

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
C-02.10	SLOPES, RURAL DIVIDED HIGHWAYS	C-10.03	W-BEAM GUARDRAIL, MGS BLOCKED-OUT TIMBER POST
C-02.20	SLOPES, RURAL UNDIVIDED AND FRINGE-URBAN HIGHWAYS	C-10.04	W-BEAM GUARDRAIL, MGS BLOCKED-OUT STEEL POST
C-02.30	SLOPES, MISCELLANEOUS ROADWAYS	C-10.05	W-BEAM GUARDRAIL, (MODIFIED), WITH FREEWAY CURB & GUTTER (2 SHEETS)
C-03.10	DITCHES, CHANNELS, DIKES AND BERMS (5 SHEETS)	C-10.06	W-BEAM GUARDRAIL, LONG SPAN
C-04.10	SPILLWAY, EMBANKMENT (2 SHEETS)	C-10.07	W-BEAM GUARDRAIL, BOX CULVERT GUARDRAIL POST (2 SHEETS)
C-04.20	DOWNDRAIN, EMBANKMENT (2 SHEETS)	C-10.08	W-BEAM GUARDRAIL, END ANCHOR (2 SHEETS)
C-04.30	SPILLWAY LENGTH TABLE	C-10.09	GUARDRAIL POST ROCK INSTALLATION
C-04.40	DOWNDRAIN LENGTH TABLE	C-10.20	GUARDRAIL END TERMINAL PAD LAYOUT FOR SOFTSTOP (2 SHEETS)
C-04.50	DOWNDRAIN ENERGY DISSIPATOR	C-10.21	GUARDRAIL END TERMINAL PAD LAYOUT FOR MSKT (2 SHEETS)
C-05.10	CURB & GUTTER, CURB, AND GUTTER	C-10.22	GUARDRAIL END TERMINAL PAD LAYOUT FOR MAX-TENSION (2 SHEETS)
C-05.12	CURB & GUTTER TRANSITIONS (3 SHEETS)	C-10.23	GUARDRAIL END TERMINAL PAD LAYOUT FOR SGET (2 SHEETS)
C-05.20	CONCRETE DRIVEWAYS & SIDEWALKS (2 SHEETS)	C-10.24	GUARDRAIL END TERMINAL PAD LAYOUT FOR NGT (2 SHEETS)
C-05.30	SIDEWALK RAMP (7 SHEETS)	C-10.26	GUARDRAIL END TERMINAL PAD LAYOUT FOR MFLEAT (2 SHEETS)
C-05.40	MEDIAN PAVING AND NOSE TAPER	C-10.30	GUARDRAIL TRANSITION TO CONCRETE BARRIER, TIMBER POST (2 SHEETS)
C-05.50	CONCRETE BUS BAY	C-10.31	GUARDRAIL TRANSITION TO CONCRETE BARRIER, STEEL POST (2 SHEETS)
C-06.10	DRIVEWAY & TURNOUT LAYOUTS (2 SHEETS)	C-10.38	GUARDRAIL TAPER G4 TO MGS W-BEAM (2 SHEETS)
C-07.01	PCCP JOINTS (2 SHEETS)	C-10.40	CONCRETE MEDIAN BARRIER, 32" TYPE 'F', CAST-IN-PLACE
C-07.02	LOAD TRANSFER DOWEL ASSEMBLY	C-10.41	CONCRETE MEDIAN BARRIER, 42" TYPE 'F', CAST-IN-PLACE
C-07.03	PCCP JOINT LOCATIONS, MAINLINE (8 SHEETS)	C-10.44	CONCRETE MEDIAN BARRIER, 42" TYPE 'F' WITH VARIABLE HEIGHT SIDES, H-0" TO 26" (2 SHEETS)
C-07.04	PCCP JOINT LOCATIONS, RAMPS & CROSSROADS (5 SHEETS)	C-10.45	CONCRETE MEDIAN BARRIER, 42" TYPE 'F' WITH VARIABLE HEIGHT SIDES, H-26" TO 60" (2 SHEETS)
C-07.06	TRENCH BACKFILL AND PAVEMENT REPLACEMENT	C-10.50	CONCRETE HALF BARRIER, 32" TYPE 'F' (2 SHEETS)
C-08.20	PAVED GORE AREA	C-10.51	CONCRETE HALF BARRIER, 32" TYPE 'F', WITH SIDEWALK
		C-10.52	CONCRETE HALF BARRIER, 32" TYPE 'F', WITH GUTTER
		C-10.53	CONCRETE HALF BARRIER, 42" TYPE 'F', WITH GUTTER
		C-10.54	CONCRETE HALF BARRIER, 32" TYPE 'F' AT PIERS (3 SHEETS)
		C-10.55	CONCRETE HALF BARRIER, 42" TYPE 'F' AT PIERS (3 SHEETS)
		C-10.70	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL, 32" TYPE 'F' WITH CAISSONS (3 SHEETS)
		C-10.71	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL, 32" TYPE 'F' WITH CURB & GUTTER (2 SHEETS)
		C-10.72	CONCRETE HALF-BARRIER TRANSITION TO VERTICAL, 42" TO 32" TYPE 'F' WITH CAISSONS (3 SHEETS)
		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 BARRIER TRANSITION TO GUARDRAIL END TERMINAL LAYOUT WITH CURB
		C-10.78	CONCRETE HALF-BARRIER TRANSITION, 32" TYPE 'F' LOW SPEED APPROACH
		C-10.79	CONCRETE HALF-BARRIER TRANSITION, 42" TYPE 'F' TANGENT DEPARTURE

CONSTRUCTION STANDARD DRAWINGS - INDEX

DRAWING NO.	TITLE	DRAWING NO.	TITLE
C-11.10	ROADWAY CATTLE GUARD (4 SHEETS)	C-17.10	RAIL BANK PROTECTION FOR DRAINAGEWAYS, TYPES 1, 2 & 3
C-11.20	CATTLE GUARD, DRAINAGE	C-17.15	RAIL BANK PROTECTION AT ABUTMENTS, TYPES 4, 5 & 6
C-12.10	FENCE, WOVEN AND BARBED WIRE WITH GATES (5 SHEETS)	C-17.20	RAIL BANK PROTECTION FOR DRAINAGEWAYS, TYPES 7, 8 & 9
C-12.20	FENCE, CHAIN LINK TYPES 1 AND 2 WITH GATES (3 SHEETS)	C-18.10	MANHOLES (3 SHEETS)
C-12.30	FENCE, CHAIN LINK CABLE BARRIER (3 SHEETS)	C-19.10	FORD, CONCRETE WALLS (2 SHEETS)
C-13.10	PIPE CULVERT INSTALLATION (2 SHEETS)	C-21.10	SURVEY MONUMENT FRAME AND COVER
C-13.15	TYPICAL PIPE INSTALLATION	C-21.20	SURVEY MARKER
C-13.20	PIPE, REINFORCED CONCRETE END SECTION		
C-13.25	PIPE, CORRUGATED METAL END SECTION		
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		

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 -----

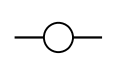
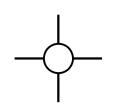
Right-of-Way Marker -----

Angle Point or PI -----

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CONSTRUCTION DRAWING SYMBOLS

NEW FEATURES EXISTING FEATURES

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 -----

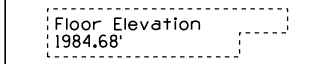
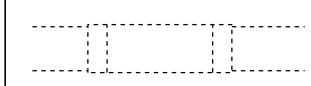
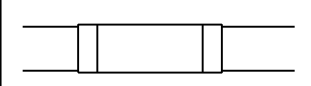
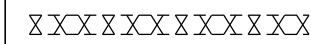
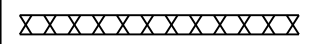
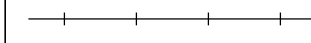
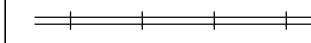
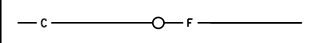
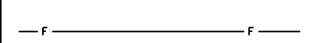
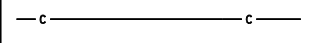
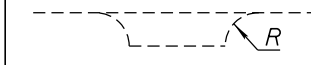
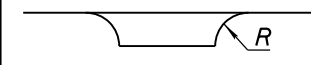
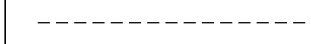
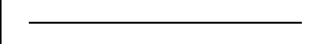
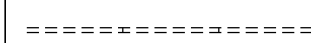
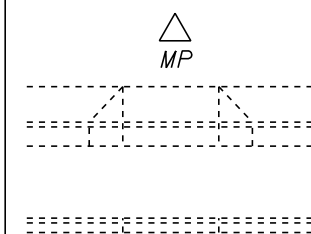
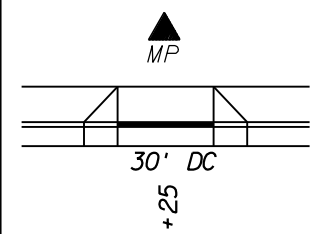
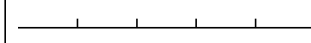
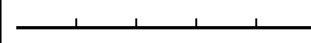
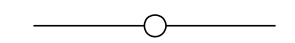
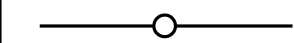
Railroad Track (1"=50' or larger) -----

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

Bank Protection -----

Bridge -----

Building -----



APPROVED FOR DESIGN
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APPROVED FOR DISTRIBUTION
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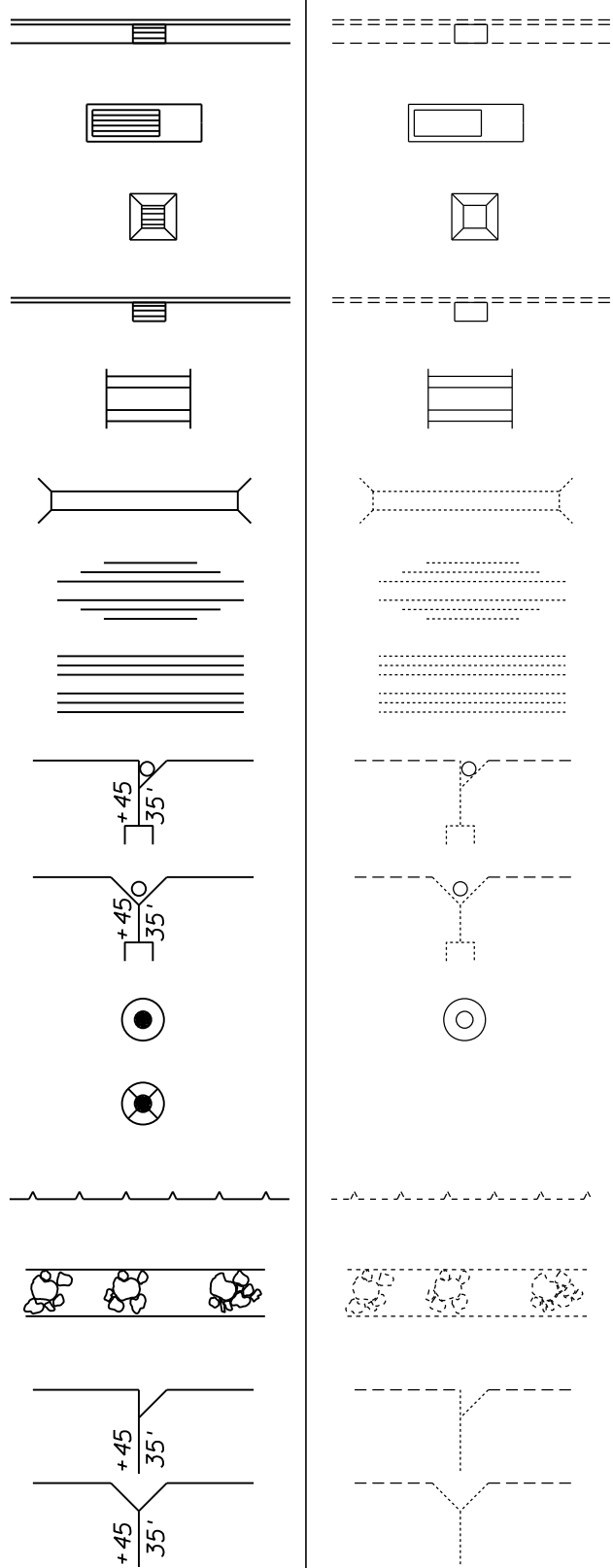
STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
ROADWAY STANDARD DRAWINGS
REV. 5/12
DRAWING NO. C-01.10
Sheet 1 of 4

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

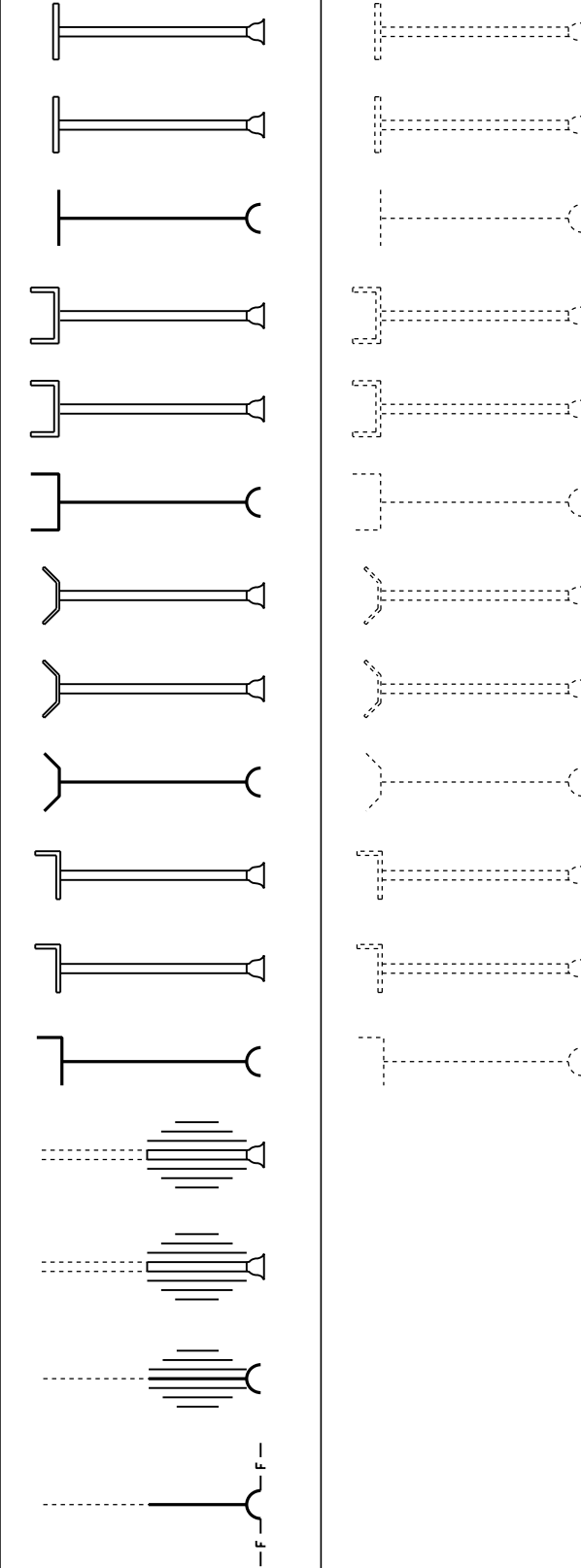
- Catch Basin, Curb & Gutter -----
- Catch Basin, Median Dike -----
- Catch Basin, Off Roadway, Flush -----
- Catch Basin, Single Curb -----
- Cattle Guard -----
- Concrete Box Culvert -----
- Dike, Median -----
- Dike -----
- Downdrain, one-way -----
- Downdrain, two-way -----
- Manhole -----
- Manhole, 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



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STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
ROADWAY STANDARD DRAWINGS

REV.

5/12

DRAWING NO.

C-01.10
Sheet 2 of 4

SYMBOL LEGEND

normal.tbl

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 -----



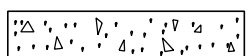
Section, Asphaltic Concrete Friction Course -----



Section, Bituminous Pavement -----



Section, Concrete -----



Section, Metal -----



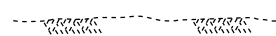
Section, Wood -----



Section, Aggregate Base -----



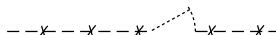
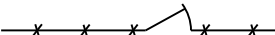
Section, Ground Line -----



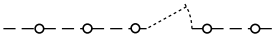
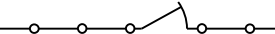
Ground Line Profile -----



Barbed Wire Fence & Gate -----



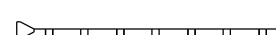
Chain Link Fence & Gate -----



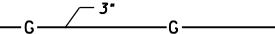
Guardrail & Flared End Terminal -----



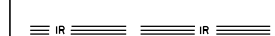
Guardrail & Tangent End Terminal -----



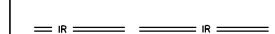
Gas Line -----



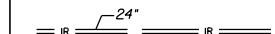
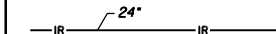
Irrigation Ditch, Concrete -----



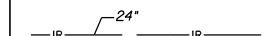
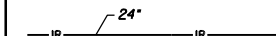
Irrigation Ditch, Earth -----



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



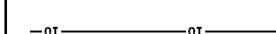
Irrigation Line (1"=100') -----



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

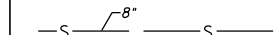
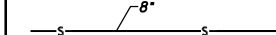


Overhead Telephone Line -----



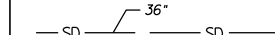
②

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

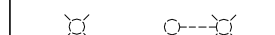


③

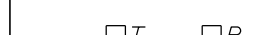
Storm Drain (1"=100') -----



Street Light and with Mast Arm -----



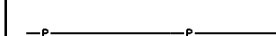
Telephone/Power Pedestal -----



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 -----

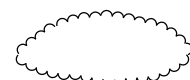
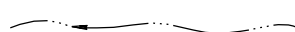
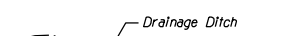
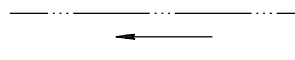
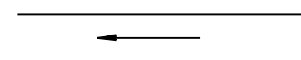
Sign, Multiple Post -----

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



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STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
ROADWAY STANDARD DRAWINGS

REV.

5/12

SYMBOL LEGEND

DRAWING NO.

C-01.10
Sheet 4 of 4

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

PRIOR DISTRIBUTION DATE 05/12

WORDS	ABBREVIATION	WORDS	ABBREVIATION	WORDS	ABBREVIATION
A		B (cont)		C (cont)	
Abutment	Abt	Bituminous Mixture	Bit Mix	Corrugated Metal Pipe	CMP
Acceleration	Acc	Bituminous Surface Treatment	BST	Corrugated Steel Pipe	CSP
Acres	Ac	Bituminous Treated Base	BTB	County	Co
Aggregate	Agg	Black Steel Pipe	BSP	Crossing	X-ING
Aggregate Base	AB	Borrow	Bor	Cross Section	X-SECT
Ahead	AHD, Ahd	Boulevard	BLVD, Blvd	Crown	Cr
Alternate	Alt	Boundary	Bdry	Cubic	Cu
Aluminum	Al	Brass Cap	BC	Cubic Feet Per Second	CFS
American Association of State Highway and Transportation Officials	AASHTO	Breakaway Cable Terminal	BCT	Cubic Yard or Cubic Yards	CY, Cu Yd
American Concrete Institute	ACI	Bridge	Br	Culvert	Culv
American Institute of Steel Construction	AISC	Building	Bldg	Curb and Gutter, Curb & Gutter	C&G
American Road and Transportation Builders Association	ARTBA	C		Curve to Spiral	CS
American Society for Testing Materials	ASTM	Calculated	Calc	D	
Amount	Amt	Cast-In-Place	C-I-P	Deceleration	Dcl
Approach	Appr	Cast Iron	CI	Deflection	Def
Approximate	Approx	Cast Iron Pipe	CIP	Deflection of Total Curve	I
Asphalt	Asph	Catch Basin	CB	Degree of Curve	D
Asphalt Rubber	AR	Cattle Guard	CG	Delineator	Del
Asphalt Rubber ACFC	ARACFC	Cement	Cem	Delta	Δ
Asphaltic Concrete	AC	Cement-Treated Base	CTB	Depressed Curb	DC
Asphaltic Concrete Base	ABC	Center	Ctr	Design Speed	Des Spd
Asphaltic Concrete Friction Course	ACFC	Center Line	£	Detail	Dtl
Asphaltic Concrete Surface Course	ACSC	Center to Center	C to C	Diameter	Dia
Avenue	AVE, Ave	Channel	Chan	Distance	Dist
Average Daily Traffic	ADT	Class	Cl	Division	Div
B		Clear	Clr	Double	Dbl
Back	BK, Bk	Column	Col	Drain or Drainage	Drn
Backfill	Bkfl	Compact or Compaction	Comp	Drainage Area	DA
Balance	Bal	Complete In Place	C in P	Drawing	Dwg
Bank Protection	BP, Bank Prt	Concrete	Conc	Drive	Dr
Barbed Wire	BW	Concrete Box Culvert	CBC	Driveway	Dwy
Bearing	Brg	Connection	Conn	Ductile Iron Pipe	DIP
Begin	Bgn	Conduit	Cond	E	
Begin Curb Return	BCR	Construct or Construction	Cst	Each	Ea
Begin Full Super	BFS	Continuos	Cont	Easement	Esmt
Bench Mark	BM	Controlled Low Strength Material	CLSM	East	E
Bevel or Beveled	Bev	Coordinate	Coord	Eastbound	EB
Bituminous	Bit	Corner	Cor		
		Correction	Corr		
		Corrugated Aluminum Pipe	CAP		
		Corrugated High-Density Polyethylene Plastic Pipe	CHDPEPP		

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	GENERAL ABBREVIATIONS	DRAWING NO. C-01.30
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 12/17
		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	1/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

Lc
Ls
Ls
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


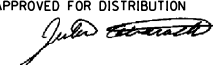
Obliterate
Original
Outside Diameter
Overhead
Overpass

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

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	Prelm
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


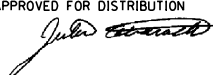
ABBREVIATION

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

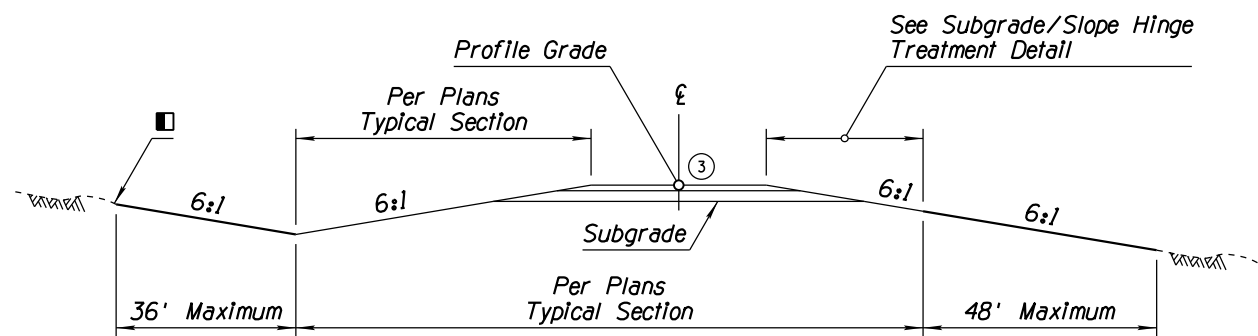
WORDS

T (cont)

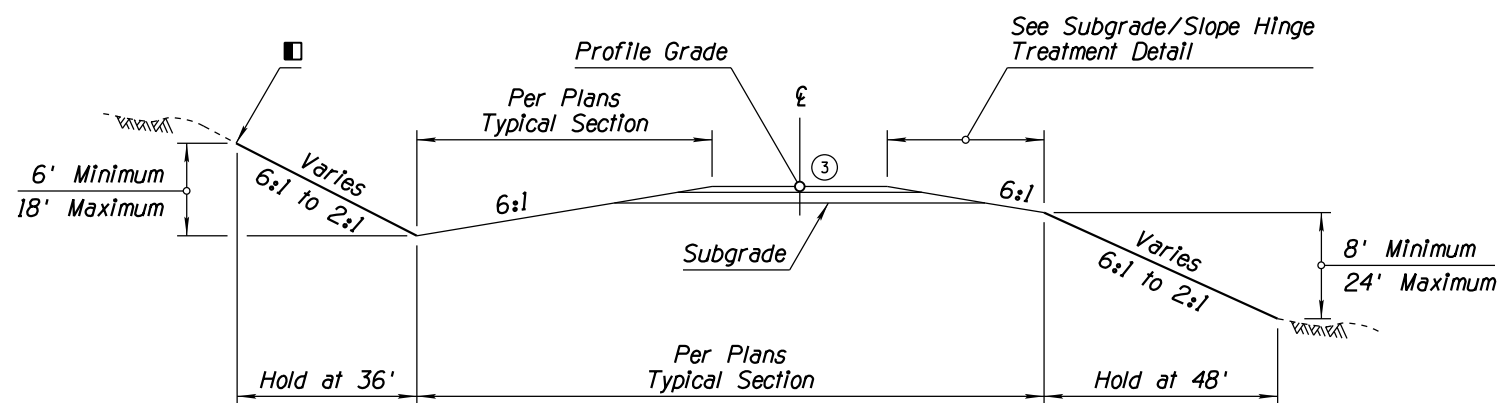
Telephone	Tel
Temporary	Temp
Temporary Construction Easement	TCE
Timber	Tbr
Top of Curb	TC
Topography	Topo
Township	T
Traffic Interchange	TI
Transition	Trns
Turning Point	TP
Turnout	TO
Typical	Typ
U	
Underground	Ugnd
Underpass	UP
V	
Variable	Var
Vertical	Vert
Vertical Curve	VC
Vertical Elliptical Reinforced Concrete Pipe	VERCP
Vertical Point of Intersection	VPI
Viaduct	Vla
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

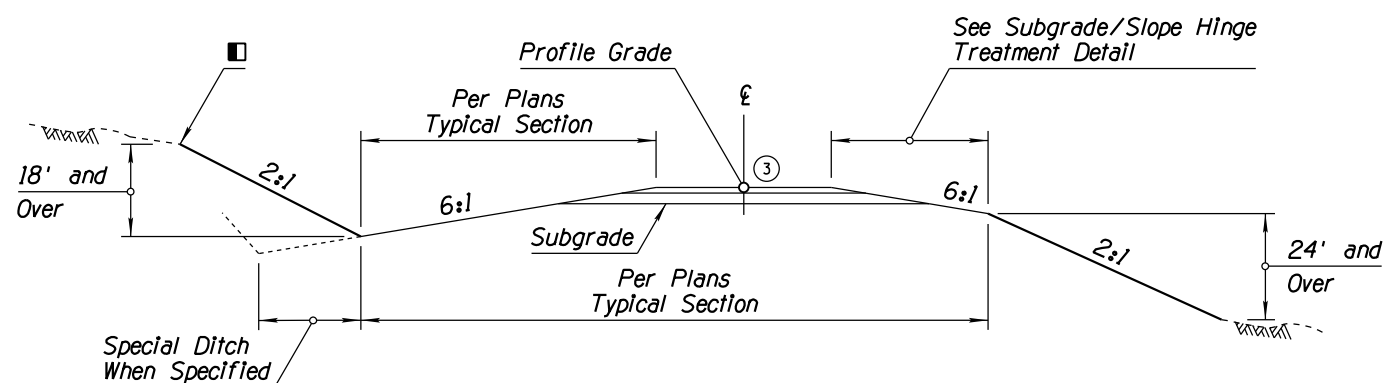
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED TITLE	RLF	4/06
2	REVISED 'NOTE TO DESIGNERS'	RLF	7/06
3	MODIFIED SYMBOL	RLF	7/06
4			



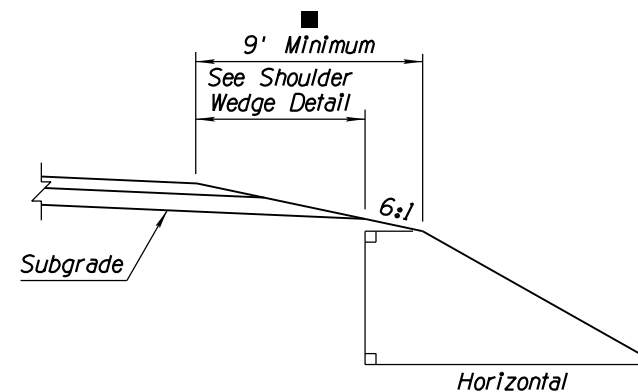
MINIMUM SLOPES



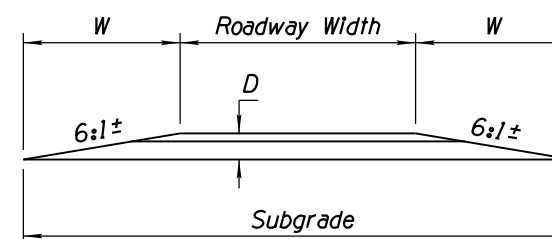
INTERMEDIATE SLOPES



MAXIMUM SLOPES

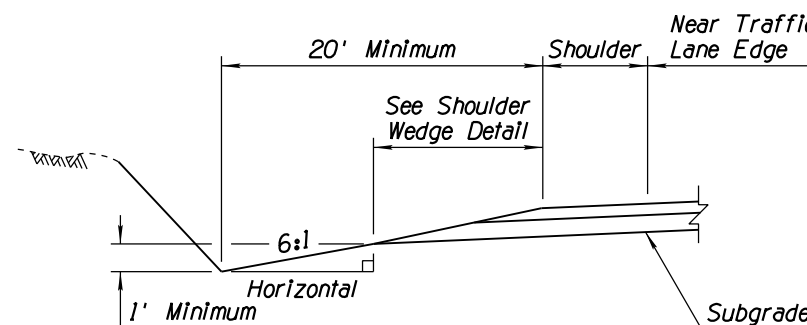


SUBGRADE/SLOPE HINGE TREATMENT DETAIL



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

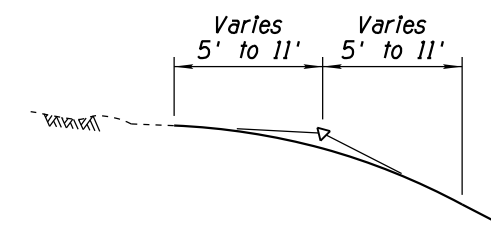
SHOULDER WEDGE DETAIL



MINIMUM DITCH CONDITIONS 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.

- ### 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.



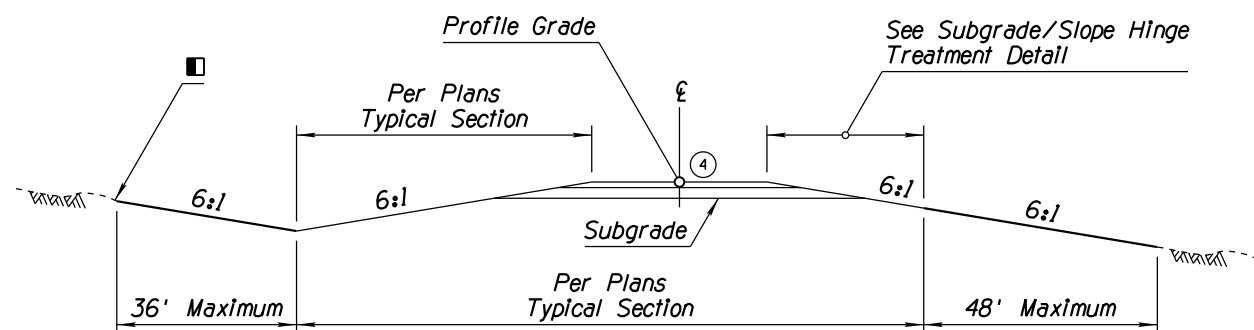
- ### SLOPE ROUNDING DETAIL
- Except in solid rock, or as directed by the Engineer, the intersection of roadway cut slopes with the ground surfaces shall be rounded.
- For cuts up to 6', use 5' semi-tangents for slope rounding. For each additional foot of cut add 1' to semi-tangent to 11' maximum.

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

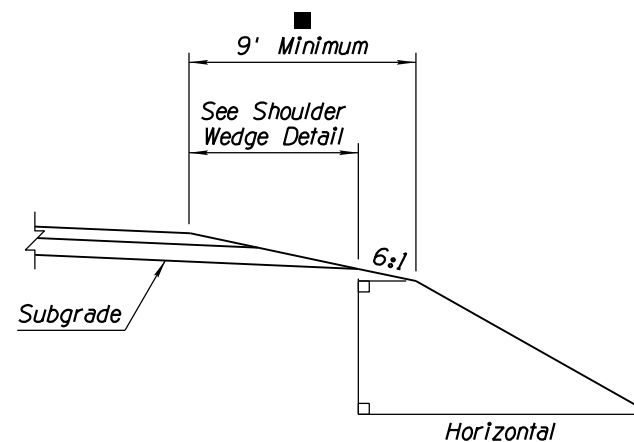
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED TITLE	RLF	4/06
2	MODIFIED SLOPE CRITERIA	RLF	4/06
3	REVISED 'NOTE TO DESIGNERS'	RLF	7/06
4	MODIFIED SYMBOL	RLF	7/06

GENERAL NOTES

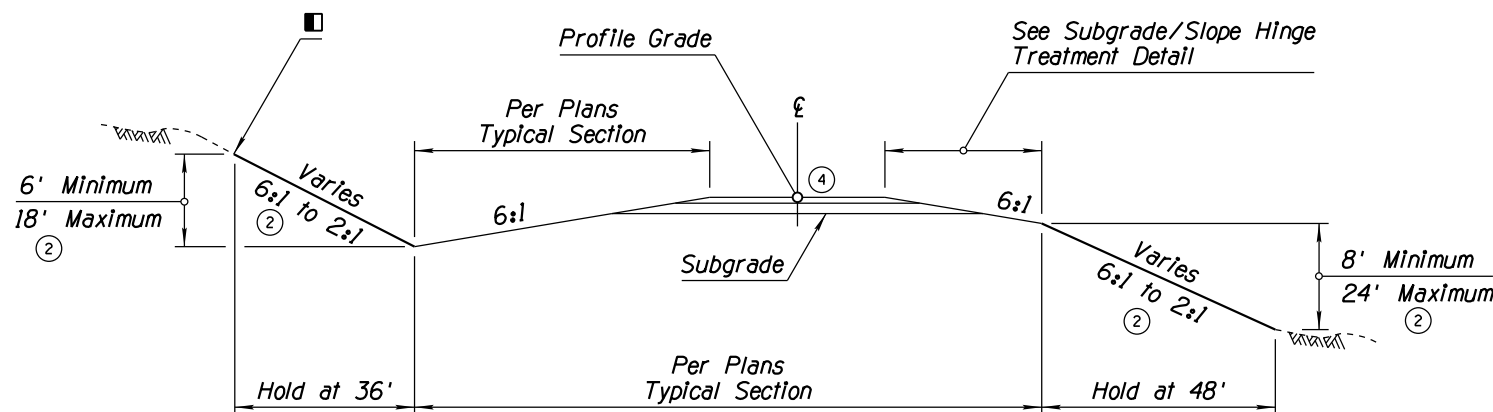
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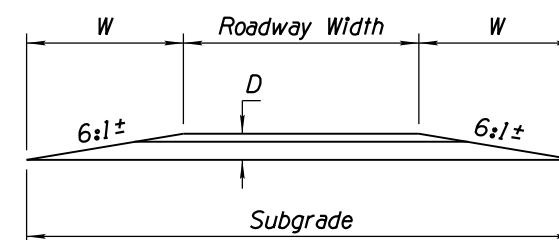
MINIMUM SLOPES



SUBGRADE/SLOPE HINGE TREATMENT DETAIL



INTERMEDIATE SLOPES

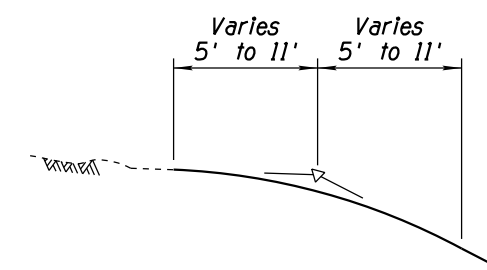


$W = D \times \text{Slope } (6:1)$
 $D = \text{Str Sct Depth (Ft) Excluding ACFC}$
 $\text{Subgrade} = 2 \times W + \text{Roadway Width}$

SHOULDER WEDGE DETAIL

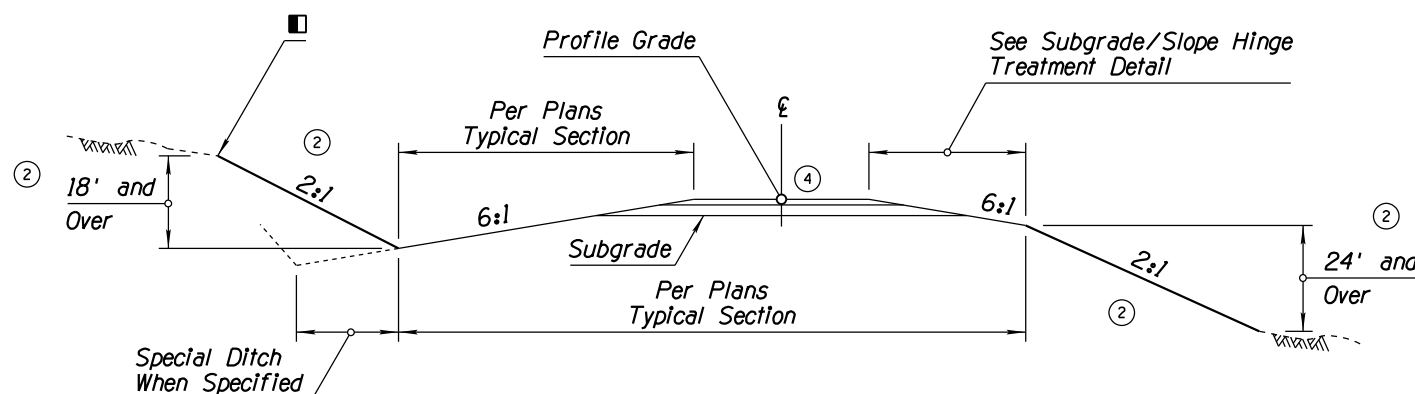
NOTE TO DESIGNERS

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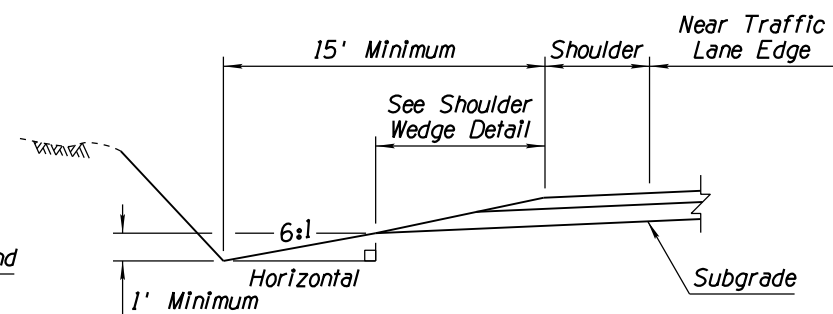


SLOPE ROUNDING DETAIL

- 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			

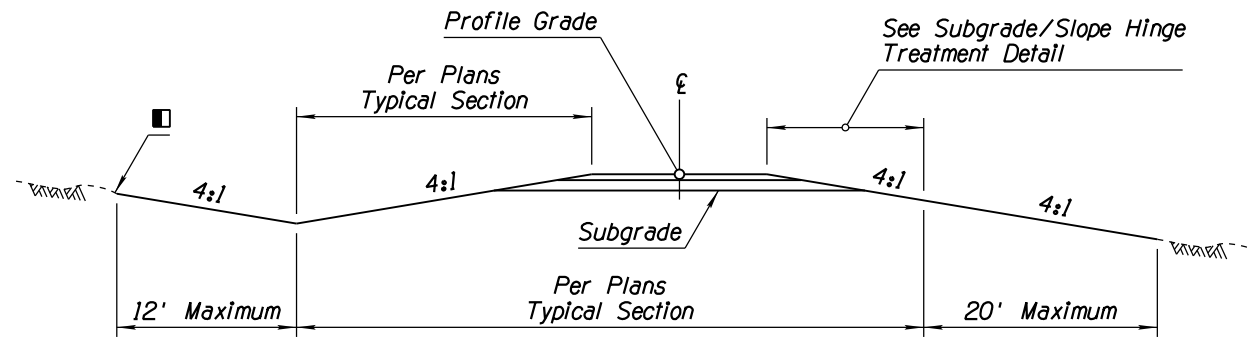
GENERAL NOTES

- Roadway width, cut ditch width, cross slope, and pavement structure section will be shown on project plans.
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- Slopes beyond the pavement structure, such as embankment and cut slopes, are relative to horizontal.

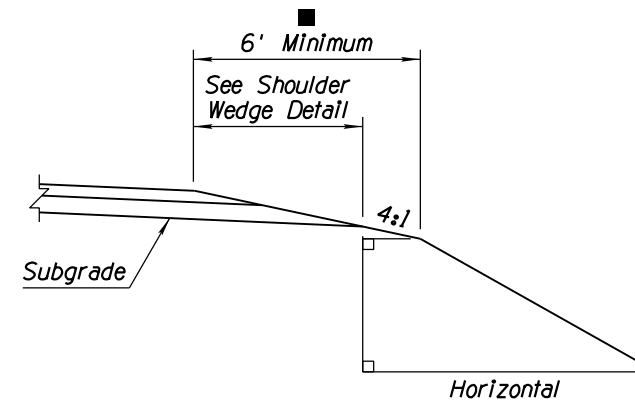
NOTE TO DESIGNERS

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

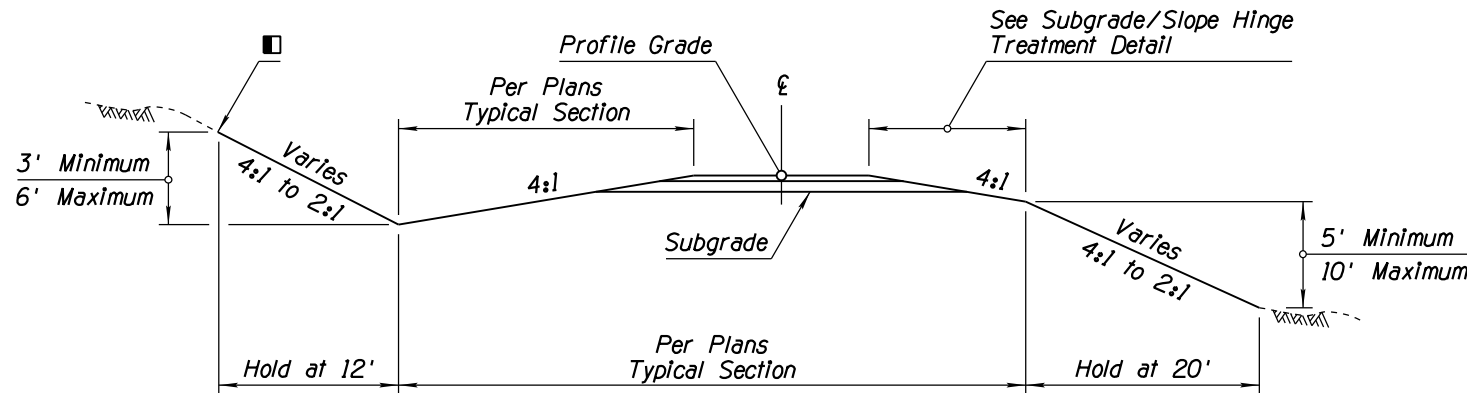
- Required when guardrail is present on the project. Treatment shall be uniform throughout the project length. The 6' requirement may be waived under special conditions on projects without guardrail.



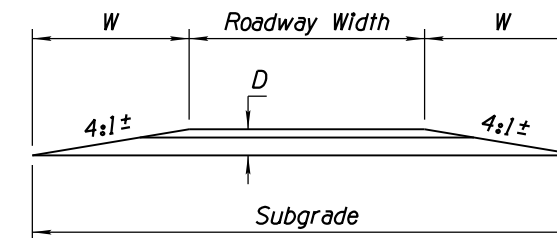
MINIMUM SLOPES



SUBGRADE/SLOPE HINGE TREATMENT DETAIL



INTERMEDIATE SLOPES

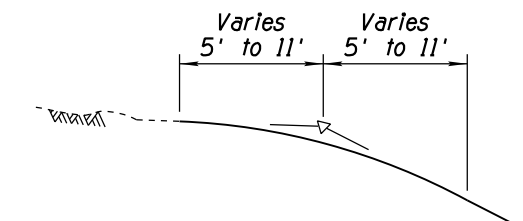


$$W = D \times \text{Slope (4:1)}$$

$$D = \text{Str Sct Depth (Ft) Excluding ACFC}$$

$$\text{Subgrade} = 2 \times W + \text{Roadway Width}$$

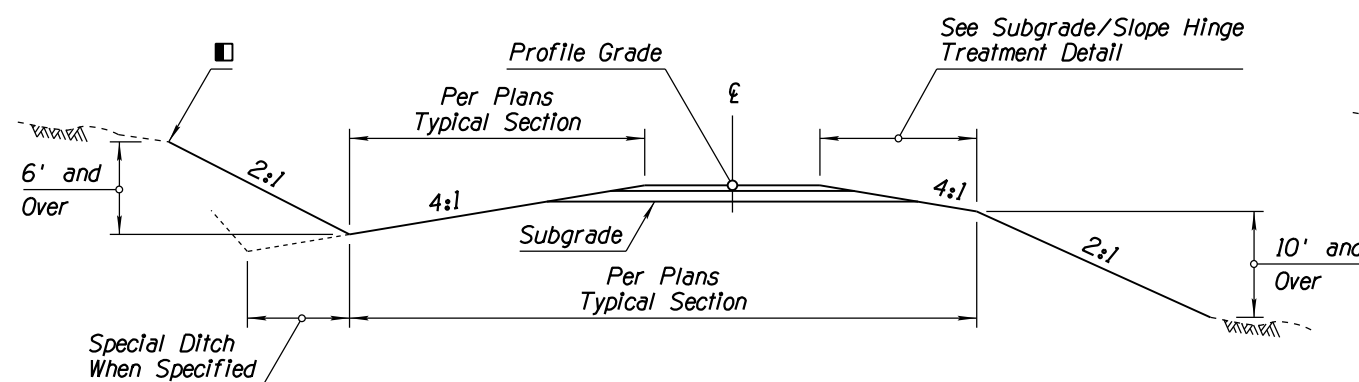
SHOULDER WEDGE DETAIL



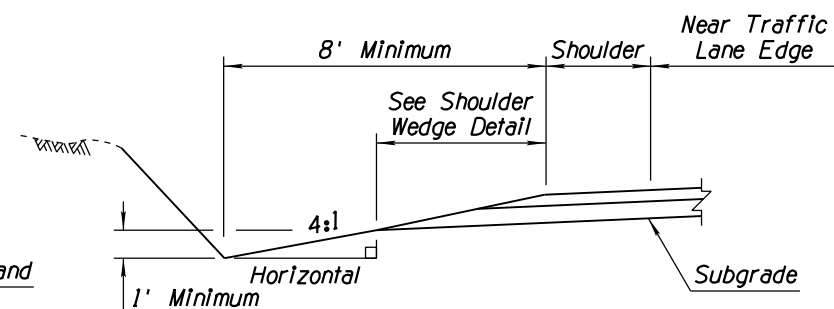
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For cuts up to 6', use 5' semi-tangents for slope rounding. For each additional foot of cut add 1' to semi-tangent to 11' maximum.



MAXIMUM SLOPES



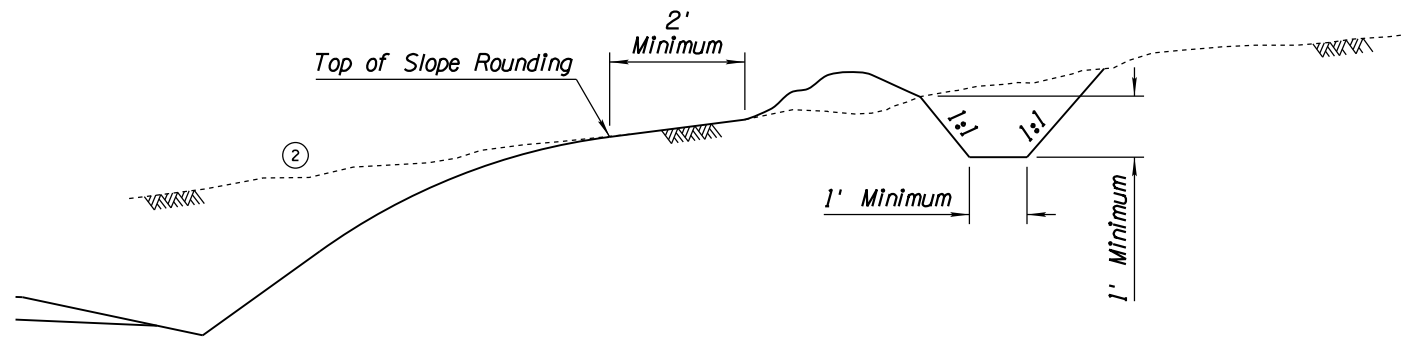
MINIMUM DITCH CONDITIONS DETAIL

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

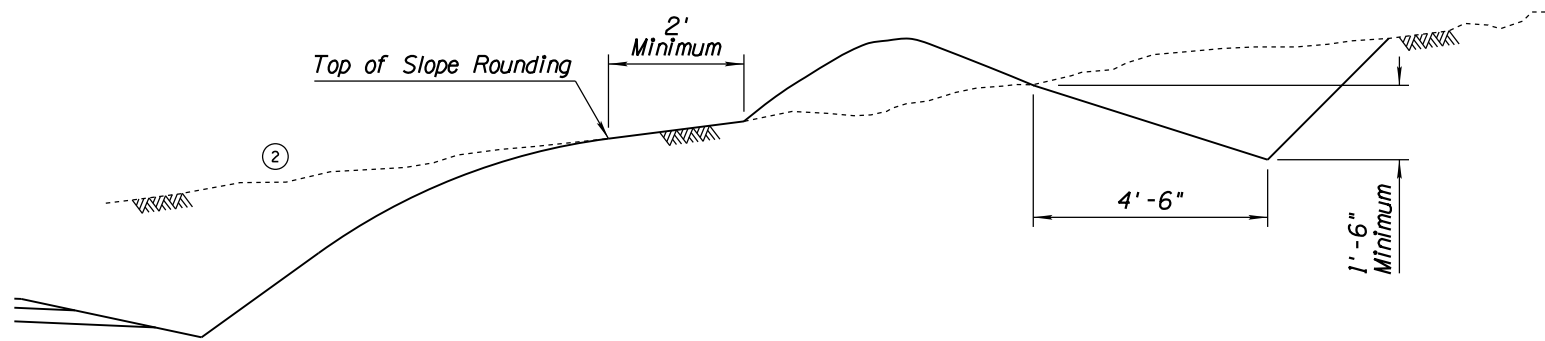
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SLOPE DESIGNATIONS	RLF	9/04
2	REVISED EXISTING GROUND-LINE SYMBOLOLOGY	RLF	9/04
3			
4			

GENERAL NOTES

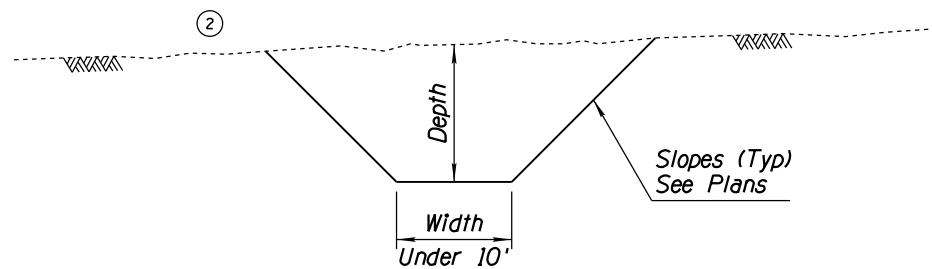
1. Dimensions of ditches and channels shall be shown on the plans as bottom width, depth and length.
2. Ditches and channels shall be constructed with a minimum grade to prevent erosion. Ditch outlet treatment shall be as provided on plans.



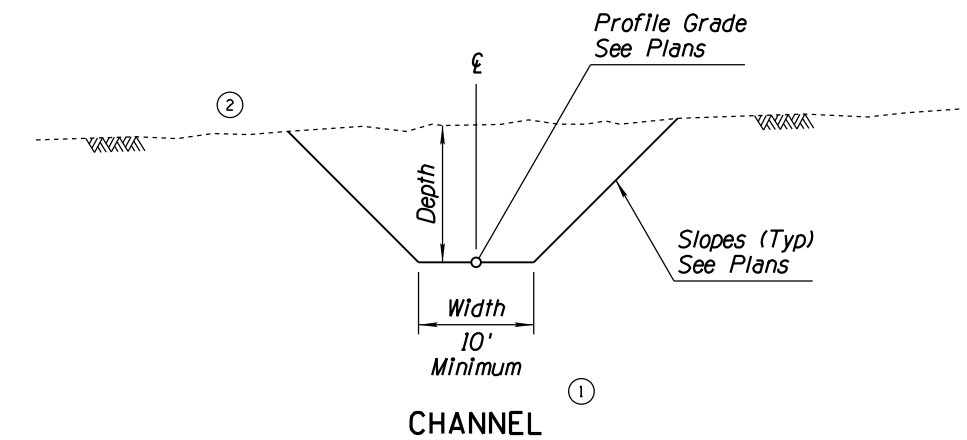
CROWN DITCH



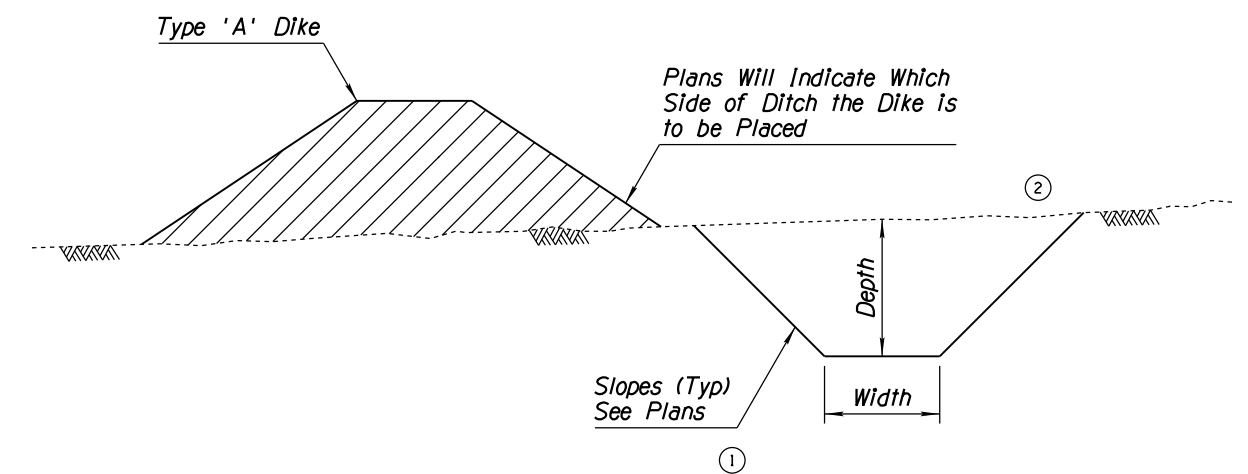
GRADER DITCH



DITCH



CHANNEL



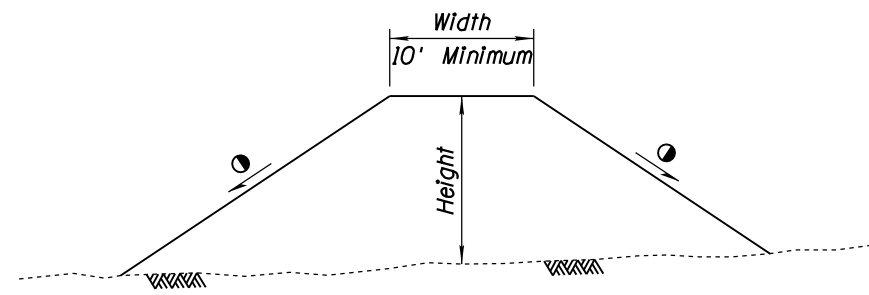
DITCH AND DIKE

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			

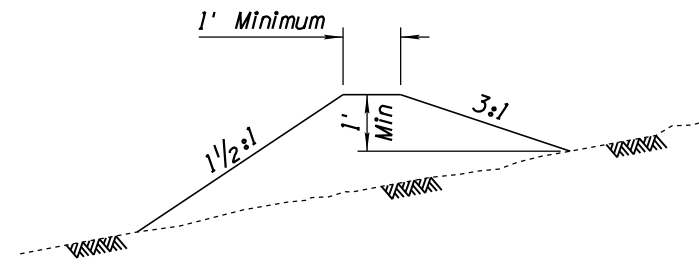
GENERAL NOTES

- 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

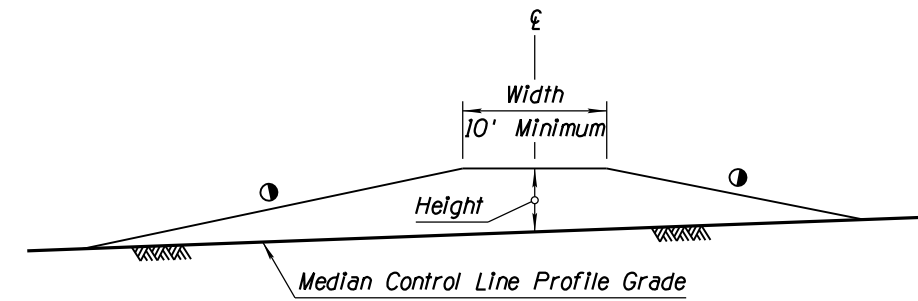


TYPE A DIKE

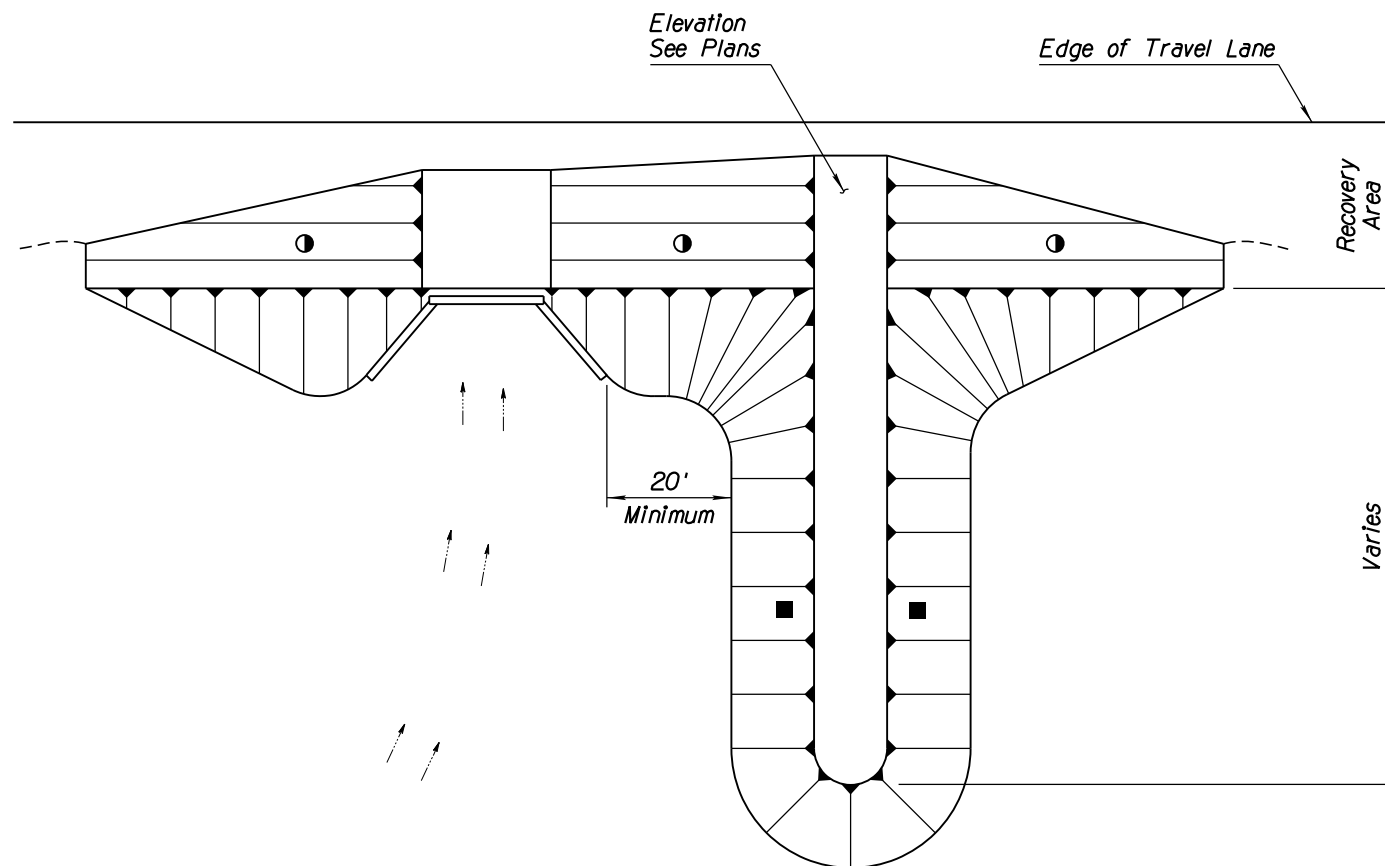
①



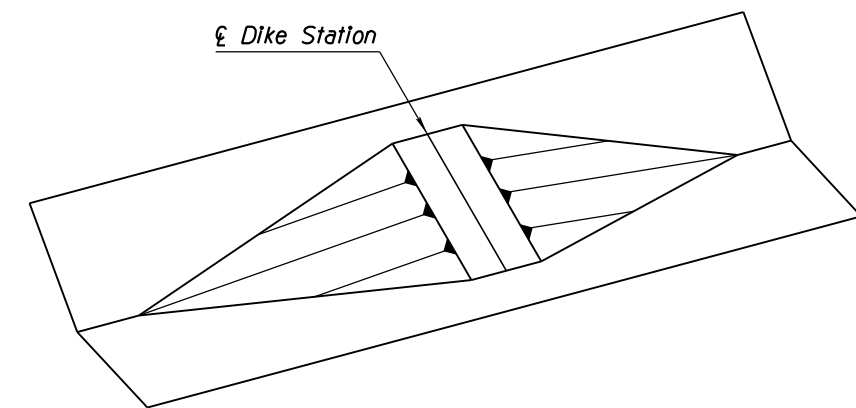
CROWN DIKE



TYPE B TRANSVERSE MEDIAN DIKE



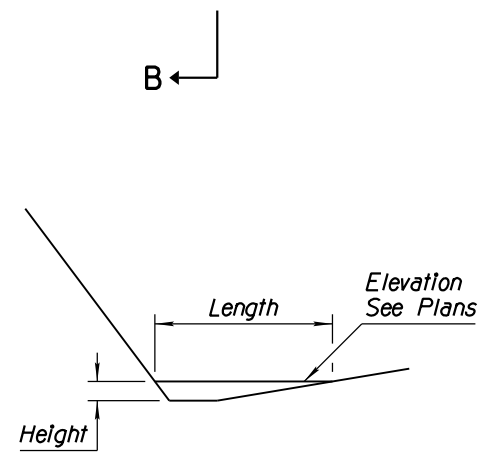
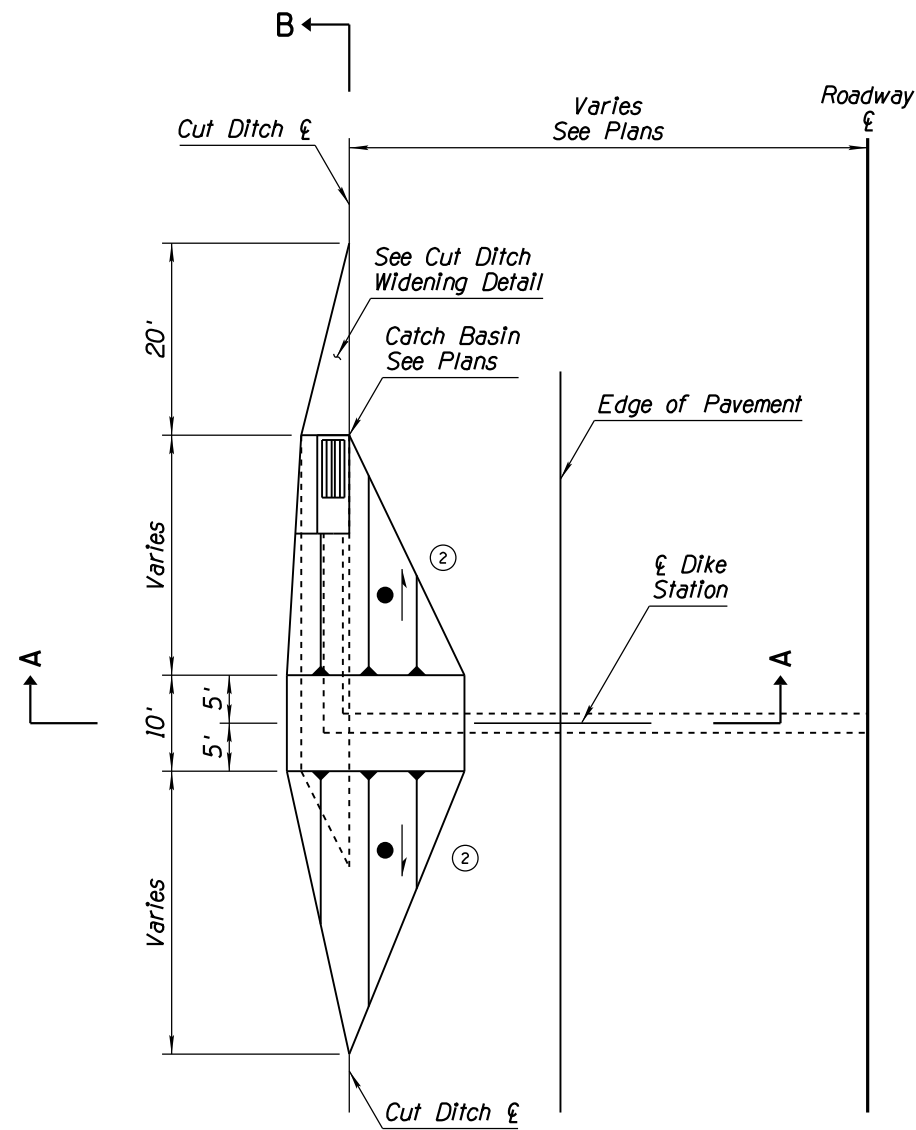
TYPICAL DIKE INSTALLATION AT STRUCTURE



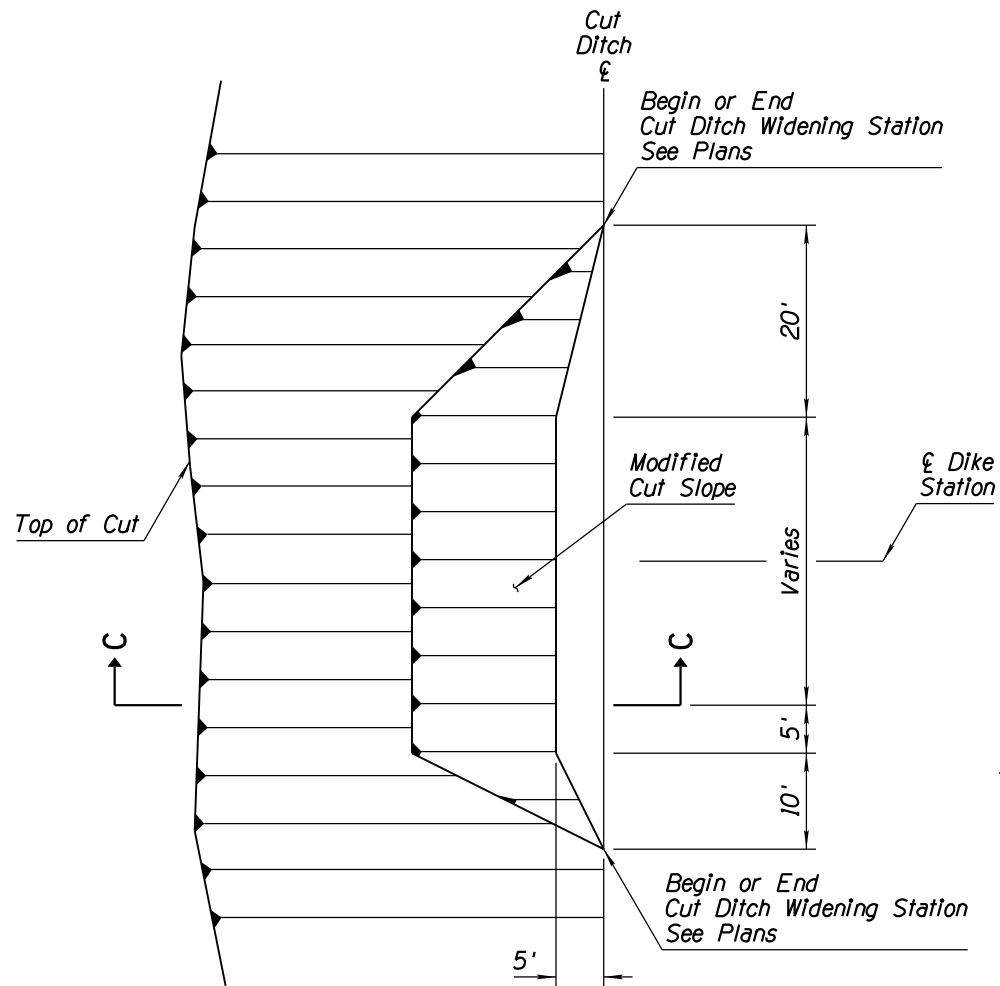
TYPICAL TRANSVERSE MEDIAN DIKE INSTALLATION

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

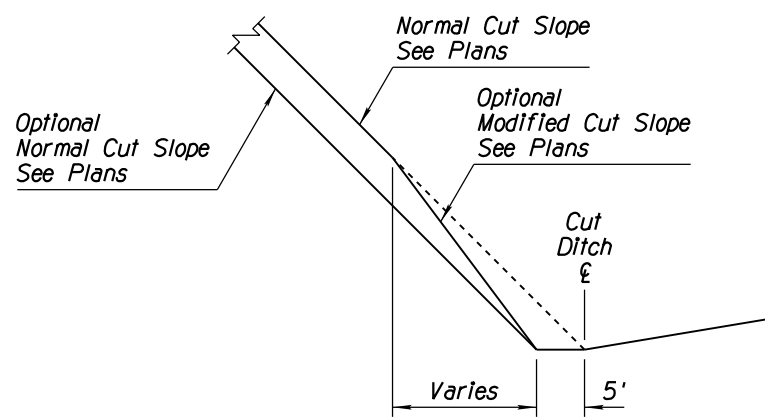
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED NEW GENERAL NOTE	RLF	9/04
2	REVISED SLOPE DESIGNATIONS	RLF	9/04
3			
4			



SECTION A-A



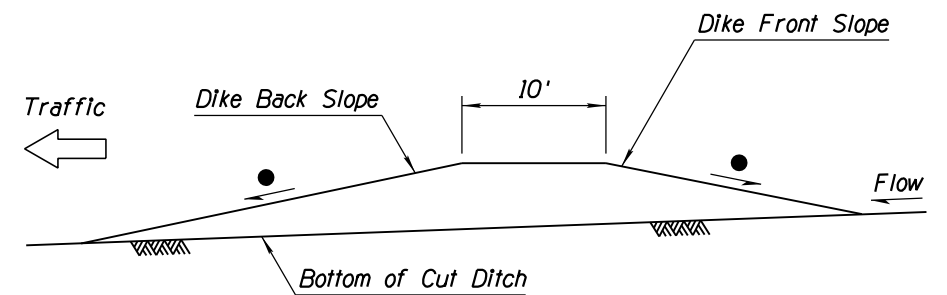
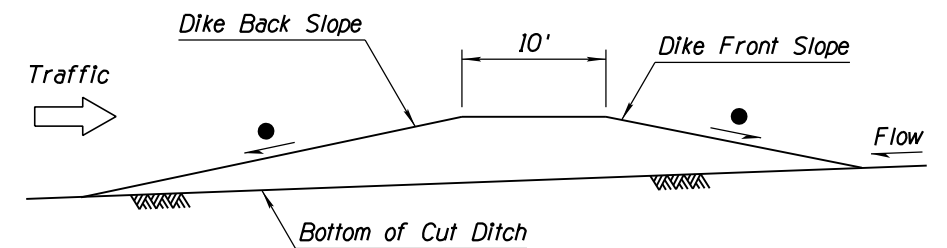
CUT DITCH WIDENING DETAIL



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



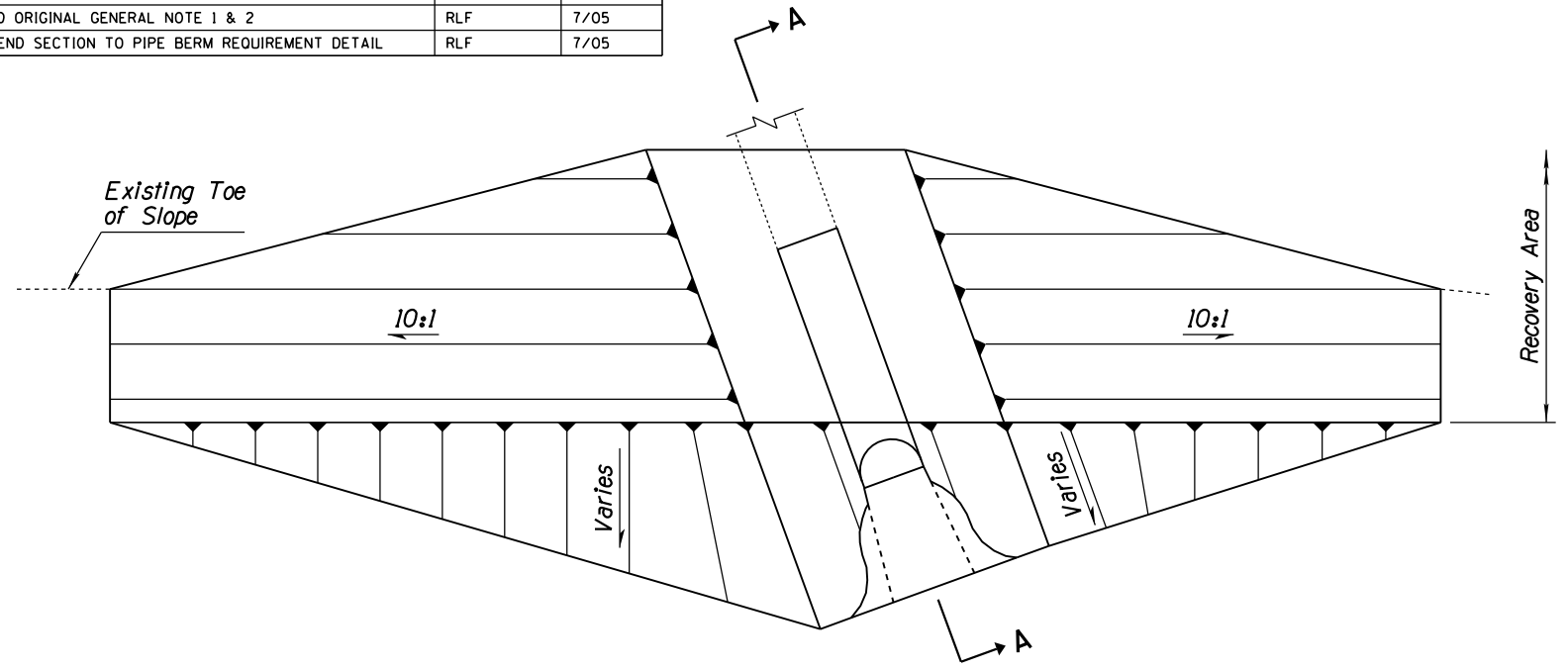
SECTION B-B

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

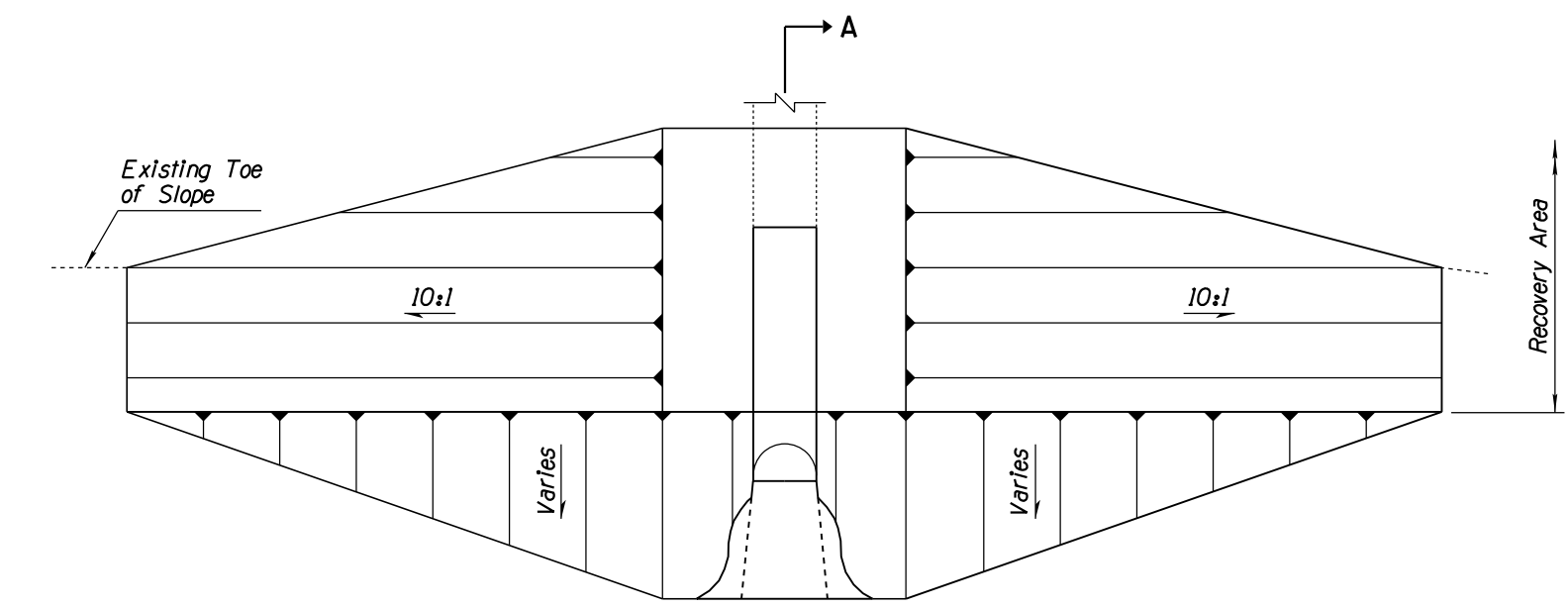
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SECTION A-A TITLE	RLF	7/05
2	DELETED SECTION A-A (WITHOUT END SECTION)	RLF	7/05
3	DELETED ORIGINAL GENERAL NOTE 1 & 2	RLF	7/05
4	ADDED END SECTION TO PIPE BERM REQUIREMENT DETAIL	RLF	7/05

GENERAL NOTES

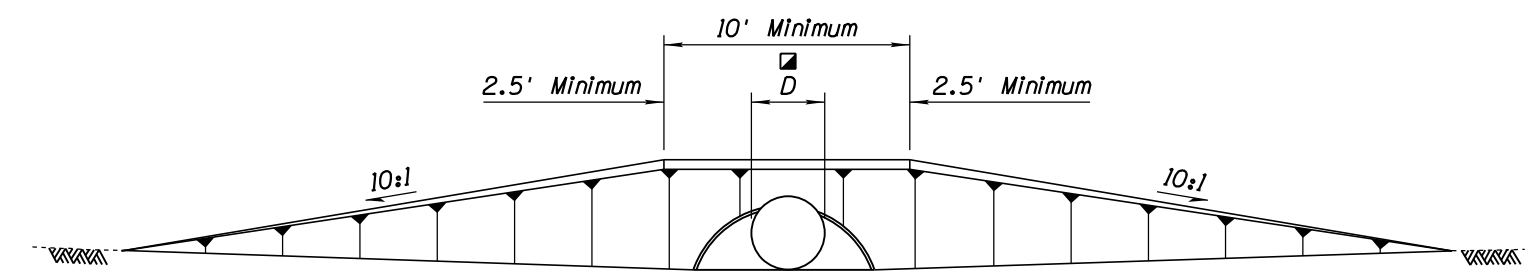
1. Berm construction shown is for pipe extensions. Berm construction similar for new pipe and multiple pipe installations. See Pipe Berm Requirement Detail.
2. If Point A is within the recovery area, then a pipe berm is required and Point B is set at the edge of the recovery area.
3. See Std Dwg C-13.15 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

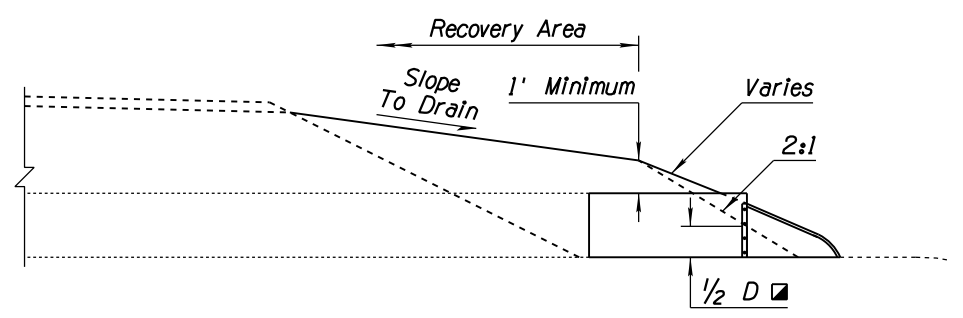


STRAIGHT PIPE PLAN

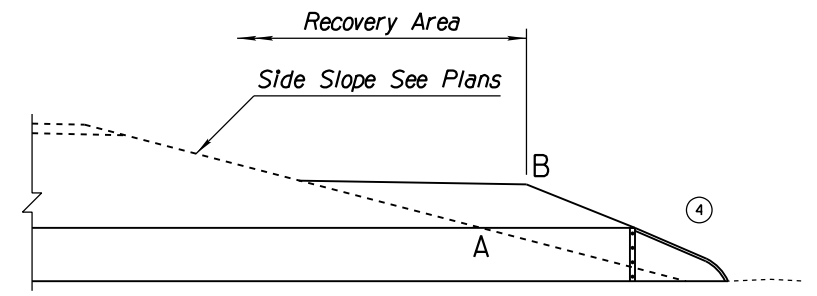


ELEVATION STRAIGHT PIPE

②



SECTION A-A



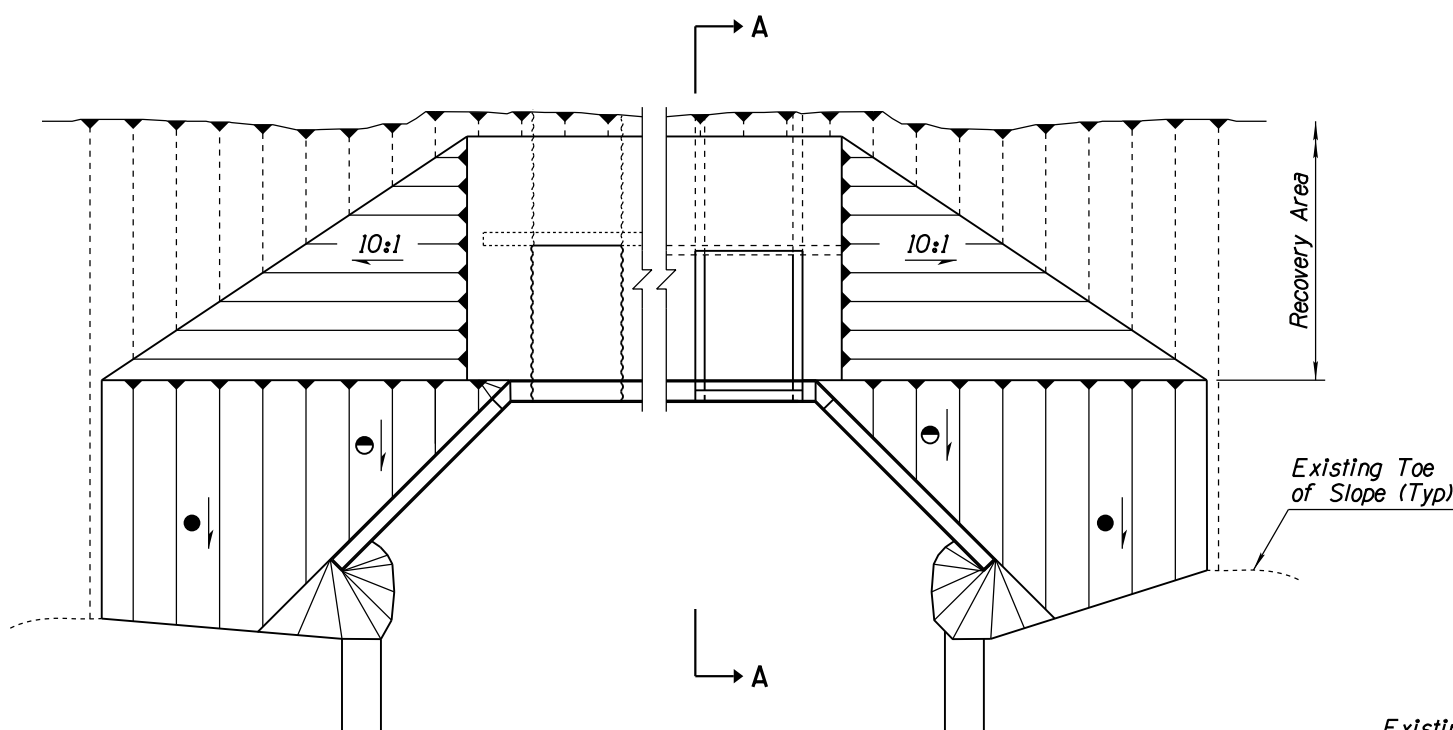
PIPE BERM REQUIREMENT DETAIL

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

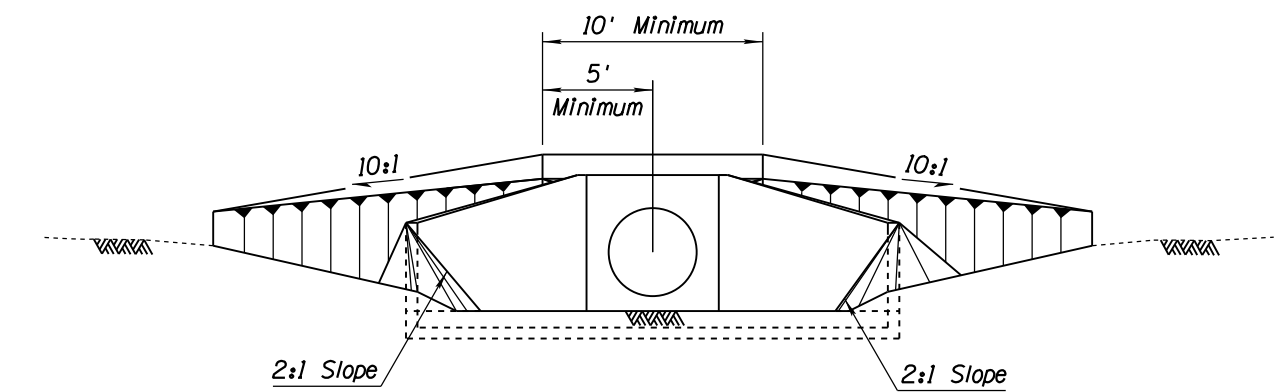
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REMOVED 1:1 SLOPE REQUIREMENT WITHIN RECOVERY AREA	RLF	5/12
3	REVISED BERM GRAPHICS	RLF	5/12
4			

GENERAL NOTES

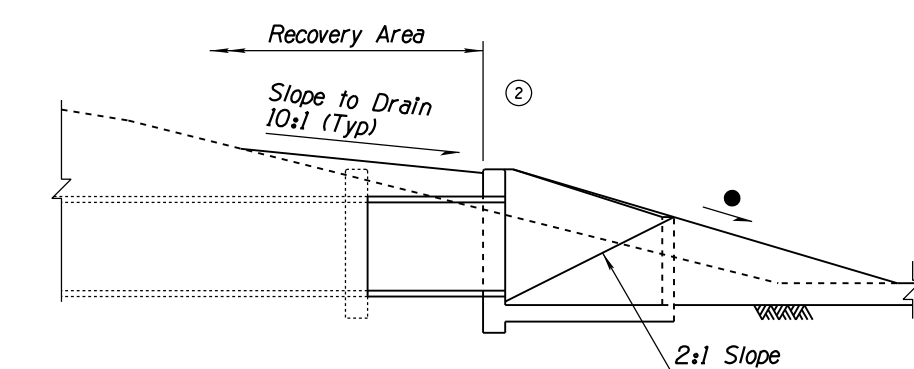
- Berm construction similar for box culvert and pipe with headwall.
- Berm construction shown is for extension of existing facilities. Berm construction similar for new facilities.
- See C-Standards and B-Standards for pipe and structure backfill limits.
 - Vary slope. Slope shall match to top of wing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



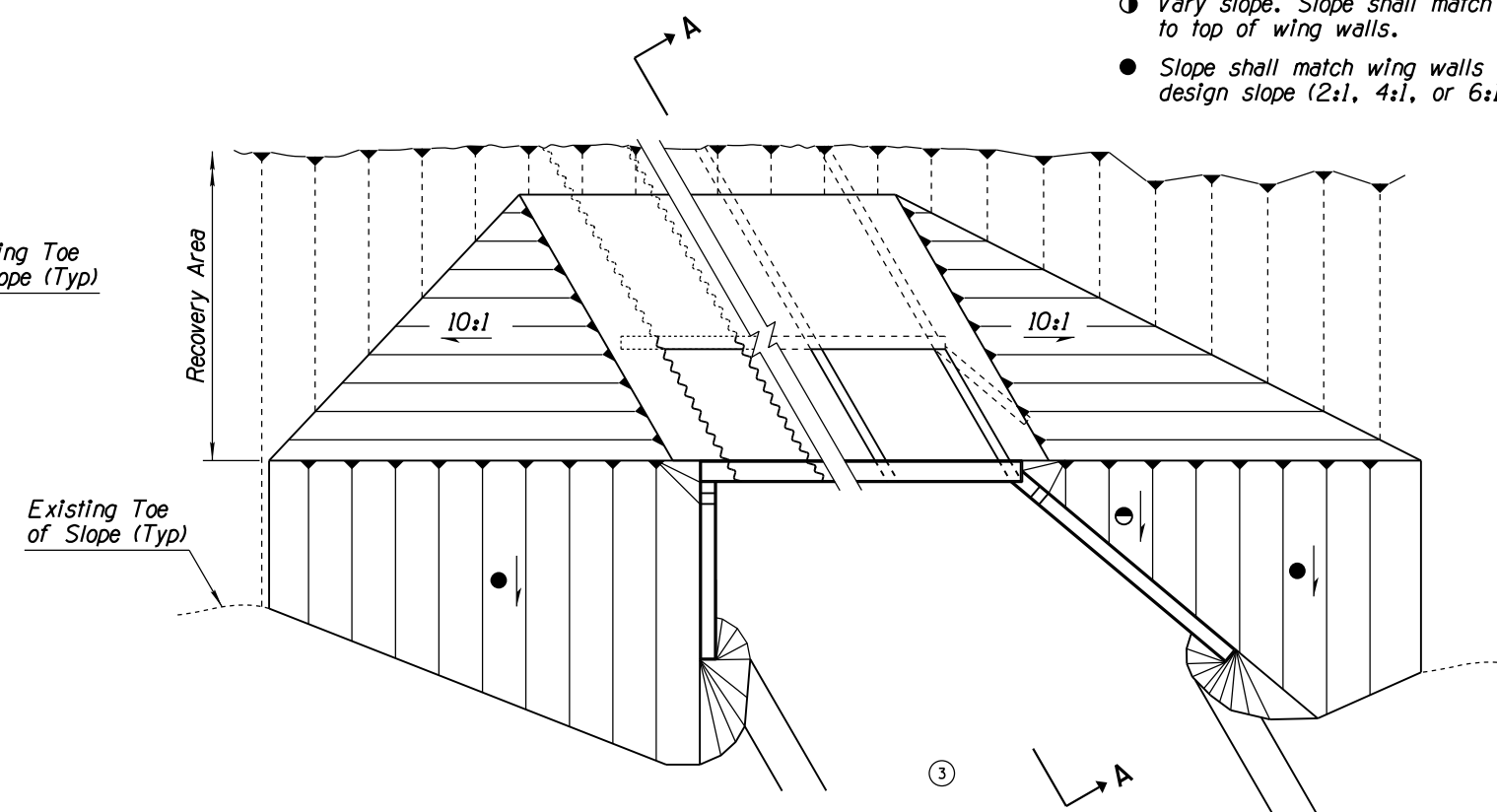
STRAIGHT HEADWALL PLAN
CBC OR PIPE WITH HEADWALL



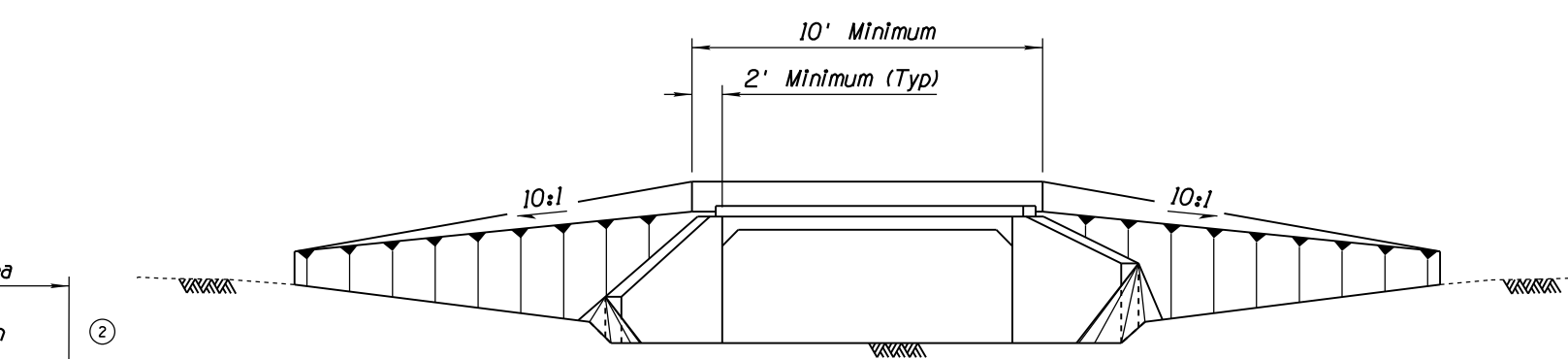
ELEVATION FOR PIPE ③



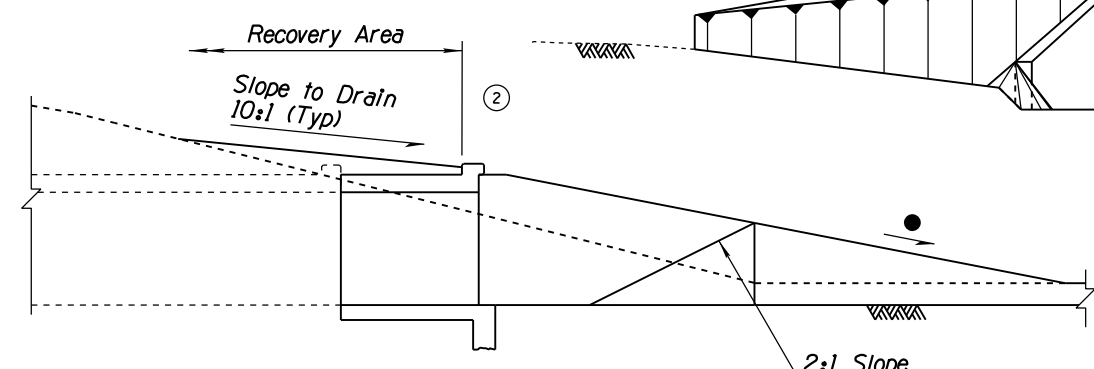
SECTION A-A (FOR PIPE WITH HEADWALL)



SKewed HEADWALL PLAN



ELEVATION FOR CBC ③

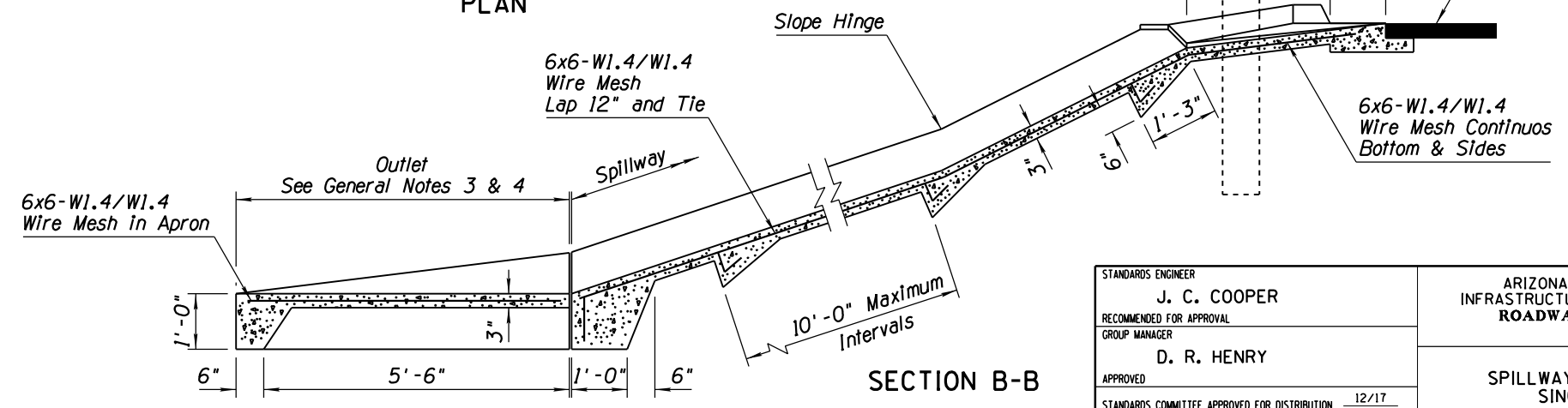
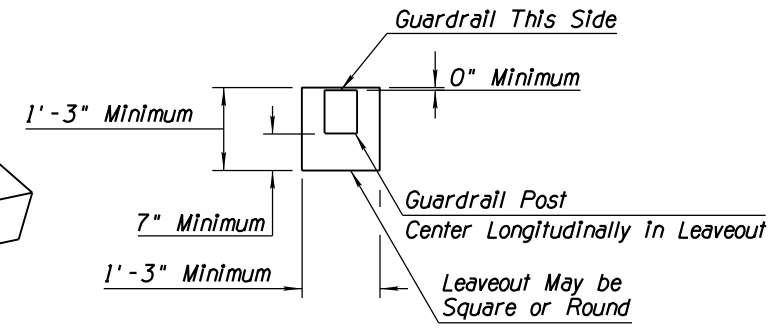
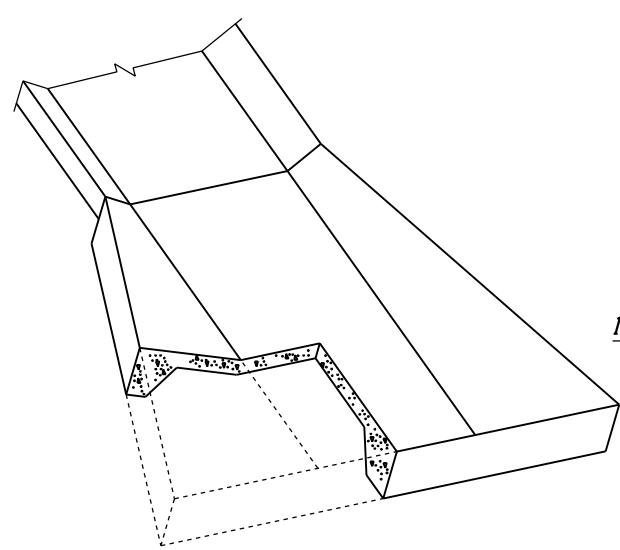
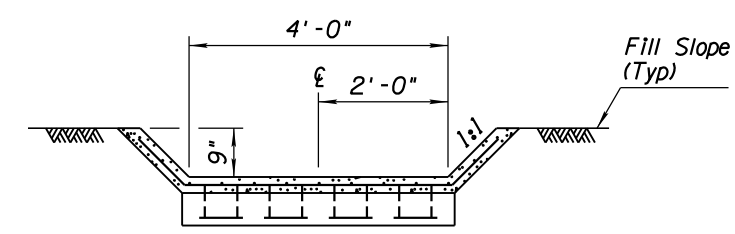
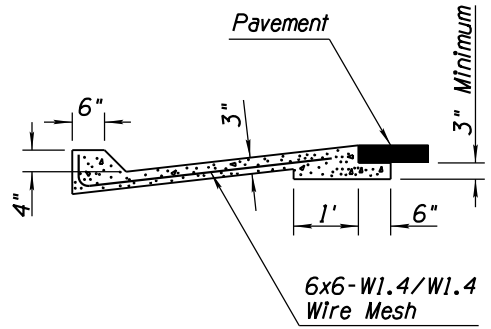
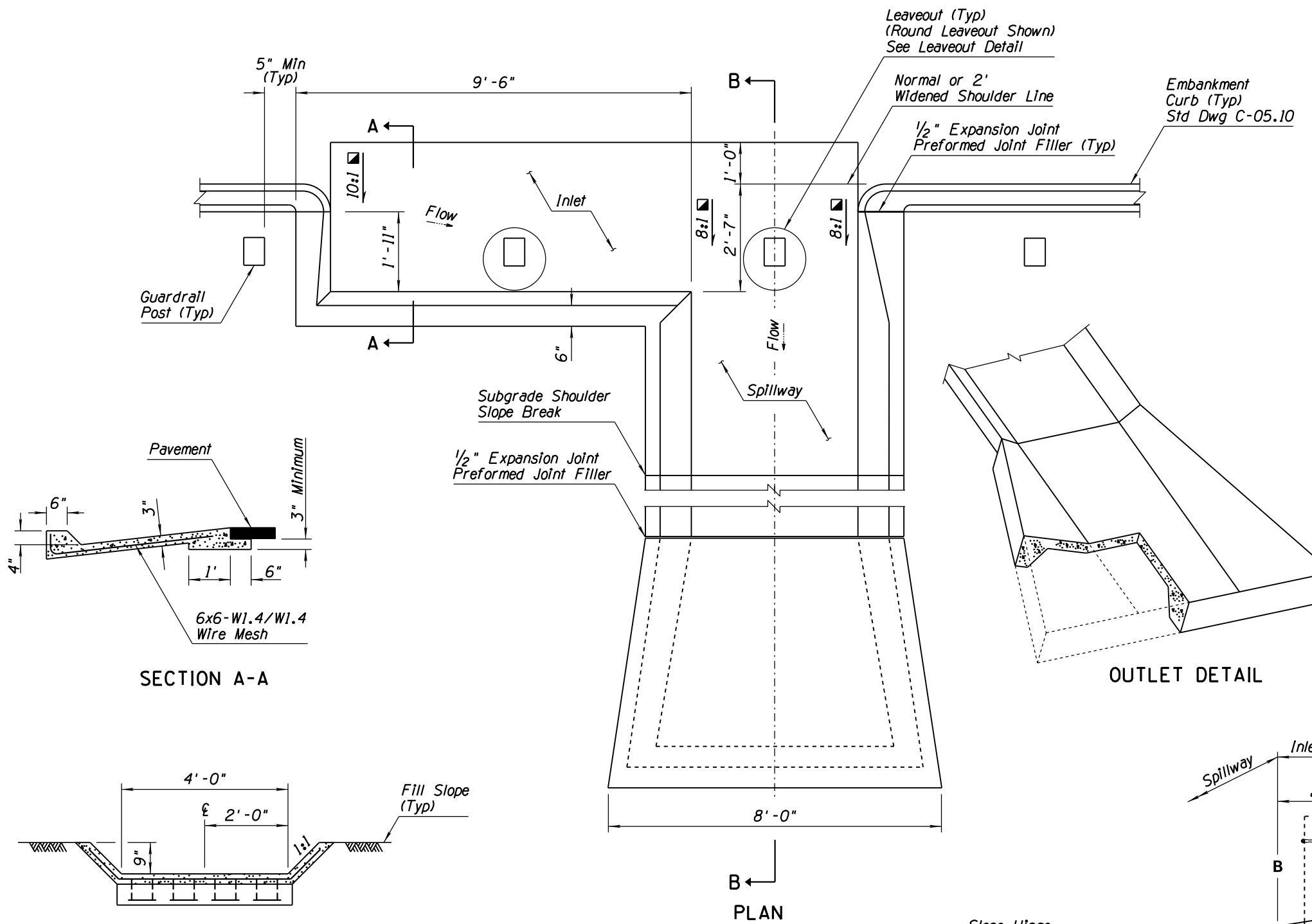


SECTION A-A (FOR CBC)

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. C-03.10 Sheet 5 of 5

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

05/12
 PRIOR DISTRIBUTION DATE



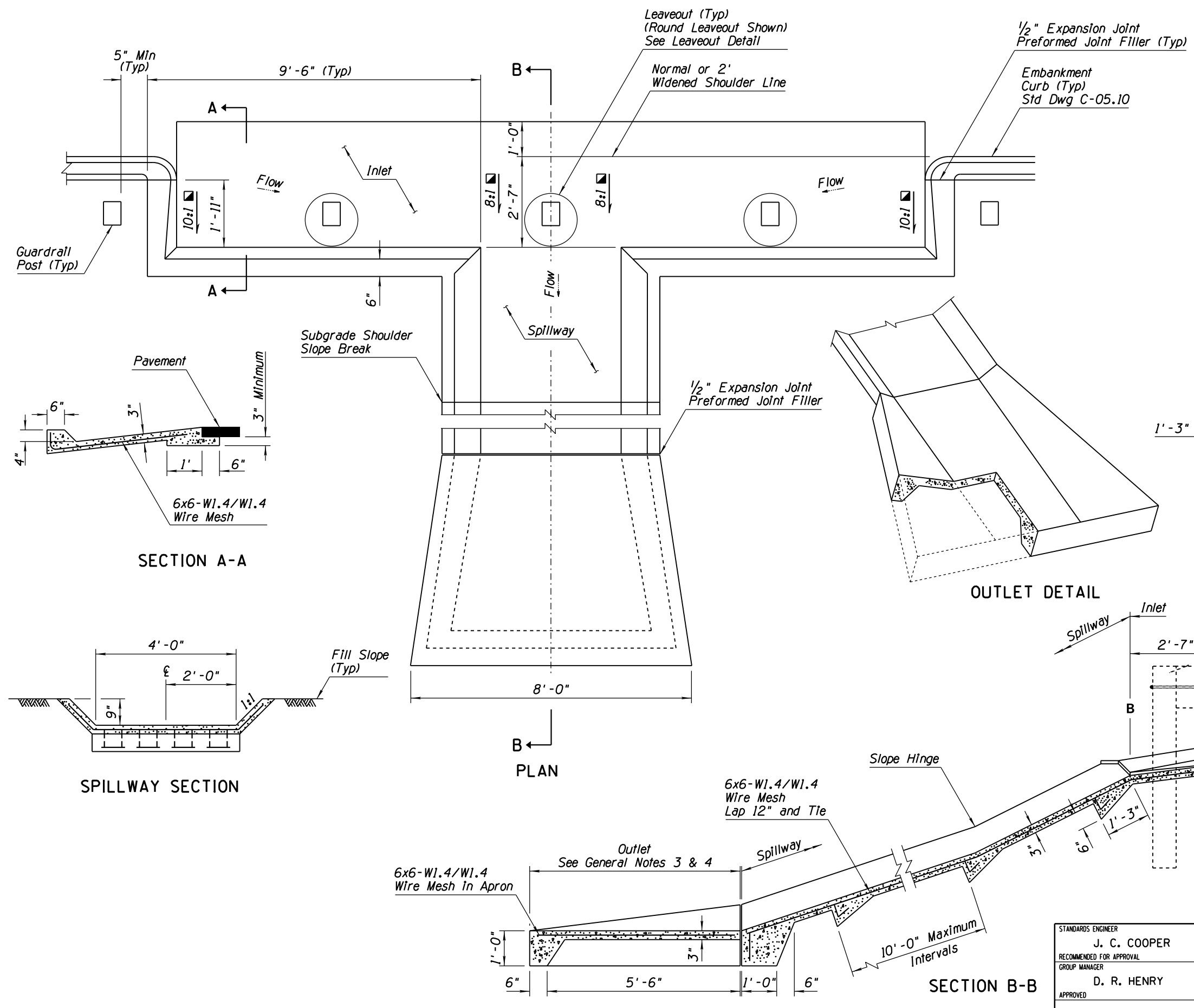
GENERAL NOTES

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. All posts within the inlet shall have a leaveout for the full depth of concrete. Leaveouts shall be filled flush to top of pavement with 3" of CLSM grout having a 28 day compressive strength between 40 and 120 psi.
 8. Round all exposed concrete corners.
- Transition slopes linearly from edge to center.

STANDARDS ENGINEER J. C. COOPER RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING		DRAWING NO. C-04.10 Sheet 1 of 2
	SPILLWAY EMBANKMENT SINGLE INLET		
DATE: 12/17			

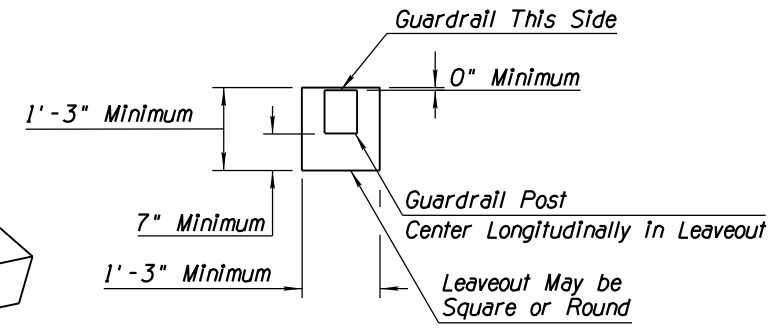
Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability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

PRIOR DISTRIBUTION DATE 05/12



GENERAL NOTES

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- ☑ Transition slopes linearly from edge to center.

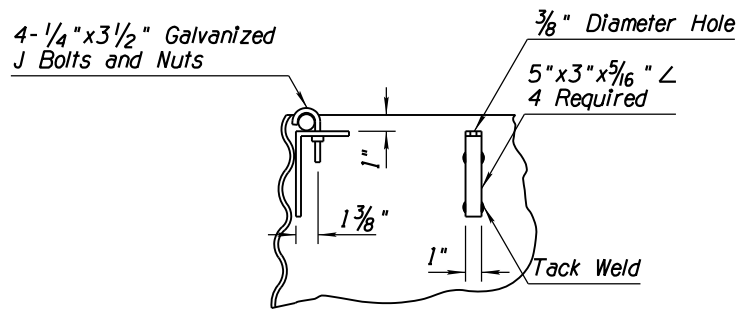
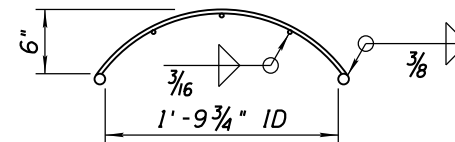
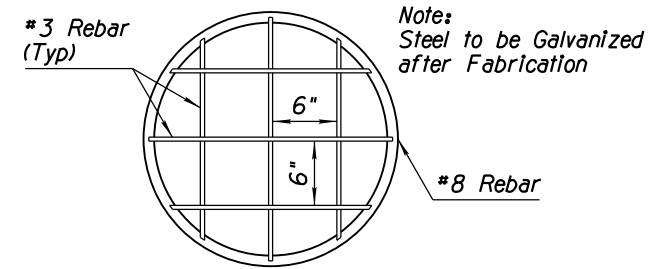
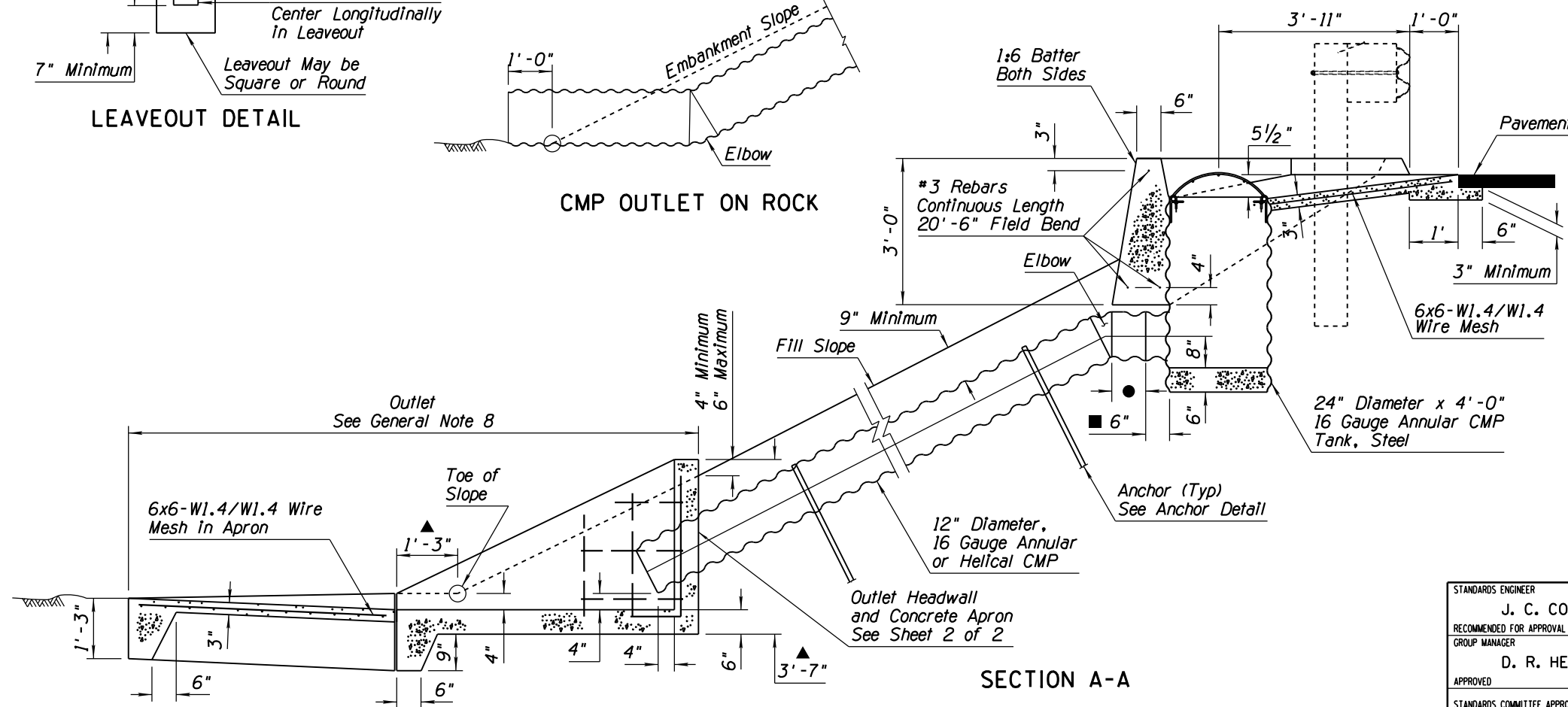
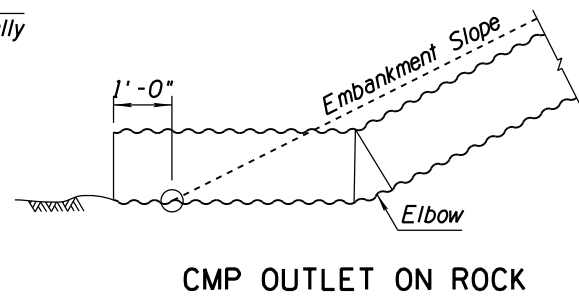
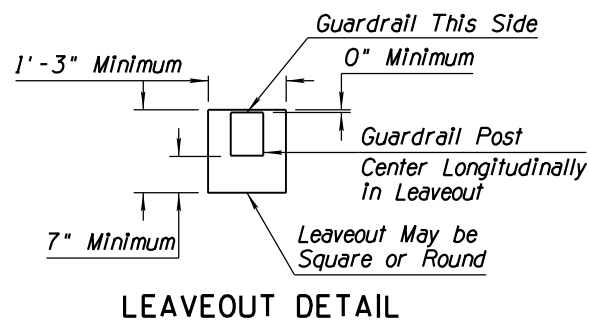
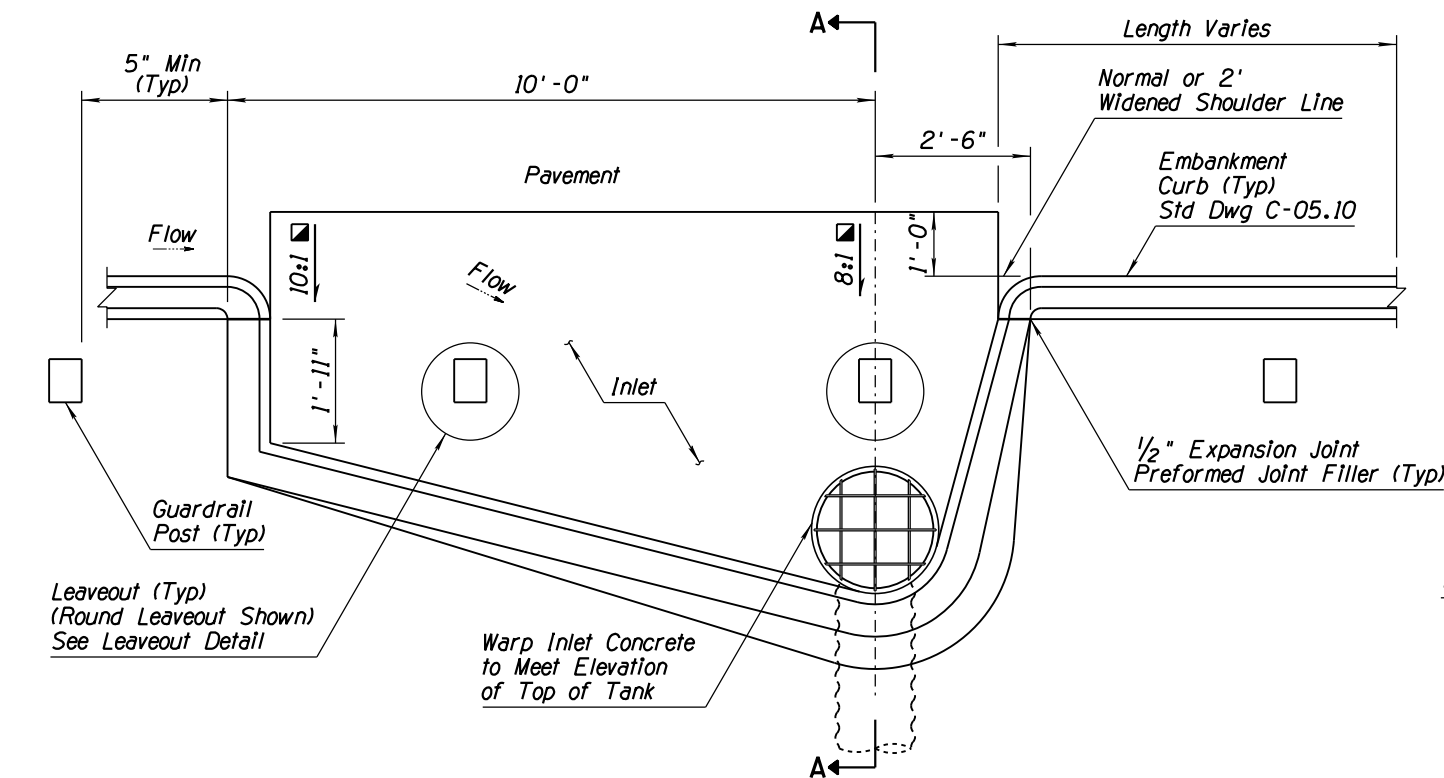


STANDARDS ENGINEER
J. C. COOPER
 RECOMMENDED FOR APPROVAL
 GROUP MANAGER
D. R. HENRY
 APPROVED
 STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 12/17 DATE

ARIZONA DEPARTMENT OF TRANSPORTATION
 INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP STANDARD DRAWING
 SPILLWAY EMBANKMENT
 DOUBLE INLET
 DRAWING NO.
C-04.10
 Sheet 2 of 2

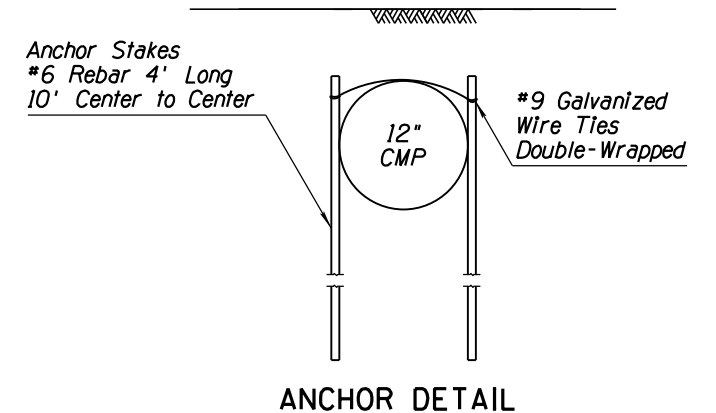
Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability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

PRIOR DISTRIBUTION DATE 05/12



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 polyolefin 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 downdrain length.
 8. Where rock is encountered the outlet may be omitted, as approved by the Engineer.
 9. All posts within the Inlet shall have a leaveout for the full depth of concrete. Leaveouts shall be filled flush to top of pavement with 3" of CLSM grout having a 28-day compressive strength between 40 and 120 PSI.
- Varies with subgrade slope and pavement structural thickness
 - ▲ Varies with fill slope and pipe cover
 - 12" Diameter x 6", 16 Gauge Annular CMP Stub
 - ▣ Transition slopes linearly from edge to center.



STANDARDS ENGINEER	J. C. COOPER
RECOMMENDED FOR APPROVAL	
GROUP MANAGER	D. R. HENRY
APPROVED	
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	12/17
	DATE

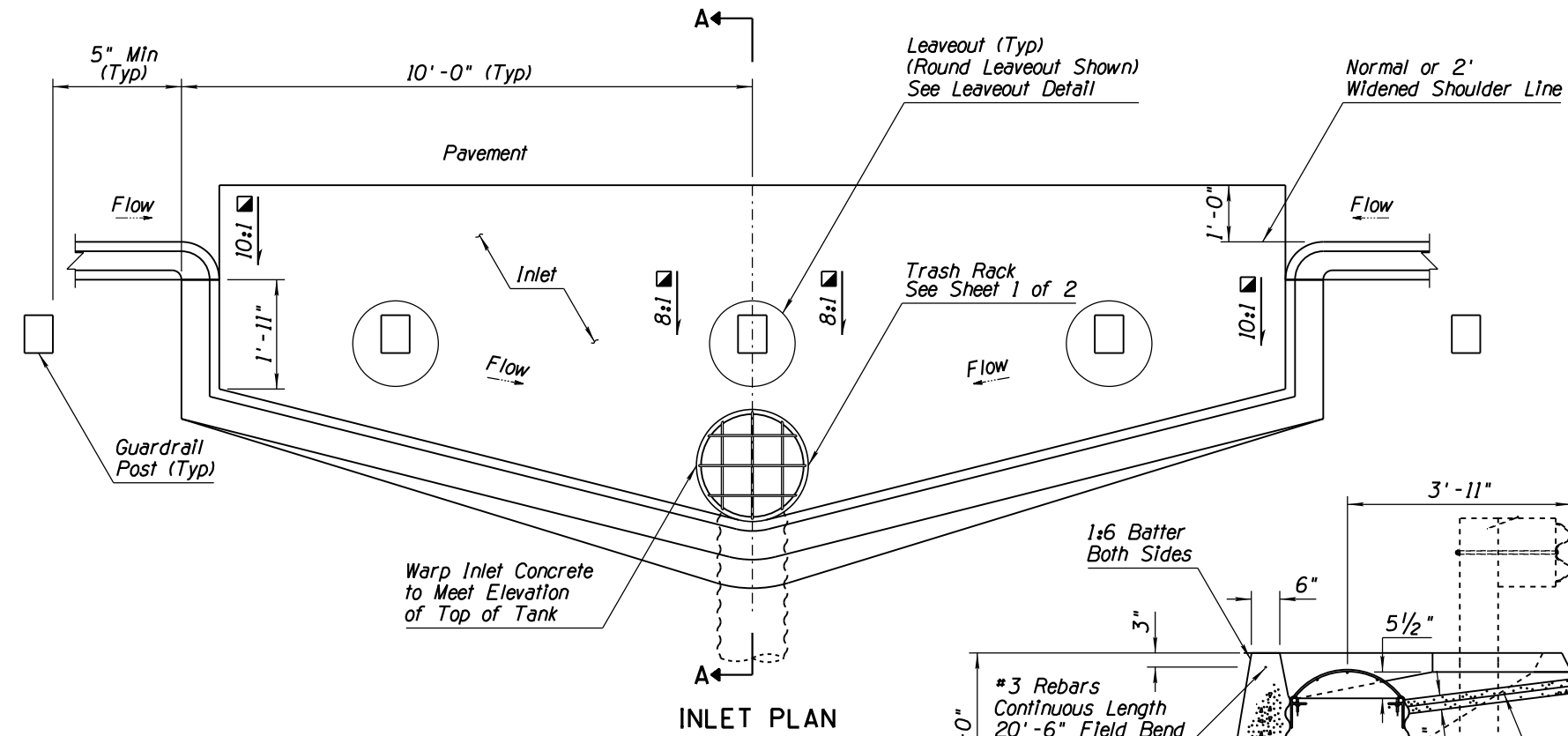
ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
DOWNDRAIN, EMBANKMENT SINGLE INLET	DRAWING NO. C-04.20 Sheet 1 of 2

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

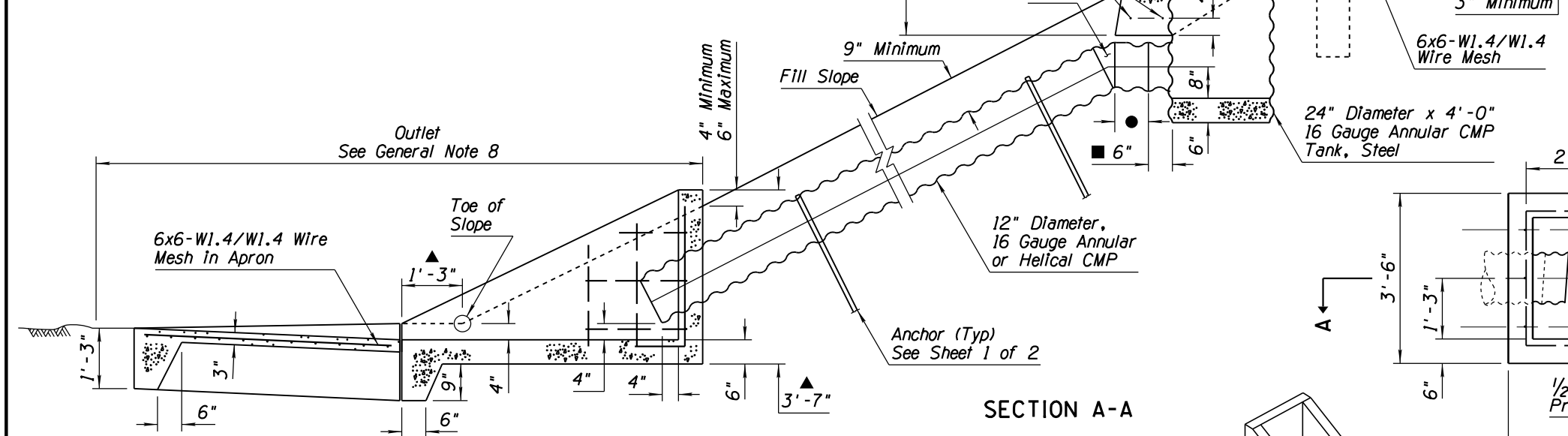
PRIOR DISTRIBUTION DATE 05/12

GENERAL NOTES

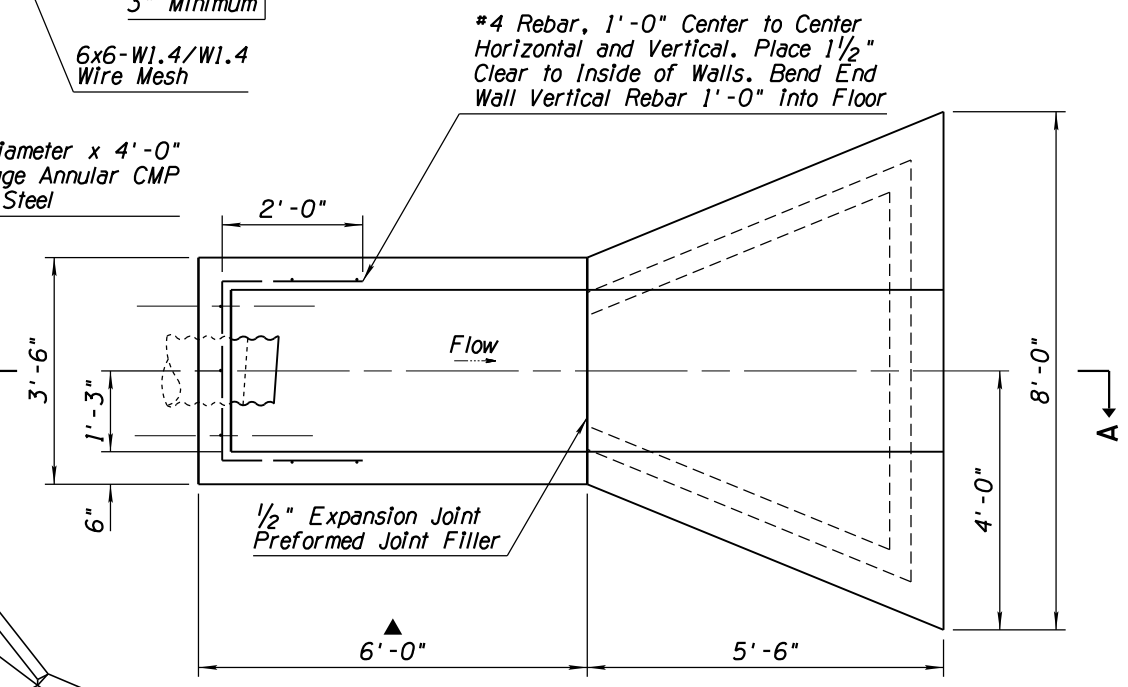
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 - 12" Diameter x 6", 16 Gauge Annular CMP Stub
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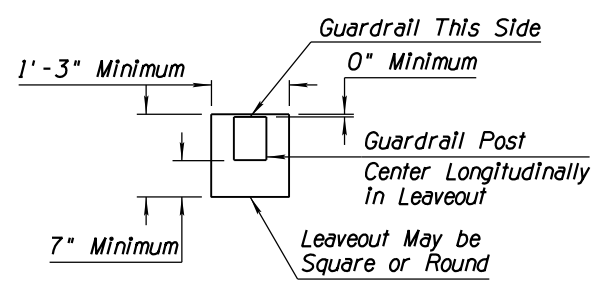
INLET PLAN



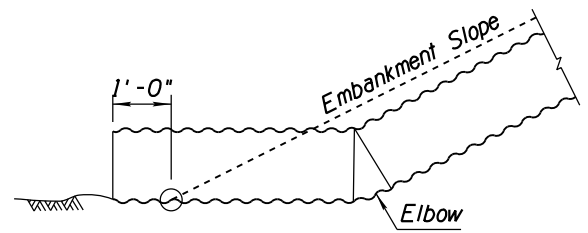
SECTION A-A



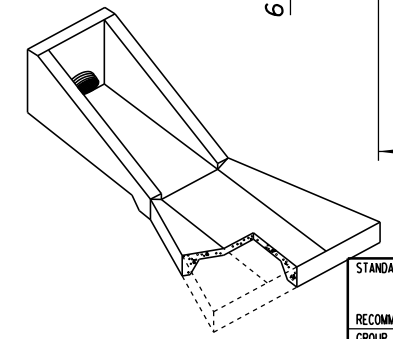
OUTLET HEADWALL AND CONCRETE APRON



LEAVEOUT DETAIL



CMP OUTLET ON ROCK



OUTLET DETAIL

STANDARDS ENGINEER
J. C. COOPER
 RECOMMENDED FOR APPROVAL
 GROUP MANAGER
D. R. HENRY
 APPROVED
 STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 12/17 DATE

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

DOWNDRAIN, EMBANKMENT
 DOUBLE INLET

DRAWING NO.
C-04.20
 Sheet 2 of 2

GENERAL NOTES

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

NOTE TO DESIGNERS

Use earthwork cross sections for more precise spillway lengths

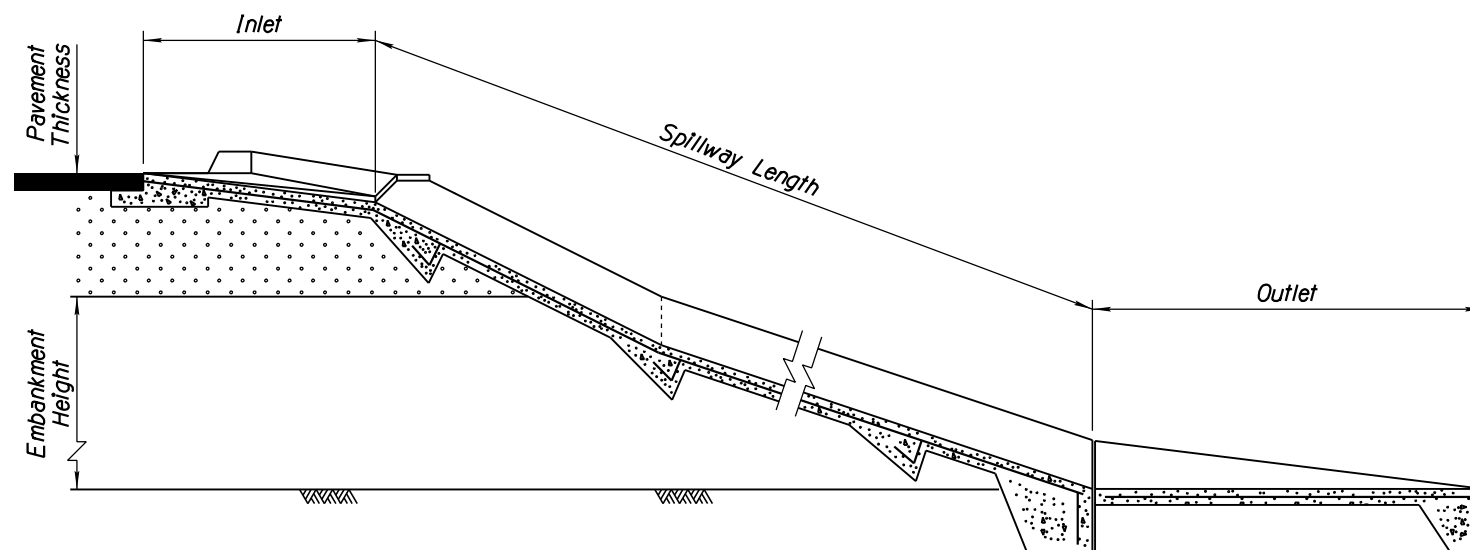
APPROXIMATE LENGTH OF SPILLWAY (Ft) -- C-02.10 & C-02.20 SLOPES

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	33	39	45	51	52	53	54	55	56	57	58	59	63	68	72	77
14	33	39	45	51	52	53	54	55	56	57	58	59	63	68	72	77
16	33	39	45	51	52	53	54	55	56	57	58	59	63	68	72	77
18	33	39	45	51	52	53	54	55	56	57	58	59	63	68	72	77
20	34	40	46	52	53	54	55	56	57	58	59	60	64	69	73	78
22	35	41	47	53	54	55	56	57	58	59	60	61	65	70	74	79
24	36	42	48	54	55	56	57	58	59	60	61	62	66	71	75	80
26	37	43	49	55	56	57	58	59	60	61	62	63	67	72	76	81
28	38	44	50	56	57	58	59	60	61	62	63	64	68	73	77	82
30	39	45	51	57	58	59	60	61	62	63	64	65	69	74	78	83
32	40	46	52	58	59	60	61	62	63	64	65	66	70	75	79	84
34	41	47	53	59	60	61	62	63	64	65	66	67	71	76	80	85
36	42	48	54	60	61	62	63	64	65	66	67	68	72	77	81	86

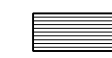
APPROXIMATE LENGTH OF SPILLWAY (Ft) -- C-02.30 SLOPES

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	13	17	21	22	23	23	24	24	29	33		
14	13	17	21	22	23	23	24	24	29	33		
16	13	17	21	22	23	23	24	24	29	33		
18	13	17	21	22	23	23	24	24	29	33		
20	14	18	22	23	23	24	25	25	30	34		
22	14	19	23	23	24	25	25	26	30	35		
24	15	19	23	24	25	25	26	26	31	35		
26	16	20	24	25	25	26	27	27	32	36		
28	16	21	25	25	26	27	27	28	32	37		
30	17	21	25	26	27	27	28	29	33	37		
32	18	22	26	27	27	28	29	29	34	38		
34	18	23	27	27	28	29	29	30	34	39		
36	19	23	27	28	29	29	30	31	35	40		

C-02.10 AND C-02.20 SLOPES



C-02.30 SLOPES

 Spillways are not usually used for these slope conditions

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

05/12

PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER
J. C. COOPER
RECOMMENDED FOR APPROVAL
GROUP MANAGER
D. R. HENRY
APPROVED
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION — 12/17 —
DATE

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

SPILLWAY LENGTH TABLE

DRAWING NO.
C-04.30

GENERAL NOTES

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

NOTE TO DESIGNERS

Use earthwork cross sections for more precise downdrain lengths

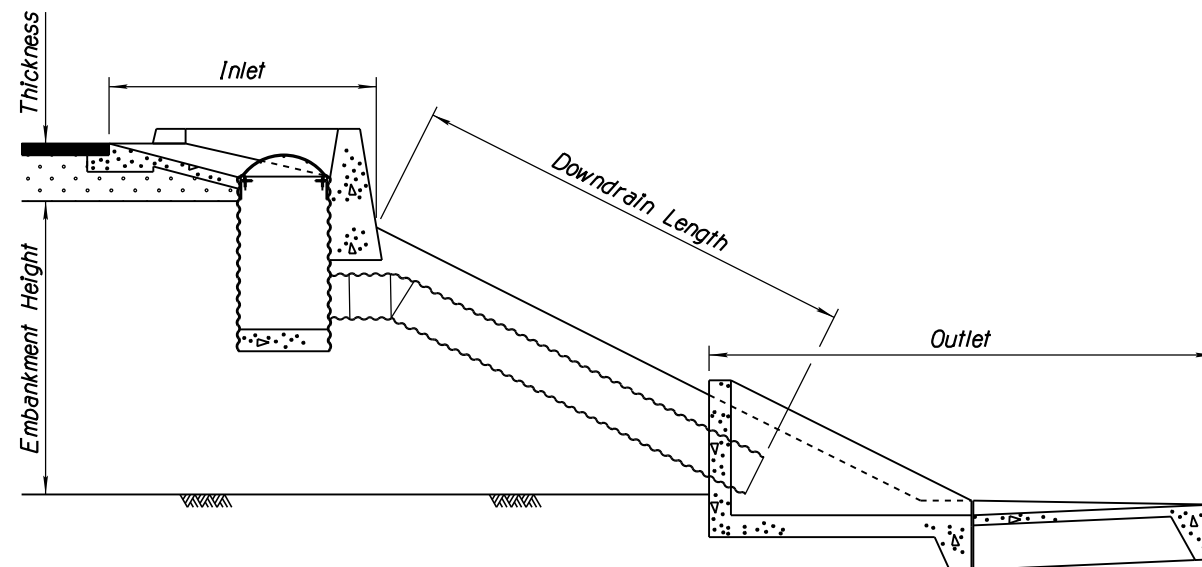
APPROXIMATE DOWNDRAIN LENGTH (Ft) -- C-02.10 & C-02.20 SLOPES

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	21	27	33	39	41	44	45	47	47	49	50	52	56	61	65	70
14	21	27	33	39	41	44	45	47	47	49	50	52	56	61	65	70
16	21	27	33	39	41	44	45	47	47	49	50	52	56	61	65	70
18	21	27	33	39	41	44	45	47	47	49	50	52	56	61	65	70
20	22	28	34	40	42	45	46	48	48	50	51	53	57	62	66	71
22	23	29	35	41	43	46	47	49	49	51	52	54	58	63	67	72
24	24	30	36	42	44	47	48	50	50	52	53	55	60	64	69	73
26	25	31	37	43	45	48	49	51	51	54	54	56	61	65	70	74
28	26	32	38	44	46	49	50	52	52	55	55	57	62	66	71	75
30	27	33	39	45	47	50	51	53	53	56	56	58	63	67	72	76
32	28	34	40	46	48	51	52	54	54	57	57	59	64	68	73	77
34	29	35	41	47	49	52	53	55	55	58	58	60	65	69	74	78
36	30	36	42	48	50	53	54	56	56	59	59	61	66	70	75	79


APPROXIMATE DOWNDRAIN LENGTH (Ft) -- 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	6	10	14	15	16	17	18	19	24	28
14	6	10	14	15	16	17	18	19	24	28
16	6	10	14	15	16	17	18	19	24	28
18	6	10	14	15	16	17	18	19	24	28
20	6	10	14	16	17	18	19	20	24	29
22	7	11	15	16	18	19	20	21	25	30
24	8	12	16	17	18	20	20	21	26	30
26	8	12	16	18	19	20	21	22	27	31
28	9	13	17	19	20	21	22	23	27	32
30	10	14	18	19	21	22	23	24	28	33
32	10	14	19	20	21	22	23	25	29	33
34	11	15	19	21	22	23	24	25	30	34
36	12	16	20	21	23	24	25	26	31	35

C-02.10 AND C-02.20 SLOPES



C-02.30 SLOPES

 Downdrains are not usually used for these slope conditions

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

05/12

PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER
J. C. COOPER
RECOMMENDED FOR APPROVAL
GROUP MANAGER
D. R. HENRY
APPROVED
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION — 12/17 —
DATE

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

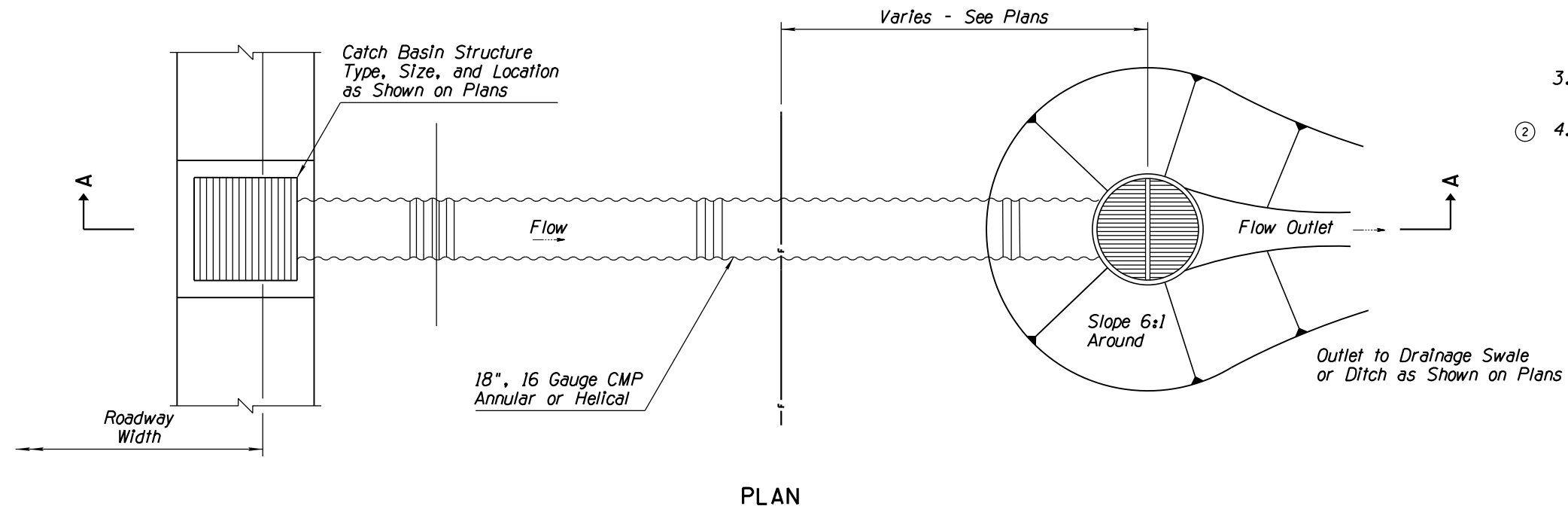
DOWNDRAIN LENGTH TABLE

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			

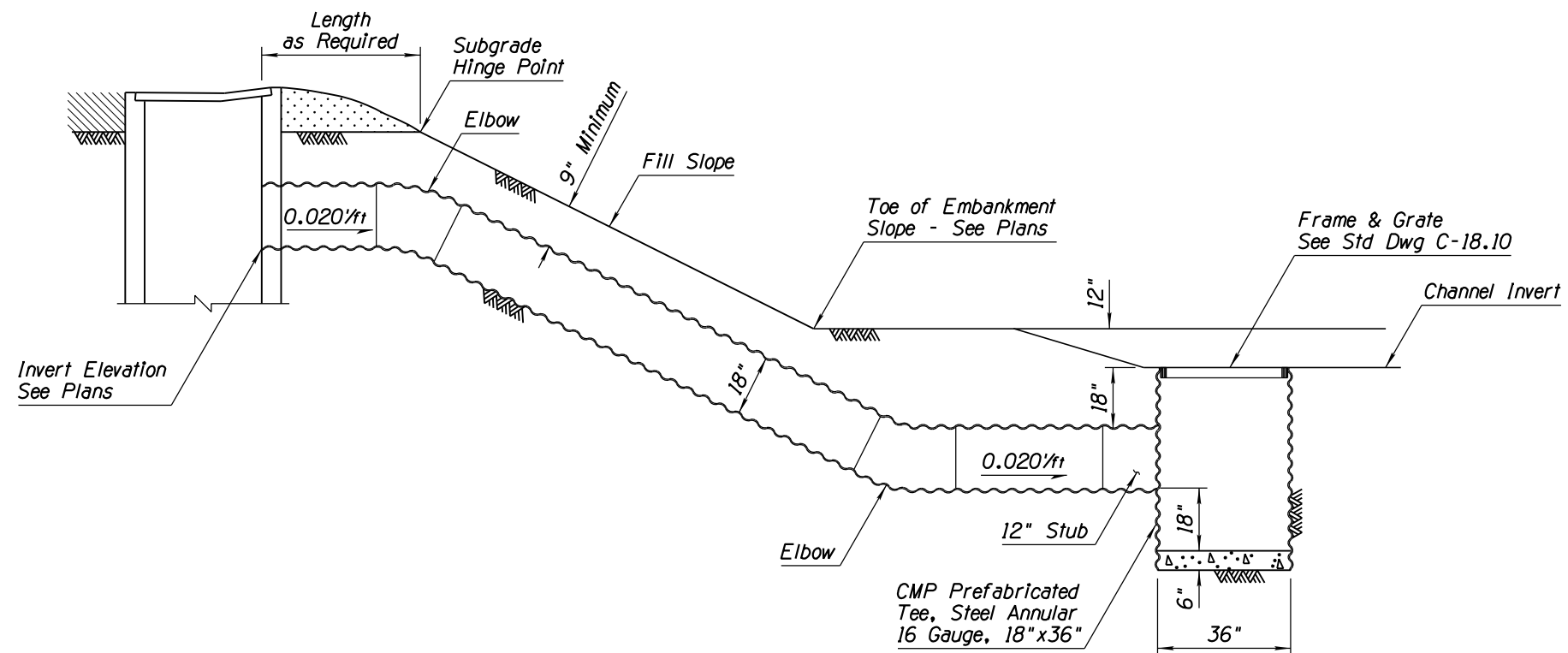
GENERAL NOTES

1. Stub shall have annular corrugation. Downrain piping beyond stub may be either annular or helical.
2. Couplings shall be mechanical heat-shrinkable polyolefin 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 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 \blacksquare Gutter Depression shall be reduced at sidewalk ramps (C-05.30) to achieve a maximum gutter cross-slope of 5%.
- ② \bullet See Plans (6 inch typical)
- \blacksquare Curb Radius when shown on plans

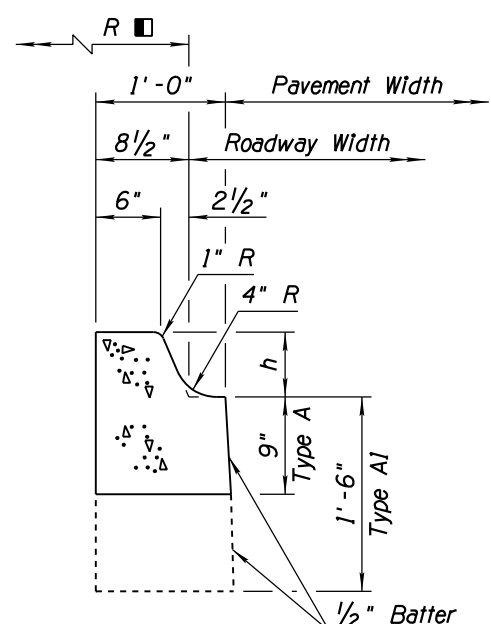
EMBANKMENT CURB

- 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".

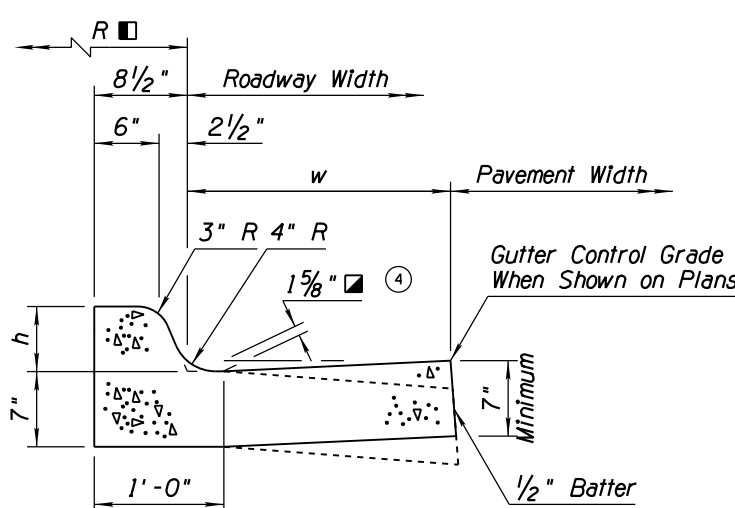
Curb & Gutter Type	Curb Height h	Gutter Width w	Gutter Depression d \blacksquare
D	\bullet	2'-0"	1 5/8"
D-1	\bullet	2'-6"	1 3/4"
D-2	\bullet	4'-6"	1 3/4"
D-3	\bullet	2'-0"	N/A
G	\bullet	2'-0"	1 5/8"

URBAN FREEWAY CURB & GUTTER

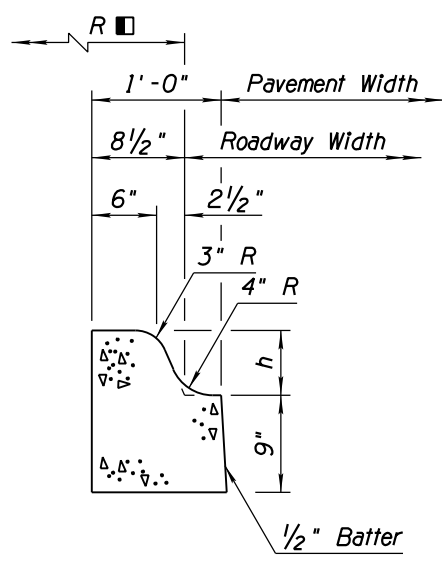
Curb & Gutter Type	Curb Height h	Curb Width c	Slope	Gutter Depression d
B	6"	1'-6"	3:1	2"
C	3"	1'-6"	6:1	5/8"
C-1	3"	1'-6"	6:1	N/A
E	4"	2'-0"	6:1	5/8"
E-1	4"	2'-0"	6:1	N/A



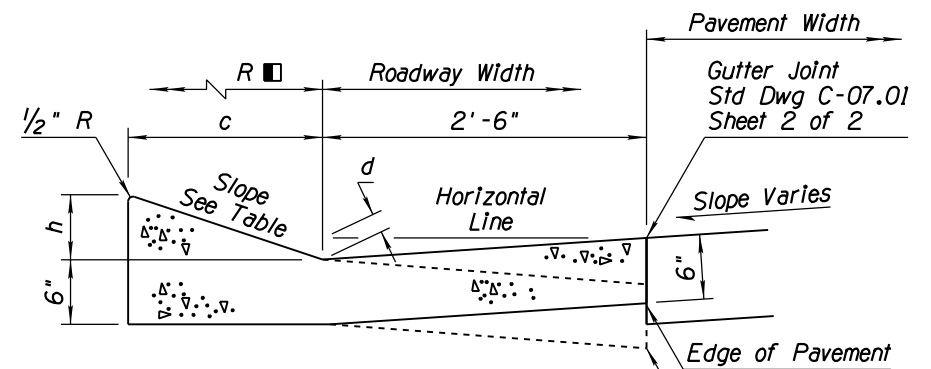
SINGLE CURB
TYPE A & A1



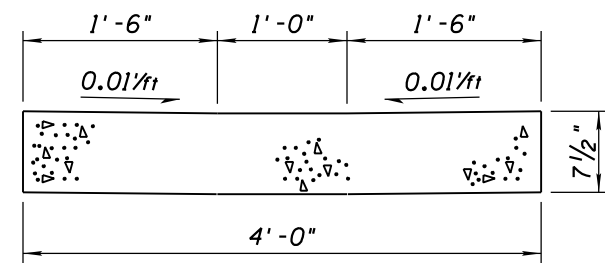
CURB & GUTTER
TYPE G



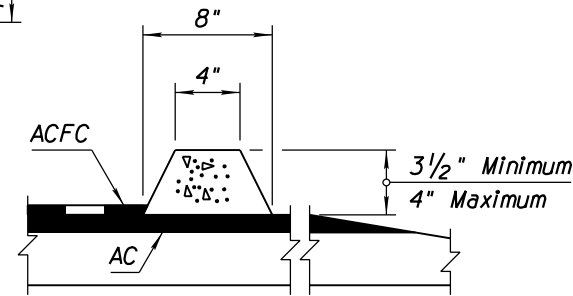
SINGLE CURB
TYPE G



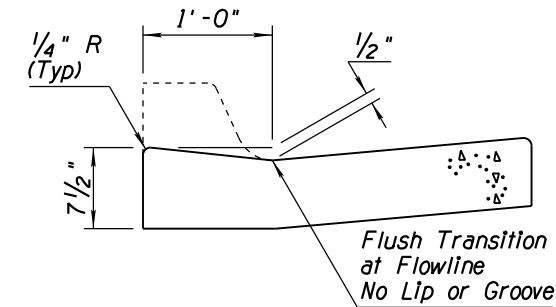
CURB & GUTTER
TYPE B, C, C-1, E & E-1



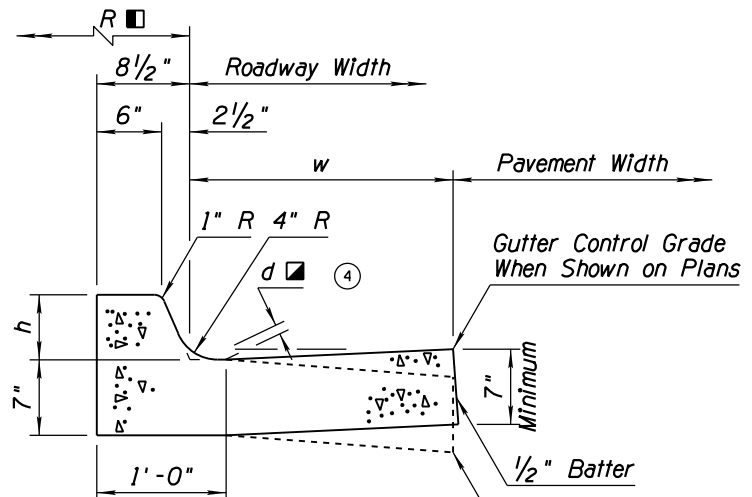
VALLEY GUTTER



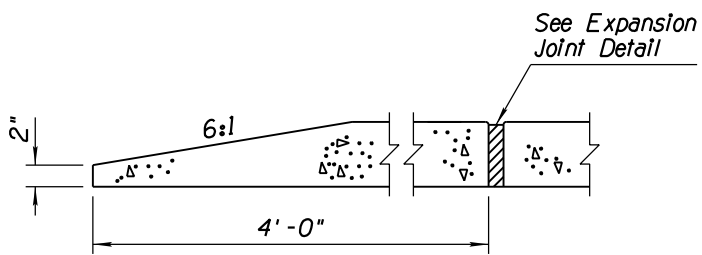
EMBANKMENT CURB



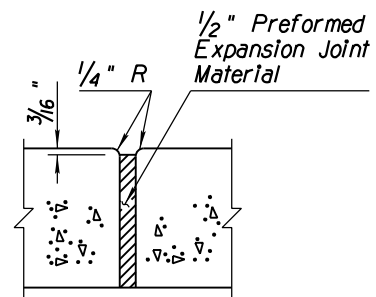
DEPRESSED CURB & GUTTER



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



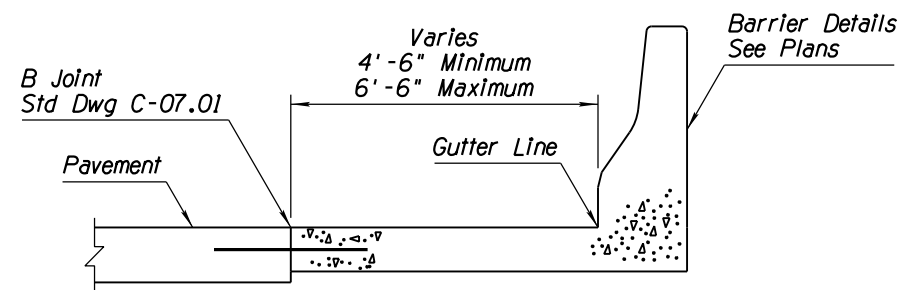
CURB TERMINAL SECTION



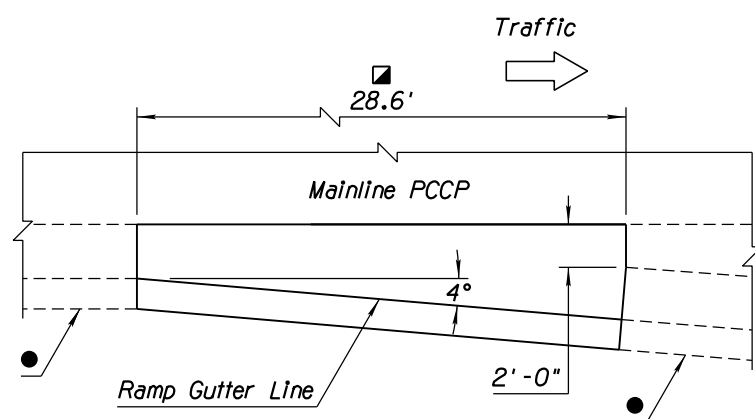
EXPANSION JOINT DETAIL

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

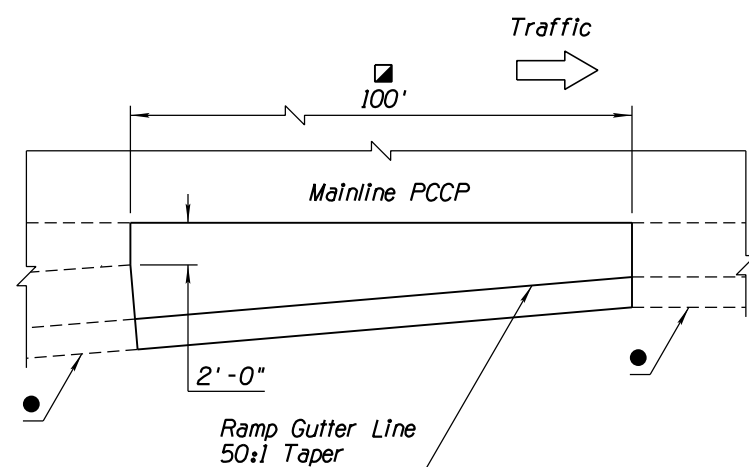
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	7/05
2	REVISED CURB WIDTH AND MODIFIED GENERAL NOTE	RLF	5/12
3			
4			



SECTION
CONCRETE BARRIER APPLICATION

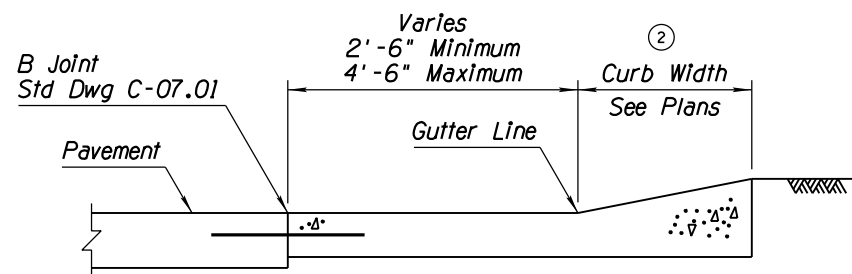


EXIT

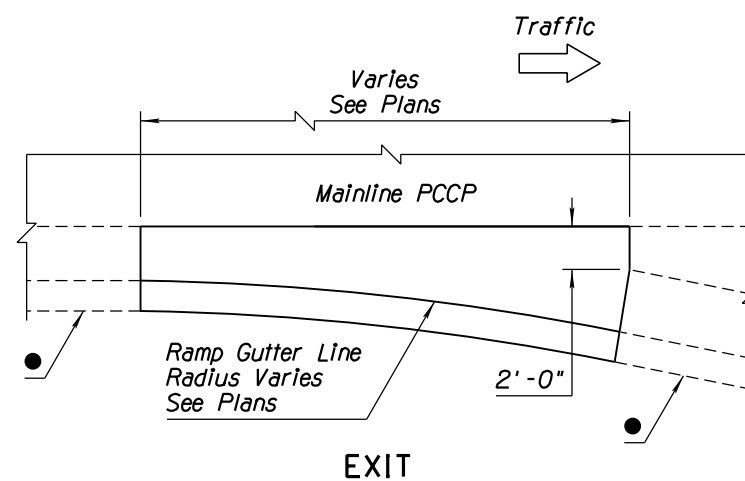


ENTRANCE

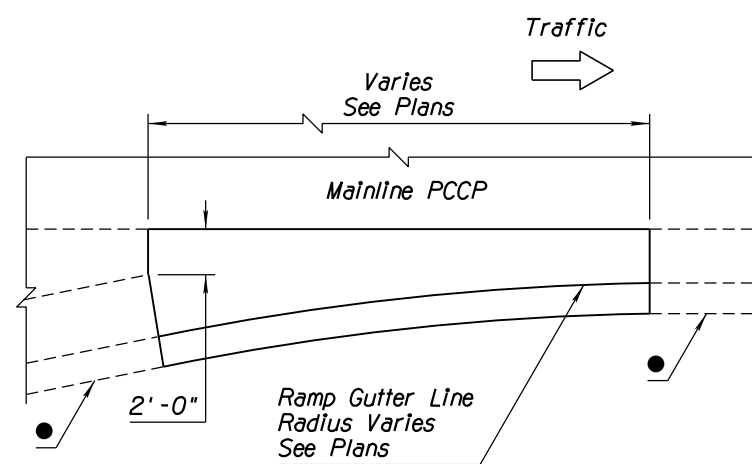
TYPE 1 - TAPER-TYPE GUTTER TRANSITIONS AT RAMPS
PLAN VIEW



SECTION
CURB & GUTTER APPLICATION



EXIT



ENTRANCE

TYPE 1 - PARALLEL-TYPE GUTTER TRANSITIONS AT RAMPS

PLAN VIEW

GENERAL NOTES

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

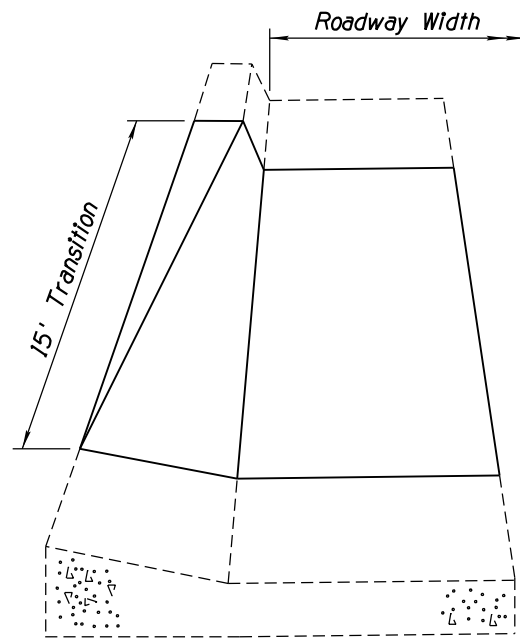
Dimension May Vary Where Transition Occurs on Curves: See Plans

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

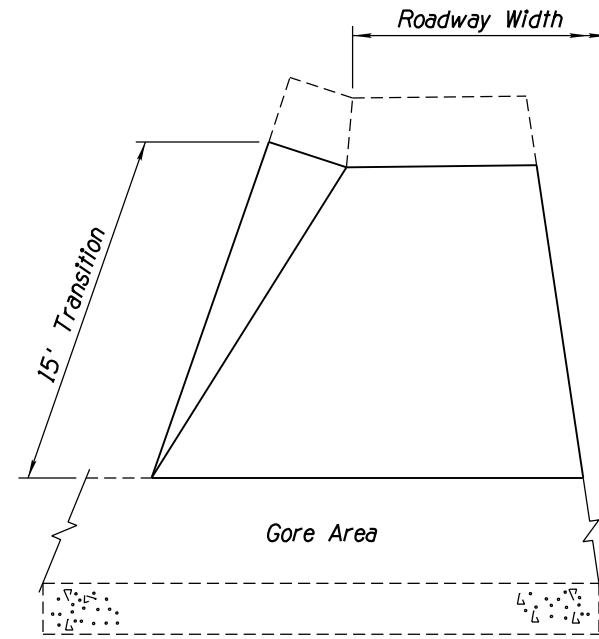
② ● Curb & Gutter - Type B, C, C-1, E or E-1 Std Dwg C-05.10

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

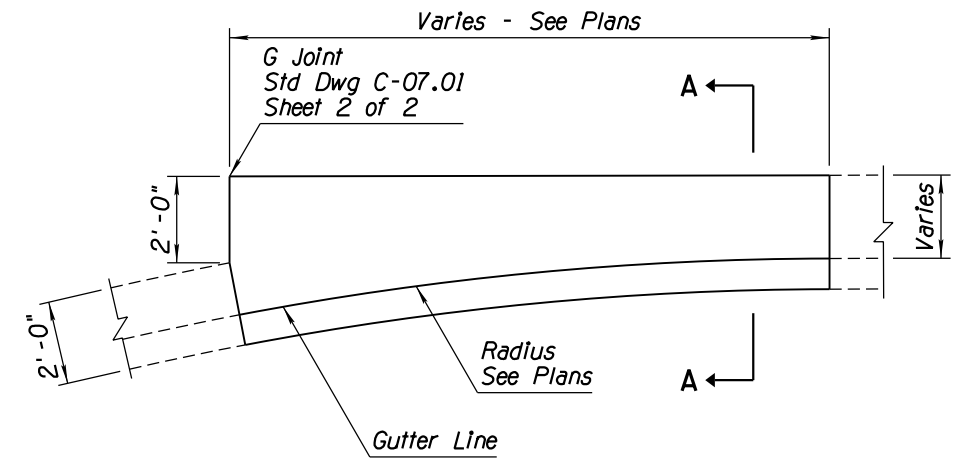
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2	REVISED NOTE	RLF	4/06
3	REVISED CURB WIDTH AND MODIFIED NOTE	RLF	5/12
4			



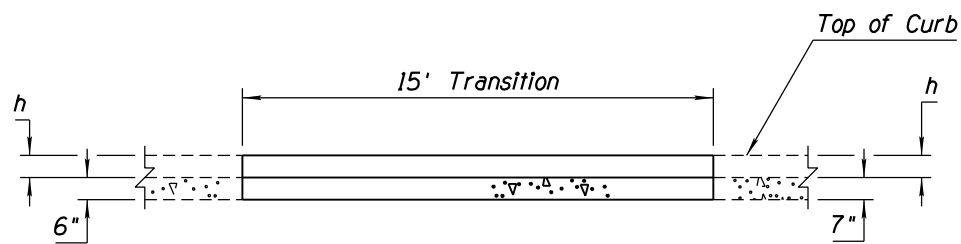
PERSPECTIVE VIEW



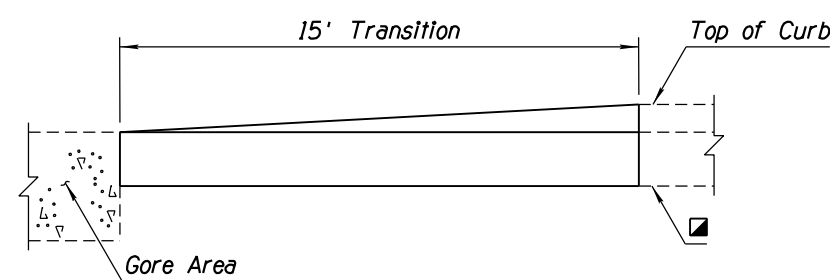
PERSPECTIVE VIEW



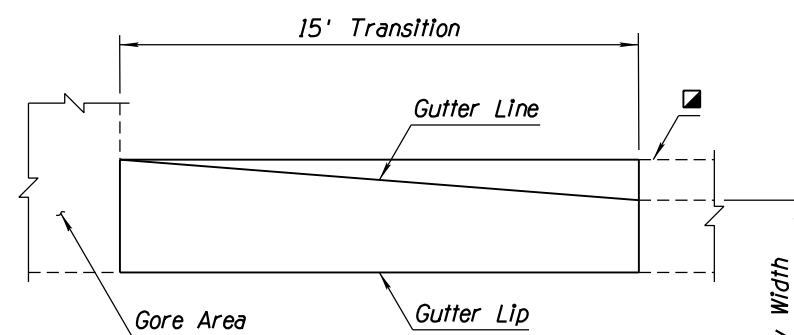
TYPE 4 - CURB & GUTTER TRANSITION



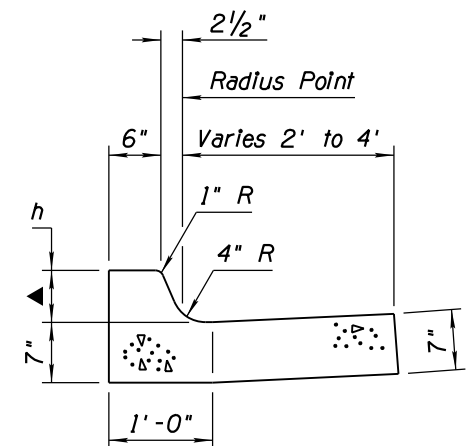
SECTION B-B



ELEVATION

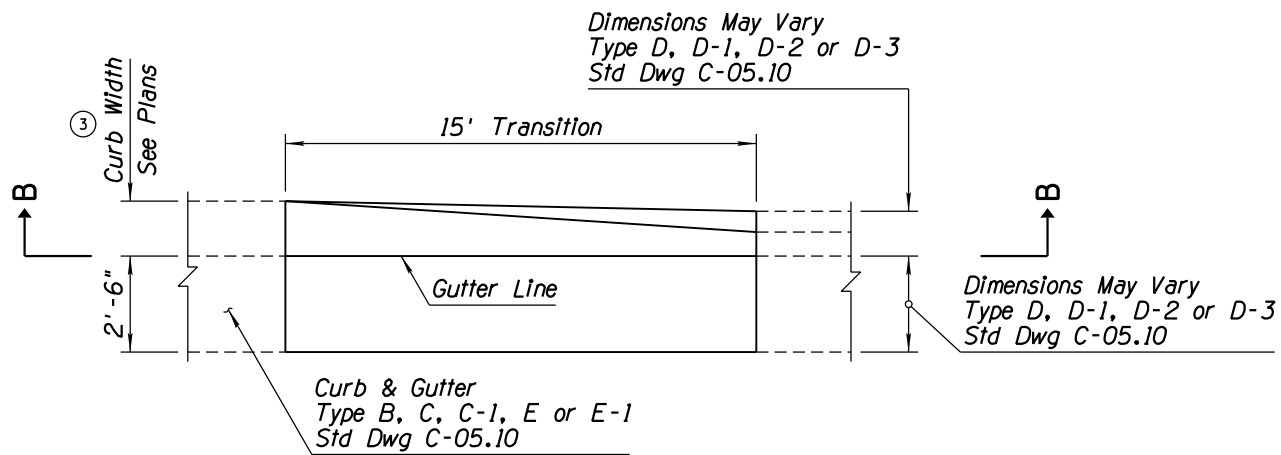


TYPE 3 - CURB & GUTTER TRANSITION AT PAVED GORE PLAN VIEW



SECTION A-A

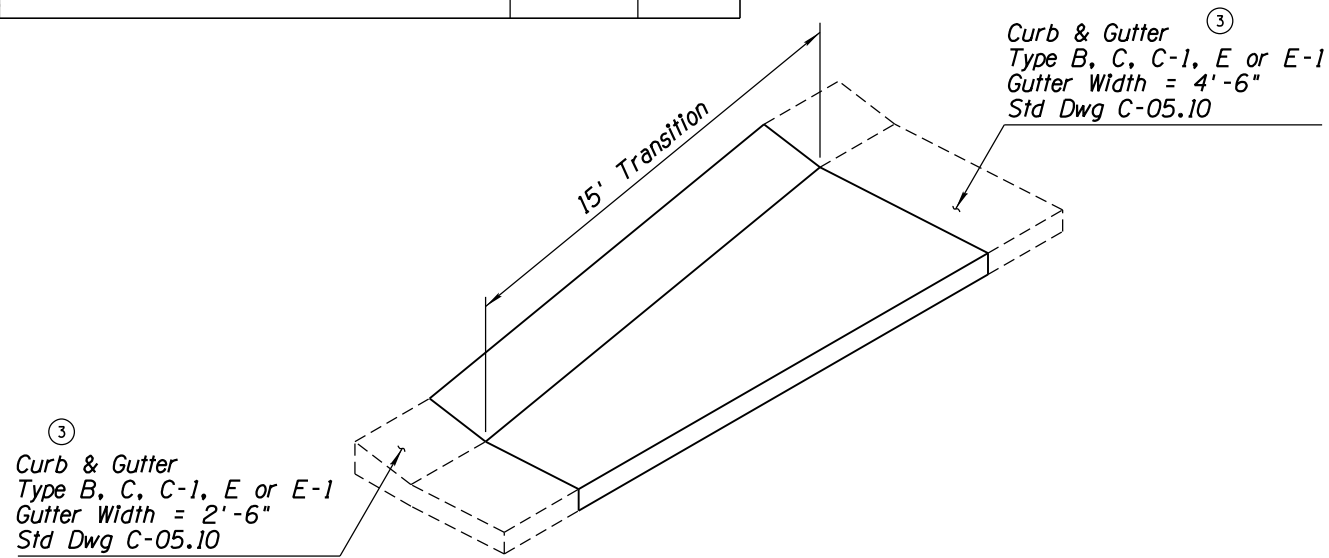
- ▲ Curb Height Varies 0" to 7" Maximum in Depressed Curb Area Beyond the End of Barrier. See Plans for Curb Height.
- ② ■ Curb & Gutter Type B, C, C-1, D, D-1, D-2, D-3 E or E-1.
- ③



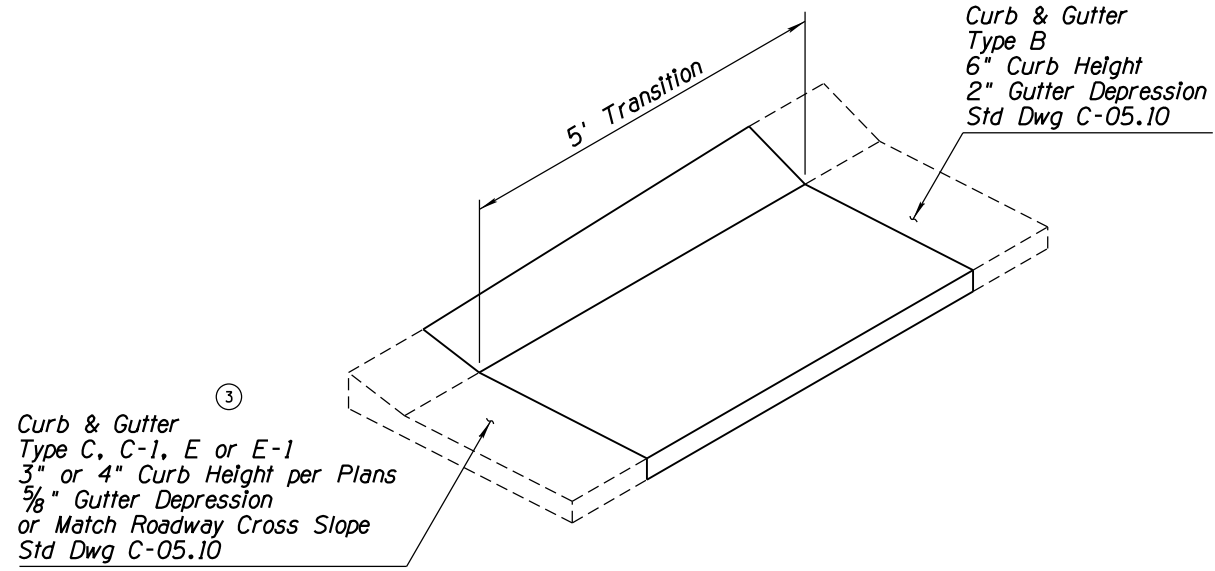
TYPE 2 - CURB & GUTTER TRANSITION PLAN VIEW

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

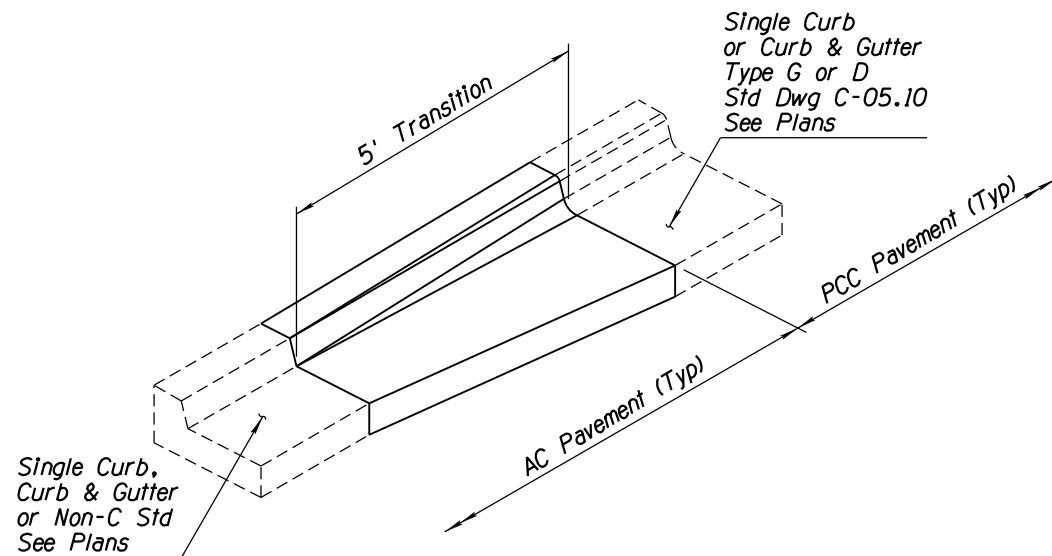
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD	RLF	9/04
2	REVISED DIMENSION	RLF	7/05
3	REVISED CURB & GUTTER NOTES	RLF	5/12
4			



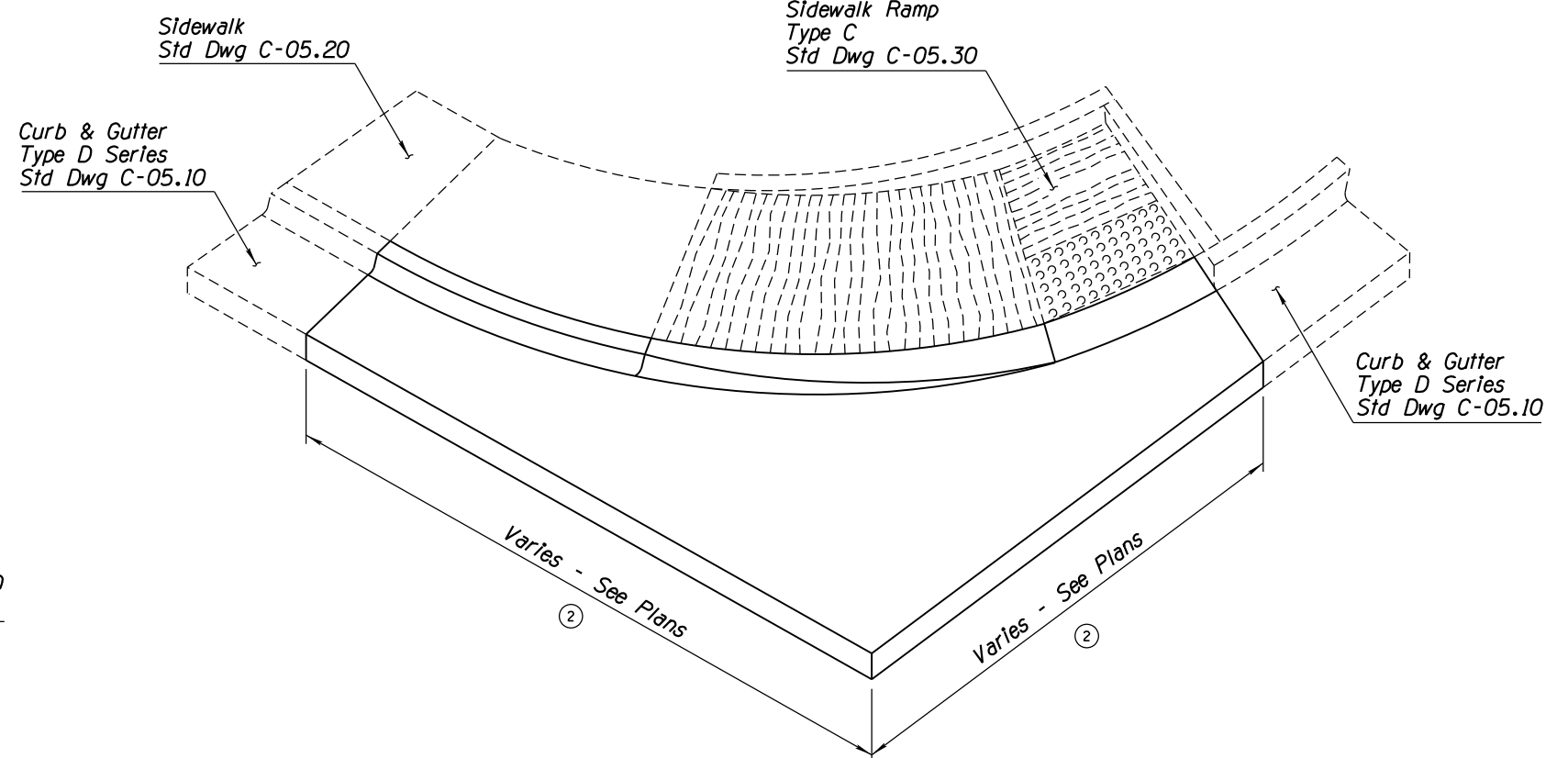
TYPE 5 - CURB & GUTTER TRANSITION



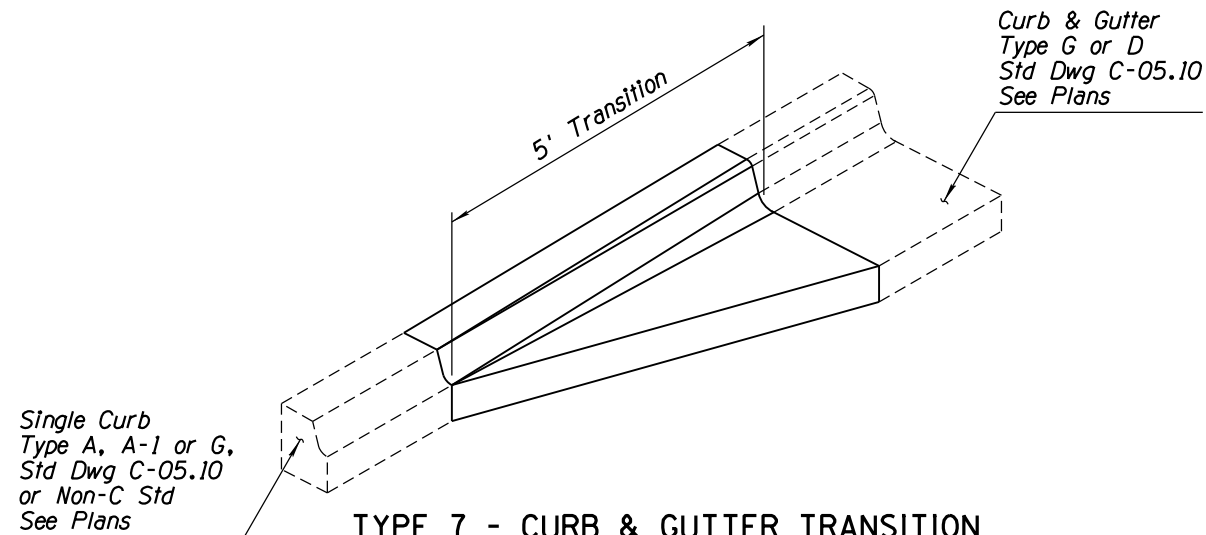
TYPE 8 - CURB & GUTTER TRANSITION



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

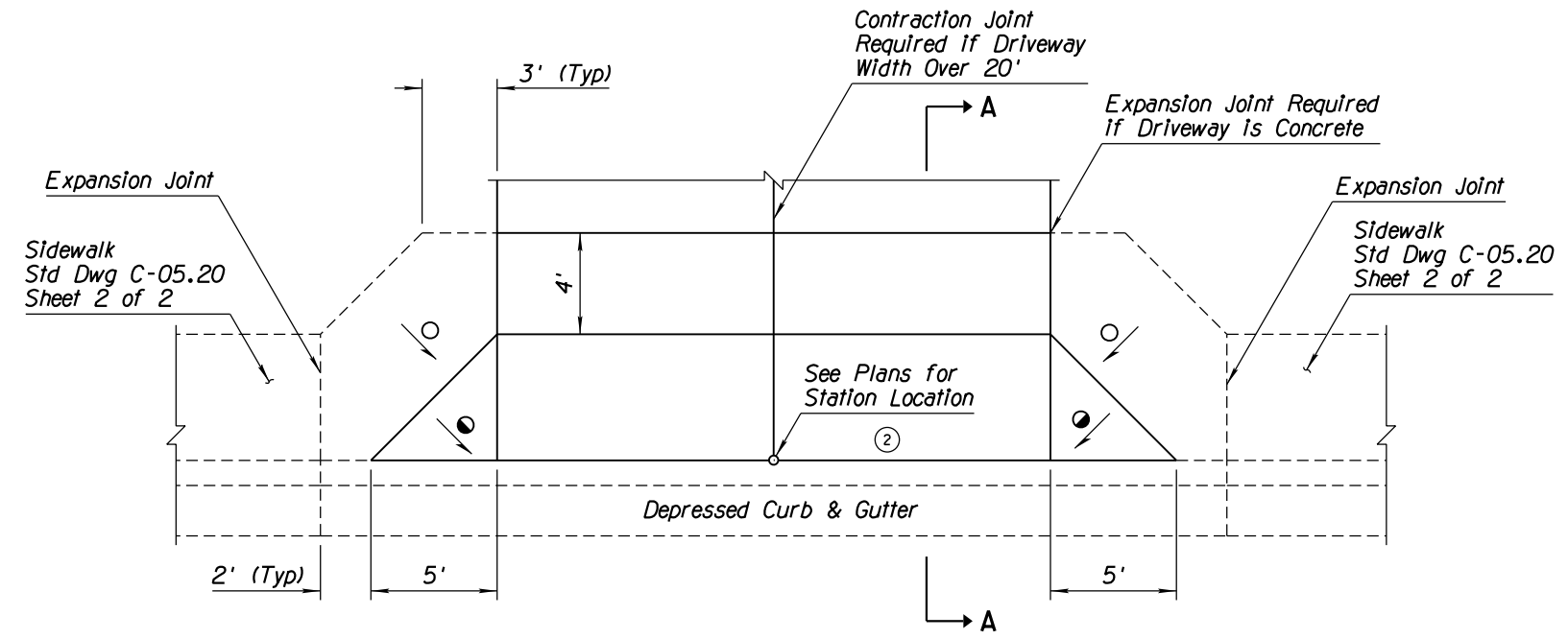
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REVISED NOTATION	RLF	7/05
3	ADDED GENERAL NOTE FOR AB REQUIREMENT	RLF	5/07
4			

GENERAL NOTES

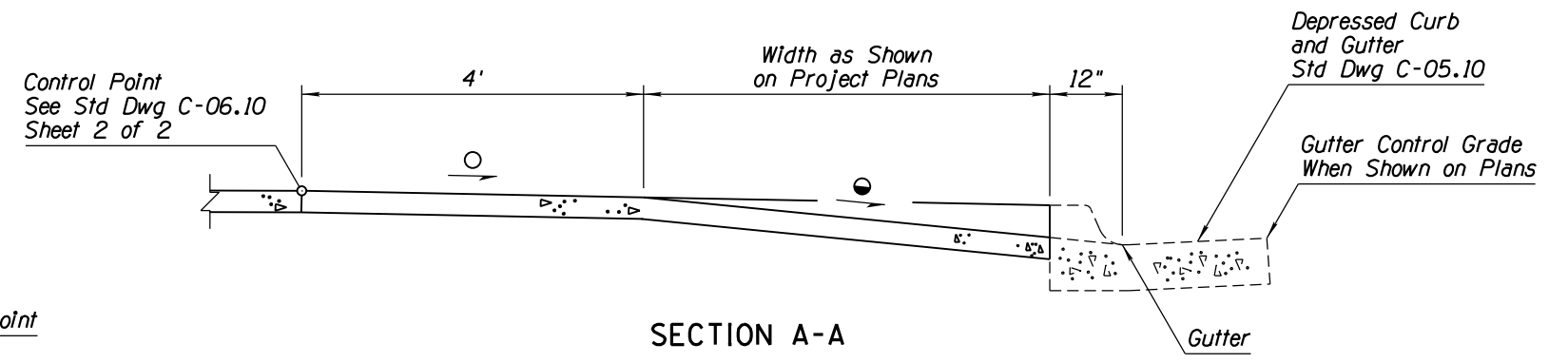
1. Unless otherwise specified, driveways shall be 6" thick.
2. Two-inch deep transverse contraction joints shall be placed in driveways if the driveway width is over 20'. If the driveway thickness is greater than 6", then the contraction joint depth shall be $T/3$, where T is the thickness of the driveway. 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.

LEGEND

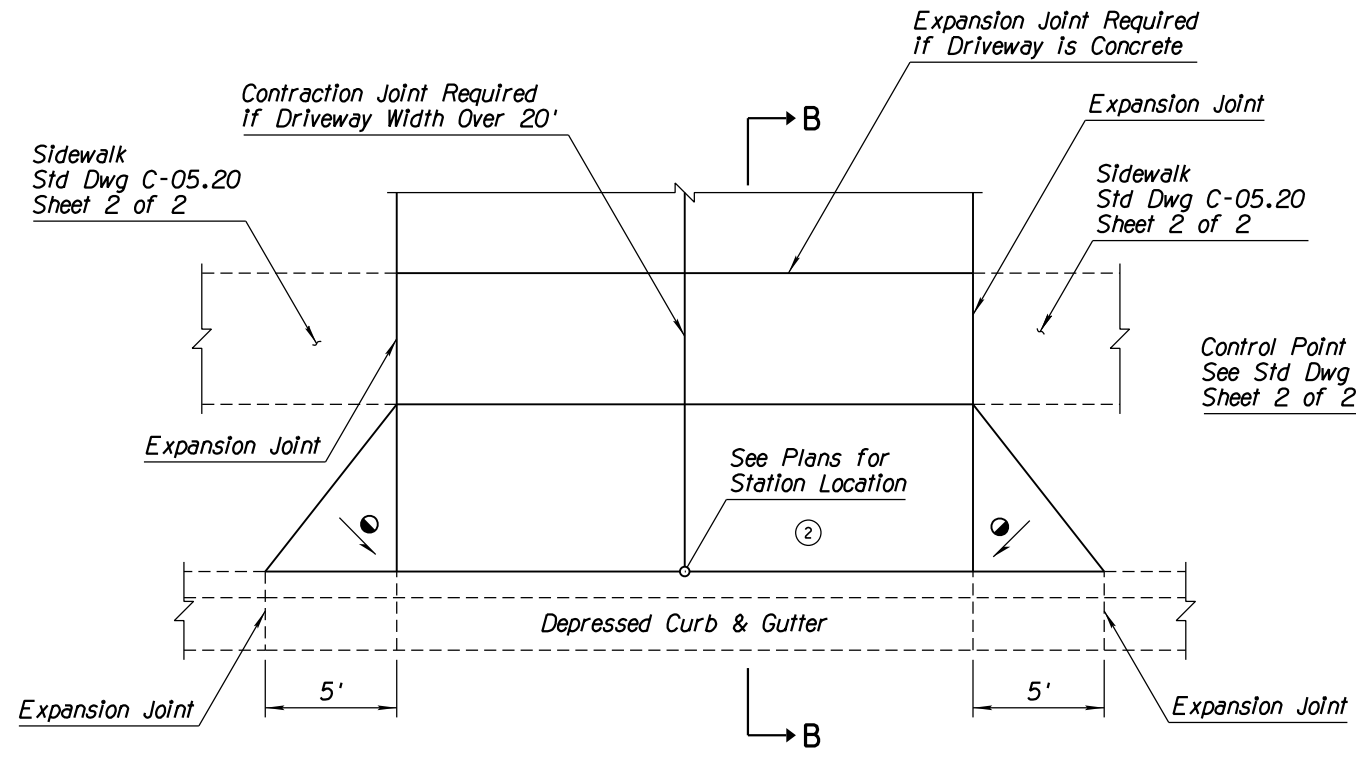
-  Minimum slope = 0.01 %
-  Maximum slope = 0.02 %
-  Straight grade with downward slope



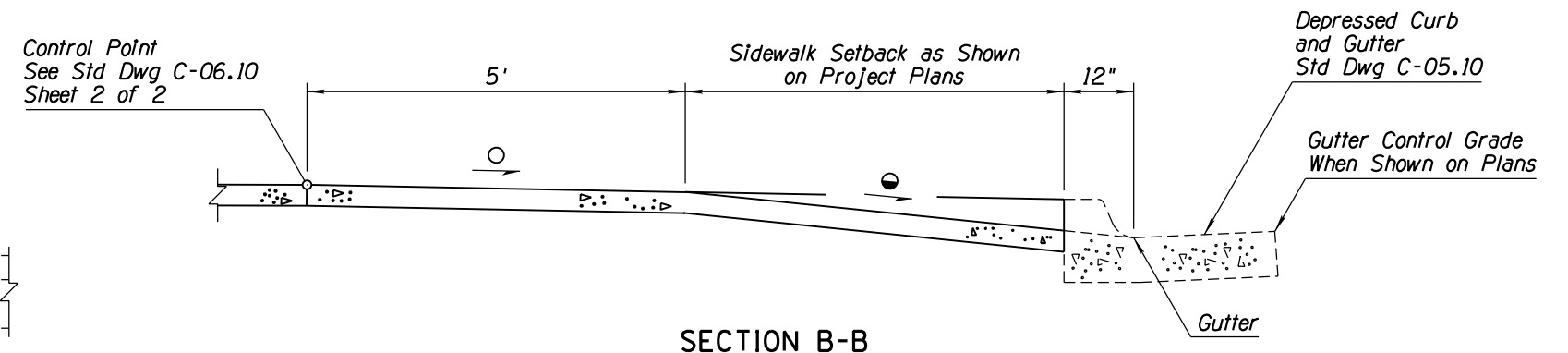
DRIVEWAY WITH SIDEWALK ADJACENT TO CURB




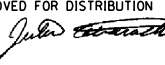
SECTION A-A



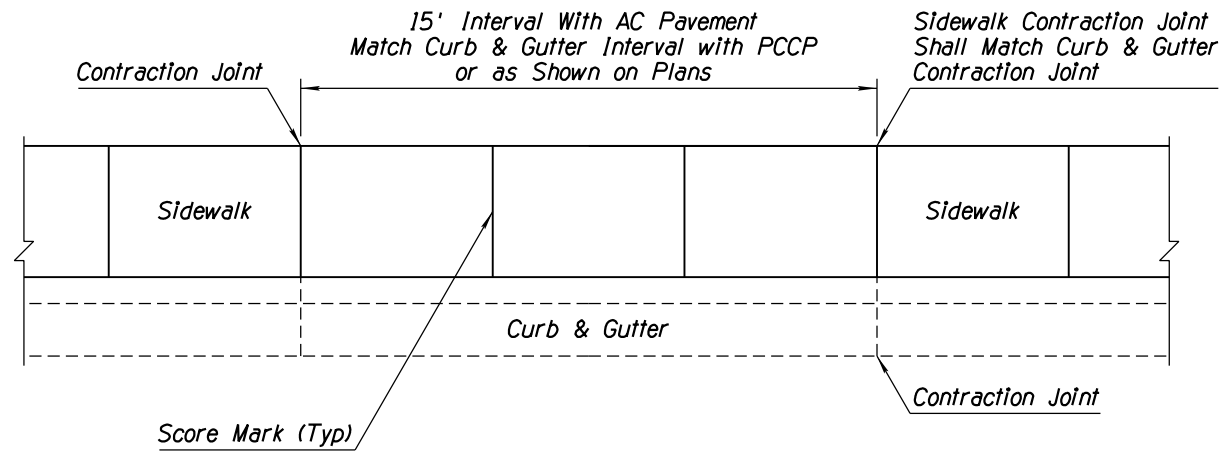
DRIVEWAY WITH SIDEWALK SETBACK



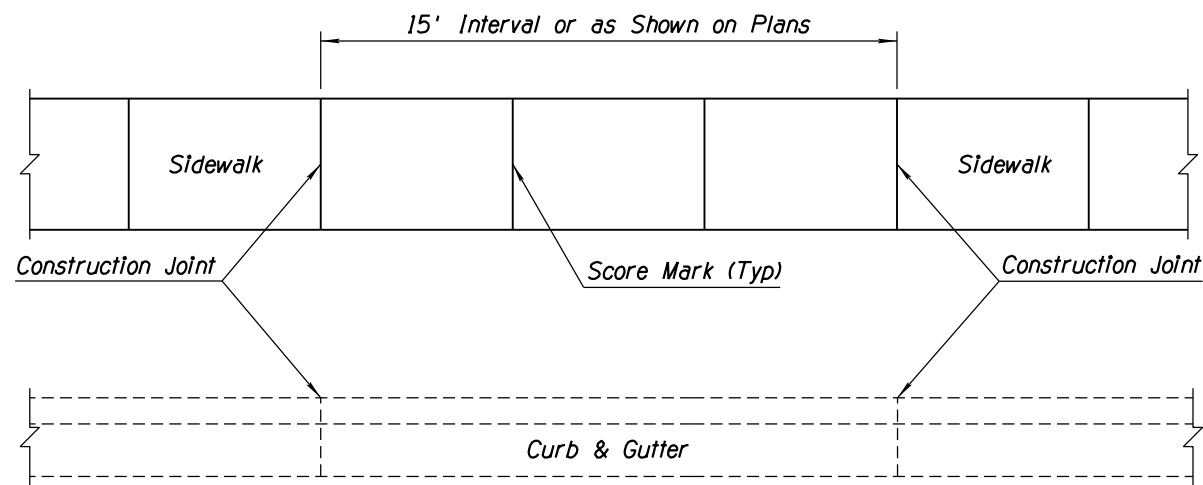
SECTION B-B

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

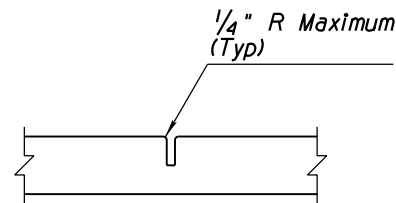
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	NEW GENERAL NOTE 5, REARRANGED 3, 4 & 5	RLF	9/04
2	ADDED SLOPE SPECIFICATIONS & REVISED SECTION VIEWS	RLF	7/05
3	ADDED GENERAL NOTE FOR AB REQUIREMENT	RLF	5/07
4			



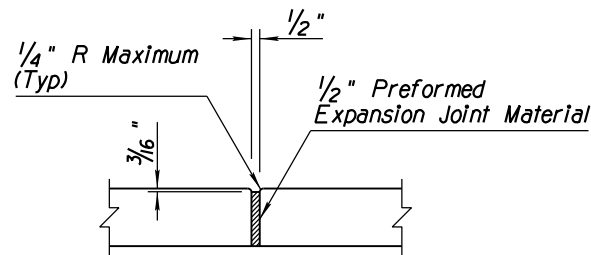
SIDEWALK ADJACENT TO CURB



SIDEWALK SETBACK FROM CURB



CONTRACTION JOINT DETAIL



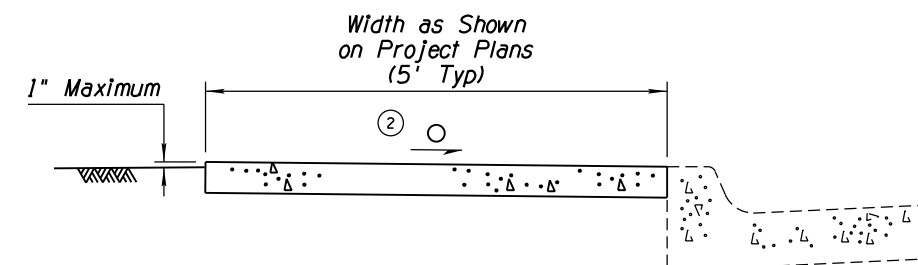
EXPANSION JOINT DETAIL

① GENERAL NOTES

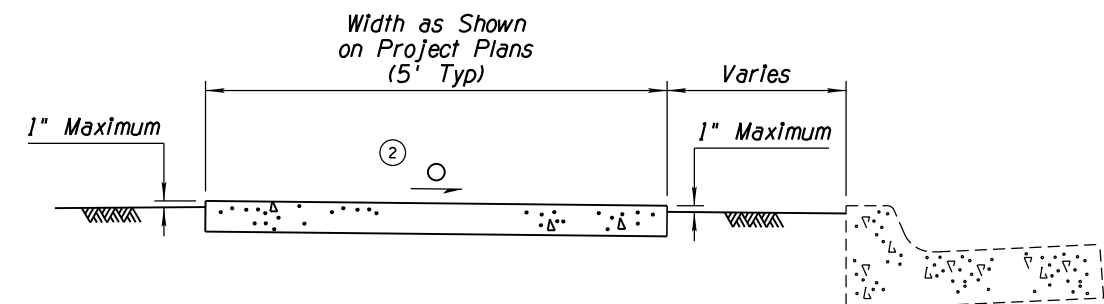
1. Unless otherwise specified, sidewalks shall be 4" thick.
2. One-inch deep transverse contraction joints shall be placed in sidewalks at intervals of approximately 15' or at a spacing that matches adjacent curb and gutter. If the sidewalk is over 7' in width, a 2" deep longitudinal contraction joint 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.
- ③ 6. Place AB under sidewalks when shown on plans.

② LEGEND

- Minimum slope = 0.01 %
- Maximum slope = 0.02 %



CONCRETE SIDEWALK ADJACENT TO CURB

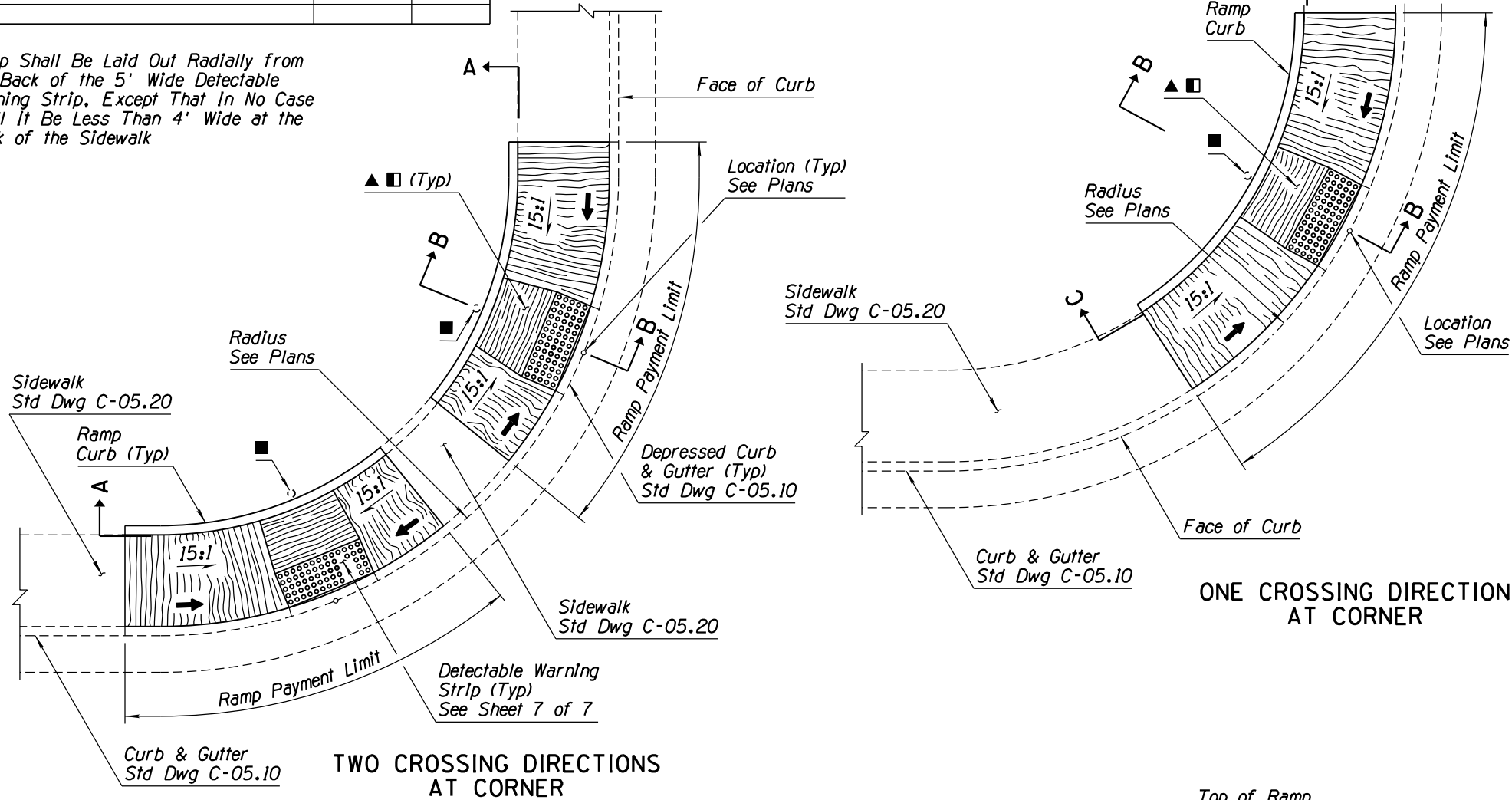


CONCRETE SIDEWALK SETBACK FROM CURB

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

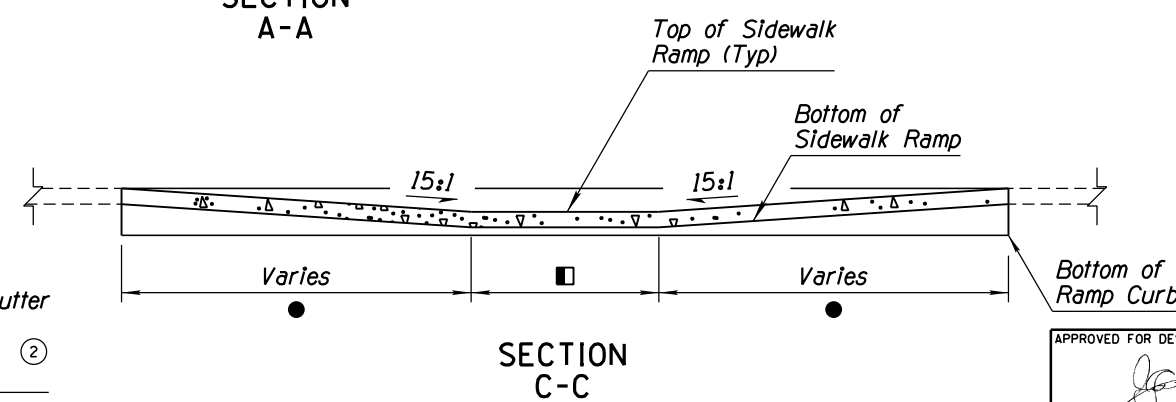
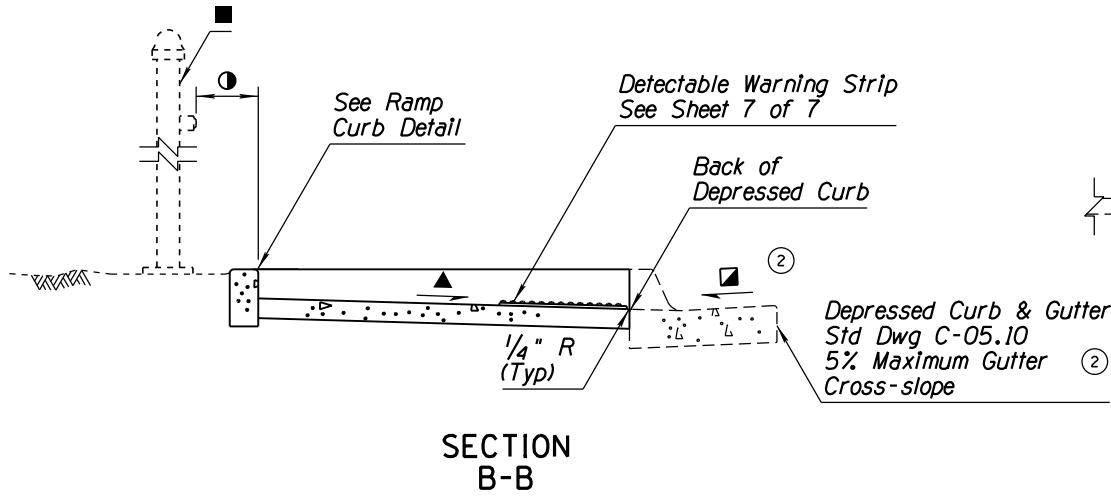
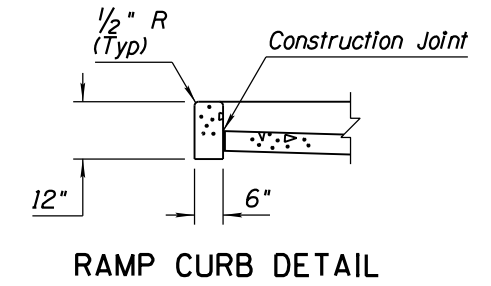
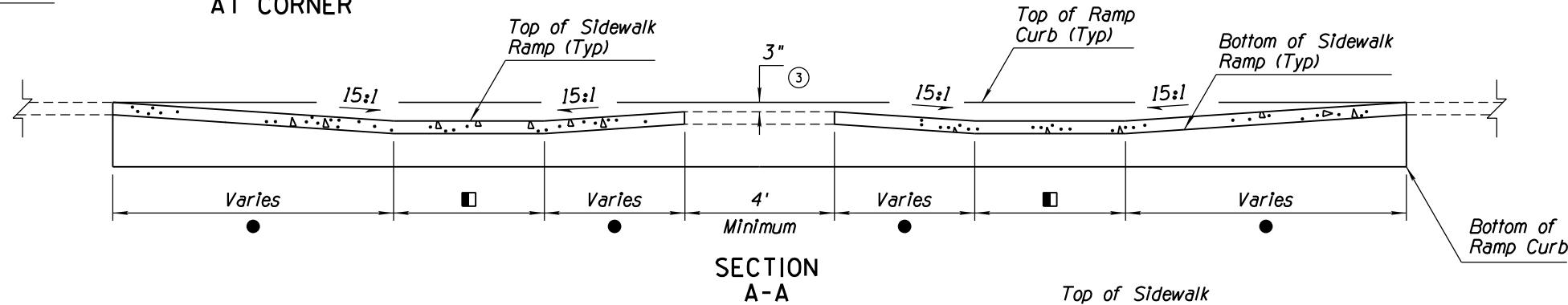
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	5/07
2	ADDED NOTE & REVISED VIEW	RLF	5/12
3	REVISED DIMENSION LOCATION	RLF	5/12
4			

■ 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 <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. ① 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	SIDEWALK RAMP TYPE A	DRAWING NO. C-05.30 Sheet 1 of 7

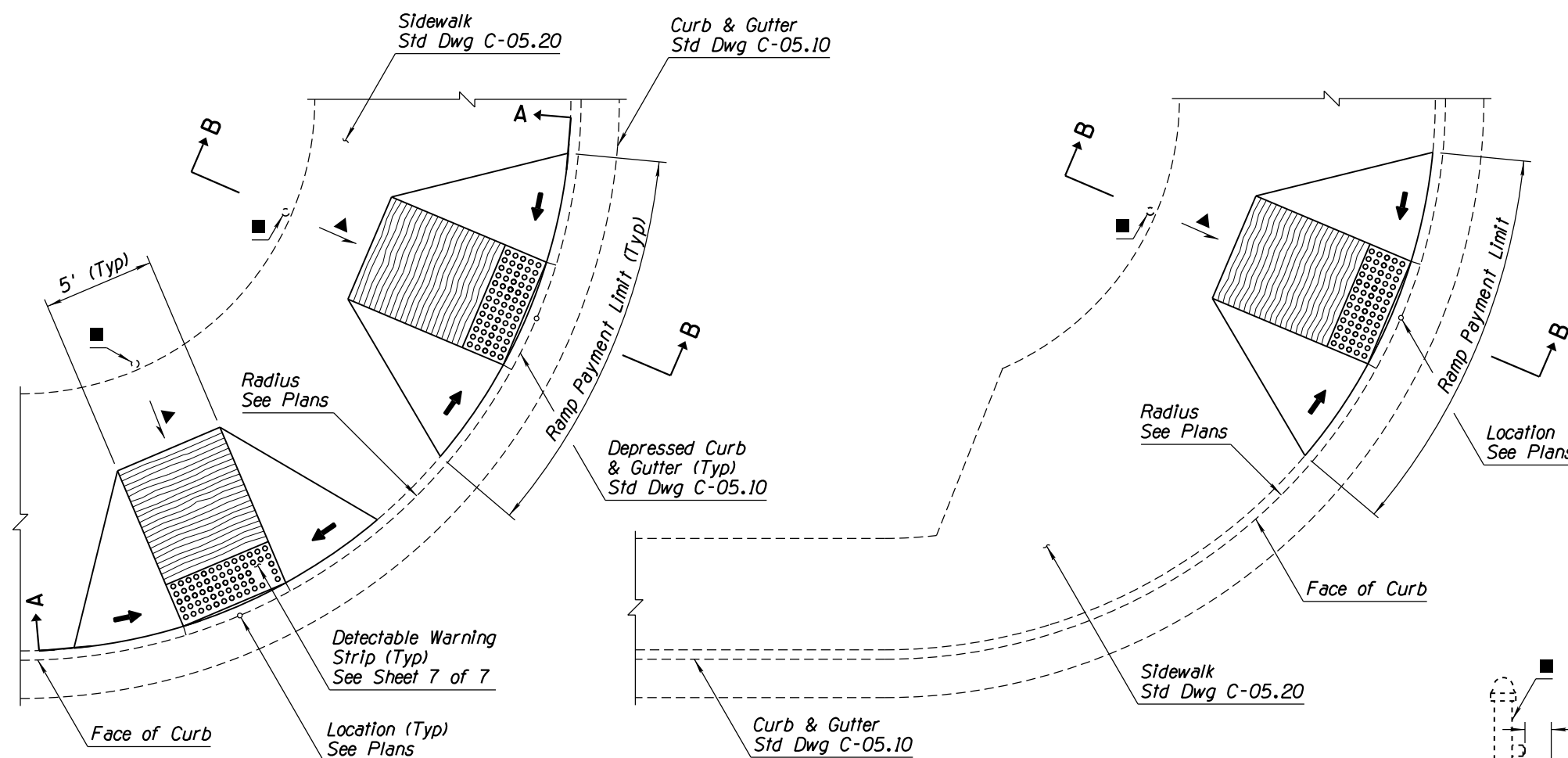
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED NOTE, REVISED VIEW & REISSUED STANDARD DRAWING	RLF	5/12
2			
3			
4			

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
 - ⊙ 10" Maximum to Face of Pedestrian Push Button

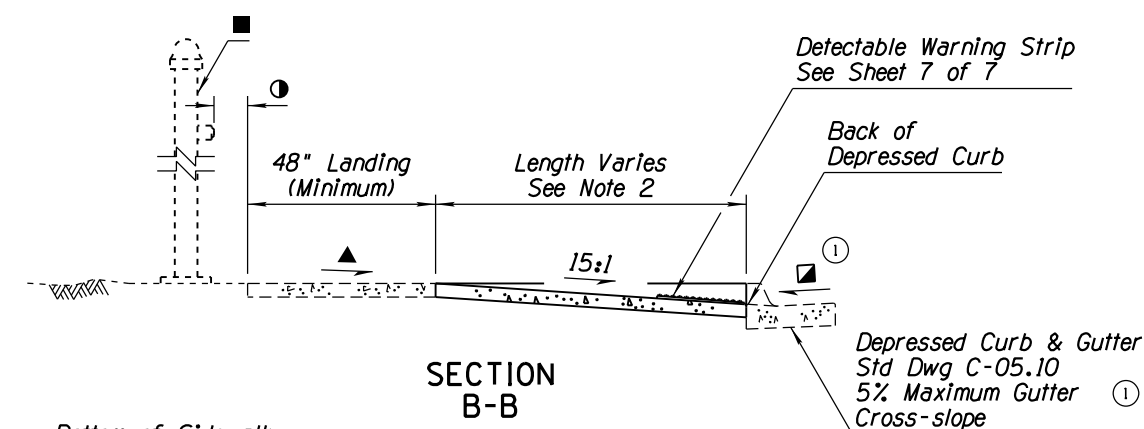
LEGEND

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

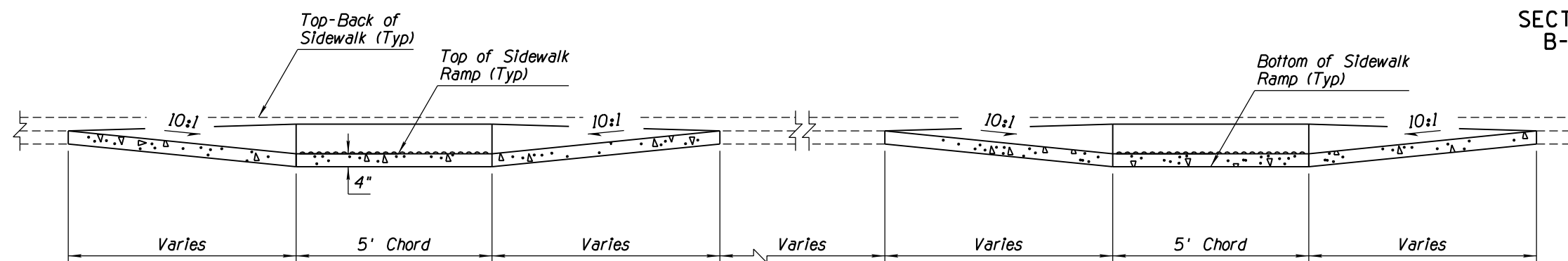


TWO CROSSING DIRECTIONS AT CORNER

ONE CROSSING DIRECTION AT CORNER



SECTION B-B



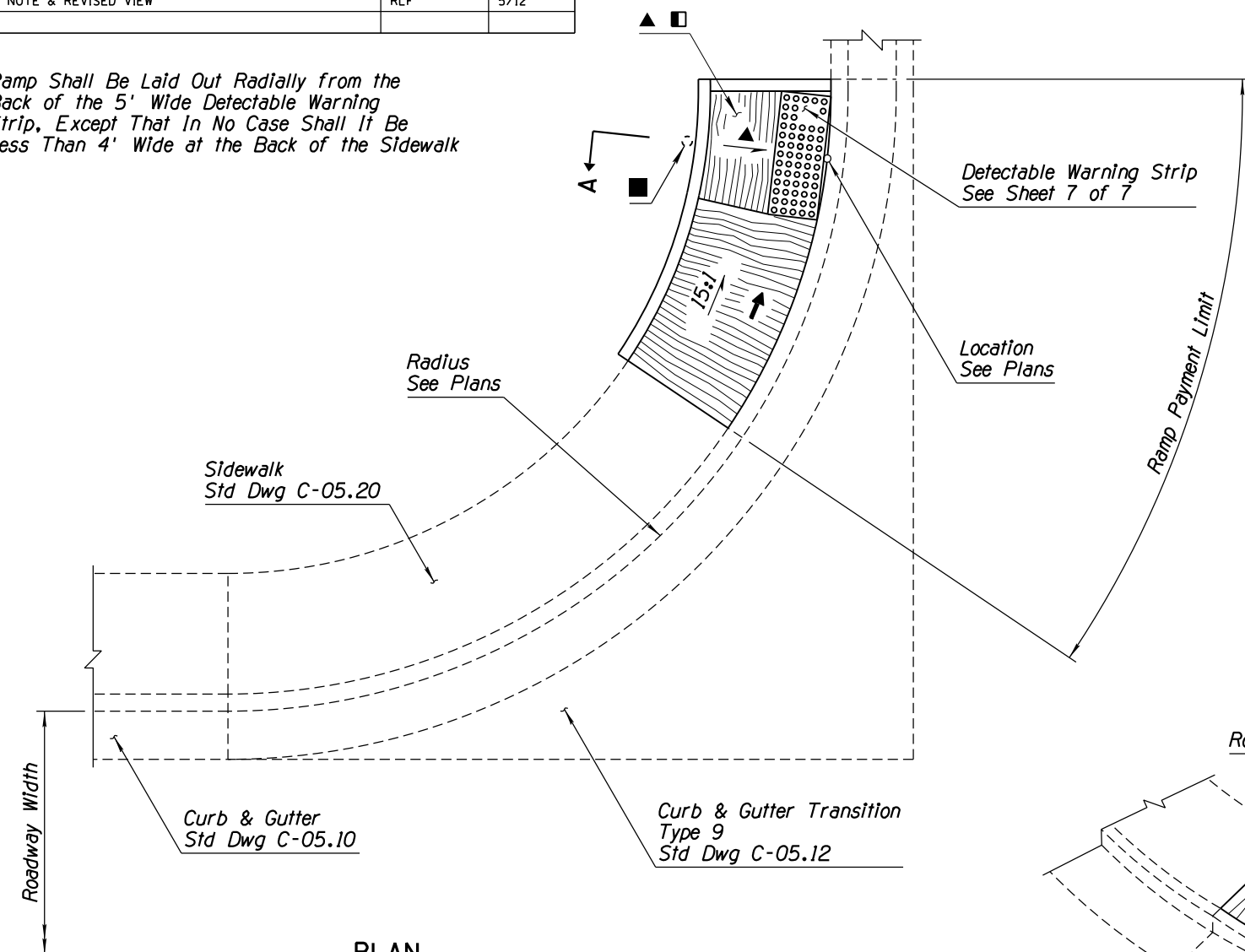
SECTION A-A

PERPENDICULAR CURB RAMP

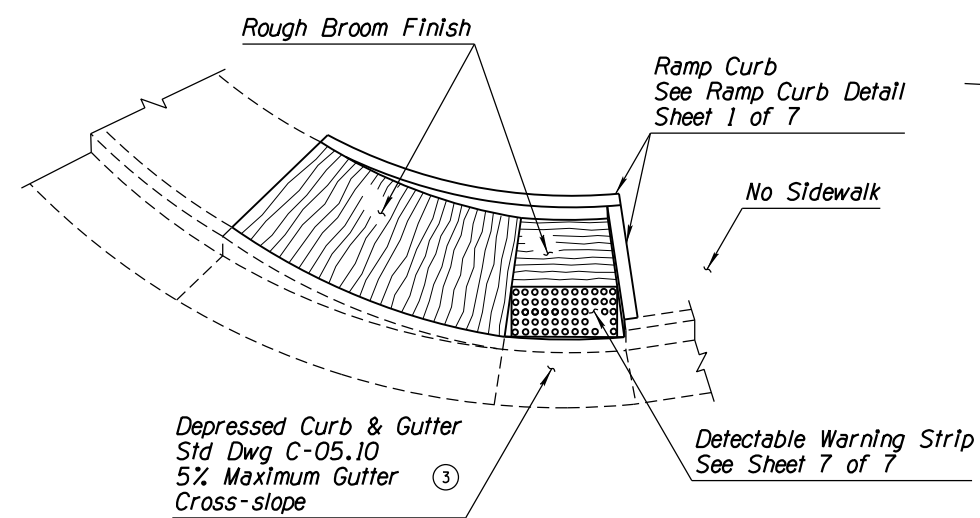
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SIDEWALK RAMP TYPE B	DRAWING NO. C-05.30 Sheet 2 of 7

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			

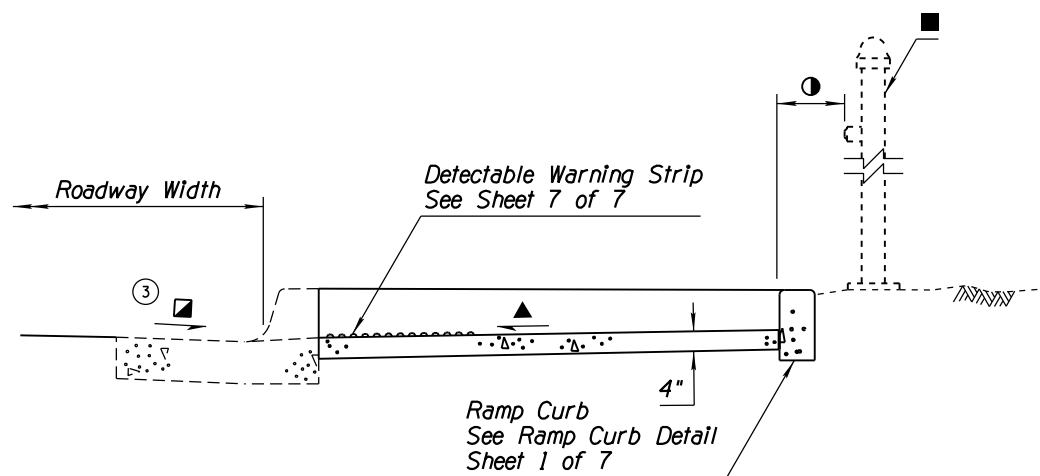
■ Ramp Shall Be Laid Out Radially from the Back of the 5' Wide Detectable Warning Strip, Except That In No Case Shall It Be Less Than 4' Wide at the Back of the Sidewalk



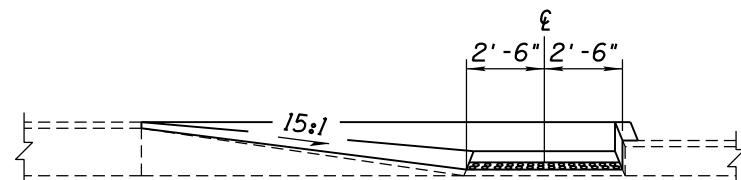
PLAN



PERSPECTIVE



SECTION A-A



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.
- 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.
- Pedestrian Push Button Pole When Shown on Traffic Plans. See Traffic Signal Plans for Additional Information
 - 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

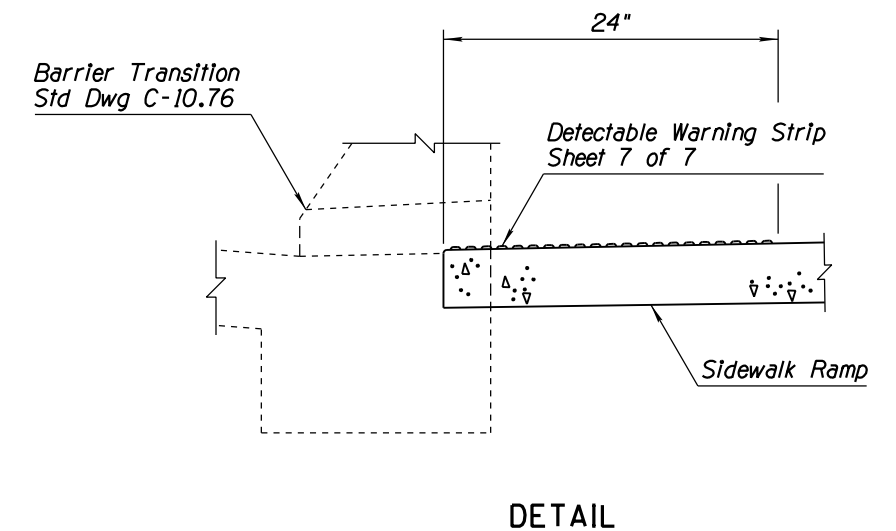
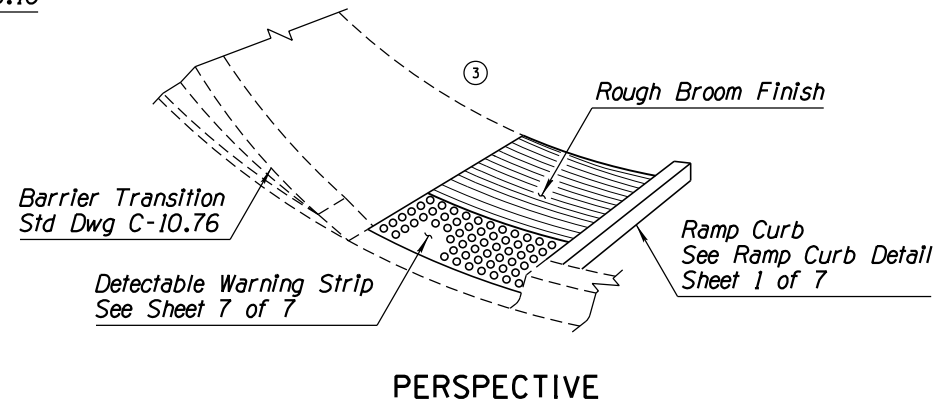
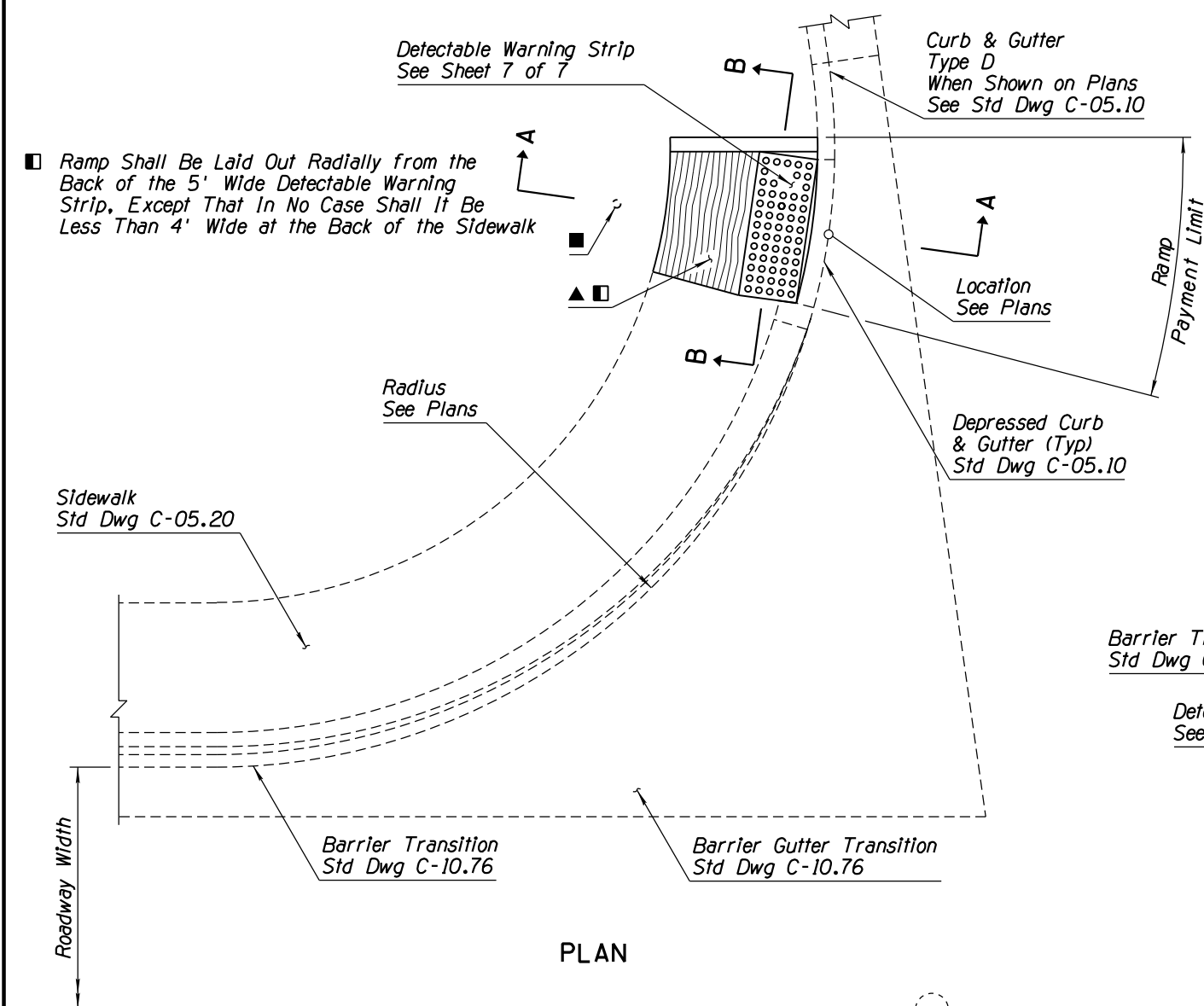
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	4/06
2	DELETED GENERAL NOTE 7	RLF	5/07
3	REVISED VIEW; REMOVED CURB	RLF	5/07
4	ADDED NOTE & REVISED VIEW	RLF	5/12

GENERAL NOTES

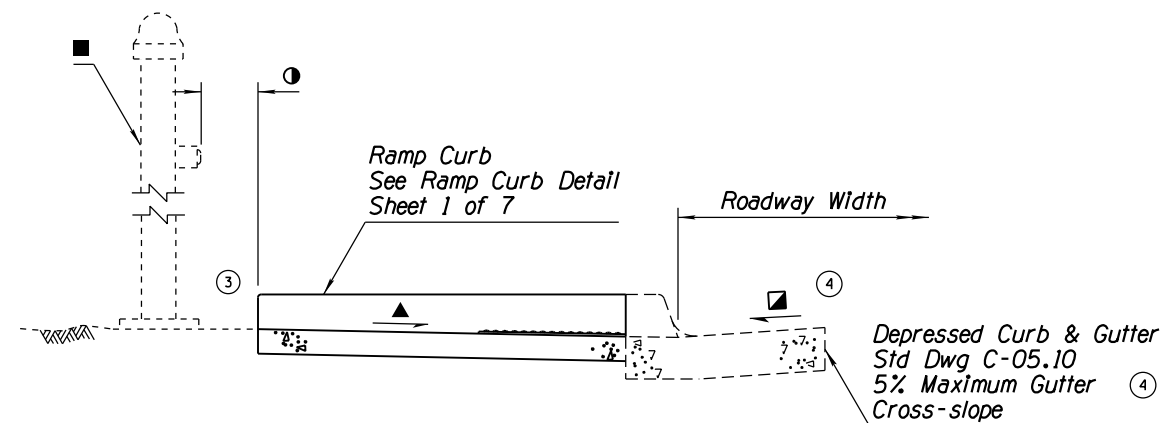
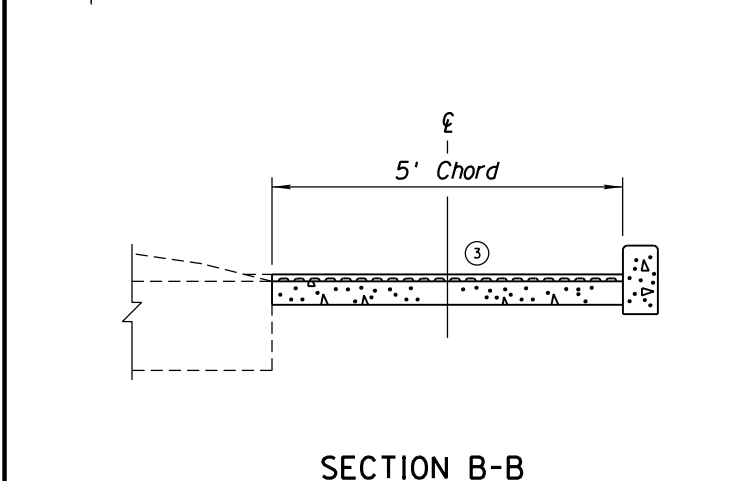
- For use where sidewalk is not continuous.
 - Ramp centerline shall be radial from the face of the curb at the Sidewalk Ramp Control Point.
 - The top of the Ramp Curb along the back of the Sidewalk Ramp shall match the elevation of the adjacent back of sidewalk and run parallel to the Sidewalk Ramp. 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



SIDEWALK RAMP AT SIDEWALK TERMINUS SIDEWALK BEHIND BARRIER



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

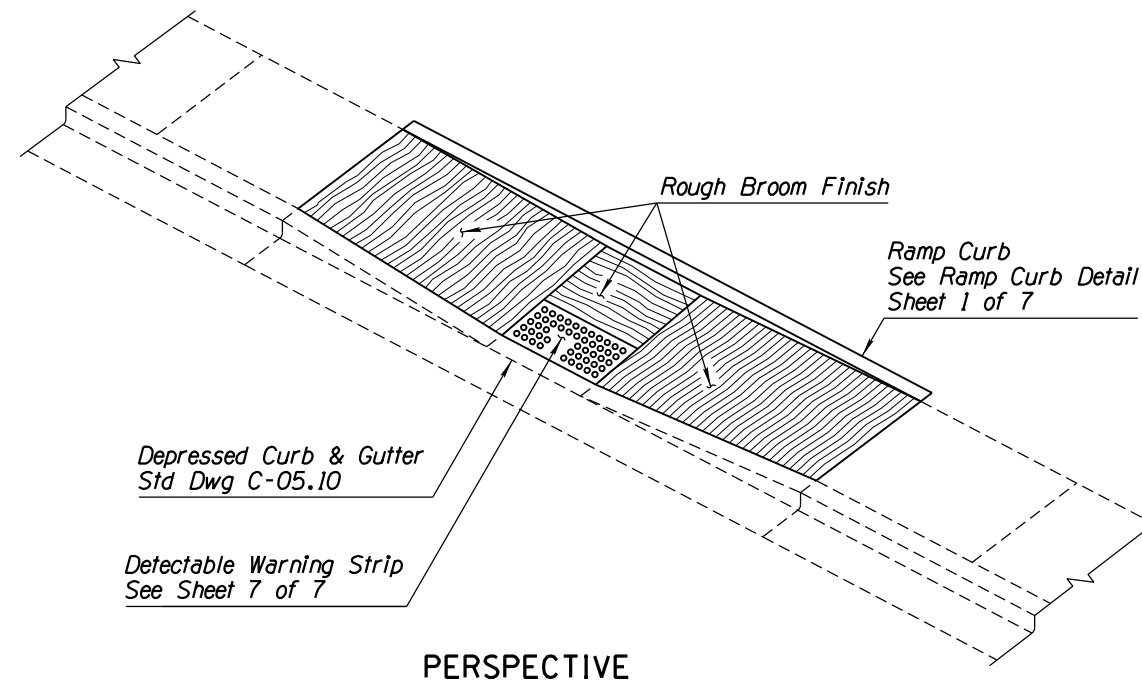
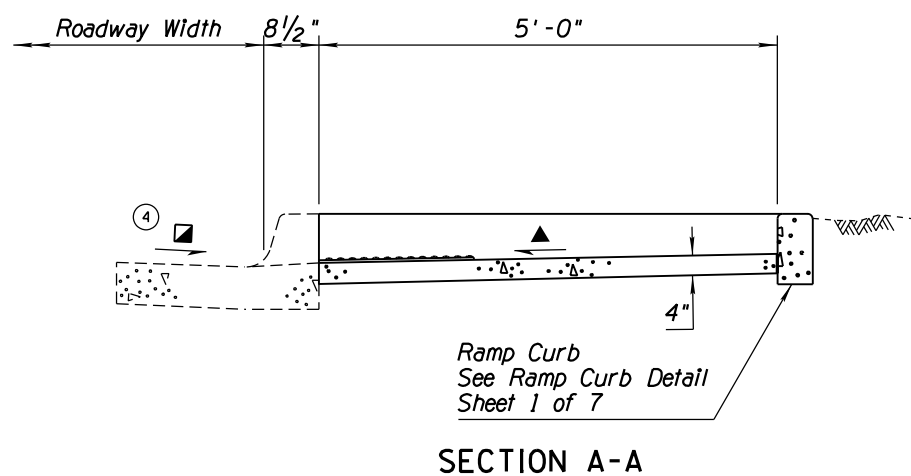
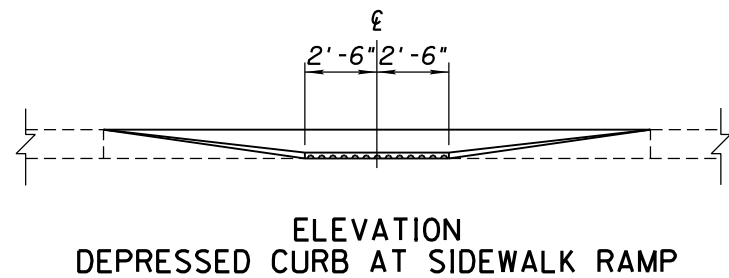
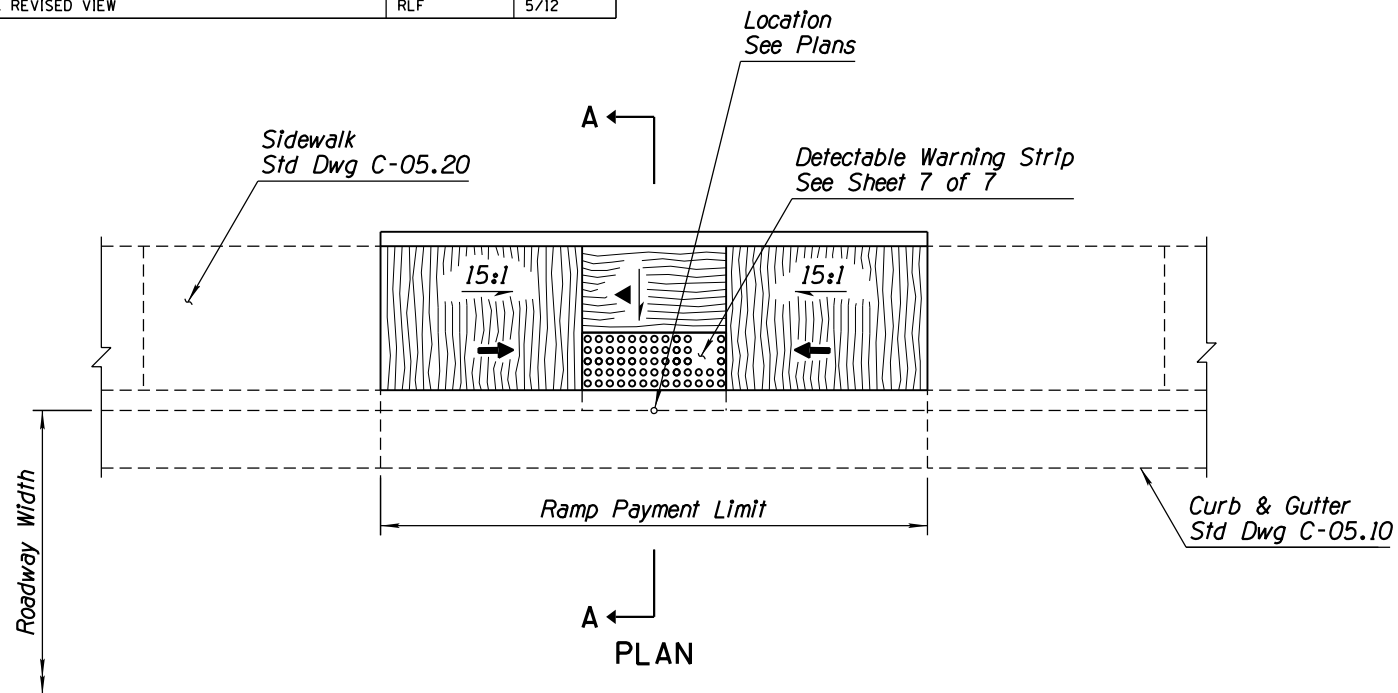
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	4/06
2	REVISED GENERAL NOTE	RLF	4/06
3	DELETED GENERAL NOTE 9	RLF	5/07
4	ADDED NOTE & REVISED VIEW	RLF	5/12

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)

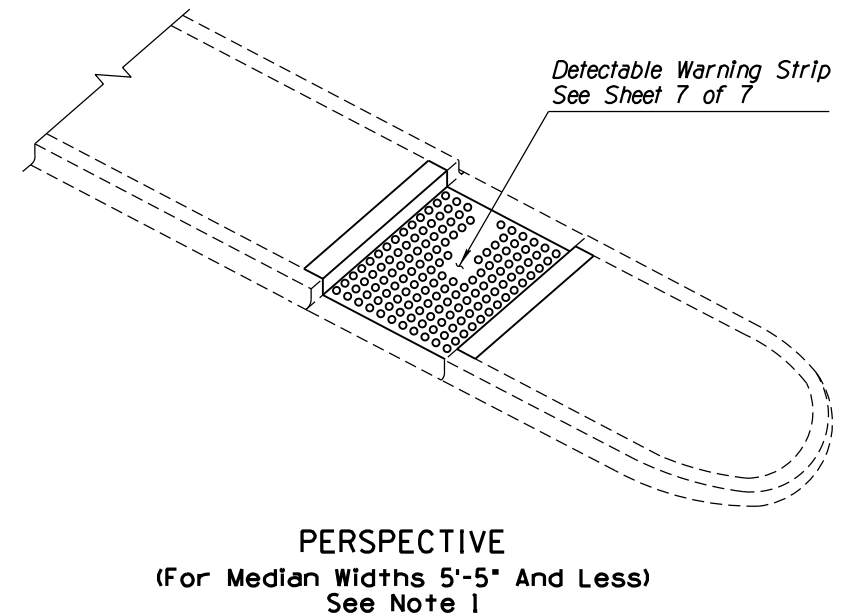
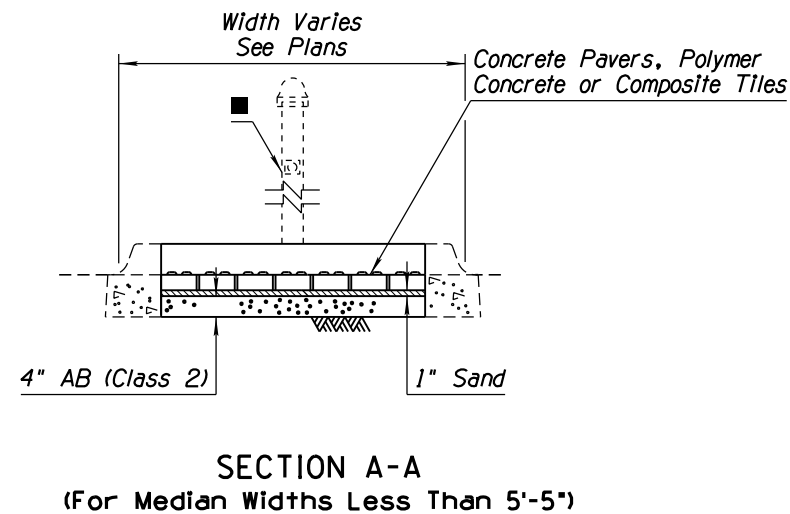
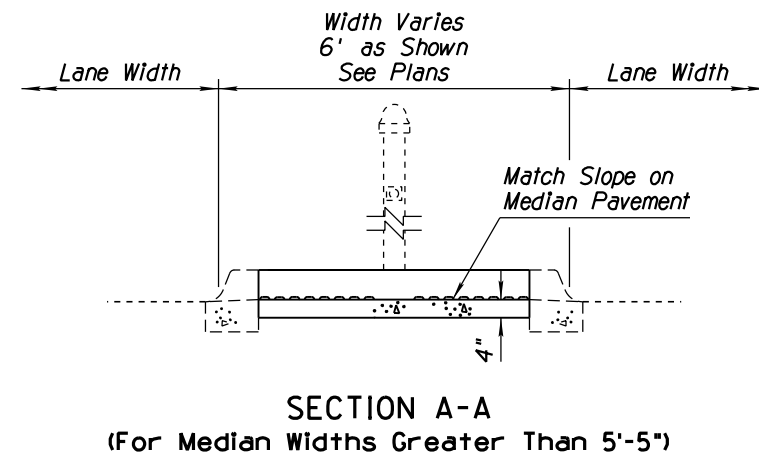
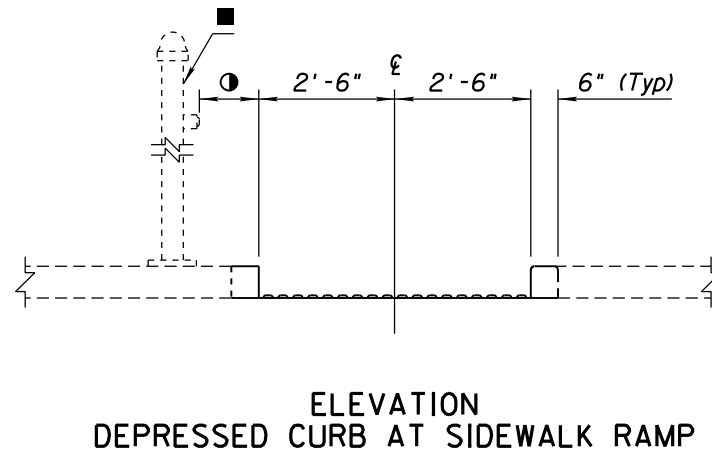
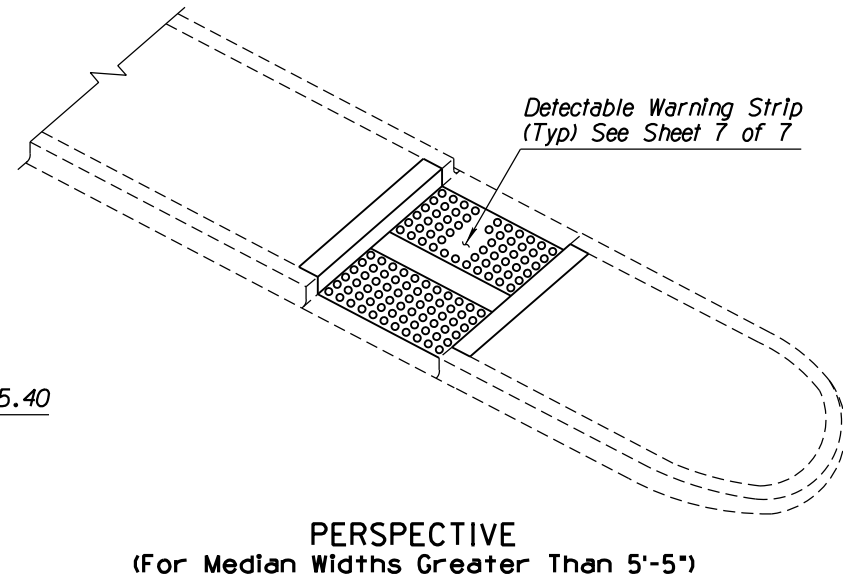
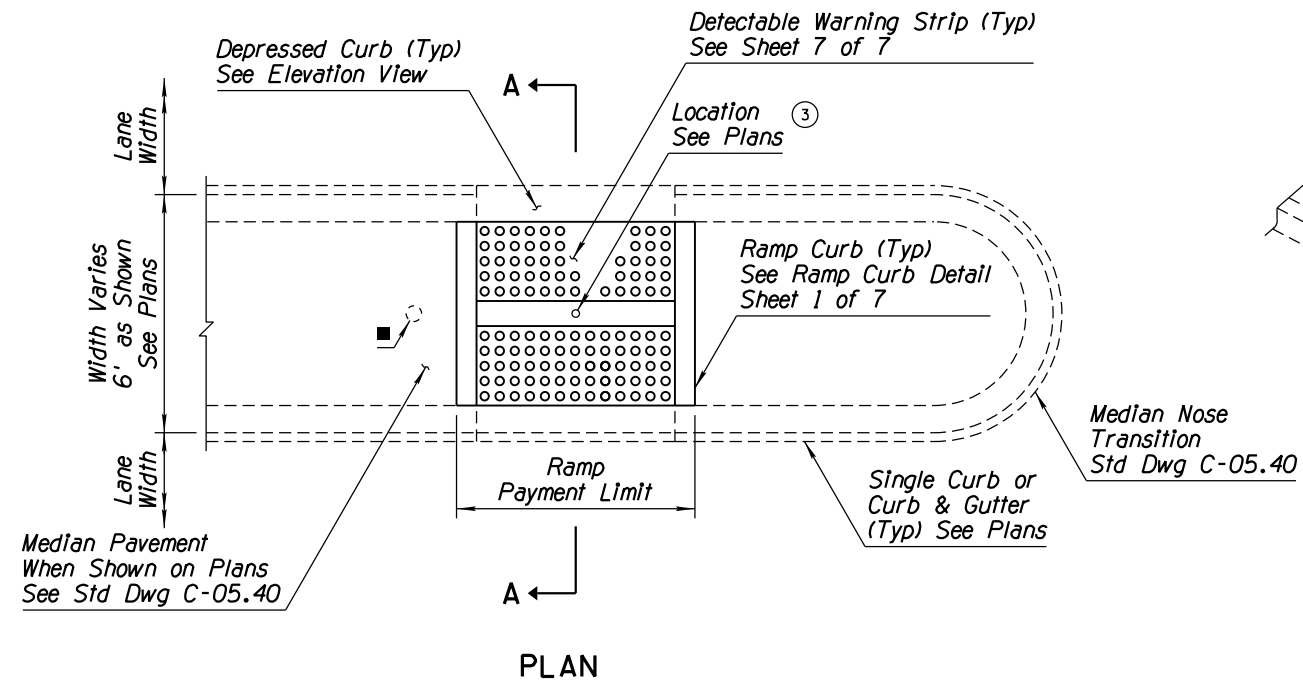


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SIDEWALK RAMP TYPE E	DRAWING NO. ① C-05.30 Sheet 5 of 7

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

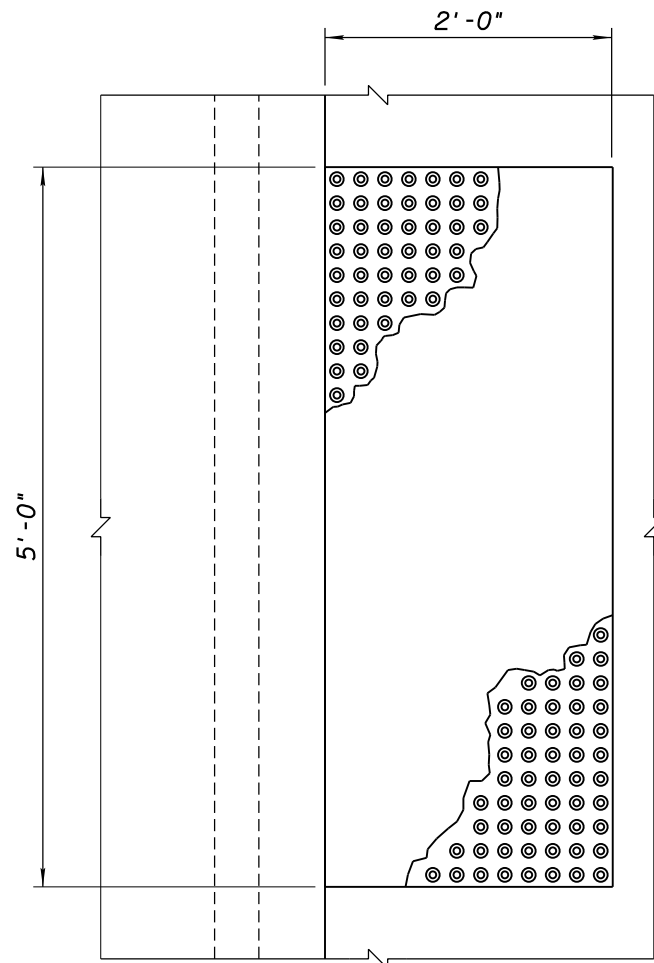
- For median widths 5'-5" and less, the Detectable Warning Strip shall be continuous from back-of-curb to back-of-curb. The Detectable Warning Strip shall not extend beyond the back of curb. Modular units such as bricks or tiles shall be used to construct the Detectable Warning Strip. Partial domes at 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

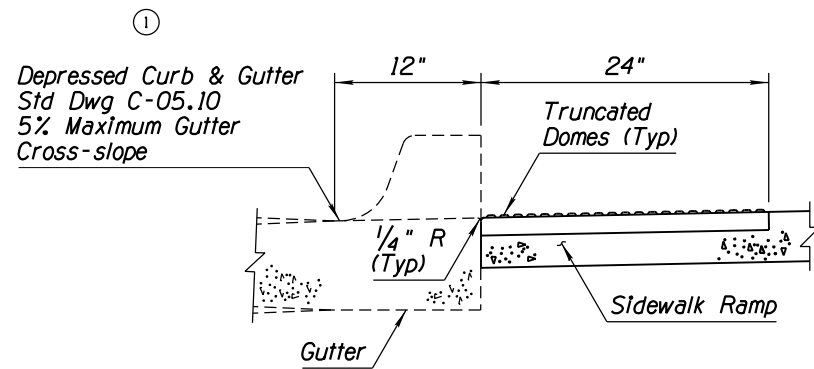
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SIDEWALK RAMP TYPE F	DRAWING NO. C-05.30 Sheet 6 of 7

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

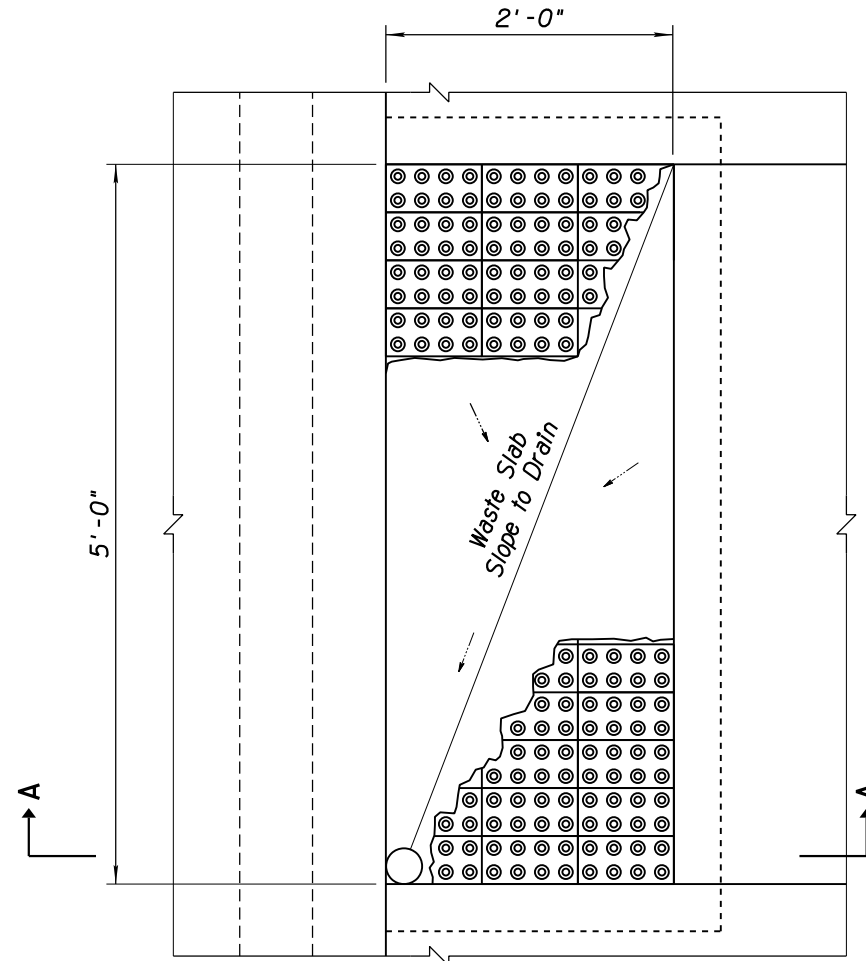


DETECTABLE WARNING STRIP

PLAN

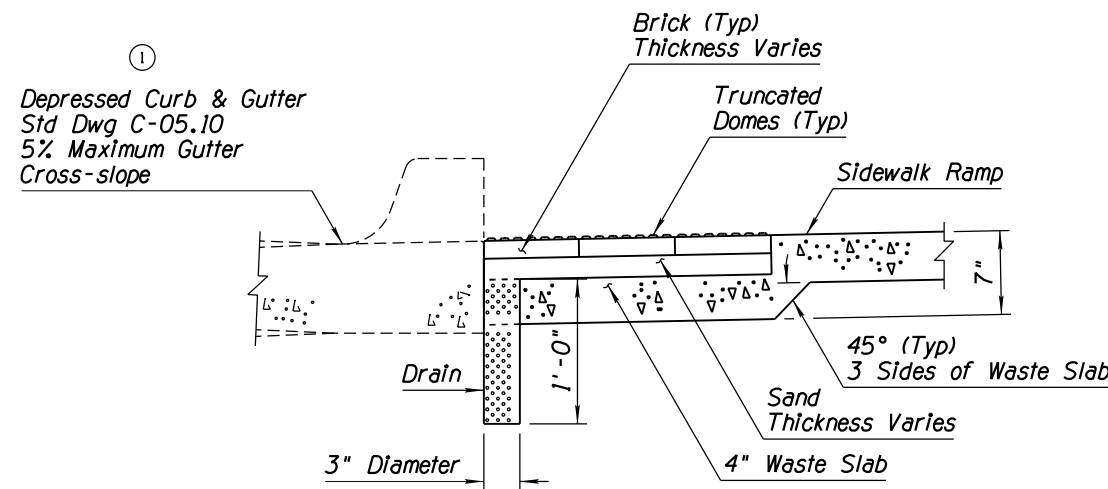


SECTION



DETECTABLE WARNING STRIP
BRICK OPTION

PLAN



DETECTABLE WARNING STRIP
BRICK OPTION

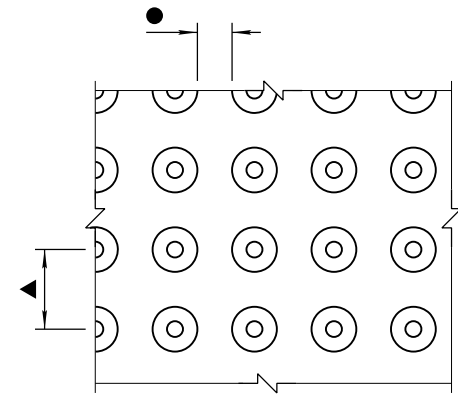
SECTION A-A

GENERAL NOTES

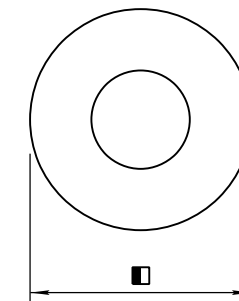
1. Drain shall be placed in low corner and filled with coarse aggregate (AASHTO N43 Size 7) securely tied in a long-life geotextile sack.

LEGEND

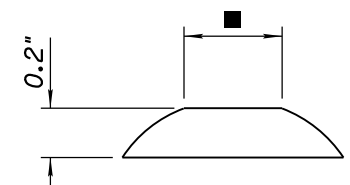
- 1/16" Minimum (Typ) (0.65 in. Minimum ADA Actual)
- ▲ 1 5/8" to 2 3/8" (Typ) (1.6 in. to 2.4 in. ADA Actual)
- 7/8" to 1 3/8" (Typ) (0.9 in. to 1.4 in. ADA Actual)
- 50% to 65% of ■



TEXTURE PATTERN DETAIL



TRUNCATED DOME
DETAIL



TRUNCATED DOME
ELEVATION

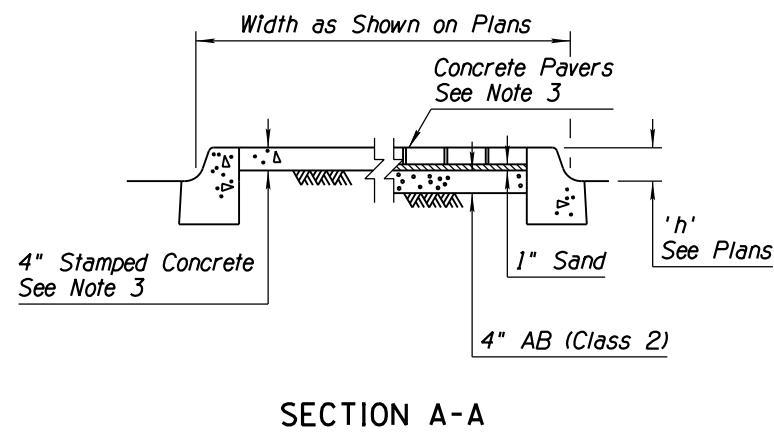
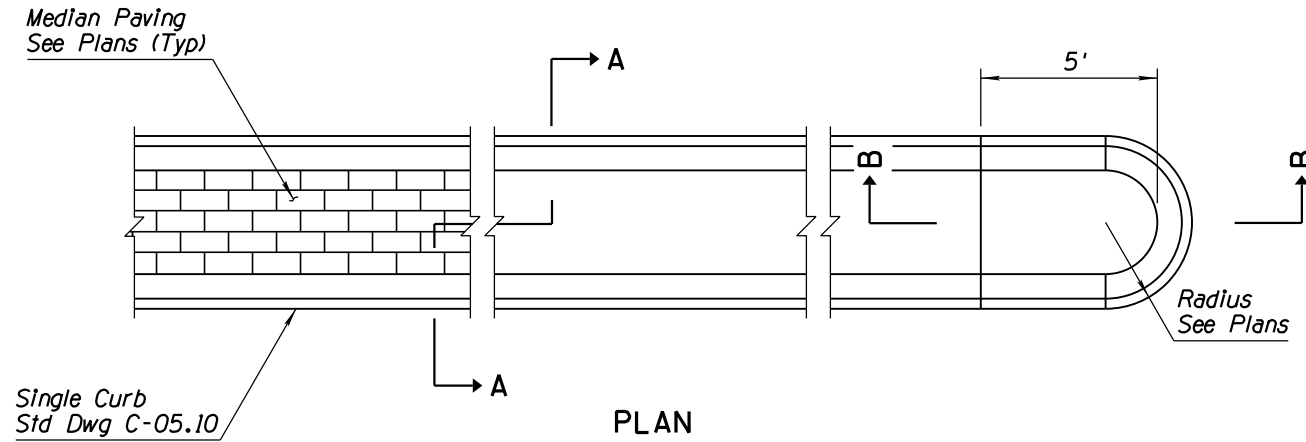
DETECTABLE WARNING STRIP DETAIL

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

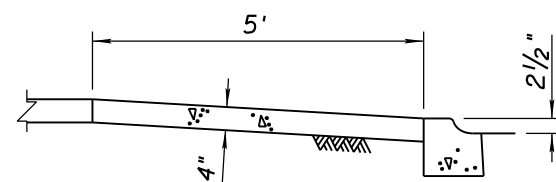
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2			
3			
4			

GENERAL NOTES

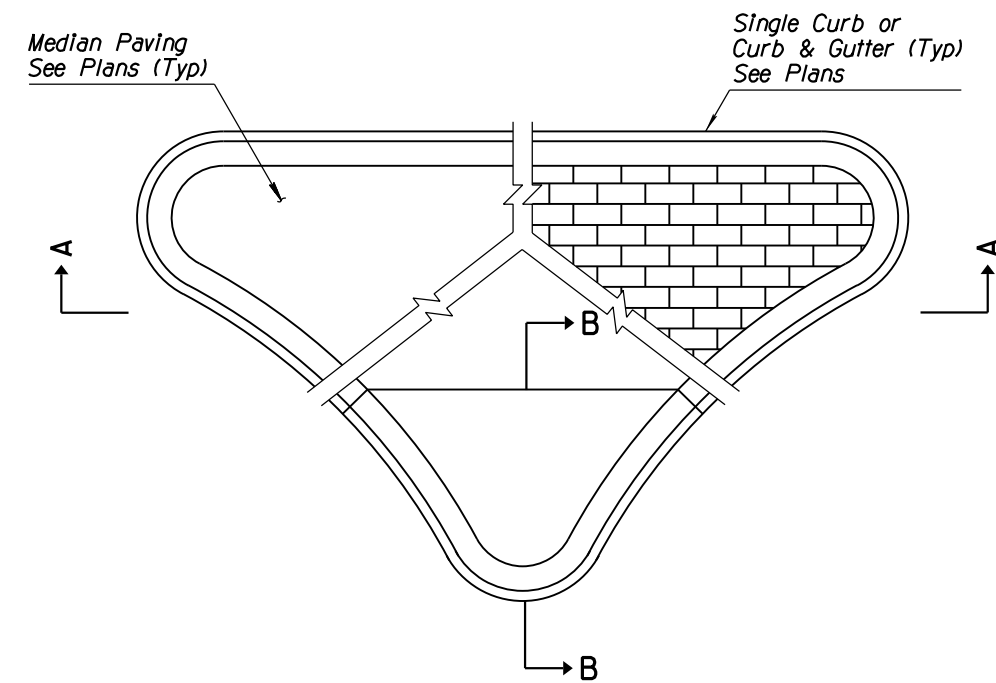
1. Traffic signal foundations, traffic sign foundations and pull boxes for traffic signs and traffic signals shall be installed prior to placement of median paving.
2. See Std Dwgs C-05.10 and C-05.20 for joint requirements.
3. Decorative median paving may be stamped concrete, concrete pavers, or as 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



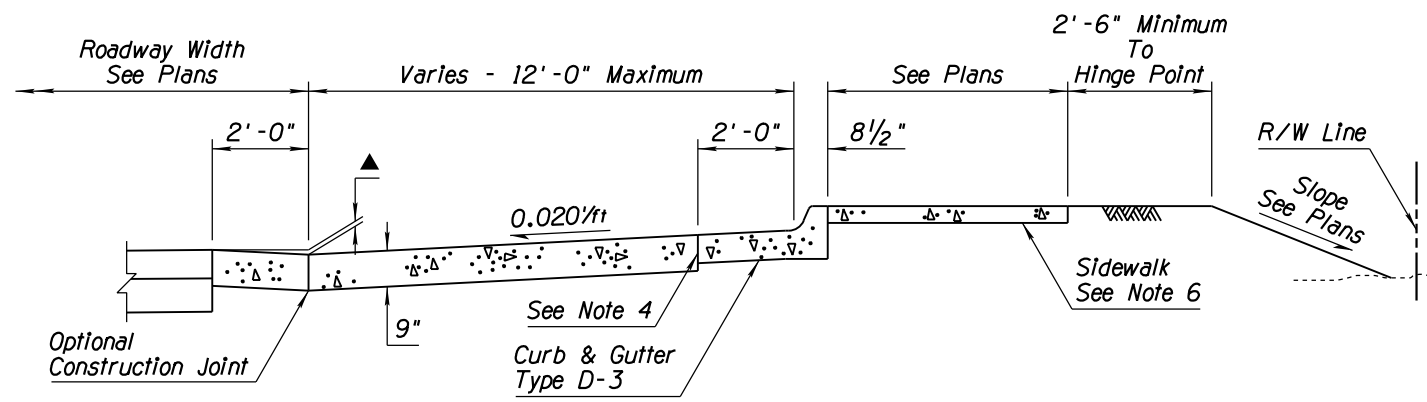
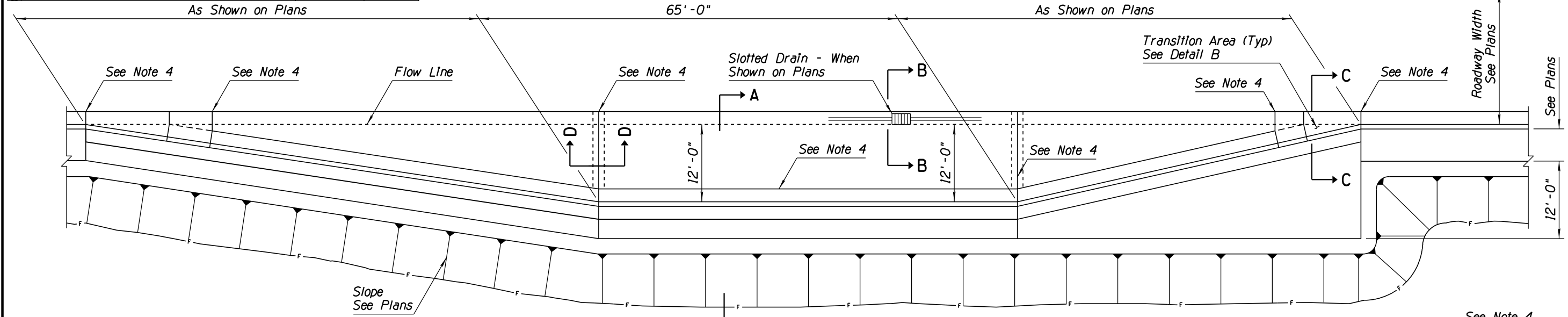
SECTION B-B



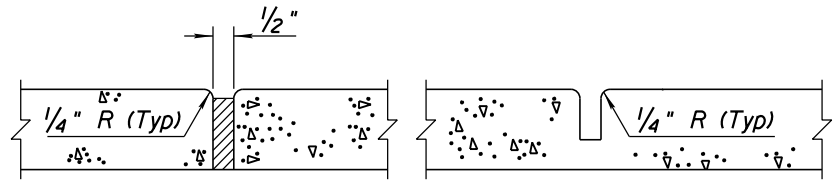
NOSE LAYOUT

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

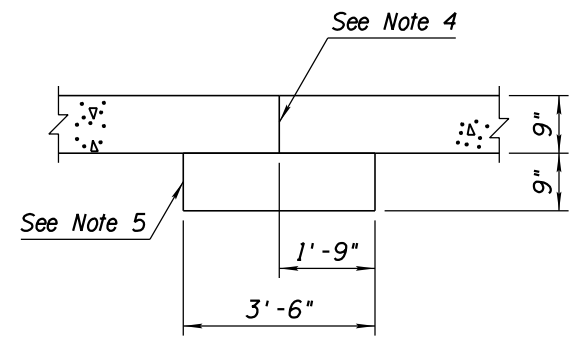
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	5/07
2			
3			
4			



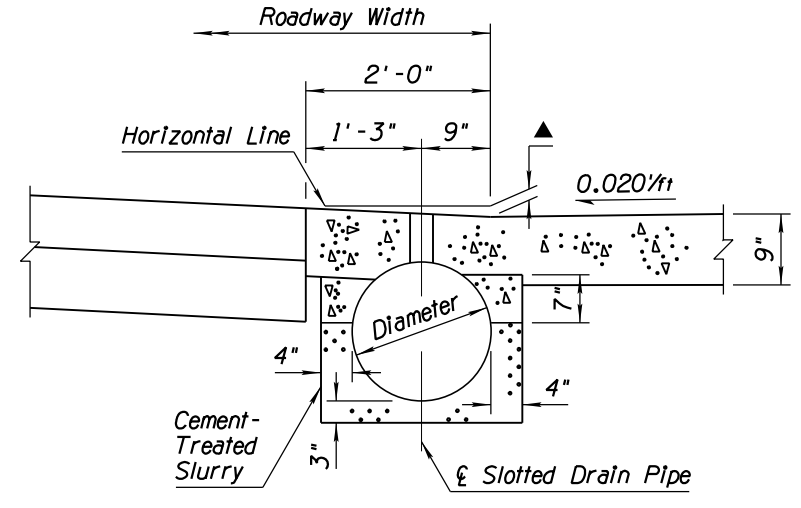
SECTION A-A



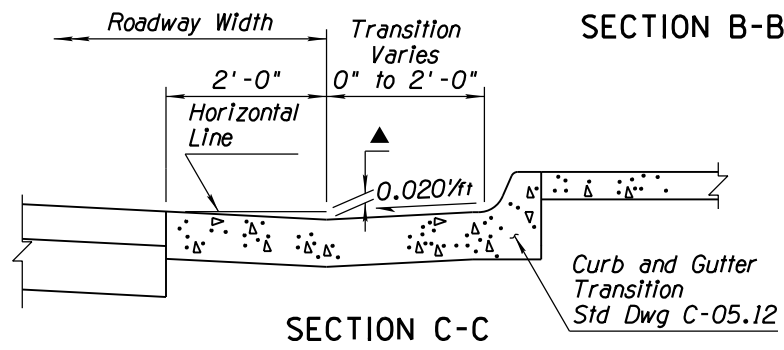
DETAIL A



SECTION D-D



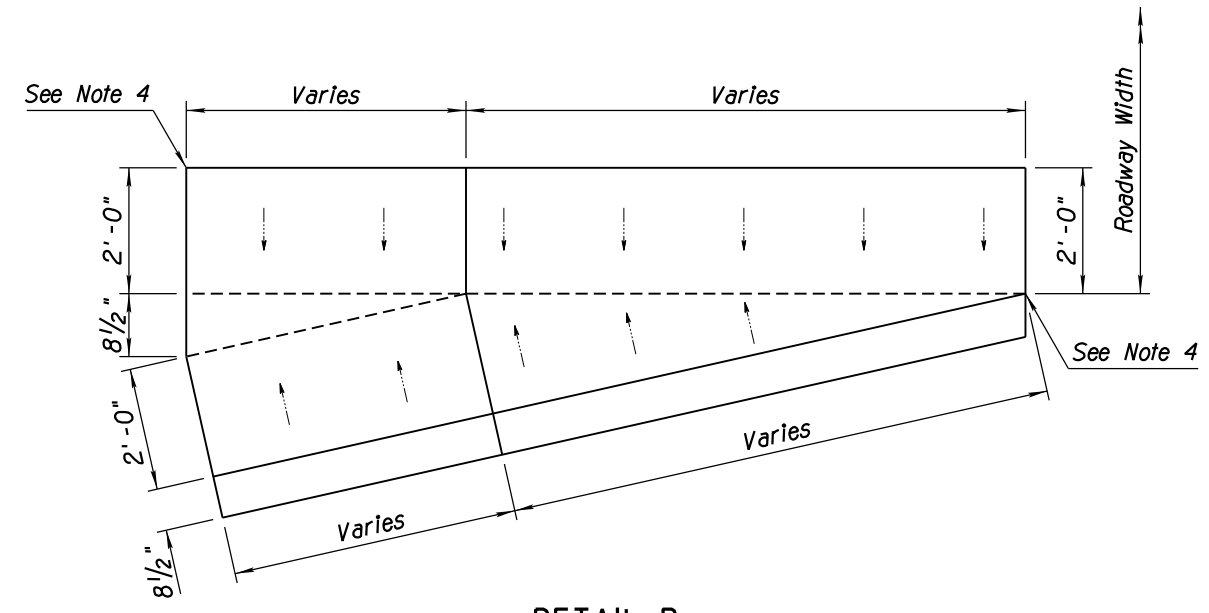
SECTION B-B



SECTION C-C

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



DETAIL B

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

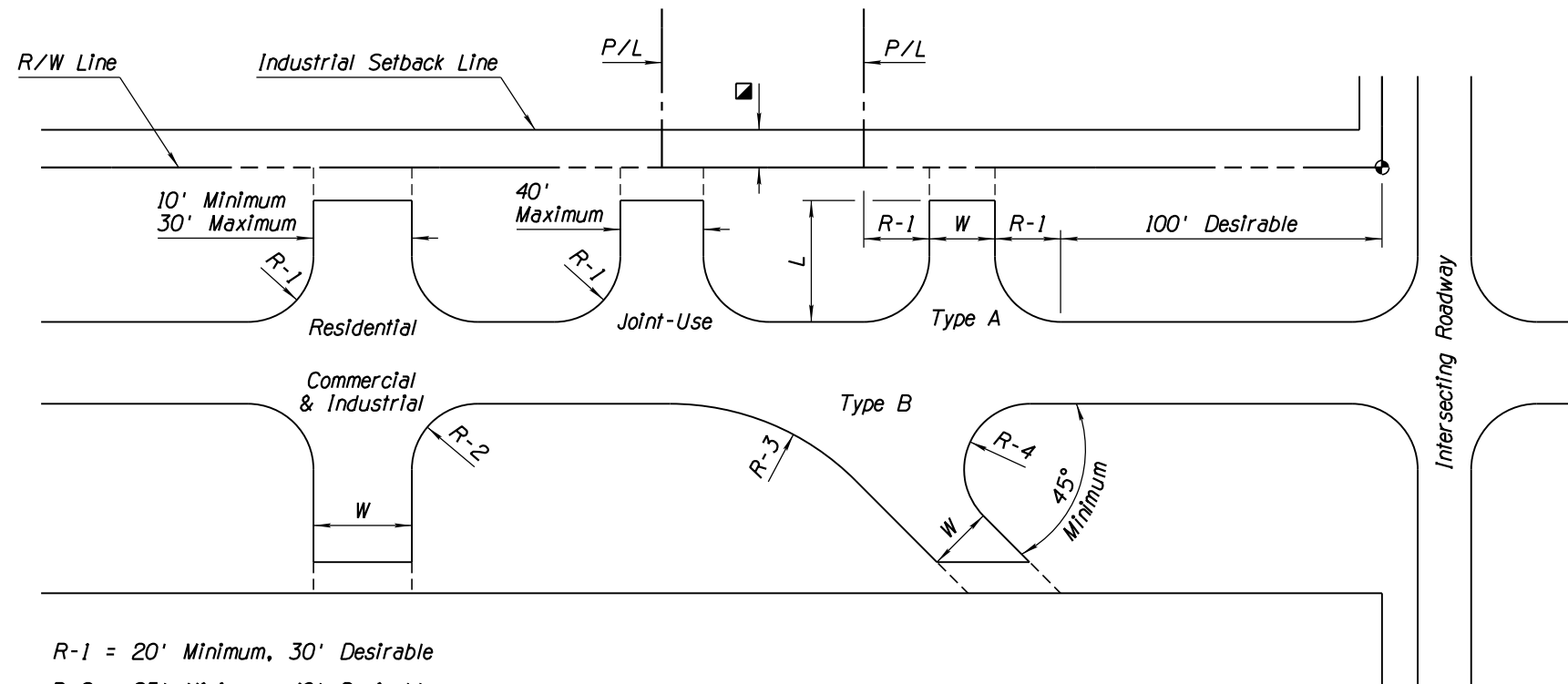
1. Driveway types:

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.

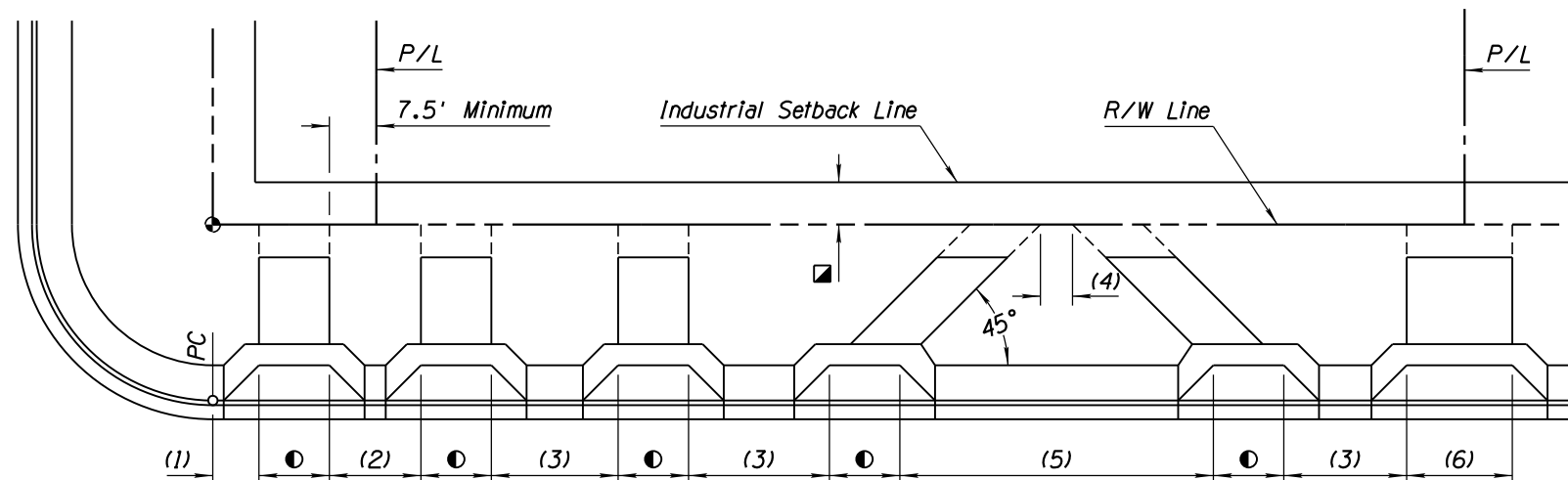
Industrial - one directly serving a substantial number of truck movements to and from loading docks of an industrial facility, warehouse or truck terminal.

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

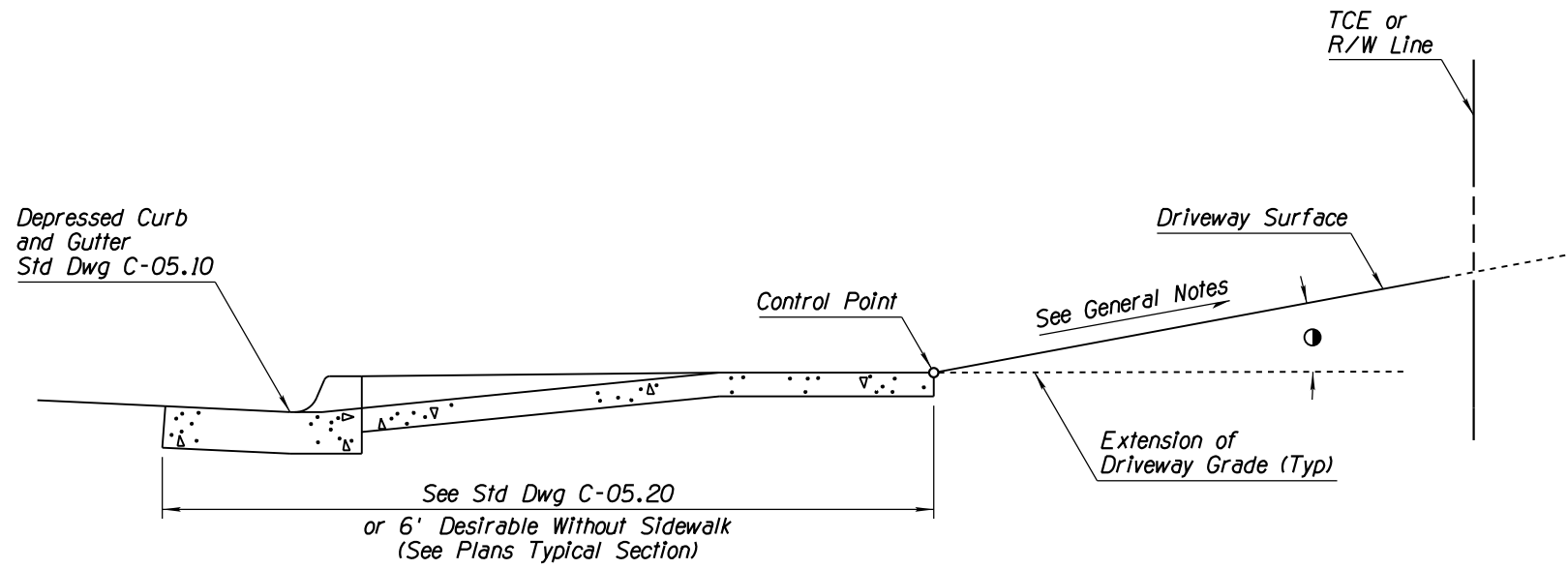
URBAN DEVELOPMENTS

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

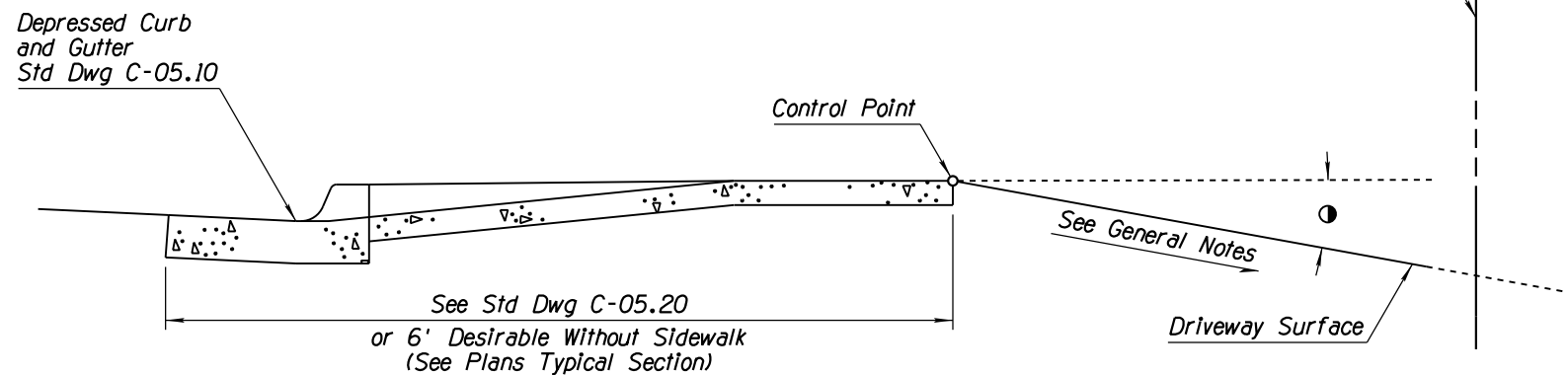
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	7/06
2			
3			
4			

GENERAL NOTES

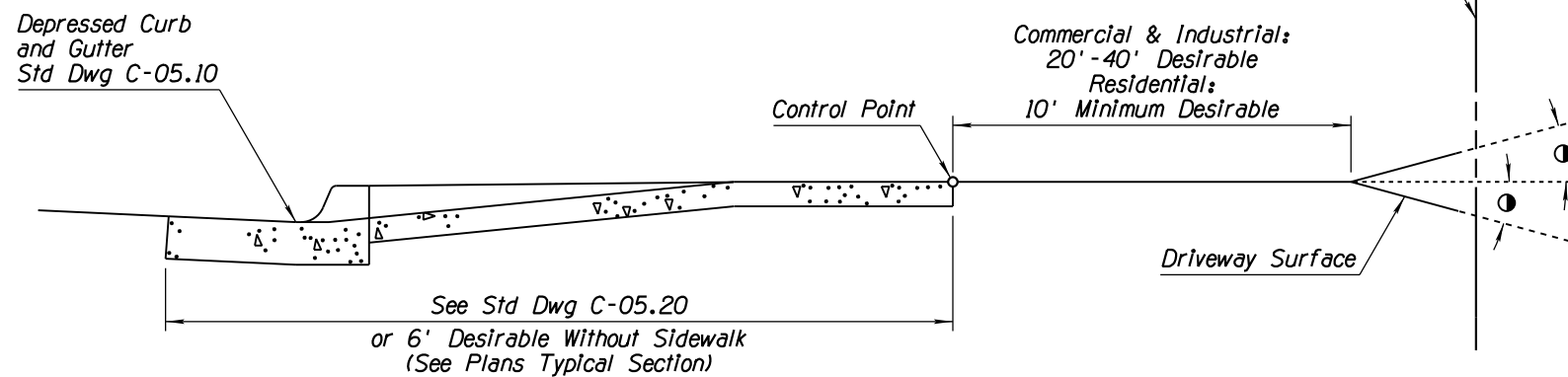
1. Grade as shown on plans or as negotiated between property owner and Engineer.
2. When field conditions require modifications to plans, contact design engineer for assistance.
3. See Sheet 1 of 2 for all other General Notes.
4. Break angle greater than 6% requires a vertical curve, L=10' minimum. Vertical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



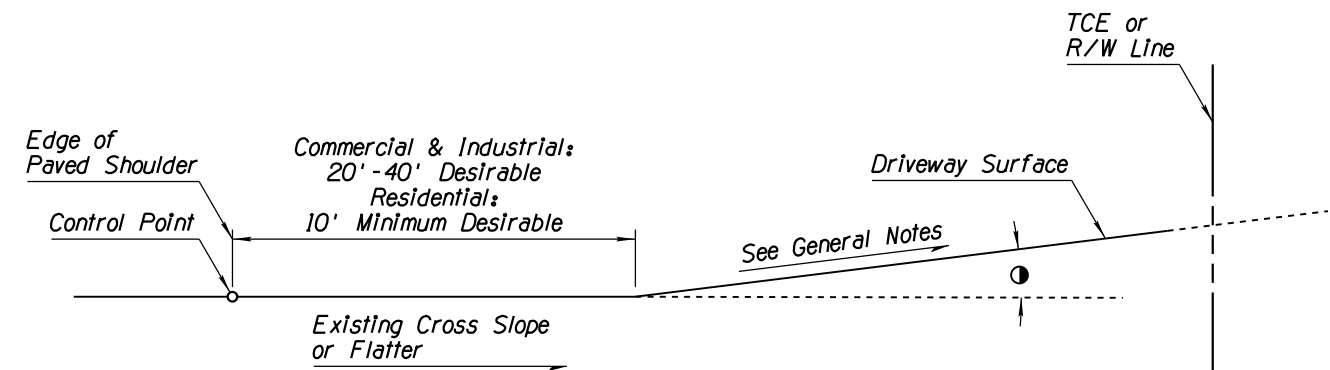
URBAN CROSS SECTION (UP-GRADE)



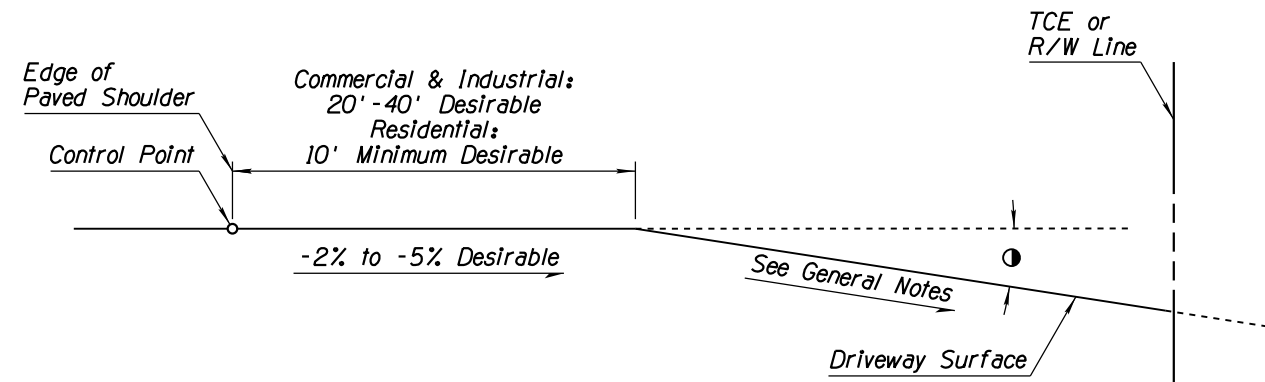
URBAN CROSS SECTION (DOWN-GRADE)



DESIRABLE URBAN CROSS SECTION



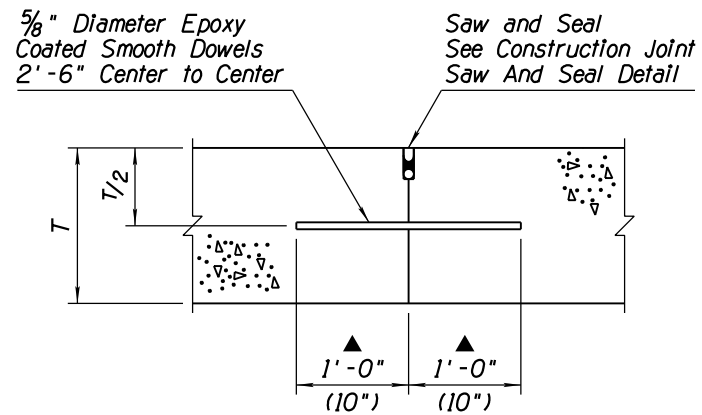
RURAL CROSS SECTION (UP-GRADE)



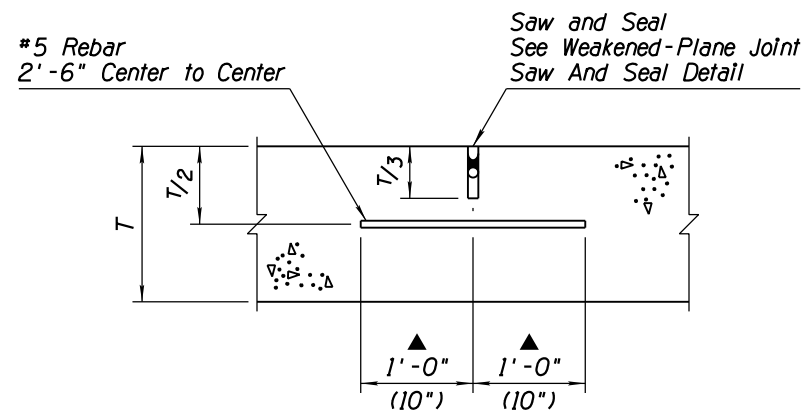
RURAL CROSS SECTION (DOWN-GRADE)

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

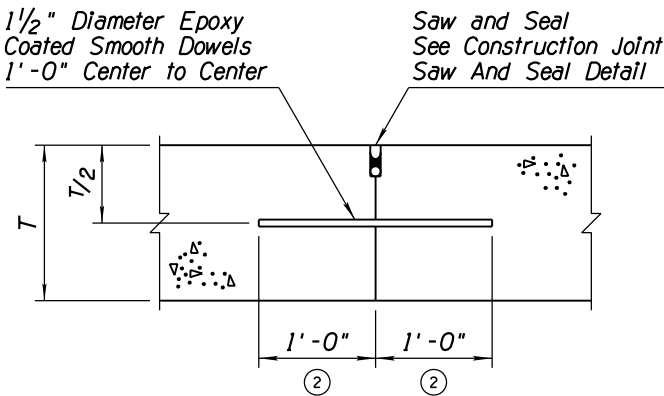
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED DEFINITION FOR 'PE'	RLF	9/04
2	REVISED DIMENSION FORMAT	RLF	7/05
3	REMOVED 'INITIAL SAWCUT' NOTATION	RLF	7/05
4			



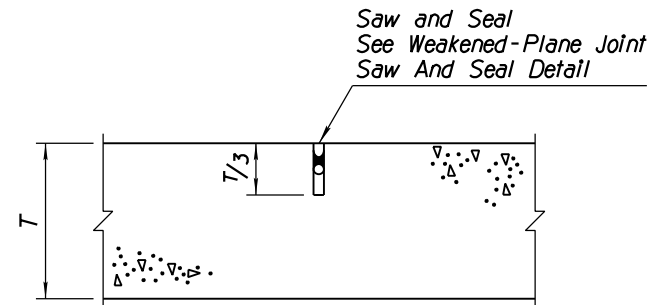
LONGITUDINAL CONSTRUCTION JOINT
LC Joint



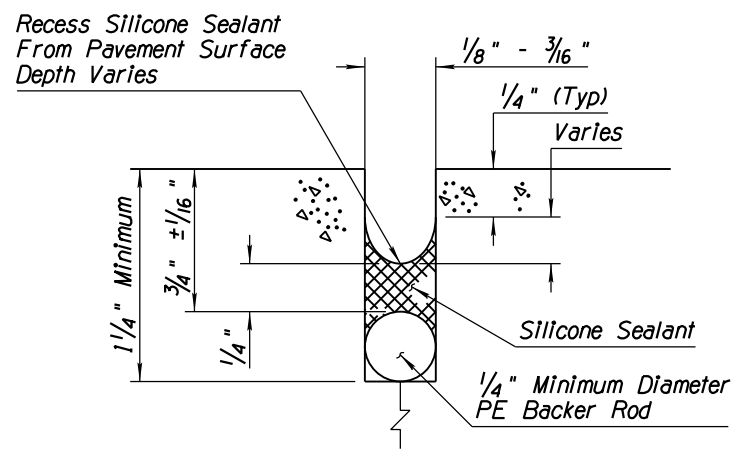
LONGITUDINAL WEAKENED-PLANE JOINT
LWP Joint



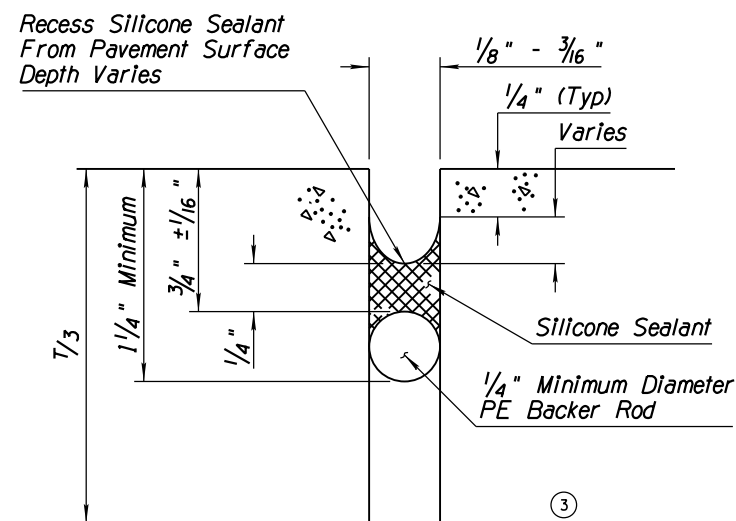
TRANSVERSE CONSTRUCTION JOINT
TC Joint
Non-Skewed & Skewed Joints



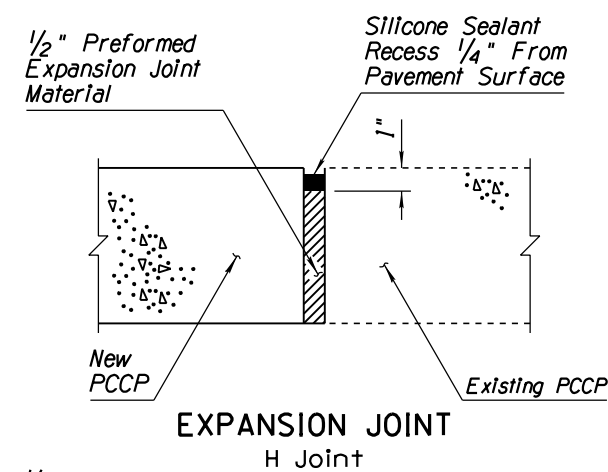
TRANSVERSE WEAKENED-PLANE JOINT
TWP Joint
W/O Load Transfer Dowel Assemblies



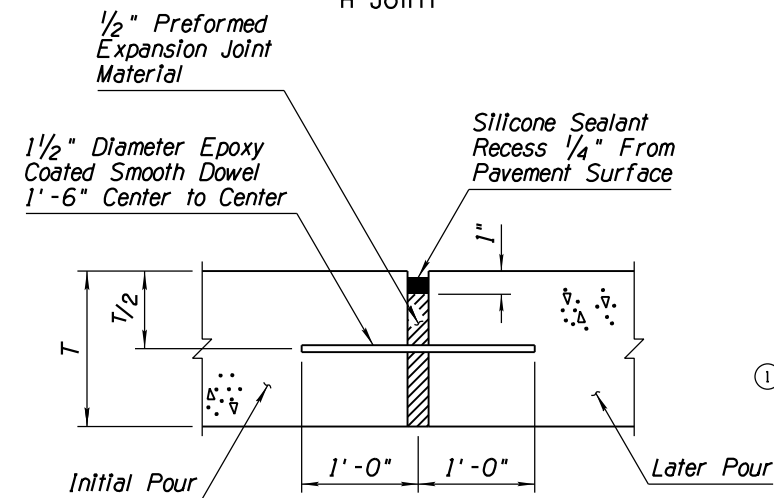
CONSTRUCTION JOINT
SAW AND SEAL DETAIL



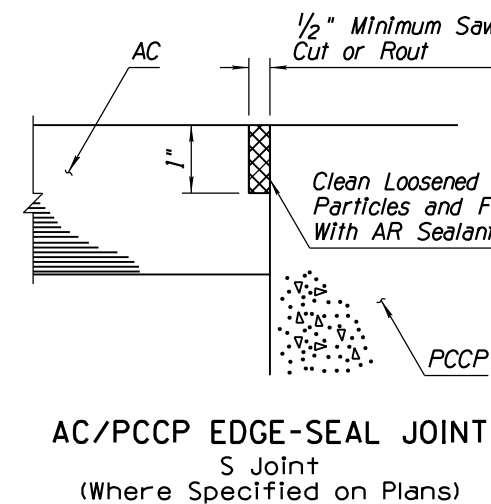
WEAKENED-PLANE JOINT
SAW AND SEAL DETAIL



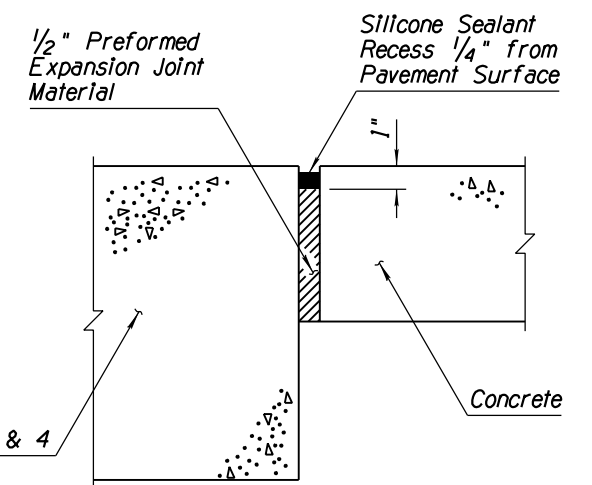
EXPANSION JOINT
H Joint



EXPANSION JOINT
E Joint



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



EXPANSION JOINT
K Joint (See Notes 3 & 4)

GENERAL NOTES

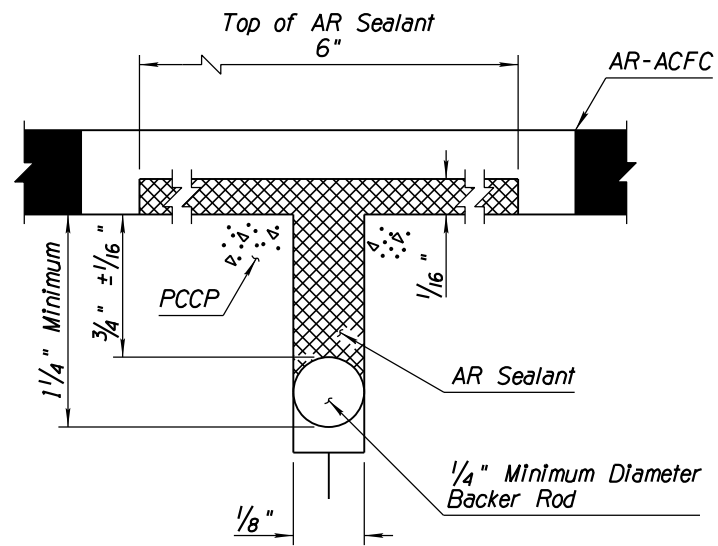
1. When load transfer dowel assemblies are required, use dimensions shown in ()'s. See Assembly Placement And Edge Clearance Detail, Std Dwg C-07.02.
2. In slip form type pavement construction, LWP joints shall be used. In fixed form construction either LWP or LC joints may be used.
3. K joints shall be constructed around the complete perimeter of miscellaneous structures, or as directed by the Engineer.
4. 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

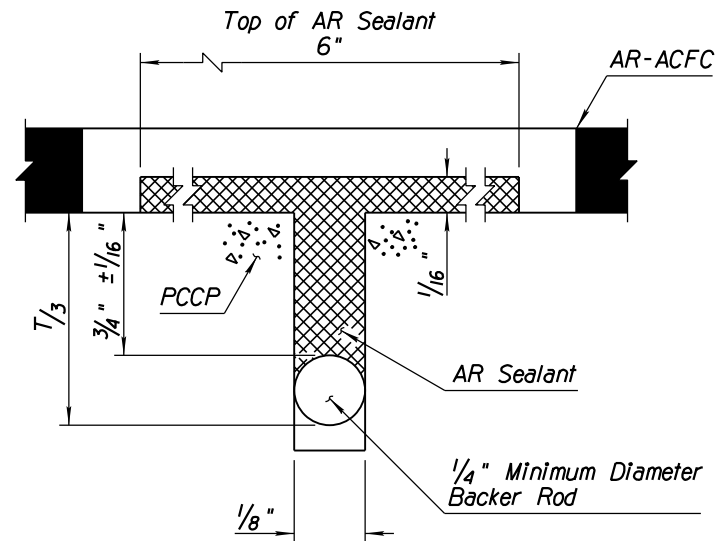
- LWP - Longitudinal Weakened-Plane Joint
- TWP - Transverse Weakened-Plane Joint
- LC - Longitudinal Construction Joint
- TC - Transverse Construction Joint
- E, H, K - Expansion Joints
- S - AC/PCCP Edge-Seal Joint
- T - PCCP Thickness
- ① PE - Polyethylene

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)



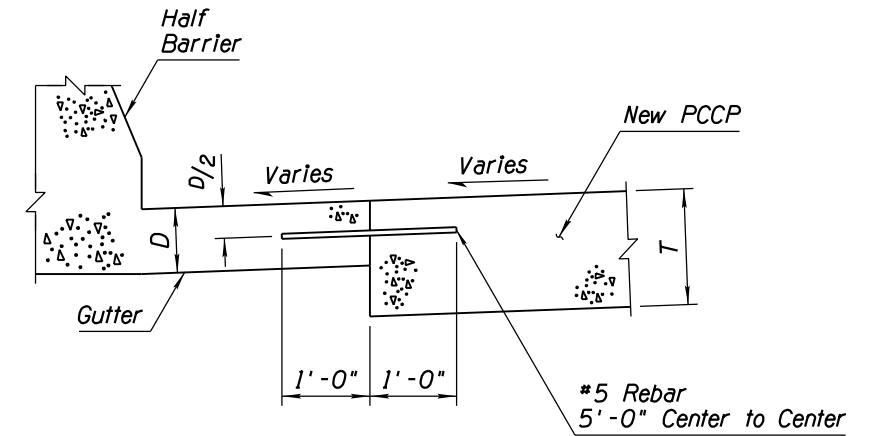
WEAKENED-PLANE JOINT DETAIL (WITH AR-ACFC)

GENERAL NOTES

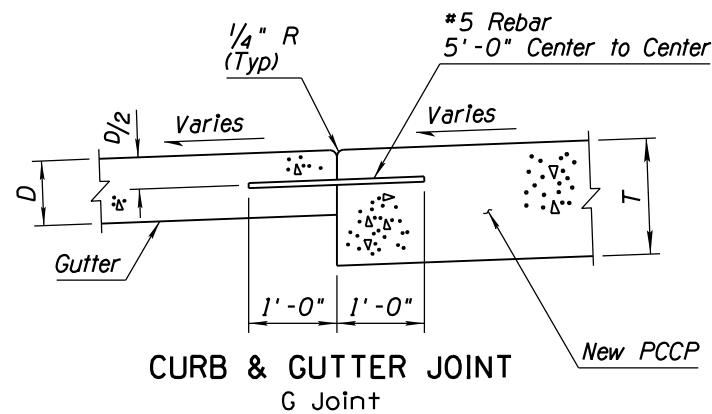
1. Joints are generally shown with pavement sloping toward the joint.

JOINT ABBREVIATIONS

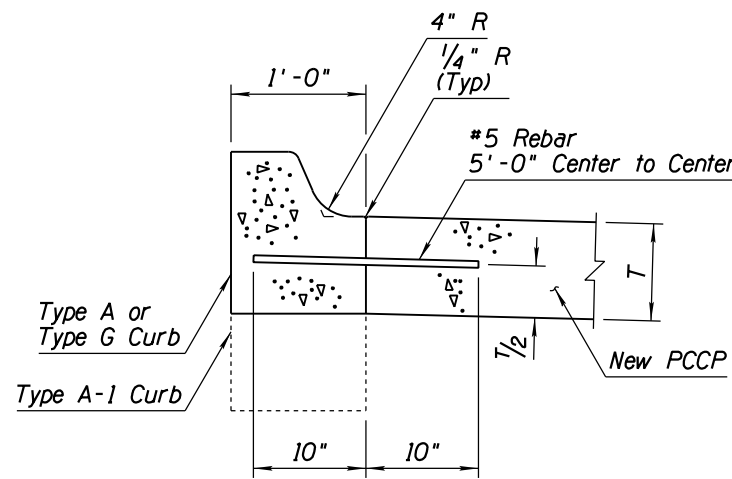
- G - Gutter Joint
- T - PCCP Thickness
- D - Gutter Thickness
- B - Barrier Joint
- ② F - Barrier Footing Concrete Thickness (Full-depth Concrete Shown)



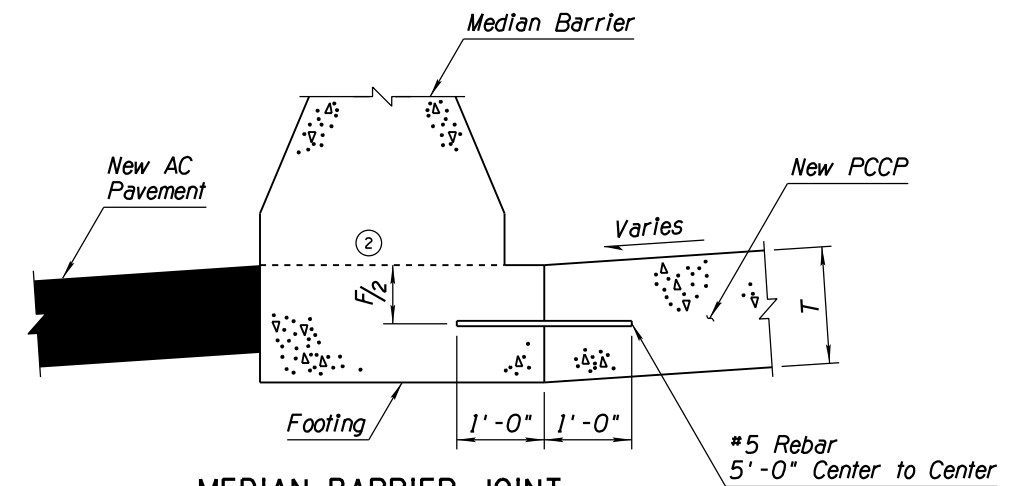
HALF BARRIER JOINT B Joint



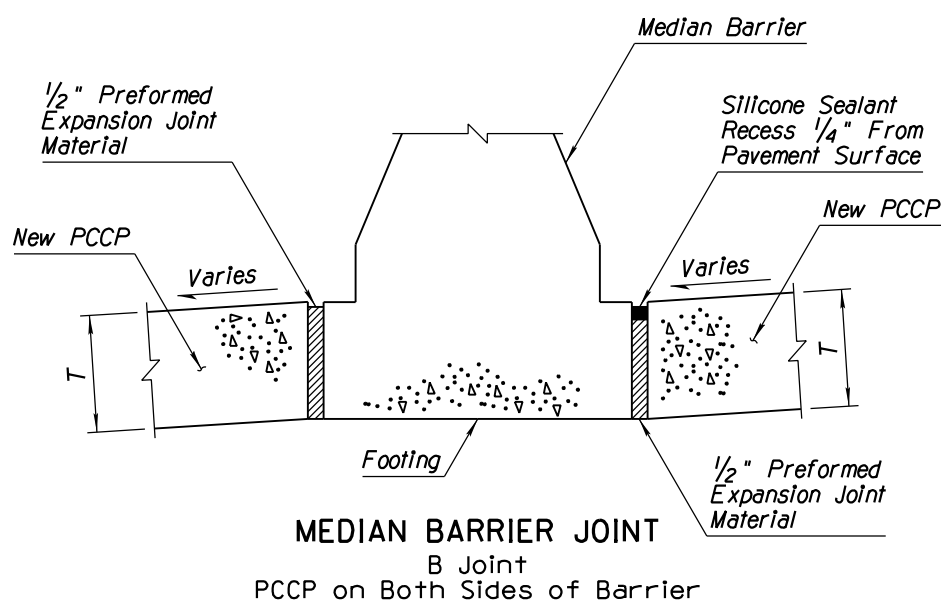
CURB & GUTTER JOINT G Joint



SINGLE CURB JOINT A Joint



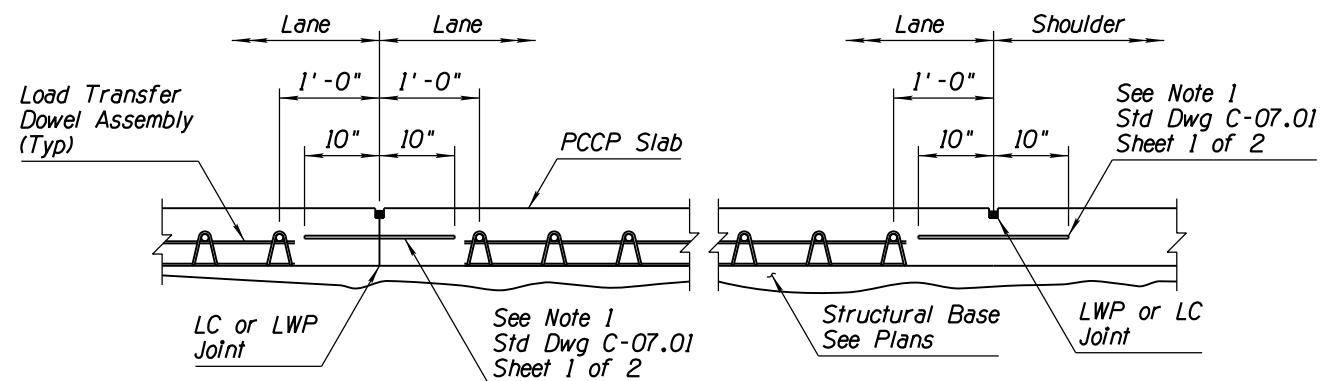
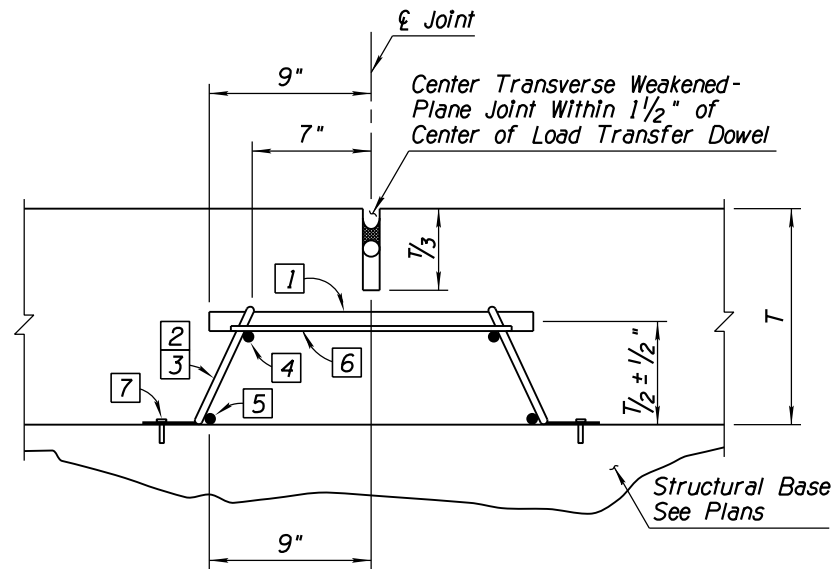
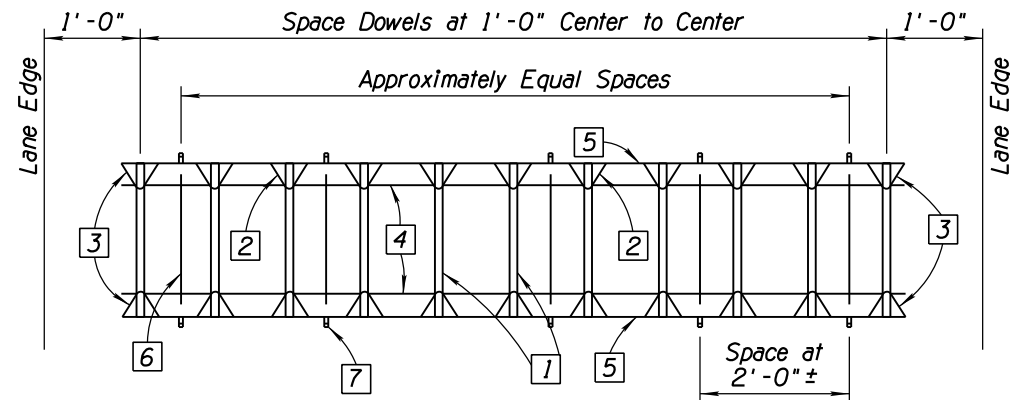
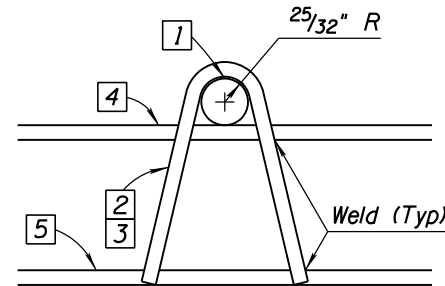
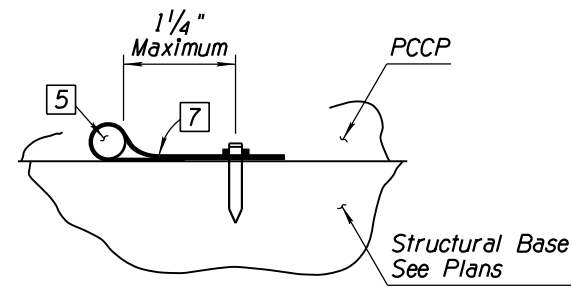
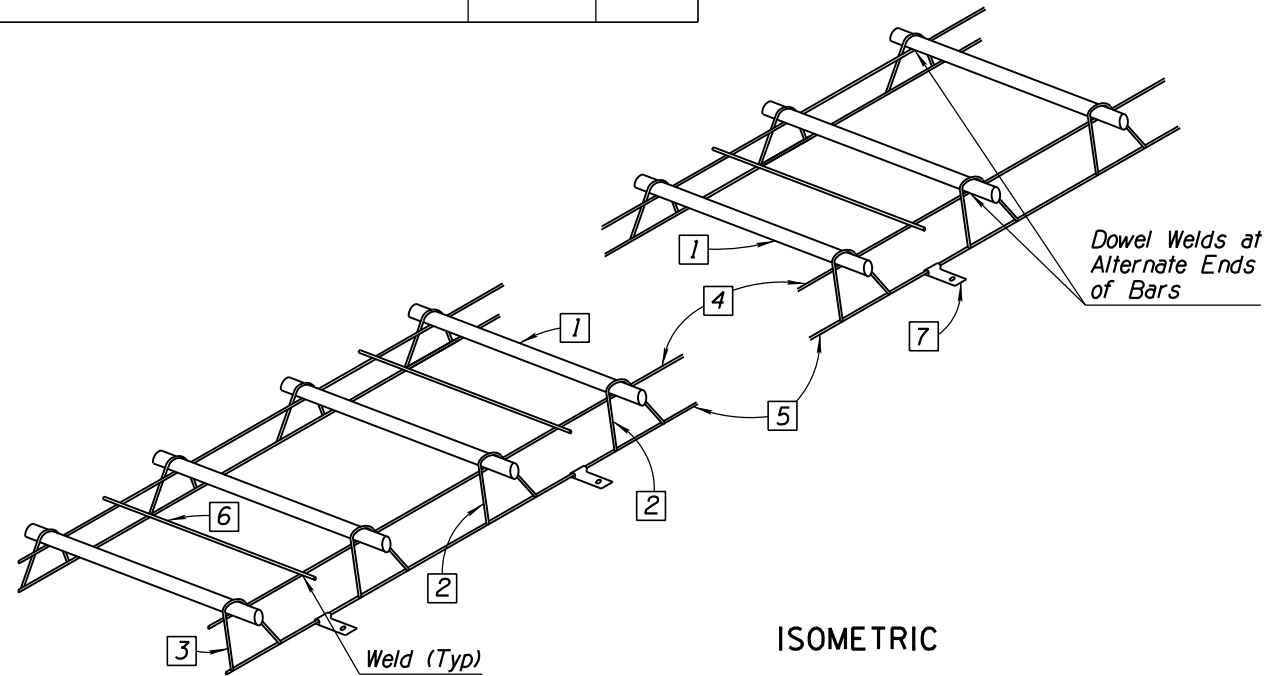
MEDIAN BARRIER JOINT B Joint
AC Pavement on Back Side of Barrier



MEDIAN BARRIER JOINT B Joint
PCCP on Both Sides 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			



	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".

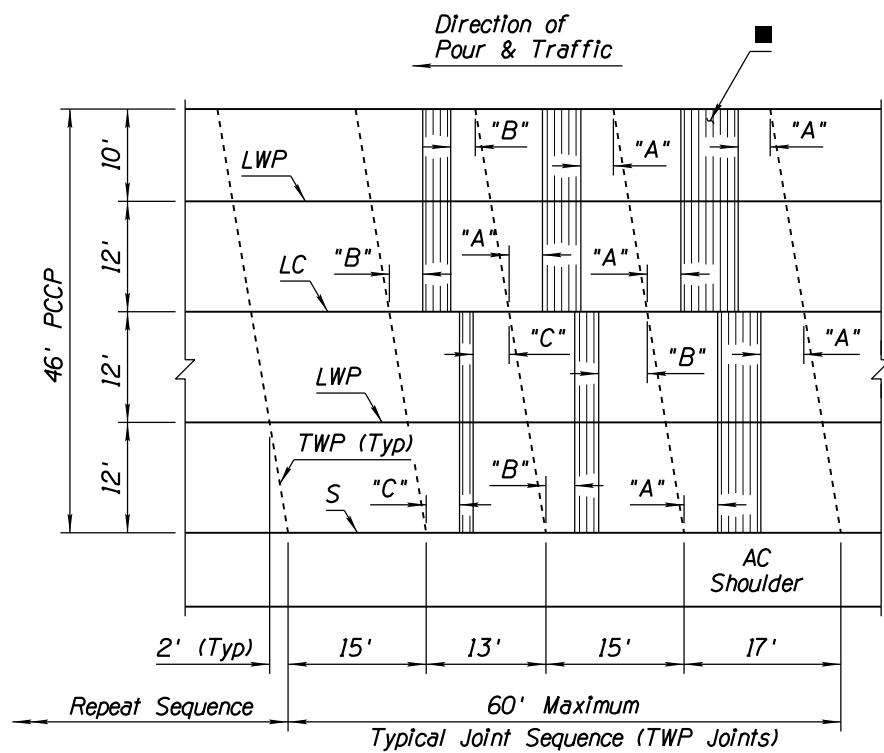
Load transfer dowel assembly shall be assembled from the following materials:
(See Quantity Table)

- 1 Dowel bars - 1/2" 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.

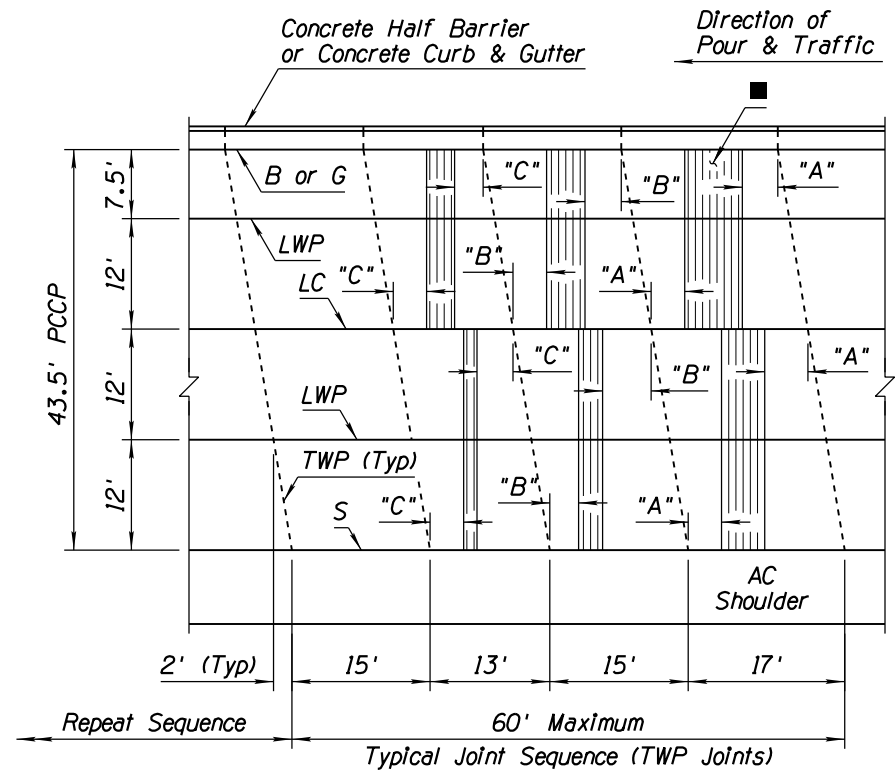
Item No	Lane Width (Ft)		
	12	14	16
1	11	13	15
2	18	22	26
3	4	4	4
4	2	2	2
5	2	2	2
6	5	6	7
7	10	12	14

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

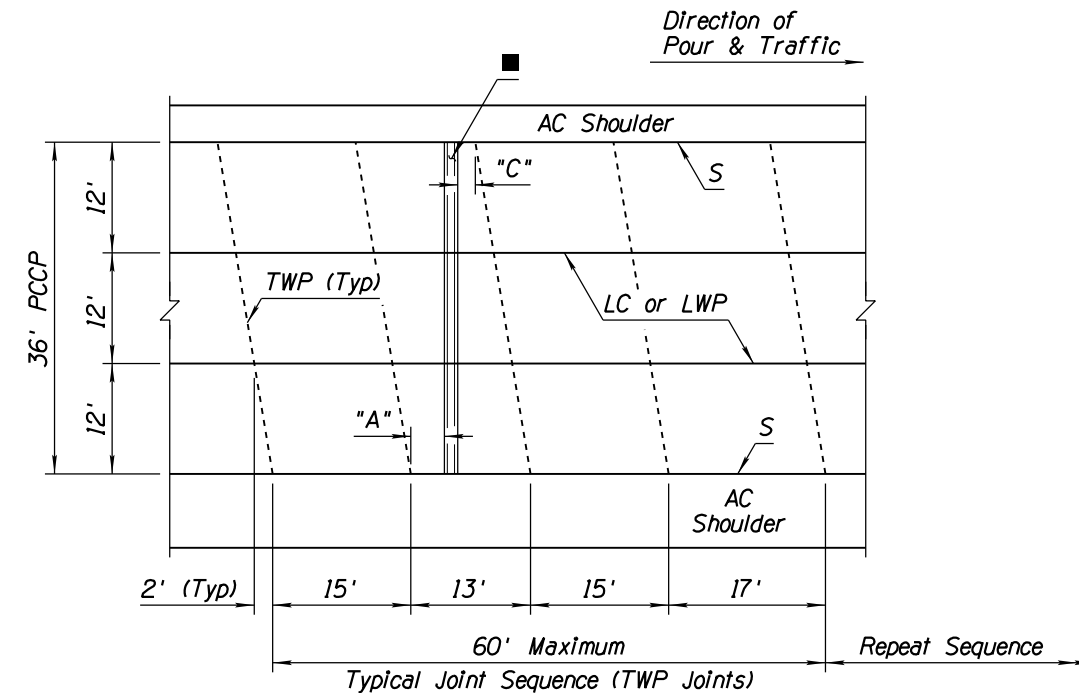
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED JOINT ANGLE FOR CURB & GUTTER	RLF	9/04
3	REVISED TITLE	RLF	9/04
4			



PLAN
46' PCCP



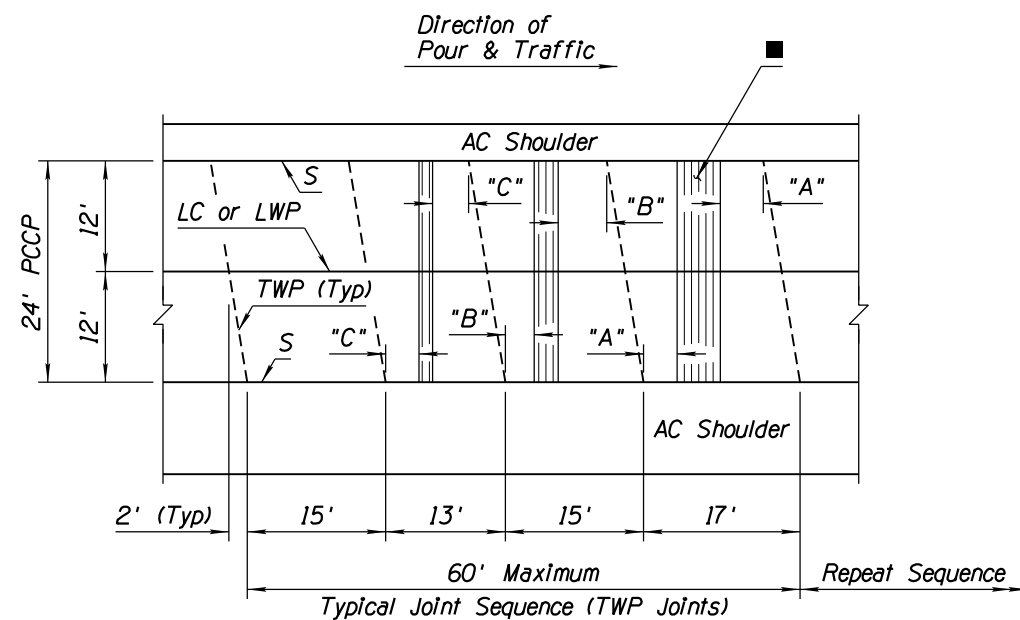
PLAN
43.5' PCCP



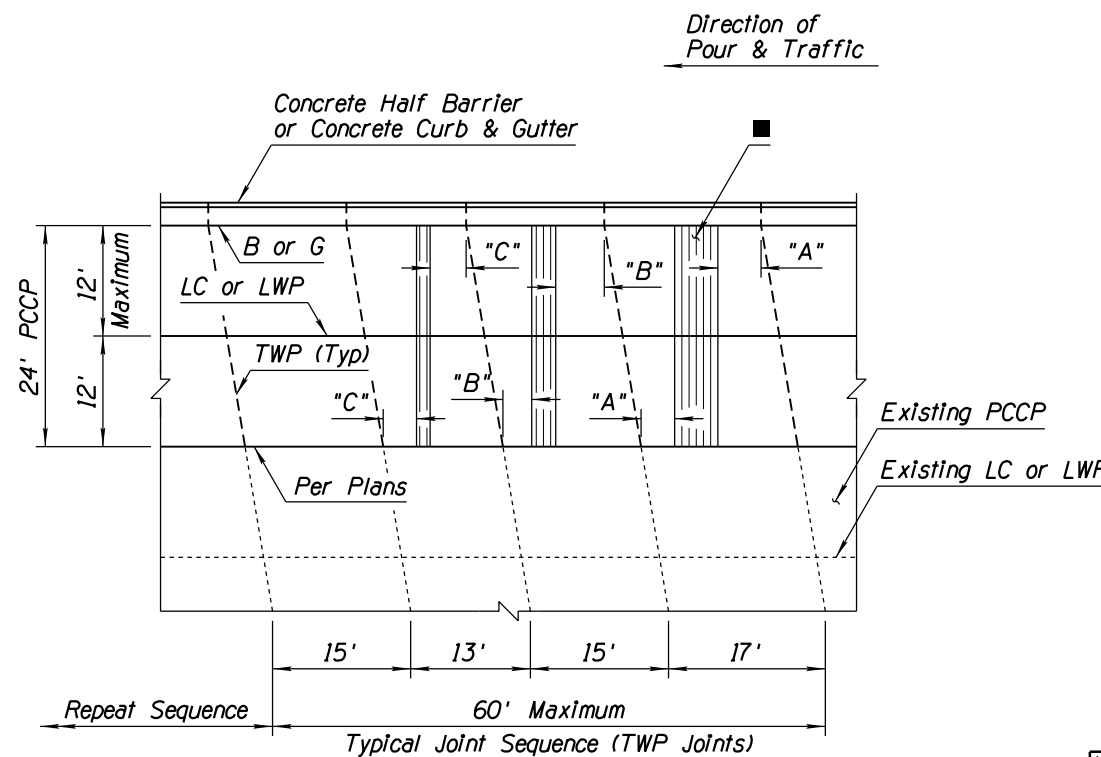
PLAN
36' PCCP

GENERAL NOTES

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.
 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



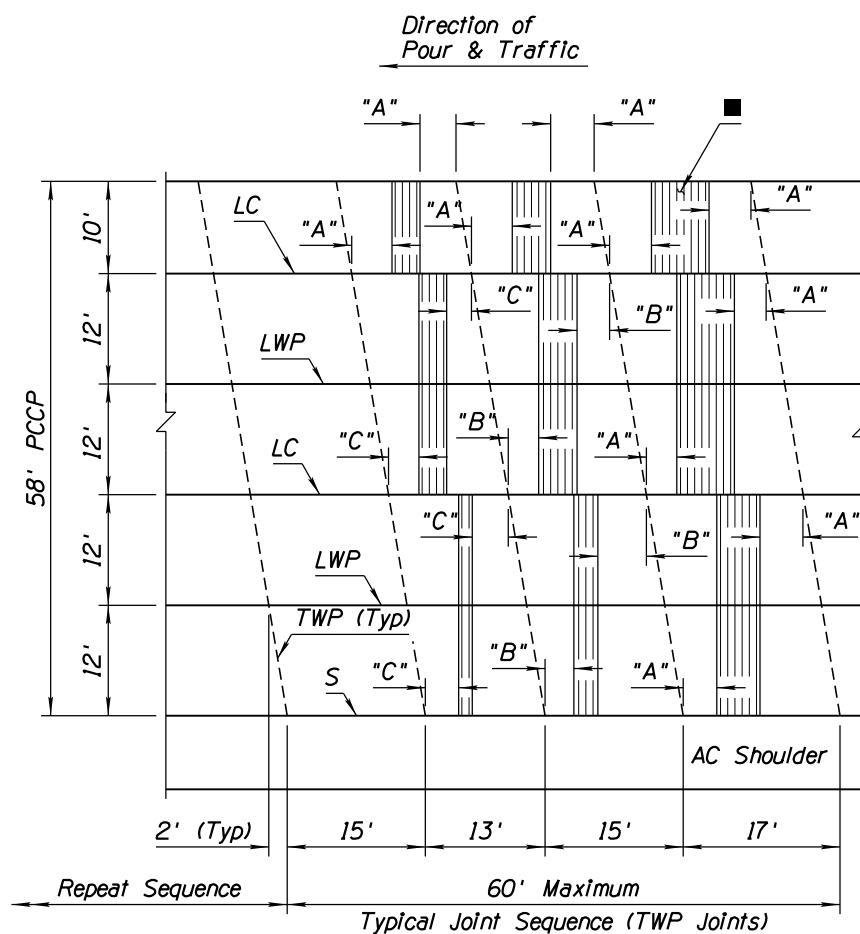
PLAN
24' PCCP
(WIDENING)

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

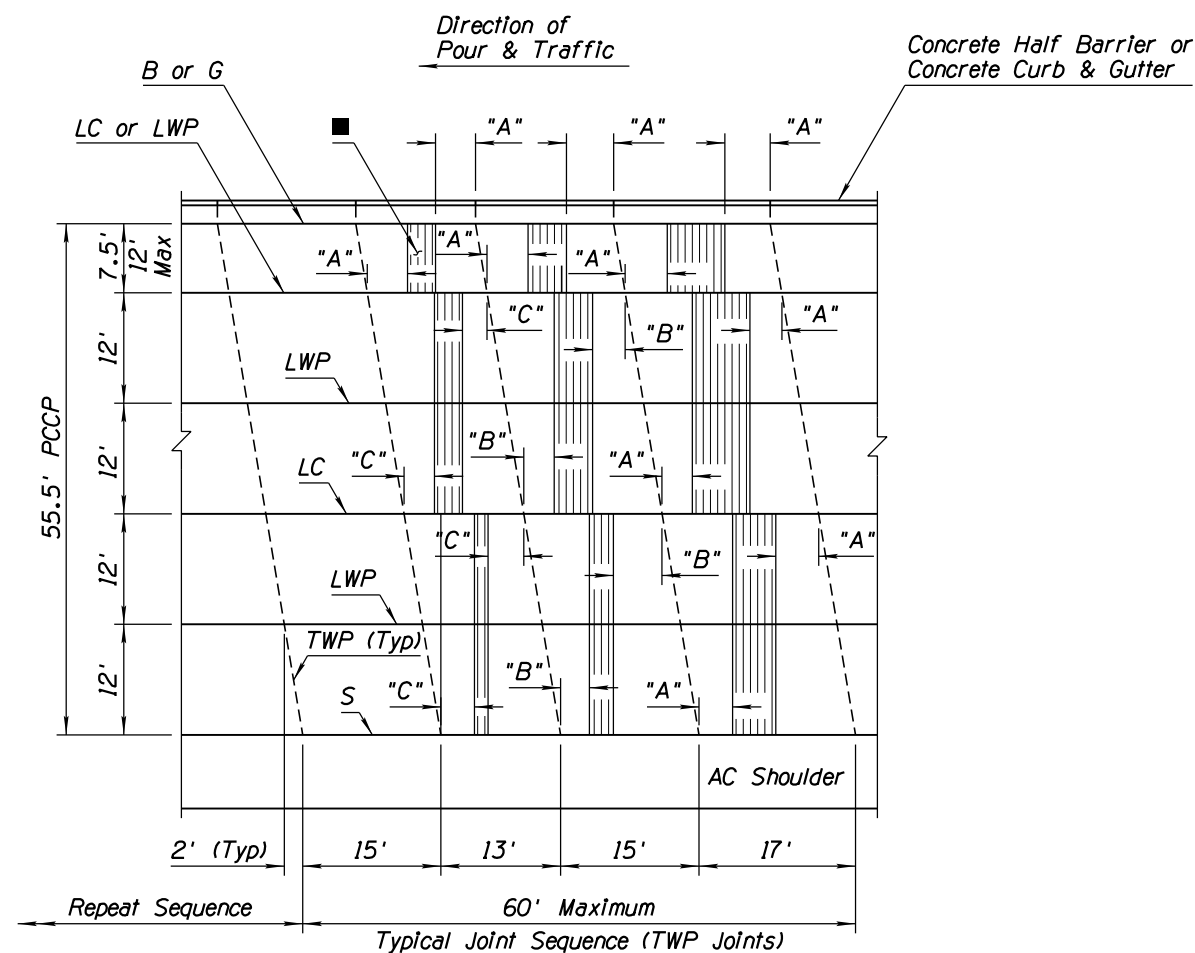
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED JOINT ANGLE FOR CURB & GUTTER	RLF	9/04
3	REVISED TITLE	RLF	9/04
4			

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.
 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
58' PCCP



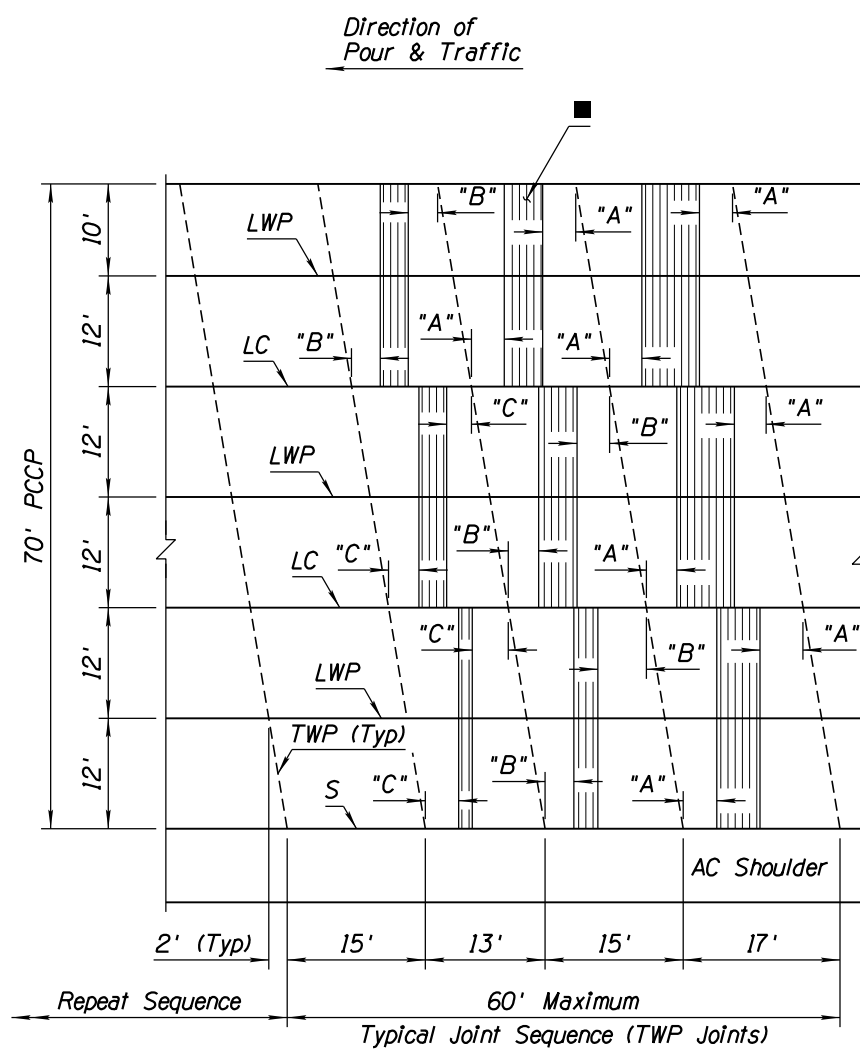
PLAN ②
55.5' PCCP

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

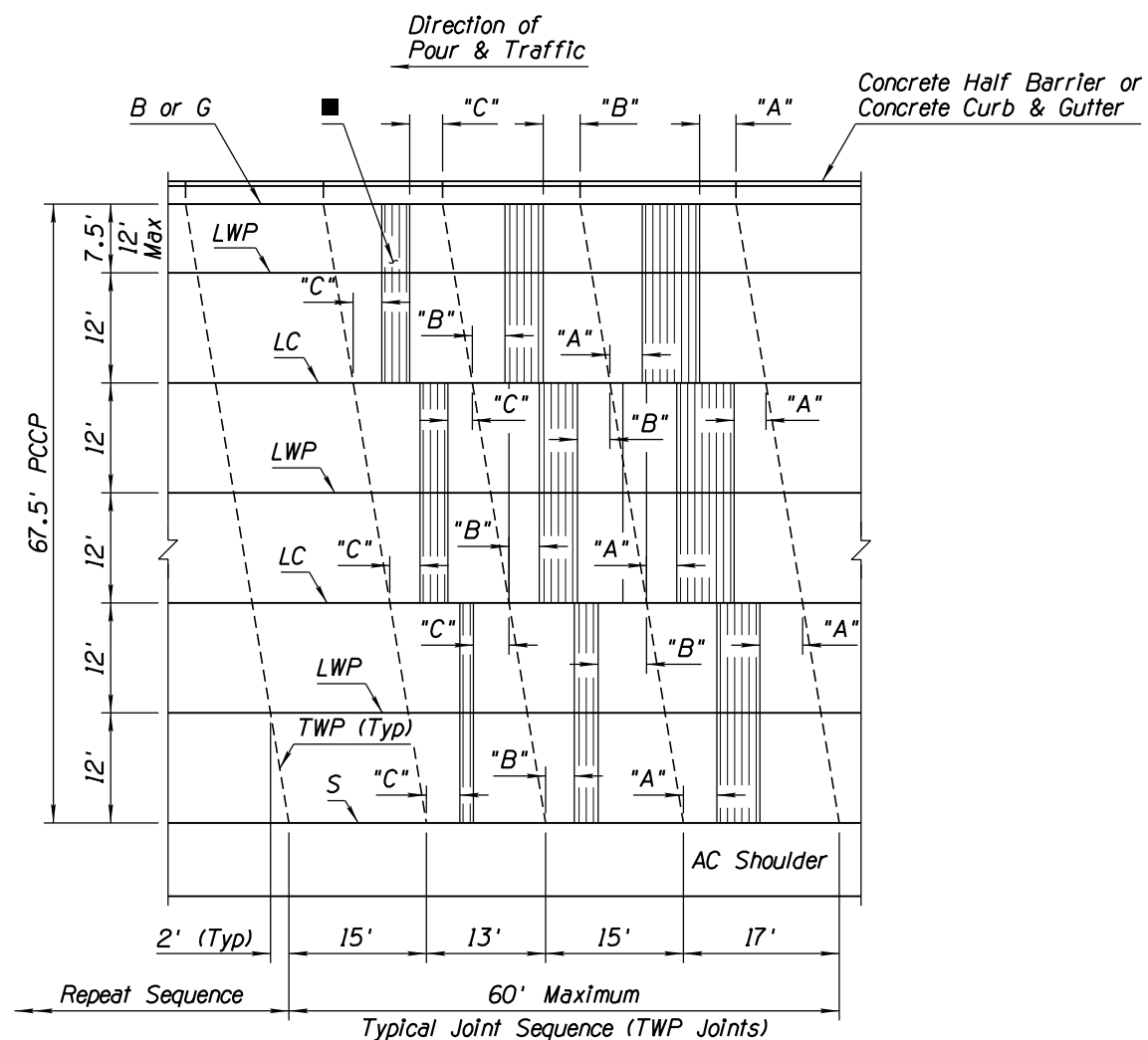
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED JOINT ANGLE FOR CURB & GUTTER	RLF	9/04
3	REVISED TITLE	RLF	9/04
4			

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.
 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)



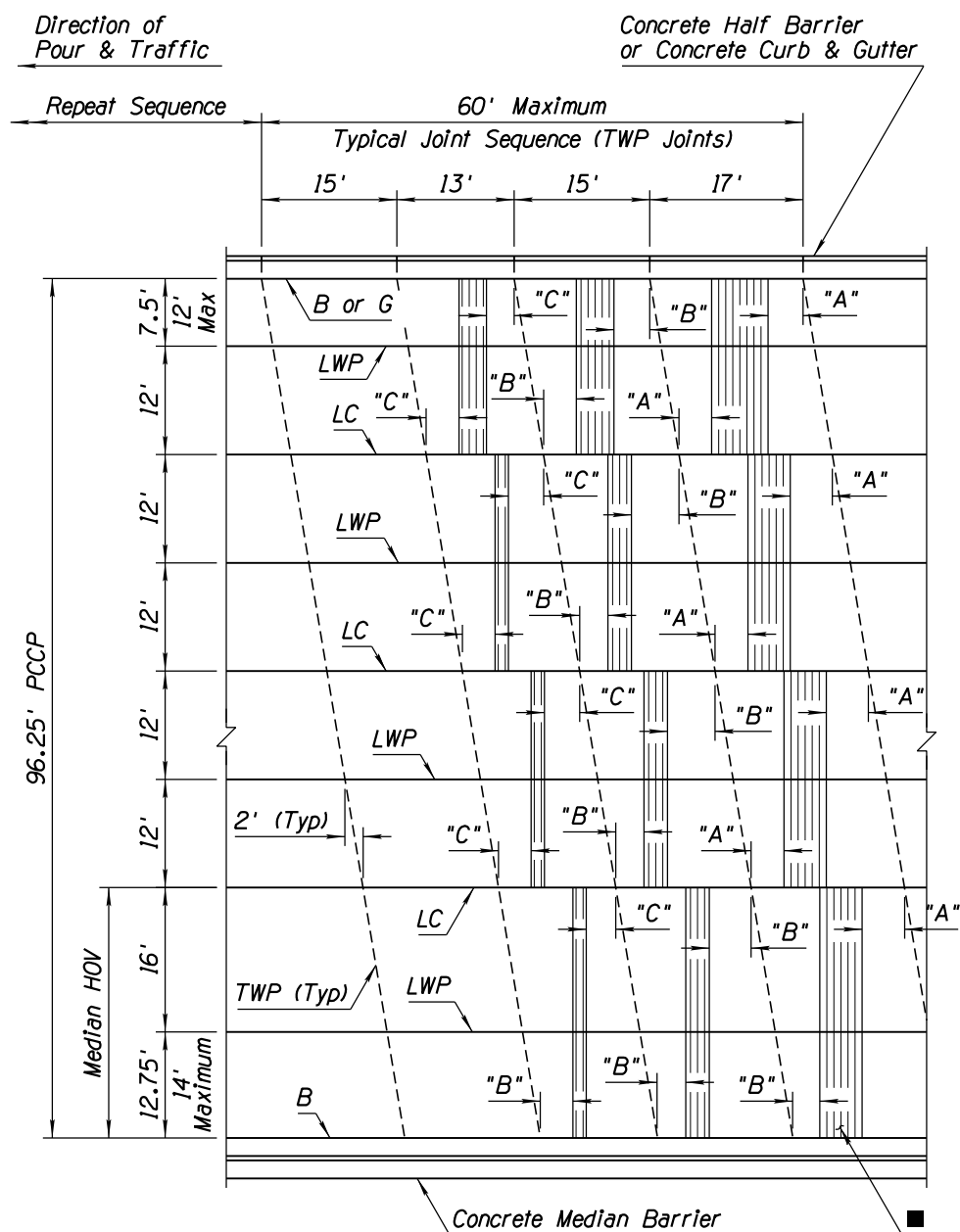
PLAN
70' PCCP



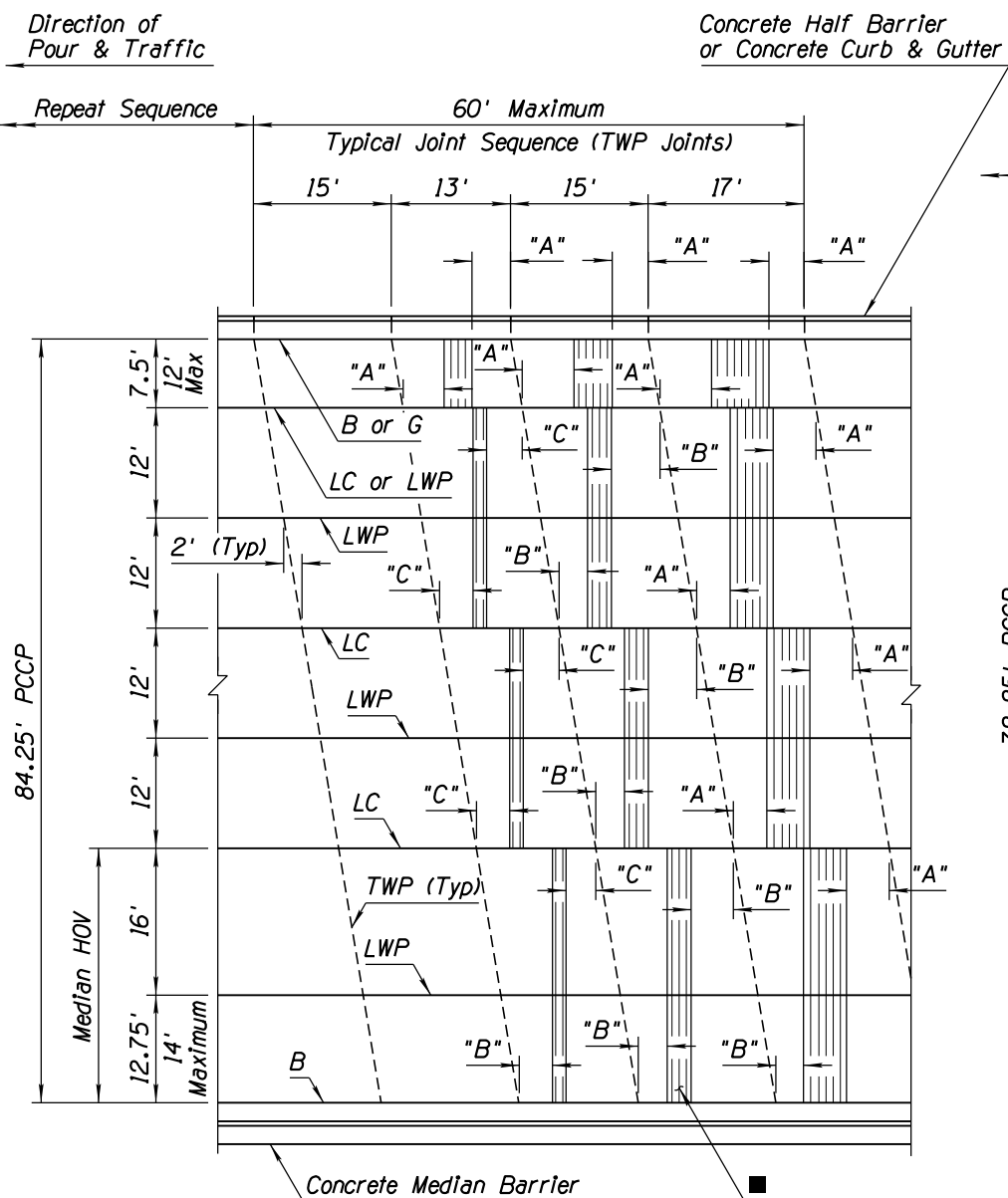
PLAN
67.5' PCCP

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

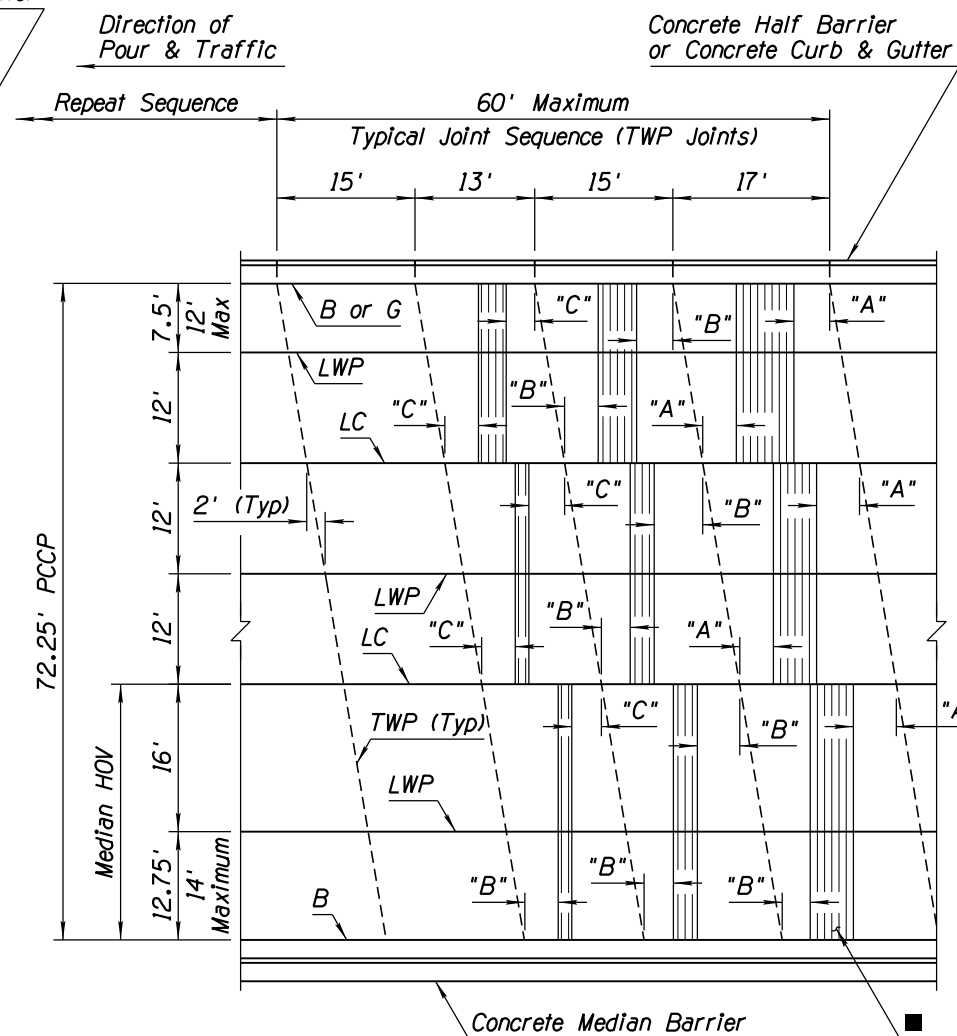
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED JOINT ANGLE FOR CURB & GUTTER	RLF	9/04
3	REVISED TITLE	RLF	9/04
4			



PLAN ②
96.25' PCCP



PLAN ②
84.25' PCCP



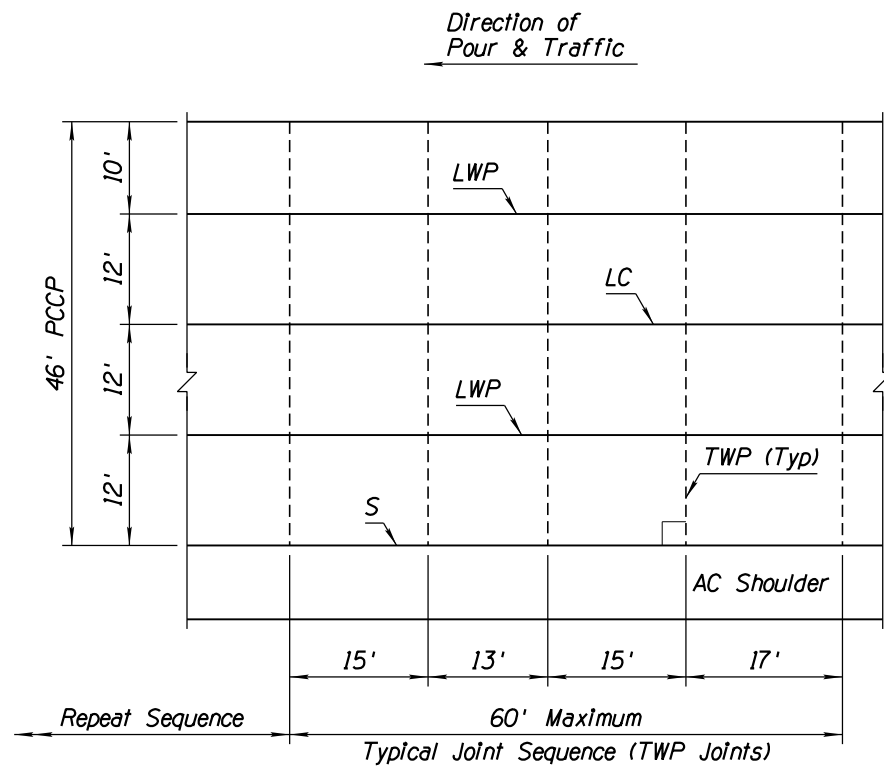
PLAN ②
72.25' PCCP

GENERAL NOTES

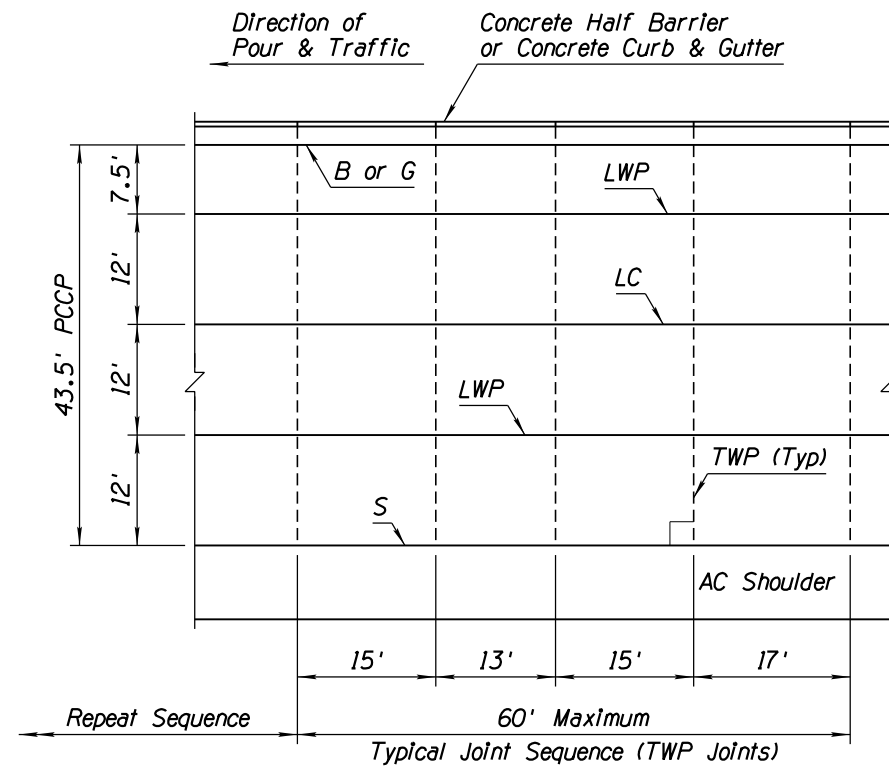
- ① 1. LC and LWP joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
 2. Skewed PCCP joints shall 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

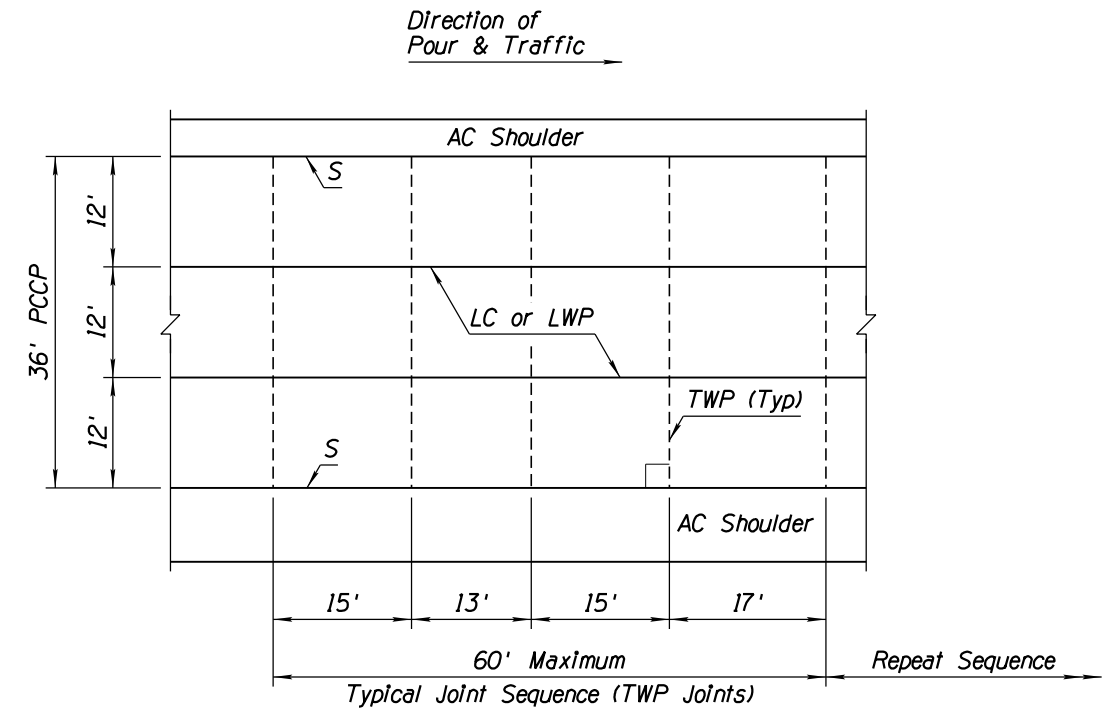
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED TITLE	RLF	9/04
3			
4			



PLAN
46' PCCP



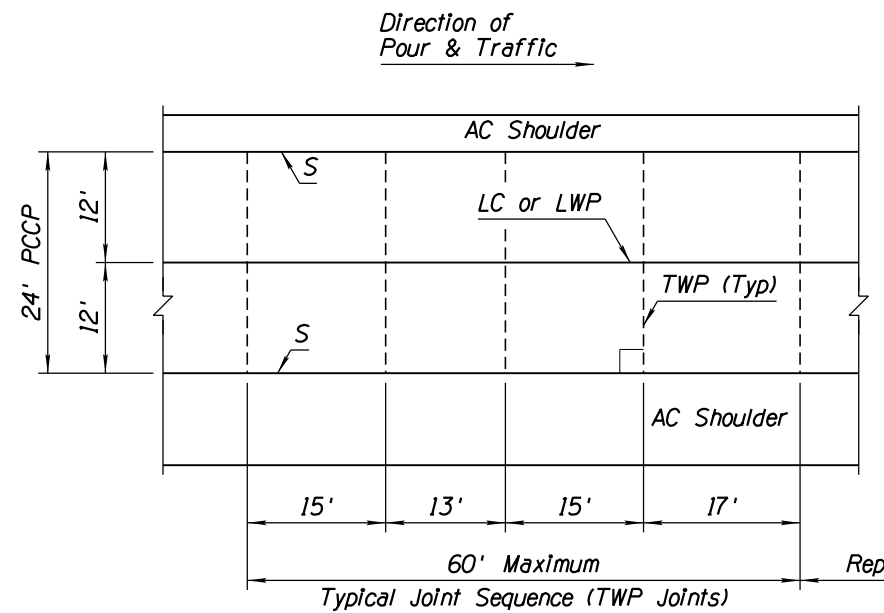
PLAN
43.5' PCCP



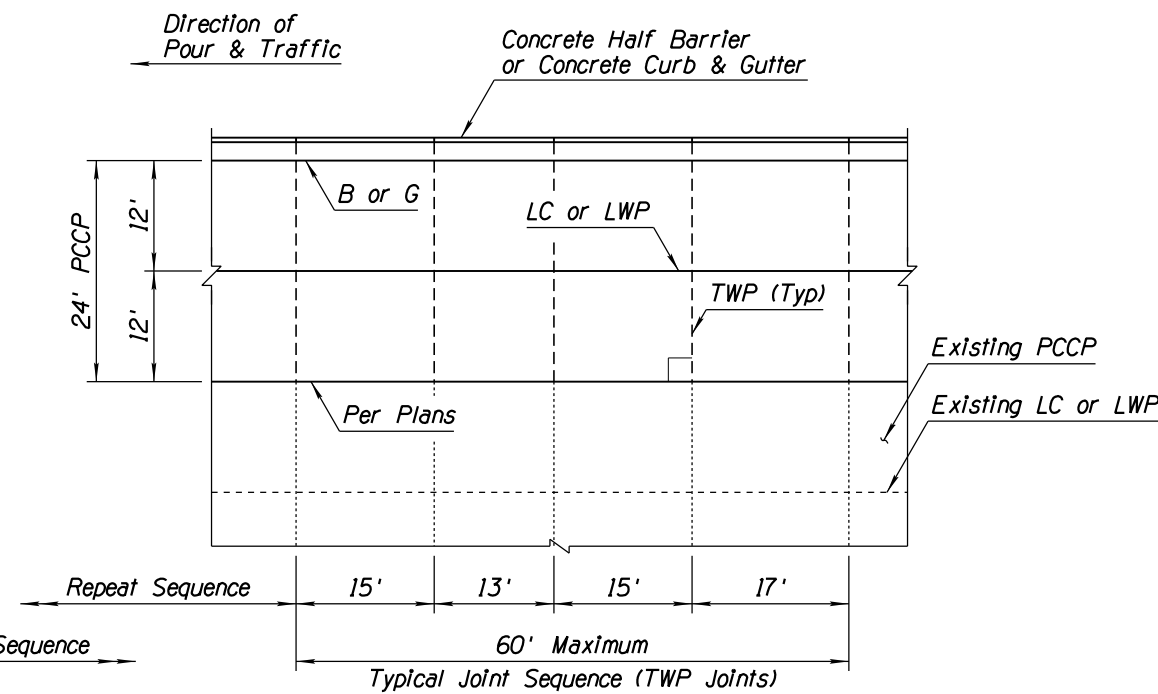
PLAN
36' PCCP

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.



PLAN
24' PCCP



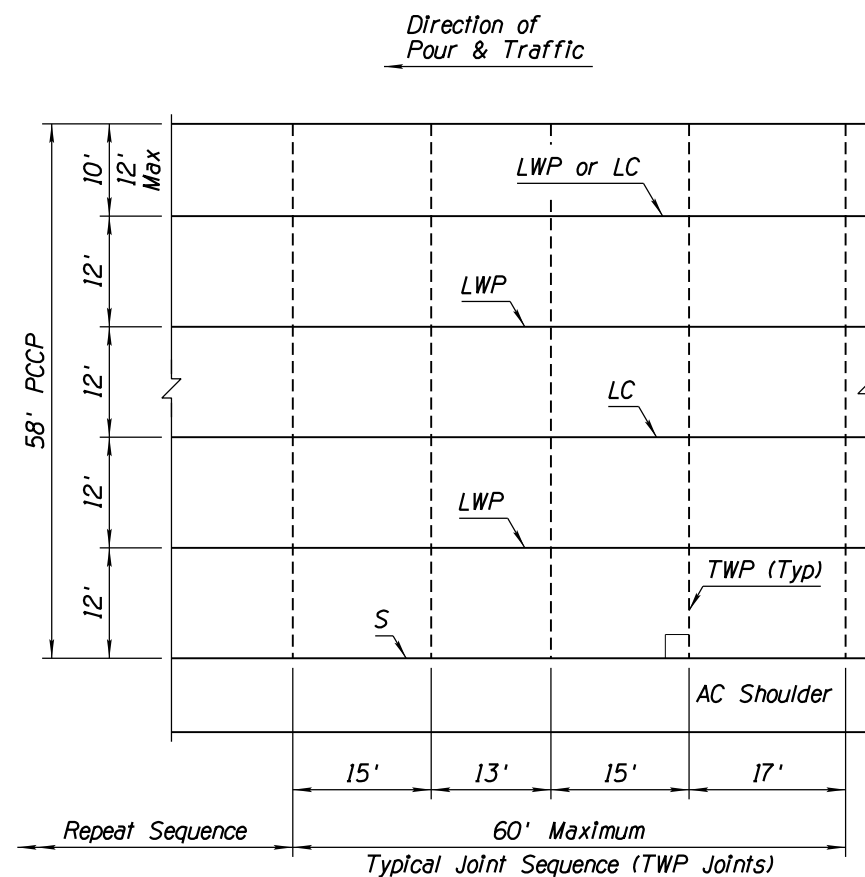
PLAN
24' PCCP
(WIDENING)

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

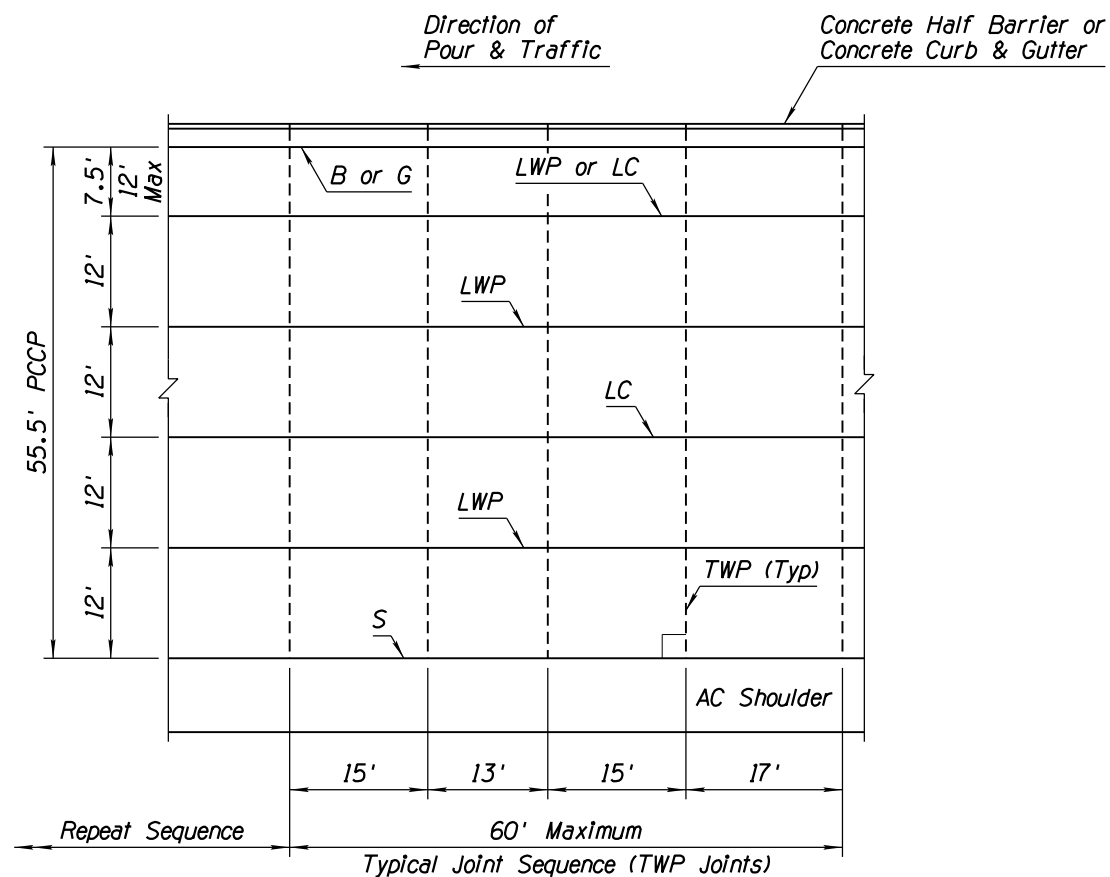
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED TITLE	RLF	9/04
3			
4			

GENERAL NOTES

- 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 rebar 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.



PLAN
58' PCCP



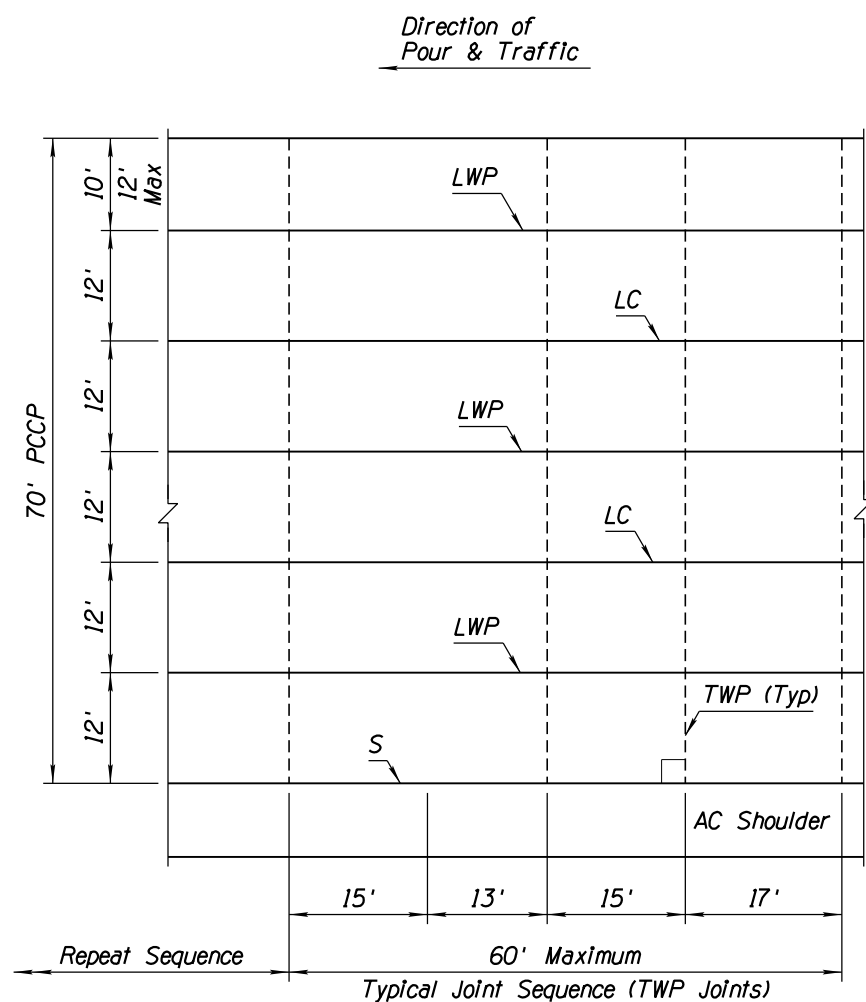
PLAN
55.5' PCCP

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

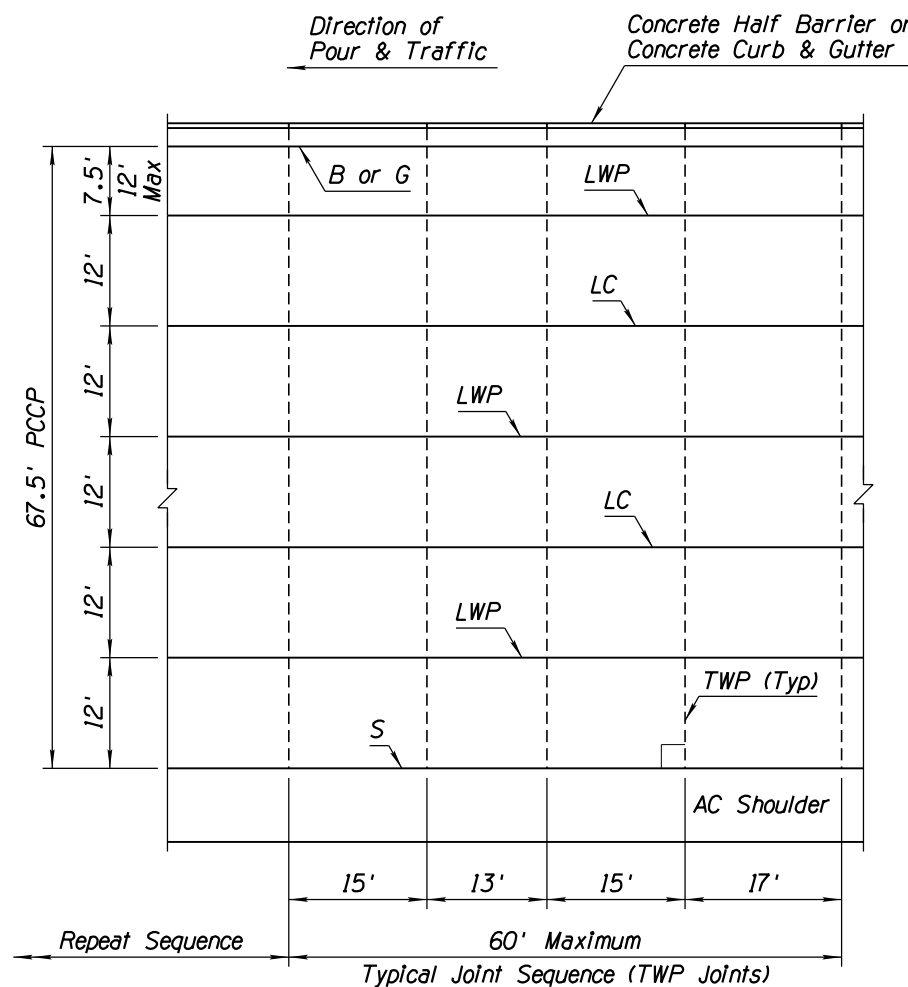
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED TITLE	RLF	9/04
3			
4			

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.
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.



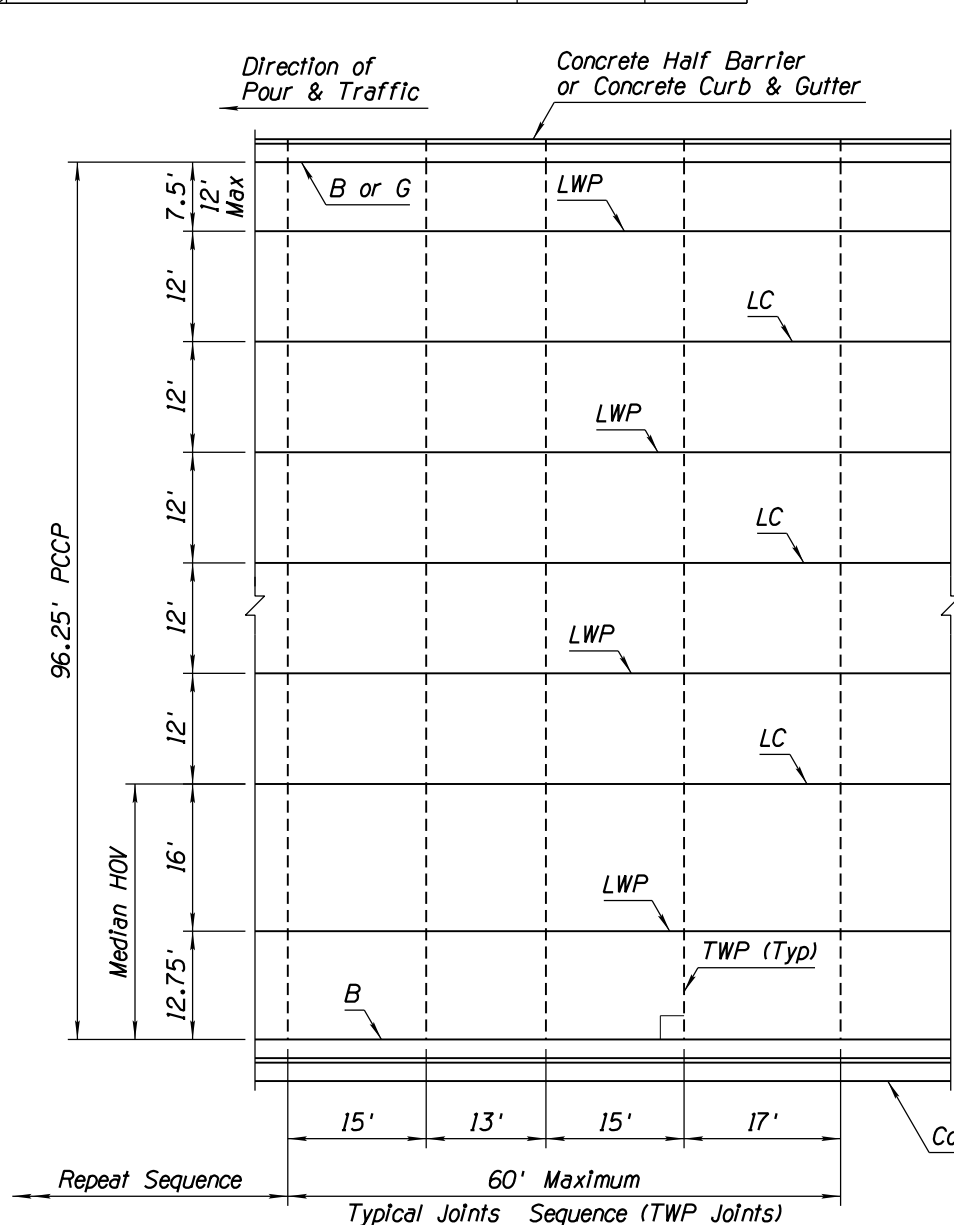
PLAN
70' PCCP



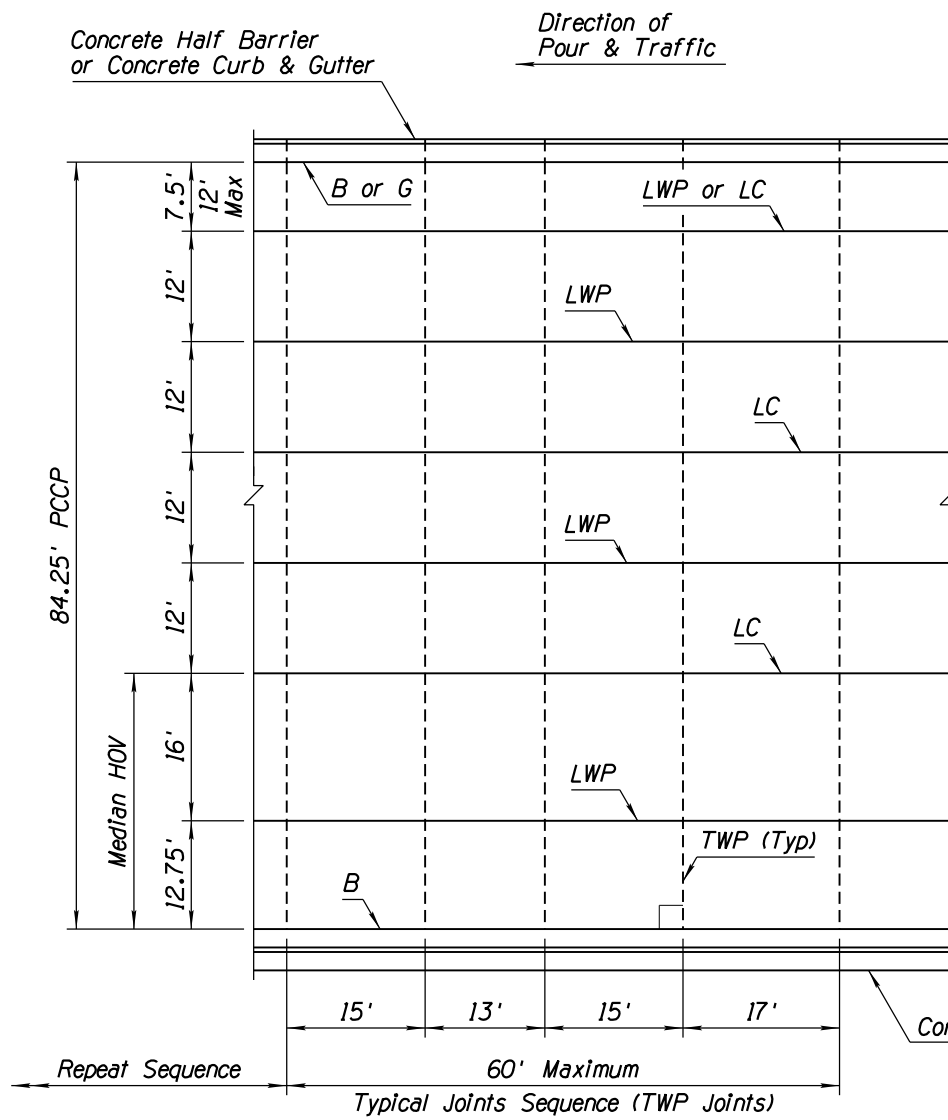
PLAN
67.5' PCCP

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

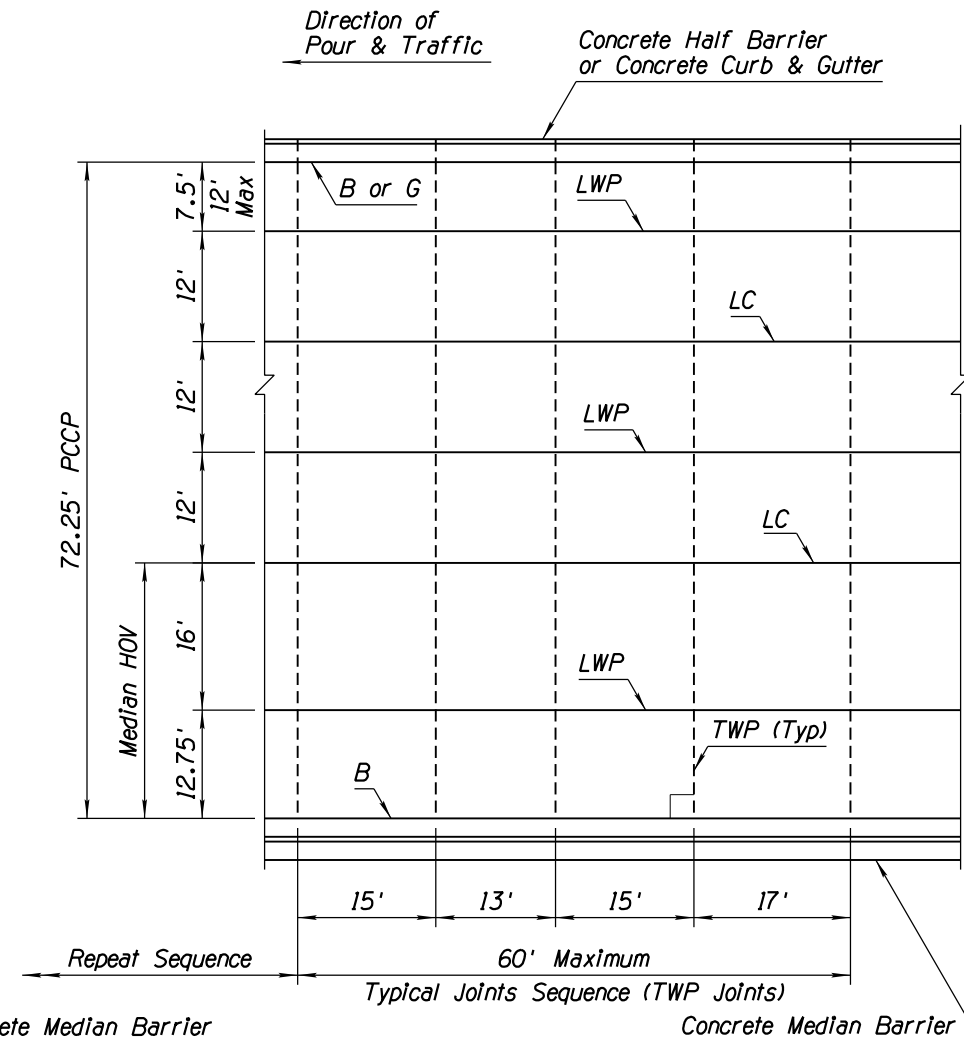
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED GENERAL NOTES 1 & 9	RLF	9/04
2	REVISED TITLE	RLF	9/04
3			
4			



PLAN
96.25' PCCP



PLAN
84.25' PCCP



PLAN
72.25' PCCP

GENERAL NOTES

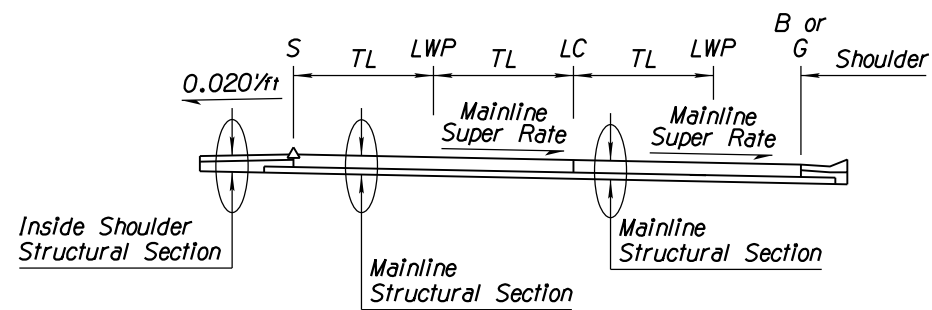
- ① 1. LC and LWP joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
2. Non-skewed PCCP joints shall 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

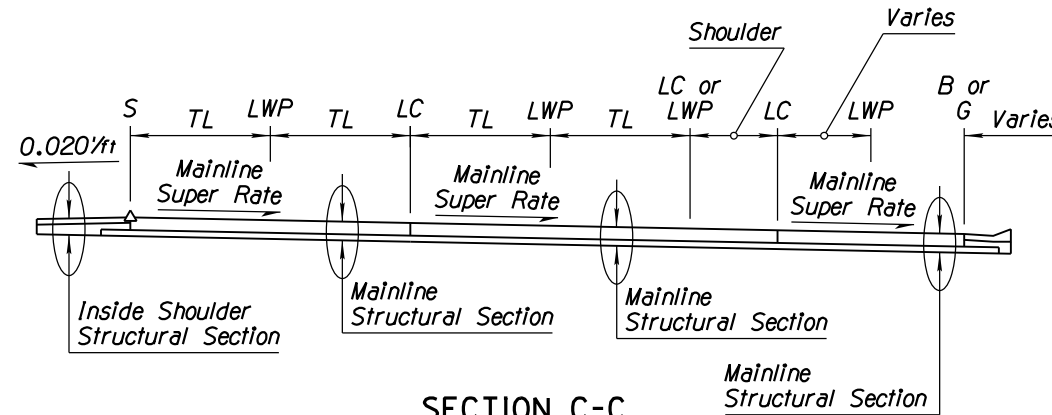
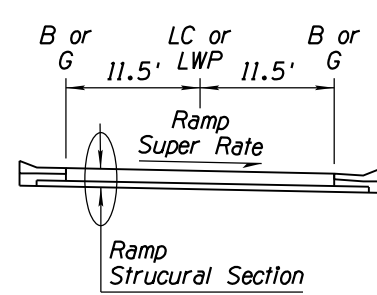
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
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3			
4			

GENERAL NOTES

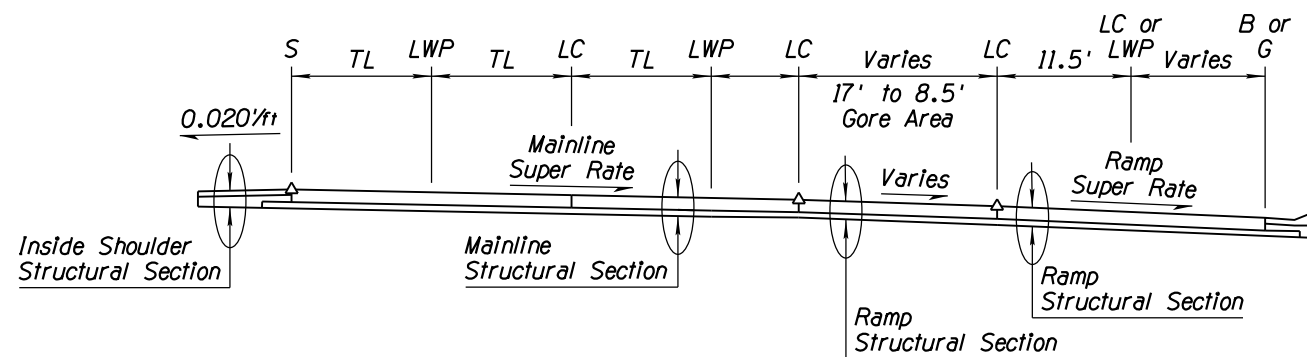
1. All joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
2. See Std Dwg C-07.01 for joint information.
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.



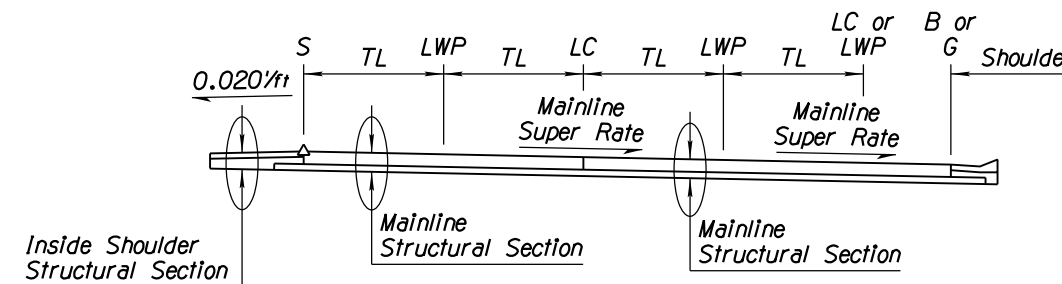
**SECTION A-A
MID-RAMP**



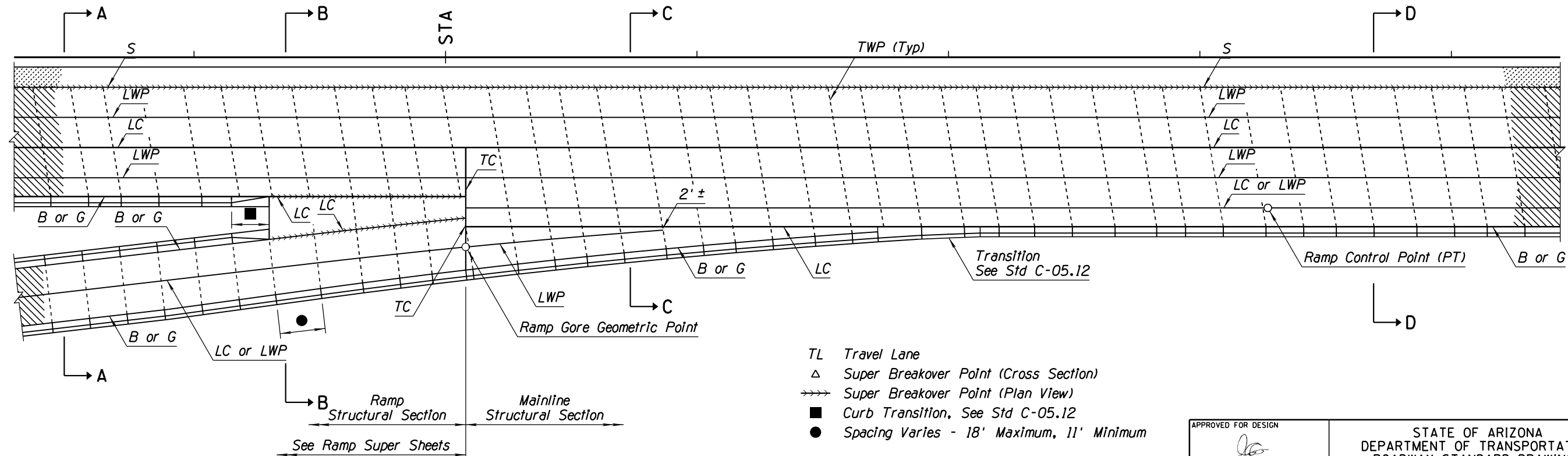
**SECTION C-C
RAMP TAPER**



**SECTION B-B
GORE AREA**



**SECTION D-D
MAINLINE**



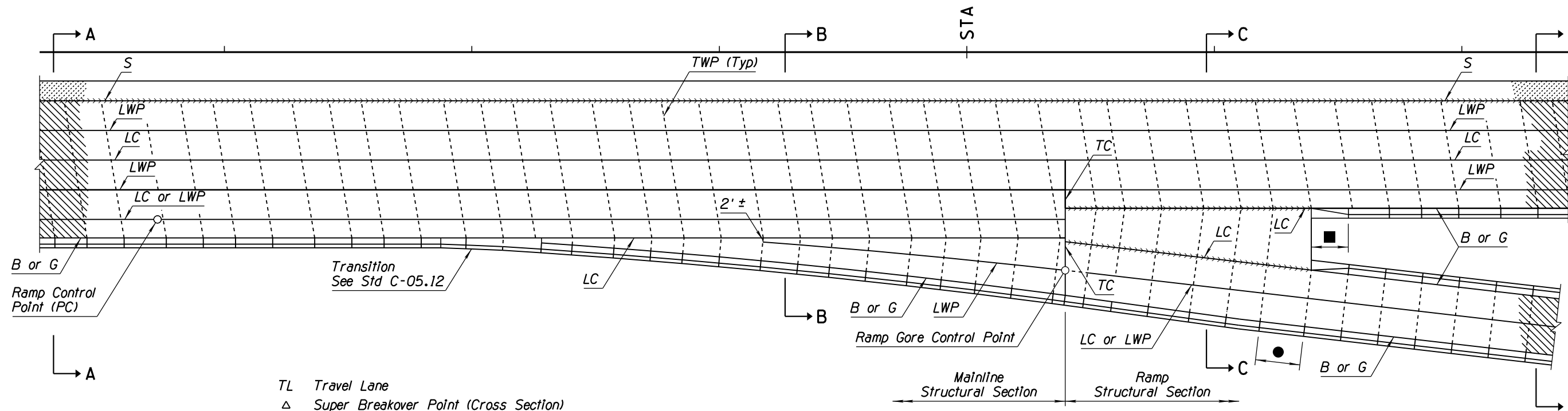
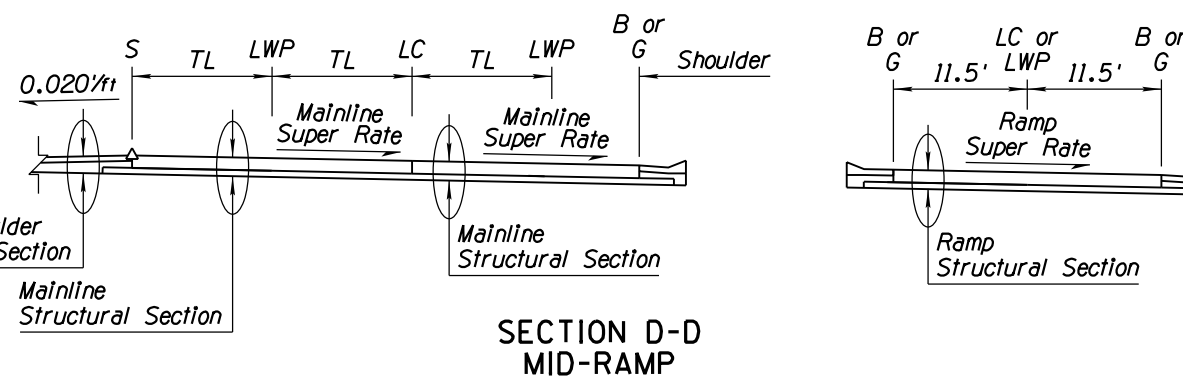
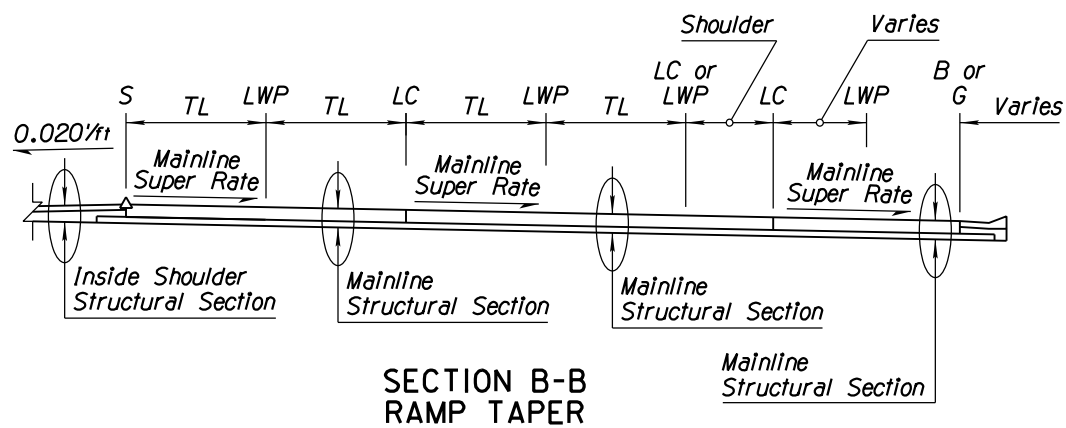
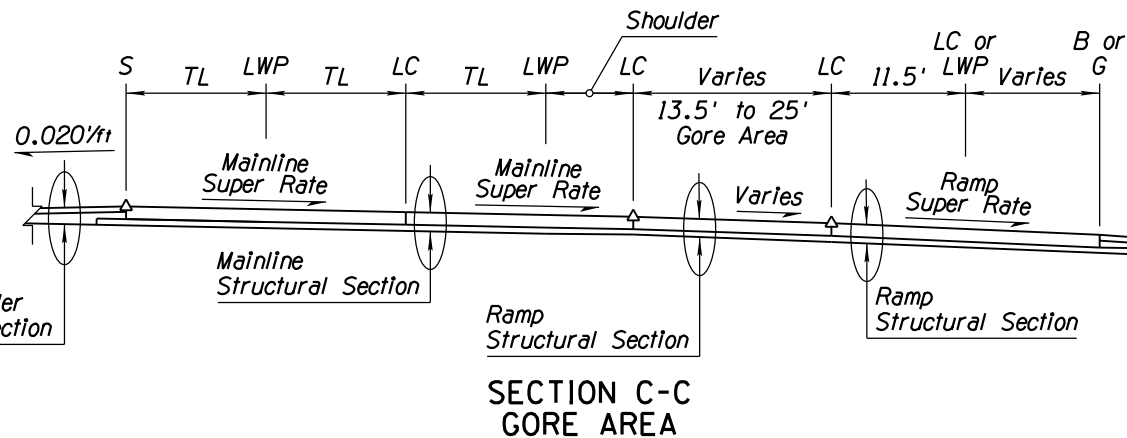
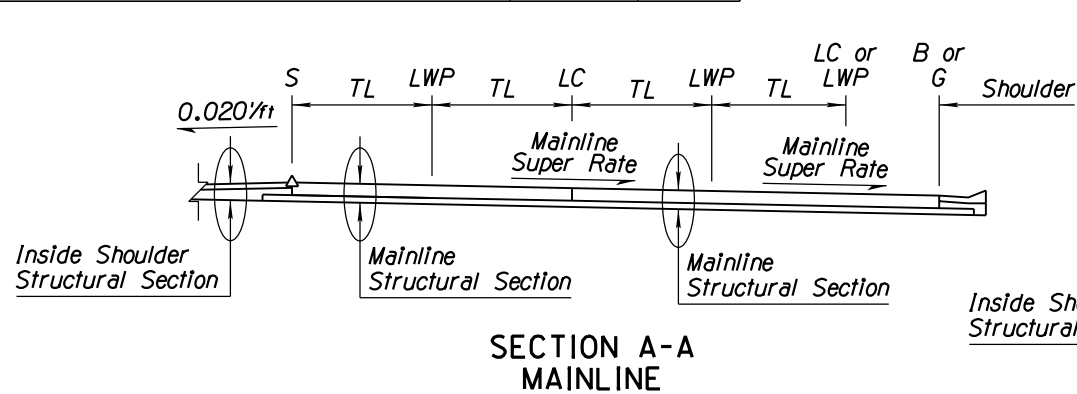
- TL Travel Lane
- △ Super Breakover Point (Cross Section)
- Super Breakover Point (Plan View)
- Curb Transition, See Std C-05.12
- Spacing Varies - 18' Maximum, 11' Minimum

APPROVED FOR DESIGN <i>[Signature]</i>	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION <i>[Signature]</i>	PCCP JOINT LOCATIONS PARALLEL-TYPE ENTRANCE RAMP WITH AUXILIARY LANE	DRAWING NO. C-07.04 Sheet 1 of 5

NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	NEW STANDARD DRAWING; CONVERTED FROM DETAIL X7053	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.
- See Std Dwg C-07.01 for joint information.
- See plans for ramp dimensions.
- For ramp joint spacing sequence, see Sheet 4 of 5.
- LC and LWP joints shall be located on the edge of traffic lanes unless otherwise shown on the project plans.



- 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

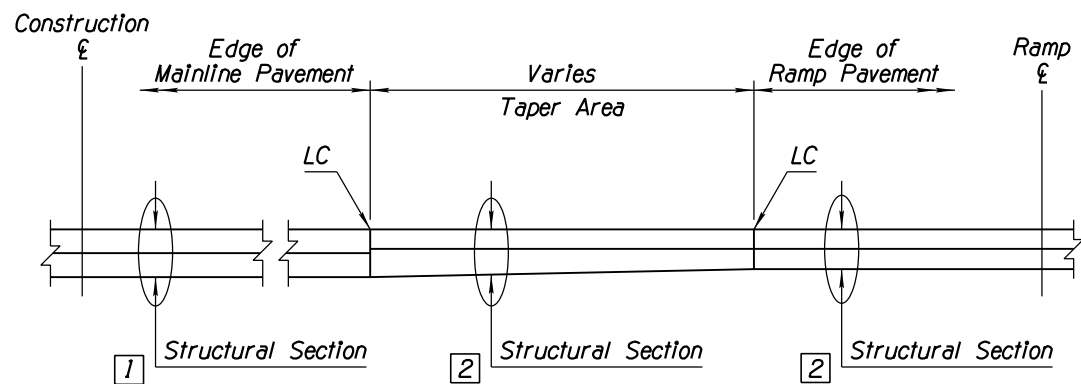
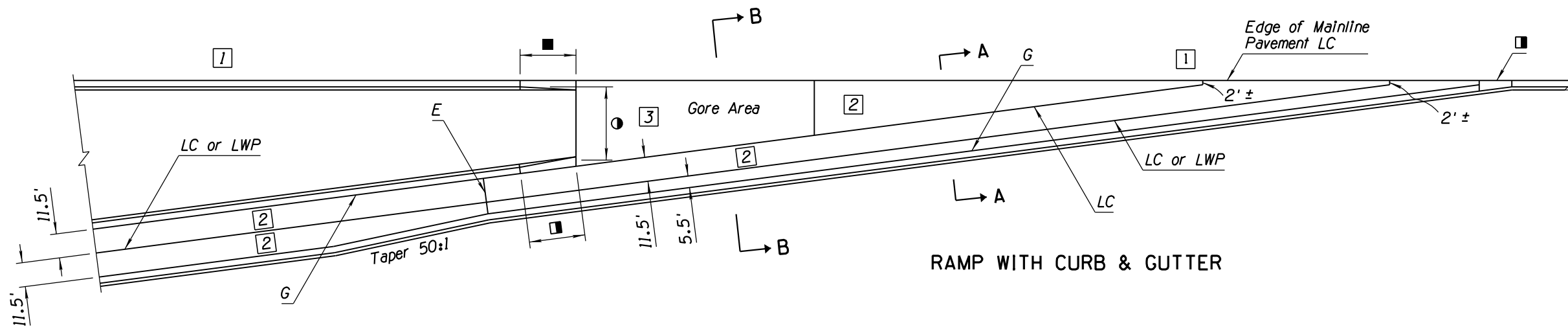
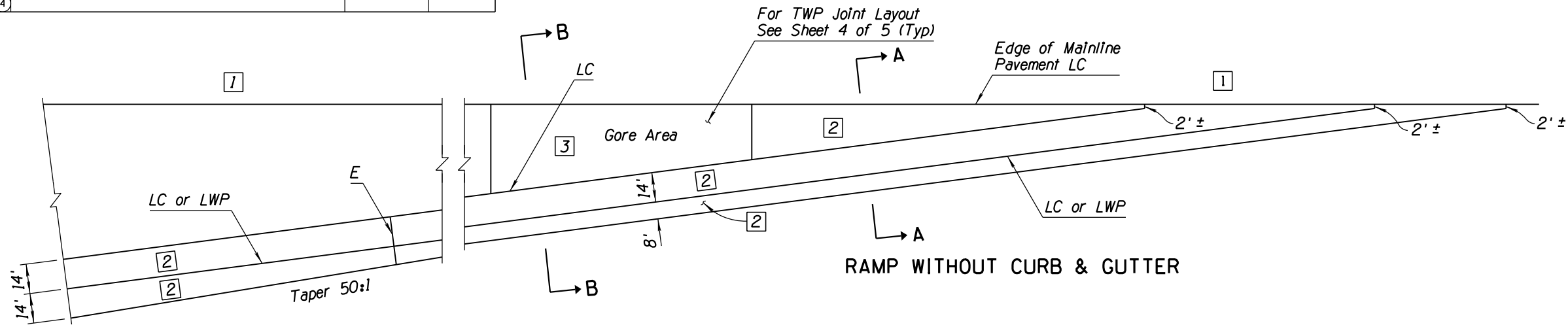
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS PARALLEL-TYPE EXIT RAMP WITH AUXILIARY LANE	DRAWING NO. C-07.04 Sheet 2 of 5

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
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3			
4			

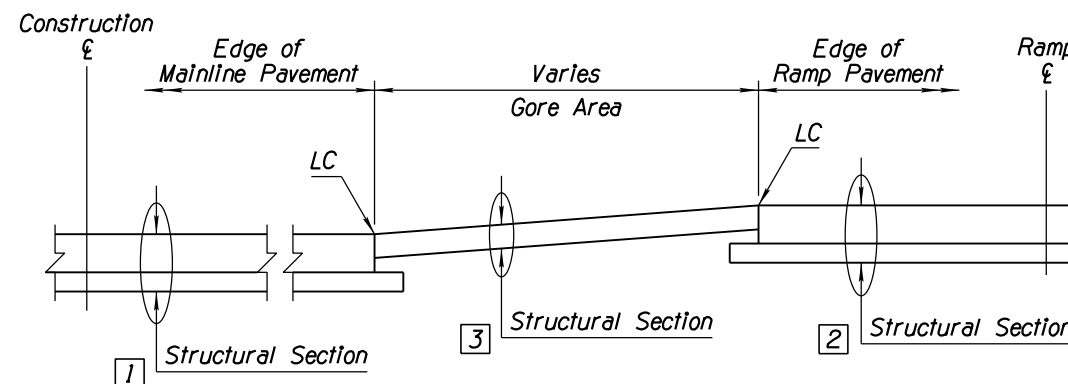
GENERAL NOTES

- 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.
 - For ramp joint spacing sequence, see Sheet 4 of 5.
 - 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



SECTION A-A
RAMP TAPER



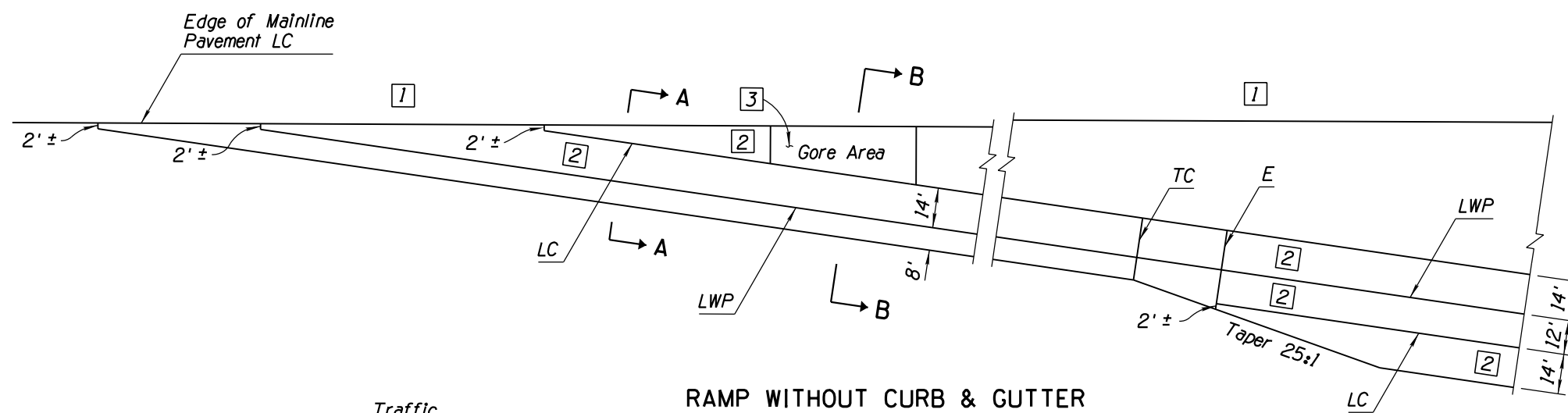
SECTION B-B
GORE AREA

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

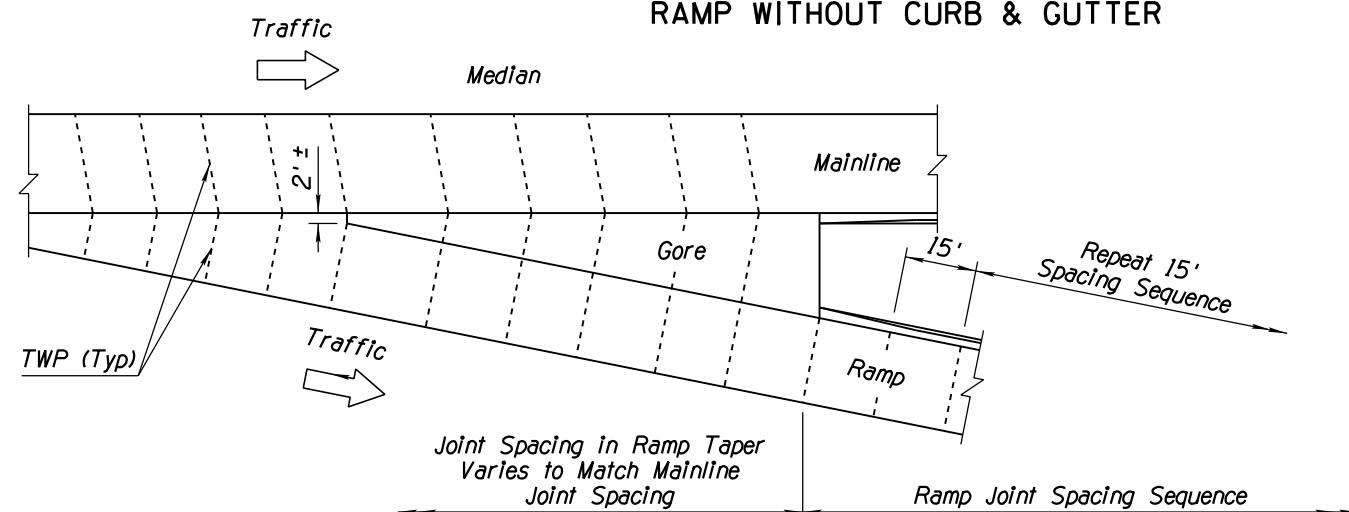
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GENERAL NOTES

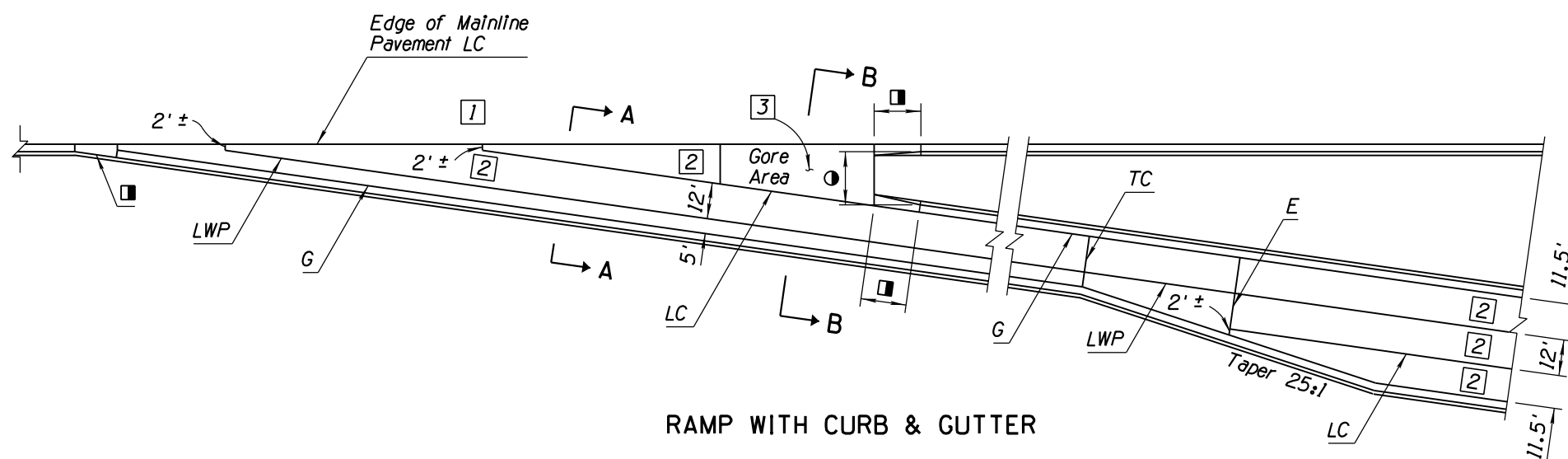
- All joint locations shown are typical. The actual paving pour plan with joint locations shall be based upon the project paving plan submitted by the contractor and approved by the Engineer in accordance with Subsection 401-3.01 of the Standard Specifications.
- Dimensions with a tolerance may be adjusted 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
- Mainline Structural Section See Plans
- Ramp Structural Section See Plans
- Gore Structural Section See Plans



RAMP WITHOUT CURB & GUTTER



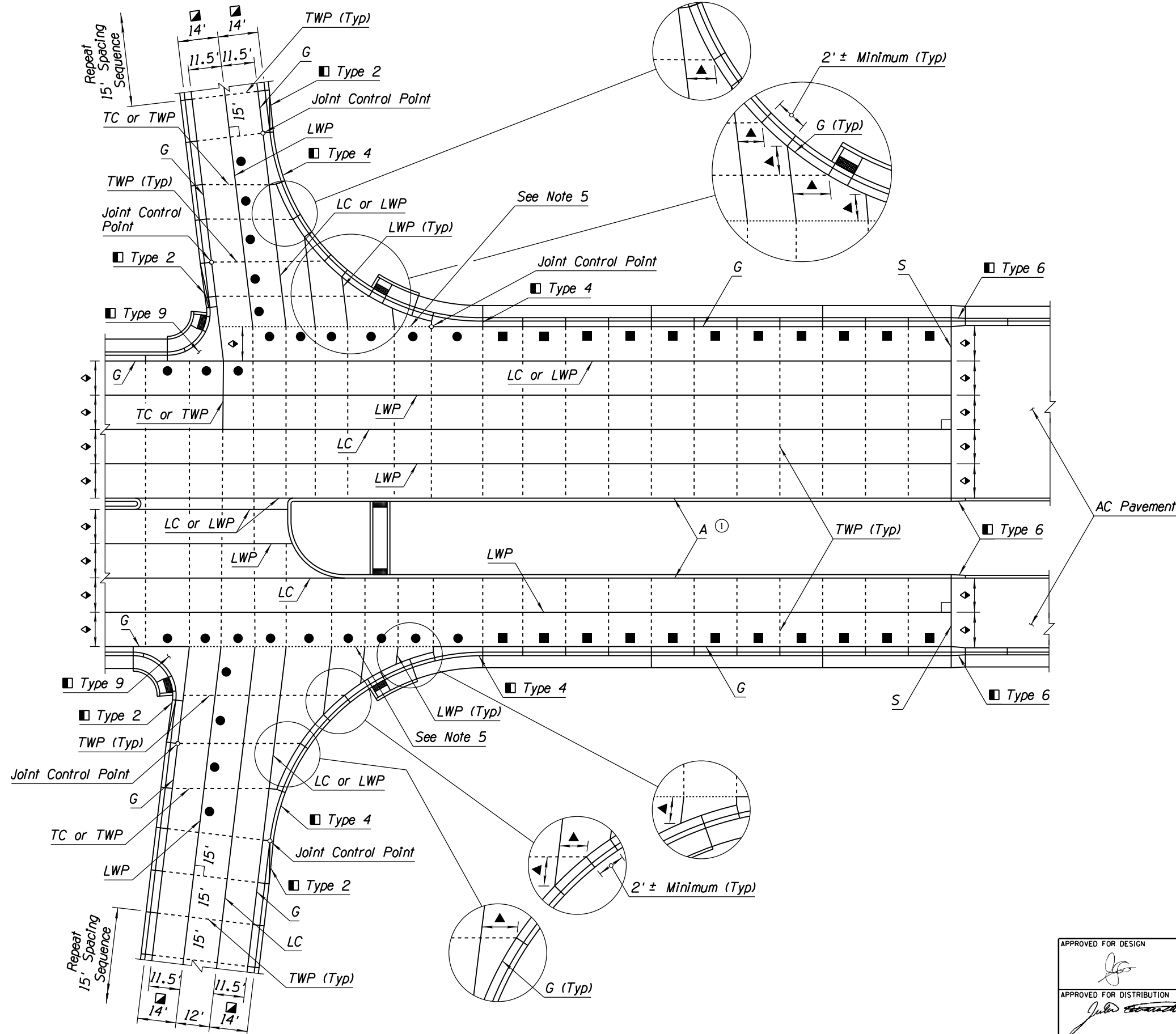
TYPICAL TRANSVERSE WEAKENED-PLANE JOINT LAYOUT AT GORE AREAS
Exit Ramp Shown
Entrance Ramp Similar



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			



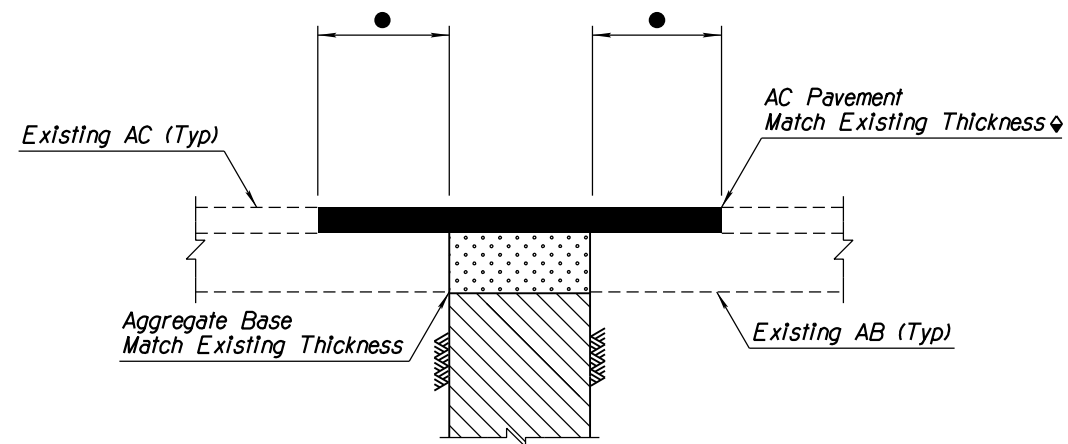
GENERAL NOTES

- 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

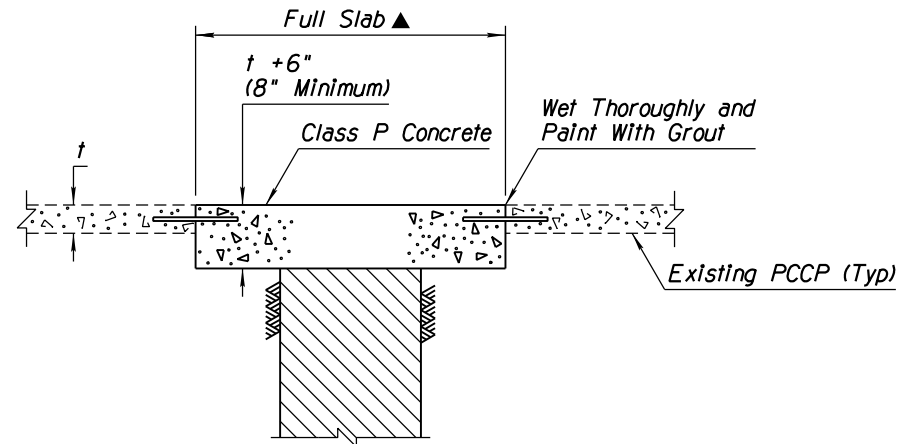
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PCCP JOINT LOCATIONS CROSSROAD AND RAMP TERMINI	DRAWING NO. C-07.04 Sheet 5 of 5

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

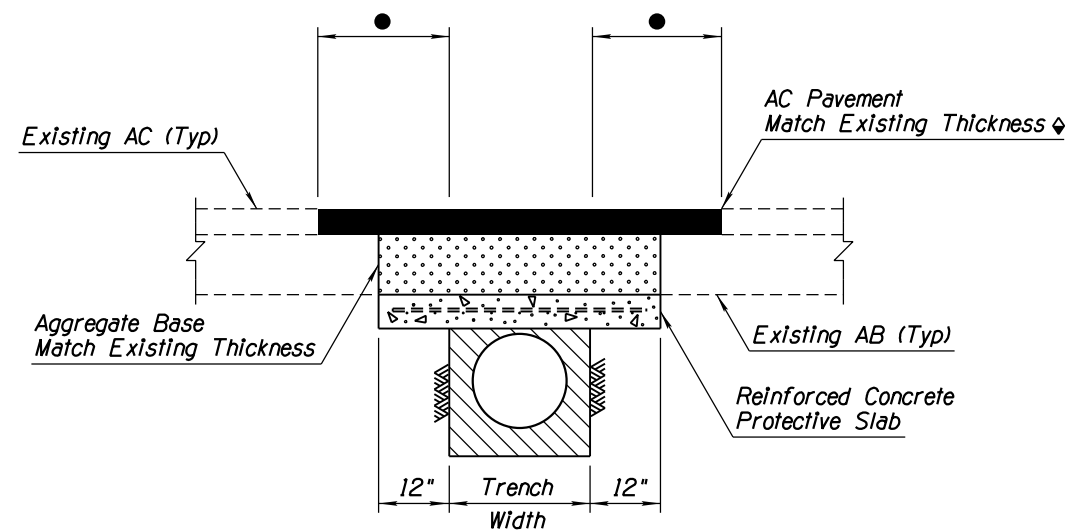
PRIOR DISTRIBUTION DATE 05/12



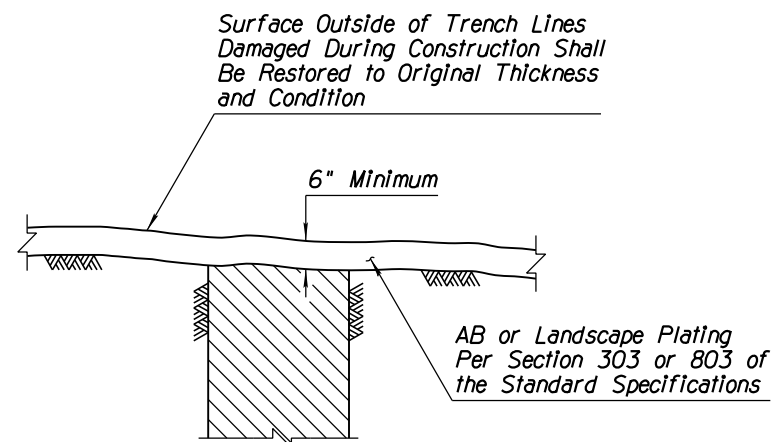
AC PAVEMENT



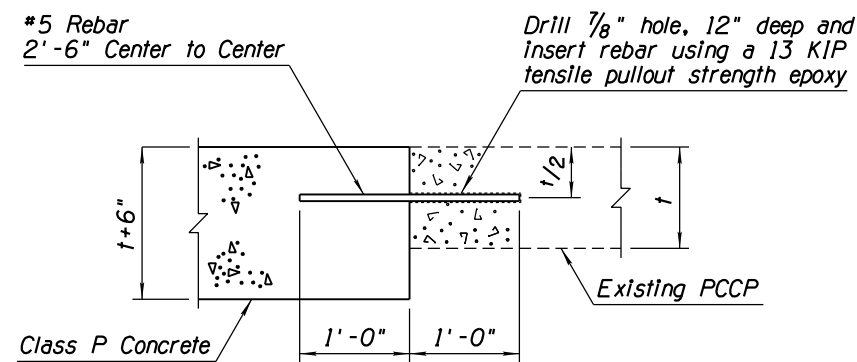
PCCP PAVEMENT



SHALLOW COVER ■



PLATED SURFACE



DOWEL DETAIL

GENERAL NOTES

1. Backfill shall be in accordance with Section 501 bedding and pipe backfill requirements of the Standard Specifications.
2. Aggregate Base shall be in accordance with Section 303 requirements of the Standard Specifications.
3. Asphalt concrete shall be in accordance with Section 409 requirements of the Standard Specifications.
4. Portland Cement Concrete Pavement shall be in accordance with Section 401 requirements of the Standard Specifications. Match existing surface texture and grade.
5. See Std Dwg C-13.15 for pipe culvert installation.

● Replace 2 ft of AC on each side of the excavation along centerline unless otherwise directed by the Engineer. Replace full lane width of all disturbed lanes perpendicular to centerline.

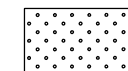
▲ All disturbed slabs shall be replaced in full and doweled into adjacent PCCP on each side. See Dowel Detail.

■ Use when shown on plans or as directed by the Engineer when minimum cover cannot be attained. See plans for protective slab thickness and reinforcement requirements.

◇ A thicker pavement section may be required if shown on plans or directed by the Engineer.



BACKFILL



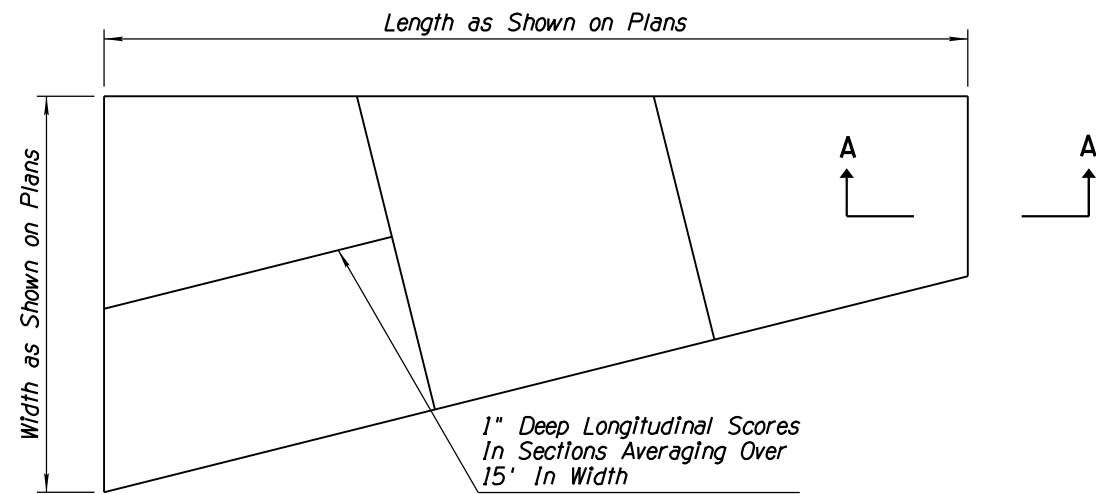
AGGREGATE BASE

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER	TRENCH BACKFILL AND PAVEMENT REPLACEMENT	DRAWING NO. C-07.06
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		08/21 DATE

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

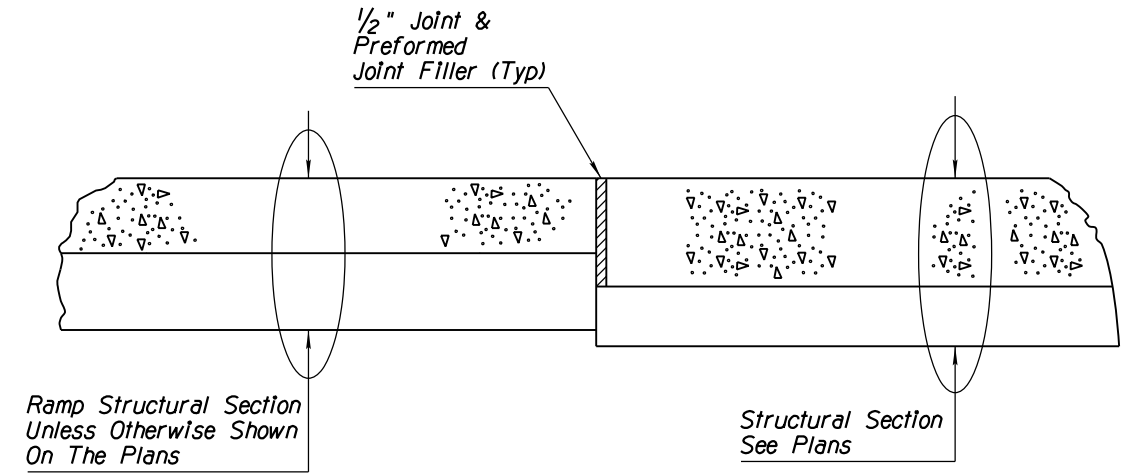
GENERAL NOTES

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.



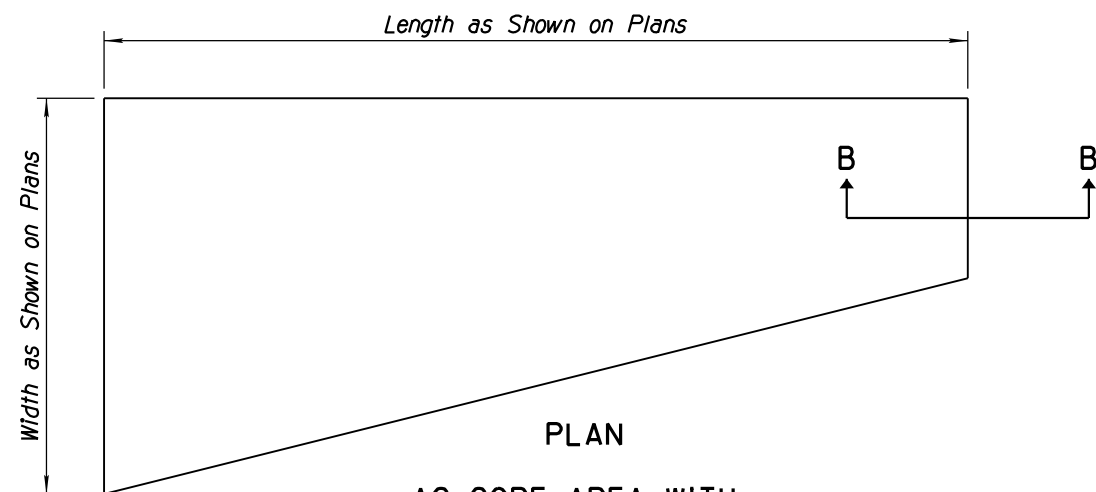
PLAN

**CONCRETE GORE AREA
WITH ABUTTING CONCRETE PAVEMENT**



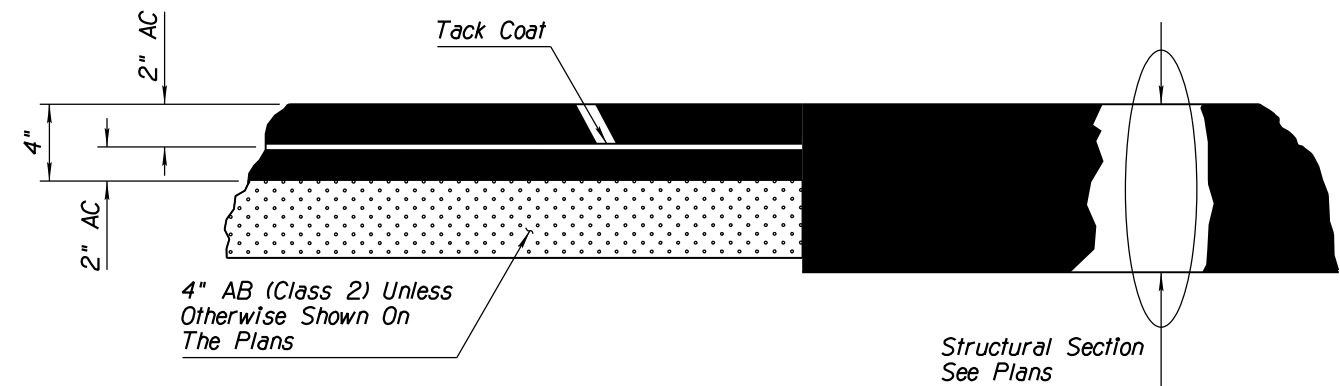
SECTION A-A

①


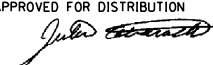


PLAN

**AC GORE AREA WITH
ABUTTING AC PAVEMENT**

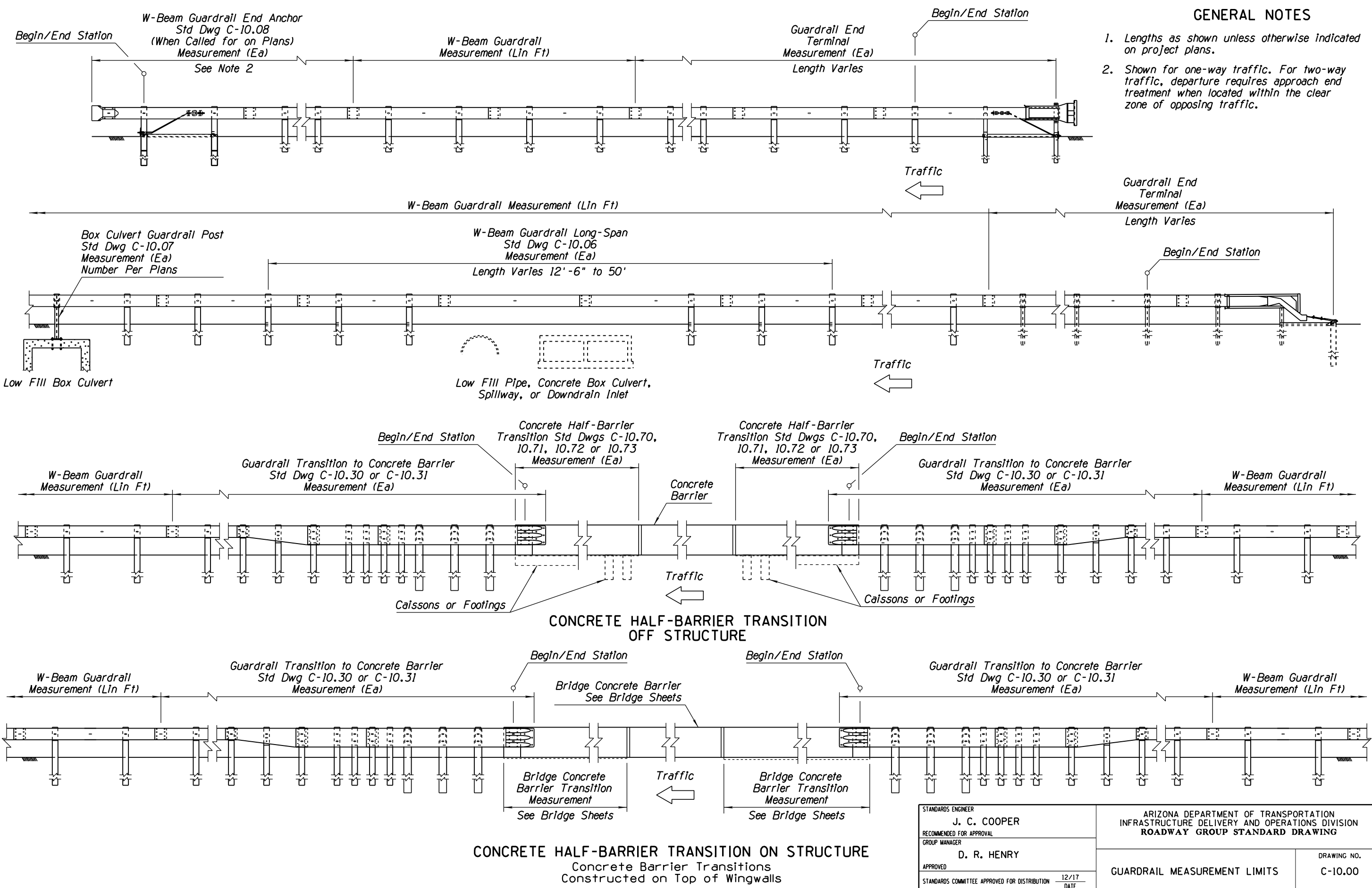


SECTION B-B

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

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

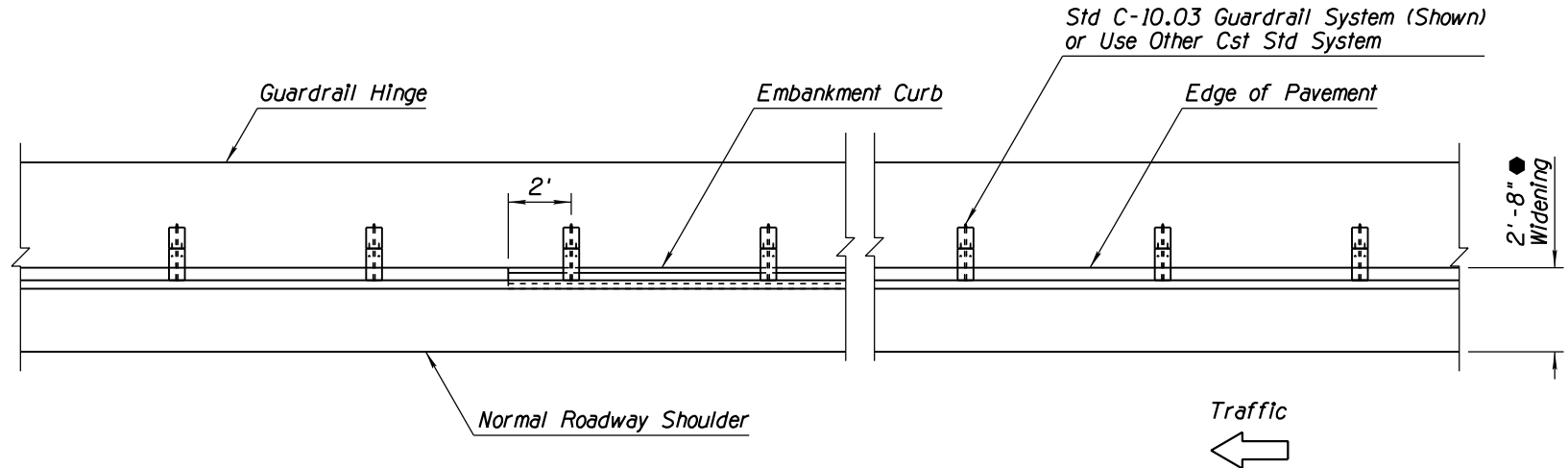
05/12
 PRIOR DISTRIBUTION DATE



STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	GUARDRAIL MEASUREMENT LIMITS	DRAWING NO. C-10.00
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	

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

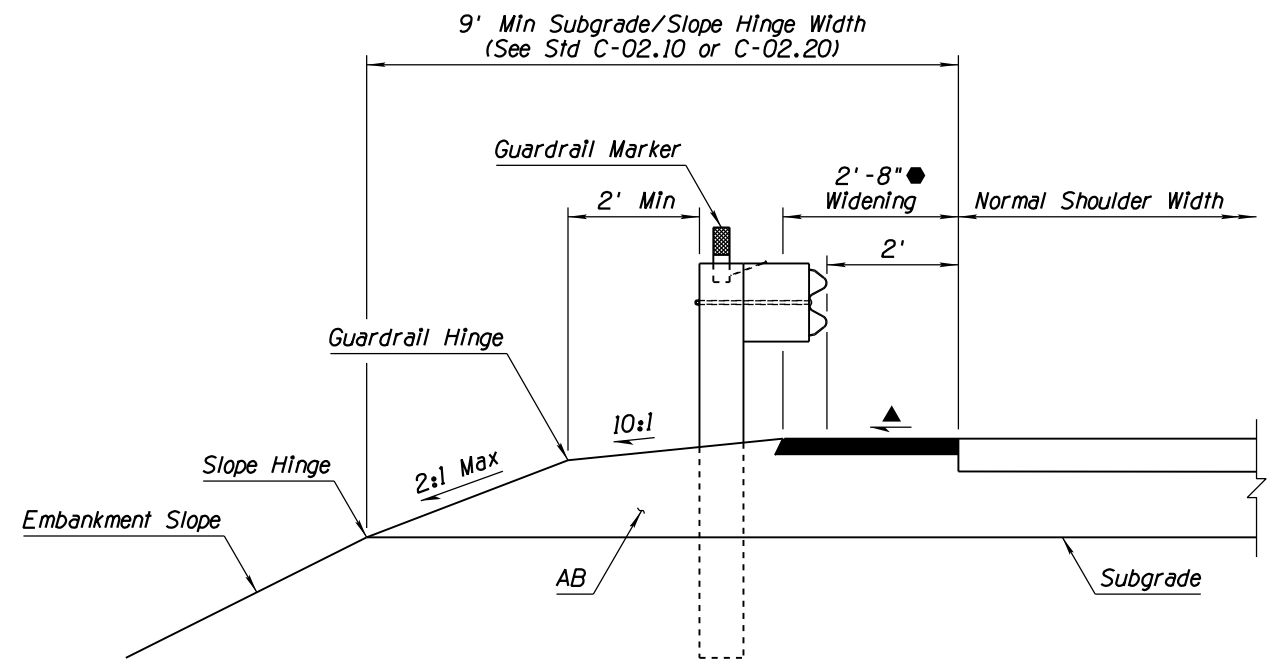
PRIOR DISTRIBUTION DATE 05/12



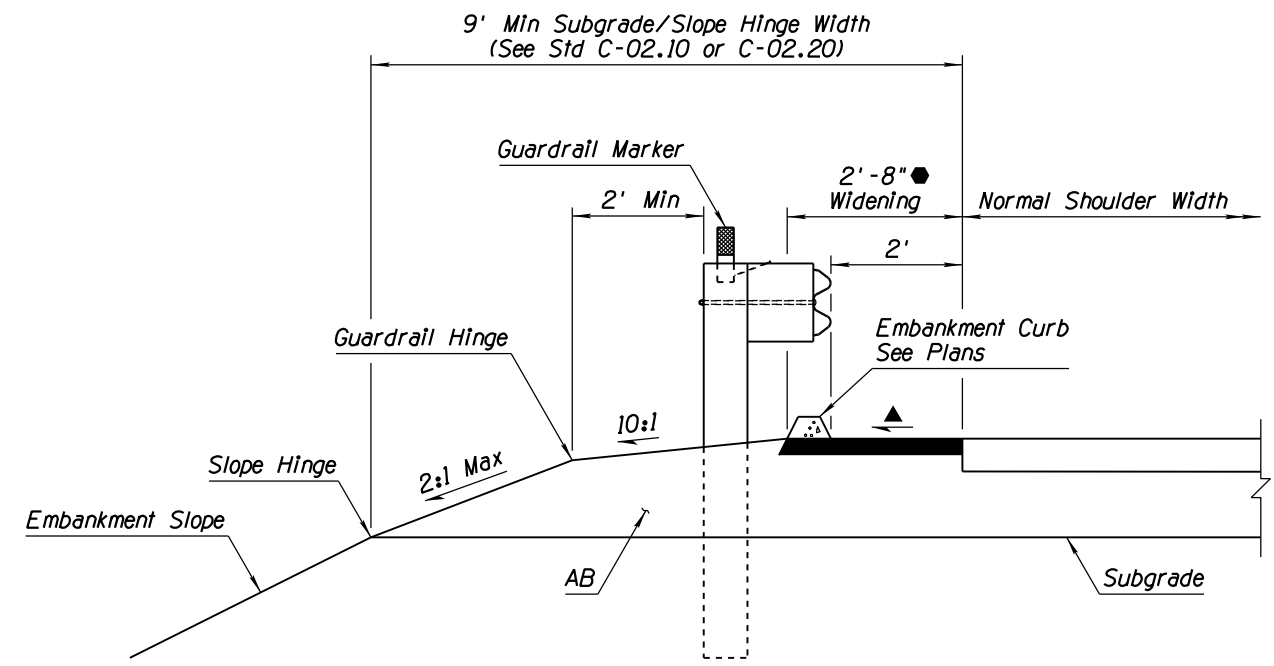
PLAN

GENERAL NOTES

1. Guardrail shall extend beyond the limits of embankment curb.
 2. See Std C-10.00 for measurement limits.
 3. See Std Specs 703, 905, and 1012-3 for guardrail marker materials, reflective sheeting, and spacing requirements.
 4. See Std C-10.03 or C-10.04 for guardrail system details.
 5. Construct widening adjacent to AC pavement with 3" thick AC. Construct widening adjacent to PCCP with 6" thick PCCP.
- Widen 2'-8" unless otherwise noted on plans.
 - ▲ Match Roadway Cross Slope.



SECTION

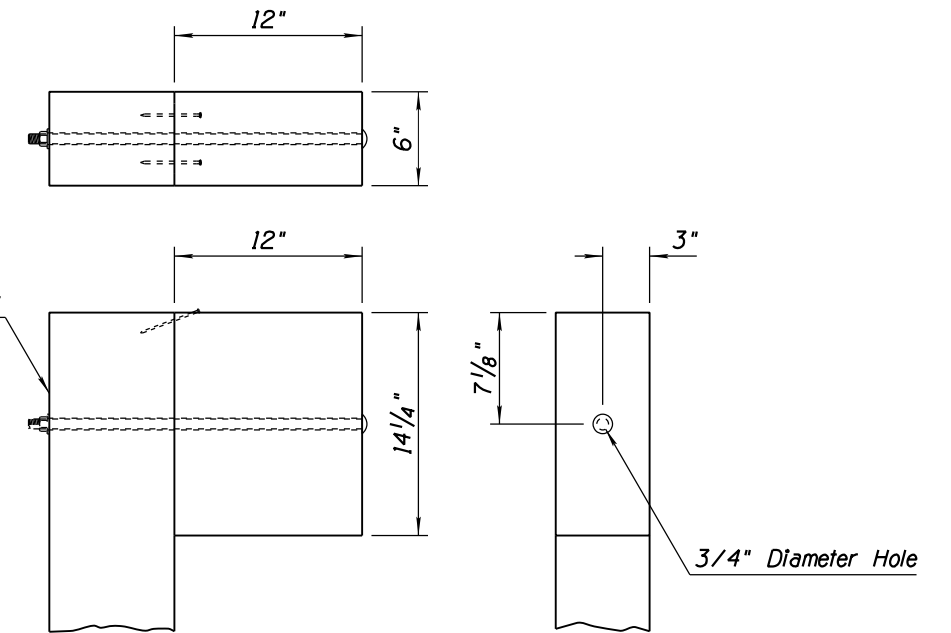
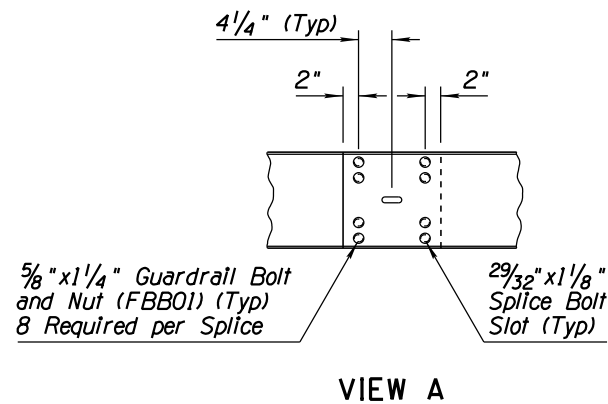
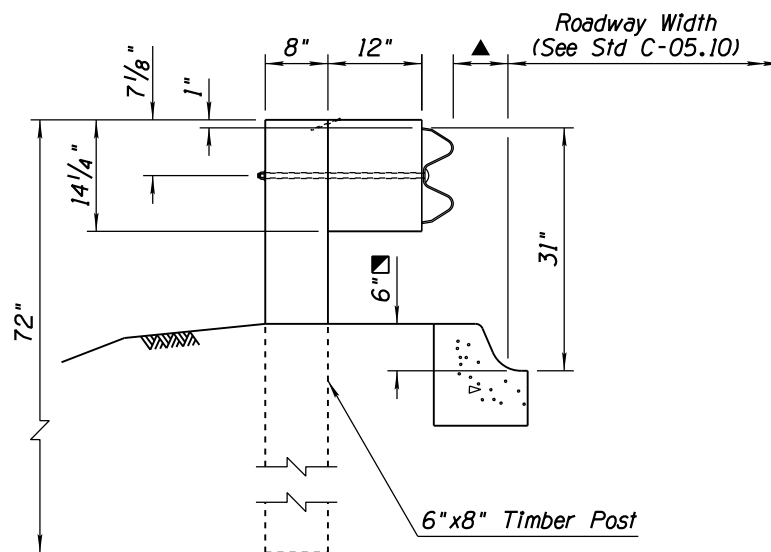
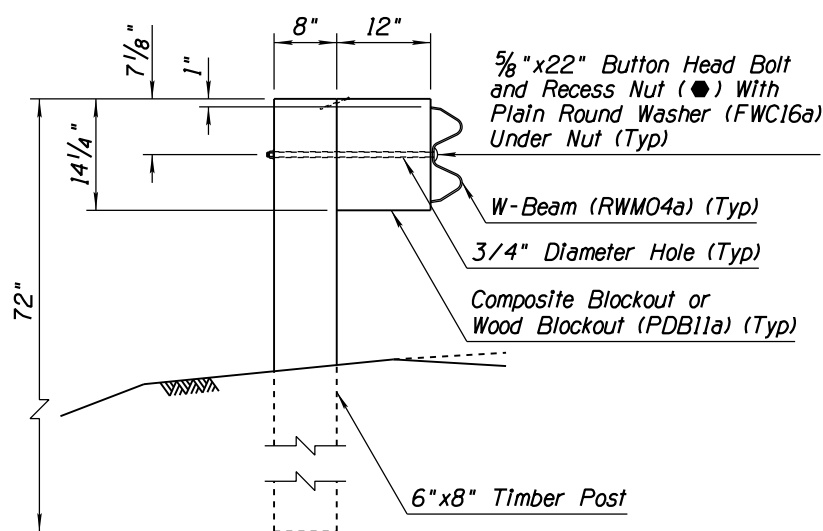
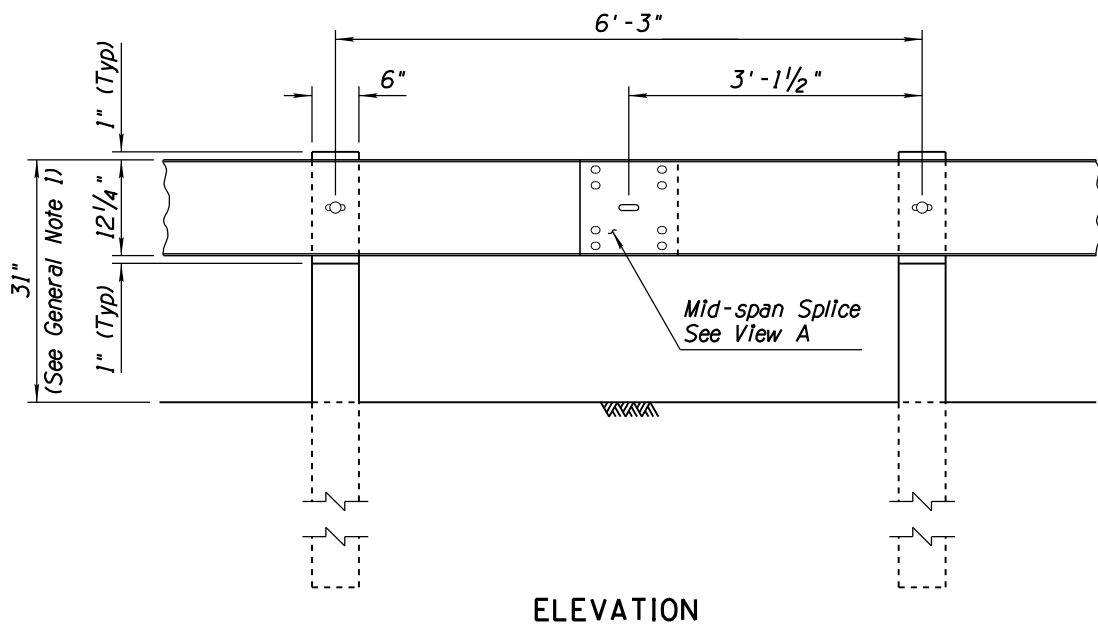
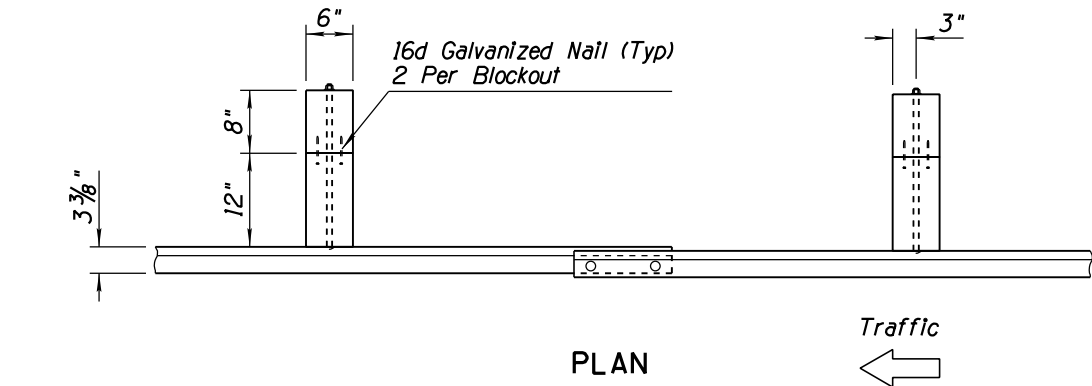


SECTION WITH EMBANKMENT CURB

STANDARDS ENGINEER J. C. COOPER RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	DRAWING NO. C-10.01
DATE 12/17	GUARDRAIL INSTALLATION	

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

PRIOR DISTRIBUTION DATE 05/12



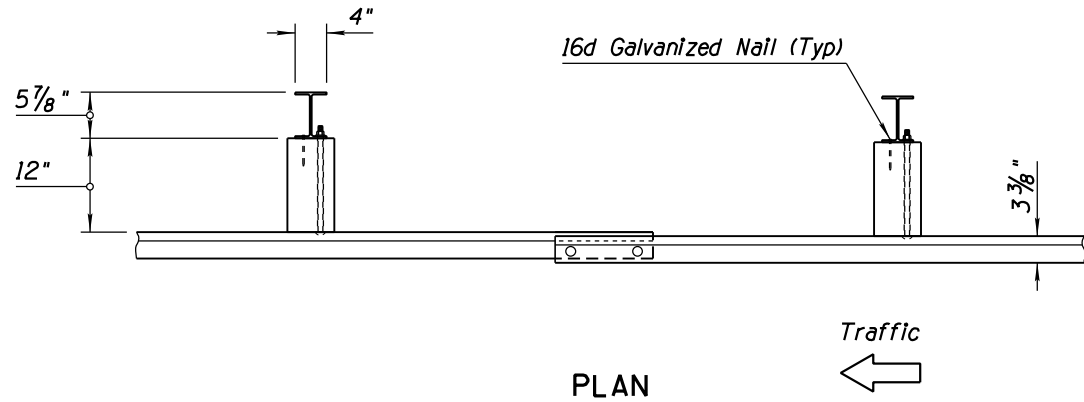
GENERAL NOTES

1. The control height for guardrail system is 31" to the top of rail, measured at the face of rail from the normal finished shoulder elevation.
 2. Guardrail shall be lapped in the direction of adjacent traffic.
 3. Wood blockout may be one 12" deep blockout, or a combination of one 8" deep blockout and one 4" deep blockout (PDB11b). If two blockouts are used, they must be nailed together by two 16d galvanized nails.
 4. Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.
 5. Maintain a distance of 59" between w-beam face and rigid objects.
- ☑ Use 6" maximum curb height.
 - ▲ Default value is 0". May vary up to 7" if shown on plans or directed by the Engineer.
 - Shall meet the same material requirements as FBB07 with the noted length.

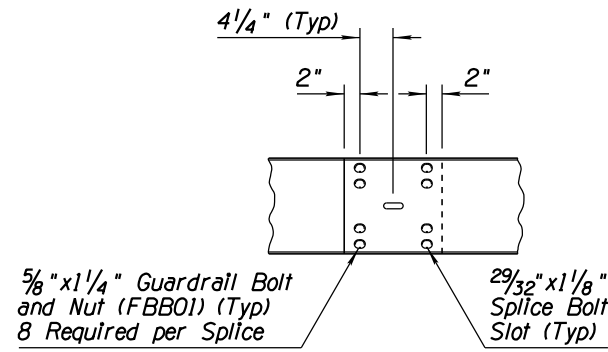
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	W-BEAM GUARDRAIL, MGS BLOCKED-OUT TIMBER POST	DRAWING NO. C-10.03
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 12/17

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

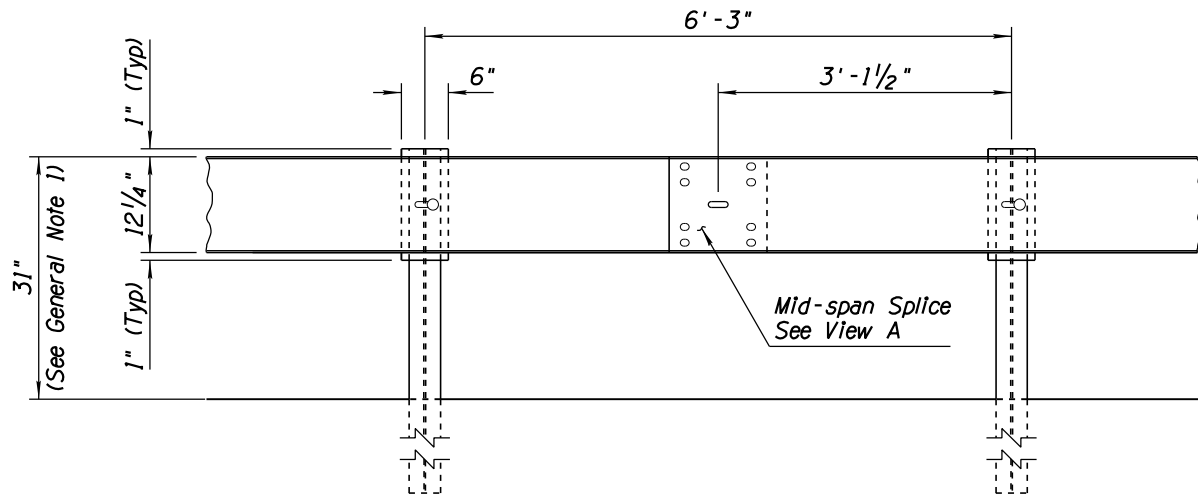
PRIOR DISTRIBUTION DATE 05/12



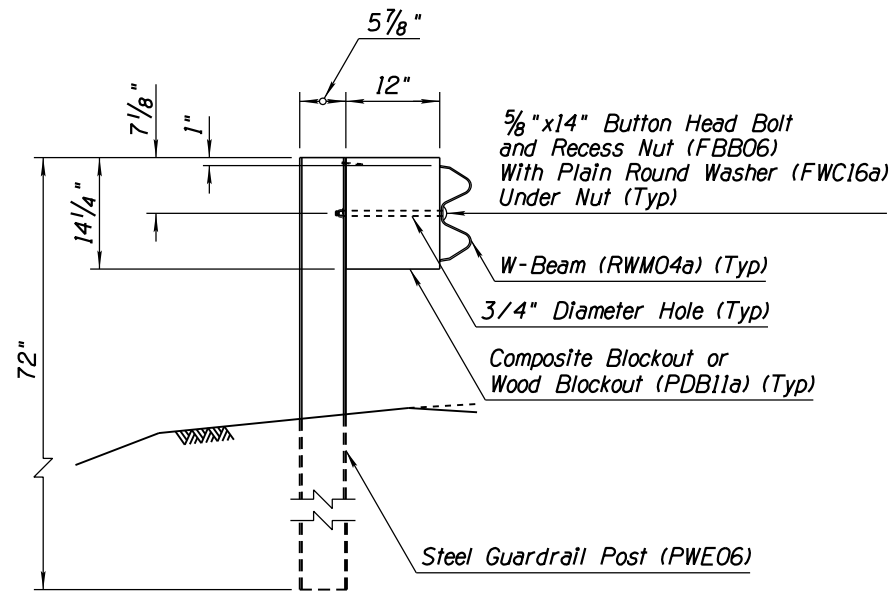
PLAN



VIEW A

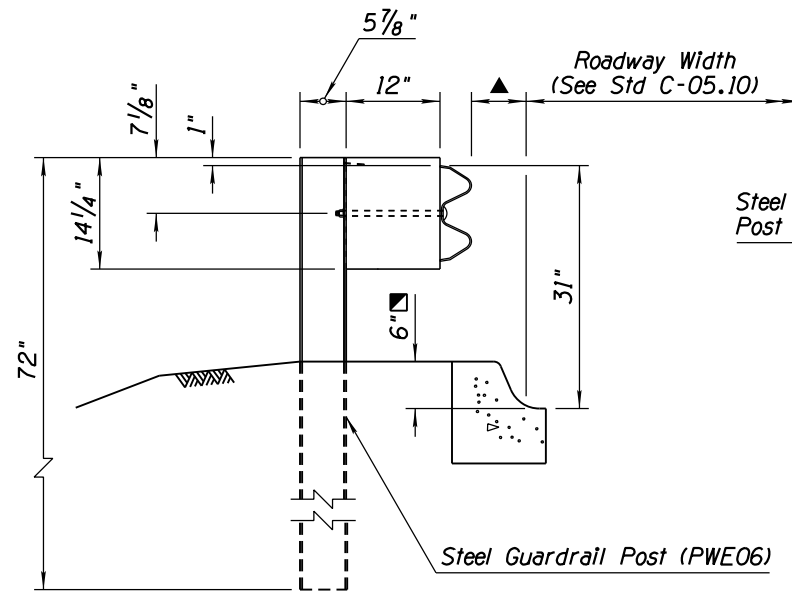


ELEVATION



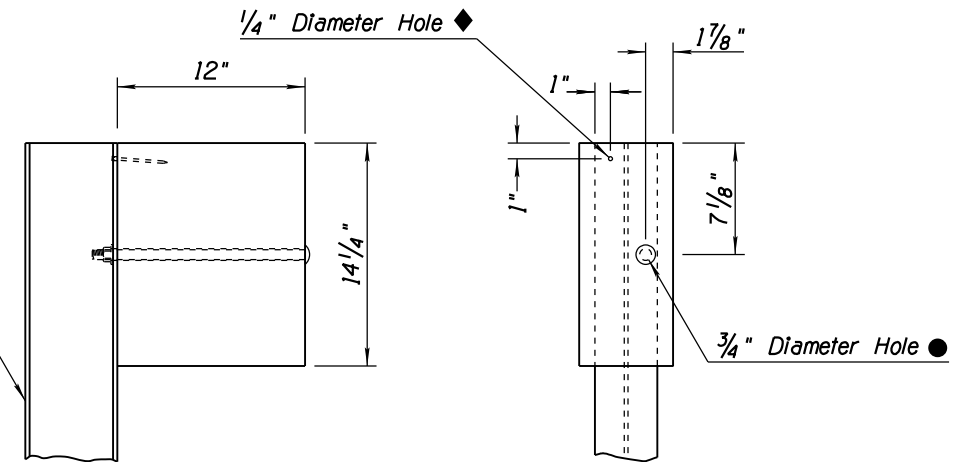
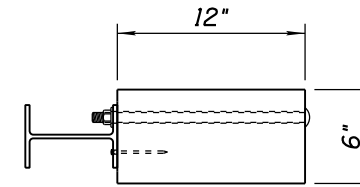
SECTION

SHOWN WITHOUT CURB



SECTION

SHOWN WITH CURB



BLOCKOUT DETAIL

GENERAL NOTES

1. The control height for guardrail system is 31" to the top of rail, measured at the face of rail from the normal finished shoulder elevation.
2. Guardrail shall be lapped in the direction of adjacent traffic.
3. Wood blockout may be one 12" deep blockout, or a combination of one 8" deep blockout and one 4" deep blockout (PDB11b). If two blockouts are used, they must be nailed together by two 16d galvanized nails.
4. Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.
5. Maintain a distance of 50" between w-beam face and rigid objects.
 - ▣ Use 6" maximum curb height.
 - ▲ Default value is 0". May vary up to 7" if shown on plans or directed by the Engineer.
 - An additional 3/4" diameter hole may be provided at the same location on the opposite side of web.
 - ◆ The 1/4" diameter hole may be eliminated when composite or routed wood blockouts are installed.

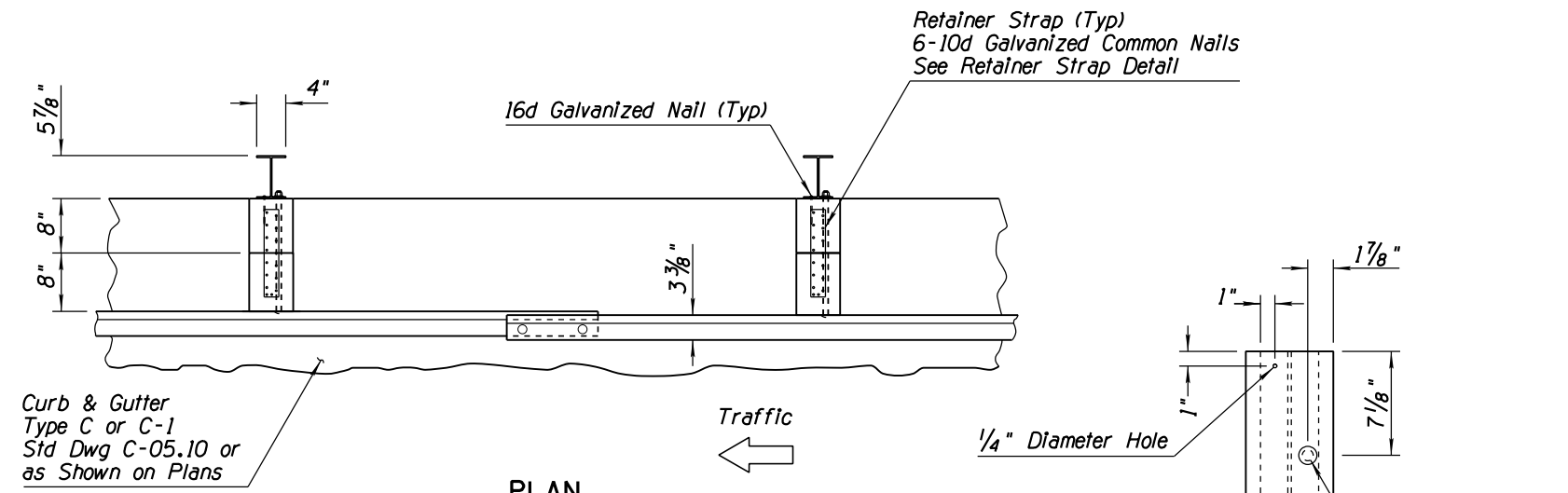
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17

W-BEAM GUARDRAIL, MGS
BLOCKED-OUT STEEL POST

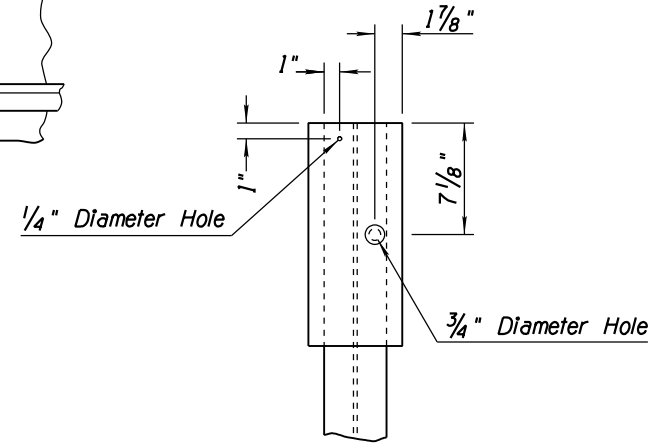
DRAWING NO.
C-10.04

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

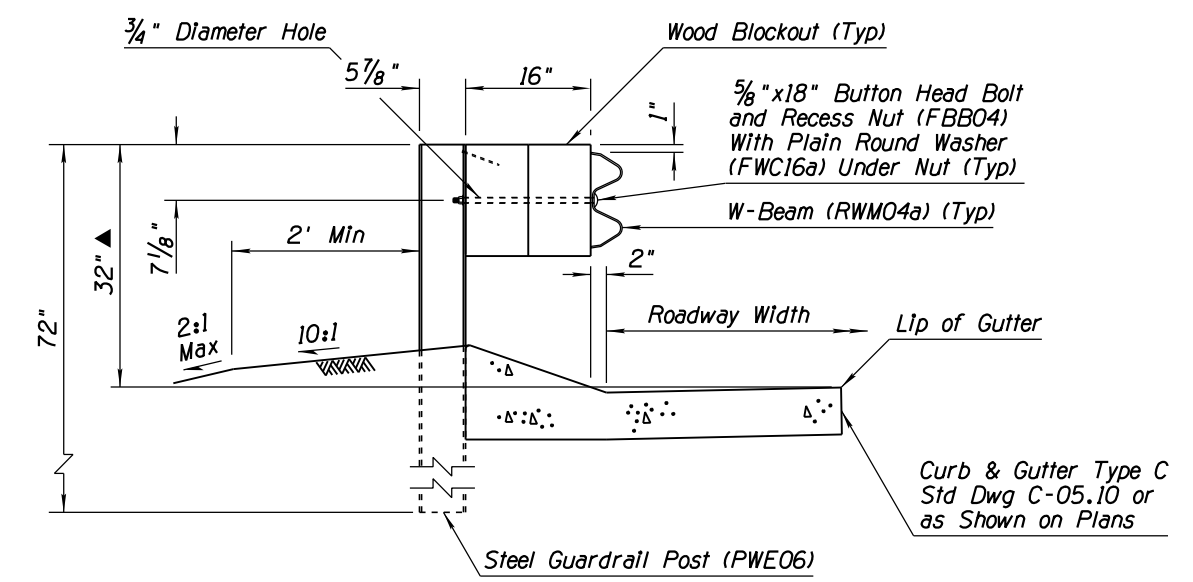
05/12
 PRIOR DISTRIBUTION DATE



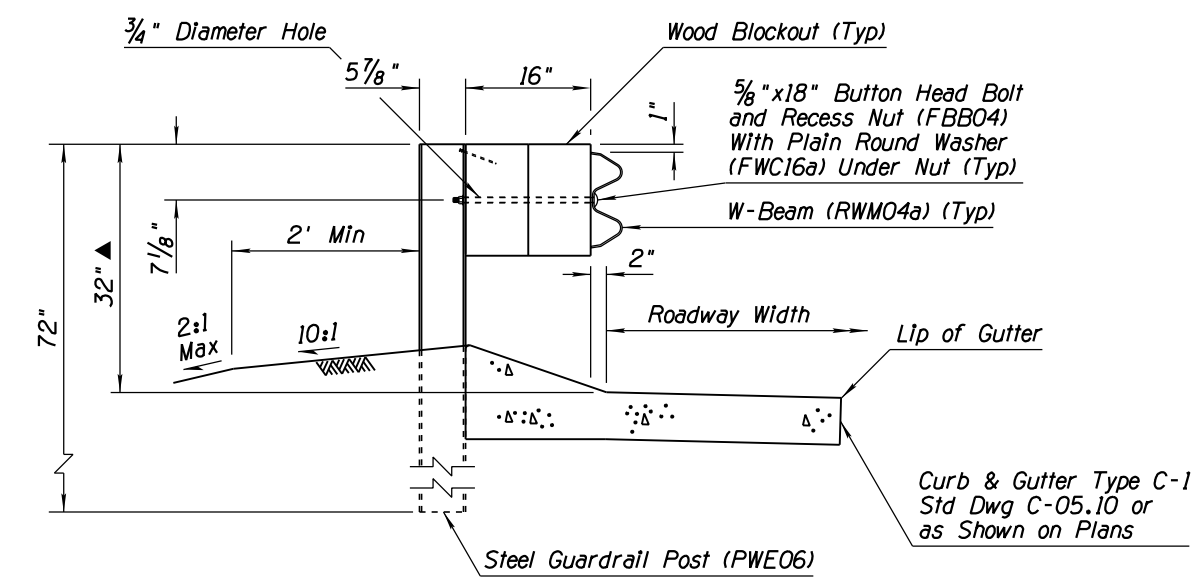
PLAN



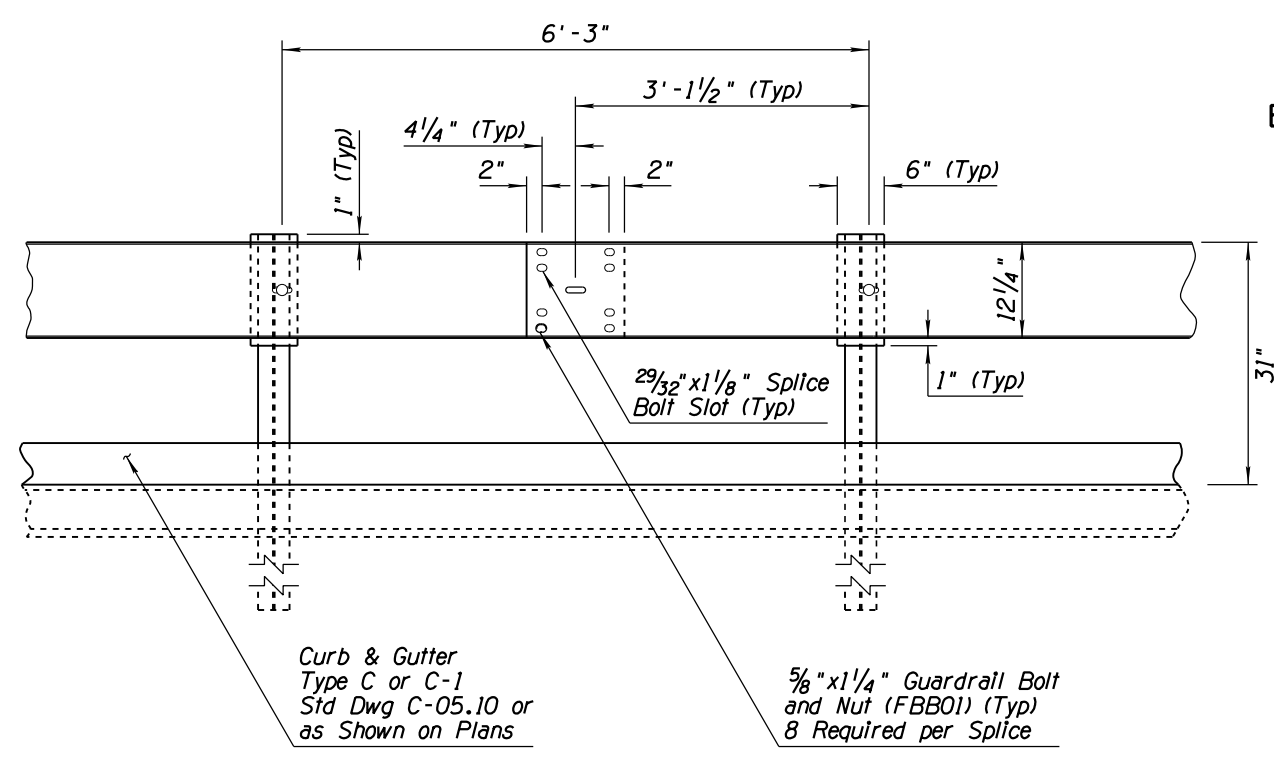
BLOCKOUT DETAIL



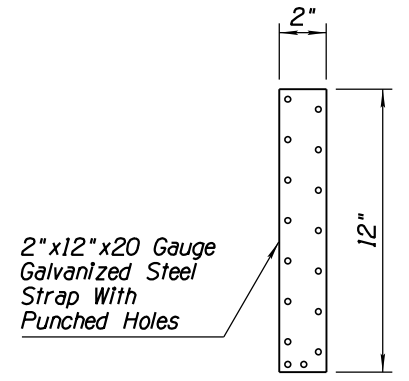
SECTION WITH CURB & GUTTER TYPE C



SECTION WITH CURB & GUTTER TYPE C-1



ELEVATION



RETAINER STRAP DETAIL

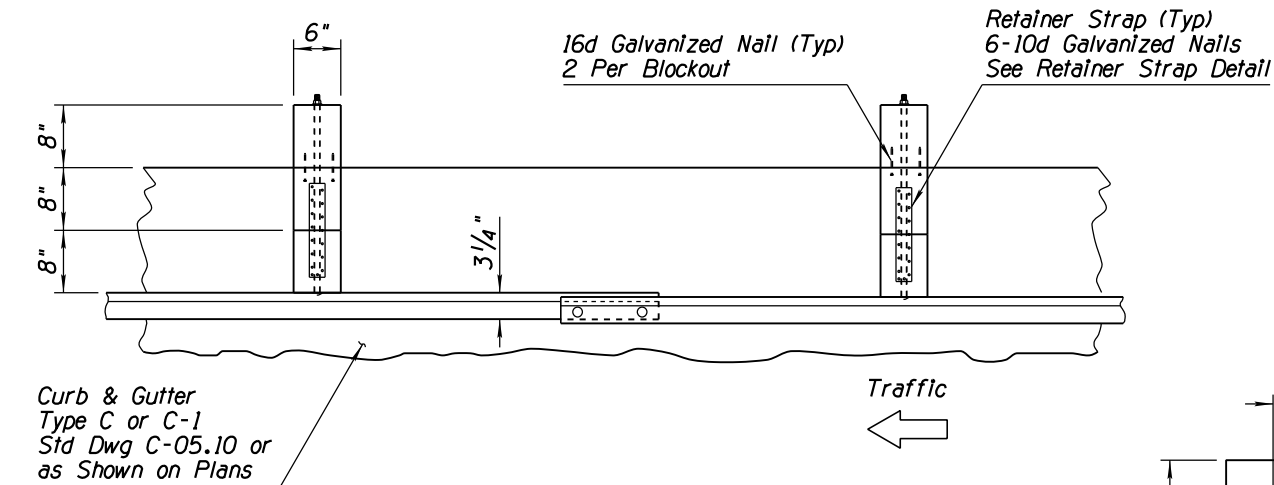
GENERAL NOTES

1. Height of curb shall not exceed 4 inches.
 2. Guardrail shall be lapped in the direction of adjacent traffic.
 3. Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.
 4. Maintain a distance of 50" between w-beam face and rigid objects.
- ▲ For Type C curb and gutter, 32" dimension is at lip of gutter.
 For Type C-1 curb and gutter, 32" dimension is at flowline.

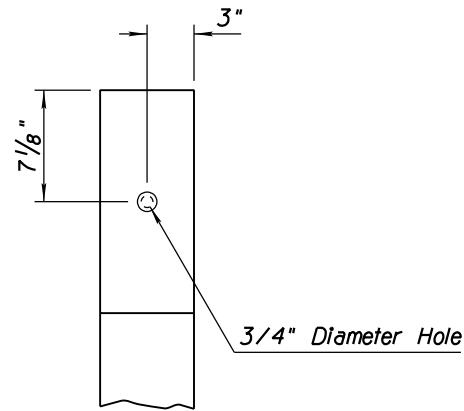
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	W-BEAM GUARDRAIL (MODIFIED) WITH FREEWAY CURB AND GUTTER	DRAWING NO. C-10.05
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 12/17

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

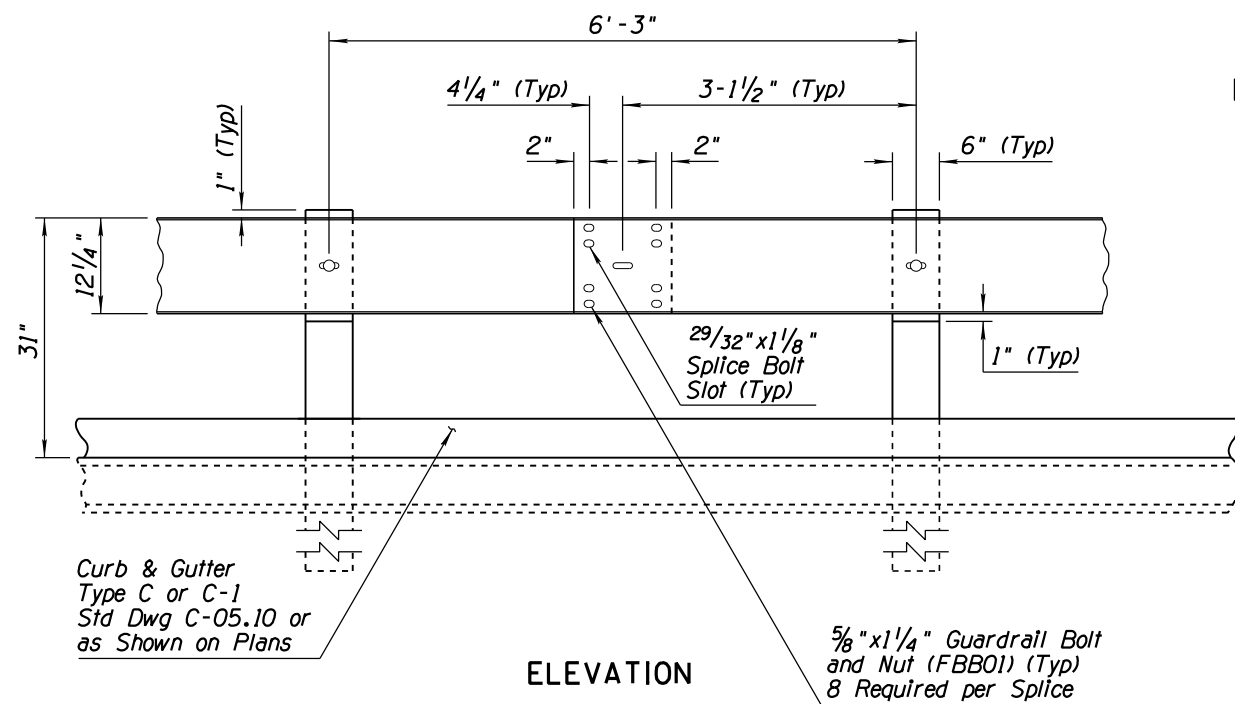
PRIOR DISTRIBUTION DATE 05/12



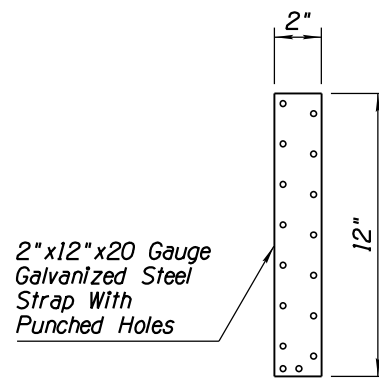
PLAN



BLOCKOUT DETAIL



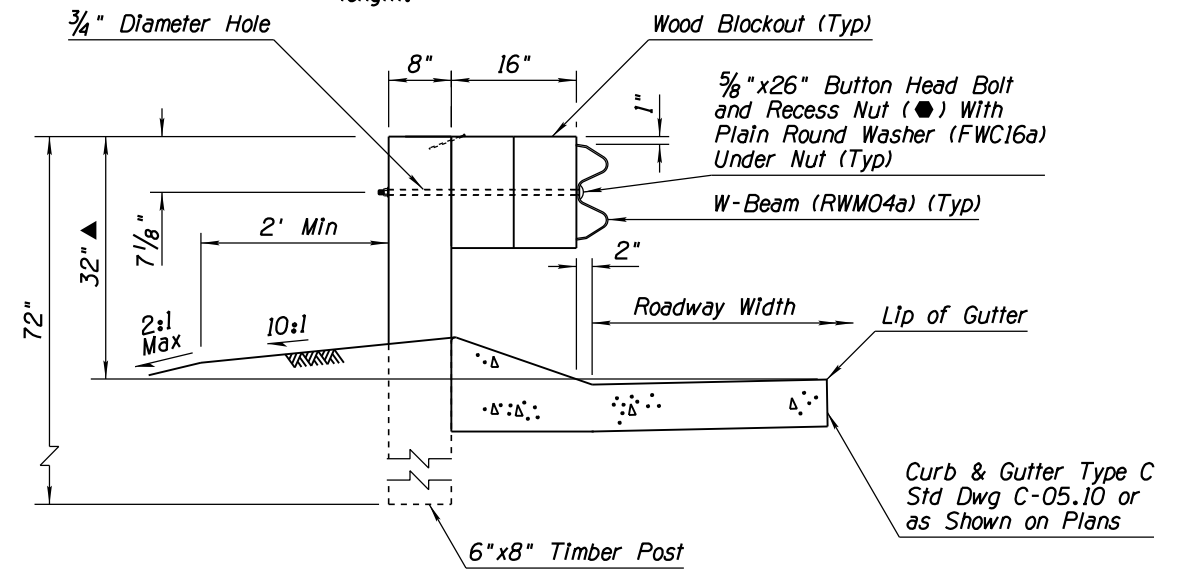
ELEVATION



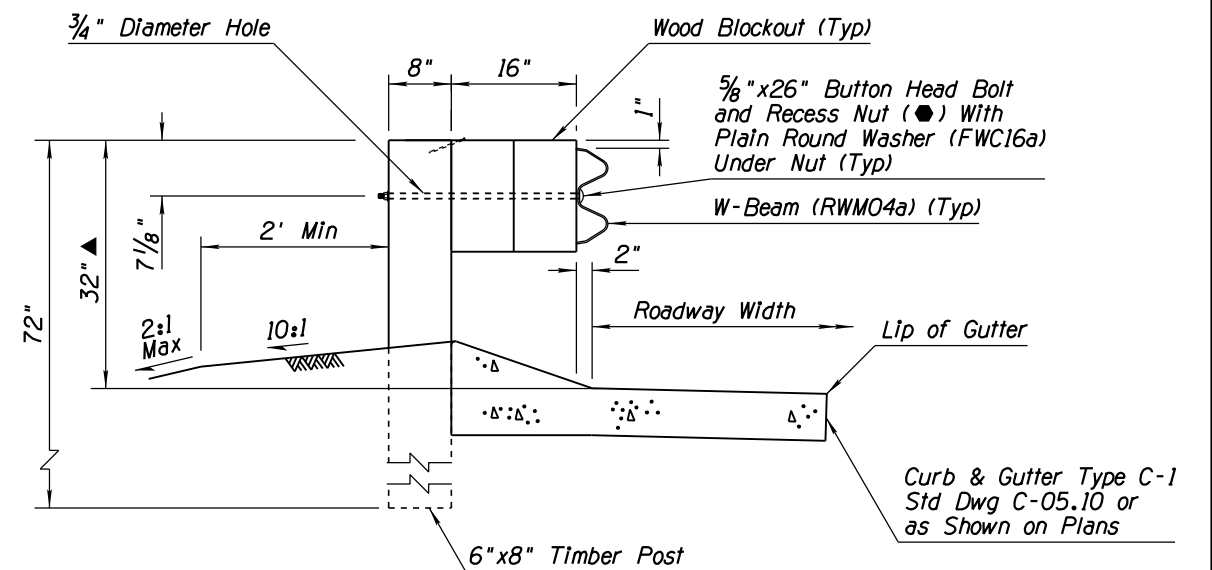
RETAINER STRAP DETAIL

GENERAL NOTES

1. Height of curb shall not exceed 4 inches.
 2. Guardrail shall be lapped in the direction of adjacent traffic.
 3. Manufacture components according to AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.
 4. Maintain a distance of 59" between w-beam face and rigid objects.
- ▲ For Type C curb and gutter, 32" dimension is at lip of gutter. For Type C-1 curb and gutter, 32" dimension is at flowline.
 - Shall meet the same material requirements as FBB05 with the noted length.



SECTION WITH CURB & GUTTER TYPE C

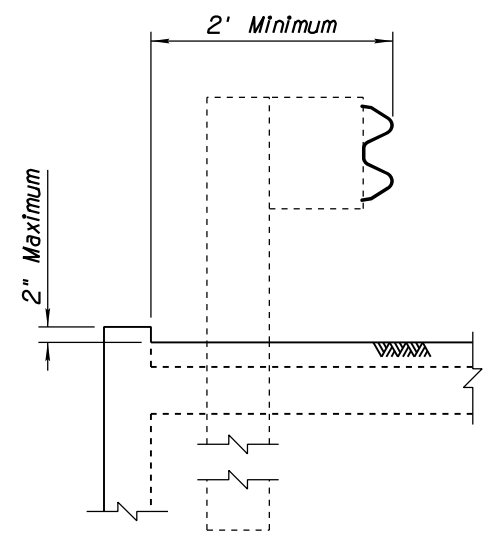


SECTION WITH CURB & GUTTER TYPE C-1

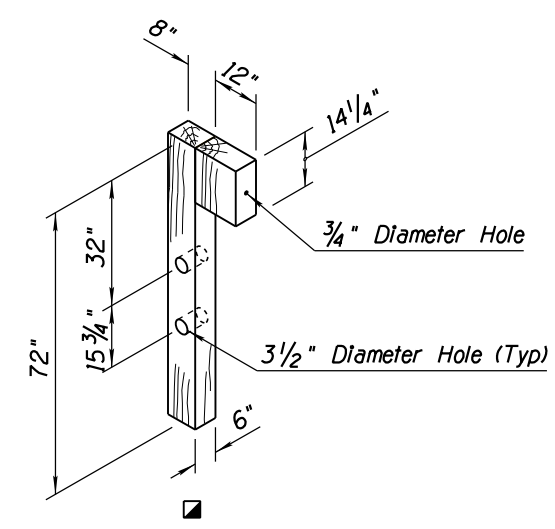
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	W-BEAM GUARDRAIL (MODIFIED) WITH FREEWAY CURB AND GUTTER	DRAWING NO. C-10.05
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	12/17 DATE	Sheet 2 of 2

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

PRIOR DISTRIBUTION DATE 05/12



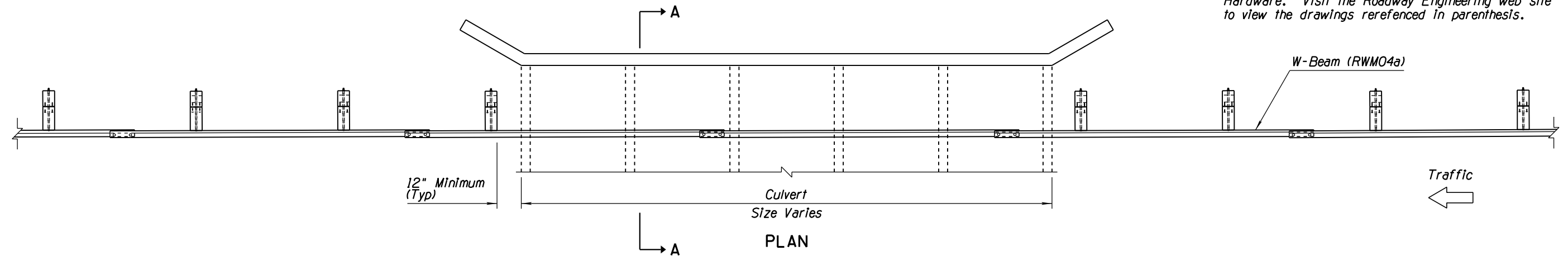
SECTION A-A



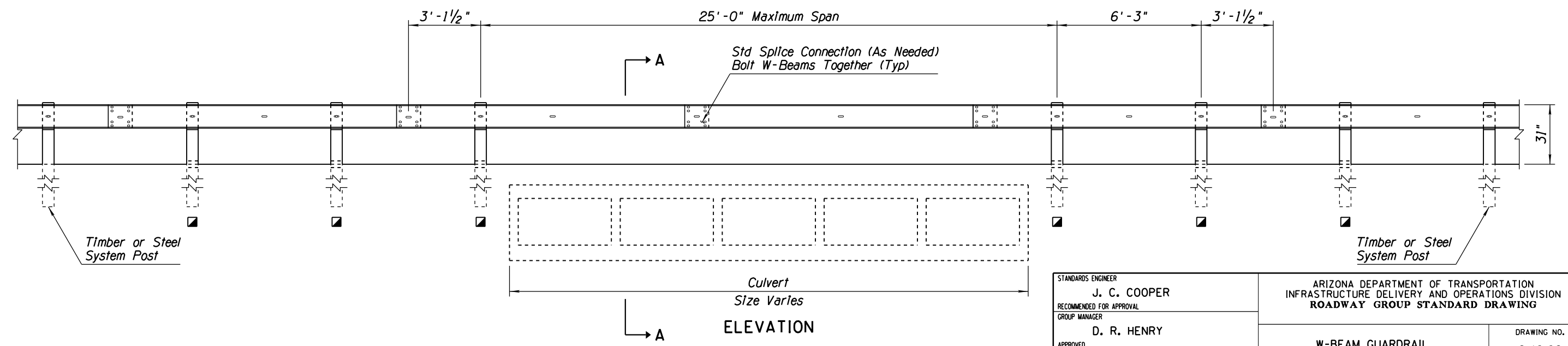
6"x8"x72" Controlled Releasing Terminal (CRT) Timber Post for 31" Height Guardrail

GENERAL NOTES

1. Omit as few posts as needed to span features with less than 40" of cover. A maximum of 3 posts may be omitted.
2. Posts shall not be omitted within transitions, end terminals, spillways, downdrains, or curbed locations.
3. Three Controlled Releasing Terminal (CRT) posts are required on each side of the omitted posts. CRT posts are not required if only one post is omitted.
4. Maintain a level surface free of any objects within 24 inches behind the w-beam face. Objects beyond the 24 inches and up to 94 inches behind the w-beam shall not extend more than 2 inches above grade.
5. Unless otherwise shown on plans, install a minimum of 50' of guardrail beyond the first CRT post or standard post on either side of the missing post(s); exclusive of transitions, tapers, end anchors, end terminals, or other long-span installations.
6. See Std Dwgs C-10.03 and C-10.04 for additional information and dimensions.
7. Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings rereferenced in parenthesis.



PLAN



ELEVATION

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17

W-BEAM GUARDRAIL
LONG-SPAN

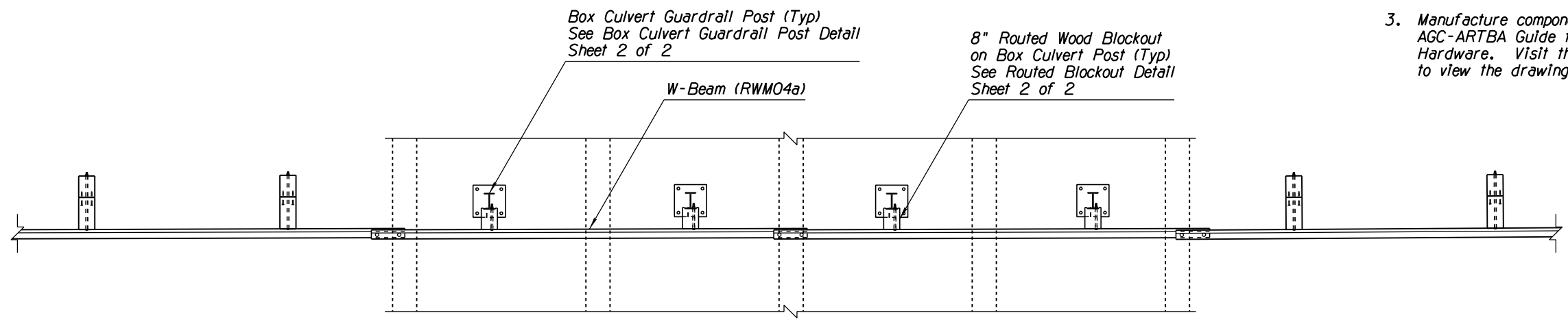
DRAWING NO.
C-10.06

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

PRIOR DISTRIBUTION DATE 05/12

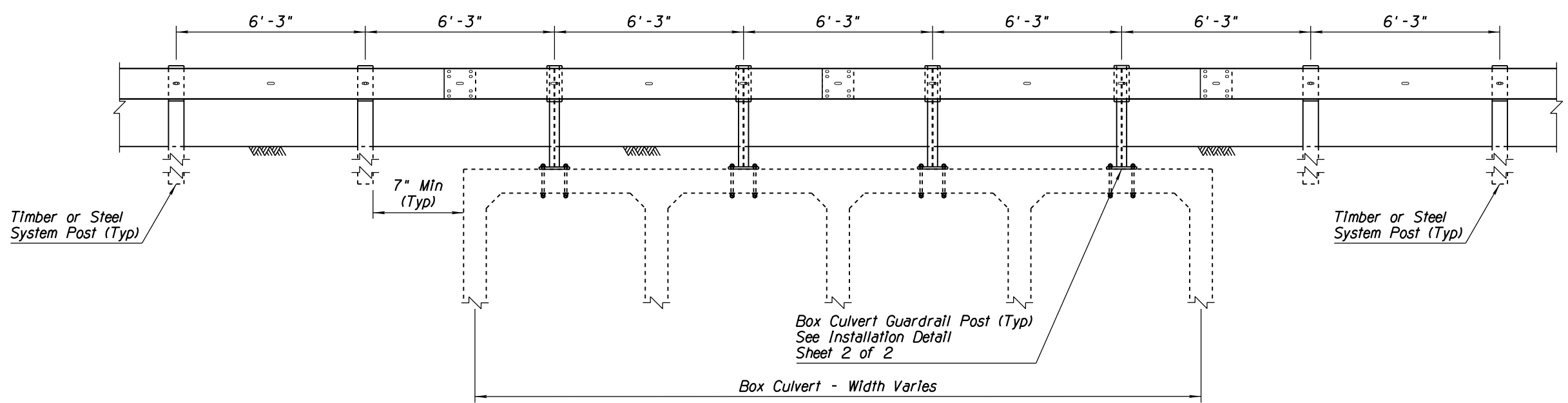
GENERAL NOTES

1. See Std Dwgs C-10.03 and C-10.04 for additional information and dimensions.
2. Guardrail shall be lapped in the direction of adjacent traffic.
3. Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.



PLAN

Traffic
←



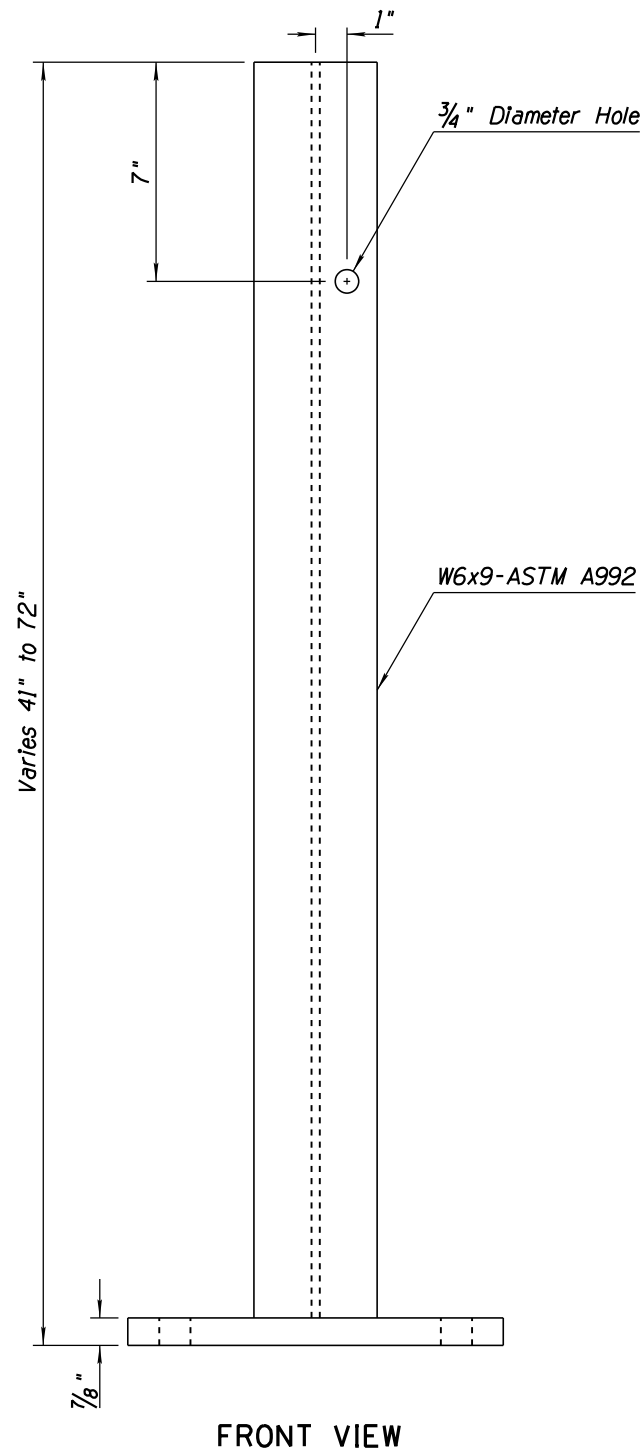
ELEVATION
BOX CULVERT GUARDRAIL POST INSTALLATION

STANDARDS ENGINEER	J. C. COOPER
RECOMMENDED FOR APPROVAL	
GROUP MANAGER	D. R. HENRY
APPROVED	
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	12/17 DATE

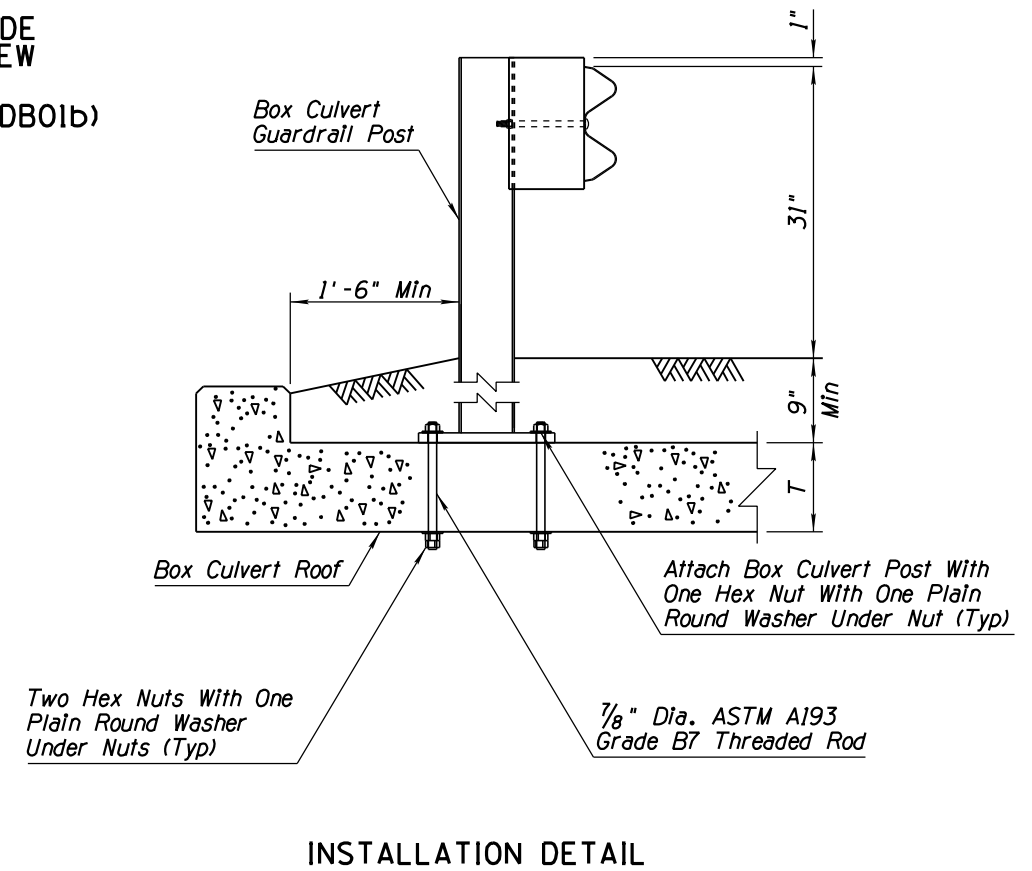
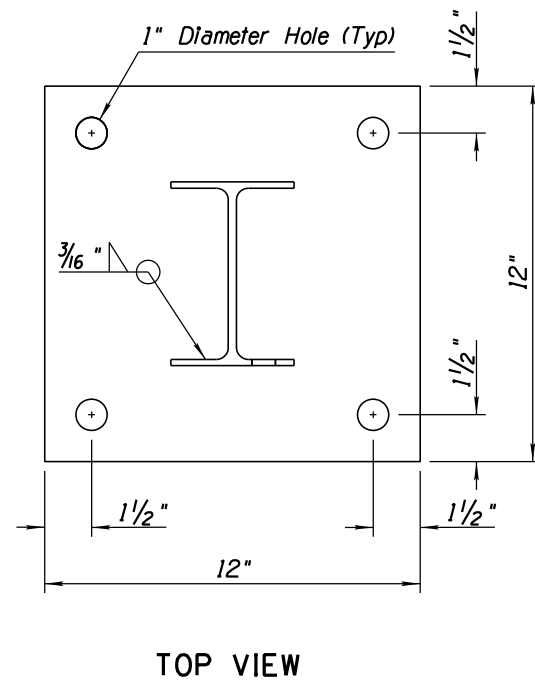
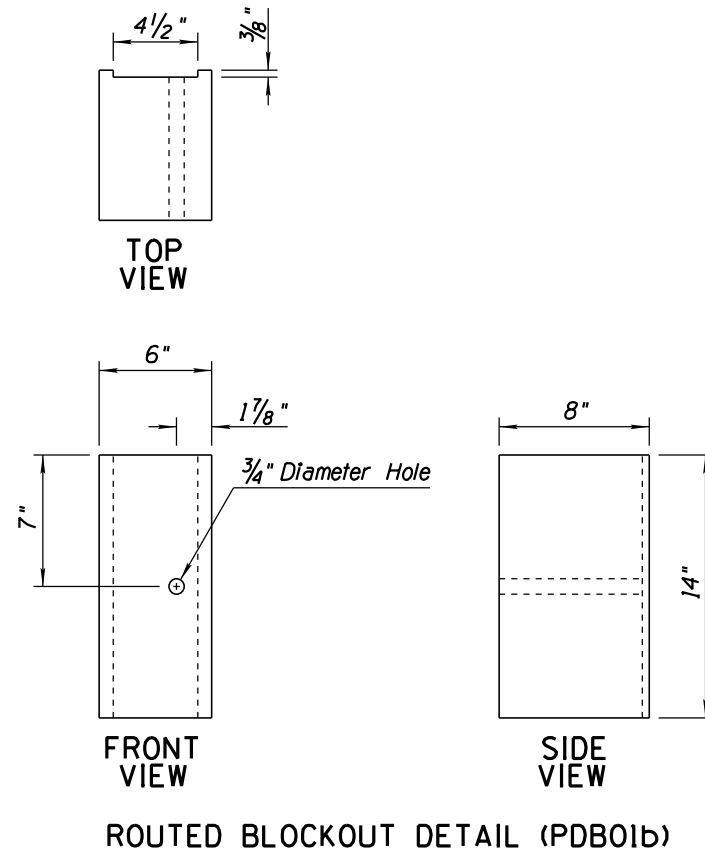
ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
W-BEAM GUARDRAIL BOX CULVERT GUARDRAIL POST	DRAWING NO. C-10.07 Sheet 1 of 2

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

PRIOR DISTRIBUTION DATE 05/12



BOX CULVERT GUARDRAIL POST DETAIL



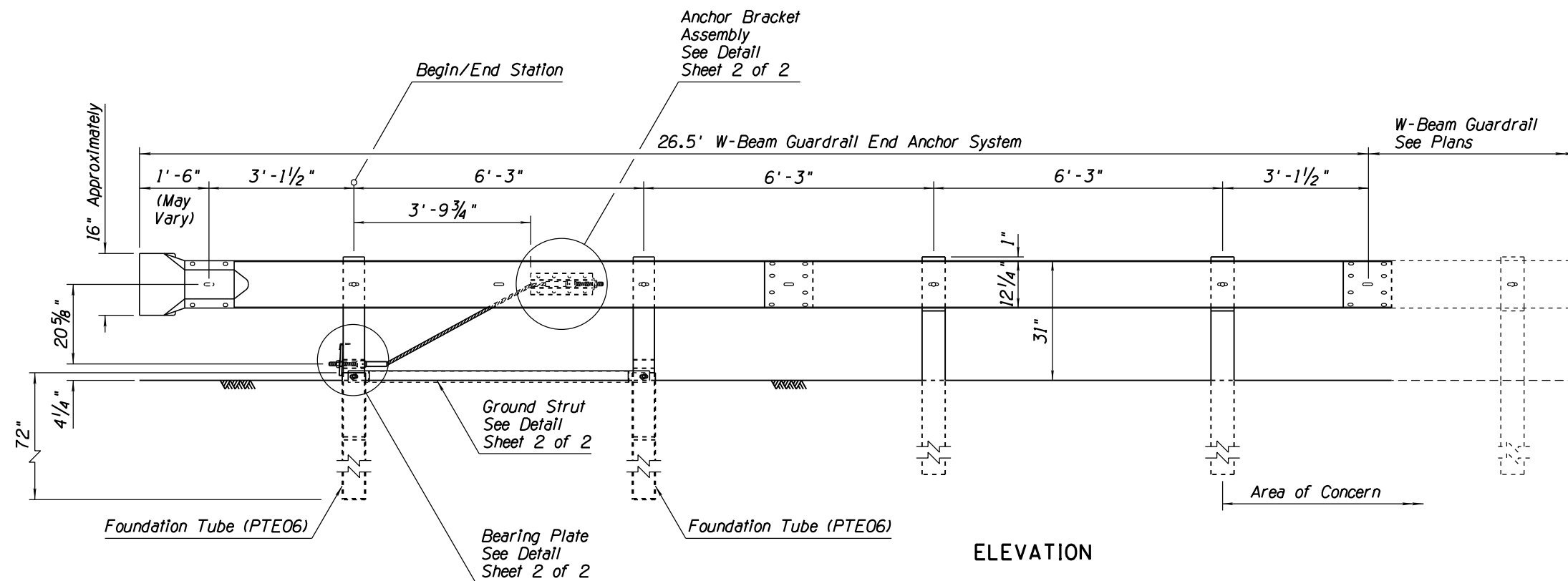
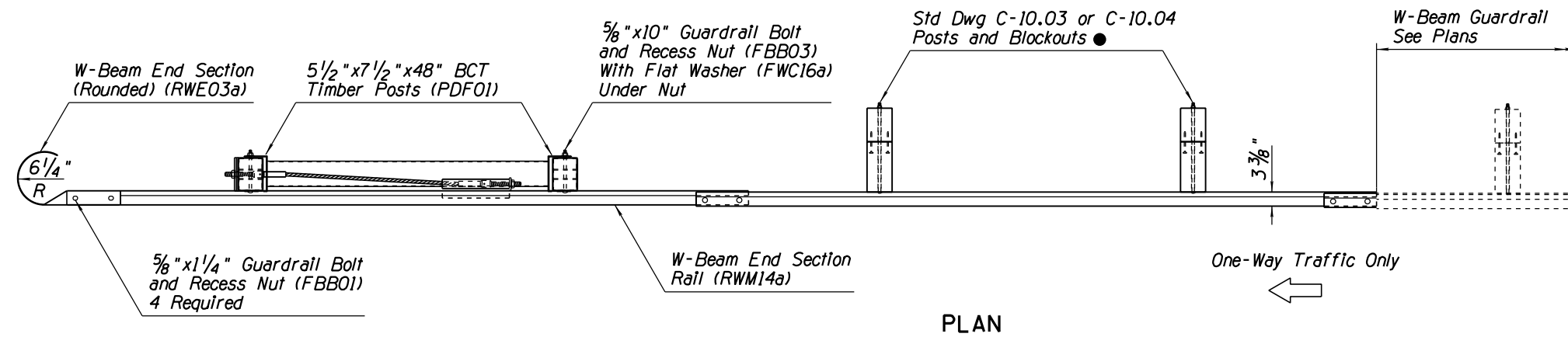
GENERAL NOTES

1. See Std Dwgs C-10.03 and C-10.04 for additional information and dimensions.
2. Guardrail shall be lapped in the direction of adjacent traffic.
3. Where bolting through the top of box culvert is not practical, the bolts may be attached to the top of the box culvert using epoxy. The bolts shall be embedded a minimum of 6 inches into the concrete.
4. Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	W-BEAM GUARDRAIL BOX CULVERT GUARDRAIL POST	DRAWING NO. C-10.07
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		Sheet 2 of 2
	DATE	12/17

GENERAL NOTES

1. The Cable Anchor Assembly shall be tightened to remove slack.
 2. See Std Dwg C-10.00 for measurement limits.
 3. Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.
- Match adjacent W-Beam Guardrail post type.

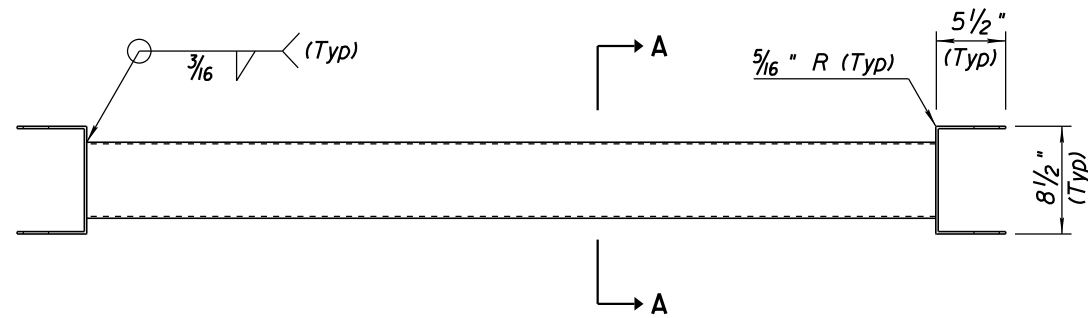


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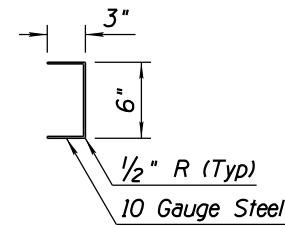
PRIOR DISTRIBUTION DATE 05/12

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	W-BEAM GUARDRAIL END ANCHOR	DRAWING NO. C-10.08
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 12/17
		Sheet 1 of 2

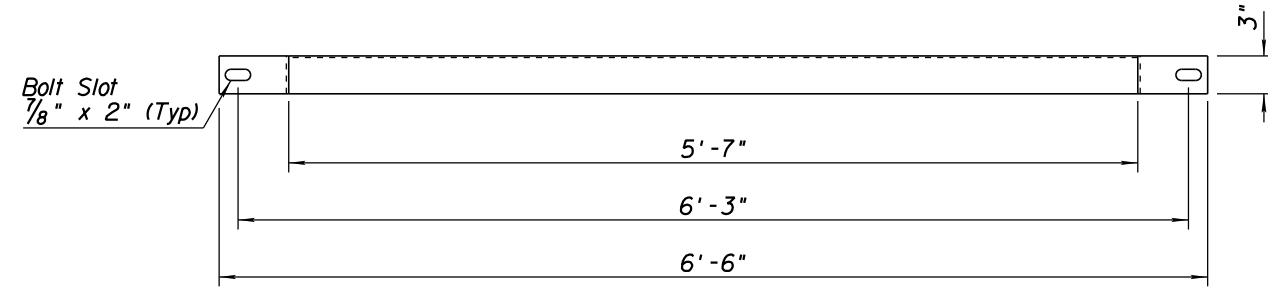
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PLAN

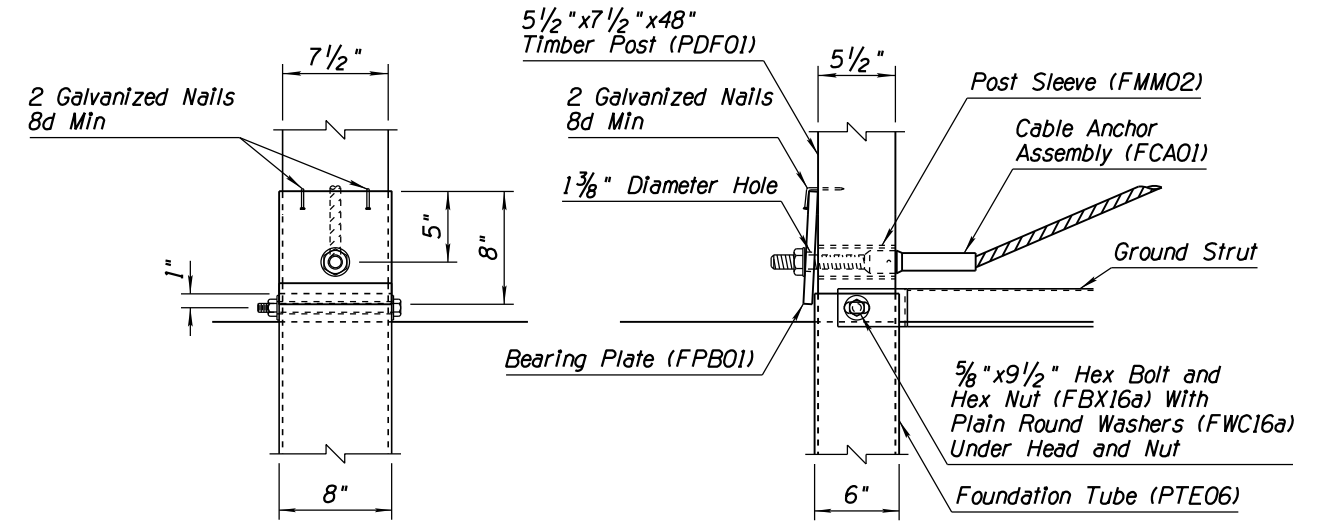


SECTION A-A



ELEVATION

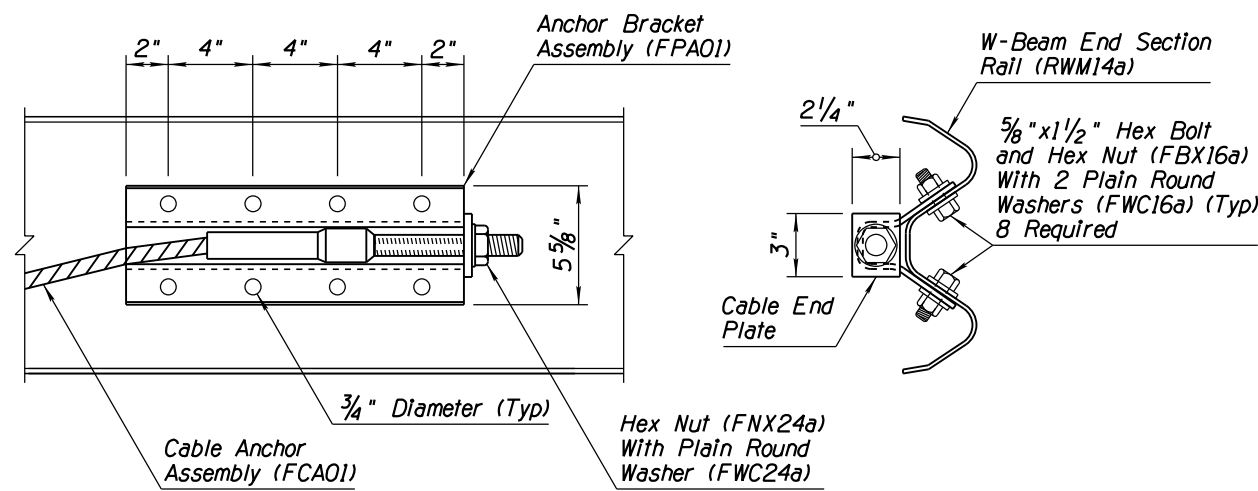
GROUND STRUT DETAIL



SIDE VIEW

FRONT VIEW

BEARING PLATE DETAIL



ELEVATION

SECTION

ANCHOR BRACKET DETAIL

GENERAL NOTES

1. The Cable Anchor Assembly shall be tightened to remove slack.
2. Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.

05/12

PRIOR DISTRIBUTION DATE

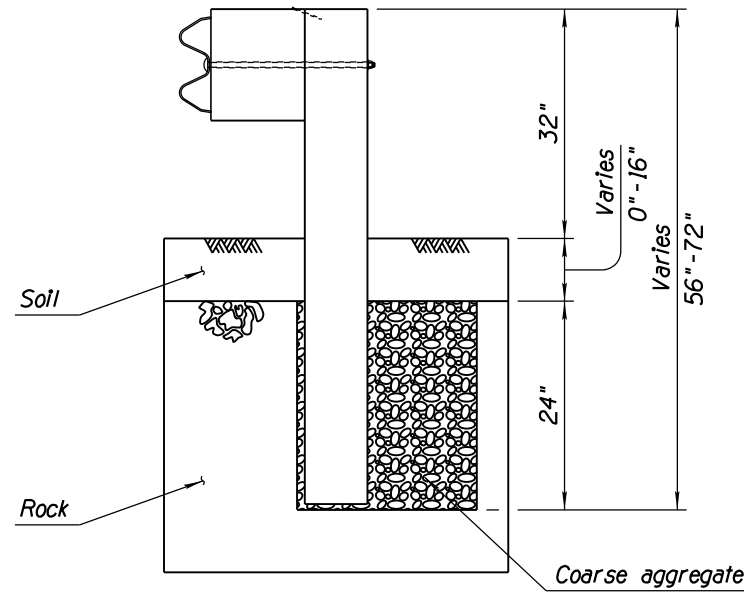
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17

**W-BEAM GUARDRAIL
END ANCHOR**

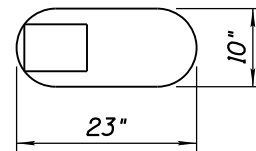
DRAWING NO.
C-10.08
Sheet 2 of 2

Note to Designer:
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PRIOR DISTRIBUTION DATE 05/12

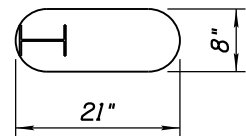


**ELEVATION
CASE 1**

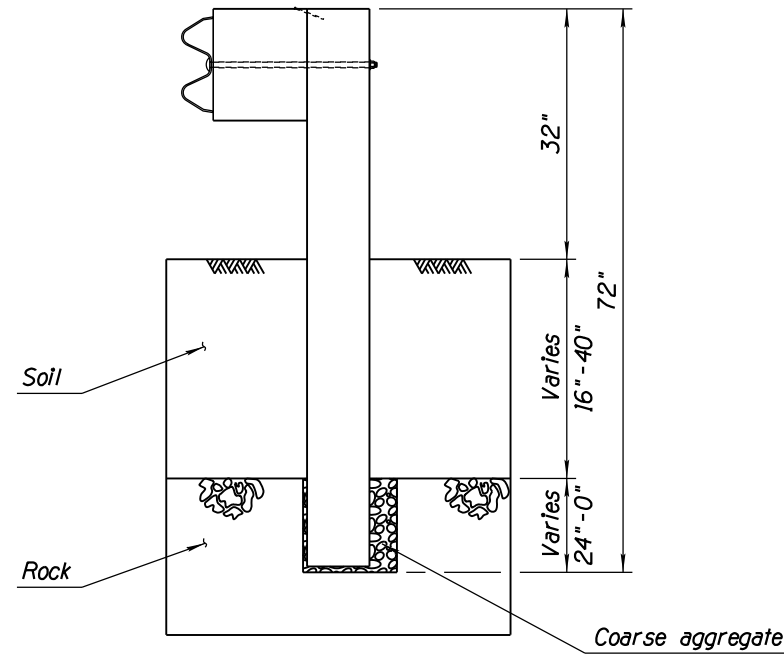


**PLAN VIEW
WOOD POST**

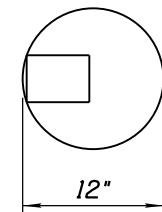
Or



**PLAN VIEW
STEEL POST**

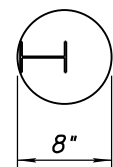


**ELEVATION
CASE 2**

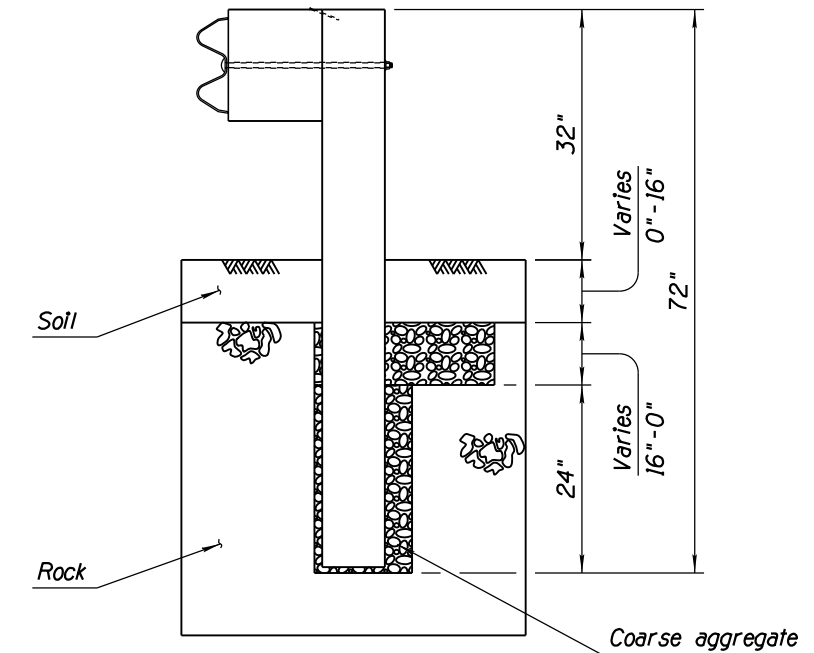


**PLAN VIEW
WOOD POST**

Or



**PLAN VIEW
STEEL POST**



**ELEVATION
CASE 3**

See Case 1 plan view for drill dimensions to 16" deep.
 See Case 2 plan view for drill dimensions 16" to 40" deep.

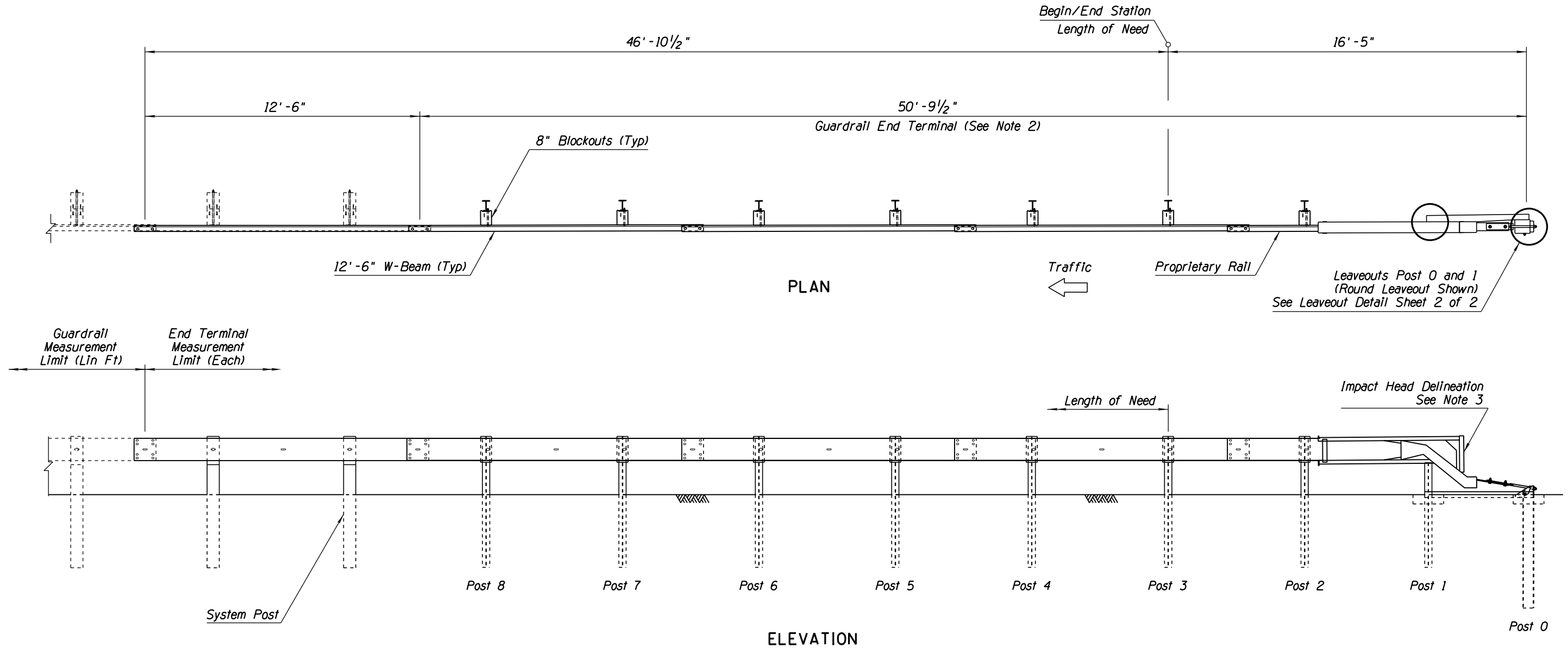
GENERAL NOTES

1. Use case 1 when overlying soil depth is less than 16".
 Use case 2 when overlying soil depth is between 16" and 40".
2. A 23" circular hole for wood posts or a 21" circular hole for steel posts may be substituted for oblong holes shown.
3. Use coarse aggregate similar to ASTM C33 Size No.57.
4. Use case 2 or 3 for 72" long transition post in C-10.30 and C-10.31 applications. For 8"x10" transition posts, drill 14" diameter by 48" deep hole and backfill with coarse aggregate. For W6x15 transition posts, drill 10" diameter by 54" deep hole and backfill with coarse aggregate.
5. Drill 8" diameter by 70" deep hole for C-10.08 foundation tubes.
6. Follow manufacturers guidance for treatment of end terminal posts in rock.

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	GUARDRAIL POST ROCK INSTALLATION	DRAWING NO. C-10.09
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION —12/17— DATE		

GENERAL NOTES

1. This drawing is for roadway layout only.
2. The SoftStop shall be installed in accordance with the manufacturer's specifications and current approved drawings including all details, hardware, hardware quantities, and other information. The current manufacturer's approved drawing number is SS 646. Visit the Roadway Engineering web site to view the manufacturer's drawing.
3. See specifications and Traffic Signing and Marking Standard Drawings.
4. Posts 3 - 8 shall be steel line posts. Posts 0 - 2 are proprietary.
5. No rigid objects are allowed within the terminal pad footprint.
6. The terminal shall be installed tangent to roadway, without taper or flare.



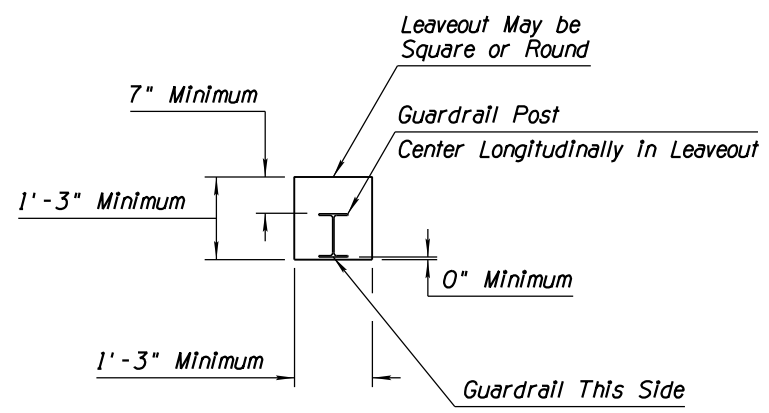
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PRIOR DISTRIBUTION DATE 12/17

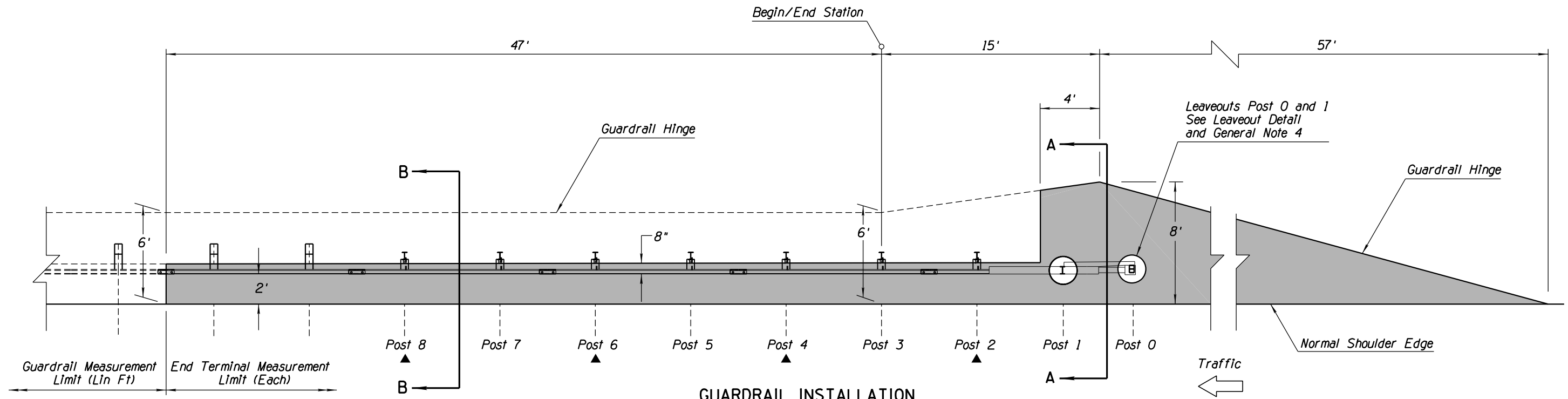
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER	GUARDRAIL END TERMINAL PAD LAYOUT FOR SOFTSTOP	DRAWING NO. C-10.20
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		Sheet 1 of 2
	DATE <u>04/19</u>	

GENERAL NOTES

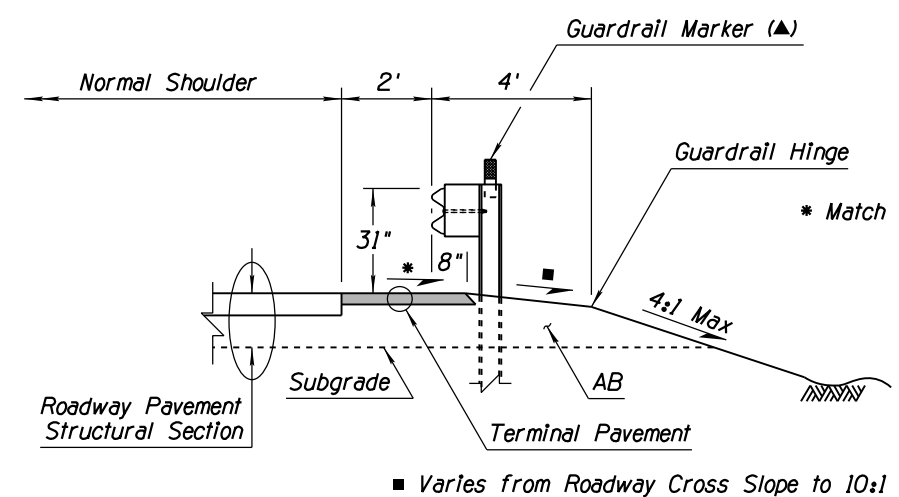
1. Use 3" of AC for terminal pavement adjacent to AC roadway pavement. Use 6" of Class B concrete for terminal pavement adjacent to PCCP roadway pavement.
 2. PCCP terminal pavement shall include 2" deep scored joints aligned with adjacent PCCP roadway pavement.
 3. This drawing shows pavement treatment for pads without curb. See Std Dwg C-10.77 for pavement treatment with curb.
 4. Leaveouts shall be provided in the pavement around guardrail posts 0 and 1. Leaveouts shall be filled flush to top of pavement with 3" of CLSM grout having a 28 day compressive strength between 40 and 120 psi.
- ▲ Guardrail markers (delimiters) shall be installed on posts 2, 4, 6, 8 and as indicated in the Standard Specifications.



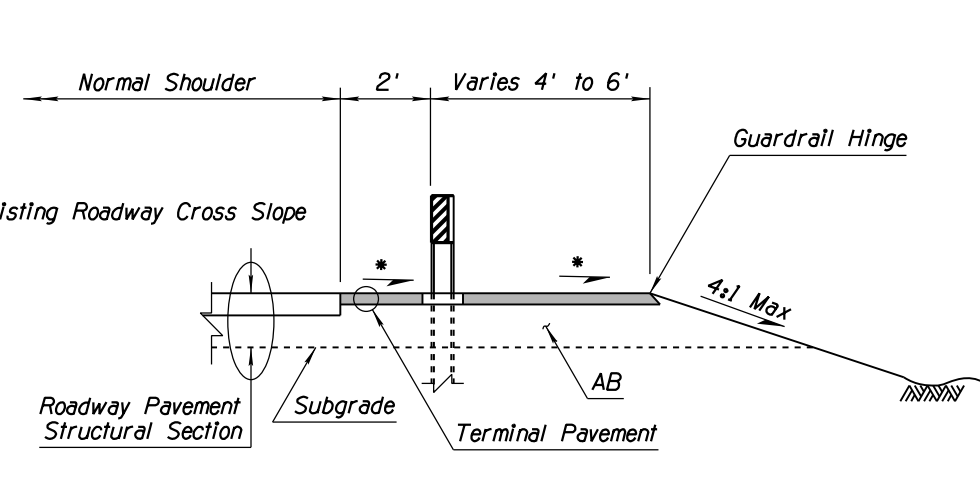
LEAVEOUT DETAIL



GUARDRAIL INSTALLATION



SECTION B - B



SECTION A - A

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

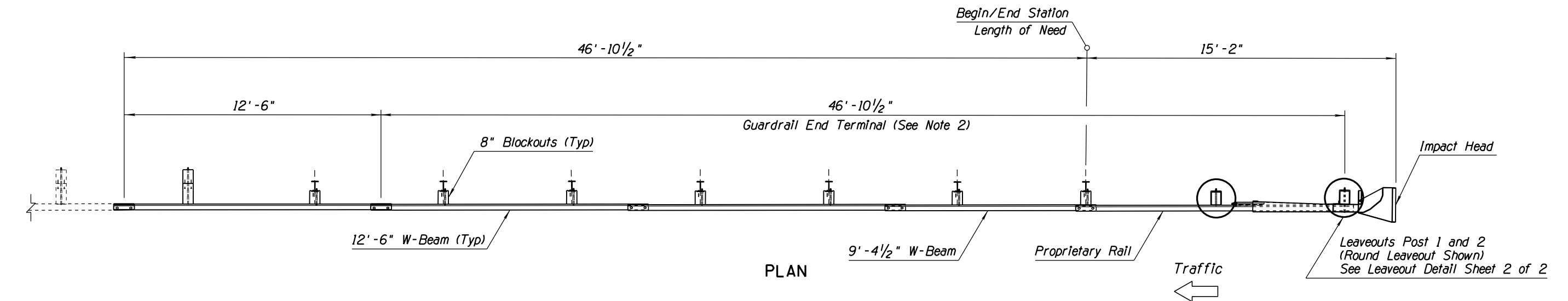
PRIOR DISTRIBUTION DATE 12/17

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER	
APPROVED	GUARDRAIL END TERMINAL PAD LAYOUT FOR SOFTSTOP
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 04/19 DATE	

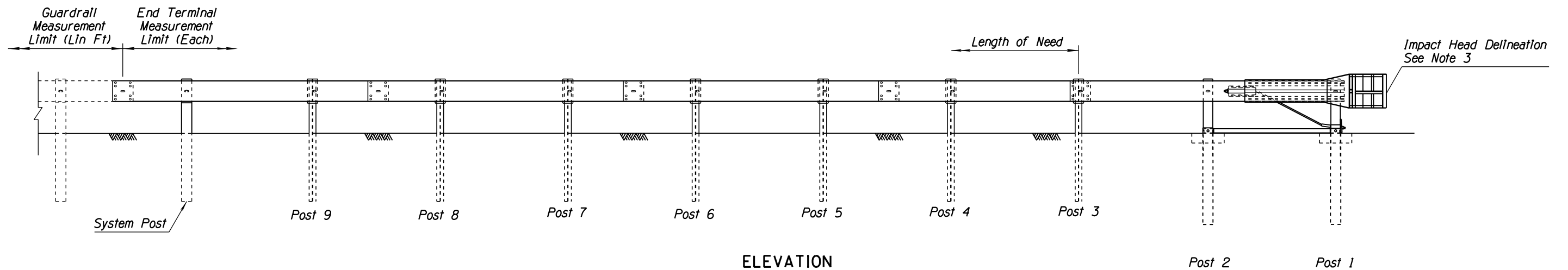
DRAWING NO. C-10.20
Sheet 2 of 2

GENERAL NOTES

1. This drawing is for roadway layout only.
2. The MSKT shall be installed in accordance with the manufacturer's specifications and current approved drawing including all details, hardware, hardware quantities, and other information. The current manufacturer's approved drawing number is MSKT-SP-MGS8. Visit the Roadway Engineering web site to view the manufacturer's drawing.
3. See specifications and Traffic Signing and Marking Standard Drawings.
4. Posts 3 - 9 shall be steel line posts. Posts 1 and 2 are proprietary.
5. No rigid objects are allowed within the terminal pad footprint.
6. The terminal shall be installed tangent to roadway, without taper or flare.



PLAN



ELEVATION

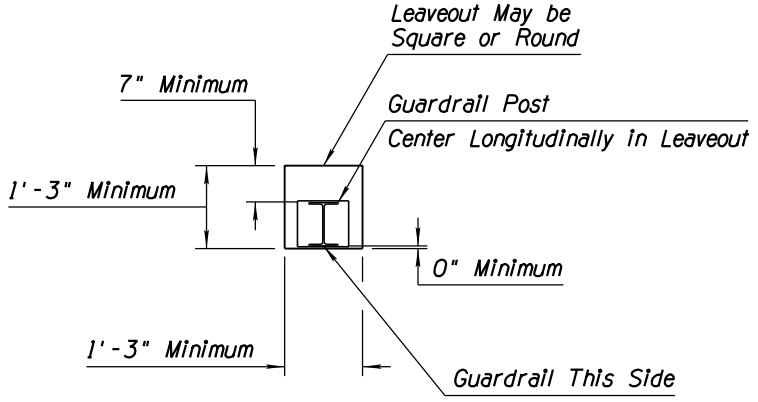
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PRIOR DISTRIBUTION DATE 12/17

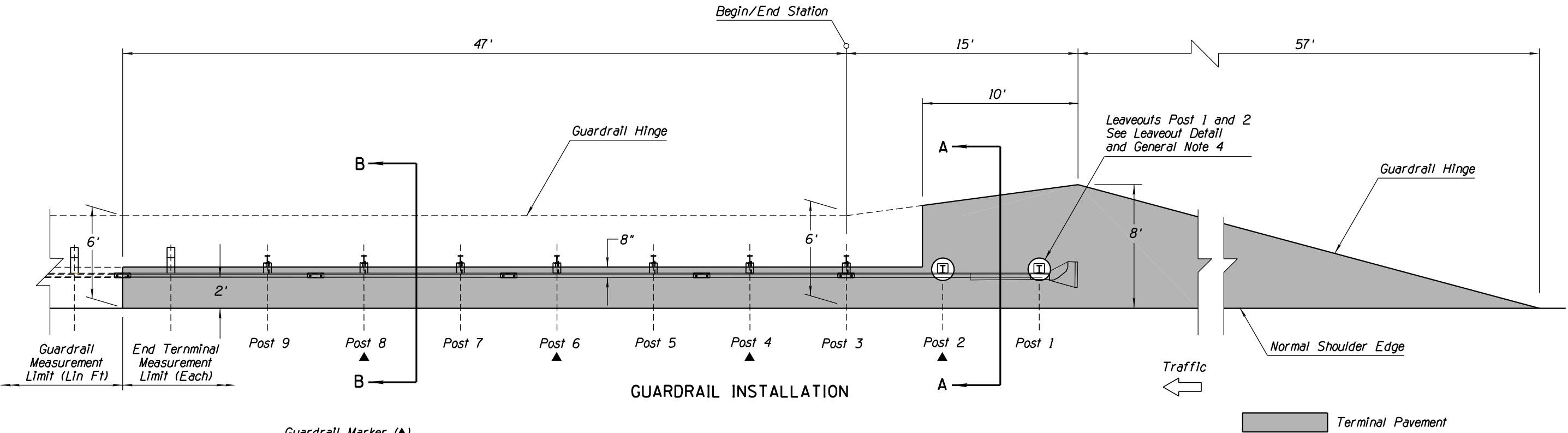
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER	GUARDRAIL END TERMINAL PAD LAYOUT FOR MSKT	DRAWING NO. C-10.21
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 04/19 DATE		Sheet 1 of 2

GENERAL NOTES

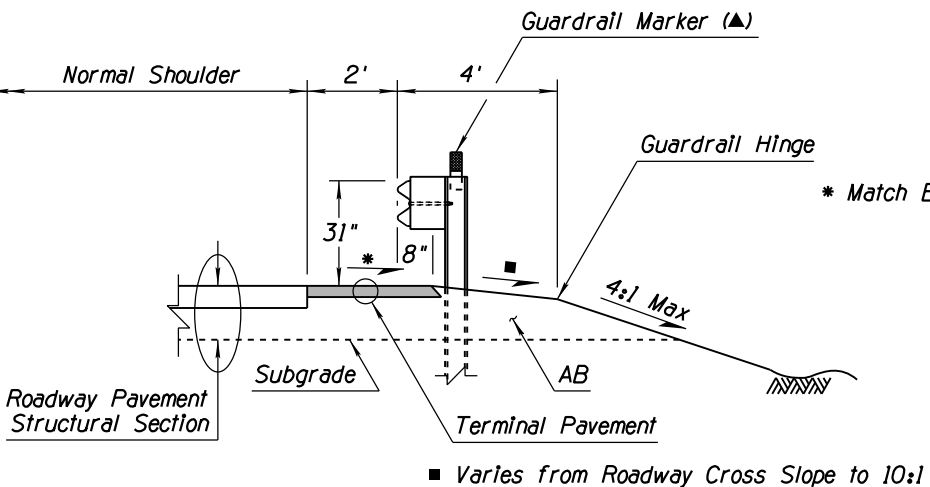
1. Use 3" of AC for terminal pavement adjacent to AC roadway pavement. Use 6" of Class B concrete for terminal pavement adjacent to PCCP roadway pavement.
 2. PCCP terminal pavement shall include 2" deep scored joints aligned with adjacent PCCP roadway pavement.
 3. This drawing shows pavement treatment for pads without curb. See Std Dwg C-10.77 for pavement treatment with curb.
 4. Leaveouts shall be provided in the pavement around guardrail posts 1 and 2. Leaveouts shall be filled flush to top of pavement with 3" of CLSM grout having a 28 day compressive strength between 40 and 120 psi.
- ▲ Guardrail markers (delimiters) shall be installed on posts 2, 4, 6, 8 and as indicated in the Standard Specifications.



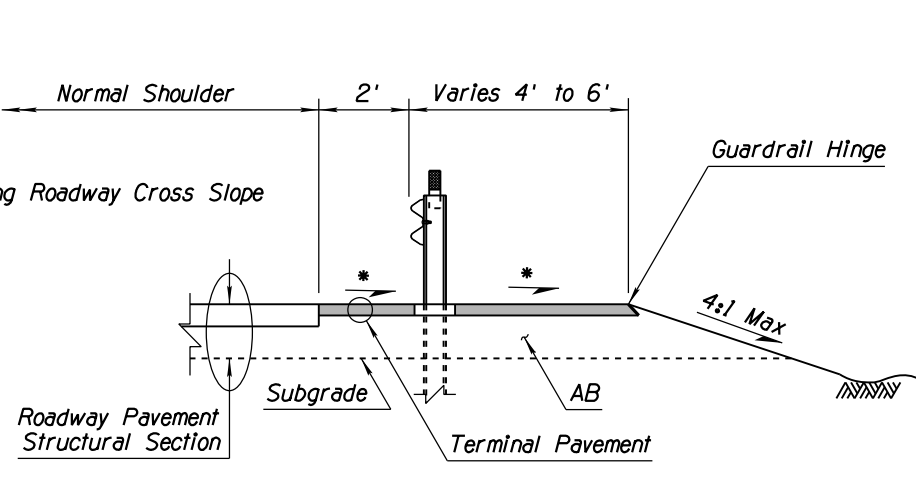
LEAVEOUT DETAIL



GUARDRAIL INSTALLATION



SECTION B - B



SECTION A - A

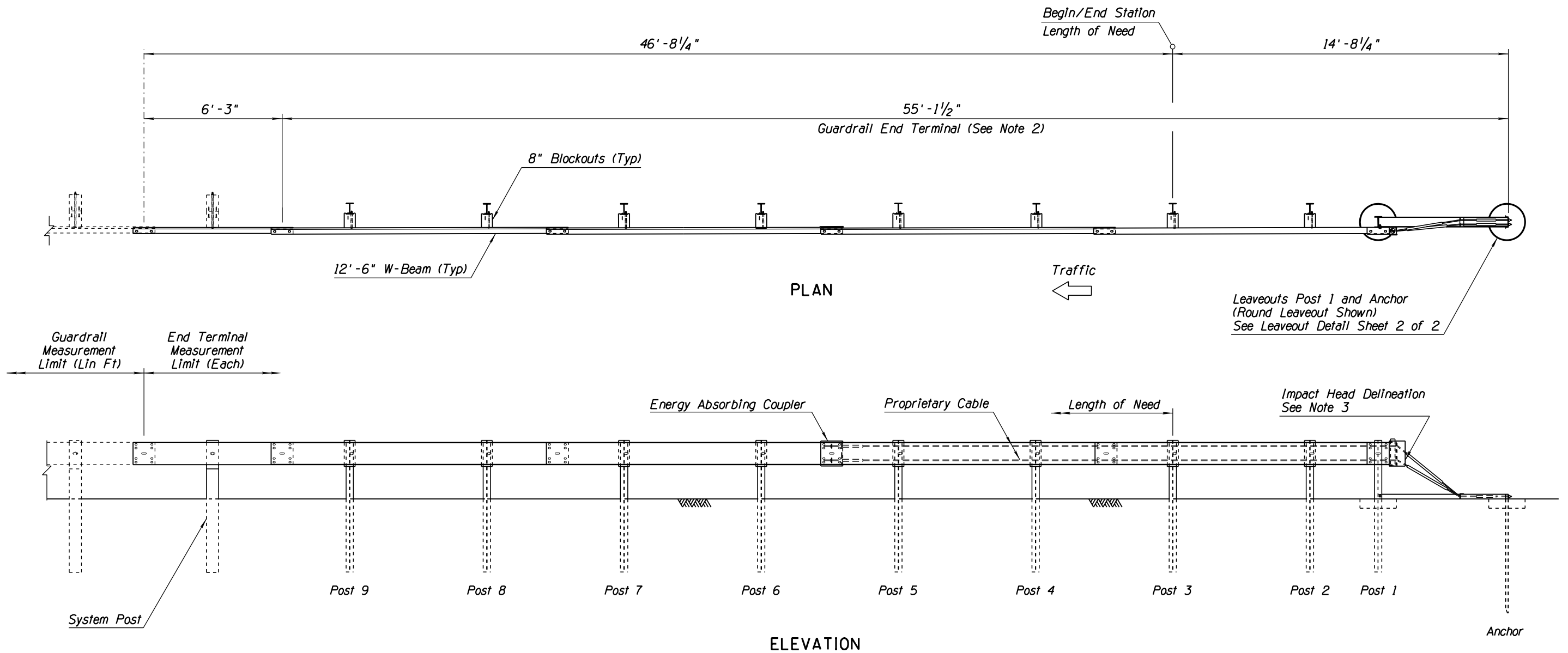
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PRIOR DISTRIBUTION DATE 12/17

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	DRAWING NO. C-10.21
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER		
APPROVED	GUARDRAIL END TERMINAL PAD LAYOUT FOR MSKT	Sheet 2 of 2
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	04/19 DATE	

GENERAL NOTES

1. This drawing is for roadway layout only.
2. The Max-Tension shall be installed in accordance with the manufacturer's specifications and current approved drawings including all details, hardware, hardware quantities, and other information. The current manufacturer's approved drawing number is MT3S1S8C4. Visit the Roadway Engineering web site to view the manufacturer's drawing.
3. See specifications and Traffic Signing and Marking Standard Drawings.
4. Posts 2 - 9 shall be steel line posts. Posts 1 and Anchor are proprietary.
5. No rigid objects are allowed within the terminal pad footprint.
6. The terminal shall be installed tangent to the roadway, without taper or flare.



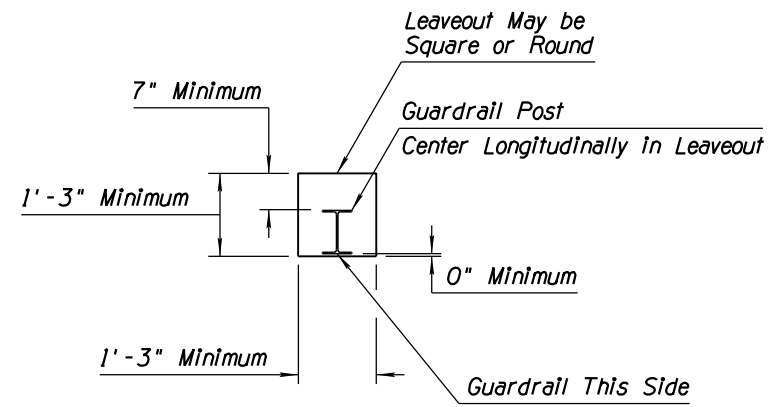
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PRIOR DISTRIBUTION DATE 02/18

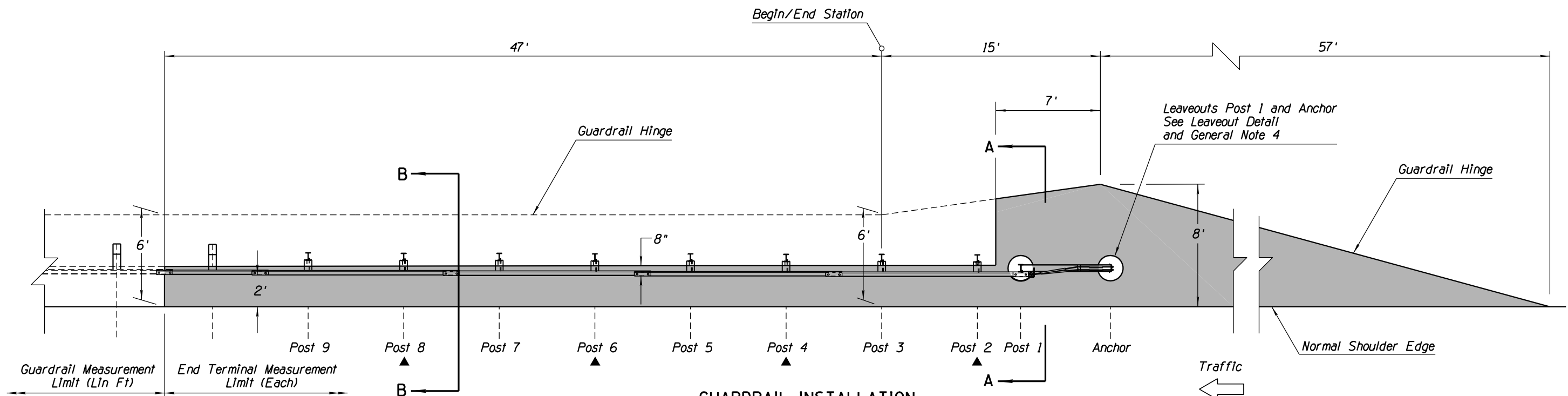
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER	LAYOUT FOR MAX-TENSION TERMINAL PAD	DRAWING NO. C-10.22
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		04/19 DATE
		Sheet 1 of 2

GENERAL NOTES

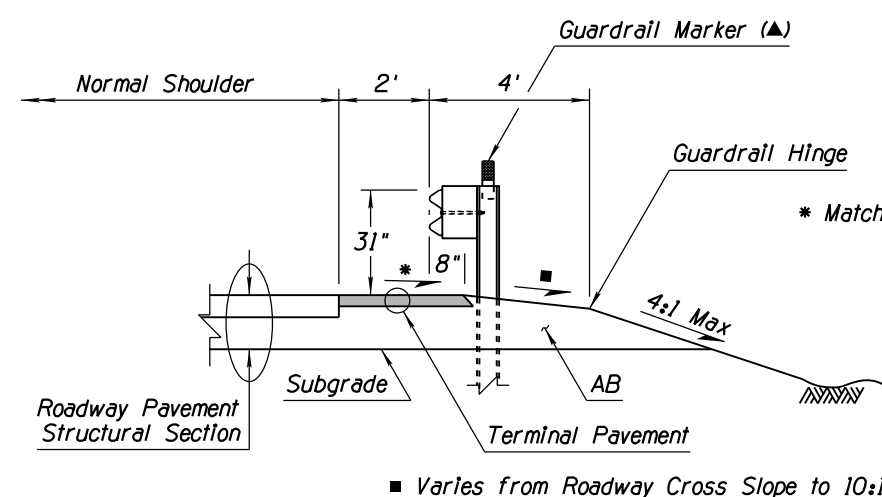
1. Use 3" of AC for terminal pavement adjacent to AC roadway pavement. Use 6" of Class B concrete for terminal pavement adjacent to PCCP roadway pavement.
 2. PCCP terminal pavement shall include 2" deep scored joints aligned with adjacent PCCP roadway pavement.
 3. This drawing shows pavement treatment for pads without curb. See Std Dwg C-10.77 for pavement treatment with curb.
 4. Leaveouts shall be provided in the pavement around guardrail posts 1 and Anchor. Leaveouts shall be filled flush to top of pavement with 3" of CLSM grout having a 28 day compressive strength between 40 and 120 psi.
- ▲ Guardrail markers (delimiters) shall be installed on posts 2, 4, 6, 8 and as indicated in the Standard Specifications.



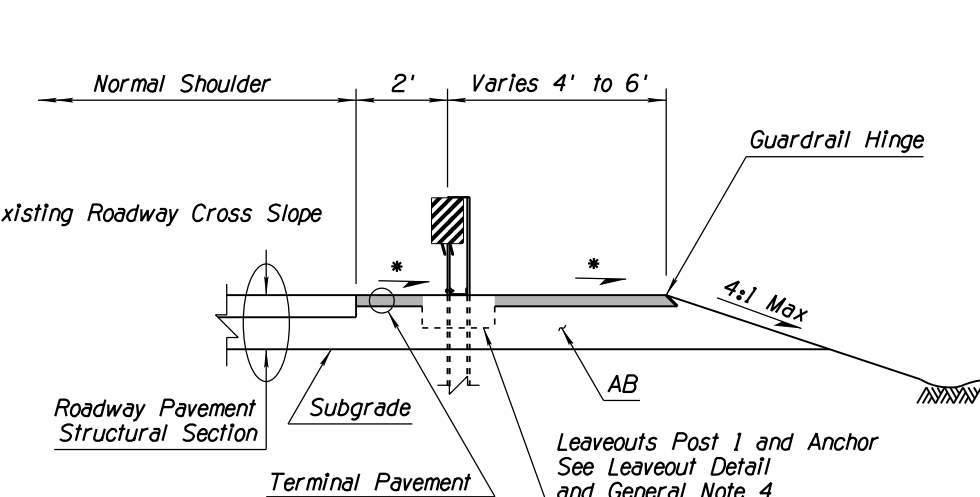
LEAVEOUT DETAIL



GUARDRAIL INSTALLATION



SECTION B - B



SECTION A - A

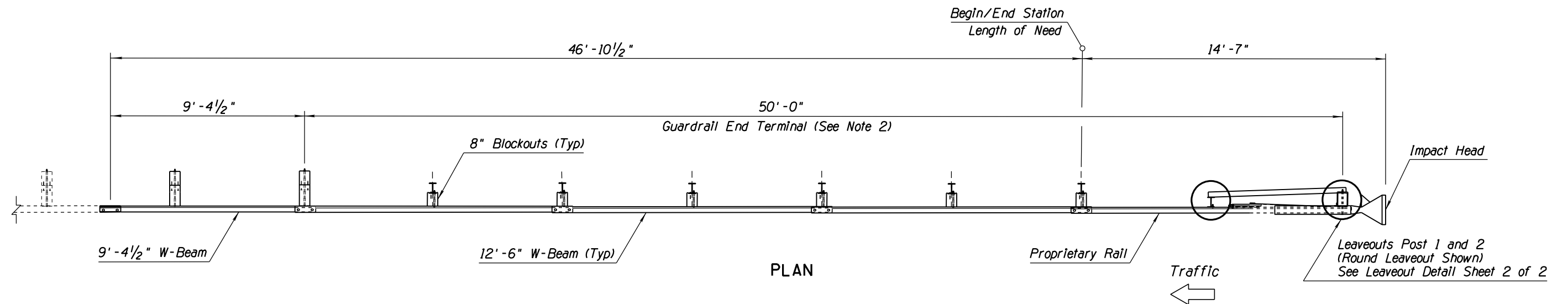
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PRIOR DISTRIBUTION DATE 02/18

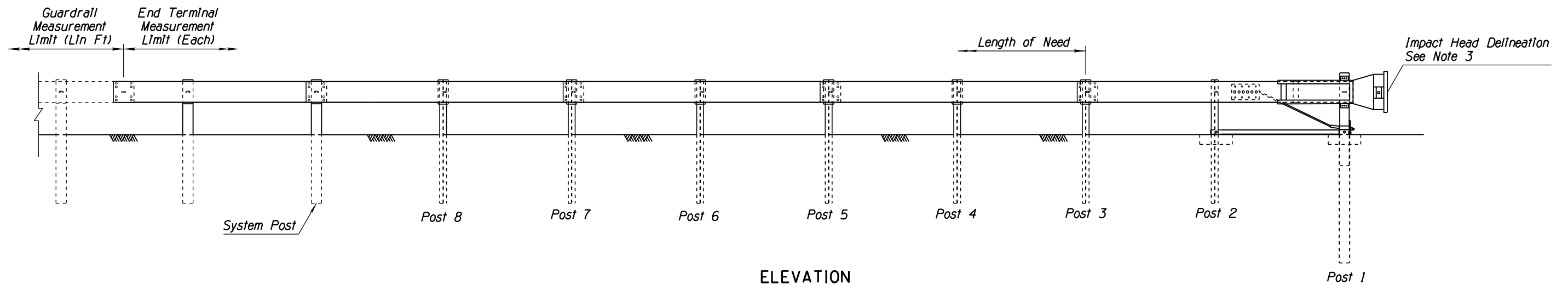
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER	LAYOUT FOR MAX-TENSION TERMINAL PAD	DRAWING NO. C-10.22
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 04/19
		Sheet 2 of 2

GENERAL NOTES

1. This drawing is for roadway layout only.
2. The SGET shall be installed in accordance with the manufacturer's specifications and current approved drawing including all details, hardware, hardware quantities, and other information. The current manufacturer's approved drawing name is SGET-MASH-TL-3. Visit the Roadway Engineering web site to view the manufacturer's drawing.
3. See specifications and Traffic Signing and Marking Standard Drawings for additional information.
4. Posts 2 - 8 shall be steel yielding posts. Post 1 is wood breakaway post in foundation tube.
5. No rigid objects are allowed within the terminal pad footprint.
6. The terminal shall be installed tangent to roadway, without taper or flare.



PLAN



ELEVATION

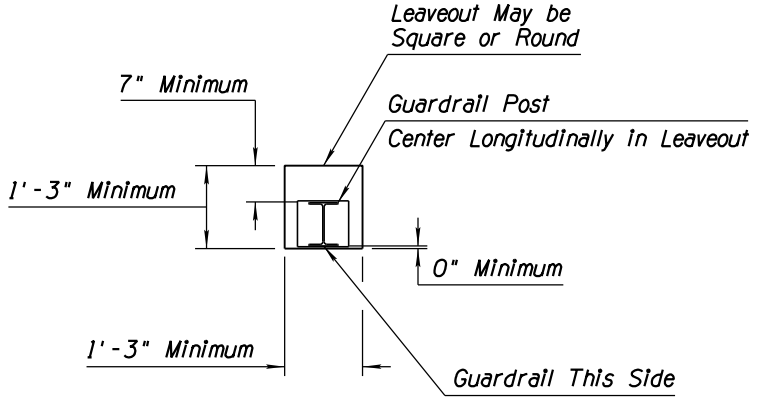
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PRIOR DISTRIBUTION DATE

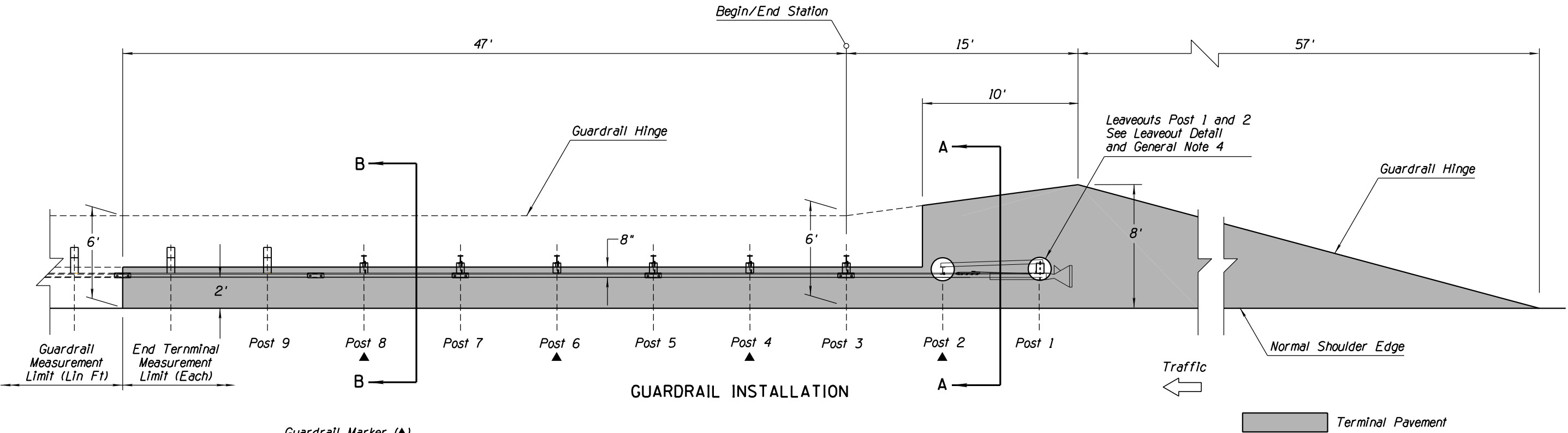
STANDARDS ENGINEER J. C. COOPER RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 04/21 DATE	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	DRAWING NO. C-10.23 Sheet 1 of 2
GUARDRAIL END TERMINAL PAD LAYOUT FOR SGET		

GENERAL NOTES

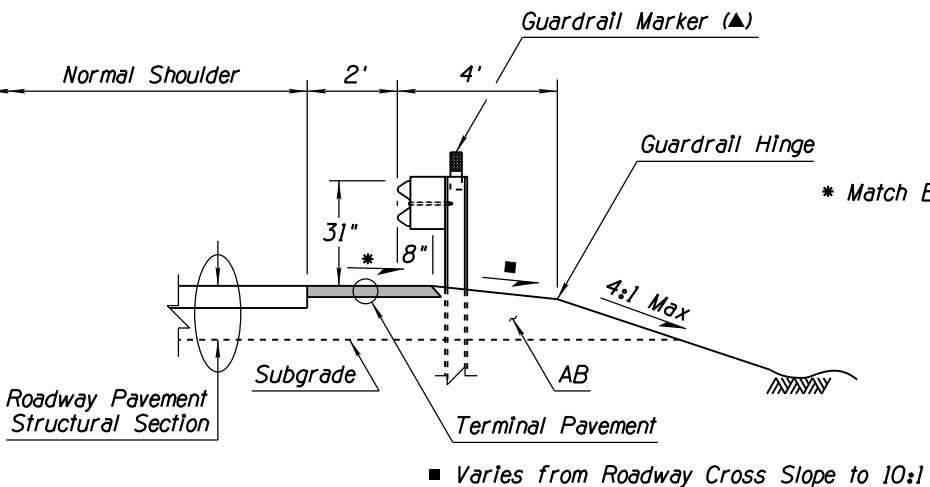
1. Use 3" of AC for terminal pavement adjacent to AC roadway pavement. Use 6" of Class B concrete for terminal pavement adjacent to PCCP roadway pavement.
 2. PCCP terminal pavement shall include 2" deep scored joints aligned with adjacent PCCP roadway pavement.
 3. This drawing shows pavement treatment for pads without curb. See Std Dwg C-10.77 for pavement treatment with curb.
 4. Leaveouts shall be provided in the pavement around guardrail posts 1 and 2. Leaveouts shall be filled flush to top of pavement with 3" of CLSM grout having a 28 day compressive strength between 40 and 120 psi.
- ▲ Guardrail markers (delineators) shall be installed on posts 2, 4, 6, 8 and as indicated in the specifications.



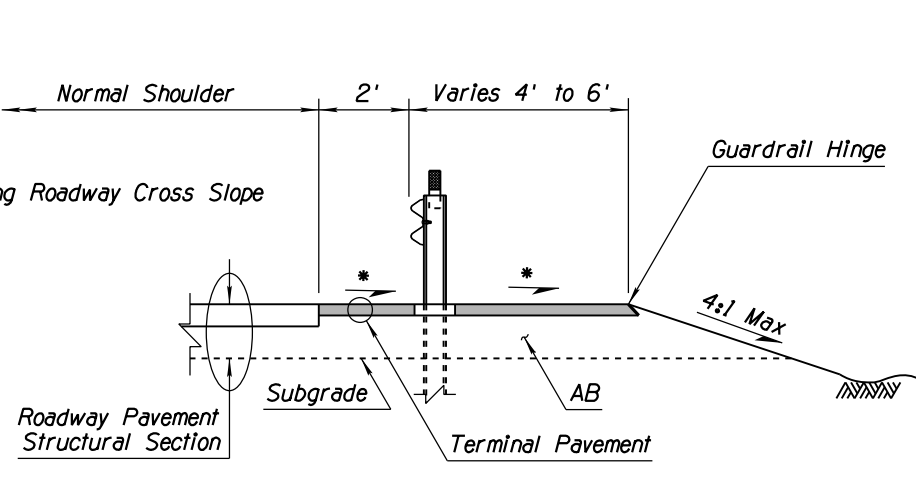
LEAVEOUT DETAIL



GUARDRAIL INSTALLATION



SECTION B - B



SECTION A - A

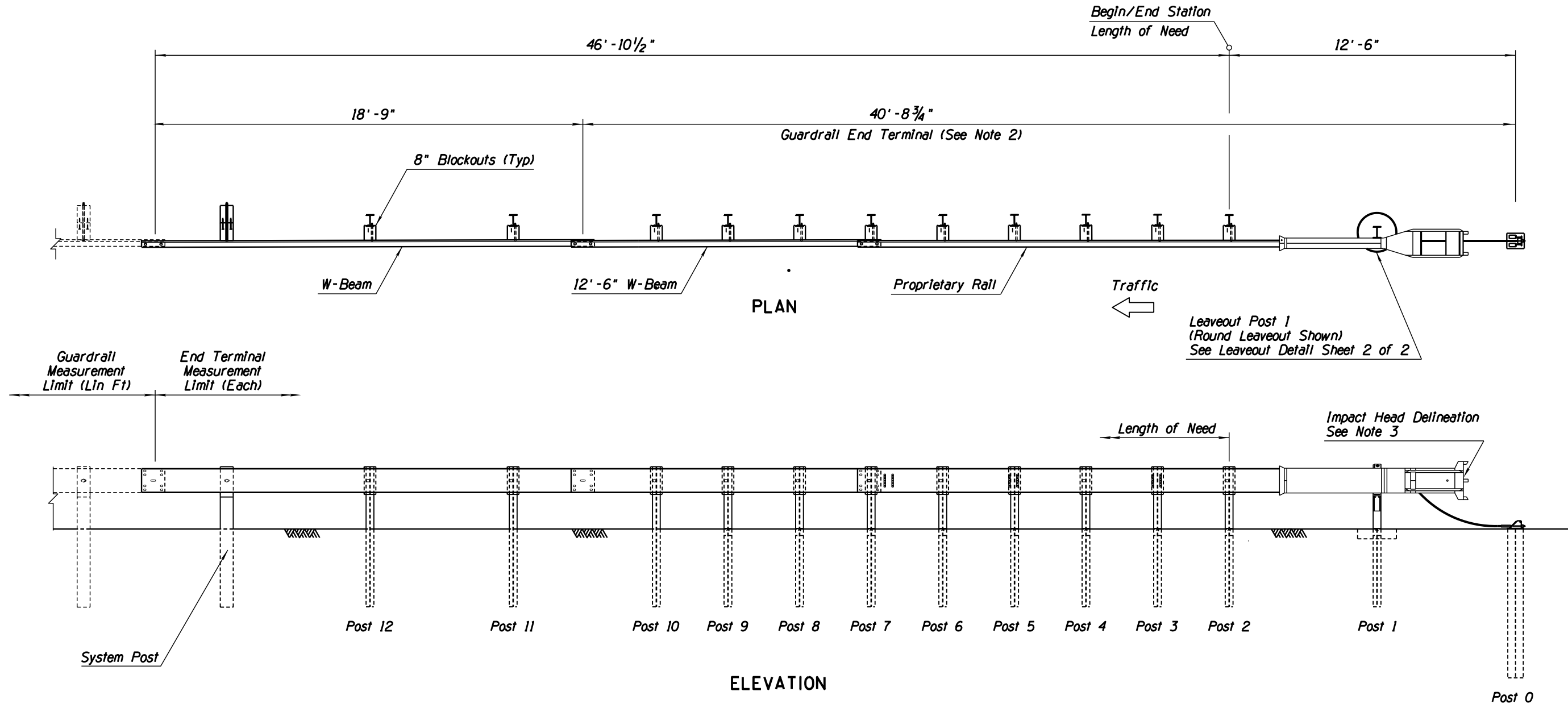
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PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	DRAWING NO. C-10.23
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER		
APPROVED	GUARDRAIL END TERMINAL PAD LAYOUT FOR SGET	Sheet 2 of 2
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	04/21 DATE	

GENERAL NOTES

1. This drawing is for roadway layout only.
2. The Next Generation Terminal shall be installed in accordance with the manufacturer's specifications and current approved drawings including all details, hardware, hardware quantities, and other information. The current manufacturer's approved drawing is dated 6/13/2024. Visit the Roadway Engineering web site to view the manufacturer's drawing.
3. See specifications and Traffic Signing and Marking Standard Drawing M-34.
4. Posts 10 thru 12 shall be steel line posts. Posts 0 thru 9 are proprietary.
5. No rigid objects are allowed within the terminal pad and slope.
6. The terminal shall be installed tangent to the roadway, without taper or flare.



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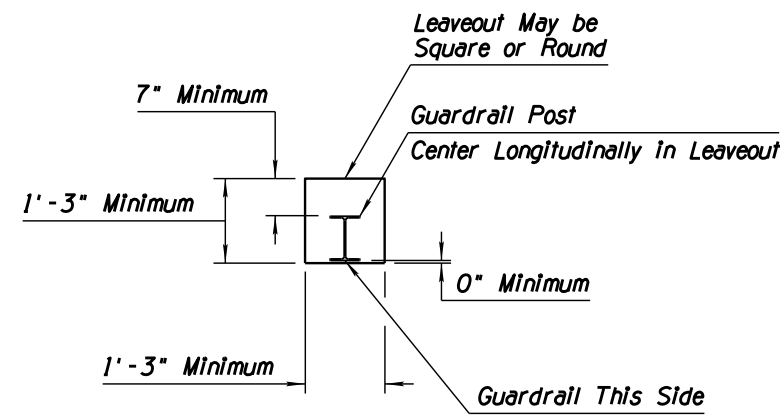
PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER J. C. COOPER RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
	GUARDRAIL END TERMINAL PAD LAYOUT FOR NGT	DRAWING NO. C-10.24 Sheet 1 of 2

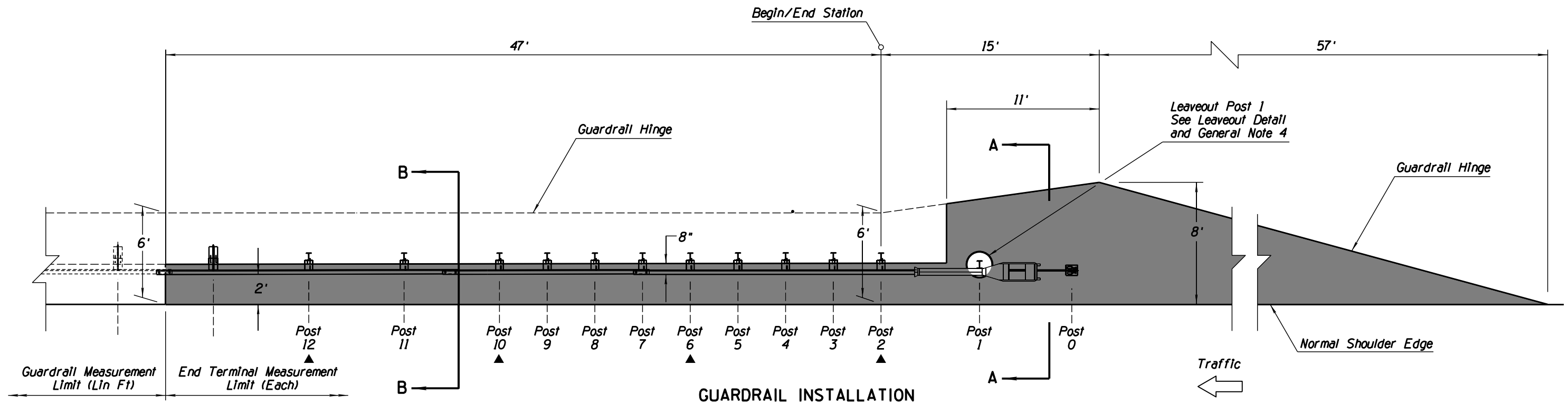
02/25
DATE

GENERAL NOTES

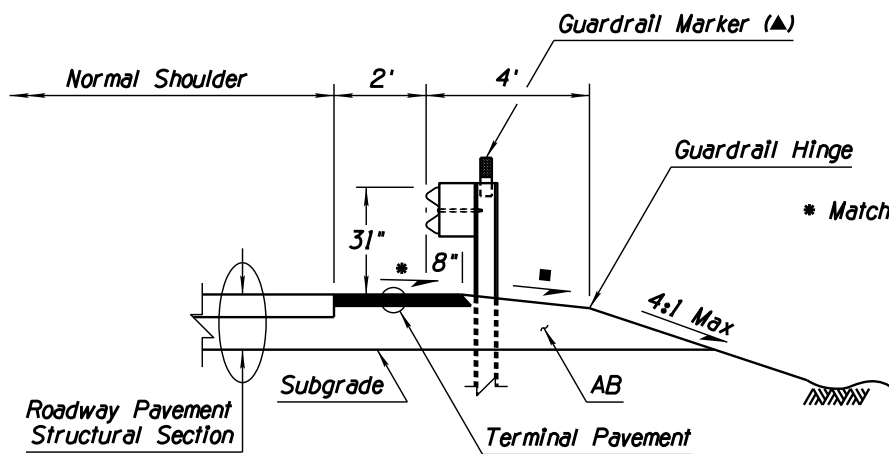
1. Use 3" of AC for terminal pavement adjacent to AC roadway pavement. Use 6" of Class B concrete for terminal pavement adjacent to PCCP roadway pavement.
 2. PCCP terminal pavement shall include 2" deep scored joints aligned with adjacent PCCP roadway pavement.
 3. This drawing shows pavement treatment for pads without curb. See Std Dwg C-10.77 for pavement treatment with curb.
 4. A leaveout shall be provided in the pavement around guardrail post 1. The leaveout shall be filled flush to top of pavement with 3" of CLSM grout having a 28 day compressive strength between 40 and 120 psi.
- ▲ Guardrail markers (delimiters) shall be installed on posts 2, 6, 10, 12 and as indicated in the Standard Specifications.
 - ◆ Match existing roadway cross slope, except slope at 0.020' /ft away from roadway on high side of superelevated roadways above 4000 ft elevation.



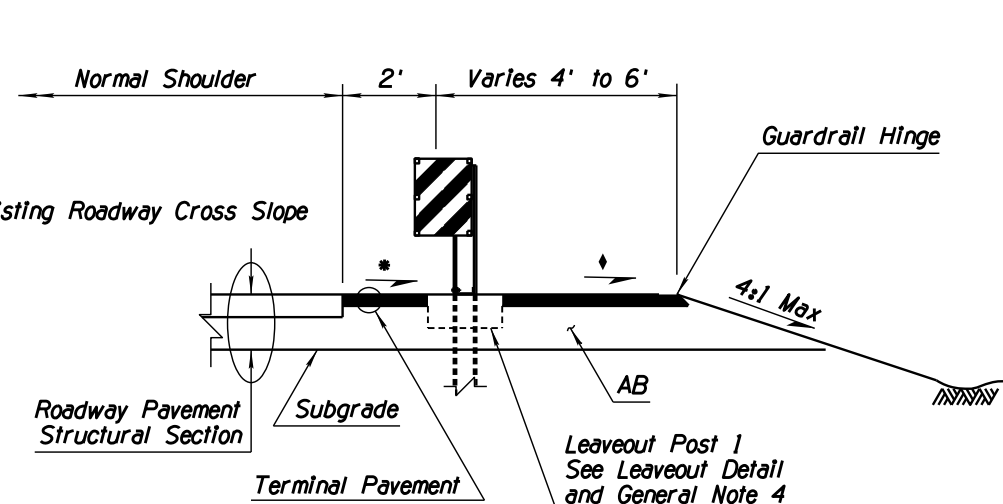
LEAVEOUT DETAIL



GUARDRAIL INSTALLATION



SECTION B - B



SECTION A - A

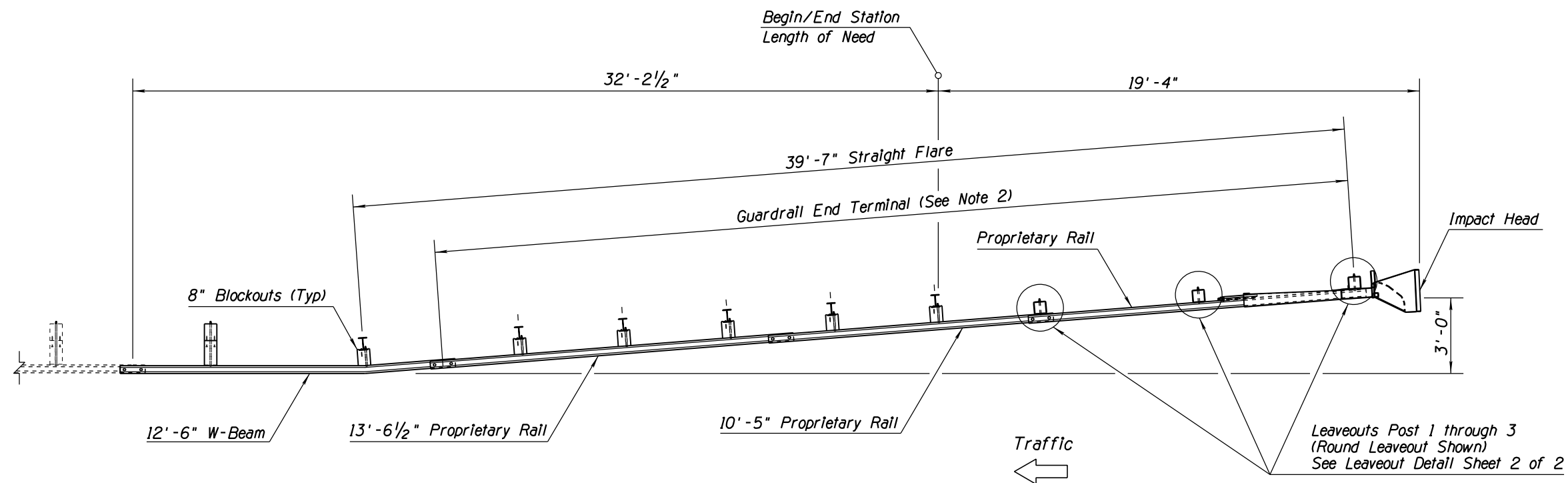
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	GUARDRAIL END TERMINAL PAD LAYOUT FOR NGT
DATE 02/25	DRAWING NO. C-10.24 Sheet 2 of 2

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

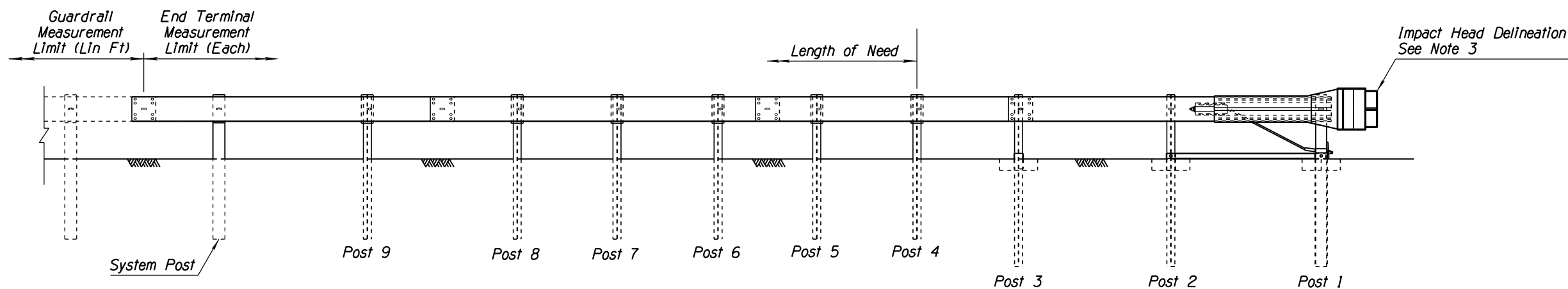
PRIOR DISTRIBUTION DATE

GENERAL NOTES

1. This drawing is for roadway layout only.
2. The MFLEAT shall be installed in accordance with the manufacturer's specifications and current approved drawing including all details, hardware, hardware quantities, and other information. The current manufacturer's approved drawing name is MFLT. Visit the Roadway Engineering web site to view the manufacturer's drawing.
3. See specifications and Traffic Signing and Marking Standard Drawings.
4. Posts 4 through 9 shall be steel line posts. Posts 1 through 3 are proprietary.
5. No rigid objects are allowed within the terminal pad footprint.



PLAN



ELEVATION

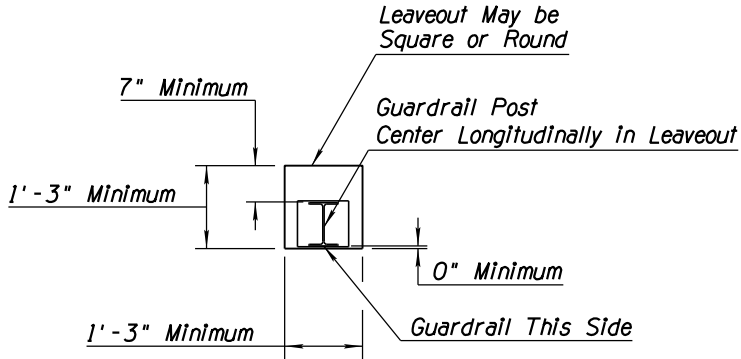
Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability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

PRIOR DISTRIBUTION DATE

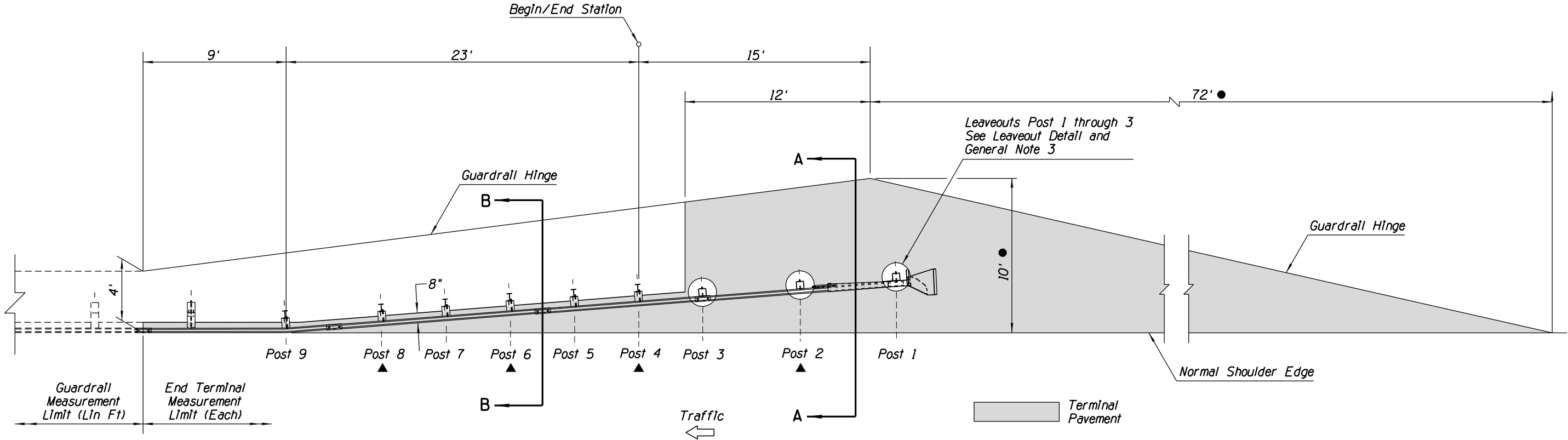
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER	GUARDRAIL END TERMINAL PAD LAYOUT FOR MFLEAT	DRAWING NO. C-10.26
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 11/19
		Sheet 1 of 2

GENERAL NOTES

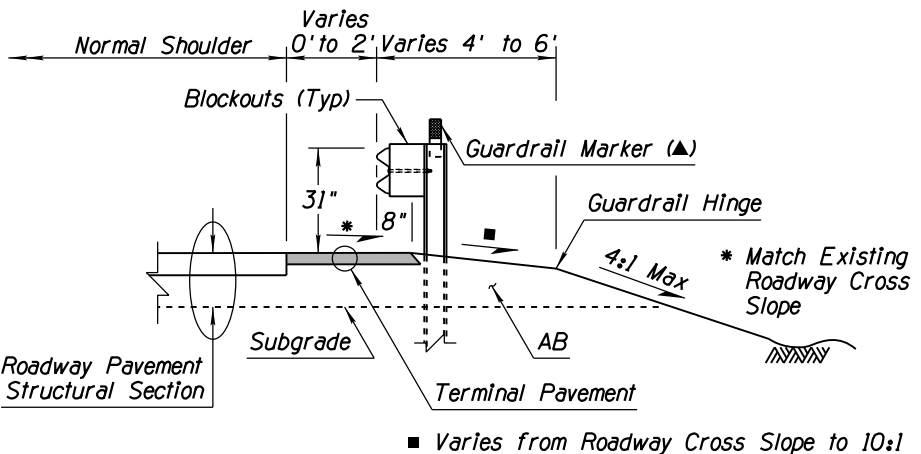
1. Use 3" of AC for terminal pavement adjacent to AC roadway pavement. Use 6" of Class B concrete for terminal pavement adjacent to PCCP roadway pavement.
 2. PCCP terminal pavement shall include 2" deep scored joints aligned with adjacent PCCP roadway pavement.
 3. Leaveouts shall be provided in the pavement around guardrail posts 1 through 3. Leaveouts shall be filled flush to top of pavement with 3" of CLSM grout having a 28 day compressive strength between 40 and 120 psi.
- ▲ Guardrail markers (delineators) shall be installed on posts 2, 4, 6, 8 and as indicated in the Standard Specifications.
 - Layout shown is for Guardrail face at normal shoulder width. When Guardrail is offset by 2' from normal shoulder width, increase pad approach taper length to 86' and pad width to 12'.



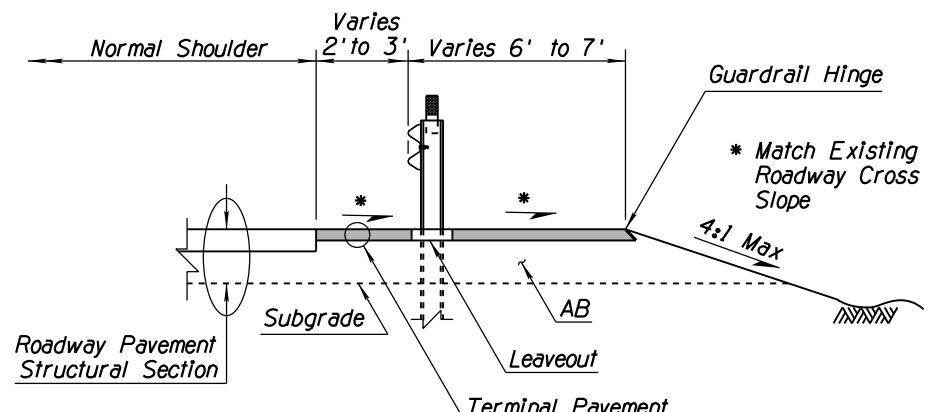
LEAVEOUT DETAIL



GUARDRAIL INSTALLATION



SECTION B - B



SECTION A - A

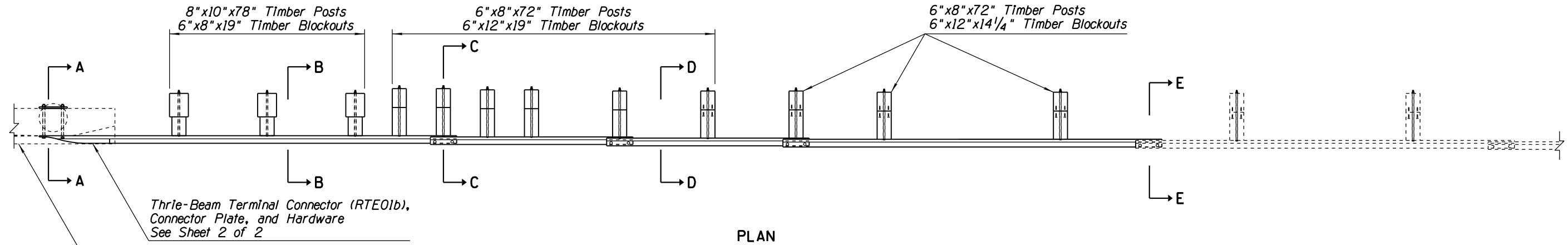
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PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	DRAWING NO. C-10.26
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER		
APPROVED	GUARDRAIL END TERMINAL PAD LAYOUT FOR MFLEAT	Sheet 2 of 2
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 11/19	

GENERAL NOTES

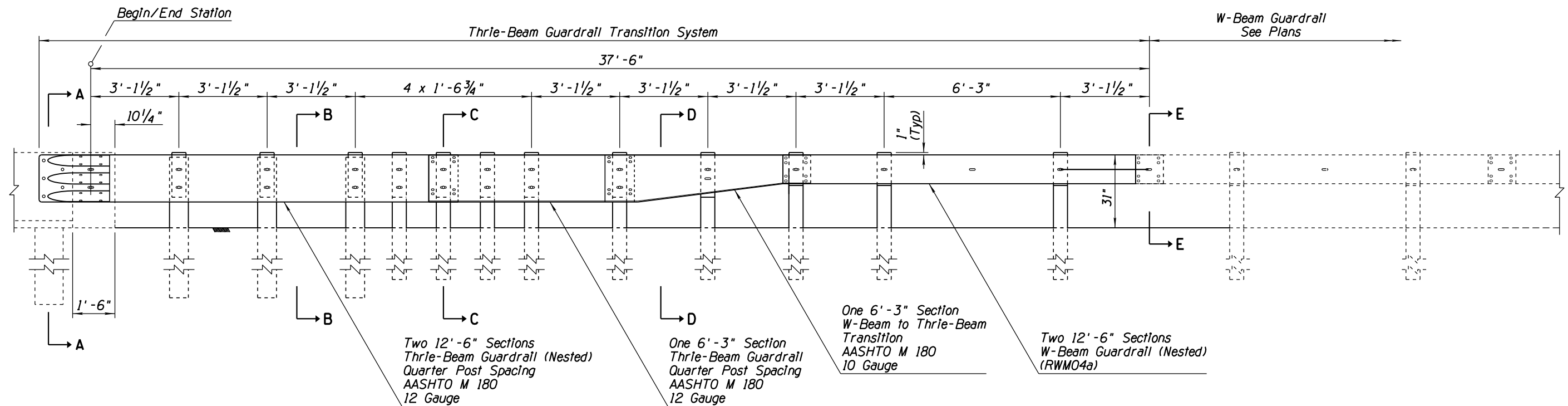
1. Thrie-beam terminal connector to thrie-beam splice shall be lapped in the direction of adjacent traffic.
2. Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.



Thrie-Beam Terminal Connector (RTE01b),
Connector Plate, and Hardware
See Sheet 2 of 2

Concrete Barrier Transition
Type 'F' to Thrie Beam
Std Dwgs C-10.70, C-10.71,
C-10.72 & C-10.73

PLAN



ELEVATION

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PRIOR DISTRIBUTION DATE 05/12

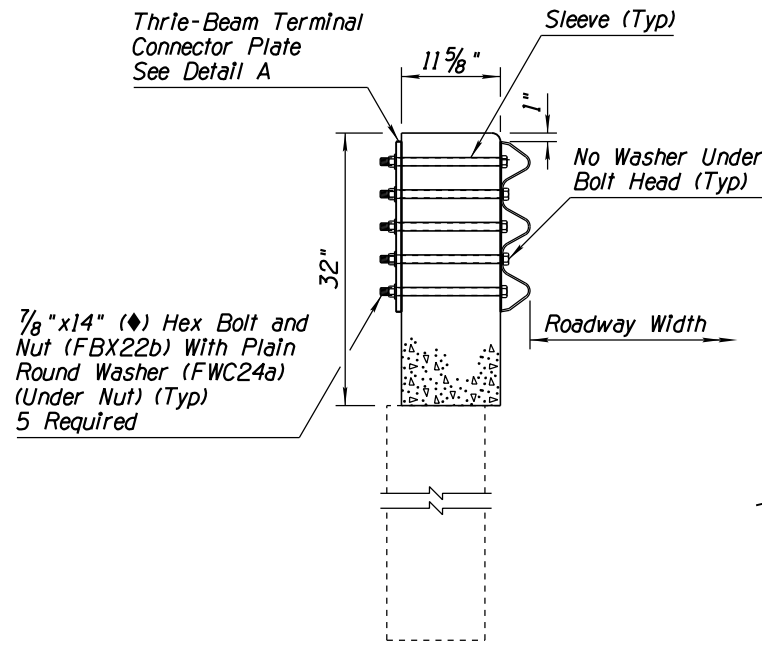
STANDARD ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	GUARDRAIL TRANSITION TO CONCRETE BARRIER TIMBER POST	DRAWING NO. C-10.30
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 12/17

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

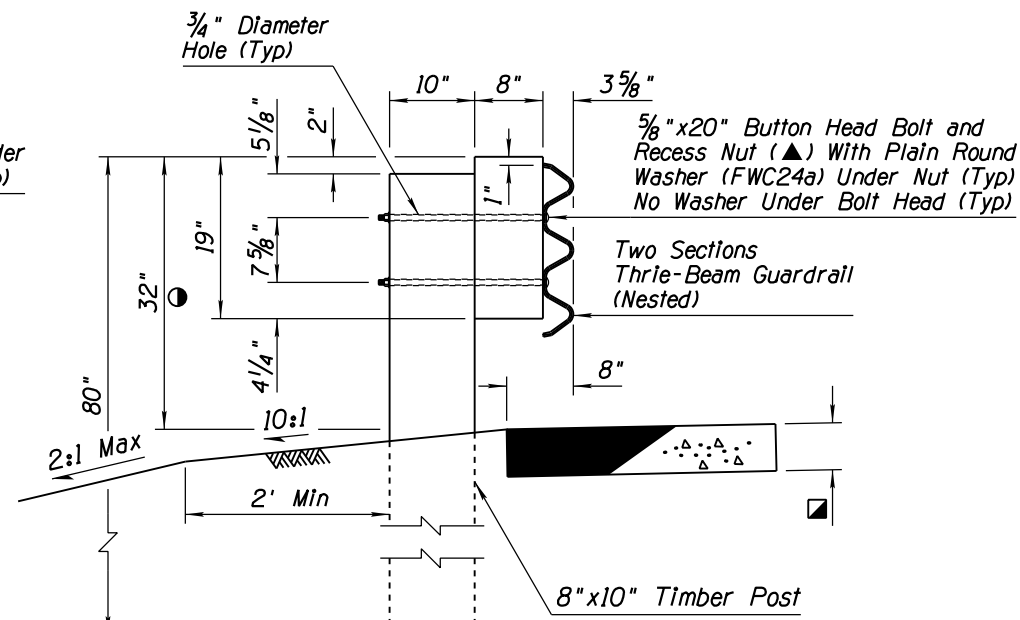
PRIOR DISTRIBUTION DATE 05/12

GENERAL NOTES

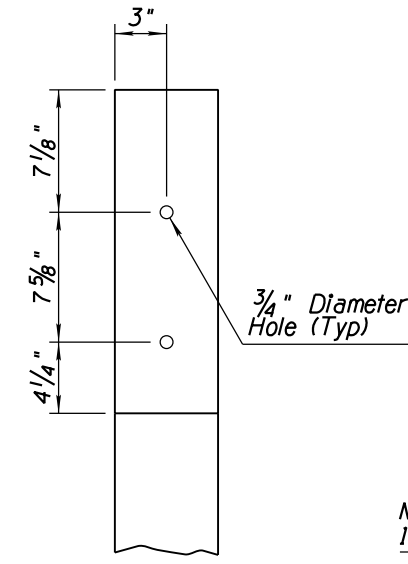
- Anchor plate shall conform to ASTM specification A36. bolts, washers and anchor plate shall be galvanized or, at the contractors option, stainless steel bolts and washers may be used.
- Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.
- Curb shall not be used with timber post guardrail transition.
 - 32" dimension to top of blockout is measured at face of guardrail. Top of guardrail shall be 31" measured at face of rail.
 - ▲ Shall meet the same material requirements as FBB07 with the noted length.
 - 3" min thick AC or 6" min thick PCCP



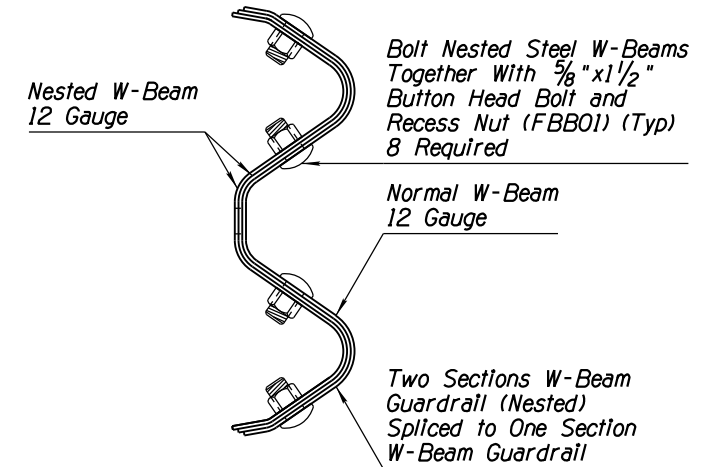
SECTION A-A ●



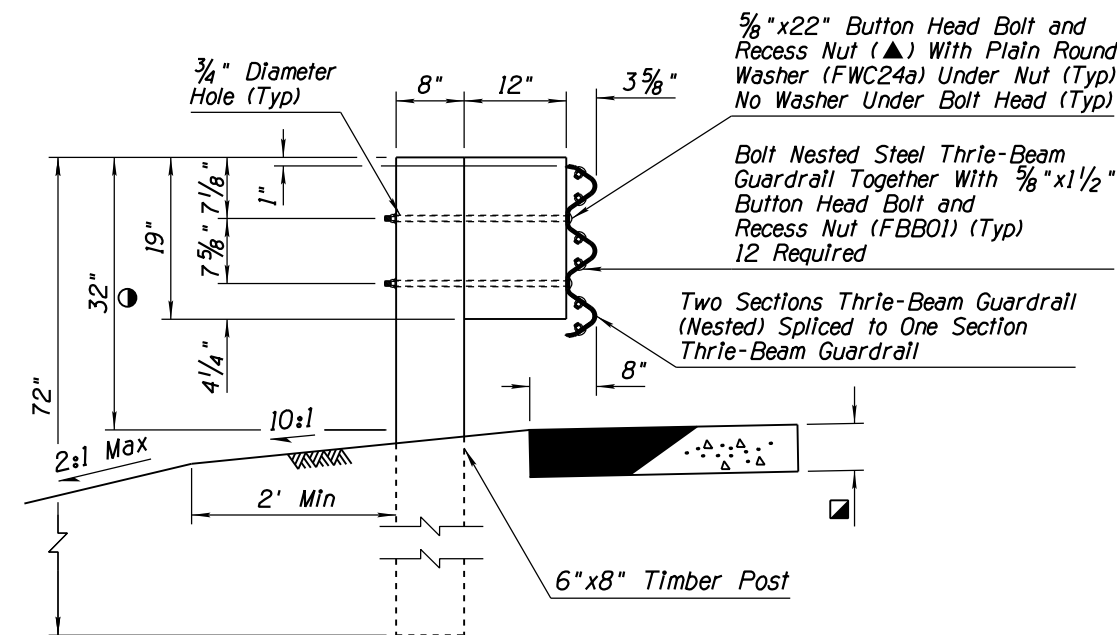
SECTION B-B



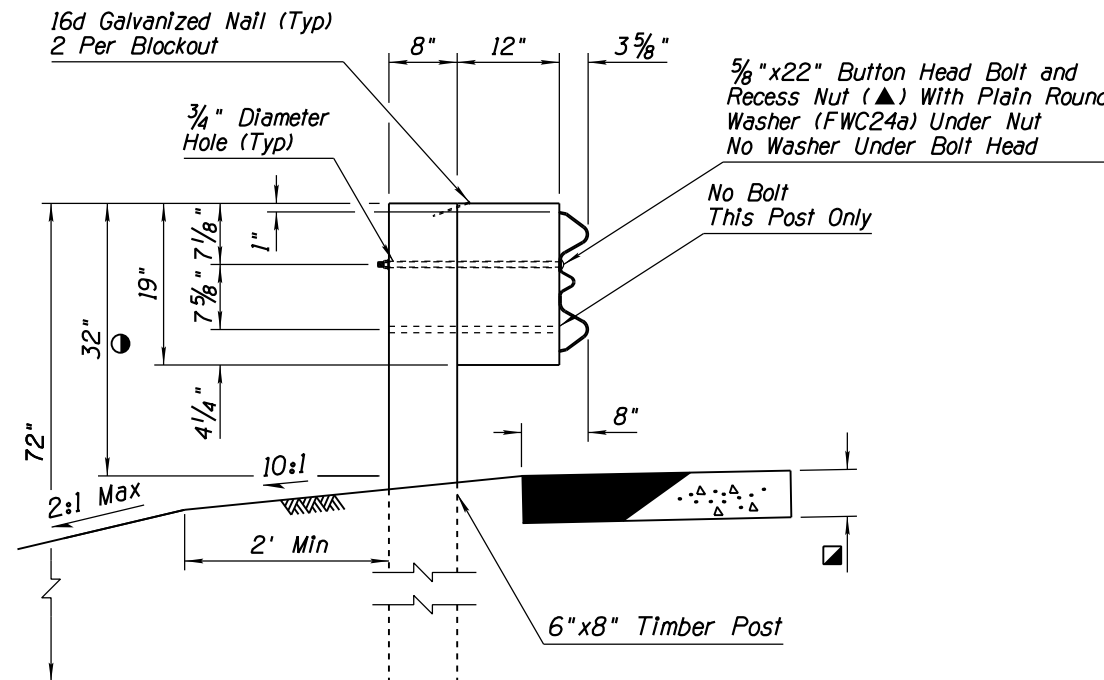
6" x 8" x 19" AND 6" x 12" x 19" BLOCKOUT DETAIL



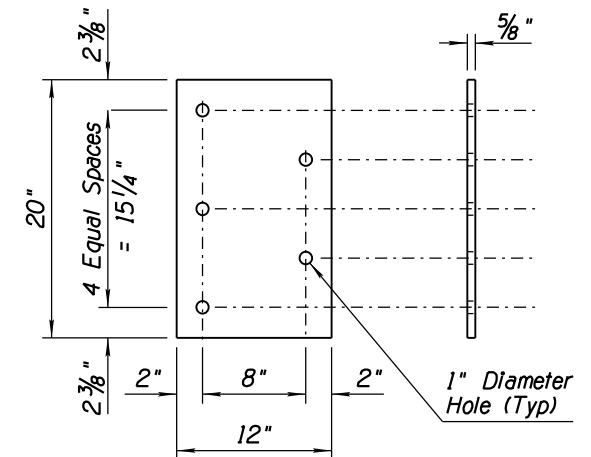
SECTION E-E



SECTION C-C



SECTION D-D

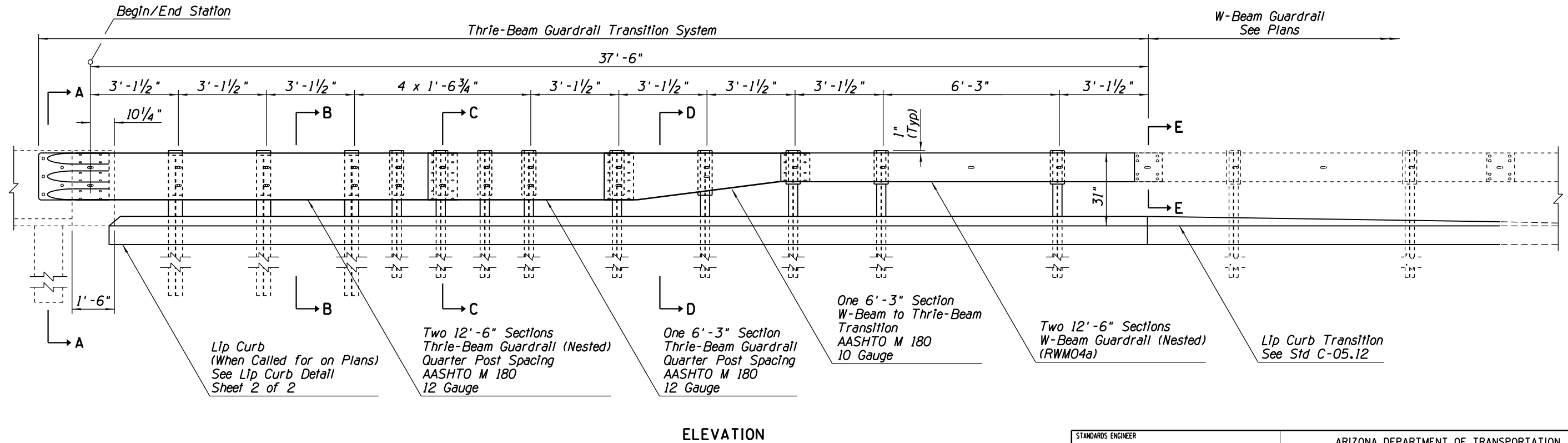
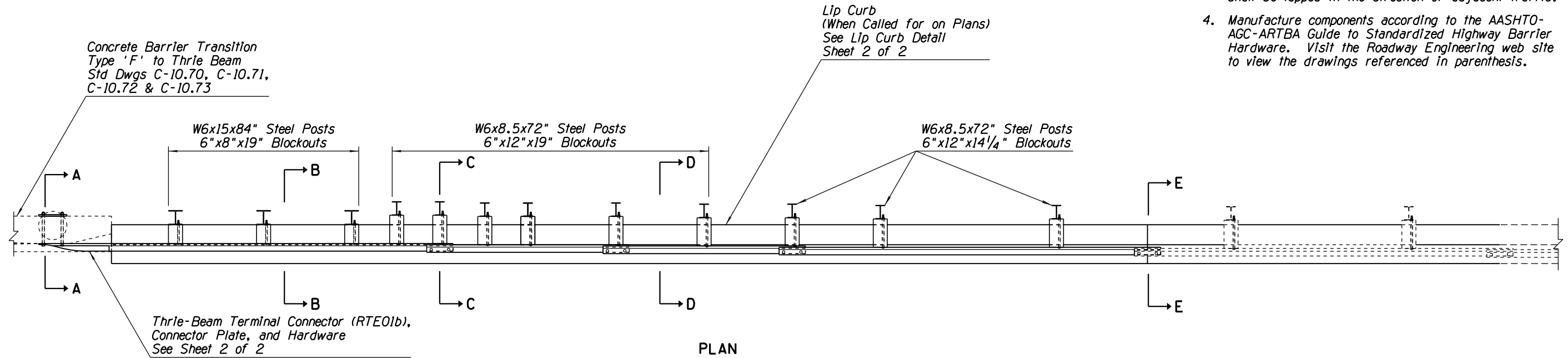


DETAIL A THRIE-BEAM TERMINAL CONNECTOR PLATE

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	GUARDRAIL TRANSITION TO CONCRETE BARRIER TIMBER POST	DRAWING NO. C-10.30
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	Sheet 2 of 2

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.
4. Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.



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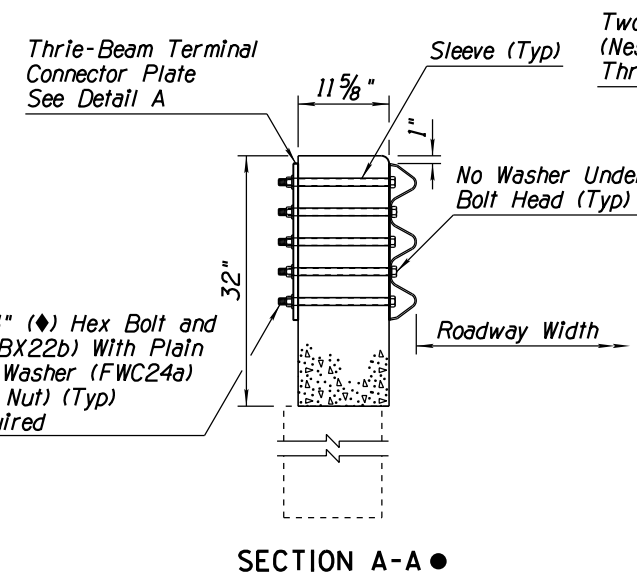
PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED	GUARDRAIL TRANSITION TO CONCRETE BARRIER STEEL POST
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	

DATE 12/17	DRAWING NO. C-10.31
	Sheet 1 of 2

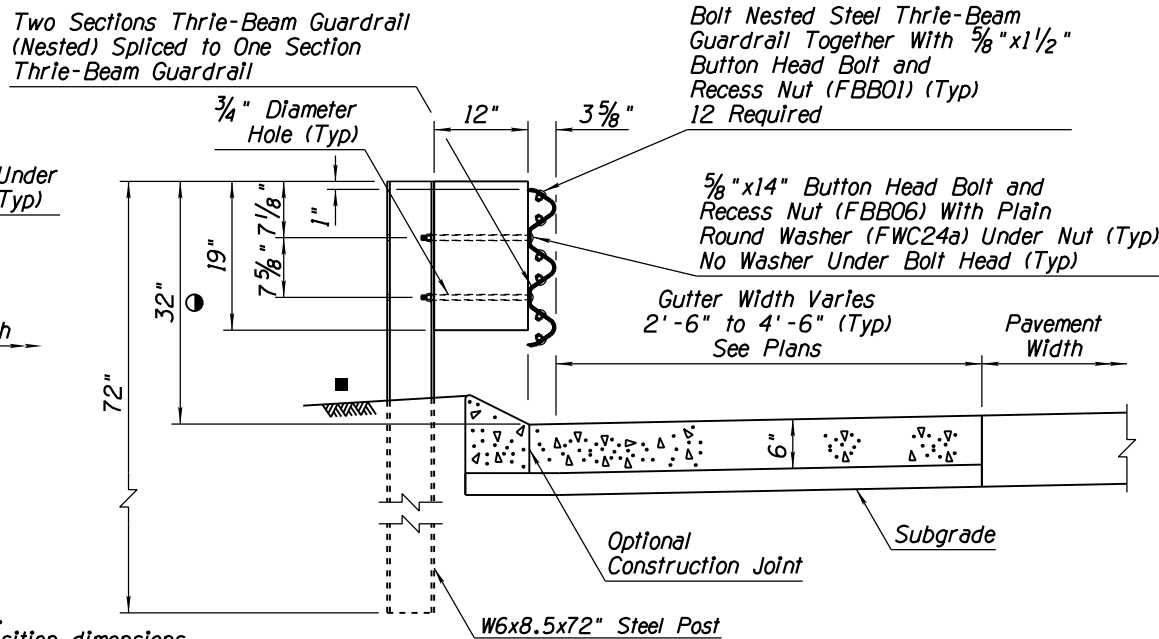
Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability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

PRIOR DISTRIBUTION DATE

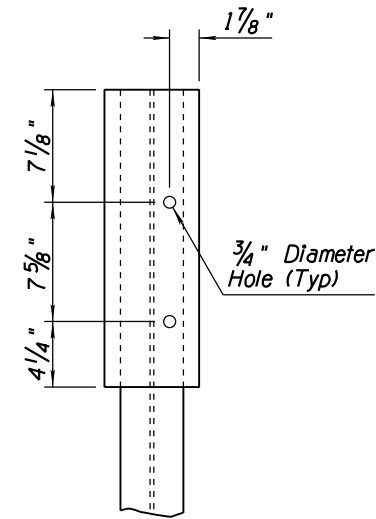


SECTION A-A

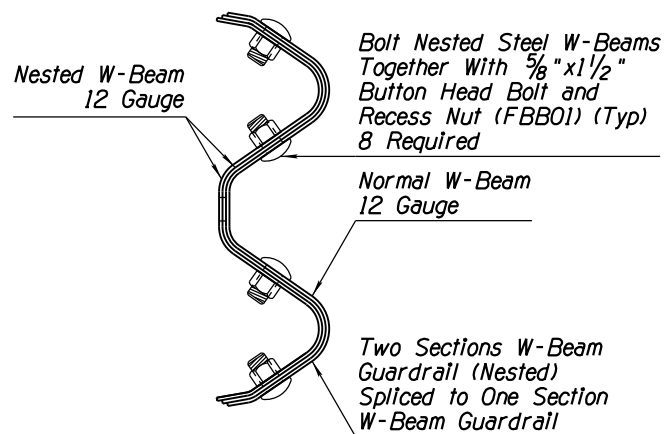
- Dimensions shown are for C-10.70 series transitions. See SD-1.01, SD-1.02 and SD-1.06 for bridge transition dimensions.
- ◆ Use 7/8" x 15" hex bolt for SD-1.01 and SD-1.06 transitions. Use 7/8" x 17" hex bolt for SD-1.02 transition.



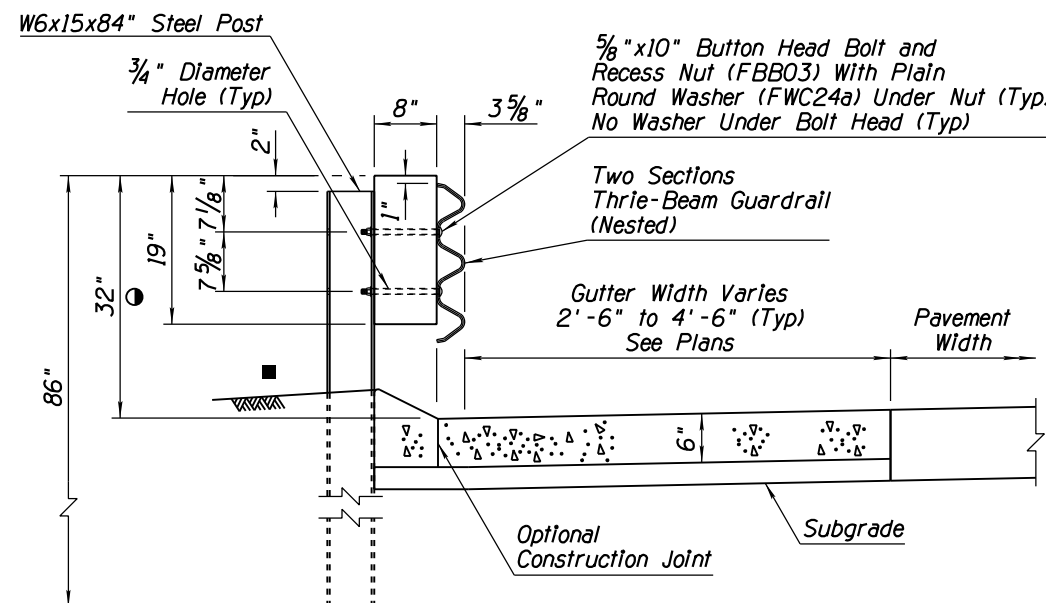
SECTION C-C



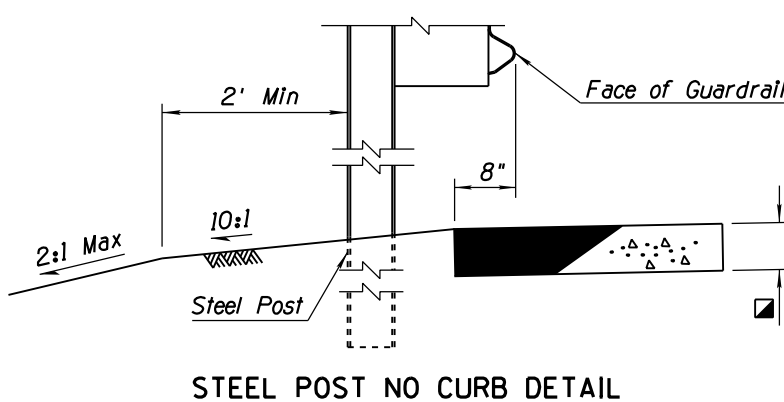
6" x 8" x 19" AND 6" x 12" x 19" BLOCKOUT DETAIL



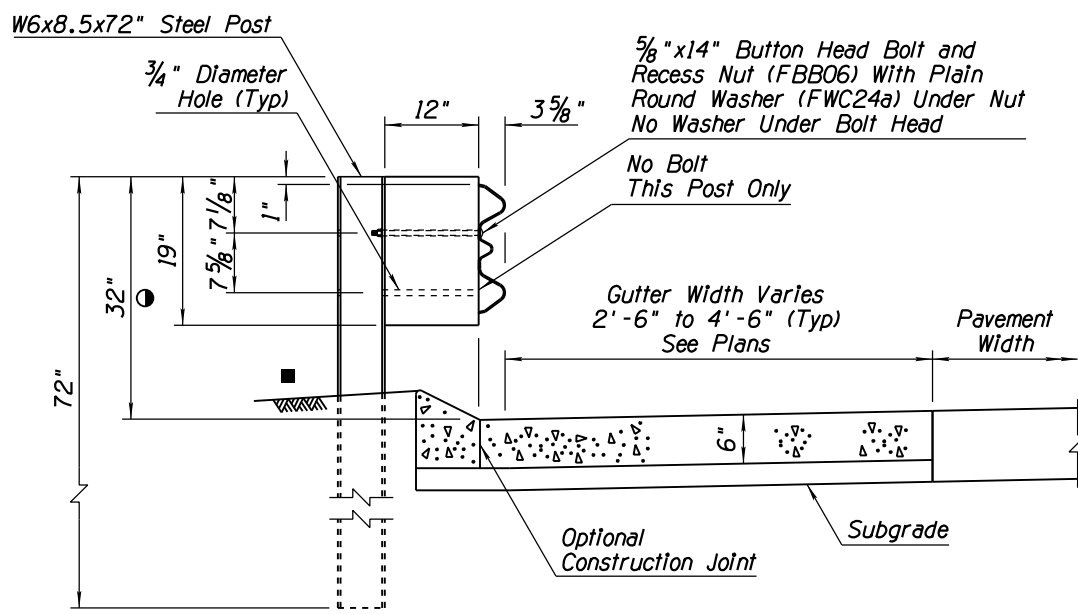
SECTION E-E



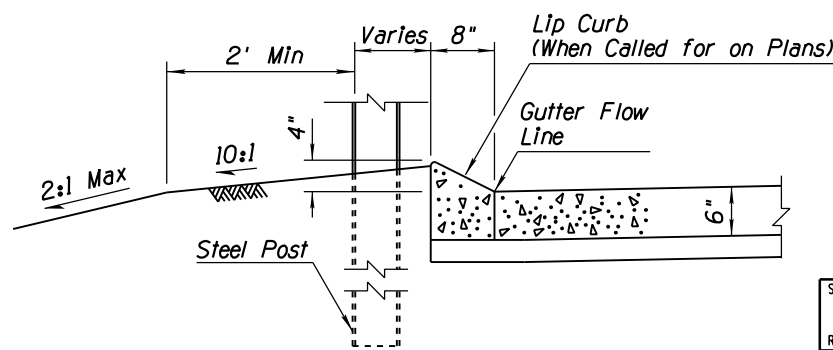
SECTION B-B



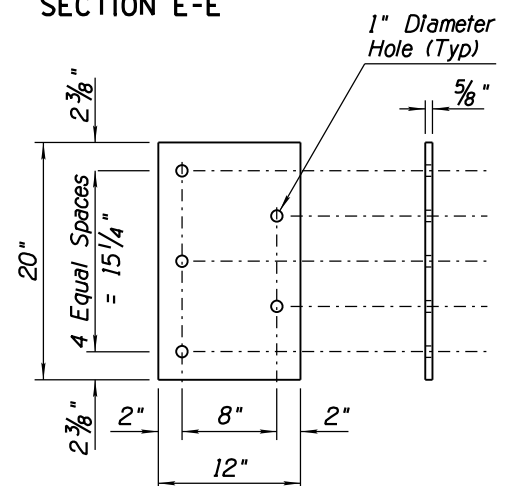
STEEL POST NO CURB DETAIL



SECTION D-D



LIP CURB DETAIL



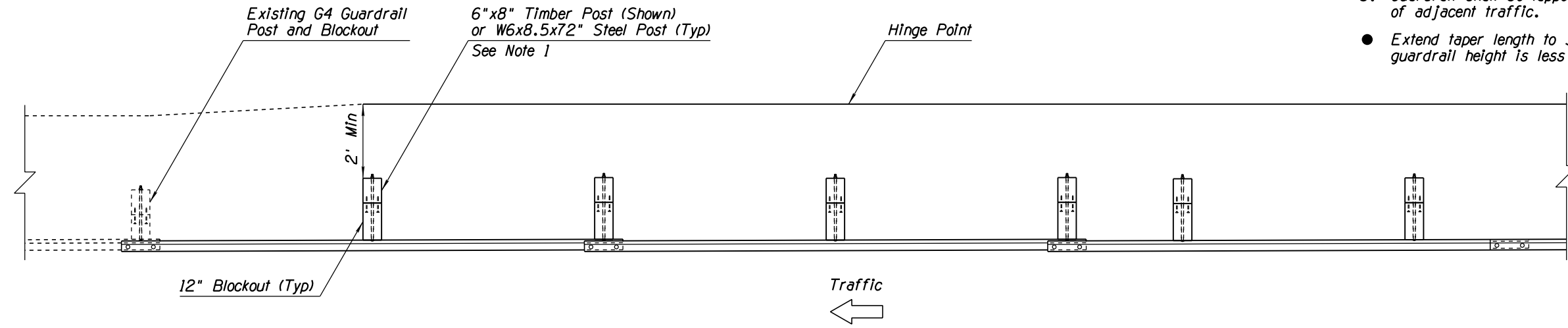
DETAIL A THRIE-BEAM TERMINAL CONNECTOR PLATE

- 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.
 - Manufacture components according to the AASHTO-AGC-ARTBA Guide to Standardized Highway Barrier Hardware. Visit the Roadway Engineering web site to view the drawings referenced in parenthesis.
- 32" dimension to top of blockout is measured at face of guardrail. Top of guardrail shall be 31" measured at face of rail.
 - See Lip Curb Detail for slope information
 - ▣ 3" min thick AC or 6" min thick PCCP

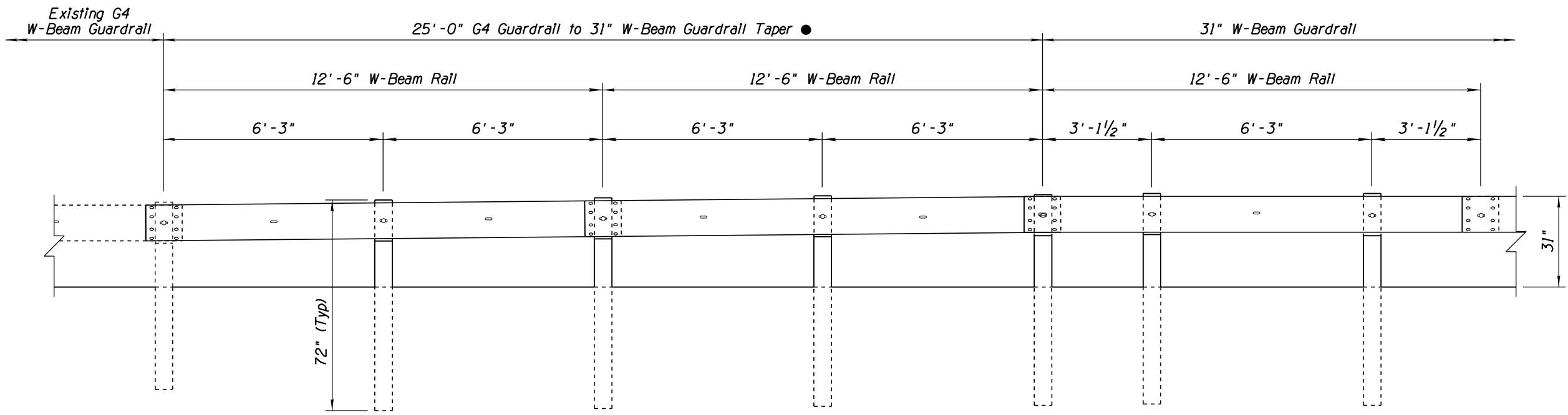
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	GUARDRAIL TRANSITION TO CONCRETE BARRIER STEEL POST	DRAWING NO. C-10.31
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	12/17 DATE	Sheet 2 of 2

GENERAL NOTES

1. Post type (timber or steel) for tapers shall match post type of adjoining guardrail.
2. See Std Dwgs C-10.03 and C-10.04 for additional information and dimensions.
3. Guardrail shall be lapped in the direction of adjacent traffic.
 - Extend taper length to 37'-6" when existing guardrail height is less than 28 inches.



PLAN



ELEVATION

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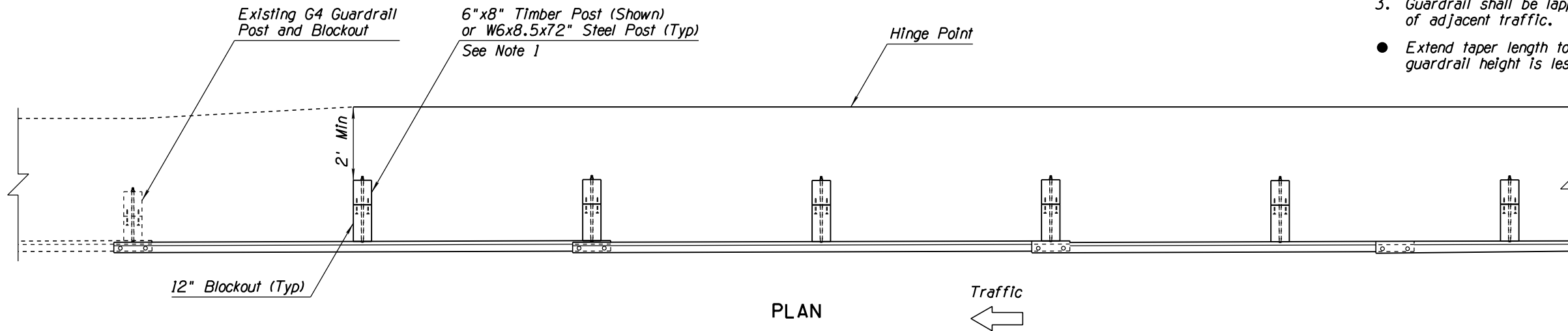
PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE <u>12/17</u>

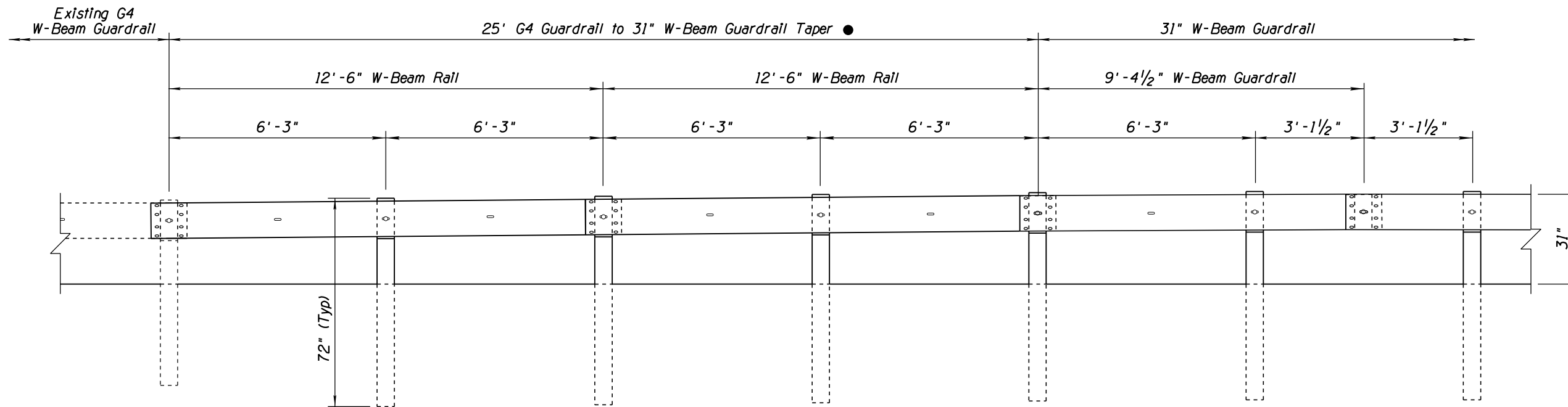
GUARDRAIL TAPER G4 TO MGS W-BEAM WITH STAGGERED POSTS	DRAWING NO. C-10.38 Sheet 1 of 2
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GENERAL NOTES

1. Post type (timber or steel) for tapers shall match post type of adjoining guardrail.
2. See Std Dwgs C-10.03 and C-10.04 for additional information and dimensions.
3. Guardrail shall be lapped in the direction of adjacent traffic.
 - Extend taper length to 37'-6" when existing guardrail height is less than 28 inches.



PLAN



ELEVATION

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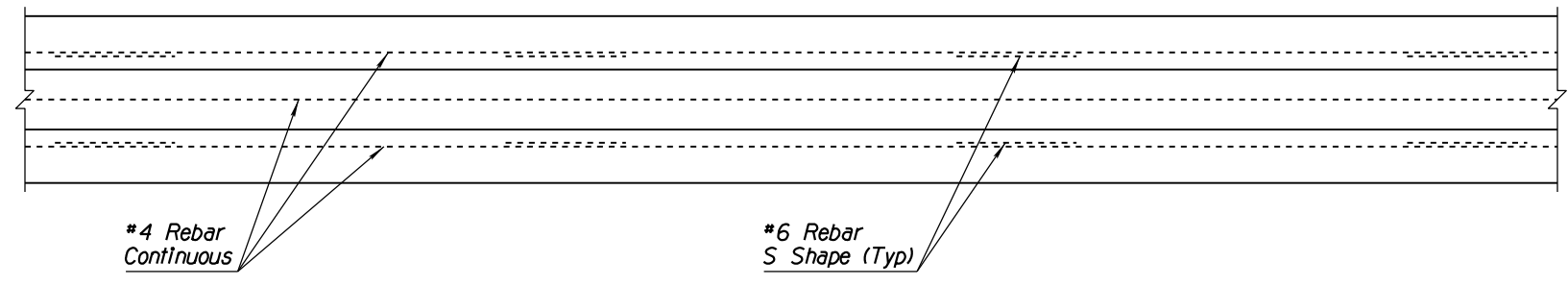
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED	GUARDRAIL TAPER G4 TO MGS W-BEAM WITH OFFSET RAIL
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	
DATE: 12/17	DRAWING NO. C-10.38
	Sheet 2 of 2

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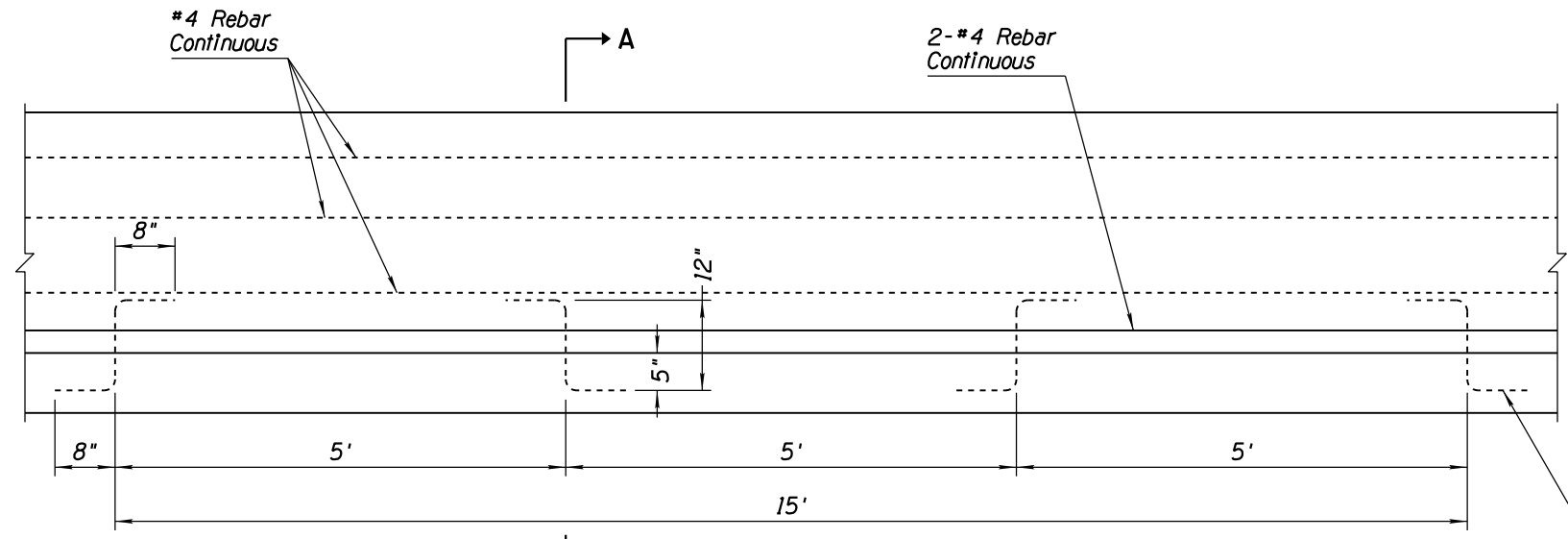
PRIOR DISTRIBUTION DATE 05/12

GENERAL NOTES

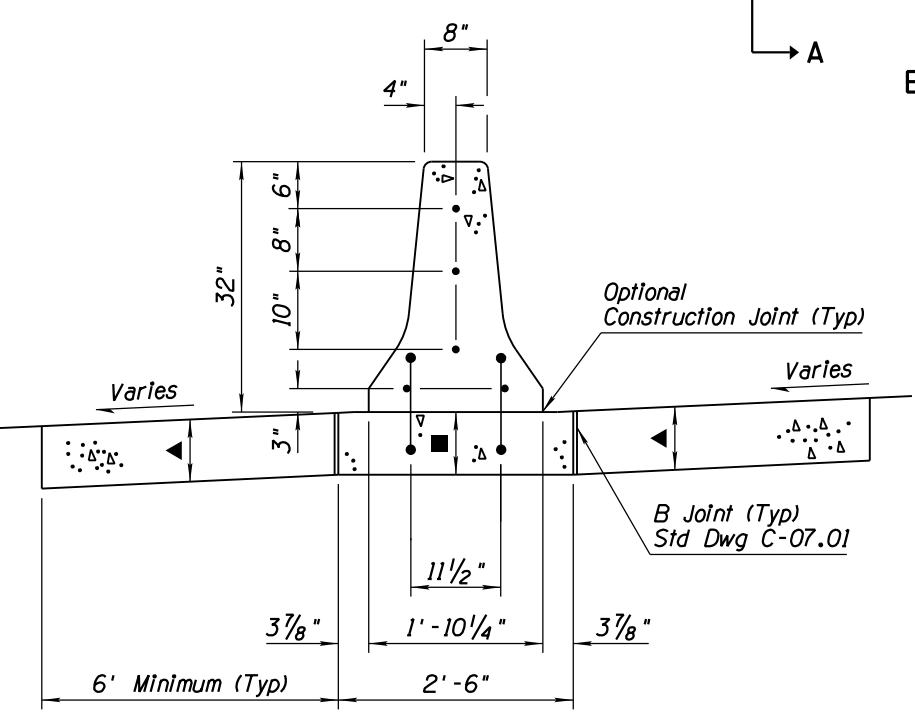
1. Median Barrier shall be constructed by the slip form or formed cast-in-place method.
 2. When obstacles prevent the use of slip form equipment, stationary forms shall be used.
 3. Barrier concrete shall be Class S, $f'_c = 4500$ PSI.
 4. Rebar shall be Grade 60.
 5. If the footing and barrier are cast monolithically, # 6 S shape rebars are not required.
 6. Barrier width shall not exceed the barrier footing width nor overhang the adjacent pavement.
 7. # 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:
 a) full-depth concrete, or
 b) 8" concrete over compacted AB (Class 2).
 See Special Provisions for measurement and payment.



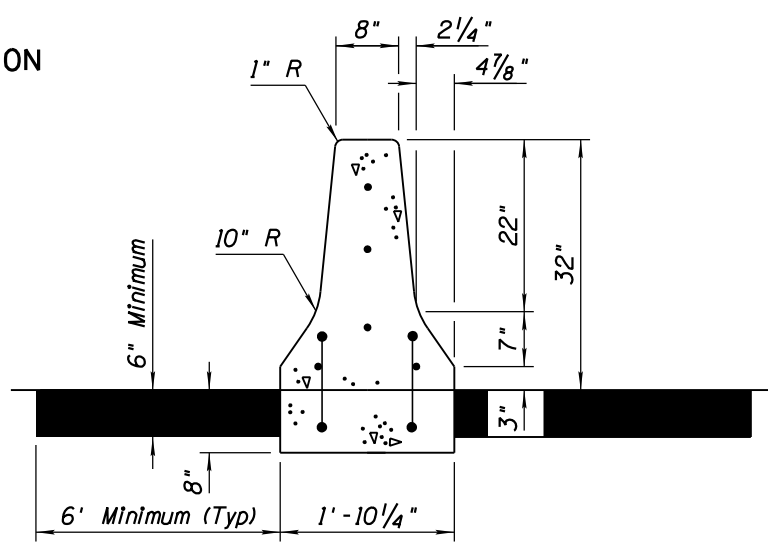
PLAN



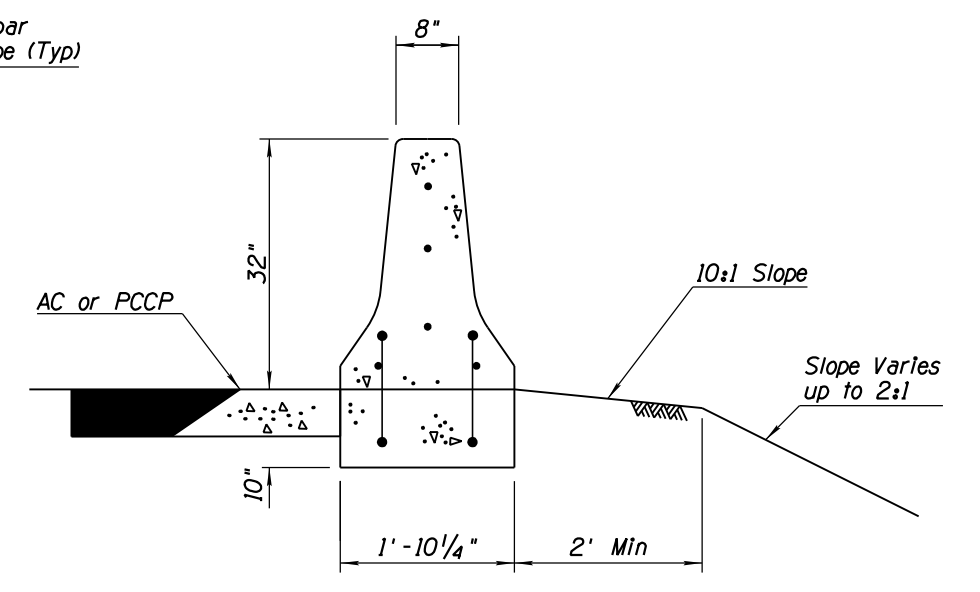
ELEVATION



WITH PCCP SECTION A-A



WITH AC SECTION A-A

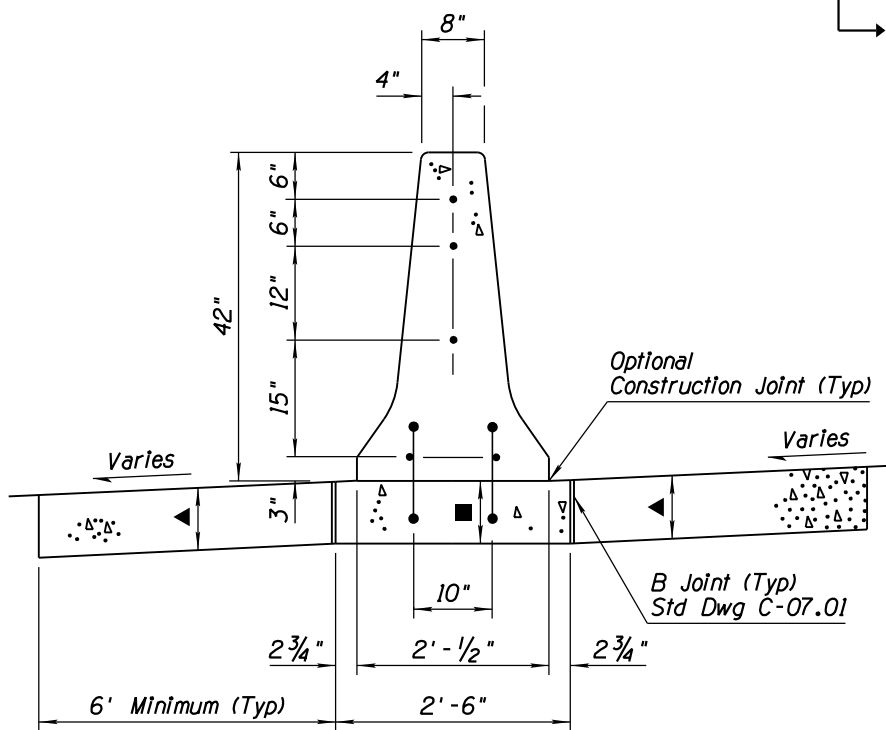
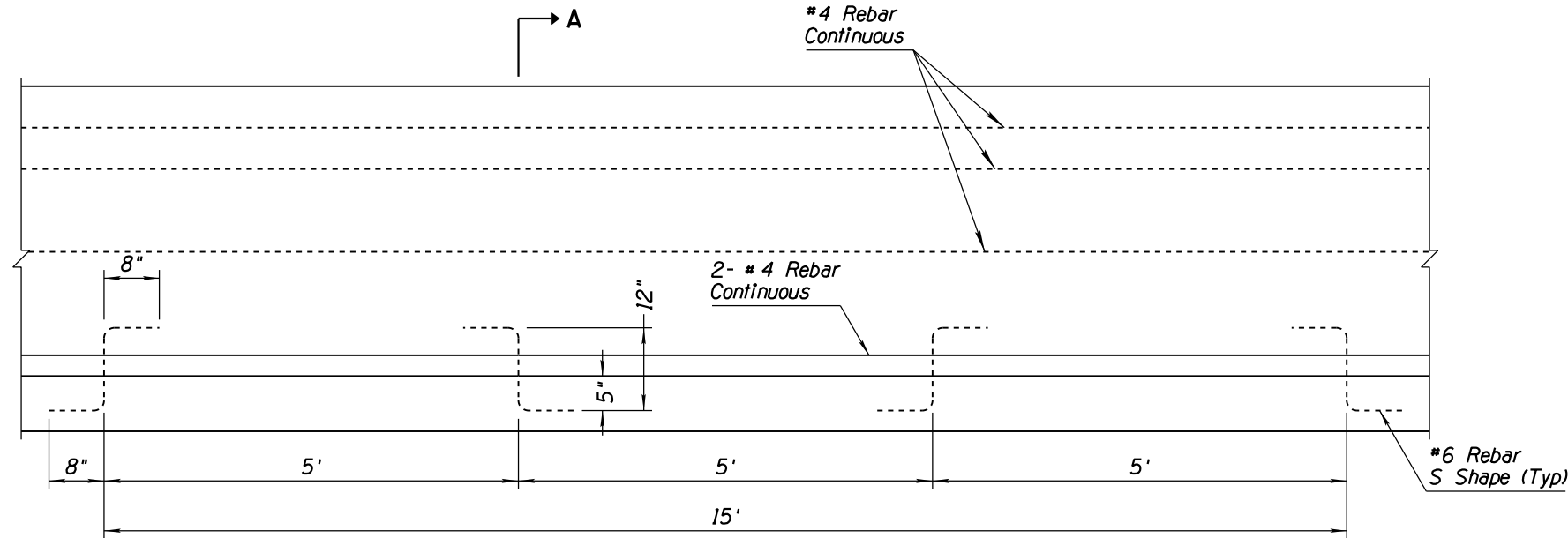
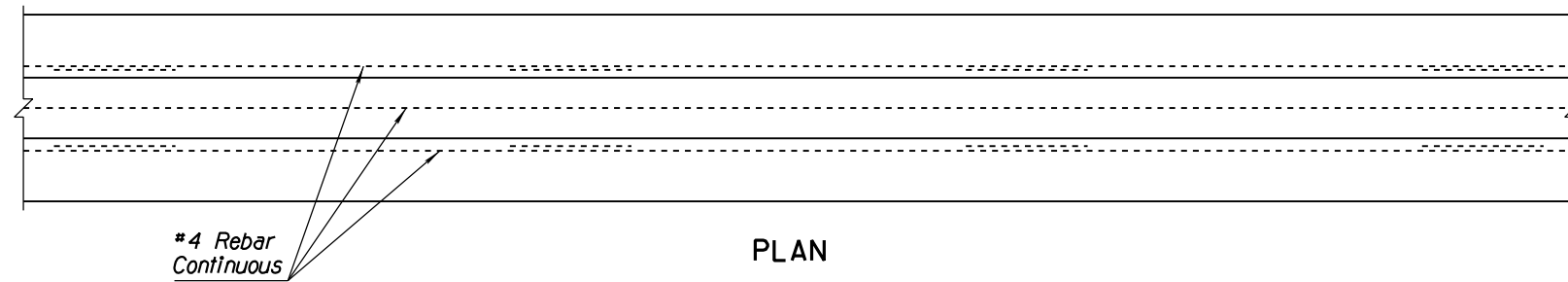


ADJACENT TO SLOPE SECTION A-A

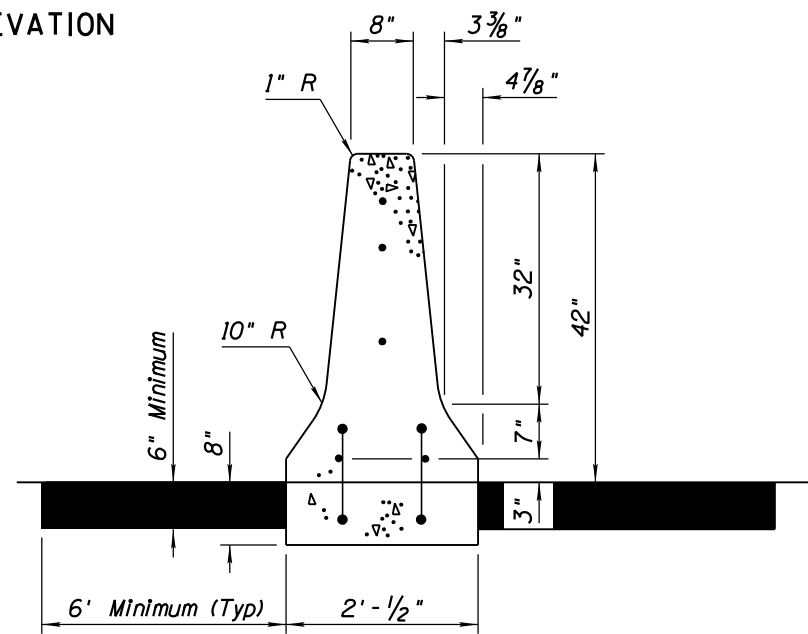
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE MEDIAN BARRIER 32" TYPE 'F' CAST-IN-PLACE	DRAWING NO. C-10.40
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	

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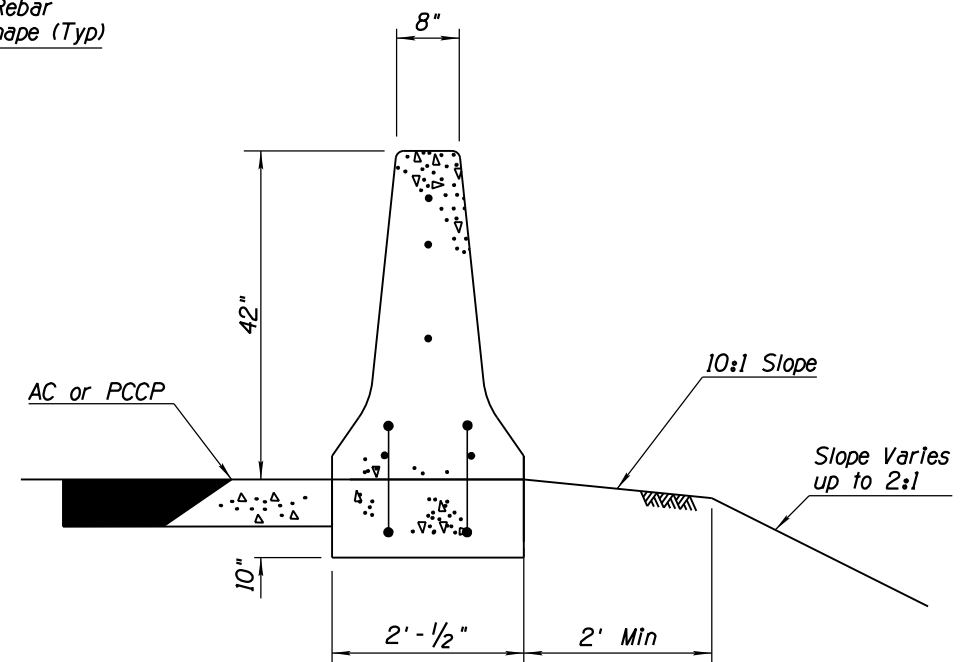
PRIOR DISTRIBUTION DATE 05/12



WITH PCCP SECTION A-A



WITH AC SECTION A-A



ADJACENT TO SLOPE SECTION A-A

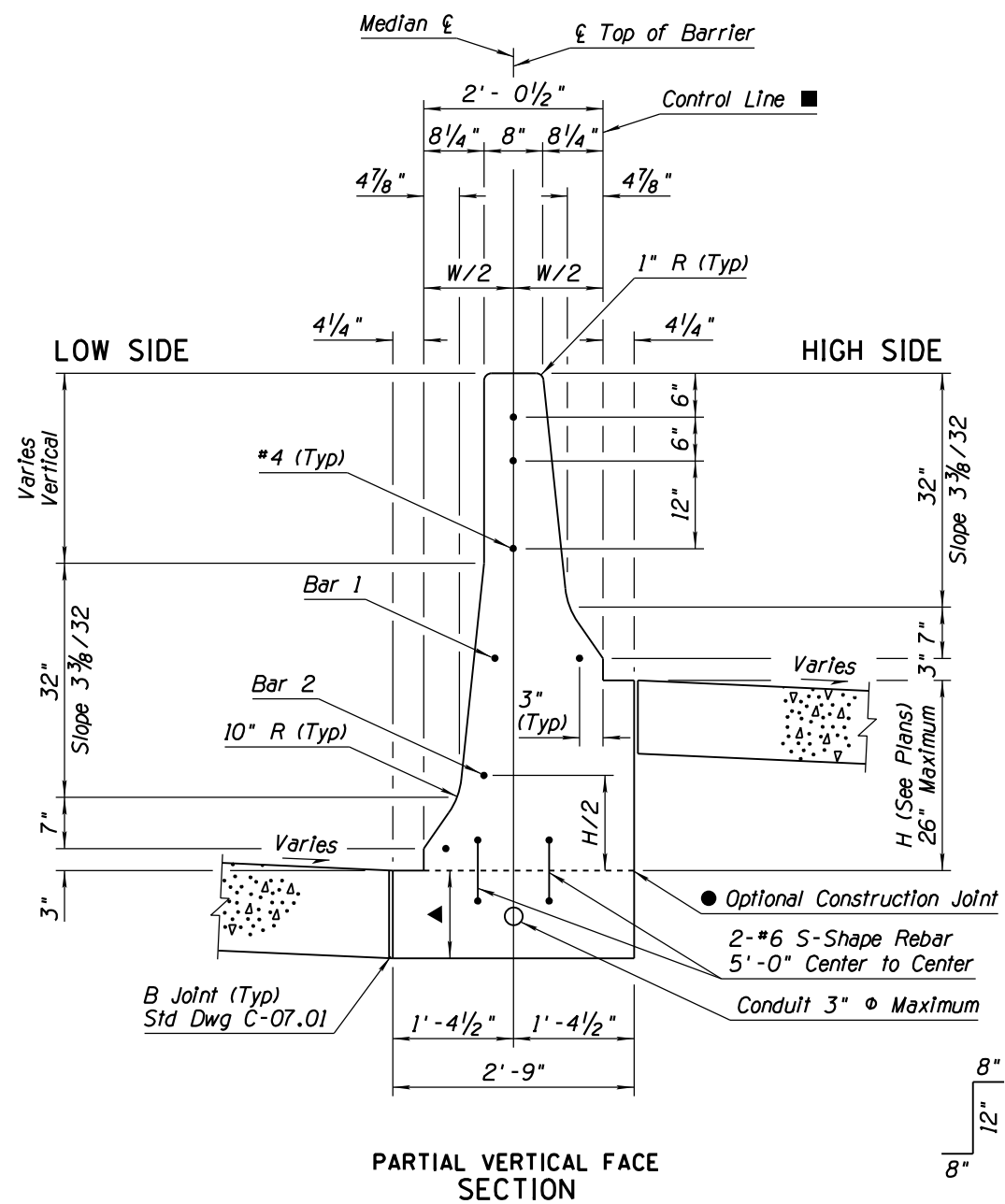
GENERAL NOTES

1. Median Barrier shall be constructed by the slip form or by the formed cast-in-place method.
 2. When obstacles prevent the use of slip form equipment, stationary forms shall be used.
 3. Barrier concrete shall be Class S, $f'_c = 4500$ PSI.
 4. Rebar shall be Grade 60.
 5. If the footing and barrier are cast monolithically, #6 S shape rebars are not required.
 6. Barrier width shall not exceed the barrier footing width nor overhang the adjacent pavement.
 7. #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:
 - a) full-depth concrete, or
 - b) 8" concrete over compacted AB (Class 2).
- See Special Provisions for measurement and payment.

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE MEDIAN BARRIER 42" TYPE 'F' CAST-IN-PLACE	DRAWING NO. C-10.41
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	

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

PRIOR DISTRIBUTION DATE



Height (H)	Bar 1	Bar 2
0" to 6"		
6" to 12"	X	
12" to 26"	X	X

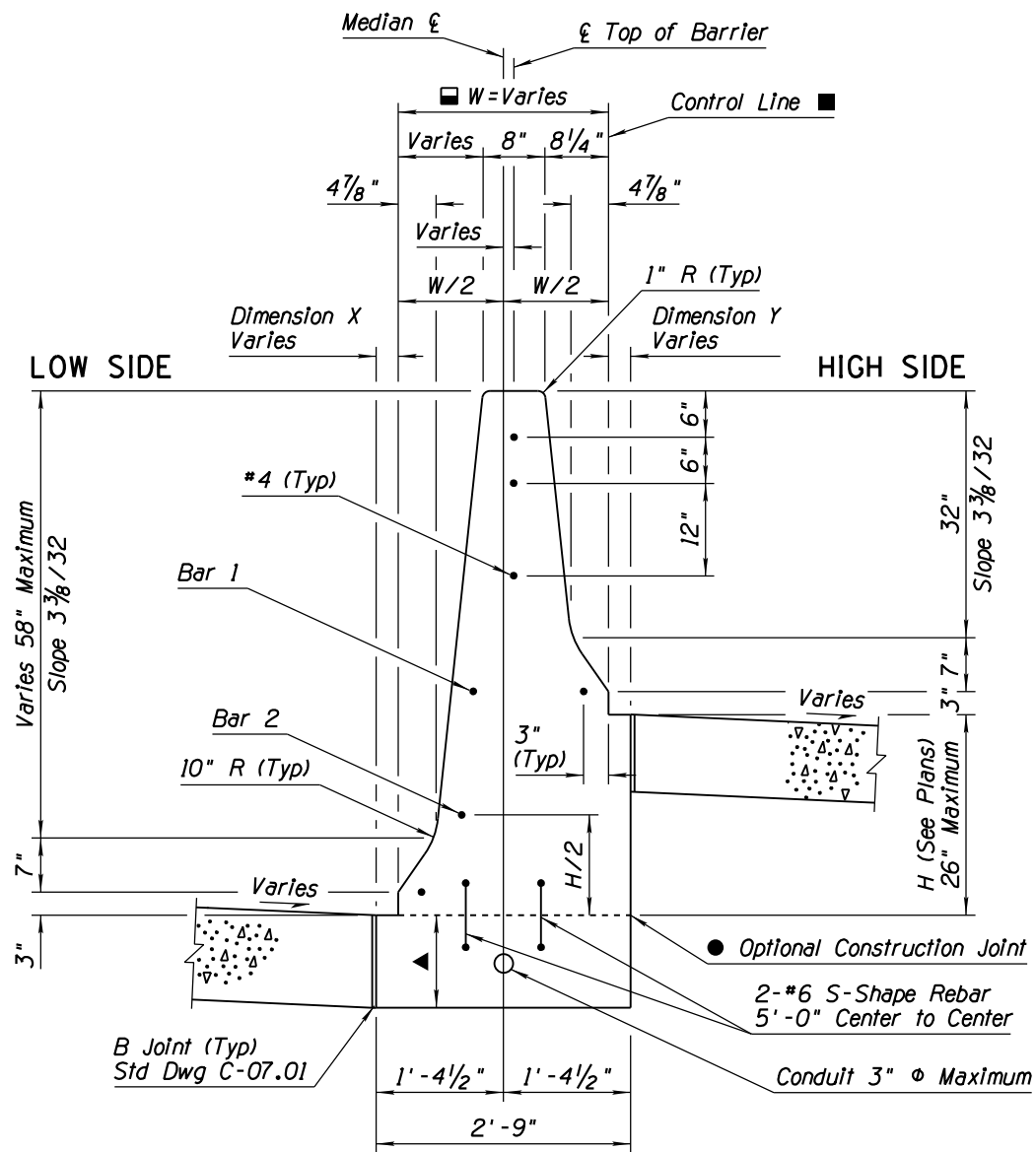
X - Indicates #4 Rebar To Be Included

GENERAL NOTES

- Design Specifications- AASHTO LRFD Design Specifications, 4th Edition, 2007.
- Barrier concrete shall be Class S, $f'_c=4500$ PSI.
- All rebar shall be Grade 60.
- All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for rebar shall be out-to-out of bars. All placement dimensions shall be to center of bars unless noted otherwise.
- All rebar shall have 2-inch clear cover unless noted otherwise.
- Longitudinal rebar shall extend 12" past the construction joint at the completion of each incremental pour.
- Median Barrier shall be constructed by the slip form or formed cast-in-place methods only.
- Where obstacles prevent slip forming, stationary forms shall be used.
- The terminology 'Low Side' and 'High Side' are used for reference purposes only. The barrier details shall be mirrored if required by the adjacent pavement elevations.
- Backfilling and/or embankment placement on the High Side shall not commence until the PCCP is constructed on the Low Side.
- The Median Barrier has been designed to accommodate a maximum of 2 - 3" ϕ conduits. Locate conduits as required to make connection to pull boxes and appurtenances.
 - If footing and barrier are constructed monolithically, #6 S-Shape rebar is not required.
 - The contractor shall provide Control Line offsets to the Engineer prior to construction of the Median Barrier. The offsets shall be provided at sufficient intervals to control the location of the barrier construction equipment and forms.
 - W/2 - Bottom faces of Median Barrier shall be equidistant from Median ξ .
 - ▲ Footing depth shall match adjacent PCCP thickness and shall consist of either:
 - full-depth concrete (as shown), or
 - 8" concrete over compacted AB (Class 2).
 See Special Provisions for measurement and payment.

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE MEDIAN BARRIER 42" TYPE "F" WITH VARIABLE HEIGHT SIDES H = 0" TO 26"	DRAWING NO. C-10.44
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 12/17

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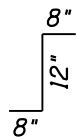
SLOPED FACE ALTERNATIVE SECTION

Height (H)	Bar 1	Bar 2
0" to 6"		
6" to 12"	X	
12" to 26"	X	X

X - Indicates #4 Rebar To Be Included

GENERAL NOTES

- Barrier concrete shall be Class S, $f'_c=4500$ PSI.
- All rebar shall be Grade 60.
- All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for rebar shall be out-to-out of bars. All placement dimensions shall be to center of bars unless noted otherwise.
- All rebar shall have 2-inch clear cover unless noted otherwise.
- Longitudinal rebar shall extend 12" past the construction joint at the end of each incremental pour.
- Median Barrier shall be constructed by the slip form or formed cast-in-place methods only.
- Where obstacles prevent slip forming, stationary forms shall be used.
- The terminology 'Low Side' and 'High Side' are used for reference purposes only. The barrier details shall be mirrored if required by the adjacent pavement elevations.
- Backfilling and/or embankment placement on the High Side shall not commence until the PCCP is constructed on the Low Side.
- The Median Barrier has been designed to accommodate a maximum of 2 - 3" ϕ conduits. Locate conduits as required to make connection to pull boxes and appurtenances.
 - If footing and barrier are constructed monolithically, #6 S-Shape rebar is not required.
 - The contractor shall provide Control Line offsets to the Engineer prior to construction of the Median Barrier. The offsets shall be provided at sufficient intervals to control the location of the barrier construction equipment and forms.
 - W (in) = $24\frac{1}{2}$ (in) + $3\frac{3}{8}/32 * H$ (in)
 Dimension X = Dimension Y = $1'-4\frac{1}{2}" - W/2$
 $W/2$ - Bottom faces of Median Barrier shall be equidistant from Median E.
 - ▲ Footing depth shall match adjacent PCCP thickness and shall consist of either:
 - full-depth concrete (as shown), or
 - 8" concrete over compacted AB (Class 2).
 See Special Provisions for measurement and payment.

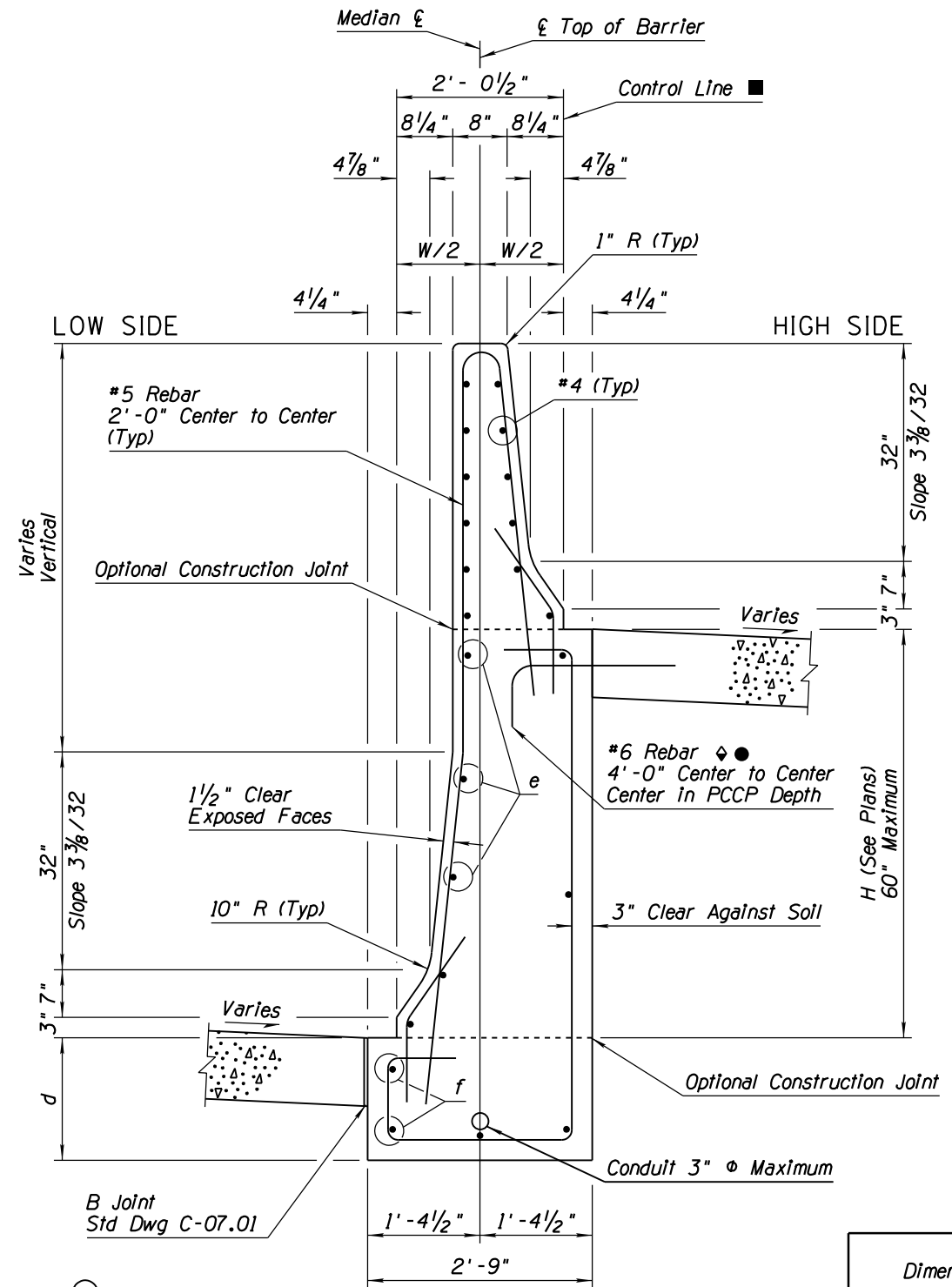


PRIOR DISTRIBUTION DATE

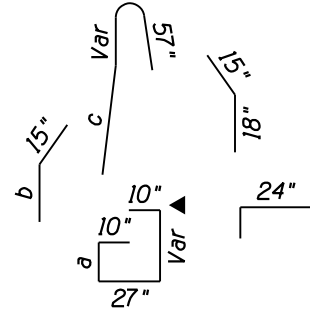
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE MEDIAN BARRIER 42" TYPE "F" WITH VARIABLE HEIGHT SIDES H = 0" TO 26"	DRAWING NO. C-10.44
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		Sheet 2 of 2
	DATE: 12/17	

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

PRIOR DISTRIBUTION DATE



SECTION PARTIAL VERTICAL FACE



Dimension H	23"	36"	48"
	to 36"	to 48"	to 60"
Bend Dimension a	7"	7"	13"
Bend Dimension b	12"	12"	18"
Bend Dimension c	51"	51"	57"
Dimension d	12"	12"	18"
Number of bars e	1	2	3
Number of bars f	1	1	2

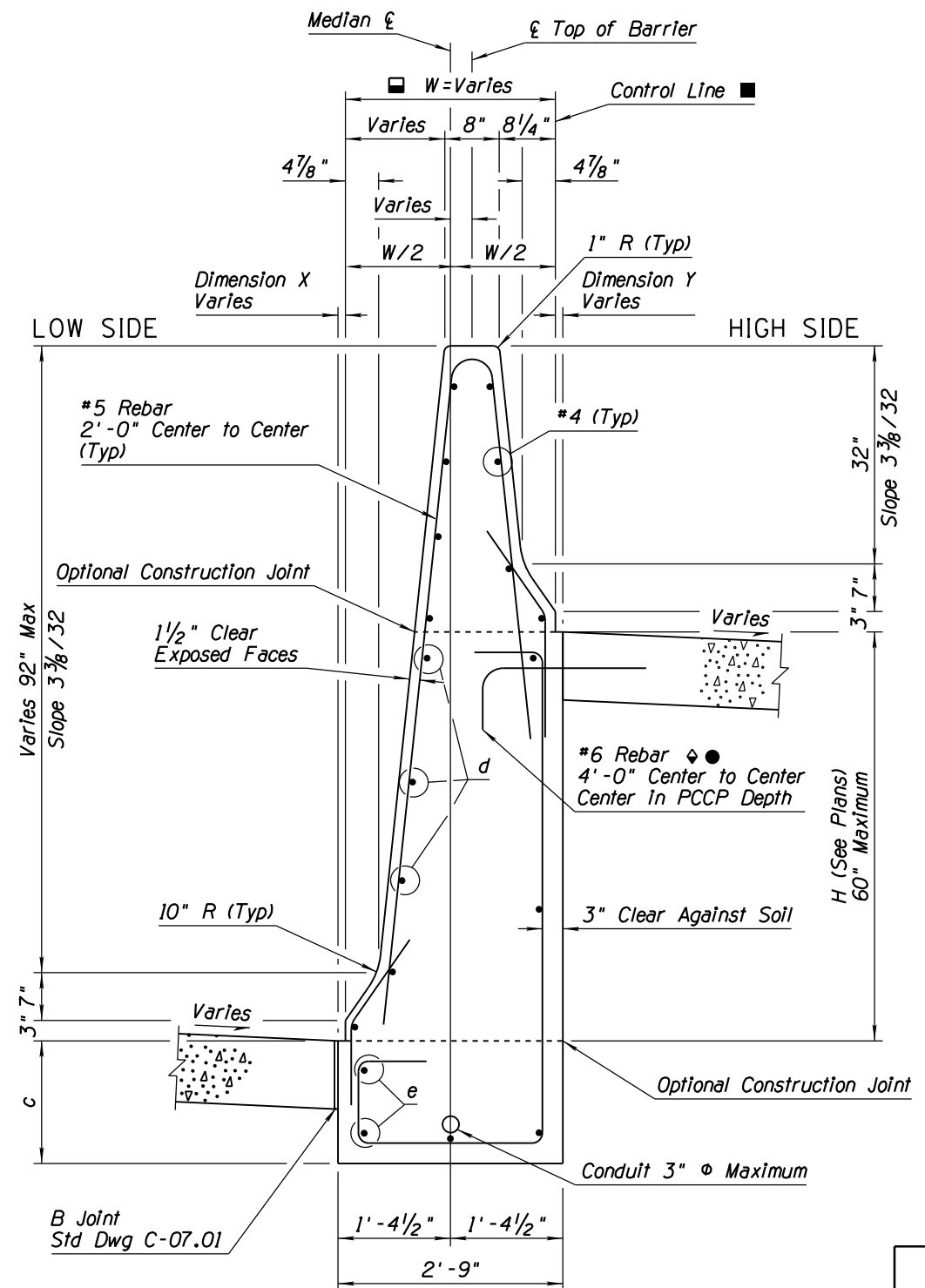
GENERAL NOTES

- Design Specifications- AASHTO LRFD Design Specifications, 4th Edition, 2007.
- Barrier concrete shall be Class S, $f'_c = 4500$ psi.
- All rebar shall be Grade 60.
- All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for rebar shall be out-to-out of bars. All placement dimensions shall be to center of bars unless noted otherwise.
- All rebar shall have 2-inch clear cover unless noted otherwise.
- Longitudinal rebar shall extend 12" past the construction joint at the completion of each incremental pour.
- Median Barrier shall be constructed by the slip form or formed cast-in-place methods only.
- Where obstacles prevent slip forming, stationary forms shall be used.
- The terminology 'Low Side' and 'High Side' are used for reference purposes only. The barrier details shall be mirrored if required by the adjacent pavement elevations.
- Backfilling and/or embankment placement on the High Side shall not commence until the PCCP is constructed on the Low Side.
- The Median Barrier has been designed to accommodate a maximum of 2 - 3" ϕ conduits. Locate conduits as required to make connection to pull boxes and appurtenances.
 - ◆ #5 Rebar may be used for H = 48" to 60".
 - Rebar shall be cast into PCCP or drilled and epoxied using an approved epoxy adhesive. The embedment shall be sufficient to develop the full yield strength of the rebar, but shall be no less than 1'-0". The length of the rebar shall be adjusted to maintain a minimum of 1'-0" embedment into the barrier.
 - ▲ A lap splice may be introduced into the Var leg of this bar set. The lap splice shall be a minimum of 1'-4".
 - The contractor shall provide Control Line offsets to the Engineer prior to construction of the Median Barrier. The offsets shall be provided at sufficient intervals to control the location of the barrier construction equipment and forms.
 - Space evenly between adjacent longitudinal rebar.

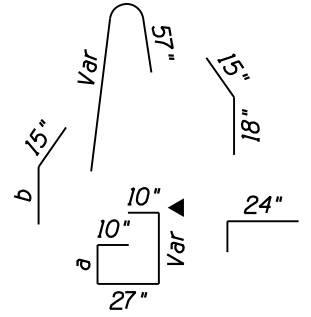
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL		
GROUP MANAGER D. R. HENRY		
APPROVED		
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	12/17 DATE	DRAWING NO. C-10.45 Sheet 1 of 2

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

PRIOR DISTRIBUTION DATE



SECTION SLOPED FACE ALTERNATIVE



Dimension H	26" to 36"	36" to 48"	48" to 60"
Bend Dimension a	7"	7"	13"
Bend Dimension b	12"	12"	18"
Dimension c	12"	12"	18"
Number of bars d	1	2	3
Number of bars e	1	1	2

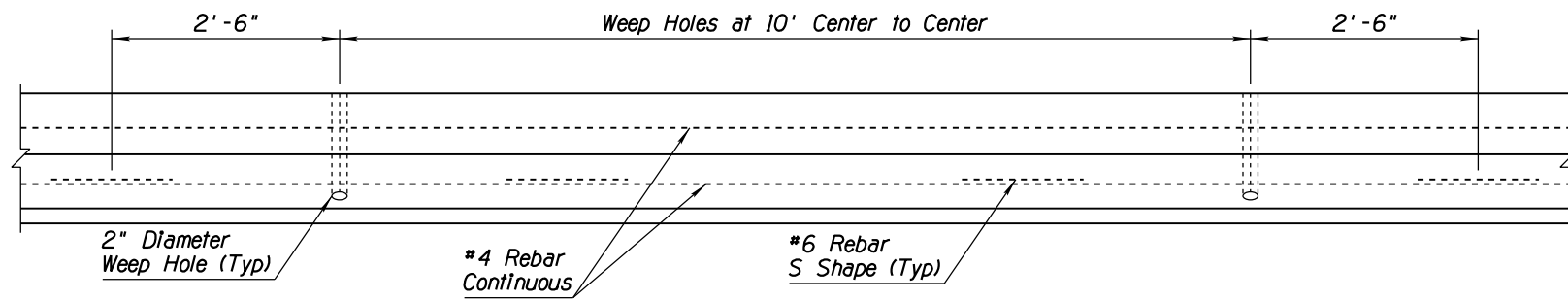
GENERAL NOTES

- Design Specifications- AASHTO LRFD Design Specifications, 4th Edition, 2007.
- Barrier concrete shall be Class 'S' ($f'_c=4500$ psi).
- All rebar shall be Grade 60.
- All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for rebar shall be out-to-out of bars. All placement dimensions shall be to center of bars unless noted otherwise.
- All rebar shall have 2 inch clear cover unless noted otherwise.
- Longitudinal rebar shall extend 12" past the construction joint at the completion of each incremental pour.
- Median Barrier shall be constructed by the slip form or formed cast-in-place methods only.
- Where obstacles prevent slip forming, stationary forms shall be used.
- The terminology 'Low Side' and 'High Side' are used for reference purposes only. The barrier details shall be mirrored if required by the adjacent pavement elevations.
- Backfilling and/or embankment placement on the High Side shall not commence until the PCCP is constructed on the Low Side.
- The Median Barrier has been designed to accommodate a maximum of 2 - 3" ϕ conduits. Locate conduits as required to make connection to pull boxes and appurtenances.
 - ◆ #5 Rebar may be used for $H = 48"$ to $60"$.
 - Rebar shall be cast into PCCP or drilled and epoxied using an approved epoxy adhesive. The embedment shall be sufficient to develop the full yield strength of the rebar, but shall be no less than 12". The length of the rebar shall be adjusted to maintain a minimum of 12" embedment into the barrier.
 - ▲ A lap splice may be introduced into the Var leg of this bar set. The lap splice shall be a minimum of 1'-4".
 - The contractor shall provide Control Line offsets to the Engineer prior to construction of the Median Barrier. The offsets shall be provided at sufficient intervals to control the location of the barrier construction equipment and forms.
 - W (in) = $24\frac{1}{2}$ (in) + $3\frac{3}{8}/32 * H$ (in)
 Dimension X = Dimension Y = $1'-4\frac{1}{2}" - W/2$
 $W/2$ - Bottom faces of Median Barrier shall be equidistant from Median ξ .
 - Space evenly between adjacent longitudinal rebar.

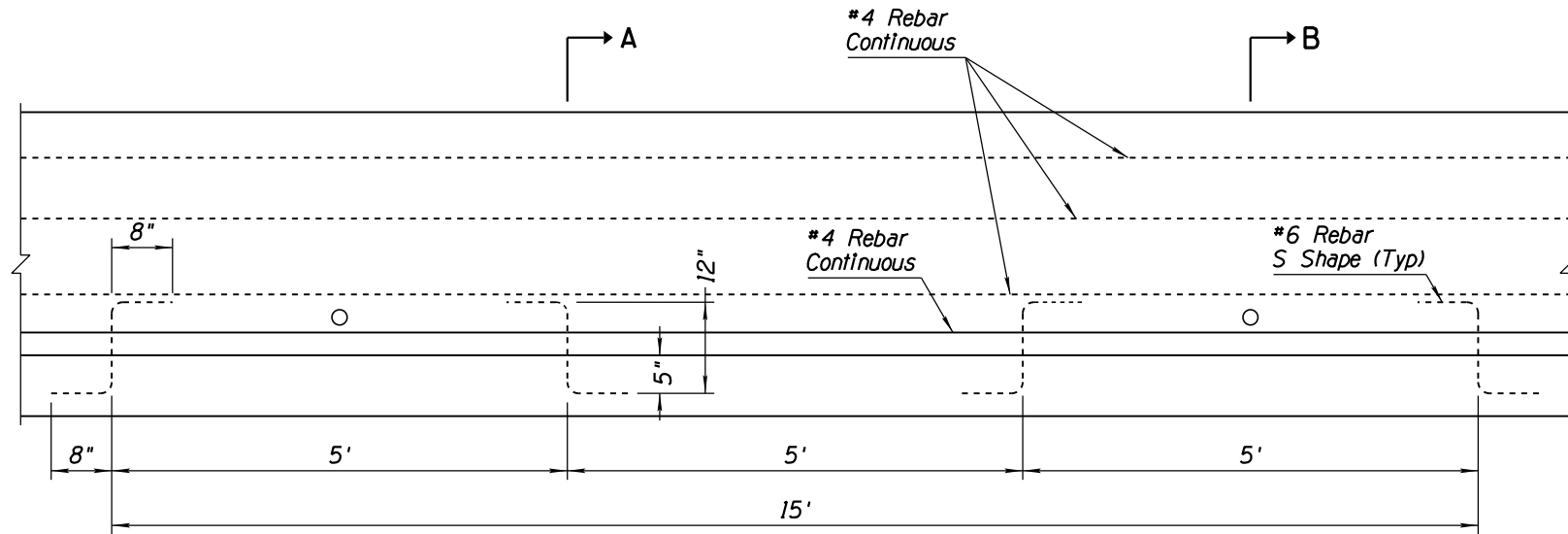
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE MEDIAN BARRIER 42" TYPE "F" WITH VARIABLE HEIGHT SIDES H = 26" TO 60"	DRAWING NO. C-10.45
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	Sheet 2 of 2

GENERAL NOTES

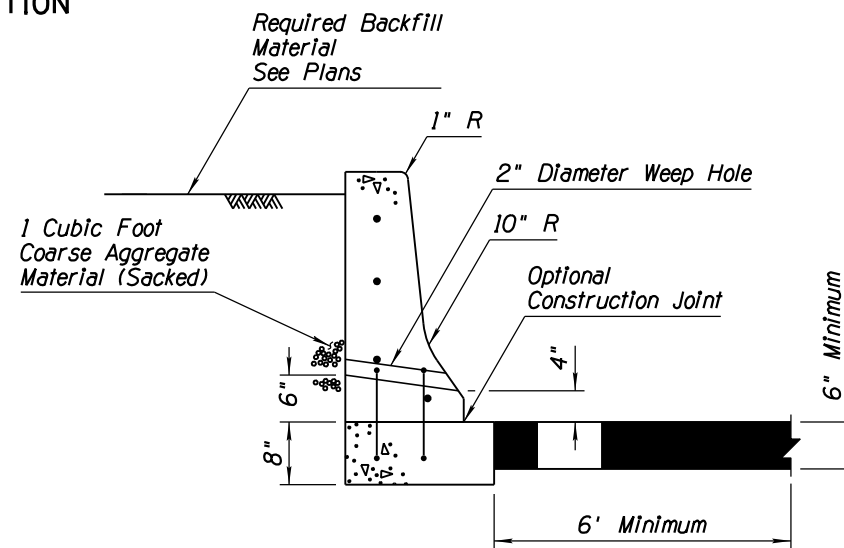
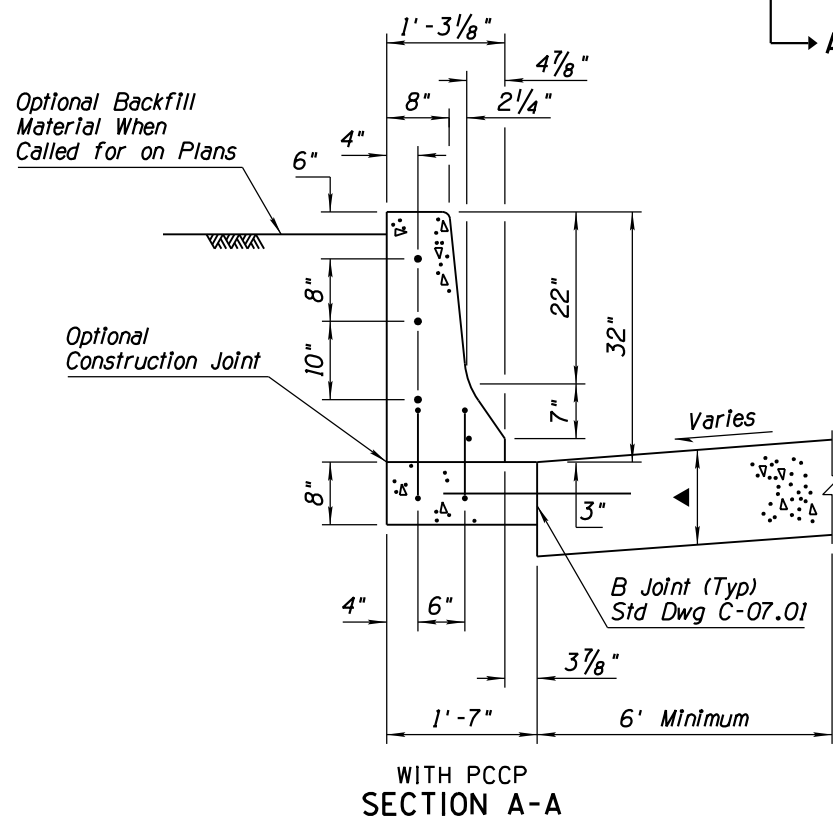
1. Half barrier shall be constructed by the slip or fixed form method.
 2. When obstacles prevent the use of slip form equipment, stationary forms shall be used.
 3. Barrier concrete shall be Class S, $f'_c = 4500$ PSI.
 4. Rebar shall be Grade 60.
 5. If the footing and barrier are cast monolithically, #6 S shape rebar will not be required.
 6. #4 rebar shall extend 12" past the construction joint at the completion of the day's pour.
 7. Weep holes shall be placed whenever barrier is backfilled unless otherwise indicated on the plans.
- ▲ Depth to match adjacent PCCP thickness.



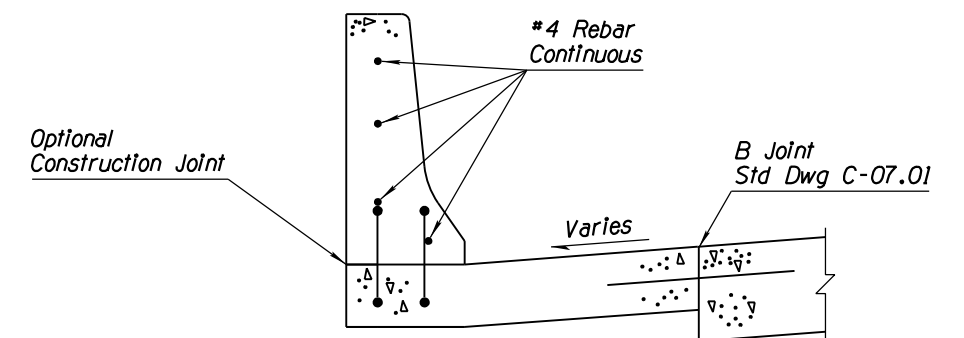
PLAN



ELEVATION



SEE SECTION A-A FOR TYPICAL REBAR PLACEMENT



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

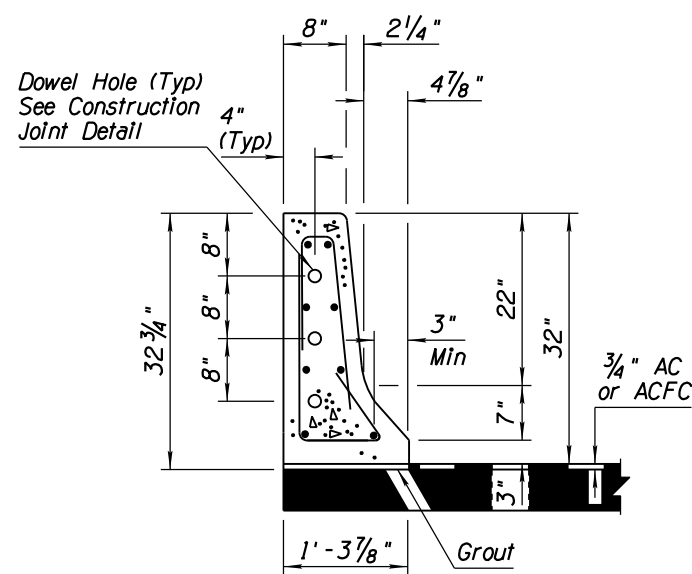
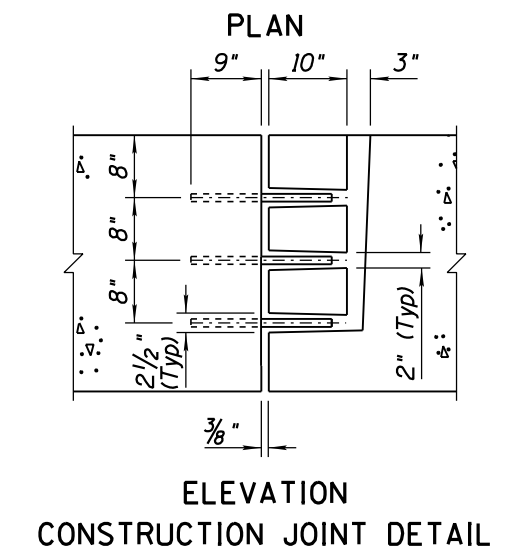
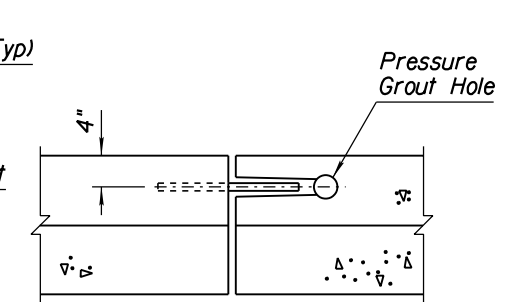
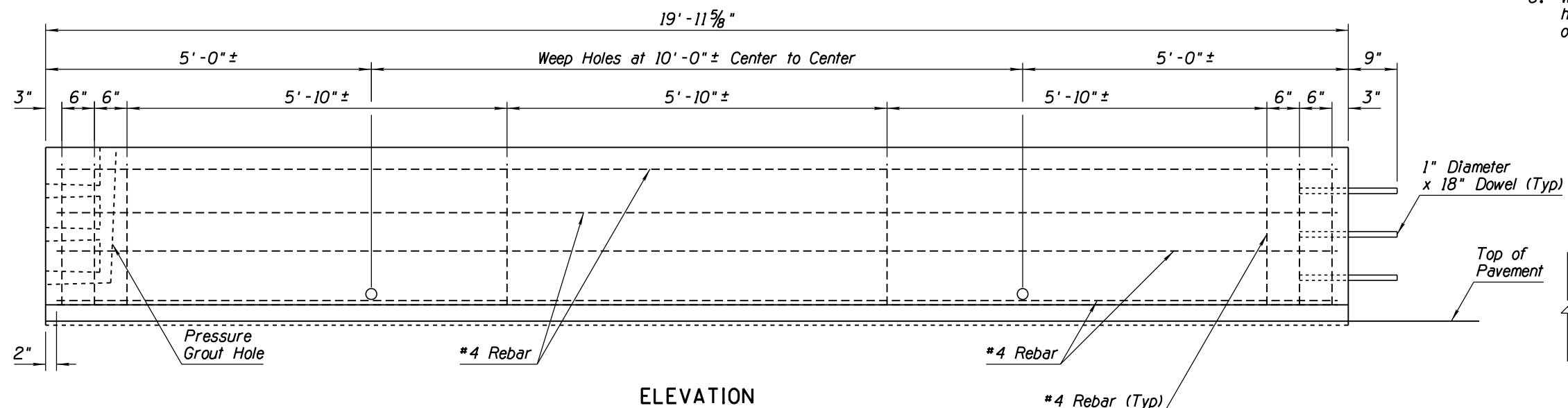
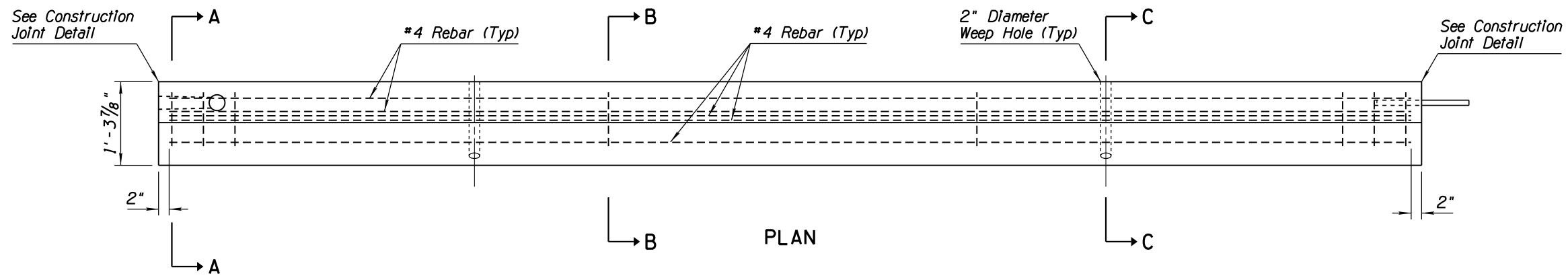
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PRIOR DISTRIBUTION DATE 05/12

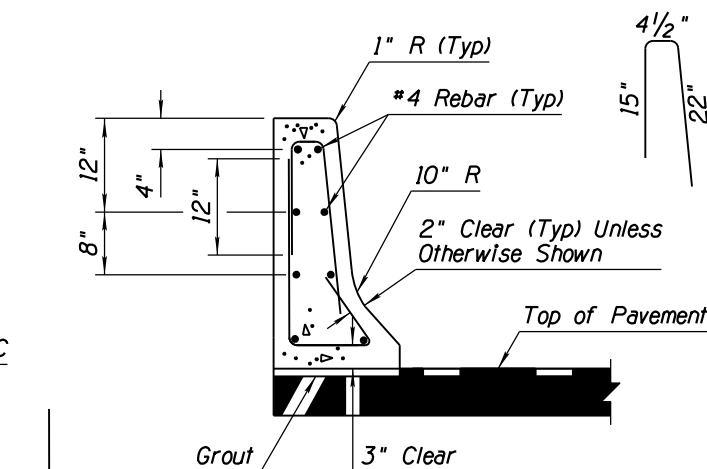
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER 32" TYPE 'F' CAST-IN-PLACE	DRAWING NO. C-10.50
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		Sheet 1 of 2
DATE 12/17		

GENERAL NOTES

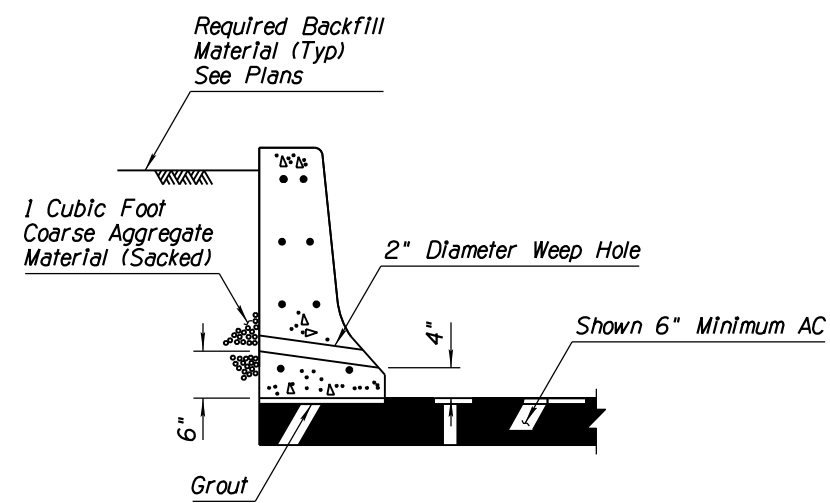
1. Concrete half barrier shall be precast.
2. Barrier concrete shall be Class S, $f'_c = 4500$ PSI.
3. Rebar shall be Grade 60.
4. Pavement thickness adjacent to half barrier shall be $\frac{3}{4}$ " minimum.
5. The half barrier shall be placed upon a bed of grout in order to provide a uniform bearing.
6. Doweled joints shall be grouted under pressure until all of the openings and the joints are filled.
7. All bend dimensions for rebar are out-to-out of rebars.
8. Weep holes shall be placed whenever half barrier is backfilled unless otherwise indicated on the plans.



SECTION A-A



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

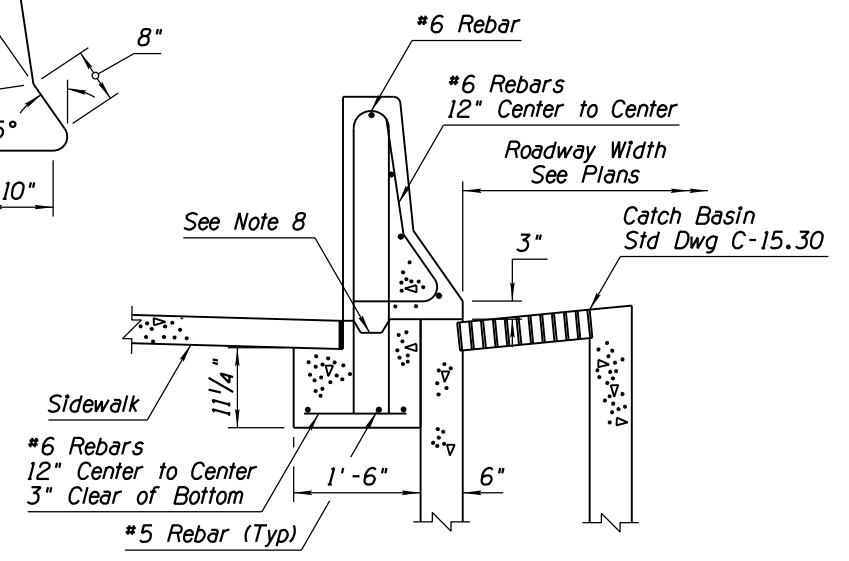
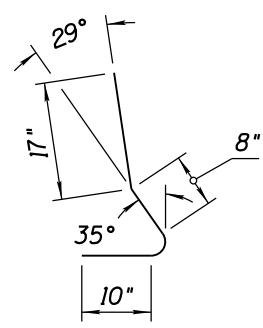
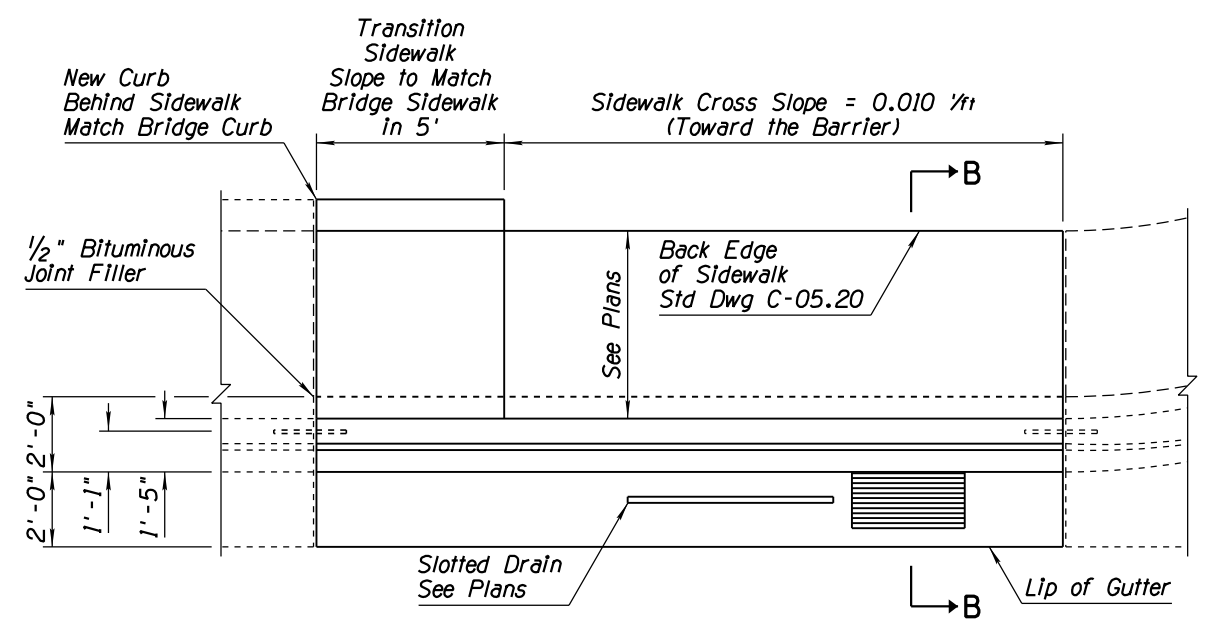
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PRIOR DISTRIBUTION DATE 05/12

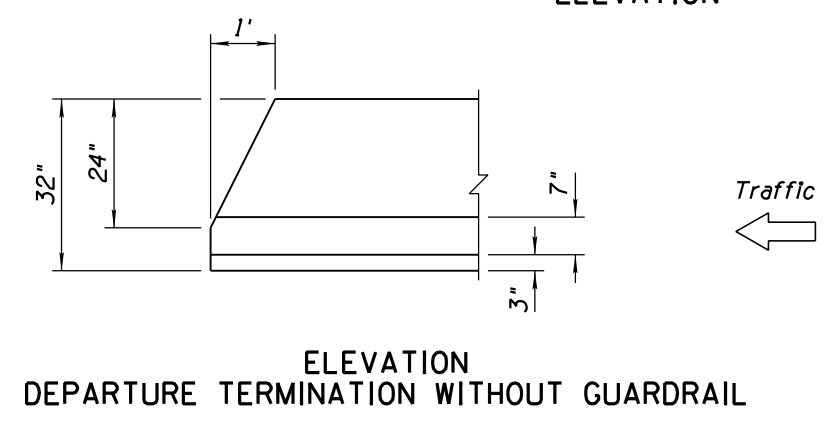
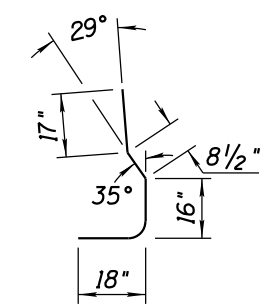
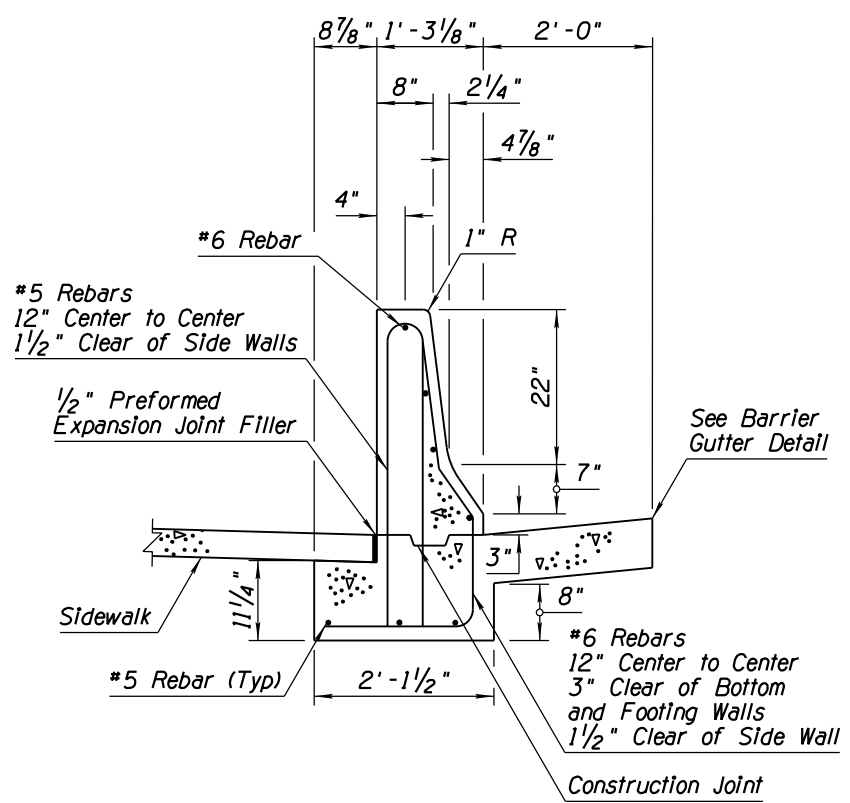
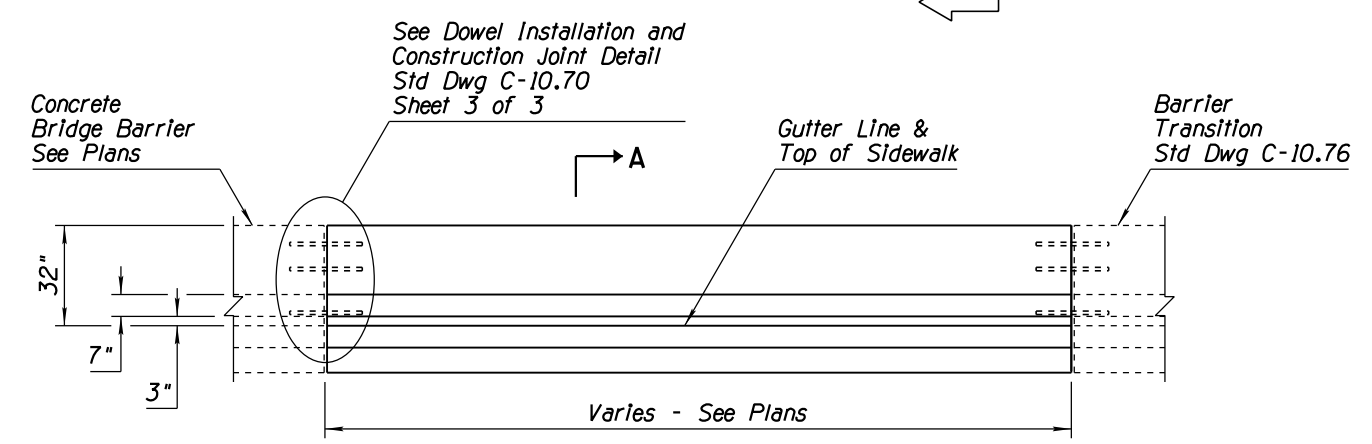
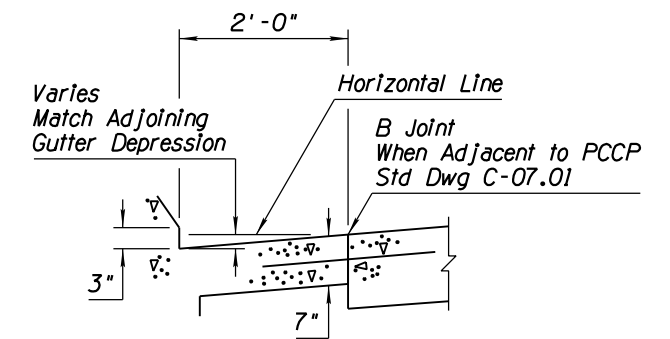
STANDARD'S ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED STANDARD'S COMMITTEE APPROVED FOR DISTRIBUTION	CONCRETE HALF BARRIER 32" TYPE 'F' PRECAST
DATE 12/17	DRAWING NO. C-10.50 Sheet 2 of 2

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

PRIOR DISTRIBUTION DATE 05/12



- ### GENERAL NOTES
- Barrier concrete shall be Class S, $f'c=4500$ PSI.
 - Rebar shall be Grade 60.
 - 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.
 - See Std Dwg C-10.54 for Keyway Details.



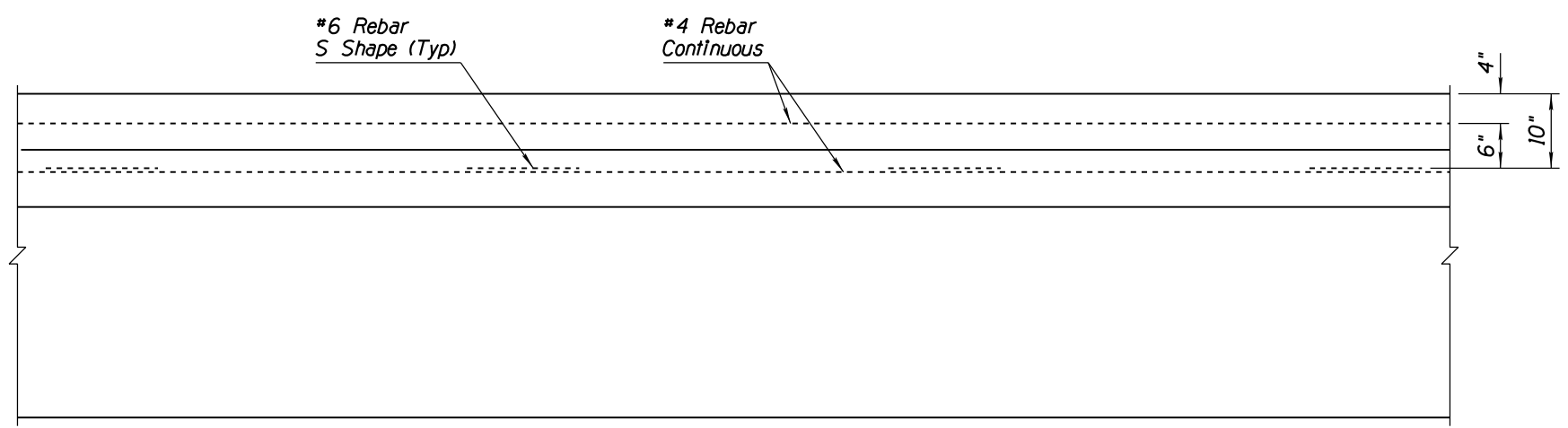
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER 32" TYPE 'F' WITH SIDEWALK	DRAWING NO. C-10.51
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	

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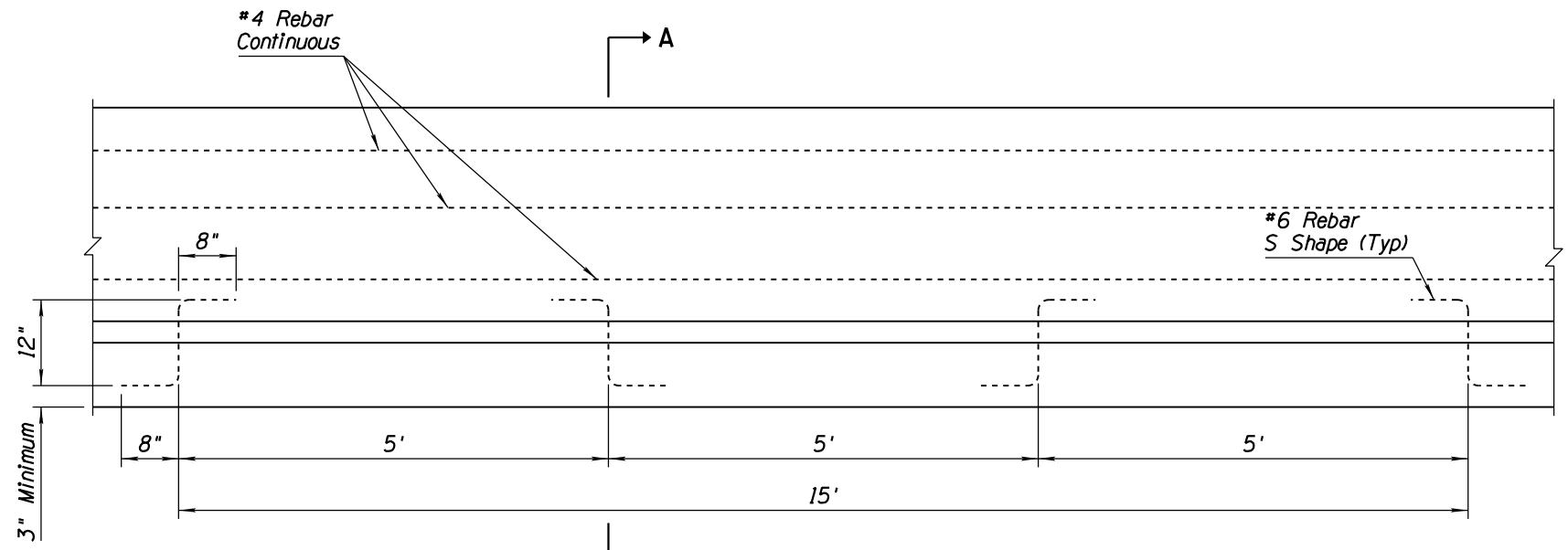
PRIOR DISTRIBUTION DATE 05/12

GENERAL NOTES

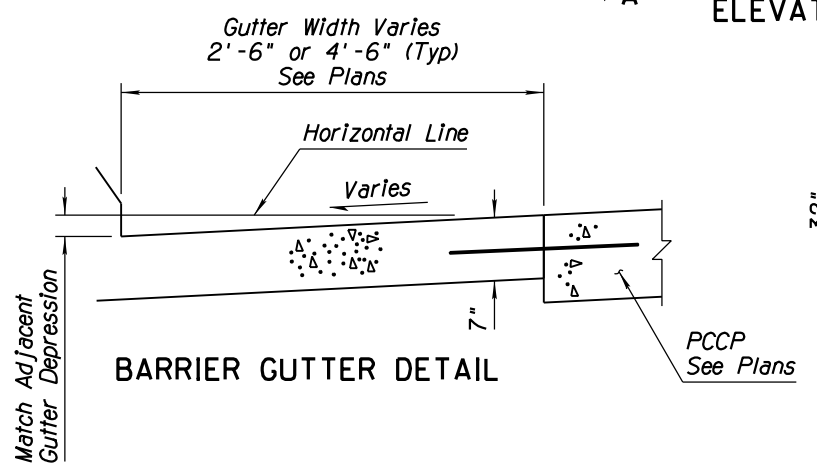
1. Half Barrier shall be constructed by the slip or fixed form method.
2. When obstacles prevent the use of slip form equipment, stationary forms shall be used.
3. Barrier concrete shall be Class S, $f'_c=4500$ PSI.
4. Rebar shall be Grade 60.
5. #4 rebar shall extend 12" past the construction joint 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. 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.
8. At bridges, the cross slope of the gutter shall transition to match the cross-slope of the bridge. Length of the transition is 15'.
9. 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.
10. Whenever Half Barrier is backfilled, see Std Dwg C-10.50 for weep hole details, unless otherwise specified on the plans.



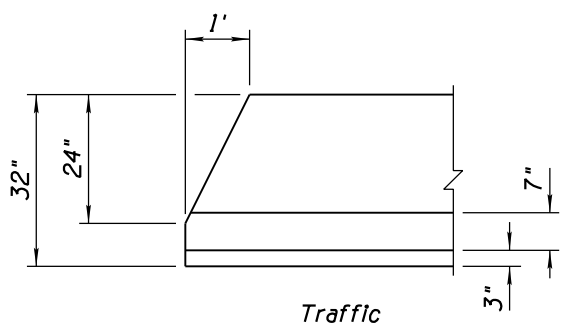
PLAN



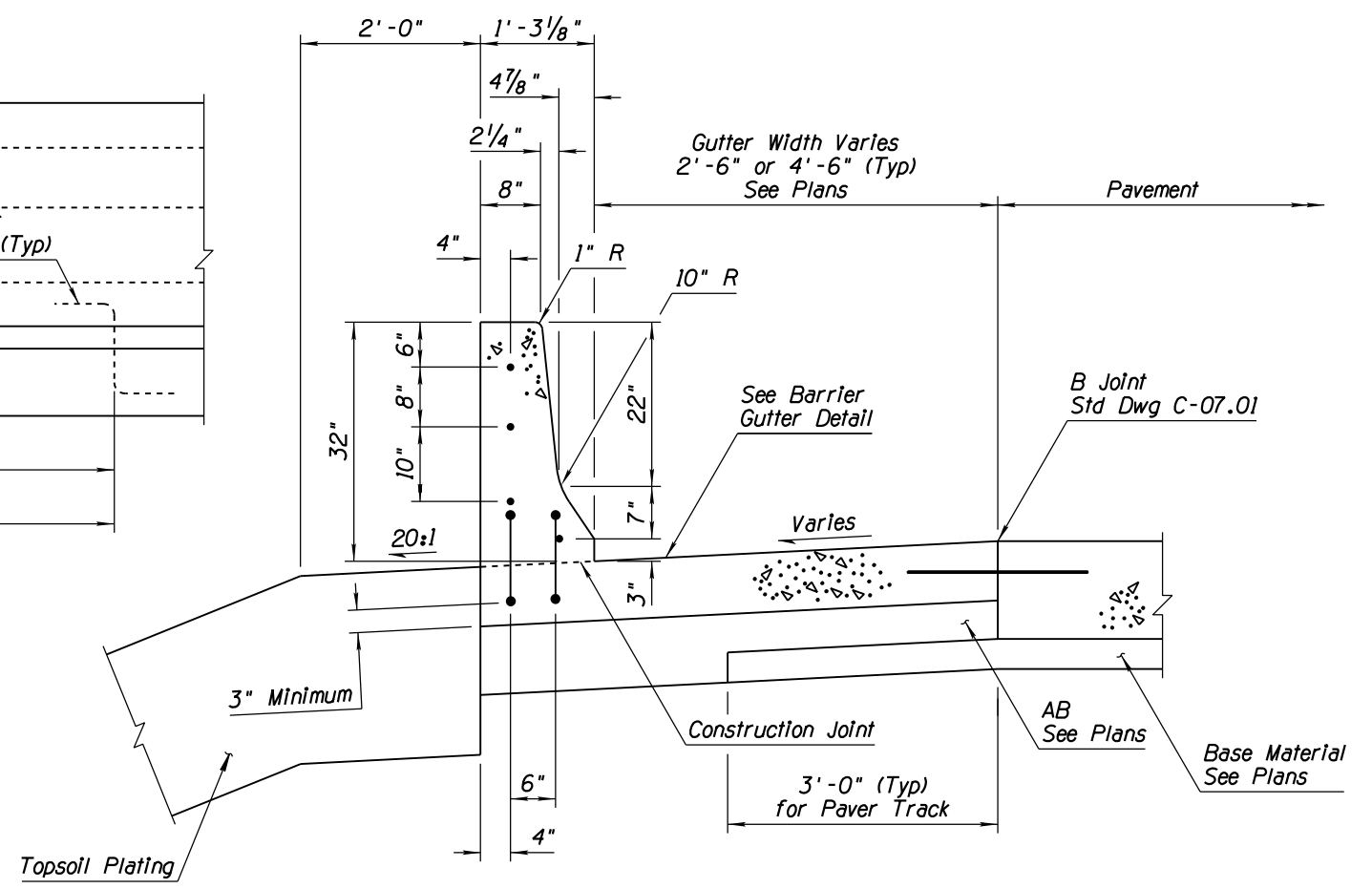
ELEVATION



BARRIER GUTTER DETAIL



ELEVATION DEPARTURE TERMINATION WITHOUT GUARDRAIL

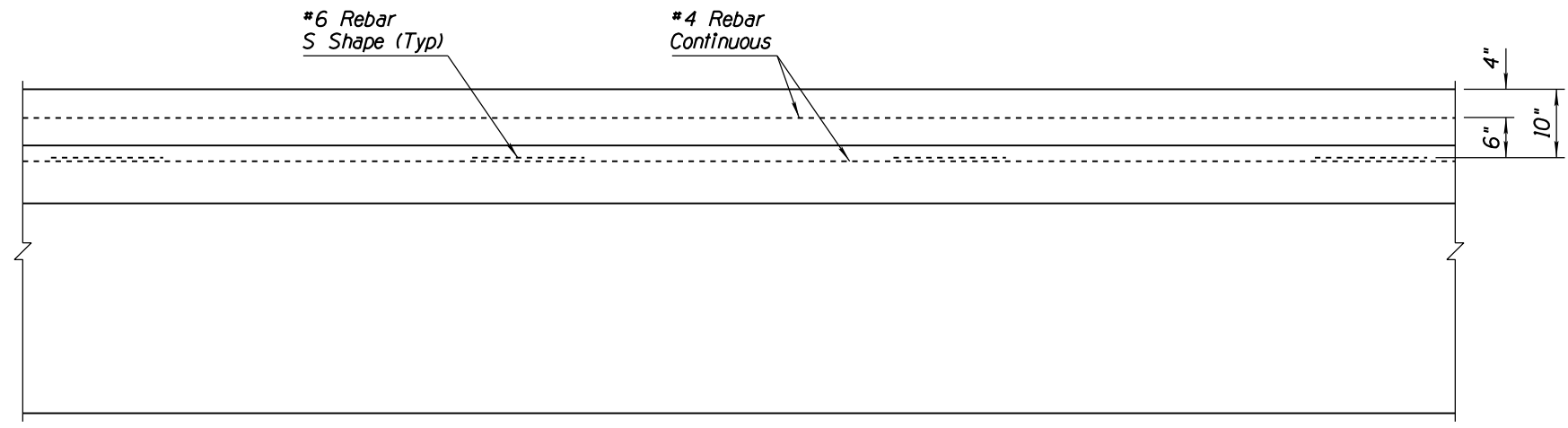


SECTION A-A

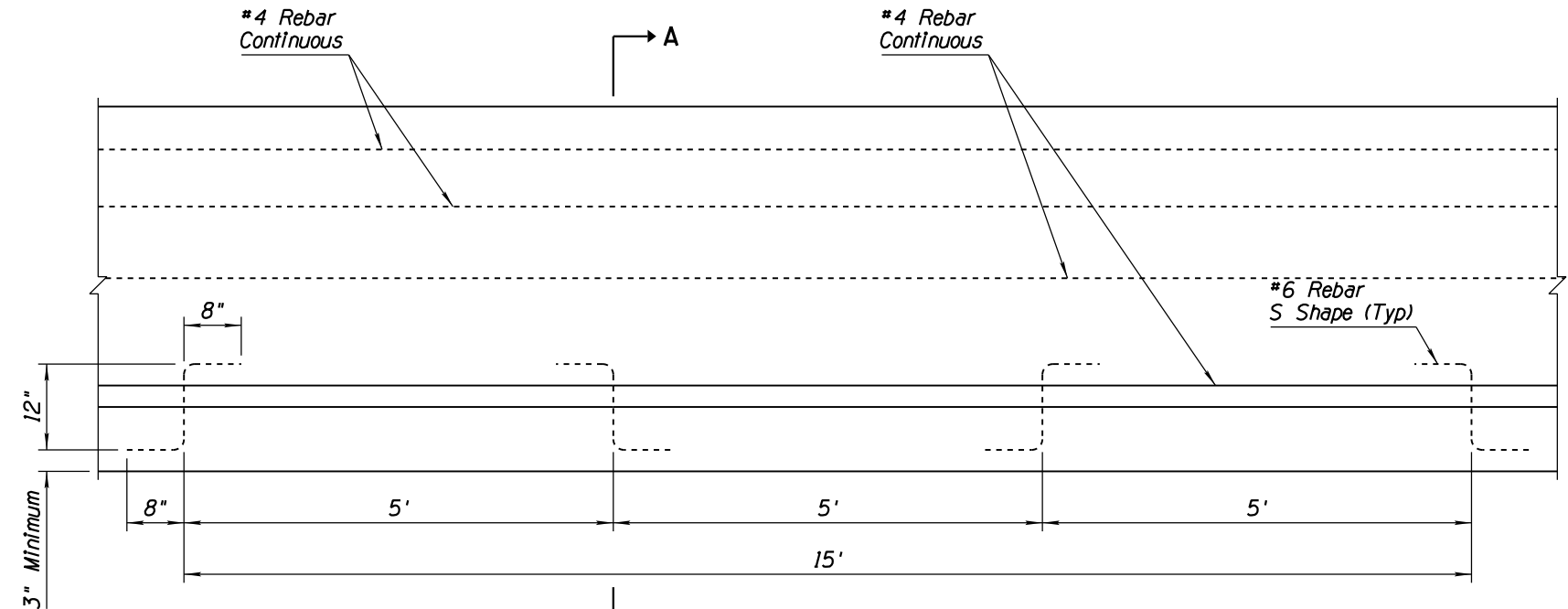
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL		
GROUP MANAGER D. R. HENRY		
APPROVED		
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	CONCRETE HALF BARRIER 32" TYPE 'F' WITH GUTTER	DRAWING NO. C-10.52
DATE 12/17		

GENERAL NOTES

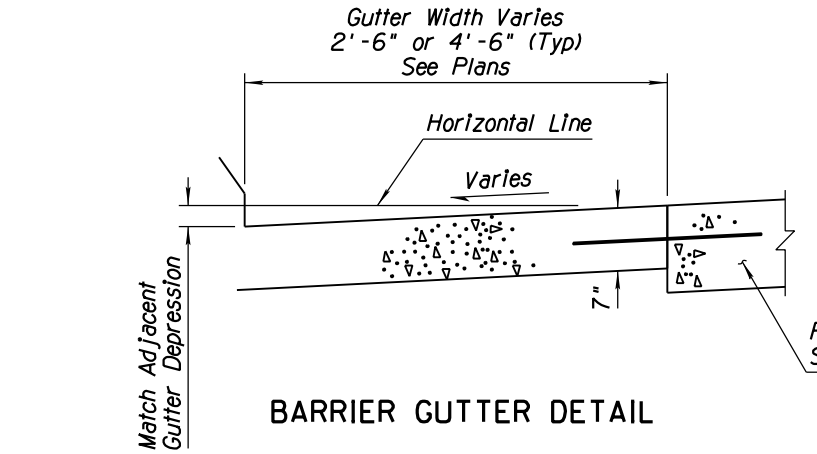
1. Half barrier shall be constructed by the slip or fixed form method.
2. When obstacles prevent the use of slip form equipment, stationary forms shall be used.
3. Barrier concrete shall be Class S, $f'_c=4500$ PSI.
4. Rebar shall be Grade 60.
5. #4 rebar shall extend 12" past the construction joint 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. 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.
8. At bridges, the cross slope of the gutter shall transition to match the cross slope of the bridge. Length of the transition is 15'.
9. 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.
10. Whenever half barrier is backfilled, see Std Dwg C-10.50 for weep hole details, unless otherwise indicated on the plans.



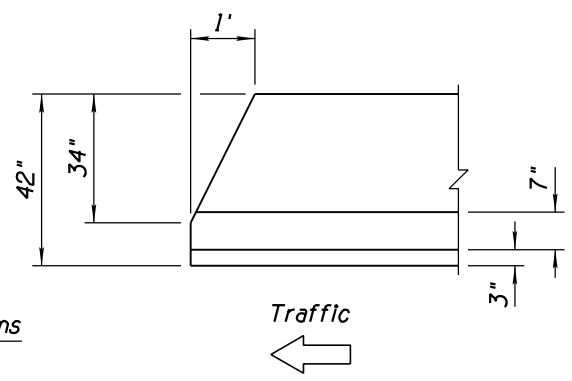
PLAN



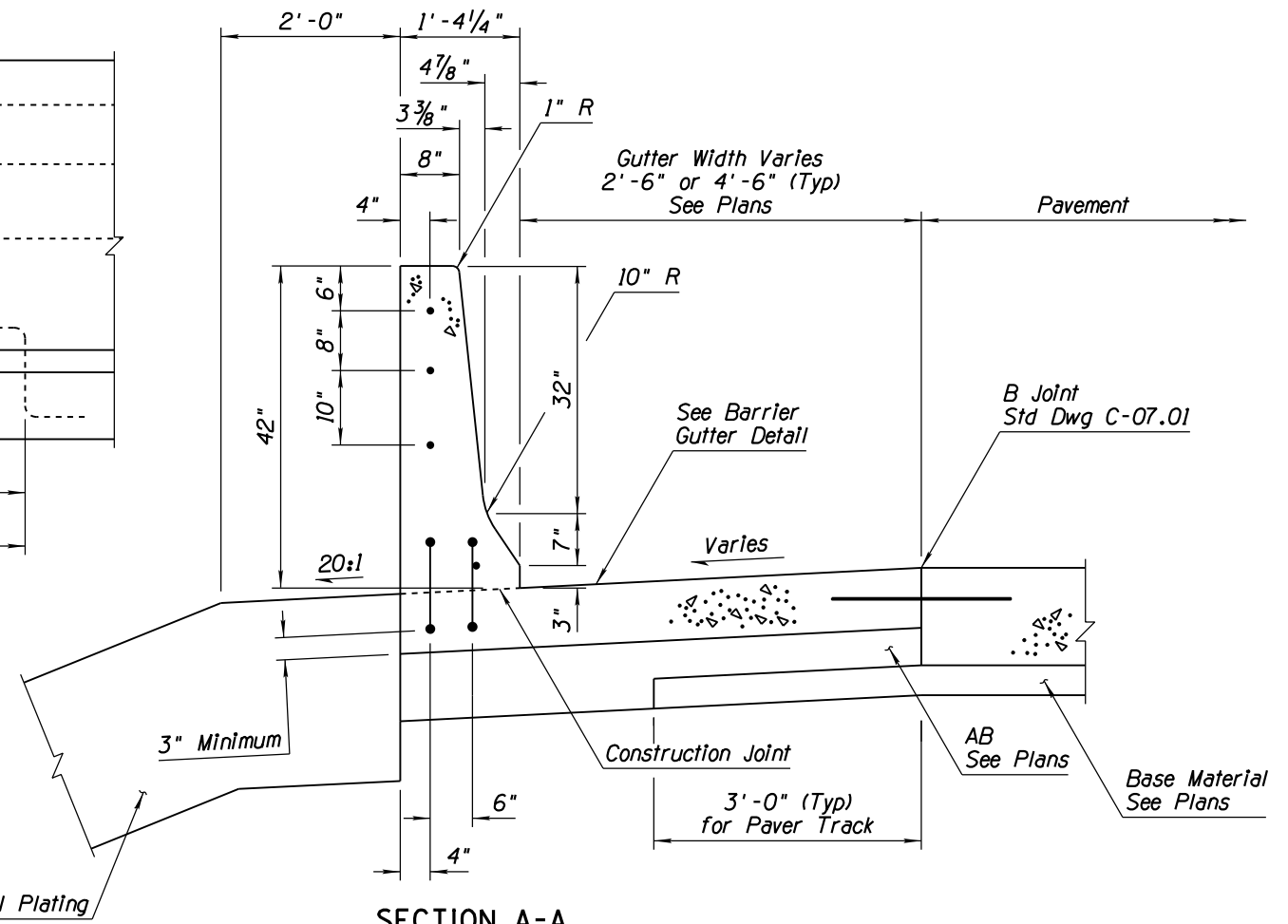
ELEVATION



BARRIER GUTTER DETAIL



ELEVATION DEPARTURE TERMINATION WITHOUT GUARDRAIL



SECTION A-A

STANDARD ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL		
GROUP MANAGER D. R. HENRY		
APPROVED		
STANDARD COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	DRAWING NO. C-10.53
CONCRETE HALF BARRIER 42" TYPE 'F' WITH GUTTER		

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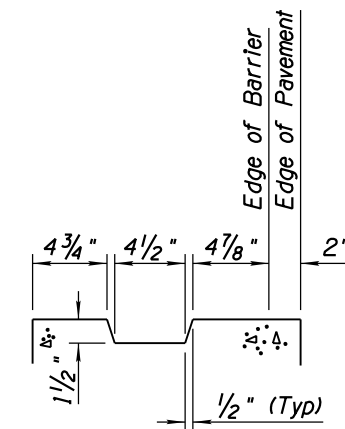
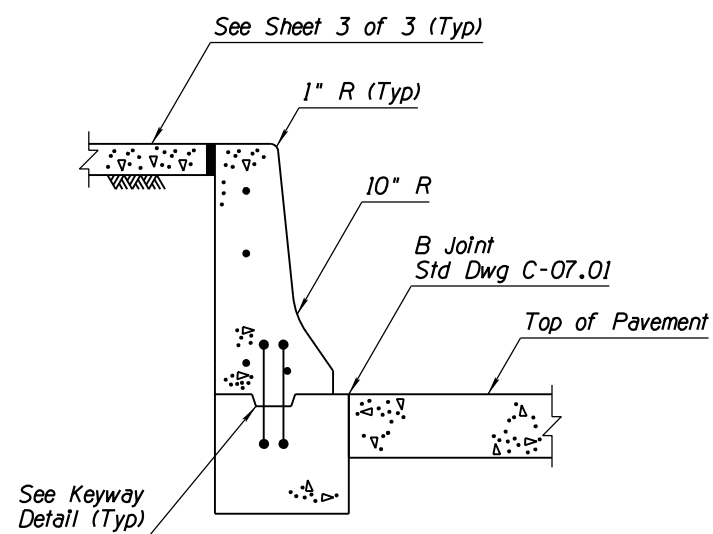
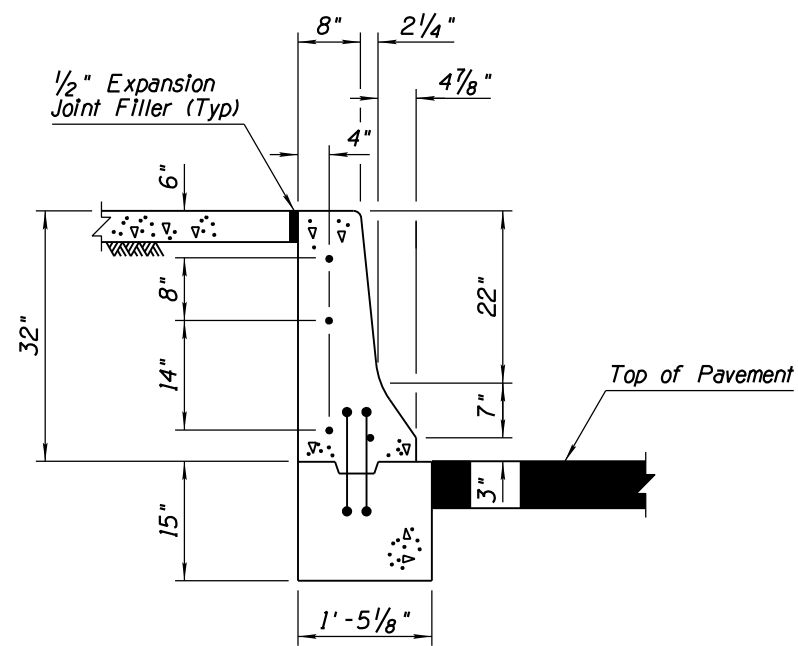
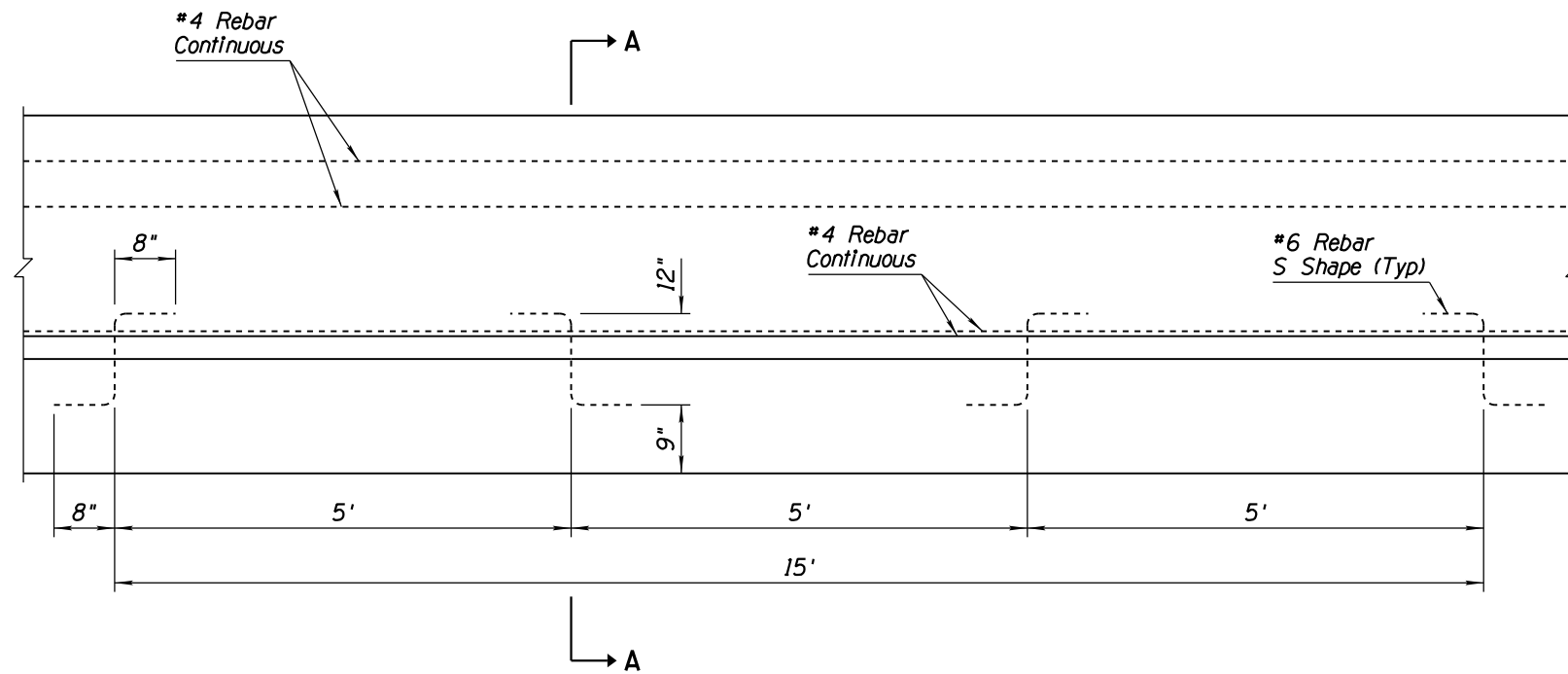
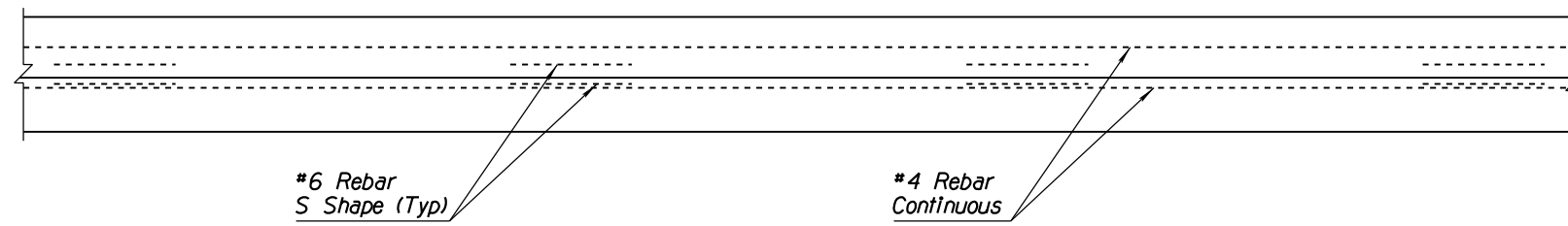
PRIOR DISTRIBUTION DATE 05/12

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PRIOR DISTRIBUTION DATE 05/12

GENERAL NOTES

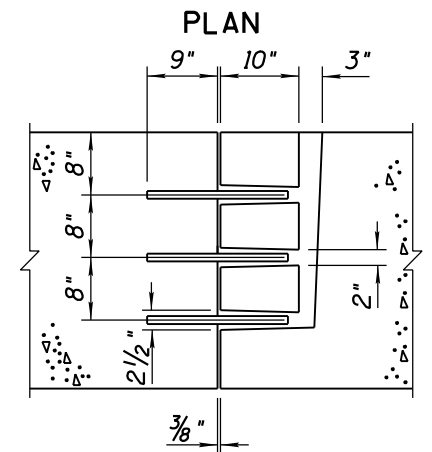
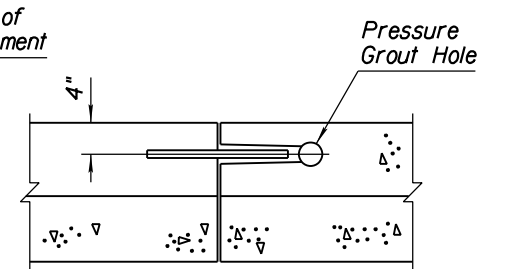
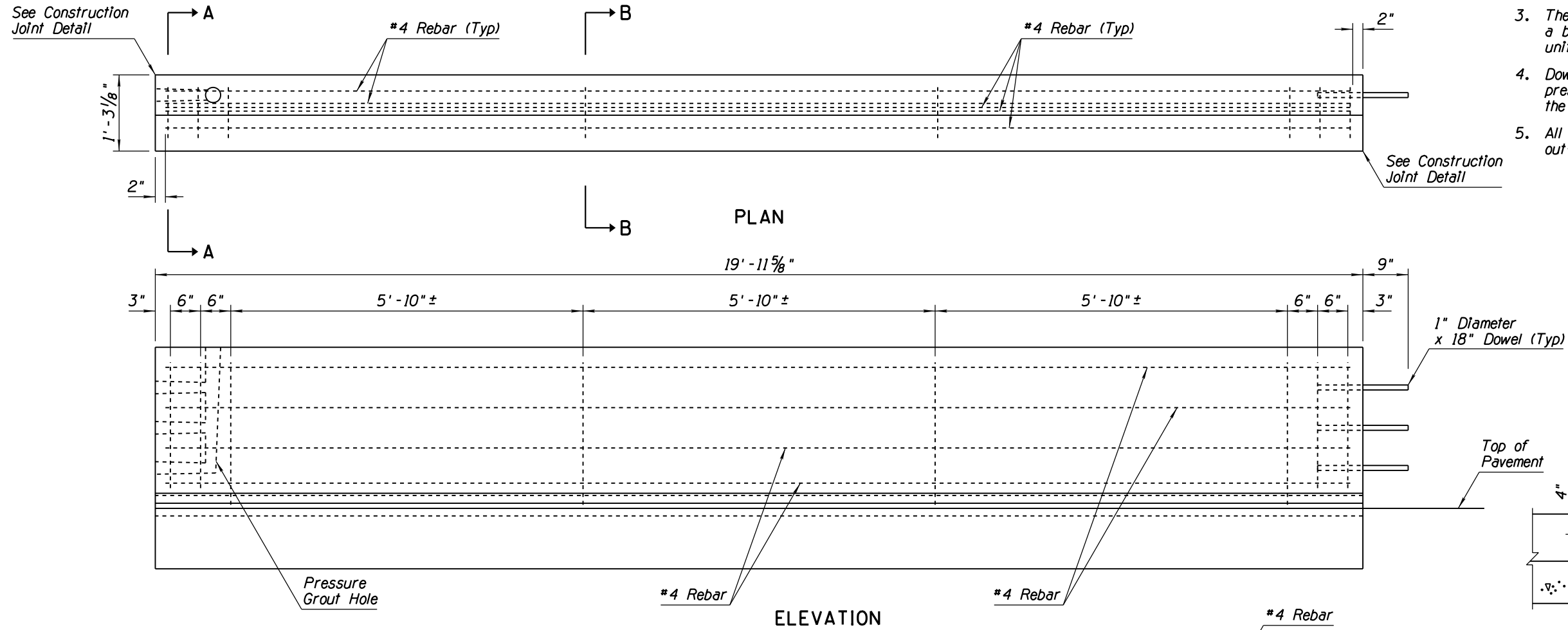
- Barrier concrete shall be Class S, $f'_c=4500$ PSI.
- Rebar shall be Grade 60.
- If the footing and Half Barrier are cast monolithically, #6 S shape rebars are not required.
- Longitudinal rebar shall extend 12" past the construction joint at the completion of each incremental pour.



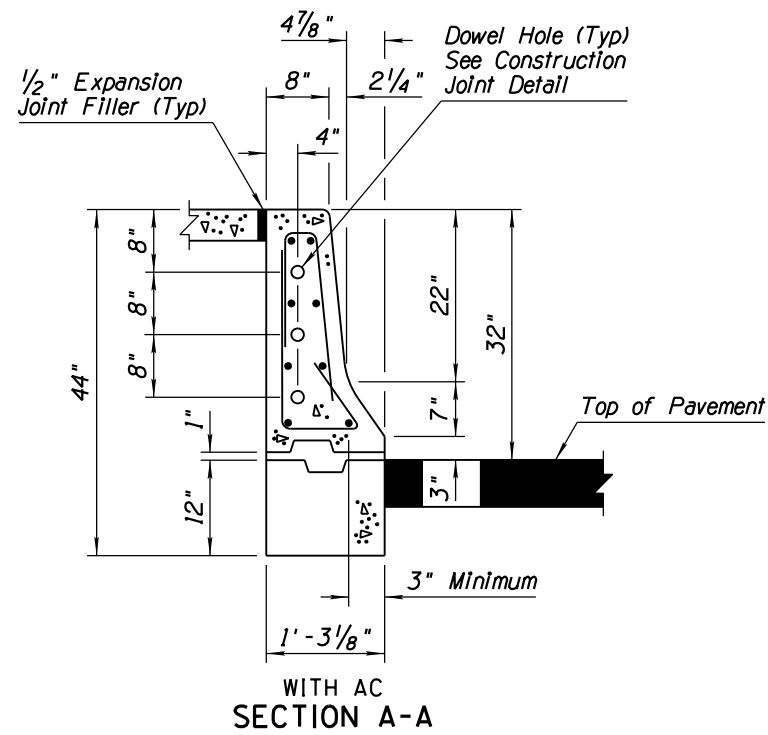
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	CONCRETE HALF BARRIER 32" TYPE 'F' AT PIERS CAST-IN-PLACE
DATE 12/17	DRAWING NO. C-10.54 Sheet 1 of 3

GENERAL NOTES

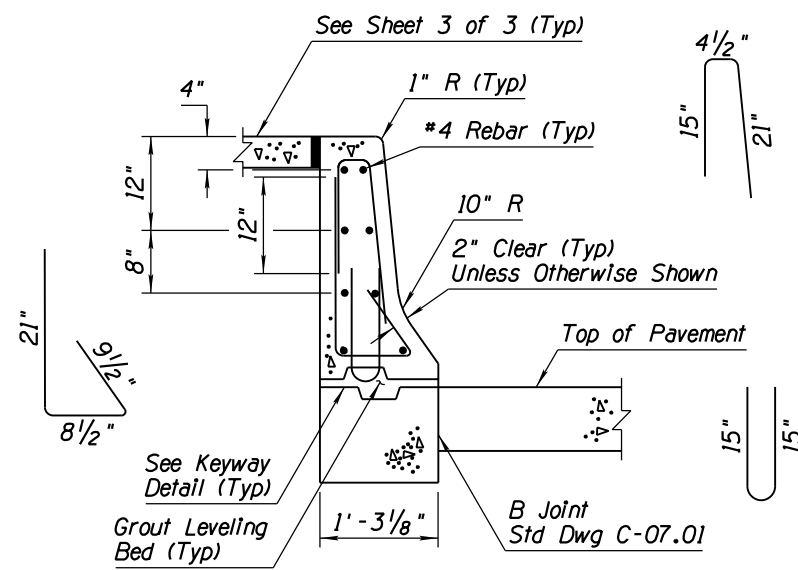
1. Barrier concrete shall be Class S, $f'_c = 4500$ PSI.
2. Rebar shall be Grade 60.
3. The Half Barrier shall be placed upon a bed of grout in order to provide a uniform bearing.
4. Doweled joints shall be grouted under pressure until all of the openings and the joints are filled.
5. All bend dimensions for rebar are out-to-out of rebars.



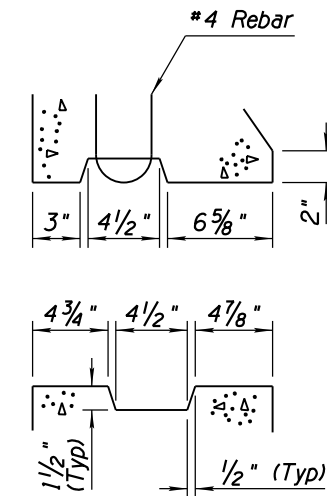
CONSTRUCTION JOINT DETAIL



WITH AC SECTION A-A



AT REBAR - WITH PCCP SECTION B-B



KEYWAY DETAIL

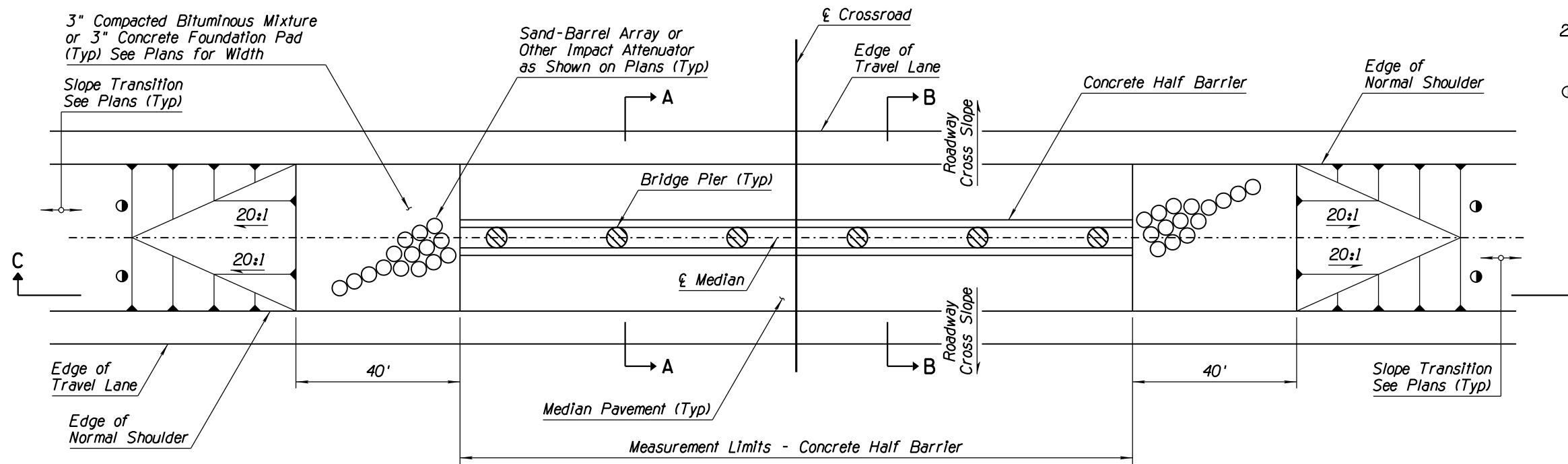
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	CONCRETE HALF BARRIER 32" TYPE 'F' AT PIERS PRECAST
DATE 12/17	DRAWING NO. C-10.54 Sheet 2 of 3

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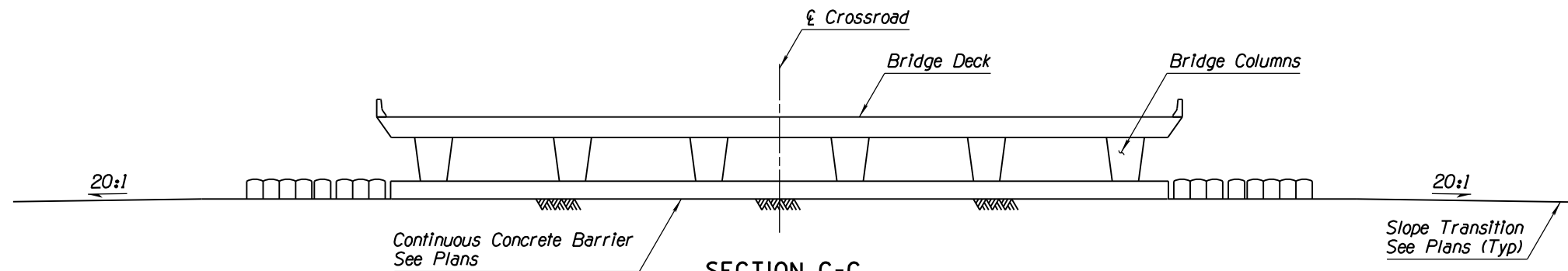
PRIOR DISTRIBUTION DATE 05/12

GENERAL NOTES

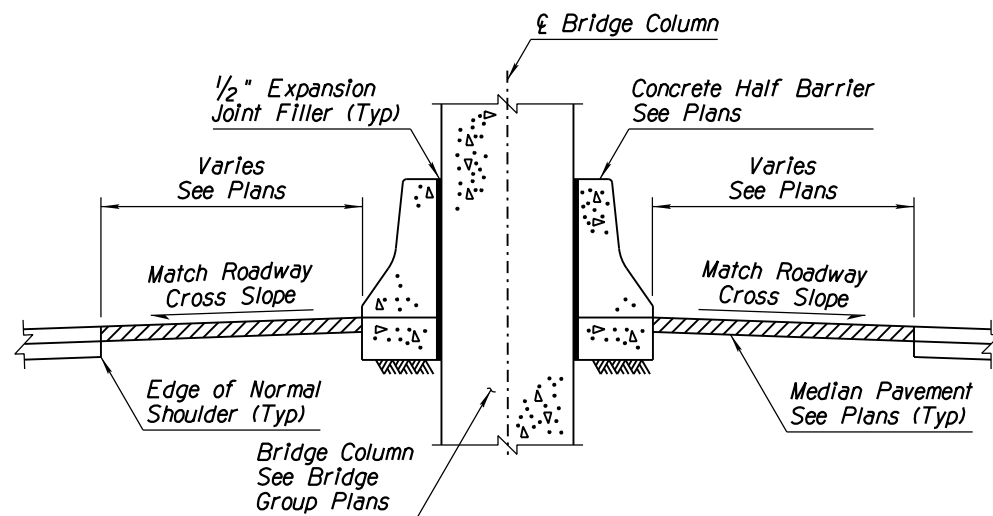
1. Transition median paving cross slope to meet level foundation pad. See plans for length and location.
 2. Compacted backfill and Class B concrete shall be placed between bridge columns or piers only.
- Slope as shown on Plans



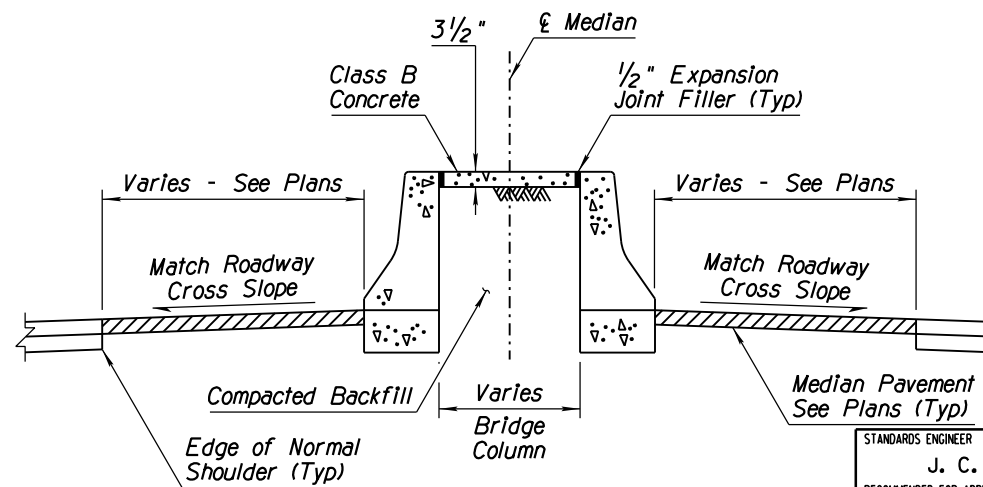
PLAN



SECTION C-C



SECTION A-A



SECTION B-B

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PRIOR DISTRIBUTION DATE 05/12

STANDARDS ENGINEER
J. C. COOPER
 RECOMMENDED FOR APPROVAL
 GROUP MANAGER
D. R. HENRY
 APPROVED
 STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION 12/17 DATE

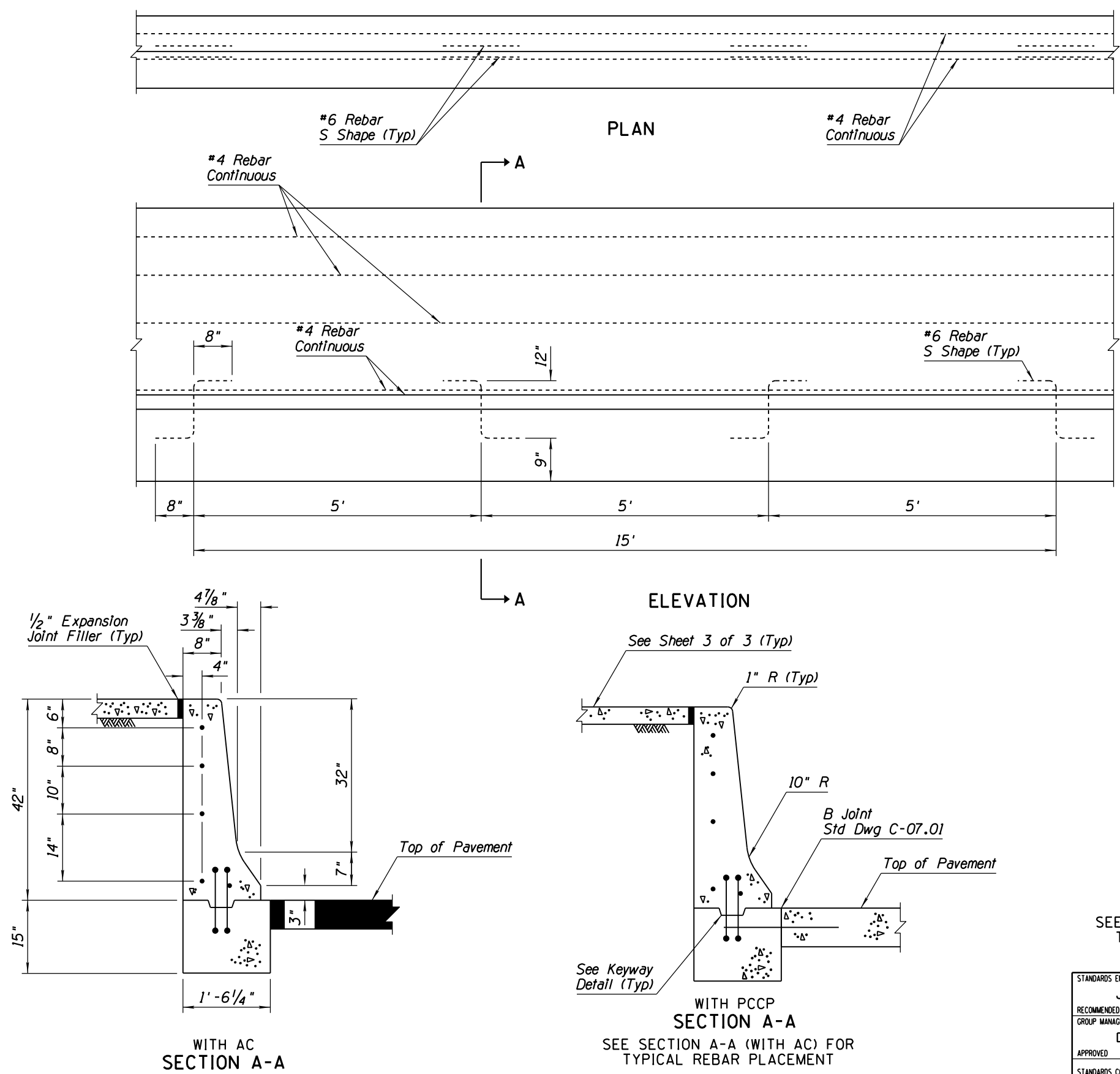
ARIZONA DEPARTMENT OF TRANSPORTATION
 INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
ROADWAY GROUP STANDARD DRAWING

**CONCRETE HALF BARRIER
 32" TYPE 'F' AT PIERS
 LAYOUT**

DRAWING NO.
C-10.54
 Sheet 3 of 3

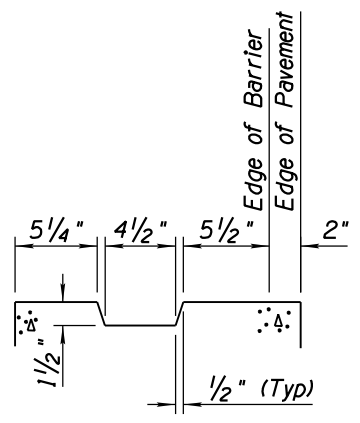
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PRIOR DISTRIBUTION DATE 05/12



GENERAL NOTES

1. Barrier concrete shall be Class S, $f'_c = 4500$ PSI.
2. Rebar shall be Grade 60.
3. If the footing and barrier are cast monolithically, #6 S shape rebars are not required.
4. Barrier width shall not exceed the barrier footing width nor overhang the adjacent pavement.
5. Longitudinal rebar shall extend 12" past the construction joint at the completion of each incremental pour.

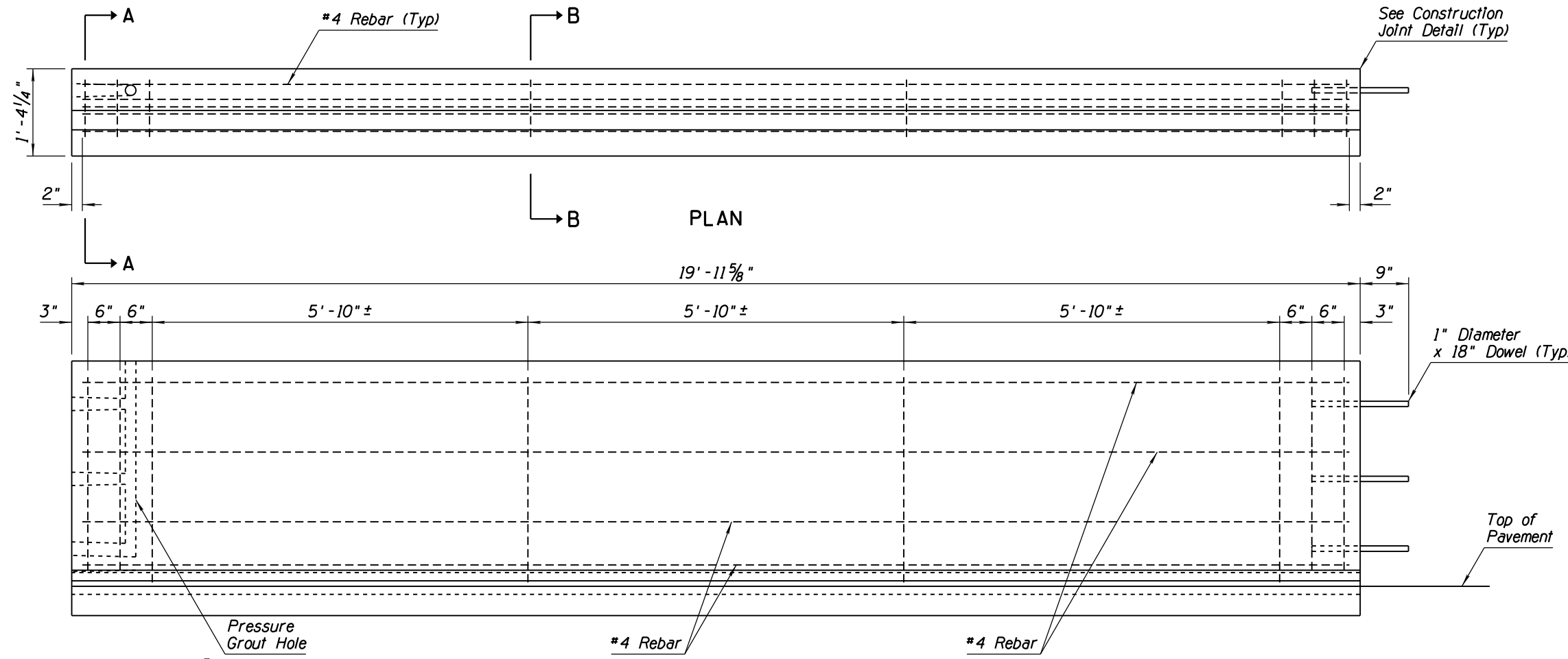


KEYWAY DETAIL
 SEE SECTION A-A (WITH AC) FOR TYPICAL REBAR PLACEMENT

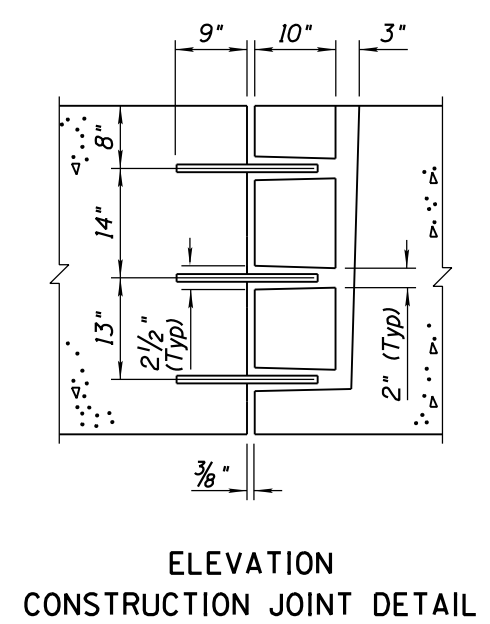
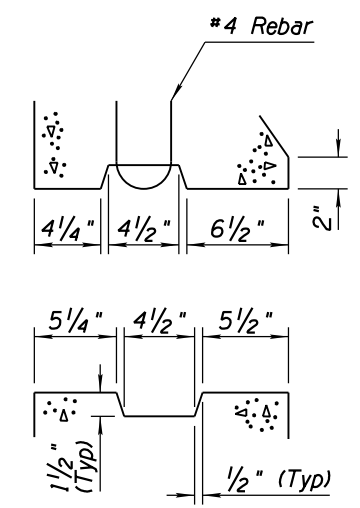
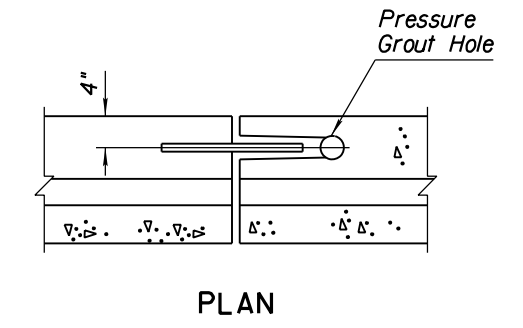
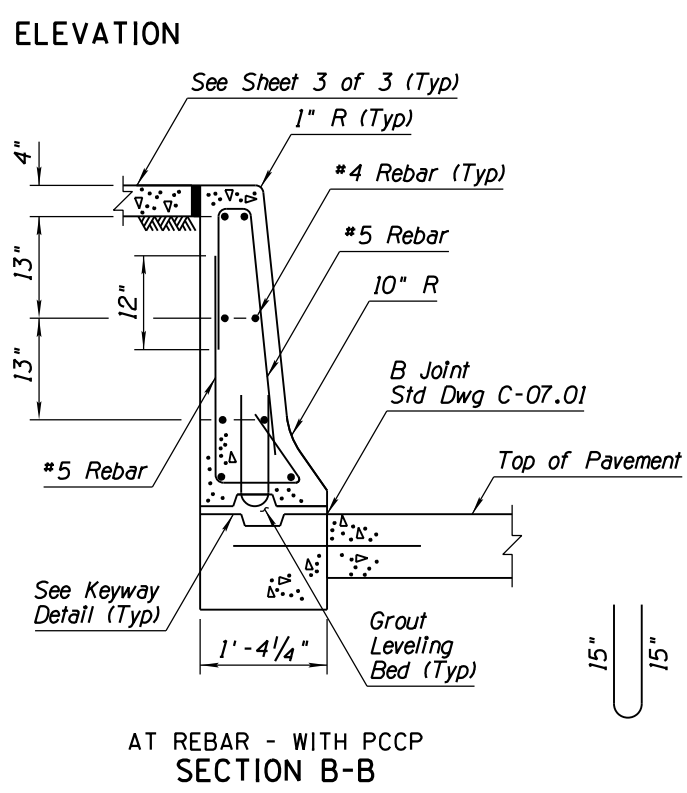
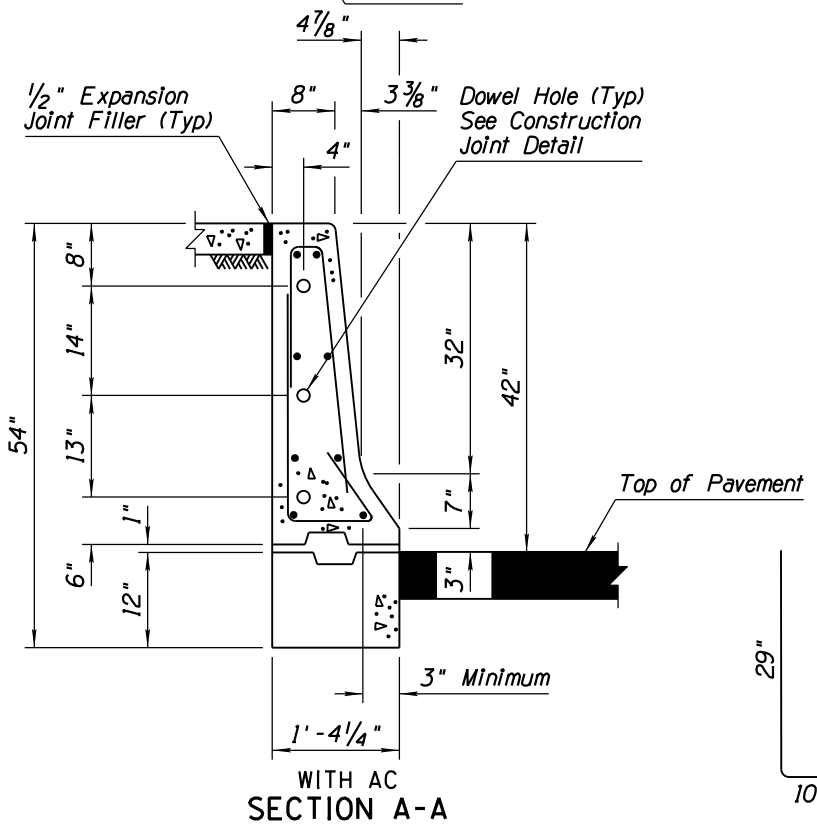
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER 42" TYPE 'F' AT PIERS CAST-IN-PLACE	DRAWING NO. C-10.55
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 12/17
		Sheet 1 of 3

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PRIOR DISTRIBUTION DATE 05/12



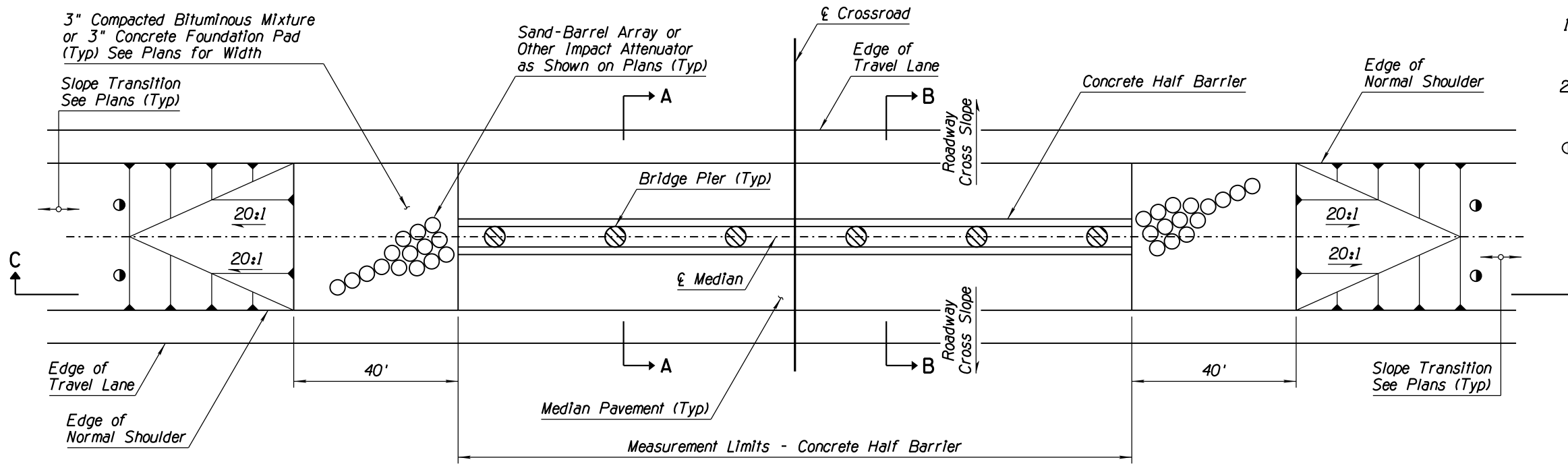
- ### GENERAL NOTES
- Barrier concrete shall be Class S, $f'_c = 4500$ PSI.
 - Rebar shall be Grade 60.
 - The Half Barrier shall be placed upon a bed of grout in order to provide a uniform bearing.
 - Doweled joints shall be grouted under pressure until all of the openings and the joints are filled.
 - All bend dimensions for rebar are out-to-out of bars.
 - Rebar shall have 2" minimum clear cover unless otherwise noted.



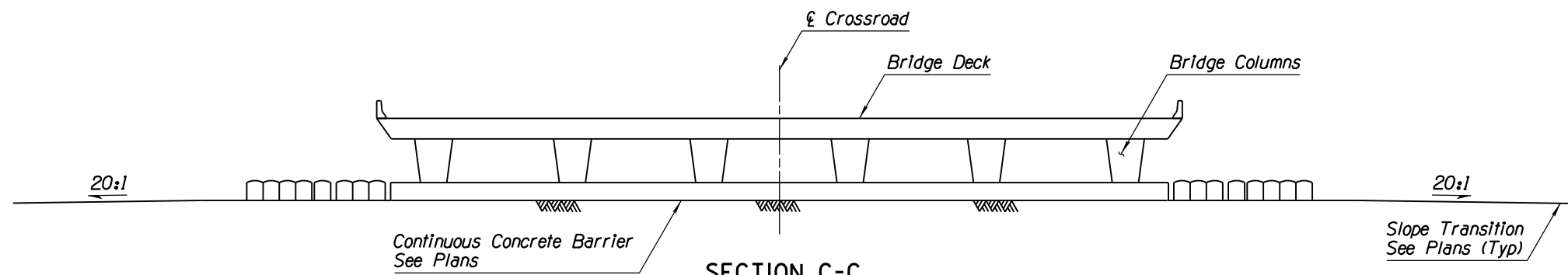
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER 42" TYPE 'F' AT PIERS PRECAST	DRAWING NO. C-10.55
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	Sheet 2 of 3

GENERAL NOTES

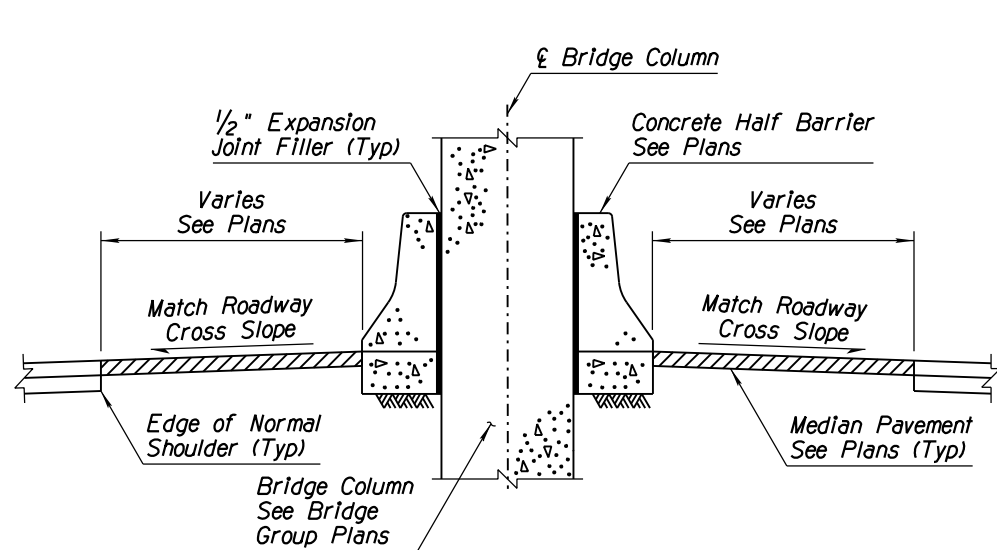
1. Transition median paving cross slope to meet level foundation pad. See plans for length and location.
 2. Compacted backfill and Class B concrete shall be placed between bridge columns or piers only.
- Slope as shown on Plans



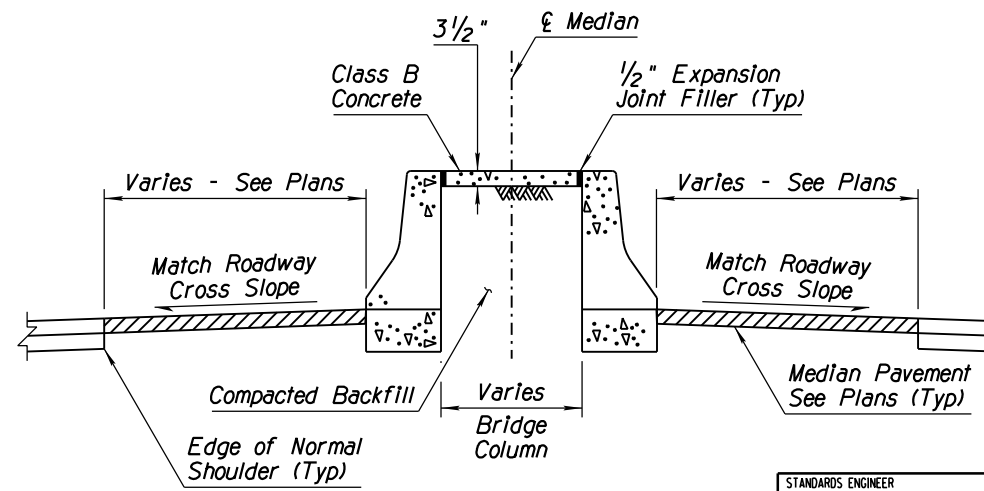
PLAN



SECTION C-C



SECTION A-A



SECTION B-B

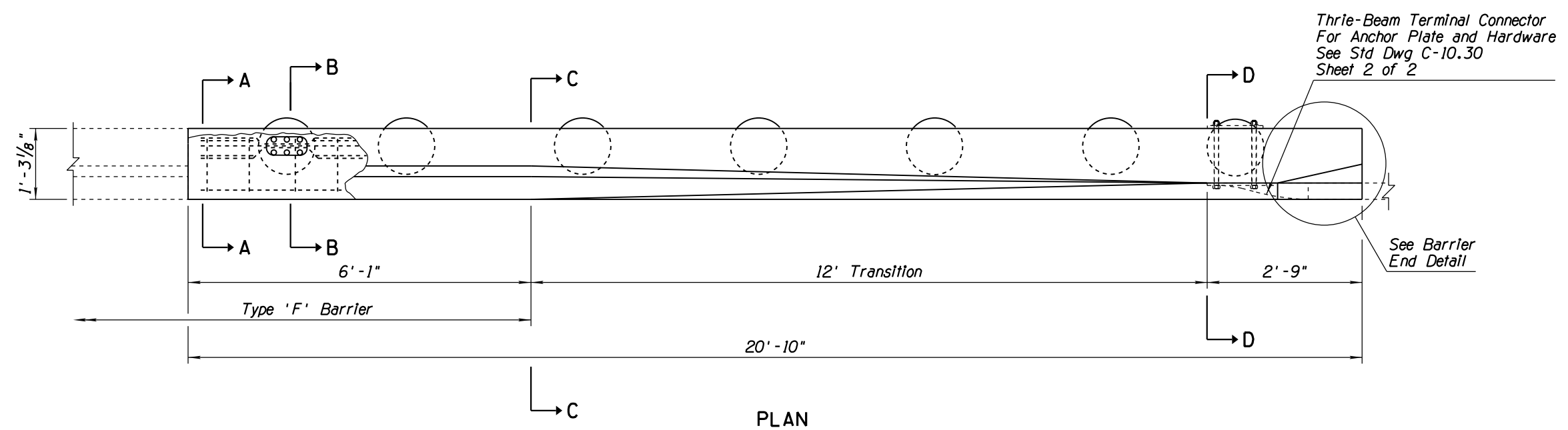
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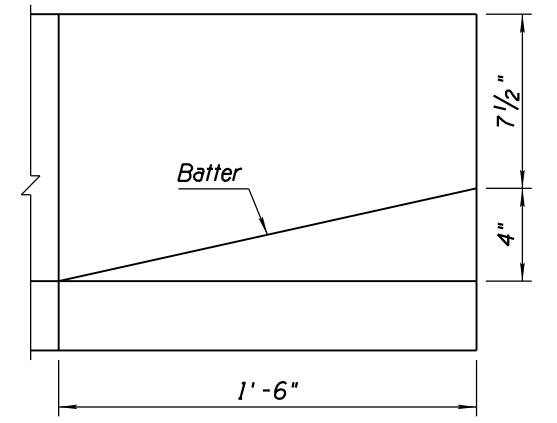
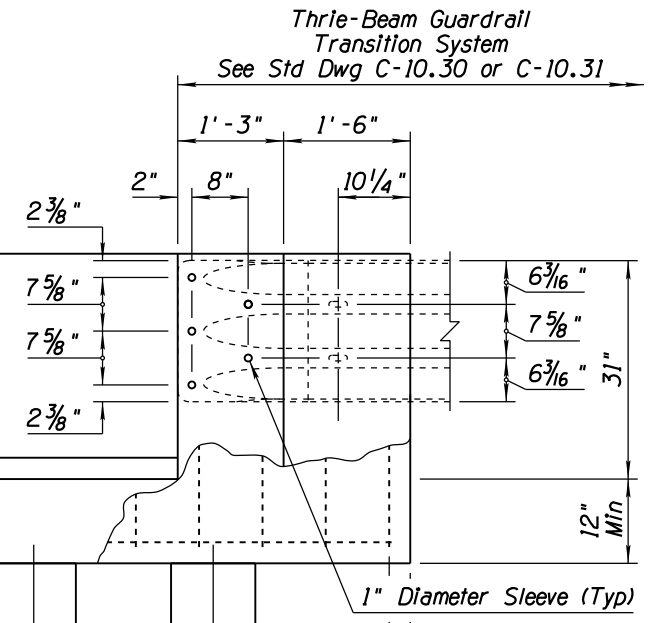
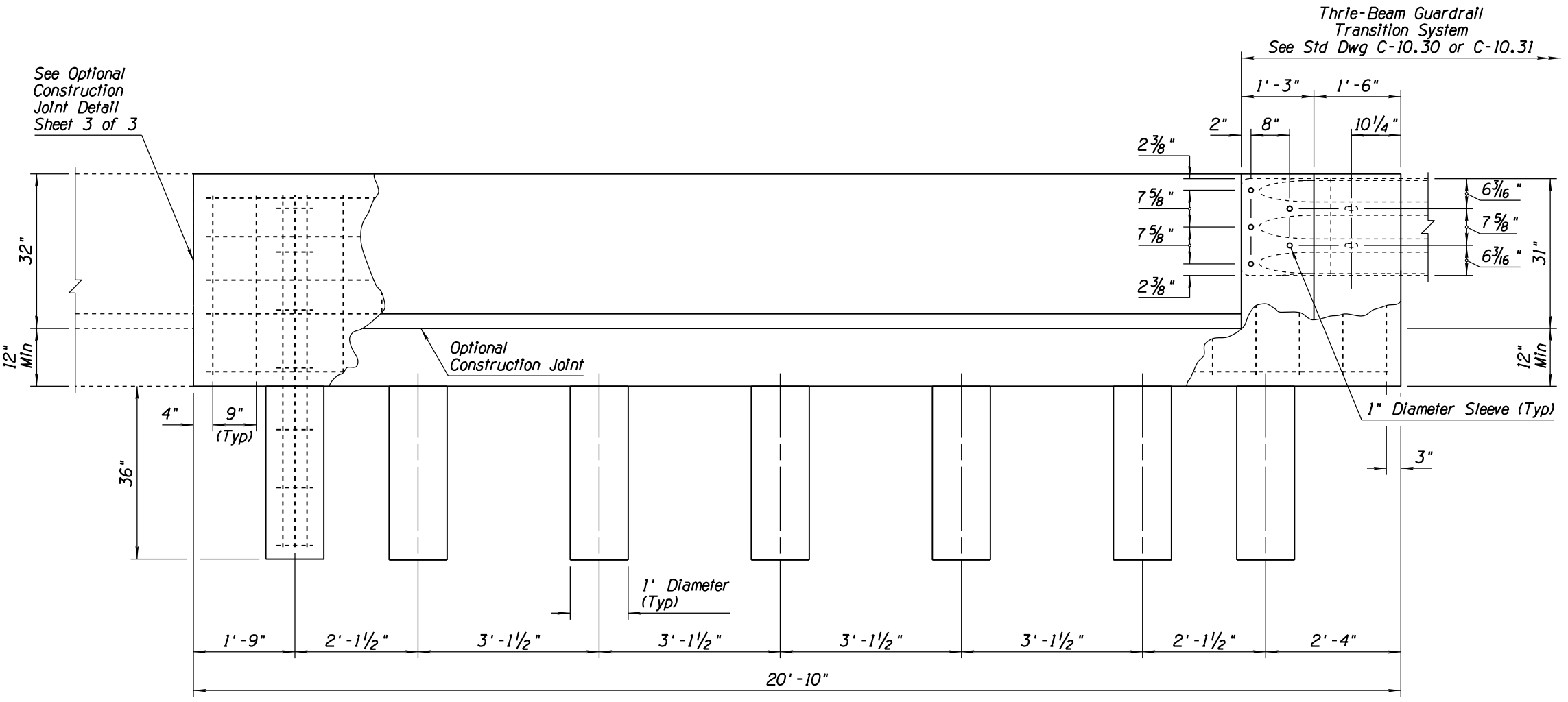
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	CONCRETE HALF BARRIER 42" TYPE 'F' AT PIERS LAYOUT
DATE 12/17	DRAWING NO. C-10.55 Sheet 3 of 3

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PRIOR DISTRIBUTION DATE 05/12



- GENERAL NOTES**
1. Concrete shall be Class S, $f'_c = 4500$ PSI.
 2. Rebar shall be Grade 60.
 3. All rebar shall have 2" minimum clear cover unless otherwise noted.
 4. All bend dimensions for rebar are out-to-out of rebars.



ELEVATION BARRIER WITHOUT CURB

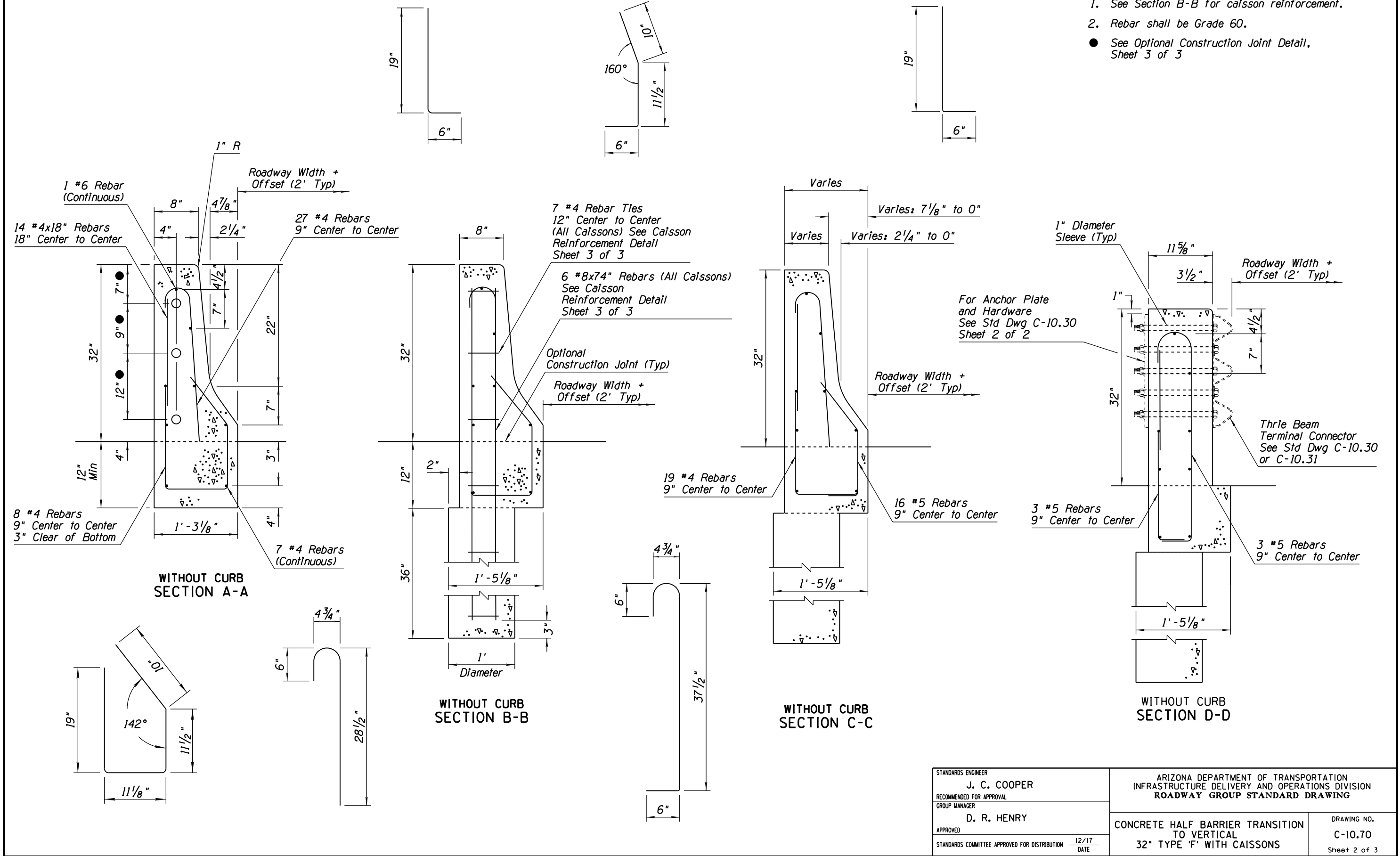
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	CONCRETE HALF BARRIER TRANSITION TO VERTICAL 32" TYPE 'F' WITH CAISSONS
DATE 12/17	DRAWING NO. C-10.70 Sheet 1 of 3

GENERAL NOTES

1. See Section B-B for caisson reinforcement.
2. Rebar shall be Grade 60.
- See Optional Construction Joint Detail, Sheet 3 of 3

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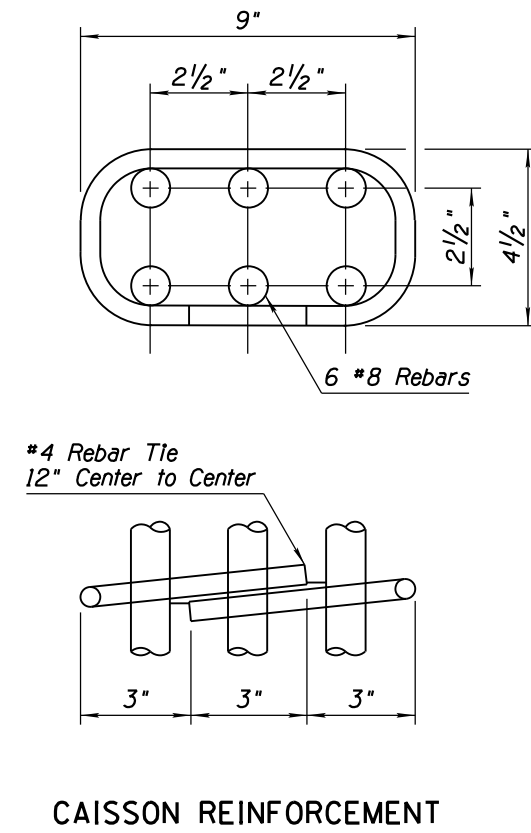
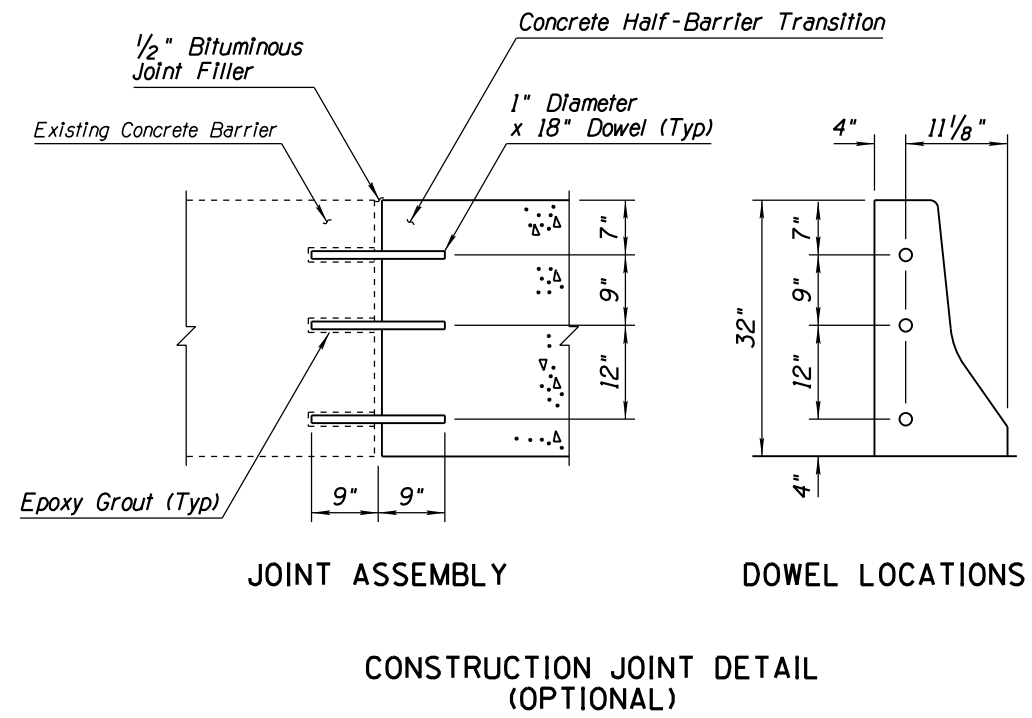
PRIOR DISTRIBUTION DATE 05/12



STANDARD ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER TRANSITION TO VERTICAL 32" TYPE 'F' WITH CAISSONS	DRAWING NO. C-10.70
APPROVED STANDARD COMMITTEE APPROVED FOR DISTRIBUTION		Sheet 2 of 3
	DATE 12/17	

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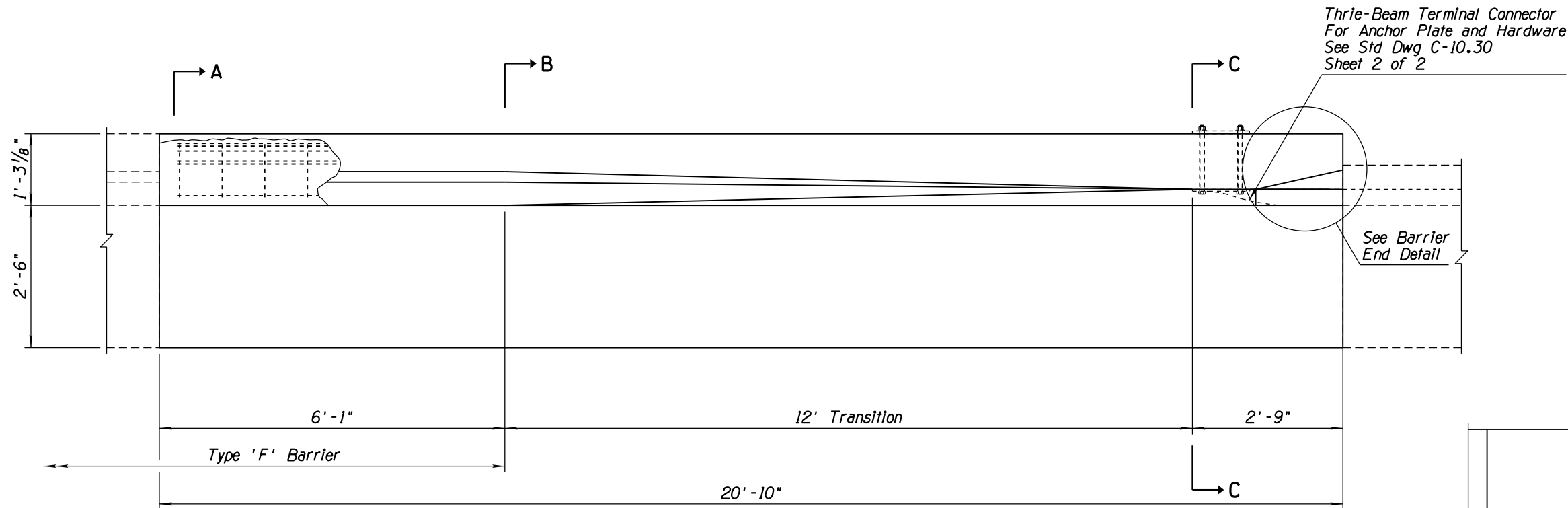
PRIOR DISTRIBUTION DATE 05/12



STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER TRANSITION TO VERTICAL 32" TYPE 'F' WITH CAISSONS	DRAWING NO. C-10.70
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 12/17
		Sheet 3 of 3

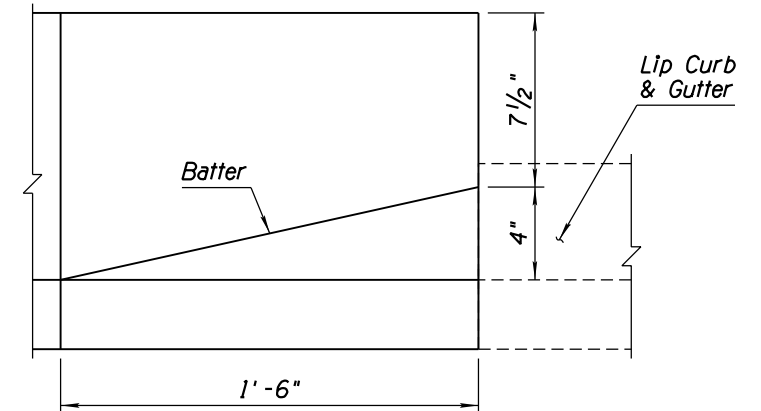
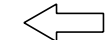
GENERAL NOTES

1. Concrete shall be Class S, $f'_c=4500$ PSI.
2. Rebar shall be Grade 60.
3. All rebar shall have 2" minimum clear cover unless otherwise noted.
4. All bend dimensions for rebar are out-to-out of bars.
6. 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

Traffic



BARRIER END DETAIL

See Optional Construction Joint Detail Sheet 2 of 2



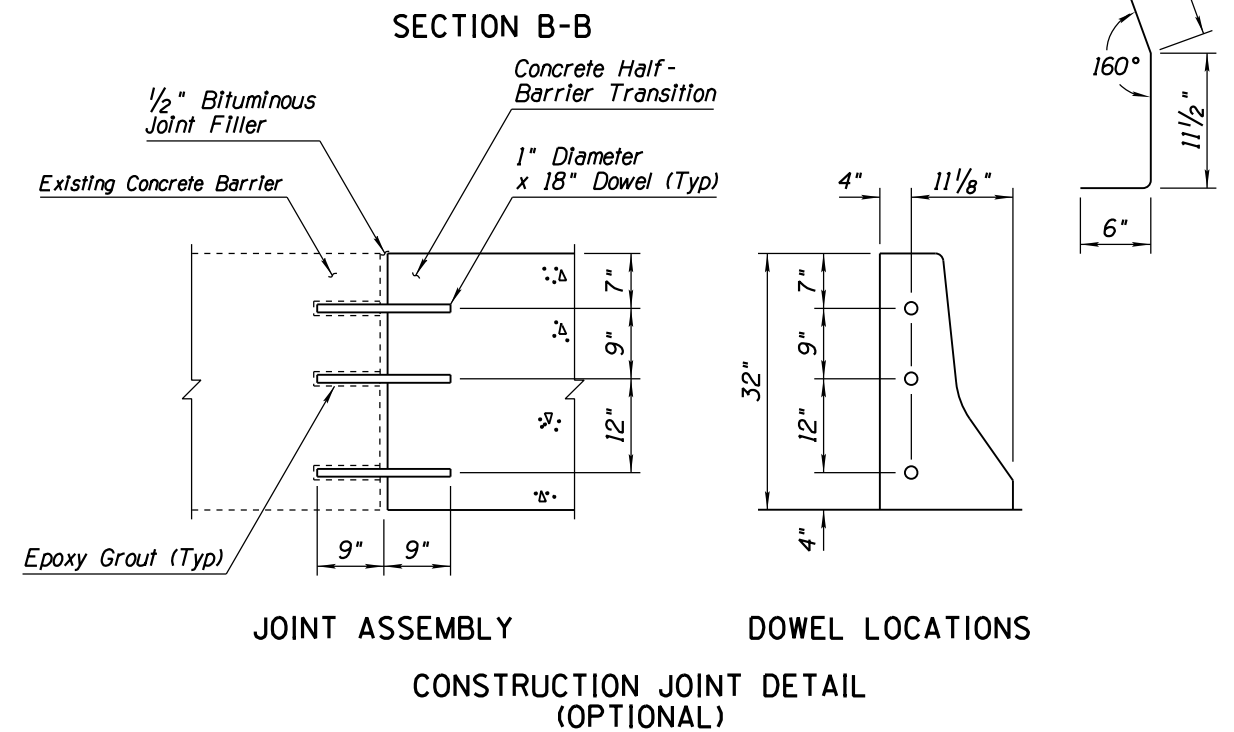
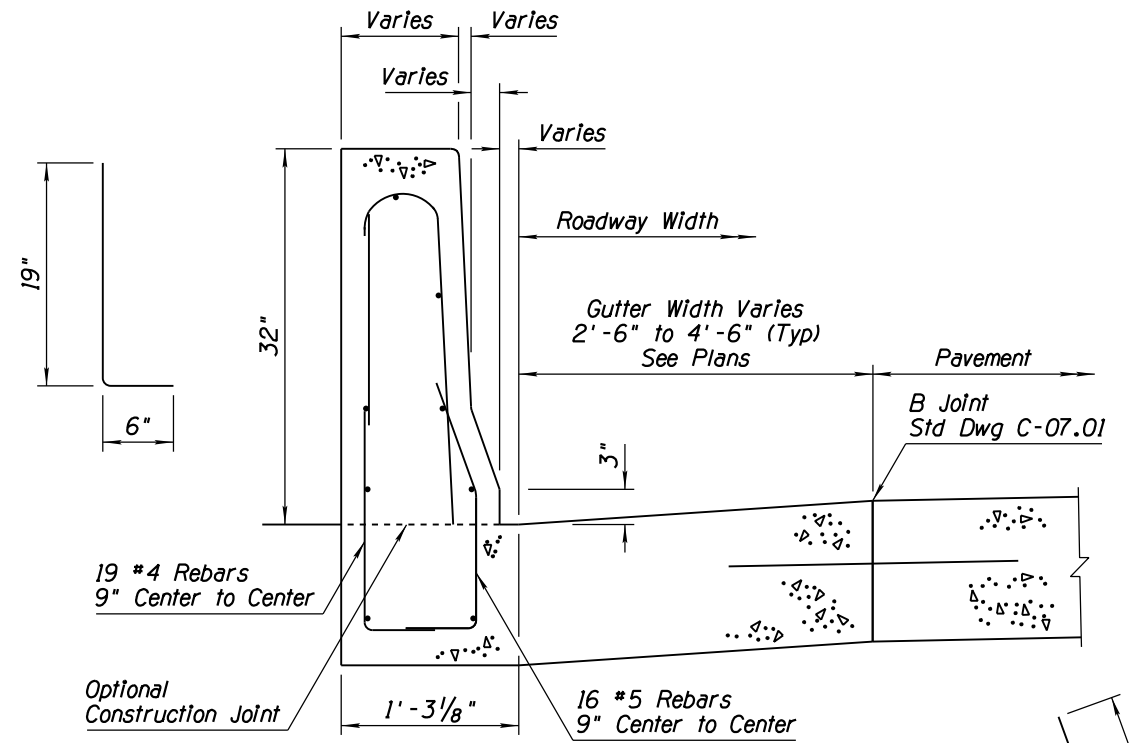
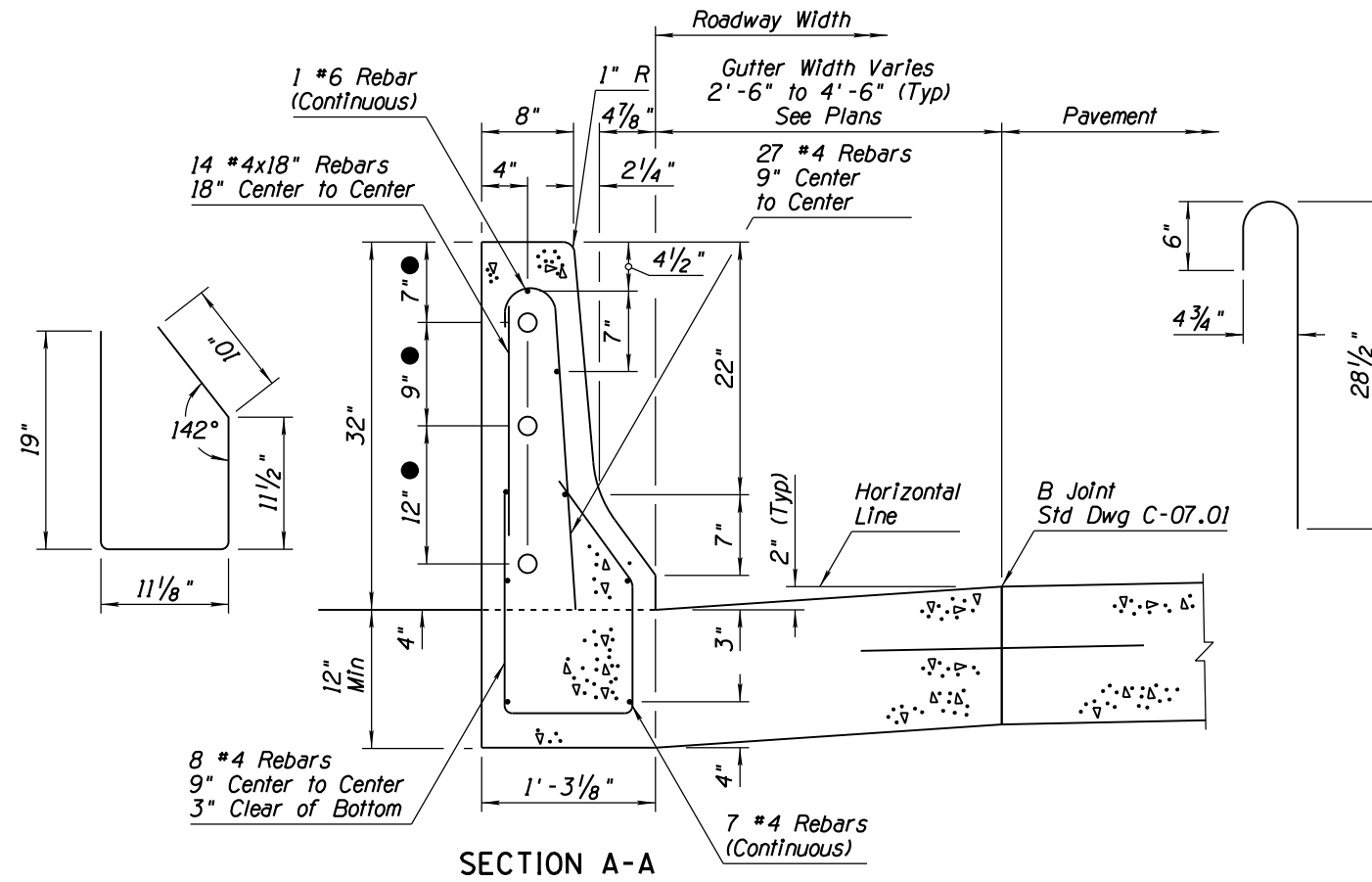
**ELEVATION
BARRIER WITH CURB AND GUTTER**

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PRIOR DISTRIBUTION DATE 05/12

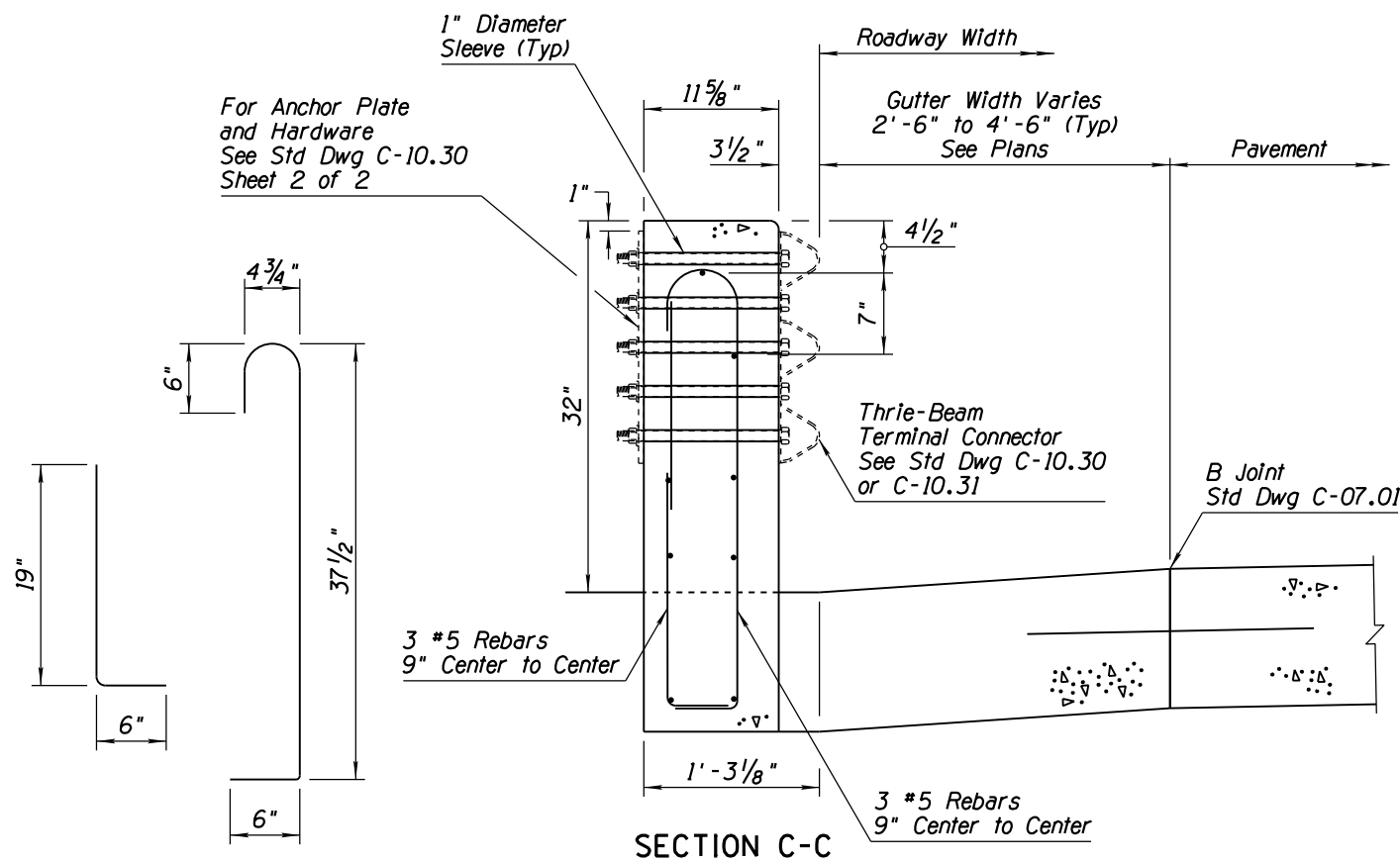
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER TRANSITION TO VERTICAL 32" TYPE 'F' WITH CURB & GUTTER	DRAWING NO. C-10.71
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 12/17
		Sheet 1 of 2

● See Optional Construction Joint Detail



SECTION B-B

JOINT ASSEMBLY
DOWEL LOCATIONS
CONSTRUCTION JOINT DETAIL (OPTIONAL)



SECTION C-C

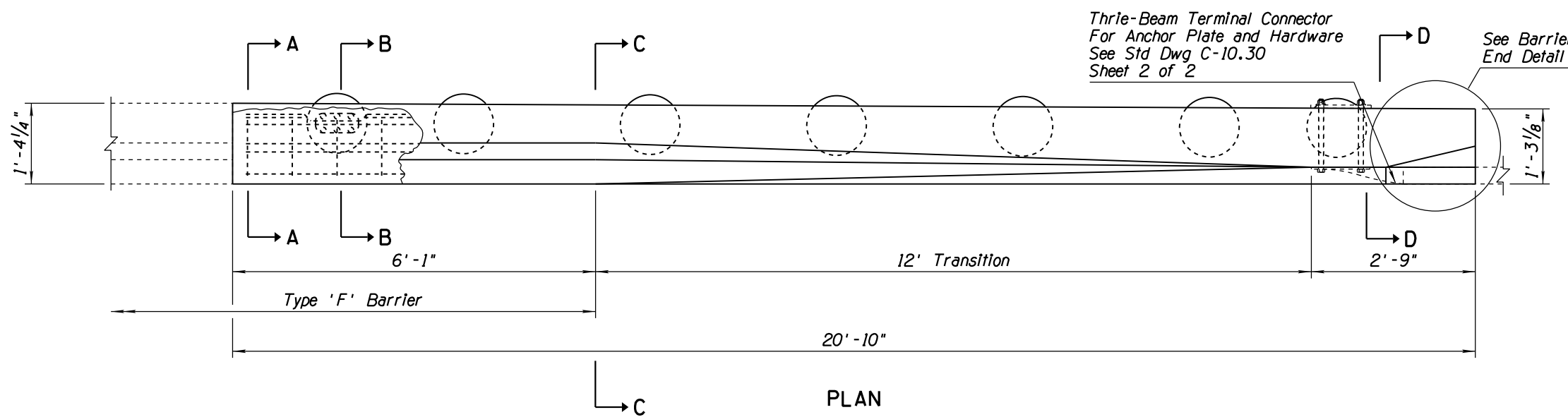
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER TRANSITION TO VERTICAL 32" TYPE 'F' WITH CURB & GUTTER	DRAWING NO. C-10.71
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		Sheet 2 of 2

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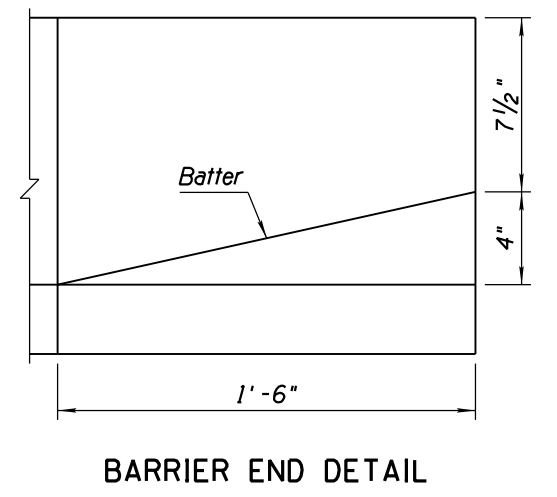
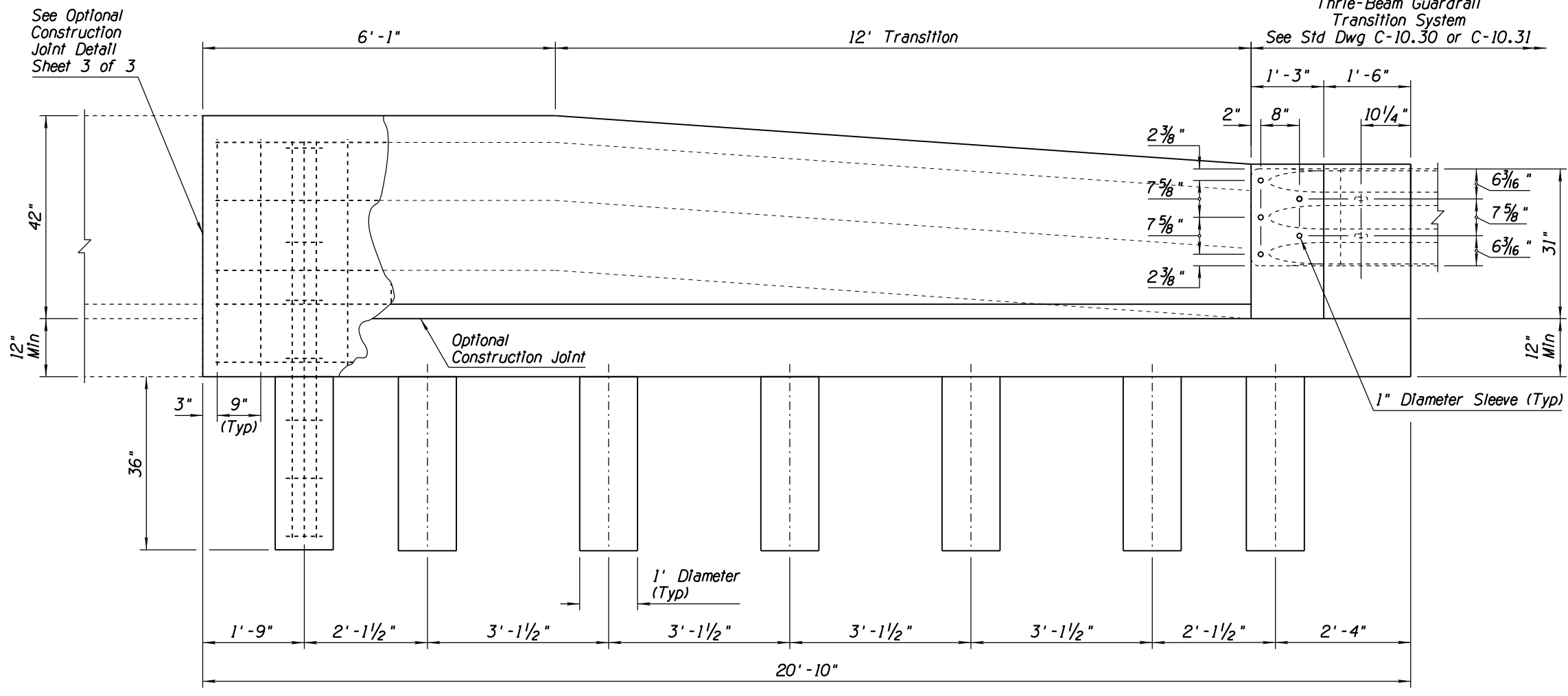
PRIOR DISTRIBUTION DATE 05/12

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PRIOR DISTRIBUTION DATE 05/12



- GENERAL NOTES**
1. Concrete shall be Class S, $f'_c=4500$ PSI.
 2. Rebar shall be Grade 60.
 3. All rebar shall have 2" minimum clear cover unless otherwise noted.
 4. All bend dimensions for rebar are out-to-out of rebars.

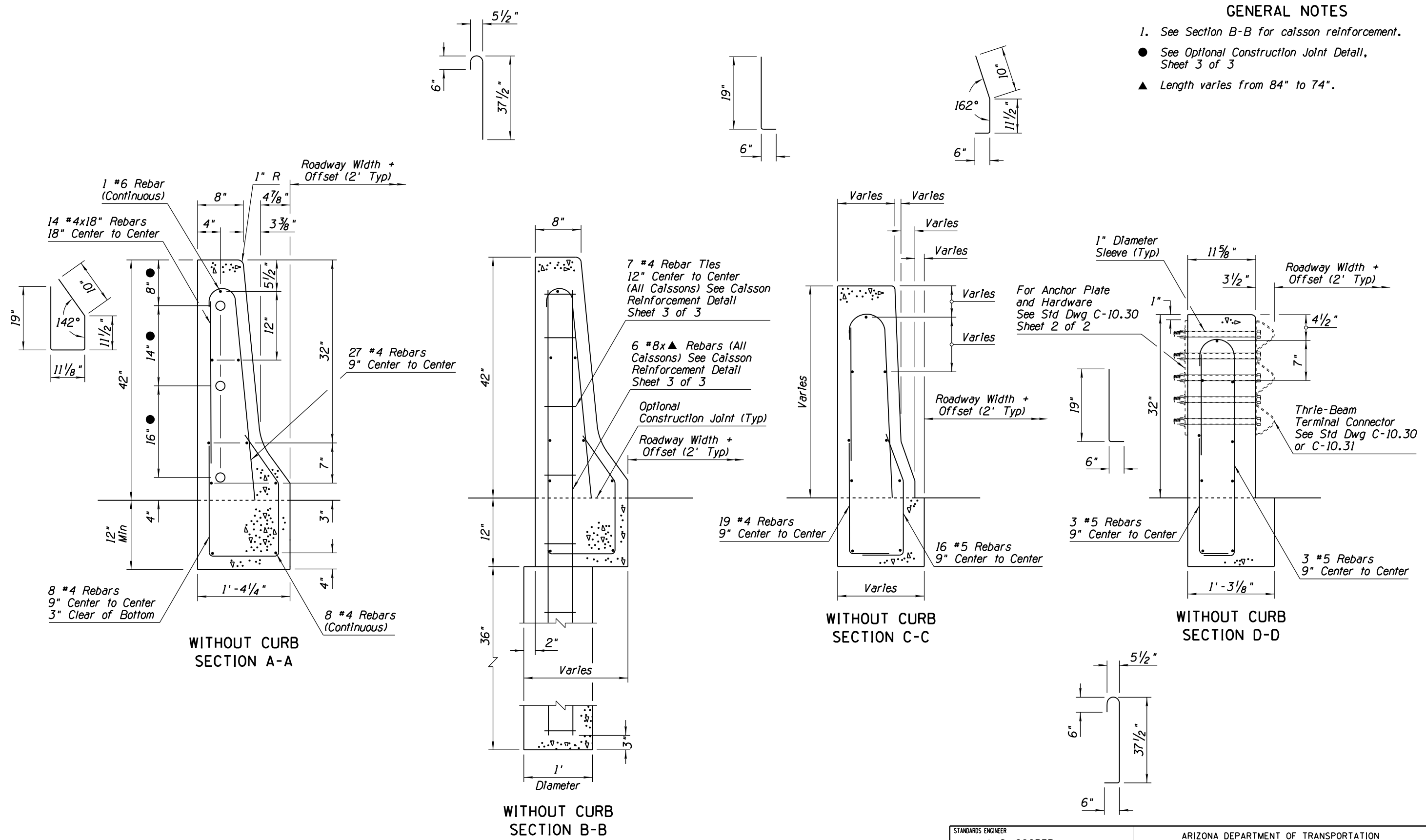


ELEVATION BARRIER WITHOUT CURB

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER TRANSITION TO VERTICAL 42" TO 32" TYPE 'F' WITH CAISSONS	DRAWING NO. C-10.72
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		Sheet 1 of 3
	DATE	12/17

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

PRIOR DISTRIBUTION DATE 05/12



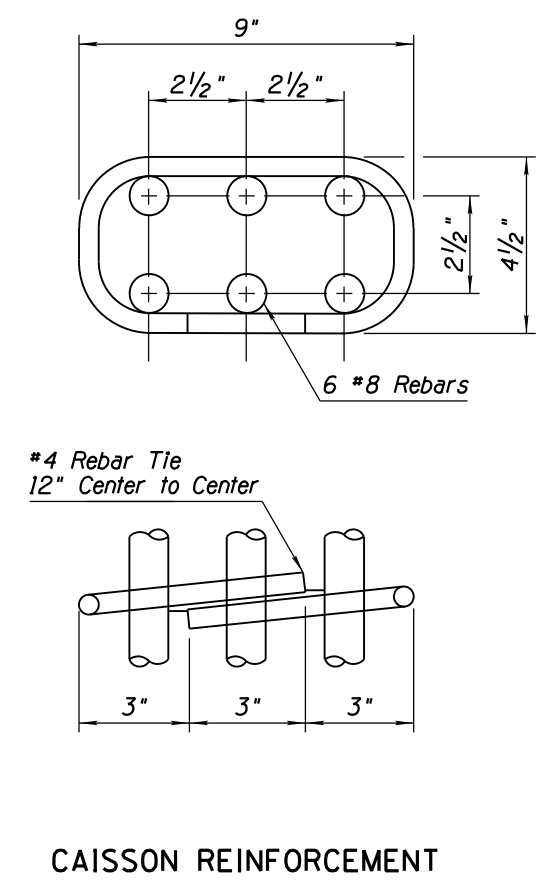
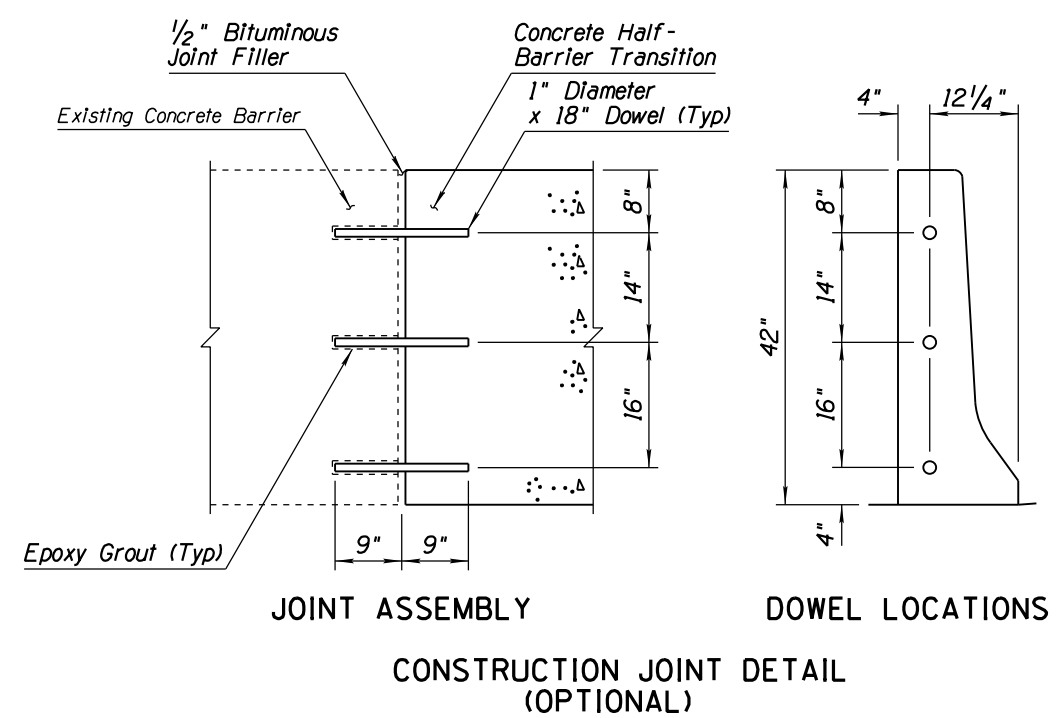
GENERAL NOTES

- 1. See Section B-B for caisson reinforcement.
- See Optional Construction Joint Detail, Sheet 3 of 3
- ▲ Length varies from 84" to 74".

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER TRANSITION TO VERTICAL 42" TO 32" TYPE 'F' WITH CAISSONS	DRAWING NO. C-10.72
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION —12/17— DATE		Sheet 2 of 3

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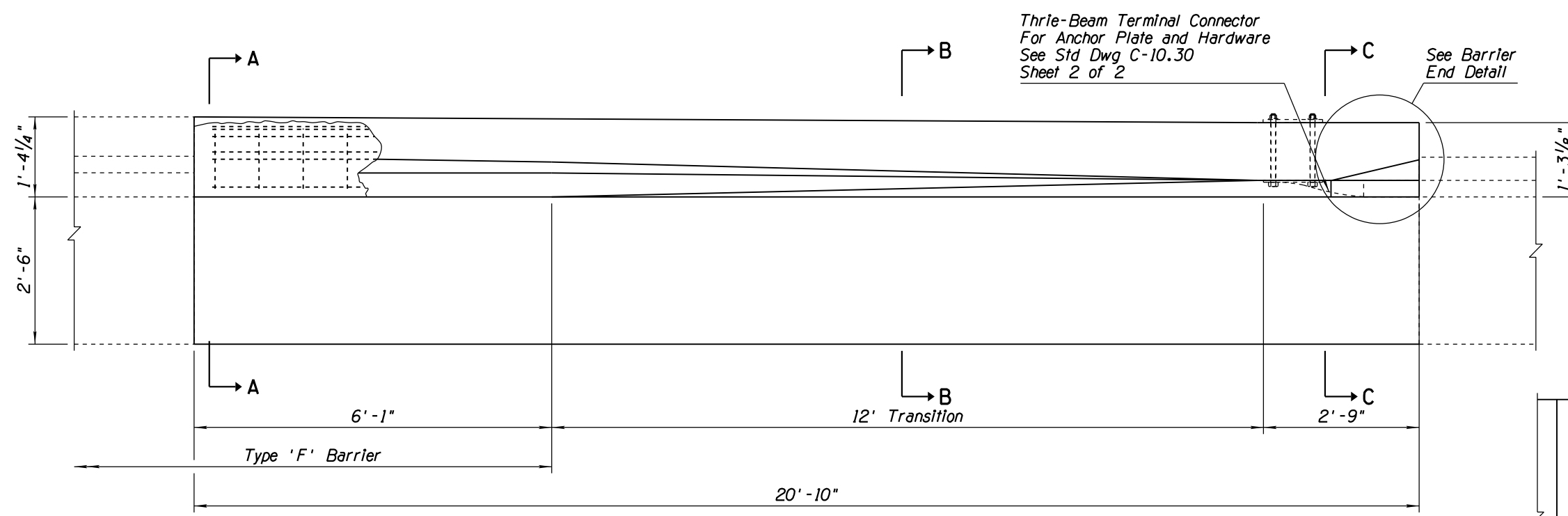
PRIOR DISTRIBUTION DATE 05/12



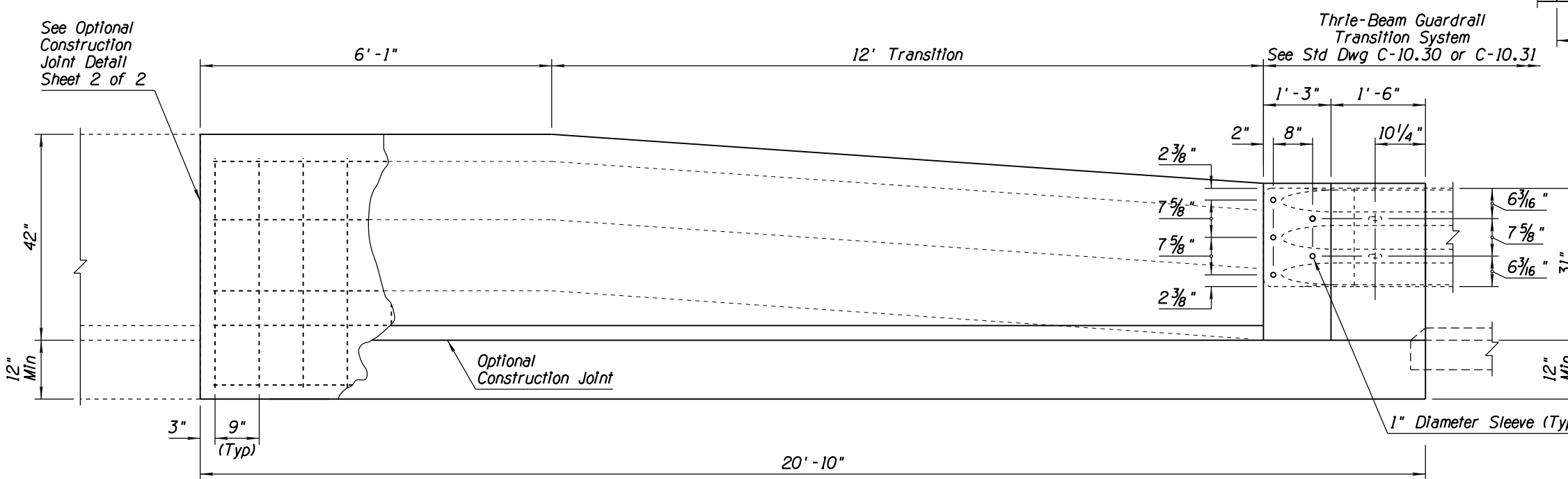
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING		DRAWING NO. C-10.72
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY			
APPROVED	CONCRETE HALF BARRIER TRANSITION TO VERTICAL	12/17 DATE	Sheet 3 of 3
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	42" TO 32" TYPE 'F' WITH CAISSONS		

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PRIOR DISTRIBUTION DATE 05/12

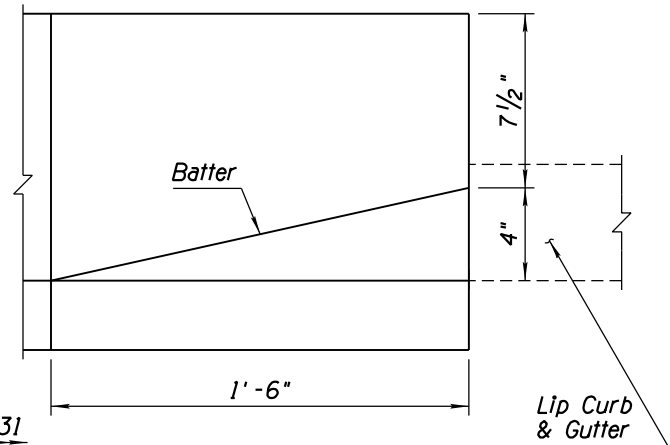


PLAN



ELEVATION
BARRIER WITH CURB AND GUTTER

- GENERAL NOTES**
1. Concrete shall be Class S, $f'_c = 4500$ PSI.
 2. Rebar shall be Grade 60.
 3. All rebar shall have 2" minimum clear cover unless otherwise noted.
 4. All bend dimensions for rebar are out-to-out of rebars.
 5. 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.

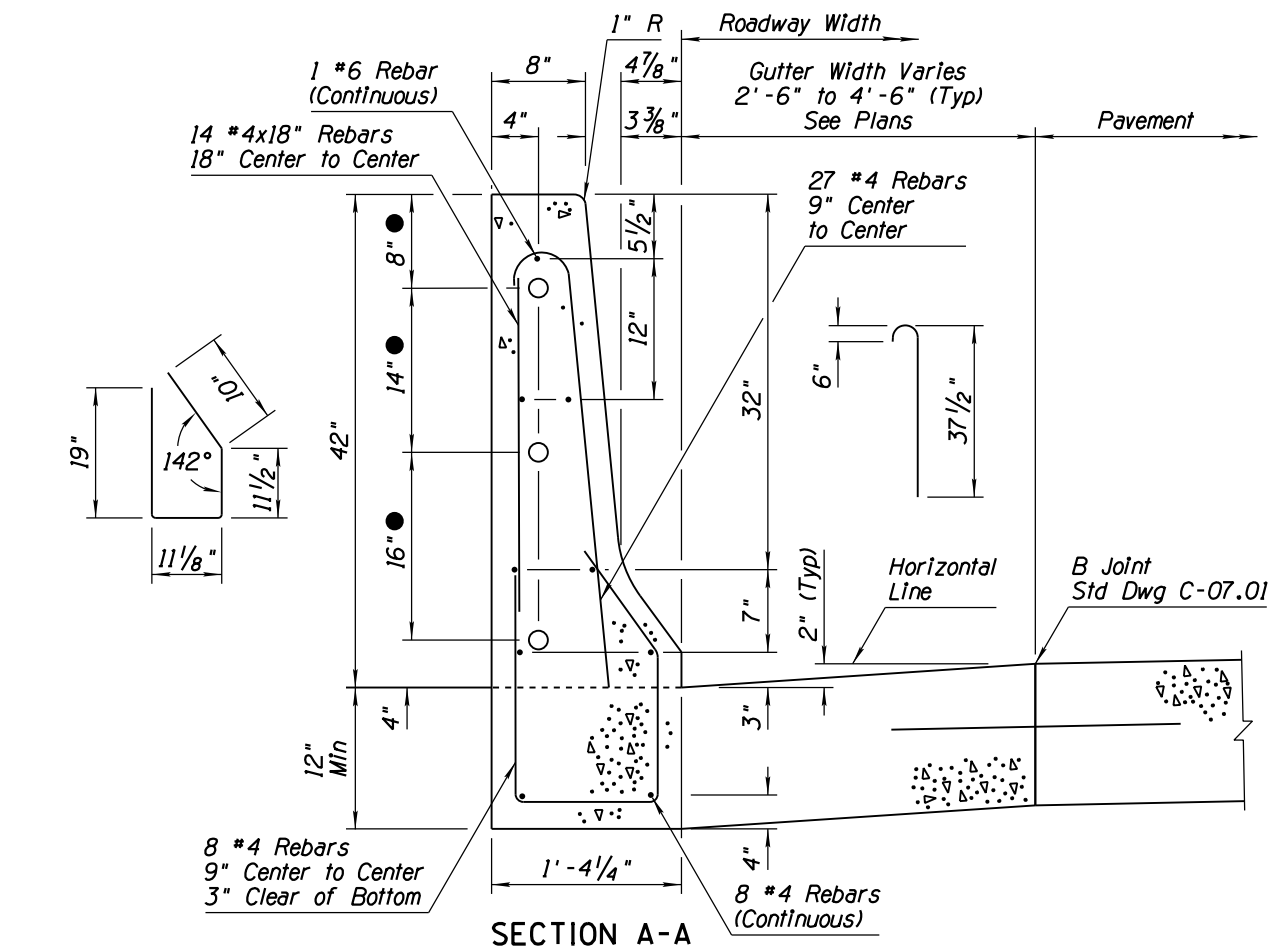


BARRIER END DETAIL

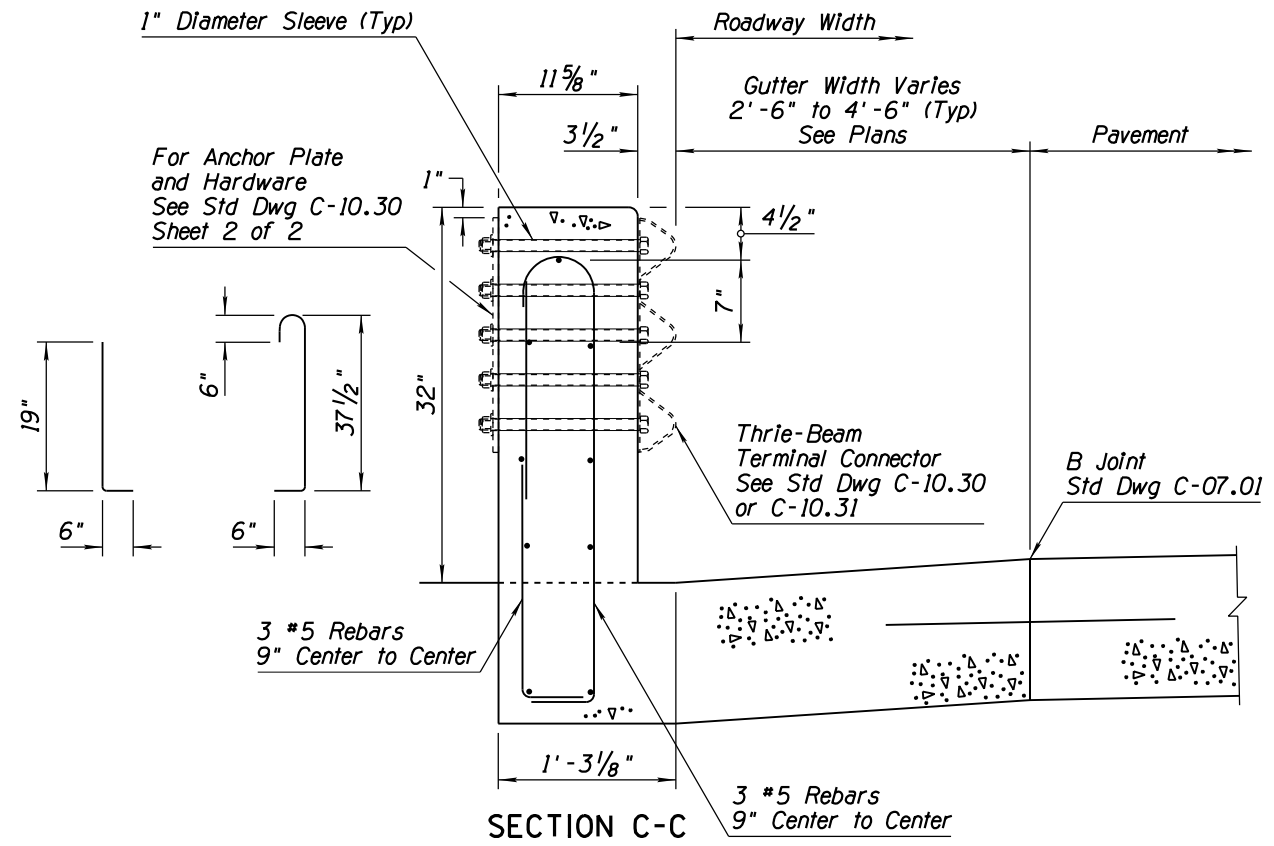
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER TRANSITION TO VERTICAL 42" TO 32" TYPE 'F' WITH GUTTER	DRAWING NO. C-10.73
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	Sheet 1 of 2

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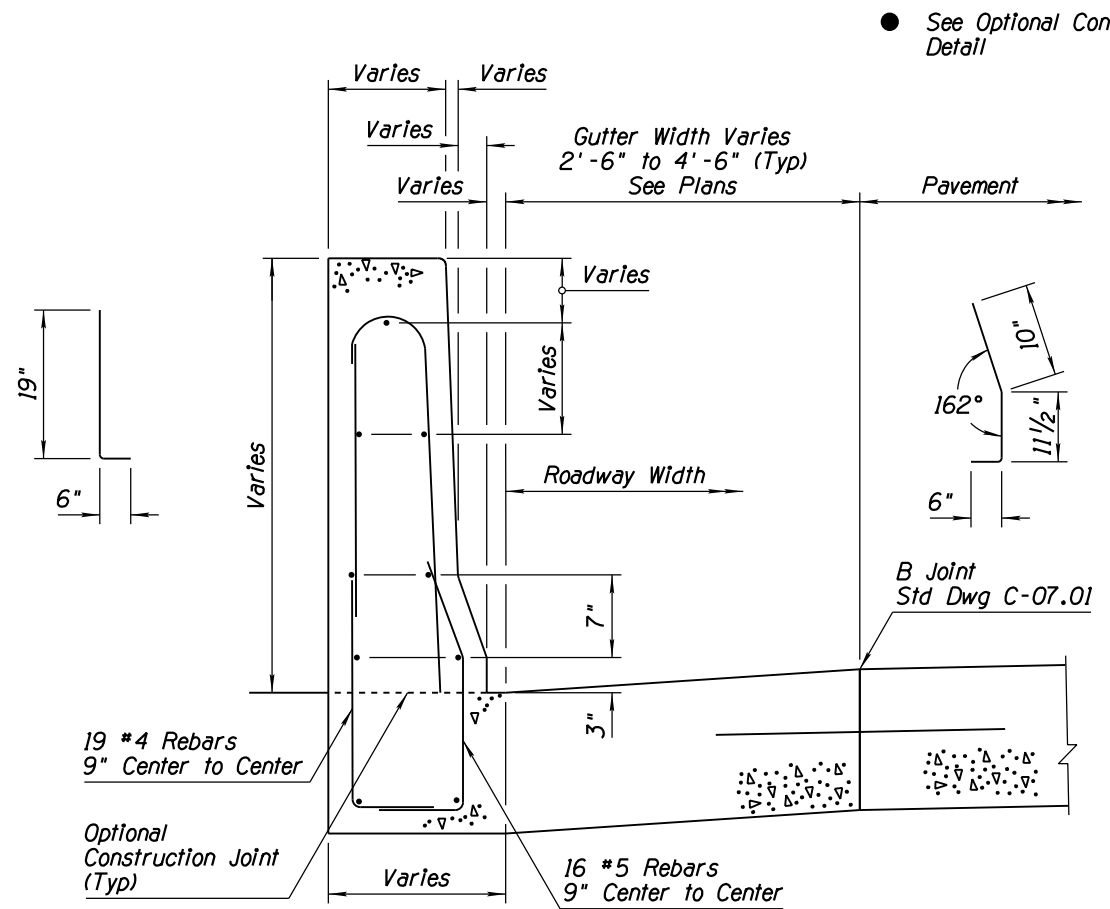
PRIOR DISTRIBUTION DATE 05/12



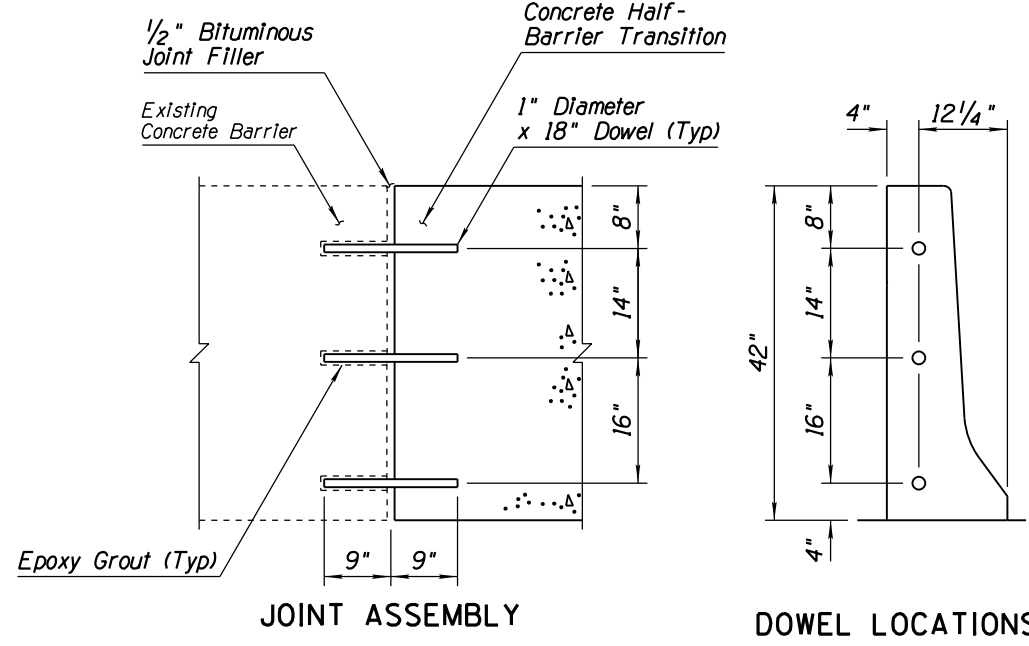
SECTION A-A



SECTION C-C



SECTION B-B



JOINT ASSEMBLY

DOWEL LOCATIONS

CONSTRUCTION JOINT DETAIL (OPTIONAL)

● See Optional Construction Joint Detail

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER TRANSITION TO VERTICAL 42" TO 32" TYPE 'F' WITH GUTTER	DRAWING NO. C-10.73
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 12/17
		Sheet 2 of 2

GENERAL NOTES

1. Half-barrier Transition shall be constructed by the formed cast-in-place method.
2. Barrier concrete shall be Class S, $f'_c=4500$ PSI.
3. Rebar shall be Grade 60.
4. If the footing and barrier are cast monolithically, #6 S shape rebars are not required.
5. Barrier width shall not exceed the barrier footing width nor overhang the adjacent pavement.
6. #4 rebar shall extend 12" past the construction joint at the completion of the day's pour.
7. Gutter thickness can be adjusted to match the PCCP thickness, as approved by the Engineer.
8. 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.

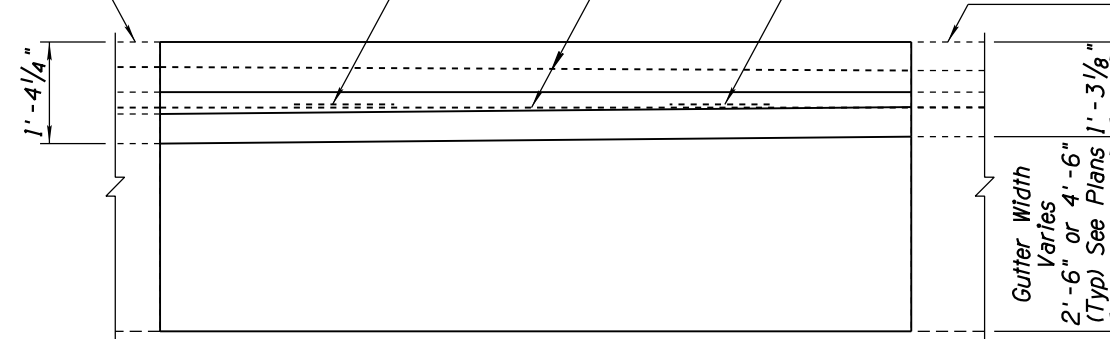
Concrete Half Barrier
42" Type 'F' With Gutter
Std Dwg C-10.53 or
as Shown on Plans

#6 Rebar
S Shape

#4 Rebar
Continuous

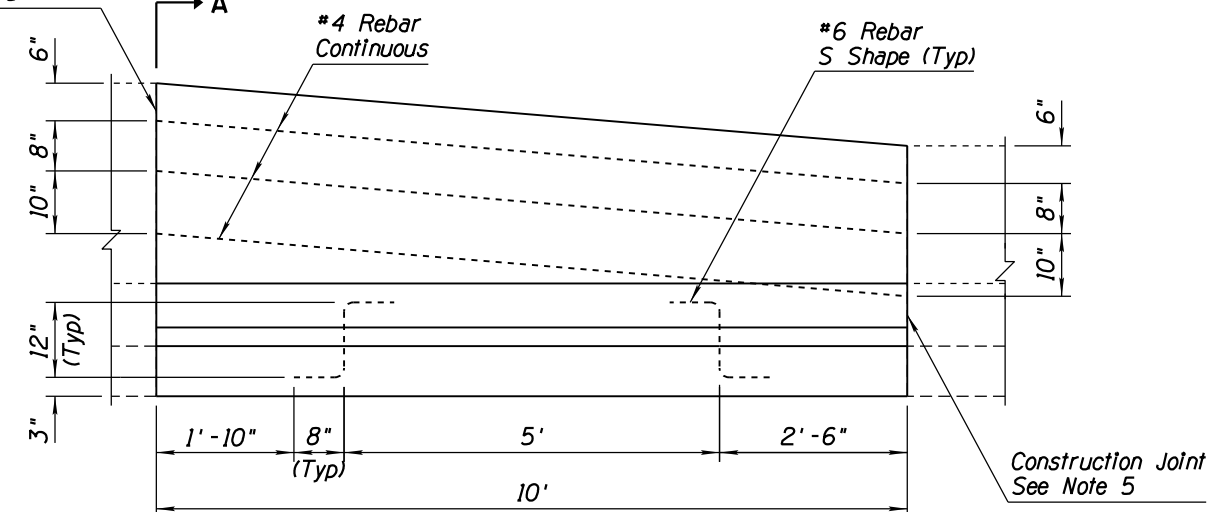
#6 Rebar
S Shape

Concrete Half Barrier
32" Type 'F' With Gutter
Std Dwg C-10.52 or
as Shown on Plans

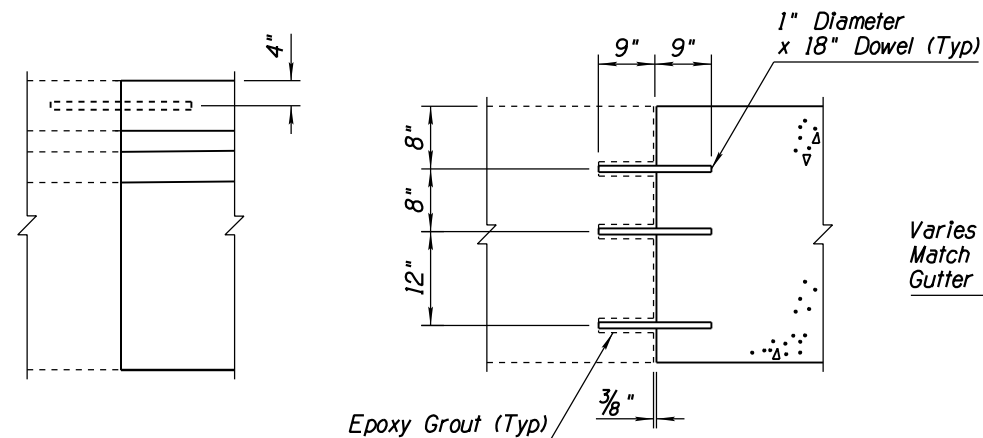


PLAN

Construction Joint
See Note 5



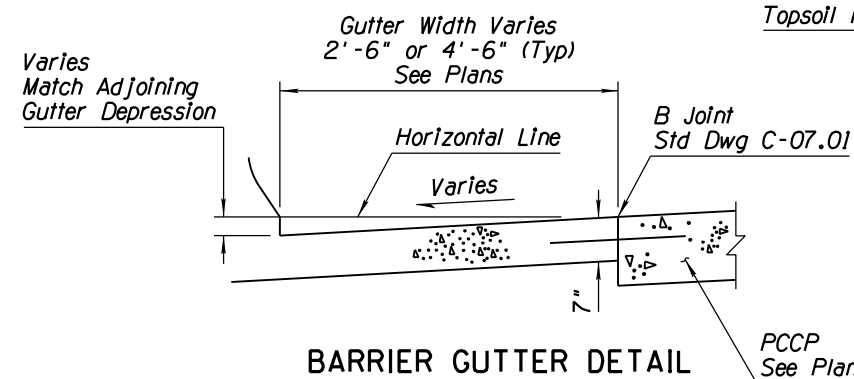
ELEVATION



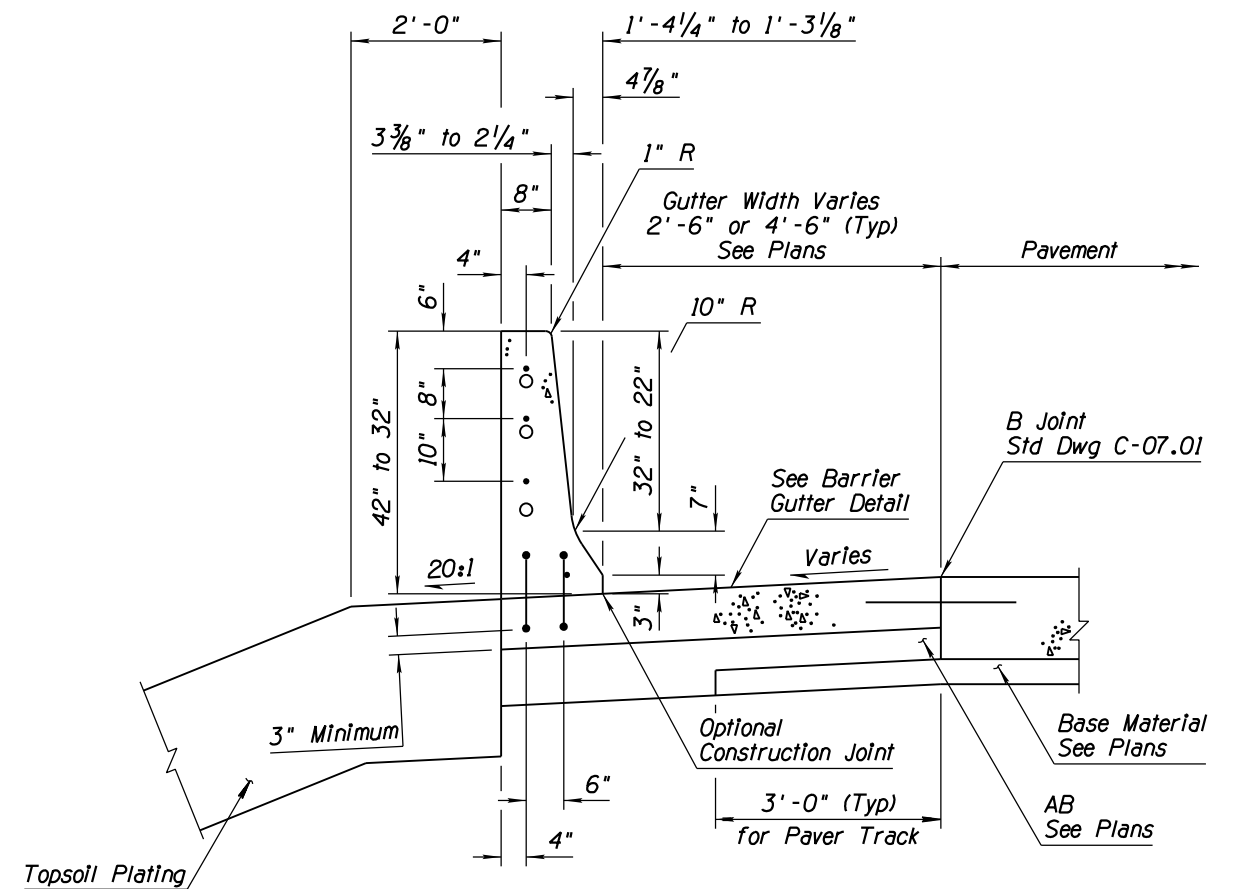
PLAN

ELEVATION

**CONSTRUCTION JOINT DETAIL
(OPTIONAL)**



BARRIER GUTTER DETAIL



SECTION A-A

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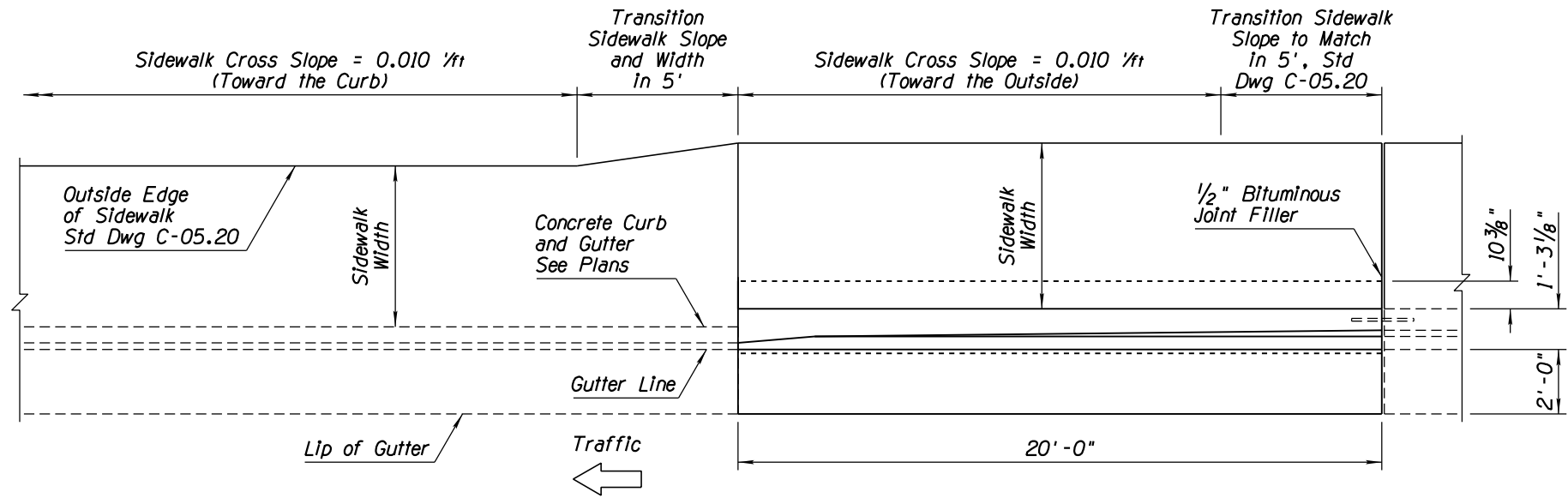
05/12

PRIOR DISTRIBUTION DATE

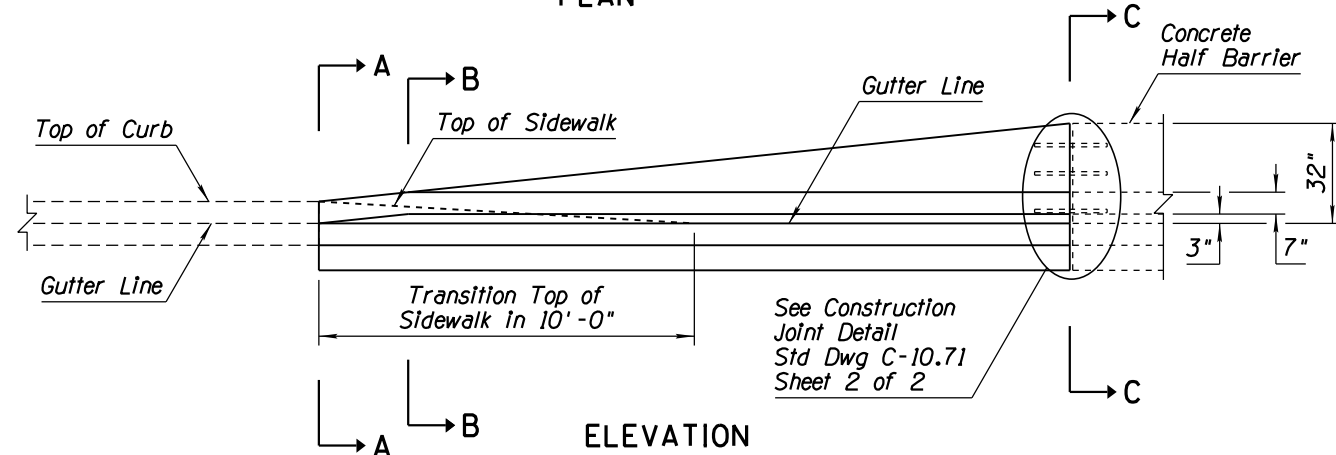
STANDARD ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL		
GROUP MANAGER D. R. HENRY		
APPROVED		
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	12/17 DATE	DRAWING NO. C-10.74
CONCRETE HALF BARRIER TRANSITION 42" TO 32" TYPE 'F'		

GENERAL NOTES

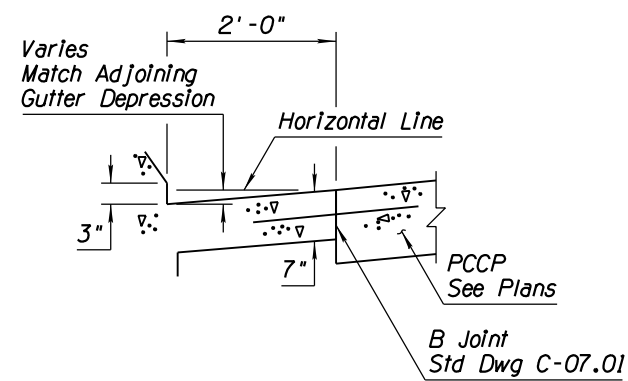
1. Barrier concrete shall be Class S, $f'c=4500$ PSI.
2. Rebar shall be Grade 60.
3. All rebar shall have 2" minimum clear cover unless otherwise noted.
4. See drainage sheets for slotted drain and catch basin details.
5. Barrier transition shall match both adjoining curb and gutter and concrete Half 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.



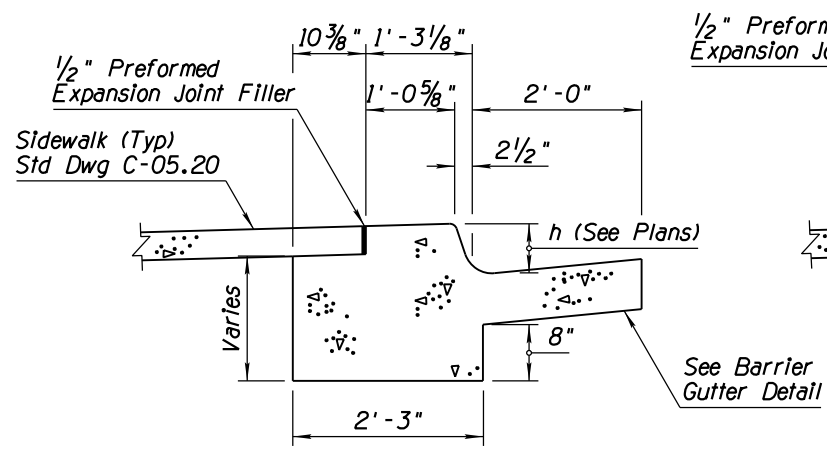
PLAN



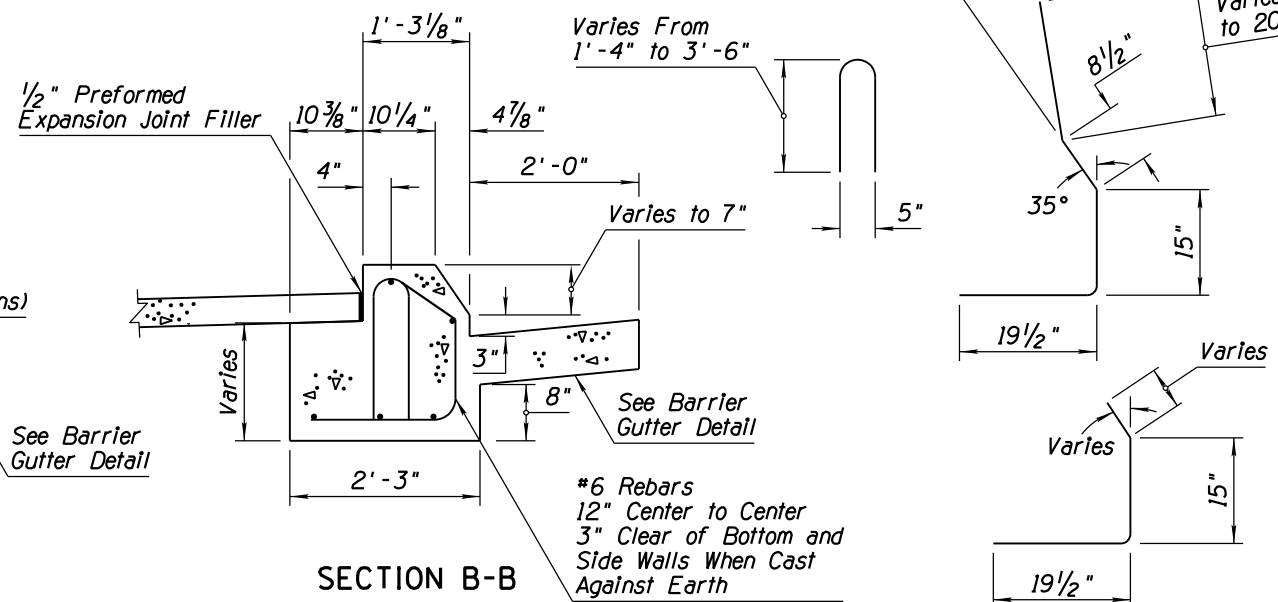
ELEVATION



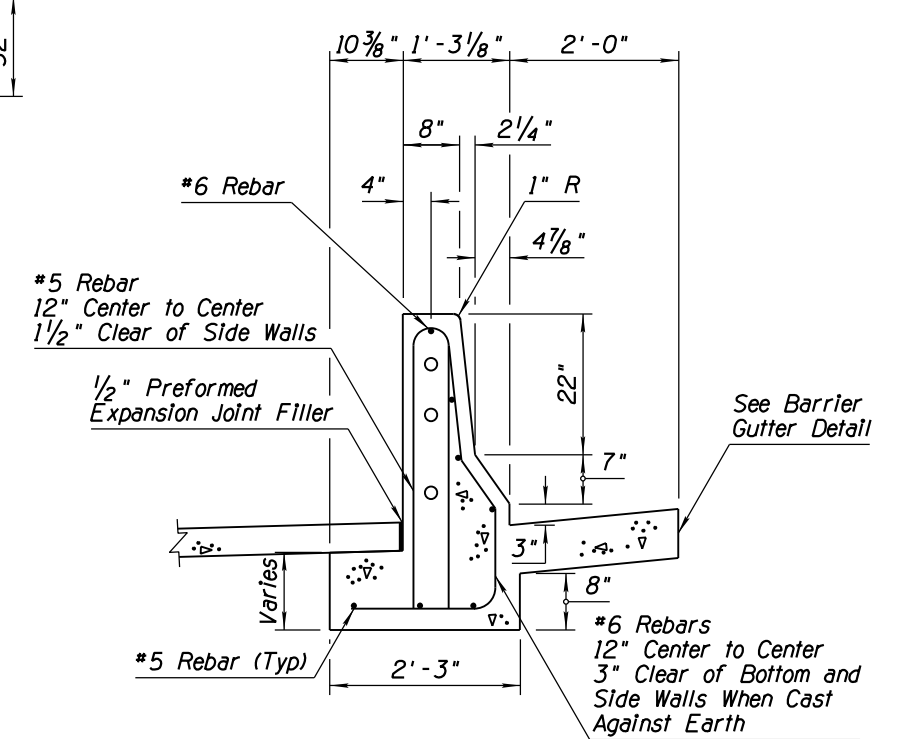
BARRIER GUTTER DETAIL



SECTION A-A



SECTION B-B



**SECTION C-C
TRANSITION TO VERTICAL TYPE CURB**

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PRIOR DISTRIBUTION DATE 05/12

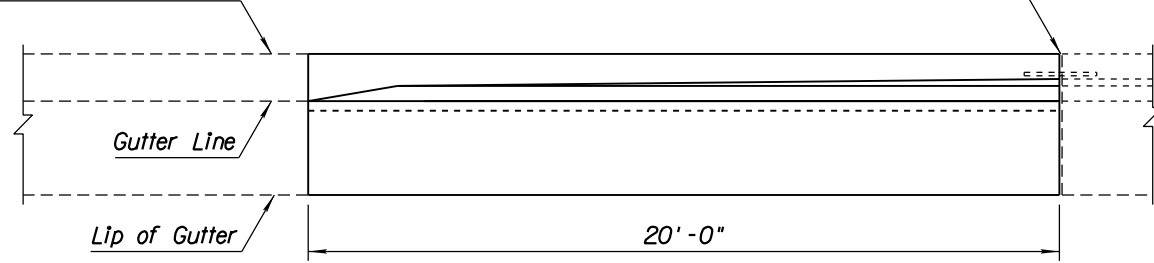
STANDARD ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	DRAWING NO. C-10.75
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY		CONCRETE HALF BARRIER TRANSITION TYPE 'F' TANGENT DEPARTURE TYPE 1
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	Sheet 1 of 2

GENERAL NOTES

1. Barrier concrete shall be Class S f'c=4500 PSI.
2. Rebar shall be Grade 60.
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.

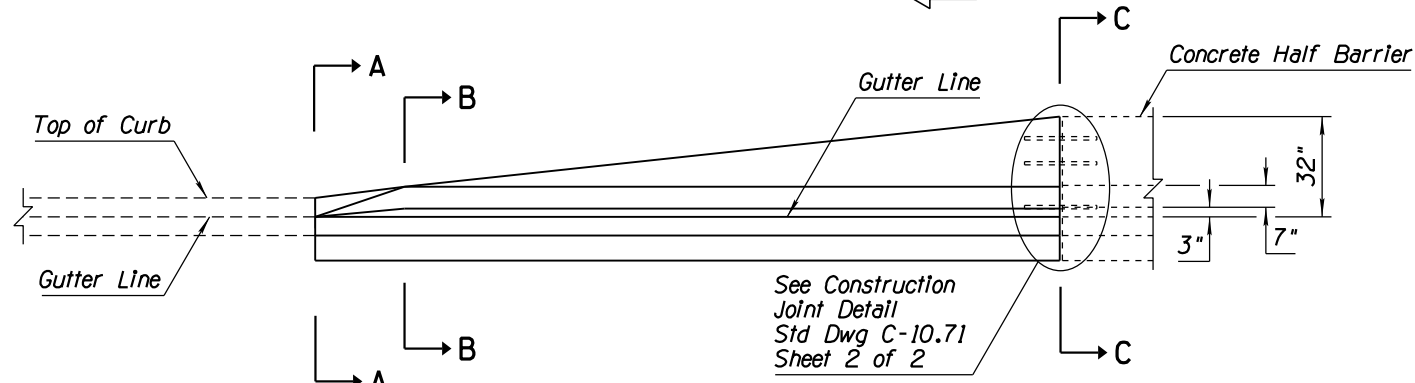
Concrete Curb & Gutter
Type B or C
Std Dwg C-05.10
See Plans

1/2" Bituminous
Joint Filler

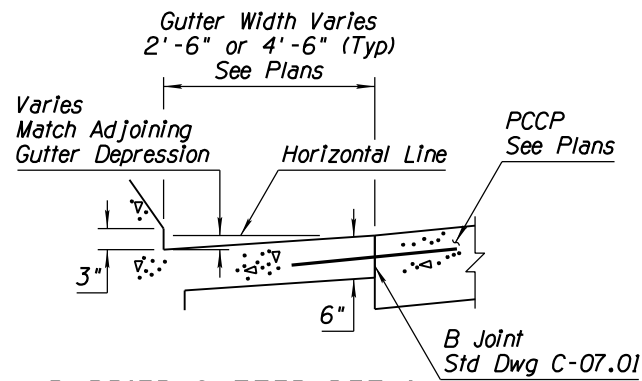


PLAN

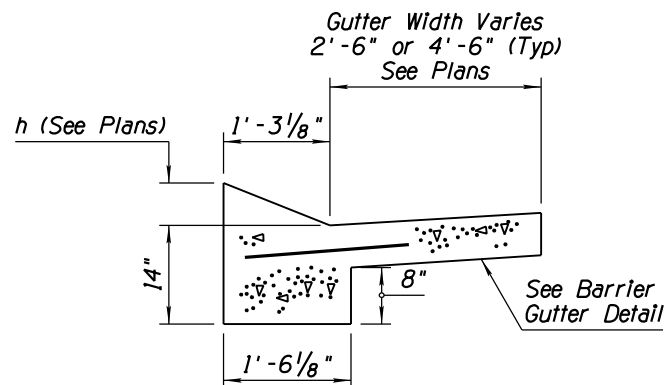
Traffic
←



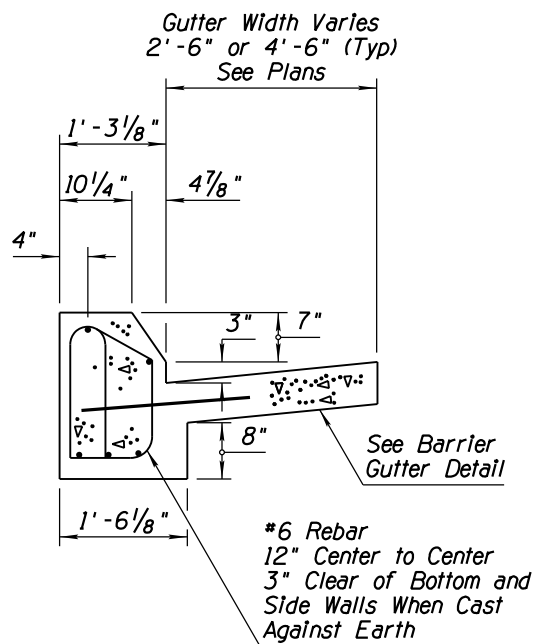
ELEVATION



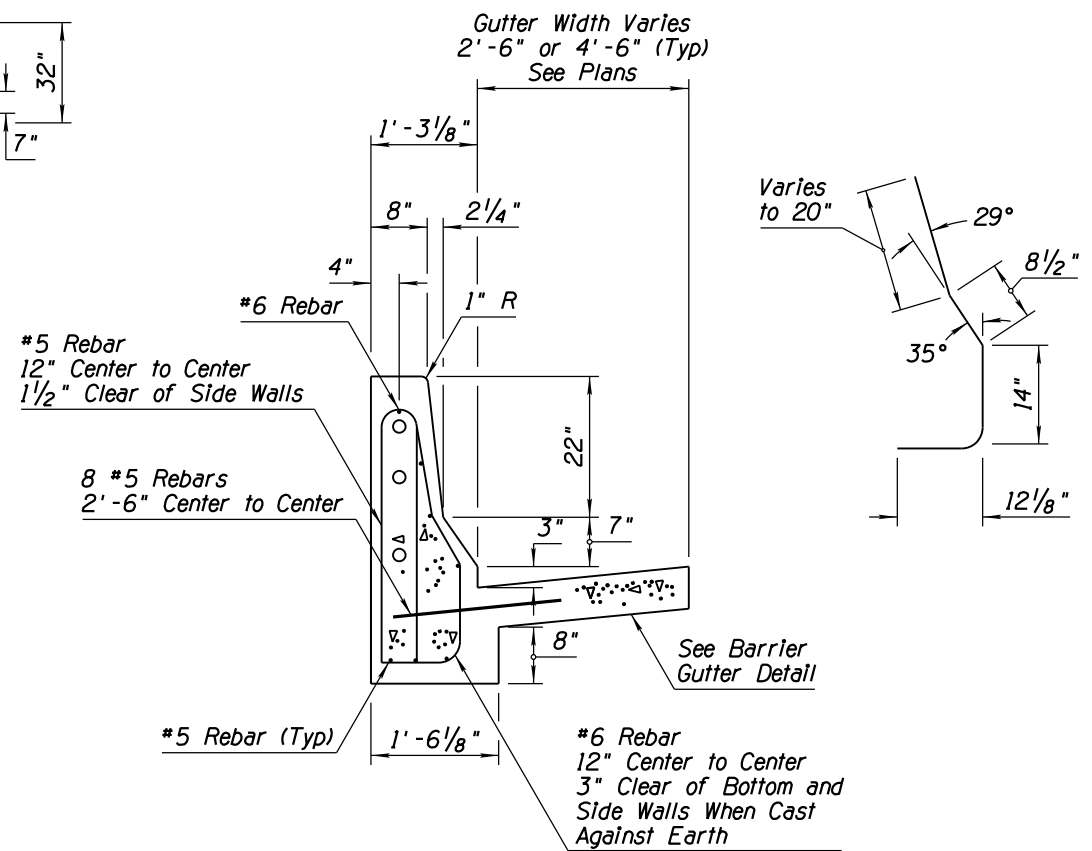
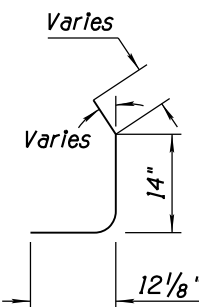
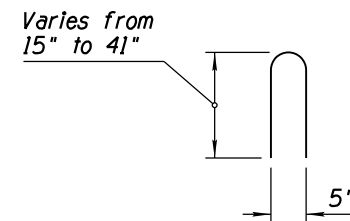
BARRIER GUTTER DETAIL



SECTION A-A



SECTION B-B



SECTION C-C

TRANSITION TO FREEWAY CURB

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05/12

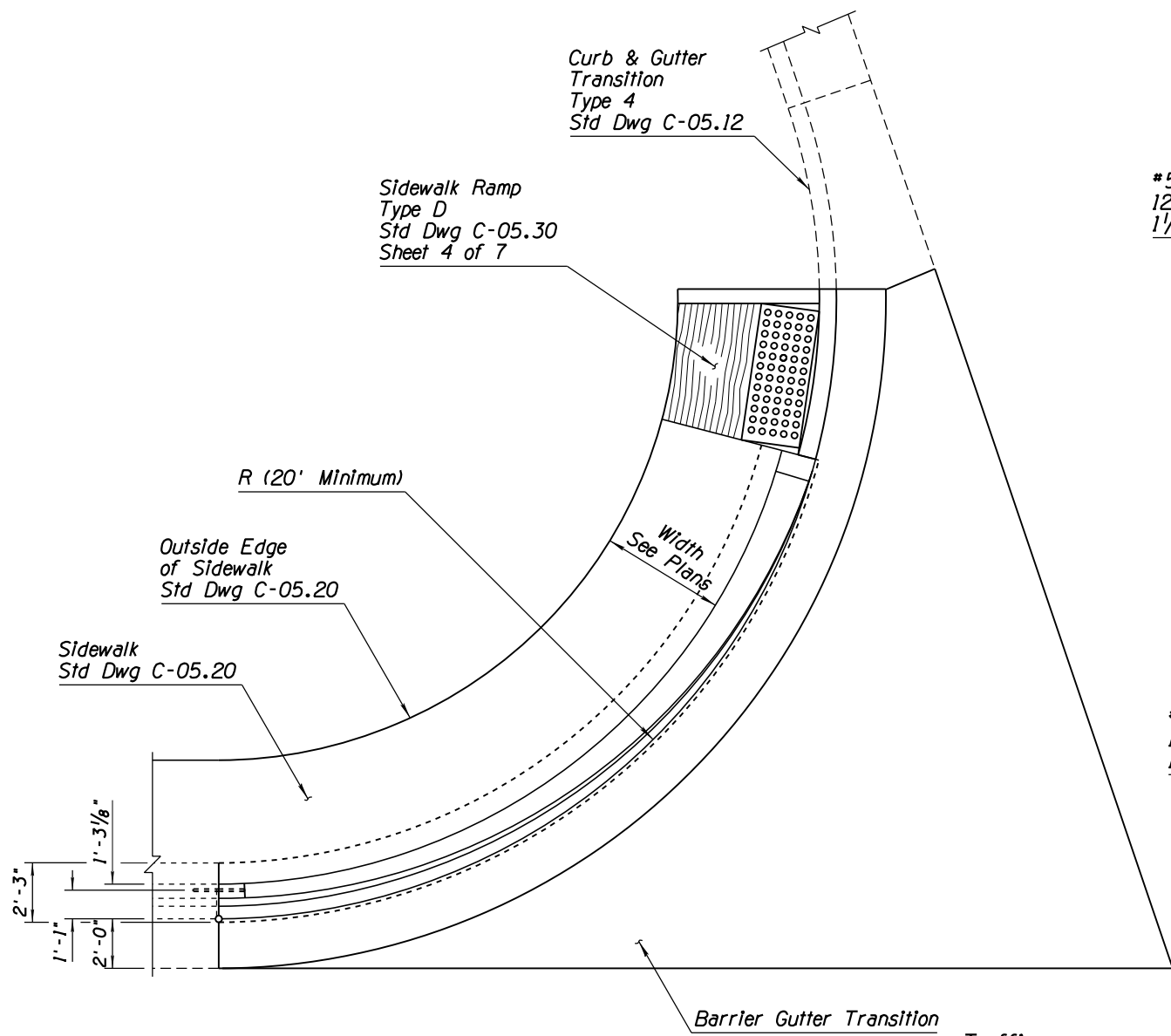
PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER	J. C. COOPER
RECOMMENDED FOR APPROVAL	
GROUP MANAGER	D. R. HENRY
APPROVED	
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	12/17 DATE

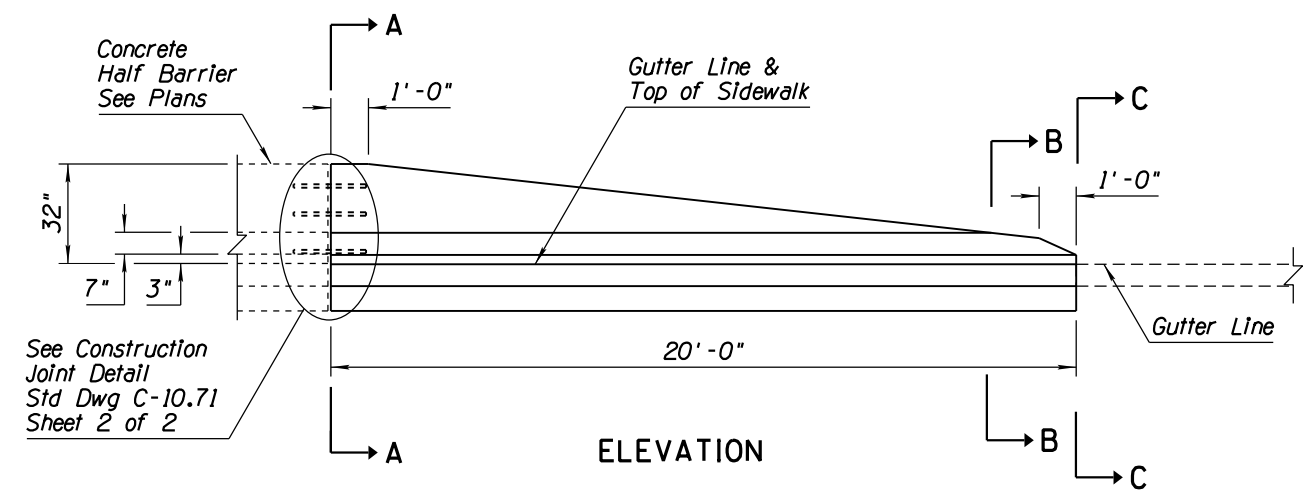
ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
CONCRETE HALF BARRIER TRANSITION TYPE 'F'	DRAWING NO. C-10.75
TANGENT DEPARTURE TYPE 2	Sheet 2 of 2

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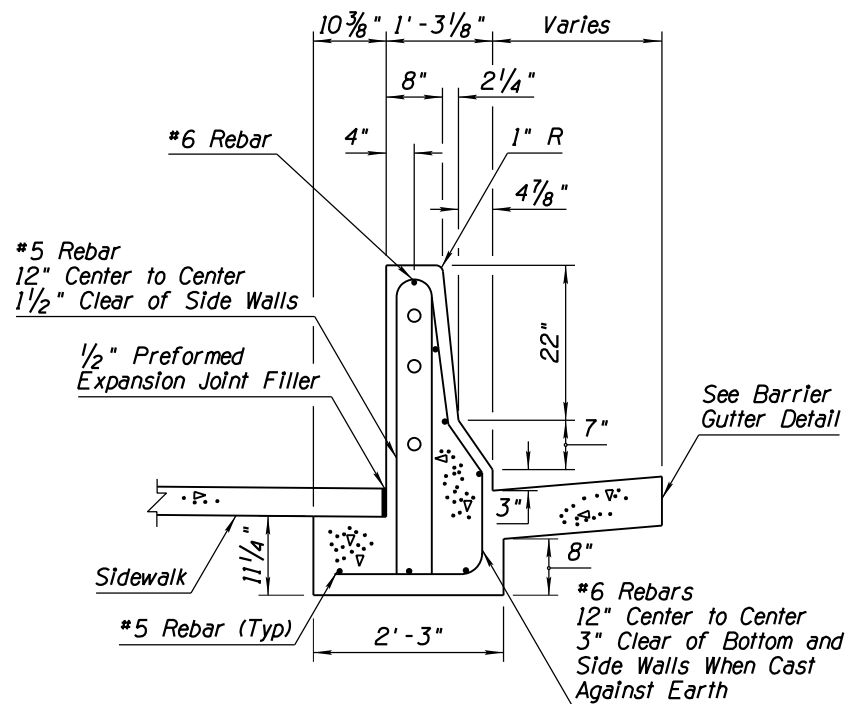
PRIOR DISTRIBUTION DATE 05/12



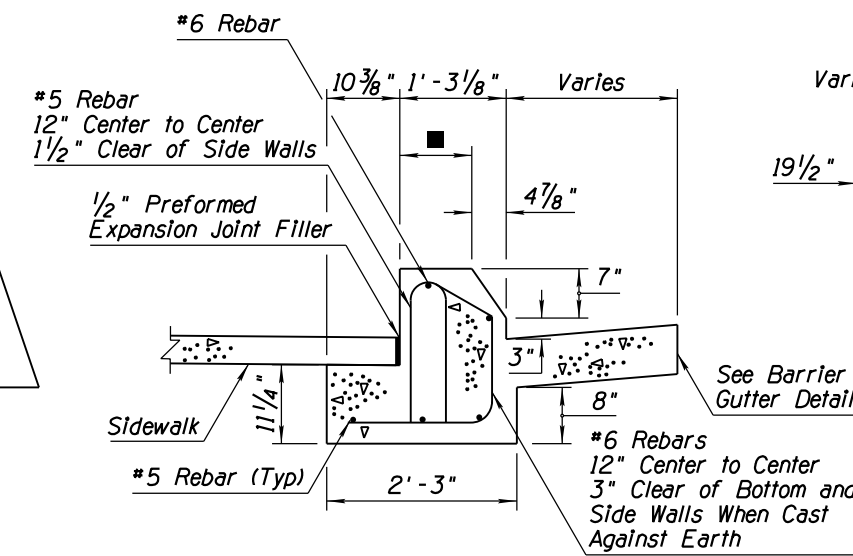
PLAN



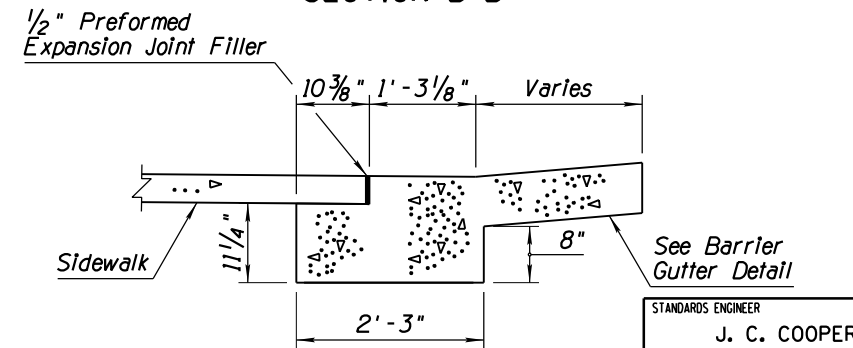
ELEVATION



SECTION A-A



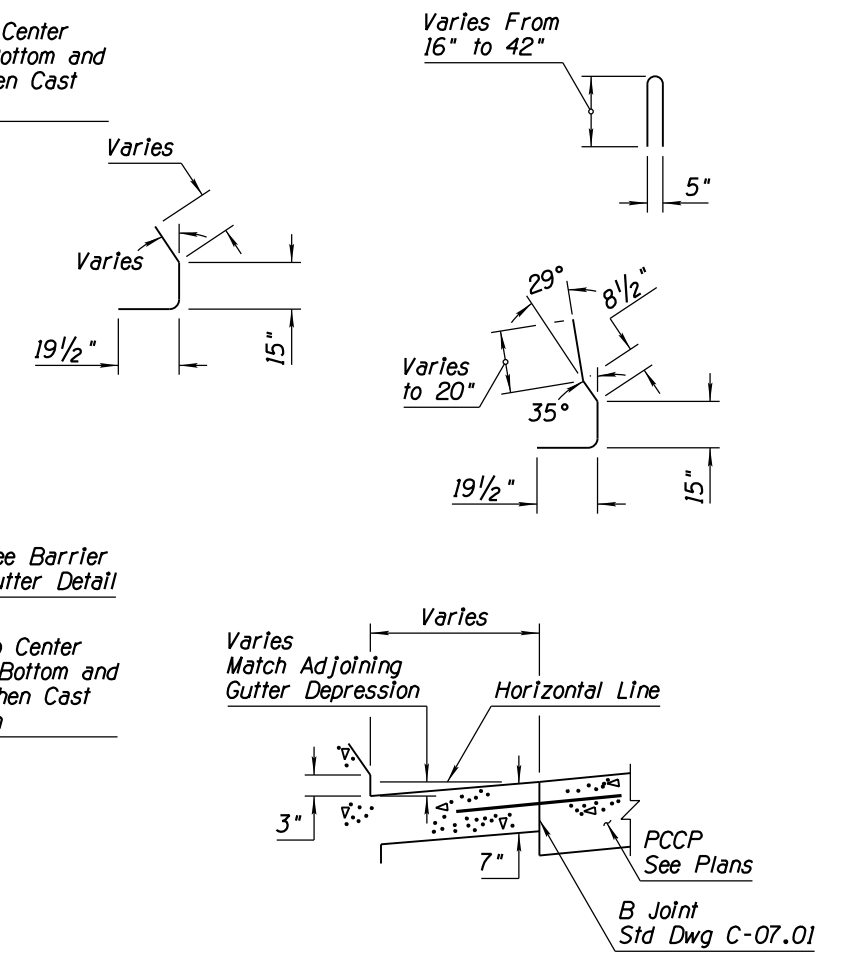
SECTION B-B



SECTION C-C

GENERAL NOTES

1. Barrier concrete shall be Class S, $f'c=4500$ PSI.
 2. Rebar shall be Grade 60.
 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"

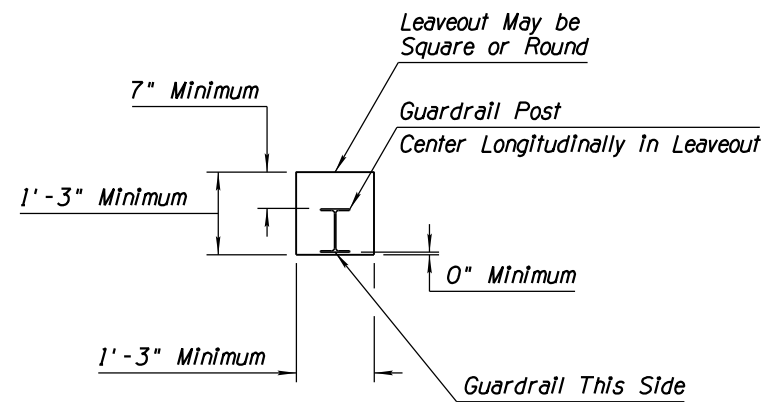


BARRIER GUTTER DETAIL

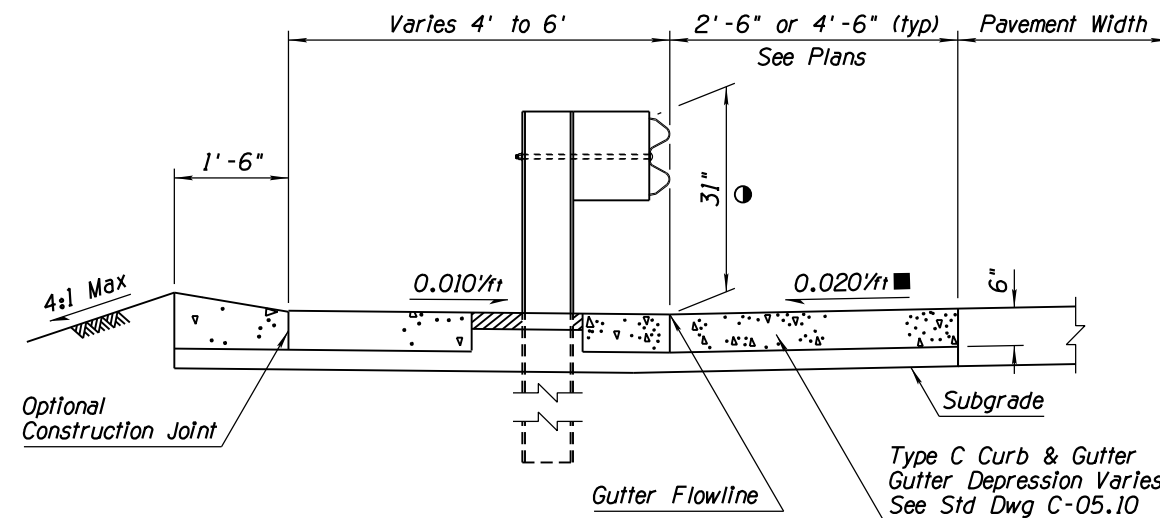
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	DRAWING NO. C-10.76
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY		
APPROVED	CONCRETE HALF BARRIER TRANSITION TYPE 'F' AT RADIUS 32" TO 0"	
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	

GENERAL NOTES

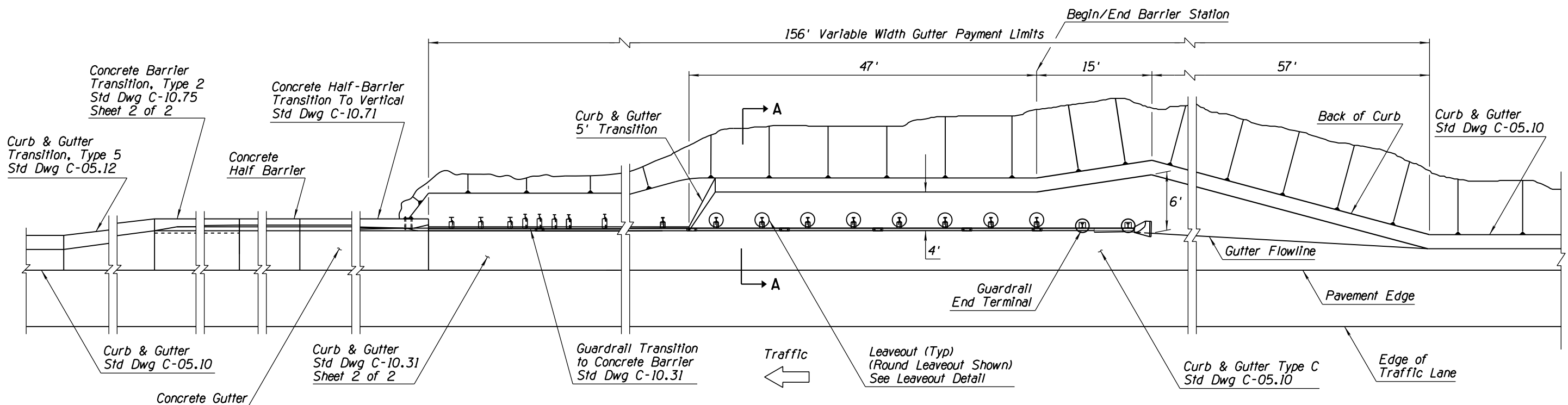
1. See plans and barrier summary sheets for location and type of guardrail and end treatments. Minimum length of guardrail installation shown.
 2. See Std Dwg C-05.10, 05.12, and 10.01 for dimensions and details not shown.
 3. See plans for type and location of drainage facilities.
 4. Bituminous joint filler ($\frac{1}{2}$ ") 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.
 5. "Leaveouts" shall be provided around all guardrail posts located in concrete. "Leaveouts" shall be filled flush to top of pavement with 3" of CLSM grout having a 28 day compressive strength between 40 and 120 psi.
 6. The guardrail end terminal shall be installed tangent to roadway, without taper or flare. See Std Dwg C-10.20, 10.21, or 10.22 for end terminal system details.
- Vary as required to maintain gutter flow. Match roadway cross slope when roadway slopes away from the gutter.
- To Top of Beam



LEAVEOUT DETAIL



SECTION A-A

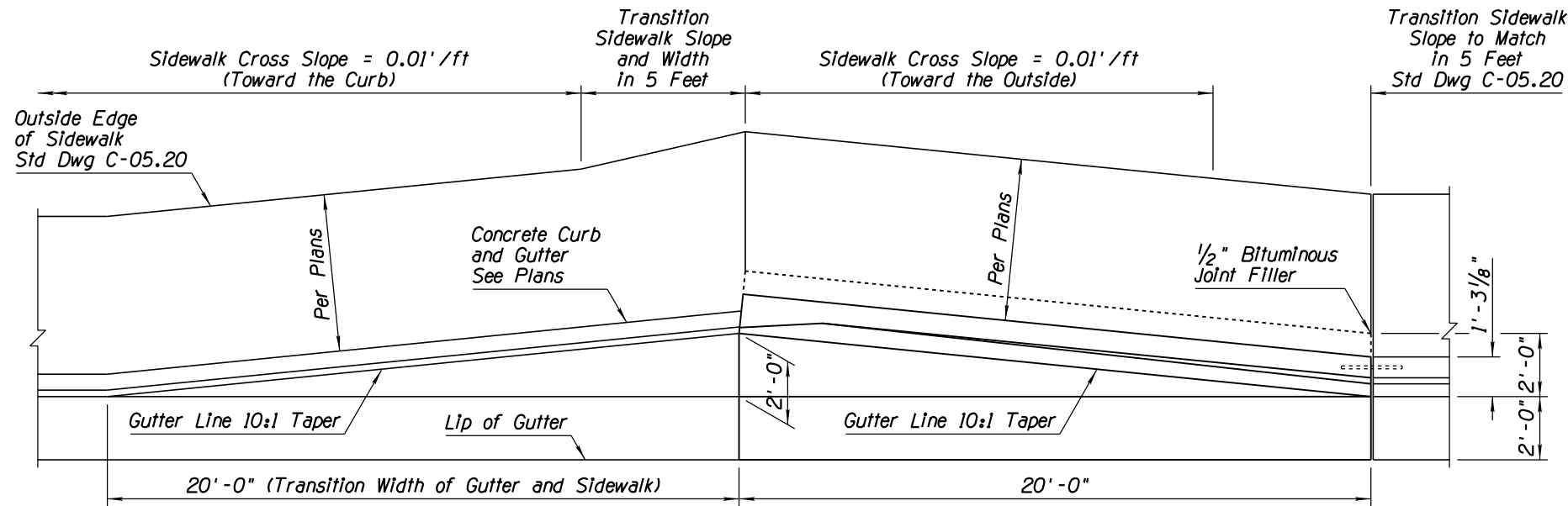


PLAN

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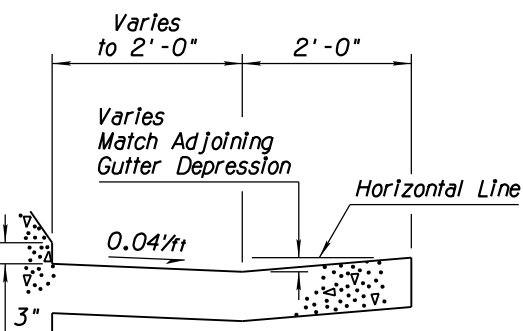
PRIOR DISTRIBUTION DATE 12/17

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER	CONCRETE BARRIER TRANSITION TO GUARDRAIL END TERMINAL LAYOUT WITH CURB	DRAWING NO. C-10.77
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION		DATE 04/19

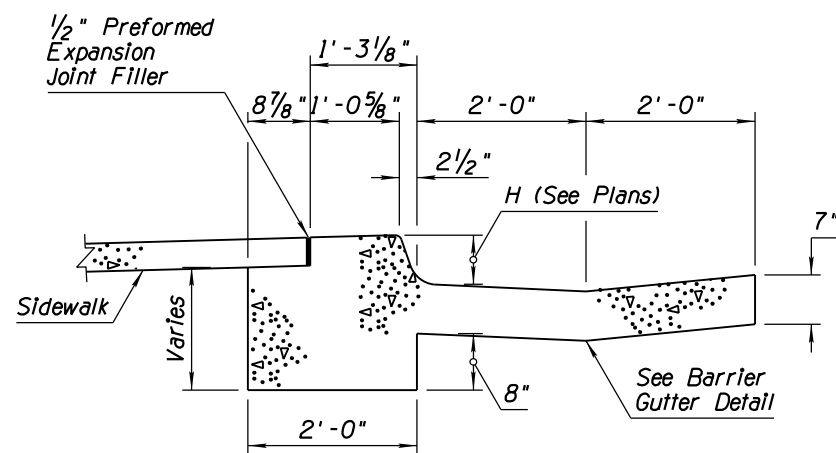


PLAN VIEW

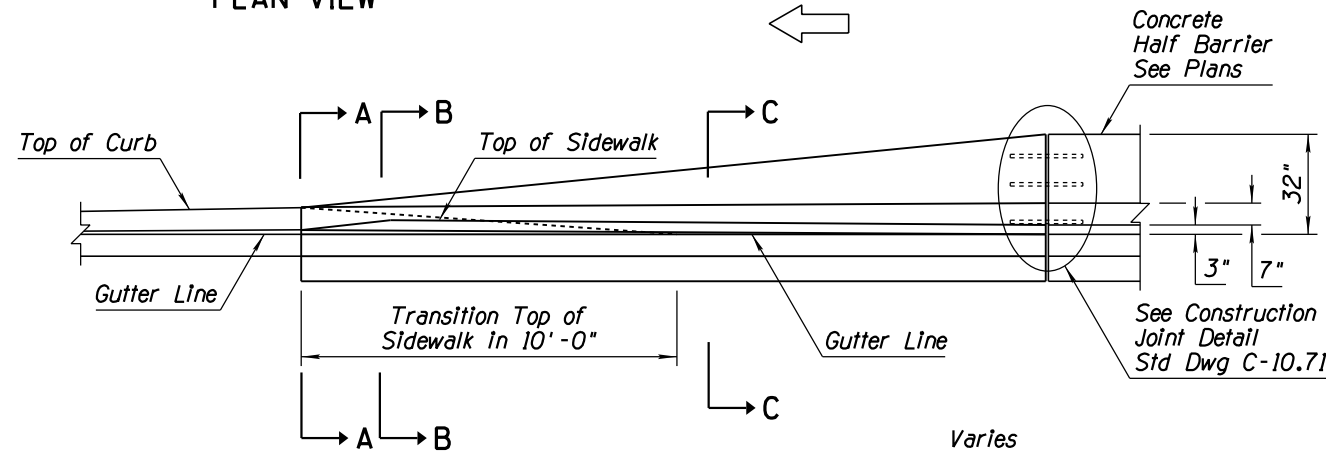
Traffic



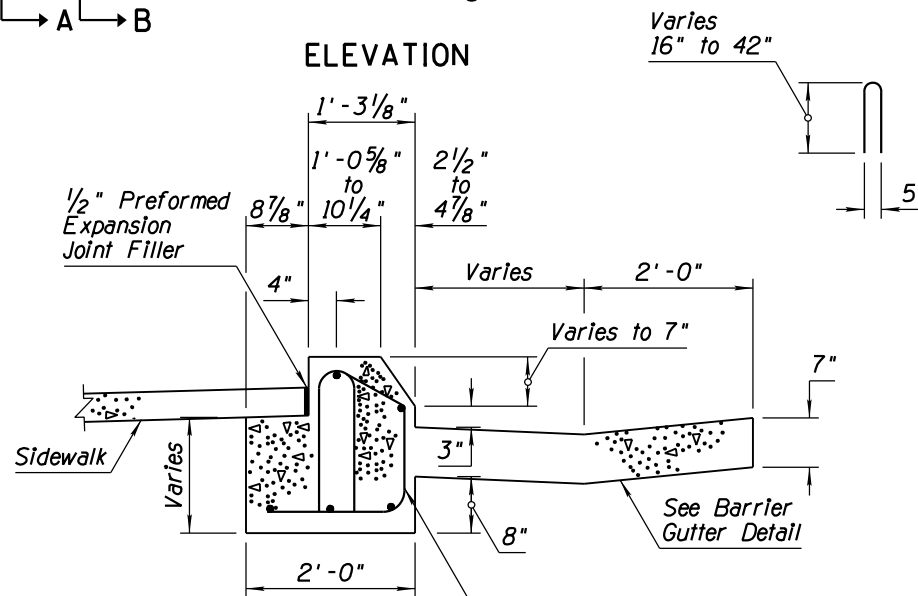
BARRIER GUTTER DETAIL



SECTION A-A

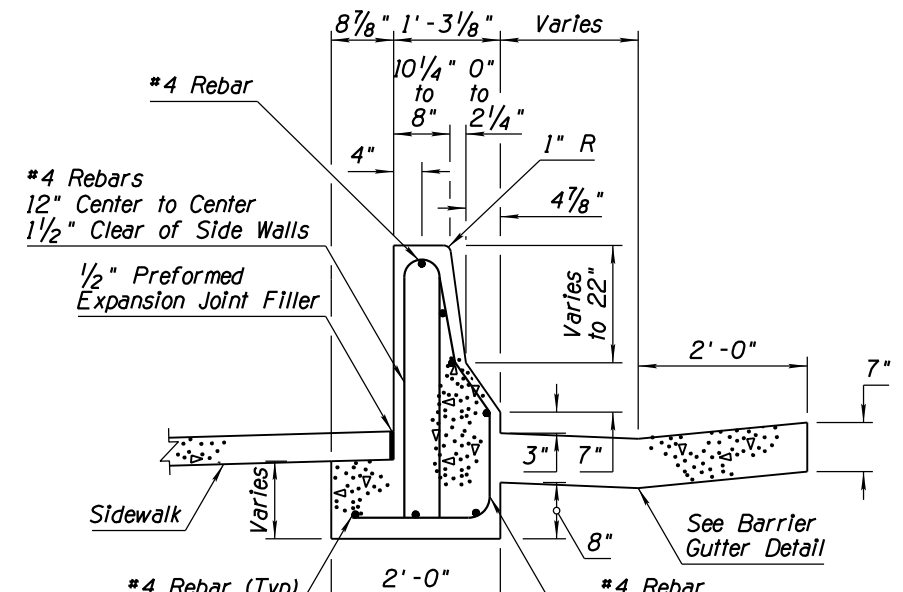


ELEVATION

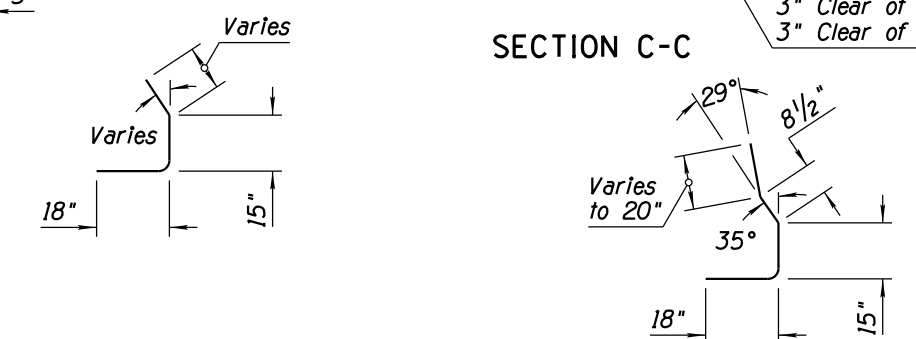


SECTION B-B

- GENERAL NOTES**
1. Barrier concrete shall be Class S, $f'c=4500$ PSI.
 2. Rebar shall be Grade 60.
 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 shall be out-to-out of bars.
 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-foot centers when adjacent to AC pavement. Joints shall be either hand tooled or sawn.



SECTION C-C

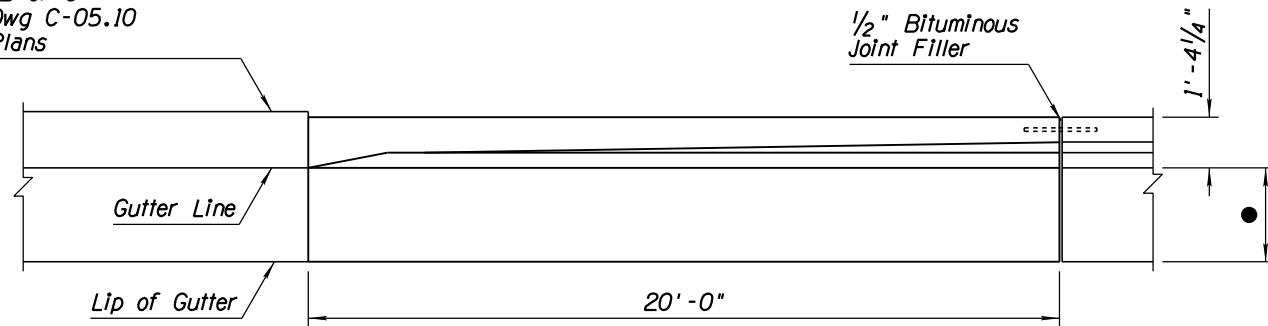


STANDARD ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	DRAWING NO. C-10.78
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY		
APPROVED	CONCRETE HALF BARRIER TRANSITION, 32" TYPE 'F' LOW SPEED APPROACH	
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 12/17	

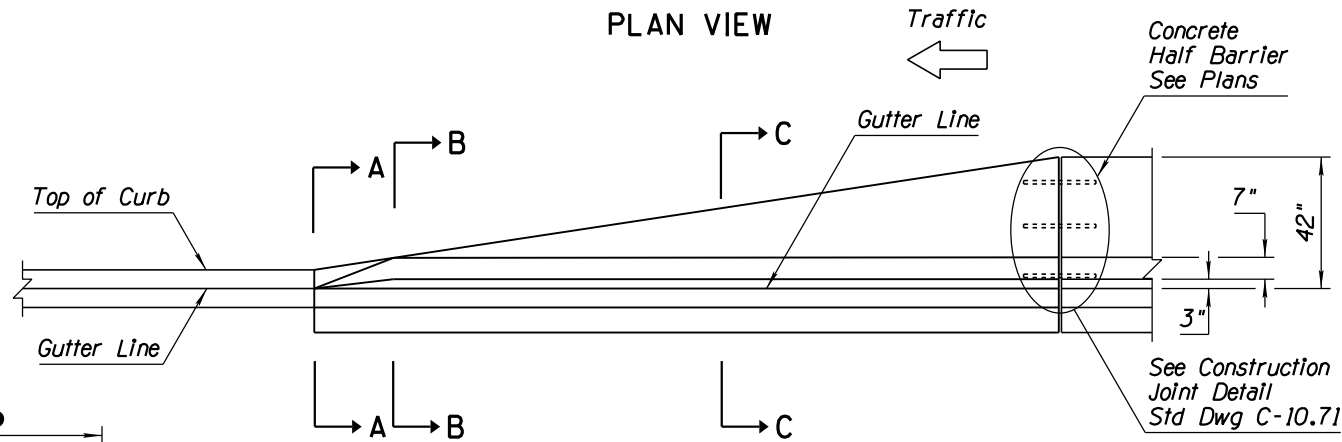
Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability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

PRIOR DISTRIBUTION DATE

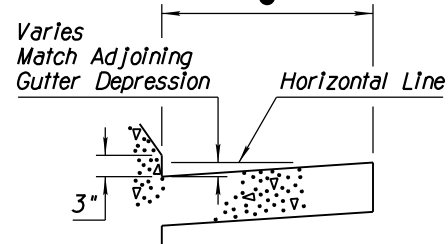
Concrete Curb and Gutter
Type B or C
Std Dwg C-05.10
See Plans



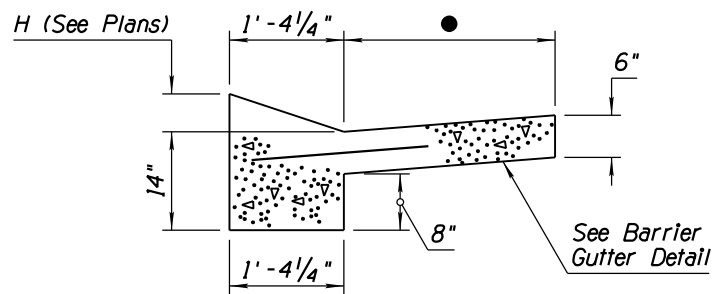
PLAN VIEW



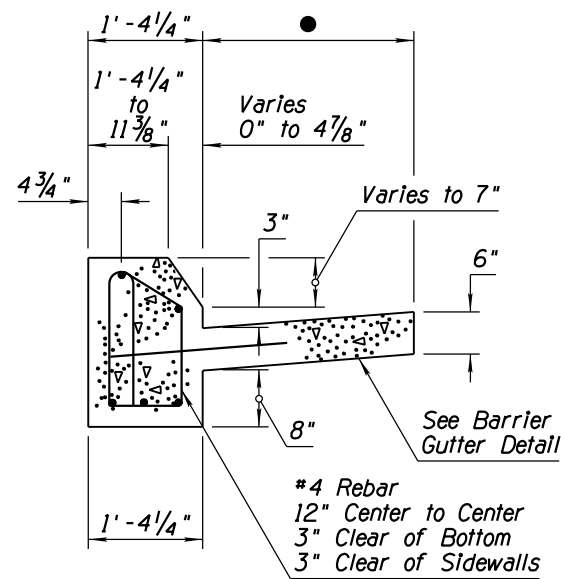
ELEVATION



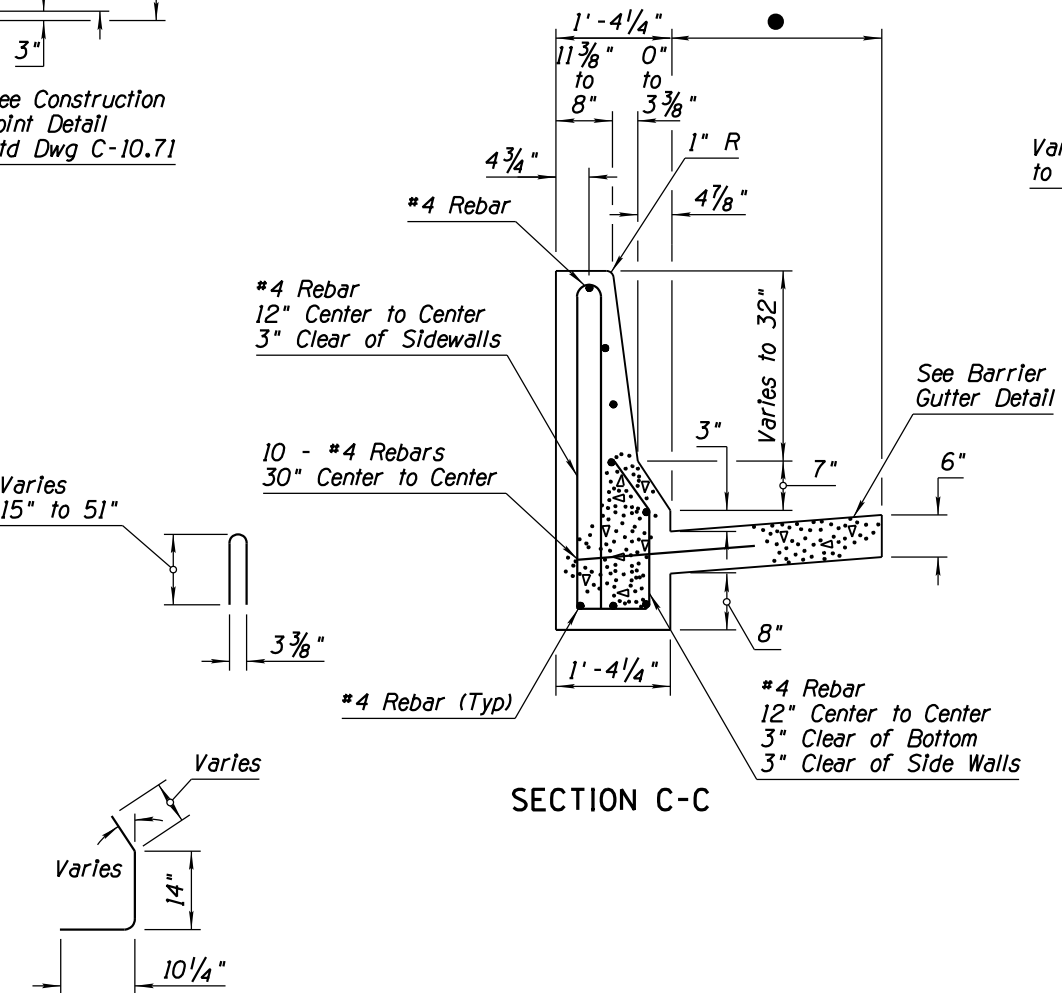
BARRIER GUTTER DETAIL



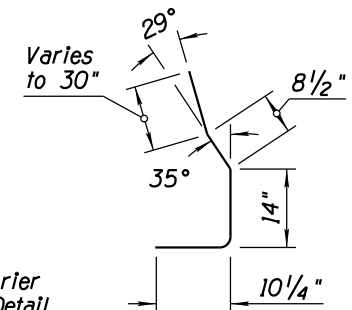
SECTION A-A



SECTION B-B



SECTION C-C



GENERAL NOTES

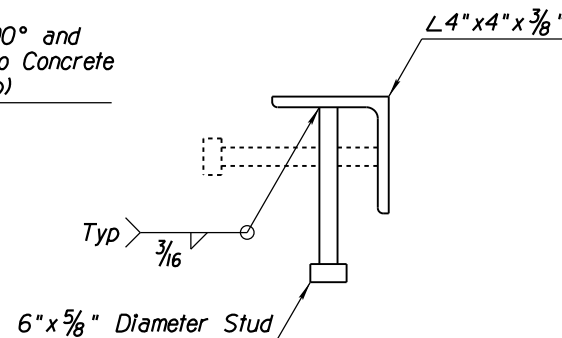
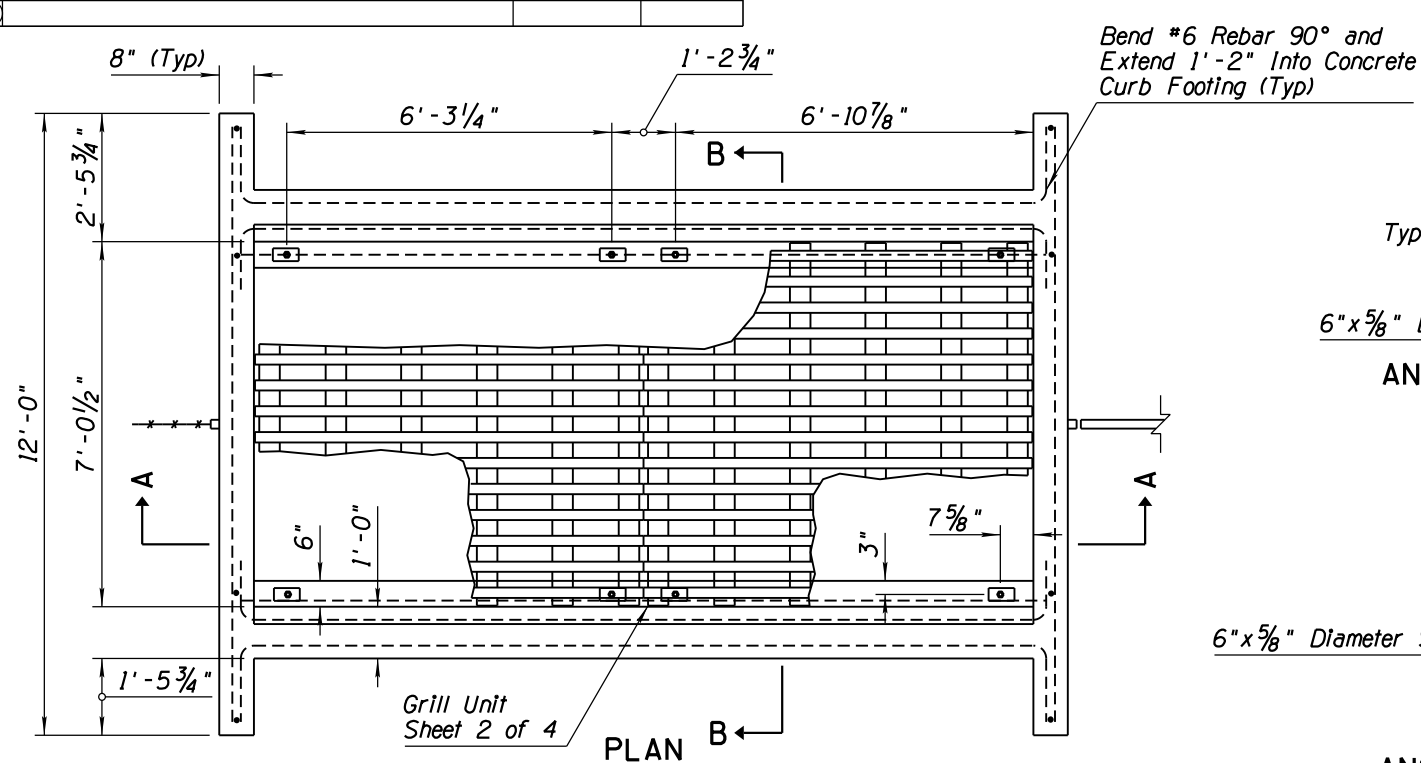
- Barrier concrete shall be Class S, f'c=4500 PSI.
 - Rebar shall be Grade 60.
 - All rebar shall have 2" minimum clear cover unless otherwise noted.
 - See drainage sheets for slotted drain and catch basin details.
 - Barrier transition shall match both adjoining curb and gutter and concrete half barrier.
 - See Std Dwg C-05.20 for sidewalk construction.
 - All bend dimensions for rebar shall be 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-foot centers when adjacent to AC pavement. Joints shall be either hand tooled or sawn.
- Varies - 2'-6", 4'-6" or width as shown on plans.

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

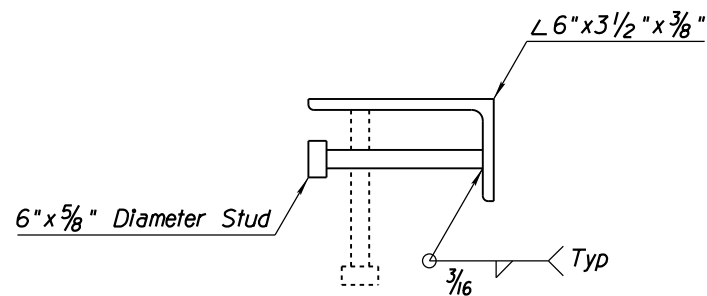
PRIOR DISTRIBUTION DATE

STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING	
RECOMMENDED FOR APPROVAL GROUP MANAGER D. R. HENRY	CONCRETE HALF BARRIER TRANSITION, 42" TYPE 'F' TANGENT DEPARTURE	
APPROVED STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	12/17 DATE	DRAWING NO. C-10.79

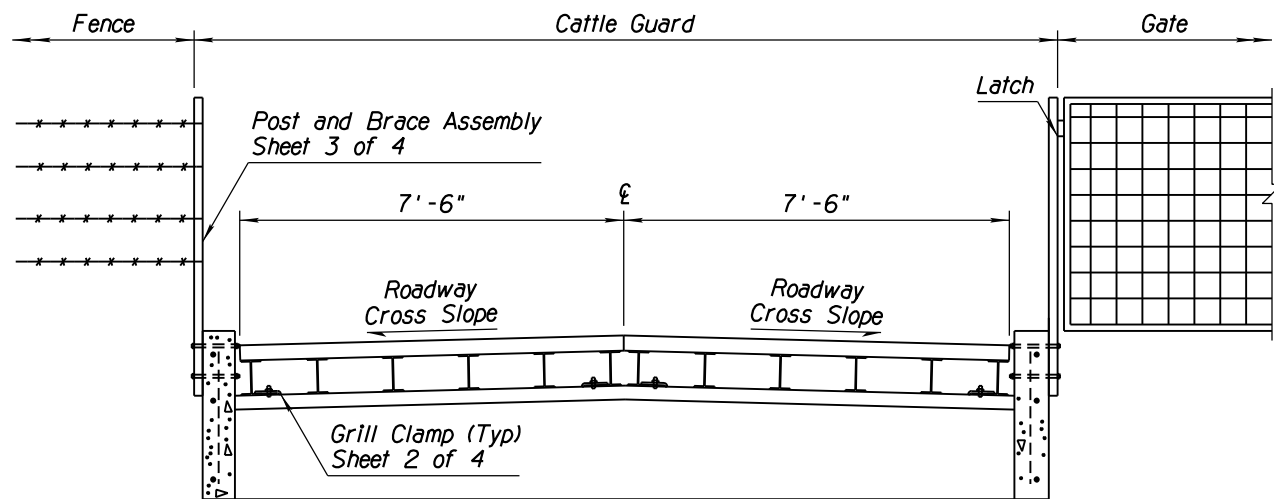
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	4/06
2			
3			
4			



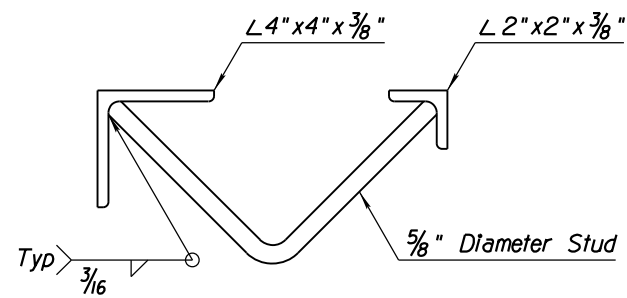
ANGLE ASSEMBLY DETAIL 1



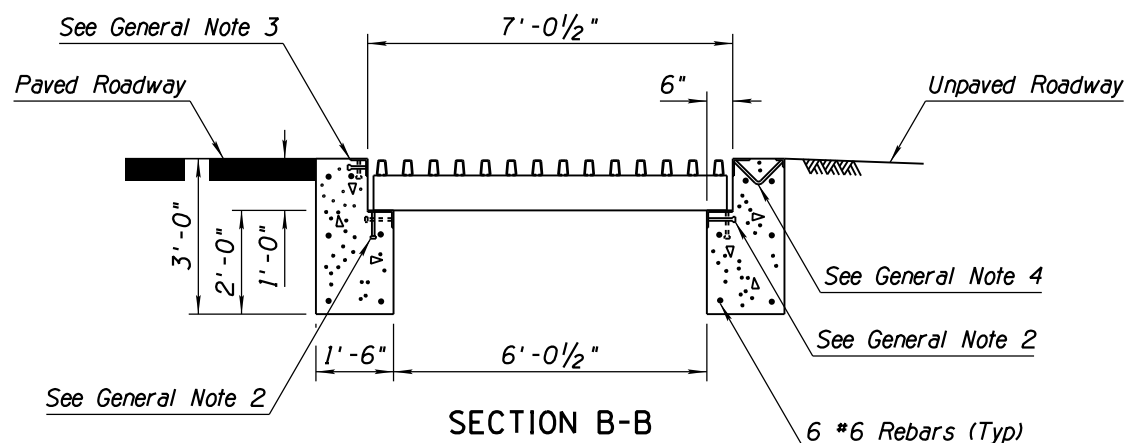
ANGLE ASSEMBLY DETAIL 2



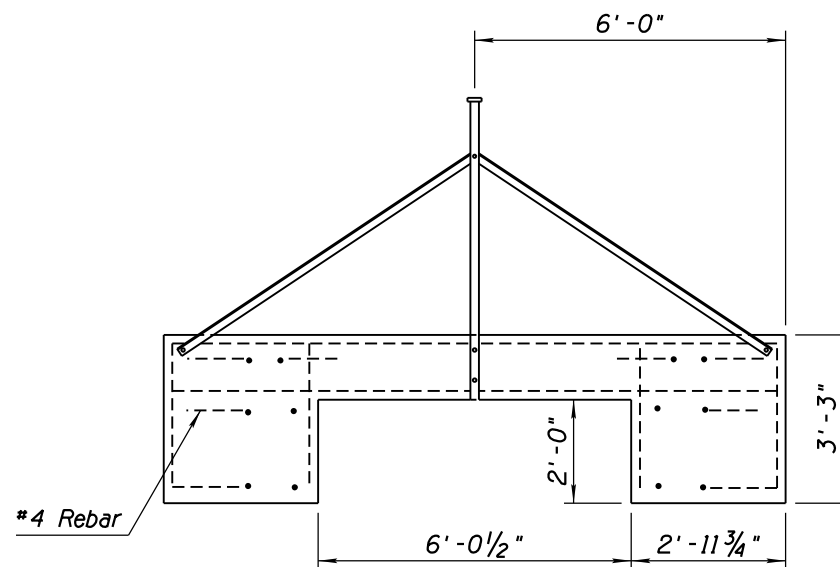
SECTION A-A



ANGLE ASSEMBLY DETAIL 3



SECTION B-B



END VIEW

GENERAL NOTES

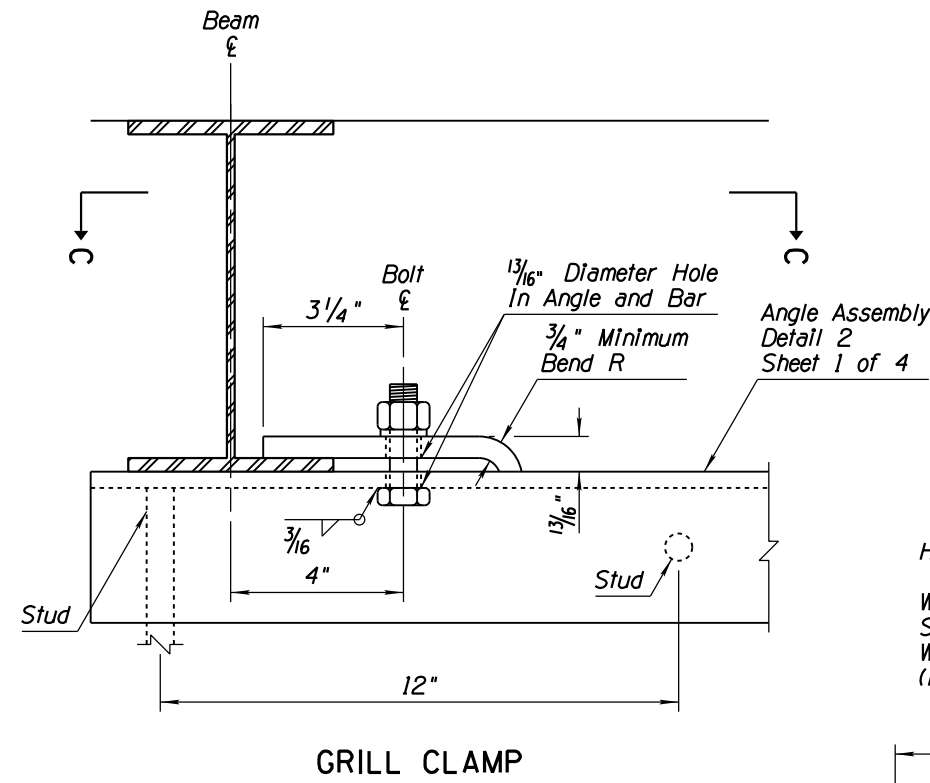
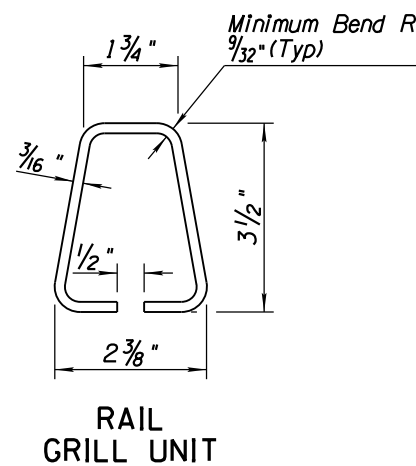
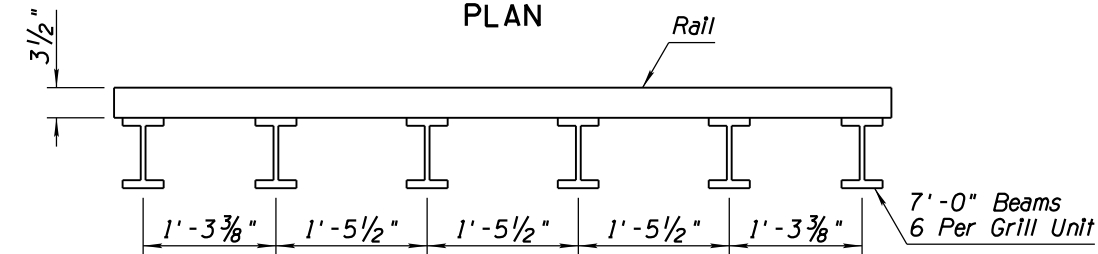
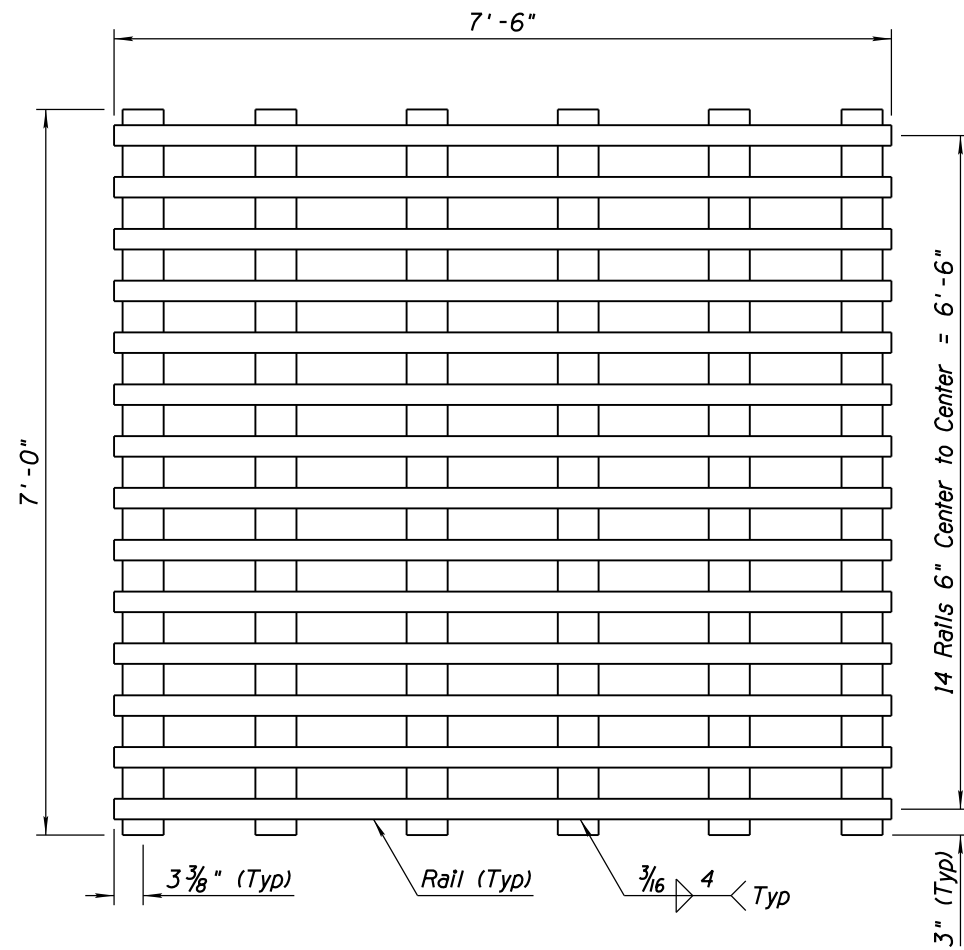
1. Cattle guard shall include two (2) clamps per Sheet 4 at each gap between two (2) grill units, one at each end. Clamps shall be adjusted to provide a 1/4-inch, plus or minus 1/16-inch gap between adjacent grill units.
2. Grill units shall be set on an angle iron assembly consisting of one piece of 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.
3. 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.
4. 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.
5. 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.
6. Each angle iron and angle iron assembly shall be fabricated to form a single piece for the full length of the cattle guard.
7. Quantities shown for concrete and rebar are approximations for informational purposes only.
8. When a gate is to be installed, it shall be called out on the plans.
9. All rebar shall have a minimum cover of 3", or as shown on the plans.
10. 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

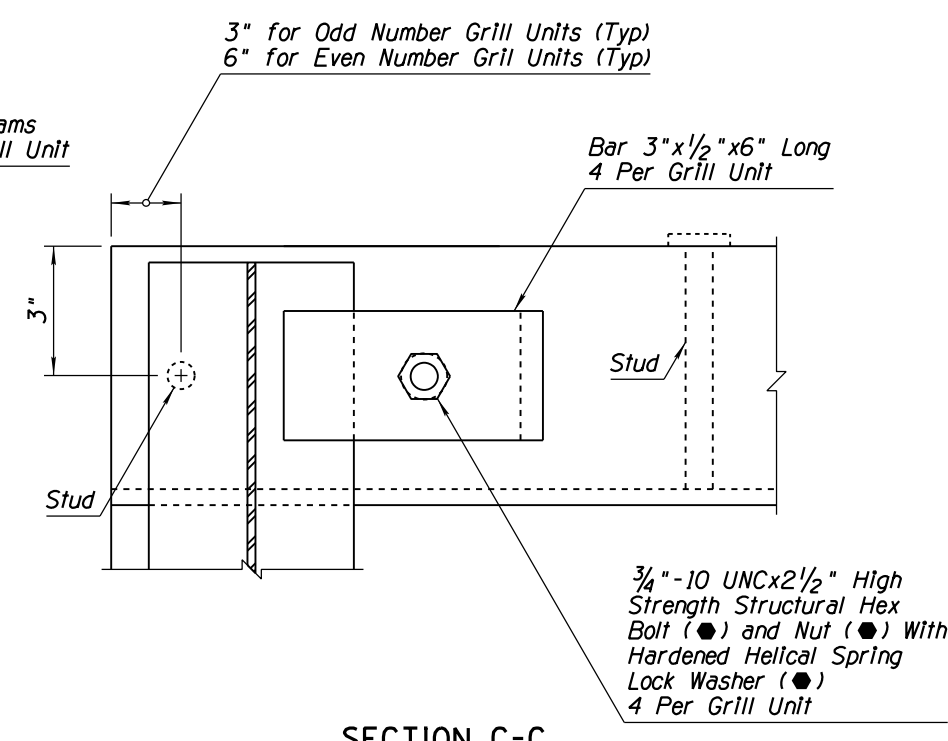
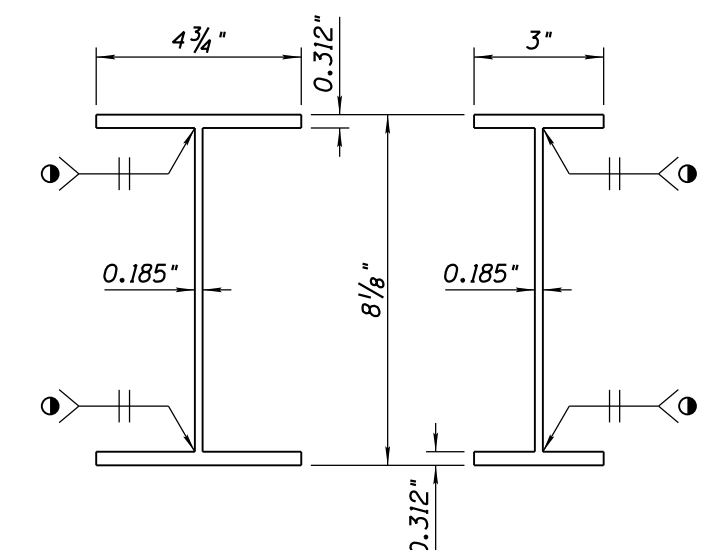
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	4/06
2			
3			
4			

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



HS-20 Loading
W 8x18
S 8x18.4
Welded Beam
(Fy=42 ksi)

HS-10 Loading
W 8x15
Welded Beam
(Fy=42 ksi)

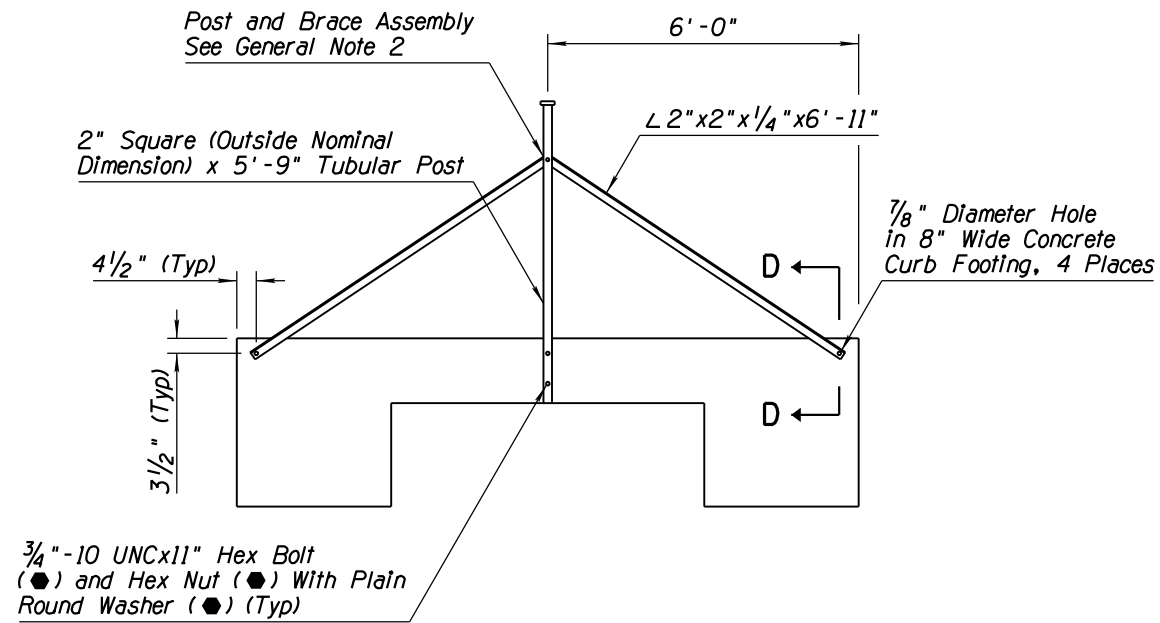


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	ROADWAY CATTLE GUARD	DRAWING NO. C-11.10 Sheet 2 of 4

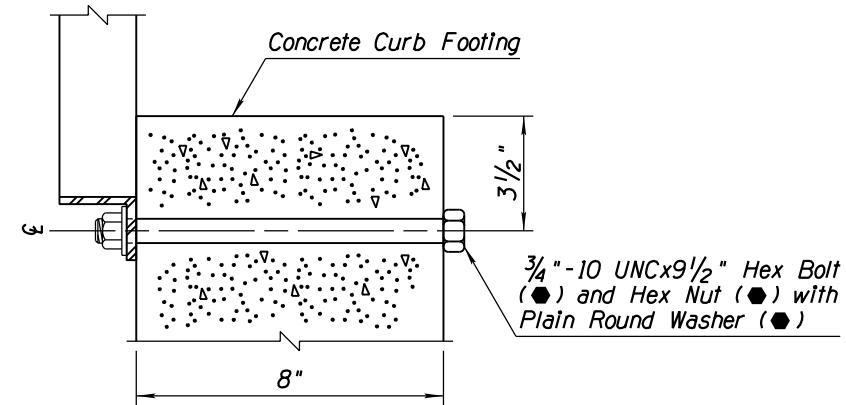
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	RLF	4/06
2			
3			
4			

GENERAL NOTES

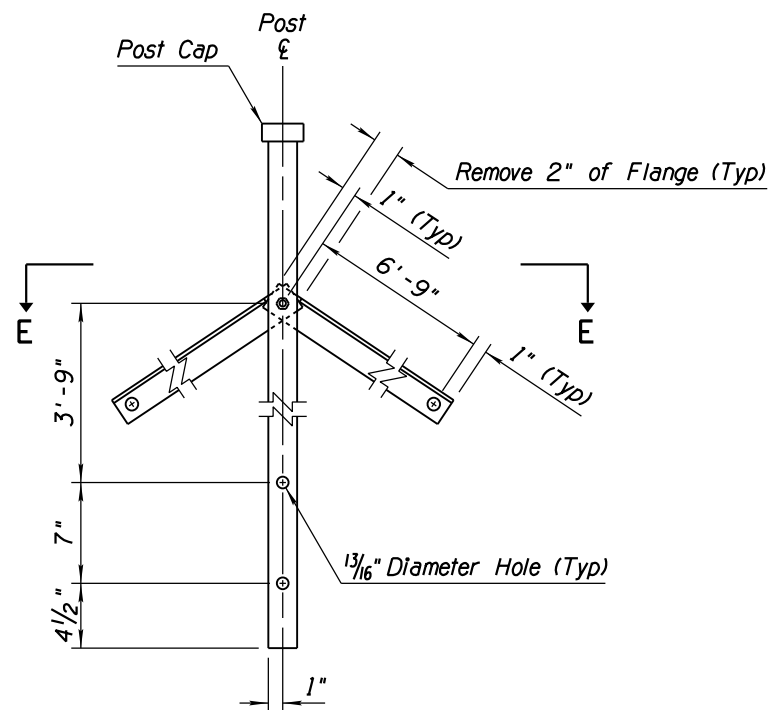
1. Material for shoulder transition shall be placed to the finished roadway elevation for the entire length of the transition. When the roadway is paved, aggregate subbase or AB shall be used. When the roadway is unpaved, a material equivalent to the existing roadway shall be used.
2. On steeper grades, 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

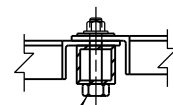


SECTION D-D

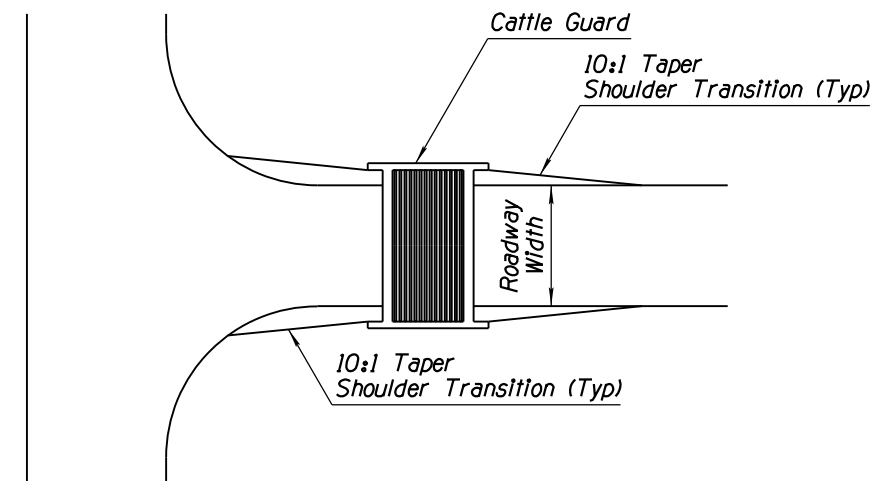


POST AND BRACE ASSEMBLY

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



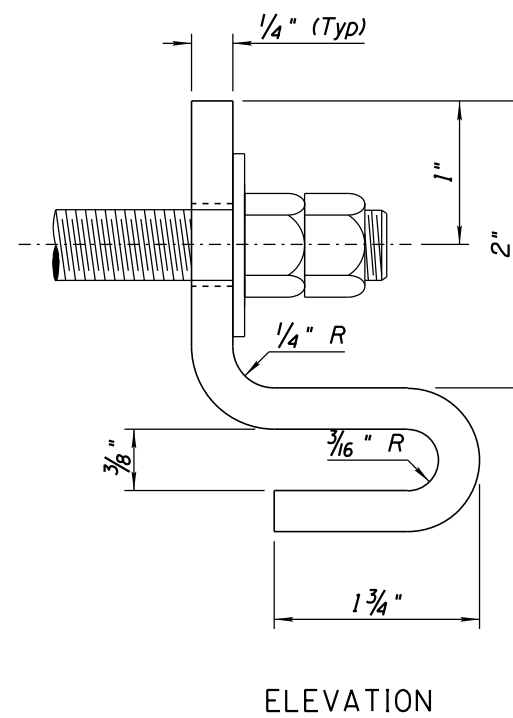
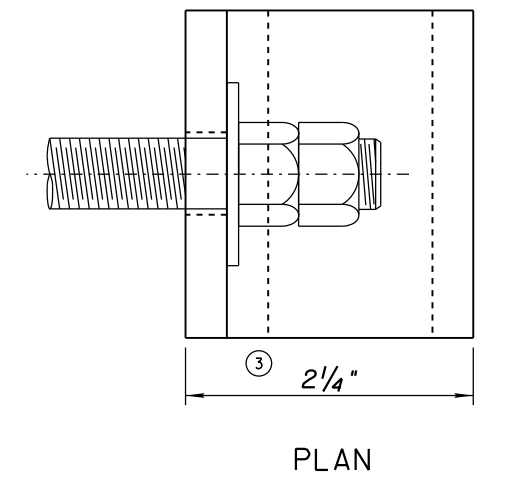
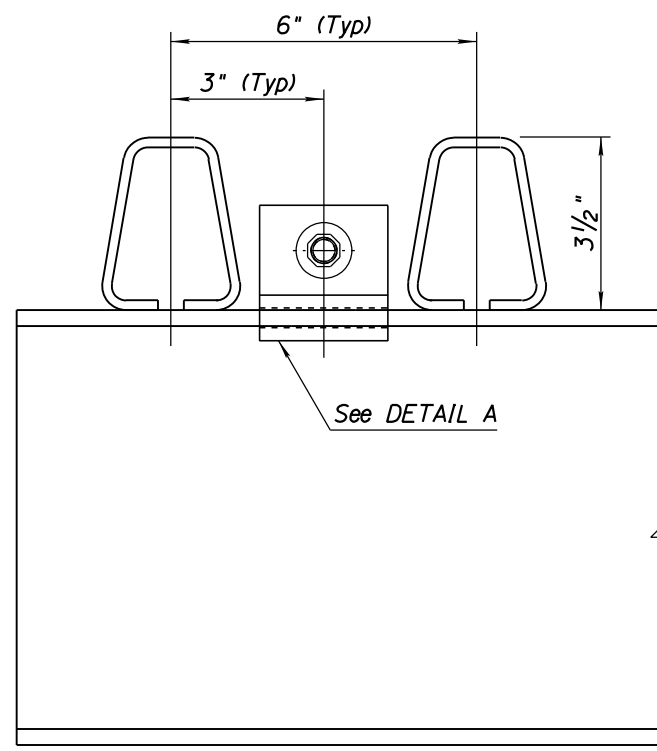
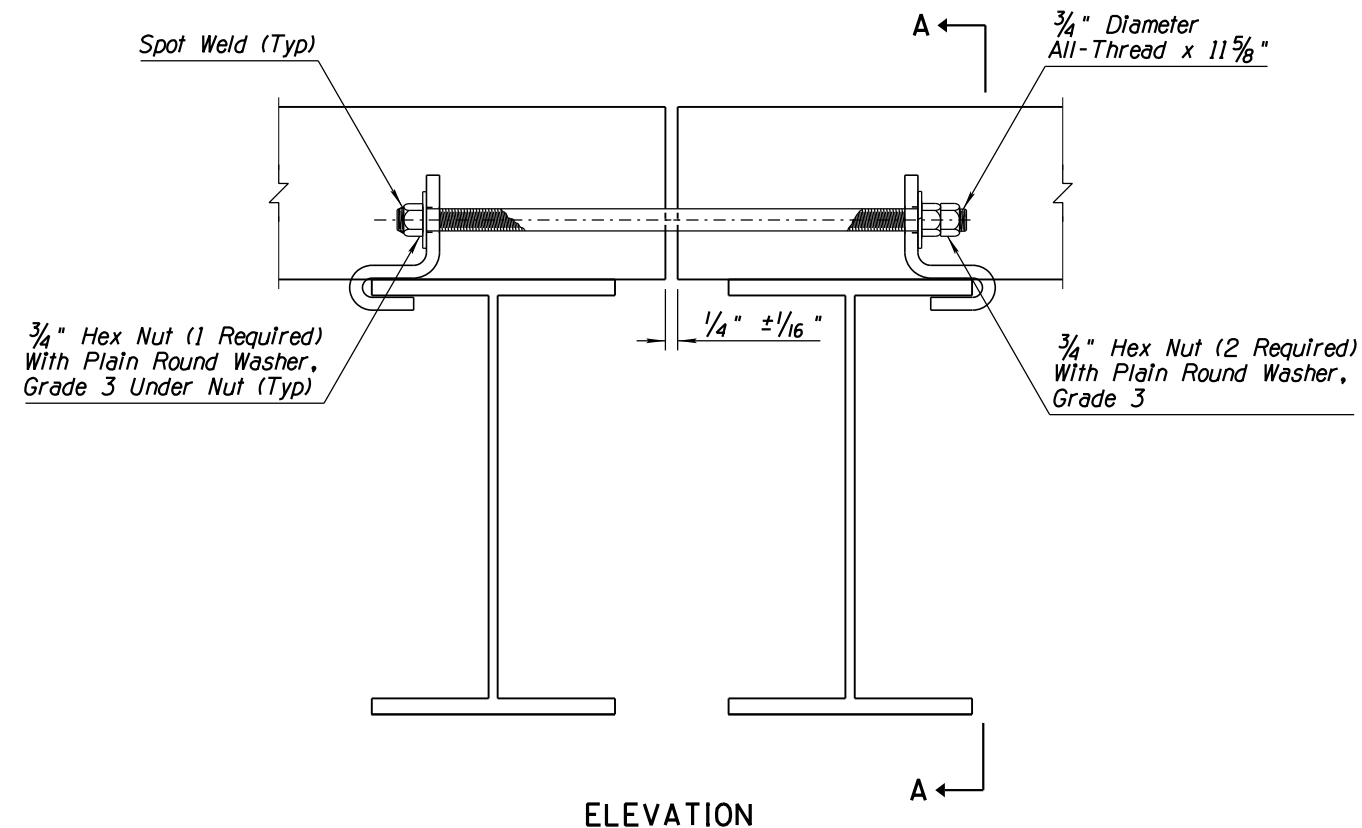
SECTION E-E



SHOULDER TRANSITION AT CATTLE GUARDS

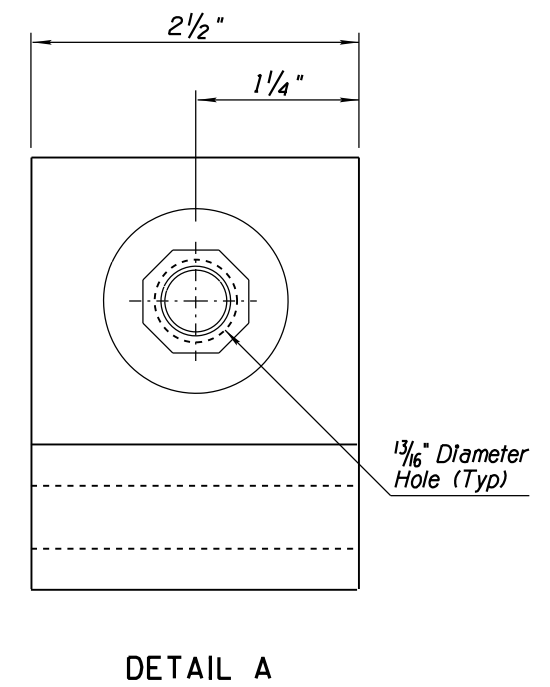
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	ROADWAY CATTLE GUARD	DRAWING NO. ① C-11.10 Sheet 3 of 4

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			



② GENERAL NOTES

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

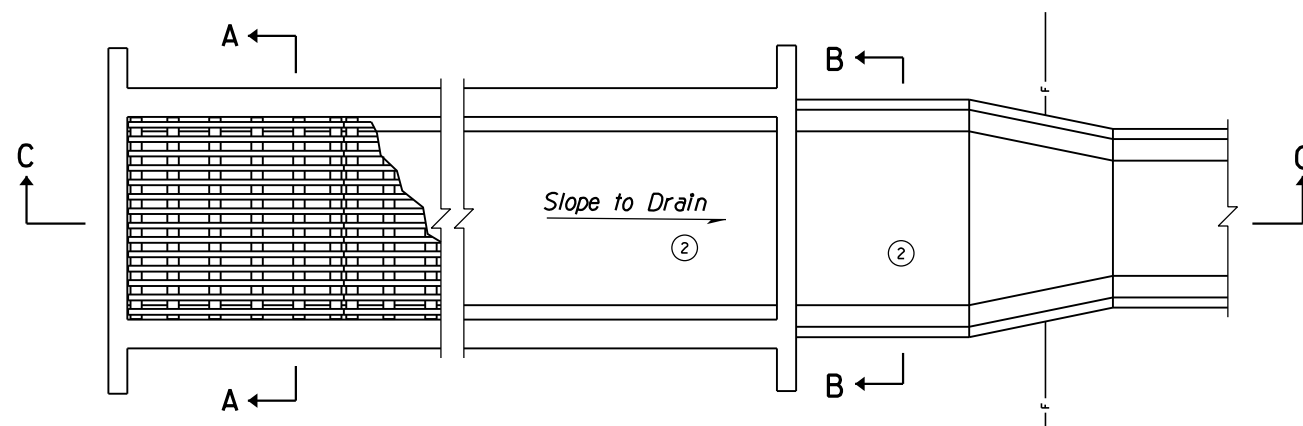


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	ROADWAY CATTLE GUARD	DRAWING NO. ① C-11.10 Sheet 4 of 4

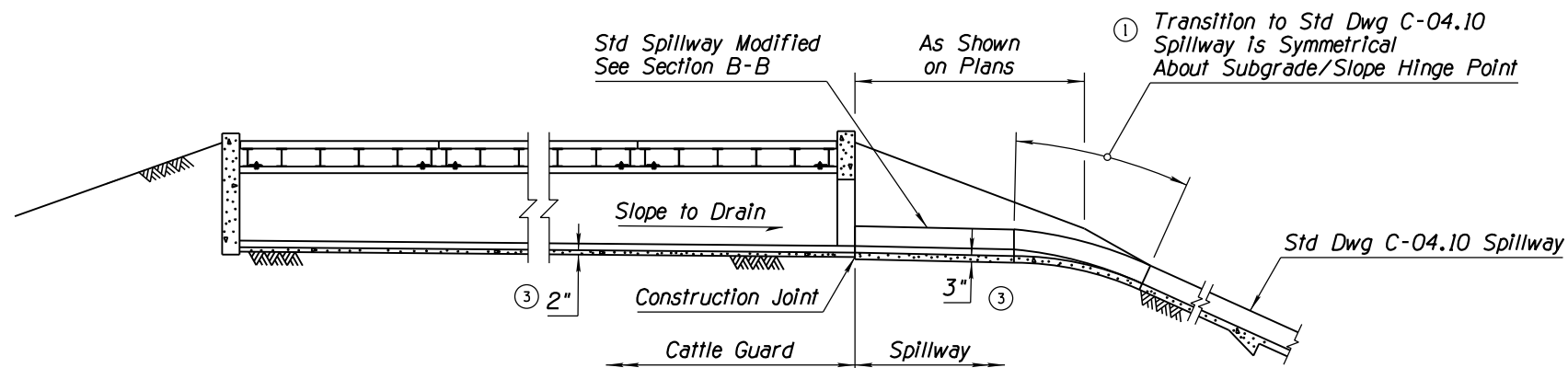
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED NOTE	PNB	7/94
2	REMOVED CONCRETE NOTES	RLF	7/06
3	ADDED CONCRETE DEPTH DIMENSIONS	RLF	7/06
4			

GENERAL NOTES

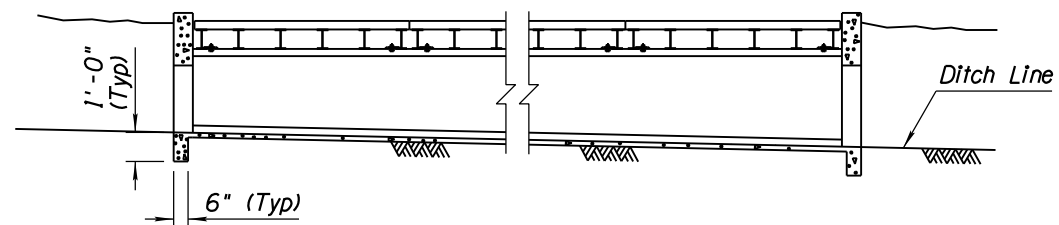
1. See Std Dwgs C-11.10 for all other Cattle Guard details.
2. This standard shall be used in embankment or where highly erodable soil is found.
3. All concrete shall be Class B.



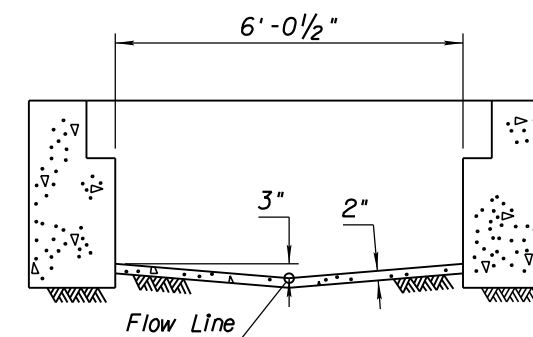
PLAN



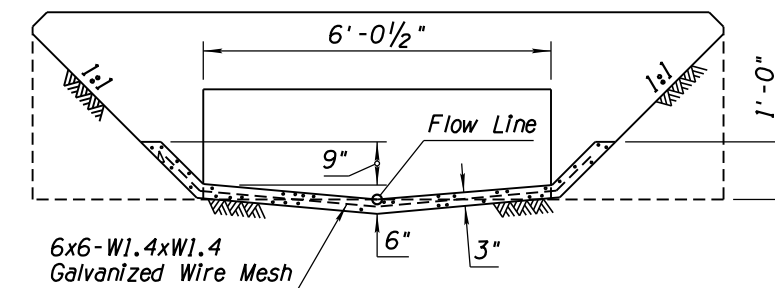
SECTION C-C
IN EMBANKMENT



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



SECTION A-A

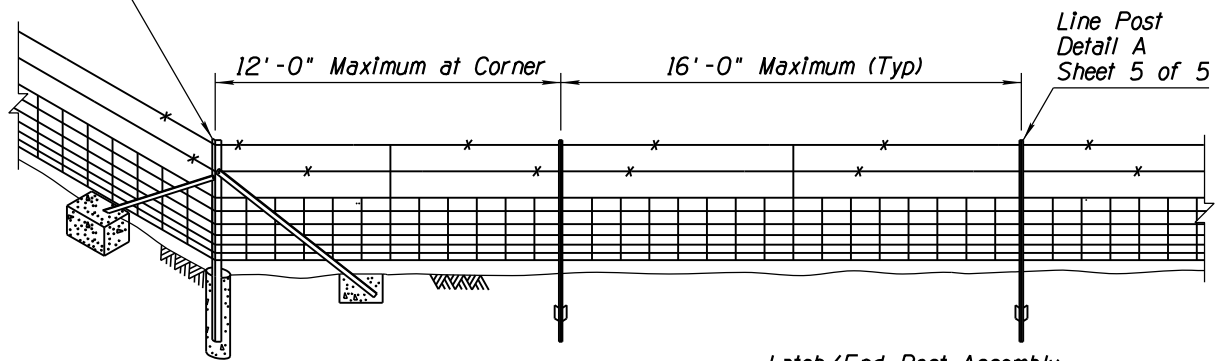


SECTION B-B

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

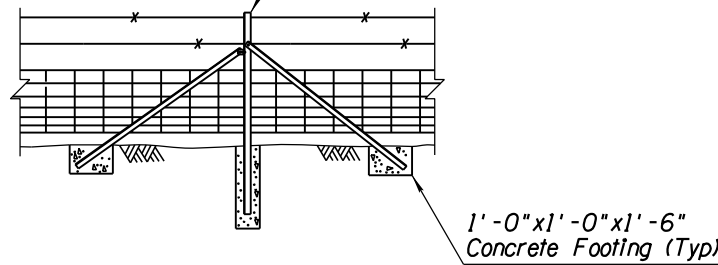
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	ADDED ASTM CALLOUT	PNB	7/94
2	REVISED GENERAL NOTE	RLF	5/12
3	ADDED TYPICAL FENCE LOCATION VIEW	RLF	5/12
4			

Corner Post Assembly
Detail D
Sheet 5 of 5



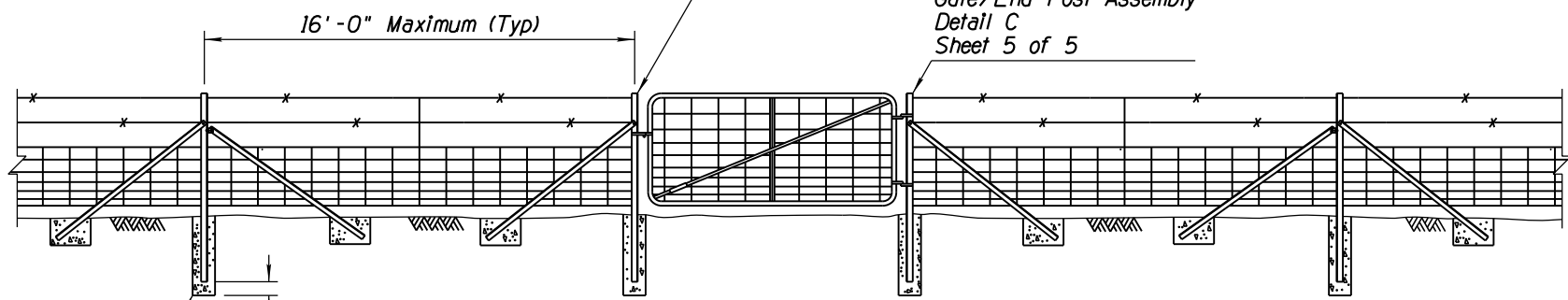
Line Post
Detail A
Sheet 5 of 5

Intermediate Post Assembly
Detail B
Sheet 5 of 5



Latch/End Post Assembly
Detail C
Sheet 5 of 5

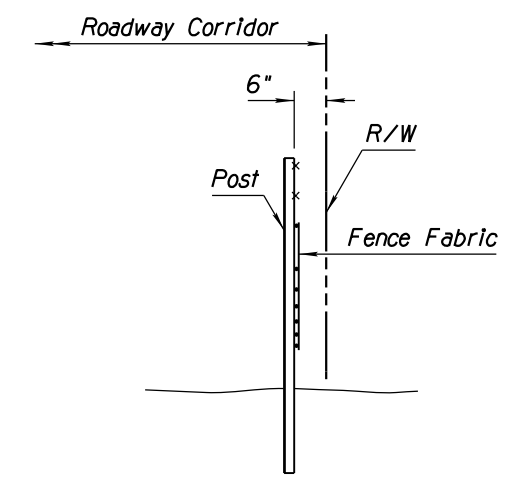
Gate/End Post Assembly
Detail C
Sheet 5 of 5



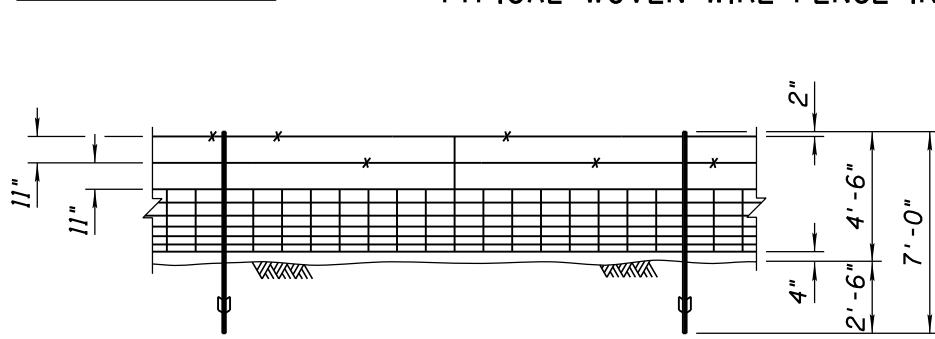
10" Diameter x 3'-0"
Concrete Footing (Typ)
6" Typ

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

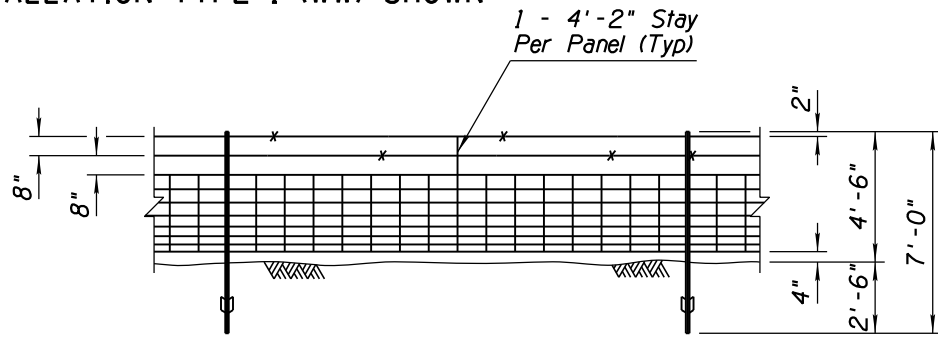
- ### GENERAL NOTES
- Length of post and braces shall not be less than 7'-0".
 - Woven wire fence fabric shall be attached to the line posts at the top, bottom, and intermediate wires, and shall be placed on the side of the posts away from the main roadway.
 - Intermediate Post Assemblies shall be located 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



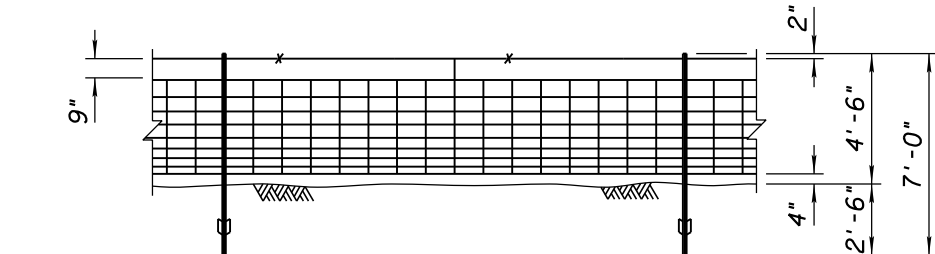
③ TYPICAL FENCE LOCATION



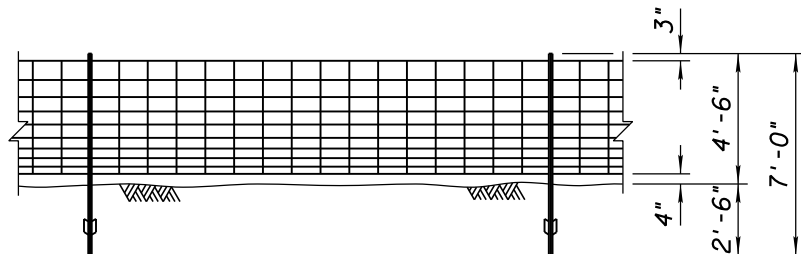
TYPE 1 WOVEN WIRE (WW)



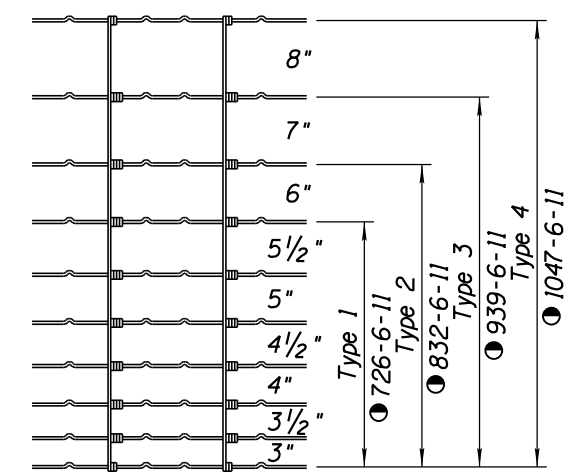
TYPE 2 WOVEN WIRE (WW)



TYPE 3 WOVEN WIRE (WW)



TYPE 4 WOVEN WIRE (WW)

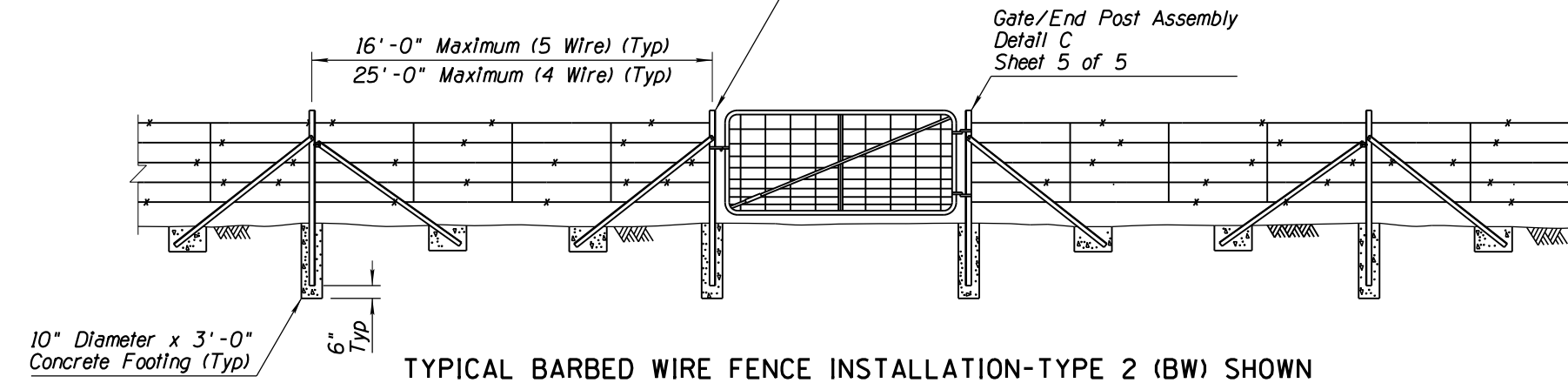
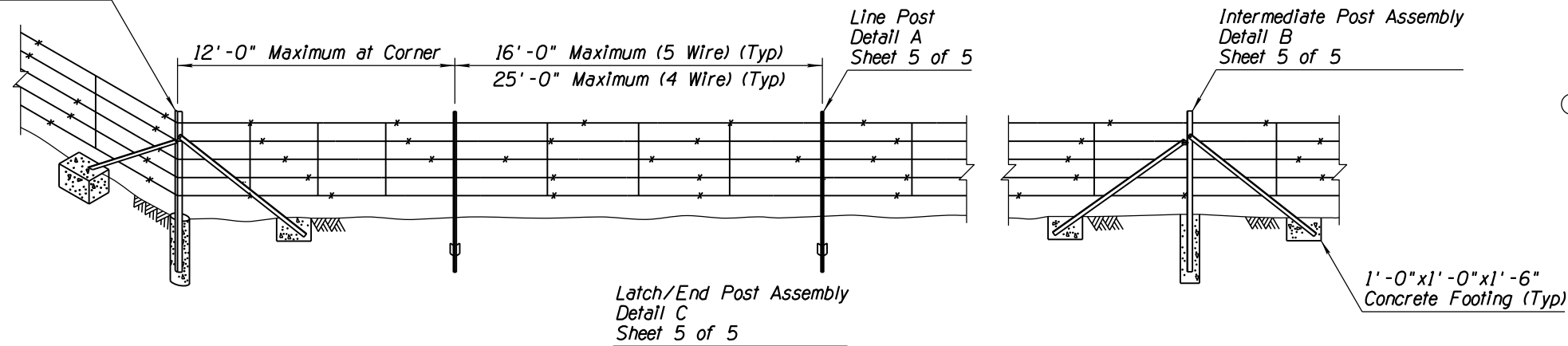


FENCE FABRIC DIMENSIONS AND DESIGN NUMBERS

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

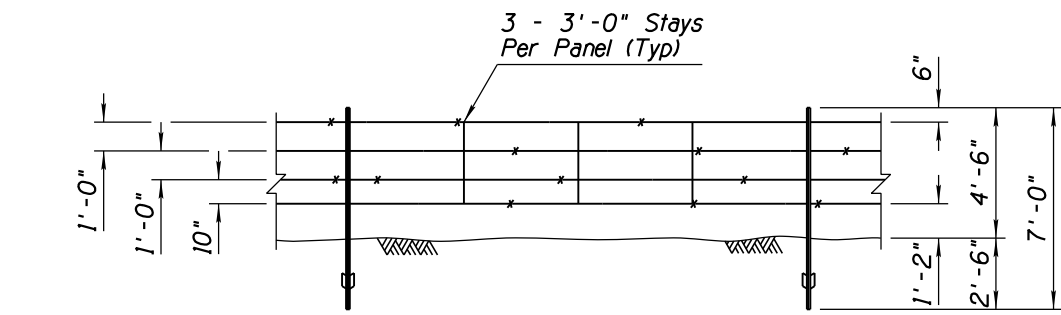
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	PNB	7/94
2	REVISED GENERAL NOTE 1	RLF	7/05
3	ADDED GENERAL NOTE 4	RLF	5/12
4	ADDED TYPICAL FENCE LOCATION VIEW	RLF	5/12

Corner Post Assembly
Detail D
Sheet 5 of 5

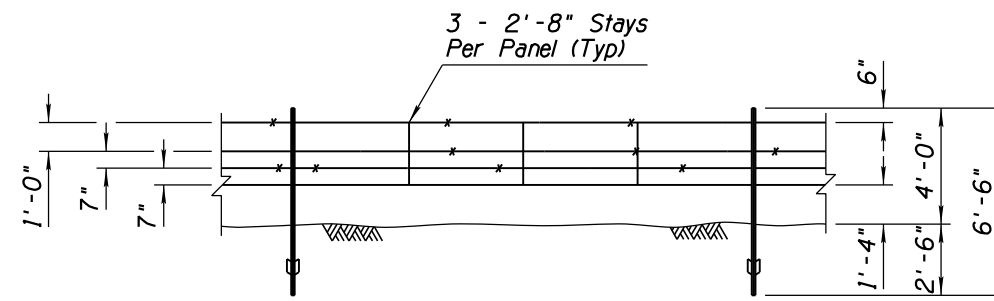


TYPICAL BARBED WIRE FENCE INSTALLATION-TYPE 2 (BW) SHOWN

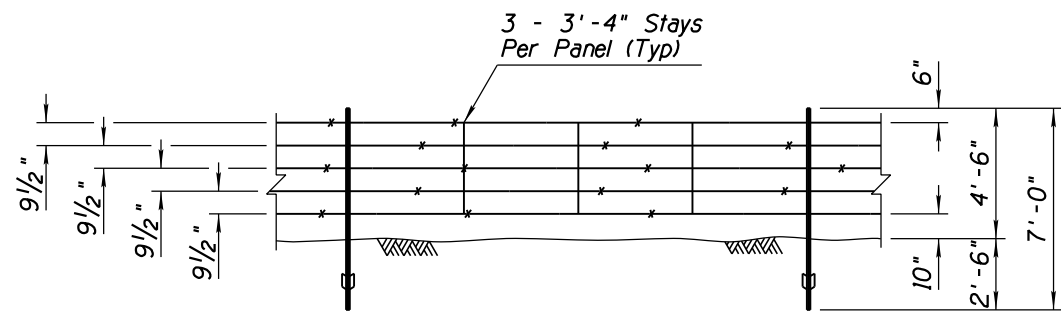
- GENERAL NOTES**
- Intermediate Post Assemblies shall be located as shown and at intervals not to exceed 650', or midway between all braced posts.
 - For game fence the bottom wire shall be barbless.
 - The stays on game fence shall have their ends turned up to prevent injuries to game.
 - Fence Wire 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.



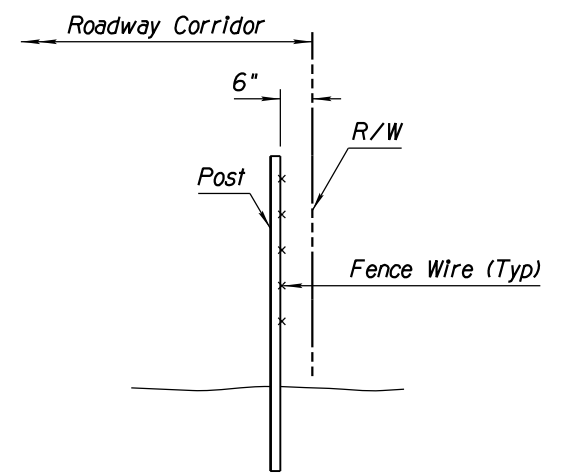
TYPE 1 BARBED WIRE (BW) (4 WIRE)



BARBED WIRE GAME FENCE (GF)



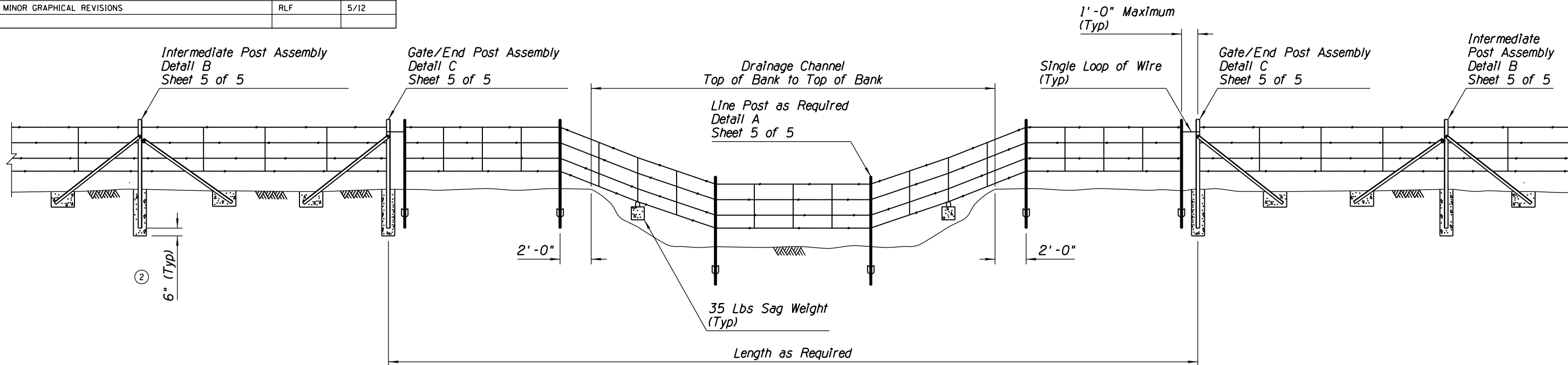
TYPE 2 BARBED WIRE (BW) (5 WIRE)



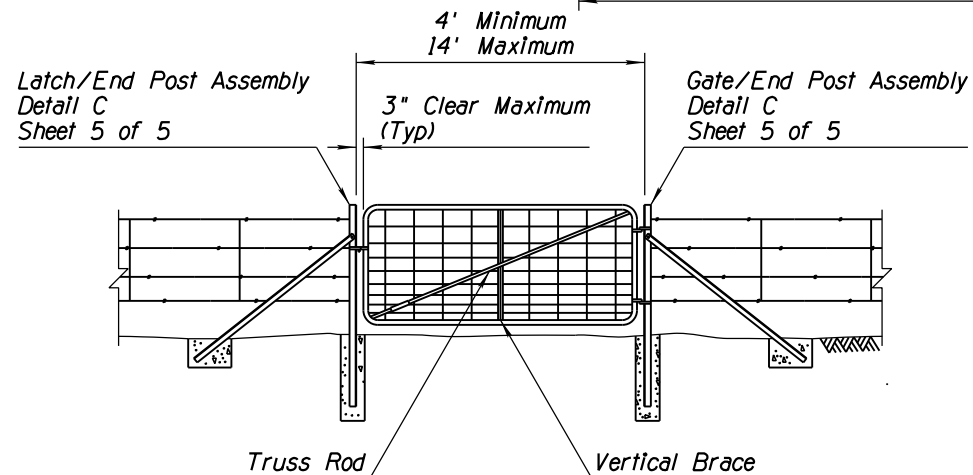
④ TYPICAL FENCE LOCATION

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

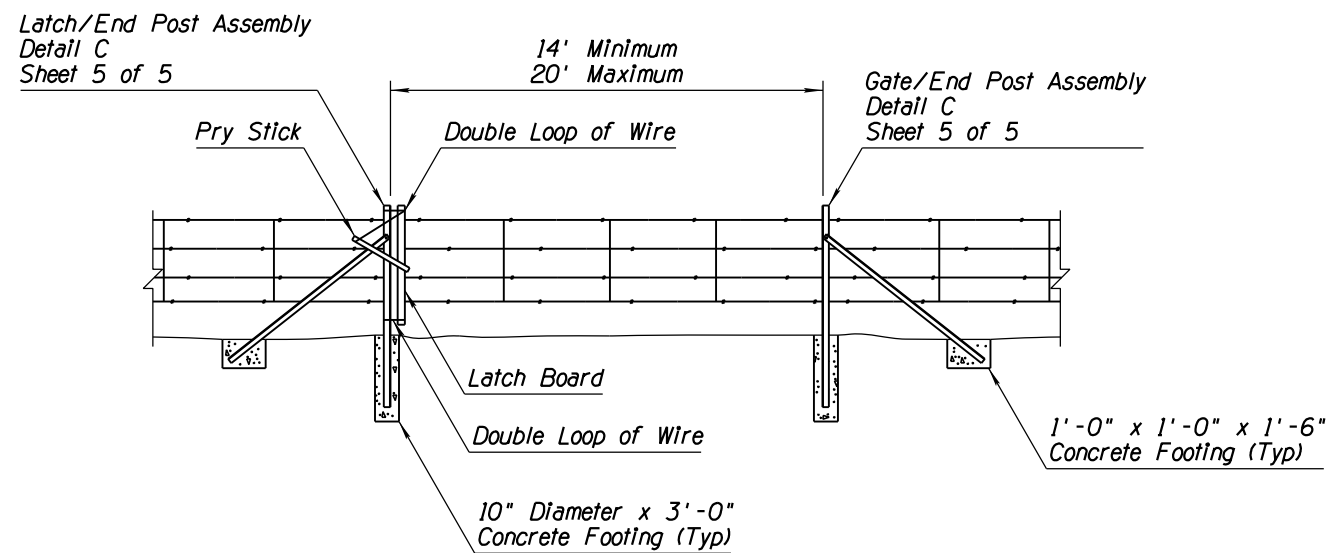
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD DWG	PNB	7/94
2	ADDED DIMENSION	RLF	9/04
3	MINOR GRAPHICAL REVISIONS	RLF	5/12
4			



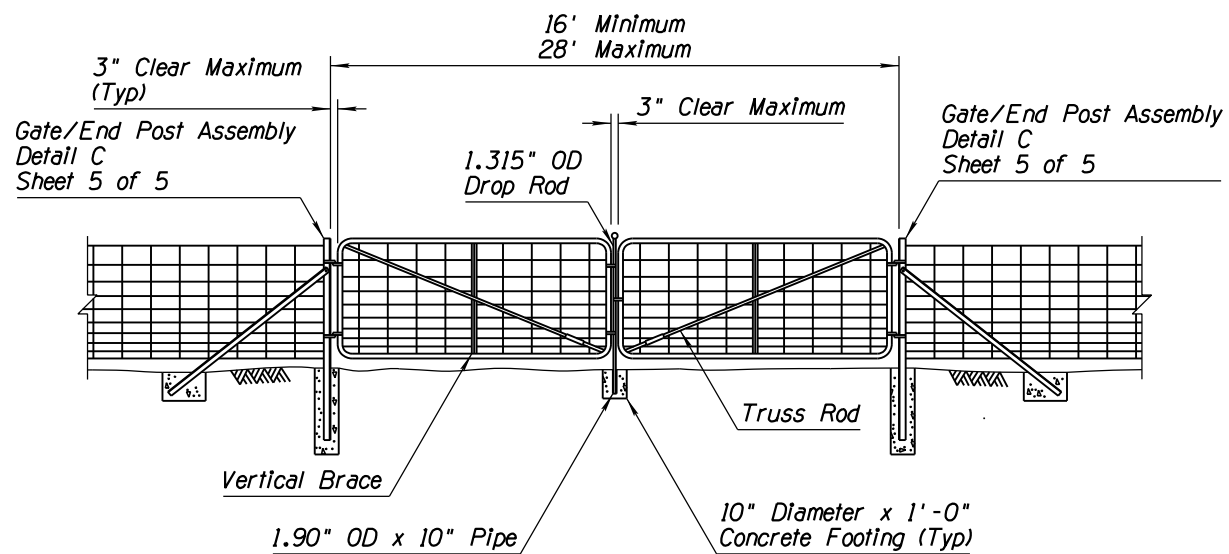
FLOOD GATE



TYPE 1 SINGLE GATE



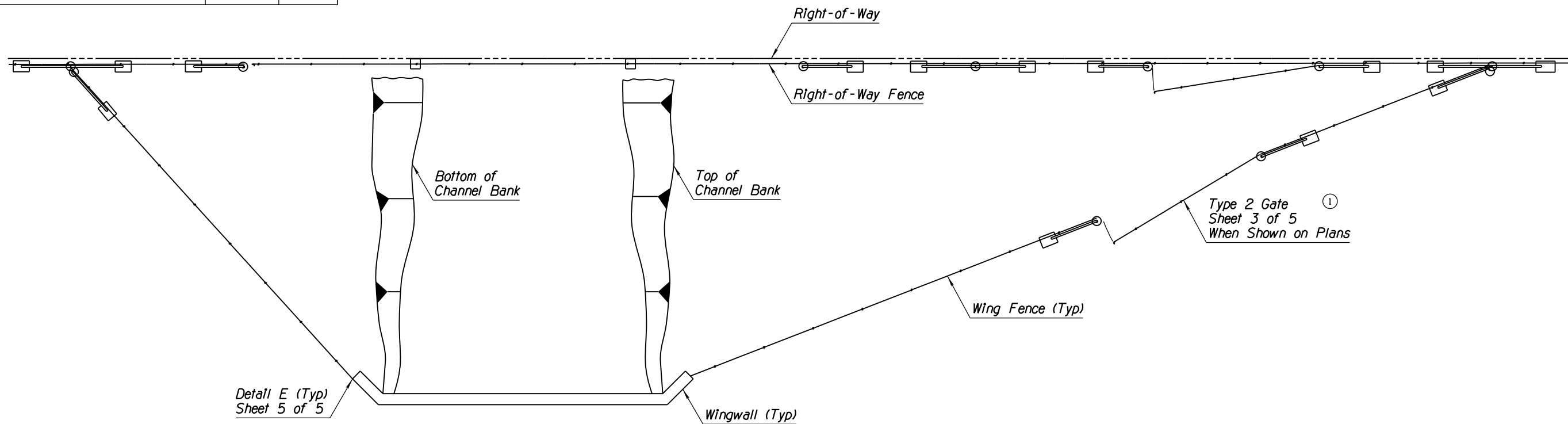
TYPE 2 GATE



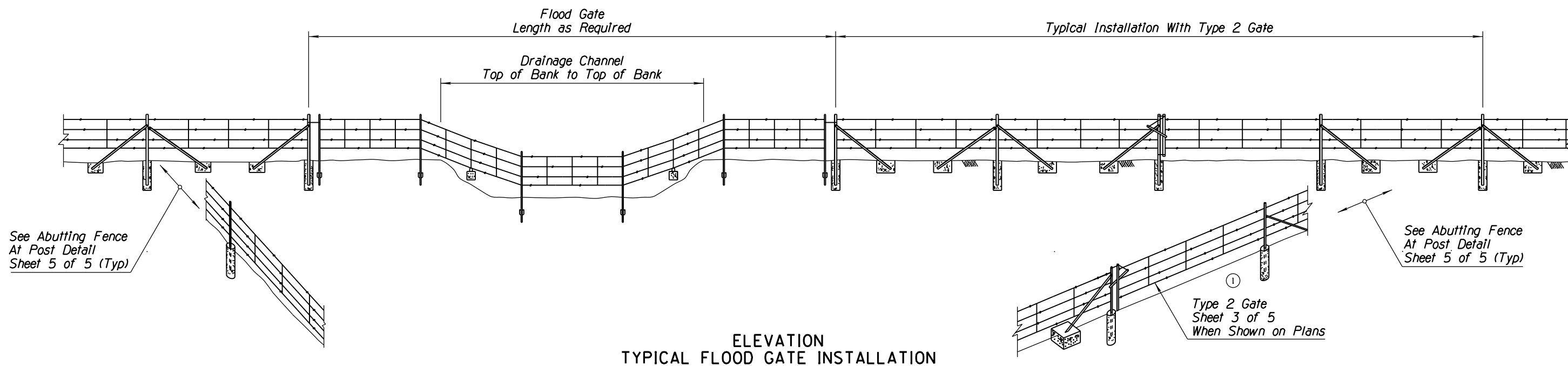
TYPE 1 DOUBLE GATE

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



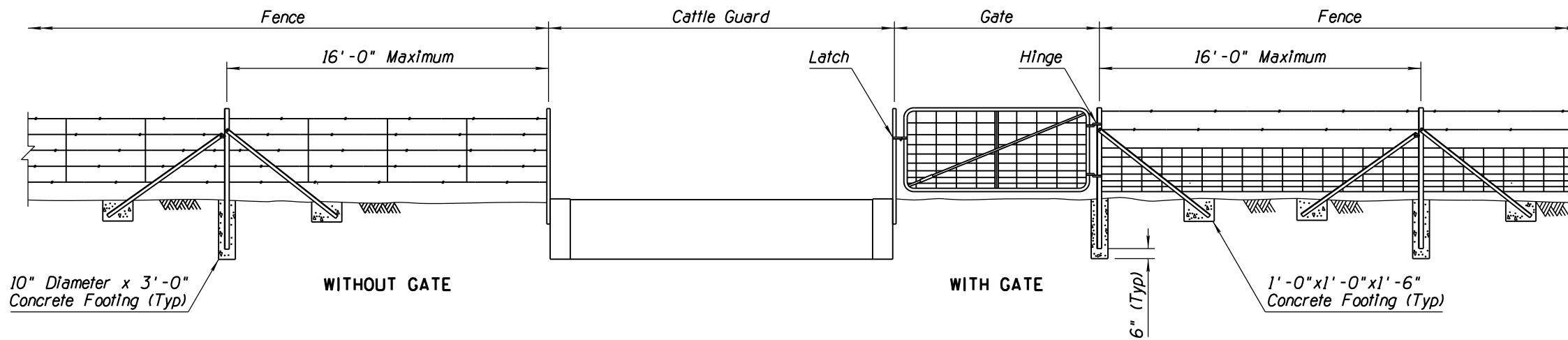
ELEVATION
TYPICAL FLOOD GATE INSTALLATION

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE FLOOD GATE INSTALLATION ②	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			

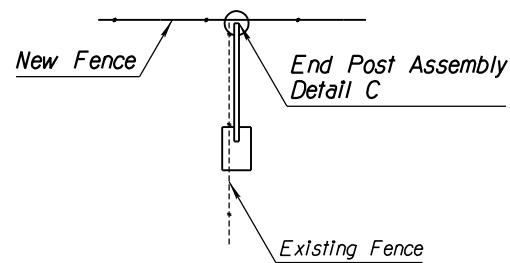
GENERAL NOTES

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.



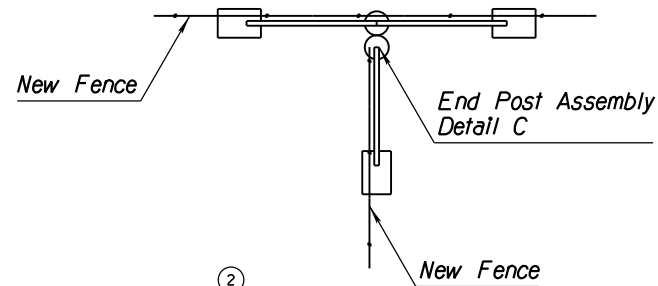
TYPICAL FENCE LOCATION AT CATTLE GUARD

③



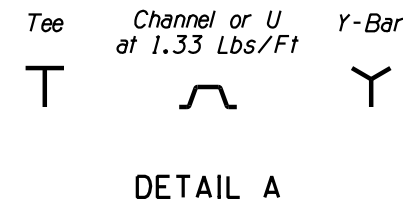
②

ABUTTING FENCE



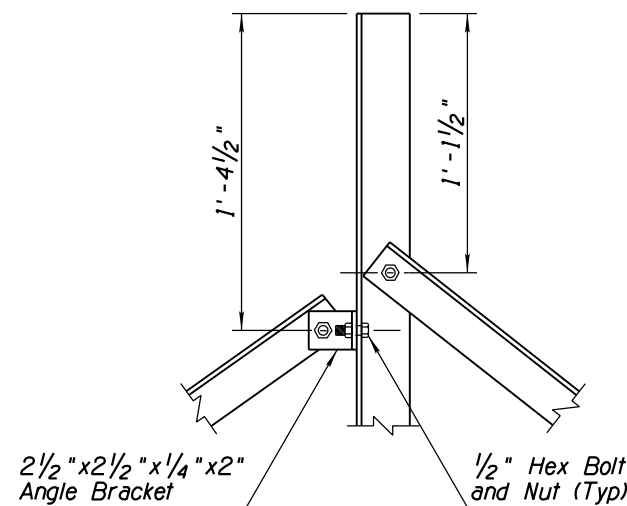
②

ABUTTING FENCE AT POST

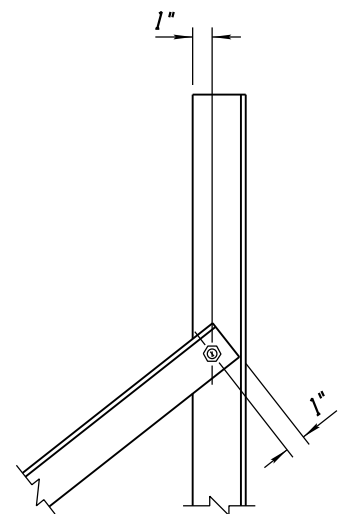


DETAIL A

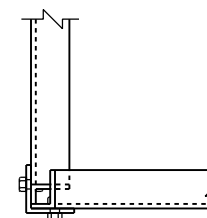
TYPICAL CROSS SECTIONS OF LINE POST SHAPES



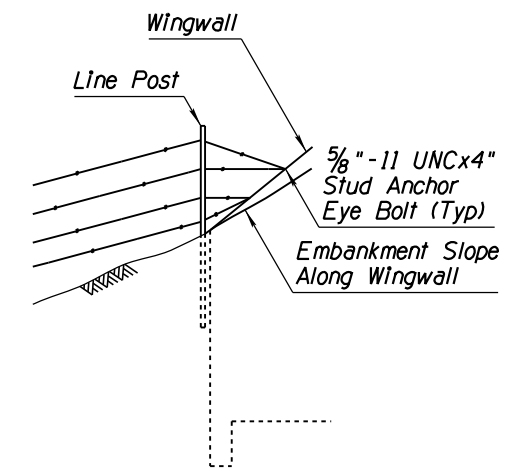
**DETAIL B
INTERMEDIATE POST ASSEMBLY**



**DETAIL C
END POST ASSEMBLY**



**DETAIL D
CORNER POST ASSEMBLY**



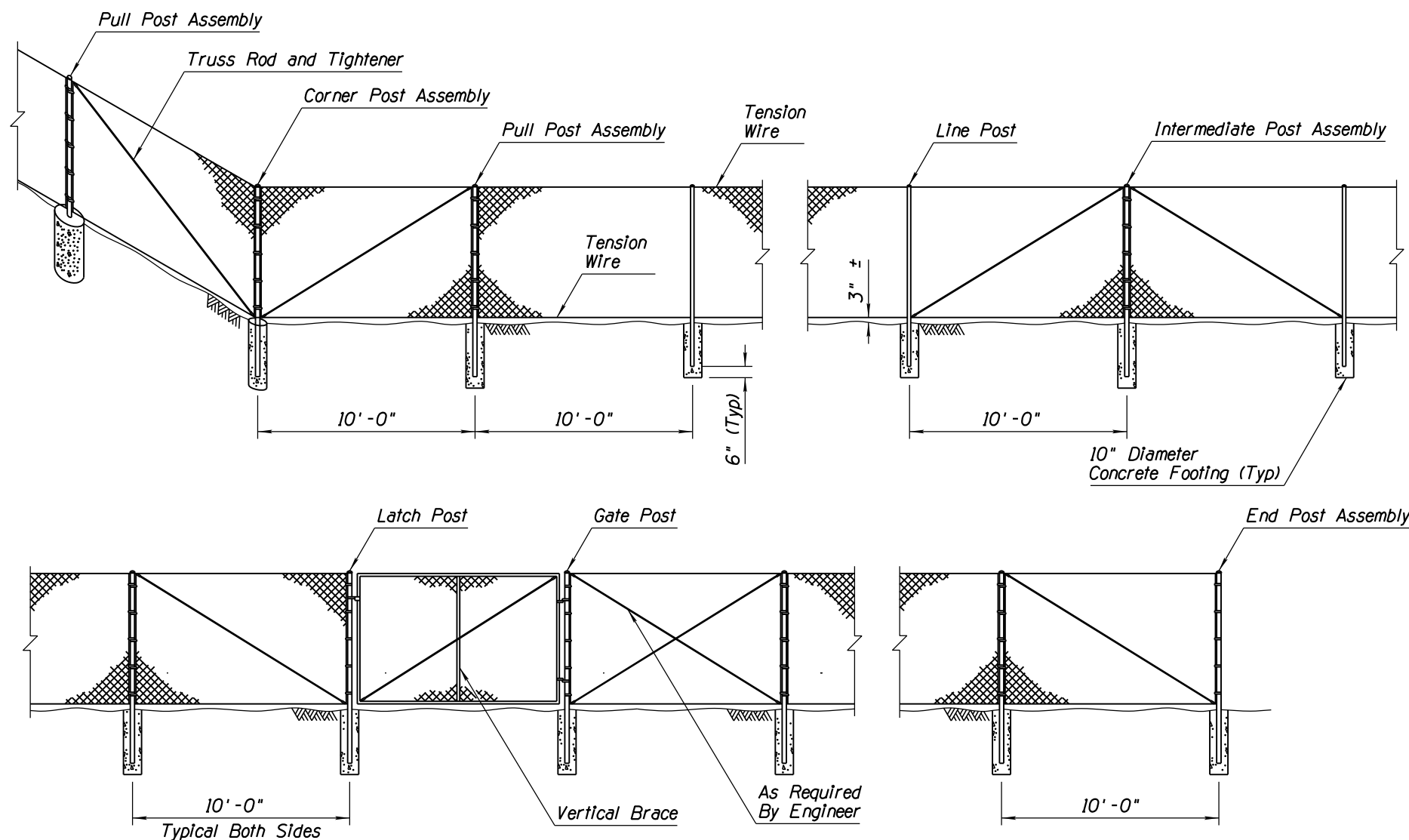
**DETAIL E
FENCE CONNECTION TO WINGWALL**

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

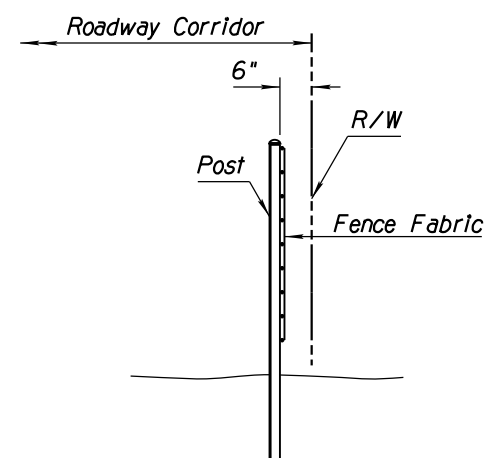
- Posts shall be round, H-section, or roll-formed and shall conform to the nominal dimensional requirements shown on the plans. Dimensional tolerances for all shapes shall be according to ASTM A500. In addition, the material of which posts are fabricated shall have a nominal thickness, before galvanizing, 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 fabric 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)	Length (Ft-In)	Corner, End, Intermediate, Gate, Latch and Pull Posts			Line Posts			
		Round (OD) (In)	Roll Formed (In)		Length (Ft-In)	Round (OD) (In)	Roll Formed (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

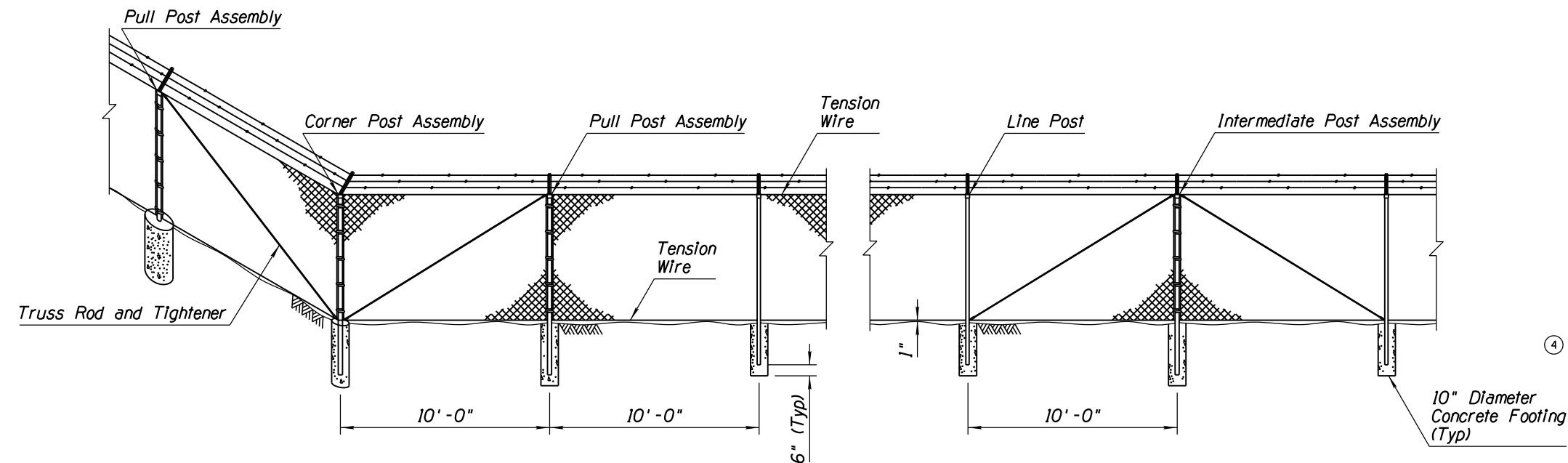


③

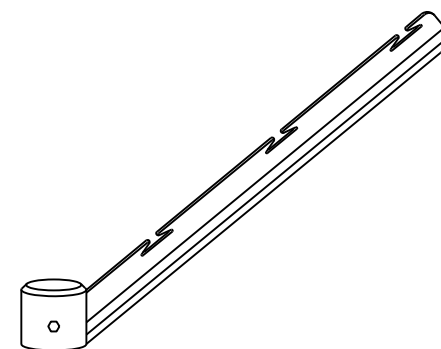
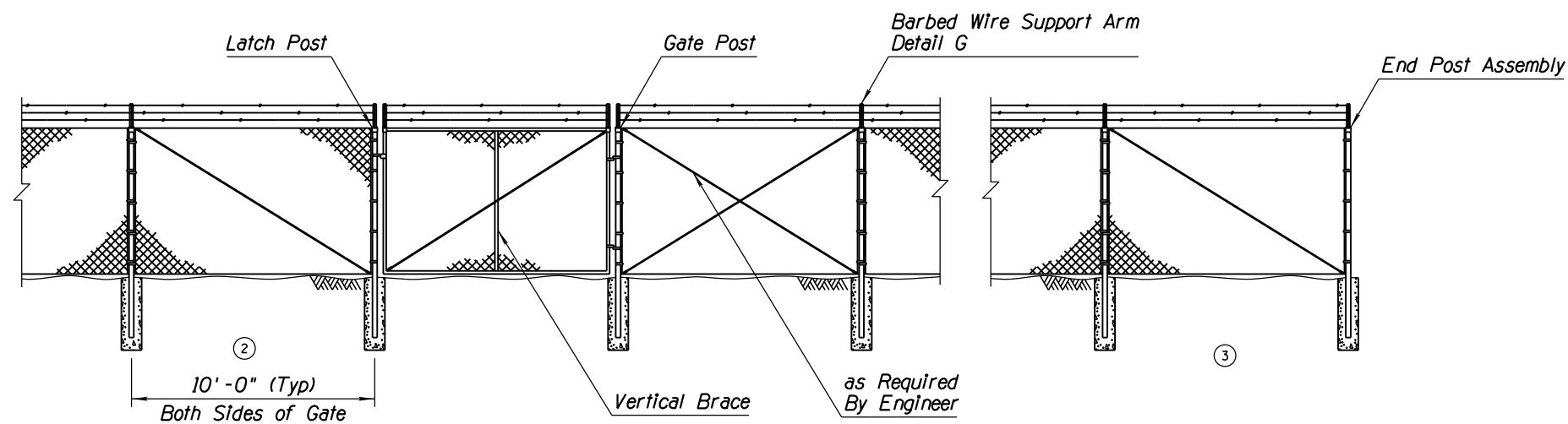
TYPICAL FENCE LOCATION

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

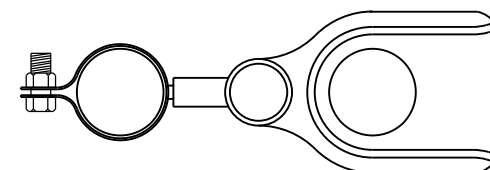
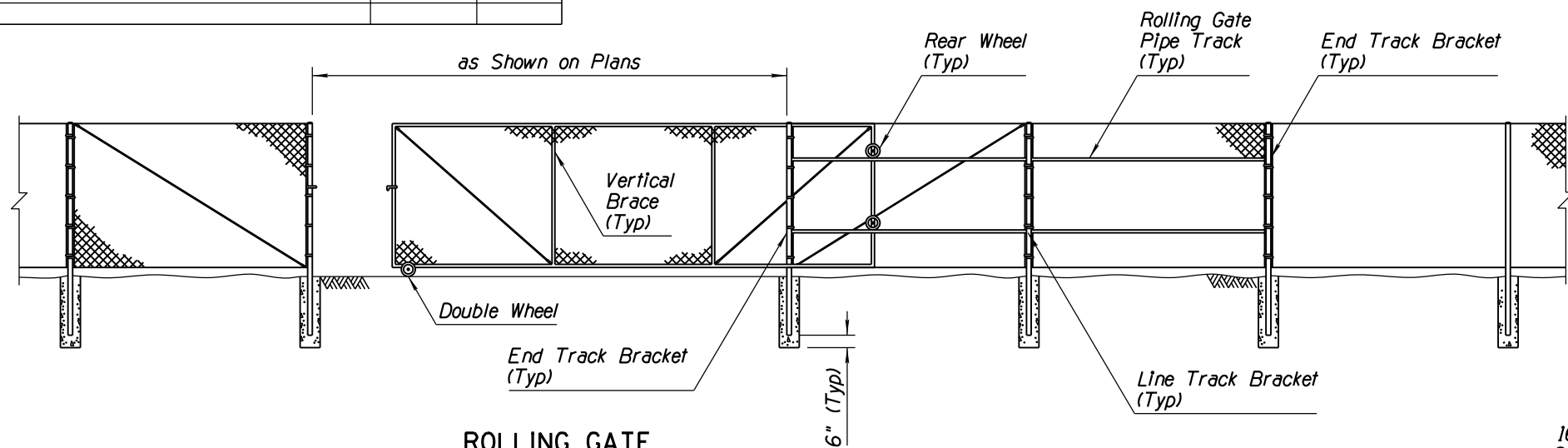
DETAIL G
BARBED WIRE SUPPORT ARM

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

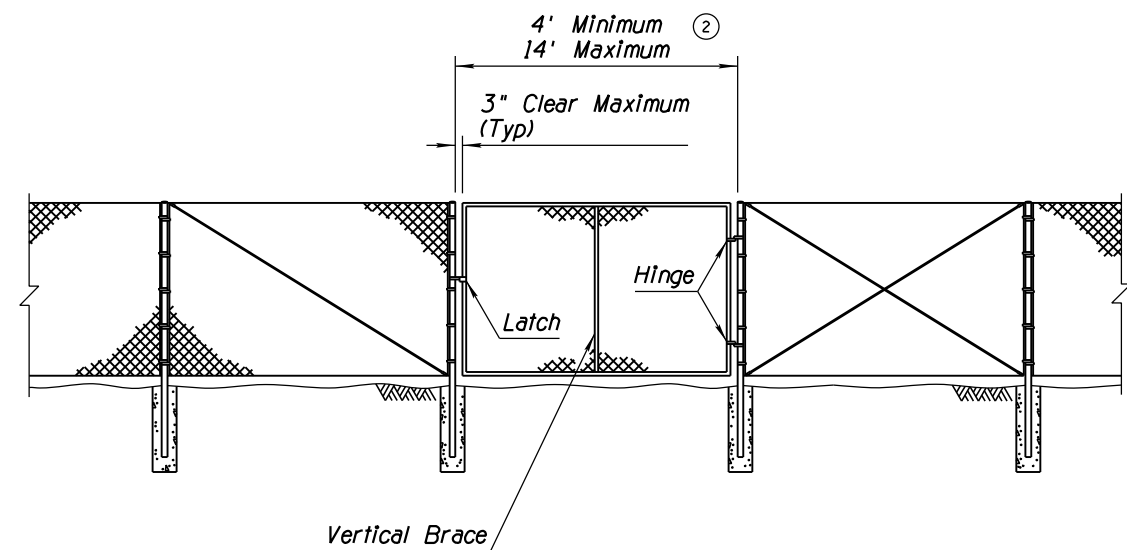
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE CHAIN LINK TYPE 2	DRAWING NO. C-12.20 Sheet 2 of 3

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			

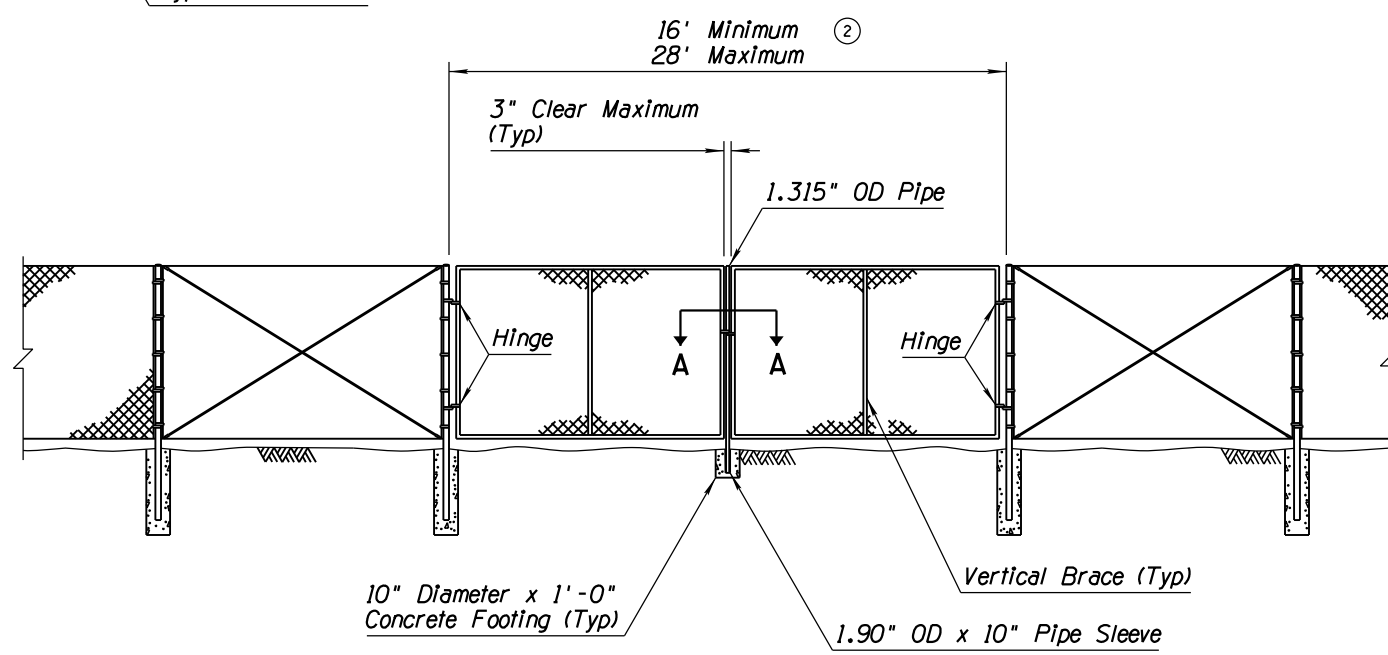


SECTION A-A
DOUBLE GATE LATCH ASSEMBLY

ROLLING GATE



SINGLE GATE



DOUBLE GATE

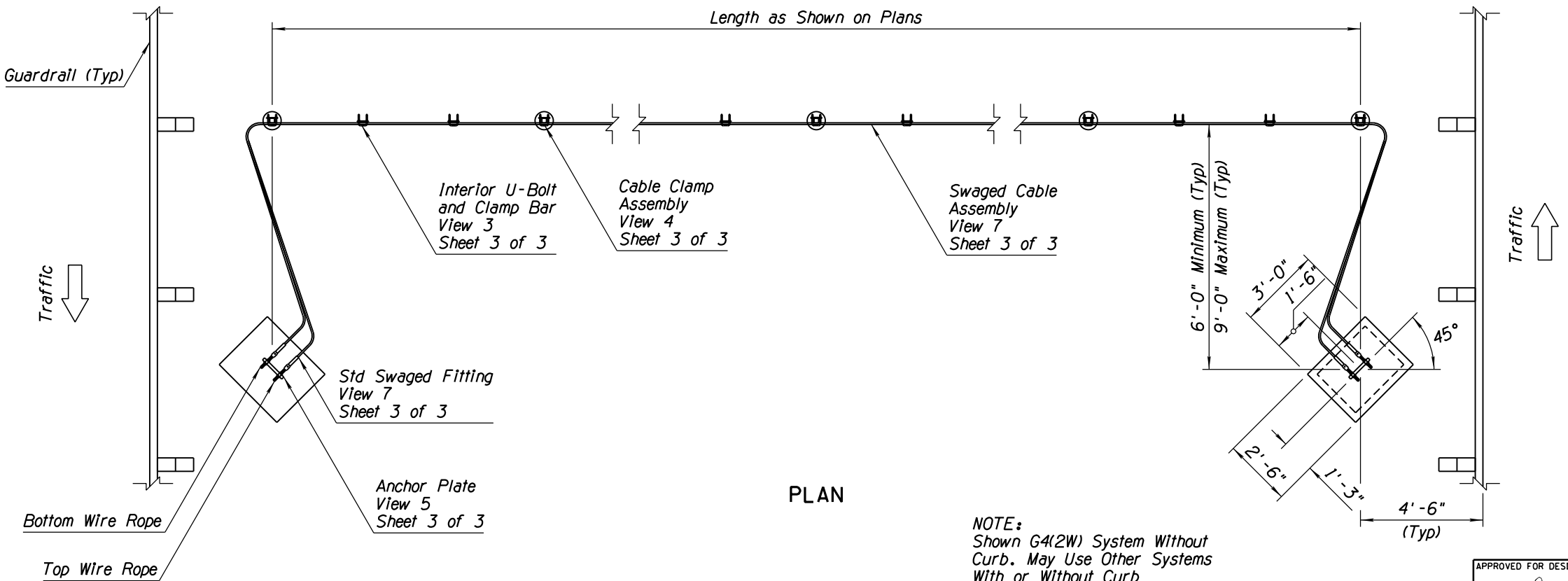
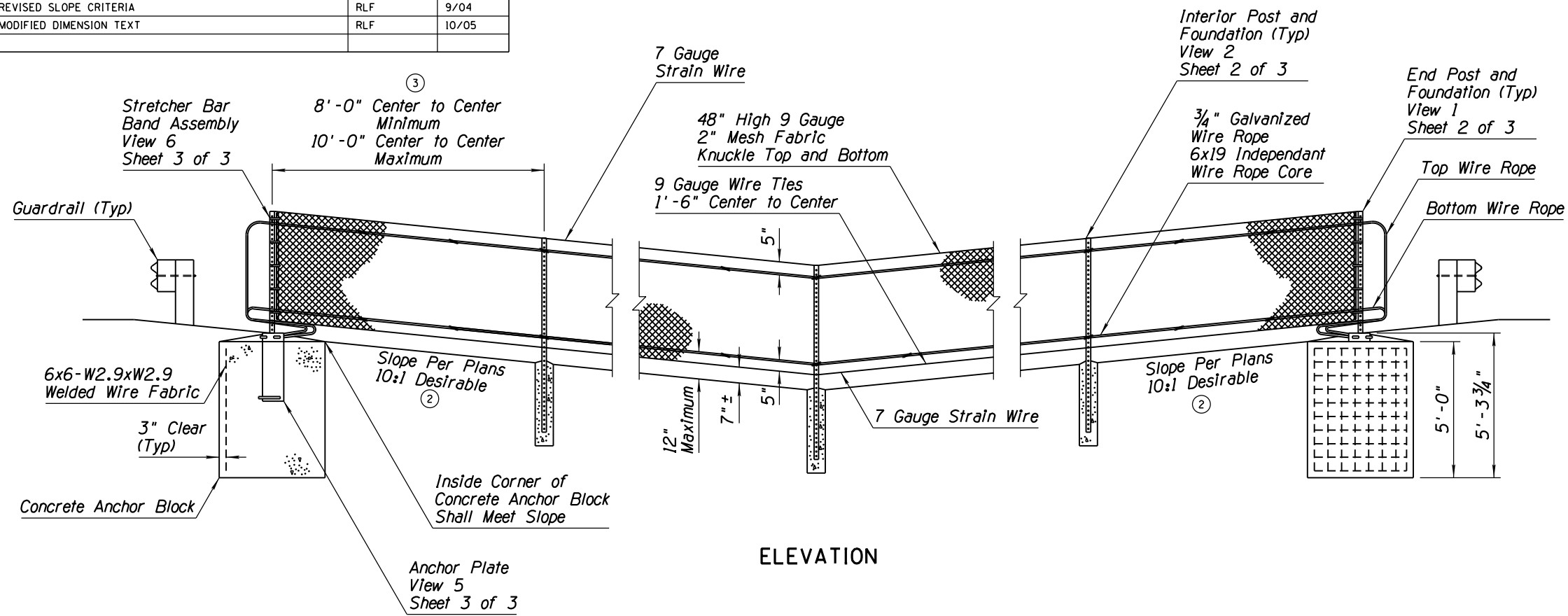
TYPICAL GATE DIMENSIONS

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			



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

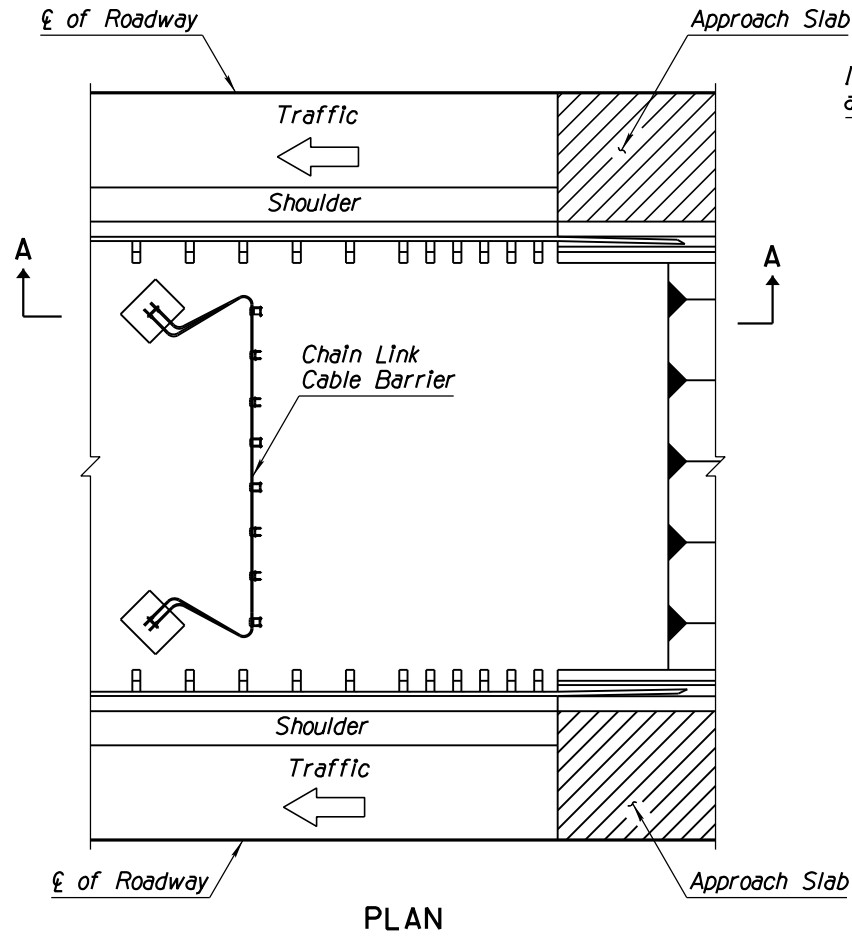
GENERAL NOTES

- 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 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 5/32" ± 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 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' ± of the Chain Link Cable Barrier should not exceed a grade break of 10 percent.

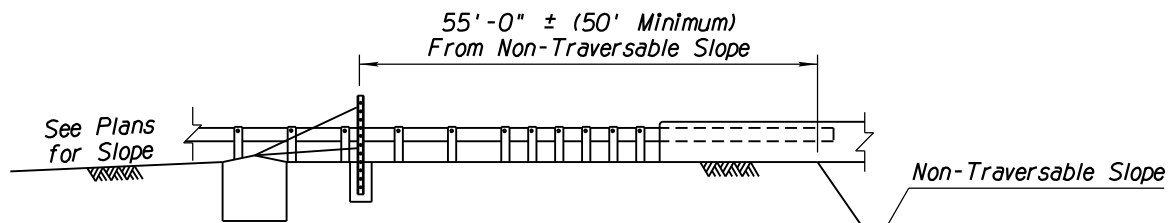
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE CHAIN LINK CABLE BARRIER	DRAWING NO. C-12.30 Sheet 1 of 3

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

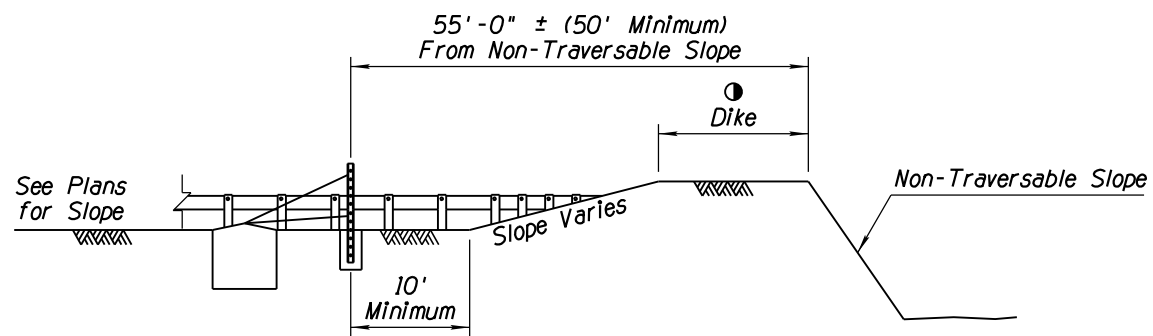
- ① ● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation
 ● When Shown on Plans



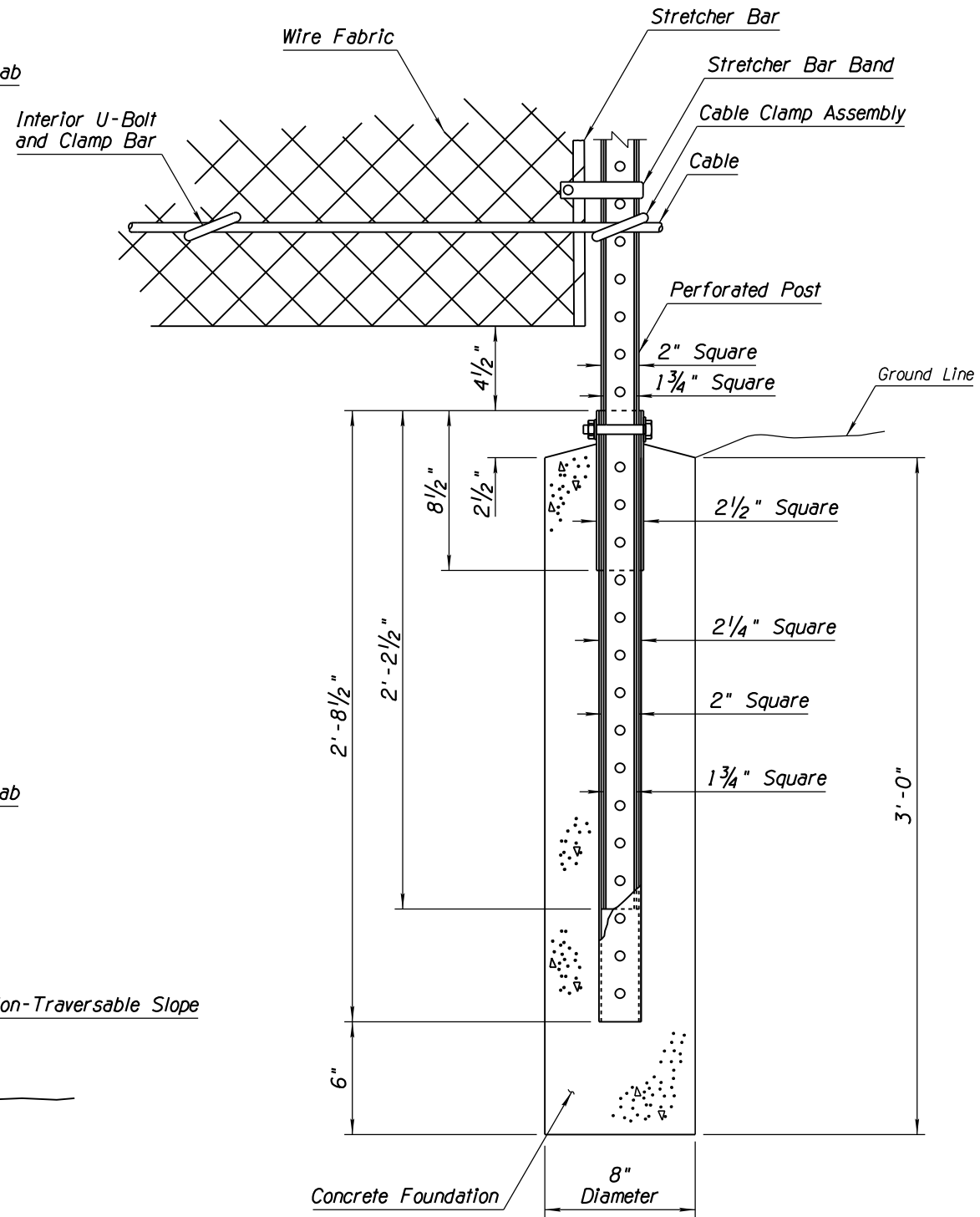
PLAN



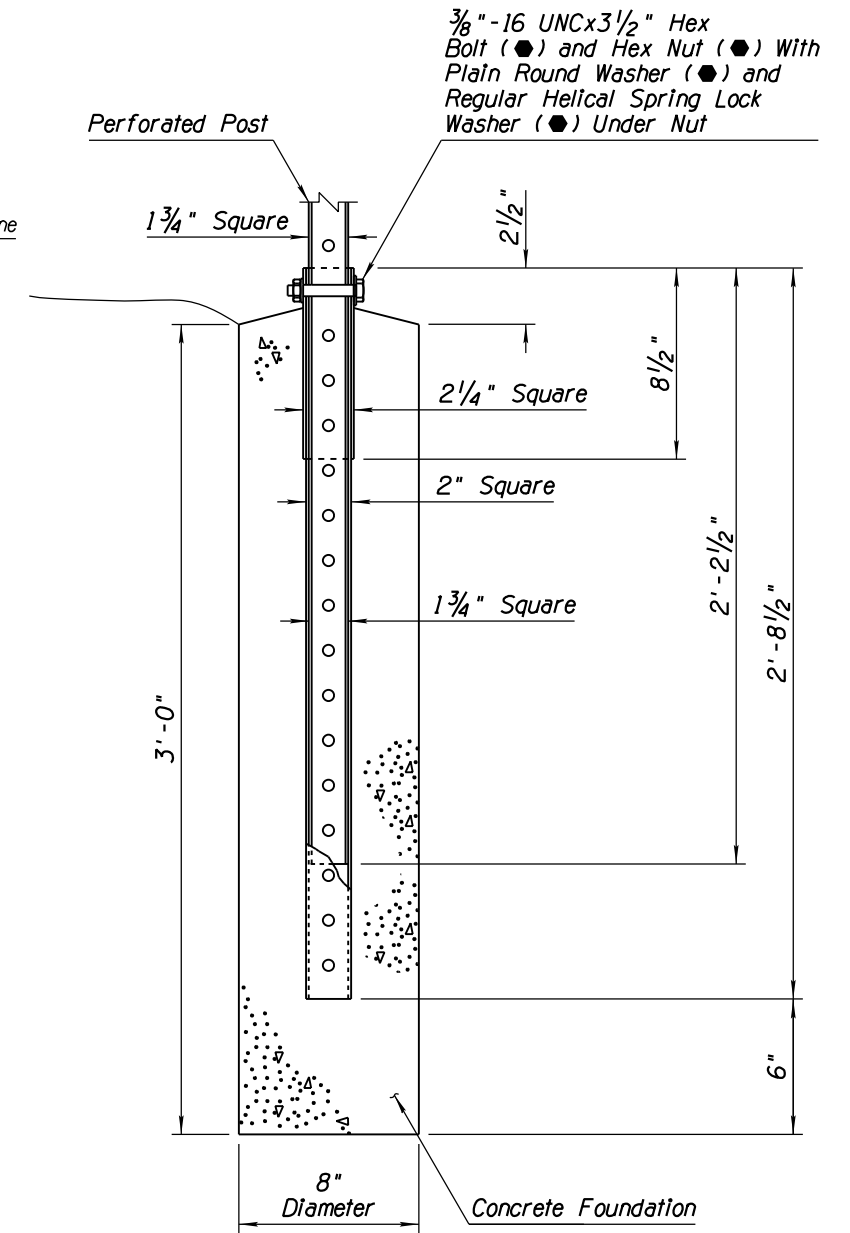
SECTION A-A
TYPICAL INSTALLATION WITHOUT DIKE



SECTION A-A
TYPICAL INSTALLATION WITH DIKE



VIEW 1
END POST AND FOUNDATION

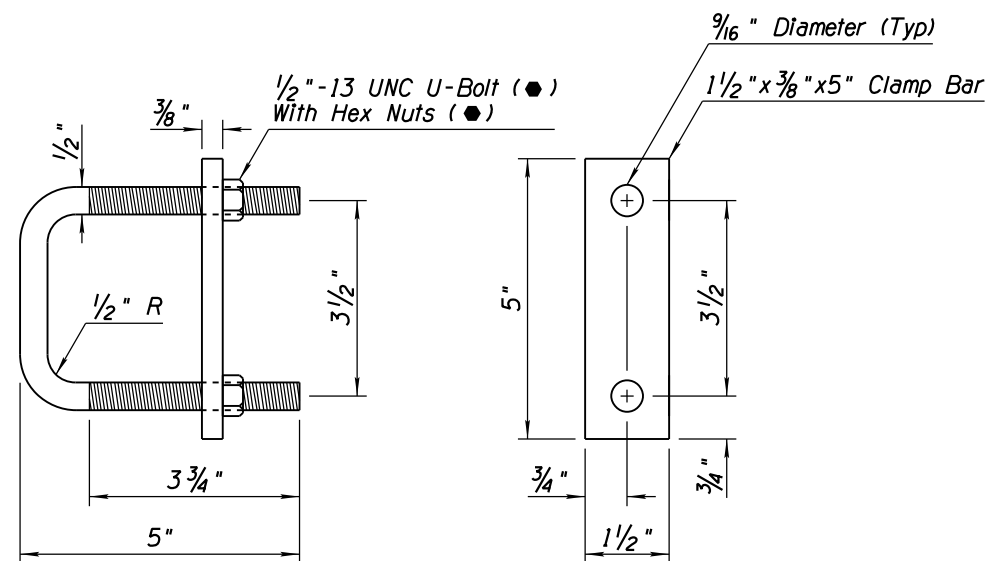


VIEW 2
INTERIOR POST AND FOUNDATION

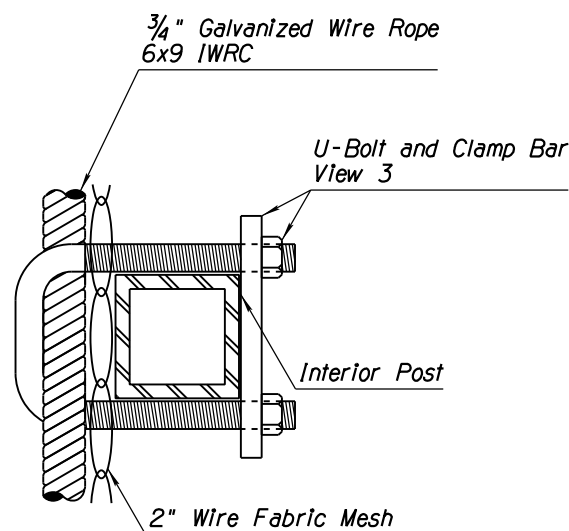
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE CHAIN LINK CABLE BARRIER	DRAWING NO. C-12.30 Sheet 2 of 3

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

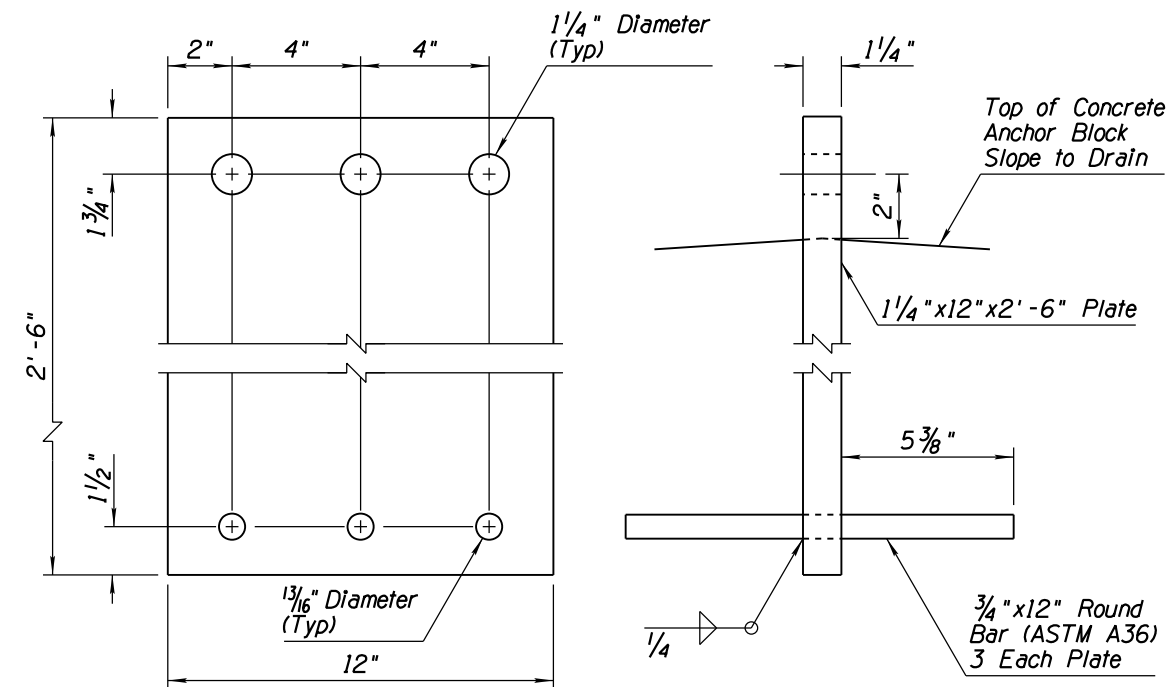
① ● - Indicates AASHTO, AGC & ARTBA Task Force 13 Report designation



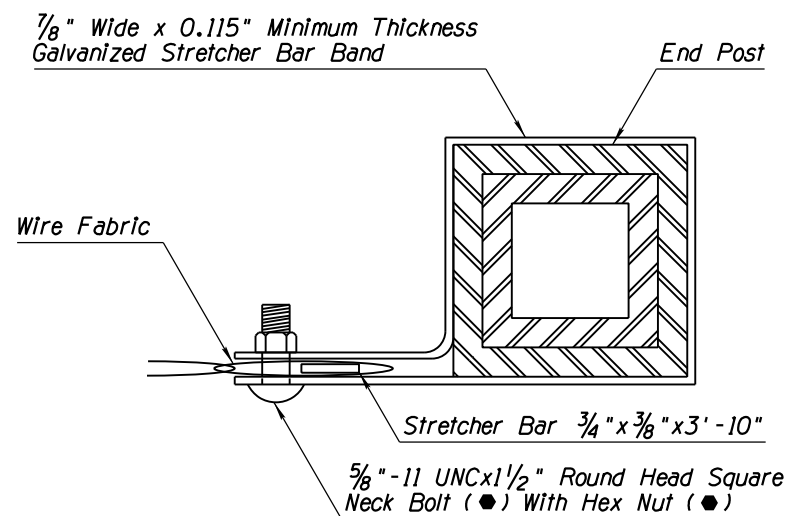
VIEW 3
U-BOLT AND CLAMP BAR



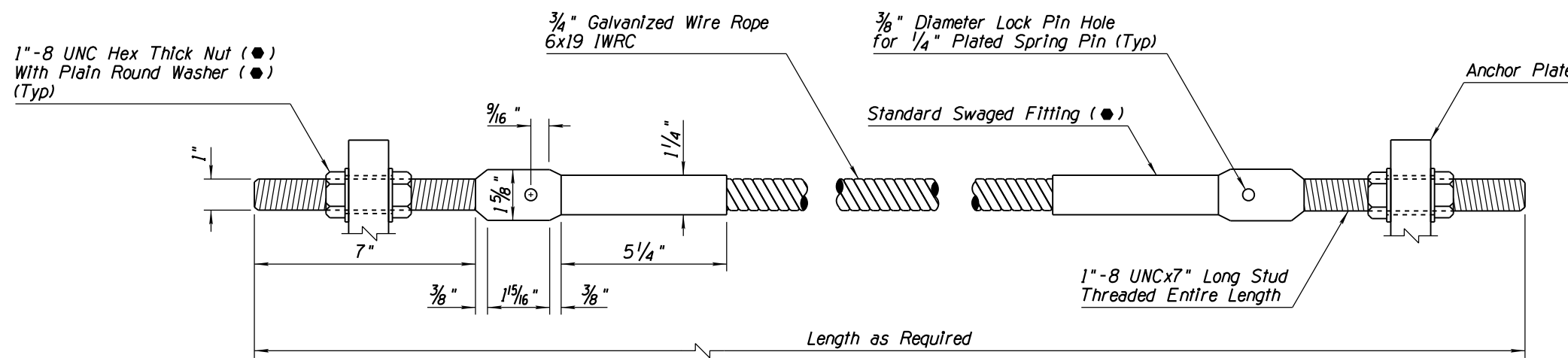
VIEW 4
CABLE CLAMP ASSEMBLY



VIEW 5
ANCHOR PLATE



VIEW 6
STRETCHER BAR BAND ASSEMBLY



VIEW 7
SWAGED CABLE ASSEMBLY

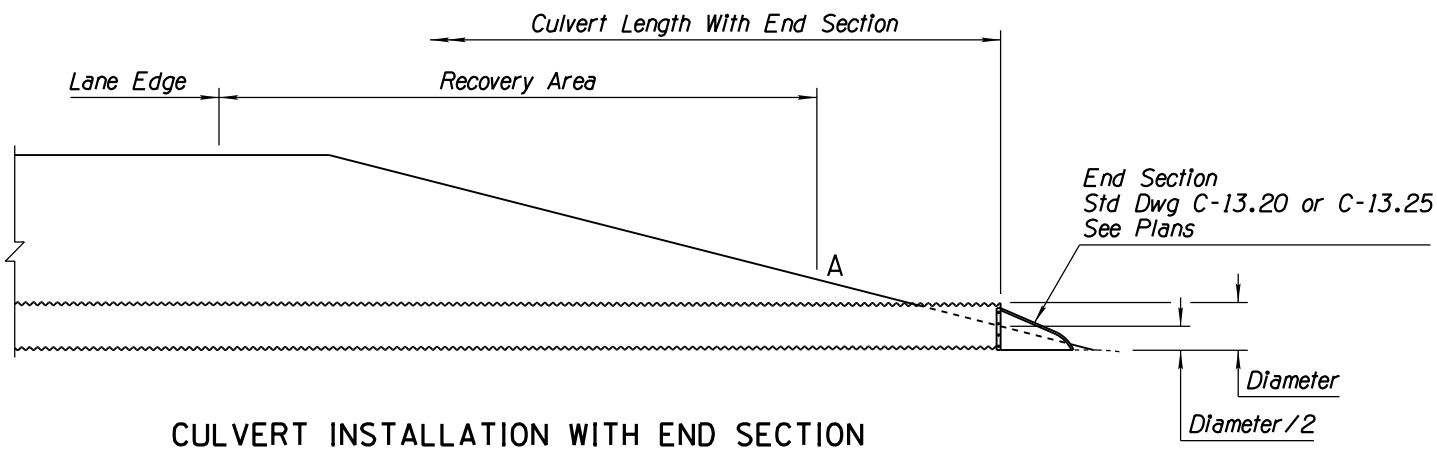
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FENCE CHAIN LINK CABLE BARRIER	DRAWING NO. C-12.30 Sheet 3 of 3

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

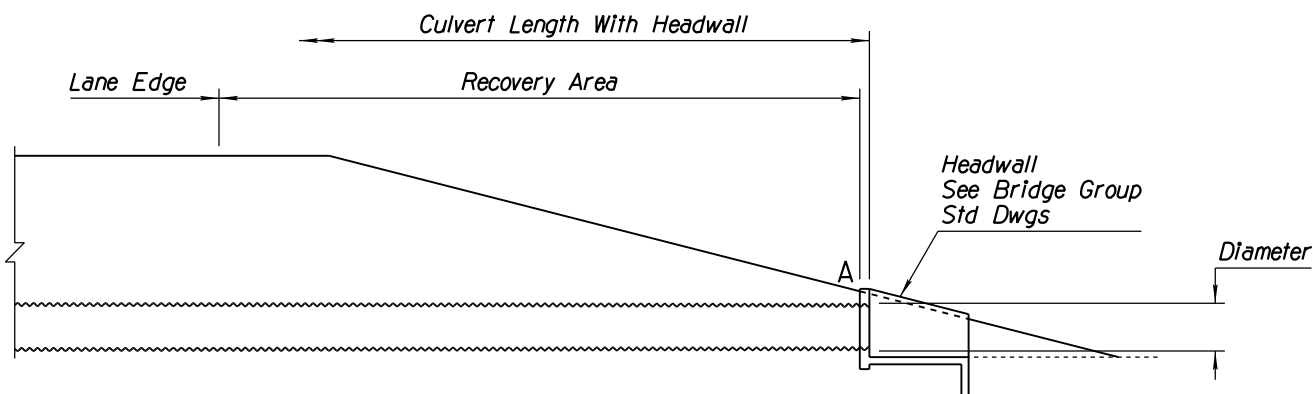
GENERAL NOTES

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.

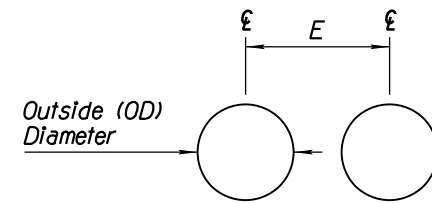
MINIMUM SPACING FOR MULTIPLE PIPES WITH HEADWALL	
Diameter or Span (In)	E (Ft-In)
18	2-6
24	3-0
30	3-9
36	4-6
42	5-3
48 to 66	OD + 3-0
72 and Over	OD + 3-0



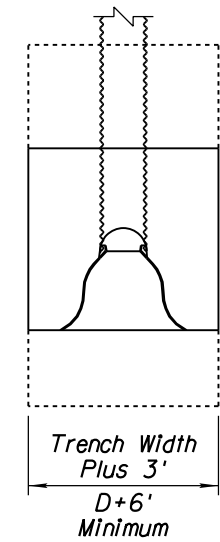
CULVERT INSTALLATION WITH END SECTION



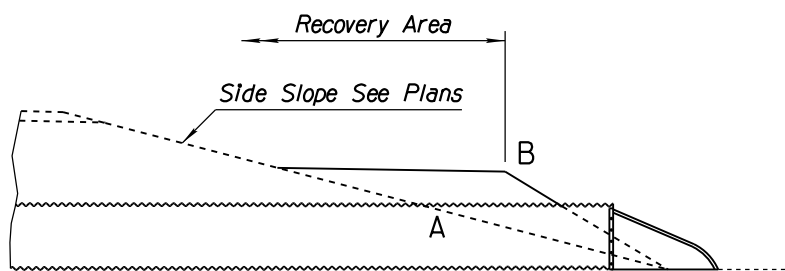
CULVERT INSTALLATION WITH HEADWALL



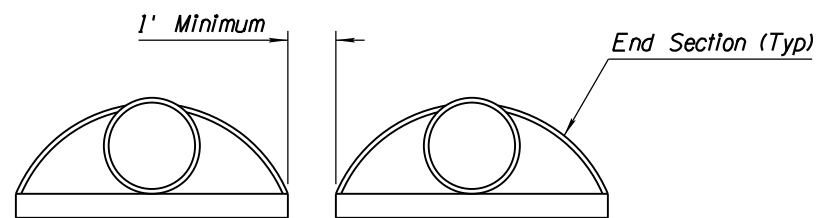
MINIMUM SPACING FOR MULTIPLE PIPES WITH HEADWALL



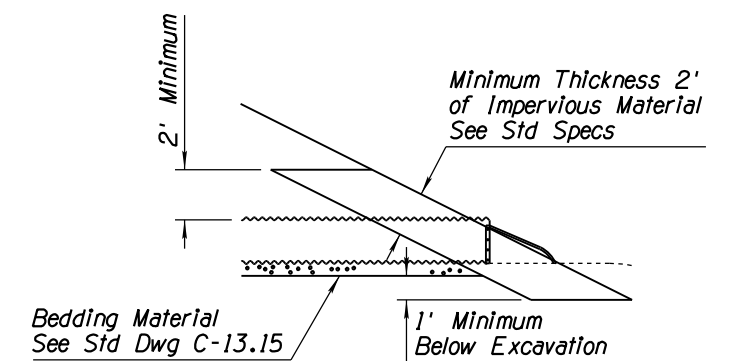
PLAN



PIPE WITH BERM REQUIREMENT DETAIL
See General Note 4



MINIMUM SPACING FOR MULTIPLE PIPES WITH END SECTIONS



ELEVATION

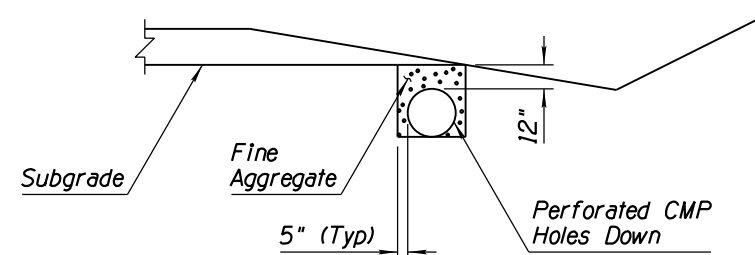
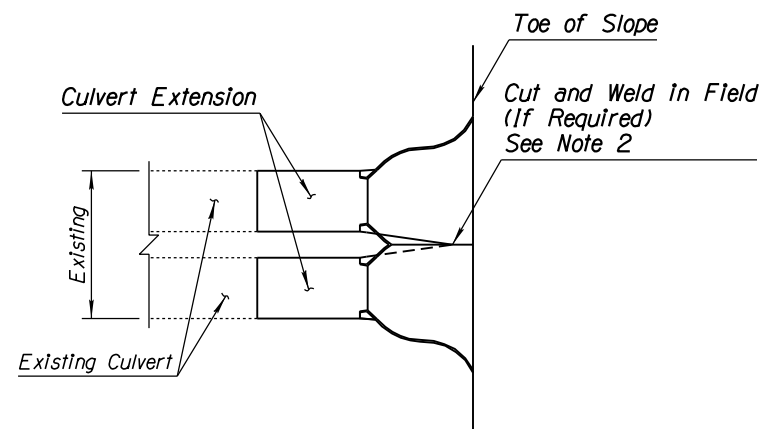
SLOPE PLATING FOR PIPE WITH END SECTIONS

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			

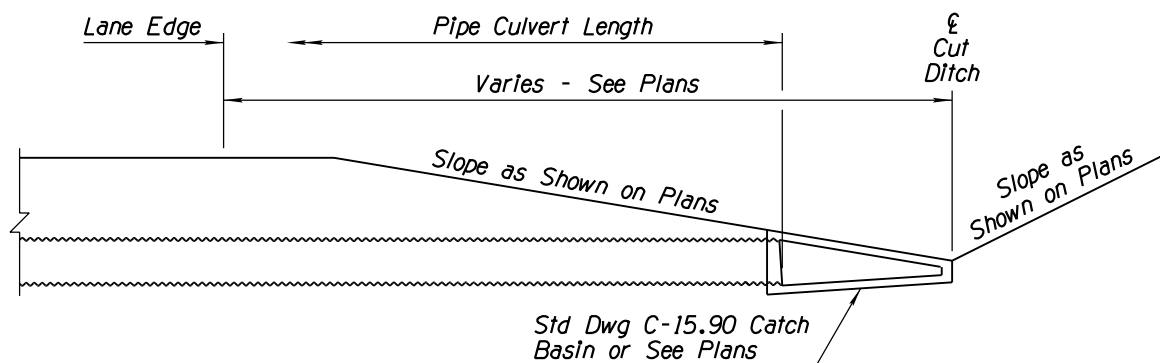
GENERAL NOTES

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.

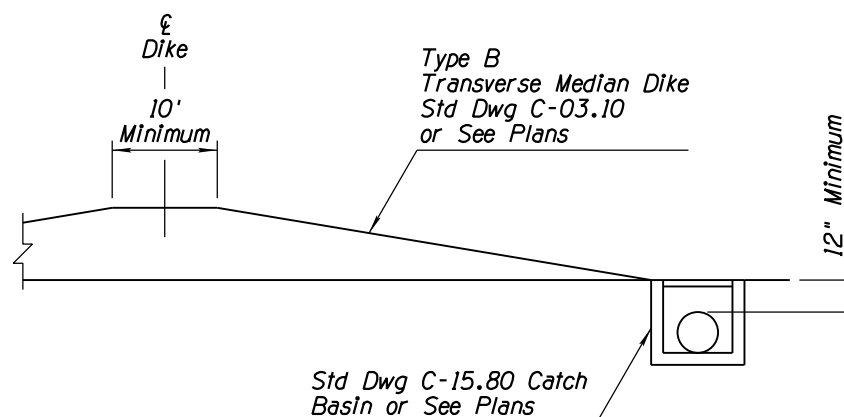


PERFORATED CMP INSTALLATION

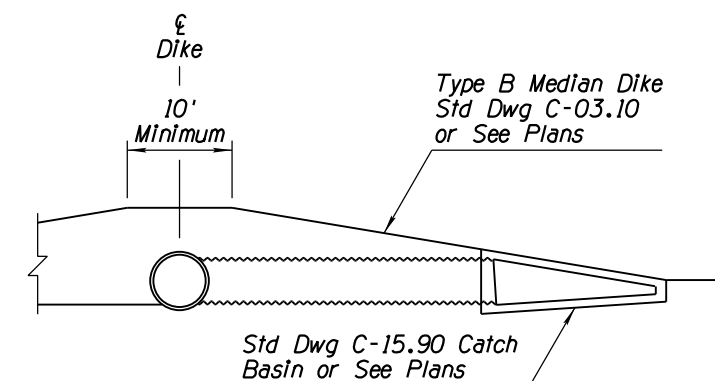
SPECIAL MULTIPLE PIPE END SECTION DETAIL FOR PIPE CULVERT EXTENSIONS ONLY



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

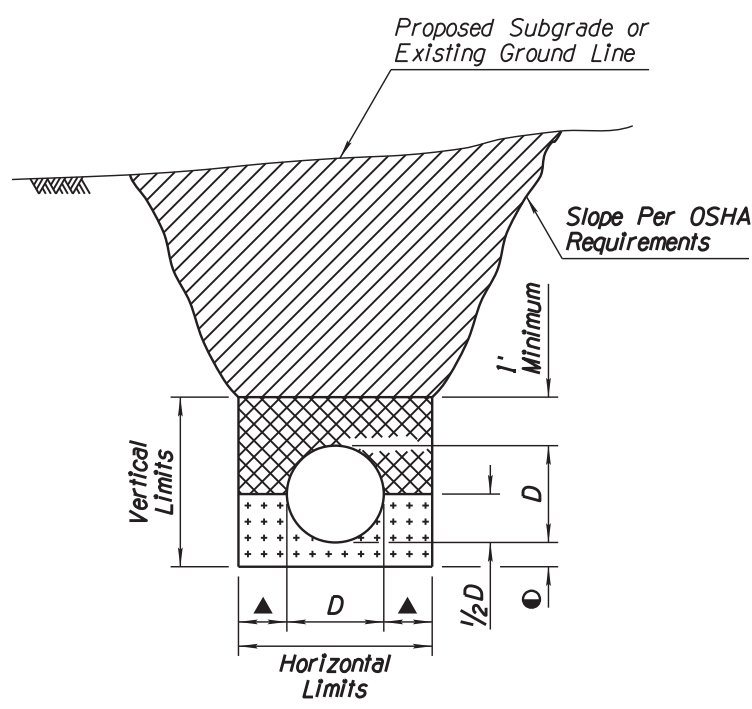
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PIPE CULVERT INSTALLATION	DRAWING NO. C-13.10 Sheet 2 of 2

GENERAL NOTES

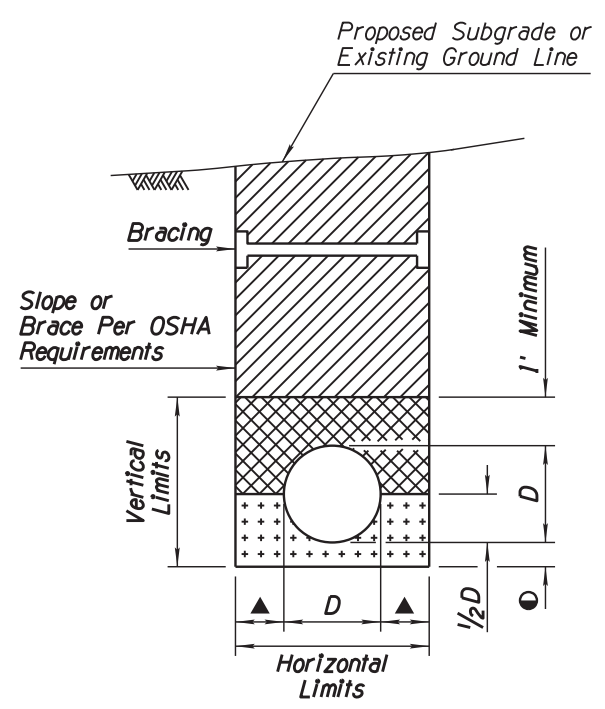
1. Pipes shall be installed either in a trench condition or in a non-trench condition in natural ground or in embankment.
 2. In a trench condition, the vertical and horizontal limits shall be maintained. If horizontal limits are exceeded or the vertical limits are not maintained, a non-trench condition exists.
 3. Bracing and sloping shall conform to OSHA requirements.
 4. Bedding material shall be used for pipe backfill on thermoplastic pipes, and may be used for pipe backfill on other pipes.
 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.

- ▲ Minimum = 12" ■ ●
Maximum = 24" for $D < 48"$
Maximum = 36" for $D \geq 48"$
- ▣ 6" minimum when using cement treated slurry for bedding and backfill.
- For thermoplastic pipe with $D \geq 24"$:
Minimum ▲ = $0.25D + 6"$
- - 6 inches except when on unyielding or unstable material. See Std Specs.
- = $3D$ for thermoplastic pipe with $D > 30"$ and fill height $> 10'$.

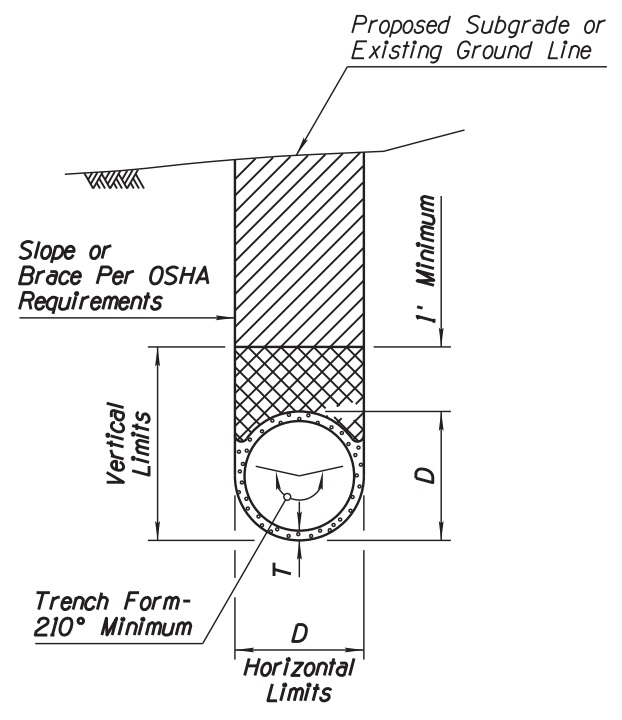
- ▨ TRENCH BACKFILL
- ▩ PIPE BACKFILL
- ▧ BEDDING



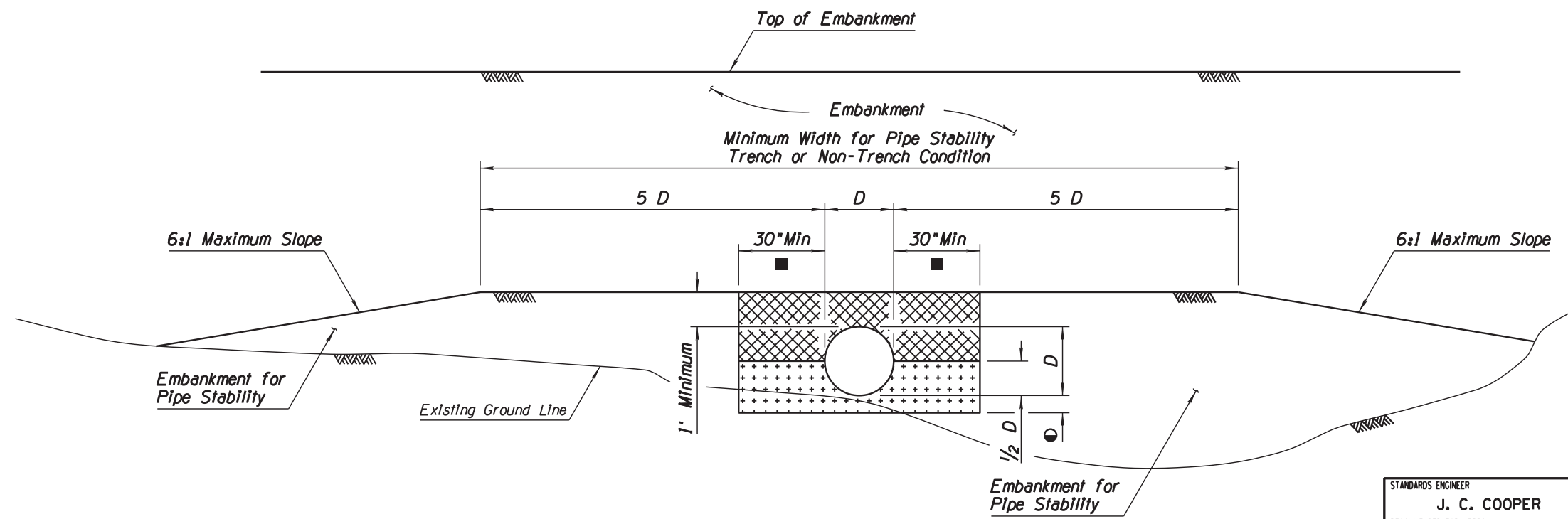
TRENCH CONDITION
IN NATURAL GROUND OR IN EMBANKMENT
WITHOUT BRACING



TRENCH CONDITION
IN NATURAL GROUND OR IN EMBANKMENT
WITH BRACING SHOWN



TRENCH CONDITION
NRCIPCP IN NATURAL GROUND
OR IN EMBANKMENT



NON-TRENCH CONDITION

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

PRIOR DISTRIBUTION DATE 04/21

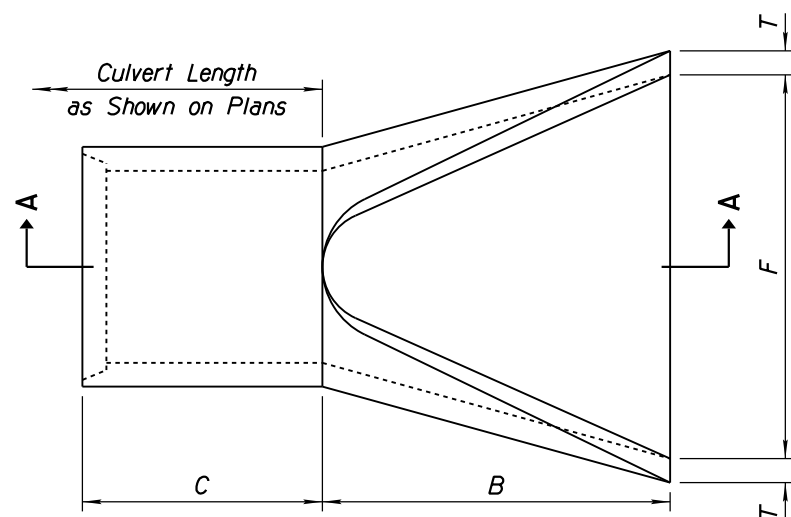
STANDARDS ENGINEER J. C. COOPER	ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION ROADWAY GROUP STANDARD DRAWING
RECOMMENDED FOR APPROVAL GROUP MANAGER M. DENBLEYKER	
APPROVED	DRAWING NO. TYPICAL PIPE INSTALLATION
STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION	DATE 08/23 C-13.15

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

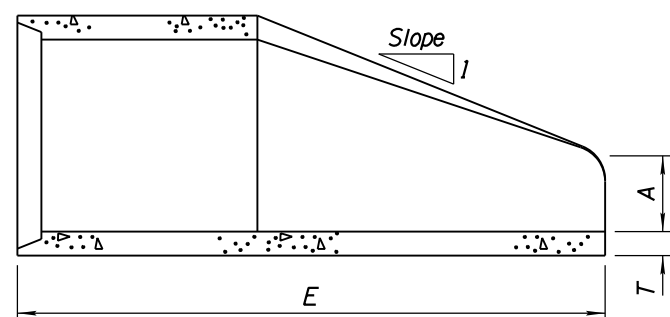
GENERAL NOTES

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

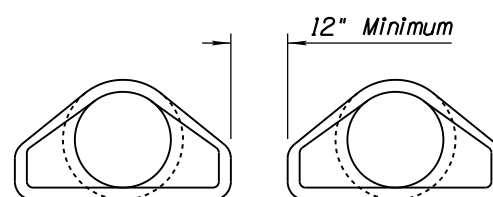
Pipe Diameter (In)	Approximate Weight (Lbs)	Dimensions (In)						Approximate Slope
		T	A	B	C	E	F	
24	1520	3	9 1/2	43 1/2	30	73 1/2	48	3
27	1930	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3
30	2190	3 1/2	12	54	19 3/4	73 3/4	60	3
36	4100	4	15	63	34 3/4	97 3/4	72	3
42	5380	4 1/2	21	63	35	98	78	3



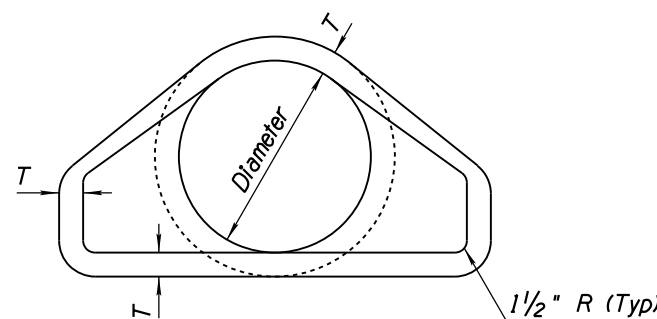
PLAN



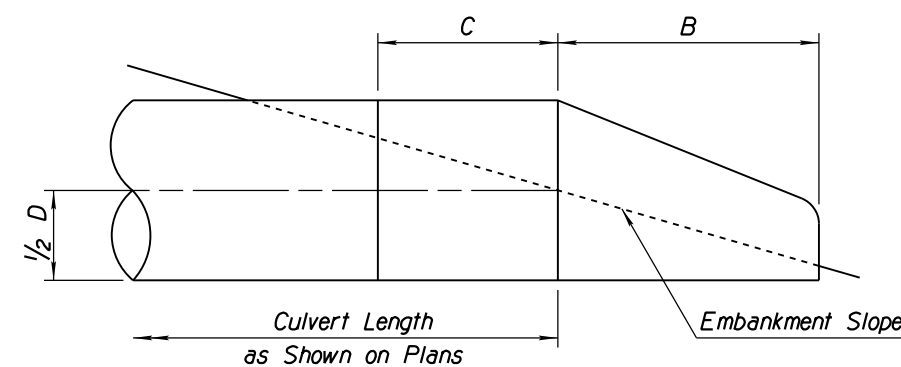
SECTION A-A



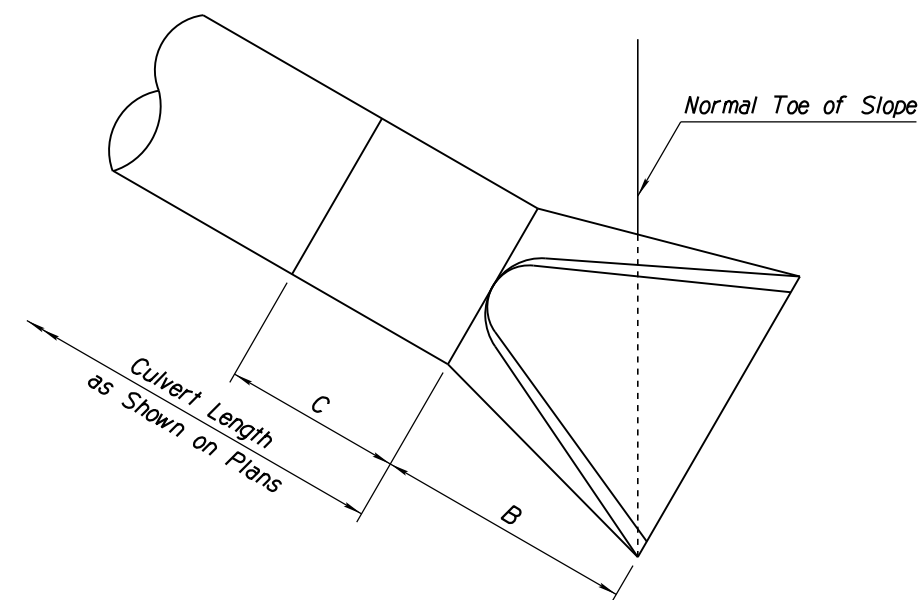
SPACING FOR MULTIPLE INSTALLATION



FRONT ELEVATION



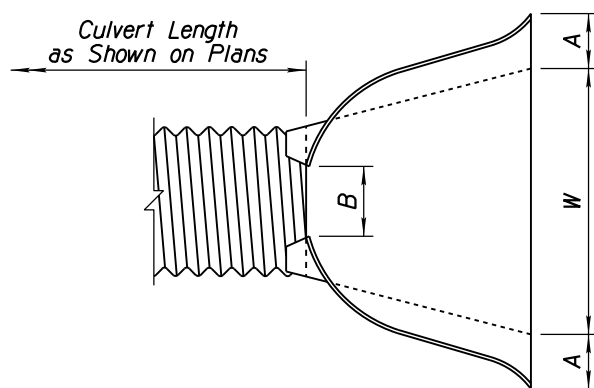
RIGHT-ANGLE CULVERT



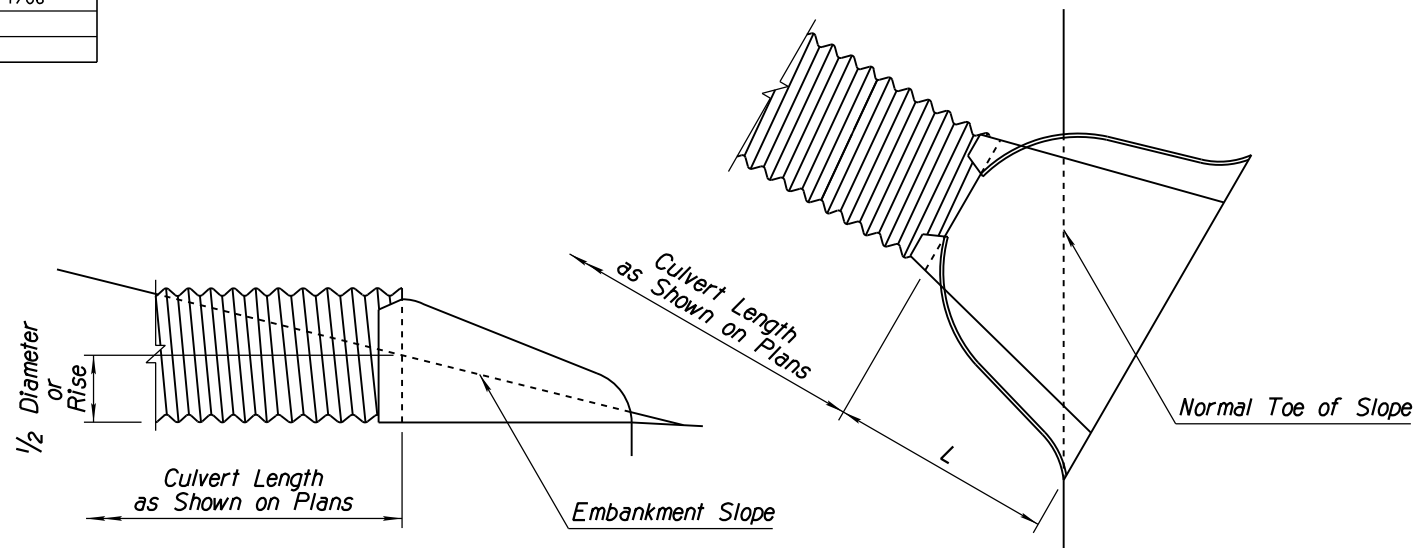
SKewed CULVERT

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			



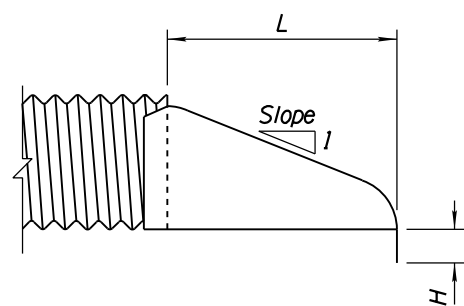
RIGHT ANGLE CULVERT



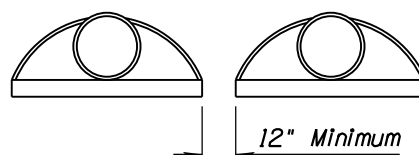
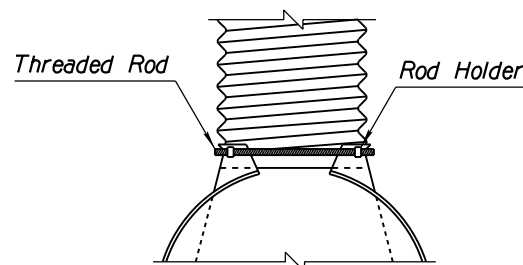
SKewed CULVERT

GENERAL NOTES

1. 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.
2. 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.
3. Type 2 and 3 connectors shall only be used with annular or helical pipe with a requisite number of annular corrugations.
- ② 4. Type 4 connector shall only be used with helical pipe.
5. All steel end section components shall be galvanized.
6. Toe of embankment shall be warped to match toe of skewed end section.
7. A berm shall be added to abnormal projections per Std Dwg C-13.10.
8. The foregoing applies to all cross-section configurations.

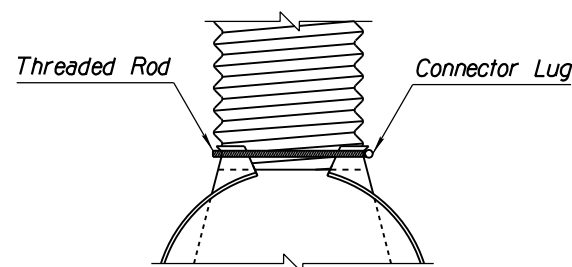


TYPE 2
THREADED ROD CONNECTIONS

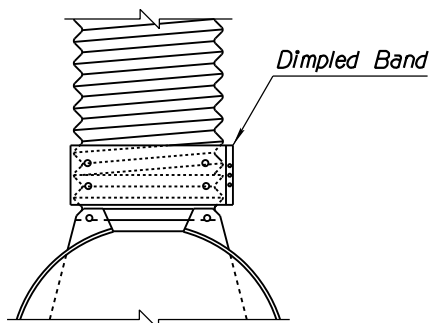


SPACING FOR MULTIPLE
INSTALLATION

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

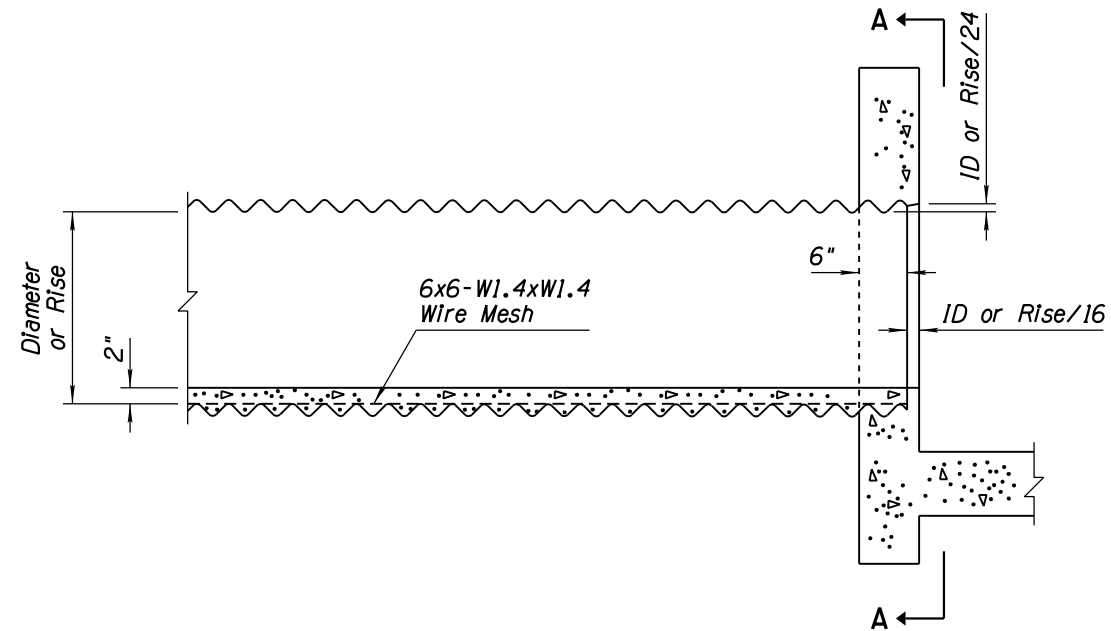


TYPE 4
DIMPLED BAND CONNECTIONS

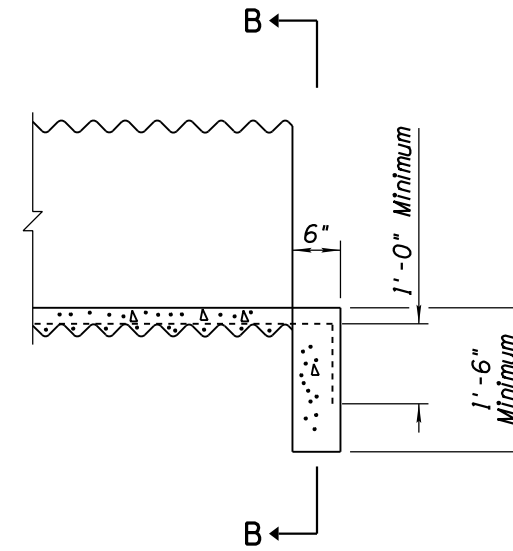
Pipe Arch			Dimensions (In)					Approximate Slope	Connection Type
Span (In)	Rise (In)	Gauge	A ±1	B Max	H ±1	L ±1 1/2	W ±2		
21	15	16	7 1/2	11	6	24	36	2 1/2	2, 3, 4
28	20	16	8	16	6	32	48	2 1/2	2, 3, 4
35	24	14	10	16	6	39	60	2 1/2	2, 4
42	29	14	12	12	7 1/2	46	75	2 1/2	2, 4
49	33	12	13 1/2	20	9	53	84	2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

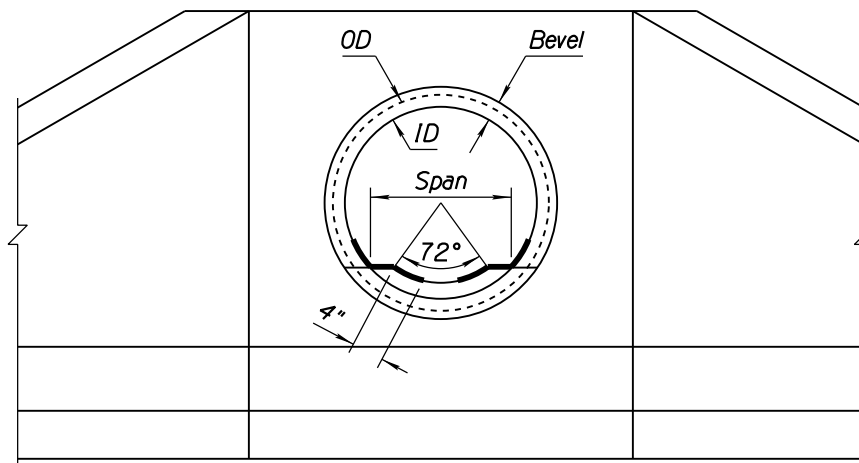


PROJECTING INSTALLATION

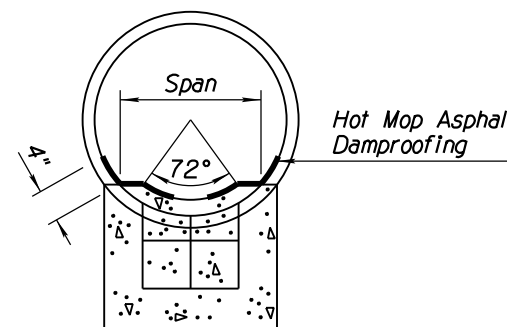
GENERAL NOTES

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



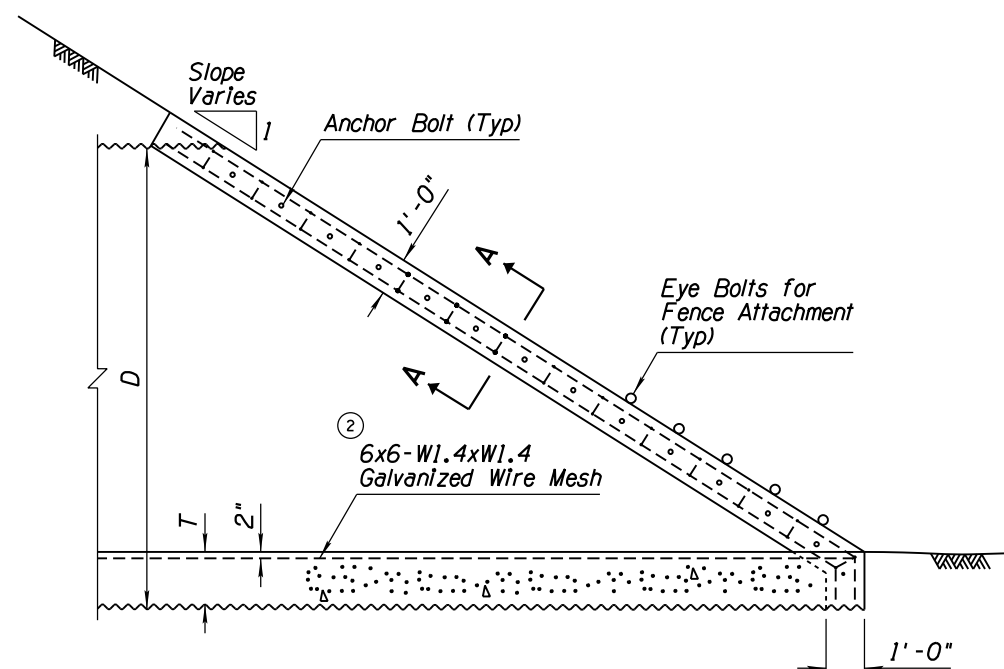
SECTION B-B

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

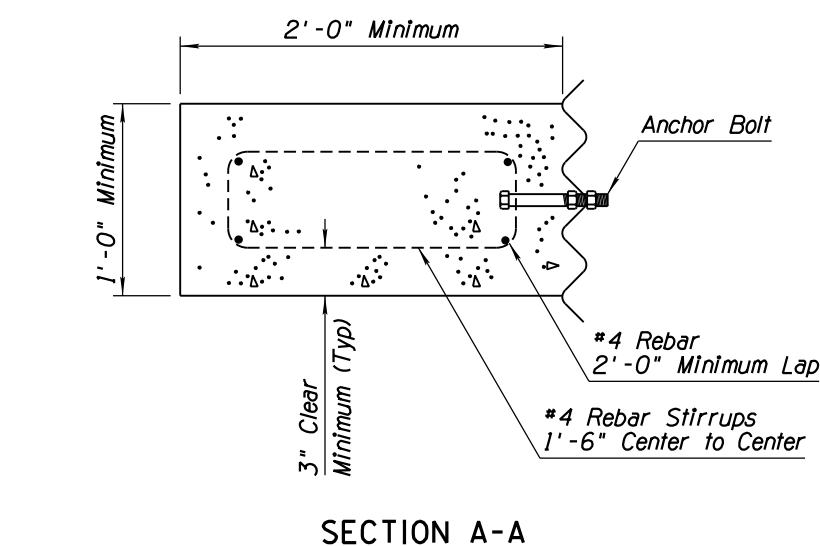
1. This end treatment is to be used only for those cattle and/or vehicle passes not used for drainage.
2. All concrete shall be Class B. An optional 12" AB invert paving base course and 6" of concrete may be used in the 144" diameter pipe.
3. Anchor bolts shall be retained in a horizontal position during 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.



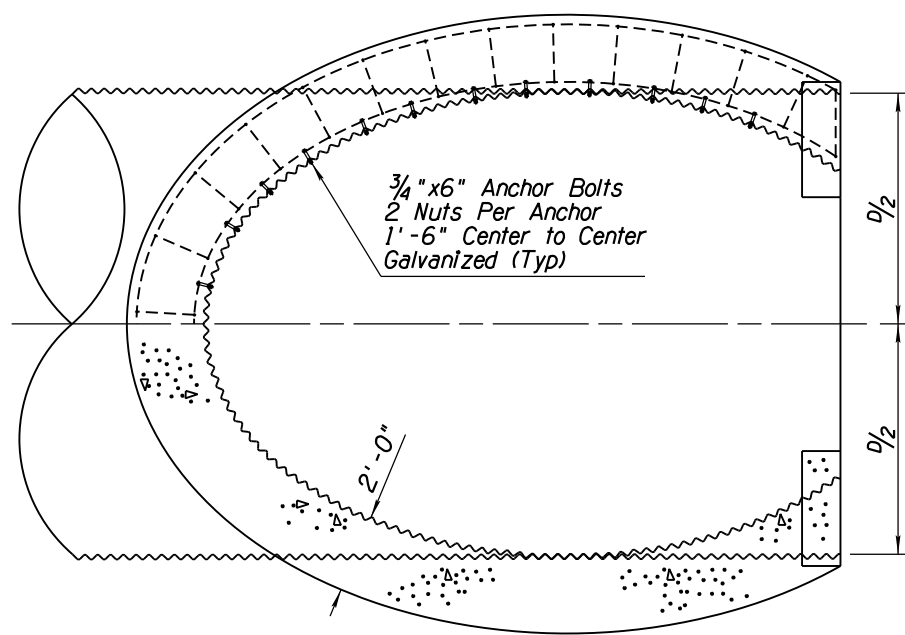
LONGITUDINAL SECTION

①

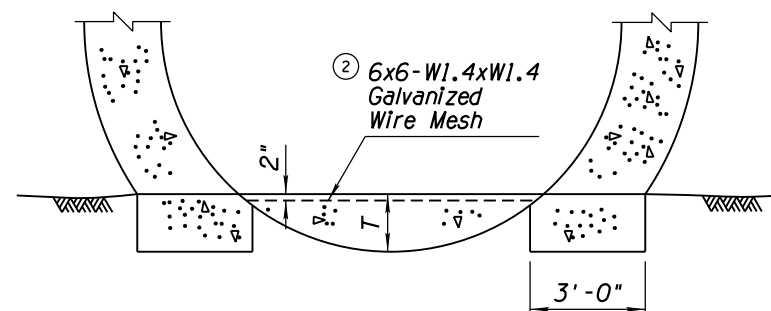
	D (In)	T (In)
Combination Vehicle and Cattle Pass	144	18
Cattle Pass Only	120	6



SECTION A-A



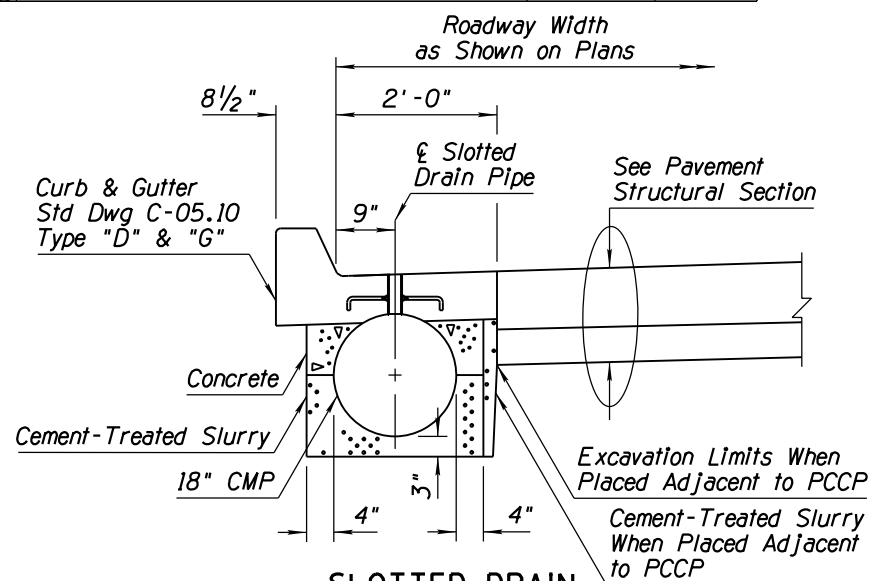
PLAN NORMAL TO SLOPE



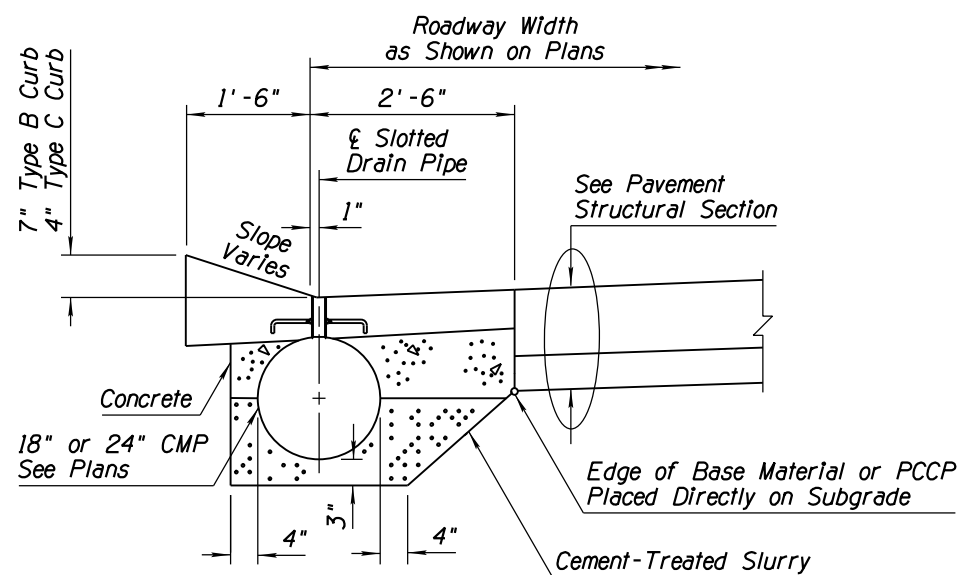
END ELEVATION

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

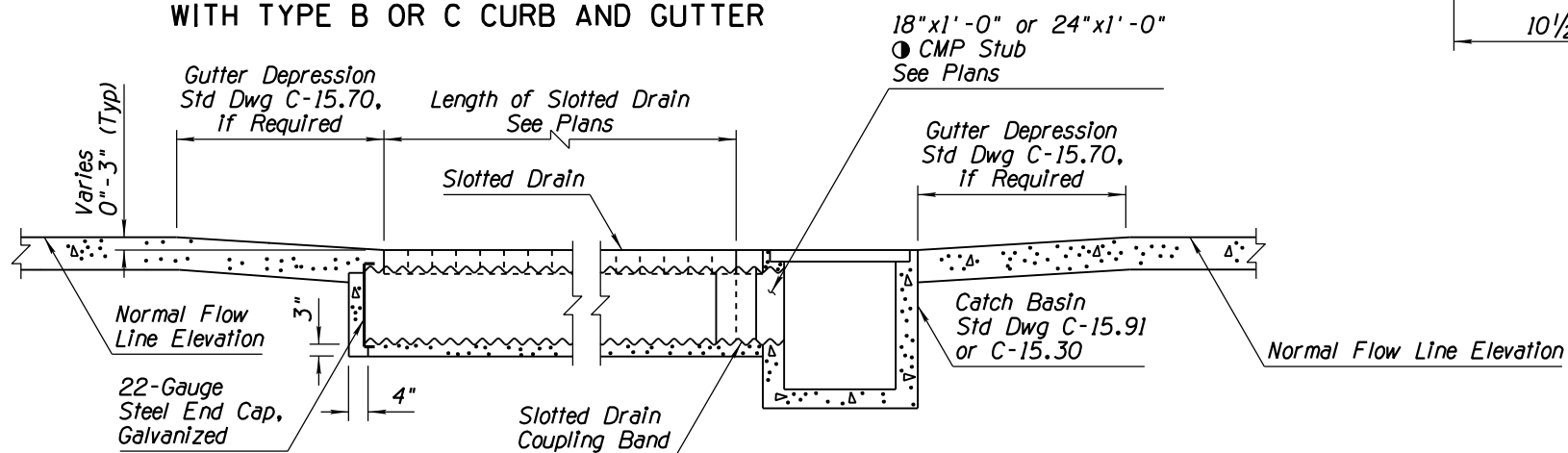
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	7/06
2			
3			
4			



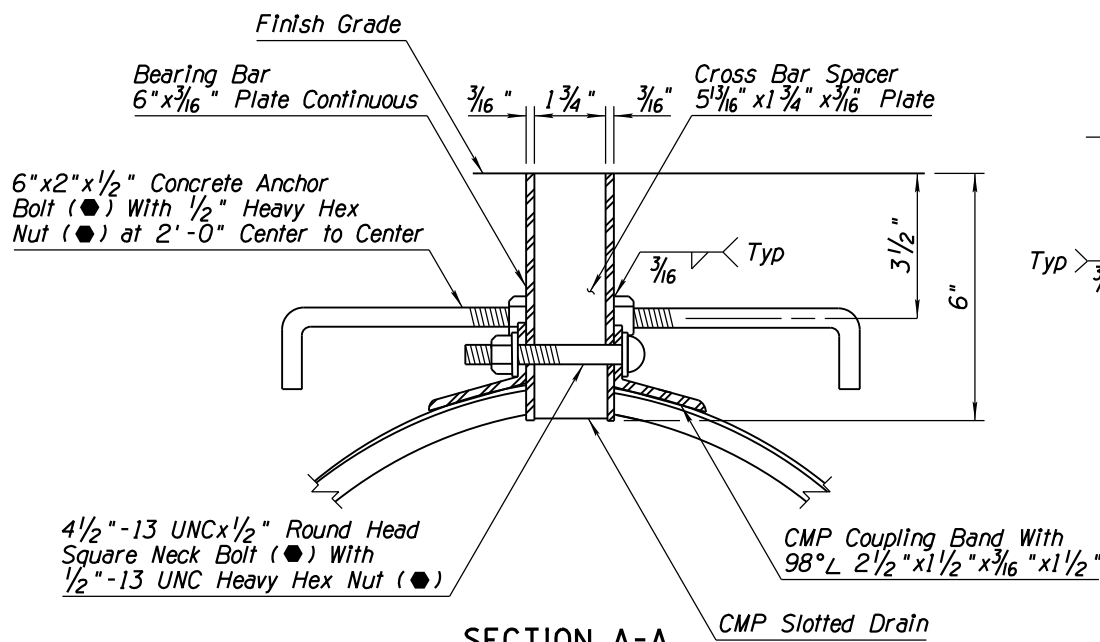
SLOTTED DRAIN WITH TYPE D & G CURB AND GUTTER



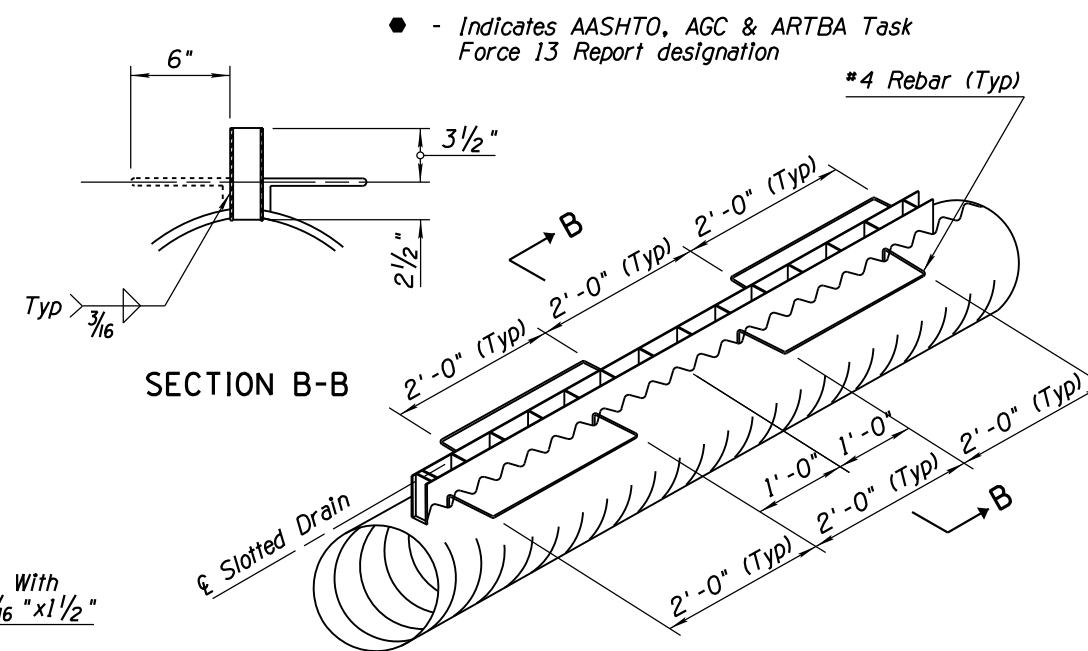
SLOTTED DRAIN WITH TYPE B OR C CURB AND GUTTER



CONNECTION TO CATCH BASIN AND END CAP



SECTION A-A



SECTION B-B

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

GENERAL NOTES

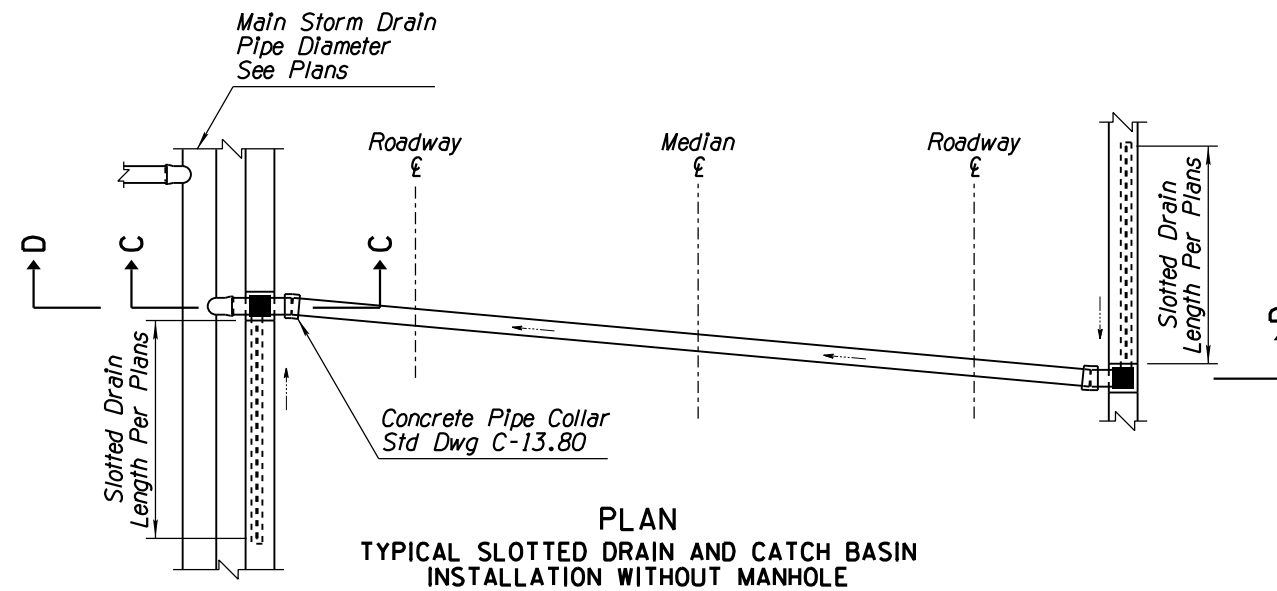
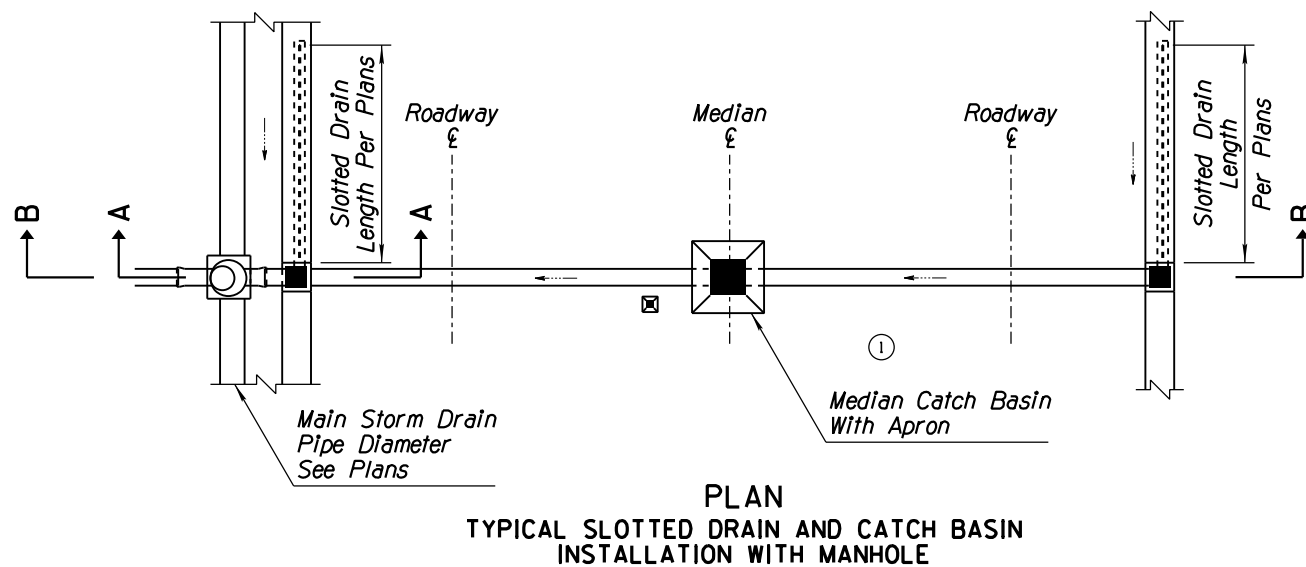
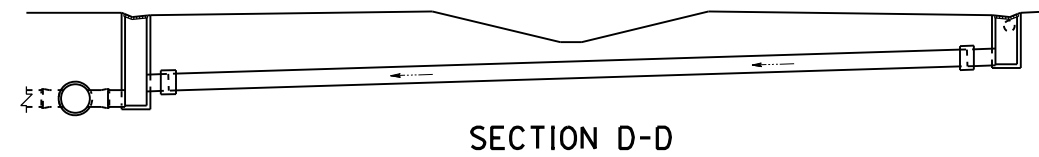
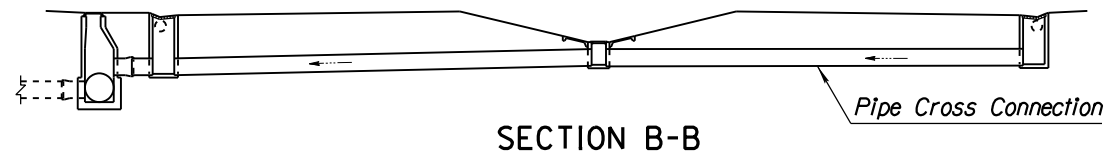
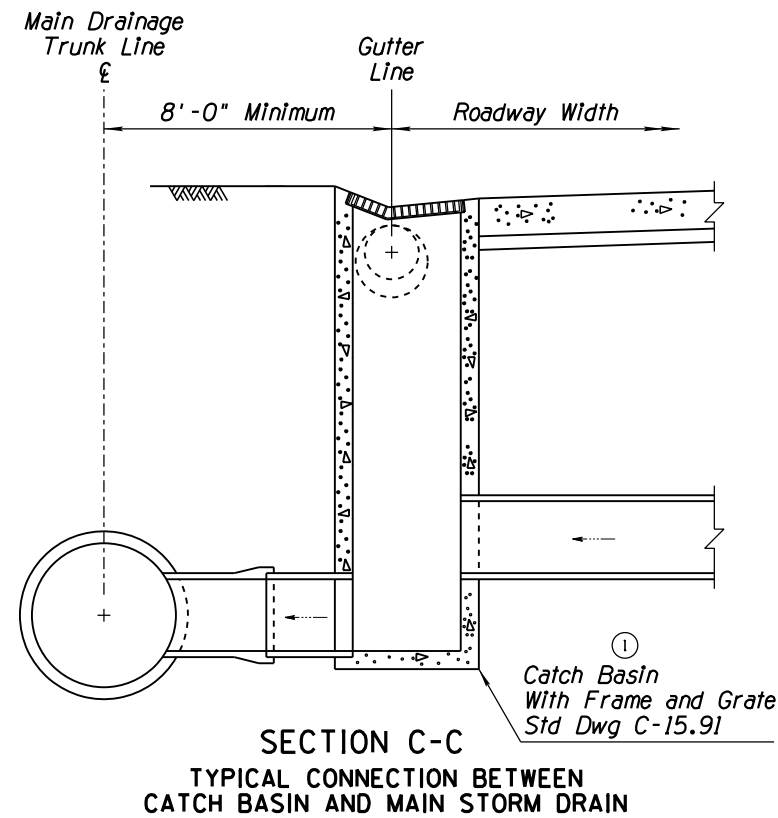
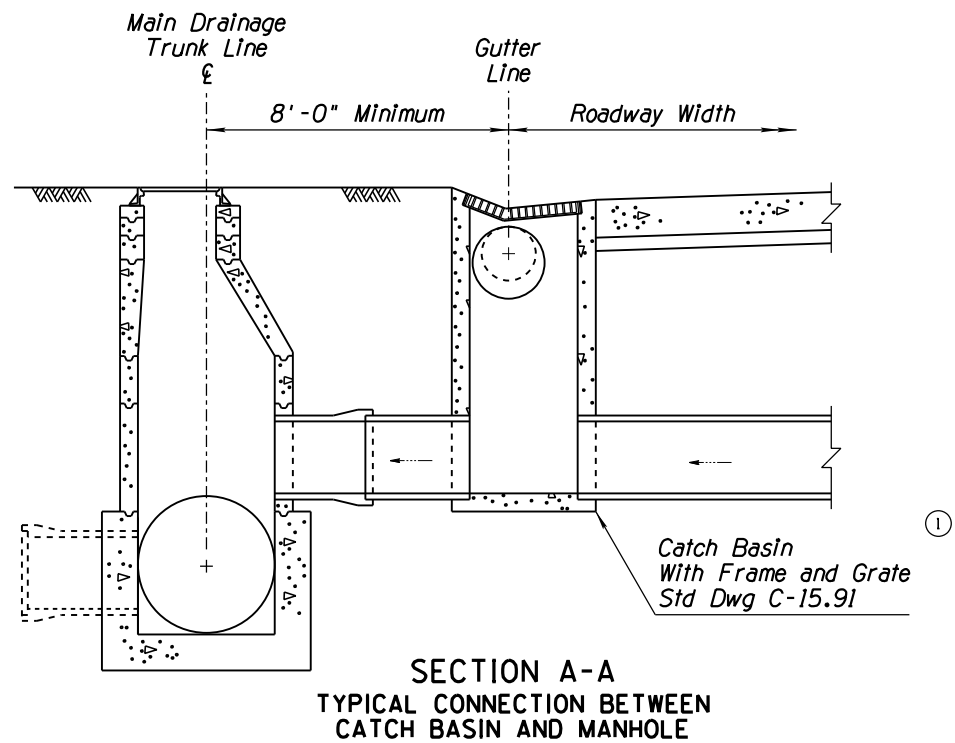
1. Slotted drain pipe shall be 2 2/3" x 1/2" corrugated steel pipe with a minimum wall thickness of 0.064" and shall conform to the requirements of AASHTO M36.
2. All concrete shall be Class B.
3. Rebar shall conform to Std Spec 1003-2.
4. Structural steel shall conform to ASTM A36.
5. Concrete anchors shall conform to ASTM A307 and hex nuts shall conform to ASTM A563 Grade A.
6. All slotted drain pipe hardware except anchor bolts and rebar shall be given two coats of Number 1 paint.
7. When annular pipe is used, apply water proof sealer before attaching coupling band.
8. When helical pipe is used, it shall be formed with at least one annular corrugation at each end of each pipe section. Water proof sealer shall be applied to the annular corrugation prior to attachment of coupling band.
9. Cover slot during construction with removable tape or other acceptable substitute.
10. Slotted drain pipe shall be clean at the time of final acceptance.
11. Concrete curb and gutter shall be paid for under the curb and gutter items.
12. See Std Dwg C-05.10 for curb and gutter details.
13. Joints in concrete curb & gutter shall match adjoining PCCP and slotted drain bands.
14. All welding shall be in accordance with Std Spec 604-3.06.
15. Bolts or rebar may be used for concrete anchoring.
 - The 18" x 1'-0" or 24" x 1'-0" CMP stub shall be included in the price of respective catch basins.

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. ① 5/12
APPROVED FOR DISTRIBUTION 	SLOTTED DRAIN DETAILS	DRAWING NO. C-13.60

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

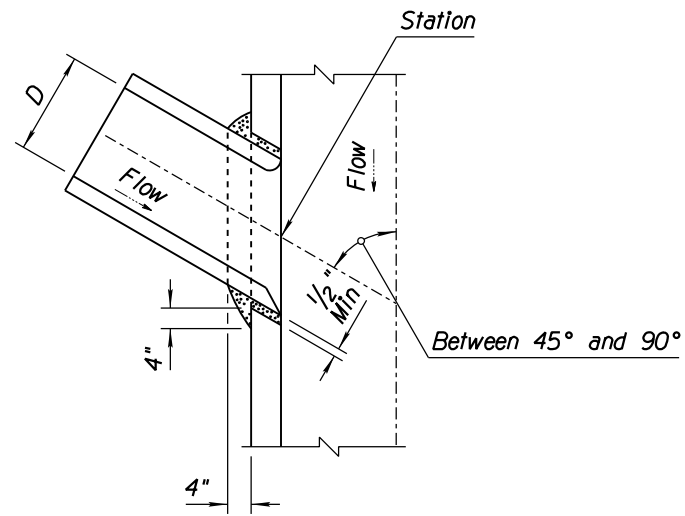
GENERAL NOTES

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.

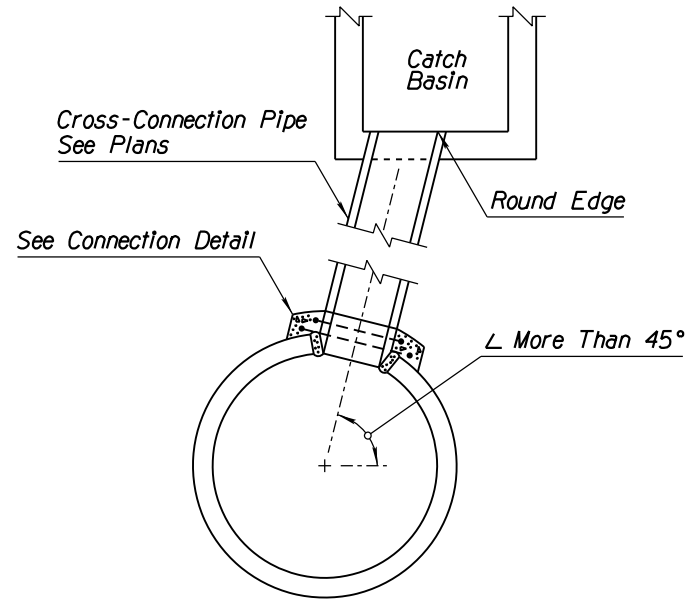


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	SLOTTED DRAIN INSTALLATION DETAILS	DRAWING NO. C-13.65

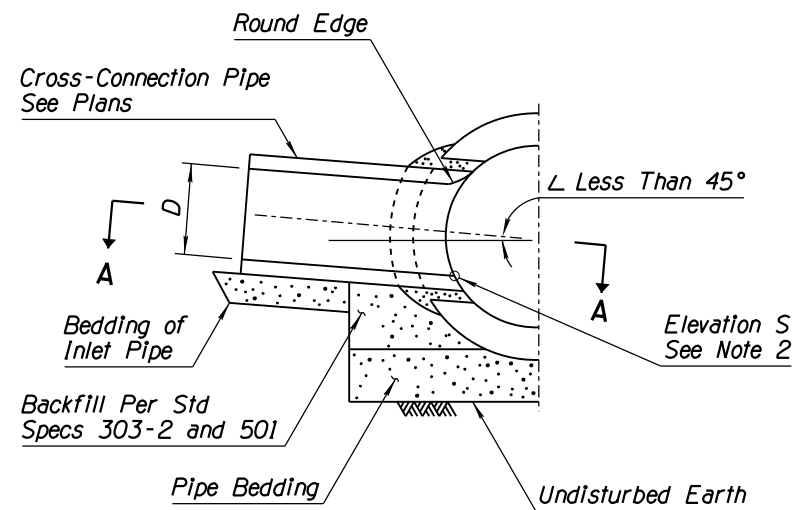
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REARRANGED STD DWG	PNB	7/94
2			
3			
4			



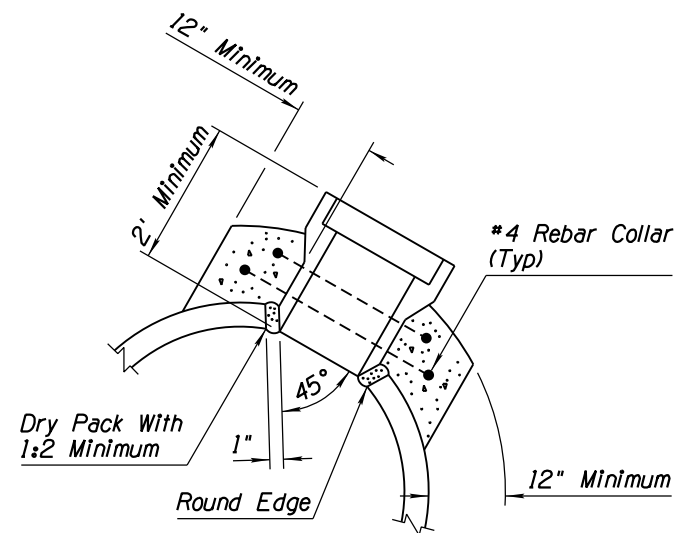
SECTION A-A



CATCH BASIN ABOVE STORM DRAIN
TYPE 2



SIDE INLET
TYPE 1



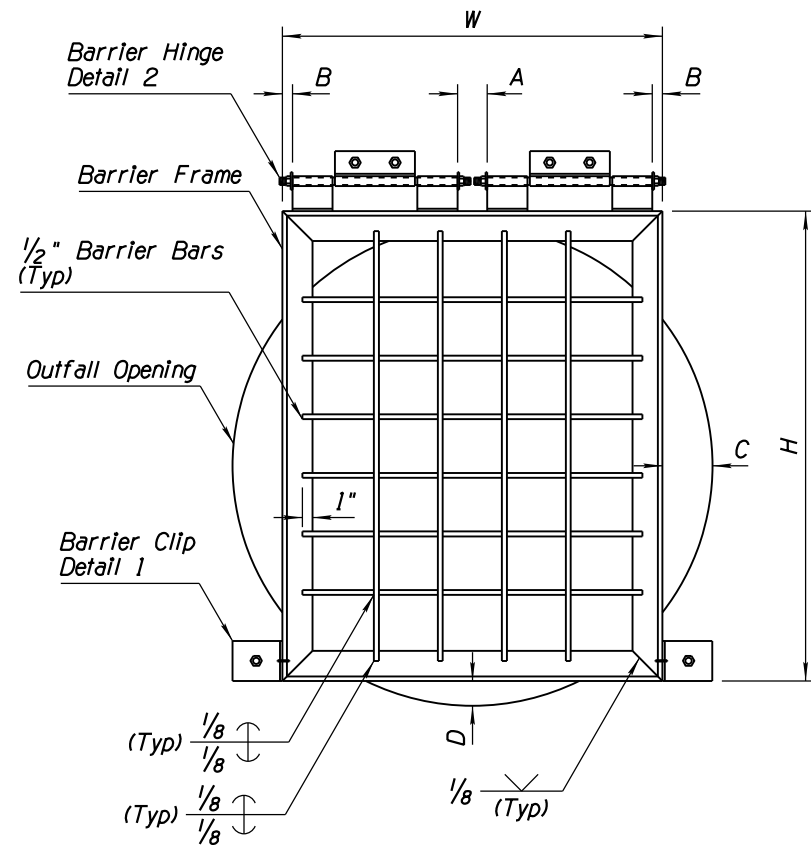
CONNECTION DETAIL
TYPE 2

GENERAL NOTES

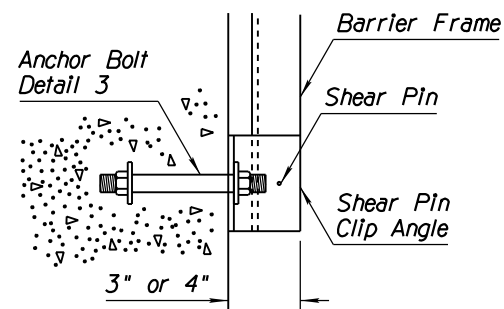
1. Prefabricated tees shall be used when the outside diameter of the inlet pipe exceeds one half of the inside diameter of the main storm drain, except when the manholes are shown on plans.
2. Centerline of the inlet pipe shall intersect the centerline of the main storm drain except when elevation "S" is shown on plans.
3. If L 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.

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

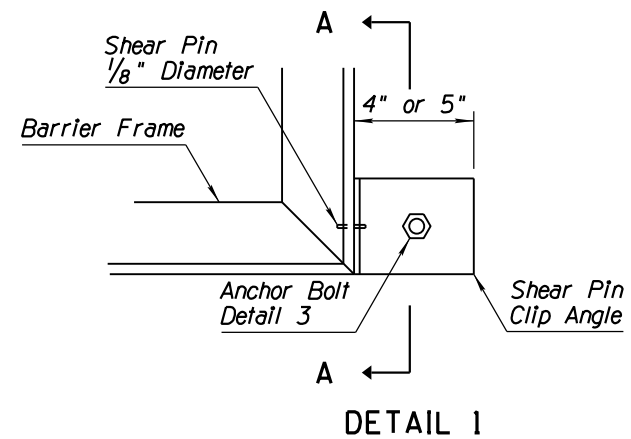
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STANDARD	RLF	9/04
2	MODIFIED TABLE MEASUREMENT FORMAT	RLF	9/04
3	MODIFIED STEEL QUANTITIES	RLF	9/04
4			



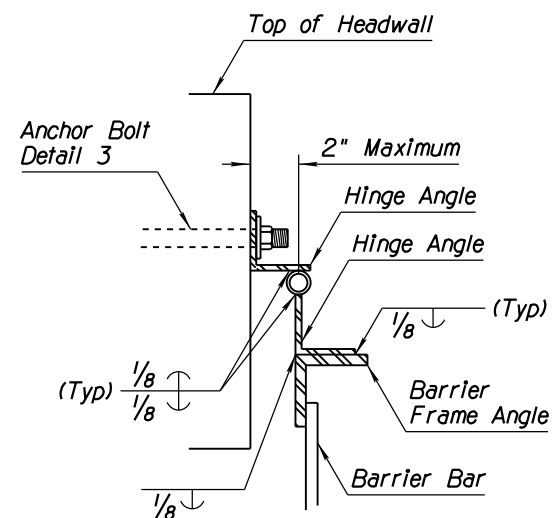
PIPE ACCESS BARRIER FRONT ELEVATION



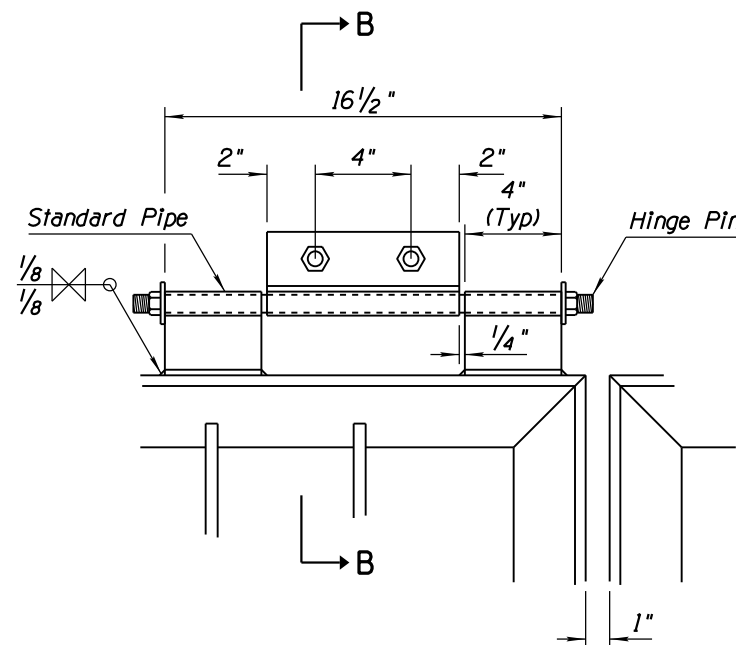
SECTION A-A



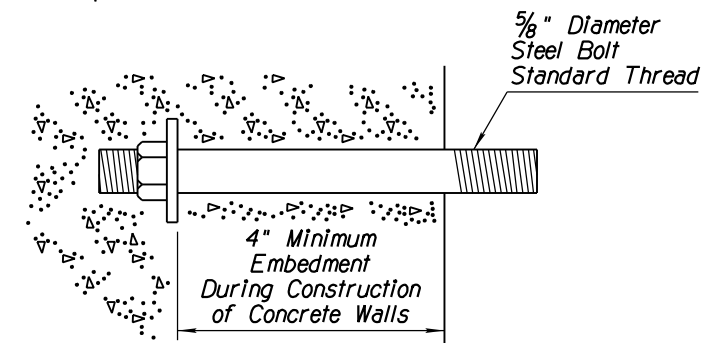
DETAIL 1



SECTION B-B



DETAIL 2



DETAIL 3

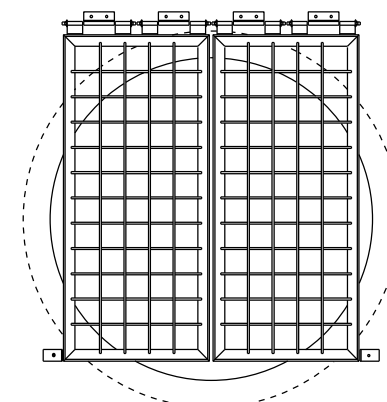
- ### GENERAL NOTES
- All shear pin angles shall fit snug and true to face. Cover with waterproof grease prior to installation of pin.
 - Shear pin holes in the angle shall be drilled for a tight fit of the pins.
 - Both ends of the shear pins shall be peened after installation.
 - Shear pin material shall be commercially pure aluminum wire alloy 1100, Temper 0, 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



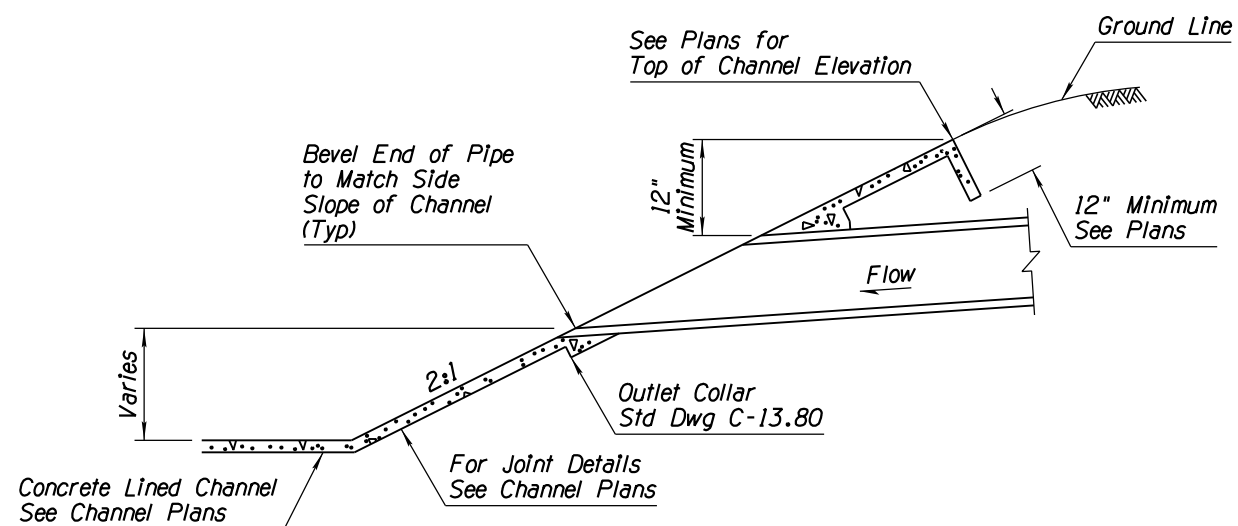
INSTALLATION DETAIL FOR DOUBLE GATES

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

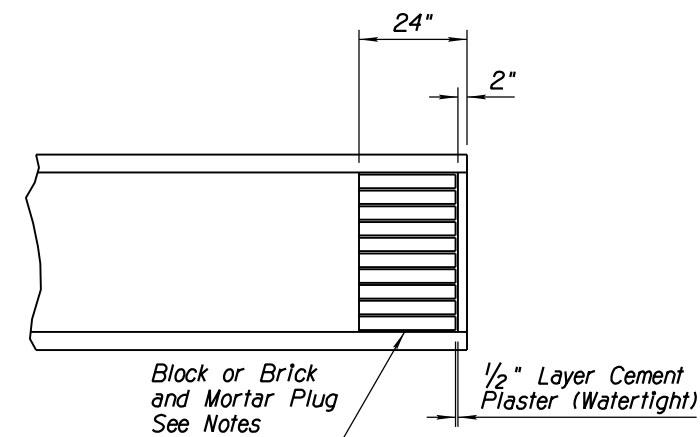
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STANDARD FROM C-13.75, SHEET 2	RLF	9/04
2			
3			
4			

GENERAL NOTES


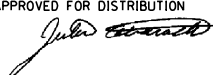
1. Compact soil at end of pipe plug to 95% of maximum density.
2. If depth of cover is less than 5' or greater than 10', increase plug thickness a minimum of 4".



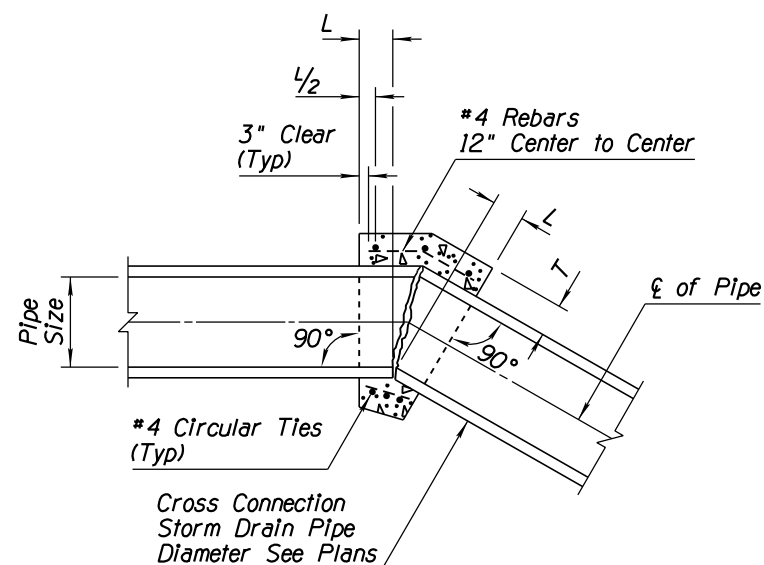
DRAINAGE OUTLET INTO CHANNEL



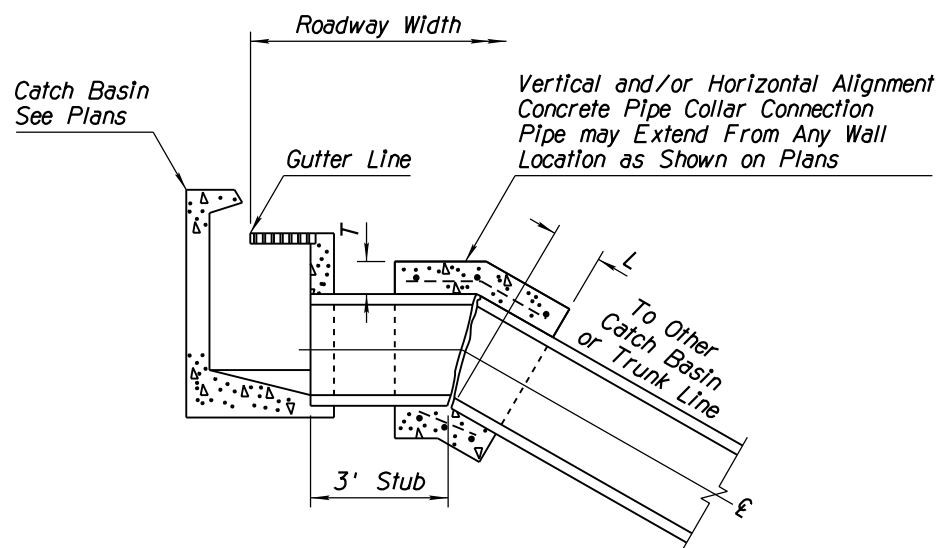
STORM DRAIN PLUG

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)

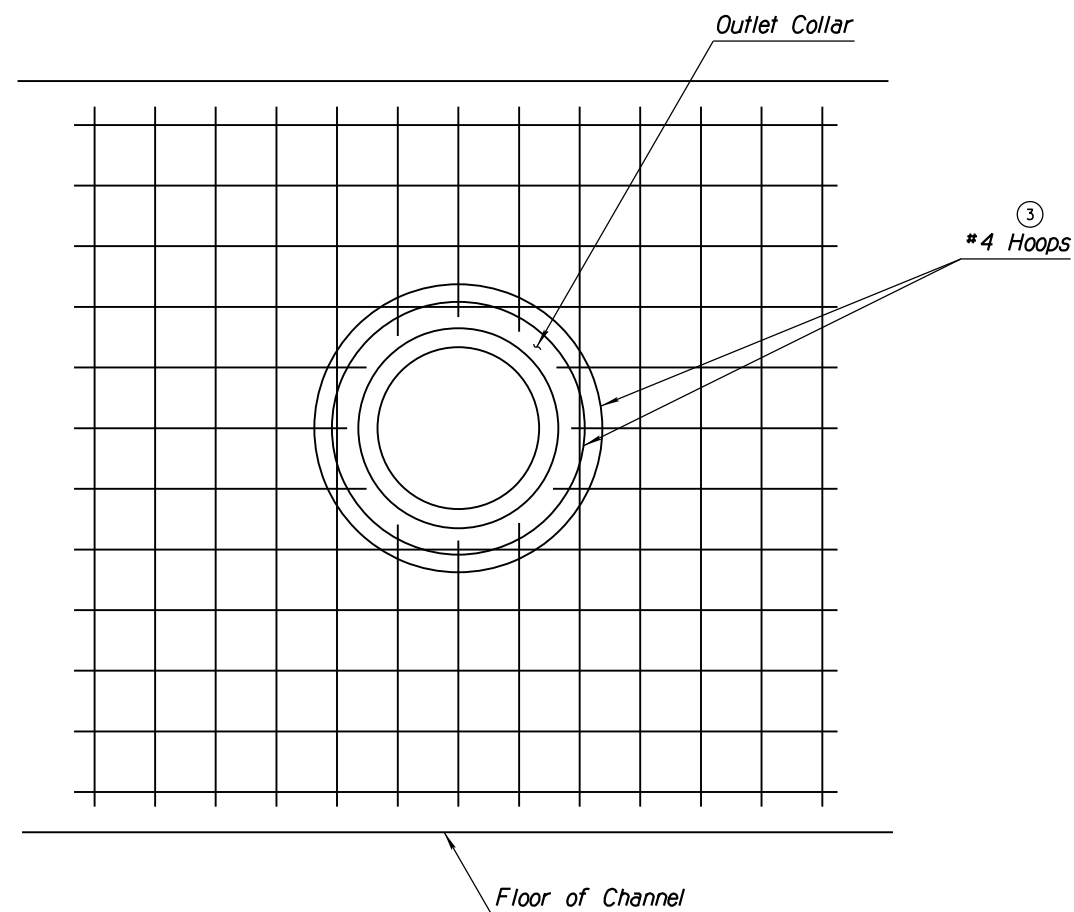
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	MODIFIED TABLE VALUES	RLF	9/04
2	MODIFIED GENERAL NOTE 2	RLF	9/04
3	ADDED CALLOUT	RLF	9/04
4			



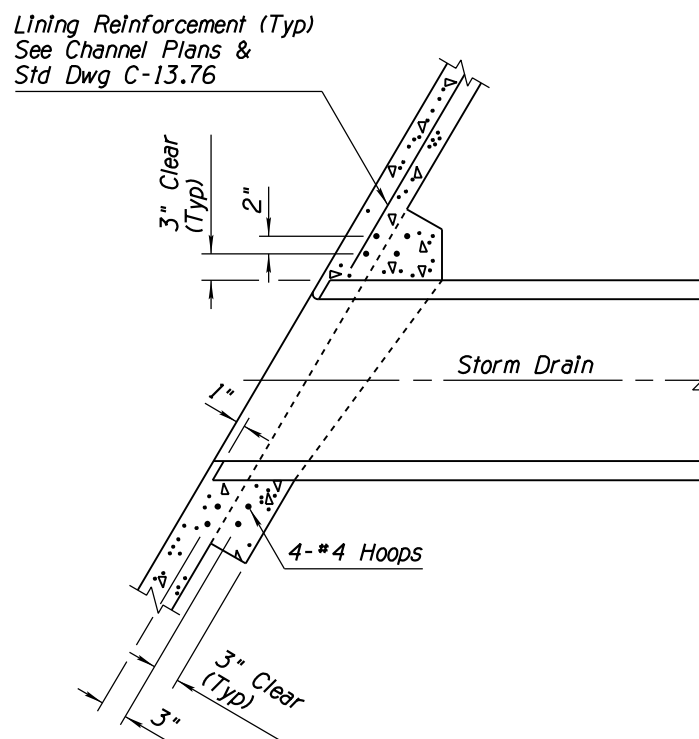
CONCRETE PIPE COLLAR



TYPICAL LATERAL CONNECTIONS TO CATCH BASINS WITH CONCRETE COLLARS



OUTLET COLLAR DETAIL



GENERAL NOTES

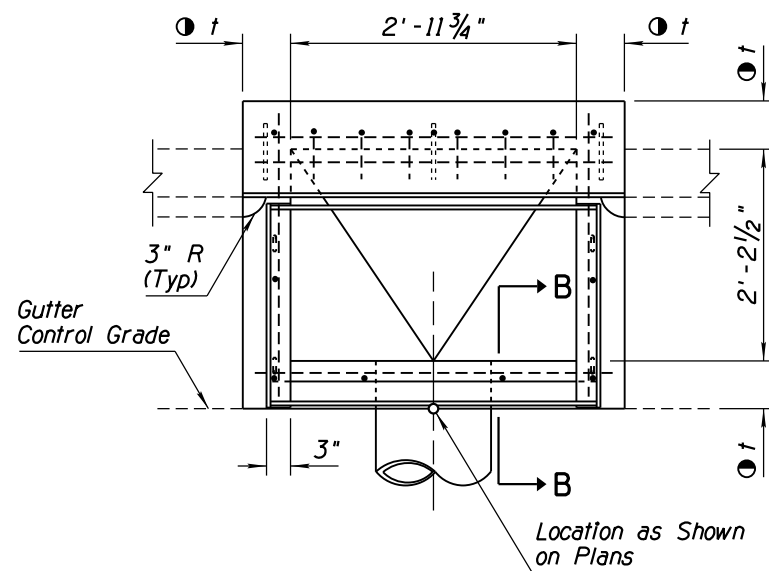
1. All concrete shall be Class B.
2. All rebar shall conform to Std Spec 1003-1.2.
3. All rebar shall have 3" minimum clear cover.
4. A concrete collar shall be required where pipes of different diameters or materials are joined or where the design change in alignment or grade exceeds that allowed for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

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

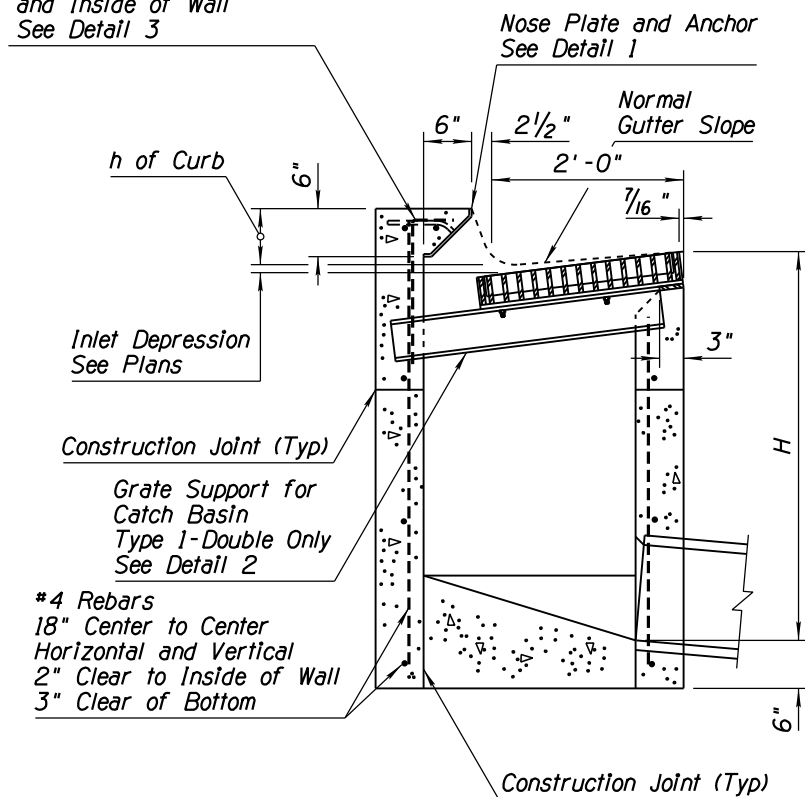
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	PIPE COLLAR DETAILS	DRAWING NO. C-13.80

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			

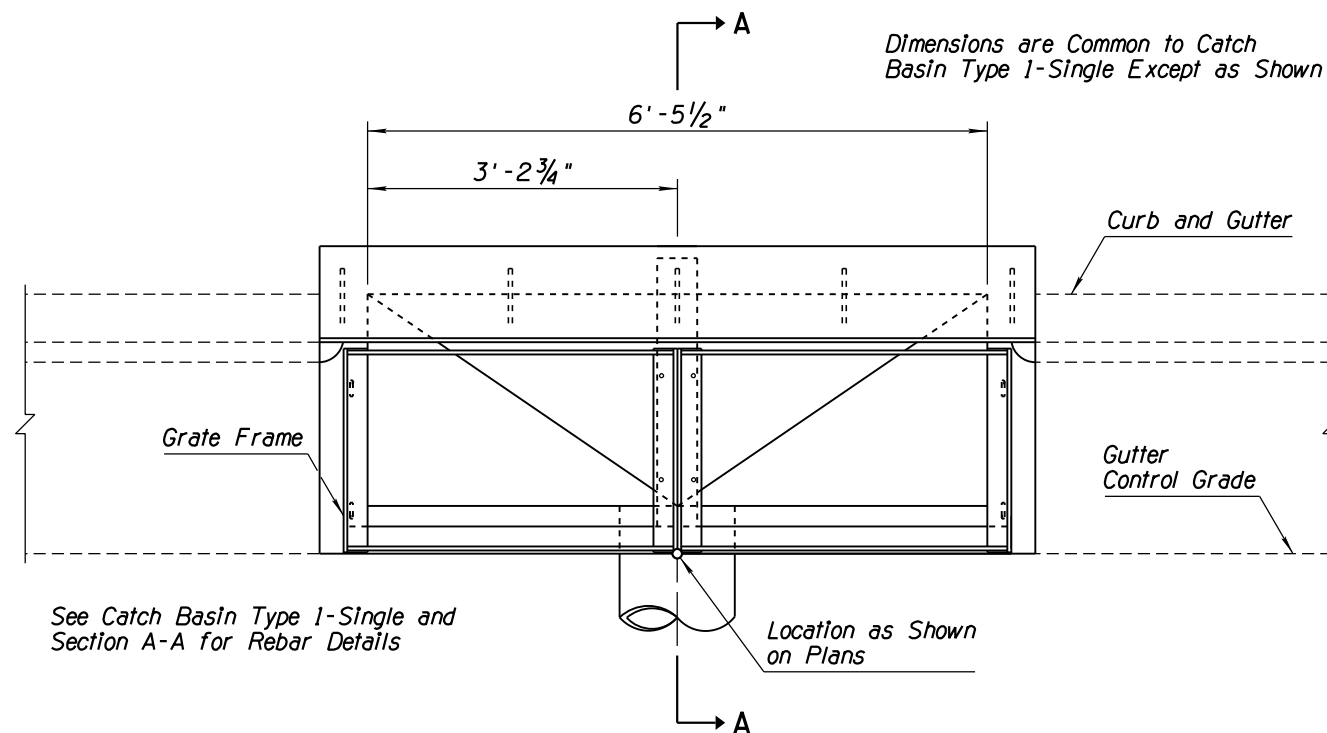


PLAN - CATCH BASIN TYPE 1 - SINGLE

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



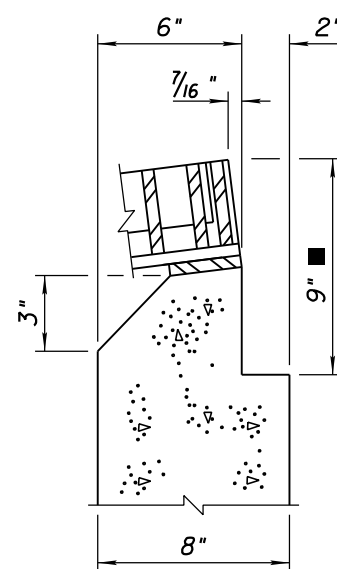
SECTION A-A



PLAN - CATCH BASIN TYPE 1 - DOUBLE

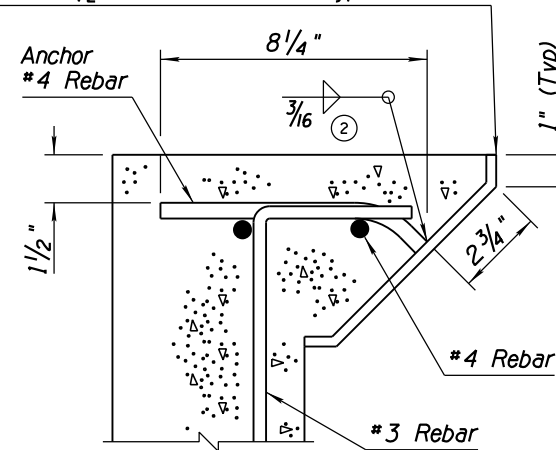
See Catch Basin Type 1-Single and Section A-A for Rebar Details

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

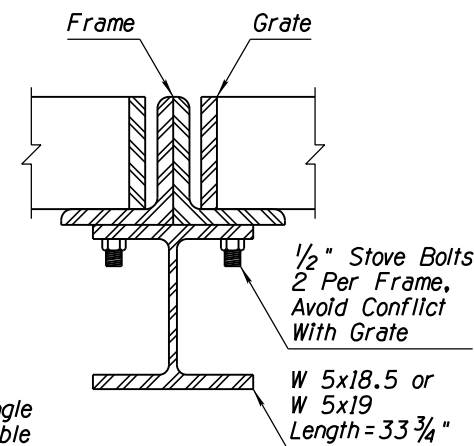


SECTION B-B
USE THIS SECTION
WHEN t=8"

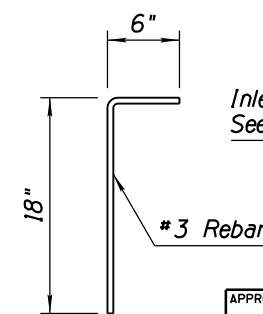
Nose Plate
8" x 5/16" Bent Plate
Length: 2'-11 3/4" + 2t for CB Type 1-Single
6'-5 1/2" + 2t for CB Type 1-Double



DETAIL 1



DETAIL 2

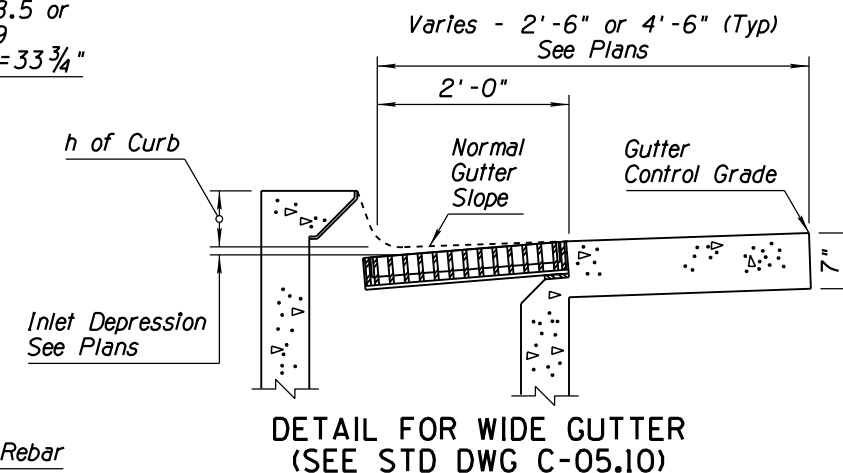


DETAIL 3

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

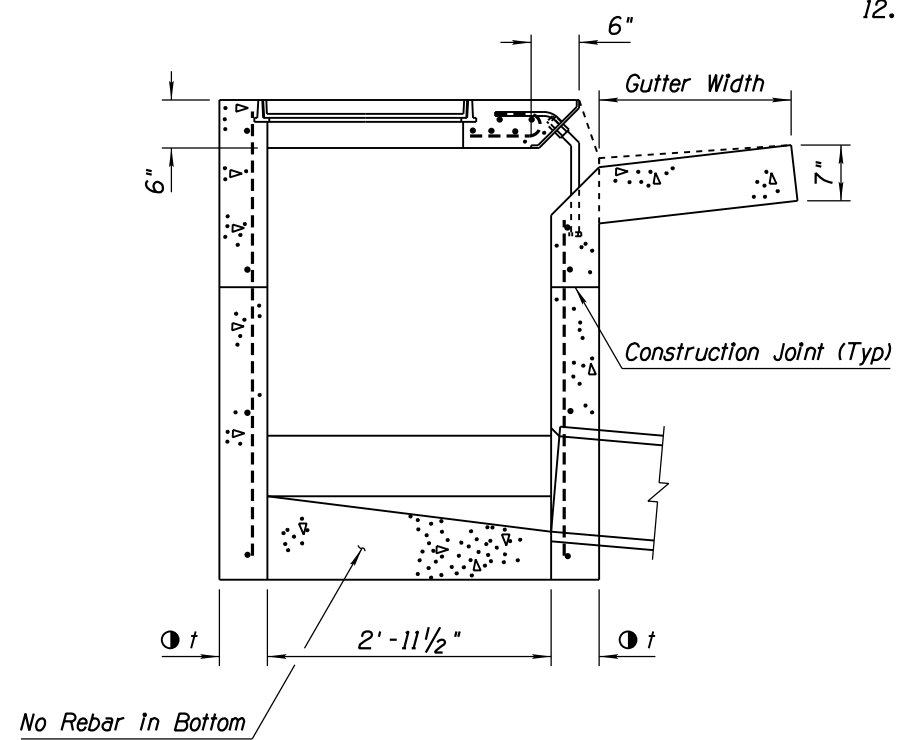
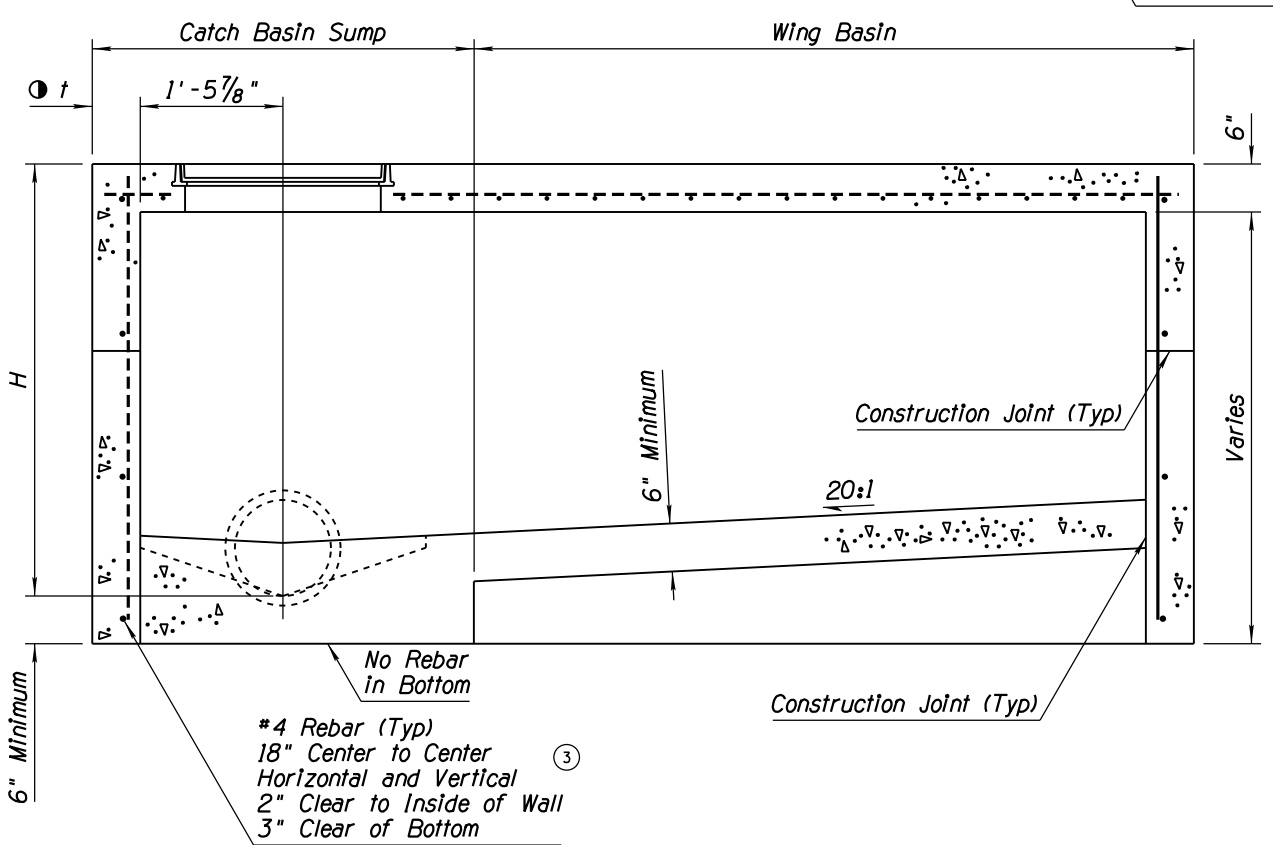
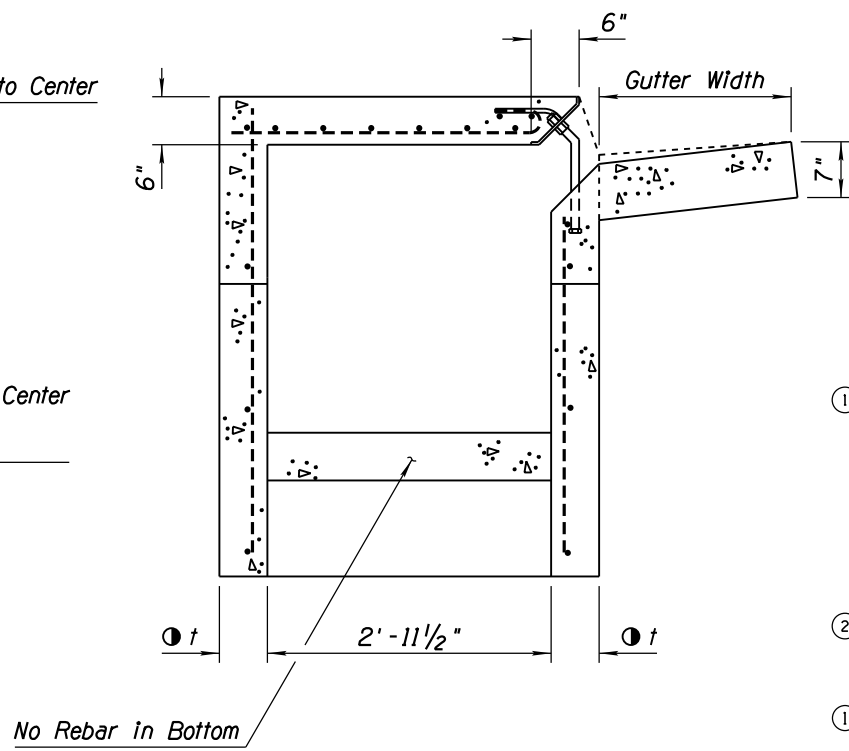
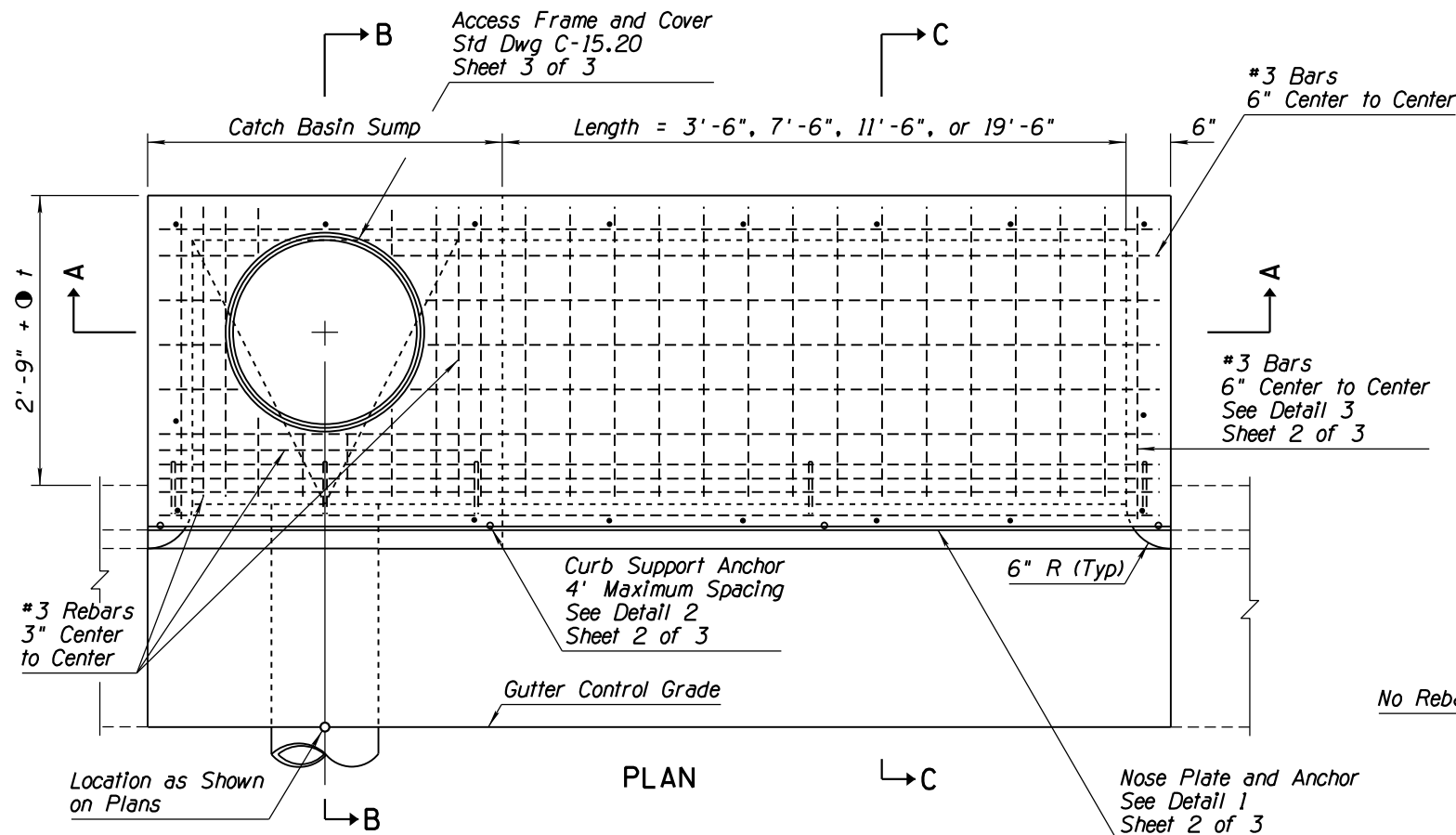


DETAIL FOR WIDE GUTTER
(SEE STD DWG C-05.10)

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

GENERAL NOTES

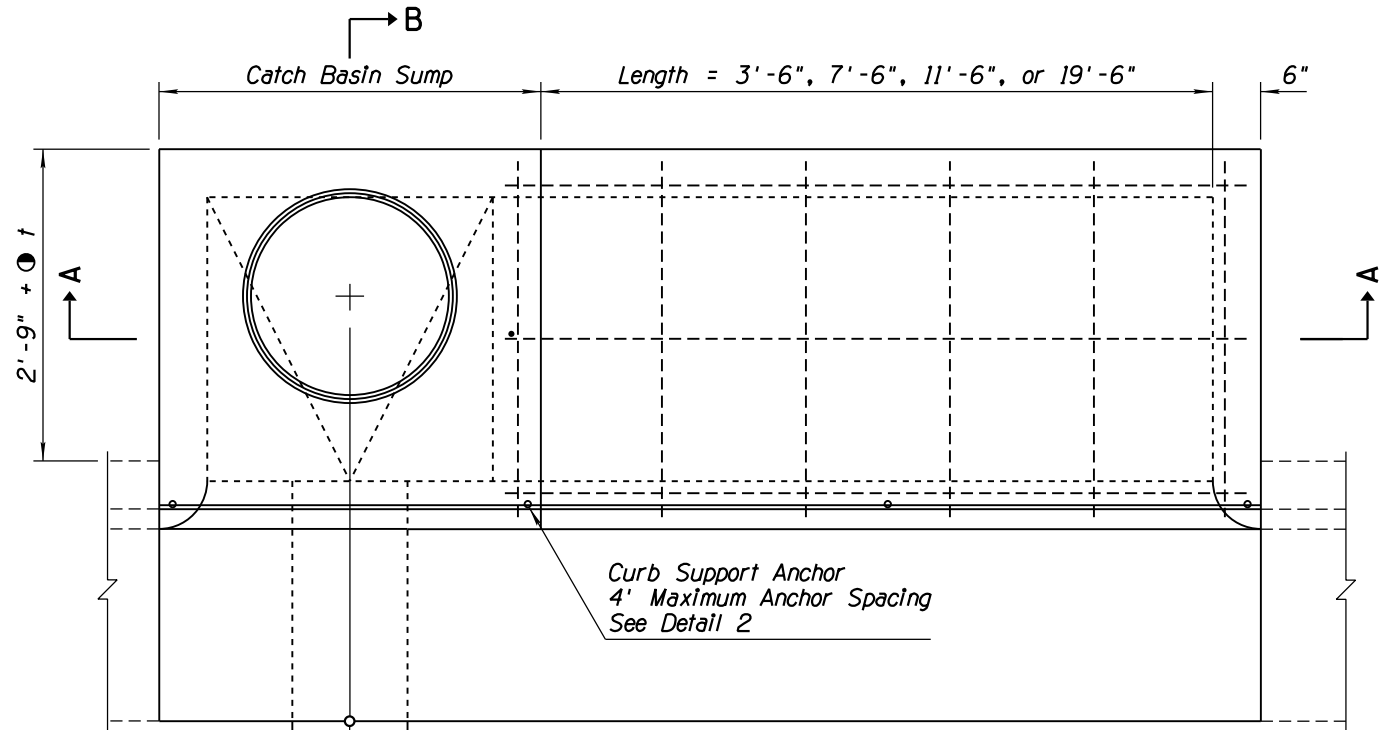
- Catch basin can be used on grade or at roadway sag.
- Catch basin has three configurations:
 Sump Only-Sump portion of catch basin (See Detail 4, Sheet 2 of 3).
 Single Wing (Illustrated)-Sump with wing basin upstream.
 Double Wing-Sump with symmetrical wing basins each side.
- Pipes can be placed 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'.



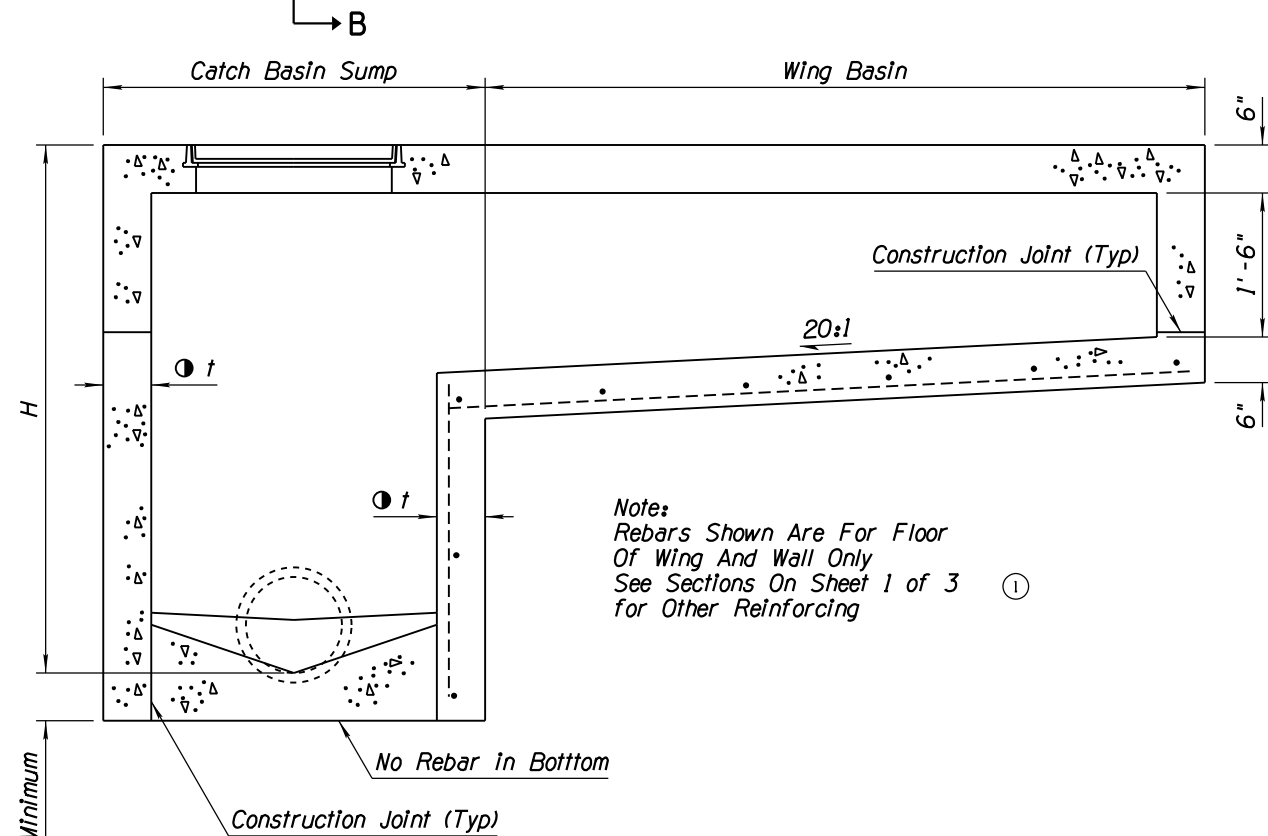
USE THIS SECTION WHEN H=5' OR LESS

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

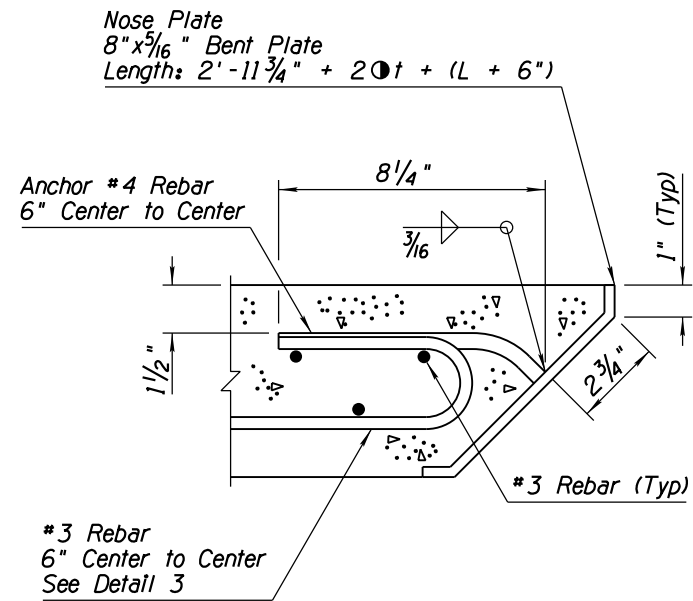
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED SHEET NUMBER REFERENCE	RLF	5/07
2			
3			
4			



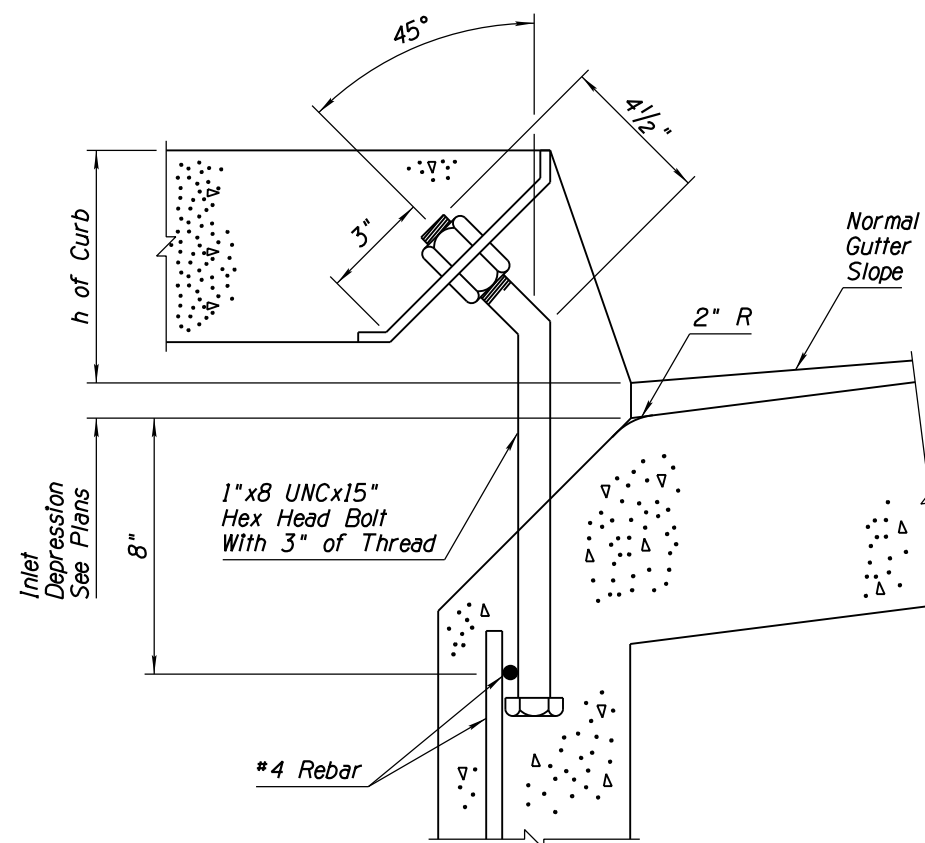
PLAN



SECTION A-A
USE THIS SECTION WHEN H IS GREATER THAN 5'

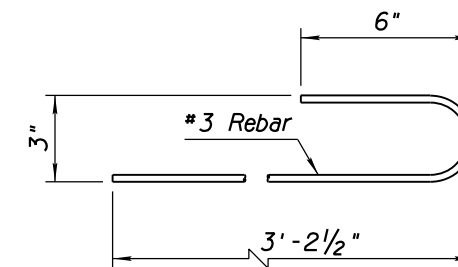


DETAIL 1

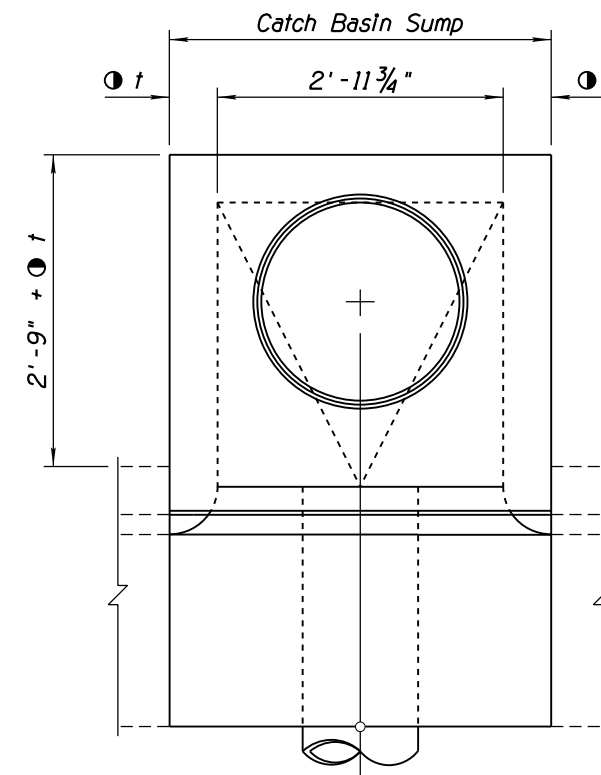


DETAIL 2
CURB SUPPORT ANCHOR

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



DETAIL 3



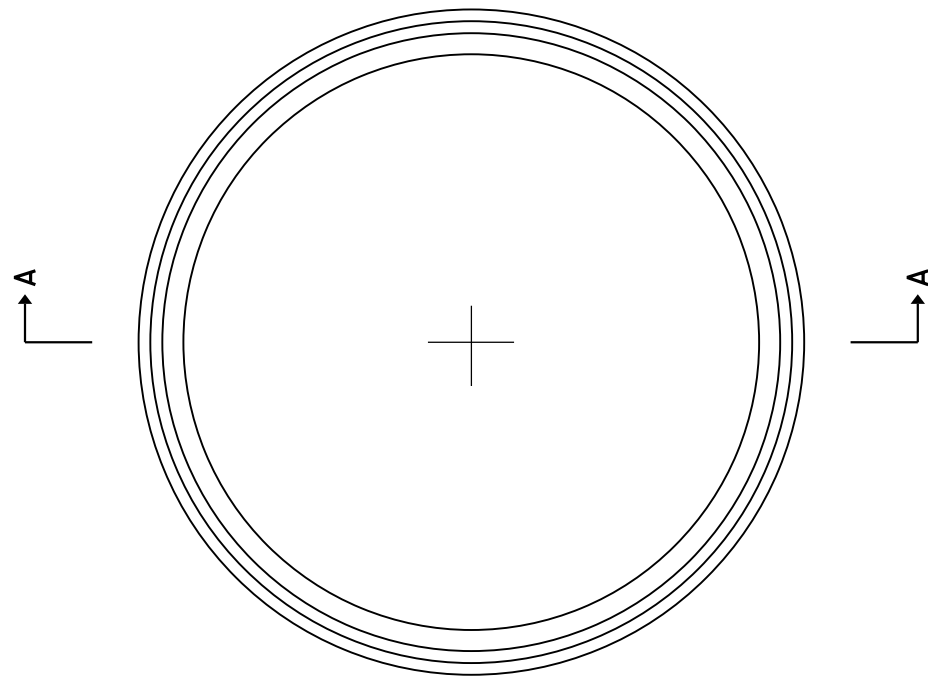
DETAIL 4

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

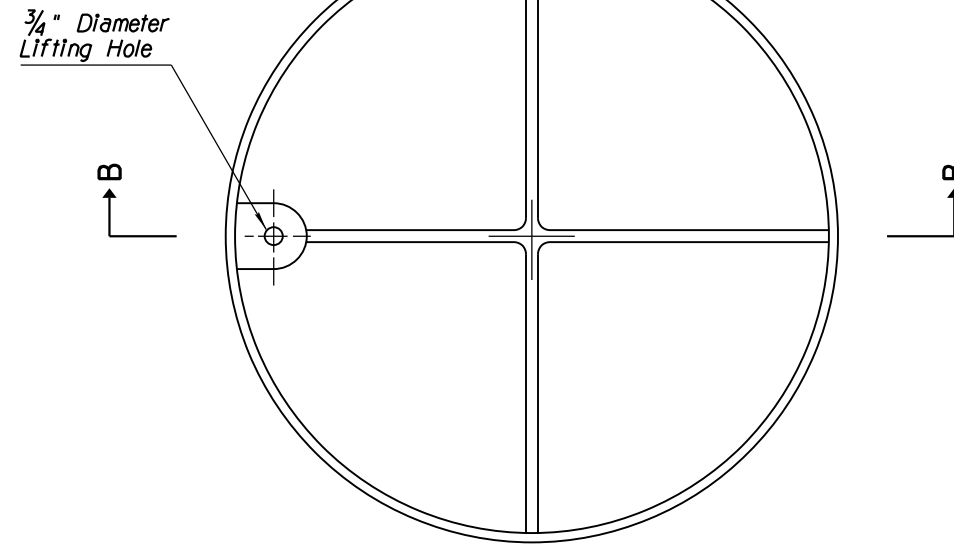
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STANDARD FROM C-15.65 TO C-15.20, SHEET 3 OF 3	RLF	9/04
2			
3			
4			

GENERAL NOTES

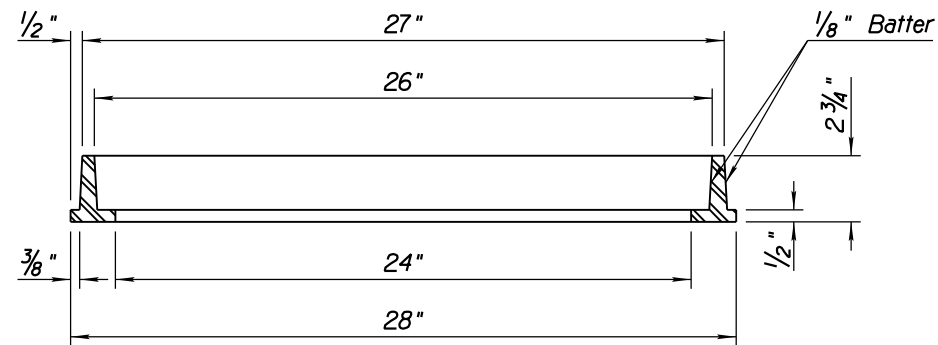
1. Cover shall be non-locking.
2. Frame and cover shall be cast iron or structural steel.
3. Catch basin access frame and cover is for use in sidewalk area only.
4. Cover shall be filled with concrete and broom finished.



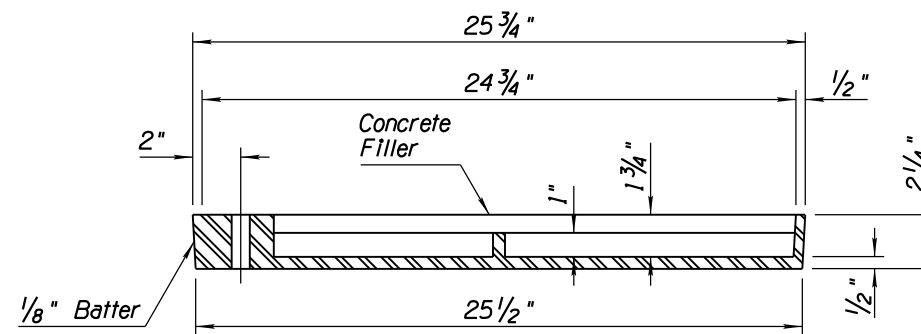
PLAN



PLAN



SECTION A-A
FRAME



SECTION B-B
COVER

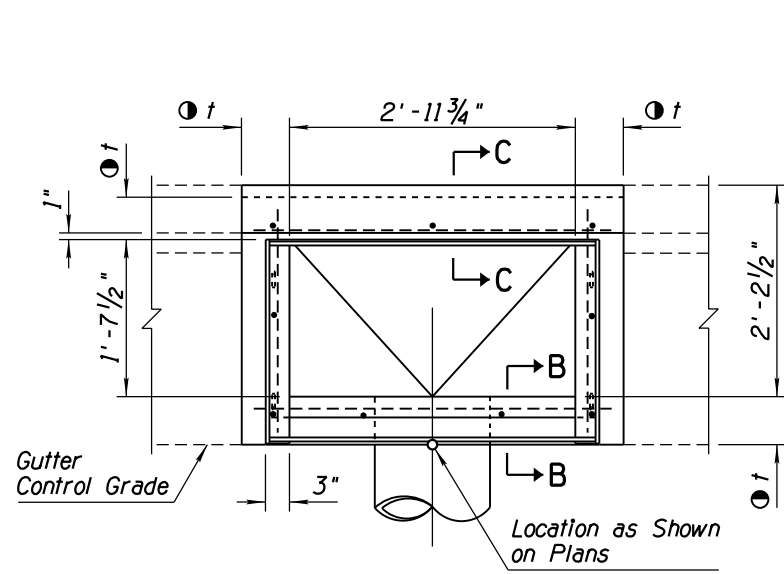
APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN ACCESS FRAME AND COVER DETAILS	DRAWING NO. (1) C-15.20 Sheet 3 of 3

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

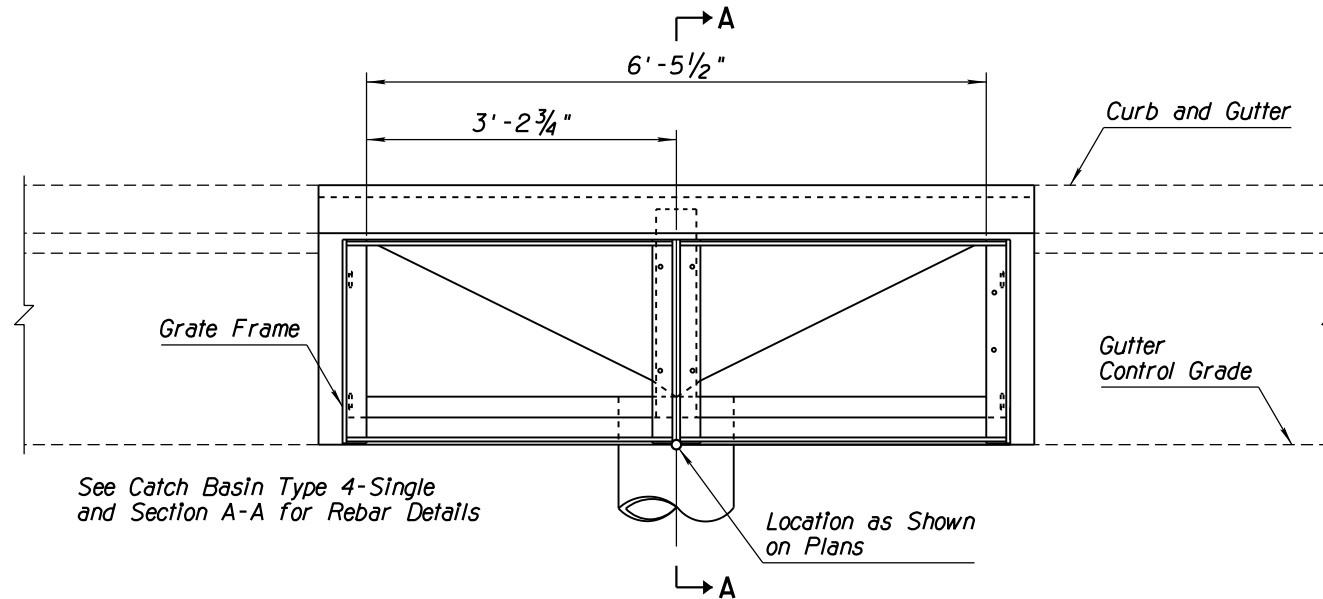
Dimensions are Common to Catch Basin Type 4-Single Except as Shown

GENERAL NOTES

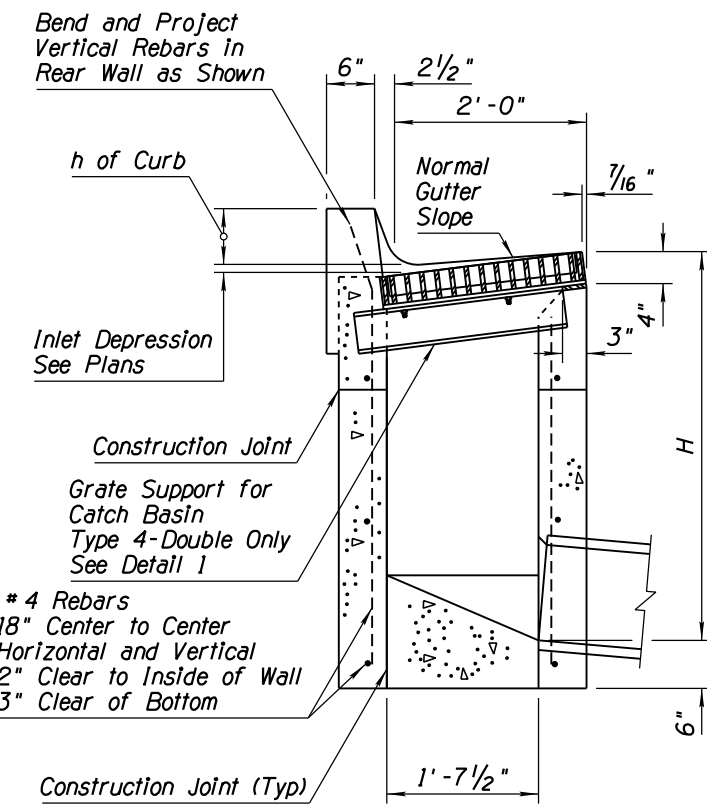
- Catch basin can be used on grade or at roadway sag.
- Pipes can be placed in any wall.
- Floor shall be a wood troweled finish with a minimum 4:1 slope along the axis of the pipe toward the pipe.
- Curb over catch basin shall not be constructed until catch basin concrete has set for a minimum of 24 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.



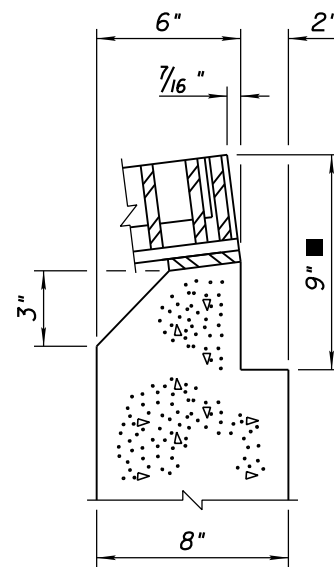
PLAN - CATCH BASIN TYPE 4 - SINGLE



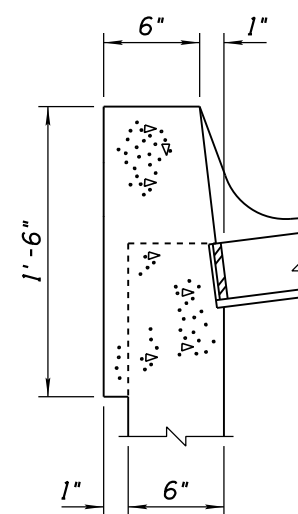
PLAN - CATCH BASIN TYPE 4 - DOUBLE



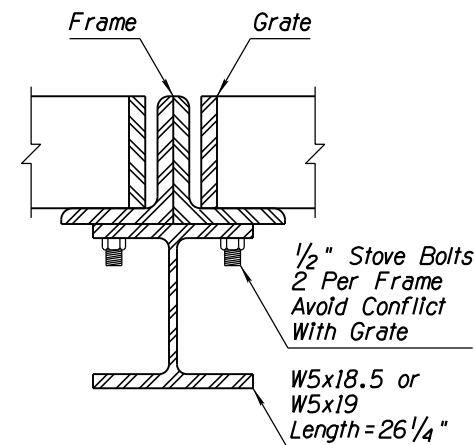
SECTION A-A



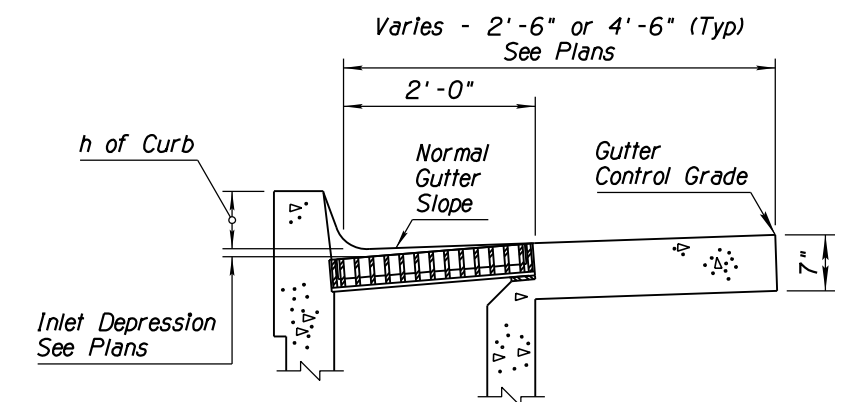
USE THIS SECTION WHEN t=8"
SECTION B-B



SECTION C-C



DETAIL 1



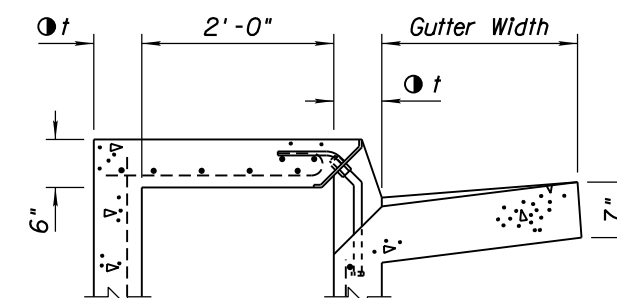
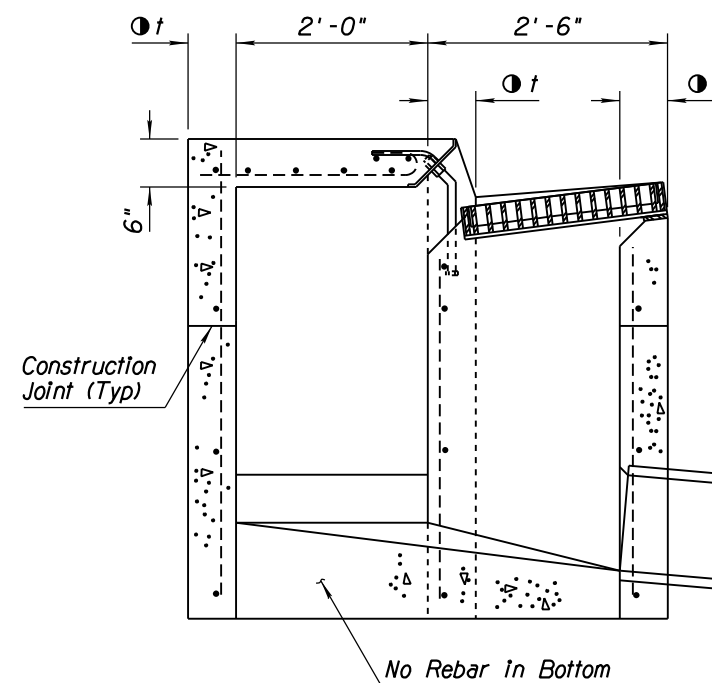
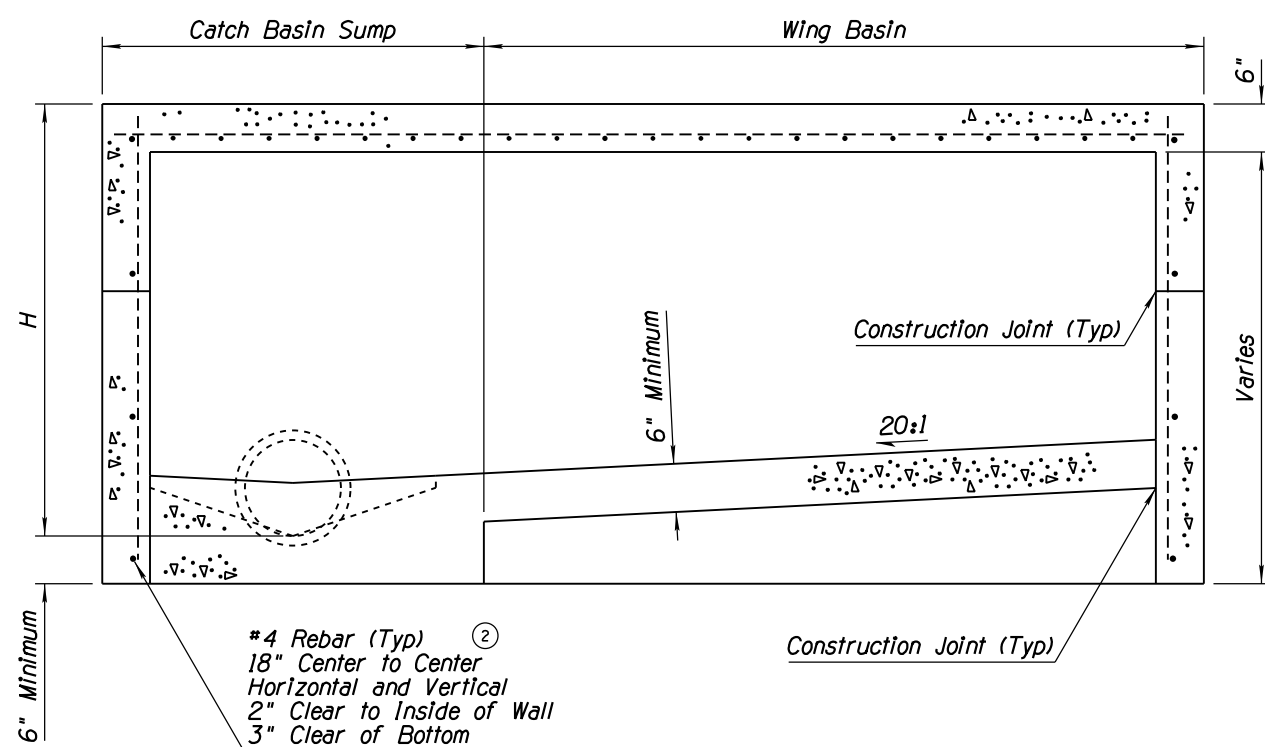
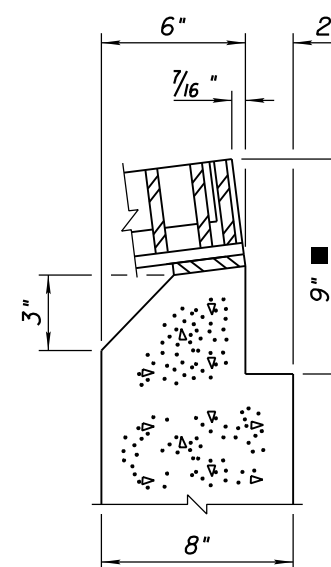
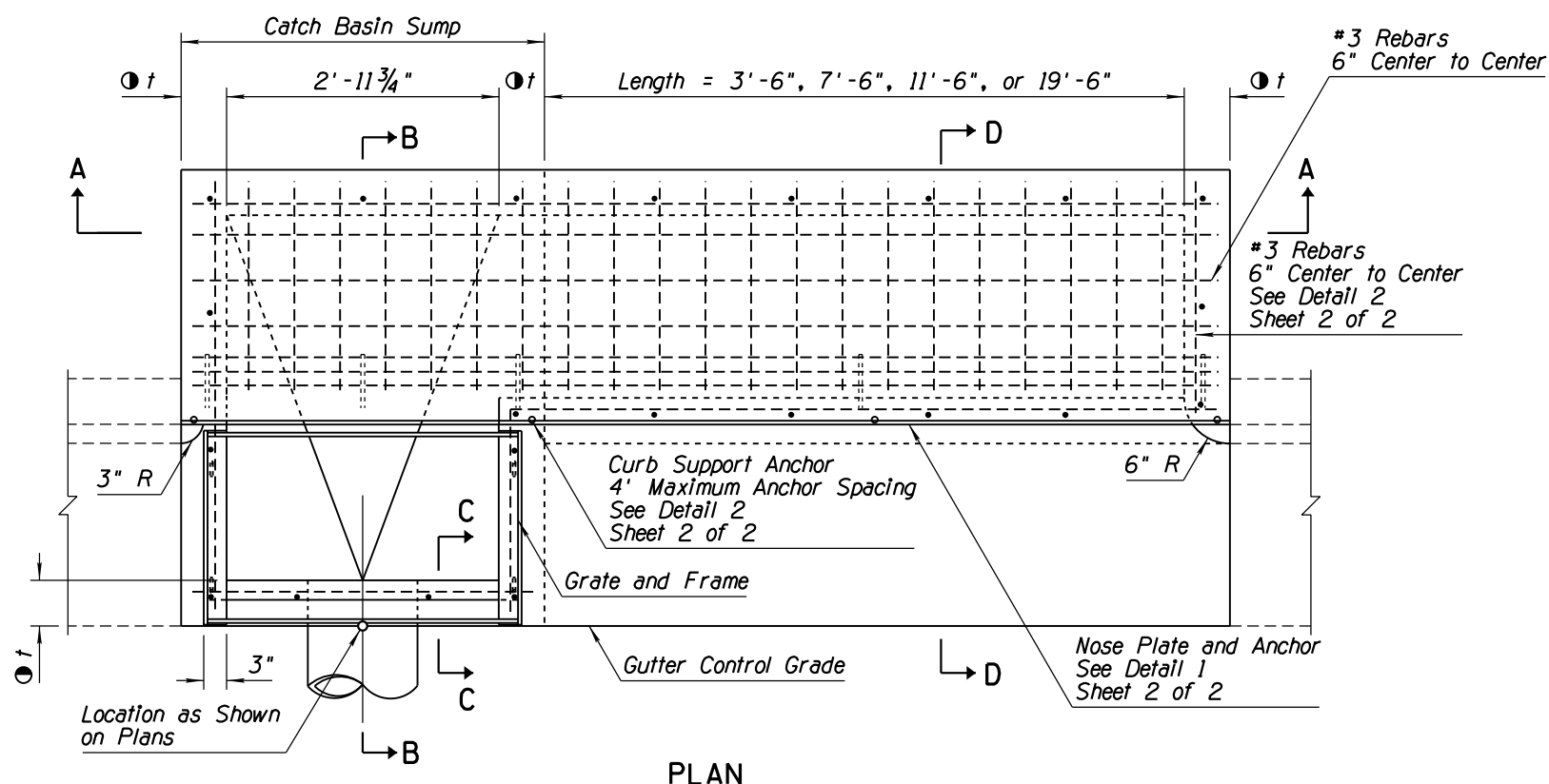
DETAIL FOR WIDE GUTTER (SEE STD DWG C-05.10)

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.
- ② 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.

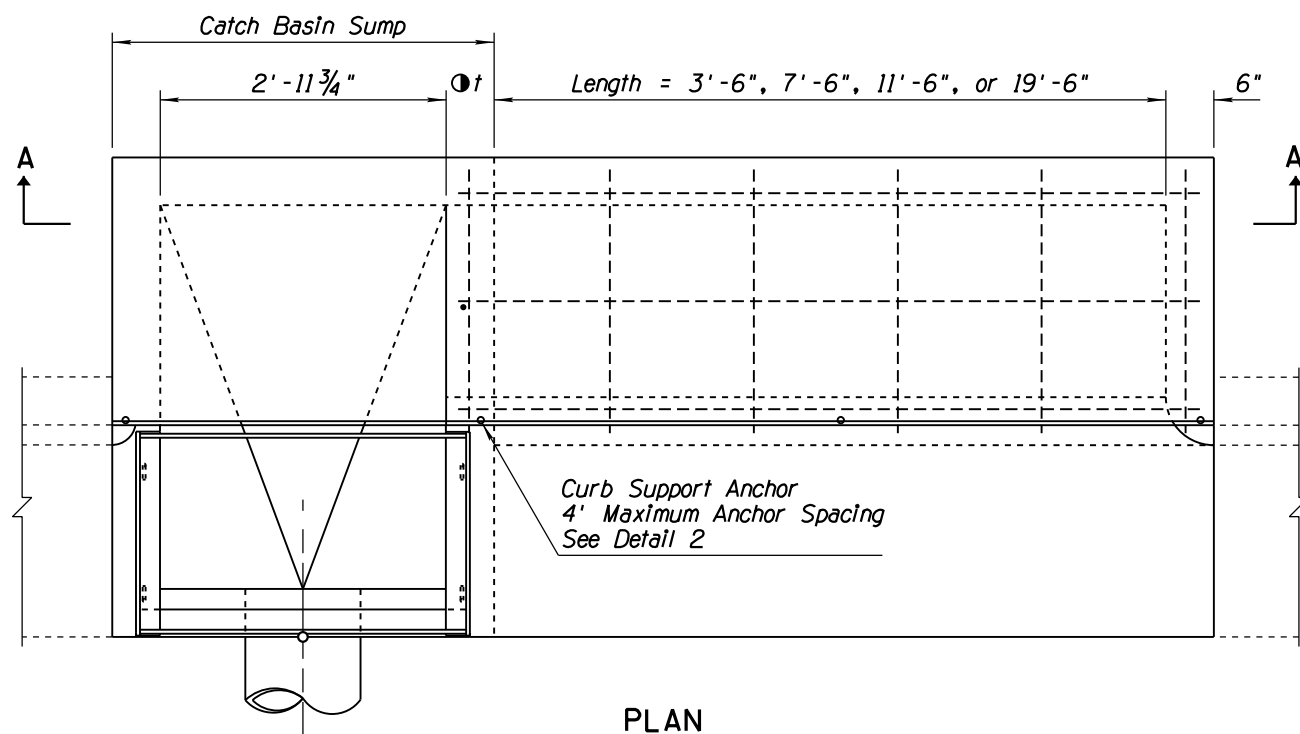


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN TYPE 5	DRAWING NO. C-15.40 Sheet 1 of 2

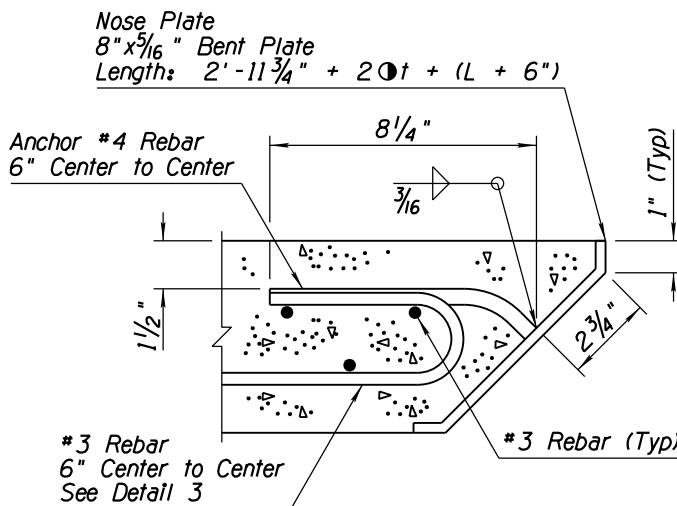
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1			
2			
3			
4			

GENERAL NOTES

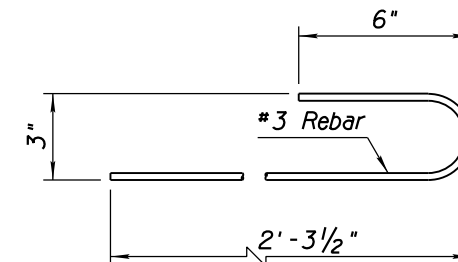
1. See Sheet 1 of 2 for other dimensions, notes and rebar.
2. $t = 6"$ when H is 8' or less
8" when H is greater than 8'



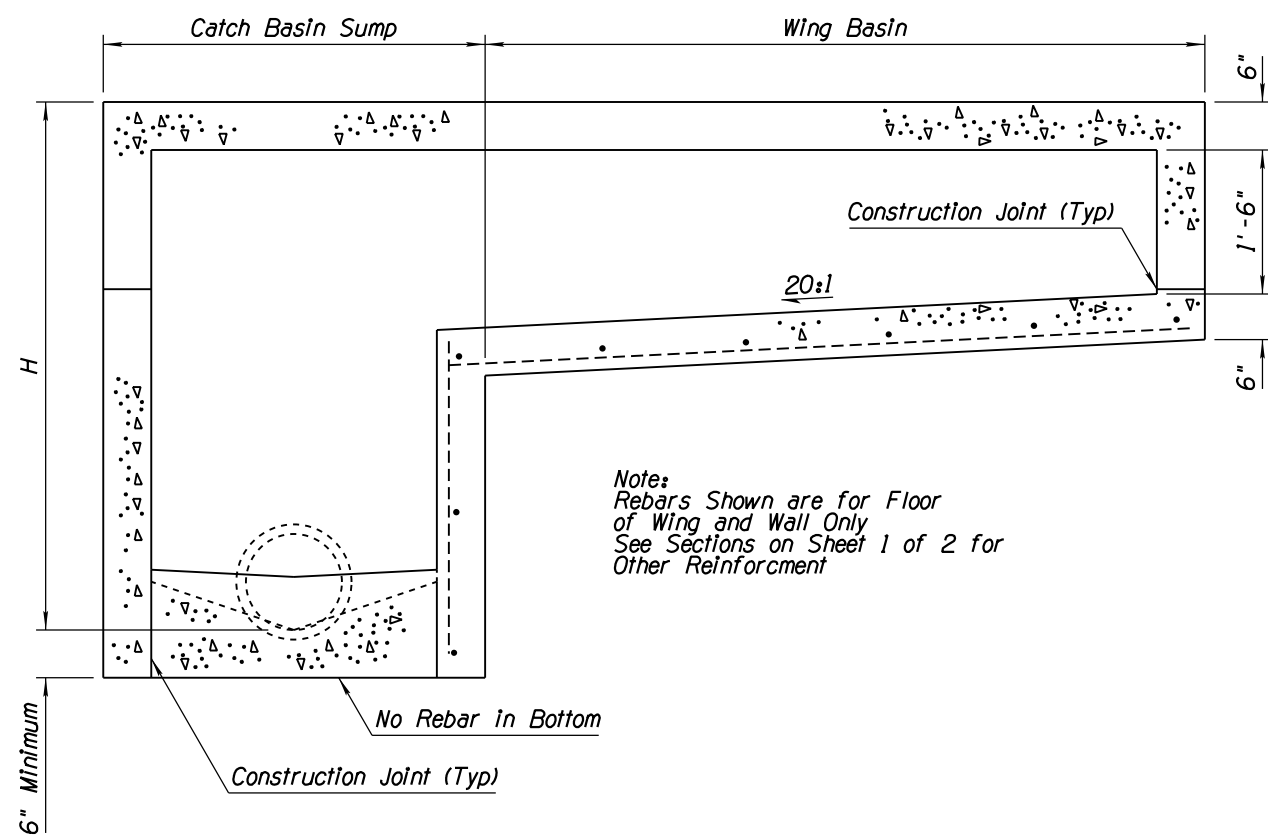
PLAN



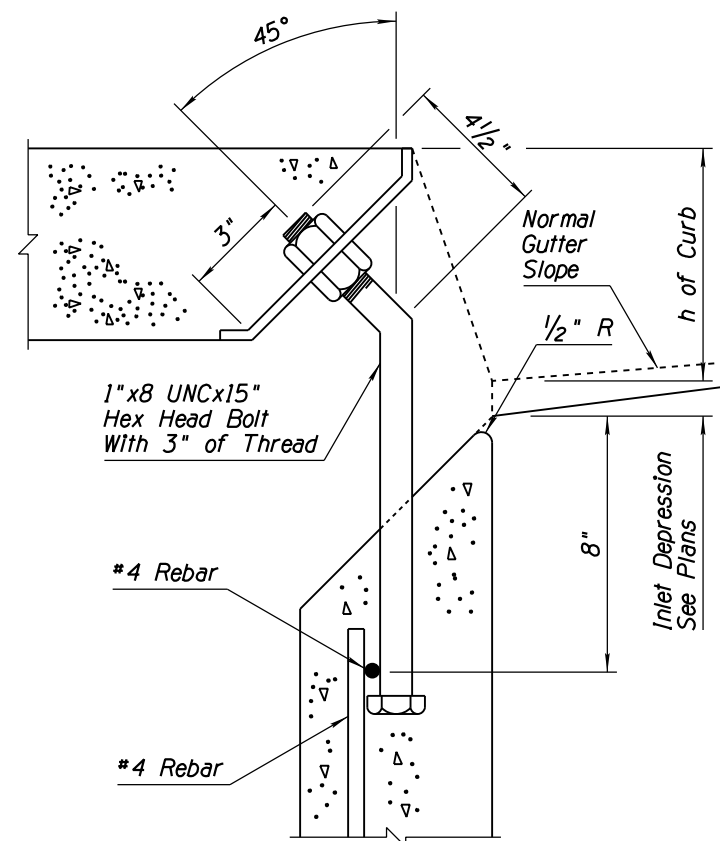
DETAIL 1



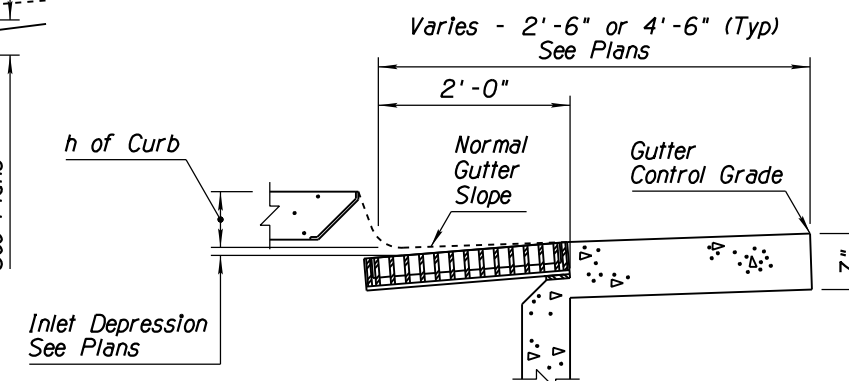
DETAIL 3



SECTION A-A
USE THIS SECTION WHEN H IS GREATER THAN 5'



DETAIL 2
CURB SUPPORT ANCHOR



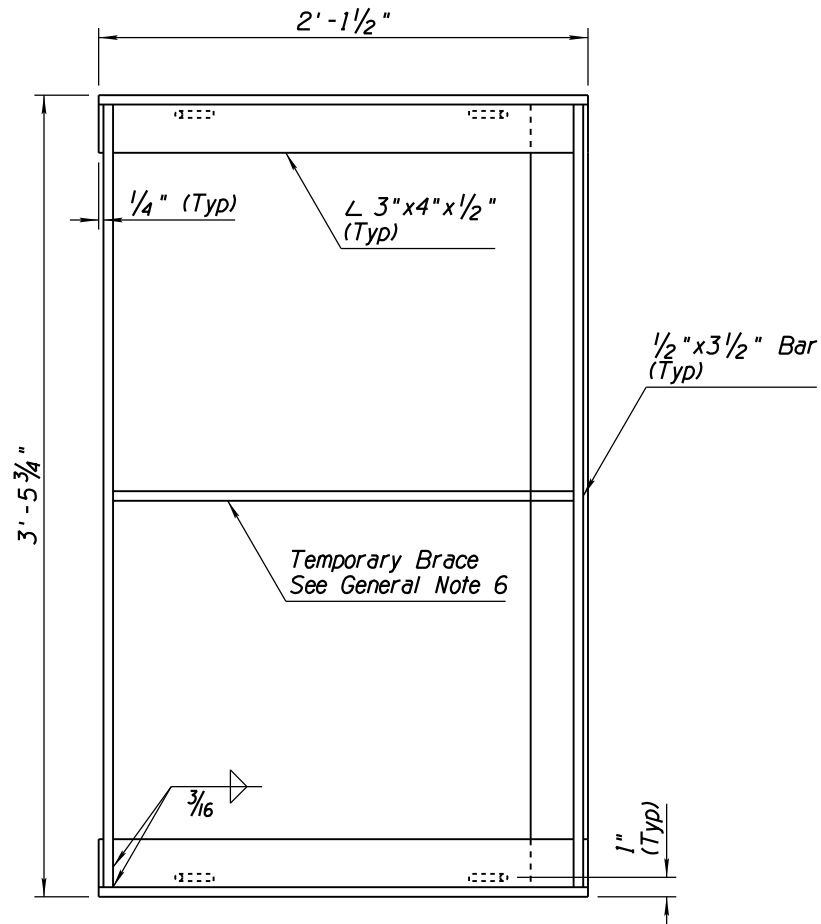
DETAIL 4

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

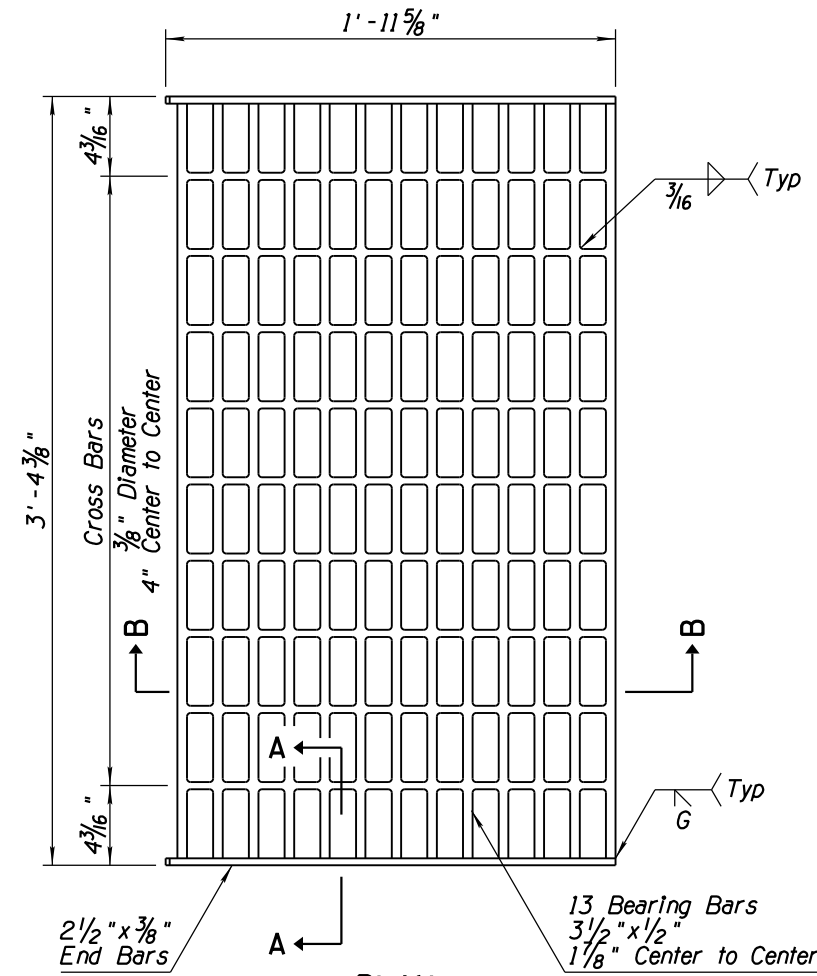
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED GRATE DIMENSIONS AND REISSUED STANDARD	RLF	7/01
2			
3			
4			

GENERAL NOTES

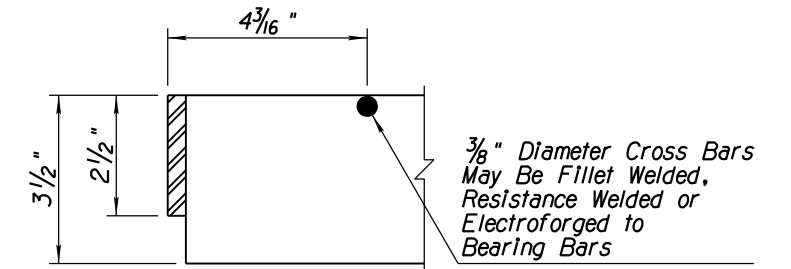
1. Grating units and frames shall be fabricated from structural steel ASTM A36 except as noted.
2. All welding shall be in accordance with Std Spec 604-3.06.
3. The completed assembly shall be given one shop coat of Number 1 paint.
4. Frames and grates shall fit to a maximum rock of $\frac{3}{32}$ " 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.



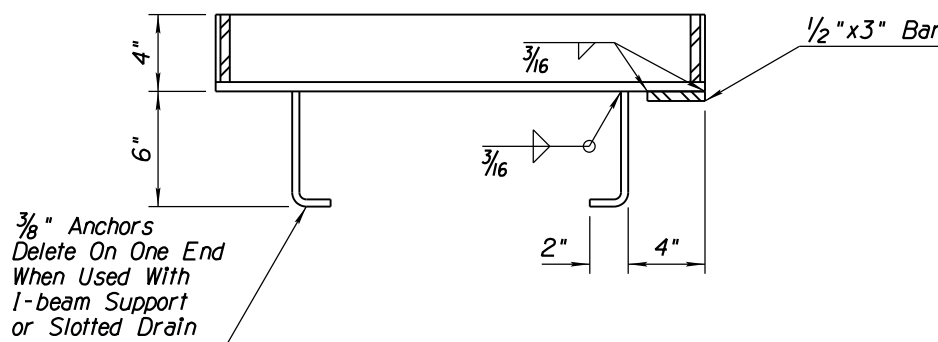
PLAN



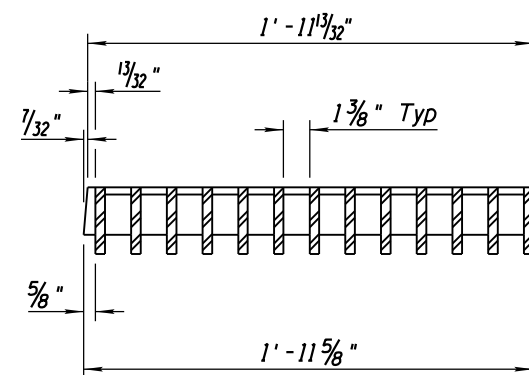
PLAN



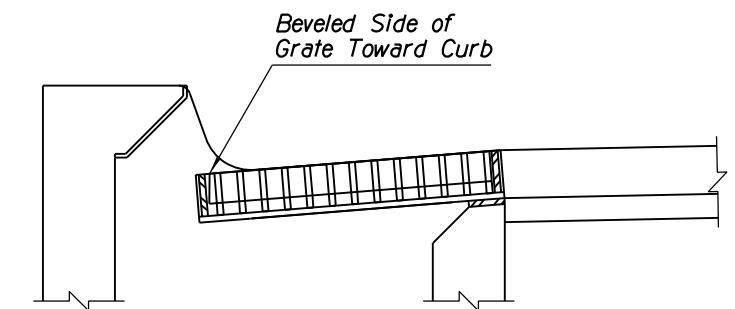
SECTION A-A



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

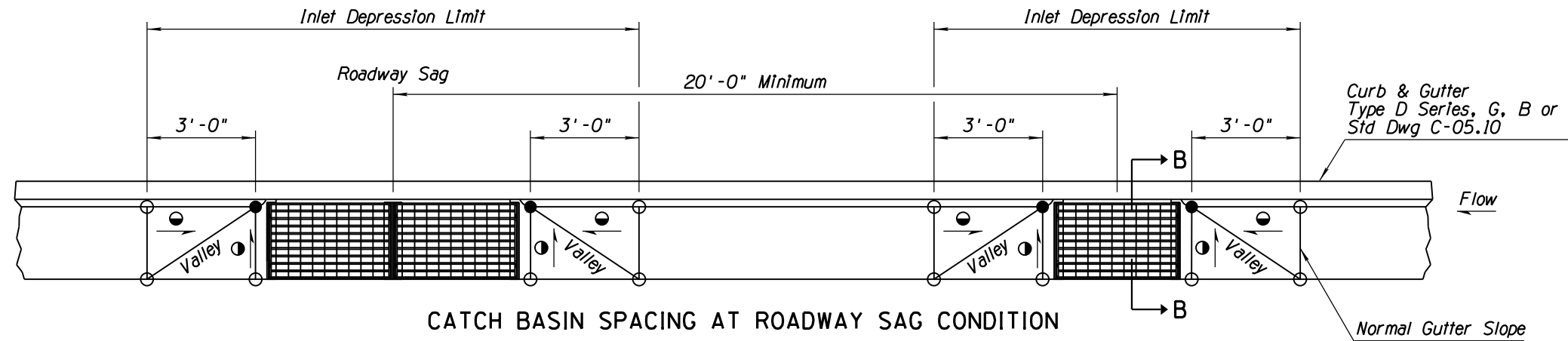
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2			
3			
4			

GENERAL NOTES

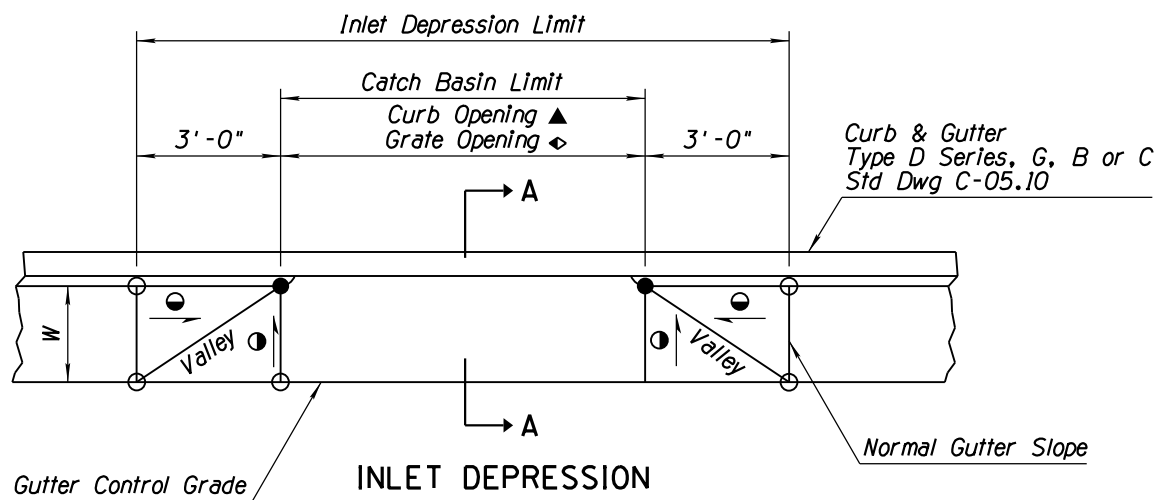
1. No Inlet depression shall extend into a traffic lane.
2. Maximum combined Inlet and gutter depression is 3". See Section A-A.
3. Maximum distance along curb between catch basins where full gutter depression is used is 10'.
4. See Std Dwg C-15.80 for aprons used with Std Dwg C-15.80 Catch Basin.

LEGEND

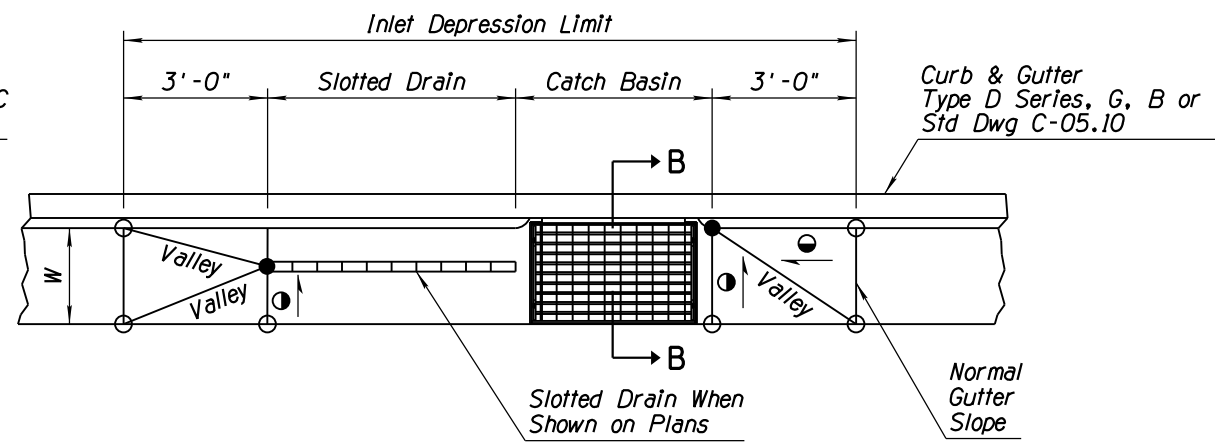
- - Normal pavement or gutter flow line elevation.
- - Depressed elevation.
- ◐ - Straight grade with downward slope.
- W - Normal gutter width per Std Dwg C-05.10.
- ▲ - For Types 1, 3, & 5 Catch Basin.
- ◊ - For Type 4 Catch Basin & Std Dwg C-15.91.



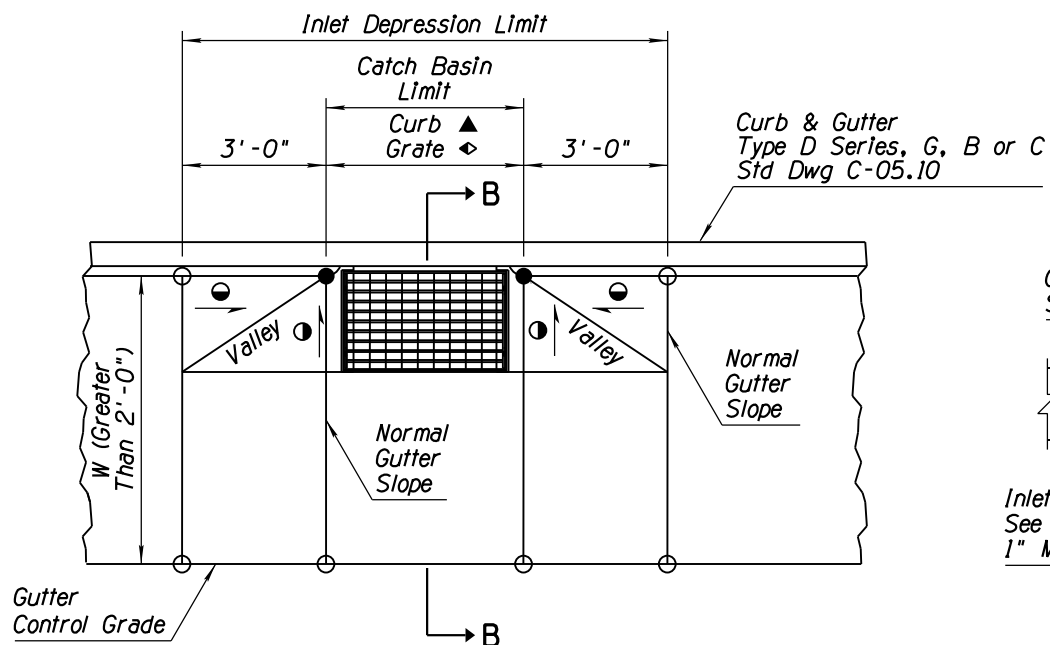
CATCH BASIN SPACING AT ROADWAY SAG CONDITION



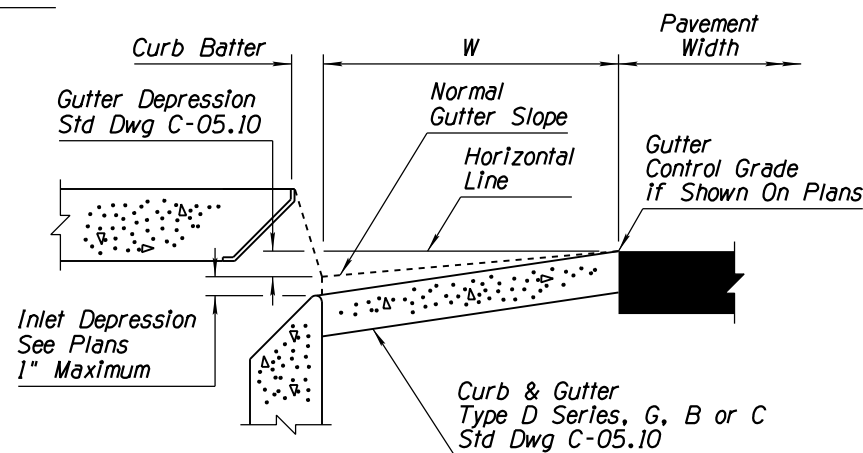
INLET DEPRESSION



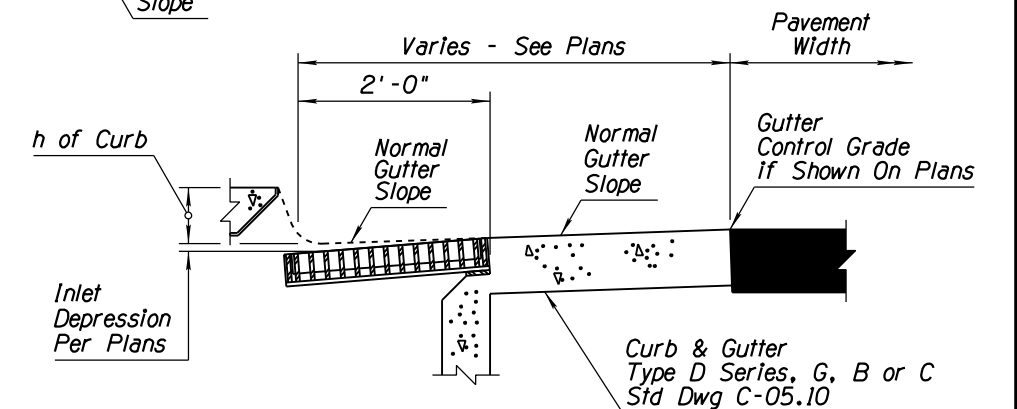
INLET DEPRESSION CATCH BASIN WITH SLOTTED DRAIN



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

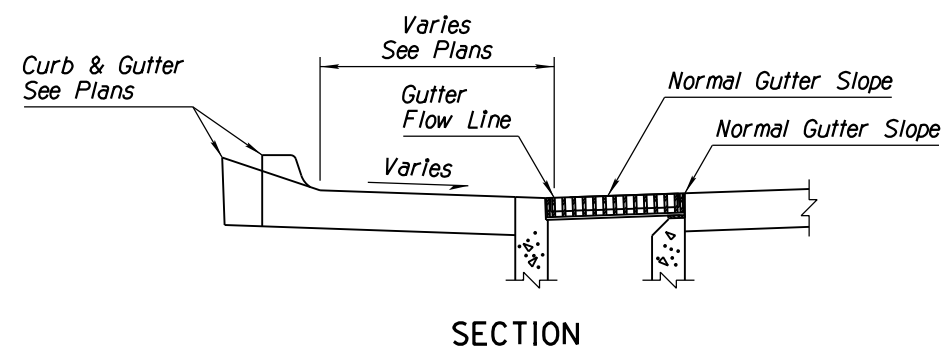
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED CMP DESIGNATION	RLF	9/04
2	ADDED NOTE	RLF	9/04
3			
4			

GENERAL NOTES

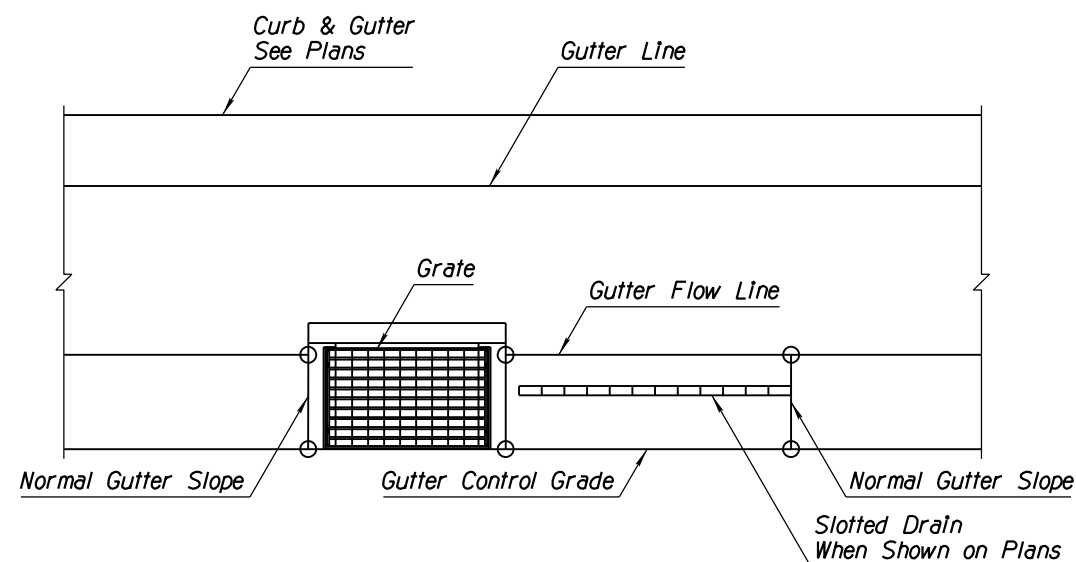
1. Construction drain may be deleted at the option of the Engineer.

LEGEND

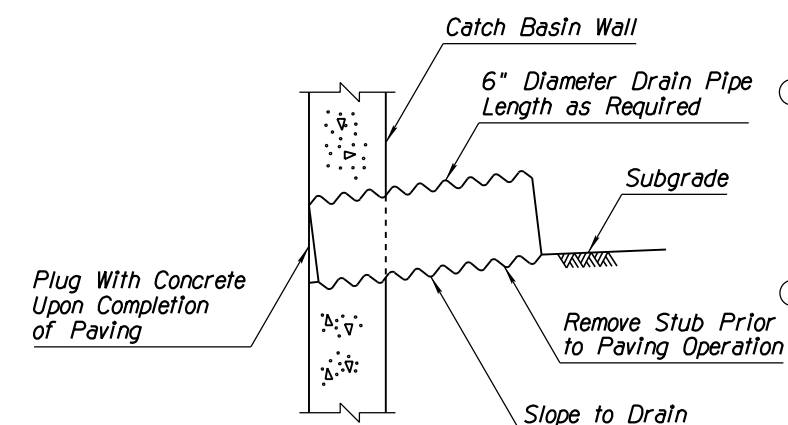
○ - Normal pavement or gutter flow line elevation.



SECTION



TYPE 4 CATCH BASIN WITHOUT CURB



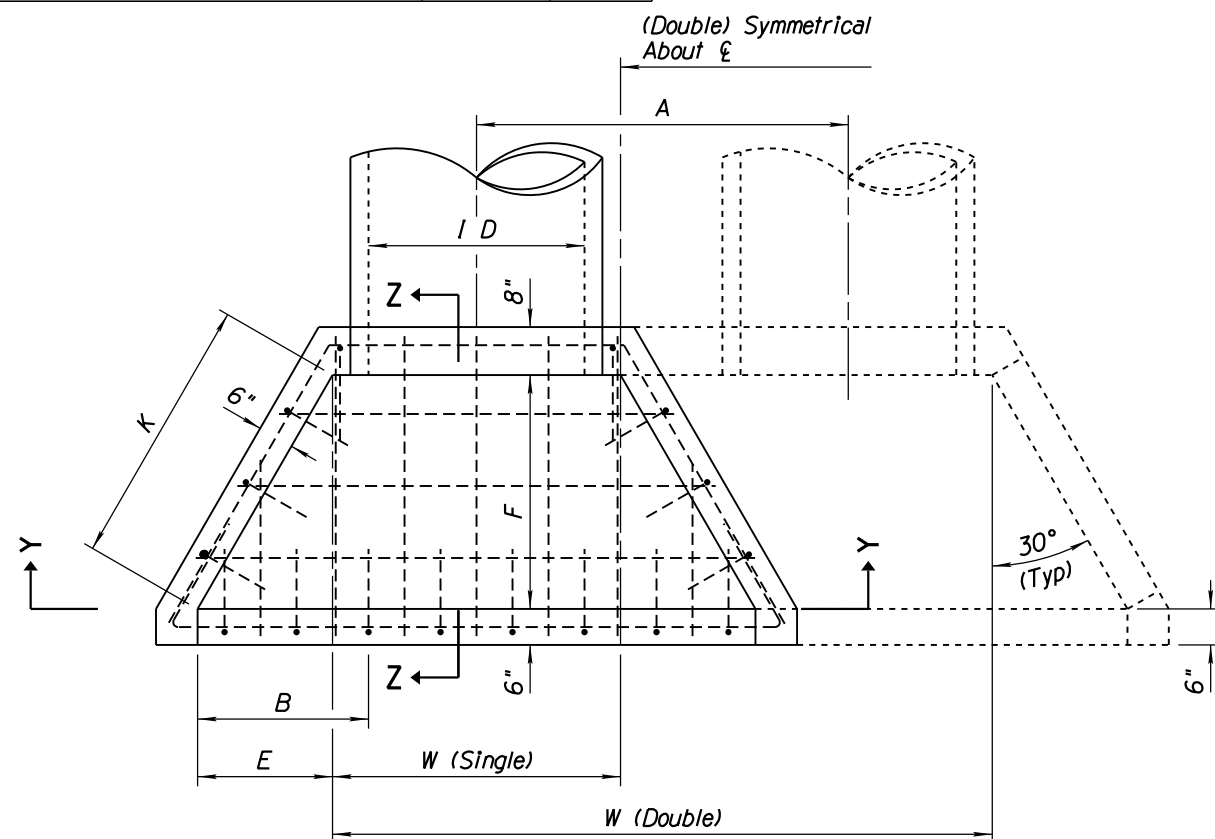
CATCH BASIN CONSTRUCTION DRAIN

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

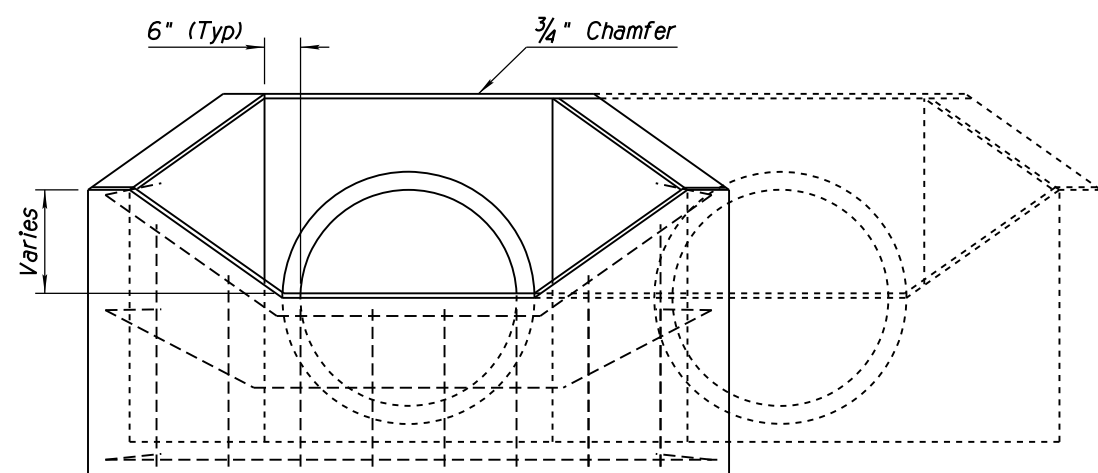
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED TABLE MEASUREMENT FORMAT	RLF	9/04
2			
3			
4			

GENERAL NOTES

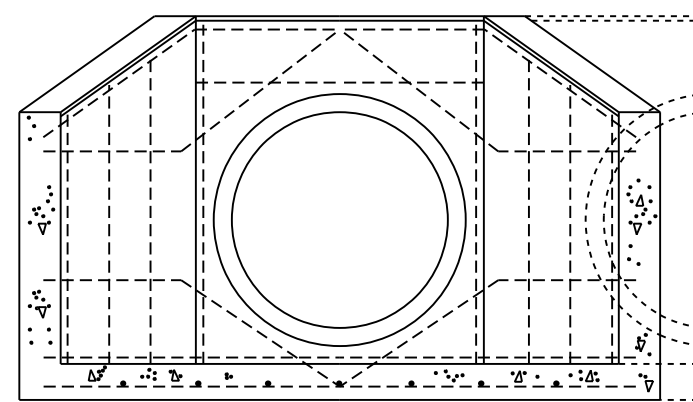
1. See also Std Dwg C-13.10.
2. High point of headwall shall not project more than 3" above slope.
3. All concrete shall be Class B.
4. All rebar shall be #4, 1'-0" center to center, with 3" minimum clear to inside of walls and floor.



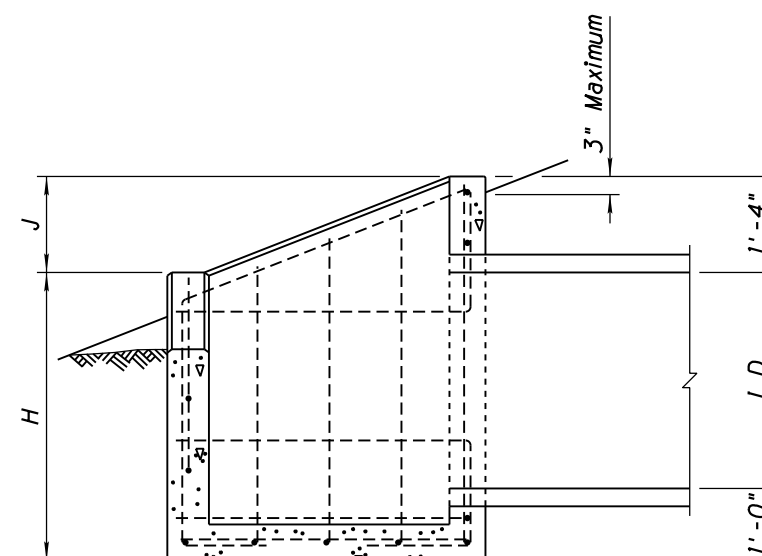
PLAN



ELEVATION



SECTION Y-Y

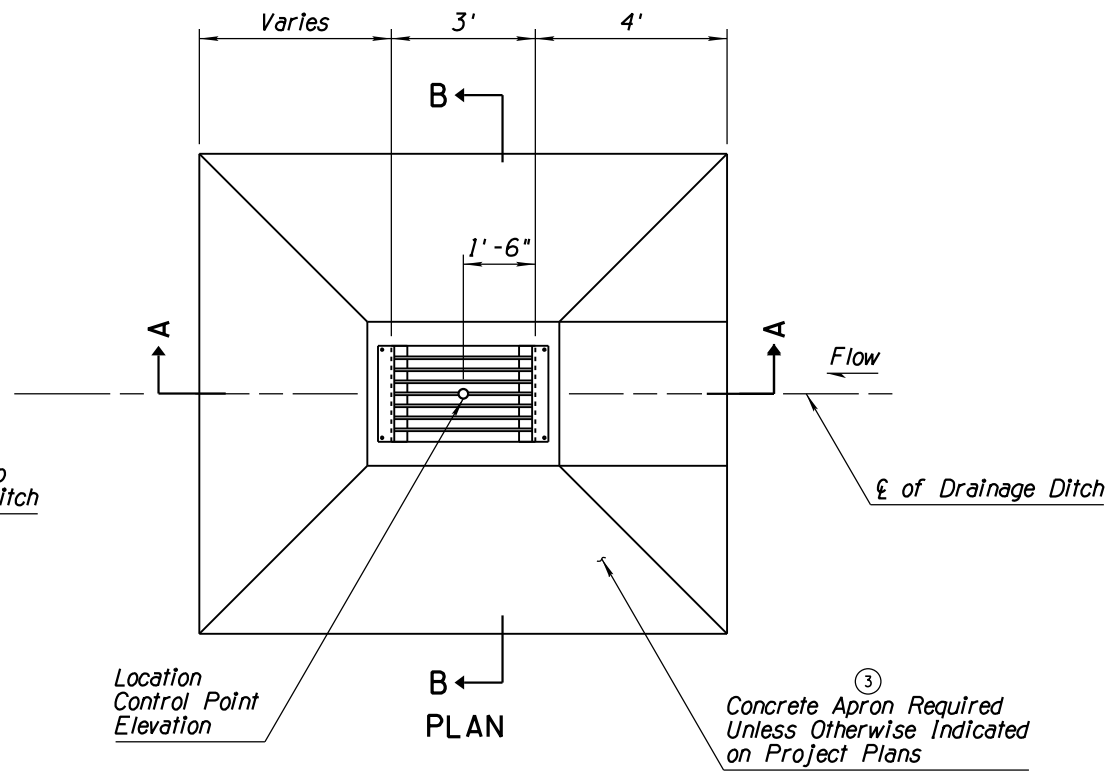
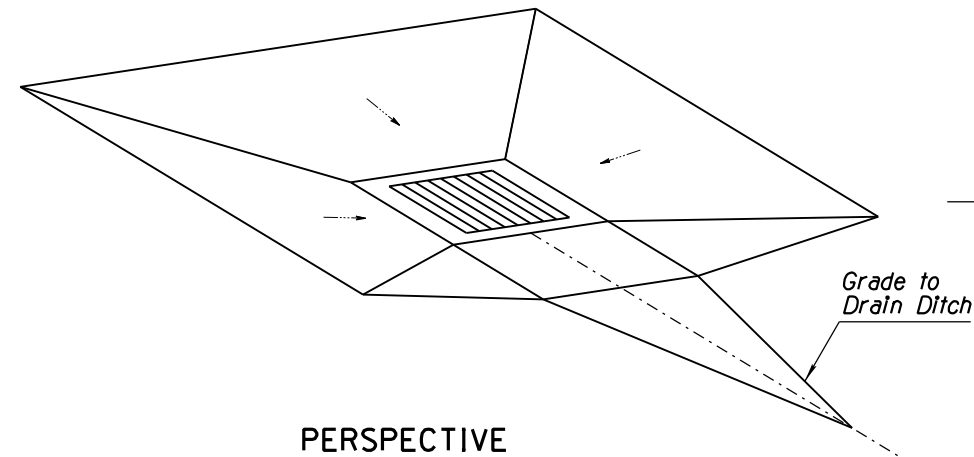


SECTION Z-Z

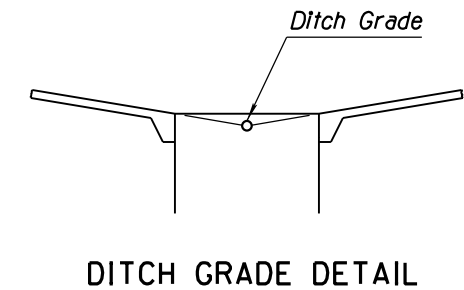
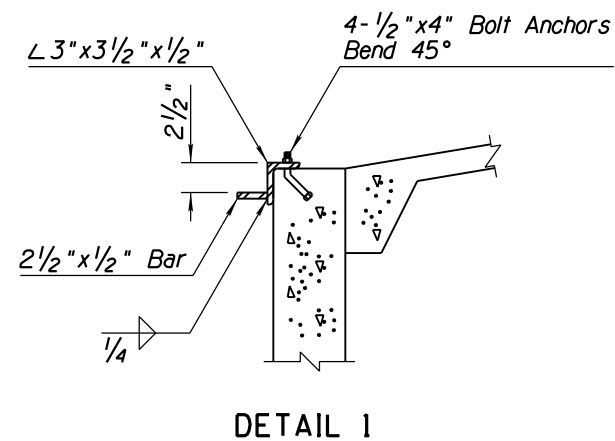
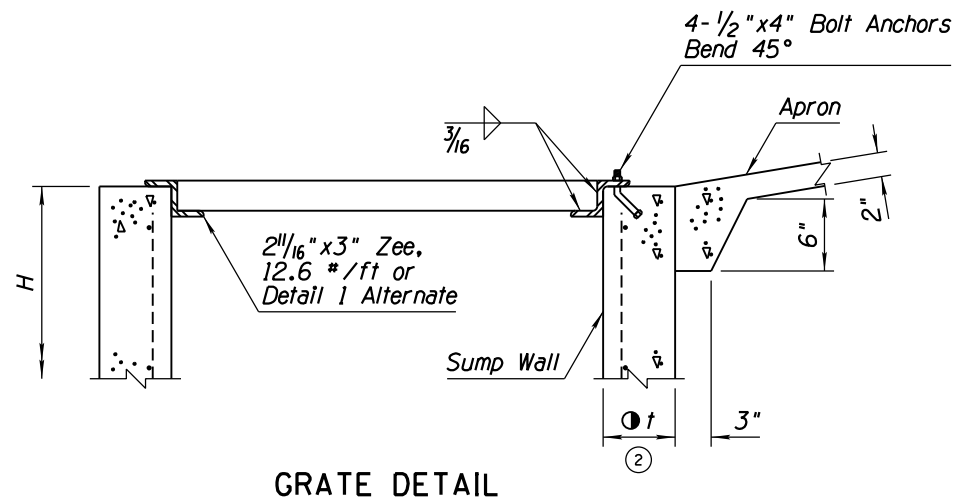
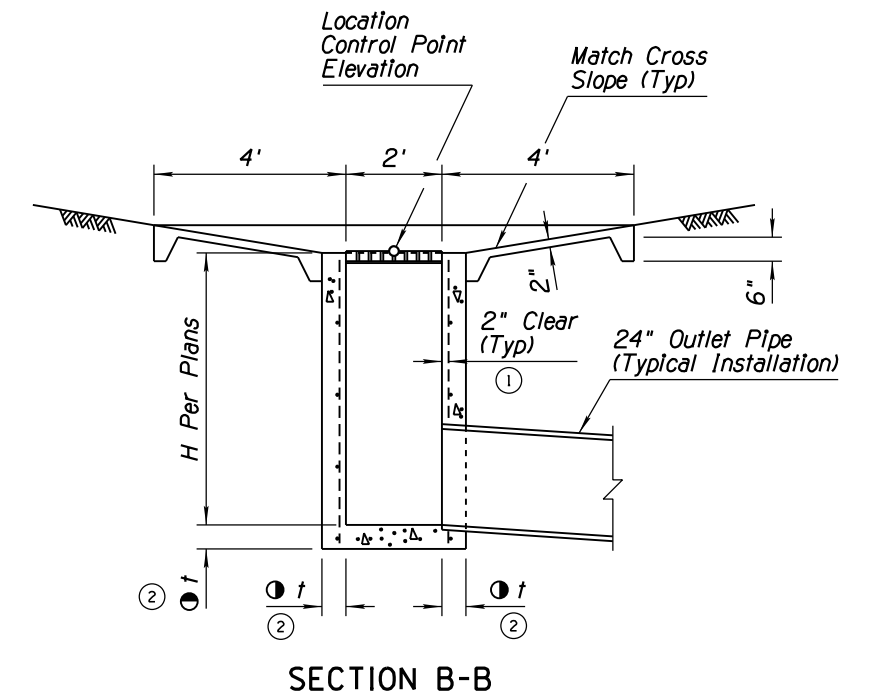
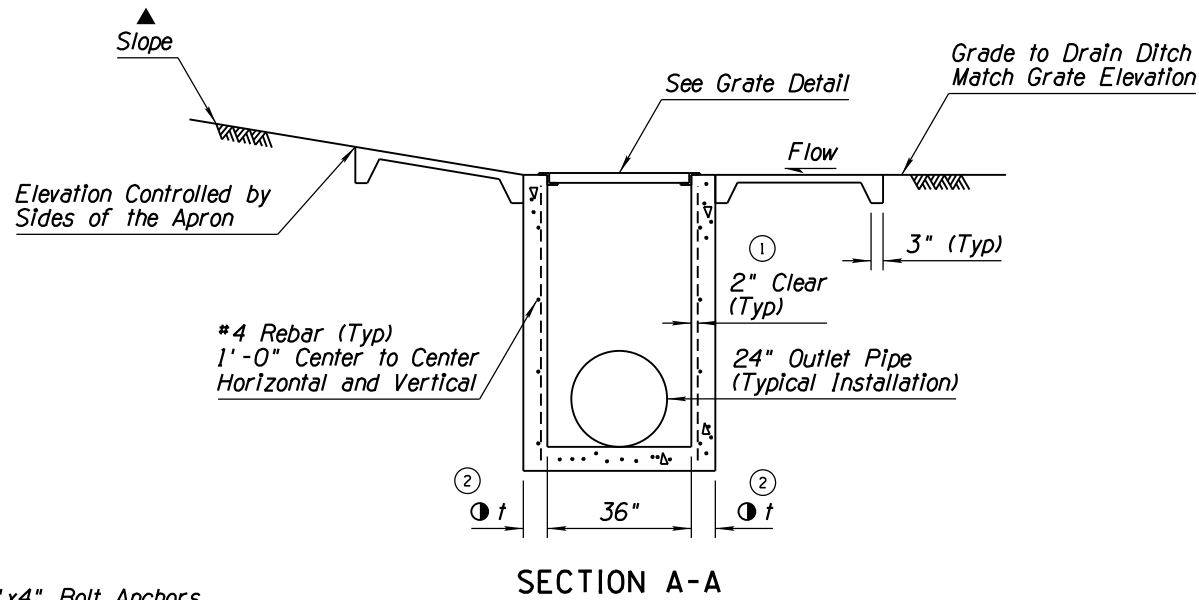
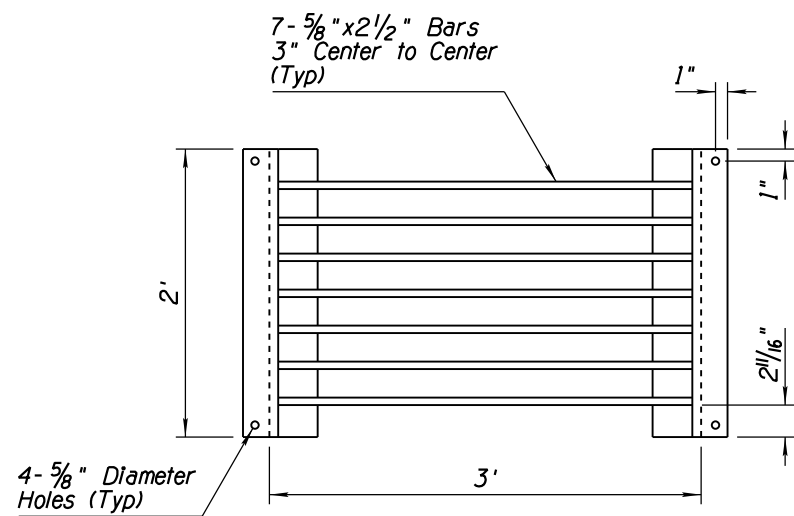
PIPE ID (In)	DIMENSIONS (Ft-In)									QUANTITIES (Based on CMP Installation)			
	W		A	B	E	F	H	J	K	Concrete (CY)		Reinforcing Steel (Lbs)	
	Single	Double								Single	Double	Single	Double
18	2 -6	5 -2	2 -8	1 -3	0 -9	1 -3 5/8	3 -1	0 -9	1 -6	0.7	1.1	75	105
24	3 -0	6 -6	3 -6	1 -7 1/2	1 -1 1/2	1 -11 3/8	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	DRAWING NO. C-15.75

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			

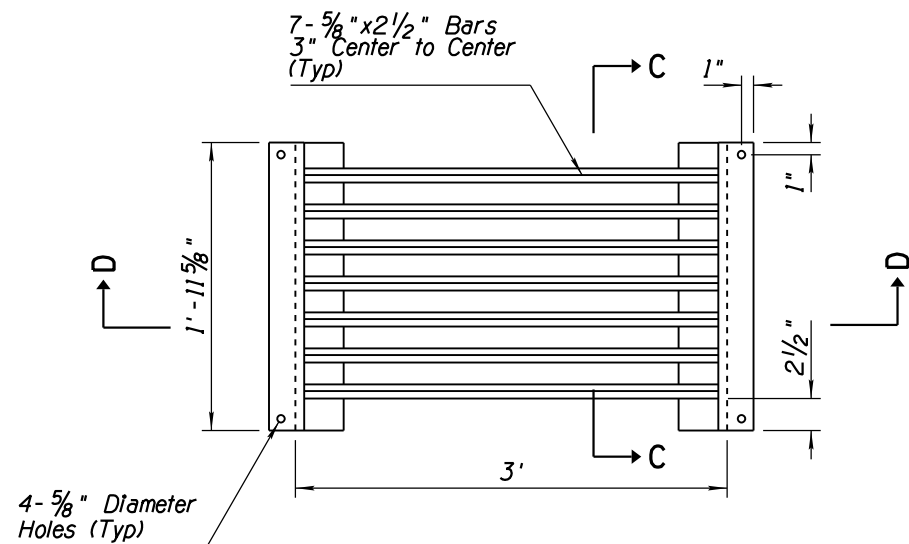


- ### GENERAL NOTES
- All concrete shall be Class B.
 - Grate and frame shall be fabricated of structural steel in accordance with ASTM A36.
 - All welding shall be in accordance with Std Spec 604-3.06.
 - Grate assembly shall be given one shop coat of Number 1 paint.
- ▲ Apron slopes shall match the 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'

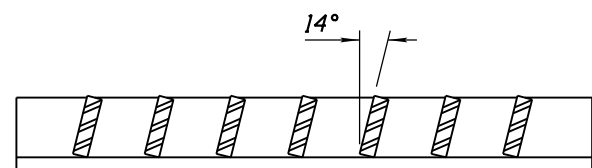


APPROVED FOR DESIGN	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION	CATCH BASIN FLUSH	DRAWING NO. C-15.80

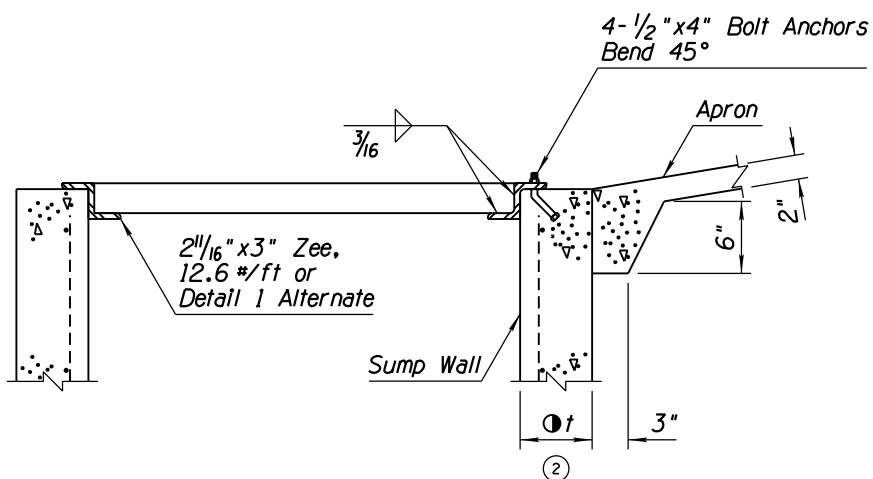
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED CLEAR COVER	RLF	9/04
2	REVISED THICKNESS SPECIFICATION	RLF	9/04
3	ADDED CONCRETE REQUIREMENT	RLF	9/04
4			



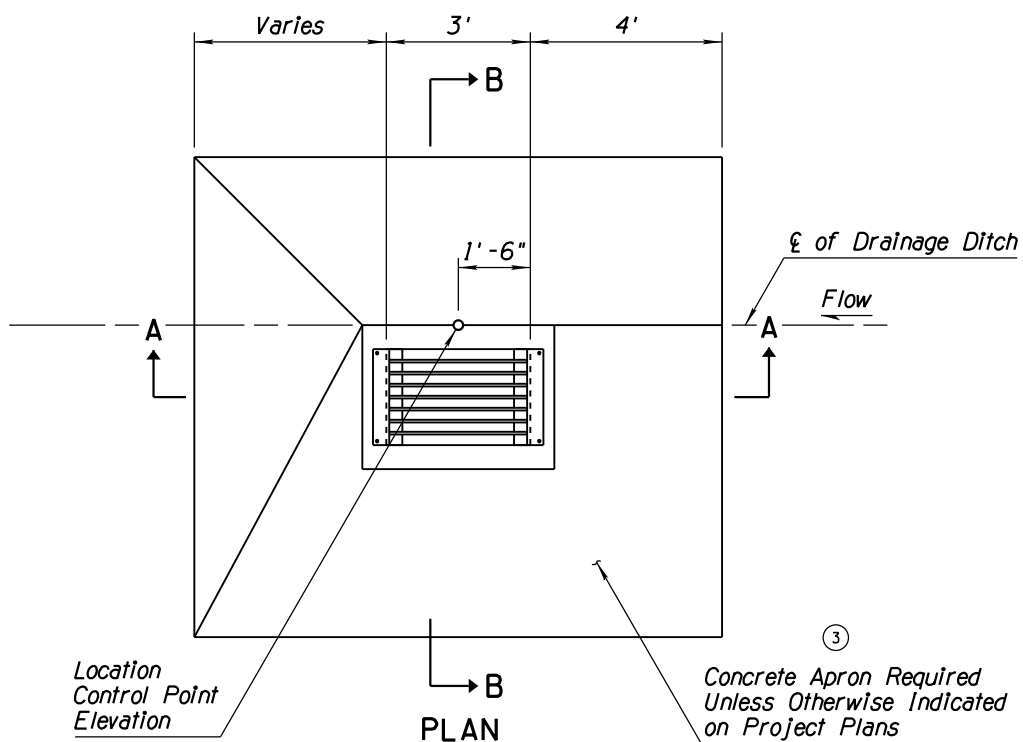
GRATE DETAIL



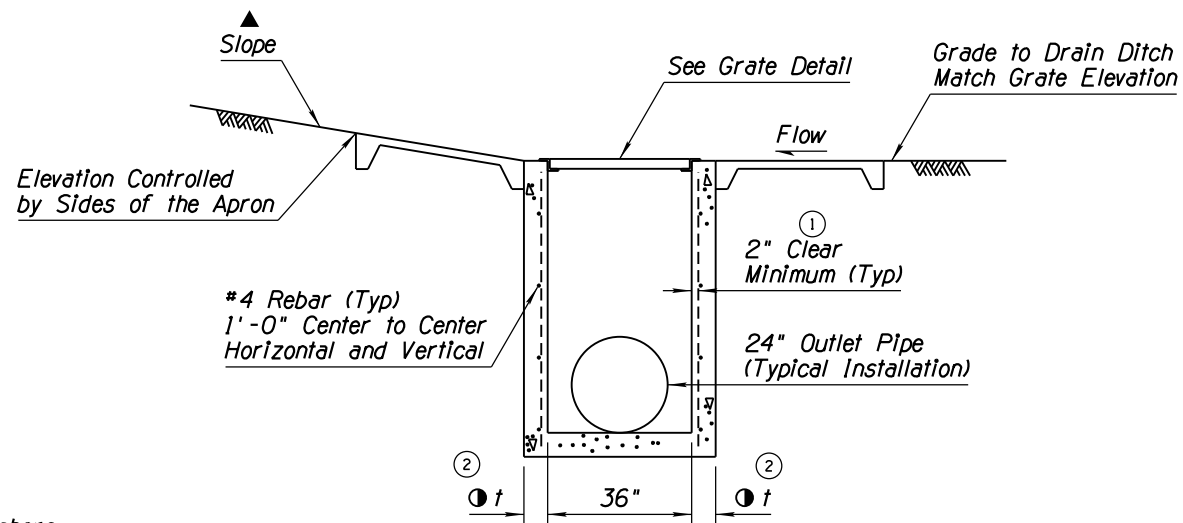
SECTION C-C



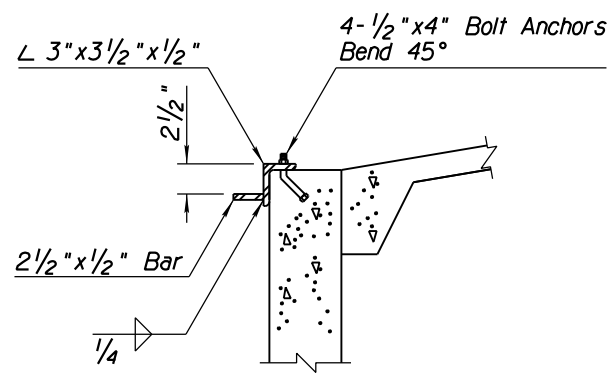
SECTION D-D



PLAN



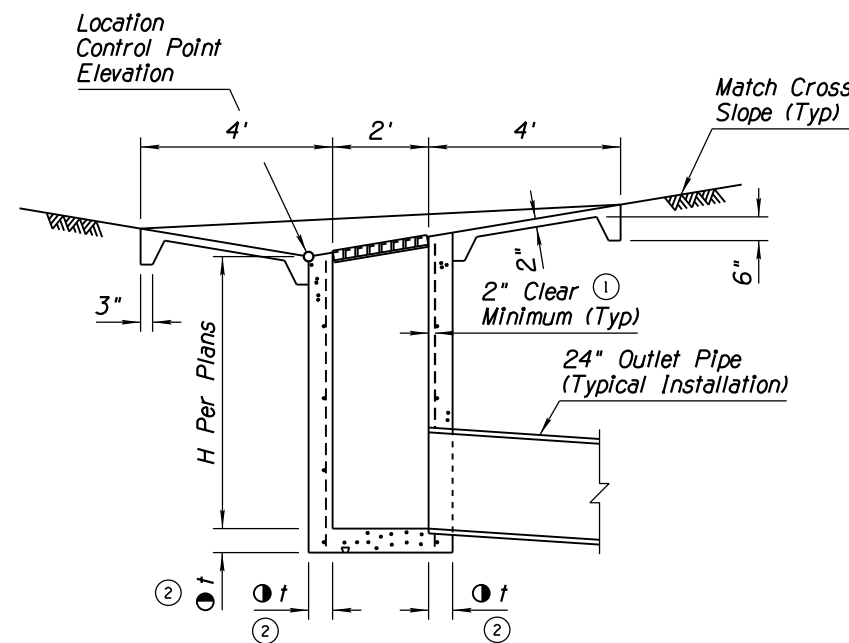
SECTION A-A



DETAIL 1

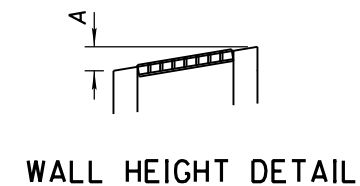
GENERAL NOTES

- 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'



SECTION B-B

DIMENSION TABLE	
Slope	A (In)
10:1	3.6
8:1	4.5
6:1	6
4:1	9



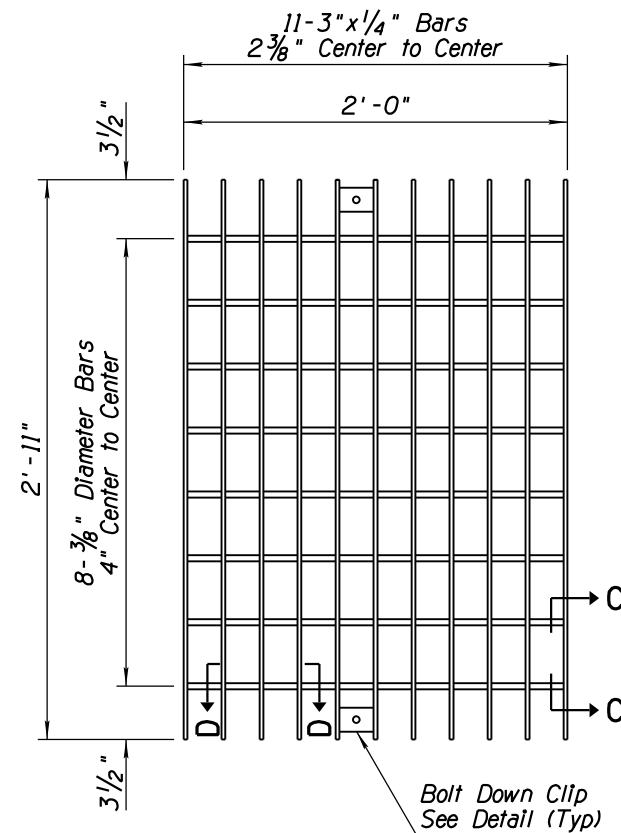
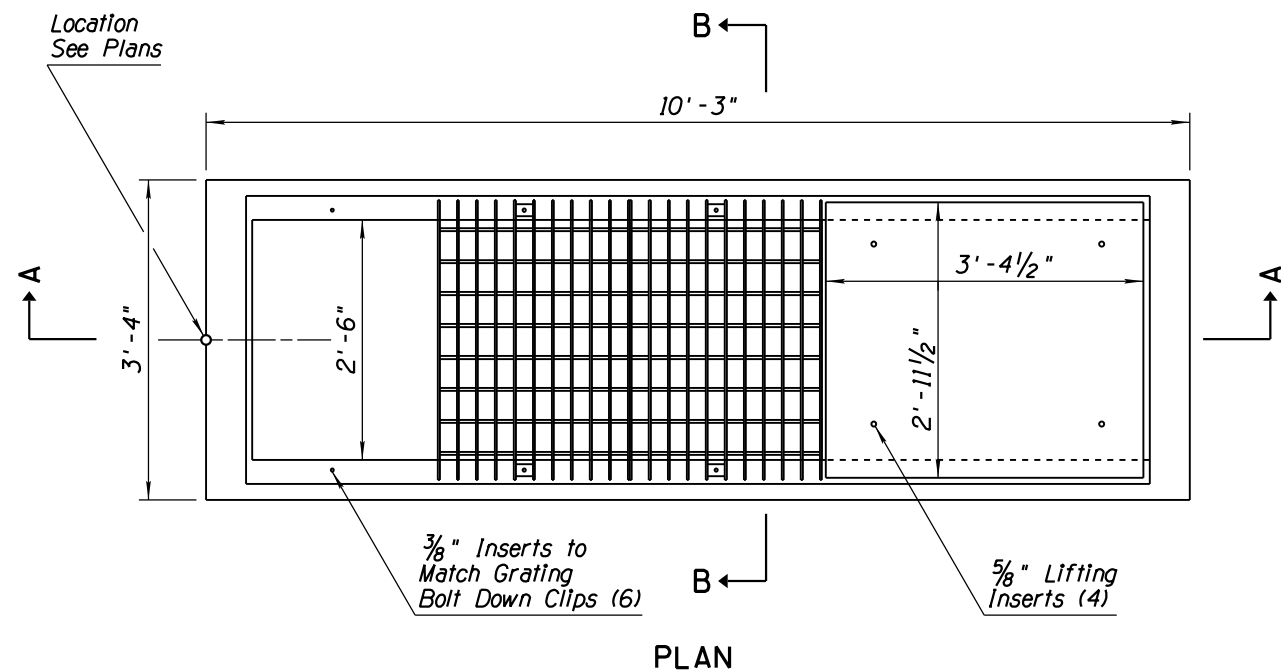
WALL HEIGHT DETAIL

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	CATCH BASIN SIDE SLOPE	DRAWING NO. C-15.81

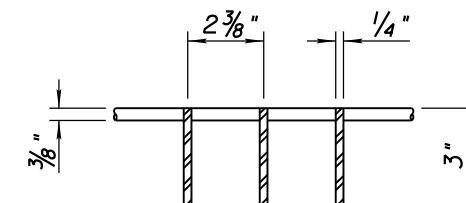
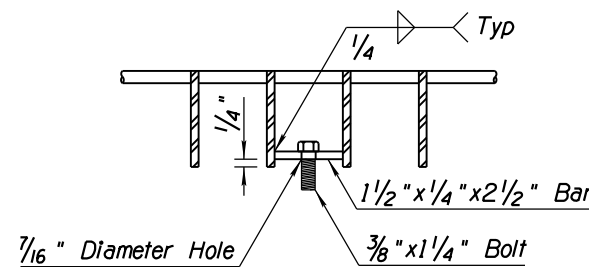
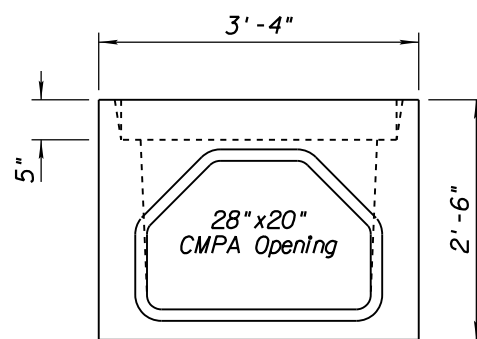
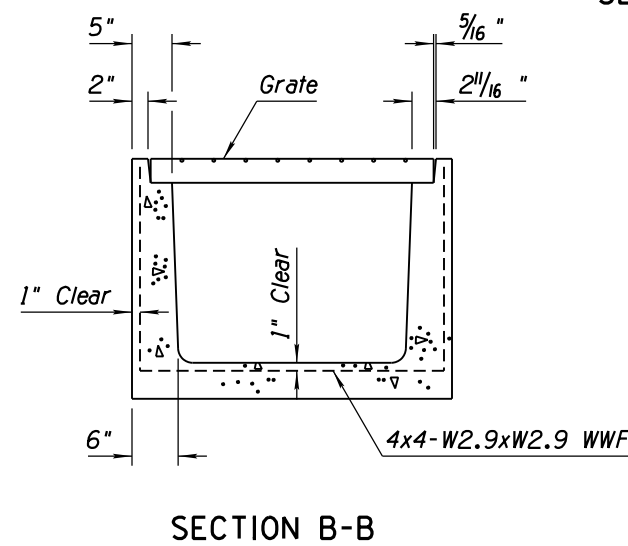
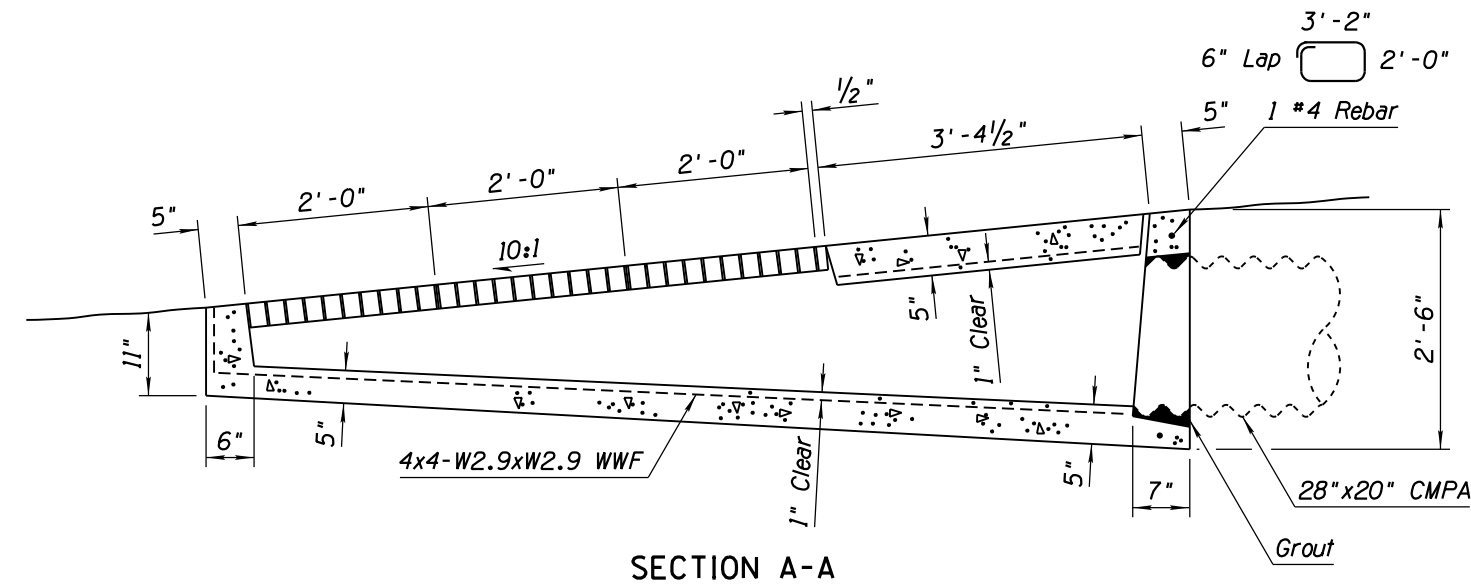
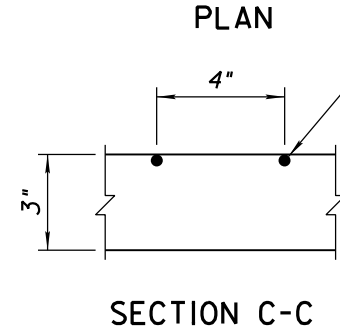
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1			
2			
3			
4			

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.



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

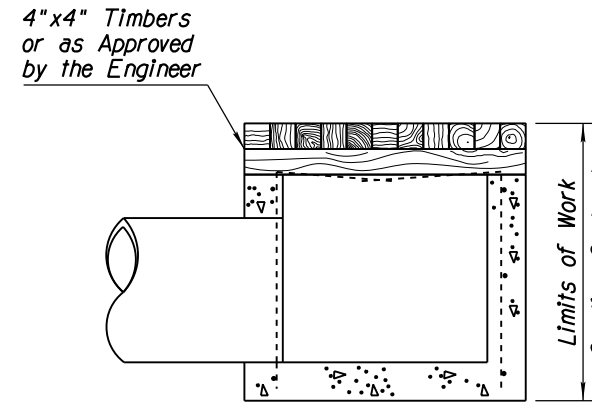
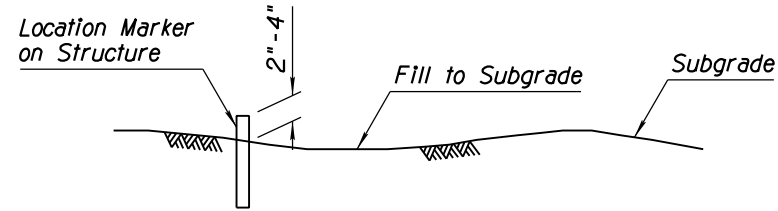
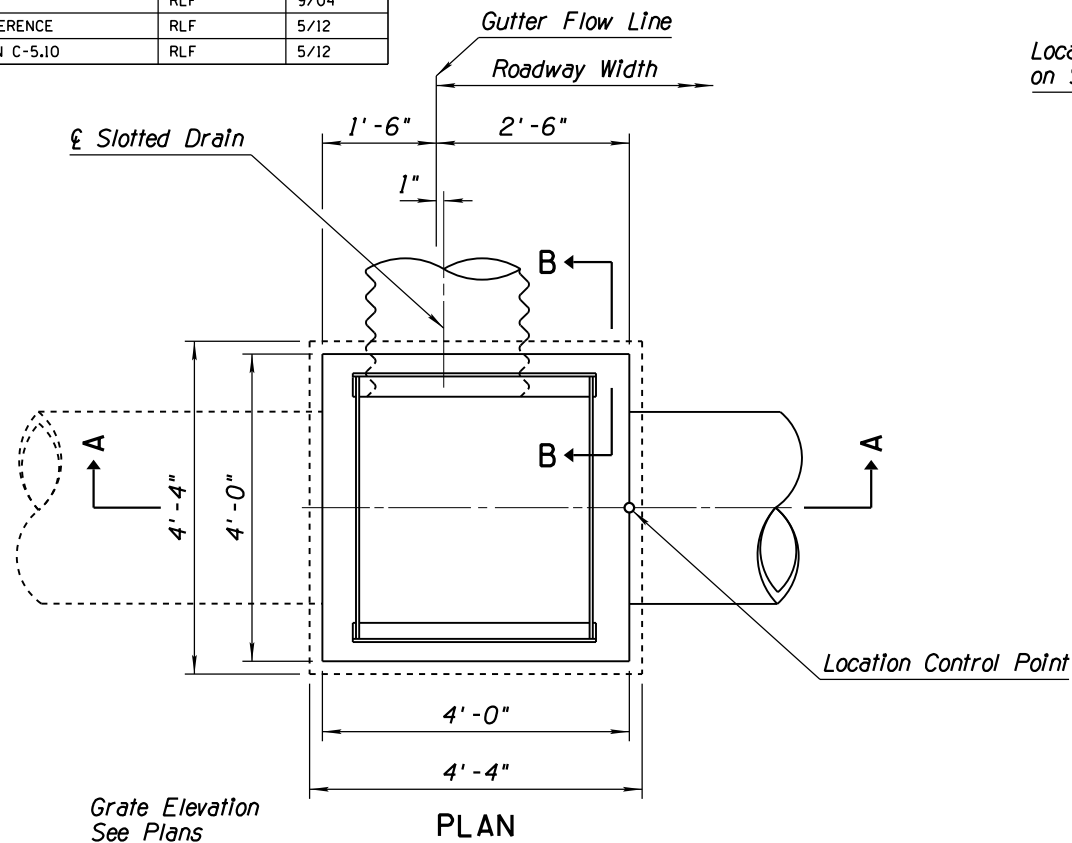


APPROVED FOR DESIGN	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION	CATCH BASIN MEDIAN DIKE PRECAST	DRAWING NO. C-15.90

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

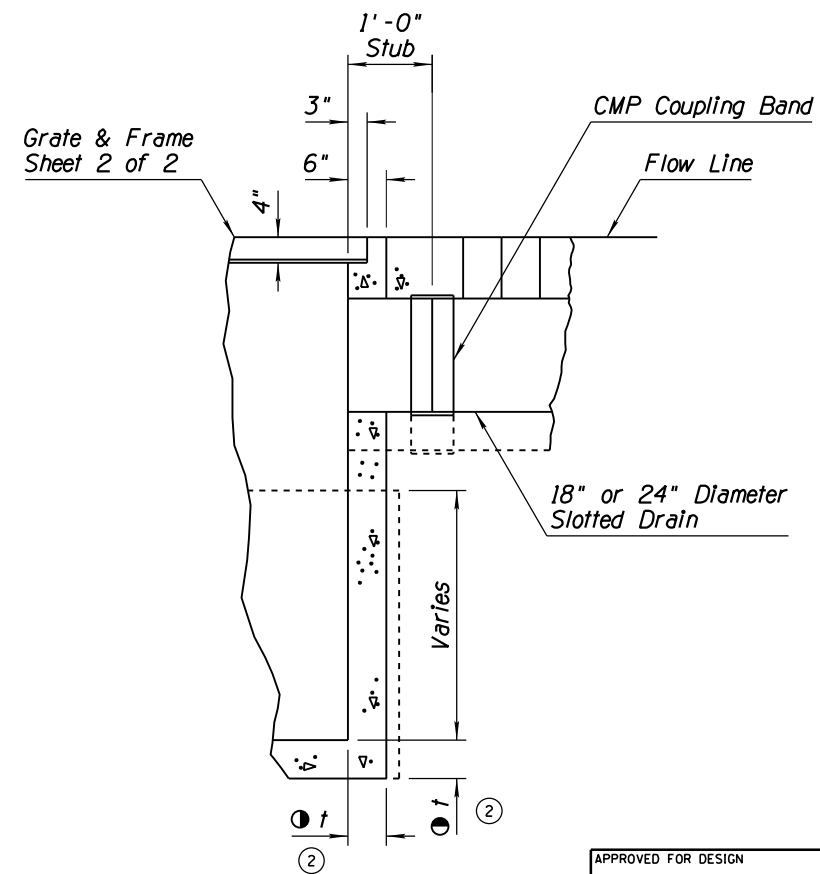
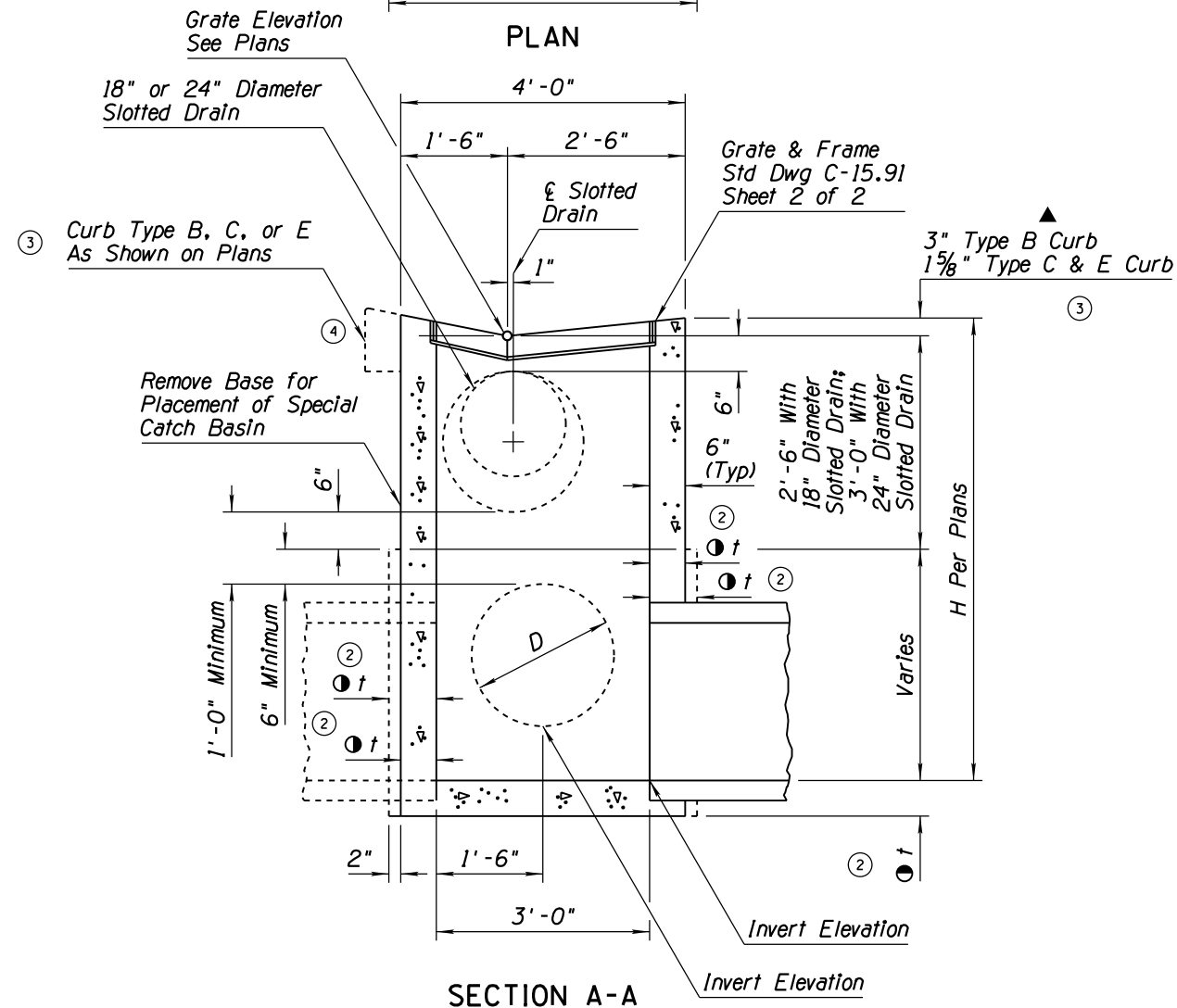
GENERAL NOTES

1. All concrete shall be Class B.
 - ① 2. All rebar shall have 2" minimum clear cover unless otherwise noted.
 3. #4 rebar shall be placed 12" center to center horizontal & vertical in walls.
 4. Pipe may be placed in any wall.
 5. 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'



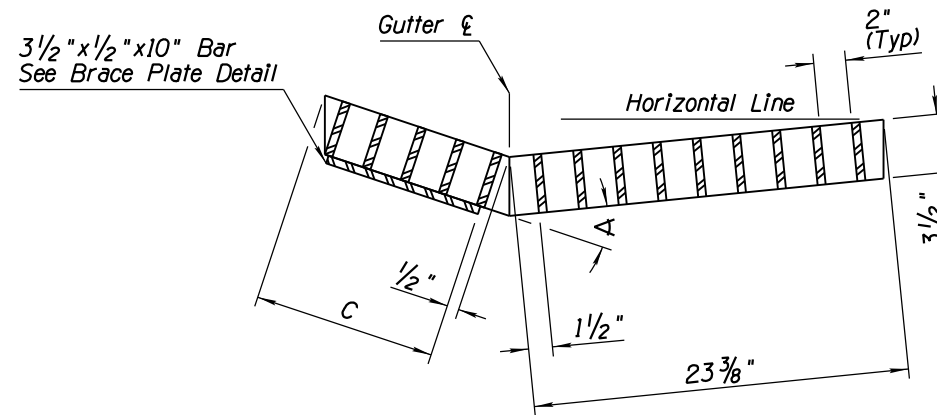
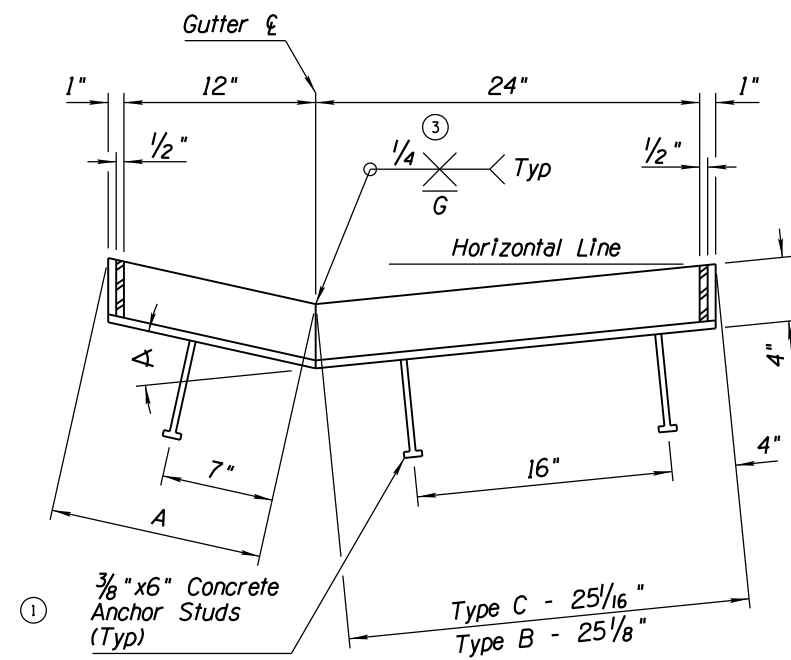
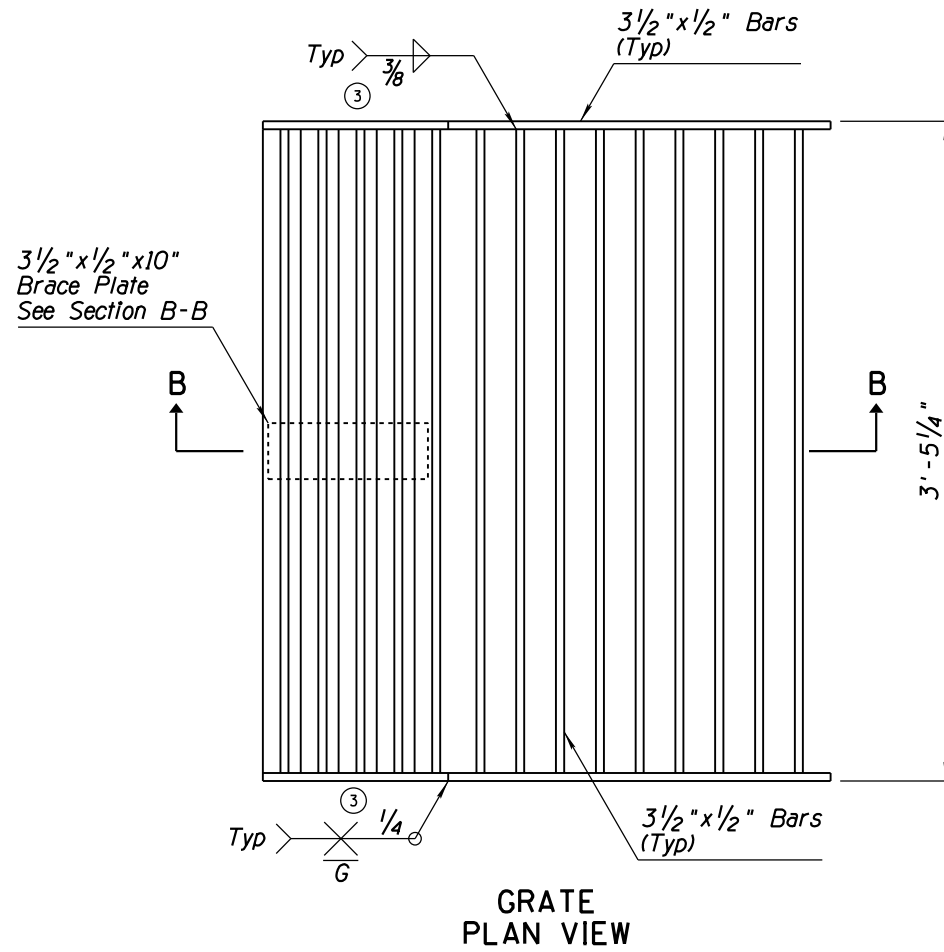
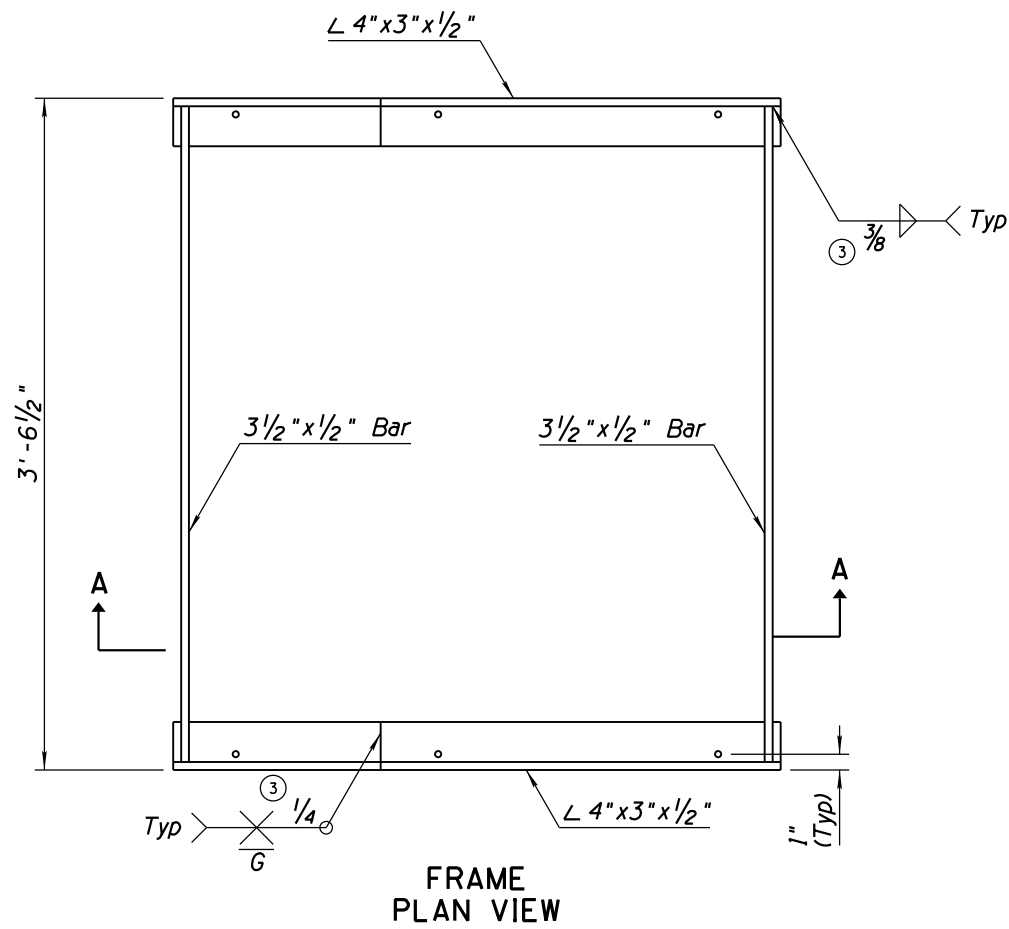
NOTE:
Bend Rebars and Cover With
Two Layers of 4"x4" Timbers

TEMPORARY TIMBER CAP 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 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



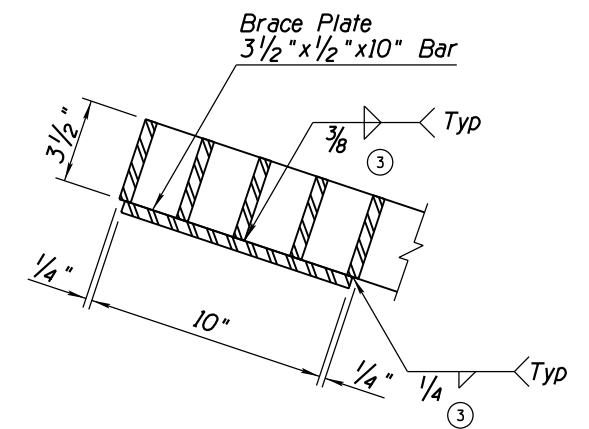
GENERAL NOTES

- 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

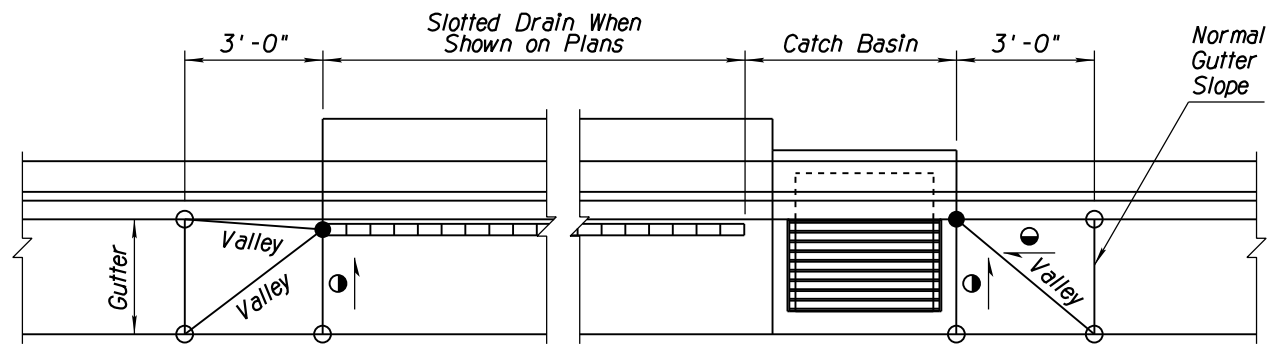
Grate design is not suitable for locations subject to bicycle traffic.

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"

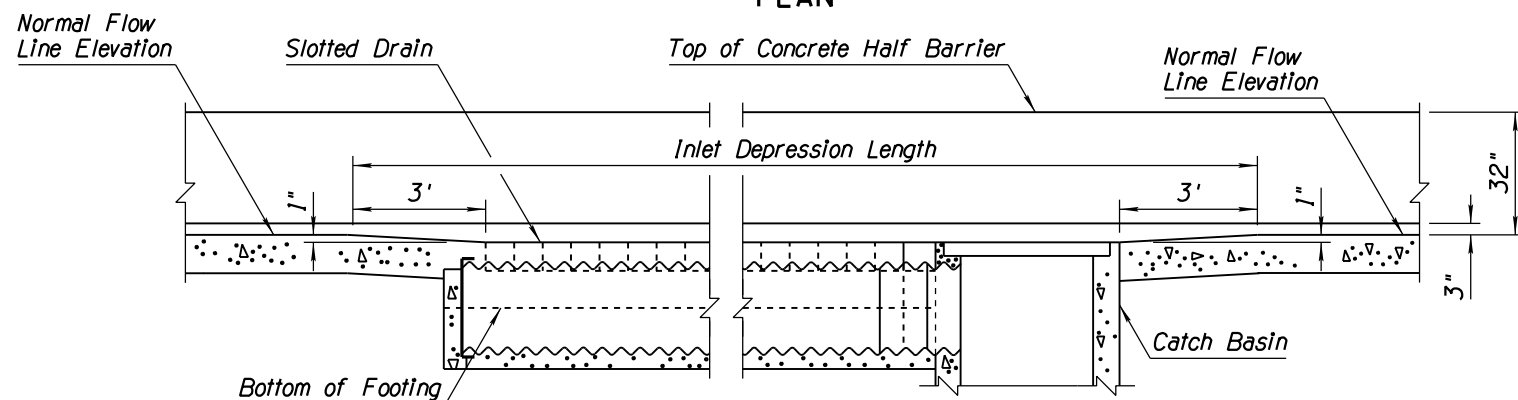


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FREeway CATCH BASIN DETAILS	DRAWING NO. C-15.91 Sheet 2 of 2

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

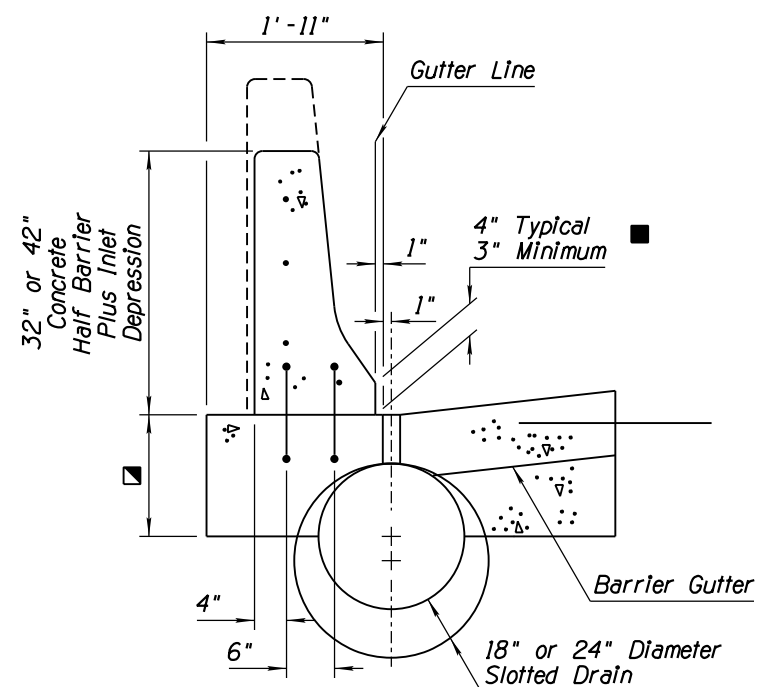


PLAN

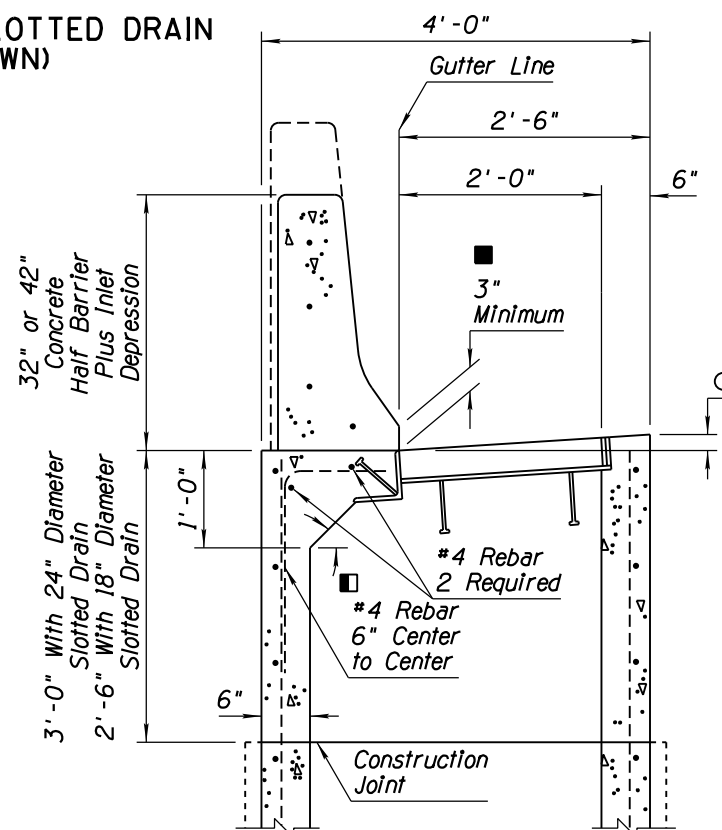


ELEVATION

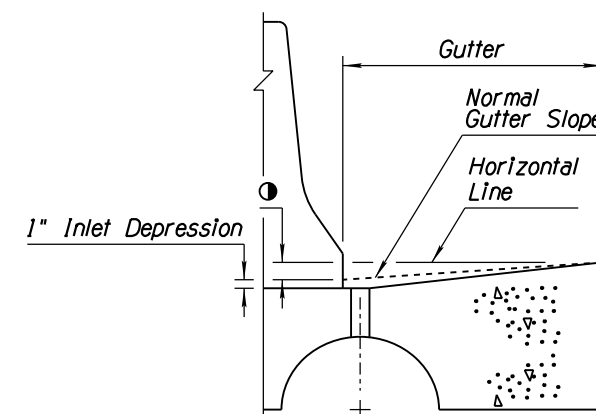
INLET DEPRESSION
CONCRETE HALF BARRIER AND CATCH BASIN WITH SLOTTED DRAIN
(18" CMP AND 32" CONCRETE BARRIER SHOWN)



HALF BARRIER INSTALLATION
AT SLOTTED DRAIN LOCATIONS



CATCH BASIN WITH HALF BARRIER



GUTTER DEPRESSION
AT SLOTTED DRAIN LOCATIONS

- ### GENERAL NOTES
- See Std Dwg C-15.91 for dimensions, sizes and details not shown for construction of catch basin.
 - See Std Dwgs C-10.52 and C-10.53 for dimensions, sizes and details not shown for construction of barrier.
 - See Std Dwg C-13.60 for dimensions, sizes and details not shown for construction of slotted drain.
 - 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.

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

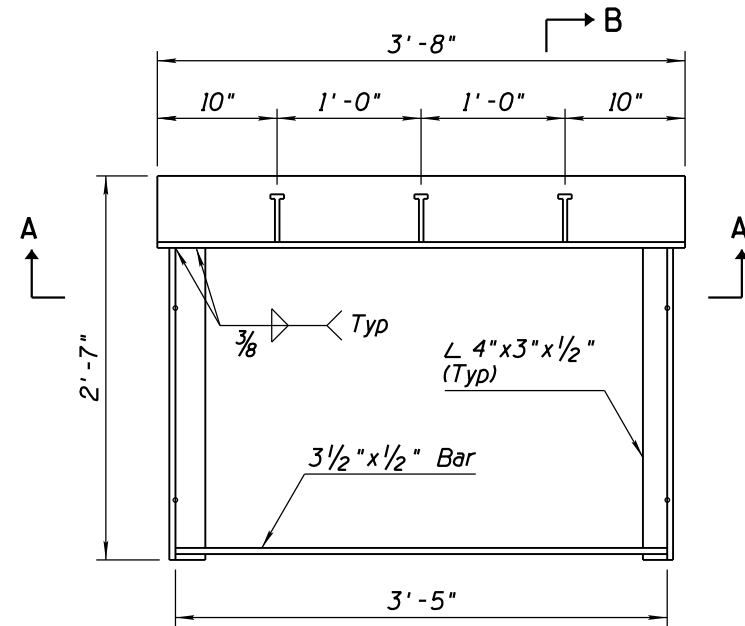
- All welding shall be in accordance with Std Spec 604-3.06.
- Grate opening for grate shown is 4.75 Sq Ft.

②

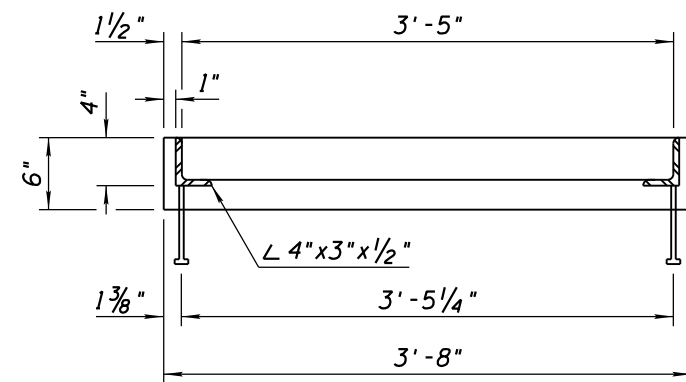
▲ Beveled side of grate toward barrier

③ NOTE TO DESIGNERS

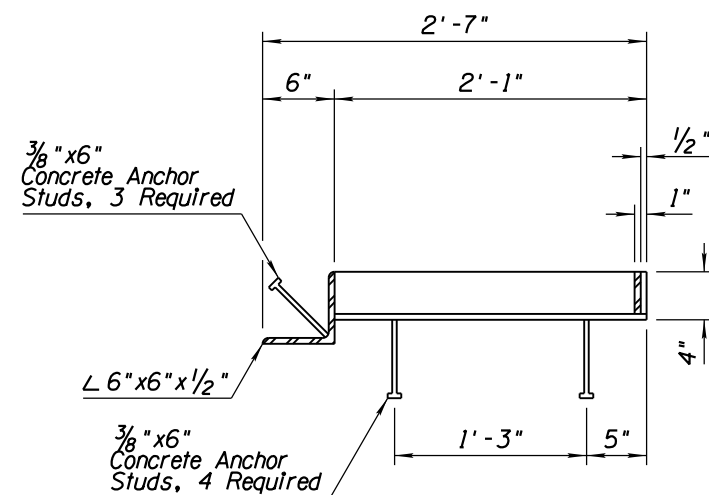
Grate design shown is not suitable for locations with bicycle traffic. Use Std Dwg C-15.50 grate with Std Dwg C-15.92 frame (Sheet 2 of 2) for locations with bicycle traffic.



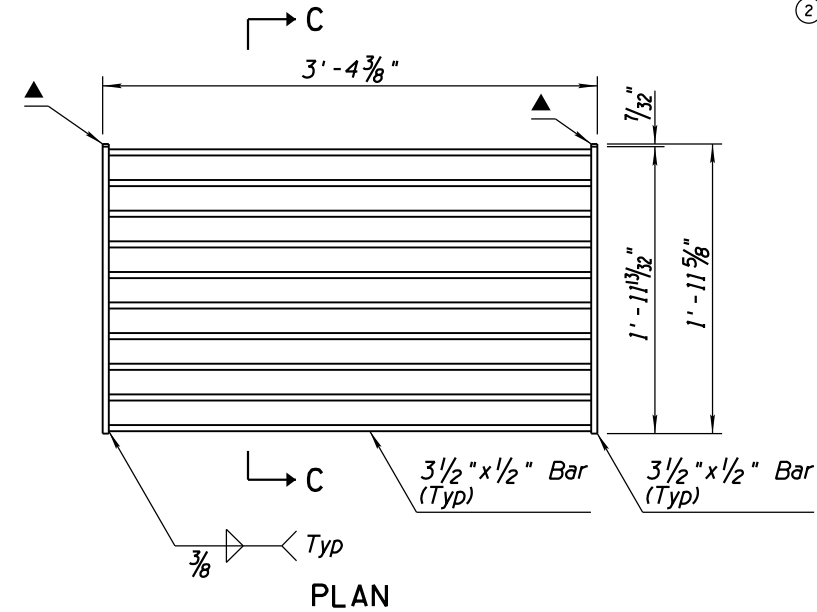
PLAN



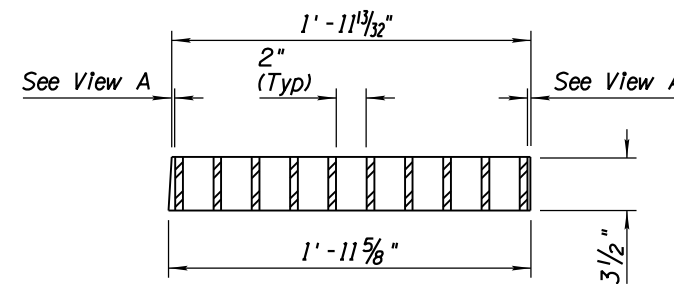
SECTION A-A



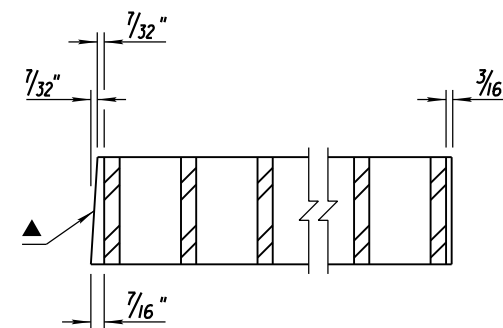
SECTION B-B
FRAME



PLAN



SECTION C-C
GRATE



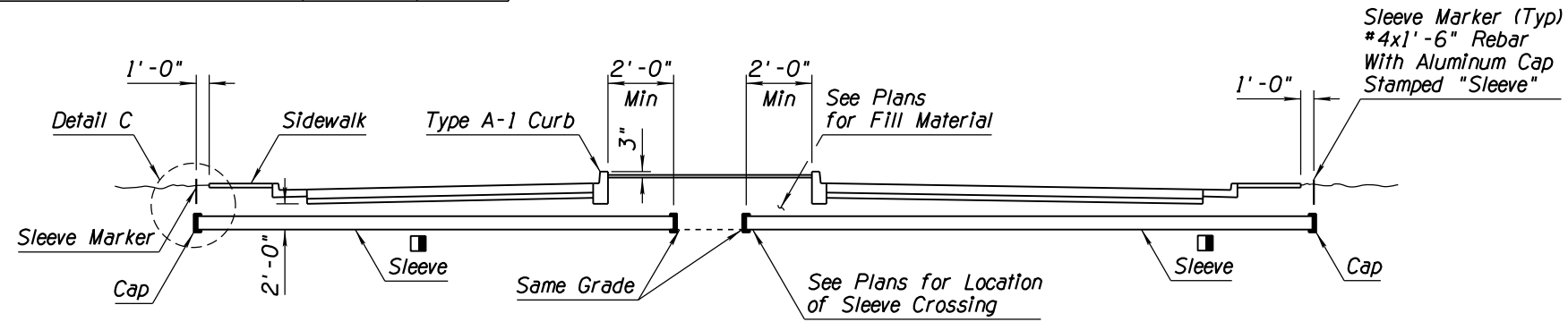
View A

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

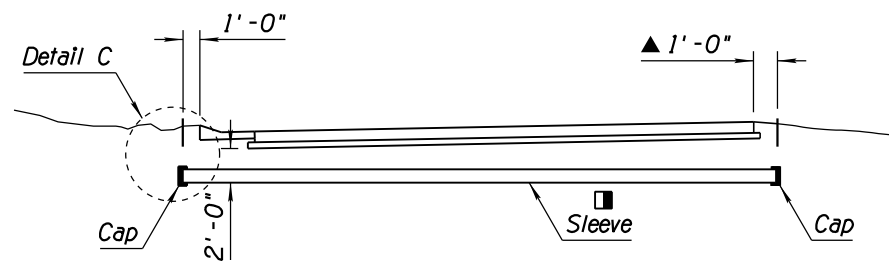
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REVISED GRAPHICS	RLF	9/04
2			
3			
4			

GENERAL NOTES

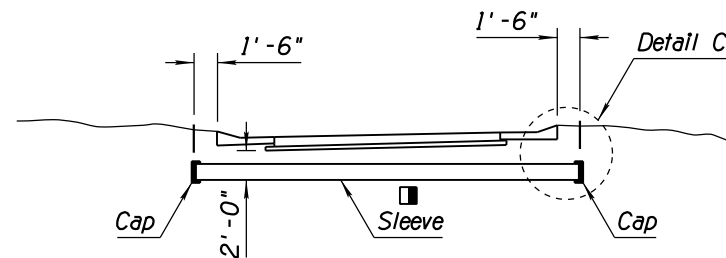
- Irrigation sleeves shall be installed in a trench condition. See Std Dwg C-13.15.
- Bedding and backfill material shall be Class 2 AB.
- Pipe Installation shall conform to Section 501 of Std Specs.
- The contractor shall imprint a 4"± high letter "S" on the face of all curbs at sleeve locations. The width of the letter shall be 1/2" and shall penetrate the concrete surface 1/2".
- 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.
- 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 superelevated sections. Minimum slope nominal to drain.
 - ▲ 2'-0" Back of Curb Median



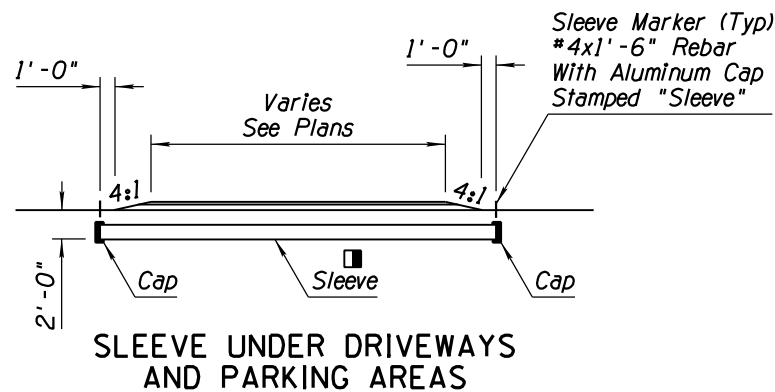
SLEEVE UNDER CROSSROAD



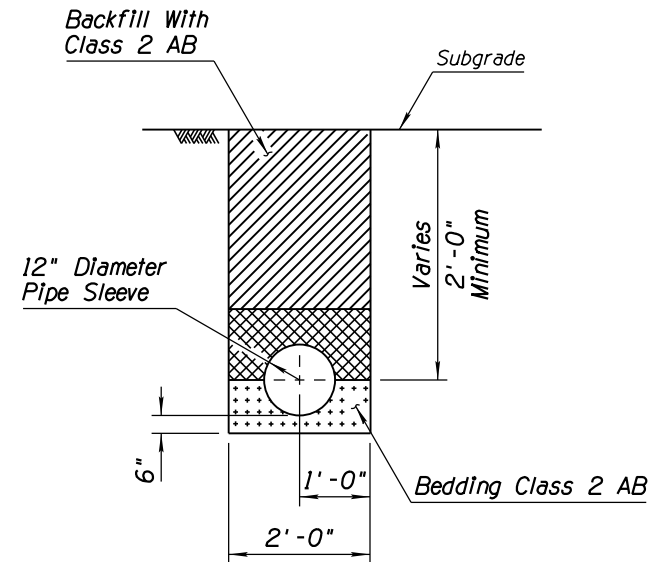
SLEEVE UNDER MAINLINE



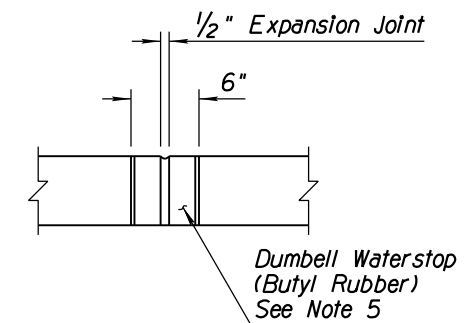
SLEEVE UNDER RAMP



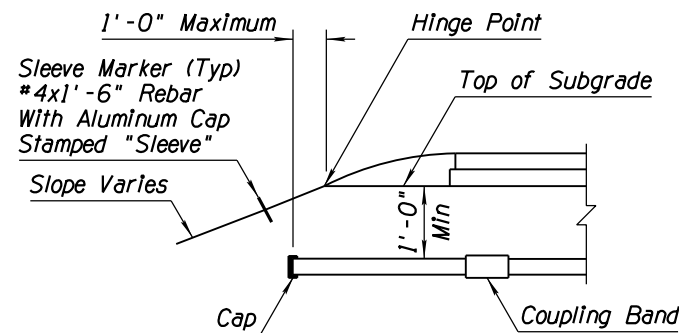
SLEEVE UNDER DRIVEWAYS AND PARKING AREAS



TYPICAL INSTALLATION



DUMBELL WATERSTOP

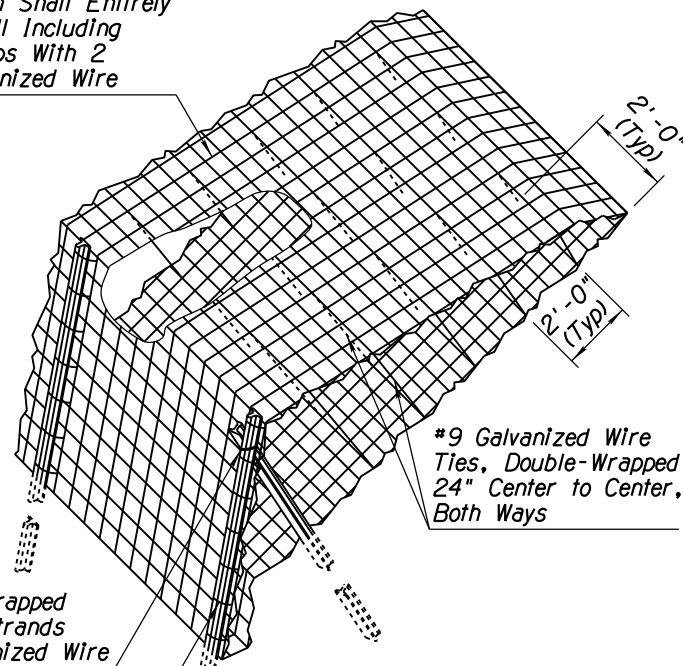


DETAIL C
SLEEVE TERMINATION
AT ELEVATED ROADWAY

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

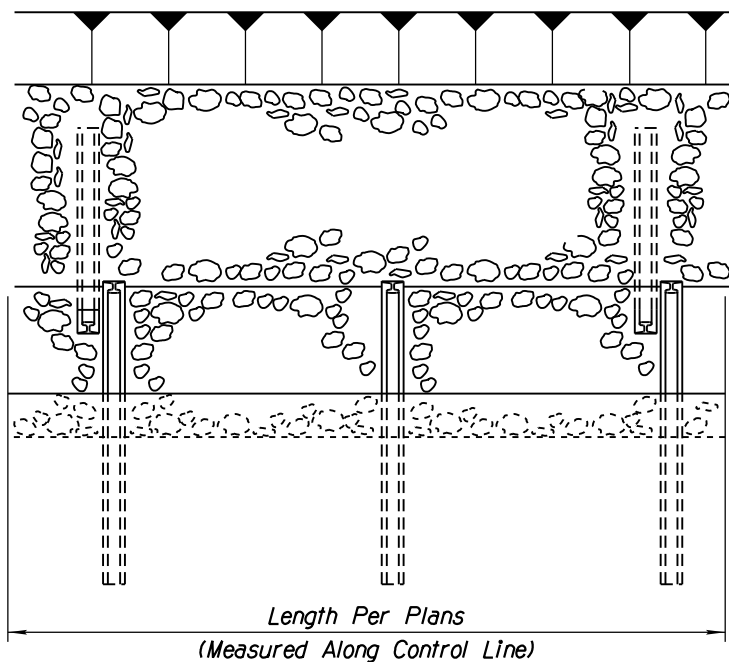
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STANDARD DRAWING	RLF	9/04
2	REVISED BOLT SPECIFICATION	RLF	5/12
3			
4			

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

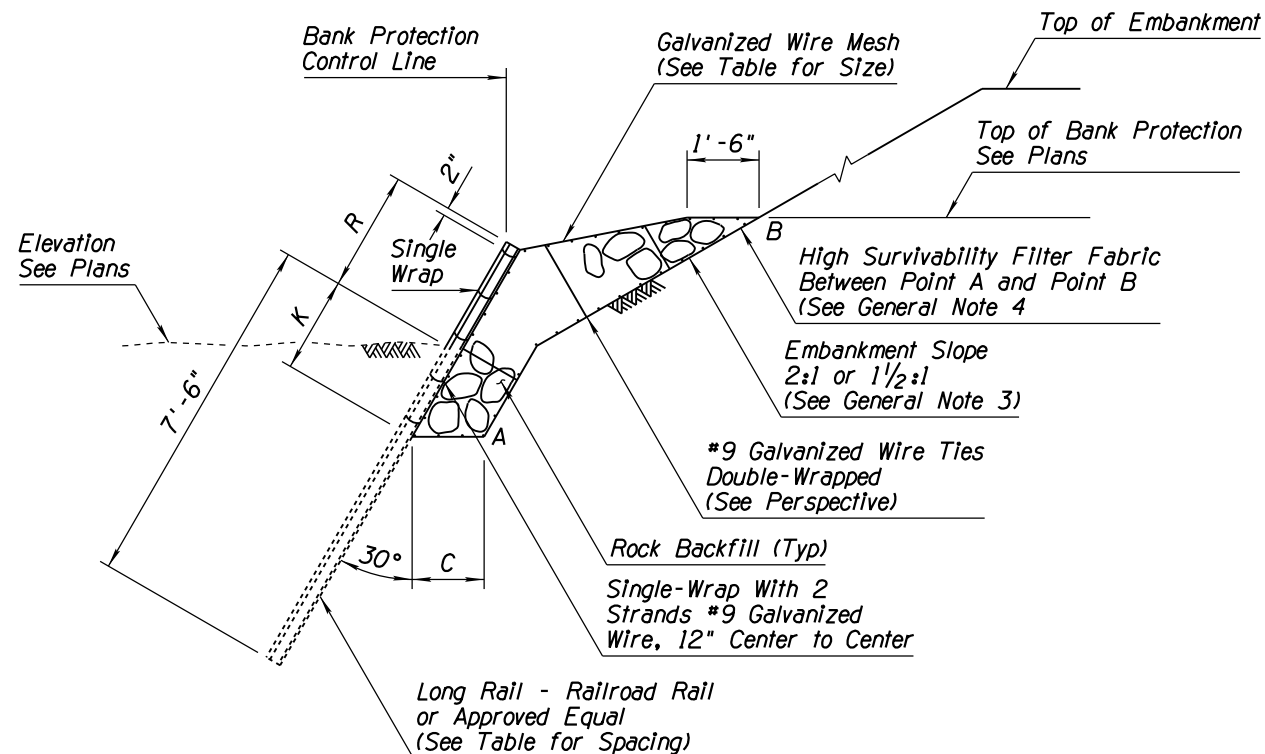


PERSPECTIVE

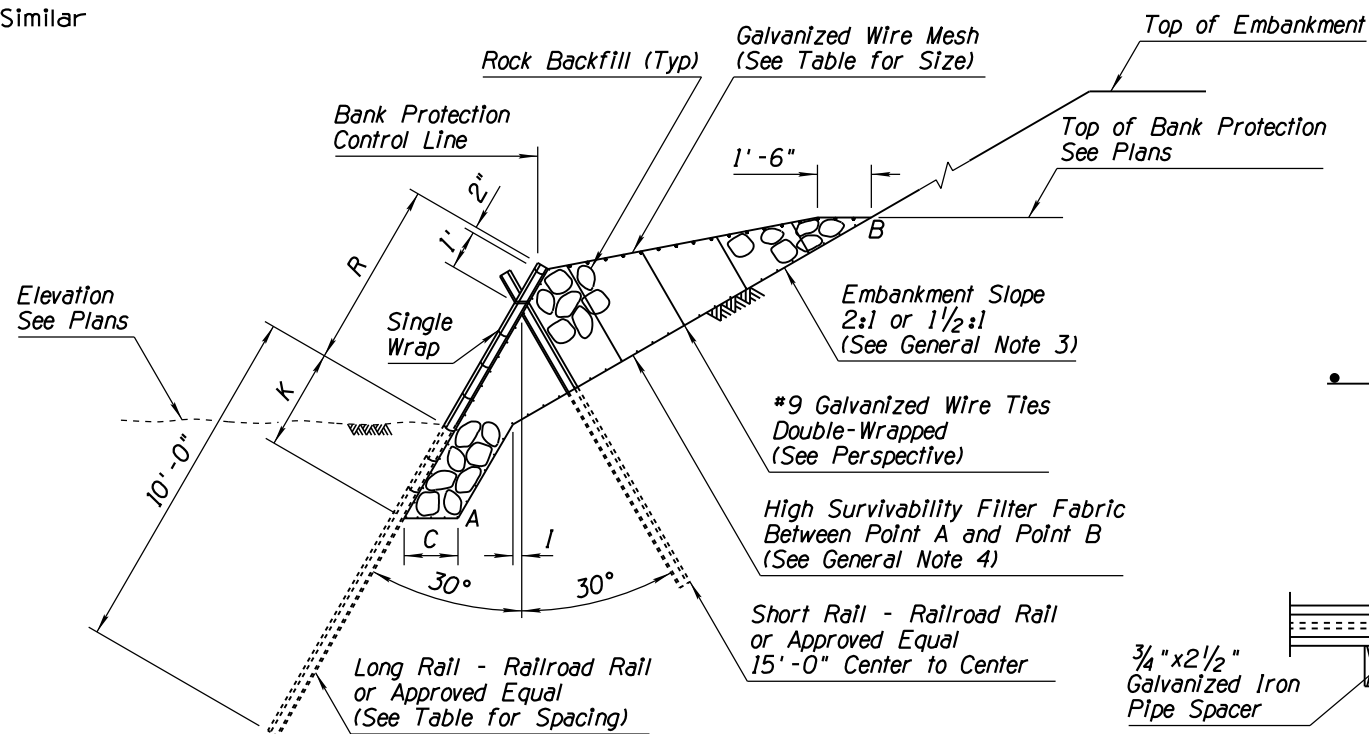
Drawn for Types 2 & 3, Type 1 Similar



PLAN OF CHANNEL BANK PROTECTION



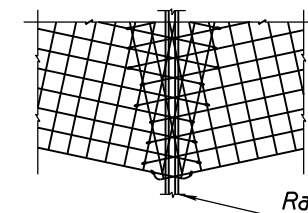
TYPE 1 BANK PROTECTION



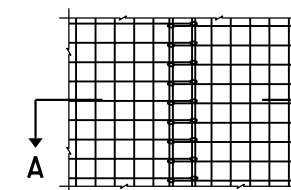
TYPE 2 AND 3 BANK PROTECTION

GENERAL NOTES

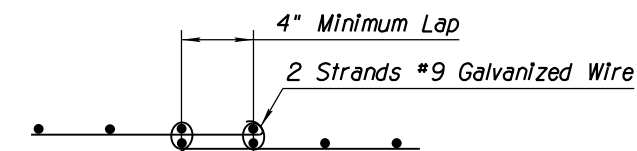
1. Rock shall conform to Std Spec 913-2.01(A). The rock shall have a minimum nominal diameter no smaller than the mesh opening, and a maximum nominal diameter of 12".
2. All mesh wire, tie wire, cable, bolts, washers and nuts shall be galvanized.
3. When other embankment slope rates are encountered, 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.



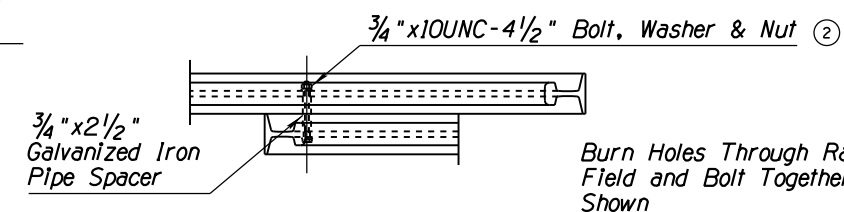
ELEVATION AT CHORD POINT ON CURVE



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

APPROVED FOR DISTRIBUTION

STATE OF ARIZONA
DEPARTMENT OF TRANSPORTATION
ROADWAY STANDARD DRAWINGS

RAIL BANK PROTECTION
FOR DRAINAGEWAYS
TYPES 1, 2 & 3

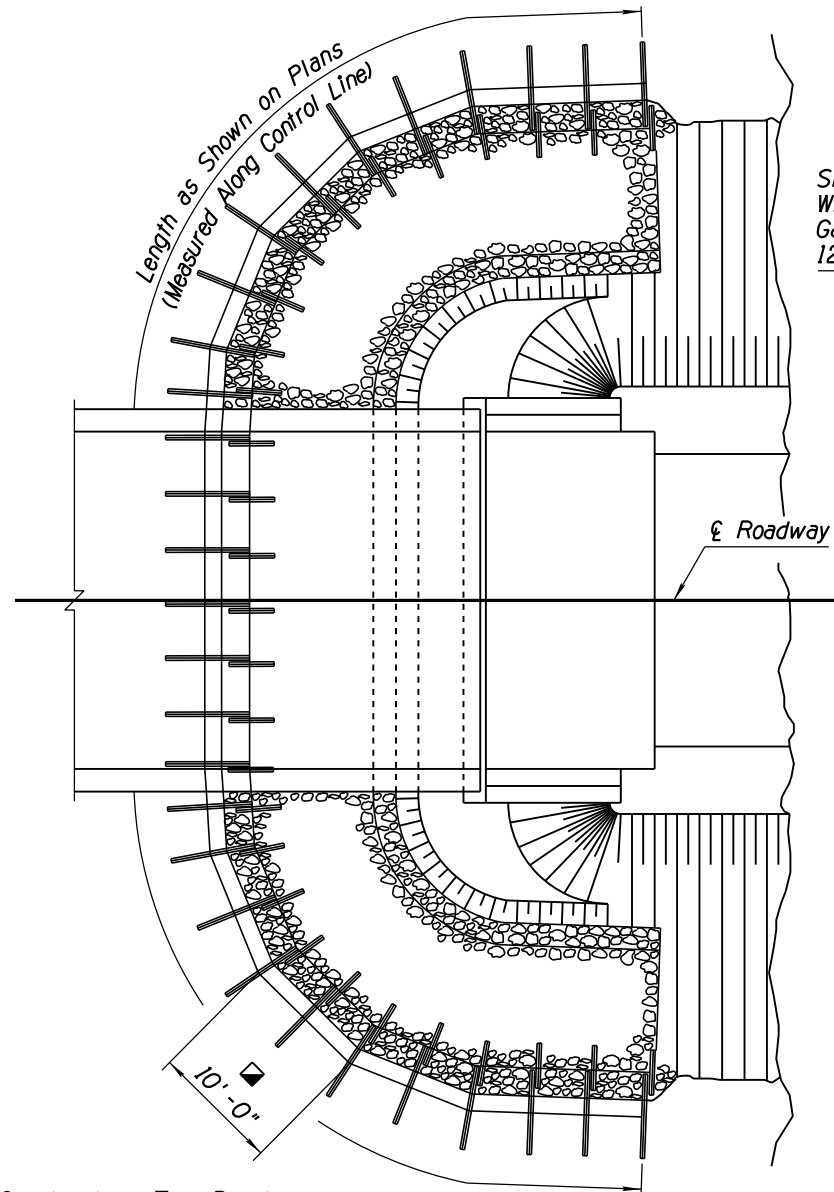
REV.

5/12

DRAWING NO.

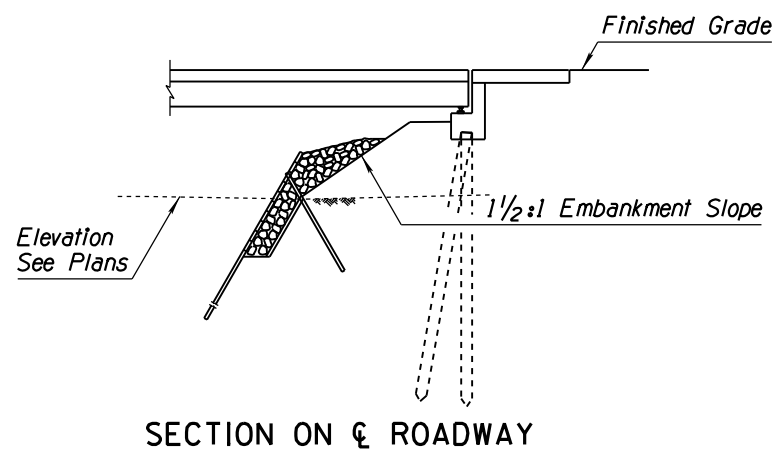
C-17.10

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

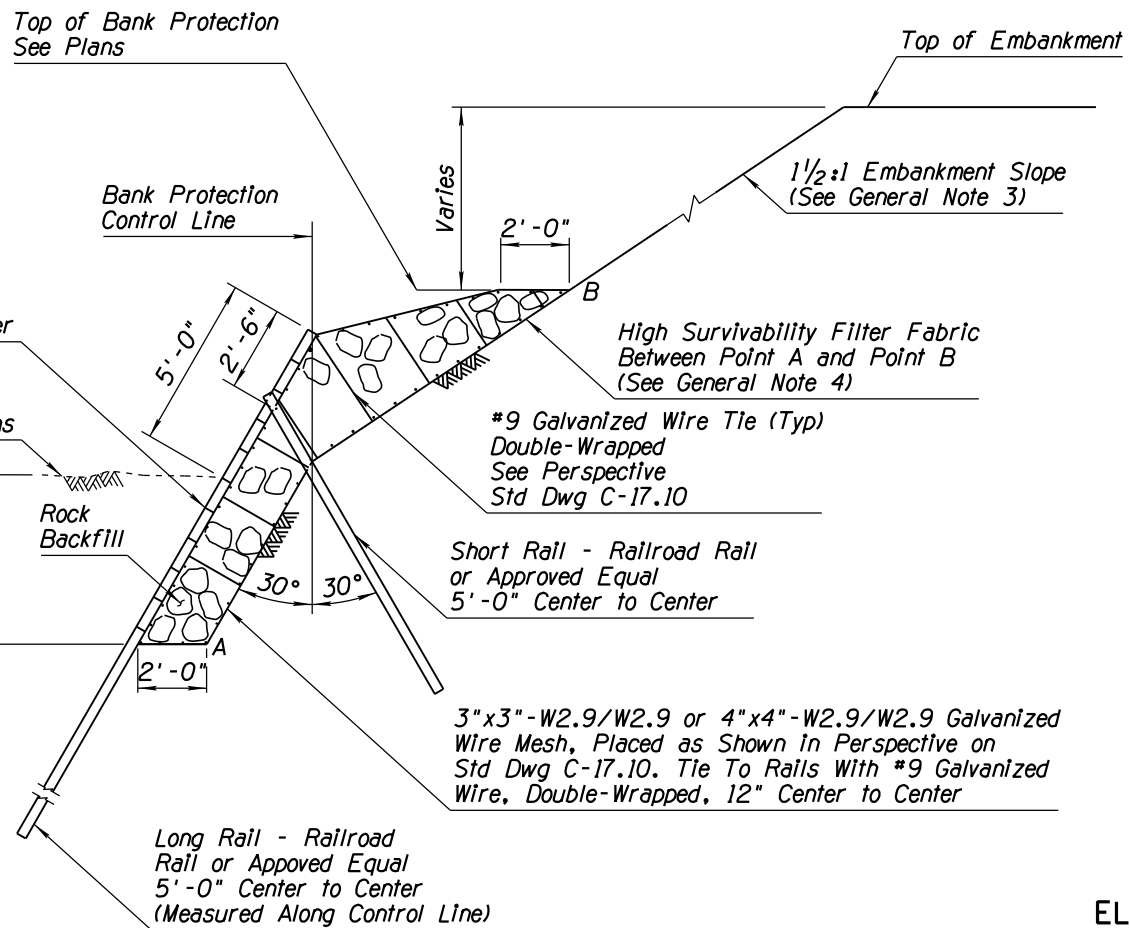


Construct on Two-Panel Chords Around Curves

PLAN OF BANK PROTECTION AT ABUTMENT



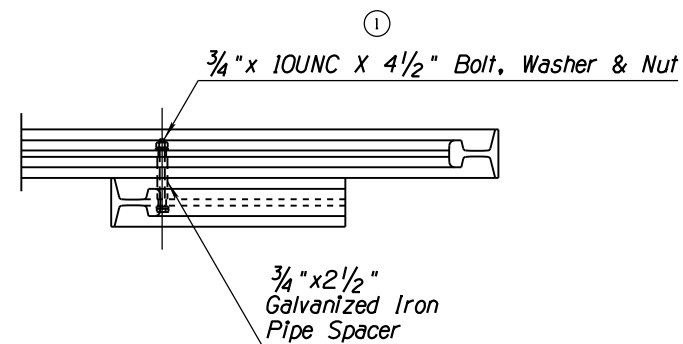
SECTION ON ROADWAY



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

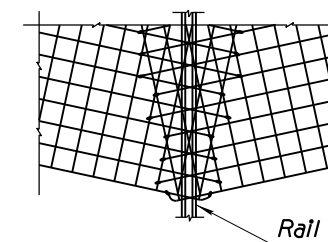


RAIL CONNECTION DETAIL

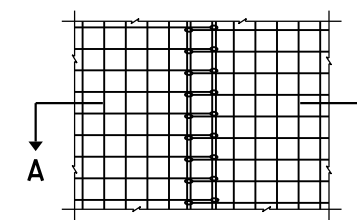
Burn Holes Through Rails in Field and Bolt Together as Shown

GENERAL NOTES

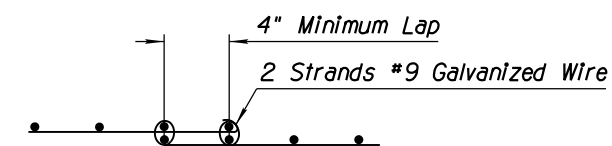
1. Rock shall conform to Section 913-2.01(A) of the Standard Specifications. The rock shall have a minimum nominal diameter no smaller than the mesh opening, and a maximum nominal diameter of 12".
2. All mesh wire, tie wire, cable, bolts, washers and nuts shall be galvanized.
3. When other embankment 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



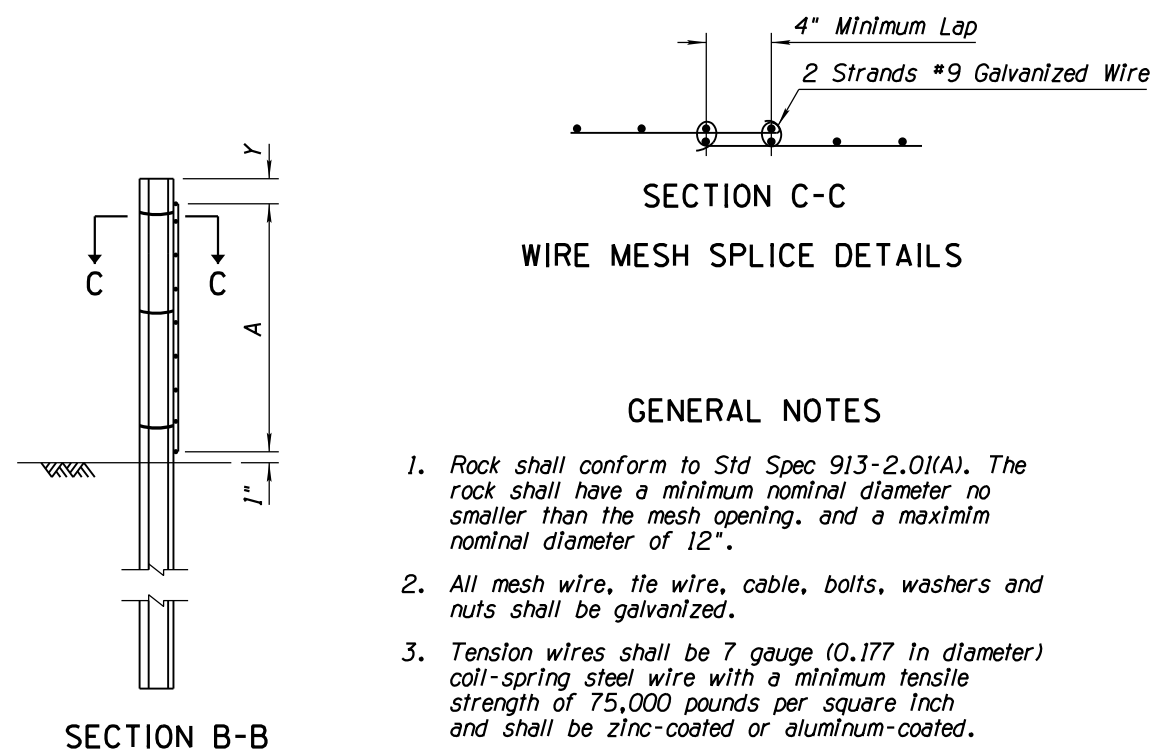
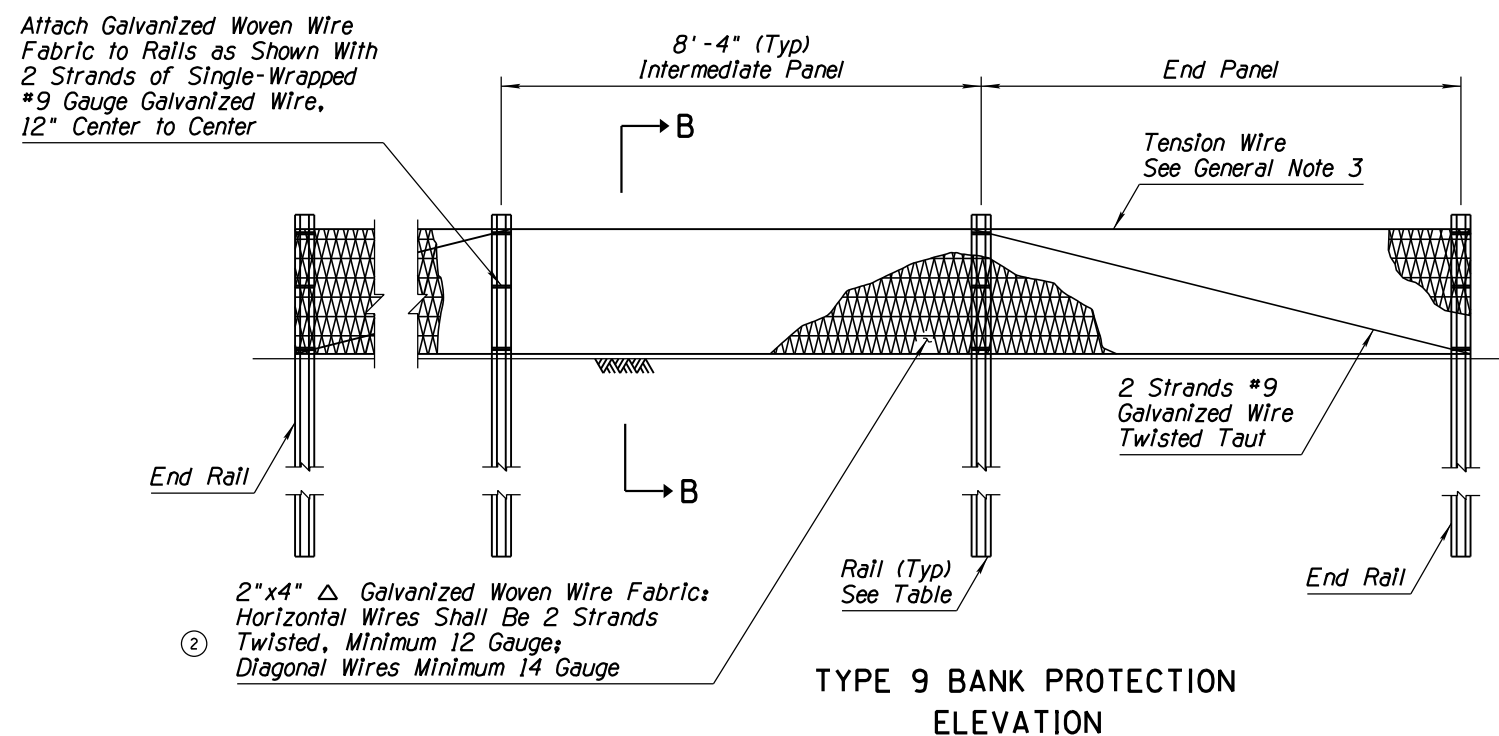
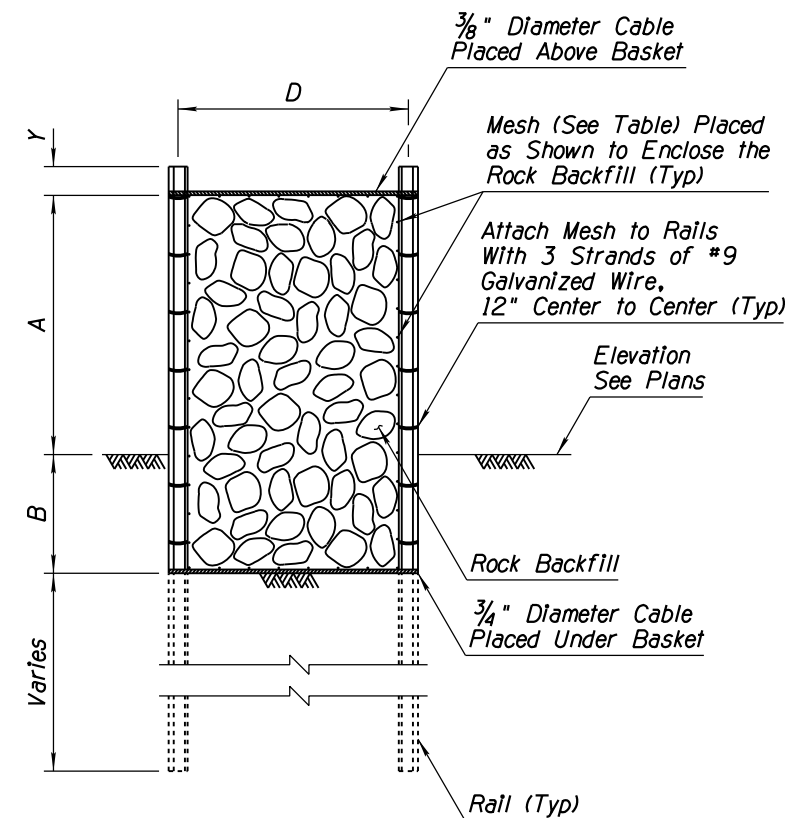
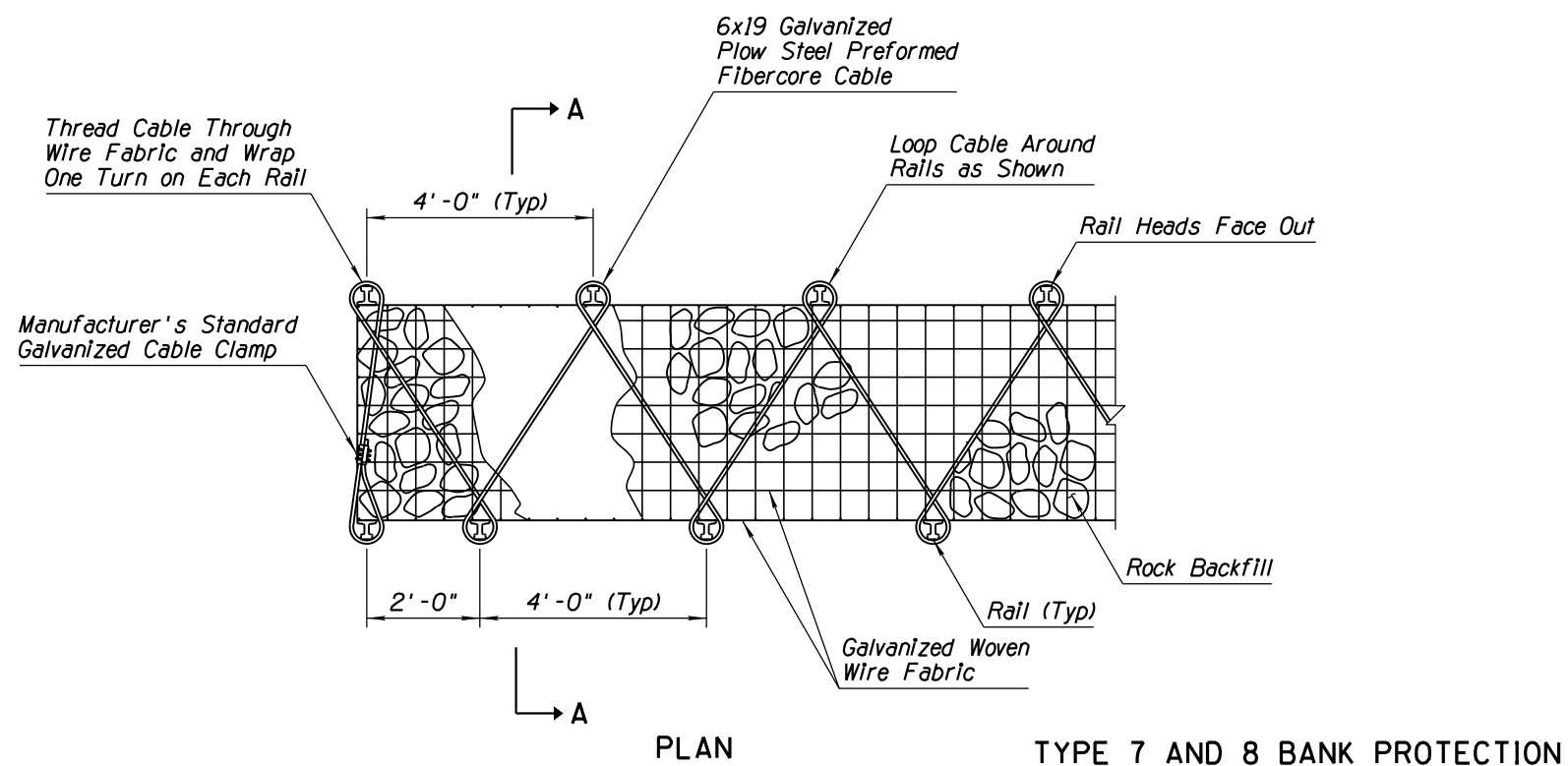
ELEVATION ON STRAIGHT SECTION



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	4 - 0	2 - 0	4	6
8	18	50	4"X4"-W1.4/W1.4	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 FROM C-18.40 TO C-18.10, SHEET 1 OF 3	RLF	9/04
2	REVISED GENERAL NOTE	RLF	7/05
3	DELETED ORIGINAL NOTE 5; CHANGED NUMBERS 6 & 7	RLF	5/07
4	ADDED NOTE TO DESIGNERS	RLF	5/07

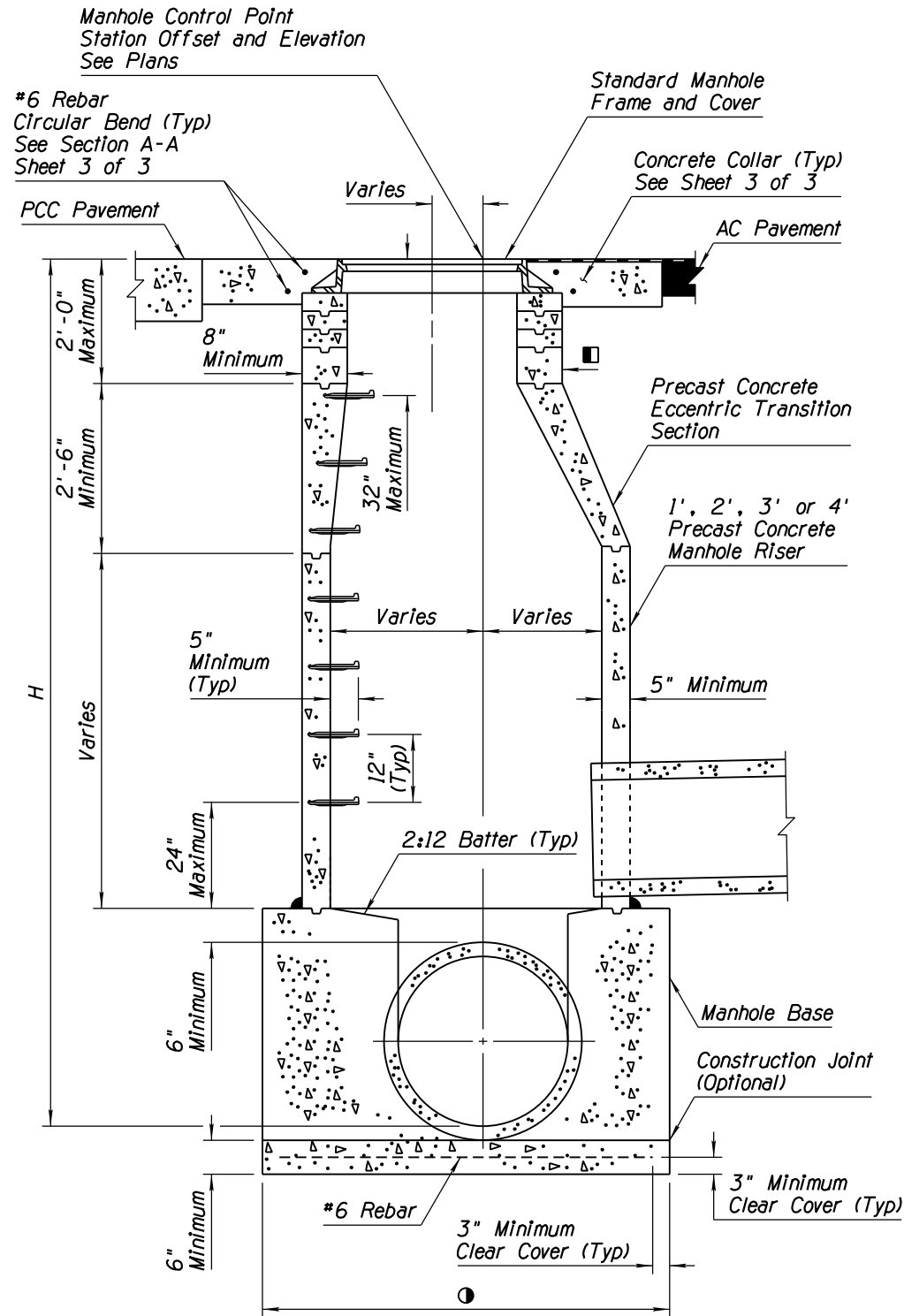
GENERAL NOTES

1. Pipe sizes and elevations are shown on plans.
2. The manhole height, H, shall be measured from the lowest Invert elevation to the top of the manhole frame.
3. Concrete for cast-in-place manholes shall be Class B.
- ② 4. All manholes deeper than 56 inches shall have steps. Manhole steps shall be constructed in accordance with AASHTO M199. Where precast manholes are used, the steps shall be installed at the same time sections are cast.
- ③ 5. Precast manhole sections shall be manufactured in accordance with AASHTO M199, except that the compressive strength of each section shall be determined and accepted in accordance with Std Spec 1006-7.
- ③ 6. Manhole size, location and elevation shall be as shown on plans.
- ③ ② 7. Backfill material shall be compacted to at least 95 percent of the maximum density per the applicable test method of the ADOT Materials Testing Manual.
 - 4", 6", 8" or 12" (30" Inside Diameter) Grade Rings
 - ▲ 1/4" /ft
 - See Sheet 2 of 3

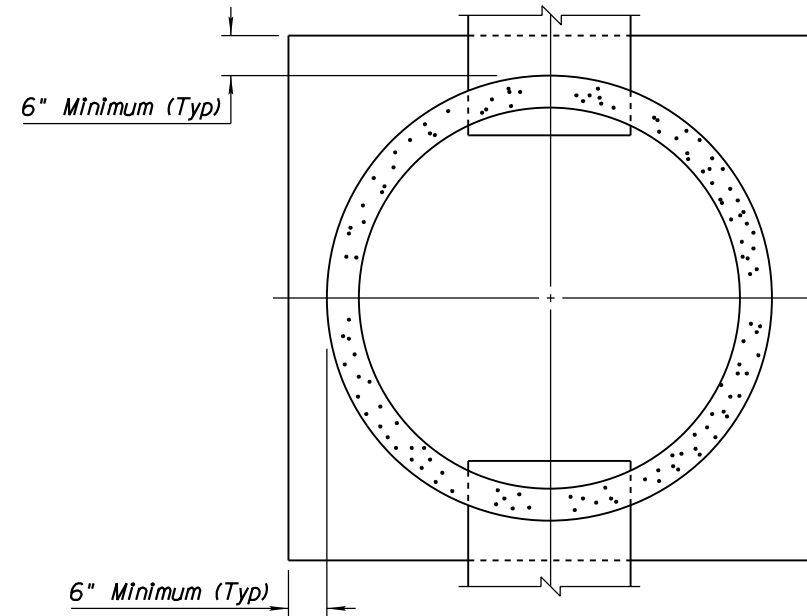
④

NOTE TO DESIGNERS

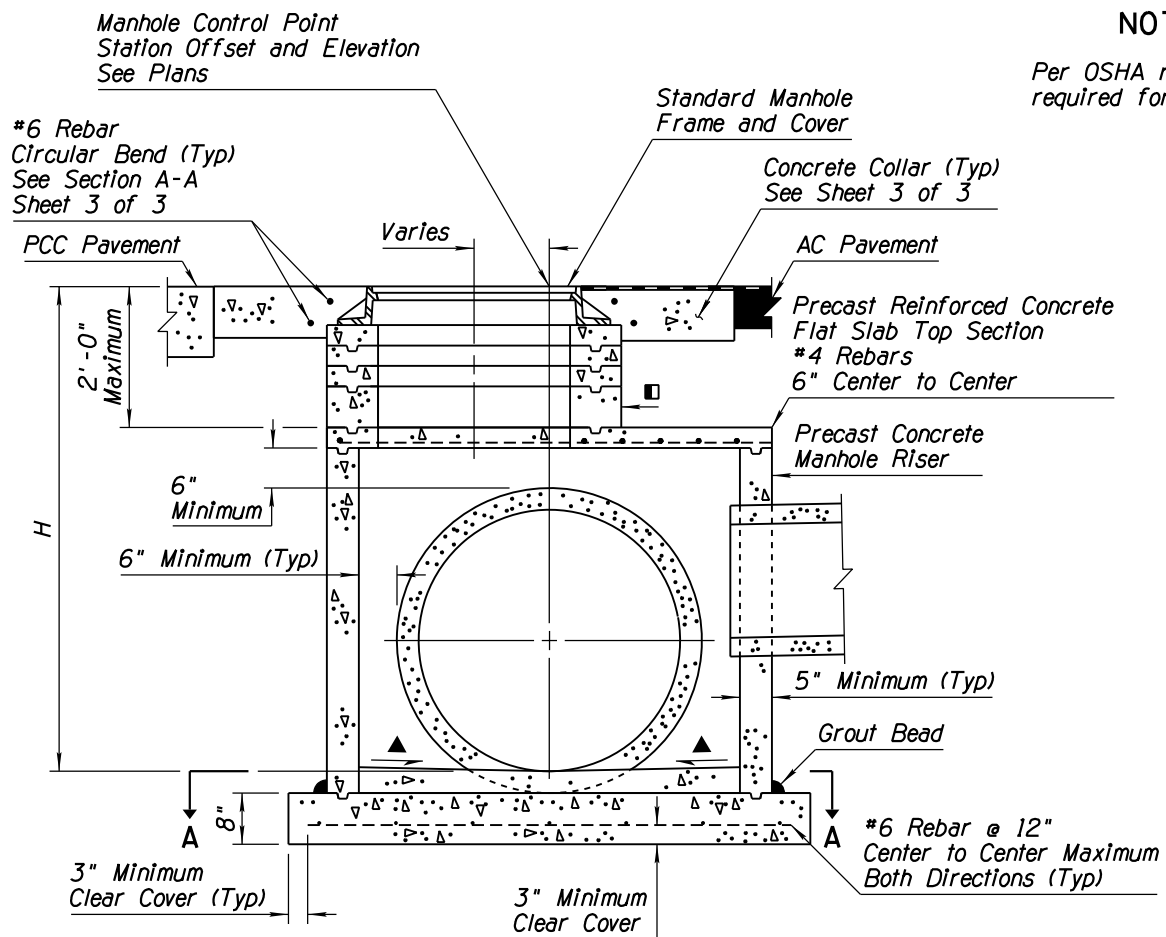
Per OSHA requirements, special treatments are required for heights exceeding 30 ft.



**SECTION
NORMAL INSTALLATION
STANDARD BASE**



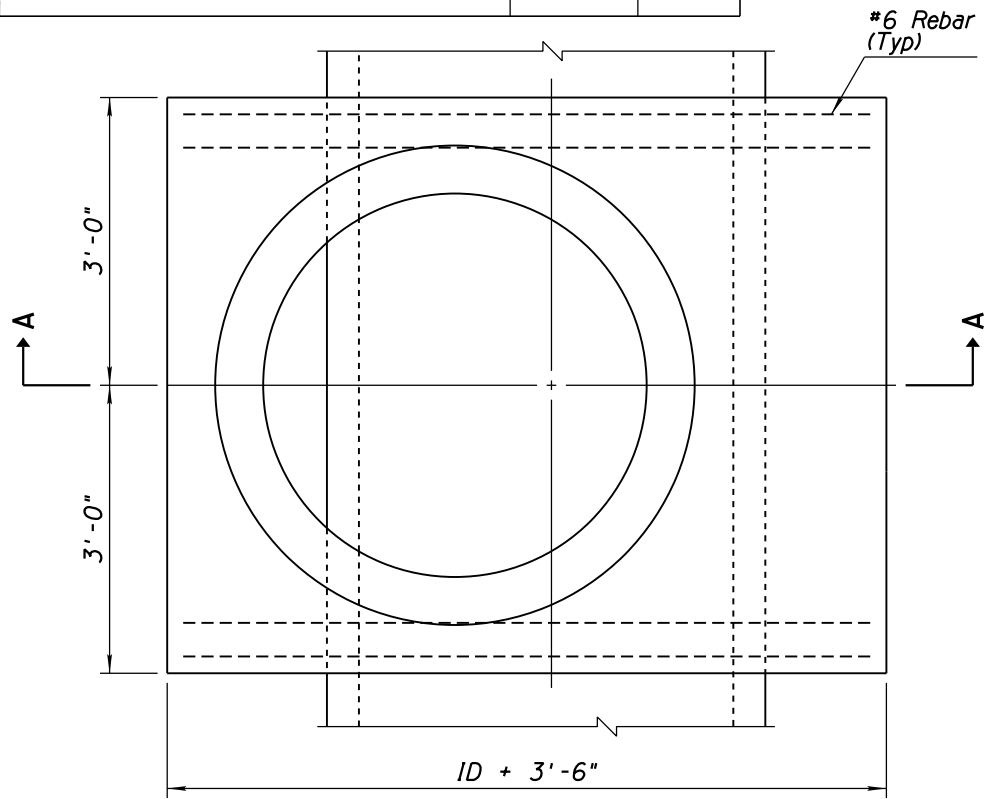
SECTION A-A



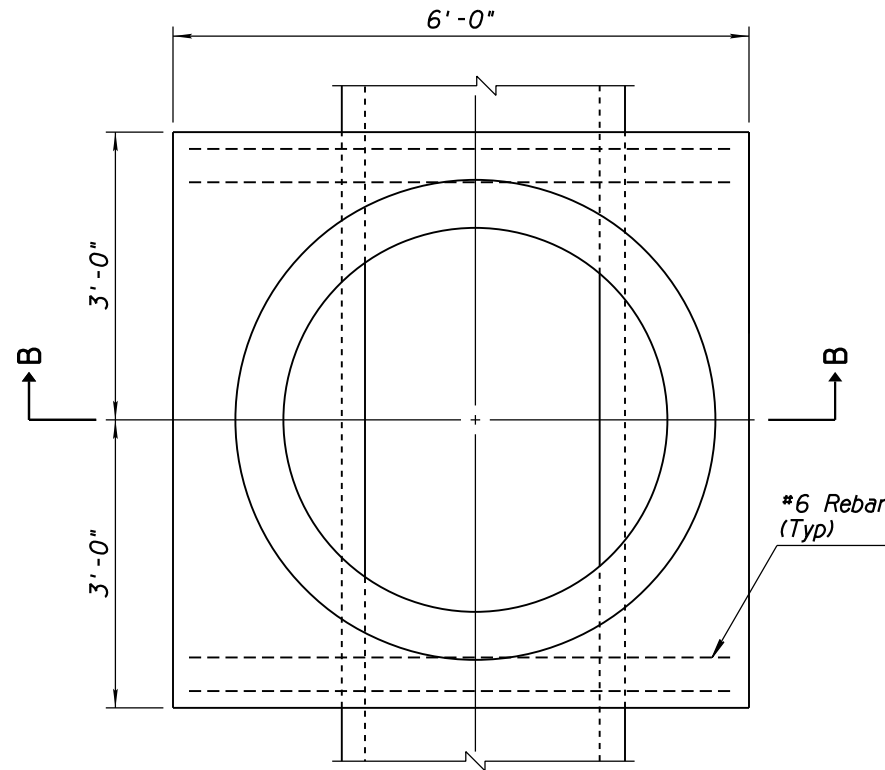
**SECTION
SHALLOW INSTALLATION
SLAB BASE**

APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	MANHOLE RISER DETAILS	DRAWING NO. C-18.10 Sheet 1 of 3

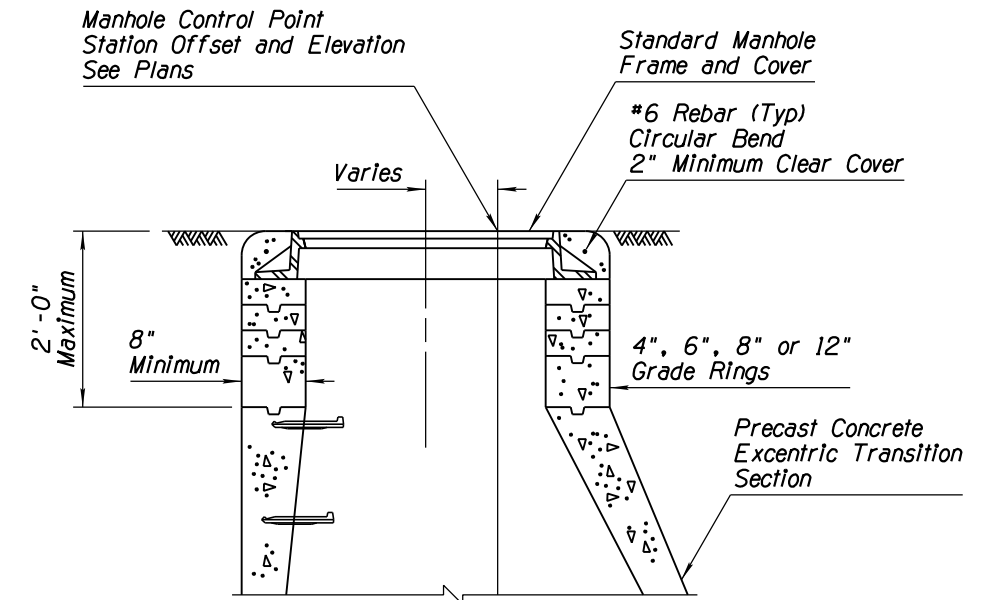
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	RENAMED STD DWG TO C-18.10, SHEET 2 OF 3	RLF	9/04
2	REVISED SECTION A-A THROUGH C-C GRAPHICS	RLF	4/06
3			
4			



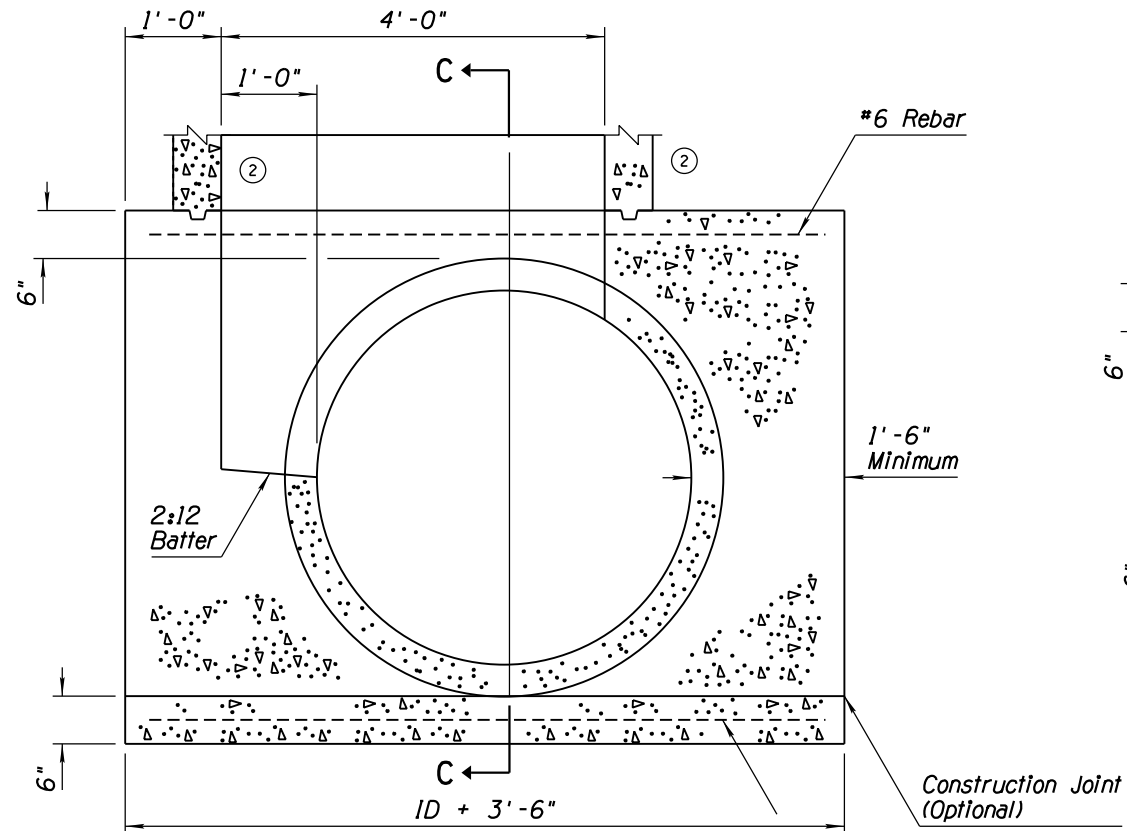
PLAN
FOR PIPES OVER 36" ID



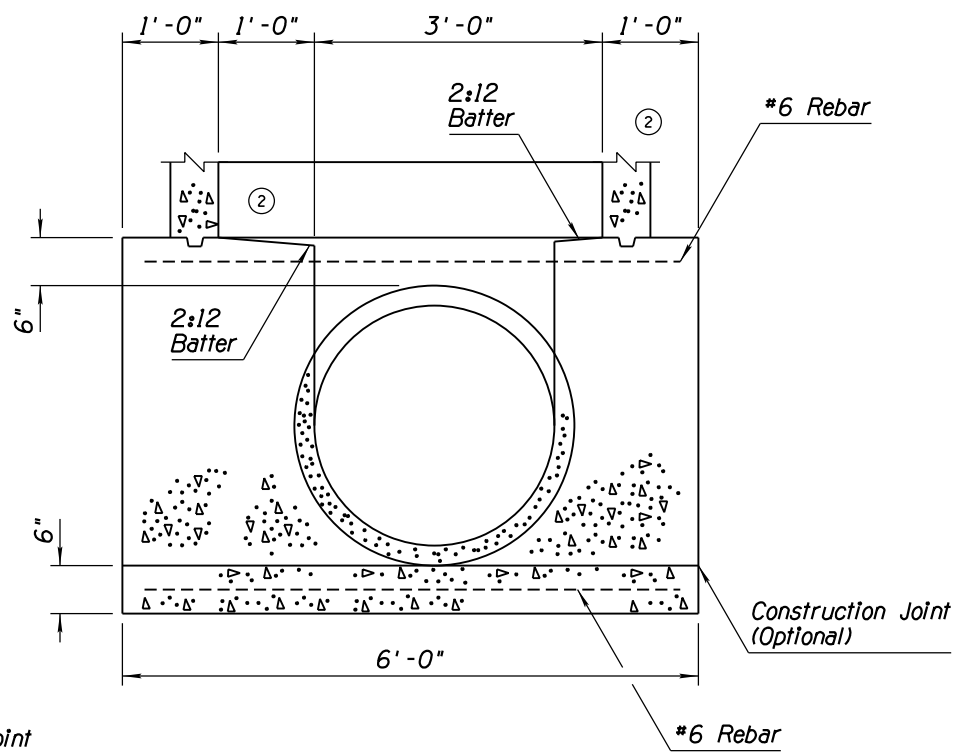
PLAN
FOR PIPES 36" ID AND SMALLER



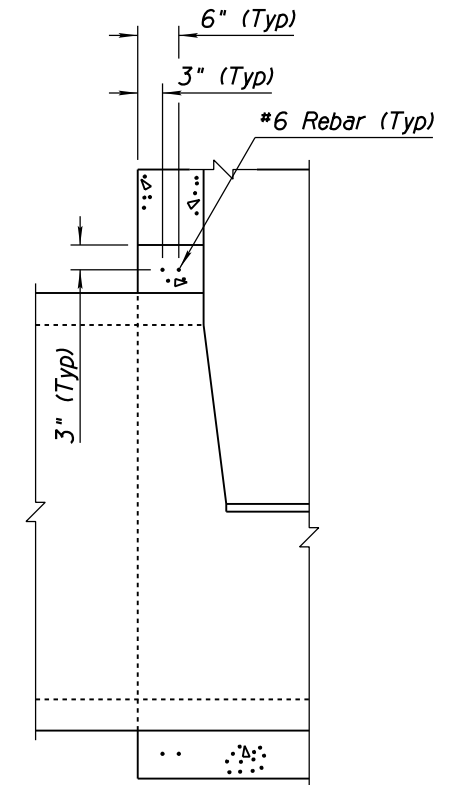
SECTION
RING, FRAME & COVER
NON-PAVEMENT INSTALLATION



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



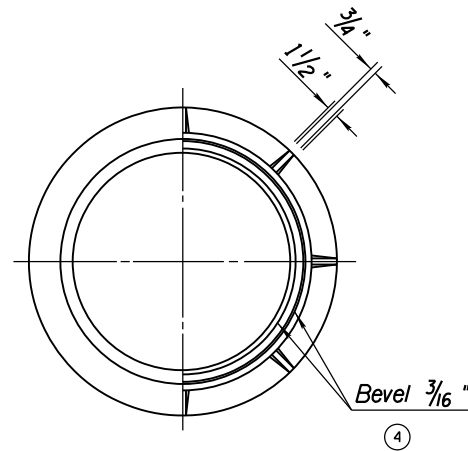
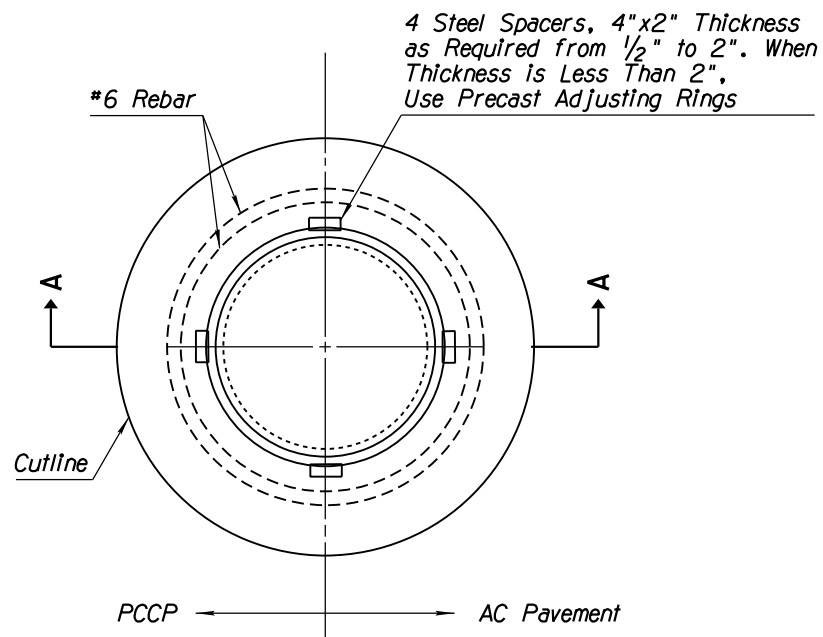
SECTION B-B
STANDARD BASE STRUCTURE
FOR PIPES 24" TO 36" ID



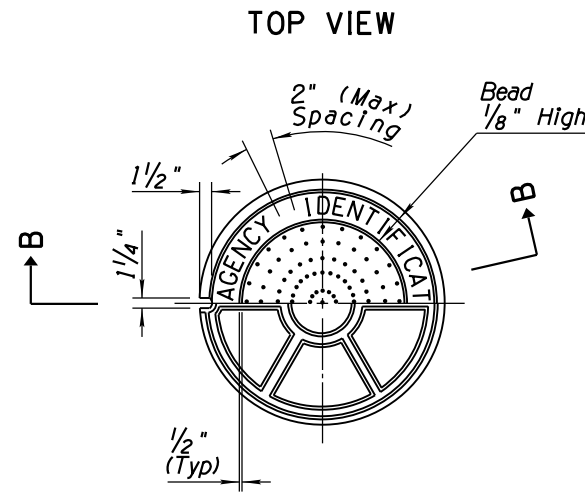
SECTION C-C

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

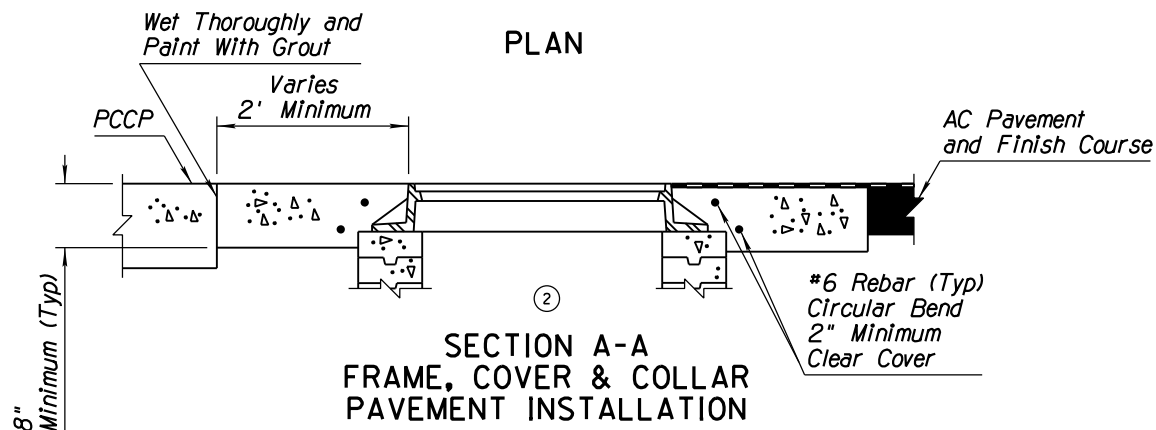


BOTTOM VIEW - TOP VIEW

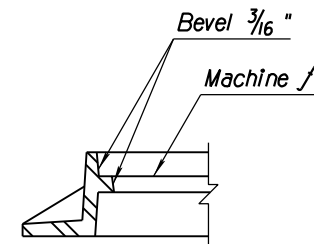


TOP VIEW - BOTTOM VIEW

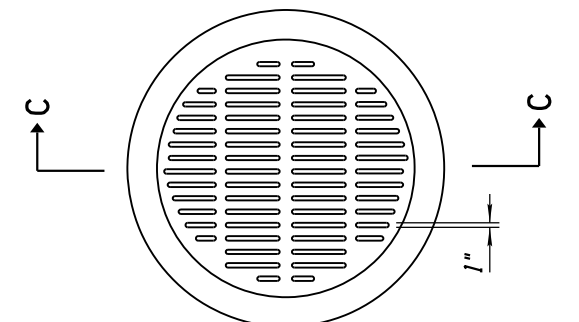
- GENERAL NOTES**
- The 30" minimum opening shall be required. Other Frame and Cover dimensions shown are nominal and vary by manufacturer.
 - All frames, grates, and covers shall support HS20 loading, minimum.
 - Casting weights shown are minimum weights and are either for cast-iron or ductile-iron 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.



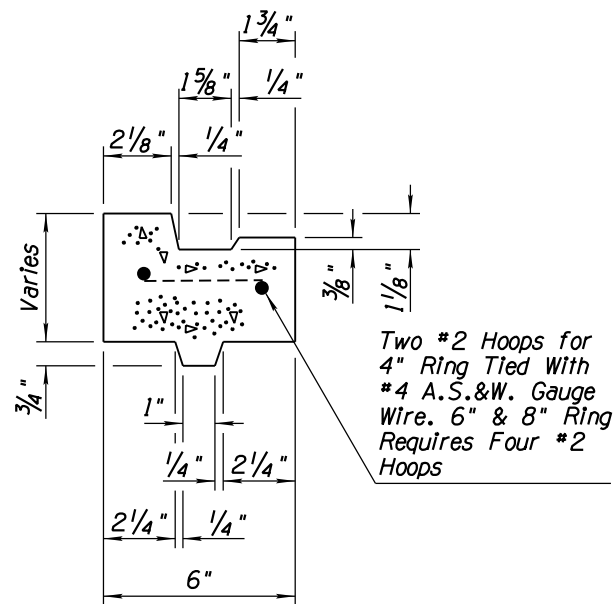
SECTION A-A
FRAME, COVER & COLLAR
PAVEMENT INSTALLATION



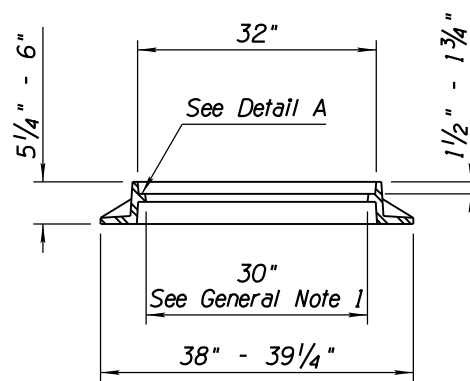
DETAIL A



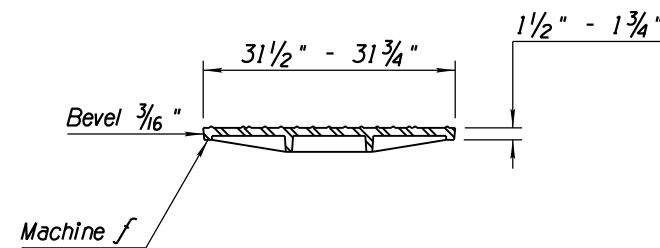
PLAN



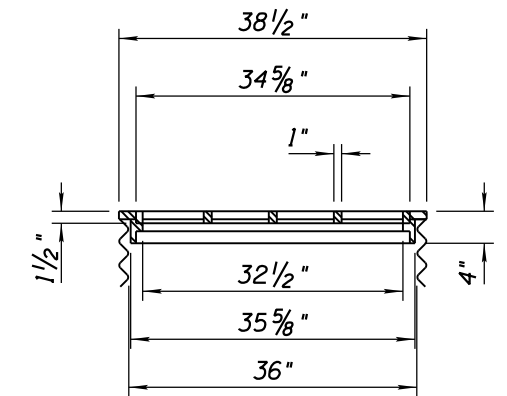
PRECAST ADJUSTING RING DETAIL



SECTION OF FRAME



SECTION B-B



SECTION C-C
36" NOMINAL CMP FRAME & GRATE

Approximate Weight: Frame 125 Lbs
Cover 167 Lbs

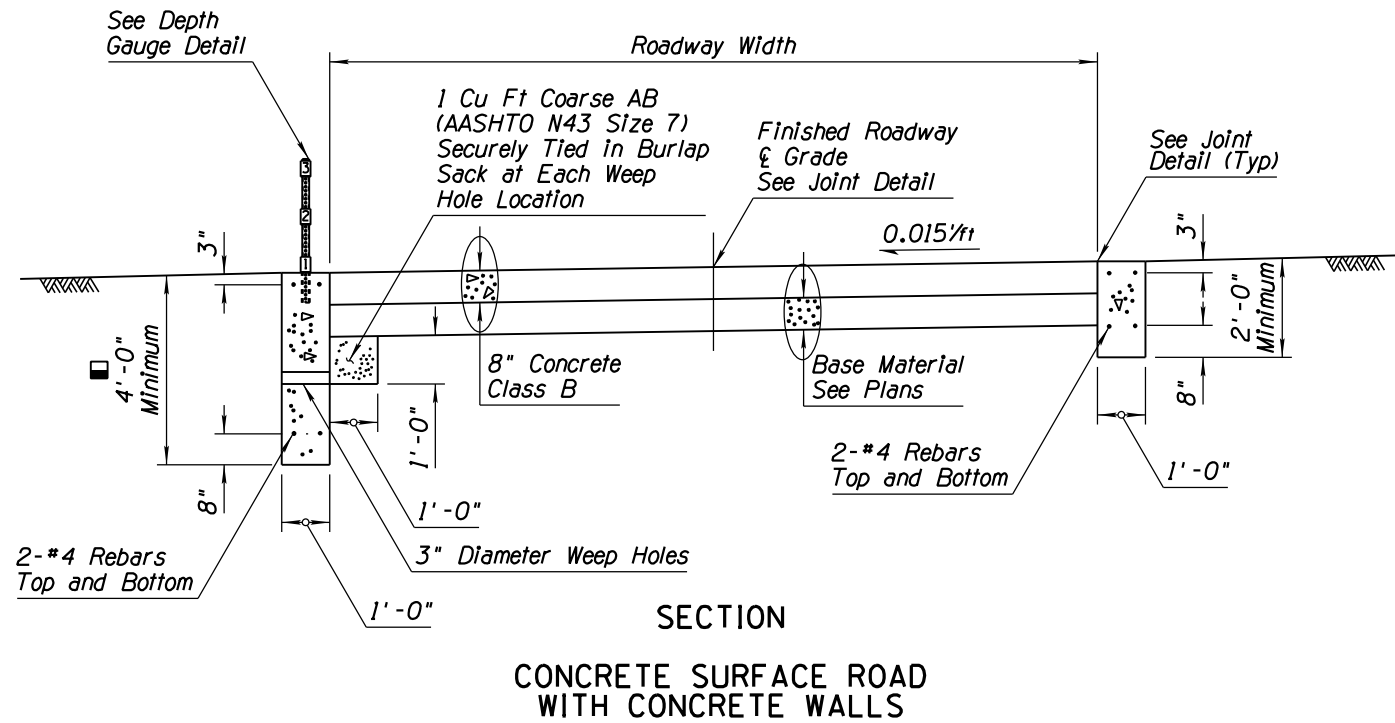
30" MANHOLE FRAME & COVER
Approximate Weight: Frame 204 Lbs
Cover 209 Lbs

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

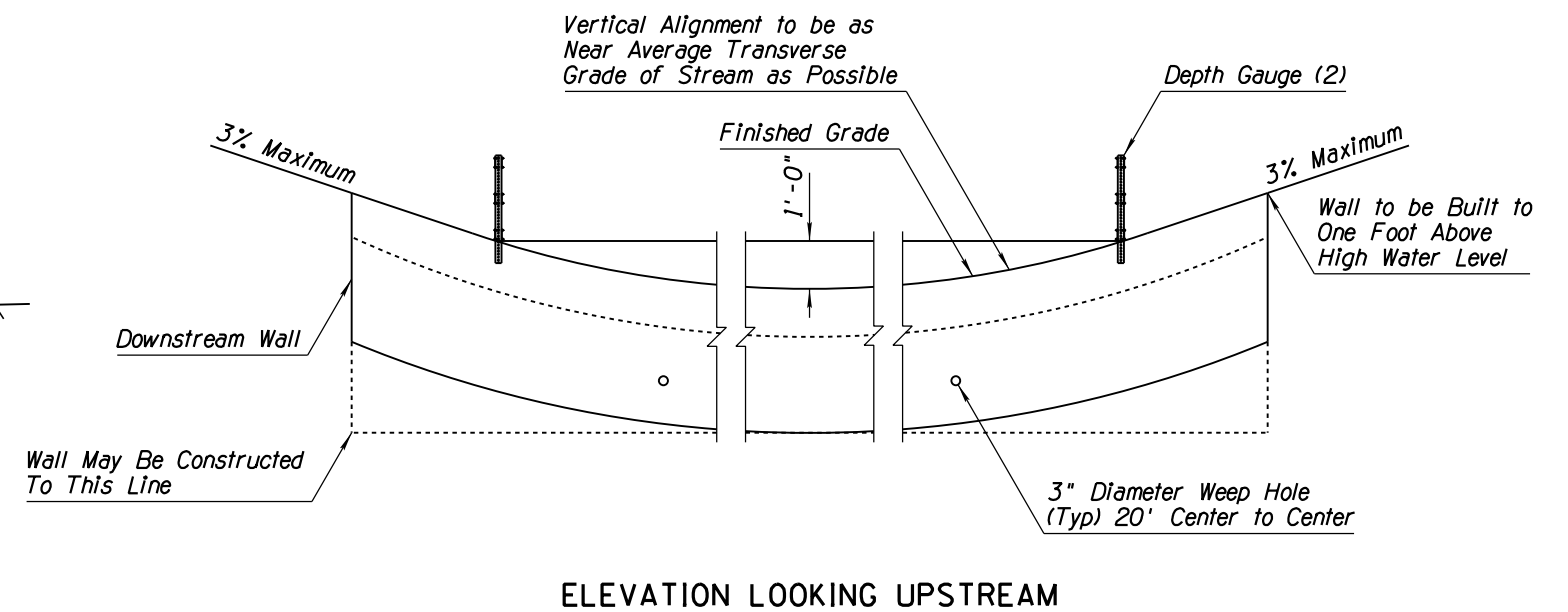
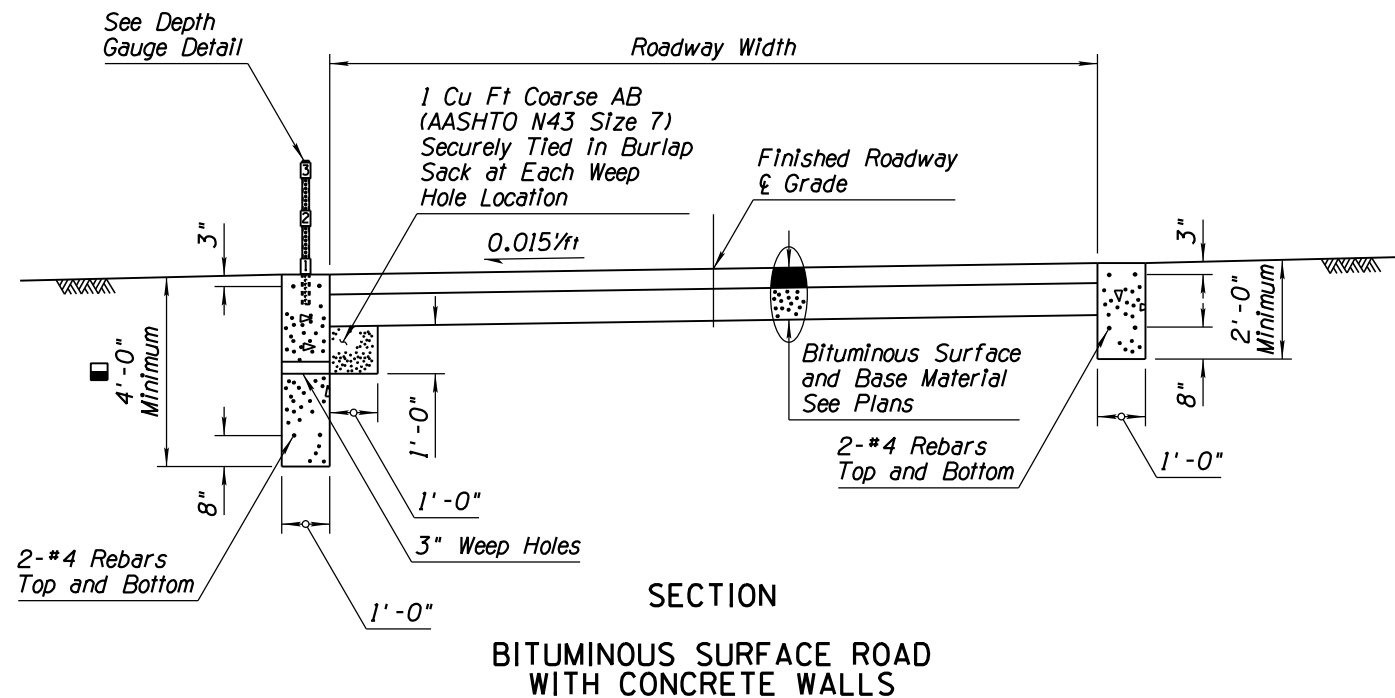
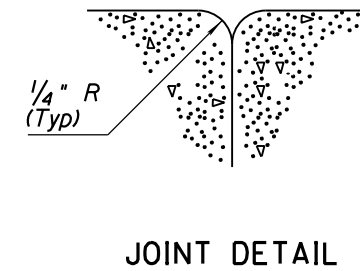
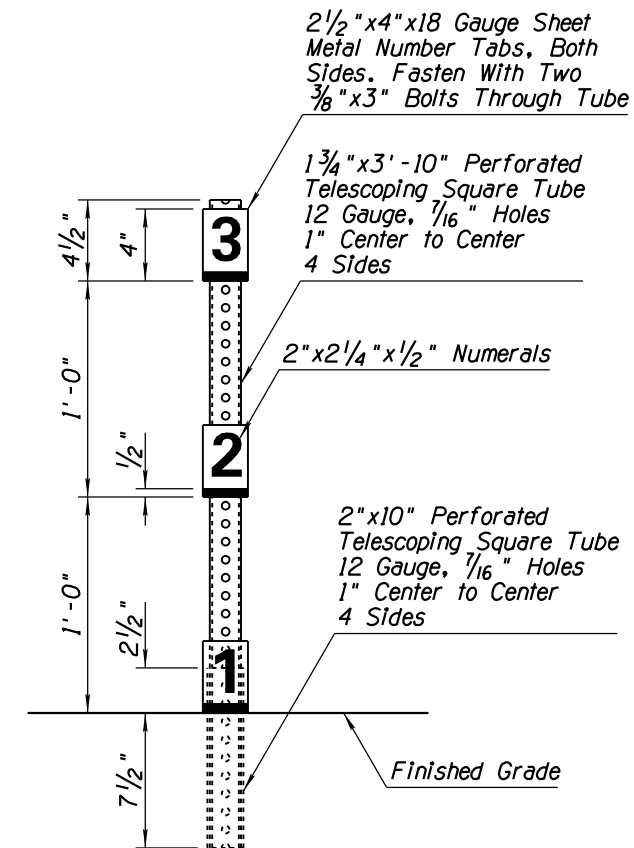
NO.	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REISSUED STD AS C-19.10, SHEET 1 OF 2	RLF	9/04
2	ADDED GENERAL NOTE 4	RLF	9/04
3			
4			

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

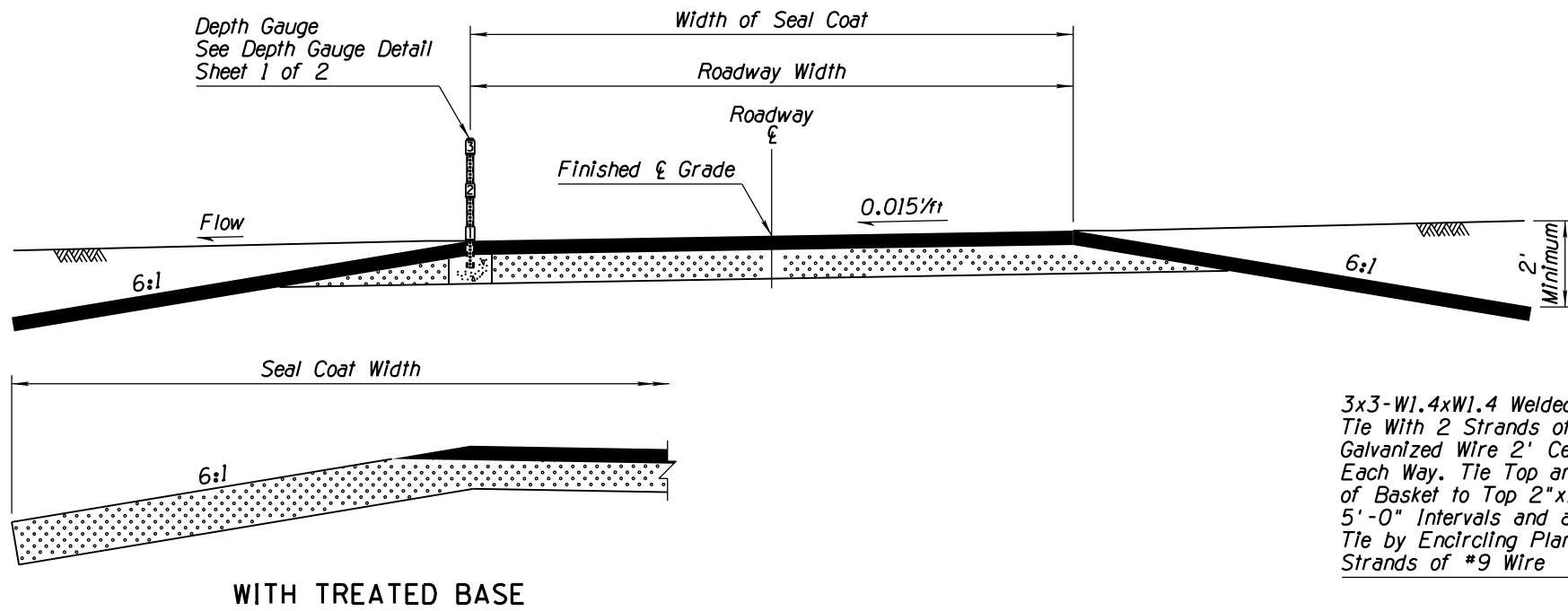


APPROVED FOR DESIGN 	STATE OF ARIZONA DEPARTMENT OF TRANSPORTATION ROADWAY STANDARD DRAWINGS	REV. 5/12
APPROVED FOR DISTRIBUTION 	FORD CONCRETE WALLS	DRAWING NO. C-19.10 Sheet 1 of 2

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			

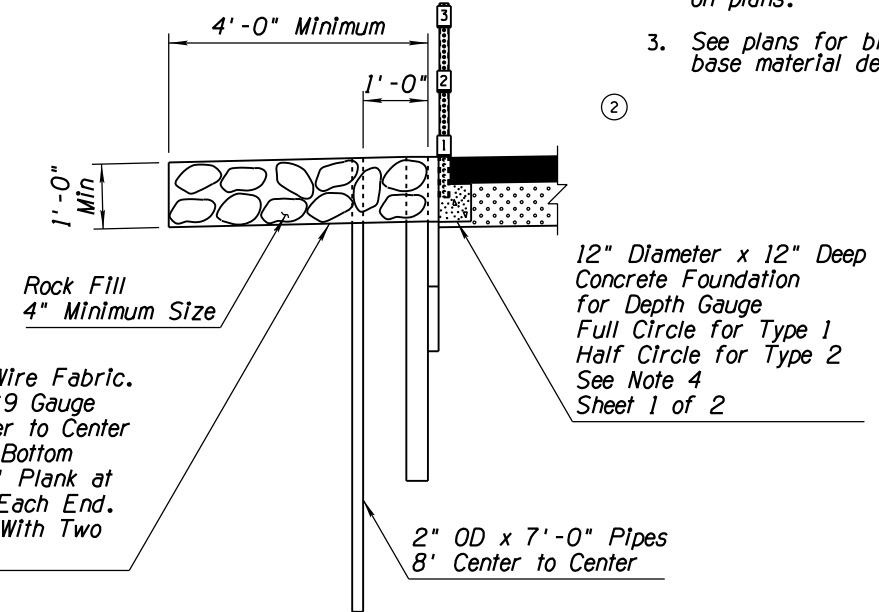
GENERAL NOTES

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.

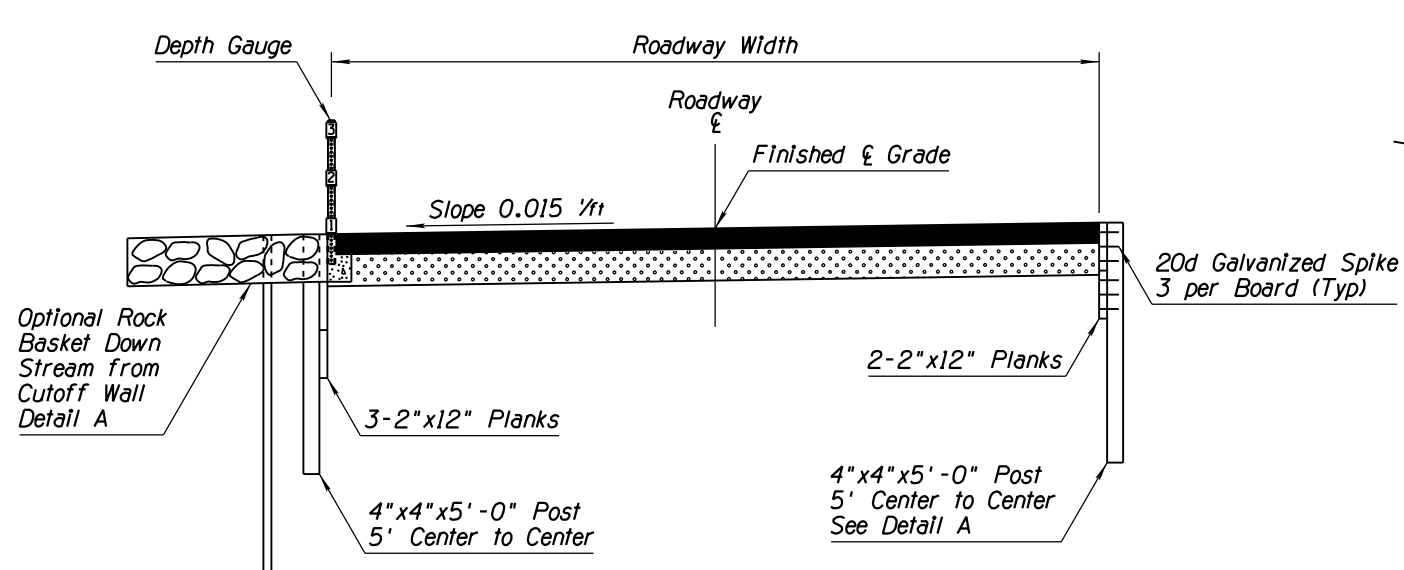


WITH TREATED BASE

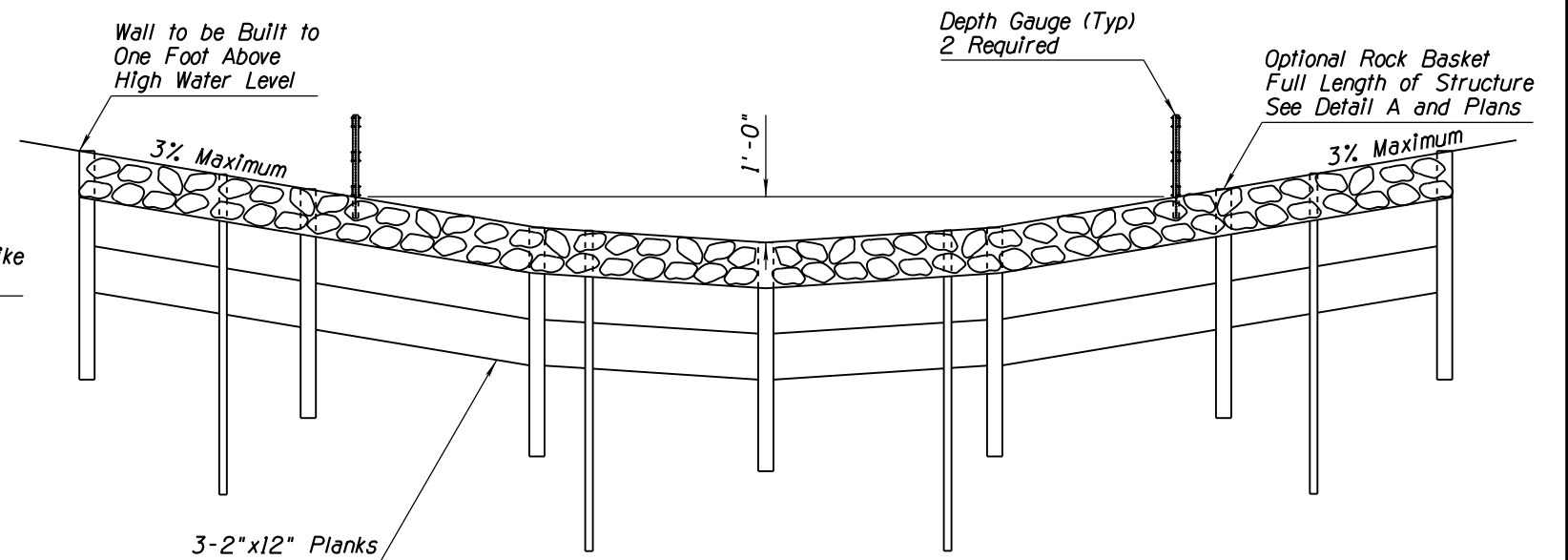
**TYPE 1
BITUMINOUS SURFACE ROAD**



DETAIL A



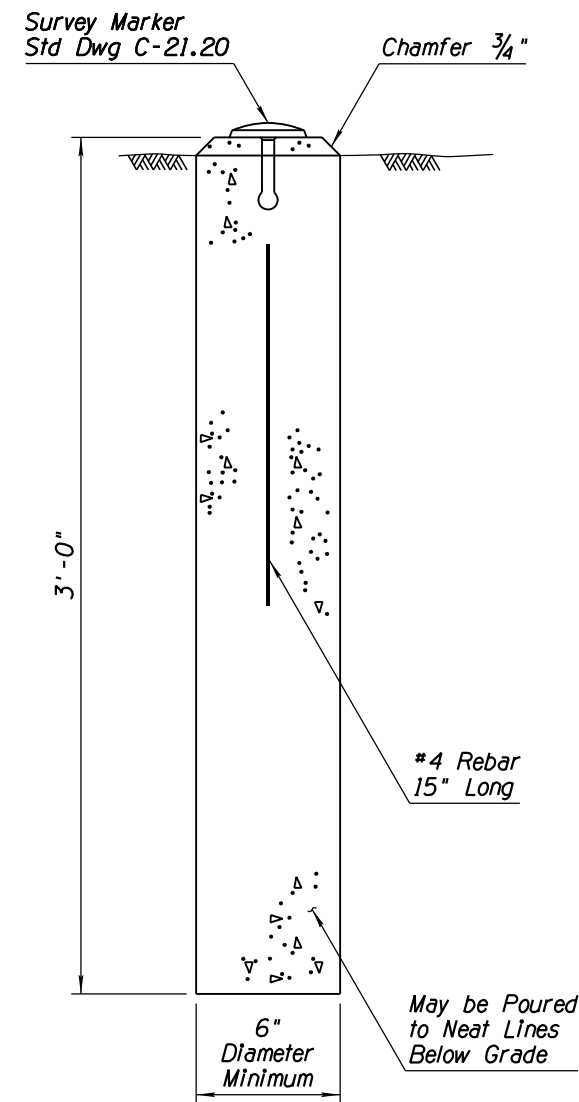
**TYPE 2
BITUMINOUS SURFACE FORD
TIMBER CUTOFF WALLS**



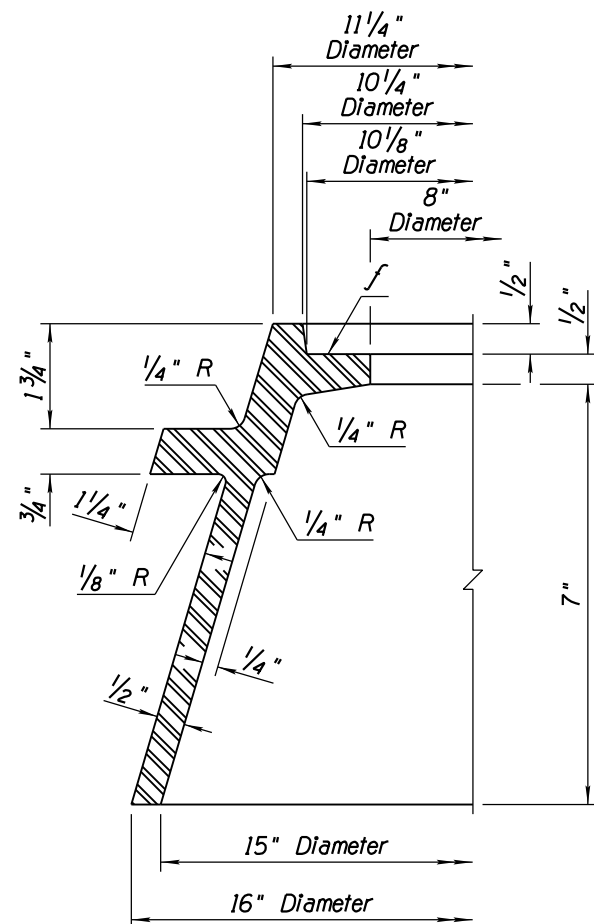
ELEVATION - TYPE 2

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

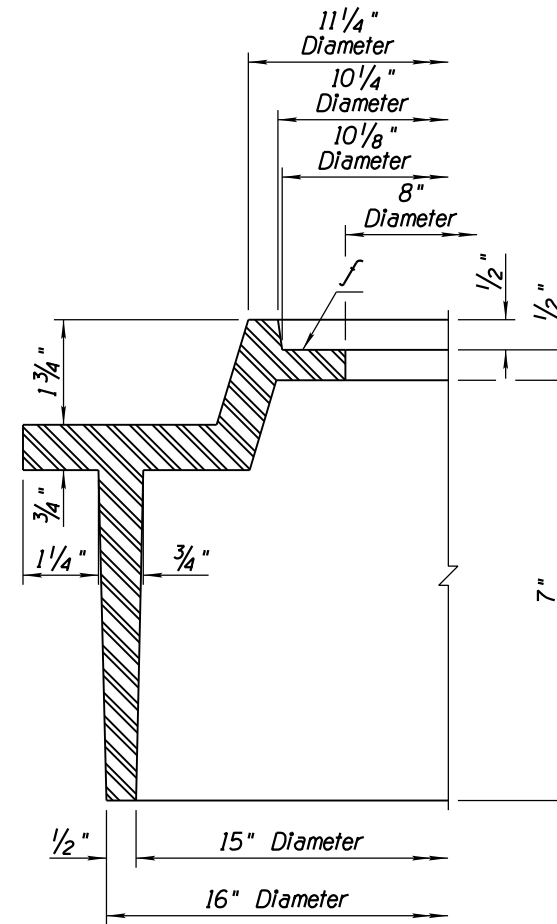
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED RIGHT-OF-WAY MARKER DETAILS	RLF	11/07
2	ADDED VIEW TITLE	RLF	11/07
3	ADDED (Typ) AND PATTERNING	RLF	11/07
4			



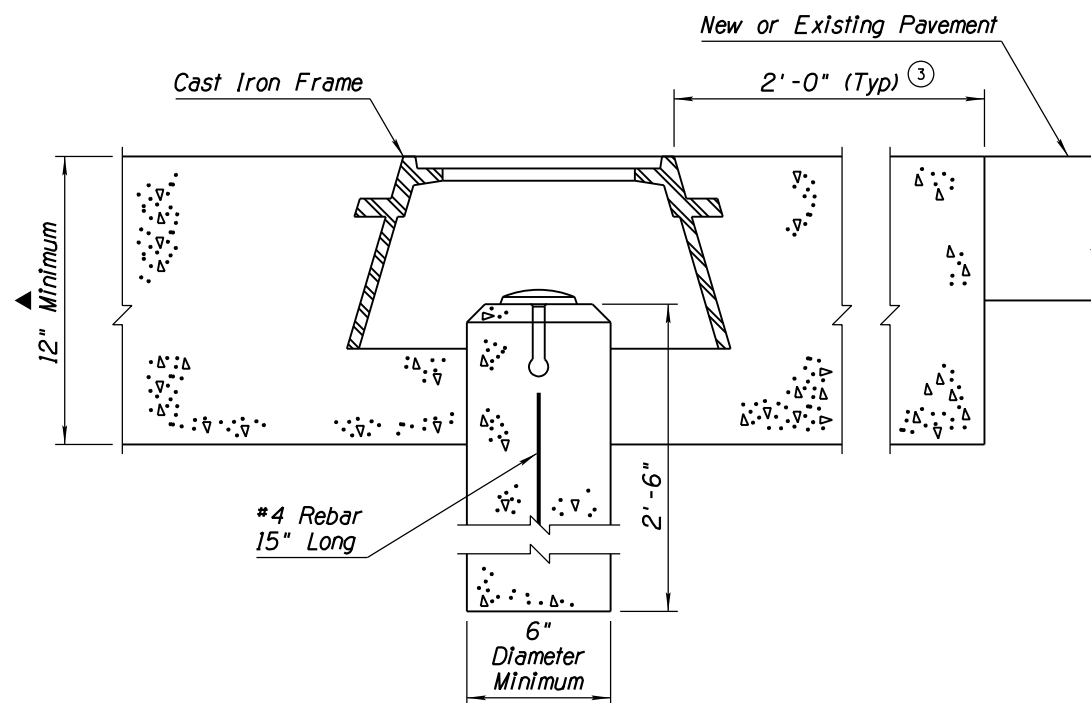
SURVEY MONUMENT



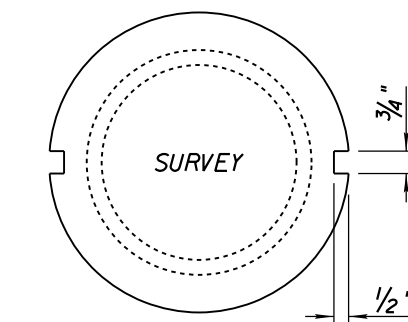
FRAME TYPE A



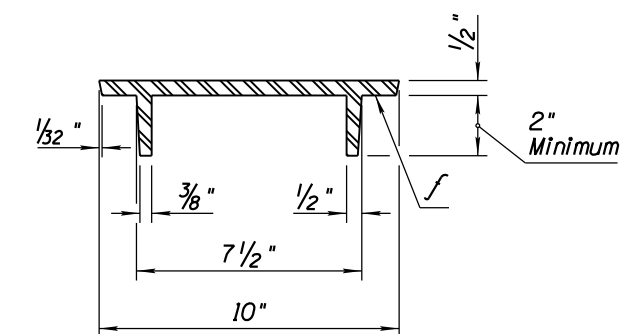
FRAME TYPE B



SURVEY MONUMENT
FRAME AND COVER



② COVER PLAN



COVER SECTION

GENERAL NOTES

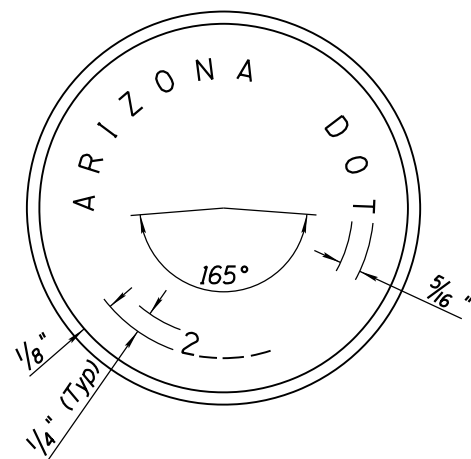
1. A survey monument and frame & cover, complete-in-place, shall be considered a unit.
 2. All markers shall be placed as shown on the plans or as directed by the Engineer.
 3. Frames may be either Type A or Type B.
 4. Frames shall weigh at least 53 pounds.
 5. Covers shall weigh at least 16 pounds.
 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.

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

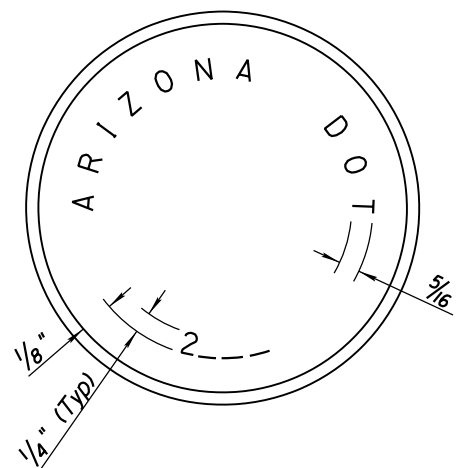
NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	REMOVED RIGHT-OF-WAY MARKER DETAILS	RLF	11/07
2	REVISED GENERAL NOTE REFERENCE	RLF	11/07
3			
4			

GENERAL NOTES

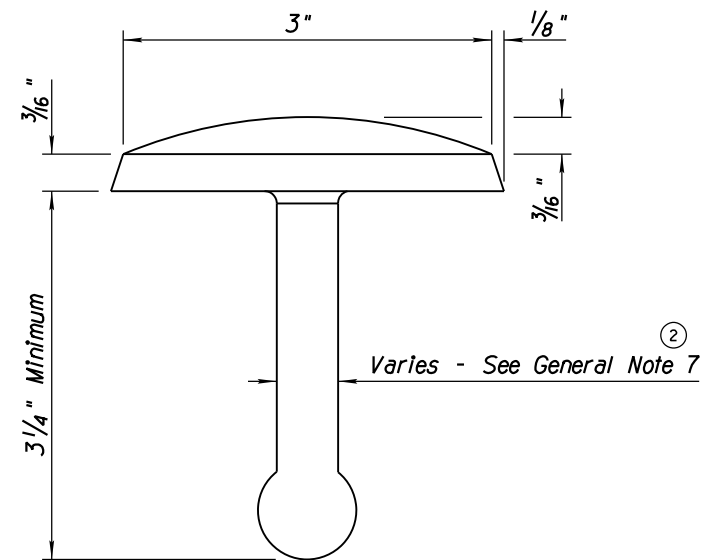
1. Survey marker may be used with survey monument, and as bench or survey control marker.
2. Survey marker shall be made of brass and will be furnished by the Department. Cast-in lettering format may vary.
3. When used to define section lines, the marker shall be stamped in accordance with the BLM "Manual 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.



SURVEY MARKER (BENCH)



SURVEY MARKER



SURVEY MARKER

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