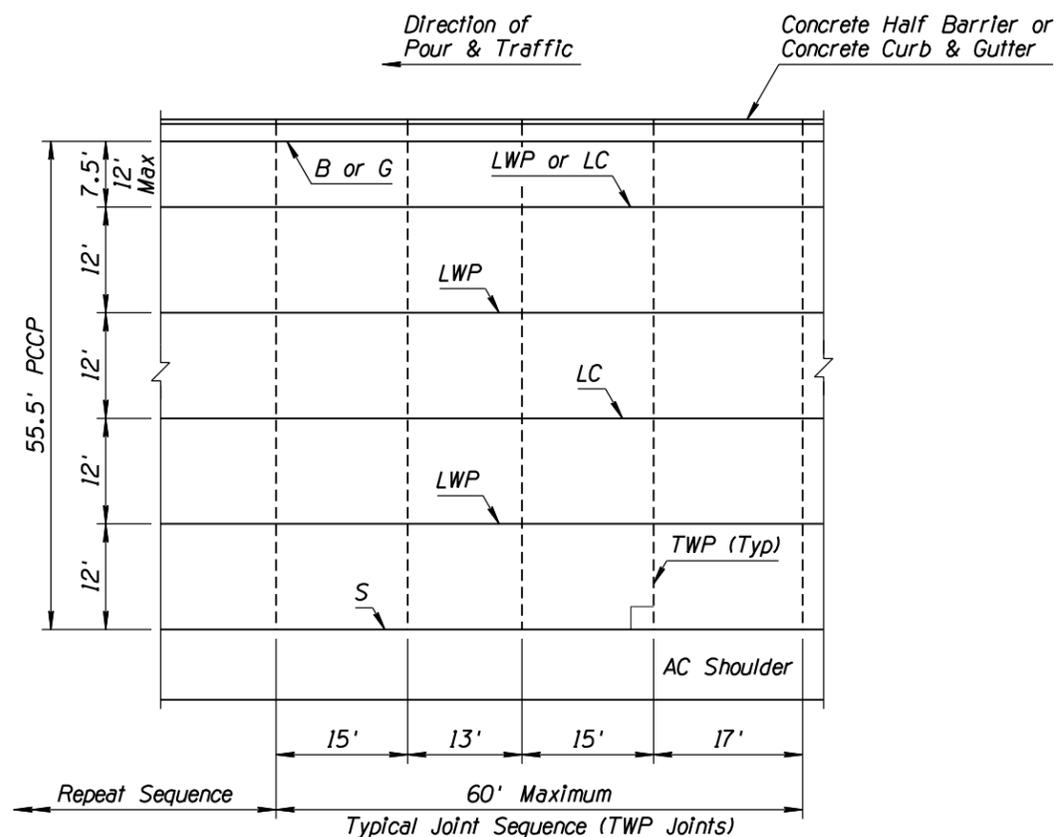
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED TITLE	RLF	9/04
3			
4			

GENERAL NOTES

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- ① 9. LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.



PLAN
58' PCCP



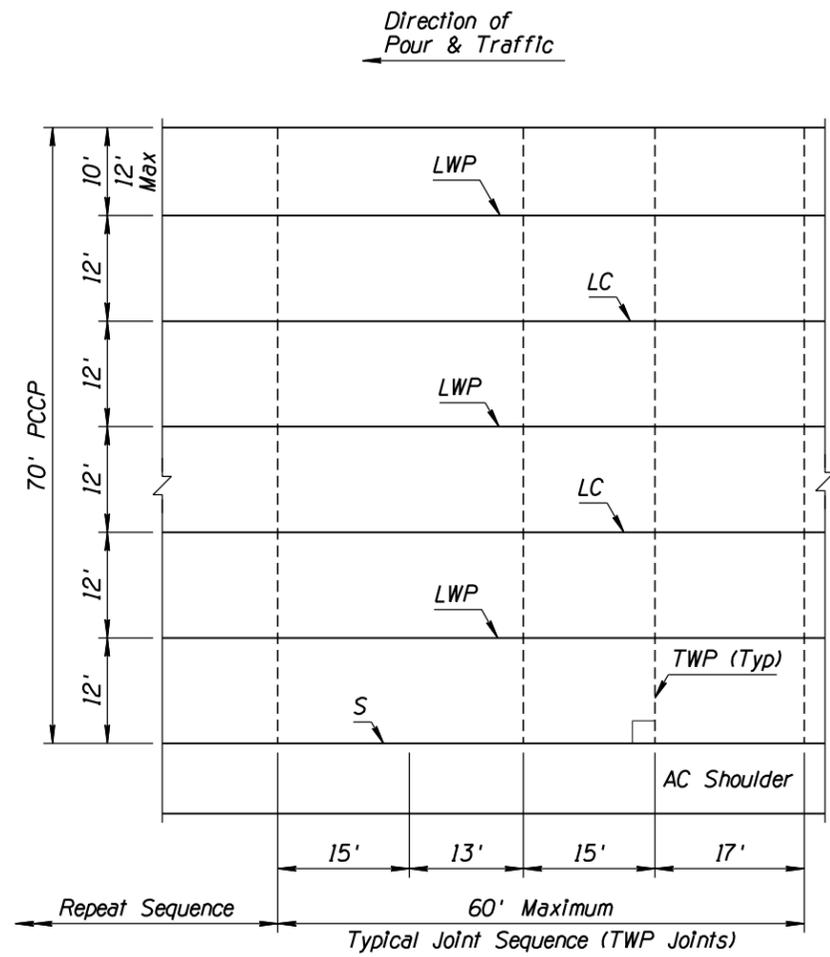
PLAN
55.5' PCCP

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS MAINLINE NON-SKEWED JOINTS ②	DRAWING NO. C-07.03 Sheet 6 of 8

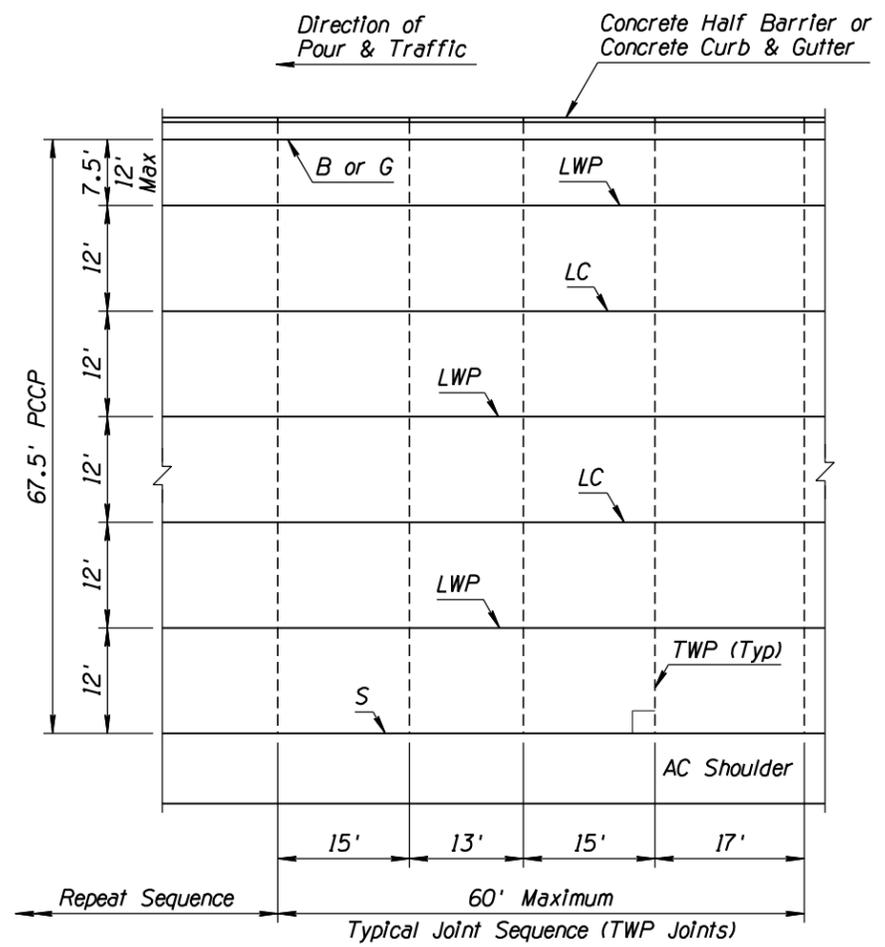
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED TITLE	RLF	9/04
3			
4			

GENERAL NOTES

- ① 1. LC and LWP joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
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- ① 9. LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.



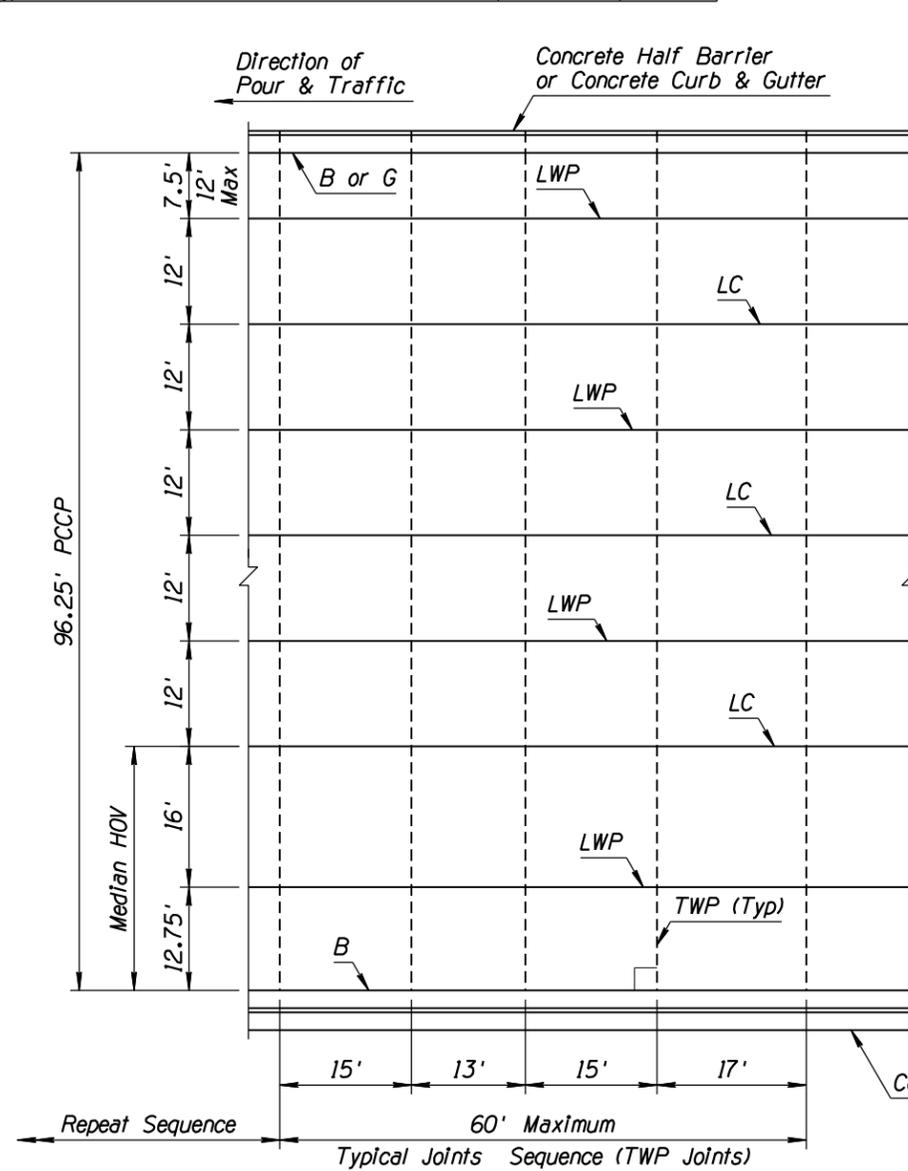
PLAN
70' PCCP



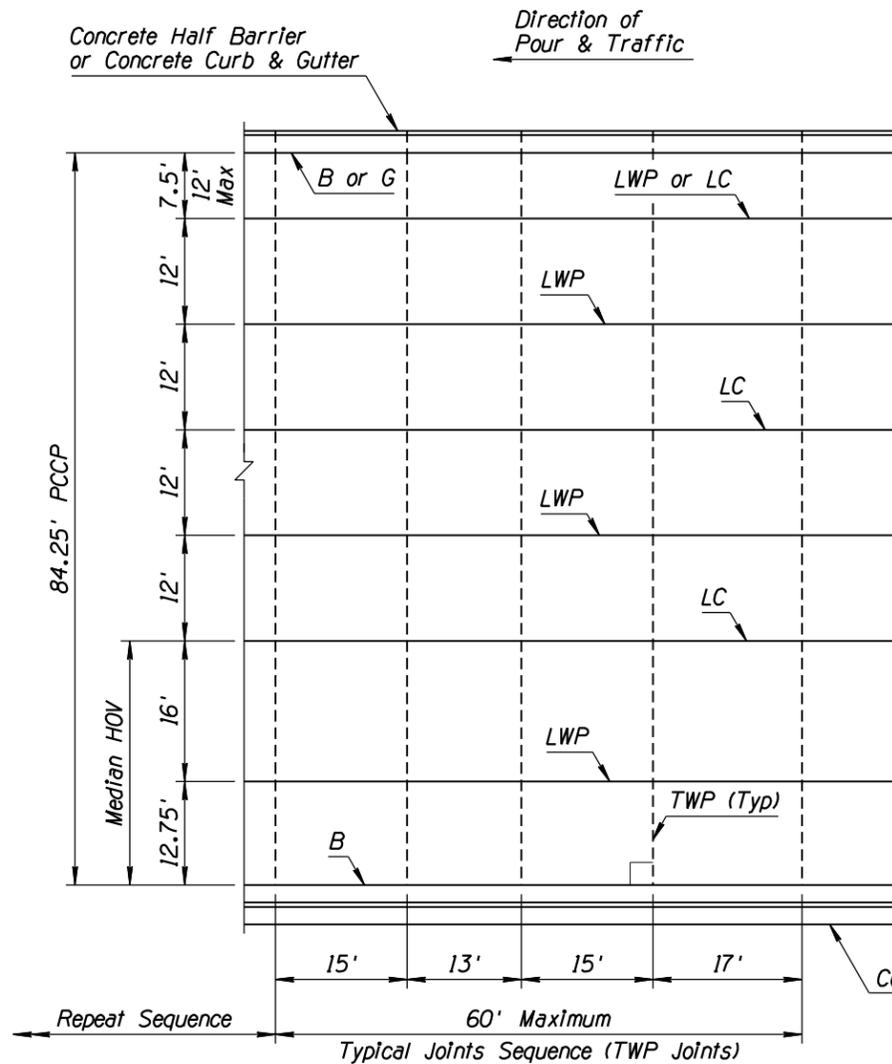
PLAN
67.5' PCCP

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS MAINLINE NON-SKEWED JOINTS ②	DRAWING NO. C-07.03 Sheet 7 of 8

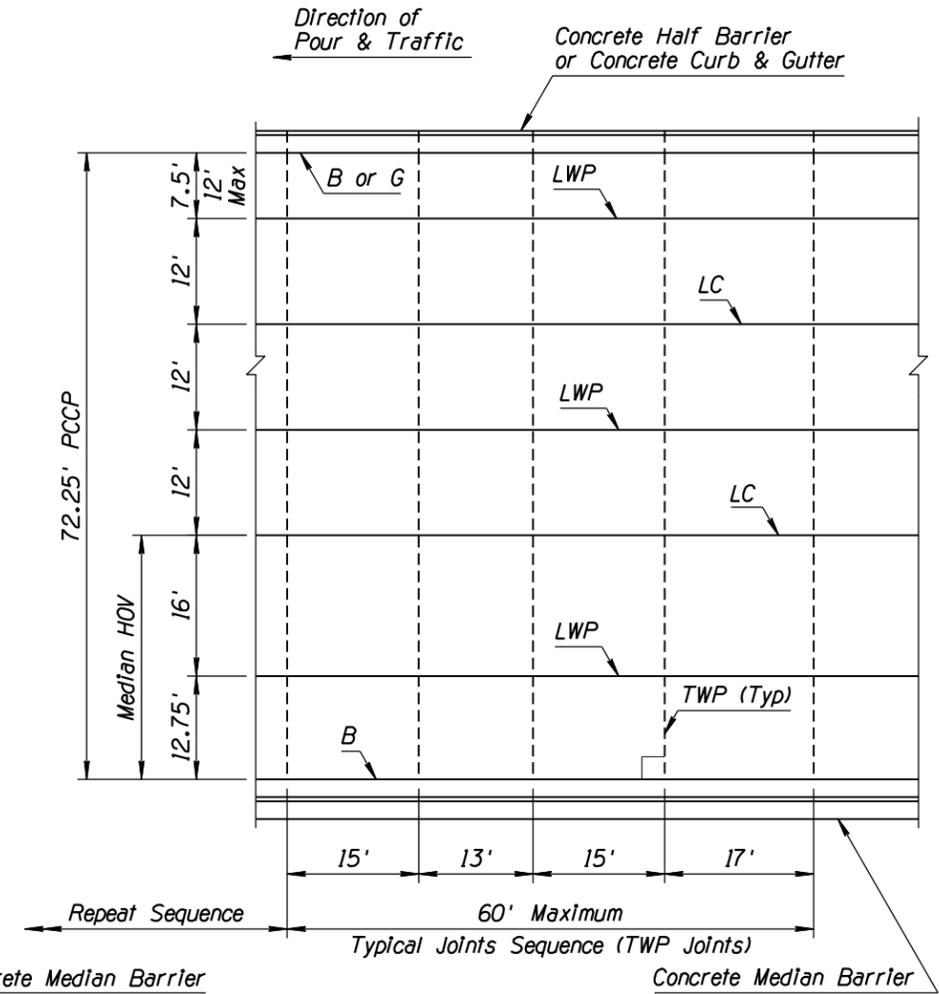
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED TITLE	RLF	9/04
3			
4			



PLAN
96.25' PCCP



PLAN
84.25' PCCP



PLAN
72.25' PCCP

GENERAL NOTES

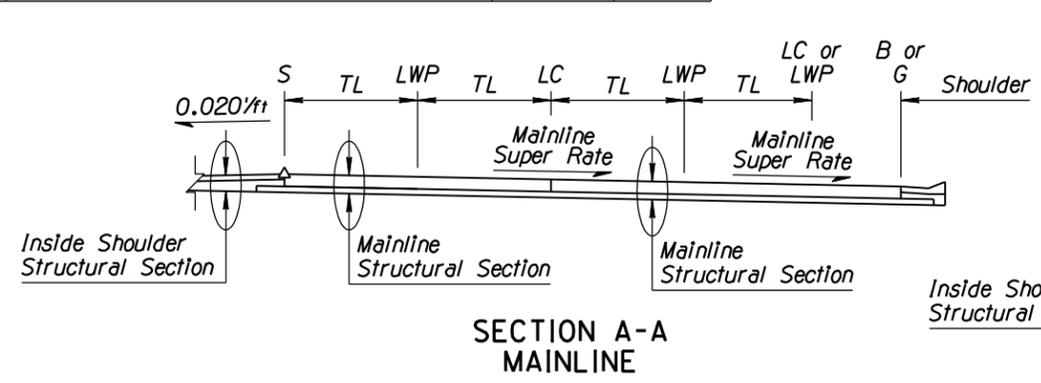
- ① 1. LC and LWP joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
2. Non-skewed PCCP joints shall be used with load transfer dowel assemblies.
3. See Std Dwg C-07.01 for PCCP joints and additional notes.
4. All transverse joints shall align with joints in adjacent slabs and are perpendicular (90°) to the longitudinal joints.
5. At intersection of side roads or streets, joints shall be placed to give the intersection a symmetrical appearance while conforming to the cross section of the intersecting road or street.
6. See Std Dwg C-05.10 for curb and gutter joint requirements.
7. The rebars in the LWP & LC joints shall be placed no greater than 1'-3" from the TC joint.
8. Transverse weakened-plane joint shall be constructed at least 6'-0" from a transverse construction joint.
- ① 9. LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS MAINLINE NON-SKEWED JOINTS ②	DRAWING NO. C-07.03 Sheet 8 of 8

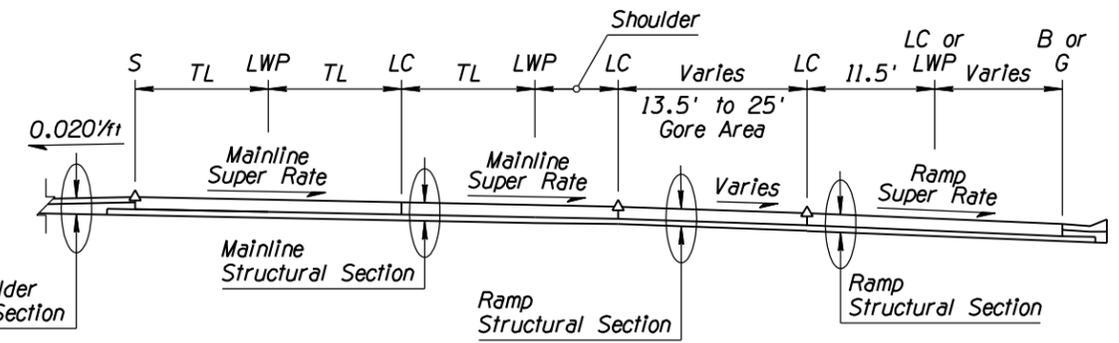
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	NEW STANDARD DRAWING; CONVERTED FROM DETAIL X7053	RLF	9/04
2			
3			
4			

GENERAL NOTES

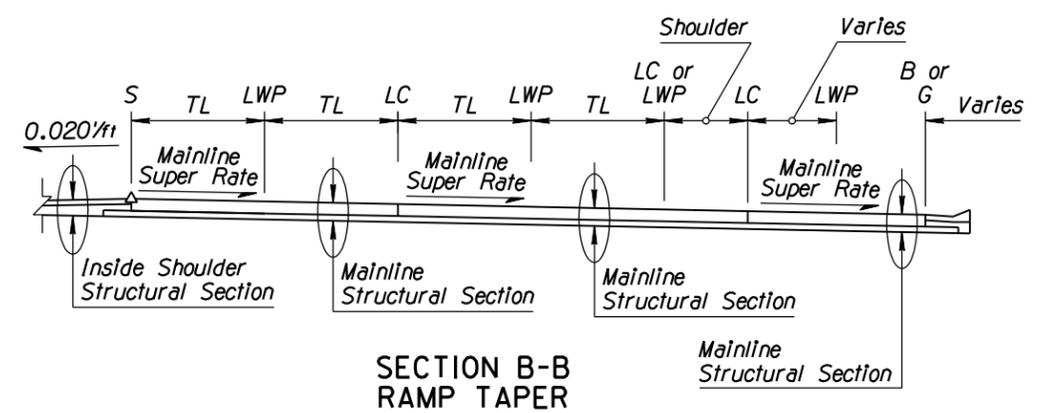
1. All joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
2. See Std Dwg C-07.01 for joint information.
3. See plans for ramp dimensions.
4. For ramp joint spacing sequence, see Sheet 4 of 5.
5. LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.



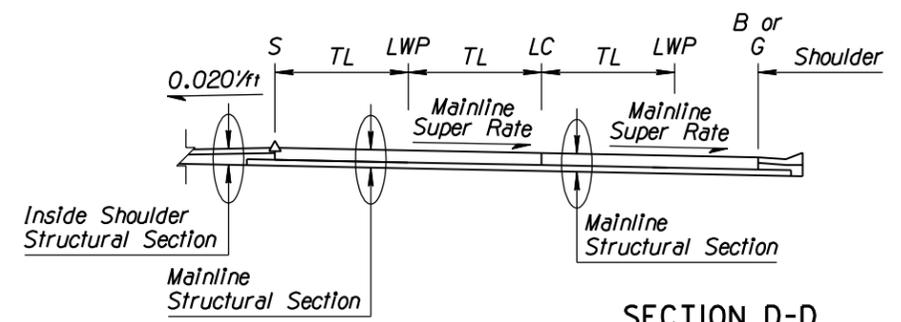
**SECTION A-A
MAINLINE**



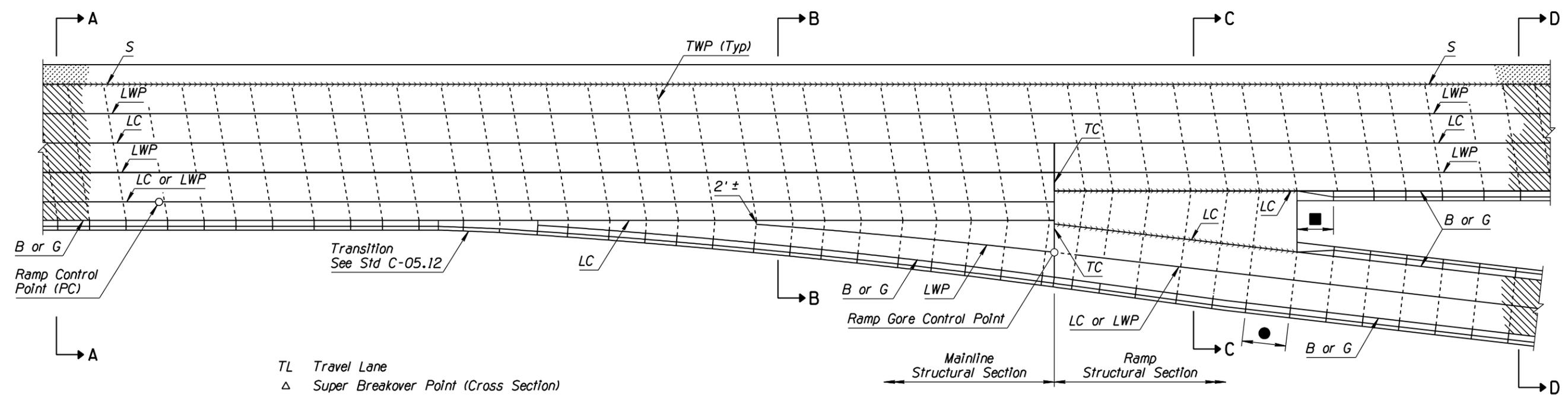
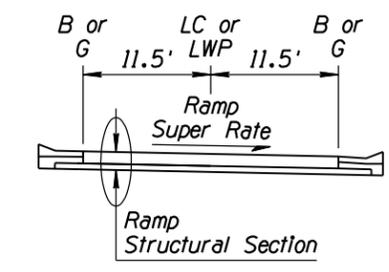
**SECTION C-C
GORE AREA**



**SECTION B-B
RAMP TAPER**



**SECTION D-D
MID-RAMP**



- TL Travel Lane
- △ Super Breakover Point (Cross Section)
- Super Breakover Point (Plan View)
- Curb Transition, See Std C-05.12
- Spacing Varies - 18' Maximum, 11' Minimum

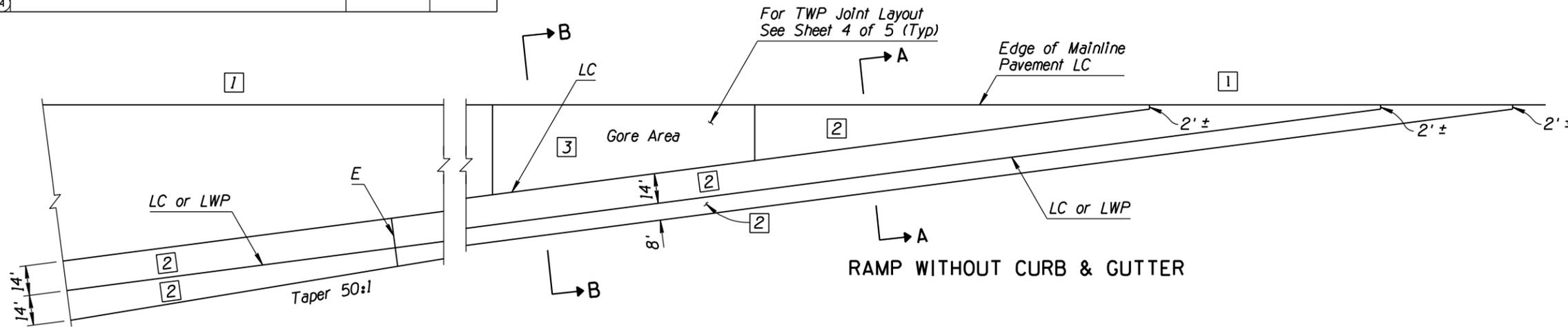
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS PARALLEL-TYPE EXIT RAMP WITH AUXILIARY LANE	DRAWING NO. C-07.04 Sheet 2 of 5

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED FROM C-07.04 TO C-07.04, SHEET 3 OF 5	RLF	9/04
2			
3			
4			

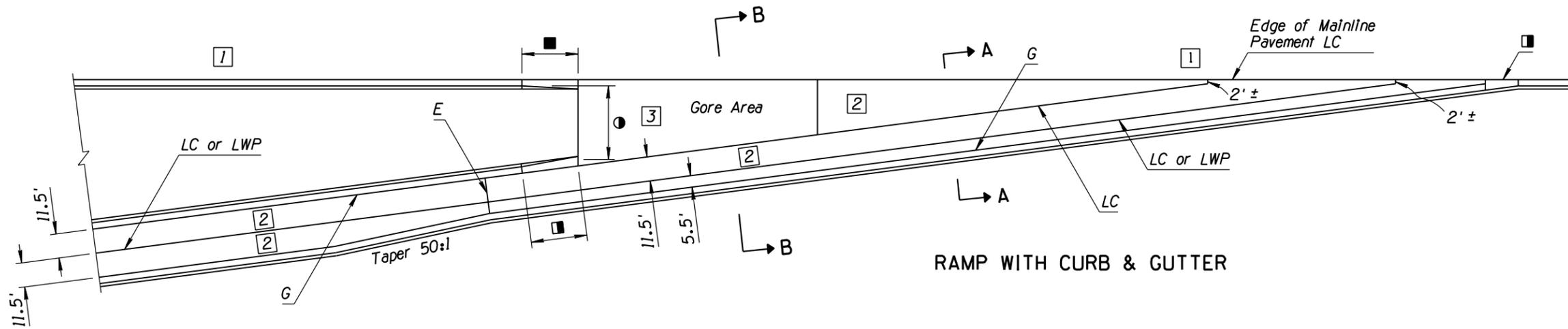
GENERAL NOTES

1. All joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
 2. Dimensions with a tolerance may be adjusted to align to the nearest transverse weakened-plane construction joint as directed.
 3. See Std Dwg C-07.01 for joint information.
 4. See plans for ramp dimensions.
 5. For ramp joint spacing sequence, see Sheet 4 of 5.
 6. LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.
- Transition, See Std Dwg C-05.12
 ● 12' Face of Curb to Face of Curb on Entrance Ramp

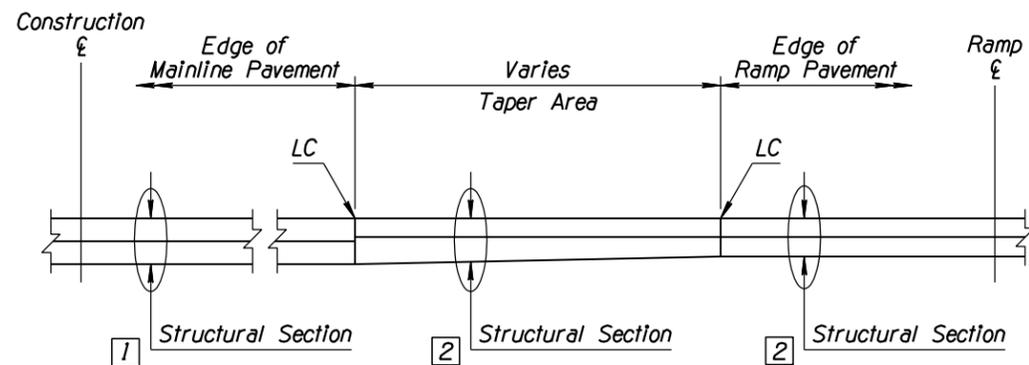
- 1 Mainline Structural Section See Plans
- 2 Ramp Structural Section See Plans
- 3 Gore Structural Section See Plans



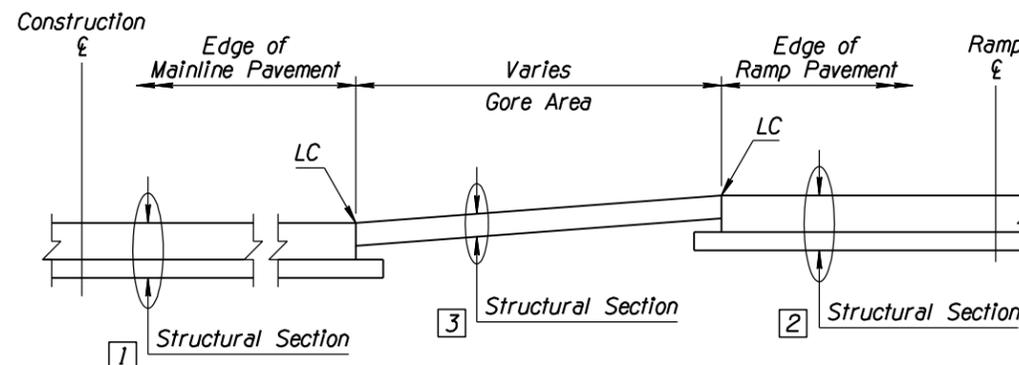
RAMP WITHOUT CURB & GUTTER



RAMP WITH CURB & GUTTER



**SECTION A-A
RAMP TAPER**



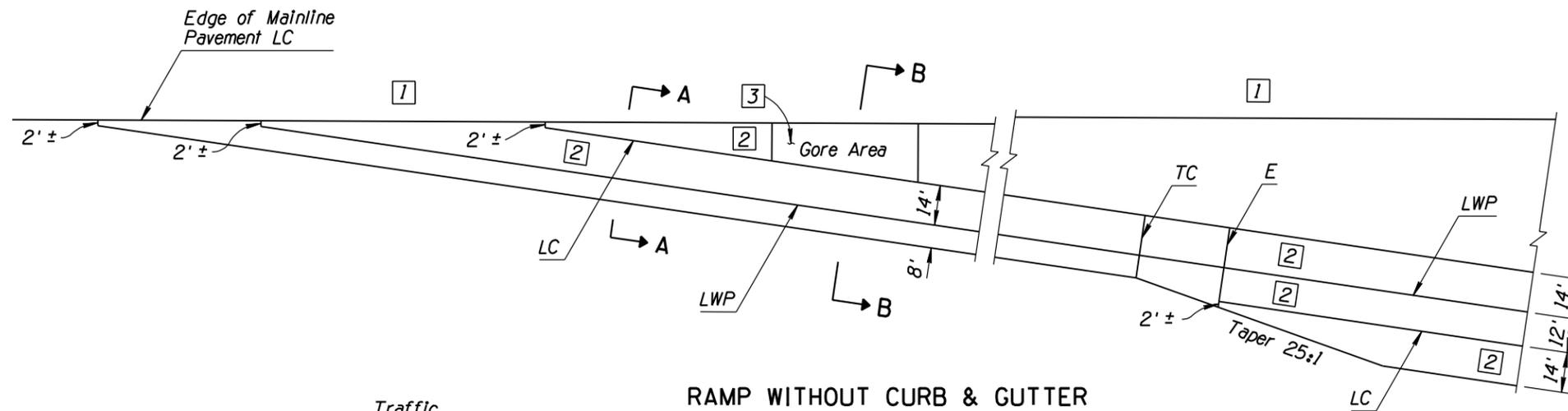
**SECTION B-B
GORE AREA**

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS TAPER-TYPE ENTRANCE RAMP	DRAWING NO. 1 C-07.04 Sheet 3 of 5

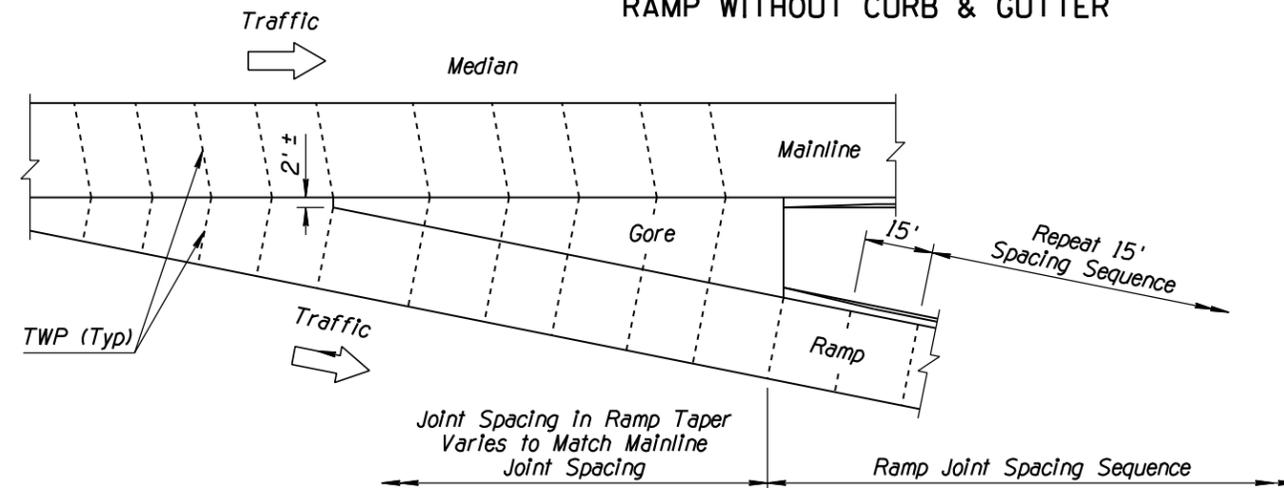
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED FROM C-07.05 TO C-07.04, SHEET 4 OF 5	RLF	9/04
2			
3			
4			

GENERAL NOTES

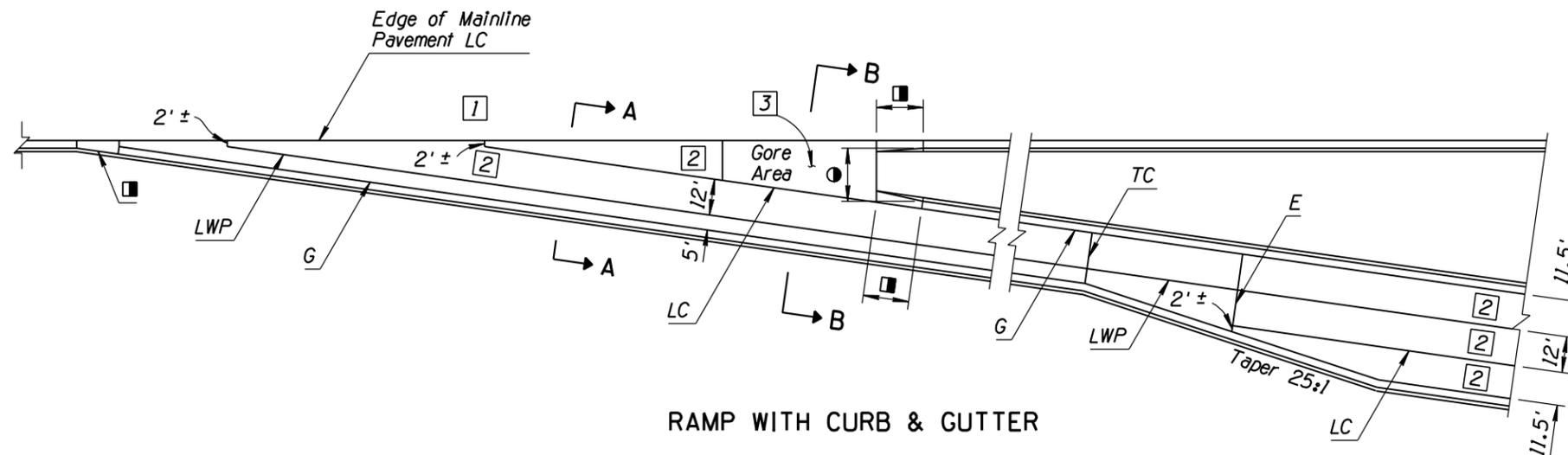
- All joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
 - Dimensions with a tolerance may be adjusted to align to the nearest transverse weakened-plane construction joint as directed.
 - See Std Dwg C-07.01 for joint information.
 - See plans for ramp dimensions.
- Transition, See Std Dwg C-05.12
 - 20' Face of Curb to Face of Curb on Exit Ramp
 - 1 Mainline Structural Section See Plans
 - 2 Ramp Structural Section See Plans
 - 3 Gore Structural Section See Plans



RAMP WITHOUT CURB & GUTTER



TYPICAL TRANSVERSE WEAKENED-PLANE JOINT LAYOUT AT GORE AREAS
Exit Ramp Shown
Entrance Ramp Similar



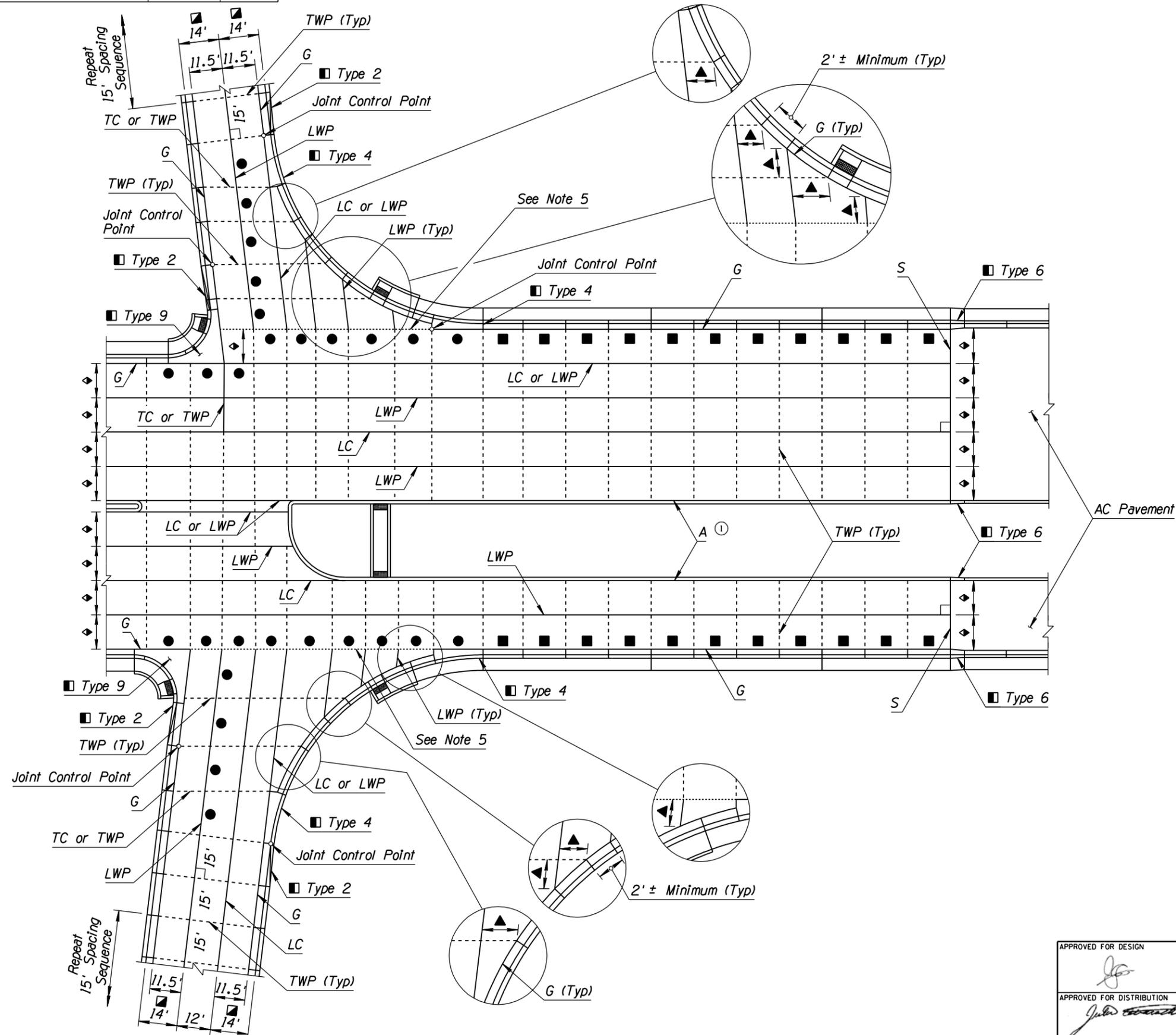
RAMP WITH CURB & GUTTER

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS TAPER-TYPE EXIT RAMP	DRAWING NO. ① C-07.04 Sheet 4 of 5

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED JOINT DESIGNATION	RLF	5/10
2			
3			
4			

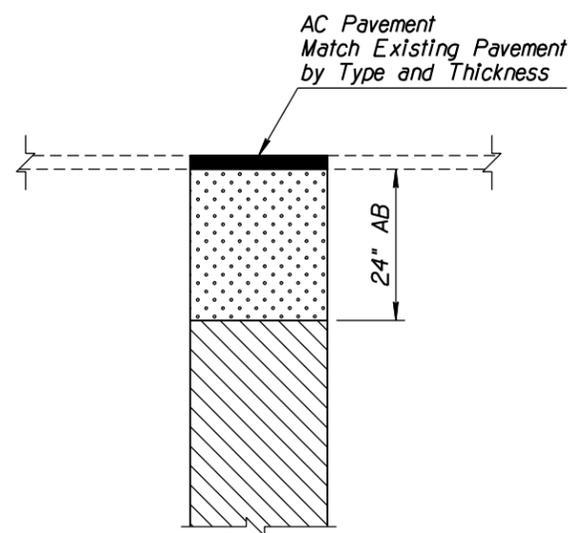
GENERAL NOTES

- All joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
 - See Std Dwg C-07.01 for joint information.
 - The ratio of transverse to longitudinal joint spacing shall be greater than $\frac{2}{3}$ but not more than $1\frac{1}{2}$.
 - LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.
 - See Plans for Crossroad Paving Type E or H Joint if PCC Paving
S Joint if AC Paving
 - Transverse joints shall be perpendicular (90°) to the longitudinal joints, except as shown at the ramp terminal.
- ▲ 6' Minimum
 - Varies - 18' Maximum
11' Minimum
 - Varies - 12' when adjacent gutter widths are 2' or less
- 15' when adjacent gutter widths are greater than 2'
 - ▣ Without curb and gutter
 - ▣ Transition, See Std Dwg C-05.12
 - ◆ Varies - 12' Typical or As Shown on Plans
17' Maximum

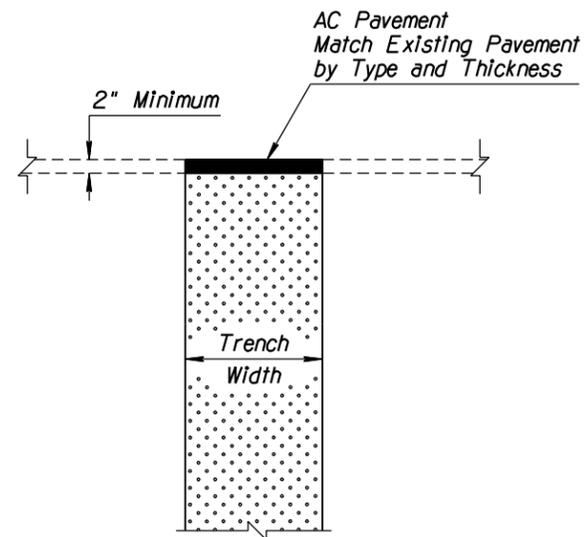


APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	PCCP JOINT LOCATIONS CROSSROAD AND RAMP TERMINI	DRAWING NO. C-07.04 Sheet 5 of 5

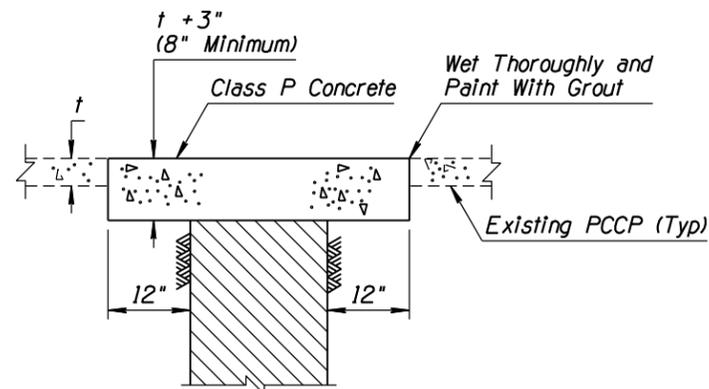
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED NOTE	PNB	10/95
2	DELETED TYPE E VIEW	RLF	7/05
3	MODIFIED STANDARD SPECIFICATION REFERENCE	RLF	7/05
4			



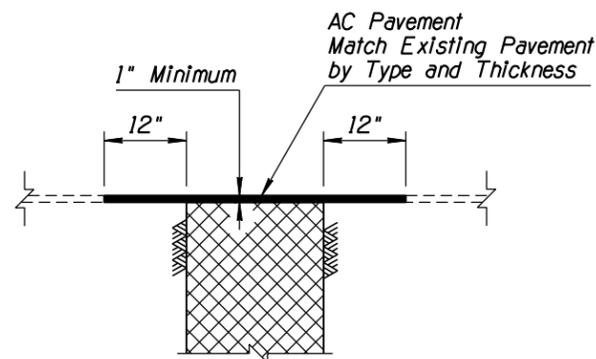
TYPE A



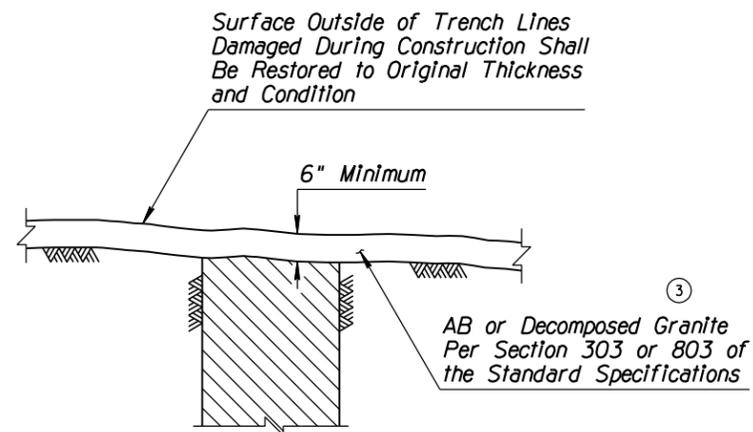
TYPE B



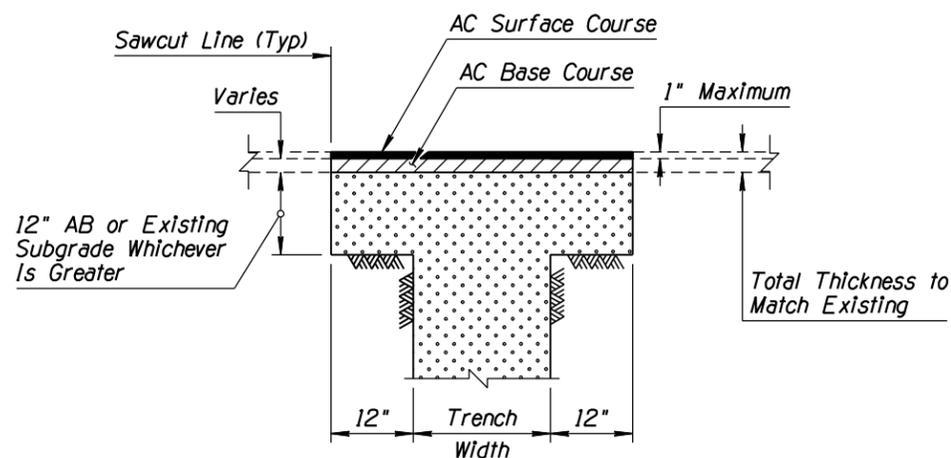
TYPE C



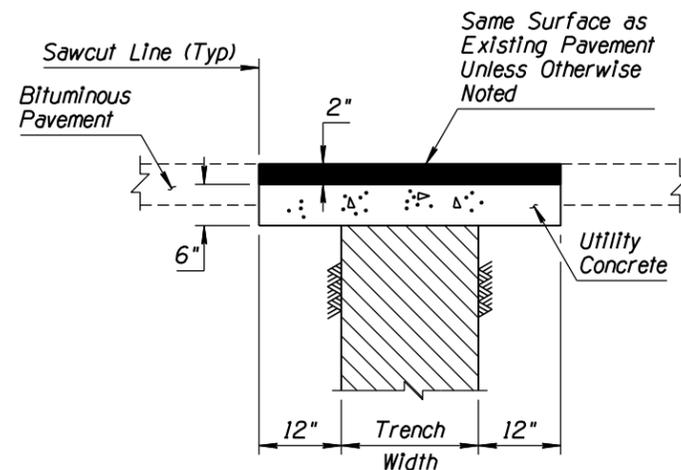
TYPE D



TYPE F



TYPE G

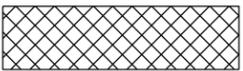
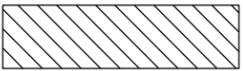
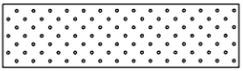


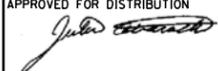
TYPE H

GENERAL NOTES

- ① 1. Bedding per Section 501 of the Standard Specifications.
2. Asphalt concrete shall be in accordance with the requirements of the Standard Specifications.
3. 12" lip is required on the sides of trenches that are not parallel at the center line of the street.
4. Type D requires 9" of AB at top of trench when there is an existing base.
- ① 5. See Std Dwg C-13.15 for typical pipe installation.

LEGEND

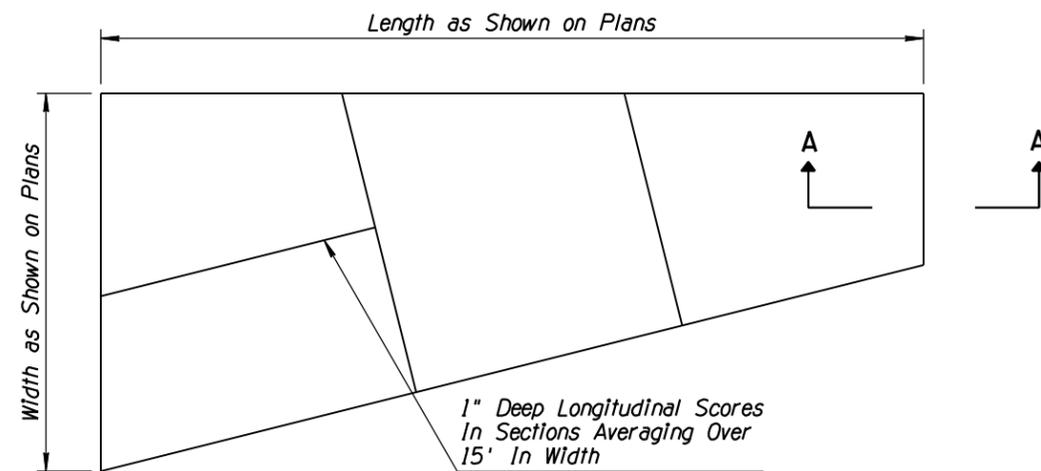
-  Compacted Backfill or Slurry Per Section 501 of the Standard Specifications
-  AB, Granular Backfill or Native Backfill Per Sections 303 and 501 of the Standard Specifications ③
-  AB Per Sections 303 and 501 of the Standard Specifications ③

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	TRENCH BACKFILL AND PAVEMENT REPLACEMENT	DRAWING NO. ③ C-07.06

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SECTION VIEW	RLF	5/10
2			
3			
4			

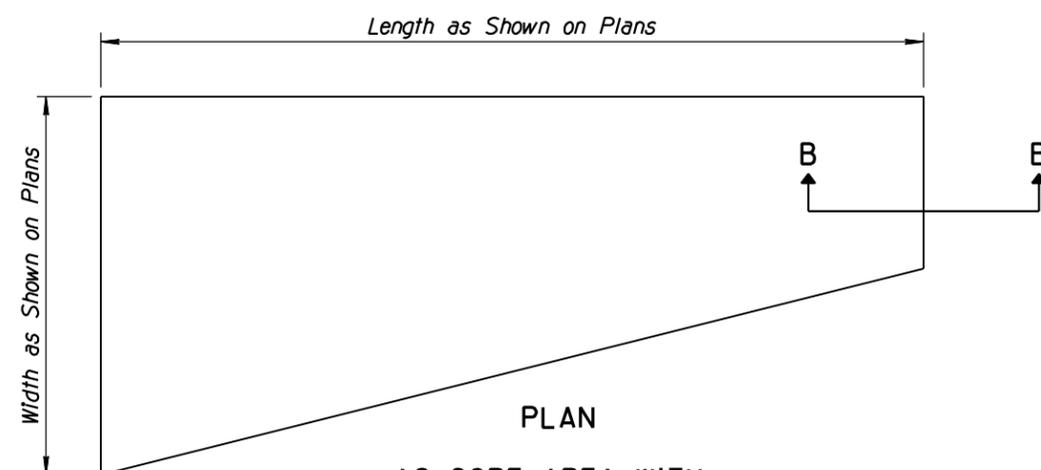
GENERAL NOTES

1. Paved gore area shall be Class S Concrete, $f'_c = 4000$ PSI or AC as shown on plans.
2. See Std Dwgs C-07.01 and C-07.04 for joint layout and details.



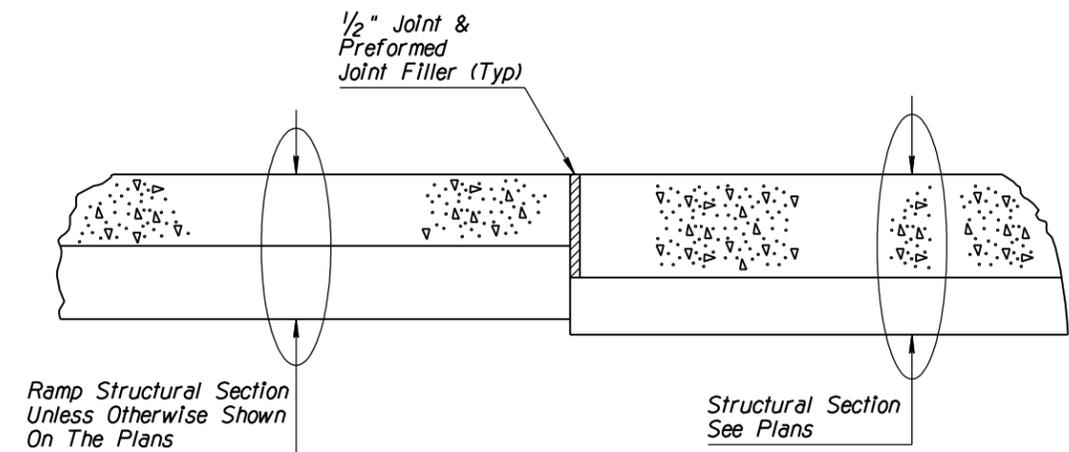
PLAN

**CONCRETE GORE AREA
WITH ABUTTING CONCRETE PAVEMENT**



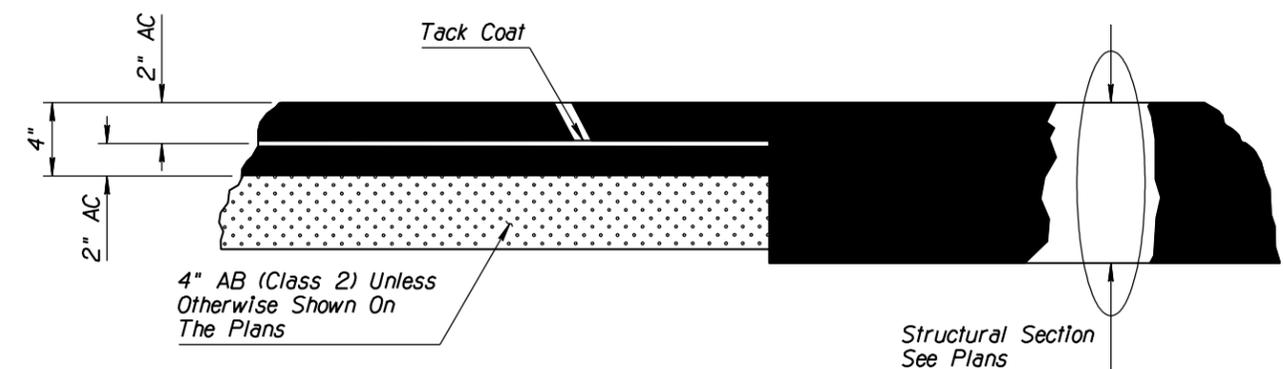
PLAN

**AC GORE AREA WITH
ABUTTING AC PAVEMENT**



SECTION A-A

①



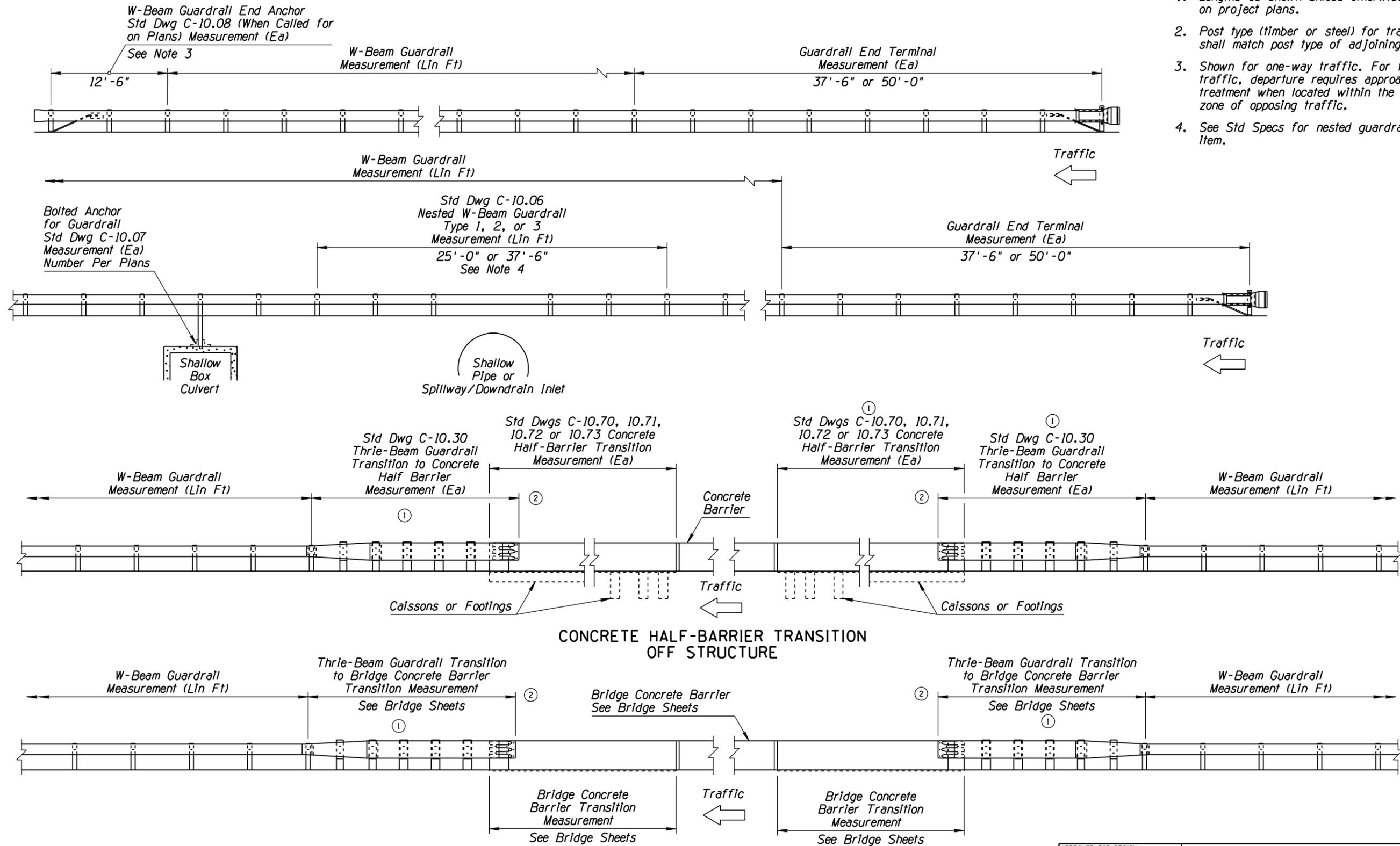
SECTION B-B

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PAVED GORE AREA	DRAWING NO. C-08.20

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED BARRIER TRANSITION	RLF	7/05
2	REVISED SYSTEM LIMIT TO INCLUDE END SHOE	RLF	5/07
3			
4			

GENERAL NOTES

1. Lengths as shown unless otherwise indicated on project plans.
2. Post type (timber or steel) for transitions shall match post type of adjoining guardrail.
3. Shown for one-way traffic. For two-way traffic, departure requires approach end treatment when located within the clear zone of opposing traffic.
4. See Std Specs for nested guardrail pay item.



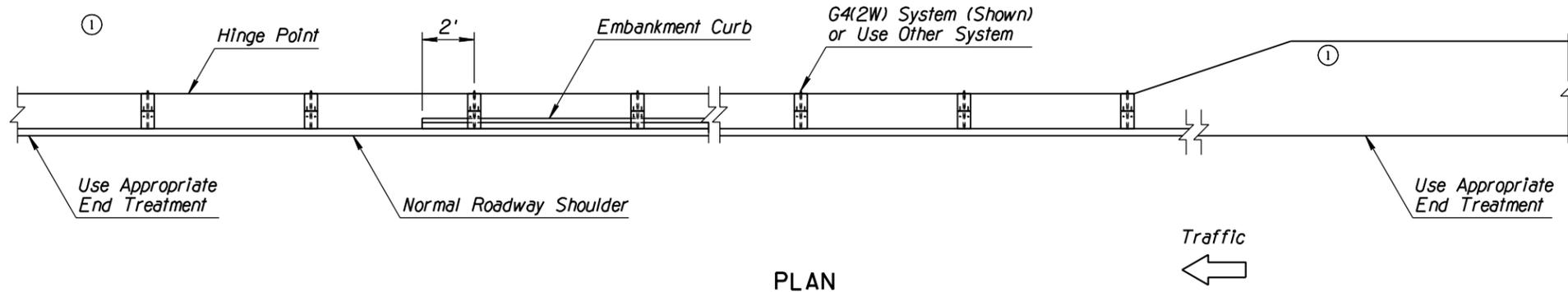
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	GUARDRAIL MEASUREMENT LIMITS	DRAWING NO. C-10.00

CONCRETE HALF-BARRIER TRANSITION ON STRUCTURE
Concrete Barrier Transitions
Constructed on Top of Wingwalls

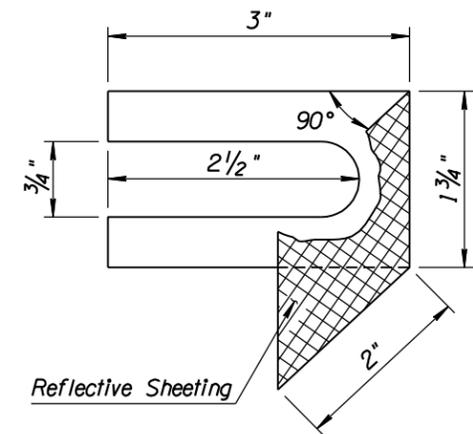
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED PLAN VIEW GRAPHICS/REMOVED WIDTH DIMENSION	RLF	9/04
2	REVISED GENERAL NOTES 3 & 4	RLF	9/04
3	MODIFIED STANDARD DRAWING TITLE	RLF	9/04
4	REVISED SECTION VIEW TITLE	RLF	7/05

GENERAL NOTES

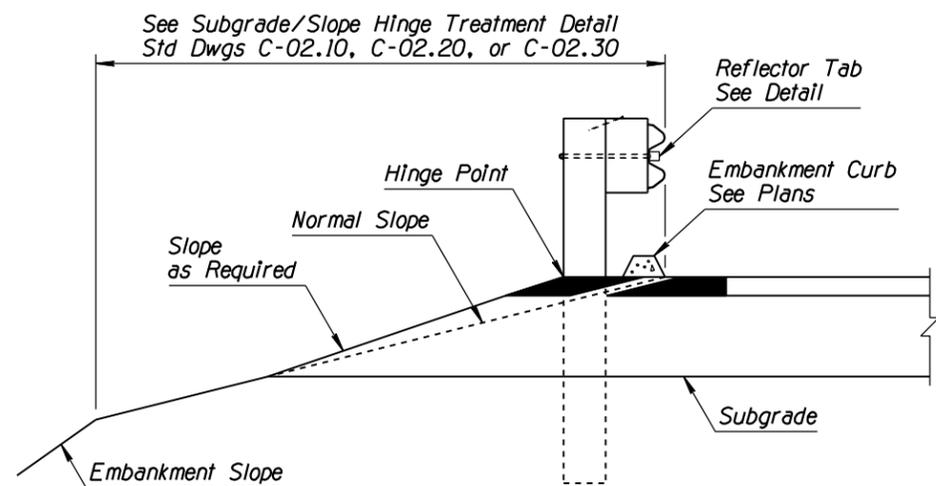
1. All embankment curb shall be protected by guardrail.
 2. Guardrail shall extend beyond the limits of embankment curb.
 - ② 3. See Std Dwg C-10.00 for measurement limits.
 - ② 4. See Std Specs 703, 905 and 1012-3 for reflector tab and snow marker materials, reflective sheeting, and spacing requirements.
- ▲ Top of Rail = 28"
See General Note 1
Std Dwg C-10.03



PLAN



REFLECTOR TAB DETAIL



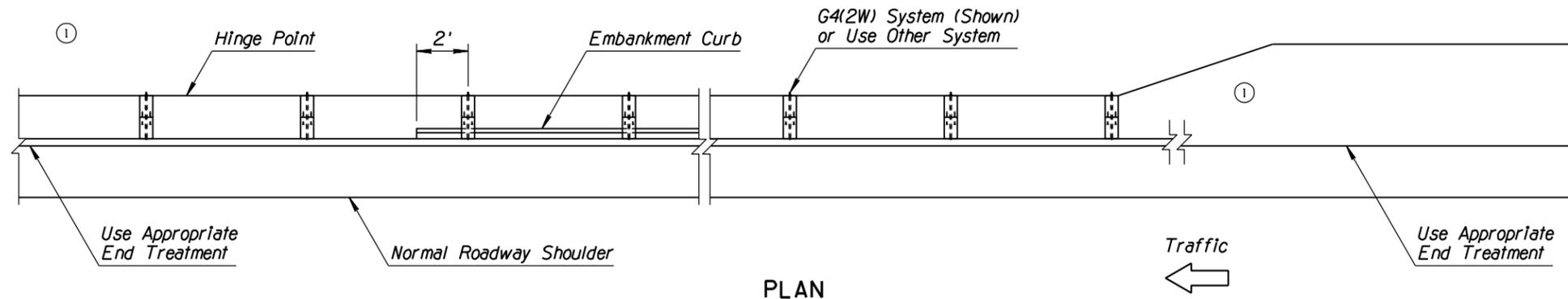
④
TYPE A SECTION

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	GUARDRAIL INSTALLATION ③ TYPE A AND REFLECTOR TAB	DRAWING NO. C-10.01

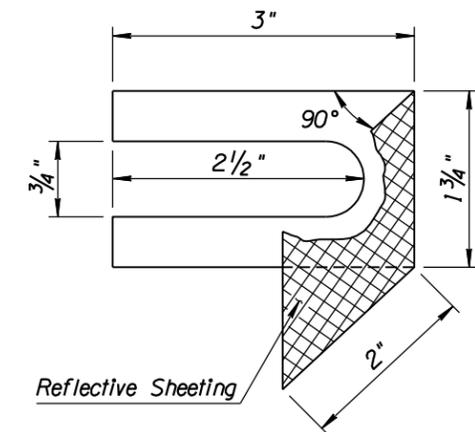
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED PLAN VIEW GRAPHICS/REMOVED WIDTH DIMENSION	RLF	9/04
2	REVISED GENERAL NOTES 3 & 4	RLF	9/04
3	REVISED STANDARD DRAWING TITLE	RLF	9/04
4	REVISED SECTION VIEW TITLE	RLF	7/05

GENERAL NOTES

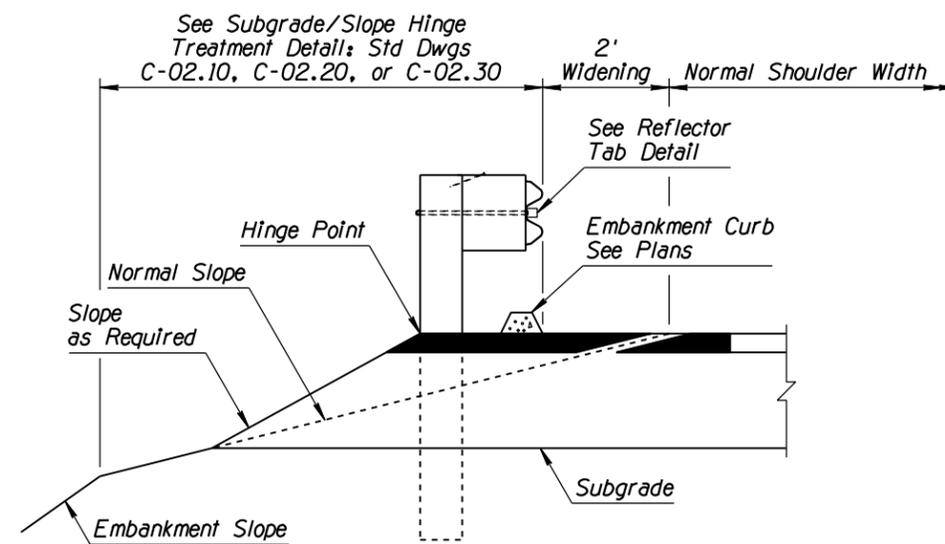
1. All embankment curb shall be protected by guardrail.
 2. Guardrail shall extend beyond the limits of embankment curb.
 - ② 3. See Std Dwg C-10.00 for measurement limits.
 - ② 4. See Std Specs 703, 905 and 1012-3 for reflector tab and snow marker materials, reflective sheeting, and spacing requirements.
- ▲ Top of Rail = 28"
See General Note 1
Std Dwg C-10.03



PLAN



REFLECTOR TAB DETAIL

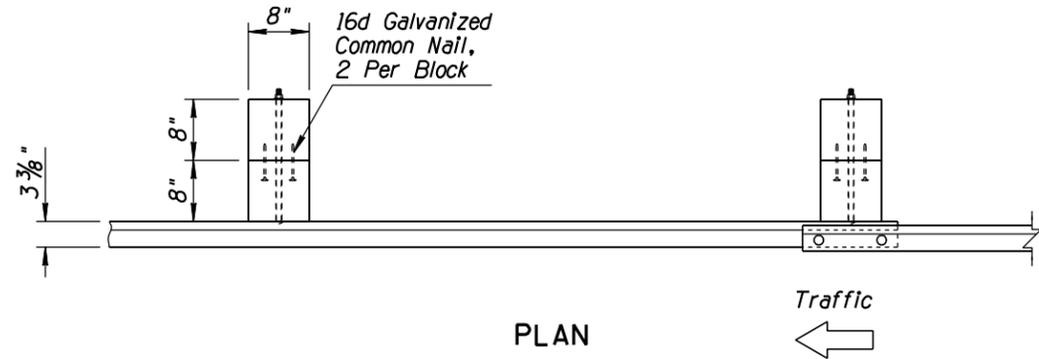


TYPE B SECTION

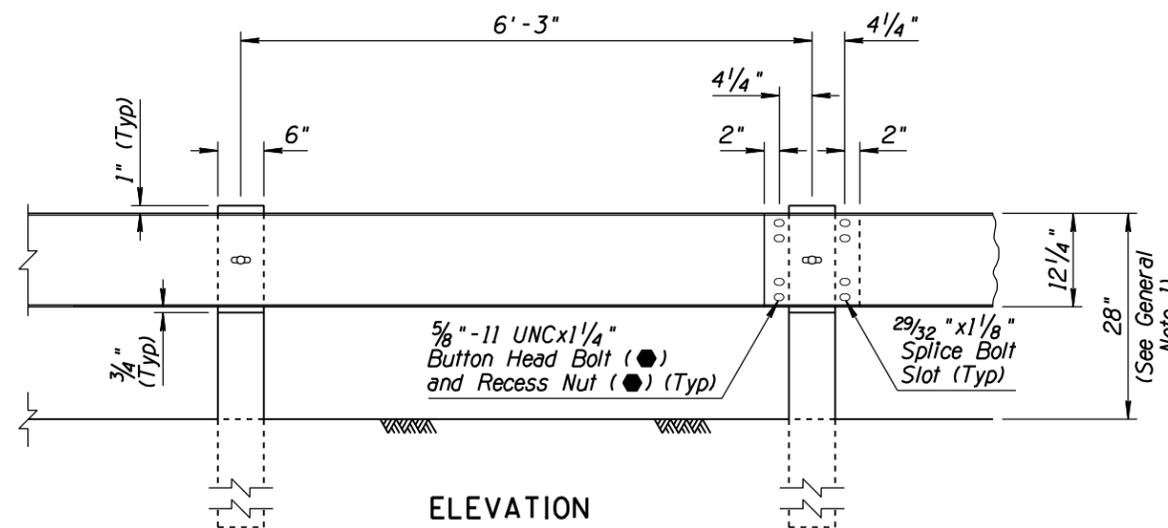
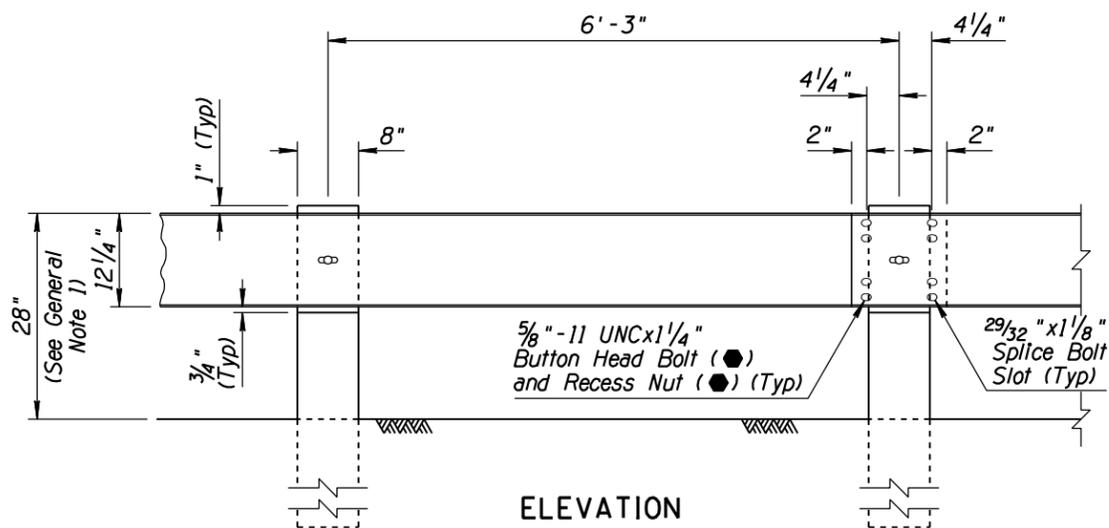
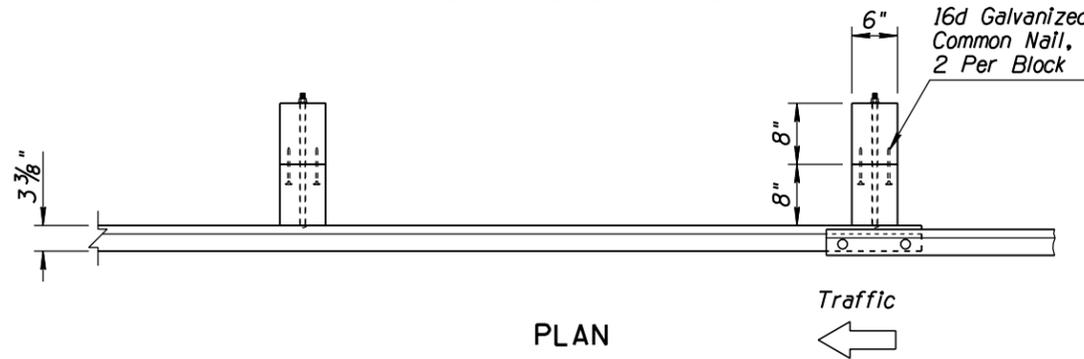
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	GUARDRAIL INSTALLATION TYPE B AND REFLECTOR TAB ③	DRAWING NO. C-10.02

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED DESIGNATION	RLF	9/04
2	REVISED GENERAL NOTE 1 & ADDED GENERAL NOTE 2	RLF	9/04
3	RENAMED STD DRAWING FROM C-10.20 AND REVISED TITLE	RLF	9/04
4	REMOVED 29 INCH DIMENSION	RLF	7/05

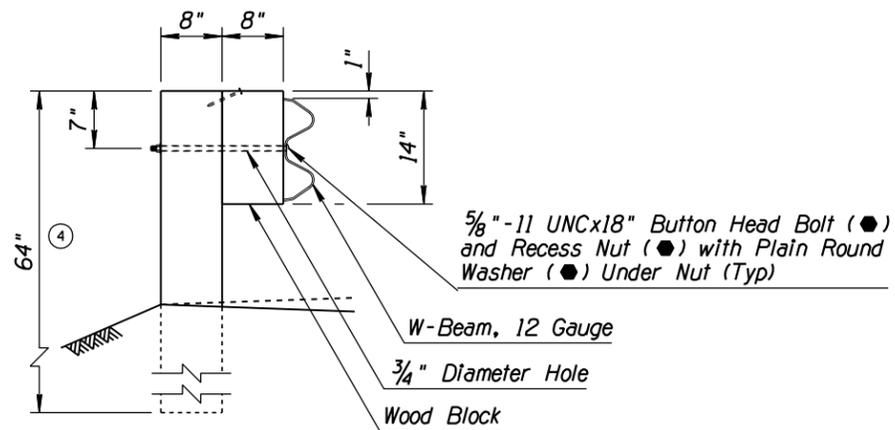
G4(1W) SYSTEM (8"x8")



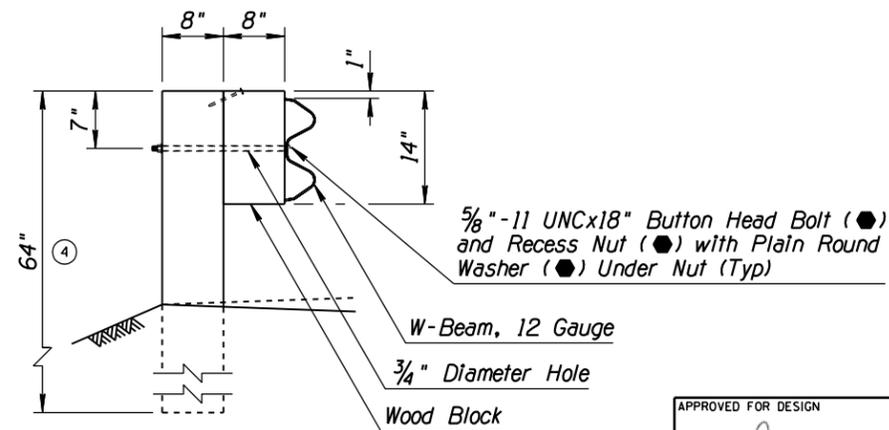
G4(2W) SYSTEM (6"x8")



G4(1W) SYSTEM (8"x8")



G4(2W) SYSTEM (6"x8")



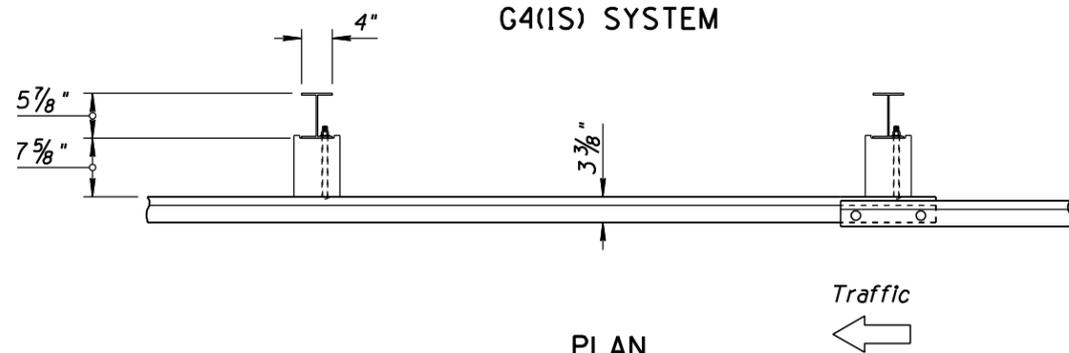
GENERAL NOTES

- ② 1. The control height for guardrail system is 28" to the top of rail, measured at the face of rail from the normal finished shoulder elevation.
- ② 2. Guardrail shall be lapped in the direction of adjacent traffic.
- ① ● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation

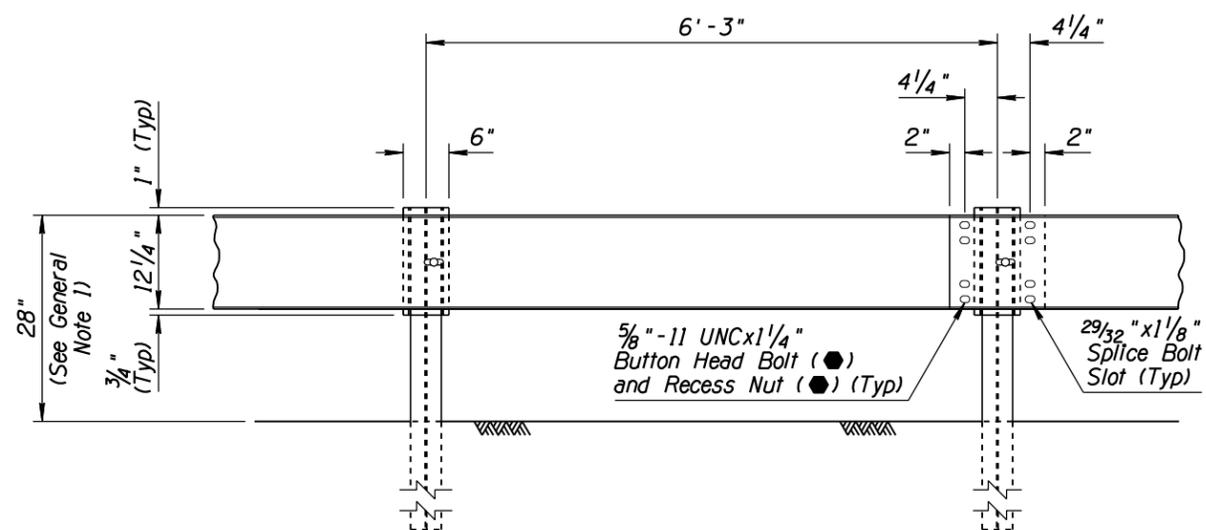
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	W-BEAM GUARDRAIL G4(1W) AND G4(2W) BLOCKED-OUT TIMBER POST	DRAWING NO. C-10.03

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED DESIGNATION	RLF	9/04
2	REVISED GENERAL NOTES 1 & 2	RLF	9/04
3	RENAMED STD DRAWING FROM C-10.21 & REVISED TITLE	RLF	9/04
4	REMOVED 29 INCH DIMENSION	RLF	7/05

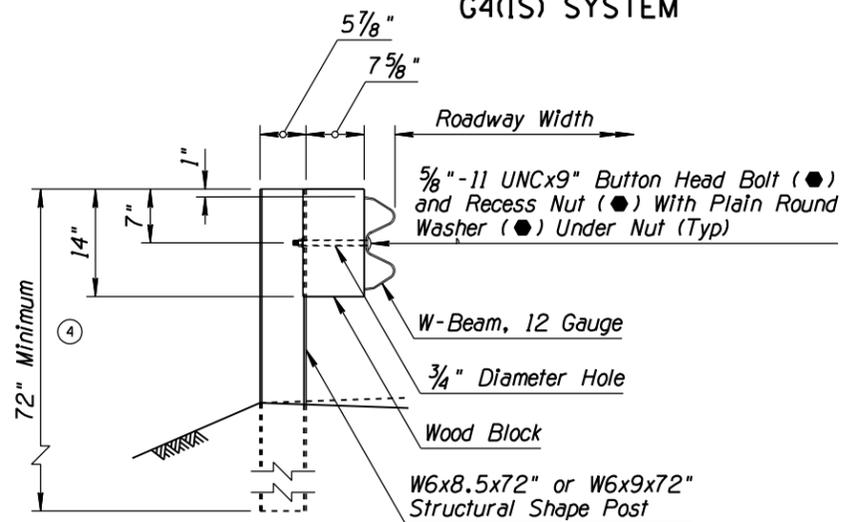
G4(IS) SYSTEM



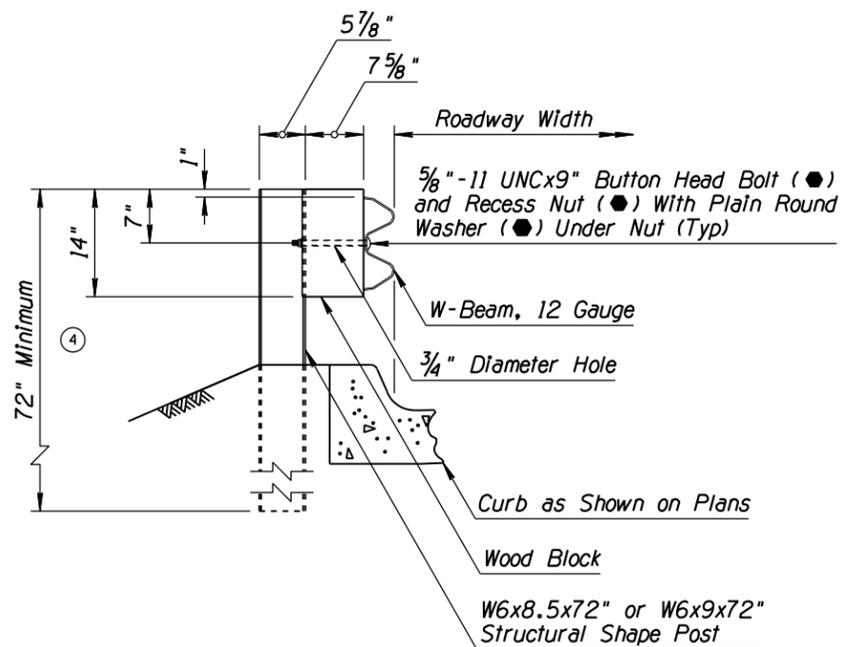
PLAN



ELEVATION G4(IS) SYSTEM



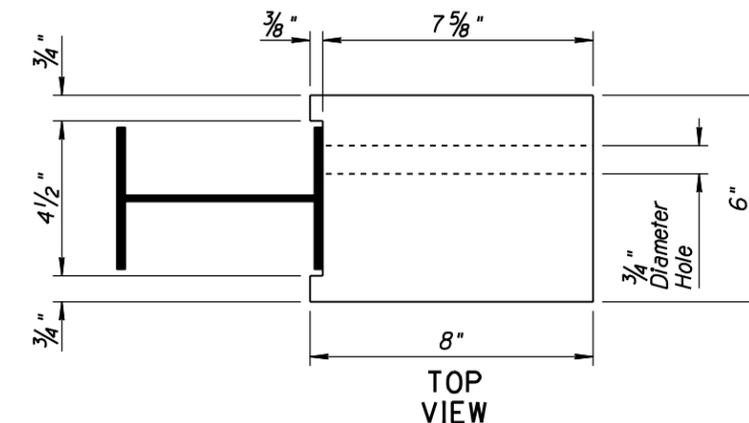
SECTION G4(IS)
SHOWN WITHOUT CURB



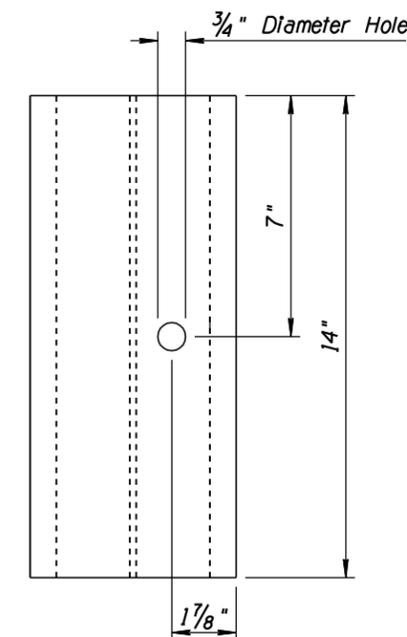
SECTION G4(IS)
SHOWN WITH CURB

GENERAL NOTES

- ② 1. The control height for guardrail system is 28" to the top of rail, measured at the face of rail from the normal finished shoulder elevation.
- ② 2. Guardrail shall be lapped in the direction of adjacent traffic.
- ① ● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation



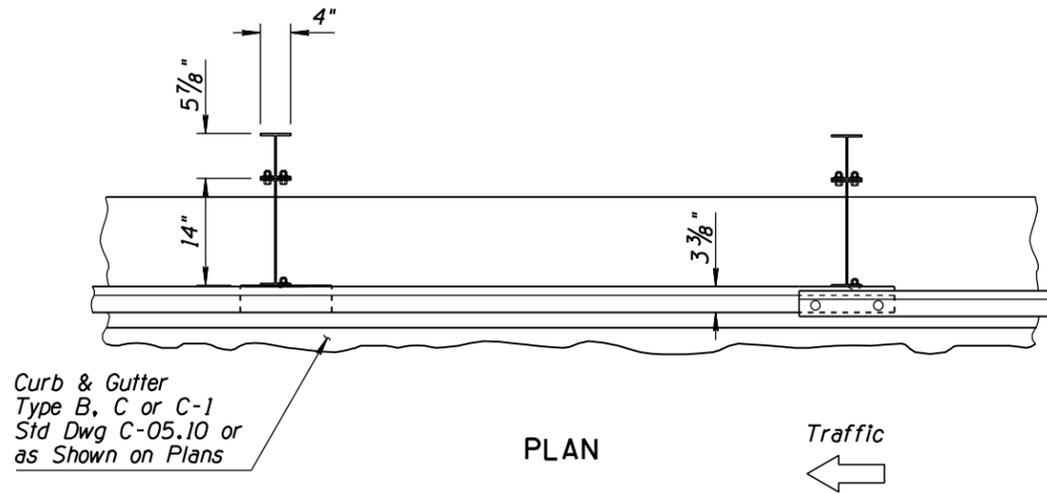
TOP VIEW



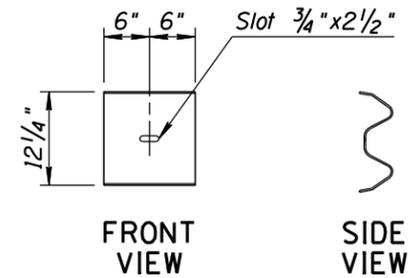
FRONT VIEW
WOOD BLOCK DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	W-BEAM GUARDRAIL G4(IS) BLOCKED-OUT STEEL POST ③	DRAWING NO. C-10.04 ③

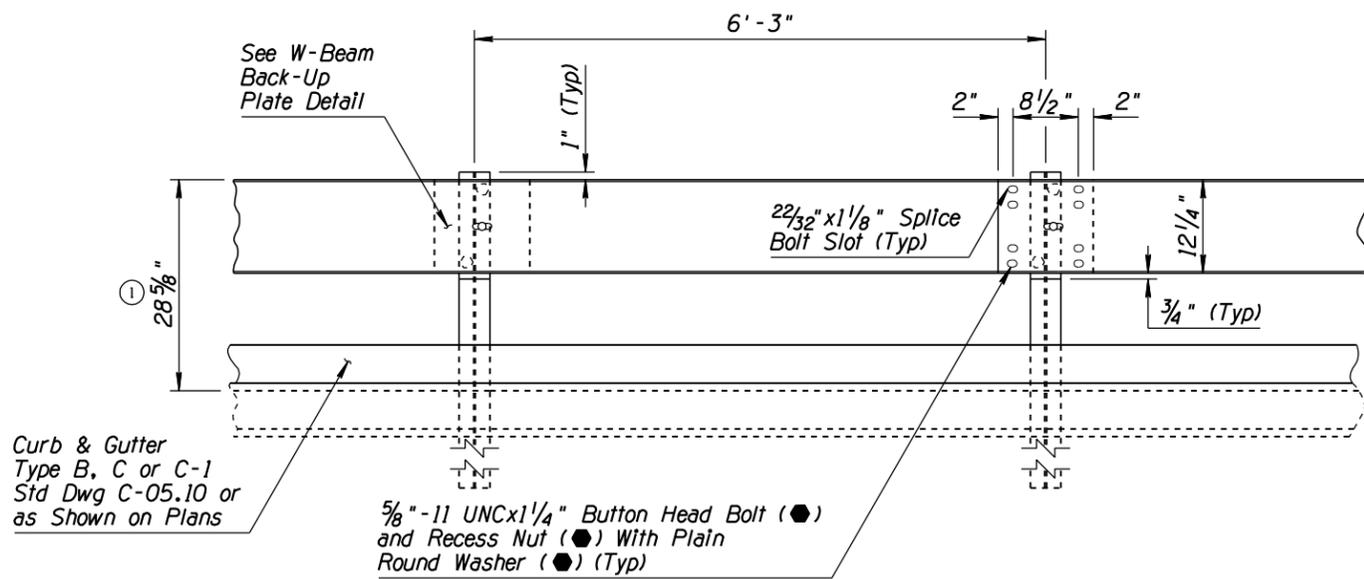
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED DIMENSION AND REISSUED STD DWG	RLF	4/12
2			
3			
4			



PLAN

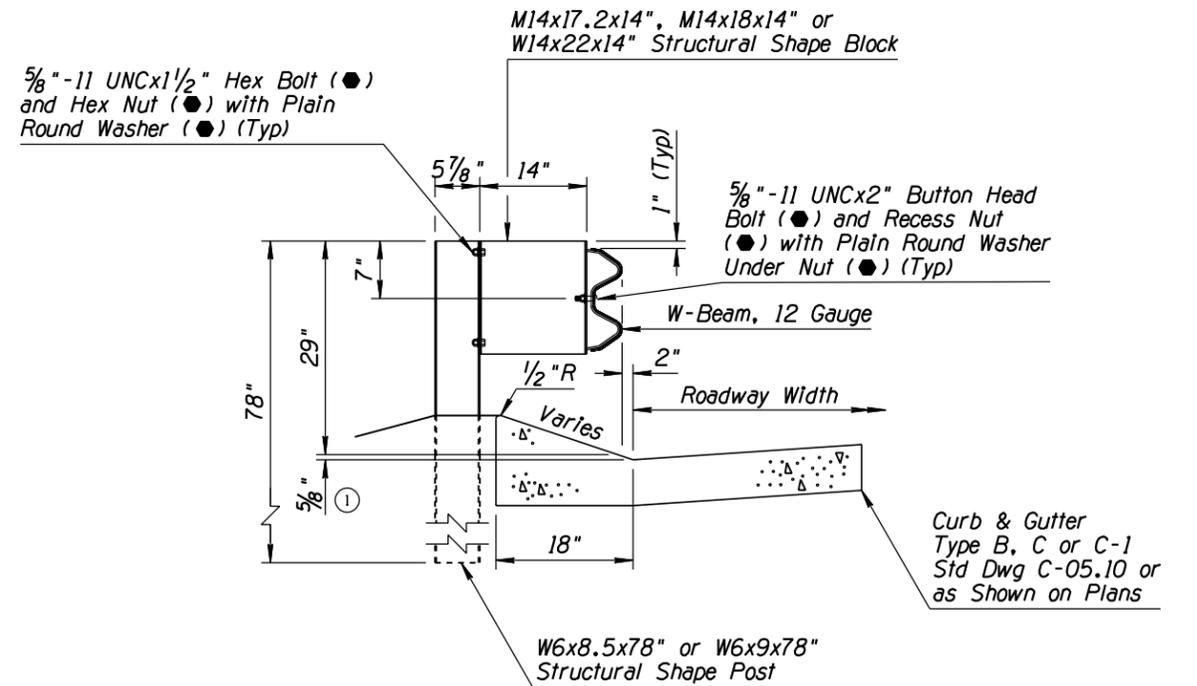


W-BEAM BACK-UP PLATE DETAIL



ELEVATION

G4(IS-MODIFIED)



SECTION

GENERAL NOTES

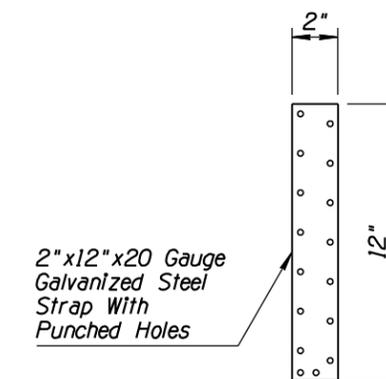
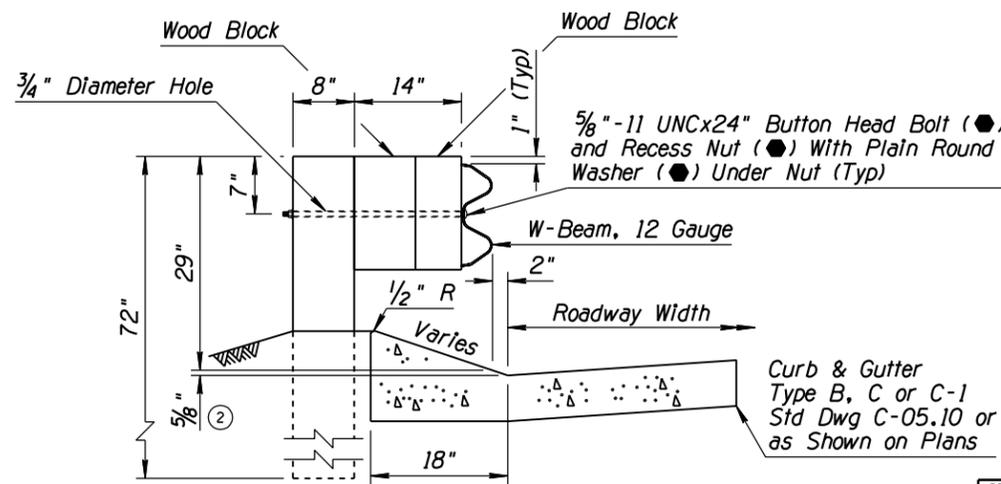
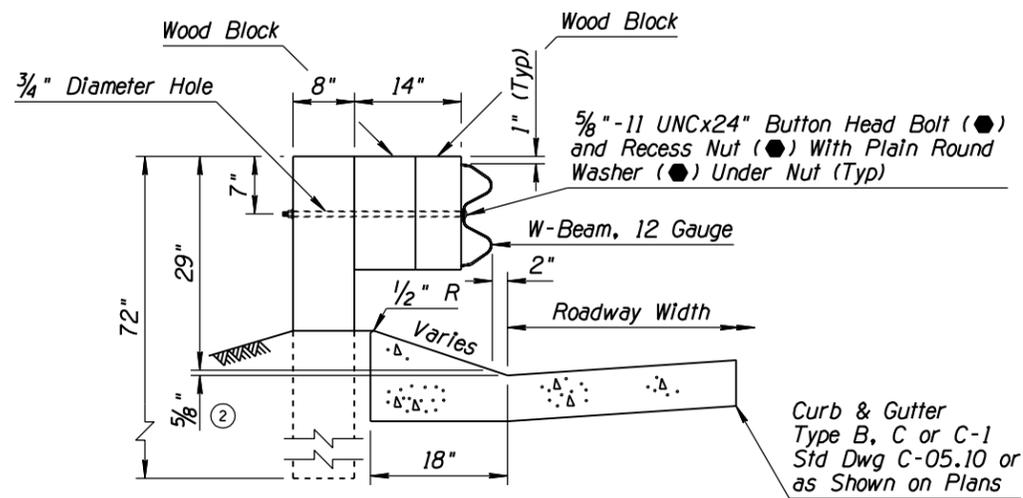
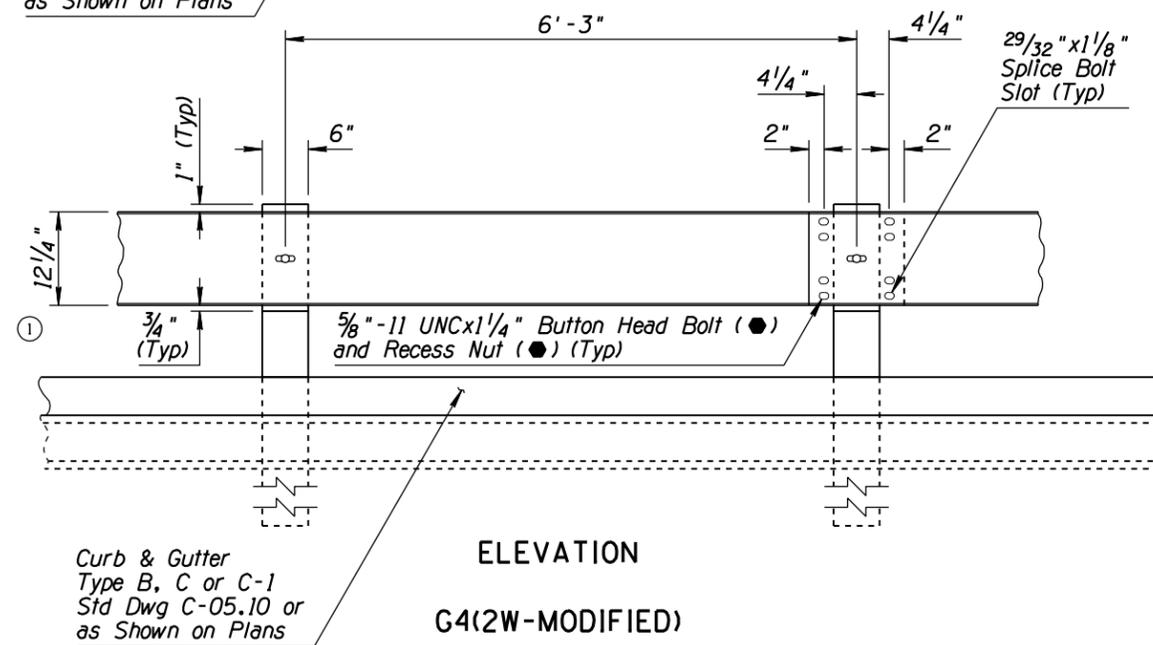
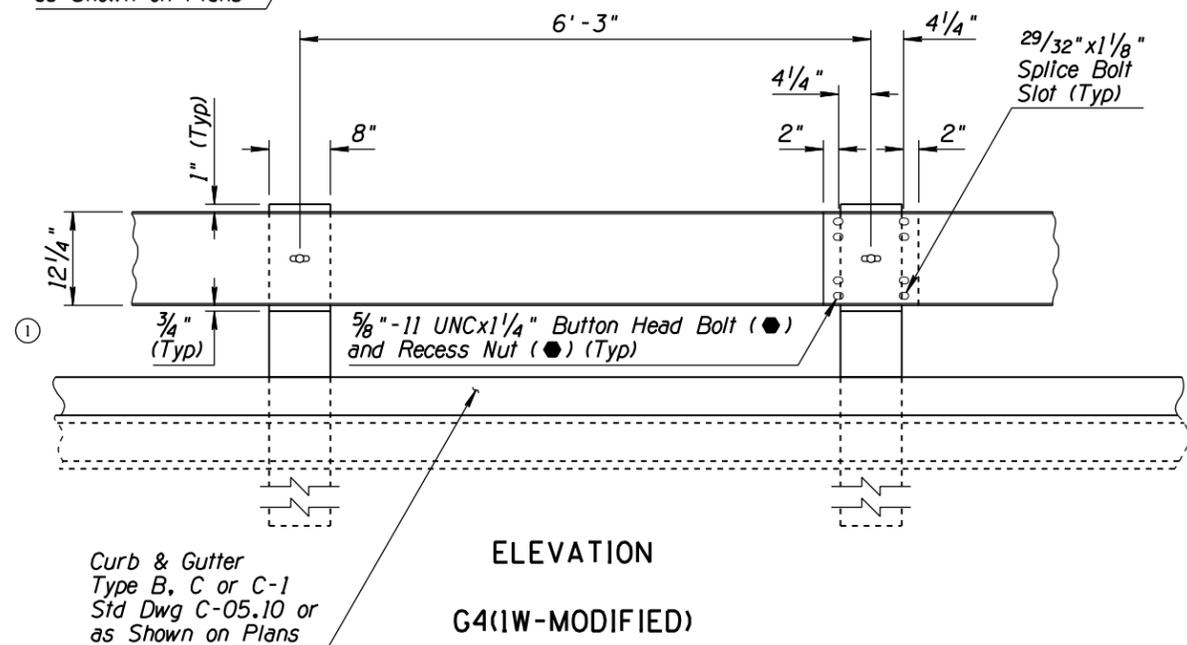
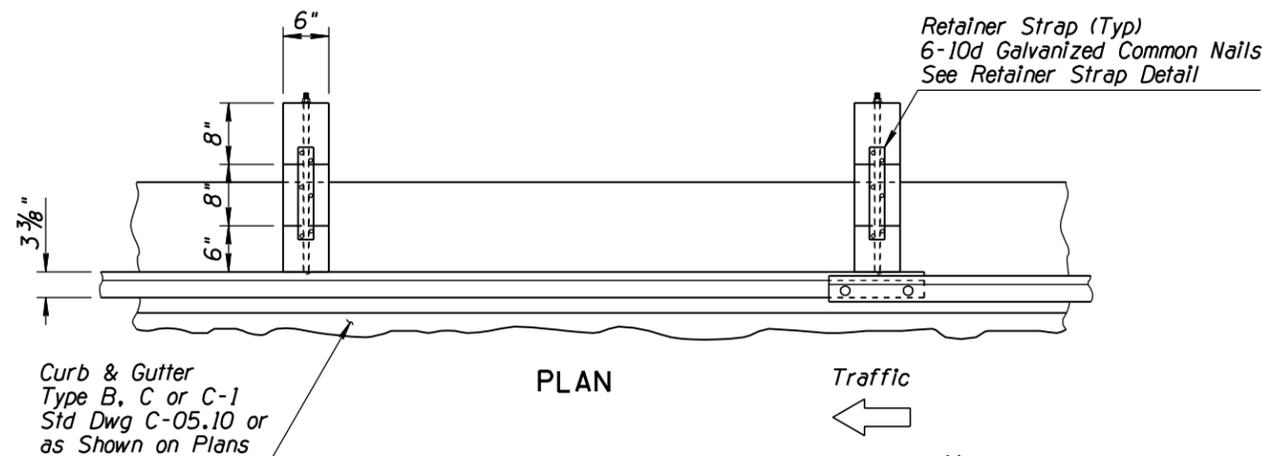
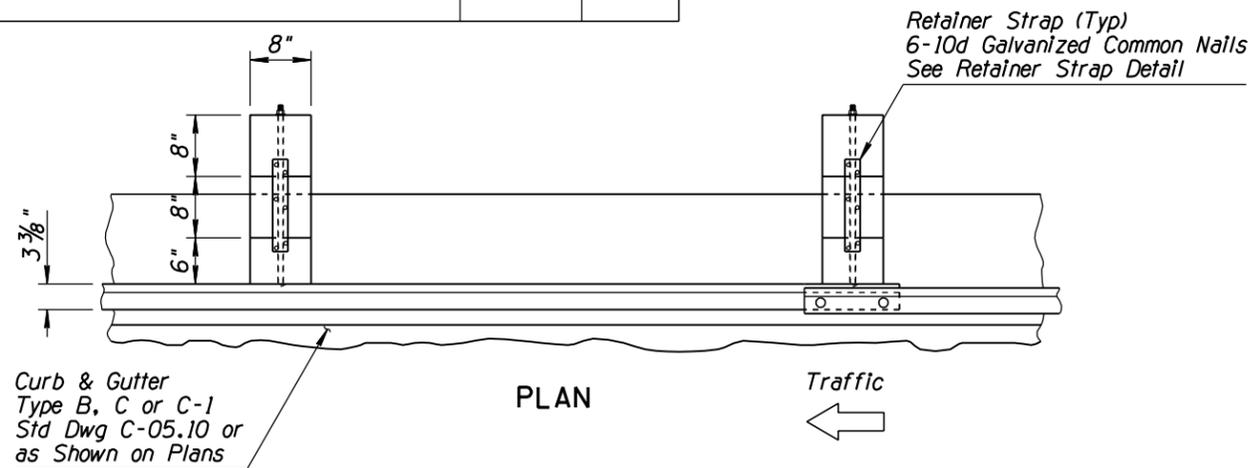
1. Height of curb shall not exceed 4 inches.
 2. Guardrail shall be lapped in the direction of adjacent traffic.
- - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	W-BEAM GUARDRAIL G4(MODIFIED) WITH FREEWAY CURB AND GUTTER	DRAWING NO. C-10.05 Sheet 1 of 2

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED DIMENSION	RLF	5/12
2	REVISED DIMENSION	RLF	5/12
3			
4			

GENERAL NOTES

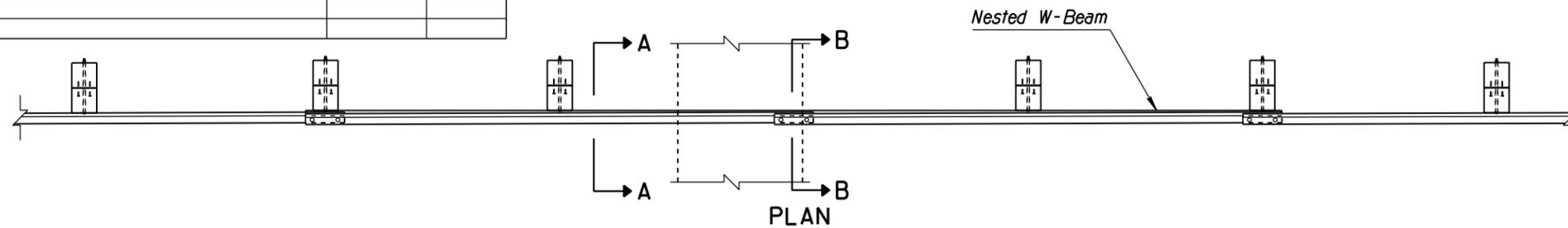
● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation



RETAINER STRAP DETAIL

APPROVED FOR DESIGN	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION	W-BEAM GUARDRAIL G4(MODIFIED) WITH FREEWAY CURB AND GUTTER	DRAWING NO. C-10.05 Sheet 2 of 2

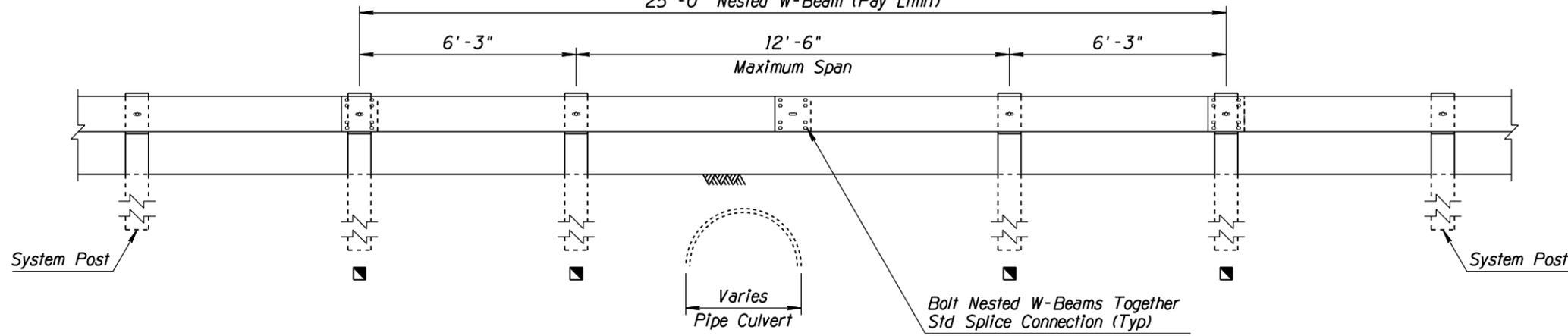
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED TITLES, SPLICE NOTES & GENERAL NOTES	RLF	11/09
2			
3			
4			



PLAN

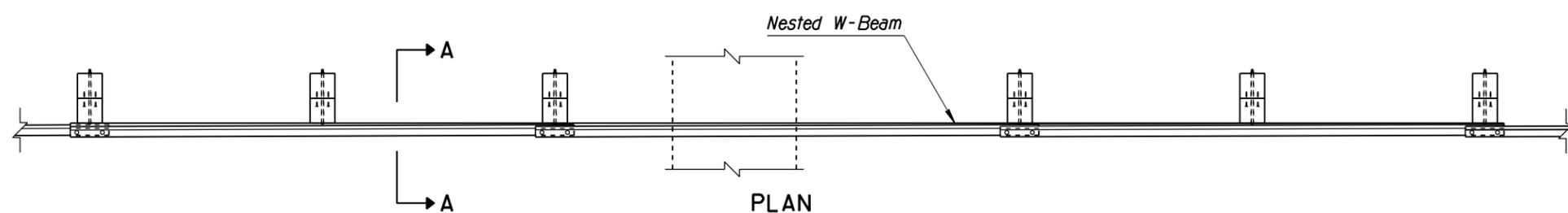
25'-0" Nested W-Beam (Pay Limit)

6'-3" 12'-6" 6'-3"
Maximum Span



ELEVATION

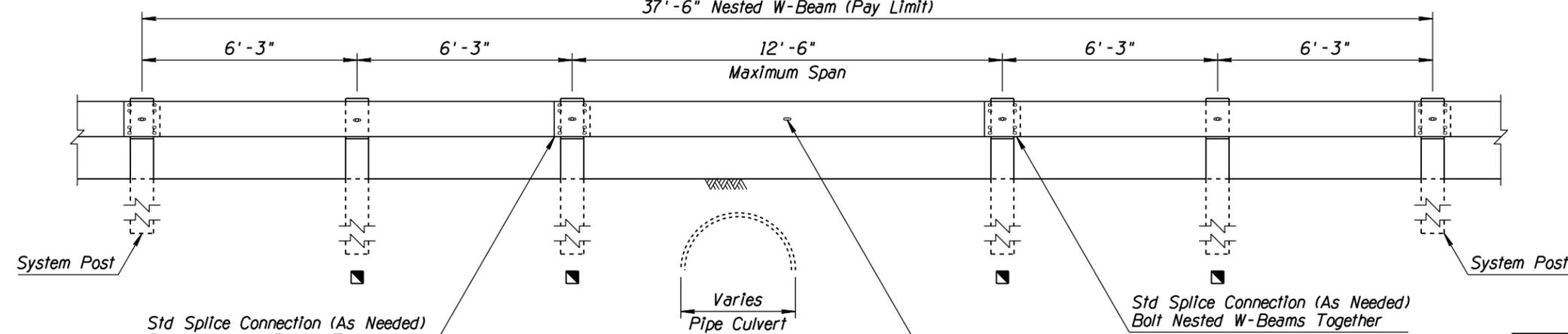
TYPE 1 (SPLICE CONNECTION INSIDE 12'-6" SPAN)



PLAN

37'-6" Nested W-Beam (Pay Limit)

6'-3" 6'-3" 12'-6" 6'-3" 6'-3"
Maximum Span



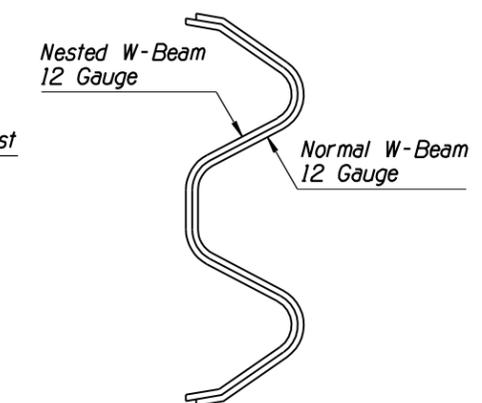
ELEVATION

TYPE 2 (SPLICE CONNECTION OUTSIDE 12'-6" SPAN)

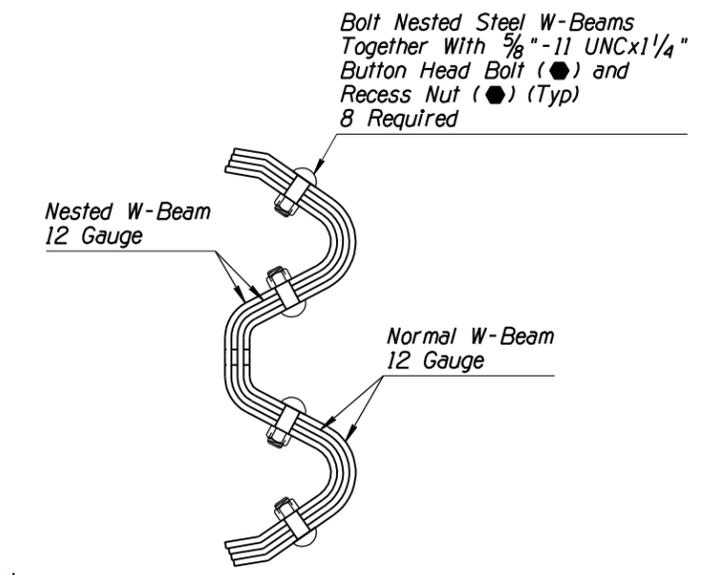
GENERAL NOTES

1. Construct either Type 1 or Type 2 for 12'-6" span.
2. For Type 1 and Type 2, a maximum of one post may be eliminated within a span of nested guardrail.
3. Minimum length of nested guardrail is one 6'-3" post spacing on each side of maximum span.
4. See Std Dwgs C-10.03 and C-10.04 for additional information and dimensions.
5. Guardrail shall be lapped in the direction of adjacent traffic.

- - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation
- 72" Timber Post



SECTION A-A



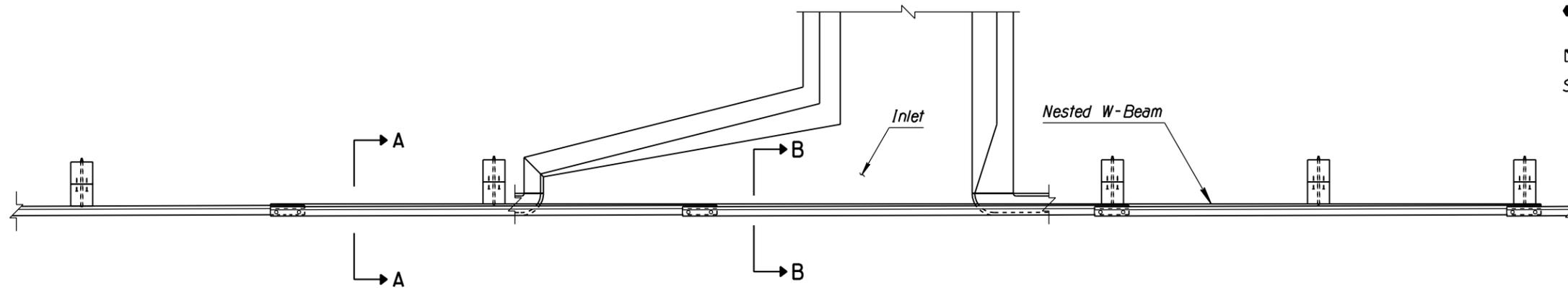
SECTION B-B

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	W-BEAM GUARDRAIL NESTED TYPES 1 AND 2	DRAWING NO. C-10.06 Sheet 1 of 2

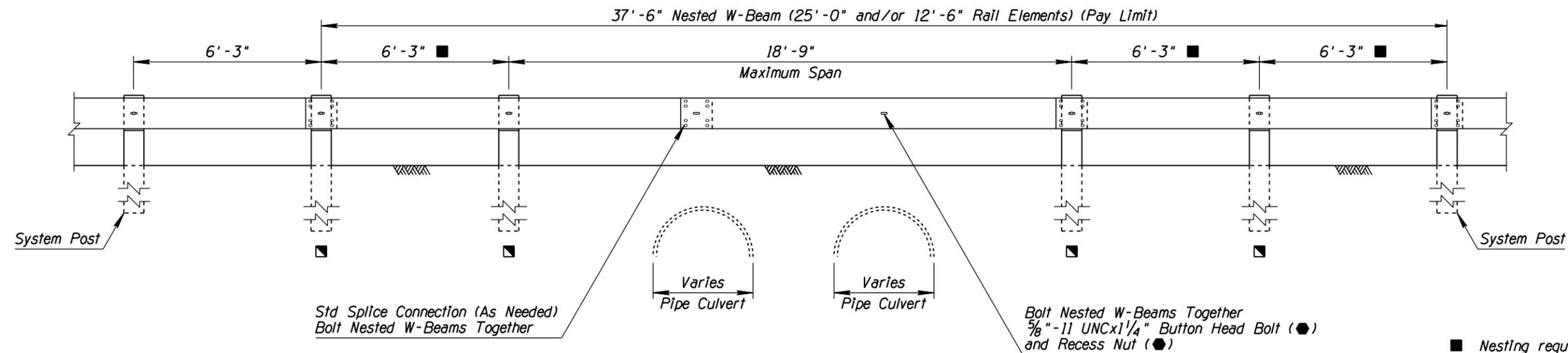
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED TITLE, SPLICE NOTES & GENERAL NOTES	RLF	11/09
2			
3			
4			

GENERAL NOTES

1. Use Type 3 Nested W-Beam to span downdrain or spillway inlets as shown in the plan view.
 2. Use Type 3 Nested W-Beam to span multiple obstructions as shown in the elevation view.
 3. For Type 3, a maximum of two posts may be eliminated within a span of nested guardrail.
 4. Minimum length of nested guardrail is one 6'-3" post spacing on each side of maximum span.
 5. Guardrail shall be lapped in the direction of adjacent traffic.
- - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation
 ■ 72" Timber Post
 See Sheet 1 of 2 for Sections A-A and B-B



PLAN



ELEVATION

TYPE 3 (18'-9" SPAN)

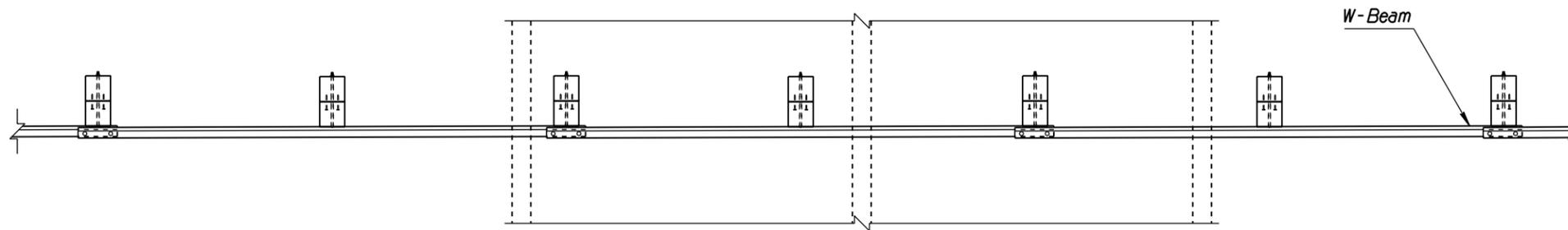
- Nesting requires one 6'-3" post spacing on one end of the span and two 6'-3" post spacings on the other end of the span for standard length guardrail elements. The one or two post spacings may be reversed to accommodate field conditions.

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	W-BEAM GUARDRAIL NESTED TYPE 3	DRAWING NO. C-10.06 Sheet 2 of 2

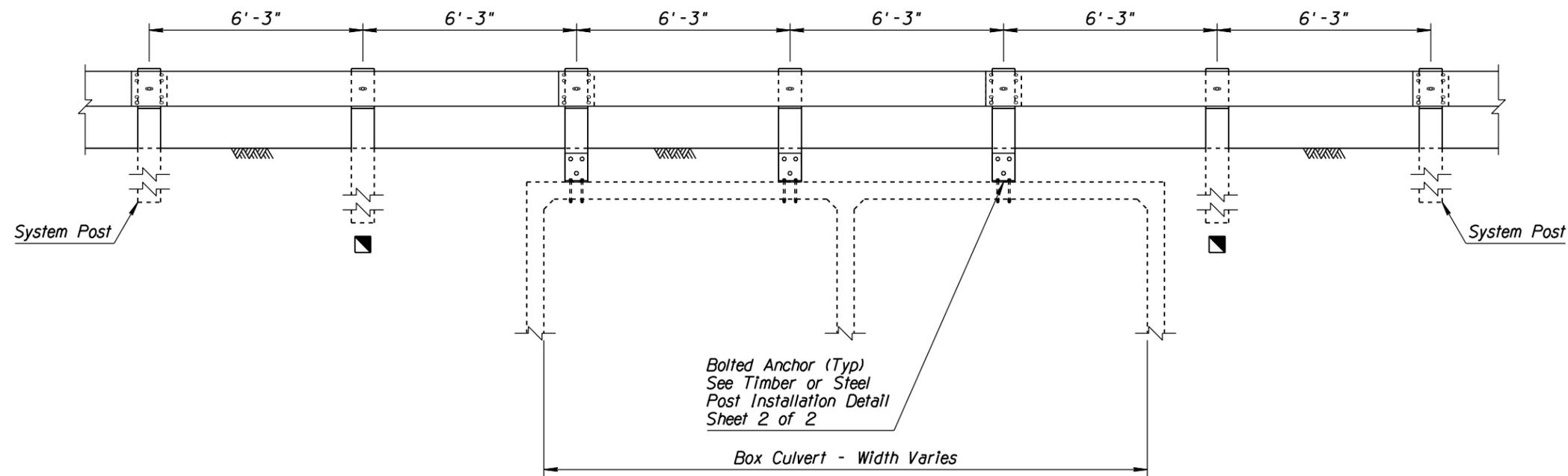
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED FROM C-10.29, 1 OF 2 & REVISED TITLE	RLF	9/04
2	ADDED GENERAL NOTE 2	RLF	9/04
3	REVISED GENERAL NOTE 1	RLF	9/04
4			

GENERAL NOTES

- ③ 1. See Std Dwgs C-10.03 and C-10.04 for additional information and dimensions.
- ② 2. Guardrail shall be lapped in the direction of adjacent traffic.
- 72" Timber Post



PLAN
Traffic ←



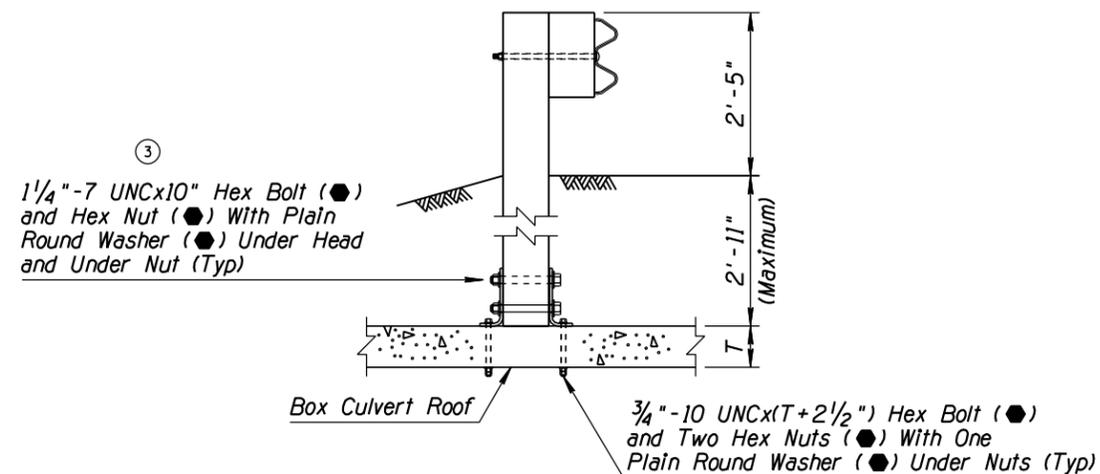
ELEVATION
BOLTED ANCHOR
BOX CULVERT INSTALLATION

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	W-BEAM GUARDRAIL BOLTED ANCHOR	DRAWING NO. C-10.07 Sheet 1 of 2

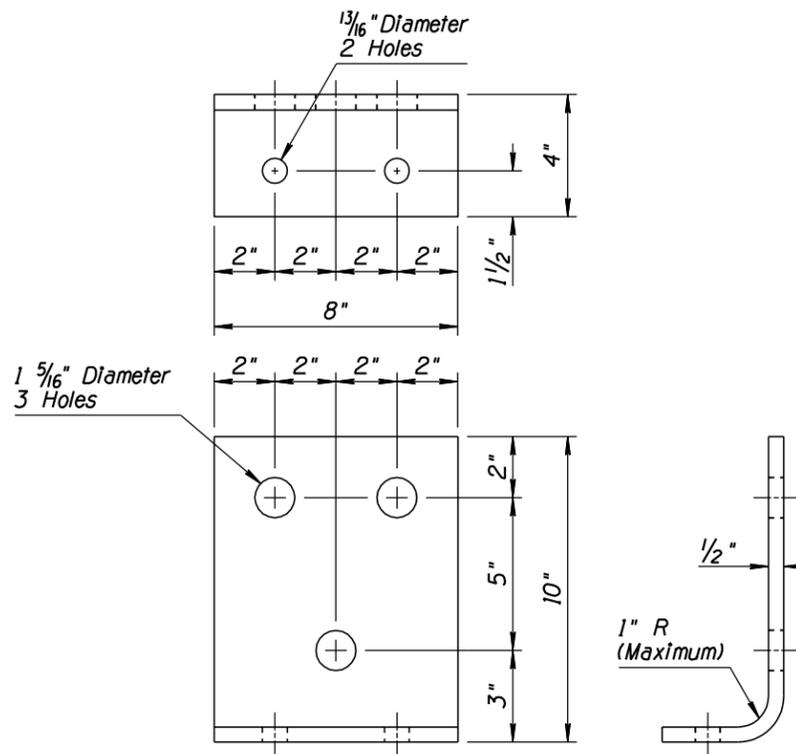
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG FROM C-10.29, 2 OF 2 & REVISED TITLE	RLF	9/04
2	REVISED DESIGNATION	RLF	9/04
3	REVISED LENGTH	RLF	7/05
4			

GENERAL NOTES

- Bracket may be made of one piece hot bent, or two pieces welded together.
 - Short timber posts anchored to box culvert roof shall be 8" x 8" only.
- ② ● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation

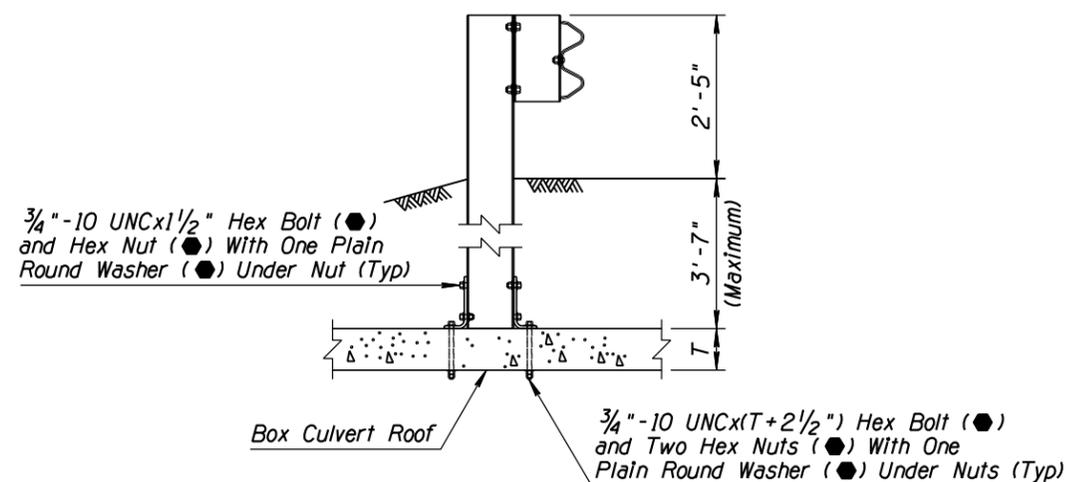


INSTALLATION DETAIL

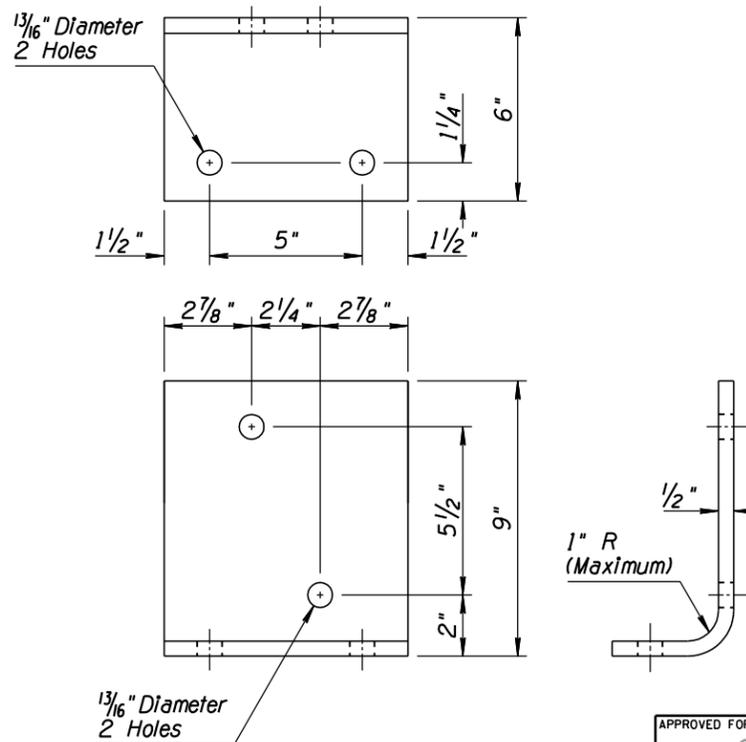


BRACKET DETAIL

**BOLTED ANCHOR
TIMBER POST INSTALLATION DETAIL**



INSTALLATION DETAIL



BRACKET DETAIL

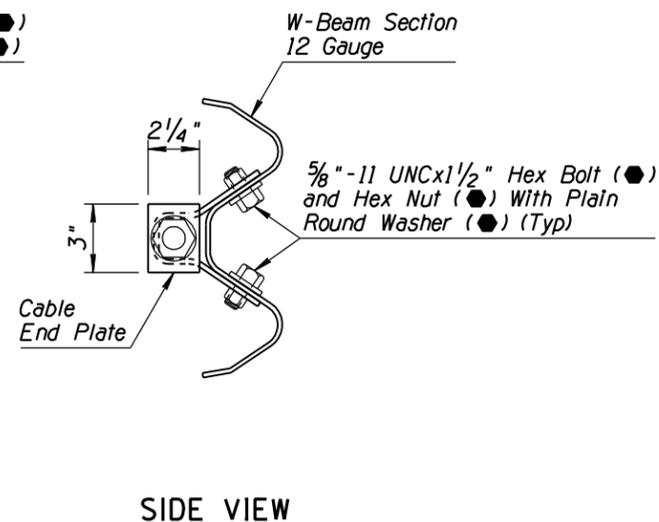
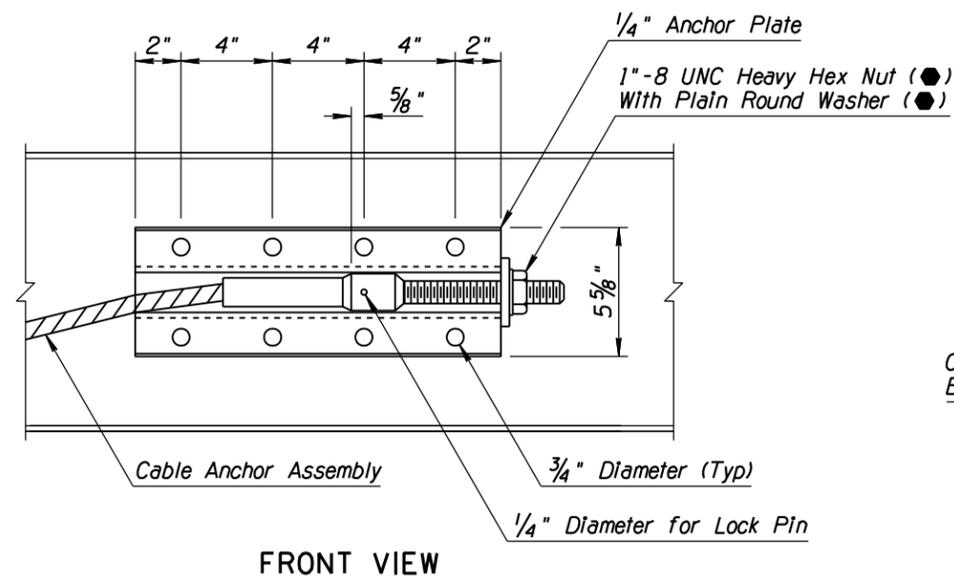
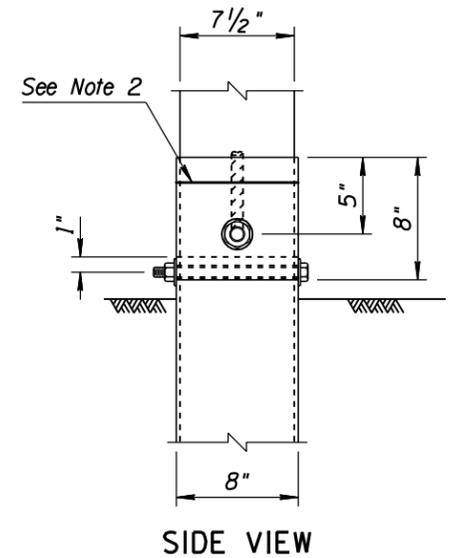
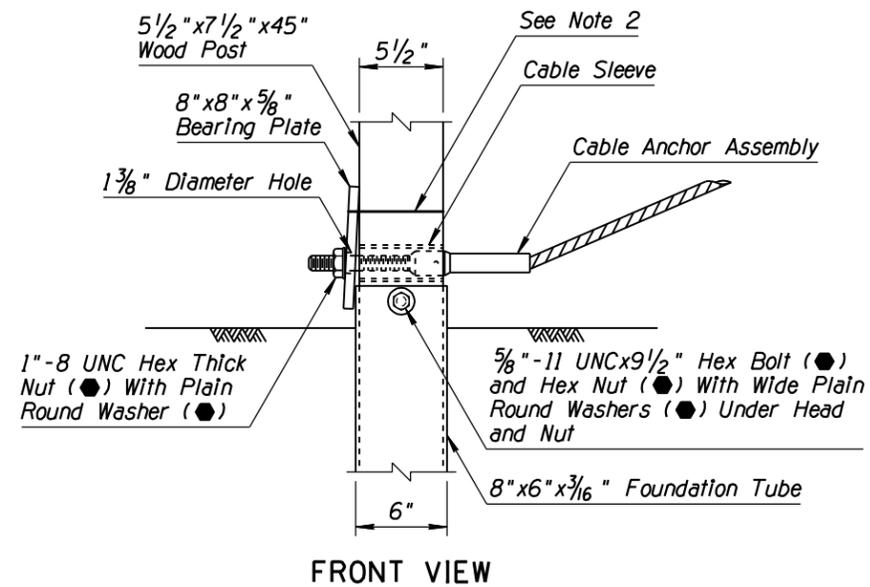
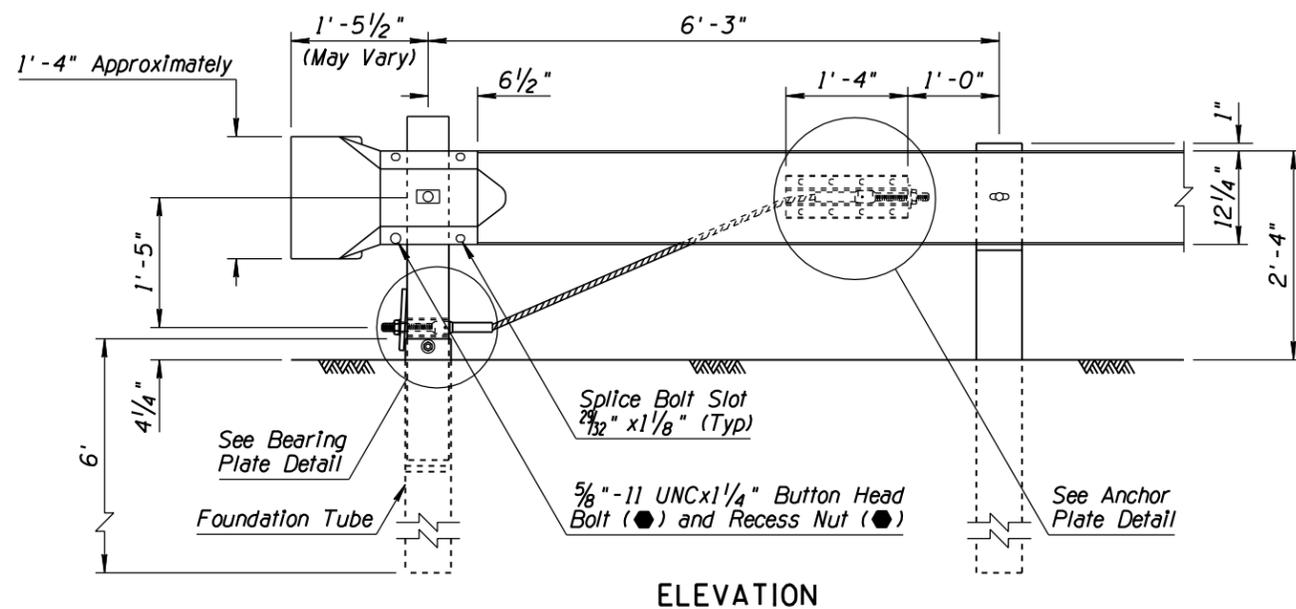
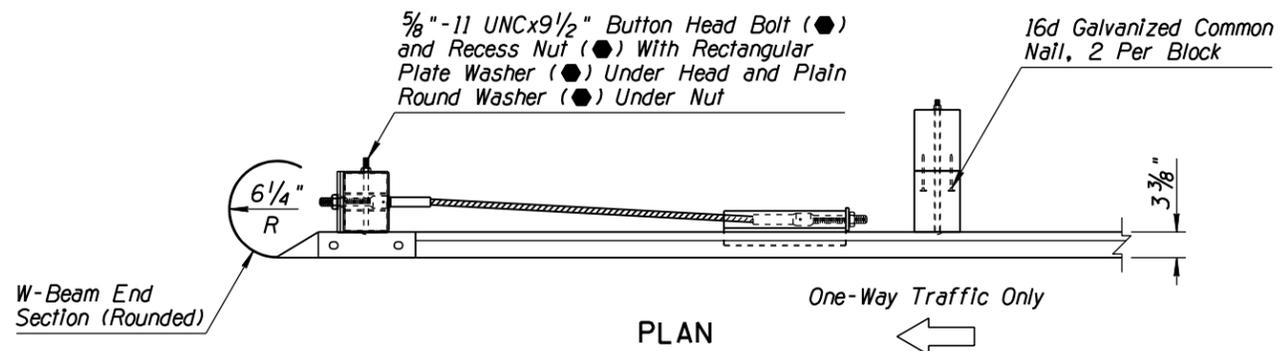
**BOLTED ANCHOR
STEEL POST INSTALLATION DETAIL**

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	W-BEAM GUARDRAIL BOLTED ANCHOR	DRAWING NO. ① C-10.07 Sheet 2 of 2

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG FROM C-10.45 & REVISED TITLE	RLF	9/04
2	REVISED DESIGNATION	RLF	9/04
3	REVISED GENERAL NOTE 2	RLF	9/04
4			

GENERAL NOTES

- The cable assembly shall be tightened to remove slack.
 - One wrap of 14 gauge galvanized steel wire shall be wrapped around the terminal post near the top of the bearing plate.
 - See Std Dwg C-10.00 for measurement limits.
- - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation

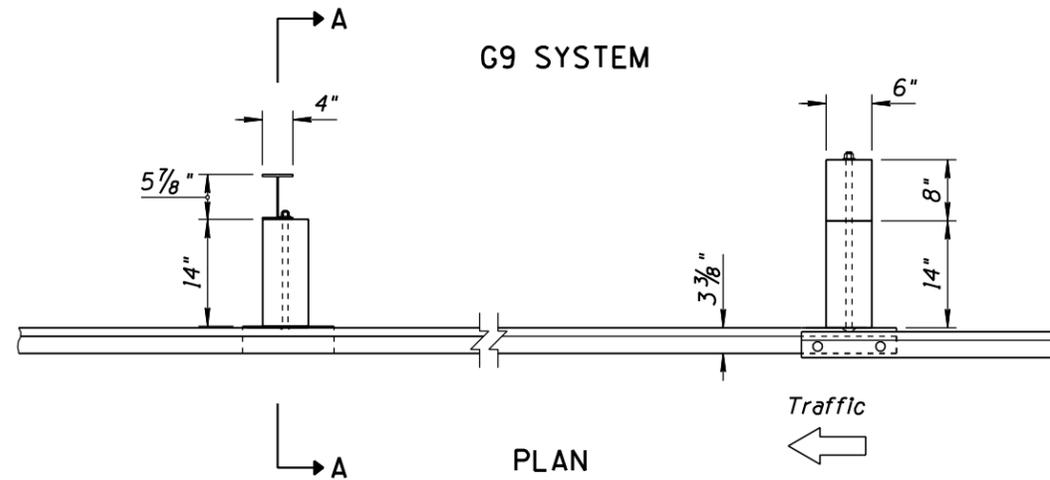


APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	W-BEAM GUARDRAIL END ANCHOR ①	DRAWING NO. C-10.08 ①

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG FROM C-10.24 & REVISED TITLE	RLF	9/04
2	REVISED DESIGNATION	RLF	9/04
3	REVISED PLAN, ELEVATION & SECTION VIEWS	RLF	9/04
4	CORRECTED THRIE-BEAM DIMENSION	RLF	5/12

GENERAL NOTES

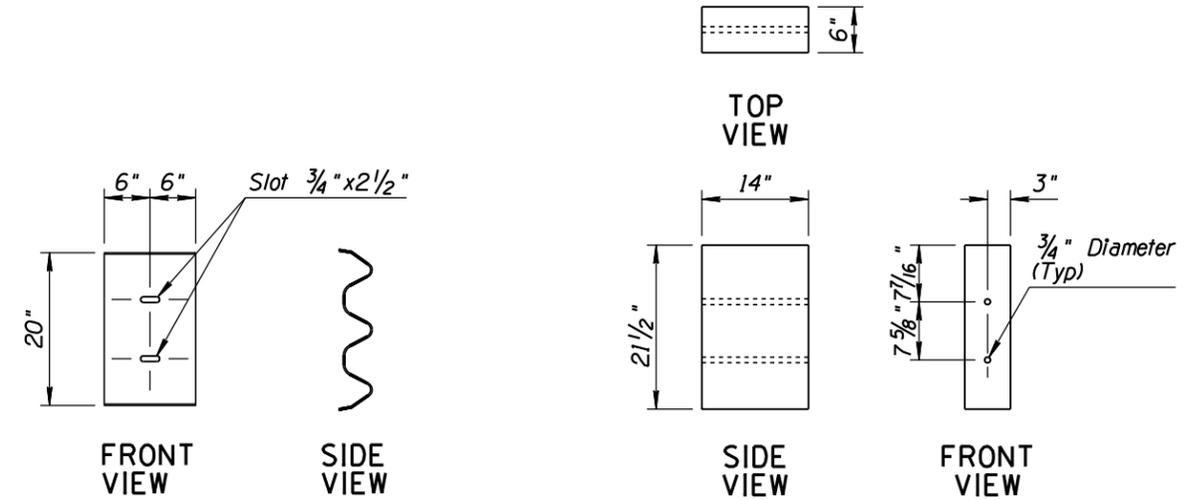
② ● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation



G9 SYSTEM

PLAN

③

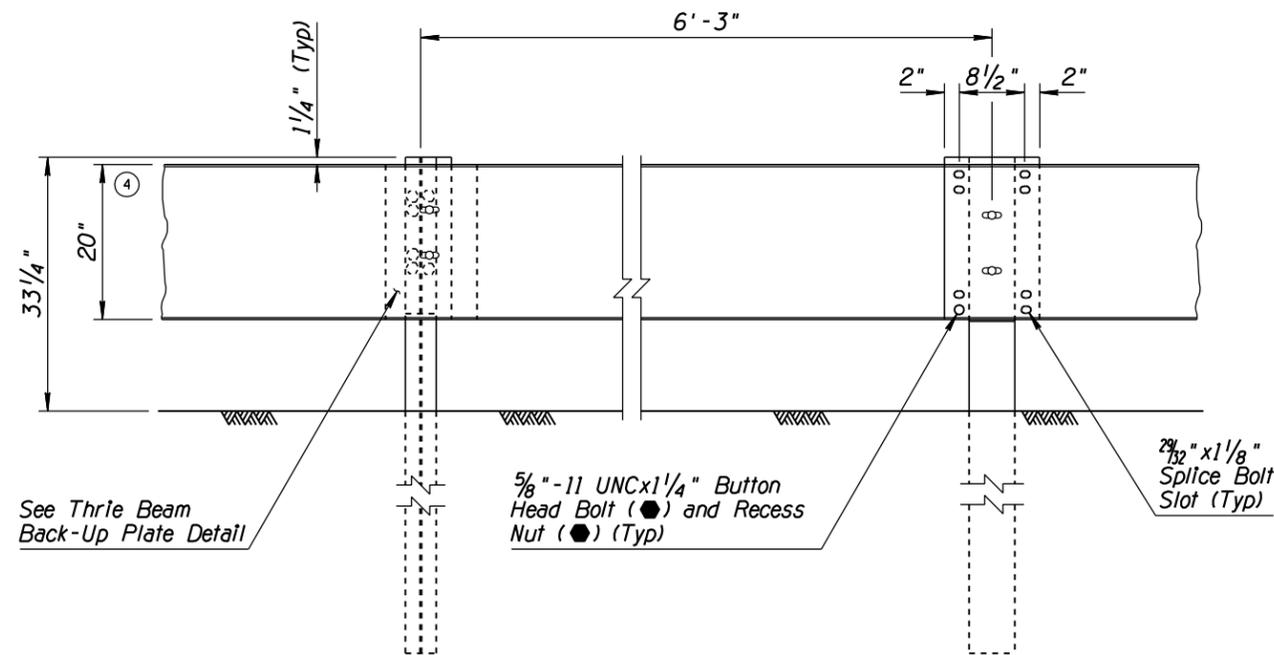


THRIE BEAM BACK-UP PLATE DETAIL

③

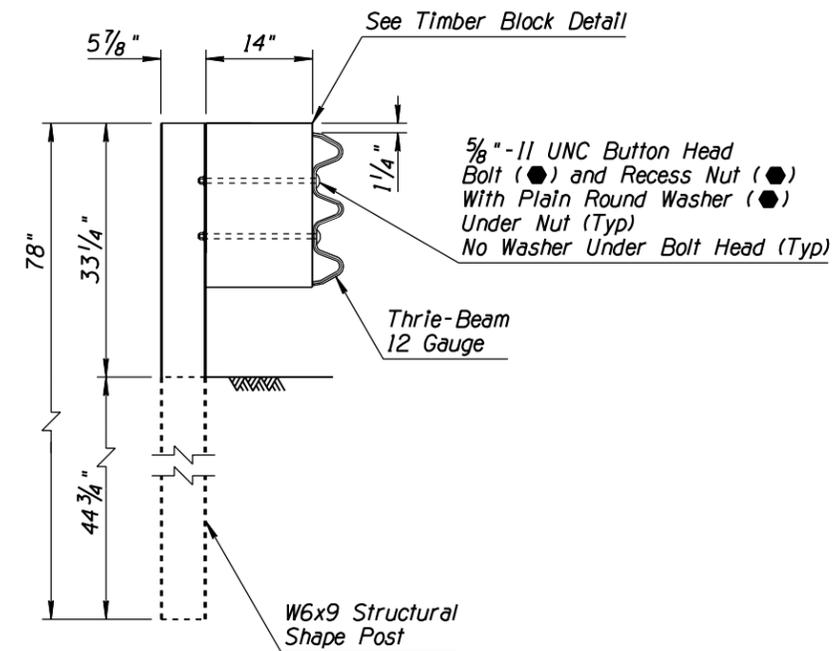
TIMBER BLOCK DETAIL

③



ELEVATION G9 SYSTEM

③



(G9) SECTION A-A

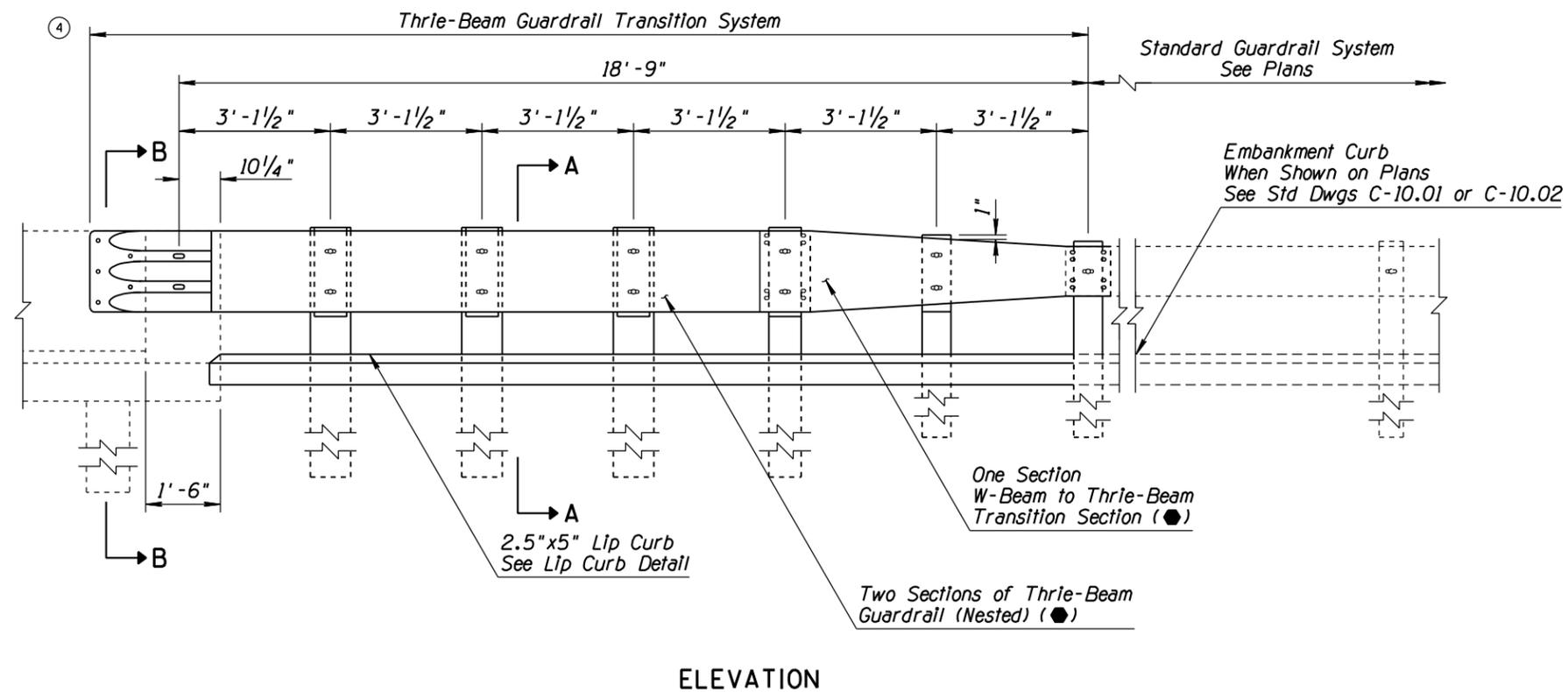
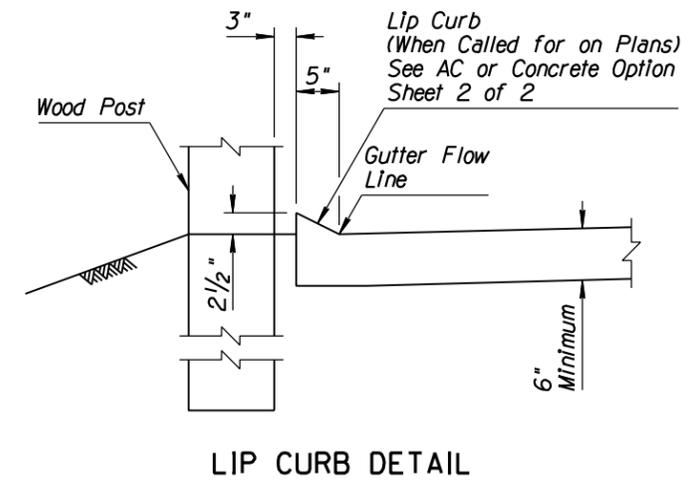
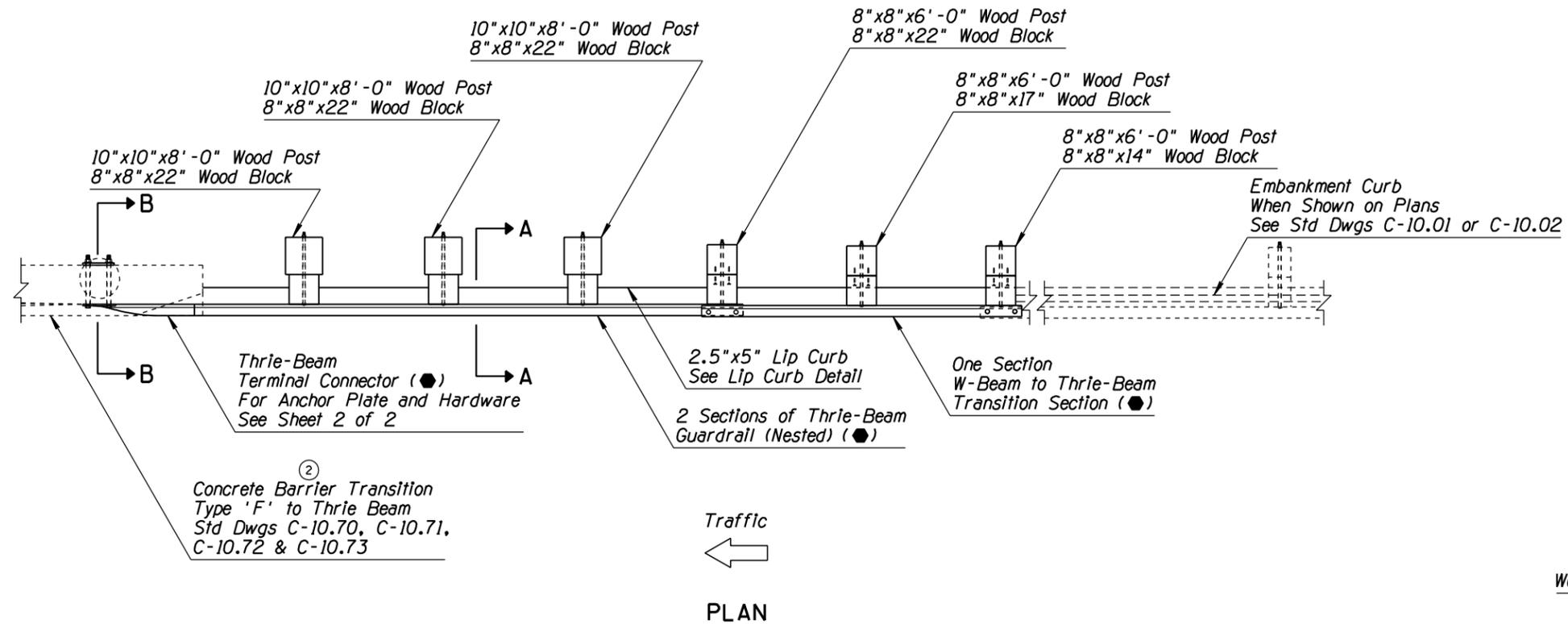
③

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	THRIE-BEAM GUARDRAIL G9 BLOCKED-OUT STEEL POST	DRAWING NO. ① C-10.20

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED (A325) REQUIREMENT	RLF	12/04
2	REVISED BARRIER TRANSITION CALLOUT	RLF	7/05
3	REISSUED AS STANDARD DRAWING C-10.30, SHEET 1 OF 2	RLF	7/05
4	REVISED SYSTEM LIMIT TO INCLUDE END SHOE	RLF	5/07

GENERAL NOTES

1. Curbing is not required when drainage flows transversely away from barrier.
 2. Treatment at back of lip curb modified for constructability purposes. Front slope and height of lip curb shall not be exceeded.
 3. Thrie-beam terminal connector to thrie-beam splice shall be lapped in the direction of adjacent traffic.
- - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation

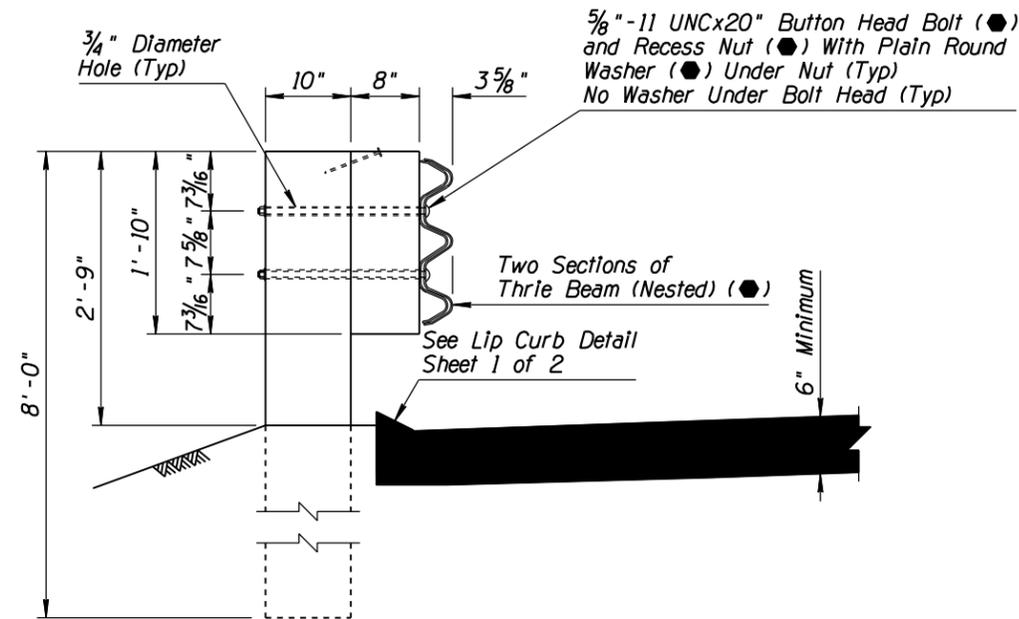


APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	GUARDRAIL TRANSITION, THRIE BEAM TO CONCRETE HALF BARRIER 32" TYPE 'F'	DRAWING NO. 3 C-10.30 Sheet 1 of 2

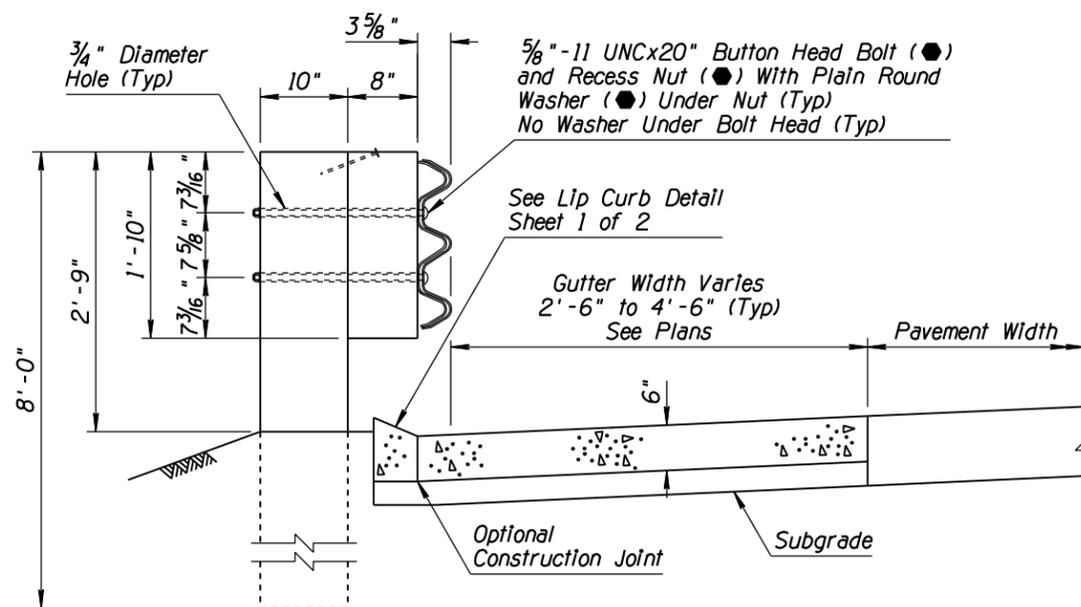
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	NEW STANDARD DRAWING	RLF	7/05
2			
3			
4			

GENERAL NOTES

- Anchor Plate shall conform to ASTM specification A36. Bolts, washers and Anchor Plate shall be galvanized or, at the contractors option, stainless steel bolts and washers may be used.
 - Two-Inch deep contraction joints shall be placed in the curb and the gutter at locations which match the joints in adjacent PCCP and at approximate 15' centers when adjacent to AC pavement. Joints shall be either hand-tooled or sawn.
- - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation

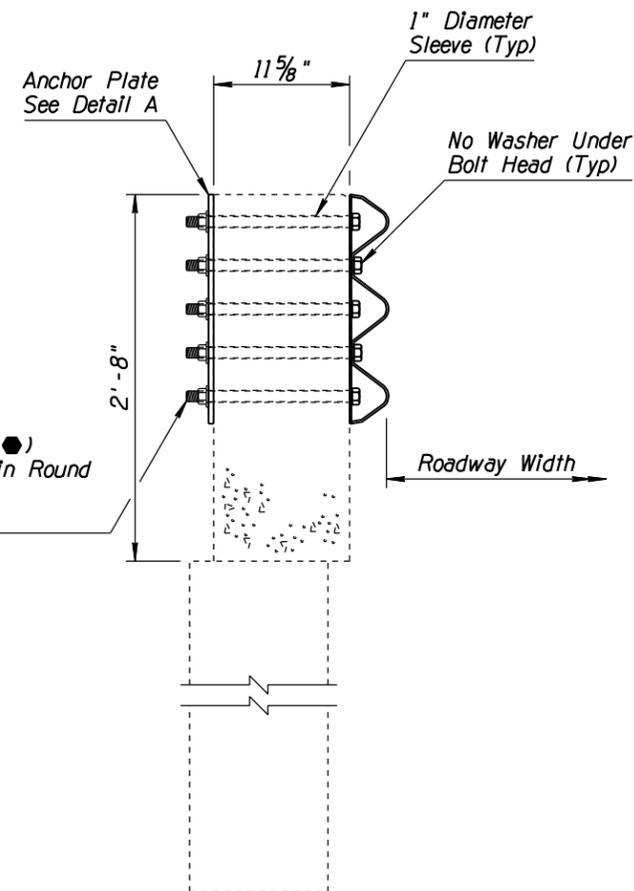


SECTION A-A
AC OPTION

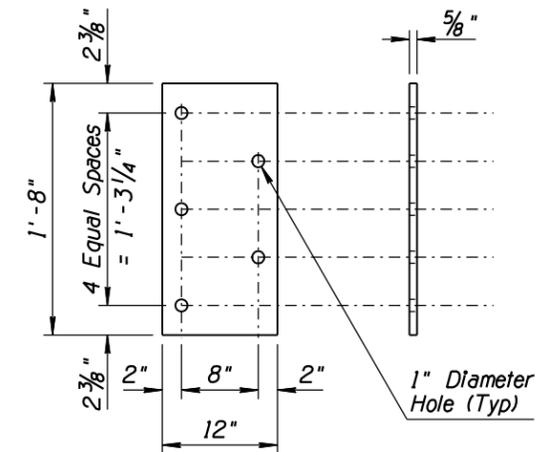


SECTION A-A
CONCRETE OPTION

7/8"-9 UNCx14" Hex Bolt (A325) (●) and Hex Nut (A325) (●) With Plain Round Washer (●) (Under Nut) (Typ) 5 Required



SECTION B-B



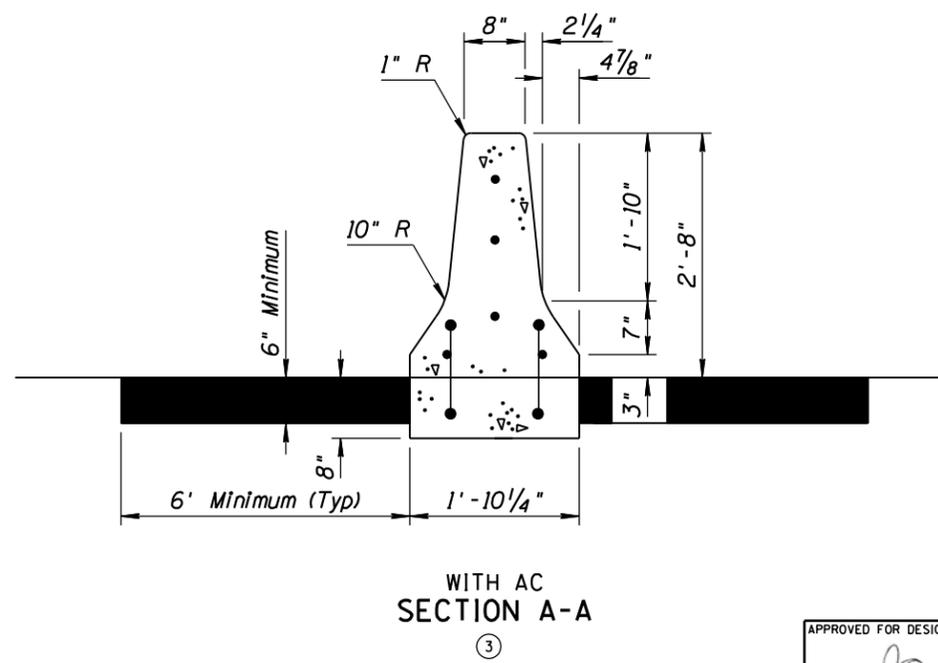
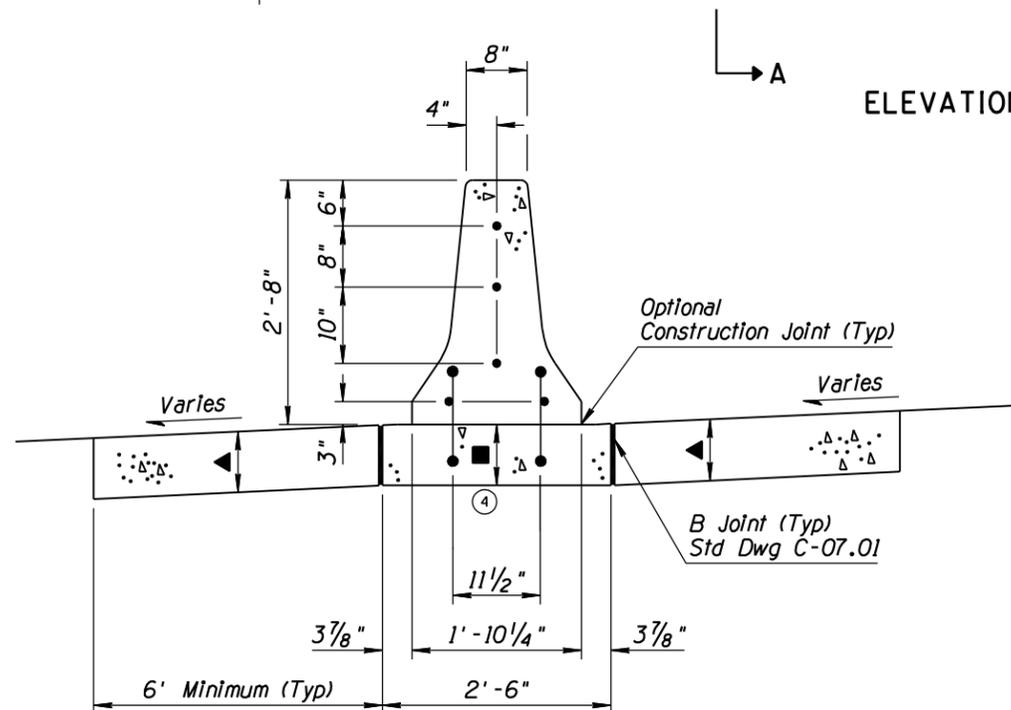
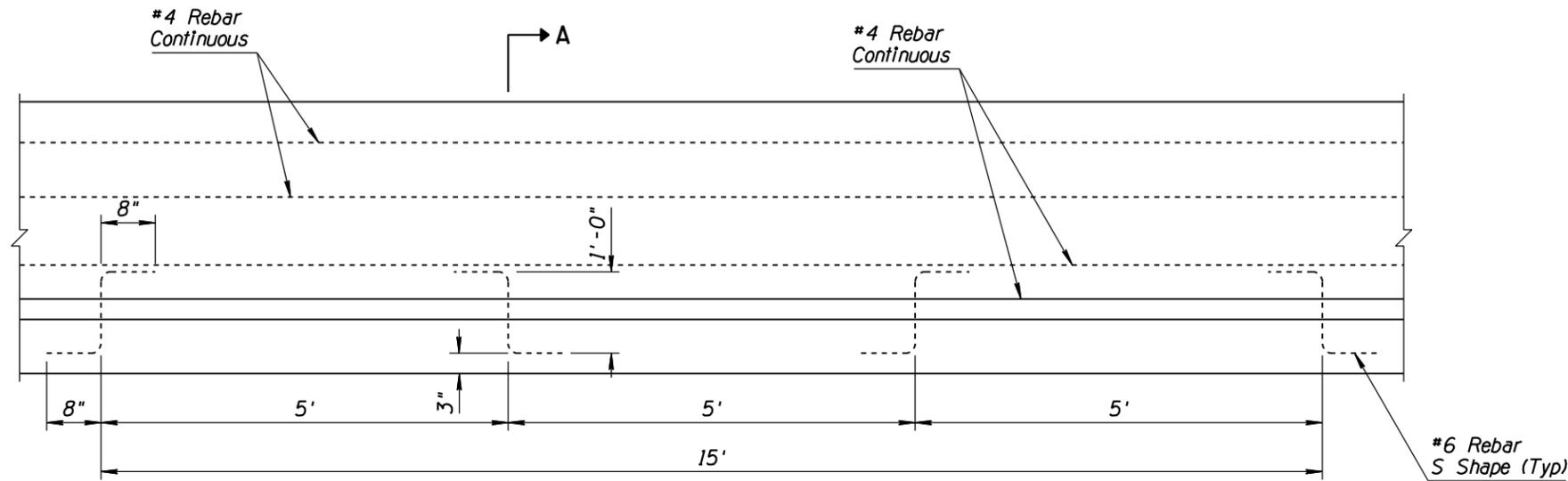
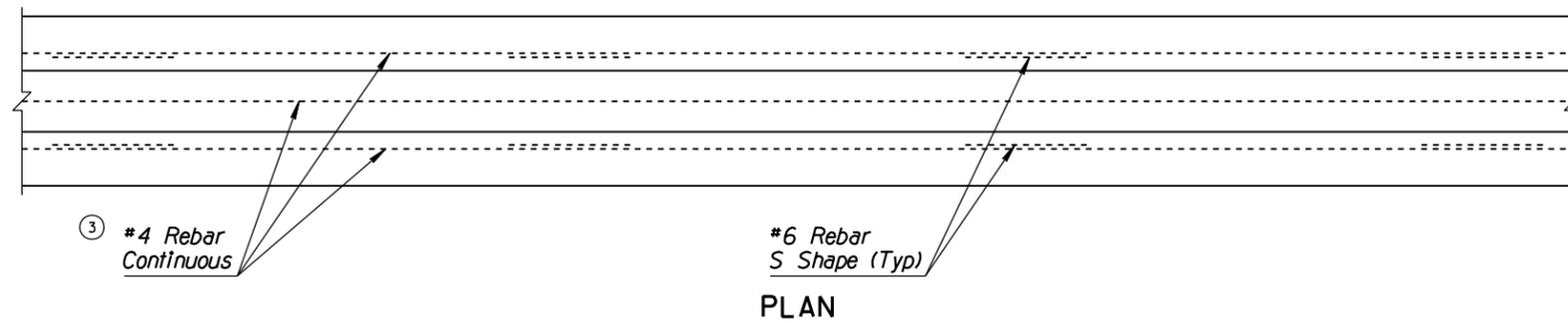
ANCHOR PLATE - DETAIL A

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	GUARDRAIL TRANSITION THREE-BEAM TO CONCRETE HALF BARRIER 32" TYPE 'F'	DRAWING NO. ① C-10.30 Sheet 2 of 2

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG C-10.66 & REVISED TITLE	RLF	9/04
2	REVISED GENERAL NOTE 3	RLF	9/04
3	RELOCATED # 4 REBARS	RLF	9/04
4	REVISED SECTION VIEW AND NOTE	RLF	5/12

GENERAL NOTES

- Median Barrier shall be constructed by the slip form or formed cast-in-place method.
 - When obstacles prevent the use of slip form equipment, stationary forms shall be used.
 - Concrete shall be Class S, $f'_c = 4000$ PSI.
 - If the footing and barrier are cast monolithically, #6 S shape rebars are not required.
 - Barrier width shall not exceed the barrier footing width nor overhang the adjacent pavement.
 - #4 Rebar shall extend 12" past the construction joint at the completion of the day's pour.
- ▲ Depth to match adjacent PCCP thickness.
- Footing depth shall match adjacent PCCP thickness and shall consist of either
- full-depth concrete, or
 - 8" concrete over compacted AB (Class 2).
- See Special Provisions for measurement and payment.

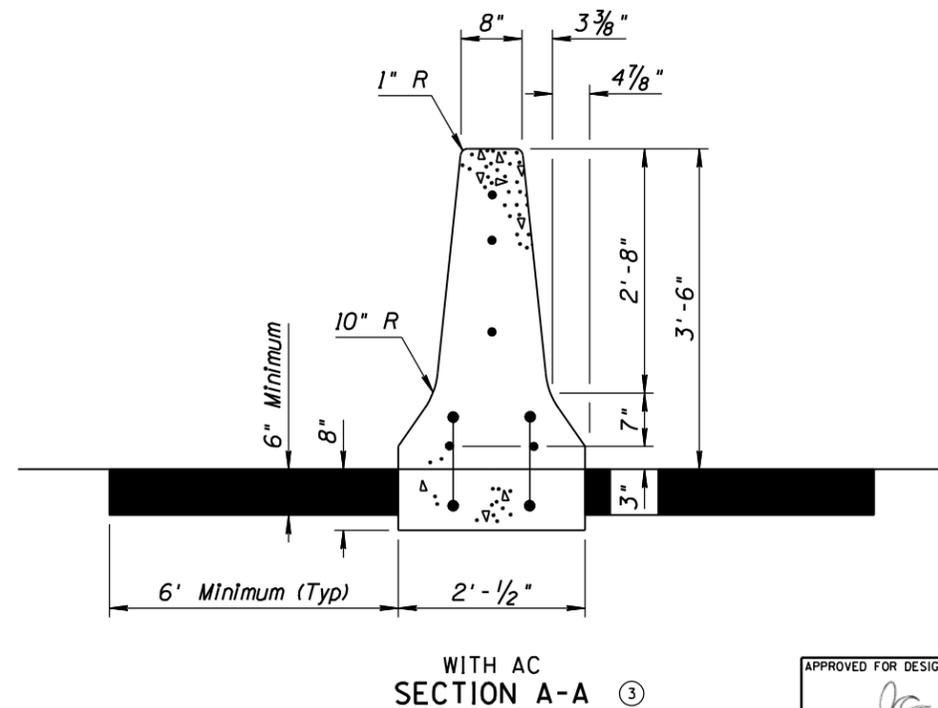
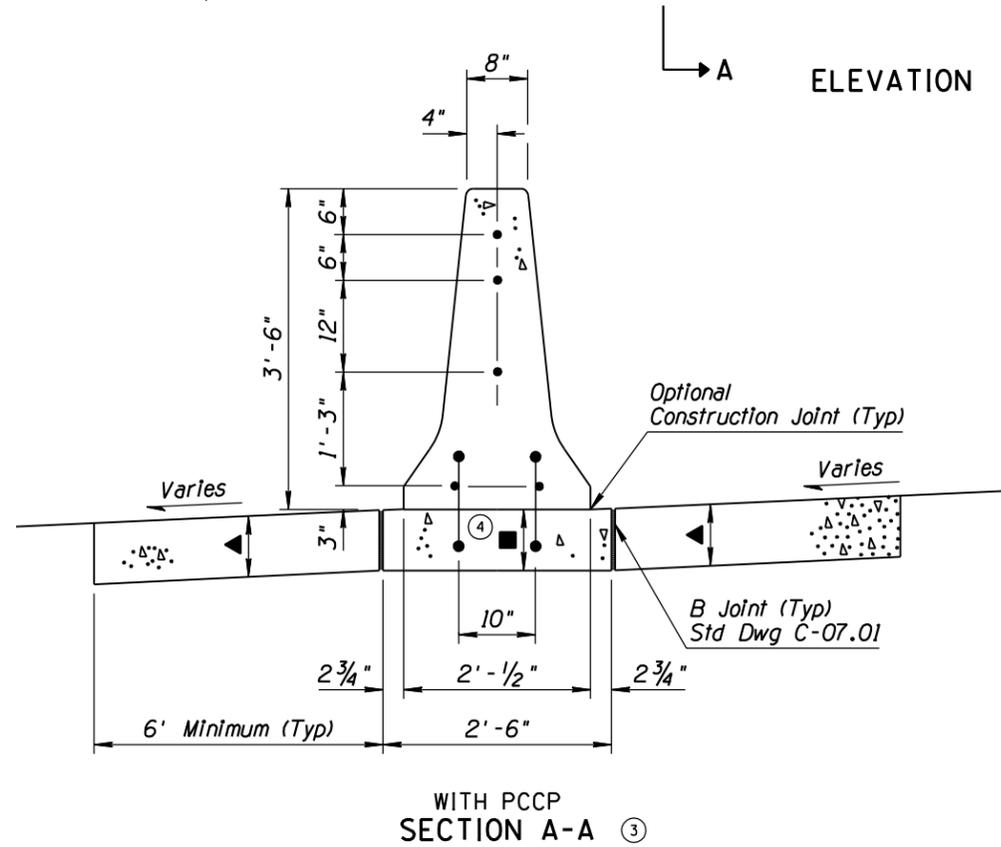
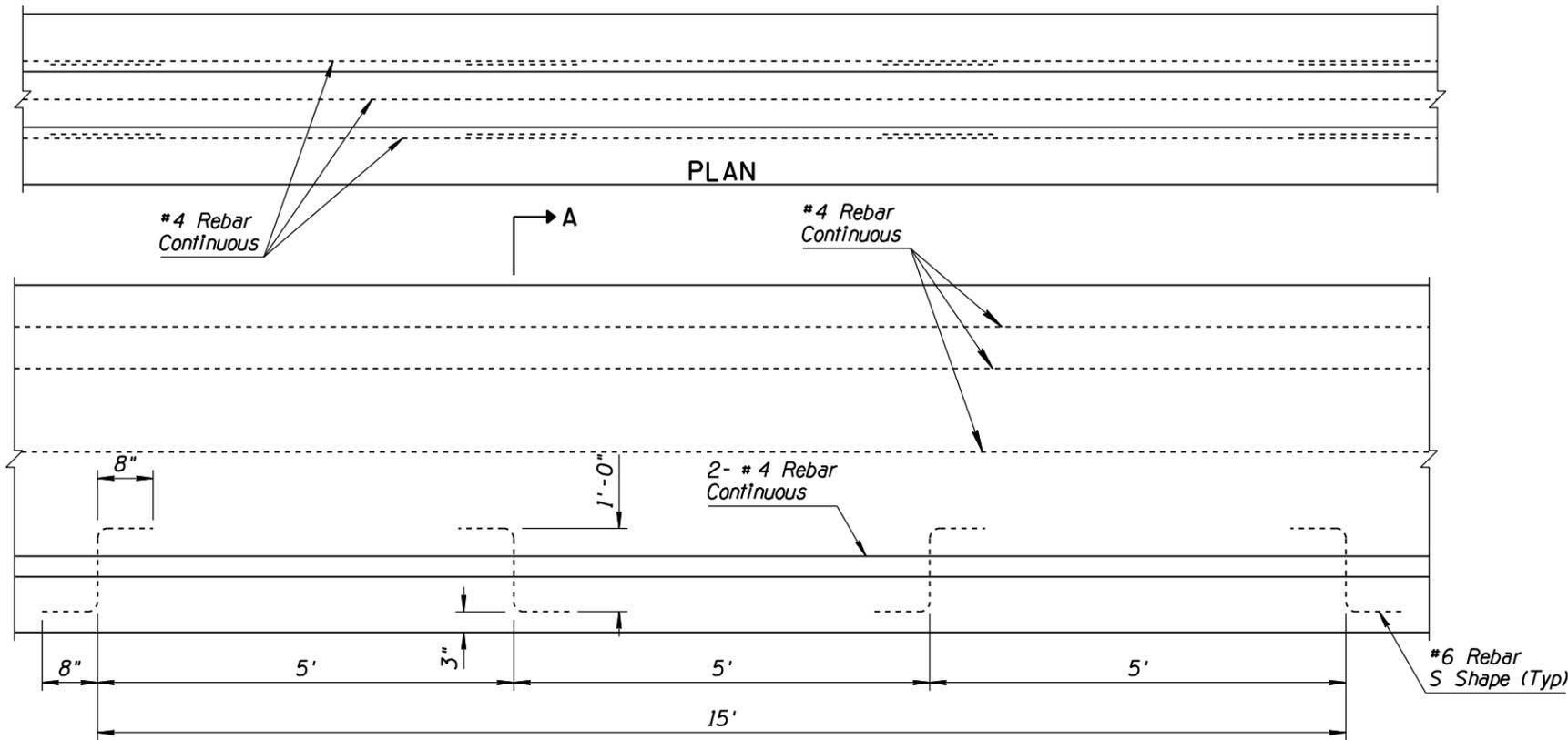


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE MEDIAN BARRIER 32" TYPE 'F' CAST-IN-PLACE	DRAWING NO. ① C-10.40

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG FROM C-10.67 & REVISED TITLE	RLF	9/04
2	REVISED GENERAL NOTE 3	RLF	9/04
3	RELOCATED #4 REBARS	RLF	9/04
4	REVISED SECTION VIEW AND NOTES ▲ & ■	RLF	5/12

GENERAL NOTES

- Median Barrier shall be constructed by the slip form or by the formed cast-in-place method.
 - When obstacles prevent the use of slip form equipment, stationary forms shall be used.
 - Concrete shall be Class S, $f'_c = 4000$ PSI.
 - If the footing and barrier are cast monolithically, #6 S shape rebars are not required.
 - Barrier width shall not exceed the barrier footing width nor overhang the adjacent pavement.
 - #4 rebar shall extend 12" past the construction joint at the completion of the day's pour.
- ▲ Depth to match adjacent PCCP thickness.
 ■ Footing depth shall match adjacent PCCP thickness and shall consist of either
- full-depth concrete, or
 - 8" concrete over compacted AB (Class 2).
- See Special Provisions for measurement and payment.

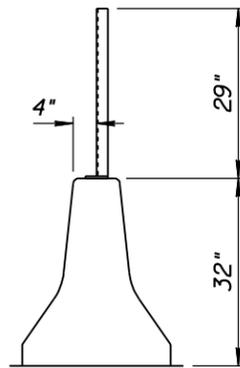


APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	CONCRETE MEDIAN BARRIER ① 42" TYPE 'F' CAST-IN-PLACE	DRAWING NO. ① C-10.41

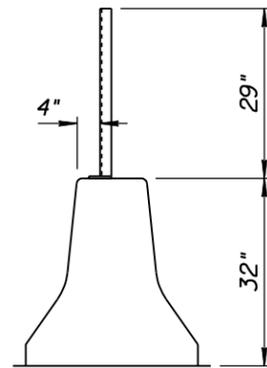
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STANDARD DRAWING FROM C-10.97, SHEET 1 OF 3	RLF	9/04
2	CORRECTED DRAWING REVISION DATE	RLF	7/06
3			
4			

GENERAL NOTES

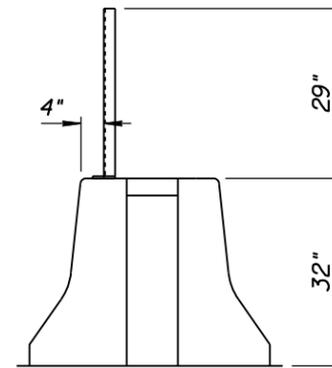
- Posts shall be 12'-6" center to center. Structural steel shall conform to ASTM A36, galvanized in accordance with ASTM A123.
- Hex head bolt shall conform to ASTM A307, galvanized in accordance with ASTM A153 Class C.
- Helical spring lock washer shall conform to ASTM A313, galvanized in accordance with ASTM A153 Class C.
- Tension wire: AWG number 9 (0.148") galvanized in accordance with ASTM A116 Class 2.
- Hog ring: AWG number 12 (0.105") galvanized in accordance with ASTM A116 Class 2. Fasten glare screen to top and bottom tension wire spaced approximately 2' apart.
- Glare Screen: 18 gauge steel. ASTM A526, galvanized in accordance with ASTM A525/(G235), expanded to the following dimensions: 1.33" shortway of diamond and 4.0" longway of diamond (center to center of bridges) with a strand width of 0.250" angled at approximately 20° to the plane of the original sheet. Top edge to be shop curled and crimped on 12" center to center. Glare screen shall be installed such that flat portion of screen blocks light from headlights. See Direction Detail, Sheet 2 of 2.
- Splices allowed in glare screen at posts only, with one full diamond overlap.
- Glare screen shall be constructed without interruption to the greatest degree possible.



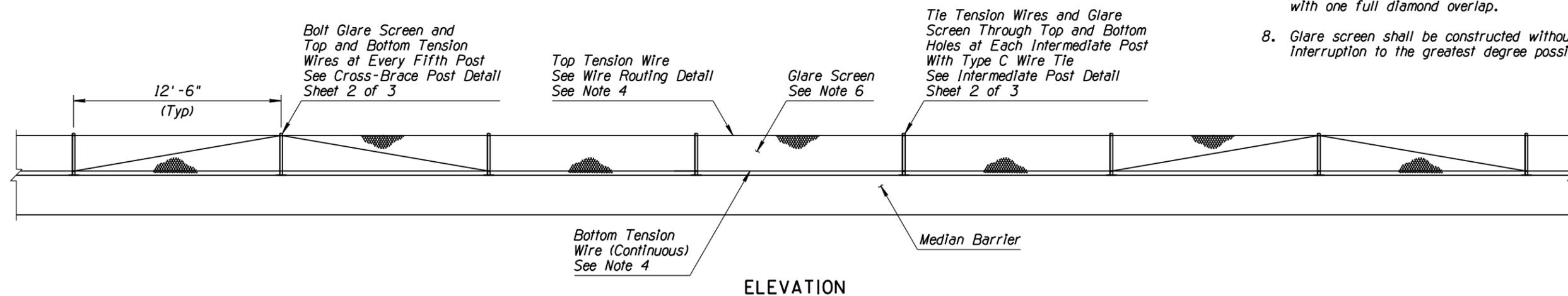
GLARE SCREEN
INSTALLATION ON
STANDARD MEDIAN BARRIER



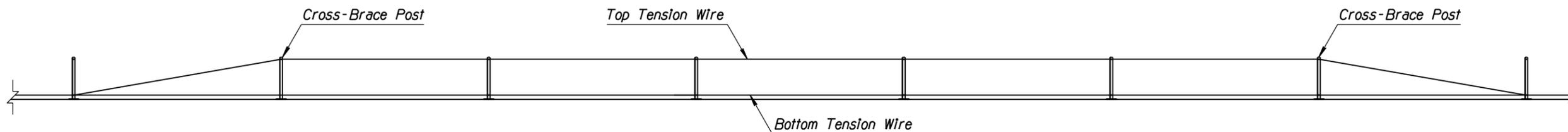
GLARE SCREEN
INSTALLATION ON
MEDIAN BARRIER TRANSITION



GLARE SCREEN
INSTALLATION ON
HALF BARRIER AT BRIDGE PIER



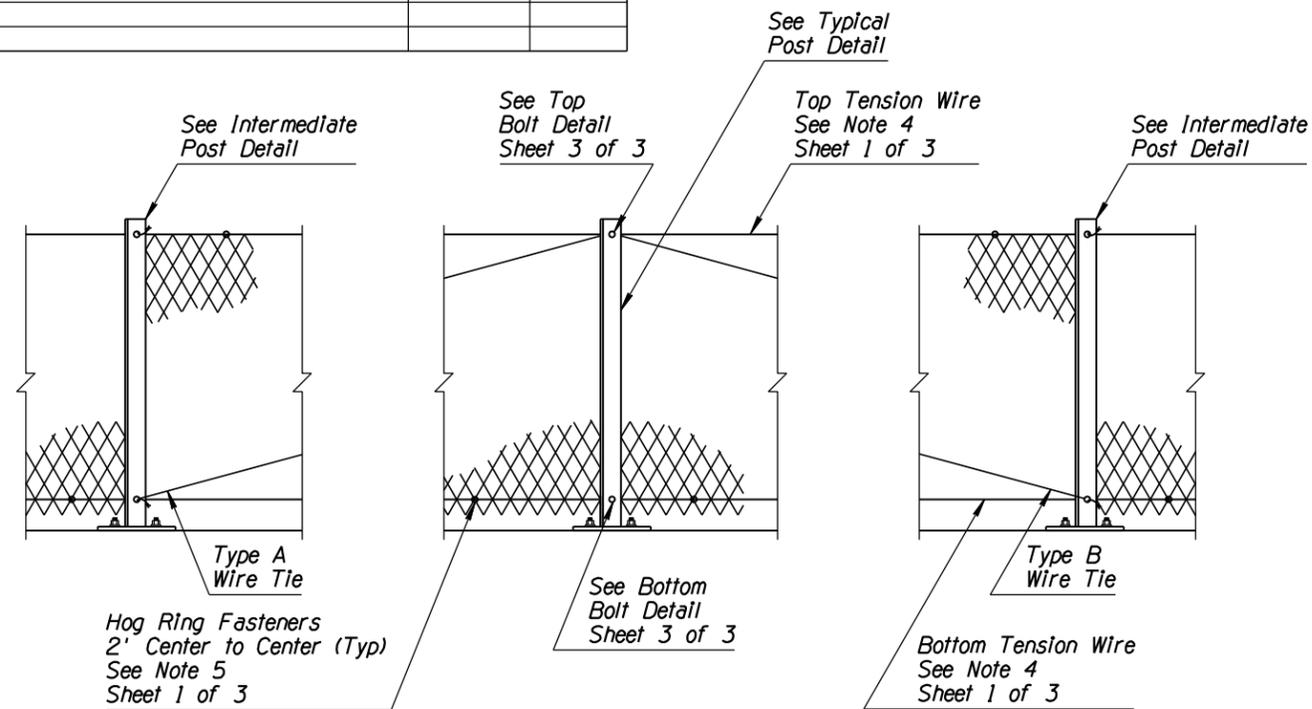
ELEVATION



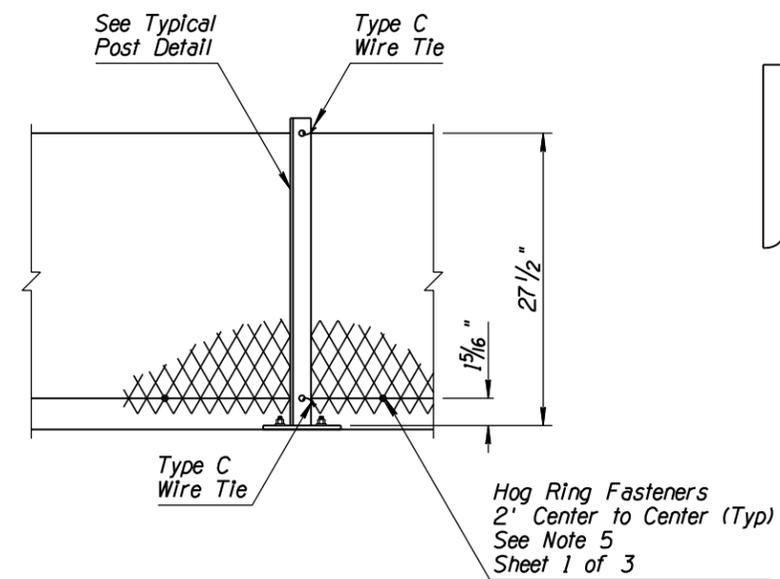
TENSION WIRE ROUTING DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	GLARE SCREEN CONCRETE MEDIAN BARRIER	DRAWING NO. C-10.42 Sheet 1 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED FROM STANDARD DRAWING C-10.97, SHEET 2 OF 3	RLF	9/04
2			
3			
4			

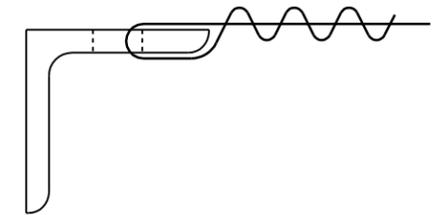


CROSS-BRACE POST DETAIL

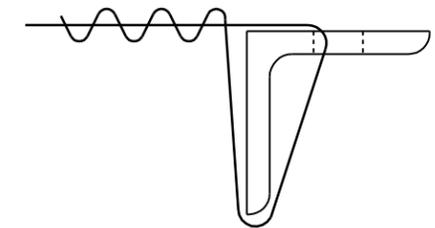


INTERMEDIATE POST DETAIL

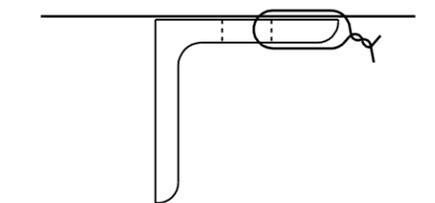
● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation



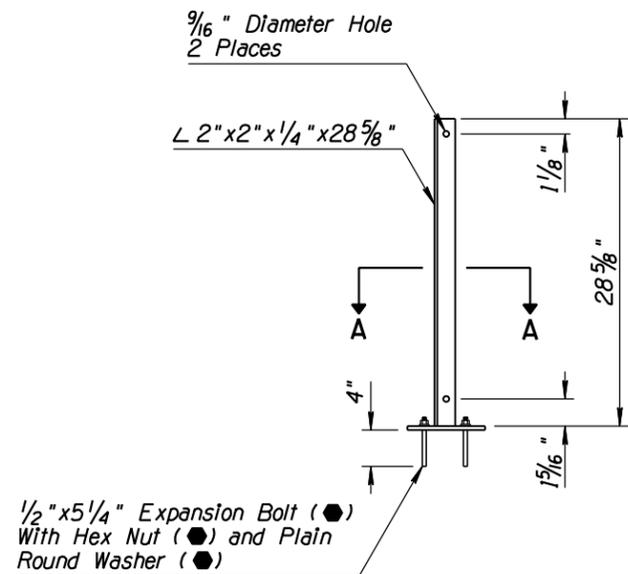
TYPE A WIRE TIE



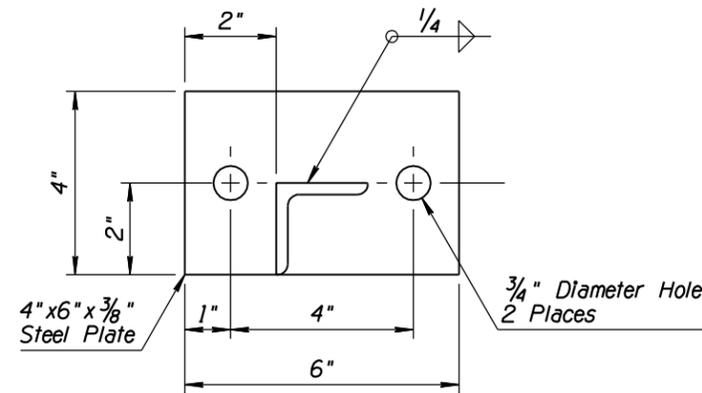
TYPE B WIRE TIE



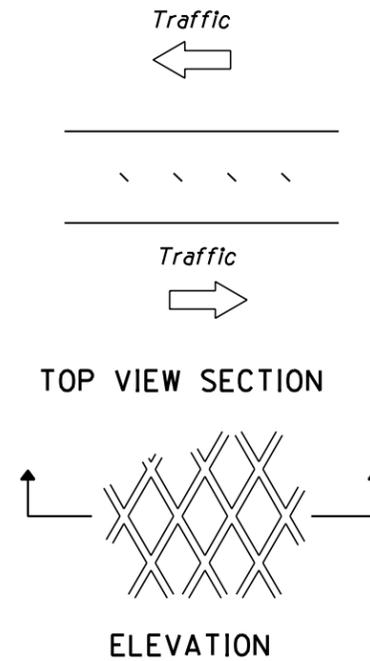
TYPE C WIRE TIE



TYPICAL POST DETAIL



SECTION A-A

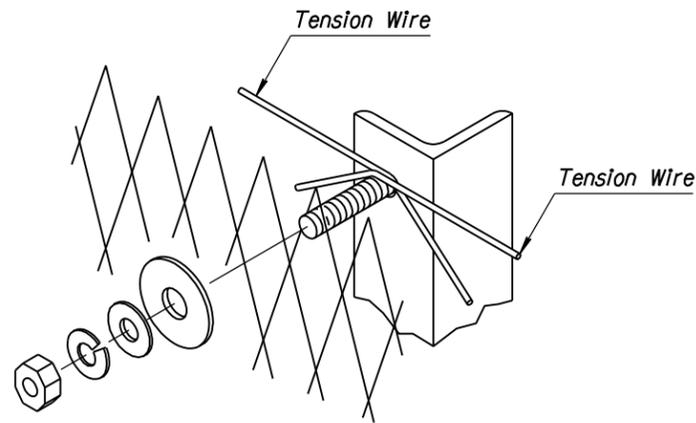


DIRECTION DETAIL

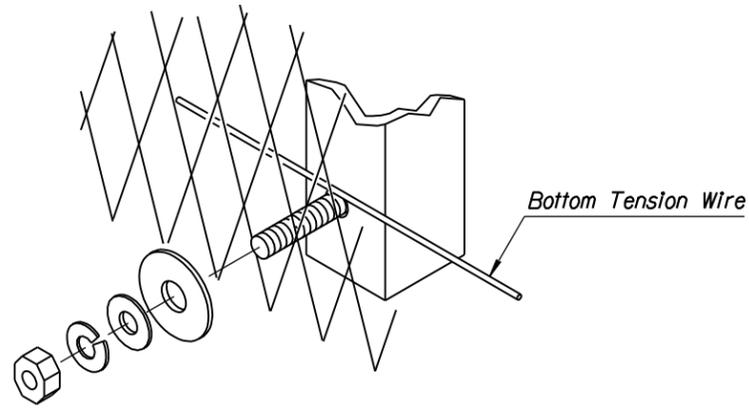
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	GLARE SCREEN CONCRETE MEDIAN BARRIER	DRAWING NO. C-10.42 Sheet 2 of 3

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STANDARD DRAWING FROM C-10.97, SHEET 3 OF 3	RLF	9/04
2			
3			
4			

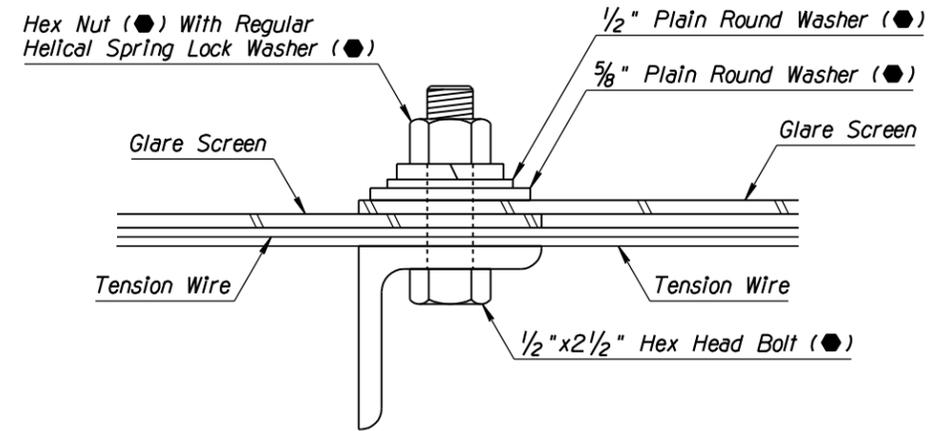
● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation



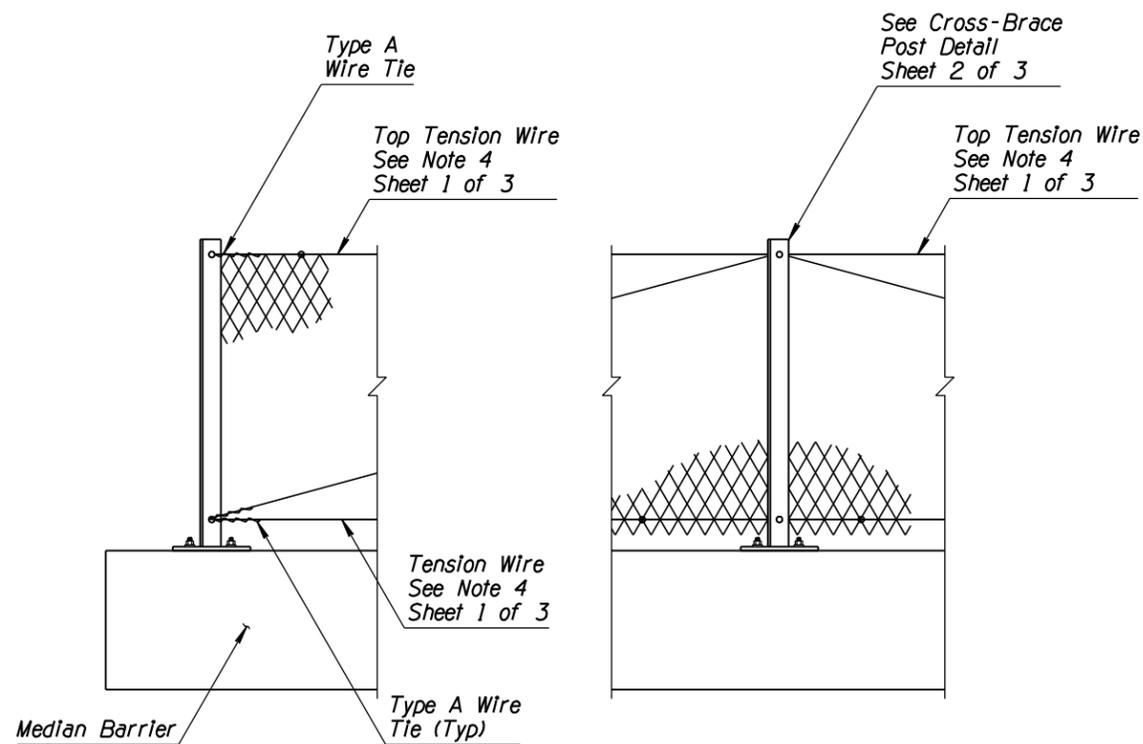
TOP BOLT DETAIL



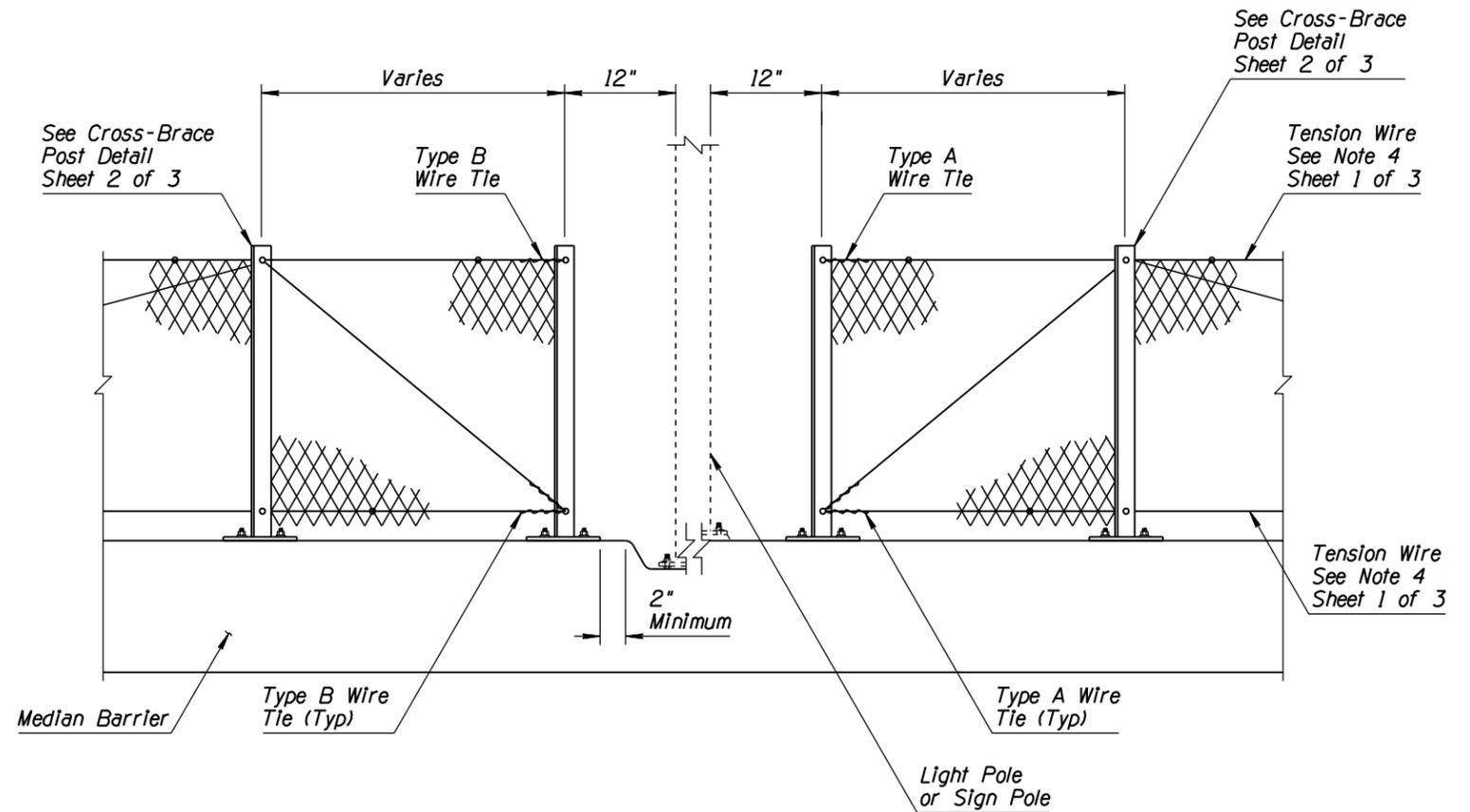
BOTTOM BOLT DETAIL



TOP BOLT SECTION



TERMINATION DETAIL



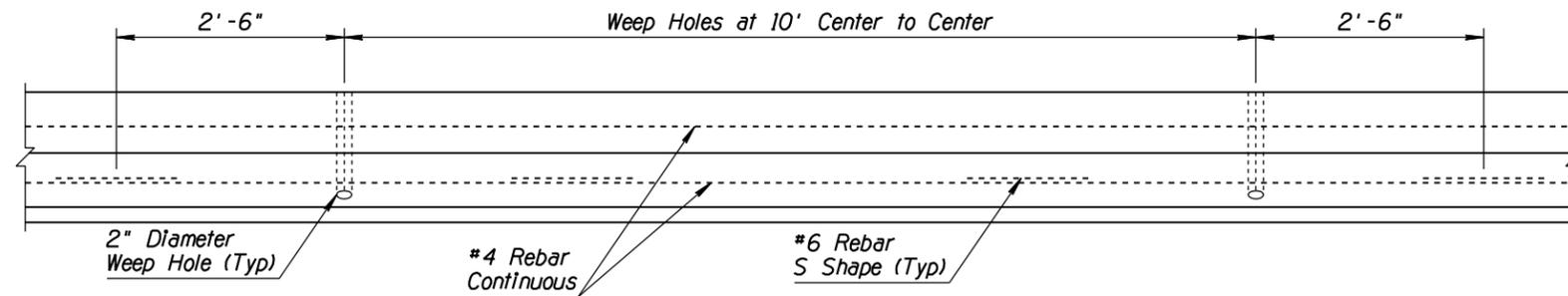
OBSTRUCTION DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	GLARE SCREEN CONCRETE MEDIAN BARRIER	DRAWING NO. C-10.42 Sheet 3 of 3

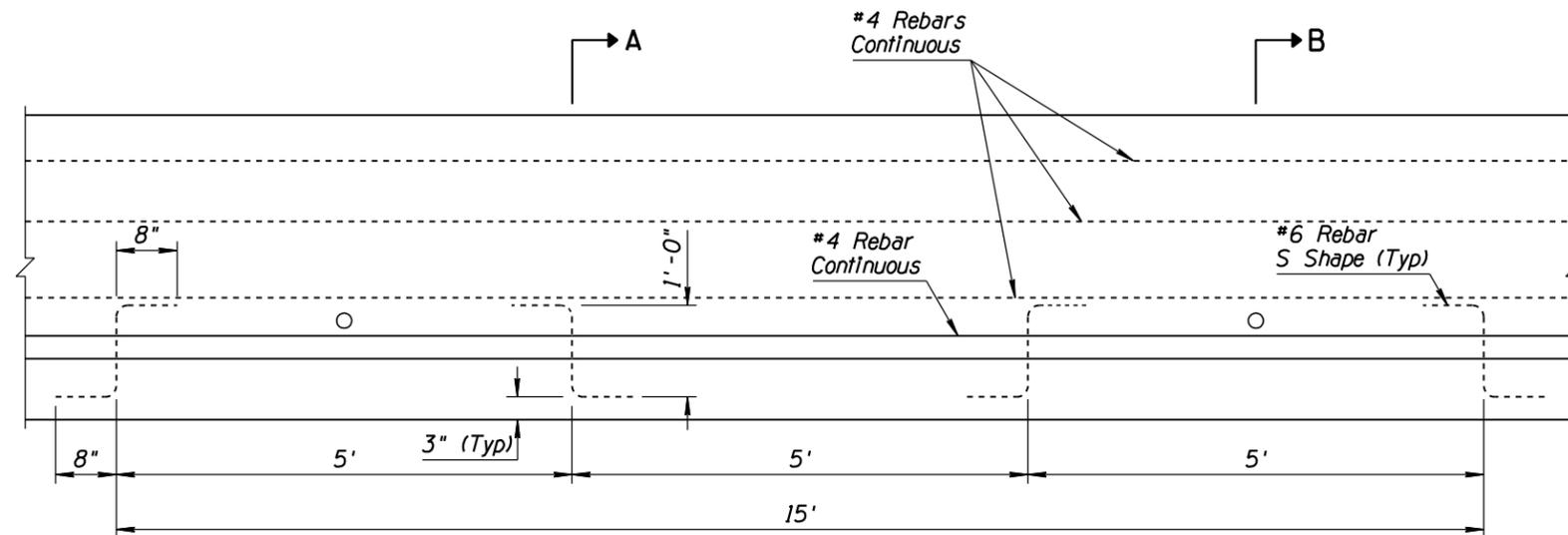
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG FROM C-10.60 & REVISED TITLE	RLF	9/04
2	REVISED NOTE	RLF	5/12
3			
4			

GENERAL NOTES

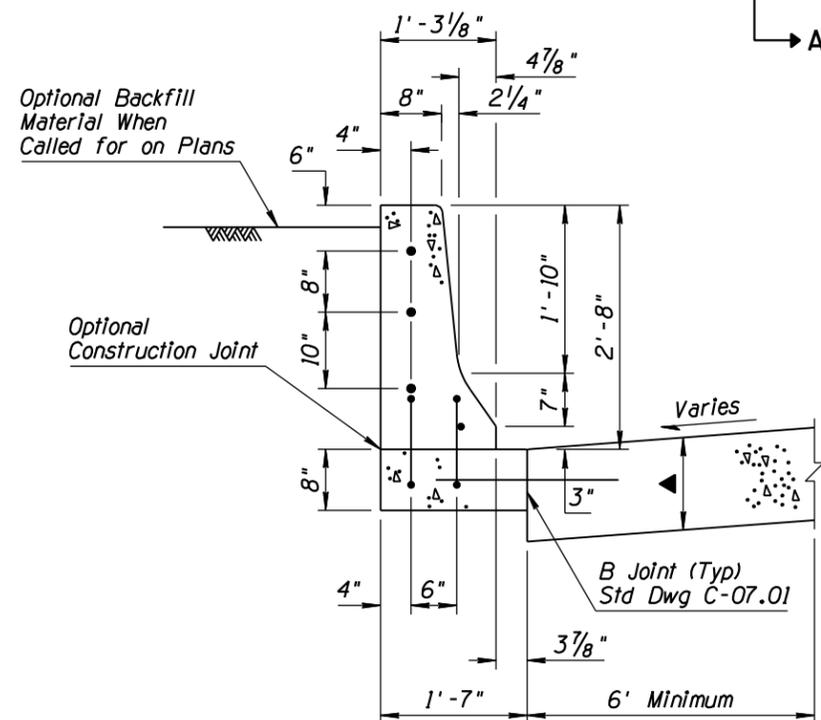
1. Half barrier shall be constructed by the slip or fixed form method.
 2. When obstacles prevent the use of slip form equipment, stationary forms shall be used.
 3. Concrete shall be Class S, $f'_c = 4000$ PSI.
 4. If the footing and barrier are cast monolithically, #6 S shape rebar will not be required.
 5. #4 rebar shall extend 12" past the construction joint at the completion of the day's pour.
 6. Weep holes shall be placed whenever barrier is backfilled unless otherwise indicated on the plans.
- ② ▲ Depth to match adjacent PCCP thickness.



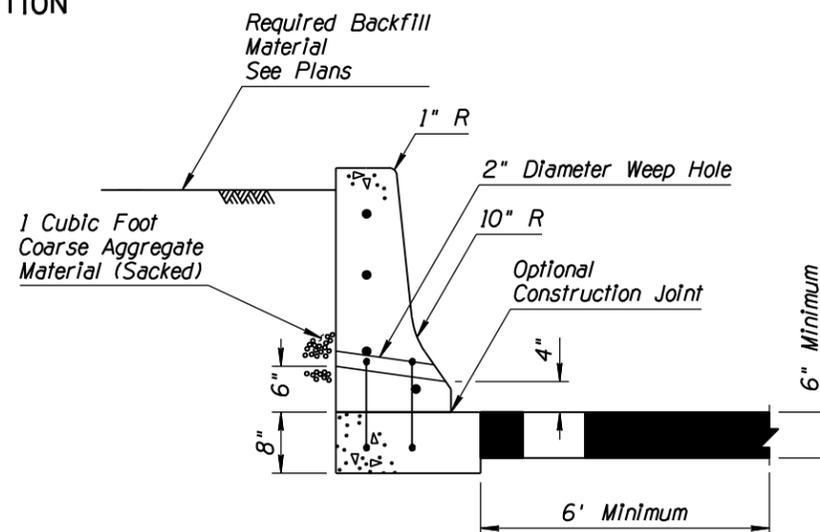
PLAN



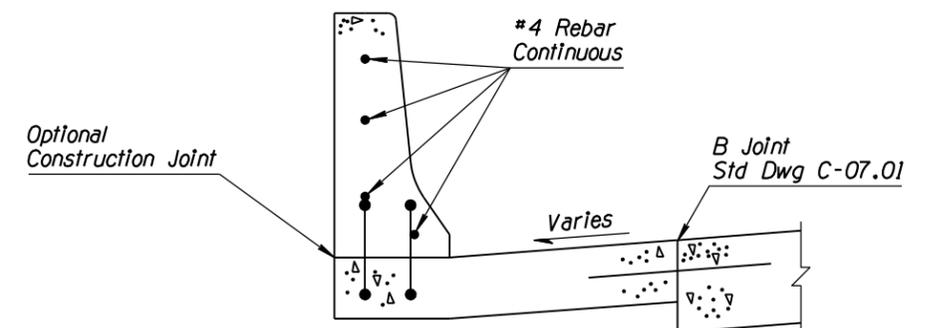
ELEVATION



WITH PCCP
SECTION A-A



WITH AC
SECTION B-B
SEE SECTION A-A FOR
TYPICAL REBAR PLACEMENT



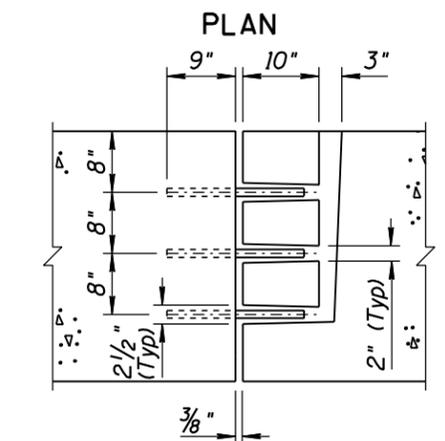
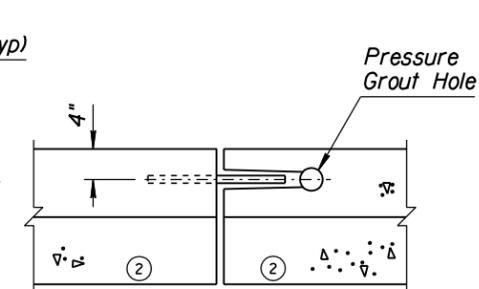
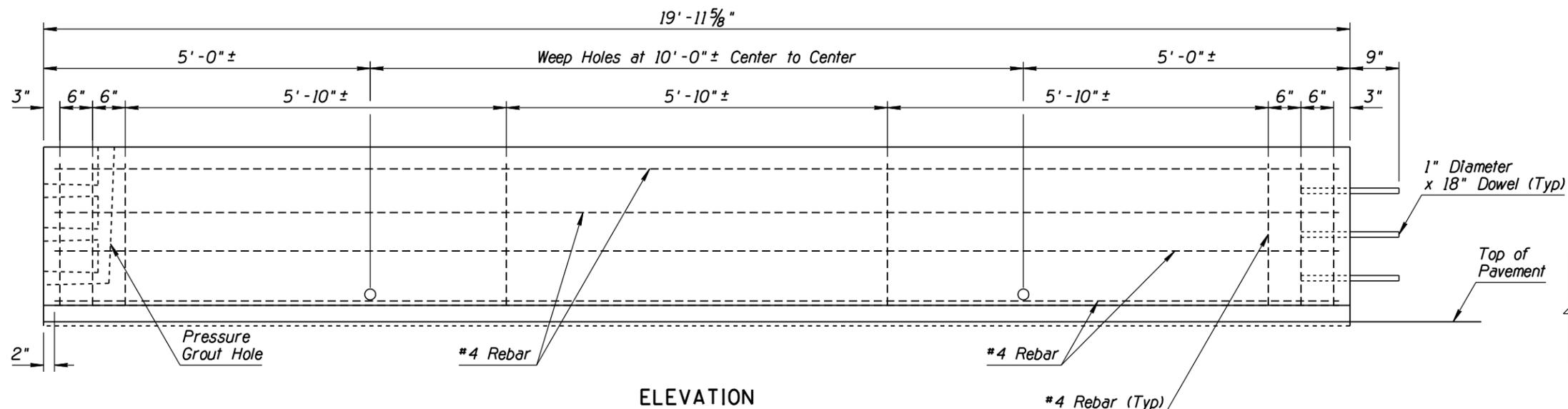
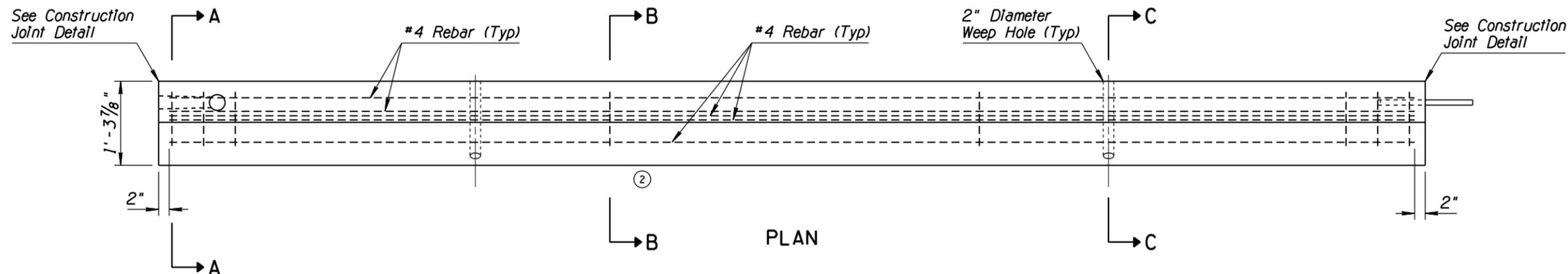
WITH PCCP
BARRIER WITH GUTTER
(SEE STD DWG C-10.52)

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF BARRIER 32" TYPE 'F' CAST-IN-PLACE	DRAWING NO. C-10.50 Sheet 1 of 2

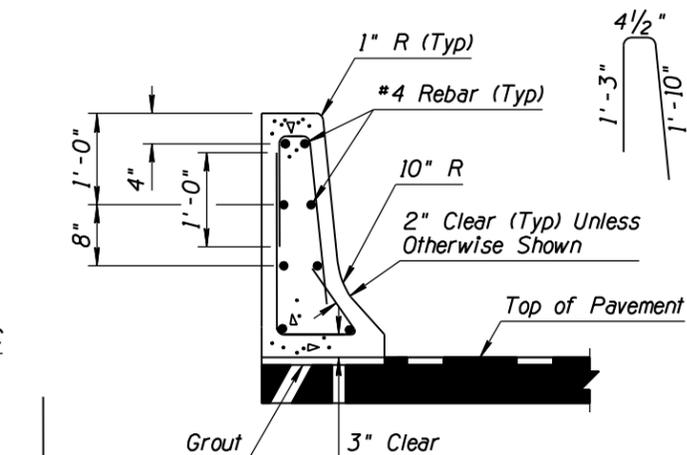
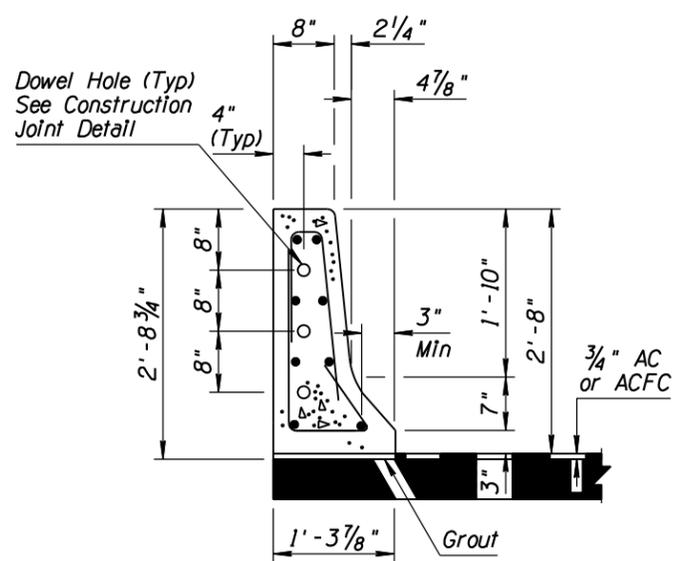
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG FROM C-10.61 TO C-10.50 & REVISED TITLE	RLF	9/04
2	REVISED VIEW: REMOVED EXTRA LINE	RLF	5/12
3			
4			

GENERAL NOTES

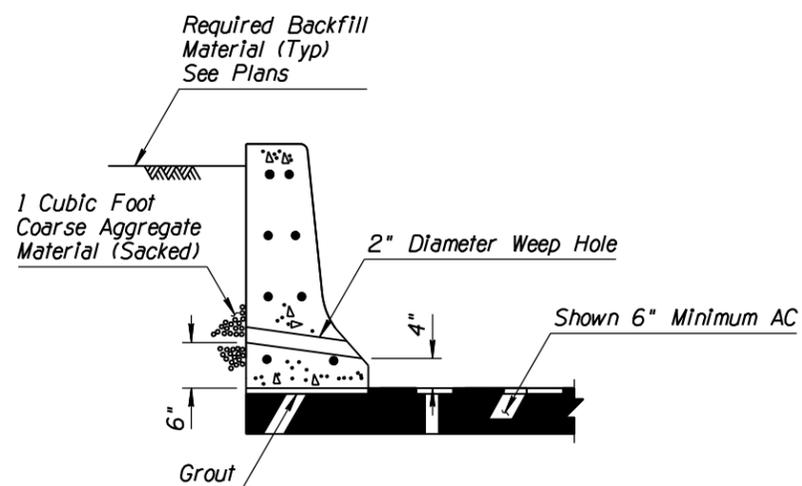
- Concrete half barrier shall be precast.
- Concrete shall be Class S, $f'_c=4000$ PSI.
- Pavement thickness adjacent to half barrier shall be $\frac{3}{4}$ " minimum.
- The half barrier shall be placed upon a bed of grout in order to provide a uniform bearing.
- Doweled joints shall be grouted under pressure until all of the openings and the joints are filled.
- All bend dimensions for rebar are out-to-out of rebars.
- Weep holes shall be placed whenever half barrier is backfilled unless otherwise indicated on the plans.



CONSTRUCTION JOINT DETAIL



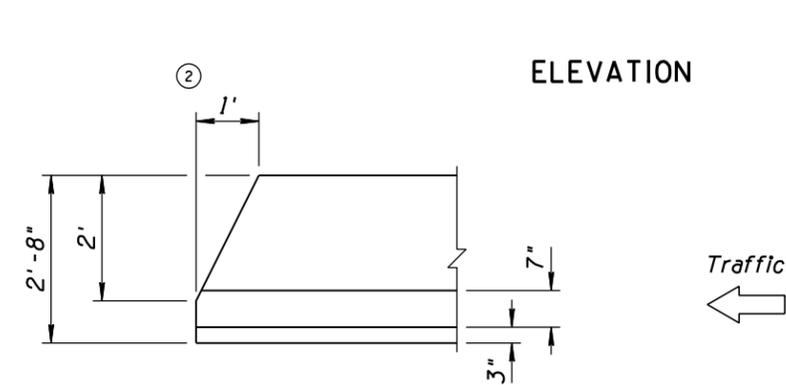
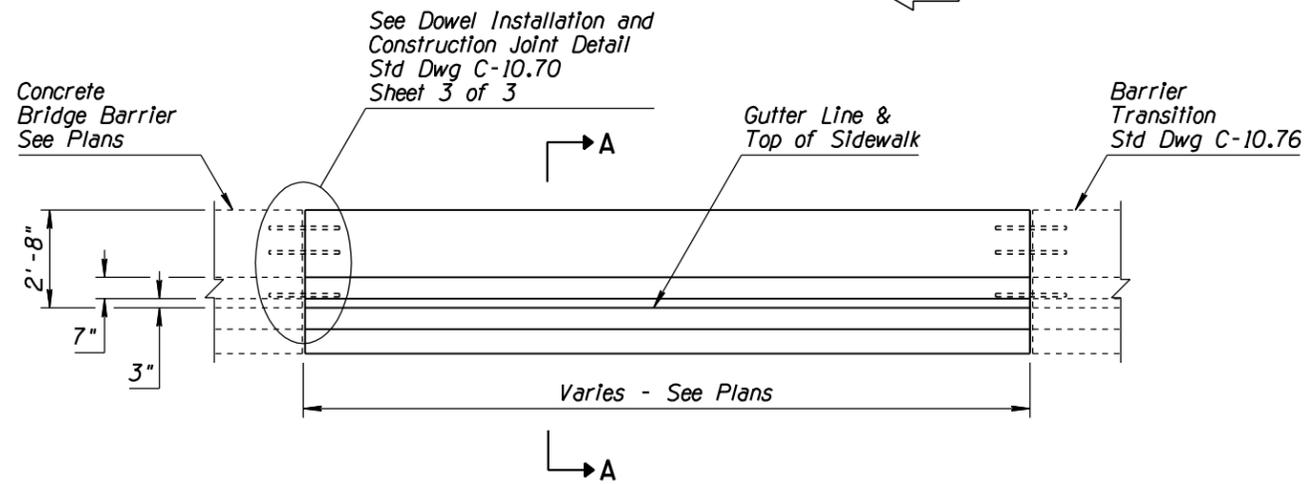
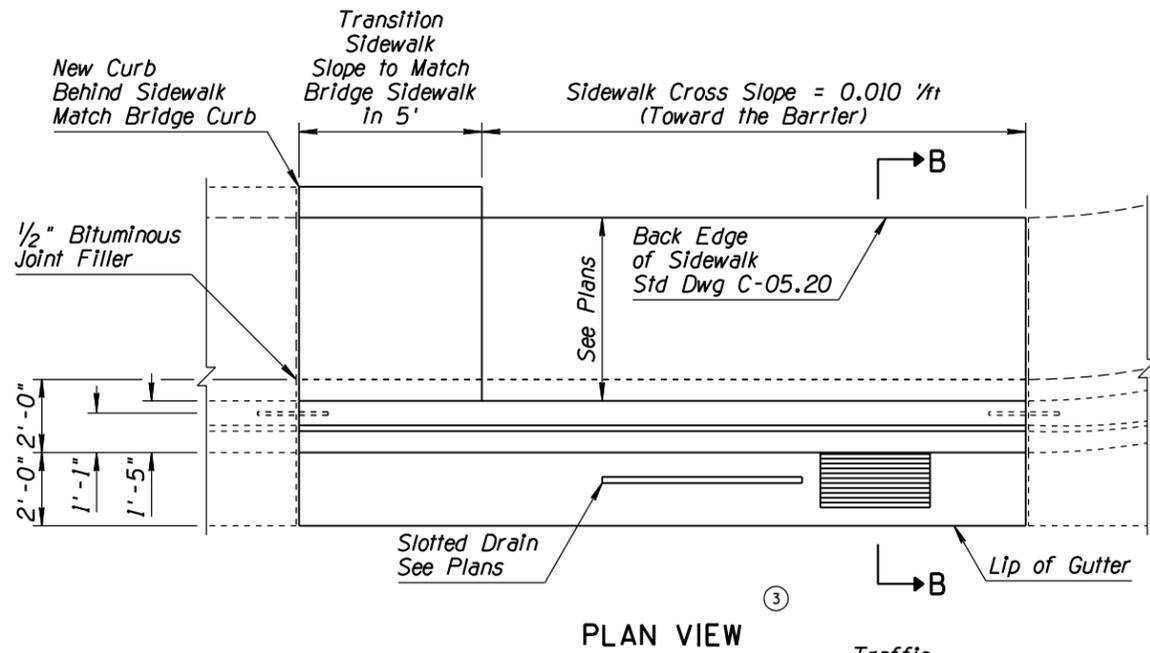
AT REBAR SECTION B-B
SEE SECTION A-A FOR TYPICAL REBAR PLACEMENT



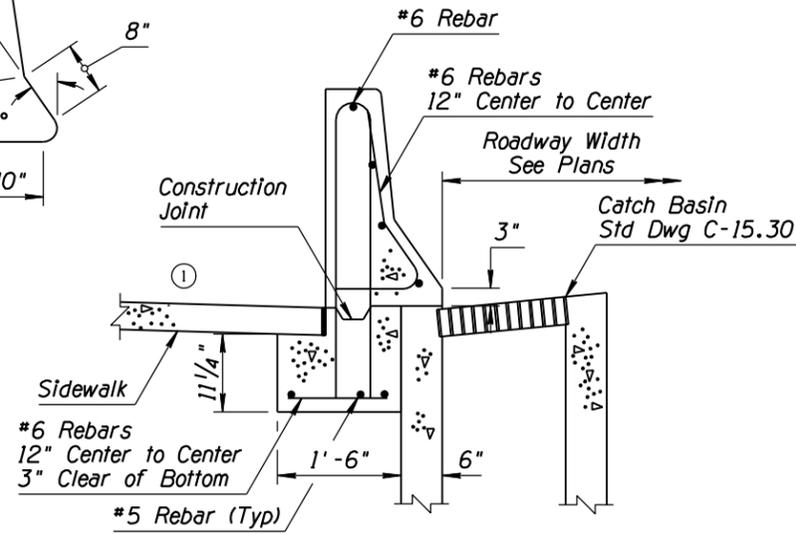
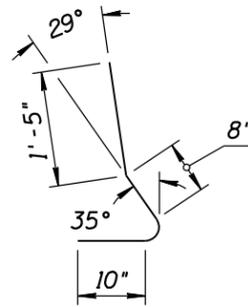
AT WEEP HOLE SECTION C-C
SEE SECTION A-A FOR TYPICAL REBAR PLACEMENT

APPROVED FOR DESIGN	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION	CONCRETE HALF BARRIER 32" TYPE 'F' PRECAST	DRAWING NO. C-10.50 Sheet 2 of 2

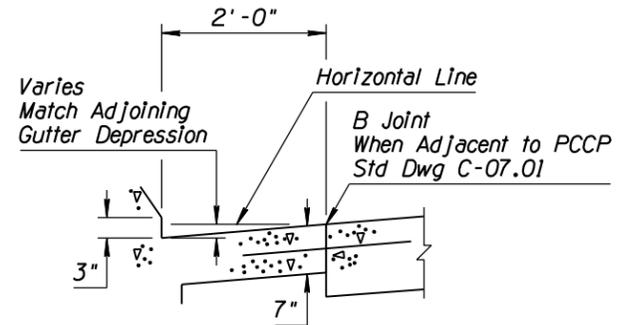
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED SECTION VIEWS: REMOVED SLOPE SPECIFICATION	RLF	4/06
2	WAS 1 1/2" IS NOW 1" & ADDED WITHOUT GUARDRAIL TO TITLE	RLF	4/06
3	MODIFIED TITLE	RLF	4/06
4	REVISED HEIGHT DIMENSION FROM 32" TO 32"	RLF	7/06



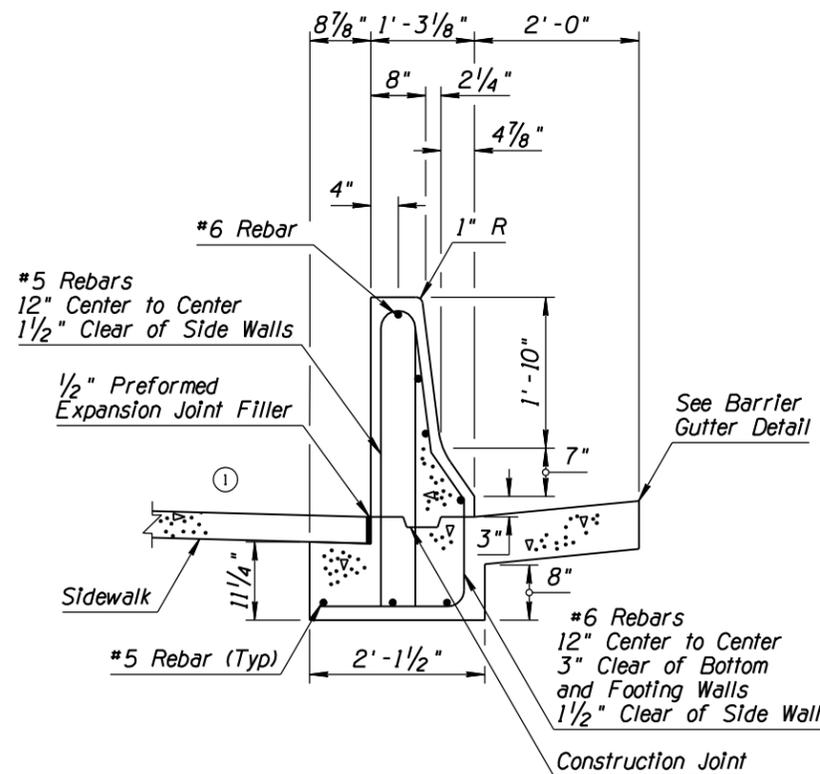
ELEVATION
DEPARTURE TERMINATION WITHOUT GUARDRAIL



SECTION B-B
AT CATCH BASINS



BARRIER GUTTER DETAIL



SECTION A-A

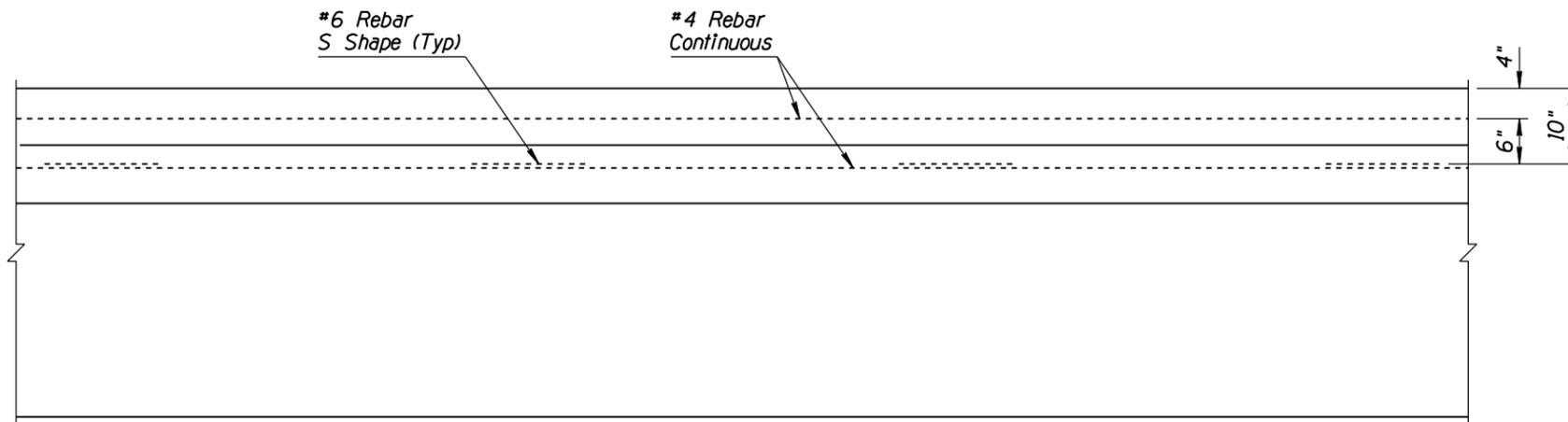
- GENERAL NOTES**
- Concrete shall be Class S, $f'c=4000$ PSI.
 - Rebar shall conform to Std Spec 1003.
 - Rebar shall have 2" minimum clear cover unless otherwise noted.
 - See drainage sheets for slotted drain and catch basin details.
 - Departure termination may be substituted for Std Dwg C-10.76 barrier transition under departure conditions.
 - See Std Dwg C-05.20 for sidewalk construction.
 - All bend dimensions for rebar are out-to-out of rebars.

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF BARRIER 32" TYPE 'F' WITH SIDEWALK	DRAWING NO. C-10.51

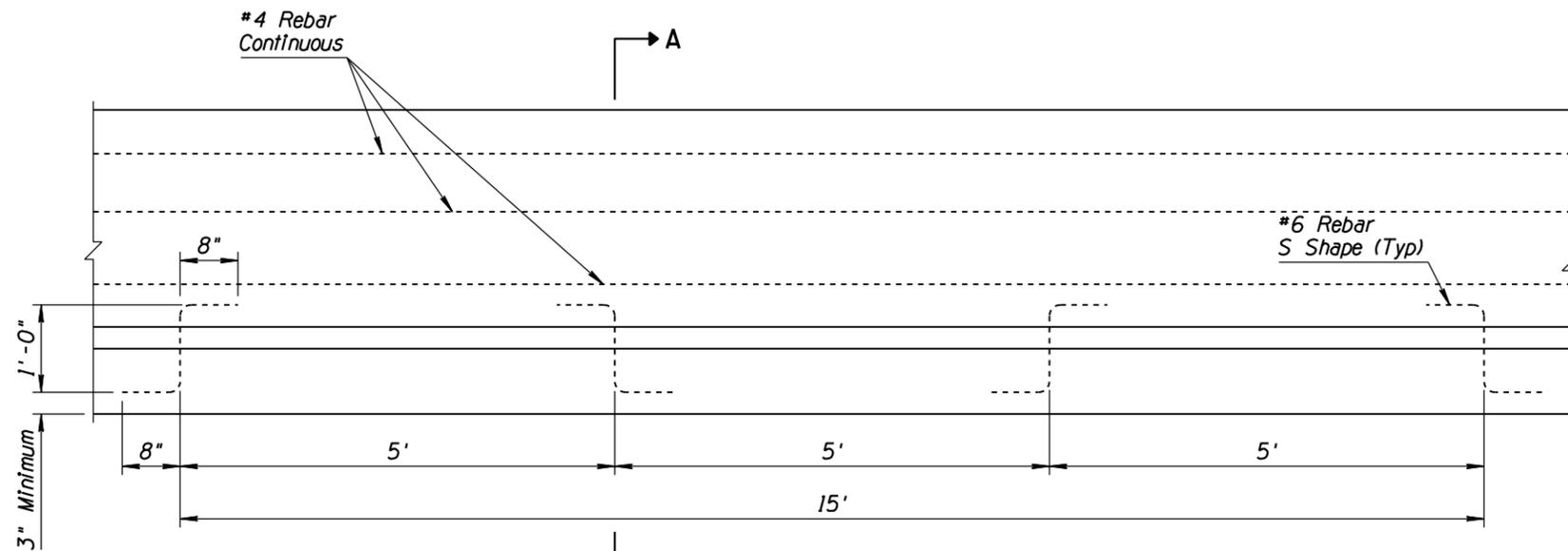
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED D REFERENCE FROM GENERAL NOTE	RLF	4/06
2			
3			
4			

GENERAL NOTES

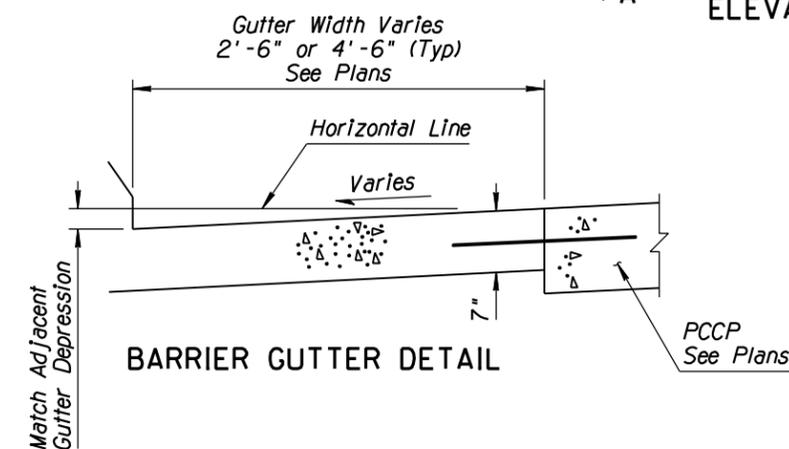
1. Half Barrier shall be constructed by the slip or fixed form method.
2. When obstacles prevent the use of slip form equipment, stationary forms shall be used.
3. Concrete shall be Class S, $f'_c = 4000$ PSI.
4. #4 rebar shall extend 12" past the construction joint at the completion of the day's pour.
5. Gutter thickness can be adjusted to match the PCCP thickness, as approved by the Engineer.
6. When the pavement section slopes away from the gutter, the slope of the gutter shall match the pavement cross slope. Therefore, the 2" gutter depression is not applicable.
7. At bridges, the cross slope of the gutter shall transition to match the cross-slope of the bridge. Length of the transition is 15'.
8. Two-inch deep contraction joints shall be placed in the gutter at locations which match the joints in adjacent PCCP. Joints shall be hand-tooled or sawn.
9. Whenever Half Barrier is backfilled, see Std Dwg C-10.50 for weep hole details, unless otherwise specified on the plans.



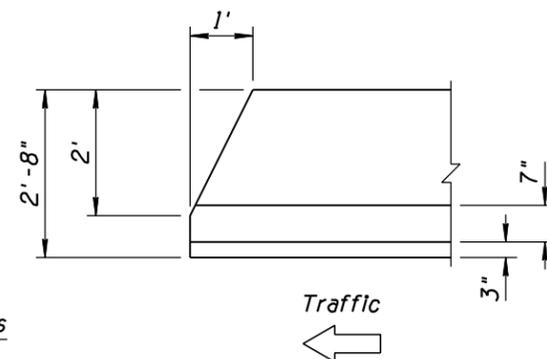
PLAN



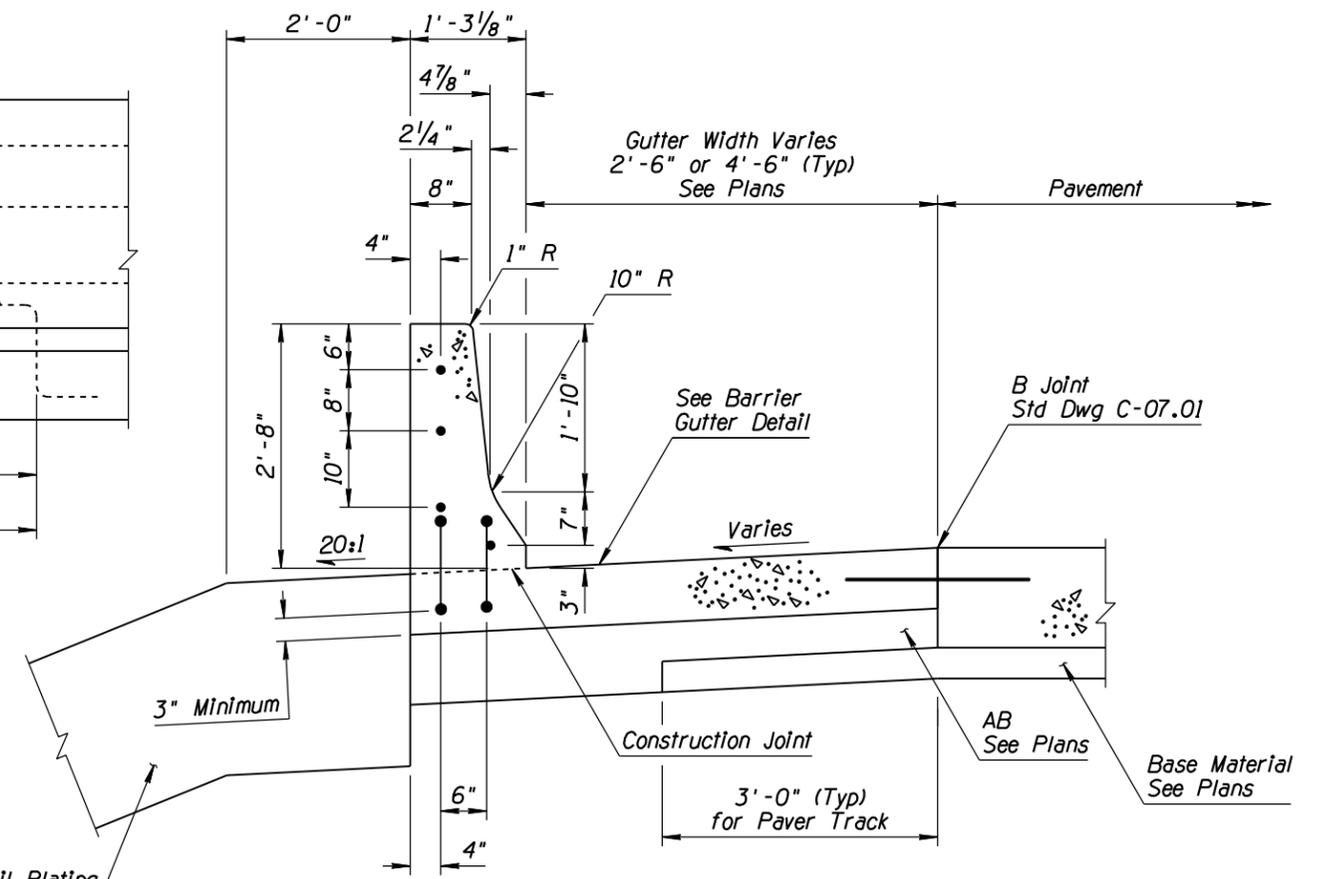
ELEVATION



BARRIER GUTTER DETAIL



ELEVATION DEPARTURE TERMINATION WITHOUT GUARDRAIL



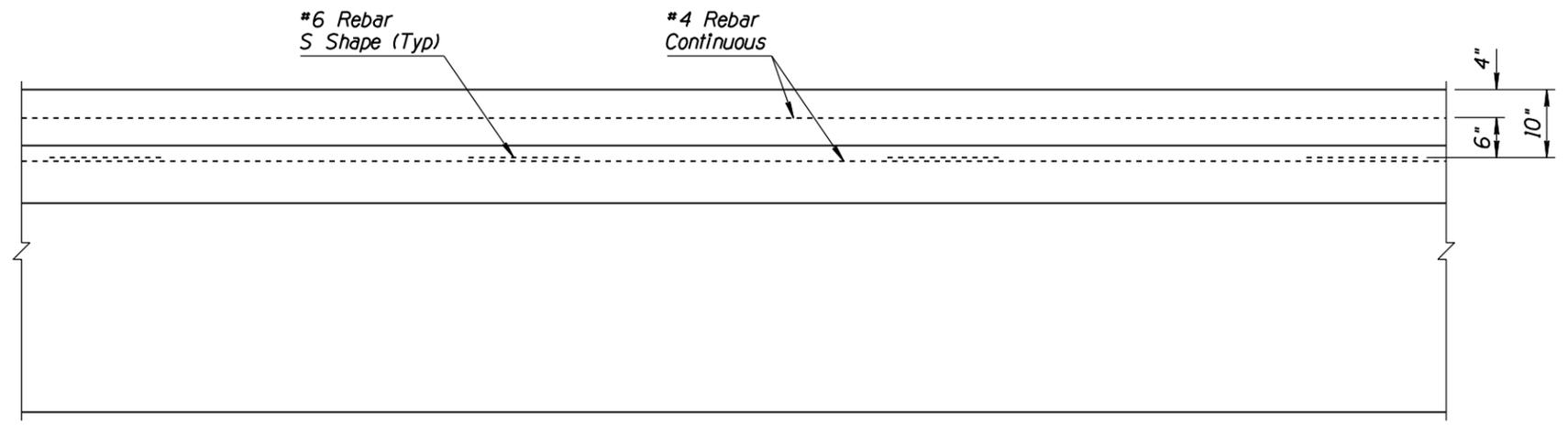
SECTION A-A

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF BARRIER 32" TYPE 'F' WITH GUTTER	DRAWING NO. C-10.52

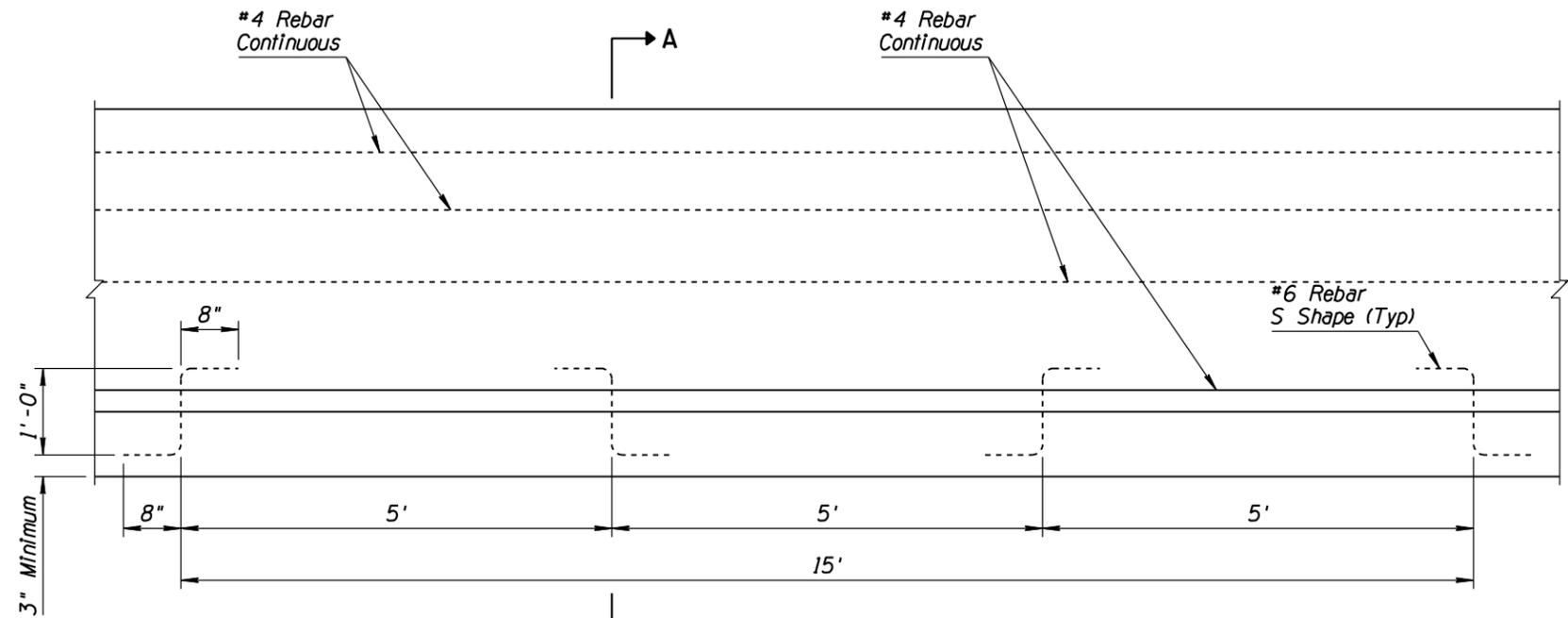
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED D DIMENSION	RLF	7/05
2	REVISED GENERAL NOTE 5	RLF	5/07
3			
4			

GENERAL NOTES

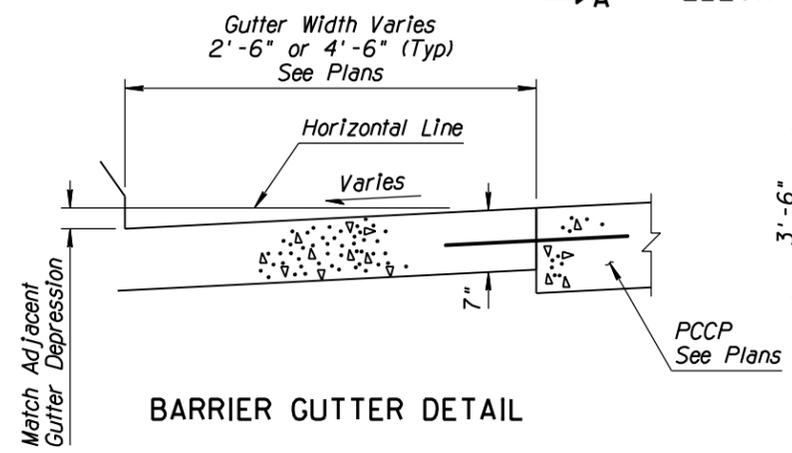
1. Half barrier shall be constructed by the slip or fixed form method.
2. When obstacles prevent the use of slip form equipment, stationary forms shall be used.
3. Concrete shall be Class S, $f'_c = 4000$ PSI.
4. #4 rebar shall extend 12" past the construction joint at the completion of the day's pour.
5. Gutter thickness can be adjusted to match the PCCP thickness, as approved by the Engineer.
6. When the pavement section slopes away from the gutter, the slope of the gutter shall match the pavement cross slope. Therefore, the 2" gutter depression is not applicable.
7. At bridges, the cross slope of the gutter shall transition to match the cross slope of the bridge. Length of the transition is 15'.
8. Two-inch deep contraction joints shall be placed in the gutter at locations which match the joints in adjacent PCCP. Joints shall be hand tooled or sawn.
9. Whenever half barrier is backfilled, see Std Dwg C-10.50 for weep hole details, unless otherwise indicated on the plans.



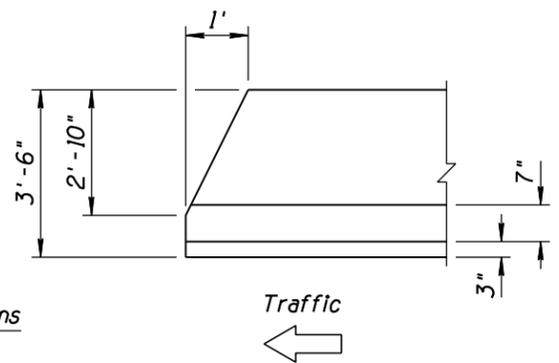
PLAN



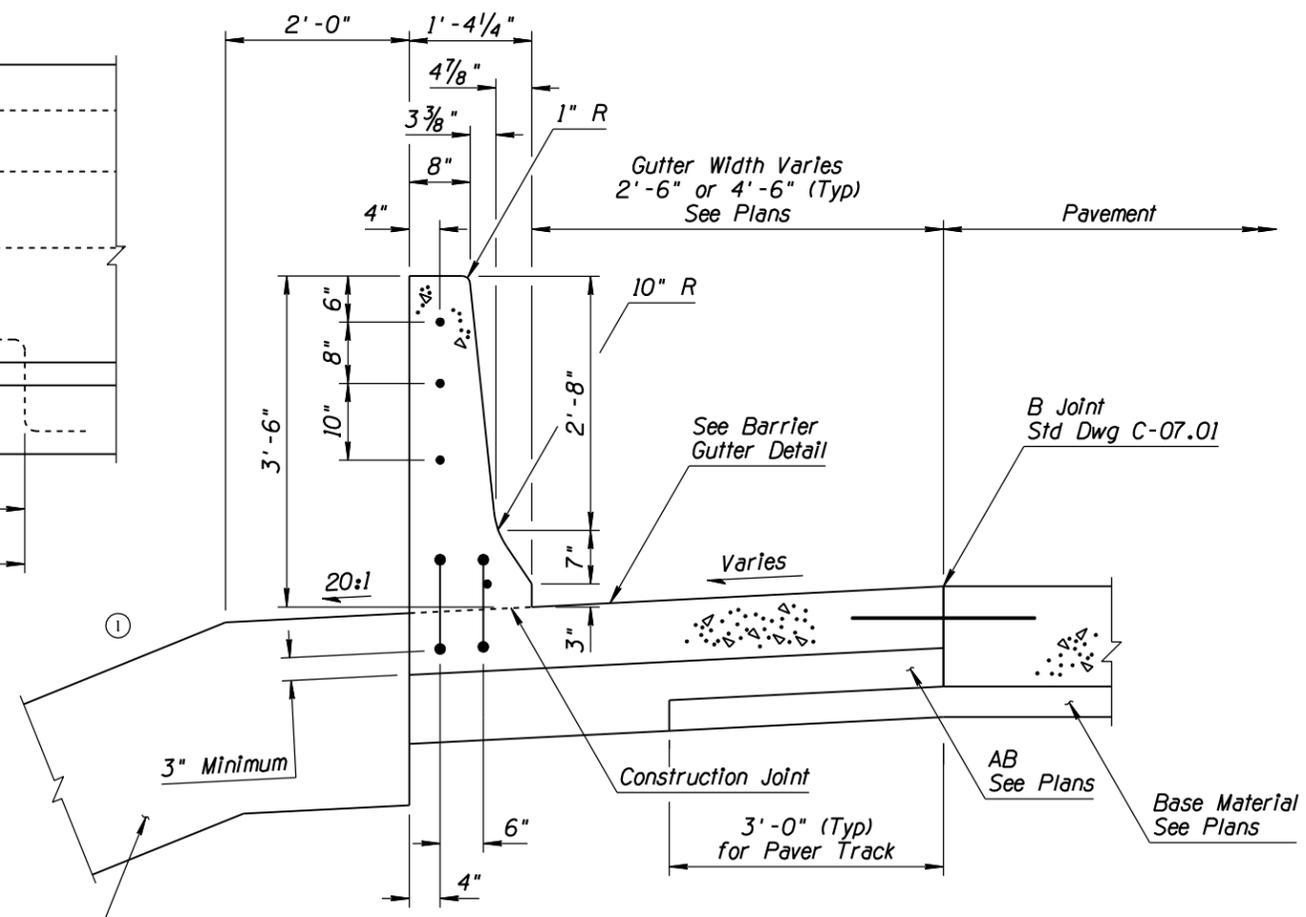
ELEVATION



BARRIER GUTTER DETAIL



ELEVATION
DEPARTURE TERMINATION WITHOUT GUARDRAIL



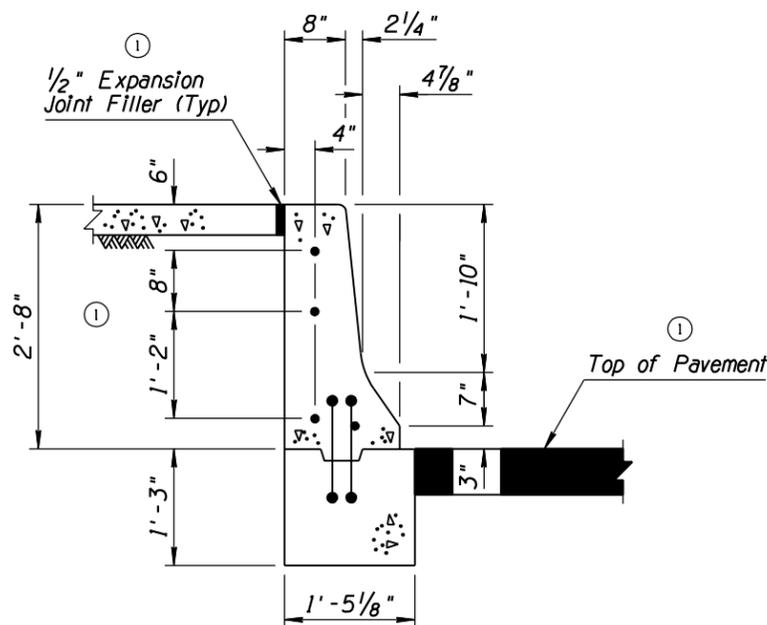
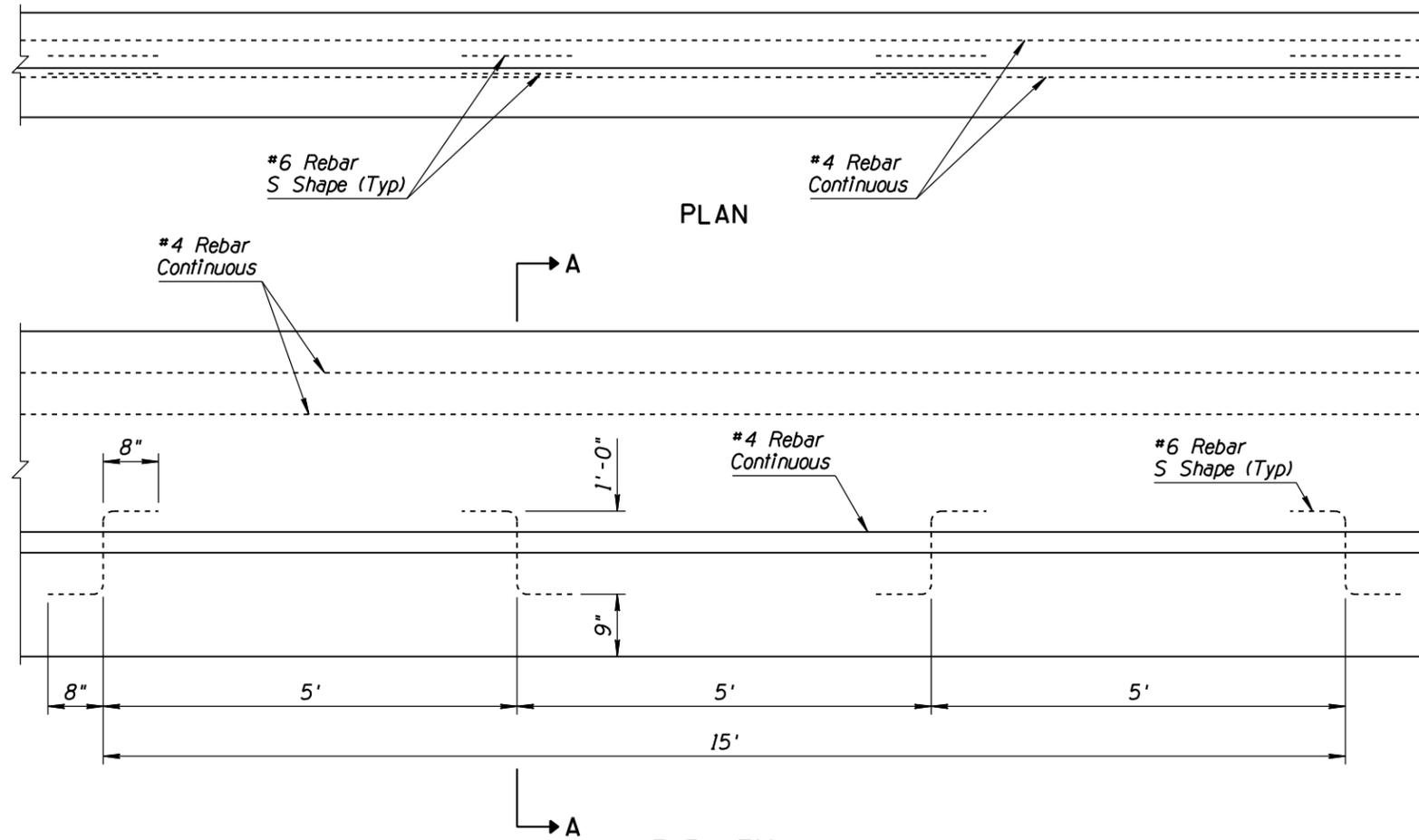
SECTION A-A

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF BARRIER 42" TYPE 'F' WITH GUTTER	DRAWING NO. C-10.53

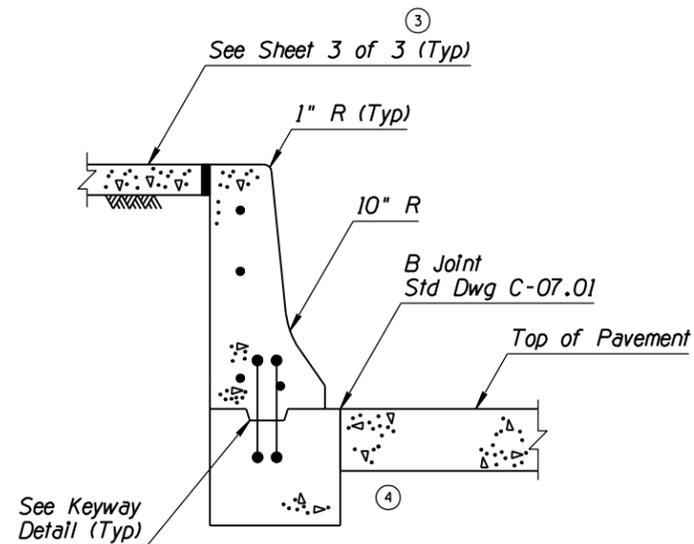
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SECTION A-A: ADDED CONCRETE CAP & NOTES	RLF	11/06
2	REVISED GENERAL NOTE 3	RLF	11/06
3	ADDED (Typ)	RLF	11/06
4	REMOVED DOWEL FROM JOINT	RLF	5/07

GENERAL NOTES

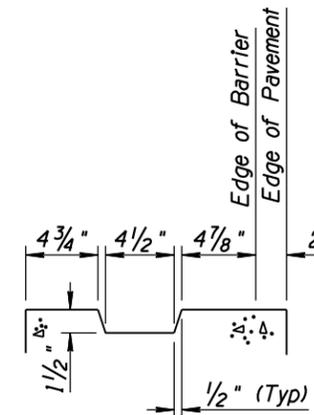
- Concrete shall be Class S, $f'_c = 4000$ PSI.
- If the footing and Half Barrier are cast monolithically, #6 S shape rebars are not required.
- Longitudinal rebar shall extend 12" past the construction joint at the completion of each incremental pour.



WITH AC
SECTION A-A



WITH PCCP
SECTION A-A
SEE SECTION A-A (WITH AC)
FOR TYPICAL REBAR PLACEMENT



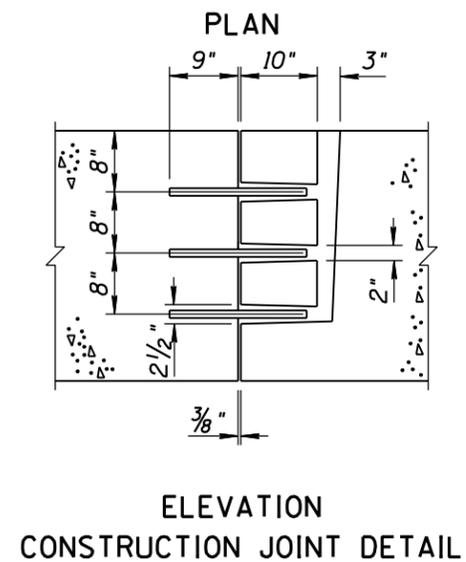
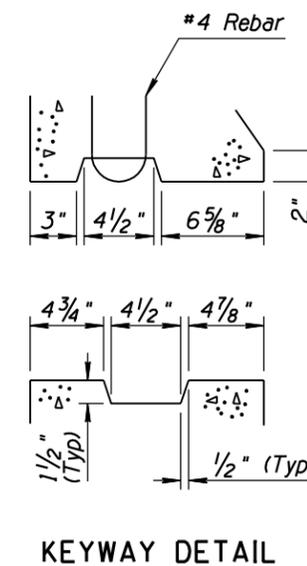
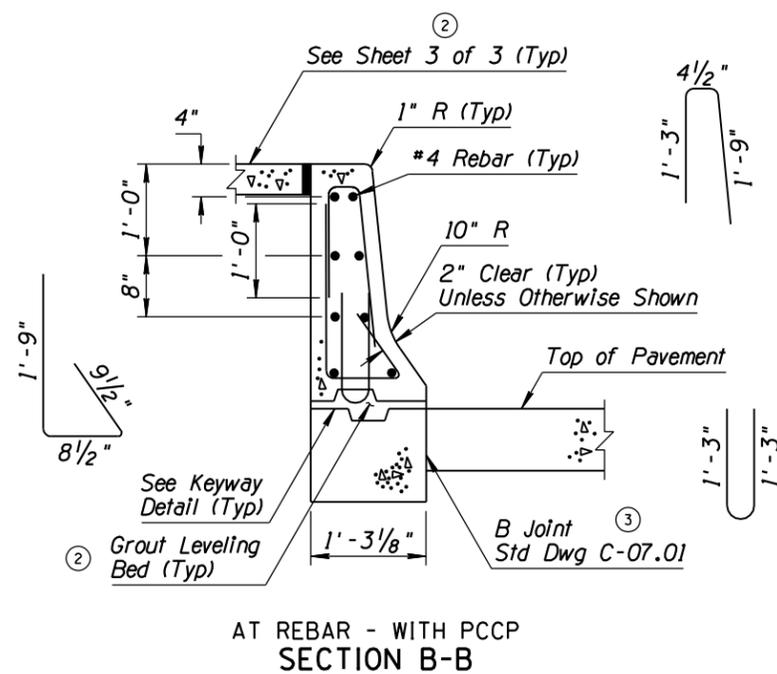
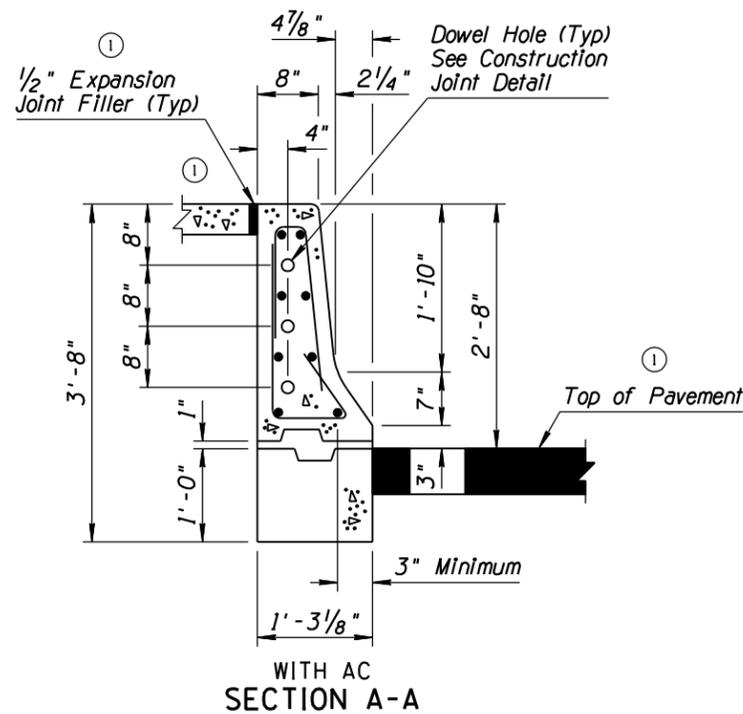
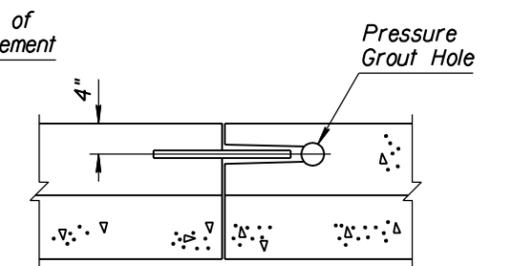
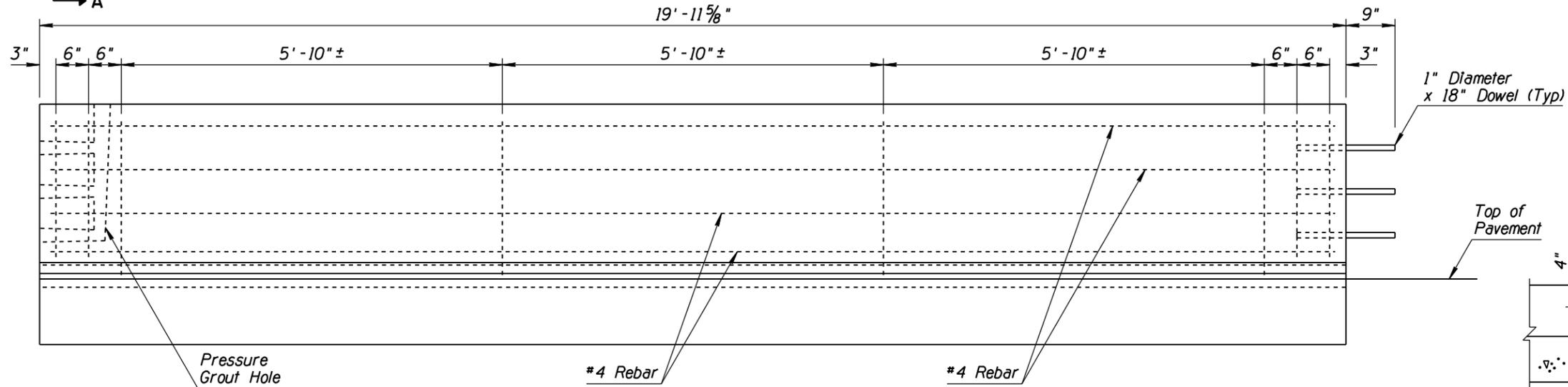
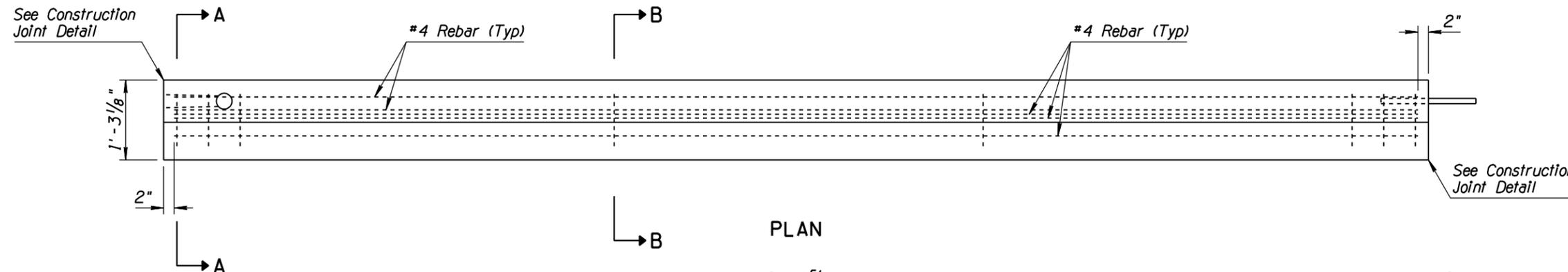
KEYWAY DETAIL
SEE SECTION A-A (WITH AC)
FOR TYPICAL REBAR PLACEMENT

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF BARRIER 32" TYPE 'F' AT PIERS CAST-IN-PLACE	DRAWING NO. C-10.54 Sheet 1 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SECTION A-A: ADDED CONCRETE CAP & NOTES	RLF	11/06
2	REVISED CALLOUT: ADDED 'TYP'	RLF	11/06
3	ADDED B JOINT NOTE	RLF	5/07
4			

GENERAL NOTES

- Concrete shall be Class S, $f'_c = 4000$ PSI.
- The Half Barrier shall be placed upon a bed of grout in order to provide a uniform bearing.
- Doweled joints shall be grouted under pressure until all of the openings and the joints are filled.
- All bend dimensions for rebar are out-to-out of rebars.

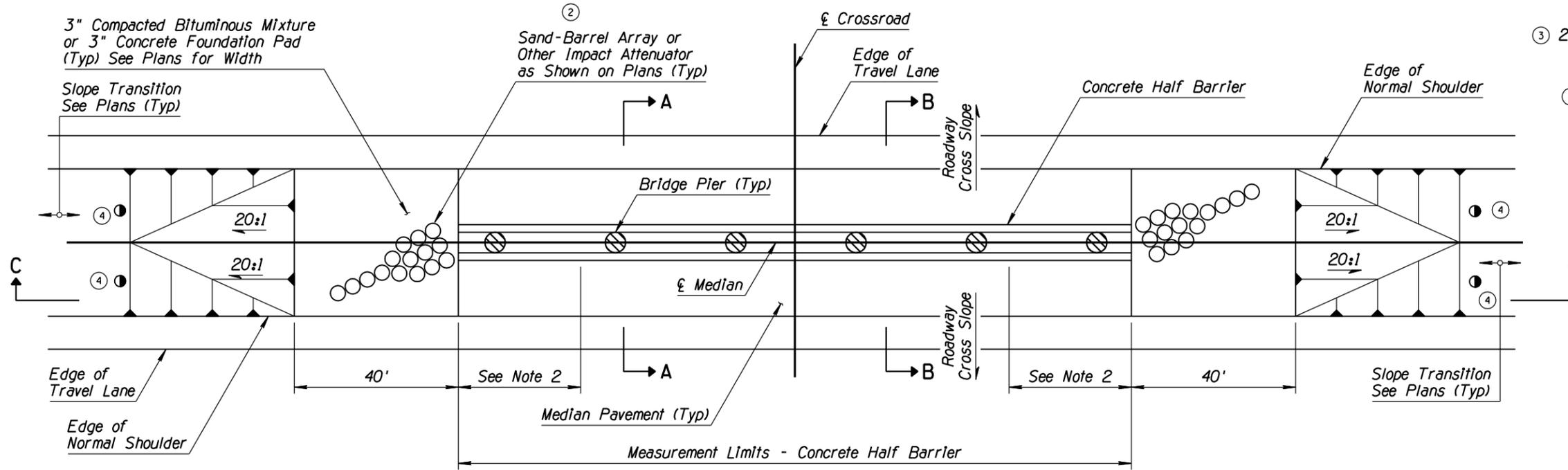


APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	CONCRETE HALF BARRIER 32" TYPE 'F' AT PIERS PRECAST	DRAWING NO. C-10.54 Sheet 2 of 3

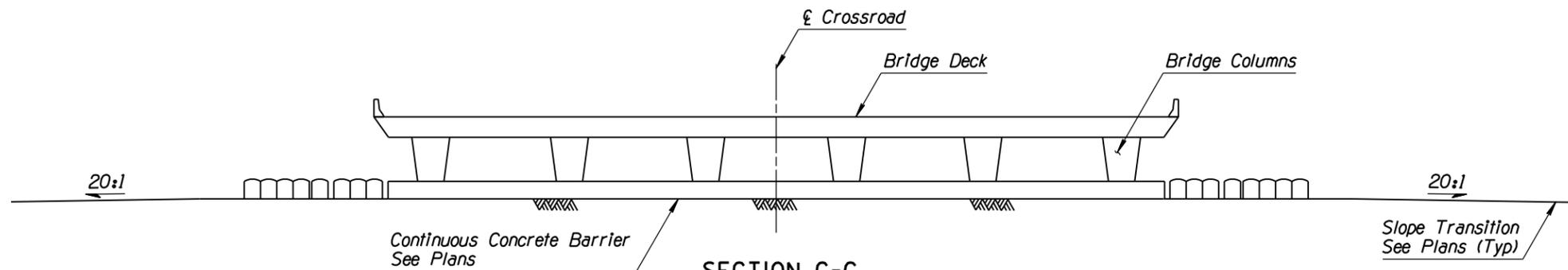
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STANDARD FROM C-10.15 TO C-10.54, 3 OF 3	RLF	9/04
2	REVISED SAND BARREL REFERENCE	RLF	9/04
3	ADDED GENERAL NOTE	RLF	9/04
4	MODIFIED SLOPE CALLOUT	RLF	9/04

GENERAL NOTES

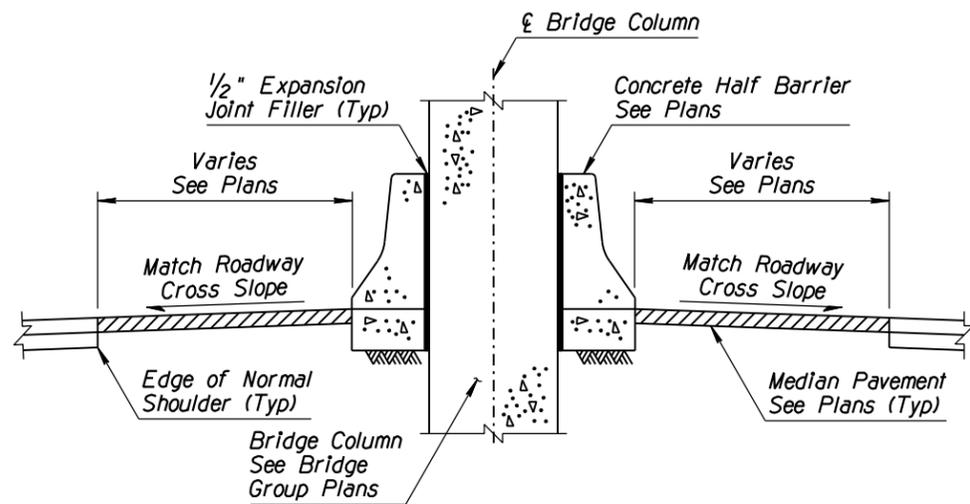
1. Transition median paving cross slope to meet level foundation pad. See plans for length and location.
2. Compacted backfill and Class B concrete shall be placed between bridge columns or piers only.
3. Slope as shown on Plans



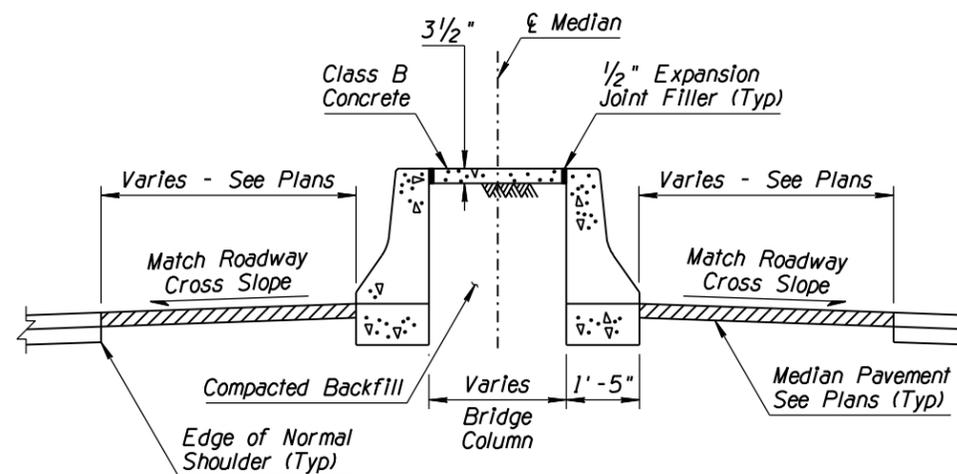
PLAN



SECTION C-C



SECTION A-A



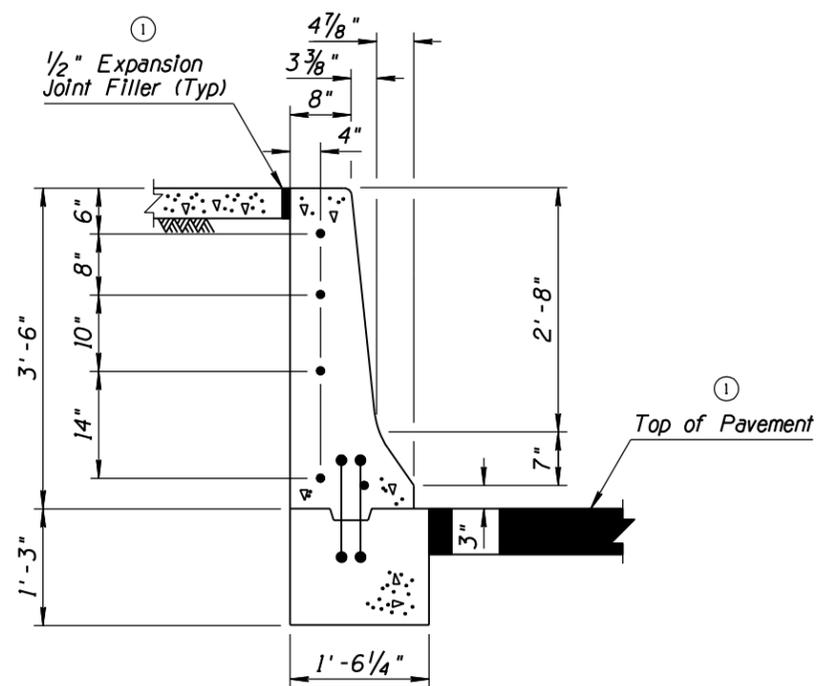
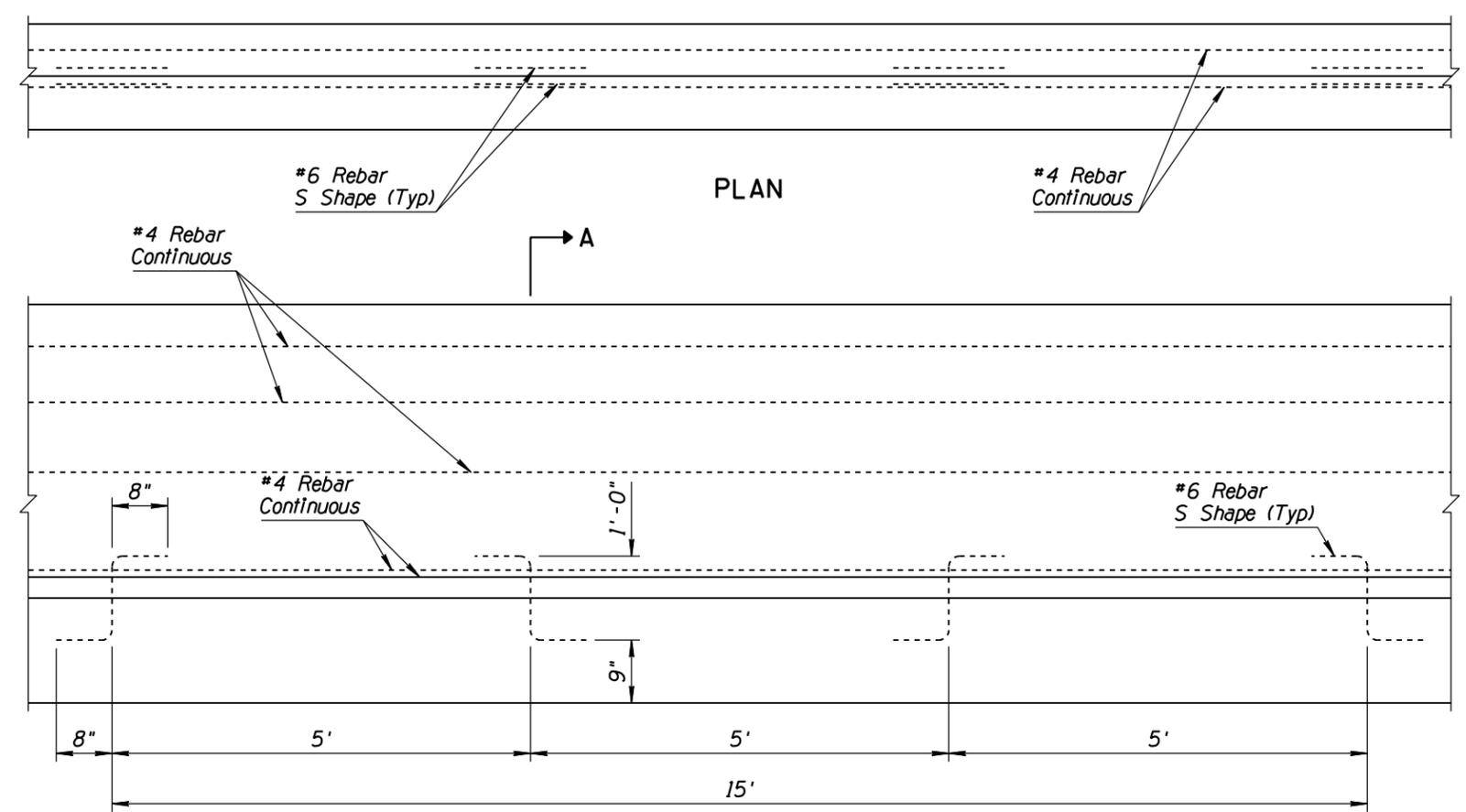
SECTION B-B

APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	CONCRETE HALF BARRIER 32" TYPE 'F' AT PIERS LAYOUT	DRAWING NO. ① C-10.54 Sheet 3 of 3

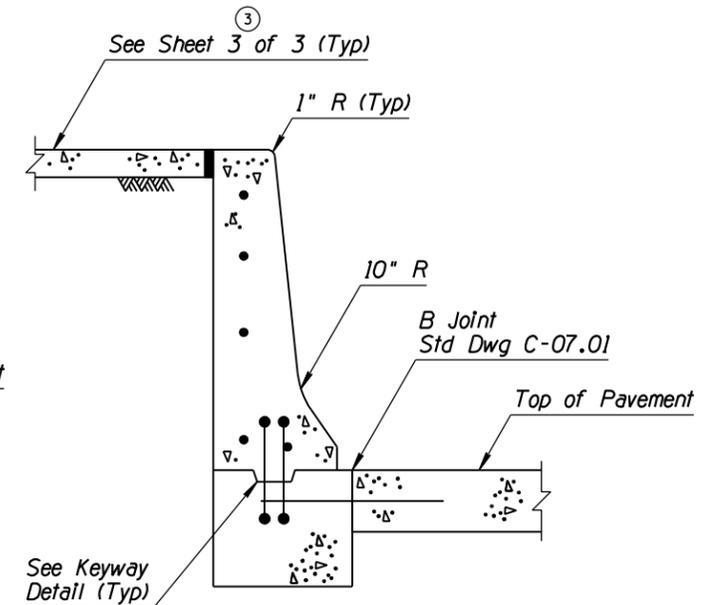
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SECTION A-A: ADDED CONCRETE CAP & NOTES	RLF	11/06
2	REVISED GENERAL NOTE 4	RLF	11/06
3	ADDED (Typ)	RLF	11/06
4			

GENERAL NOTES

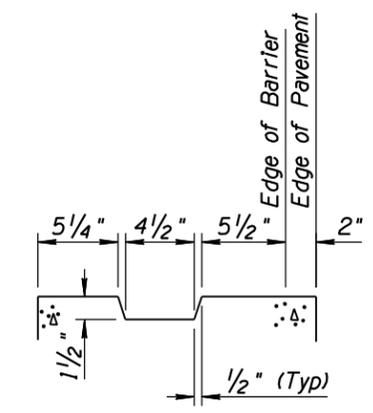
- Concrete shall be Class S, $f'_c=4000$ PSI.
- If the footing and barrier are cast monolithically, #6 S shape rebar are not required.
- Barrier width shall not exceed the barrier footing width nor overhang the adjacent pavement.
- ② Longitudinal rebar shall extend 12" past the construction joint at the completion of each incremental pour.



WITH AC
SECTION A-A



WITH PCCP
SECTION A-A
SEE SECTION A-A (WITH AC) FOR
TYPICAL REBAR PLACEMENT



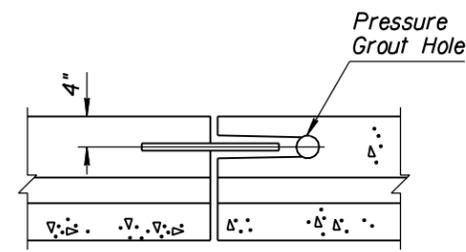
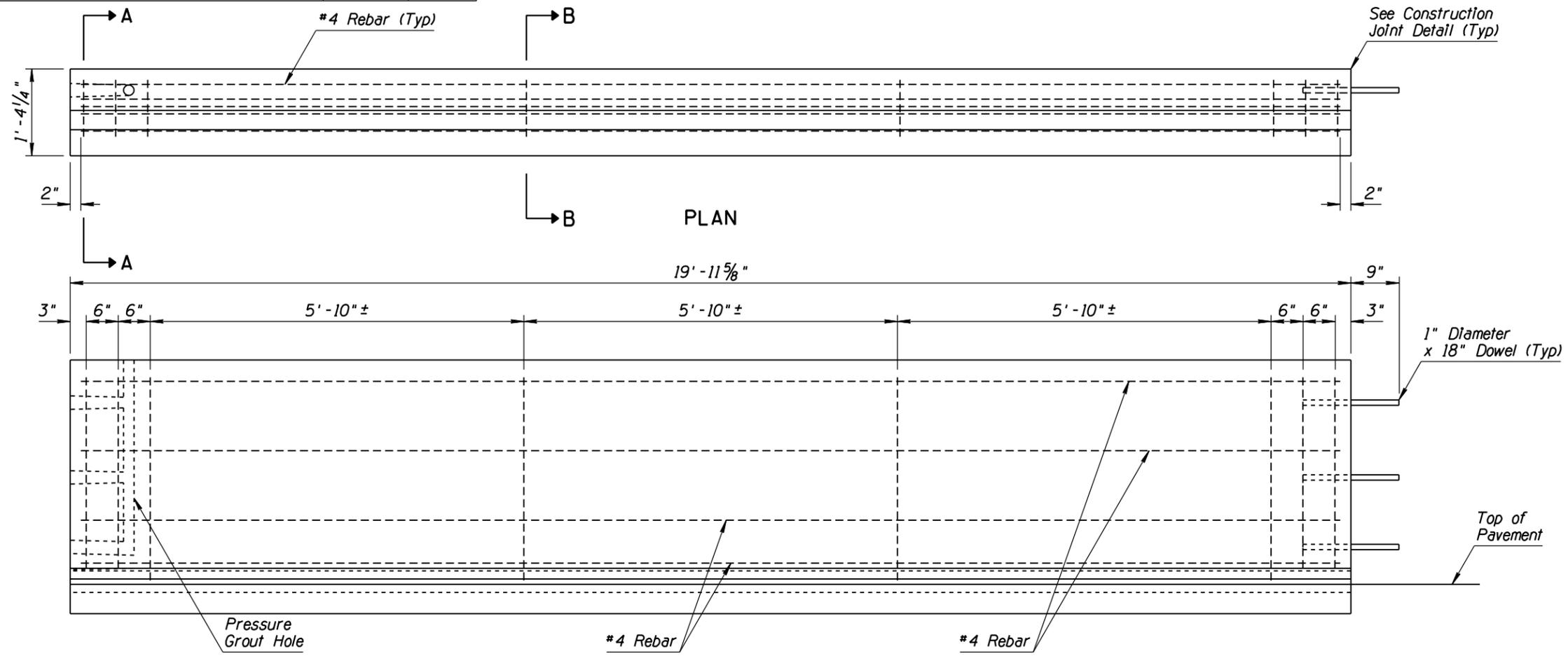
KEYWAY DETAIL
SEE SECTION A-A (WITH AC) FOR
TYPICAL REBAR PLACEMENT

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF BARRIER 42" TYPE 'F' AT PIERS CAST-IN-PLACE	DRAWING NO. C-10.55 Sheet 1 of 3

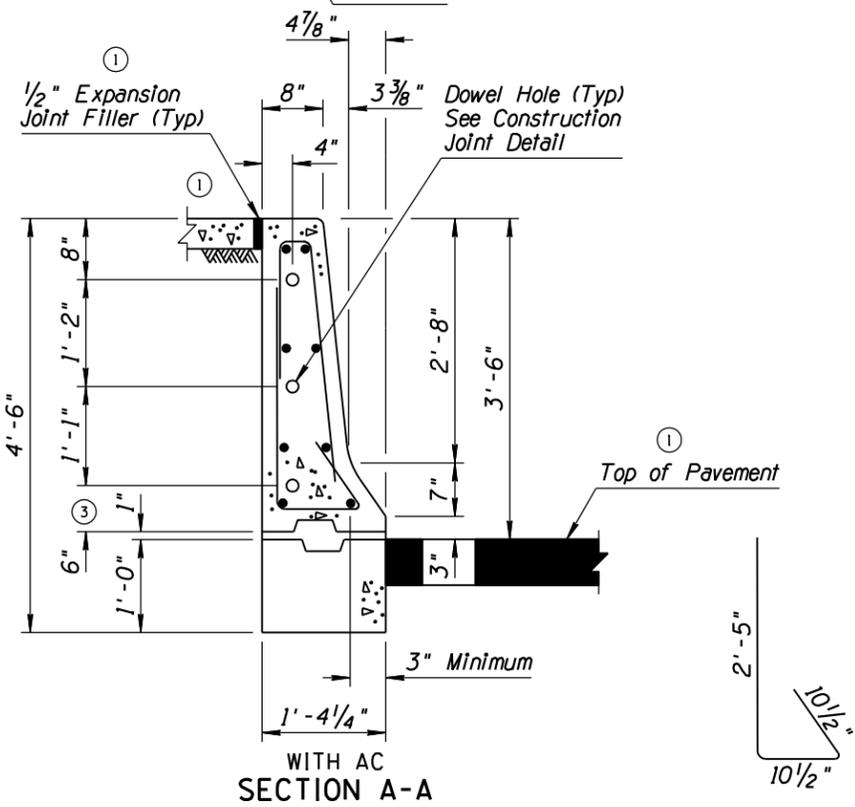
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SECTION A-A: ADDED CONCRETE CAP AND NOTES	RLF	11/06
2	ADDED (Typ)	RLF	11/06
3	CHANGED 3" DIMENSION TO 6"	RLF	5/12
4			

GENERAL NOTES

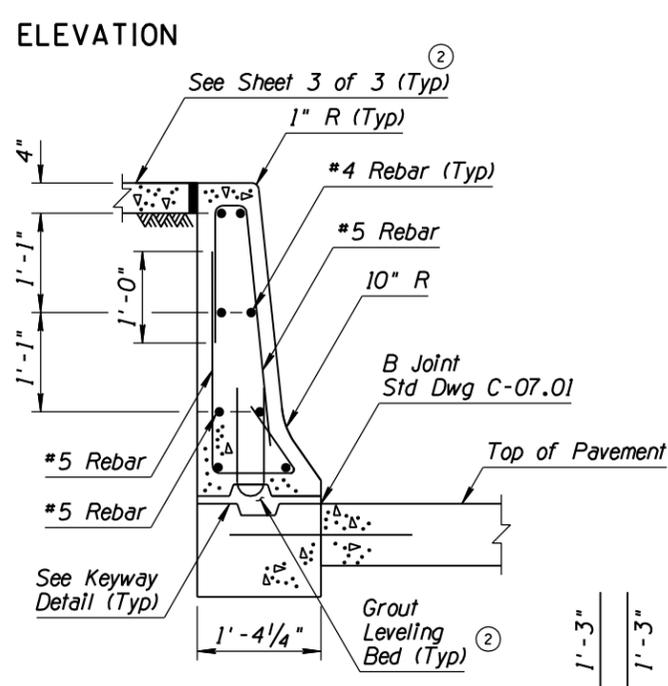
- Concrete shall be Class S, $f'_c = 4000$ PSI.
- The Half Barrier shall be placed upon a bed of grout in order to provide a uniform bearing.
- Doweled joints shall be grouted under pressure until all of the openings and the joints are filled.
- All bend dimensions for rebar are out-to-out of bars.
- Rebar shall have 2" minimum clear cover unless otherwise noted.



PLAN

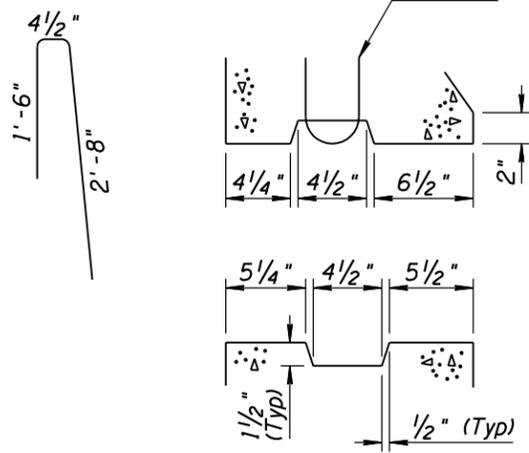


WITH AC SECTION A-A

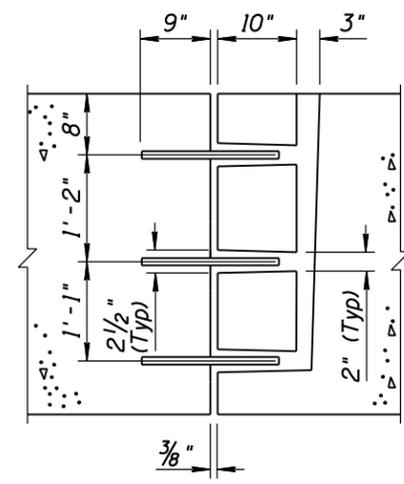


ELEVATION

AT REBAR - WITH PCCP SECTION B-B



KEYWAY DETAIL



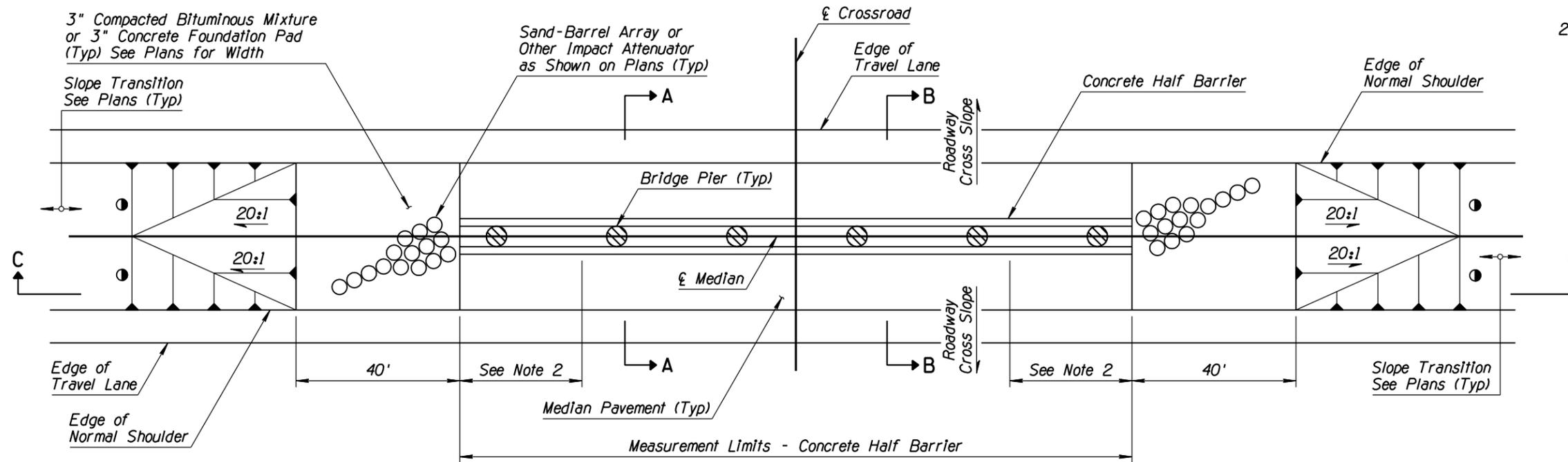
ELEVATION CONSTRUCTION JOINT DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF BARRIER 42" TYPE 'F' AT PIERS PRECAST	DRAWING NO. C-10.55 Sheet 2 of 3

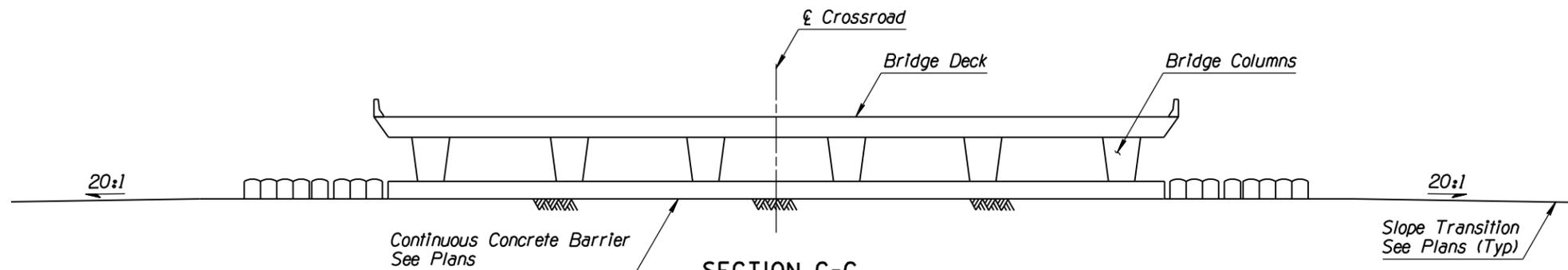
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	NEW STANDARD DWG	RLF	9/04
2			
3			
4			

GENERAL NOTES

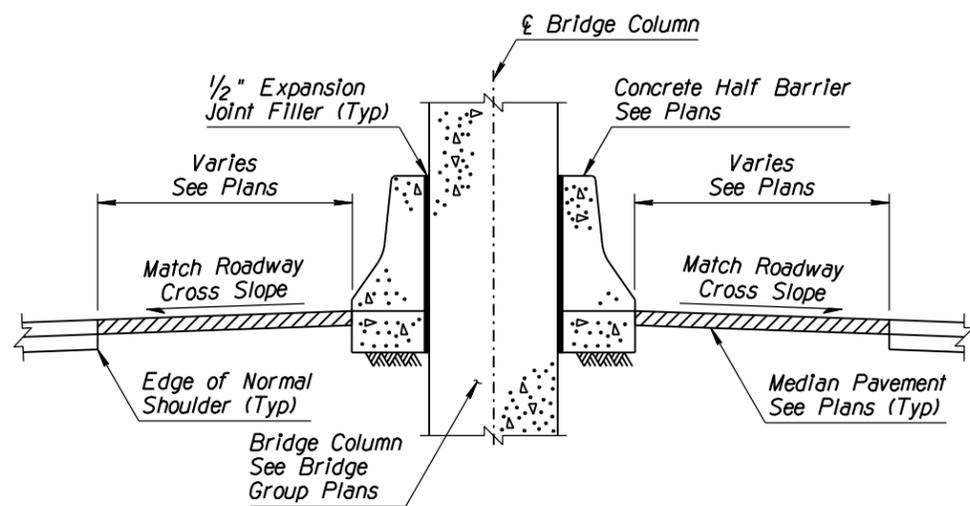
1. Transition median paving cross slope to meet level foundation pad. See plans for length and location.
 2. Compacted backfill and Class B concrete shall be placed between bridge columns or piers only.
- Slope as shown on Plans



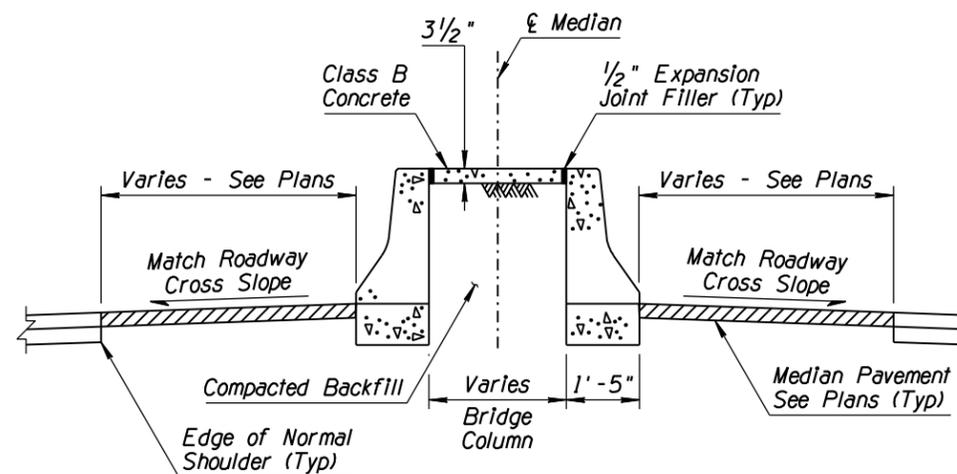
PLAN



SECTION C-C



SECTION A-A



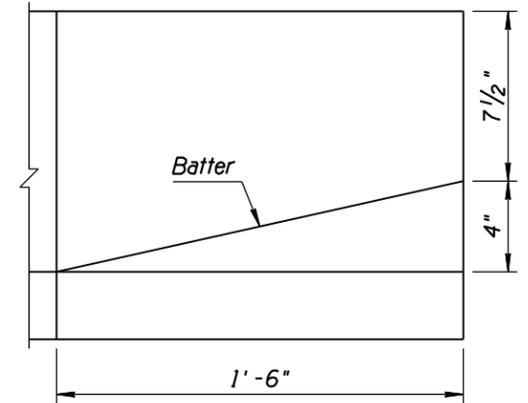
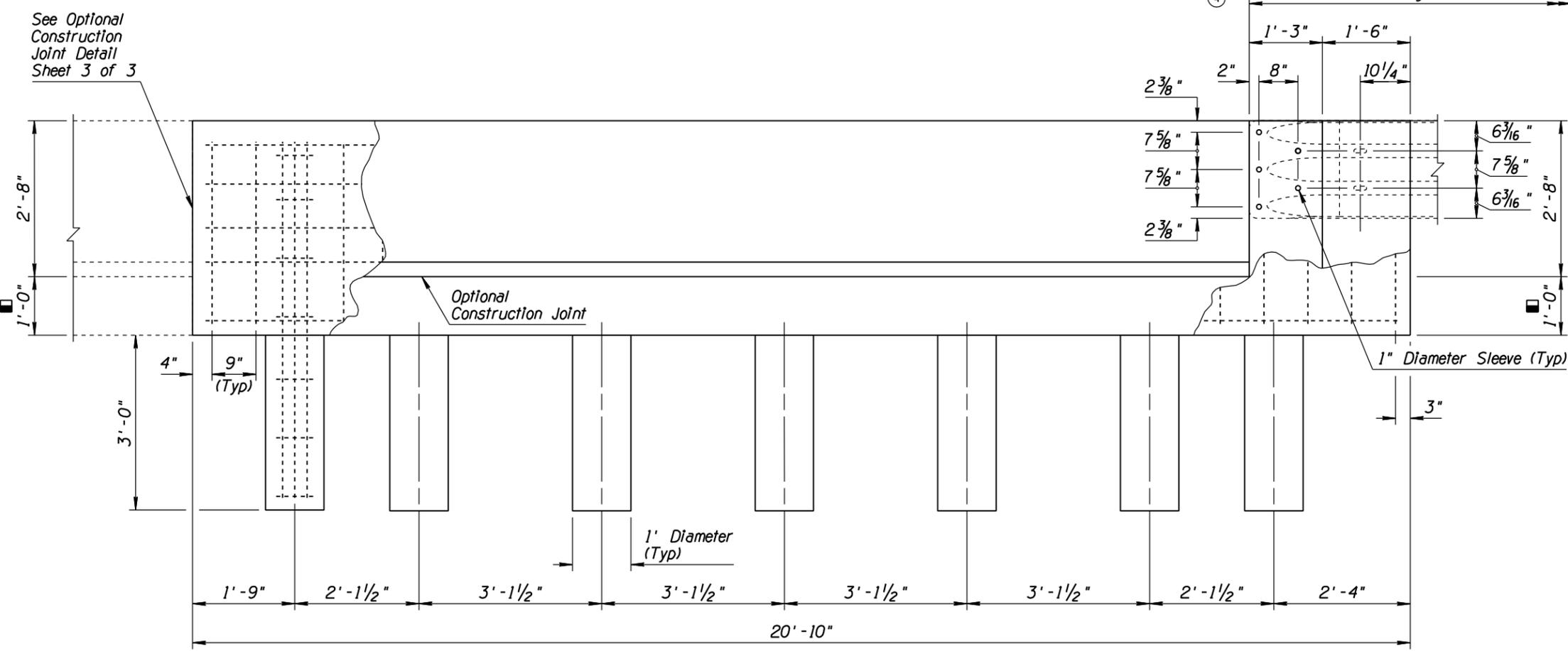
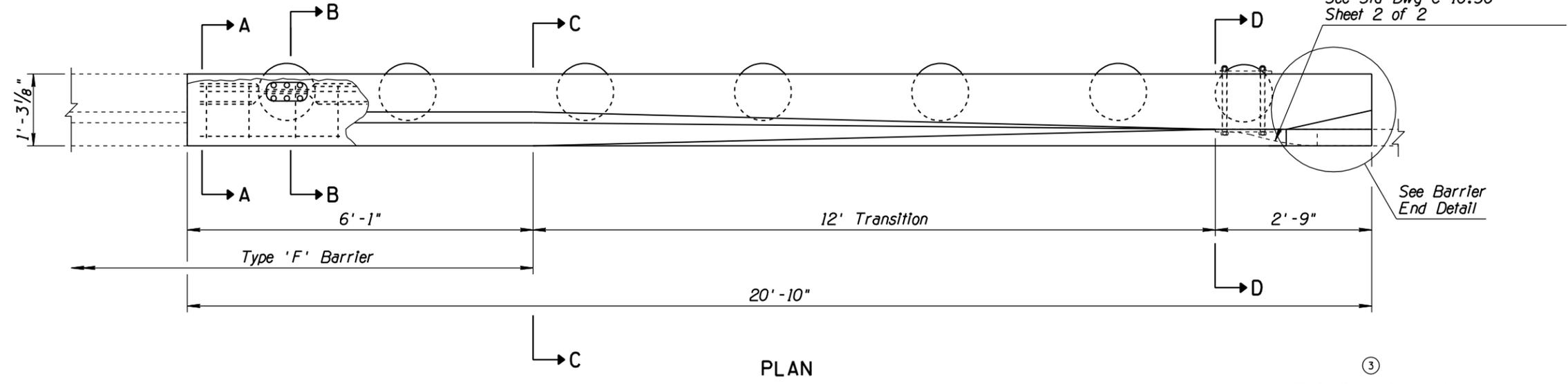
SECTION B-B

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF BARRIER 42" TYPE 'F' AT PIERS LAYOUT	DRAWING NO. C-10.55 Sheet 3 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REVISED TERMINAL CONNECTOR NOTE	RLF	7/05
3	REVISED TRANSITION SYSTEM NOTE	RLF	7/05
4	REVISED SYSTEM LIMIT TO INCLUDE END SHOE	RLF	5/07

GENERAL NOTES

- Concrete shall be Class S, $f'_c = 4000$ PSI.
 - All rebar shall have 2" minimum clear cover unless otherwise noted.
 - All bend dimensions for rebar are out-to-out of rebars.
- 1'-0" Minimum or Match Thickness of Adjacent PCCP

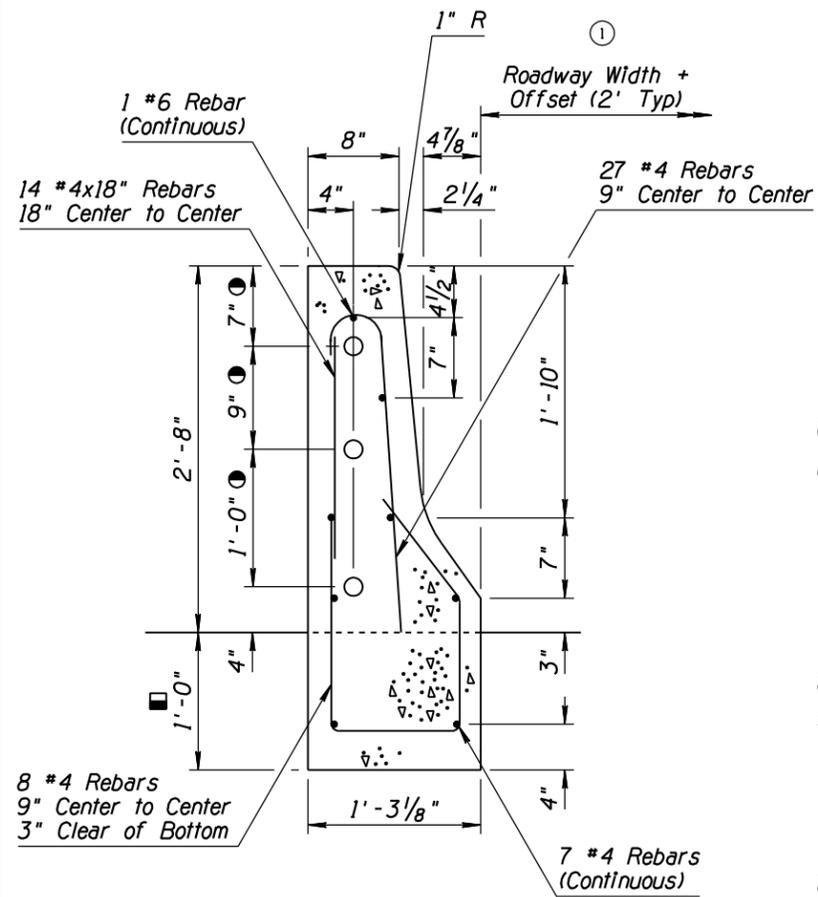


APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL 32" TYPE 'F' WITH CAISSONS	DRAWING NO. C-10.70 Sheet 1 of 3

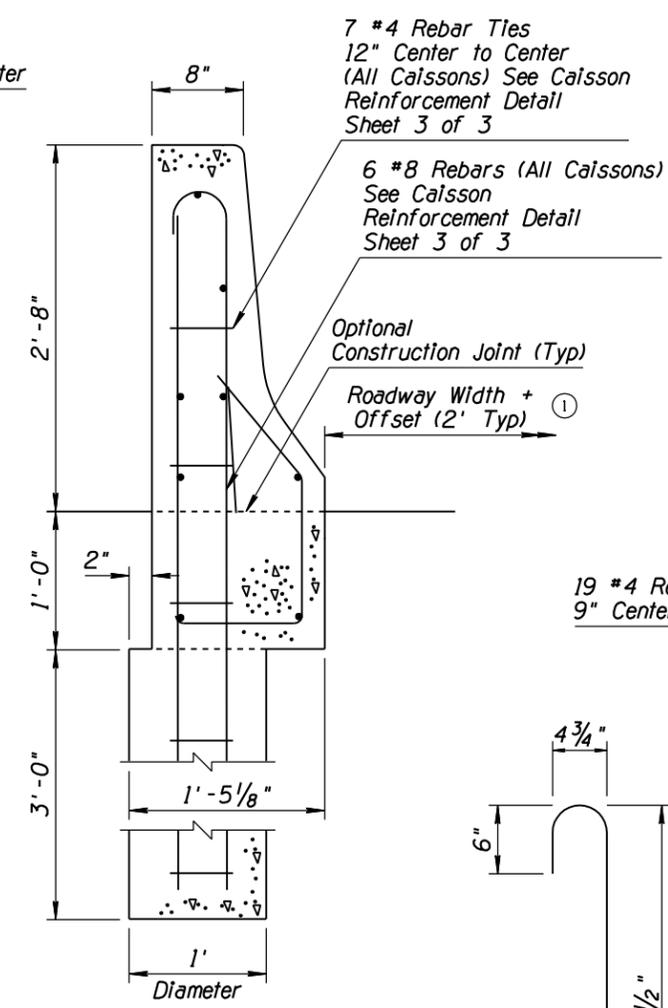
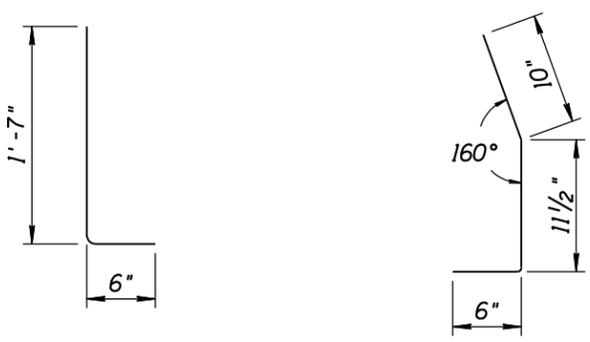
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED DIMENSION	RLF	9/04
2	REVISED TITLE	RLF	9/04
3	ADDED REFERENCE	RLF	9/04
4	REVISED NOTE	RLF	7/05

GENERAL NOTES

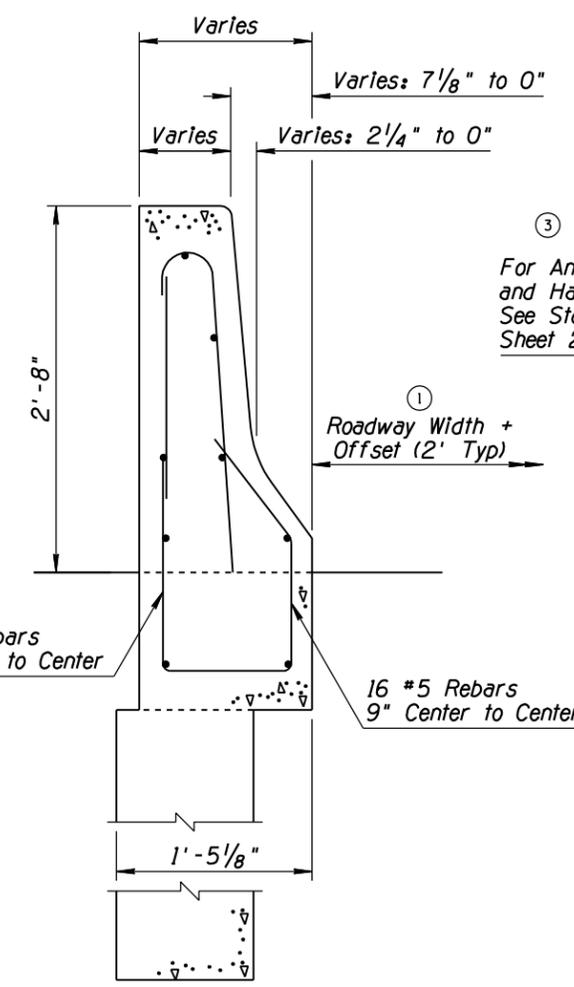
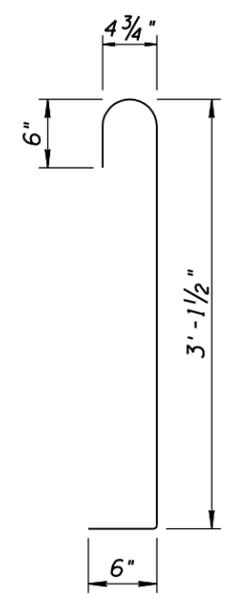
- See Section B-B for caisson reinforcement.
- See Optional Construction Joint Detail, Sheet 3 of 3
- 1'-0" Minimum or Match Thickness of Adjacent PCCP



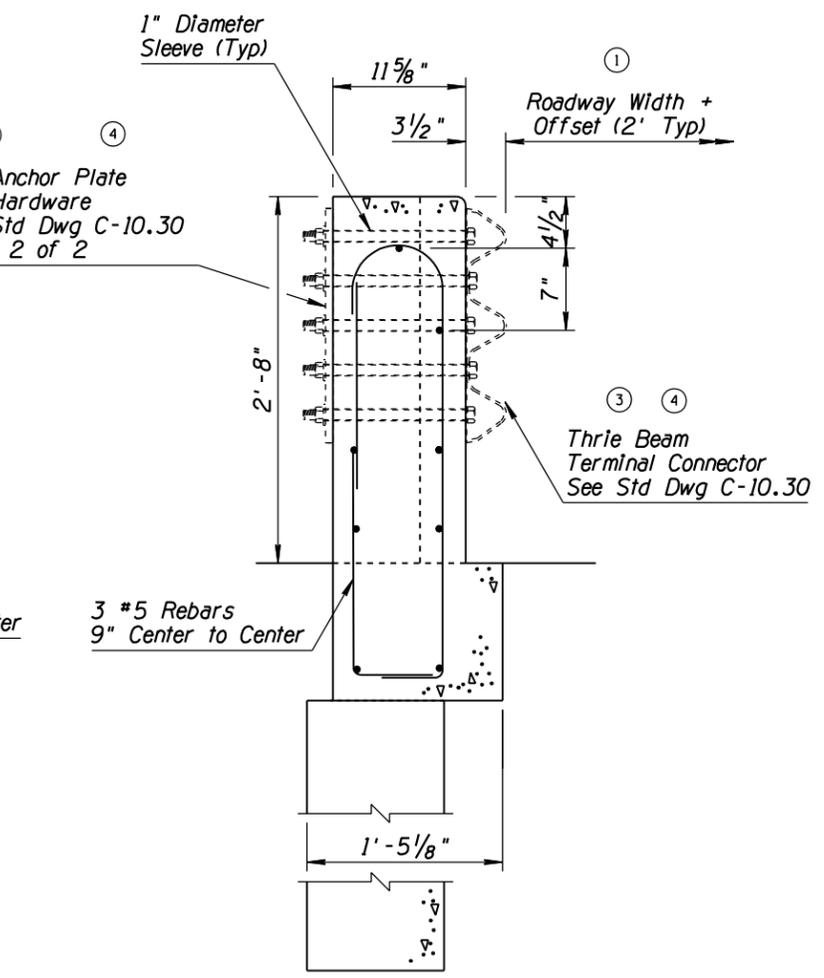
WITHOUT CURB SECTION A-A



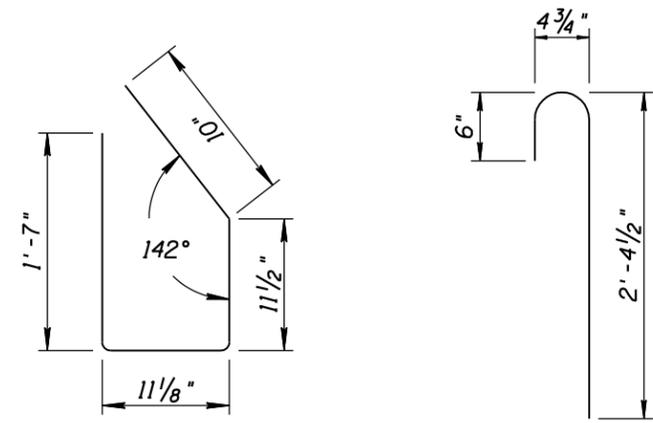
WITHOUT CURB SECTION B-B



WITHOUT CURB SECTION C-C

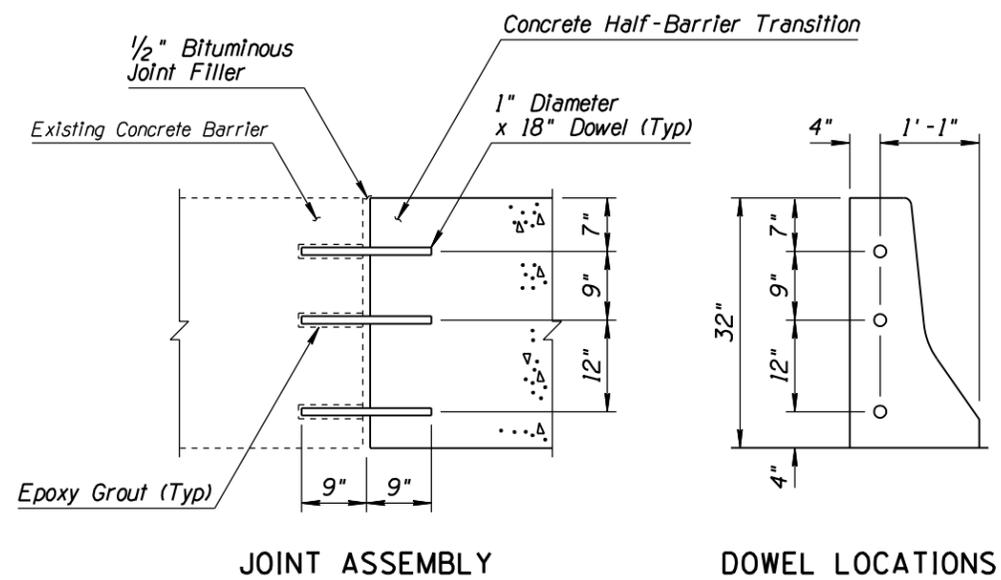


WITHOUT CURB SECTION D-D

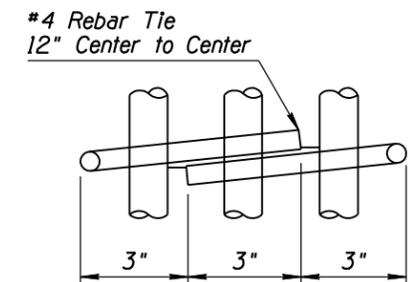
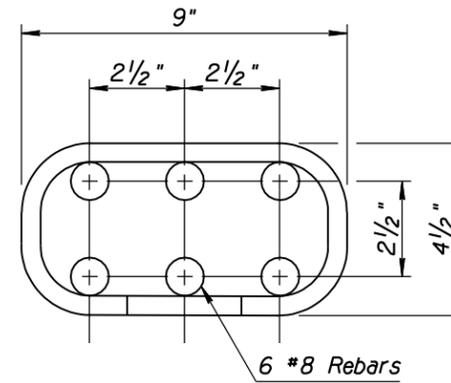


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL 32" TYPE 'F' WITH CAISSONS ②	DRAWING NO. C-10.70 Sheet 2 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED TITLE	RLF	9/04
2	REMOVED ANCHOR PLATE DETAIL	RLF	9/04
3			
4			



CONSTRUCTION JOINT DETAIL
(OPTIONAL)



CAISSON REINFORCEMENT

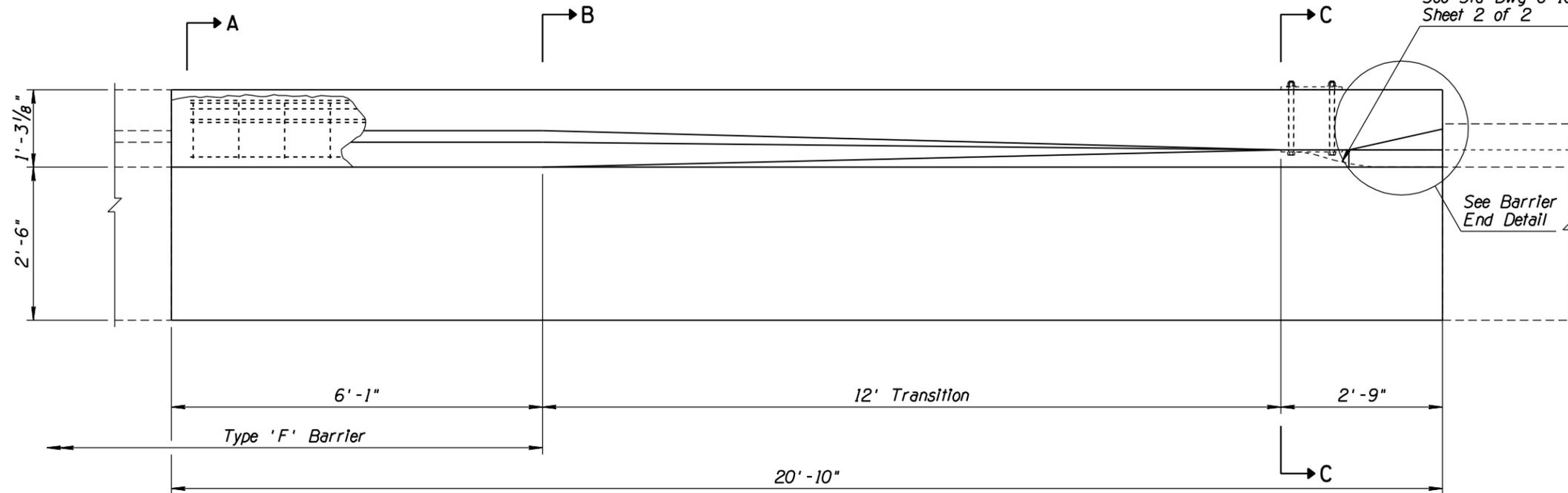
②

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL 32" TYPE 'F' WITH CAISSONS ①	DRAWING NO. C-10.70 Sheet 3 of 3

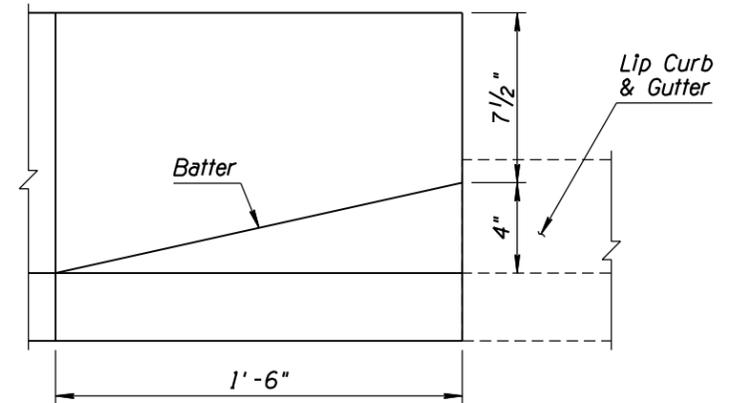
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REVISED NOTE	RLF	7/05
3	REVISED SYSTEM LIMIT TO INCLUDE END SHOE	RLF	5/07
4			

GENERAL NOTES

- Concrete shall be Class S, $f'_c = 4000$ PSI.
 - All rebar shall have 2" minimum clear cover unless otherwise noted.
 - All bend dimensions for rebar are out-to-out of bars.
 - Two-inch deep contraction joints shall be placed in the gutter at locations which match the joints in adjacent PCCP and at approximate 15' centers when adjacent to AC pavement. Joints shall be either hand tooled or sawn.
- 1'-0" Minimum or Match Thickness of Adjacent PCCP

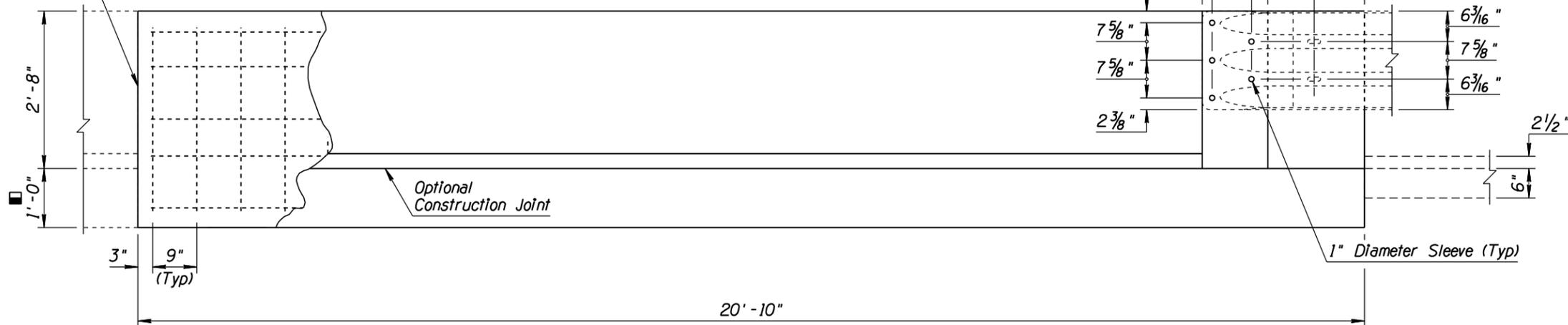


PLAN



BARRIER END DETAIL

See Optional Construction Joint Detail Sheet 2 of 2

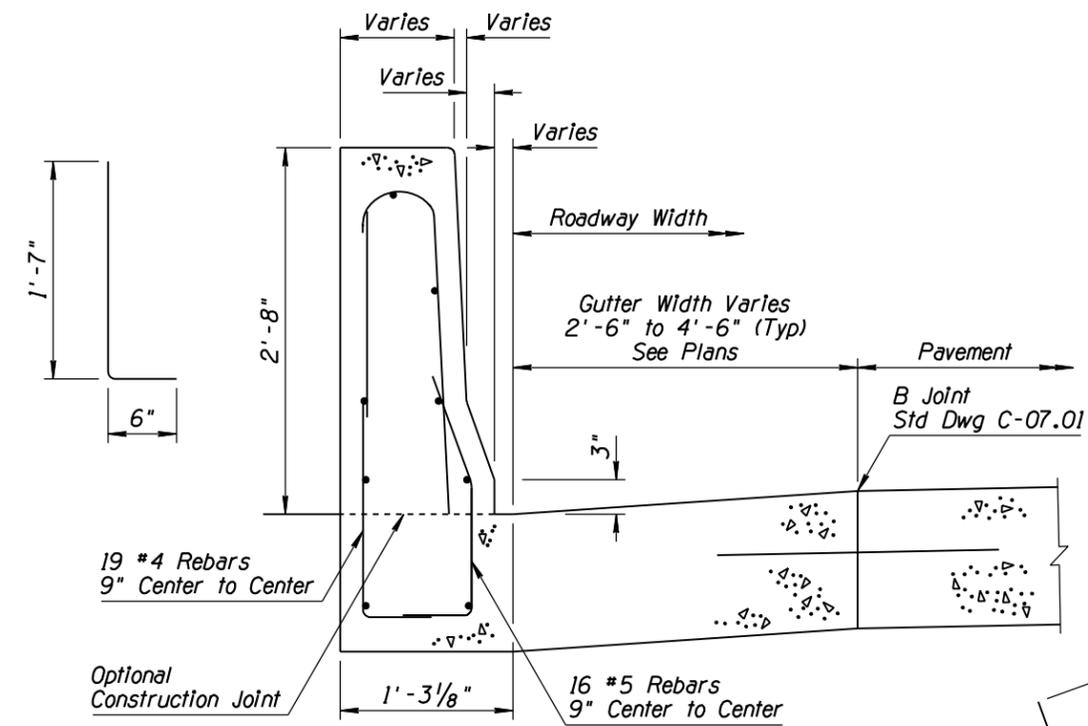
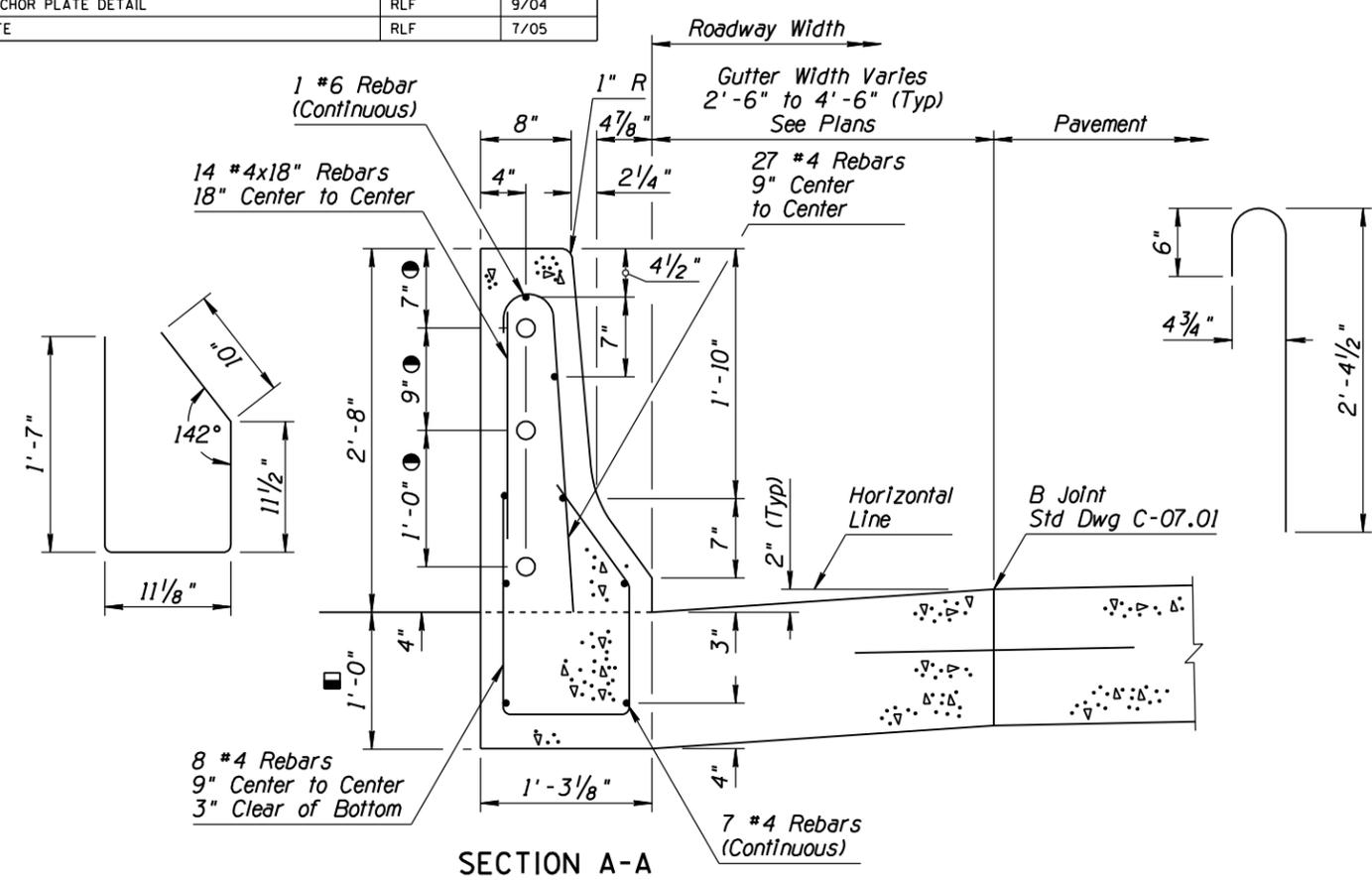


**ELEVATION
BARRIER WITH CURB AND GUTTER**

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL 32" TYPE 'F' WITH CURB & GUTTER	DRAWING NO. ① C-10.71 Sheet 1 of 2

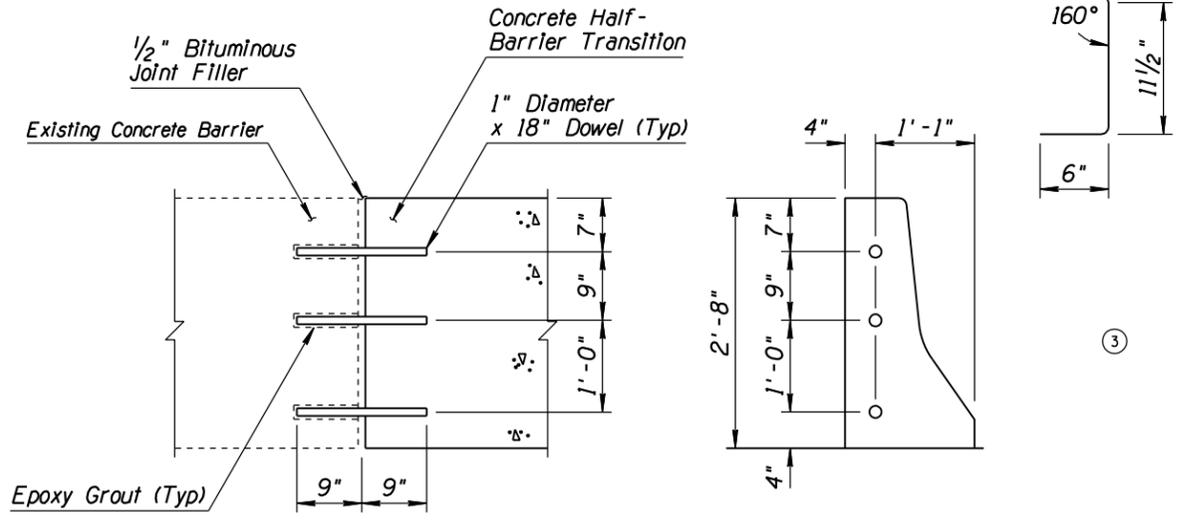
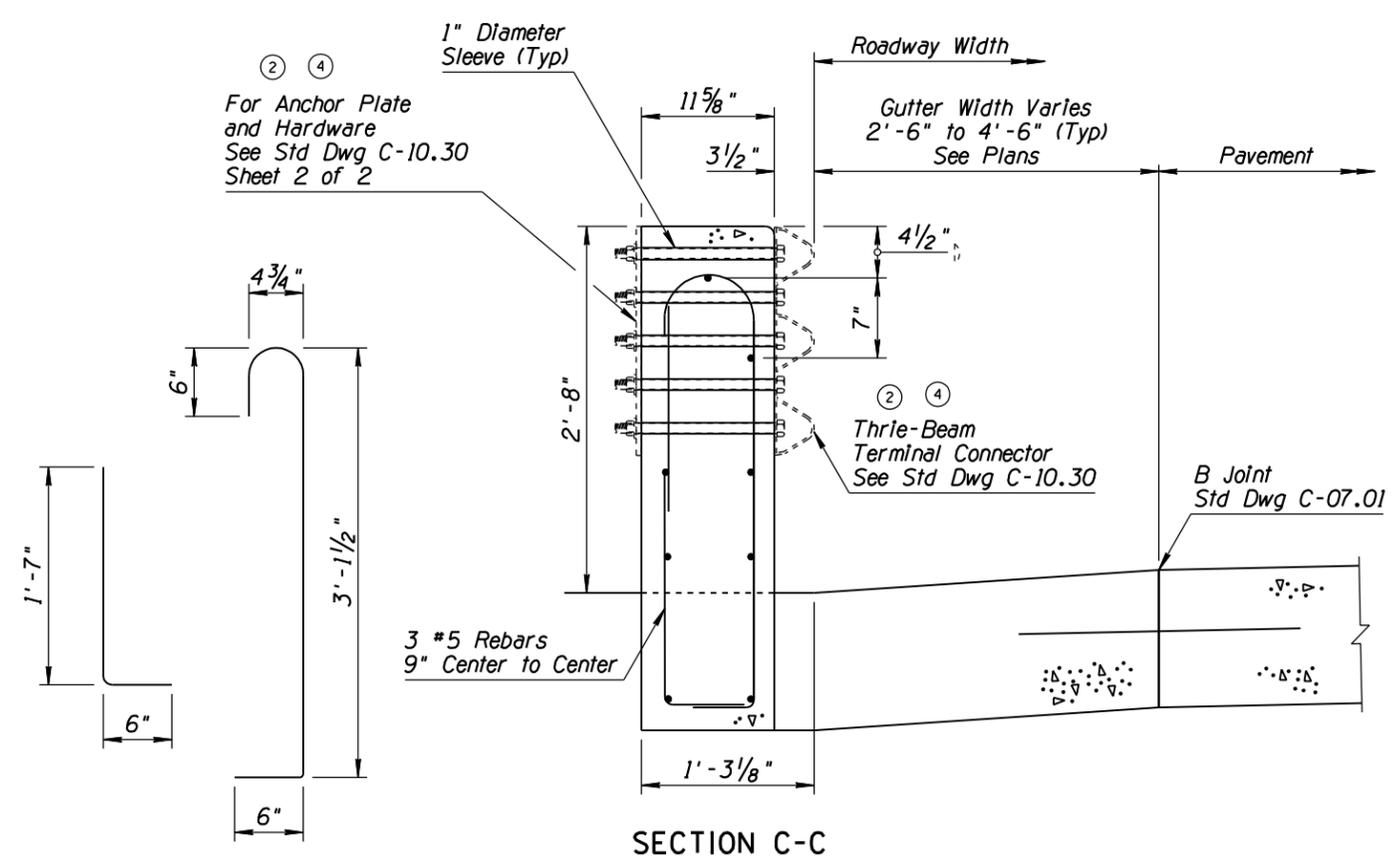
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	9/04
2	ADDED REFERENCE	RLF	9/04
3	REMOVED ANCHOR PLATE DETAIL	RLF	9/04
4	REVISED NOTE	RLF	7/05

- See Optional Construction Joint Detail
- 1'-0" Minimum or Match Thickness of Adjacent PCCP



SECTION A-A

SECTION B-B

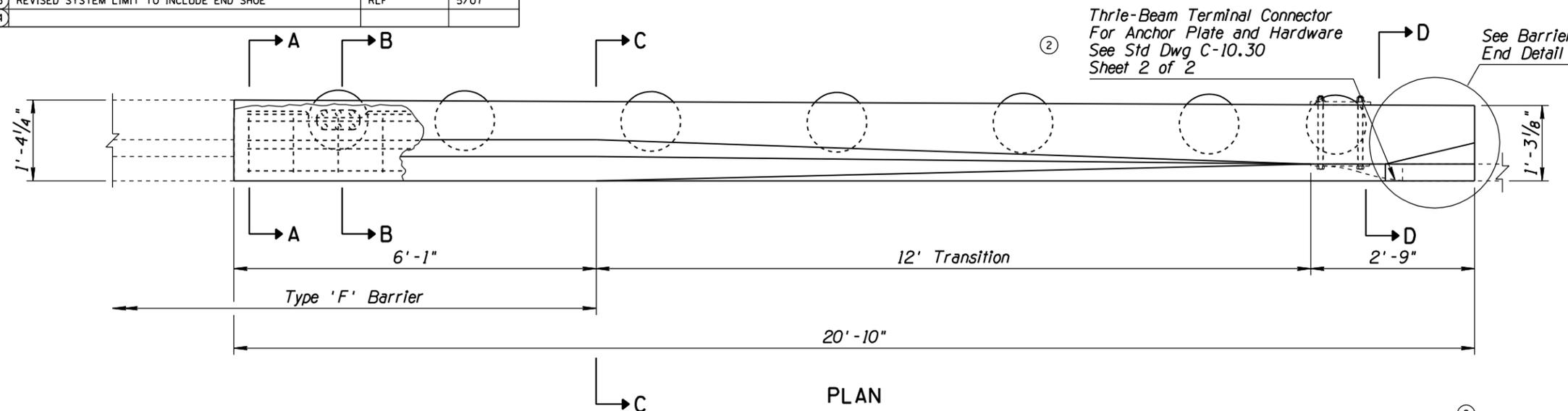


JOINT ASSEMBLY
DOWEL LOCATIONS
CONSTRUCTION JOINT DETAIL (OPTIONAL)

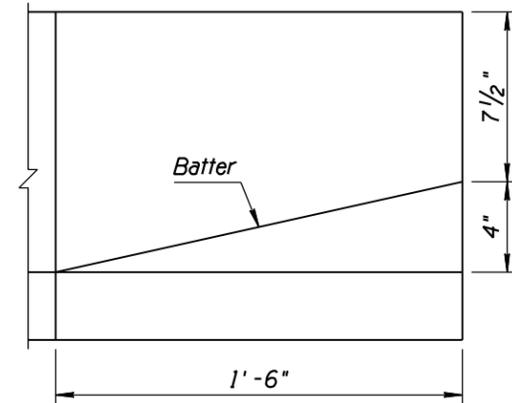
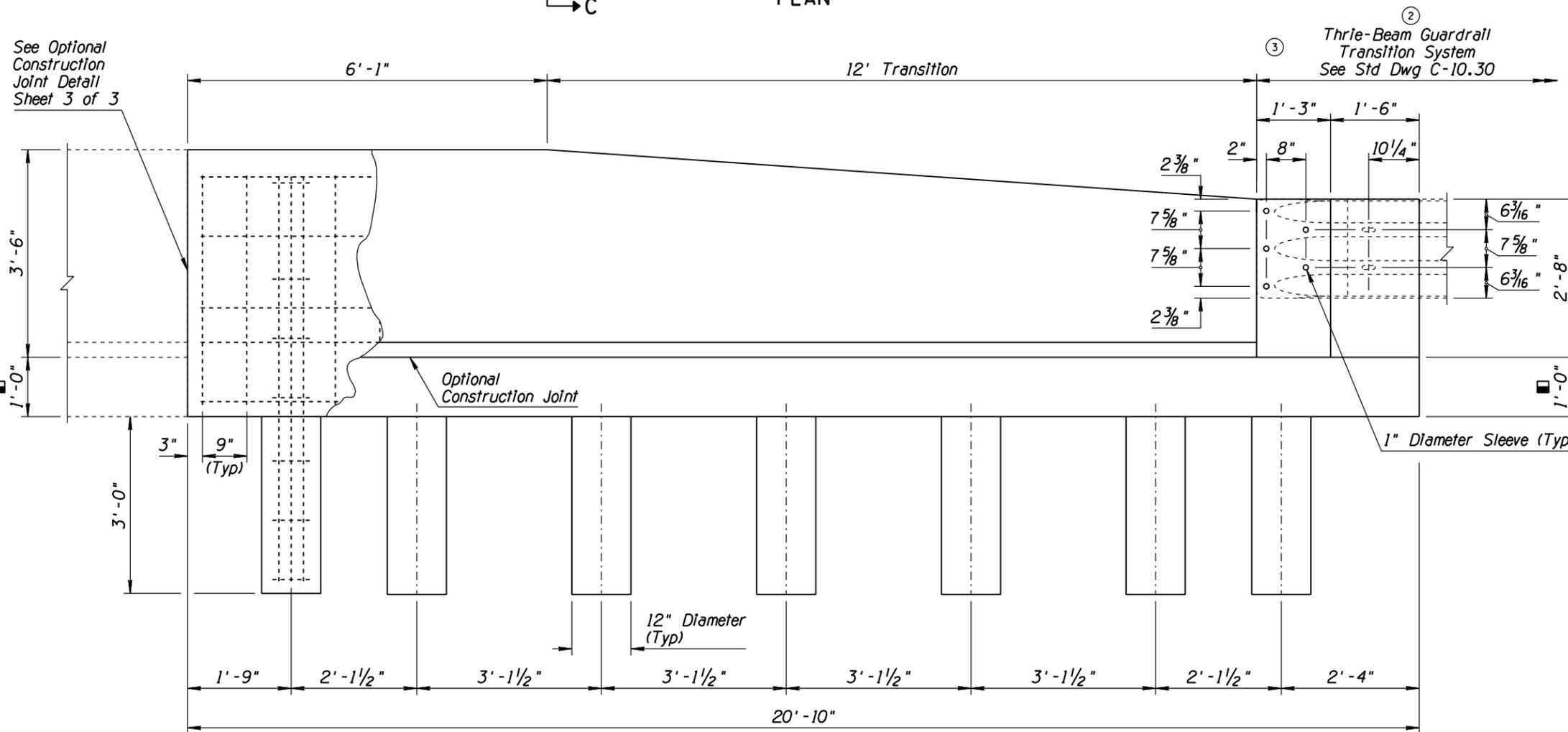
SECTION C-C

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL 32" TYPE 'F' WITH CURB & GUTTER	DRAWING NO. C-10.71 Sheet 2 of 2

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REVISED NOTE	RLF	7/05
3	REVISED SYSTEM LIMIT TO INCLUDE END SHOE	RLF	5/07
4			



- ### GENERAL NOTES
- Concrete shall be Class S, $f'_c = 4000$ PSI.
 - All rebar shall have 2" minimum clear cover unless otherwise noted.
 - All bend dimensions for rebar are out-to-out of rebars.
- 1'-0" Minimum or Match Thickness of Adjacent PCCP



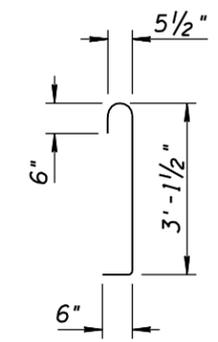
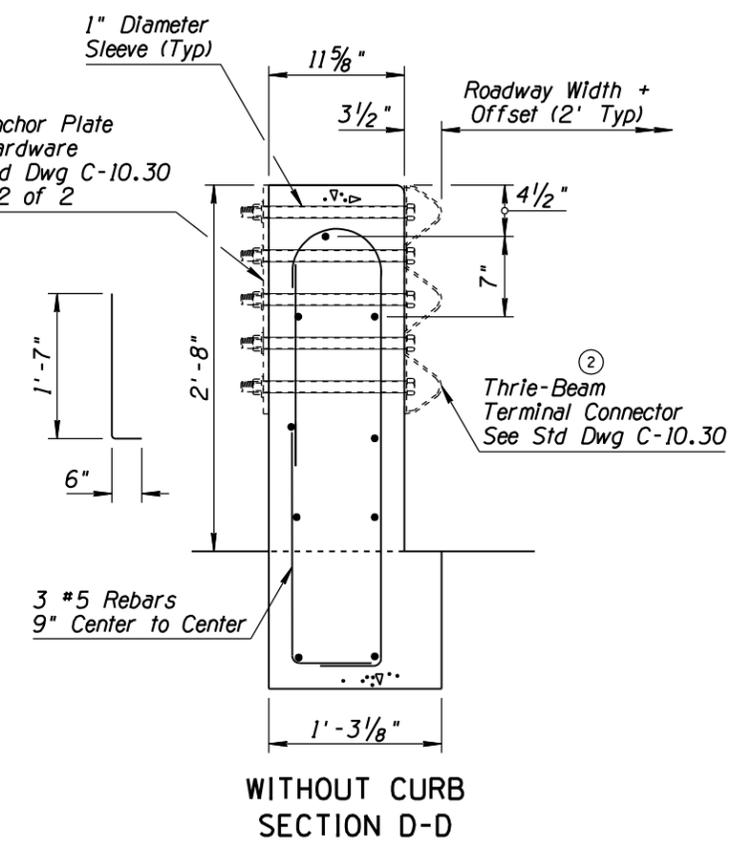
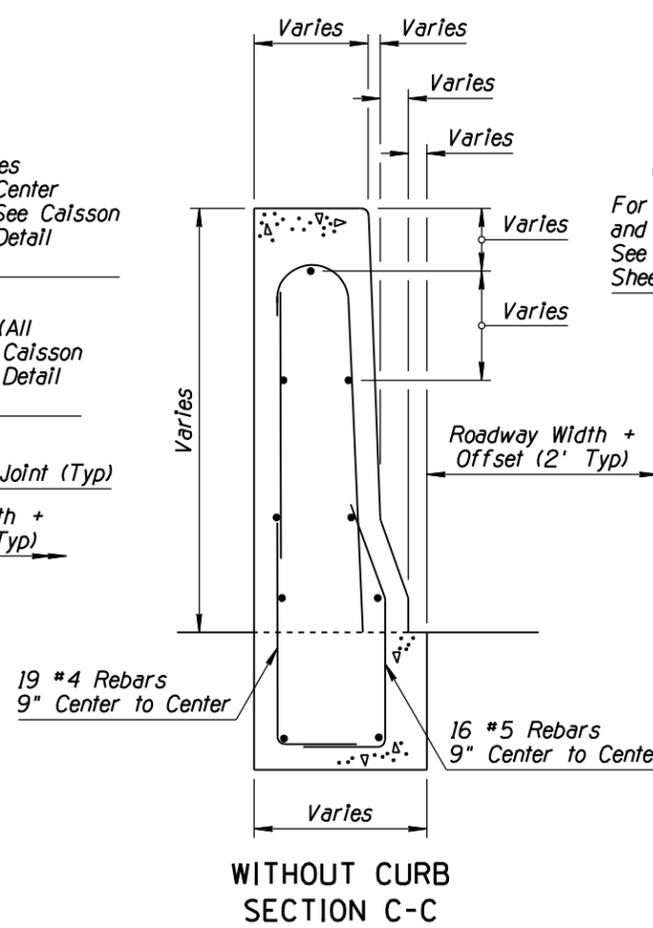
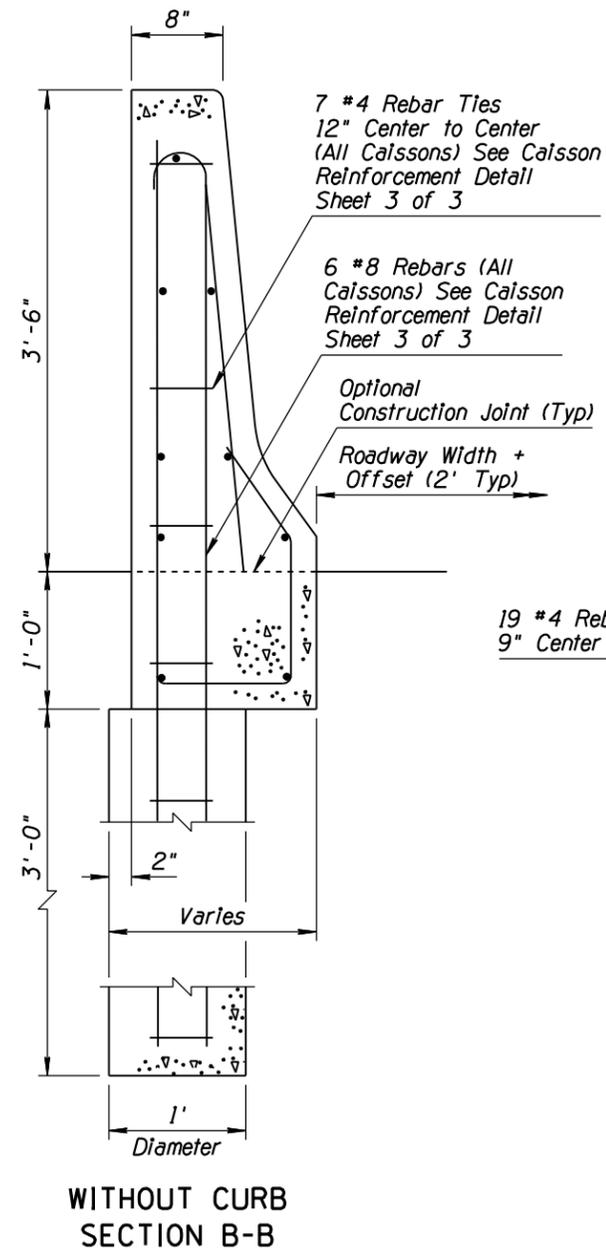
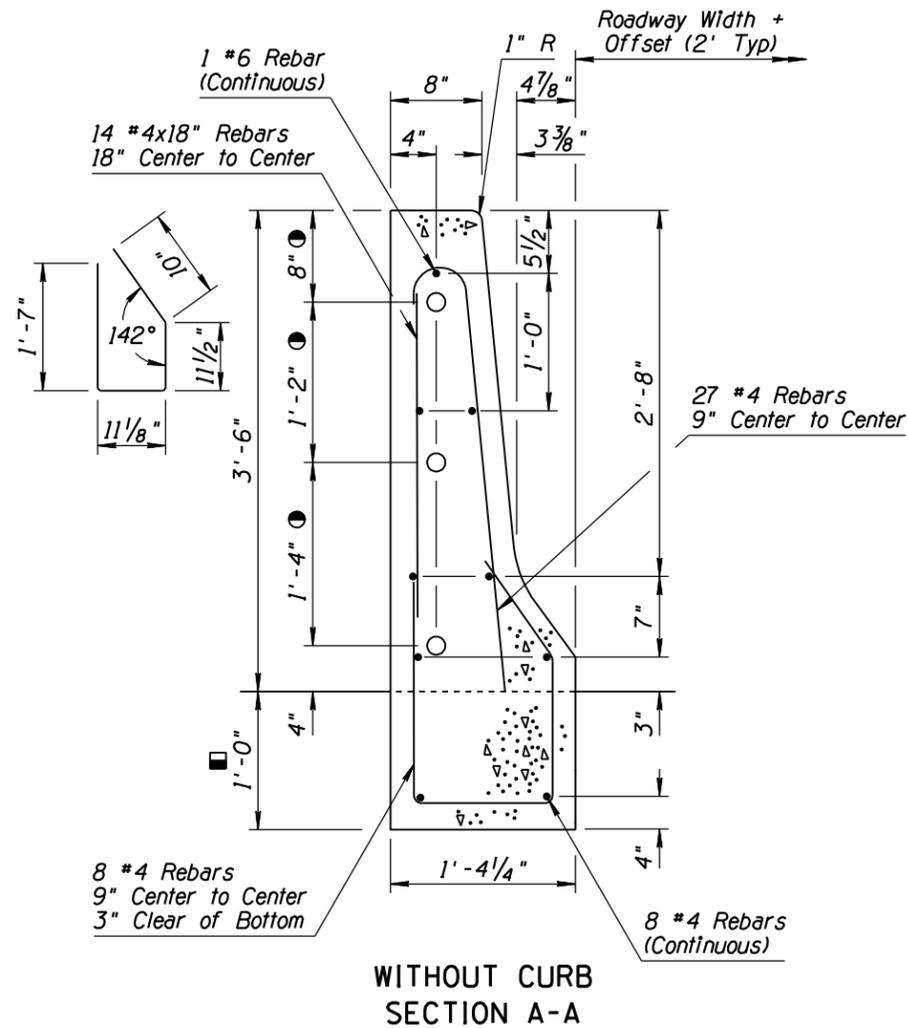
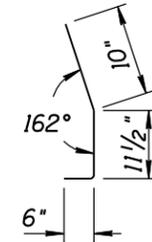
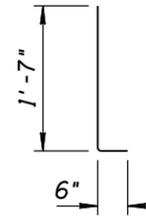
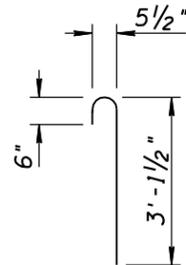
ELEVATION BARRIER WITHOUT CURB

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL 42" TO 32" TYPE 'F' WITH CAISSONS	DRAWING NO. ① C-10.72 Sheet 1 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	9/04
2	REVISED NOTE	RLF	7/05
3			
4			

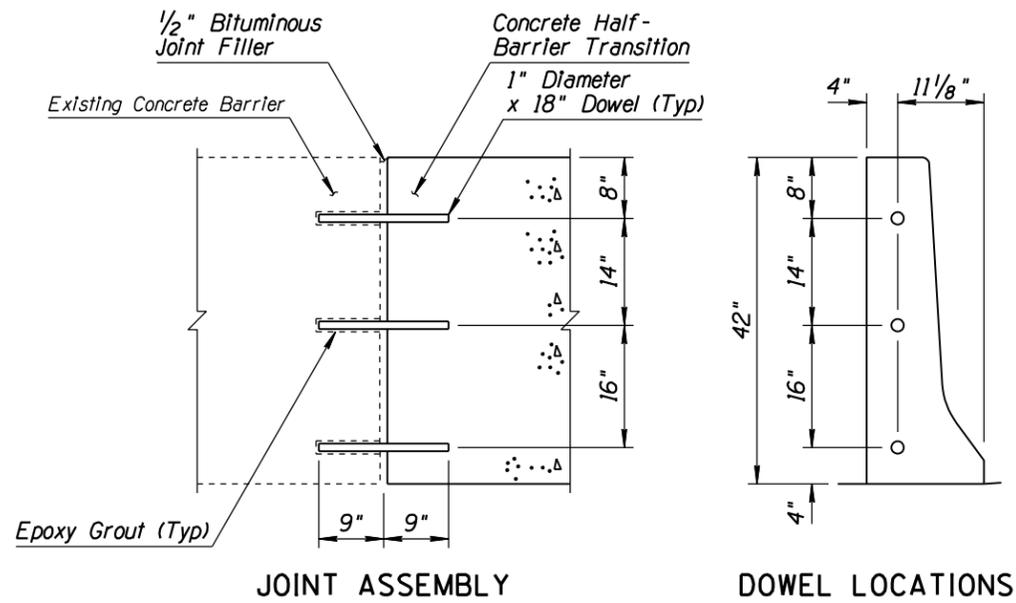
GENERAL NOTES

- See Section B-B for caisson reinforcement.
- See Optional Construction Joint Detail, Sheet 3 of 3
- 1'-0" Minimum or Match Thickness of Adjacent PCCP

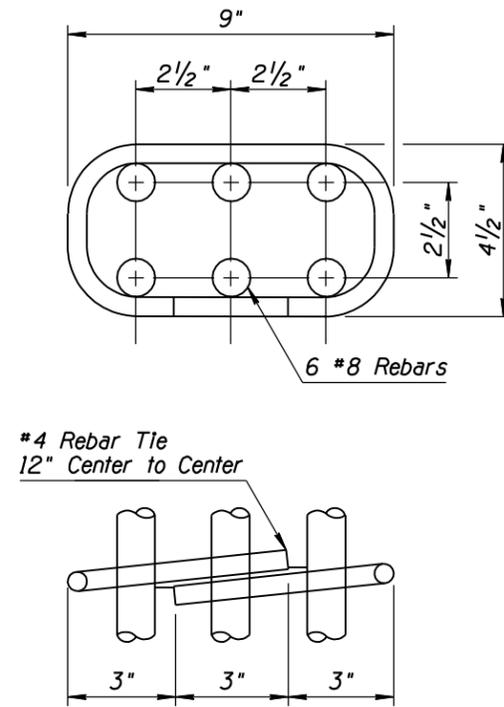


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL 42" TO 32" TYPE 'F' WITH CAISSONS	DRAWING NO. C-10.72 Sheet 2 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED TITLE	RLF	9/04
2	REMOVED ANCHOR PLATE DETAIL	RLF	9/04
3			
4			



JOINT ASSEMBLY
DOWEL LOCATIONS
CONSTRUCTION JOINT DETAIL
(OPTIONAL)



CAISSON REINFORCEMENT

②

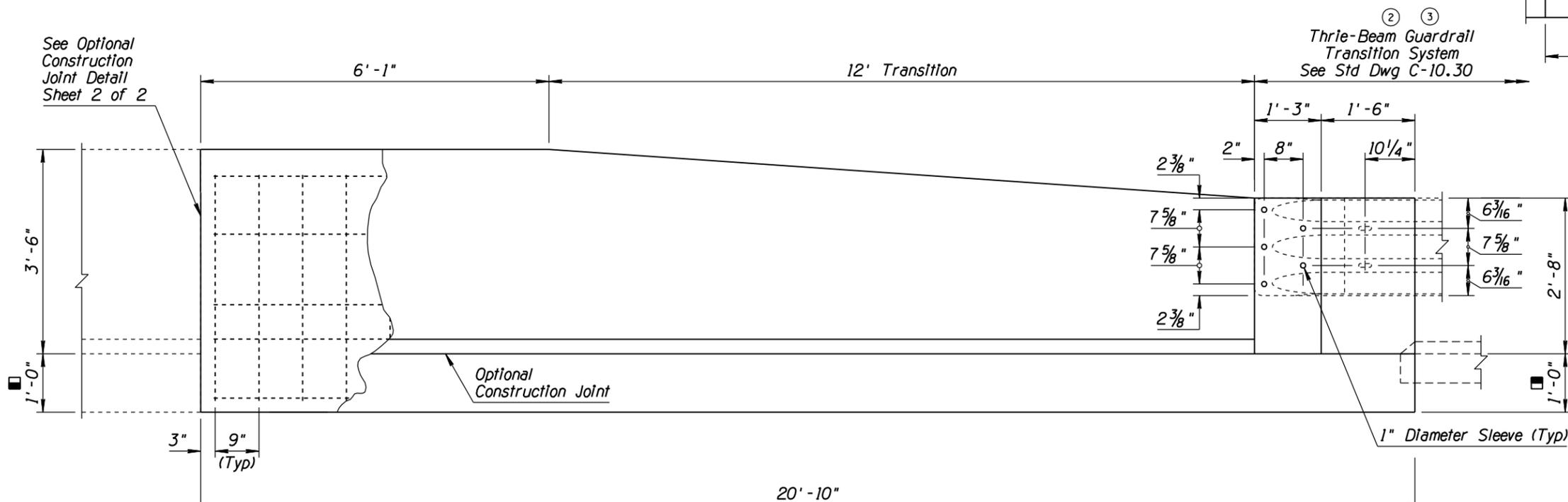
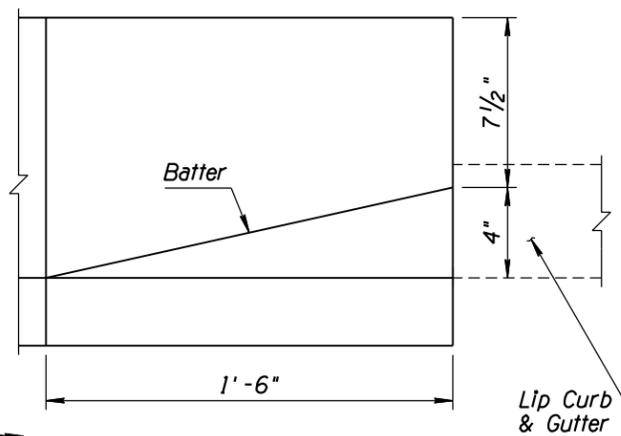
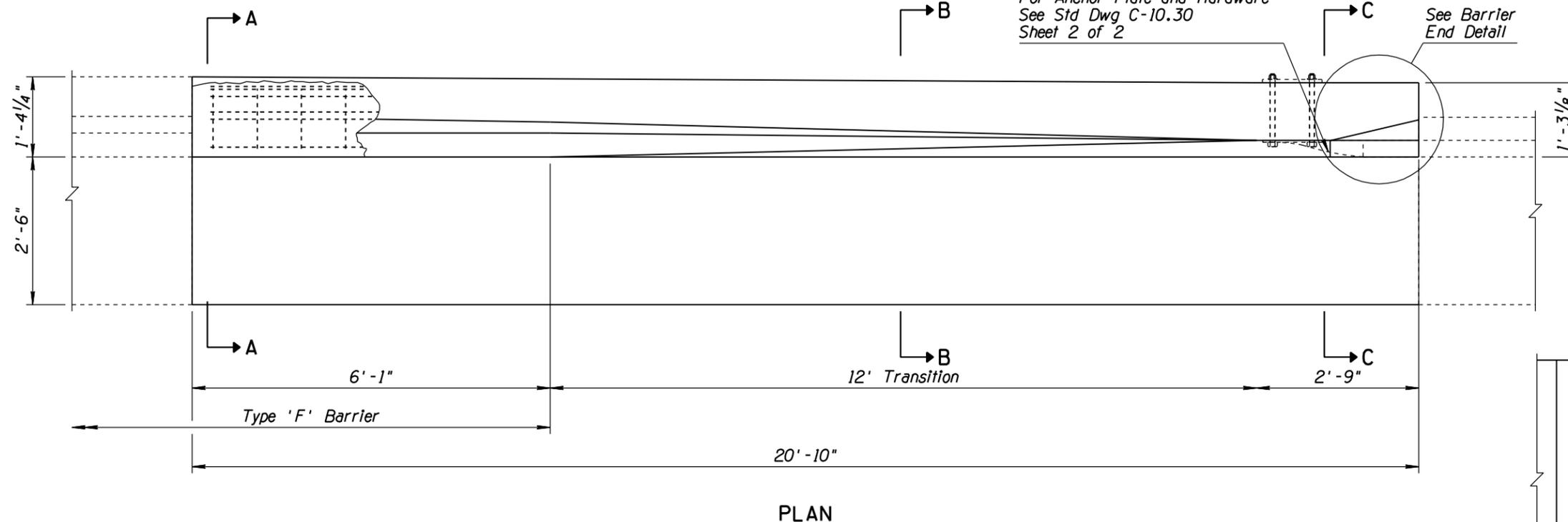
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL 42" TO 32" TYPE 'F' WITH CAISSONS ①	DRAWING NO. C-10.72 Sheet 3 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REVISED NOTE	RLF	7/05
3	REVISED SYSTEM LIMIT TO INCLUDE END SHOE	RLF	5/07
4			

GENERAL NOTES

- Concrete shall be Class S, $f'_c = 4000$ PSI.
- All rebar shall have 2" minimum clear cover unless otherwise noted.
- All bend dimensions for rebar are out-to-out of rebars.
- Two-inch deep contraction joints shall be placed in the gutter at locations which match the joints in adjacent PCCP and at approximate 15' centers when adjacent to AC pavement. Joints shall be either hand-tooled or sawn.
 - 1'-0" Minimum or Match Thickness of Adjacent PCCP

②
 Thrie-Beam Terminal Connector
 For Anchor Plate and Hardware
 See Std Dwg C-10.30
 Sheet 2 of 2

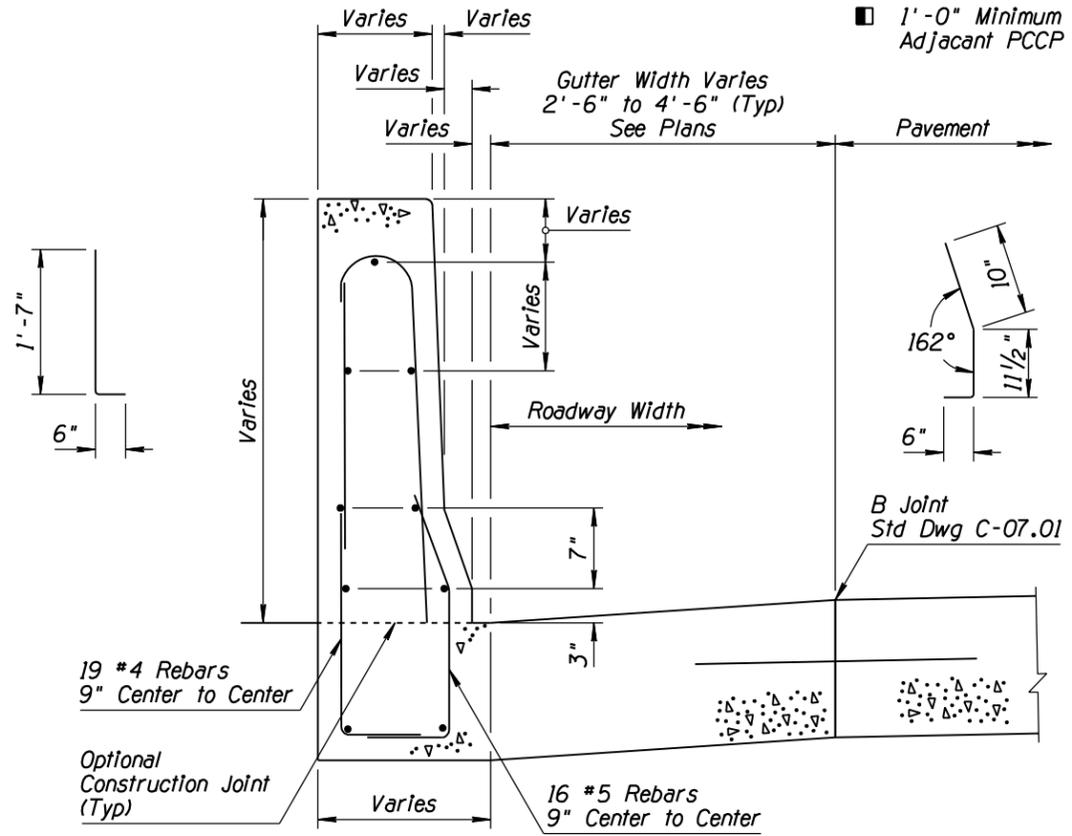
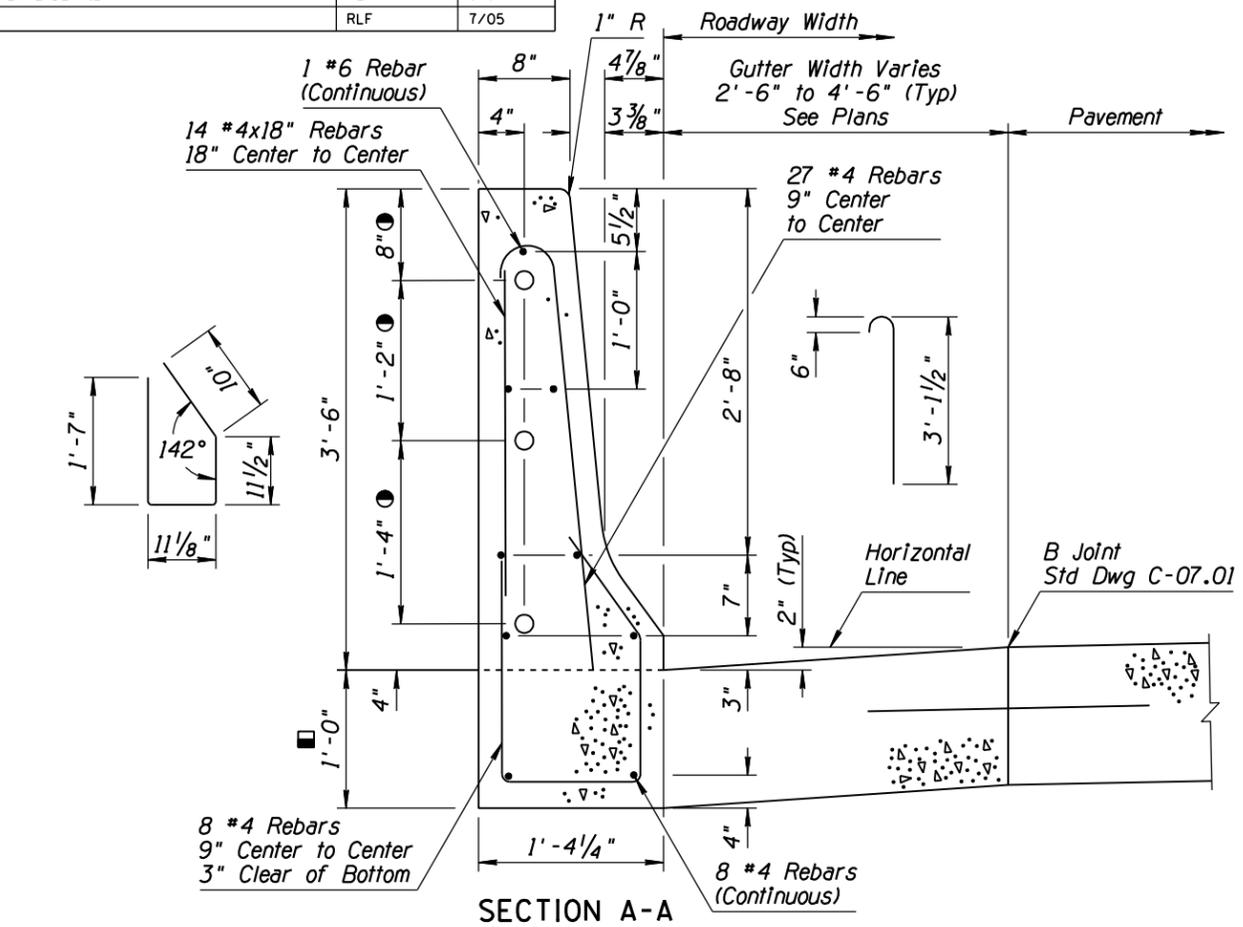


**ELEVATION
 BARRIER WITH CURB AND GUTTER**

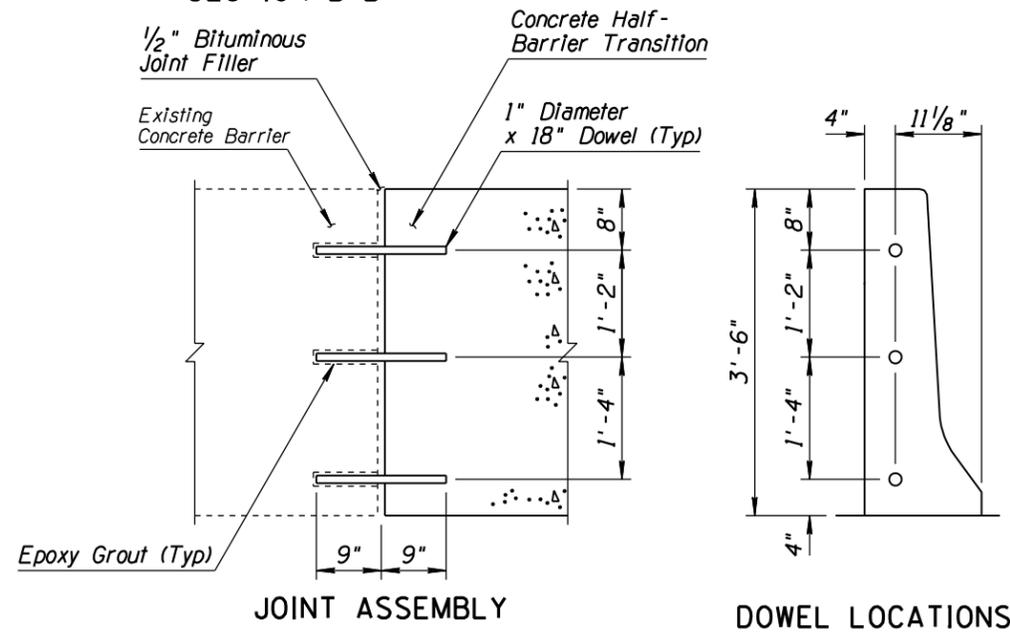
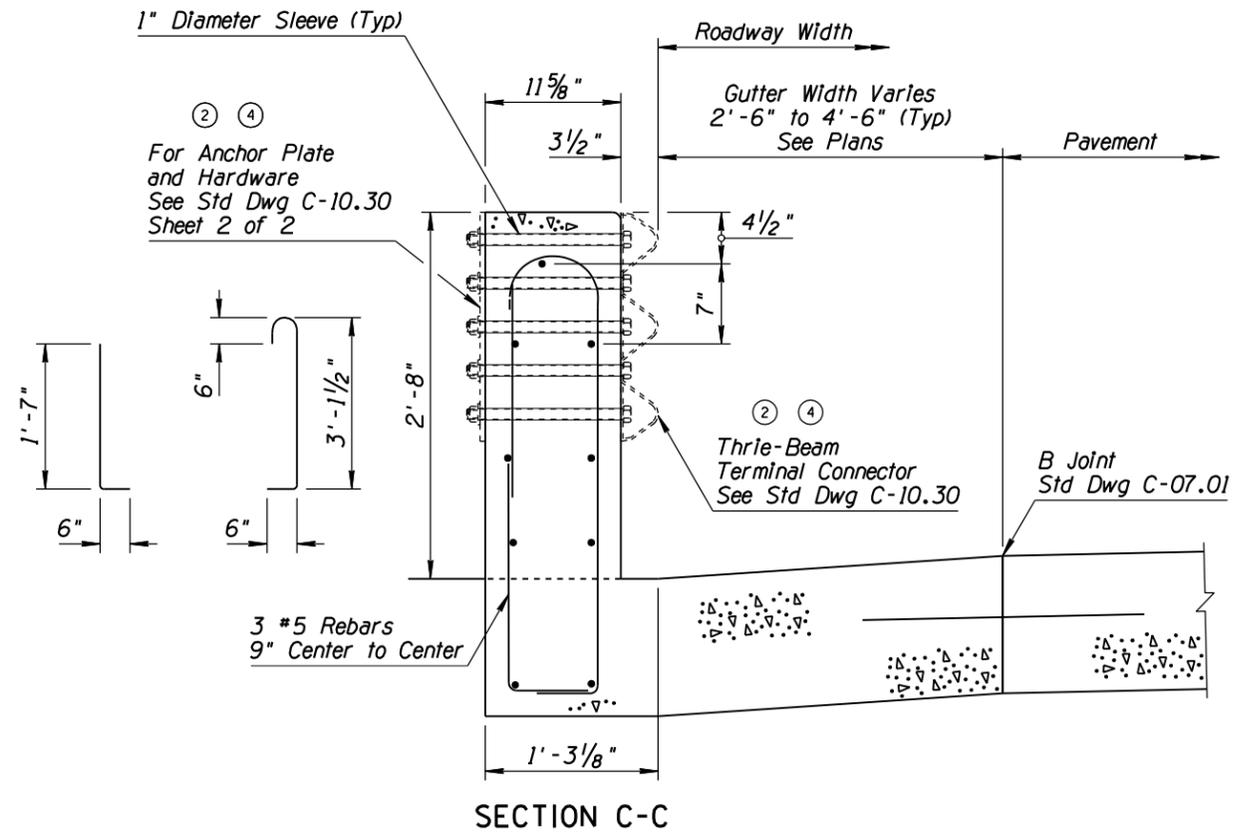
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APPROVED FOR DISTRIBUTION <i>[Signature]</i>	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL 42" TO 32" TYPE 'F' WITH GUTTER	DRAWING NO. C-10.73 Sheet 1 of 2

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED TITLE	RLF	9/04
2	ADDED REFERENCE	RLF	9/04
3	REMOVED ANCHOR PLATE DETAIL	RLF	9/04
4	REVISED NOTE	RLF	7/05

- ① See Optional Construction Joint Detail
- 1'-0" Minimum or Match Thickness of Adjacent PCCP



SECTION B-B



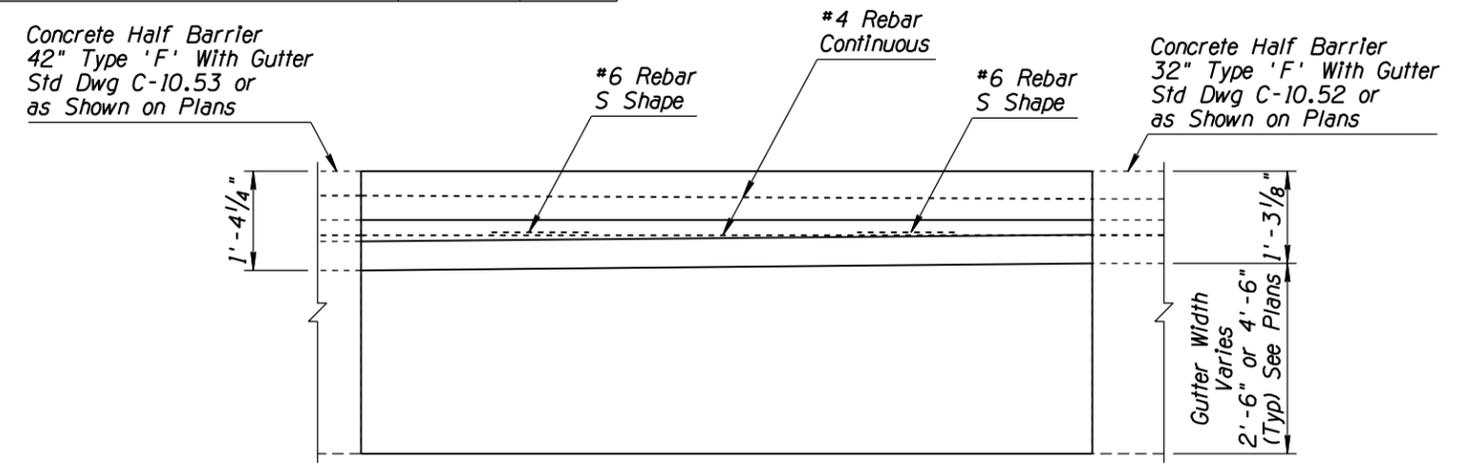
CONSTRUCTION JOINT DETAIL (OPTIONAL)

APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL 42" TO 32" TYPE 'F' WITH GUTTER	DRAWING NO. C-10.73 Sheet 2 of 2

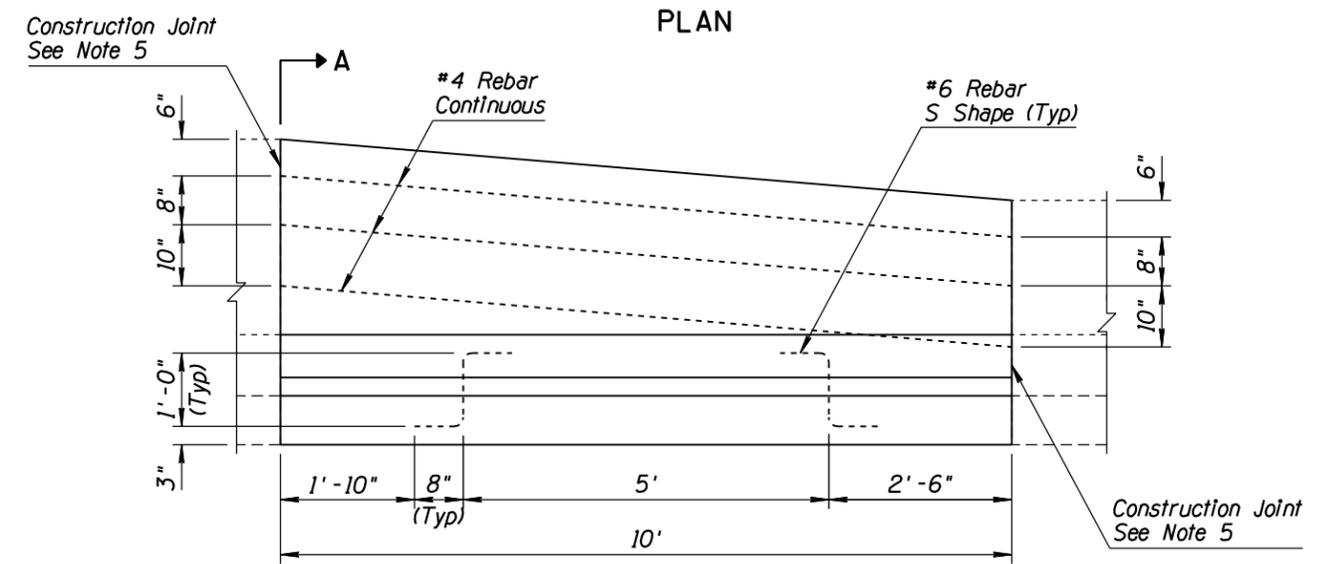
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	5/07
2			
3			
4			

GENERAL NOTES

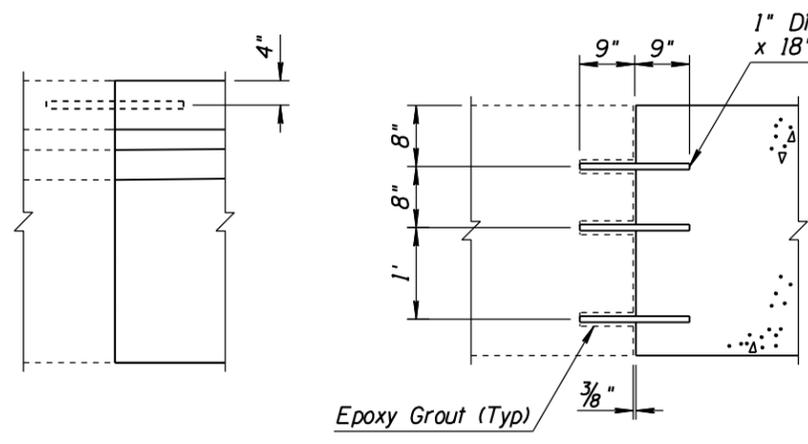
1. Half-barrier Transition shall be constructed by the formed cast-in-place method.
2. Concrete shall be Class S, $f'_c = 4000$ PSI.
3. If the footing and barrier are cast monolithically, #6 S shape rebar is not required.
4. Barrier width shall not exceed the barrier footing width nor overhang the adjacent pavement.
5. #4 rebar shall extend 12" past the construction joint at the completion of the day's pour.
6. Gutter thickness can be adjusted to match the PCCP thickness, as approved by the Engineer.
7. Two-inch deep construction joints shall be placed in the gutter at locations which match the joints in adjacent PCCP and at approximate 15' centers when adjacent to AC pavement. Joints shall be either hand tooled or sawn.



PLAN



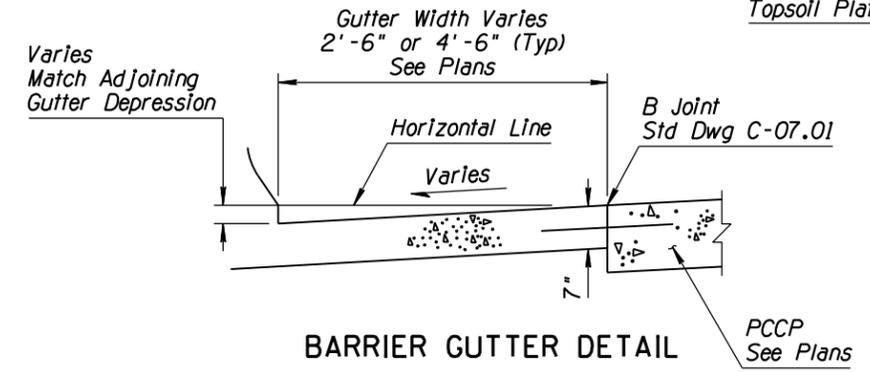
ELEVATION



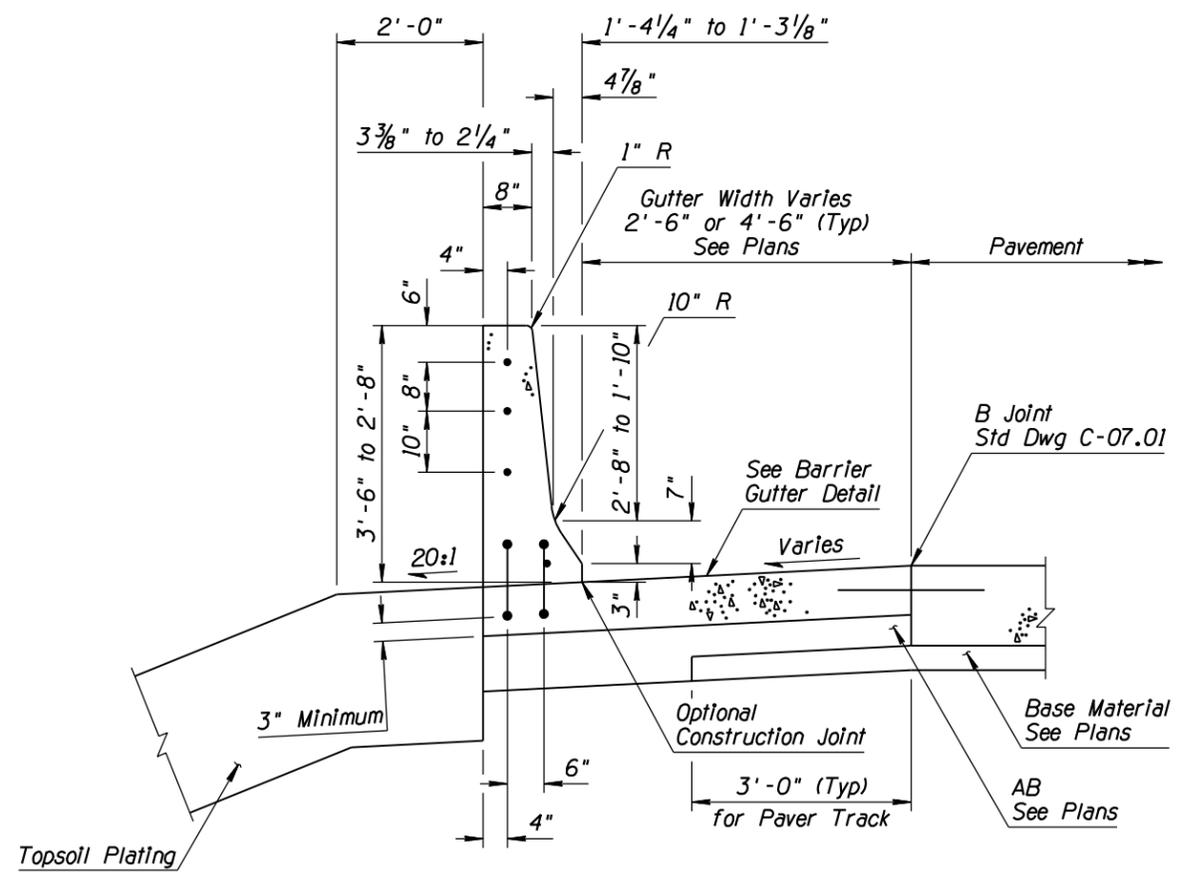
PLAN

ELEVATION

CONSTRUCTION JOINT DETAIL (OPTIONAL)



BARRIER GUTTER DETAIL



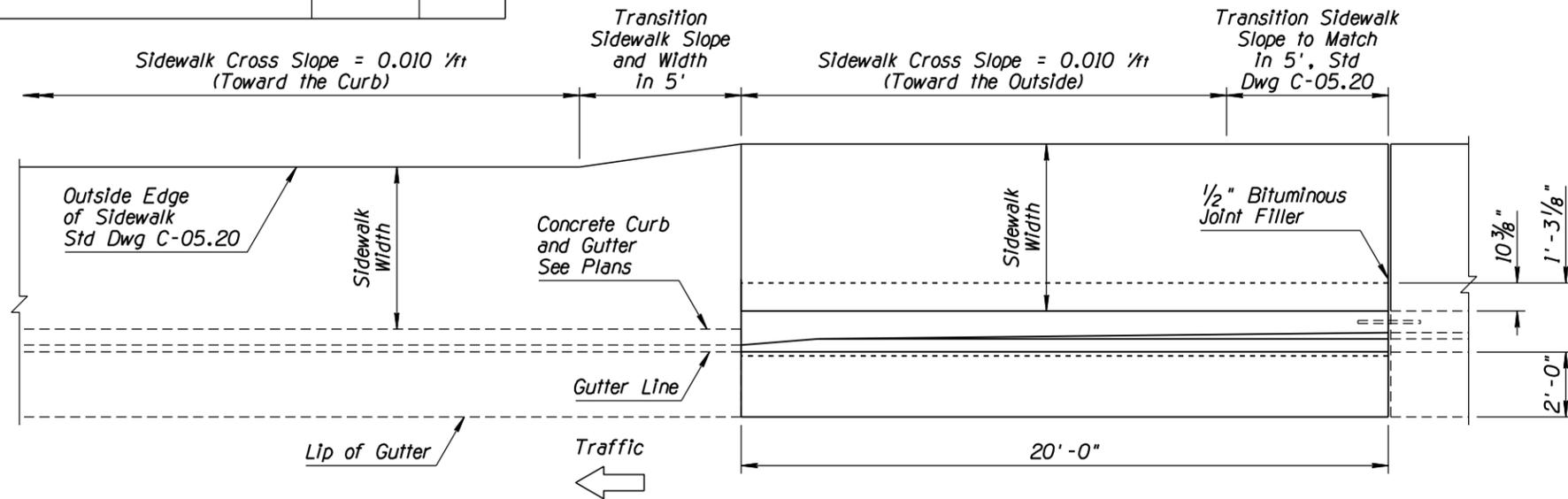
SECTION A-A

APPROVED FOR DESIGN	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV.
APPROVED FOR DISTRIBUTION		5/12
CONCRETE HALF-BARRIER TRANSITION 42" TO 32" TYPE 'F'		DRAWING NO. C-10.74

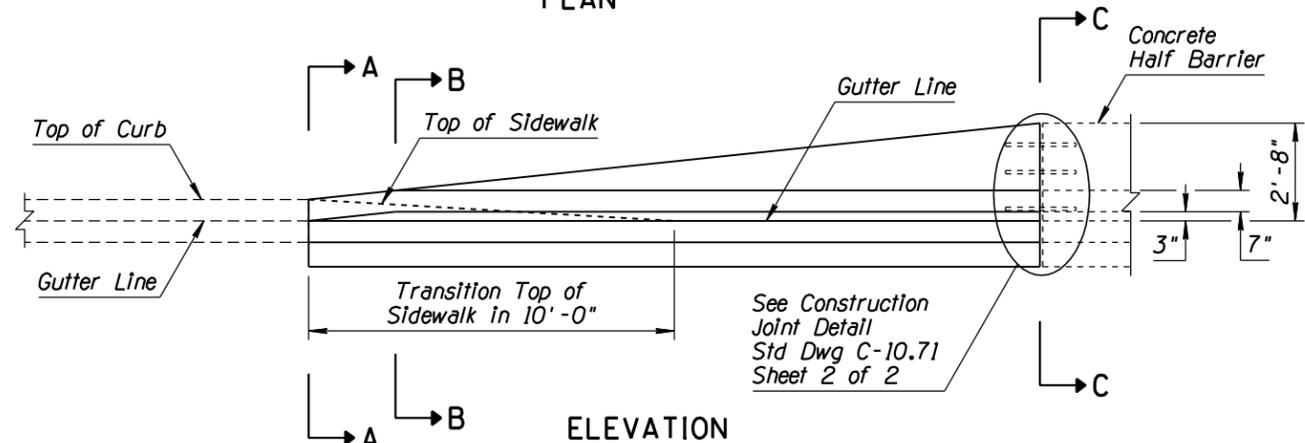
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SECTION VIEW GRAPHICS	RLF	4/06
2	REVISED 'H' HEIGHT DESIGNATION TO 'h'	RLF	4/06
3	REVISED NOTE	RLF	5/07
4			

GENERAL NOTES

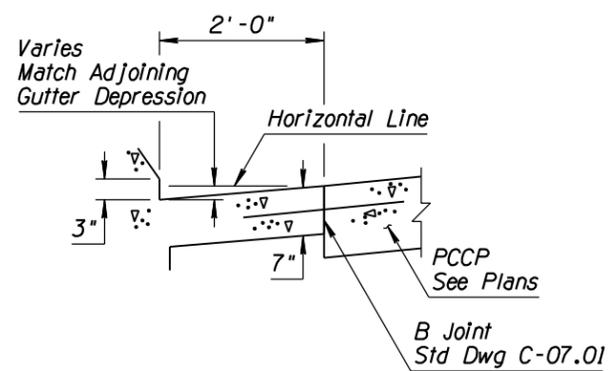
1. All concrete shall be Class S, $f'c=4000$ PSI.
2. All rebar shall conform to Std Spec 1003.
3. All rebar shall have 2" minimum clear cover unless otherwise noted.
4. See drainage sheets for slotted drain and catch basin details.
5. Barrier transition shall match both adjoining curb and gutter and concrete Half Barrier.
6. See Std Dwg C-05.20 for sidewalk construction.
7. All bend dimensions for rebar are out-to-out of rebars.
8. Two-inch deep contraction joints shall be placed in the gutter at locations which match the joints in adjacent PCCP and at approximate 15' centers when adjacent to AC pavement. Joints shall be either hand tooled or sawn.



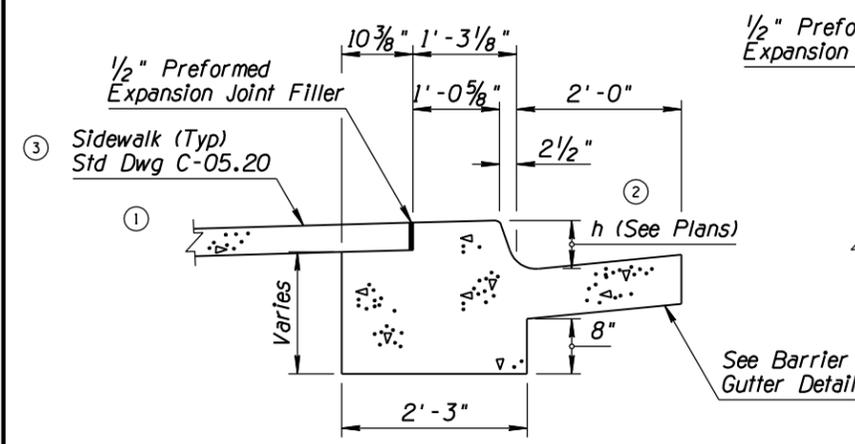
PLAN



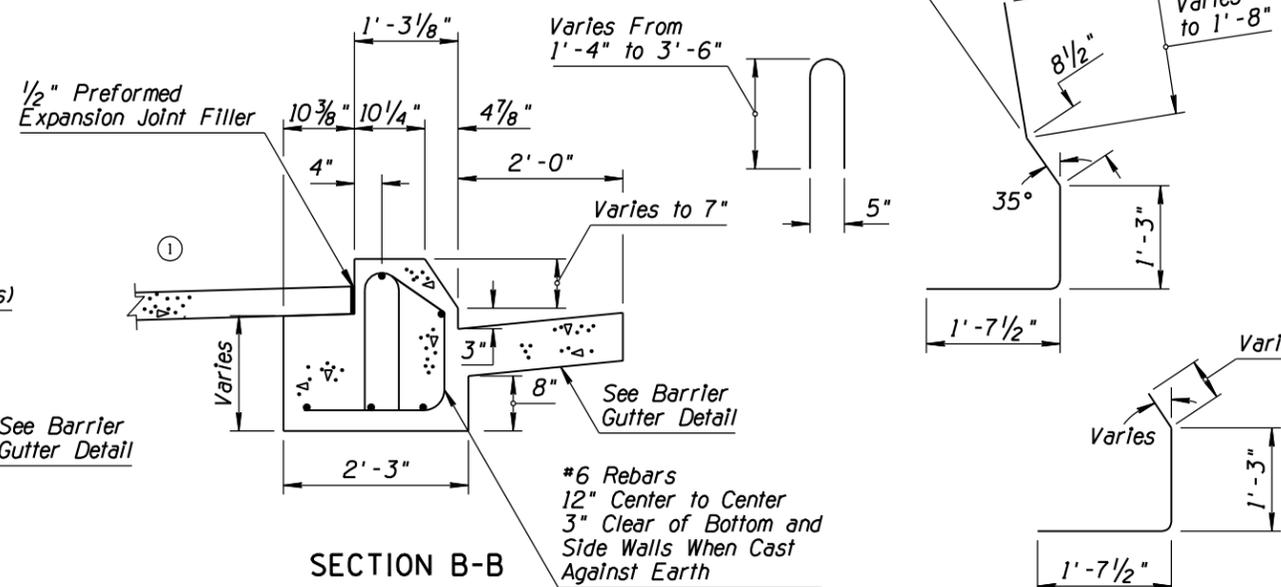
ELEVATION



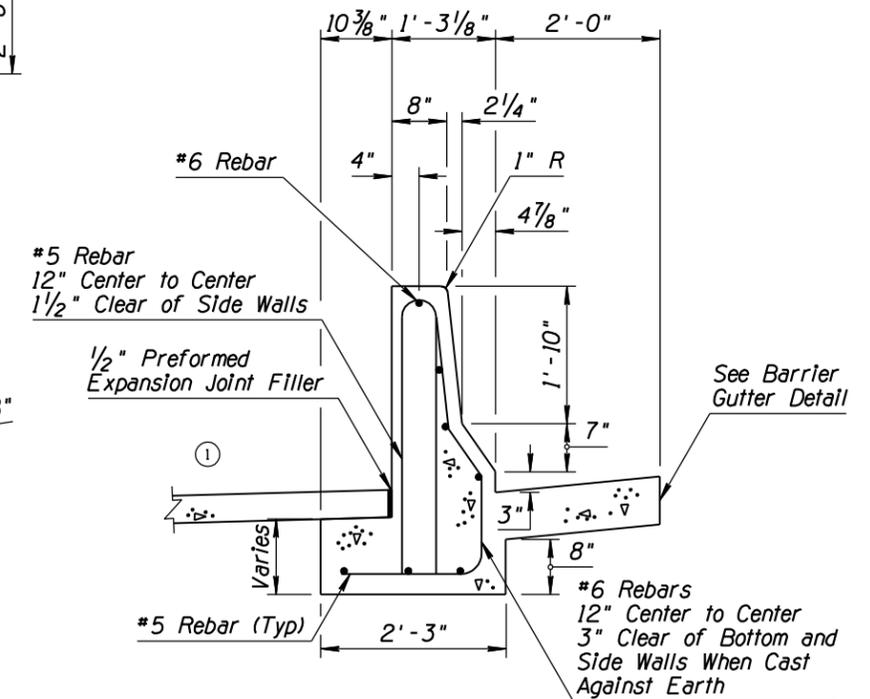
BARRIER GUTTER DETAIL



SECTION A-A



SECTION B-B



SECTION C-C
TRANSITION TO VERTICAL TYPE CURB

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF-BARRIER TRANSITION TYPE 'F' TANGENT DEPARTURE TYPE 1	DRAWING NO. C-10.75 Sheet 1 of 2

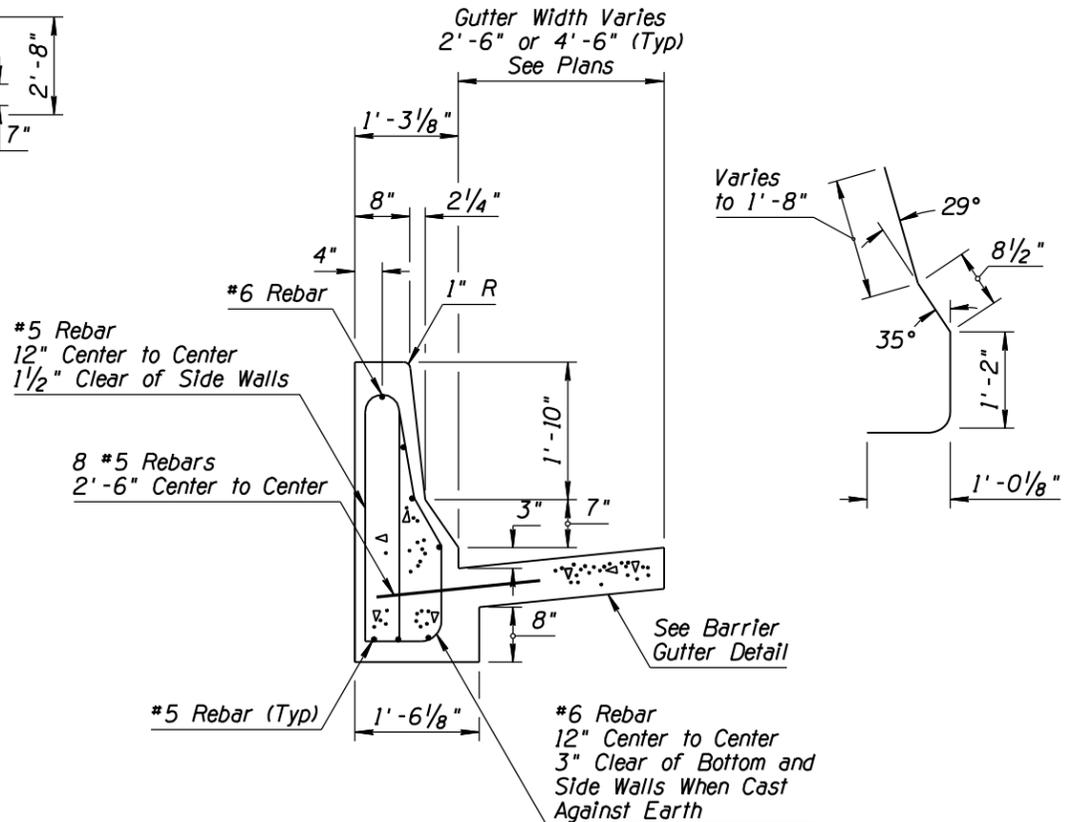
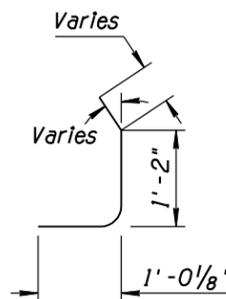
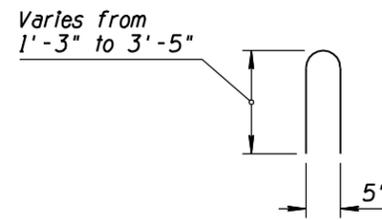
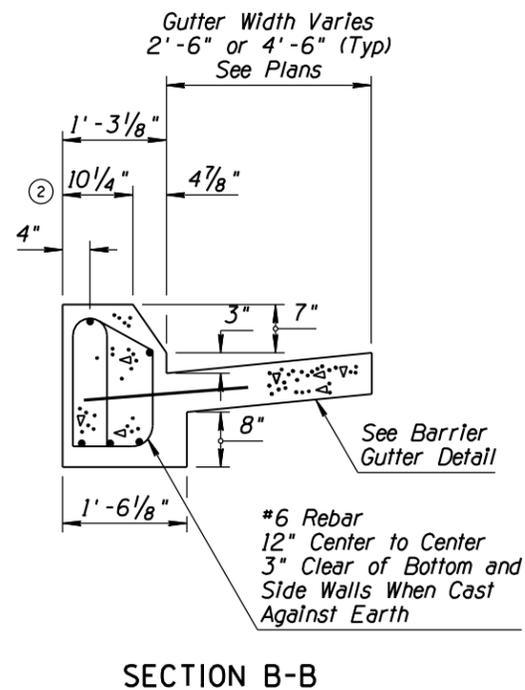
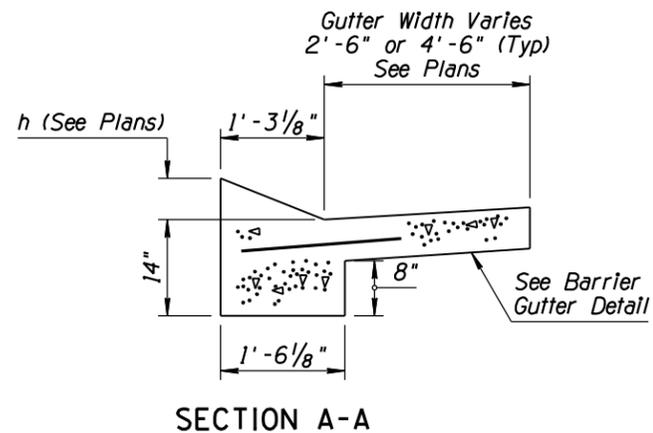
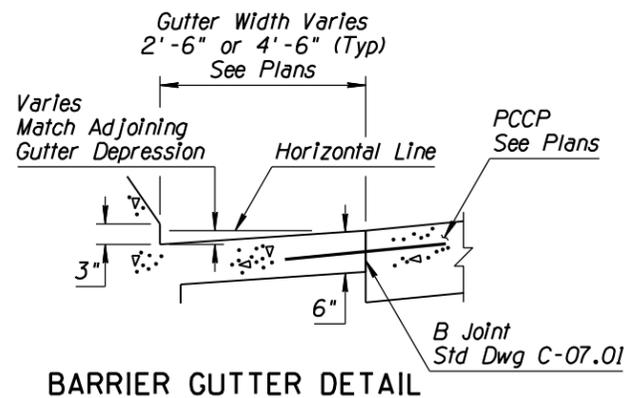
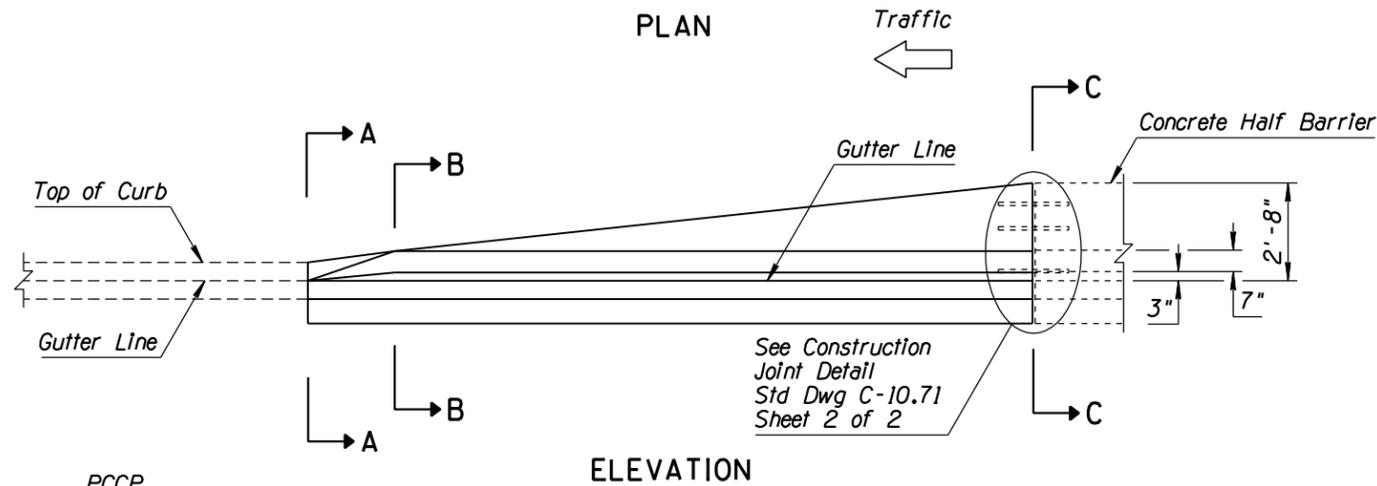
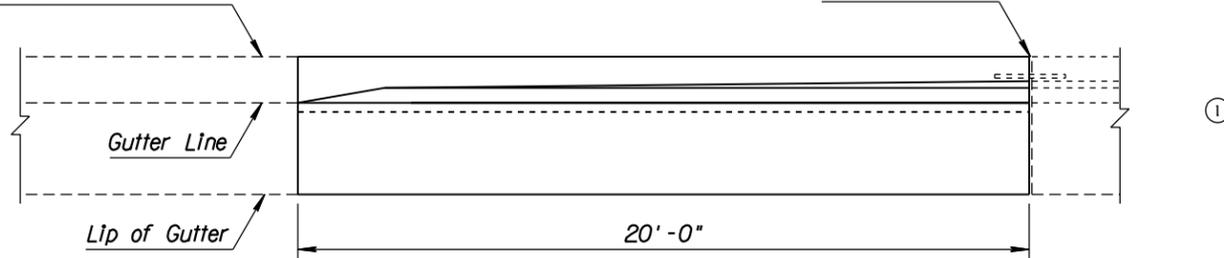
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED DIMENSIONS	RLF	4/06
2	REMOVED SYMBOL - ADDED DIMENSION	RLF	5/07
3	REMOVED NOTES	RLF	5/07
4			

GENERAL NOTES

1. All concrete shall be Class S f'c=4000 PSI.
2. All rebar shall conform to Std Spec 1003.
3. All rebar shall have 2" minimum clear cover unless otherwise noted.
4. See drainage sheets for slotted drain and catch basin details.
5. Barrier transition shall match both adjoining curb and gutter and concrete half barrier.
6. All bend dimensions for rebar are out-to-out of bars.
7. Two-inch deep contraction joints shall be placed in the gutter at locations which match the joints in adjacent PCCP and at approximate 15' centers when adjacent to AC pavement. Joints shall be either hand-tooled or sawn.

Concrete Curb & Gutter
Type B or C
Std Dwg C-05.10
See Plans

1/2" Bituminous
Joint Filler

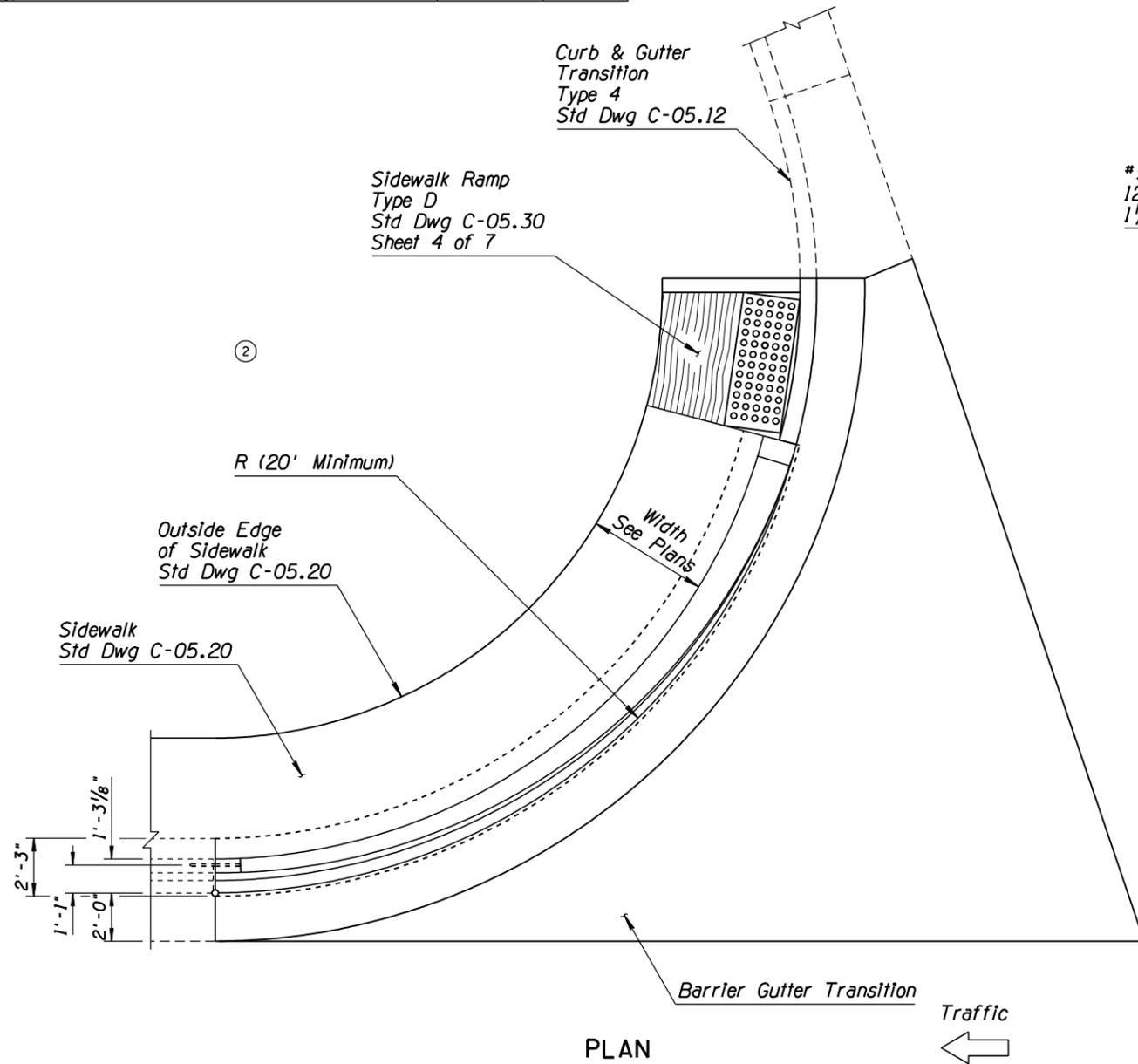


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF-BARRIER TRANSITION TYPE 'F' TANGENT DEPARTURE TYPE 2	DRAWING NO. C-10.75 Sheet 2 of 2

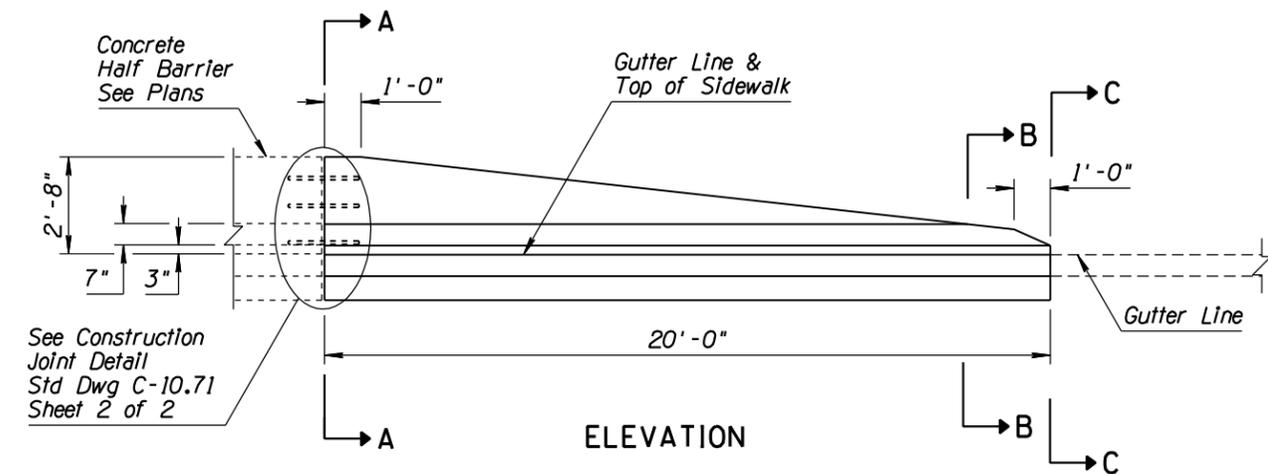
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG AS TYPE 'F' TRANSITION	RLF	4/06
2	REMOVED LINE	RLF	5/07
3			
4			

GENERAL NOTES

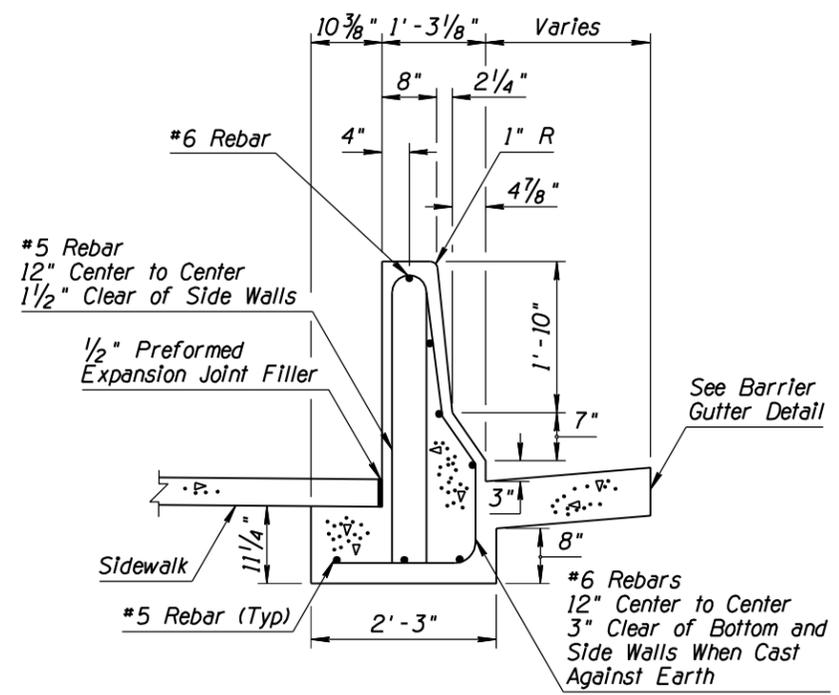
1. All concrete shall be Class S, $f'c=4000$ PSI.
 2. All rebar shall conform to Std Spec 1003.
 3. All rebar shall have 2" minimum clear cover unless otherwise noted.
 4. See drainage sheets for slotted drain and catch basin details.
 5. Barrier transition shall match the adjoining concrete half barrier.
 6. See Std Dwg C-05.20 for sidewalk construction.
 7. All bend dimensions for rebar are out-to-out of bars.
- *Varies; 10 1/4" to 1'-0 5/8" to 1'-3 1/8"*



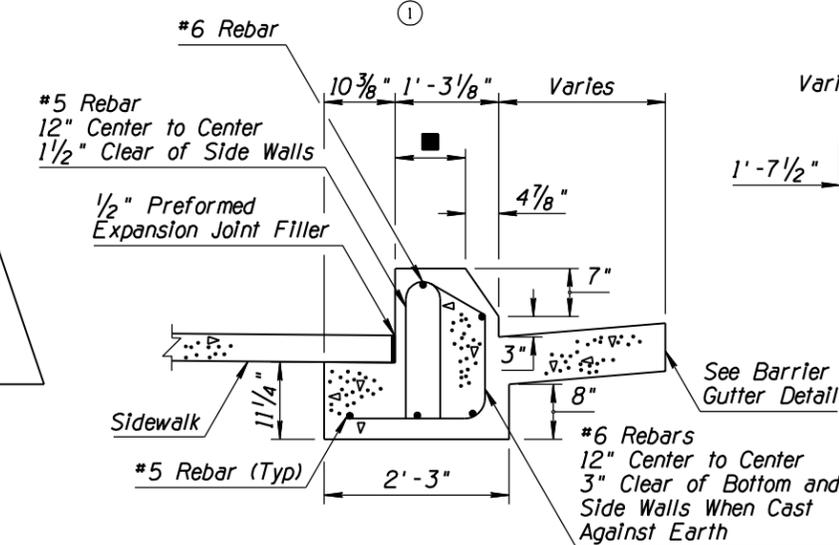
PLAN



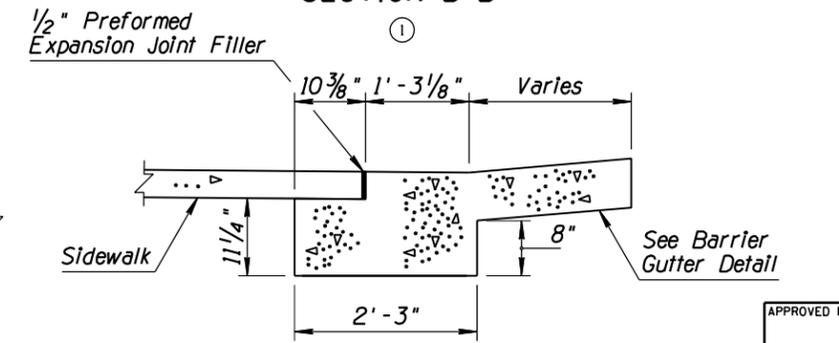
ELEVATION



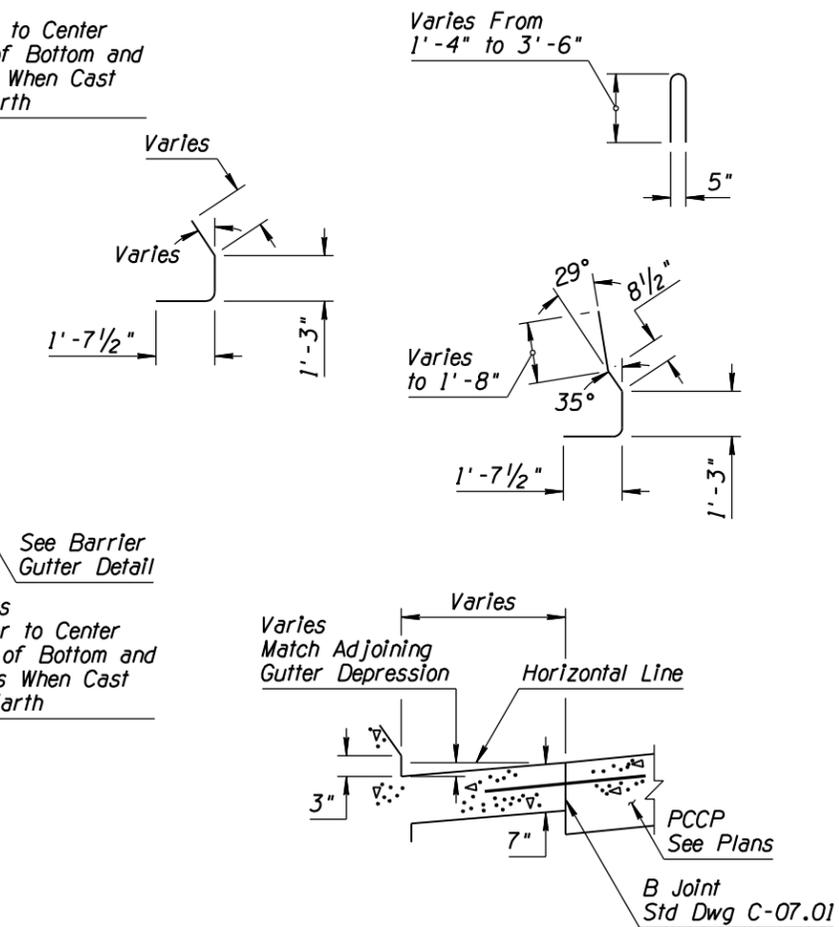
SECTION A-A



SECTION B-B



SECTION C-C



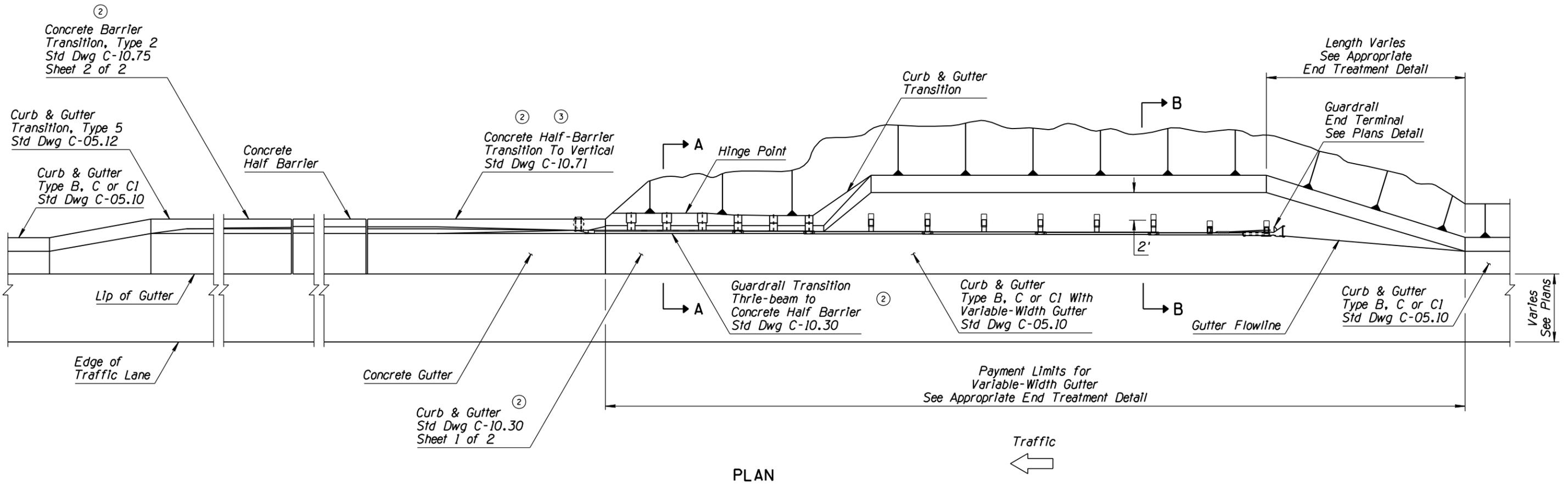
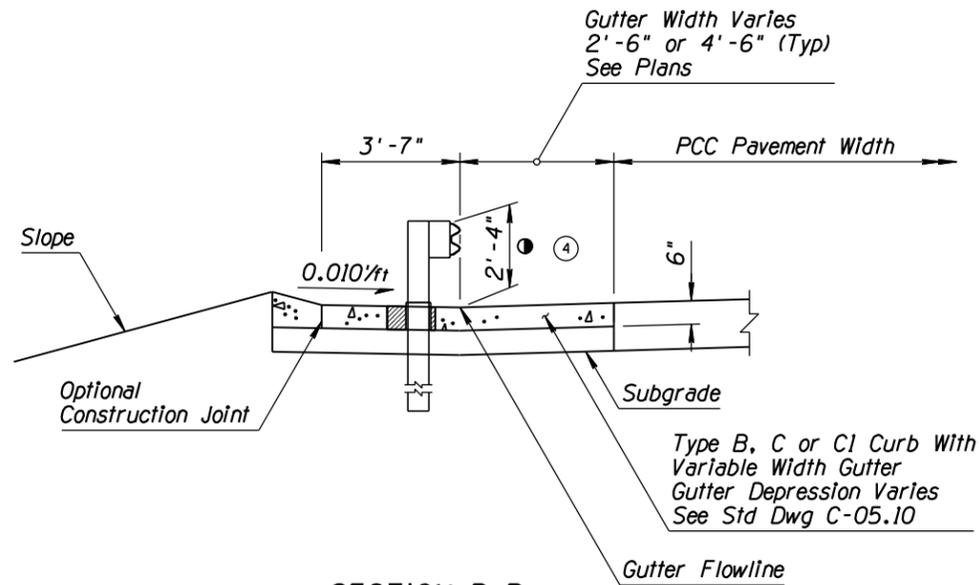
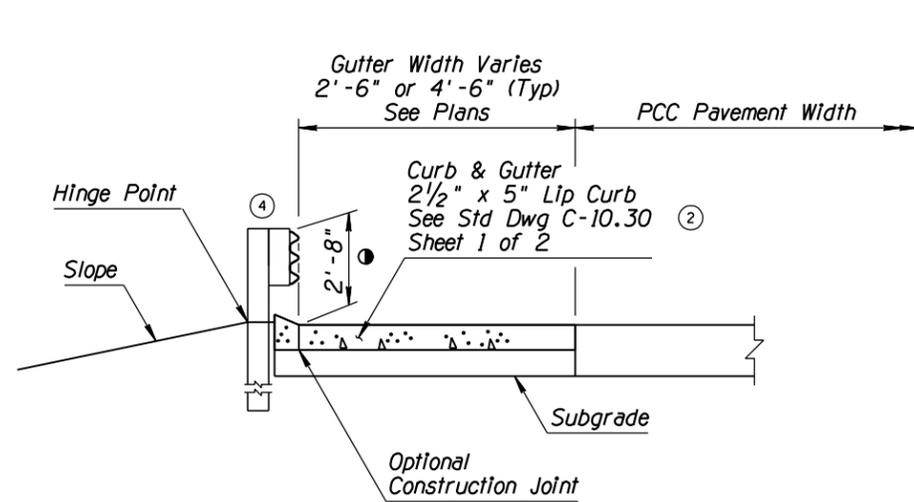
BARRIER GUTTER DETAIL

APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	CONCRETE HALF-BARRIER TRANSITION TYPE 'F' AT RADIUS 32" TO 0"	DRAWING NO. C-10.76

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG FROM C-10.06 AND REVISED TITLE	RLF	9/04
2	MODIFIED REFERENCE	RLF	4/06
3	MODIFIED REFERENCE & DRAWING DATE	RLF	7/06
4	REVISED SECTION VIEWS AND NOTE	RLF	5/12

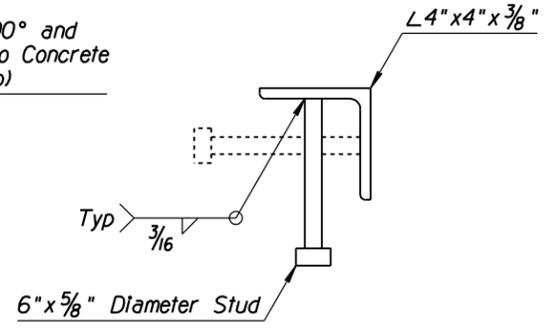
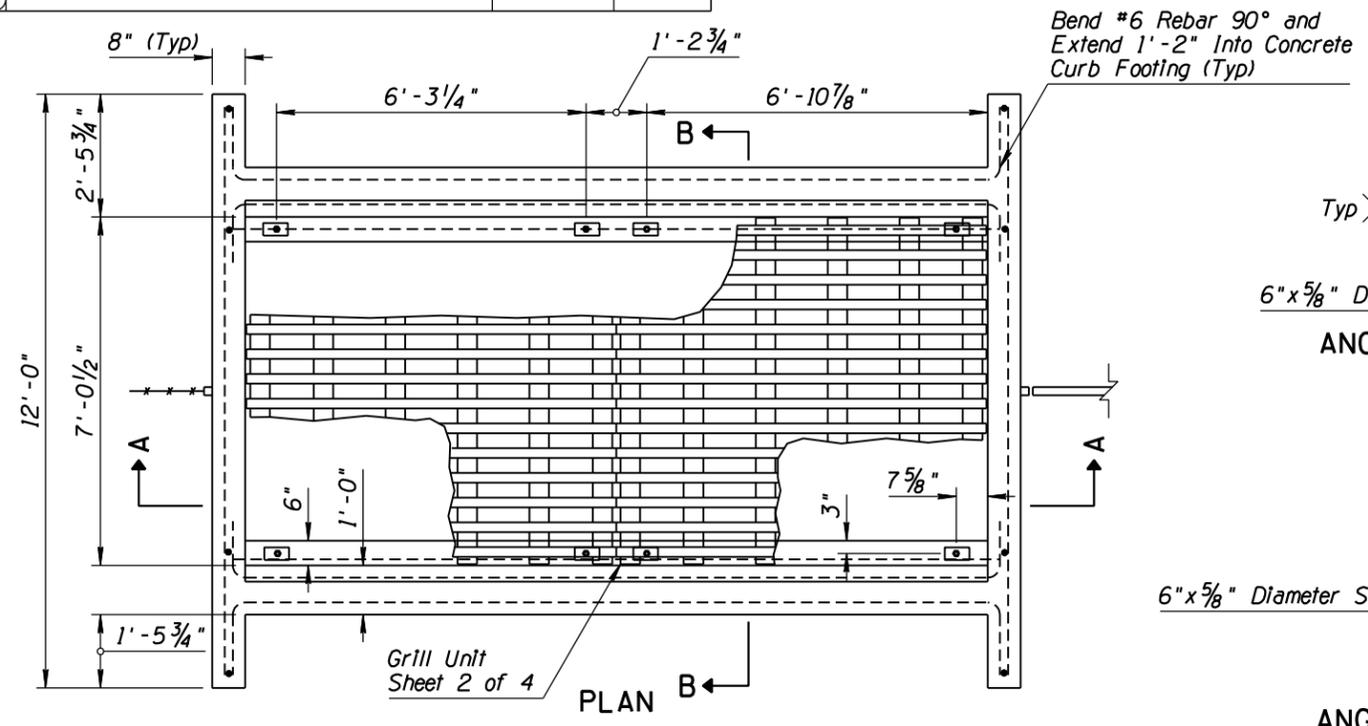
GENERAL NOTES

1. See plans and barrier summary sheets for location and type of guardrail and end treatments. Timber post installation shown.
 2. See Std Dwgs C-05.10, 05.12, 10.01 and 10.02 for dimensions and details not shown.
 3. Type B guardrail installation shown. For Type A guardrail installation, use Type D-1 Curb and Gutter instead of the Type D-2 Curb and Gutter shown.
 4. See plans for type and location of drainage facilities.
 5. Bituminous joint filler (1/2") shall be placed when the curb & gutter or concrete widening abuts slotted drains, catch basins, dados, barrier, etc. Scored joints, 2" in depth, shall be placed to match adjacent joints in PCCP or at 15' intervals when adjacent to AC or continuously reinforced concrete pavement.
- ④ ● To Top of Beam

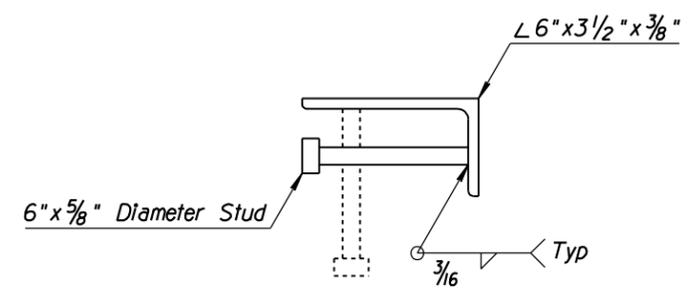


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CONCRETE HALF-BARRIER TRANSITION END TERMINAL CURB AND GUTTER	DRAWING NO. C-10.77

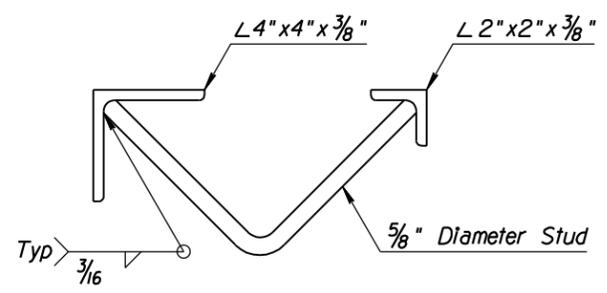
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2			
3			
4			



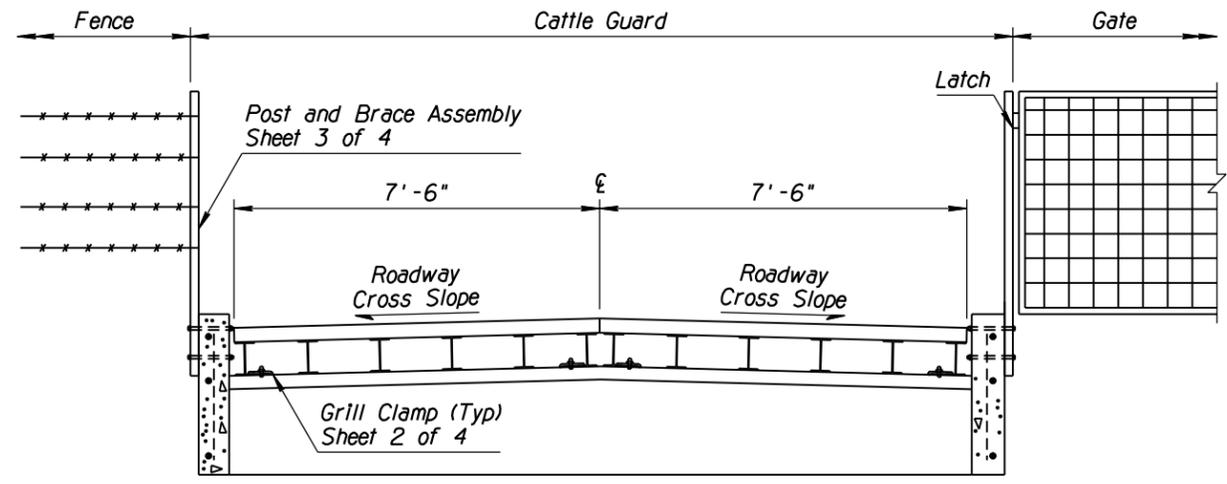
ANGLE ASSEMBLY DETAIL 1



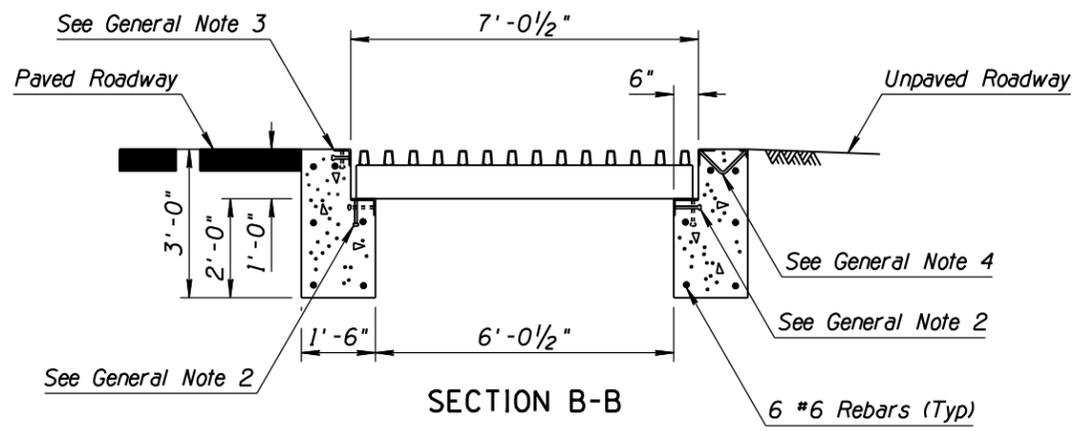
ANGLE ASSEMBLY DETAIL 2



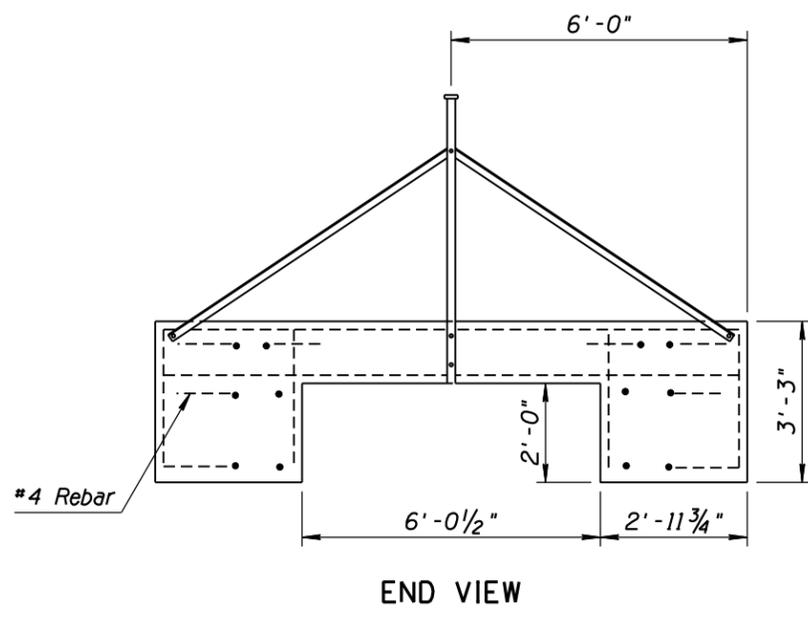
ANGLE ASSEMBLY DETAIL 3



SECTION A-A



SECTION B-B



END VIEW

GENERAL NOTES

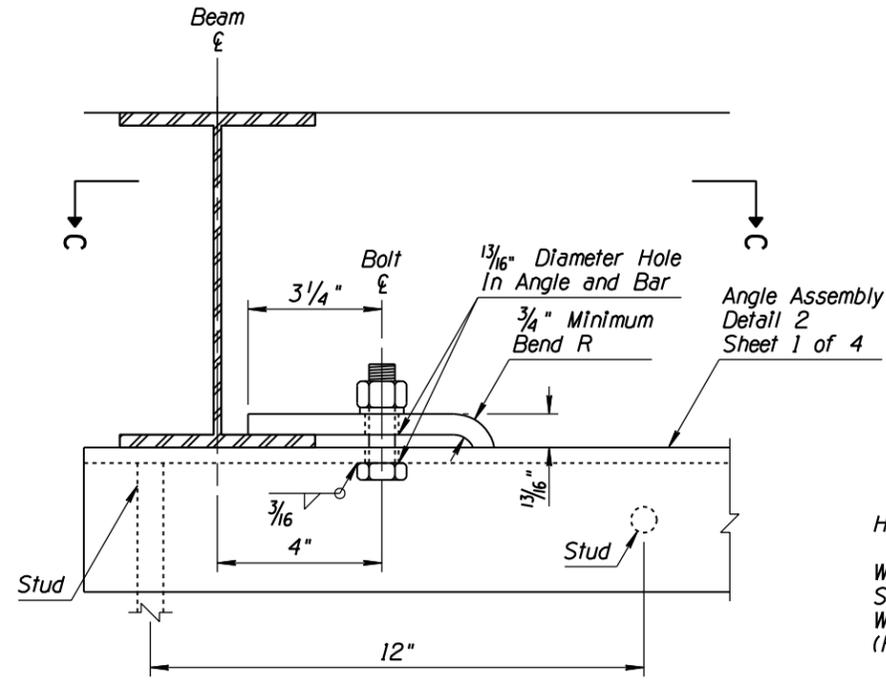
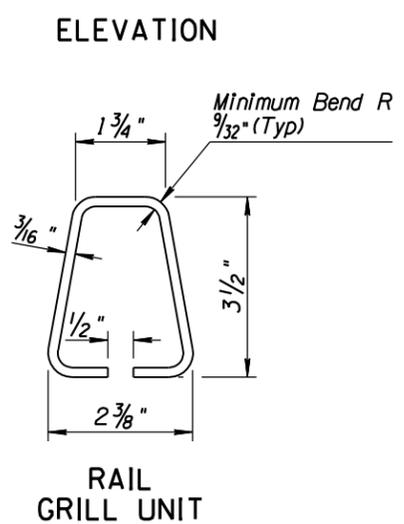
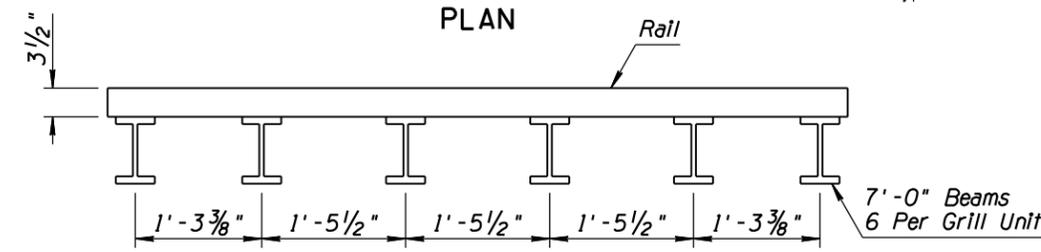
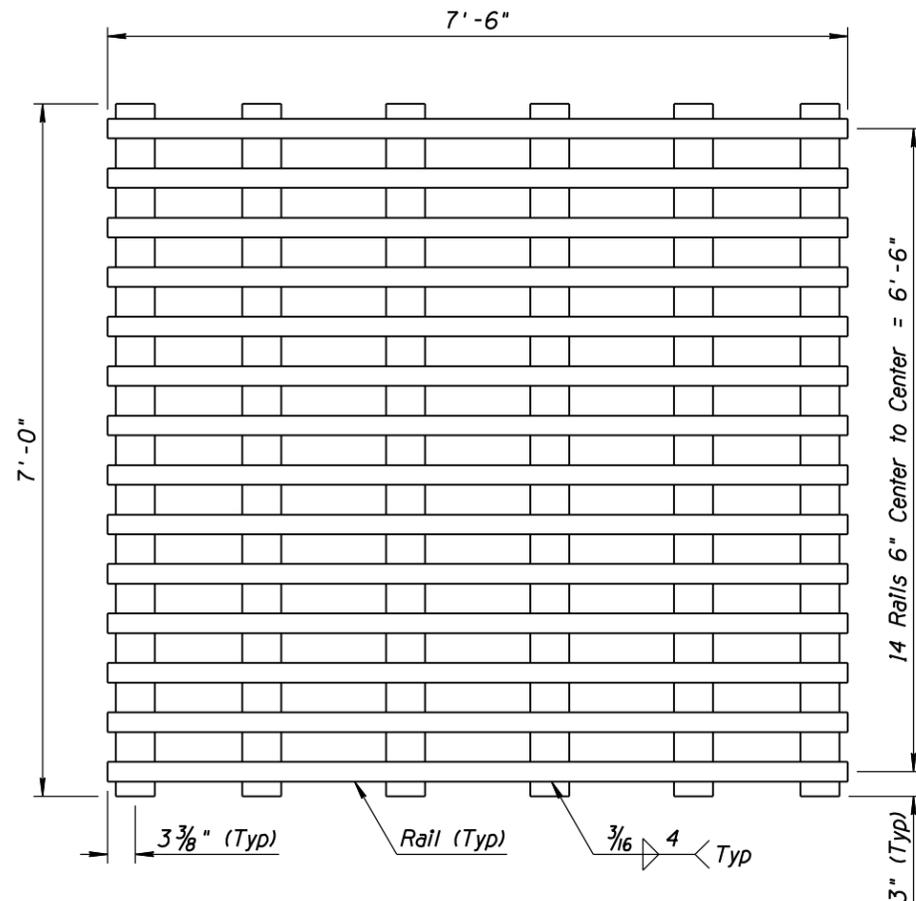
- Cattle guard shall include two (2) clamps per Sheet 4 at each gap between two (2) grill units, one at each end. Clamps shall be adjusted to provide a 1/4-inch, plus or minus 1/16-inch gap between adjacent grill units.
- Grill units shall be set on an angle iron assembly consisting of one piece of 6"x3 1/2"x 3/8" angle iron and studs with a head. The studs shall be placed on 1'-0" alternate centers. See Angle Assembly Detail 2.
- Cattle guard shall be sloped to conform to the roadway grade and cross-section, except that where an odd number of grill units is specified in a crowned roadway, the center grill unit shall have a level cross slope.
- Where the adjacent roadway is paved, an angle iron assembly shall consist of one piece of 4"x4"x 3/8" angle iron and studs with a head. The studs shall be placed on 1'-0" alternate centers. See Angle Assembly Detail 1.
- Where the adjacent roadway is unpaved, an angle iron assembly shall consist of one 4"x4"x 3/8" angle iron, one 2"x2"x 3/8" angle iron, and connected with studs. The assembly shall be crowned at the centerline and constructed with a bevel cut and welded. The studs shall be bent 90° and placed on 1'-0" centers. See Angle Assembly Detail 3.
- Each angle iron and angle iron assembly shall be fabricated to form a single piece for the full length of the cattle guard.
- Quantities shown for concrete and rebar are approximations for informational purposes only.
- When a gate is to be installed, it shall be called out on the plans.
- All rebar shall have a minimum cover of 3", or as shown on the plans.
- Cattle guard beams shall be HS-20 loading unless otherwise shown on the plans.

UNIT TABLE			
Roadway Width (ft)	Grill Units Required	Concrete (Cu Yd)	Rebar (Lbs)
12	2	5.8	175
16	3	8.0	240
20	4	10.3	310
28	5	12.5	375
34	6	14.7	445
36	6	14.7	445
38	7	16.9	510
40	7	16.9	510

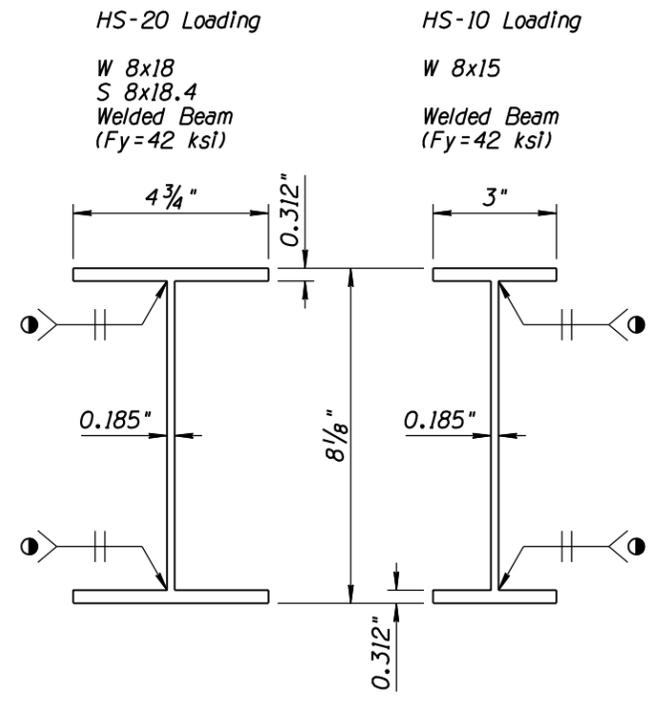
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	ROADWAY CATTLE GUARD	DRAWING NO. C-11.10 Sheet 1 of 4

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	4/06
2			
3			
4			

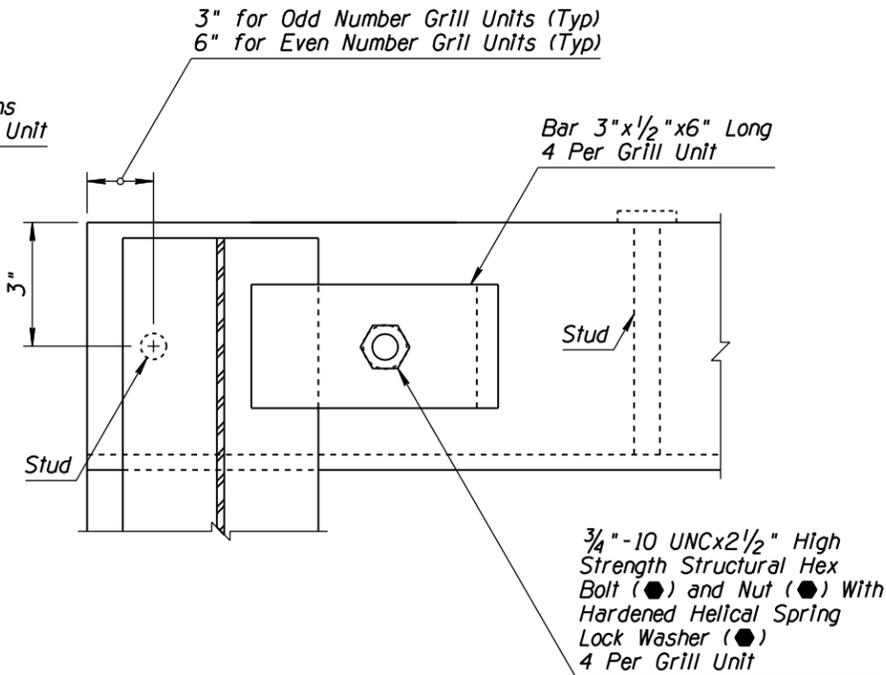
● - Indicates AASHTO, AGC & ARTBA Task Force 13 designation



GRILL CLAMP



BEAMS



SECTION C-C

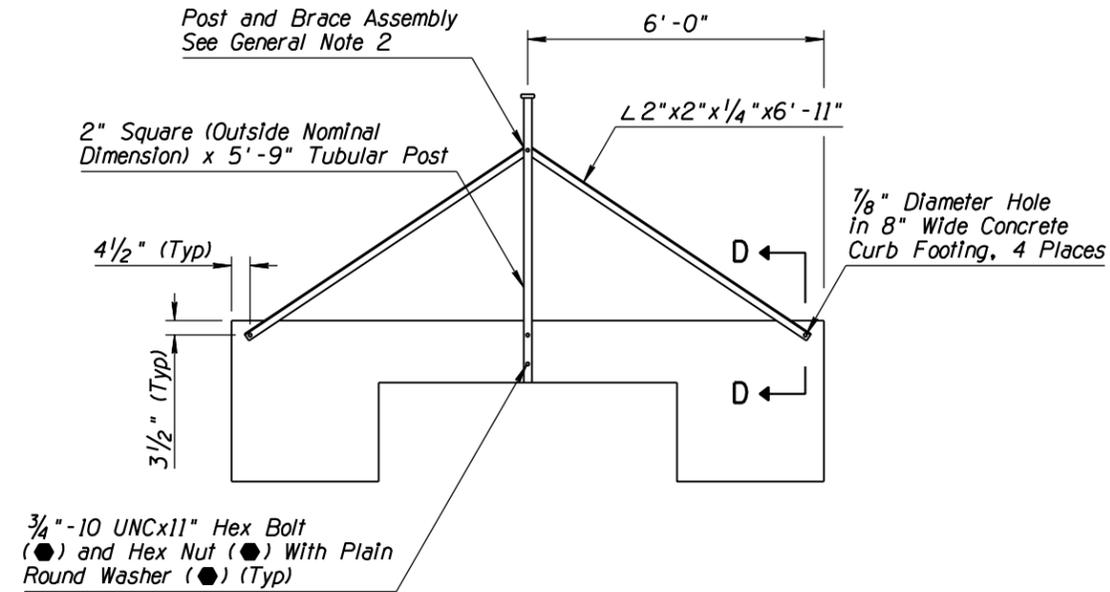
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	ROADWAY CATTLE GUARD	DRAWING NO. C-11.10 Sheet 2 of 4

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	4/06
2			
3			
4			

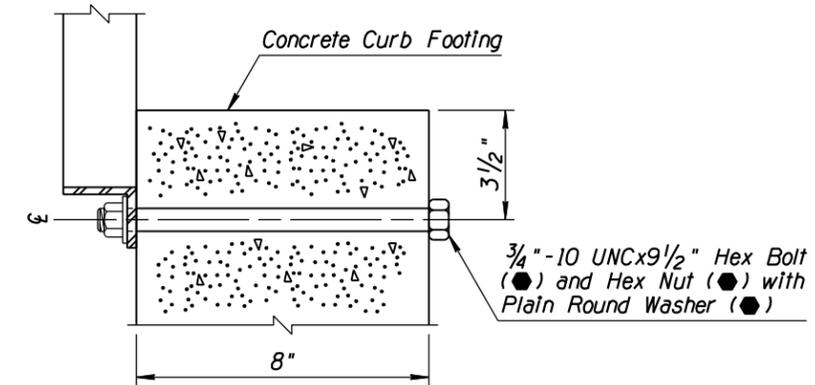
GENERAL NOTES

1. Material for shoulder transition shall be placed to the finished roadway elevation for the entire length of the transition. When the roadway is paved, aggregate subbase or AB shall be used. When the roadway is unpaved, a material equivalent to the existing roadway shall be used.
2. On steeper grades, the post shall be installed plumb to align with adjacent fencing. The brace assembly may be modified as necessary to support the post.

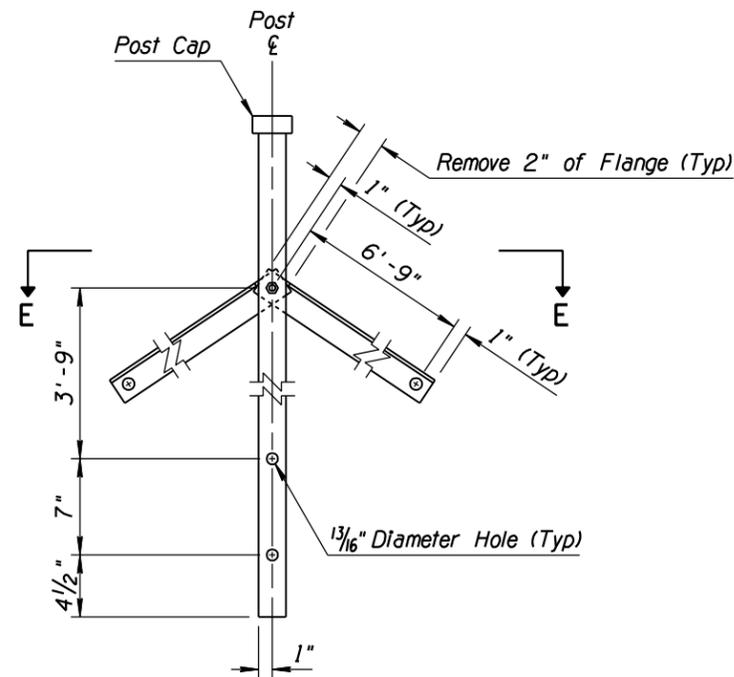
● - Indicates AASHTO, AGC & ARTBA Task Force 13 designation



END VIEW

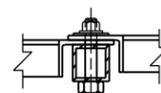


SECTION D-D

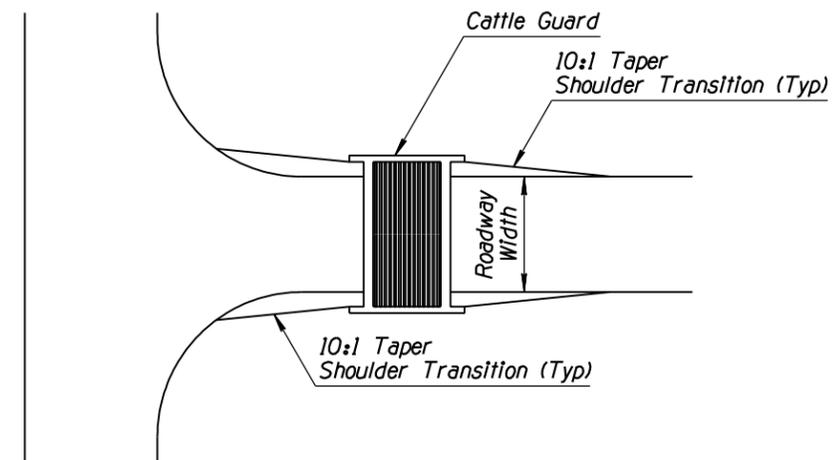


POST AND BRACE ASSEMBLY

3/4"-10 UNC x 3 1/2" Hex Bolt (●) and Hex Nut (●) With Plain Round Washer (●)



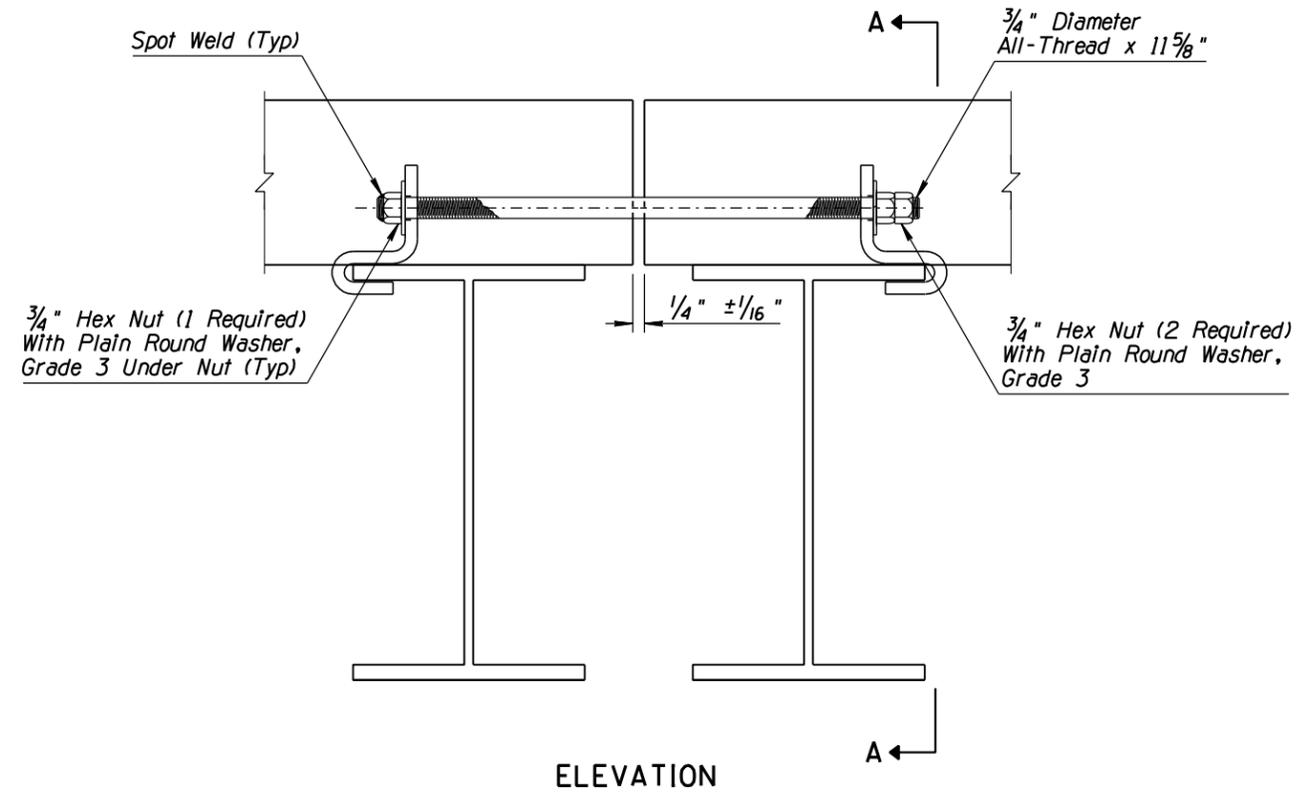
SECTION E-E



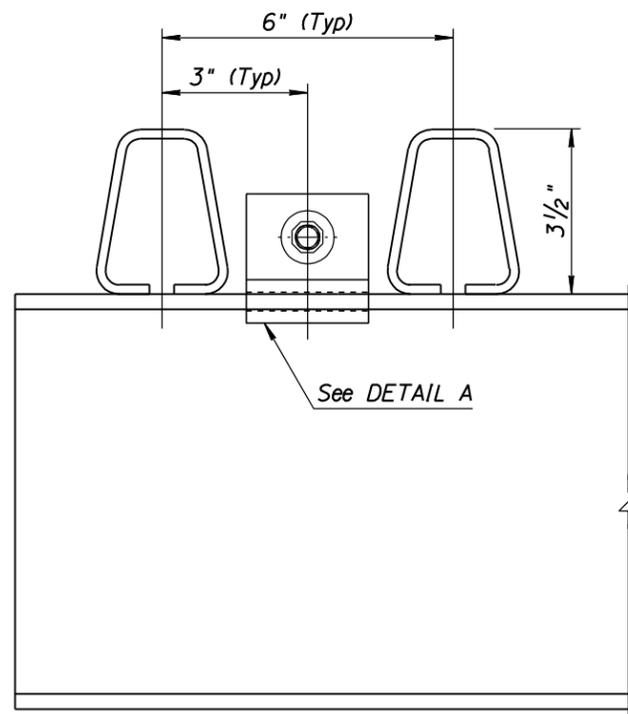
SHOULDER TRANSITION AT CATTLE GUARDS

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	ROADWAY CATTLE GUARD	DRAWING NO. ① C-11.10 Sheet 3 of 4

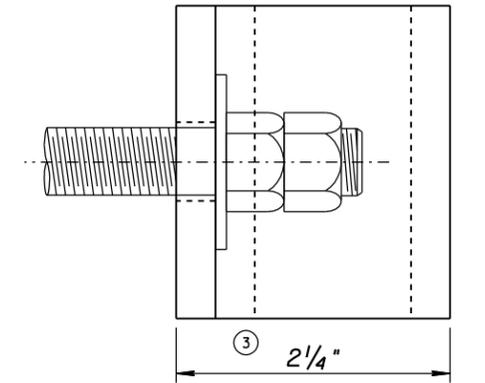
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	4/06
2	ADDED GENERAL NOTE	RLF	5/07
3	REVISED DIMENSION	RLF	5/12
4			



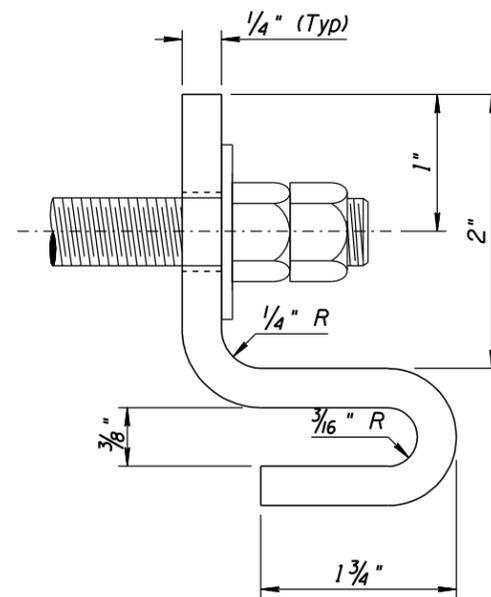
ELEVATION



SECTION A-A



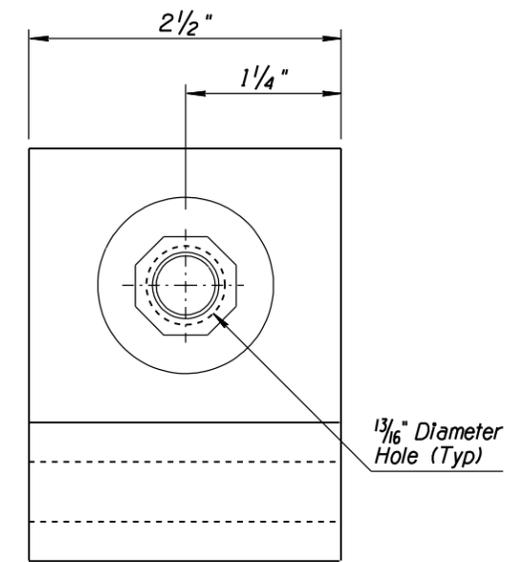
PLAN



ELEVATION

② GENERAL NOTES

1. Apply a heavy duty, high-strength anaerobic thread-locking compound to the threads before installing the double nuts.



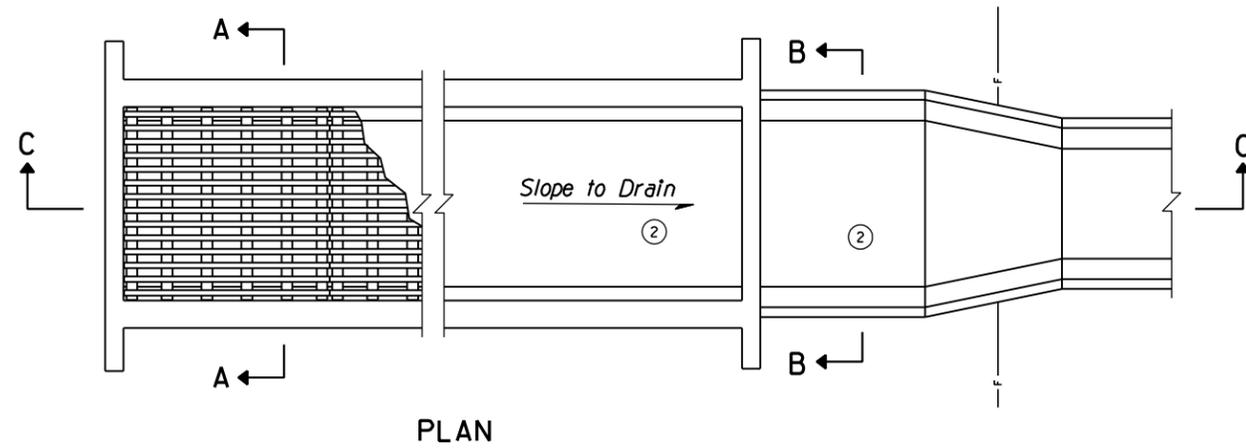
DETAIL A

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	ROADWAY CATTLE GUARD	DRAWING NO. ① C-11.10 Sheet 4 of 4

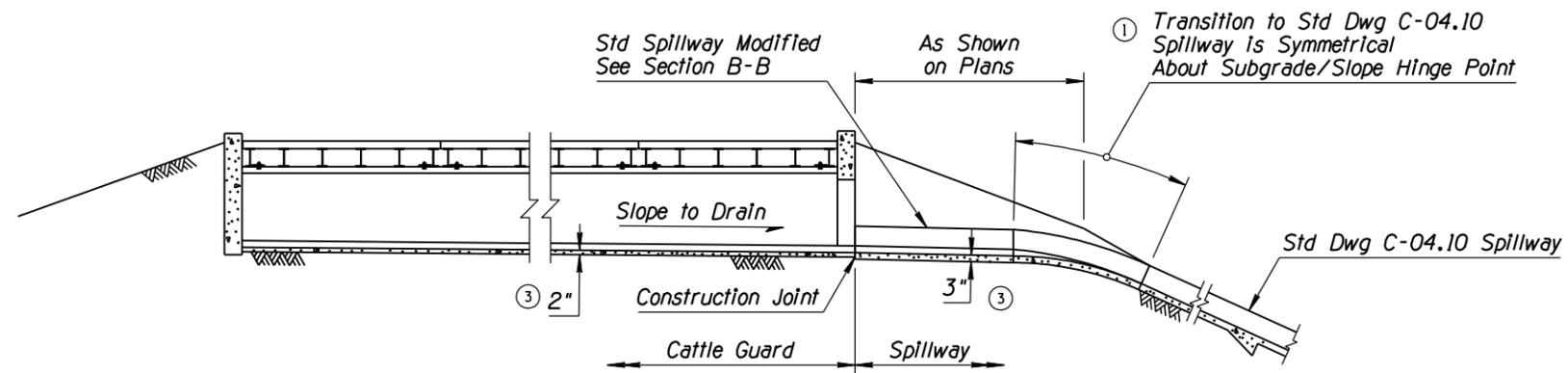
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED NOTE	PNB	7/94
2	REMOVED CONCRETE NOTES	RLF	7/06
3	ADDED CONCRETE DEPTH DIMENSIONS	RLF	7/06
4			

GENERAL NOTES

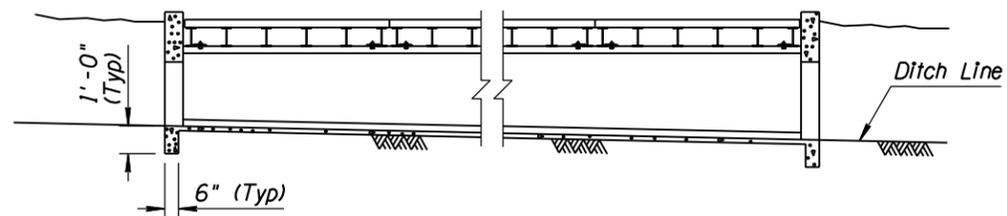
1. See Std Dwgs C-11.10 for all other Cattle Guard details.
2. This standard shall be used in embankment or where highly erodable soil is found.
3. All concrete shall be Class B.



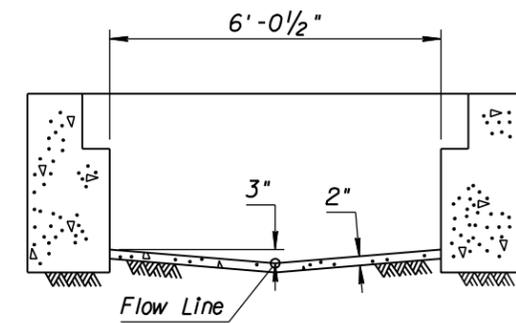
PLAN



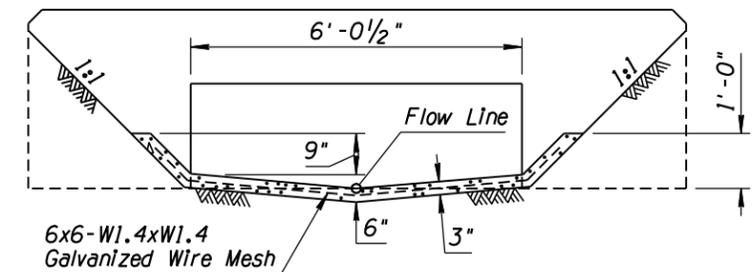
SECTION C-C
IN EMBANKMENT



SECTION C-C
WHERE USED FOR THROUGH DRAINAGE
CATTLE GUARD OPEN BOTH ENDS



SECTION A-A

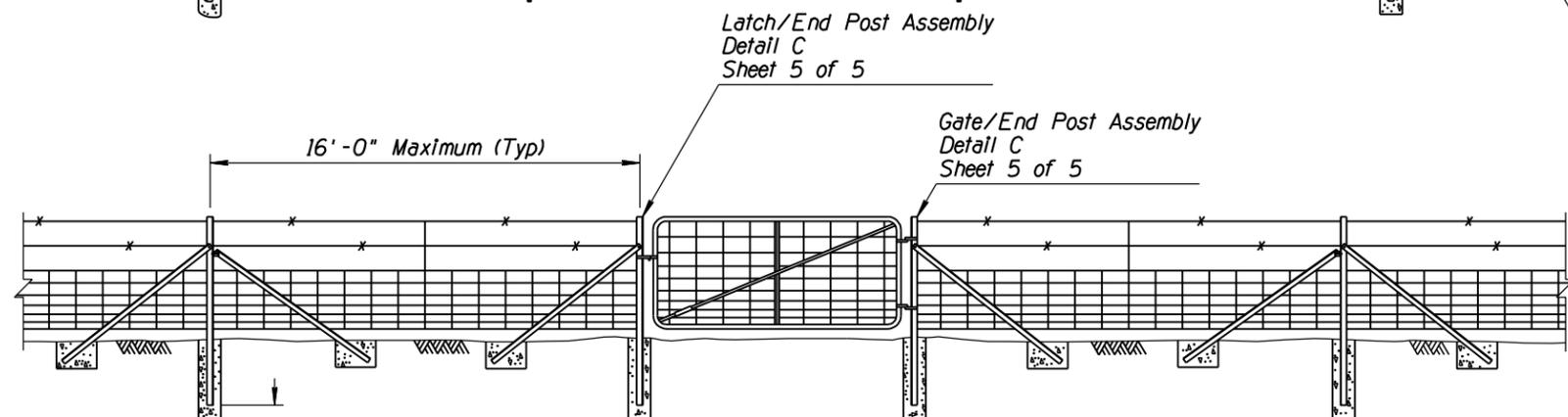
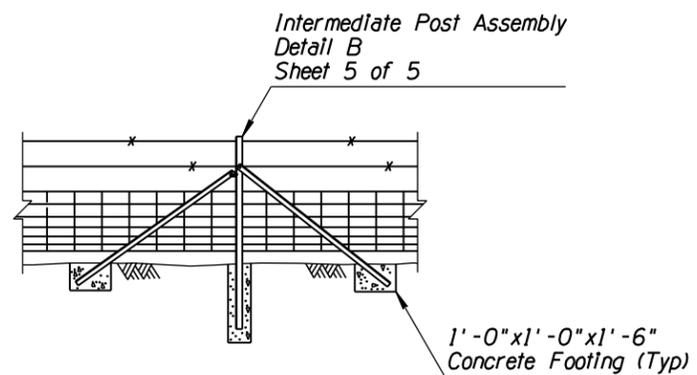
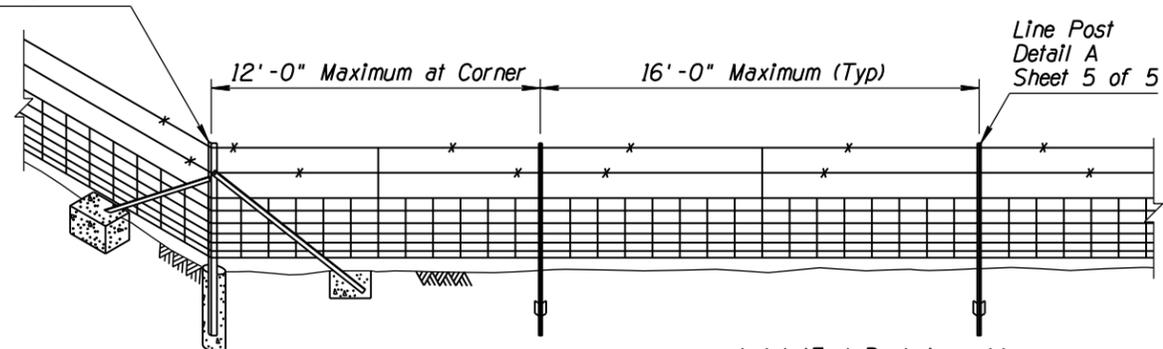


SECTION B-B

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATTLE GUARD, DRAINAGE	DRAWING NO. C-11.20

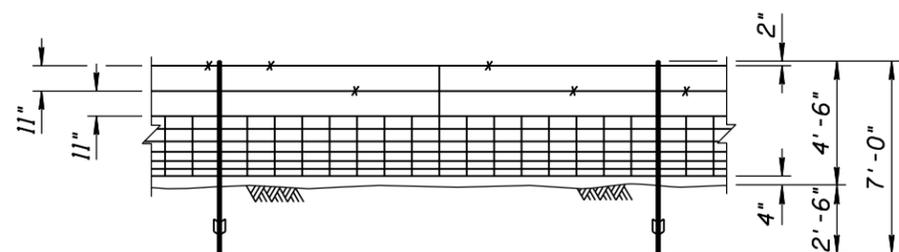
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED ASTM CALLOUT	PNB	7/94
2	REVISED GENERAL NOTE	RLF	5/12
3	ADDED TYPICAL FENCE LOCATION VIEW	RLF	5/12
4			

Corner Post Assembly
Detail D
Sheet 5 of 5

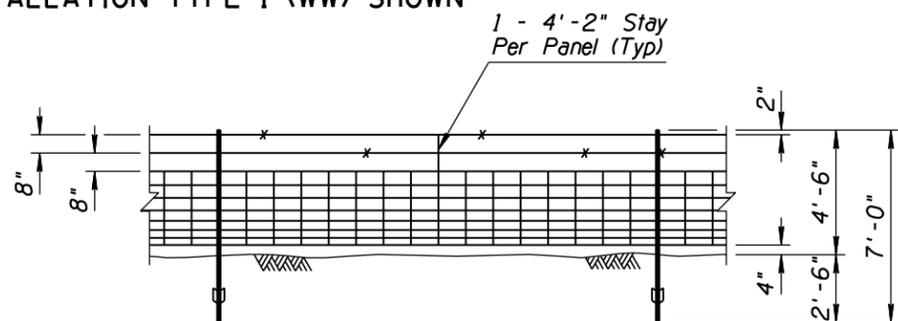


10" Diameter x 3'-0"
Concrete Footing (Typ)

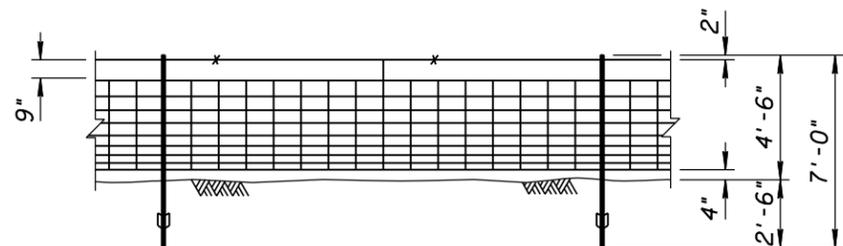
TYPICAL WOVEN WIRE FENCE INSTALLATION-TYPE 1 (WW) SHOWN



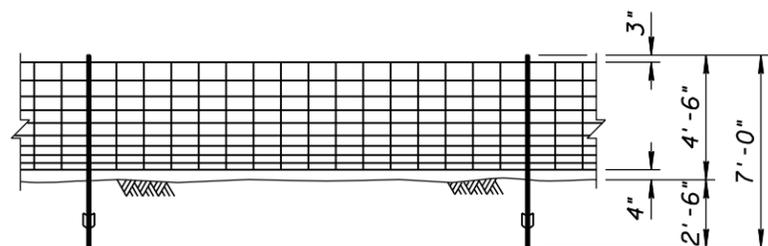
TYPE 1 WOVEN WIRE (WW)



TYPE 2 WOVEN WIRE (WW)



TYPE 3 WOVEN WIRE (WW)

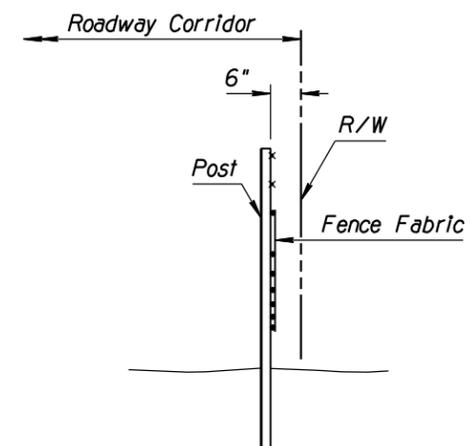


TYPE 4 WOVEN WIRE (WW)

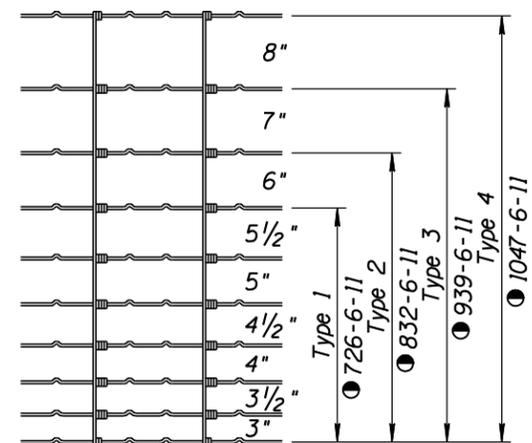
GENERAL NOTES

- Length of post and braces shall not be less than 7'-0".
- Woven wire fence fabric shall be attached to the line posts at the top, bottom, and intermediate wires, and shall be placed on the side of the posts away from the main roadway.
- Intermediate Post Assemblies shall be located as shown and at intervals to utilize standard rolls to minimize cutting and waste.
- A twisted wire stay shall be centered between posts.

① ② ● ASTM designation



③ TYPICAL FENCE LOCATION

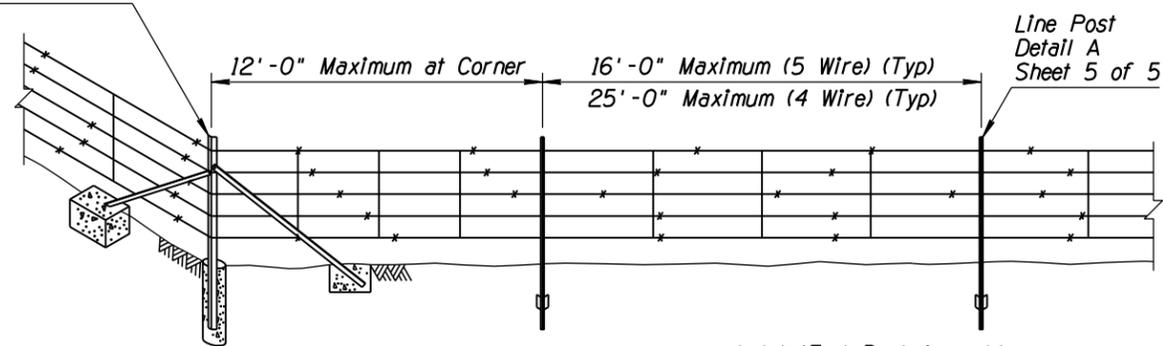


FENCE FABRIC DIMENSIONS AND DESIGN NUMBERS

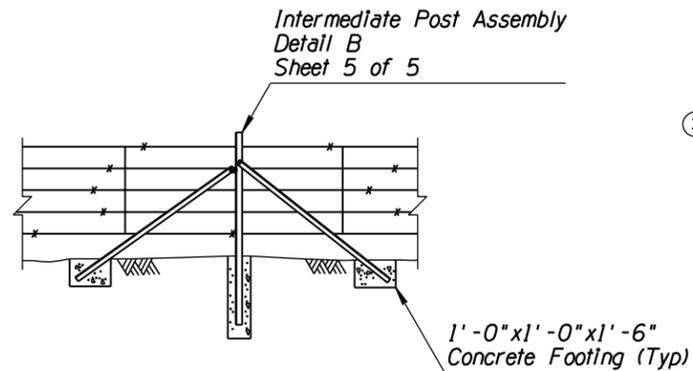
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE WOVEN WIRE	DRAWING NO. C-12.10 Sheet 1 of 5

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	PNB	7/94
2	REVISED GENERAL NOTE 1	RLF	7/05
3	ADDED GENERAL NOTE 4	RLF	5/12
4	ADDED TYPICAL FENCE LOCATION VIEW	RLF	5/12

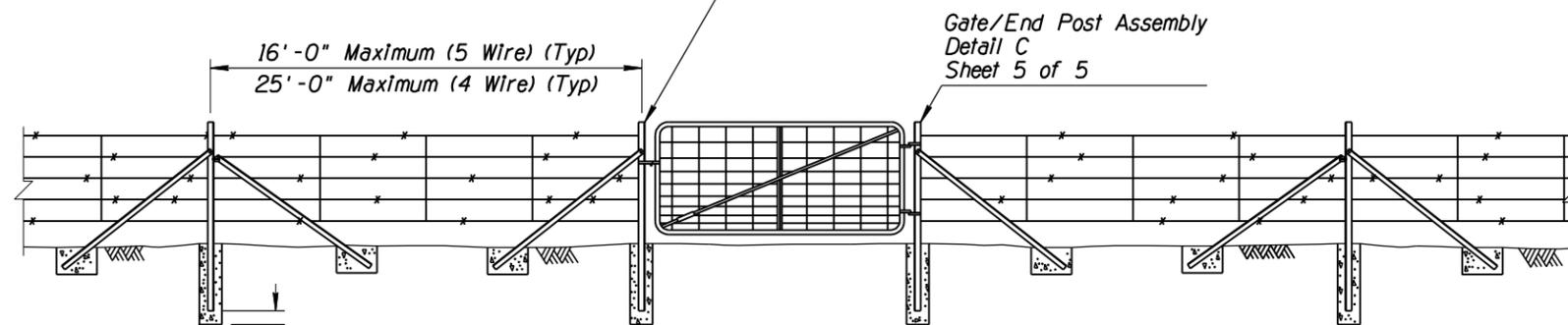
Corner Post Assembly
Detail D
Sheet 5 of 5



Intermediate Post Assembly
Detail B
Sheet 5 of 5

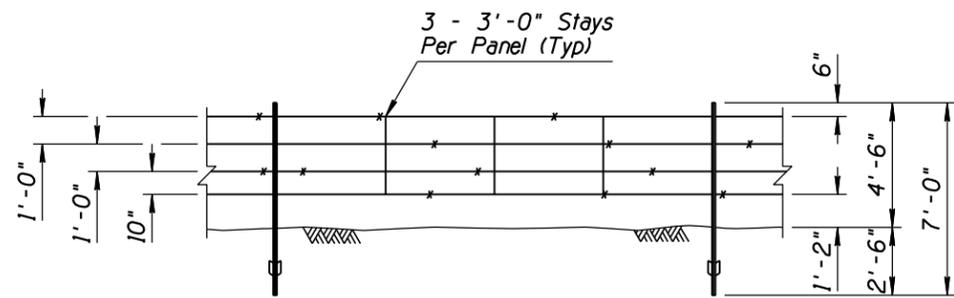


Latch/End Post Assembly
Detail C
Sheet 5 of 5

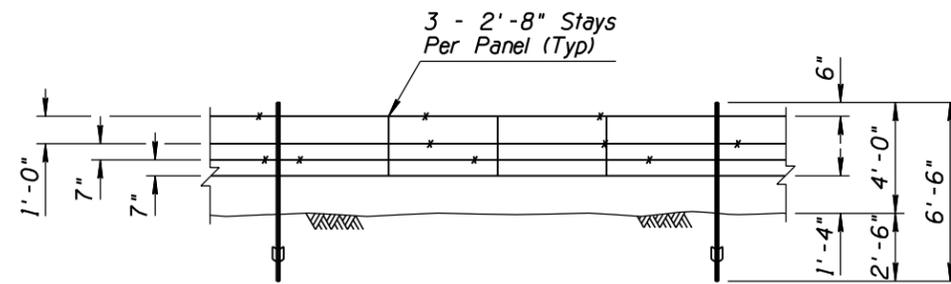


10" Diameter x 3'-0"
Concrete Footing (Typ)

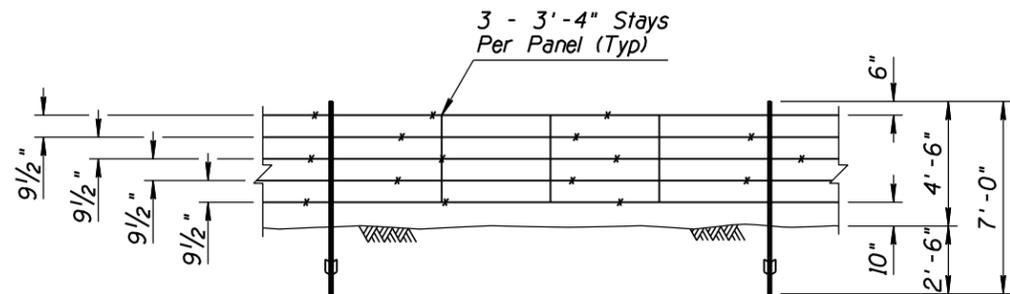
TYPICAL BARBED WIRE FENCE INSTALLATION-TYPE 2 (BW) SHOWN



TYPE 1 BARBED WIRE (BW) (4 WIRE)



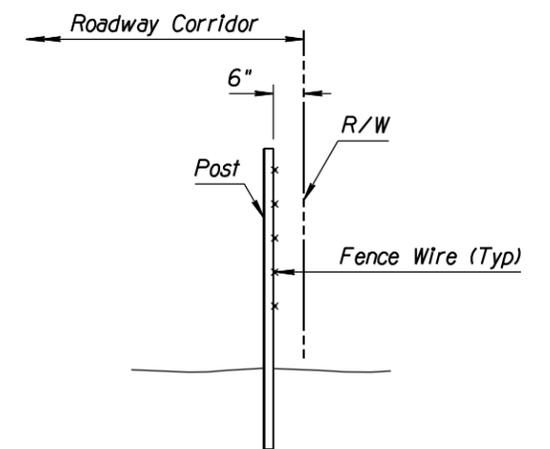
BARBED WIRE GAME FENCE (GF)



TYPE 2 BARBED WIRE (BW) (5 WIRE)

GENERAL NOTES

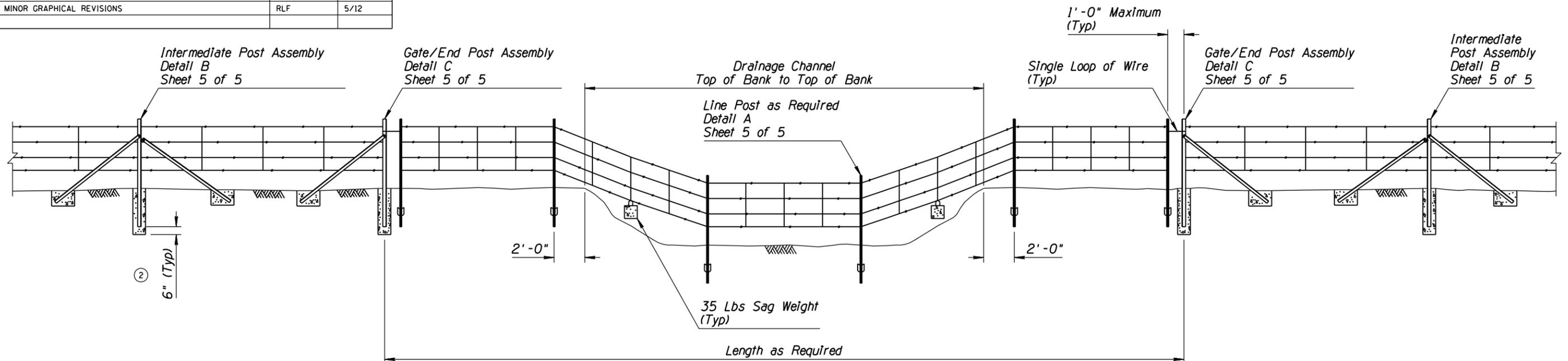
- ② 1. Intermediate Post Assemblies shall be located as shown and at intervals not to exceed 650', or midway between all braced posts.
2. For game fence the bottom wire shall be barbless.
3. The stays on game fence shall have their ends turned up to prevent injuries to game.
- ③ 4. Fence Wire shall be placed on the side of the line posts away from the main roadway except in sharper curve areas where it should be moved to the side with tension against the posts.



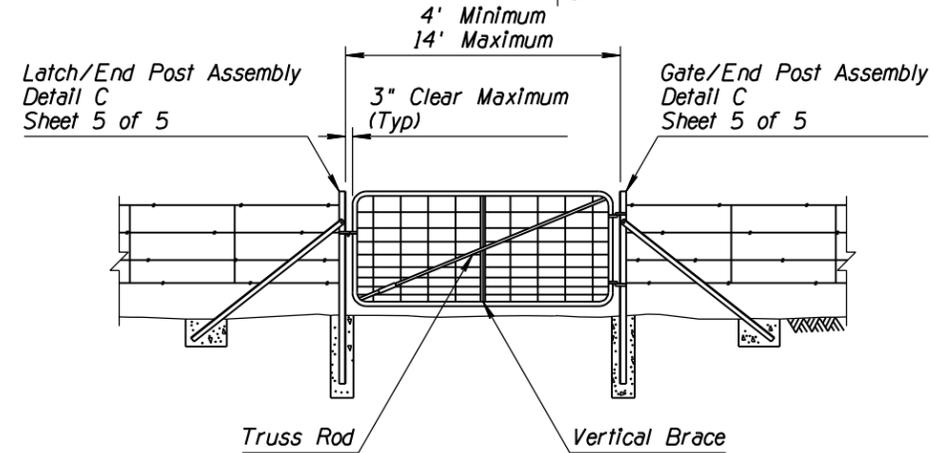
④ TYPICAL FENCE LOCATION

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	① FENCE BARBED WIRE	DRAWING NO. C-12.10 Sheet 2 of 5

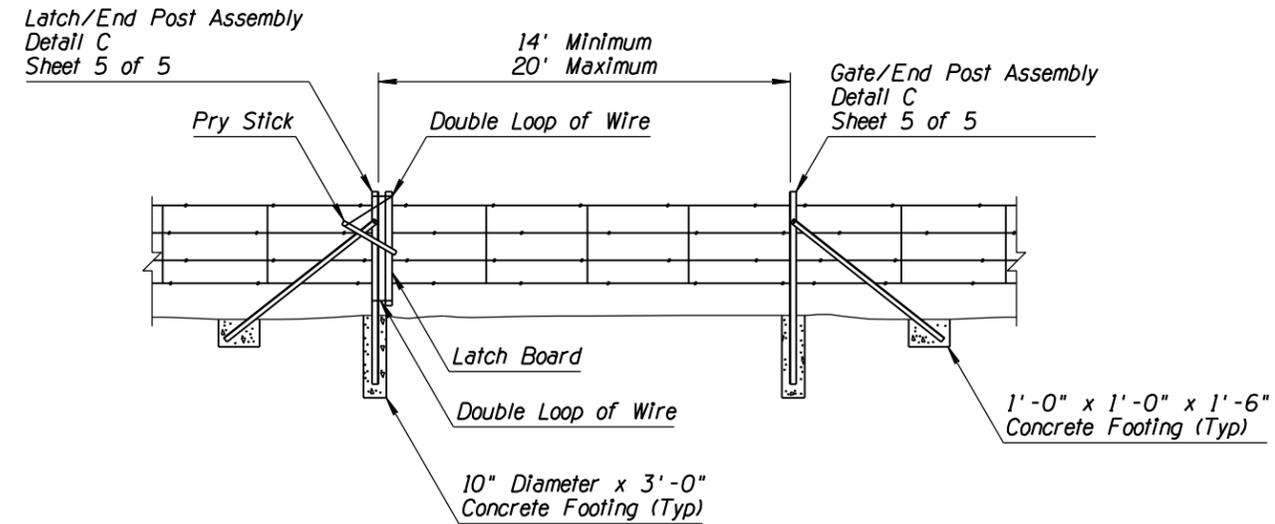
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	PNB	7/94
2	ADDED DIMENSION	RLF	9/04
3	MINOR GRAPHICAL REVISIONS	RLF	5/12
4			



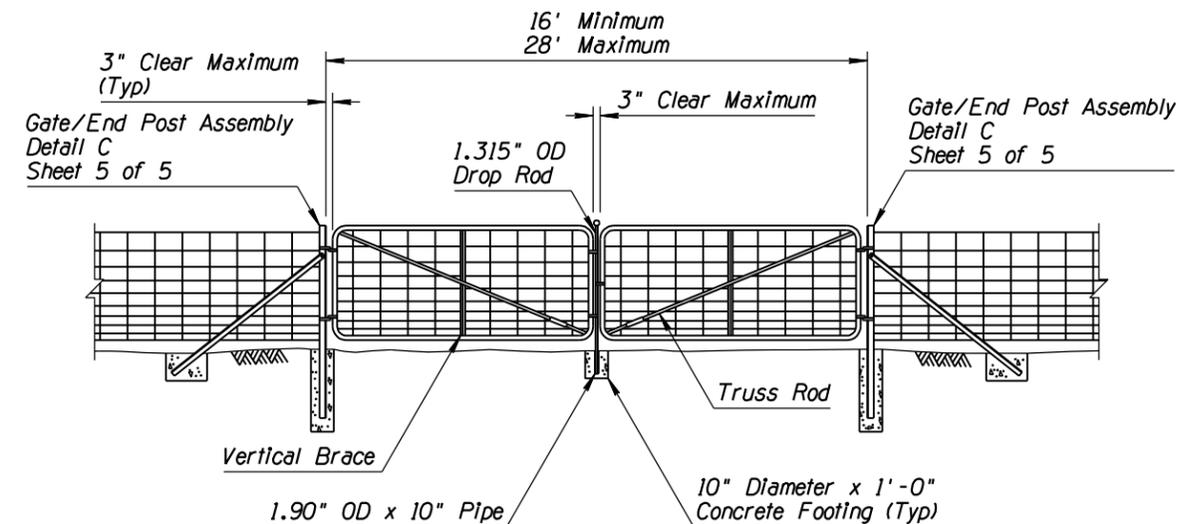
FLOOD GATE



TYPE 1 SINGLE GATE



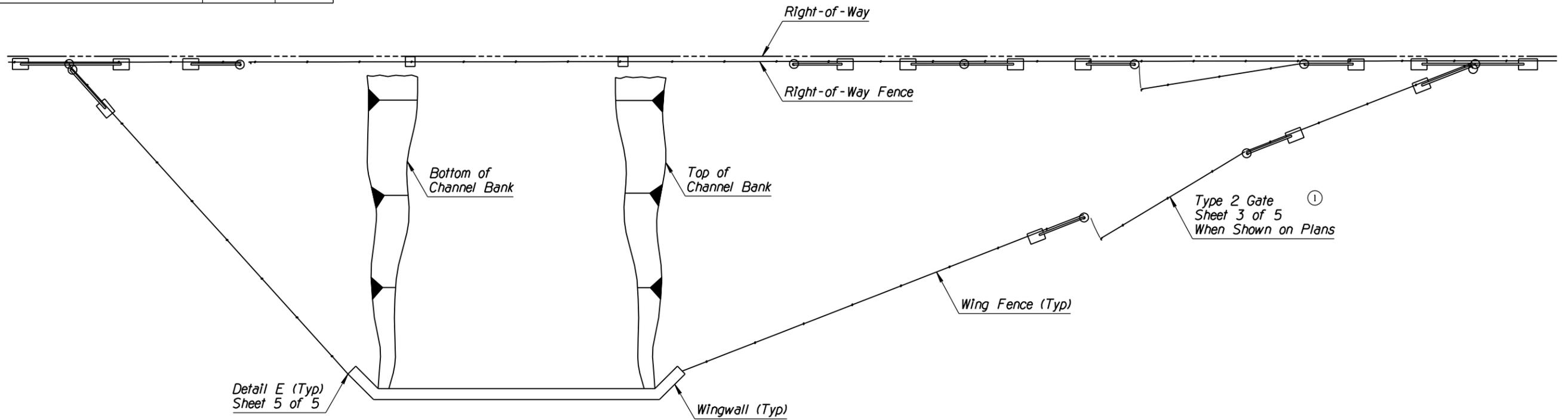
TYPE 2 GATE



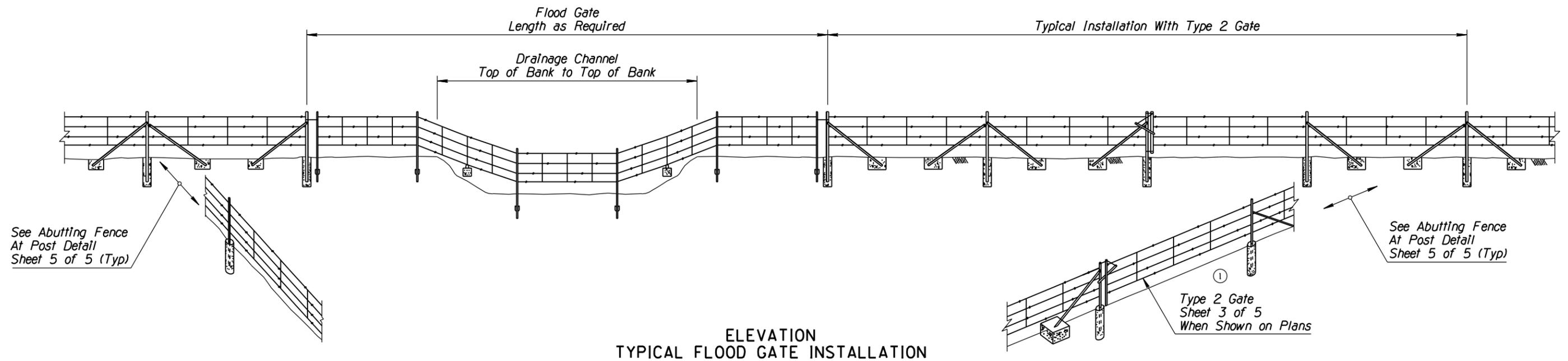
TYPE 1 DOUBLE GATE

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	① FENCE TYPE 1 AND 2 GATES FLOOD GATE ③	DRAWING NO. C-12.10 Sheet 3 of 5

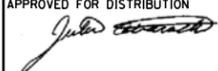
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED TYPE 2 GATE	RLF	9/04
2	REVISED DRAWING GRAPHICS	RLF	5/12
3			
4			



PLAN



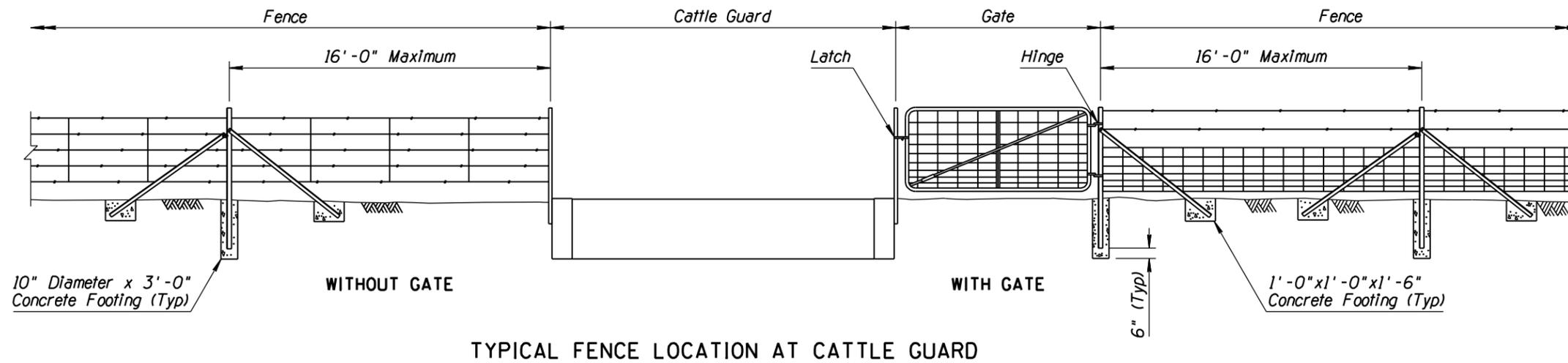
ELEVATION
TYPICAL FLOOD GATE INSTALLATION

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE FLOOD GATE INSTALLATION	DRAWING NO. C-12.10 Sheet 4 of 5

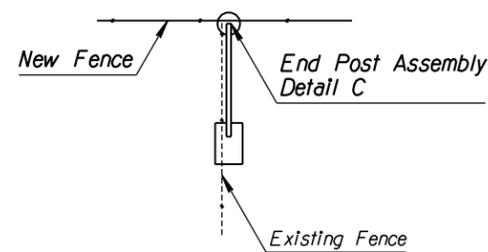
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUE STD	PNB	7/94
2	REVISED VIEW GRAPHICS	RLF	5/12
3	MOVED FENCE LOCATION VIEW TO SHEETS 1 & 2 OF 5	RLF	5/12
4			

GENERAL NOTES

1. Post assemblies shall consist of an upright angle $2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$ at 4.10 lbs/ft, and brace angles $2 \times 2 \times \frac{1}{4}$ at 3.19 lbs/ft.

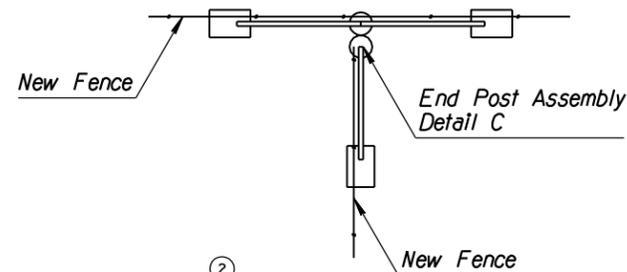


TYPICAL FENCE LOCATION AT CATTLE GUARD



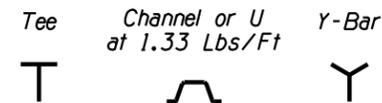
②

ABUTTING FENCE



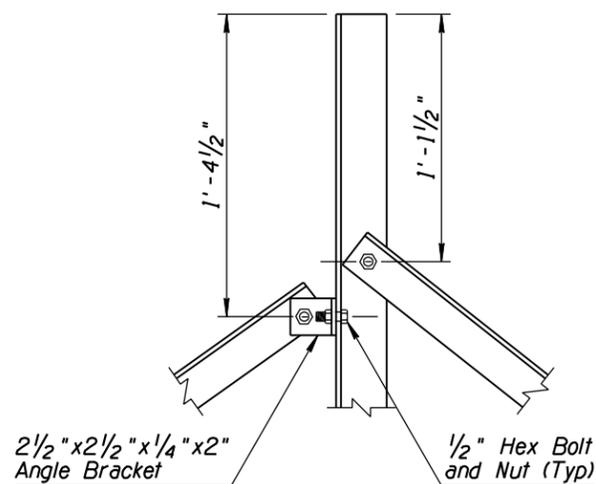
②

ABUTTING FENCE AT POST

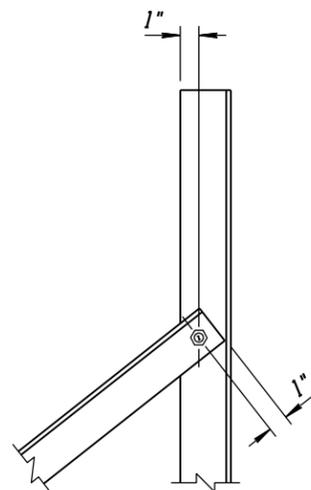


DETAIL A

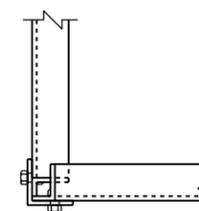
TYPICAL CROSS SECTIONS OF LINE POST SHAPES



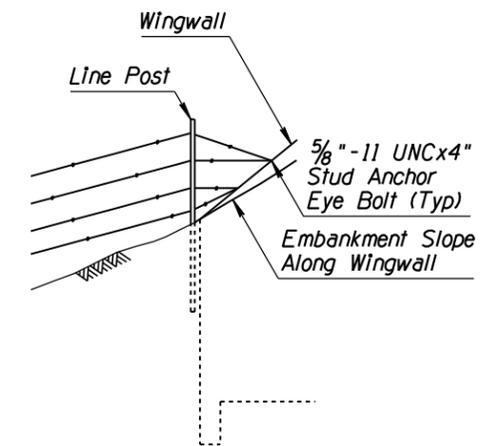
DETAIL B
INTERMEDIATE POST ASSEMBLY



DETAIL C
END POST ASSEMBLY



DETAIL D
CORNER POST ASSEMBLY



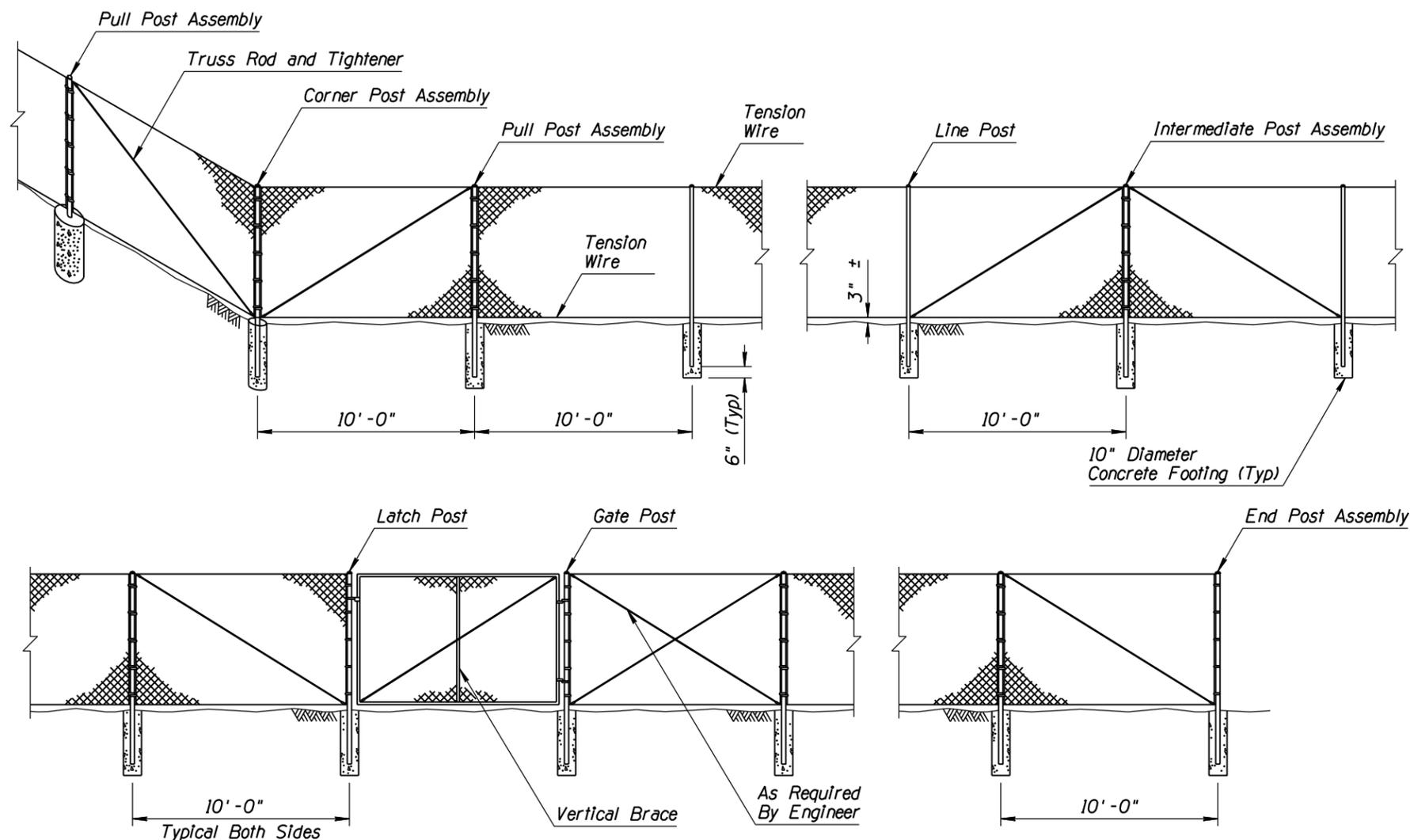
DETAIL E
FENCE CONNECTION TO WINGWALL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	① FENCE MISCELLANEOUS DETAILS	DRAWING NO. C-12.10 Sheet 5 of 5

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED TABLE MEASUREMENT FORMAT	RLF	9/04
2	NEW GENERAL NOTE #2; RENUMBERED ALL OTHER NOTES	RLF	5/12
3	ADDED "TYPICAL FENCE LOCATION" VIEW	RLF	5/12
4			

GENERAL NOTES

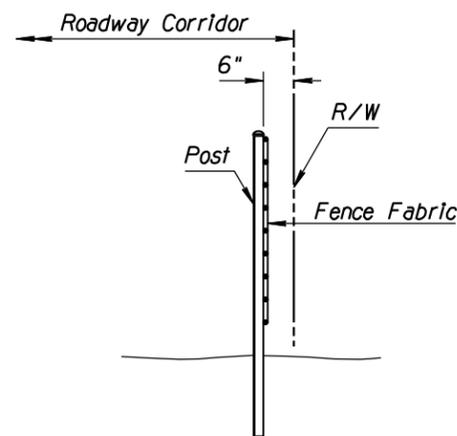
- Posts shall be round, H-section, or roll-formed and shall conform to the nominal dimensional requirements shown on the plans. Dimensional tolerances for all shapes shall be according to ASTM A500. In addition, the material of which posts are fabricated shall have a nominal thickness, before galvanizing, of not less than 0.111" for line posts and 0.130" for terminal posts.
- Chain link fabric shall be attached on the side of the line posts away from the main roadway.
- Chain link fabric shall be either zinc-coated or aluminum-coated steel wire fence fabric. Zinc-coated steel shall conform to the requirements of ASTM A392, Class 1 coating. Aluminum-coated steel fabric shall conform to the requirements of ASTM A491, with a minimum weight of coating of 0.40 ounce per square foot of wire surface area. Fabric shall be 11 gauge for all fence fabric 60" or less in height and shall be 9 gauge for fabrics greater than 60" in height.
- Tension wires shall be 7 gauge (0.177" diameter) coil spring steel wire with a minimum tensile strength of 75,000 PSI and shall be zinc-coated or aluminum-coated.
- Truss rods shall be 3/8" diameter adjustable rods. Truss tighteners shall have a strap thickness of not less than 1/4".
- Stretcher bars shall be 3/16" x 3/4" steel flat bars. Stretcher bar bands shall be 1/8" x 1" preformed steel bands.
- Bottom tension wire shall be 3" from top of crown on concrete footings.
- Intermediate post assemblies shall be spaced at 500' intervals or midway between pull posts when the distance between such posts is less than 1,000' and more than 500'.



TYPICAL CHAIN LINK FENCE INSTALLATION - TYPE I SHOWN

①

TYPICAL POST DIMENSIONS								
Fabric Height (In)	Corner, End, Intermediate, Gate, Latch and Pull Posts					Line Posts		
	Length (Ft-In)	Round	Roll Formed (In)		Length (Ft-In)	Round	Roll Formed	
		(OD) (In)	□	□		(OD) (In)	H-Section (In)	□ (In)
36	6-0	2.375	3.50 x 3.50	2.25 x 1.70	5-6	1.900	1.875 x 1.625	1.875 x 1.625
48	7-0	2.375	3.50 x 3.50	2.25 x 1.70	6-6	1.900	1.875 x 1.625	1.875 x 1.625
60	8-0	2.375	3.50 x 3.50	2.25 x 1.70	7-6	1.900	1.875 x 1.625	1.875 x 1.625
72	9-0	2.375	3.50 x 3.50	2.25 x 1.70	8-6	1.900	1.875 x 1.625	1.875 x 1.625
Over 72	Height +3-0	2.875	3.50 x 3.50	2.50 x 2.50	Height +2-6	2.375	2.250 x 2.000	1.875 x 1.625



③

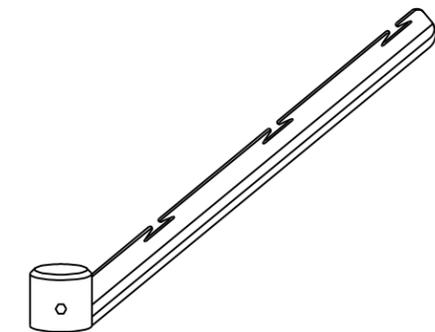
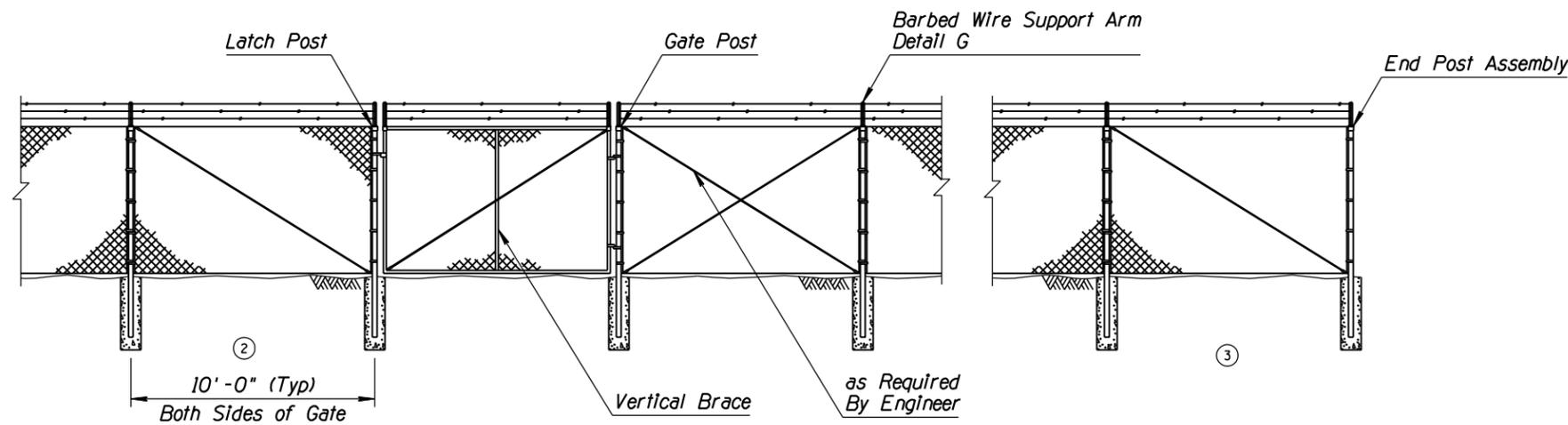
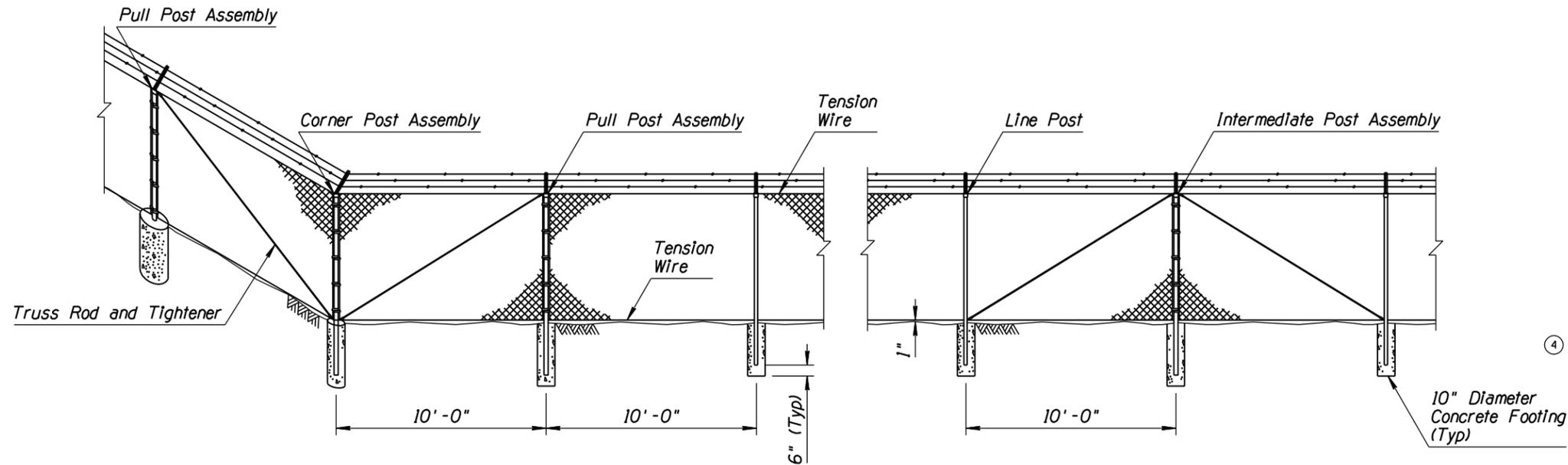
TYPICAL FENCE LOCATION

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE CHAIN LINK TYPE I	DRAWING NO. C-12.20 Sheet 1 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED TABLE MEASUREMENT FORMAT	RLF	9/04
2	MODIFIED DIMENSION TEXT	RLF	10/05
3	DELETED DIMENSION	RLF	10/05
4	REVISED GENERAL NOTE	RLF	5/12

GENERAL NOTES

1. Barbed wire for use with Type 2 chain link fence shall be 12 gauge steel wire with 4 point 14 gauge barbs spaced 5" apart and shall be either zinc-coated or aluminum-coated. Zinc-coated steel wire shall conform to the requirements of ASTM A121, Class 1 coating. Aluminum-coated steel wire shall conform to the requirements of ASTM 1585, Type 1, Class 1 coating.
2. Barbed wire support arm shall be of the type shown on the plans, shall be fabricated from commercial quality steel, and shall be zinc-coated in accordance with the requirements of AASHTO M111.
3. Bottom tension wire shall just clear top of crown on concrete footings.
4. For details and notes not shown, see chain link fence, Type 1, Sheet 1 of 3.
5. See Sheet 1 of 3 for typical fence location.



TYPICAL CHAIN LINK FENCE INSTALLATION - TYPE 2 SHOWN

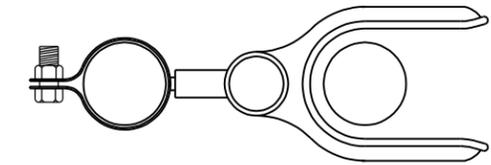
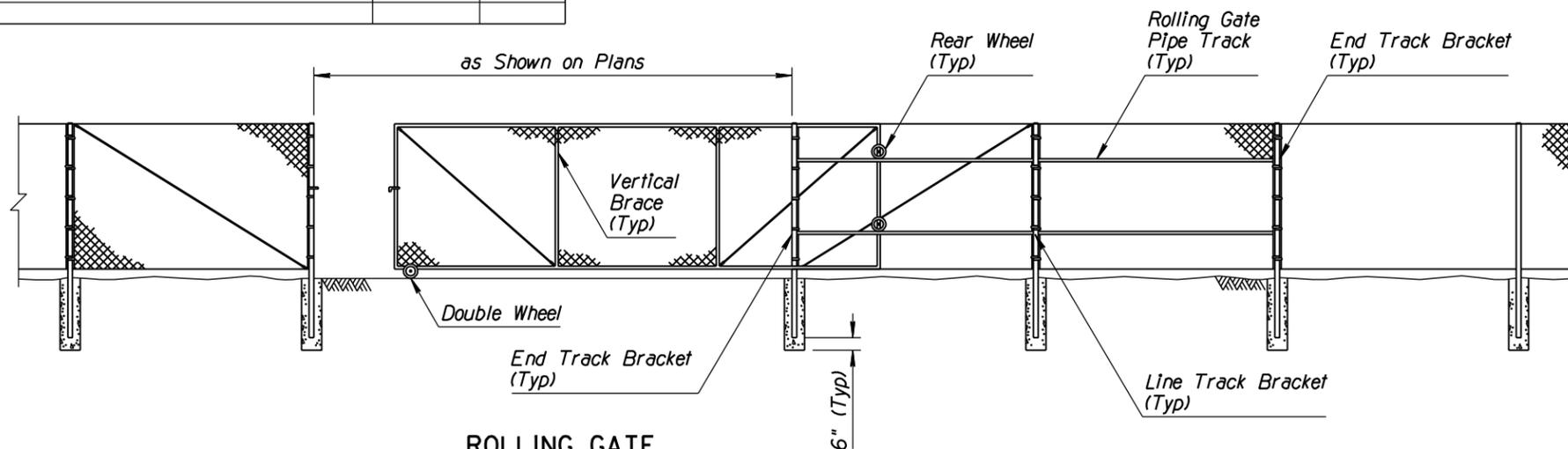
DETAIL G BARBED WIRE SUPPORT ARM

TYPICAL POST DIMENSIONS

Fabric Height (In)	Corner, End, Intermediate, Gate, Latch and Pull Posts				Line Posts			
	Length (Ft-In)	Round	Roll Formed		Length (Ft-In)	Round	H-Section (In)	Roll Formed
		(OD) (In)	⊏ (In)	□ (In)		(OD) (In)		□ (In)
72	8-6	2.375	3.50 x 3.50	2.50 x 2.50	8-0	1.900	1.875 x 1.625	1.875 x 1.625

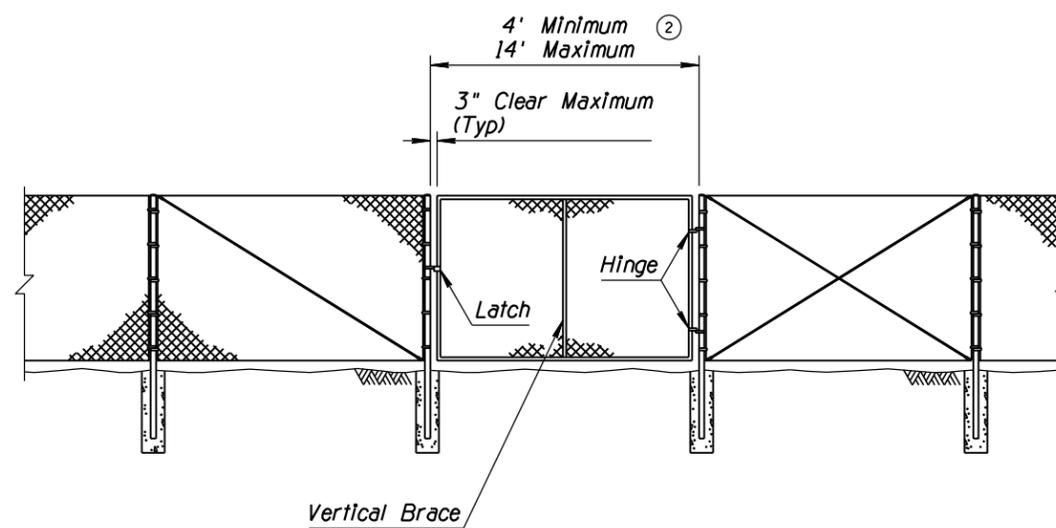
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE CHAIN LINK TYPE 2	DRAWING NO. C-12.20 Sheet 2 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED TABLE MEASUREMENT FORMAT	RLF	9/04
2	MODIFIED DIMENSION TEXT	RLF	10/05
3	MOVED FENCE LOCATION VIEW TO SHEET 1 OF 3	RLF	5/12
4			

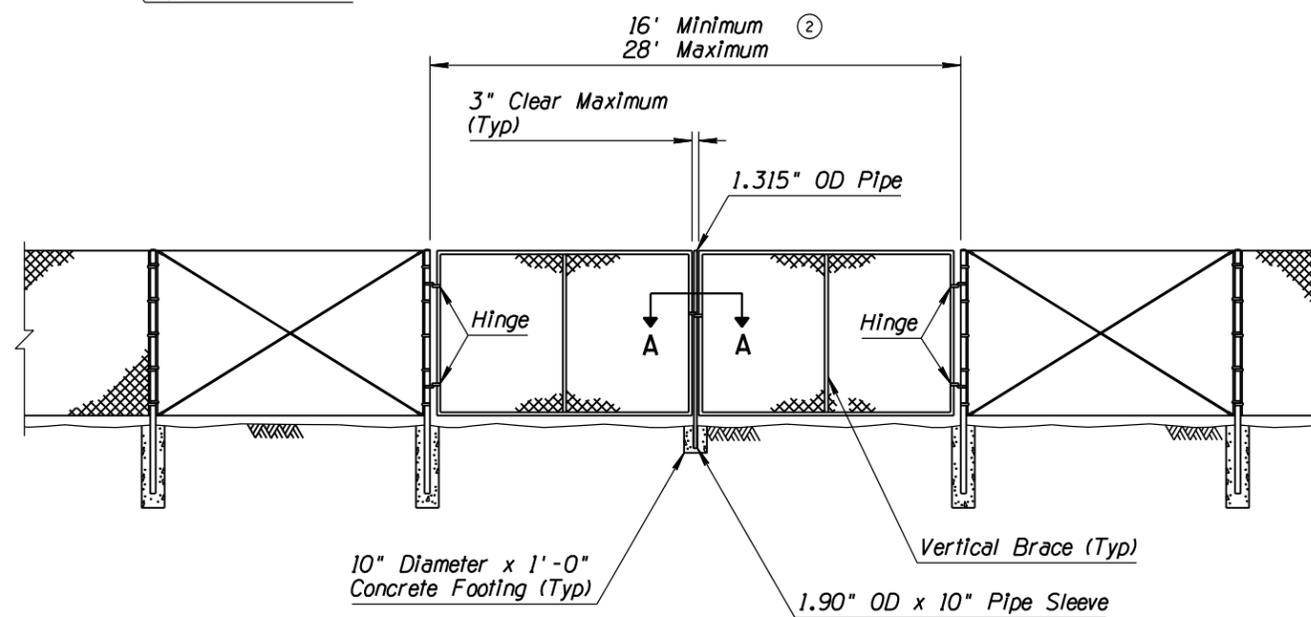


SECTION A-A
DOUBLE GATE LATCH ASSEMBLY

ROLLING GATE



SINGLE GATE



DOUBLE GATE

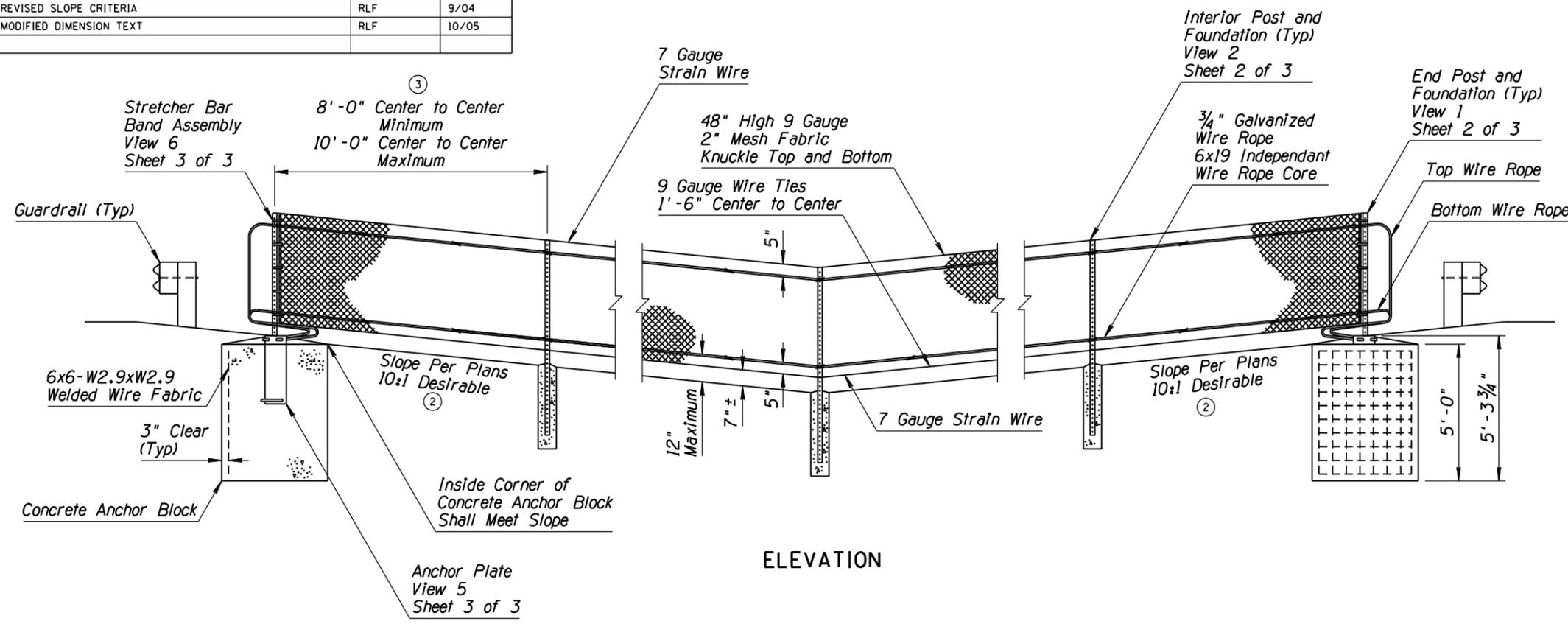
TYPICAL GATE DIMENSIONS

SINGLE AND DOUBLE SWING GATES						ROLLING GATES			
Gate Width (Ft)	Vertical Braces	Gate Post Size	Gate Width (Ft)	Vertical Braces	Gate Post Size	Gate Width (Ft)	Number of Equally Spaced Vertical Braces	Tension Rods Per Braced Panel	Gate Post Size
6' Ht or Less		OD (In)	Over 6' Ht		OD (In)				OD (In)
3 to 8	0	2.875	3 to 8	0	2.875	6 to 13	1	0	2.875
8 to 16	1	4.000	8 to 16	1	4.000	13 to 16	1	1	2.875
16 to 18	2	4.000				16 to 21	2	1	2.875
						21 to 27	2	1	2.875
						28 and Larger	3	1	2.875

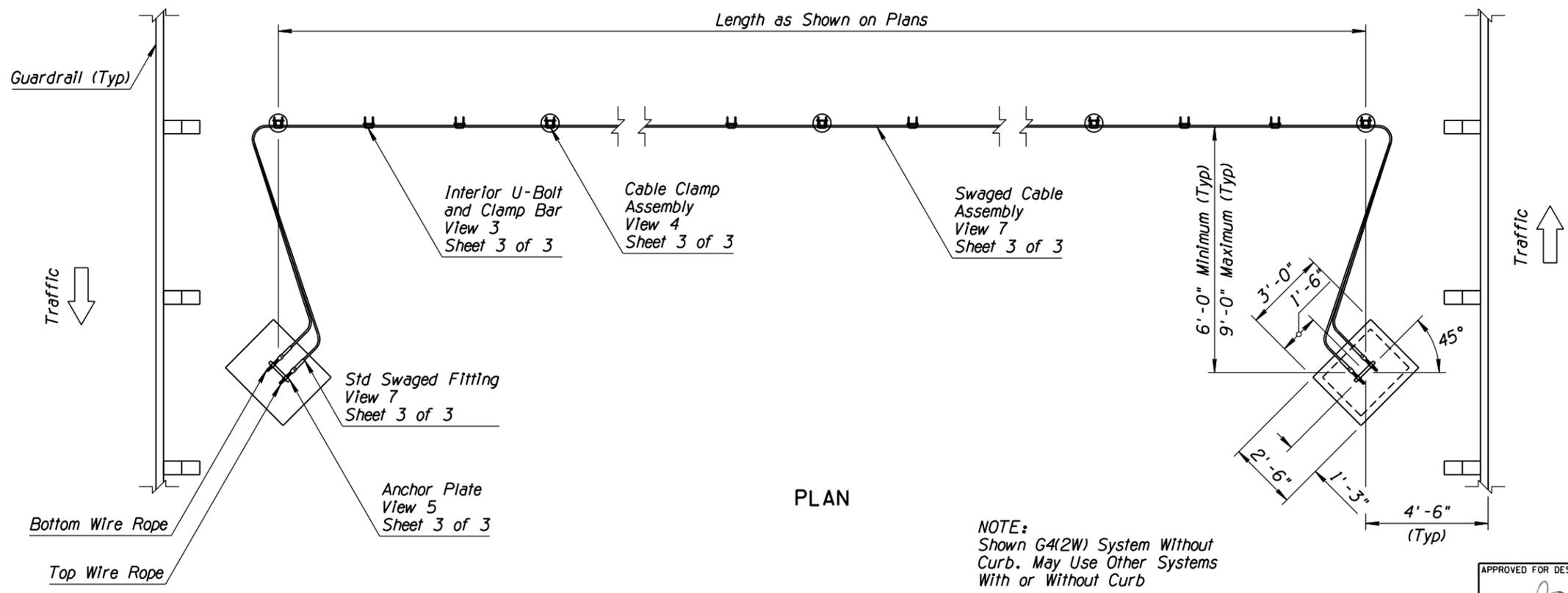
GATES FOR CHAIN LINK FENCE - TYPE 1 SHOWN
(Type 2, With Barbed Wire Typical)

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE CHAIN LINK GATES	DRAWING NO. C-12.20 Sheet 3 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED TITLE	RLF	9/04
2	REVISED SLOPE CRITERIA	RLF	9/04
3	MODIFIED DIMENSION TEXT	RLF	10/05
4			



ELEVATION



PLAN

NOTE:
Shown G4(2W) System Without
Curb. May Use Other Systems
With or Without Curb

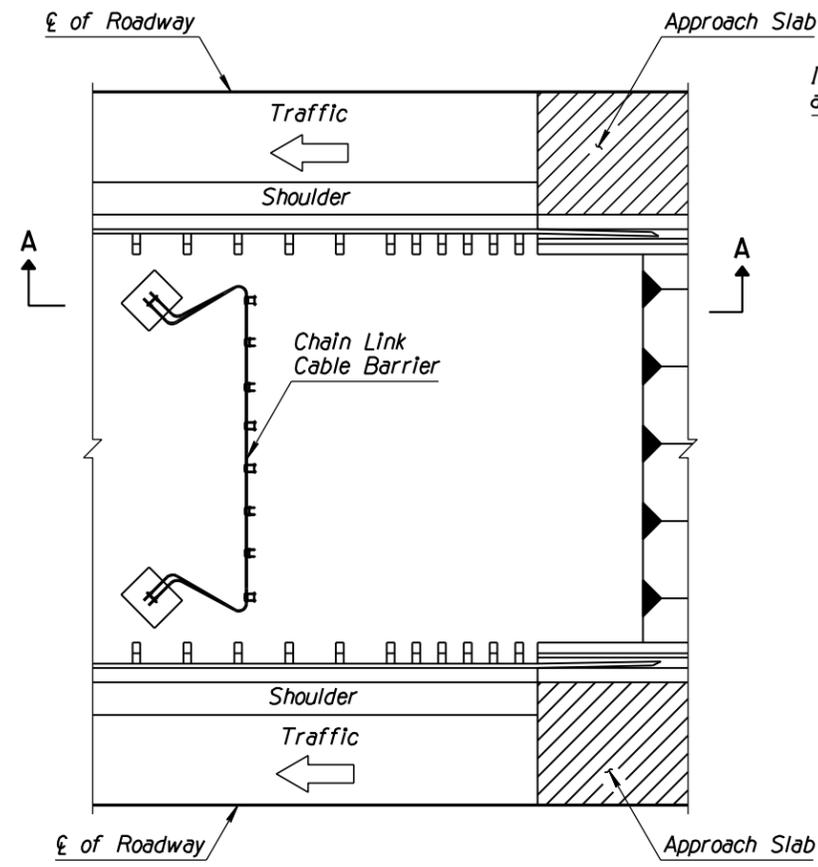
GENERAL NOTES

- All concrete shall be Class S, $f'c=4000$ PSI.
- All bolts, nuts, washers and fittings shall meet the dimensional requirements of the American National Standards Institute, unless otherwise designated and shall be galvanized in accordance with ASTM A153.
- Galvanized swaged fitting and U-Bolt shall conform to ASTM A449.
- The $\frac{3}{4}$ " galvanized wire rope shall conform to AASHTO M30 Class B, Type 2.
- The wire fabric, ties, bands, stretcher bars, and other fittings and hardware shall conform to AASHTO M181.
- The wire fabric fence shall follow contour of the graded median.
- The excavation for the concrete anchor blocks shall be to neat lines. Maximum excess shall be 3".
- Perforated posts shall be square tube formed from 0.105" USS gauge ASTM A366/A366M cold rolled carbon steel. The square tubes shall be welded directly in the corner by high frequency resistance welding or equal. The posts to be externally scarfed to agree with standard corner radii of $\frac{5}{32} \pm \frac{1}{16}$ ".
- Perforated posts shall be galvanized to the requirements of ASTM A653/A653M. Coating designator shall be Z275.
- The cables shall have enough tension to prevent sagging. The location of the concrete anchor blocks may also be varied to provide enough tension to help prevent sagging.
- Two interior U-bolt and clamp bars shall be spaced at $\frac{1}{3}$ of the distance between posts.
- See Standard Drawing C-12.20 for 48" fabric details.
- An alternate to rectangular concrete anchor block shall be a 36" diameter round footing with an additional depth of 4".
- The median approach grade within $100' \pm$ of the Chain Link Cable Barrier should not exceed a grade break of 10 percent.

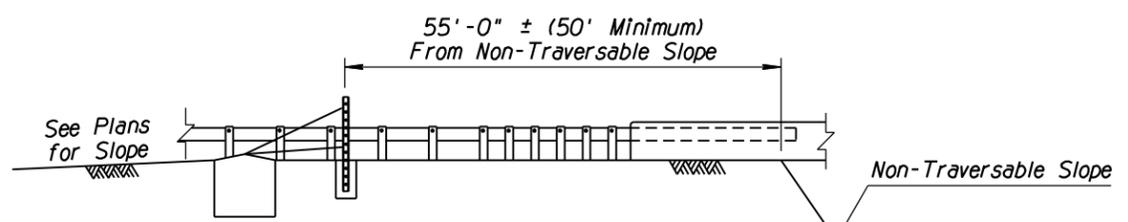
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE CHAIN LINK CABLE BARRIER	DRAWING NO. C-12.30 Sheet 1 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED DESIGNATION	RLF	9/04
2	REVISED TITLE	RLF	9/04
3			
4			

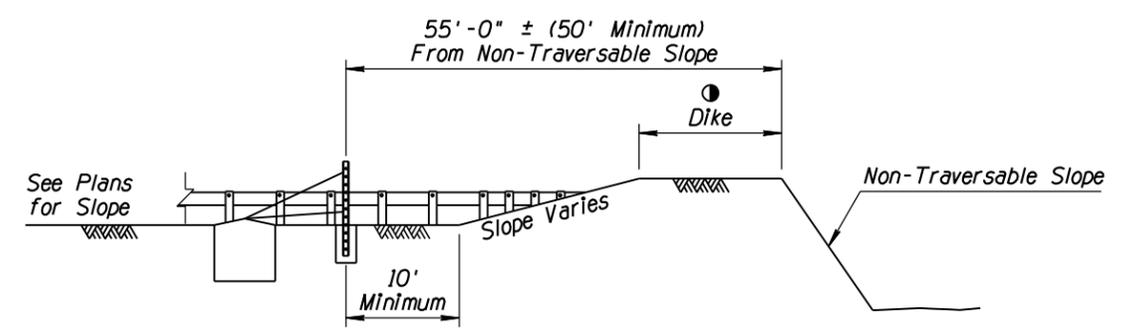
- ① ● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation
 ● - When Shown on Plans



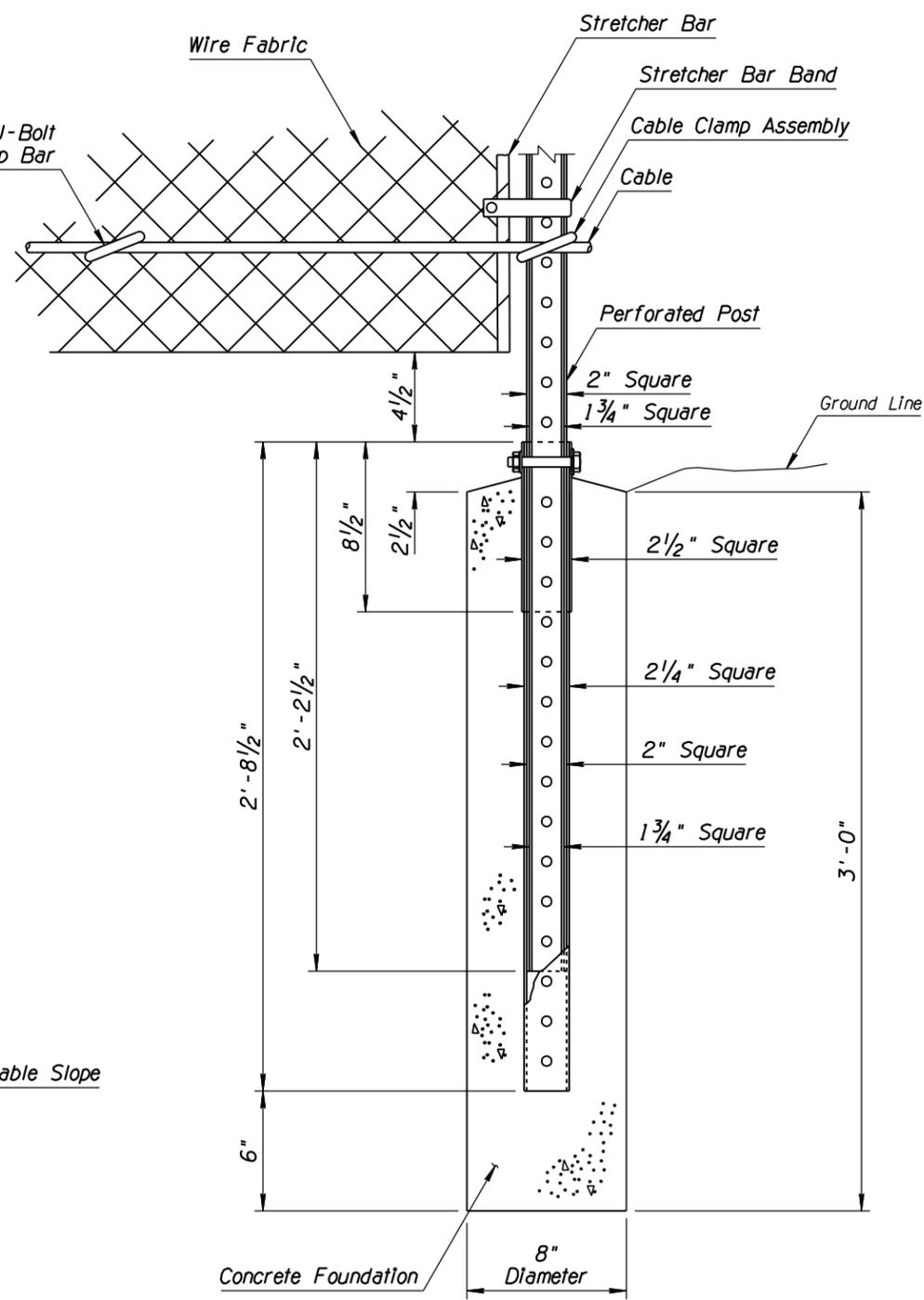
PLAN



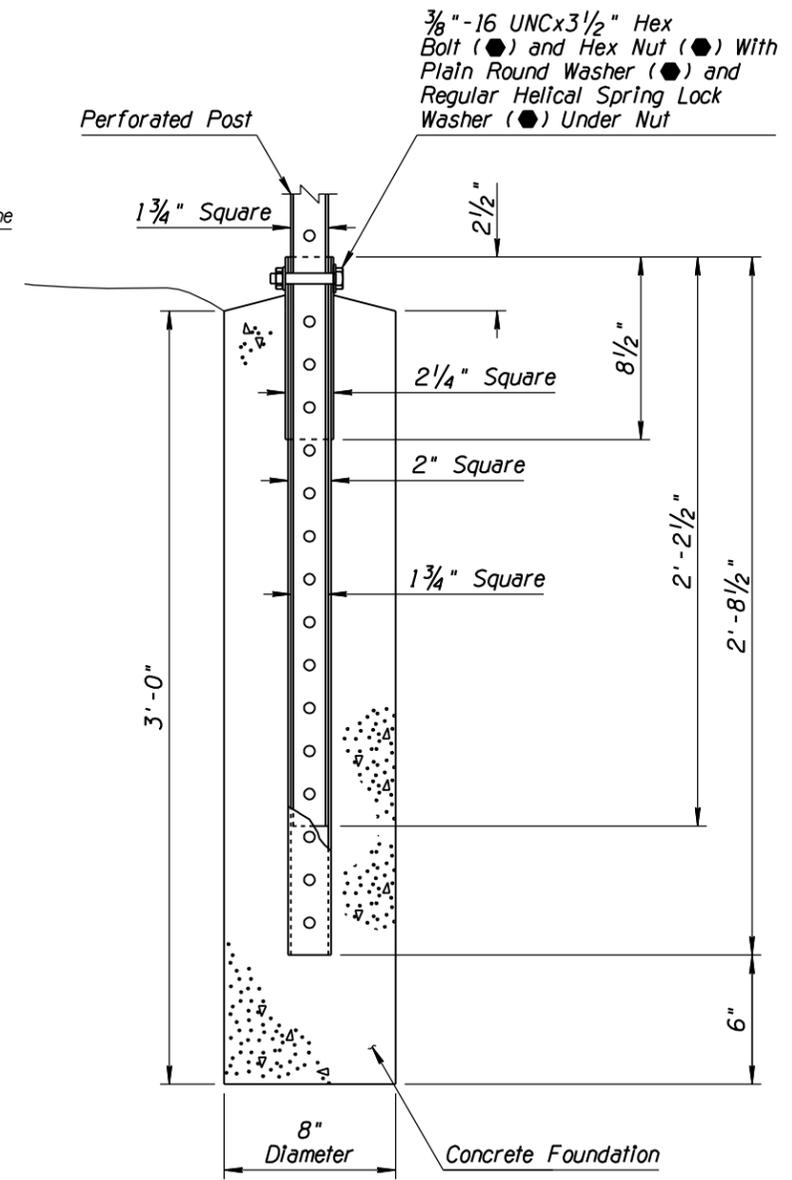
SECTION A-A
TYPICAL INSTALLATION WITHOUT DIKE



SECTION A-A
TYPICAL INSTALLATION WITH DIKE



VIEW 1
END POST AND FOUNDATION

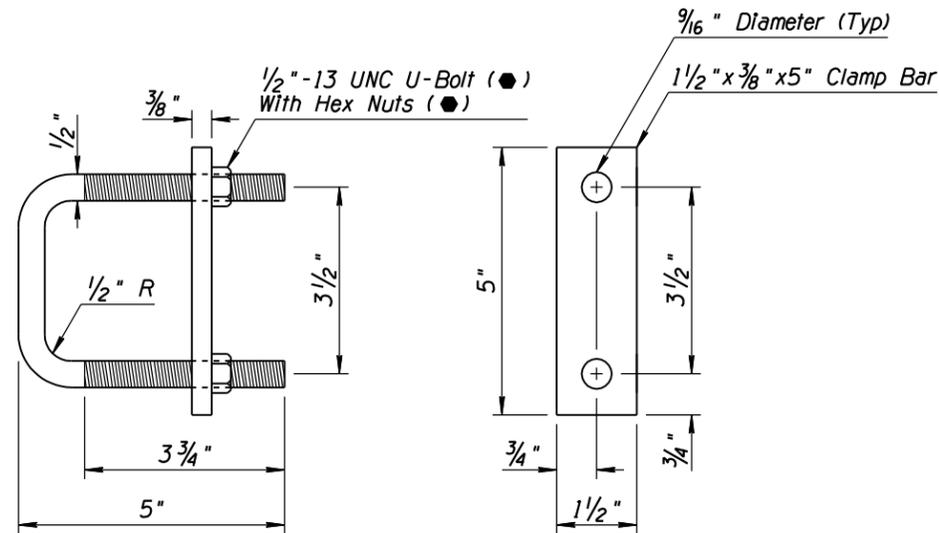


VIEW 2
INTERIOR POST AND FOUNDATION

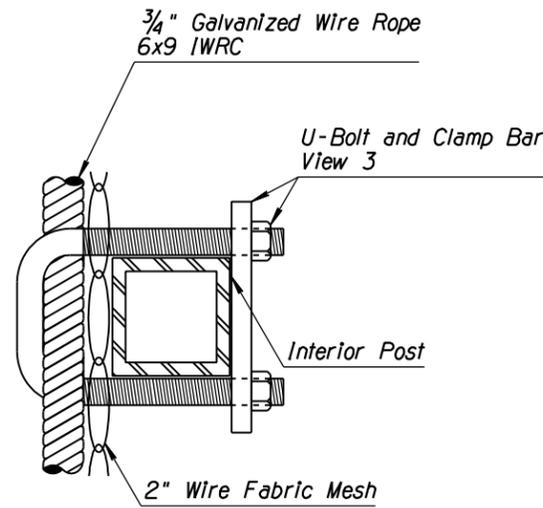
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE CHAIN LINK CABLE BARRIER	DRAWING NO. C-12.30 Sheet 2 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED DESIGNATION	RLF	9/04
2	REVISED TITLE	RLF	9/04
3			
4			

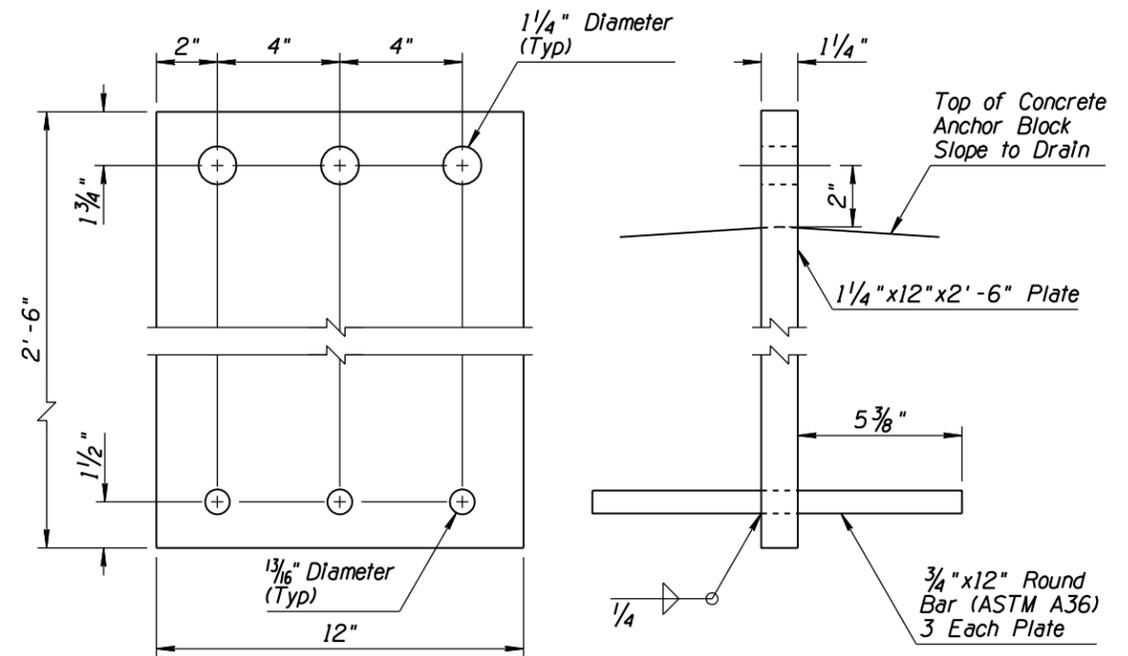
① ● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation



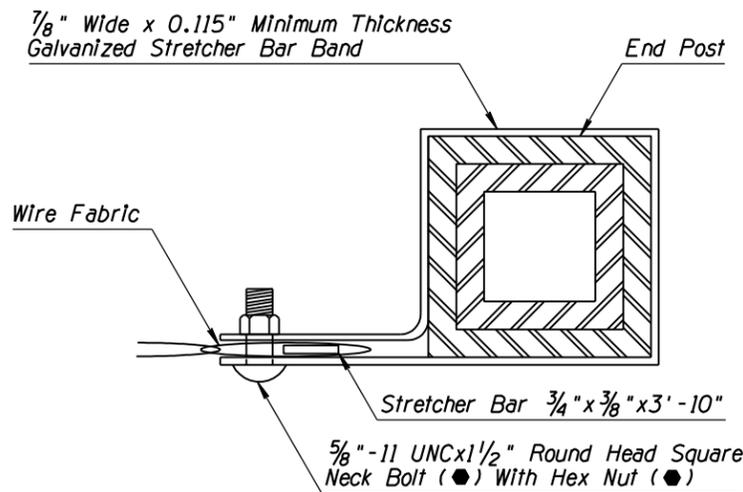
VIEW 3
U-BOLT AND CLAMP BAR



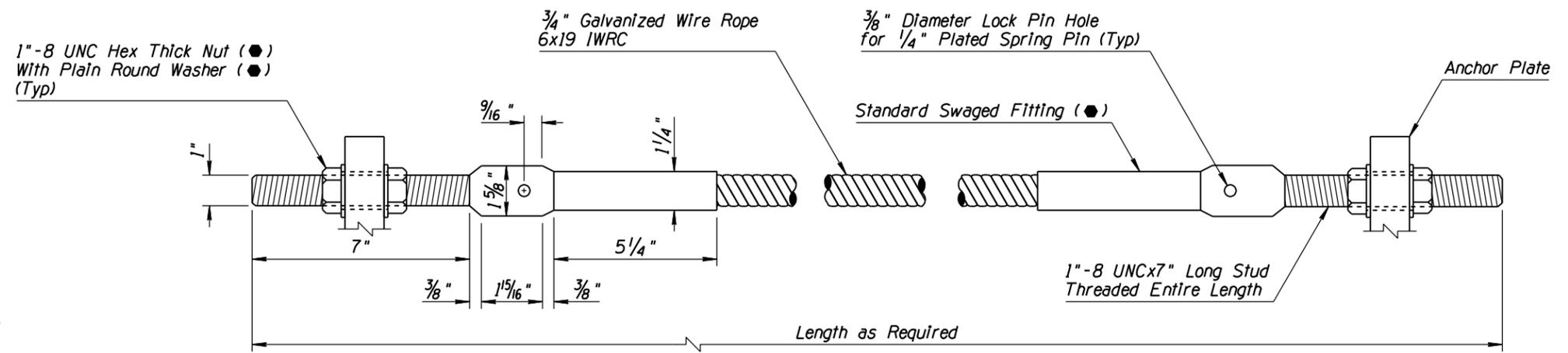
VIEW 4
CABLE CLAMP ASSEMBLY



VIEW 5
ANCHOR PLATE



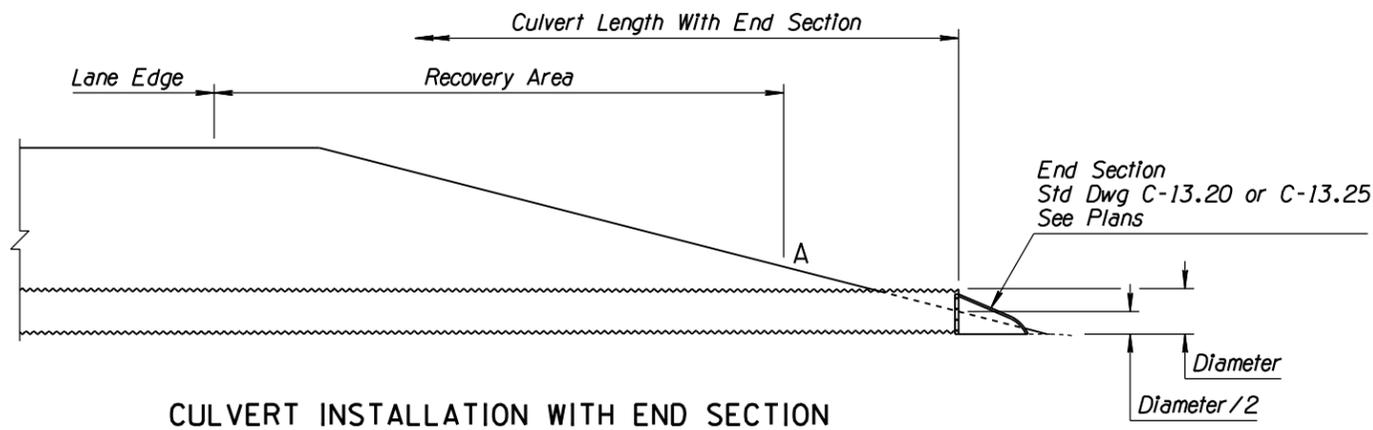
VIEW 6
STRETCHER BAR BAND ASSEMBLY



VIEW 7
SWAGED CABLE ASSEMBLY

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE CHAIN LINK CABLE BARRIER	DRAWING NO. C-12.30 Sheet 3 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	7/05
2			
3			
4			

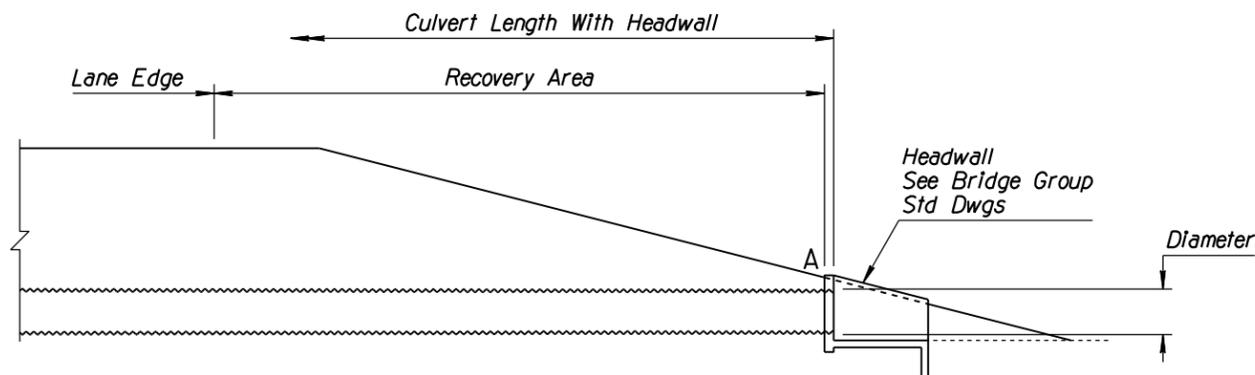


CULVERT INSTALLATION WITH END SECTION

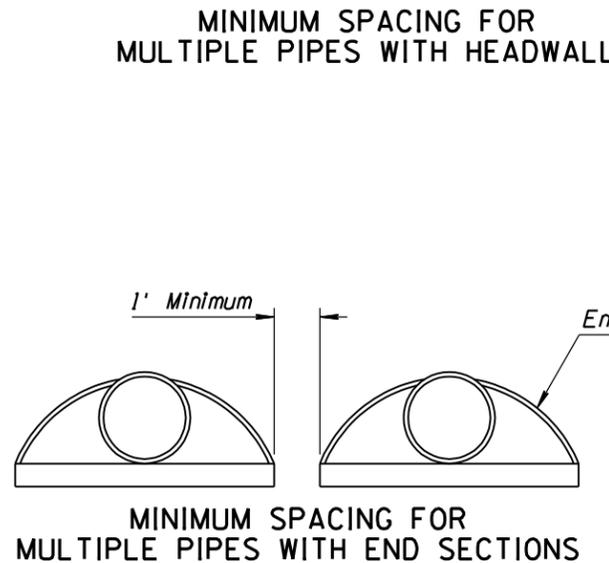
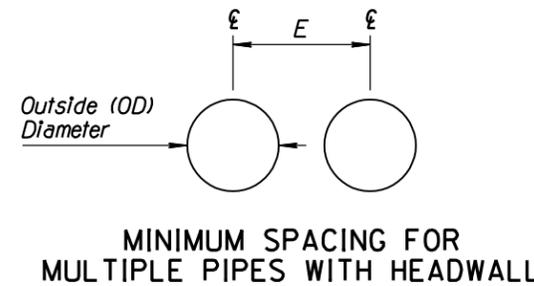
MINIMUM SPACING FOR MULTIPLE PIPES WITH HEADWALL	
Diameter or Span (In)	E (Ft-In)
18	2-6
24	3-0
30	3-9
36	4-6
42	5-3
48 to 66	OD + 3-0
72 and Over	OD + 3-0

GENERAL NOTES

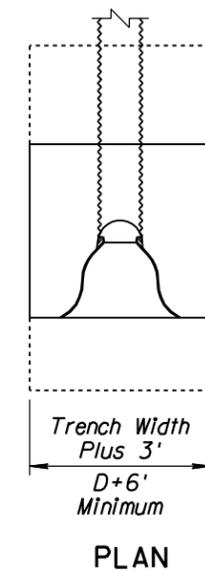
1. See plans for any required inlet and/or outlet protection.
2. E dimension applies to both non-trench and trench conditions.
3. Minimum cover over pipe culverts shall be 1', measured from the top of pipe.
4. See Pipe Berm Requirement Detail for pipe berm requirements and Std Dwg C-03.10 for installation. If Point A is within the recovery area, then a pipe berm is required and Point B is set at the edge of the recovery area.
5. Slope plating shall conform to Std Spec 501.



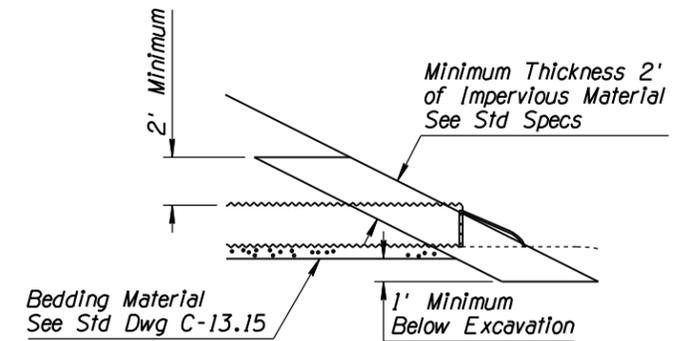
CULVERT INSTALLATION WITH HEADWALL



MINIMUM SPACING FOR MULTIPLE PIPES WITH END SECTIONS

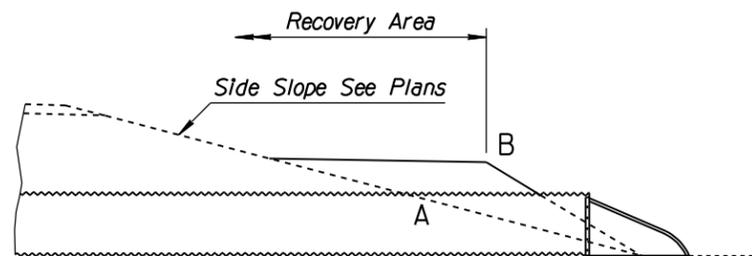


PLAN



ELEVATION

SLOPE PLATING FOR PIPE WITH END SECTIONS

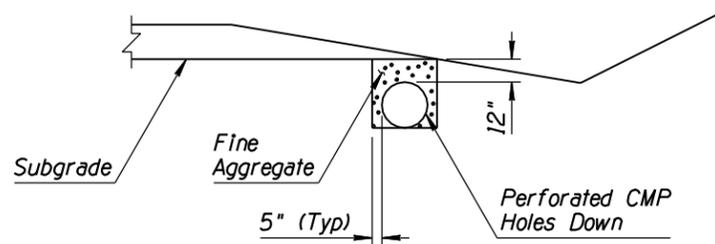
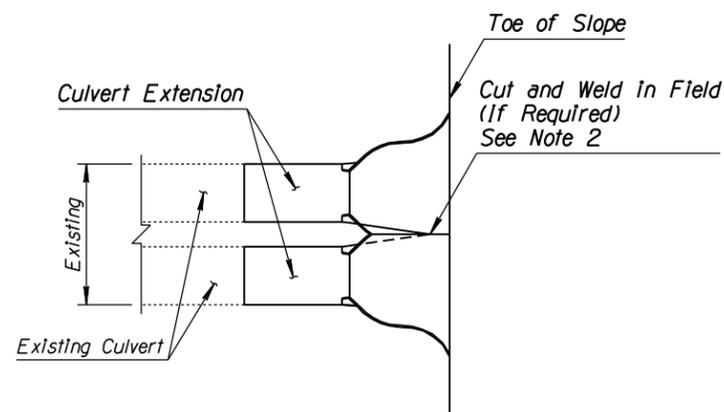


PIPE WITH BERM REQUIREMENT DETAIL

See General Note 4

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. ① 5/12
APPROVED FOR DISTRIBUTION 	PIPE CULVERT INSTALLATION	DRAWING NO. C-13.10 Sheet 1 of 2

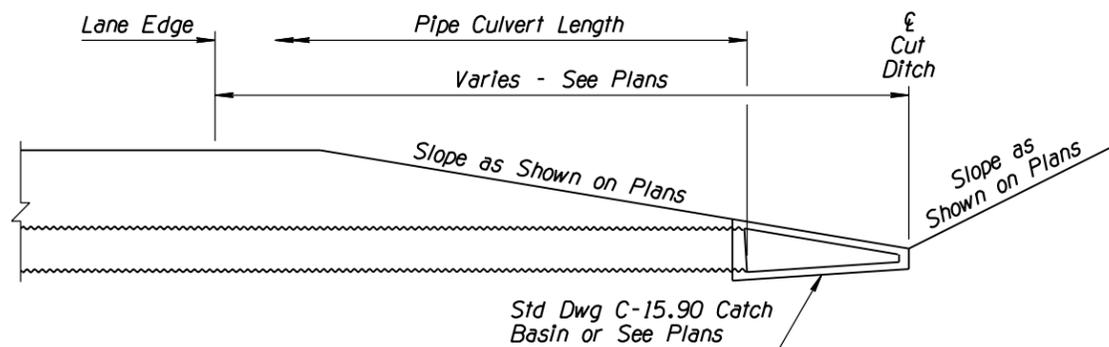
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	NEW GENERAL NOTE 2	RLF	9/04
2			
3			
4			



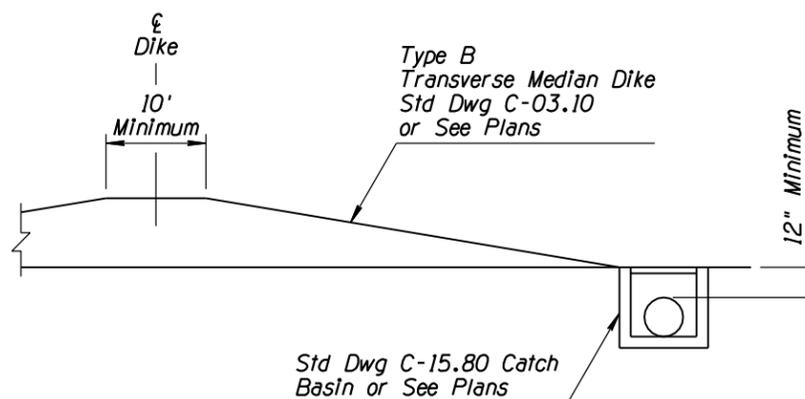
PERFORATED CMP INSTALLATION

SPECIAL MULTIPLE PIPE END SECTION DETAIL FOR PIPE CULVERT EXTENSIONS ONLY

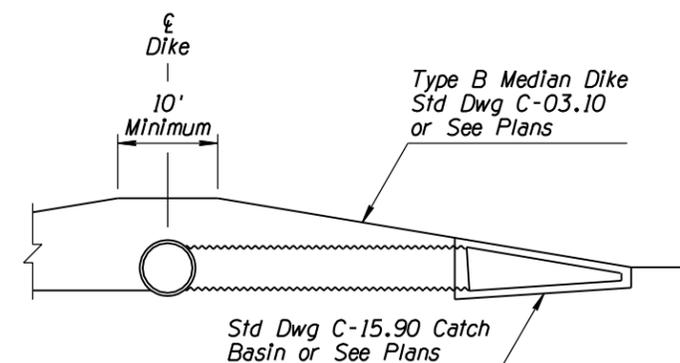
- GENERAL NOTES**
1. Minimum cover over pipe culverts shall be 12", measured from the top of pipe.
 - ① 2. After welding, the damaged coating shall be cleaned by a wire brush and painted with at least one full coat of Paint Number 4, or given two coats of an approved hot asphalt paint, as directed by the Engineer.



PIPE AND CATCH BASIN INSTALLATION AT SAG CONDITION OF CUT DITCH



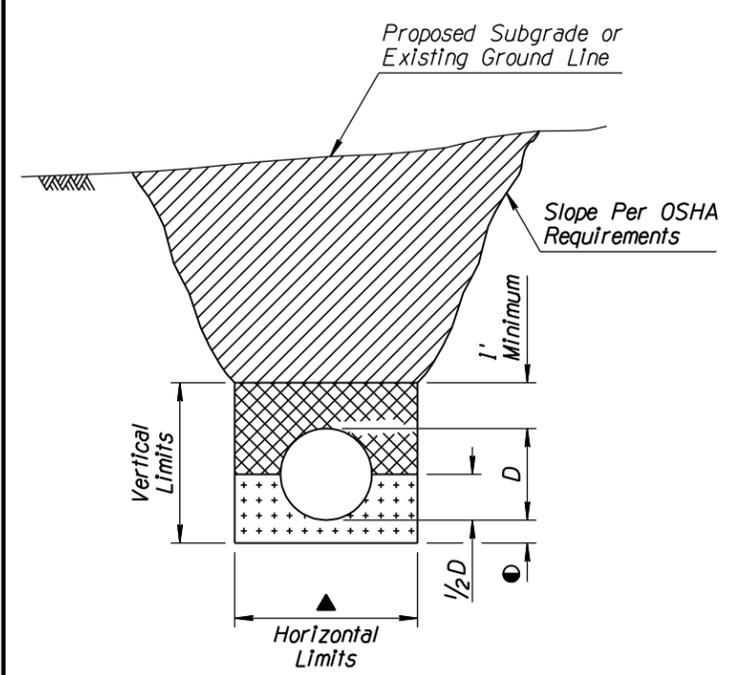
PIPE AND CATCH BASIN INSTALLATION AT BASE OF TRANSVERSE DIKE



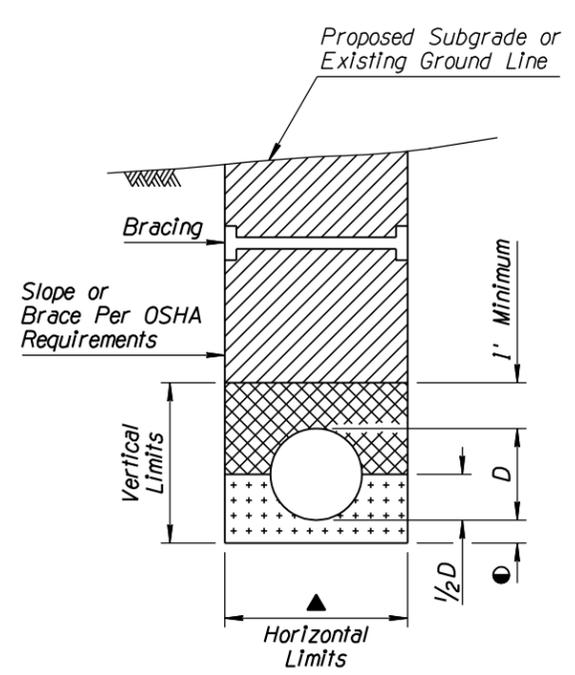
PIPE AND CATCH BASIN INSTALLATION AT FACE OF TRANSVERSE DIKE

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PIPE CULVERT INSTALLATION	DRAWING NO. C-13.10 Sheet 2 of 2

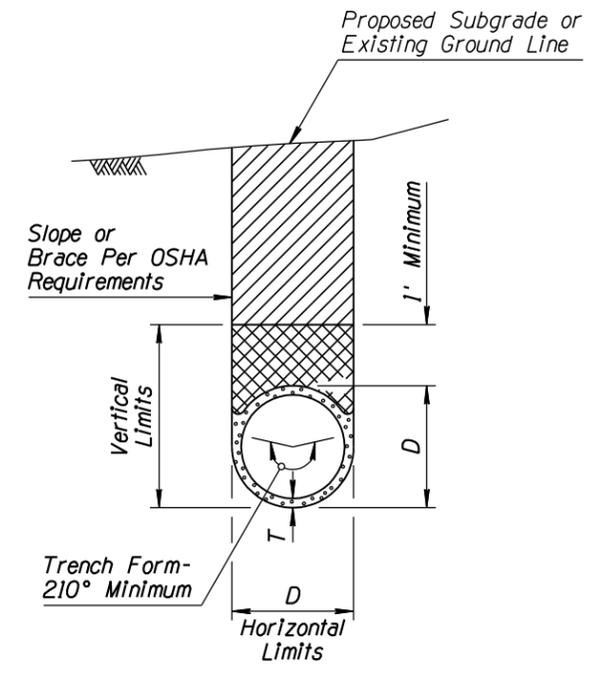
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SPECIFICATIONS	RLF	9/04
2			
3			
4			



TRENCH CONDITION
IN NATURAL GROUND OR IN EMBANKMENT
WITHOUT BRACING



TRENCH CONDITION
IN NATURAL GROUND OR IN EMBANKMENT
WITH BRACING SHOWN

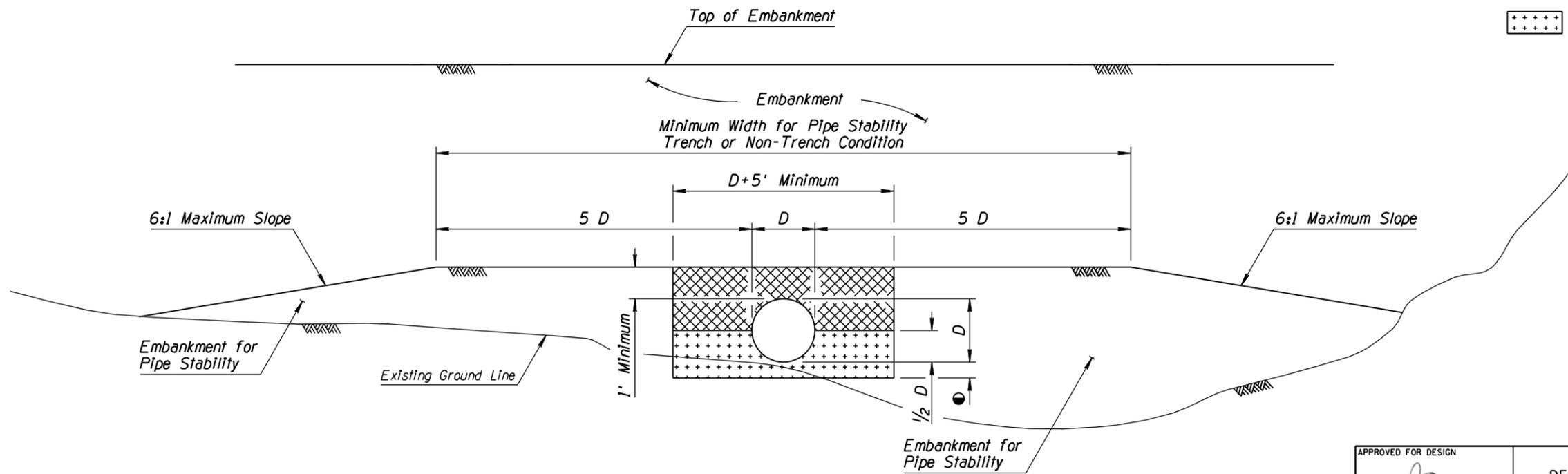


TRENCH CONDITION
NRCIPCP IN NATURAL GROUND
OR IN EMBANKMENT

GENERAL NOTES

1. Pipes shall be installed either in a trench condition or in a non-trench condition in natural ground or in embankment.
 2. In a trench condition, the vertical and horizontal limits shall be maintained. If horizontal limits are exceeded or the vertical limits are not maintained, a non-trench condition exists.
 3. Bracing and sloping shall conform to OSHA requirements.
 4. Pipe backfill may be bedding material.
 5. In a non-trench condition, the embankment for pipe stability shall be constructed in lifts to the limits shown in the detail simultaneously with the bedding material and pipe backfill. If the contractor chooses to construct it as a trench condition, the embankment shall be constructed before excavating the trench.
- D - Outside diameter of full circle pipe or outside dimension (span or rise) of arch, arch pipe, elliptical pipe.
- T - Minimum wall thickness for NRCIPCP: See Plans.
- ① ▲ For $D < \text{than } 4'$: $D + 6''$ each side, minimum
 $D + 2'$ each side, maximum
 - ① For $D \geq \text{than } 4'$: $D + 1'$ each side, minimum
 $D + 3'$ each side, maximum

- ▨ TRENCH BACKFILL
- ▩ PIPE BACKFILL
- +++++ BEDDING



NON-TRENCH CONDITION

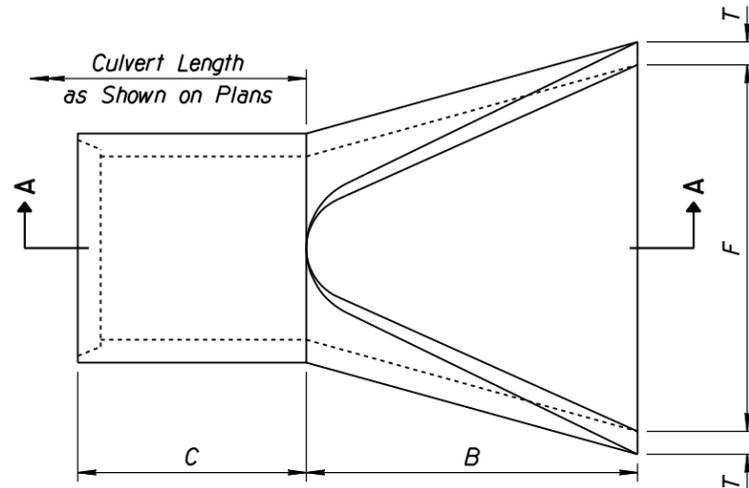
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	TYPICAL PIPE INSTALLATION	DRAWING NO. C-13.15

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	NEW GENERAL NOTE 1	RLF	9/04
2			
3			
4			

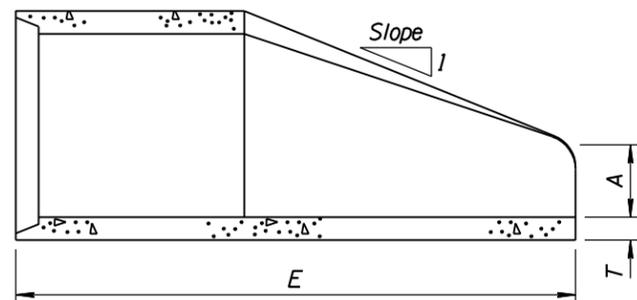
GENERAL NOTES

- ① 1. End section joint type shall match the pipe joint type.
- 2. Embankment slope shall be warped to match slope of end section.

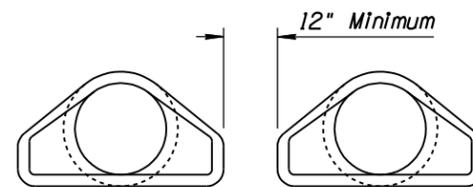
Pipe Diameter (In)	Approximate Weight (Lbs)	Dimensions (In)						Approximate Slope
		T	A	B	C	E	F	
24	1520	3	9 1/2	43 1/2	30	73 1/2	48	3
27	1930	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3
30	2190	3 1/2	12	54	19 3/4	73 3/4	60	3
36	4100	4	15	63	34 3/4	97 3/4	72	3
42	5380	4 1/2	21	63	35	98	78	3



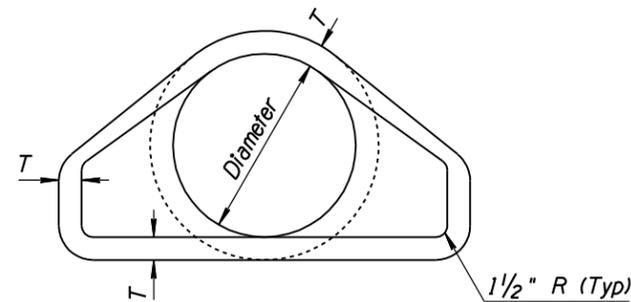
PLAN



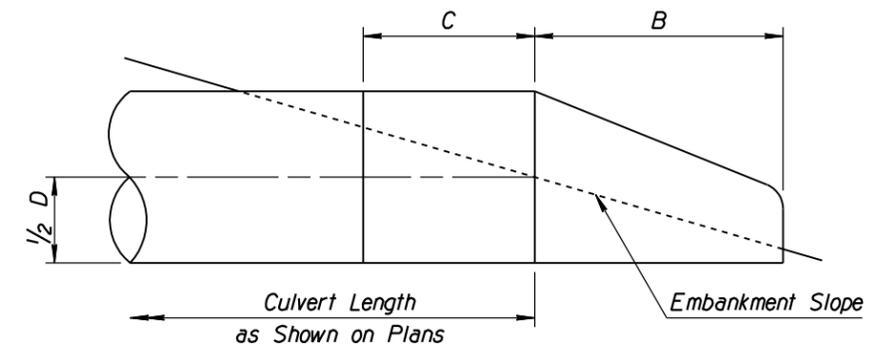
SECTION A-A



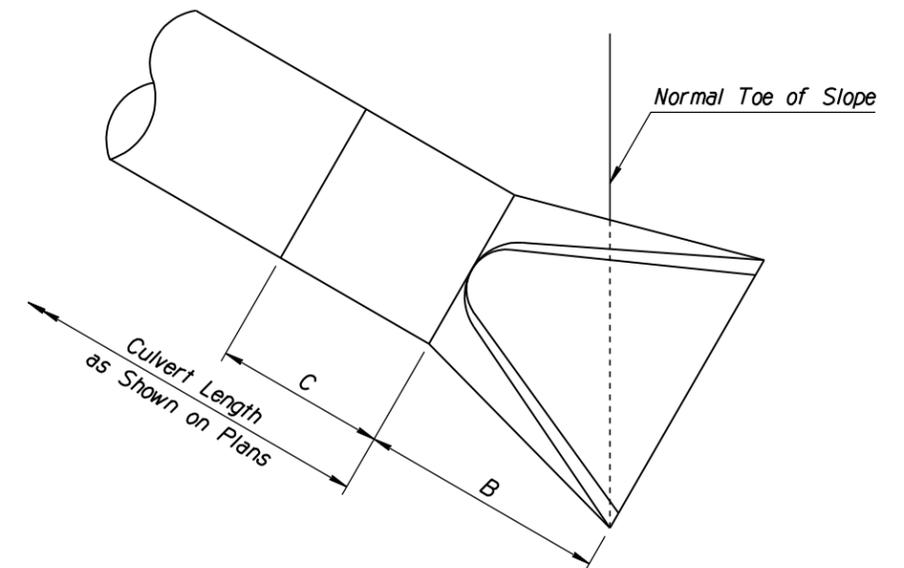
SPACING FOR MULTIPLE INSTALLATION



FRONT ELEVATION



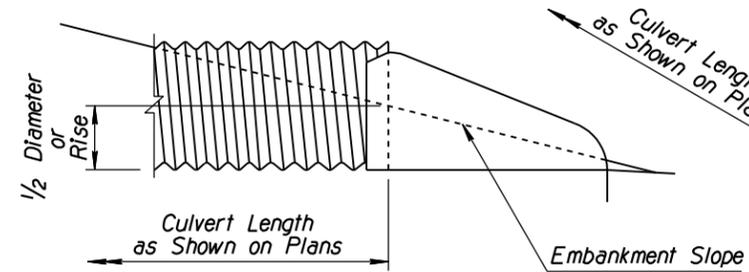
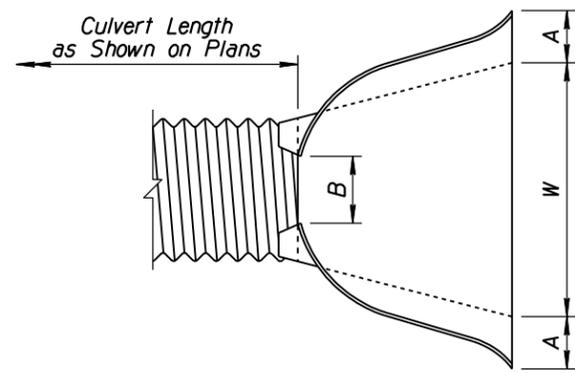
RIGHT-ANGLE CULVERT



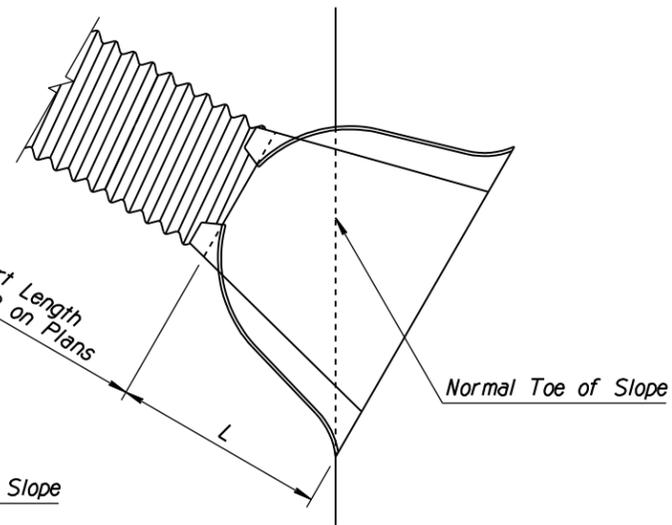
SKewed CULVERT

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PIPE REINFORCED CONCRETE END SECTION	DRAWING NO. C-13.20

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED DATA TABLE	BAF	6/98
2	REMOVED 'TYPE 5' REFERENCE	RLF	7/06
3			
4			



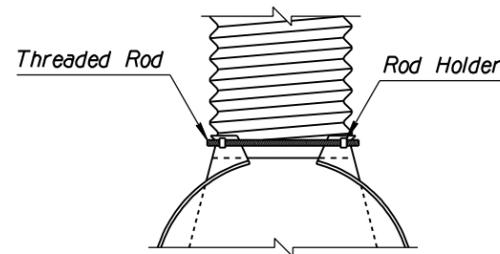
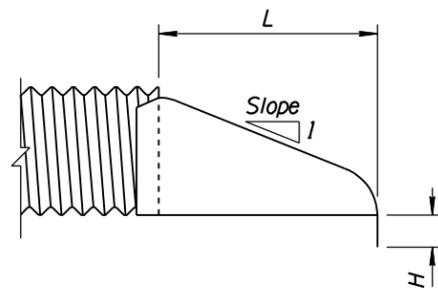
RIGHT ANGLE CULVERT



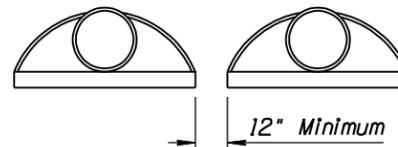
SKewed CULVERT

GENERAL NOTES

- The end section may be joined to the pipe or connector section by bolts, rivets, dimpled bands, slip-seam bands or threaded rod type fasteners. For allowable connector types, see table.
- The Type 1 connector is bolted or riveted. Maximum circumferential fastener spacing shall be 12" and with a minimum of 8 fasteners per joint. The Type 1 joint may be used with either annular or helical corrugations.
- Type 2 and 3 connectors shall only be used with annular or helical pipe with a requisite number of annular corrugations.
- Type 4 connector shall only be used with helical pipe.
- All steel end section components shall be galvanized.
- Toe of embankment shall be warped to match toe of skewed end section.
- A berm shall be added to abnormal projections per Std Dwg C-13.10.
- The foregoing applies to all cross-section configurations.

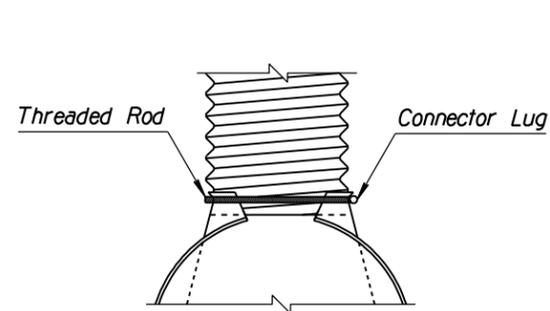


TYPE 2
THREADED ROD CONNECTIONS

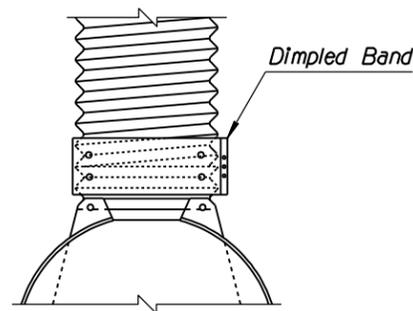


SPACING FOR MULTIPLE
INSTALLATION

Circular Pipe		Dimensions (In)					Approximate Slope	Connection Type
Diameter (In)	Gauge	A ±1	B Maximum	H ±1	L ±1 1/2	W ±2		
18	16	8	8	6	31	36	2 1/2	2, 3, 4
24	16	10	13	6	41	48	2 1/2	2, 3, 4
30	14	12 1/4	12 1/2	8	51	57	2 1/2	2, 4
36	14	14 1/2	12	9	60	72	2 1/2	2, 4
42	12	17	11	10 1/2	69	84	2 1/2	3



TYPE 3
THREADED ROD CONNECTIONS

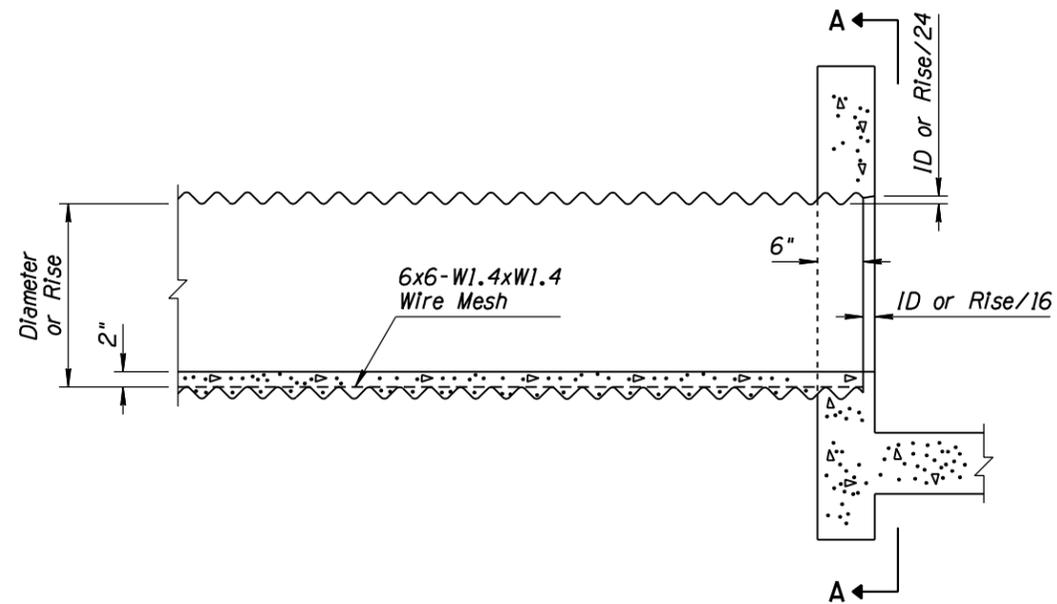


TYPE 4
DIMPLED BAND CONNECTIONS

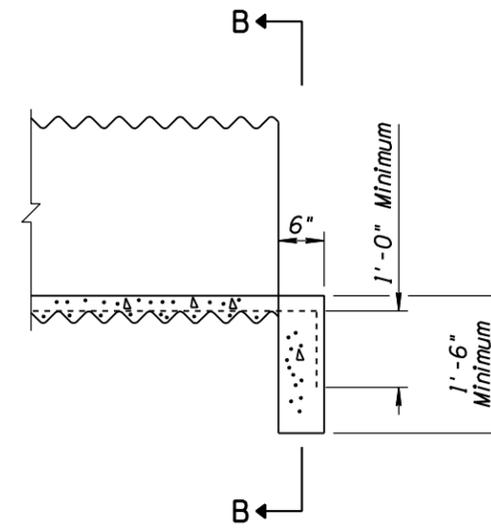
Pipe Arch			Dimensions (In)					Approximate Slope	Connection Type
Span (In)	Rise (In)	Gauge	A ±1	B Max	H ±1	L ±1 1/2	W ±2		
21	15	16	7 1/2	11	6	24	36	2 1/2	2, 3, 4
28	20	16	8	16	6	32	48	2 1/2	2, 3, 4
35	24	14	10	16	6	39	60	2 1/2	2, 4
42	29	14	12	12	7 1/2	46	75	2 1/2	2, 4
49	33	12	13 1/2	20	9	53	84	2 1/2	3

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PIPE CORRUGATED METAL END SECTION	DRAWING NO. C-13.25

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	DELETED GENERAL NOTE 7	RLF	9/04
2			
3			
4			



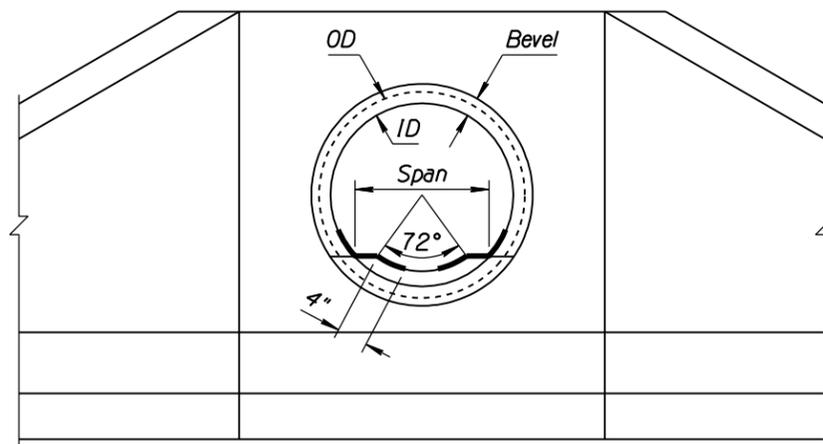
HEADWALL INSTALLATION
(SEE STANDARD DRAWING B-11.12)



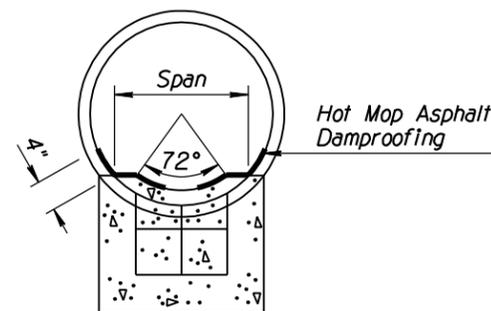
PROJECTING INSTALLATION

- ### GENERAL NOTES
1. For lateral dimensions of invert paving, use 72° control for CMP and span for CMPA.
 2. Paving shall be scored laterally at 1'-6" minimum intervals along the length of the pipe.
 3. Use bevel on inlet headwall only.
 4. Wire mesh shall be fastened or welded to corrugation crests at intervals and in a manner approved by the Engineer. Laps shall be 6" minimum.
 5. Paving shall not be placed until backfilling is completed.
 6. Concrete shall be Class B.

①



SECTION A-A



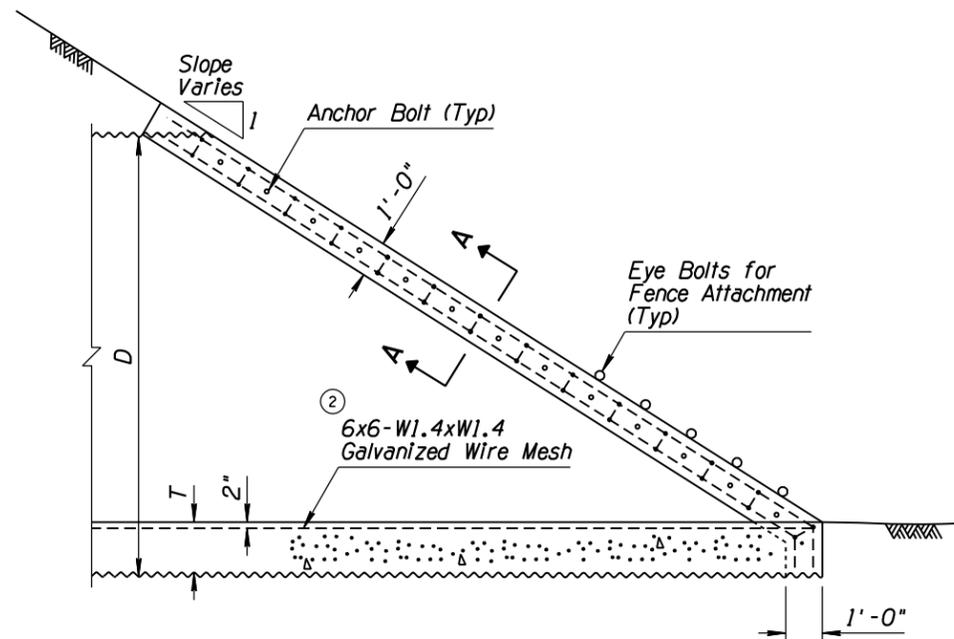
SECTION B-B

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PIPE AND PIPE ARCH CORRUGATED METAL CONCRETE INVERT PAVING	DRAWING NO. C-13.30

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED TABLE & MEASUREMENT FORMAT	RLF	9/04
2	REVISED WIRE MESH DESIGNATION	RLF	9/04
3			
4			

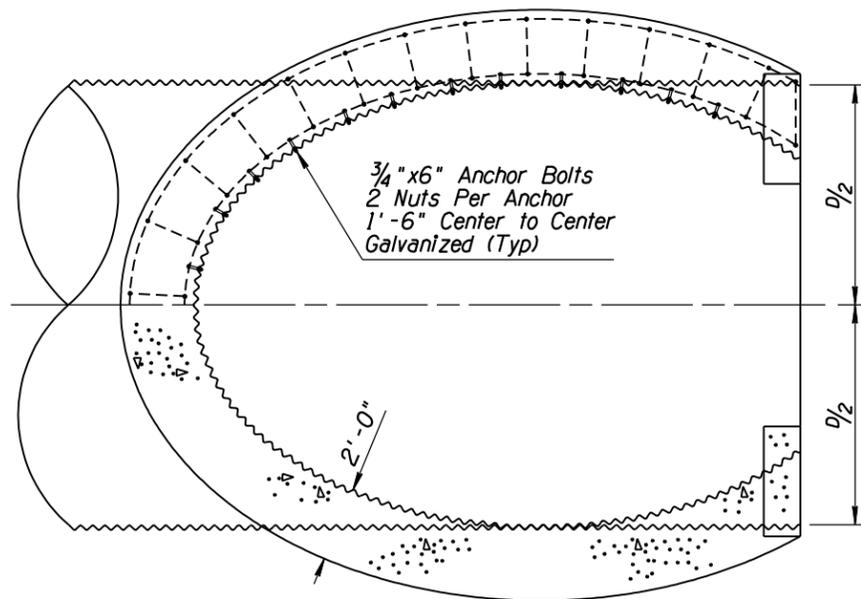
GENERAL NOTES

1. This end treatment is to be used only for those cattle and/or vehicle passes not used for drainage.
2. All concrete shall be Class B. An optional 12" AB invert paving base course and 6" of concrete may be used in the 144" diameter pipe.
3. Anchor bolts shall be retained in a horizontal position during pour with final tightening a minimum of 7 days after pour.
4. Pipe shall be backfilled before concrete bond beam is constructed. Minimum forming may be used.
5. Edges of wire mesh shall be fastened or welded to corrugation crests at intervals and in a manner approved by the Engineer. Laps shall be a minimum of 6".
6. For installation normal to roadway centerline only.

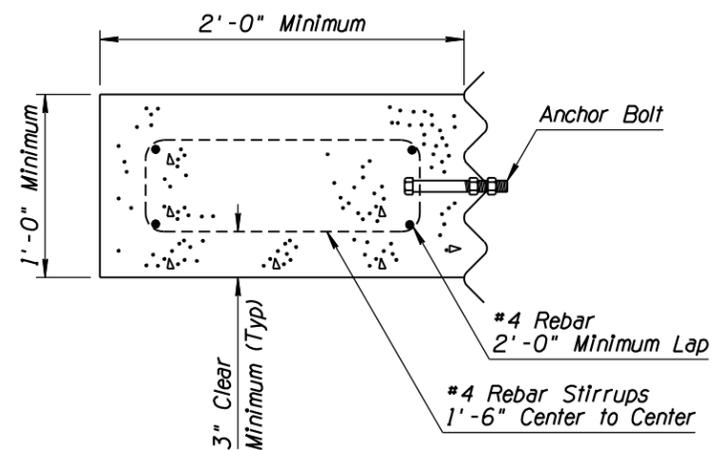


LONGITUDINAL SECTION

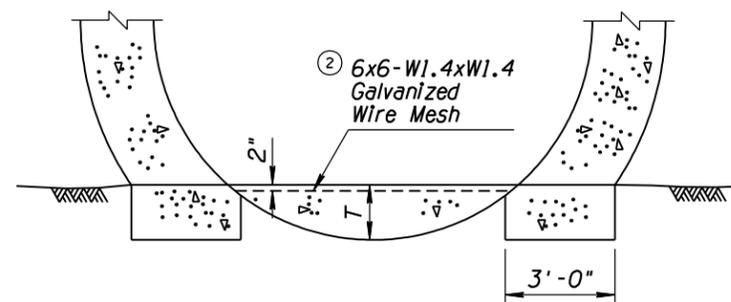
	D (In)	T (In)
Combination Vehicle and Cattle Pass	144	18
Cattle Pass Only	120	6



PLAN NORMAL TO SLOPE



SECTION A-A



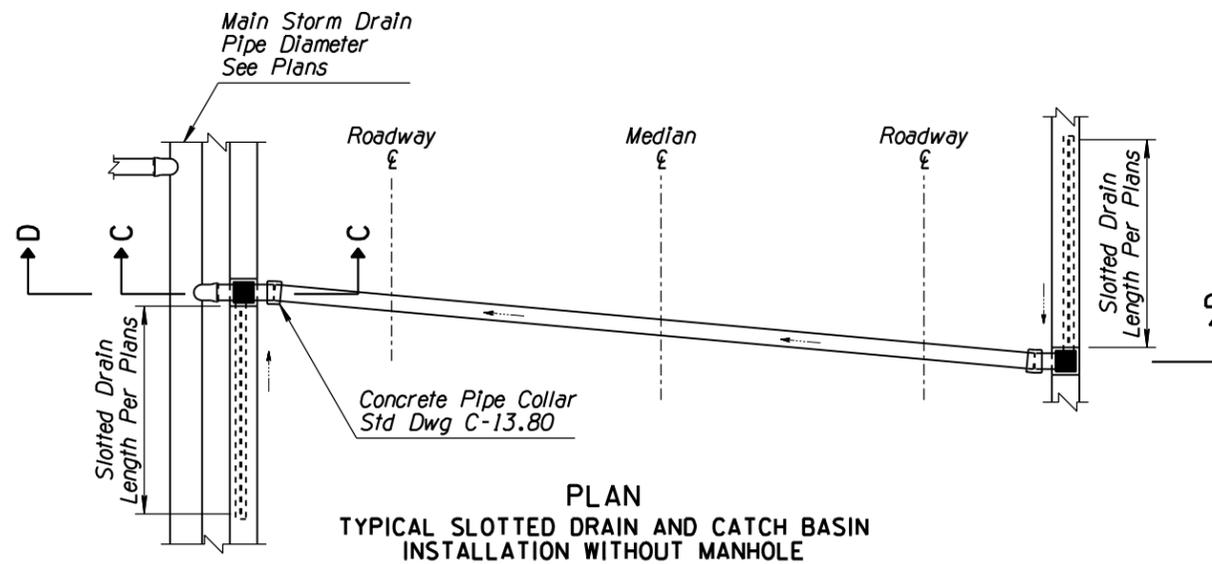
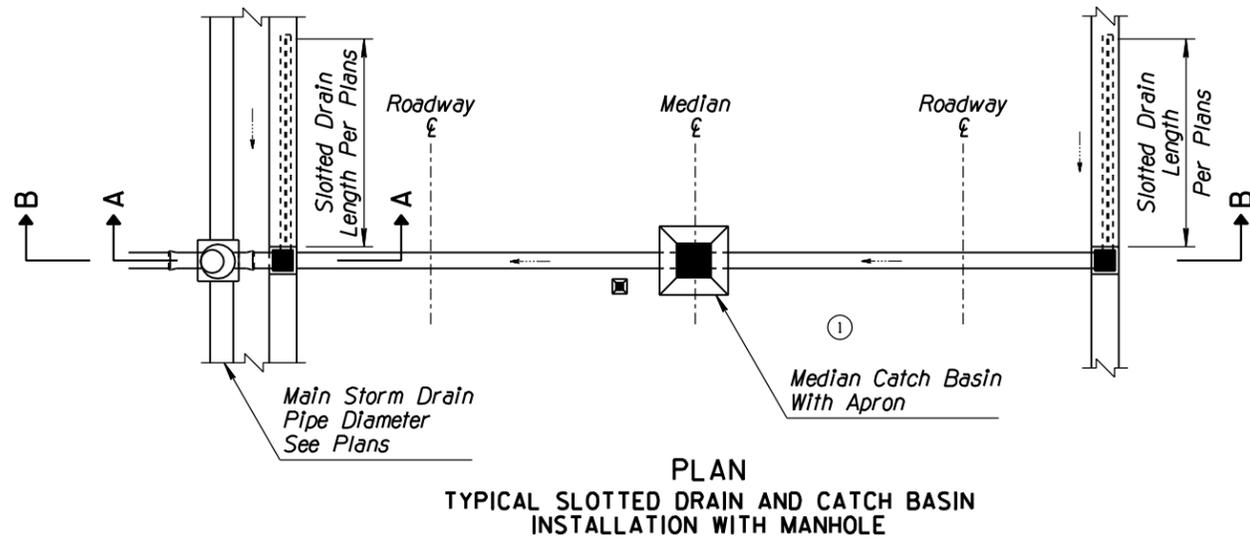
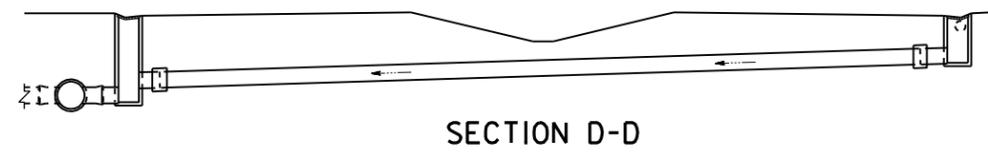
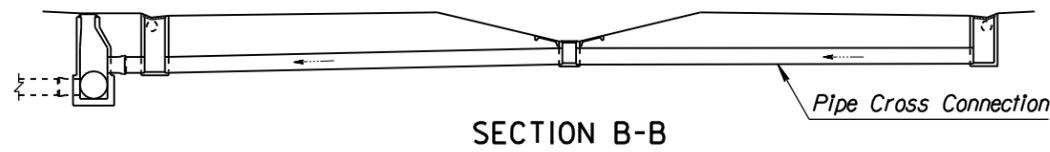
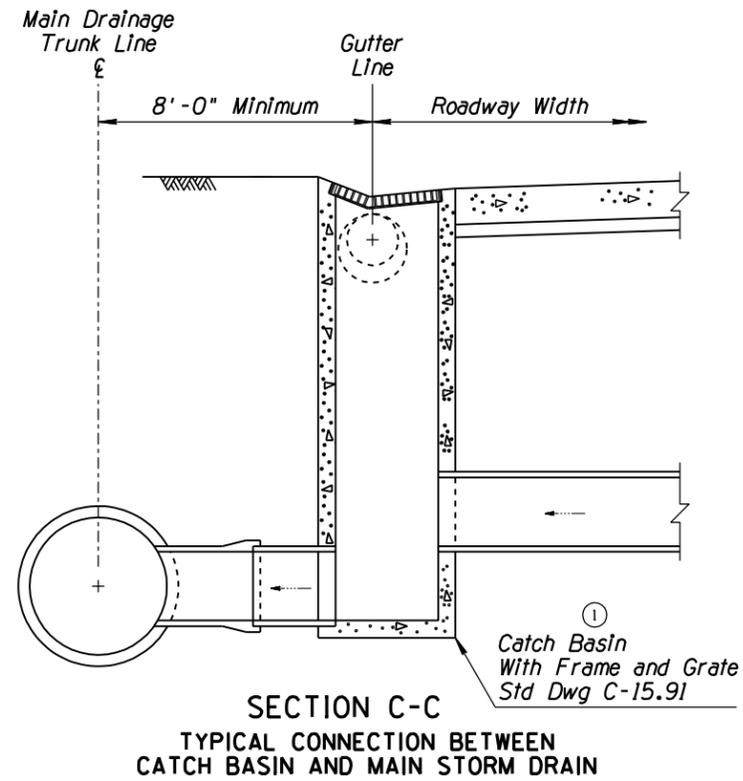
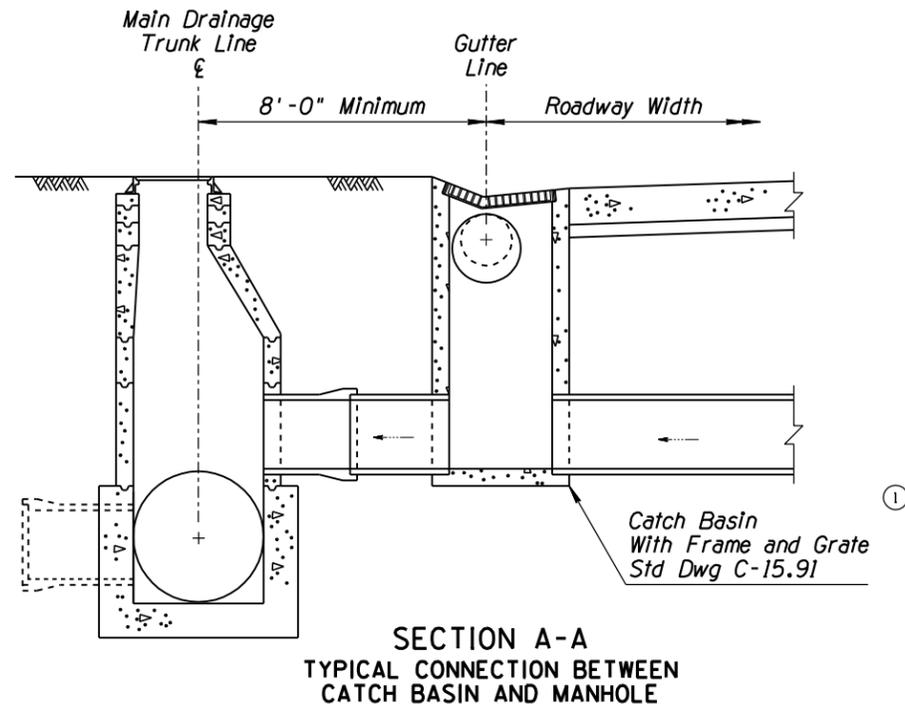
END ELEVATION

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PIPE CATTLE/VEHICLE PASS MITERED END TREATMENT	DRAWING NO. C-13.55

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED CATCH BASIN REFERENCE	RLF	9/04
2			
3			
4			

GENERAL NOTES

1. Pipe collars are not required where direct catch basin connections can be made within 7° of a normal 90° installation, either horizontally or vertically.
2. "T" connections direct to the main drainage trunk line should be avoided and used only where manhole connections are impractical.

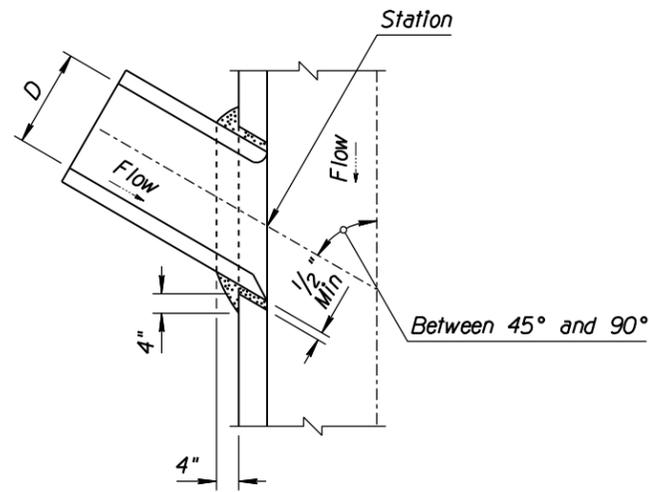


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SLOTTED DRAIN INSTALLATION DETAILS	DRAWING NO. C-13.65

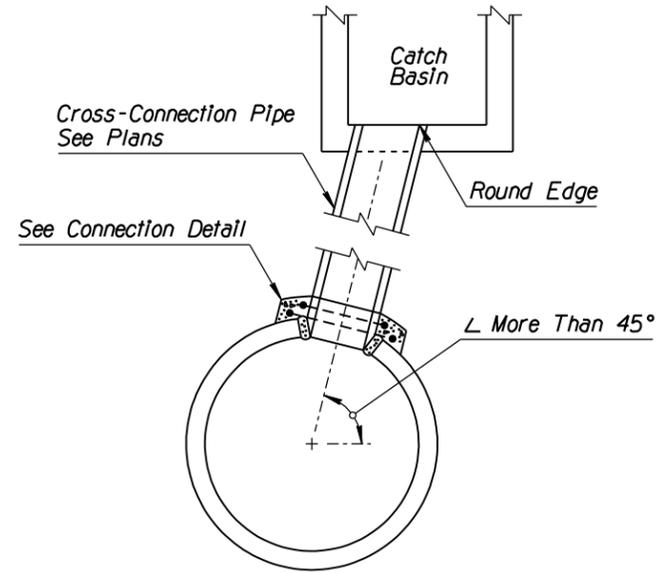
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REARRANGED STD DWG	PNB	7/94
2			
3			
4			

GENERAL NOTES

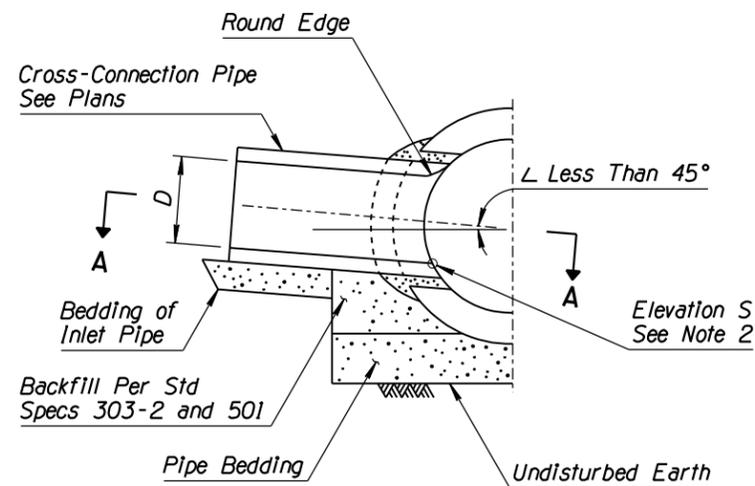
1. Prefabricated tees shall be used when the outside diameter of the inlet pipe exceeds one half of the inside diameter of the main storm drain, except when the manholes are shown on plans.
2. Centerline of the inlet pipe shall intersect the centerline of the main storm drain except when elevation "S" is shown on plans.
3. If \angle is 45° or less, Type 1 connection shall be used.
4. All concrete shall be Class B.
5. All rebar shall conform to Std Specs 1003-1 & 2.
6. Rebar shall have 2" minimum cover.



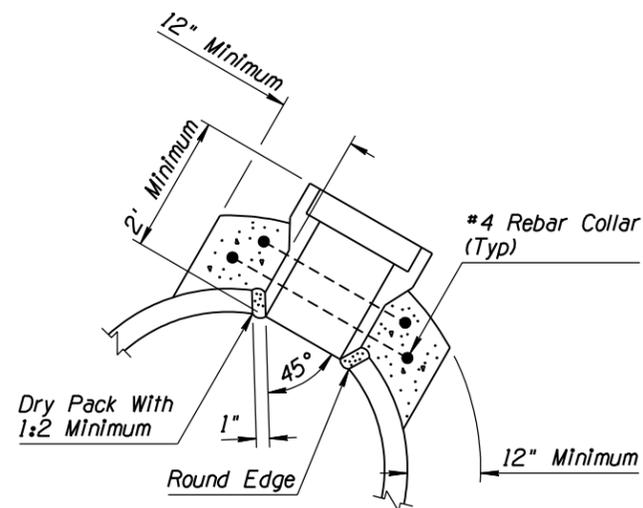
SECTION A-A



CATCH BASIN ABOVE STORM DRAIN
TYPE 2



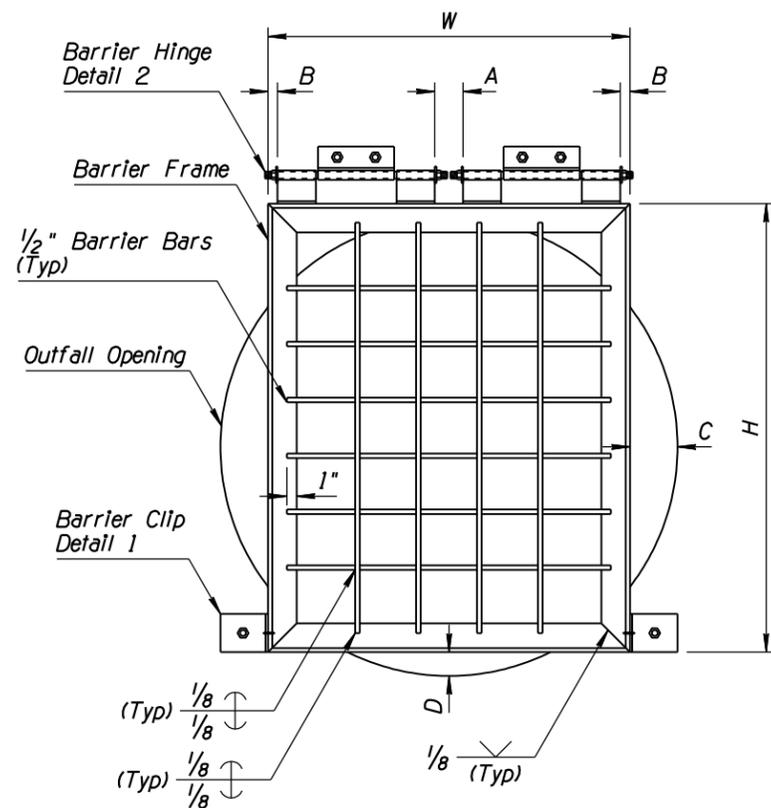
SIDE INLET
TYPE 1



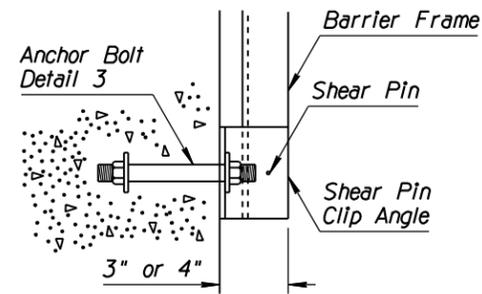
CONNECTION DETAIL
TYPE 2

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	① STORM DRAIN CONNECTION DETAILS	DRAWING NO. C-13.70

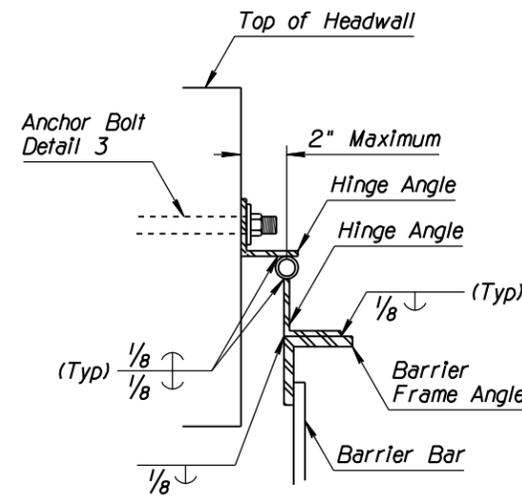
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STANDARD	RLF	9/04
2	MODIFIED TABLE MEASUREMENT FORMAT	RLF	9/04
3	MODIFIED STEEL QUANTITIES	RLF	9/04
4			



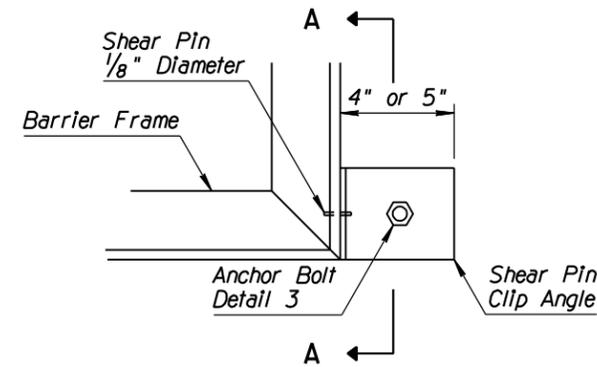
PIPE ACCESS BARRIER FRONT ELEVATION



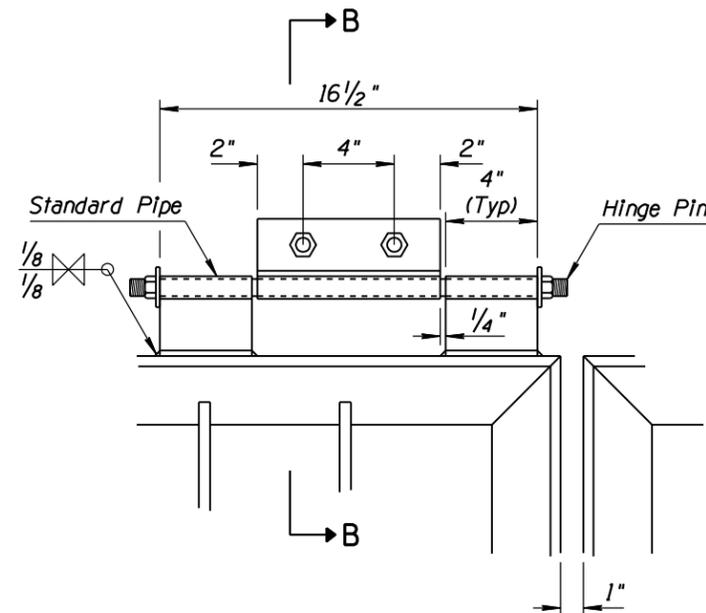
SECTION A-A



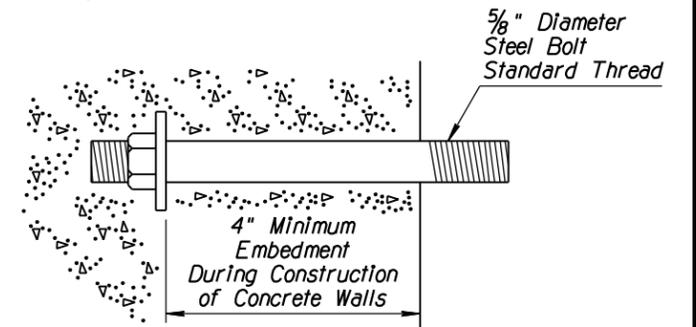
SECTION B-B



DETAIL 1



DETAIL 2



DETAIL 3

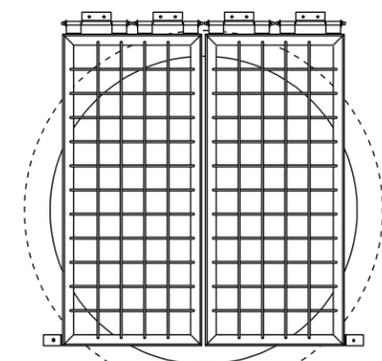
- ### GENERAL NOTES
- All shear pin angles shall fit snug and true to face. Cover with waterproof grease prior to installation of pin.
 - Shear pin holes in the angle shall be drilled for a tight fit of the pins.
 - Both ends of the shear pins shall be peened after installation.
 - Shear pin material shall be commercially pure aluminum wire alloy 1100, Temper O, Federal Spec QQ-A411.
 - Galvanize all ferrous parts after fabrication.
 - Frame and hinge angles shall have the outstanding legs out.
 - All steel shall be in accordance with ASTM A36.
 - Barrier bars shall be equally spaced.
 - Hinge pin material shall be bolt stock and threaded on both ends so nut and lock washer are flush with the lower angle. Cover pin with waterproof grease prior to installation. Upset or damage exposed threads after installation.
 - All welding shall be in accordance with Std Spec 604-3.06.

②

ACCESS BARRIER GATE DIMENSION SCHEDULE

Outfall Pipe ID (In)	Number of Barrier Gates	Frame Angles	Shear Pin Clip Angles	Hinge Pin Diameter (In)	Hinge Angles	Hinge Std Pipe Diameter (In)	Number & Length of Vertical Bars	Number & Length of Horizontal Bars	H (In)	W (In)	A (In)	B (In)	C (In)	D (In)	③ Structural Steel (Lbs)
30	1	2 x2 x1/4	4 x4 x1/4	1/2	2 x2 x1/4	3/4	4-31	4-34	33	36	3	0	-3	2	80
36	1	2 x2 x1/4	4 x4 x1/4	1/2	2 x2 x1/4	3/4	4-31	4-34	33	36	3	0	0	3.5	80
42	1	2 x2 x1/4	4 x4 x1/4	1/2	2 x2 x1/4	3/4	4-41	5-34	43	36	3	0	3	0.5	90
48	1	3 x3 x7/16	5 x3 x1/4	3/4	2 1/2 x2 1/2 x1/4	1	4-46	6-34	50	38	3	1	5	1	180
54	1	3 x3 x7/16	5 x3 x1/4	3/4	2 1/2 x2 1/2 x1/4	1	5-52	7-40	56	44	5	3	5	2	205
60	1	3 x3 x7/16	5 x3 x1/4	3/4	2 1/2 x2 1/2 x1/4	1	6-58	8-46	62	50	9	4	5	3	235
66	1	3 x3 x7/16	5 x3 x1/4	3/4	2 1/2 x2 1/2 x1/4	1	7-64	9-52	68	56	11	6	5	4	265
72	2	3 x3 x7/16	5 x3 x1/4	3/4	2 1/2 x2 1/2 x1/4	1	4-69 *	9-34 *	73	38	3	1	-2.5	5	445
78	2	3 x3 x7/16	5 x3 x1/4	3/4	2 1/2 x2 1/2 x1/4	1	4-75 *	10-34 *	79	38	3	1	0.5	5	470
84	2	3 x3 x7/16	5 x3 x1/4	3/4	2 1/2 x2 1/2 x1/4	1	4-81 *	11-34 *	85	38	3	1	3.5	5	495
90	2	3 x3 x7/16	5 x3 x1/4	3/4	2 1/2 x2 1/2 x1/4	1	4-87 *	12-36 *	91	40	3	2	4.5	5	525
96	2	3 x3 x7/16	5 x3 x1/4	3/4	2 1/2 x2 1/2 x1/4	1	5-93 *	13-39 *	97	43	4	3	4.5	5	580

* Per Gate



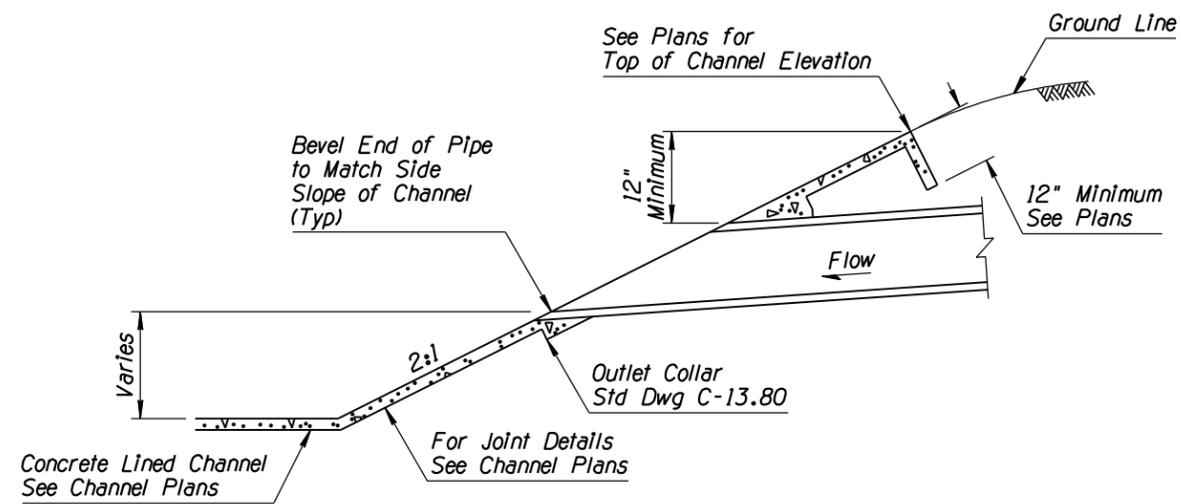
INSTALLATION DETAIL FOR DOUBLE GATES

APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	STORM DRAIN OUTLET BARRIER GATE ①	DRAWING NO. C-13.75 ①

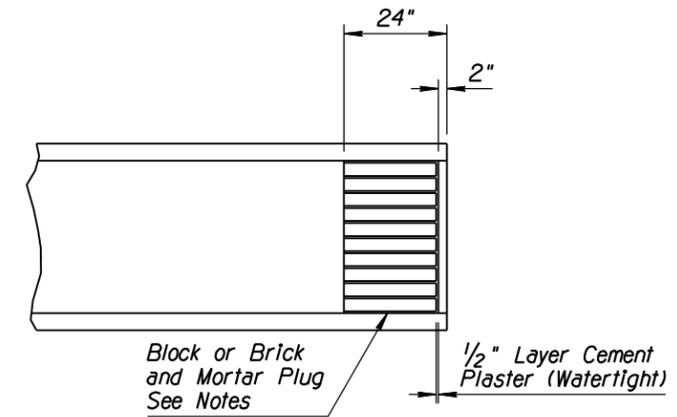
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STANDARD FROM C-13.75, SHEET 2	RLF	9/04
2			
3			
4			

GENERAL NOTES

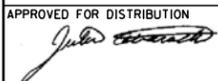
1. Compact soil at end of pipe plug to 95% of maximum density.
2. If depth of cover is less than 5' or greater than 10', increase plug thickness a minimum of 4".



DRAINAGE OUTLET INTO CHANNEL



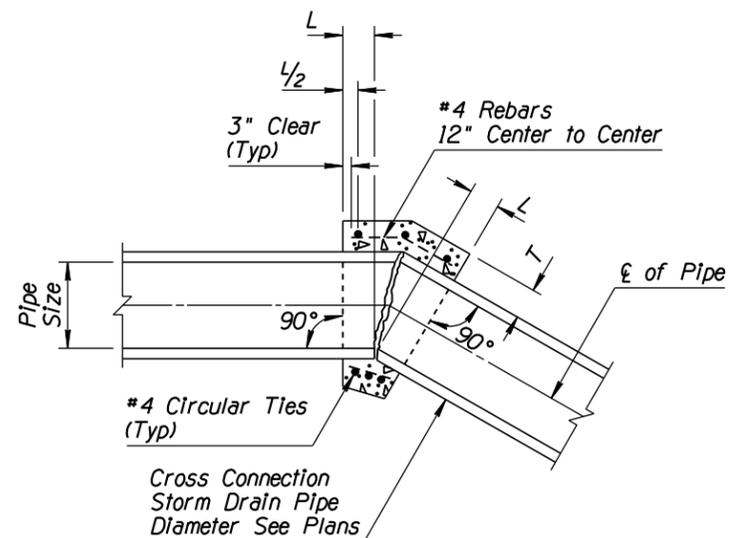
STORM DRAIN PLUG

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	STORM DRAIN OUTLET AND STORM DRAIN PLUG ①	DRAWING NO. C-13.76 ①

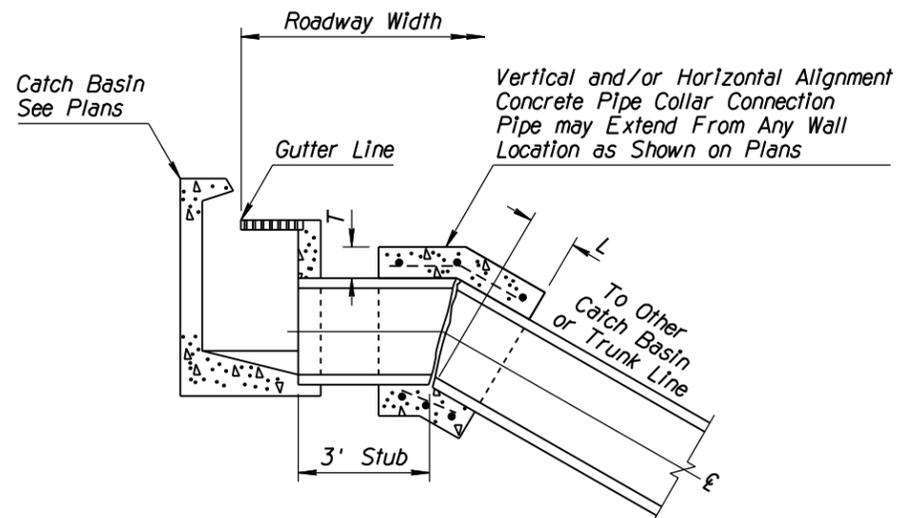
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED TABLE VALUES	RLF	9/04
2	MODIFIED GENERAL NOTE 2	RLF	9/04
3	ADDED CALLOUT	RLF	9/04
4			

GENERAL NOTES

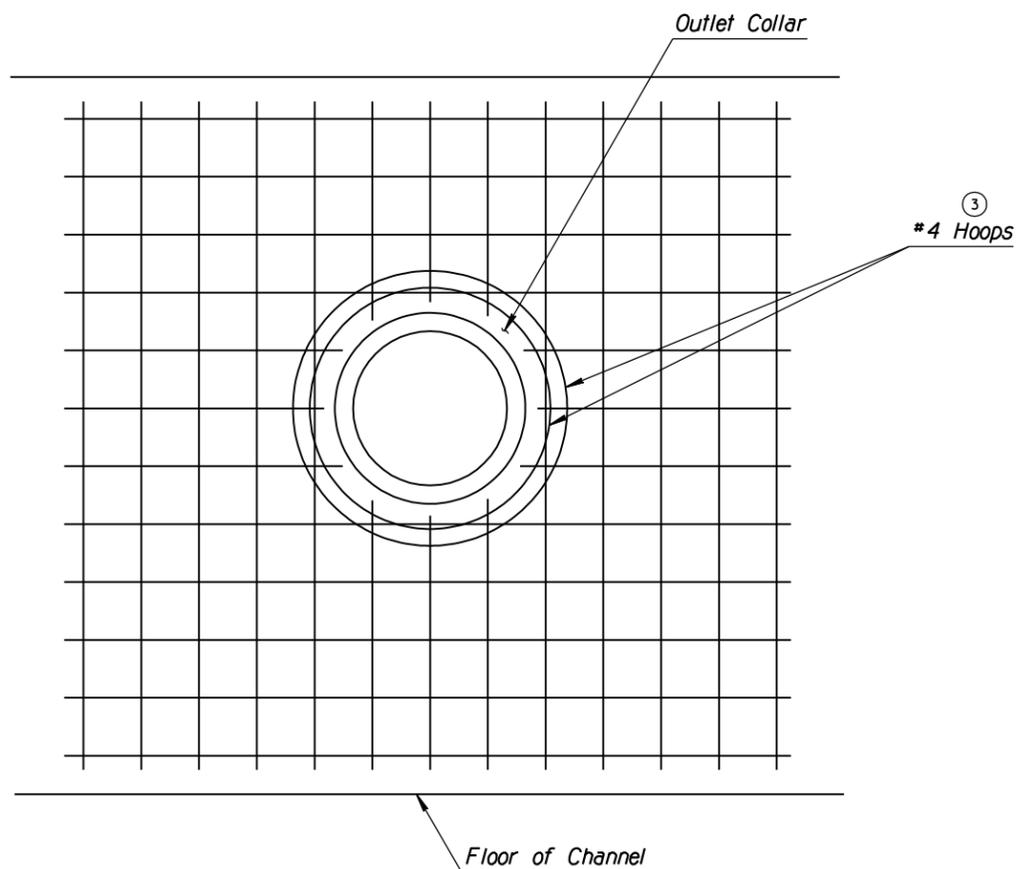
- All concrete shall be Class B.
- All rebar shall conform to Std Spec 1003-1.2.
- All rebar shall have 3" minimum clear cover.
- A concrete collar shall be required where pipes of different diameters or materials are joined or where the design change in alignment or grade exceeds that allowed for a standard joint.
- When pipes of different diameters are joined with a concrete collar, "L" & "T" shall be those of the larger diameter.
- The diameter of the circular ties shall be the outside diameter of pipe + T.
- Pipe ends to be trimmed such that the maximum distance between pipes at any point is 2".



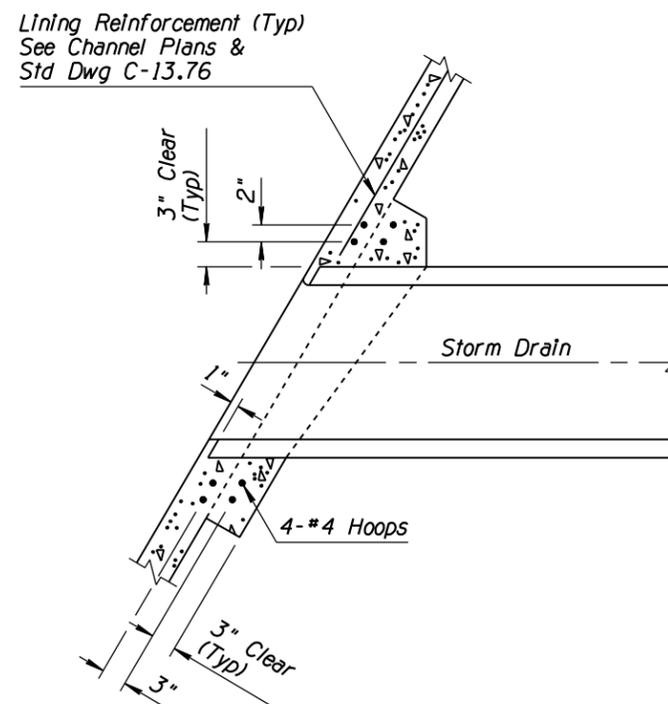
CONCRETE PIPE COLLAR



TYPICAL LATERAL CONNECTIONS TO CATCH BASINS WITH CONCRETE COLLARS



OUTLET COLLAR DETAIL

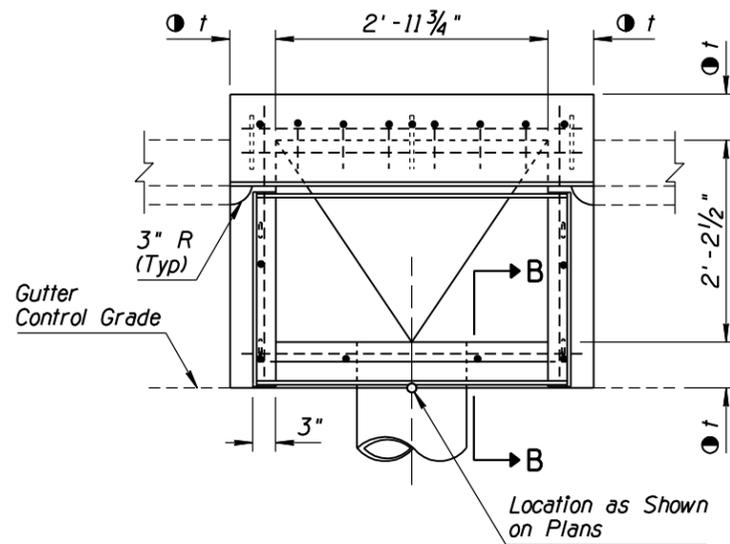


①

PIPE COLLAR TABLE			
Pipe Size (In)	L (Ft-In)	T (In)	#4 Ties
12	1-0	4	3
18	1-0	5	3
24	1-0	6	3
30	1-6	8	3
36	1-6	8	3
42	1-9	10	4
48	1-9	10	4
52	1-9	10	4
60	1-9	11	4
66	2-0	11	5
72	2-0	14	5
78	2-0	14	5
84	2-3	16	5
96	2-3	16	5

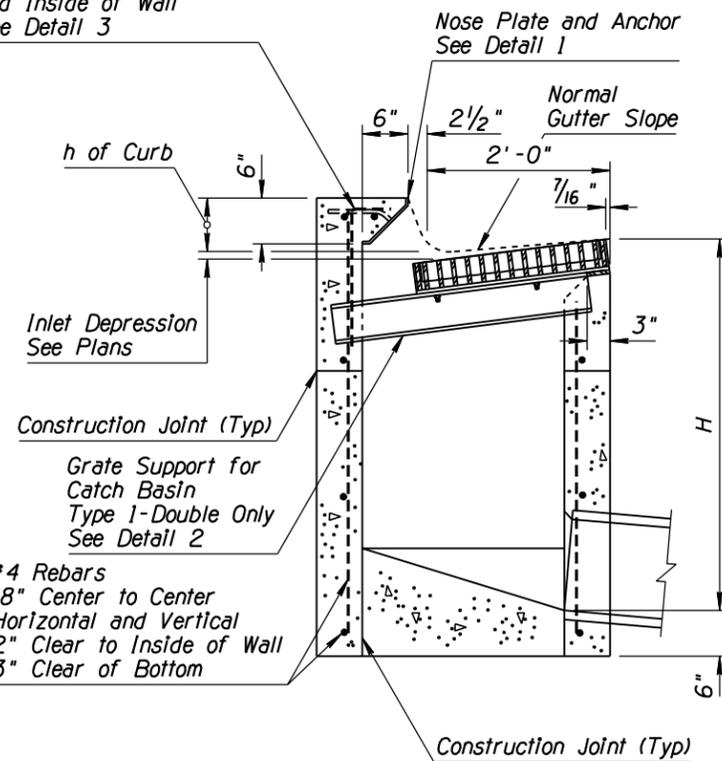
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PIPE COLLAR DETAILS	DRAWING NO. C-13.80

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED NOTE # 5	RLF	7/01
2	REMOVED UNIT OF MEASURE FROM WELD SPECIFICATION	RLF	4/06
3			
4			

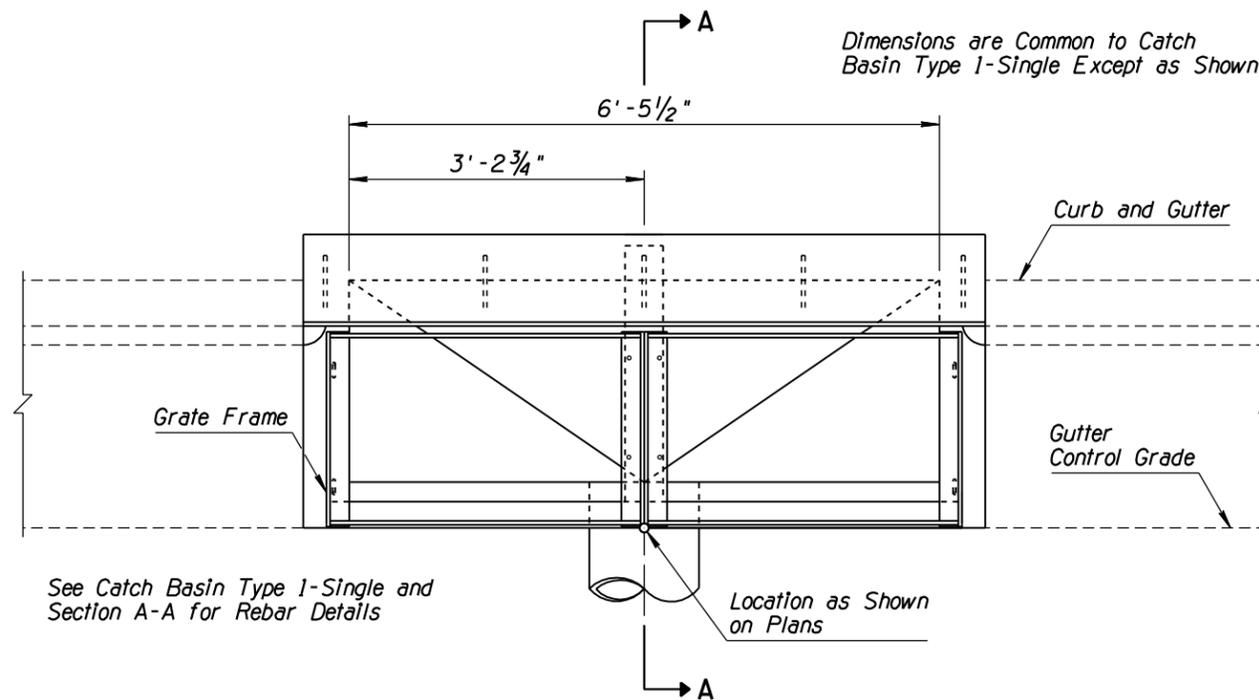


PLAN - CATCH BASIN TYPE 1 - SINGLE

#3 Rebars
6" Center to Center
2" Clear to Top of Nose
and Inside of Wall
See Detail 3



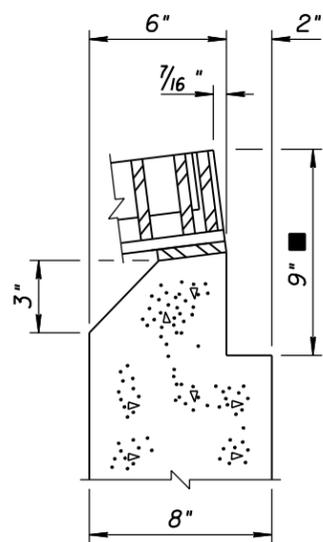
SECTION A-A



PLAN - CATCH BASIN TYPE 1 - DOUBLE

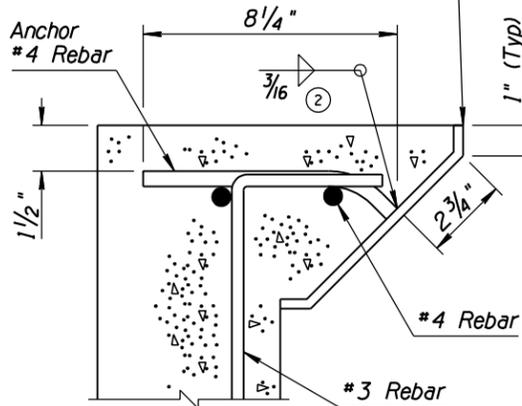
See Catch Basin Type 1-Single and Section A-A for Rebar Details

Dimensions are Common to Catch Basin Type 1-Single Except as Shown

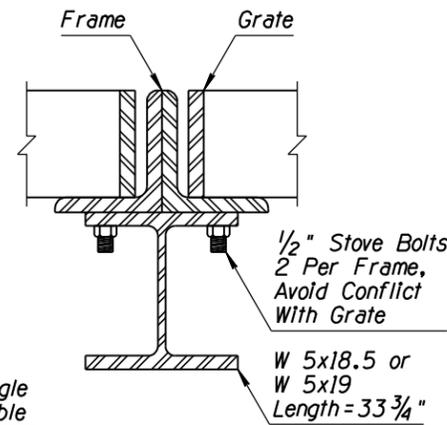


SECTION B-B
USE THIS SECTION
WHEN t=8"

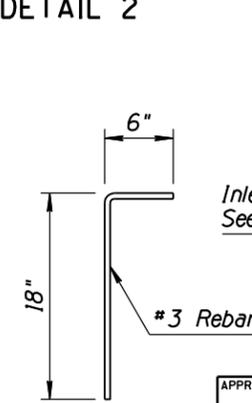
Nose Plate
8" x 3/16" Bent Plate
Length: 2'-11 3/4" + 2t for CB Type 1-Single
6'-5 1/2" + 2t for CB Type 1-Double



DETAIL 1



DETAIL 2

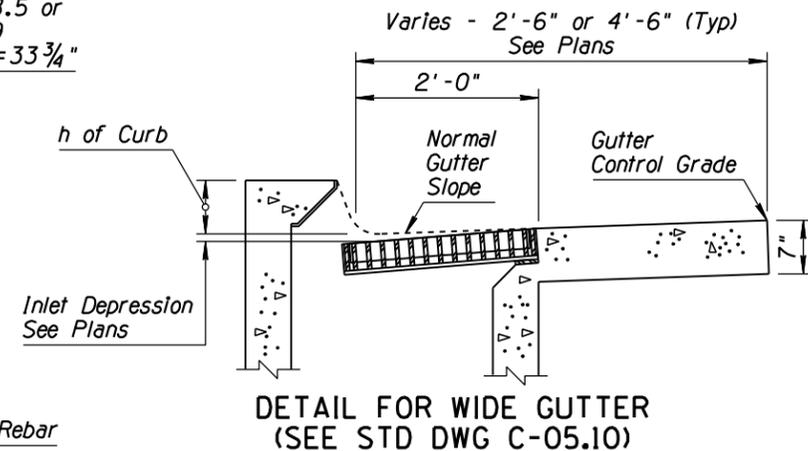


DETAIL 3

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN TYPE 1	DRAWING NO. C-15.10

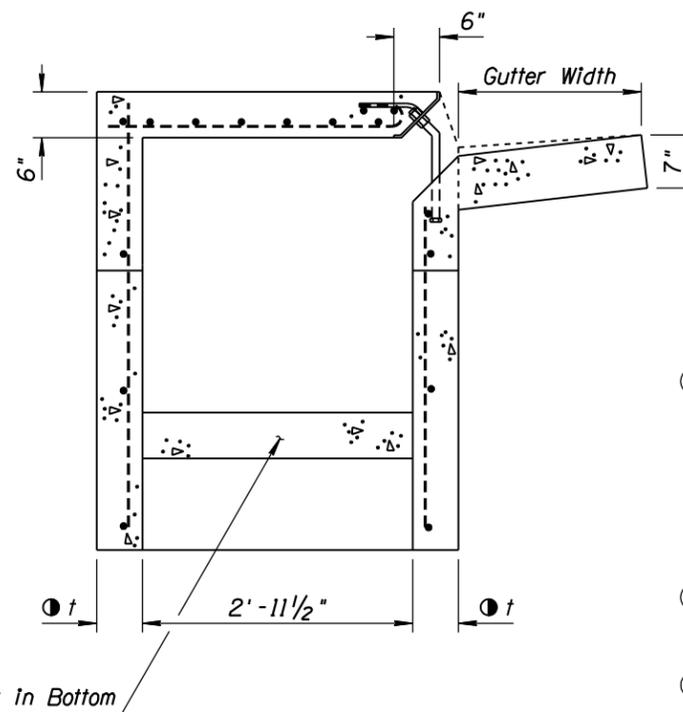
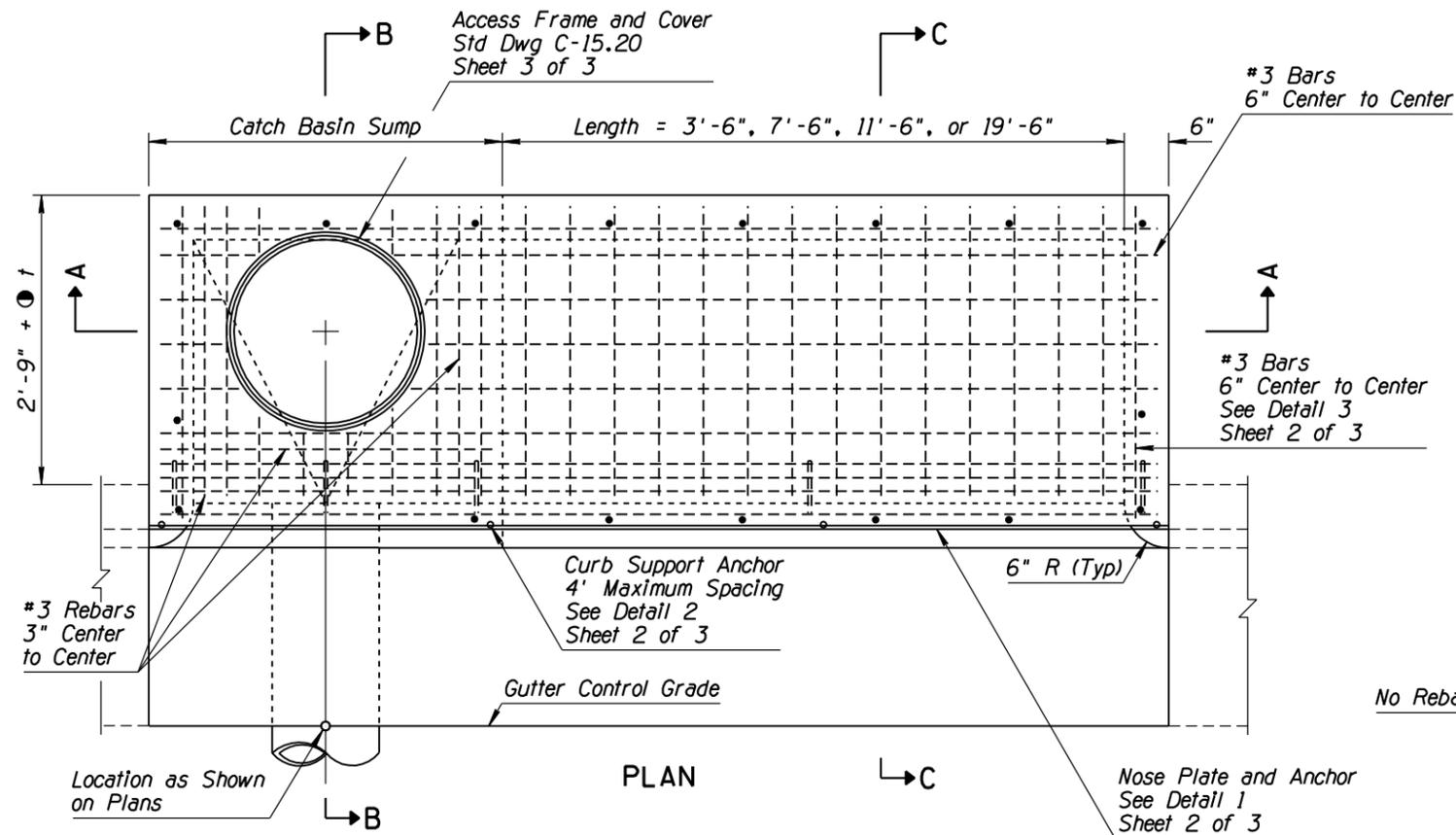
GENERAL NOTES

- Catch basin used at roadway sag.
- Pipes can be placed in any wall.
- Sump floor shall be a wood troweled finish with a minimum 4:1 slope in all directions to outlet.
- All rebar shall be ASTM A36.
- All welding shall be in accordance with Std Spec 604-3.06.
- Grate, frame, beam and nose plate shall be given one shop coat of Number 1 paint.
- All concrete shall be Class B.
- Construction joints and drains shall be placed to meet field conditions. See Std Dwg C-15.70.
- Any specified inlet depression shall be warped to opening according to Std Dwg C-15.70.
- Silicone sealant shall be placed between the grate frame and PCCP, recessed 1/4" from the pavement surface.
- Curb opening areas, sq ft, for Type 1-single and Type 1-double equal 0.25 and 0.54, respectively, for each inch of "h" + inlet depression - 2.35". See Std Dwg C-15.70.
- See Std Dwg C-15.50 for grate and frame details and grate opening areas.
- t = 6" when H is 8' or less
 - 8" when H is greater than 8'
 - See Section B-B
 - = 9" when pavement is AC
 - Match pavement thickness when pavement is PCCP

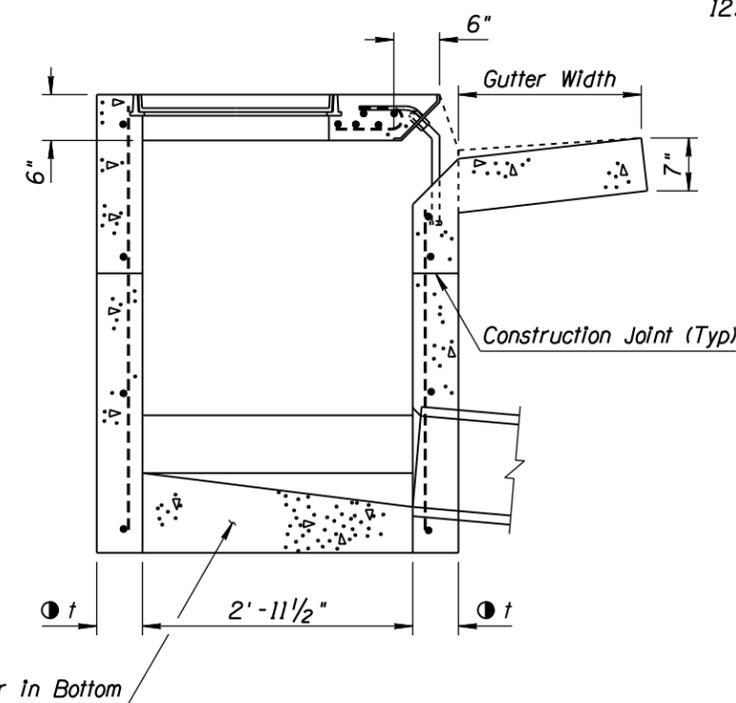


DETAIL FOR WIDE GUTTER
(SEE STD DWG C-05.10)

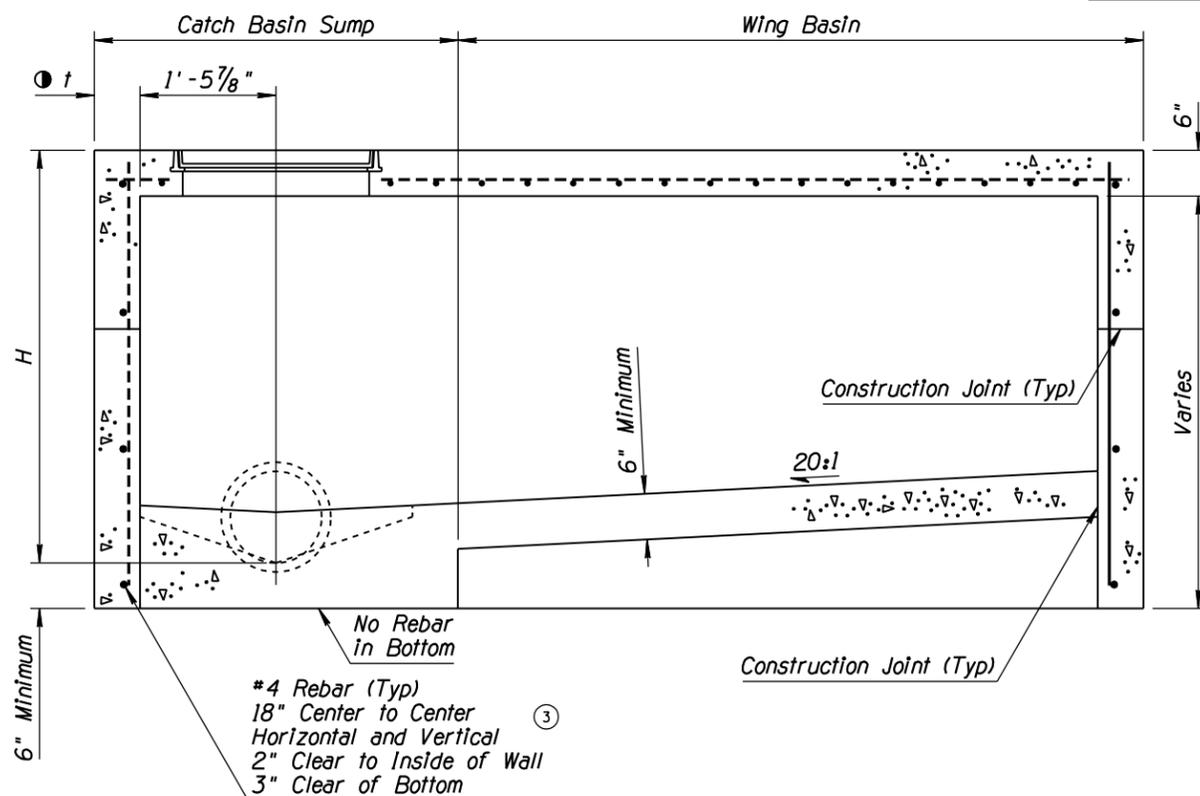
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED NOTES 5, 10 & 11	RLF	9/04
2	DELETED GENERAL NOTE 9	RLF	9/04
3	ADDED CALLOUT	RLF	9/04
4	REVISED SHEET NUMBER REFERENCE	RLF	4/06



SECTION C-C



SECTION B-B



SECTION A-A

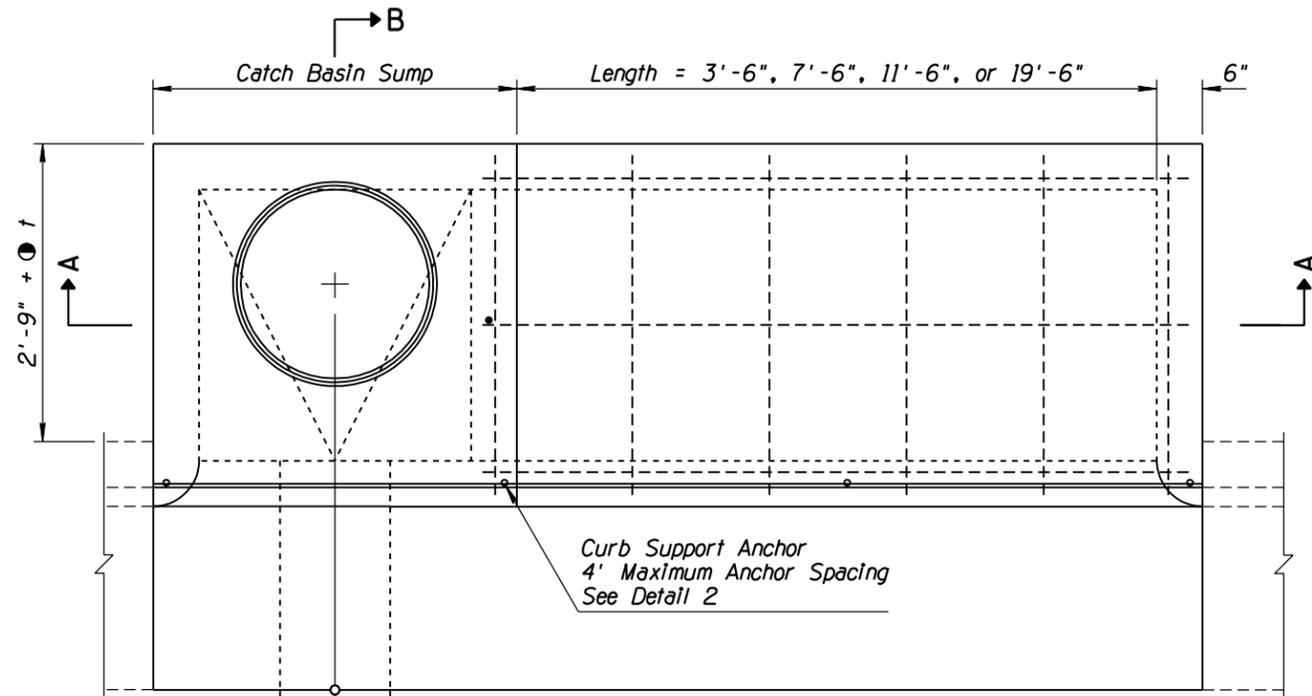
USE THIS SECTION WHEN H=5' OR LESS

GENERAL NOTES

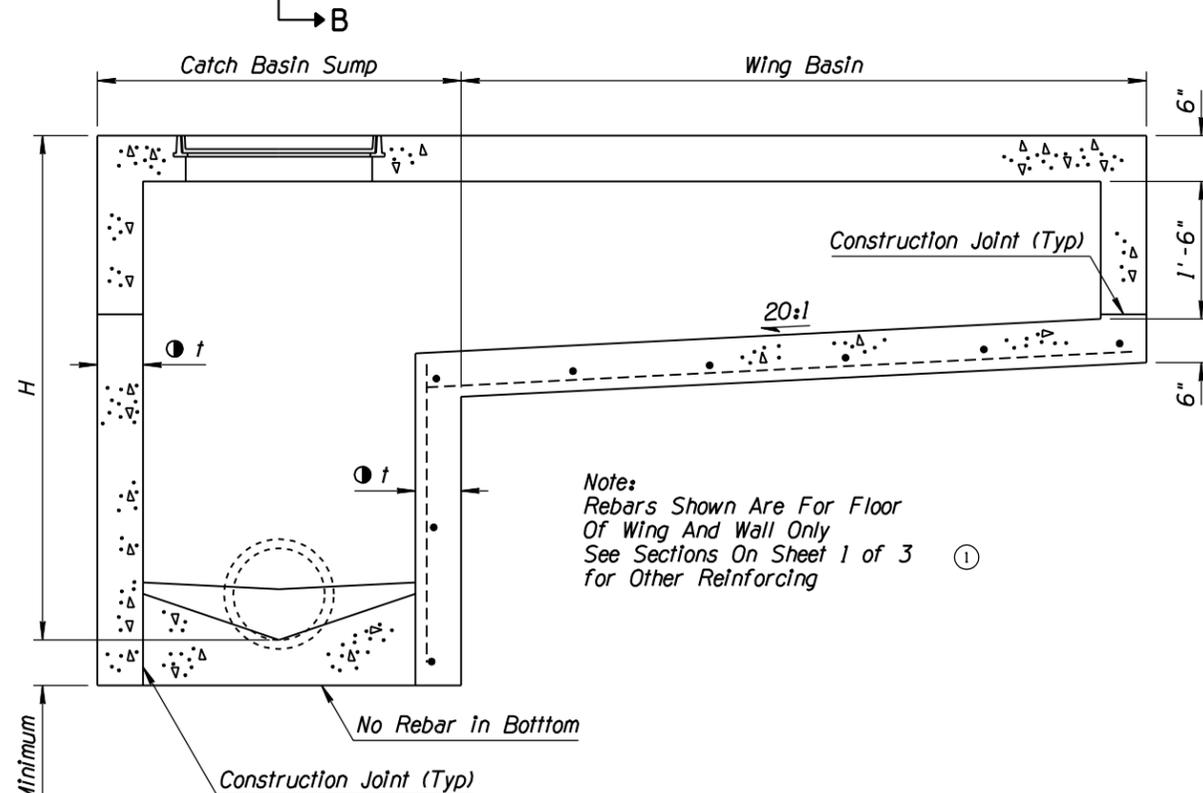
- Catch basin can be used on grade or at roadway sag.
- Catch basin has three configurations:
 Sump Only-Sump portion of catch basin (See Detail 4, Sheet 2 of 3).
 Single Wing (Illustrated)-Sump with wing basin upstream.
 Double Wing-Sump with symmetrical wing basins each side.
- Pipes can be placed in any wall except wall adjacent to wing basin.
- Floor shall be a wood troweled finish. Slope of the sump portion of the catch basin along the axis of the pipe shall be 4:1.
- Any specified inlet depression shall be warped to opening according to Std Dwg C-15.70.
- All rebar shall be ASTM A36.
- Nose plate, access frame and cover shall be given one shop coat of Number 1 paint.
- All concrete shall be Class B.
- Curb opening area (sq ft) per inch of curb "h" + gutter depression = curb opening length (ft) x 0.0833.
- All welding shall be in accordance with Std Spec 604-3.06.
- Construction joints and drains shall be placed to meet field conditions. See Std Dwg C-15.70.
- t = 6" when H is 8' or less.
8" when H is greater than 8'.

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN TYPE 3	DRAWING NO. C-15.20 Sheet 1 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SHEET NUMBER REFERENCE	RLF	5/07
2			
3			
4			



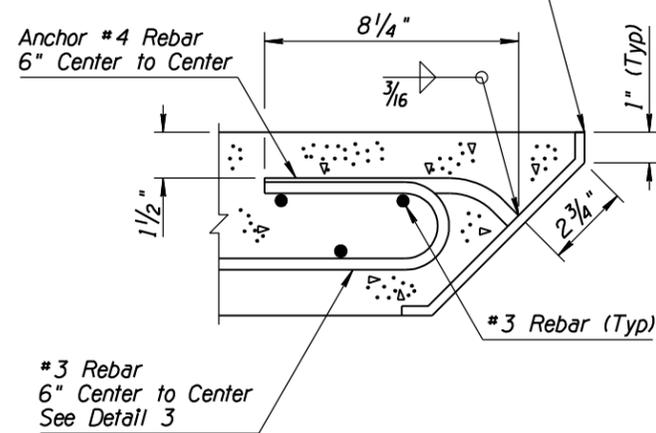
PLAN



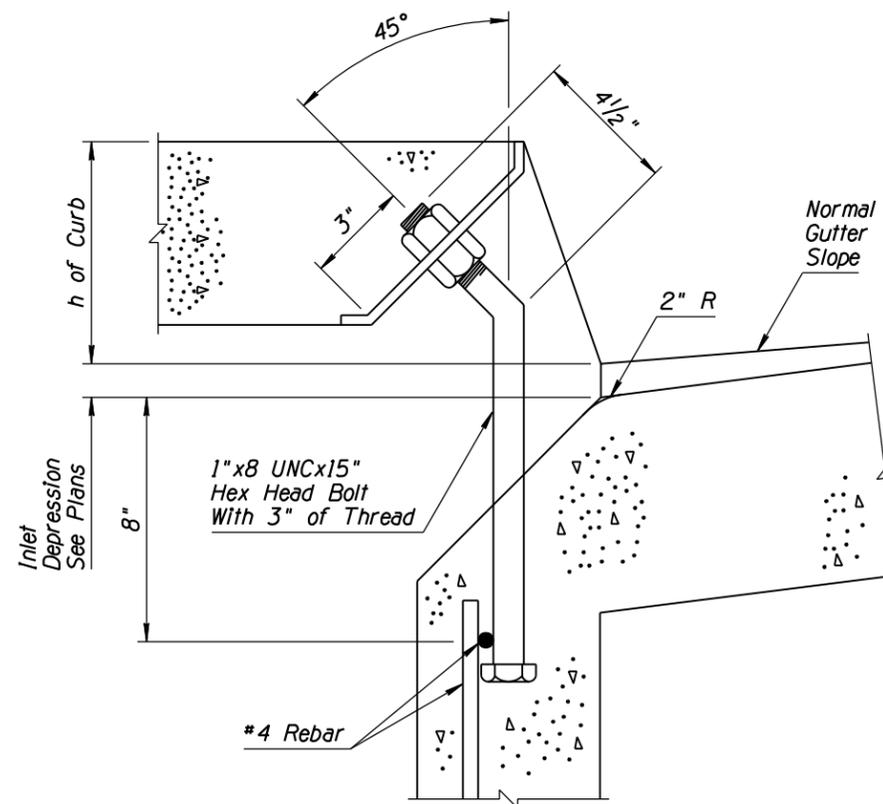
SECTION A-A

USE THIS SECTION WHEN H IS GREATER THAN 5'

Nose Plate
 $8 \times \frac{5}{16}$ Bent Plate
 Length: $2'-11 \frac{3}{4} + 2t + (L + 6)$



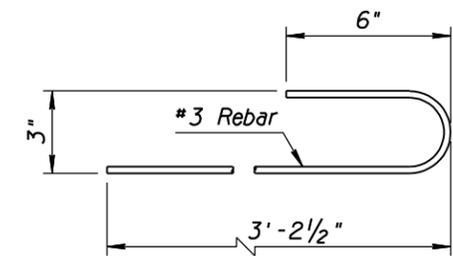
DETAIL 1



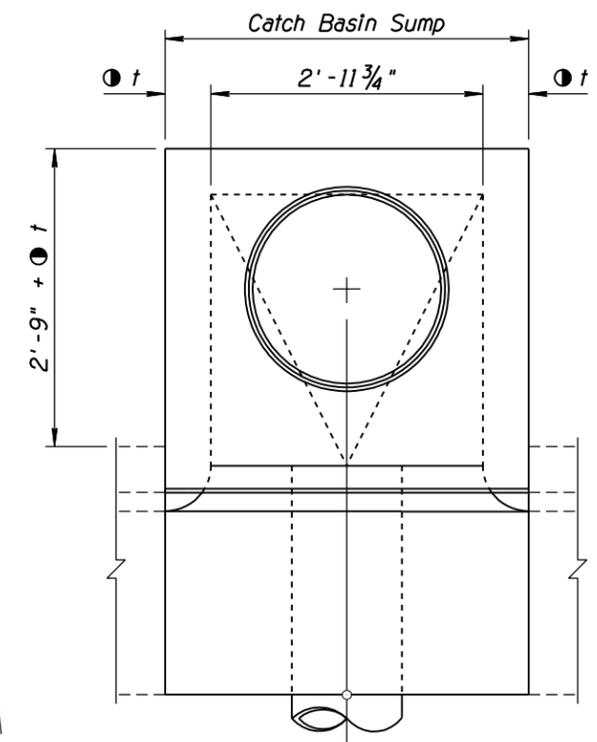
DETAIL 2
CURB SUPPORT ANCHOR

GENERAL NOTES

1. See Sheet 1 of 3 for other dimensions, notes and rebar.
2. $t = 6$ when H is 8' or less
 8 when H is greater than 8'



DETAIL 3



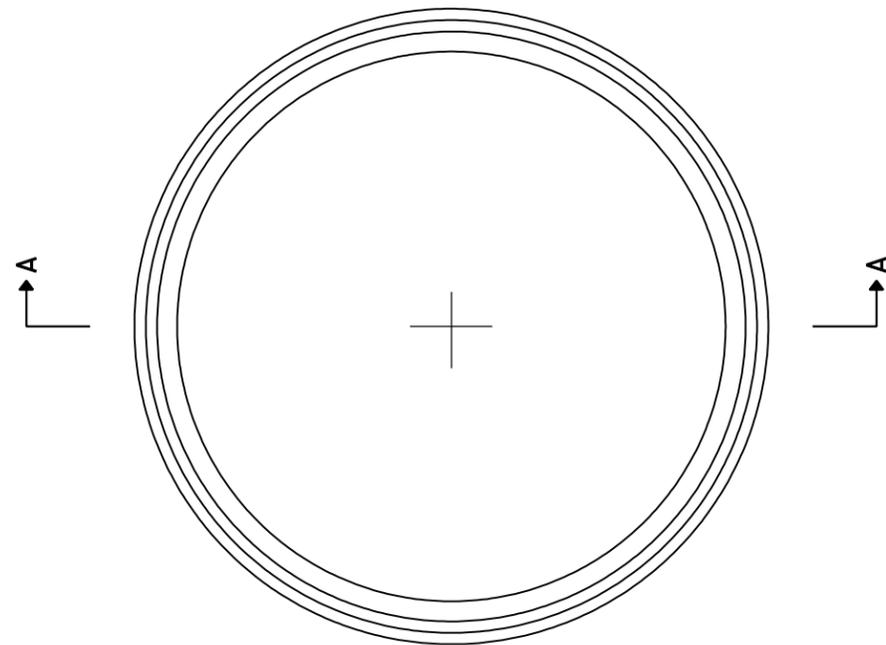
DETAIL 4

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN TYPE 3	DRAWING NO. C-15.20 Sheet 2 of 3

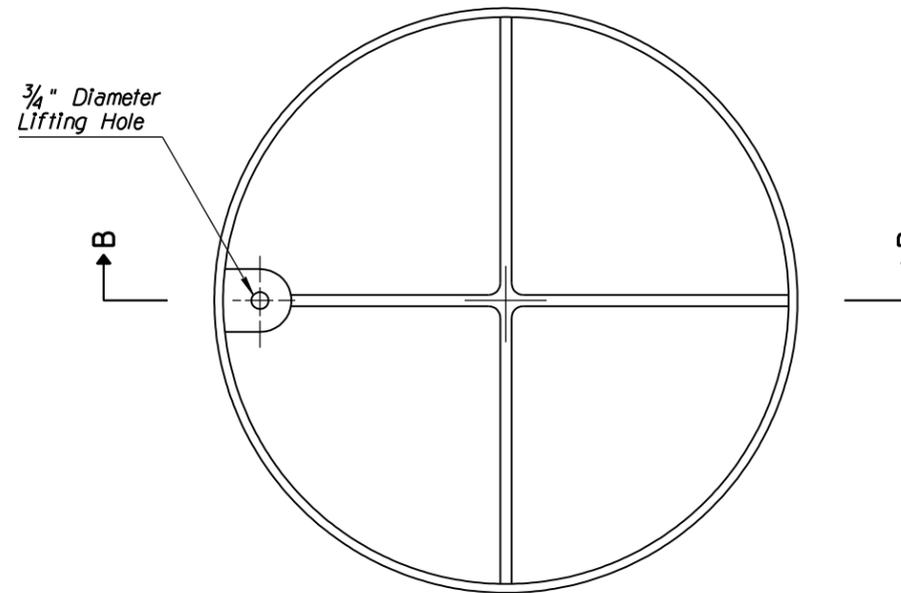
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STANDARD FROM C-15.65 TO C-15.20, SHEET 3 OF 3	RLF	9/04
2			
3			
4			

GENERAL NOTES

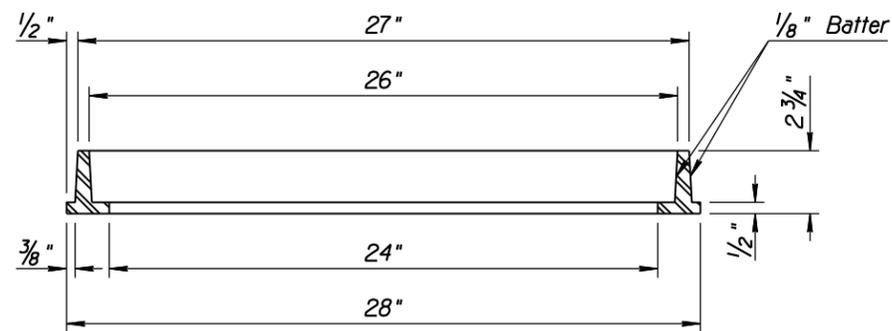
1. Cover shall be non-locking.
2. Frame and cover shall be cast iron or structural steel.
3. Catch basin access frame and cover is for use in sidewalk area only.
4. Cover shall be filled with concrete and broom finished.



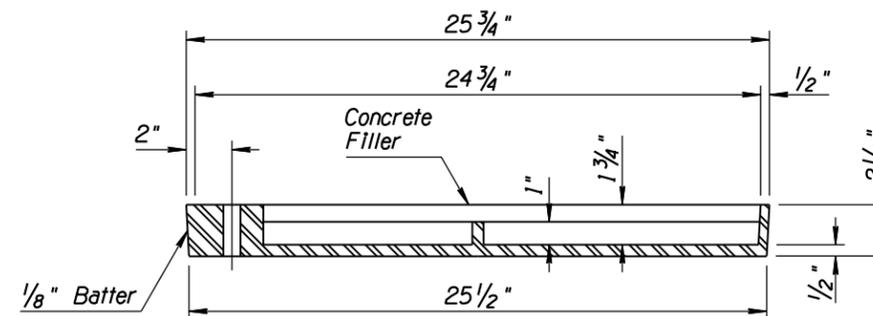
PLAN



PLAN



SECTION A-A
FRAME



SECTION B-B
COVER

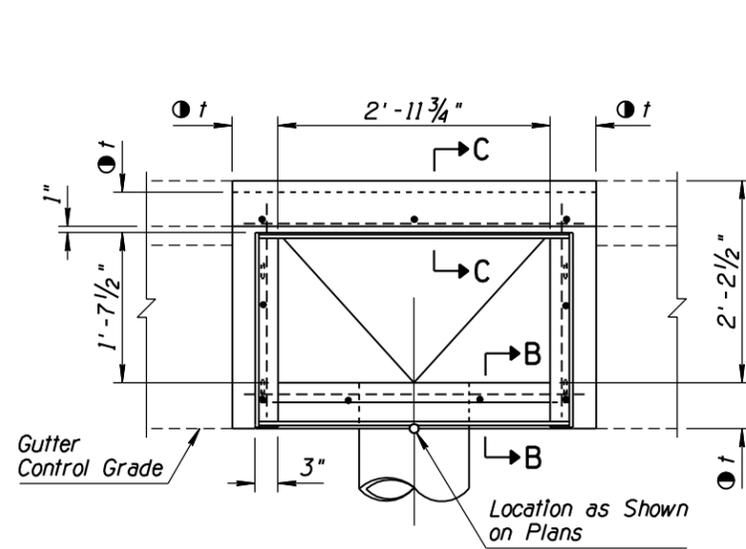
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN ACCESS FRAME AND COVER DETAILS	DRAWING NO. ① C-15.20 Sheet 3 of 3

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED STANDARD FOR NEW FRAME	PNB	5/97
2			
3			
4			

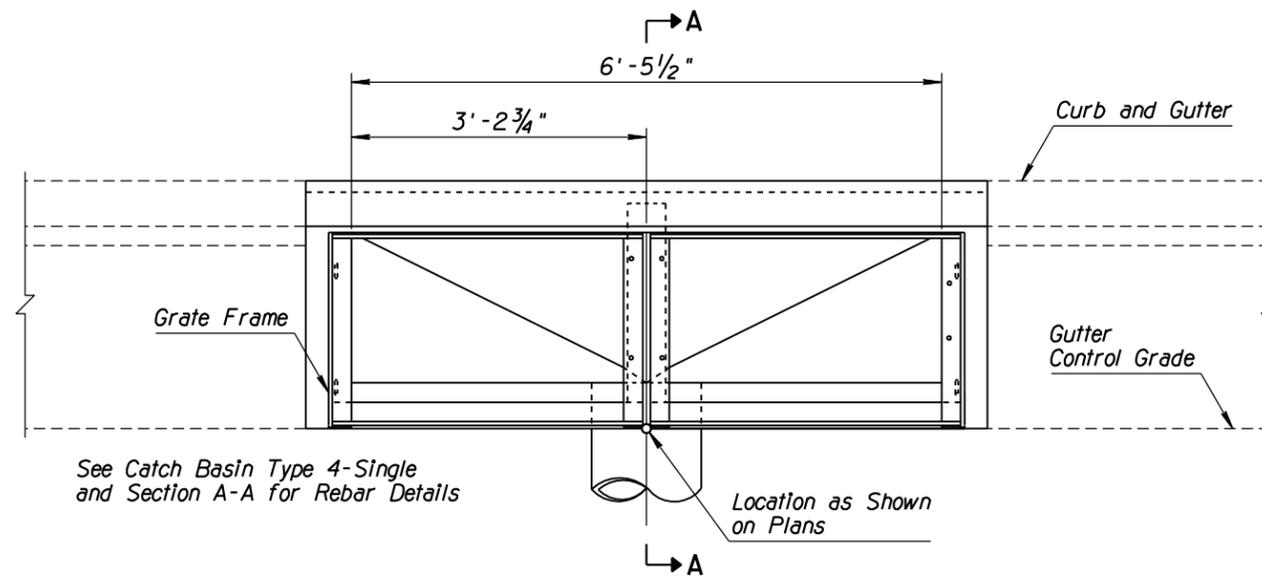
Dimensions are Common to Catch Basin Type 4-Single Except as Shown

GENERAL NOTES

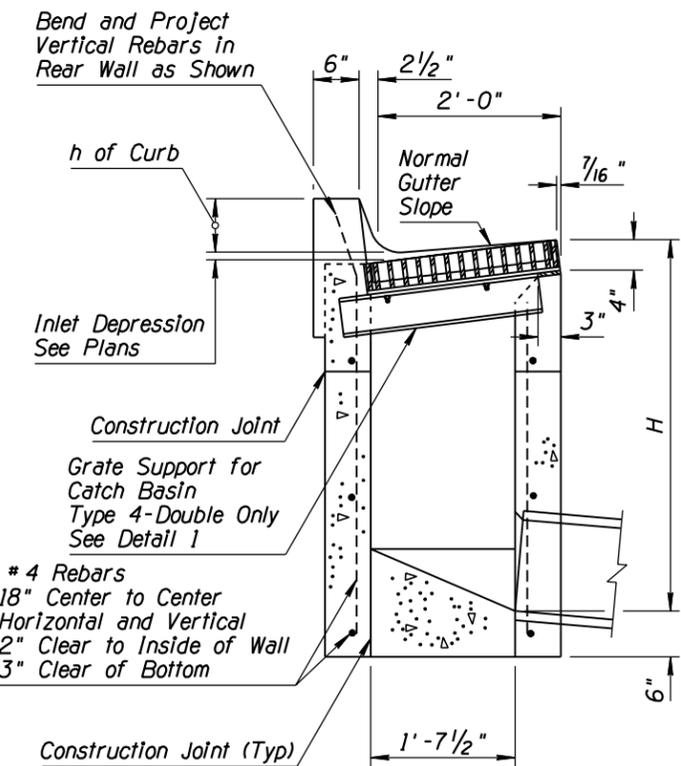
- Catch basin can be used on grade or at roadway sag.
- Pipes can be placed in any wall.
- Floor shall be a wood troweled finish with a minimum 4:1 slope along the axis of the pipe toward the pipe.
- Curb over catch basin shall not be constructed until catch basin concrete has set for a minimum of 24 hours.
- Catch basin can be used with curb and gutter (as shown) or without.
- See Std Dwg C-15.50 for grate and frame details and opening areas.
- Any specified inlet depression shall be warped to opening according to Std Dwg C-15.70.
- All rebar shall be ASTM A36.
- Grate, frame and beam shall be given one shop coat of Number 1 paint.
- All concrete shall be Class B.
- Construction joints and drains shall be placed to meet field conditions. See Std Dwg C-15.70.
- Silicone sealant shall be placed between the grate frame and PCCP, recessed 1/4" from the pavement surface.
- See Detail 2 for catch basin with wide gutter.
- t = 6" when H is 8' or less.
 - 8" when H is greater than 8'.
 - See Section B-B.
 - 9" when pavement is AC.
 - Match pavement thickness when pavement is PCCP.



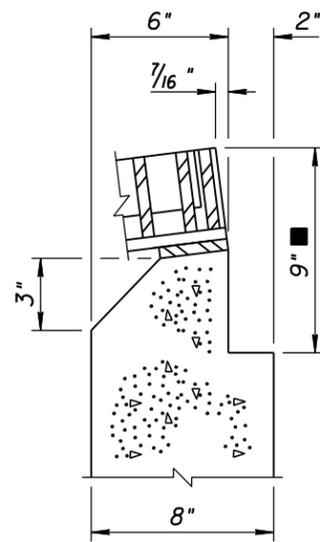
PLAN - CATCH BASIN TYPE 4 - SINGLE



PLAN - CATCH BASIN TYPE 4 - DOUBLE

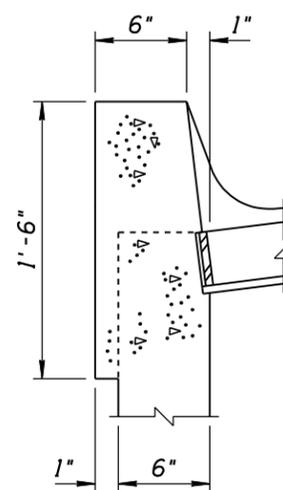


SECTION A-A

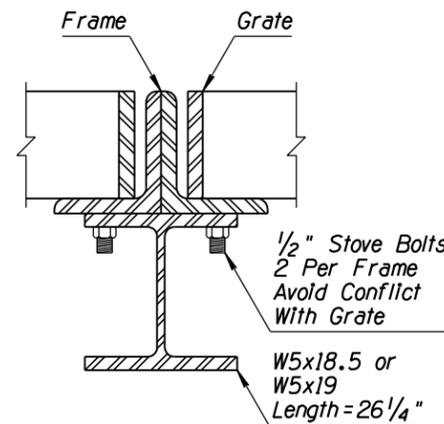


USE THIS SECTION WHEN t=8"

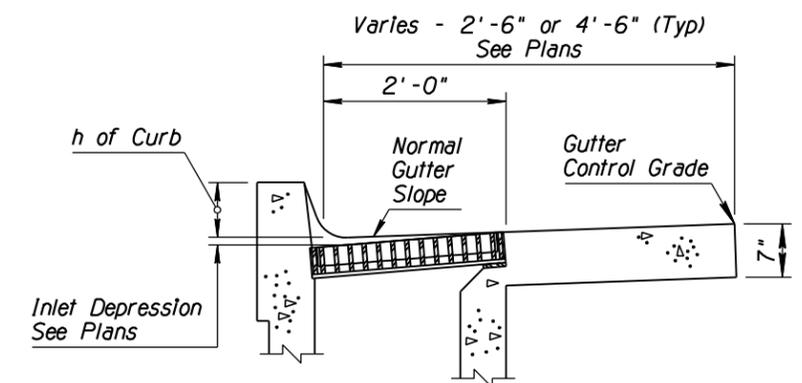
SECTION B-B



SECTION C-C



DETAIL 1



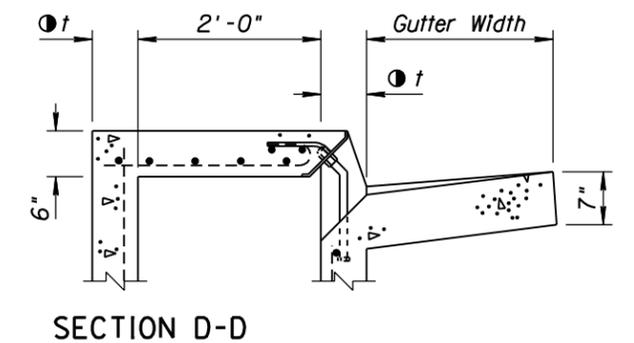
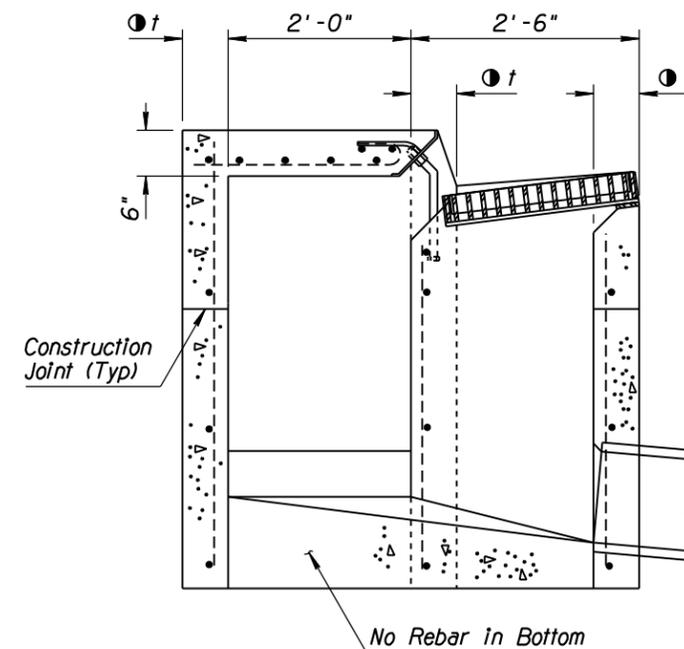
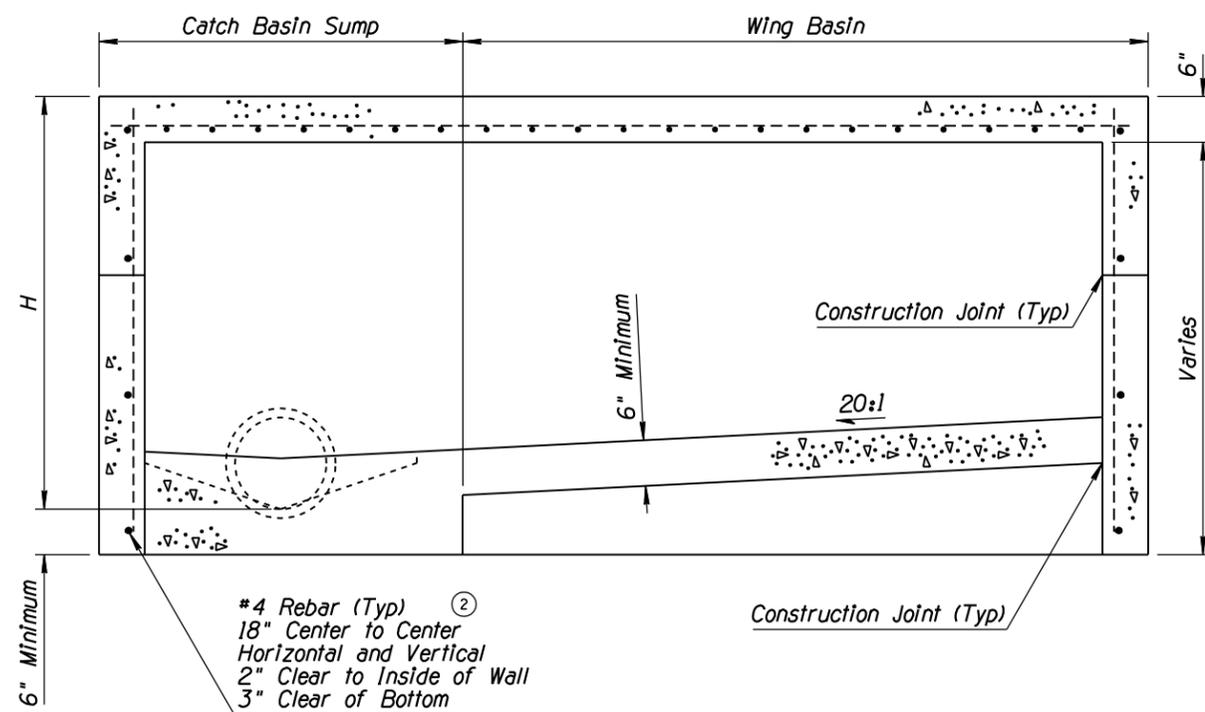
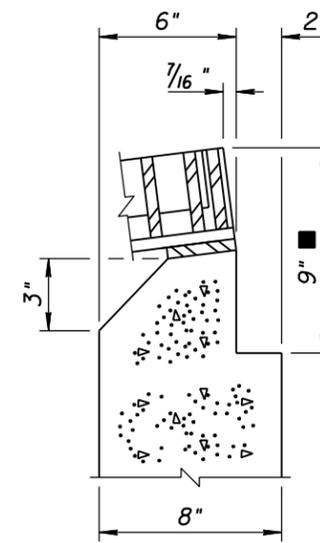
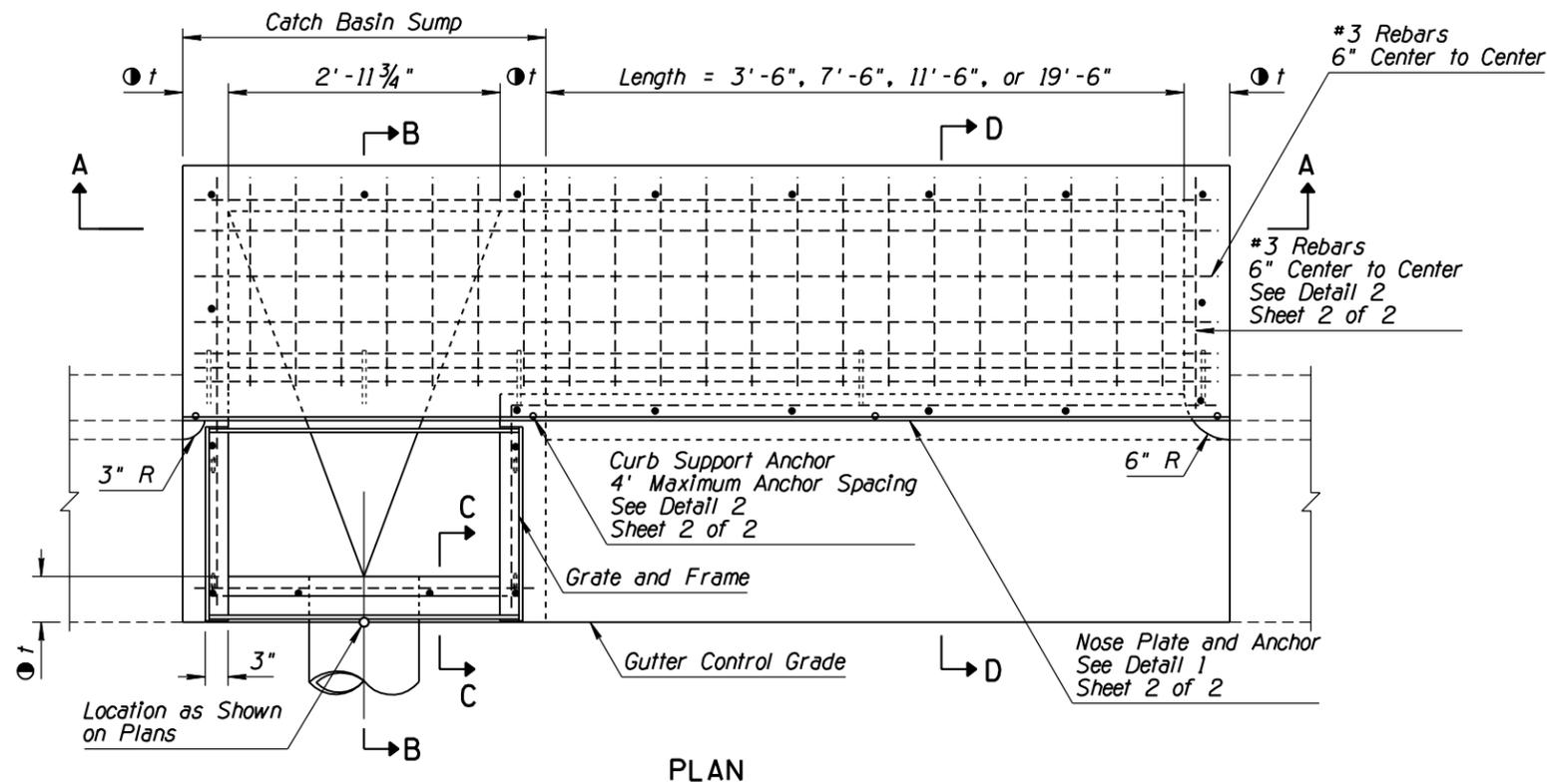
DETAIL FOR WIDE GUTTER (SEE STD DWG C-05.10)

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	① CATCH BASIN TYPE 4	DRAWING NO. C-15.30

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	DELETED GENERAL NOTE 9, RENUMBERED ALL AFTER 8	RLF	9/04
2	ADDED CALLOUT	RLF	9/04
3			
4			

GENERAL NOTES

- Catch basin can be used on grade or at roadway sag.
- Catch basin has three configurations:
Sump only-sump portion of catch basin;
Single wing (illustrated)-sump with wing basin upstream; and
Double wing-sump with symmetrical wing basins each side.
- Pipes can be placed in any wall except wall adjacent to a wing basin.
- Floor shall be a wood troweled finish. Slope of the sump portion of the catch basin along the axis of the pipe shall be 4:1.
- Any specified inlet depression shall be warped to opening according to Std Dwg C-15.70.
- All rebar shall be ASTM A36.
- Nose plate shall be given one shop coat of Number 1 paint.
- All concrete shall be Class B.
- ① Curb opening area (sq ft) per inch of curb "h" + inlet depression = curb opening length (ft) x 0.0833.
- All welding shall be in accordance with Std Spec 604-3.06.
- See Std Dwg C-15.50 for grate and frame details and opening areas.
- Construction joints and drains shall be placed to meet field conditions. See Std Dwg C-15.70.
- Silicone sealant shall be placed between the grate frame and PCCP, recessed 1/4" from the pavement surface.
- ① t = 6" when H is 8' or less.
8" when H is greater than 8'.
See Section C-C.
- = 9" when pavement is AC.
Match pavement thickness when pavement is PCCP.

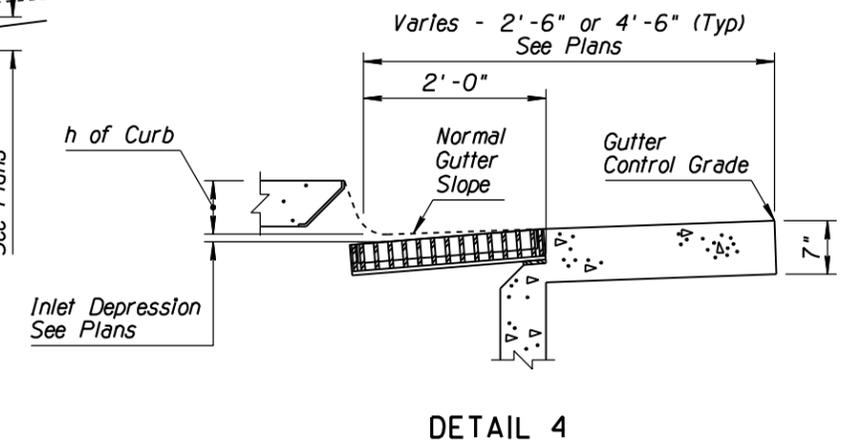
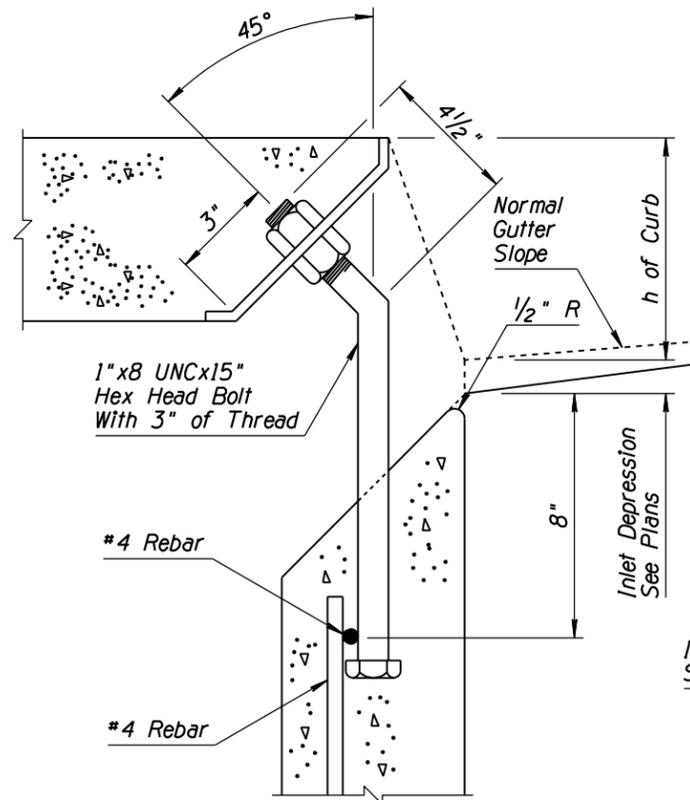
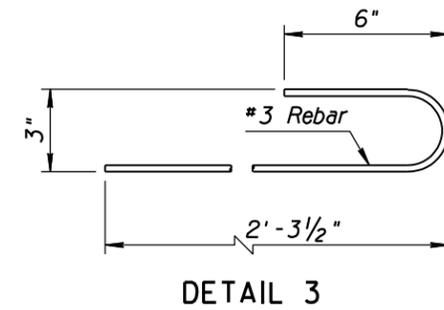
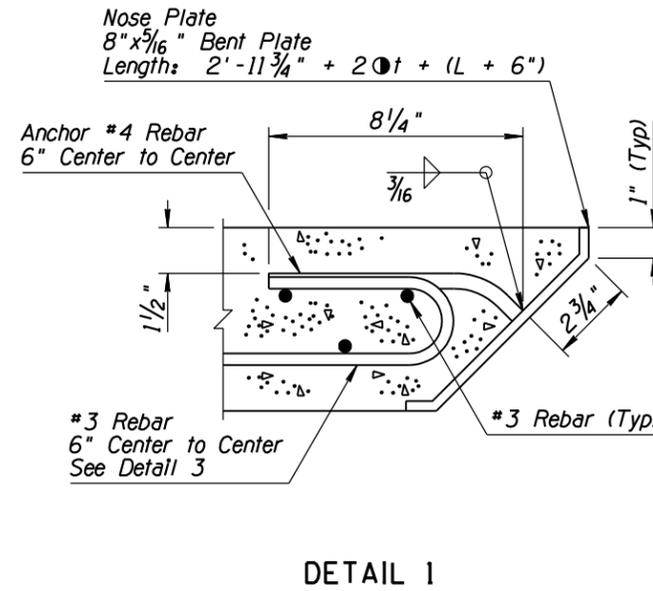
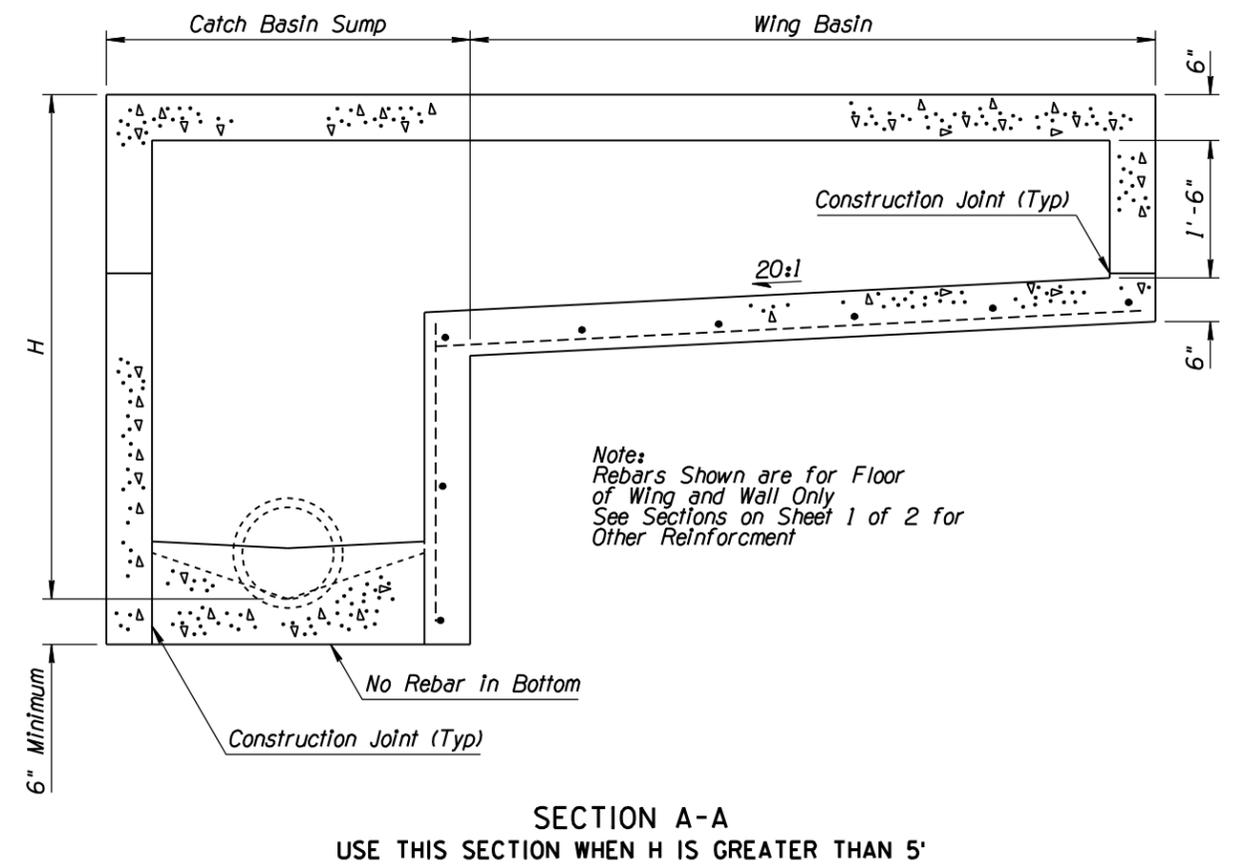
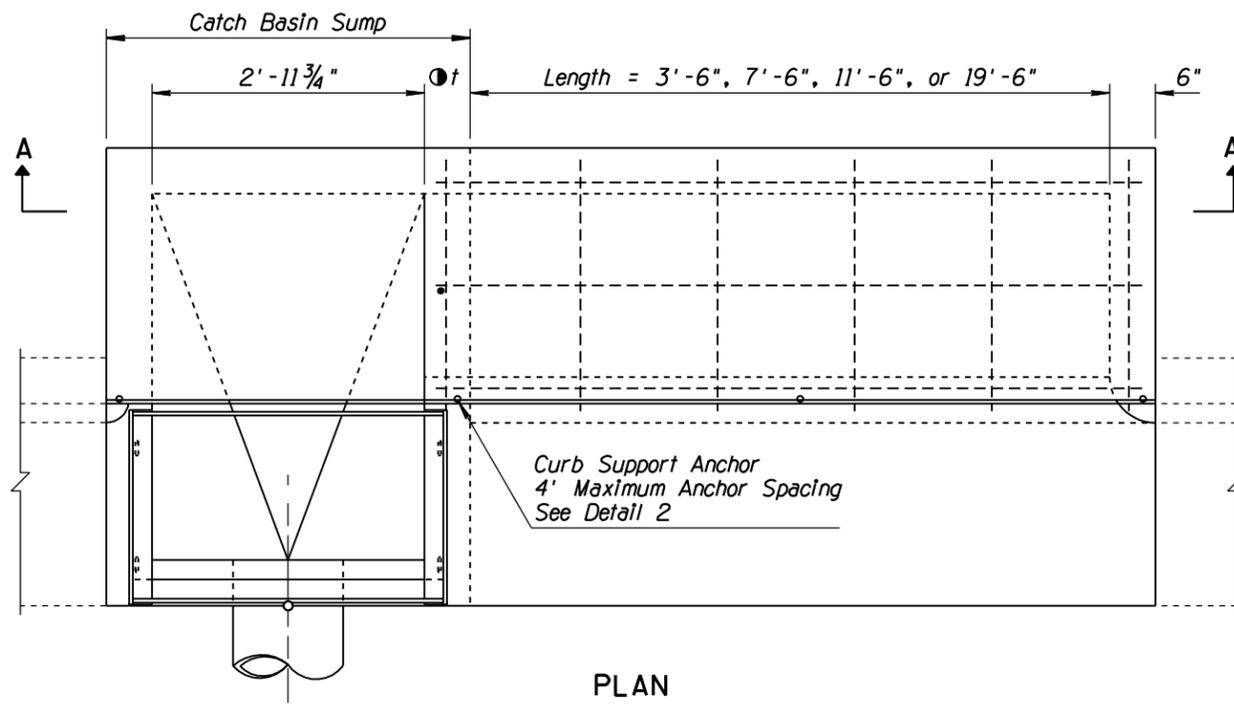


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN TYPE 5	DRAWING NO. C-15.40 Sheet 1 of 2

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1			
2			
3			
4			

GENERAL NOTES

- See Sheet 1 of 2 for other dimensions, notes and rebar.
- $t = 6"$ when H is 8' or less
 $8"$ when H is greater than 8'

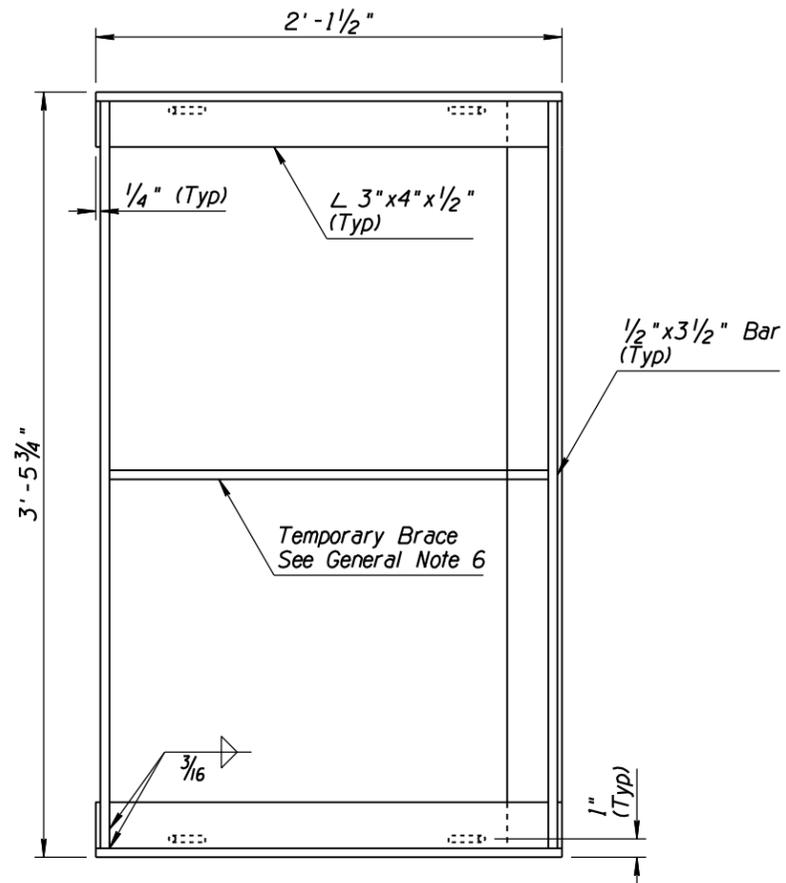


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN TYPE 5	DRAWING NO. C-15.40 Sheet 2 of 2

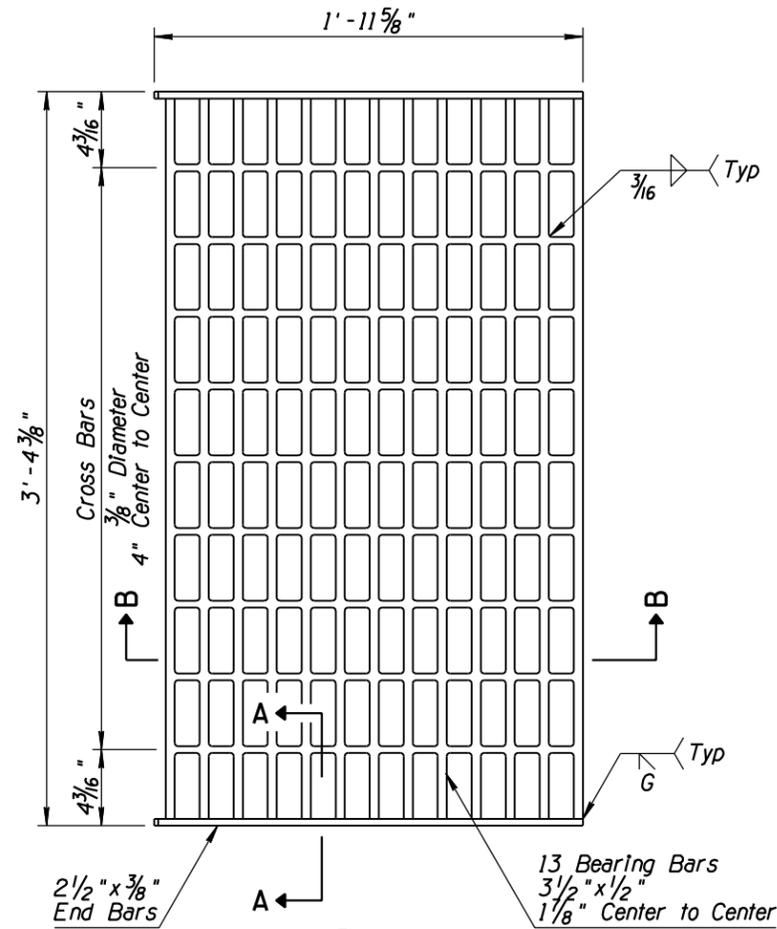
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED GRATE DIMENSIONS AND REISSUED STANDARD	RLF	7/01
2			
3			
4			

GENERAL NOTES

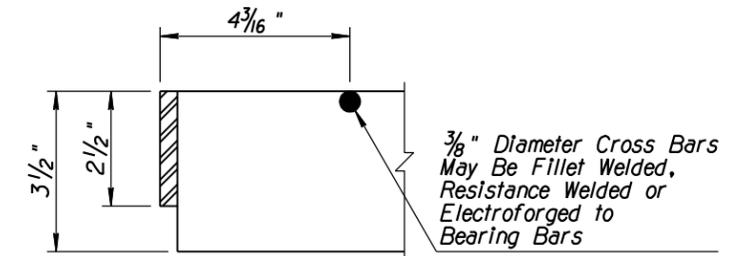
1. Grating units and frames shall be fabricated from structural steel ASTM A36 except as noted.
2. All welding shall be in accordance with Std Spec 604-3.06.
3. The completed assembly shall be given one shop coat of Number 1 paint.
4. Frames and grates shall fit to a maximum rock of $\frac{3}{32}$ " at any point.
5. Grate opening is 3.60 Sq Ft.
6. Bracing of frame is recommended for handling and placement purposes.
7. Frame and Grate to be used with Std Dwgs C-15.10, C-15.30 and C-15.40.
8. Grate may be used with Std Dwg C-15.92 Frame.



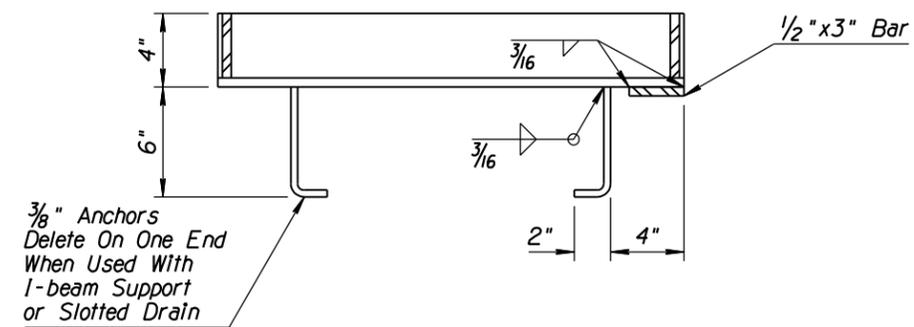
PLAN



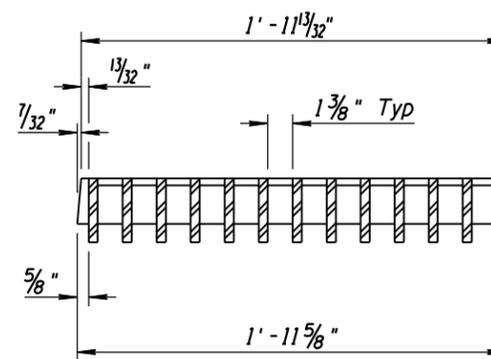
PLAN



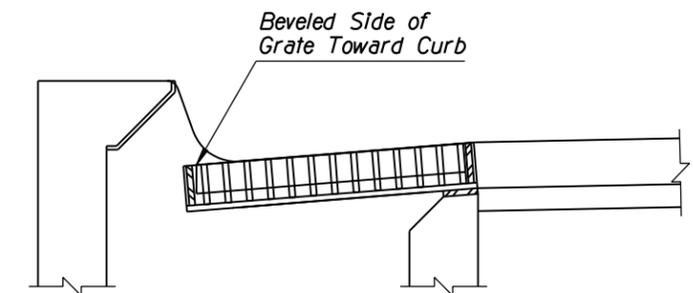
SECTION A-A



SECTION FRAME



SECTION B-B GRATE



TYPICAL INSTALLATION
C-15.10 Catch Basin Shown
Similar for C-15.30 and C-15.40

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN FRAME AND GRATE	DRAWING NO. C-15.50

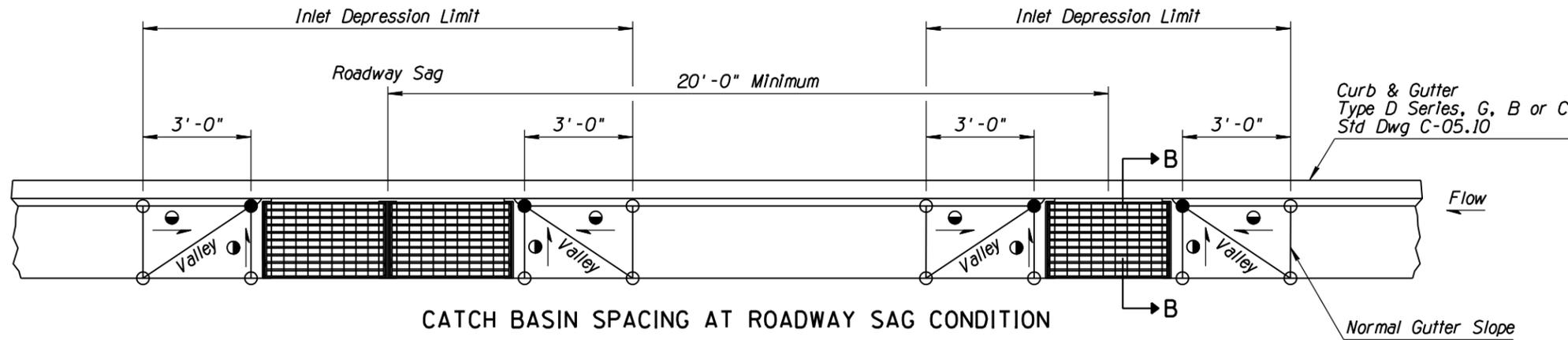
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2			
3			
4			

GENERAL NOTES

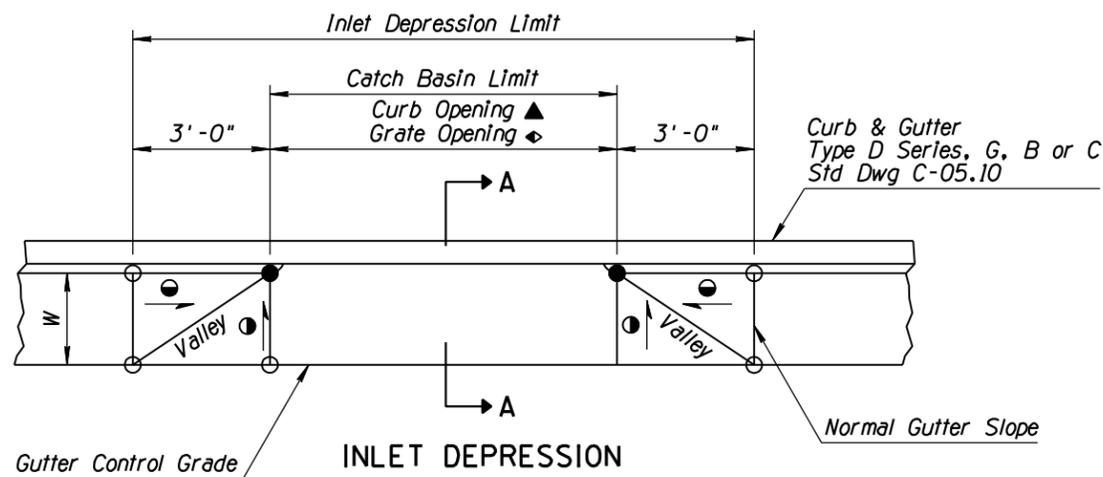
1. No inlet depression shall extend into a traffic lane.
2. Maximum combined inlet and gutter depression is 3". See Section A-A.
3. Maximum distance along curb between catch basins where full gutter depression is used is 10'.
4. See Std Dwg C-15.80 for aprons used with Std Dwg C-15.80 Catch Basin.

LEGEND

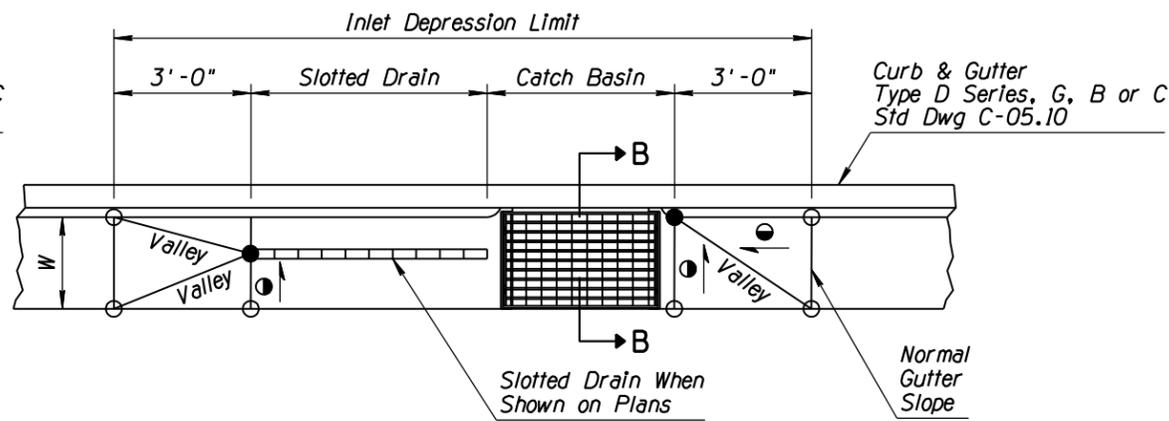
- - Normal pavement or gutter flow line elevation.
- - Depressed elevation.
- ◐ - Straight grade with downward slope.
- W - Normal gutter width per Std Dwg C-05.10.
- ▲ - For Types 1, 3, & 5 Catch Basin.
- ◆ - For Type 4 Catch Basin & Std Dwg C-15.91.



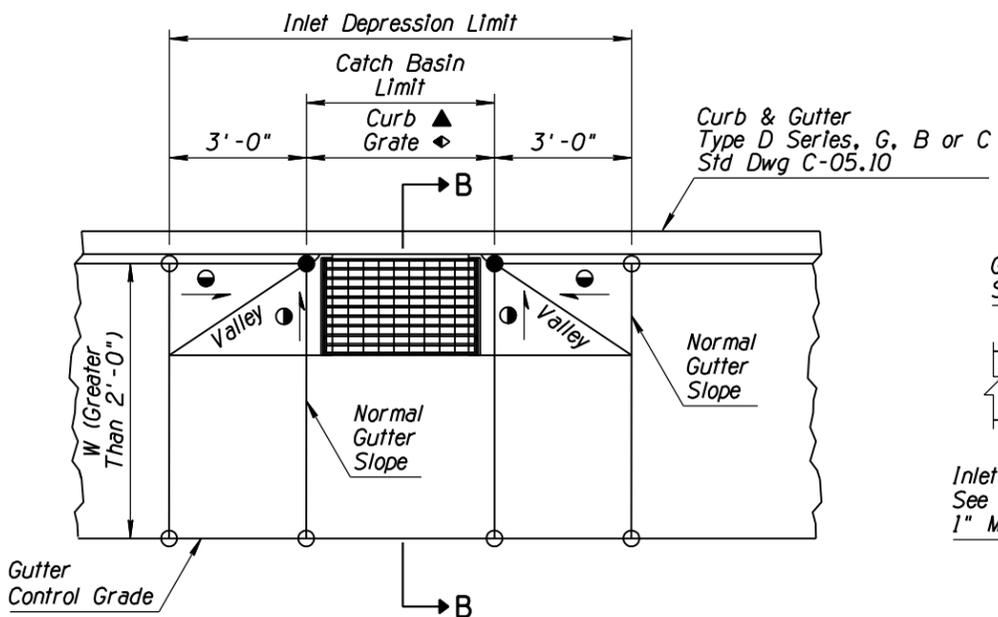
CATCH BASIN SPACING AT ROADWAY SAG CONDITION



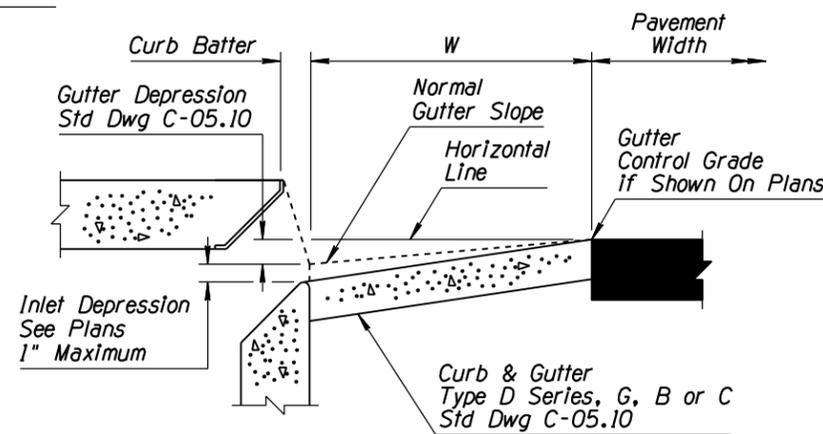
INLET DEPRESSION



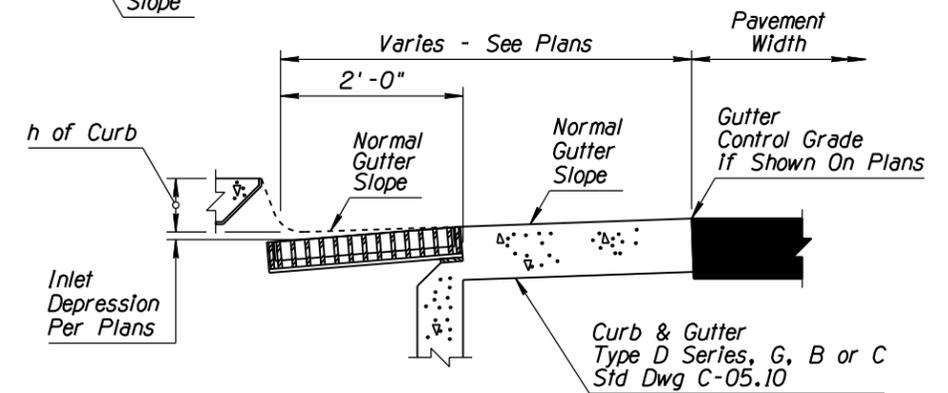
INLET DEPRESSION
CATCH BASIN WITH SLOTTED DRAIN



INLET DEPRESSION
CATCH BASIN WITH WIDE GUTTER



SECTION A-A
(Type D Curb & Gutter Shown)



SECTION B-B
(Type D Curb & Gutter Shown)

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN MISCELLANEOUS DETAILS	DRAWING NO. C-15.70 Sheet 1 of 2

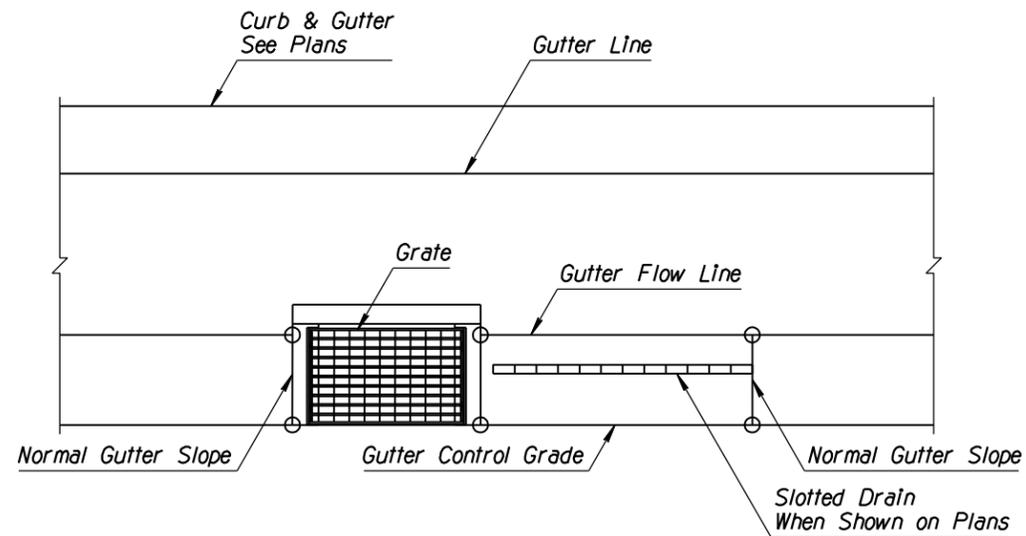
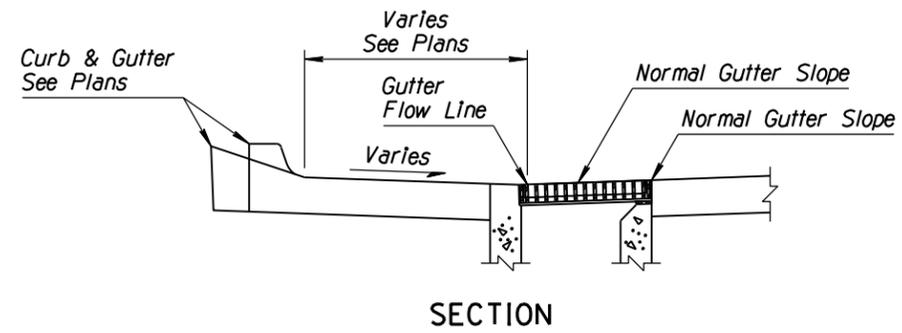
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED CMP DESIGNATION	RLF	9/04
2	ADDED NOTE	RLF	9/04
3			
4			

GENERAL NOTES

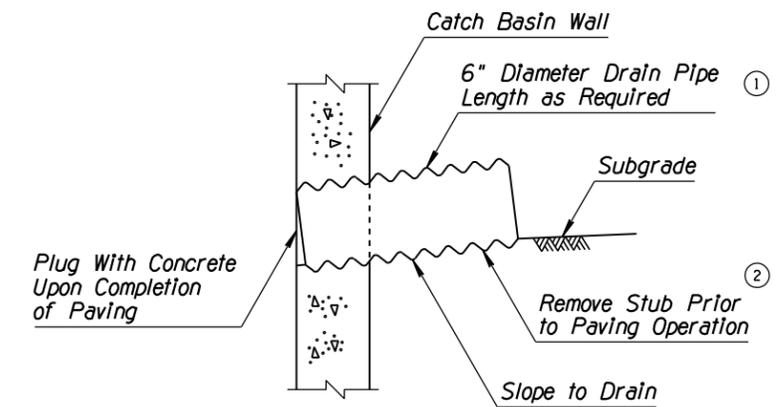
1. Construction drain may be deleted at the option of the Engineer.

LEGEND

- - Normal pavement or gutter flow line elevation.



TYPE 4 CATCH BASIN WITHOUT CURB



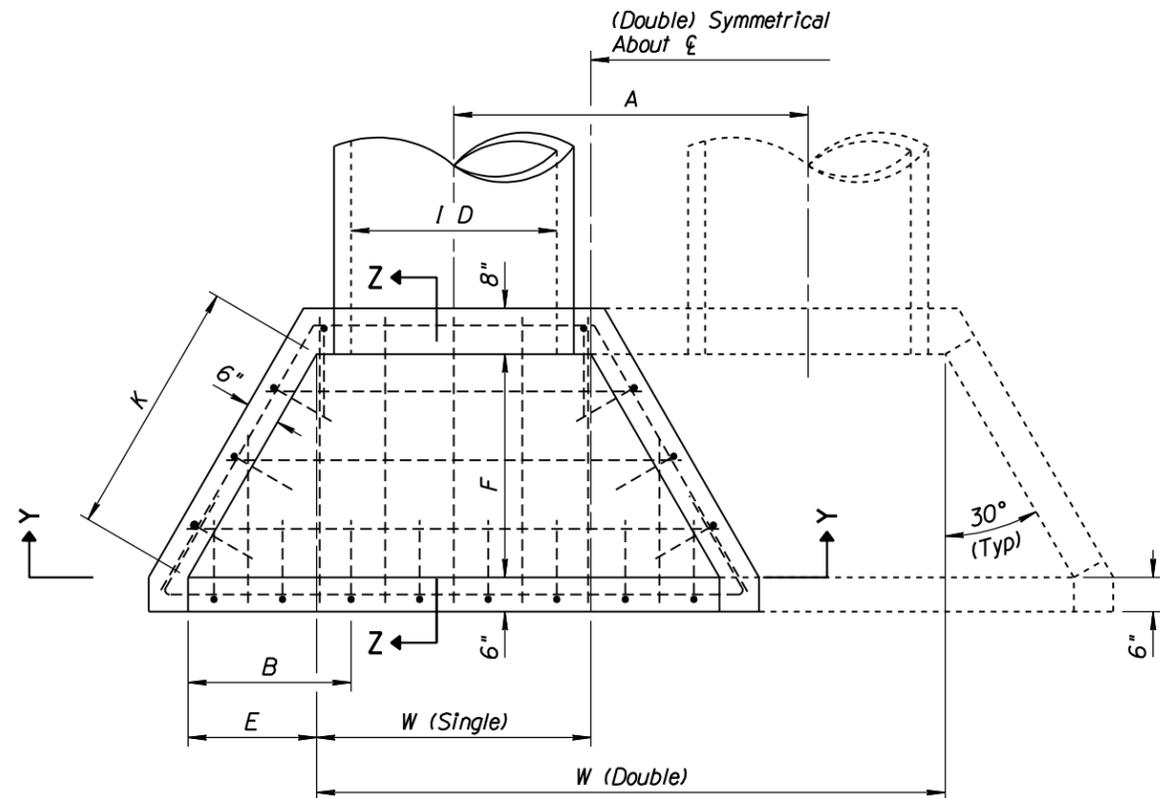
CATCH BASIN CONSTRUCTION DRAIN

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN MISCELLANEOUS DETAILS	DRAWING NO. C-15.70 Sheet 2 of 2

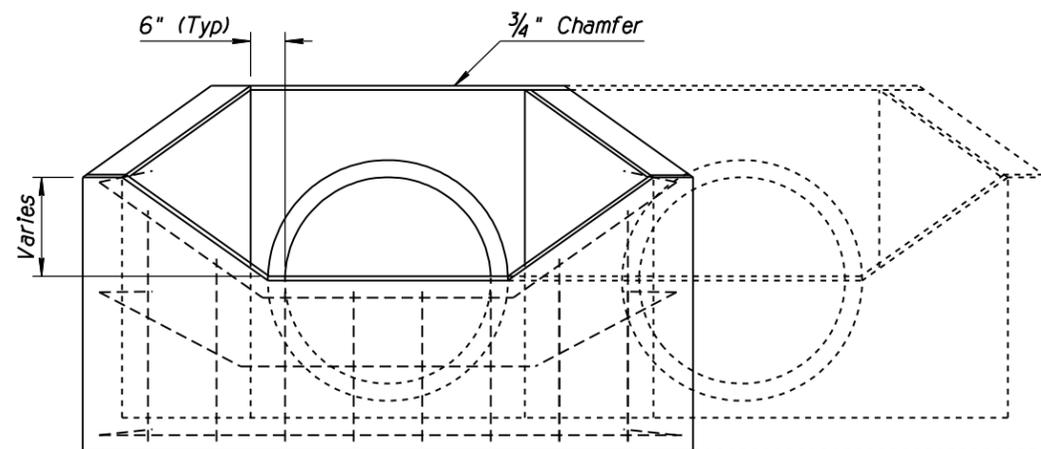
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED TABLE MEASUREMENT FORMAT	RLF	9/04
2			
3			
4			

GENERAL NOTES

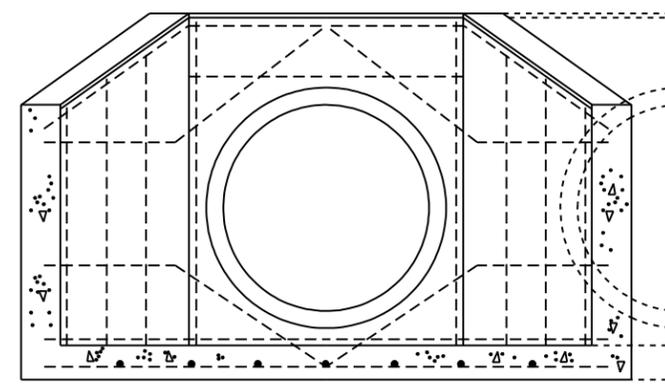
1. See also Std Dwg C-13.10.
2. High point of headwall shall not project more than 3" above slope.
3. All concrete shall be Class B.
4. All rebar shall be #4, 1'-0" center to center, with 3" minimum clear to inside of walls and floor.



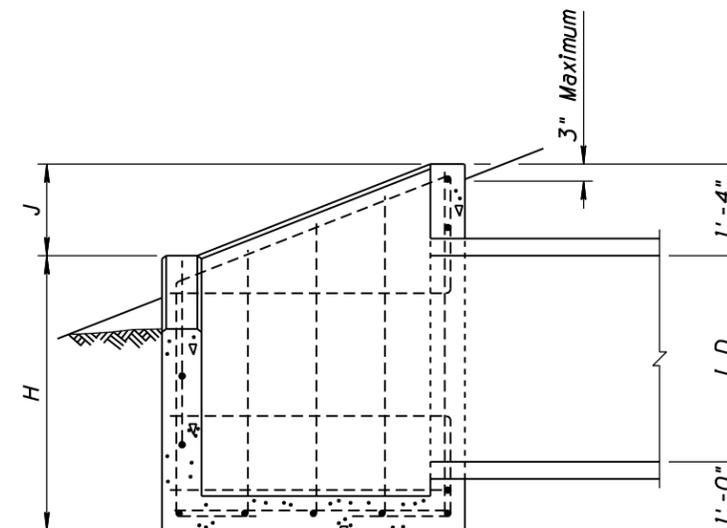
PLAN



ELEVATION



SECTION Y-Y

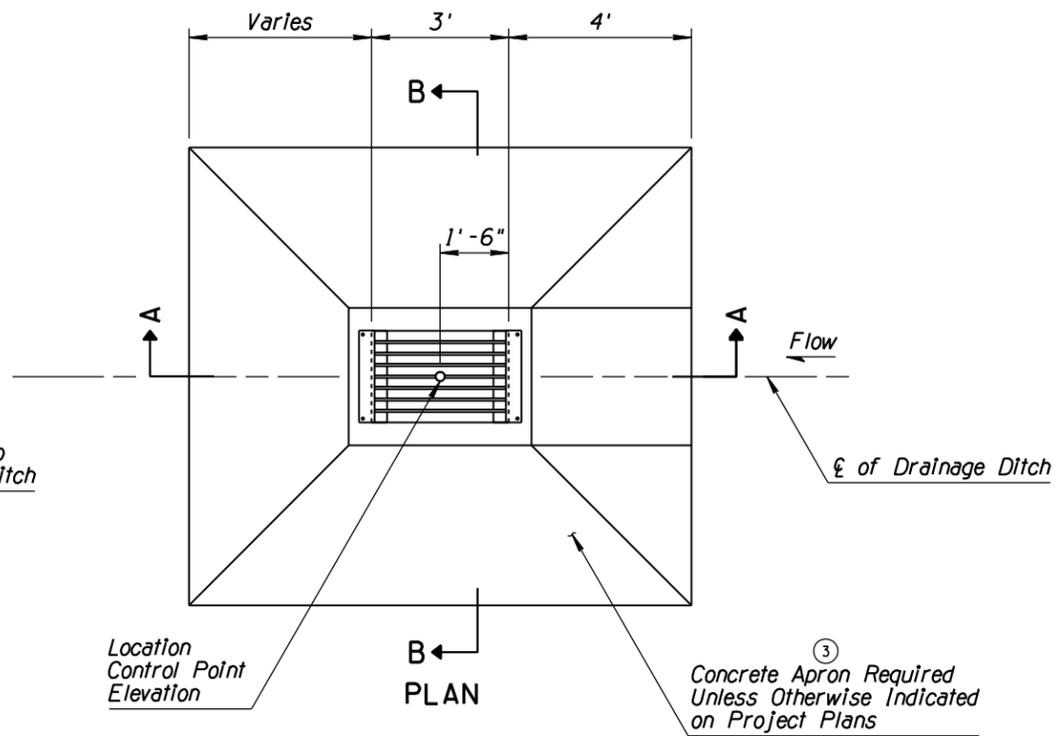
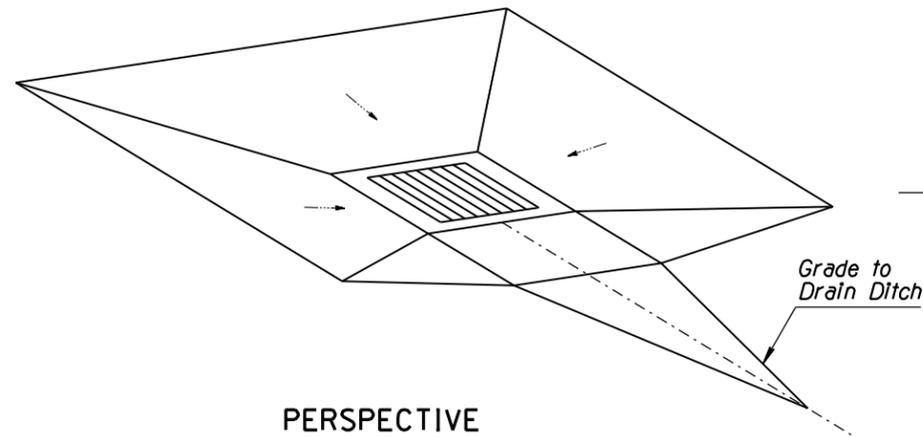


SECTION Z-Z

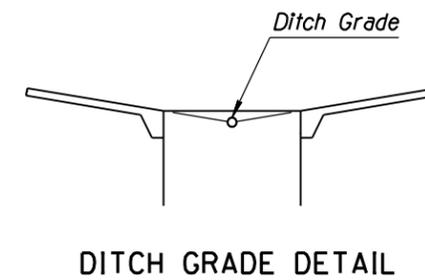
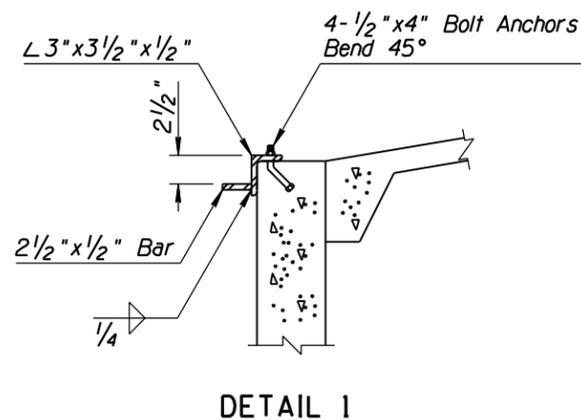
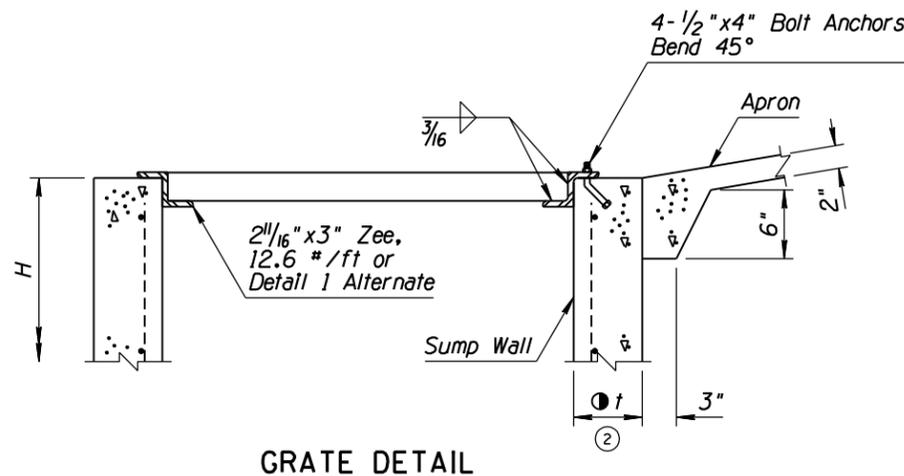
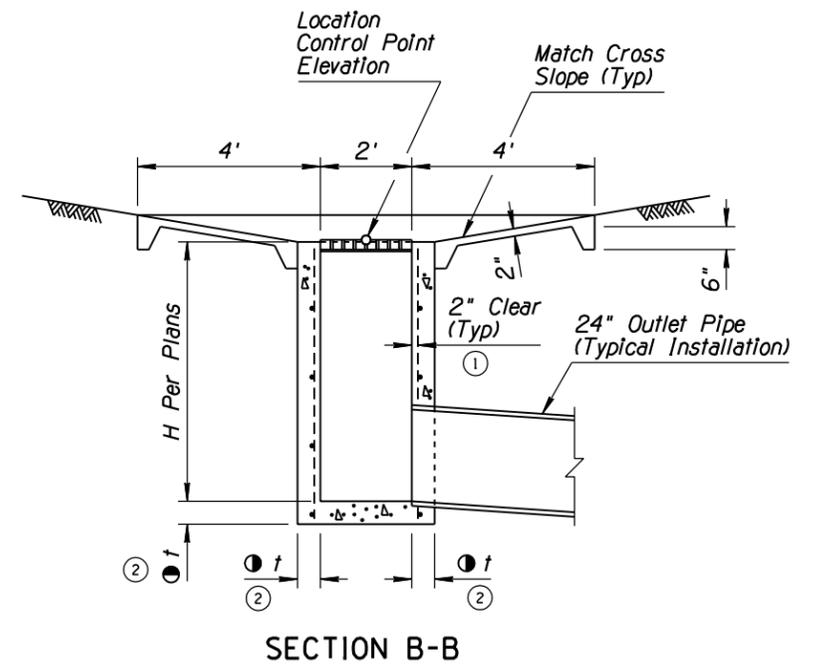
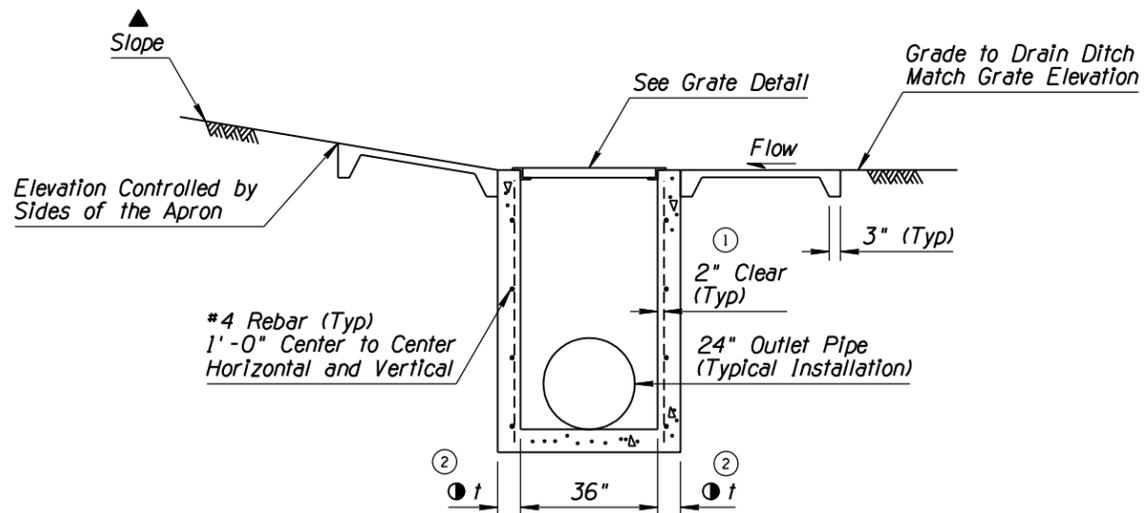
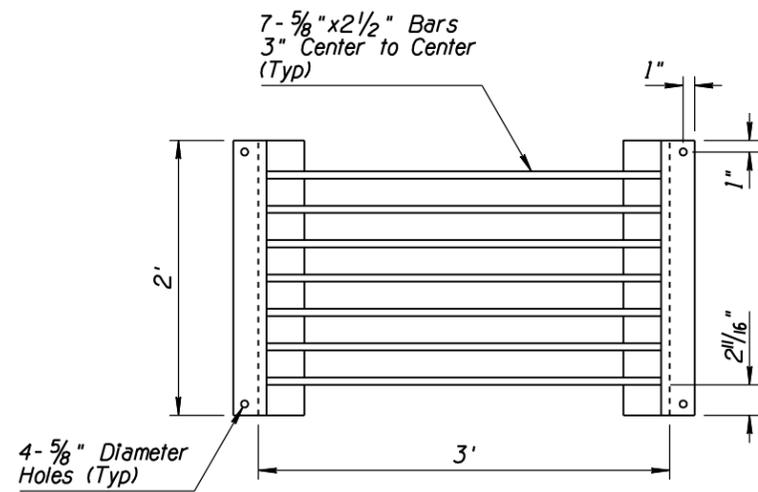
PIPE ID (In)	DIMENSIONS (Ft-In)									QUANTITIES (Based on CMP Installation)			
	W		A	B	E	F	H	J	K	Concrete (CY)		Reinforcing Steel (Lbs)	
	Single	Double								Single	Double	Single	Double
18	2 -6	5 -2	2 -8	1 -3	0-9	1 -3 ⁵ / ₈	3 -1	0-9	1 -6	0.7	1.1	75	105
24	3 -0	6 -6	3 -6	1 -7 ¹ / ₂	1 -1 ¹ / ₂	1 -11 ³ / ₈	3 -5	0-11	2 -3	1.0	1.6	90	135
30	3 -6	7 -10	4 -4	2 -0	1 -6	2 -7 ¹ / ₄	3 -9	1 -1	3 -0	1.5	2.3	110	165
36	4 -0	9 -2	5 -2	2 -4 ¹ / ₂	1 -10 ¹ / ₂	3 -3	4 -0	1 -4	3 -9	2.0	3.0	145	215
42	4 -6	10 -6	6 -0	2 -9	2 -3	3 -10 ³ / ₄	4 -4	1 -6	4 -6	2.5	3.8	190	280

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 		CATCH BASIN DROP INLET

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED CLEAR COVER	RLF	9/04
2	REVISED THICKNESS SPECIFICATION	RLF	9/04
3	ADDED CONCRETE REQUIREMENT	RLF	9/04
4			



- ### GENERAL NOTES
- All concrete shall be Class B.
 - Grate and frame shall be fabricated of structural steel in accordance with ASTM A36.
 - All welding shall be in accordance with Std Spec 604-3.06.
 - Grate assembly shall be given one shop coat of Number 1 paint.
- ▲ Apron slopes shall match the natural flow line of the ditch. No additional depression will be allowed.
- ② $t = 6"$ when H is 8' or less
 $8"$ when H is greater than 8'

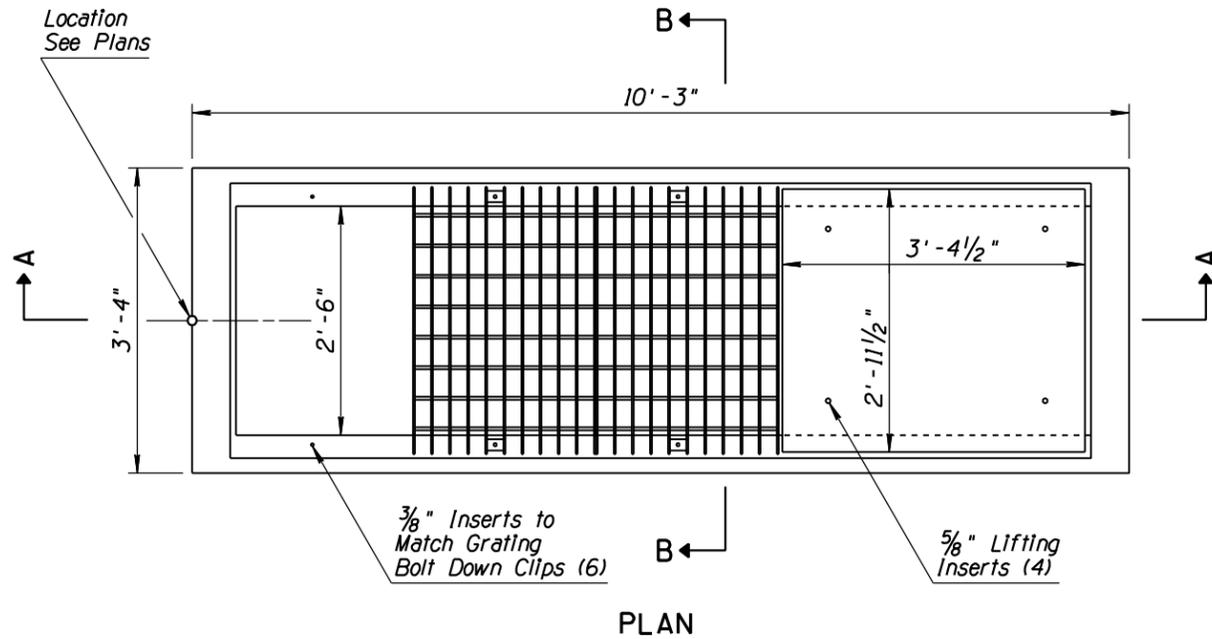


APPROVED FOR DESIGN	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION	CATCH BASIN FLUSH	DRAWING NO. C-15.80

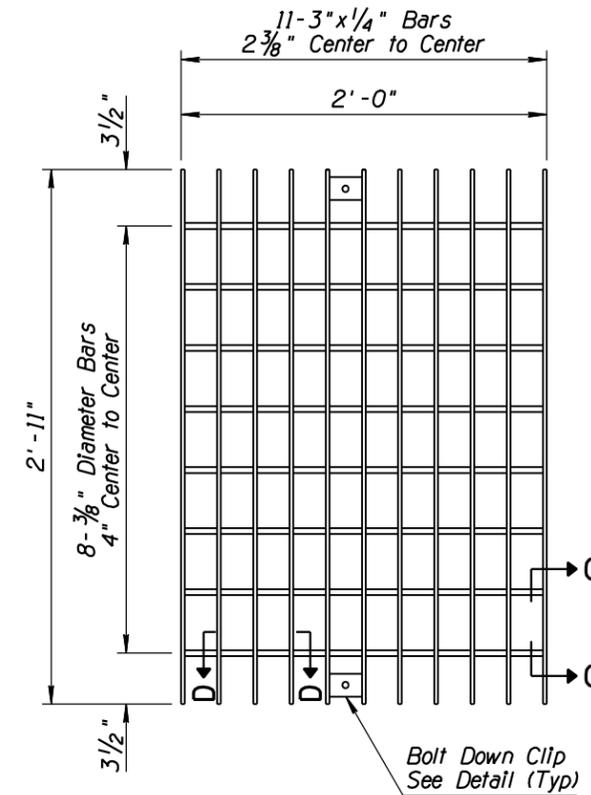
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1			
2			
3			
4			

GENERAL NOTES

1. Concrete shall conform to the requirements for Class S Concrete. The minimum strength shall be 4000 PSI.
2. Grout shall be in accordance with the Std Specs except water content shall be such that the consistency is proper for smooth troweling.
3. All welding shall be in accordance with Std Spec 604-3.06.
4. The completed grate shall be given one shop coat of Number 1 paint.
5. Foundation soil and backfill shall be in accordance with Std Spec 203-5.



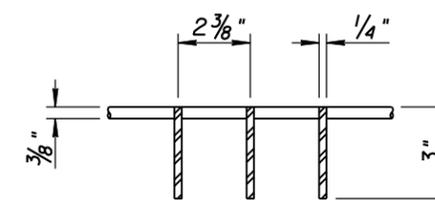
PLAN



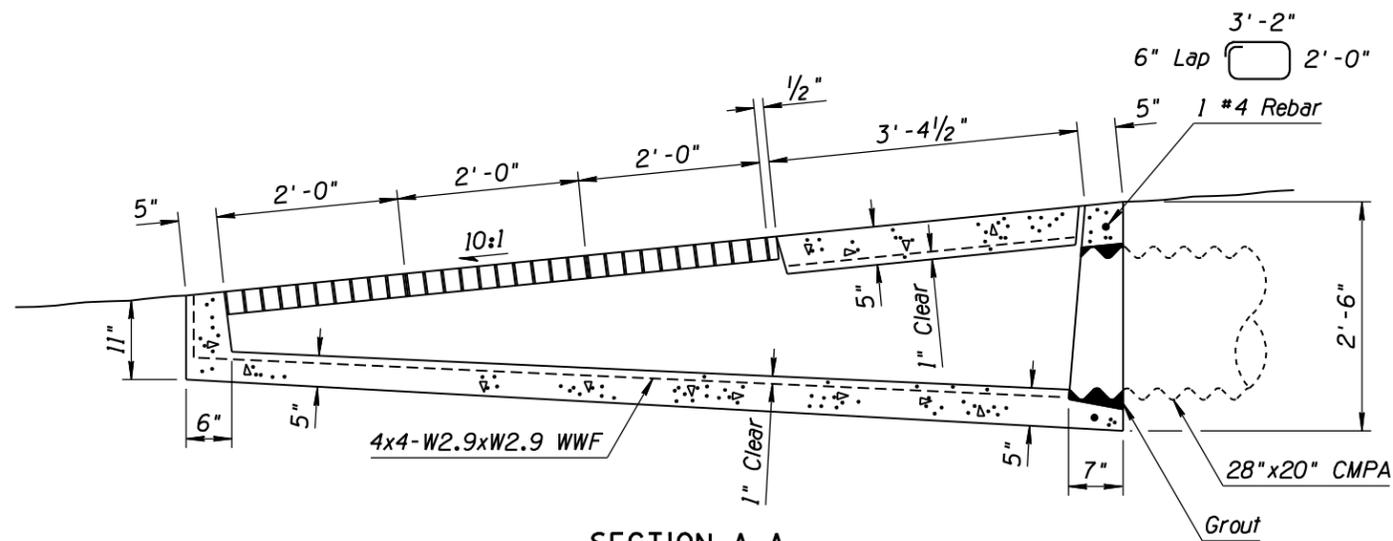
PLAN

3/8" Diameter Cross Bars May Be Fillet Welded, Resistance Welded, or Electroforged to Bearing Bars

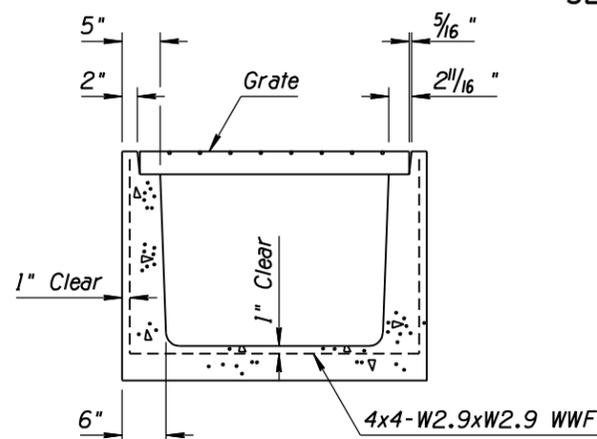
SECTION C-C



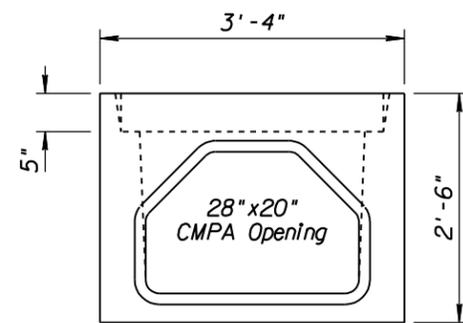
SECTION D-D



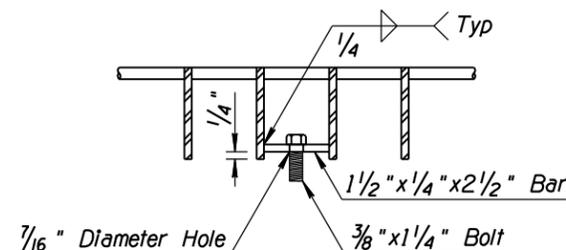
SECTION A-A



SECTION B-B



END VIEW



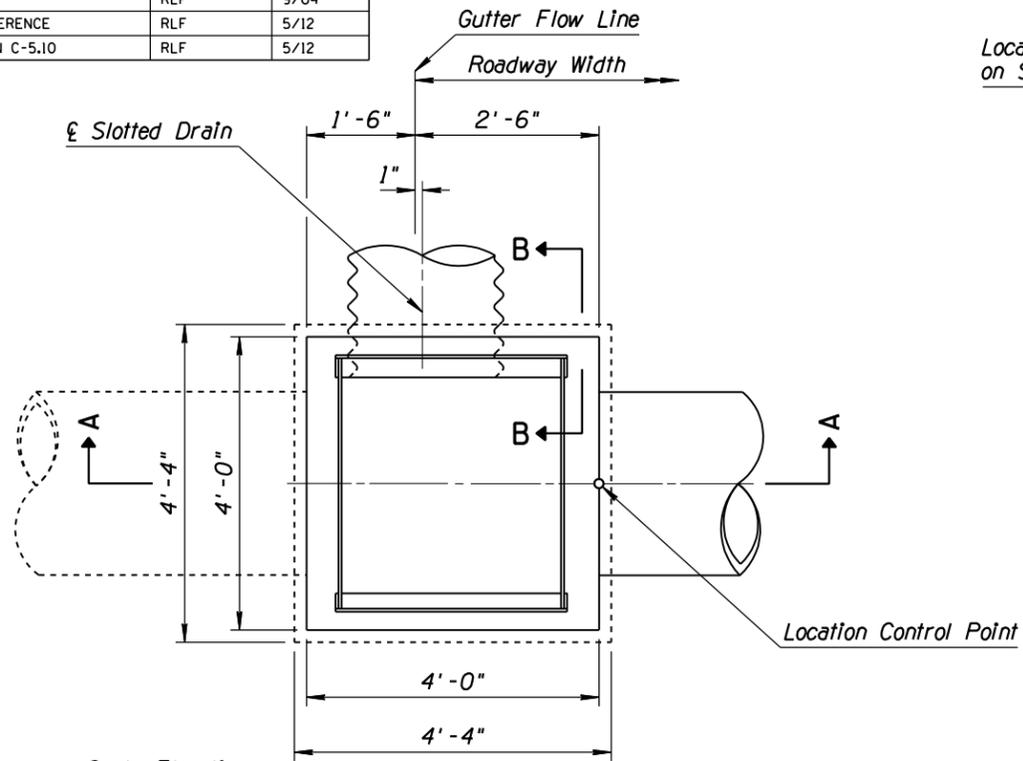
BOLT DOWN CLIP DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN MEDIAN DIKE PRECAST	DRAWING NO. C-15.90

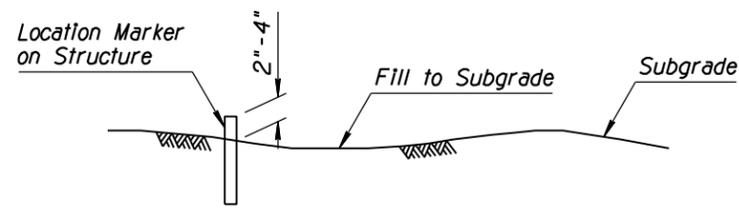
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	DELETED PREVIOUS GENERAL NOTE* 2	RLF	7/01
2	REVISED THICKNESS SPECIFICATION	RLF	9/04
3	REVISED VIEW: ADDED CURB & GUTTER REFERENCE	RLF	5/12
4	REMOVED CURB HEIGHT DIMENSIONS: ARE ON C-5.10	RLF	5/12

GENERAL NOTES

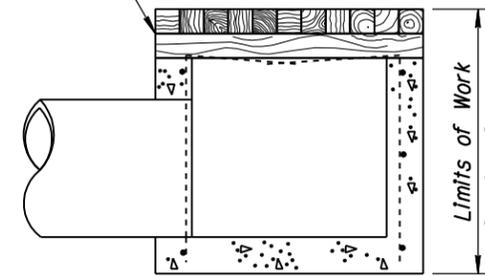
- All concrete shall be Class B.
 - All rebar shall have 2" minimum clear cover unless otherwise noted.
 - #4 rebar shall be placed 12" center to center horizontal & vertical in walls.
 - Pipe may be placed in any wall.
 - See Std Dwgs C-13.60 and C-13.65 for more information and dimensions of slotted drains.
- ▲ Includes 1" Inlet Depression
- ② $t = 6"$ when H is 8' or less
 $8"$ when H is greater than 8'



PLAN

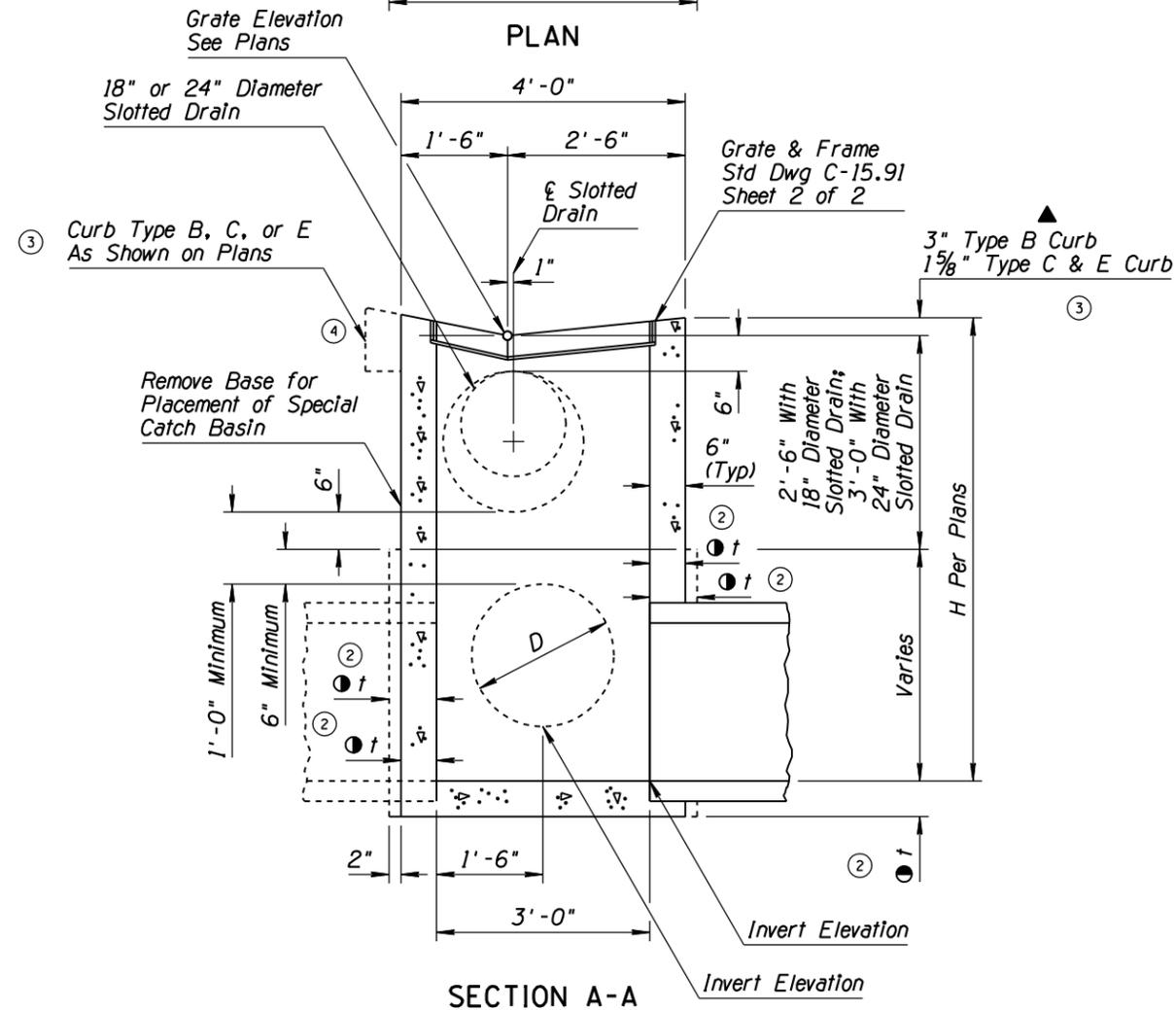


4"x4" Timbers
or as Approved
by the Engineer

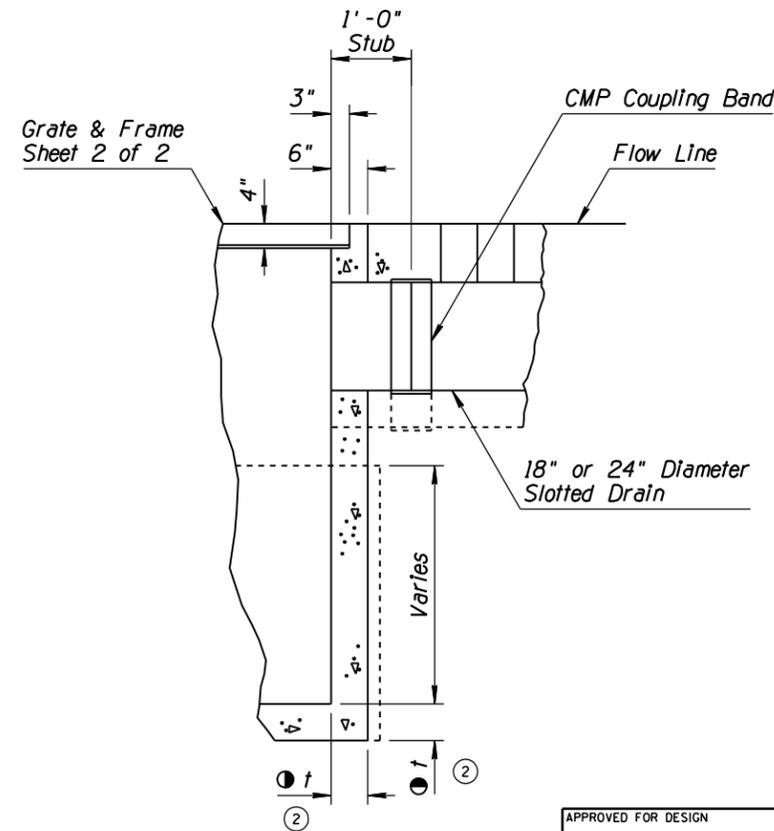


NOTE:
Bend Rebars and Cover With
Two Layers of 4"x4" Timbers

TEMPORARY TIMBER CAP DETAIL



SECTION A-A



SECTION B-B

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FREWAY CATCH BASIN DETAILS	DRAWING NO. C-15.91 Sheet 1 of 2

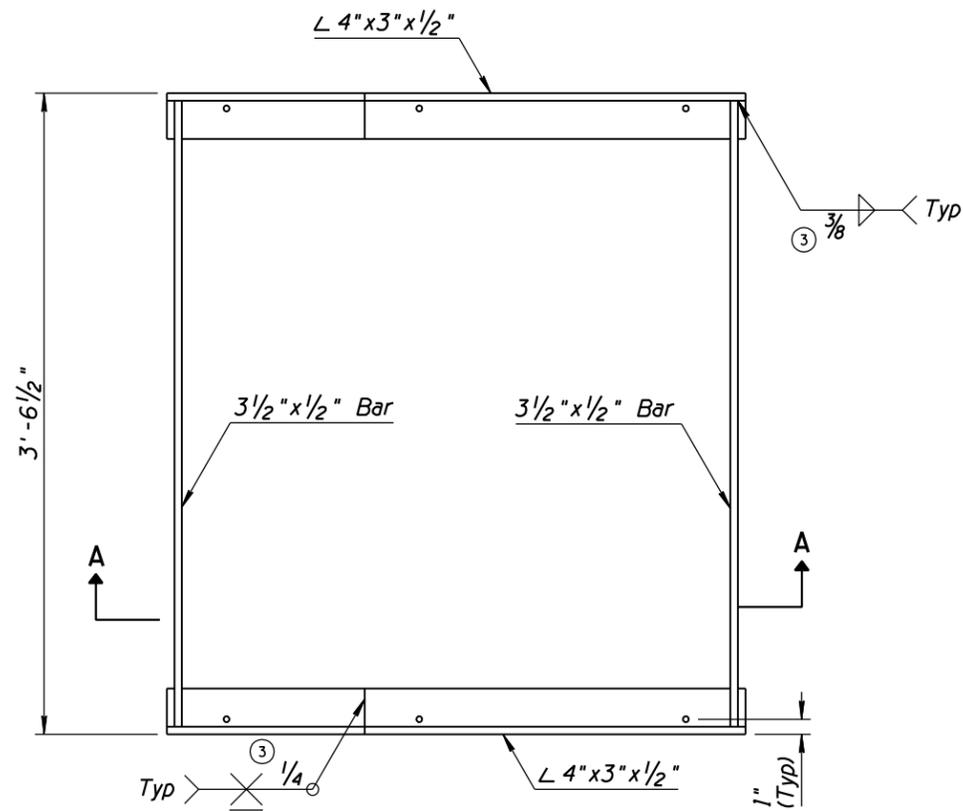
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED CONCRETE ANCHOR STUD LENGTH	RLF	9/04
2	REARRANGED GENERAL NOTES	RLF	9/04
3	REVISED WELD SIZE NOTATIONS ON DRAWING	RLF	4/06
4	ADDED TYPE E CURB REFERENCE TO TABLE	RLF	5/12

② GENERAL NOTES

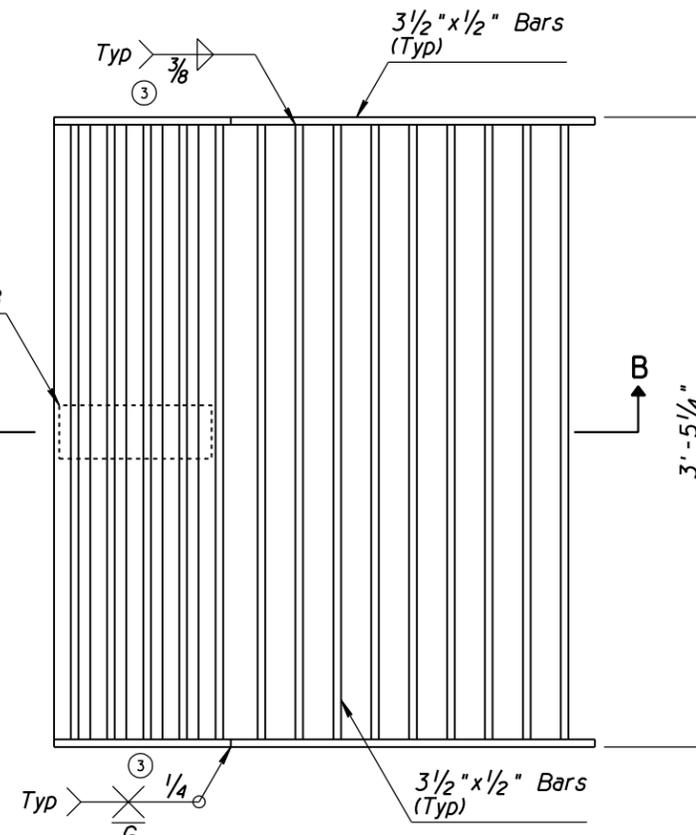
- All structural steel shall be in accordance with ASTM A36.
- All welding shall be in accordance with Std Spec 604-3.06.
- The completed grate assembly (frame & grate) shall be given two shop coats of Number 1 paint.

NOTE TO DESIGNERS

Grate design is not suitable for locations subject to bicycle traffic.



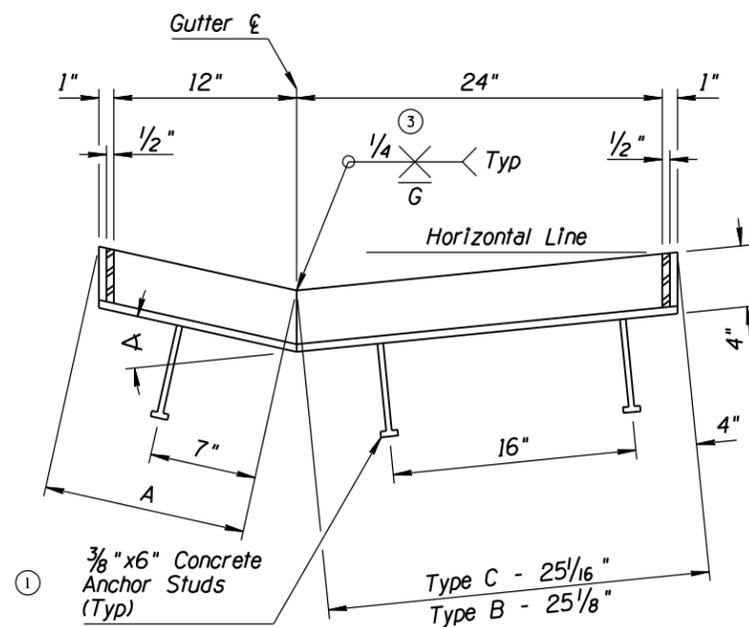
FRAME PLAN VIEW



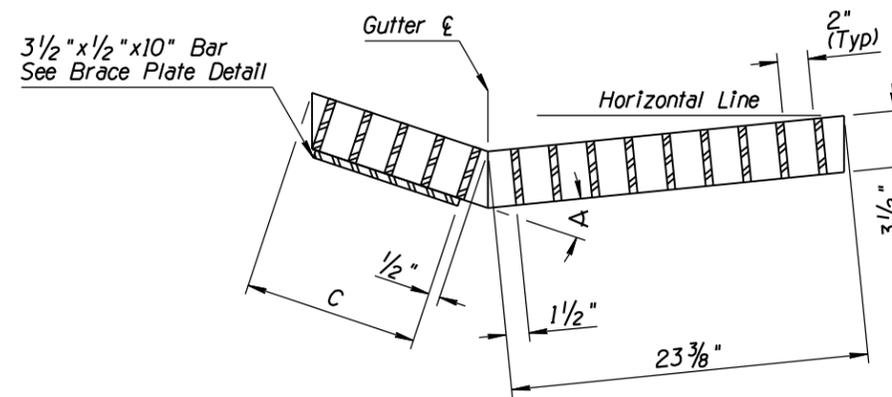
GRATE PLAN VIEW

GRATE AND FRAME DIMENSIONS						
Type	Curb Height (In)	Gutter Width (Ft-In)	Catch Basin Frame		Catch Basin Grate	
			A (In)	α	C (In)	α
B	6	2-6	13 ⁵ / ₁₆	26°-57'-40"	12 ¹ / ₁₆	26°-57'-40"
C	3	2-6	13 ⁵ / ₁₆	15°-37'-45"	11 ⁷ / ₈	15°-37'-45"
E	4	2-6	13 ⁵ / ₁₆	15°-37'-45"	11 ⁷ / ₈	15°-37'-45"

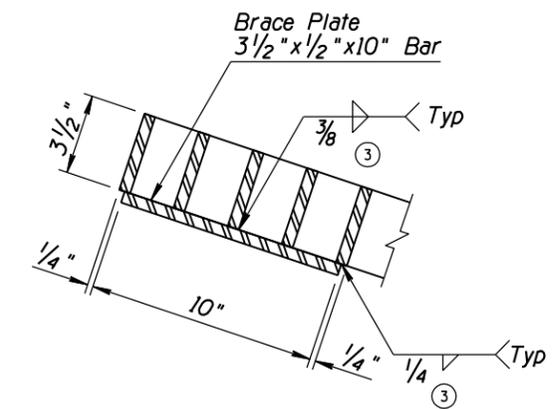
④



SECTION A-A



SECTION B-B



BRACE PLATE DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FREWAY CATCH BASIN DETAILS	DRAWING NO. C-15.91 Sheet 2 of 2

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2			
3			
4			

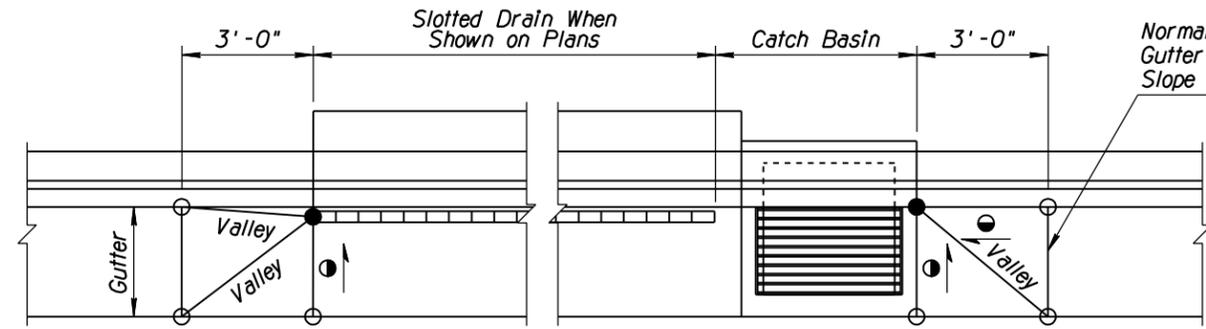
GENERAL NOTES

1. See Std Dwg C-15.91 for dimensions, sizes and details not shown for construction of catch basin.
2. See Std Dwgs C-10.52 and C-10.53 for dimensions, sizes and details not shown for construction of barrier.
3. See Std Dwg C-13.60 for dimensions, sizes and details not shown for construction of slotted drain.
4. Only longitudinal reinforcing steel shall be placed in half barrier within 1' of catch basin frame. S-shape bars shall not be placed in the rear wall of the catch basin.

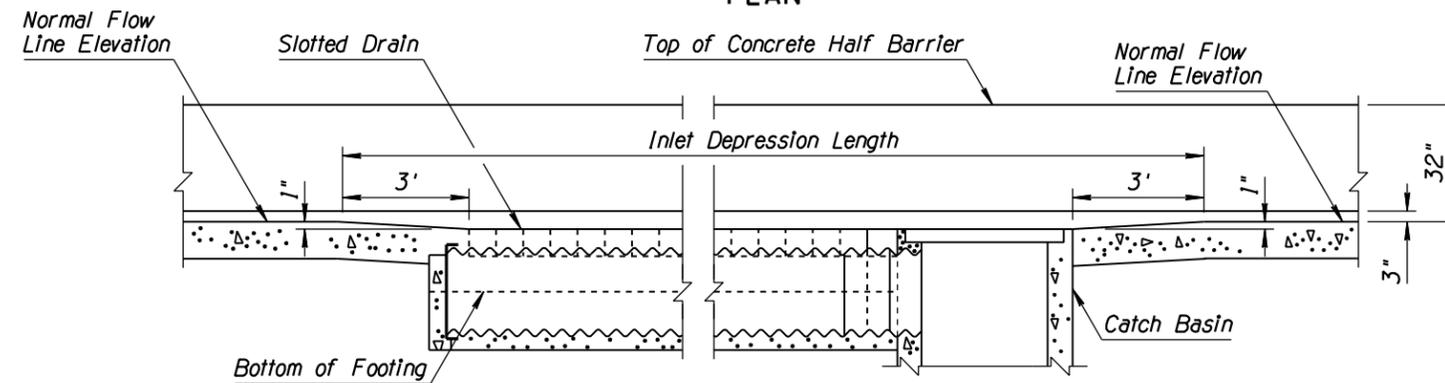
- 1'-3" for 18" diameter slotted drain
1'-6" for 24" diameter slotted drain
- Angle varies, approximately 45°
- Varies in increased height over catch basin and slotted drain inlet depression
- Depressed elevation.
- Normal pavement or gutter flow line elevation.
- Match adjacent gutter depression. Additional inlet depression as specified
- Straight grade with downward slope.

NOTE TO DESIGNERS

Grate design shown is not suitable for locations subject to bicycle traffic. Use Std Dwg C-15.50 grate with Std Dwg C-15.92 frame (Sheet 2 of 2) for locations with bicycle traffic.

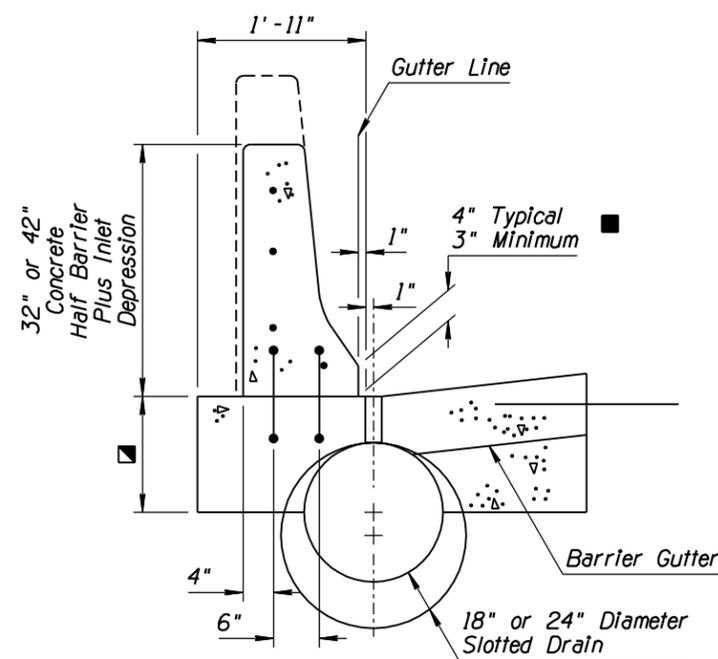


PLAN

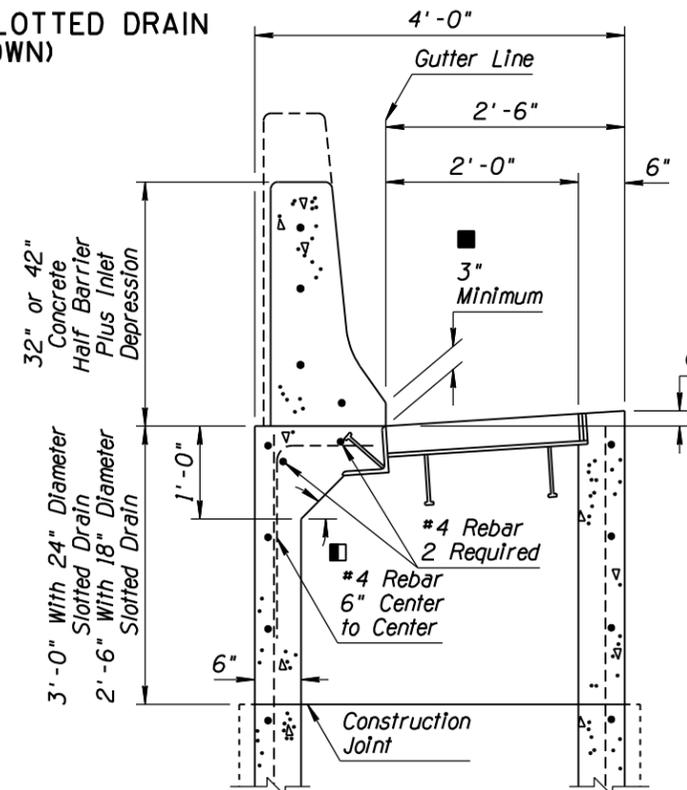


ELEVATION

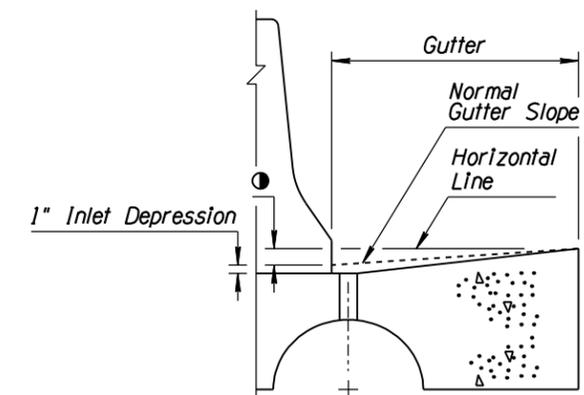
INLET DEPRESSION CONCRETE HALF BARRIER AND CATCH BASIN WITH SLOTTED DRAIN (18" CMP AND 32" CONCRETE BARRIER SHOWN)



HALF BARRIER INSTALLATION
AT SLOTTED DRAIN LOCATIONS



CATCH BASIN WITH HALF BARRIER



GUTTER DEPRESSION
AT SLOTTED DRAIN LOCATIONS

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN WITH TYPE 'F' CONCRETE HALF BARRIER	DRAWING NO. ① C-15.92 Sheet 1 of 2

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	DELETED GENERAL NOTE	RLF	4/06
3	REVISED NOTE TO DESIGNERS	RLF	5/07
4			

GENERAL NOTES

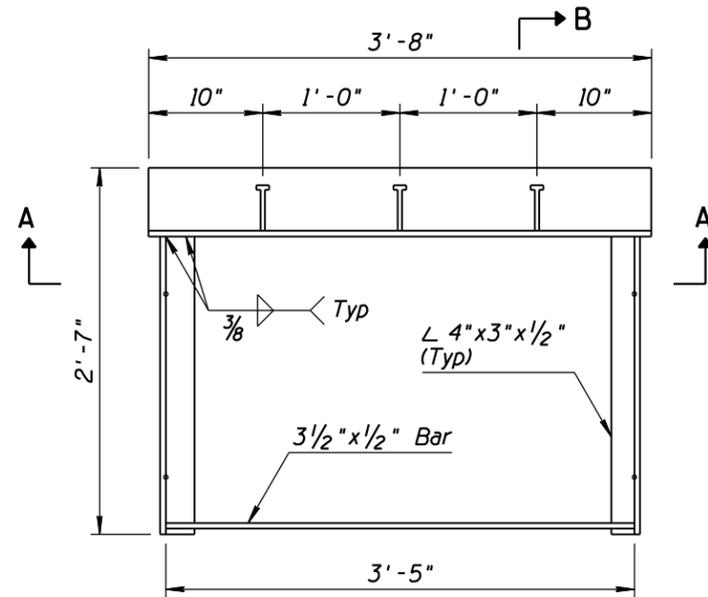
- All welding shall be in accordance with Std Spec 604-3.06.
- Grate opening for grate shown is 4.75 Sq Ft.

②

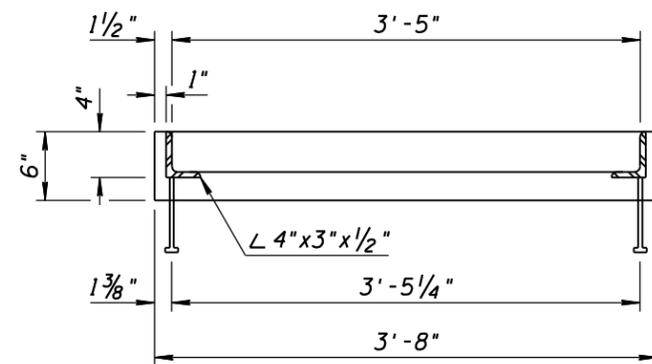
▲ Beveled side of grate toward barrier

③ NOTE TO DESIGNERS

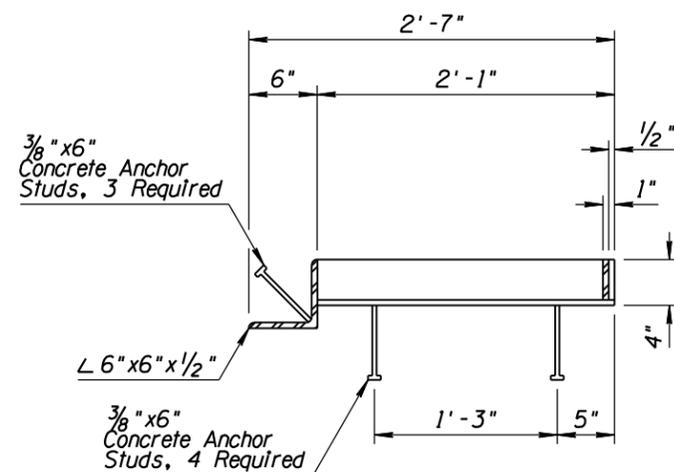
Grate design shown is not suitable for locations with bicycle traffic. Use Std Dwg C-15.50 grate with Std Dwg C-15.92 frame (Sheet 2 of 2) for locations with bicycle traffic.



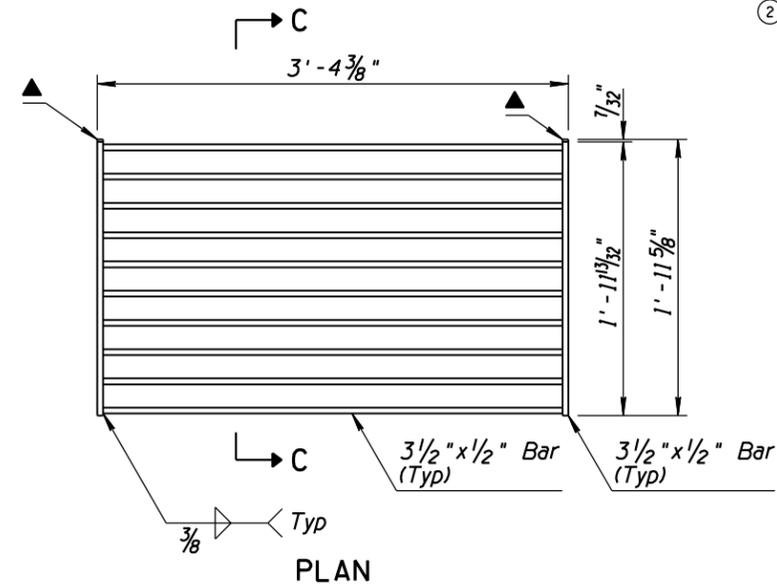
PLAN



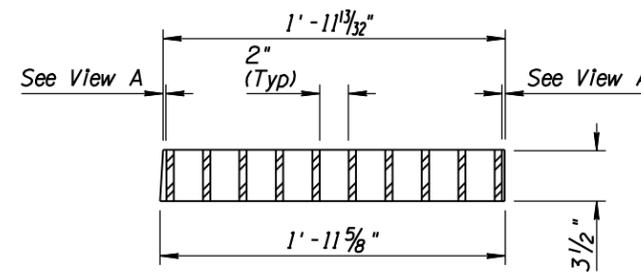
SECTION A-A



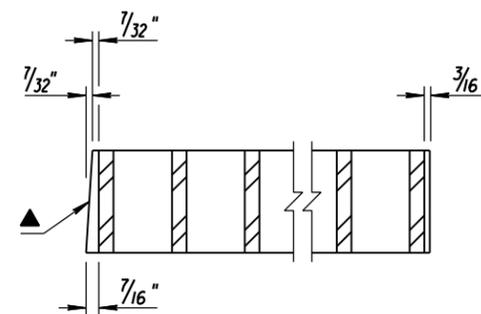
SECTION B-B
FRAME



PLAN



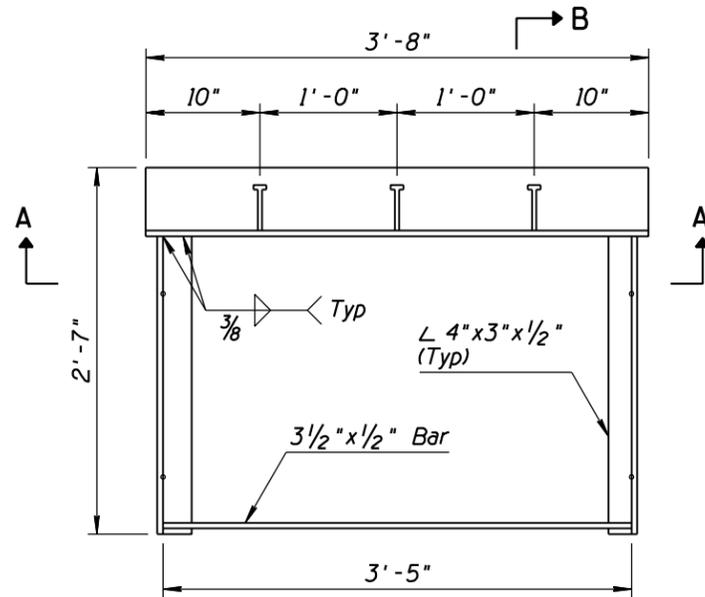
SECTION C-C
GRATE



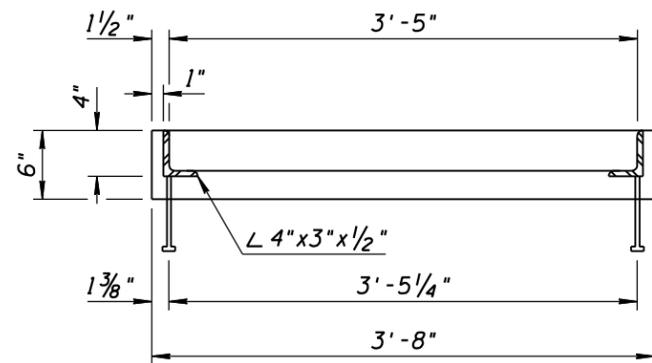
View A

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN WITH TYPE 'F' CONCRETE HALF BARRIER	DRAWING NO. ① C-15.92 Sheet 2 of 2

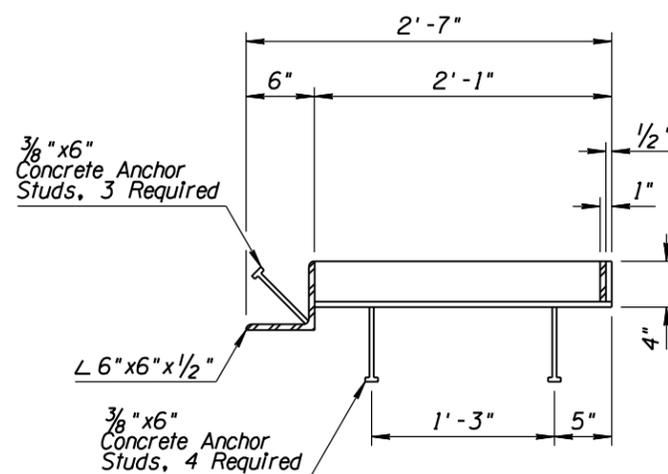
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	DELETED GENERAL NOTE	RLF	4/06
3	REVISED NOTE TO DESIGNERS	RLF	5/07
4			



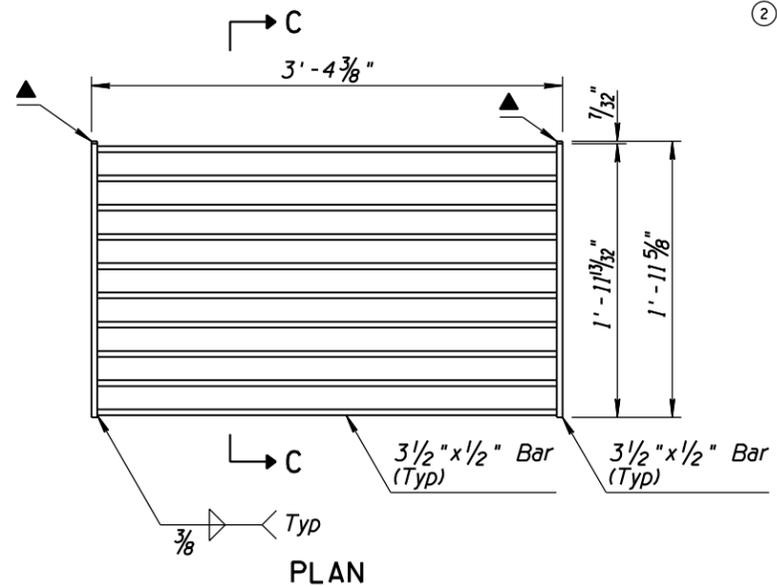
PLAN



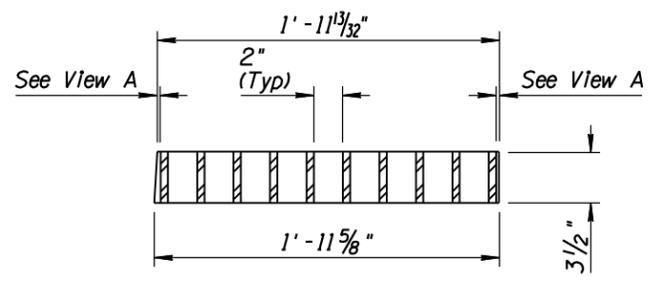
SECTION A-A



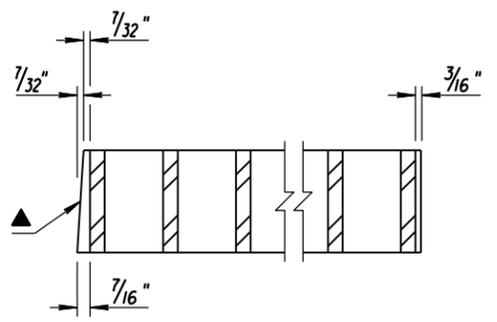
SECTION B-B
FRAME



PLAN



SECTION C-C
GRATE



View A

GENERAL NOTES

- All welding shall be in accordance with Std Spec 604-3.06.
- Grate opening for grate shown is 4.75 Sq Ft.

▲ Beveled side of grate toward barrier

NOTE TO DESIGNERS

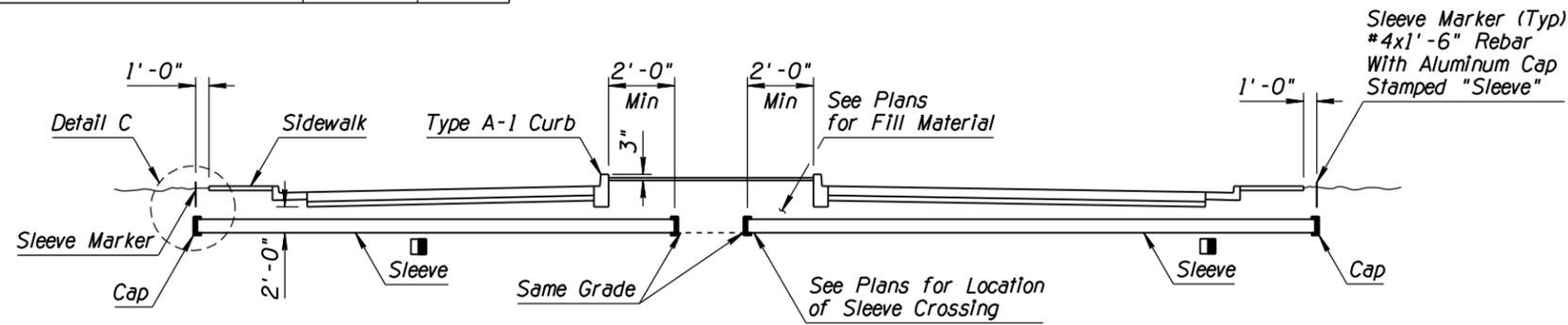
Grate design shown is not suitable for locations with bicycle traffic. Use Std Dwg C-15.50 grate with Std Dwg C-15.92 frame (Sheet 2 of 2) for locations with bicycle traffic.

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN WITH TYPE 'F' CONCRETE HALF BARRIER	DRAWING NO. ① C-15.92 Sheet 2 of 2

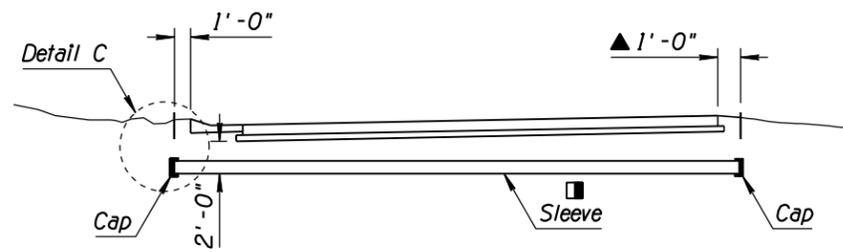
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED GRAPHICS	RLF	9/04
2			
3			
4			

GENERAL NOTES

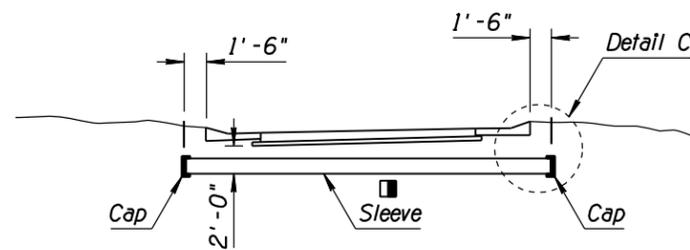
1. Irrigation sleeves shall be installed in a trench condition. See Std Dwg C-13.15.
 2. Bedding and backfill material shall be Class 2 AB.
 3. Pipe installation shall conform to Section 501 of Std Specs.
 4. The contractor shall imprint a 4"± high letter "S" on the face of all curbs at sleeve locations. The width of the letter shall be 1/2" and shall penetrate the concrete surface 1/2".
 5. For non-continuous sleeves under crossroads, Std Dwg C-05.10 Type "A-1" curb shall be required where median is irrigated. See plans for locations. Dumbell waterstop shall be at all expansion joints.
 6. Materials used for caps or plugs shall be as recommended by the pipe supplier and approved by the Engineer.
- Sleeves shall be installed parallel to the roadway subgrade. Slope may vary in super-elevated sections. Minimum slope nominal to drain.
- ▲ 2'-0" Back of Curb Median



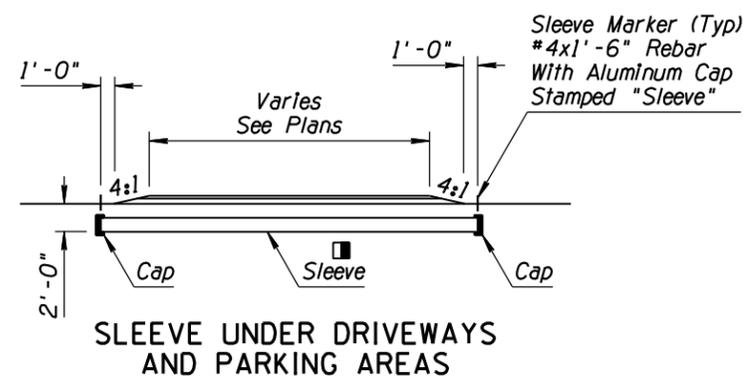
SLEEVE UNDER CROSSROAD



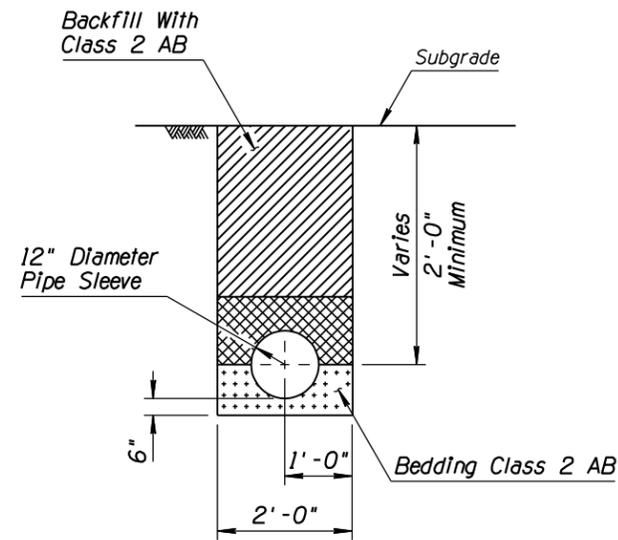
SLEEVE UNDER MAINLINE



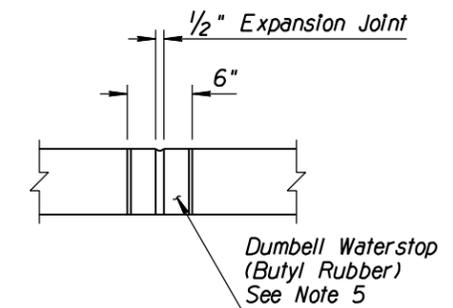
SLEEVE UNDER RAMP



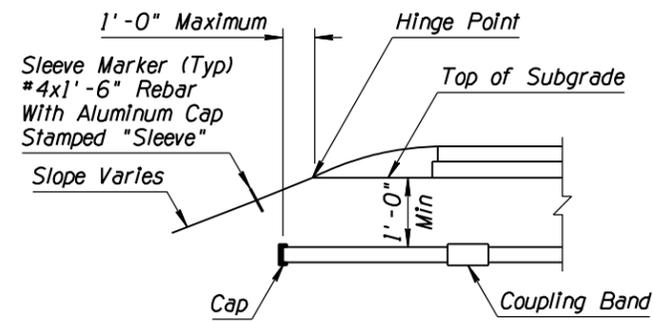
SLEEVE UNDER DRIVEWAYS AND PARKING AREAS



TYPICAL INSTALLATION



DUMBELL WATERSTOP

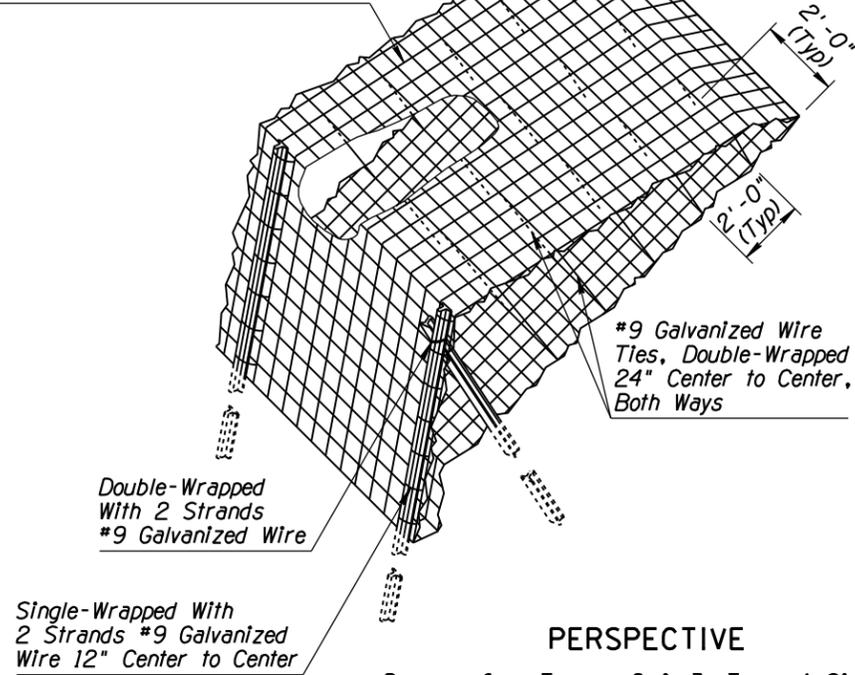


DETAIL C
SLEEVE TERMINATION
AT ELEVATED ROADWAY

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	IRRIGATION SLEEVES	DRAWING NO. C-16.40

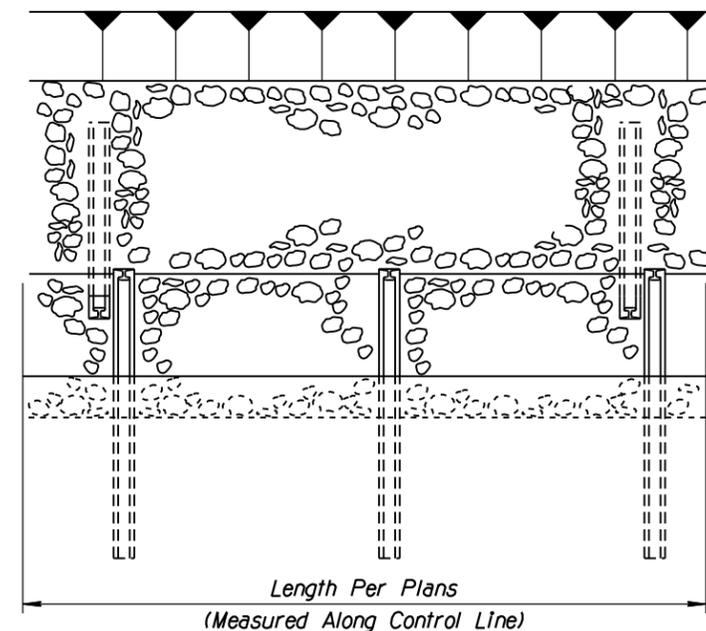
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REVISED BOLT SPECIFICATION	RLF	5/12
3			
4			

Galvanized Wire Mesh Shall Entirely Enclose Rock Backfill Including Both Ends. Lace Laps With 2 Strands of #9 Galvanized Wire

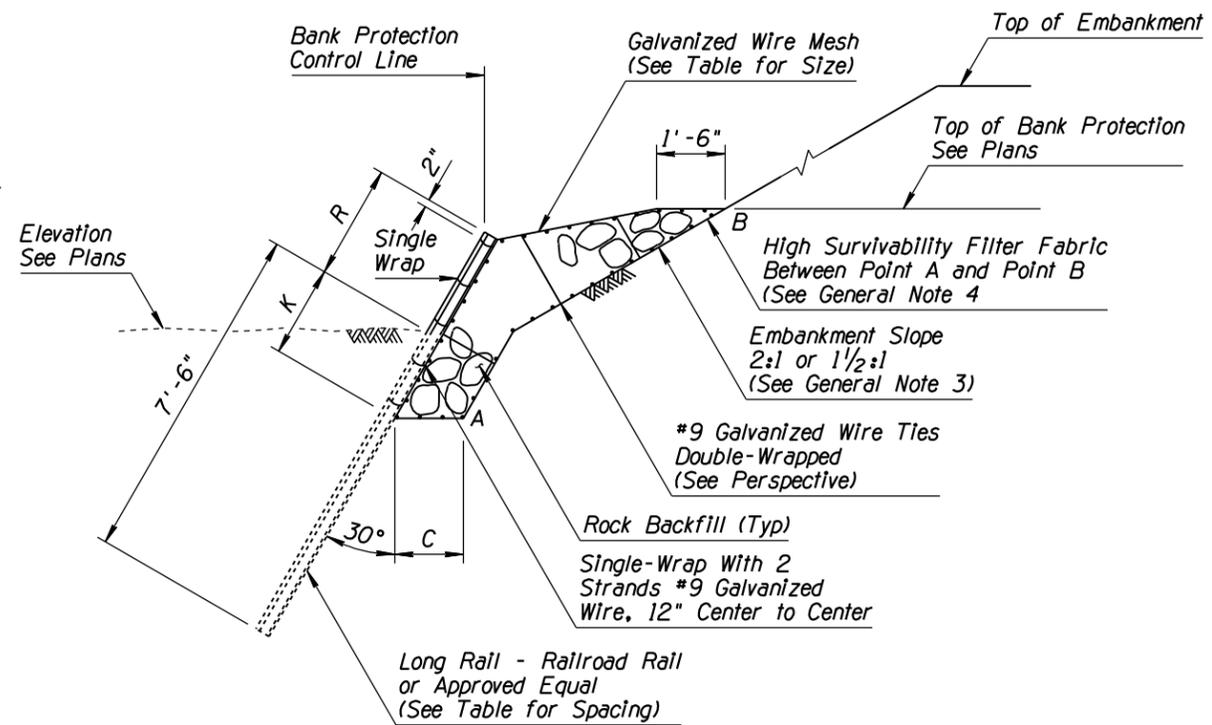


PERSPECTIVE

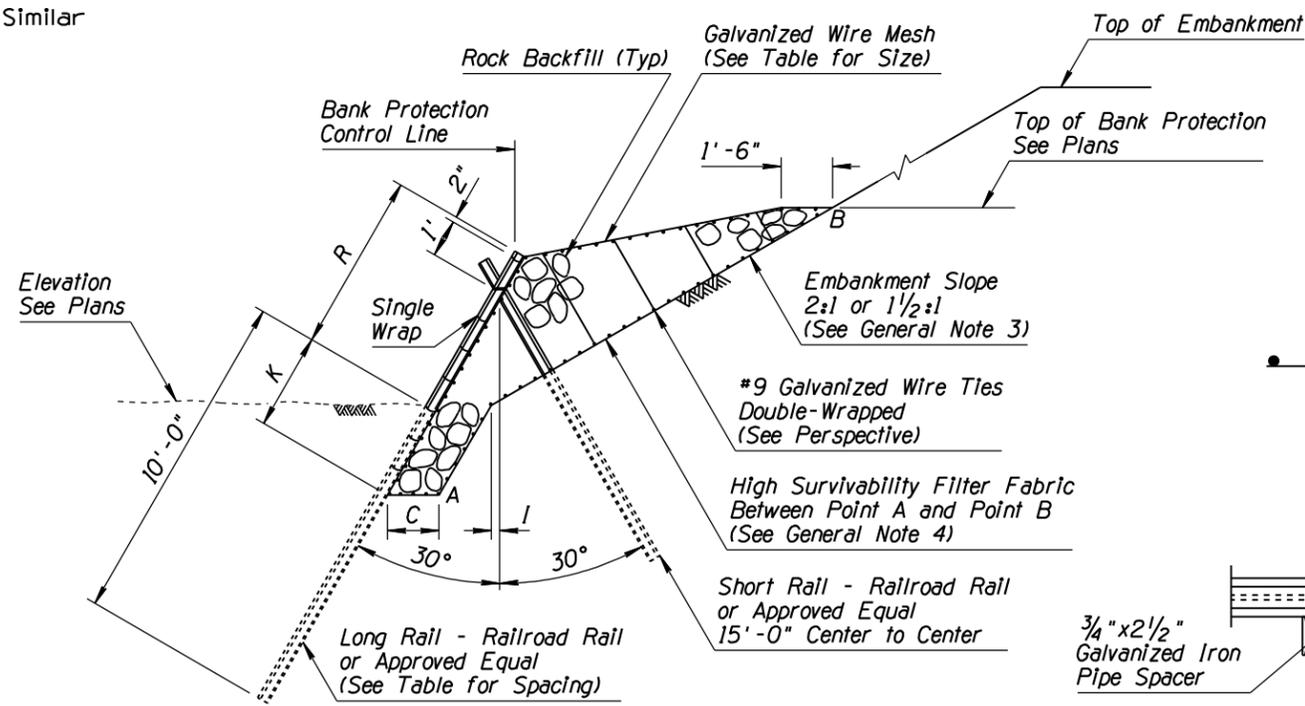
Drawn for Types 2 & 3, Type 1 Similar



PLAN OF CHANNEL BANK PROTECTION



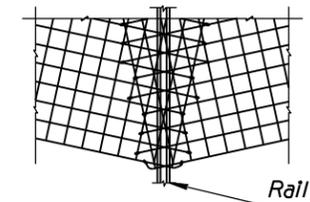
TYPE 1 BANK PROTECTION



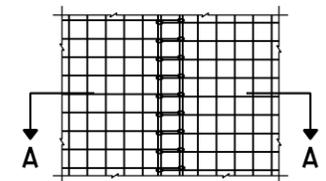
TYPE 2 AND 3 BANK PROTECTION

GENERAL NOTES

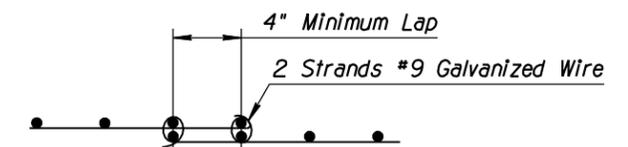
1. Rock shall conform to Std Spec 913-2.01(A). The rock shall have a minimum nominal diameter no smaller than the mesh opening, and a maximum nominal diameter of 12".
2. All mesh wire, tie wire, cable, bolts, washers and nuts shall be galvanized.
3. When other embankment slope rates are encountered, warp to 1 1/2:1 or 2:1.
4. High survivability filter fabric shall conform to Section 913-2.05 of the Standard Specifications.
5. All wire mesh on a single project shall have the same mesh opening.



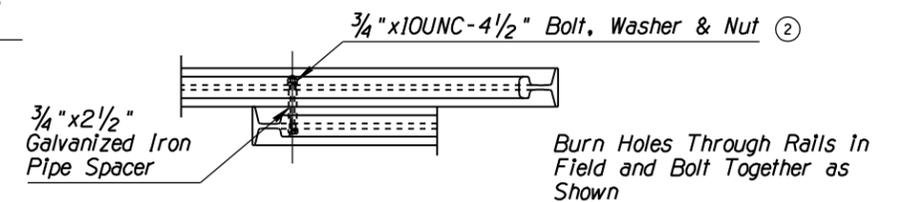
ELEVATION AT CHORD POINT ON CURVE



ELEVATION ON STRAIGHT SECTION



SECTION A - A
WIRE MESH SPLICE DETAILS

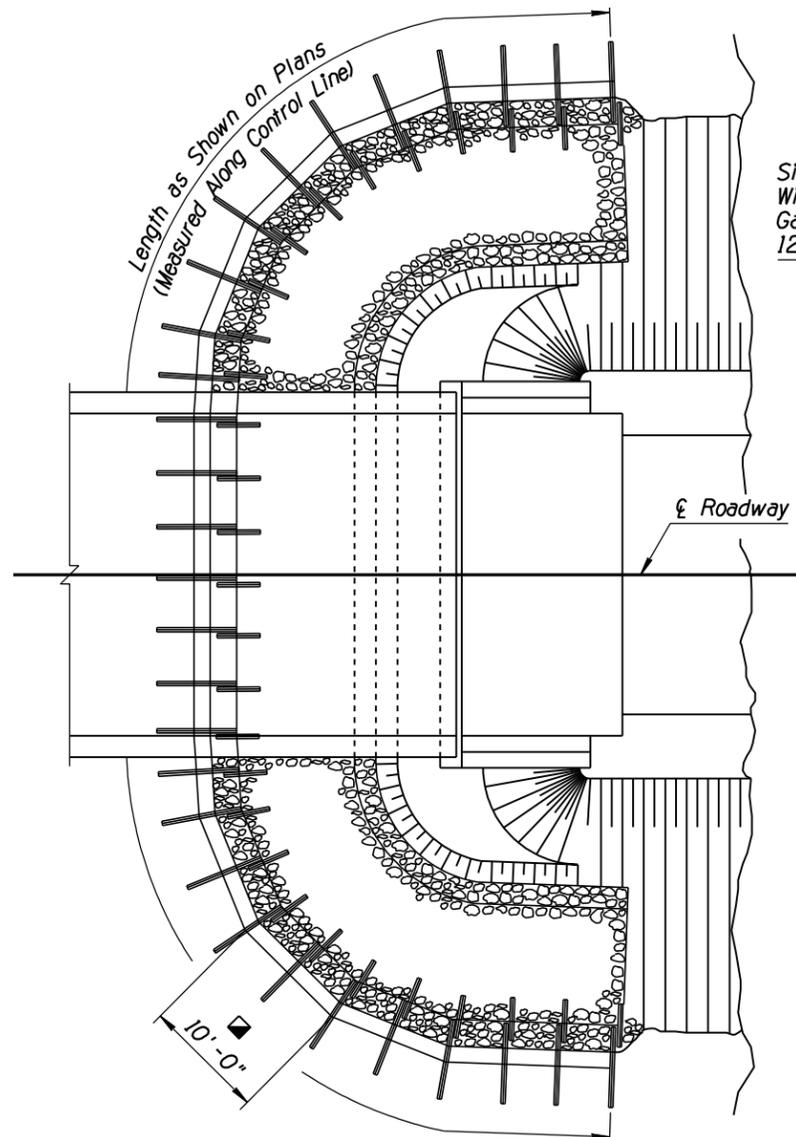


RAIL CONNECTION DETAIL

Type	SHORT RAIL LENGTH (Ft)	SHORT RAIL WT (Lbs/Yd)	LONG RAIL LENGTH (Ft)	LONG RAIL WT (Lbs/Yd)	LONG RAIL SPACING (Ft-In) (Center to Center)	MESH DESIGNATION	C (Ft-In)	I (Ft)	K (Ft-In)	R (Ft-In)	TOP OF BANK PROTECTION ABOVE THE STREAM BED (Ft)
1	N/A	N/A	10	20 Min	7-0	3" X 3" - W1.4/W1.4	1-6	0	2-0	2-6	2 to 4
2	10	20 Min	15	50 Min	7-6	or	1-6	0	3-0	5-0	4 to 7
3	12	20 Min	17	50 Min	7-6	4" X 4" - W1.4/W1.4	2-0	1	4-0	7-0	6 to 12

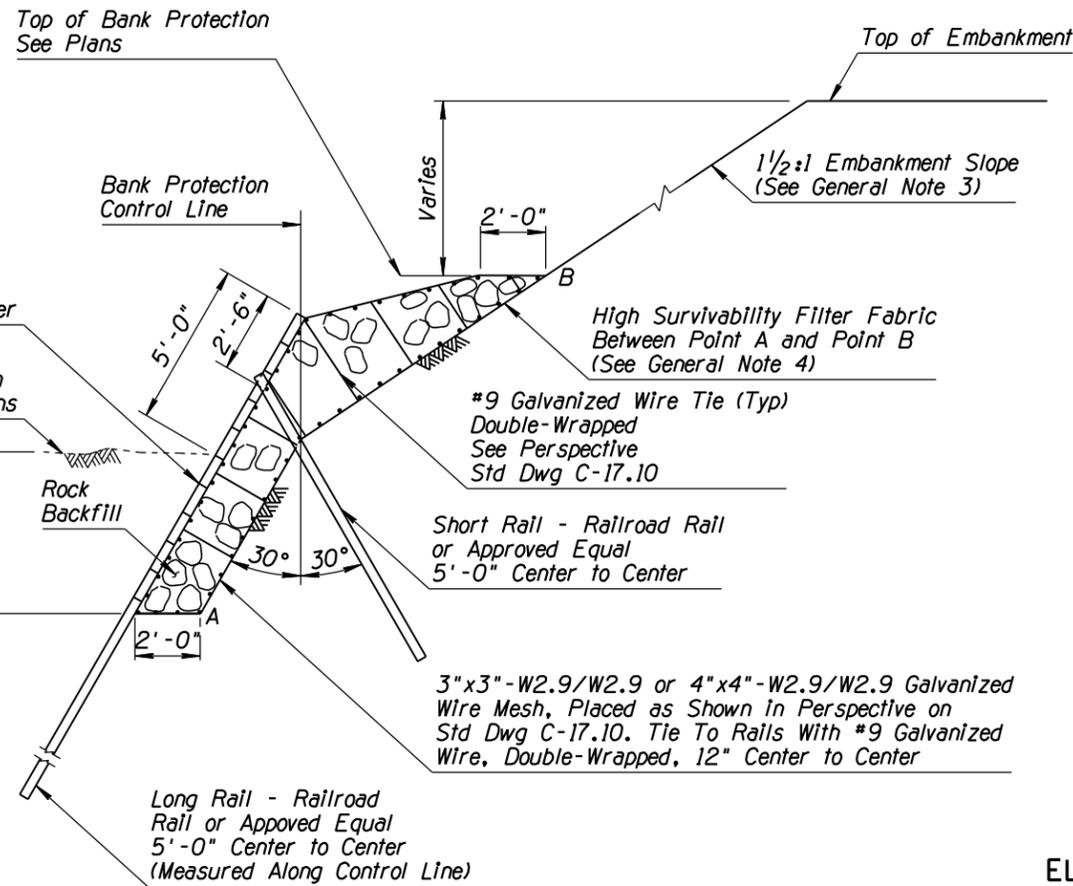
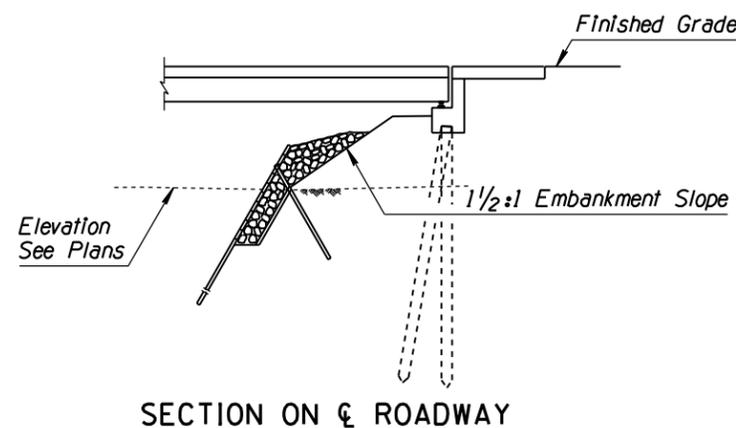
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	RAIL BANK PROTECTION FOR DRAINAGEWAYS TYPES 1, 2 & 3	DRAWING NO. C-17.10

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED BOLT SPECIFICATION	RLF	5/12
2			
3			
4			



Construct on Two-Panel Chords Around Curves

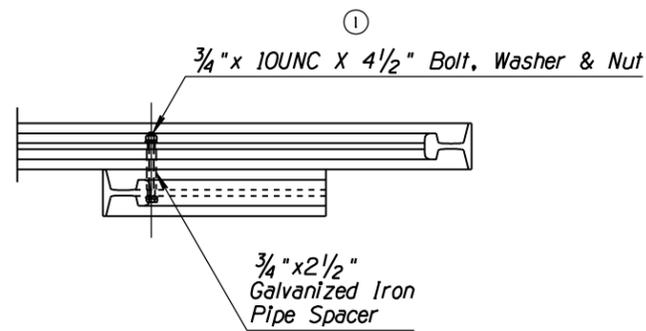
PLAN OF BANK PROTECTION AT ABUTMENT



TYPICAL SECTION

See Perspective Std Dwg C-17.10

Type	X (Ft-In)	Minimum Rail Length (Ft)		Minimum Rail Weight (Lbs/Yd)
		Long Rail	Short Rail	
4	5-0	22	10	50
5	7-6	25	13	50
6	10-0	28	16	50

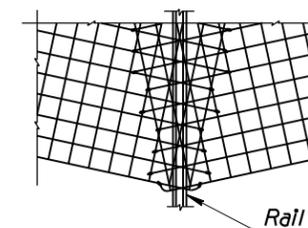


RAIL CONNECTION DETAIL

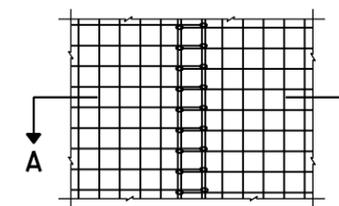
Burn Holes Through Rails in Field and Bolt Together as Shown

GENERAL NOTES

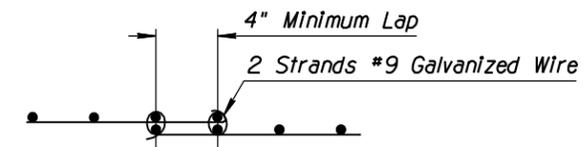
1. Rock shall conform to Section 913-2.01(A) of the Standard Specifications. The rock shall have a minimum nominal diameter no smaller than the mesh opening, and a maximum nominal diameter of 12".
2. All mesh wire, tie wire, cable, bolts, washers and nuts shall be galvanized.
3. When other embankment slope rates are encountered, warp to 1/2:1 or 2:1.
4. High survivability filter fabric shall conform to Section 913-2.05 of the Standard Specifications.
5. All wire mesh on a single project shall have the same mesh opening.



ELEVATION AT CHORD POINT ON CURVE



ELEVATION ON STRAIGHT SECTION

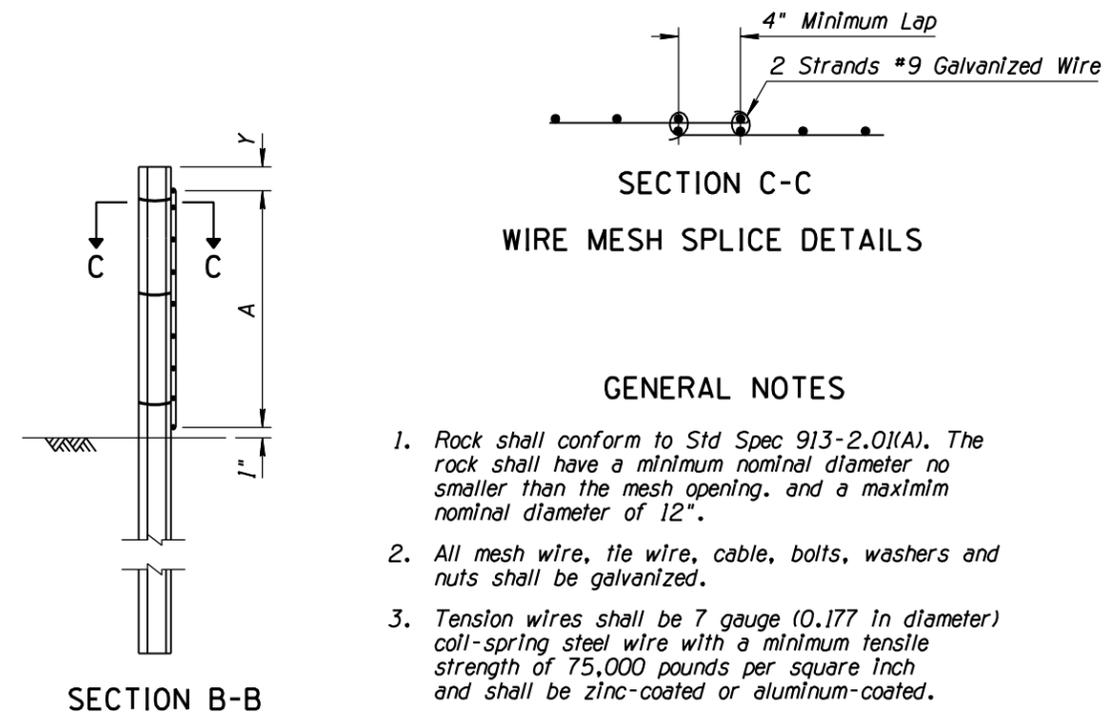
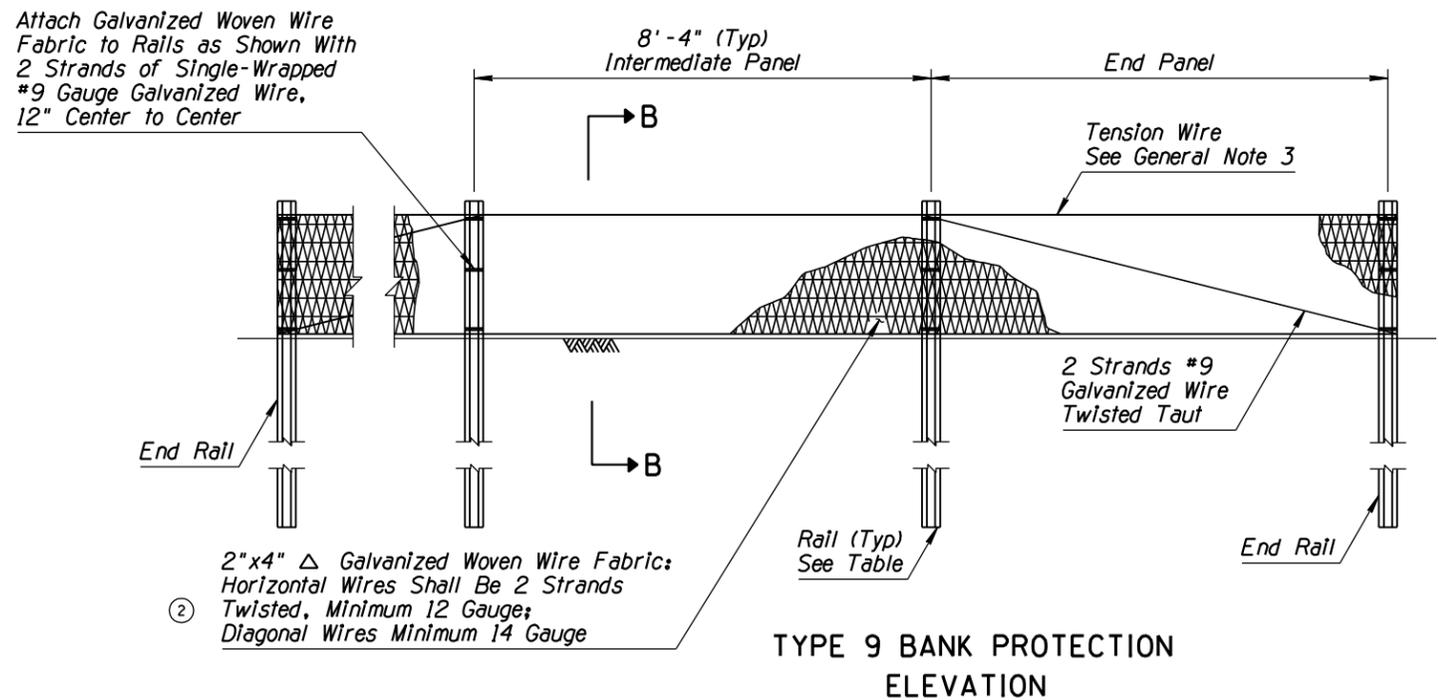
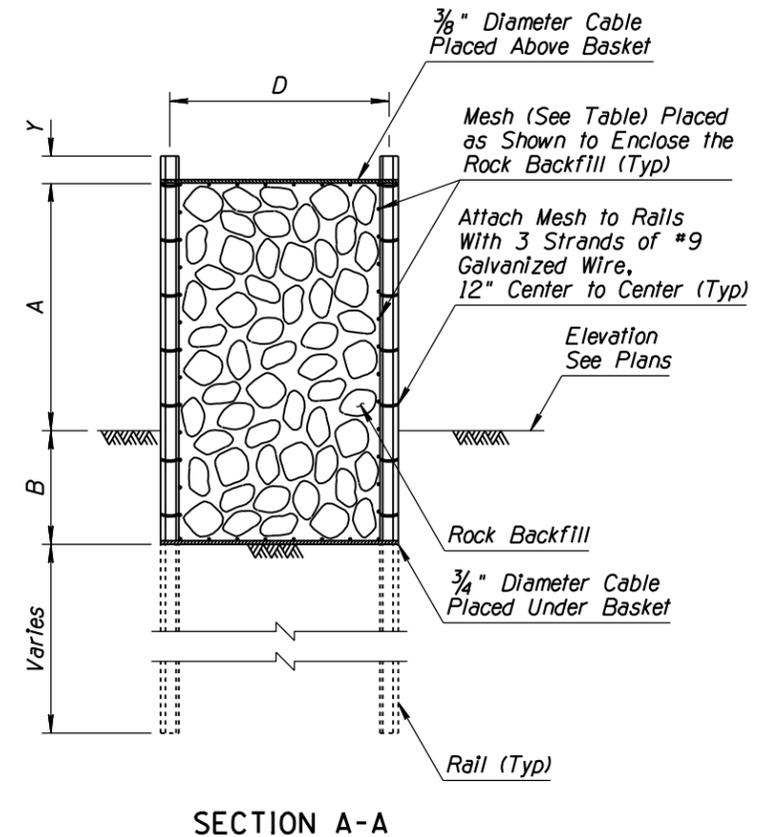
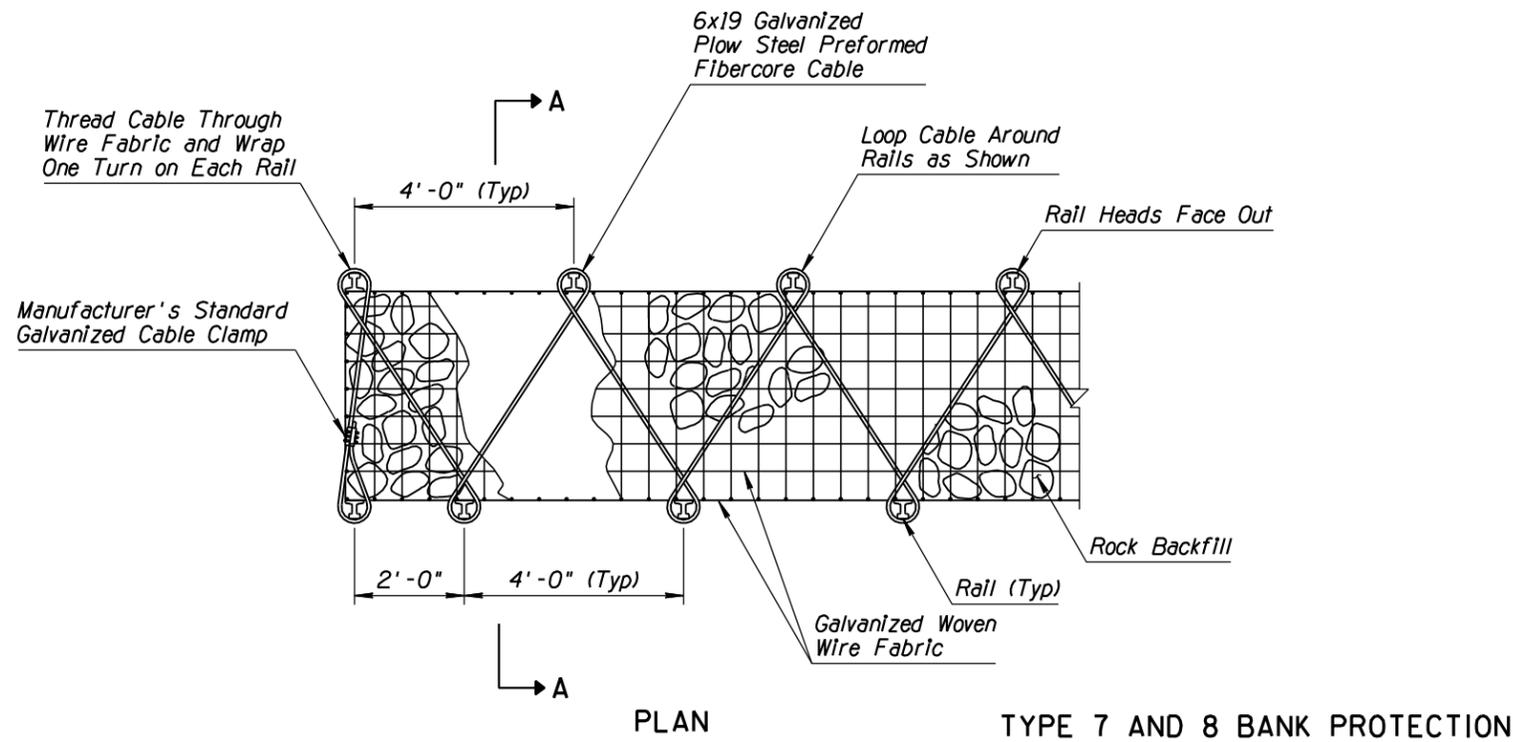


SECTION A-A

WIRE MESH SPLICE DETAILS

APPROVED FOR DESIGN	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION	RAIL BANK PROTECTON AT ABUTMENTS TYPES 4, 5 & 6	DRAWING NO. C-17.15

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REVISED WIRE GAUGE SIZE	RLF	5/12
3			
4			



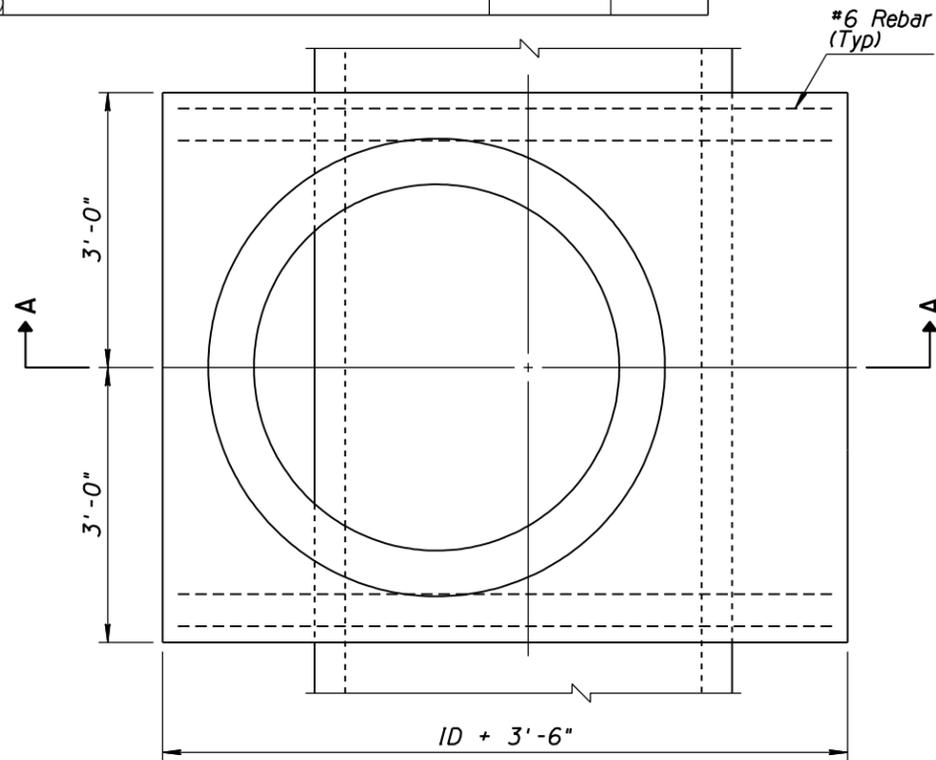
GENERAL NOTES

1. Rock shall conform to Std Spec 913-2.01(A). The rock shall have a minimum nominal diameter no smaller than the mesh opening, and a maximum nominal diameter of 12".
2. All mesh wire, tie wire, cable, bolts, washers and nuts shall be galvanized.
3. Tension wires shall be 7 gauge (0.177 in diameter) coil-spring steel wire with a minimum tensile strength of 75,000 pounds per square inch and shall be zinc-coated or aluminum-coated.

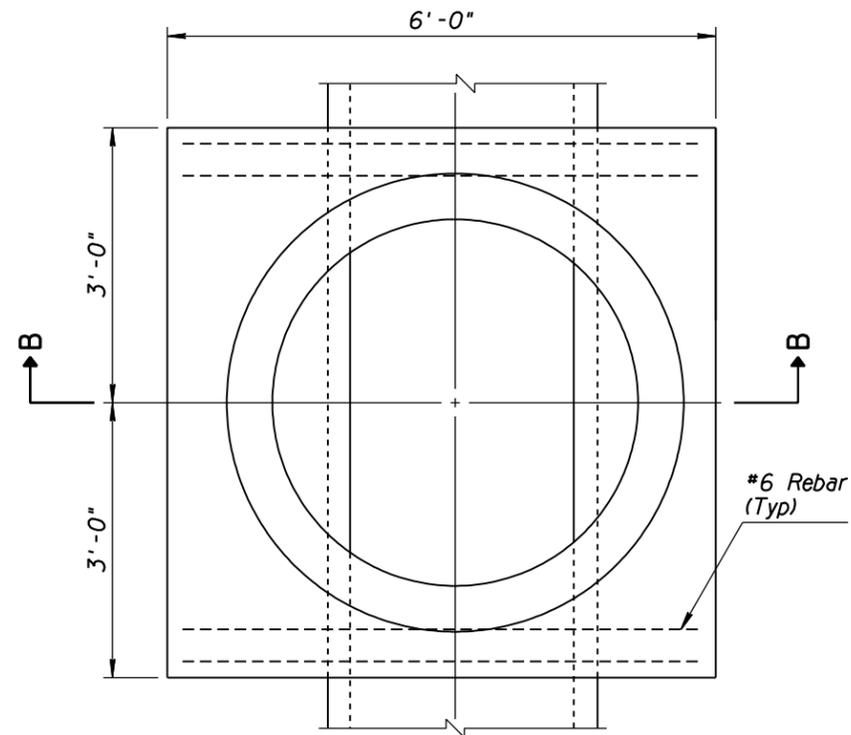
Type	MIN RAIL LENGTH (Ft)	MIN RAIL WT (lbs/Yd)	MESH	A (Ft-In)	B (Ft-In)	D (Ft)	Y (In)
7	15	50	3"X3"-W1.4/W1.4 or 4"X4"-W1.4/W1.4	4 - 0	2 - 0	4	6
8	18	50		7 - 0	3 - 0	5	6
9	10	15	N/A	2 - 2	N/A	N/A	3

APPROVED FOR DESIGN	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION	RAIL BANK PROTECTION FOR DRAINAGEWAYS TYPES 7, 8 & 9	DRAWING NO. C-17.20

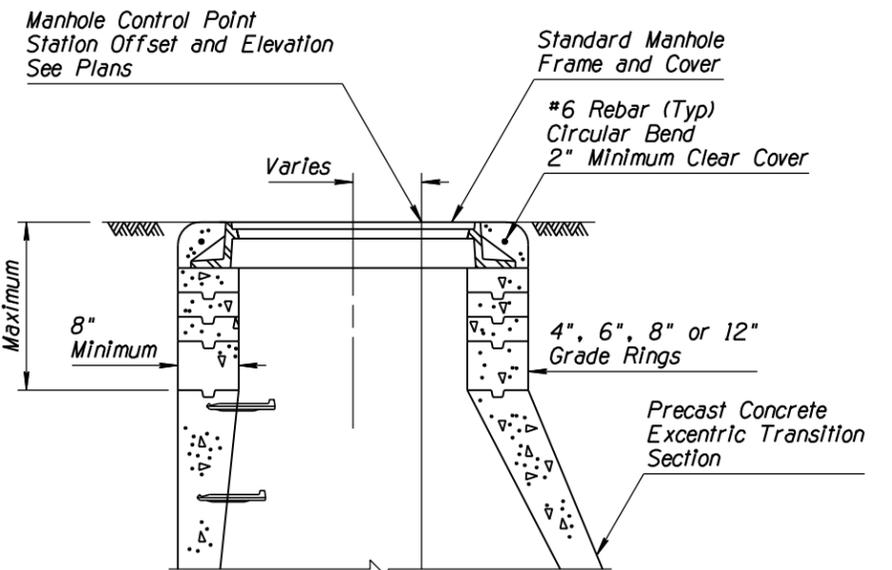
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG TO C-18.10, SHEET 2 OF 3	RLF	9/04
2	REVISED SECTION A-A THROUGH C-C GRAPHICS	RLF	4/06
3			
4			



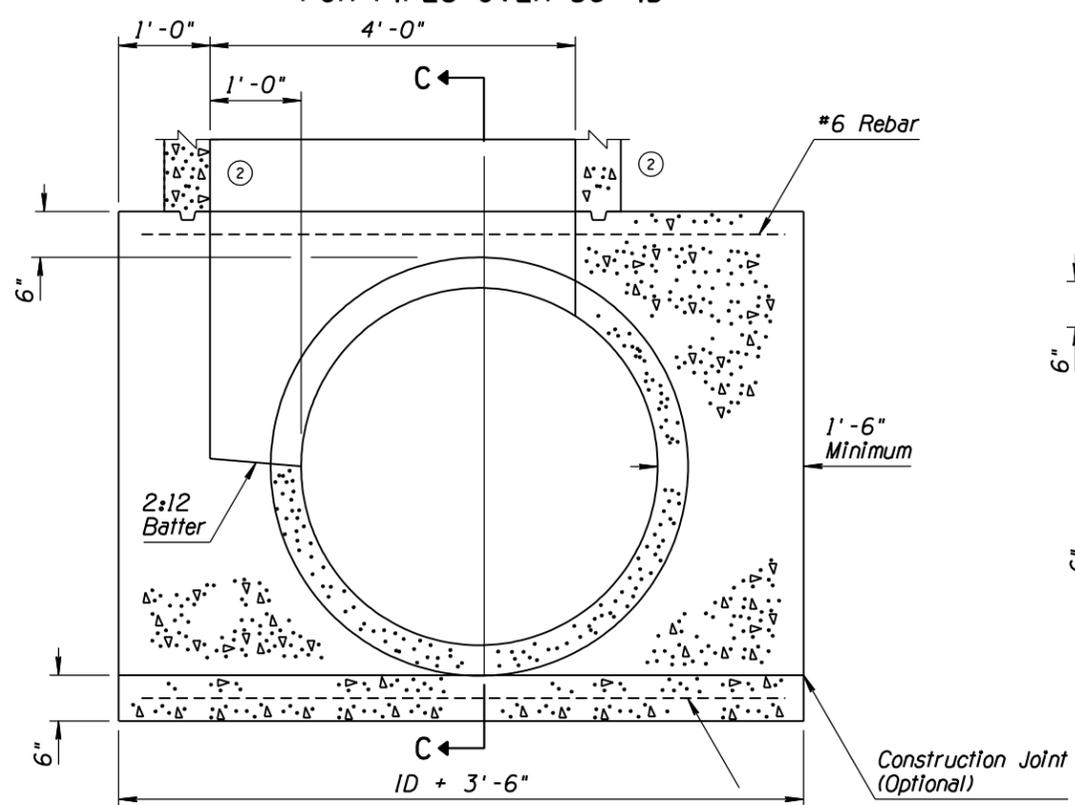
PLAN FOR PIPES OVER 36" ID



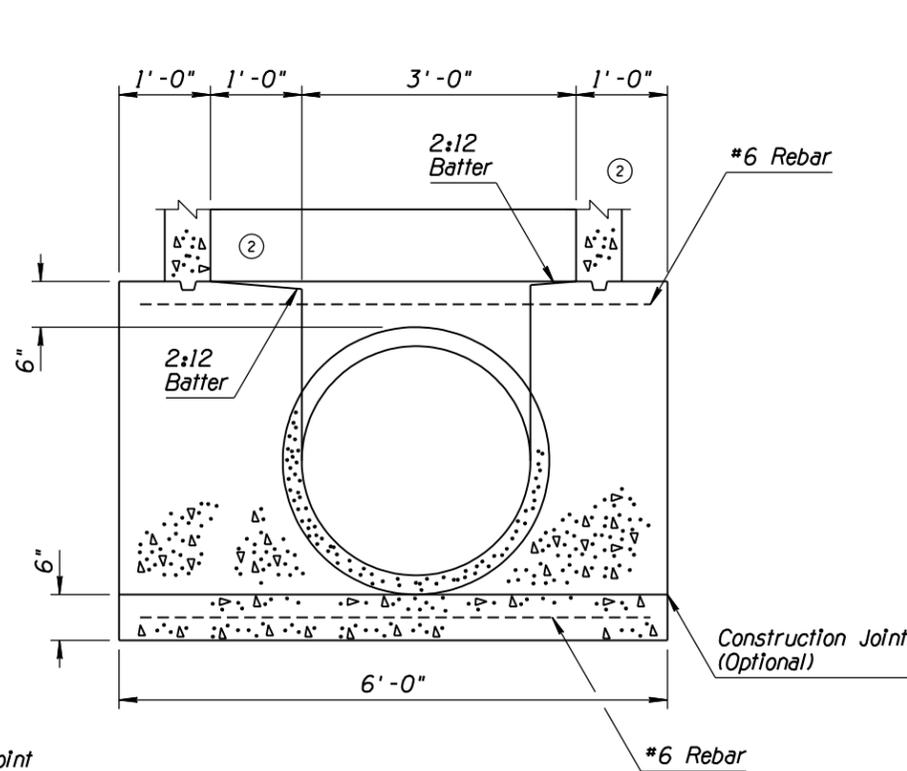
PLAN FOR PIPES 36" ID AND SMALLER



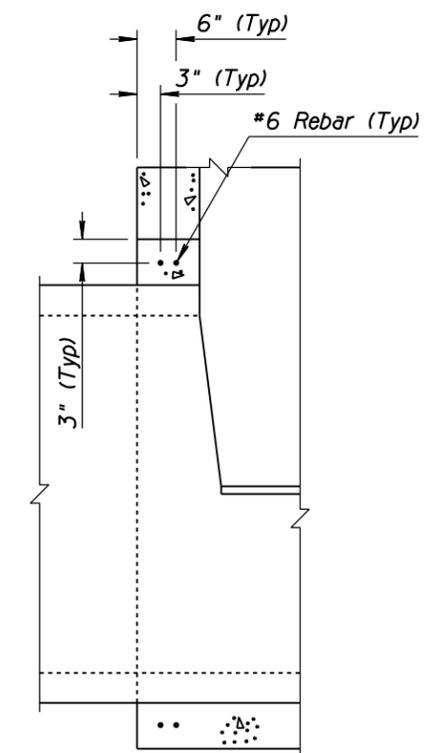
SECTION RING, FRAME & COVER NON-PAVEMENT INSTALLATION



SECTION A-A STANDARD BASE STRUCTURE FOR PIPES OVER 36" ID



SECTION B-B STANDARD BASE STRUCTURE FOR PIPES 24" TO 36" ID



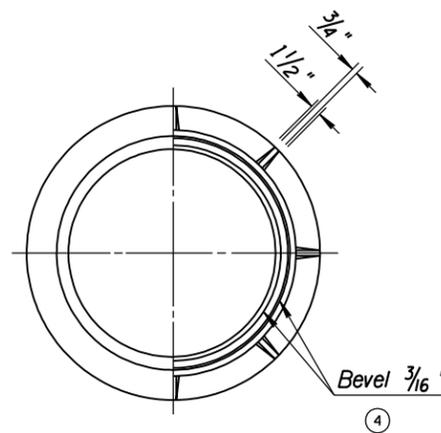
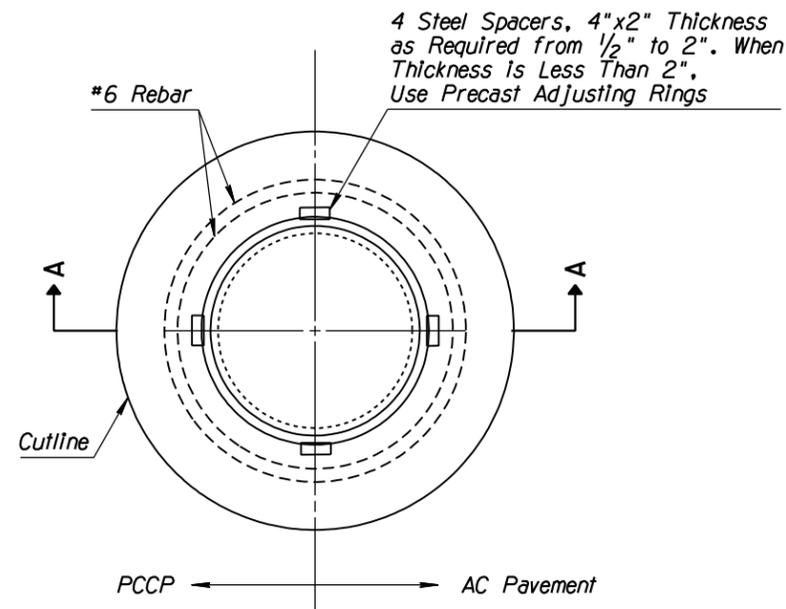
SECTION C-C

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	MANHOLE BASE DETAILS NORMAL INSTALLATION	DRAWING NO. C-18.10 Sheet 2 of 3

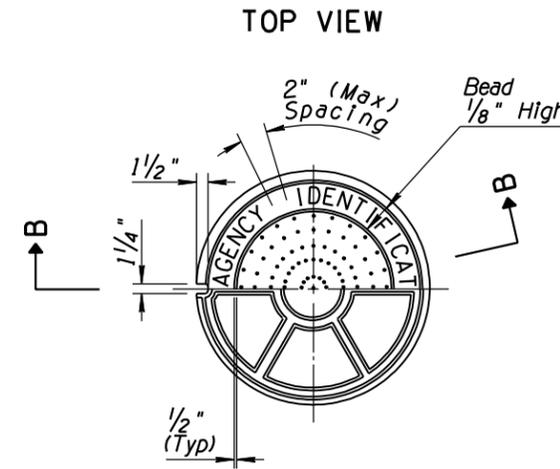
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG FROM C-18.20 TO C-18.10, SHEET 3 OF 3	RLF	9/04
2	MODIFIED SECTION VIEWS AND ADDED DETAIL A	RLF	5/12
3	NEW GENERAL NOTE 1: REVISED GENERAL NOTE NUMBERS	RLF	5/12
4	REVISED BEVEL SIZE	RLF	5/12

GENERAL NOTES

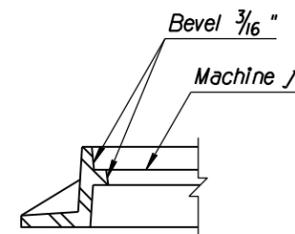
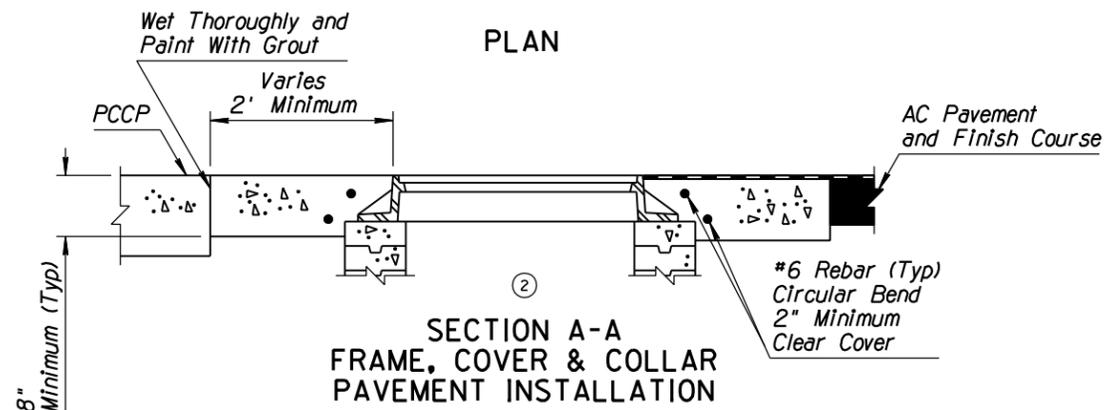
- The 30" minimum opening shall be required. Other Frame and Cover dimensions shown are nominal and vary by manufacturer.
- All frames, grates, and covers shall support HS20 loading, minimum.
- Casting weights shown are minimum weights and are either for cast-iron or ductile-iron castings. Casting weight shall not exceed 110% of the weights shown.
- Covers (excluding grates) shall conform to the following:
 - Manhole covers to contain the agency name and utility, as directed;
 - Letters shall be 2 inches in height and raised 1/8-inch above the plane of the cover;
 - Letters and words to be equally spaced; and
 - Letter font and layout shall be as approved by the Engineer.
- Details shown are typical. Alternative designs of manhole frames and covers may be used upon approval of the Engineer, as long as the minimum loading and weight criteria (see above) are met.



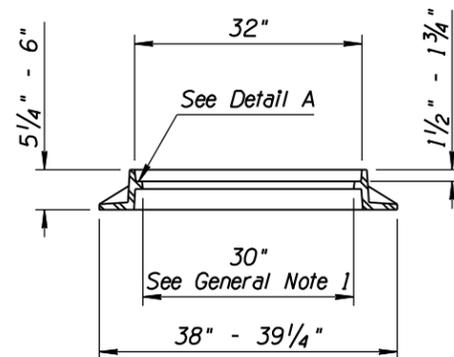
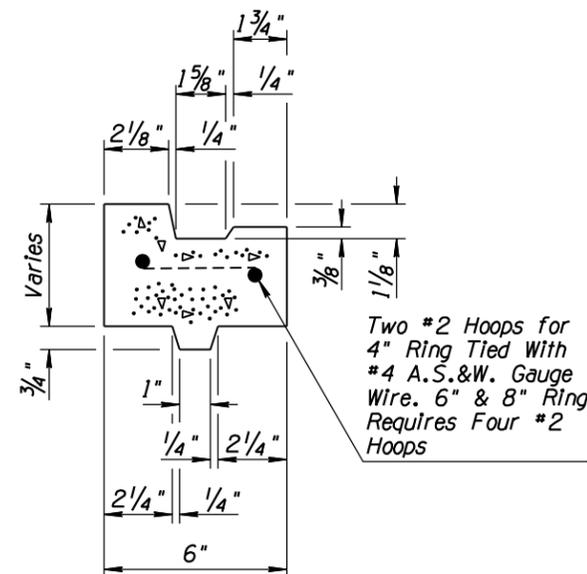
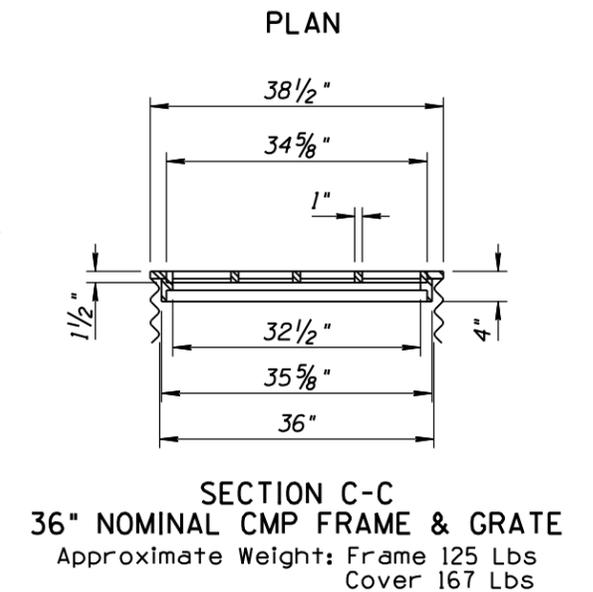
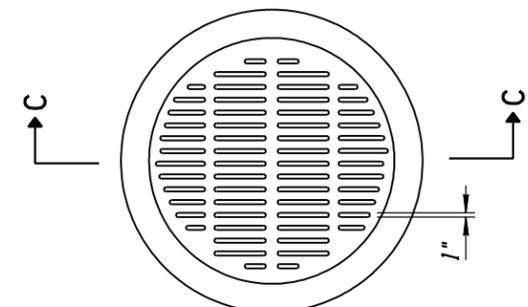
BOTTOM VIEW - TOP VIEW



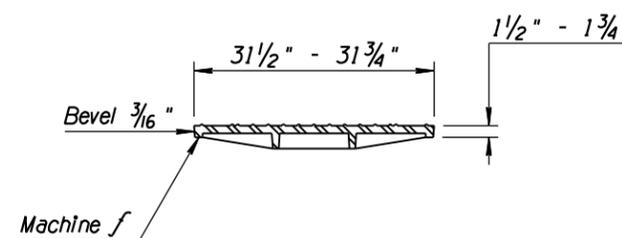
TOP VIEW - BOTTOM VIEW



DETAIL A



SECTION OF FRAME



SECTION B-B

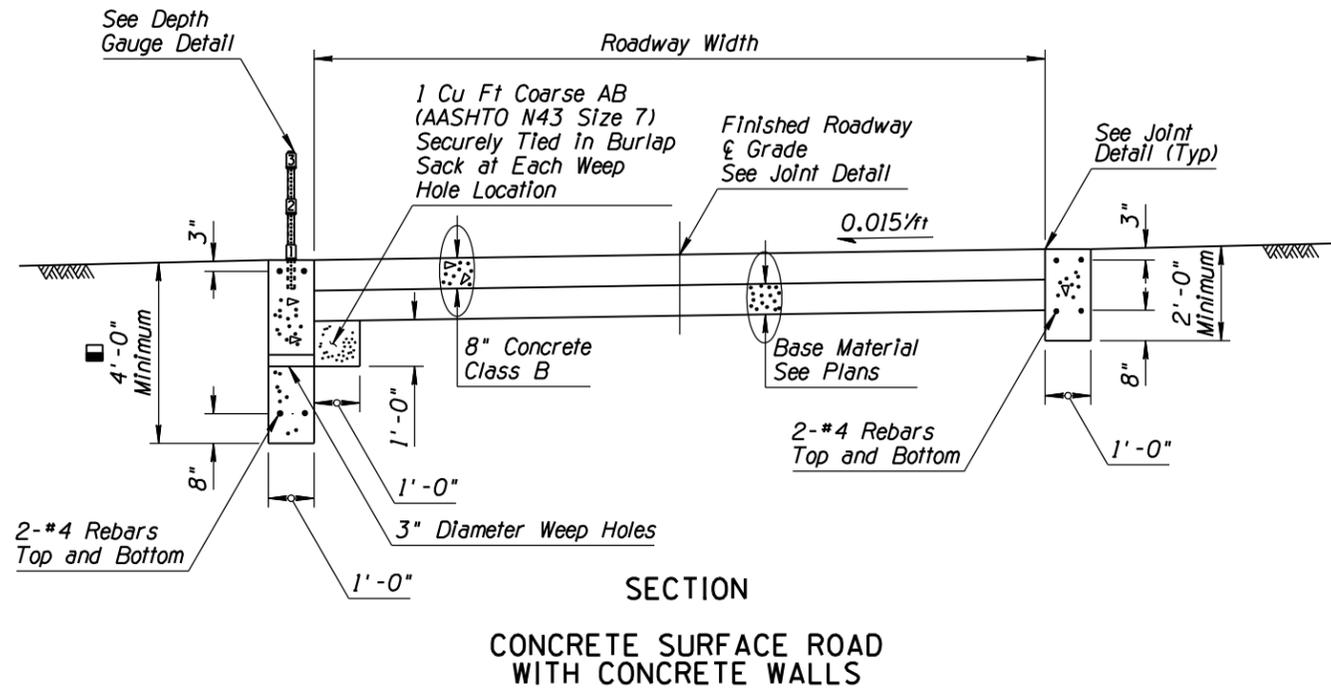
30" MANHOLE FRAME & COVER
 Approximate Weight: Frame 204 Lbs
 Cover 209 Lbs

APPROVED FOR DESIGN	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION	MANHOLE FRAME AND COVER DETAILS	DRAWING NO. C-18.10 Sheet 3 of 3

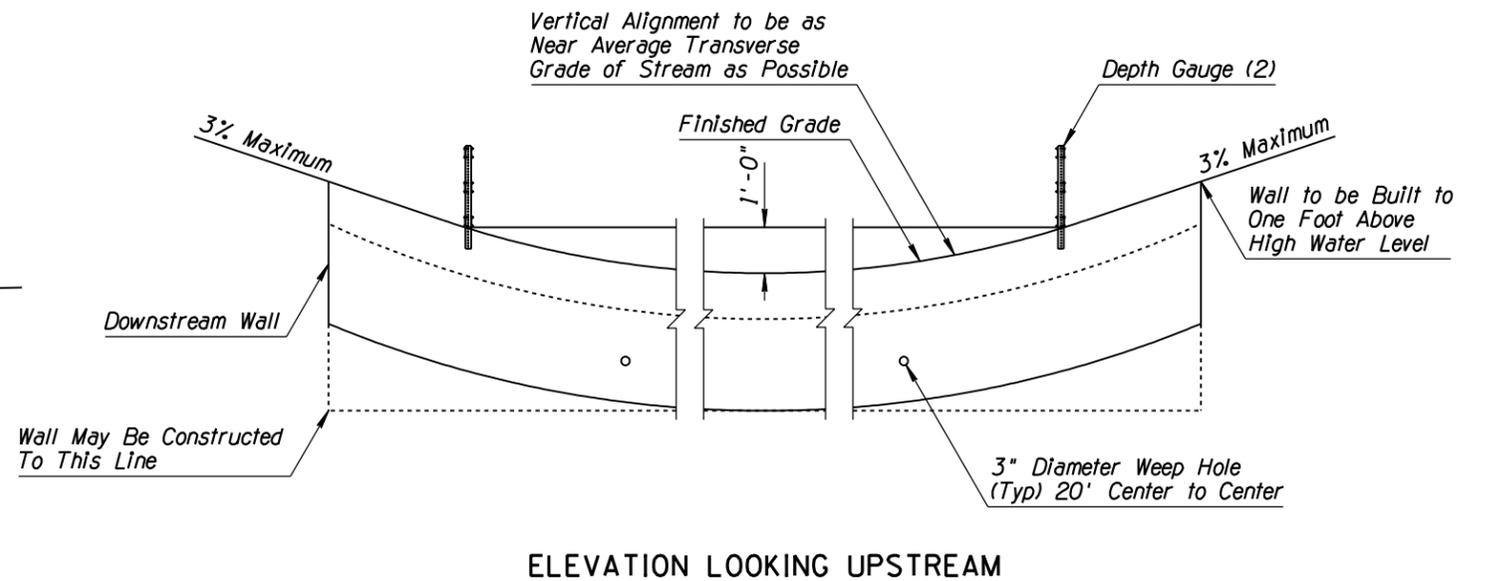
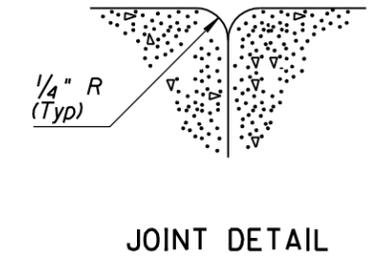
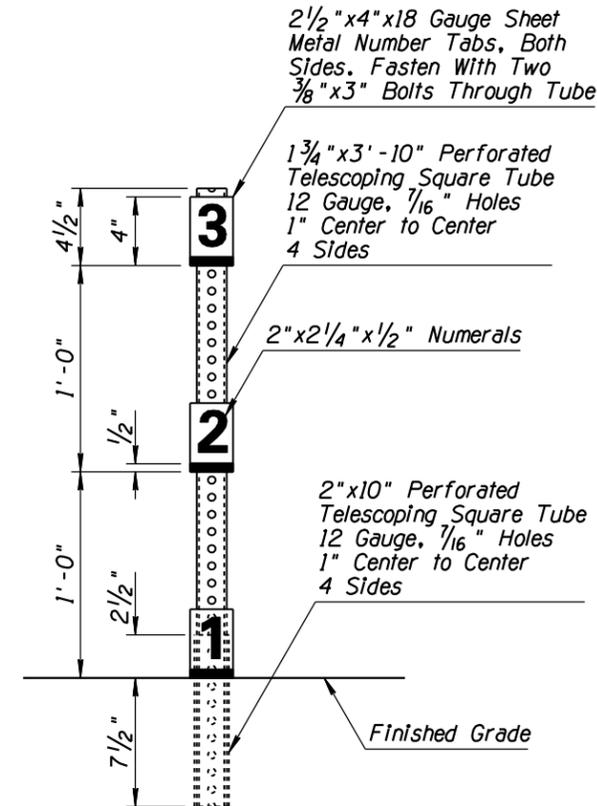
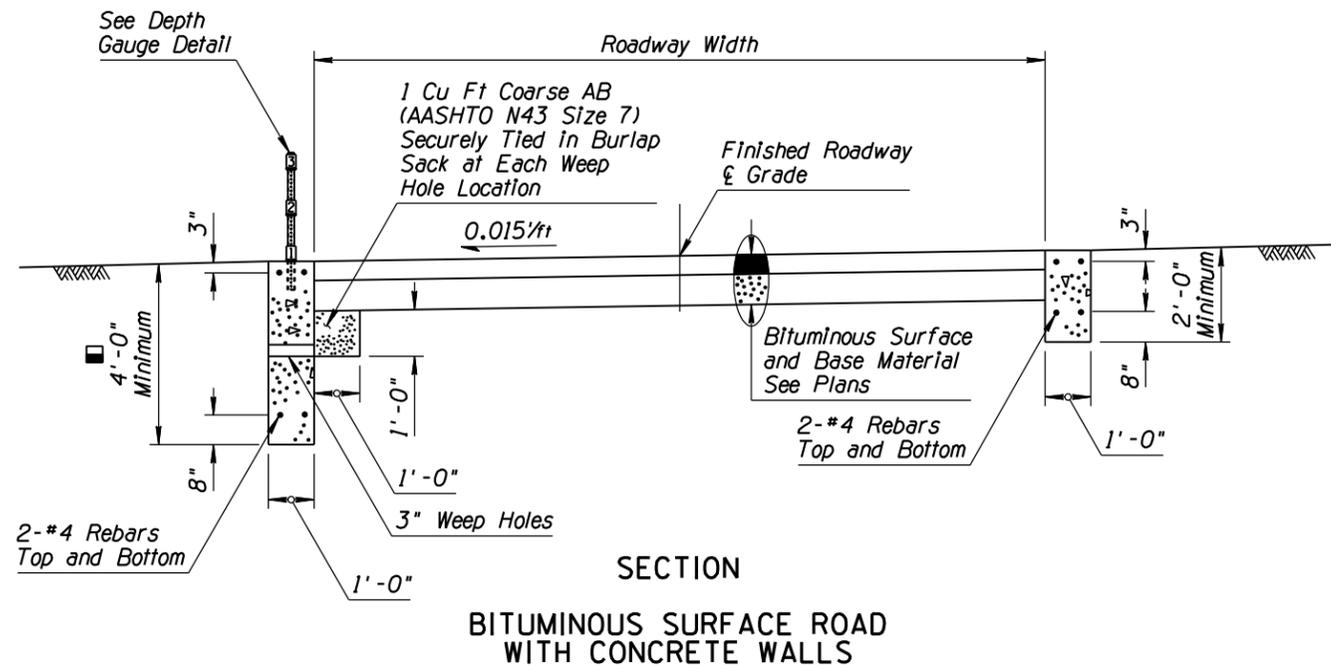
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD AS C-19.10, SHEET 1 OF 2	RLF	9/04
2	ADDED GENERAL NOTE 4	RLF	9/04
3			
4			

GENERAL NOTES

1. Ford walls shall be Class B concrete.
2. Depth gauge tubing shall be protected against concrete entering through bottom or perforations.
3. Depth gauge tubing and both sides of numeral tabs shall be painted with two coats of white enamel. Numerals and markers shall be painted with one coat of gloss black enamel.
- ② 4. Depth gauge foundation may be utility concrete.



■ Minimum Distance Below Stream Bed

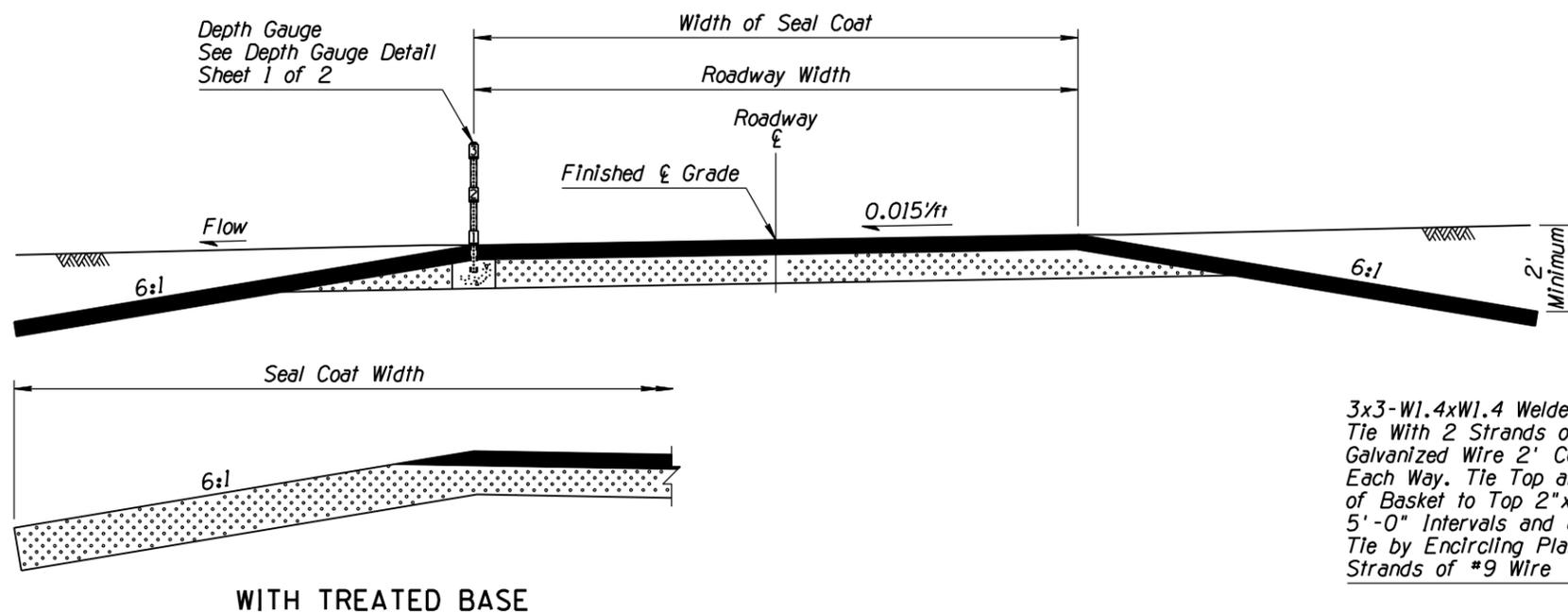


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FORD CONCRETE WALLS	DRAWING NO. C-19.10 Sheet 1 of 2

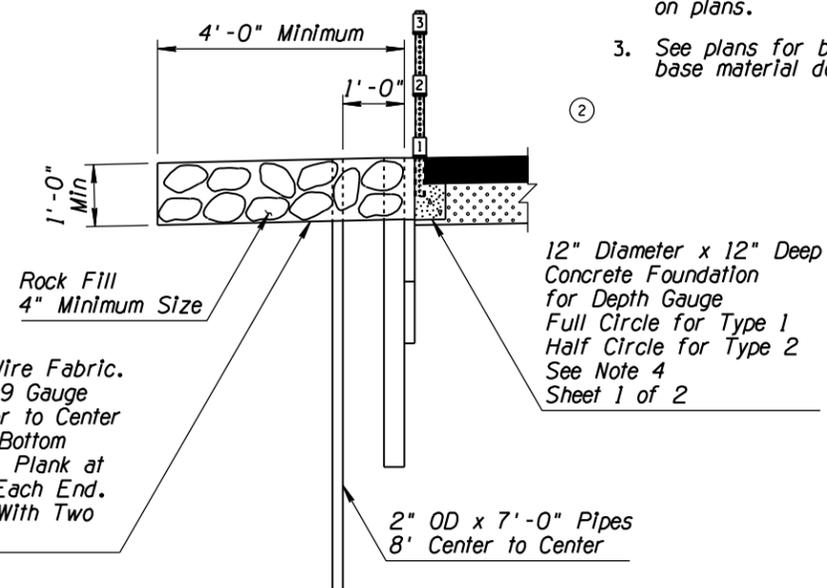
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD AS C-19.10, SHEET 2 OF 2	RLF	9/04
2	DELETED GENERAL NOTE	RLF	9/04
3			
4			

GENERAL NOTES

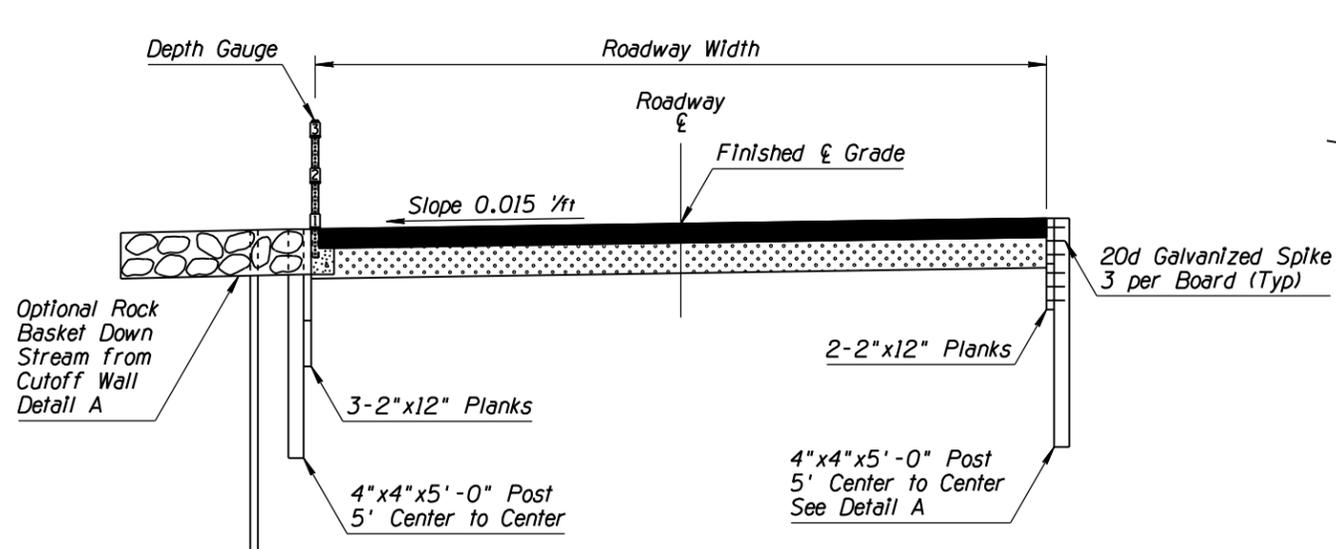
1. All timber shall be rough, pressure treated and unpainted.
2. Rock basket, full length of structure, shall be included only when called for on plans.
3. See plans for bituminous surface and base material details.



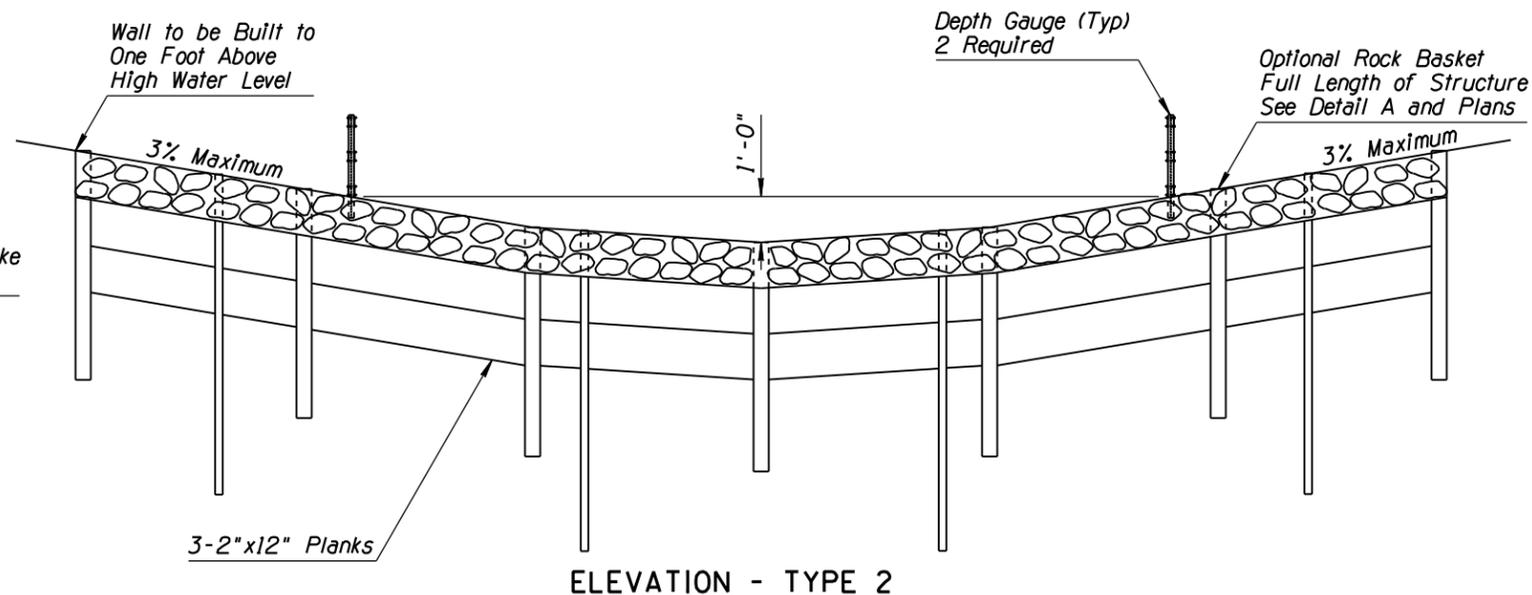
**TYPE 1
BITUMINOUS SURFACE ROAD**



DETAIL A



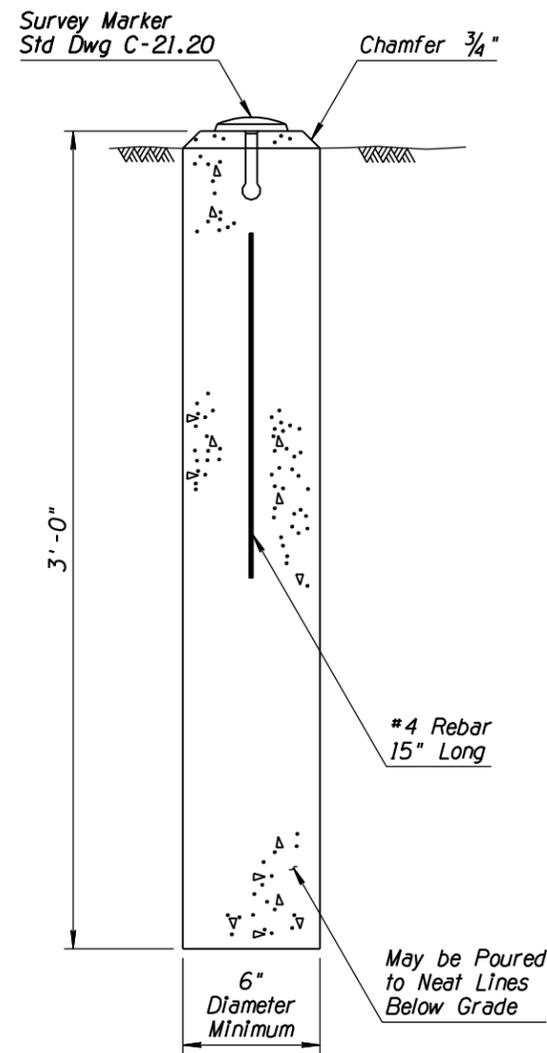
**TYPE 2
BITUMINOUS SURFACE FORD
TIMBER CUTOFF WALLS**



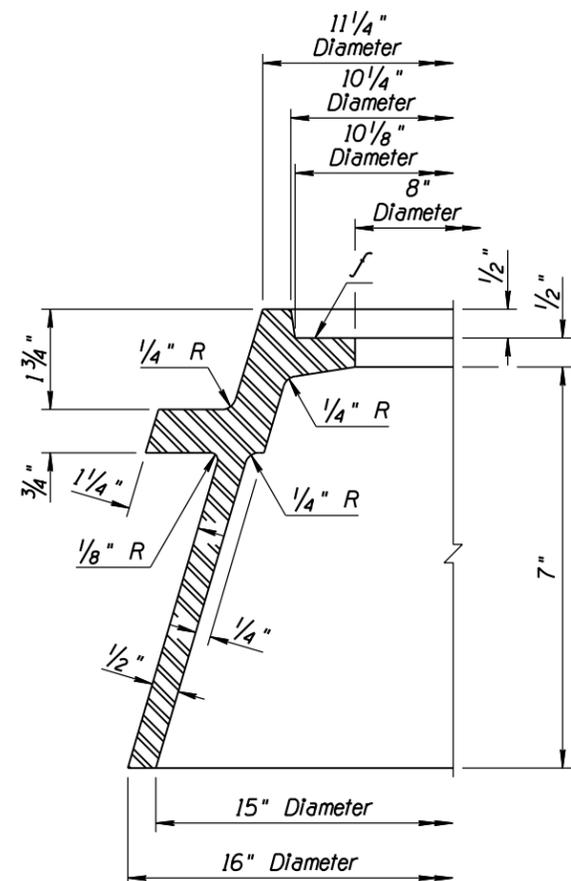
ELEVATION - TYPE 2

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FORD TYPES 1 AND 2	DRAWING NO. C-19.10 Sheet 2 of 2

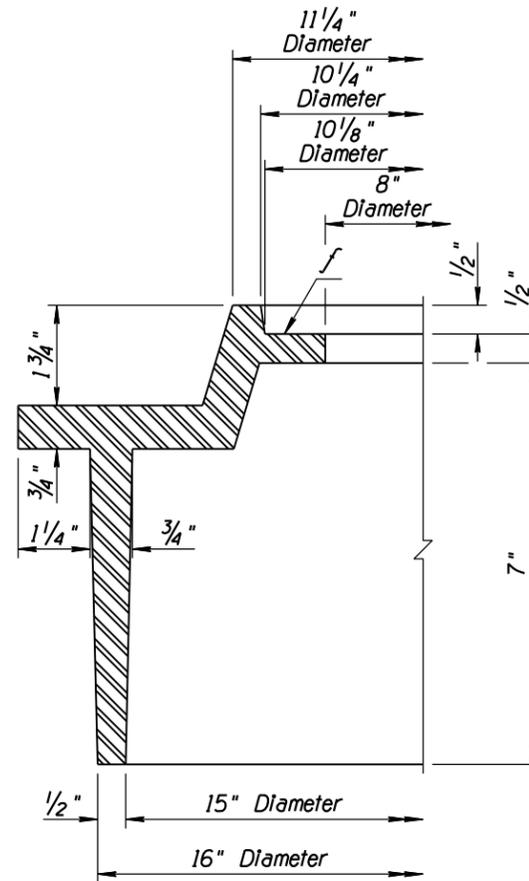
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED RIGHT-OF-WAY MARKER DETAILS	RLF	11/07
2	ADDED VIEW TITLE	RLF	11/07
3	ADDED (Typ) AND PATTERNING	RLF	11/07
4			



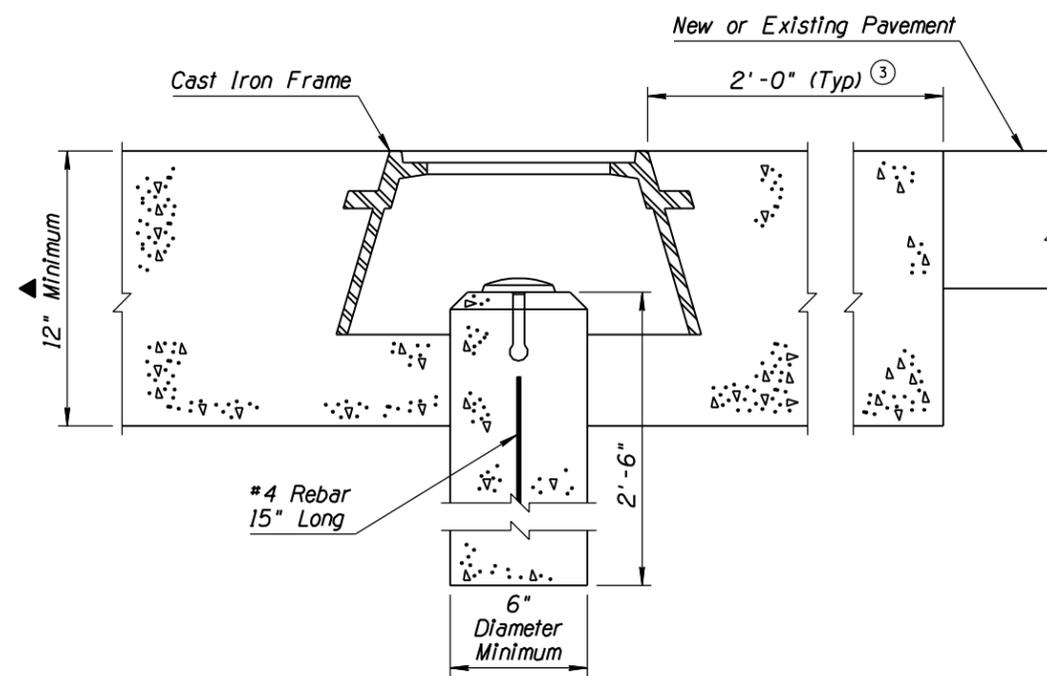
SURVEY MONUMENT



FRAME TYPE A



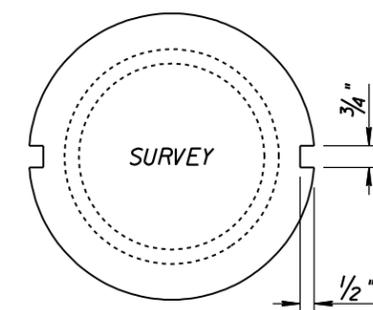
FRAME TYPE B



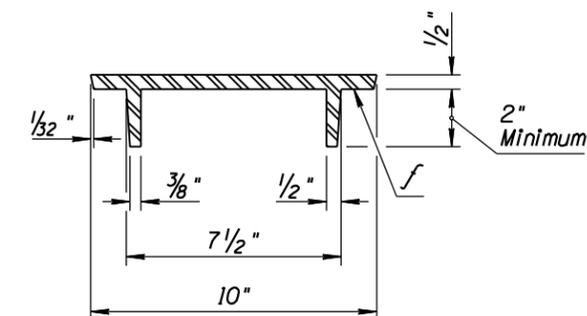
SURVEY MONUMENT
FRAME AND COVER

GENERAL NOTES

1. A survey monument and frame & cover, complete-in-place, shall be considered a unit.
 2. All markers shall be placed as shown on the plans or as directed by the Engineer.
 3. Frames may be either Type A or Type B.
 4. Frames shall weigh at least 53 pounds.
 5. Covers shall weigh at least 16 pounds.
 6. Machined portions of the frame and cover are shown by the symbol "f". The allowable tolerance for machined areas is $\pm \frac{1}{64}$ ". Concrete shall conform to Std Spec 922.
 7. Survey monuments shall be magnetically detectable.
 8. For R/W monumentation, see ADOT R/W Plans Section Right-of-Way Monumentation Procedures and Standards.
- ▲ 12" or pavement structure thickness, whichever is greater.



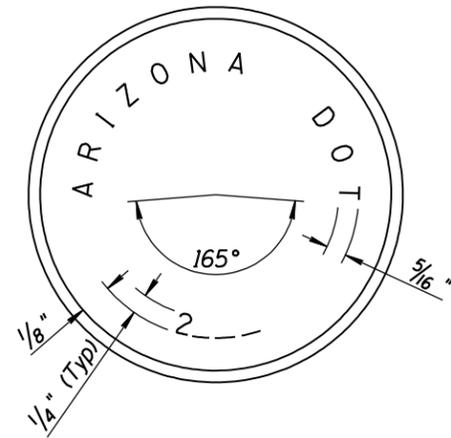
② COVER PLAN



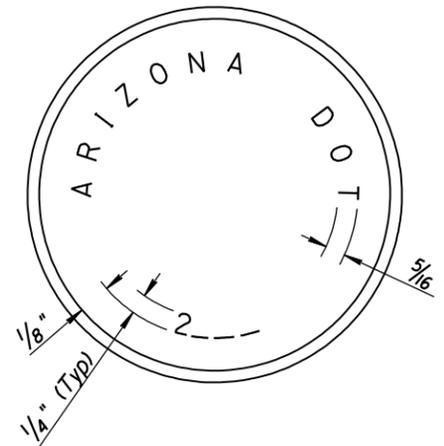
COVER SECTION

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SURVEY MONUMENT FRAME AND COVER ①	DRAWING NO. C-21.10

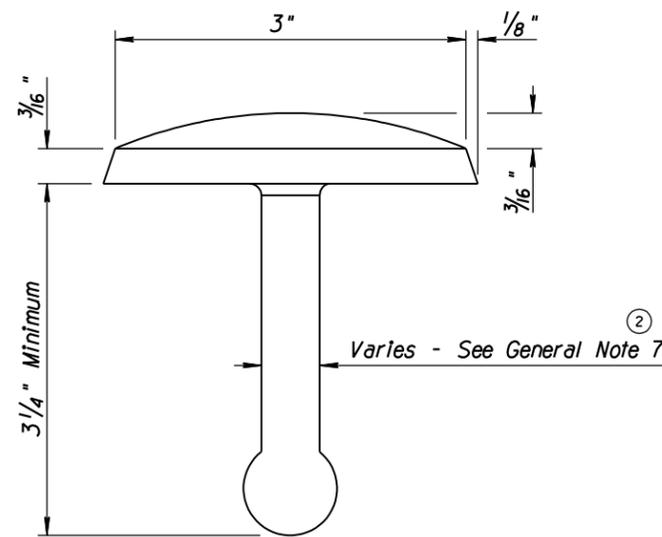
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED RIGHT-OF-WAY MARKER DETAILS	RLF	11/07
2	REVISED GENERAL NOTE REFERENCE	RLF	11/07
3			
4			



SURVEY MARKER (BENCH)



SURVEY MARKER



SURVEY MARKER

GENERAL NOTES

1. Survey marker may be used with survey monument, and as bench or survey control marker.
2. Survey marker shall be made of brass and will be furnished by the Department. Cast-in lettering format may vary.
3. When used to define section lines, the marker shall be stamped in accordance with the BLM "Manual of Surveying Instructions" including the land surveyor's registration number.
4. For R/W marker information, refer to current ADOT R/W Plans Section R/W Monumentation Procedures and Standards.
5. Bench marks shall be established on headwalls, bridge walls and other permanent structures as directed by the Engineer.
6. Bench mark station, elevation, year, and/or other information shall be hand stamped in field, as approved by the Engineer.
7. Shank cross-sectional area shall be a minimum of 0.31 square inches and a maximum of 0.60 square inches. Shank cross-section may vary and is not a critical feature of this standard.
8. Shank geometry shall provide for secure anchorage in concrete.
9. Text shall not obscure survey point.

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SURVEY MARKER ①	DRAWING NO. C-21.20