



Subject: Revision of Standard Road Plan Manual

Revision Date: 10/21/2025

To: Holders of Standard Road Plans

From: Design Bureau

The following revisions are effective with the 10/21/2025 letting. Projects let prior to this date may reference earlier versions of these Standard Road Plans. Questions concerning information contained on the Standard Road Plans should be directed to the Methods Section, Design Bureau, telephone (515) 239-1830 or email michael.thiel@iowadot.us.

**Standard
Road Plan**

Description of Revision

BA Index

BA-250

Changed variable flare from 12:1 to 15:1. Added note 5.

BA-251

Changed variable flare from 12:1 to 15:1. Added note 3.

BA-252

Changed variable flare from 12:1 to 15:1. Added note 4.

BA-260

Changed variable flare from 12:1 to 15:1. Added note 4.

BR Index

BR-101

Changed "fabric" to "polymer grid" in circle note ten.

BR-201

Changed 'KS-2' joint to 'BT-2' joint.

BR-202

Changed 'KS-2' joint to 'BT-2' joint.

BR-203

Changed 'KS-2' joint to 'BT-2' joint.

BR-204

Changed 'KS-2' joint to 'BT-2' joint.

BR-205

Changed 'KS-2' joint to 'BT-2' joint.

BR-211

Changed 'KS-2' joint to 'BT-2' joint.

BR-212

Changed 'KS-2' joint to 'BT-2' joint.

BR-231

Changed 'KS-2' joint to 'BT-2' joint.

BR-241

Changed 'KS-2' joint to 'BT-2' joint.

DR Index

DR-502

Added reference to grate materials and galvanization.

LI Index

LI-103

Updated Sudas and IDOT Logos.

MI Index

MI-210

Changed 'K' joint to 'E" joint in circle note 2.

MI-221

Updated Sudas and IDOT Logos.

PR Index

PR-101

Removed 'KT-2' joint option.

PR-102

Removed 'KT-2' joint option.

PR-103

Removed 'KT-2' joint option.

PR-104

Removed 'KT-2' joint option.

PR-105

Removed 'KT-2' joint option.

PV Index

PV-101

Updated Sudas and IDOT Logos.

PV-102

Updated Sudas and IDOT Logos.

PV-103
Updated Sudas and IDOT Logos.

PV-104
Updated Sudas and IDOT Logos.

PV-121
Updated Sudas and IDOT Logos.

PV-201
Updated Sudas and IDOT Logos.

PV-410
Removed 'KT-2' joint option.

PV-411
Removed 'KT-2' joint option.

PV-412
Removed 'KT-2' joint option.

PV-414
Removed 'KT-2' joint option.

PV-500
Changed 'KT-2' joint to 'BT-2' joint.

PV-501
Changed 'KT-2' joint to 'BT-2' joint.

PV-502
Changed 'KT-2' joint to 'BT-2' joint.

PV-503
Changed 'KT-2' joint to 'BT-2' joint.

PV-504
Changed 'KT-2' joint to 'BT-2' joint.

PV-505
Changed 'KT-2' joint to 'BT-2' joint.

PV-506
Changed 'KT-2' joint to 'BT-2' joint.

PV-507
Changed 'KT-2' joint to 'BT-2' joint.

PV-508
Changed 'KT-2' joint to 'BT-2' joint.

PV-509
Changed 'KT-2' joint to 'BT-2' joint.

PV-510

Changed 'KT-2' joint to 'BT-2' joint.

PV-511

Changed 'KT-2' joint to 'BT-2' joint.

PV-512

Changed 'KT-2' joint to 'BT-2' joint.

PV-513

Changed 'KT-2' joint to 'BT-2' joint.

PV-514

Changed 'KT-2' joint to 'BT-2' joint.

SW Index

SW-101

Updated Sudas and IDOT Logos.

SW-102

Updated Sudas and IDOT Logos.

SW-103

Updated Sudas and IDOT Logos.

SW-104

Updated Sudas and IDOT Logos.

SW-105

Updated Sudas and IDOT Logos.

SW-201

Updated Sudas and IDOT Logos.

SW-202

Updated Sudas and IDOT Logos.

SW-203

Updated Sudas and IDOT Logos.

SW-211

Updated Sudas and IDOT Logos.

SW-301

Updated Sudas and IDOT Logos.

SW-302

Updated Sudas and IDOT Logos.

SW-303

Updated Sudas and IDOT Logos.

SW-304
Updated Sudas and IDOT Logos.

SW-305
Updated Sudas and IDOT Logos.

SW-307
Updated Sudas and IDOT Logos.

SW-308
Updated Sudas and IDOT Logos.

SW-401
Updated Sudas and IDOT Logos.

SW-402
Updated Sudas and IDOT Logos.

SW-403
Updated Sudas and IDOT Logos.

SW-404
Updated Sudas and IDOT Logos.

SW-405
Updated Sudas and IDOT Logos.

SW-406
Updated Sudas and IDOT Logos.

SW-501
Updated Sudas and IDOT Logos.

SW-502
Updated Sudas and IDOT Logos.

SW-503
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SW-506
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SW-507
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SW-508
Updated Sudas and IDOT Logos.

SW-509

Updated Sudas and IDOT Logos.

SW-510

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SW-511

Updated Sudas and IDOT Logos.

SW-512

Updated Sudas and IDOT Logos.

SW-513

Updated Sudas and IDOT Logos.

SW-514

Updated Sudas and IDOT Logos.

SW-515

Updated Sudas and IDOT Logos.

SW-516

Updated Sudas and IDOT Logos.

SW-521

Updated Sudas and IDOT Logos.

SW-538

Removed 'KT-2' joint option.

SW-539

Removed 'KT-2' joint option.

SW-541

Updated Sudas and IDOT Logos.

SW-542

Updated Sudas and IDOT Logos.

SW-545

Updated Sudas and IDOT Logos.

SW-601

Updated Sudas and IDOT Logos.

SW-602

Updated Sudas and IDOT Logos.

SW-603

Updated Sudas and IDOT Logos.

SW-604

Updated Sudas and IDOT Logos.

TC Index

TC-061

Added note 11, and added raised pavement markings.

TC-217

Added detail A, and adjusted all red times.

TC-252

Added sheet 4, closure of turn lanes.

TC-421

Adjusted taper width and length. Adjusted sign layout.

TS Index

TS-102

Updated Sudas and IDOT Logos.

WM Index

WM-101

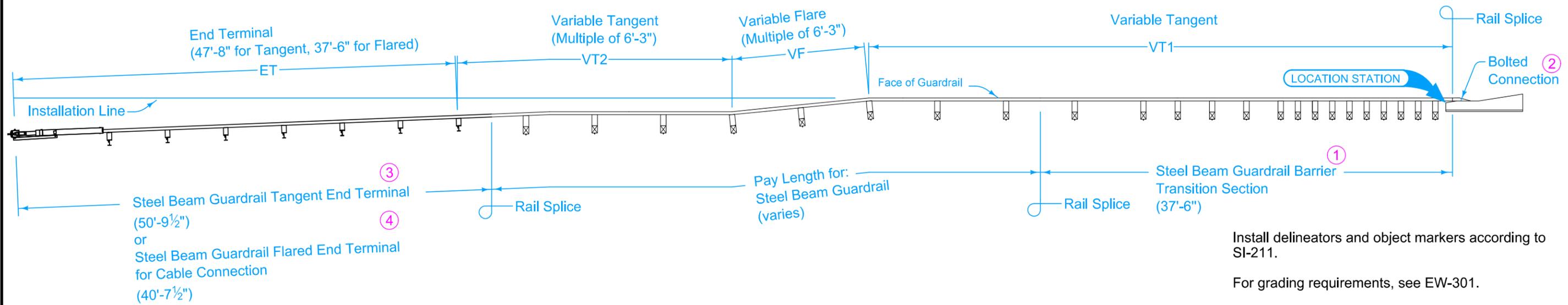
Updated Sudas and IDOT Logos.

WM-102

Updated Sudas and IDOT Logos.

WM-201

Updated Sudas and IDOT Logos.

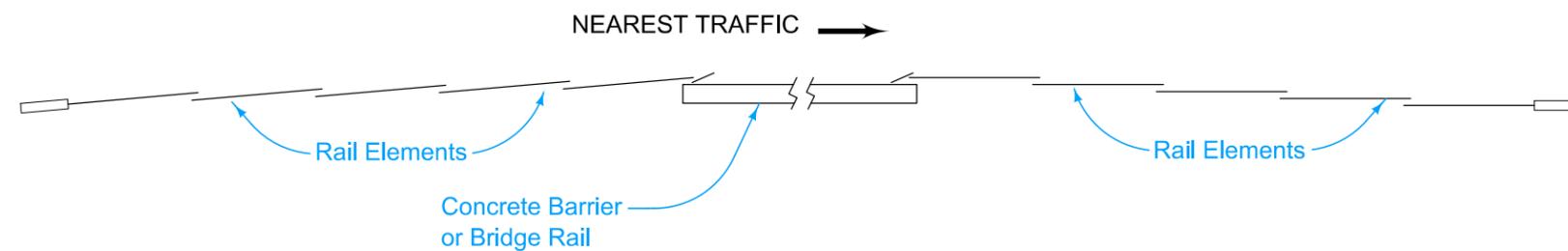


Install delineators and object markers according to SI-211.

For grading requirements, see EW-301.

For general guardrail details, see BA-200.

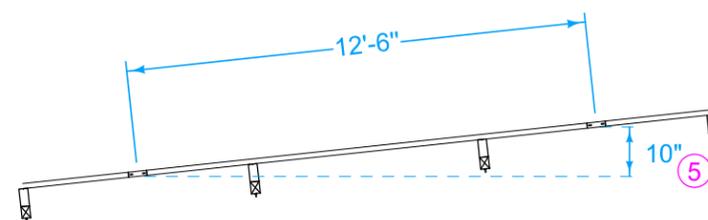
- ① See BA-201 or BA-209.
- ② See BA-202 for connections to concrete barriers and bridge rail end sections.
- ③ See BA-205.
- ④ See BA-206.
- ⑤ When posted speed is 45mph or less a 10:1 flare may be used. For 12.5' longitudinally offset will be 1' 4".



LAPPING PROCEDURE

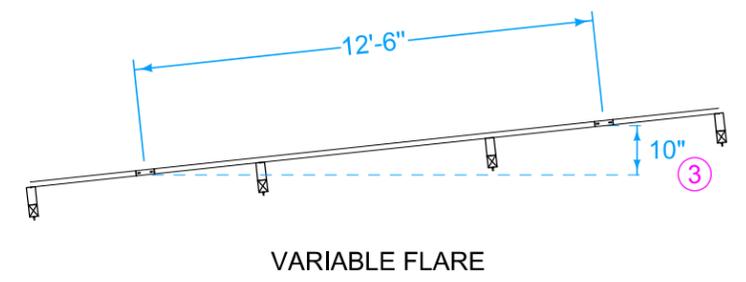
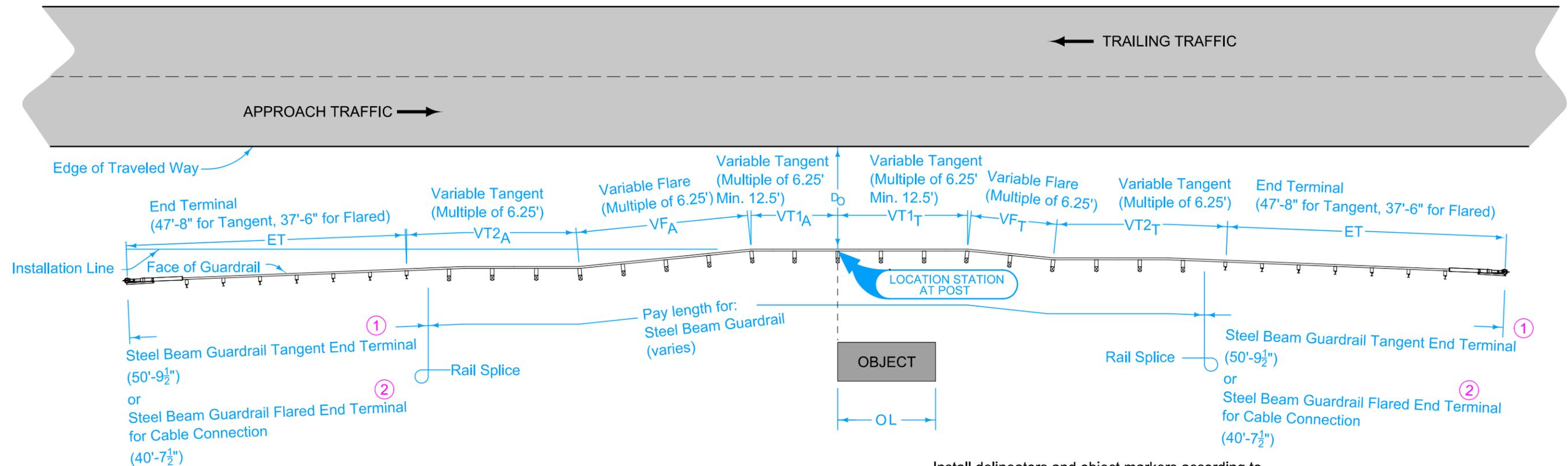
- Possible Contract Items:
- Steel Beam Guardrail
 - Steel Beam Guardrail Barrier Transition Section, BA-201
 - Steel Beam Guardrail End Anchor, Bolted
 - Steel Beam Guardrail Tangent End Terminal, BA-205
 - Steel Beam Guardrail Flared End Terminal, BA-206

- Possible Tabulation:
- 108-8A



VARIABLE FLARE

	REVISION	
	9	10-21-25
STANDARD ROAD PLAN		BA-250
		SHEET 1 of 1
REVISIONS: Changed variable flare from 12:1 to 15:1. Added note 5.		
APPROVED BY DESIGN METHODS ENGINEER		
STEEL BEAM GUARDRAIL INSTALLATION AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION (MASH TL-3)		



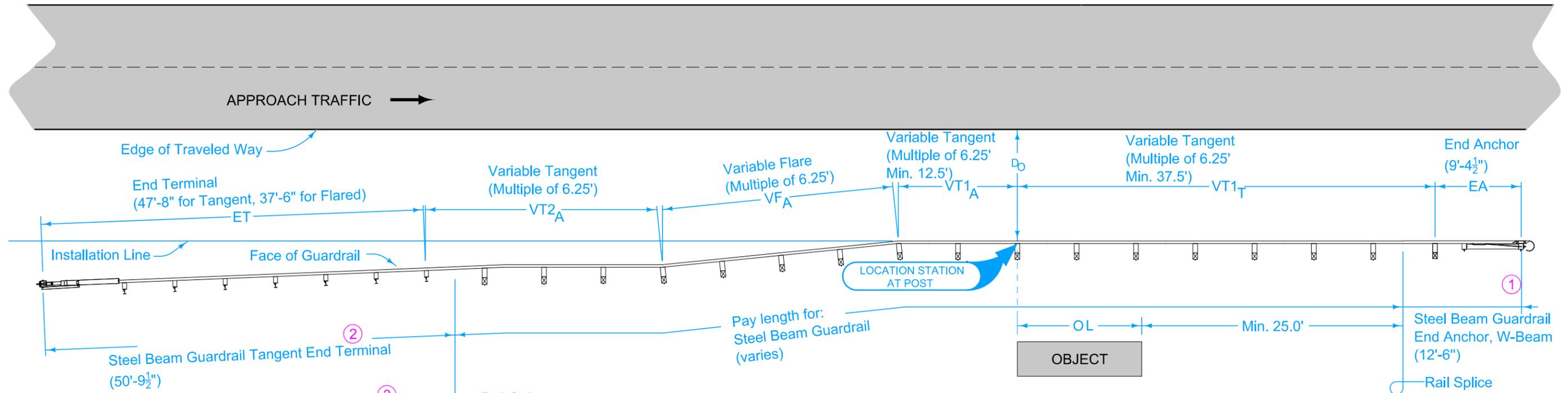
Install delineators and object markers according to SI-211.
 For grading requirements, see EW-301.
 For general guardrail details, see BA-200.

- ① See BA-205.
- ② See BA-206.
- ③ When posted speed is 45mph or less a 10:1 flare may be used. For 12.5' longitudinally offset will be 1' 4".

Possible Contract Items:
 Steel Beam Guardrail
 Steel Beam Guardrail Tangent End Terminal, BA-205
 Steel Beam Guardrail Flared End Terminal, BA-206

Possible Tabulation:
 108-8B

	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		BA-251
REVISIONS: Changed variable flare from 12:1 to 15:1. Added note 3.		SHEET 1 of 1
 APPROVED BY DESIGN METHODS ENGINEER		
STEEL BEAM GUARDRAIL INSTALLATION AT SIDE OBJECT (TWO-WAY PROTECTION)		

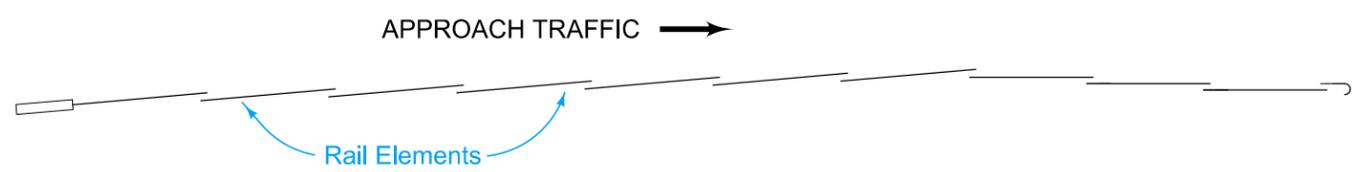


Steel Beam Guardrail Tangent End Terminal (50'-9 $\frac{1}{2}$ "
or
Steel Beam Guardrail Flared End Terminal for Cable Connection (40'-7 $\frac{1}{2}$ "

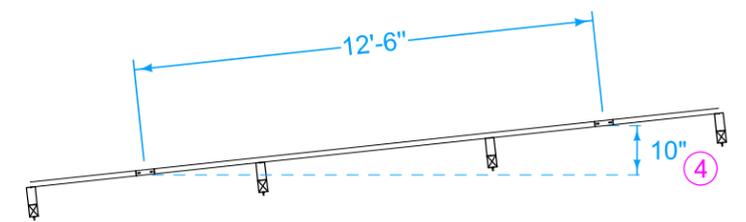
Pay length for: Steel Beam Guardrail (varies)

Install delineators and object markers according to SI-211.
For grading requirements, see EW-301.
For general guardrail details, see BA-200.

- ① See BA-203.
- ② See BA-205.
- ③ See BA-206.
- ④ When posted speed is 45mph or less a 10:1 flare may be used. For 12.5' longitudinally offset will be 1' 4".



LAPPING PROCEDURE



VARIABLE FLARE

Possible Contract Items:
Steel Beam Guardrail
Steel Beam Guardrail End Anchor, W-Beam
Steel Beam Guardrail Flared End Terminal, BA-206
Steel Beam Guardrail Tangent End Terminal, BA-205

Possible Tabulation:
108-8C

	REVISION	
	8	10-21-25
STANDARD ROAD PLAN		BA-252
REVISIONS: Changed variable flare from 12:1 to 15:1. Added note 4.		SHEET 1 of 1
 APPROVED BY DESIGN METHODS ENGINEER		
STEEL BEAM GUARDRAIL INSTALLATION AT SIDE OBJECT (ONE-WAY PROTECTION)		

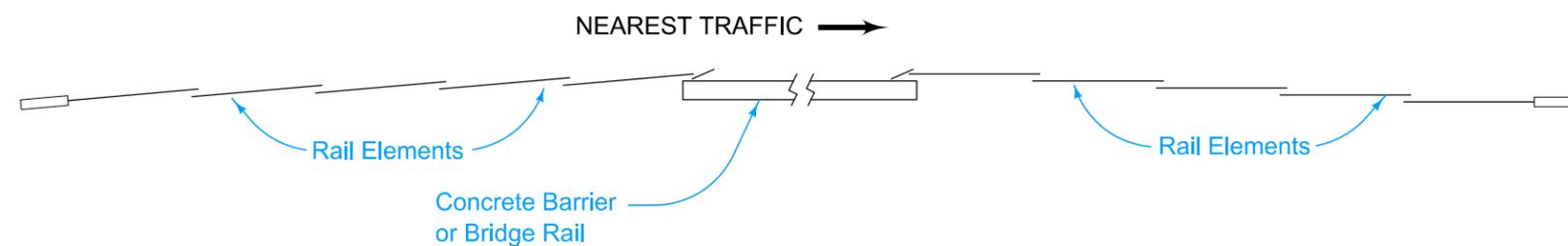
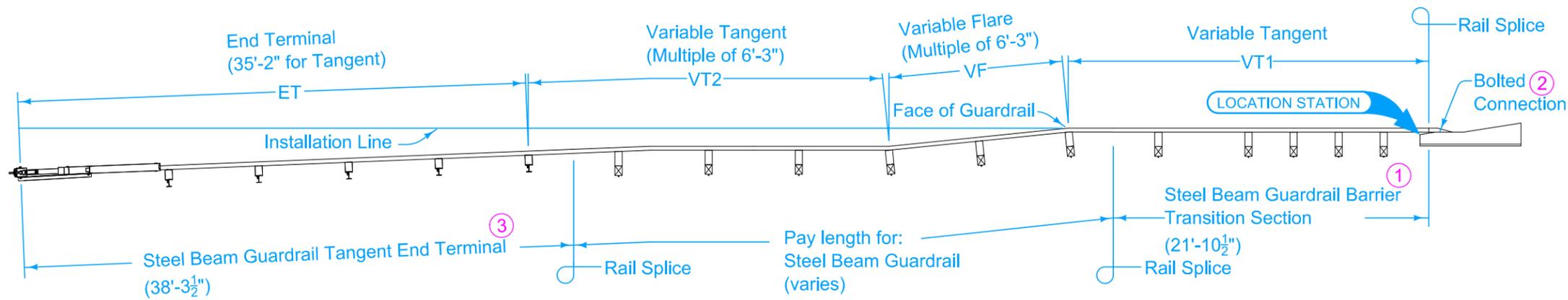
DESIGNER INFORMATION

Install delineators and object markers according to SI-211.

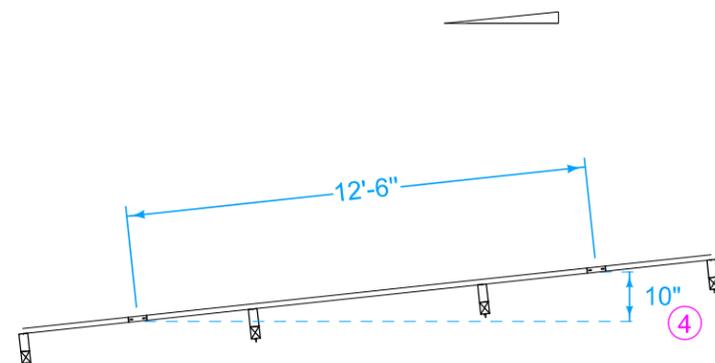
For grading requirements, see EW-301.

For general guardrail details, see BA-200.

- ① See BA-221.
- ② See BA-202 for connections to concrete barriers and bridge rail end sections.
- ③ See BA-225.
- ④ When posted speed is 45mph or less a 10:1 flare may be used. For 12.5' longitudinally offset will be 1' 4".



LAPPING PROCEDURE



VARIABLE FLARE

- Possible Contract Items:
- Steel Beam Guardrail
 - Steel Beam Guardrail Barrier Transition Section, BA-221
 - Steel Beam Guardrail End Anchor, Bolted
 - Steel Beam Guardrail Tangent End Terminal, BA-225

- Possible Tabulation:
- 108-8A

	REVISION	
	2	10-21-25
STANDARD ROAD PLAN		BA-260
		SHEET 1 of 1
REVISIONS: Changed variable flare from 12:1 to 15:1. Added note 4.		
APPROVED BY DESIGN METHODS ENGINEER		
STEEL BEAM GUARDRAIL INSTALLATION AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION (MASH TL-2)		

Sections and details apply to Standard Road Plans BR-112 and BR-102 through BR-107.

- ⑬ Edge with ¼ inch tool for length of joint indicated if formed; edging not required when cut with diamond blade saw.
- ⑭ Compact tire buffings by spading with a square-nose shovel. Tire buffings shall not be larger than ½ inch.
- ⑮ Setting Width Notes:

- Width is perpendicular to abutment.
- Temperature of concrete deck on the underside or shaded portion of the deck shall be between 40 to 80 degrees Farenheit when placing approach slab concrete.
- This 'BE' joint and the setting temperatures may be used for all concrete beam or slab bridges up to 575' in length and for all steel girder bridges up to 400' in length.

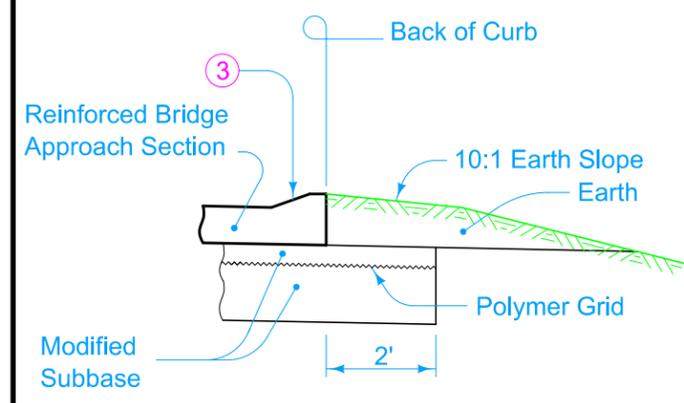
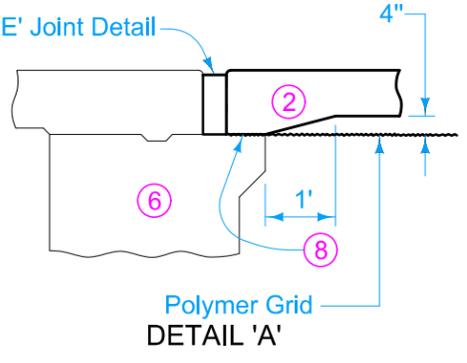
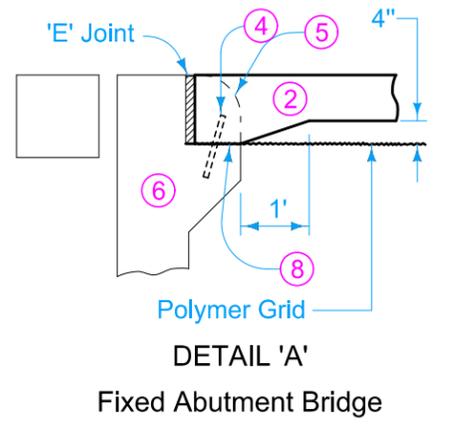
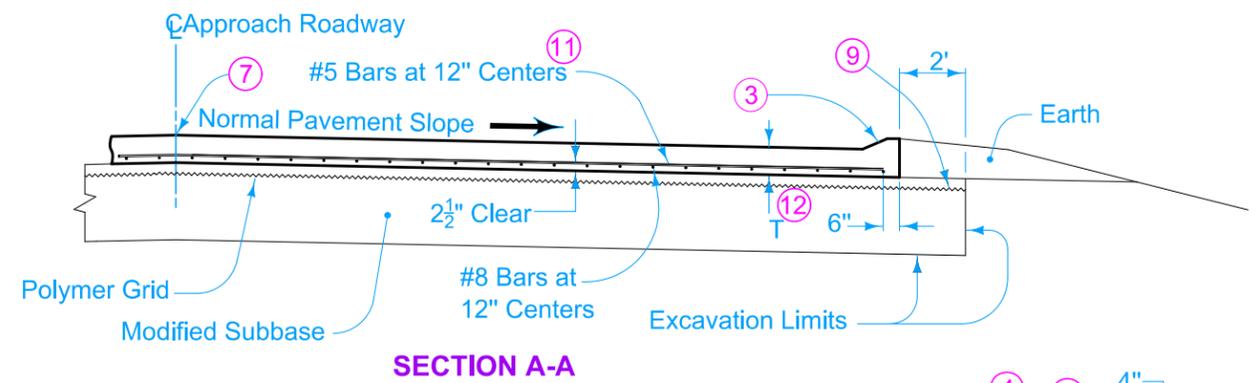
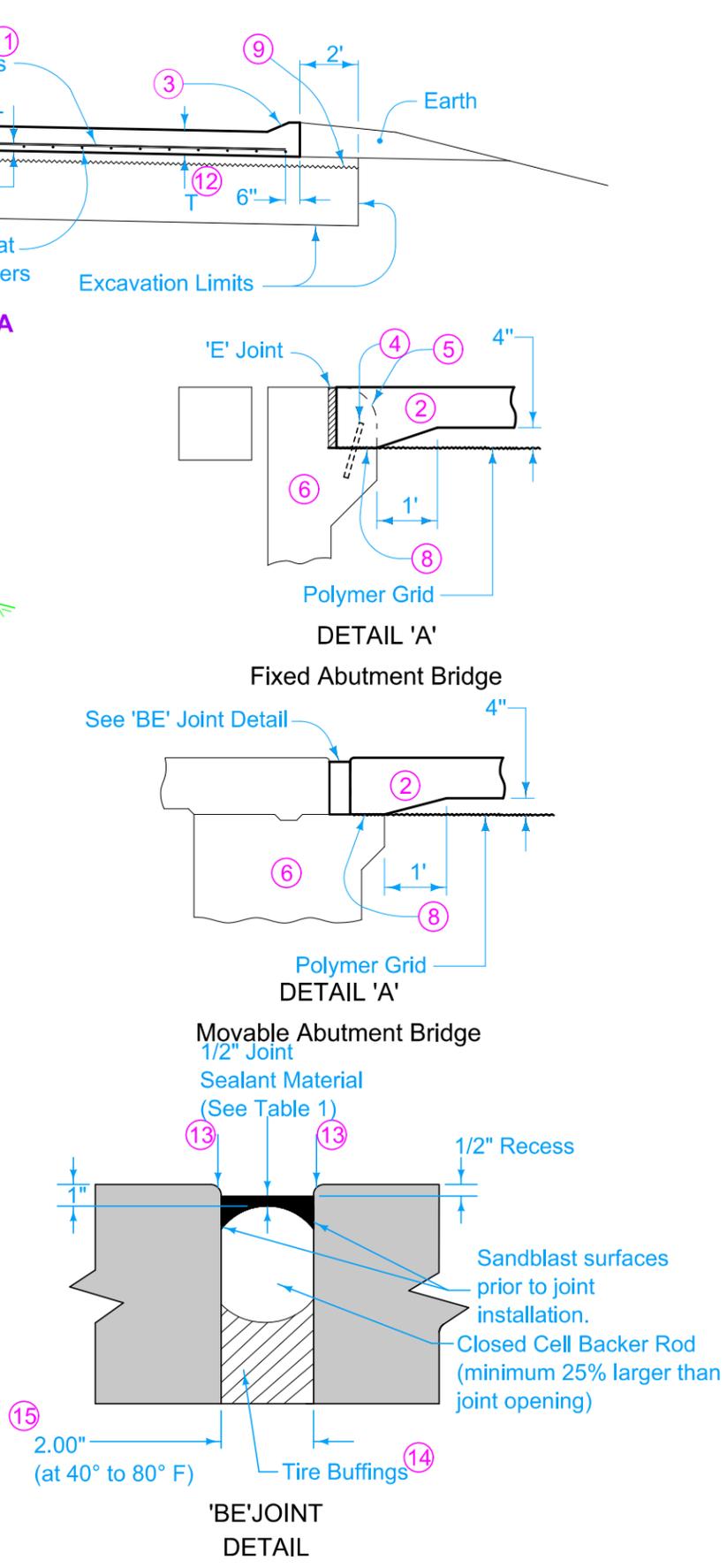
- ① Design Shoulder width.
- ② Reinforced Bridge Approach Section.
- ③ Build curb. See Detail 'C'. Refer to PV-102 for runout details.
- ④ Reinforcing Bar.
- ⑤ Temporary paving block removed by paving contractor.
- ⑥ Bridge Abutment.
- ⑦ Longitudinal Joint (PV-101):
Single pour - Saw cut joint per Detail B.
Two pours - Use 'KS-1' joint.
- ⑧ Secure polymer grid on top of paving notch.
- ⑨ Extend polymer grid to 2 feet outside edge of pavement.
- ⑩ Trim polymer grid to edge of excavation.
- ⑪ If bridge is skewed, place additional #5 bar parallel to skewed face.
- ⑫ T = 10 inches.

Possible Contract Item:
 Bridge Approach, Two Lane
 Longitudinal Grooving in Concrete, Bridge Deck
 Longitudinal Grooving in Concrete, Pavement

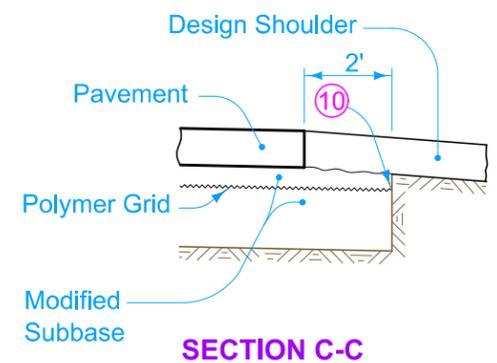
Possible Tabulation:
 112-6

 STANDARD ROAD PLAN	REVISION	
	3	10-21-25
BR-101		
SHEET 1 of 2		
REVISIONS: Changed "fabric" to "polymer grid" in circle note ten.		
 <small>APPROVED BY DESIGN METHODS ENGINEER</small>		
BRIDGE APPROACH SECTION (GENERAL DETAILS)		

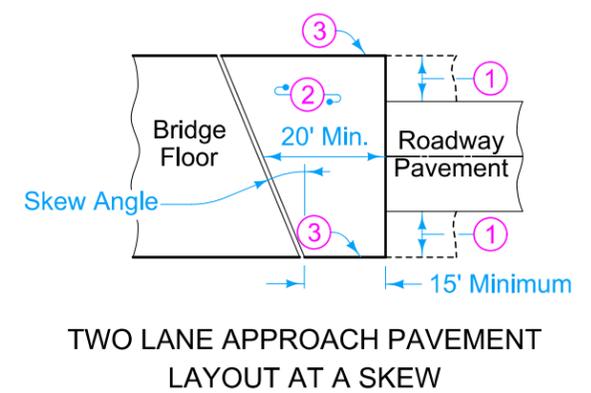
Table 1
Approved List of Sealant
Dow - Dowsil 902 RCS
Sika - Sikasil 728 RCS
Watson Bowman Acme - Wabo SiliconeSeal
Pecora - 322FC



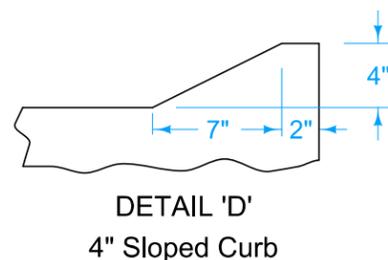
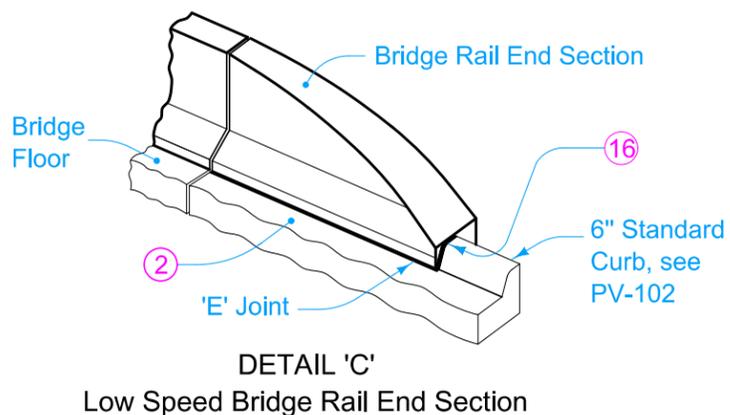
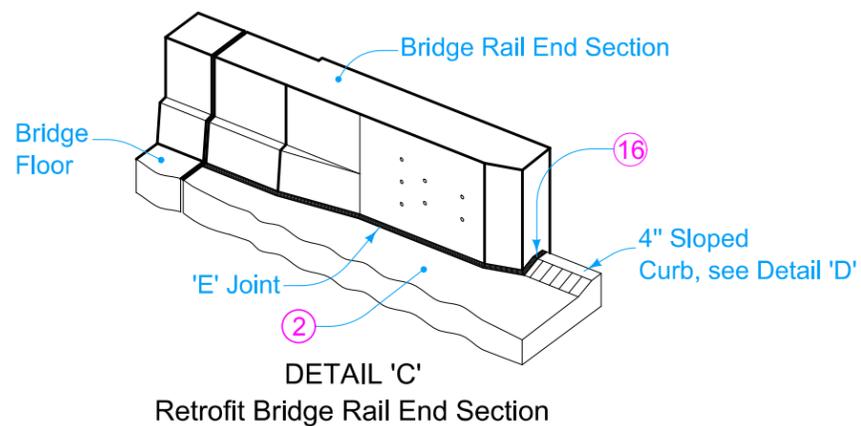
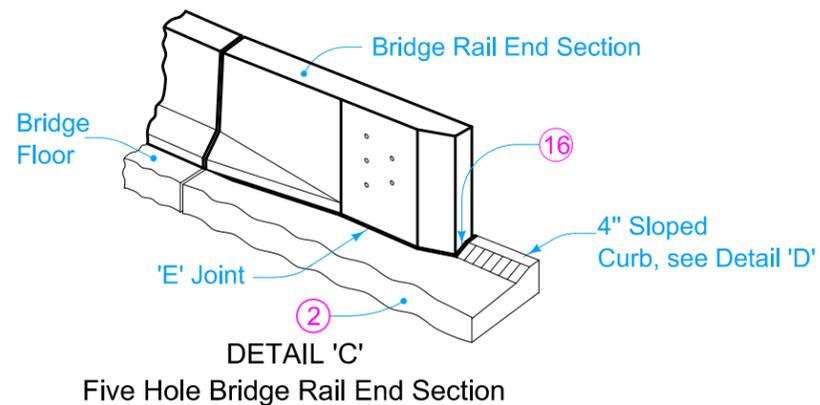
SECTION B-B



SECTION C-C



TWO LANE APPROACH PAVEMENT LAYOUT AT A SKEW

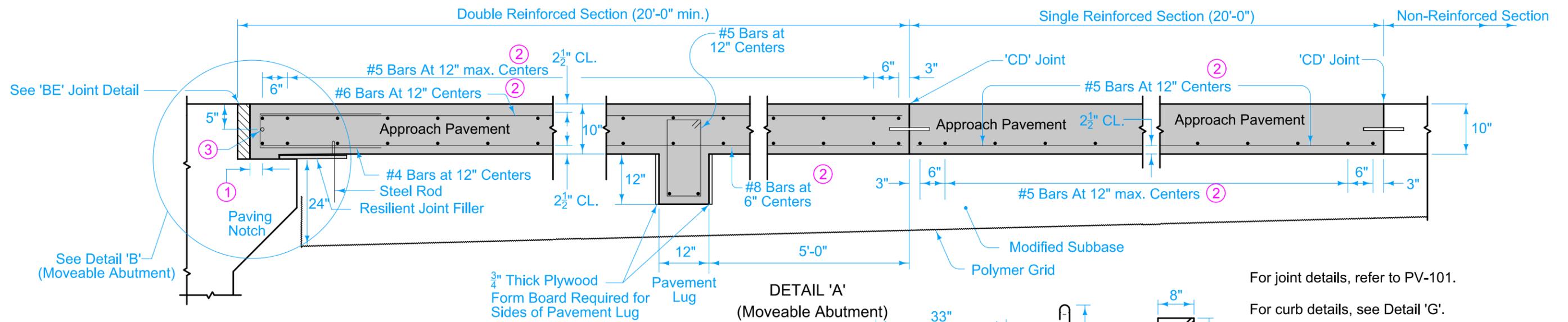
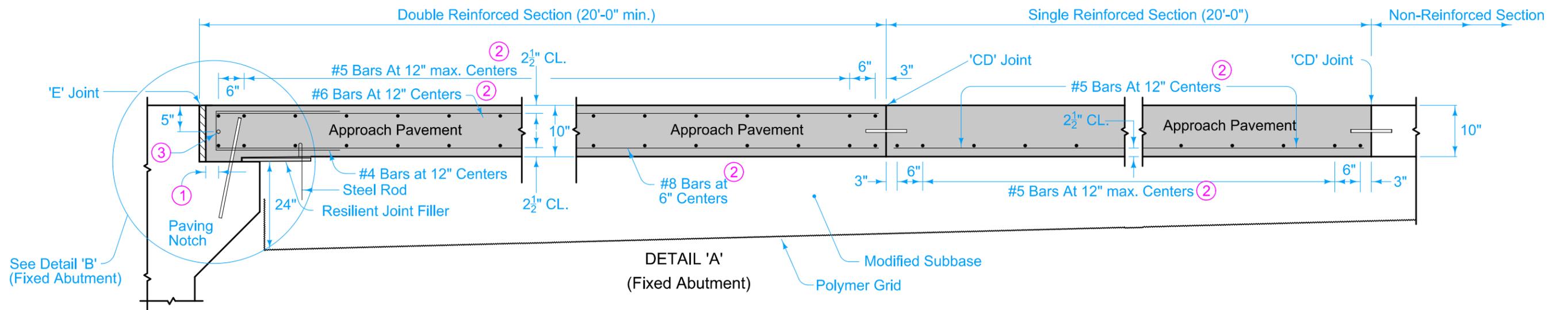


CURB ALIGNMENT AND JOINT PLACEMENT

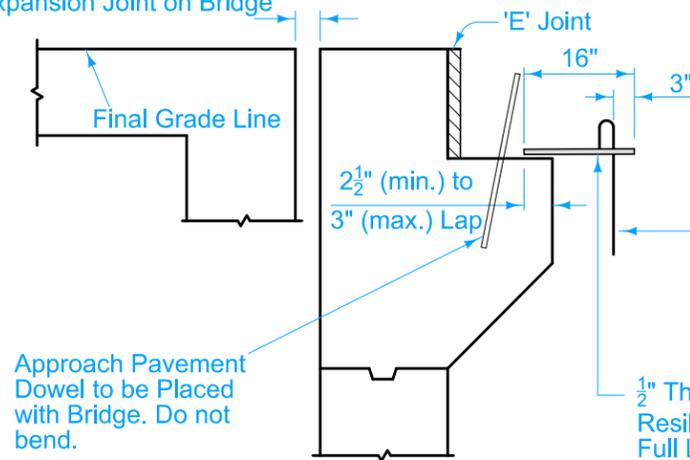
- ② Reinforced Bridge Approach Section.
- ①⑥ Joint at end of Bridge Rail End Section: Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section B-B of PV-101. Seal joint per Detail F of PV-101.

- Fixed Abutment Bridges: Type 'E' Joint.
- Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Set width of gap to 2 inches. Joint length as required to completely fill from back side of curb to front face of bridge wing.

	REVISION	
	3	10-21-25
STANDARD ROAD PLAN		BR-101
		SHEET 2 of 2
REVISIONS: Changed "fabric" to "polymer grid" in circle note ten.		
APPROVED BY DESIGN METHODS ENGINEER		
BRIDGE APPROACH SECTION (GENERAL DETAILS)		

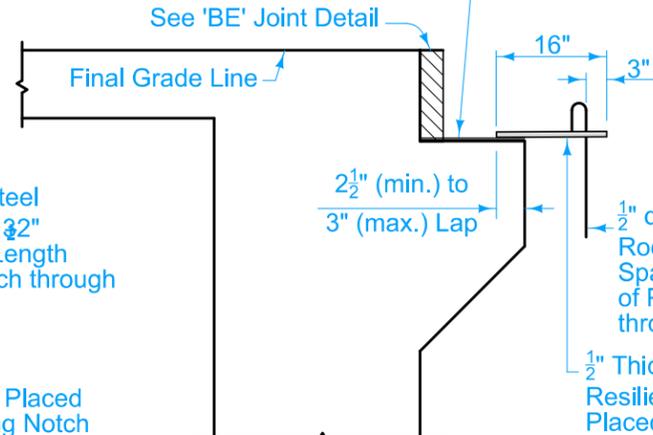


Expansion Joint on Bridge

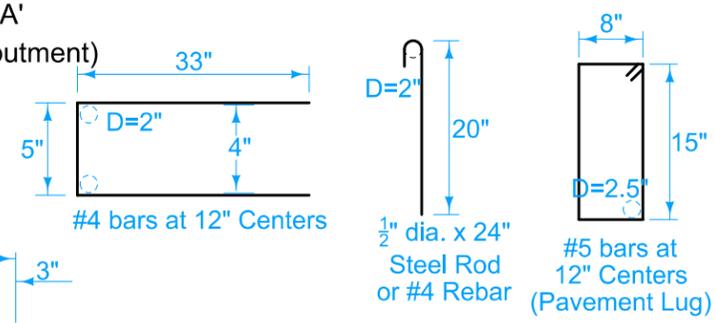


DETAIL 'B' (Fixed Abutment)

Debond paving notch with two layers of 30# asphaltic felt paper full length of paving notch. See 'BE' Joint Detail.



DETAIL 'B' (Moveable Abutment)



- ① 2" min. to 2 1/2" max. clear to bent bar.
- ② Minimum lap length: #5 Bars - 18" #6 Bars - 27" #8 Bars - 48"
- ③ If bridge is skewed, place additional #5 bar parallel to skewed face.

For joint details, refer to PV-101.

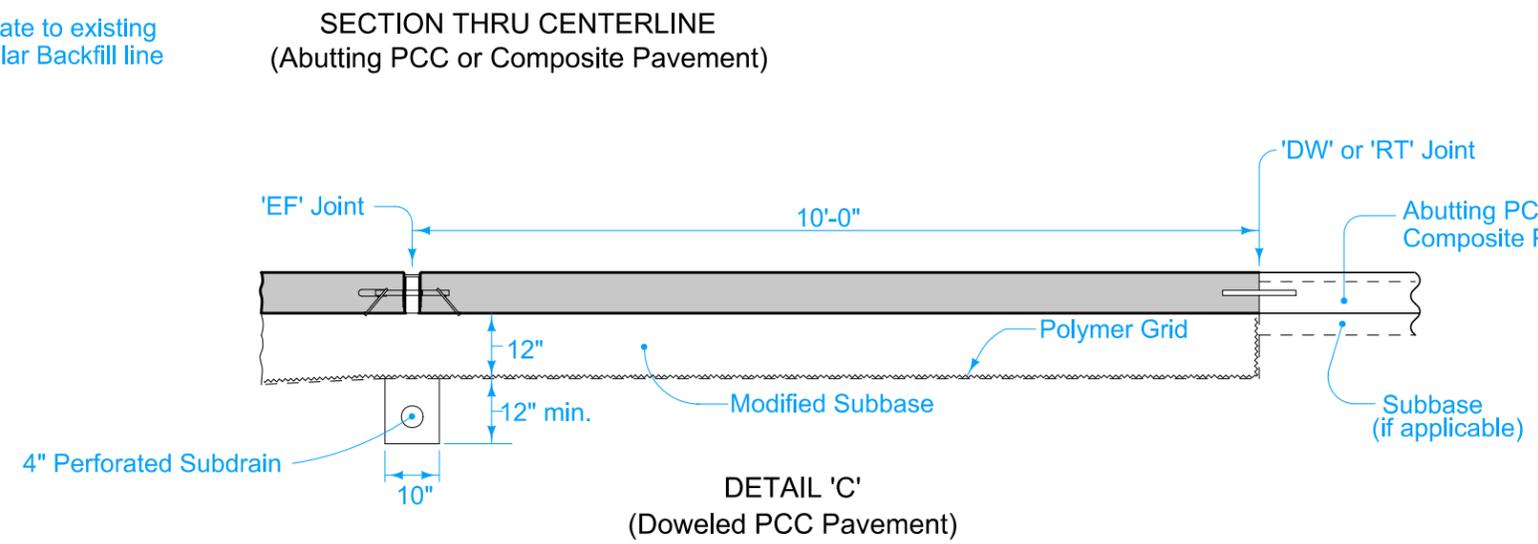
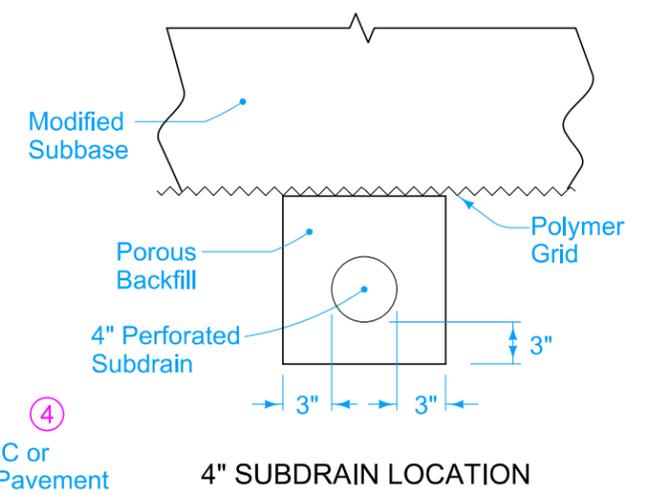
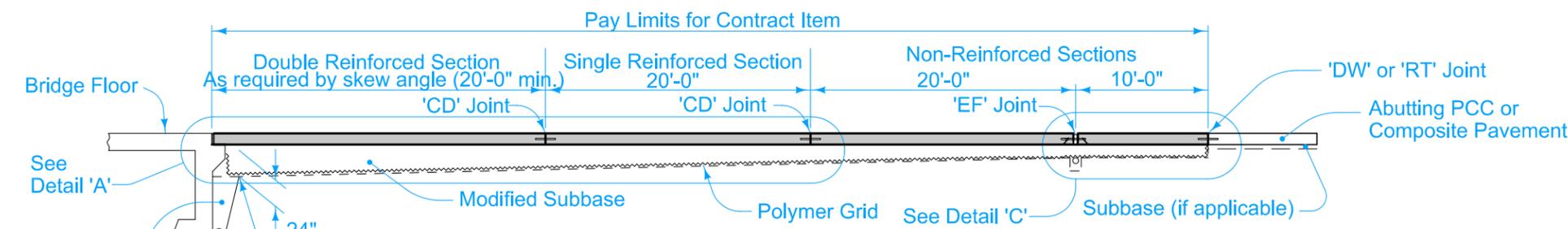
For curb details, see Detail 'G'.

All transverse bars are #5.

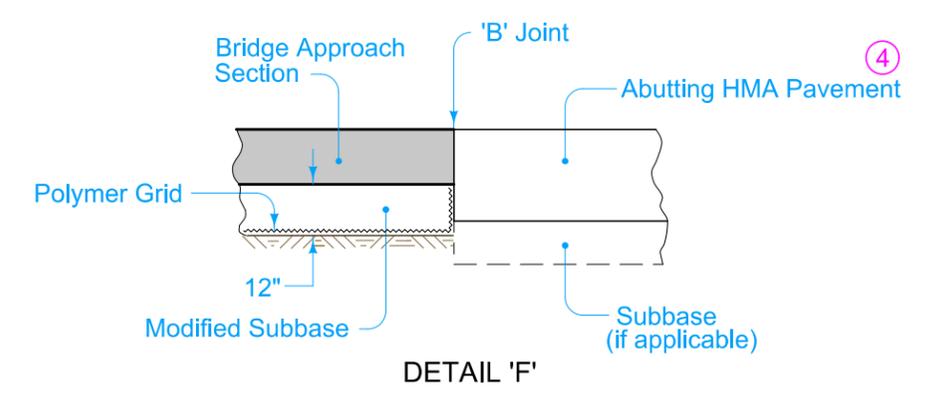
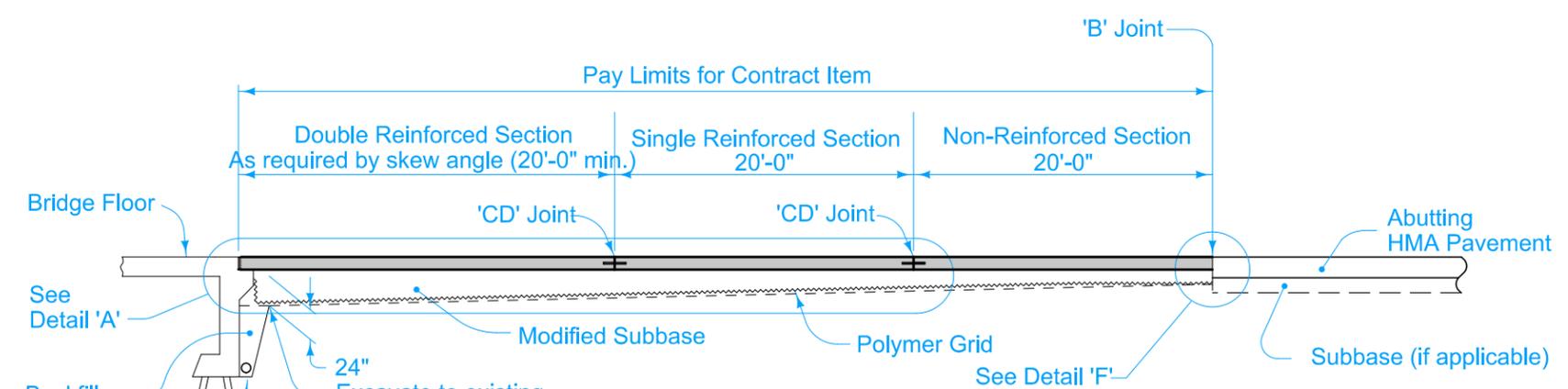
Possible Contract Item:
 Bridge Approach, BR-201
 Longitudinal Grooving in Concrete, Bridge Deck
 Longitudinal Grooving in Concrete, Pavement

Possible Tabulation:
 112-6

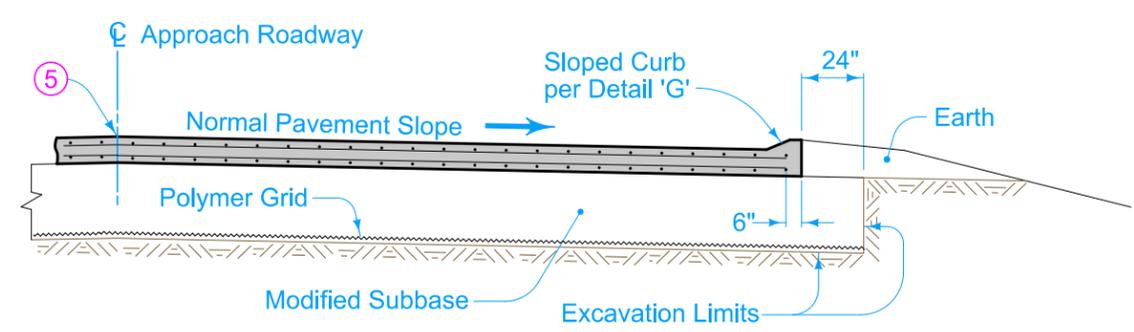
	REVISION
	5 10-21-25
STANDARD ROAD PLAN	BR-201
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.	SHEET 1 of 3
 APPROVED BY DESIGN METHODS ENGINEER	
DOUBLE REINFORCED 10" APPROACH	



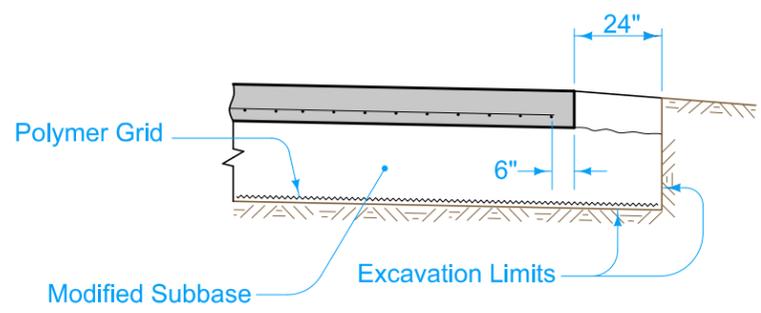
④ If abutting pavement (PCC or HMA) is not in place, refer to BR-213.



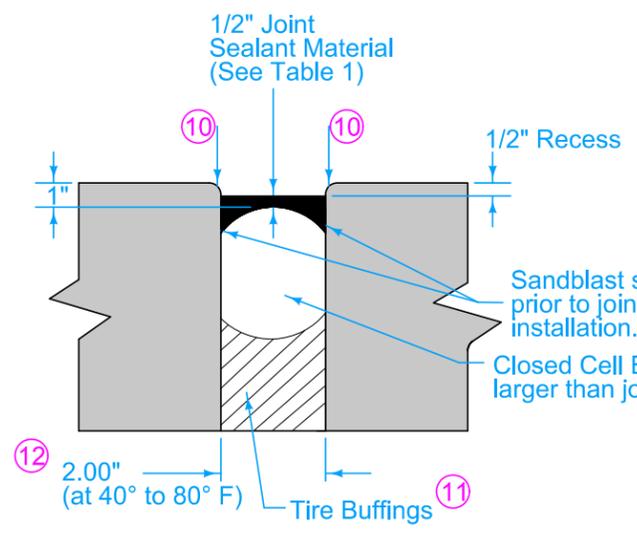
	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		BR-201
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.		SHEET 2 of 3
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 10" APPROACH		



SECTION A-A

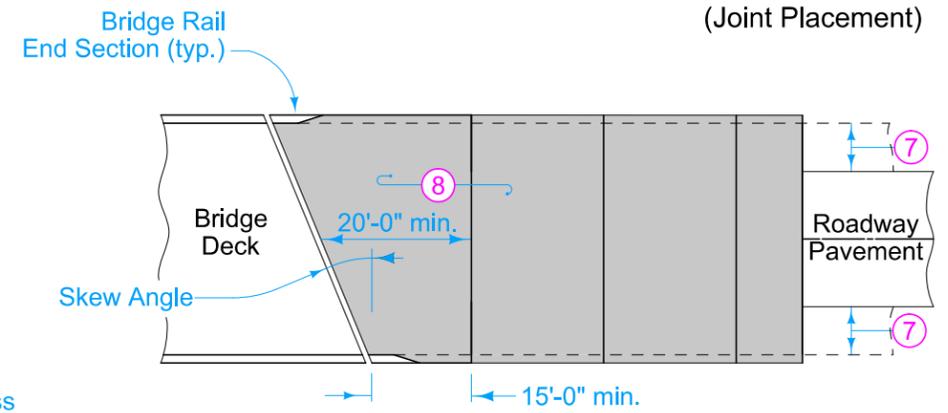


SECTION B-B

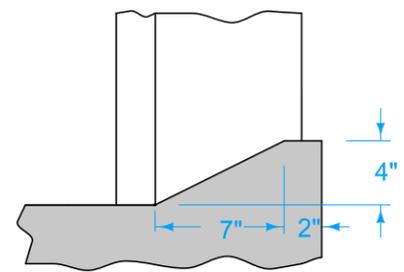


'BE' JOINT DETAIL

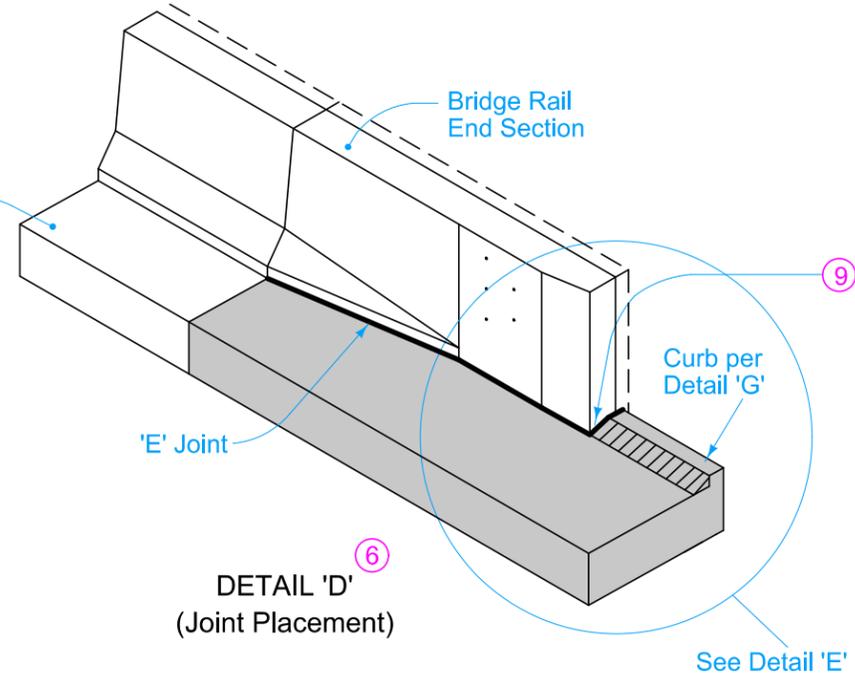
Table 1
Approved List of Sealant
Dow - Dowsil 902 RCS
Sika - Sikasil 728 RCS
Watson Bowman Acme - Wabo SiliconeSeal
Pecora - 322FC



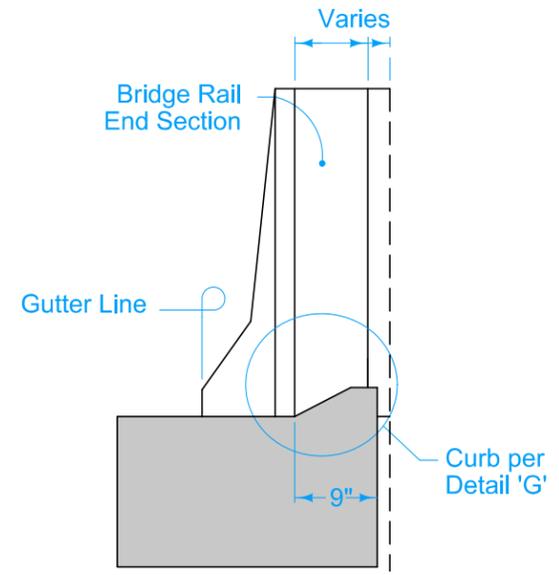
APPROACH PAVEMENT LAYOUT AT A SKEW



DETAIL 'G'



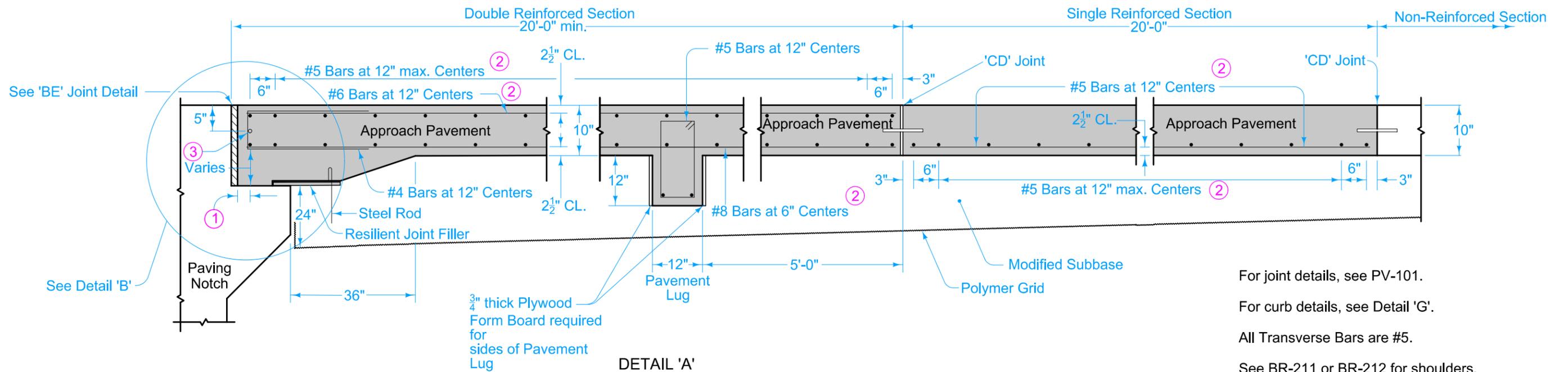
DETAIL 'D' (Joint Placement)



DETAIL 'E' (Back of Curb Placement)

- ⑤ Longitudinal Joint (PV-101):
Single pour - Saw cut joint per Detail B.
Two pours - Use 'BT-2' Joint.
- ⑥ Refer to BR-211, BR-212, or BR-231.
- ⑦ Design shoulder width.
- ⑧ Reinforced bridge approach section.
- ⑨ Joint at end of Bridge Rail End Section: Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section B-B of PV-101. Seal joint per Detail F of PV-101.
 - Fixed Abutment Bridges: Type 'E' Joint.
 - Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Set width of gap to 2 inches. Joint length as required to completely fill from back side of curb to front face of bridge wing.
- ⑩ Edge with 1/4 inch tool for length of joint indicated if formed edging not required when cut with diamond blade saw.
- ⑪ Compact tire buffings by spading with a square-nose shovel. Tire buffings shall not be larger than 1/2 inch.
- ⑫ Setting Width Notes:
 - Width is perpendicular to abutment.
 - Temperature of concrete deck on the underside or shaded portion of the deck shall be between 40 to 80 degrees Fahrenheit when placing approach slab concrete.
 - This 'BE' joint and the setting temperatures may be used for all concrete beam or slab bridges up to 575' in length and for all steel girder bridges up to 400' in length.

 STANDARD ROAD PLAN	REVISION	
	5	10-21-25
BR-201		SHEET 3 of 3
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.		
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 10" APPROACH		



For joint details, see PV-101.

For curb details, see Detail 'G'.

All Transverse Bars are #5.

See BR-211 or BR-212 for shoulders.

① 2" to 2½" clear to bent bar.

② Minimum lap length: #5 bars - 18 inches
#6 bars - 27 inches
#8 bars - 48 inches

③ If bridge is skewed, place additional #5 bar parallel to skewed face.

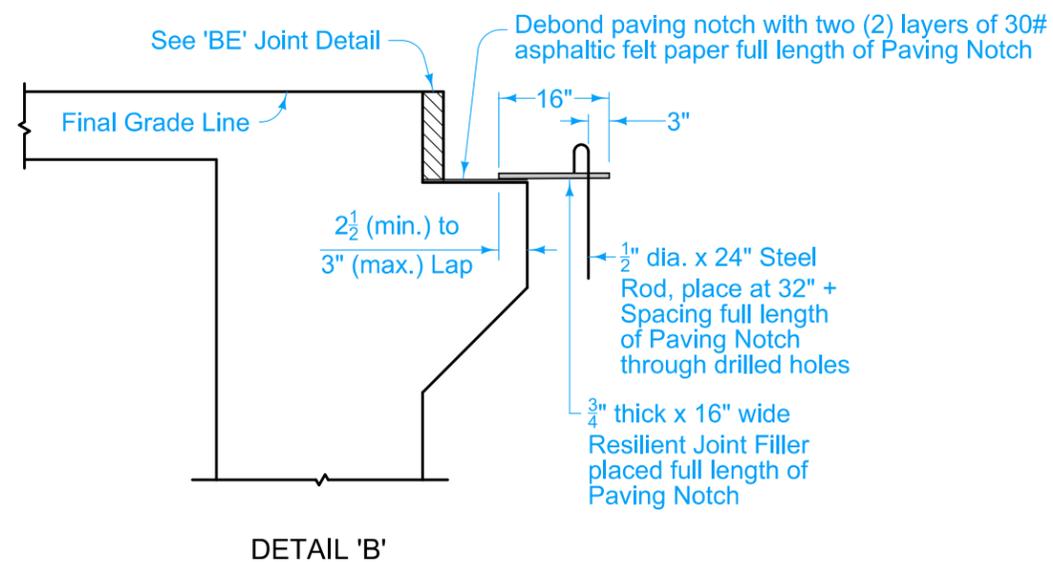
Possible Contract Item:
Bridge Approach, BR-202
Longitudinal Grooving in Concrete, Bridge Deck
Longitudinal Grooving in Concrete, Pavement

Possible Tabulation:
112-6

	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		BR-202
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.		SHEET 1 of 4

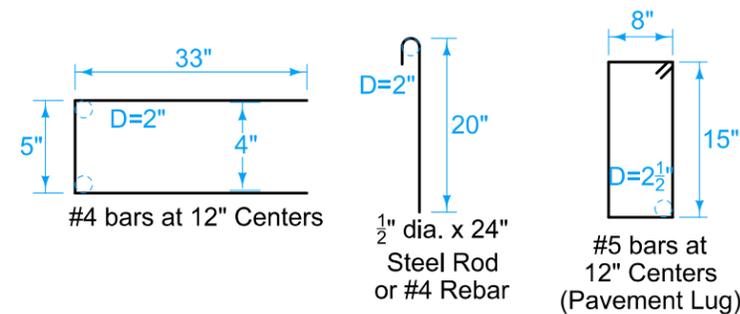
APPROVED BY DESIGN METHODS ENGINEER

DOUBLE REINFORCED 10" APPROACH
WITH VARIABLE DEPTH PAVING NOTCH

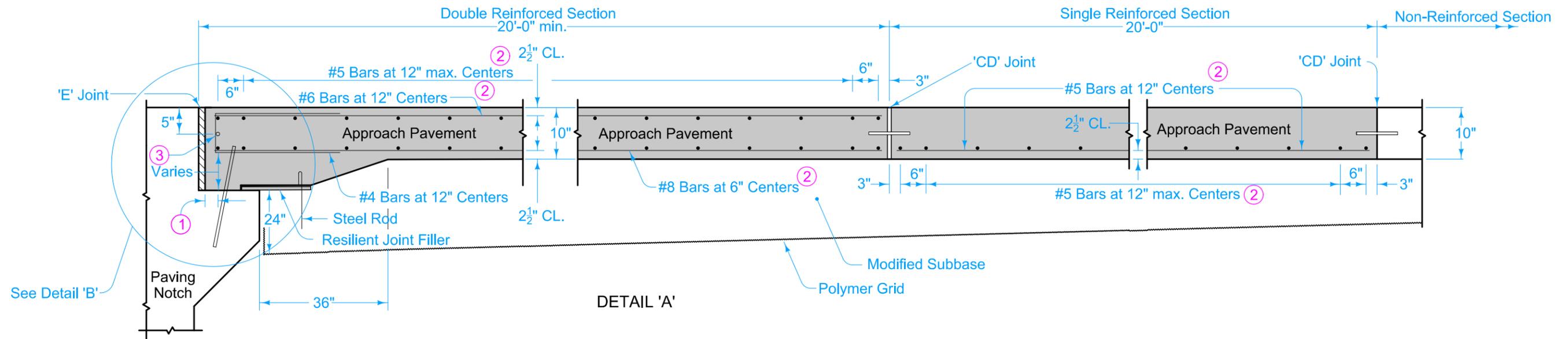


DETAIL 'B'

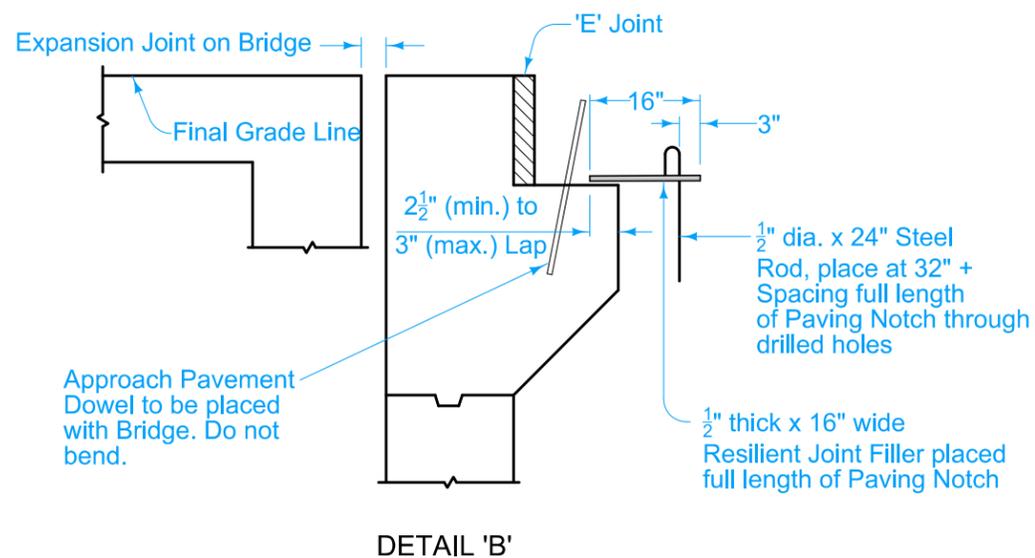
MOVEABLE ABUTMENT



BENT BAR SHAPES

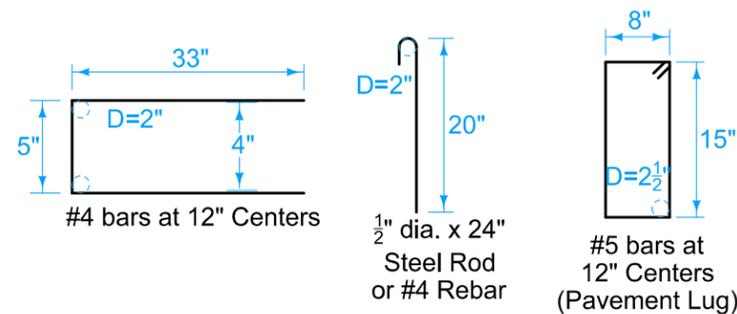


DETAIL 'A'



DETAIL 'B'

FIXED ABUTMENT

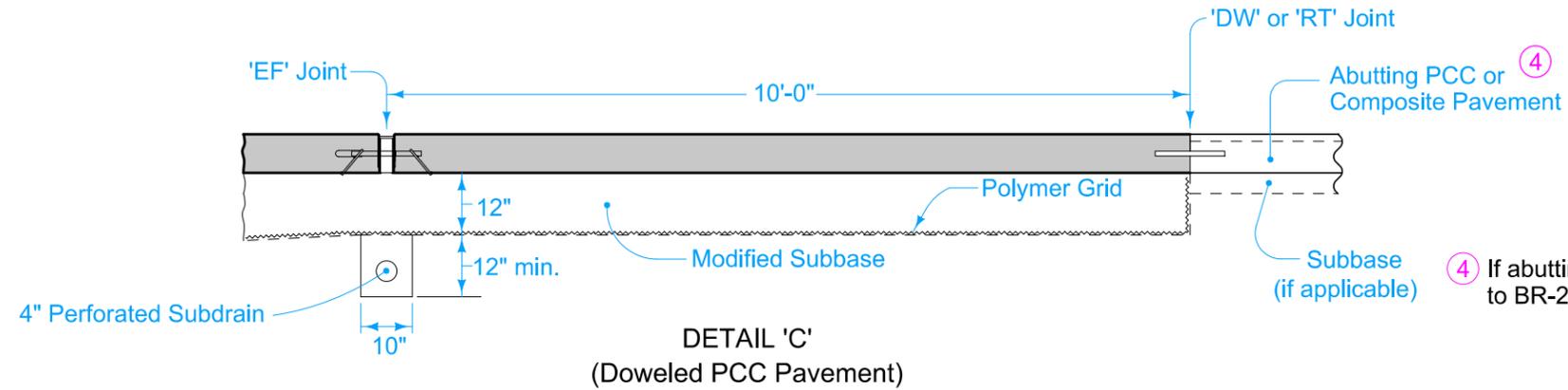
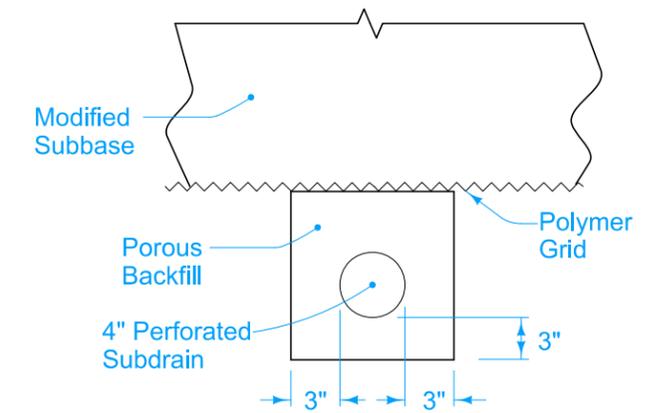
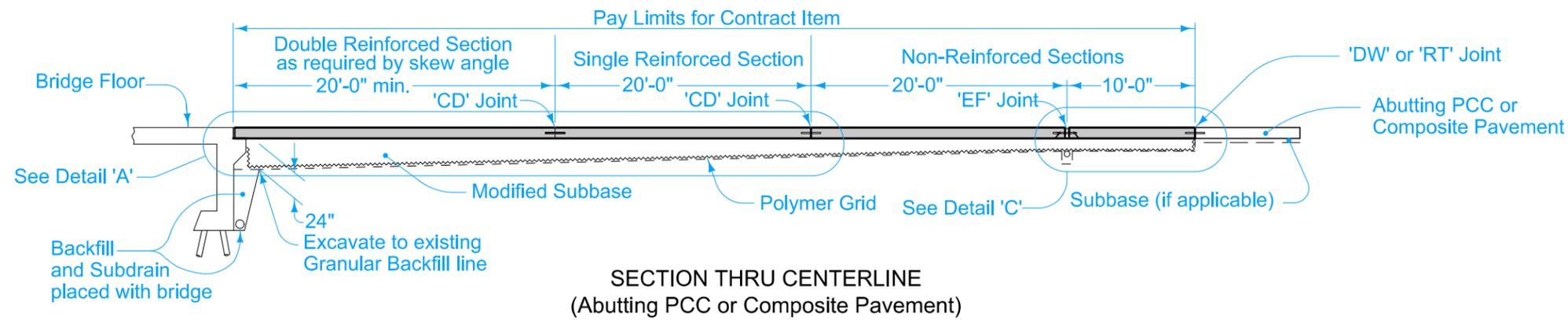


BENT BAR SHAPES

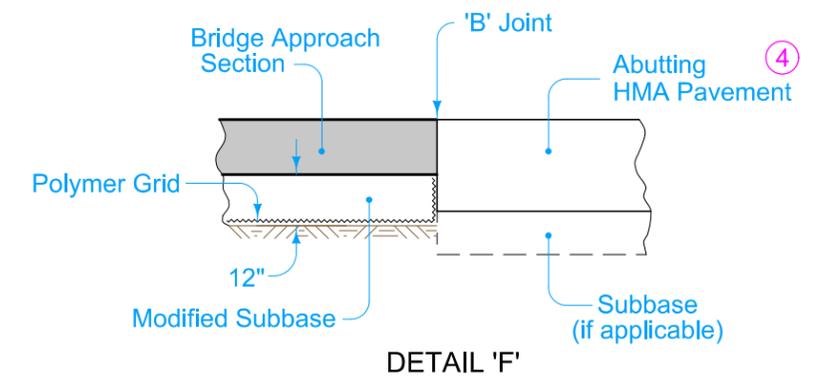
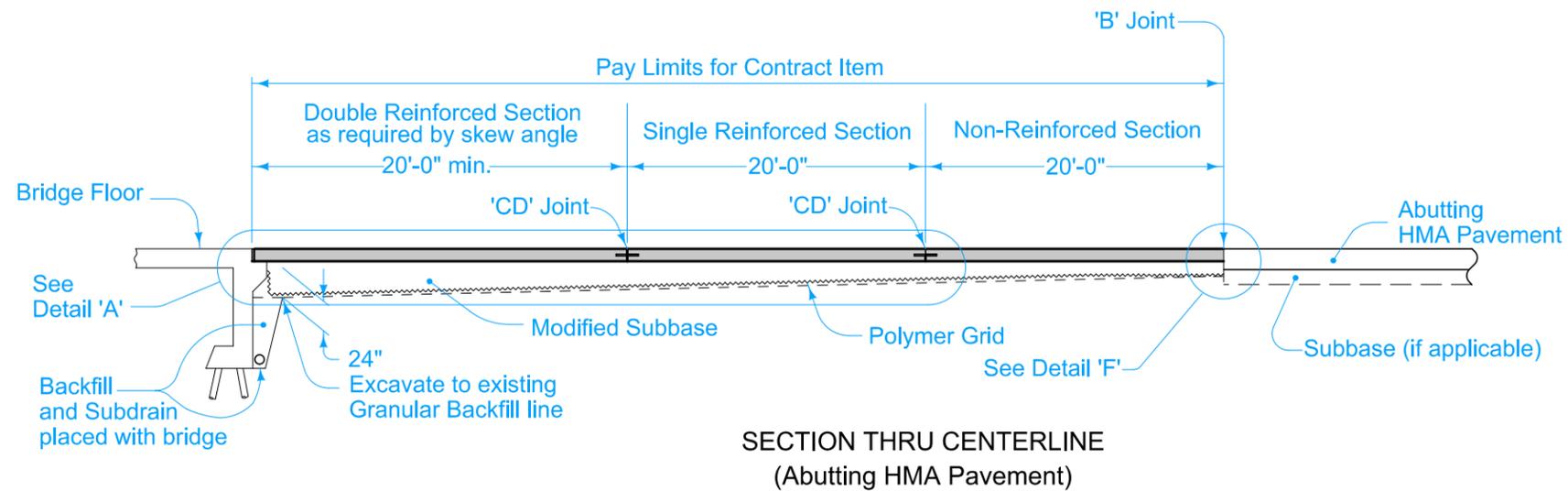
- ① 2" to 2½" clear to bent bar.
- ② Minimum lap length: #5 bars - 18 inches
#6 bars - 27 inches
#8 bars - 48 inches
- ③ If bridge is skewed, place additional #5 bar parallel to skewed face.

 STANDARD ROAD PLAN	REVISION	
	5	10-21-25
BR-202		
SHEET 2 of 4		
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.		
 APPROVED BY DESIGN METHODS ENGINEER		

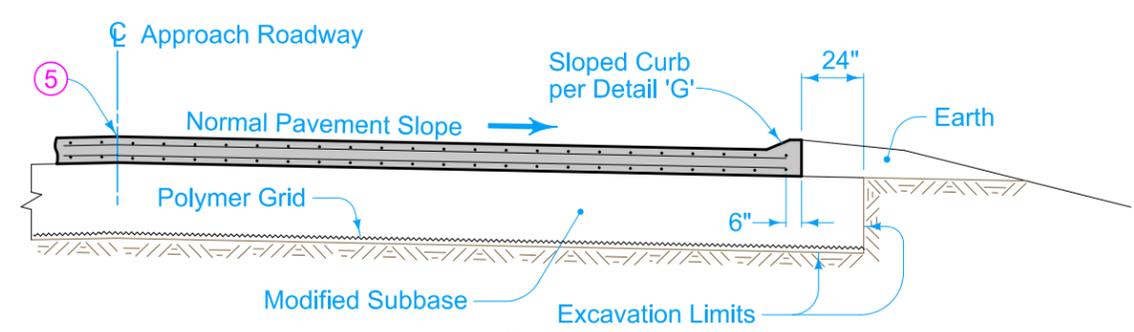
**DOUBLE REINFORCED 10" APPROACH
WITH VARIABLE DEPTH PAVING NOTCH**



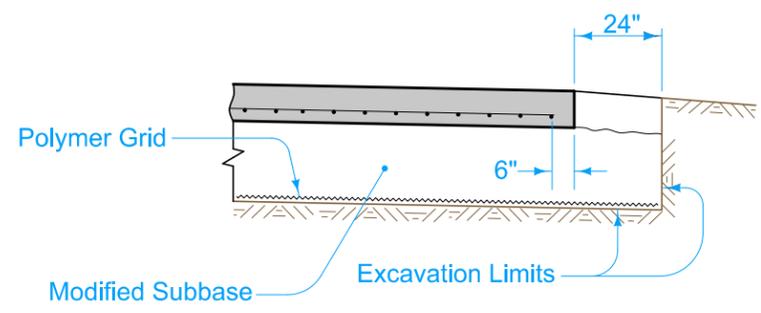
④ If abutting pavement (PCC or HMA) is not in place, refer to BR-213.



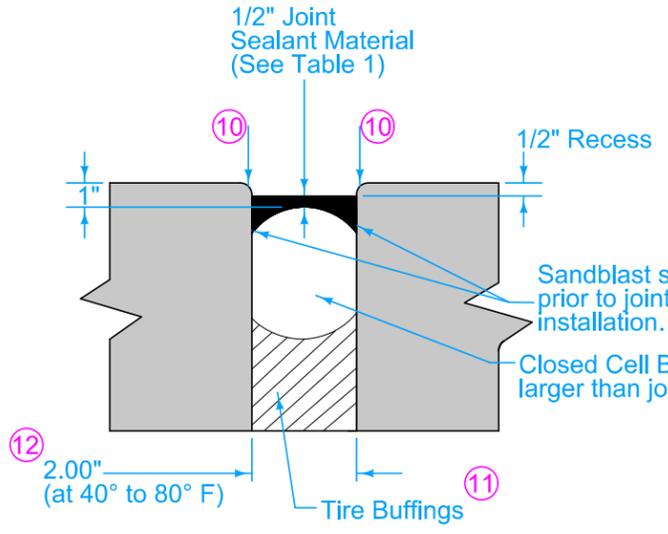
	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		BR-202
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.		SHEET 3 of 4
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 10" APPROACH WITH VARIABLE DEPTH PAVING NOTCH		



SECTION A-A

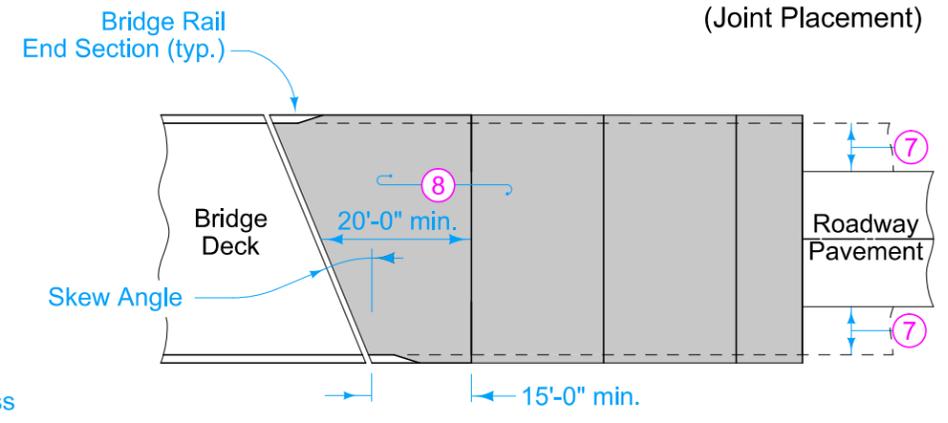


SECTION B-B

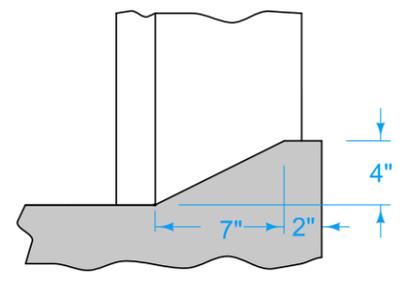


'BE' JOINT DETAIL

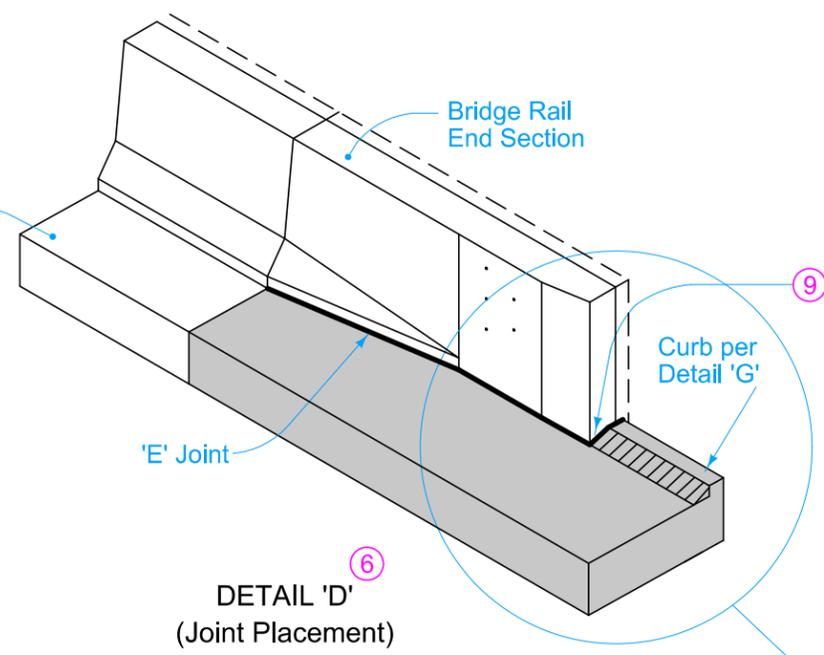
Table 1
Approved List of Sealant
Dow - Dowsil 902 RCS
Sika - Sikasil 728 RCS
Watson Bowman Acme - Wabo SiliconeSeal
Pecora - 322FC



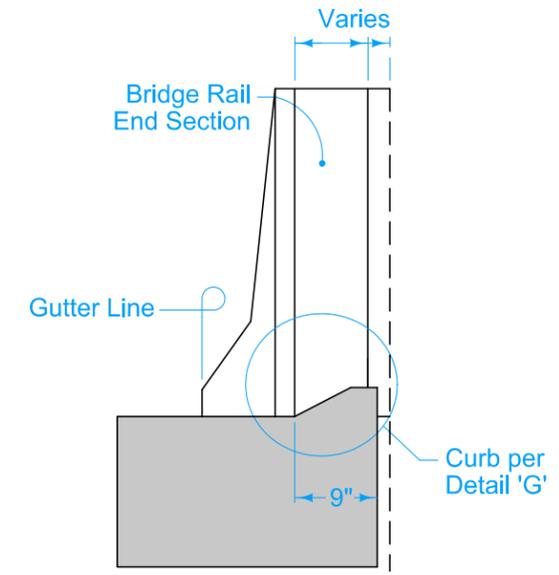
APPROACH PAVEMENT LAYOUT AT A SKEW



DETAIL 'G'



DETAIL 'D' (Joint Placement)



DETAIL 'E' (Back of Curb Placement)

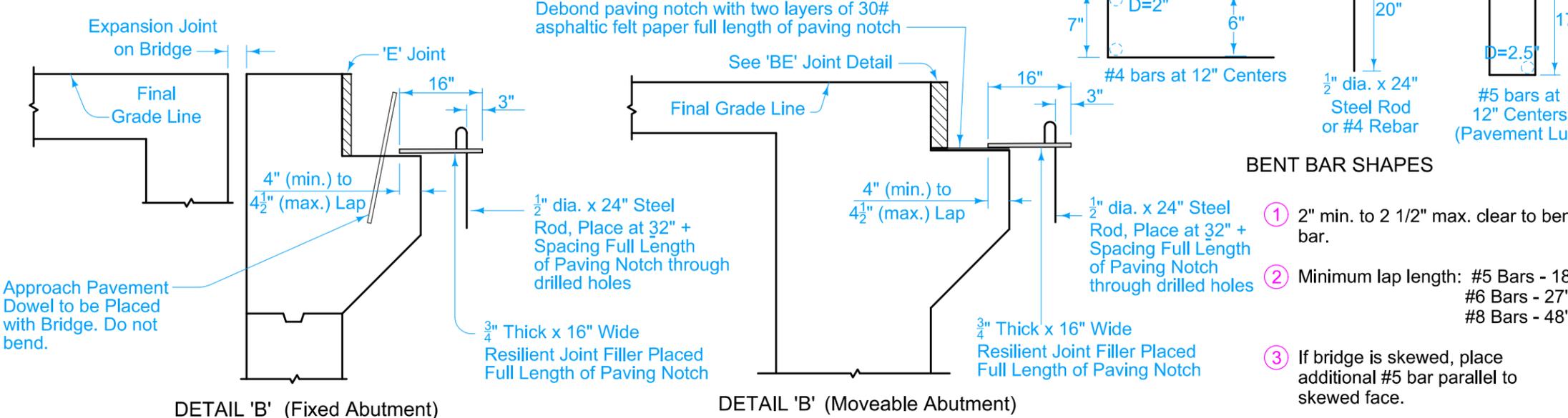
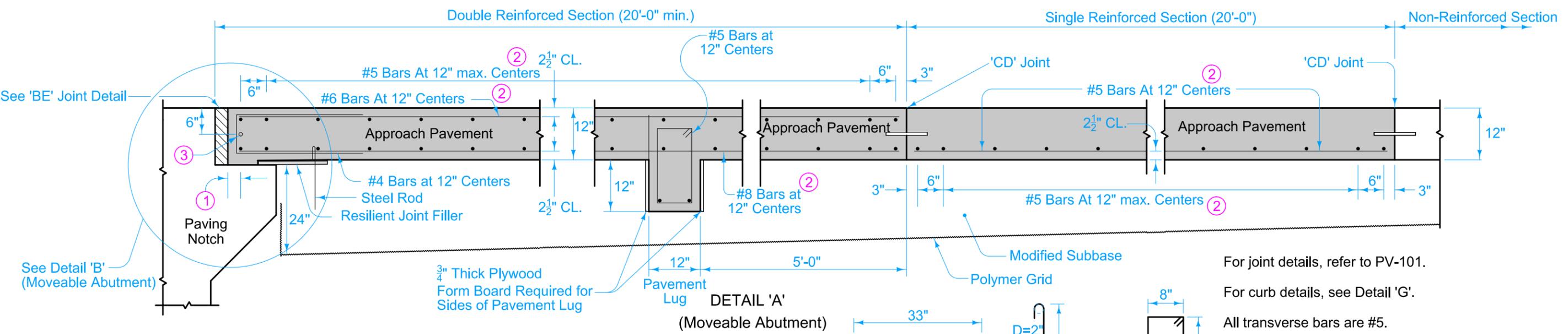
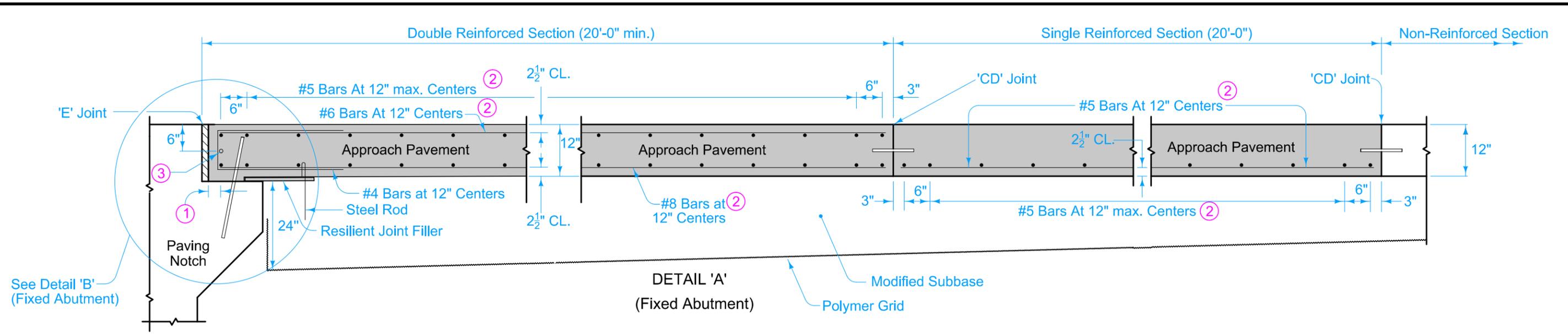
- ⑤ Longitudinal Joint (PV-101):
Single pour - Saw cut joint per Detail B.
Two pours - Use 'BT-2' Joint.
- ⑥ Refer to BR-211, BR-212, or BR-231.
- ⑦ Design shoulder width.
- ⑧ Reinforced bridge approach section.
- ⑨ Joint at end of Bridge Rail End Section: Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section B-B of PV-101. Seal joint per Detail F of PV-101.
 - Fixed Abutment Bridges: Type 'E' Joint.
 - Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Set width of gap to 2 inches. Joint length as required to completely fill from back side of curb to front face of bridge wing.
- ⑩ Edge with 1/4 inch tool for length of joint indicated if formed edging not required when cut with diamond blade saw.
- ⑪ Compact tire buffings by spading with a square-nose shovel. Tire buffings shall not be larger than 1/2 inch.
- ⑫ Setting Width Notes:
 - Width is perpendicular to abutment.
 - Temperature of concrete deck on the underside or shaded portion of the deck shall be between 40 to 80 degrees Fahrenheit when placing approach slab concrete.
 - This 'BE' joint and the setting temperatures may be used for all concrete beam or slab bridges up to 575' in length and for all steel girder bridges up to 400' in length.

IOWA DOT	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		
BR-202		
SHEET 4 of 4		

REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

DOUBLE REINFORCED 10" APPROACH WITH VARIABLE DEPTH PAVING NOTCH



For joint details, refer to PV-101.

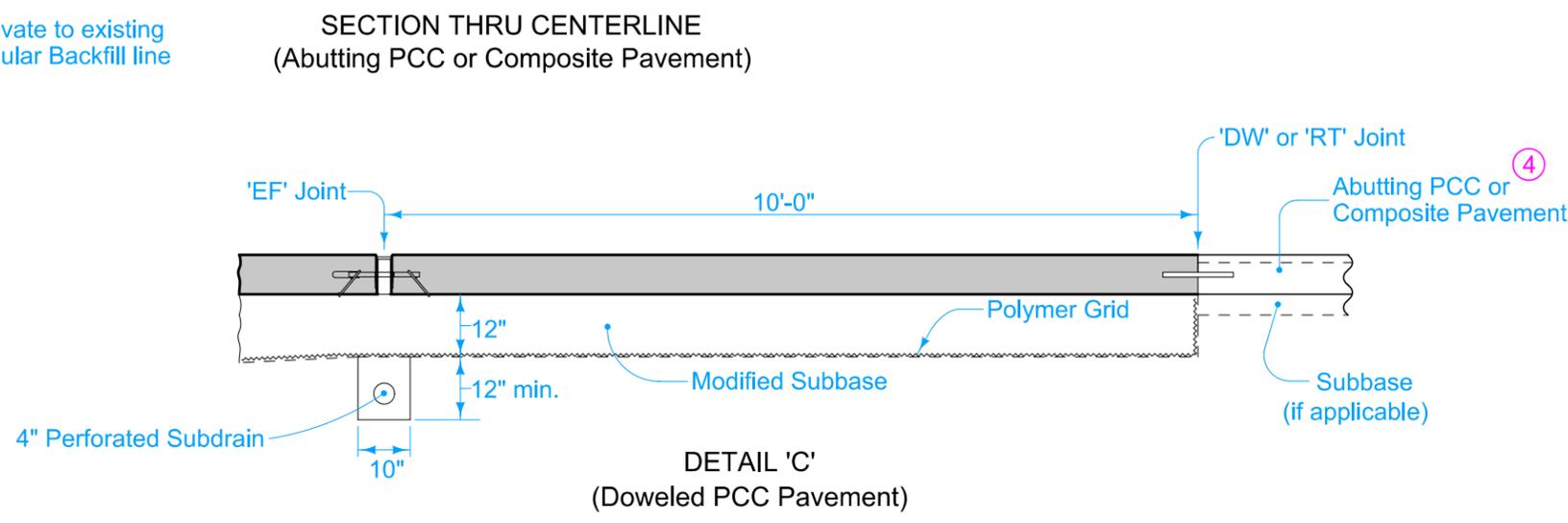
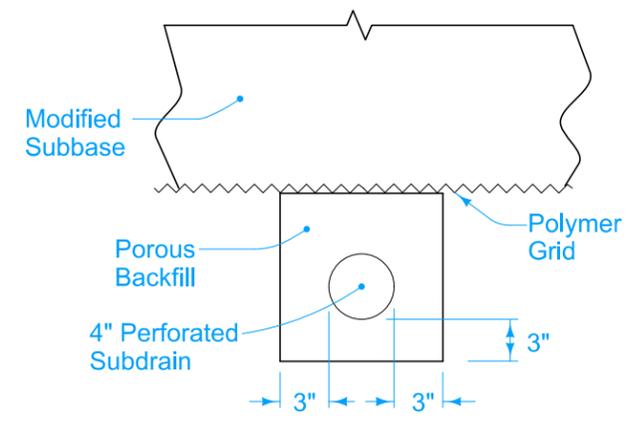
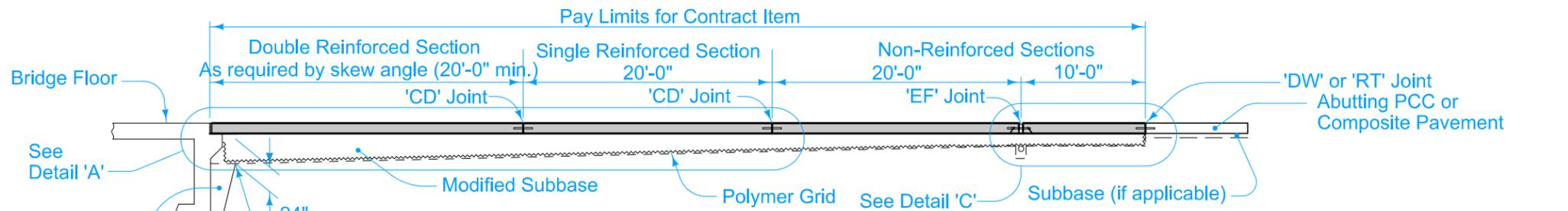
For curb details, see Detail 'G'.

All transverse bars are #5.

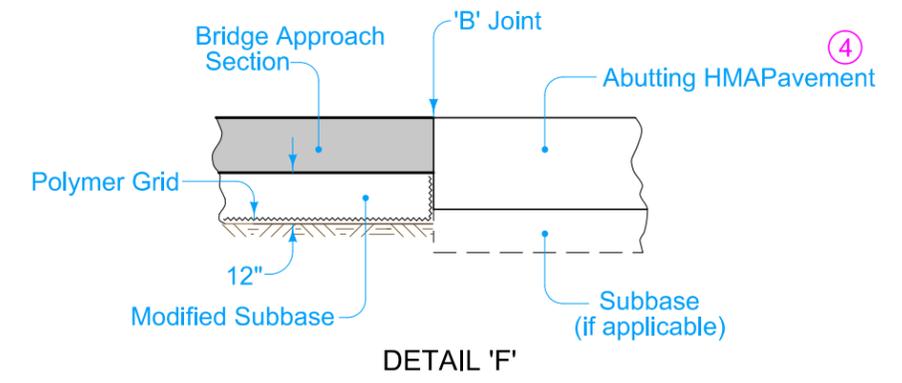
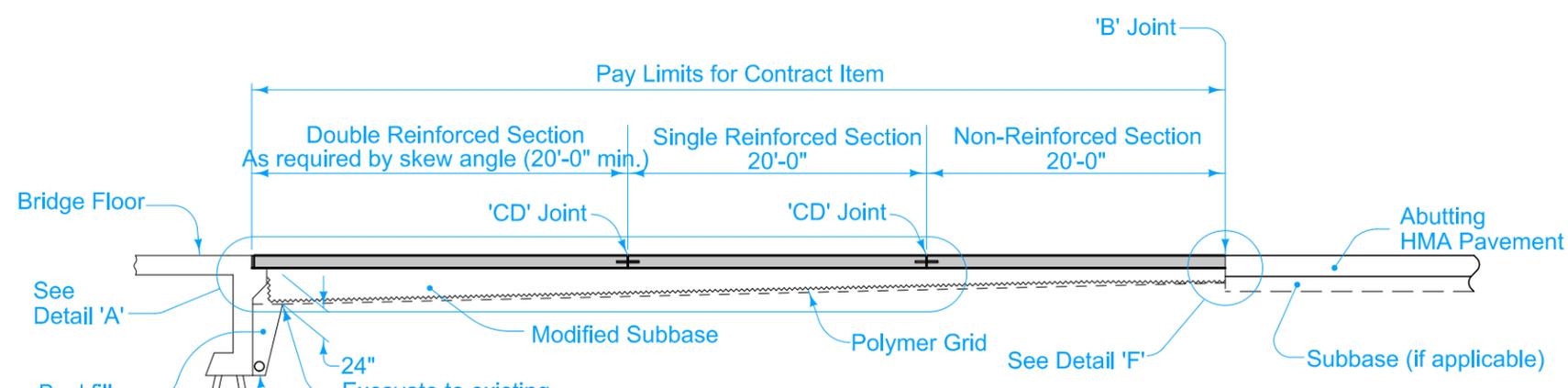
Possible Contract Item:
Bridge Approach, BR-203
Longitudinal Grooving in Concrete, Bridge Deck
Longitudinal Grooving in Concrete, Pavement

Possible Tabulation:
112-6

	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		BR-203
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.		SHEET 1 of 3
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 12" APPROACH		



④ If abutting pavement (PCC or HMA) is not in place, refer to BR-213.

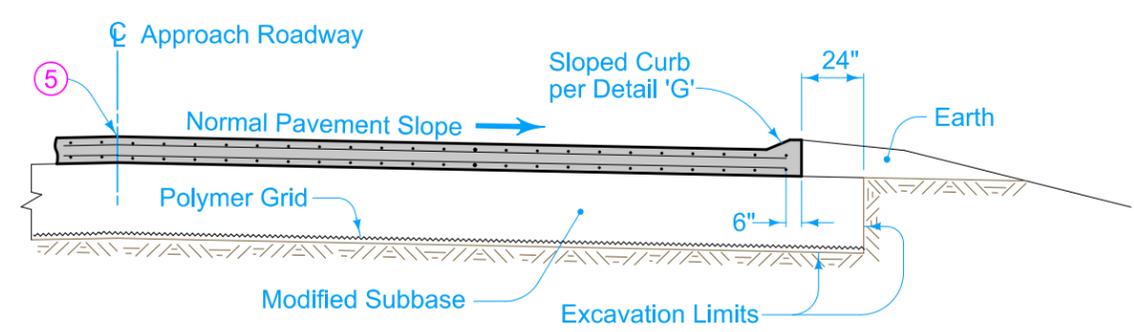


IOWA DOT STANDARD ROAD PLAN	REVISION	
	5	10-21-25
BR-203 SHEET 2 of 3		

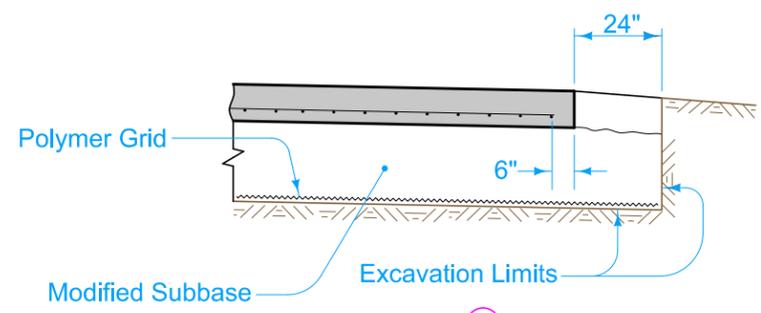
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.

APPROVED BY DESIGN METHODS ENGINEER

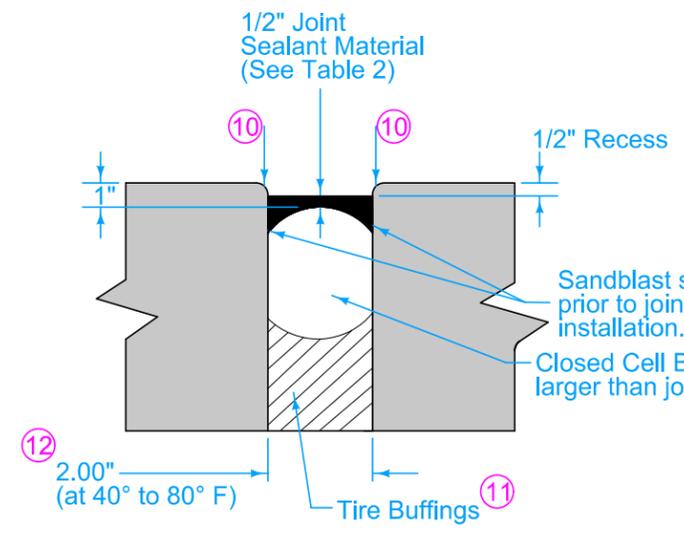
DOUBLE REINFORCED 12" APPROACH



SECTION A-A

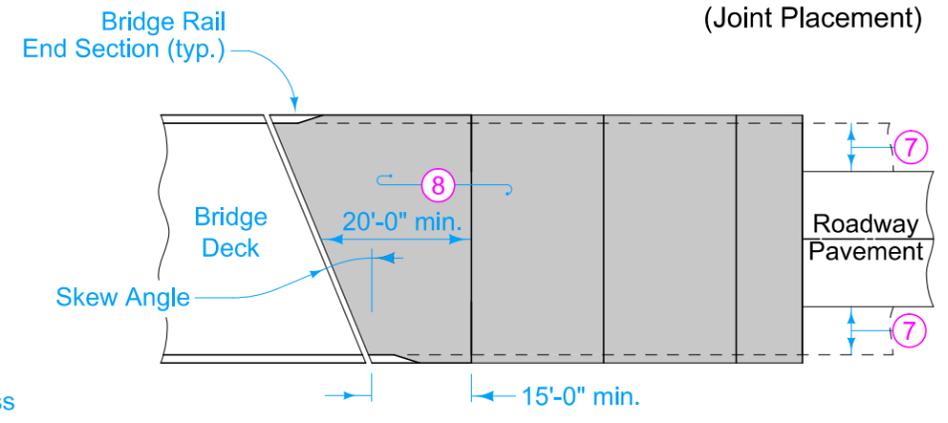


SECTION B-B

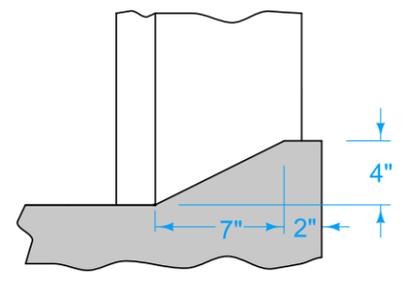


'BE' JOINT DETAIL

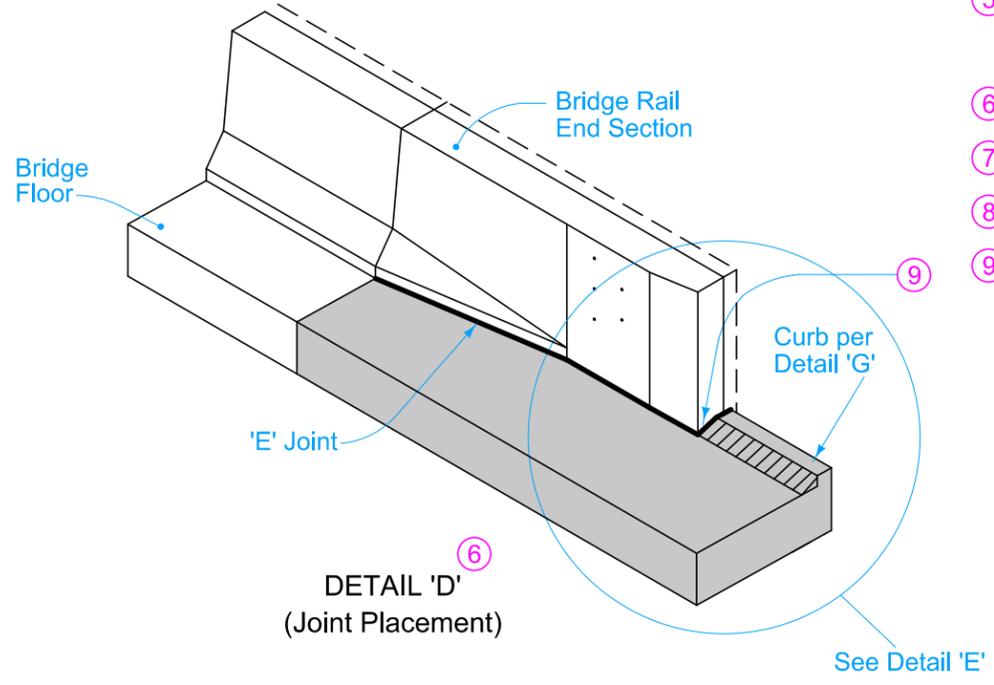
Table 2	
Approved List of Sealant	
Dow - Dowsil 902 RCS	
Sika - Sikasil 728 RCS	
Watson Bowman Acme - Wabo SiliconeSeal	
Pecora - 322FC	



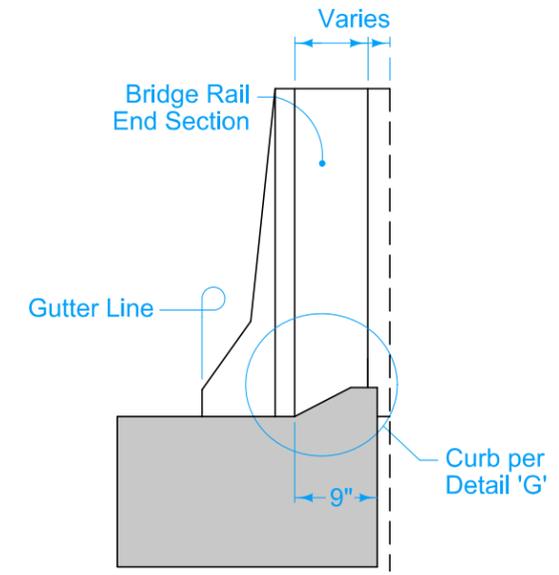
APPROACH PAVEMENT LAYOUT AT A SKEW



DETAIL 'G'



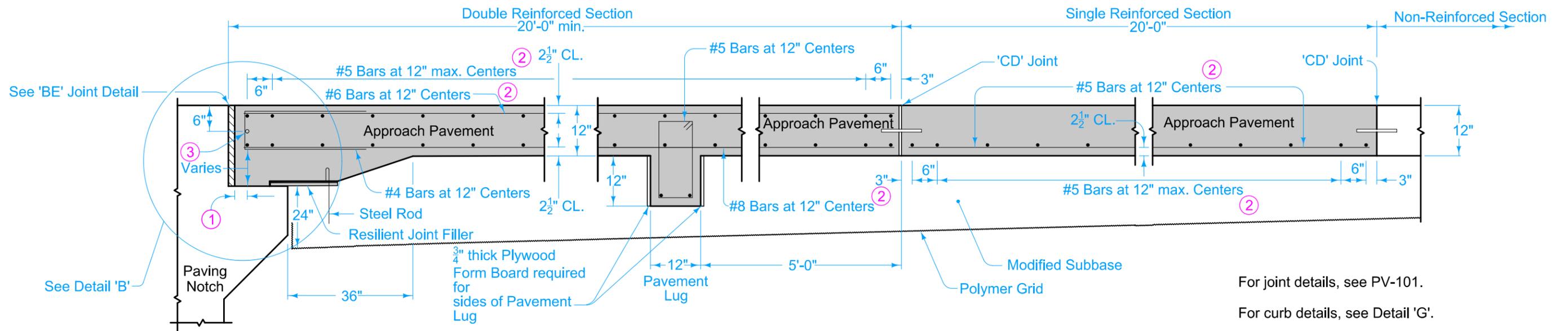
DETAIL 'D' (Joint Placement)



DETAIL 'E' (Back of Curb Placement)

- (5) Longitudinal Joint (PV-101):
Single pour - Saw cut joint per Detail B.
Two pours - Use 'BT-2' Joint.
- (6) Refer to BR-211, BR-212, or BR-231.
- (7) Design shoulder width.
- (8) Reinforced bridge approach section.
- (9) Joint at end of Bridge Rail End Section: Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section B-B of PV-101. Seal joint per Detail F of PV-101.
 - Fixed Abutment Bridges: Type 'E' Joint.
 - Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Set width of gap to 2 inches. Joint length as required to completely fill from back side of curb to front face of bridge wing.
- (10) Edge with 1/4 inch tool for length of joint indicated if formed edging not required when cut with diamond blade saw.
- (11) Compact tire buffings by spading with a square-nose shovel. Tire buffings shall not be larger than 1/2 inch.
- (12) Setting Width Notes:
 - Width is perpendicular to abutment.
 - Temperature of concrete deck on the underside or shaded portion of the deck shall be between 40 to 80 degrees Fahrenheit when placing approach slab concrete.
 - This 'BE' joint and the setting temperatures may be used for all concrete beam or slab bridges up to 575' in length and for all steel girder bridges up to 400' in length.

 STANDARD ROAD PLAN	REVISION	
	5	10-21-25
	BR-203	
SHEET 3 of 3		
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.		
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 12" APPROACH		



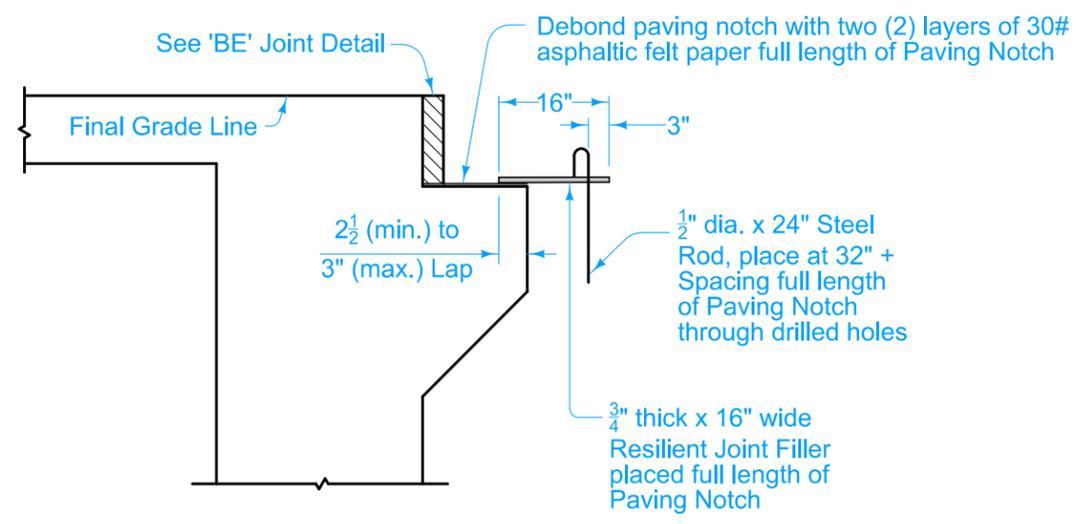
DETAIL 'A'

For joint details, see PV-101.
 For curb details, see Detail 'G'.
 All Transverse Bars are #5.
 See BR-211 or BR-212 for shoulders.

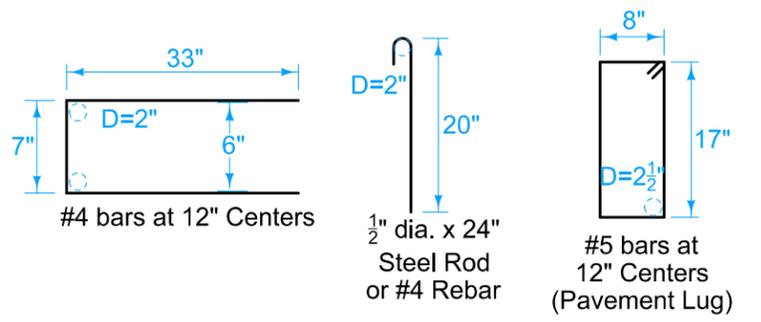
- ① 2" to 2½" clear to bent bar.
- ② Minimum lap length: #5 bars - 18 inches
 #6 bars - 27 inches
 #8 bars - 48 inches
- ③ If bridge is skewed, place additional #5 bar parallel to skewed face.

Possible Contract Item:
 Bridge Approach, BR-204
 Longitudinal Grooving in Concrete, Bridge Deck
 Longitudinal Grooving in Concrete, Pavement

Possible Tabulation:
 112-6



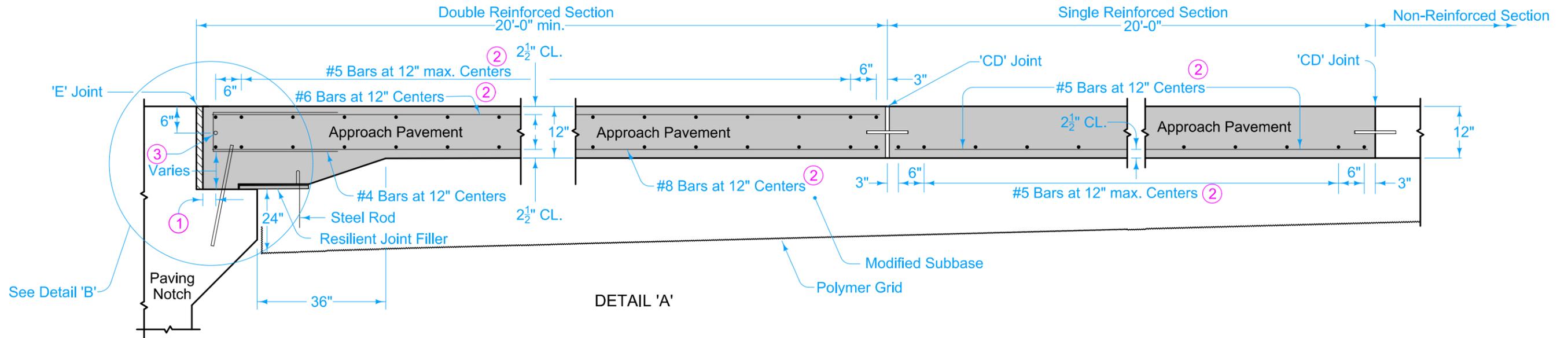
DETAIL 'B'



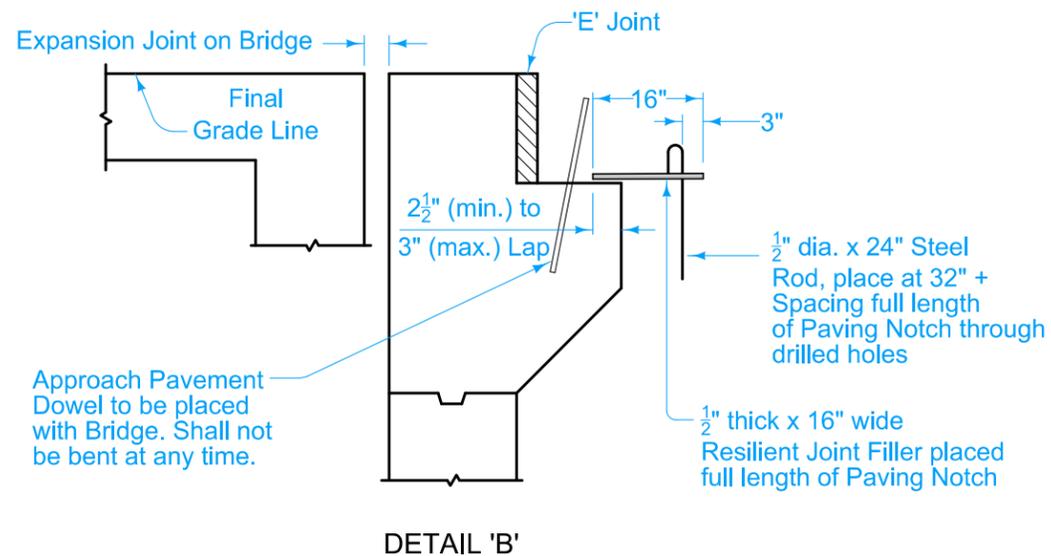
BENT BAR SHAPES

MOVEABLE ABUTMENT

	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		BR-204
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.		SHEET 1 of 4
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 12" APPROACH WITH VARIABLE DEPTH PAVING NOTCH		

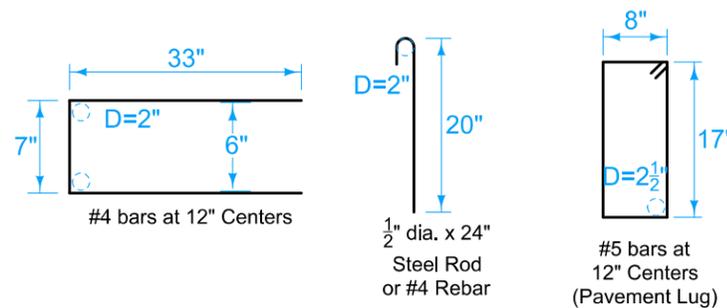


DETAIL 'A'



DETAIL 'B'

FIXED ABUTMENT



BENT BAR SHAPES

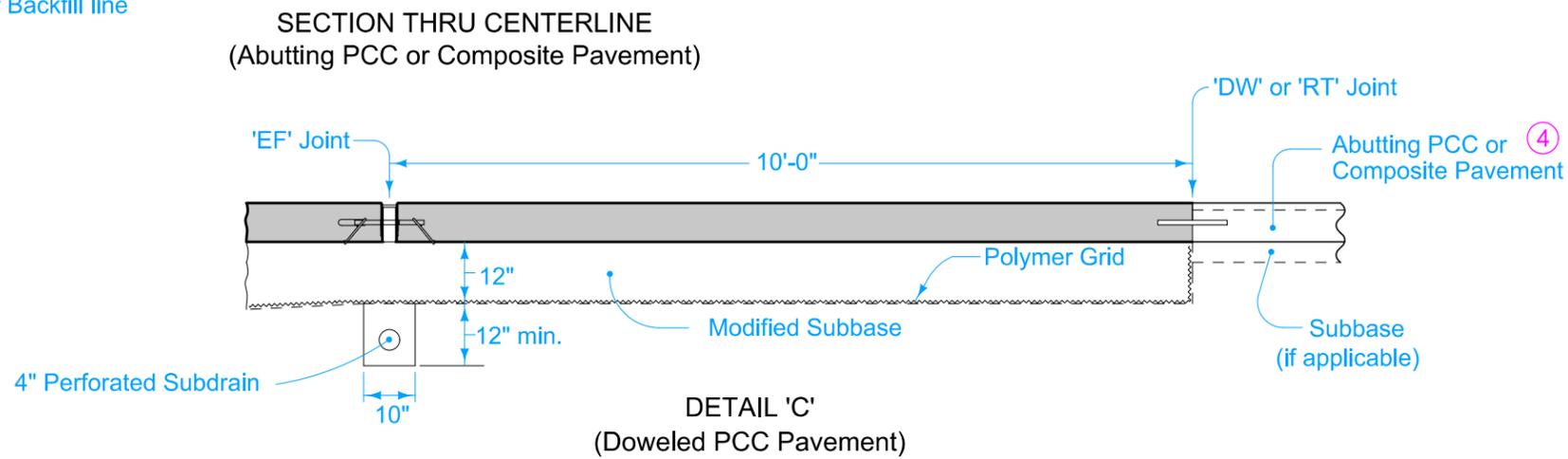
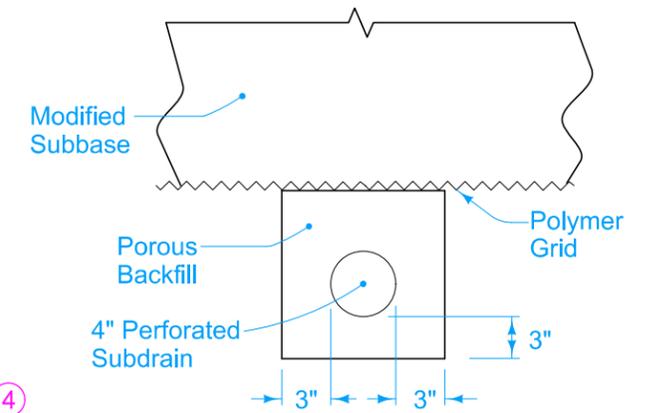
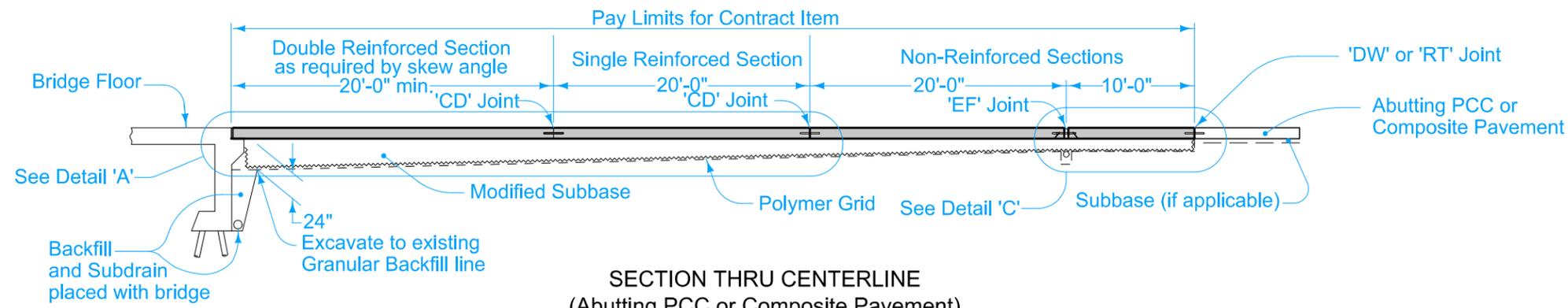
- ① 2" to 2½" clear to bent bar.
- ② Minimum lap length: #5 bars - 18 inches
#6 bars - 27 inches
#8 bars - 48 inches
- ③ If bridge is skewed, place additional #5 bar parallel to skewed face.

 STANDARD ROAD PLAN	REVISION	
	5	10-21-25
	BR-204	
SHEET 2 of 4		

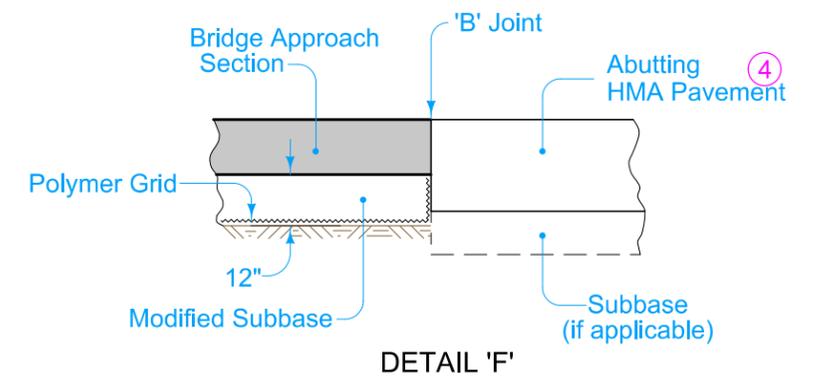
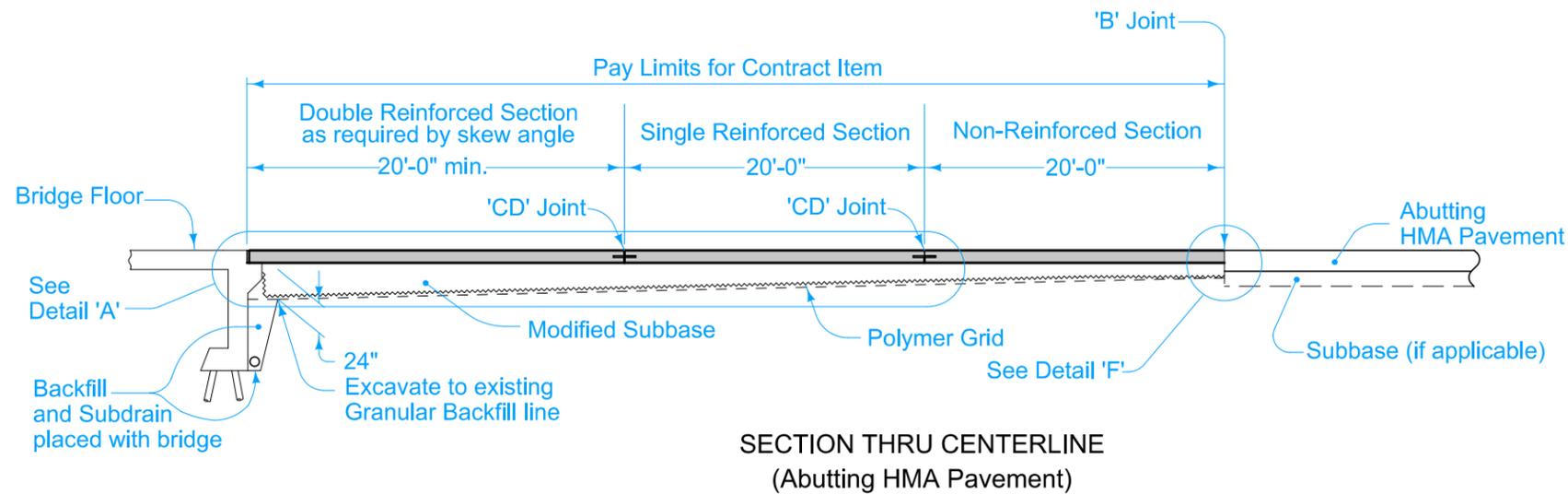
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

**DOUBLE REINFORCED 12" APPROACH
WITH VARIABLE DEPTH PAVING NOTCH**



④ If abutting pavement (PCC or HMA) is not in place, refer to BR-213.

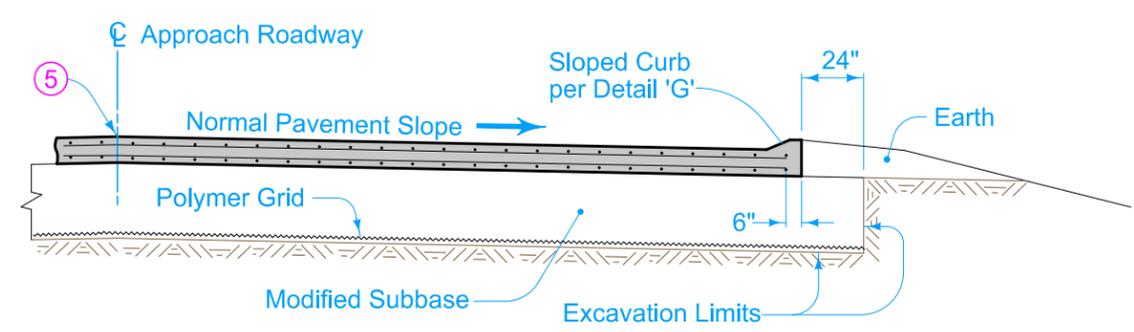


	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		BR-204
		SHEET 3 of 4

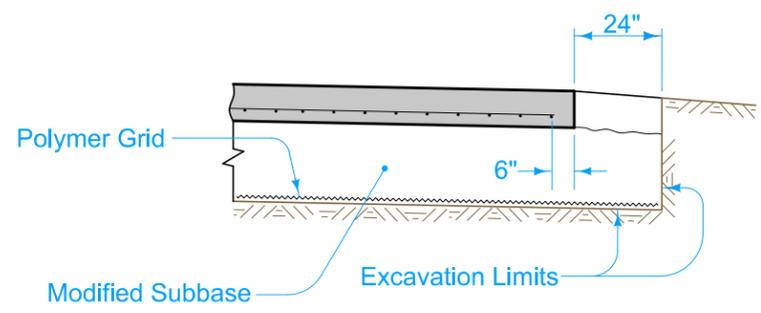
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.

APPROVED BY DESIGN METHODS ENGINEER

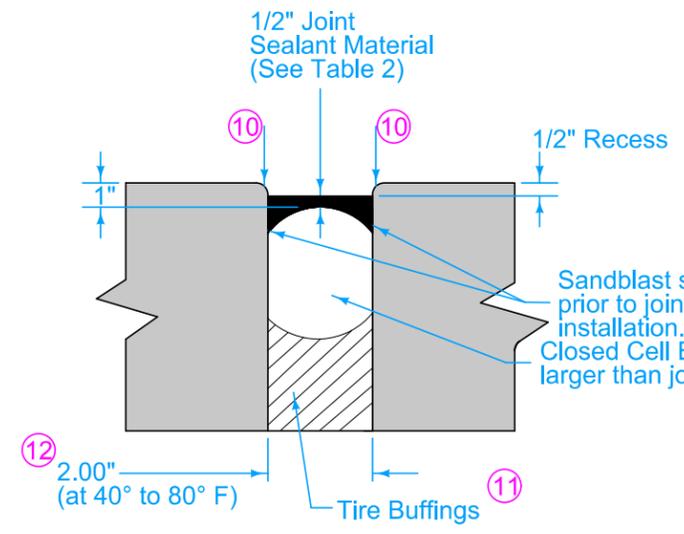
DOUBLE REINFORCED 12" APPROACH WITH VARIABLE DEPTH PAVING NOTCH



SECTION A-A

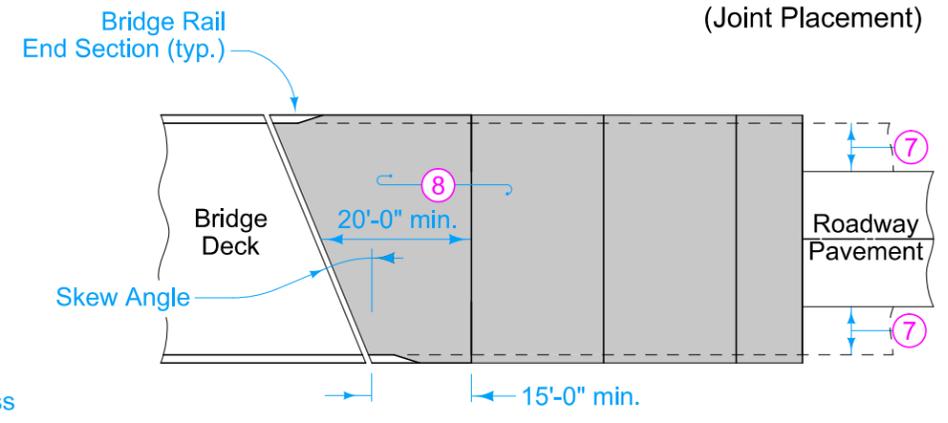


SECTION B-B

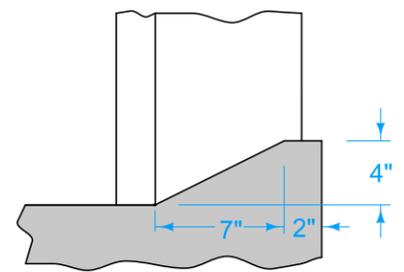


'BE' JOINT DETAIL

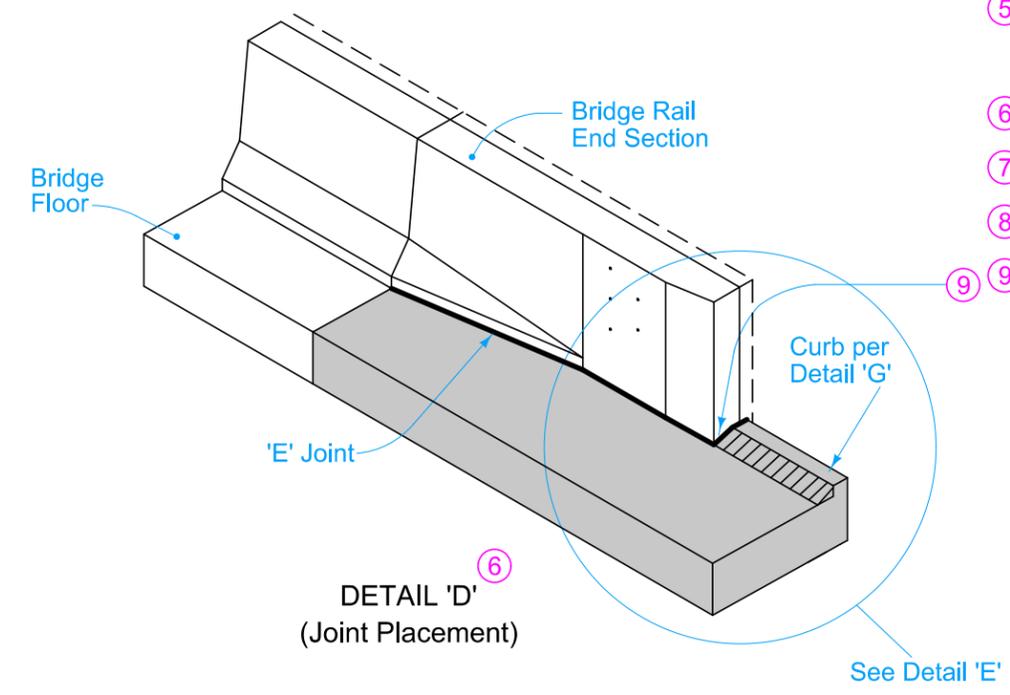
Table 2	
Approved List of Sealant	
Dow - Dowsil 902 RCS	
Sika - Sikasil 728 RCS	
Watson Bowman Acme - Wabo SiliconeSeal	
Pecora - 322FC	



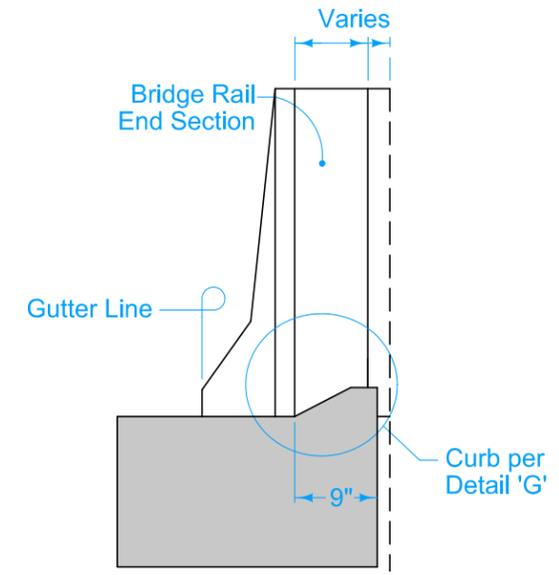
APPROACH PAVEMENT LAYOUT AT A SKEW



DETAIL 'G'



DETAIL 'D' (Joint Placement)



DETAIL 'E' (Back of Curb Placement)

- ⑤ Longitudinal Joint (PV-101):
Single pour - Saw cut joint per Detail B.
Two pours - Use 'BT-2' Joint.
- ⑥ Refer to BR-211, BR-212, or BR-231.
- ⑦ Design shoulder width.
- ⑧ Reinforced bridge approach section.
- ⑨ Joint at end of Bridge Rail End Section: Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section B-B of PV-101. Seal joint per Detail F of PV-101.
- Fixed Abutment Bridges: Type 'E' Joint.
- Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Set width of gap to 2 inches. Joint length as required to completely fill from back side of curb to front face of bridge wing.
- ⑩ Edge with 1/4 inch tool for length of joint indicated if formed edging not required when cut with diamond blade saw.
- ⑪ Compact tire buffings by spading with a square-nose shovel. Tire buffings shall not be larger than 1/2 inch.
- ⑫ Setting Width Notes:
 - Width is perpendicular to abutment.
 - Temperature of concrete deck on the underside or shaded portion of the deck shall be between 40 to 80 degrees Farenheit when placing approach slab concrete.
 - This 'BE' joint and the setting temperatures may be used for all concrete beam or slab bridges up to 575' in length and for all steel girder bridges up to 400' in length.

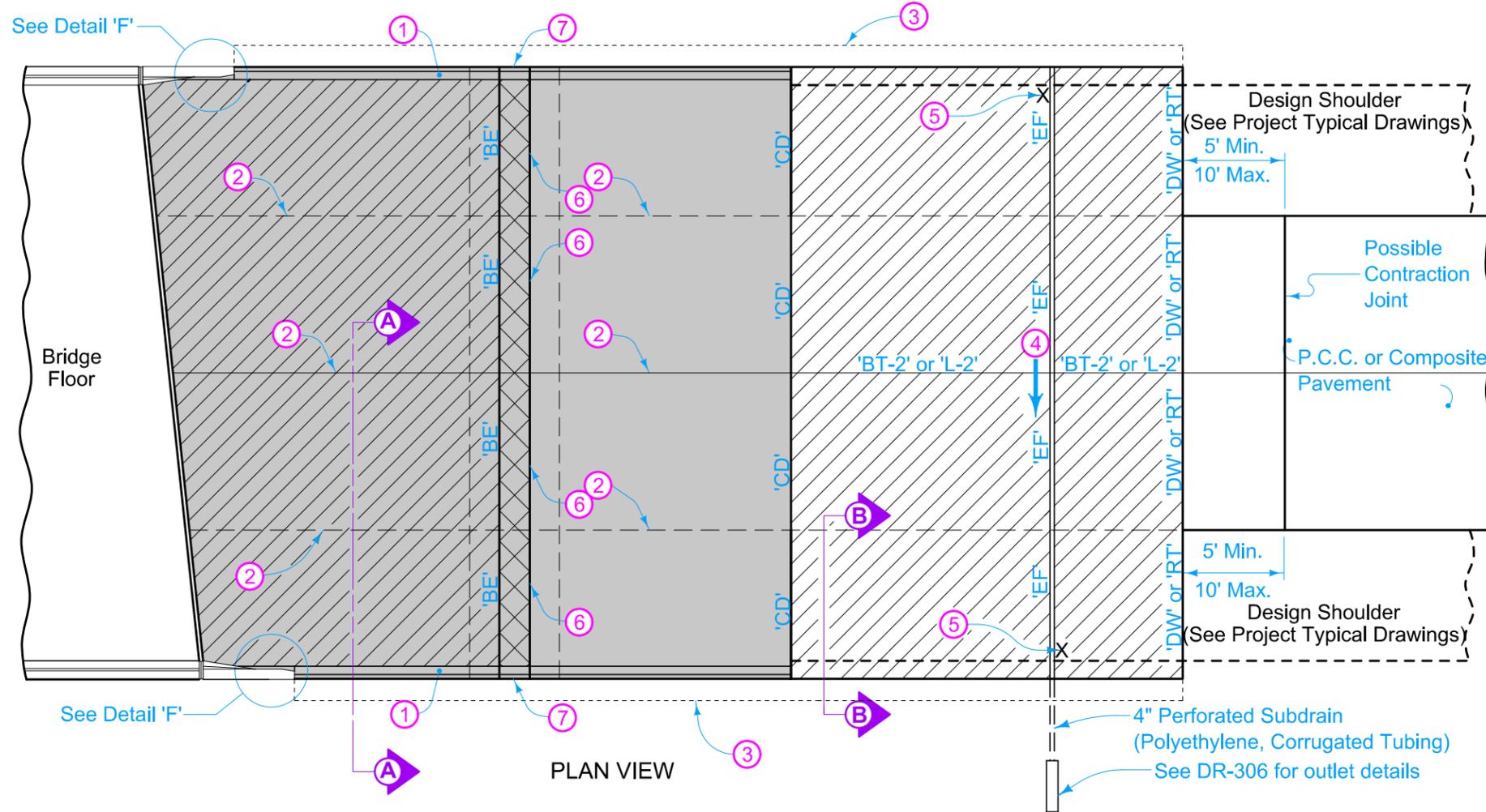
 STANDARD ROAD PLAN	REVISION	
	5	10-21-25
BR-204		
SHEET 4 of 4		

REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

DOUBLE REINFORCED 12" APPROACH WITH VARIABLE DEPTH PAVING NOTCH

DESIGNER INFORMATION



For joint details, see PV-101.

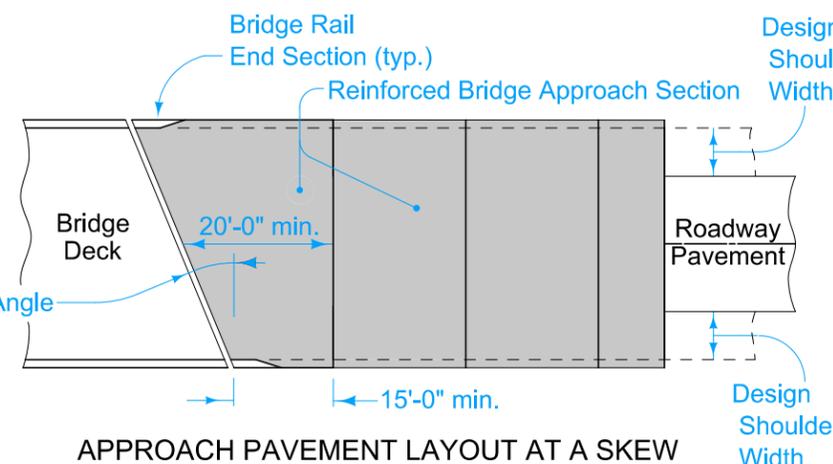
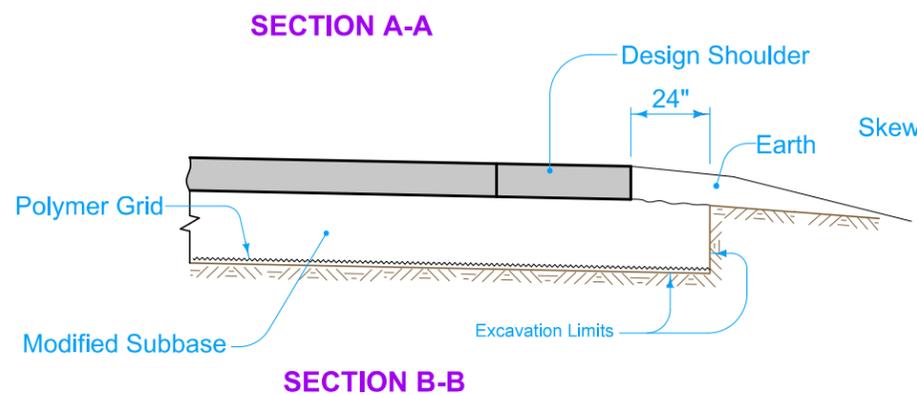
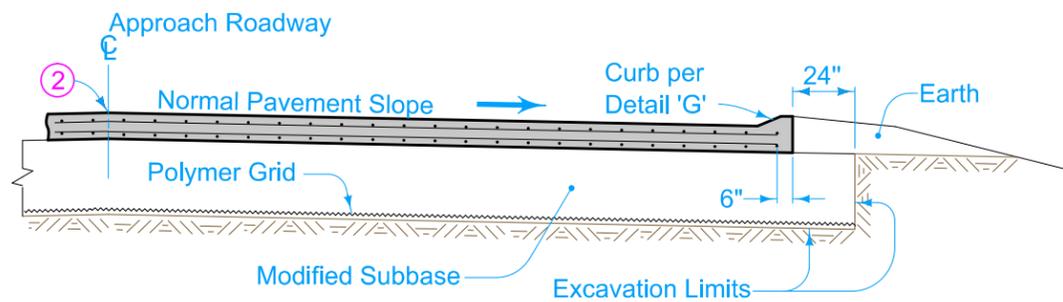
For curb details, see Detail 'G'.

All transverse bars are #5.

Use epoxy coated bars for all reinforcement.

Quantities for both the 1'-9" top part of the sleeper slab and the 6'-3" portion under the approach pavement have been included in the double reinforced section quantities.

- ① Build 4 inch Sloped Curb to end of Reinforced Sections.
- ② Longitudinal Joint (PV-101):
Single Pour - Saw cut joint per Detail B .
Two Pours - Use 'BT-2' joint
- ③ Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge.
- ④ Slope subdrain to drain.
- ⑤ Place an "X" in the plastic concrete near the 'EF' joint at the outside edge of pavement.
- ⑥ ¼ inch Preformed Joint Filler and seal top.
- ⑦ See Detail 'C'.



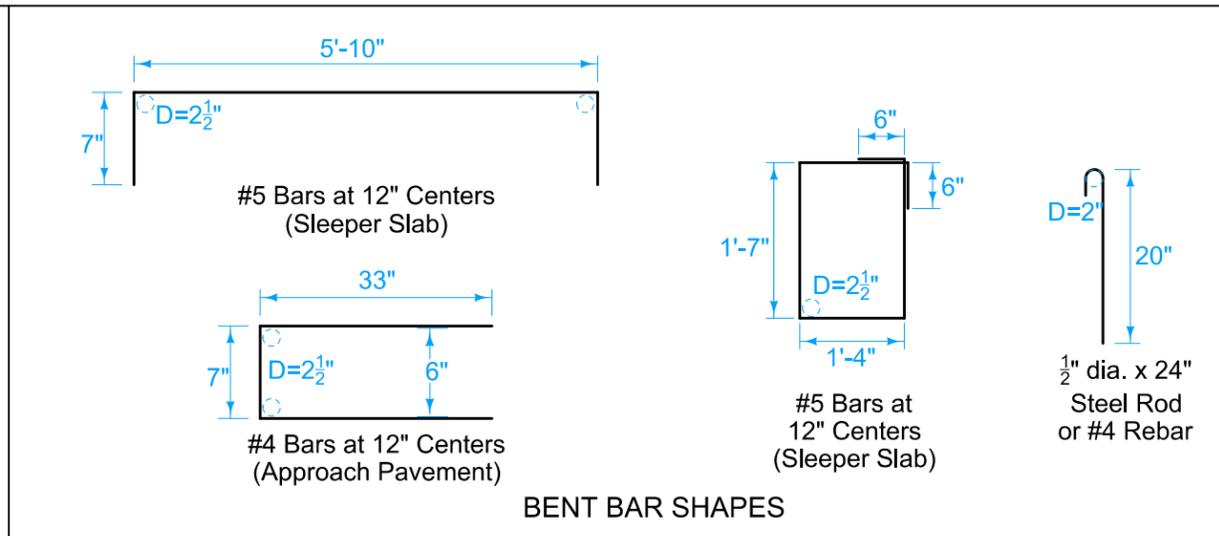
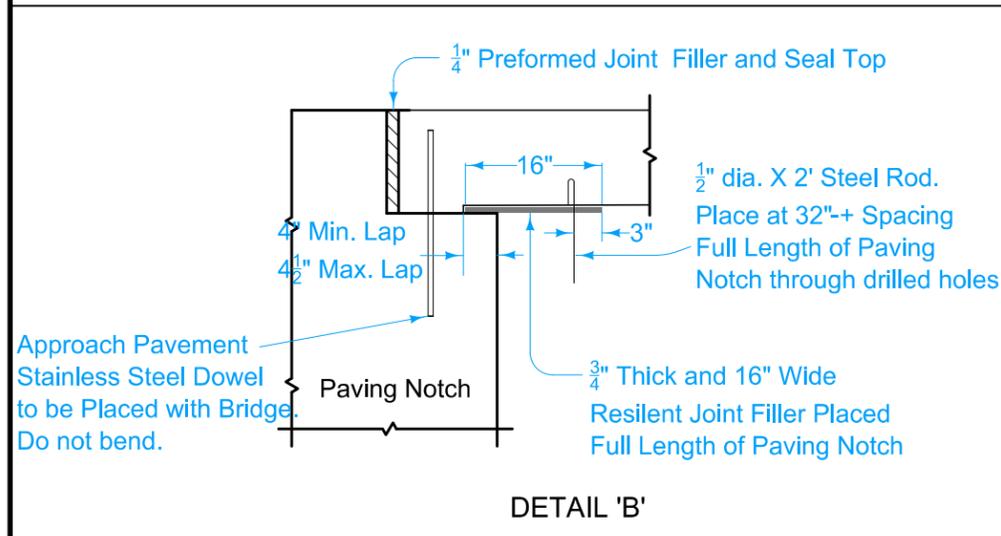
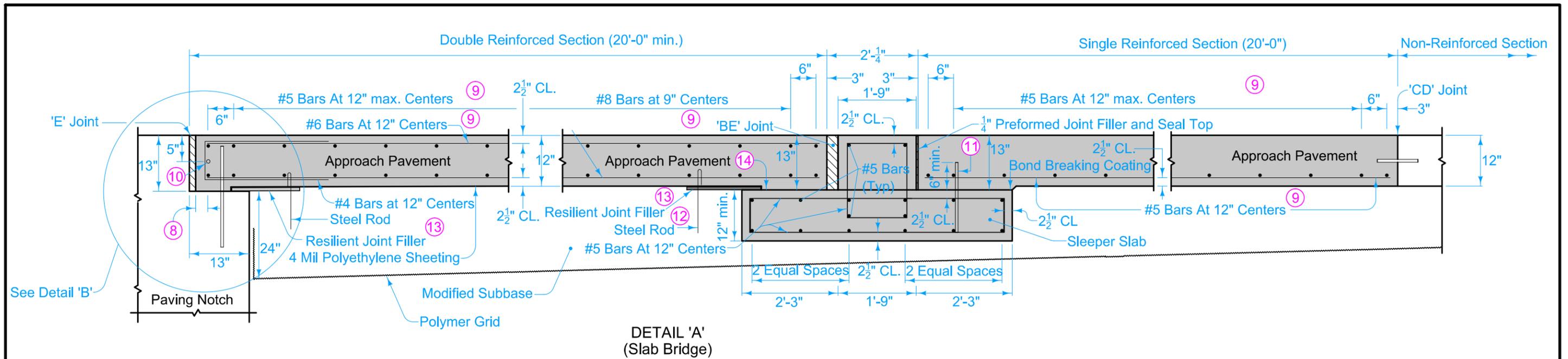
Possible Contract Item:
Bridge Approach, BR-205
Longitudinal Grooving in Concrete, Bridge Deck
Longitudinal Grooving in Concrete, Pavement

Possible Tabulation:
112-6

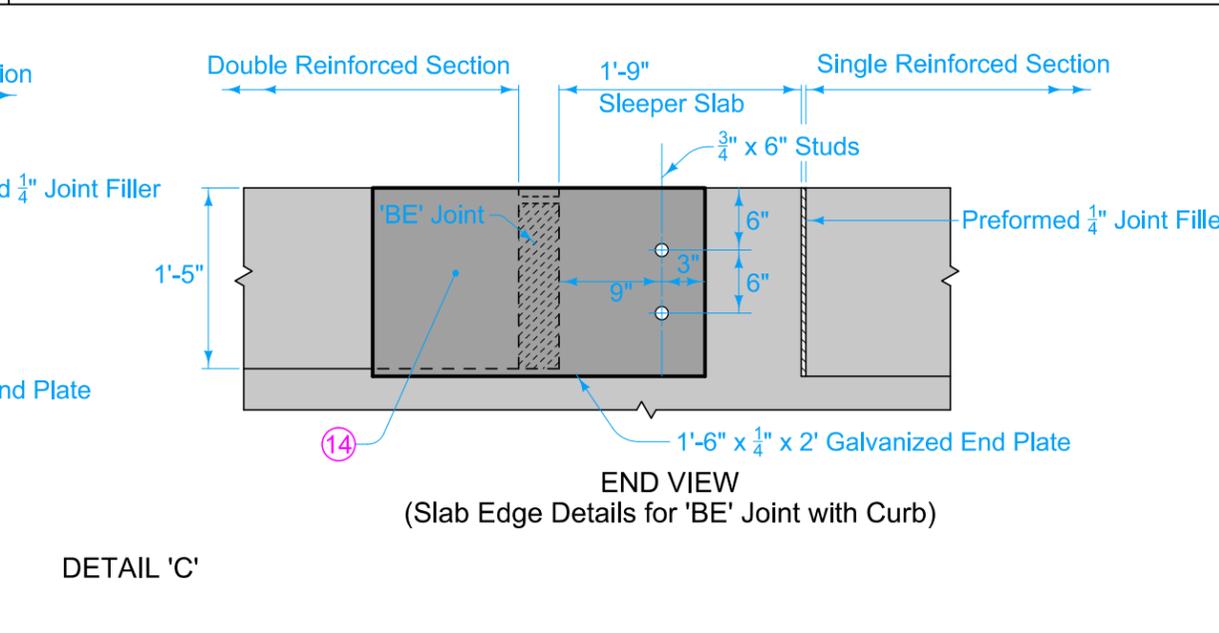
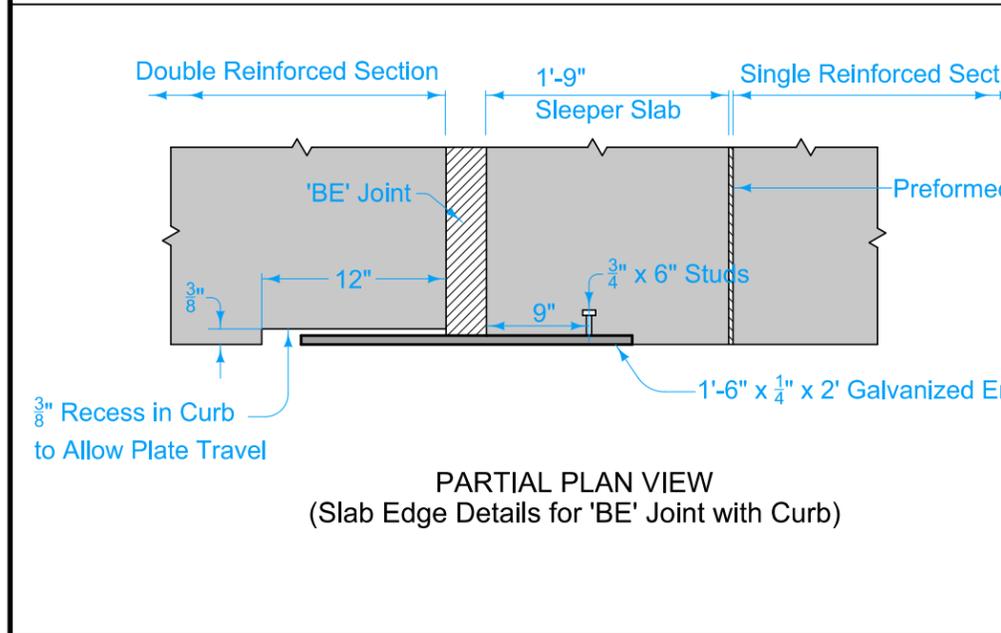
Pay limits for contract item include the following areas:

	Double Reinforced Section
	Sleeper Beam Section
	Single Reinforced Section
	Non-Reinforced Section

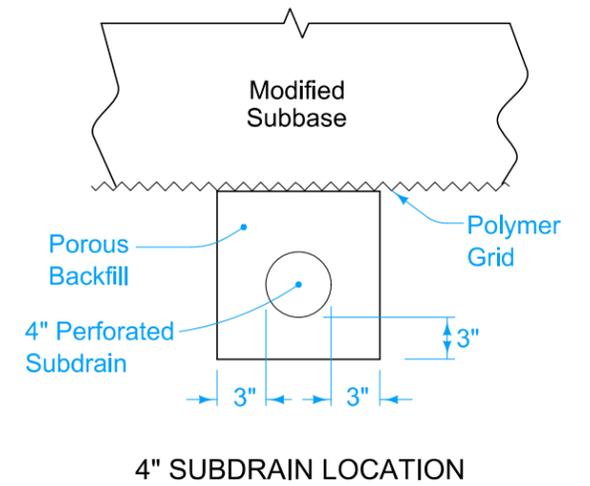
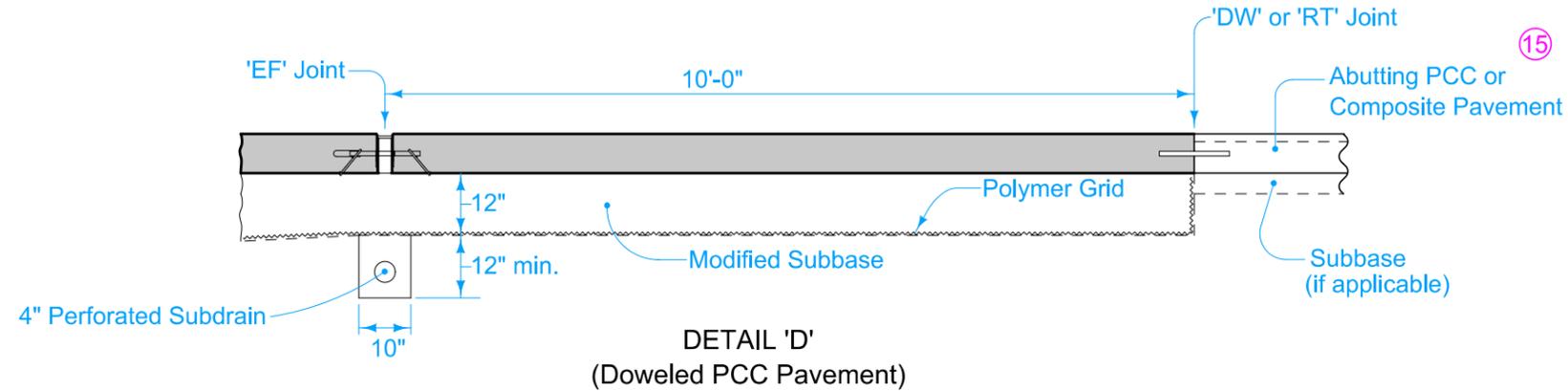
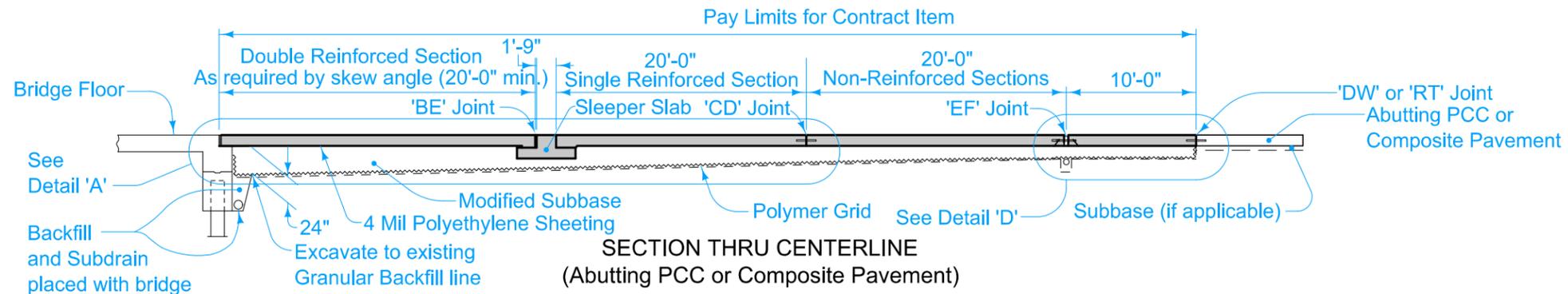
 STANDARD ROAD PLAN	REVISION	
	10	10-21-25
BR-205		
SHEET 1 of 4		
REVISIONS: Changed 'KT' joints to BT joints.		
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 12" APPROACH (SLAB BRIDGE)		



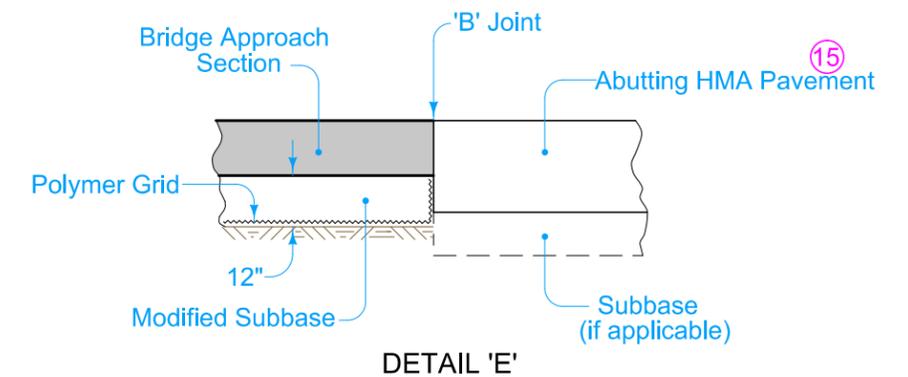
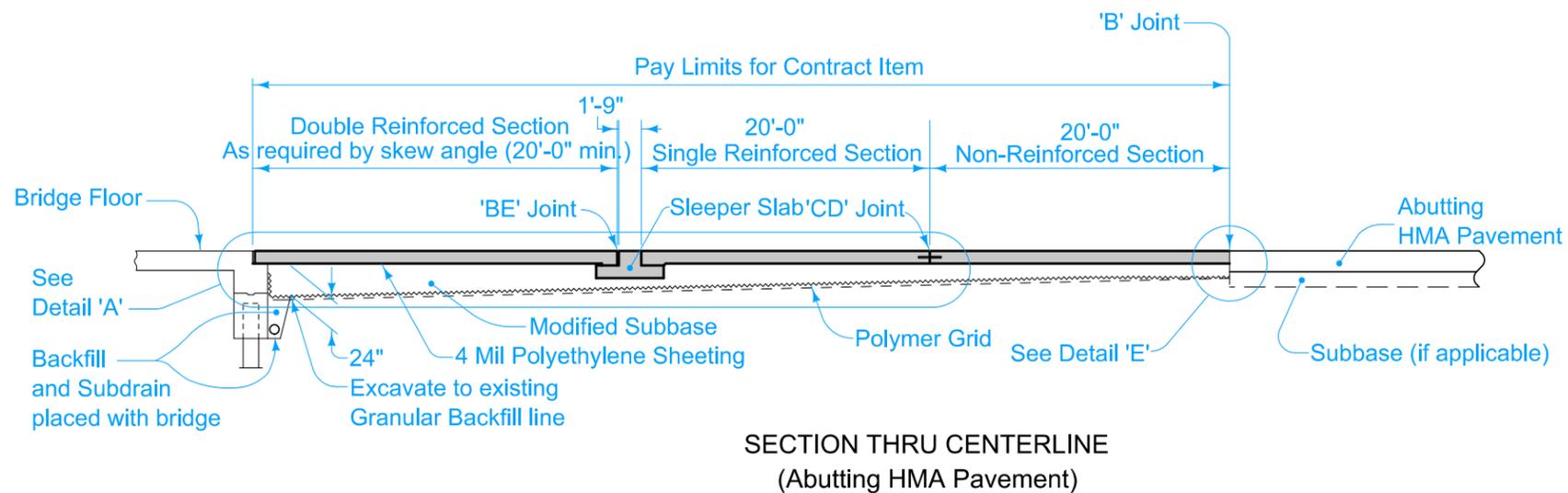
- ⑧ 2" min. to 2 1/2" max. clear to bent bar.
- ⑨ Minimum lap length: #5 Bars - 18"
#6 Bars - 27"
#8 Bars - 48"
- ⑩ If bridge is skewed, place additional #5 bar parallel to skewed face.
- ⑪ #8 dowels 1'-6" long with 2 1/2 inch bottom end clearance. Space at 24 inches O.C.
- ⑫ Space at 32" ± for full length of Sleeper Slab.
- ⑬ 3/4 inch thick x 16 inch wide Resilient Joint Filler for full length of Sleeper Slab.
- ⑭ Debond Paving Notch with 2 layers of 30# Asphaltic Felt Paper full length.



 STANDARD ROAD PLAN	REVISION	
	10	10-21-25
BR-205		SHEET 2 of 4
REVISIONS: Changed 'KT' joints to BT joints.		
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 12" APPROACH (SLAB BRIDGE)		



15 If abutting pavement (PCC or HMA) is not in place, refer to BR-213.

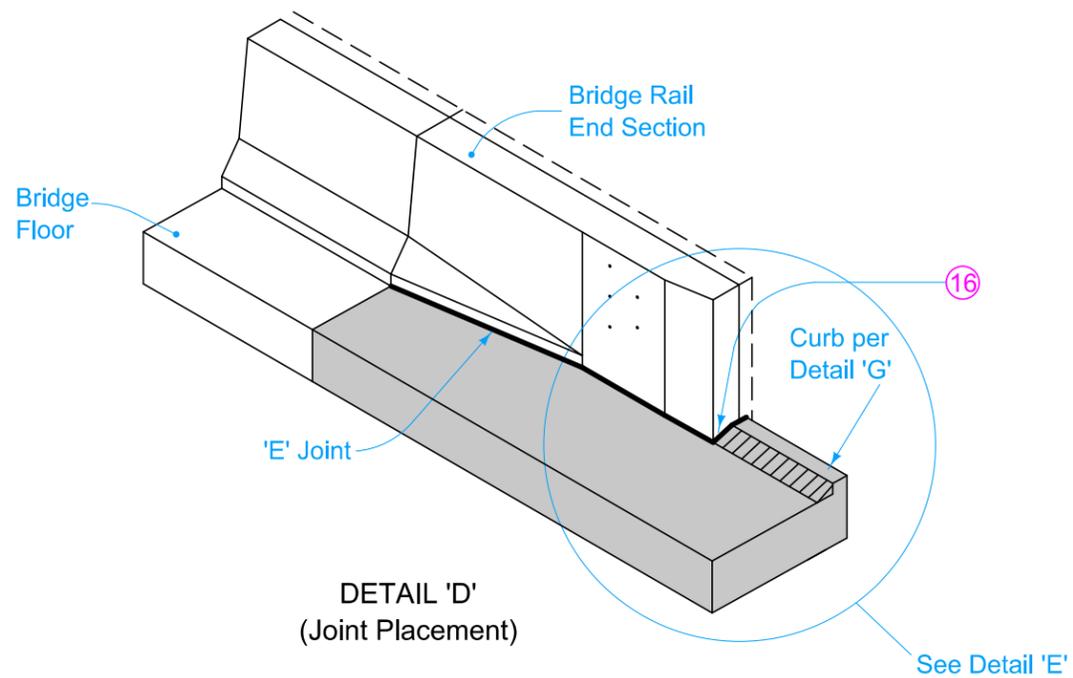


IOWA DOT STANDARD ROAD PLAN	REVISION	
	10	10-21-25
BR-205 SHEET 3 of 4		

REVISIONS: Changed 'KT' joints to BT joints.

Shawn Miller
 APPROVED BY DESIGN METHODS ENGINEER

**DOUBLE REINFORCED 12" APPROACH
(SLAB BRIDGE)**



DETAIL 'D'
(Joint Placement)

16 Joint at end of Bridge Rail End Section: Place joint filler the full depth of the bridge approach pavement. In areas with curb, place full depth of pavement plus curb and shape material to fit the shape of the curb per Section B-B of PV-101. Seal joint per Detail F of PV-101.

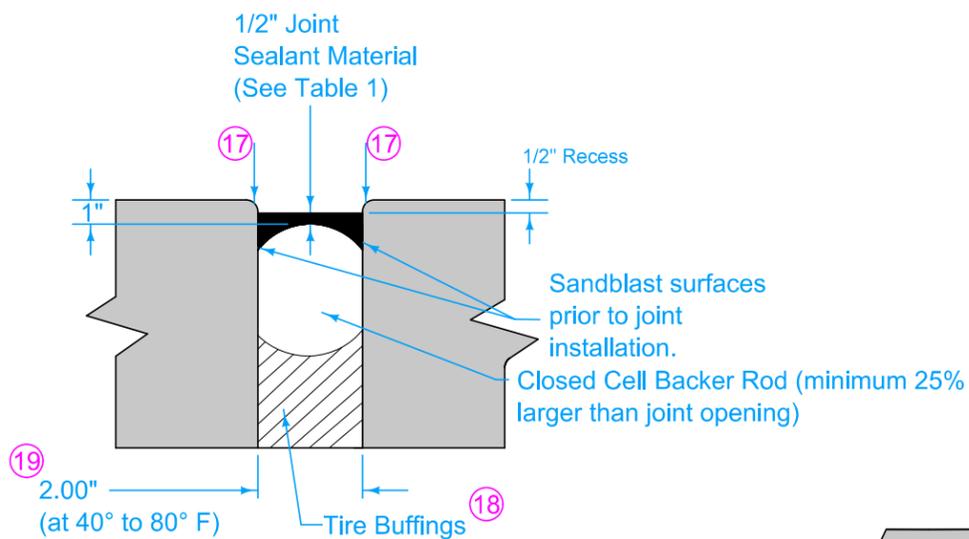
- Fixed Abutment Bridges: Type 'E' Joint.
- Moveable Abutment Bridges: Flexible Foam Expansion Joint Filler complying with Section 4136 of the Standard Specifications. Set width of gap to 2 inches. Joint length as required to completely fill from back side of curb to front face of bridge wing.

17 Edge with 1/4 inch tool for length of joint indicated if formed edging not required when cut with diamond blade saw.

18 Compact tire buffings by spading with a square-nose shovel. Tire buffings shall not be larger than 1/2 inch.

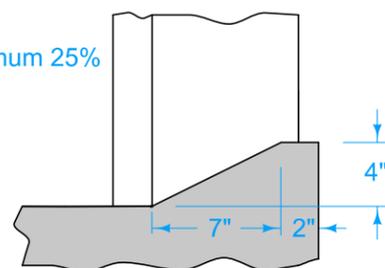
19 Setting Width Notes:

- Width is perpendicular to abutment.

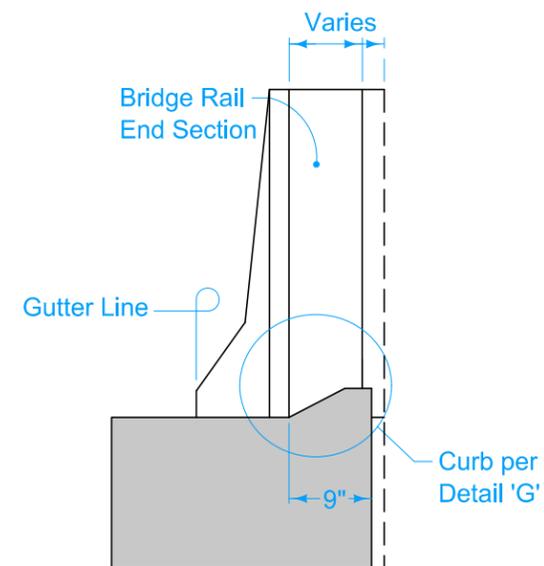


'BE'JOINT
DETAIL

Table 1
Approved List of Sealant
Dow - Dowsil 902 RCS
Sika - Sikasil 728 RCS
Watson Bowman Acme - Wabo SiliconeSeal
Pecora - 322FC



DETAIL 'G'



DETAIL 'E'
(Back of Curb Placement)

	REVISION	
	10	10-21-25
STANDARD ROAD PLAN		BR-205
REVISIONS: Changed 'KT' joints to BT joints.		SHEET 4 of 4
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 12" APPROACH (SLAB BRIDGE)		

For joint details, see PV-101.

① Build 4 inch Sloped Curb to end of Double Reinforced Section. Refer to PV-102 for curb and runout details.

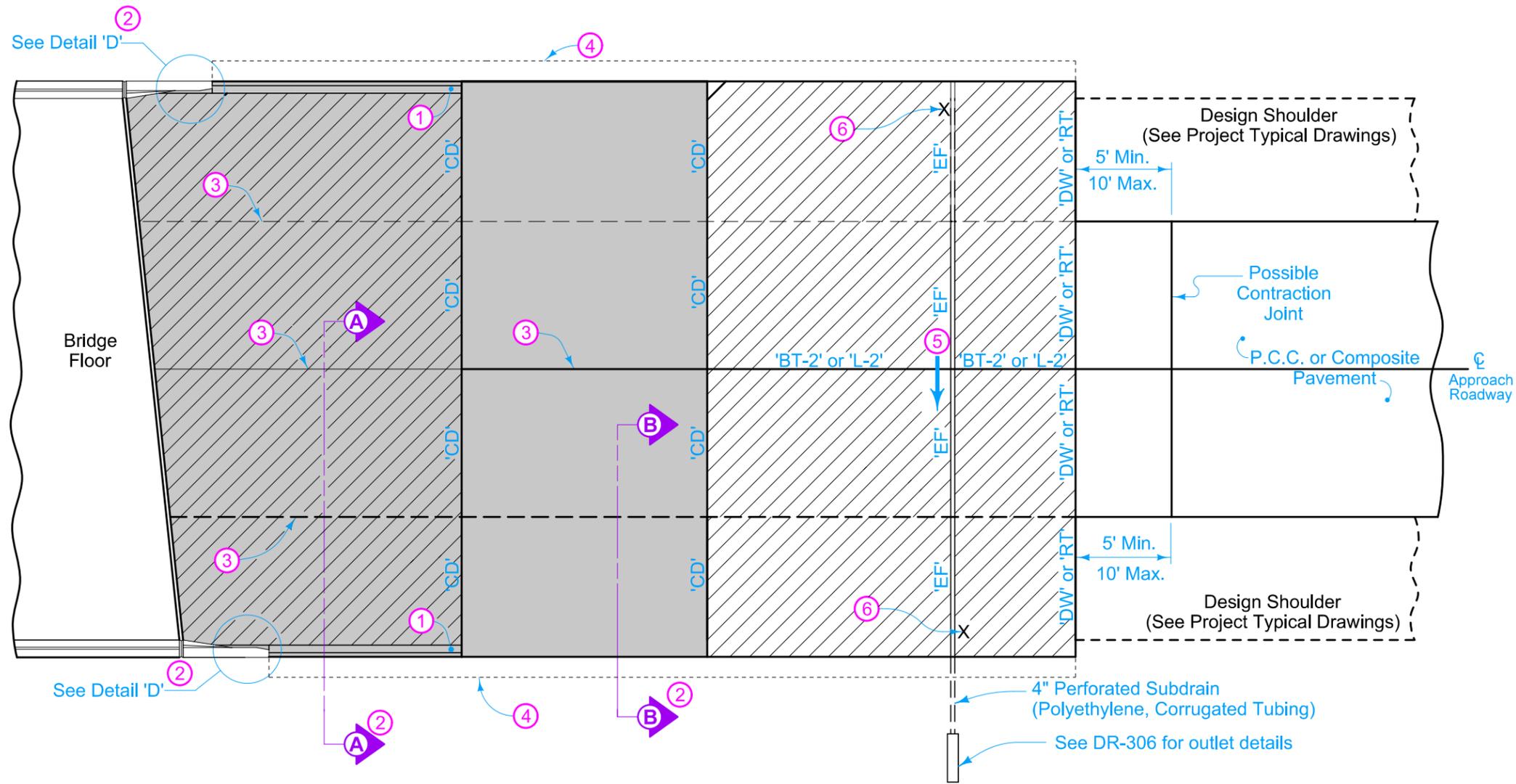
② See BR-201, BR-202, BR-203, or BR-204.

③ Longitudinal Joint (PV-101):
Single Pour - Saw cut joint per Detail B.
Two Pours - Use 'BT-2' joint

④ Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge. See BR-201, BR-202, BR-203, or BR-204.

⑤ Slope subdrain to drain.

⑥ Place an "X" in the plastic concrete near the 'EF' joint at the outside edge of pavement.



PLAN VIEW

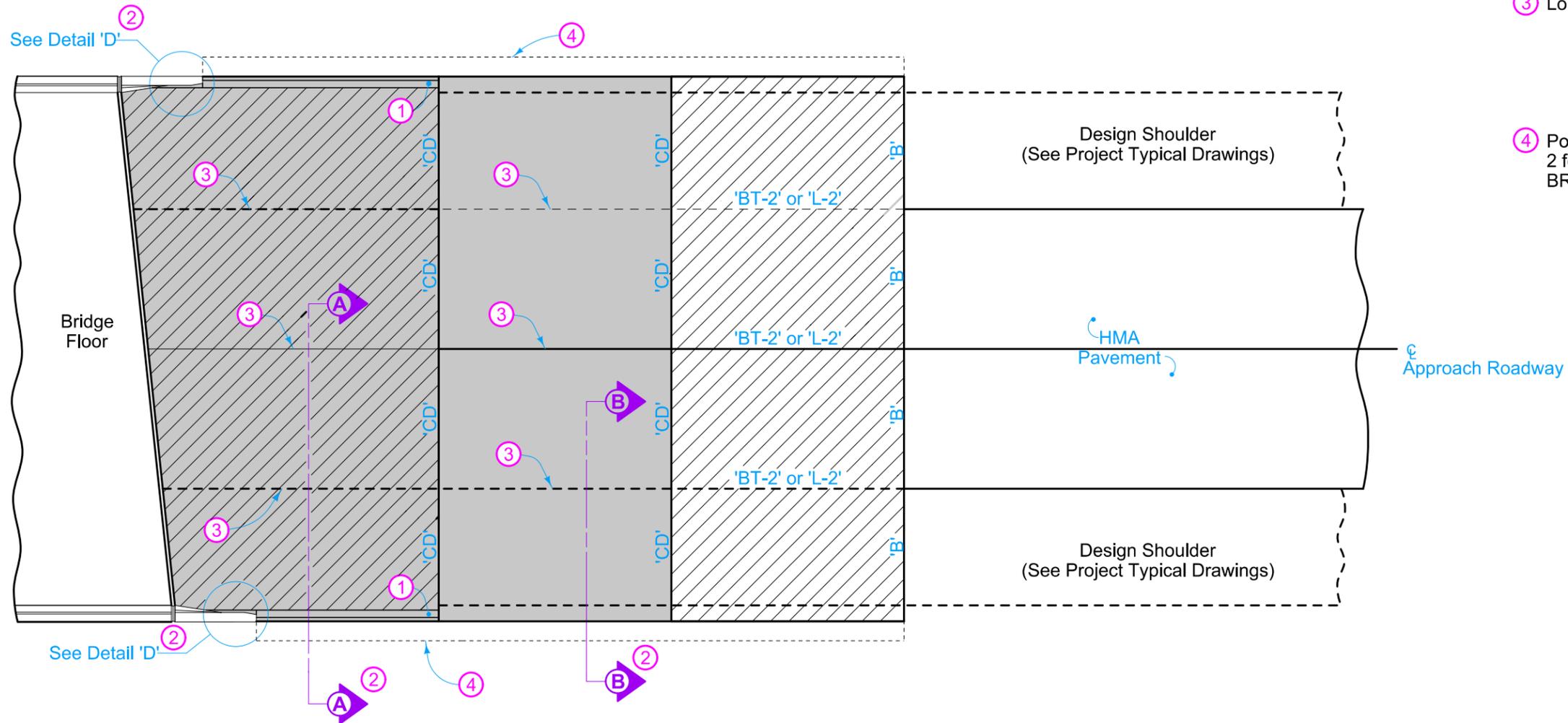
Pay limits for contract item include the following areas:

-  Double Reinforced Section
-  Single Reinforced Section
-  Non-Reinforced Section

 STANDARD ROAD PLAN	REVISION	
	4	10-21-25
BR-211		
SHEET 1 of 1		
REVISIONS: Changed 'KT' joints to 'BT' joints.		
 <small>APPROVED BY DESIGN METHODS ENGINEER</small>		
BRIDGE APPROACH (ABUTTING PCC OR COMPOSITE PAVEMENT)		

For joint details, see PV-101.

- ① Build 4 inch Sloped Curb to end of Double Reinforced Section. Refer to PV-102 for curb and runout details.
- ② See BR-201, BR-202, BR-203, or BR-204.
- ③ Longitudinal Joint (PV-101):
Single Pour - Saw cut joint per Detail B.
Two Pours - Use 'BT-2' joint.
- ④ Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge. See BR-201, BR-202, BR-203, or BR-204.



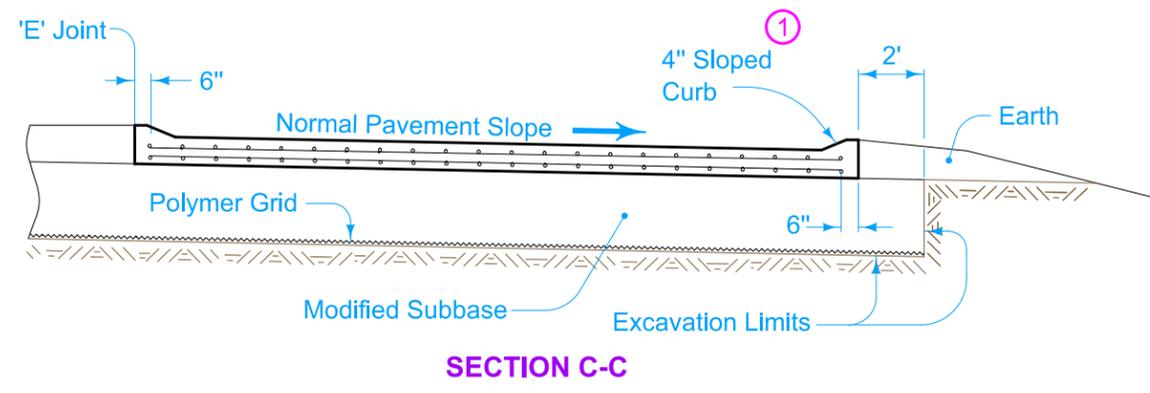
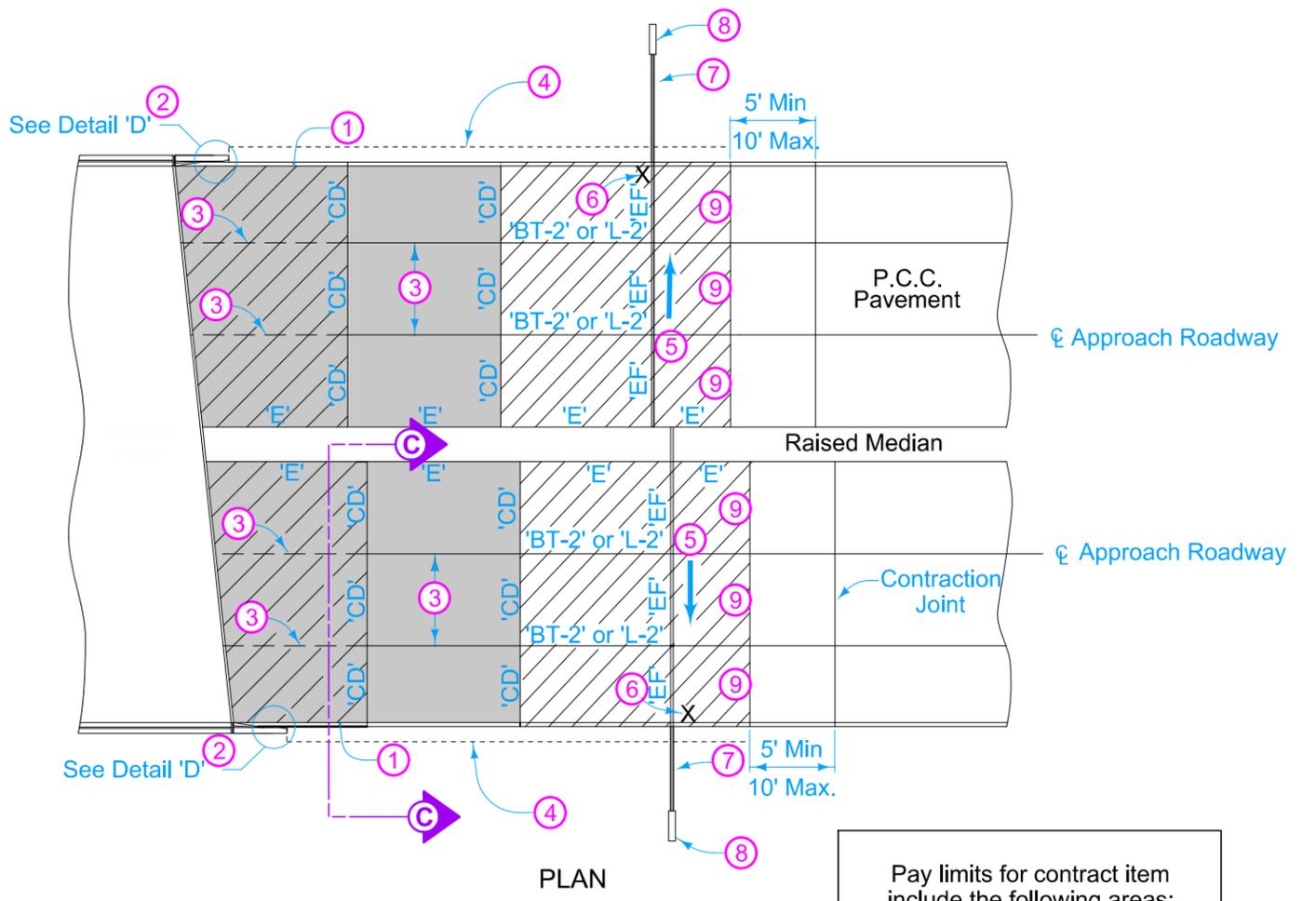
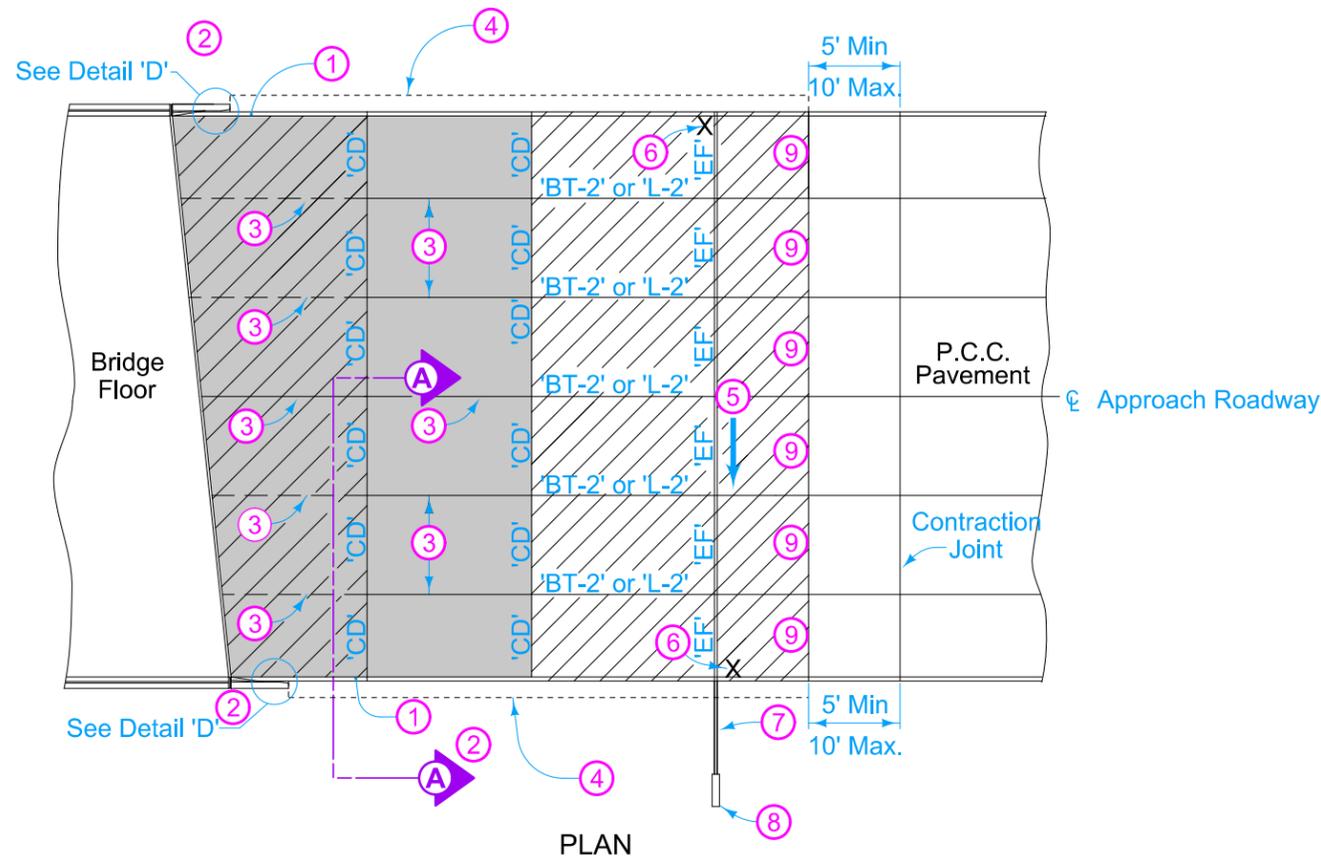
PLAN VIEW

Pay limits for contract item include the following areas:

-  Double Reinforced Section
-  Single Reinforced Section
-  Non-Reinforced Section

 STANDARD ROAD PLAN	REVISION	
	4	10-21-25
BR-212		SHEET 1 of 1
REVISIONS: Changed 'KT' joints to 'BT' joints.		
 APPROVED BY DESIGN METHODS ENGINEER		
BRIDGE APPROACH (ABUTTING HMA PAVEMENT)		

For joint details, see PV-101.



- ① Build 4 inch Sloped Curb, unless noted otherwise in the plans. Refer to PV-102 for curb and runout details.
- ② See BR-201, BR-202, BR-203, or BR-204.
- ③ Longitudinal Joint (PV-101):
Single Pour - Saw cut joint per Detail B.
Two Pours - Use 'BT-2' joint.
- ④ Polymer Grid and excavation limits of Modified Subbase 2 feet outside of pavement edge. See BR-201, BR-202, BR-203, or BR-204.
- ⑤ Slope subdrain to drain.
- ⑥ Place an "X" in the plastic concrete near the 'EF' joint at the outside edge of pavement.
- ⑦ 4 inch perforated subdrain (polyethylene, corrugated tubing).
- ⑧ See DR-303 or DR-306 for outlet details
- ⑨ 'DW' or 'RT' joint.

Pay limits for contract item include the following areas:

- Double Reinforced Section
- Single Reinforced Section
- Non-Reinforced Section

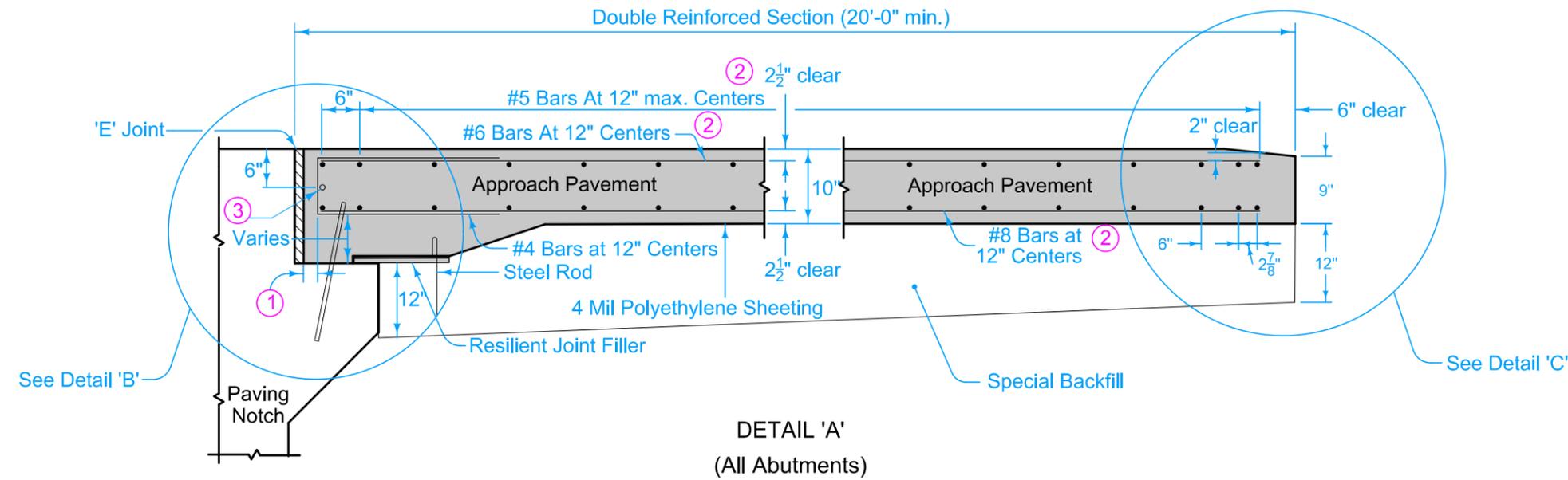
	REVISION	
	3	10-21-25
STANDARD ROAD PLAN		BR-231
REVISIONS: Changed 'K' joints to 'BT' joints.		SHEET 1 of 1
 APPROVED BY DESIGN METHODS ENGINEER		
BRIDGE APPROACH (MULTI-LANE, CURBED ROADWAY)		

DESIGNER INFORMATION

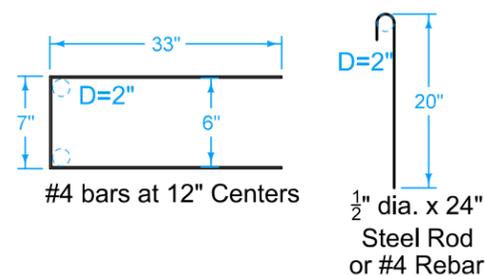
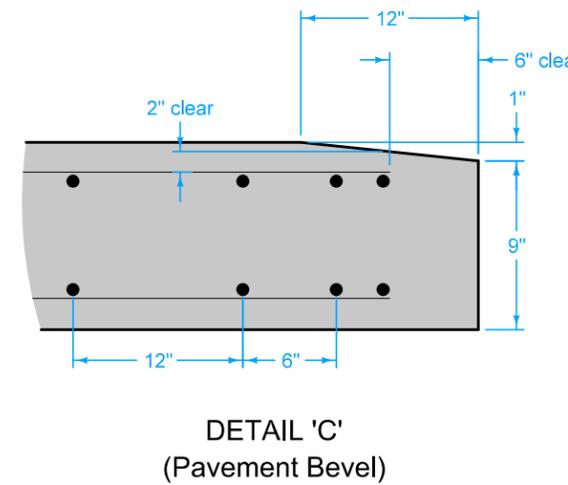
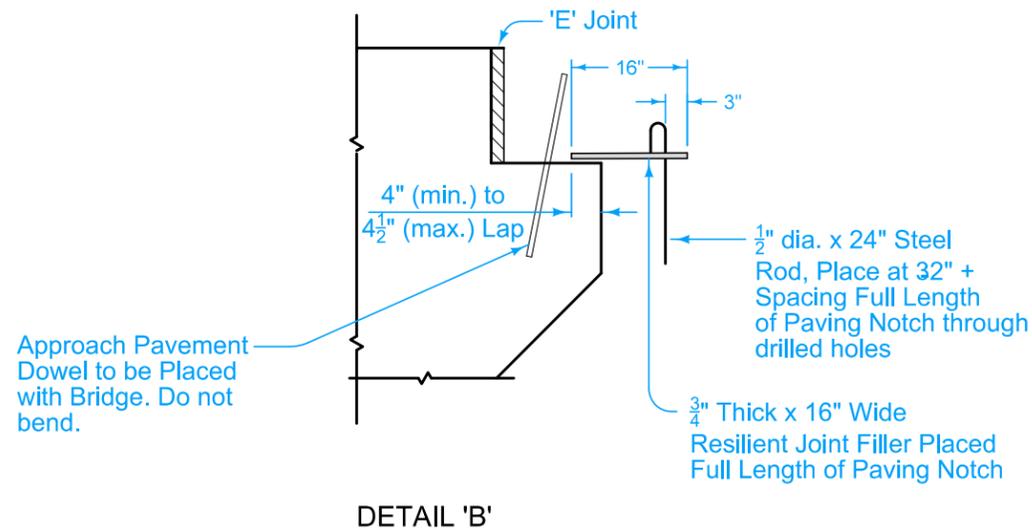
For joint details, refer to PV-101.

For curb details, see Detail 'F'.

All transverse bars are #5.



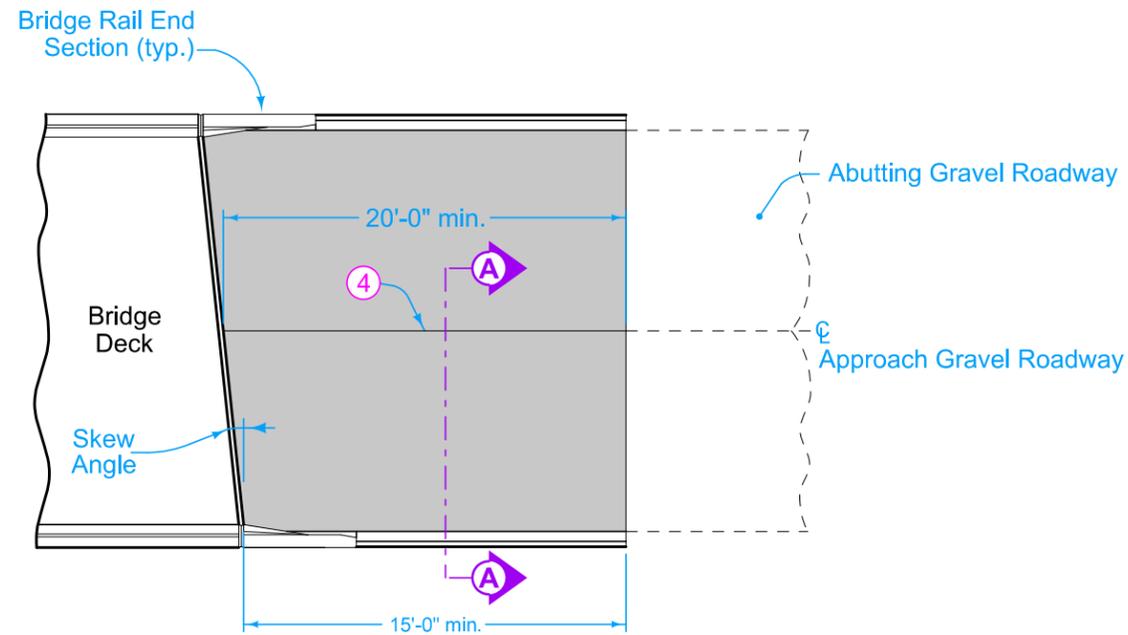
- ① 2" min. to 2 1/2" max. clear to bent bar.
- ② Minimum lap length: #5 Bars - 38"
#6 Bars - 45"
#8 Bars - 59"
- ③ If bridge is skewed, place additional #5 bar parallel to skewed face.



Possible Contract Item:
Bridge Approach, BR-241
Longitudinal Grooving in Concrete, Bridge Deck
Longitudinal Grooving in Concrete, Pavement

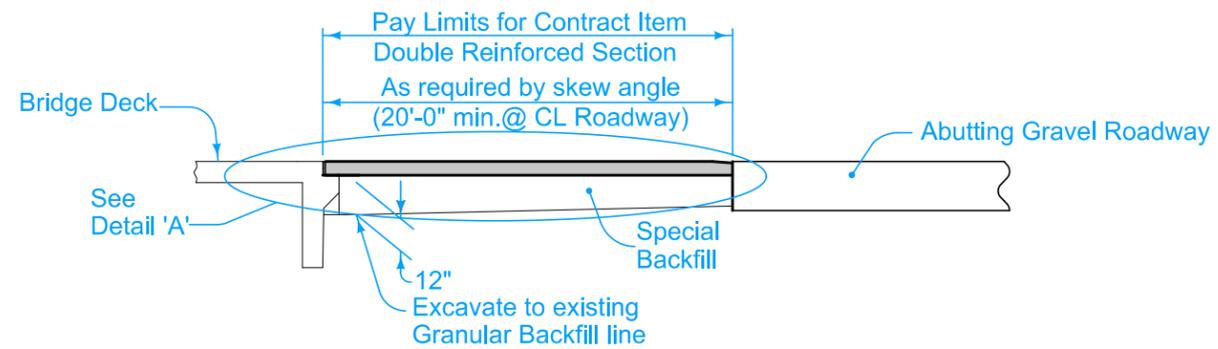
Possible Tabulation:
112-6

	REVISION	
	3	10-21-25
STANDARD ROAD PLAN		BR-241
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.		SHEET 1 of 3
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 10" APPROACH ON GRAVEL ROADS		

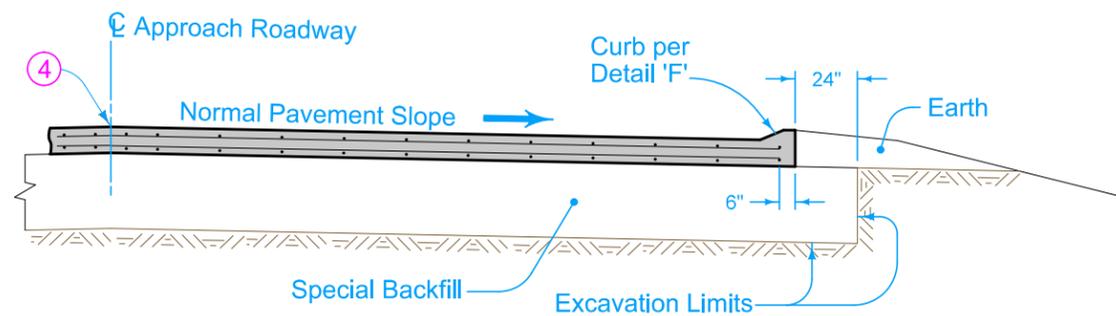


PLAN VIEW

④ Longitudinal Joint (PV-101):
 Single pour - Saw cut joint per Detail B.
 Two pours - Use 'BT-2' joint.



SECTION THRU CENTERLINE



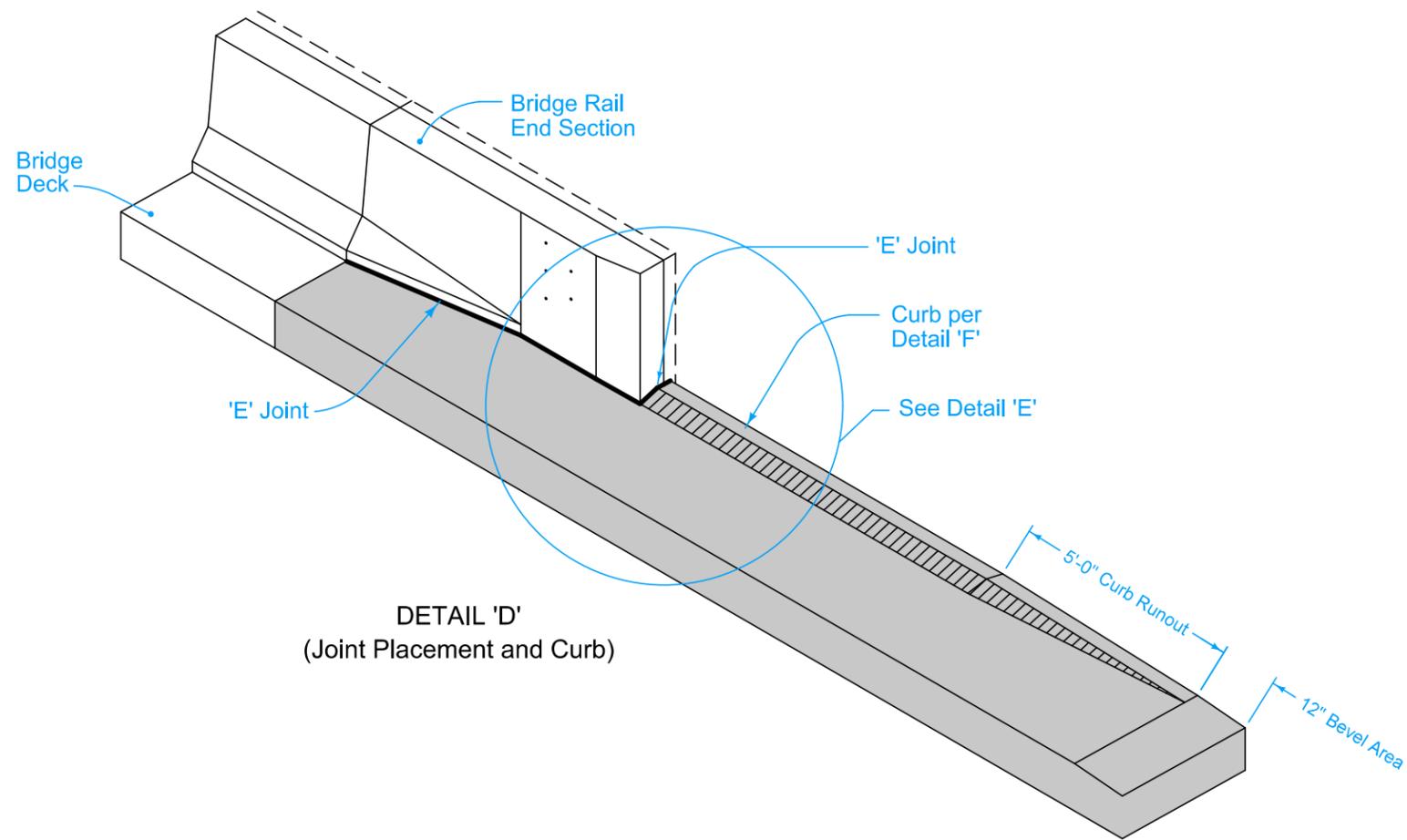
SECTION A-A

	REVISION	
	3	10-21-25
STANDARD ROAD PLAN		BR-241
		SHEET 2 of 3

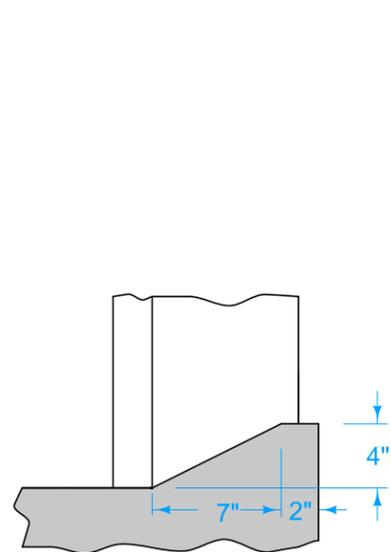
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.

Steve Miller
 APPROVED BY DESIGN METHODS ENGINEER

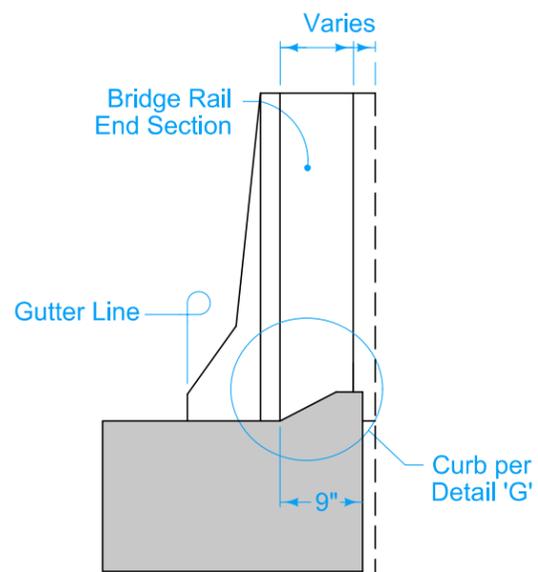
**DOUBLE REINFORCED 10" APPROACH
 ON GRAVEL ROADS**



DETAIL 'D'
(Joint Placement and Curb)

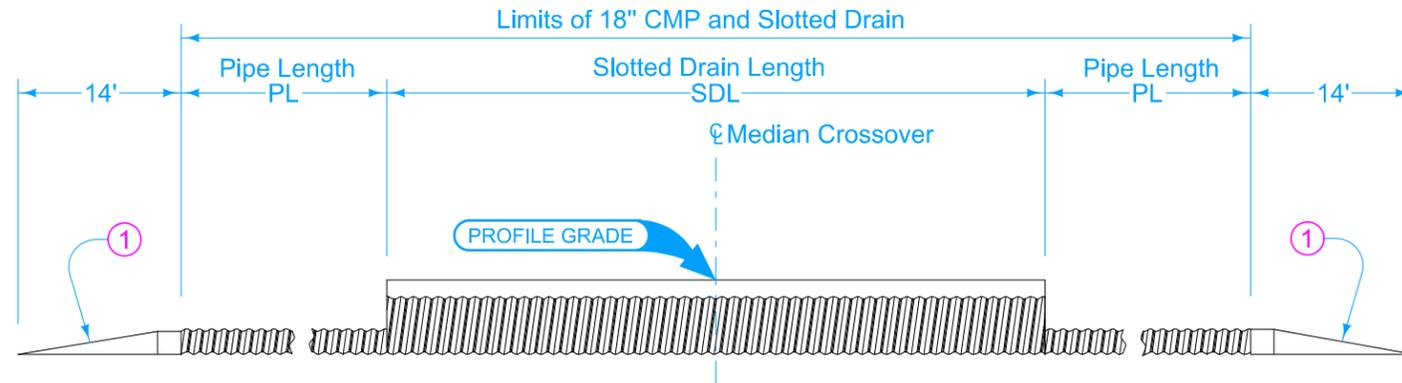


DETAIL 'G'



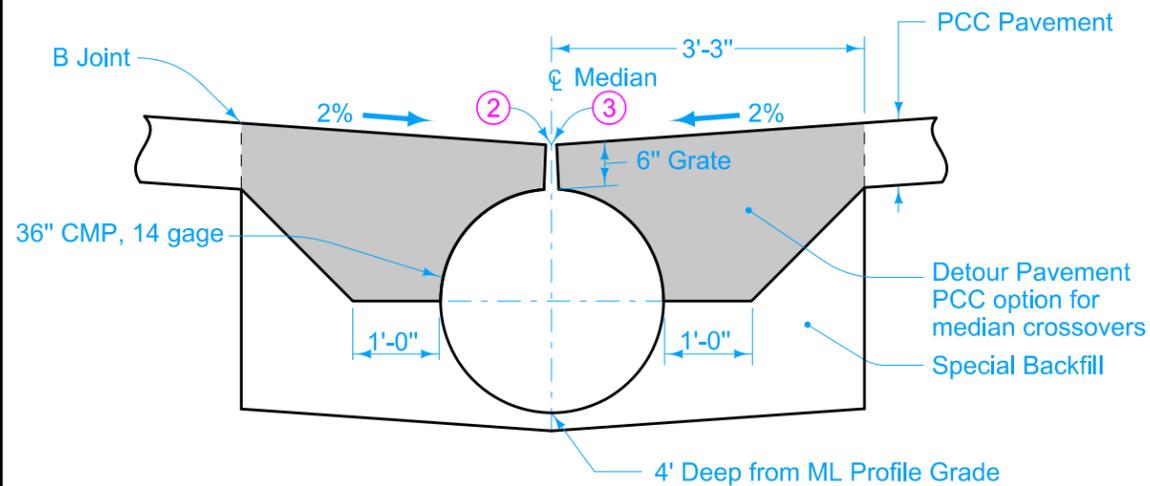
DETAIL 'E'
(Back of Curb Placement)

	REVISION	
	3	10-21-25
STANDARD ROAD PLAN		BR-241
		SHEET 3 of 3
REVISIONS: Changed 'KS-2' joint to 'BT-2' joint.		
 APPROVED BY DESIGN METHODS ENGINEER		
DOUBLE REINFORCED 10" APPROACH ON GRAVEL ROADS		

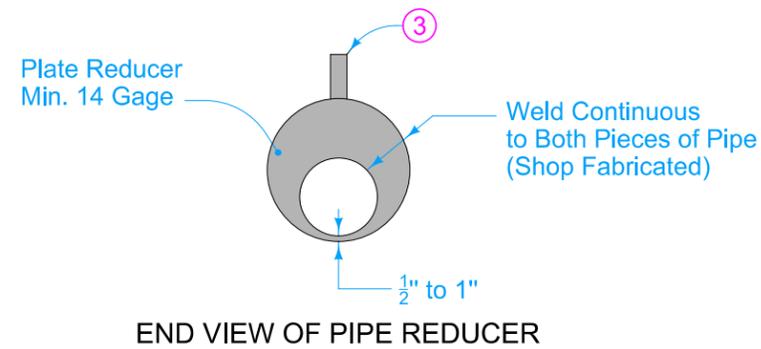


LONGITUDINAL SECTION THROUGH CMP SLOTTED DRAIN ASSEMBLY

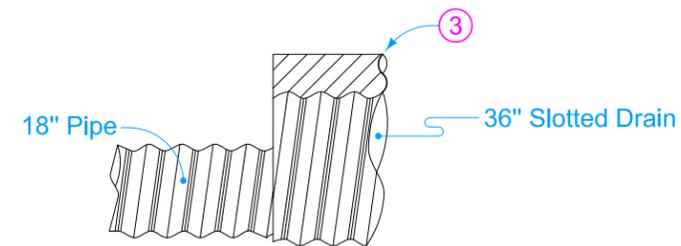
- ① Beveled pipe and guard. See DR-212.
- ② During construction of crossover pavement, cover slotted drain with duct tape or wood block.
- ③ Slotted grate 6 inches high x $1\frac{3}{4}$ inches opening width. Use $\frac{3}{16}$ inch material for spacers and bearing bars (sides). Refer to ASTM A 709 grade 36 for grate material. Refer to ASTM A123 for galvanizing requirements.



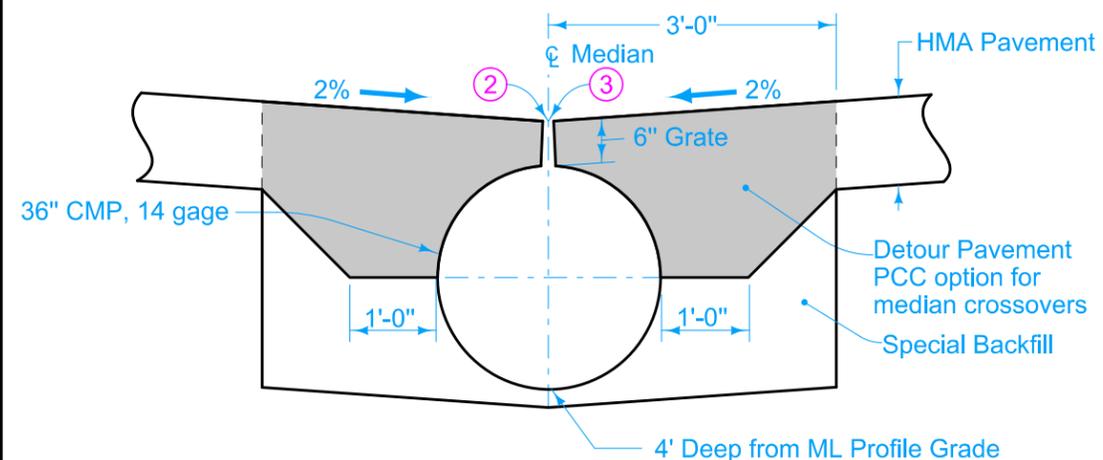
PCC PAVEMENT SITUATION



END VIEW OF PIPE REDUCER



SIDE VIEW OF PIPE REDUCER



HMA PAVEMENT SITUATION

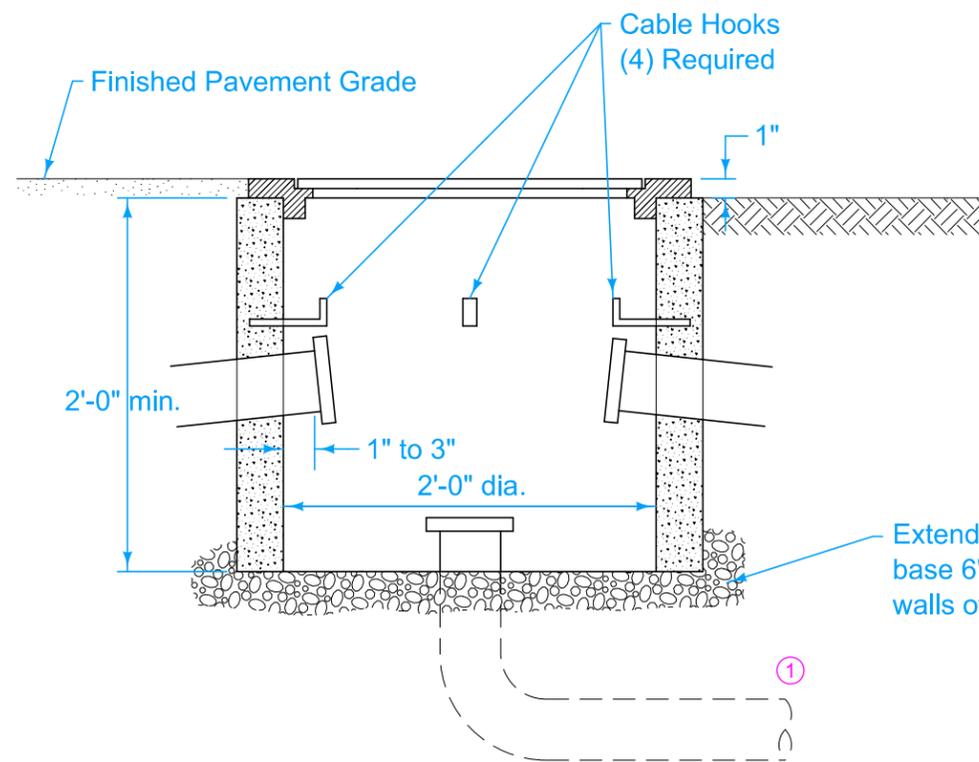
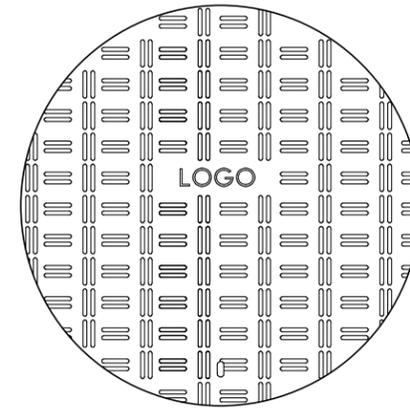
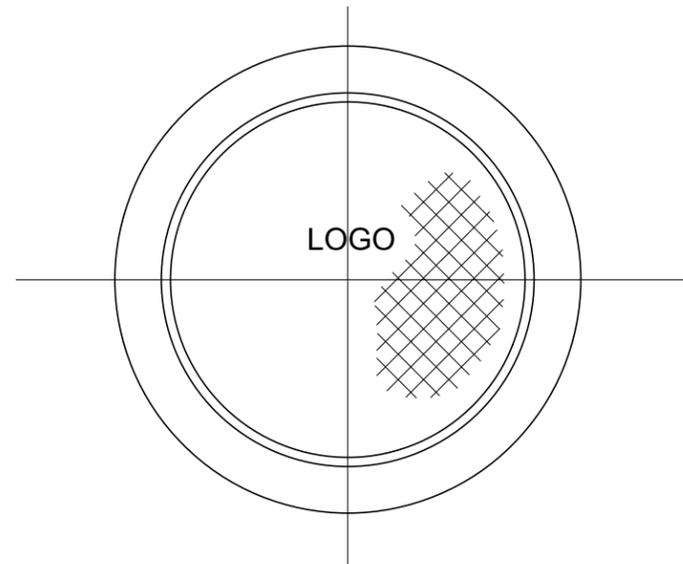
- Possible Contract Items:
- Beveled Pipe and Guard
 - Culvert, Unclassified Roadway Pipe, 18" Dia.
 - Detour Pavement
 - Drain, Corrugated Metal Pipe Slotted, 36", w/6" Grate
 - Special Backfill

Possible Tabulation:
112-8

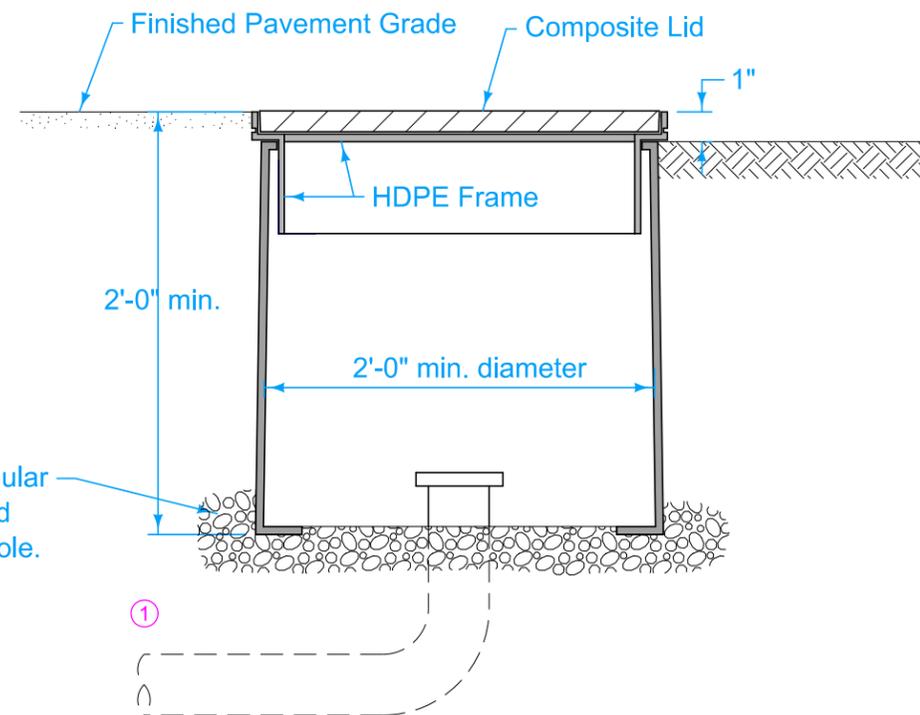
TABLE OF QUANTITIES					
Standard Road Plan	PV-500	PV-503	PV-506	PV-509	PV-512
Median Width	50'	64'	68.24'	82'	100'
SDL Slotted Drain Length	116'	110'	110'	102'	94'
PL Pipe Length	132'	110'	104'	90'	76'
Bid Items					
36" Corrugated Metal Slotted Pipe Drain w/6" Grate	116'	110'	110'	102'	94'
18" dia. Corrugated Metal Roadway Pipe Culvert	264'	220'	208'	180'	152'

 STANDARD ROAD PLAN	REVISION	
	2	10-21-25
DR-502		
SHEET 1 of 1		
REVISIONS: Added reference to grate materials and galvanization.		
 APPROVED BY DESIGN METHODS ENGINEER		
SLOTTED DRAIN FOR MEDIAN CROSSOVERS		

① Potential conduit entry through bottom of handhole.



PRECAST CONCRETE HANDHOLE (TYPE I)



HDPE HANDHOLE (TYPE V)

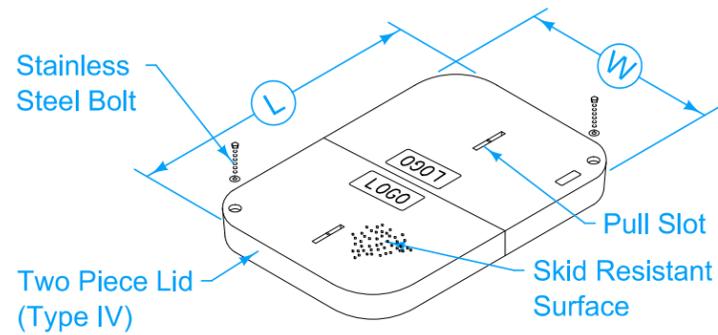
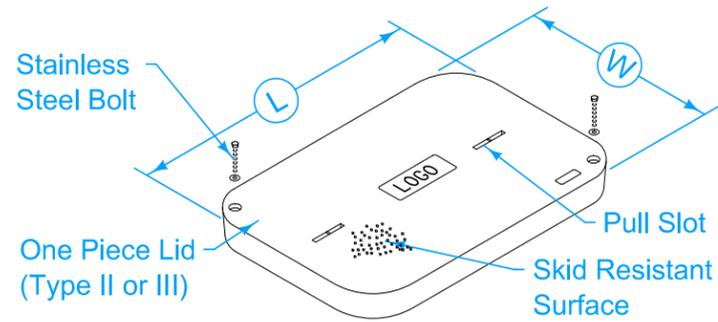
FIGURE 8010.103 SHEET 1 OF 2

		REVISION	
		3	10-21-25
FIGURE 8010.103	STANDARD ROAD PLAN	LI-103	
		SHEET 1 of 2	

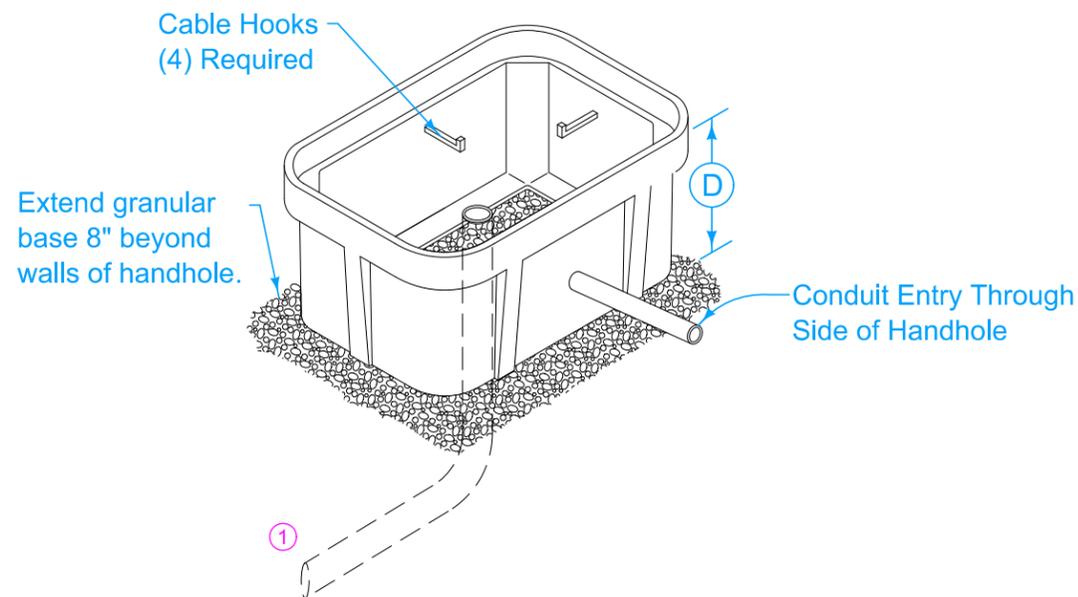
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR
 DESIGN METHODS ENGINEER

CONDUIT AND PRECAST HANDHOLES

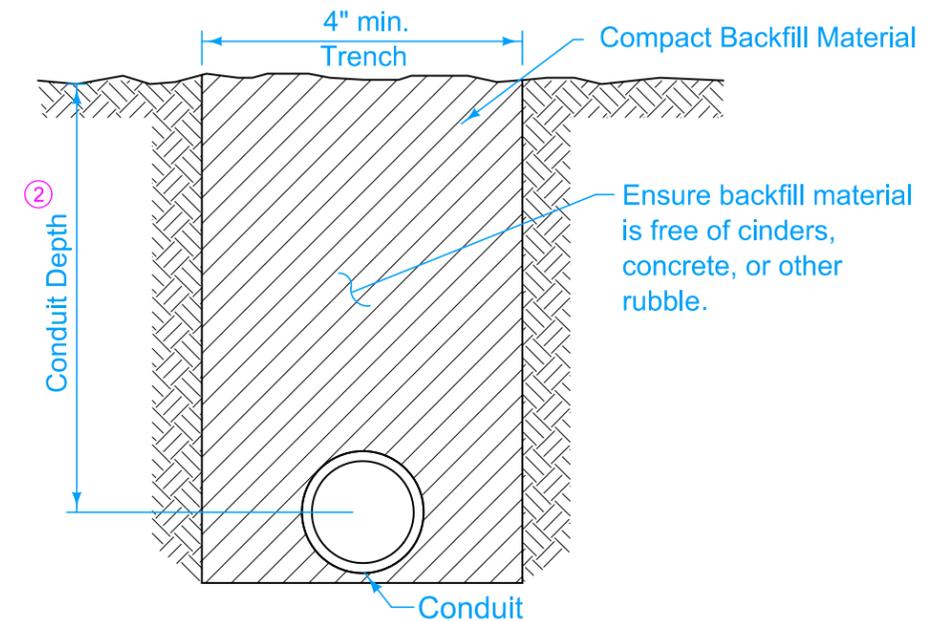


HANDHOLE DIMENSIONS TABLE (NOMINAL)			
TYPE	(L)	(W)	(D)
II	30"	17"	24"
III	36"	24"	30"
IV	48"	30"	36"



PRECAST CONCRETE COMPOSITE HANDHOLE

- ① Potential conduit entry through bottom of handhole.
- ② For conduit behind curb, place 24 to 48 inches below top of curb. For conduit under roadway, place 30 to 60 inches below the gutterline.

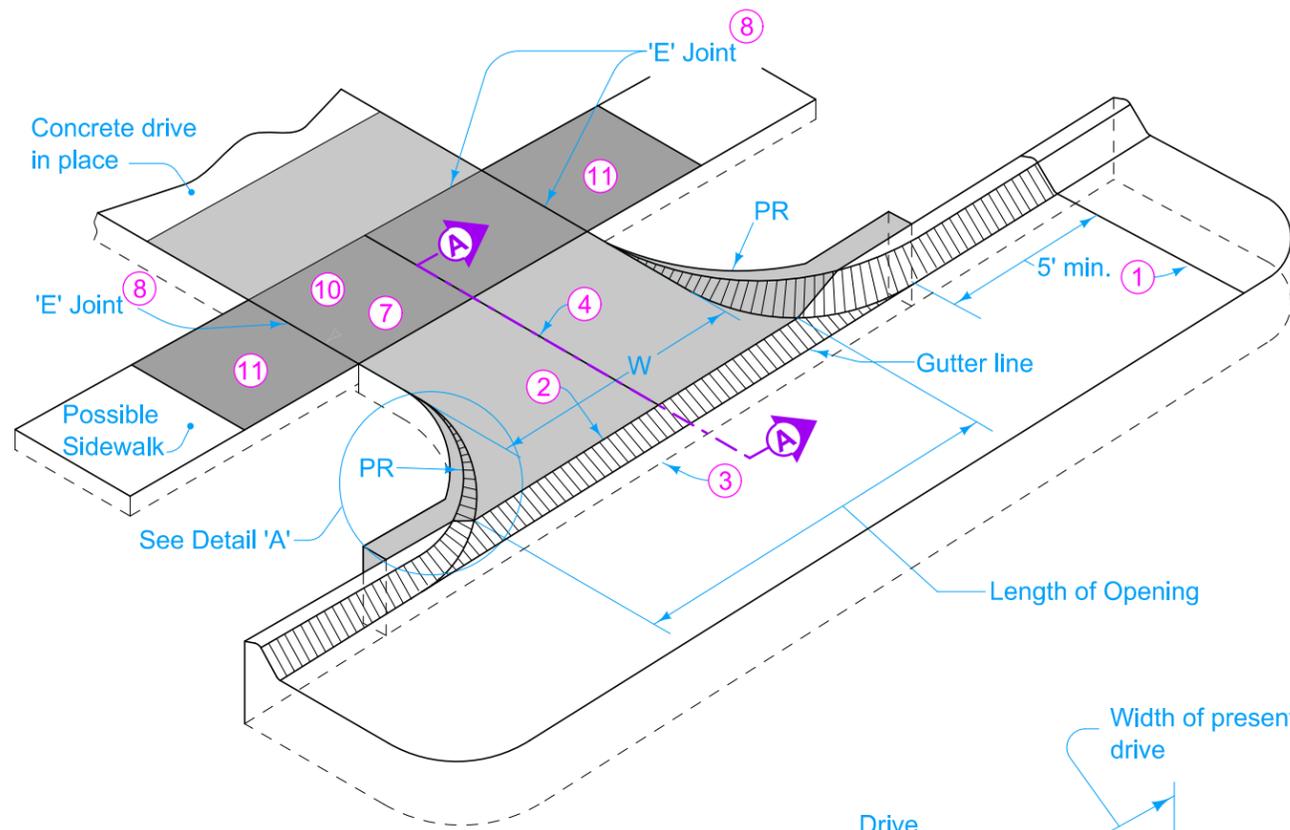


CONDUIT IN TRENCH

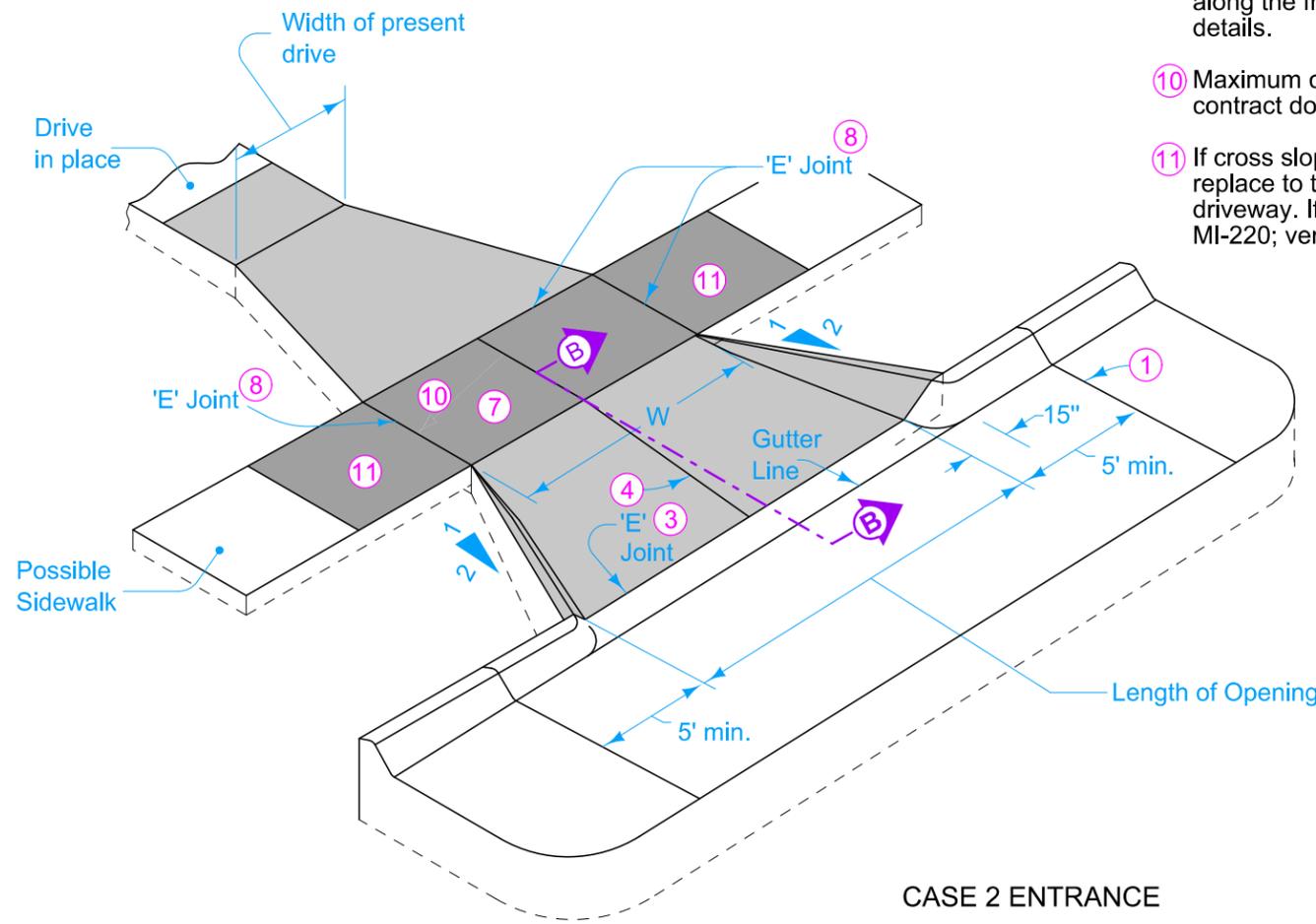
		REVISION	
		3	10-21-25
FIGURE 8010.103	STANDARD ROAD PLAN	LI-103 SHEET 2 of 2	

REVISIONS: Updated Sudas and IDOT Logos.

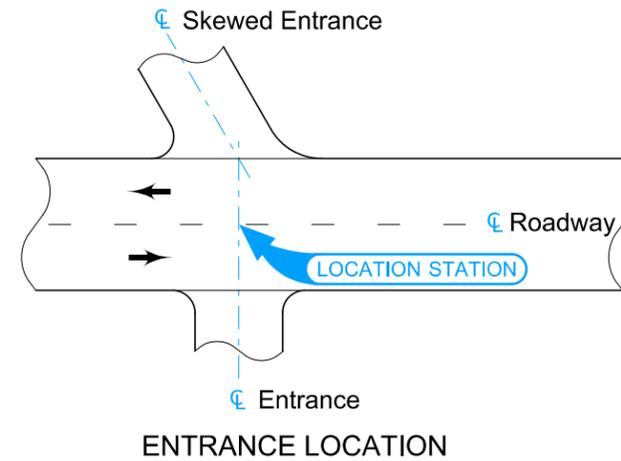
SUDAS DIRECTOR
 DESIGN METHODS ENGINEER



CASE 1 ENTRANCE



CASE 2 ENTRANCE



Special details for entrances other than Cases 1 and 2 are included in the detail plans. The shape and surface of driveways and alleys will vary to fit individual conditions.

Use unreinforced concrete pavement mix with a minimum thickness of 6 inches, unless specified otherwise for driveways and alleys. If an alley drains toward the roadway, use a 2 inch inverted crown; otherwise, use flat surface for driveway pavement.

W is measured at the street side of sidewalk. If sidewalk is not present, *W* is to be measured at the end of the returns for Case 1 and 10 feet back of curb for Case 2.

- ① Transverse Pavement Joints as per detail Project Plans.
- ② 'E' Pavement Joint (Refer to PV-101) from end of radius to end of radius.
- ③ Line at the Back of Curb.
- ④ 'C' Joint on Centerline.
- ⑦ Refer to contract documents for sidewalk construction if the entrance is designed to accommodate sidewalk. Construct sidewalk using the same thickness as the driveway.
- ⑧ If the sidewalk is in place at the time of construction, place 'E' Joint along the front edge of the sidewalk. If the sidewalk is reconstructed with the driveway entrance, place 'E' Joint along the back edge of the sidewalk and a 'C' Joint sawed or formed along the front edge of the sidewalk. Refer to PV-101 for joint details.
- ⑩ Maximum cross slope is 2% unless specified otherwise in the contract documents.
- ⑪ If cross slope of the sidewalk panel exceeds 2%, remove and replace to transition from existing sidewalk to sidewalk through driveway. If elevation change requires a curb ramp, comply with MI-220; verify need for detectable warning panel with Engineer.

Possible Contract Items:
 Driveway, P.C. Concrete
 Driveway, Reinforced P.C. Concrete
 Removal of Paved Driveway
 Sidewalk, P.C. Concrete

Possible Tabulation:
 102-3
 113-1
 113-1A

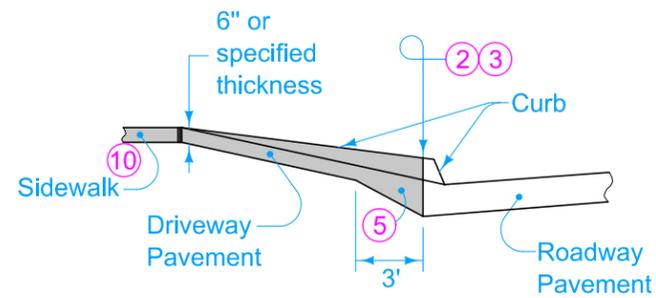
LEGEND	
	Sidewalk
	Driveway

 STANDARD ROAD PLAN	REVISION
	8 10-21-25
MI-210	
SHEET 1 of 2	

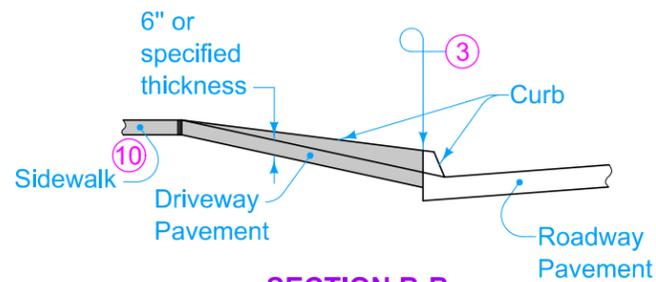
REVISIONS: Changed 'K' joint to 'E' joint in circle note 2.

Shawn Miller
 APPROVED BY DESIGN METHODS ENGINEER

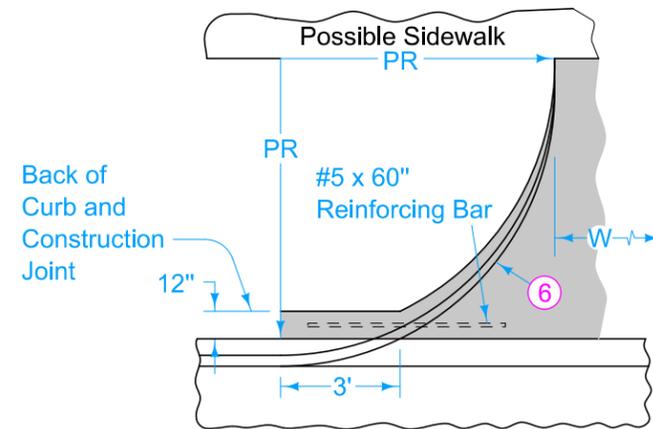
PCC DRIVEWAYS AND ALLEYS



**SECTION A-A
(Case 1 Entrance)**

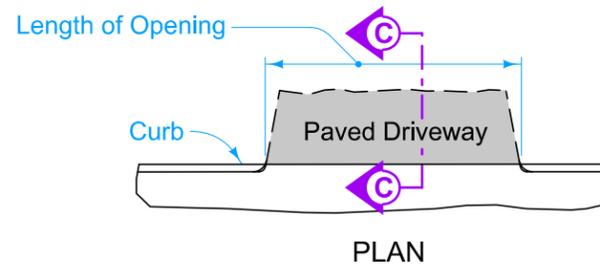


**SECTION B-B
(Cases 2 Entrance)**

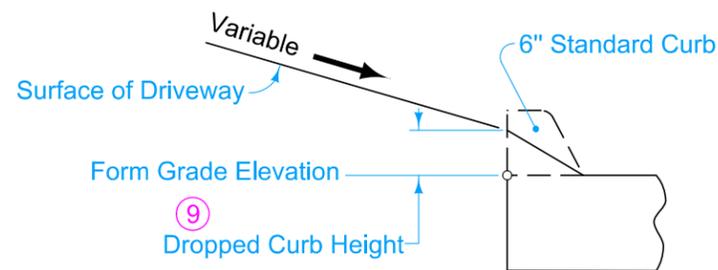


**DETAIL 'A'
CASE 1 ENTRANCE**

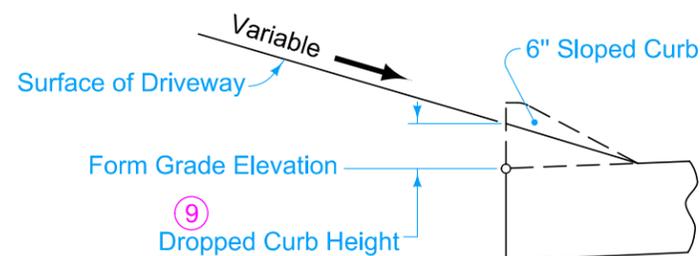
- ② 'E' Pavement Joint (Refer to PV-101) from end of radius to end of radius.
- ③ Line at the Back of Curb.
- ⑤ Taper to Pavement Thickness.
- ⑥ Lip curb varies from either 4½ inch or 3 inch at back of curb to 0 inch at front of sidewalk.
- ⑨ Refer to Tabulation 102-3.
- ⑩ Maximum cross slope is 2% unless specified otherwise in the contract documents.



PLAN



**SECTION C-C
(Standard Curb)**



**SECTION C-C
(Sloped Curb)**

DROPPED CURB

	REVISION	
	8	10-21-25
STANDARD ROAD PLAN		
MI-210		
SHEET 2 of 2		

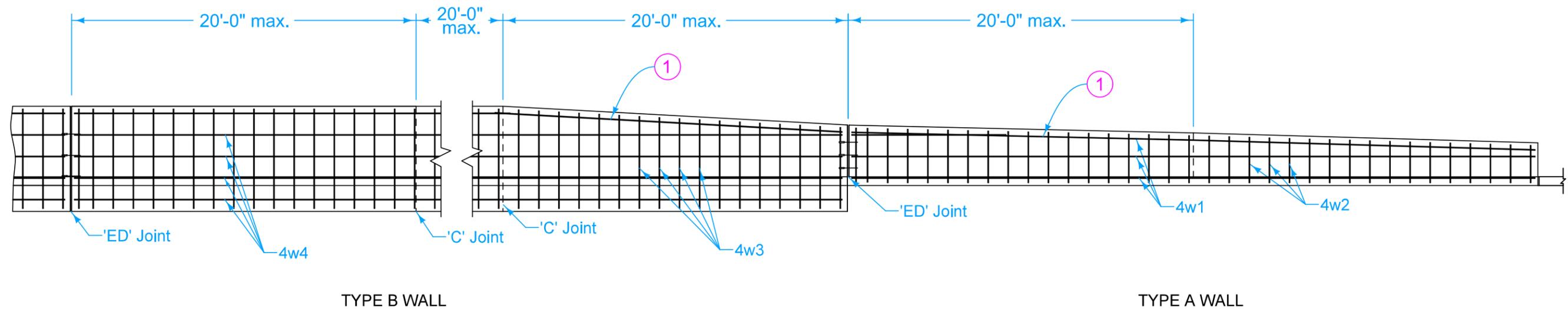
REVISIONS: Changed 'K' joint to 'E' joint in circle note 2.

Steve Miller
APPROVED BY DESIGN METHODS ENGINEER

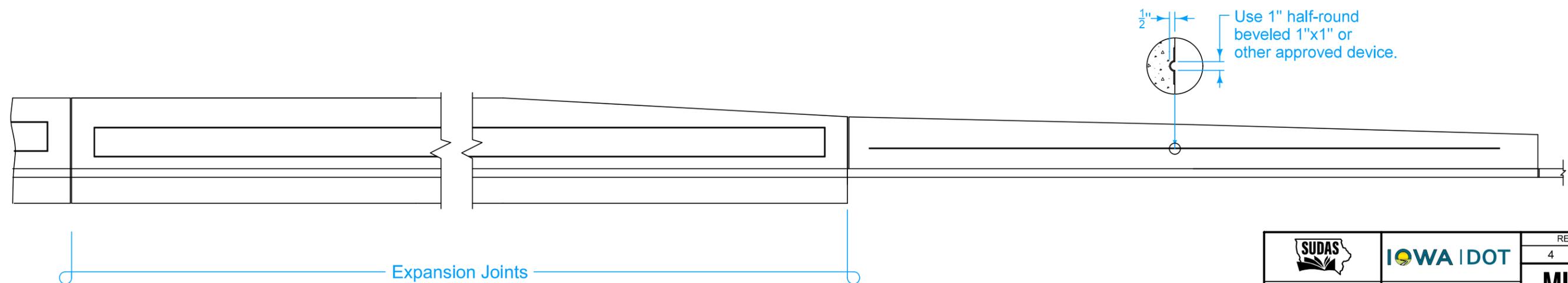
PCC DRIVEWAYS AND ALLEYS

Provide a minimum concrete cover to near reinforcement of 1 1/2 inches. Provide 3 inches minimum cover at the ends of bars.

- ① Top bar parallel to top of wall. Lap 6 inch minimum as necessary. Tie securely.



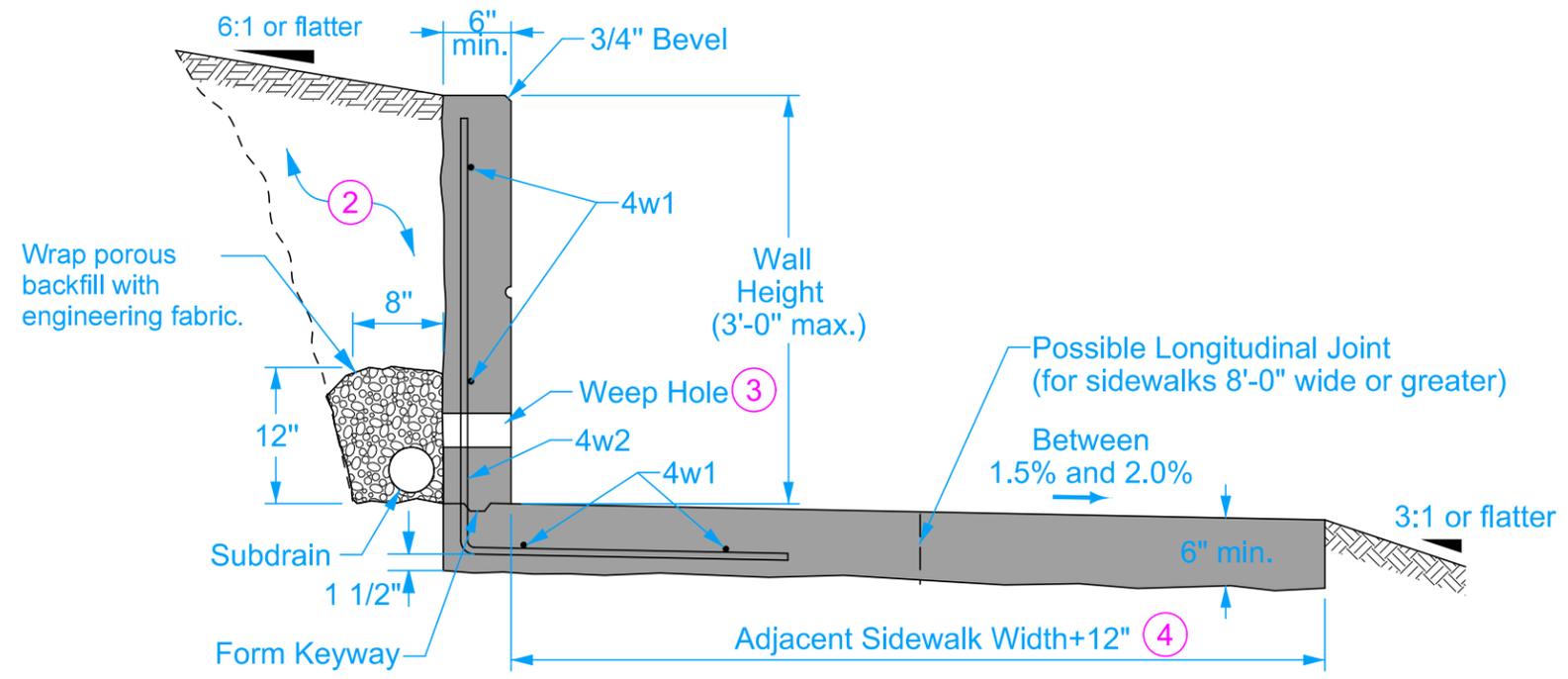
TYPICAL LONGITUDINAL SECTION OF RETAINING WALL



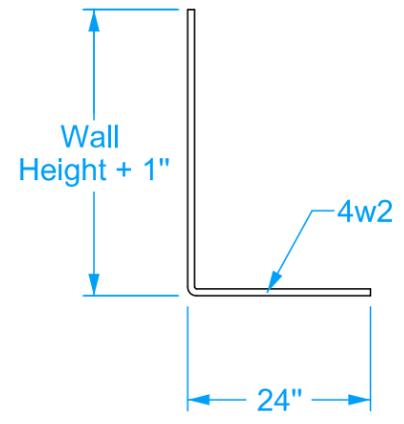
TYPICAL RUSTICATION DETAIL

FIGURE 9072.221 SHEET 1 OF 2

		REVISION	
		4	10-21-25
FIGURE 9072.221	STANDARD ROAD PLAN	<h1>MI-221</h1>	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
COMBINED RETAINING WALL - SIDEWALK			



TYPE A WALL TYPICAL SECTION

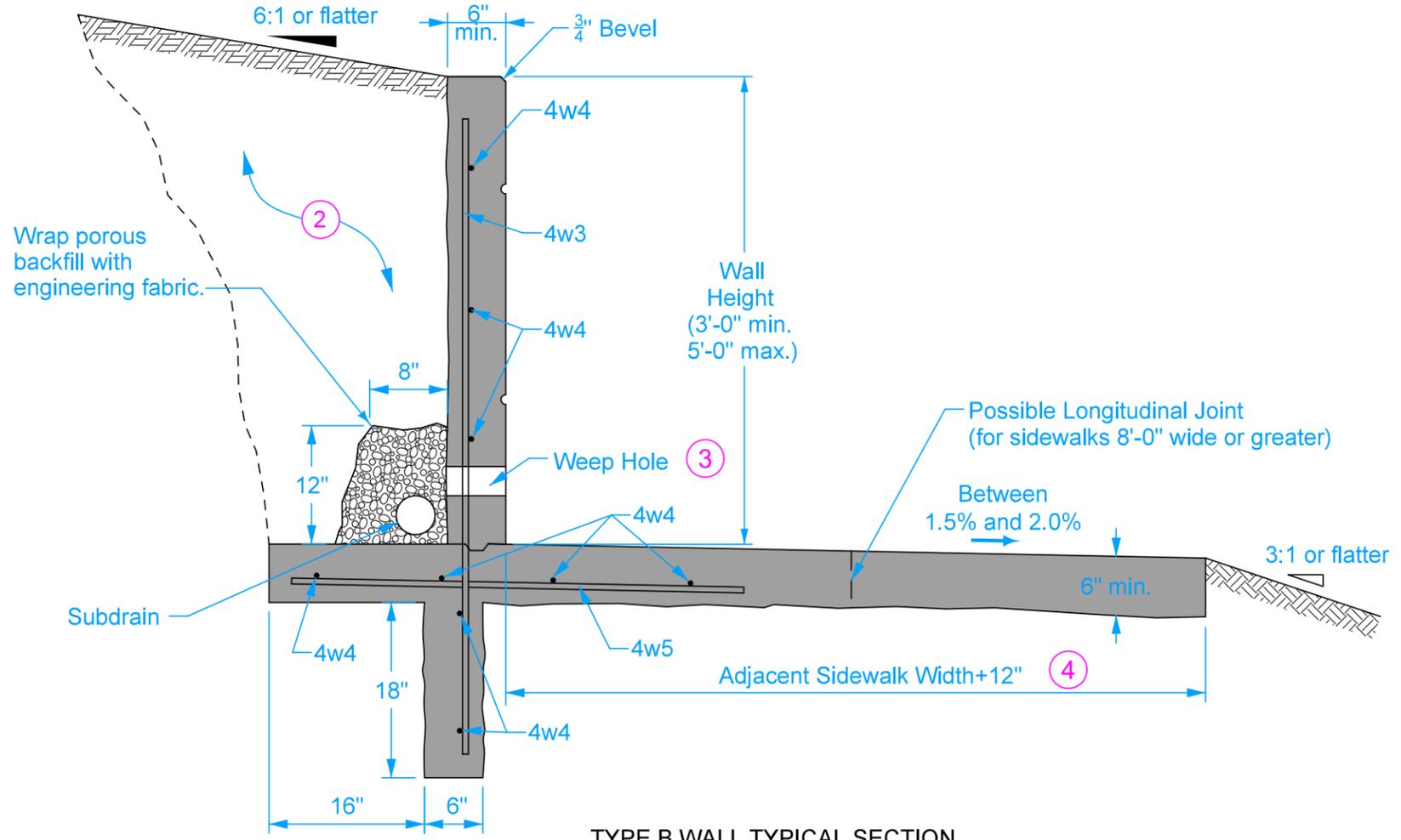


BENT BARS

REINFORCING BAR LIST					
Wall Type	Mark	Size	Shape	Length	Spacing
Type A	4w1	4	—	Variable	15"
	4w2	4	L	Variable	14"
Type B	4w3	4	—	Wall Height + 18"	14"
	4w4	4	—	Variable	15"
	4w5	4	—	3'-10"	14"

Provide a minimum concrete cover to near reinforcement of 1 1/2 inches. Provide 3 inches minimum cover at the ends of bars.

- ② Excavate and place backfill material as necessary.
- ③ Provide 3 inch diameter weep holes at 8 foot intervals. Install rodent guards in weep holes. Align bottom of weep hole with top of subdrain.
- ④ Additional 12 inch width is adjacent to wall.



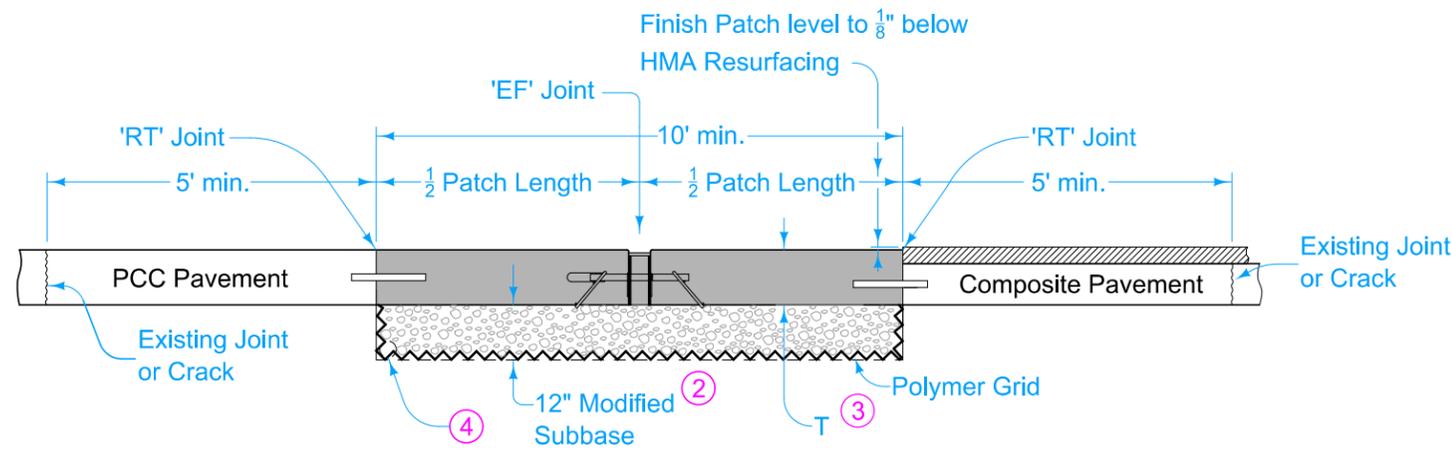
TYPE B WALL TYPICAL SECTION

FIGURE 9072.221 SHEET 2 OF 2

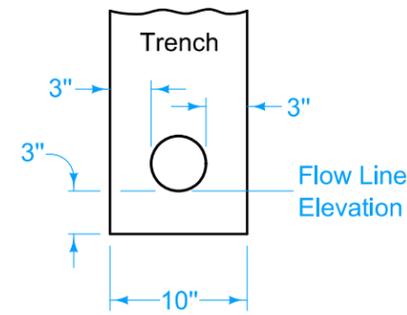
		REVISION	
		4	10-21-25
FIGURE 9072.221		STANDARD ROAD PLAN	
		MI-221 SHEET 1 of 2	

REVISIONS: Updated Sudas and IDOT Logos.

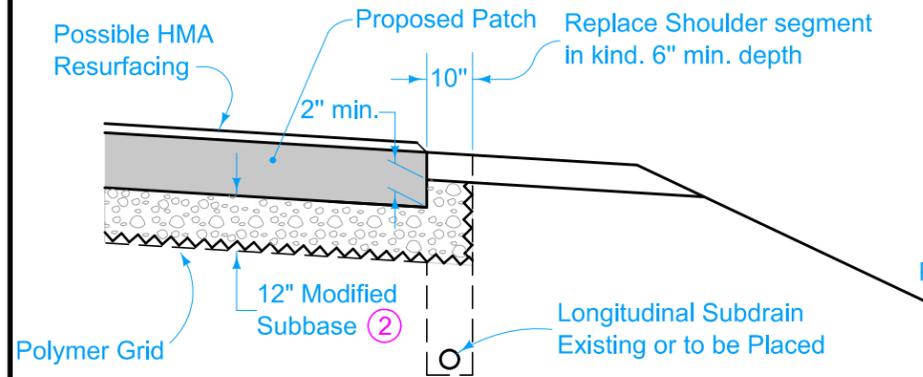
COMBINED RETAINING WALL - SIDEWALK



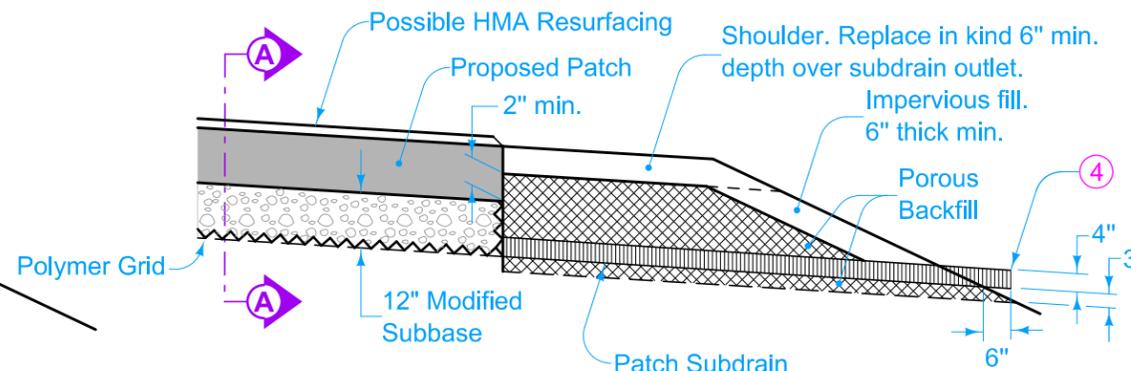
SECTION A-A
DOWELED PCC PAVEMENT



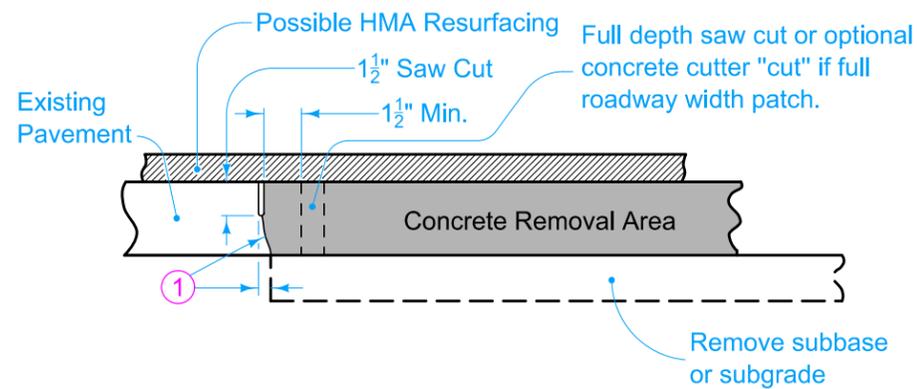
DRAIN PLACEMENT



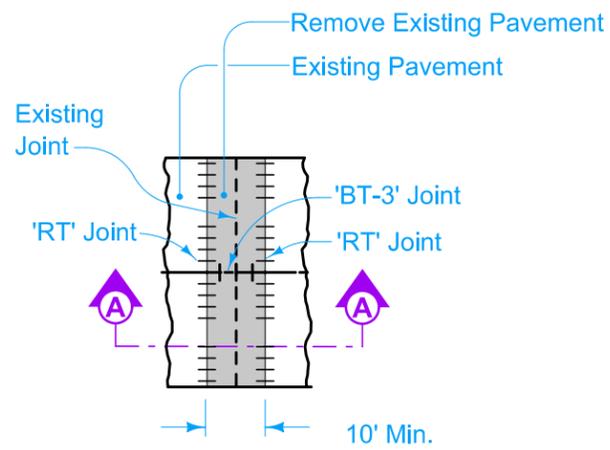
MODIFIED SUBBASE AND SUBDRAIN
IF LONGITUDINAL SUBDRAIN IS PRESENT OR IS TO BE PLACED



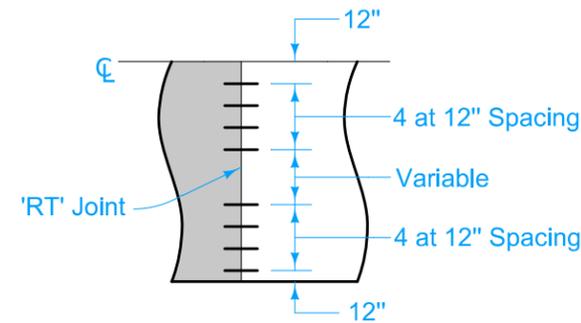
MODIFIED SUBBASE AND SUBDRAIN
WITHOUT LONGITUDINAL SUBDRAIN



PAVEMENT REMOVAL DETAILS



FULL ROADWAY WIDTH PATCH



TYPICAL HALF PLAN

Place Full Depth Patch with 'EF' Joint after the final lift of asphalt has been placed. Porous Backfill and Subdrain may be placed prior to construction of resurfacing of shoulders.

Place Full Depth Patch according to Full Depth Patch specifications and Standard Road Plan PR-103, except as noted on this sheet.

Place Full Depth Patch and 'EF' Joint full width of the roadway. If roadway has PCC shoulders, extend 'CF' joint across shoulder. Cost of placing 'CF' joint is incidental to 'EF' joint.

See PV-101 for joint and bar placement details.

- ① Break out concrete within 1 1/2" of saw cut with hand tools to ensure near vertical face with minimal undercut or protrusion. No need to remove protrusions smaller than 2 inches if uniformly tapered from bottom of saw cut to bottom of pavement. A step or ledge on this face will not be allowed.
- ② 12 inches Modified Subbase is required under Full Depth Patch with 'EF' Joint. Extend Modified Subbase over longitudinal subdrain, if present.
- ③ Unless noted otherwise in the plans, depth of patch, T, is 12 inches regardless of existing pavement thickness.
- ④ If longitudinal subdrain (shoulder) is not to be placed or if it is not present on side of roadway to be patched, then place Patch Subdrain at low end(s) of patch.

Possible Contract Items:

- Joint Assembly, EF
- Patches, Full-Depth Repair
- Patches by Count (Repair)
- Patches, Full-Depth Finish, by Count
- Patches, Full-Depth Finish, by Area
- Patches, Full-Depth Finish, by Area (50 feet or greater in length)
- Patch Subdrain
- Subbase Patch with EF Joint

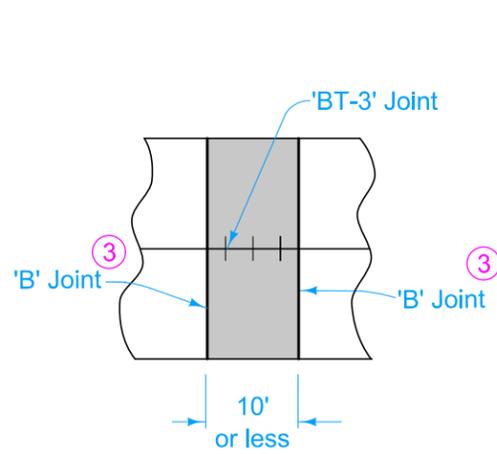
Possible Tabulation:
102-6C

IOWA DOT	REVISION	
	2	10-21-25
STANDARD ROAD PLAN		
PR-101		
SHEET 1 of 1		

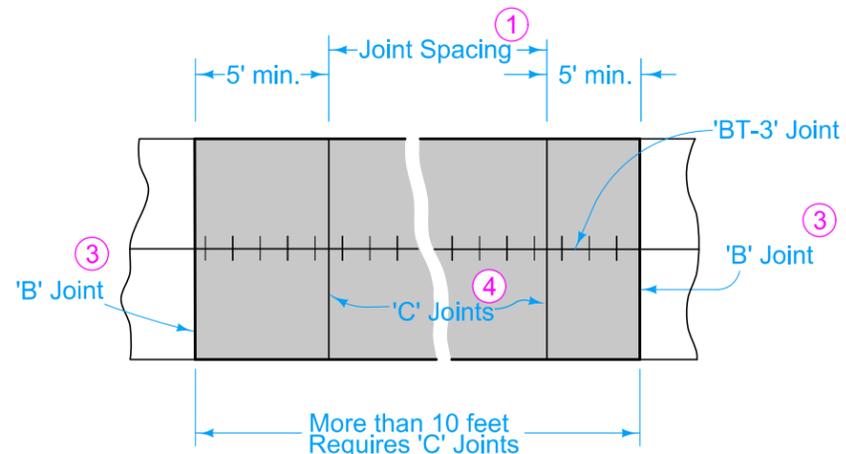
REVISIONS: Removed 'KT-2' joint option.

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

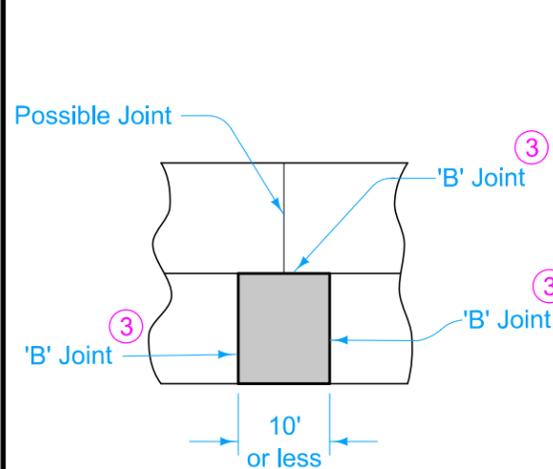
FULL DEPTH PATCH
WITH 'EF' JOINT IN PCC



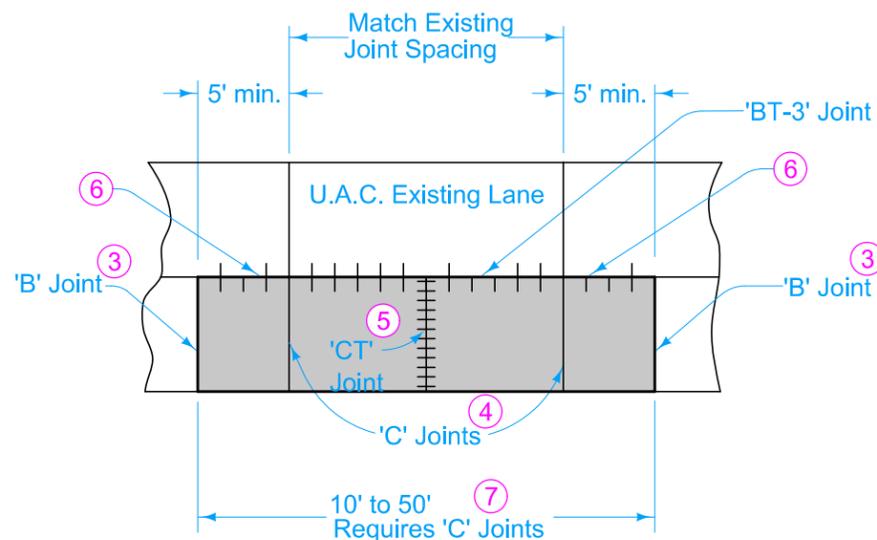
FULL ROADWAY WIDTH PATCH



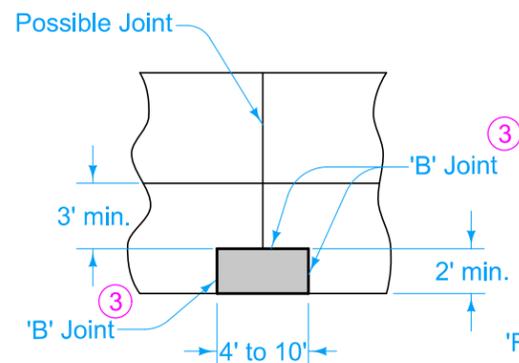
FULL ROADWAY WIDTH PATCH



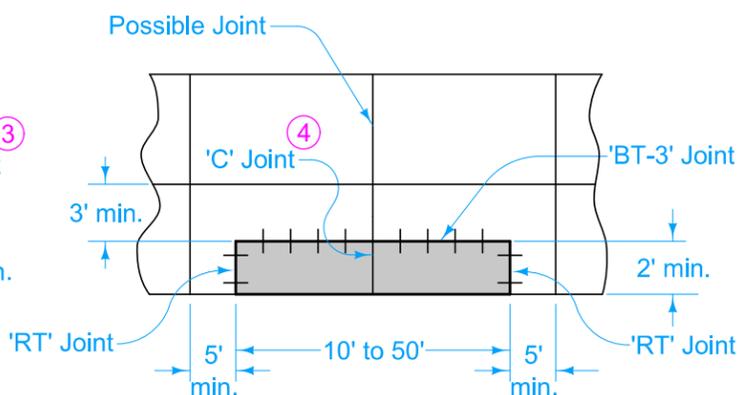
ONE LANE WIDTH PATCH



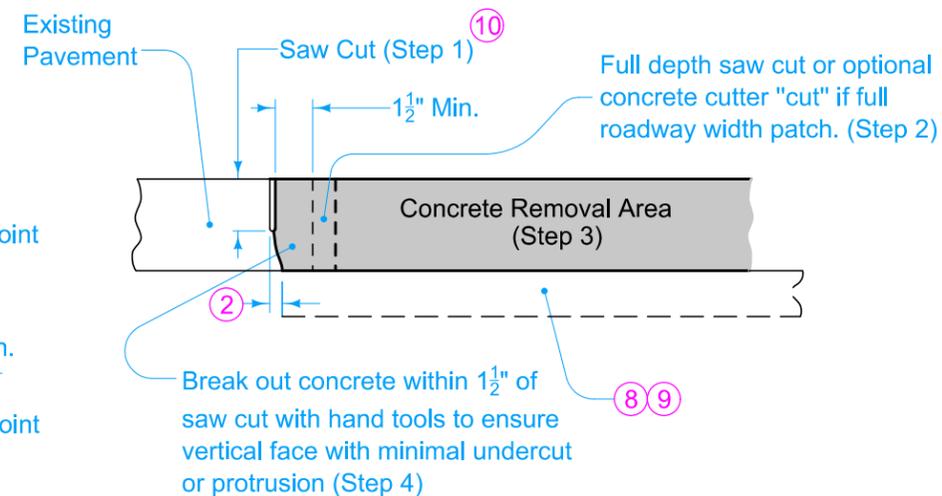
ONE LANE WIDTH PATCH



PARTIAL LANE WIDTH PATCH



PARTIAL LANE WIDTH PATCH



PAVEMENT REMOVAL

- ① Joint spacing 10 feet minimum, 17 feet maximum, 15 feet optimum.
- ② The face of the patch should be near vertical. Protrusions less than 2 inches need not be removed if uniformly tapered from bottom of saw cut to bottom of patch. A step or ledge on this face will not be allowed.
- ③ If resurfacing is part of the contract, do not saw or seal joint after patching. If patch is not to be surfaced, then saw and seal according to PV-101.
- ④ If resurfacing is part of the contract, saw 'C' joints, but do not seal. If the patch is not to be resurfaced, then saw and seal according to PV-101.

See PV-101 for joint and bar placement details.
Construct rectangular patches even when existing pavement joints are skewed.

- ⑤ Establish a new joint at approximate mid patch. This joint does not need to align with any existing joint or crack in adjacent pavement.
- ⑥ 'B' joint if end of patch does not match an existing joint or crack in the adjacent lane.
- ⑦ If one lane patch exceeds 50 feet, both lanes should be considered for patching.
- ⑧ Possible Subbase Patch, see PR-140.
- ⑨ If longitudinal subdrain (shoulder) is not to be placed or if it is not present on side of roadway to be patched, then place drain per PR-140.
- ⑩ Saw cut through overlay so that cut is 1 1/2 inches into original pavement.

Possible Contract Items:

- CT Joint
- Patches, Full-Depth Repair
- Patches by Count (Repair)
- Patches, Full-Depth Finish, by Count
- Patches, Full-Depth Finish, by Area
- Patches, Full-Depth Finish, by Area (50 feet or greater in length)

Possible Tabulation:
102-6C

	REVISION	
	4	10-21-25
STANDARD ROAD PLAN		PR-102
		SHEET 1 of 1

REVISIONS: Removed 'KT-2' joint option.

APPROVED BY DESIGN METHODS ENGINEER

FULL DEPTH PCC PATCH
WITHOUT DOWELS

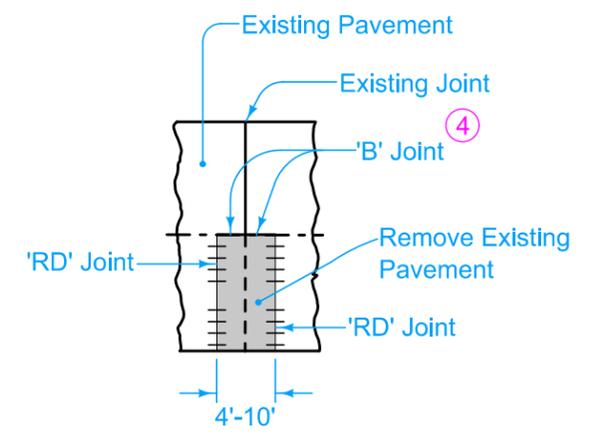
See PV-101 for joint and bar placement details.
 Construct rectangular patches even when existing pavement joints are skewed.
 Min. length of patches on interstate project is 6 feet.

- ① Joint spacing 10 feet minimum, 17 feet maximum, 15 feet optimum.
- ② If there is no existing joint or crack in the adjacent pavement, place a 'CT' joint. If there is an existing joint or crack in the adjacent pavement, place a 'CD' joint at the same transverse location. Saw but do not seal 'CT' joints.
- ③ New 'CD' joint must be a minimum 5 feet from the patch end.
- ④ Do not saw or seal the joint. Place 1/2 inch preformed joint material between patch and concrete in adjacent lane.
- ⑤ If one lane patch exceeds 50 feet, both lanes should be considered for patching.
- ⑥ Possible Subbase Patch, see PR-140.
- ⑦ If longitudinal subdrain (shoulder) is not to be placed or if it is not present on side of roadway to be patched, then place drain per PR-140.

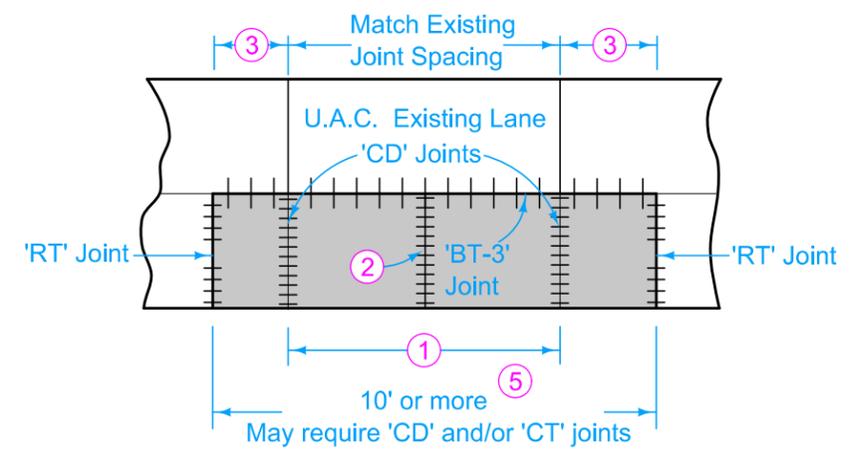
- Possible Contract Items:
- CD Joint Assembly
 - CT Joint
 - Patches by Count (Repair)
 - Patches, Full-Depth Finish, by Area
 - Patches, Full-Depth Finish, by Count
 - Patches, Full Depth Finish, by Area (50 feet in length or greater)
 - Patches, Full-Depth Repair

Possible Tabulation:
102-6C

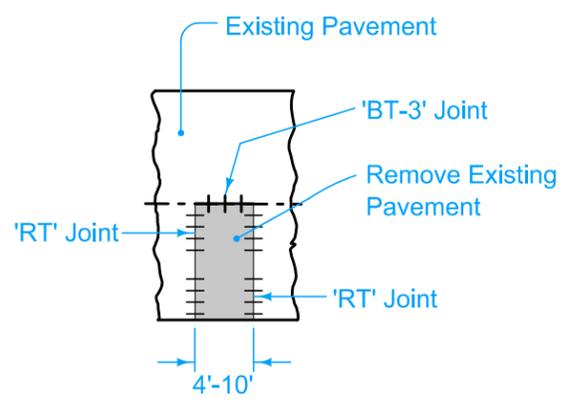
	REVISION	
	4	10-21-25
STANDARD ROAD PLAN		PR-103
REVISIONS: Removed 'KT-2' joint option.		SHEET 1 of 1
 <small>APPROVED BY DESIGN METHODS ENGINEER</small>		
FULL DEPTH PCC PATCH WITH DOWELS		



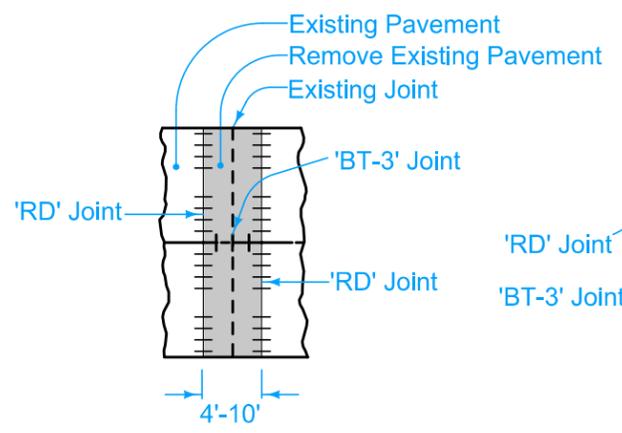
ONE LANE WIDTH PATCH



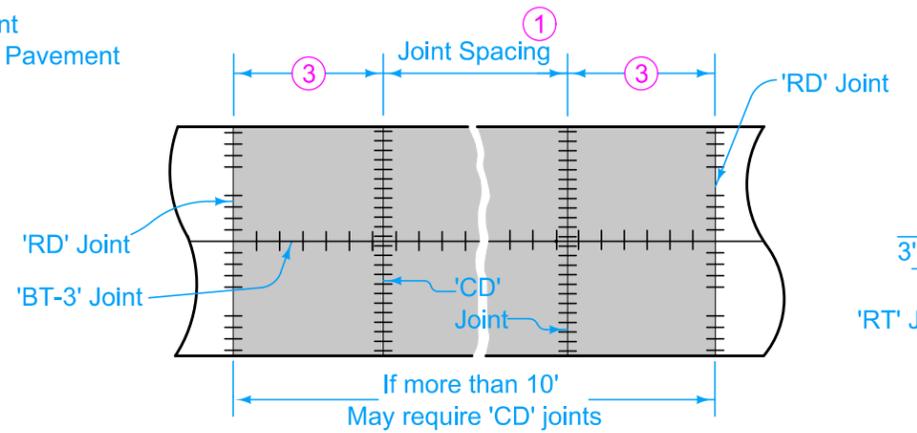
ONE LANE WIDTH PATCH



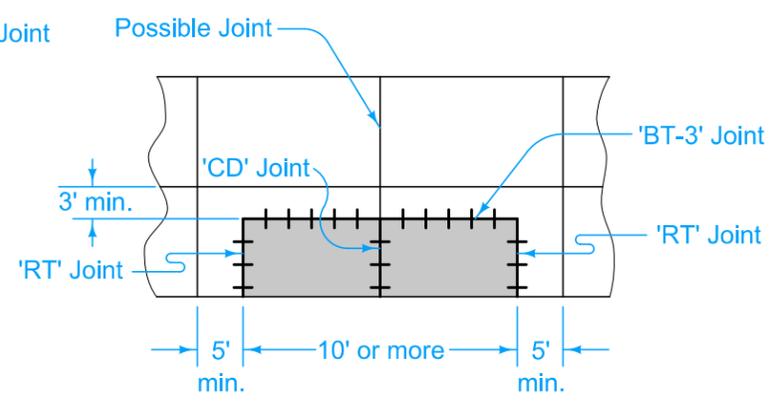
ONE LANE PATCH (NO OPPOSING JOINT)



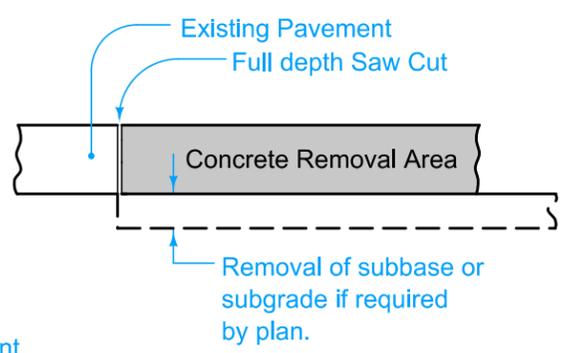
FULL ROADWAY WIDTH PATCH



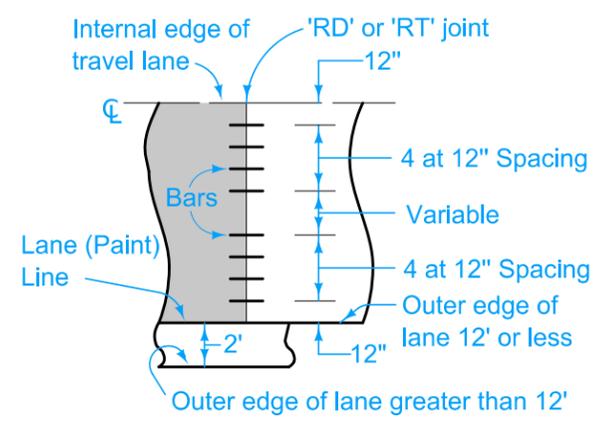
FULL ROADWAY WIDTH PATCH



PARTIAL LANE WIDTH PATCH

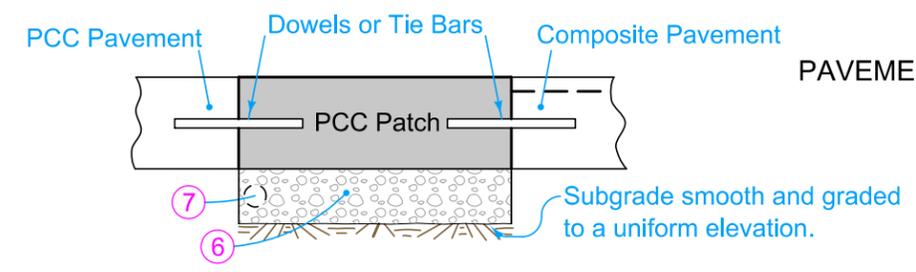


PAVEMENT REMOVAL DETAILS



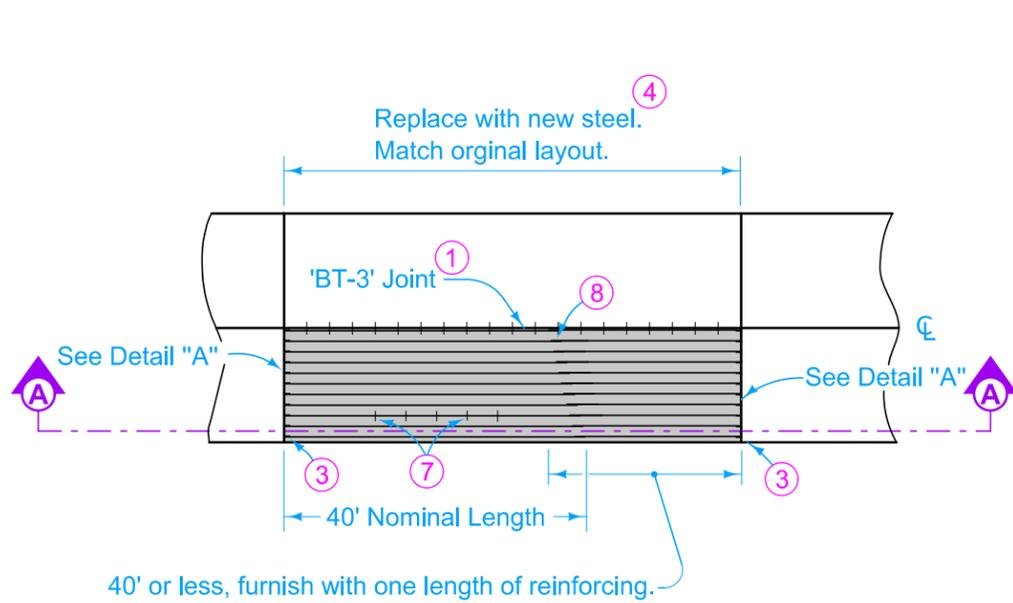
DETAIL FOR 'RT' OR 'RD' JOINT BAR SPACING

TYPICAL HALF PLAN
 For interior lanes, place first bar 12" from edge of lane (slab).

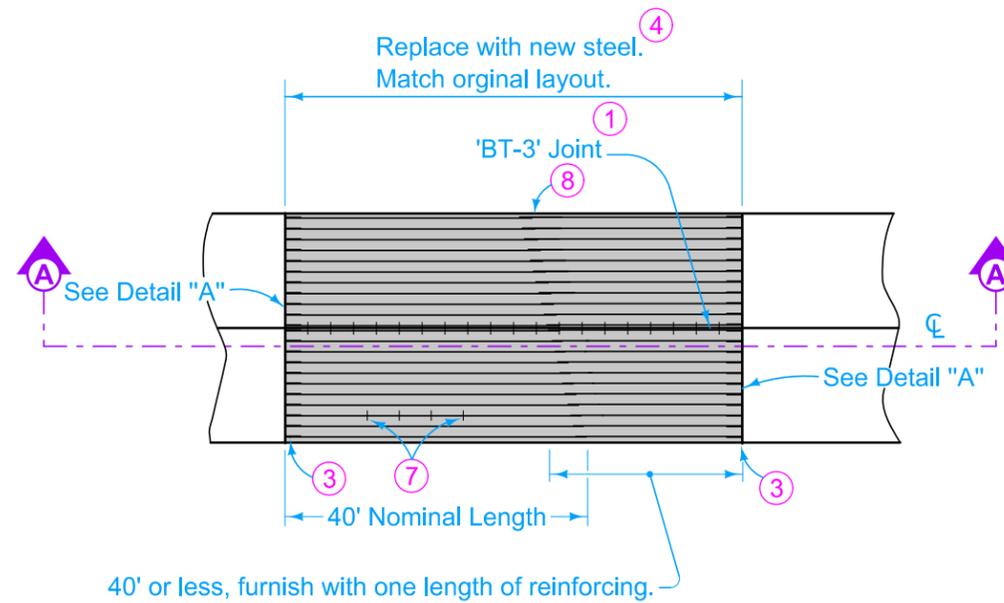


LONGITUDINAL SECTION THRU PATCH

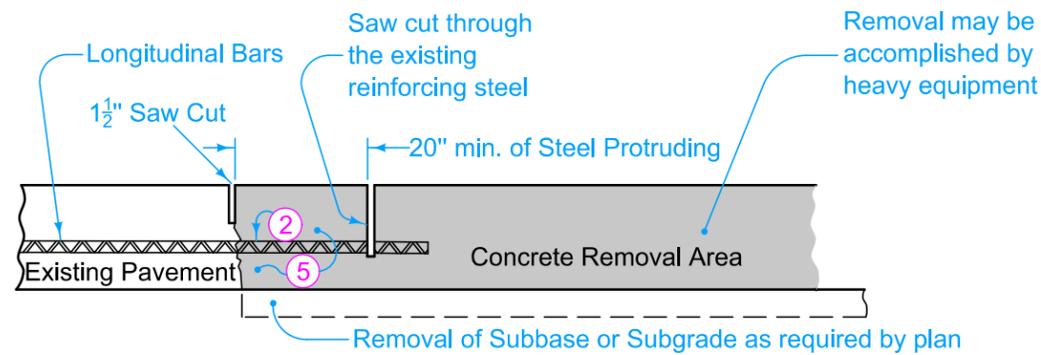
BAR SIZE TABLE			
Existing PCC Pavement Thickness	Less than 8"	8" to 10"	More than 10"
DOWEL SIZE	3/4"	1 1/4"	1 1/2"
TIE BAR SIZE	#6	#10	#11



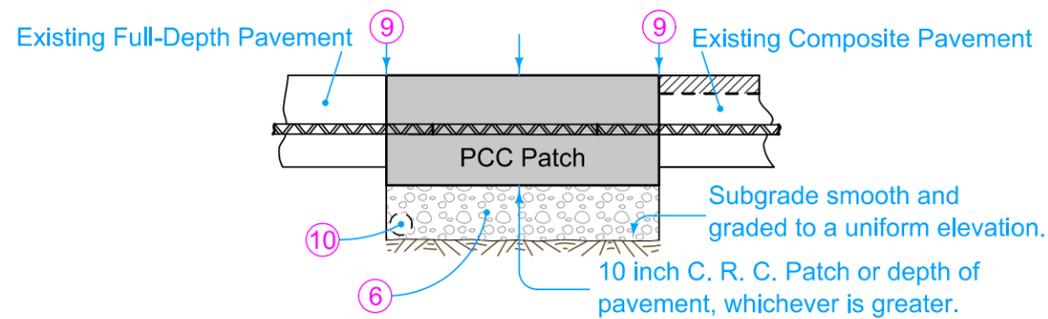
ONE LANE WIDTH PATCH



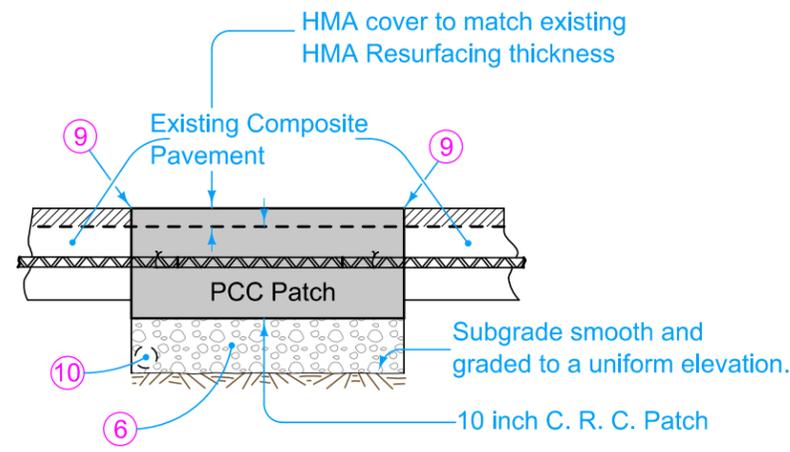
FULL ROADWAY WIDTH PATCH



DETAIL "A"
PAVEMENT REMOVAL DETAILS LONGITUDINAL SECTION



SECTION A-A
PCC ONLY PATCH OPTION



SECTION A-A
COMPOSITE PATCH OPTION

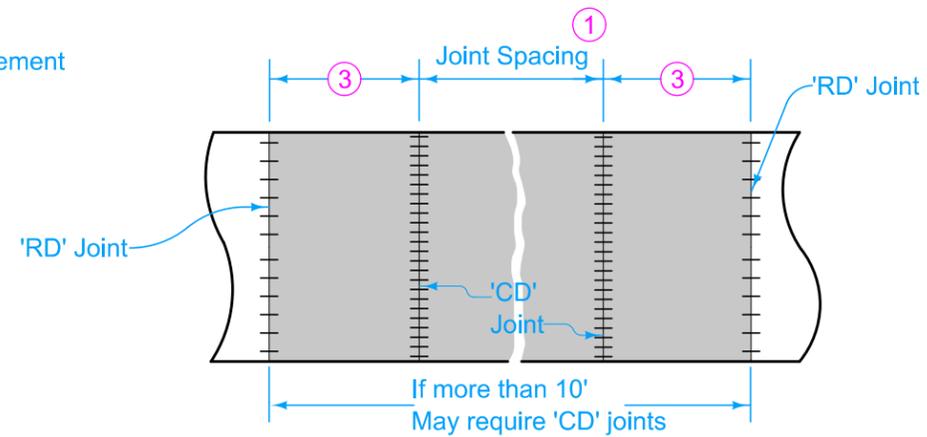
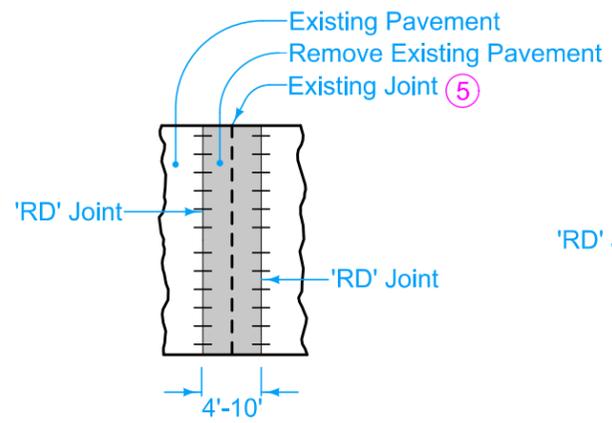
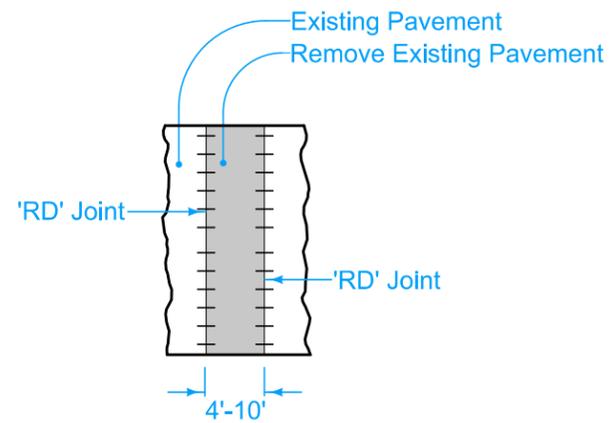
- ① If patch is over 10 feet in length, replace tie bars. See PV-101 for joint details.
- ② Exercise care to preserve the 20 inch length of longitudinal steel when removing concrete.
- ③ 18 inch minimum lap between existing and new reinforcing bars 2 wire ties per lap.
- ④ Minimum length of patch is 8 feet.
- ⑤ Break and remove pavement area to ensure vertical face with minimal undercut or protrusion.
- ⑥ Possible Subdrain Patch, see PR-140.
- ⑦ Place longitudinal bars at approximately midpoint of the slab and support at approximately 4 foot intervals.
- ⑧ Lap bars 25 diameters of steel or 24 inch minimum for mesh. For patches 8 feet to 40 feet, no intermediate lap joint required. For patches over 40 feet in length, lap joint as required to not exceed 40 feet spacing.
- ⑨ Do not saw or seal the joint after patch is placed.
- ⑩ If longitudinal subdrain (shoulder) is not to be placed or if it is not present on side of roadway to be patched, then place drain per PR-140.

Possible Contract Items:

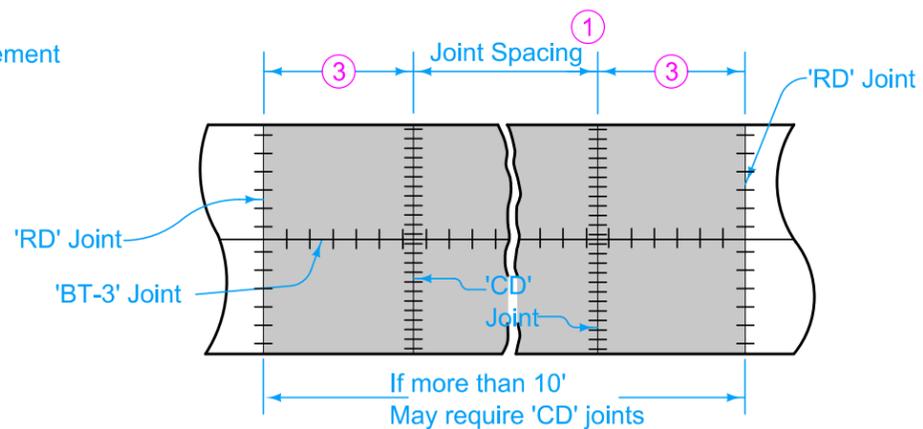
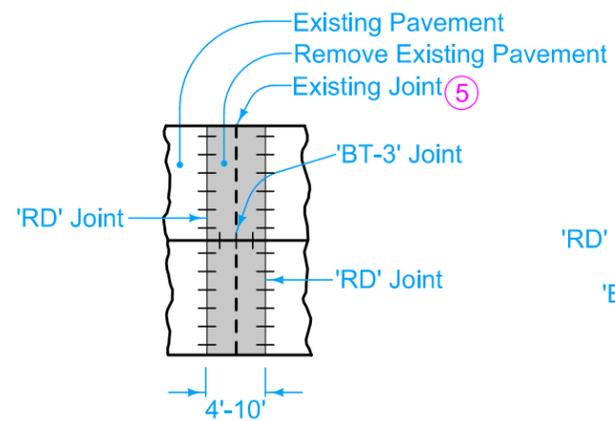
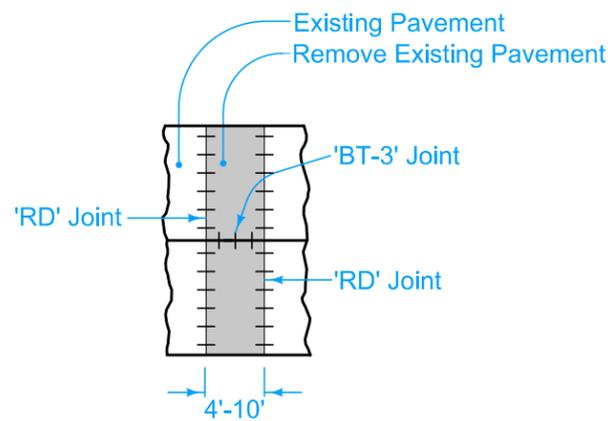
- Patches by Count (Repair)
- Patches, Full-Depth Finish, by Count
- Patches, Full-Depth Repair
- Patches, Full-Depth Finish, by Area
- Patches, Full-Depth Finish, by Area (50 feet or greater in length)

Possible Tabulation:
102-6C

	REVISION	
	1	10-21-25
STANDARD ROAD PLAN		PR-104
REVISIONS: Removed 'KT-2' joint option.		SHEET 1 of 1
 APPROVED BY DESIGN METHODS ENGINEER		
FULL DEPTH PATCH CONTINUOUS REINFORCED PCC PAVEMENT		



FULL RAMP WIDTH PATCHES
(NO EXISTING LONGITUDINAL JOINT)



FULL RAMP WIDTH PATCHES
(EXISTING LONGITUDINAL JOINT)

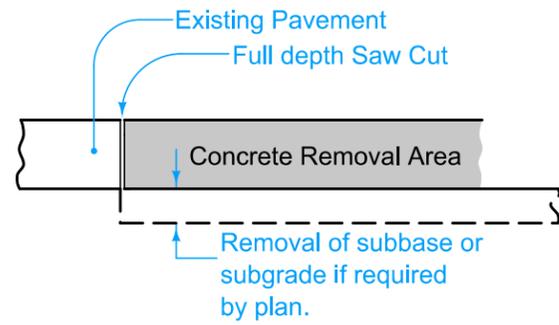
- ① Joint spacing 10 feet minimum, 20 feet maximum, 15 feet optimum.
- ③ New 'CD' joint must be a minimum 5 feet from the patch end.
- ⑤ Do not saw a new joint.

 STANDARD ROAD PLAN	REVISION	
	4	10-21-25
PR-105		SHEET 2 of 3

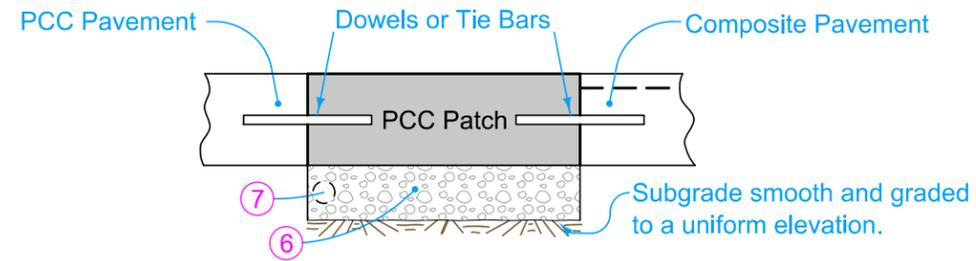
REVISIONS: Removed 'KT-2' joint option.

APPROVED BY DESIGN METHODS ENGINEER

**FULL DEPTH RAMP PCC PATCH
WITH DOWELS**

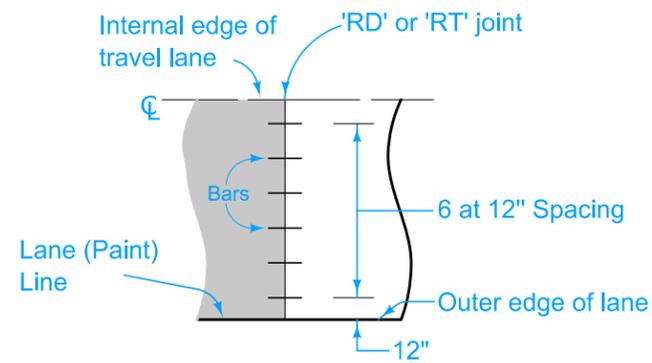


PAVEMENT REMOVAL DETAILS



LONGITUDINAL SECTION THRU PATCH

- ⑥ Possible Subbase Patch, see PR-140.
- ⑦ If longitudinal subdrain (shoulder) is not to be placed or if it is not present on side of roadway to be patched, then place drain per PR-140.



DETAIL FOR 'RT' OR 'RD'
JOINT BAR SPACING
TYPICAL HALF PLAN

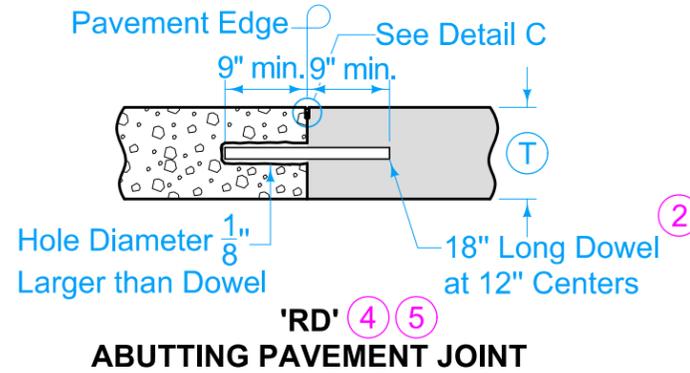
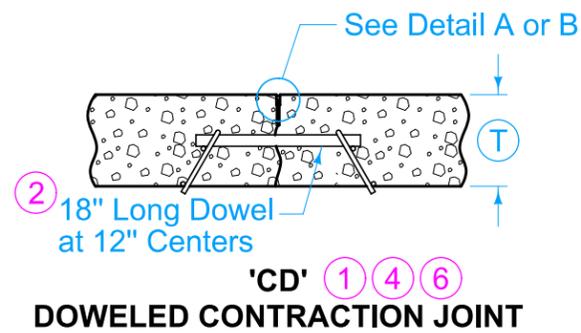
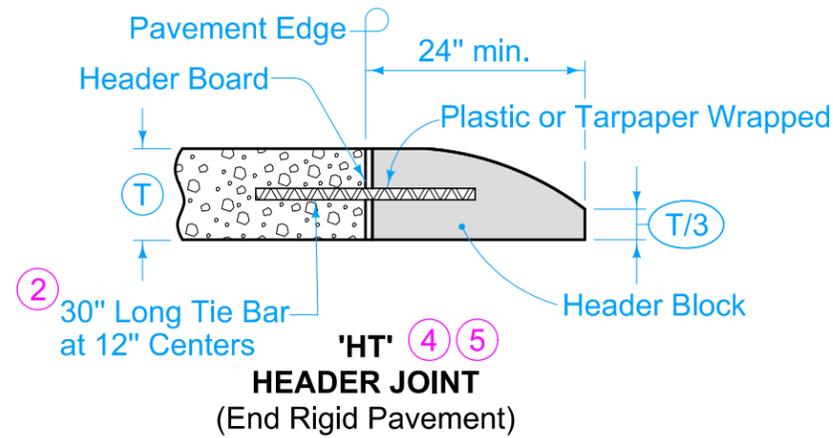
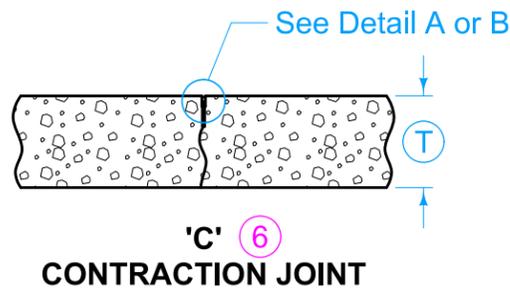
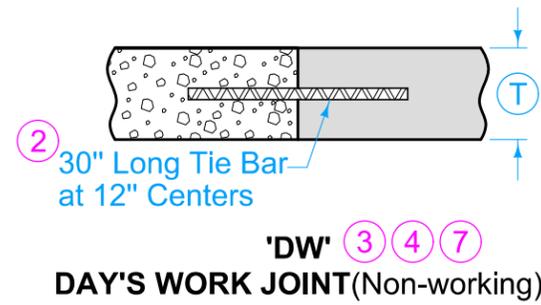
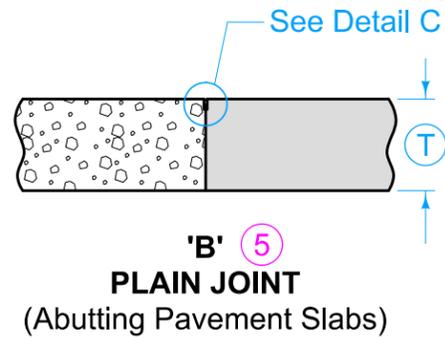
BAR SIZE TABLE			
Existing PCC Pavement Thickness	Less than 8"	8" to 10"	More than 10"
DOWEL SIZE	3/4"	1 1/4"	1 1/2"
TIE BAR SIZE	#6	#10	#11

	REVISION	
	4	10-21-25
STANDARD ROAD PLAN		PR-105
		SHEET 3 of 3

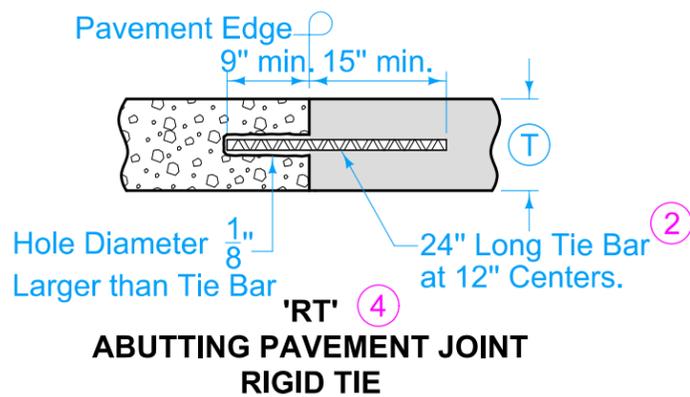
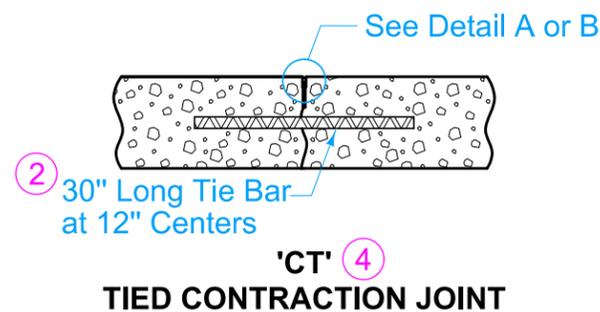
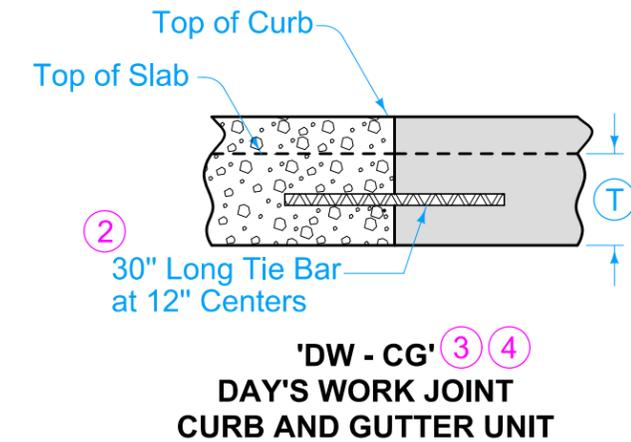
REVISIONS: Removed 'KT-2' joint option.

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

**FULL DEPTH RAMP PCC PATCH
WITH DOWELS**



- 1 See dowel assemblies for fabrication details.
- 2 See Bar Size Table for Contraction Joints on Sheet 2.
- 3 Locate 'DW' joint at a mid-panel location between future 'C' or 'CD' joints. Place no closer than 5 feet to a 'C' or 'CD' joint.
- 4 Place bars within the limits shown under dowel assemblies.
- 5 Edge with 1/8 inch tool for length of joint. For HT joint, remove header block and board when second slab is placed.
- 6 Unless specified otherwise, use 'CD' transverse contraction joints in mainline pavement when T is greater or equal to 8 inches. Use 'C' joints when T is less than 8 inches.
- 7 'RT' joint may be used in lieu of 'DW' joint at the end of the days work. Remove any pavement damaged due to the drilling at no additional cost to the Contracting Authority.



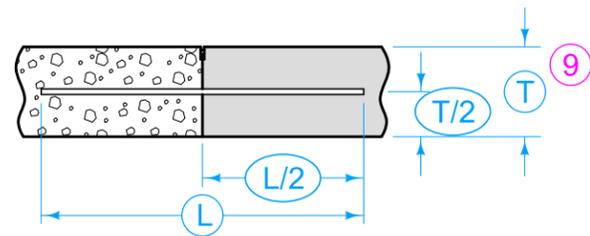
LEGEND	
	Existing Pavement
	Proposed Pavement

		REVISION	
		12	10-21-25
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
		SHEET 1 of 8	

REVISIONS:	Updated Sudas and IDOT Logos.
SUDAS DIRECTOR	DESIGN METHODS ENGINEER

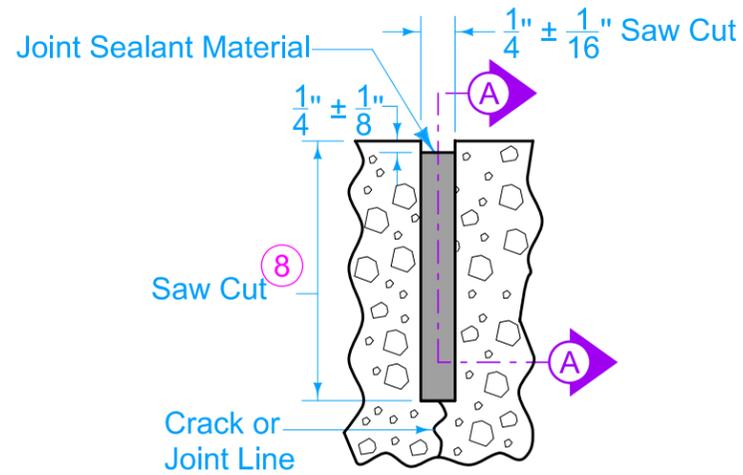
JOINTS	
---------------	--

TRANSVERSE CONTRACTION



BAR PLACEMENT

(Applies to all joints unless otherwise detailed.)



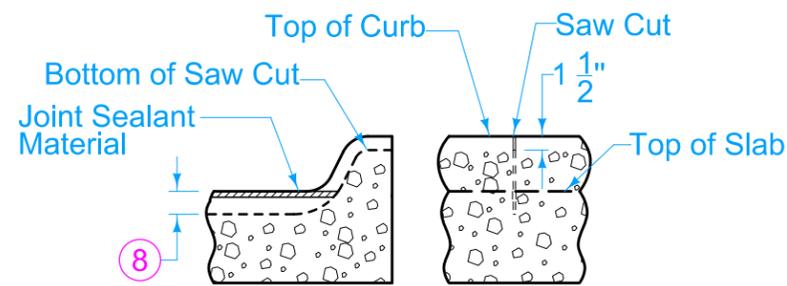
DETAIL A

(Saw cut formed by conventional concrete sawing equipment.)

- ⑧ Saw 'CD' joint to a depth of $T/3 \pm 1/4"$; saw 'C' joint to a depth of $T/4 \pm 1/4"$.
- ⑨ When tying into old pavement, T represents the depth of sound PCC.

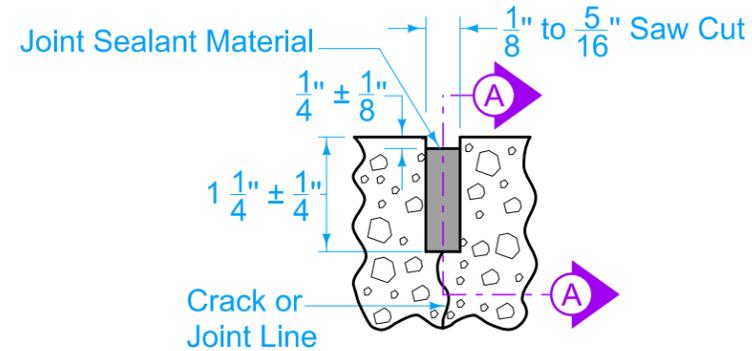
BAR SIZE TABLE FOR CONTRACTION JOINTS			
T	Solid Dowel Diameter	Tubular Dowel Diameter	Tie Bar Size
< 8"	$\frac{3}{4}$ "	$\frac{7}{8}$ "	#6
$\geq 8"$ but < 10"	$1 \frac{1}{4}$ "	$1 \frac{3}{8}$ "	#10
$\geq 10"$	$1 \frac{1}{2}$ "	$1 \frac{5}{8}$ "	#11

Tubular Dowel Bars will not be allowed for RD joints.



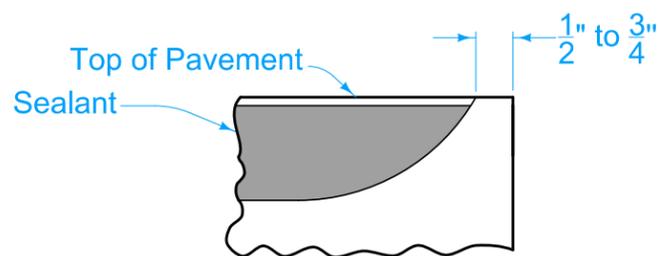
'C' JOINT IN CURB

(Match 'CT', 'CD', or 'C' joint in pavement.)



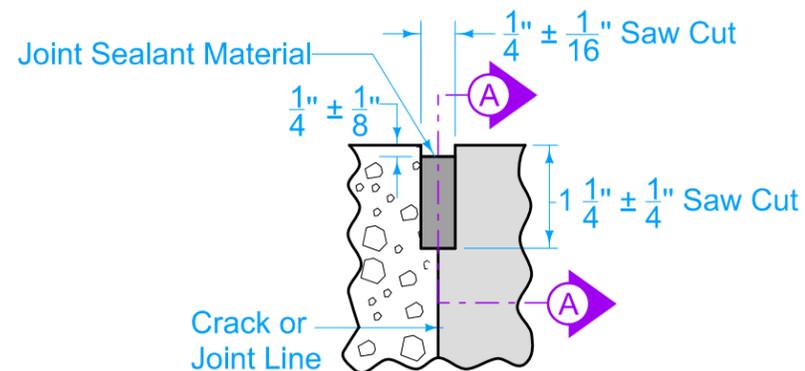
DETAIL B

(Saw cut formed by approved early concrete sawing equipment.)



SECTION A-A

(Detail at Edge of Pavement)



DETAIL C

LEGEND	
	Existing Pavement
	Proposed Pavement

		REVISION	
		12	10-21-25
FIGURE 7010.101		PV-101	
STANDARD ROAD PLAN		SHEET 2 of 8	

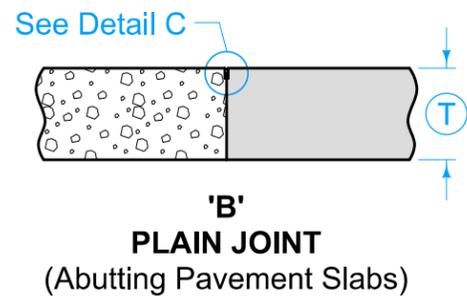
REVISIONS: Updated Sudas and IDOT Logos.

JRPL
SUDAS DIRECTOR

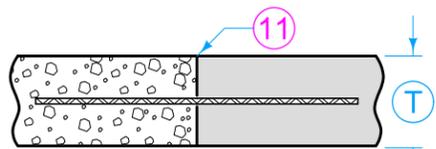
Shawn Miller
DESIGN METHODS ENGINEER

TRANSVERSE CONTRACTION

JOINTS

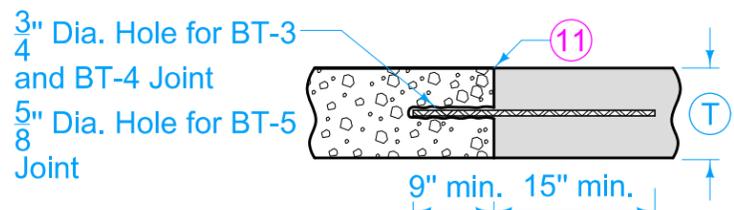


'B'
PLAIN JOINT
(Abutting Pavement Slabs)



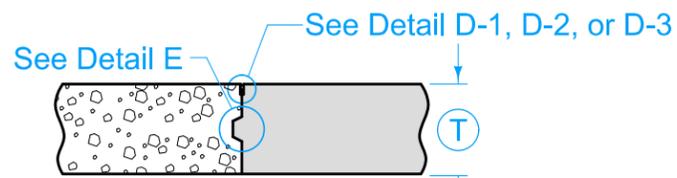
'BT'
ABUTTING PAVEMENT JOINT - RIGID TIE

(T)	Joint	Bars	Bar Length and Spacing
< 8"	'BT-1'	#4	36" Long at 30" Centers
		#5	30" Long at 30" Centers
≥ 8"	'BT-2'	#5	36" Long at 30" Centers

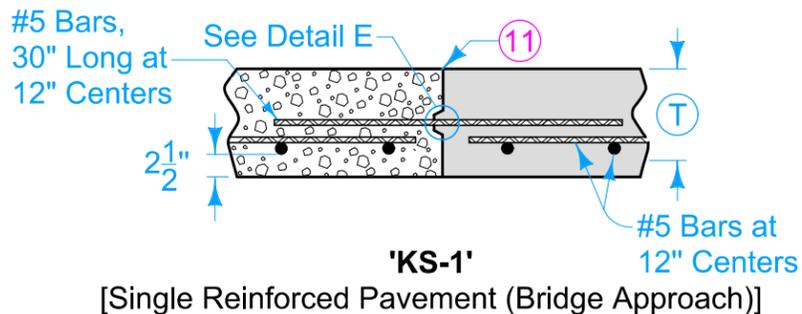


'BT'
ABUTTING PAVEMENT JOINT - RIGID TIE (Drilled)

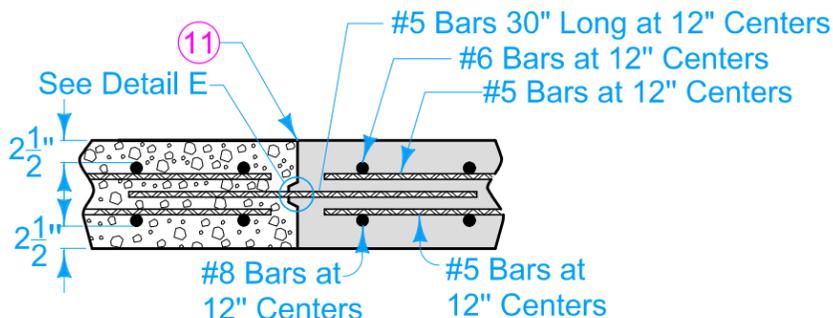
(T)	Joint	Bars	Bar Length and Spacing
< 8"	'BT-5'	#4	24" Long at 30" Centers
≥ 8"	'BT-3'	#5	24" Long at 30" Centers
	'BT-4'		24" Long at 15" Centers



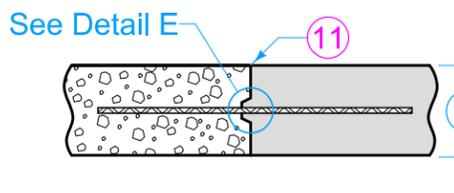
'K'
KEYED JOINT FOR ADJACENT SLABS
(Where T is 8" or more)



'KS-1'
[Single Reinforced Pavement (Bridge Approach)]



'KS-2'
[Double Reinforced Pavement (Bridge Approach)]

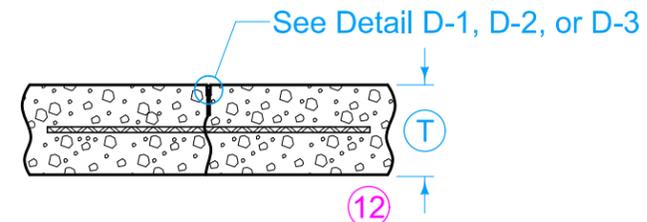


'KT'
ABUTTING PAVEMENT JOINT - KEYWAY TIE

(T)	Joint	Bars	Bar Length and Spacing
< 8"	'KT-1'	#4	30" Long at 30" Centers
≥ 8"	'KT-2'	#5	30" Long at 30" Centers
	'KT-3'		30" Long at 15" Centers

LONGITUDINAL CONTRACTION

- 10 Bar supports may be necessary for fixed form paving to ensure the bar remains in a horizontal position in the plastic concrete.
- 11 Sawing or sealing of joint not required.
- 12 The following joints are interchangeable, subject to the pouring sequence:
'BT-1', 'L-1', and 'KT-1'
'KT-2' and 'L-2'
'KT-3' and 'L-3'



'L'
CONTRACTION JOINT

(T)	Joint	Bars	Bar Length and Spacing
< 8"	'L-1'	#4	36" Long at 30" Centers
≥ 8"	'L-2'	#5	36" Long at 30" Centers
	'L-3'		36" Long at 15" Centers

LEGEND

Existing Pavement

Proposed Pavement

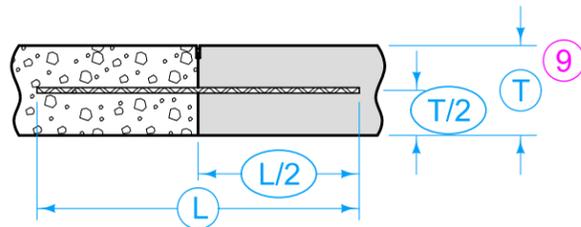
		REVISION	
		12	10-21-25
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
		SHEET 3 of 8	

REVISIONS: Updated Sudas and IDOT Logos.

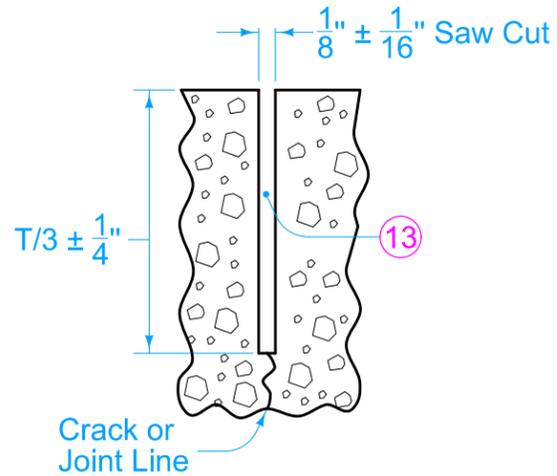
SUDAS DIRECTOR

DESIGN METHODS ENGINEER

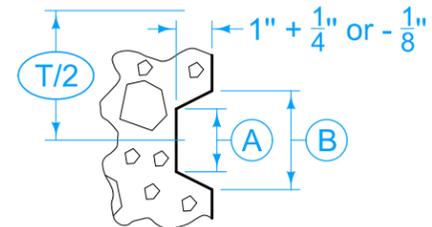
JOINTS



TIE BAR PLACEMENT
(Applies to all joints unless otherwise detailed.)

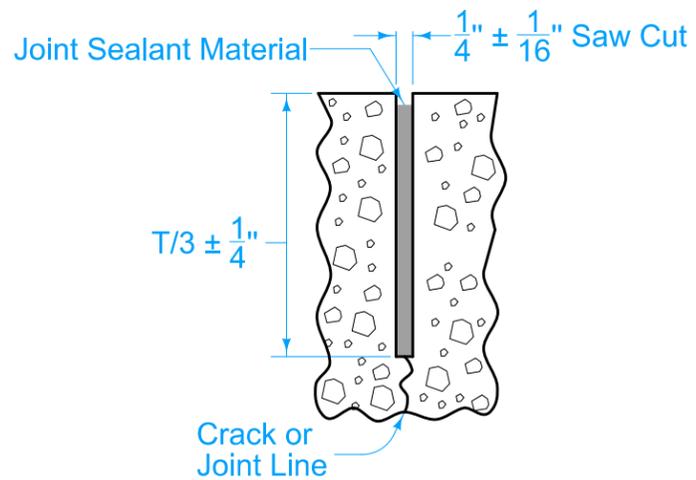


DETAIL D-1
(Required when specified in the contract documents.)

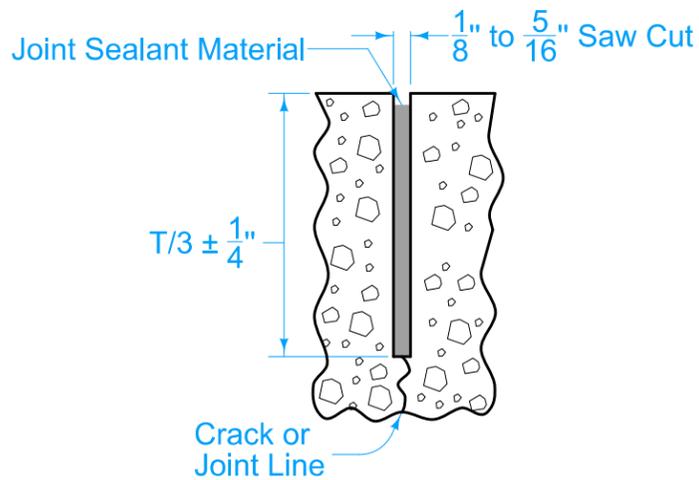


DETAIL E

- 9 When tying into old pavement, T represents the depth of sound PCC.
- 13 Sealant or cleaning not required.



DETAIL D-2
(Required when the Department of Transportation is not the Contracting Authority, or when specified in the contract documents)



DETAIL D-3
(Required when the Department of Transportation is the Contracting Authority, or when specified in the contract documents)

KEYWAY DIMENSIONS			
Keyway Type	Pavement Thickness T	A	B
Standard	8" or greater	1 3/4"	2 3/4"
Narrow	Less than 8"	1"	2"

LEGEND	
	Existing Pavement
	Proposed Pavement

		REVISION	
		12	10-21-25
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
		SHEET 4 of 8	

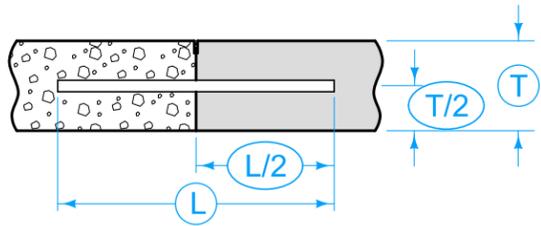
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR

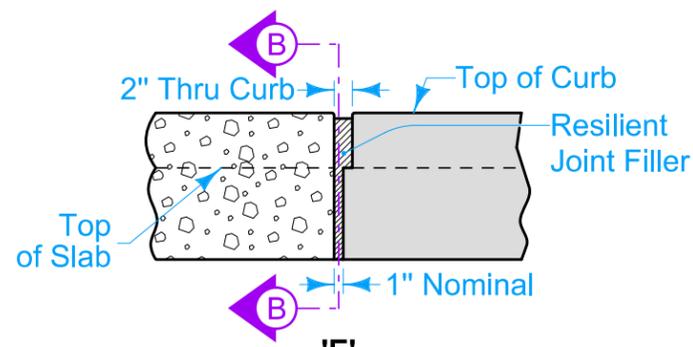
DESIGN METHODS ENGINEER

LONGITUDINAL CONTRACTION

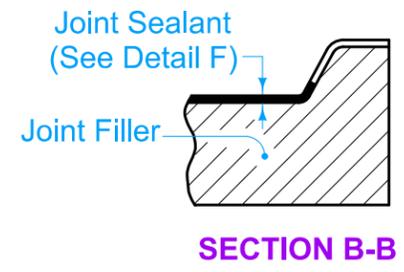
JOINTS



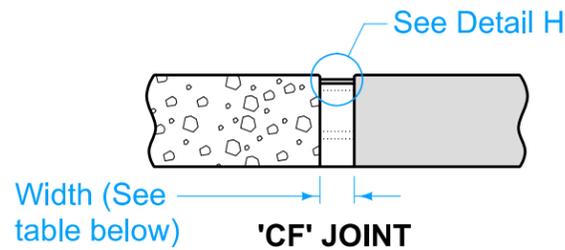
DOWEL PLACEMENT
(Applies to all joints unless otherwise detailed.)



'E'
JOINT IN CURB
(View at Back of Curb)

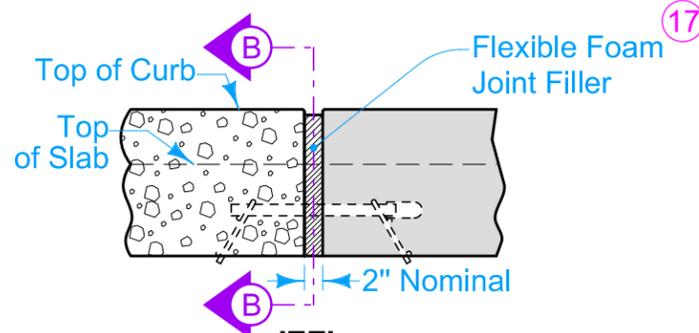


SECTION B-B

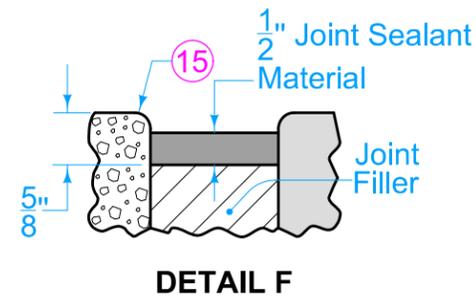


'CF' JOINT

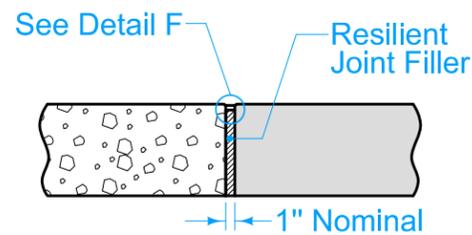
TYPE	WIDTH
CF-1	2"
CF-2	2 1/2"
CF-3	3"
CF-4	3 1/2"



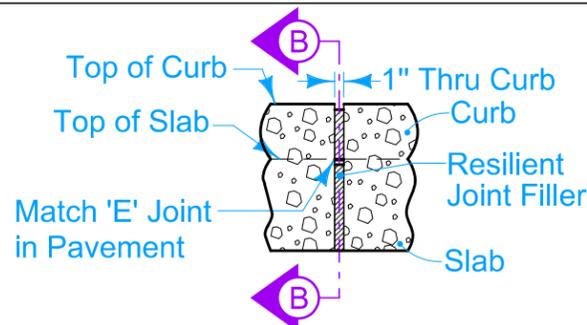
'EE'
JOINT IN CURB
(View at Back of Curb)



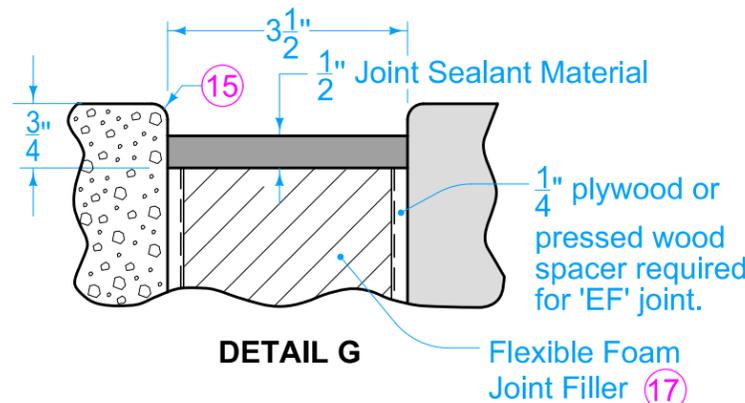
DETAIL F



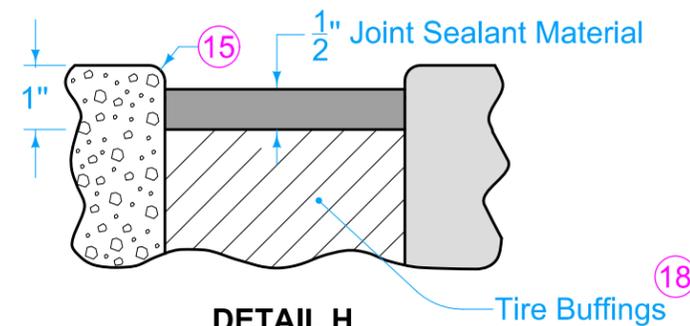
'E'
1" EXPANSION JOINT



'ES'
JOINT IN CURB
(View at Back of Curb)



DETAIL G



DETAIL H

- ⑭ See Bar Size Table for Doweled Expansion Joints.
- ⑮ Edge with 1/4 inch tool for length of joint indicated if formed; edging not required when cut with diamond blade saw.
- ⑯ See Dowel Assemblies for fabrication details and placement limits. Coat the free end of dowel bar to prevent bond with pavement. At intake locations, dowel bars may be cast-in-place.
- ⑰ Predrill or preform holes in joint material for appropriate dowel size.
- ⑱ Compact tire buffings by spading with a square-nose shovel.

DOWELED EXPANSION JOINTS		
TYPE	WIDTH	FILLER MATERIAL ⑰
ED	1"	Resilient (Detail F)
EE	2"	Flexible Foam (Detail F)
EF	3 1/2"	Flexible Foam (Detail G)

BAR SIZE TABLE FOR DOWELED EXPANSION JOINTS			
Ⓣ	< 8"	≥ 8" but < 10"	≥ 10"
Dowel Diameter	3/4"	1 1/4"	1 1/2"

Tubular Dowel Bars will not be allowed for expansion joints.

LEGEND	
	Existing Pavement
	Proposed Pavement

		REVISION	
		12	10-21-25
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
		SHEET 5 of 8	

REVISIONS: Updated Sudas and IDOT Logos.

J. P. C. SUDAS DIRECTOR *Stewart Miller* DESIGN METHODS ENGINEER

Detail F or Detail G (See Bar Size Table for Doweled Expansion Joints)

Joint Filler Material ⑰ (See Bar Size Table for Doweled Expansion Joints)

⑭ 18" Long Dowel at 12" Centers

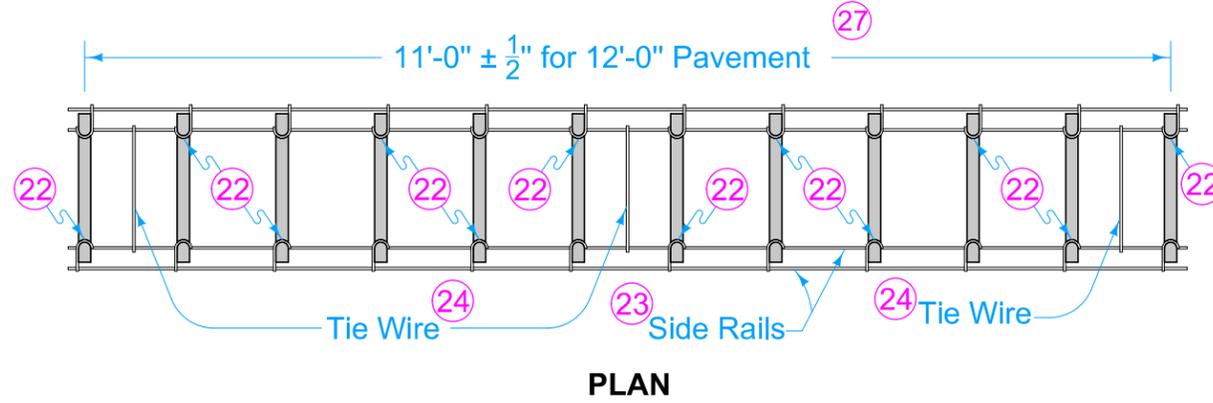
Width (See Doweled Expansion Joints Table)

'ED', 'EE', 'EF' ⑯
DOWELED EXPANSION JOINT

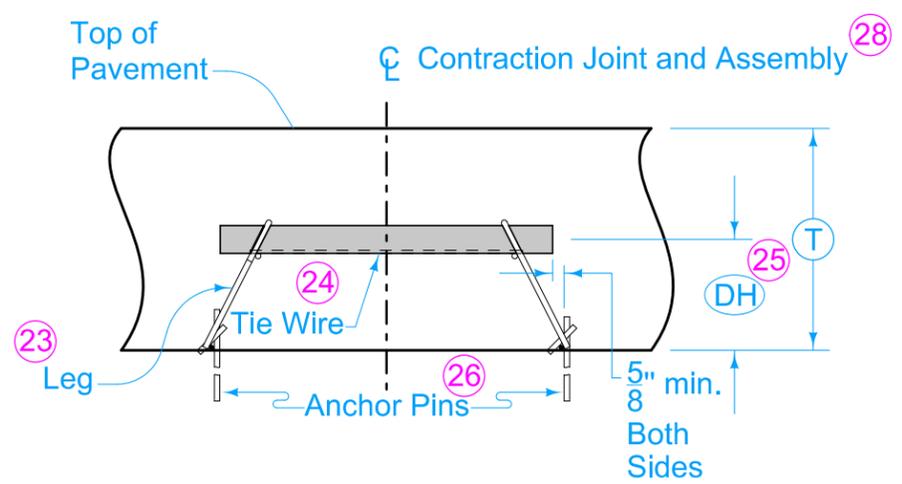
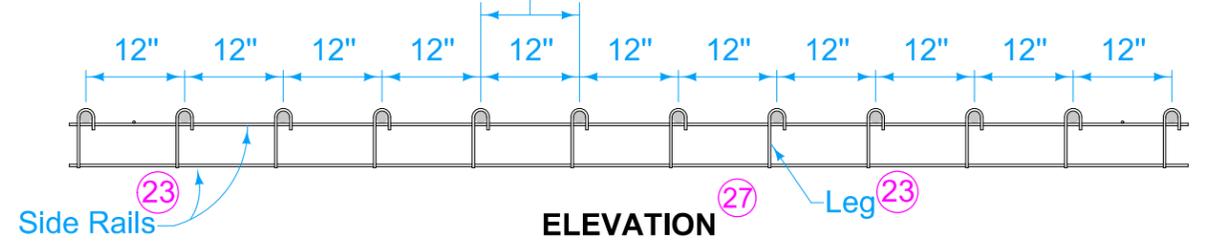
EXPANSION

JOINTS

CONTRACTION JOINTS



Spaces between dowel bars are nominal dimensions with a 1/4" allowable tolerance.



LONGITUDINAL SECTION
DOWEL ASSEMBLIES 19 20 21

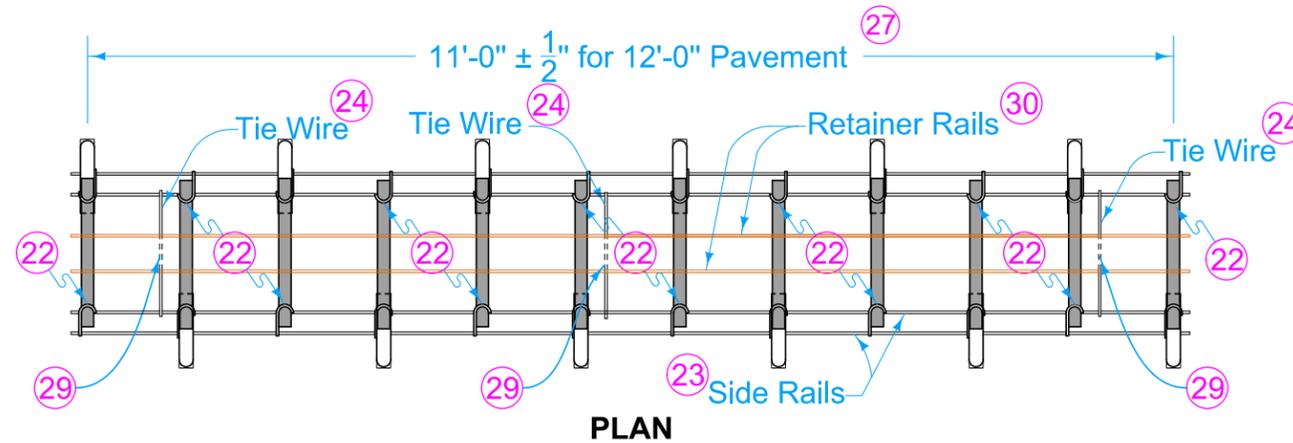
DOWEL HEIGHT AND DIAMETER FOR DOWELED CONTRACTION JOINTS			
T	DH 25	Diameter (Solid)	Diameter (Tubular)
7" to 7 1/2"	3 1/2"	3/4"	7/8"
8" to 9 1/2"	4 1/4"	1 1/4"	1 3/8"
10" to 11 1/2"	5 1/4"	1 1/2"	1 5/8"
12" to 13"	6 1/4"	1 1/2"	1 5/8"

Tubular Dowel Bars will not be allowed for RD joints.

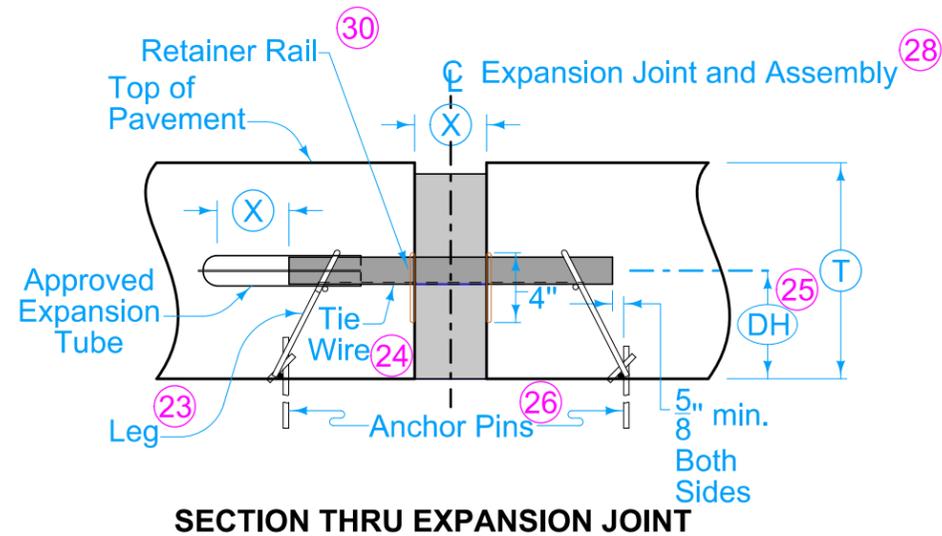
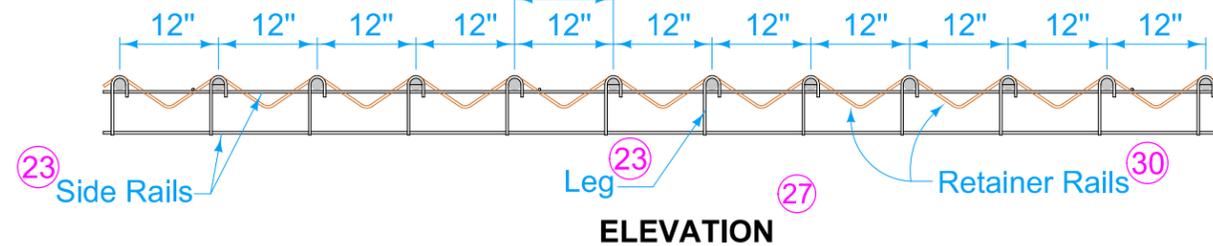
- 19 Use 18 inch long dowel bars with a tolerance of ± 1/8 inch. Ensure the centerlines of individual dowels are parallel to the other dowels in the assembly within ± 1/8 inch.
- 20 Use wires with a minimum tensile strength of 50 ksi.
- 21 Details apply to both transverse contraction and expansion joints.
- 22 Weld alternately throughout.
- 23 0.306 inch diameter wire. Wire sizes shown are the minimum required.
- 24 Maximum 0.177 inch diameter wire, welded or friction fit to upper side rail, both sides.
- 25 Measured from the centerline of dowel bar to bottom of lower side rail + 1/4 inch.
- 26 Per lane width, install a minimum of 8 anchor pins evenly spaced (4 per side), to prevent movement of assembly during construction. Anchor assemblies placed on pavement or PCC base with devices approved by the Engineer.
- 27 If dowel basket assemblies are required for curbed pavements, the assembly length is based on the jointing layout. See PV-101, sheet 8.
- 28 Ensure dowel basket assembly centerline is within 2 inches of the intended joint location longitudinally and has no more than 1/4 inch horizontal skew from end of basket to end of basket.

		REVISION	
		12	10-21-25
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
		SHEET 6 of 8	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
JOINTS			

EXPANSION JOINTS



Spaces between dowel bars are nominal dimensions with a $\frac{1}{4}$ " allowable tolerance.



JOINT OPENING AND EXPANSION TUBE EXTENSION		
Joint Type	(X)	Minimum Tube Length
"ED"	1"	6"
"EE"	2"	7"
"EF"	$3\frac{1}{2}$ "	9"

DOWEL HEIGHT AND DIAMETER FOR DOWELED EXPANSION JOINTS		
(T)	(DH) (25)	Diameter
7" to $7\frac{1}{2}$ "	$3\frac{1}{2}$ "	$\frac{3}{4}$ "
8" to $9\frac{1}{2}$ "	$4\frac{1}{4}$ "	$1\frac{1}{4}$ "
10" to $11\frac{1}{2}$ "	$5\frac{1}{4}$ "	$1\frac{1}{2}$ "
12" to 13"	$6\frac{1}{4}$ "	$1\frac{1}{2}$ "

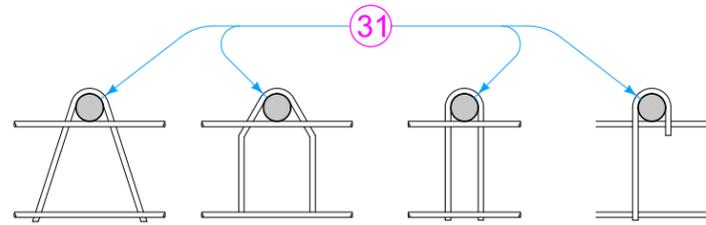
Tubular Dowel Bars will not be allowed for expansion joints.

DOWEL ASSEMBLIES

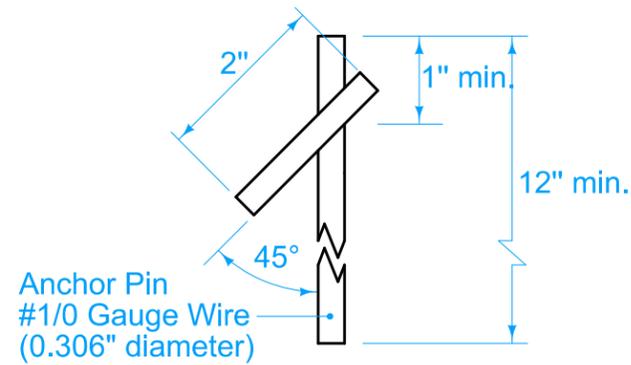
(19) (20) (21)

- (19) Use 18 inch long dowel bars with a tolerance of $\pm 1/8$ inch. Ensure the centerlines of individual dowels are parallel to the other dowels in the assembly within $\pm 1/8$ inch.
- (20) Use wires with a minimum tensile strength of 50 ksi.
- (21) Details apply to both transverse contraction and expansion joints.
- (22) Weld alternately throughout.
- (23) 0.306 inch diameter wire. Wire sizes shown are the minimum required.
- (24) Maximum 0.177 inch diameter wire, welded or friction fit to upper side rail, both sides.
- (25) Measured from the centerline of dowel bar to bottom of lower side rail + 1/4 inch.
- (26) Per lane width, install a minimum of 8 anchor pins evenly spaced (4 per side), to prevent movement of assembly during construction. Anchor assemblies placed on pavement or PCC base with devices approved by the Engineer.
- (27) If dowel basket assemblies are required for curbed pavements, the assembly length is based on the jointing layout. See PV-101, sheet 8.
- (28) Ensure dowel basket assembly centerline is within 2 inches of the intended joint location longitudinally and has no more than 1/4 inch horizontal skew from end of basket to end of basket.
- (29) Clip and remove center portion of tie during field assembly.
- (30) 1/4 inch diameter wire.

		REVISION	
		12	10-21-25
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
SHEET 7 of 8			
REVISIONS: Updated Sudas and IDOT Logos.			
SUDAS DIRECTOR		DESIGN METHODS ENGINEER	
JOINTS			

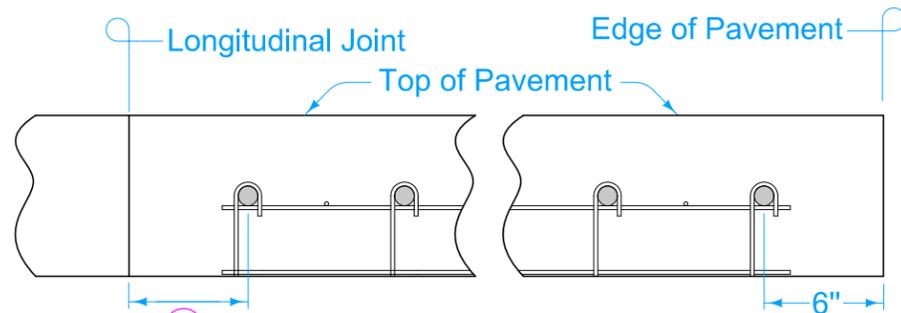


OPTIONAL LEG SHAPES

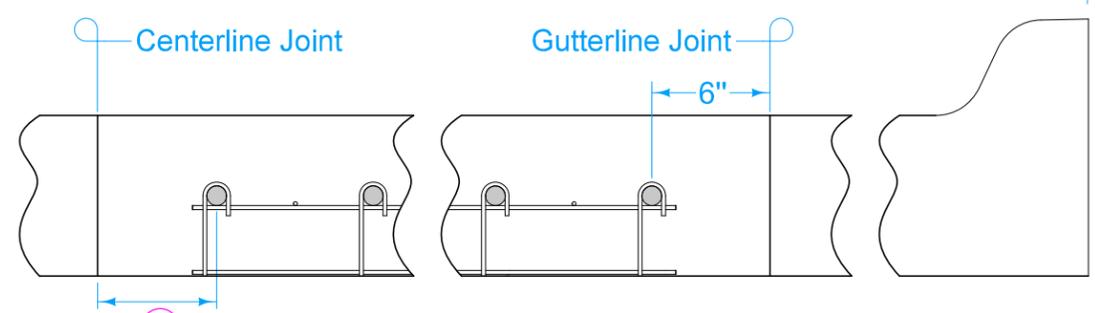


ANCHOR PIN

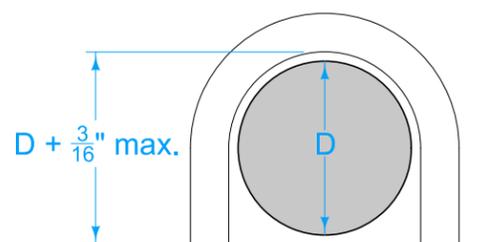
- ⑲ Use 18 inch long dowel bars with a tolerance of $\pm 1/8$ inch. Ensure the centerlines of individual dowels are parallel to the other dowels in the assembly within $\pm 1/8$ inch.
- ⑳ Use wires with a minimum tensile strength of 50 ksi.
- ㉑ Details apply to both transverse contraction and expansion joints.
- ㉓ Diameter of bend around dowel is dowel diameter + $1/8$ to $3/16$ inches.
- ㉔ For uniform lane widths: 3 to 6 inches. For taper and variable width pavements: 3 to 12 inches.



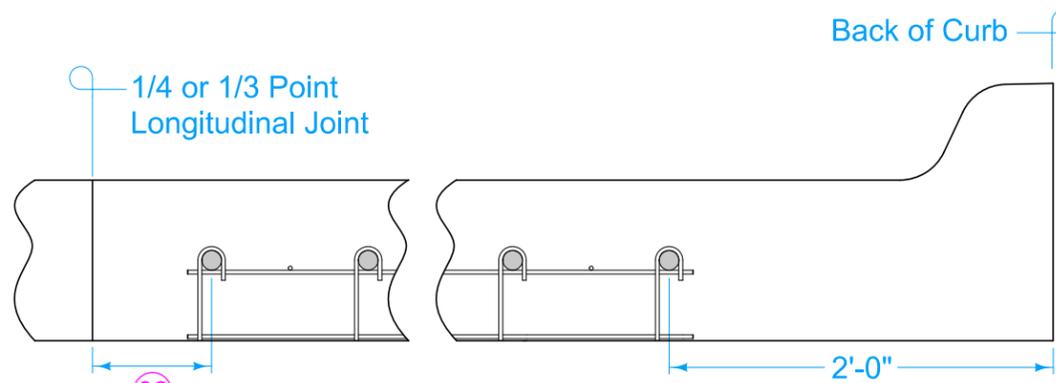
PLACEMENT LIMITS
(Rural Section)



PLACEMENT LIMITS
(Curb and Gutter - Gutterline Jointing)



BEND AROUND DOWEL



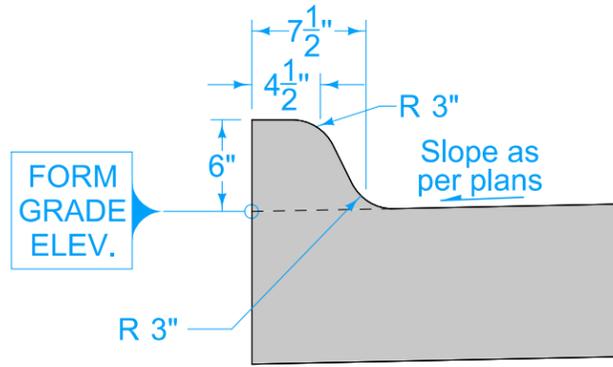
PLACEMENT LIMITS
(Curb and Gutter - 1/4 or 1/3 Point Jointing)

DOWEL ASSEMBLIES ⑲ ⑳ ㉑

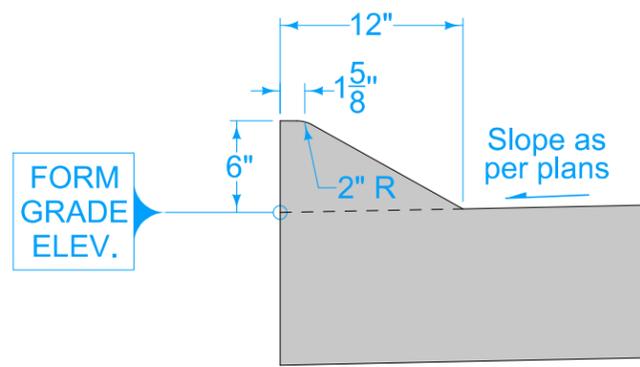
		REVISION	
		12	10-21-25
FIGURE 7010.101	STANDARD ROAD PLAN	PV-101	
		SHEET 8 of 8	

REVISIONS: Updated Sudas and IDOT Logos.

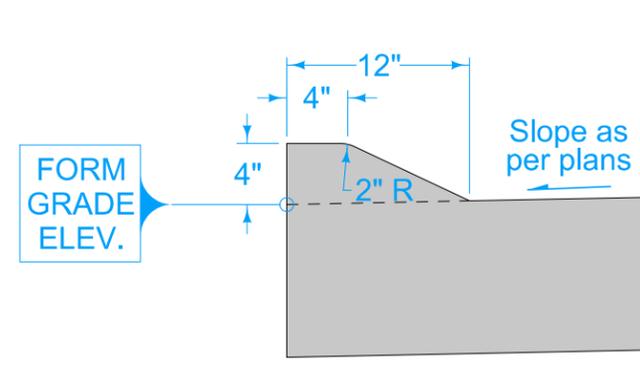
JOINTS



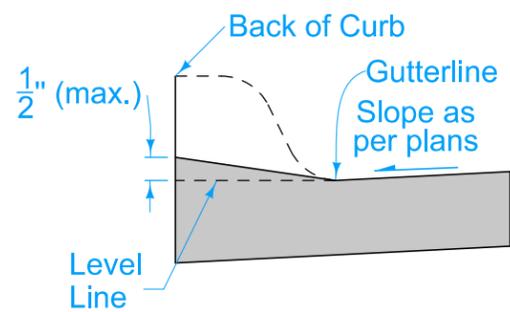
6" STANDARD CURB



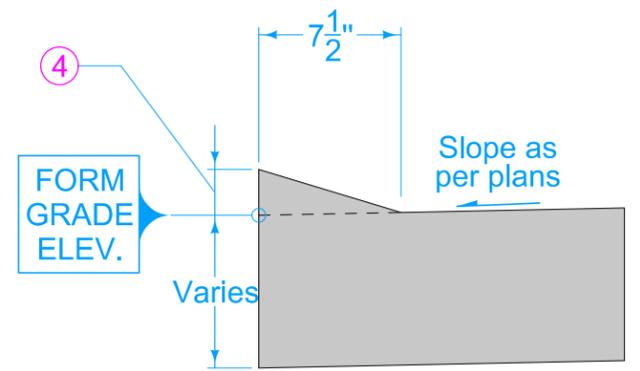
6" SLOPED CURB



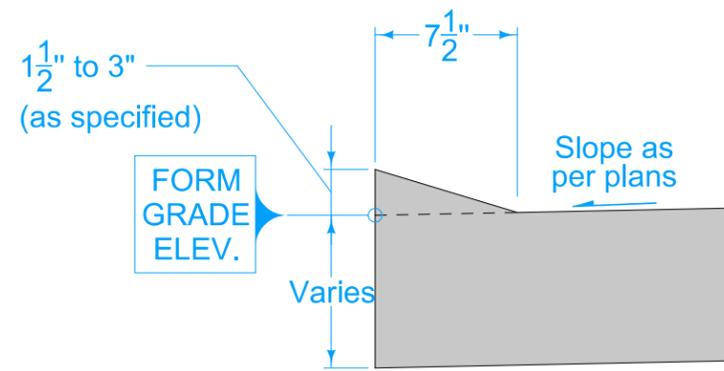
4" SLOPED CURB



DROP CURB AT SIDEWALK



DRIVEWAY DROP CURB
(Iowa Department of Transportation is not the Contracting Authority)

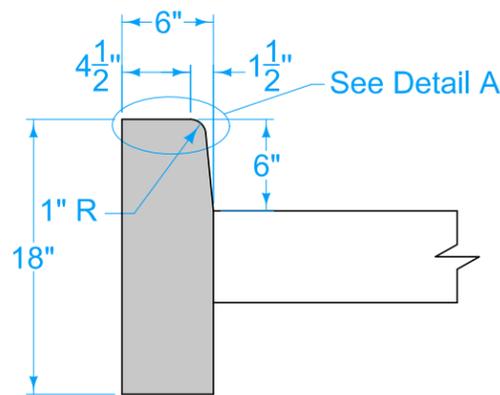


DRIVEWAY DROP CURB
(Iowa Department of Transportation is the Contracting Authority)

For joint details, see PV-101.

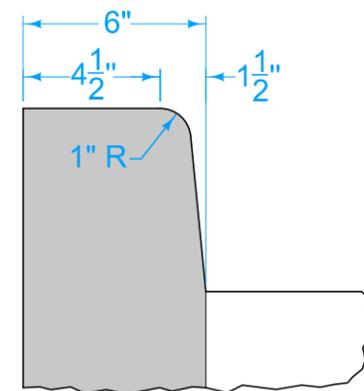
- ① 6 inch Standard Curb, 6 inch Sloped Curb, or 4 inch Sloped Curb as specified.
- ② 1/8 inch if Proposed Pavement is HMA. No elevation difference if Proposed Pavement is PCC.
- ③ 'BT', 'KT', or 'L' joint if Proposed Pavement is PCC. 'B' joint if Proposed Pavement is HMA.
- ④ 0 to 2 inches for residential entrances. 1 1/2 to 3 inches for industrial or commercial entrances.

FIGURE 7010.102 SHEET 1 OF 2

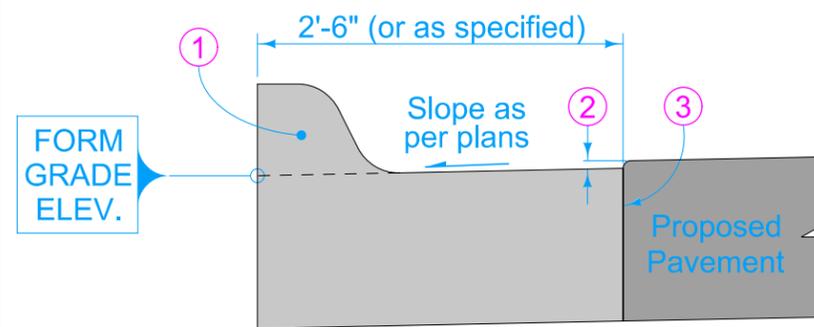


BEAM CURB*

*For short replacement sections, match existing curb profile



DETAIL A

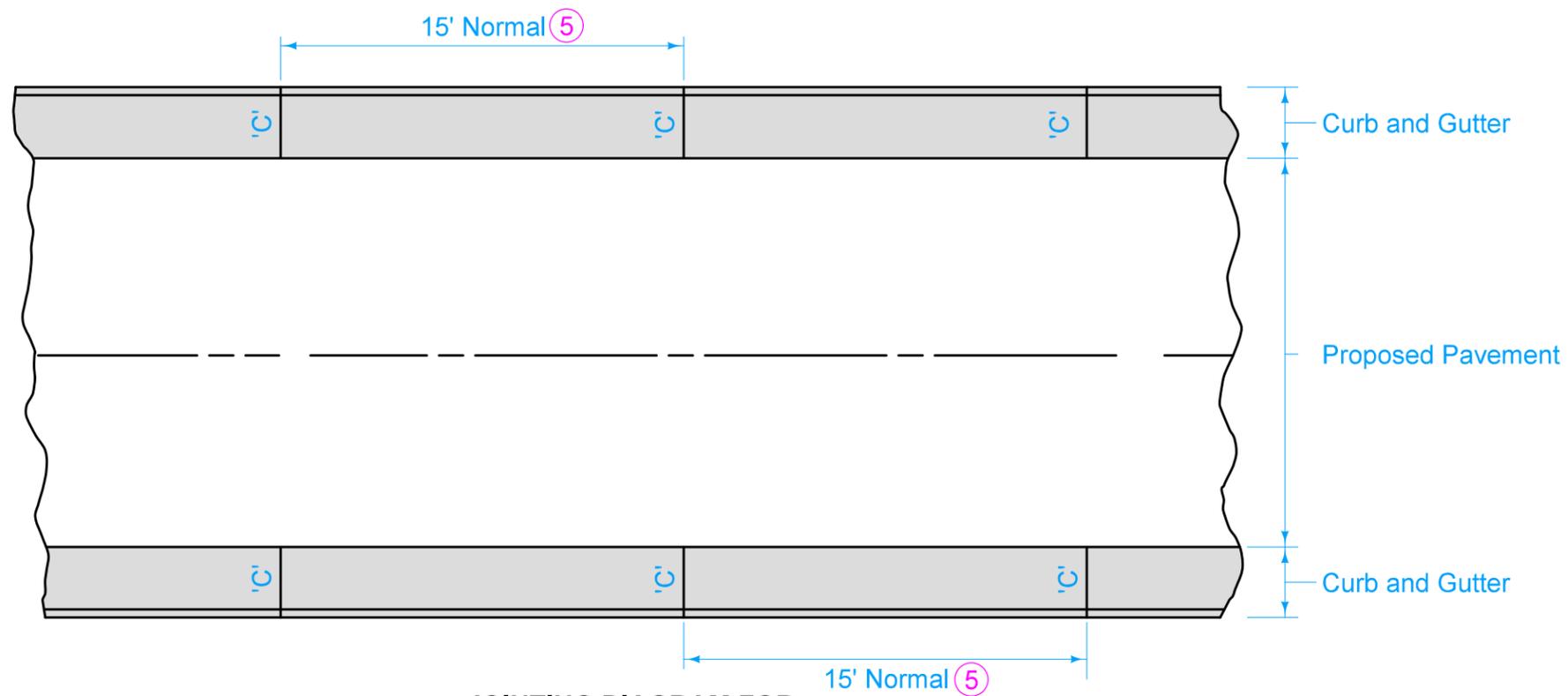


CURB AND GUTTER UNIT

		REVISION	
		6	10-21-25
FIGURE 7010.102	STANDARD ROAD PLAN	PV-102	
		SHEET 1 of 2	

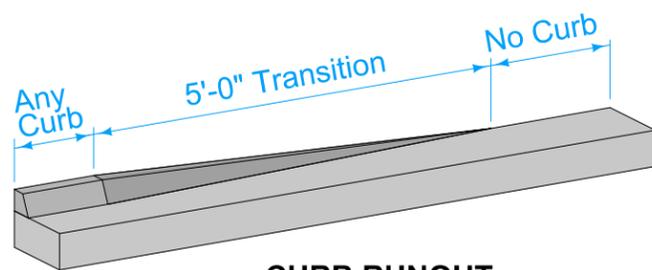
REVISIONS: Updated Sudas and IDOT Logos.

PCC CURB DETAILS

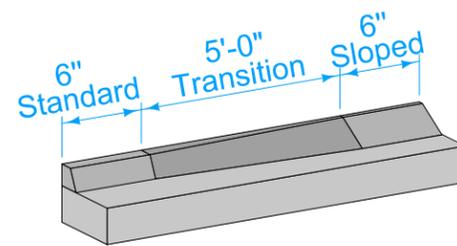


JOINTING DIAGRAM FOR CURB AND GUTTER UNIT

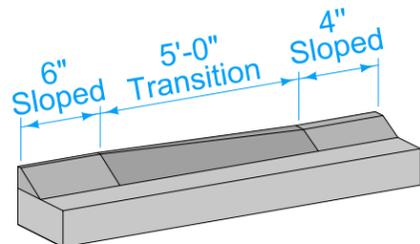
(5) If proposed pavement is PCC, match joint spacing for proposed pavement. Place 'E' joints in curb and gutter section where expansion joints are to be placed in proposed pavement.



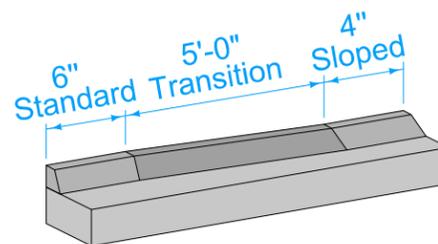
CURB RUNOUT FOR ALL CURBS



CURB TRANSITION FROM 6" STANDARD TO 6" SLOPED



CURB TRANSITION FROM 6" SLOPED TO 4" SLOPED

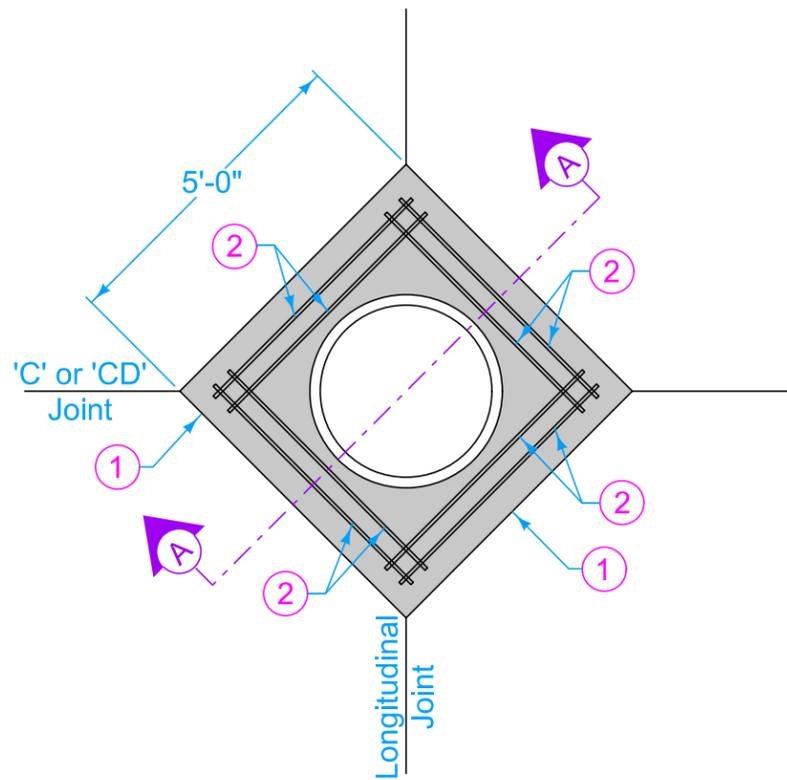


CURB TRANSITION FROM 6" STANDARD TO 4" SLOPED

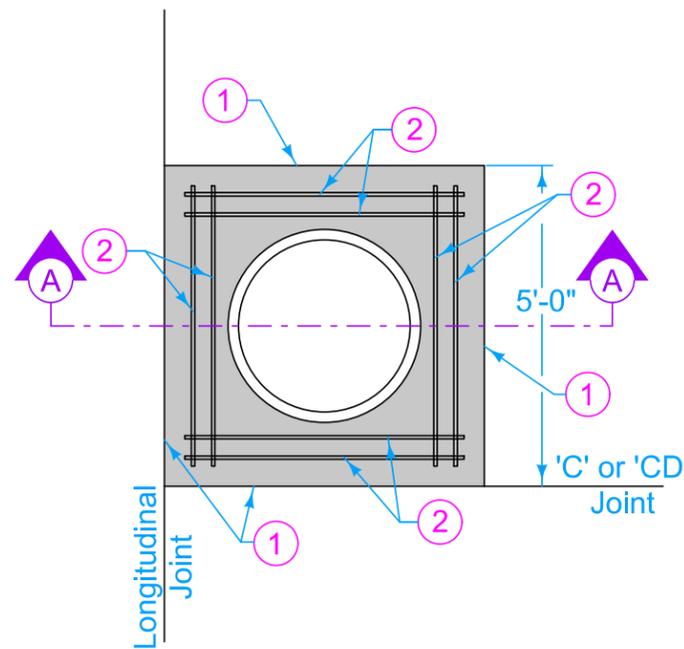
FIGURE 7010.102 SHEET 2 OF 2

		REVISION	
		6	10-21-25
FIGURE 7010.102	STANDARD ROAD PLAN	PV-102	
		SHEET 2 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	

PCC CURB DETAILS



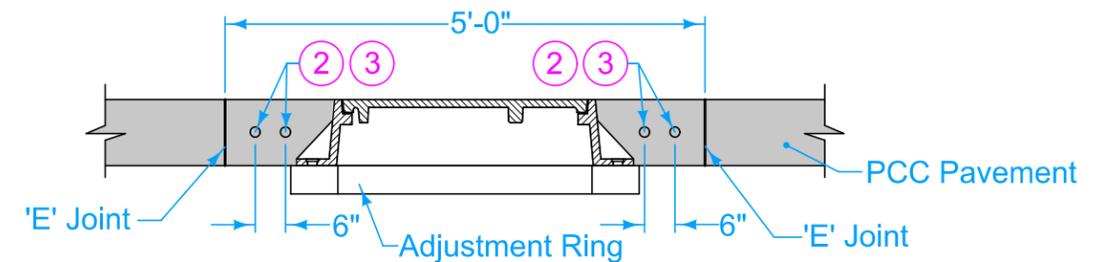
AT JOINT INTERSECTION



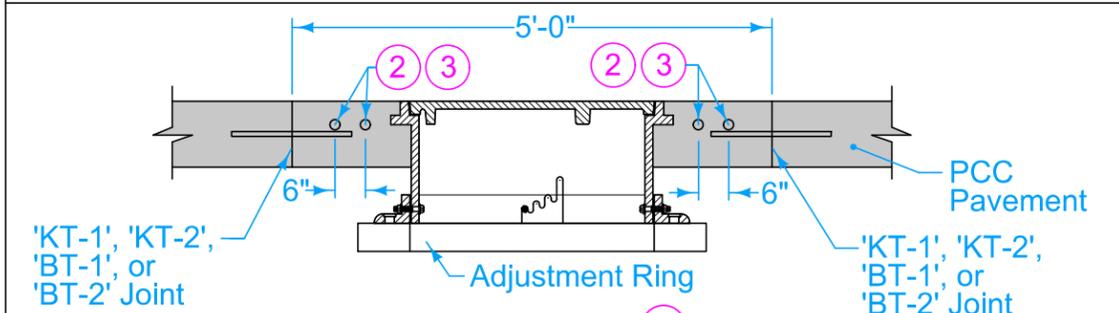
OFFSET AT JOINT INTERSECTION

Construct boxout with Class C concrete or match pavement class. Minimum 2 inches clear on reinforcement. Minimum 12 inches of concrete between outside of casting and nearest joint. Center casting within boxout area if possible.

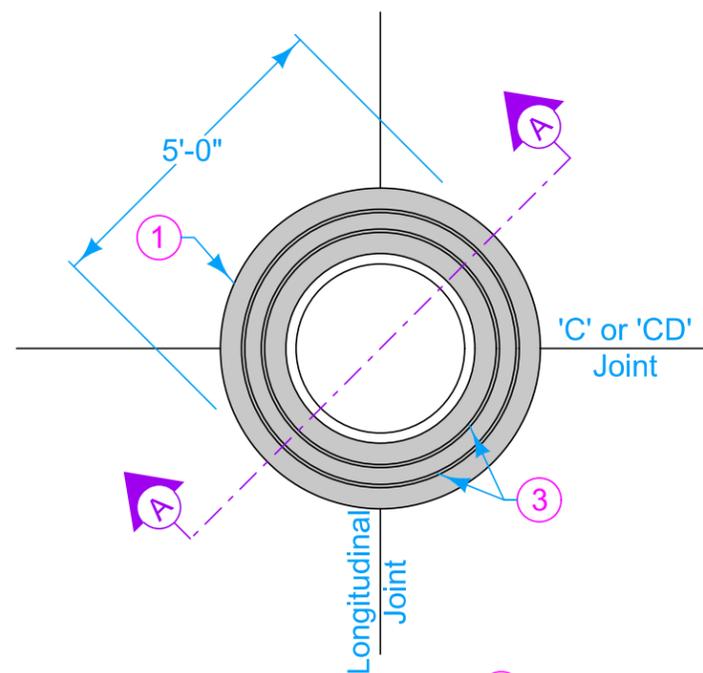
- ① 'KT-1', 'KT-2', 'BT-1', or 'BT-2' joint if three-piece floating casting (SW 601 Type B and D or SW-602 Type F) is used. 'E' joint if two-piece fixed casting (SW 601 Type A and C or SW-602 Type E) is used.
- ② 4 foot 8 inch (typ.) #4 bar. Place at mid-slab.
- ③ #4 hoops (variable length). Place at mid-slab.
- ④ No boxout is required for three-piece floating castings (SW 601 Type B and D or SW-602 Type F). If a boxout is used with a three-piece casting, construct as detailed in Section A-A for three-piece floating casting.
- ⑤ If a circular boxout is cut and extracted after PCC construction, a 'B' joint may be substituted for the 'E' joint if approved by the Engineer.



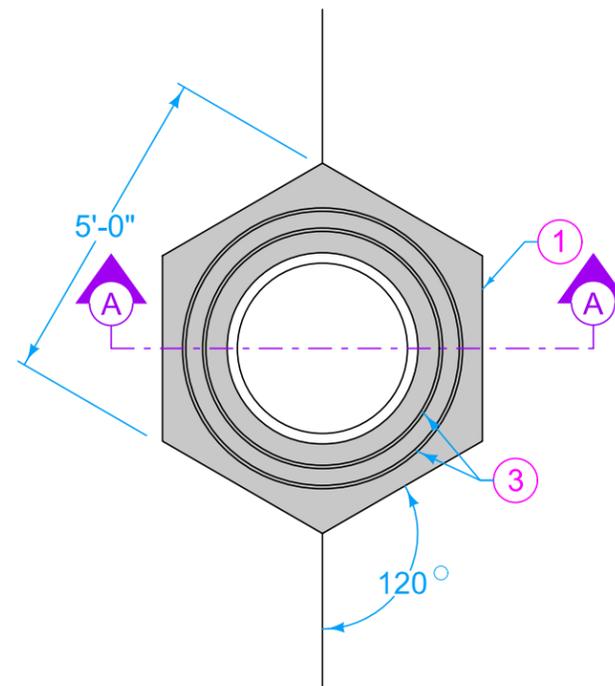
SECTION A-A
(For two-piece fixed casting)



SECTION A-A ④
(For three-piece floating casting)



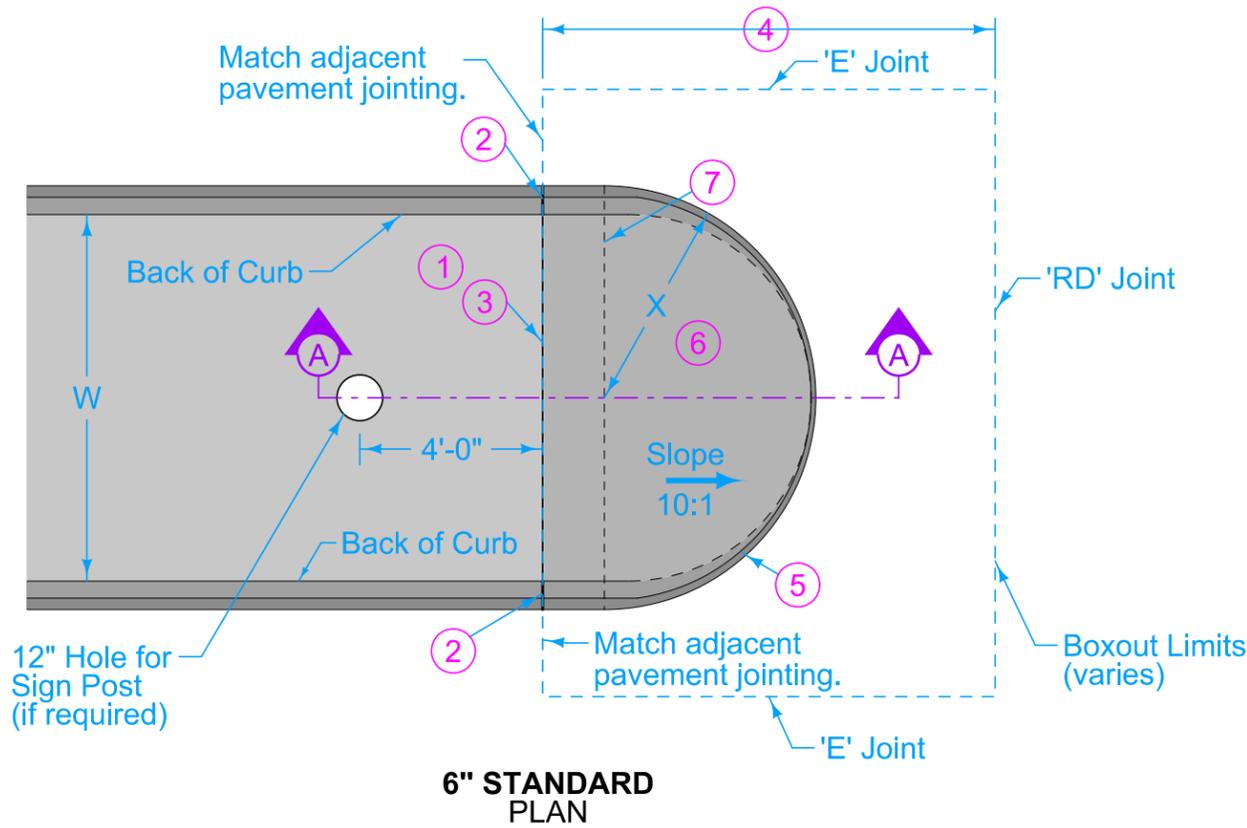
CIRCULAR



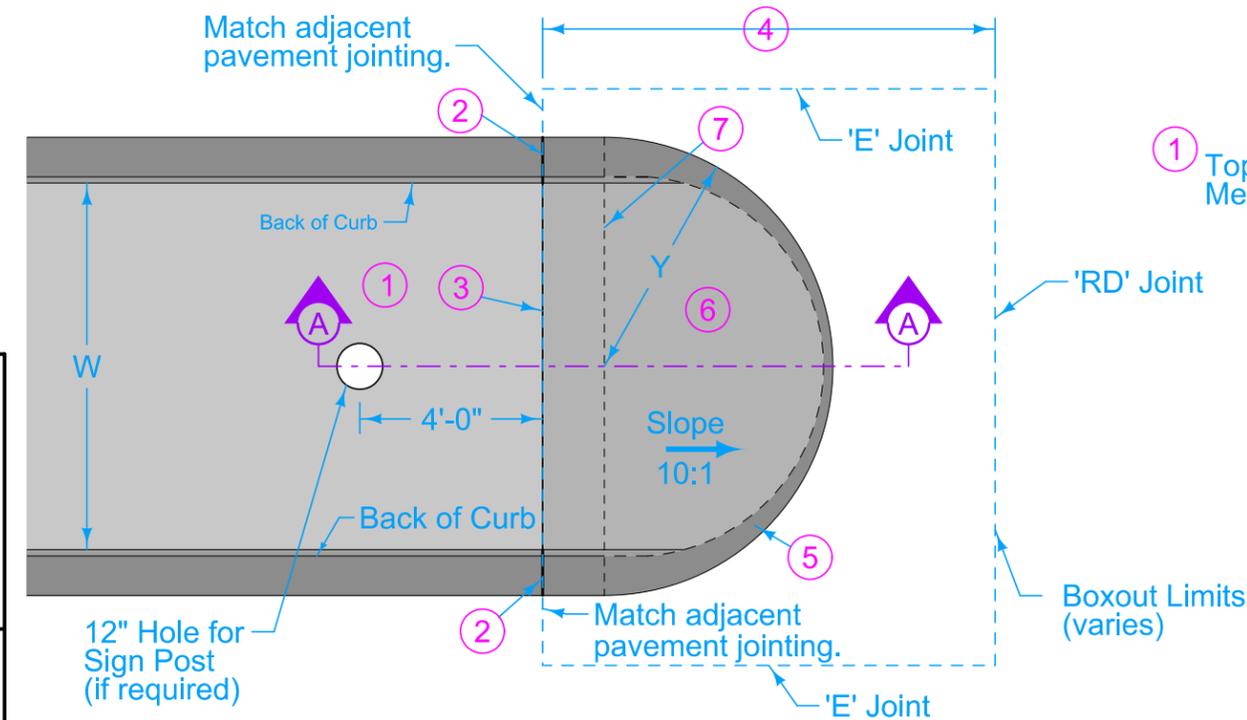
AT A SINGLE JOINT

		REVISION	
		3	10-21-25
FIGURE 7010.103	STANDARD ROAD PLAN	<h1>PV-103</h1>	
SHEET 1 of 1			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	

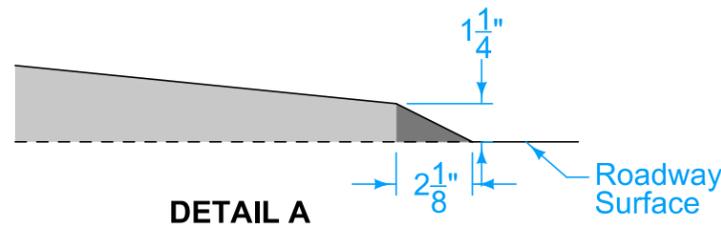
MANHOLE BOXOUTS IN
PCC PAVEMENT



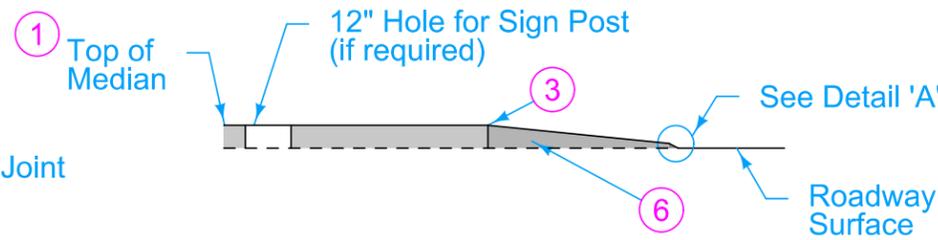
6" STANDARD PLAN



6" SLOPED PLAN



DETAIL A



SECTION A-A

RAMPED MEDIAN NOSE
(Median Width 8'-0" or Less)

- ① For details of paved median, see contract documents.
- ② 'EE' Joint. Expansion joints located at the end of normal curb.
- ③ 'E' Joint. If median is paved, place expansion joints at the end of normal curb.
- ④ If boxout length is less than or equal to 12 feet, provide 'C' Joint. If boxout length is greater than 12 feet, provide 'RD' joint.
- ⑤ Special shaping of curb.
- ⑥ Quantities for ramped median nose area is included in roadway pavement quantities.
- ⑦ When X or Y is 4 feet or greater the expansion joints will be at the beginning of the rounded median.
W = Width from back of curb to back of curb

$$X = W/2 + 7.5"$$

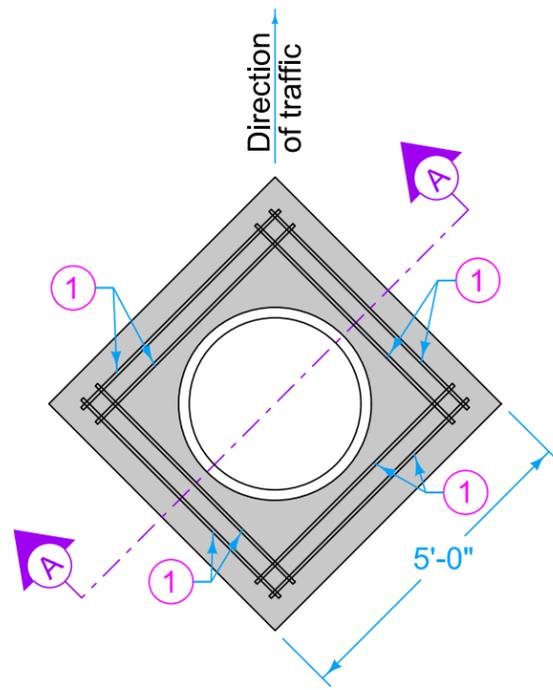
$$Y = W/2 + 12"$$

		REVISION	
		2	10-21-25
FIGURE 7010.104	STANDARD ROAD PLAN	PV-104	
		SHEET 1 of 1	

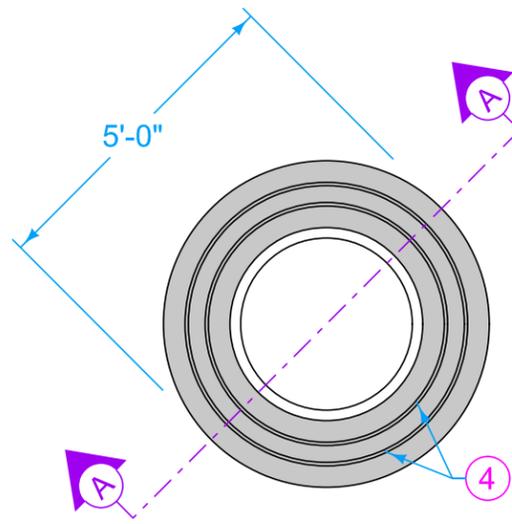
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR
 DESIGN METHODS ENGINEER

RAMPED MEDIAN NOSE



RECTANGULAR



CIRCULAR

Construct boxout with Class C concrete or match pavement class. Minimum 2 inches clear on reinforcement. Minimum 12 inches of concrete between outside of casting and nearest joint. Center casting within boxout area if possible.

- ① 4 foot 8 inch (typ.) #4 bar. Place at mid-slab.
- ② If boxout is constructed prior to placement of HMA overlay or final lift of HMA pavement, boxout may be constructed low, with a 'B' joint in place of the 'E' joint, and then final lift or overlay placed.
- ③ Apply tack coat.
- ④ #4 hoops (variable length). Place at mid-slab.

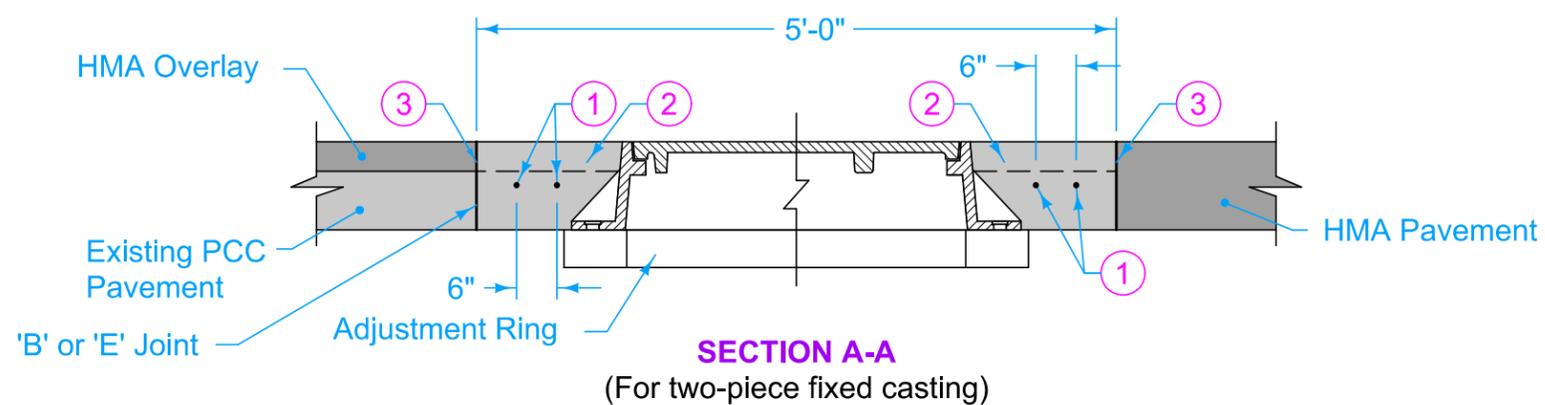
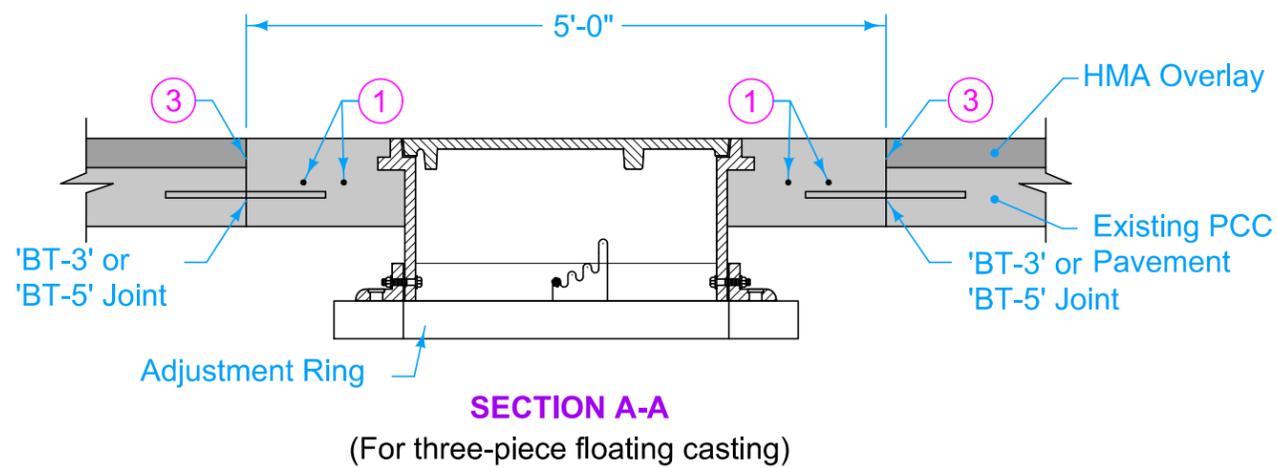


FIGURE 7020.201

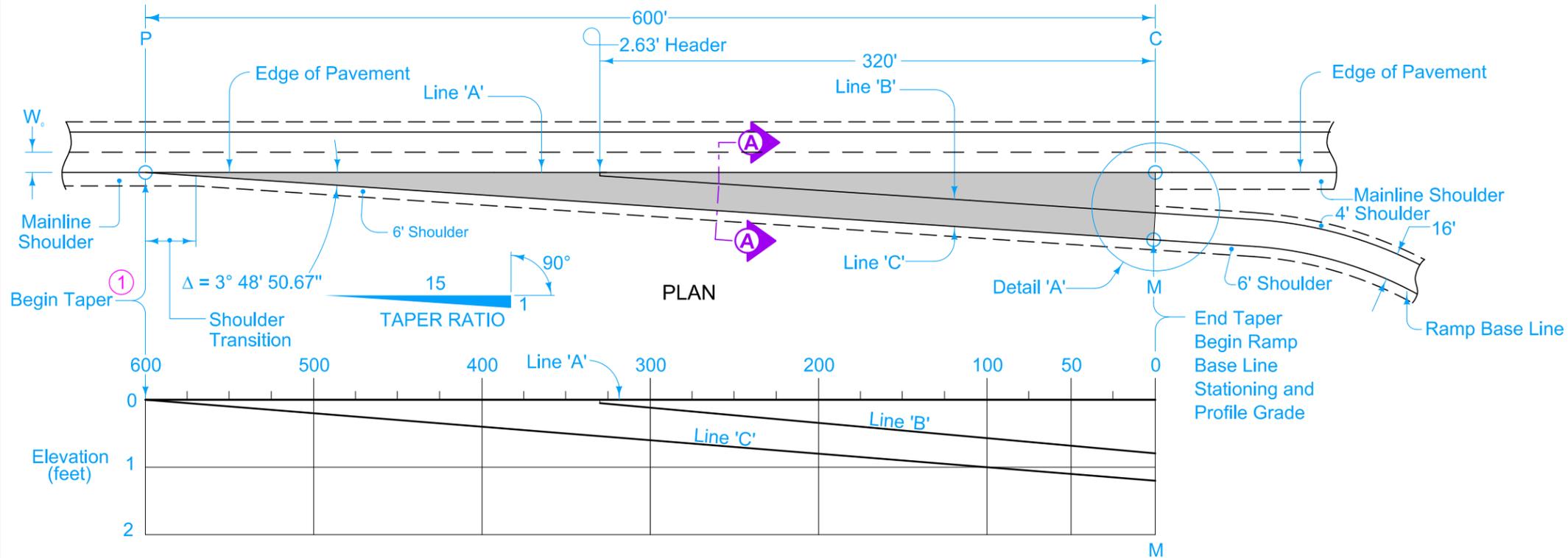
SHEET 1 OF 1

		REVISION	
		3	10-21-25
FIGURE 7020.201	STANDARD ROAD PLAN	PV-201	
		SHEET 1 of 1	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR
DESIGN METHODS ENGINEER

**MANHOLE BOXOUTS IN
HMA PAVEMENT AND
HMA OVERLAYS**



NOTE: The algebraic difference between profile grade for Ramp Base Line at M and relative profile grade of Mainline at C is 0.2%.

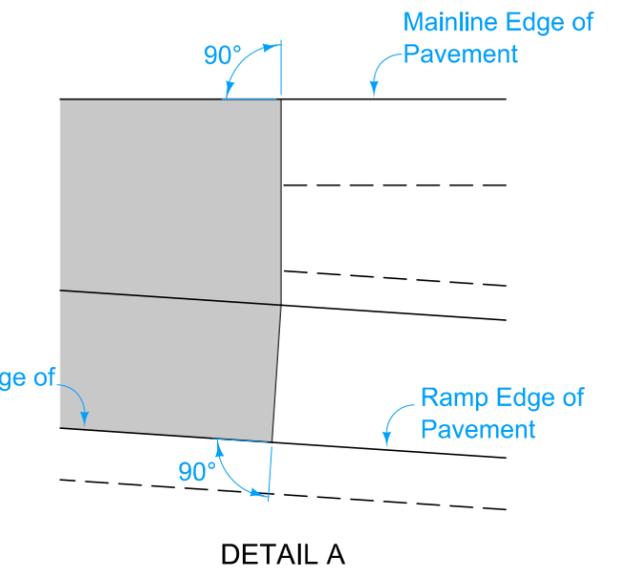
PROFILE

Construct ramp exit pavement the same thickness as mainline pavement.

Ramp exit pavement shown by shaded area is 1332 square yards.

For joint details, see PV-101.

- ① For header construction details at the beginning of taper, see Typical 7101 or Typical 7102.
- ② Construct subbase for ramp exit pavement the same thickness as mainline subbase.

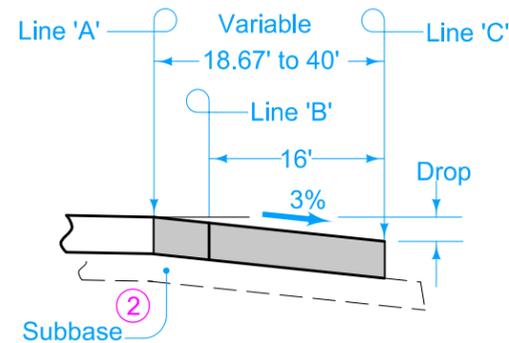


DETAIL A

DISTANCE FROM POINT C ALONG LINE 'A' (Ft.)		600	575	550	525	500	475	450	425	400	375	350	320	300	275	250	225	200	175	150	125	100	75	50	25	0	
From Line 'A' To Line 'B'	OFFSET (Ft.)												2.63	4.00	5.67	7.33	9.00	10.67	12.33	14.00	15.67	17.33	19.00	20.67	22.33	24.00	
	SLOPE (%)	← Constant 3.0% Slope →																									
	DROP (Ft.)													0.08	0.12	0.17	0.22	0.27	0.32	0.37	0.42	0.47	0.52	0.57	0.62	0.67	0.72
From Line 'B' To Line 'C'	OFFSET (Ft.)	← Constant 16' Offset →																									
	SLOPE (%)	← Constant 3.0% Slope →																									
	DROP (Ft.)													0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
From Line 'A' To Line 'C'	OFFSET (Ft.)	0	1.67	3.33	5.00	6.67	8.33	10.00	11.67	13.33	15.00	16.67															
	SLOPE (%)	← Constant 3.0% Slope →																									
	DROP (Ft.)	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.56	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	

C Ramp Taper Edge of Pavement

M

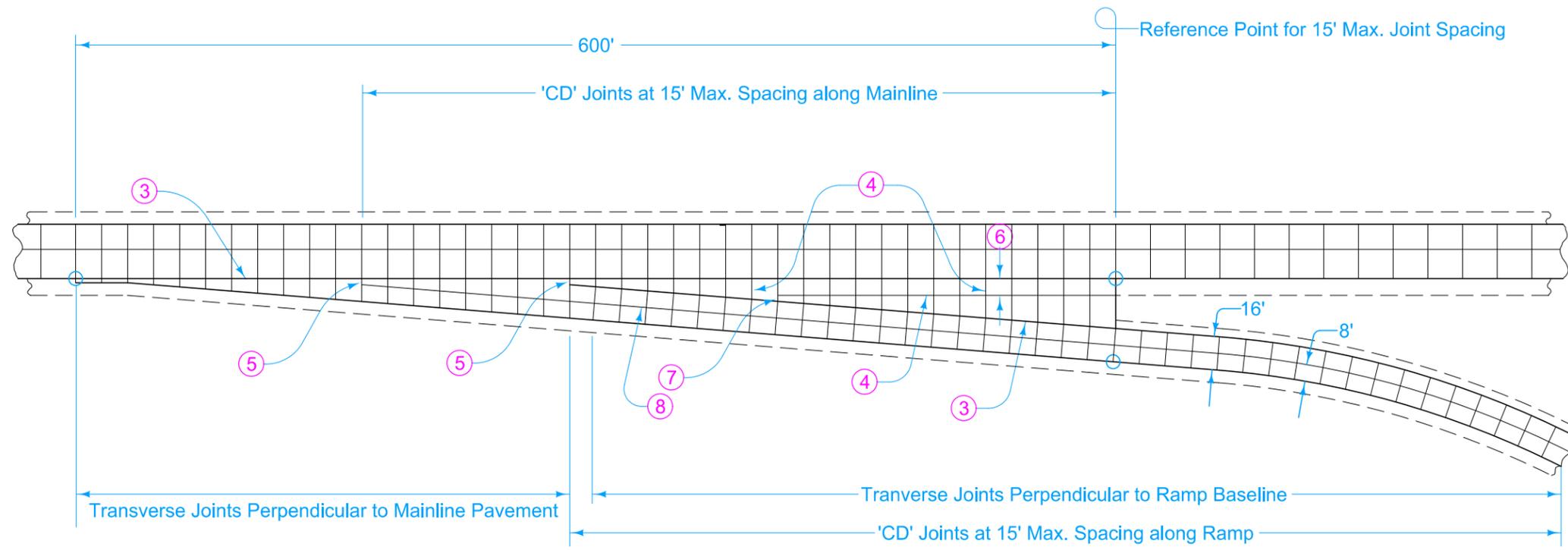


SECTION A-A

TABLE OF SHOULDER TRANSITION LENGTHS			
W _o	Shoulder Width beyond Edge of Mainline Pavement		
		8'	10'
12'	NA	60'	90'

NOTE: W_o is the width of the outside lane to the Edge of Pavement.

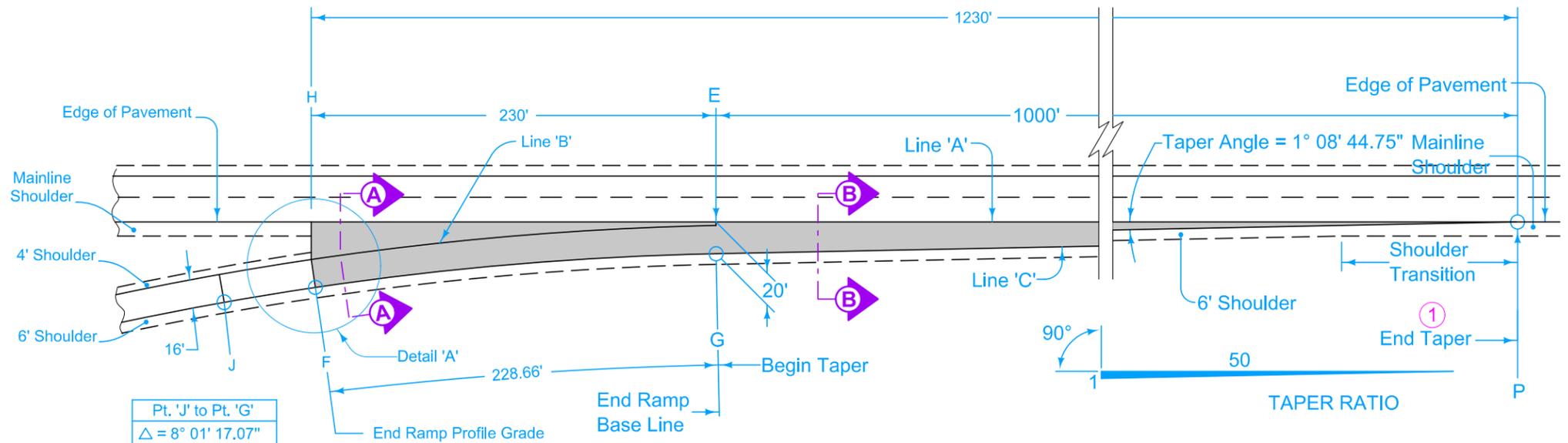
	REVISION	
	8	10-21-25
STANDARD ROAD PLAN		PV-410
REVISIONS: Removed 'KT-2' joint option.		SHEET 1 of 2
 APPROVED BY DESIGN METHODS ENGINEER		
DECELERATION TAPER FOR 16' RAMP		



- ③ 'BT-2' Joint.
- ④ 'C' Joint.
- ⑤ 'B' Joint. 2' minimum. 4' maximum.
- ⑥ 10' minimum or equal to mainline shoulder width.
- ⑦ 'B' or 'C' Joint. 2' minimum. 4' maximum.
- ⑧ 'L-2' Joint.

16' EXIT RAMP

	REVISION	
	8	10-21-25
	PV-410 SHEET 2 of 2	
REVISIONS: Removed 'KT-2' joint option.		
APPROVED BY DESIGN METHODS ENGINEER		
DECELERATION TAPER FOR 16' RAMP		



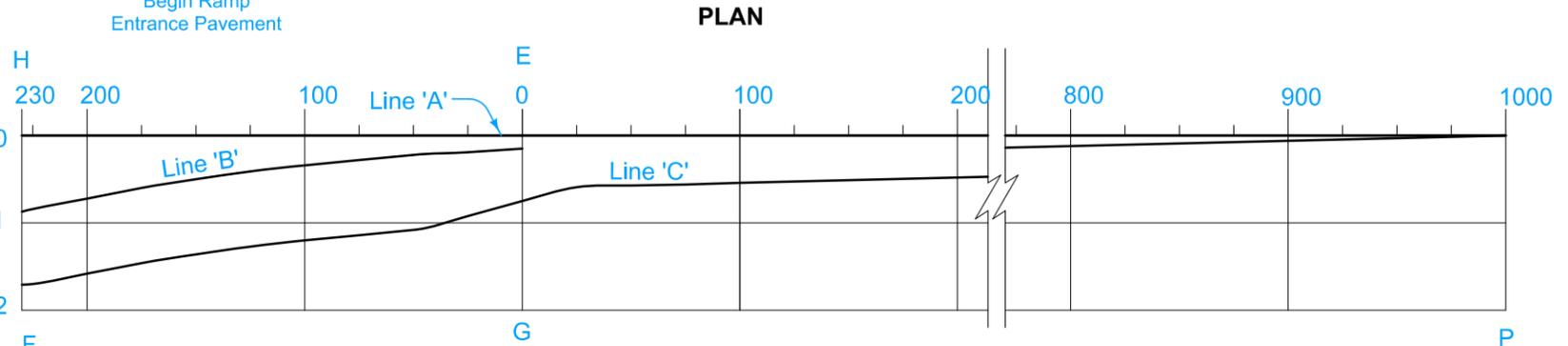
Construct ramp entrance pavement the same thickness as mainline pavement.

Ramp entrance pavement shown by shaded area is 1793 square yards.

For joint details, see PV-101

- For header construction details at the end of taper, see Typical 7101 or Typical 7102.
- Construct subbase for ramp entrance pavement the same thickness as mainline subbase.

Pt. 'J' to Pt. 'G'
 $\Delta = 8^\circ 01' 17.07''$
 $T = 140.23'$
 $L = 280.00'$
 $E = 4.91'$
 $R = 2000.00'$



NOTE: The algebraic difference between profile grade for Ramp Base Line at F and relative profile grade of Mainline at H is 0.54%.

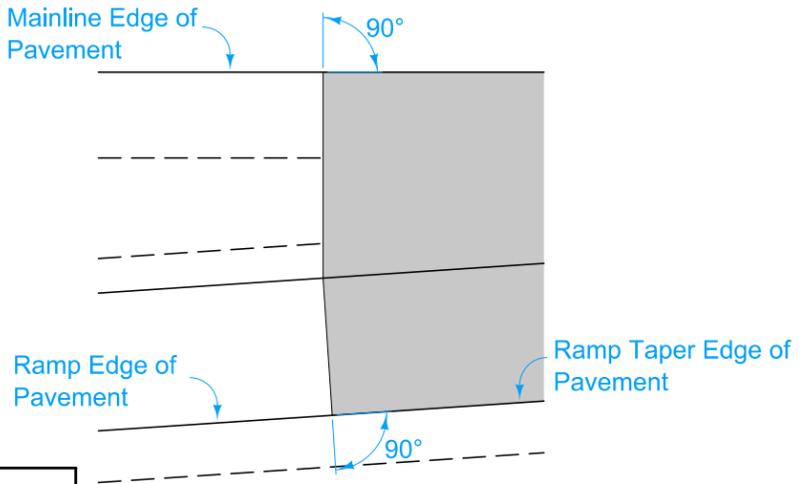


TABLE OF OFFSETS AND DROPS FOR 16' RAMP TAPER

Distance From Point E Along Line 'A' (Ft.)	230	225	200	175	150	125	100	75	50	25	0	25	50	75	100	200	300	400	500	600	700	800	900	1000	
From Line 'A' To Line 'B'	Offset (Ft.)	21.76	21.10	17.95	15.11	12.59	10.38	8.48	6.90	5.62	4.66	4.0													
	Slope (%)	← Constant 4.0% Slope →																							
	Drop (Ft.)	0.87	0.84	0.72	0.60	0.50	0.42	0.34	0.28	0.22	0.19	0.15													
From Line 'B' To Line 'C'	Offset (Ft.)	← Constant 16.0' Offset →																							
	Slope (%)	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	5.40	4.58	3.78													
	Drop (Ft.)	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.73	0.60													
From Line 'A' To Line 'C'	Offset (Ft.)												19.5	19.0	18.5	18.0	16.0	14.0	12.0	10.0	8.0	6.0	4.0	2.0	0.0
	Slope (%)												← Constant 3.0% Slope →												
	Drop (Ft.)	1.73	1.70	1.58	1.46	1.36	1.28	1.20	1.14	1.08	0.92	0.75	0.59	0.57	0.56	0.54	0.48	0.42	0.36	0.30	0.24	0.18	0.12	0.06	0.0
Distance From Point G Along Line 'C' (Ft.)		228.66	223.66	198.66	173.70	148.77	123.87	99.00	74.15	49.31	24.49	0.00													

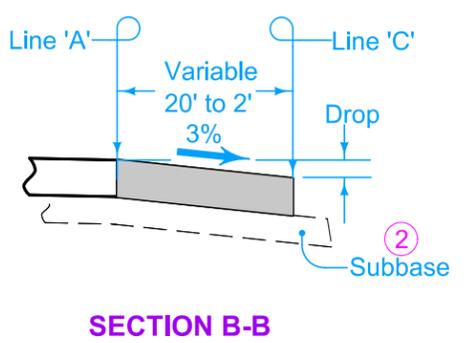
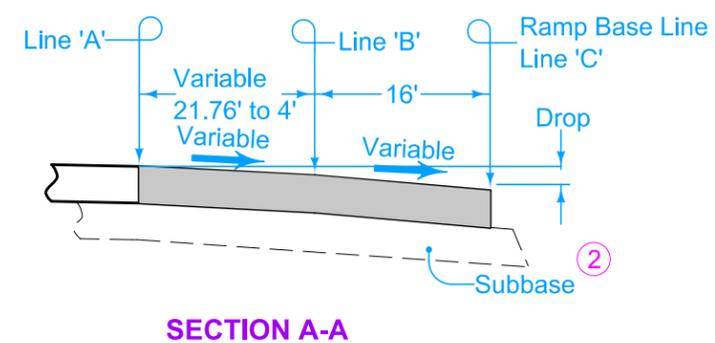


TABLE OF SHOULDER TRANSITION LENGTHS

W _o	Shoulder Width beyond Edge of Mainline Pavement		
	8'	10'	12'
12'	NA	200'	300'

NOTE: W_o is the width of the outside lane to the Edge of Pavement.

STANDARD ROAD PLAN

REVISIONS: Removed 'KT-2' joint option.

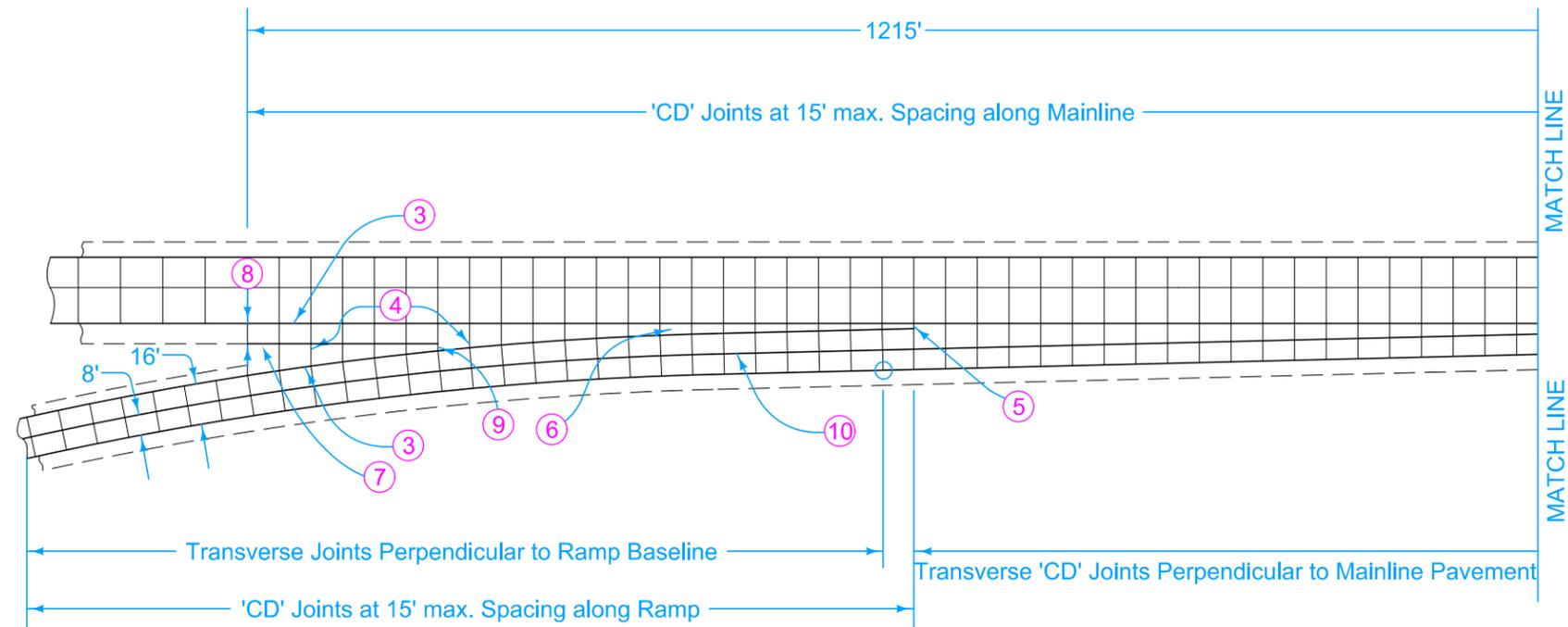
APPROVED BY DESIGN METHODS ENGINEER

REVISION	
7	10-21-25

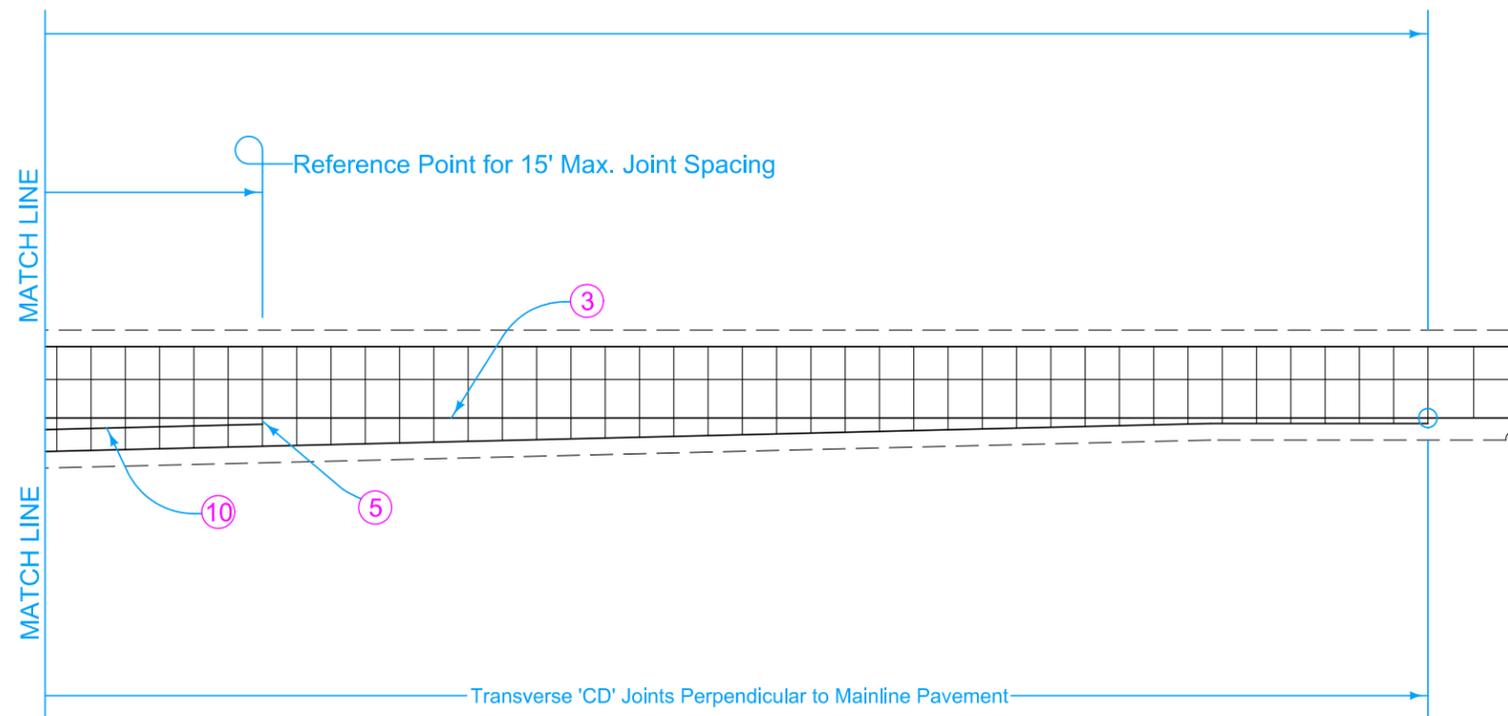
PV-411

SHEET 1 of 2

**ACCELERATION TAPER
FOR 16' ENTRANCE RAMP**



- ③ 'BT-2' Joint.
- ④ 'C' Joint.
- ⑤ 'B' Joint. 2' minimum, 4' maximum.
- ⑥ Construct transverse joints on the entrance ramp taper perpendicular to the tapered edge where the gore area is greater than 4 feet.
- ⑦ 'C' Joint equal to mainline shoulder width.
- ⑧ 10' minimum, or equal to mainline shoulder width.
- ⑨ 'B' or 'C' Joint. 2' minimum. 4' maximum.
- ⑩ 'L-2' Joint.



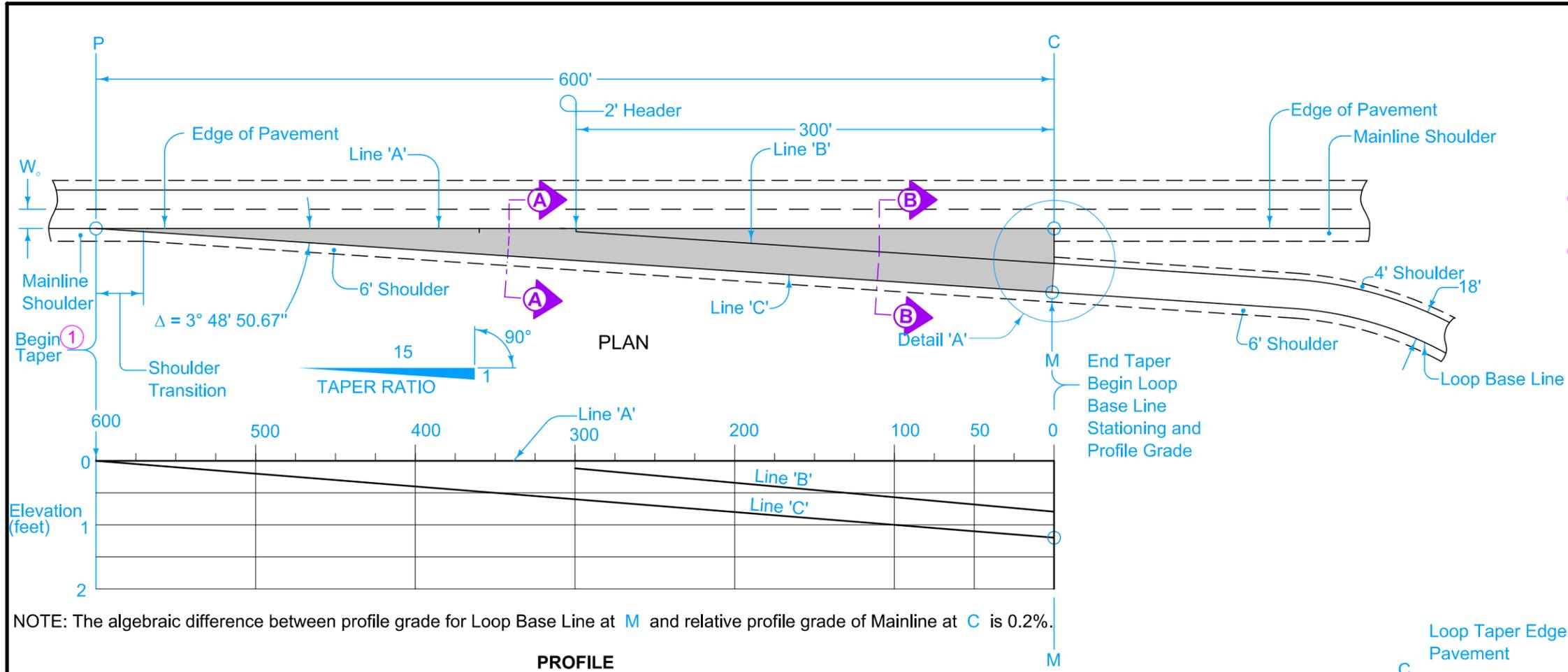
16' ENTRANCE RAMP

 STANDARD ROAD PLAN	REVISION	
	7	10-21-25
PV-411		SHEET 2 of 2

REVISIONS: Removed 'KT-2' joint option.

APPROVED BY DESIGN METHODS ENGINEER

**ACCELERATION TAPER
 FOR 16' ENTRANCE RAMP**



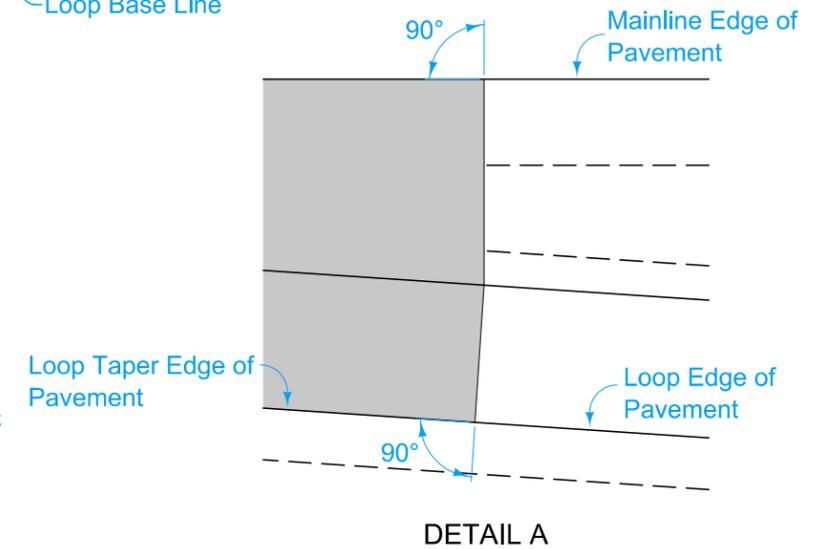
Construct loop exit pavement the same thickness as mainline pavement.

Loop exit pavement shown by shaded area is 1332 square yards.

For joint details, see PV-101

① For header construction details at the beginning of taper, see Typical 7101 or Typical 7102.

② Construct subbase for loop exit pavement the same thickness as mainline subbase.

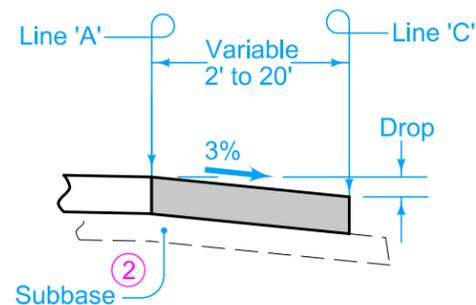


NOTE: The algebraic difference between profile grade for Loop Base Line at M and relative profile grade of Mainline at C is 0.2%.

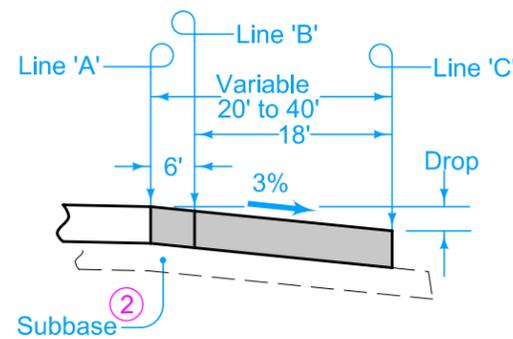
PROFILE

TABLE OF OFFSETS AND DROPS FOR 18' LOOP TAPER

DISTANCE FROM POINT C ALONG LINE 'A' (Ft.)		600	575	550	525	500	475	450	425	400	375	350	325	300	275	250	225	200	175	150	125	100	75	50	25	0			
From Line 'A' To Line 'B'	OFFSET (Ft.)													2.00	3.67	5.33	7.00	8.67	10.33	12.00	13.67	15.33	17.00	18.67	20.33	22.00			
	SLOPE (%)													← Constant 3.0% Slope →															
	DROP (Ft.)														0.06	0.11	0.16	0.21	0.26	0.31	0.36	0.41	0.46	0.51	0.56	0.61	0.66		
From Line 'B' To Line 'C'	OFFSET (Ft.)																												
	SLOPE (%)																												
	DROP (Ft.)																												
From Line 'A' To Line 'C'	OFFSET (Ft.)	0	1.67	3.33	5.00	6.67	8.33	10.00	11.67	13.33	15.00	16.67	18.33																
	SLOPE (%)	← Constant 3.0% Slope →																											
	DROP (Ft.)	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.56	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20			



SECTION A-A

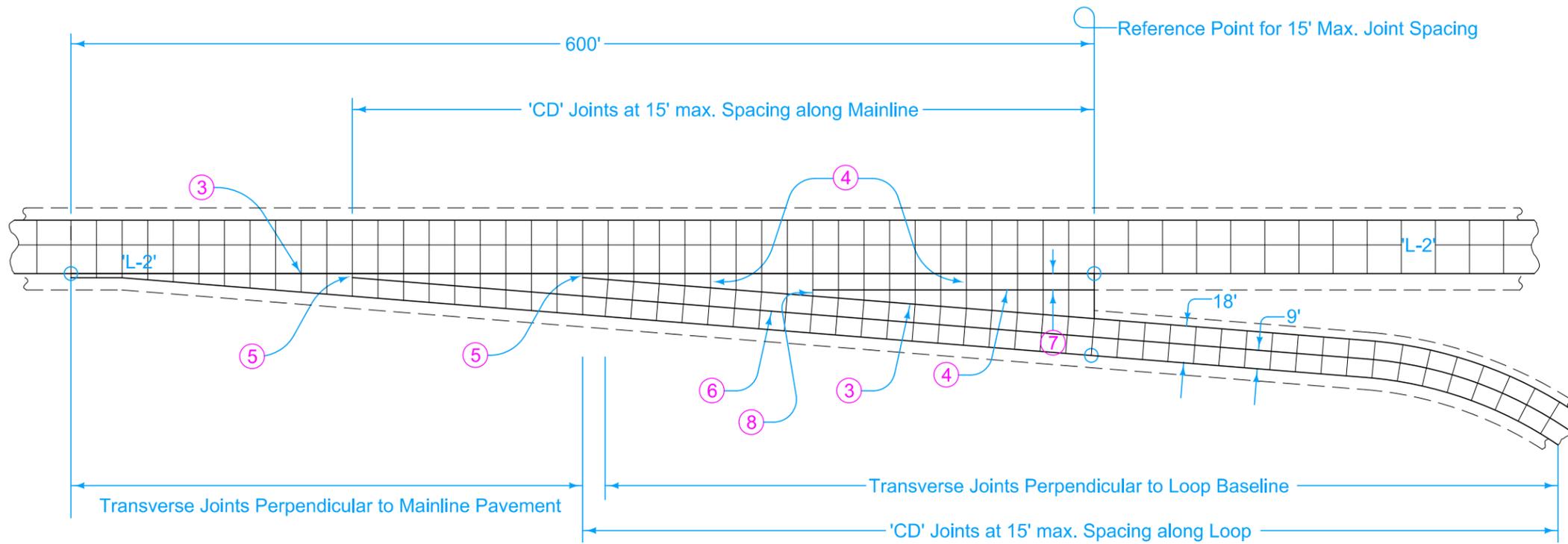


SECTION B-B

TABLE OF SHOULDER TRANSITION LENGTHS			
W _o	Shoulder Width beyond Edge of Mainline Pavement		
		8'	10'
12'	NA	60'	90'

NOTE: W_o is the width of the outside lane to the Edge of Pavement.

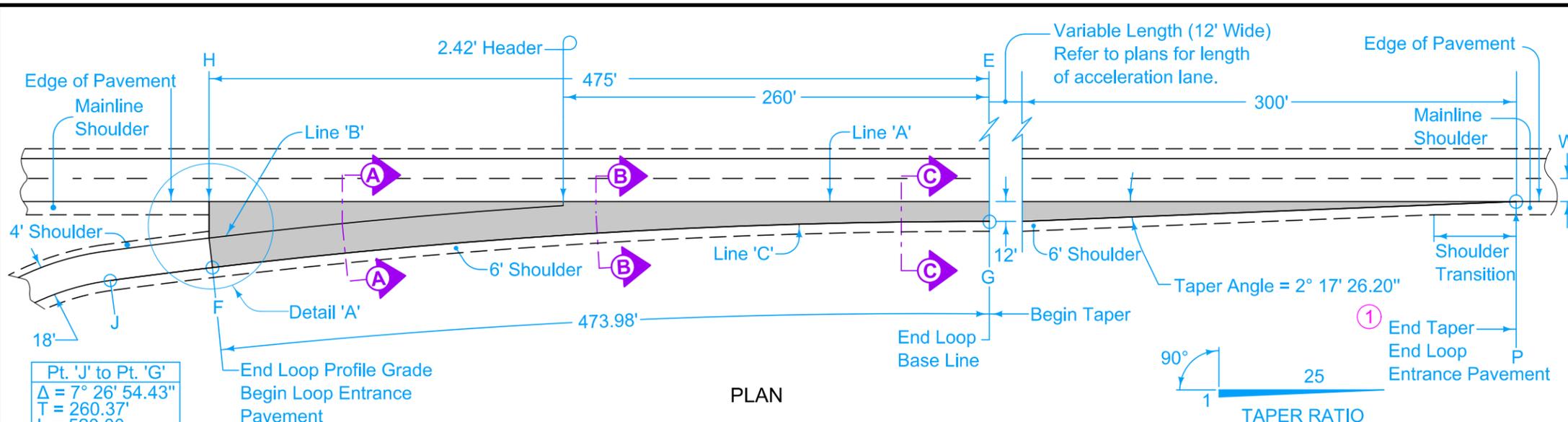
	REVISION	
	7	10-21-25
STANDARD ROAD PLAN		PV-412
REVISIONS: Removed 'KT-2' joint option.		SHEET 1 of 2
 APPROVED BY DESIGN METHODS ENGINEER		
DECELERATION TAPER FOR 18' EXIT LOOP		



- ③ 'BT-2' Joint.
- ④ 'C' Joint.
- ⑤ 'B' Joint. 2' minimum, 4' maximum.
- ⑥ 'L-2' Joint.
- ⑦ 10' minimum or equal to mainline shoulder width.
- ⑧ 'B' or 'C' Joint. 2' minimum. 4' maximum.

18' EXIT LOOP

	REVISION	
	7	10-21-25
STANDARD ROAD PLAN		PV-412
		SHEET 2 of 2
REVISIONS: Removed 'KT-2' joint option.		
APPROVED BY DESIGN METHODS ENGINEER		
DECELERATION TAPER FOR 18' EXIT LOOP		



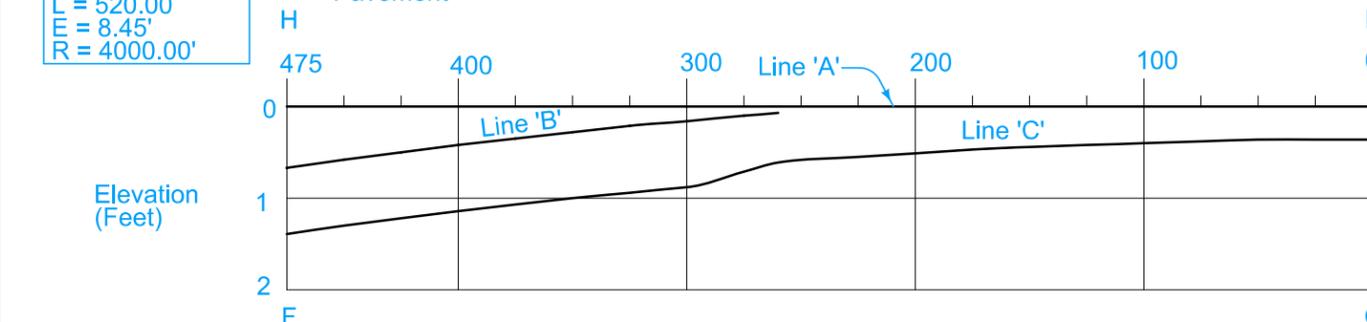
Construct loop entrance pavement the same thickness as mainline pavement.

Loop entrance pavement shown by shaded area is 1329 square yards.

For joint details, see PV-101.

① For header construction details at the end of taper, see Typical 7101 or Typical 7102.

② Construct subbase for loop entrance pavement the same thickness as mainline subbase.



NOTE: The algebraic difference between profile grade for Loop Base Line at F and relative profile grade of Mainline at H is 0.36%.

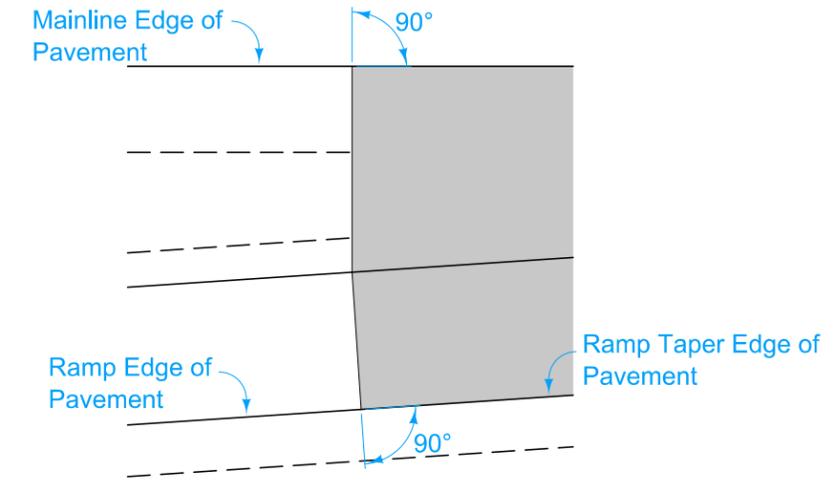


TABLE OF OFFSETS AND DROPS FOR 18' LOOP TAPER

Distance From Point E Along Line 'A' (Ft.)		475	450	425	400	375	350	325	300	275	260	225	200	175	150	125	100	75	50	25	0	
From Line 'A' To Line 'B'	Offset (Ft.)	22.18	19.28	16.54	13.96	11.54	9.27	7.17	5.22	3.42	2.42											
	Slope (%)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00											
	Drop (Ft.)	0.67	0.58	0.50	0.42	0.35	0.28	0.22	0.16	0.10	0.07											
From Line 'B' To Line 'C'	Offset (Ft.)	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0											
	Slope (%)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.38	3.00										
	Drop (Ft.)	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.61	0.54											
From Line 'A' To Line 'C'	Offset (Ft.)											18.33	17.00	15.83	14.81	13.95	13.25	12.70	12.31	12.08	12.00	
	Slope (%)											3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
	Drop (Ft.)	1.39	1.30	1.22	1.14	1.07	1.00	0.94	0.88	0.71	0.61	0.55	0.51	0.47	0.44	0.42	0.40	0.38	0.37	0.36	0.36	
Distance From Point G Along Line 'C' (Ft.)		473.98	448.93	423.89	398.87	373.86	348.87	323.90	298.93	273.98	260.18	225.12	200.08	175.06	150.03	125.02	100.01	75.00	50.00	25.00	0.00	

NOTE: From G to P cross-slope between Line 'A' and Line 'C' is a constant 3%.

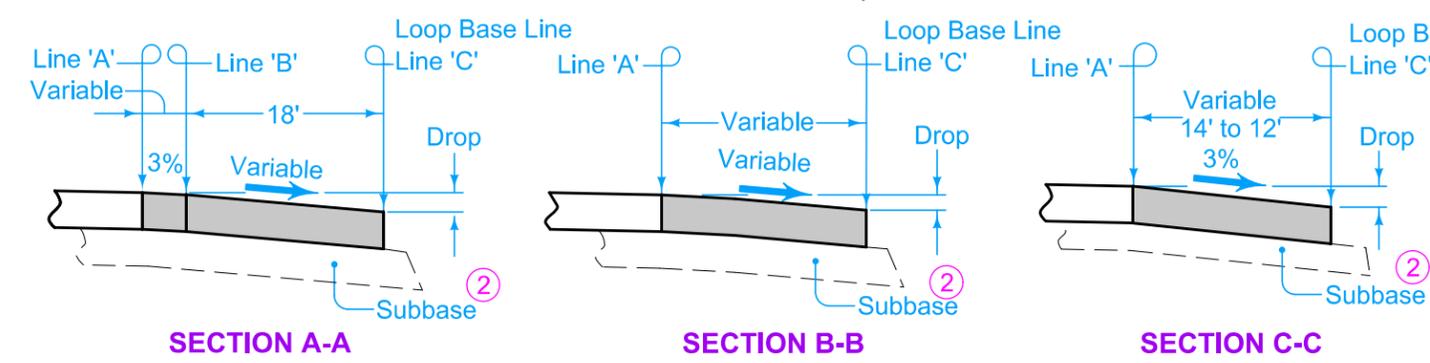


TABLE OF SHOULDER TRANSITION LENGTHS

W _s	Shoulder Width beyond Edge of Mainline Pavement		
	8'	10'	12'
12'	NA	100'	150'

NOTE: W_s is the width of the outside lane to the Edge of Pavement.

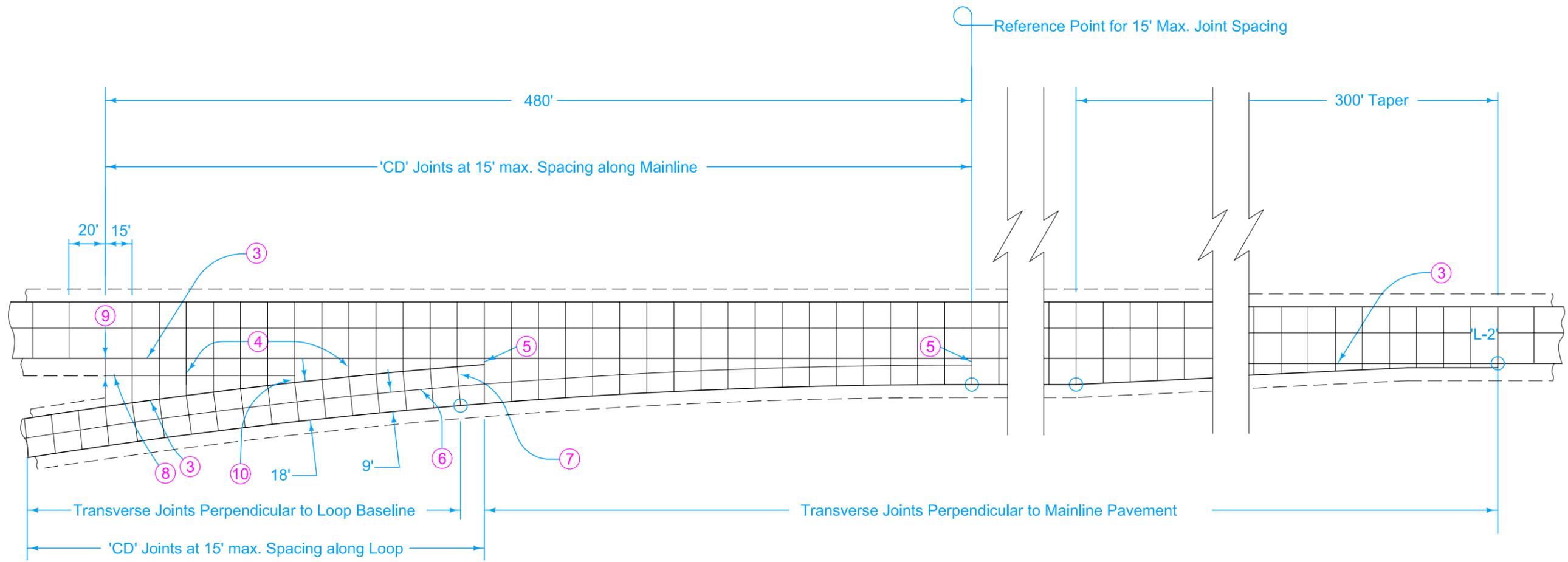
STANDARD ROAD PLAN

REVISIONS: Removed 'KT-2' joint option.

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

ACCELERATION TAPER FOR 18' ENTRANCE LOOP

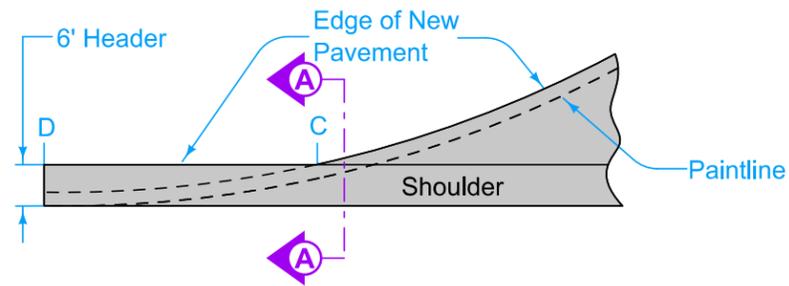
REVISION	
7	10-21-25
PV-414	
SHEET 1 of 2	



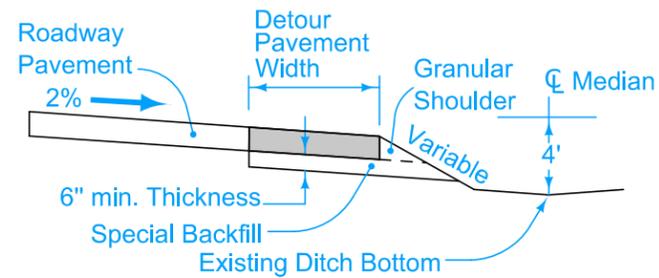
18' ENTRANCE LOOP

- ③ 'BT-2' Joint.
- ④ 'C' Joint.
- ⑤ 'B' Joint. 2' minimum, 4' maximum.
- ⑥ 'L-2' Joint.
- ⑦ Construct transverse joints on the entrance loop taper perpendicular to the loop baseline where the gore area is 4 feet or greater.
- ⑧ 'C' Joint equal to mainline shoulder.
- ⑨ 10' minimum or equal to mainline shoulder width.
- ⑩ 'B' or 'C' Joint. 2' minimum. 4' maximum.

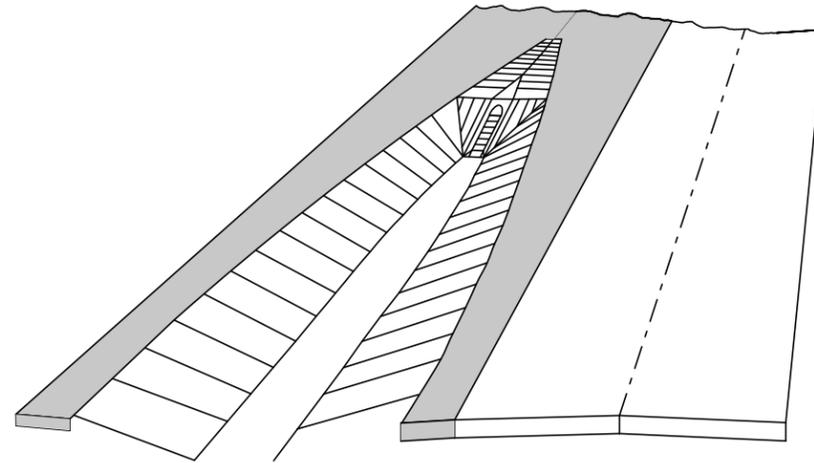
 STANDARD ROAD PLAN	REVISION	
	7	10-21-25
PV-414		SHEET 2 of 2
REVISIONS: Removed 'KT-2' joint option.		
 APPROVED BY DESIGN METHODS ENGINEER		
ACCELERATION TAPER FOR 18' ENTRANCE LOOP		



DETAIL 'A'



SECTION A-A



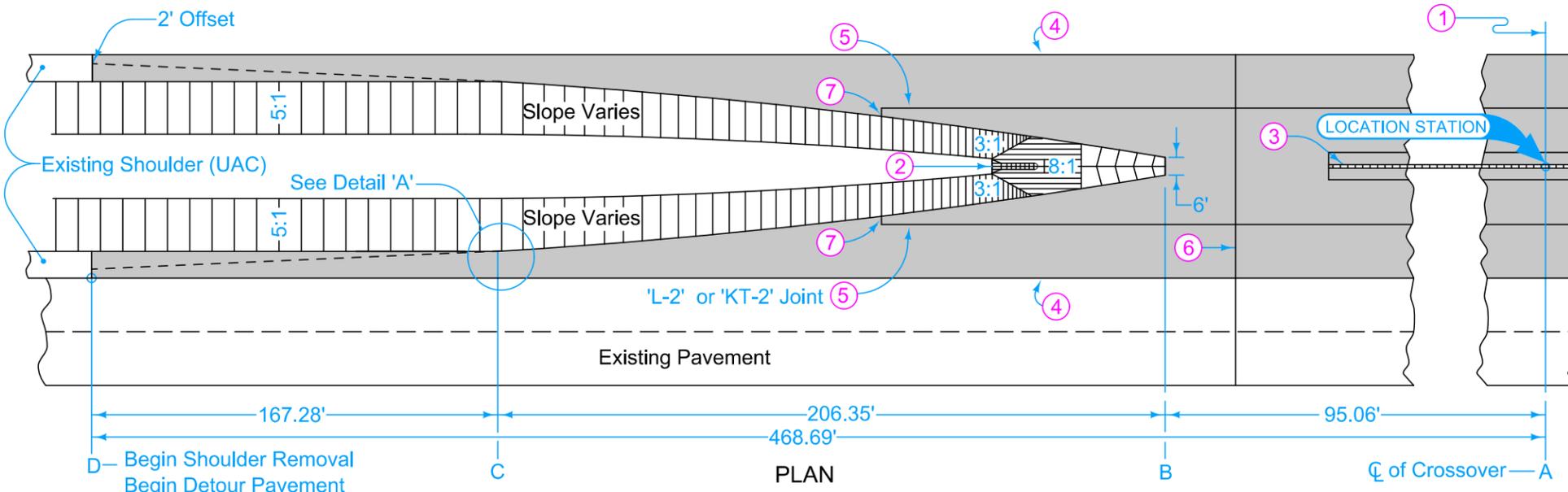
PERSPECTIVE VIEW
DITCH SLOPE AND BEVELED PIPE

Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.

- ① Median crossover is symmetrical about centerline.
- ② Beveled pipe and guard. See DR-212.
- ③ Slotted drain for median crossover. See DR-502.
- ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out.
'BT-3' joint if mainline pavement is existing.
'B' joint if Detour Pavement is HMA.
- ⑤ For PCC Detour Pavement, 'BT-2' or 'L-2' spaced at one-quarter median width.
- ⑥ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ⑦ For PCC Detour Pavement, 2 foot 'C' Joint.

DESIGN QUANTITY TABLE

Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
2695	1265	275



PLAN



- Possible Contract Items:
- Granular Shoulders, Type A
 - Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Removal of Pavement
 - Special Backfill

Possible Tabulation:
112-8

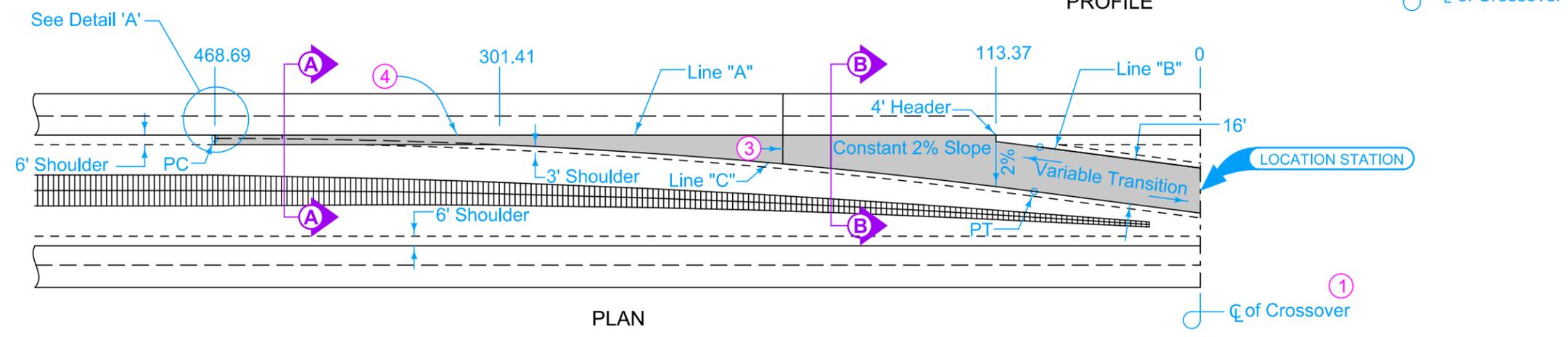
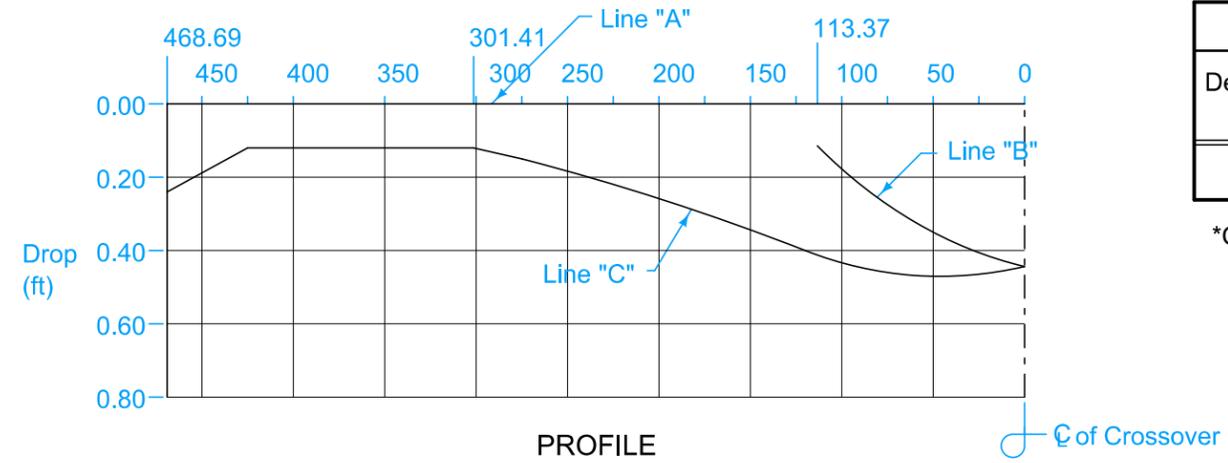
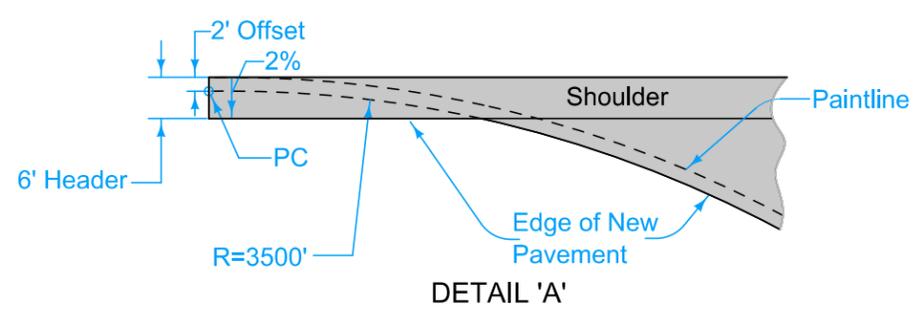
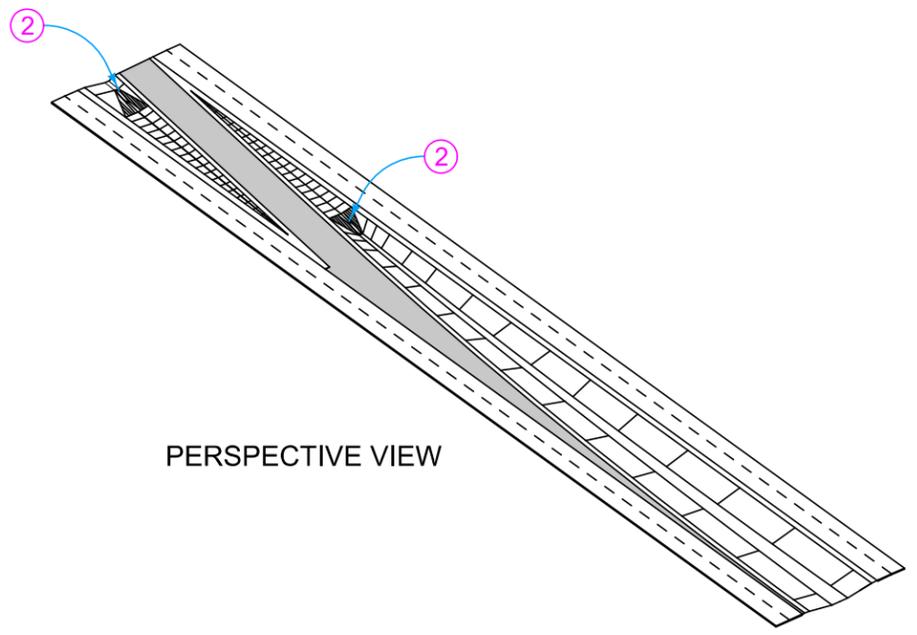
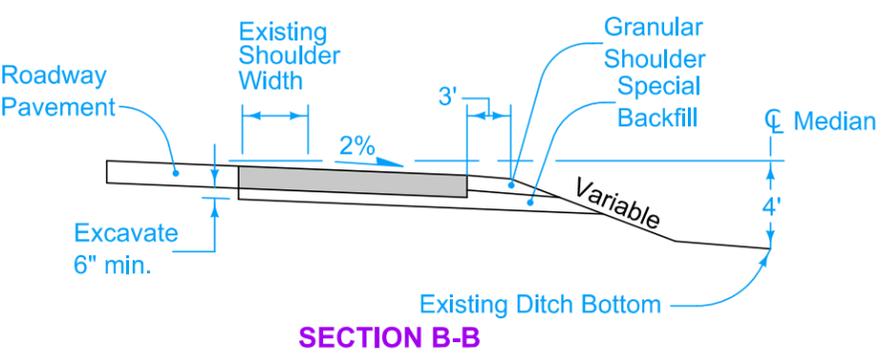
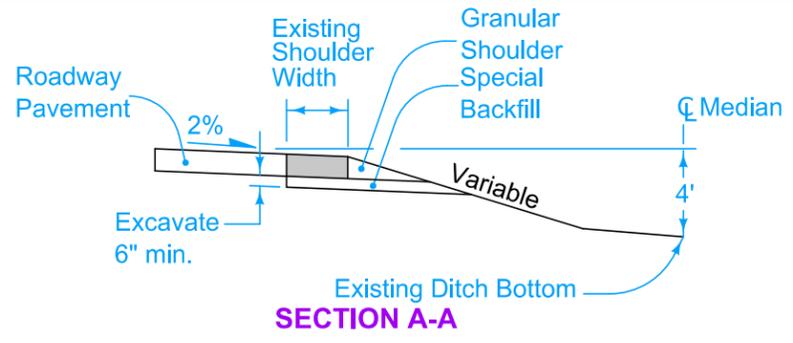
TABLE OF OFFSETS AND DROPS (PAVED SHOULDERS)

Distance from Location Station (Feet)	468.69	450	425	400	375	350	325	301.41	300	275	250	225	200	175	150	125	100	95.06	75.0	0
Offset from inside edge of Pavement (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.07	7.36	8.84	10.49	12.33	14.34	16.54	18.92	21.47	22.00	25.00	25.00
Cross-Slope from inside edge of Pavement	4.00%	3.33%	2.44%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Drop from inside edge of Pavement (Feet)	0.24	.20	0.15	0.12	0.12	0.12	0.12	0.12	0.13	.15	0.18	0.21	0.25	0.29	0.33	0.38	0.43	0.44	0.50	0.50
POINT LOCATION	D							C										B		A

IOWA DOT
STANDARD ROAD PLAN
 REVISION 6 10-21-25
PV-500
 SHEET 1 of 1

REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.
 APPROVED BY DESIGN METHODS ENGINEER

**MEDIAN CROSSOVER
(50' MEDIAN)**



- For joint details, see PV-101.
- ① Median crossover is symmetrical about centerline.
 - ② Median pipe for crossover. See DR-504.
 - ③ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
 - ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
1140	555	*200

*Quantity based on 8" shoulder depth.

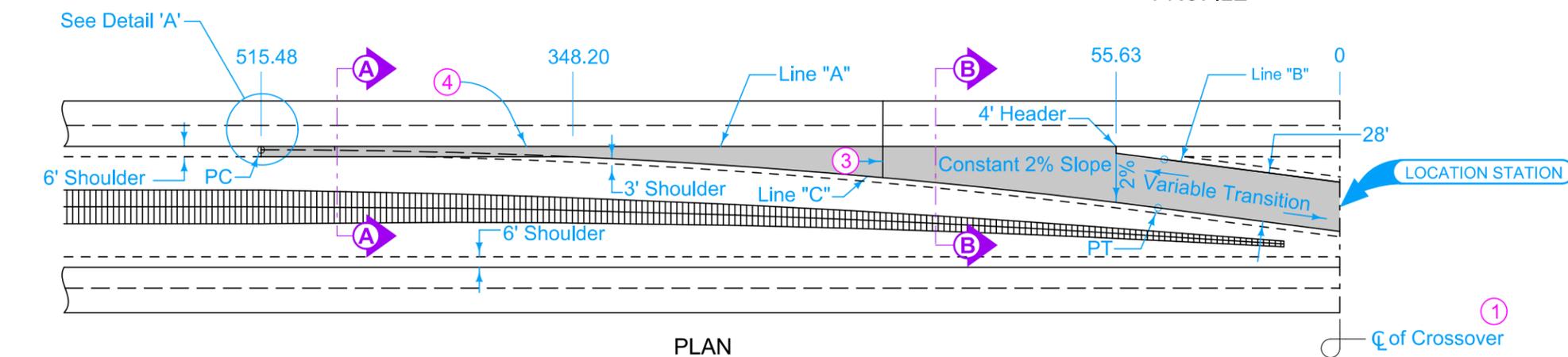
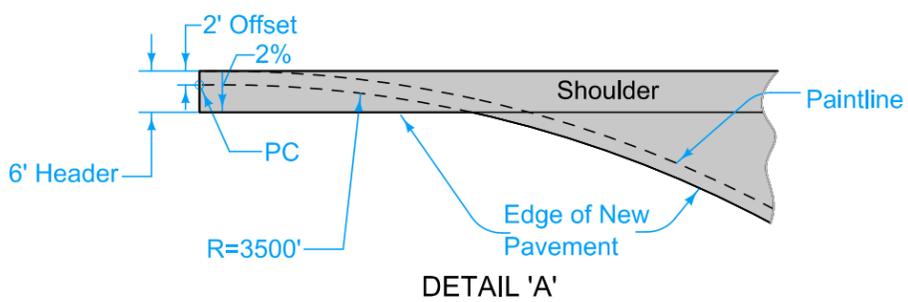
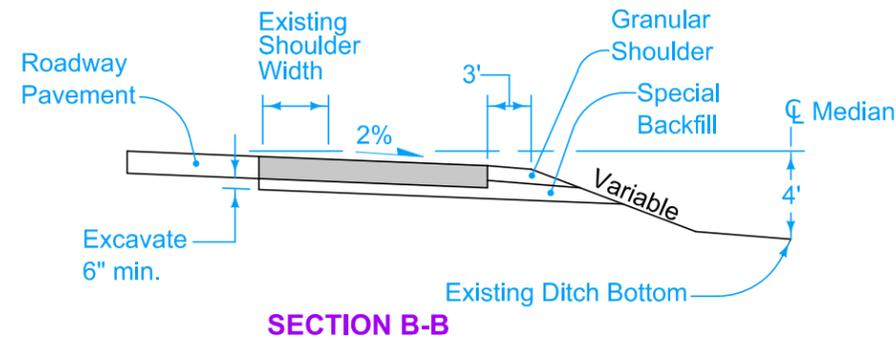
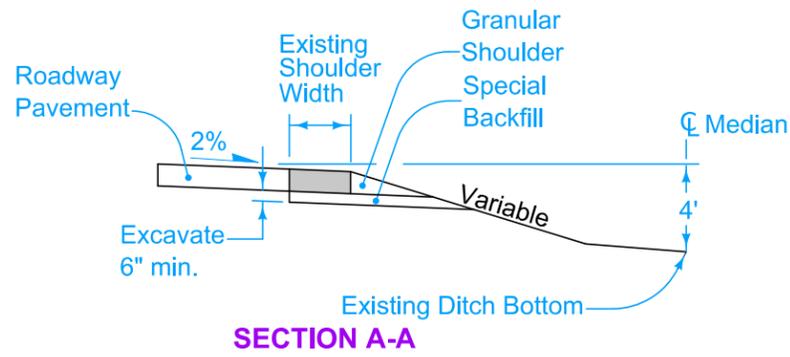


- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Granular Shoulders, Type A
 - Removal of Pavement
 - Special Backfill

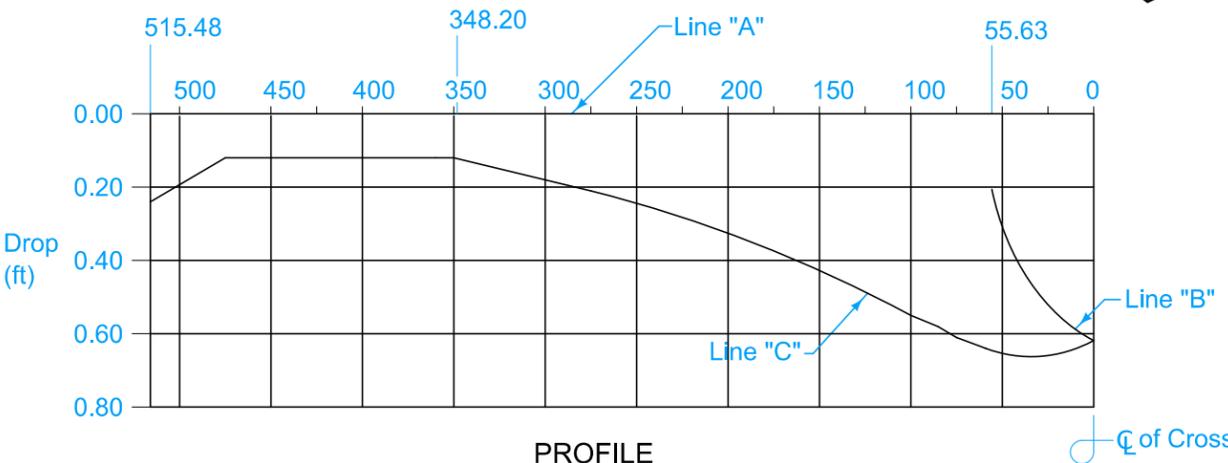
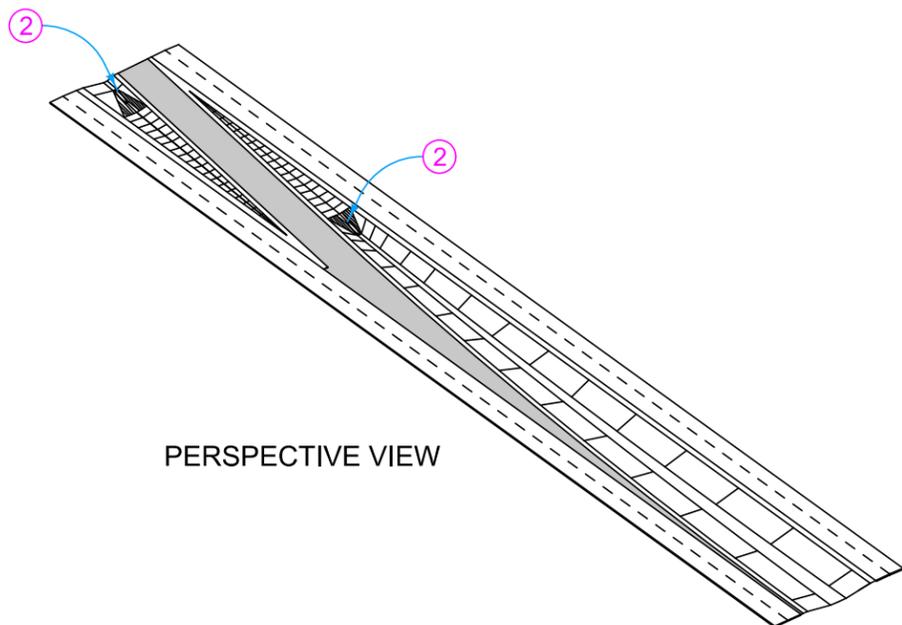
Possible Tabulation:
112-8

TABLE OF OFFSETS AND DROPS																			
Distance (Feet)	468.69	450	400	350	301.41	300	275	250	225	200	175	150	125	113.37	100	75	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.07	7.36	8.84	10.49	12.33	14.34	16.54	18.92	20.08	21.47	24.21	27.13	30.08	33.06
Drop A to C (Feet)	0.24	0.20	0.12	0.12	0.12	0.13	0.15	0.18	0.21	0.25	0.29	0.33	0.38	0.40	0.43	0.46	0.47	0.46	0.44
Drop A to B (Feet)														0.08	0.18	0.27	0.35	0.41	0.44

	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		PV-501
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.		SHEET 1 of 1
 APPROVED BY DESIGN METHODS ENGINEER		
MEDIAN CROSSOVER (50' MEDIAN) 16' WIDE 1 LANE		



Distance (Feet)	515.48	500	450	400	350	348.20	325	300	275	250	225	200	175	150	125	100	75	55.63	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	7.19	8.64	10.27	12.08	14.07	16.25	18.60	21.13	23.85	26.75	29.81	32.21	32.91	36.01	39.11
Drop A to C (Feet)	0.24	0.21	0.12	0.12	0.12	0.12	0.14	0.17	0.21	0.24	0.28	0.33	0.37	0.42	0.48	0.54	0.60	0.64	0.65	0.66	0.62
Drop A to B (Feet)																		.08	0.31	0.52	0.62



- Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.
- Median crossover is symmetrical about centerline.
 - Median pipe for crossover. See DR-504.
 - For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
 - 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.

Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
1685	725	*195

*Quantity based on 8" shoulder depth.



- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Granular Shoulders, Type A
 - Removal of Pavement
 - Special Backfill

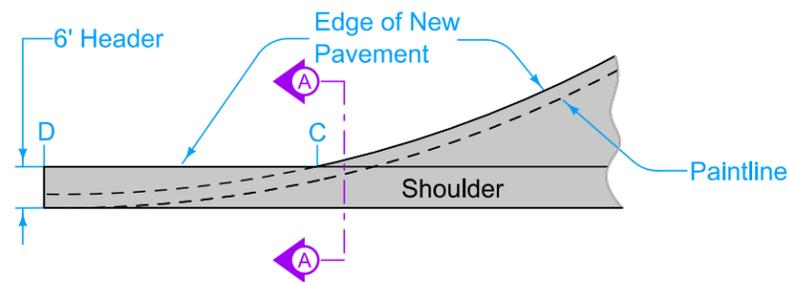
Possible Tabulation:
112-8

	REVISION
	5 10-21-25
STANDARD ROAD PLAN	
PV-502	
SHEET 1 of 1	

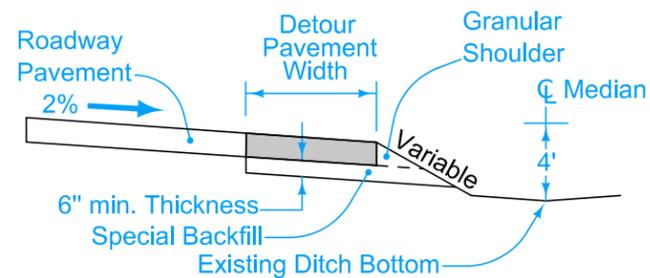
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.

APPROVED BY DESIGN METHODS ENGINEER

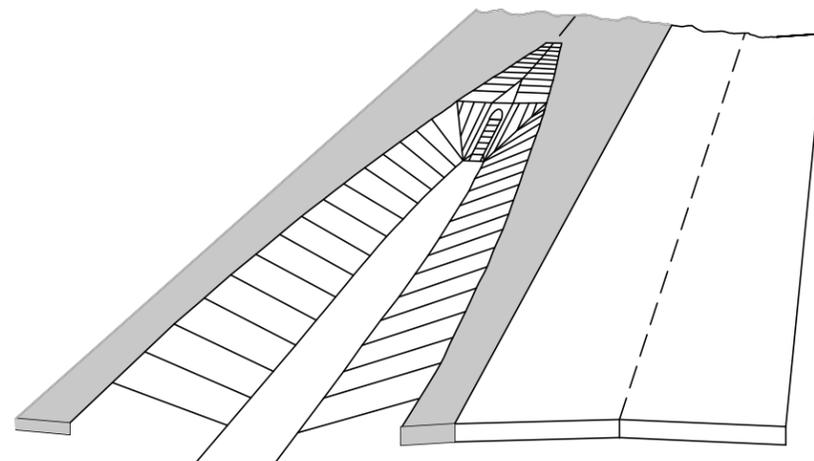
MEDIAN CROSSOVER
(50' MEDIAN)
28' WIDE 2 LANE



DETAIL 'A'



SECTION A-A

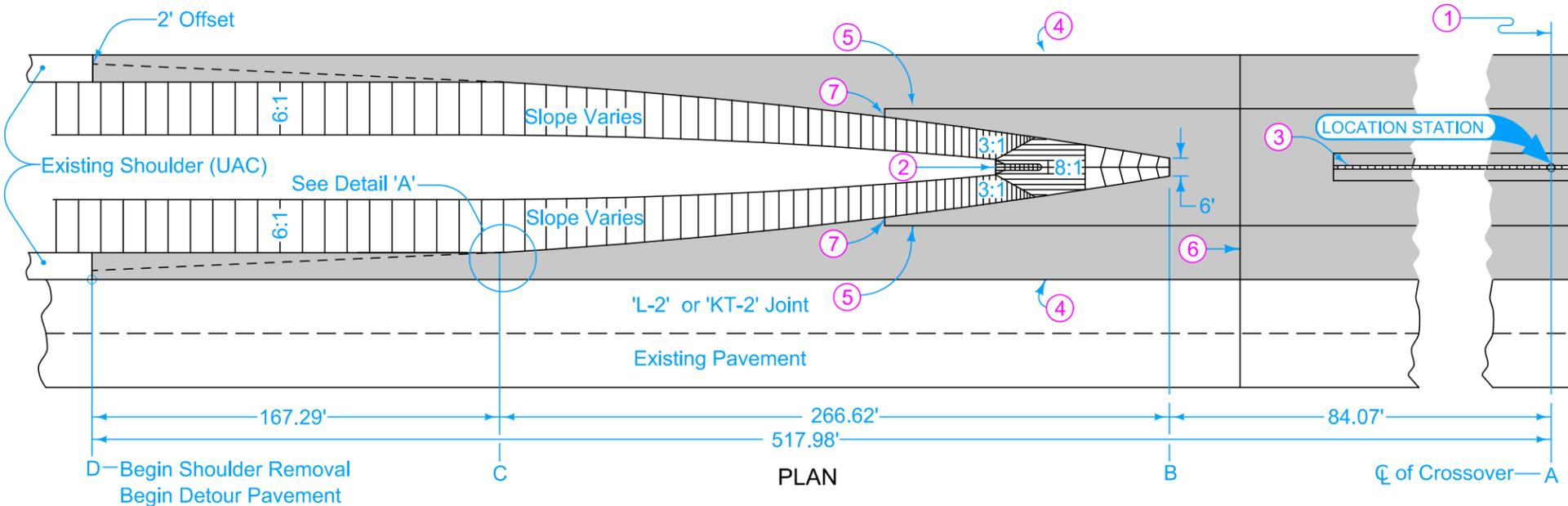


PERSPECTIVE VIEW
DITCH SLOPE AND BEVELED PIPE

Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.

- ① Median crossover is symmetrical about centerline.
- ② Beveled pipe and guard. See DR-212.
- ③ Slotted drain for median crossover. See DR-502.
- ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out.
'BT-3' joint if mainline pavement is existing.
'B' joint if Detour Pavement is HMA.
- ⑤ For PCC Detour Pavement, 'L-2' or 'BT-2' spaced at one-quarter median width.
- ⑥ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ⑦ For PCC Detour Pavement, 2 foot 'C' Joint.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
3515	1700	325

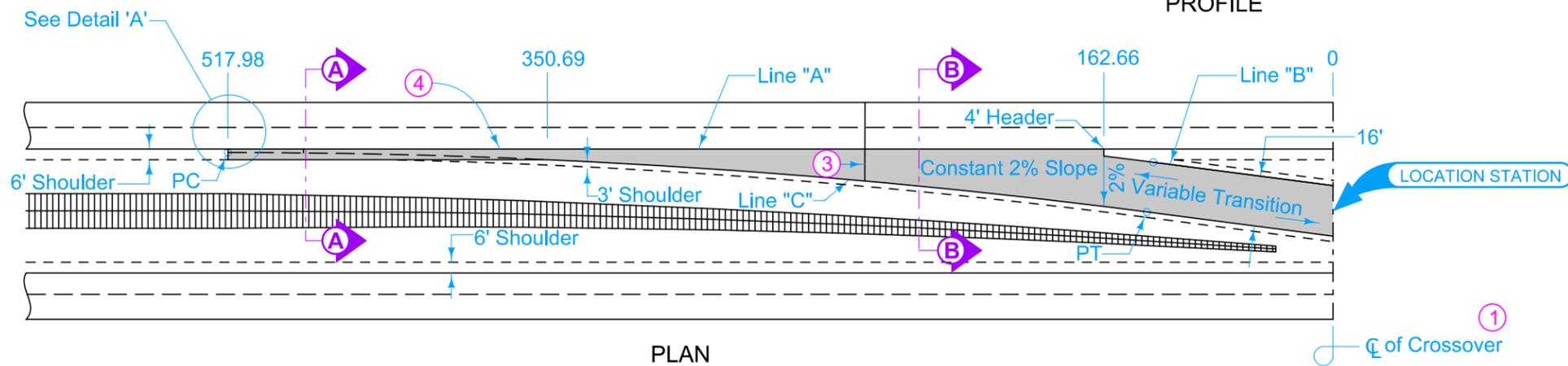
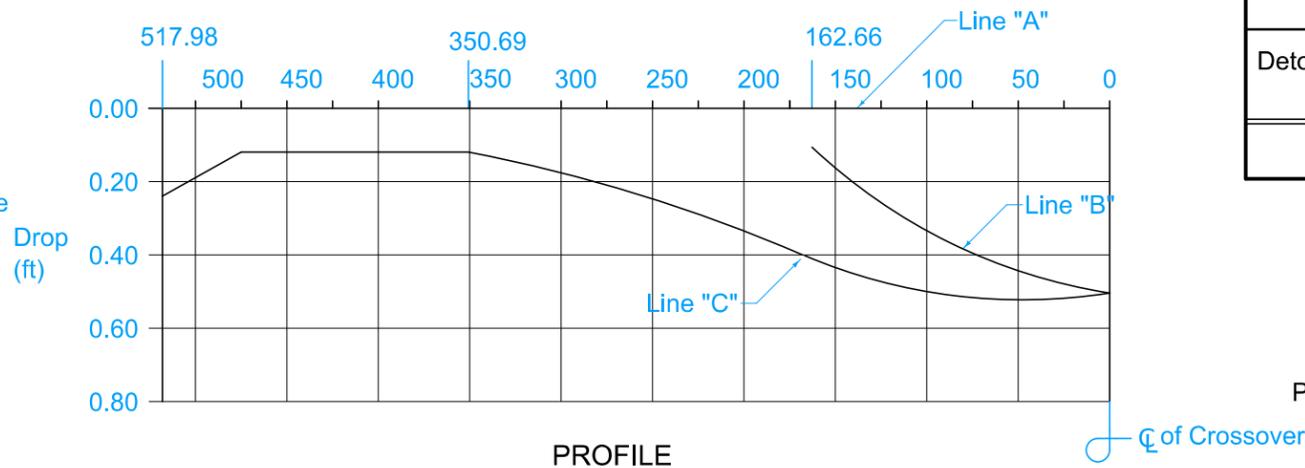
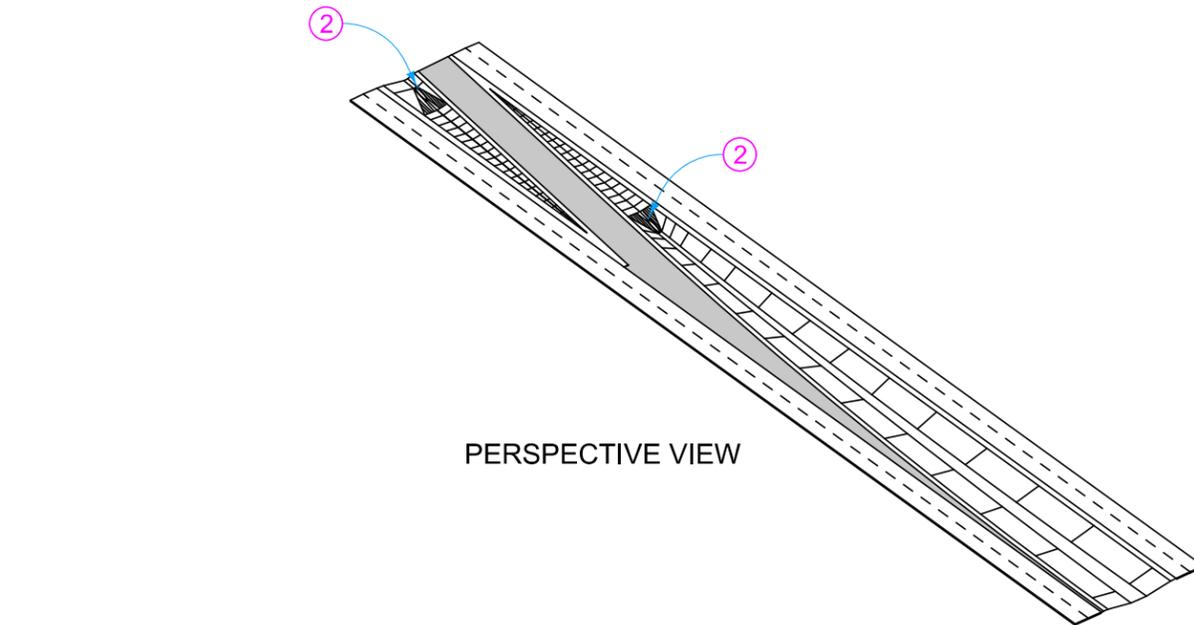
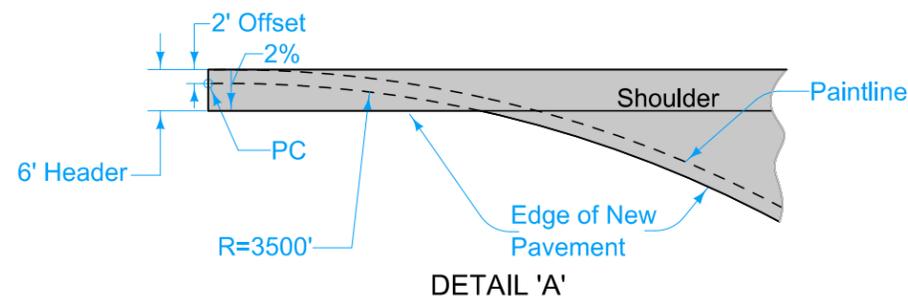
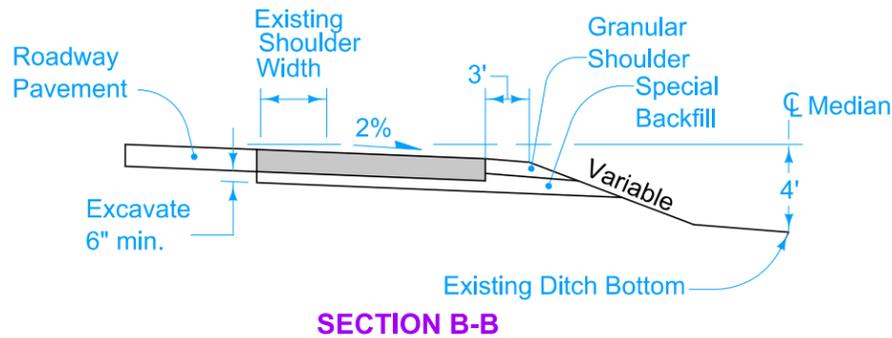
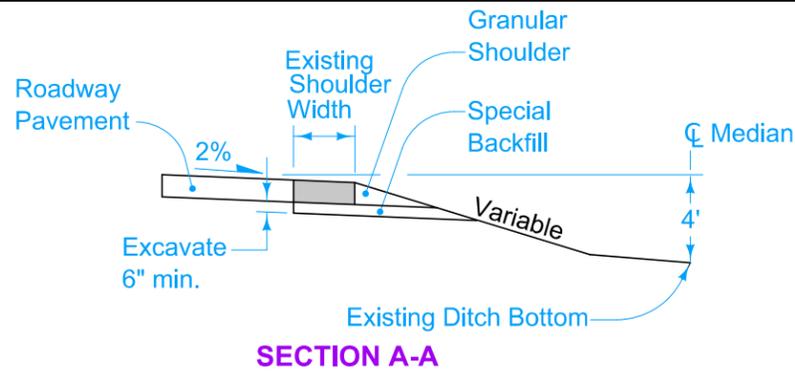


- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Removal of Pavement
 - Special Backfill
 - Granular Shoulders, Type A

Possible Tabulation:
112-8

TABLE OF OFFSETS AND DROPS (PAVED SHOULDERS)																				
Distance from Location Station (Feet)	517.98	500	475	450	400	350.69	350	325	300	275	250	225	200	175	150	125	100	84.07	75.0	0
Offset from inside edge of Pavement (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	6.03	7.32	8.79	10.44	12.27	14.28	16.47	18.84	21.40	24.13	27.05	29.00	32.00	32.00
Cross-Slope from inside edge of Pavement	4.00%	3.36%	2.47%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Drop from inside edge of Pavement (Feet)	0.24	0.20	0.15	0.12	0.12	0.12	0.12	0.15	0.18	0.21	0.25	0.29	0.33	0.38	0.43	0.48	0.54	0.58	0.64	0.64
POINT LOCATION	D					C												B		A

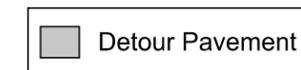
	REVISION	
	6	10-21-25
STANDARD ROAD PLAN		PV-503
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.		SHEET 1 of 1
 APPROVED BY DESIGN METHODS ENGINEER		
MEDIAN CROSSOVER (64' MEDIAN)		



- Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.
- ① Median crossover is symmetrical about centerline.
 - ② Median pipe for crossover. See DR-504.
 - ③ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
 - ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
1320	645	*235

*Quantity based on 8" shoulder depth.



- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Granular Shoulders, Type A
 - Removal of Pavement
 - Special Backfill

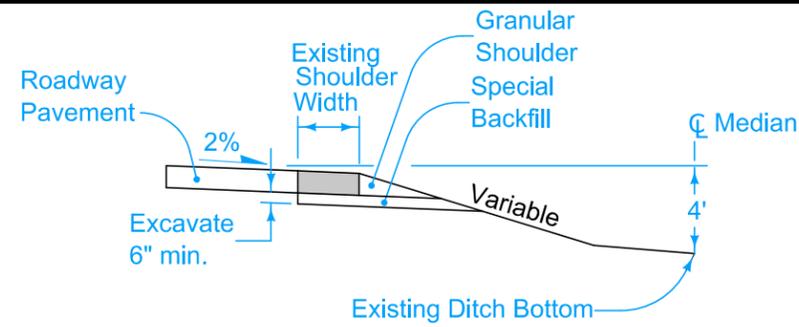
Possible Tabulation:
112-8

TABLE OF OFFSETS AND DROPS																					
Distance (Feet)	517.98	500	450	400	350.69	350	325	300	275	250	225	200	175	162.66	150	125	100	75	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.03	7.32	8.79	10.44	12.79	14.28	16.47	18.84	20.08	21.40	24.13	27.05	30.15	33.42	36.75	40.07
Drop A to C (Feet)	0.24	0.20	0.12	0.12	0.12	0.12	0.15	0.18	0.21	0.26	0.29	0.33	0.38	0.40	0.43	0.47	0.50	0.52	0.52	0.52	0.50
Drop A to B (Feet)														0.08	0.17	0.26	0.33	0.40	0.44	0.48	0.50

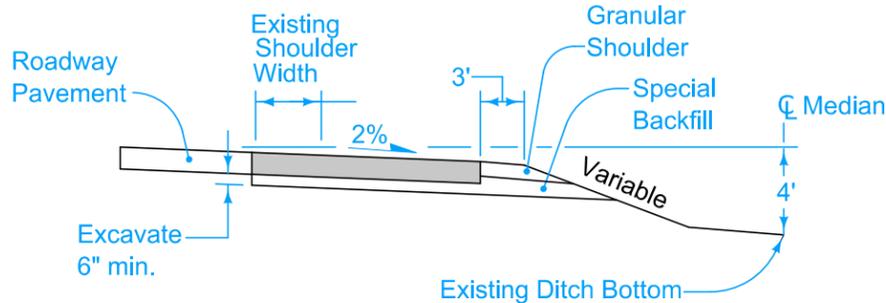
	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		PV-504
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.		SHEET 1 of 1

APPROVED BY DESIGN METHODS ENGINEER

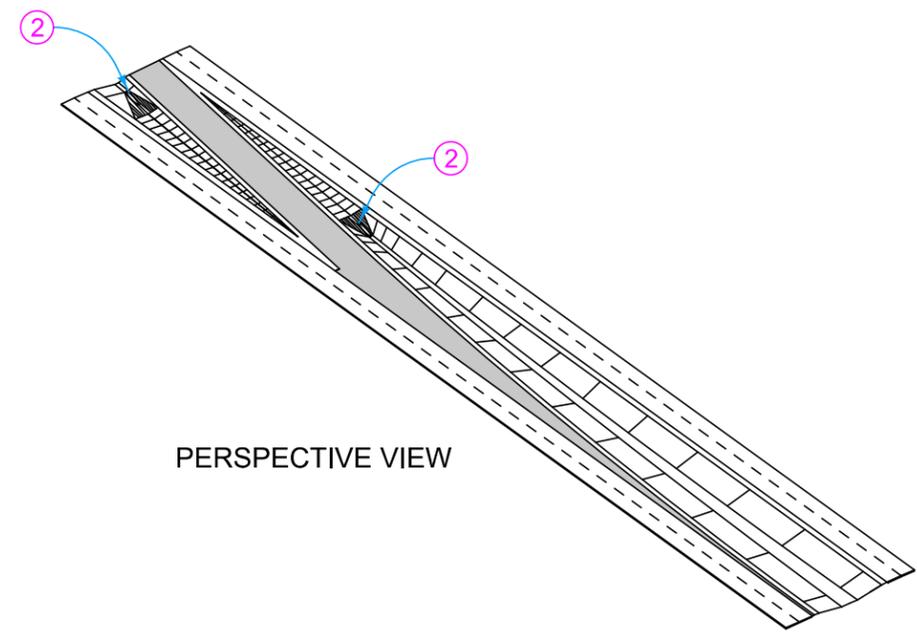
MEDIAN CROSSOVER
(64' MEDIAN)
16' WIDE 1 LANE



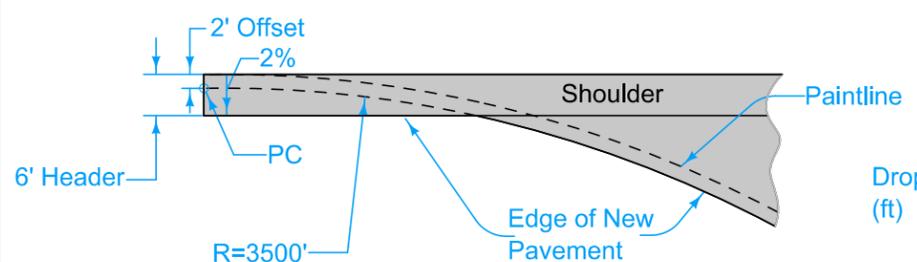
SECTION A-A



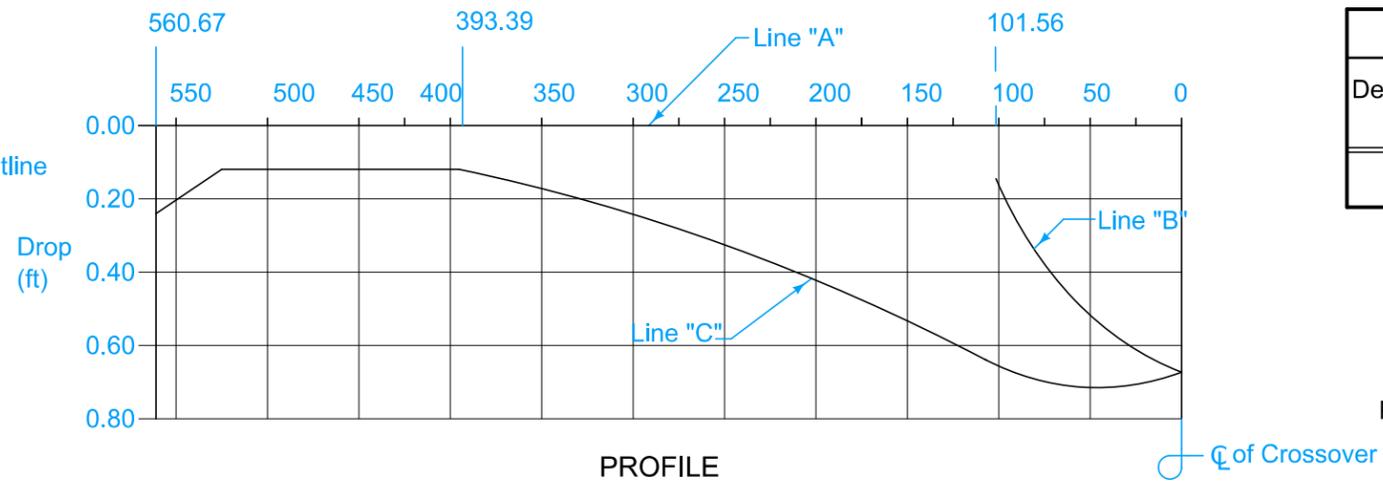
SECTION B-B



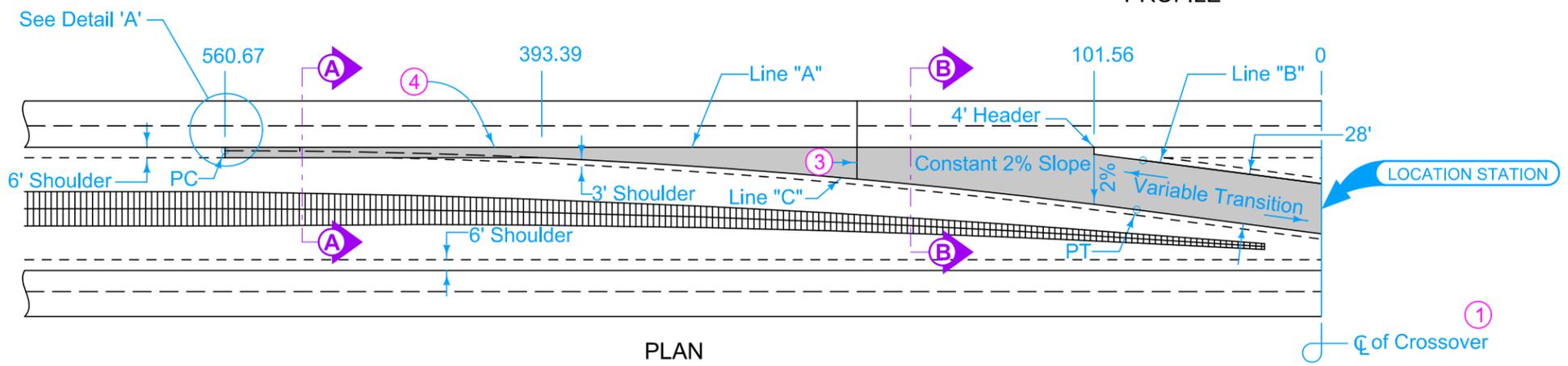
PERSPECTIVE VIEW



DETAIL 'A'



PROFILE



PLAN

- Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.
- ① Median crossover is symmetrical about centerline.
 - ② Median pipe for crossover. See DR-504.
 - ③ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
 - ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
1970	845	*225

*Quantity based on 8" shoulder depth.

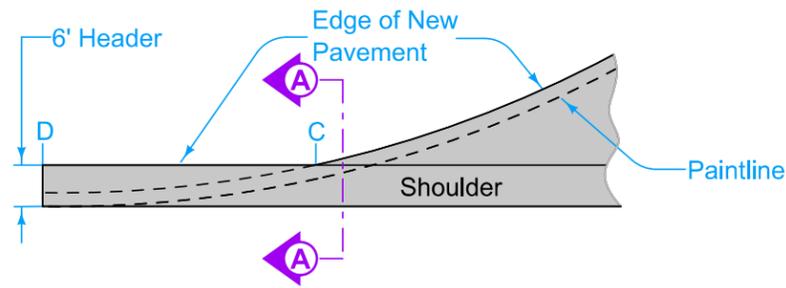


- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Granular Shoulders, Type A
 - Removal of Pavement
 - Special Backfill

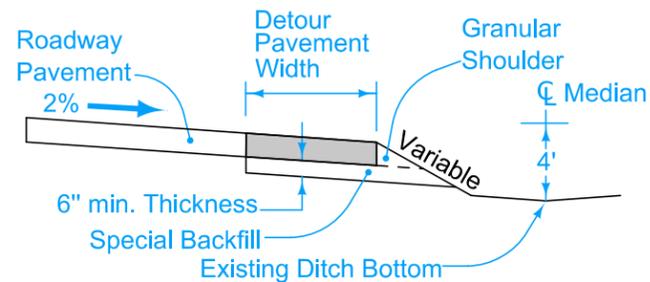
Possible Tabulation:
112-8

TABLE OF OFFSETS AND DROPS																							
Distance (Feet)	560.67	550	500	450	400	393.39	375	350	325	300	275	250	225	200	175	150	125	101.56	100	75	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	6.93	8.35	9.94	11.72	13.68	15.81	18.13	20.63	23.31	26.18	29.22	32.24	32.45	35.84	39.27	42.70	46.13
Drop A to C (Feet)	0.24	0.22	0.12	0.12	0.12	0.12	0.14	0.17	0.20	0.23	0.27	0.32	0.36	0.41	0.47	0.52	0.58	0.64	0.66	0.70	0.71	0.72	0.68
Drop A to B (Feet)																		0.08	0.16	0.38	0.52	0.61	0.68

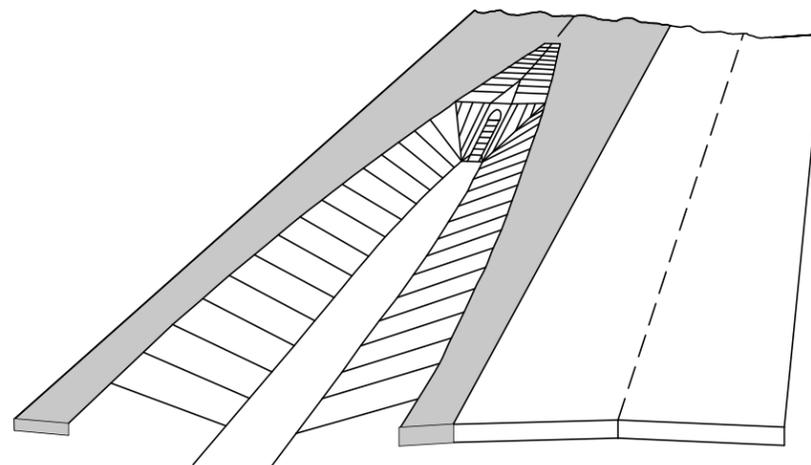
	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		PV-505
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.		SHEET 1 of 1
 APPROVED BY DESIGN METHODS ENGINEER		
MEDIAN CROSSOVER (64' MEDIAN) 28' WIDE 2 LANE		



DETAIL 'A'



SECTION A-A



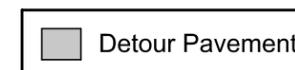
PERSPECTIVE VIEW
DITCH SLOPE AND BEVELED PIPE

Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101.

- ① Median crossover is symmetrical about centerline.
- ② Beveled pipe and guard. See DR-212.
- ③ Slotted drain for median crossover. See DR-502.
- ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out.
'BT-3' joint if mainline pavement is existing.
'B' joint if Detour Pavement is HMA.
- ⑤ For PCC Detour Pavement, 'L-2' or 'BT-2' spaced at one-quarter median width.
- ⑥ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ⑦ For PCC Detour Pavement, 2 foot 'C' Joint.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
3775	1700	340



Possible Contract Items:

- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Removal of Pavement
- Special Backfill
- Granular Shoulders, Type A

Possible Tabulation:

112-8

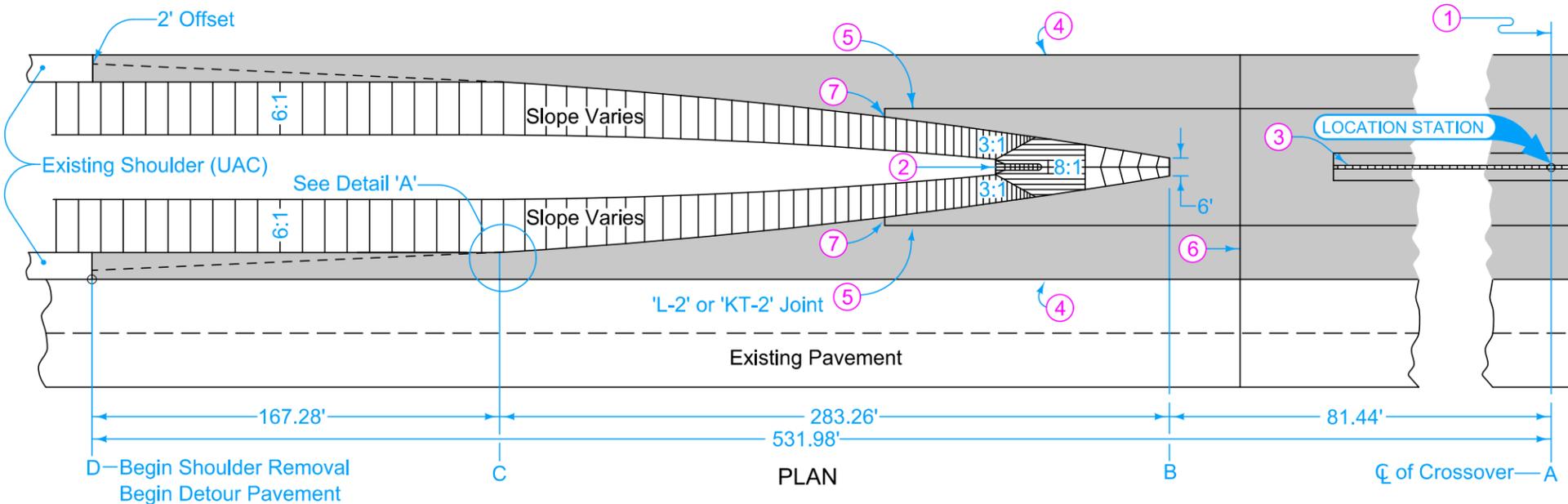


TABLE OF OFFSETS AND DROPS (PAVED SHOULDERS)

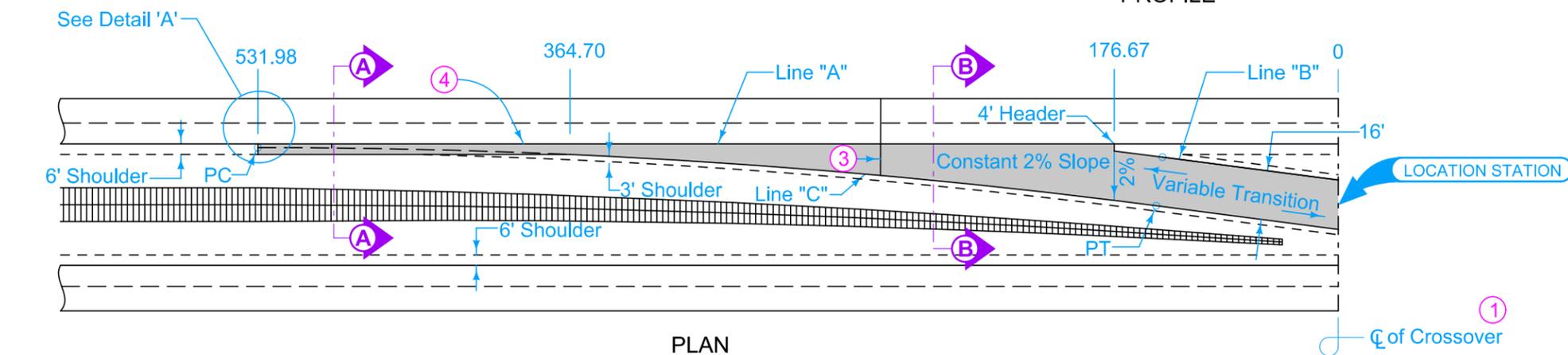
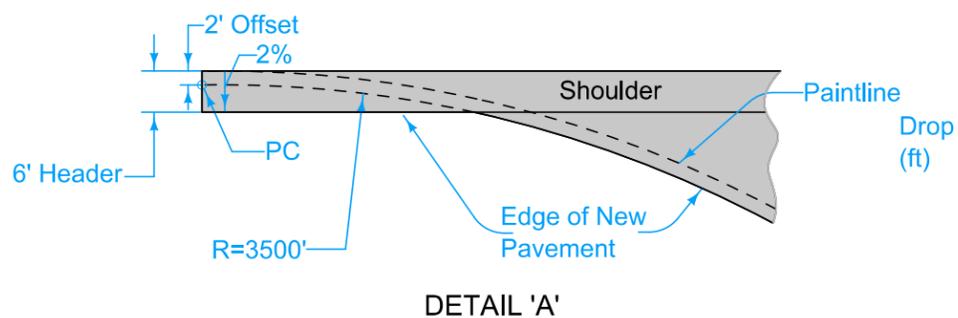
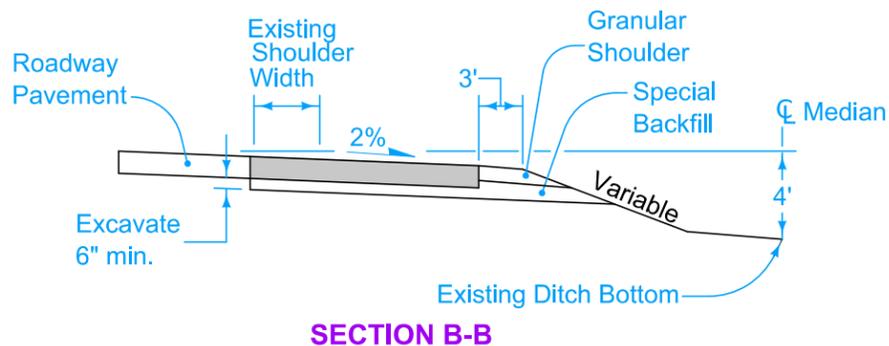
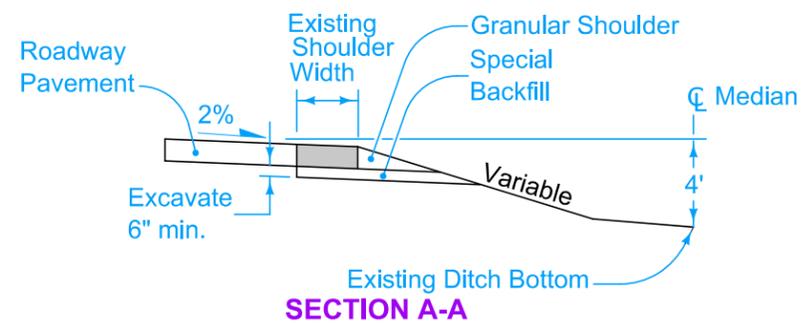
Distance from Location Station (Feet)	531.98	500	475	450	400	364.70	350	325	300	275	250	225	200	175	150	125	100	81.44	75.0	0
Offset from inside edge of Pavement (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	7.11	8.55	10.17	11.98	13.96	16.12	18.47	20.99	23.70	26.59	29.66	31.12	34.12	34.12
Cross-Slope from inside edge of Pavement	4.00%	2.86%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Drop from inside edge of Pavement (Feet)	0.24	0.17	0.12	0.12	0.12	0.12	0.13	0.16	0.19	0.23	0.27	0.31	0.36	0.41	0.46	0.51	0.58	0.62	0.68	0.68
POINT LOCATION	D					C												B		A

	REVISION	
	6	10-21-25
STANDARD ROAD PLAN		PV-506
		SHEET 1 of 1

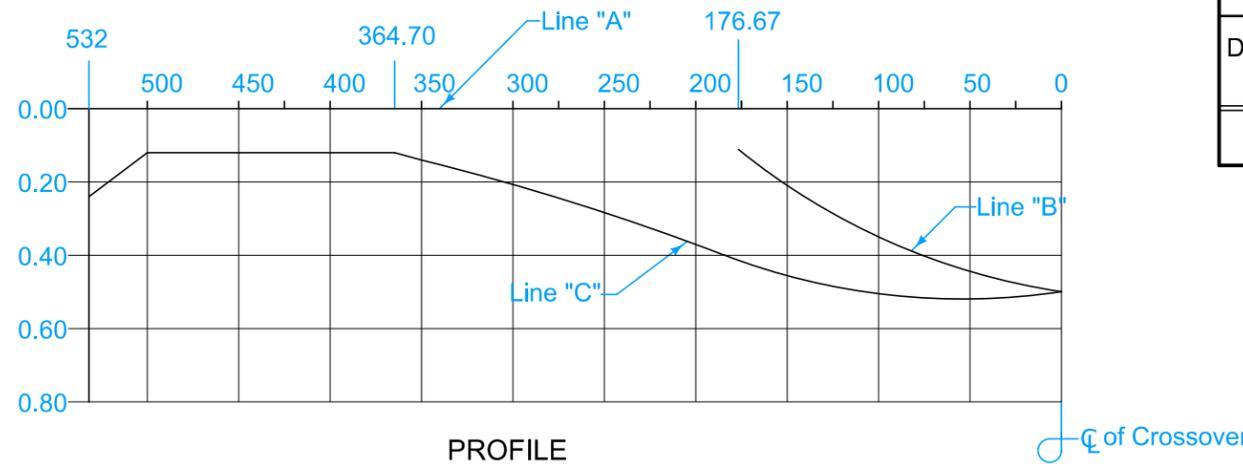
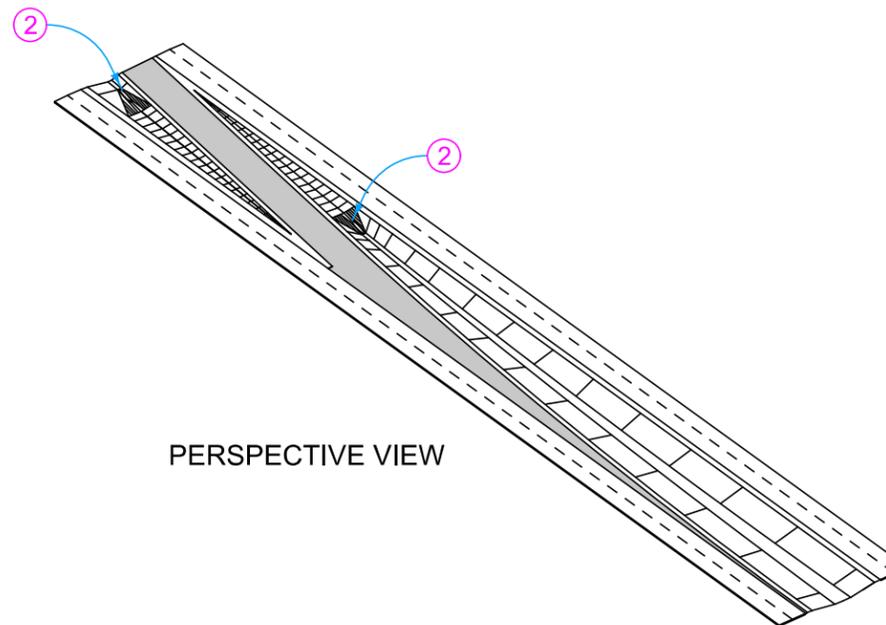
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.

APPROVED BY DESIGN METHODS ENGINEER

MEDIAN CROSSOVER
(68.24' MEDIAN)



Distance (Feet)	531.98	500	450	400	364.70	350	325	300	275	250	225	200	176.67	175	150	125	100	75	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.73	8.13	9.70	11.45	13.38	15.49	17.78	20.08	20.25	22.91	25.74	28.76	31.96	35.34	38.77	42.19
Drop A to C (Feet)	0.24	0.17	0.12	0.12	0.12	0.13	0.16	0.19	0.23	0.27	0.31	0.36	0.40	0.42	0.46	0.48	0.50	0.52	0.52	0.51	0.50
Drop A to B (Feet)													0.08	0.12	0.21	0.29	0.35	0.40	0.44	0.48	0.50



- Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.
- ① Median crossover is symmetrical about centerline.
 - ② Median pipe for crossover. See DR-504.
 - ③ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
 - ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.

Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
1370	670	*245

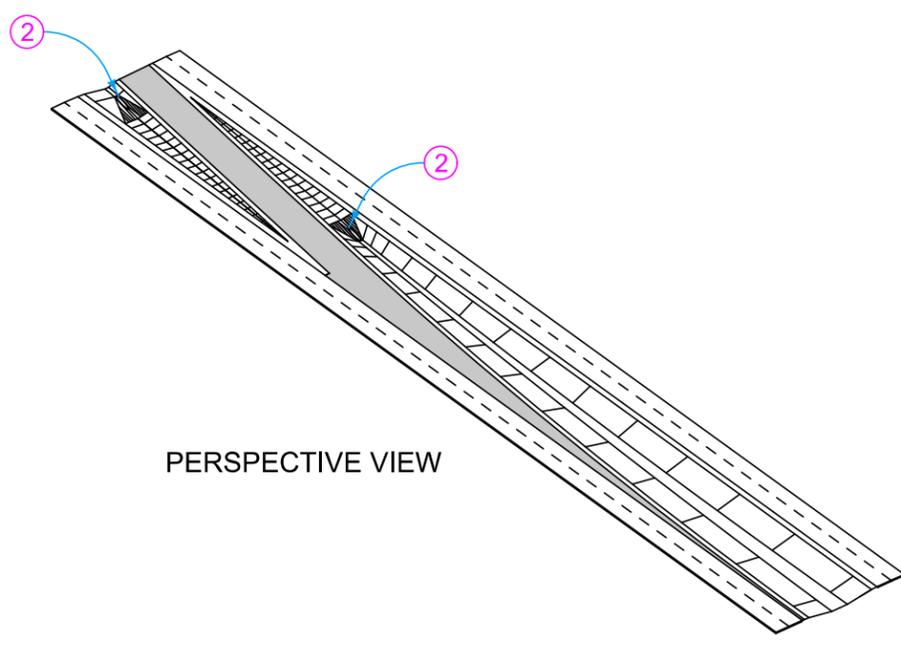
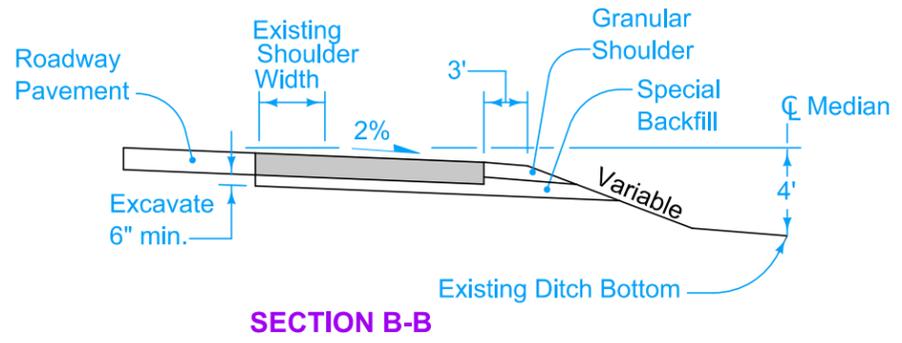
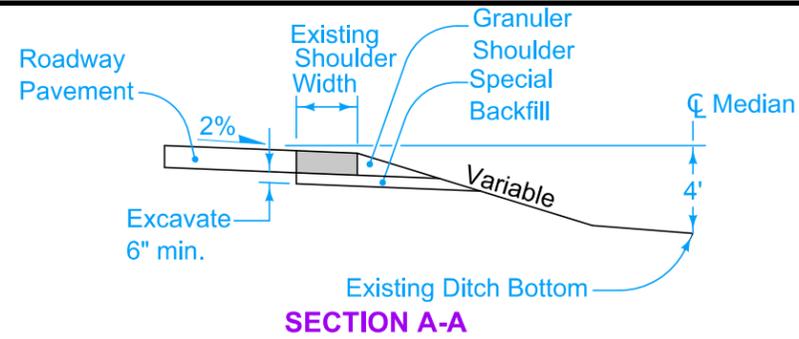
*Quantity based on 8" shoulder depth.



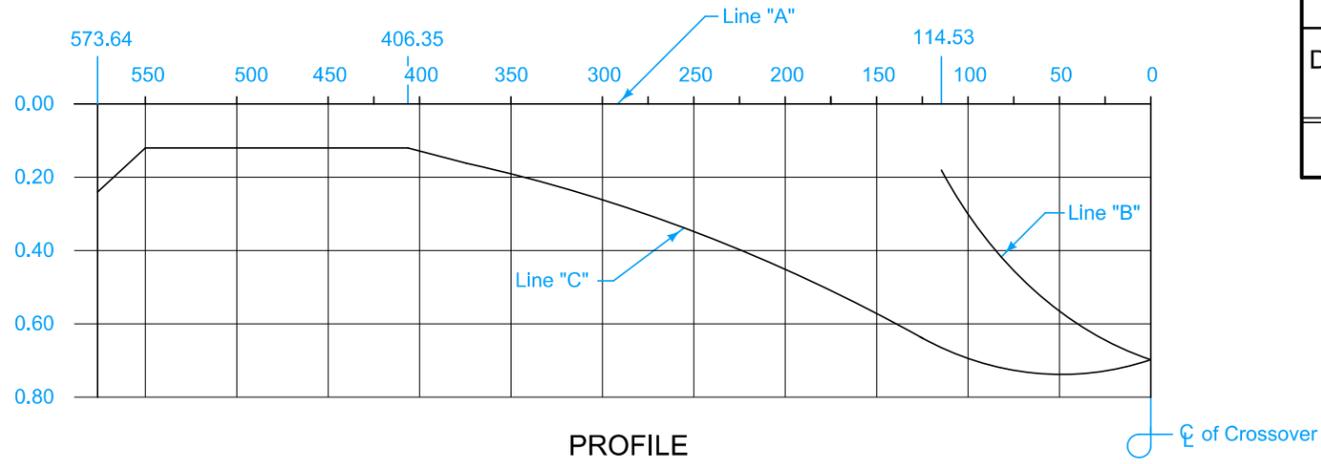
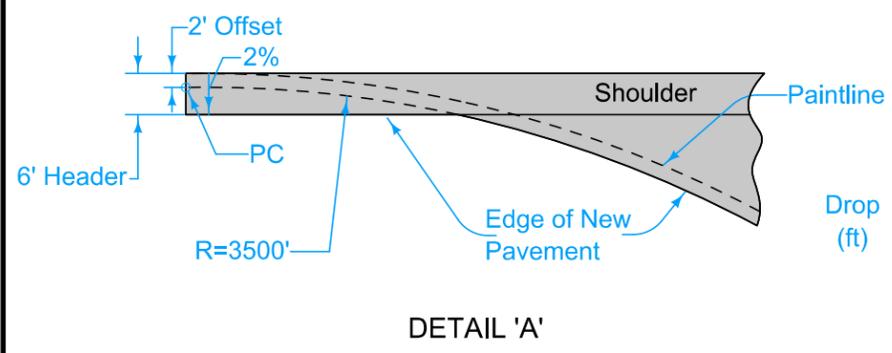
- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Granular Shoulder, Type A
 - Removal of Pavement
 - Special Backfill

Possible Tabulation:
112-8

	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		PV-507
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.		SHEET 1 of 1
APPROVED BY DESIGN METHODS ENGINEER		
MEDIAN CROSSOVER (68.24' MEDIAN) 16' WIDE 1 LANE		



- Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.
- ① Median crossover is symmetrical about centerline.
 - ② Median pipe for crossover. See DR-504.
 - ③ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
 - ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.



DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
2050	880	*235

*Quantity based on 8" shoulder depth.



- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Granular Shoulder, Type A
 - Removal of Pavement
 - Special Backfill

Possible Tabulation:
112-8

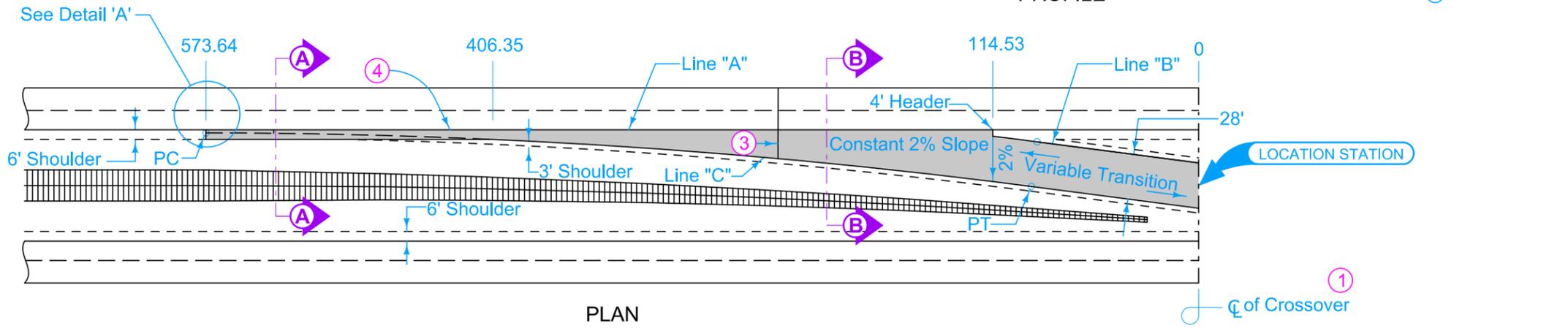


TABLE OF OFFSETS AND DROPS

Distance (Feet)	573.64	550	500	450	406.35	400	375	350	325	300	275	250	225	200	175	150	125	114.53	100	75	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.31	7.64	9.15	10.84	12.71	14.76	16.99	19.41	22.00	24.78	27.73	30.87	32.24	34.20	37.69	41.21	44.73	48.26
Drop A to C (Feet)	0.24	0.19	0.12	0.12	0.12	0.13	0.15	0.18	0.22	0.25	0.30	0.34	0.40	0.44	0.50	0.55	0.62	0.64	0.70	0.73	0.74	0.73	0.70
Drop A to B (Feet)																		0.08	0.30	0.45	0.56	0.64	0.70

STANDARD ROAD PLAN

REVISION	
5	10-21-25

PV-508

SHEET 1 of 1

REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.

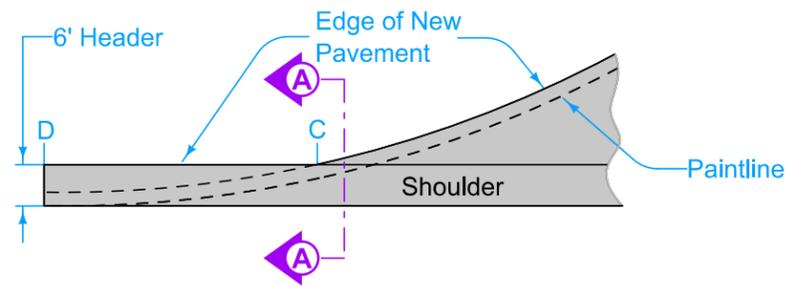
Shawn Miller

APPROVED BY DESIGN METHODS ENGINEER

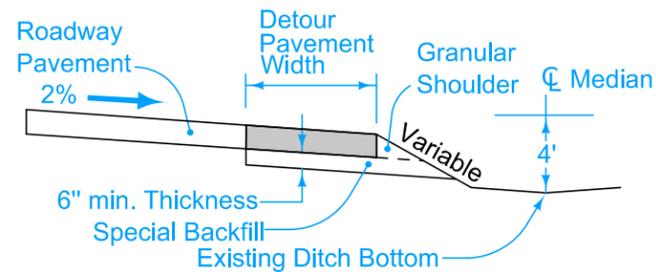
MEDIAN CROSSOVER

(68.24' MEDIAN)

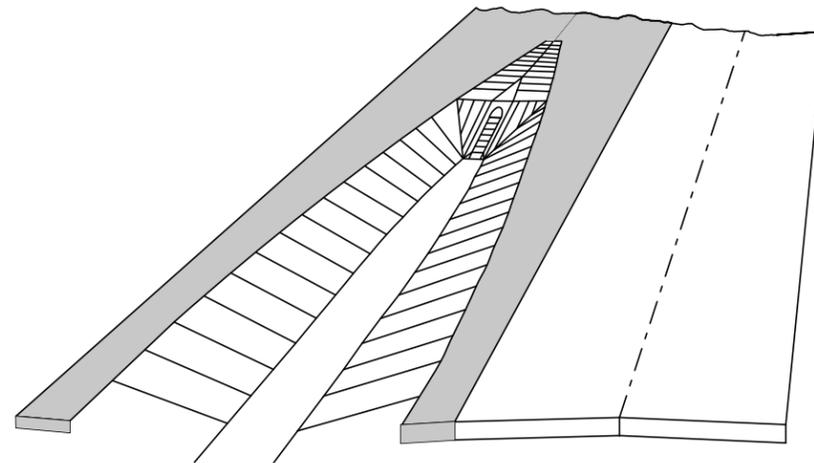
28' WIDE 2 LANE



DETAIL 'A'



SECTION A-A



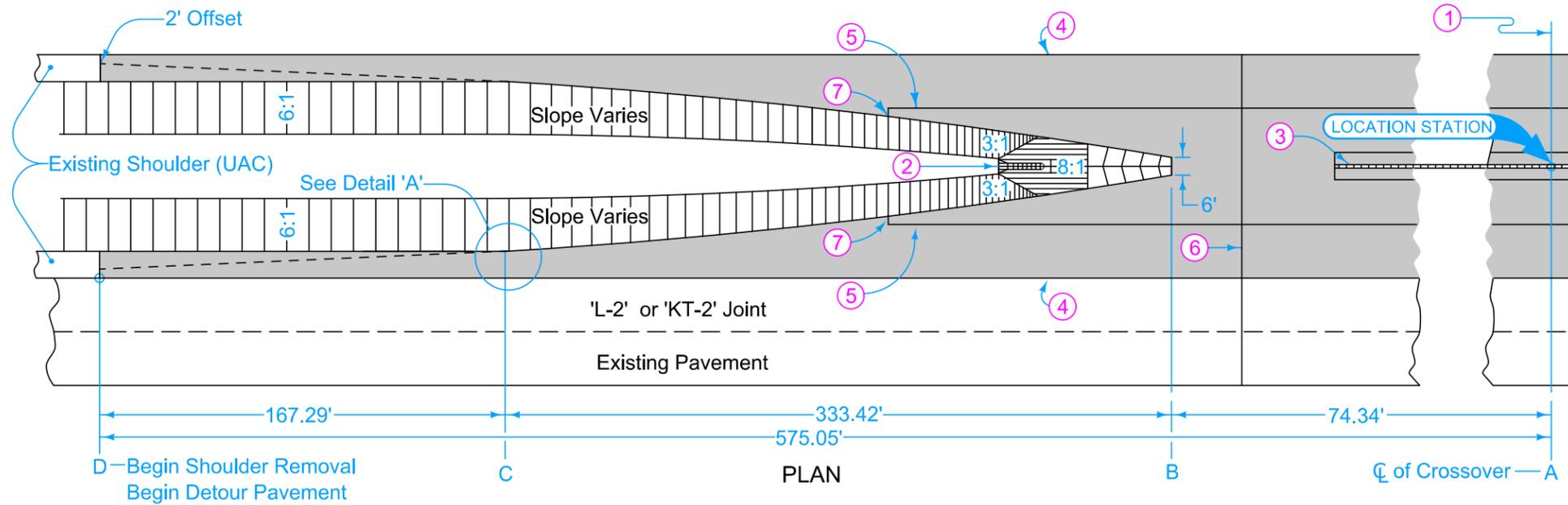
PERSPECTIVE VIEW
DITCH SLOPE AND BEVELED PIPE

Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.

- ① Median crossover is symmetrical about centerline.
- ② Beveled pipe and guard. See DR-212.
- ③ Slotted drain for median crossover. See DR-502.
- ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out.
'BT-3' joint if mainline pavement is existing.
'B' joint if Detour Pavement is HMA.
- ⑤ For PCC Detour Pavement, 'BT-2' or 'L-2' spaced at one-quarter median width.
- ⑥ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ⑦ For PCC Detour Pavement, 2 foot 'C' Joint.

DESIGN QUANTITY TABLE

Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
4665	1860	380



PLAN



- Possible Contract Items:
- Granular Shoulders, Type A
 - Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Removal of Pavement
 - Special Backfill

Possible Tabulation:
112-8

TABLE OF OFFSETS AND DROPS (PAVED SHOULDERS)

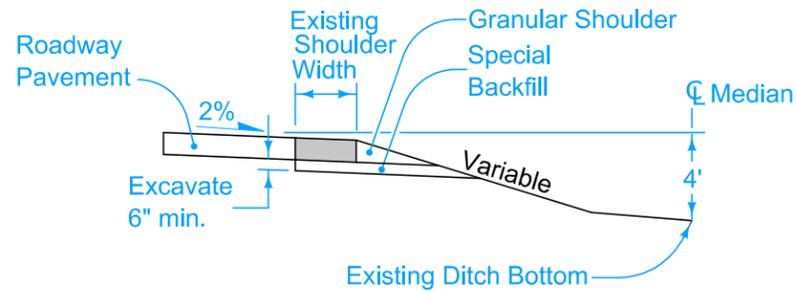
Distance from Location Station (Feet)	575.05	550	525	500	475	450	425	407.76	375	350	300	250	200	175	150	125	100	74.34	50	0
Offset from inside edge of Pavement (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	7.72	9.24	12.82	17.13	22.15	24.94	27.90	31.05	34.38	38.00	41.00	41.00
Cross-Slope from inside edge of Pavement	4.00%	3.12%	2.23%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Drop from inside edge of Pavement (Feet)	0.24	0.19	0.13	0.12	0.12	0.12	0.12	0.12	0.15	0.19	0.26	0.34	0.44	0.50	0.56	0.62	0.69	0.76	0.82	0.82
POINT LOCATION	D							C										B		A

	REVISION	
	2	10-21-25
STANDARD ROAD PLAN		PV-509
		SHEET 1 of 1

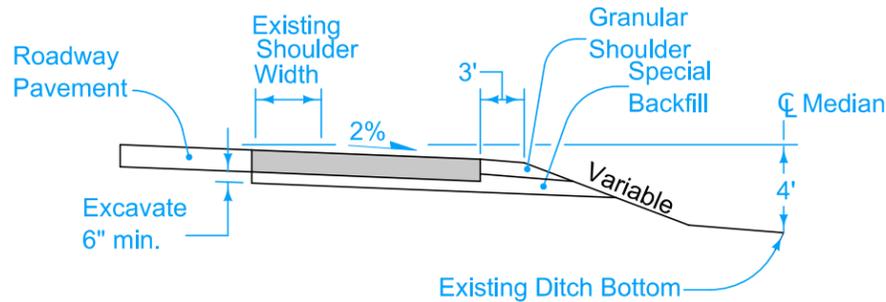
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

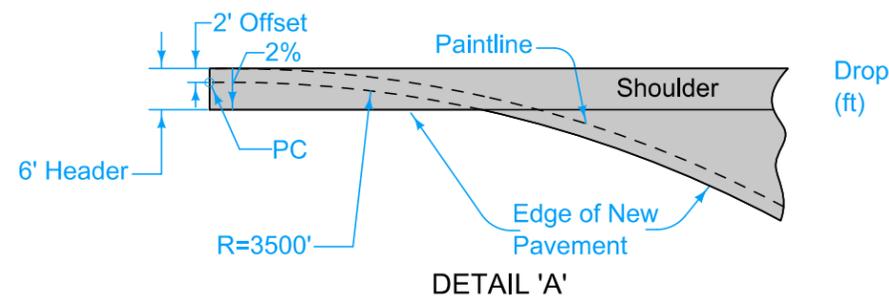
MEDIAN CROSSOVER
(82' MEDIAN)



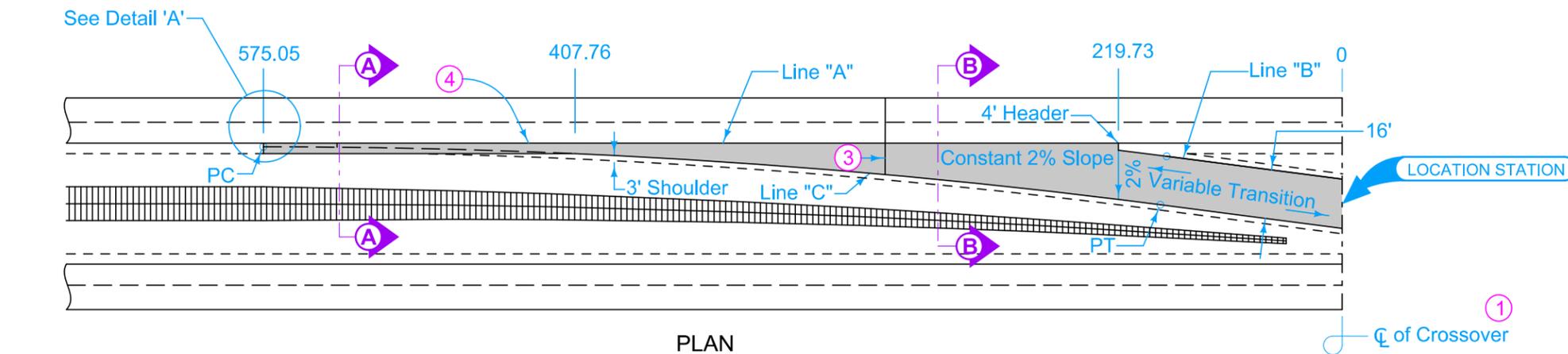
SECTION A-A



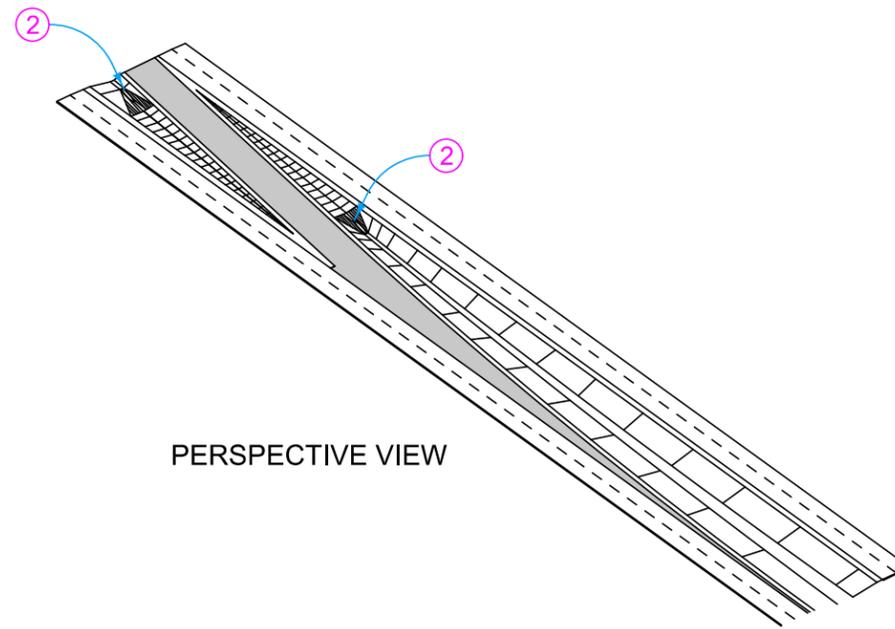
SECTION B-B



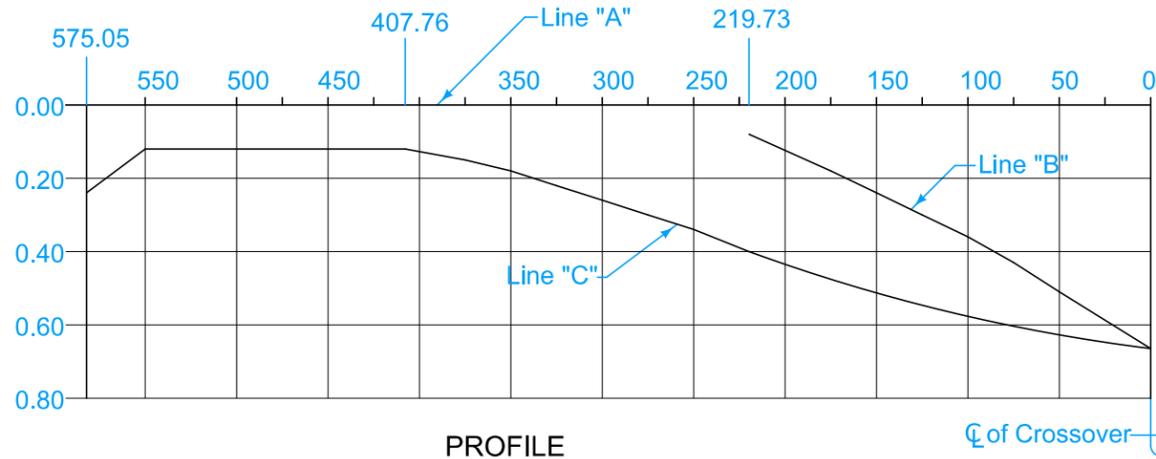
DETAIL 'A'



PLAN



PERSPECTIVE VIEW



PROFILE

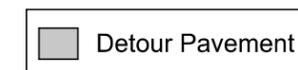
Distance (Feet)	575.05	550	525	500	475	450	407.76	375	350	325	300	275	250	219.73	175	150	125	100	75	50	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	7.72	9.24	10.94	12.82	14.88	17.13	20.08	24.94	27.91	31.06	34.39	37.91	41.60	49.09
Drop A to C (Feet)	0.24	0.19	0.13	0.12	0.12	0.12	0.12	0.15	0.18	0.22	0.26	0.30	0.34	0.40	0.50	0.56	0.62	0.69	0.86	0.83	0.66
Drop A to B (Feet)														0.08	0.18	0.24	0.30	0.36	0.43	0.51	0.66

Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.

- ① Median crossover is symmetrical about centerline.
- ② Median pipe for crossover. See DR-504.
- ③ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.

Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
1525	750	*280

*Quantity based on 8" shoulder depth.



- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Granular Shoulder, Type A
 - Removal of Pavement
 - Special Backfill

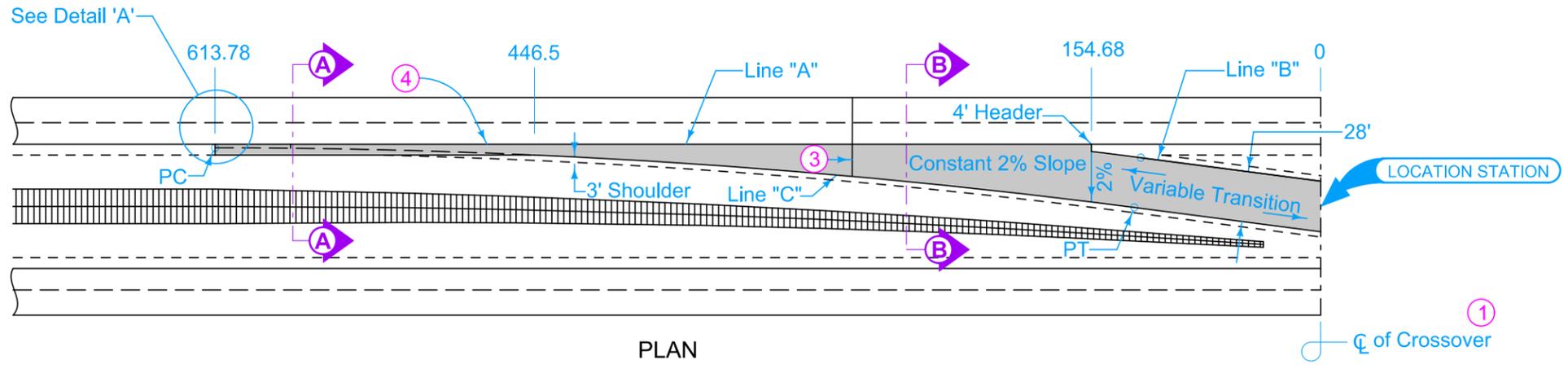
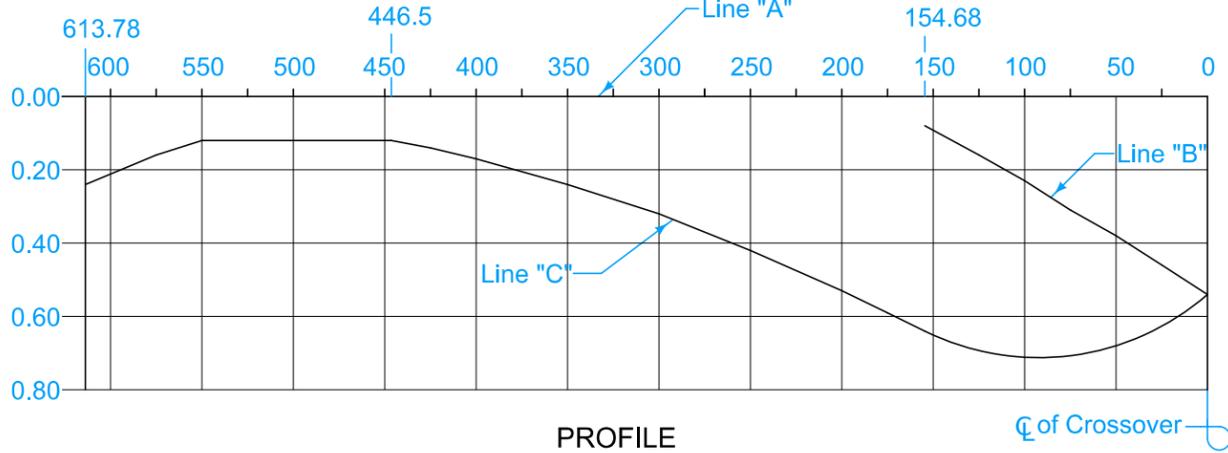
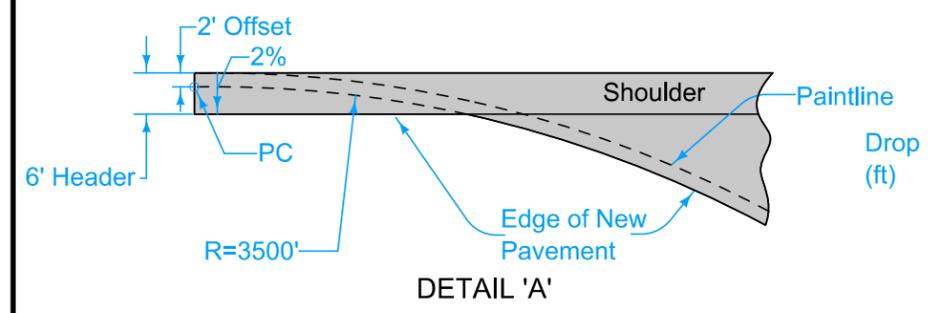
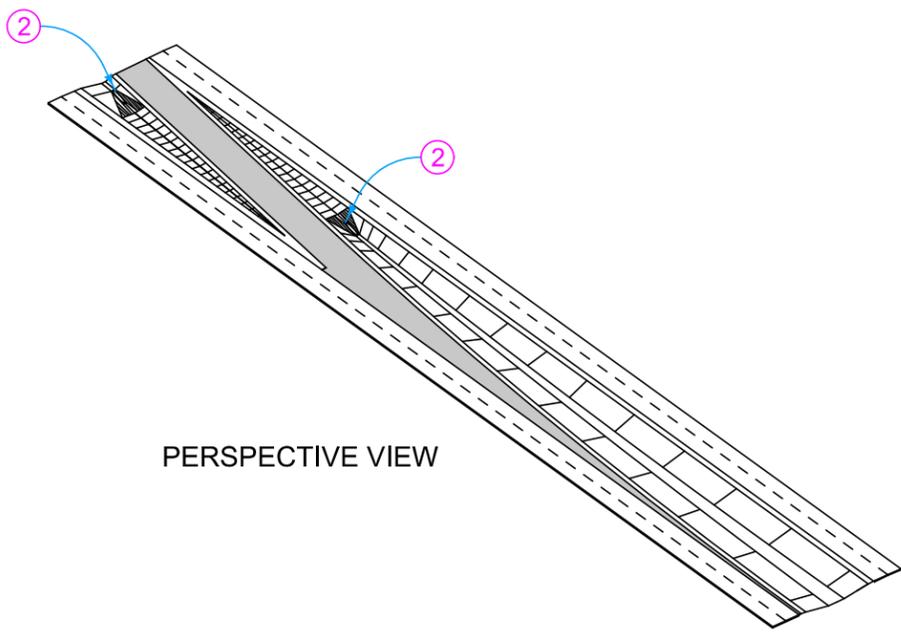
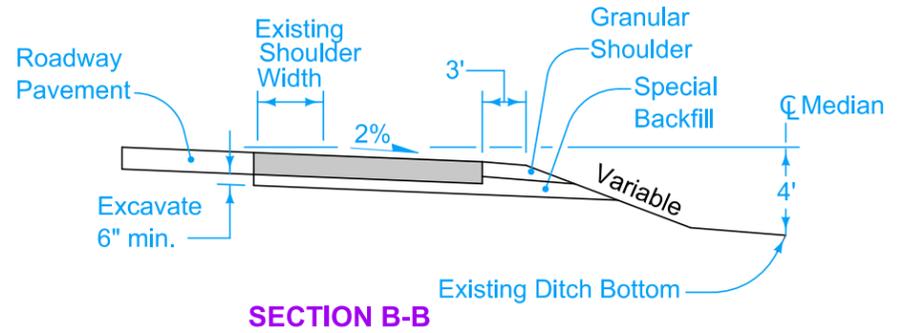
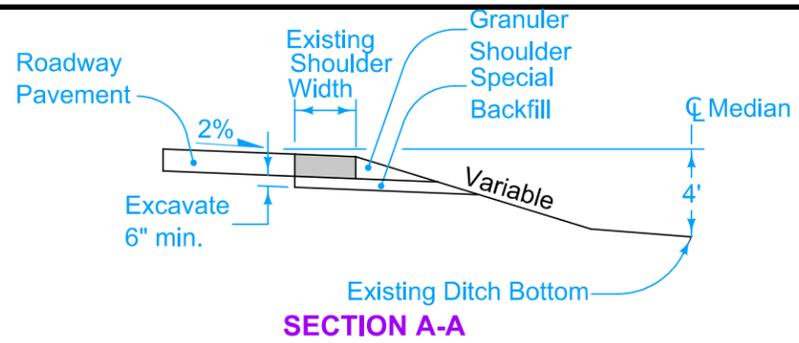
Possible Tabulation:
112-8

	REVISION
	2 10-21-25
STANDARD ROAD PLAN	
PV-510	
SHEET 1 of 1	

REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.

APPROVED BY DESIGN METHODS ENGINEER

MEDIAN CROSSOVER
(82' MEDIAN)
16' WIDE 1 LANE



- Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.
- ① Median crossover is symmetrical about centerline.
 - ② Median pipe for crossover. See DR-504.
 - ③ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
 - ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
2305	985	*270

*Quantity based on 8" shoulder depth.



- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Granular Shoulder, Type A
 - Removal of Pavement
 - Special Backfill

Possible Tabulation:
112-8

Distance (Feet)	613.78	575	550	525	500	475	446.5	425	400	350	300	250	200	175	154.68	125	100	75	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	7.10	8.53	11.95	16.09	20.96	26.55	29.61	32.24	36.30	39.92	43.70	47.52	51.34	55.16
Drop A to C (Feet)	0.24	0.16	0.12	0.12	0.12	0.12	0.12	0.14	0.17	0.24	0.32	0.42	0.53	0.59	0.64	0.69	0.71	0.71	0.68	0.63	0.54
Drop A to B (Feet)															0.08	0.16	0.23	0.31	0.38	0.46	0.54

STANDARD ROAD PLAN

REVISION	
2	10-21-25

PV-511

SHEET 1 of 1

REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.

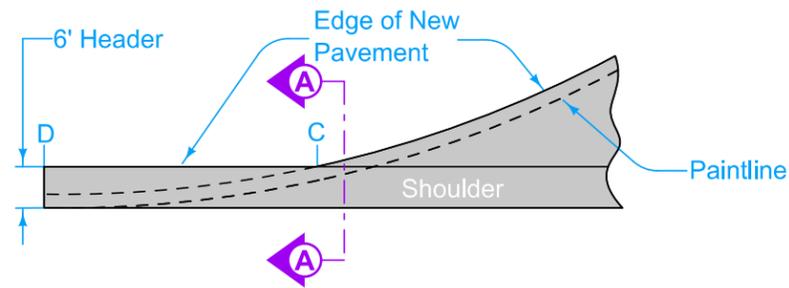
Shawn Miller

APPROVED BY DESIGN METHODS ENGINEER

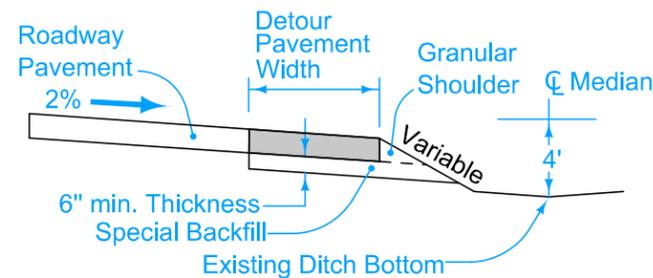
MEDIAN CROSSOVER

(82' MEDIAN)

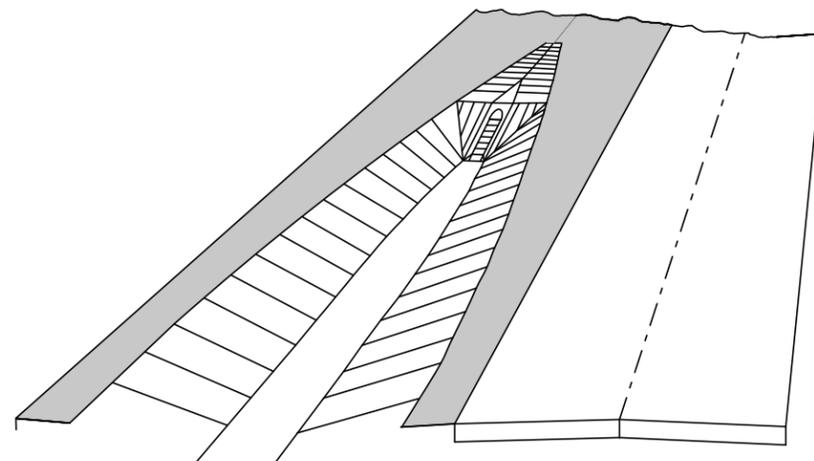
28' WIDE 2 LANE



DETAIL 'A'



SECTION A-A

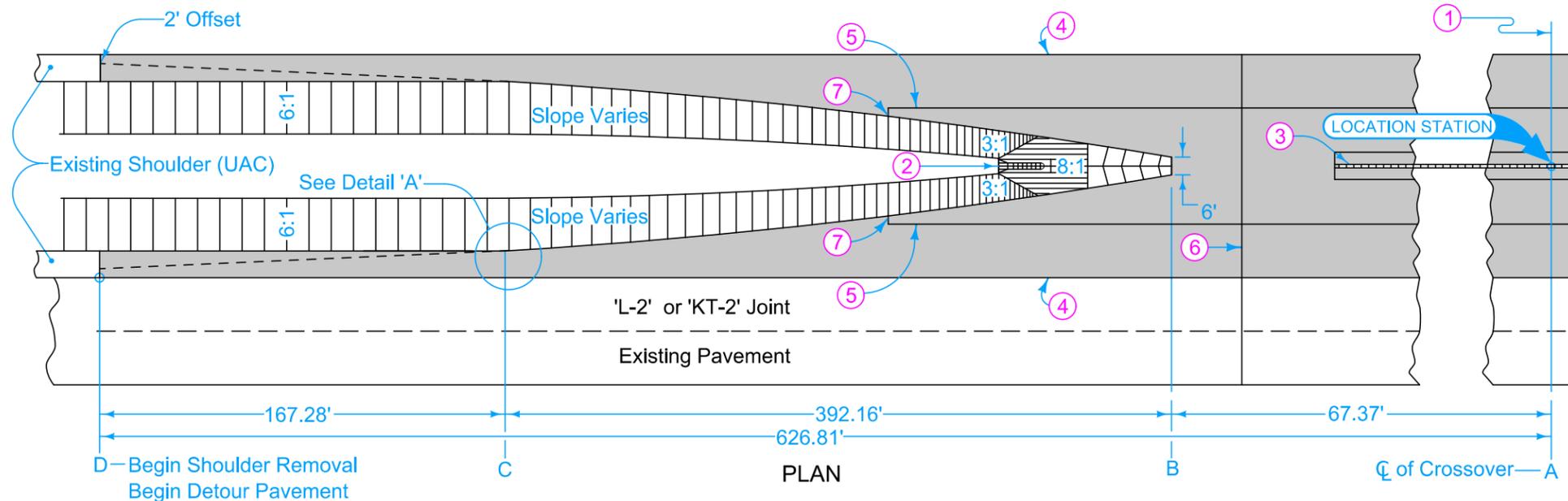


PERSPECTIVE VIEW
DITCH SLOPE AND BEVELED PIPE

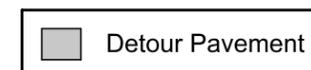
Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.

- ① Median crossover is symmetrical about centerline.
- ② Beveled pipe and guard. See DR-212.
- ③ Slotted drain for median crossover. See DR-502.
- ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.
- ⑤ For PCC Detour Pavement, 'BT-2' or 'L-2' spaced at one-quarter median width.
- ⑥ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ⑦ For PCC Detour Pavement, 2 foot 'C' Joint.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
5915	2300	430



PLAN



- Possible Contract Items:
- Granular Shoulders, Type A
 - Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Removal of Pavement
 - Special Backfill

Possible Tabulation:
112-8

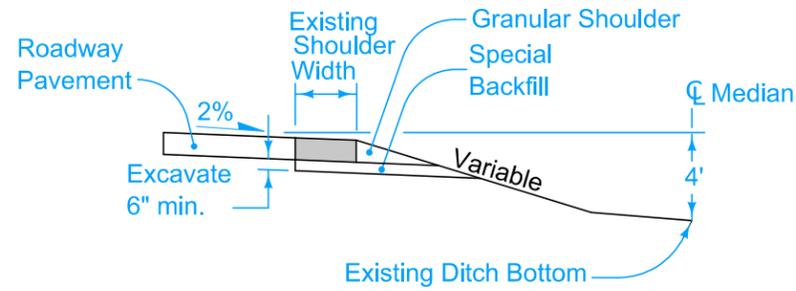
TABLE OF OFFSETS AND DROPS (PAVED SHOULDERS)																					
Distance from Location Station (Feet)	626.81	600	575	550	500	475	459.53	425	400	350	325	300	250	225	200	150	125	100	67.37	50	0
Offset from inside edge of Pavement (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	7.82	9.36	12.96	15.04	17.29	22.34	25.14	28.12	34.63	38.16	41.87	47	50	50
Cross-Slope from inside edge of Pavement	4.00%	3.05%	2.15%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Drop from inside edge of Pavement (Feet)	0.24	0.18	0.13	0.12	0.12	0.12	0.12	0.16	0.19	0.26	0.30	0.35	0.45	0.50	0.56	0.69	0.76	0.84	0.94	1.0	1.0
POINT LOCATION	D						C												B		A

 STANDARD ROAD PLAN	REVISION	
	2	10-21-25
	PV-512	
SHEET 1 of 1		

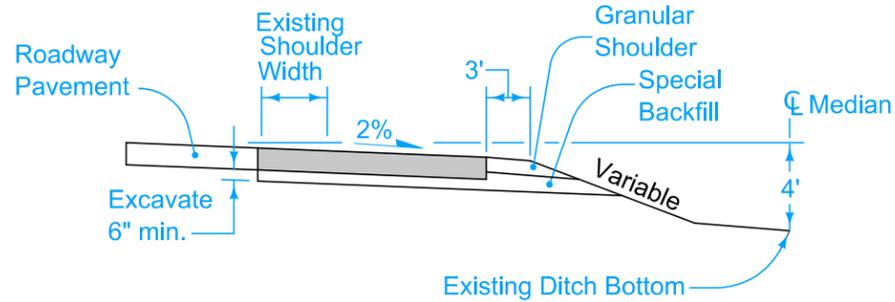
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

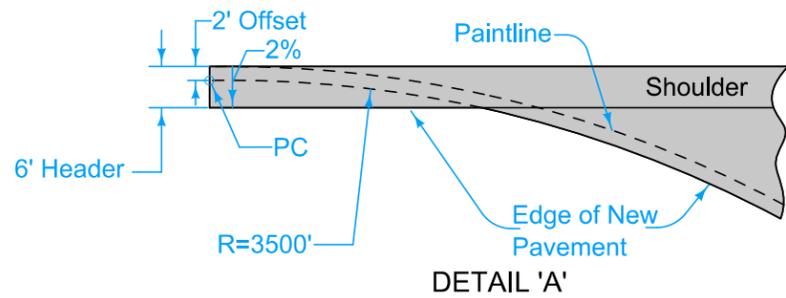
**MEDIAN CROSSOVER
(100' MEDIAN)**



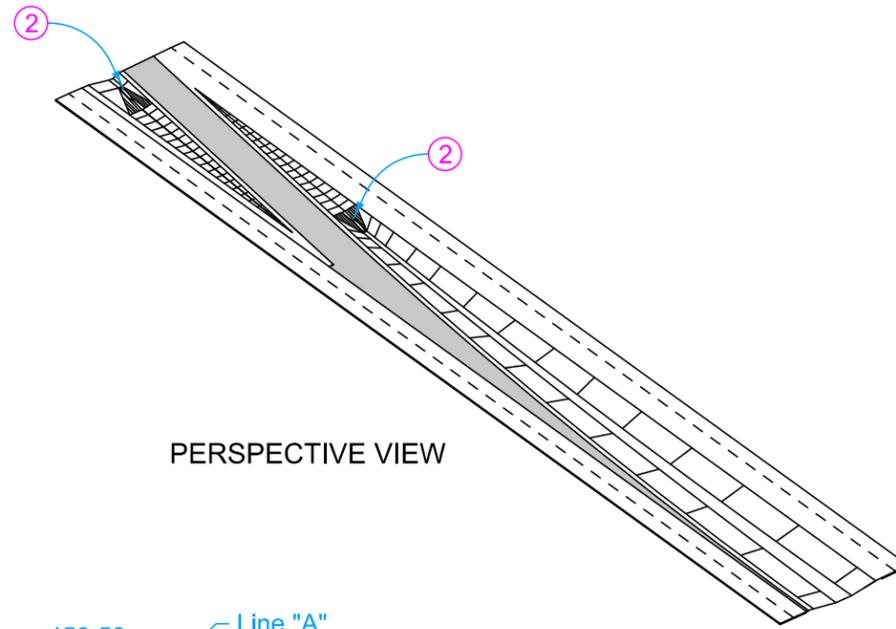
SECTION A-A



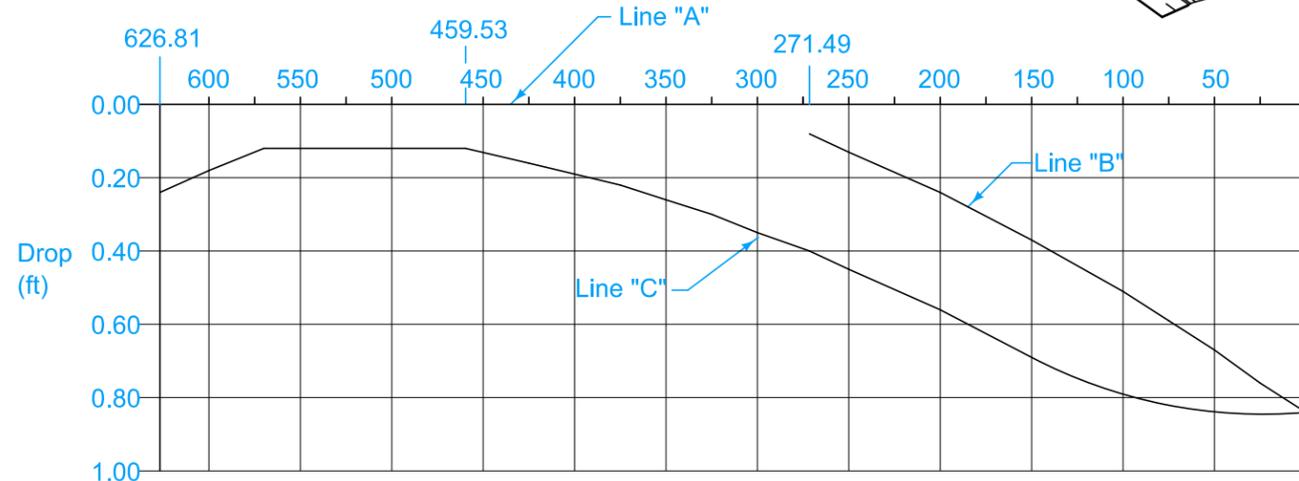
SECTION B-B



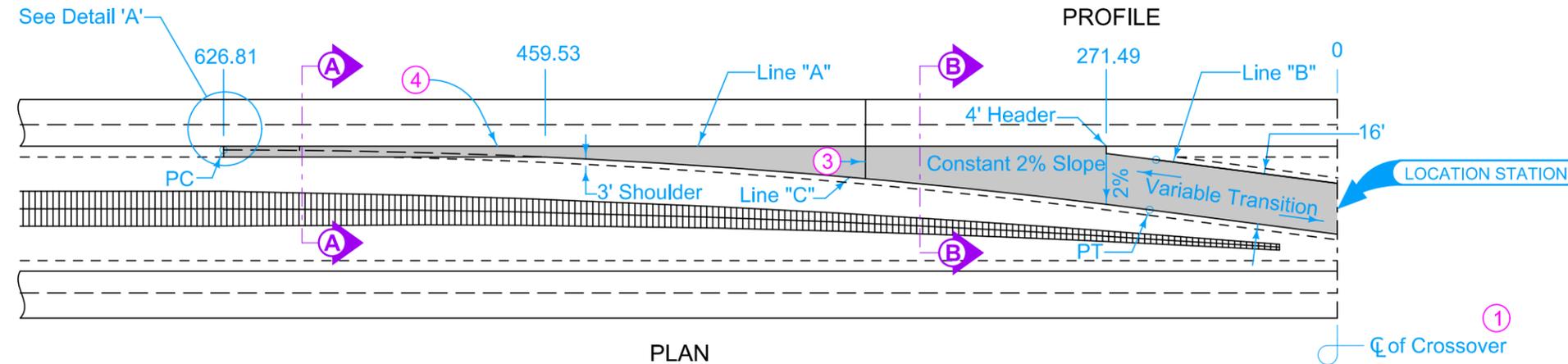
DETAIL 'A'



PERSPECTIVE VIEW



PROFILE



PLAN

Detour Pavement options: 9" PCC or 12" HMA

For joint details, see PV-101.

- ① Median crossover is symmetrical about centerline.
- ② Median pipe for crossover. See DR-504.
- ③ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
1710	845	*320

*Quantity based on 8" shoulder depth.



Possible Contract Items:

- Detour Pavement
- Embankment In Place
- Excavation, Class 10, Roadway and Borrow
- Excavation, Class 13, Roadway and Borrow
- Granular Shoulder, Type A
- Removal of Pavement
- Special Backfill

Possible Tabulation:
112-8

	REVISION	
	2	10-21-25
STANDARD ROAD PLAN		PV-513
		SHEET 1 of 1

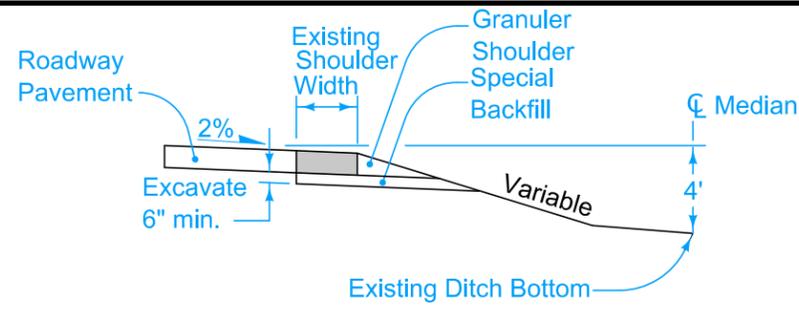
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

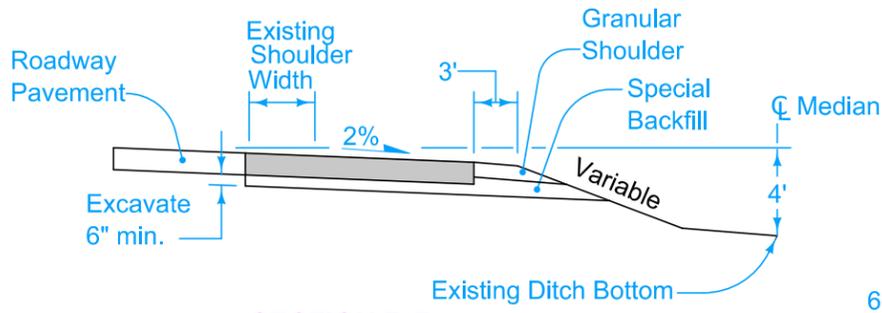
MEDIAN CROSSOVER
(100' MEDIAN)
16' WIDE 1 LANE

TABLE OF OFFSETS AND DROPS

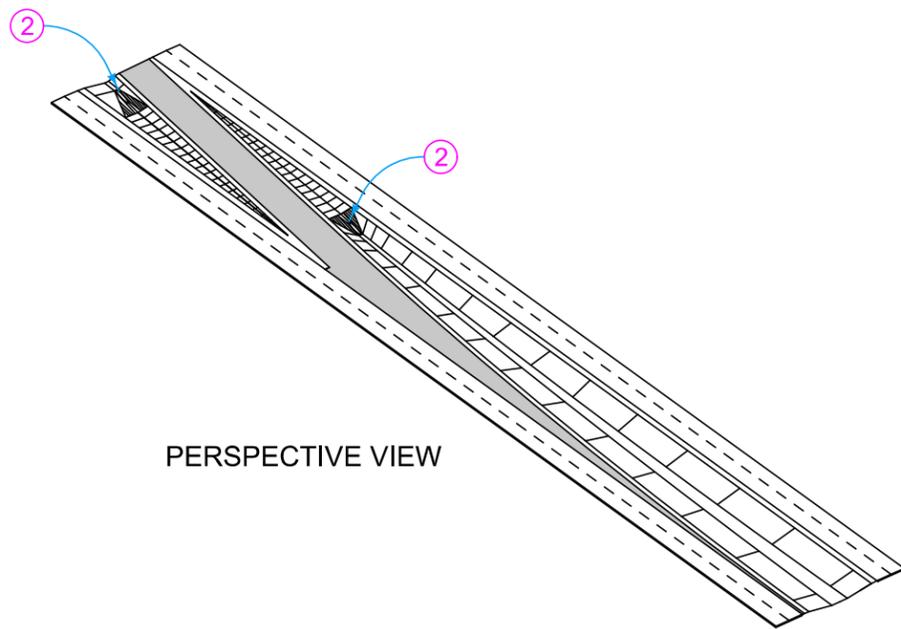
Distance (Feet)	626.81	600	575	550	500	459.53	425	400	375	350	325	300	271.49	250	200	150	100	75	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	7.82	9.36	11.07	12.96	15.04	17.29	20.08	22.34	28.12	34.63	41.87	45.77	49.85	55.95	58.11
Drop A to C (Feet)	0.24	0.18	0.13	0.12	0.12	0.12	0.16	0.19	0.22	0.26	0.30	0.35	0.40	0.45	0.56	0.69	0.79	0.82	0.84	0.85	0.84
Drop A to B (Feet)													0.08	0.13	0.24	0.37	0.51	0.59	0.67	0.76	0.84



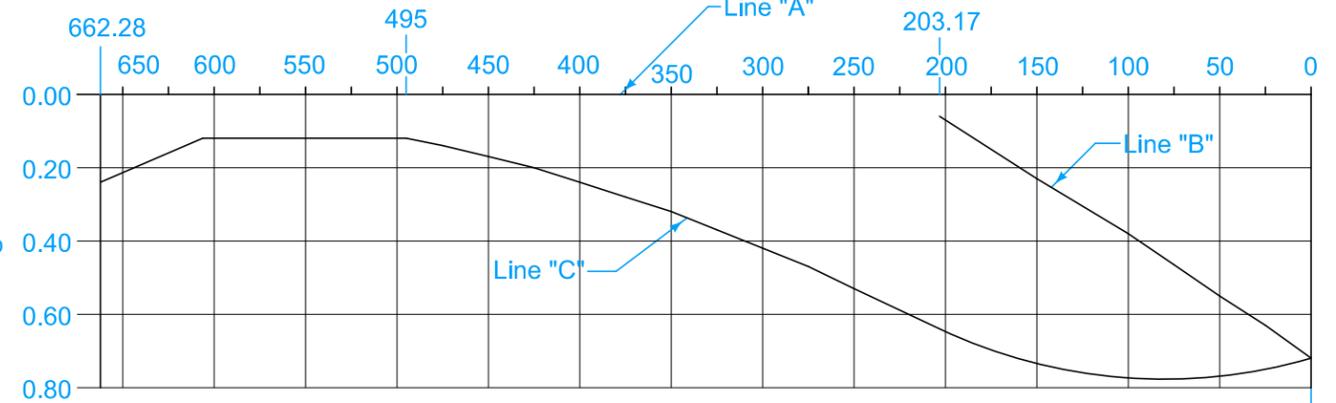
SECTION A-A



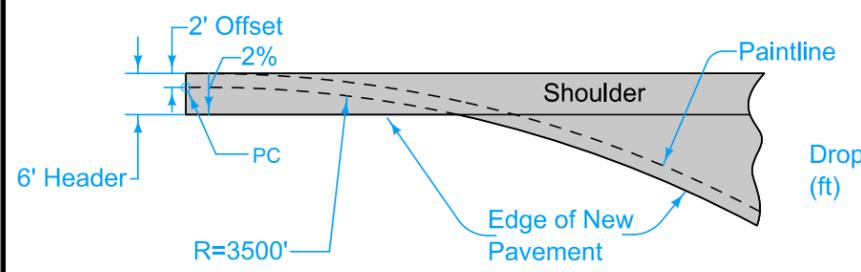
SECTION B-B



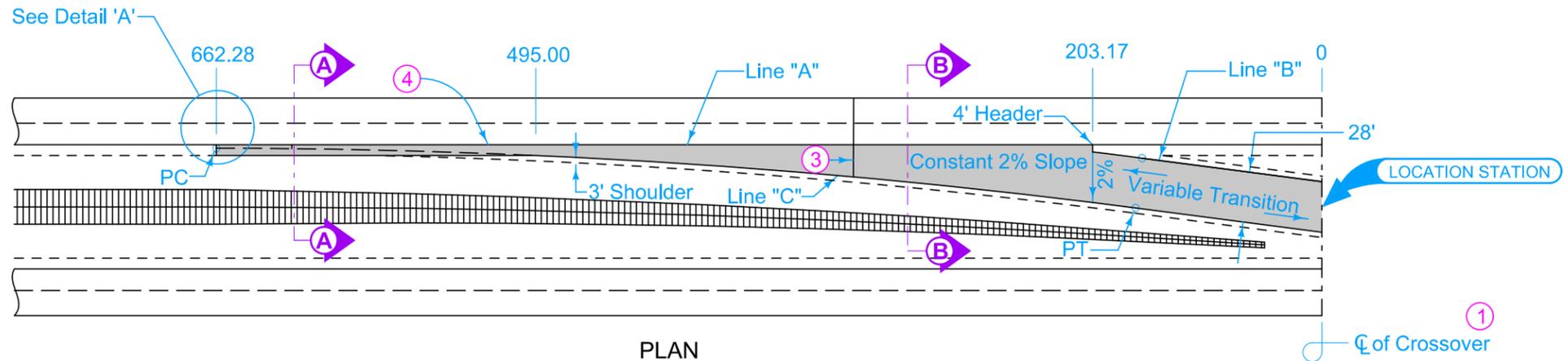
PERSPECTIVE VIEW



PROFILE



DETAIL 'A'



PLAN

Detour Pavement options: 9" PCC or 12" HMA
For joint details, see PV-101.

- ① Median crossover is symmetrical about centerline.
- ② Median pipe for crossover. See DR-504.
- ③ For PCC Detour Pavement, match existing roadway joints. 'CD' joints are required.
- ④ 'BT-2' or 'L-2' joint if mainline pavement is new construction. Bend bars out. 'BT-3' joint if mainline pavement is existing. 'B' joint if Detour Pavement is HMA.

DESIGN QUANTITY TABLE		
Detour Pavement Sq. Yds.	Special Backfill Tons	Granular Shoulder Tons
2610	1115	*305

*Quantity based on 8" shoulder depth.



- Possible Contract Items:
- Detour Pavement
 - Embankment In Place
 - Excavation, Class 10, Roadway and Borrow
 - Excavation, Class 13, Roadway and Borrow
 - Granular Shoulder, Type A
 - Removal of Pavement
 - Special Backfill

Possible Tabulation:
112-8

TABLE OF OFFSETS AND DROPS																							
Distance (Feet)	662.28	625	600	575	525	495	475	450	425	400	375	350	325	300	275	250	203.17	150	100	75	50	25	0
Offset A to C (Feet)	6.00	6.00	6.00	6.00	6.00	6.00	7.01	8.44	10.05	11.84	13.81	15.96	18.29	20.80	23.49	26.37	32.24	39.69	47.46	51.61	55.81	60.00	64.19
Drop A to C (Feet)	0.24	0.16	0.12	0.12	0.12	0.12	0.14	0.17	0.20	0.24	0.28	0.32	0.37	0.42	0.47	0.53	0.64	0.73	0.77	0.78	0.77	0.75	0.72
Drop A to B (Feet)																	0.08	0.23	0.38	0.46	0.55	0.63	0.72

STANDARD ROAD PLAN

REVISION	
2	10-21-25

PV-514

SHEET 1 of 1

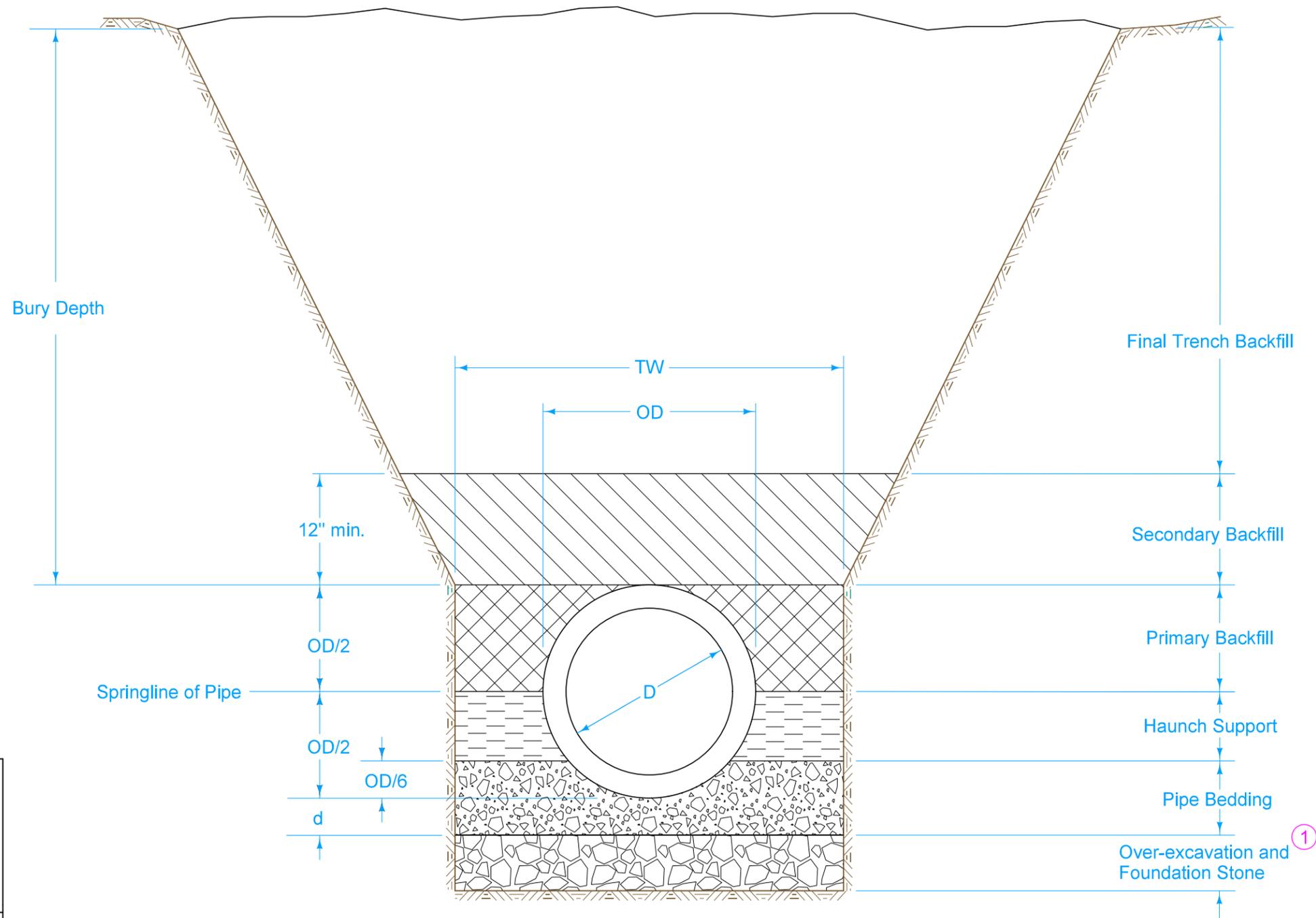
REVISIONS: Changed 'KT-2' joint to 'BT-2' joint.

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

MEDIAN CROSSOVER
(100' MEDIAN)
28' WIDE 2 LANE

Refer to the contract documents for specific material and placement requirements.

① Required only when specified in the contract documents or when directed by the Engineer.



Key

OD = Outside diameter of pipe

D = Inside diameter of pipe

TW = Trench width at top of pipe

d = Depth of bedding material below pipe

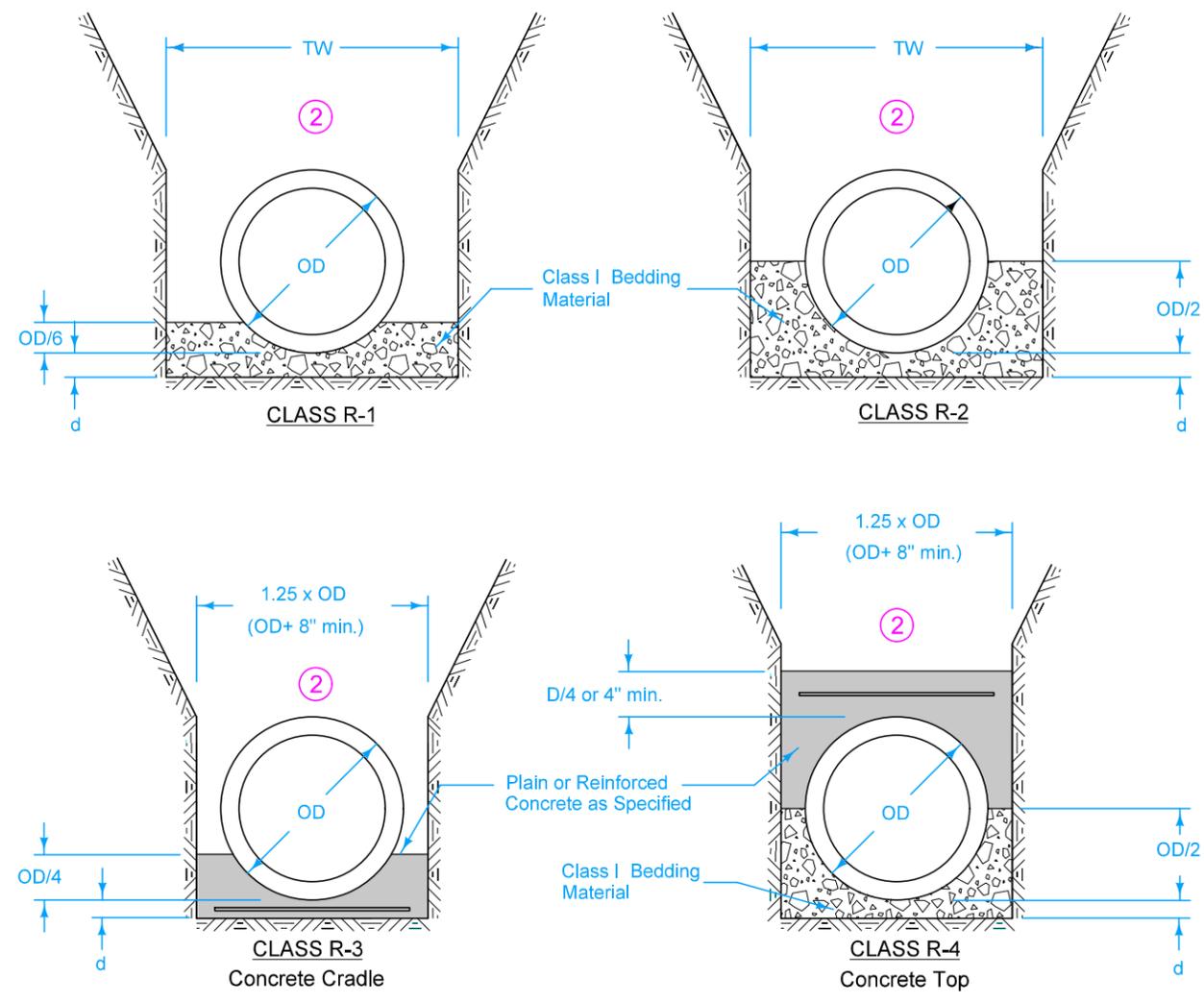
FIGURE 3010.101 SHEET 1 OF 1

		REVISION	
		2	10-21-25
FIGURE 3010.101	STANDARD ROAD PLAN	SW-101	
		SHEET 1 of 1	

REVISIONS: Updated Sudas and IDOT Logos.

TRENCH BEDDING AND BACKFILL ZONES

RCP AND VCP CIRCULAR PIPE BEDDING ①



Refer to sheet 2 for bury depth restrictions.

- ① Use Bedding Class R-1 or R-2 unless specified otherwise.
- ② Place remainder of bedding and backfill materials as specified in the contract documents.

Key

- OD = Outside diameter of pipe
- OS = Outside span of pipe
- TW = Trench width at top of pipe:
Min. = OD + 18 inches
Max. = $1.25 \times OD + 12$ inches OR 54 inches (whichever is greater)
- d = Depth of bedding material below pipe:
OD/8 or OS/8, OR 4 inches (whichever is greater)

REINFORCED CONCRETE ARCH AND ELLIPTICAL PIPE BEDDING

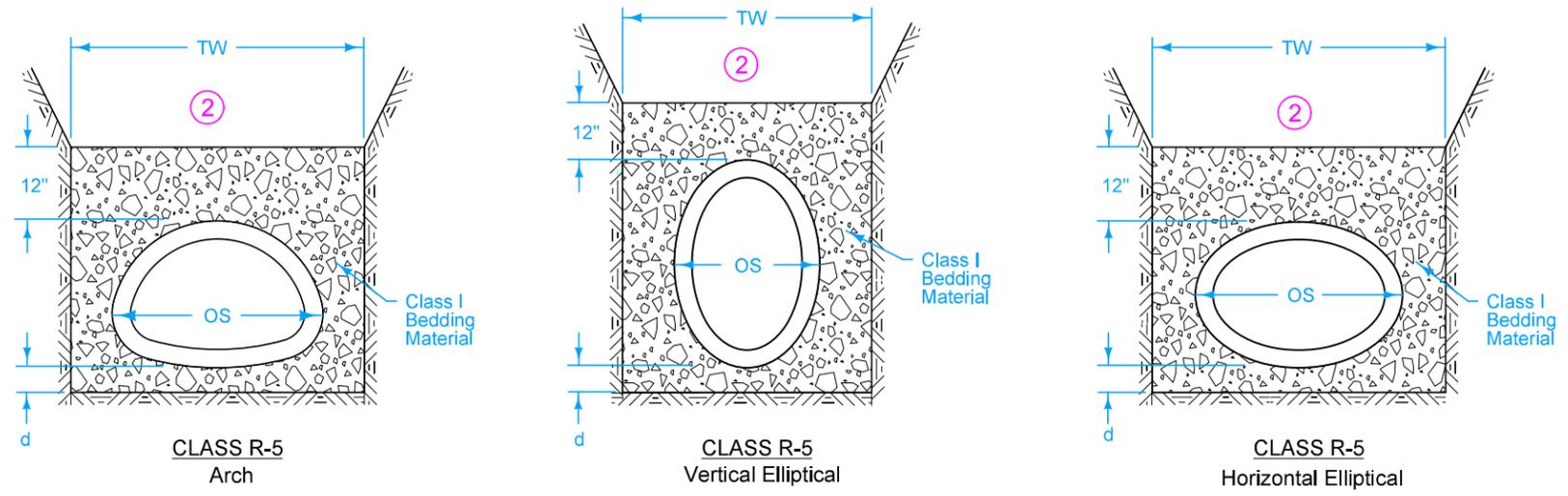


FIGURE 3010.102 SHEET 1 OF 2

		REVISION	
		5	10-21-25
FIGURE 3010.102	STANDARD ROAD PLAN	SW-102 SHEET 1 of 2	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR
 DESIGN METHODS ENGINEER

**RIGID GRAVITY PIPE
TRENCH BEDDING**

ALLOWABLE BURY DEPTH

CLASS III RCP

Pipe Diameter (in)	Class R-1 Bedding	Class R-2 Bedding	Class R-3 & R-4 Bedding		
			No Steel	As=0.4%	As=1.0%
12	7'	10'	15'	19'	27'
15	8'	10'	16'	19'	27'
18	8'	11'	16'	20'	40'
21	8'	11'	18'	26'	40'
24	8'	12'	23'	36'	40'
27	10'	15'	30'	40'	40'
30	11'	15'	29'	40'	40'
33	11'	15'	28'	40'	40'
36	11'	15'	27'	40'	40'
42	11'	15'	26'	38'	40'
48	11'	15'	26'	36'	40'
54	11'	15'	25'	34'	40'
60	11'	15'	25'	33'	40'
66	11'	15'	24'	32'	40'
72	11'	15'	24'	32'	40'

As = Area of Steel Reinforcing

CLASS IV RCP

Pipe Diameter (in)	Class R-1 Bedding	Class R-2 Bedding	Class R-3 & R-4 Bedding		
			No Steel	As=0.4%	As=1.0%
12	12'	15'	23'	28'	40'
15	12'	16'	23'	30'	40'
18	13'	16'	29'	40'	40'
21	13'	18'	40'	40'	40'
24	16'	23'	40'	40'	40'
27	19'	30'	40'	40'	40'
30	19'	29'	40'	40'	40'
33	19'	28'	40'	40'	40'
36	19'	28'	40'	40'	40'
42	18'	27'	40'	40'	40'
48	18'	26'	40'	40'	40'
54	18'	25'	40'	40'	40'
60	18'	25'	40'	40'	40'
66	18'	25'	40'	40'	40'
72	18'	24'	40'	40'	40'

As = Area of Steel Reinforcing

CLASS V RCP

Pipe Diameter (in)	Class R-1 Bedding	Class R-2 Bedding	Class R-3 & R-4 Bedding		
			No Steel	As=0.4%	As=1.0%
12	18'	23'	35'	40'	40'
15	19'	24'	40'	40'	40'
18	19'	30'	40'	40'	40'
21	25'	40'	40'	40'	40'
24	34'	40'	40'	40'	40'
27	40'	40'	40'	40'	40'
30	40'	40'	40'	40'	40'
33	40'	40'	40'	40'	40'
36	40'	40'	40'	40'	40'
42	37'	40'	40'	40'	40'
48	35'	40'	40'	40'	40'
54	33'	40'	40'	40'	40'
60	32'	40'	40'	40'	40'
66	31'	40'	40'	40'	40'
72	31'	40'	40'	40'	40'

As = Area of Steel Reinforcing

EXTRA STRENGTH VCP

Pipe Dia. (in)	Bedding Class				
	R-1	R-2	R-3 & R-4		
			No Steel	As=0.4%	As=1.0%
6	25'	30'	30'	30'	30'
8	20'	26'	30'	30'	30'
10	18'	23'	30'	30'	30'
12	16'	20'	30'	30'	30'
15	15'	19'	28'	30'	30'
18	14'	18'	30'	30'	30'
21	15'	22'	30'	30'	30'
24	18'	28'	30'	30'	30'
27	20'	30'	30'	30'	30'
30	19'	29'	30'	30'	30'
33	20'	30'	30'	30'	30'
36	20'	30'	30'	30'	30'
39	19'	29'	30'	30'	30'
42	18'	26'	30'	30'	30'

As = Area of Steel Reinforcing

CONCRETE ARCH PIPE

Pipe Size (in x in)	Equiv. Dia. (in)	Pipe Class	
		A-III	A-IV
18 x 11	15	6'	11'
22 x 13	18	6'	11'
26 x 15	21	6'	13'
29 x 18	24	7'	15'
36 x 22	30	8'	15'
44 x 27	36	8'	14'
51 x 31	42	8'	15'
58 x 36	48	8'	15'
65 x 40	54	8'	15'
73 x 45	60	8'	14'
88 x 54	72	9'	14'

Based on Class R-5 bedding

HORIZONTAL ELLIPTICAL RCP

Pipe Size (in x in)	Equiv. Dia. (in)	Pipe Class	
		HE-III	HE-IV
14 x 23	18	12'	22'
19 x 30	24	15'	29'
22 x 34	27	15'	28'
24 x 38	30	15'	27'
27 x 42	33	15'	27'
29 x 45	36	15'	26'
32 x 49	39	15'	26'
34 x 54	42	15'	25'
38 x 60	48	15'	25'
43 x 68	54	15'	24'
48 x 76	60	15'	24'
53 x 83	66	15'	24'
58 x 91	72	15'	24'
63 x 98	78	15'	23'
68 x 106	84	15'	23'

Based on Class R-5 bedding

VERTICAL ELLIPTICAL RCP

Pipe Size (in x in)	Equiv. Dia. (in)	Pipe Class			
		VE-III	VE-IV	VE-V	VE-VI
23 x 14	18	10'	15'	22'	33'
30 x 19	24	10'	16'	34'	40'
34 x 22	27	11'	20'	40'	40'
38 x 24	30	12'	23'	40'	40'
42 x 27	33	15'	30'	40'	40'
45 x 29	36	15'	29'	40'	40'
49 x 32	39	15'	29'	40'	40'
54 x 34	42	15'	28'	40'	40'
60 x 38	48	15'	27'	40'	40'
68 x 43	54	15'	27'	40'	40'
76 x 48	60	15'	26'	40'	40'
83 x 53	66	15'	25'	40'	40'
91 x 58	72	15'	25'	40'	40'
98 x 63	78	15'	25'	40'	40'
106 x 68	84	15'	24'	40'	40'

Based on Class R-5 bedding

FIGURE 3010.102 SHEET 2 OF 2

 	REVISION	
	5	10-21-25
FIGURE 3010.102 STANDARD ROAD PLAN	SW-102 SHEET 2 of 2	

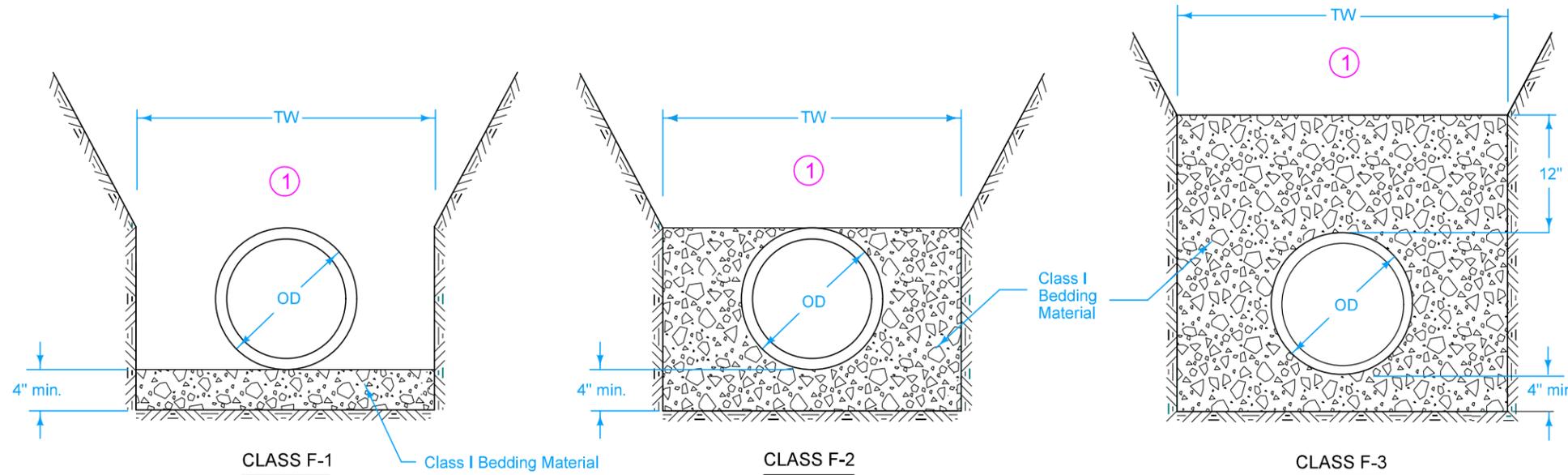
REVISIONS: Updated Sudas and IDOT Logos.



 SUDAS DIRECTOR DESIGN METHODS ENGINEER

RIGID GRAVITY PIPE TRENCH BEDDING

BEDDING CLASSES



- ① Place remainder of bedding and backfill materials as specified in the contract documents.
- ② Minimum depth of bury 12 inches or as specified by the manufacturer.

ALLOWABLE BEDDING CLASSES

PIPE MATERIAL	STORM SEWER	SANITARY SEWER
Ductile Iron	F-1, F-2, F-3	F-1, F-2, F-3
HDPE	F-2, F-3	Not allowed
Polypropylene	F-2, F-3	F-3
PVC	F-2, F-3	F-3

Key

OD = Outside diameter of pipe
 TW = Trench width at top of pipe:
 Min. = OD+18 inches OR 1.25xOD+12 inches
 (whichever is greater)

ALLOWABLE BURY DEPTH ②

PVC PIPE

Pipe Diameter (in)	ASTM D 3034			ASTM F 679	ASTM F 949	ASTM F 1803	ASTM D 2680
	Solid Wall			Solid Wall	Corrug. Exterior	Closed Profile	Composite (Truss Type)
	SDR 23.5	SDR 26	SDR 35	SDR 35			
8	30'	28'	24'	---	24'	---	32'
10	30'	28'	24'	---	24'	---	32'
12	30'	28'	24'	---	24'	---	32'
15	30'	28'	24'	---	24'	---	32'
18	---	---	---	24'	24'	---	---
21	---	---	---	24'	24'	24'	---
24	---	---	---	24'	24'	24'	---
27	---	---	---	24'	---	24'	---
30	---	---	---	24'	24'	24'	---
33	---	---	---	24'	---	---	---
36	---	---	---	24'	24'	24'	---
42	---	---	---	24'	---	24'	---
48	---	---	---	24'	---	24'	---
54	---	---	---	---	---	24'	---
60	---	---	---	---	---	24'	---

DUCTILE IRON, AWWA C151, CLASS 52

Pipe Diameter (in)	Class F-1 Bedding	Class F-2 Bedding	Class F-3 Bedding
4	40'	40'	40'
6	40'	40'	40'
8	40'	40'	40'
10	40'	40'	40'
12	37'	40'	40'
14	31'	40'	40'
16	28'	37'	40'
18	25'	34'	40'
20	23'	32'	40'
24	20'	29'	38'
30	18'	23'	31'
36	18'	22'	30'
42	17'	21'	29'
48	16'	19'	27'
54	16'	19'	27'

HDPE PIPE

Pipe Diameter (in)	AASHTO M 294
12	8'
15	9'
18	9'
24	9'
30	9'
36	9'
42	8'
48	8'
54	8'
60	8'

POLYPROPYLENE PIPE

Pipe Diameter (in)	ASTM F 2764
12	24'
15	25'
18	22'
24	20'
30	22'
36	21'
42	22'
48	23'
54	21'
60	21'

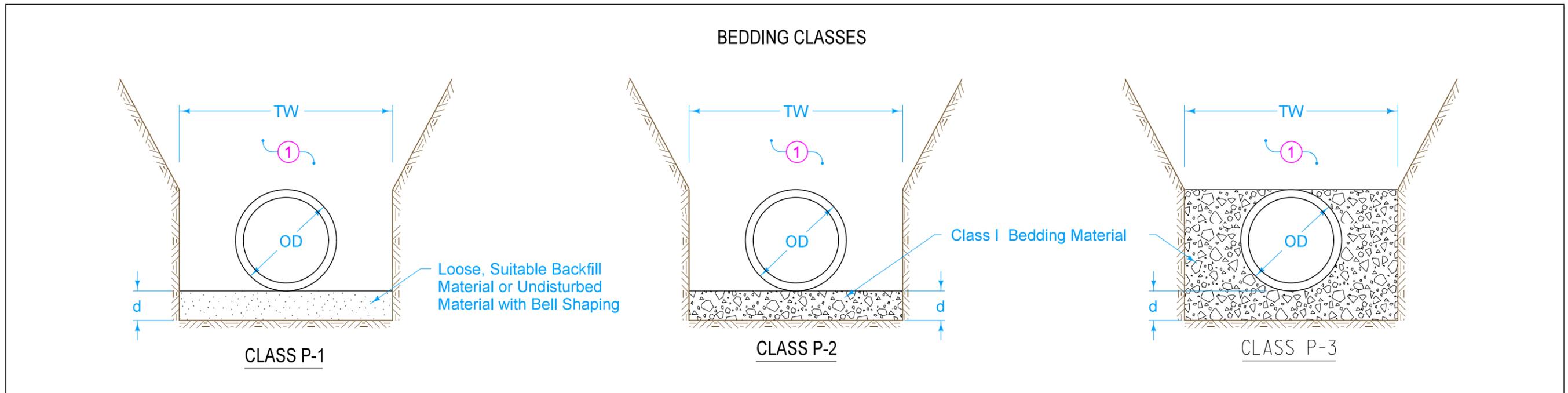
FIGURE 3010.103 SHEET 1 OF 1

		REVISION
		5 10-21-25
FIGURE 3010.103	STANDARD ROAD PLAN	SW-103
SHEET 1 of 1		

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR
 DESIGN METHODS ENGINEER

FLEXIBLE GRAVITY PIPE TRENCH BEDDING



ALLOWABLE BURY DEPTH

DUCTILE IRON, AWWA C151, CLASS 52

Pipe Diameter (inches)	Class P-1 Bedding	Class P-2 Bedding	Class P-3 Bedding
4	40'	40'	40'
6	40'	40'	40'
8	40'	40'	40'
10	36'	40'	40'
12	31'	40'	40'
14	26'	40'	40'
16	23'	37'	40'
18	20'	34'	40'
20	18'	32'	40'
24	16'	29'	38
30	13'	23'	31'
36	13'	22'	30'
42	13'	21'	29'
48	13'	19'	27'
54	13'	19'	27'

PVC, AWWA C900, DR18

Pipe Diameter (inches)	Class P-1 Bedding	Class P-2 Bedding	Class P-3 Bedding
4	19'	23'	40'
6	19'	23'	40'
8	19'	23'	40'
10	19'	23'	40'
12	19'	23'	40'
14	19'	23'	40'
16	19'	23'	40'
18	19'	23'	40'
20	19'	23'	40'
24	19'	23'	40'

① Place remainder of bedding and backfill material as specified in the contract documents.

Key

- OD = Outside diameter of pipe
- TW = Trench width at top of pipe:
Min. = OD+18 inches OR 1.25xOD+12 inches (whichever is greater)
- d = Depth of bedding material below pipe:
Min. = OD/8 OR 4 inches (whichever is greater)

FIGURE 3010.104 SHEET 1 OF 1

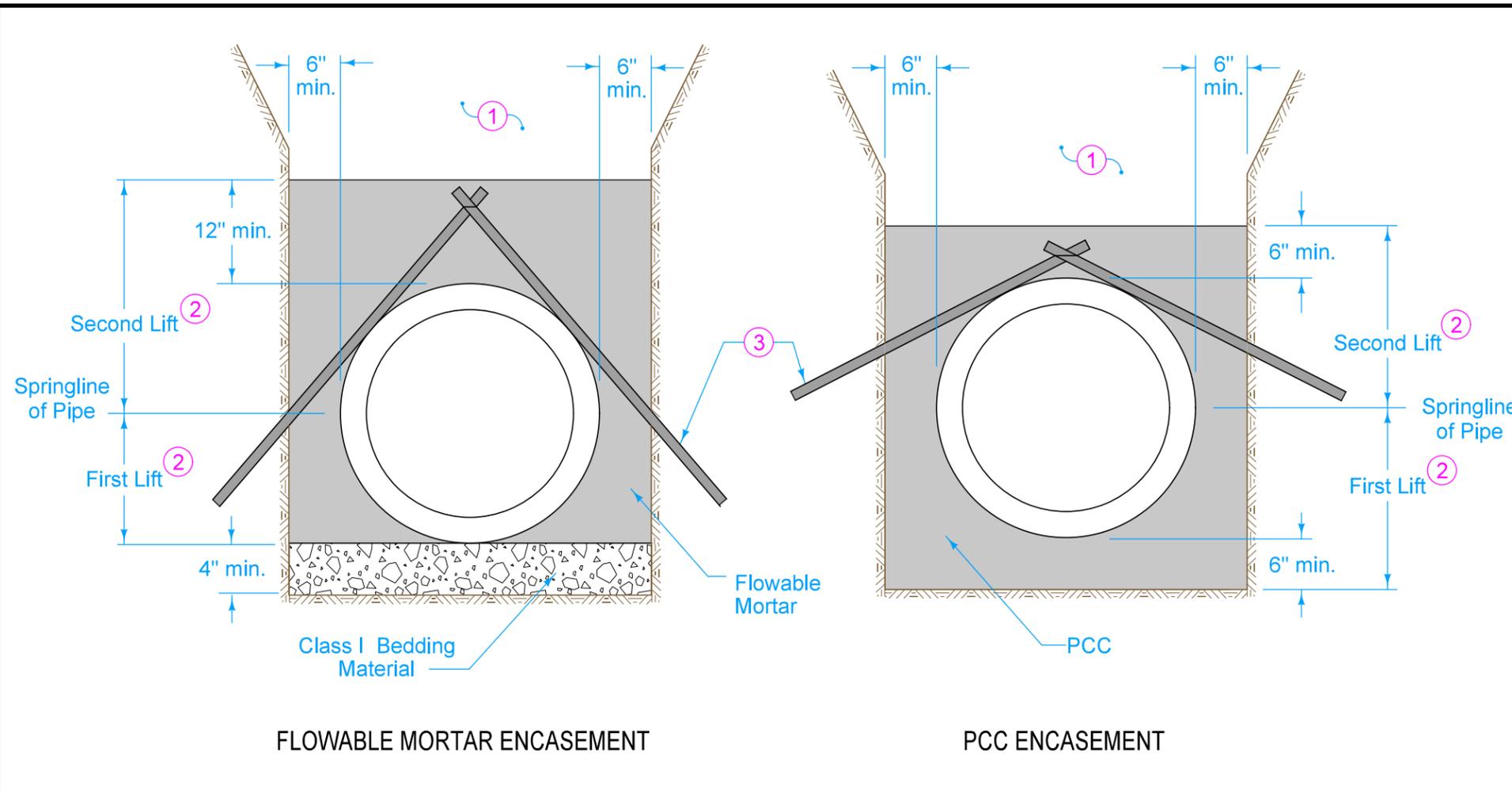
		REVISION	
		4	10-21-25
FIGURE 3010.104	STANDARD ROAD PLAN	SW-104	
		SHEET 1 of 1	

REVISIONS: Updated Sudas and IDOT Logos.

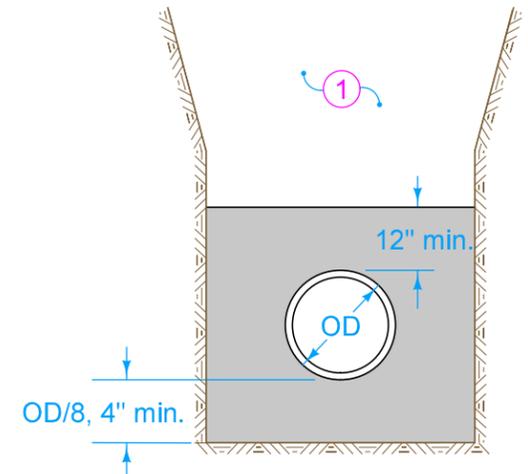
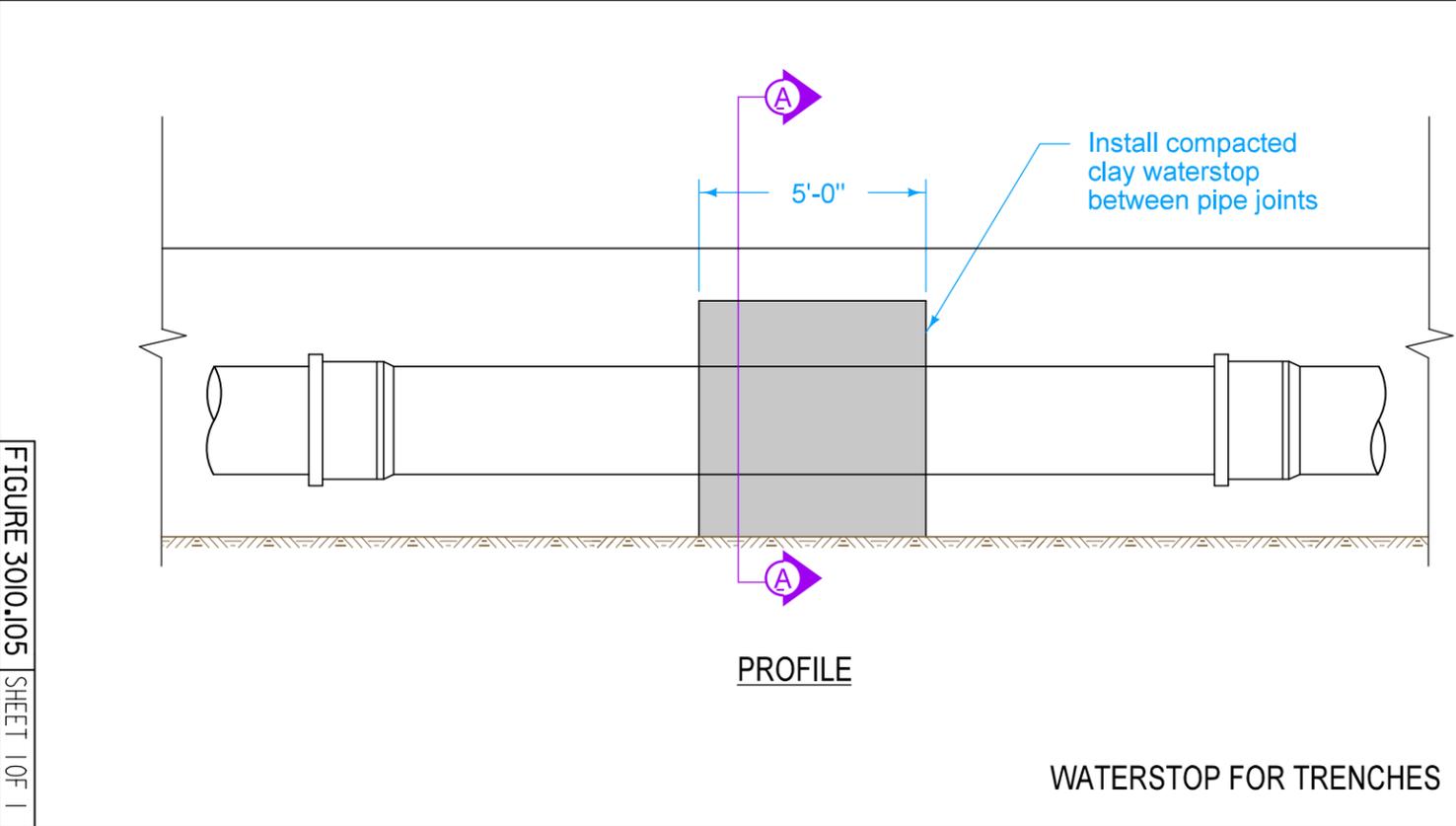
SUDAS DIRECTOR

DESIGN METHODS ENGINEER

PRESSURE PIPE TRENCH BEDDING



- ① Place remainder of bedding and backfill material as specified in the contract documents.
- ② Place encasement material in two lifts, or as required to prevent pipe flotation. Allow previous lift to reach initial set prior to placing subsequent lifts.
- ③ Restrain pipe as necessary to prevent flotation.
- ④ When specified in the contract documents, install waterstops at a nominal spacing of 800 feet or at locations as specified by the Engineer.



WATERSTOP FOR TRENCHES ④

FIGURE 3010.105 SHEET 1 OF 1

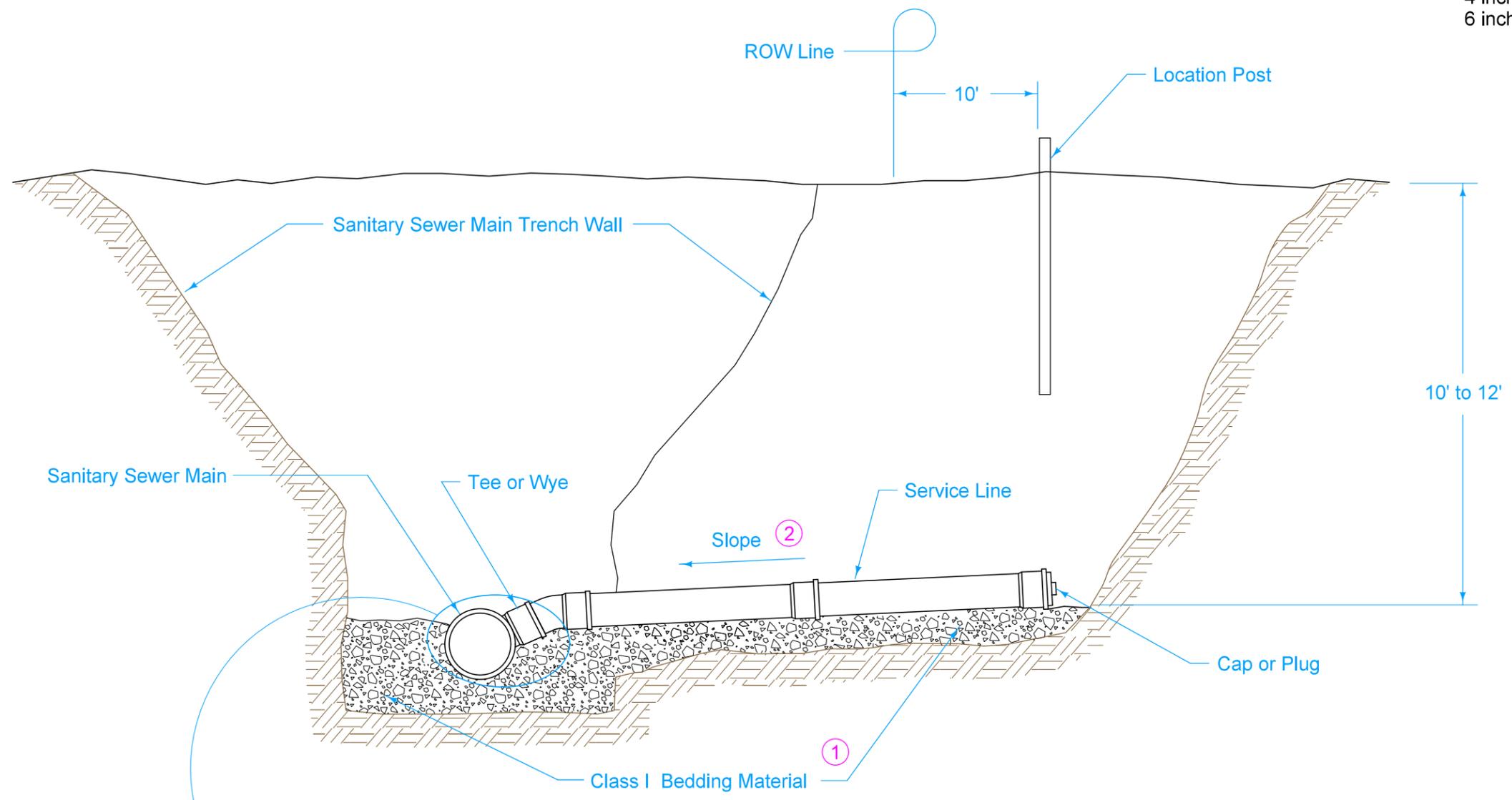
		REVISION	
		3	10-21-25
FIGURE 3010.105	STANDARD ROAD PLAN	SW-105	
		SHEET 1 of 1	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR
 DESIGN METHODS ENGINEER

MISCELLANEOUS PIPE BEDDING

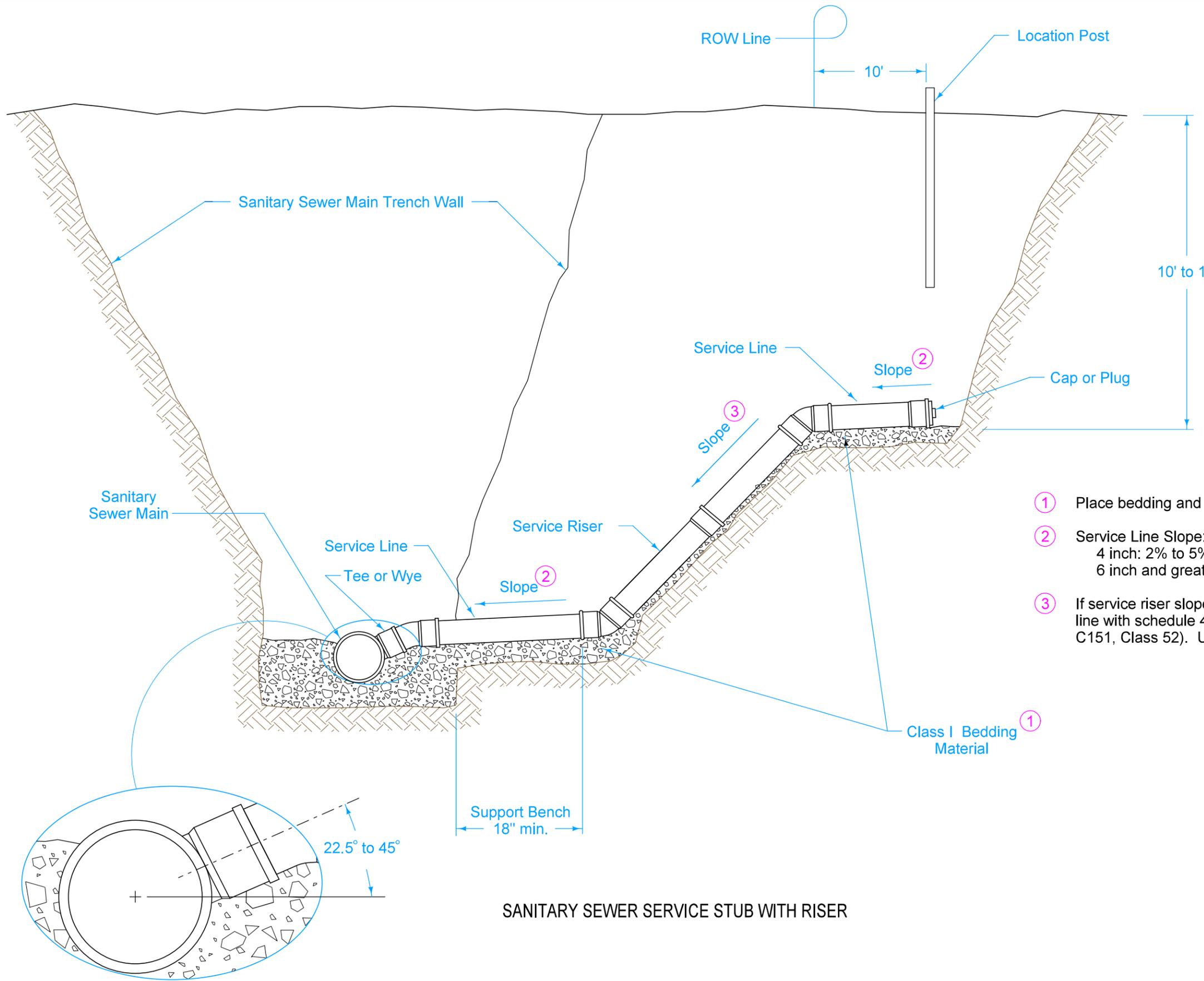
- ① Place bedding and backfill material as required for sewer main.
- ② Service Line Slope:
4 inch: 2% to 5%
6 inch and greater: 1% to 5%



SANITARY SEWER SERVICE STUB

FIGURE 4010.201 SHEET 1 OF 2

		REVISION	
		3	10-21-25
FIGURE 4010.201	STANDARD ROAD PLAN	SW-201	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SANITARY SEWER SERVICE STUB			



- ① Place bedding and backfill material as required for sewer main.
- ② Service Line Slope:
4 inch: 2% to 5%
6 inch and greater: 1% to 5%
- ③ If service riser slope is steeper than 1:1, construct riser of entire service line with schedule 40 PVC (ASTM D 1785) or ductile iron (AWWA C151, Class 52). Use single length of pipe for riser, if possible.

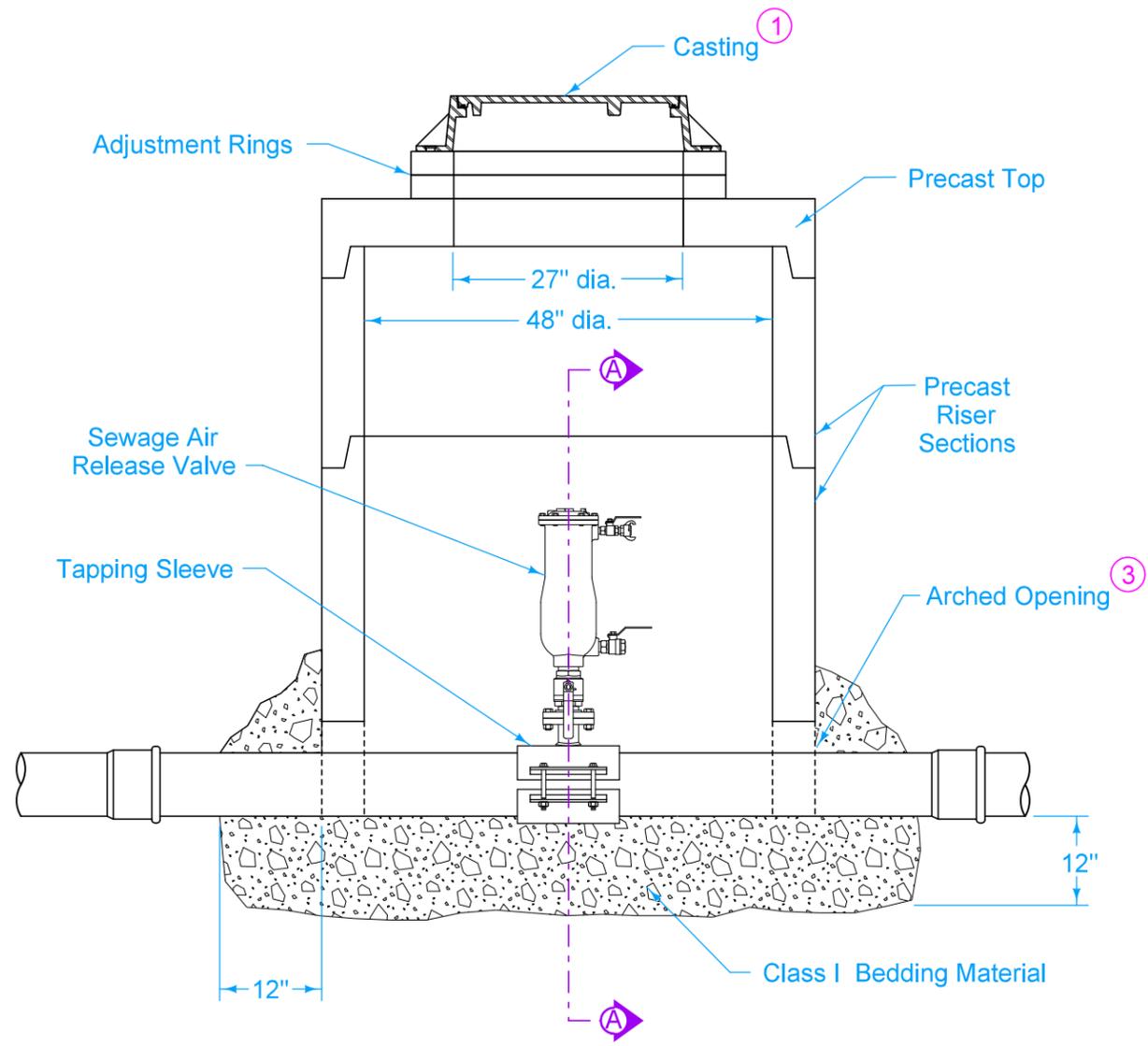
Class I Bedding Material ①

SANITARY SEWER SERVICE STUB WITH RISER

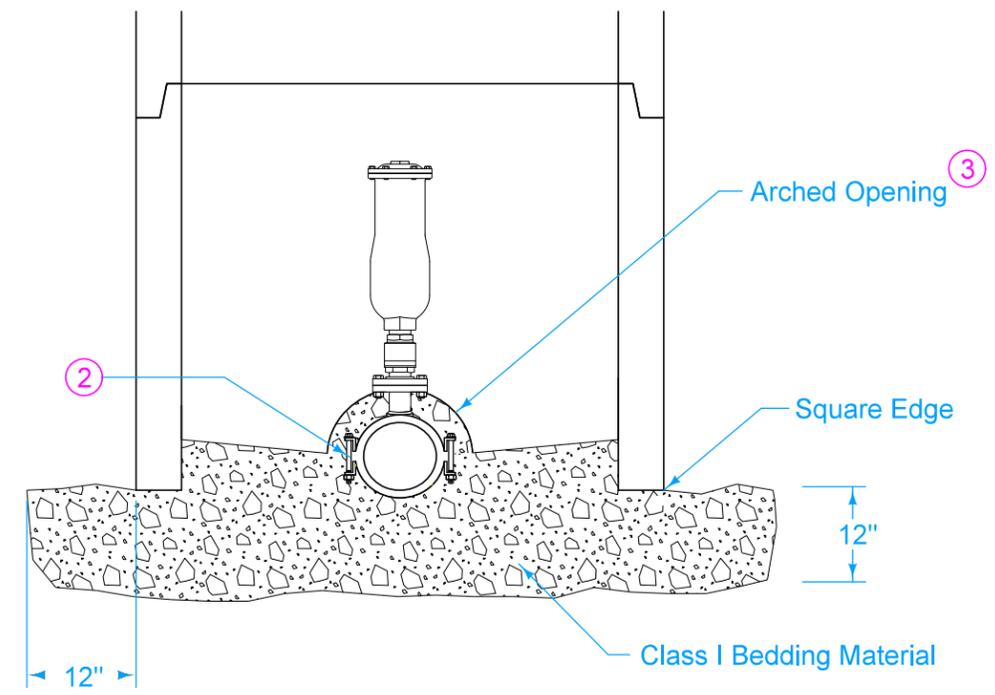
FIGURE 4010.201 SHEET 2 OF 2

		REVISION	
		3	10-21-25
FIGURE 4010.201	STANDARD ROAD PLAN	SW-201	
		SHEET 2 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SANITARY SEWER SERVICE STUB			

- ① SW-601 Type A or SW-602 Type G casting.
- ② Place bedding material to springline of pipe.
- ③ Prevent riser from bearing on pipe by providing an arched opening with a diameter up to 6 inches larger than pipe diameter.



TYPICAL SECTION

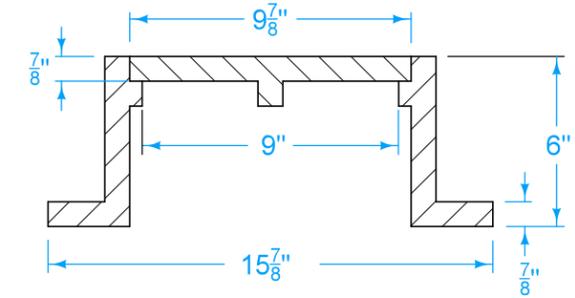
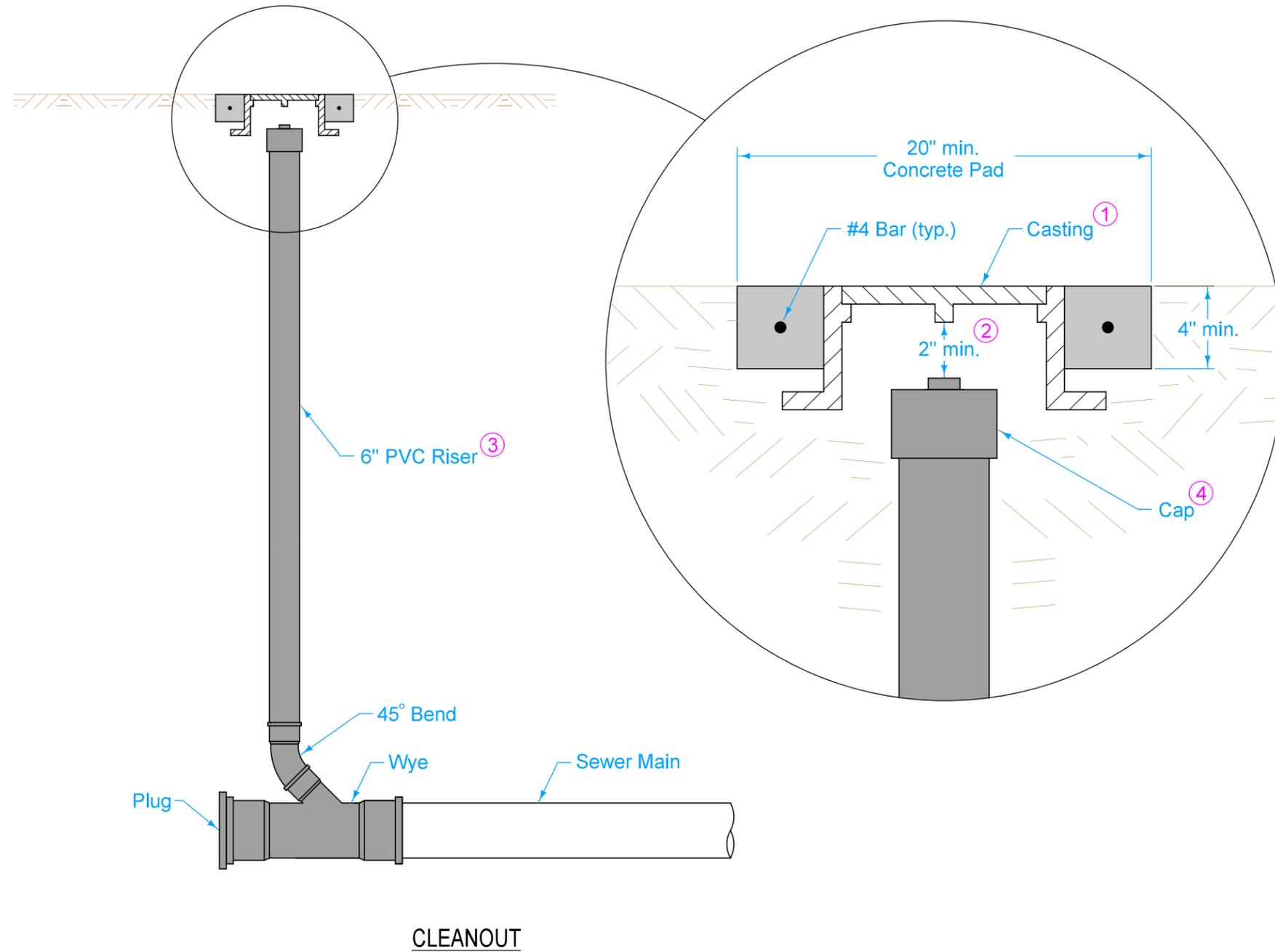


SECTION A-A

FIGURE 4010.202 SHEET 1 OF 1

		REVISION	
		3	10-21-25
FIGURE 4010.202	STANDARD ROAD PLAN	SW-202	
		SHEET 1 of 1	
REVISIONS: Updated Sudas and IDOT Logo.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SEWAGE AIR RELEASE VALVE PIT			

- ① Standard duty casting complying with AASHTO M 306. Mark lid with "Sanitary" or "Sanitary C.O."
- ② Do not allow casting to bear on top of riser pipe.
- ③ 6 inch PVC Service Pipe
- ④ Threaded PVC cap or iron body ferrule with brass screw plug



CASTING ①
(Dimensions are nominal)

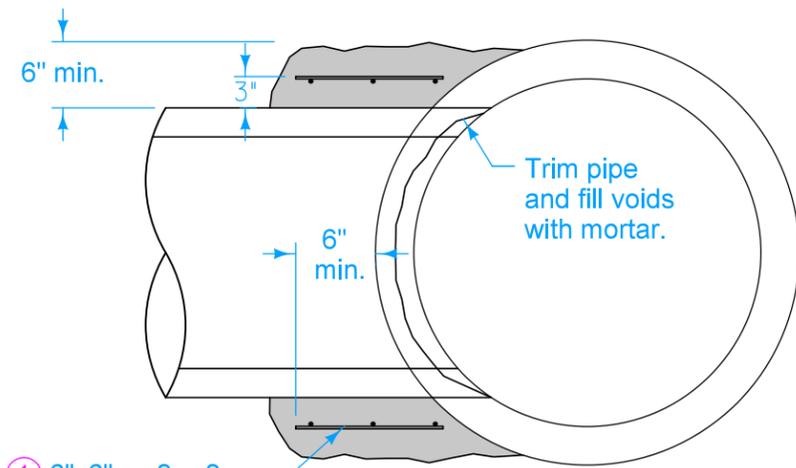
FIGURE 4010.203 SHEET 1 OF 1

		REVISION	
		2	10-21-25
FIGURE 4010.203	STANDARD ROAD PLAN	SW-203	
		SHEET 1 of 1	

REVISIONS: Updated Sudas and IDOT Logos.

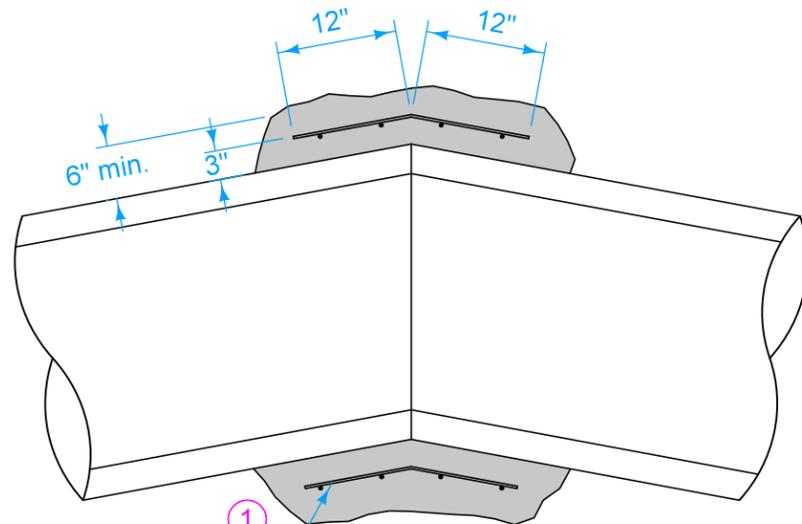
SUDAS DIRECTOR
 DESIGN METHODS ENGINEER

SANITARY SEWER CLEANOUT



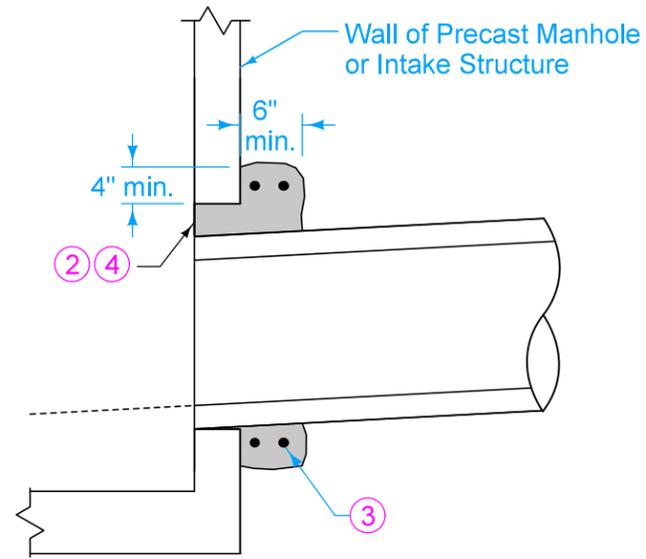
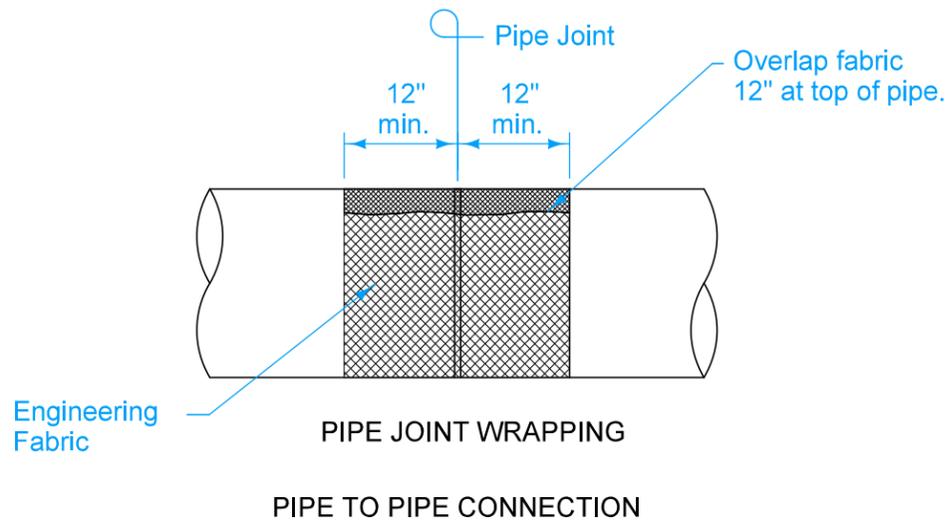
① 6"x6" - w2xw2 (8ga.) Wire Mesh

TYPE PC-1 CONCRETE COLLAR CONNECTION

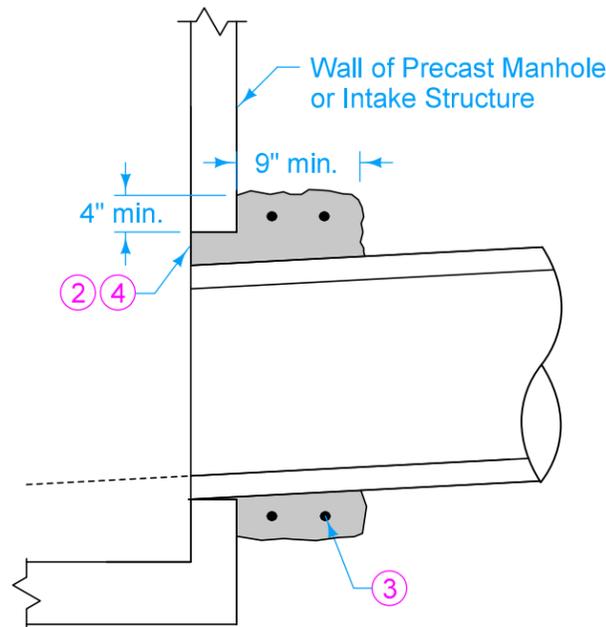


① 6"x6" - w2xw2 (8ga) Wire Mesh

TYPE PC-2 CONCRETE COLLAR CONNECTION



CONCRETE COLLAR FOR PIPES 12" AND SMALLER



CONCRETE COLLAR FOR PIPES GREATER THAN 12"

PIPE TO STRUCTURE CONNECTION

- ① Lap ends of wire mesh a minimum of 6 inches.
- ② Concrete collar is required when annular space between the outside of the pipe and the wall of the structure is 2 inches or greater.
- ③ Provide two #4 hoop bars in concrete collar. Lap bars a minimum of 6 inches.
- ④ Trowel concrete flush with inside wall of structure.

		REVISION	
		3	10-21-25
FIGURE 4020.211	STANDARD ROAD PLAN	SW-211	
		SHEET 1 of 1	

REVISIONS: Updated Sudas and IDOT Logos.

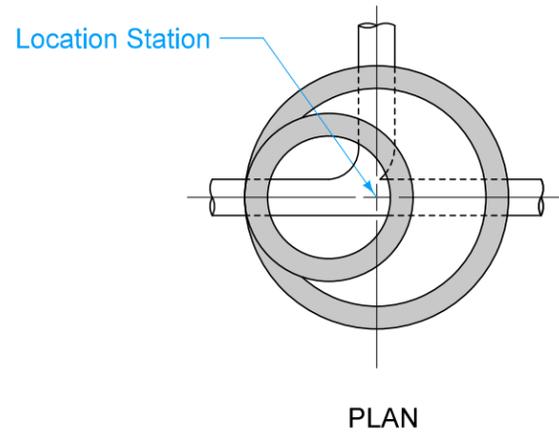
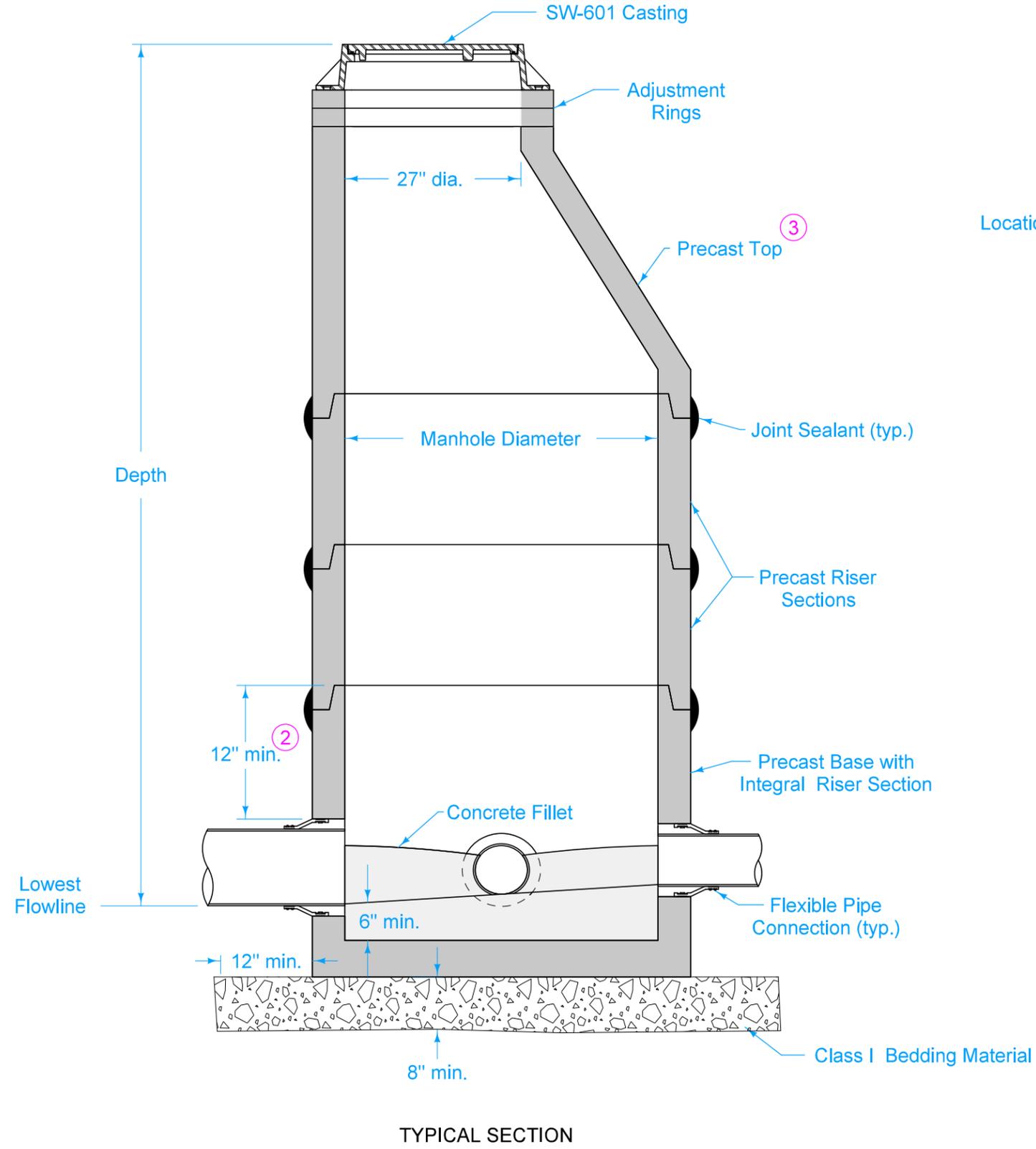
 SUDAS DIRECTOR	 DESIGN METHODS ENGINEER
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STORM SEWER PIPE CONNECTIONS

If manhole depth exceeds 20 feet, install steps.

Install infiltration barrier.

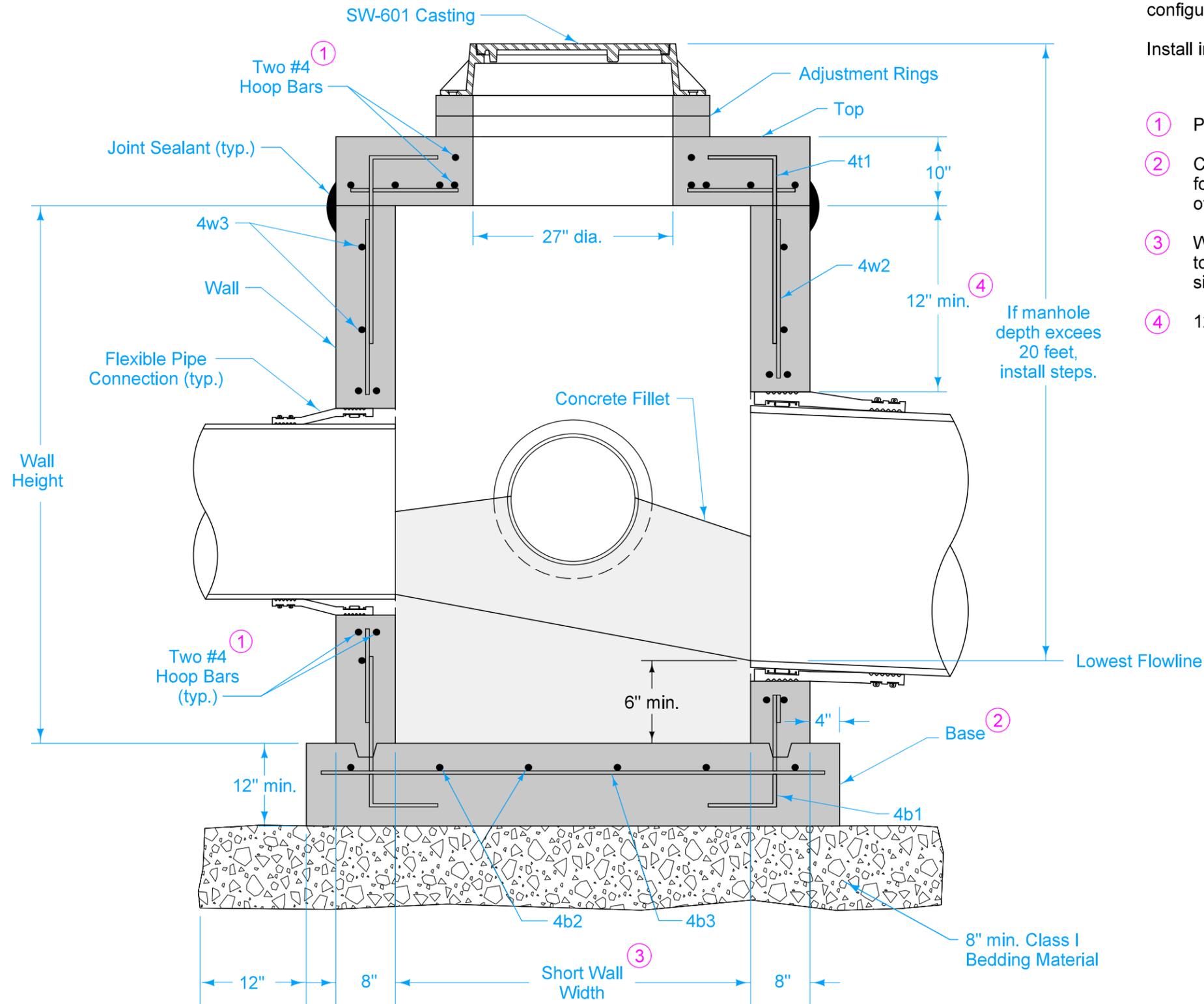
- ① For additional configurations, maintain a minimum of 12 inches of concrete between vertical edges of pipe openings.
- ② 12 inch minimum riser height above all pipe openings.
- ③ When specified, provide an eccentric flat top In Lieu of eccentric cone section.



Manhole Diameter (inches)	Maximum Pipe Diameter (inches) for 2 Pipes ①	
	At 180° Separation	At 90° Separation
48	24	18
60	36	24
72	42	30
84	48	36
96	60	42

FIGURE 6010.301 SHEET 1 OF 1

		REVISION	
		6	10-21-25
FIGURE 6010.301	STANDARD ROAD PLAN	SW-301	
		SHEET 1 of 1	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
CIRCULAR SANITARY SEWER MANHOLE			



Adjacent walls may have different widths based upon pipe configuration, but structure must be rectangular.

Install infiltration barrier.

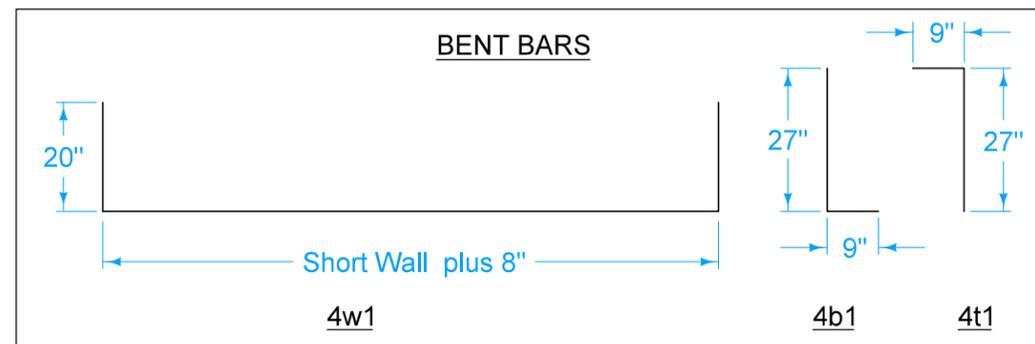
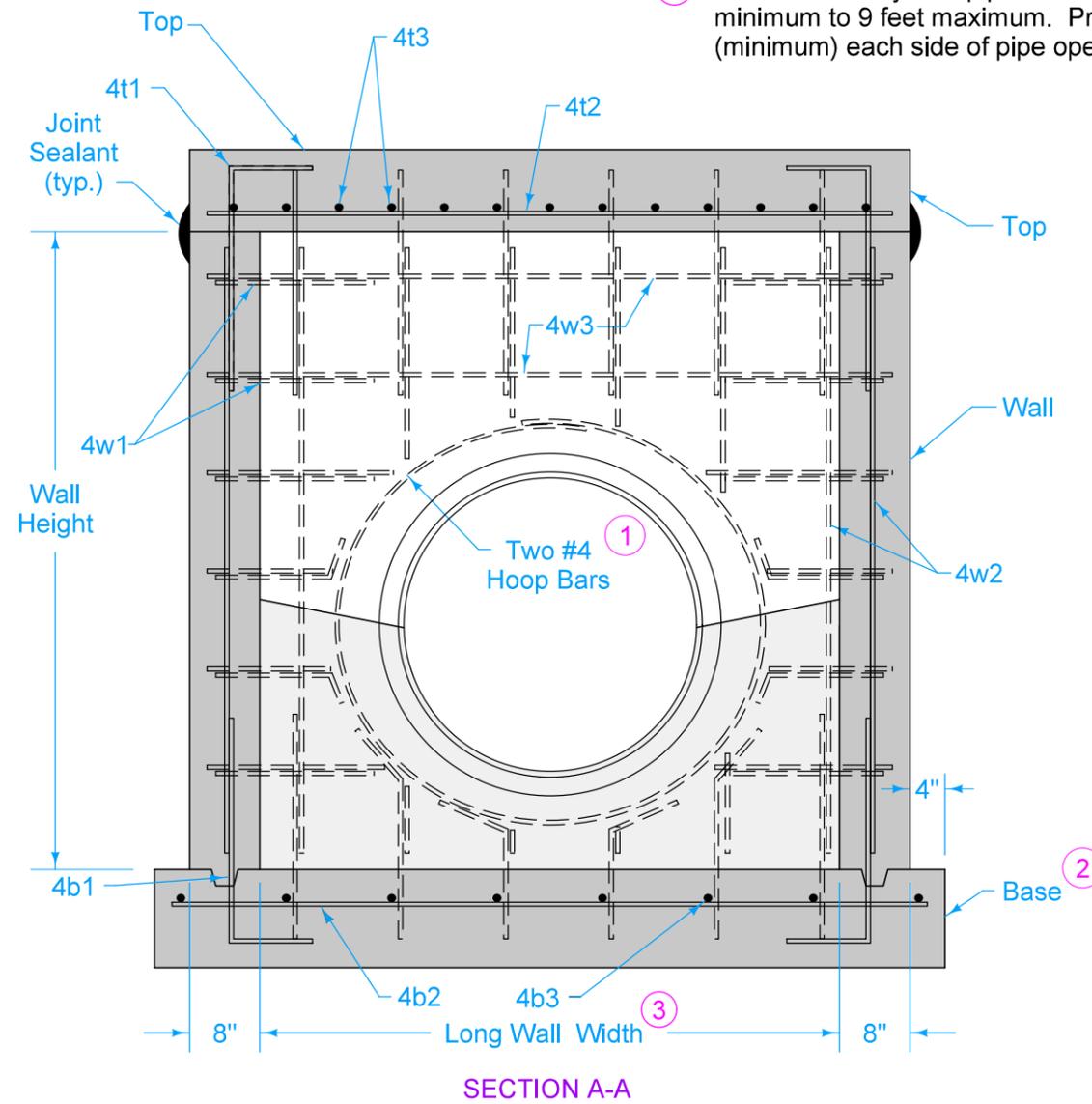
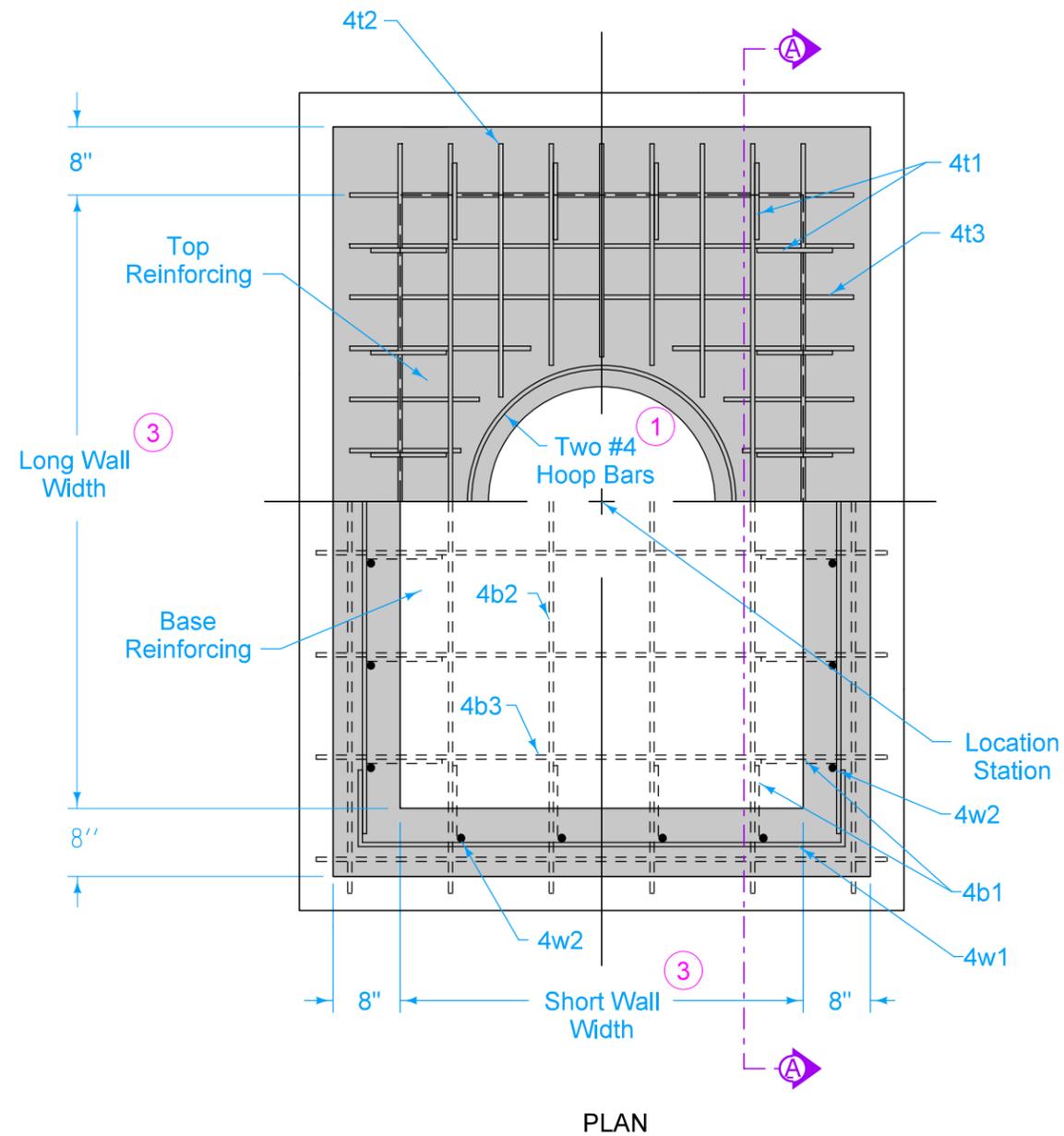
- ① Provide two #4 hoop bars at top opening and at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ Wall widths vary with pipe diameter and range from 4 feet minimum to 9 feet maximum. Provide 12 inches of wall width (minimum) each side of pipe opening.
- ④ 12 inch minimum wall height above all pipe openings.

TYPICAL SECTION

FIGURE 6010.302 SHEET 1 OF 2

		REVISION	
		4	10-21-25
FIGURE 6010.302	STANDARD ROAD PLAN	SW-302 SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
RECTANGULAR SANITARY SEWER MANHOLE			

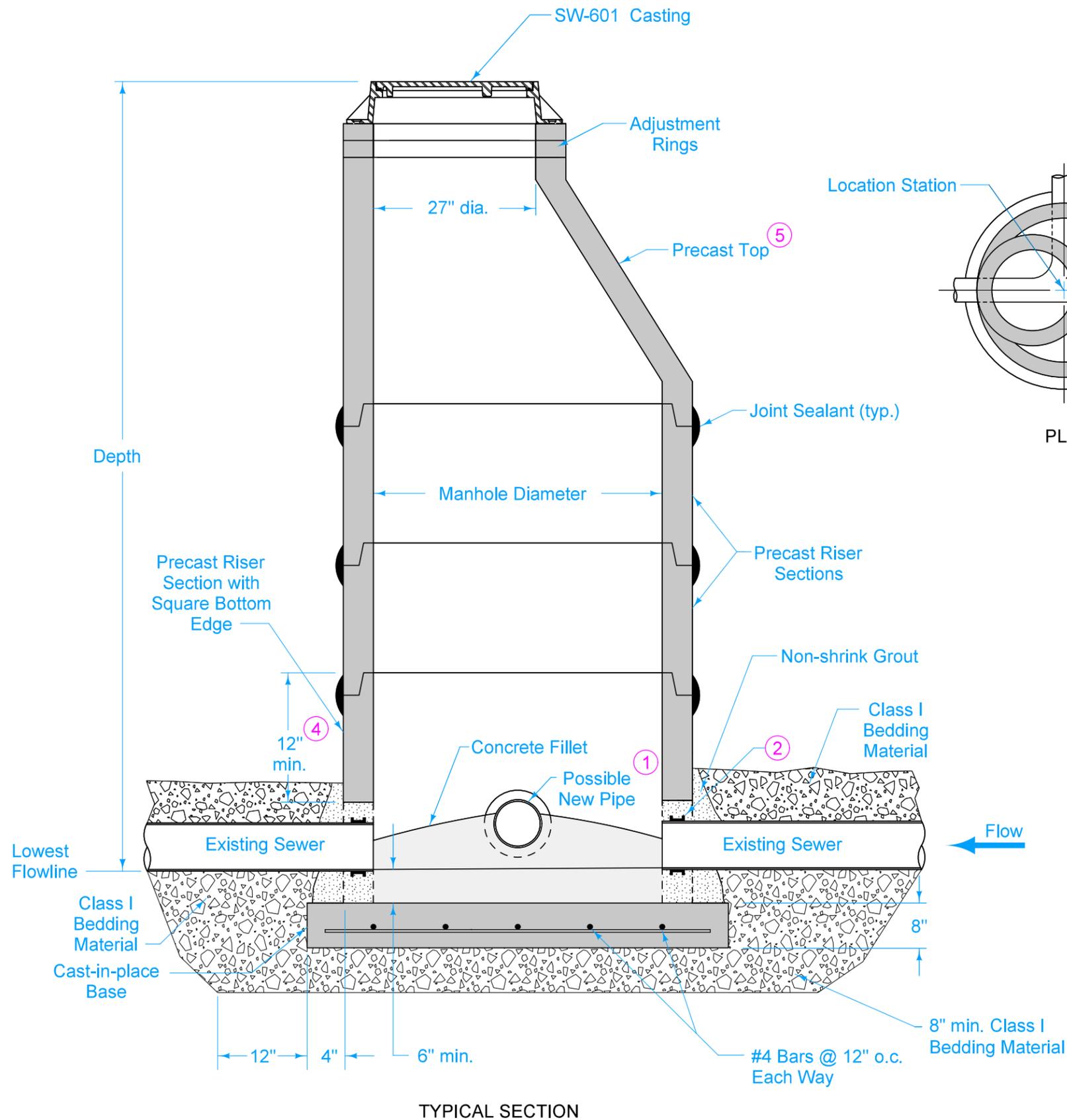
- ① Provide two #4 hoop bars at top opening and at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ Wall widths vary with pipe diameter and range from 4 feet minimum to 9 feet maximum. Provide 12 inches of wall width (minimum) each side of pipe opening.



REINFORCING BAR LIST					
Mark	Size	Location	Shape	Length	Spacing
4b1	4	Base		36"	12"
4b2	4	Base		Long Wall plus 18"	12"
4b3	4	Base		Short Wall plus 18"	12"
4t1	4	Top		36"	12"
4t2	4	Top		Long Wall plus 12"	6"
4t3	4	Top		Short Wall plus 12"	6"
4w1	4	Wall		Short Wall plus 48"	12"
4w2	4	Wall		Wall Height minus 4"	12"
4w3	4	Wall		Long Wall plus 12"	12"

FIGURE 6010.302 SHEET 2 OF 2

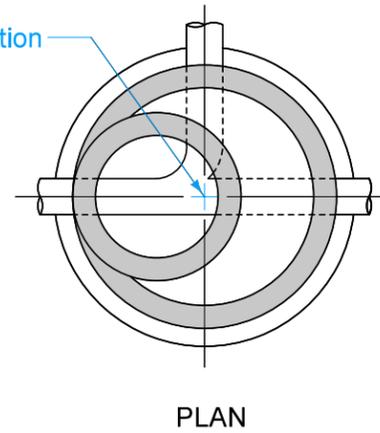
		REVISION	
		4	10-21-25
FIGURE 6010.302	STANDARD ROAD PLAN	SW-302	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
RECTANGULAR SANITARY SEWER MANHOLE			



If manhole depth exceeds 20 feet, install steps.

Install infiltration barrier.

- ① For new pipe connections, provide cored opening with flexible pipe connector.
- ② For existing pipe connections, provide an arched opening with a diameter up to 6 inches larger than outside diameter of pipe. Install waterstop around existing pipe. Fill void between pipe and opening with non-shrink grout.
- ③ For additional configurations, maintain a minimum of 12 inches of concrete between vertical edges of pipe openings.
- ④ 12 inch minimum riser height above all pipe openings.
- ⑤ When specified, provide an eccentric flat to In Lieu of eccentric cone section.

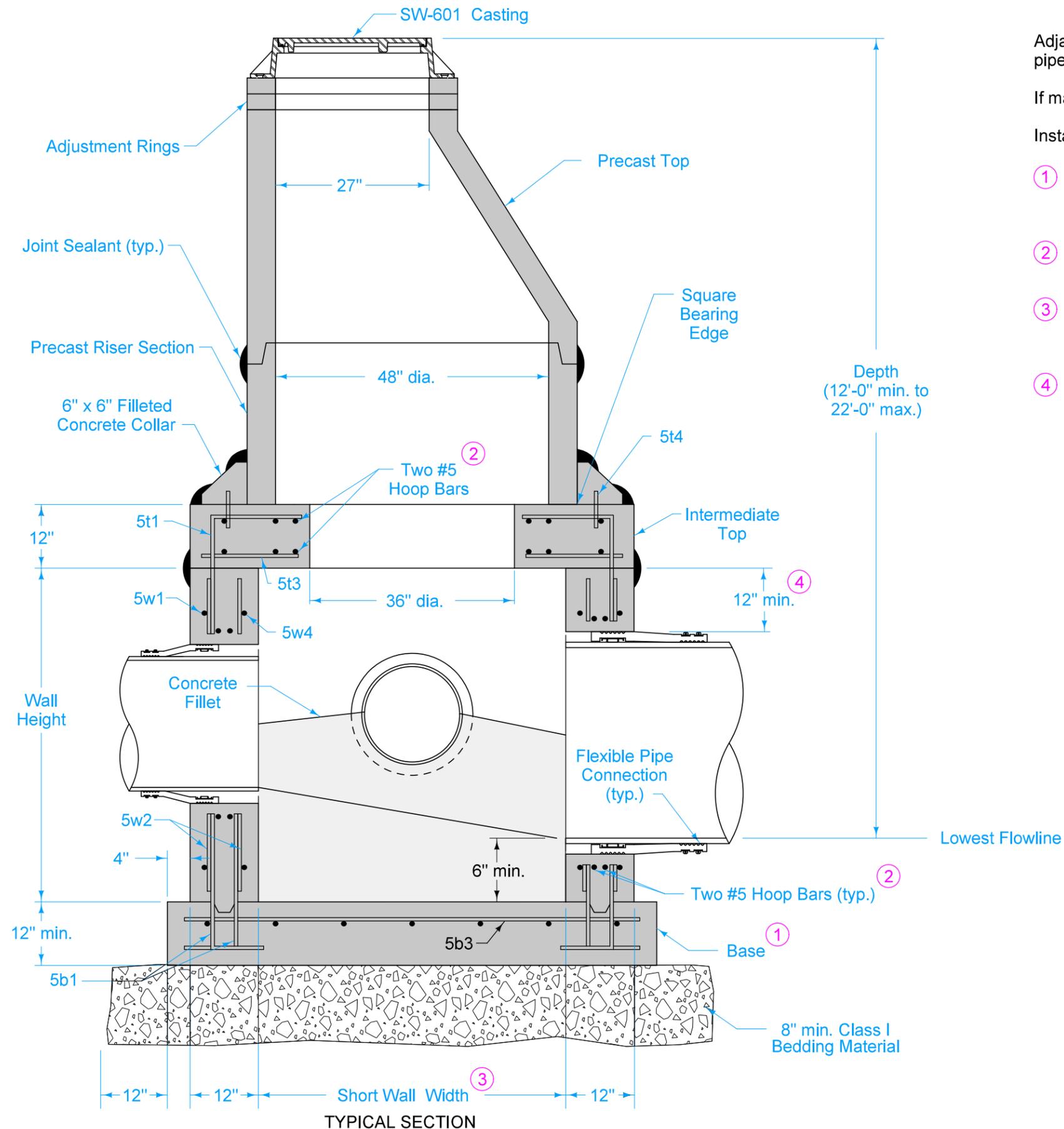


Manhole Diameter (inches)	Maximum Pipe Diameter (inches) for 2 Pipes ③	
	At 180° Separation	At 90° Separation
48	24	18
60	36	24
72	42	30
84	48	36
96	60	42

FIGURE 6010.303 SHEET 1 OF 1

TYPICAL SECTION

		REVISION	
		6	10-21-25
FIGURE 6010.303	STANDARD ROAD PLAN	SW-303	
SHEET 1 of 1			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SANITARY SEWER MANHOLE OVER EXISTING SEWER			



Adjacent walls may have different widths based upon pipe configuration, but structure must be rectangular.

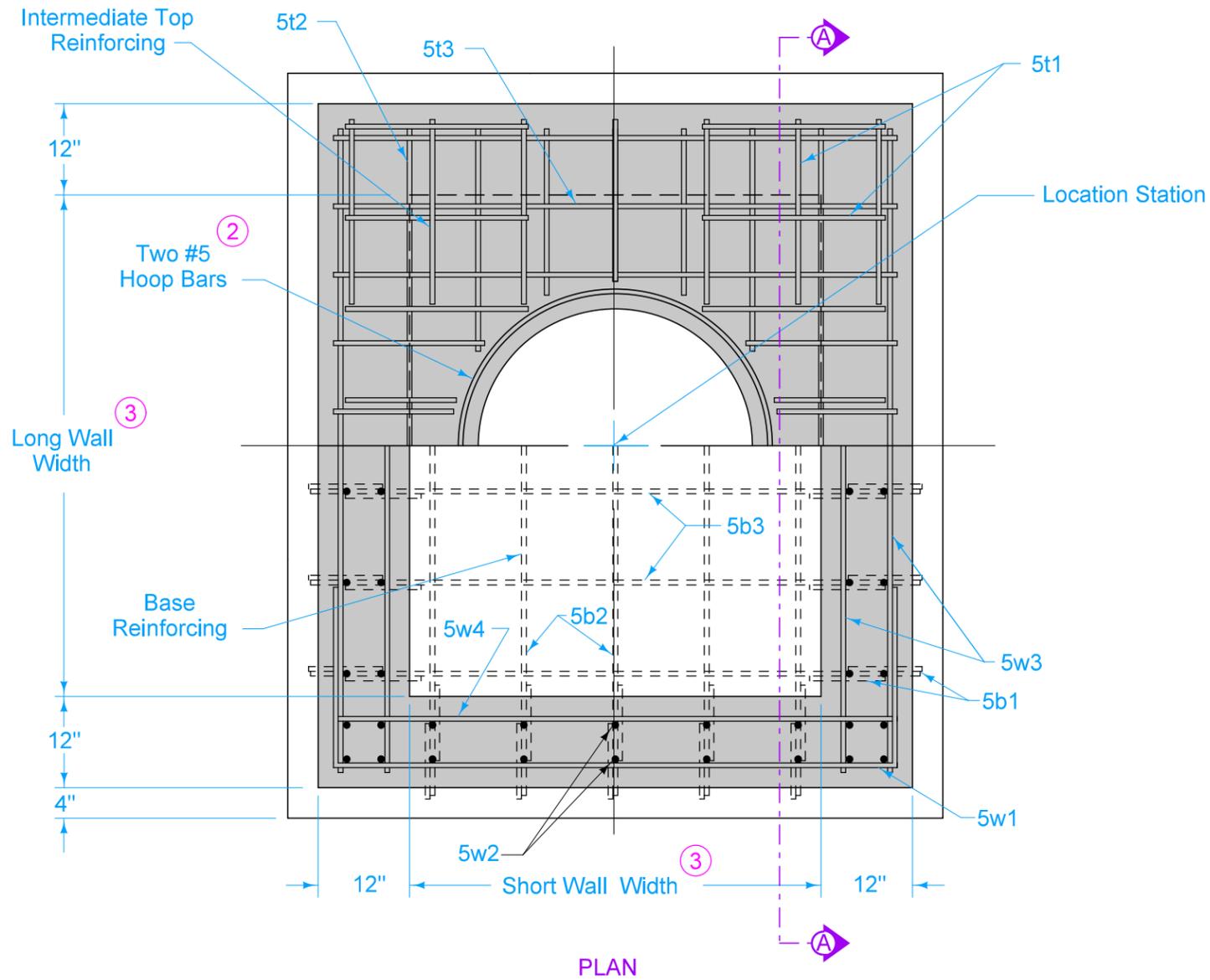
If manhole depth exceeds 20 feet, install steps.

Install infiltration barrier.

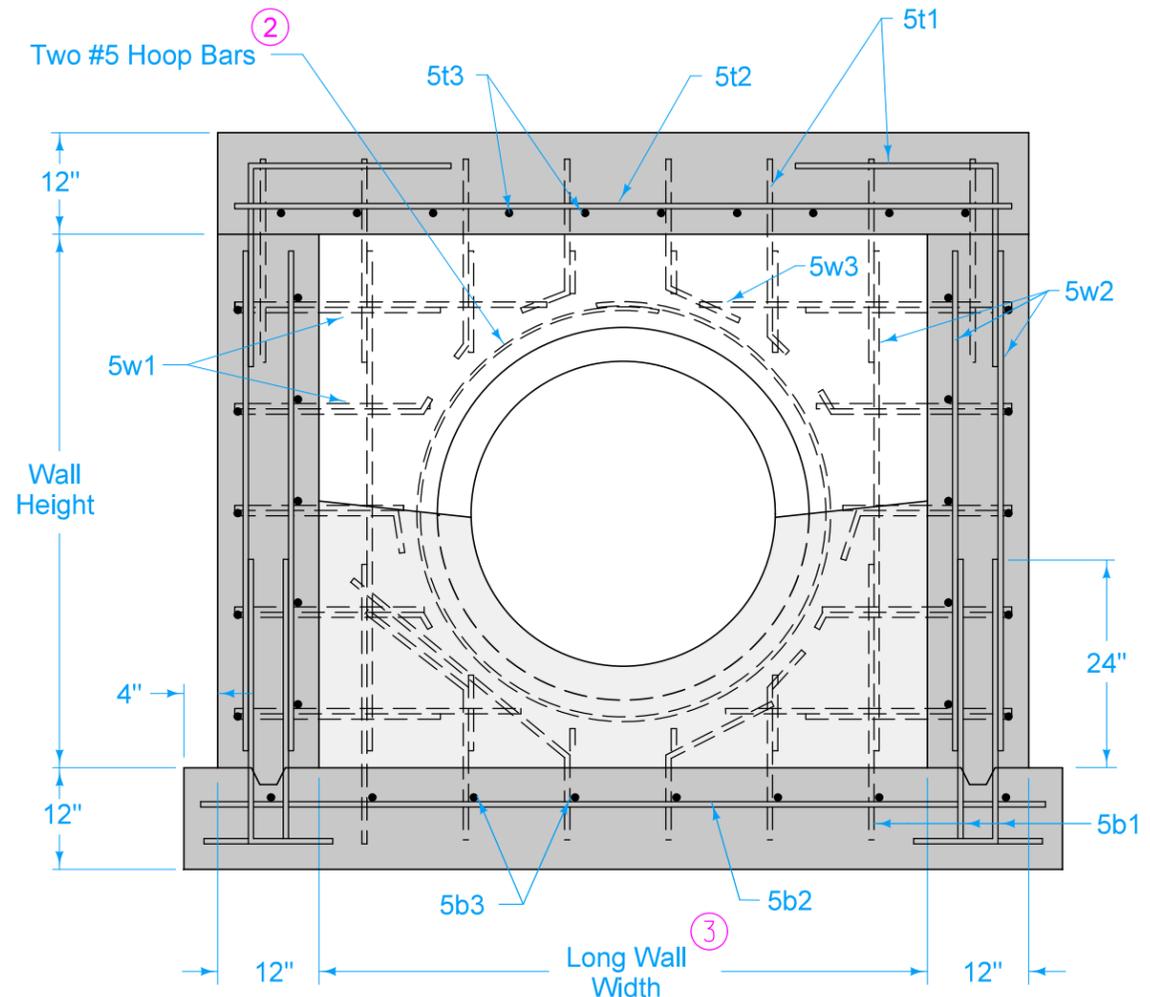
- ① Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ② Provide two #5 hoop bars at intermediate top opening and at all pipe openings.
- ③ Wall widths vary with pipe diameter and range from 4 feet minimum to 12 feet maximum. Provide 12 inches of wall width (minimum) each side of pipe opening.
- ④ 12 inch minimum wall height above all pipe openings.

FIGURE 6010.304 SHEET 1 OF 2

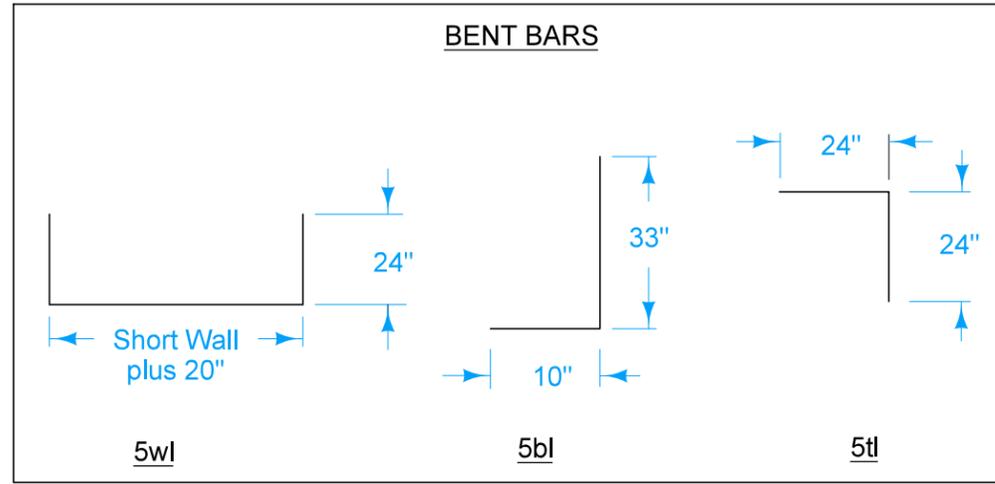
		REVISION	
		5	10-21-25
FIGURE 6010.304	STANDARD ROAD PLAN	SW-304	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
RECTANGULAR BASE/ CIRCULAR TOP SANITARY SEWER MANHOLE			



- ② Provide two #5 hoop bars at intermediate top opening and at all pipe openings.
- ③ Wall widths vary with pipe diameter and range from 4 feet minimum to 12 feet maximum. Provide 12 inches of wall opening (minimum) each side of pipe opening.



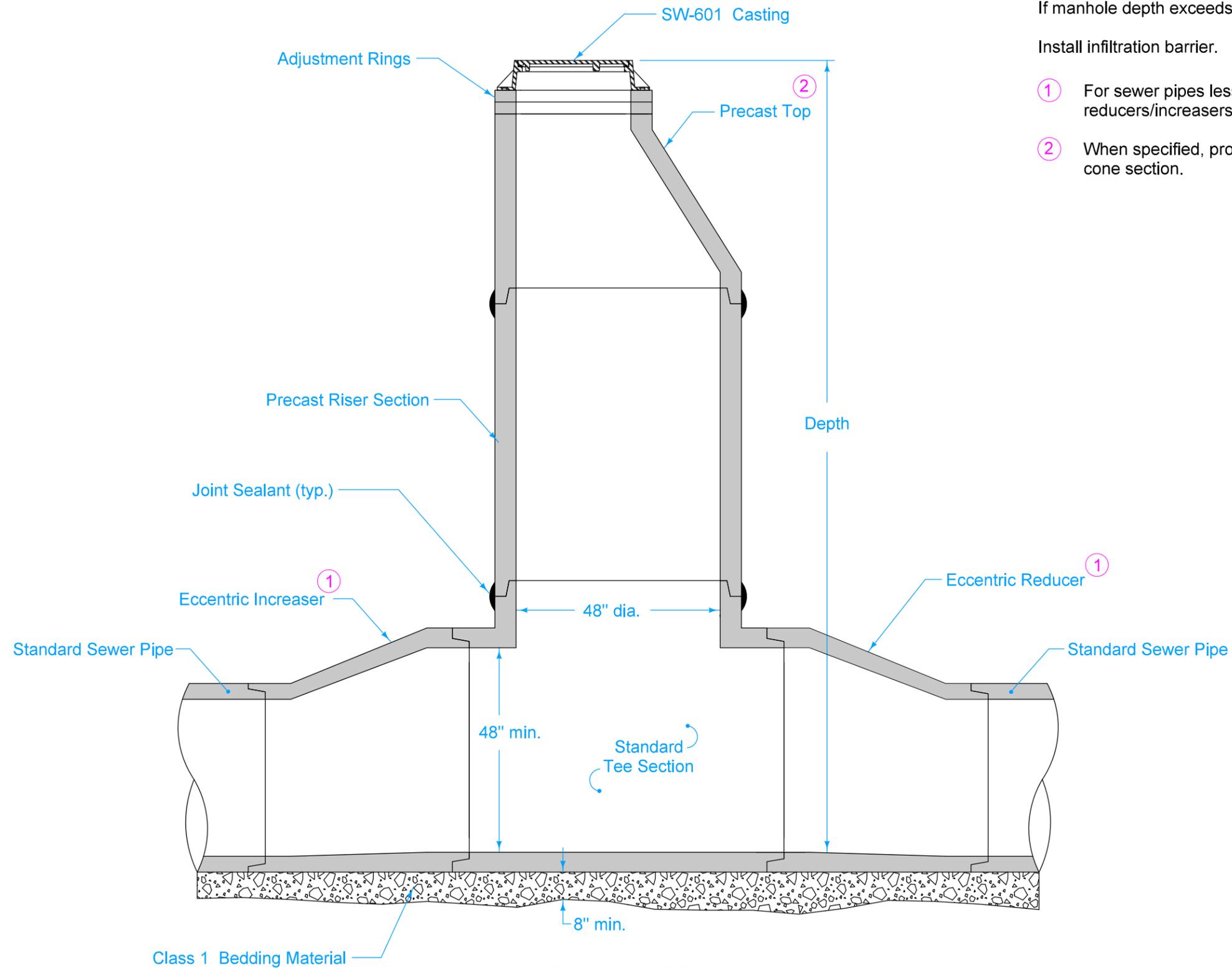
REINFORCING BAR LIST					
Mark	Size	Location	Shape	Length	Spacing
5t1	5	Top		48"	12"
5t2	5	Top		Long Wall plus 20"	9"
5t3	5	Top		Short Wall plus 20"	9"
5t4	5	Top		8"	12"
5b1	5	Base		43"	12"
5b2	5	Base		Long Wall plus 26"	12"
5b3	5	Base		Short Wall plus 26"	12"
5w1	5	Top		Short Wall plus 68"	12"
5w2	5	Top		Wall Height minus 4"	12"
5w3	5	Top		Long Wall plus 20"	12"
5w4	5	Top		Short Wall plus 20"	12"



SECTION A-A

		REVISION	
		5	10-21-25
FIGURE 6010.304	STANDARD ROAD PLAN	SW-304	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
SUDAS DIRECTOR		DESIGN METHODS ENGINEER	
RECTANGULAR BASE/ CIRCULAR TOP SANITARY SEWER MANHOLE			

FIGURE 6010.304 SHEET 2 OF 2



If manhole depth exceeds 20 feet, install steps.

Install infiltration barrier.

- ① For sewer pipes less than 48 inches in diameter, install eccentric reducers/increasers with a standard tee or utilize a composite tee.
- ② When specified, provide an eccentric flat top In Lieu of eccentric cone section.

FIGURE 6010.305 SHEET 1 OF 2

TYPICAL SECTION

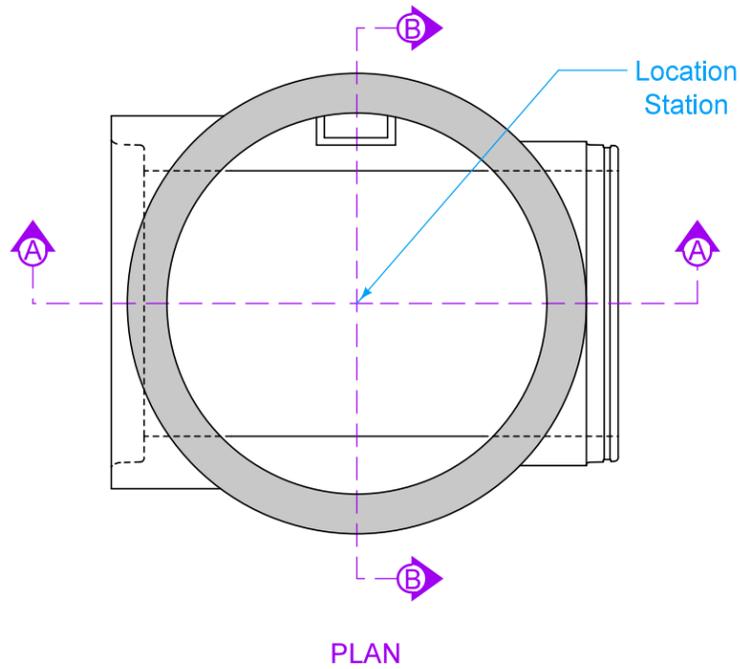
STANDARD TEE ①

		REVISION	
		5	10-21-25
FIGURE 6010.305	STANDARD ROAD PLAN	SW-305	
		SHEET 1 of 2	

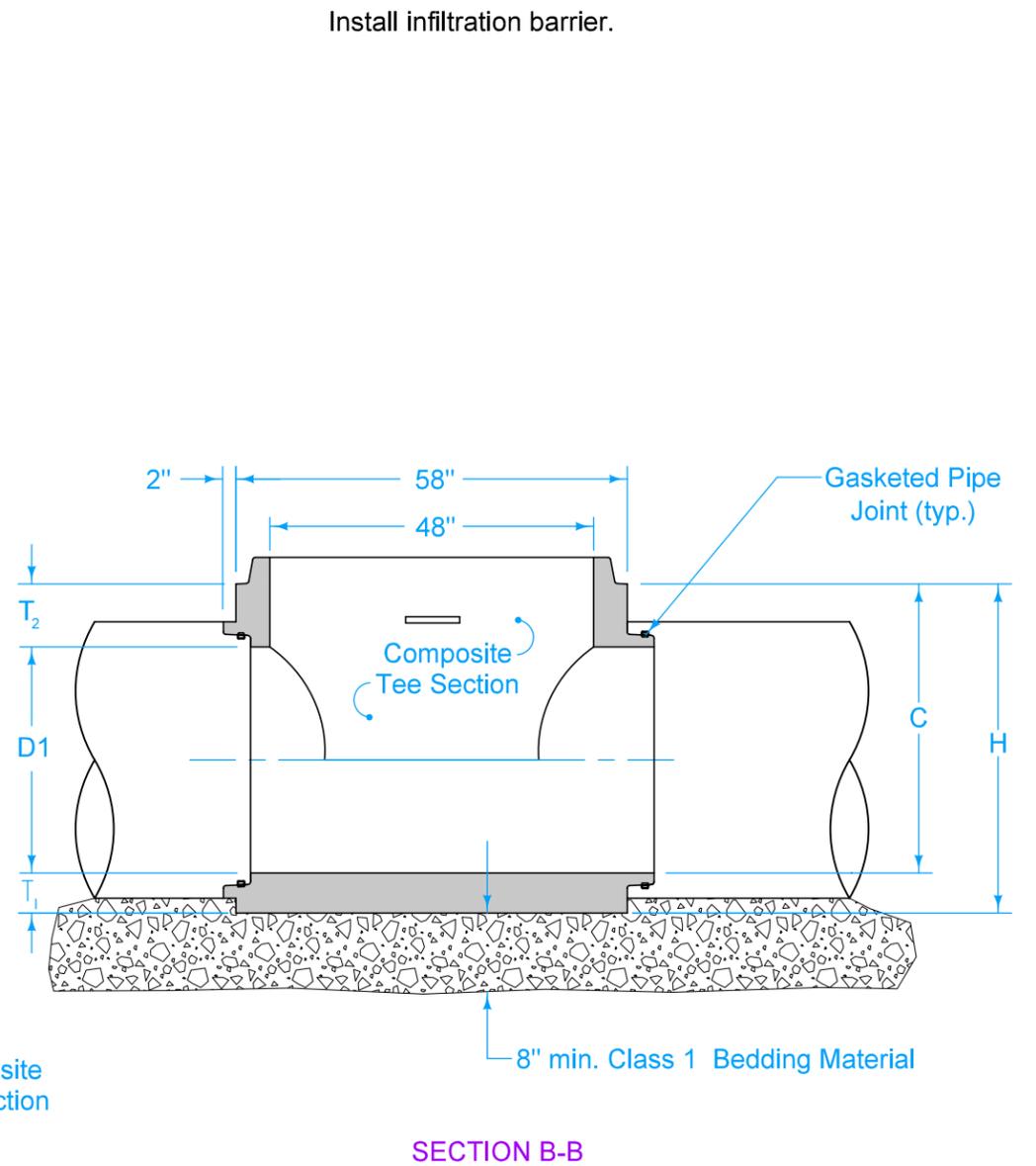
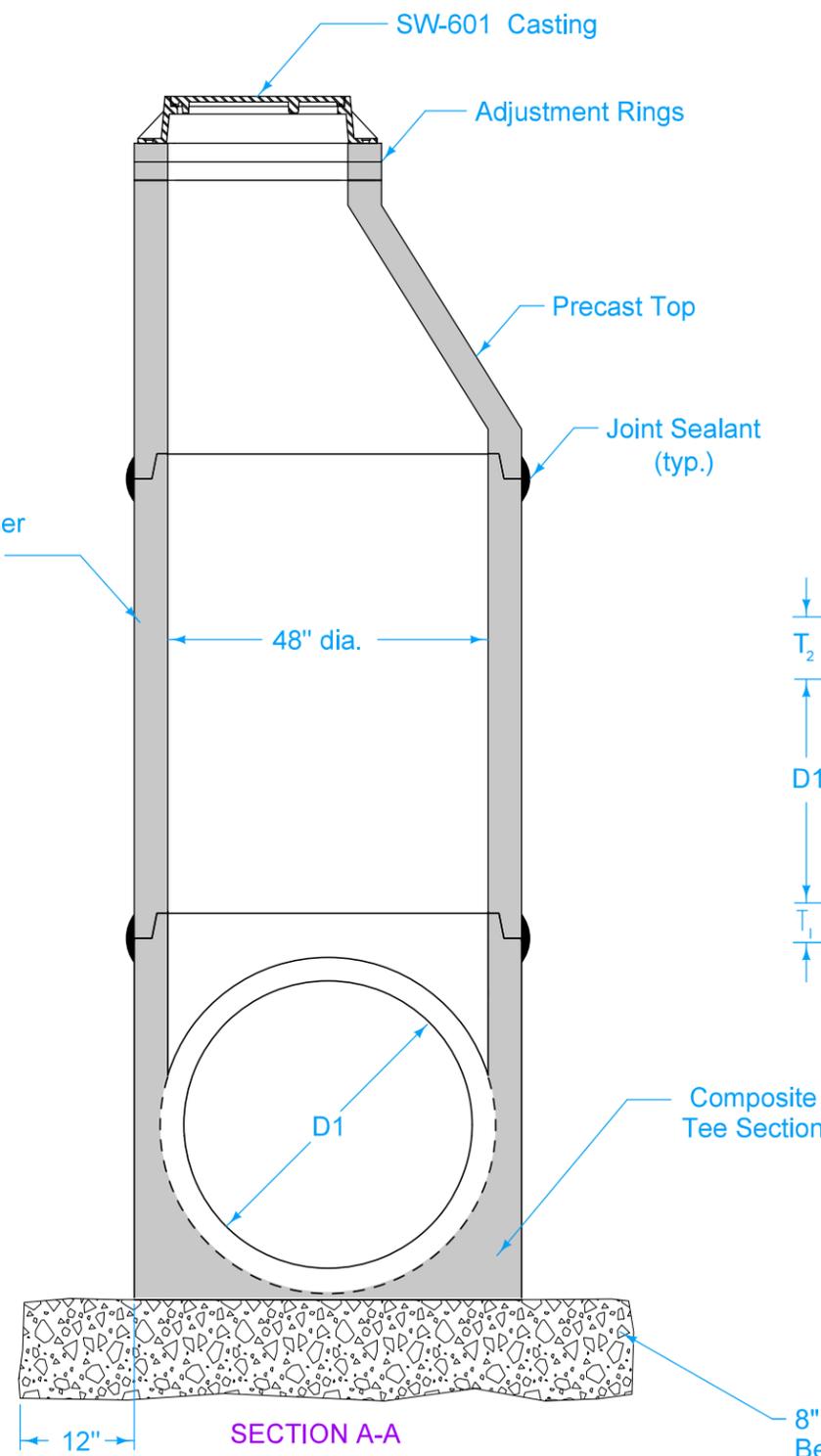
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR
DESIGN METHODS ENGINEER

**TEE-SECTION
SANITARY SEWER MANHOLE**



COMPOSITE TEE DIMENSIONS						
Size	D1	H	T ₁	T ₂	C	Weight
48" on 12"	12"	50"	8 ¹ / ₂ "	29 ¹ / ₂ "	41 ¹ / ₂ "	5600 lbs.
48" on 15"	15"	50"	7"	28"	43"	5400 lbs.
48" on 18"	18"	50"	5 ¹ / ₂ "	26 ¹ / ₂ "	44 ¹ / ₂ "	5200 lbs.
48" on 21"	21"	48"	9 ¹ / ₂ "	17 ¹ / ₂ "	38 ¹ / ₂ "	5800 lbs.
48" on 24"	24"	48"	8"	16"	40"	5600 lbs.
48" on 27"	27"	48"	9 ¹ / ₂ "	11 ¹ / ₂ "	38 ¹ / ₂ "	5900 lbs.
48" on 30"	30"	48"	8"	10"	40"	5300 lbs.
48" on 33"	33"	54"	9 ¹ / ₂ "	11 ¹ / ₂ "	44 ¹ / ₂ "	6600 lbs.
48" on 36"	36"	54"	8"	10"	46"	6100 lbs.



COMPOSITE TEE
 Alternate to standard tee with eccentric reducer (for pipes 36" and smaller).

FIGURE 6010.305 SHEET 2 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.305	STANDARD ROAD PLAN	SW-305	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
TEE-SECTION SANITARY SEWER MANHOLE			

Construct drop and overflow from ductile iron pipe of same diameter specified for sewer main. Provide mechanical joints for all ductile iron pipe and fittings.

- ① Place Class I bedding material, CLSM, flowable mortar, or concrete from top of elbow to bottom of sewer main.
- ② Encase elbow in concrete. 12 inches minimum on all sides.

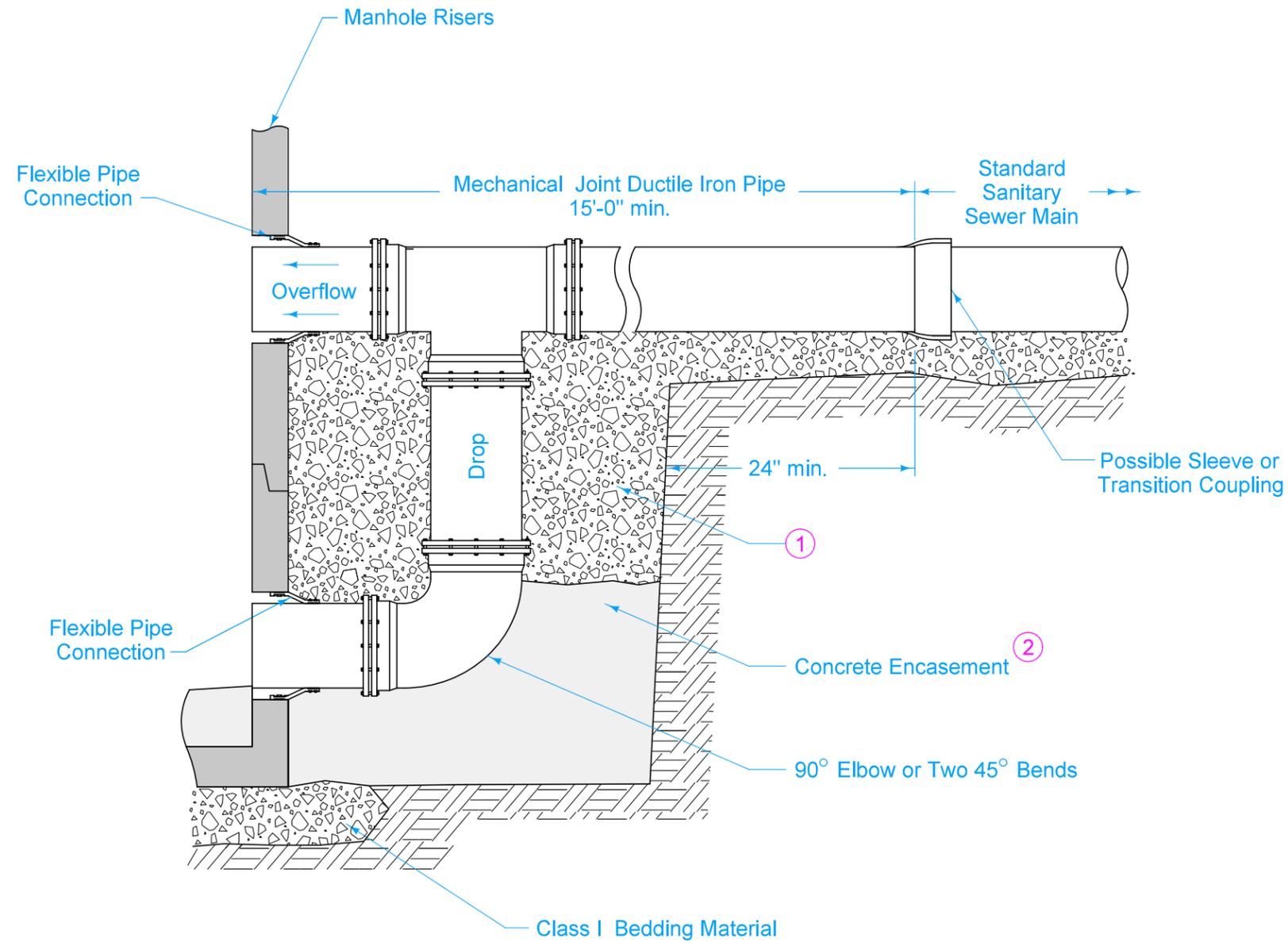
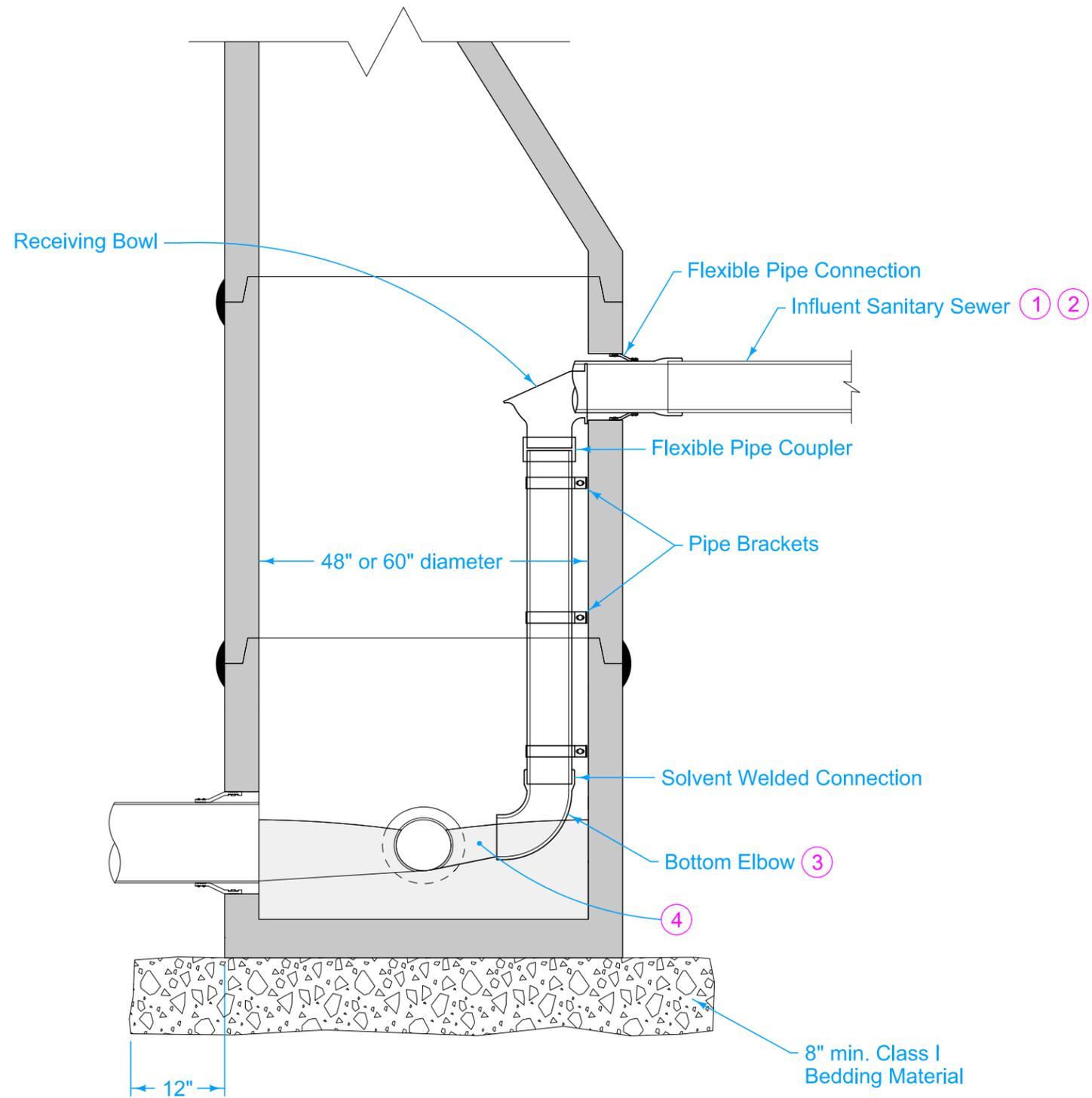


FIGURE 6010.307 | SHEET 1 OF 1

		REVISION	
		3	10-21-25
FIGURE 6010.307	STANDARD ROAD PLAN	SW-307	
		SHEET 1 of 1	
REVISIONS: Updated Sudas and IDOT Logos.			
 <small>SUDAS DIRECTOR</small>		 <small>DESIGN METHODS ENGINEER</small>	
EXTERNAL DROP CONNECTION FOR SANITARY SEWER MANHOLE			



- ① Core drill openings at least 12 inches from existing manhole joints.
- ② Install flexible pipe coupler or pipe joint on new sanitary sewer 18 to 24 inches from outside of manhole wall.
- ③ Align elbow so discharge is directed at outlet pipe or at 45 degrees to manhole flow.
- ④ Reshape fillet to provide a smooth transition and to direct flow to outlet.

FIGURE 6010.308

SHEET 1 OF 1

		REVISION	
		2	10-21-25
FIGURE 6010.308	STANDARD ROAD PLAN	SW-308	
		SHEET 1 of 1	

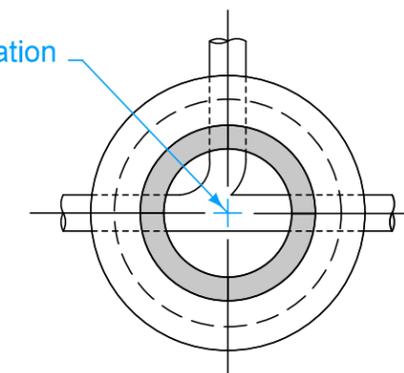
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

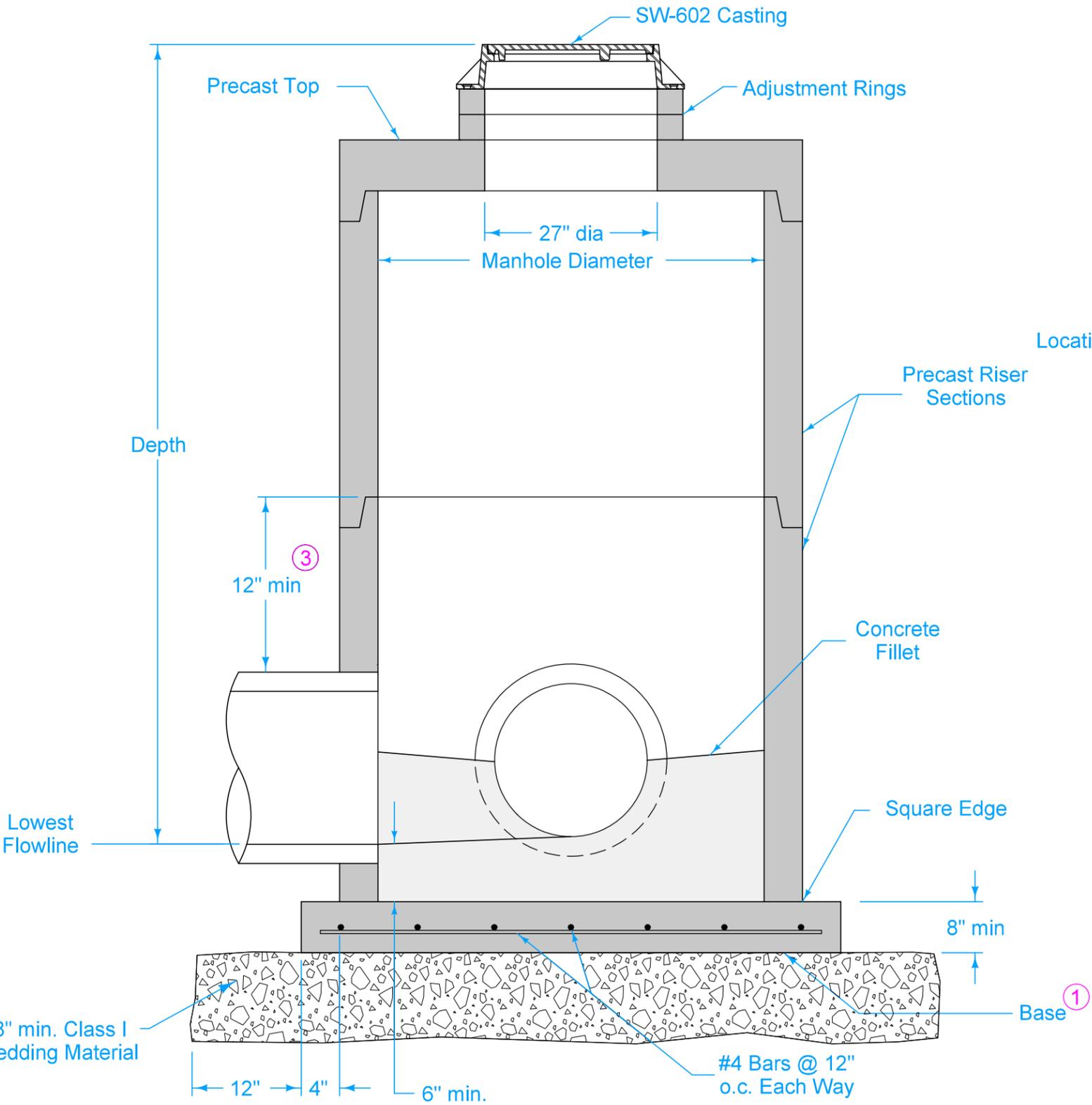
**INTERNAL DROP CONNECTION FOR
SANITARY SEWER MANHOLE**

If manhole depth exceeds 20 feet, install steps.

- ① Cast-in-place base shown. If base is precast integral with bottom riser, the footprint of the base is not required to extend beyond the outer edge of the riser.
- ② For additional configurations, maintain a minimum of 12 inches of concrete between vertical edges of pipe openings.
- ③ 12 inch minimum riser height above all pipe openings.



PLAN



TYPICAL SECTION

Manhole Diameter (inches)	Maximum Pipe Diameter (inches) for 2 Pipes ②	
	At 180° Separation	At 90° Separation
48	24	18
60	36	24
72	42	30
84	48	36
96	60	42

FIGURE 6010.401 SHEET 1 OF 1

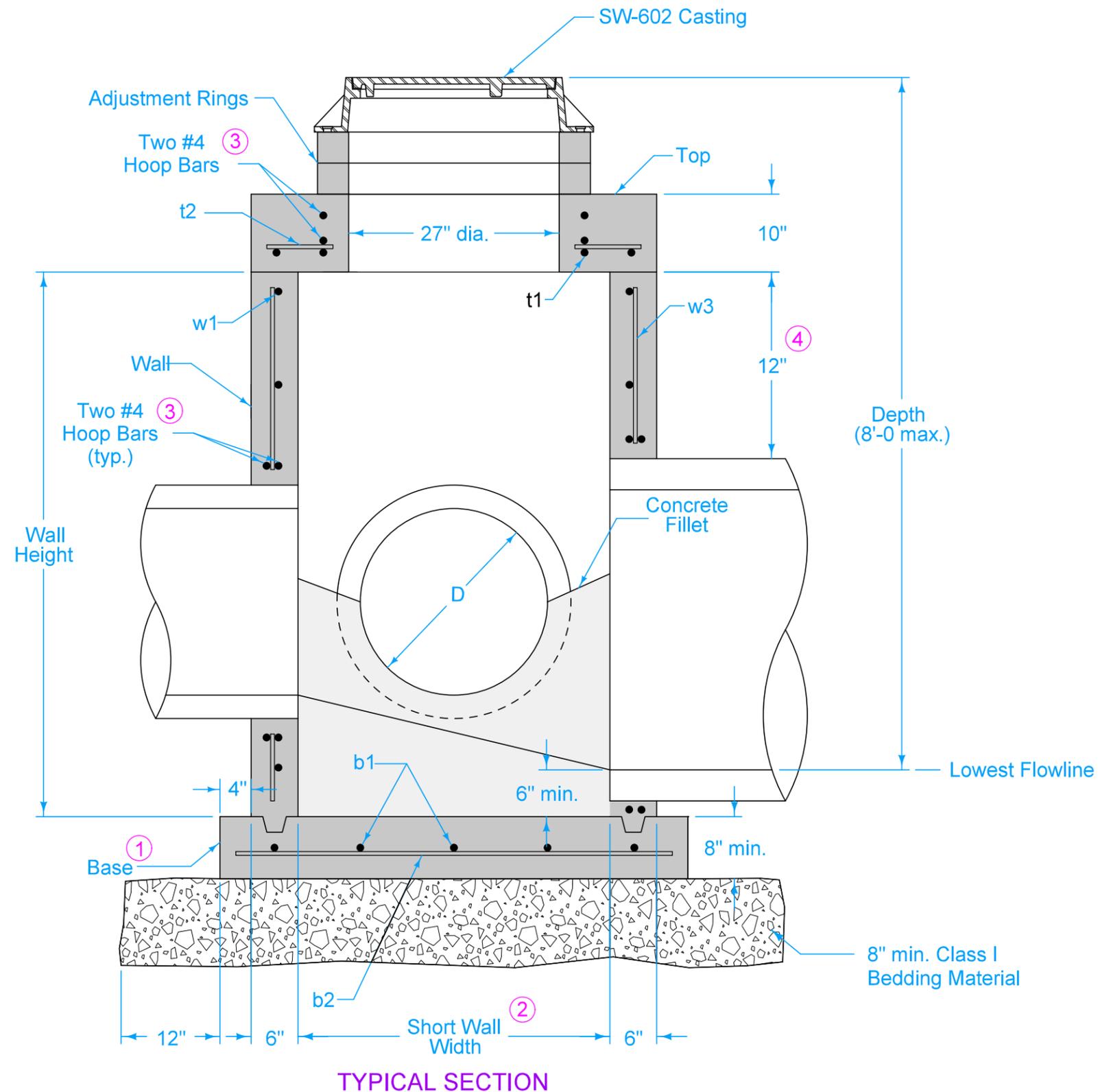
		REVISION	
		4	10-21-25
FIGURE 6010.401	STANDARD ROAD PLAN	SW-401	
		SHEET 1 of 1	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR
 DESIGN METHODS ENGINEER

CIRCULAR STORM SEWER
MANHOLE

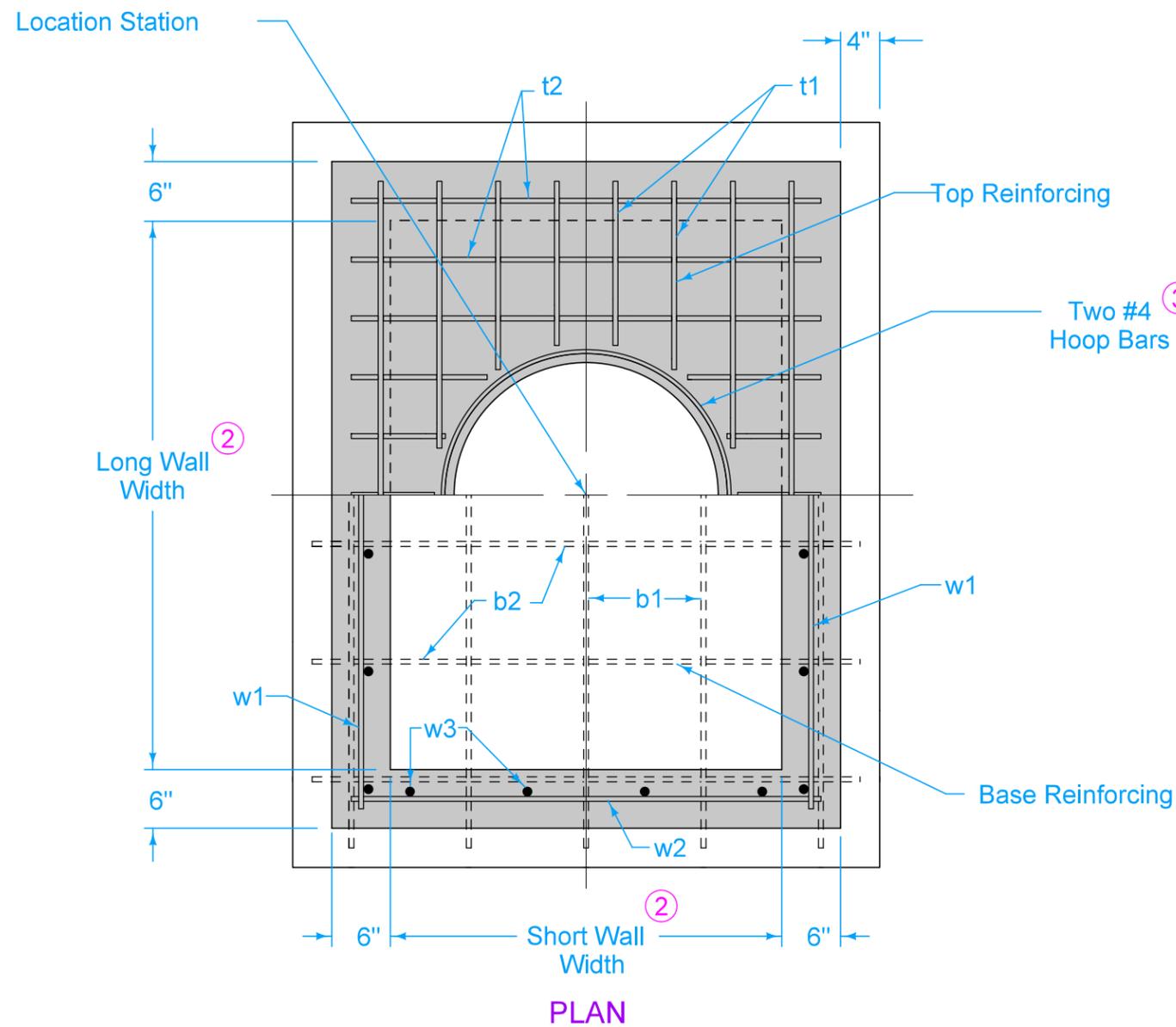
Adjacent walls may have different widths based upon pipe configuration, but structure must be rectangular.



- ① Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ② Wall widths vary with pipe diameter and range from 40 inches minimum to 77 inches maximum. Provide 6 inches of wall width (minimum) each side of pipe opening.
- ③ Provide two #4 hoop bars at top opening and at all pipe openings.
- ④ 12 inch minimum wall height above all pipes.

FIGURE 6010.402 SHEET 1 OF 2

		REVISION	
		3	10-21-25
FIGURE 6010.402	STANDARD ROAD PLAN	SW-402	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
RECTANGULAR STORM SEWER MANHOLE			



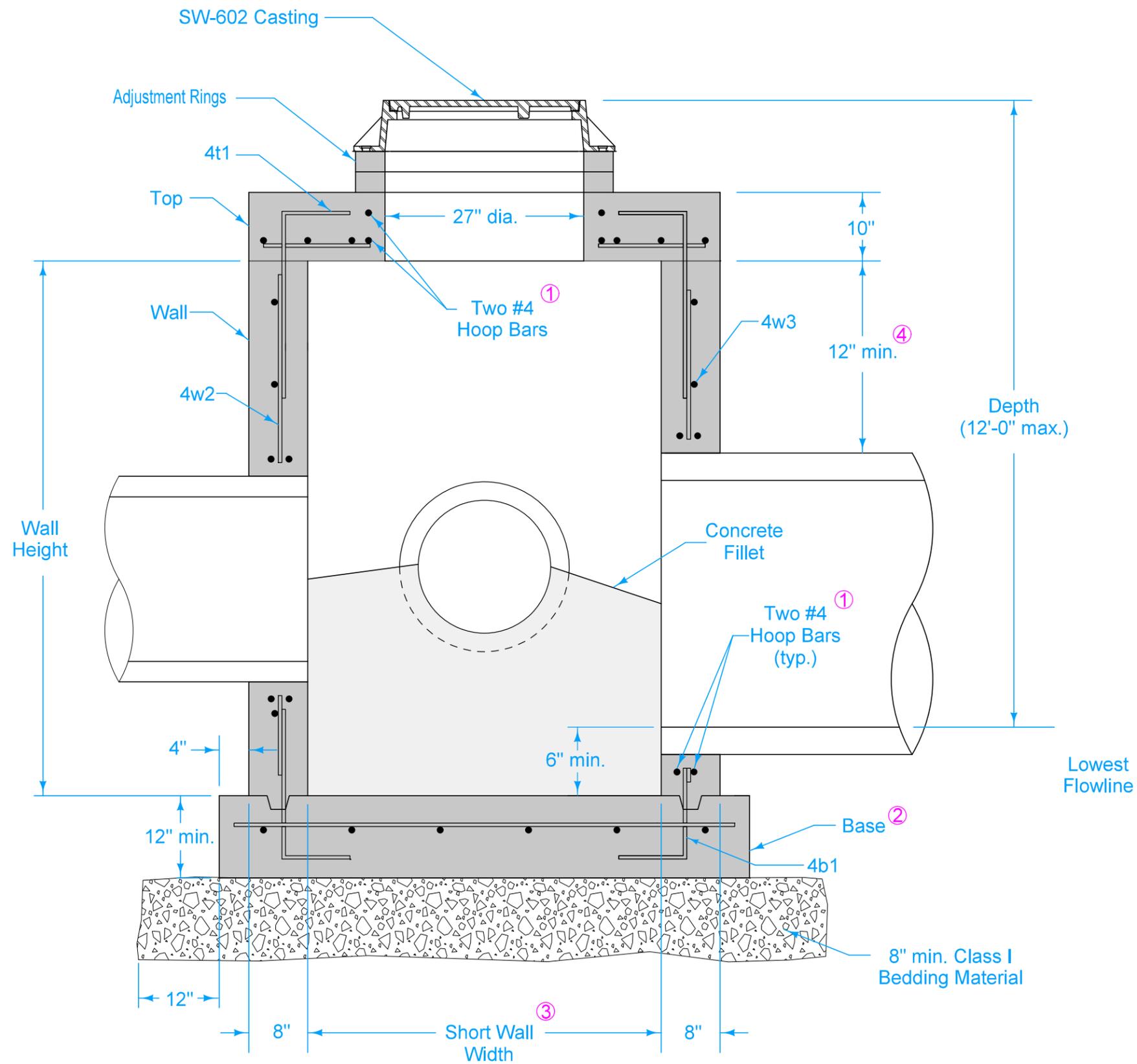
- ② Wall widths vary with pipe diameter and range from 40" minimum to 77" maximum. Provide 6" of wall width (minimum) each side of pipe opening.
- ③ Provide two #4 hoop bars at top opening and at all pipe openings.

REINFORCING BAR LIST					
Mark	Size	Location	Shape	Length	Spacing
t1	See Table	Top	—	Long Wall plus 8"	6"
t2	See Table	Top	—	Short Wall plus 8"	6"
b1	See Table	Base	—	Long Wall plus 14"	12"
b2	See Table	Base	—	Short Wall plus 14"	12"
w1	See Table	Walls	—	Long Wall plus 8"	12"
w2	See Table	Walls	—	Short Wall plus 8"	12"
w3	See Table	Walls	—	Wall Height minus 4"	12"

Diameter of Largest Pipe, D	Minimum Bar Size
48" or 54"	6
33" to 42"	5
30" or smaller	4

FIGURE 6010.402 SHEET 2 OF 2

		REVISION	
		3	10-21-25
FIGURE 6010.402	STANDARD ROAD PLAN	SW-402	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
RECTANGULAR STORM SEWER MANHOLE			



Adjacent walls may have different widths based upon pipe configuration, but structure must be rectangular.

- ① Provide two #4 hoop bars at top opening and at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ Wall widths vary with pipe diameter and range from 4 feet minimum to 9 feet maximum. Provide 12 inches of wall width (minimum) each side of pipe opening.
- ④ 12 inch minimum wall height above all pipes.

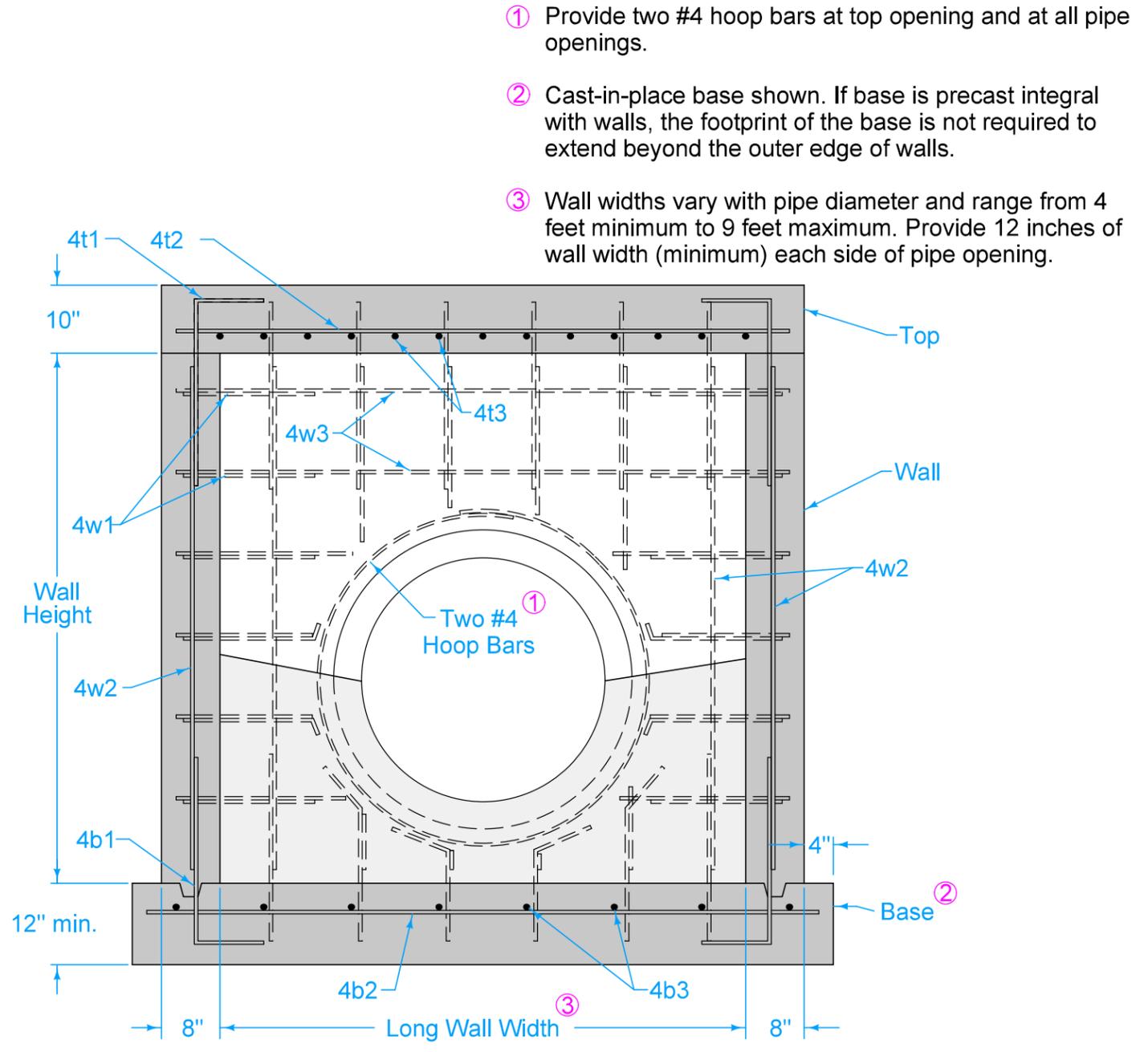
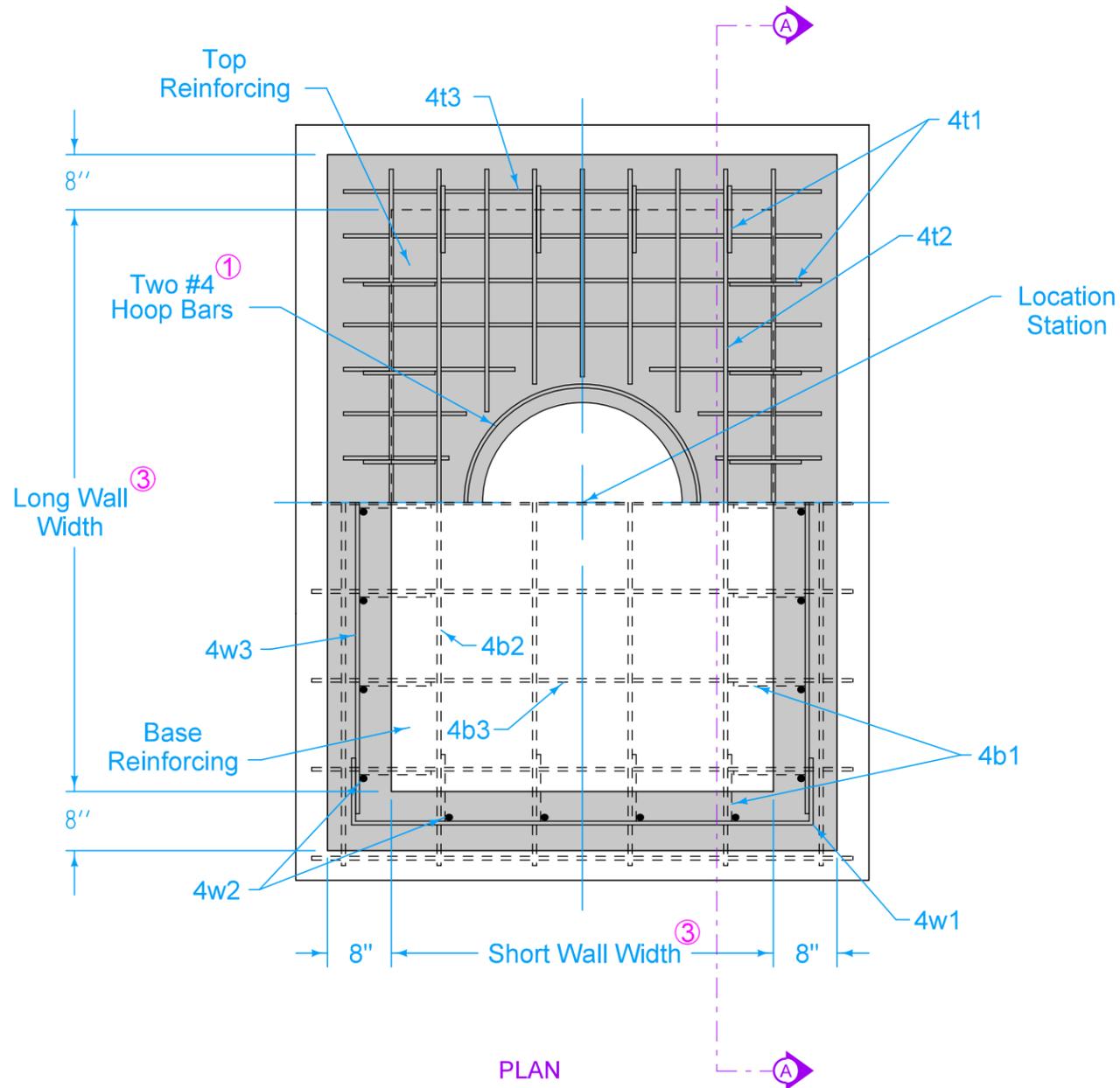
TYPICAL SECTION

FIGURE 6010.403 SHEET 1 OF 2

		REVISION	
		3	10-21-25
FIGURE 6010.403	STANDARD ROAD PLAN	SW-403 SHEET 1 of 2	

REVISIONS: Updated Sudas and IDOT Logos.

**DEEP WELL RECTANGULAR
STORM SEWER MANHOLE**



- ① Provide two #4 hoop bars at top opening and at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of walls.
- ③ Wall widths vary with pipe diameter and range from 4 feet minimum to 9 feet maximum. Provide 12 inches of wall width (minimum) each side of pipe opening.

PLAN

SECTION A-A

REINFORCING BAR LIST					
Mark	Size	Location	Shape	Length	Spacing
4t1	4	Top	┌	36"	12"
4t2	4	Top	—	Long Wall plus 12"	6"
4t3	4	Top	—	Short Wall plus 12"	6"
4b1	4	Base	└	36"	12"
4b2	4	Base	—	Long Wall plus 18"	12"
4b3	4	Base	—	Short Wall plus 18"	12"
4w1	4	Walls	┌	Short Wall plus 48"	12"
4w2	4	Walls	—	Wall Height minus 4"	12"
4w3	4	Walls	—	Long Wall plus 12"	12"

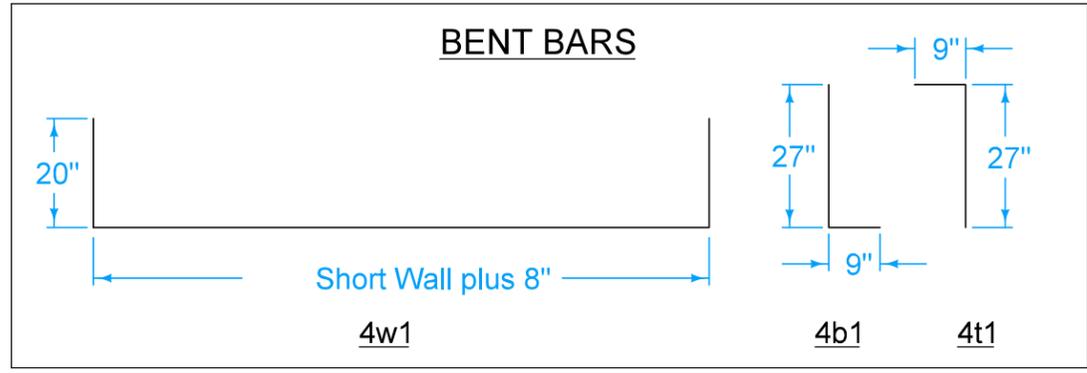
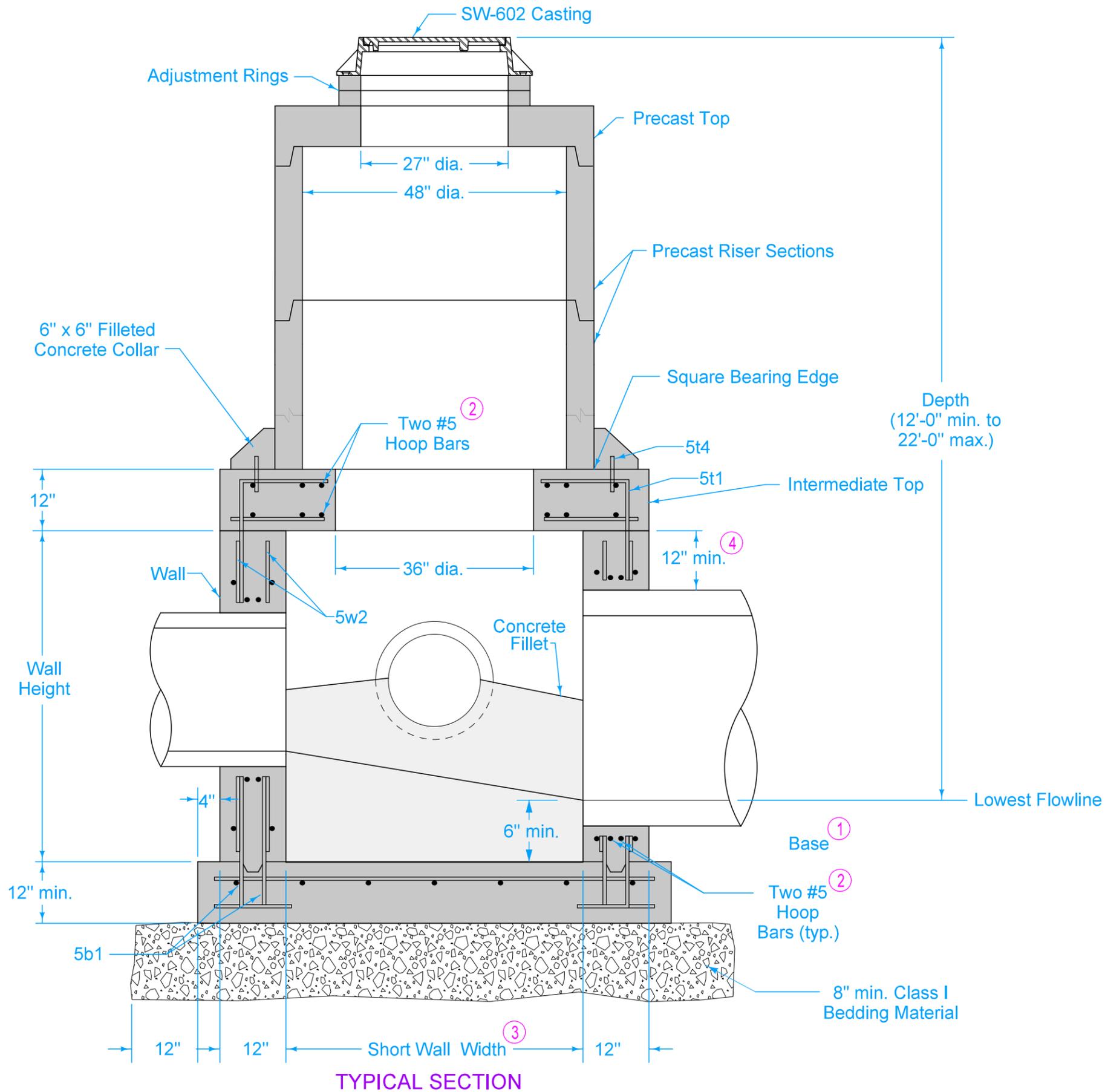


FIGURE 6010.403 SHEET 2 OF 2

		REVISION	
		3	10-21-25
FIGURE 6010.403	STANDARD ROAD PLAN	SW-403	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
DEEP WELL RECTANGULAR STORM SEWER MANHOLE			



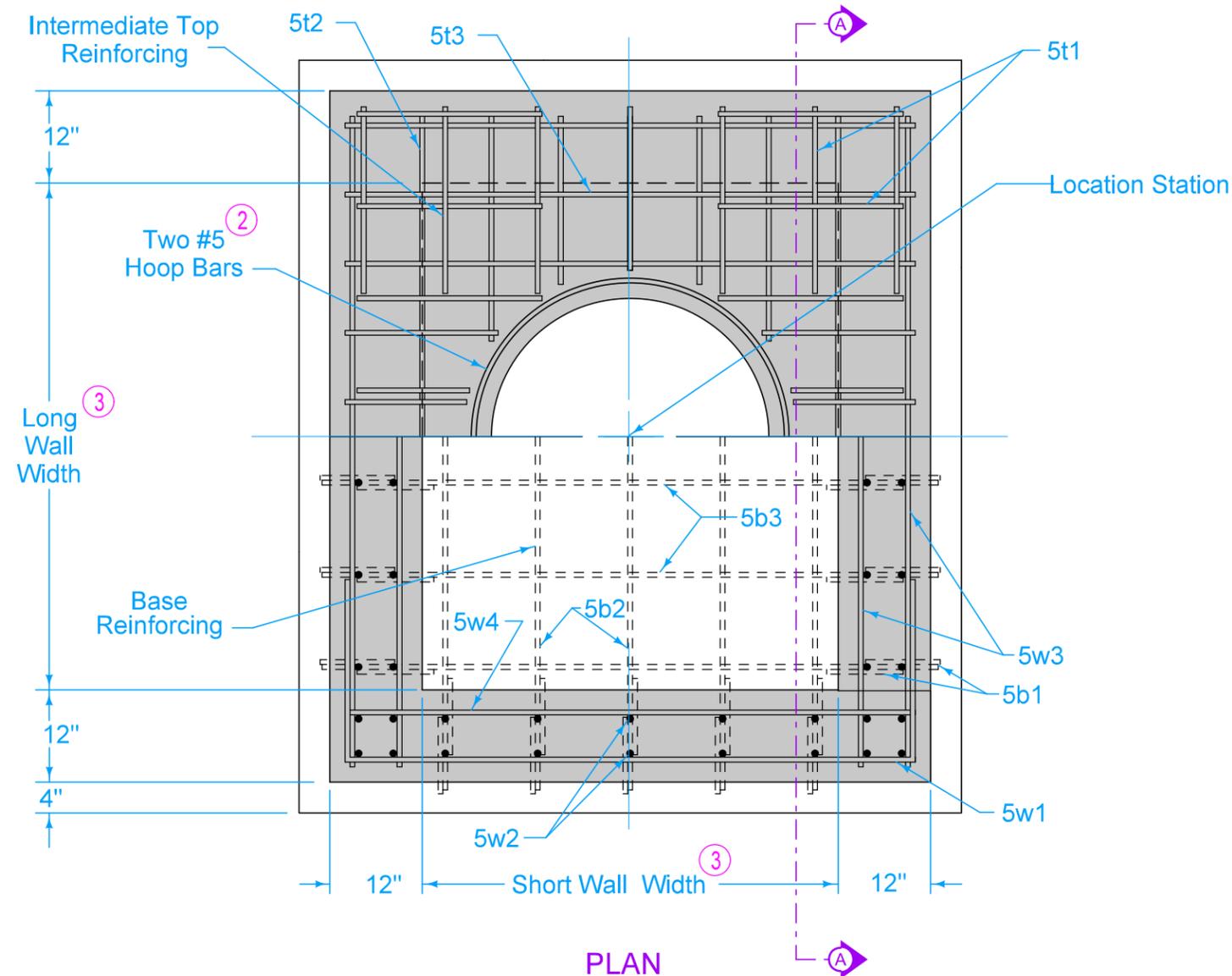
Adjacent walls may have different widths based upon pipe configuration, but structure must be rectangular.

If manhole depth exceeds 20 feet, install steps.

- ① Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ② Provide two #5 hoop bars at intermediate top opening and at all pipe openings.
- ③ Wall widths vary with pipe diameter and range from 4 feet minimum to 12 feet maximum. Provide 12 inches of wall width (minimum) each side of pipe opening.
- ④ 12 inch minimum wall height above all pipes.

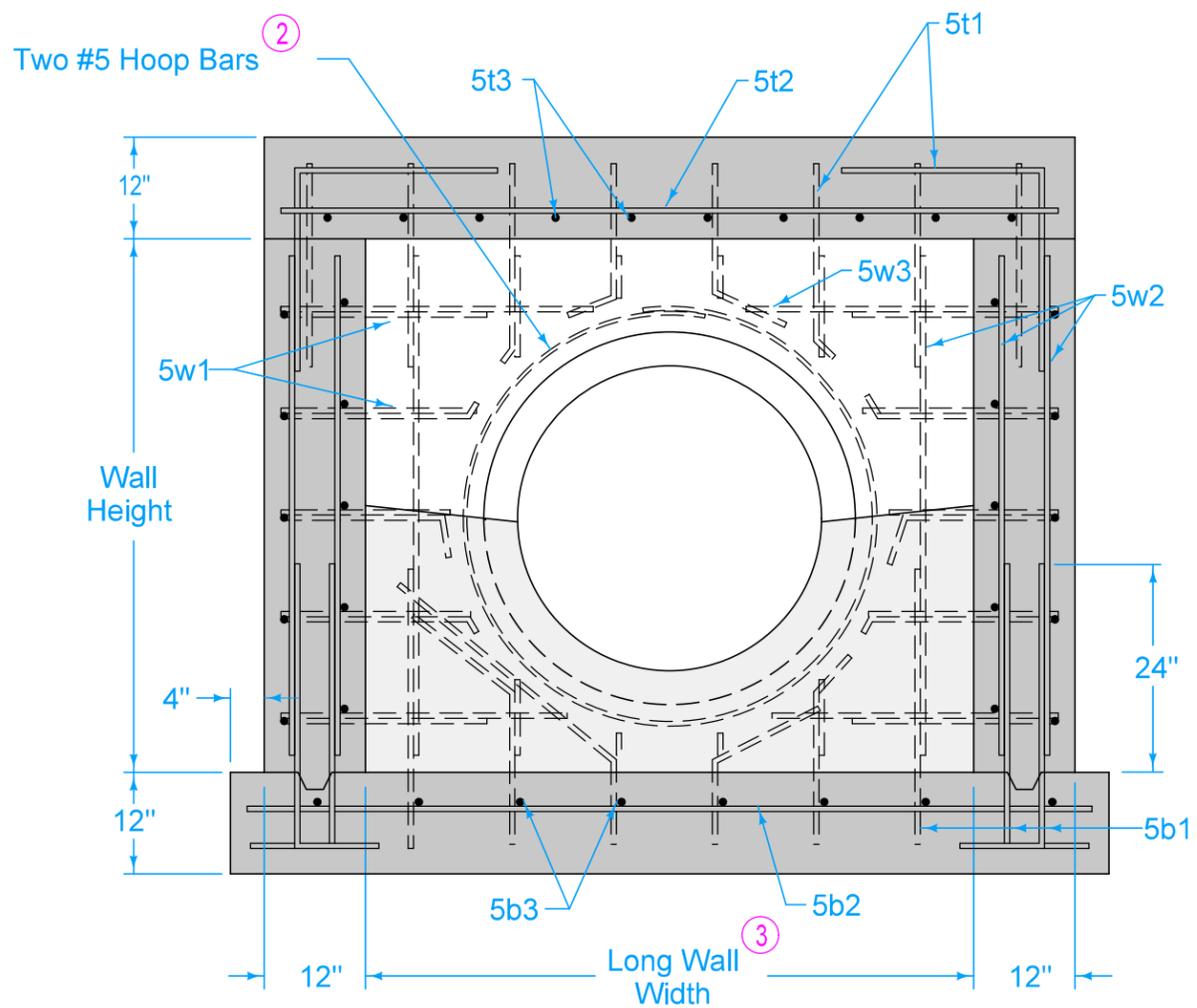
FIGURE 6010.404 SHEET 1 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.404	STANDARD ROAD PLAN	SW-404	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
RECTANGULAR BASE/ CIRCULAR TOP STORM SEWER MANHOLE			



PLAN

- ② Provide two #5 hoop bars at intermediate top opening and at all pipe openings.
- ③ Wall widths vary with pipe diameter and range from 4 feet minimum to 12 feet maximum. Provide 12 inches of wall width (minimum) each side of pipe opening.



SECTION A-A

REINFORCING BAR LIST					
Mark	Size	Location	Shape	Length	Spacing
5t1	5	Top	L	48"	12"
5t2	5	Top	—	Long Wall plus 20"	9"
5t3	5	Top	—	Short Wall plus 20"	9"
5t4	5	Top	—	8"	12"
5b1	5	Base	L	43"	12"
5b2	5	Base	—	Long Wall plus 26"	12"
5b3	5	Base	—	Short Wall plus 26"	12"
5w1	5	Wall	□	Short Wall plus 68"	12"
5w2	5	Wall	—	Wall Height minus 4"	12"
5w3	5	Wall	—	Long Wall plus 20"	12"
5w4	5	Wall	—	Short Wall plus 20"	12"

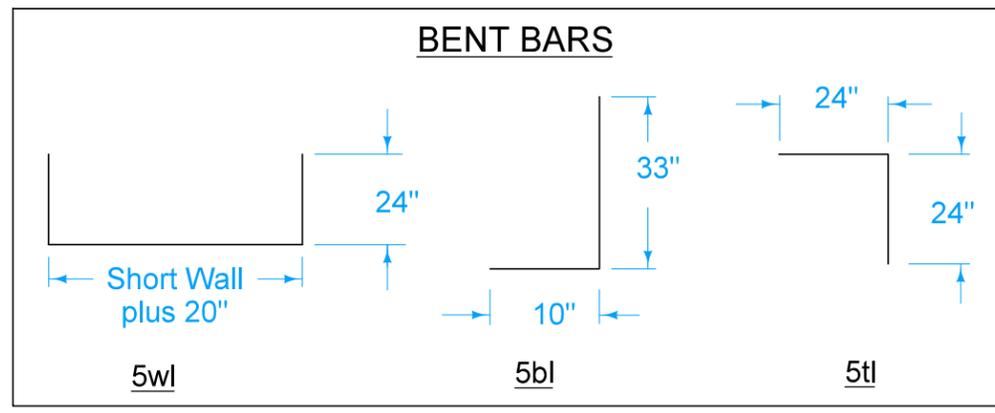
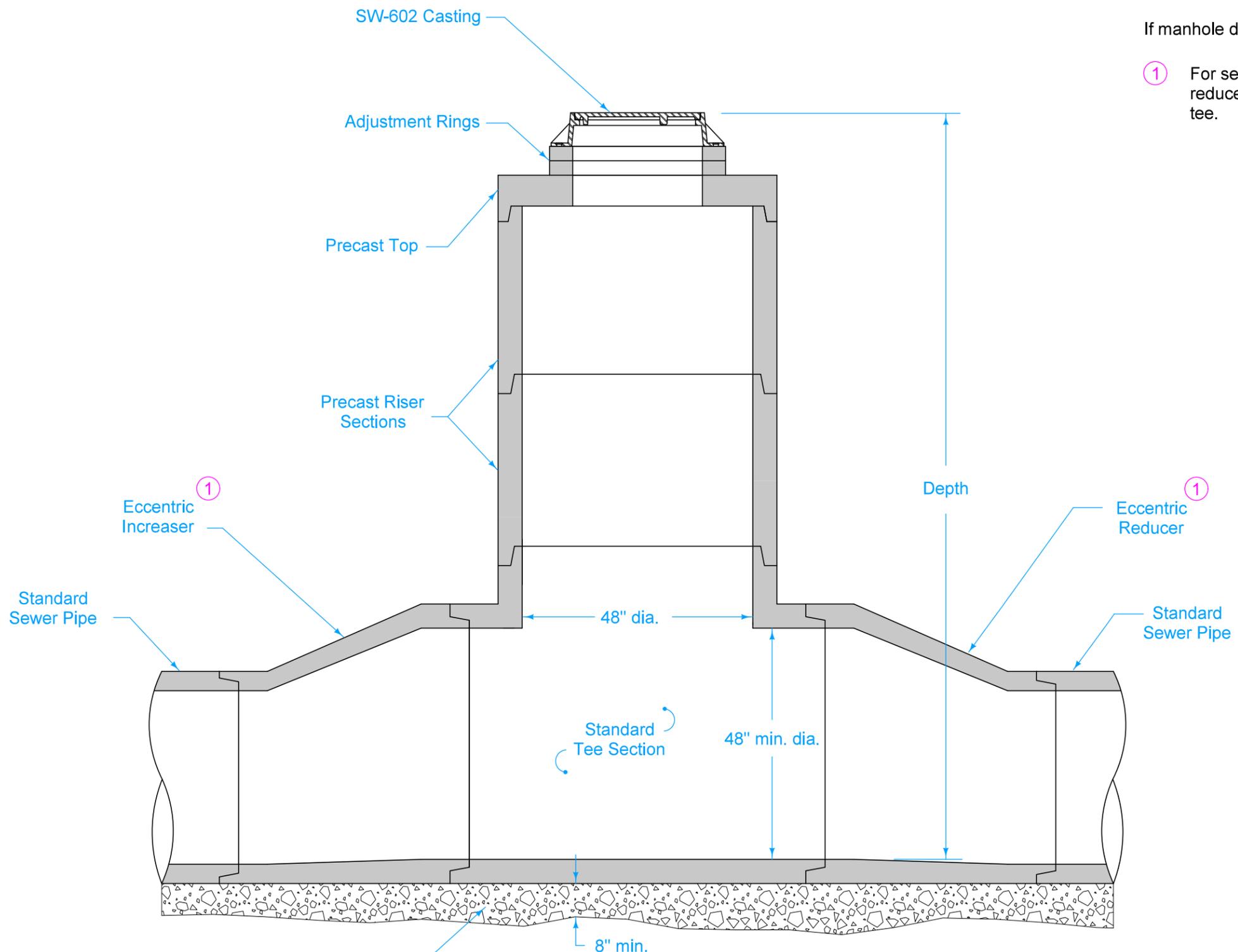


FIGURE 6010.404 SHEET 2 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.404	STANDARD ROAD PLAN	SW-404	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
RECTANGULAR BASE/ CIRCULAR TOP STORM SEWER MANHOLE			



If manhole depth exceeds 20 feet, install steps.

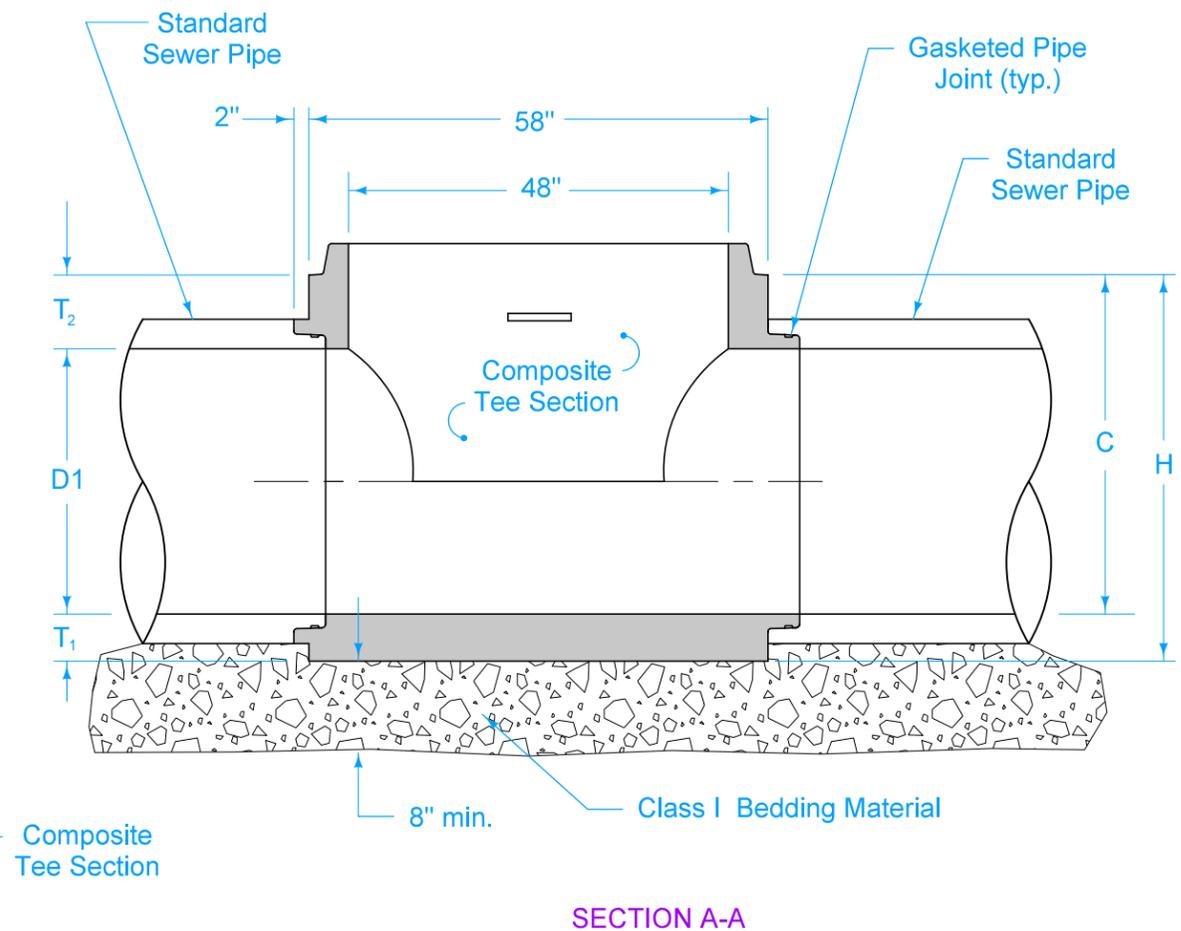
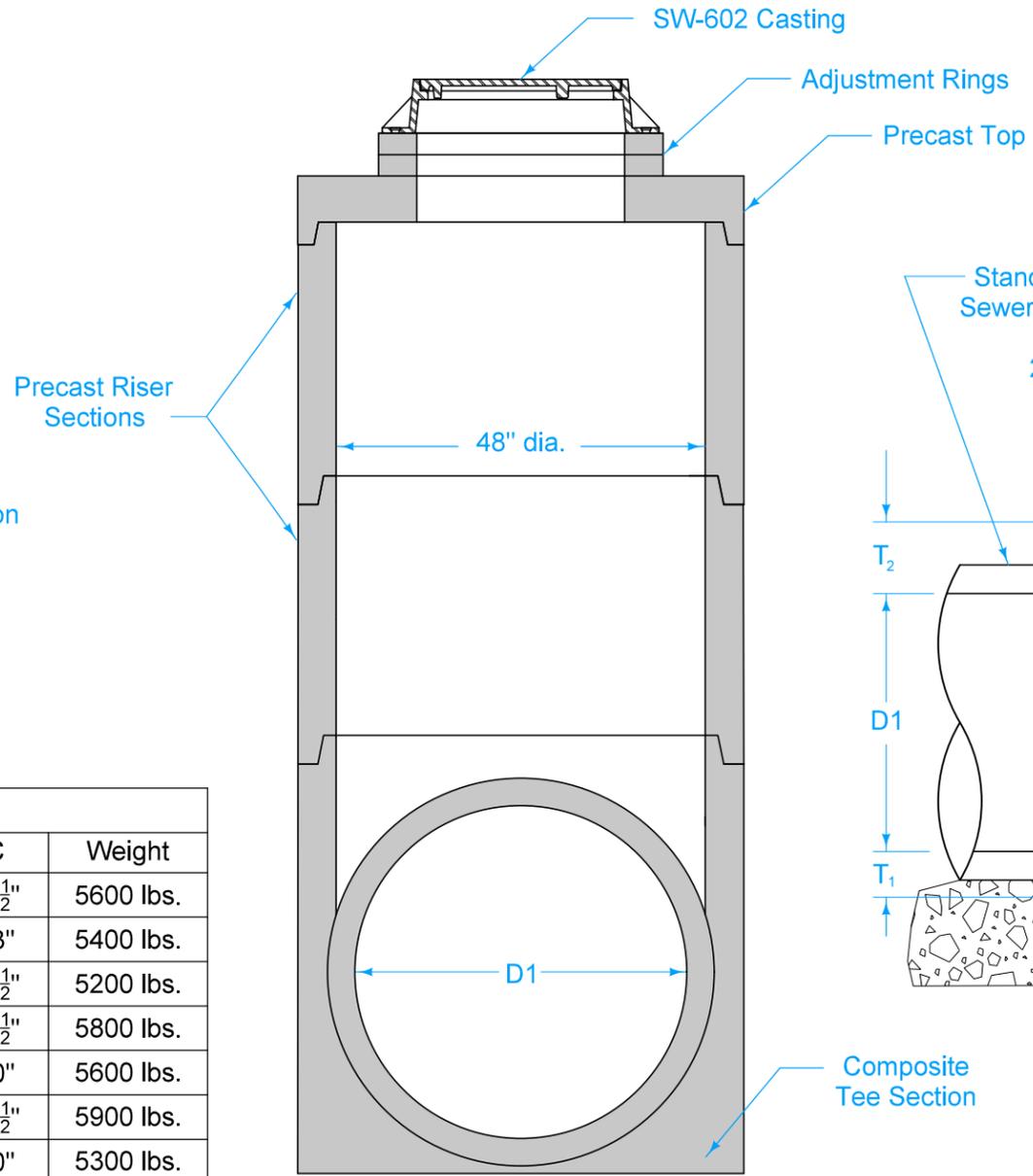
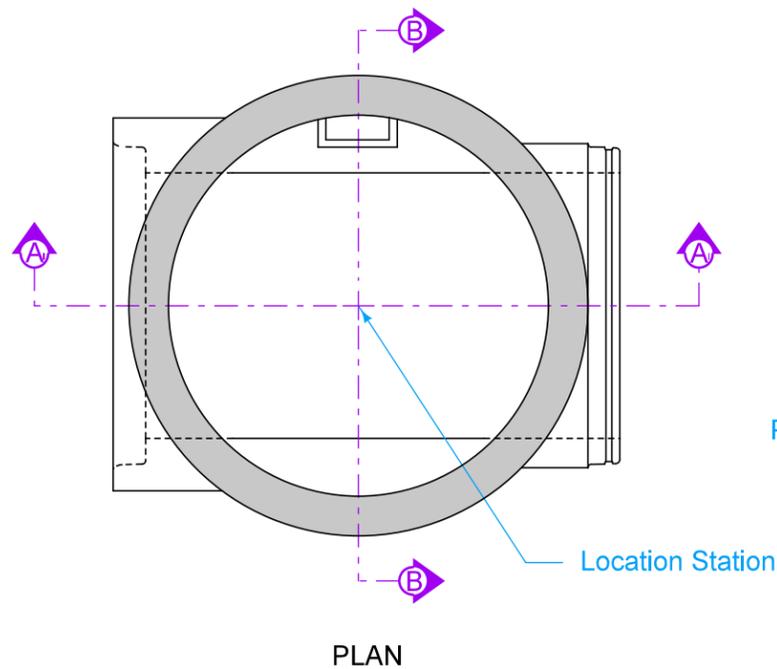
① For sewer pipes less than 48 inch diameter, install eccentric reducers/increasers with a standard tee or utilize a composite tee.

TYPICAL SECTION

STANDARD TEE ①

FIGURE 6010.405 SHEET 1 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.405	STANDARD ROAD PLAN	SW-405	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
TEE-SECTION STORM SEWER MANHOLE			



COMPOSITE TEE DIMENSIONS						
Size	D1	H	T ₁	T ₂	C	Weight
48" on 12"	12"	50"	8½"	29½"	41½"	5600 lbs.
48" on 15"	15"	50"	7"	28"	43"	5400 lbs.
48" on 18"	18"	50"	5½"	26½"	44½"	5200 lbs.
48" on 21"	21"	48"	9½"	17½"	38½"	5800 lbs.
48" on 24"	24"	48"	8"	16"	40"	5600 lbs.
48" on 27"	27"	48"	9½"	11½"	38½"	5900 lbs.
48" on 30"	30"	48"	8"	10"	40"	5300 lbs.
48" on 33"	33"	54"	9½"	11½"	44½"	6600 lbs.
48" on 36"	36"	54"	8"	10"	46"	6100 lbs.

SECTION B-B

SECTION A-A

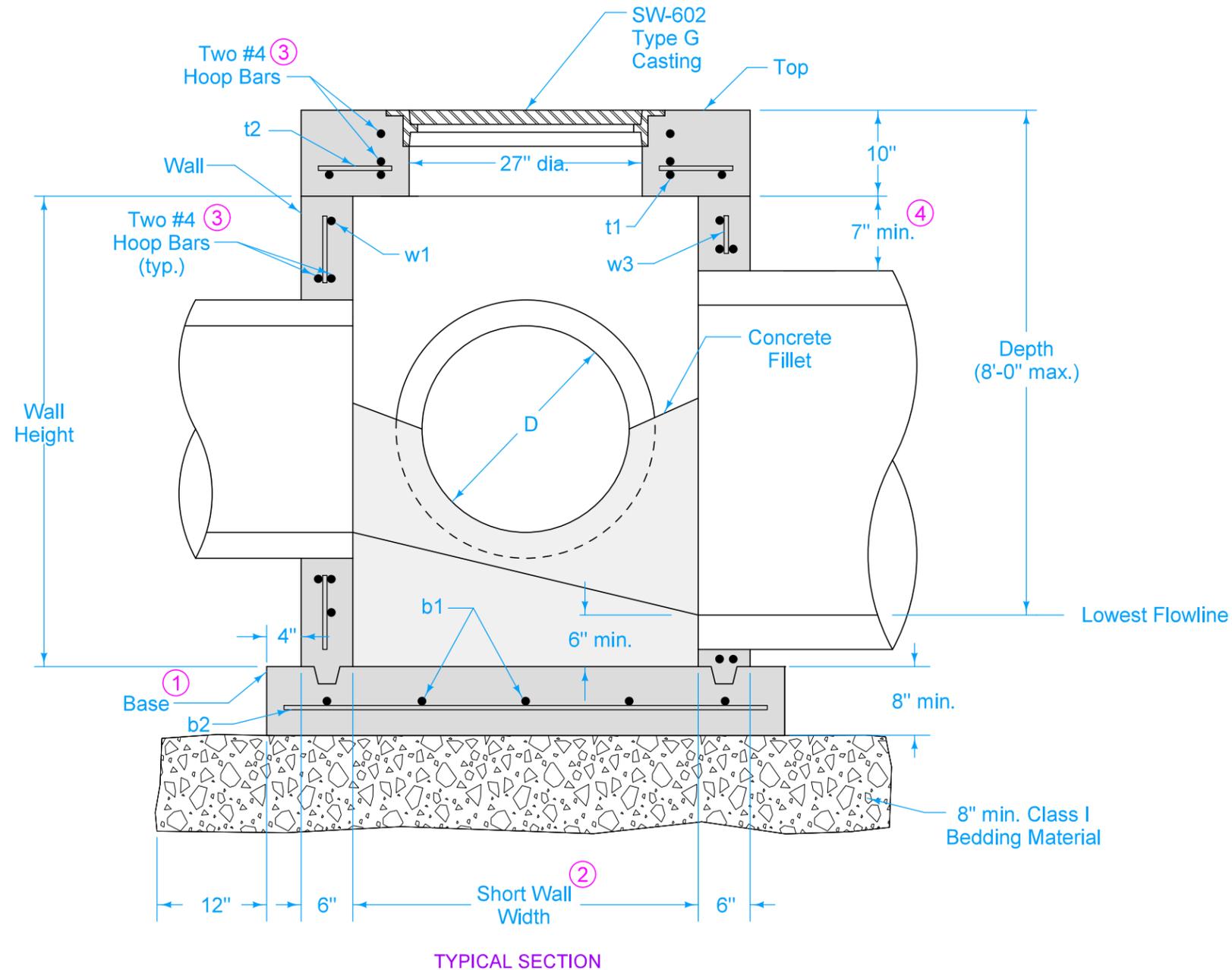
COMPOSITE TEE

Alternate to standard tee with eccentric reducer (for pipes 36" and smaller).

FIGURE 6010.405 SHEET 2 OF 2

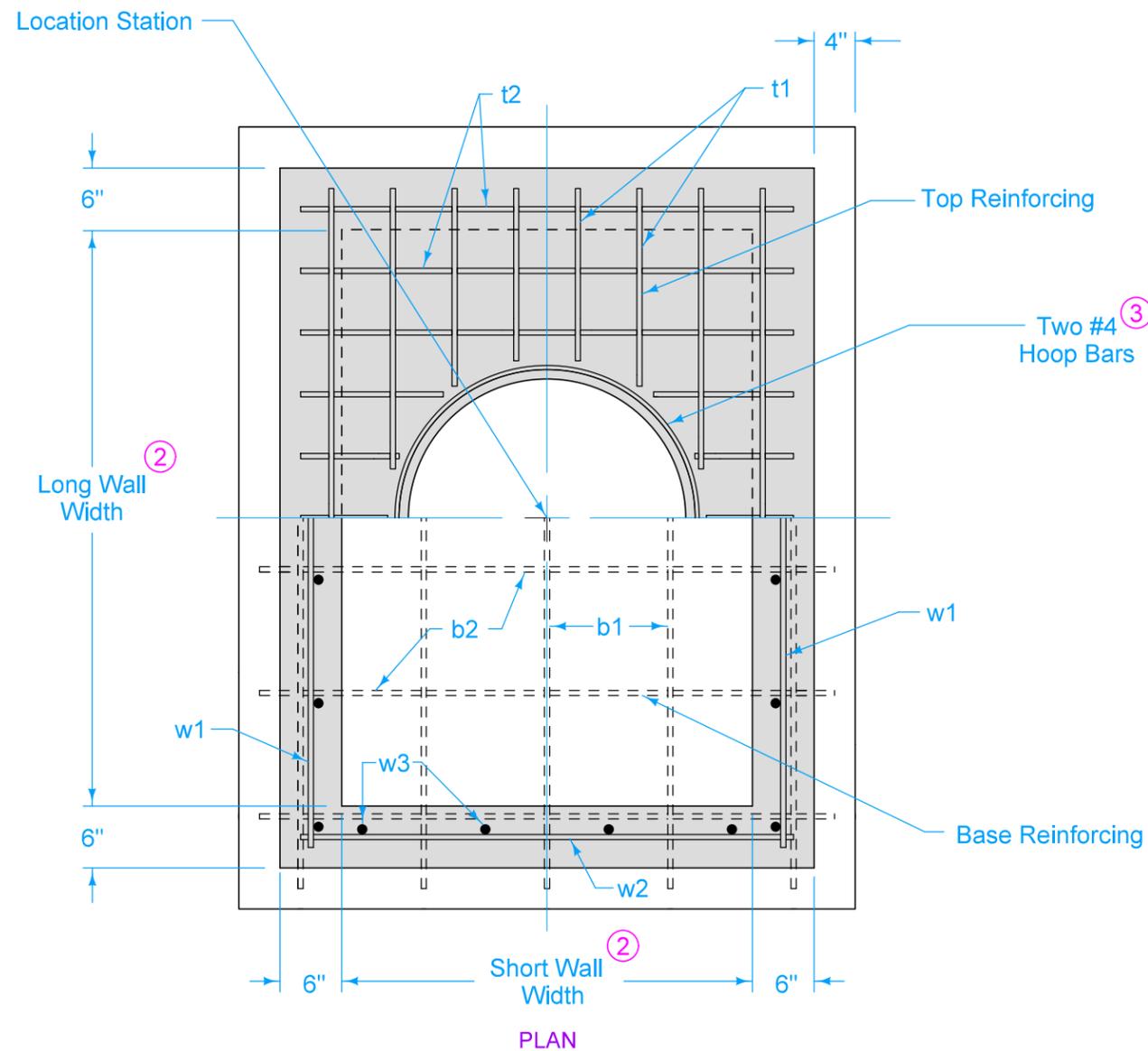
		REVISION	
		5	10-21-25
FIGURE 6010.405	STANDARD ROAD PLAN	SW-405	
		SHEET 2 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
TEE-SECTION STORM SEWER MANHOLE			

Adjacent walls may have different widths based upon pipe configuration, but structure must be rectangular.



- ① Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ② Wall widths vary with pipe diameter and range from 40 inches minimum to 77 inches maximum. Provide 6 inches of wall width (minimum) each side of pipe opening.
- ③ Provide two #4 hoop bars at top opening and at all pipe openings.
- ④ 7 inch minimum wall height above all pipes.

		REVISION	
		3	10-21-25
FIGURE 6010.406	STANDARD ROAD PLAN	SW-406	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SHALLOW RECTANGULAR STORM SEWER MANHOLE			



- ② Wall widths vary with pipe diameter and range from 40 inches minimum to 77 inches maximum. Provide 6 inches of wall width (minimum) each side of pipe opening.
- ③ Provide two #4 hoop bars at top opening and at all pipe openings.

REINFORCING BAR LIST					
Mark	Size	Location	Shape	Length	Spacing
t1	See Table	Top	—	Long Wall plus 8"	6"
t2	See Table	Top	—	Short Wall plus 8"	6"
b1	See Table	Base	—	Long Wall plus 14"	12"
b2	See Table	Base	—	Short Wall plus 14"	12"
w1	See Table	Walls	—	Long Wall plus 8"	12" ^f
w2	See Table	Walls	—	Short Wall plus 8"	12"
w3	See Table	Walls	—	Wall Height minus 4"	12"

*Place a minimum of one w1 bar above each pipe opening

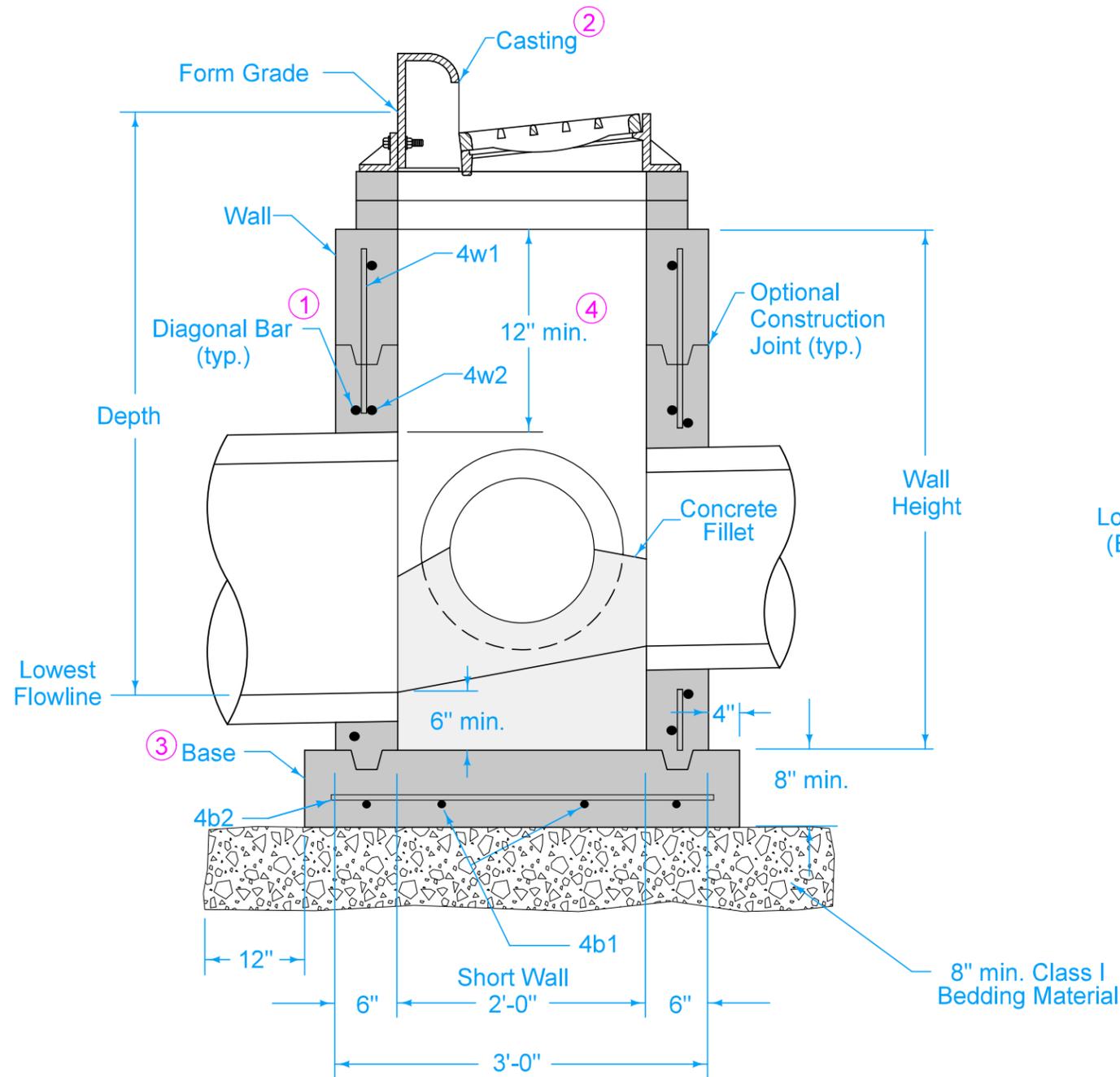
Diameter of Largest Pipe, D	Minimum Bar Size
48" or 54"	6
33" to 42"	5
30" or smaller	4

FIGURE 6010.406 SHEET 2 OF 2

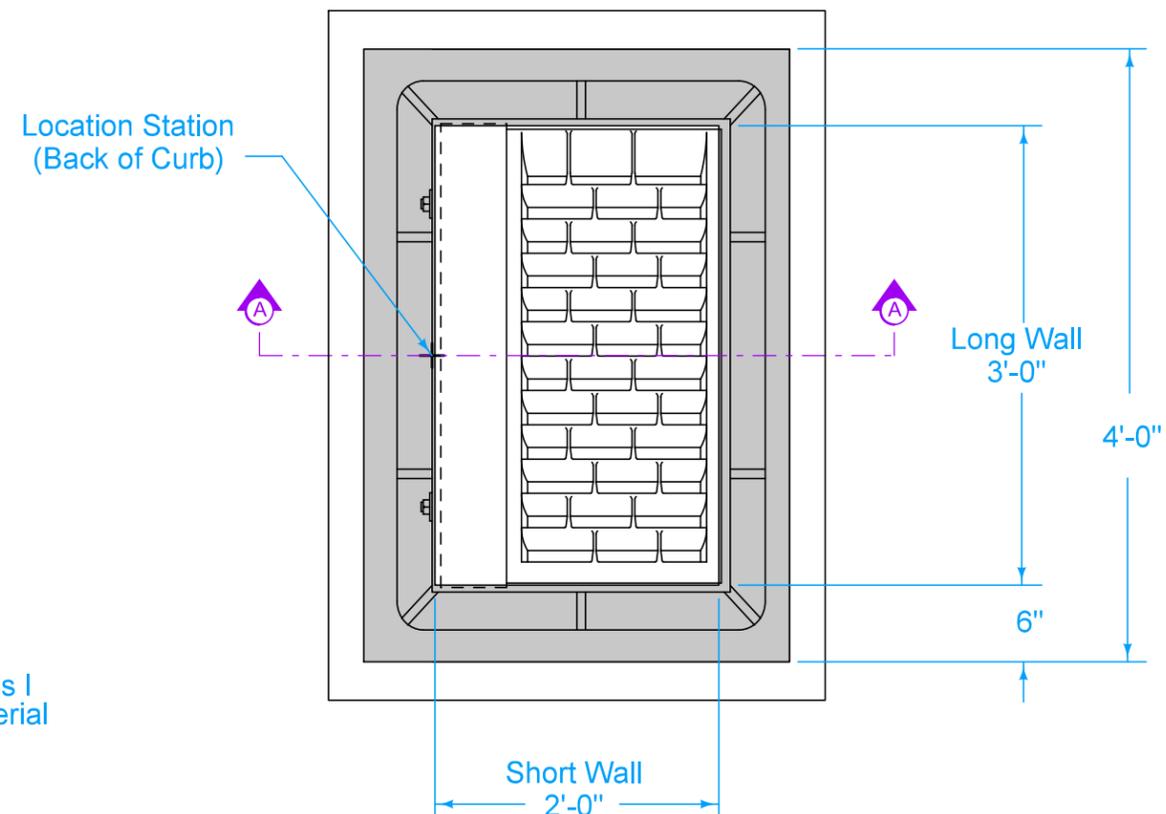
		REVISION	
		3	10-21-25
FIGURE 6010.406	STANDARD ROAD PLAN	SW-406	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SHALLOW RECTANGULAR STORM SEWER MANHOLE			

Refer to SW-514 for boxout details.

- ① Install four #4 diagonal bars at all pipe openings.
- ② SW-603 Type R unless Type Q is specified in the contract documents.
- ③ Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ④ 12 inch minimum wall height above all pipes.



SECTION A-A



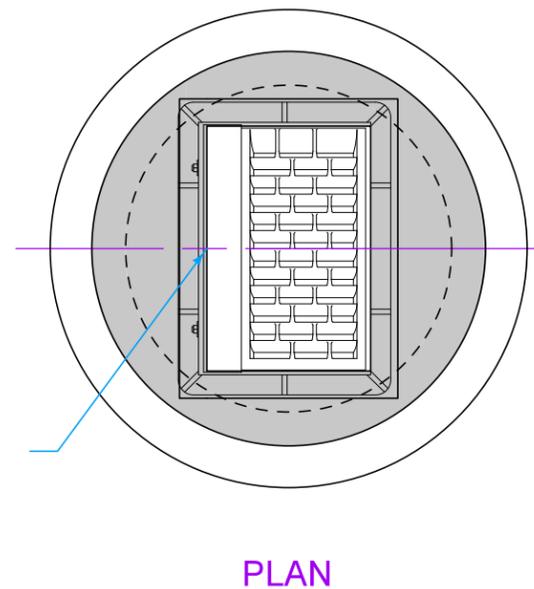
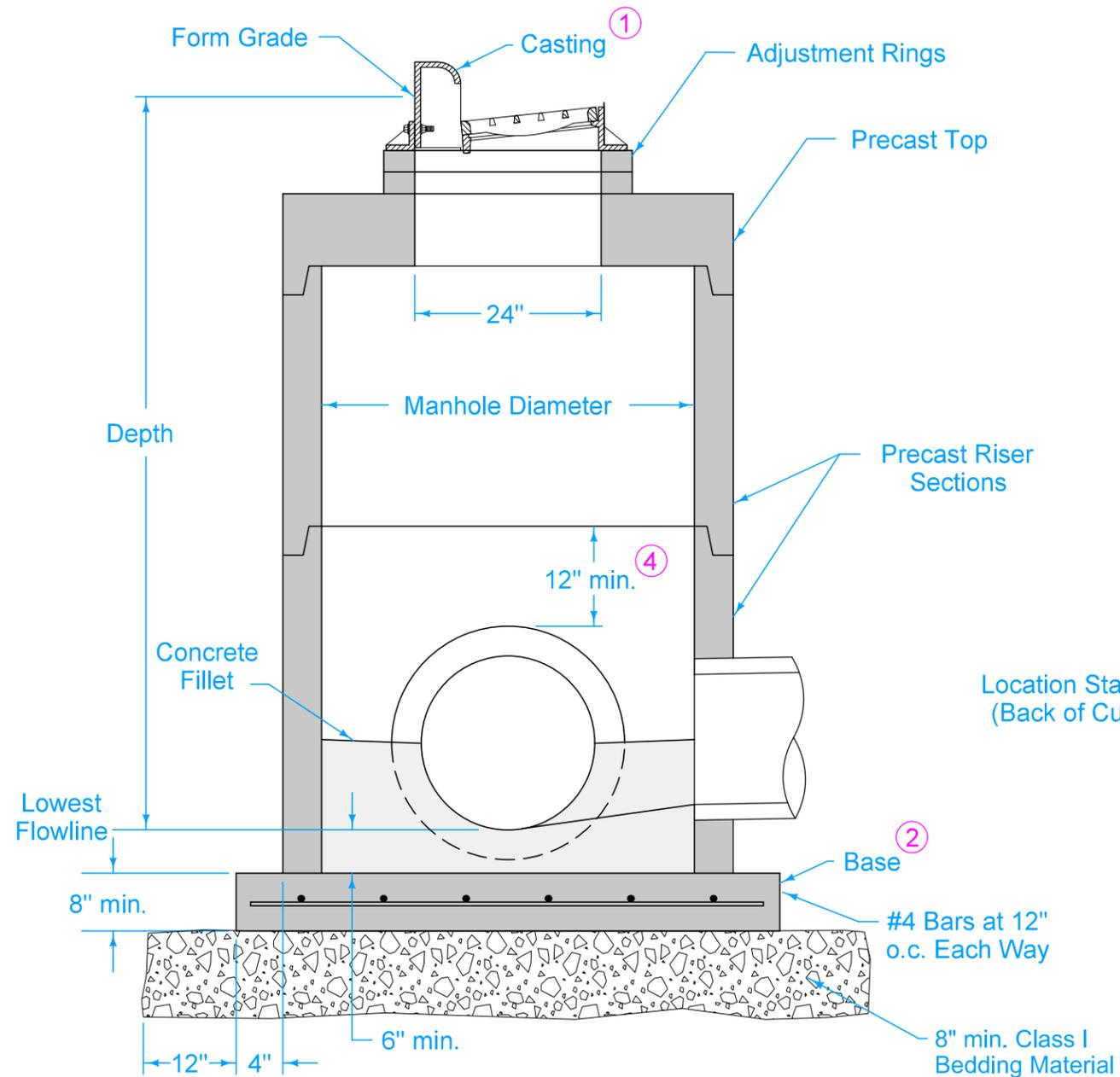
PLAN

REINFORCING BAR LIST						
Mark	Size	Location	Shape	Length	Count	Spacing
4w1	4	Walls	—	Wall Height minus 4"	14	12"
4w2	4	Long Walls	—	3'-8"	Varies	12"
4w3	4	Short Walls	—	2'-8"	Varies	12"
4b1	4	Base	—	4'-2"	4	10"
4b2	4	Base	—	3'-2"	5	10"

MAXIMUM PIPE DIAMETERS		
Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	15"	18"
Long Wall	24"	30"

FIGURE 6010.501 SHEET 1 OF 1

		REVISION
		4 10-21-25
FIGURE 6010.501	STANDARD ROAD PLAN	SW-501
SHEET 1 of 1		
REVISIONS: Updated Sudas and IDOT Logos.		
 SUDAS DIRECTOR	 DESIGN METHODS ENGINEER	
SINGLE GRATE INTAKE		



TYPICAL SECTION

Refer to SW-514 for boxout details.

- ① SW-603 Type R unless Type Q is specified in the contract documents.
- ② Cast-in-place base shown. Base may be square. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ For additional configurations, maintain a minimum of 12 inches of concrete between vertical edges of pipe openings.
- ④ 12 inch minimum riser height above all pipes.

Manhole Diameter (inches)	Maximum Pipe Diameter (inches) for 2 Pipes (3)	
	at 180° Separation	at 90° Separation
48	24	18
60	36	24
72	42	30
84	48	36
96	60	42

FIGURE 6010.502 SHEET 1 OF 1

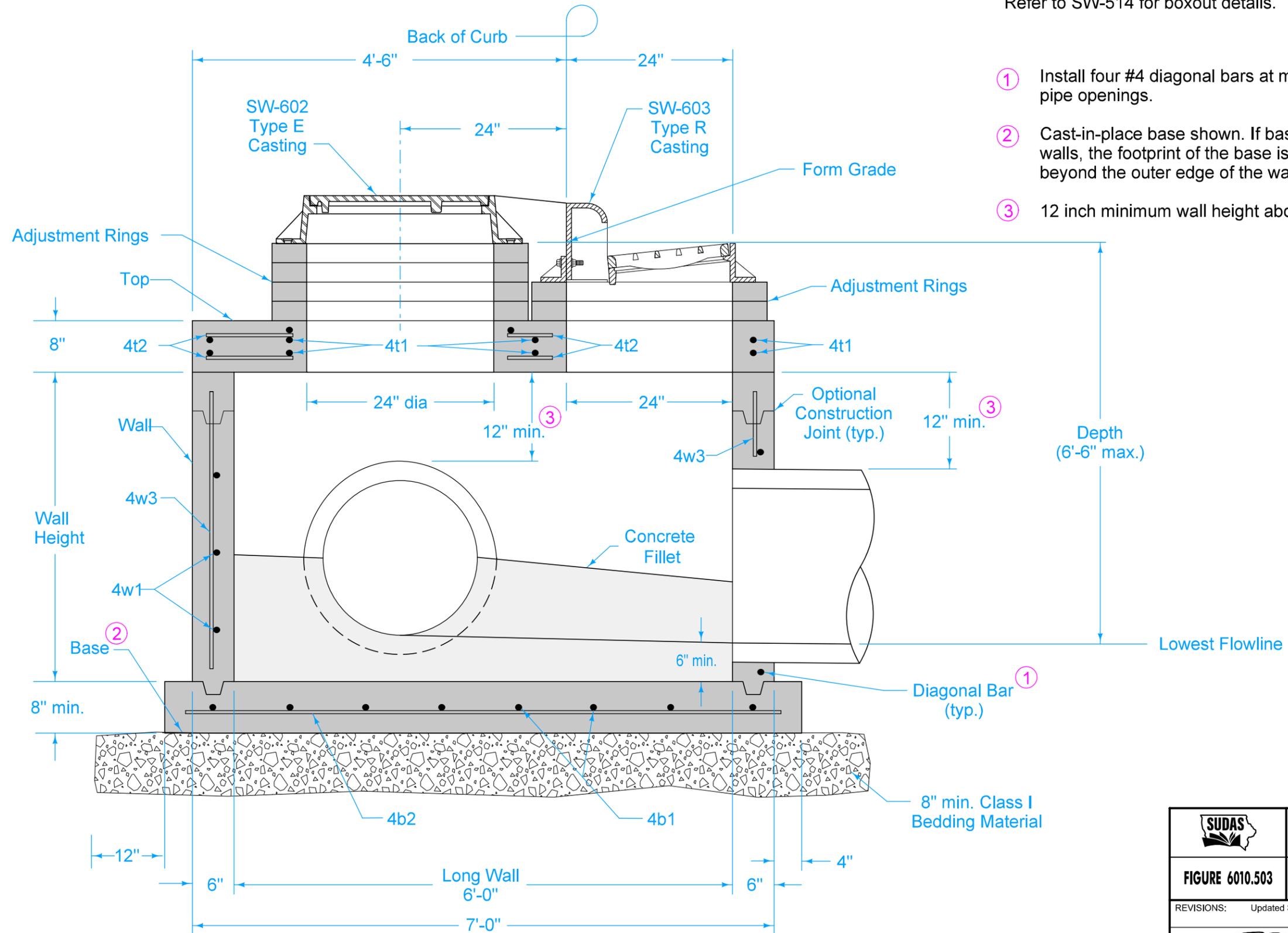
		REVISION	
		2	10-21-25
FIGURE 6010.502	STANDARD ROAD PLAN		
SHEET 1 of 1			

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR
 DESIGN METHODS ENGINEER

CIRCULAR SINGLE GRATE INTAKE

Refer to SW-514 for boxout details.



- ① Install four #4 diagonal bars at manhole opening and at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ 12 inch minimum wall height above all pipes.

TYPICAL SECTION

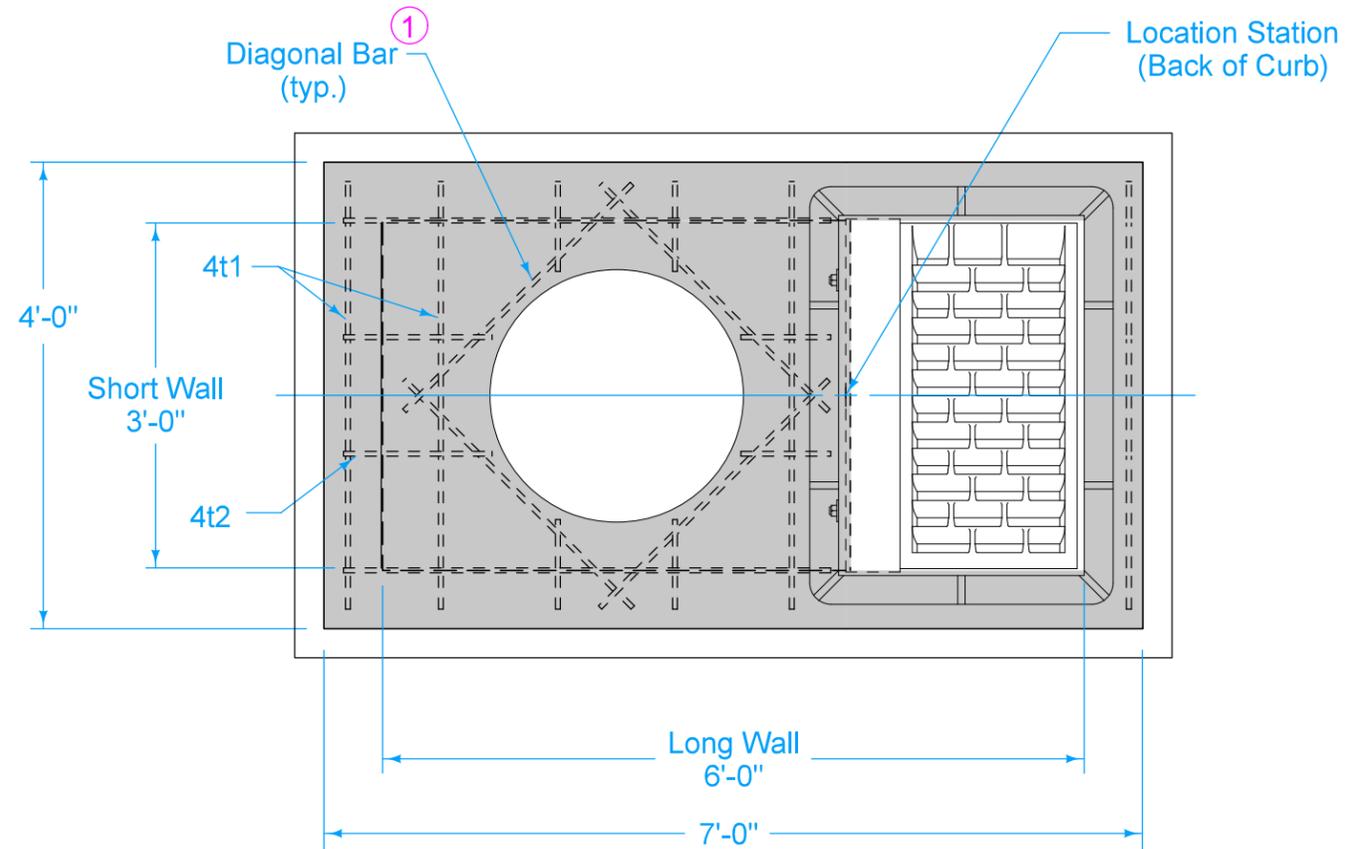
		REVISION	
		4	10-21-25
FIGURE 6010.503	STANDARD ROAD PLAN	SW-503 SHEET 1 of 2	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

**SINGLE GRATE INTAKE
WITH MANHOLE**

① Install four #4 diagonal bars at manhole opening and at all pipe openings.



PLAN

REINFORCING BAR LIST

Mark	Size	Location	Shape	Count	Length	Spacing
4t1	4	Top	—	12	3'-8"	12"
4t2	4	Top	—	8	4'-2"	12"
4b1	4	Base	—	7	4'-2"	13"
4b2	4	Base	—	5	7'-2"	10"
4w1	4	Short Walls	—	Varies	3'-8"	12"
4w2	4	Long Walls	—	Varies	6'-8"	12"
4w3	4	Walls	—	18	Wall Height minus 4"	13"

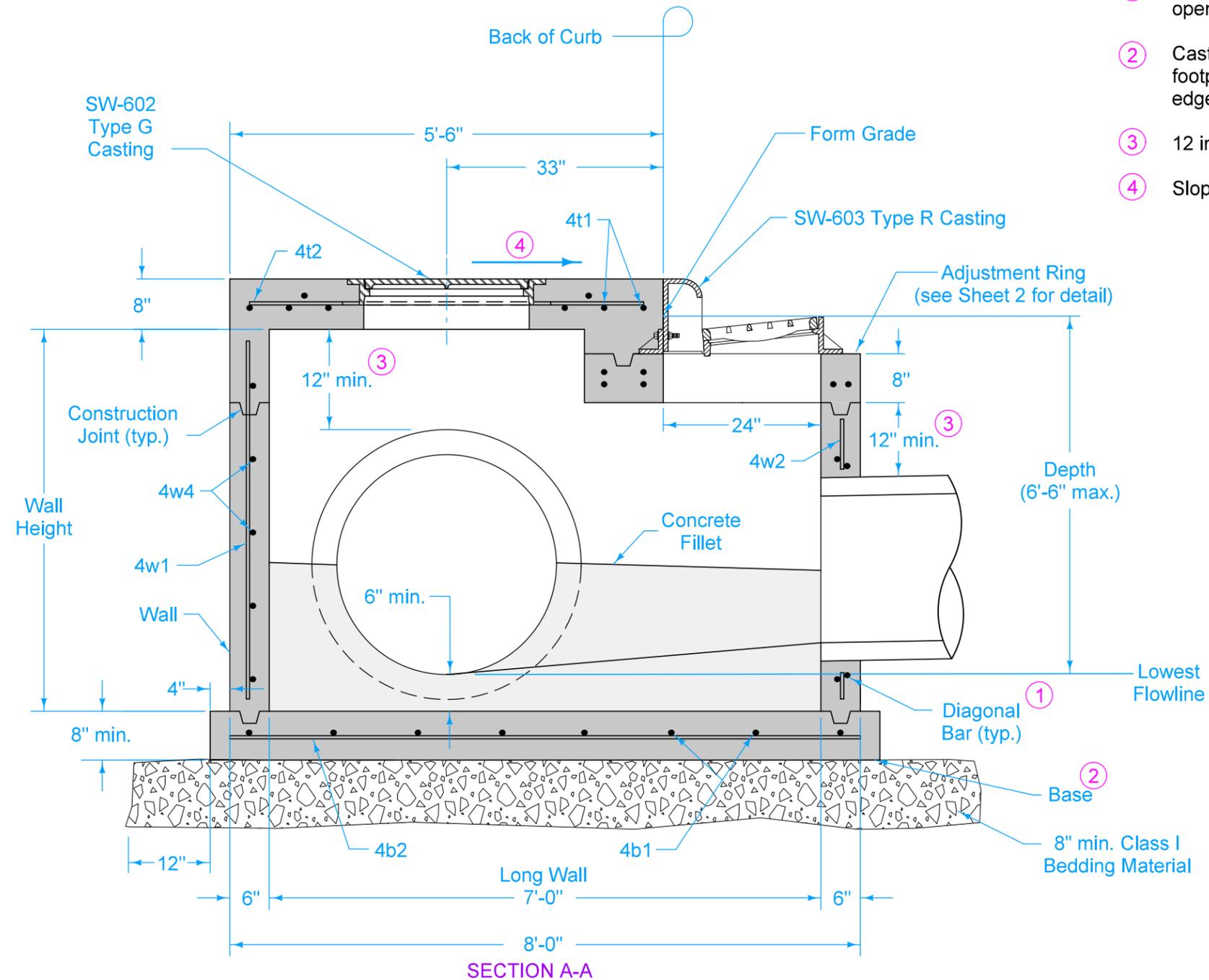
MAXIMUM PIPE DIAMETERS

Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	24"	30"
Long Wall	30"	36"

FIGURE 6010.503 SHEET 2 OF 2

		REVISION	
		4	10-21-25
FIGURE 6010.503	STANDARD ROAD PLAN	SW-503	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SINGLE GRATE INTAKE WITH MANHOLE			

Refer to SW-514 for boxout details.

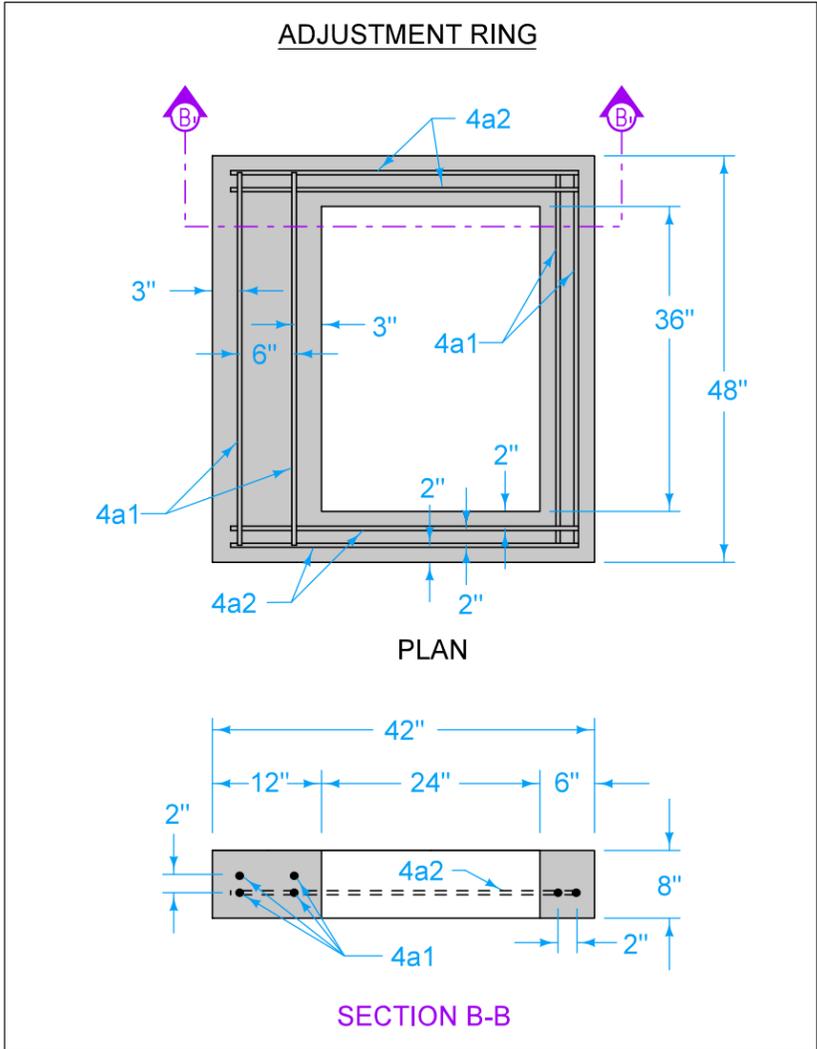
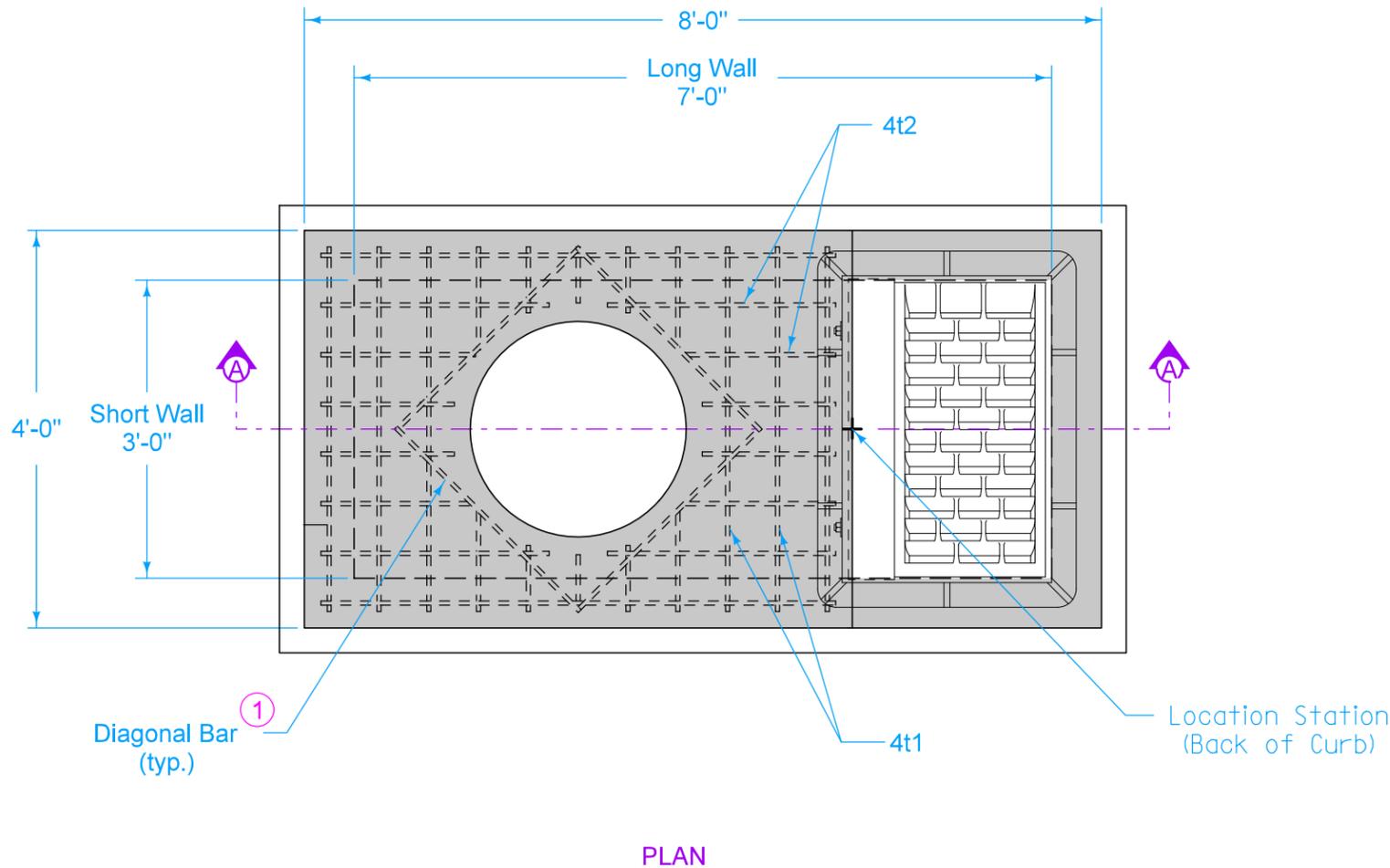


- ① Install four #4 diagonal bars at manhole opening and at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ 12 inch minimum wall height above all pipes.
- ④ Slope of 1.5% or as specified in the contract documents.

FIGURE 6010.504 SHEET 1 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.504	STANDARD ROAD PLAN	SW-504	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SINGLE GRATE INTAKE WITH FLUSH-TOP MANHOLE			

① Install four #4 diagonal bars at manhole opening and at all pipe openings.



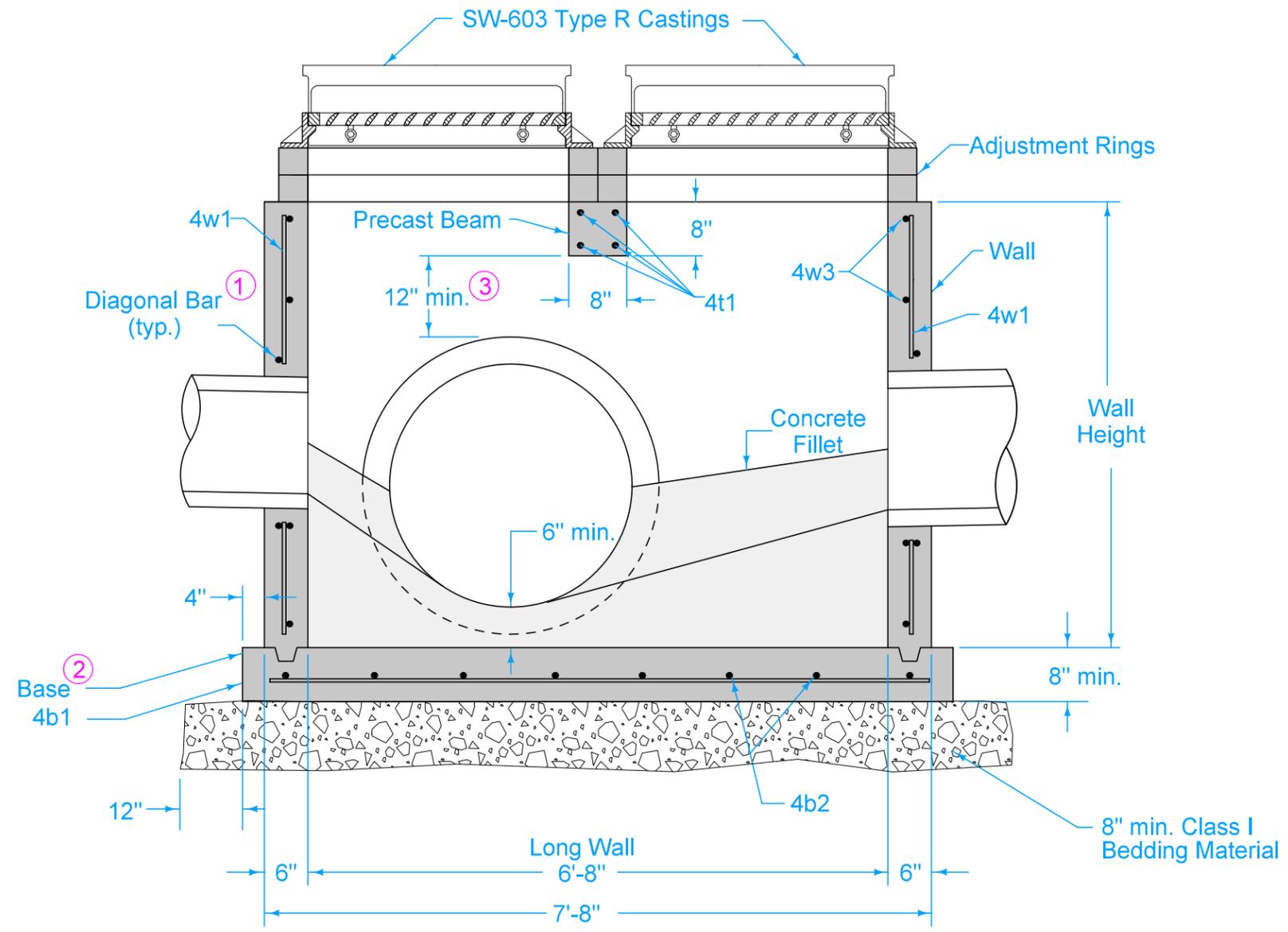
REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4t1	4	Top	—	1 1	3'-8"	6"
4t2	4	Top	—	8	5'-2"	6"
4b1	4	Base	—	8	4'-2"	13"
4b2	4	Base	—	5	8'-2"	10"
4a1	4	Adj. Ring	—	6	3'-8"	See Adj. Ring Plan
4a2	4	Adj. Ring	—	4	3'-2"	See Adj. Ring Plan
4w1	4	Walls	—	13	Wall Height minus 4"	12"
4w2	4	Walls	—	1 1	Wall Height minus 16"	12"
4w3	4	Long Walls	—	Varies	7'-8"	12"
4w4	4	Short Walls	—	Varies	3'-8"	12"

MAXIMUM PIPE DIAMETERS		
Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	18"	24"
Long Wall	30"	36"

FIGURE 6010.504 SHEET 2 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.504	STANDARD ROAD PLAN	SW-504	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SINGLE GRATE INTAKE WITH FLUSH-TOP MANHOLE			

- ① Install four #4 diagonal bars at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ 12 inch minimum wall height above all pipes.



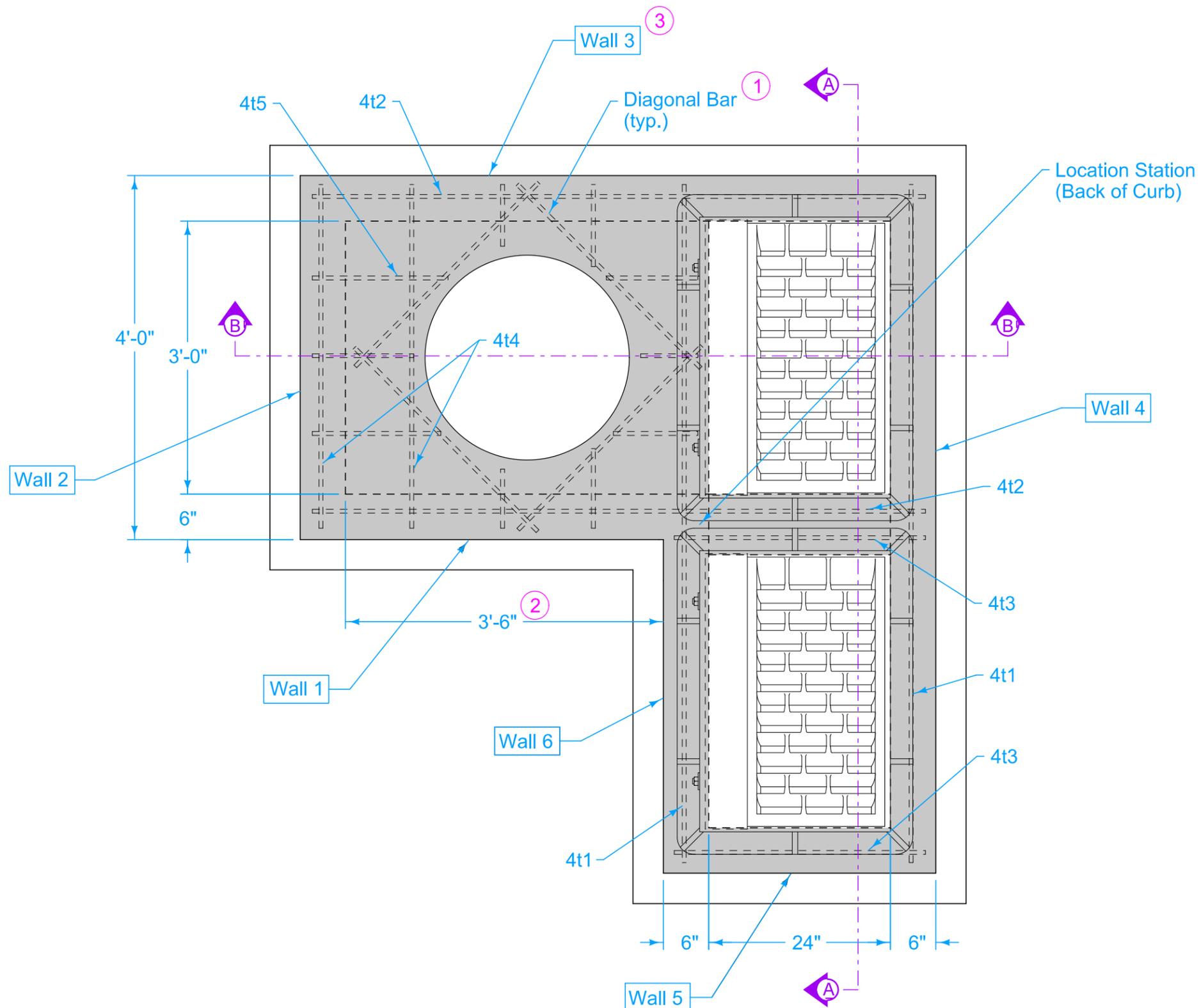
TYPICAL SECTION

REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4t1	4	Beam	—	4	2'-8"	4"
4b1	4	Base	—	4	7'-10"	10"
4b2	4	Base	—	8	3'-2"	12"
4w1	4	Walls	—	20	Wall Height minus 4"	12"
4w2	4	Long Walls	—	Varies	7'-4"	12"
4w3	4	Short Walls	—	Varies	2'-8"	12"

MAXIMUM PIPE DIAMETERS		
Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	15"	18"
Long Wall	60"	66"

FIGURE 6010.505 SHEET 2 OF 2

		REVISION	
		4	10-21-25
FIGURE 6010.505	STANDARD ROAD PLAN	SW-505	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
DOUBLE GRATE INTAKE			



Maximum pipe diameters are set based on maximum structure depth of 6 feet-6 inches and the objective of placement of the centerline of the pipe on the centerline of the manhole opening for maintenance purposes.

Refer to SW-514 for boxout details.

- ① Install four #4 diagonal bars at manhole opening and at all pipe openings.
- ② If Wall 1 is widened to 4 feet, the maximum pipe diameter can be increased to 36 inches.
- ③ If Wall 1 is widened to 4 feet, the maximum pipe diameter in Wall 3 can be increased to 42 inches.

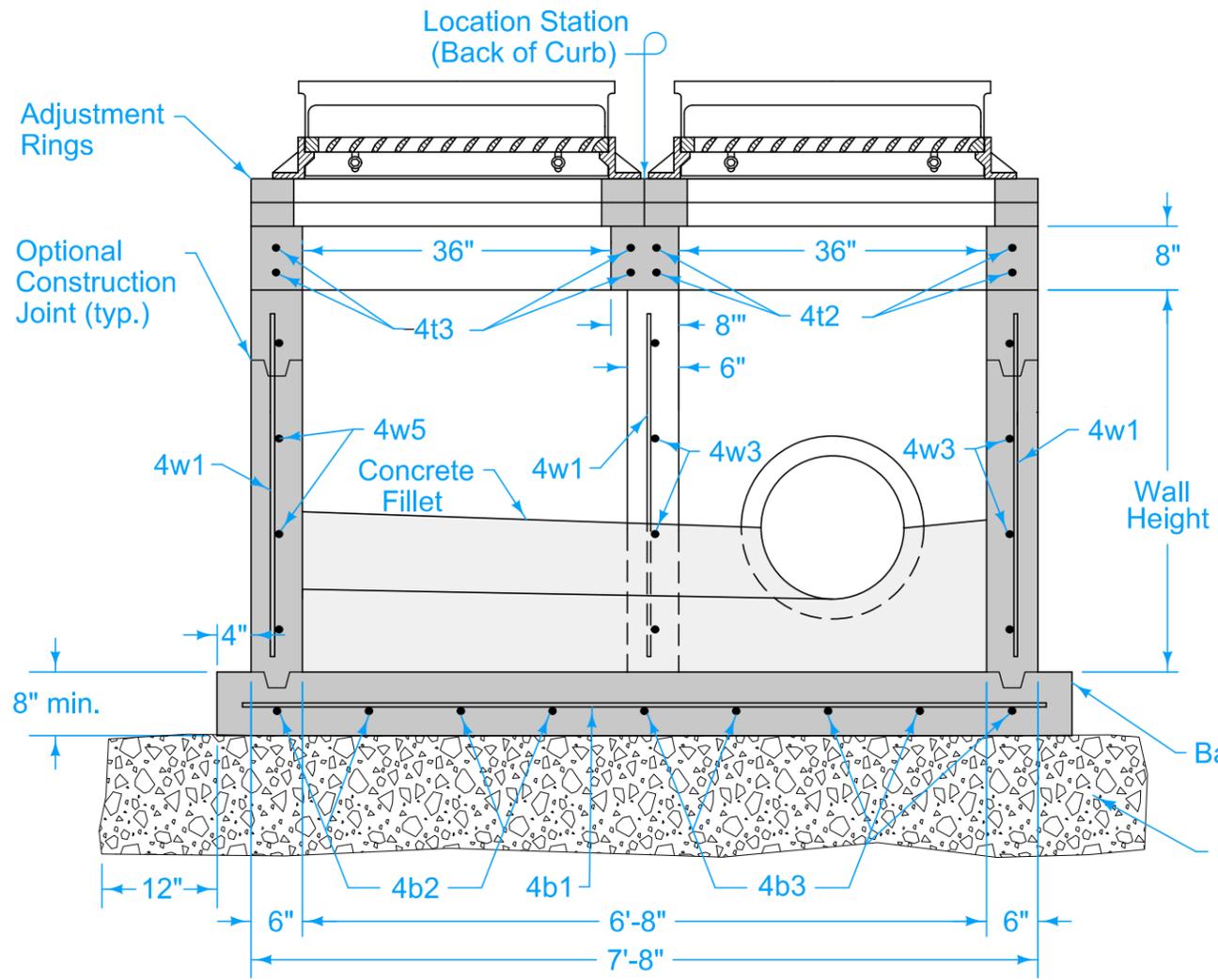
MAXIMUM PIPE DIAMETERS	
Wall	Max. Dia.
1	30" ②
2	24"
3	36" ③
4	42"

PLAN

		REVISION	
		5	10-21-25
FIGURE 6010.506	STANDARD ROAD PLAN	SW-506 SHEET 1 of 2	

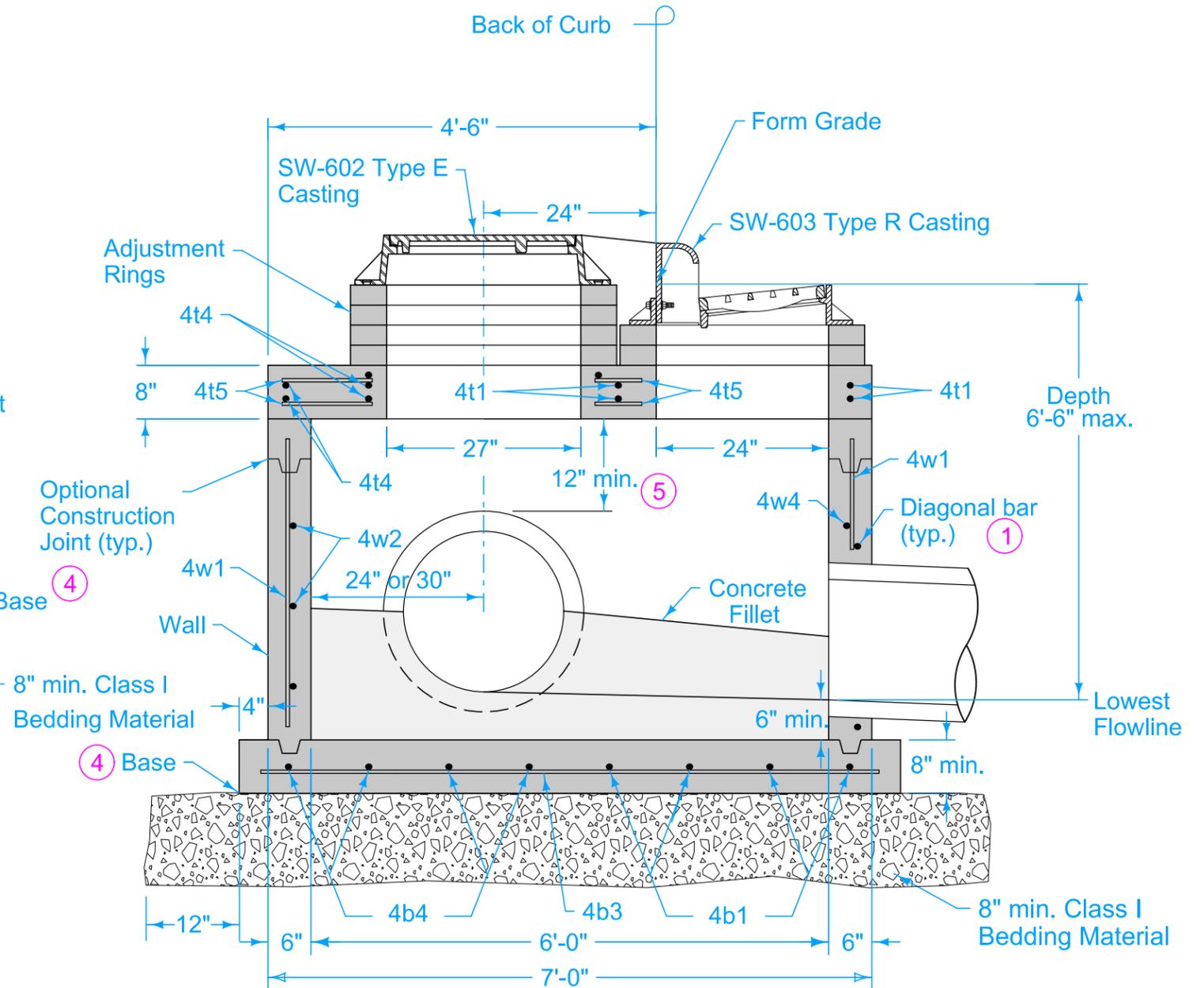
REVISIONS: Updated Sudas and IDOT Logos.

**DOUBLE GRATE INTAKE
WITH MANHOLE**



SECTION A-A

REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4t1	4	Top	—	4	7'-4"	See Detail
4t2	4	Top	—	4	6'-8"	See Detail
4t3	4	Top	—	4	2'-8"	See Detail
4t4	4	Top	—	8	3'-8"	12"
4t5	4	Top	—	6	4'-2"	12"
4b1	4	Base	—	4	7'-10"	12"
4b2	4	Base	—	4	3'-2"	12"
4b3	4	Base	—	5	7'-2"	12"
4b4	4	Base	—	4	4'-2"	12"
4w1	4	Walls	—	29	Wall Height minus 4"	12"
4w2	4	Wall 2	—	Varies	3'-8"	12"
4w3	4	Walls 1 and 3	—	Varies	6'-8"	12"
4w4	4	Wall 4	—	Varies	7'-4"	12"
4w5	4	Wall 5	—	Varies	2'-8"	12"
4w6	4	Wall 6	—	Varies	3'-10"	12"



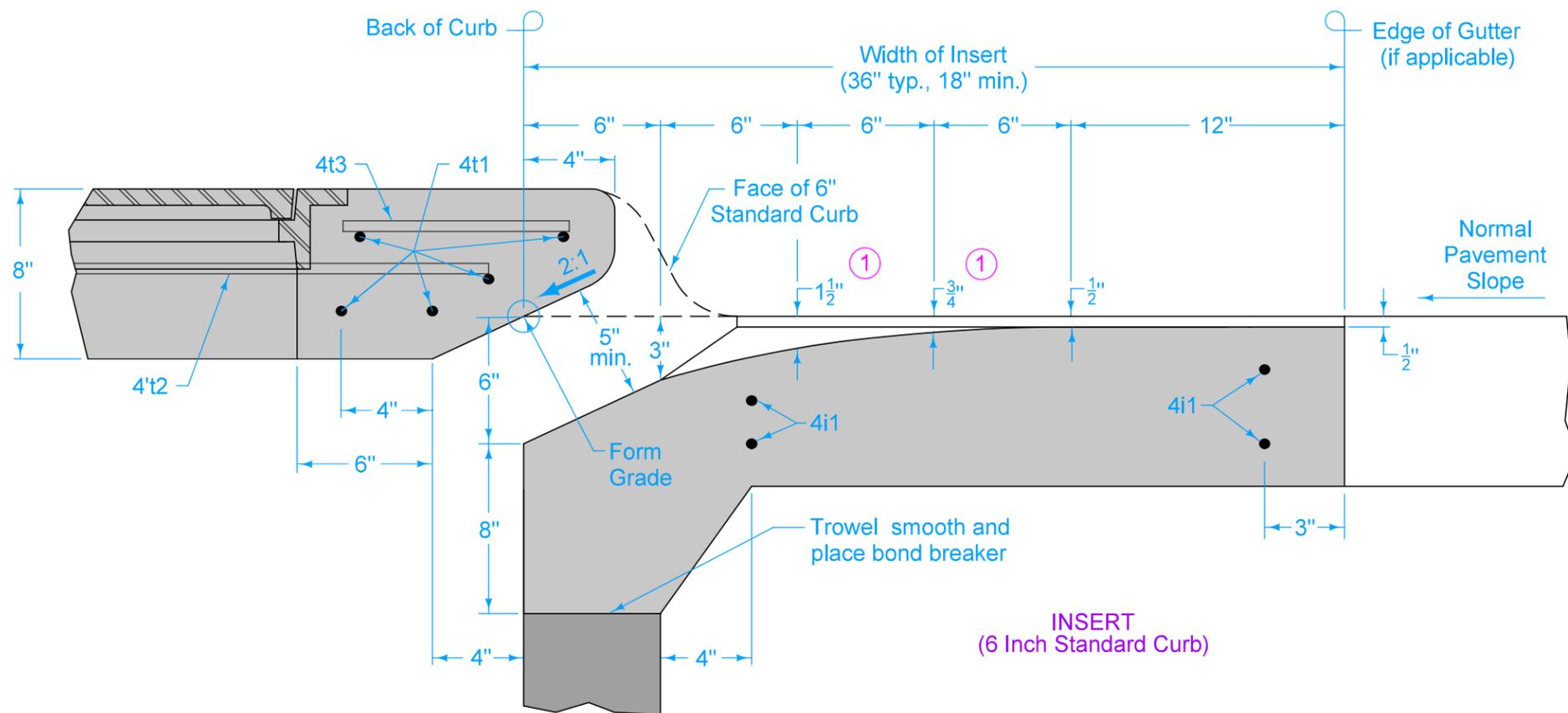
SECTION B-B

- ① Install four #4 diagonal bars at manhole opening and at all pipe openings.
- ④ Cast-in-place base shown. If base is precast integral with walls, the footprint of base is not required to extend beyond the outer edge of the walls.
- ⑤ 12 inch minimum wall height above all pipes.

FIGURE 6010.506

SHEET 2 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.506	STANDARD ROAD PLAN	SW-506	
SHEET 2 of 2			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
DOUBLE GRATE INTAKE WITH MANHOLE			



① Insert shaping may be modified for insert widths less than 36 inches. For an 18 inch insert, reduce dimensions indicated by $\frac{1}{2}$ inch.

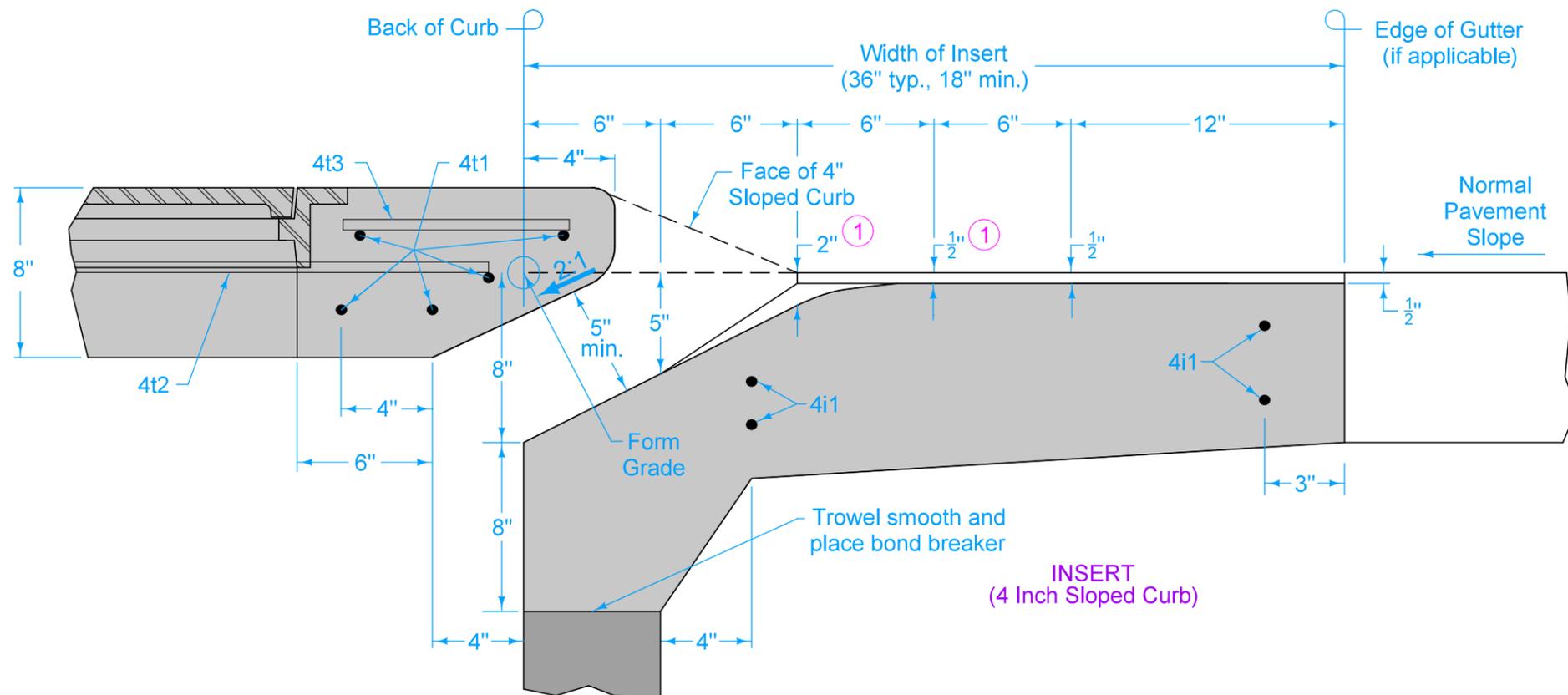


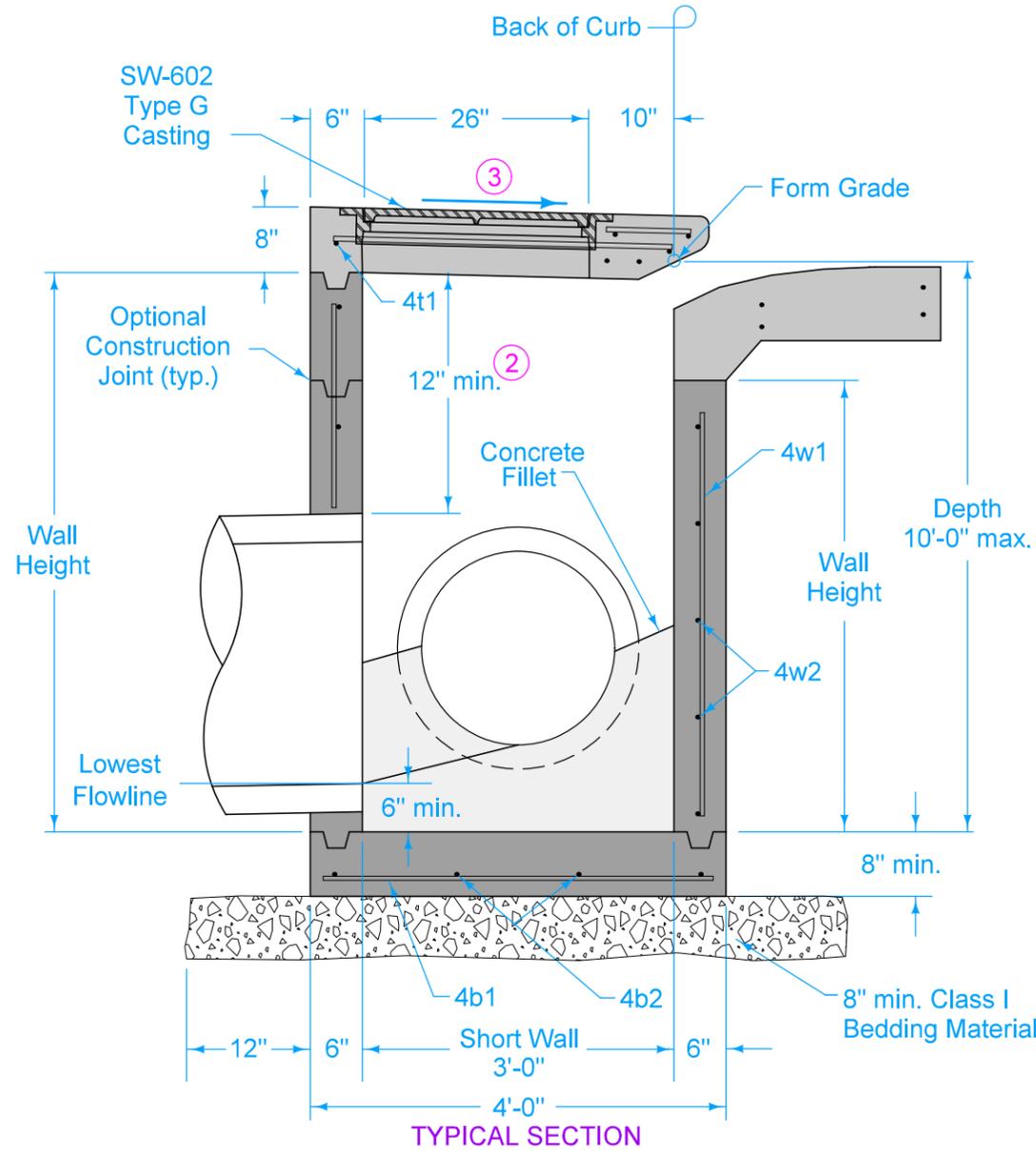
FIGURE 6010.507 SHEET 1 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.507	STANDARD ROAD PLAN	SW-507	
		SHEET 1 of 2	

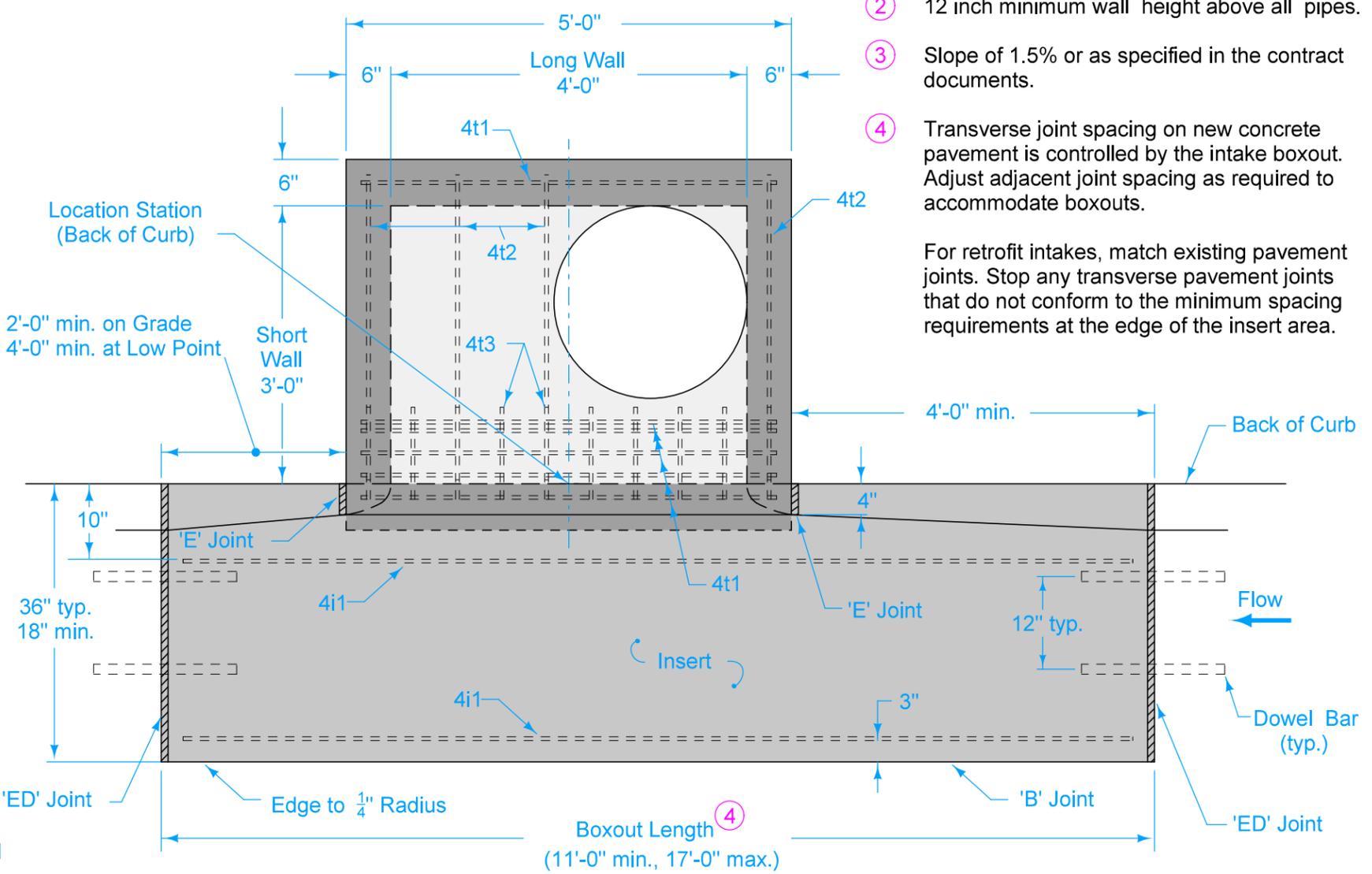
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

**SINGLE OPEN-THROAT CURB
INTAKE, SMALL BOX**



TYPICAL SECTION



PLAN

- ② 12 inch minimum wall height above all pipes.
 - ③ Slope of 1.5% or as specified in the contract documents.
 - ④ Transverse joint spacing on new concrete pavement is controlled by the intake boxout. Adjust adjacent joint spacing as required to accommodate boxouts.
- For retrofit intakes, match existing pavement joints. Stop any transverse pavement joints that do not conform to the minimum spacing requirements at the edge of the insert area.

REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4t1	4	Top	—	6	4'-8"	See Insert
4t2	4	Top	—	4	3'-6"	12"
4t3	4	Top	—	10	10"	6"
4b1	4	Base	—	6	3'-6"	1 1"
4b2	4	Base	—	5	4'-6"	10"
4i1	4	Insert	—	4	Boxout Length minus 8"	See Plan
4w1	4	Walls	—	14	Wall Height minus 4"	14"
4w2	4	Long Walls	—	Varies	4'-8"	12"
4w3	4	Short Walls	—	Varies	3'-8"	12"

MAXIMUM PIPE DIAMETERS		
Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	24"	30"
Long Wall	30"	36"

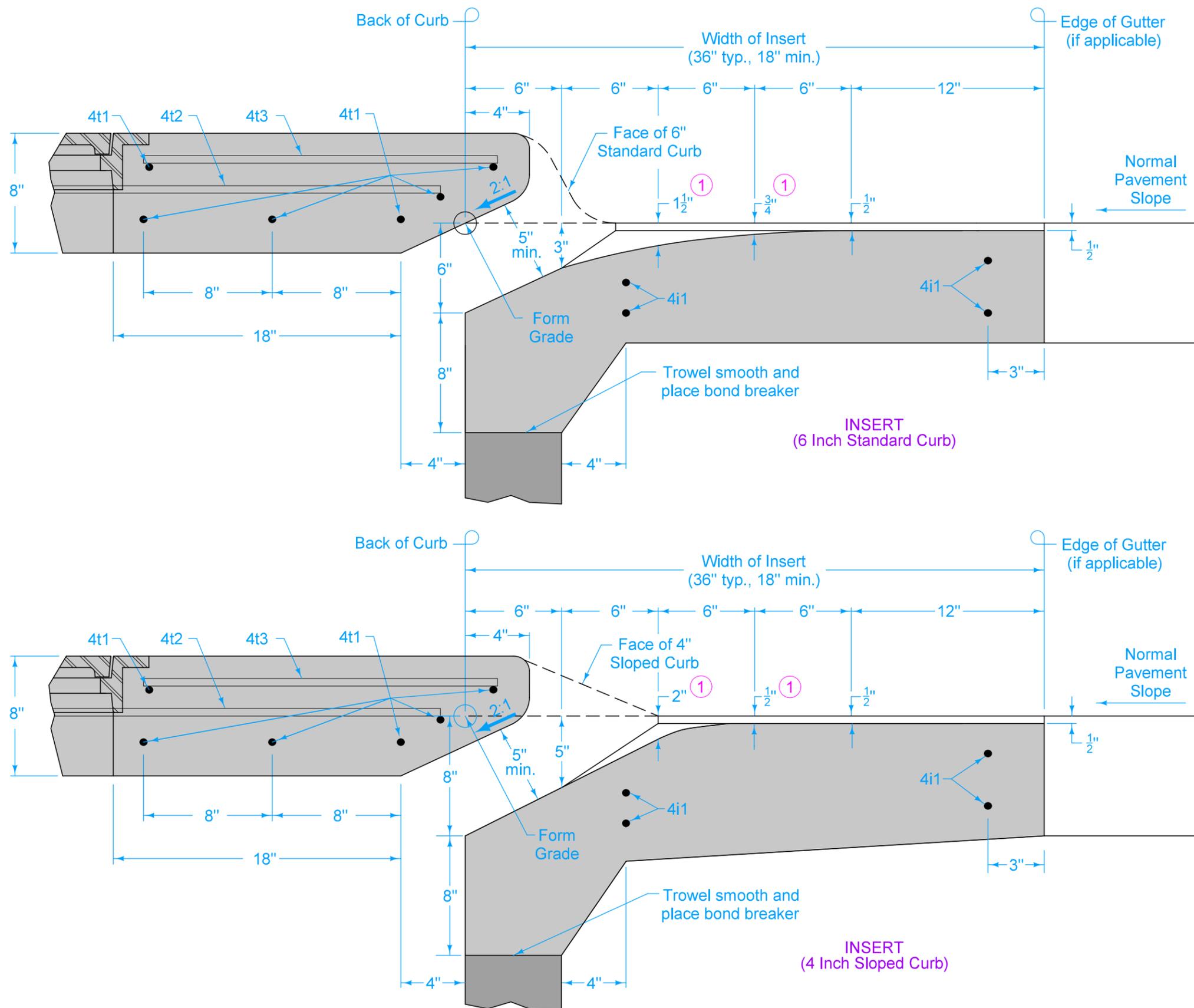
		REVISION	
		5	10-21-25
FIGURE 6010.507	STANDARD ROAD PLAN	SW-507	
SHEET 2 of 2			

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

SINGLE OPEN-THROAT CURB
INTAKE, SMALL BOX

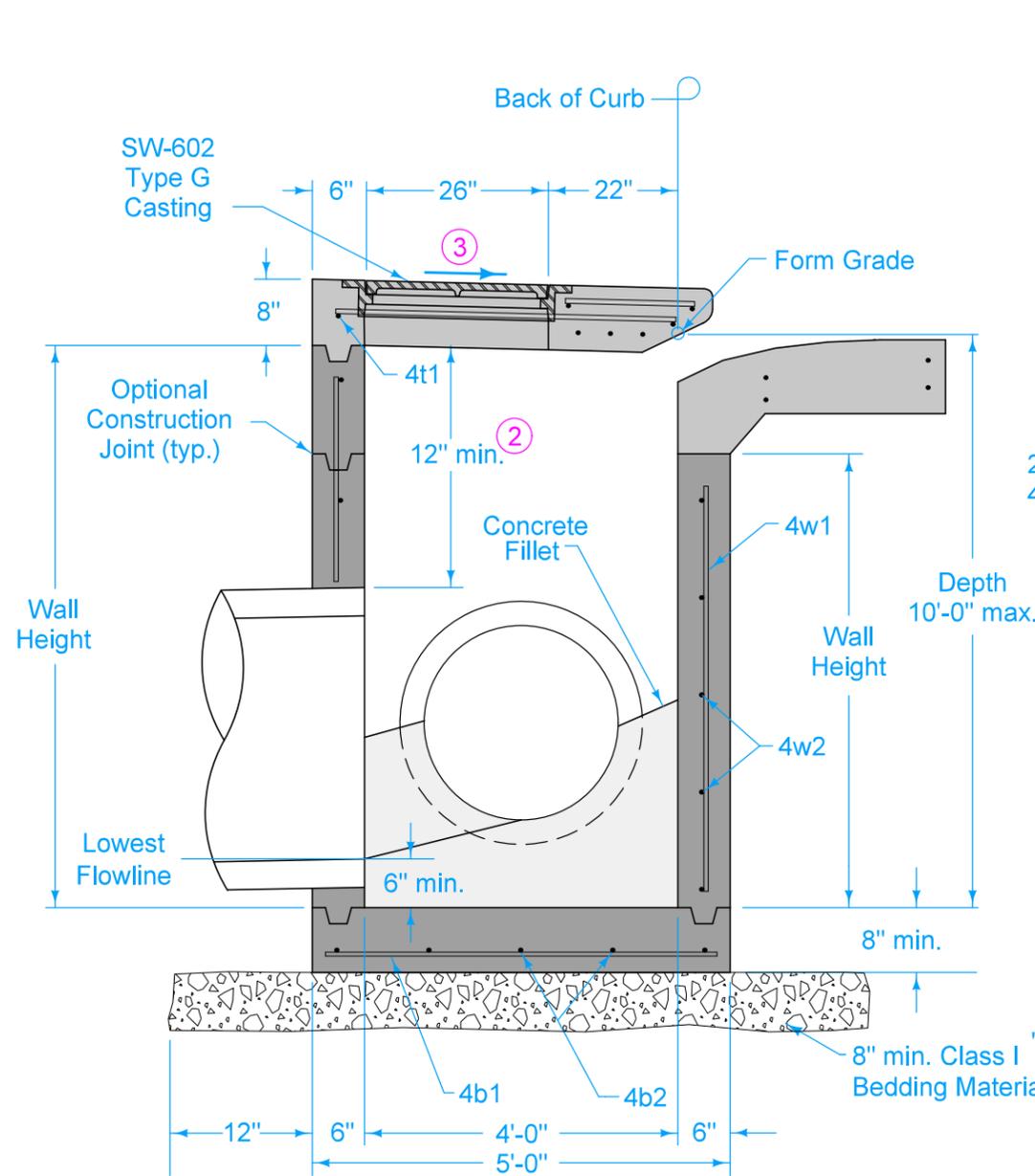
FIGURE 6010.507 SHEET 2 OF 2



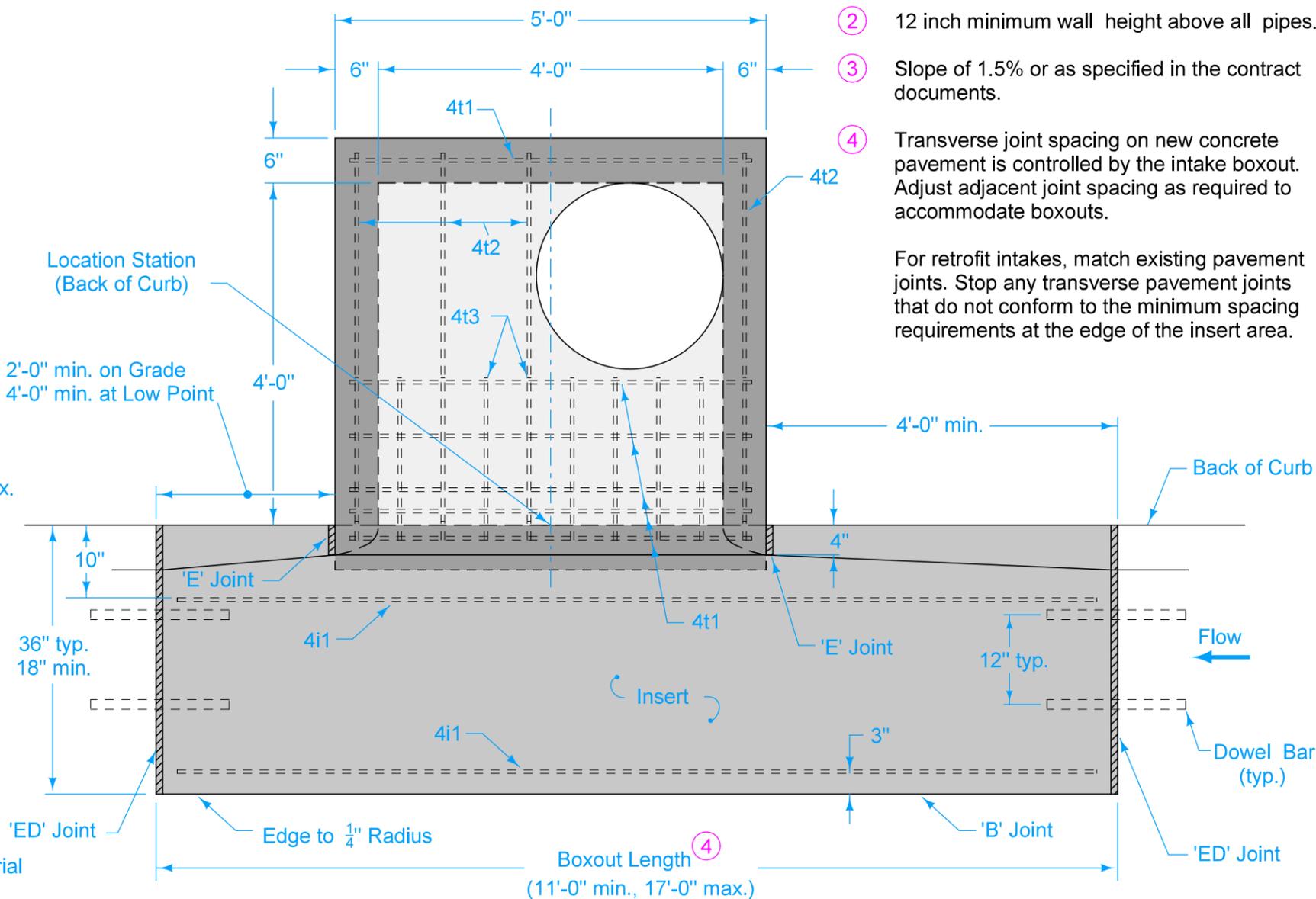
① Insert shaping may be modified for insert widths less than 36 inches. For an 18 inch insert, reduce dimensions indicated by $\frac{1}{2}$ inch.

FIGURE 6010.508 SHEET 1 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.508	STANDARD ROAD PLAN	SW-508	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SINGLE OPEN-THROAT CURB INTAKE, LARGE BOX			



TYPICAL SECTION



PLAN

- ② 12 inch minimum wall height above all pipes.
 - ③ Slope of 1.5% or as specified in the contract documents.
 - ④ Transverse joint spacing on new concrete pavement is controlled by the intake boxout. Adjust adjacent joint spacing as required to accommodate boxouts.
- For retrofit intakes, match existing pavement joints. Stop any transverse pavement joints that do not conform to the minimum spacing requirements at the edge of the insert area.

MAXIMUM PIPE DIAMETERS	
Precast Structure	Cast-in-place Structure
30"	36"

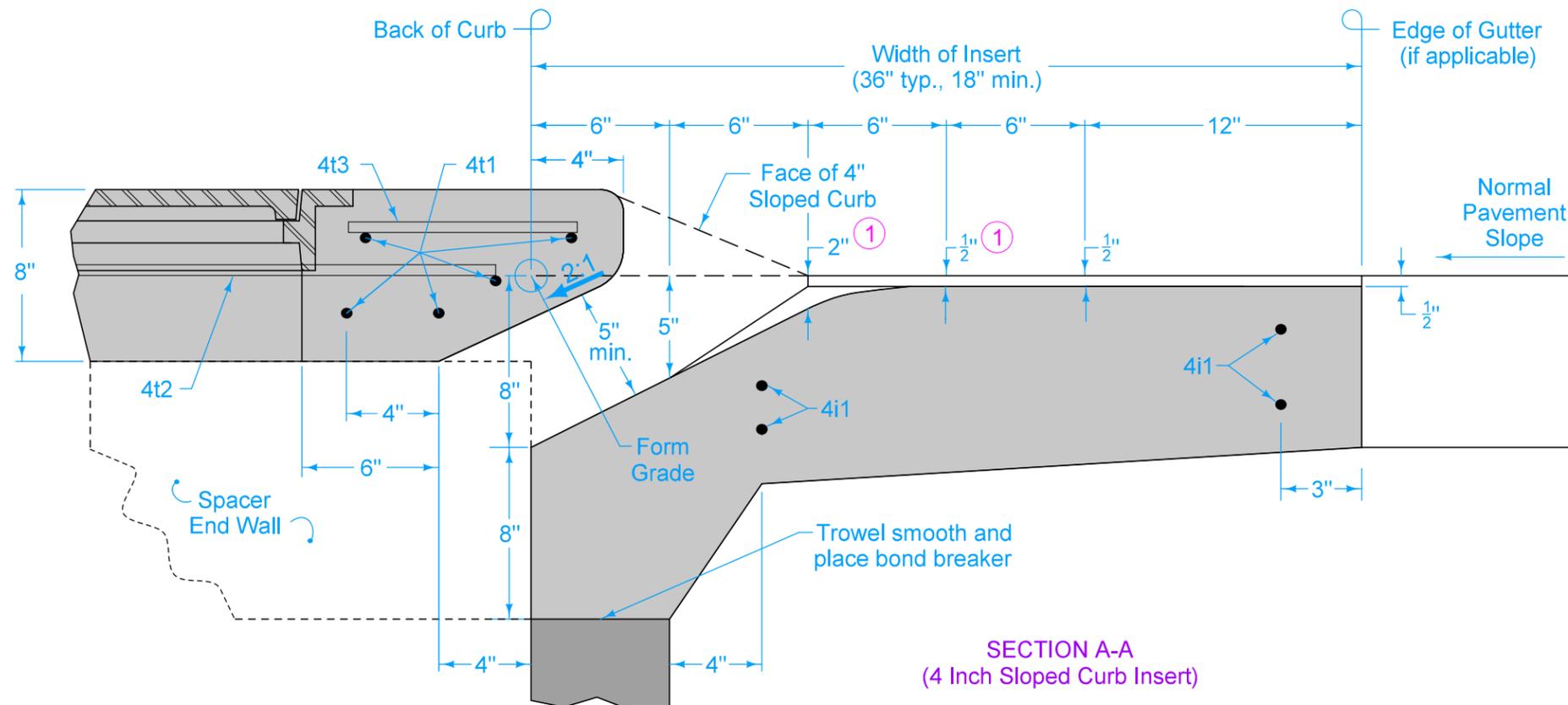
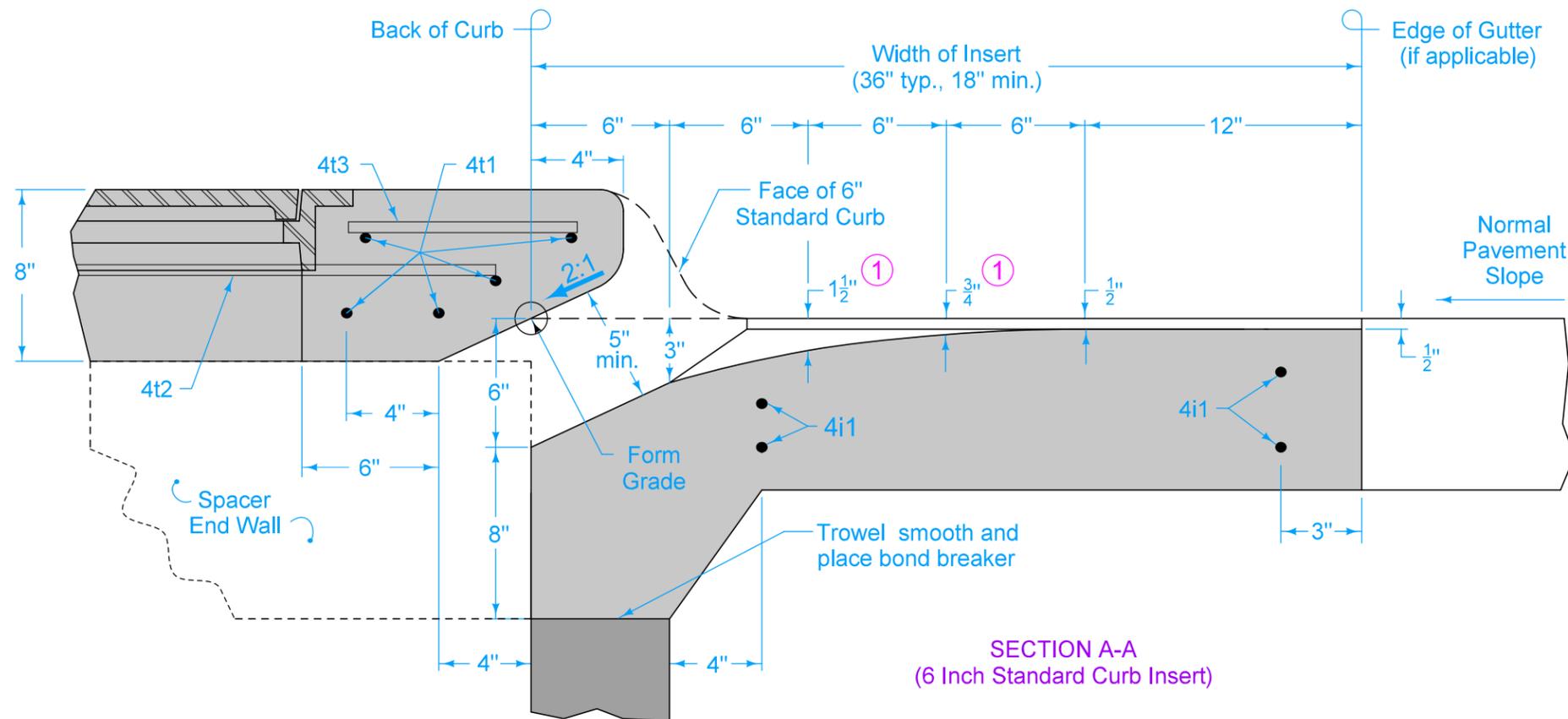
REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4t1	4	Top	—	7	4'-8"	See Insert
4t2	4	Top	—	4	4'-6"	12"
4t3	4	Top	—	10	1'-10"	6"
4b1	4	Base	—	6	4'-6"	11"
4b2	4	Base	—	6	4'-6"	11"
4i1	4	Insert	—	4	Boxout Length minus 8"	See Plan
4w1	4	Walls	—	16	Wall Height minus 4"	14"
4w2	4	Walls	—	Varies	4'-8"	12"
4w3	4	Walls	—	Varies	4'-8"	12"

FIGURE 6010.508 SHEET 2 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.508	STANDARD ROAD PLAN	SW-508	
SHEET 2 of 2			

REVISIONS: Updated Sudas and IDOT Logos.

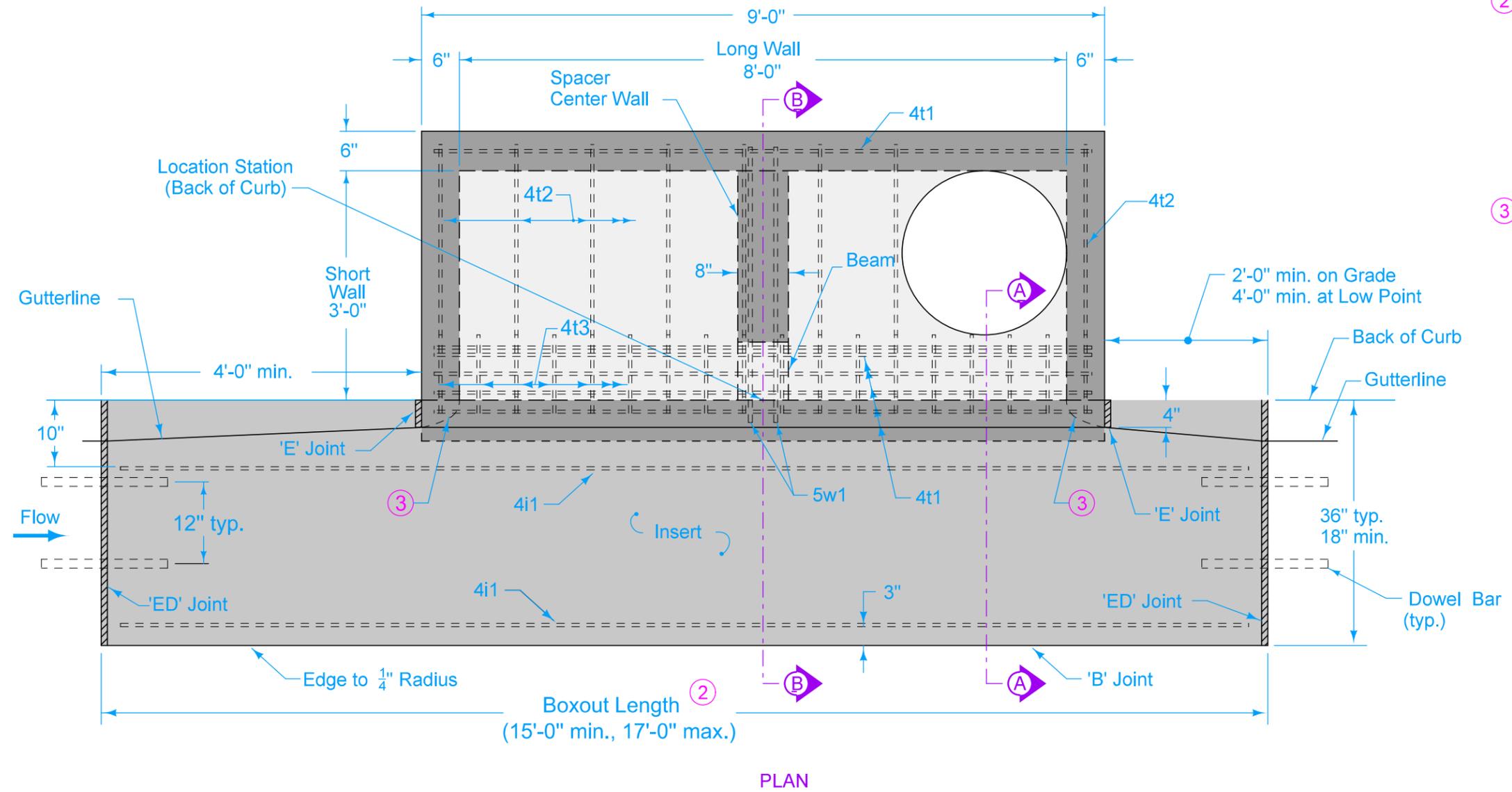
SINGLE OPEN-THROAT CURB INTAKE, LARGE BOX



① Insert shaping may be modified for insert widths less than 36 inches. For an 18 inch insert, reduce dimensions indicated by $\frac{1}{4}$ inch.

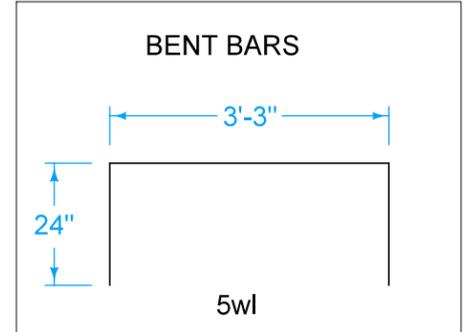
FIGURE 6010.509 SHEET 1 OF 3

		REVISION	
		7	10-21-25
FIGURE 6010.509	STANDARD ROAD PLAN	SW-509	
		SHEET 1 of 3	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
DOUBLE OPEN-THROAT CURB INTAKE, SMALL BOX			



- ② Transverse joint spacing on new concrete pavement is controlled by the intake boxout. Adjust adjacent joint spacing as required to accommodate boxouts.
- For retrofit intakes, match existing pavement joints. Stop any transverse pavement joints that do not conform to the minimum spacing requirements at the edge of the insert area.
- ③ Rounded shaping at inlet.

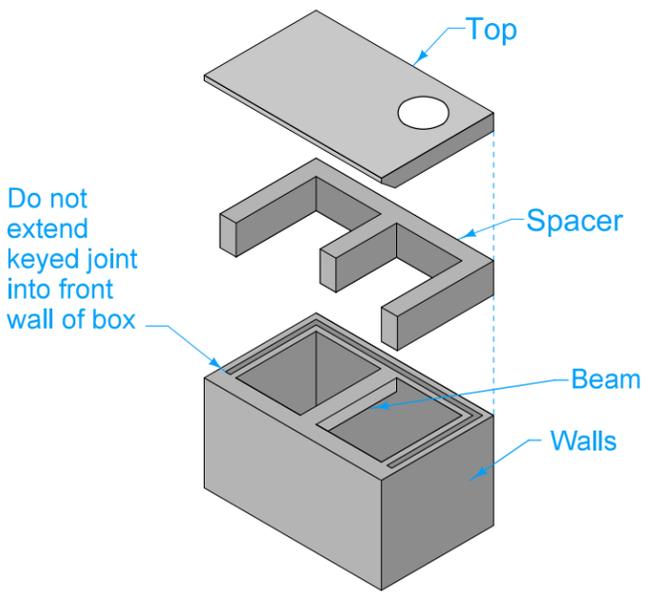
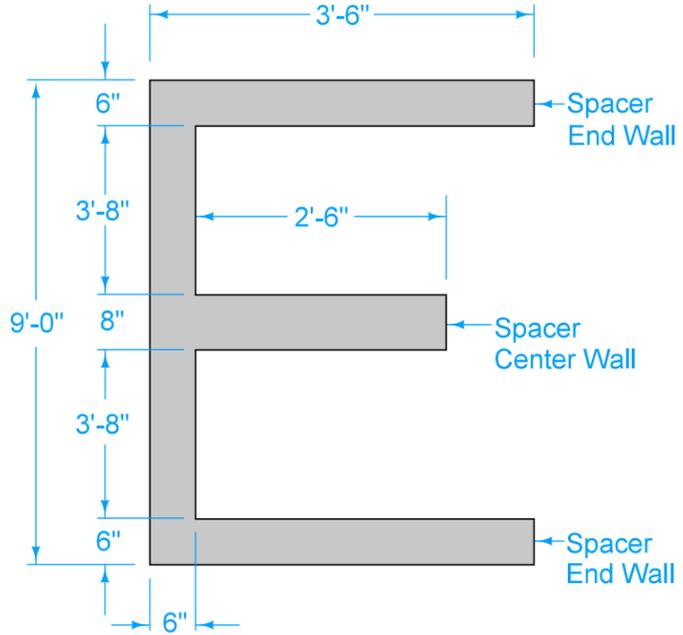
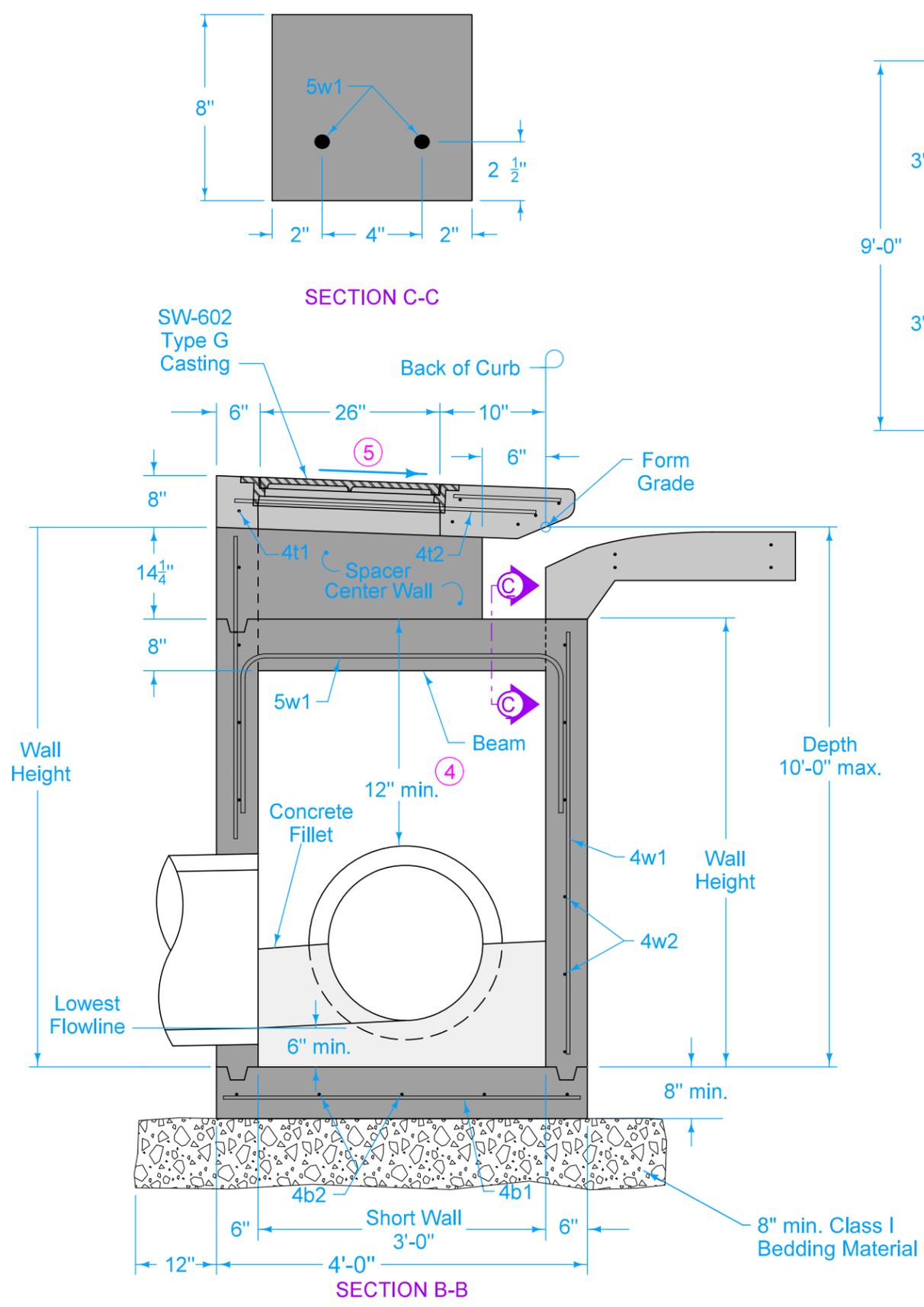
REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4b1	4	Base	—	9	3'-6"	12"
4b2	4	Base	—	5	8'-6"	10"
4i1	4	Insert	—	4	Boxout Length minus 8"	See Insert
4t1	4	Top	—	6	8'-6"	See Plan
4t2	4	Top	—	8	3'-6"	12"
4t3	4	Top	—	18	10"	6"
4w1	4	Walls	—	22	Wall Height minus 4"	13"
4w2	4	Long Walls	—	Varies	4'-8"	12"
4w3	4	Short Walls	—	Varies	3'-8"	12"
5w1	5	Beam	┌┐	2	7'-3"	4"



		REVISION	
		7	10-21-25
FIGURE 6010.509	STANDARD ROAD PLAN	SW-509	
SHEET 2 of 3			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
DOUBLE OPEN-THROAT CURB INTAKE, SMALL BOX			

FIGURE 6010.509 SHEET 2 OF 3

- ④ 12 inch minimum wall height above all pipes.
- ⑤ Slope of 1.5% or as specified in the contract documents.



ISOMETRIC
(Refer to SECTION B-B for alignment of Top with Spacer)

MAXIMUM PIPE DIAMETERS		
Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	24"	30"
Long Wall	60"	66"

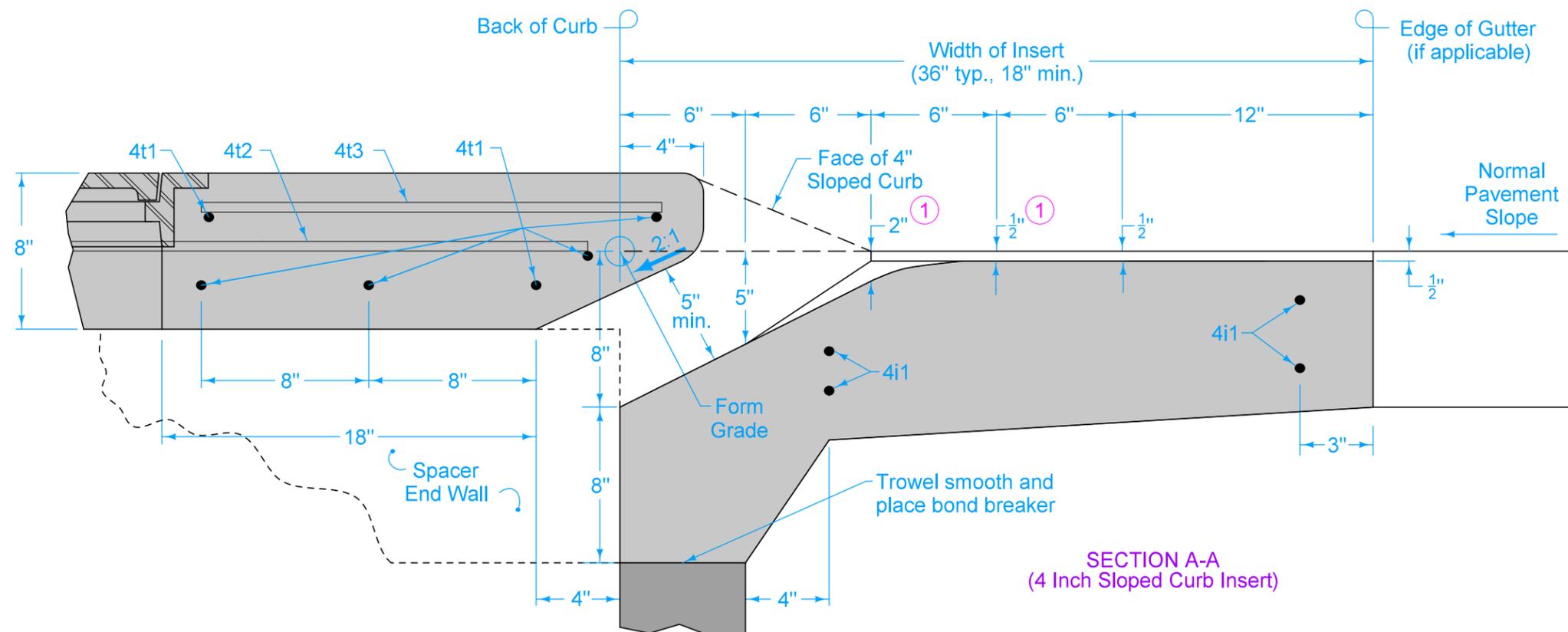
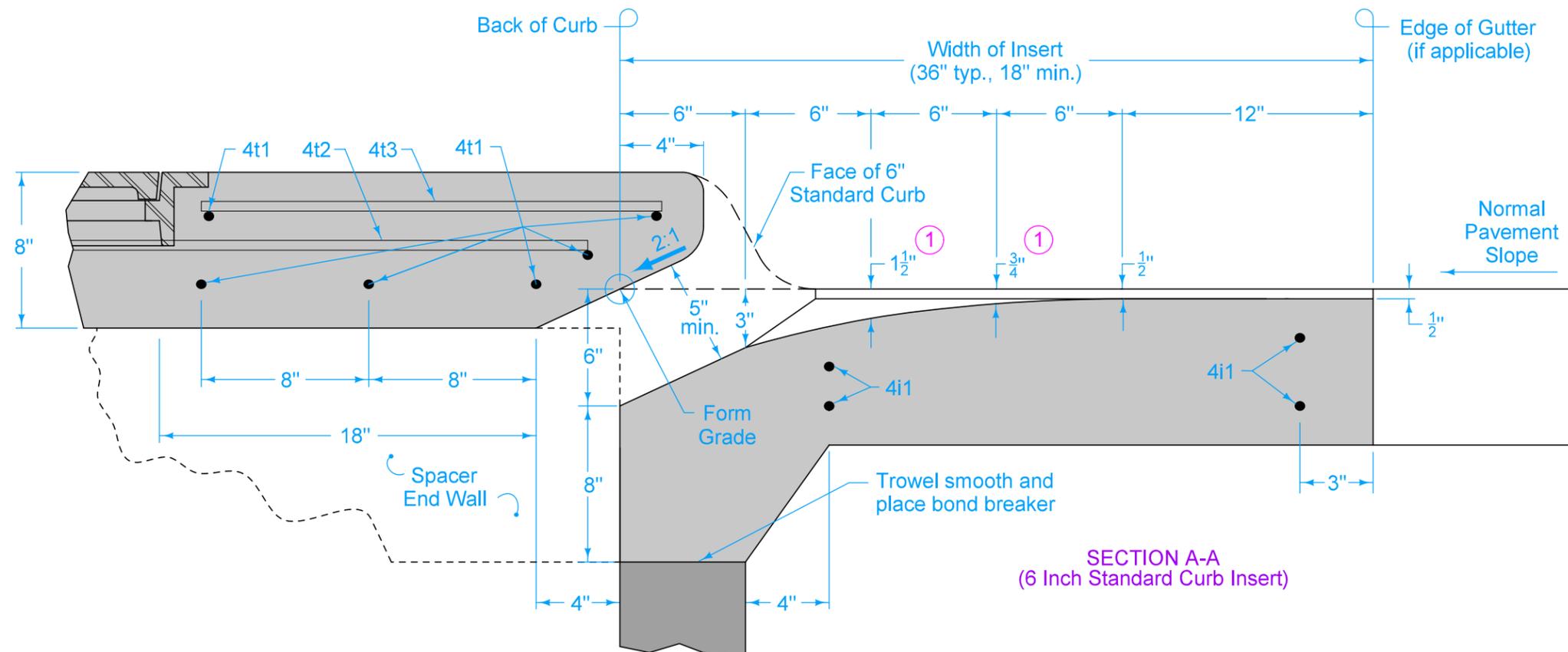
FIGURE 6010.509 SHEET 3 OF 3

		REVISION	
		7	10-21-25
FIGURE 6010.509	STANDARD ROAD PLAN	SW-509	
		SHEET 3 of 3	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

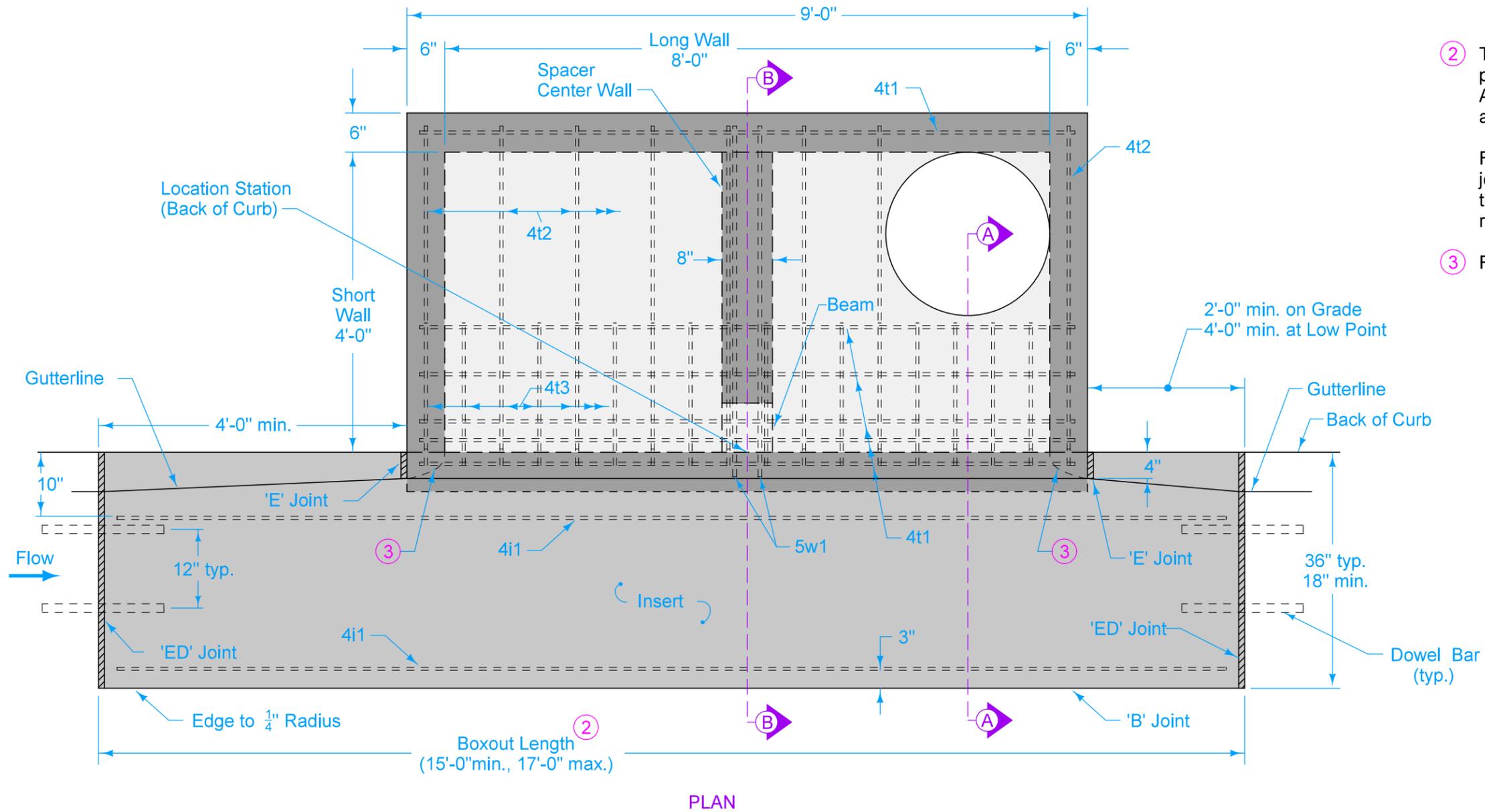
**DOUBLE OPEN-THROAT CURB
INTAKE, SMALL BOX**



① Insert shaping may be modified for insert widths less than 36 inches. For an 18 inch insert, reduce dimensions indicated by $\frac{1}{4}$ inch.

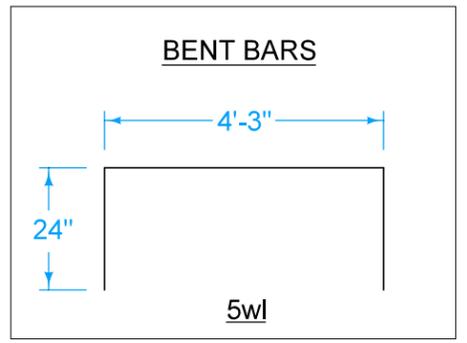
FIGURE 6010.510 SHEET 1 OF 3

		REVISION	
		7	10-21-25
FIGURE 6010.510	STANDARD ROAD PLAN	SW-510	
		SHEET 1 of 3	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
DOUBLE OPEN-THROAT CURB INTAKE, LARGE BOX			



- ② Transverse joint spacing on new concrete pavement is controlled by the intake boxout. Adjust adjacent joint spacing as required to accommodate boxouts.
- For retrofit intakes, match existing pavement joints. Stop any transverse pavement joints that do not conform to the minimum spacing requirements at the edge of the insert area.
- ③ Rounded shaping at inlet.

REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4b1	4	Base	—	9	4'-6"	12"
4b2	4	Base	—	6	8'-6"	11"
4i1	4	Insert	—	4	Boxout Length minus 8"	See Insert
4t1	4	Top	—	7	8'-6"	See Plan
4t2	4	Top	—	8	4'-4"	12"
4t3	4	Top	—	18	1'-10"	6"
4w1	4	Walls	—	24	Wall Height minus 4"	13"
4w2	4	Long Walls	—	Varies	4'-8"	12"
4w3	4	Short Walls	—	Varies	8'-8"	12"
5w1	5	Beam	┌	2	8'-3"	4"

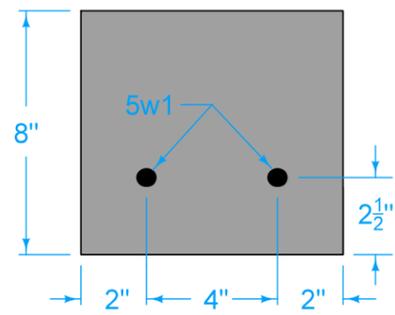


		REVISION	
		7	10-21-25
FIGURE 6010.510	STANDARD ROAD PLAN	SW-510	
SHEET 2 of 3			

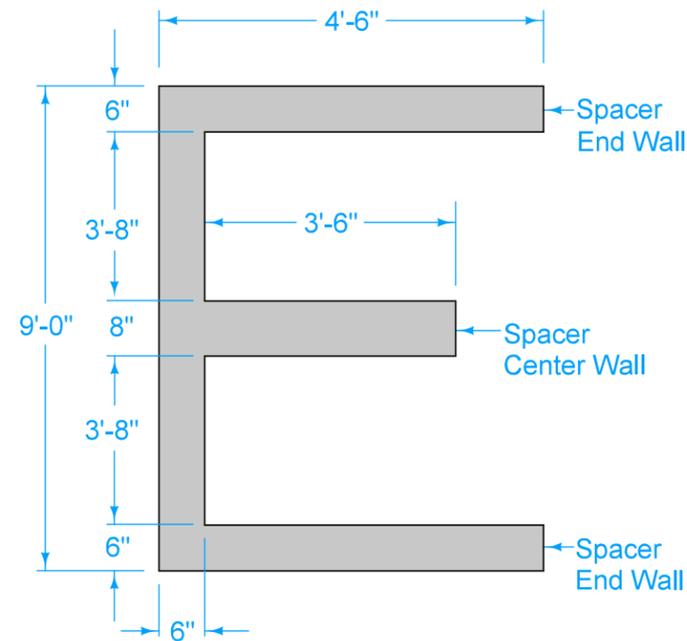
REVISIONS: Updated Sudas and IDOT Logos.

DOUBLE OPEN-THROAT CURB
INTAKE, LARGE BOX

FIGURE 6010.510 SHEET 2 OF 3



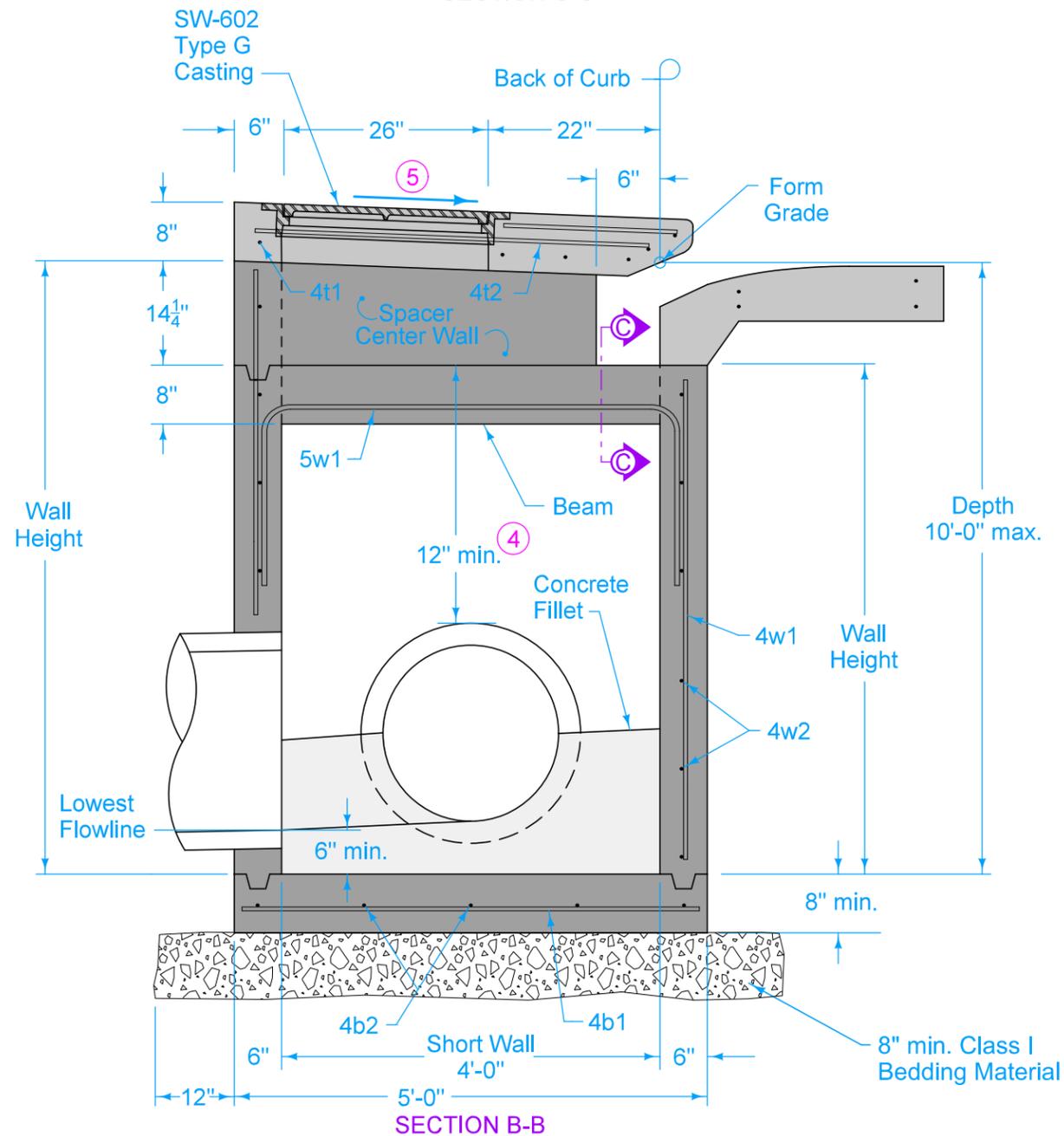
SECTION C-C



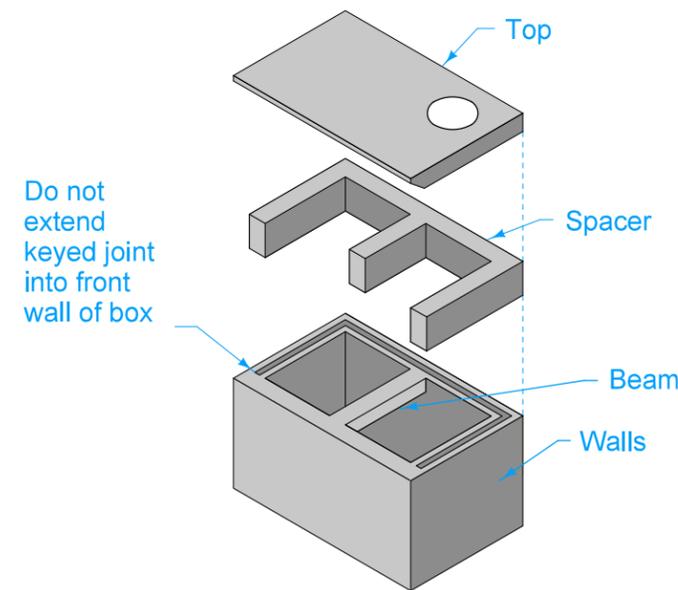
PLAN (SPACER)

- ④ 12 inch minimum wall height above all pipes.
- ⑤ Slope of 1.5% or as specified in the contract documents.

MAXIMUM PIPE DIAMETERS		
Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	30"	36"
Long Wall	60"	66"



SECTION B-B



ISOMETRIC
(Refer to Section B-B
for alignment of Top
with Spacer)

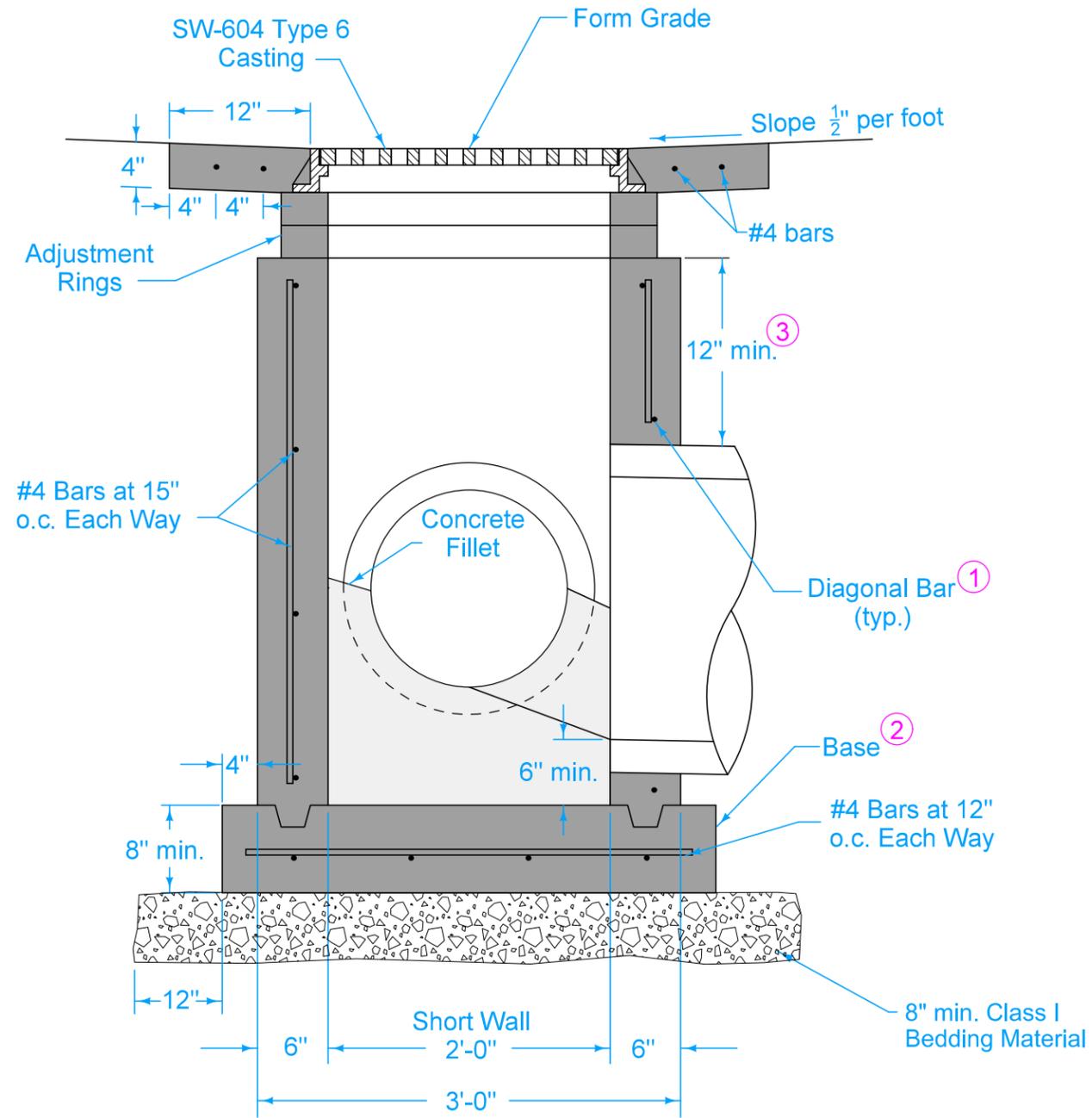
FIGURE 6010.510 SHEET 3 OF 3

		REVISION	
		7	10-21-25
FIGURE 6010.510	STANDARD ROAD PLAN	SW-510	
		SHEET 3 of 3	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

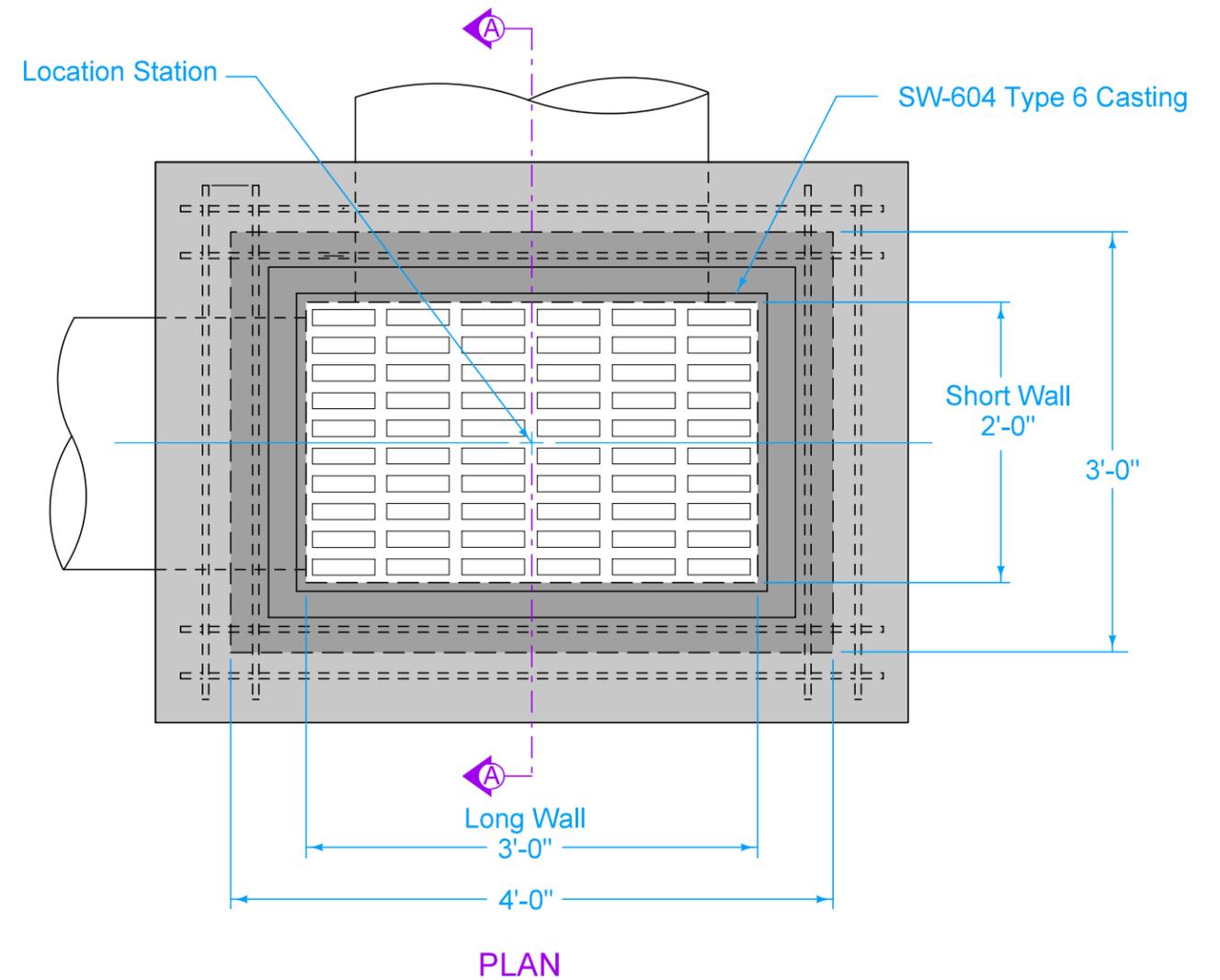
**DOUBLE OPEN-THROAT CURB
INTAKE, LARGE BOX**



SECTION A-A

MAXIMUM PIPE DIAMETERS		
Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	15"	18"
Long Wall	24"	30"

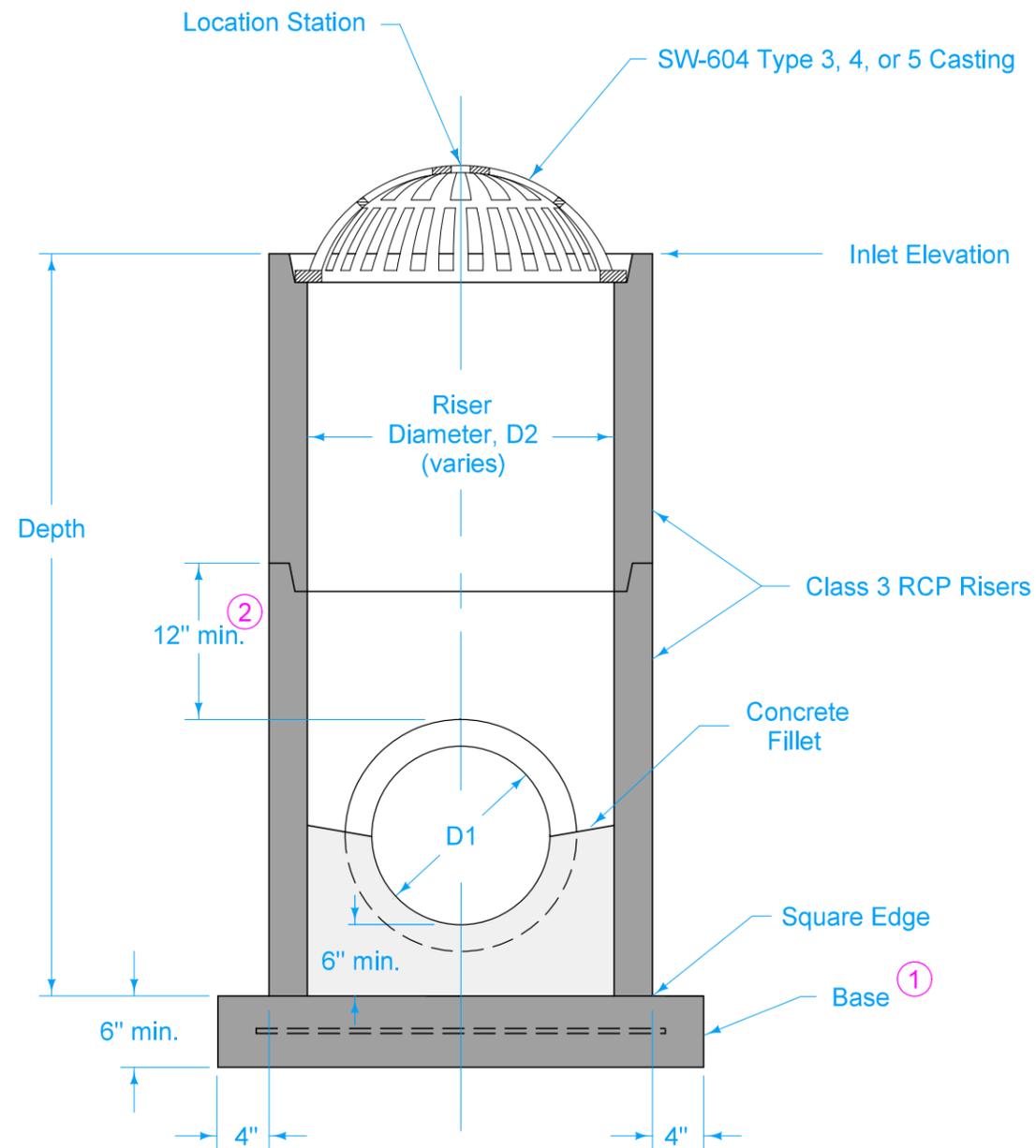
- ① Install four #4 diagonal bars at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ 12 inch minimum wall height above all pipes.



PLAN

FIGURE 6010.511 SHEET 1 OF 1

		REVISION	
		3	10-21-25
FIGURE 6010.511	STANDARD ROAD PLAN	SW-511	
SHEET 1 of 1			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
RECTANGULAR AREA INTAKE			



TYPICAL SECTION

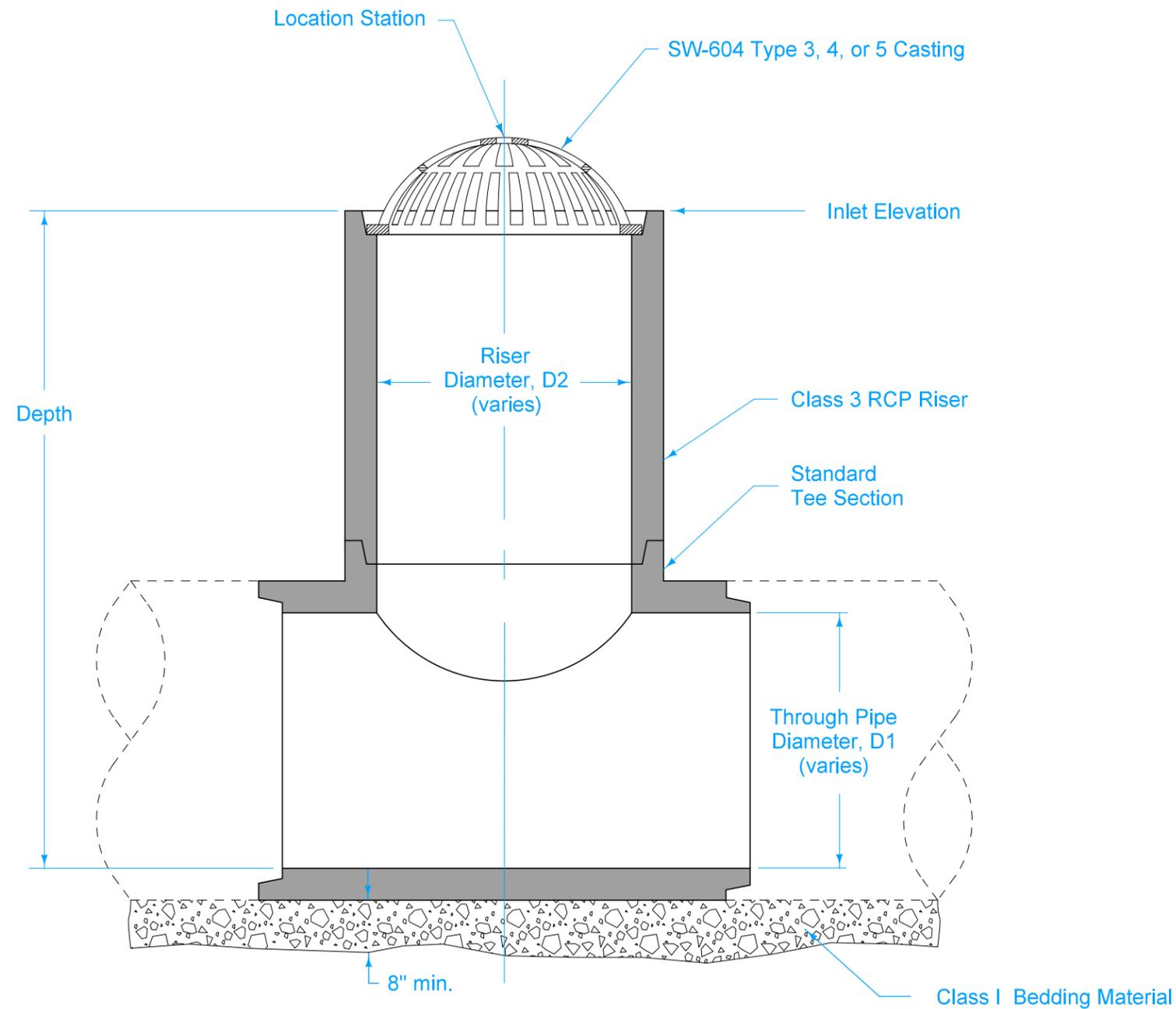
CASE 1

- ① Precast (shown) or cast-in-place base:
 - Precast: 6 inch thick concrete with #6 welded wire mesh on 4 inch centers (WWF 4" x 4"). Center mesh vertically within base.
 - Cast-in-place: 8 inch thick non-reinforced concrete.
- ② 12 inch minimum riser height above all pipes.

INTAKE SIZE - CASE 1	
Outlet Pipe Diameter, D1	Minimum Riser Diameter, D2
12"	18"
15"	24"
18"	24"
21"	30"
24"	30"
27"	36"

		REVISION	
		5	10-21-25
FIGURE 6010.512	STANDARD ROAD PLAN	SW-512	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
CIRCULAR AREA INTAKE			

③ Minimum riser diameter is 18 inches.



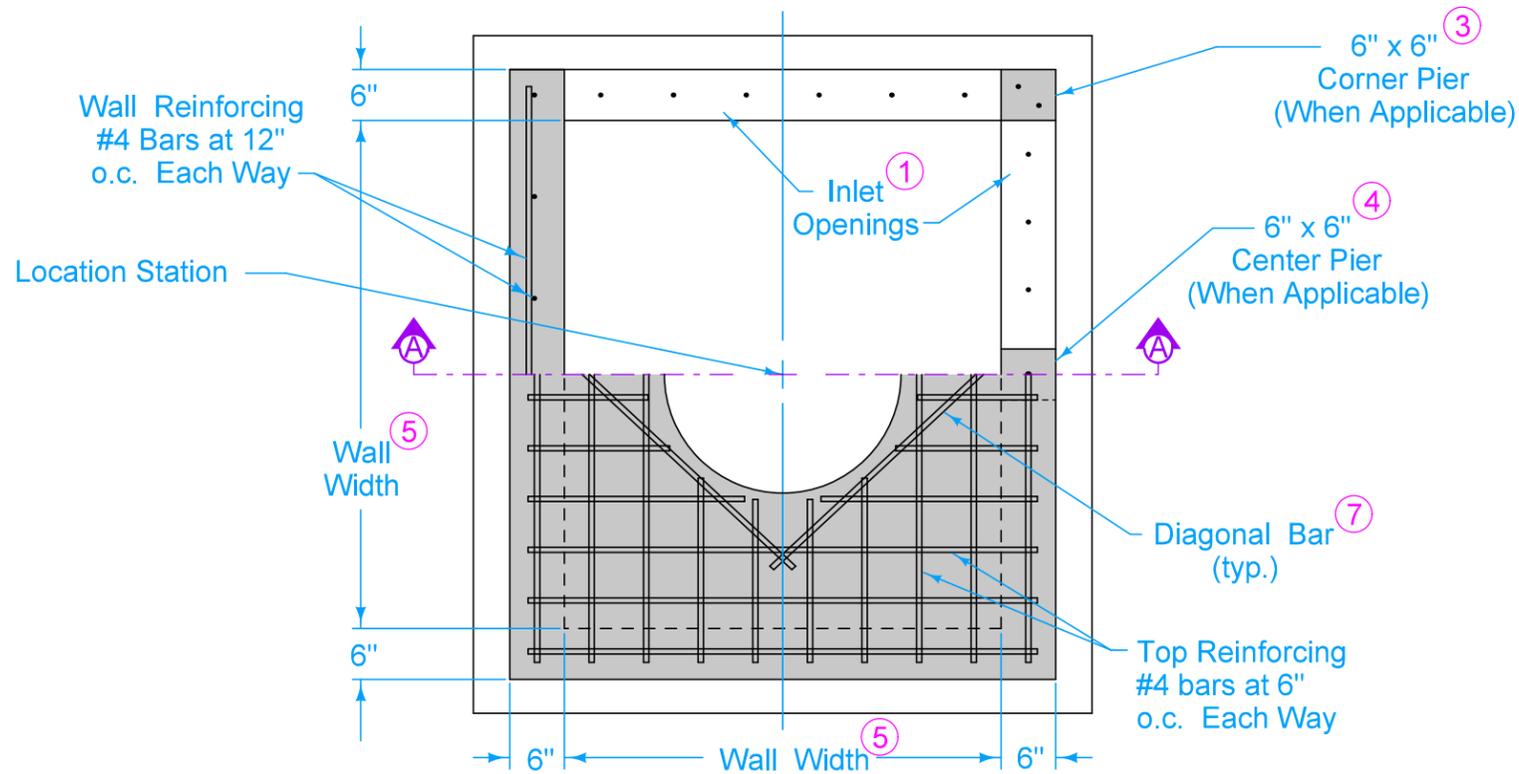
TYPICAL SECTION

CASE 2

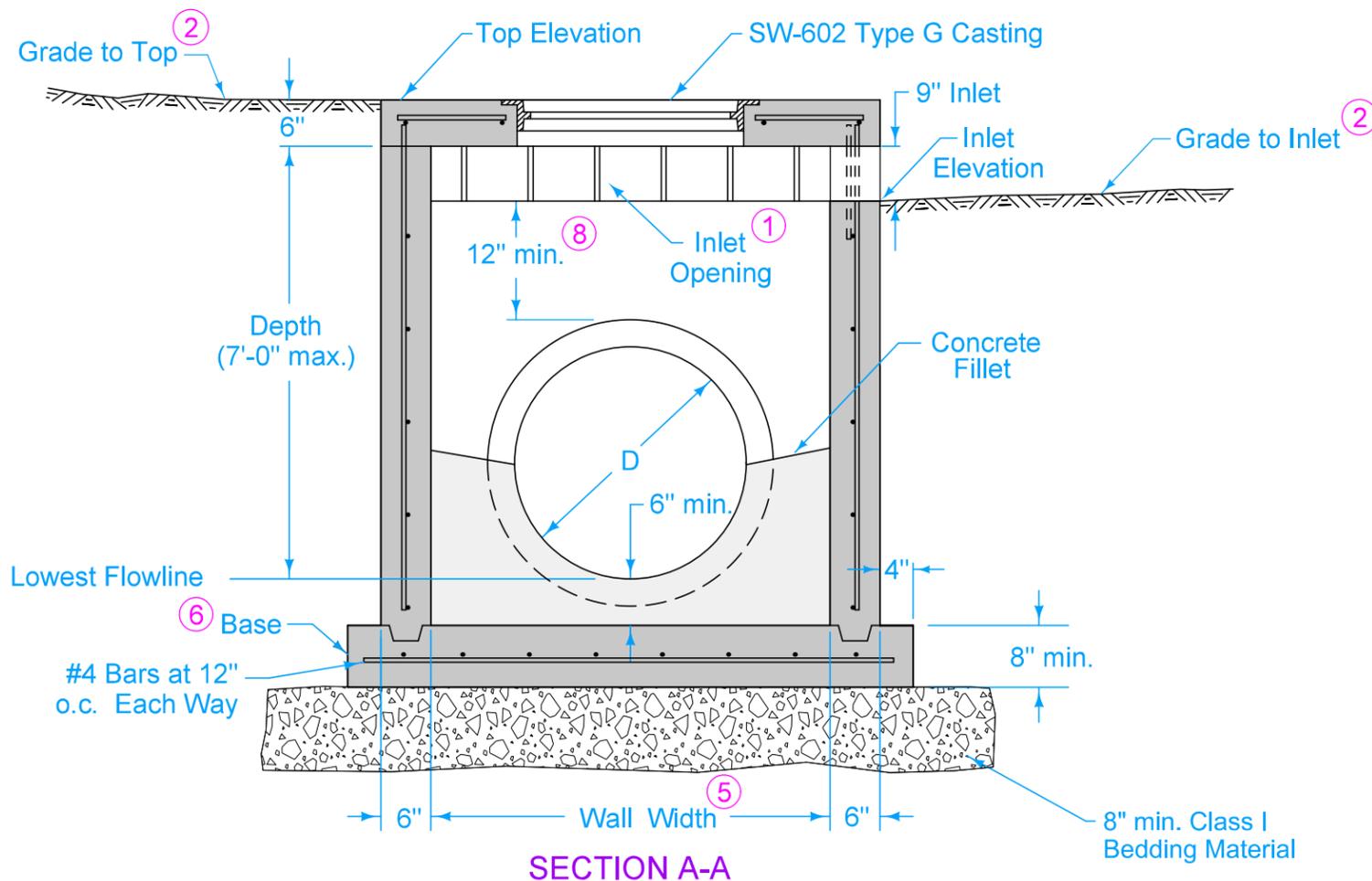
INTAKE SIZE - CASE 2	
Through Pipe Diameter, D1	Maximum Riser Diameter, D2 ③
18"	18"
21"	18"
24"	24"
27"	24"
30"	30"
36" or more	36"

FIGURE 6010.512 SHEET 2 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.512	STANDARD ROAD PLAN	SW-512	
		SHEET 2 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
CIRCULAR AREA INTAKE			



PLAN



SECTION A-A

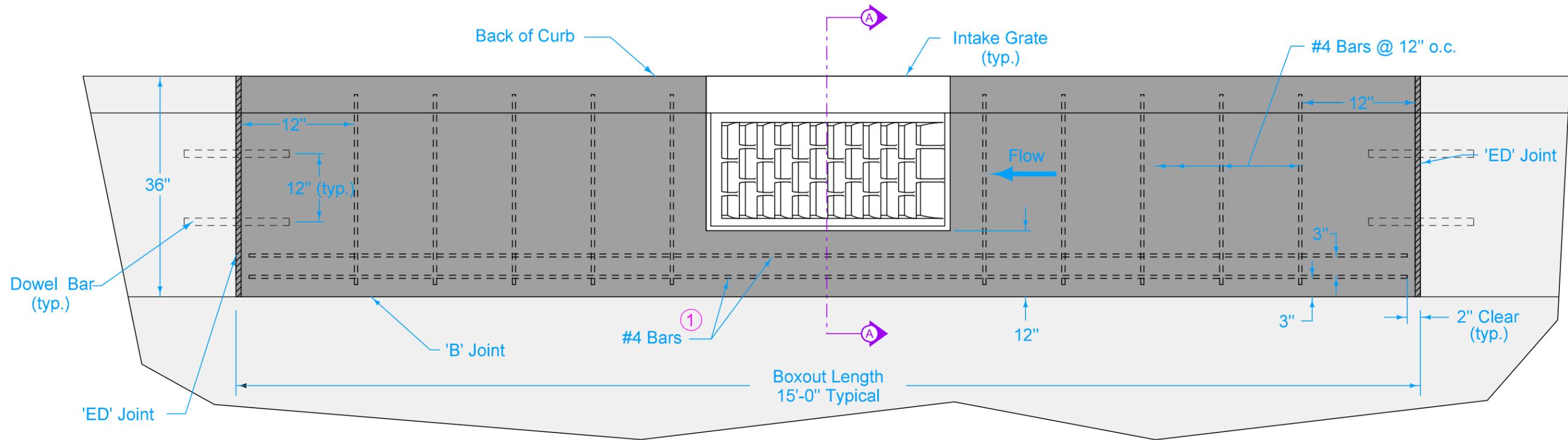
Structure may be built with openings on any or all sides. Provide openings and orientation as specified in the contract documents.

Adjacent walls may have different widths based upon pipe configuration, but structure must be rectangular.

- ① Construct inlet openings with 15 inch #4 epoxy coated bars at 8 inches on center. Embed bars a minimum of 3 inches into walls and top at all openings.
- ② Grade to inlet elevation on open sides. Grade to top elevation on closed sides.
- ③ Corner pier required between openings of two adjacent walls. Extend wall reinforcing vertically through pier. Install one additional 15 inch #4 bar in pier.
- ④ Center pier required at center of any inlet opening with length of 5 feet or greater. Extend wall reinforcing vertically through pier. Install one additional 15 inch #4 bar in pier.
- ⑤ Wall widths vary with pipe diameter. Provide 6 inches of wall width (minimum) each side of pipe opening. Minimum wall width is 36 inches. Maximum wall width is 72 inches.
- ⑥ Cast-in-place base shown. If base is precast integral with walls, the footprint of base is not required to extend beyond the outer edge of the walls.
- ⑦ Install four #4 diagonal bars at all pipe openings.
- ⑧ 12 inch minimum wall height above all pipes.

FIGURE 6010.513 SHEET 1 OF 1

		REVISION	
		4	10-21-25
FIGURE 6010.513	STANDARD ROAD PLAN	SW-513	
		SHEET 1 of 1	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
OPEN-SIDED AREA INTAKE			

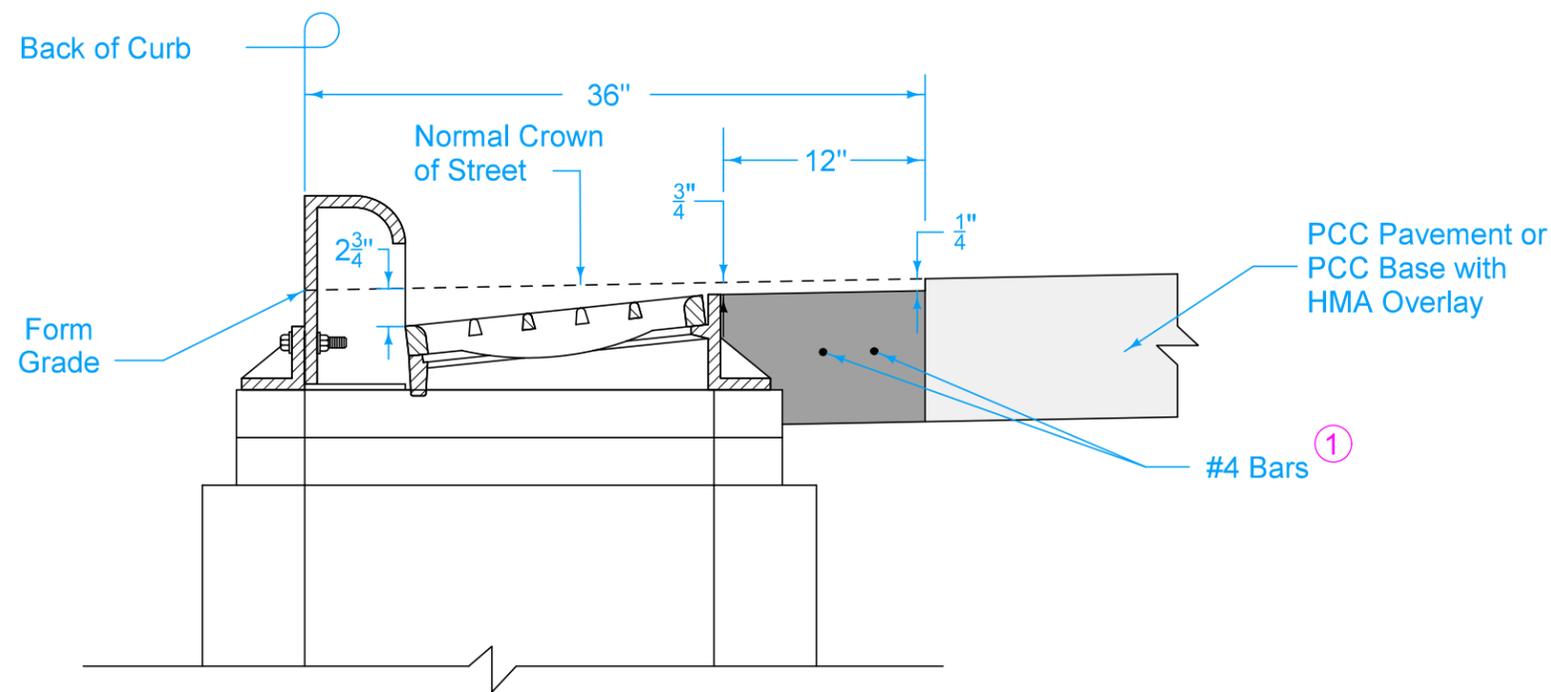


BOXOUT IN PCC PAVEMENT AND PCC BASE WITH HMA OVERLAY

Transverse joint spacing on new concrete pavement is controlled by the intake boxout. Adjust adjacent joint spacing as required to accommodate boxouts.

For retrofit intakes, match existing concrete pavement joints. Stop any transverse pavement joints that do not conform to the minimum spacing requirements at the edge of the boxout.

① Center bars vertically within slab.



SECTION A-A

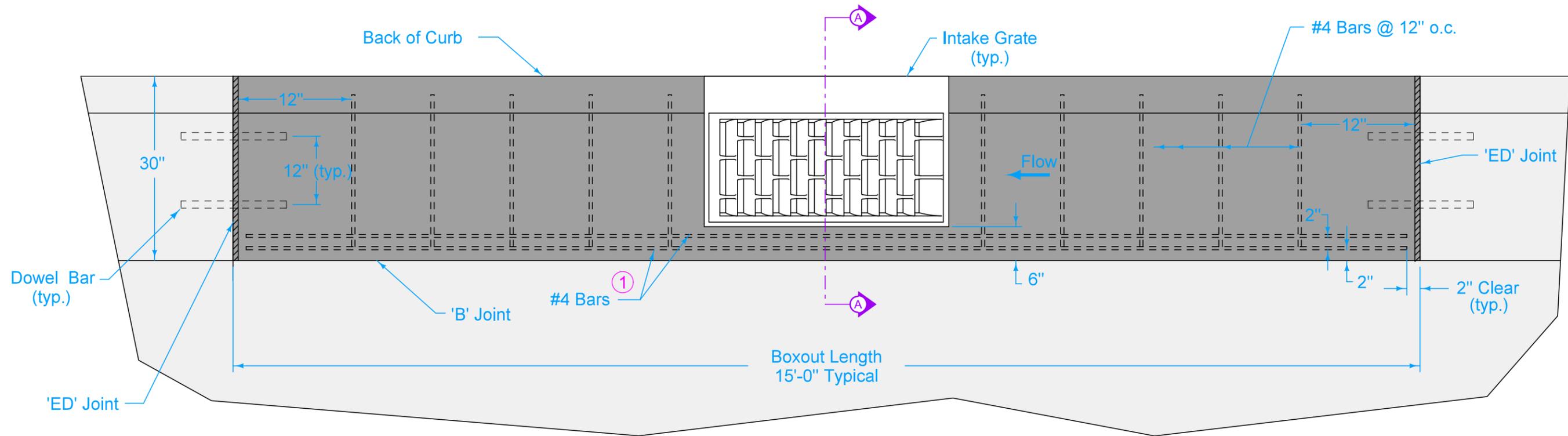
FIGURE 6010.514 SHEET 1 OF 3

		REVISION	
		2	10-21-25
FIGURE 6010.514	STANDARD ROAD PLAN	SW-514	
		SHEET 1 of 3	

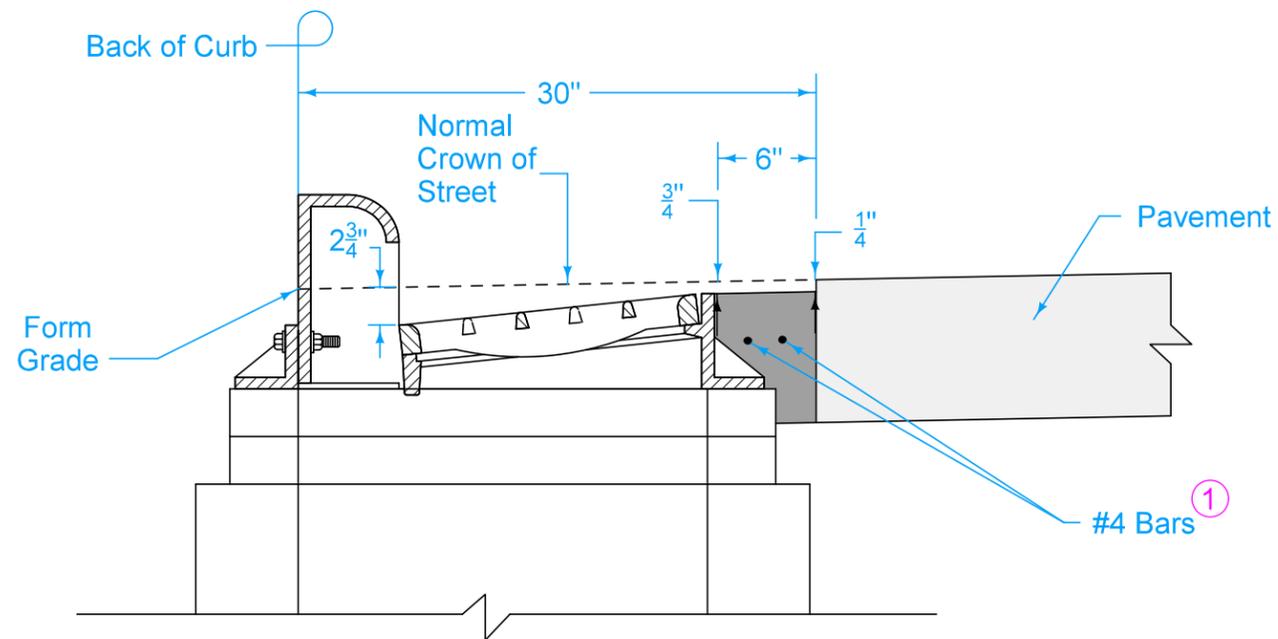
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

**BOXOUT FOR
GRATE INTAKES**



BOXOUT IN PCC CURB AND GUTTER

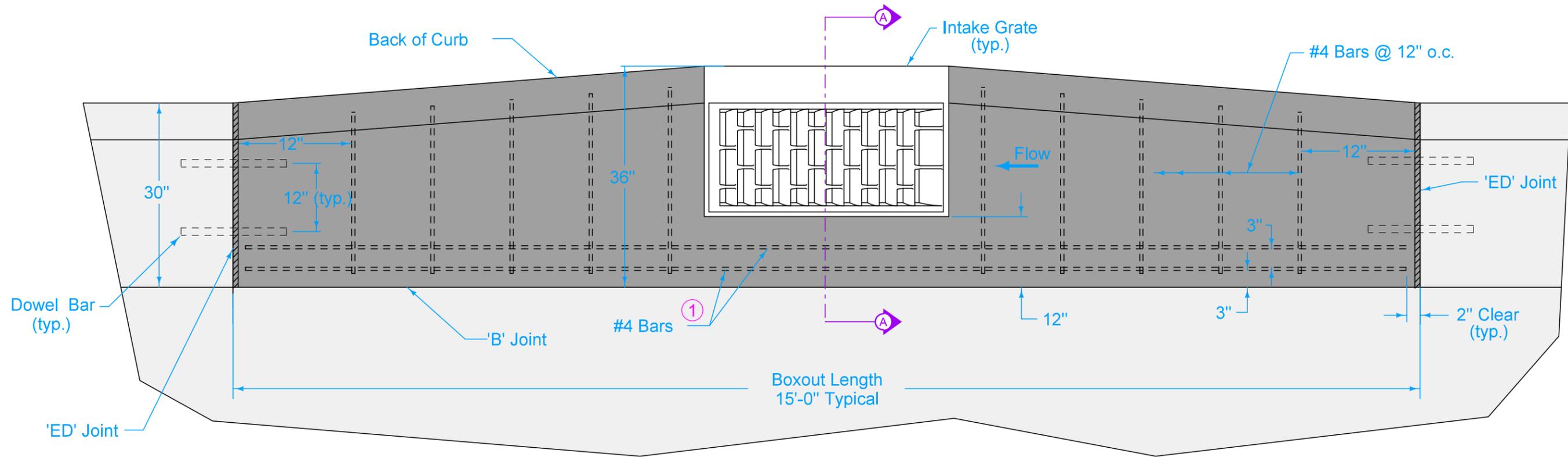


SECTION A-A

(1) Center bars vertically within slab.

FIGURE 6010.514 SHEET 2 OF 3

		REVISION	
		2	10-21-25
FIGURE 6010.514	STANDARD ROAD PLAN	SW-514	
		SHEET 2 of 3	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
BOXOUT FOR GRATE INTAKES			



ALTERNATE BOXOUT IN PCC CURB AND GUTTER

Transverse joint spacing on new concrete pavement is controlled by the intake boxout. Adjacent joint spacing may need to be field adjusted to fit boxouts.

For retrofit intakes, match existing concrete pavement joints. Stop any transverse pavement joints that do not conform to the minimum spacing requirements at the edge of the boxout.

① Center bars vertically within slab.

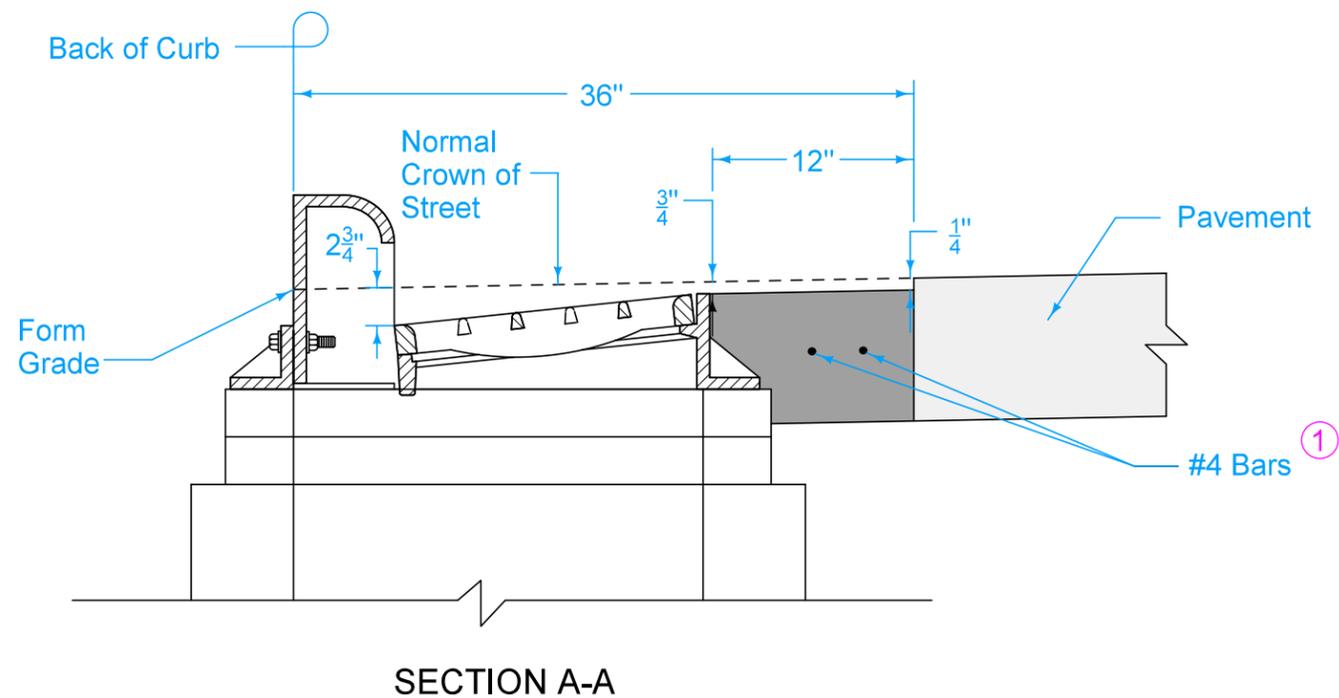
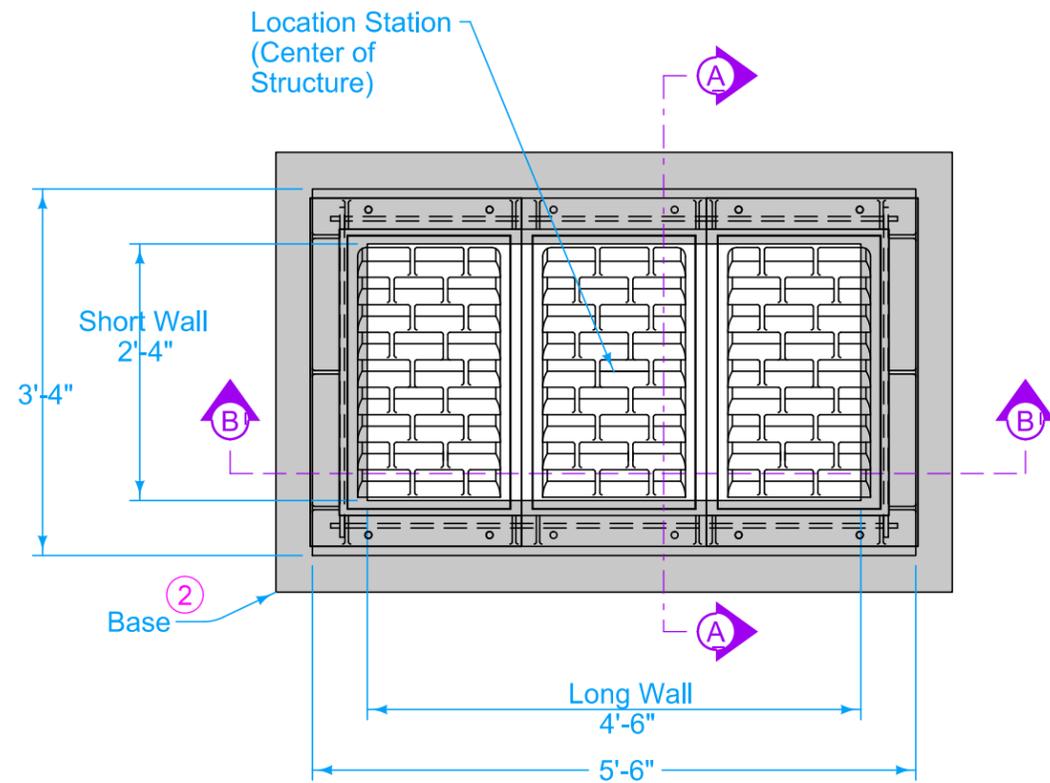
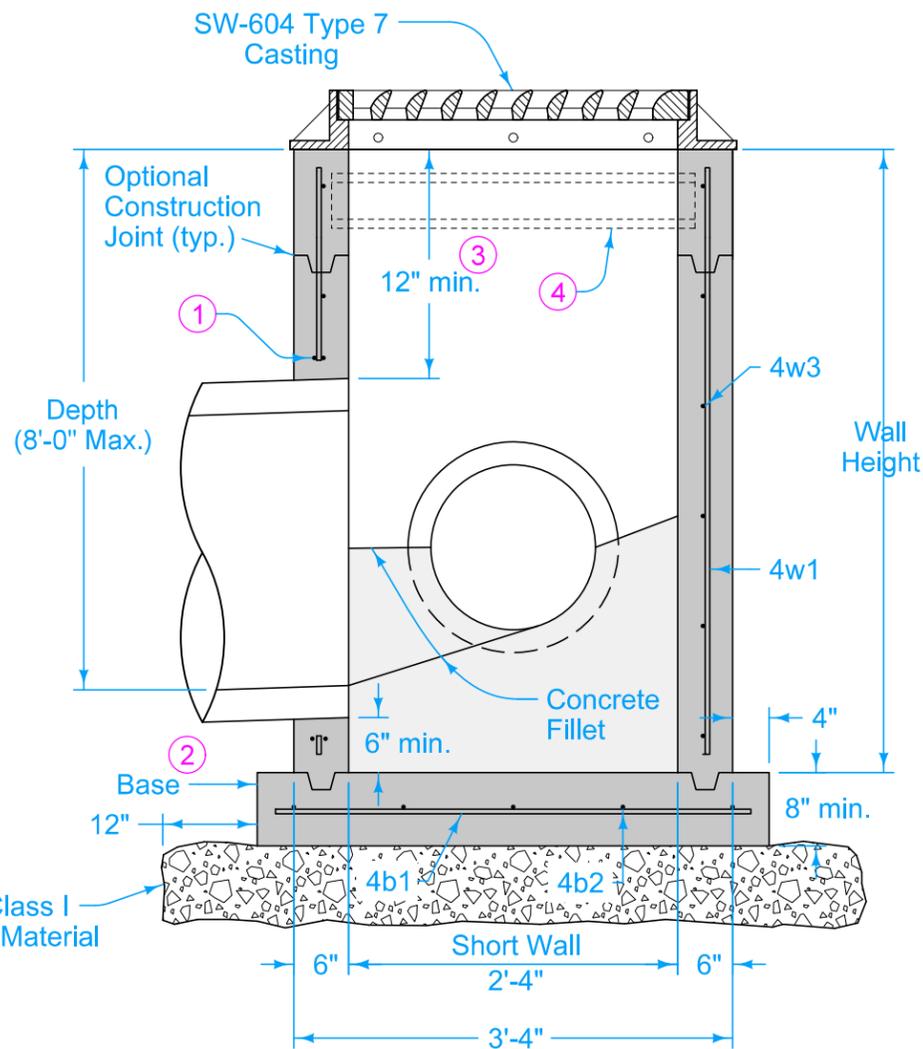


FIGURE 6010.514 SHEET 3 OF 3

		REVISION	
		2	10-21-25
FIGURE 6010.514	STANDARD ROAD PLAN	SW-514	
		SHEET 3 of 3	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
BOXOUT FOR GRATE INTAKES			



PLAN



SECTION A-A

- ① Provide two #4 hoop bars at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ 12 inch minimum wall height above all pipes.
- ④ If required by casting manufacturer, provide support beam under all frame joints. Modify structure walls as required to provide pocket for beam.

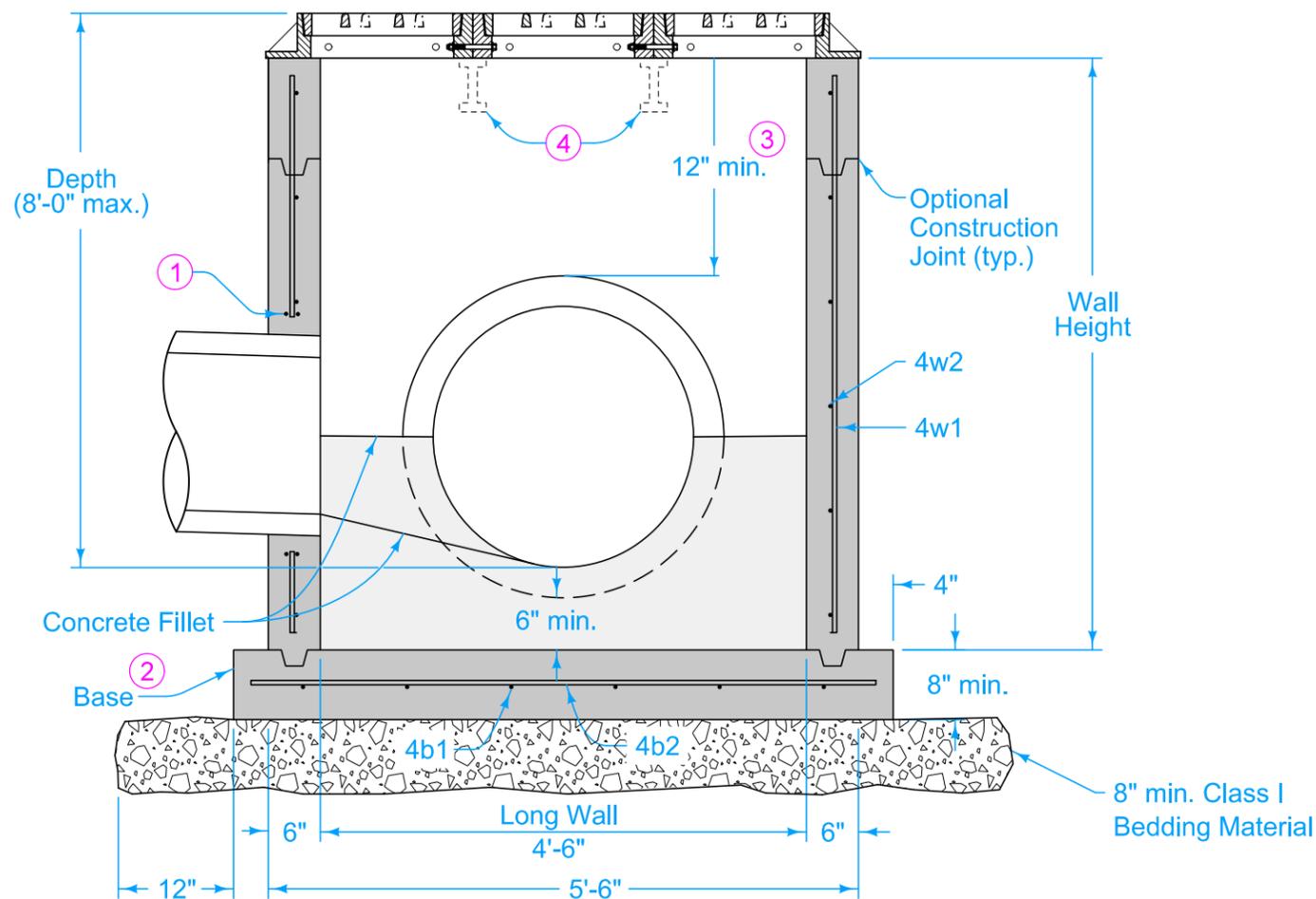
FIGURE 6010.515 SHEET 1 OF 2

		REVISION	
		2	10-21-25
FIGURE 6010.515	STANDARD ROAD PLAN	SW-515	
		SHEET 1 of 2	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR
DESIGN METHODS ENGINEER

TRIPLE RECTANGULAR AREA INTAKE



SECTION B-B

- ① Provide two #4 hoop bars at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ 12 inch minimum wall height above all pipes.
- ④ If required by casting manufacturer, provide support beam under all frame joints. Modify structure walls as required to provide pocket for beam.

REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4b1	4	Base	—	6	3'-6"	12"
4b2	4	Base	—	4	5'-8"	12"
4w1	4	Walls	—	20	Wall Height minus 4"	12"
4w2	4	Short Wall	—	Varies	3'-0"	12"
4w3	4	Long Wall	—	Varies	5'-2"	12"

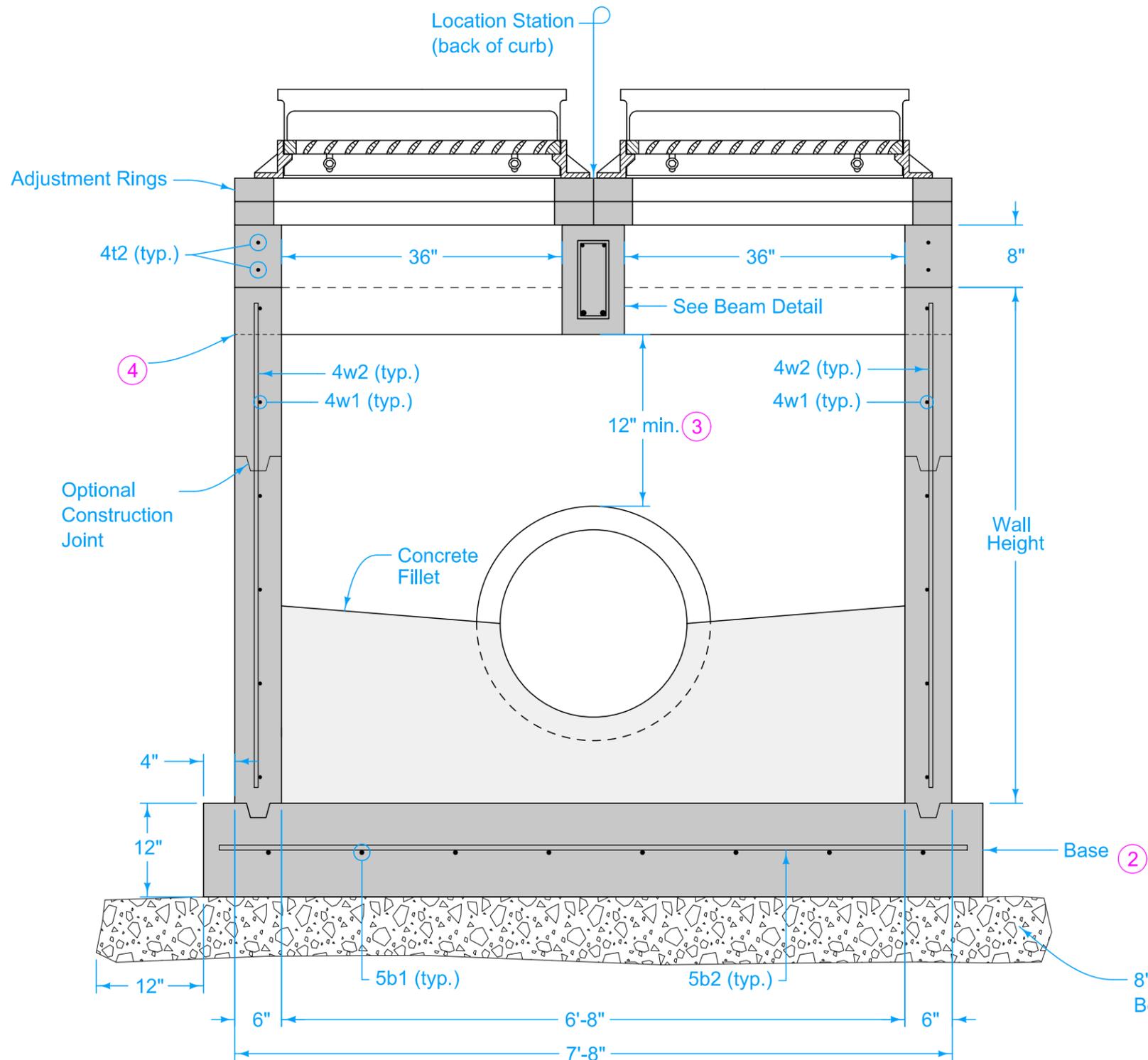
MAXIMUM PIPE DIAMETERS		
Pipe Location	Precast Structure	Cast-in-place Structure
Short Wall	18"	21"
Long Wall	36"	42"

		REVISION	
		2	10-21-25
FIGURE 6010.515	STANDARD ROAD PLAN	SW-515	
SHEET 2 of 2			

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

TRIPLE RECTANGULAR AREA INTAKE



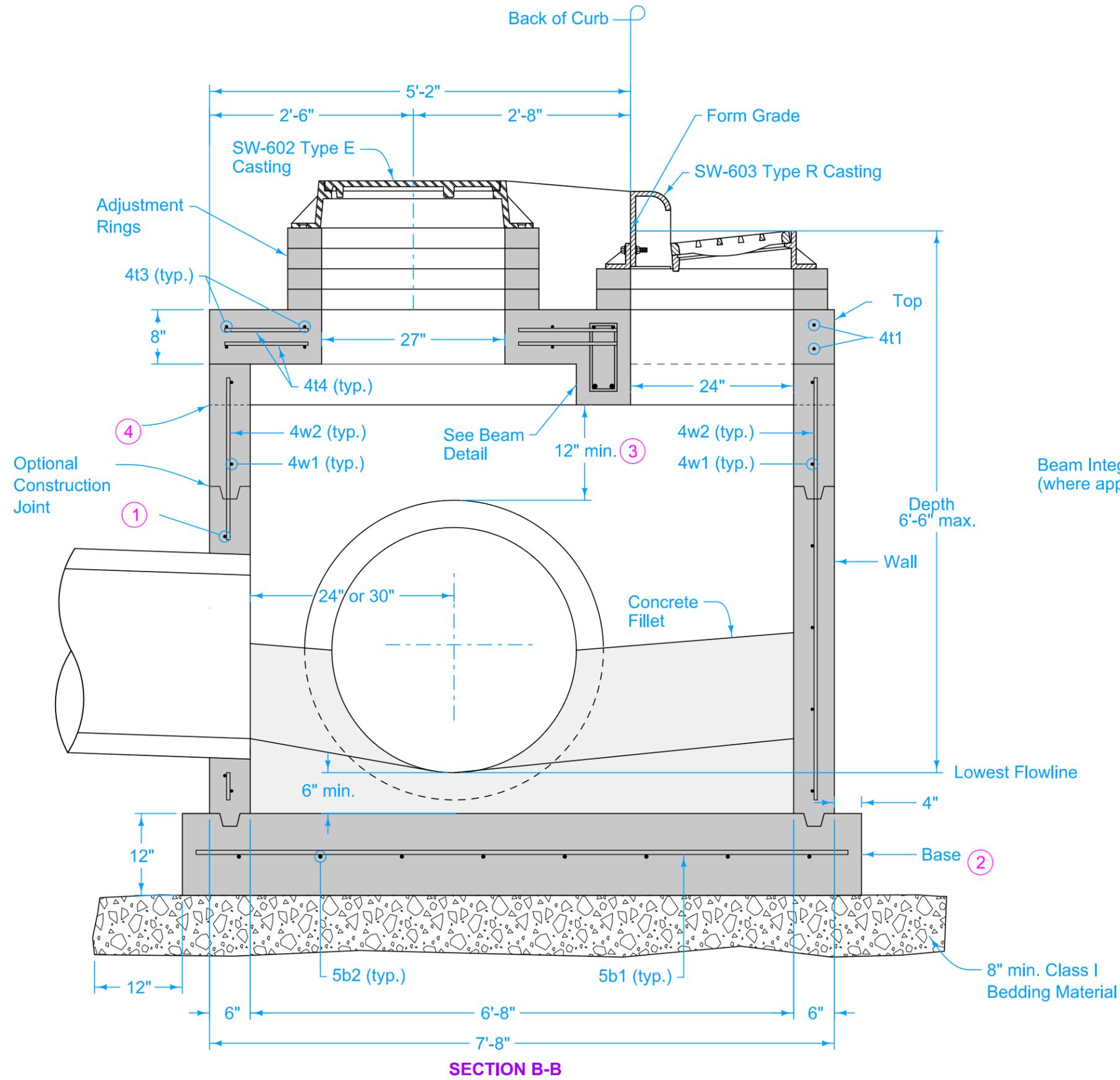
- 1 Install four #4 diagonal bars at manhole opening and at all pipe openings.
- 2 Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- 3 12 inch minimum wall height above all pipes.
- 4 Form pockets in the wall to receive integral beams in the top.

REINFORCING BAR LIST						
Mark	Size	Location	Shape	Count	Length	Spacing
4t1	4	Top	—	2	7'-4"	See Detail
4t2	4	Top	—	4	7'-4"	See Detail
4t3	4	Top	—	10	7'-4"	12"
4t4	4	Top	—	14	4'-2"	12"
3t5	3	Top	⊠	30	3'-1"	6"
4t6	4	Top	—	4	7'-4"	See Detail
6t7	6	Top	—	4	7'-4"	See Detail
4w1	4	Walls	—	Varies	7'-4"	12"
4w2	4	Walls	—	32	Wall Height minus 4"	12"
5b1	5	Base	—	9	7'-10"	12"
5b2	5	Base	—	9	7'-10"	12"

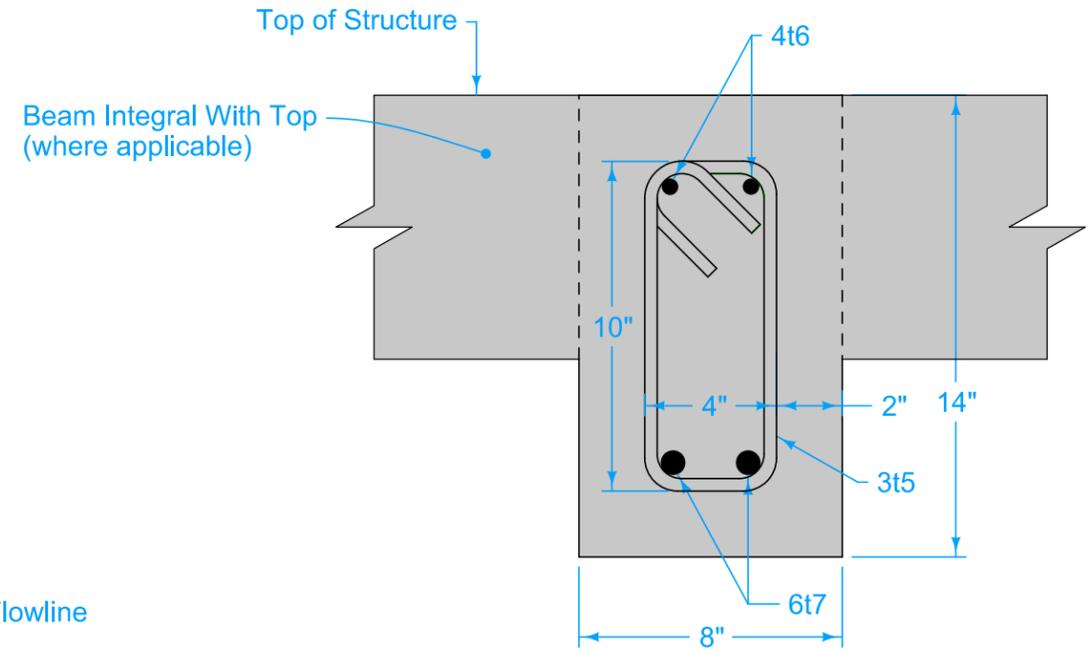
FIGURE 6010.516 SHEET 2 OF 3

SECTION A-A

		REVISION	
		1	10-21-25
FIGURE 6010.516		STANDARD ROAD PLAN	
		SW-516	
		SHEET 2 of 3	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
LARGE WELL DOUBLE GRATE INTAKE WITH MANHOLE			



- ① Install four #4 diagonal bars at manhole opening and at all pipe openings.
- ② Cast-in-place base shown. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.
- ③ 12 inch minimum wall height above all pipes.
- ④ Form pockets in the wall to receive integral beams in the top.



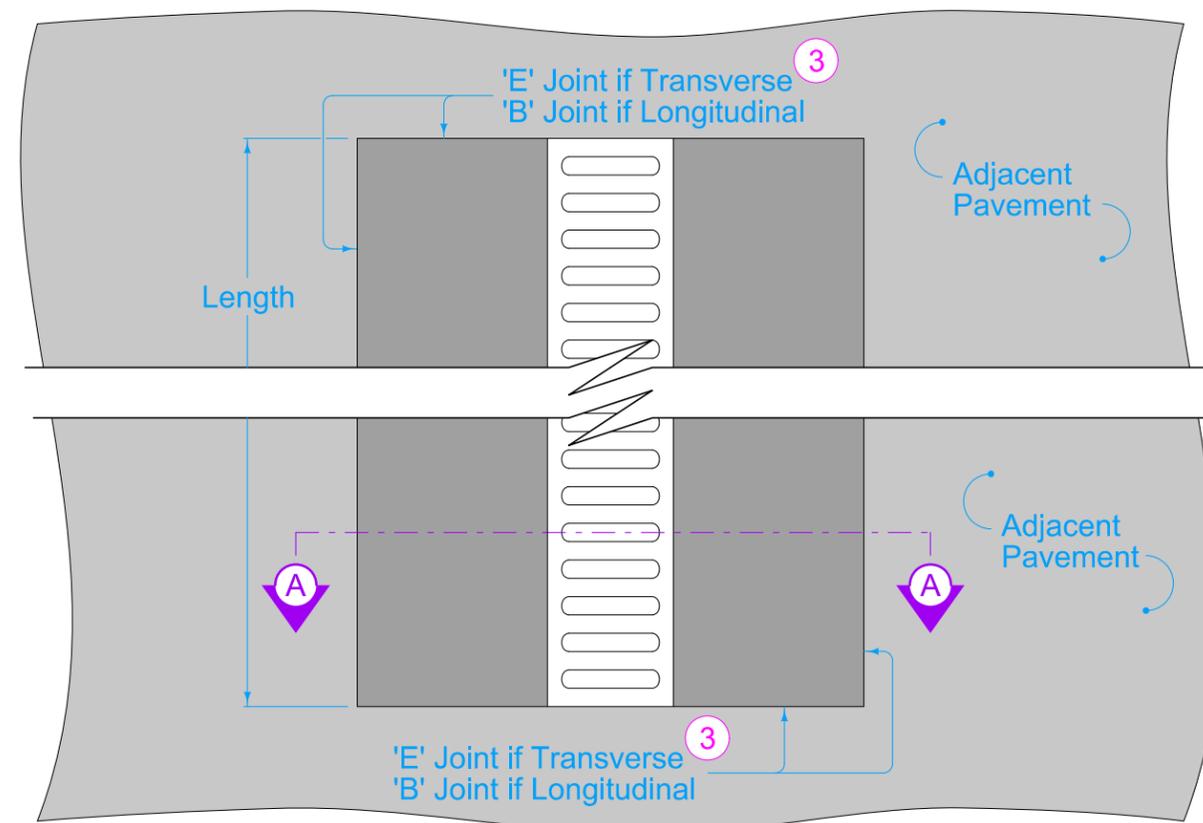
BEAM DETAIL

		REVISION	
		1	10-21-25
FIGURE 6010.516	STANDARD ROAD PLAN	SW-516	
		SHEET 3 of 3	

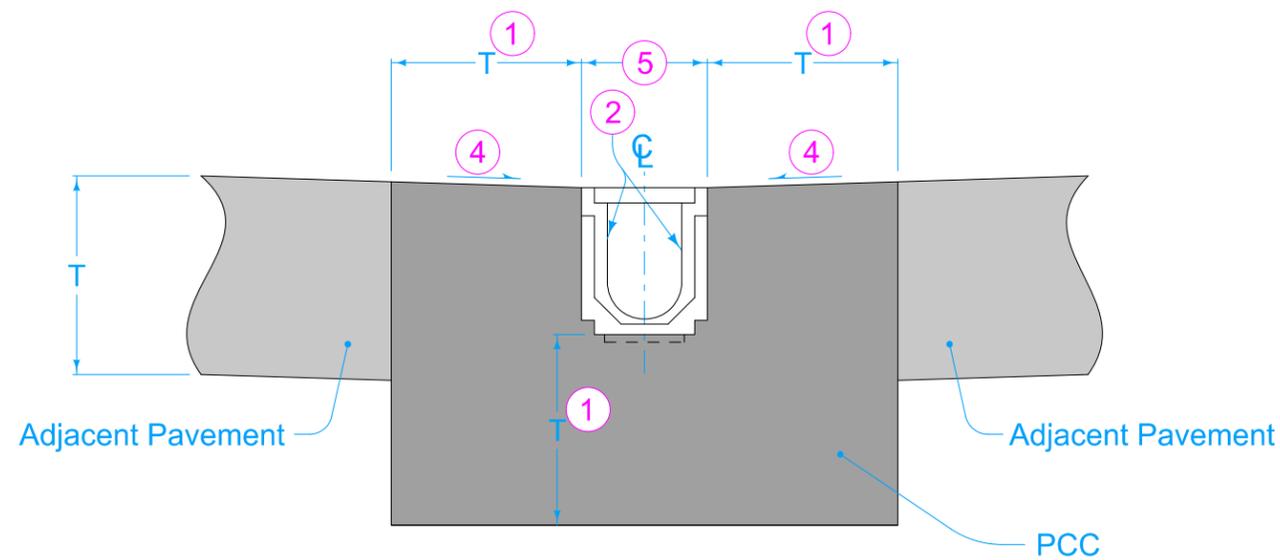
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

LARGE WELL DOUBLE GRATE INTAKE WITH MANHOLE



PLAN



SECTION A-A

- ① 6 inches or same as thickness of adjacent pavement, whichever is greater.
- ② Linear Trench Drain.
- ③ For joint details, see PV-101.
- ④ Slope same as adjacent pavement.
- ⑤ Width as determined by manufacturer. Minimum 6 inches.

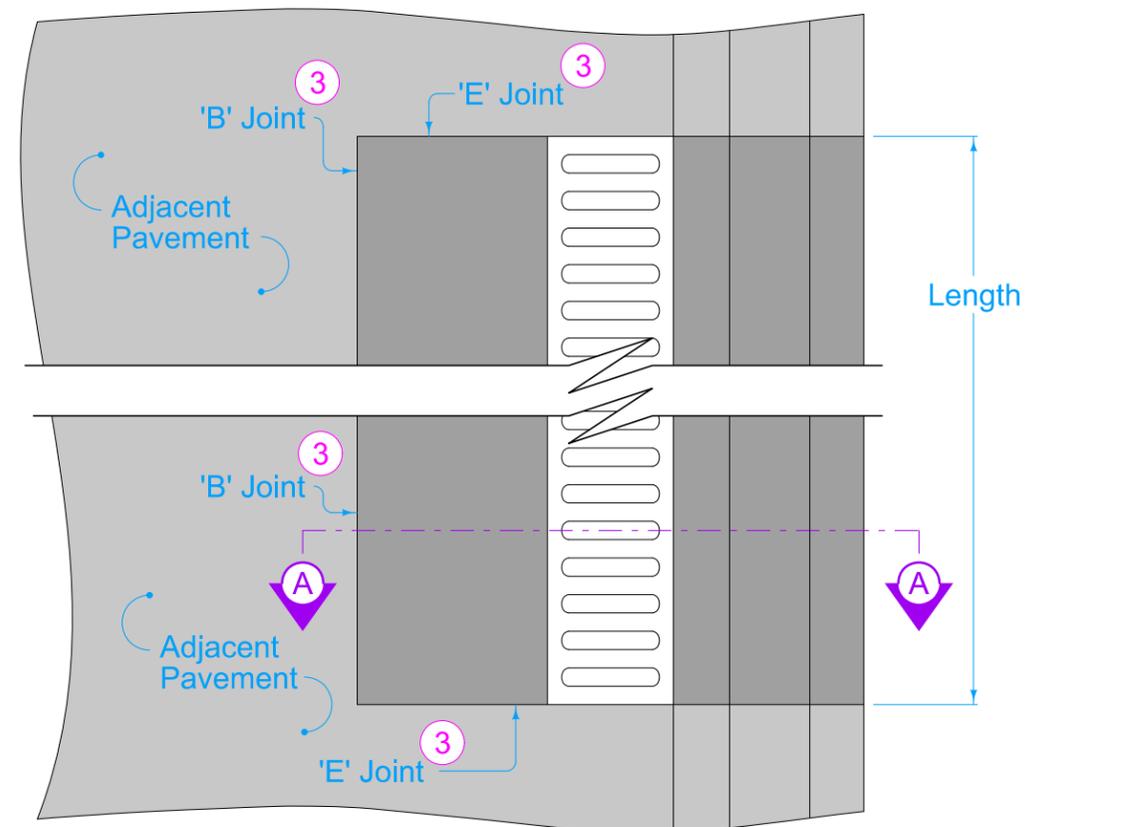
		REVISION	
		3	10-21-25
FIGURE 6010.521	STANDARD ROAD PLAN	SW-521	
		SHEET 1 of 2	

REVISIONS: Updated Sudas and IDOT Logos.

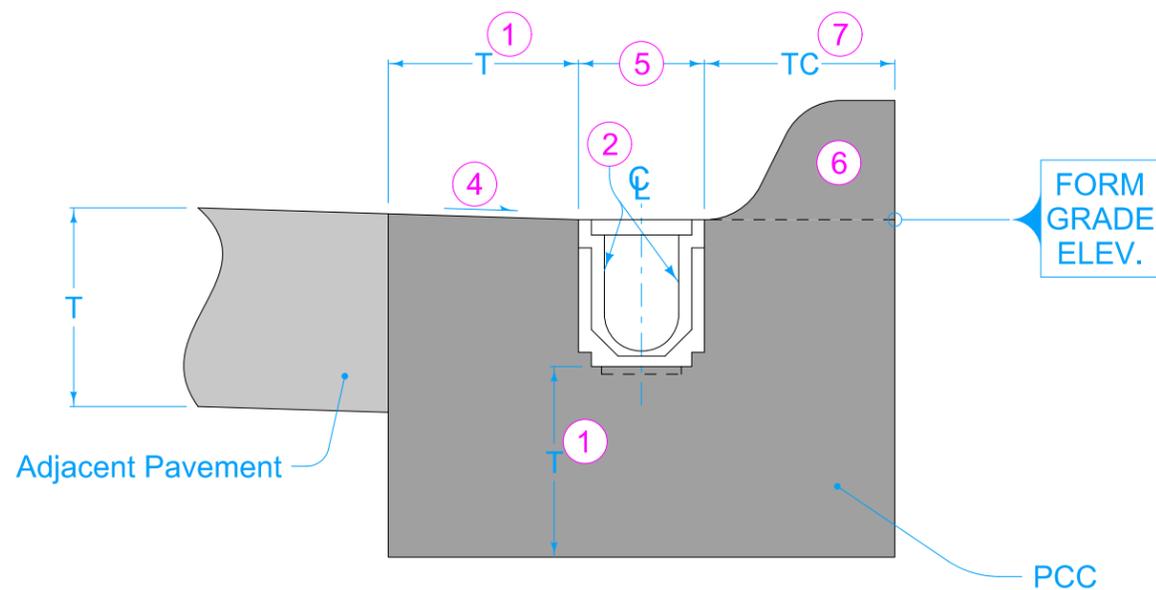
J. D. P. C.
SUDAS DIRECTOR

Stuart Miller
DESIGN METHODS ENGINEER

LINEAR TRENCH DRAIN



PLAN



SECTION A-A

- ① 6 inches or same as thickness of adjacent pavement, whichever is greater.
- ② Linear Trench Drain.
- ③ For joint details, see PV-101.
- ④ Slope same as adjacent pavement.
- ⑤ Width as determined by manufacturer. Minimum 6 inches.
- ⑥ Standard or sloped curb. For curb details, see PV-102.
- ⑦ Minimum thickness same as thickness of adjacent pavement or curb width, whichever is greater.

		REVISION	
		3	10-21-25
FIGURE 6010.521	STANDARD ROAD PLAN	SW-521	
		SHEET 2 of 2	

REVISIONS: Updated Sudas and IDOT Logos.

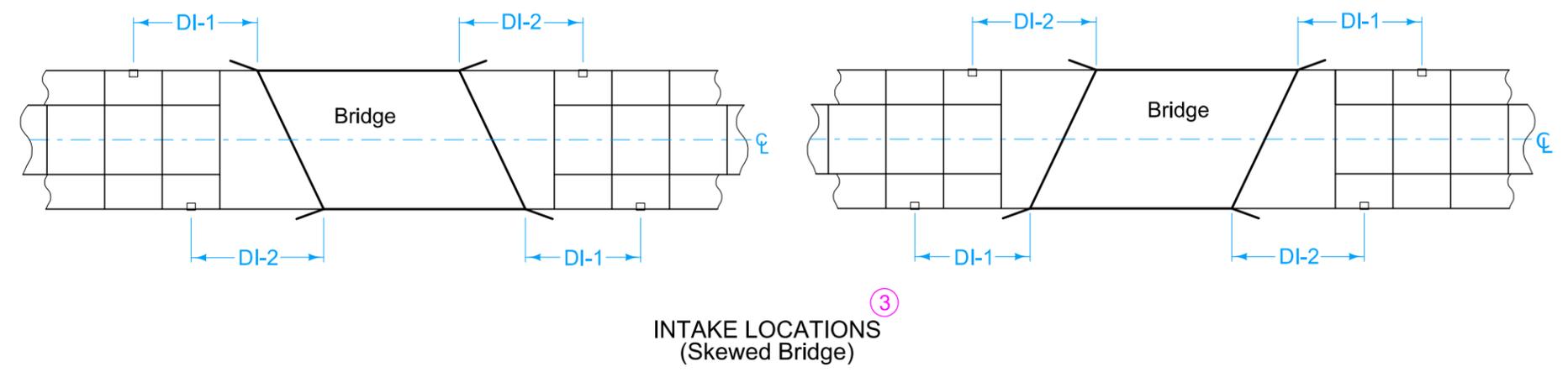
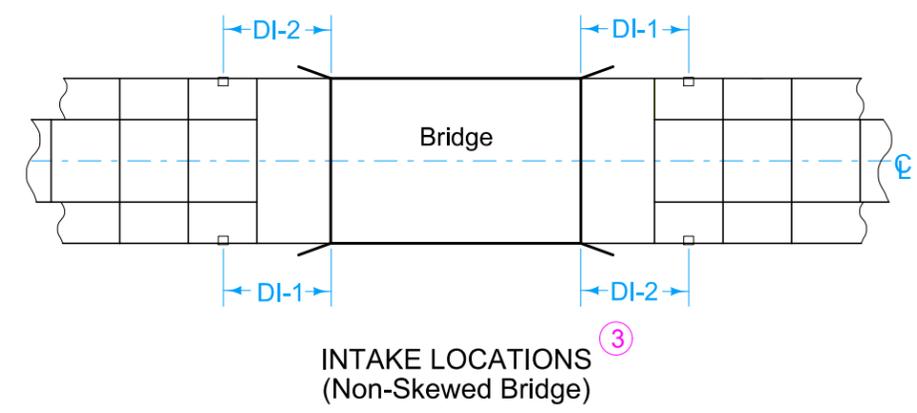
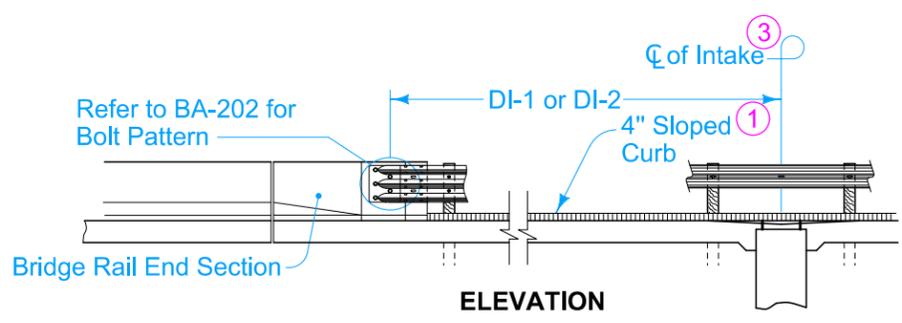
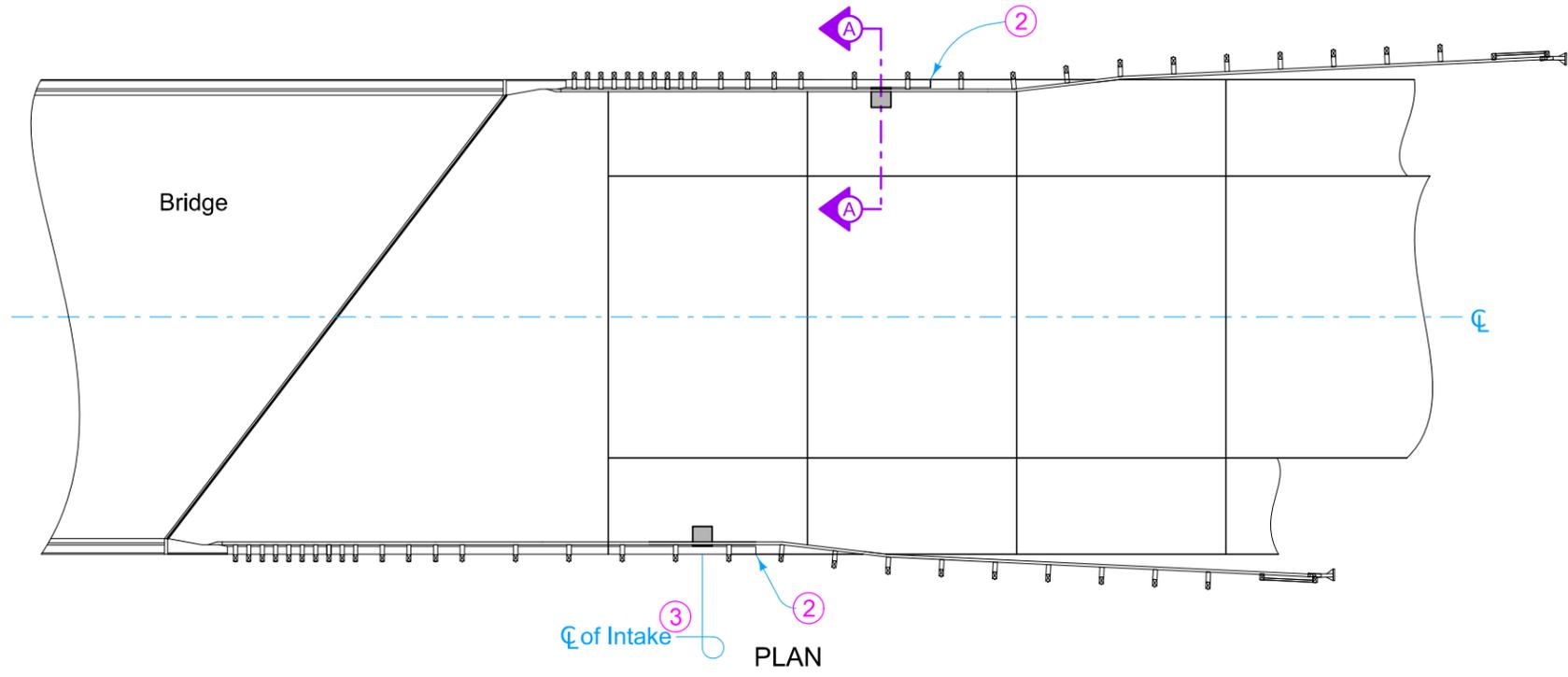
SUDAS DIRECTOR
 DESIGN METHODS ENGINEER

LINEAR TRENCH DRAIN

DESIGNER INFORMATION

Price bid for "Intake for Bridge End Drain, SW-538" is full compensation for furnishing, installing, and constructing the Bridge End Drain as shown.

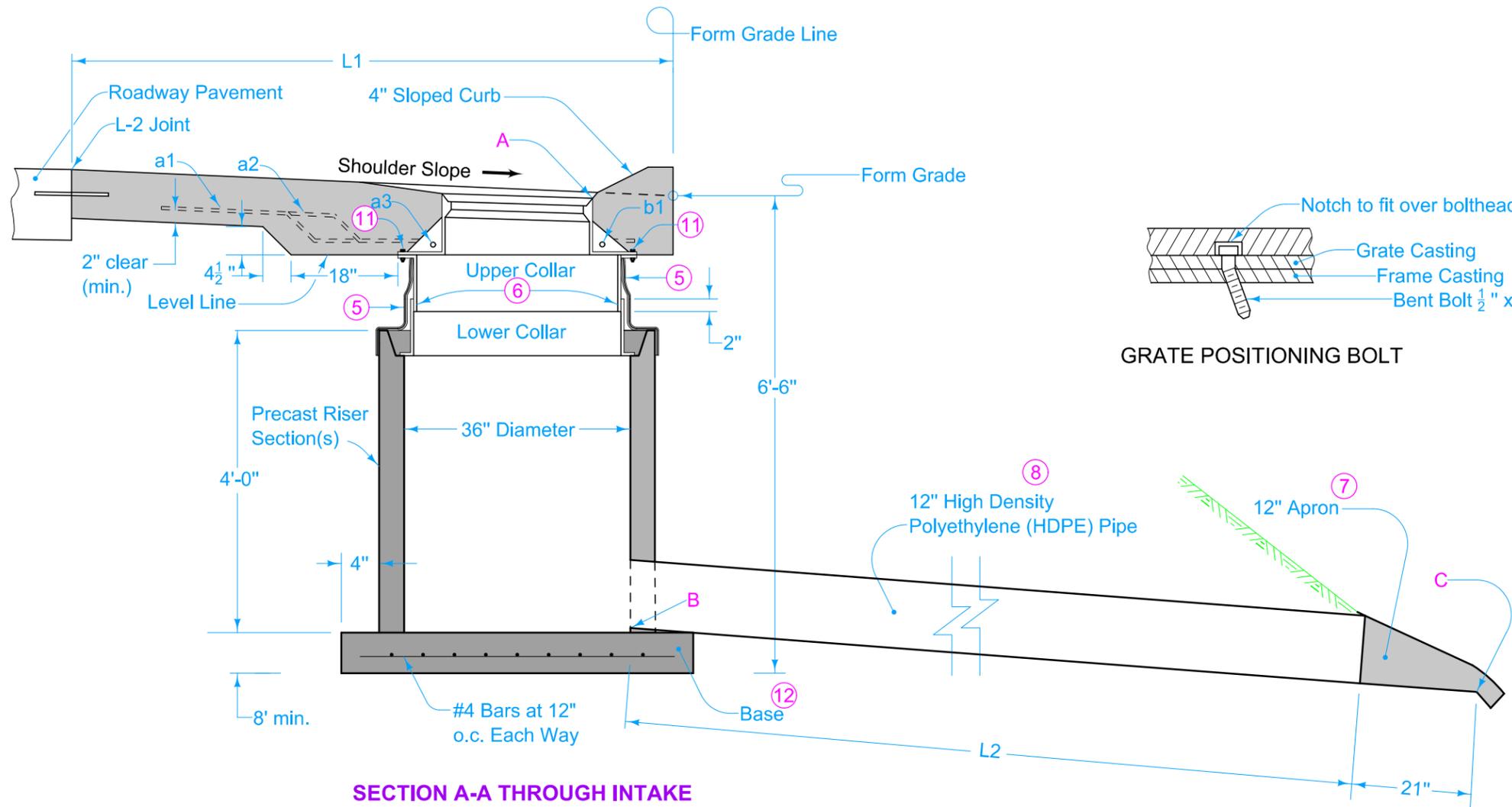
- ① Refer to BR-201, BR-202, BR-203, BR-204, or BR-205 for details of 4 inch sloped curb.
- ② Continue 4 inch Sloped Curb 5 feet beyond centerline of intake, then transition to no curb as shown on PV-102.
- ③ DI-1 and DI-2 distances measured from center of bolt hole pattern. Locate center of intake 6 feet or more from the nearest transverse pavement joint and between guardrail posts to allow for storm sewer outlet. Joints are determined by the bridge approach section.



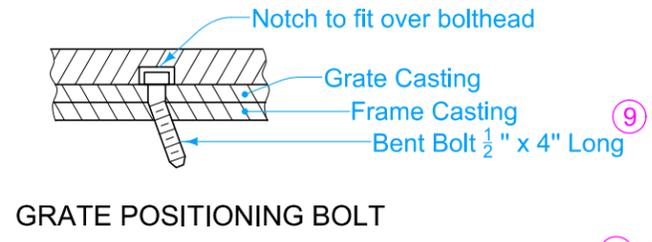
Possible Contract Items:
Intake for Bridge End Drain, SW-538

Possible Tabulation:
104-8

	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		SW-538
		SHEET 1 of 5
REVISIONS: Removed 'KT-2' joint option.		
APPROVED BY DESIGN METHODS ENGINEER		
INTAKE FOR BRIDGE END DRAIN		



SECTION A-A THROUGH INTAKE



GRATE POSITIONING BOLT

Construct precast base using 4 in. x 4 in. No. 6 steel wire mesh reinforcing or equivalent.

To ensure water-tight joints, use an approved asphaltic sealer for all corrugated metal pipe joints constructed using connecting bands.

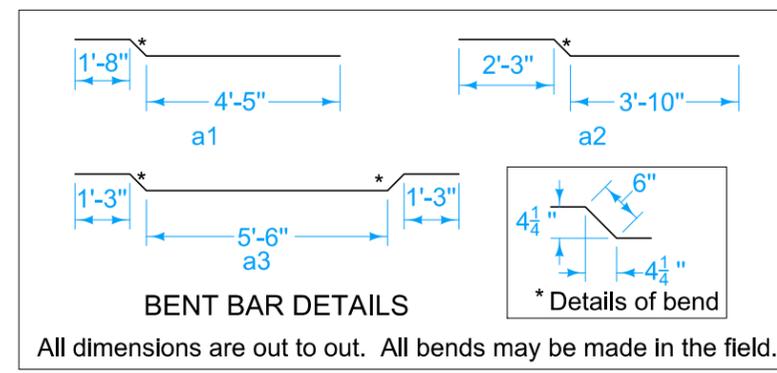
Flow line **A** elevation is 0.10 feet below Form Grade Elevation.

Flow line **B** elevation is 5.75 feet below flow line **A**.

Flow line **C** elevation is 0 - 0.5 feet above ditch grade.

Refer to project plans for actual flow line elevations of **A**, **B**, **C**, and dimensions **L1** and **L2**.

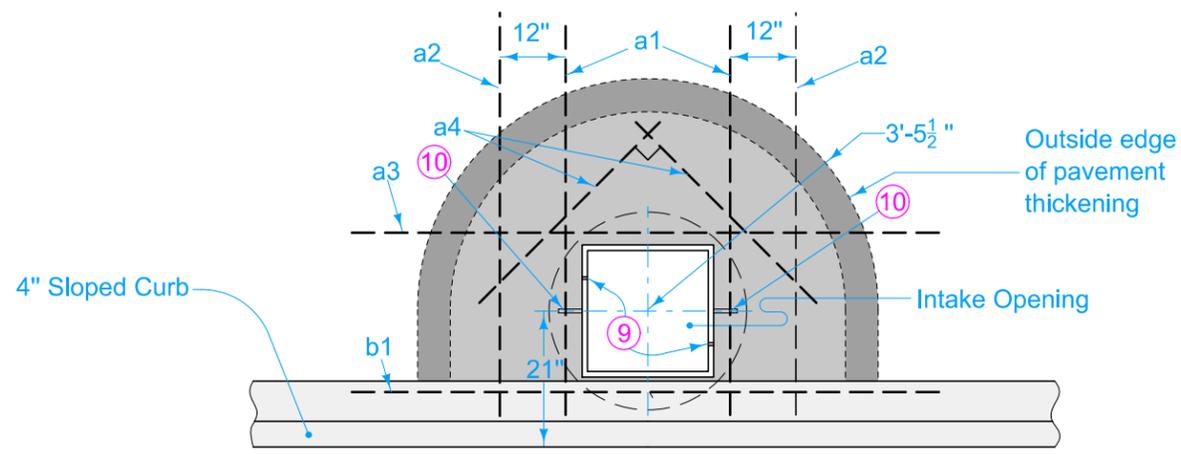
- ⑤ Before backfilling around the intake assembly, wrap two thicknesses of engineering fabric around the settlement collar. Tape all the way around with 2 inch duct tape immediately below the flange of upper section and 4 inches below the top of well pipe.
- ⑥ Fasten Slip joint temporarily with four 1/2 inch cap screws during pavement construction. Remove cap screws after pavement is hardened.
- ⑦ Refer to DR-203. Apron is incidental to Intake for Bridge End Drain and will not be paid for separately.
- ⑧ Connect to basin according to Section 2435 of the Standard Specifications. High Density Polyethylene (HDPE) Pipe is incidental to Intake for Bridge End Drain and will not be paid for separately.
- ⑨ Field place 1/2 in. x 4 in. long bolt in upstream side and bend underside to prevent removal.
- ⑩ Place bars a1, a3, and b1 through the appropriate holes in the intake frame.
- ⑪ Fasten frame casting to Upper Collar casting at four locations using 1/2 in. x 2 in. long hex bolts and 1/2 inch nuts.
- ⑫ Cast-in-place base shown. Base may be square. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.



BENT BAR DETAILS

All dimensions are out to out. All bends may be made in the field.

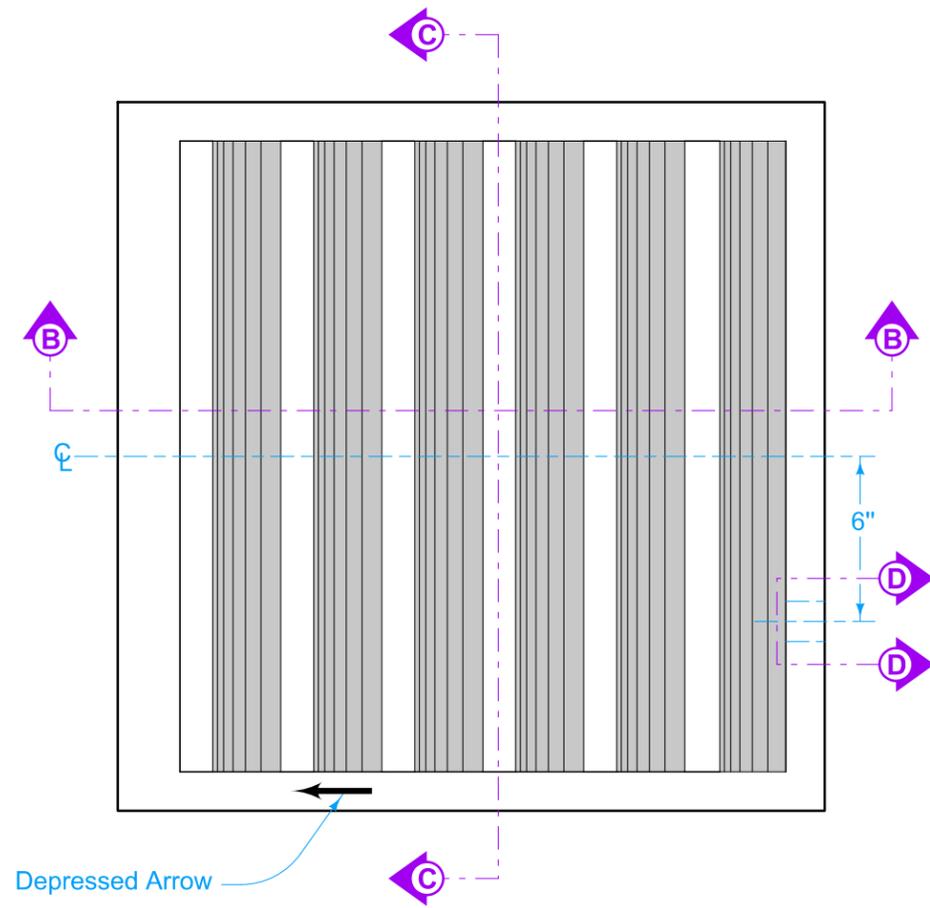
REINFORCING BAR LIST						
MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
a1 ⑩	4	Shoulder		2	6'-7"	9
a2	4	Shoulder		2	6'-7"	9
a3 ⑩	4	Shoulder		1	9'-0"	6
a4	4	Shoulder		2	4'-0"	5
b1 ⑩	4	Curb		1	8'-9"	6
Total						35 lbs.



REINFORCING LAYOUT

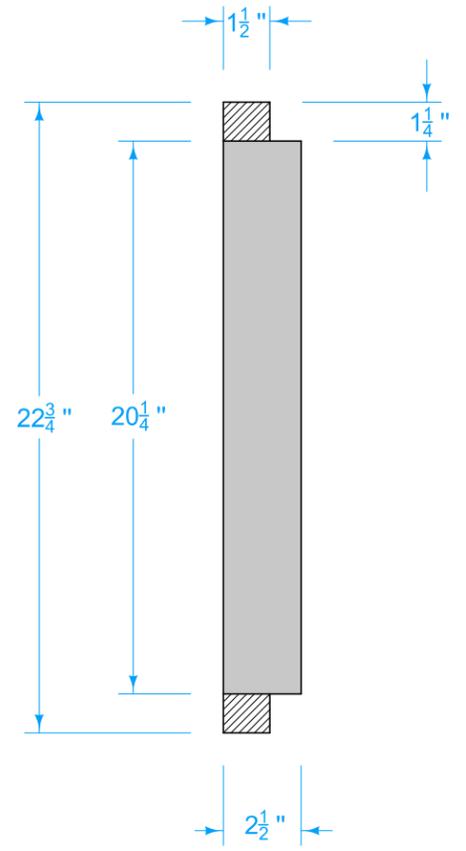
	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		SW-538
REVISIONS: Removed 'KT-2' joint option.		SHEET 2 of 5
APPROVED BY DESIGN METHODS ENGINEER		
INTAKE FOR BRIDGE END DRAIN		

Minimum Weight = 90 lbs.

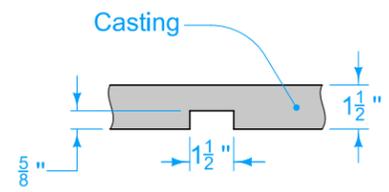


PLAN

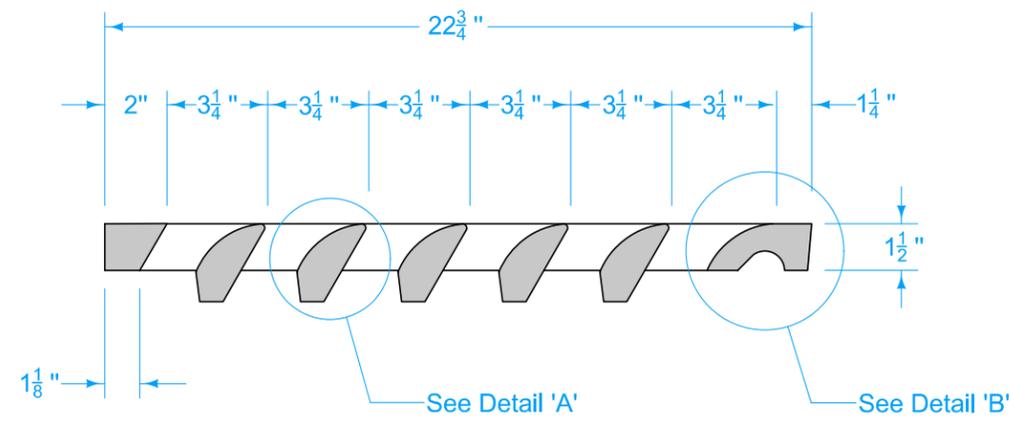
← Flow



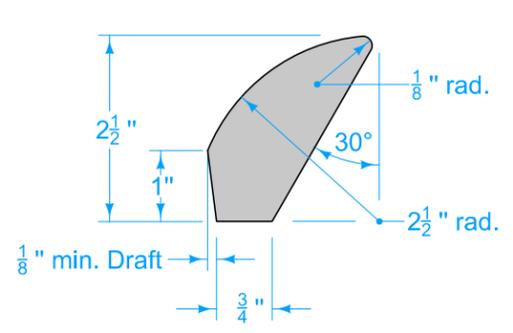
SECTION C-C



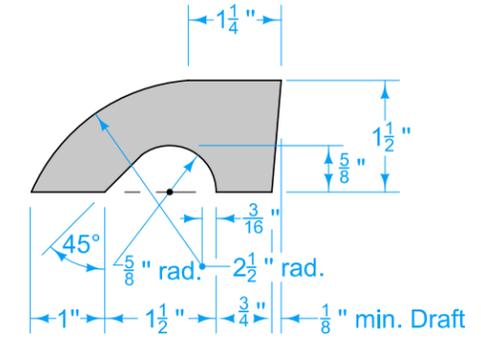
SECTION D-D



SECTION B-B



DETAIL 'A'



DETAIL 'B'

GRATE

	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		SW-538
		SHEET 3 of 5

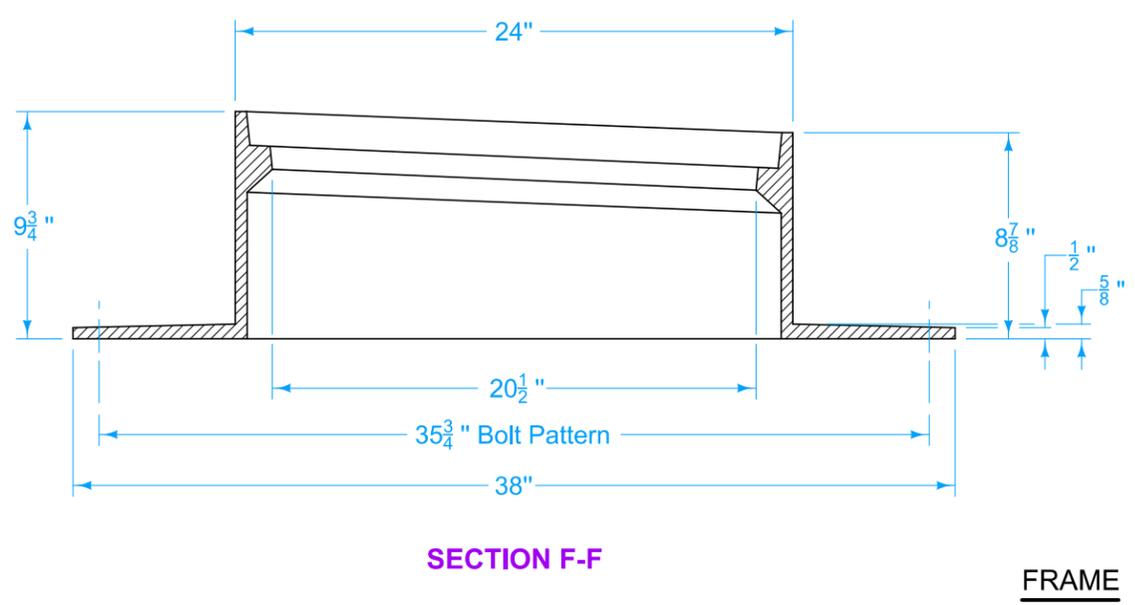
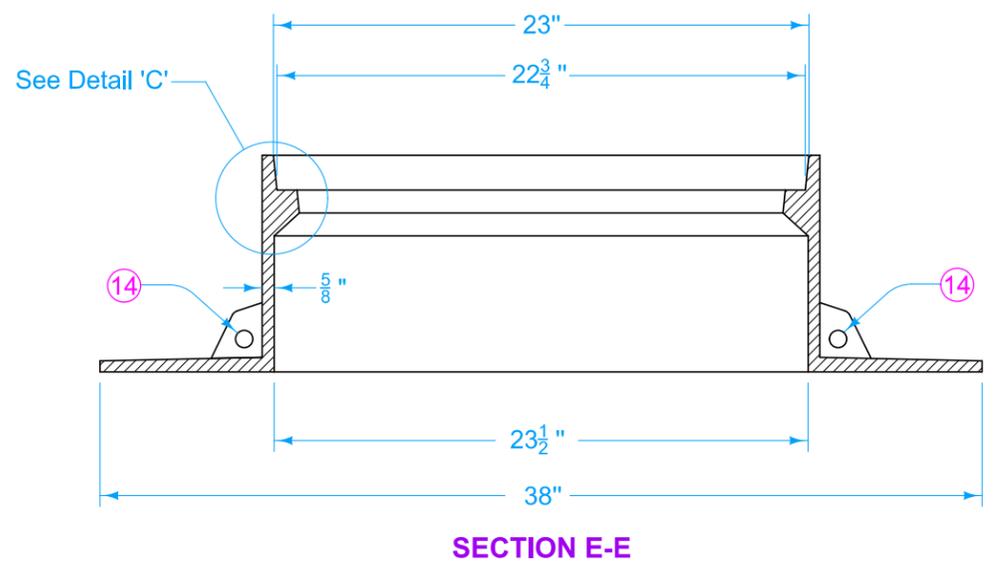
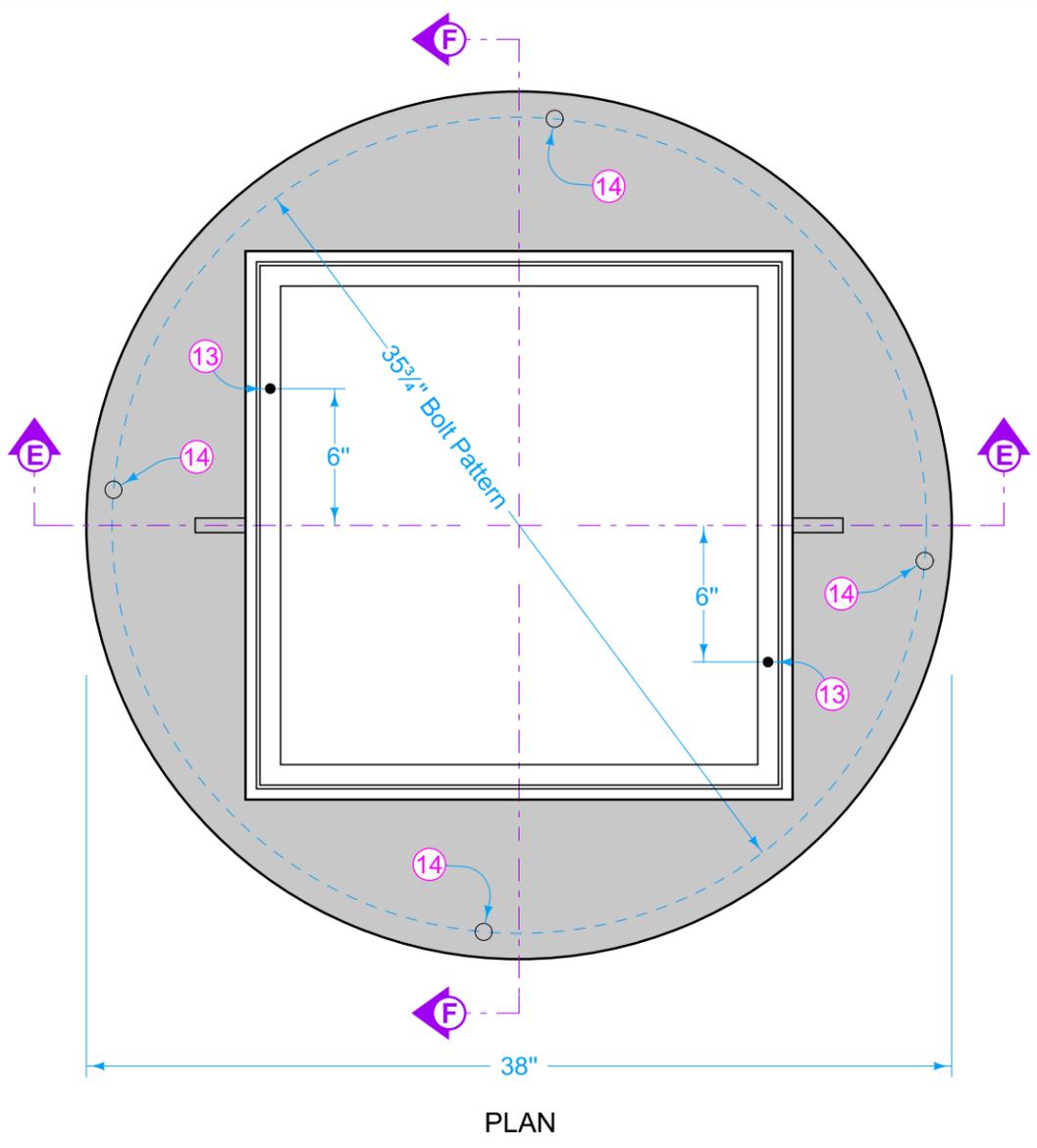
REVISIONS: Removed 'KT-2' joint option.

APPROVED BY DESIGN METHODS ENGINEER

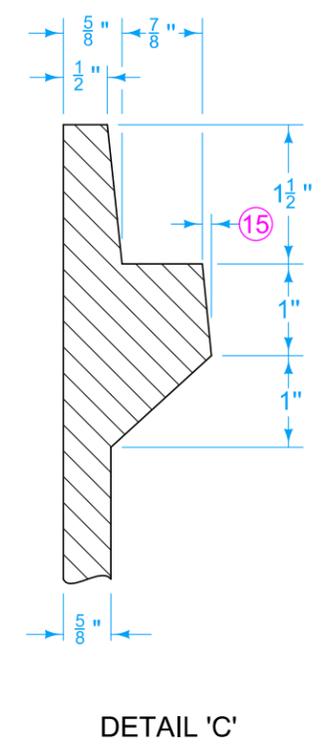
INTAKE FOR BRIDGE END DRAIN

Minimum Weight = 163 lbs.

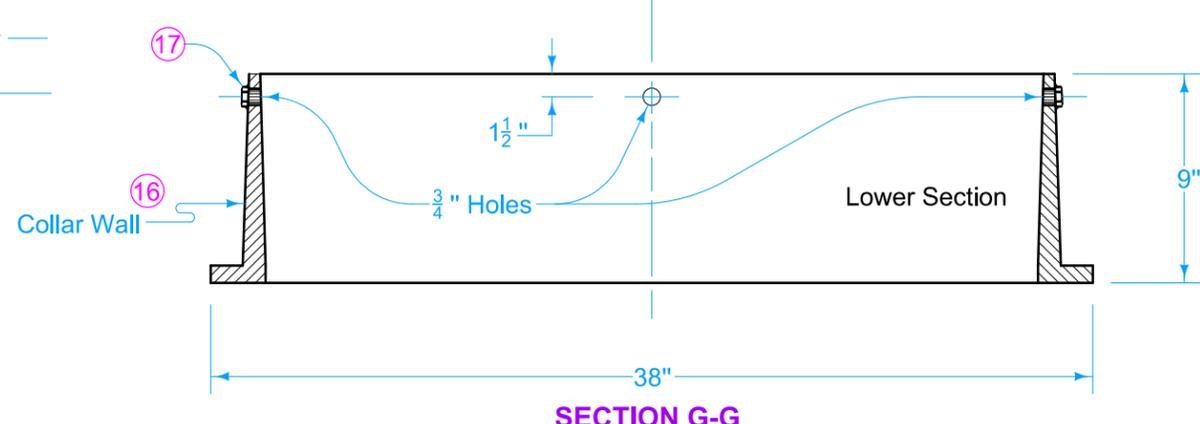
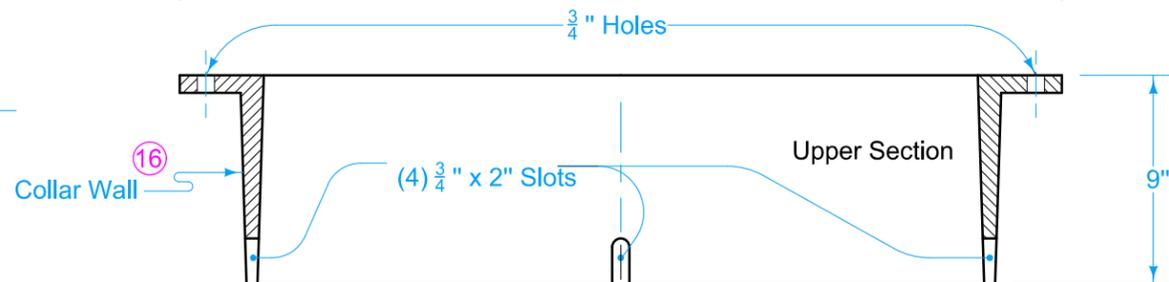
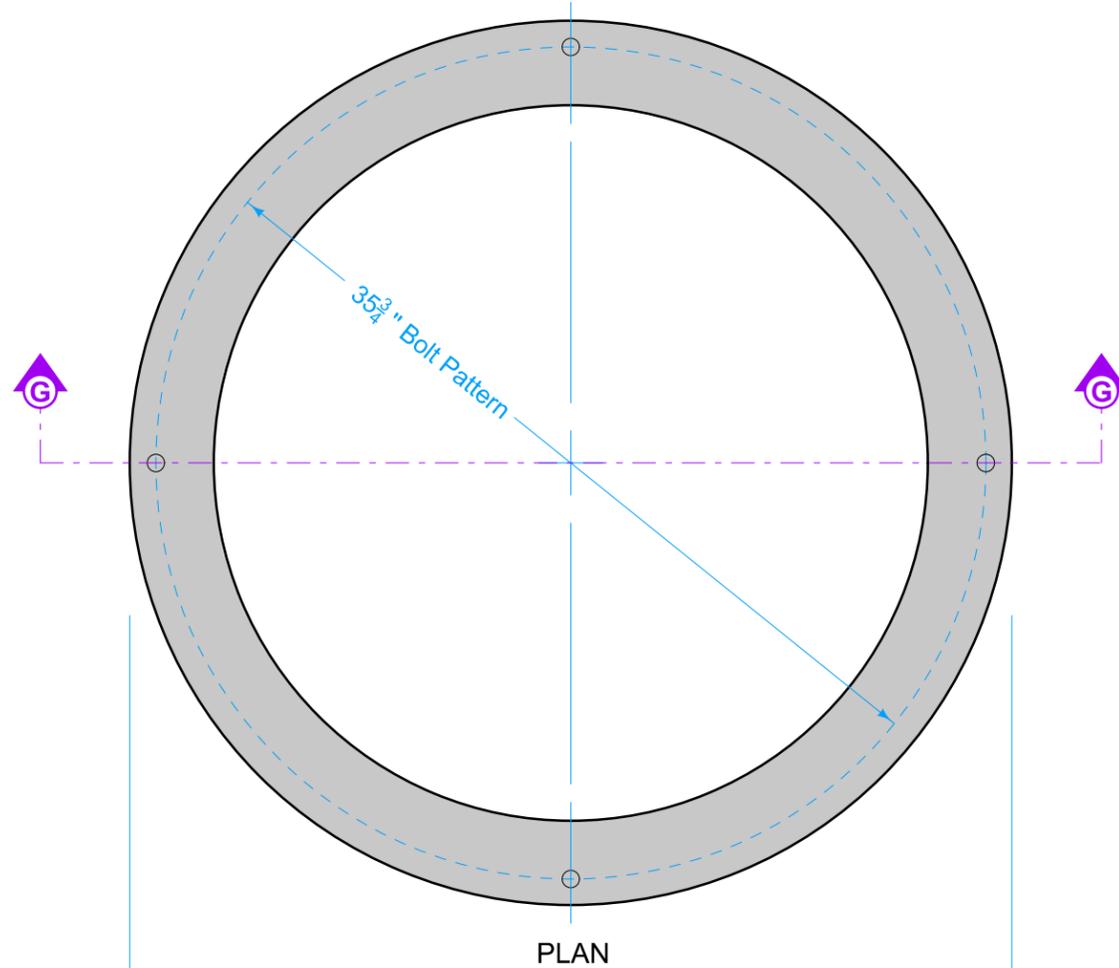
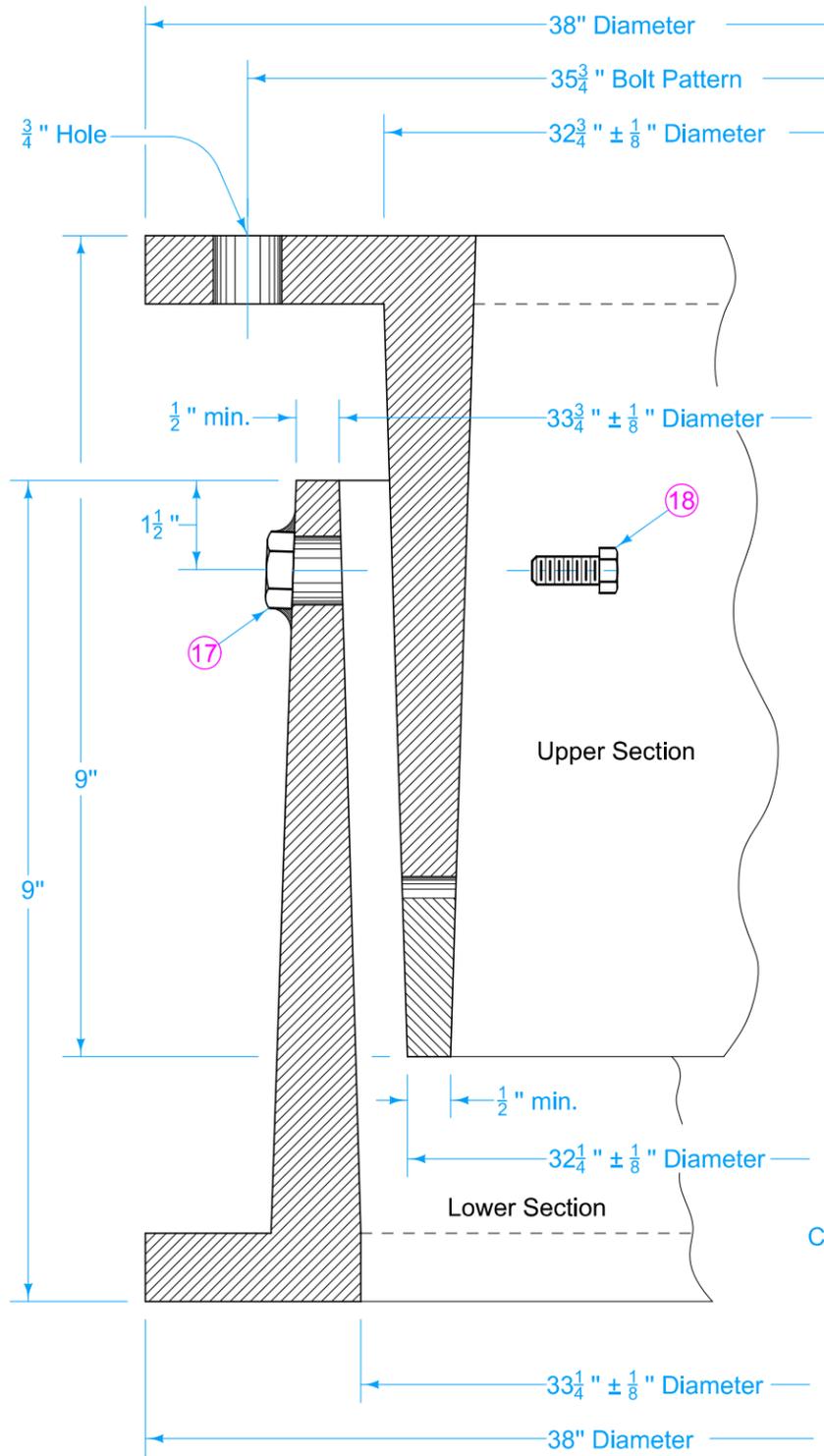
- ⑬ Provide $\frac{9}{16}$ inch diameter holes at locations indicated.
- ⑭ $\frac{3}{4}$ inch holes. Drill or core if not already existing.
- ⑮ DRAFT (Small Casting Taper) will be permitted.



FRAME



	REVISION	
	5	10-21-25
STANDARD ROAD PLAN		SW-538
REVISIONS: Removed 'KT-2' joint option.		SHEET 4 of 5
APPROVED BY DESIGN METHODS ENGINEER		
INTAKE FOR BRIDGE END DRAIN		



- 16 Wall thickness may vary uniformly from base to the top or bottom of the casting.
- 17 Tack weld four $\frac{1}{2}$ inch nuts to outside of bottom settlement collar or drill and tap four holes for $\frac{1}{2}$ inch Cap Screws in bottom settlement collar.
- 18 Remove the four $\frac{1}{2}$ inch Cap Screws after surrounding concrete has set.

MINIMUM WEIGHT	
Upper Section	210 lbs.
Lower Section	210 lbs.

	REVISION
	5 10-21-25
STANDARD ROAD PLAN	
SW-538	
SHEET 5 of 5	

REVISIONS: Removed 'KT-2' joint option.

Shawn Miller
 APPROVED BY DESIGN METHODS ENGINEER

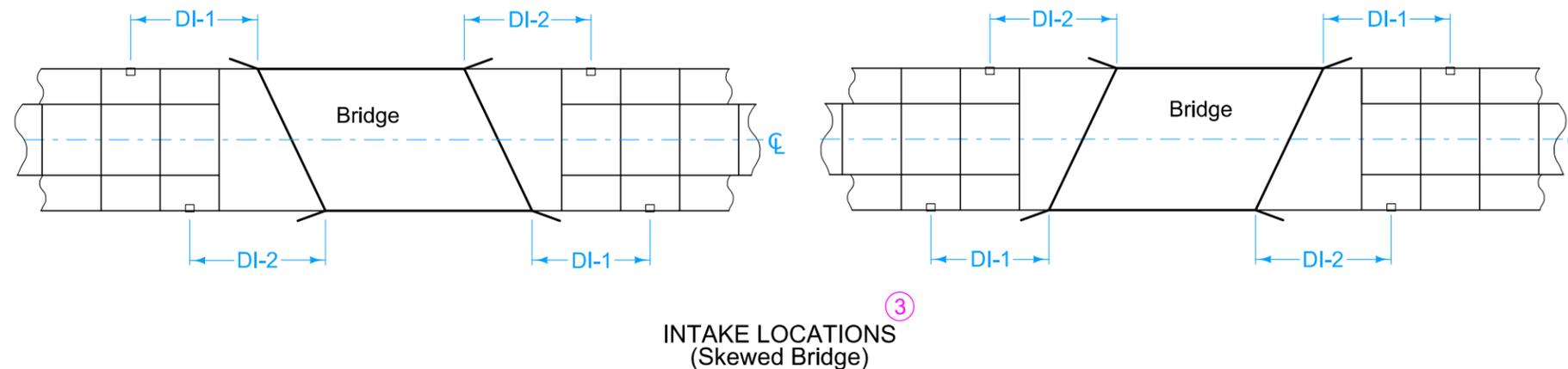
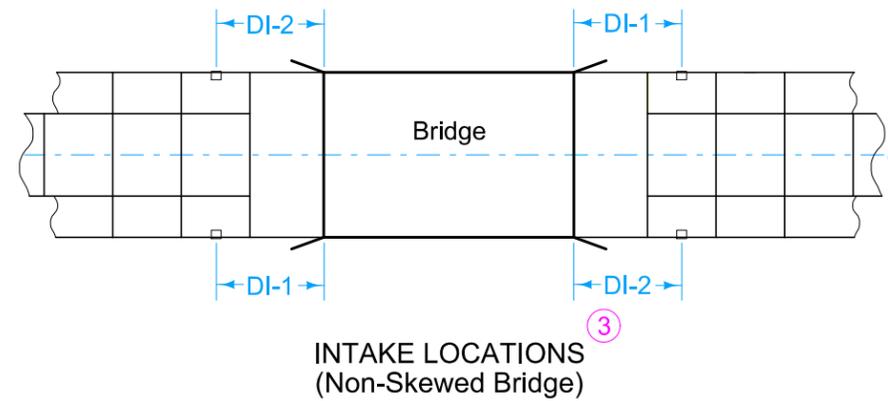
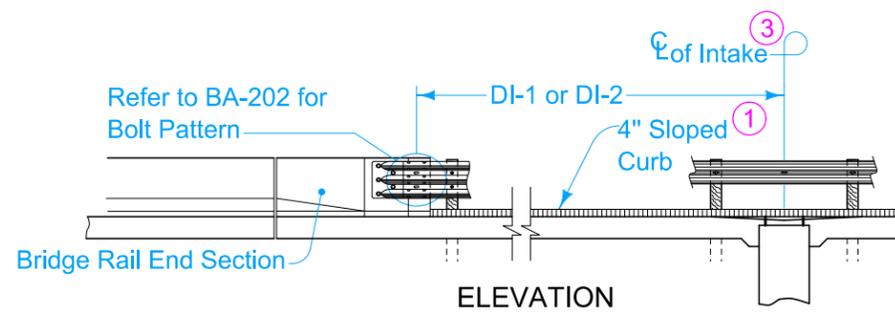
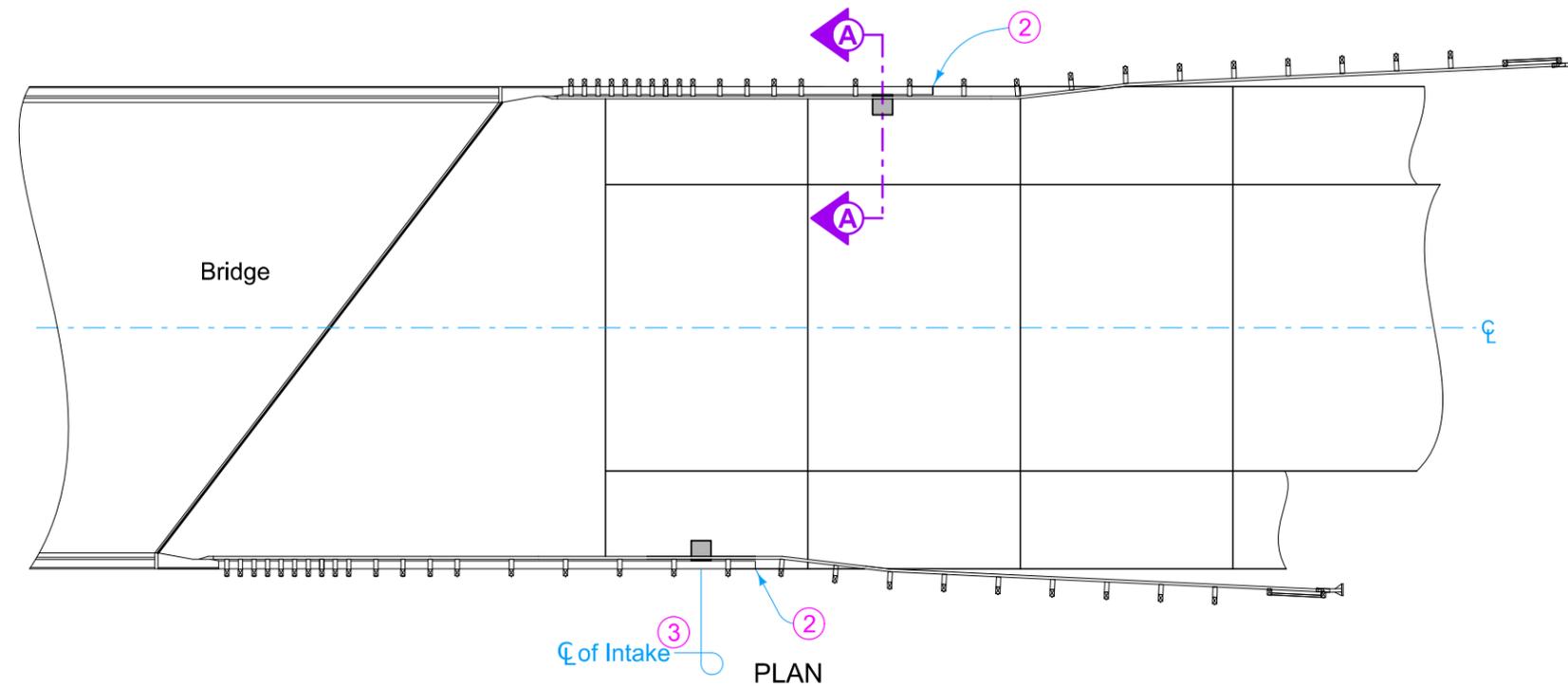
INTAKE FOR BRIDGE END DRAIN

SETTLEMENT COLLAR

DESIGNER INFORMATION

Price bid for "Intake for Bridge End Drain, SW-538" is full compensation for furnishing, installing, and constructing the Bridge End Drain as shown.

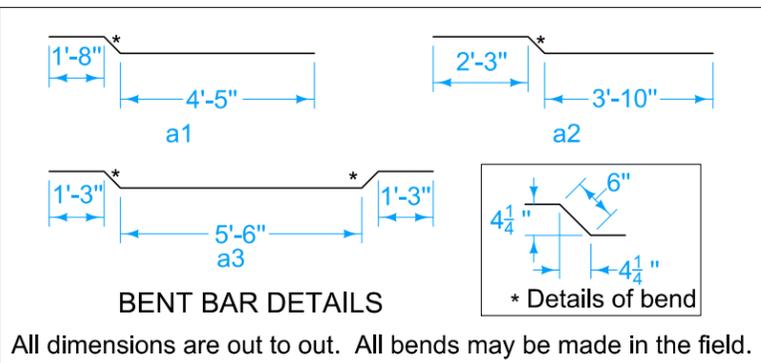
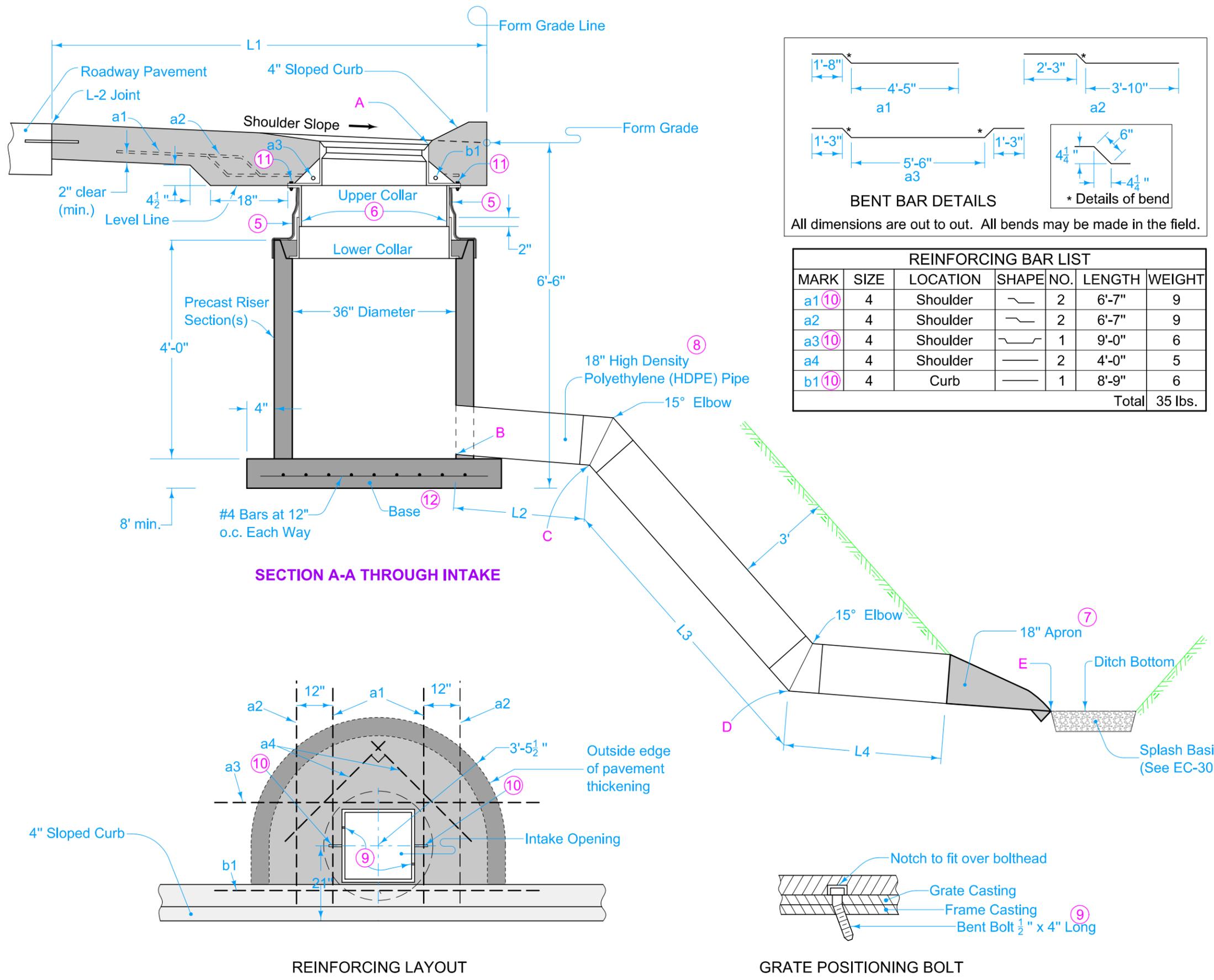
- ① Refer to BR-201, BR-202, BR-203, BR-204, or BR-205 for details of 4 inch sloped curb.
- ② Continue 4 inch Sloped Curb 5 feet beyond centerline of intake, then transition to no curb as shown on PV-102.
- ③ DI-1 and DI-2 distances measured from center of bolt hole pattern. Locate center of intake 6 feet or more from the nearest transverse pavement joint and between guardrail posts to allow for storm sewer outlet. Joints are determined by the bridge approach section.



Possible Contract Items:
Intake for Bridge End Drain, SW-539

Possible Tabulation:
104-8B

	REVISION	
	4	10-21-25
STANDARD ROAD PLAN		SW-539
		SHEET 1 of 5
REVISIONS: Removed 'KT-2' joint option.		
APPROVED BY DESIGN METHODS ENGINEER		
INTAKE FOR BRIDGE END DRAIN (WITH LETDOWN)		

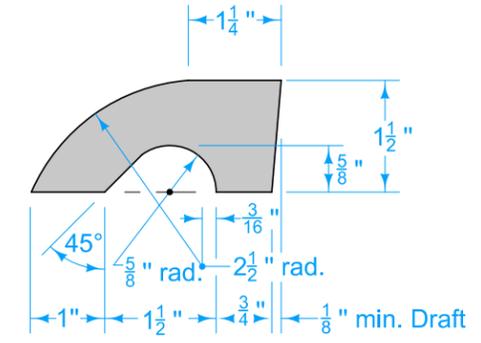
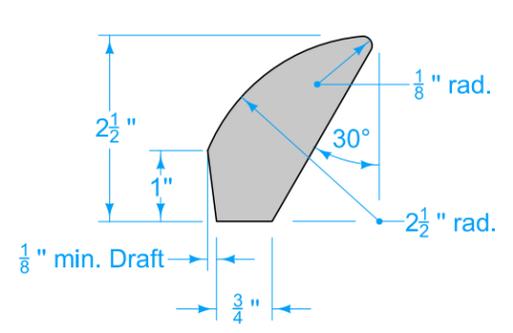
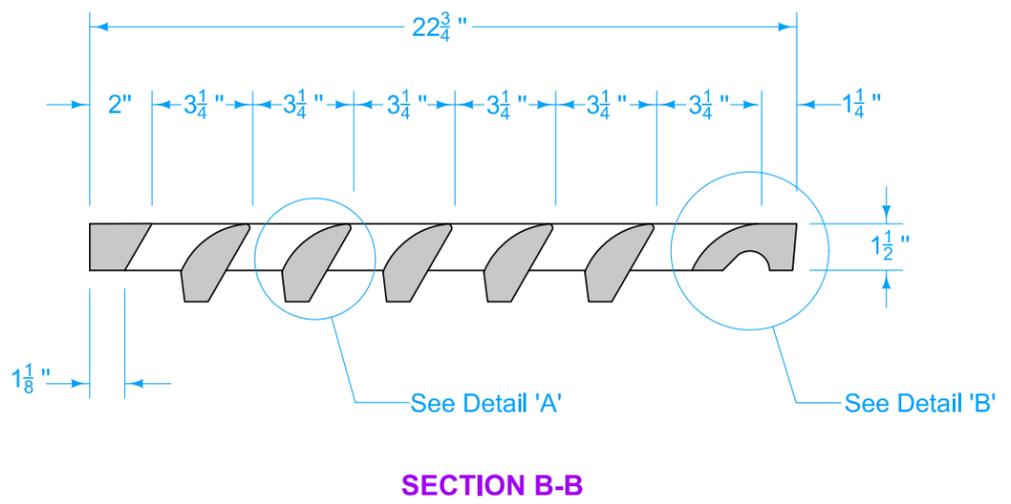
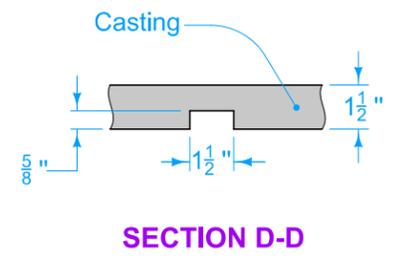
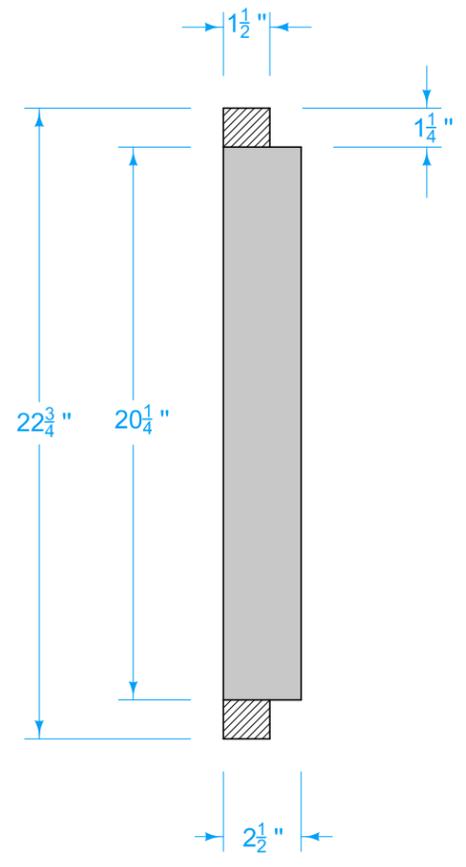
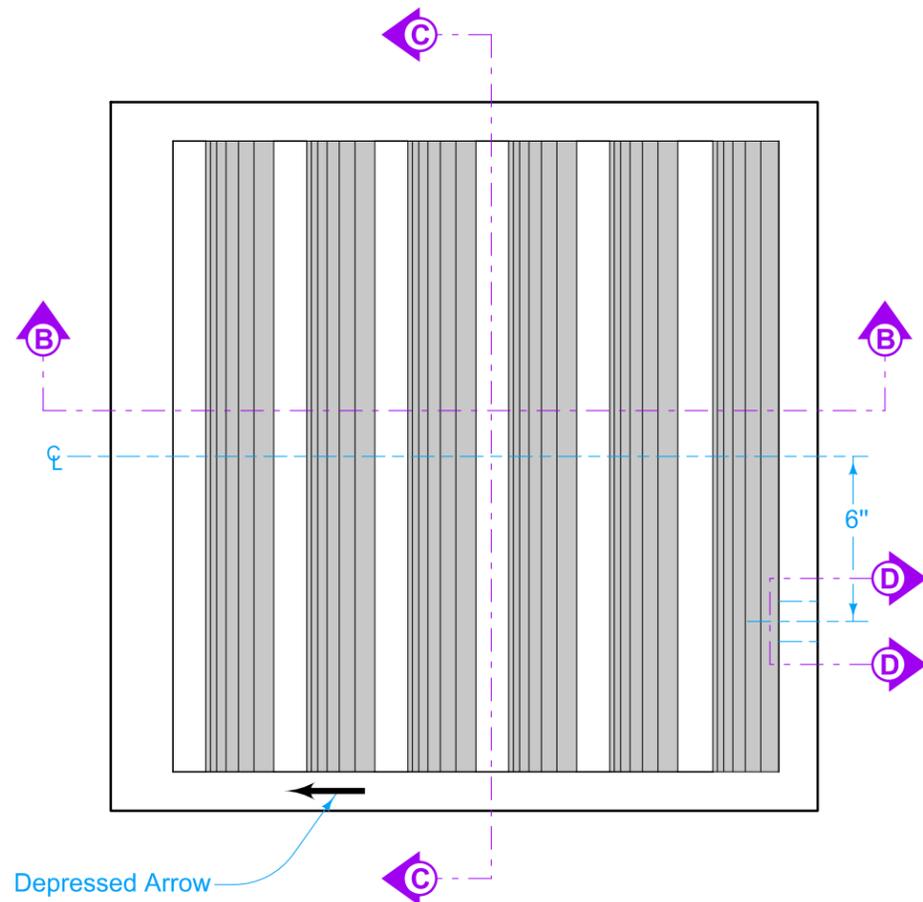


REINFORCING BAR LIST						
MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
a1 (10)	4	Shoulder		2	6'-7"	9
a2	4	Shoulder		2	6'-7"	9
a3 (10)	4	Shoulder		1	9'-0"	6
a4	4	Shoulder		2	4'-0"	5
b1 (10)	4	Curb		1	8'-9"	6
Total						35 lbs.

- Construct precast base using 4 in. x 4 in. No. 6 steel wire mesh reinforcing or equivalent.
- Flow line **A** elevation is 0.10 feet below Form Grade Elevation.
- Flow line **B** elevation is 5.75 feet below flow line **A**.
- Flow line **E** elevation is 0 - 0.5 feet above ditch grade.
- Refer to project plans for actual flow line elevations of **A, B, C, D, E**, and dimensions **L1, L2, L3**, and **L4**.
- (5)** Before backfilling around the intake assembly, wrap two thicknesses of engineering fabric around the settlement collar. Tape all the way around with 2 inch duct tape immediately below the flange of upper section and 4 inches below the top of well pipe.
- (6)** Fasten Slip joint temporarily with four 1/2 inch cap screws during pavement construction. Remove cap screws after pavement is hardened.
- (7)** Refer to DR-203. Apron is incidental to Intake for Bridge End Drain and will not be paid for separately.
- (8)** Connect to basin according to Section 2435 of the Standard Specifications. High Density Polyethylene (HDPE) Pipe is incidental to Intake for Bridge End Drain and will not be paid for separately.
- (9)** Field place 1/2 in. x 4 in. long bolt in upstream side and bend underside to prevent removal.
- (10)** Place bars a1, a3, and b1 through the appropriate holes in the intake frame.
- (11)** Fasten frame casting to Upper Collar casting at four locations using 1/2 in. x 2 in. long hex bolts and 1/2 inch nuts.
- (12)** Cast-in-place base shown. Base may be square. If base is precast integral with walls, the footprint of the base is not required to extend beyond the outer edge of the walls.

	REVISION	
	4	10-21-25
STANDARD ROAD PLAN		
SW-539		
SHEET 2 of 5		
REVISIONS: Removed 'KT-2' joint option.		
 APPROVED BY DESIGN METHODS ENGINEER		
INTAKE FOR BRIDGE END DRAIN (WITH LETDOWN)		

Minimum Weight = 90 lbs.

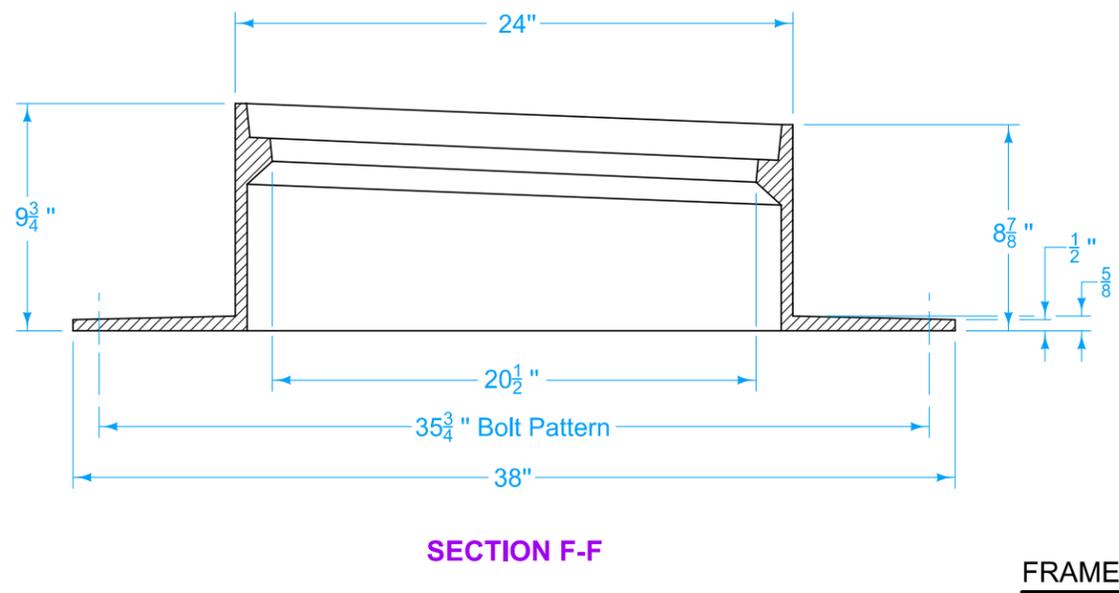
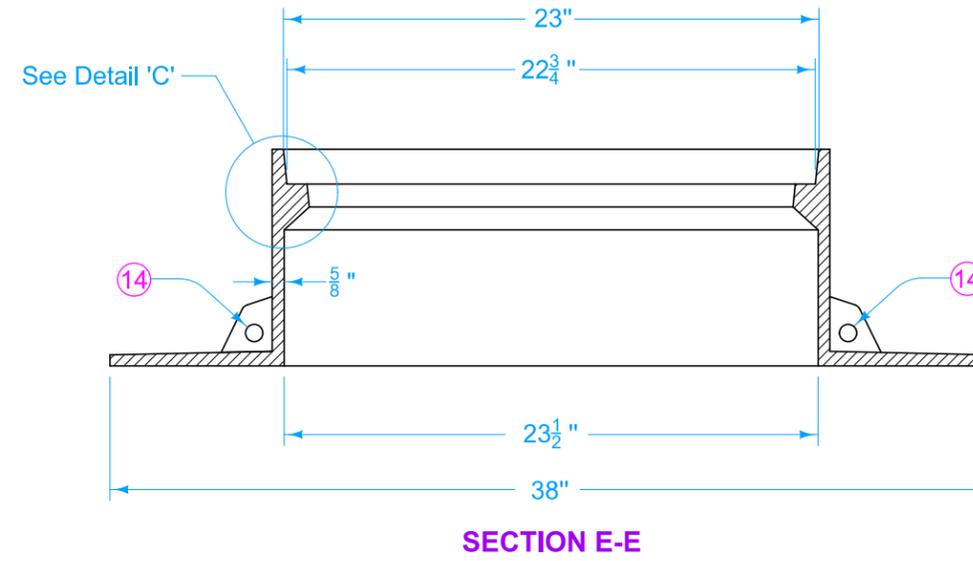
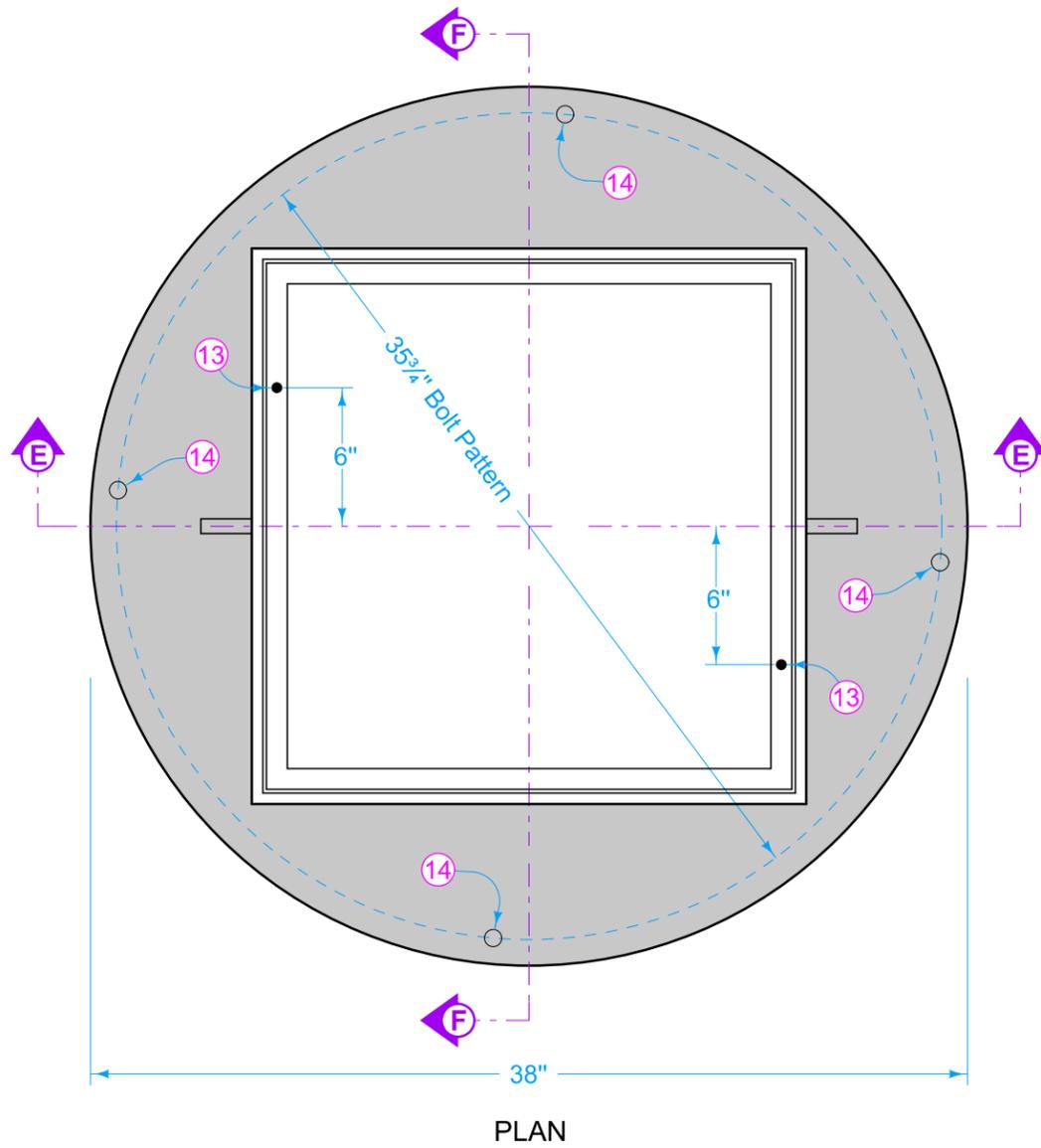


GRATE

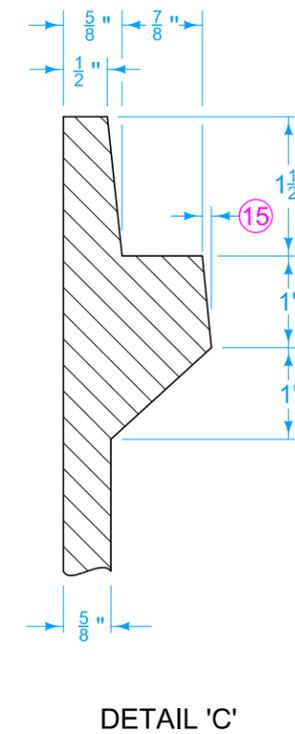
<p>STANDARD ROAD PLAN</p>	REVISION	
	4	10-21-25
	<p>SW-539</p> <p>SHEET 3 of 5</p>	
<p>REVISIONS: Removed 'KT-2' joint option.</p>		
<p><i>Steve Miller</i></p> <p>APPROVED BY DESIGN METHODS ENGINEER</p>		
<p>INTAKE FOR BRIDGE END DRAIN (WITH LETDOWN)</p>		

Minimum Weight = 163 lbs.

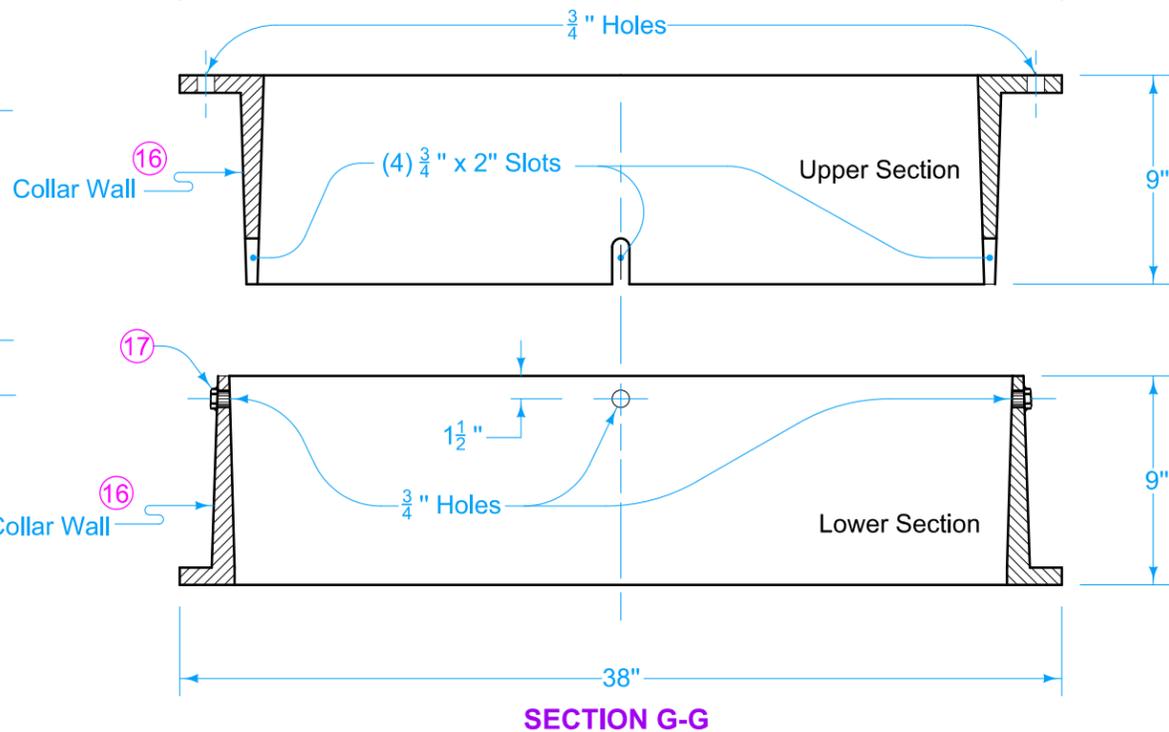
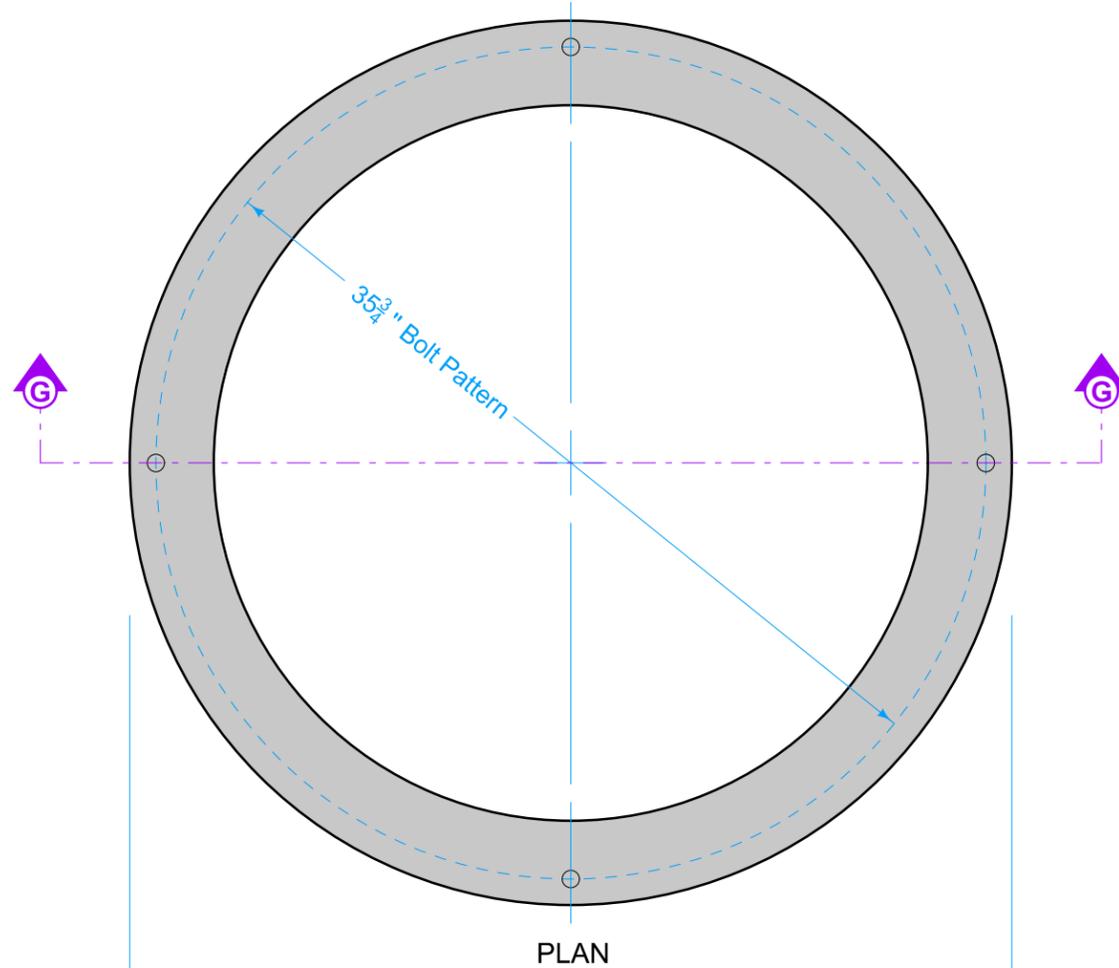
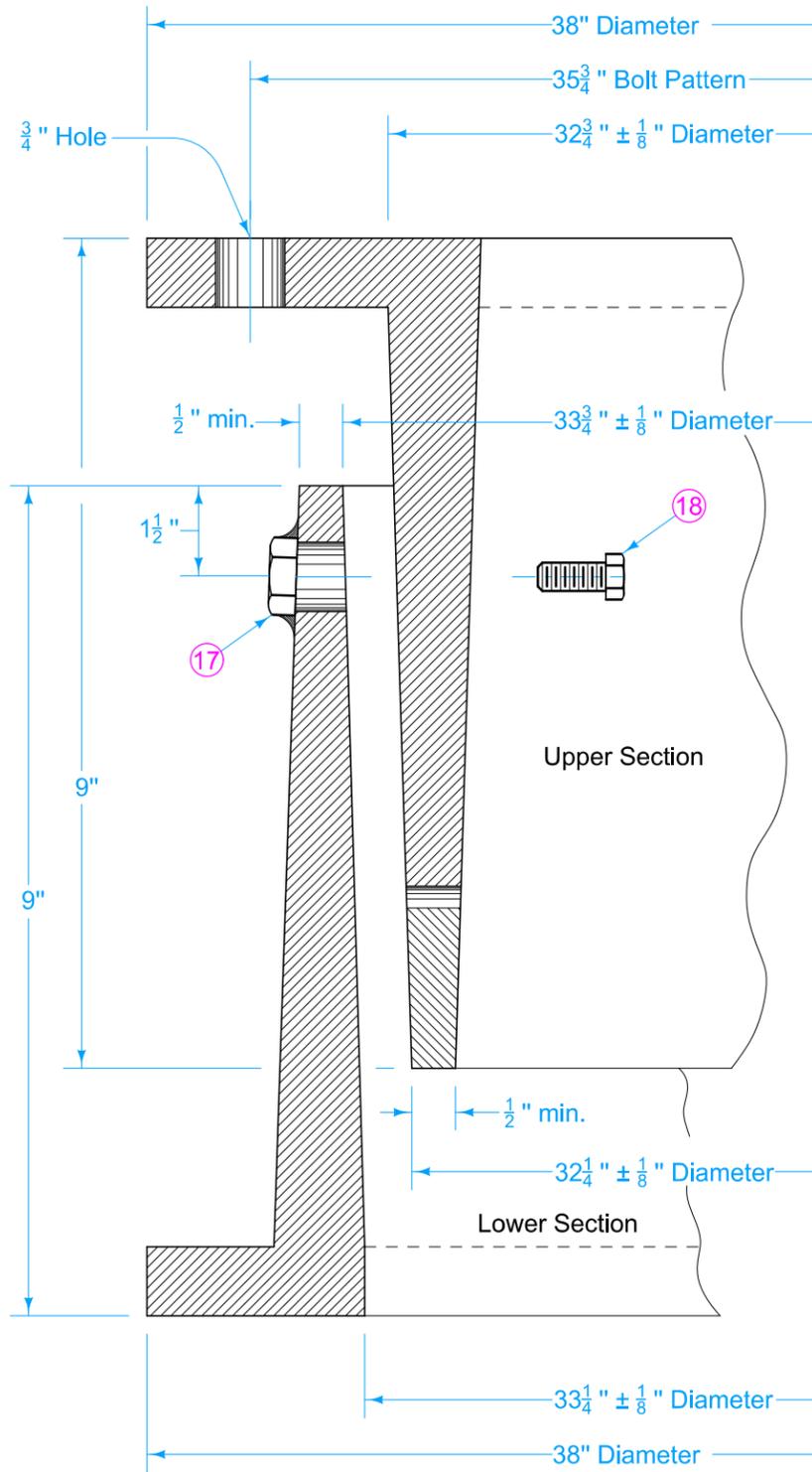
- ⑬ Provide $\frac{9}{16}$ inch diameter holes at locations indicated.
- ⑭ $\frac{3}{4}$ inch holes. Drill or core if not already existing.
- ⑮ DRAFT (Small Casting Taper) will be permitted.



FRAME



	REVISION	
	4	10-21-25
STANDARD ROAD PLAN		SW-539
REVISIONS: Removed 'KT-2' joint option.		SHEET 4 of 5
APPROVED BY DESIGN METHODS ENGINEER		
INTAKE FOR BRIDGE END DRAIN (WITH LETDOWN)		



- 16 Wall thickness may vary uniformly from base to the top or bottom of the casting.
- 17 Tack weld four $\frac{1}{2}$ inch nuts to outside of bottom settlement collar or drill and tap four holes for $\frac{1}{2}$ inch Cap Screws in bottom settlement collar.
- 18 Remove the four $\frac{1}{2}$ inch Cap Screws after surrounding concrete has set.

MINIMUM WEIGHT	
Upper Section	210 lbs.
Lower Section	210 lbs.

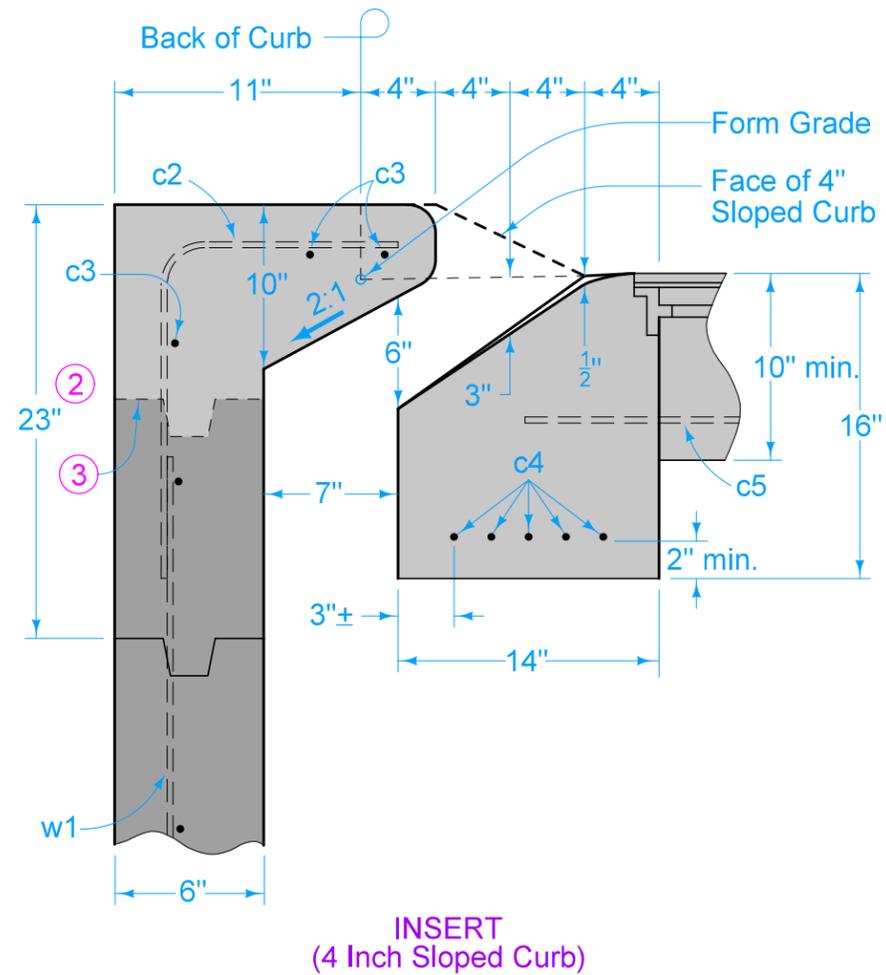
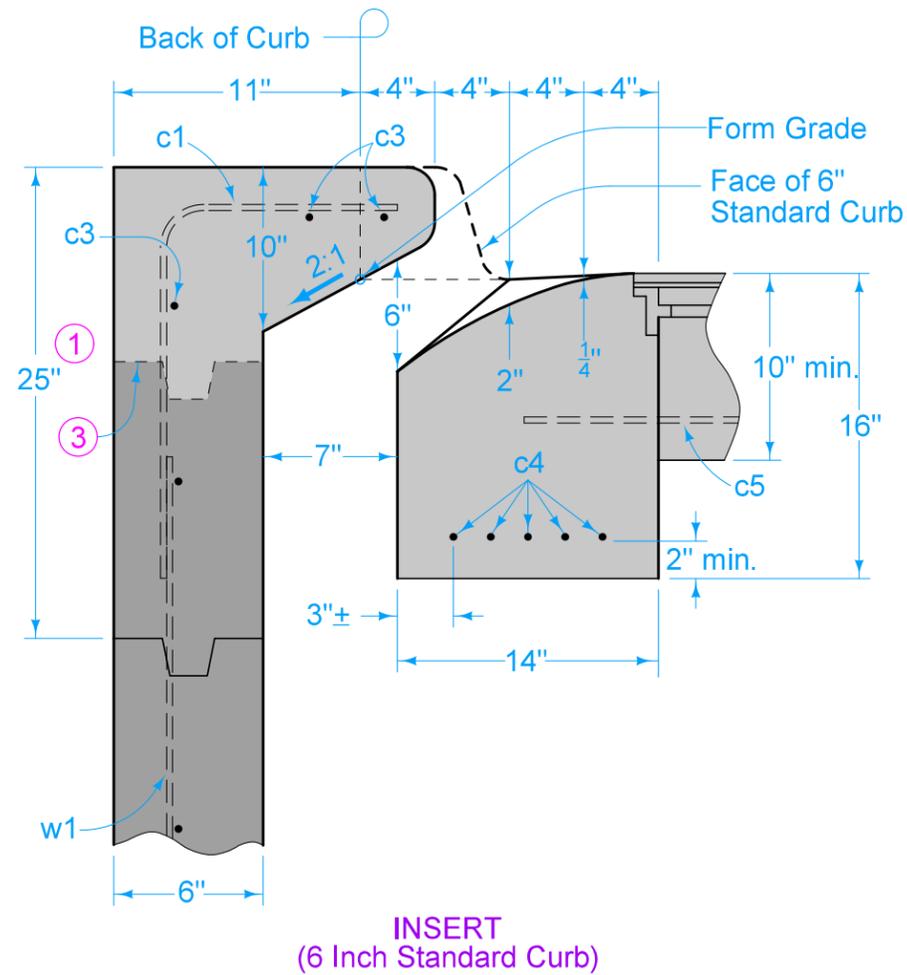
	REVISION	
	4	10-21-25
STANDARD ROAD PLAN		SW-539
		SHEET 5 of 5

REVISIONS: Removed 'KT-2' joint option.

Stuart Miller
APPROVED BY DESIGN METHODS ENGINEER

**INTAKE FOR BRIDGE END DRAIN
(WITH LETDOWN)**

- ① 39 inches when attaching the SW-542 extension unit.
- ② 37 inches when attaching the SW-542 extension unit.
- ③ Additional keyed construction joint when attaching the SW-542 extension unit.

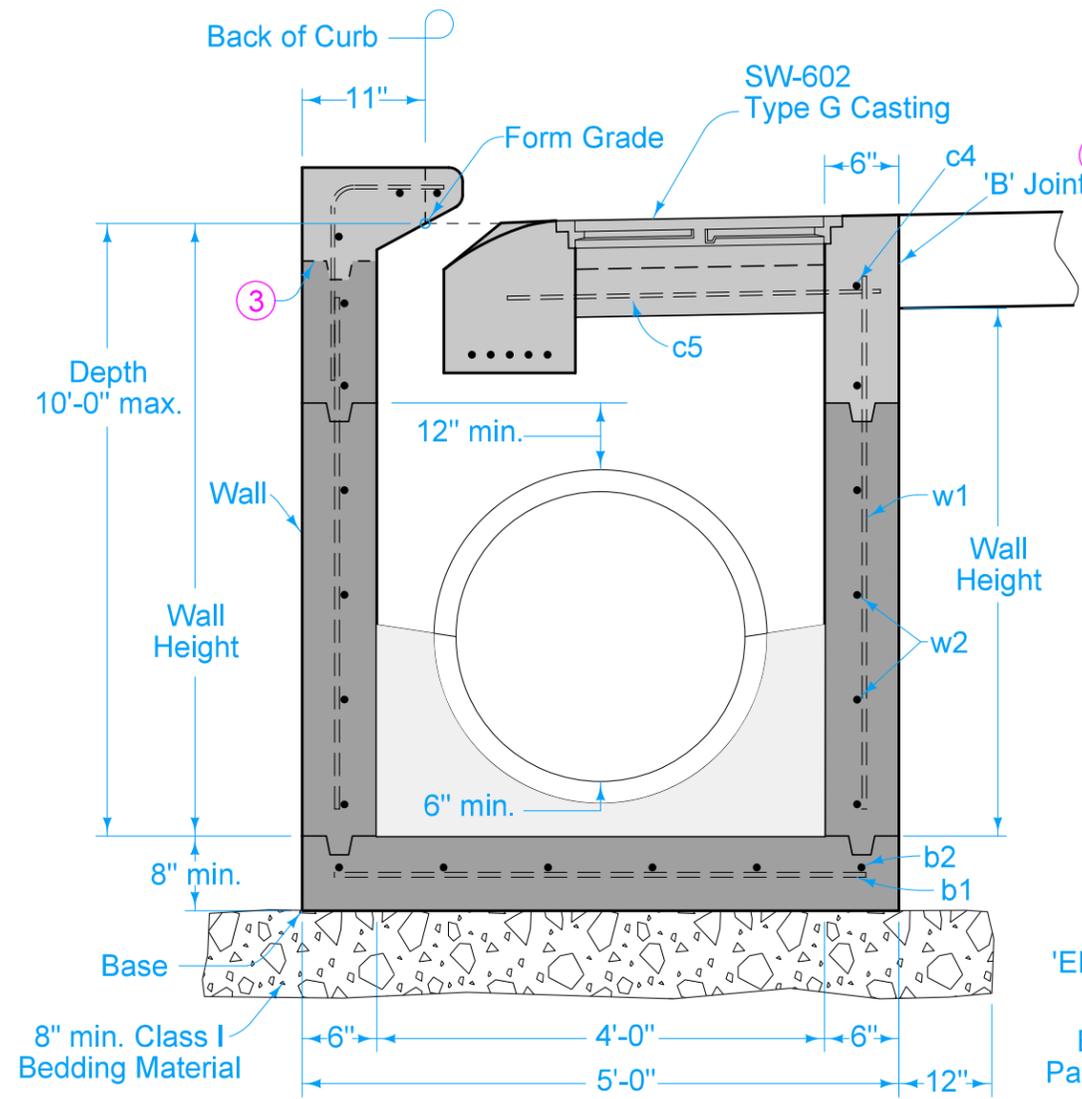


		REVISION	
		6	10-21-25
FIGURE 6010.541	STANDARD ROAD PLAN	SW-541	
		SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
OPEN-THROAT CURB			
INTAKE UNDER PAVEMENT			

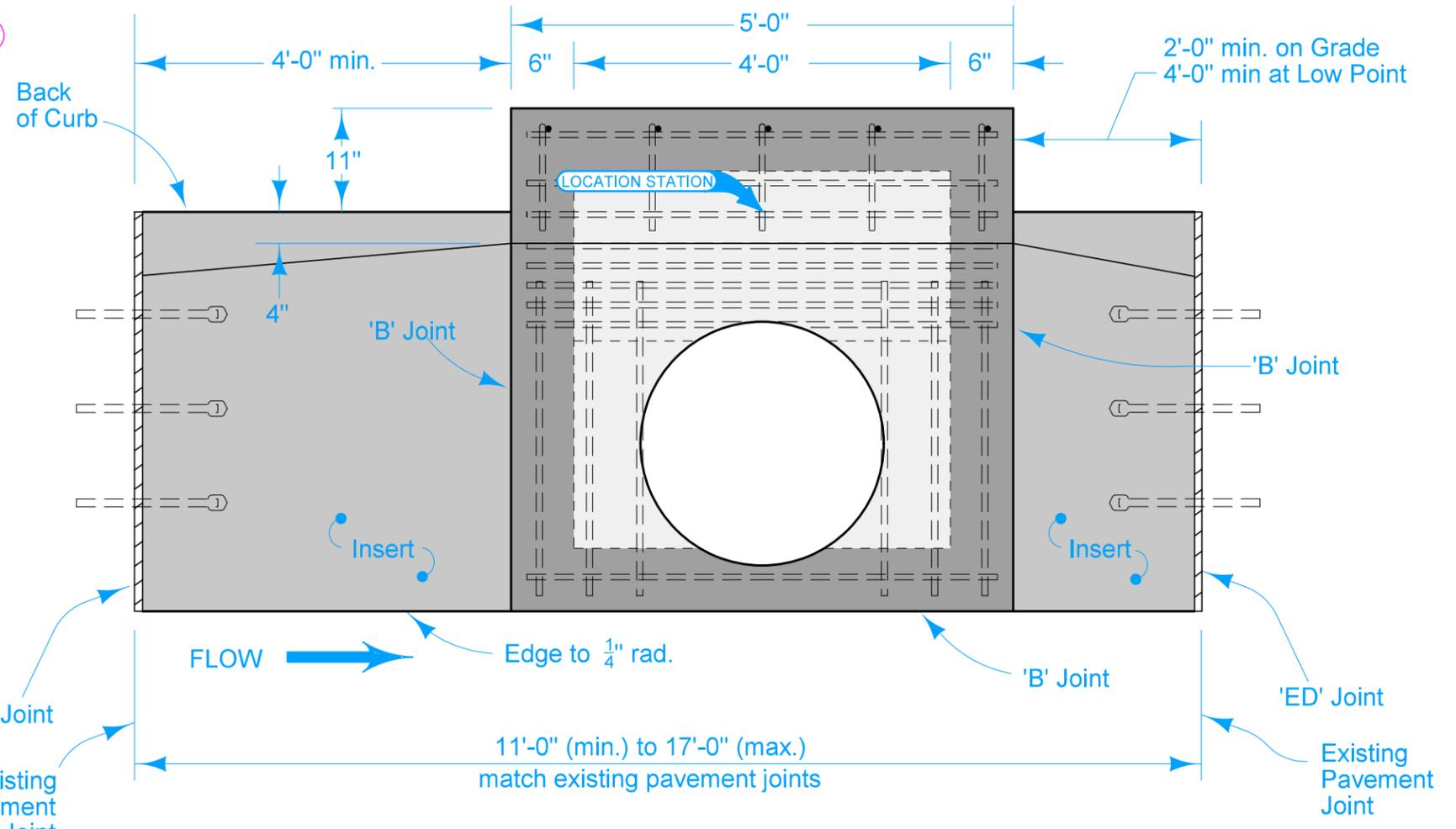
For joint details, refer to PV-101.

③ Additional keyed construction joint when attaching the SW-542 extension unit.

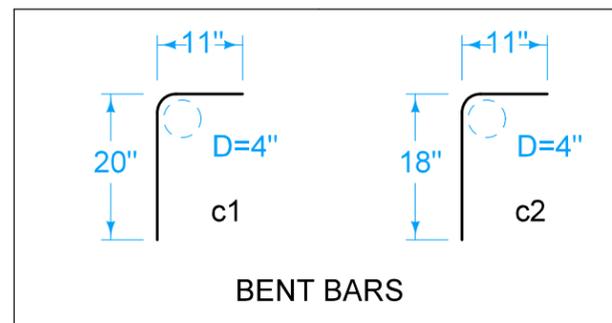
④ Top of well flush with pavement.



TYPICAL SECTION



PLAN



BENT BARS

REINFORCING BAR LIST

Mark	Size	Location	Shape	Length	Spacing
b1	4	Base	—	4'-6"	11"
b2	4	Base	—	4'-6"	11"
w1	4	Wall	—	Wall Height minus 4"	14"
w2	4	Wall	—	4'-8"	12"
c1	4	Top	⌒	2'-7"	14"
c2	4	Top	⌒	2'-5"	14"
c3	4	Top	—	4'-8"	See Detail
c4	4	Top	—	4'-8"	See Detail
c5	4	Top	—	3'-2"	See Detail

MAXIMUM PIPE DIAMETER	
Precast	30"
Cast-in-Place	36"

		REVISION	
		6	10-21-25
		SW-541	
FIGURE 6010.541 STANDARD ROAD PLAN		SHEET 2 of 2	

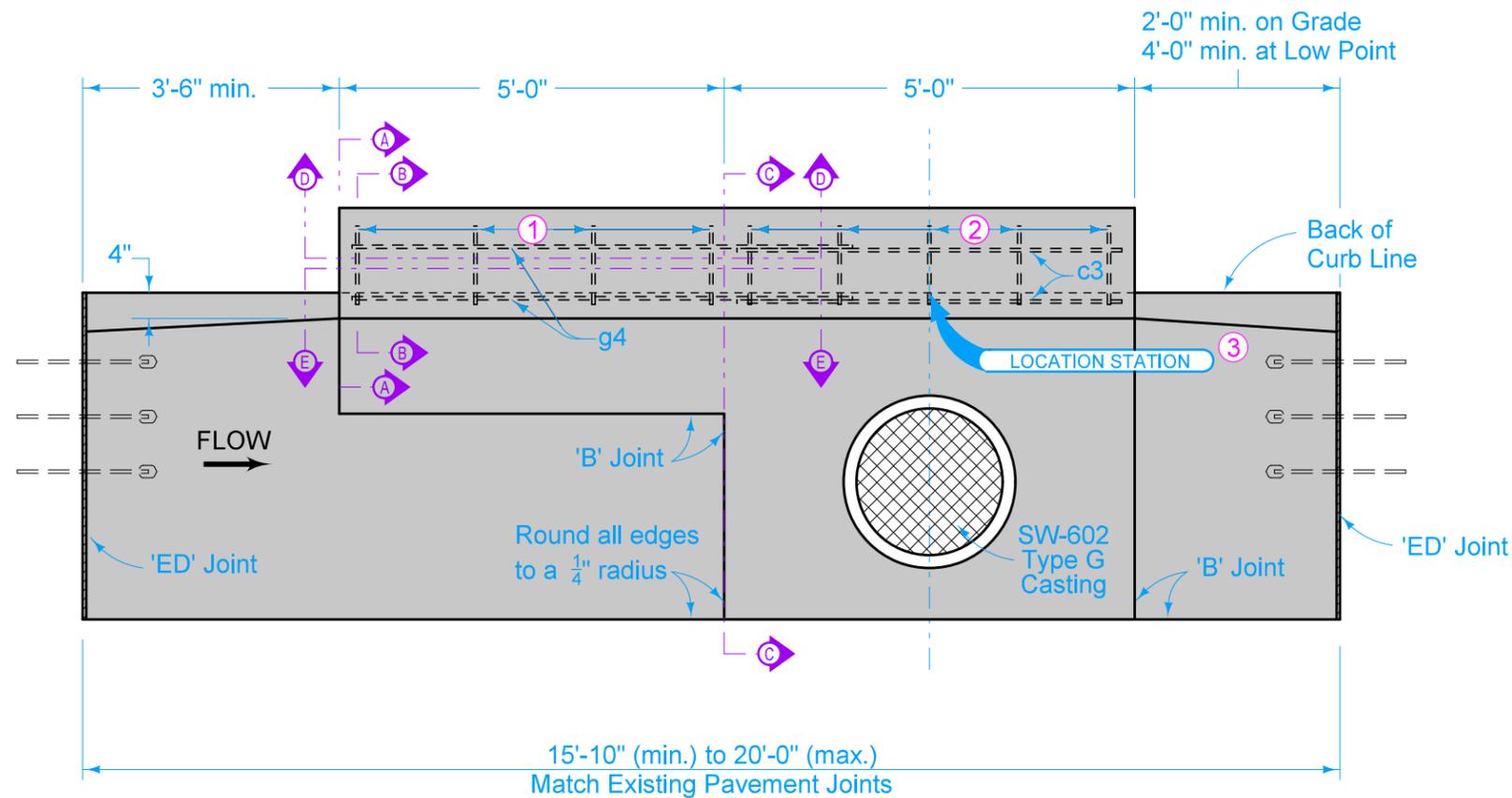
REVISIONS: Updated Sudas and IDOT Logos.

**OPEN-THROAT CURB
INTAKE UNDER PAVEMENT**

DESIGNER INFORMATION

Extension unit may be used on either or both sides of SW-541 intakes. Details are similar when extension unit is on the opposite side.

- ① g3 for 6 inch standard curb; g5 for 4 inch sloped curb.
- ② c1 for 6 inch standard curb; c2 for 4 inch sloped curb. See SW-541 for reinforcing.
- ③ The location station is where the centerline of intake meets the back of the curb line.



PLAN
(SW-542 EXTENSION AND SW-541 INTAKE)

Placing sequence: 1. Base; 2. Walls and Extension; 3. Top; 4. Insert

REINFORCING BAR LIST							
BAR	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	SPACING
b2	4	Intake Wall		3	2'-6"	5.0	9"
f1	4	Bottom		3	4'-9"	9.5	9"
f2	4	Bottom		4	1'-7"	4.2	18"
g1	4	Wall		5	Varies*	Varies*	12"
g2	4	Wall		1	4'-8"	3.1	-
g3	4	Top		4	Varies**	Varies**	18"
g4	4	Top		3	6'-4"	12.7	-
g5	4	Top		4	Varies**	Varies**	18"

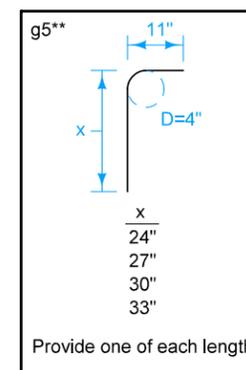
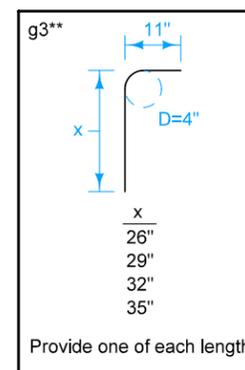
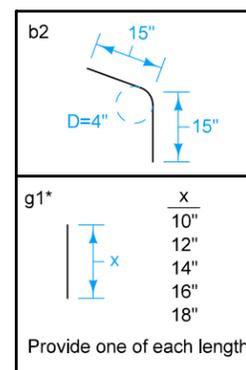
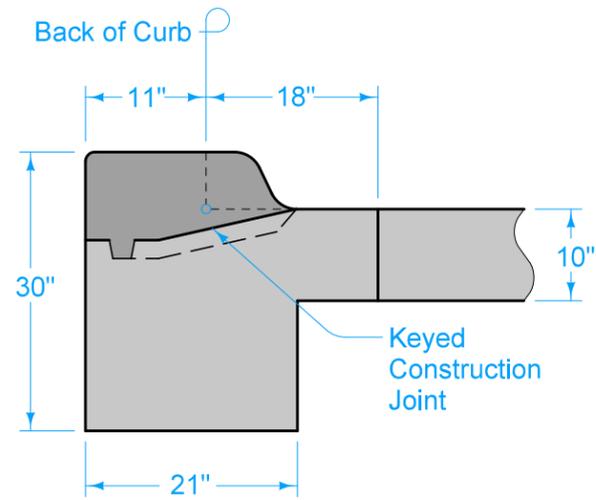
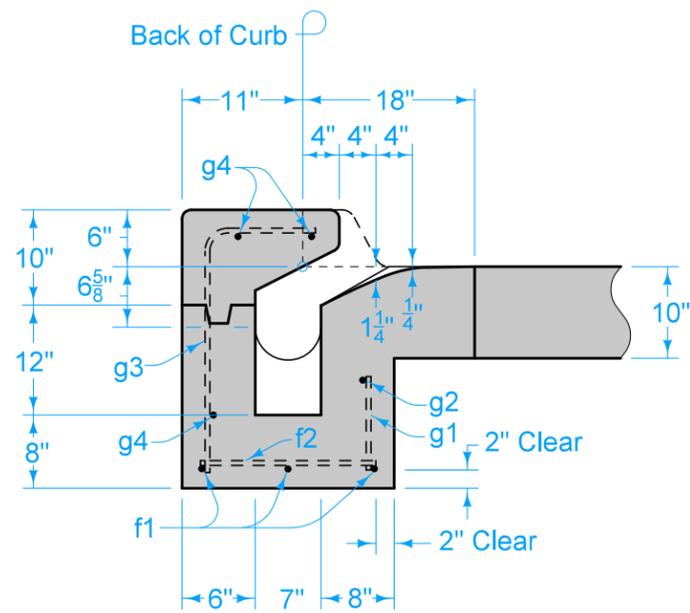


FIGURE 6010.542 SHEET 1 OF 4

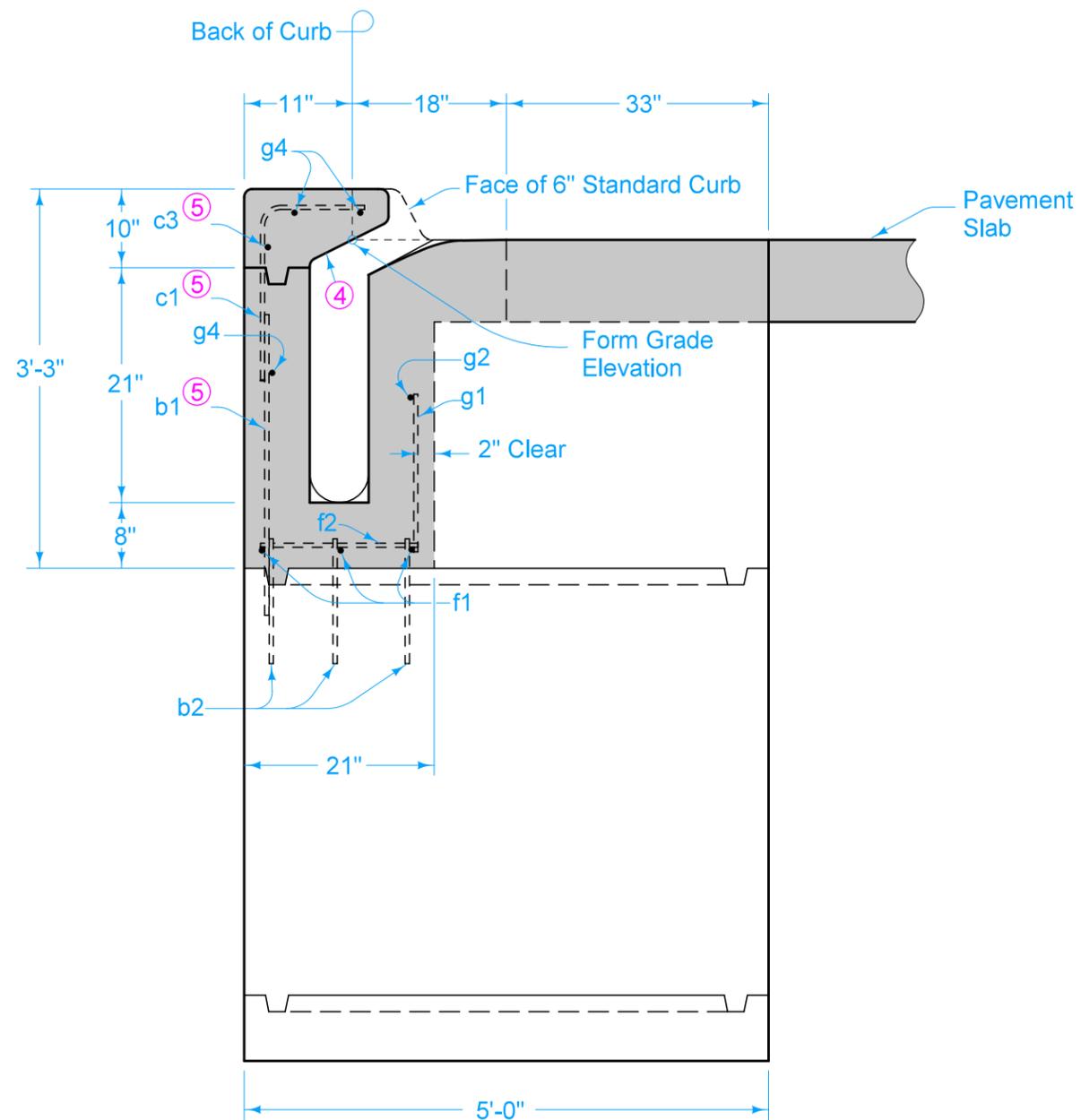
		REVISION	
		6	10-21-25
FIGURE 6010.542	STANDARD ROAD PLAN	SW-542	
SHEET 1 of 4			
REVISIONS: Updated Sudas and IDOT Logos.			
SUDAS DIRECTOR		DESIGN METHODS ENGINEER	
EXTENSION UNIT FOR OPEN-THROAT CURB INTAKE UNDER PAVEMENT			



SECTION A-A



SECTION B-B



SECTION C-C

④ 2:1 Slope (Horizontal:Vertical)

⑤ See SW-541 for reinforcing.

6 INCH STANDARD CURB

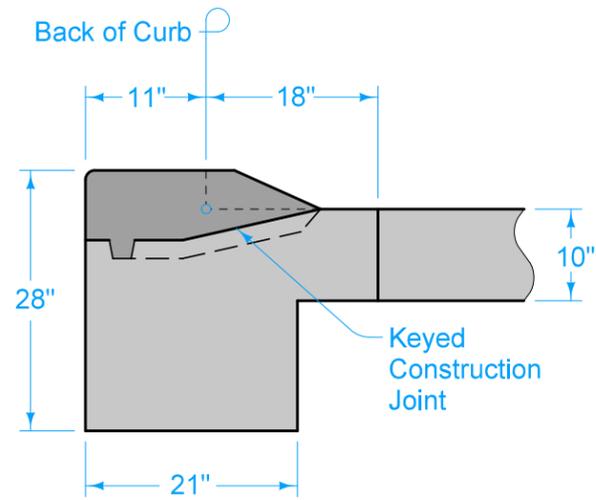
FIGURE 6010.542 SHEET 2 OF 4

		REVISION	
		6	10-21-25
FIGURE 6010.542	STANDARD ROAD PLAN	SW-542	
		SHEET 2 of 4	

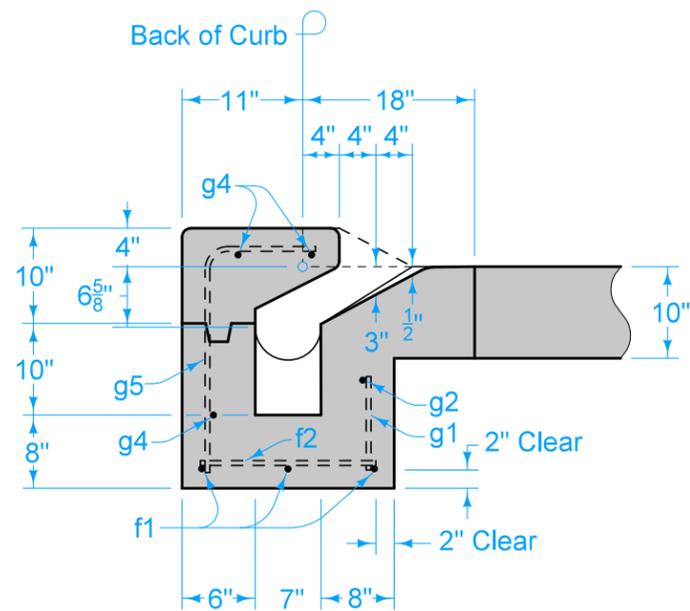
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

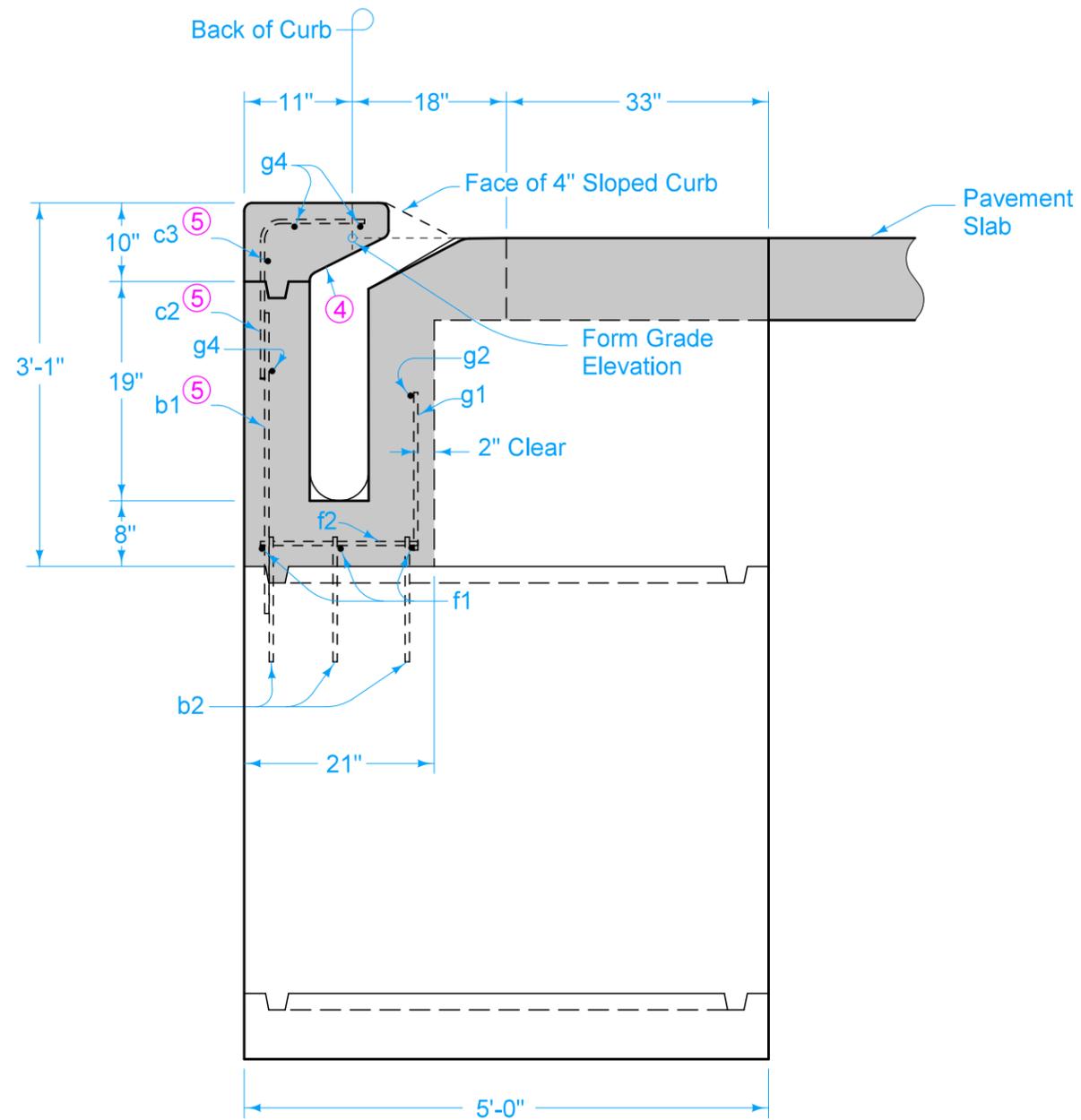
**EXTENSION UNIT FOR
OPEN-THROAT CURB
INTAKE UNDER PAVEMENT**



SECTION A-A



SECTION B-B



SECTION C-C

- ④ 2:1 Slope (Horizontal:Vertical)
- ⑤ See SW-541 for reinforcing.

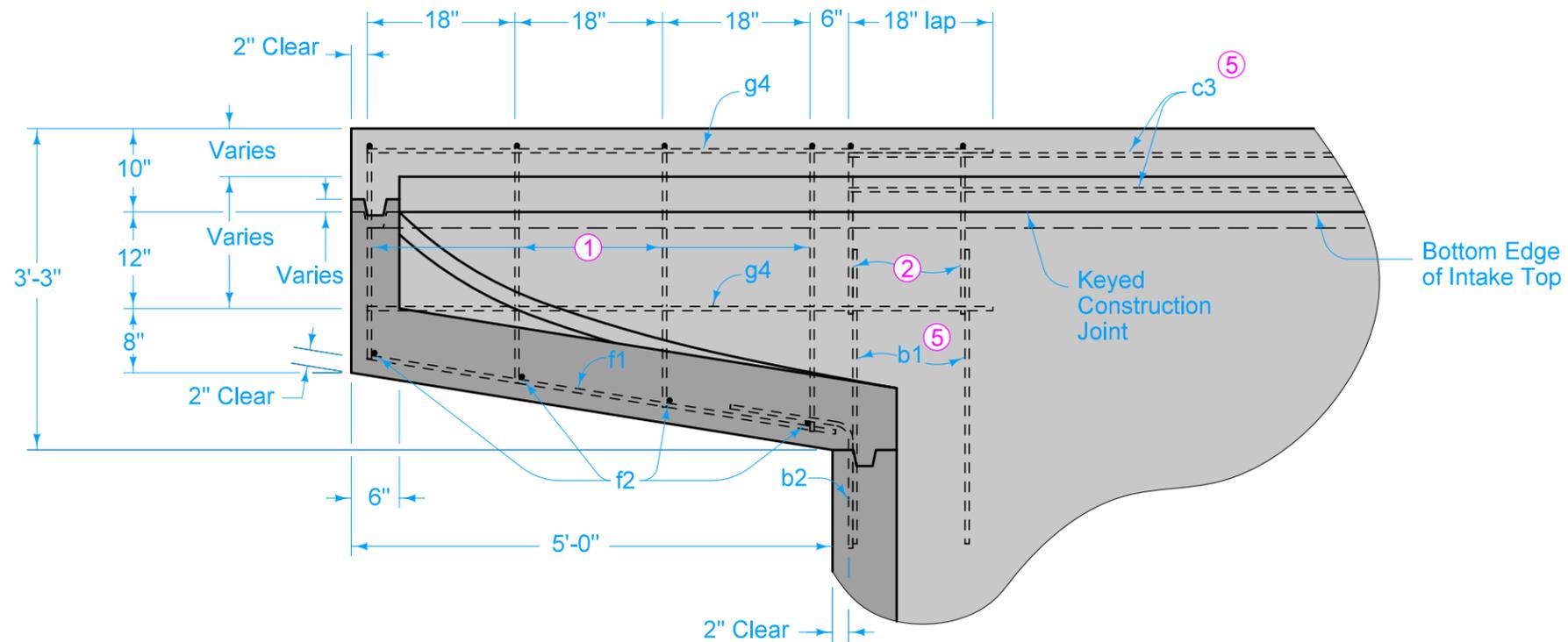
4 INCH SLOPED CURB

		REVISION	
		6	10-21-25
FIGURE 6010.542	STANDARD ROAD PLAN	SW-542	
		SHEET 3 of 4	

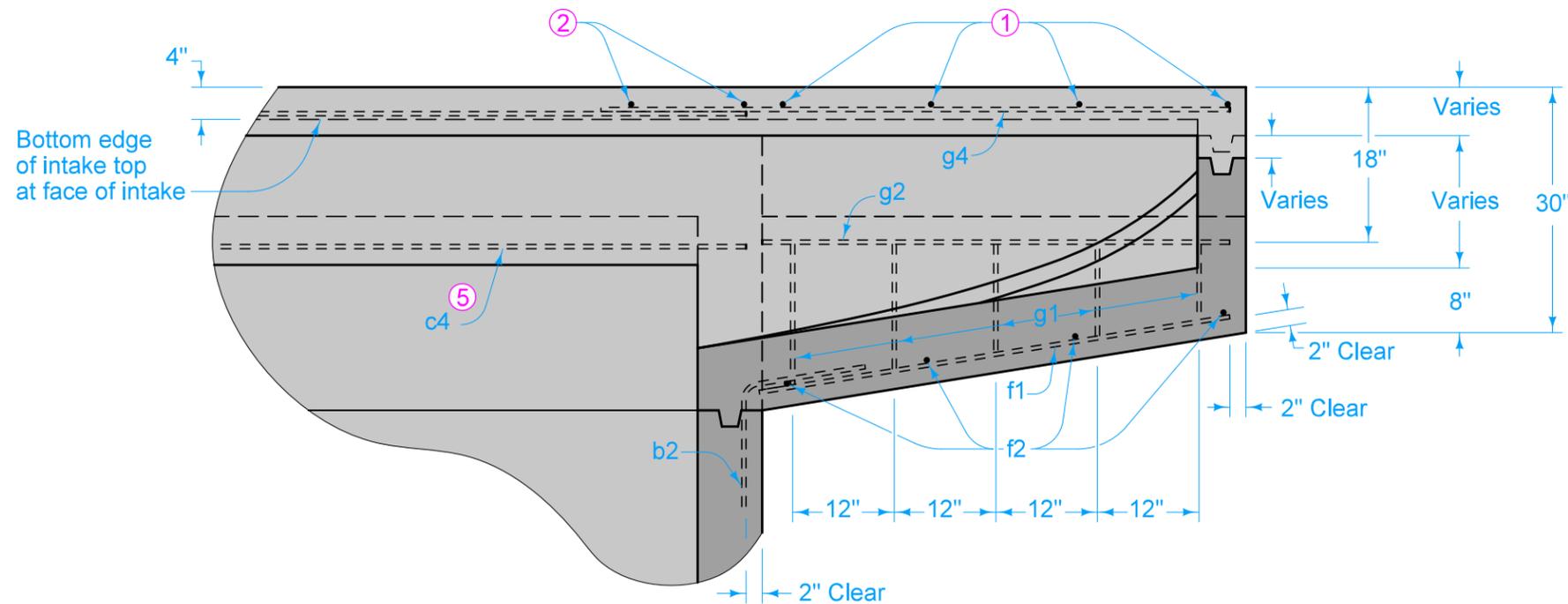
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

**EXTENSION UNIT FOR
OPEN-THROAT CURB
INTAKE UNDER PAVEMENT**



SECTION D-D



SECTION E-E

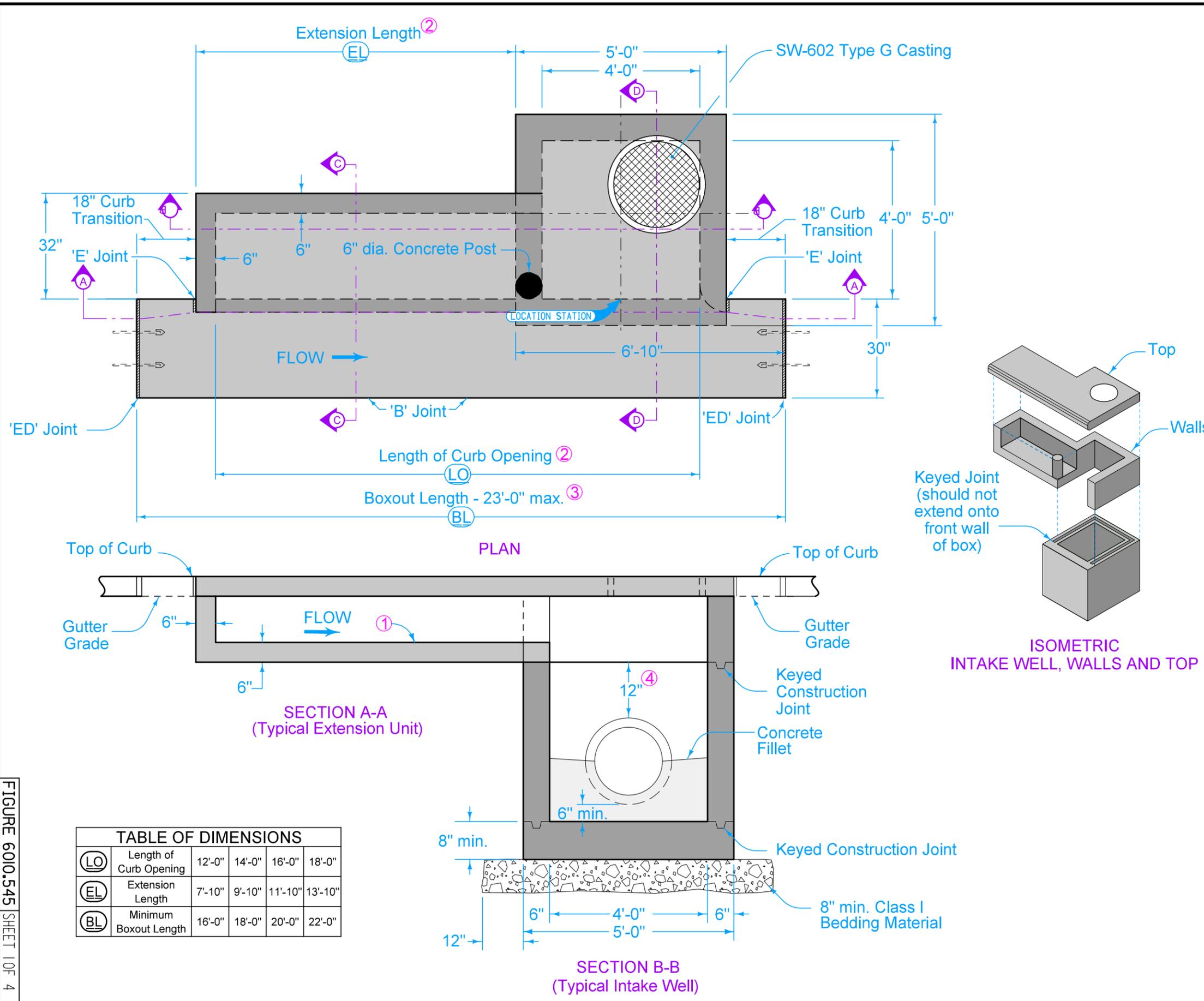
- ① g3 for 6 inch standard curb; g5 for 4 inch sloped curb.
- ② c1 for 6 inch standard curb; c2 for 4 inch sloped curb. See SW-541 for reinforcing.
- ⑤ See SW-541 for reinforcing.

		REVISION	
		6	10-21-25
FIGURE 6010.542	STANDARD ROAD PLAN	SW-542	
		SHEET 4 of 4	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

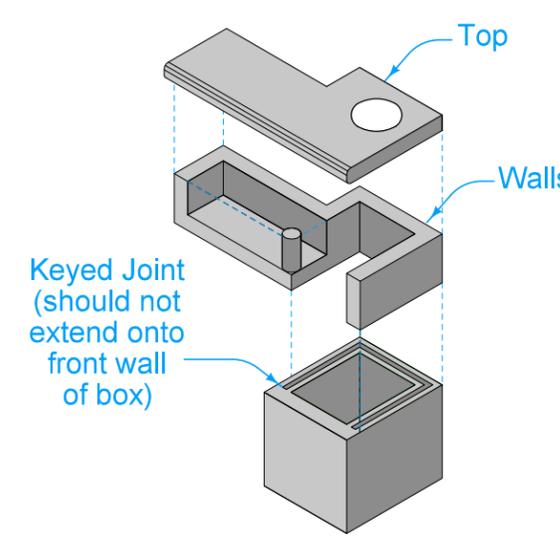
**EXTENSION UNIT FOR
OPEN-THROAT CURB
INTAKE UNDER PAVEMENT**



Extension unit may be used on either or both sides of intake. Details are similar when extension unit is on the opposite side. For joint details, refer to PV-101.

- ① Match gutter slope. Drain to well.
- ② Other lengths of opening may be constructed by varying the length of the extension and the rebar.
- ③ Includes 2 inches for 'ED' Joints.
- ④ 12 inch minimum wall height above all pipes.

MAXIMUM PIPE DIAMETERS	
Precast Structure	Cast-in-place Structure
30"	36"



ISOMETRIC INTAKE WELL, WALLS AND TOP

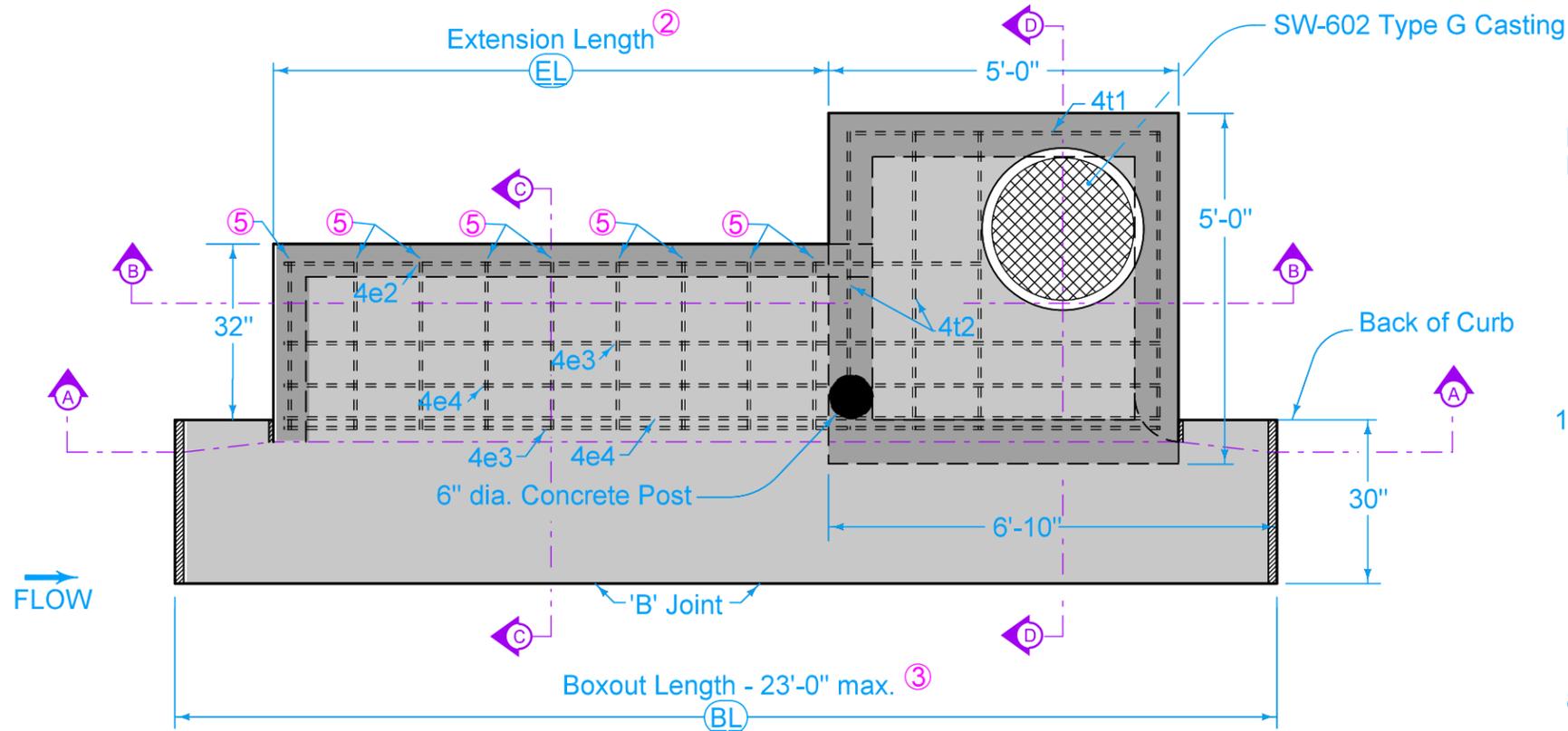
	12'-0"	14'-0"	16'-0"	18'-0"
① LO Length of Curb Opening	12'-0"	14'-0"	16'-0"	18'-0"
② EL Extension Length	7'-10"	9'-10"	11'-10"	13'-10"
③ BL Minimum Boxout Length	16'-0"	18'-0"	20'-0"	22'-0"

		REVISION	
		7	10-21-25
FIGURE 6010.545	STANDARD ROAD PLAN	SW-545	
		SHEET 1 of 4	

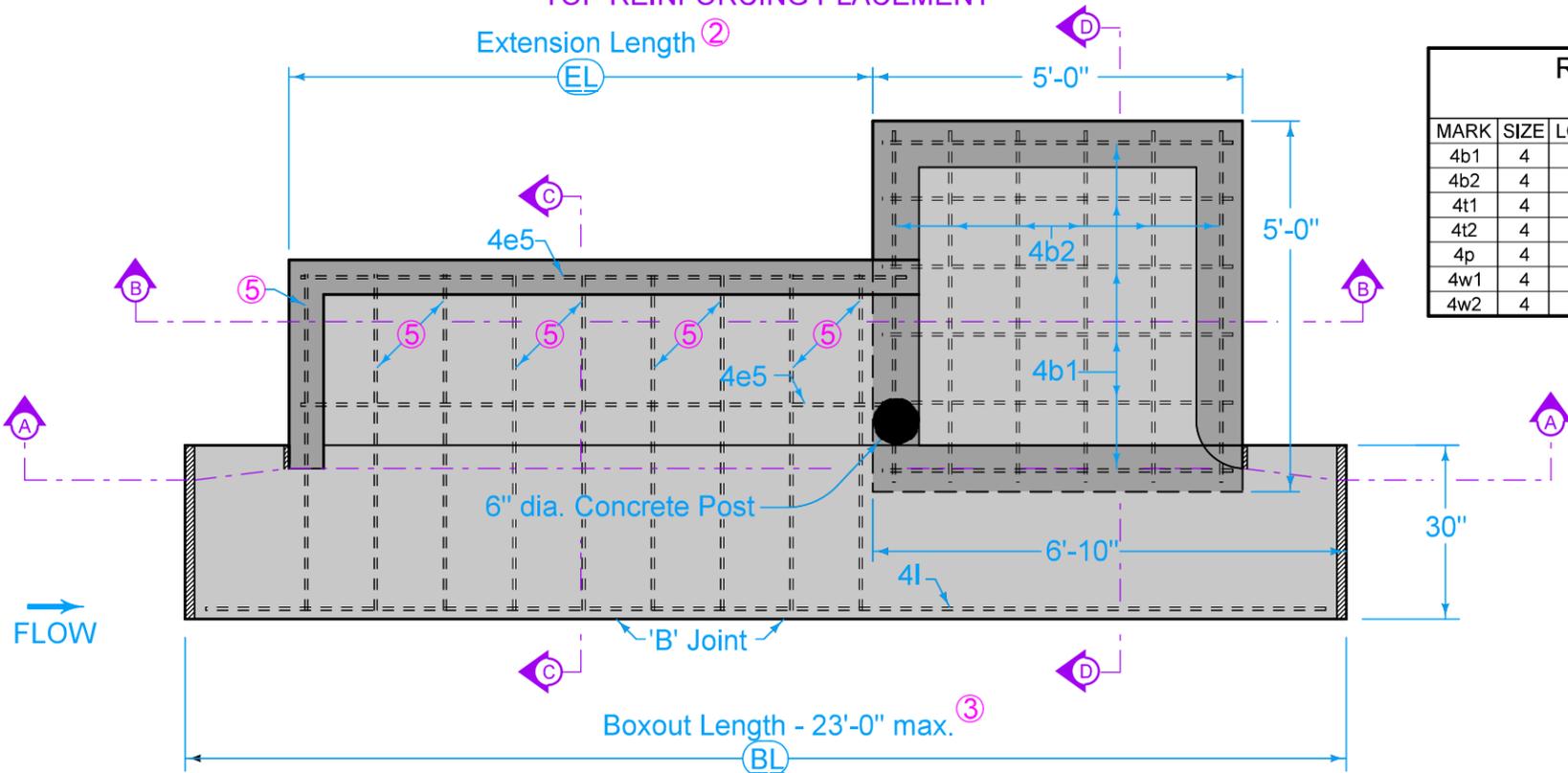
REVISIONS: Updated Sudas and IDOT Logos.

SINGLE OPEN-THROAT CURB INTAKE WITH EXTENDED OPENING

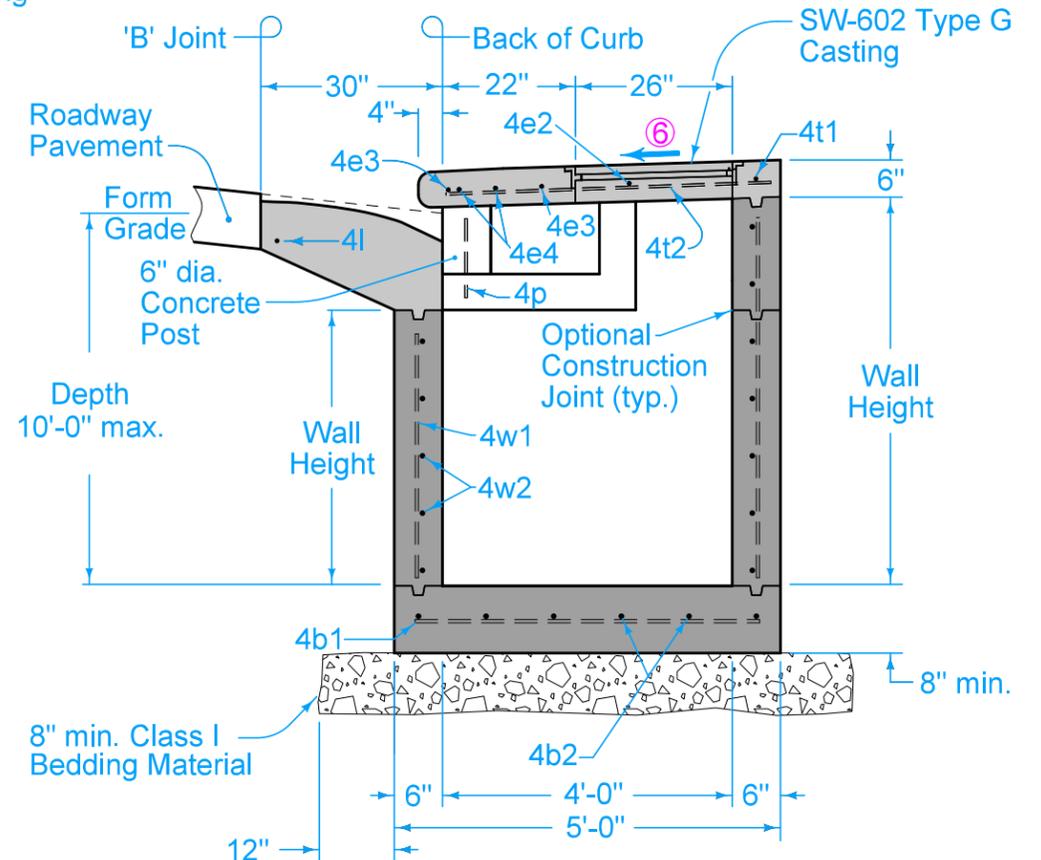
FIGURE 6010.545 SHEET 1 OF 4



PLAN
TOP REINFORCING PLACEMENT



PLAN
BOTTOM REINFORCING PLACEMENT



SECTION D-D

REINFORCING BAR LIST Intake Well					
MARK	SIZE	LOCATION	NO.	LENGTH	SPACING
4b1	4	Base	6	4'-6"	11"
4b2	4	Base	6	4'-6"	11"
4t1	4	Top	1	4'-8"	12"
4t2	4	Top	4	4'-3"	See Detail
4p	4	Post	1	13"	See Detail
4w1	4	Walls	16	Wall Height minus 4"	14"
4w2	4	Walls	Varies	4'-8"	12"

- ② Other lengths of opening may be constructed by varying the length of the extension and the rebar.
- ③ Includes 2 inches for 'ED' Joints.
- ⑤ 4e1 or 4e6. See Sheets 3 and 4.
- ⑥ Slope of 1.5% or as specified in the contract documents.

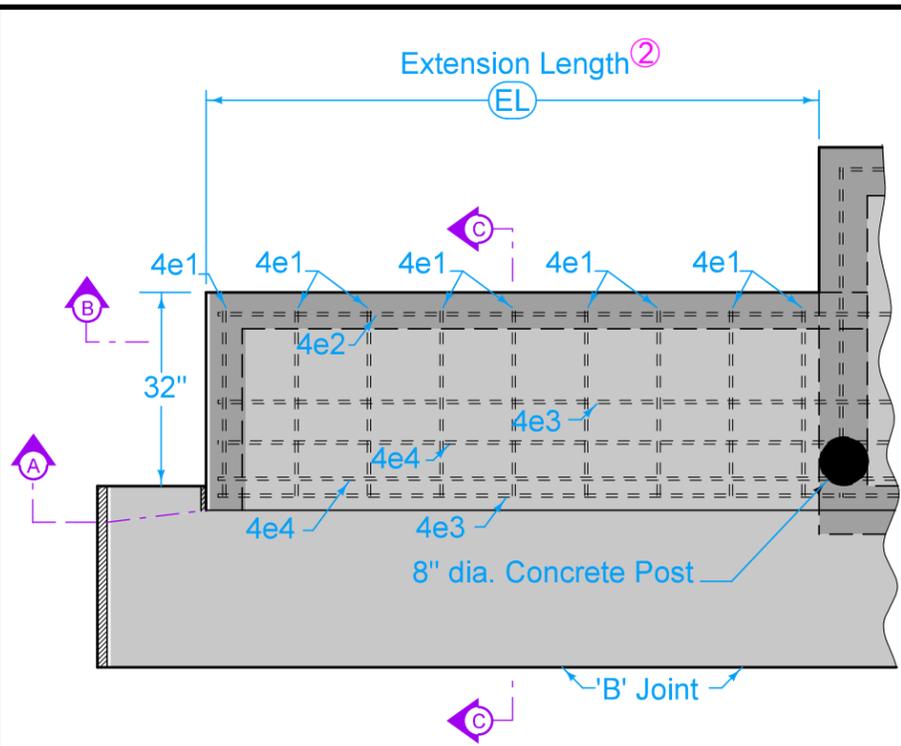
FIGURE 6010.545 SHEET 2 OF 4

		REVISION	
		7	10-21-25
FIGURE 6010.545	STANDARD ROAD PLAN	SW-545	
SHEET 2 of 4			

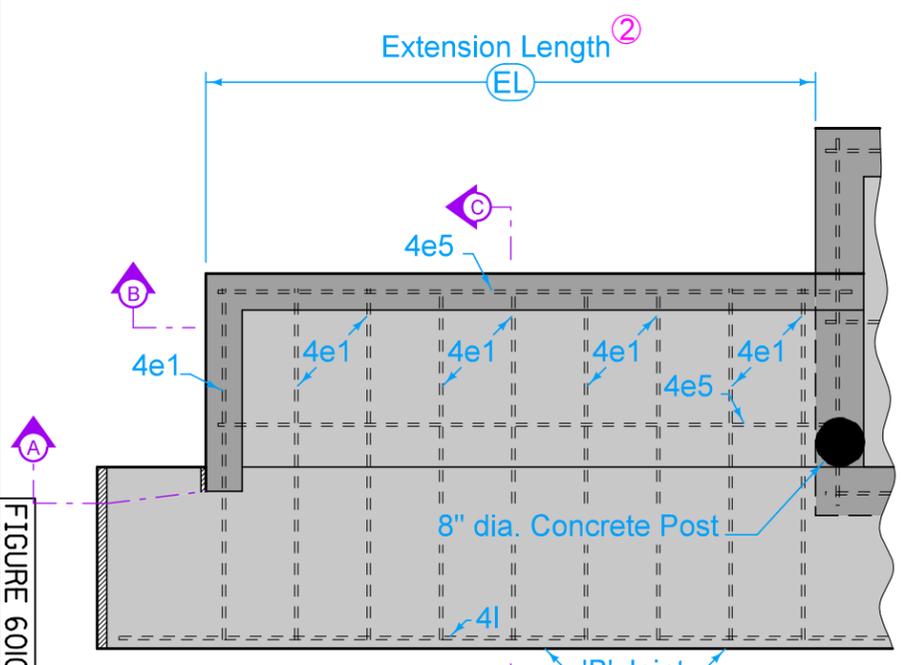
REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

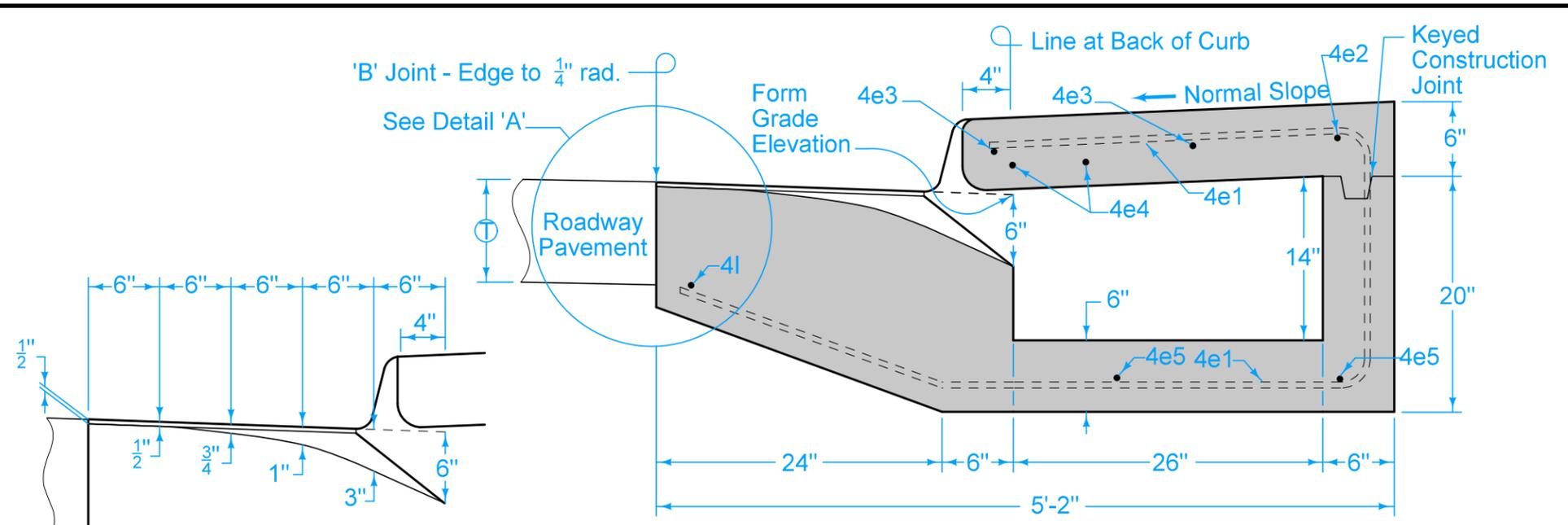
SINGLE OPEN-THROAT
CURB INTAKE WITH
EXTENDED OPENING



PLAN
TOP OF EXTENSION REINFORCING PLACEMENT



PLAN
BOTTOM OF EXTENSION REINFORCING PLACEMENT



INSERT DETAIL
(6 Inch Standard Curb)

SECTION C-C
(6 Inch Standard Curb)

REINFORCING BAR LIST (LO) = 12'-0"

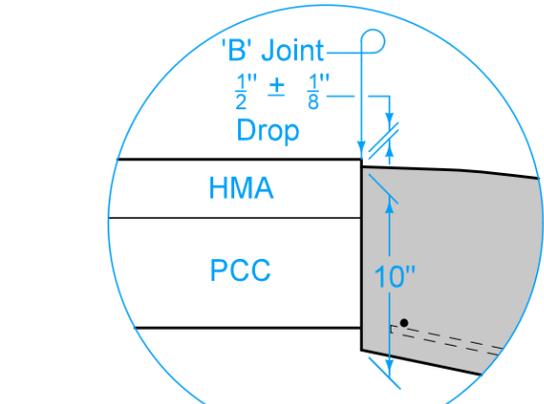
MARK	SIZE	LOCATION	NO.	LENGTH	WEIGHT	SPACING
4e1	4	Top/Base	9	9'-5 1/2"	56.9	12"
4e2	4	Top	1	10'-0"	6.7	
4e3	4	Top	2	12'-9"	17.0	15 1/2"
4e4	4	Top	2	12'-9"	17.0	6"
4e5	4	Base	2	8'-2"	10.9	22"
4I*	4	Insert	1	15'-10"	10.6	
* With 16'-6" Boxout.				Total	119.1 lbs.	

REINFORCING BAR LIST (LO) = 14'-0"

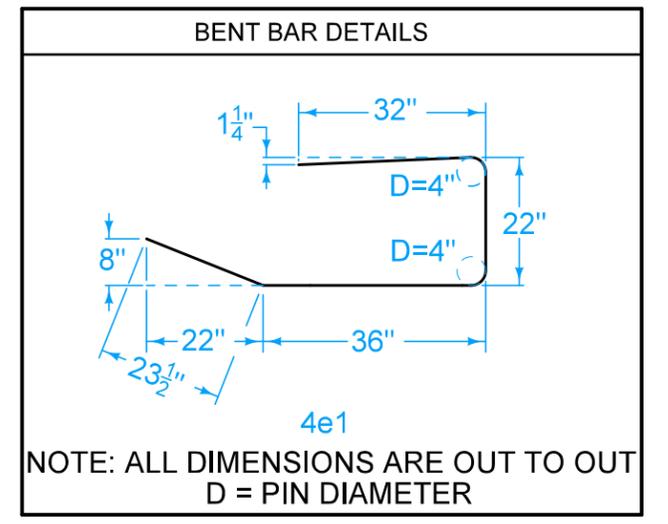
MARK	SIZE	LOCATION	NO.	LENGTH	WEIGHT	SPACING
4e1	4	Top/Base	11	9'-5 1/2"	69.5	12"
4e2	4	Top	1	12'-0"	8.0	
4e3	4	Top	2	14'-9"	19.7	15 1/2"
4e4	4	Top	2	14'-9"	19.7	6"
4e5	4	Base	2	10'-2"	13.6	22"
4I*	4	Insert	1	17'-10"	11.9	
* With 18'-6" Boxout.				Total	142.4 lbs.	

REINFORCING BAR LIST (LO) = 16'-0"

MARK	SIZE	LOCATION	NO.	LENGTH	WEIGHT	SPACING
4e1	4	Top/Base	13	9'-5 1/2"	82.1	12"
4e2	4	Top	1	14'-0"	9.3	
4e3	4	Top	2	16'-9"	22.4	15 1/2"
4e4	4	Top	2	16'-9"	22.4	6"
4e5	4	Base	2	12'-2"	16.2	22"
4I*	4	Insert	1	19'-10"	13.2	
* With 20'-6" Boxout.				Total	165.6 lbs.	



DETAIL 'A'
Use when adjacent pavement
is HMA or composite.

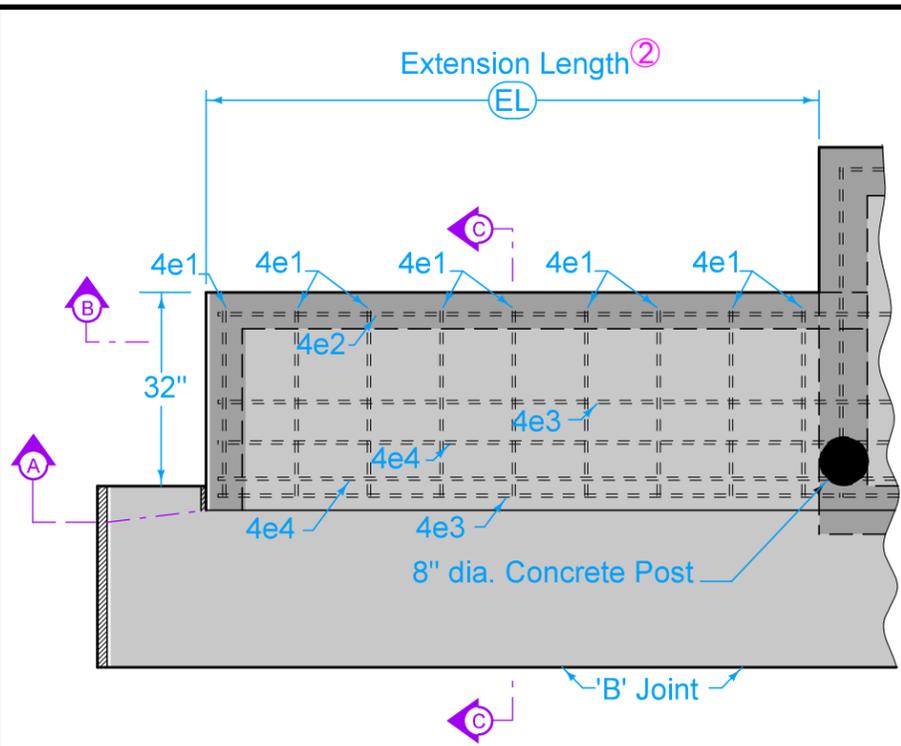


② Other lengths of opening may be constructed by varying the length of the extension and the rebar.

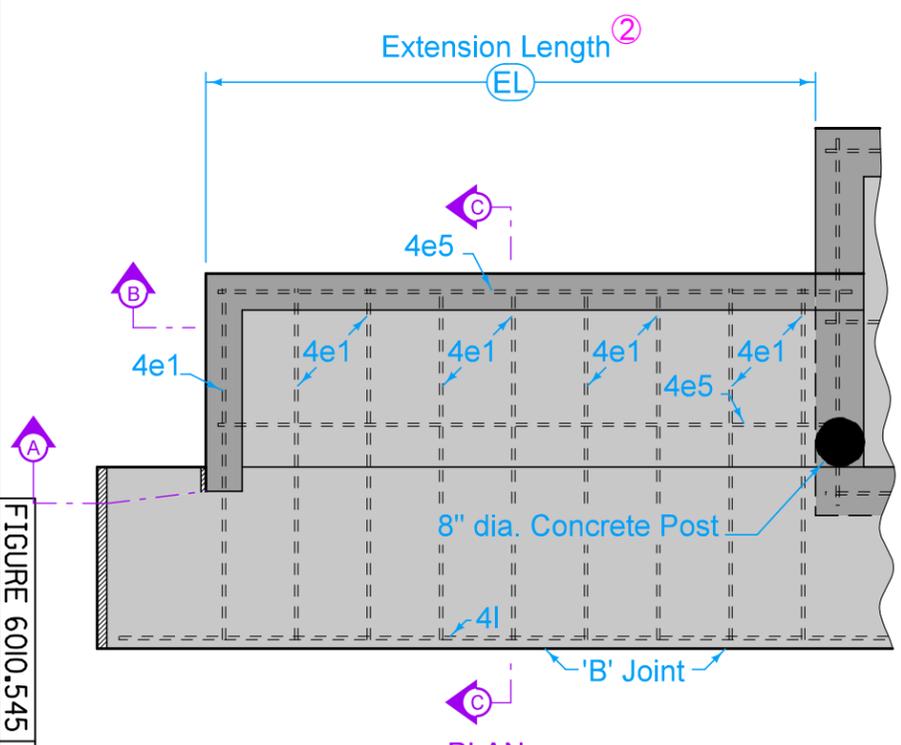
FIGURE 6010.545 SHEET 3 OF 4

6 INCH STANDARD CURB

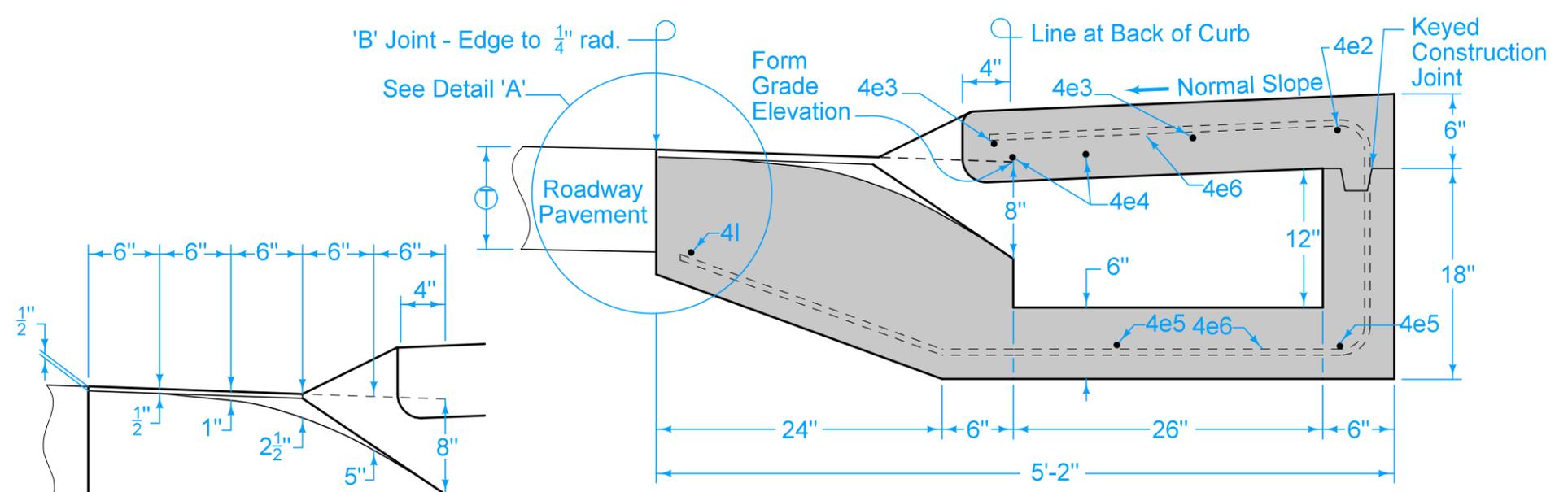
		REVISION	
		7	10-21-25
FIGURE 6010.545		STANDARD ROAD PLAN	
		SW-545	
		SHEET 3 of 4	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SINGLE OPEN-THROAT CURB INTAKE WITH EXTENDED OPENING			



PLAN
TOP OF EXTENSION REINFORCING PLACEMENT



PLAN
BOTTOM OF EXTENSION REINFORCING PLACEMENT



SECTION C-C
(4 Inch Sloped Curb)



INSERT DETAIL
(4 Inch Sloped Curb)

REINFORCING BAR LIST (LO) = 12'-0"

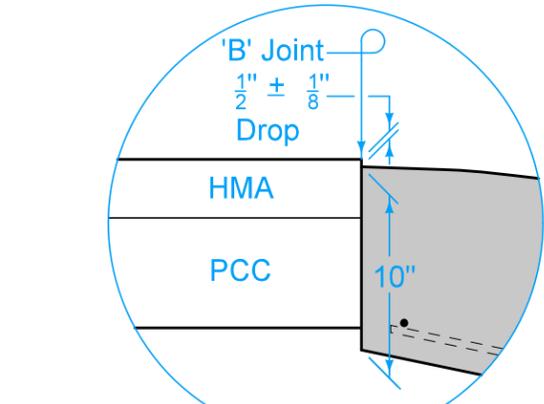
MARK	SIZE	LOCATION	NO.	LENGTH	WEIGHT	SPACING
4e2	4	Top	1	10'-0"	6.7	
4e3	4	Top	2	12'-9"	17.0	15 1/2"
4e4	4	Top	2	12'-9"	17.0	6"
4e5	4	Base	2	8'-2"	10.9	22"
4e6	4	Top/Base	9	9'-3 1/2"	56.9	12"
4I*	4	Insert	1	15'-10"	10.6	
* With 16'-6" Boxout.				Total	119.0 lbs.	

REINFORCING BAR LIST (LO) = 14'-0"

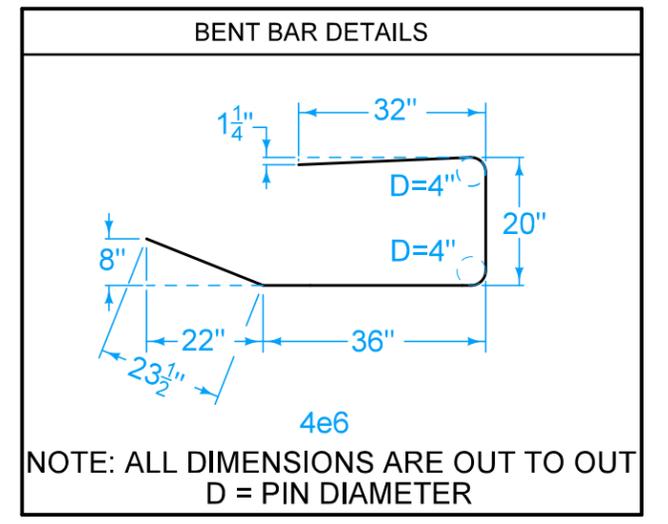
MARK	SIZE	LOCATION	NO.	LENGTH	WEIGHT	SPACING
4e2	4	Top	1	12'-0"	8.0	
4e3	4	Top	2	14'-9"	19.7	15 1/2"
4e4	4	Top	2	14'-9"	19.7	6"
4e5	4	Base	2	10'-2"	13.6	22"
4e6	4	Top/Base	11	9'-3 1/2"	69.5	12"
4I*	4	Insert	1	17'-10"	11.9	
* With 18'-6" Boxout.				Total	142.3 lbs.	

REINFORCING BAR LIST (LO) = 16'-0"

MARK	SIZE	LOCATION	NO.	LENGTH	WEIGHT	SPACING
4e2	4	Top	1	14'-0"	9.3	
4e3	4	Top	2	16'-9"	22.4	15 1/2"
4e4	4	Top	2	16'-9"	22.4	6"
4e5	4	Base	2	12'-2"	16.2	22"
4e6	4	Top/Base	13	9'-3 1/2"	82.1	12"
4I*	4	Insert	1	19'-10"	13.2	
* With 20'-6" Boxout.				Total	165.5 lbs.	



DETAIL 'A'
Use when adjacent pavement
is HMA or composite.



② Other lengths of opening may be constructed by varying the length of the extension and the rebar.

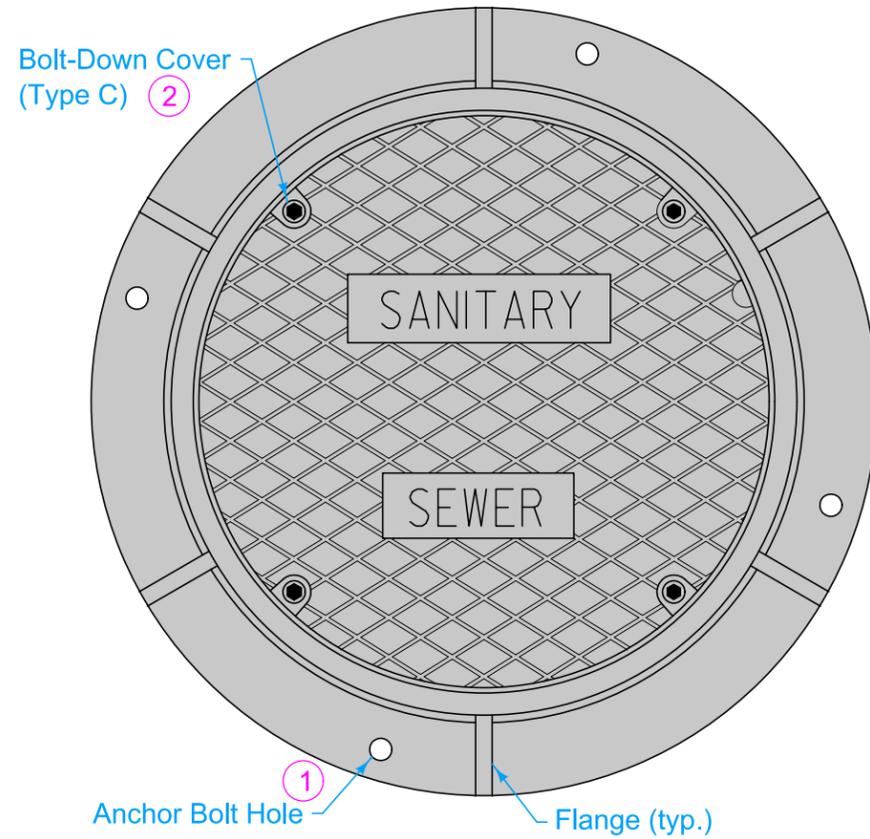
FIGURE 6010.545 SHEET 4 OF 4

4 INCH SLOPED CURB

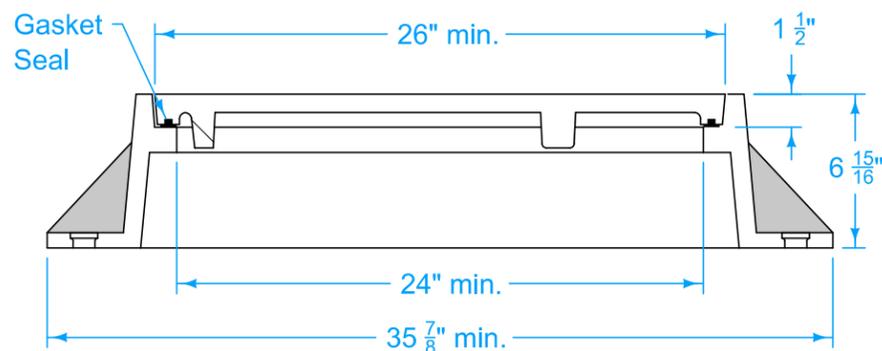
		REVISION	
		7	10-21-25
FIGURE 6010.545		STANDARD ROAD PLAN	
		SW-545	
		SHEET 4 of 4	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
SINGLE OPEN-THROAT CURB INTAKE WITH EXTENDED OPENING			

TYPE A
Two-piece fixed casting

TYPE C
Two-piece fixed casting with bolt-down cover (2)



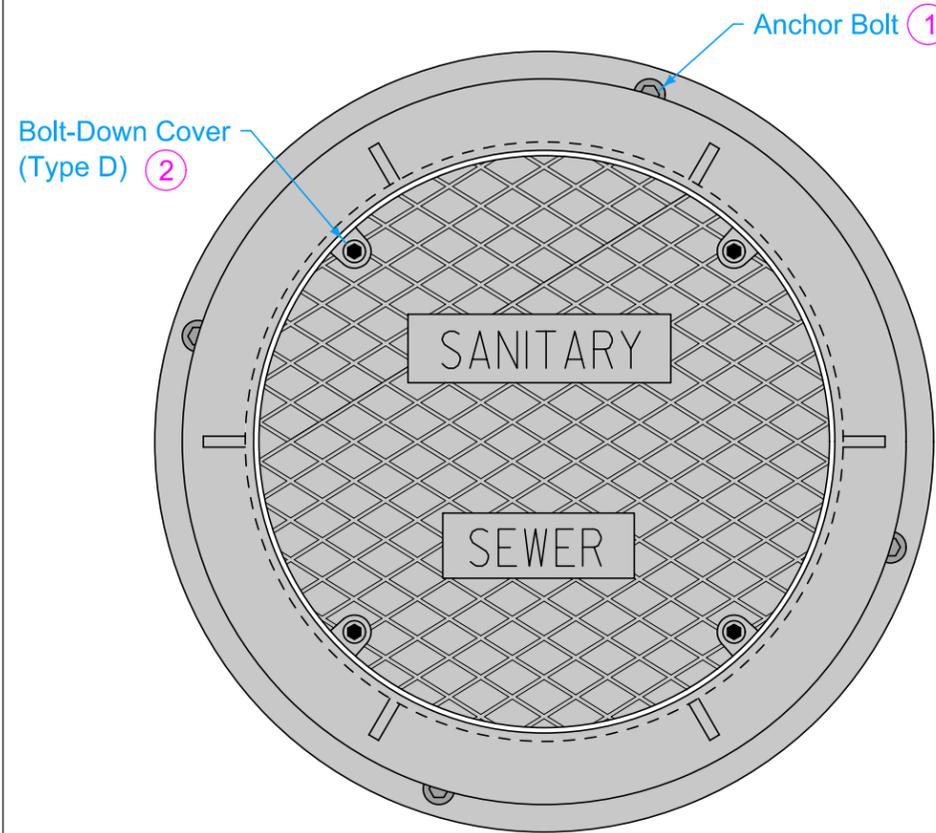
PLAN



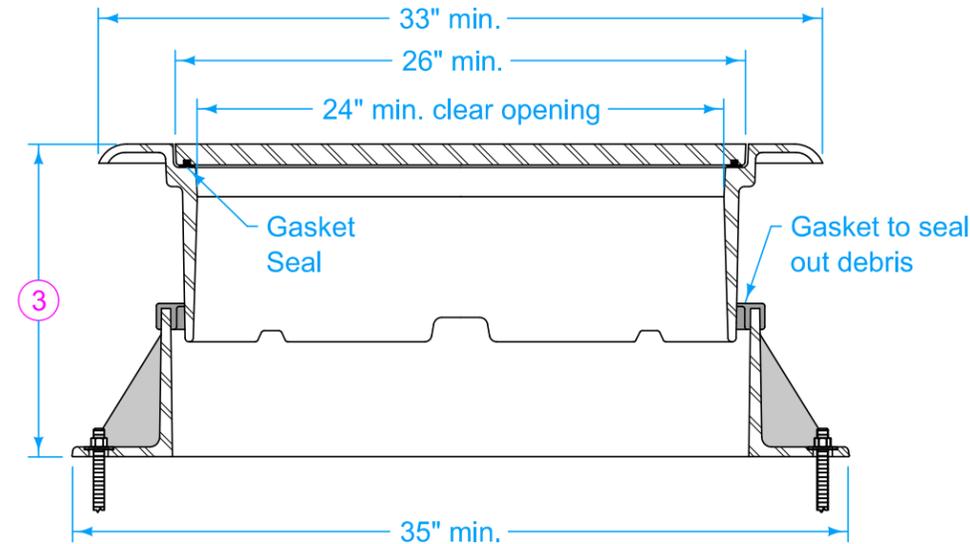
TYPICAL SECTION

TYPE B: HMA
Three-piece floating casting for use in HMA paving

TYPE D: HMA
Three-piece floating casting with bolt-down cover for use in HMA paving (2)



PLAN



TYPICAL SECTION

Frame Notes:
Size, spacing, and number of lugs and flanges may vary.

Cover Notes:
Roughness pattern and text style may vary.
Minimum one concealed pickhole.

- (1) Anchor the lower frame of all three-piece castings to the manhole structure. When specified in the contract documents, anchor the frame of two-piece castings to the manhole structure. If casting frame does not include anchor holes or slots, drill four 7/8 inch diameter holes, equally spaced around the frame.
- (2) If specified, furnish bolt down frame and cover with four 1/2 inch minimum diameter stainless steel, hex nut, recessed cap screws. Secure cover with screws, washers, and rubber gasket seals.
- (3) Casting height varies. Minimum adjustment range of 4 inches.

FIGURE 6010.601 SHEET 1 OF 2

		REVISION	
		5	10-21-25
FIGURE 6010.601	STANDARD ROAD PLAN	SW-601	
		SHEET 1 of 2	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

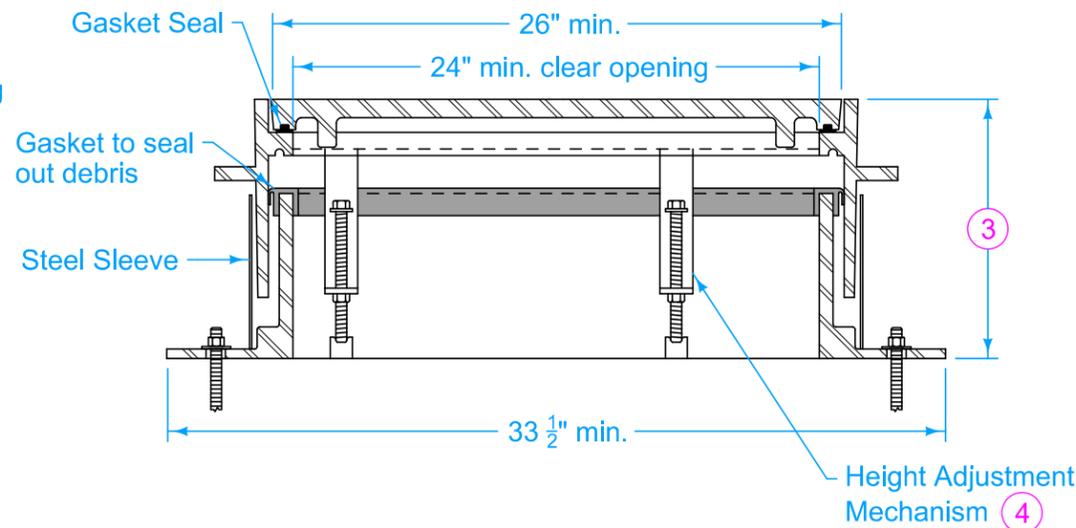
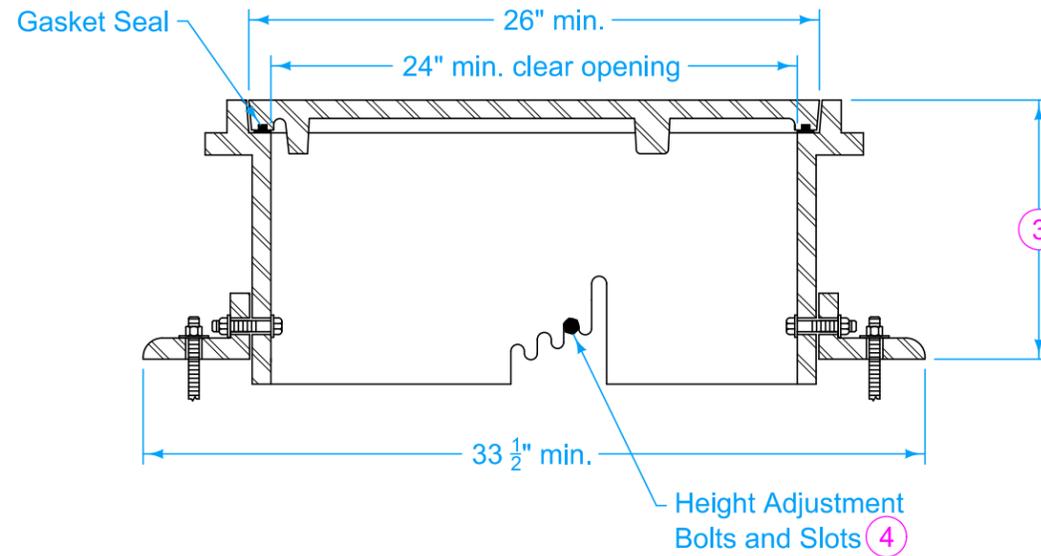
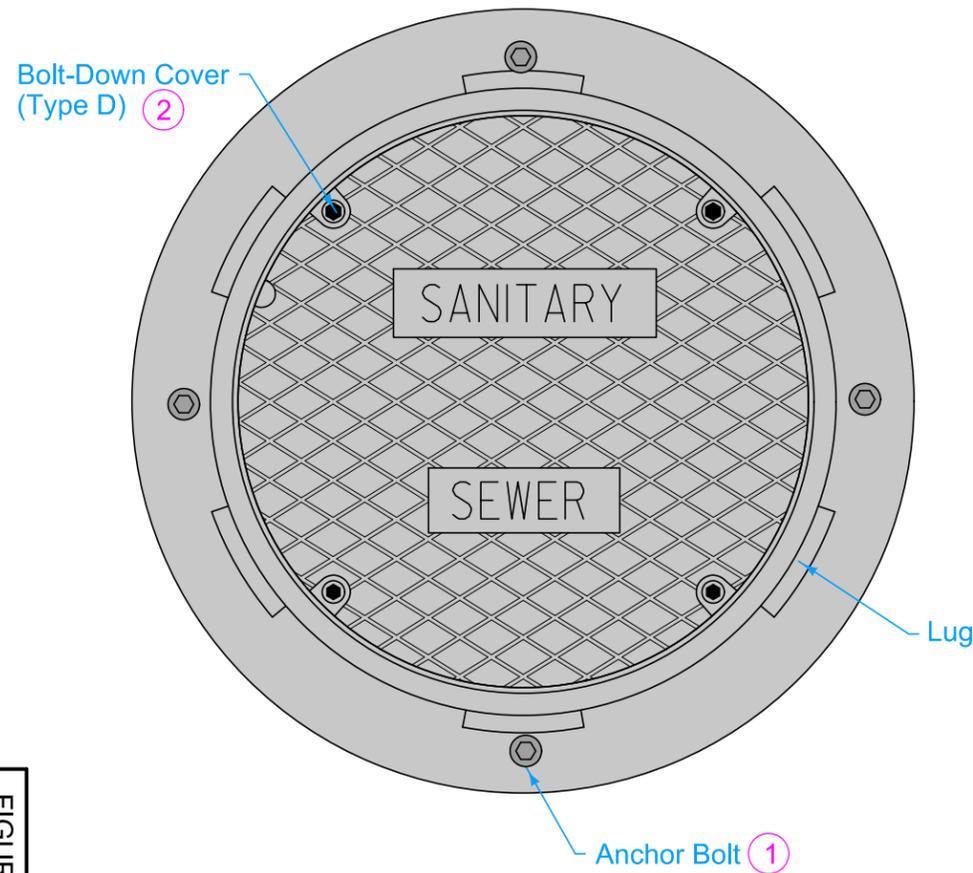
**CASTINGS FOR
SANITARY SEWER MANHOLES**

TYPE B: PCC

Three-piece floating casting for use in PCC paving and PCC boxouts

TYPE D: PCC

Three-piece floating casting with bolt-down cover for use in PCC paving and PCC boxouts



TYPICAL SECTION (5)

Frame Notes:
Size, spacing, and number of lugs and flanges may vary.

Cover Notes:
Roughness pattern and text style may vary.
Minimum one concealed pickhole.

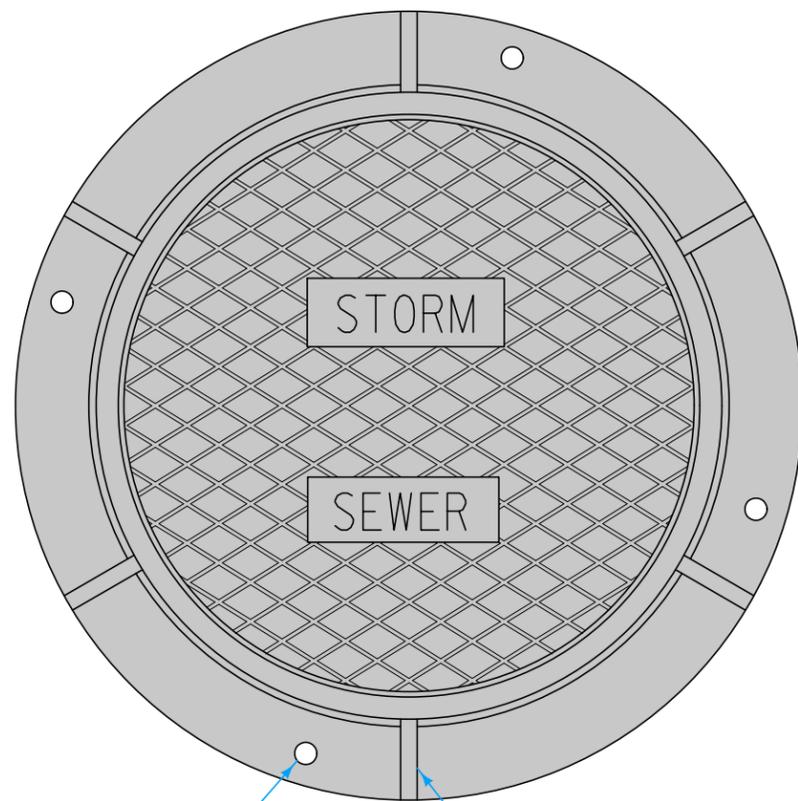
- (1) Anchor the lower frame of all three-piece castings to the manhole structure. When specified in the contract documents, anchor the frame of two-piece castings to the manhole structure. If casting frame does not include anchor holes or slots, drill four 7/8 inch diameter holes, equally spaced around the frame.
- (2) If specified, furnish bolt down frame and cover with four 1/2 inch minimum diameter stainless steel, hex nut, recessed cap screws. Secure cover with screws, washers, and rubber gasket seals.
- (3) Casting height varies. Minimum adjustment range of 4 inches.
- (4) Set casting at proper grade using the adjustment slots or adjustment mechanism. Remove bolts or mechanism upon completion of paving.
- (5) Height adjustment method may vary; two options are shown.

		REVISION	
		5	10-21-25
FIGURE 6010.601	STANDARD ROAD PLAN	SW-601 SHEET 2 of 2	

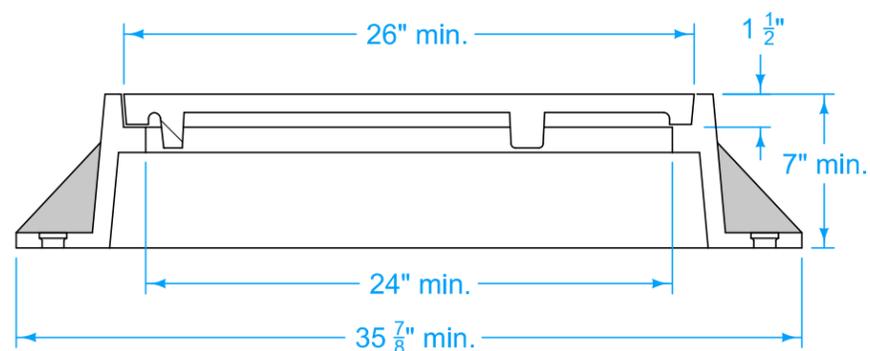
REVISIONS: Updated Sudas and IDOT Logos.

**CASTINGS FOR
SANITARY SEWER MANHOLES**

TYPE E
Two-piece fixed casting

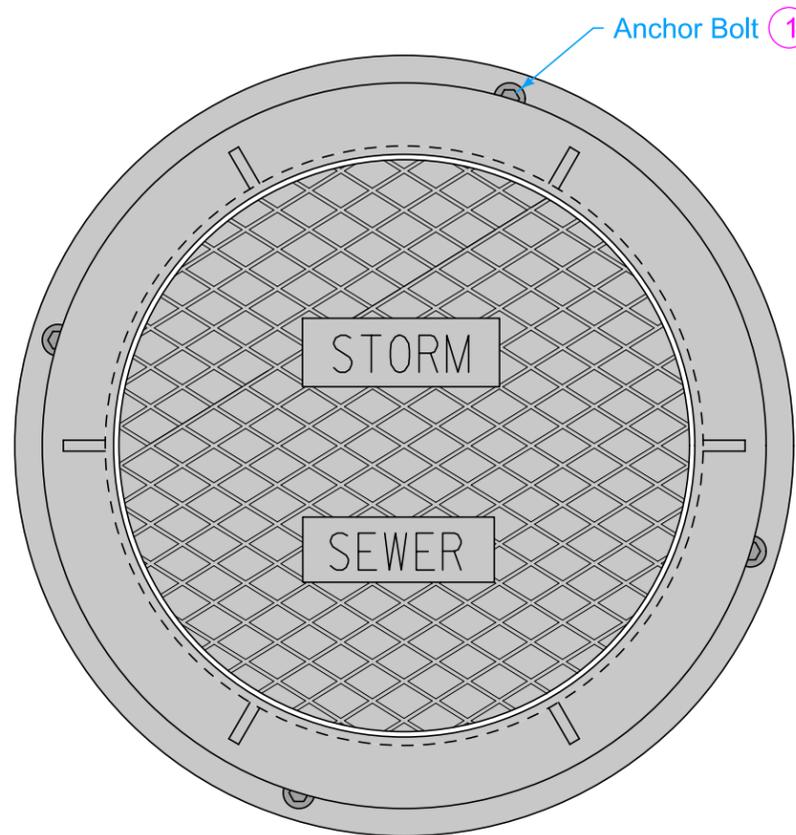


Anchor Bolt Hole 1
Flange (typ.)
PLAN

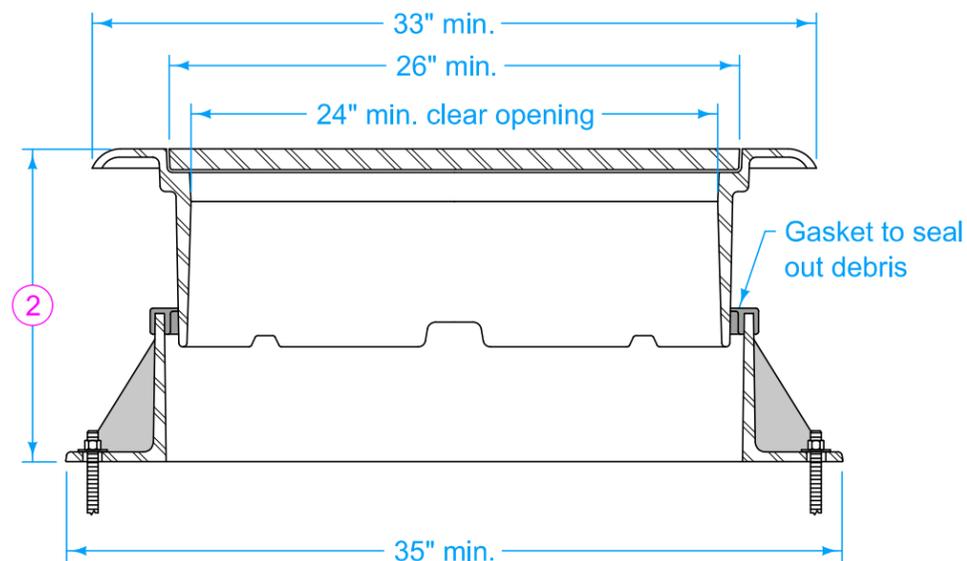


TYPICAL SECTION

TYPE F: HMA
Three-piece floating casting for use in HMA paving



PLAN



TYPICAL SECTION

Frame Notes:
Size, spacing, and number of lugs and flanges may vary.

Cover Notes:
Roughness pattern and text style may vary.
Minimum one pickhole.

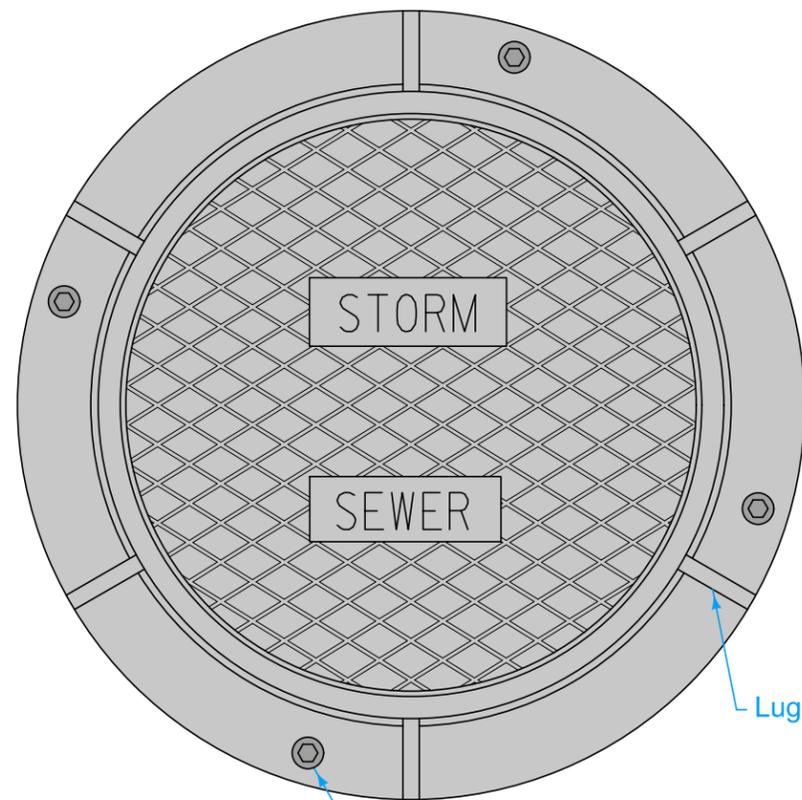
- ① Anchor the lower frame of all three-piece castings to the manhole structure. When specified in the contract documents, anchor the frame of two-piece castings to the manhole structure. If casting frame does not include anchor holes or slots, drill four 7/8 inch diameter holes, equally spaced around the frame.
- ② Casting height varies. Minimum adjustment range of 4 inches.

		REVISION	
		5	10-21-25
FIGURE 6010.602	STANDARD ROAD PLAN	SW-602	
		SHEET 1 of 3	

REVISIONS: Updated Sudas and IDOT Logos.

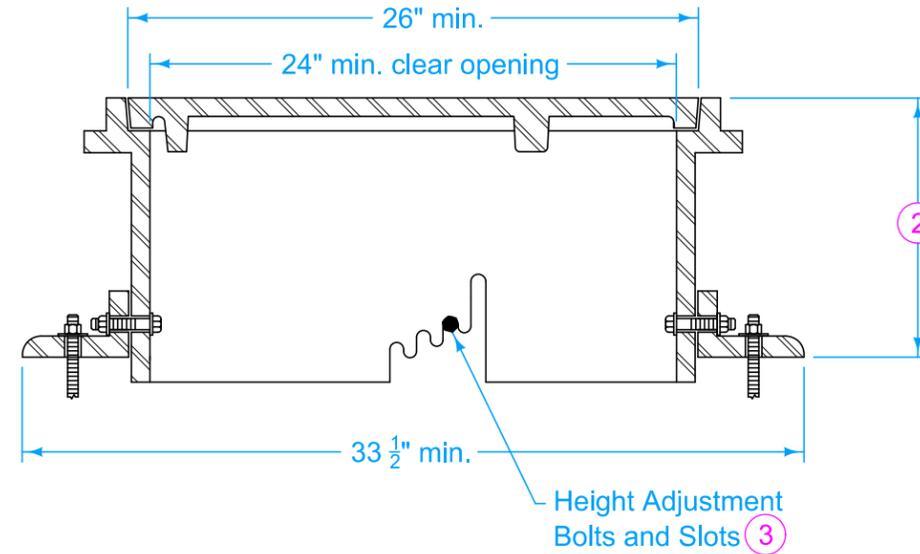
**CASTINGS FOR
STORM SEWER MANHOLES**

TYPE F: PCC
 Three-piece floating casting for use
 in PCC paving and PCC boxouts

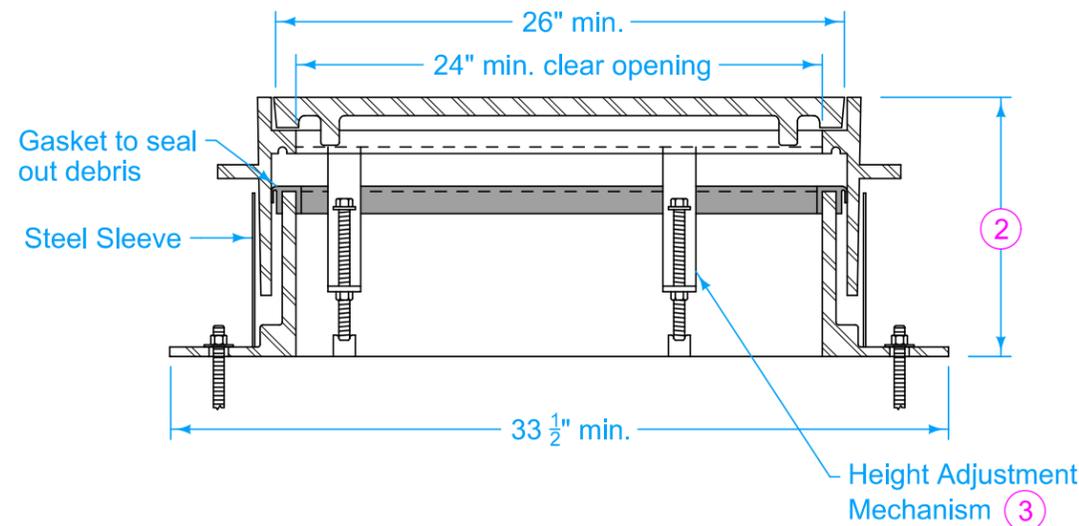


PLAN

Anchor Bolt ①



TYPICAL SECTION ④



Frame Notes:
 Size, spacing, and number of lugs and flanges
 may vary.

Cover Notes:
 Roughness pattern and text style may vary.
 Minimum one pickhole.

- ① Anchor the lower frame of all three-piece castings to the manhole structure. When specified in the contract documents, anchor the frame of two-piece castings to the manhole structure. If casting frame does not include anchor holes or slots, drill four 7/8 inch diameter holes, equally spaced around the frame.
- ② Casting height varies. Minimum adjustment range of 4 inches.
- ③ Set casting at proper grade using the adjustment slots or adjustment mechanism. Remove bolts or mechanism upon completion of paving.
- ④ Height adjustment method may vary; two options are shown.

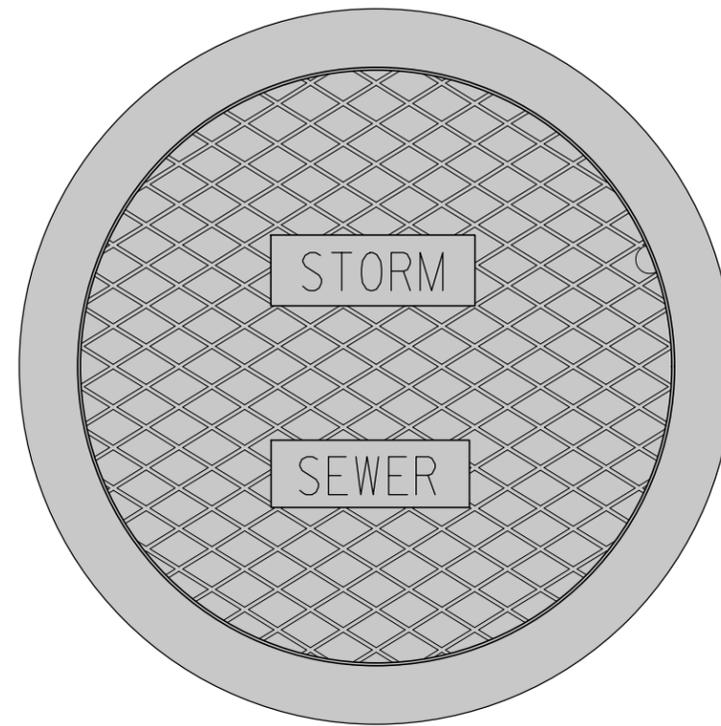
		REVISION	
		5	10-21-25
FIGURE 6010.602	STANDARD ROAD PLAN	SW-602 SHEET 2 of 3	

REVISIONS: Updated Sudas and IDOT Logos.

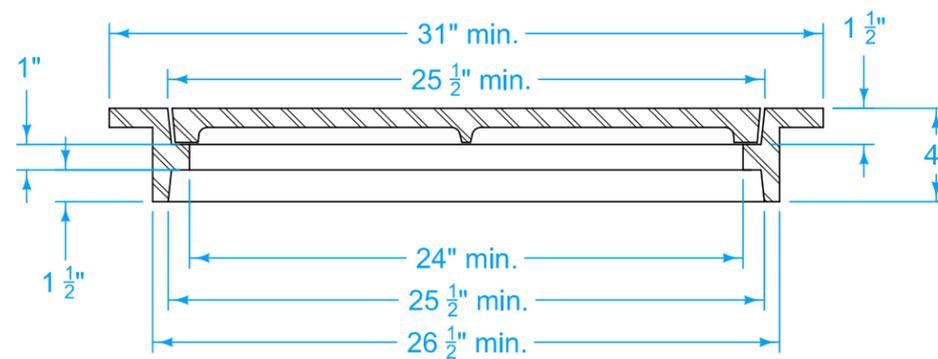
**CASTINGS FOR
 STORM SEWER MANHOLES**

TYPE G
Two piece fixed casting

Cover Notes:
Roughness pattern and text style may vary.
Minimum one pickhole.



PLAN



TYPICAL SECTION

FIGURE 6010.602
SHEET 3 OF 3

		REVISION	
		5	10-21-25
FIGURE 6010.602	STANDARD ROAD PLAN	SW-602	
		SHEET 3 of 3	

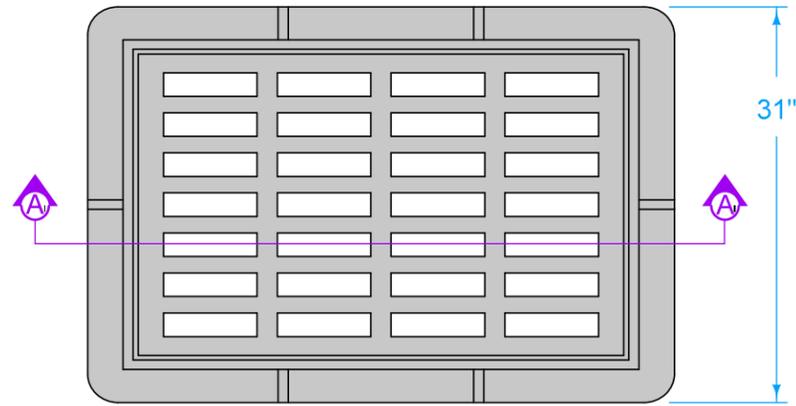
REVISIONS: Updated Sudas and IDOT Logos.



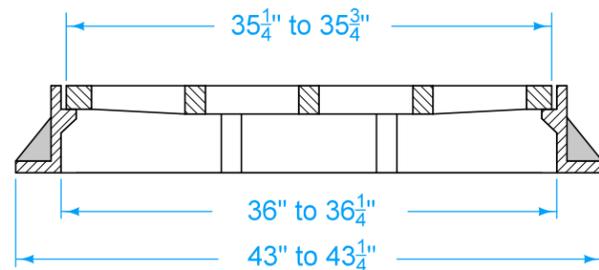
 SUDAS DIRECTOR DESIGN METHODS ENGINEER

**CASTINGS FOR
STORM SEWER MANHOLES**

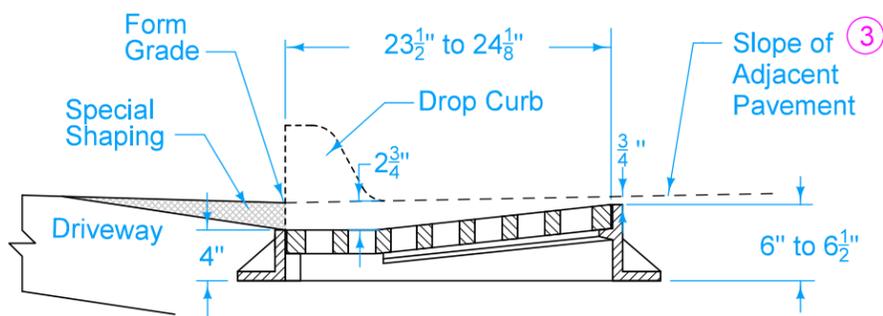
TYPE Q ^①
 Driveway Gate
 (Minimum open area 370 in²)



PLAN

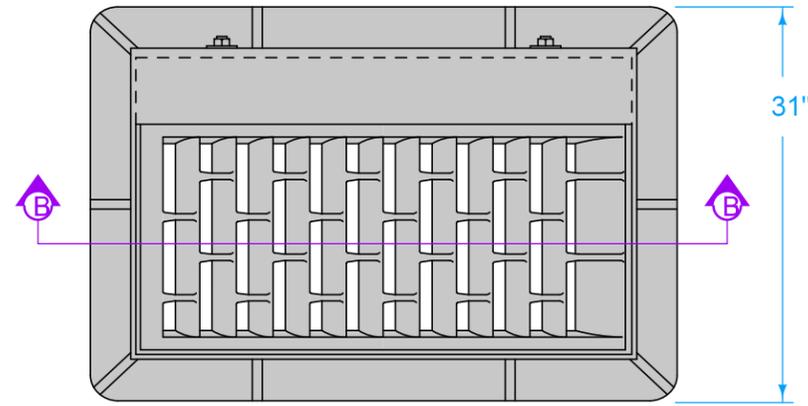


SECTION A-A

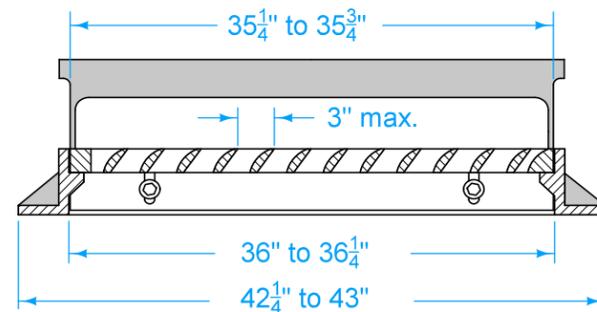


TYPICAL SECTION

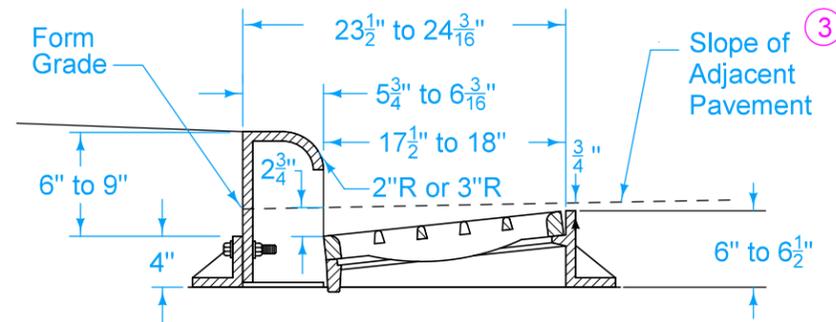
TYPE R ^②
 Curb Inlet Gate
 (Minimum open area 180 in²)



PLAN



SECTION B-B



TYPICAL SECTION

- ① For use at curb drops for driveways. Use only when specified in the contract documents.
- ② Provide bicycle-safe vane-style grate. At low points, grates with vanes facing both directions of flow are allowed.
- ③ For details of boxout pavement, refer to SW-514.

FIGURE 6010.603 SHEET 1 OF 2

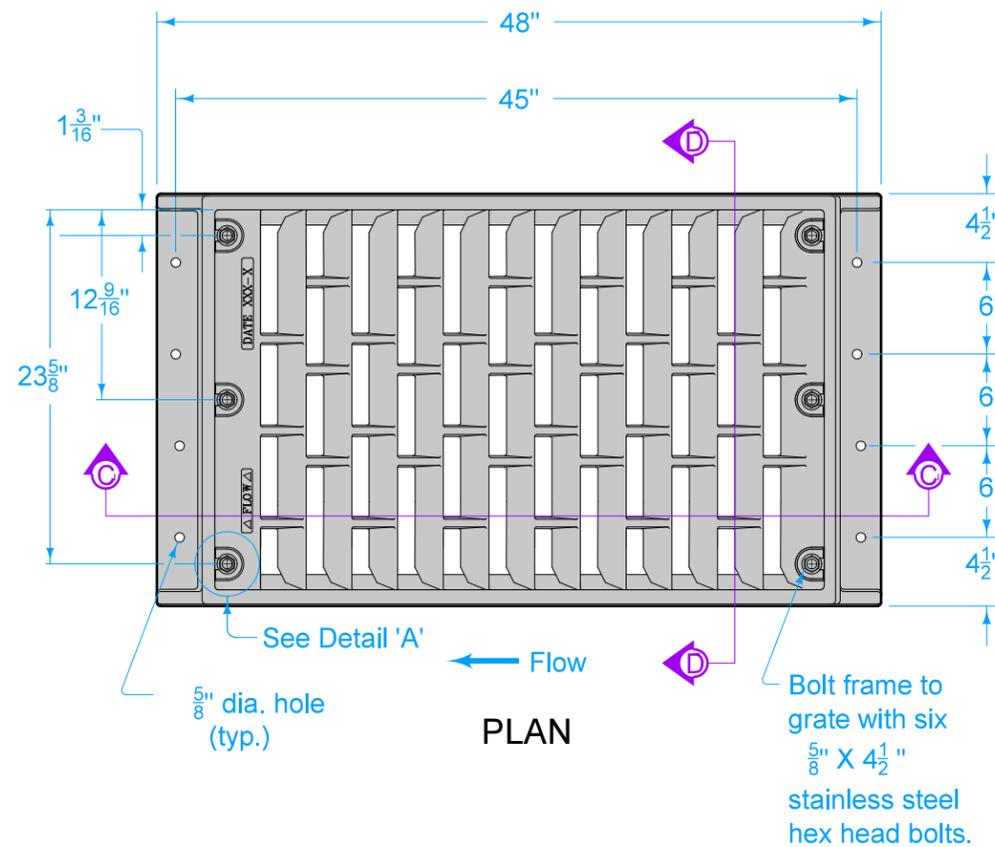
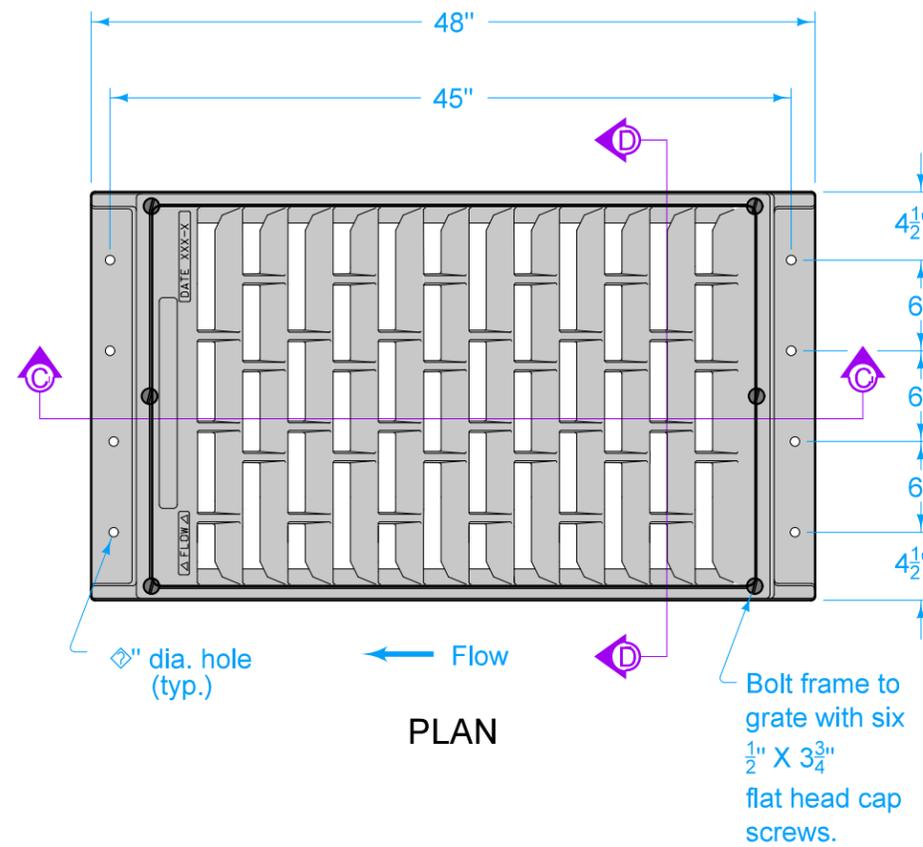
		REVISION	
		7	10-21-25
FIGURE 6010.603	STANDARD ROAD PLAN	SW-603	
		SHEET 1 of 2	

REVISIONS: Updated Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

CASTINGS FOR GRATE INTAKES

TYPE S ②④
 Barrier Intake Grate
 (Minimum open area 300 in²)



- ② Provide bicycle-safe vane-style grate. At low points, grates with vanes facing both directions of flow are allowed. The Contractor has the choice of which Type S Grate to use.
- ④ Use ductile iron frame castings meeting the requirements of ASTM A 536.

Frame minimum weight = 220 lbs.
 Grate minimum weight = 340 lbs.

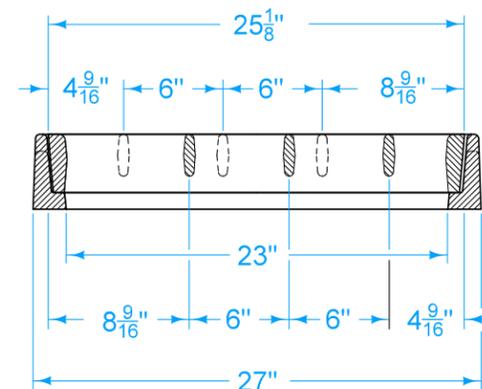
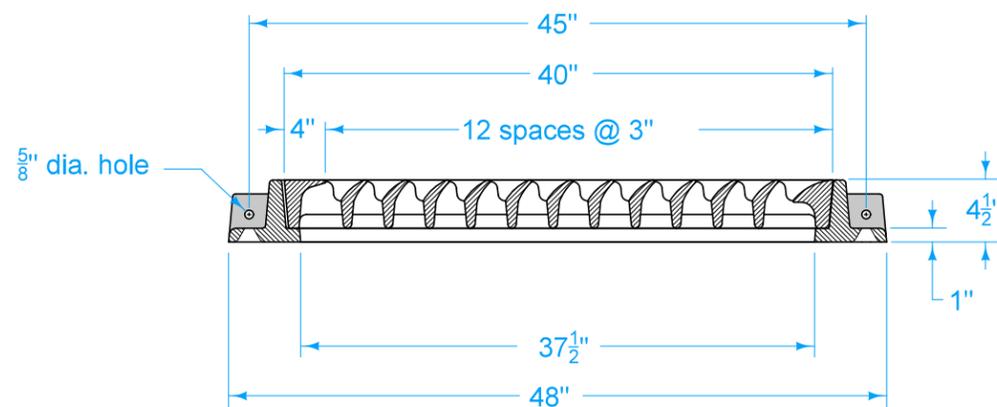
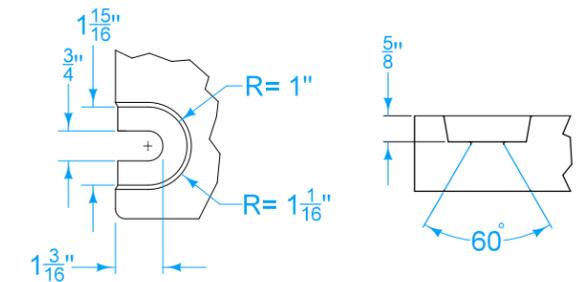


FIGURE 6010.603 SHEET 2 OF 2

		REVISION	
		7	10-21-25
FIGURE 6010.603	STANDARD ROAD PLAN	SW-603	
		SHEET 2 of 2	

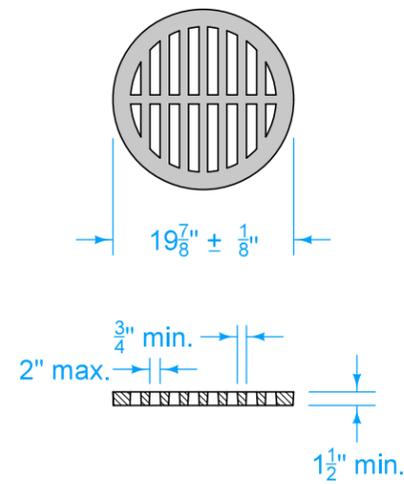
REVISIONS: Updated Sudas and IDOT Logos.

J. P. C.
 SUDAS DIRECTOR

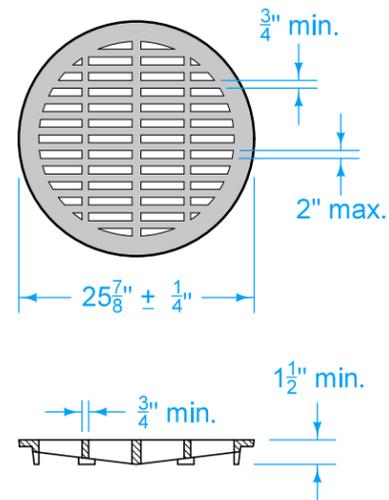
Shawn Miller
 DESIGN METHODS ENGINEER

CASTINGS FOR GRATE INTAKES

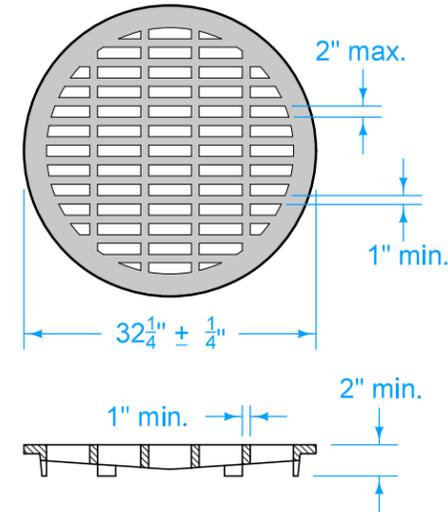
TYPE 4



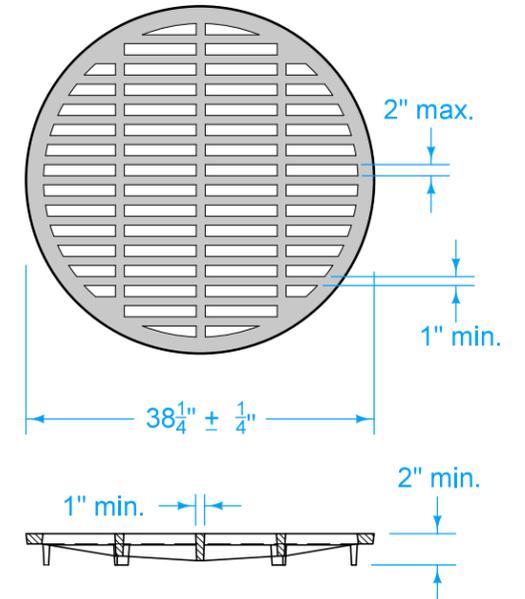
TYPE 4A
For Placement on 18" RCP



TYPE 4B
For Placement on 24" RCP

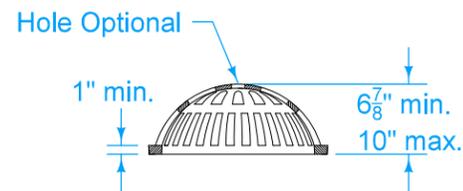
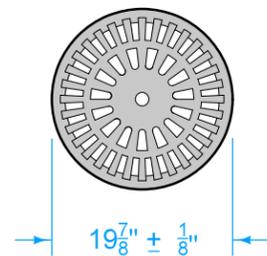


TYPE 4C
For Placement on 30" RCP

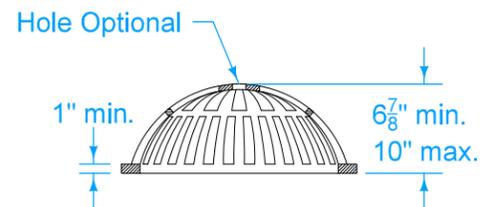
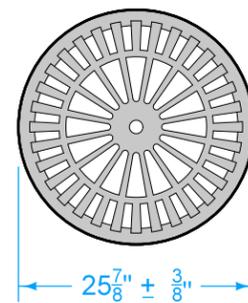


TYPE 4D
For Placement on 36" RCP

TYPE 3
(Light Duty)



TYPE 3A
For Placement on 18" RCP



TYPE 3B
For Placement on 24" RCP

TYPE 5
(Light Duty)
For Placement on 24" to 30" RCP

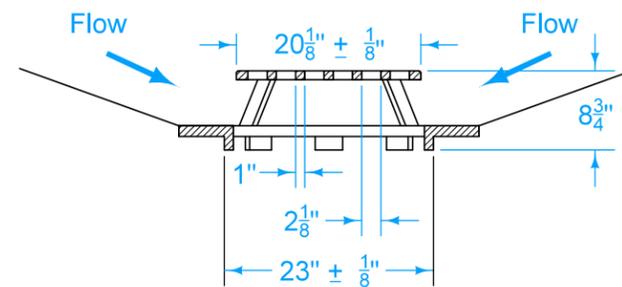
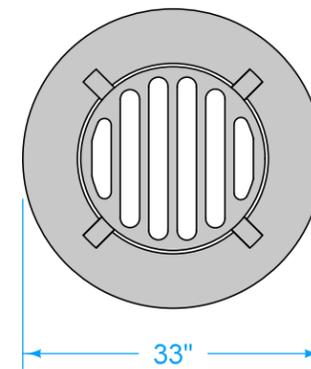


FIGURE 6010.604 SHEET 1 OF 2

		REVISION	
		4	10-21-25
FIGURE 6010.604	STANDARD ROAD PLAN	SW-604	
		SHEET 1 of 2	

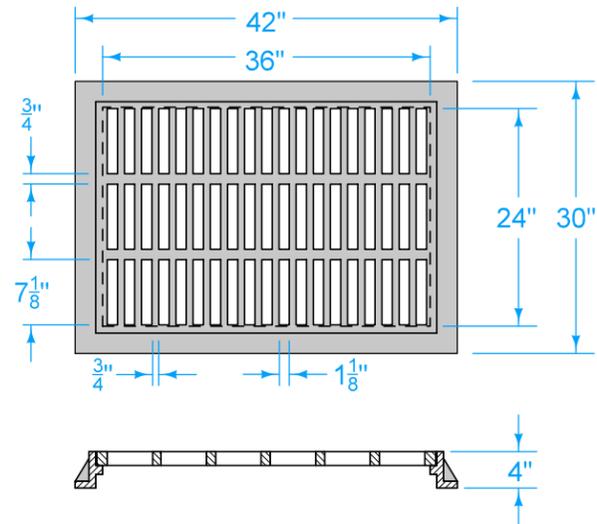
REVISIONS: Update Sudas and IDOT Logos.

J. D. P. C.
SUDAS DIRECTOR

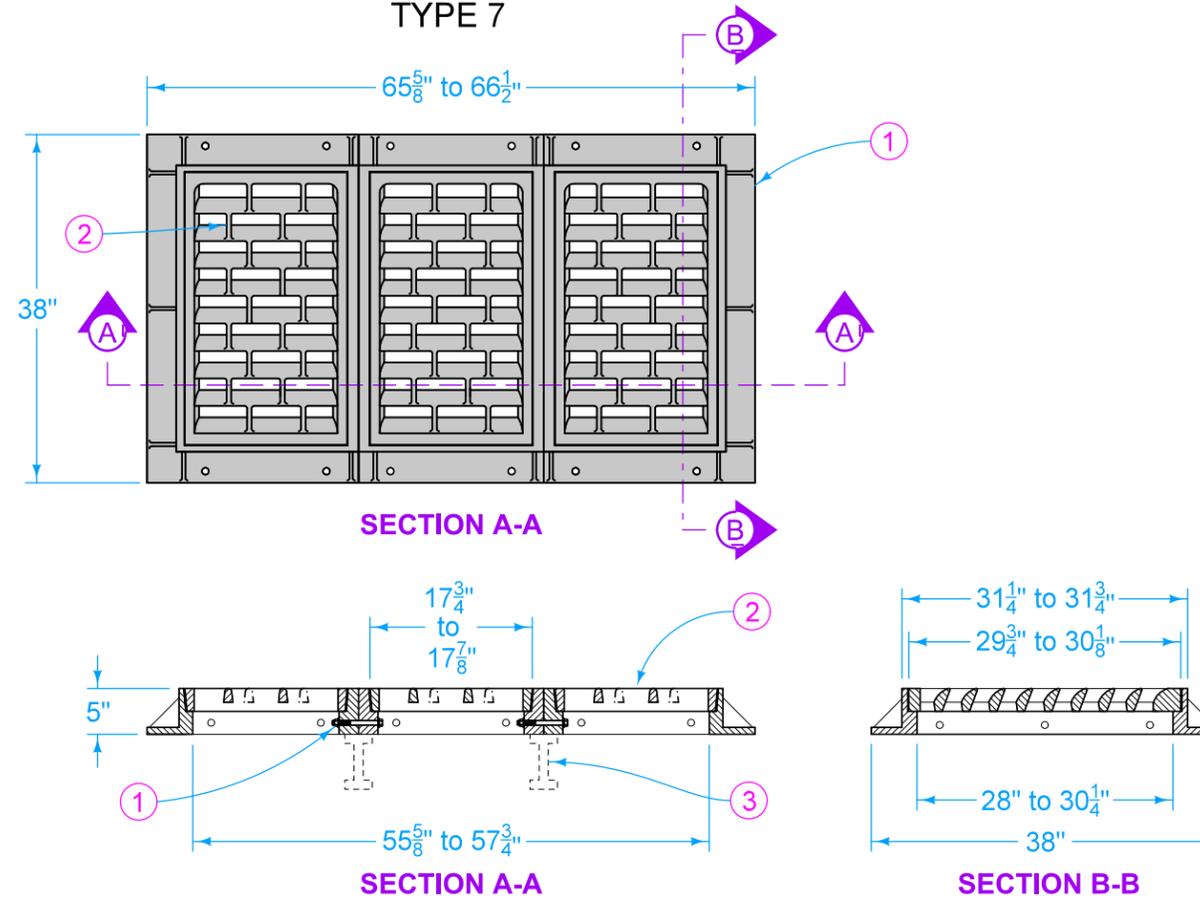
Stuart Miller
DESIGN METHODS ENGINEER

CASTINGS FOR AREA INTAKES

TYPE 6



TYPE 7



- ① Frame provided in three segments (two ends and one center). Bolt segments together as specified by the casting manufacturer.
- ② Provide bicycle safe, vane style grates with a minimum open area of 4 square feet. At low points, grates with vanes facing both directions will be allowed.
- ③ If required by casting manufacturer, provide support beam under all frame joints. Modify structure walls as required to provide pocket for beam.
- ④ Cast grate without locking lugs so it may be used in an inverted position.

TYPE 9
(Light Duty)

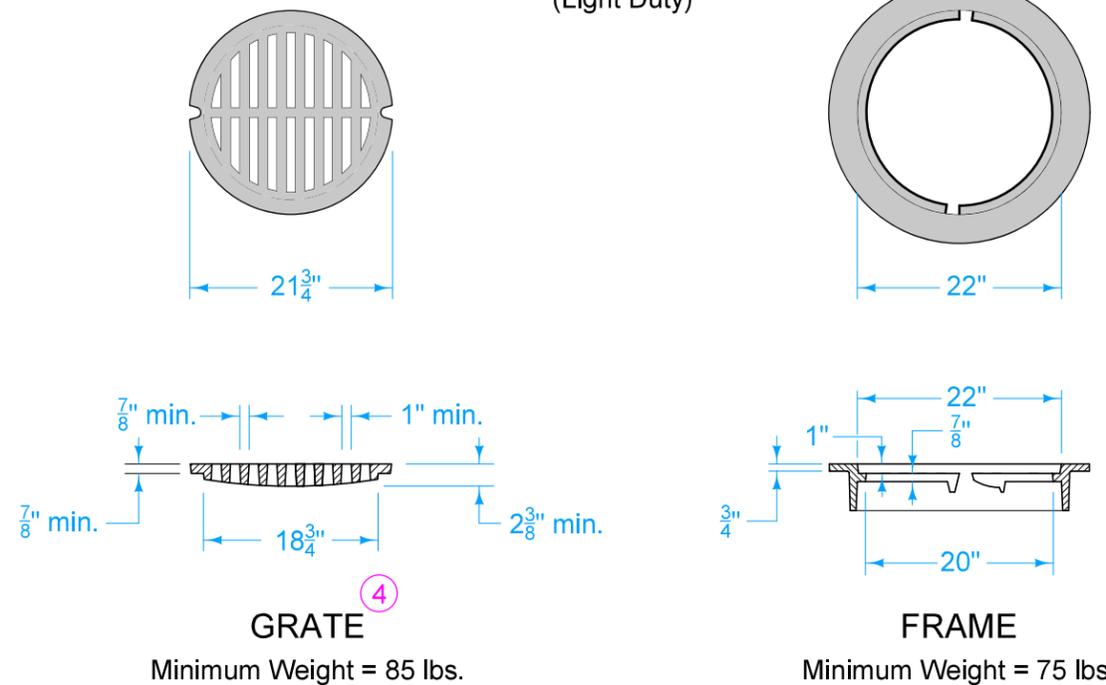


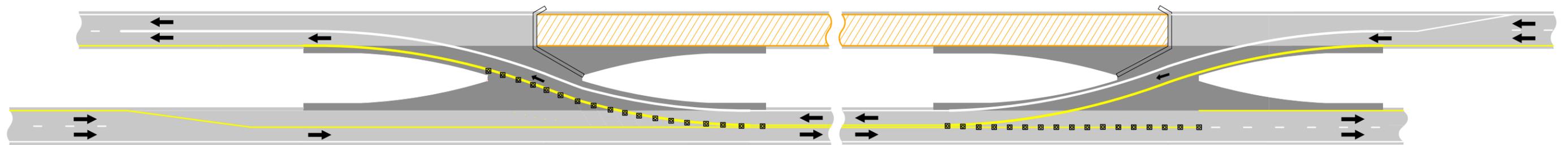
FIGURE 6010.604 SHEET 2 OF 2

		REVISION	
		4	10-21-25
FIGURE 6010.604	STANDARD ROAD PLAN	SW-604	
		SHEET 2 of 2	

REVISIONS: Update Sudas and IDOT Logos.

SUDAS DIRECTOR DESIGN METHODS ENGINEER

CASTINGS FOR AREA INTAKES



See Sheets 2 and 4 for Details

See Sheets 3 and 4 for Details

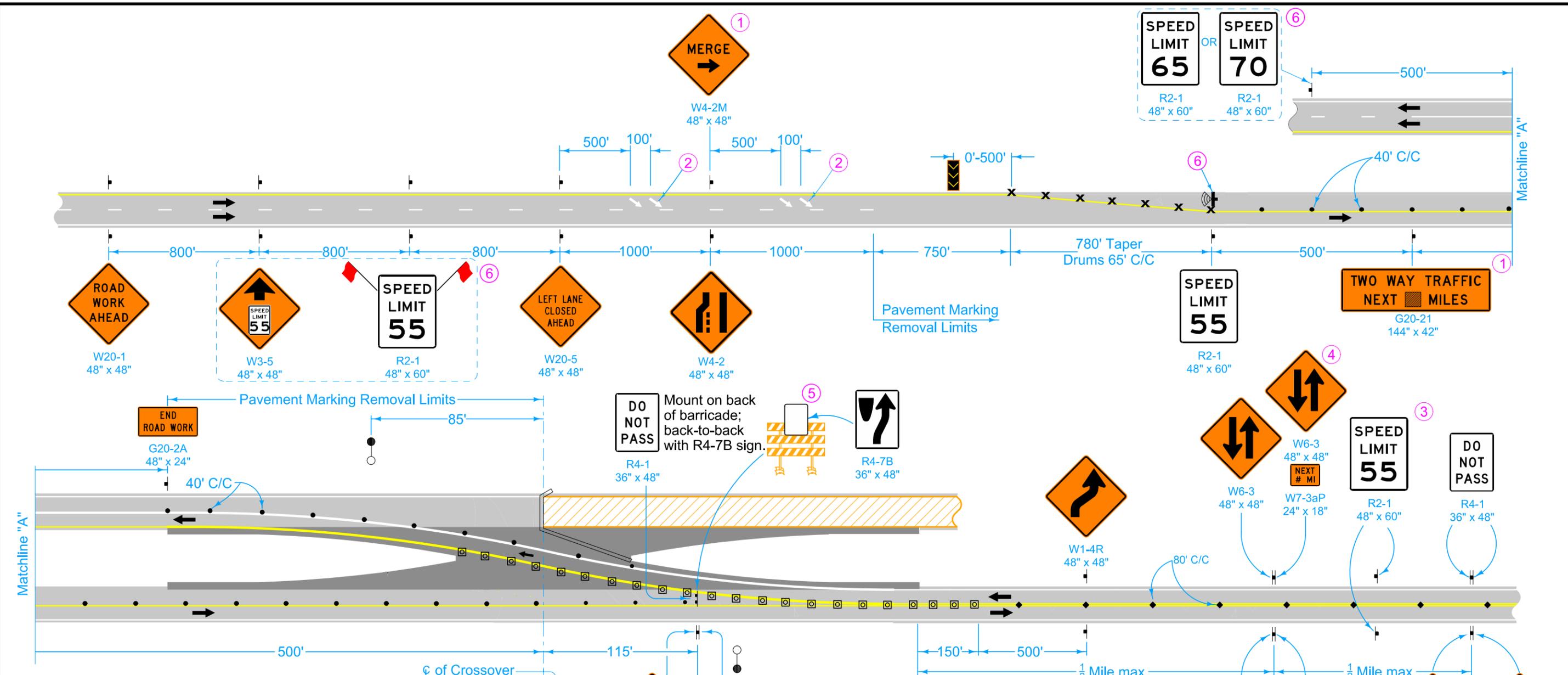
OVERVIEW OF CROSSOVER

Place Two-Way Traffic symbol and DO NOT PASS signs alternately on both sides of the roadway at a maximum of one-half mile intervals for both directions of travel. Always have signs in sight of motorists.

- Possible Contract Items:
- Painted Symbols and Legends
 - Pavement Marking Items
 - Pavement Marking Removed
 - Safety Closures
 - Temporary Floodlighting
 - Temporary Lane Separator System
 - Traffic Control

- Possible Tabulations:
- 108-13A, 108-22, 108-27, 108-29, 108-30, 108-33, 108-35

 STANDARD ROAD PLAN	REVISION	
	20	10-21-25
TC-61		SHEET 1 of 6
REVISIONS: Added note 11, and added raised pavement markings.		
 <small>APPROVED BY DESIGN METHODS ENGINEER</small>		
TWO-LANE, TWO WAY OPERATION		



LEGEND	
	Traffic Sign
	Drum
	42" Channelizer
	Tubular Marker
	Speed Feedback Sign
	Arrow Board
	Safety Closure (Refer to TC-252)
	Temporary Floodlighting
	Work Area
	Direction of Traffic
	Detour Pavement
	Temporary Lane Separator System

See sheet 4 for supplemental drawings.

- ① Refer to SI-881 for sign details.
- ② Refer to PM-111 for arrow details.
- ③ Space Speed Limit signs at one-mile intervals.
- ④ Install an additional supplemental plaque with the message NEXT X MILES on the Two-Way Traffic symbol sign assembly on the right side of the roadway to inform motorists of the remaining length of two-lane traffic. Round X to the nearest whole-mile increment.

⑤ Use a 4 foot wide Type III Barricade.

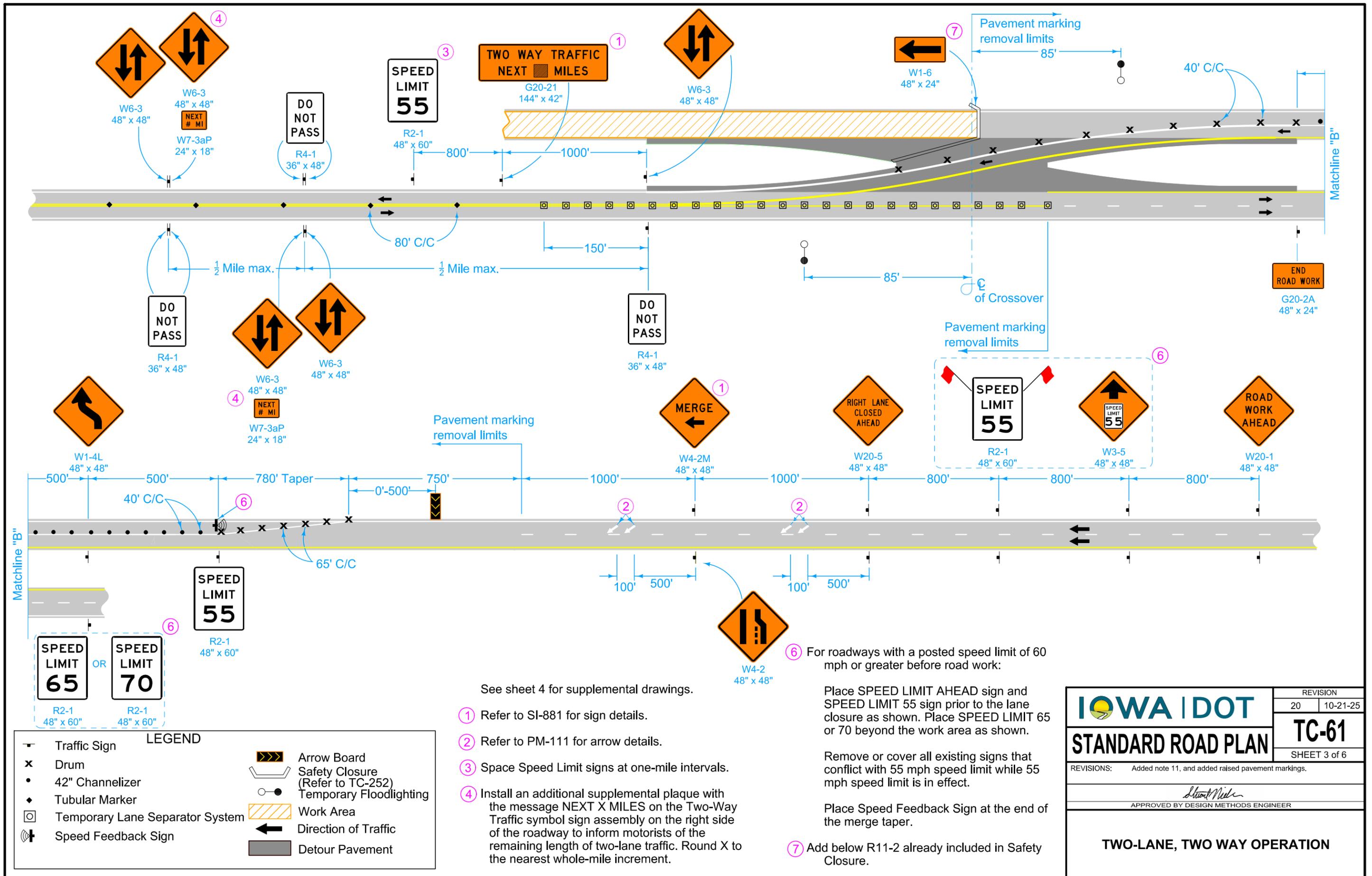
⑥ For roadways with a posted speed limit of 60 mph or greater before road work:

Place SPEED LIMIT AHEAD sign and SPEED LIMIT 55 sign prior to the lane closure as shown. Place SPEED LIMIT 65 or 70 beyond the work area as shown.

Remove or cover all existing signs that conflict with 55 mph speed limit while 55 mph speed limit is in effect.

Place Speed Feedback Sign at the end of the merge taper.

	REVISION
	20 10-21-25
STANDARD ROAD PLAN	TC-61
SHEET 2 of 6	
REVISIONS: Added note 11, and added raised pavement markings.	
 APPROVED BY DESIGN METHODS ENGINEER	
TWO-LANE, TWO WAY OPERATION	



See sheet 4 for supplemental drawings.

- ① Refer to SI-881 for sign details.
- ② Refer to PM-111 for arrow details.
- ③ Space Speed Limit signs at one-mile intervals.
- ④ Install an additional supplemental plaque with the message NEXT X MILES on the Two-Way Traffic symbol sign assembly on the right side of the roadway to inform motorists of the remaining length of two-lane traffic. Round X to the nearest whole-mile increment.

⑥ For roadways with a posted speed limit of 60 mph or greater before road work:

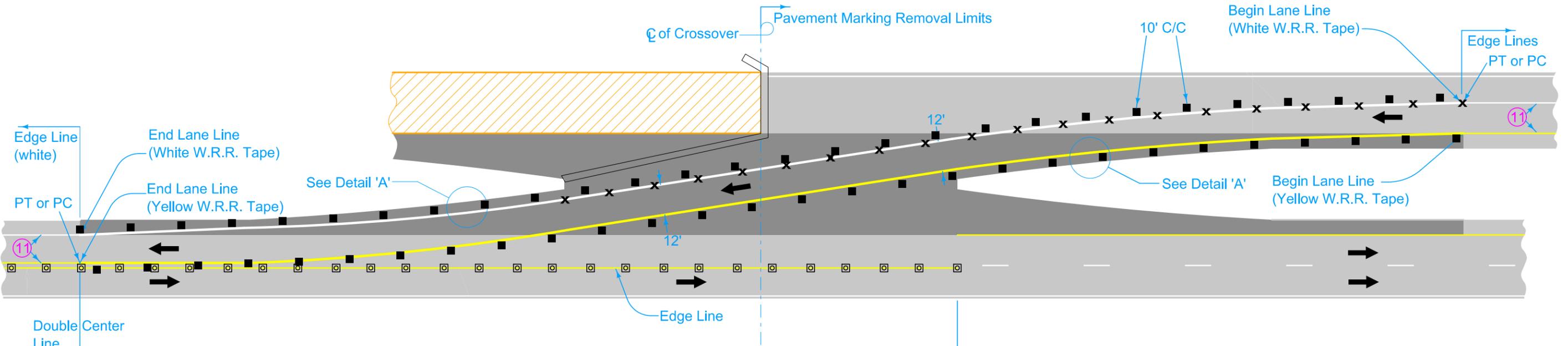
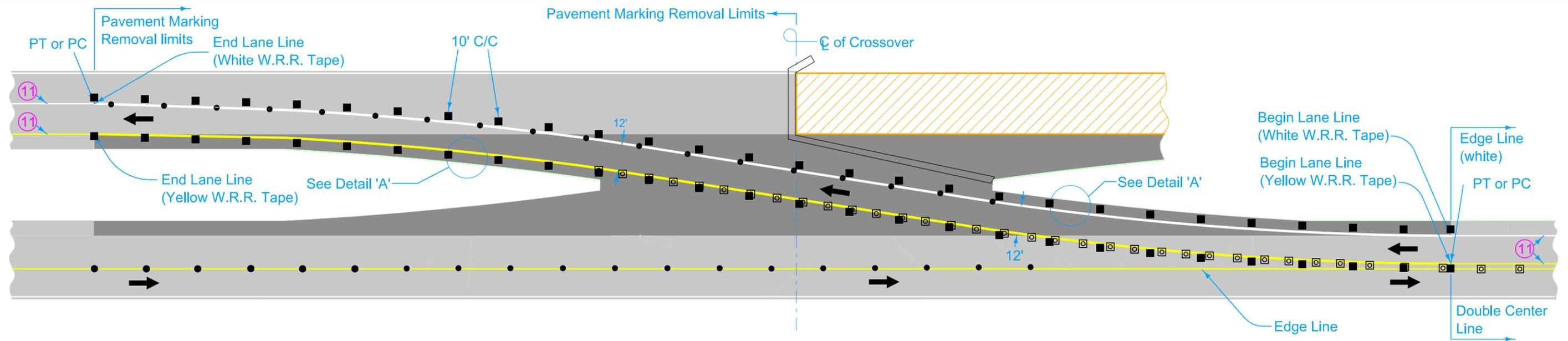
Place SPEED LIMIT AHEAD sign and SPEED LIMIT 55 sign prior to the lane closure as shown. Place SPEED LIMIT 65 or 70 beyond the work area as shown.

Remove or cover all existing signs that conflict with 55 mph speed limit while 55 mph speed limit is in effect.

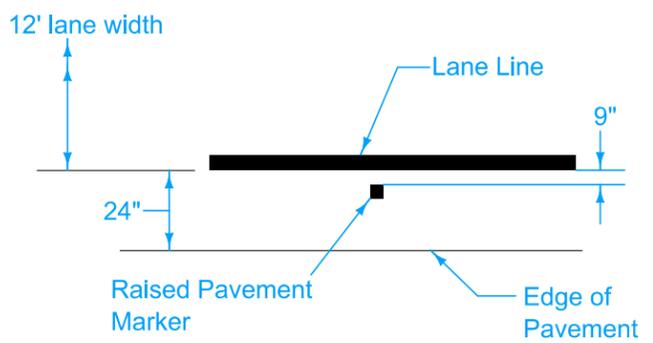
Place Speed Feedback Sign at the end of the merge taper.

⑦ Add below R11-2 already included in Safety Closure.

	REVISION	
	20	10-21-25
STANDARD ROAD PLAN		TC-61
REVISIONS: Added note 11, and added raised pavement markings.		SHEET 3 of 6
 APPROVED BY DESIGN METHODS ENGINEER		
TWO-LANE, TWO WAY OPERATION		



LEGEND	
■	Raised Pavement Marker
×	Drum
●	42" Channelizer
▨	Work Area
←	Direction of Traffic
■	Detour Pavement
⌒	Safety Closure (Refer to TC-252)
⊠	Temporary Lane Separator System

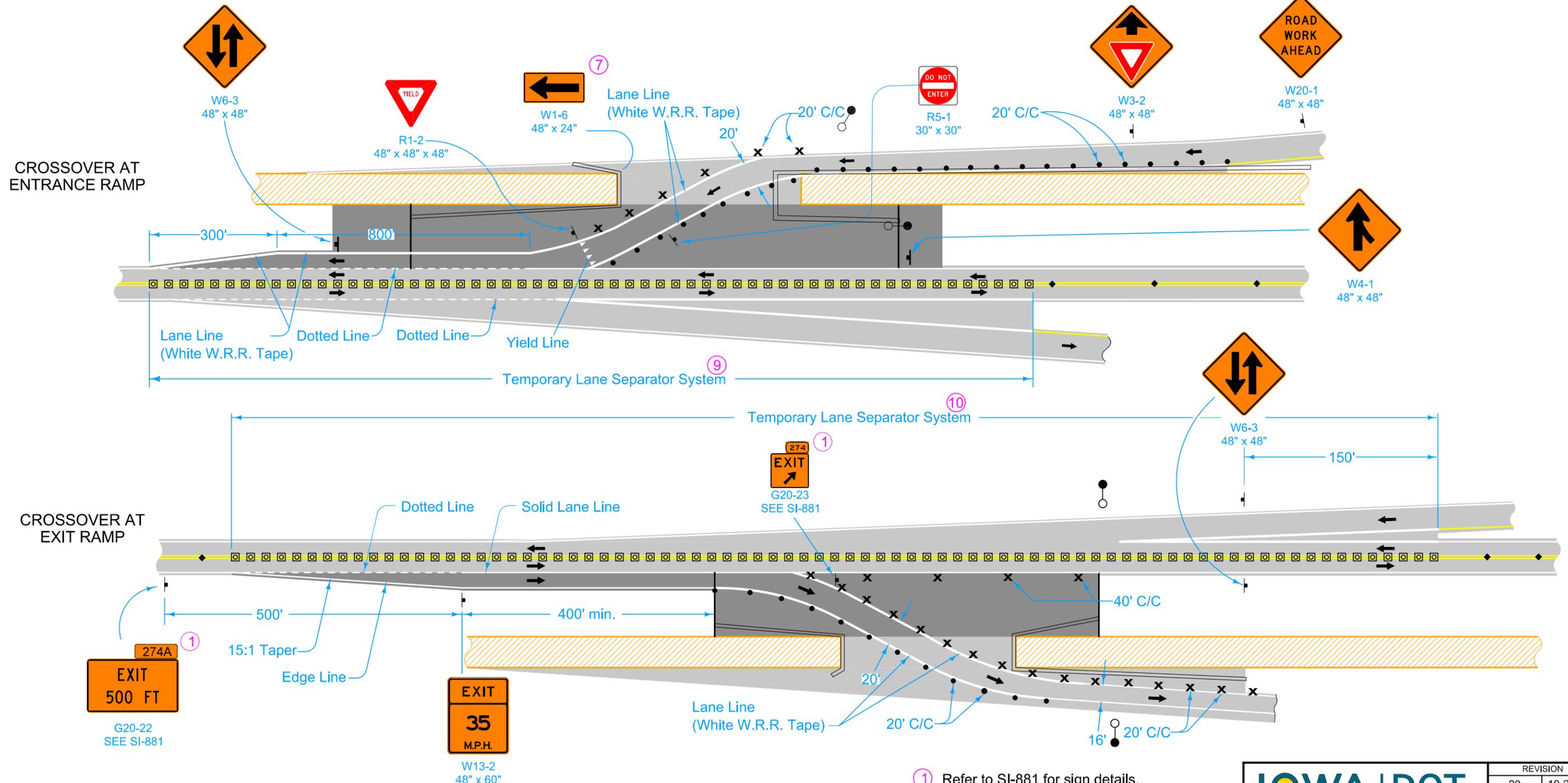


DETAIL 'A'
SUPPLEMENTAL CROSSOVER DRAWINGS

- ⑧ Details shown hereon are intended to provide additional information to the requirements shown on sheets 2 and 3.
- ⑪ Extend 8 inch pavement markings 300' past PC or PT.

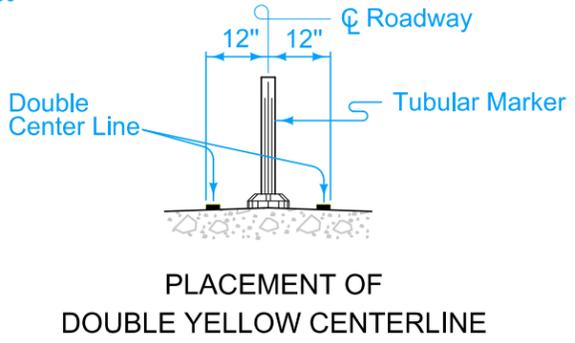
 STANDARD ROAD PLAN	REVISION
	20 10-21-25
	TC-61
SHEET 4 of 6	
REVISIONS: Added note 11, and added raised pavement markings.	
 <small>APPROVED BY DESIGN METHODS ENGINEER</small>	
TWO-LANE, TWO WAY OPERATION	

RAMP LOCATIONS



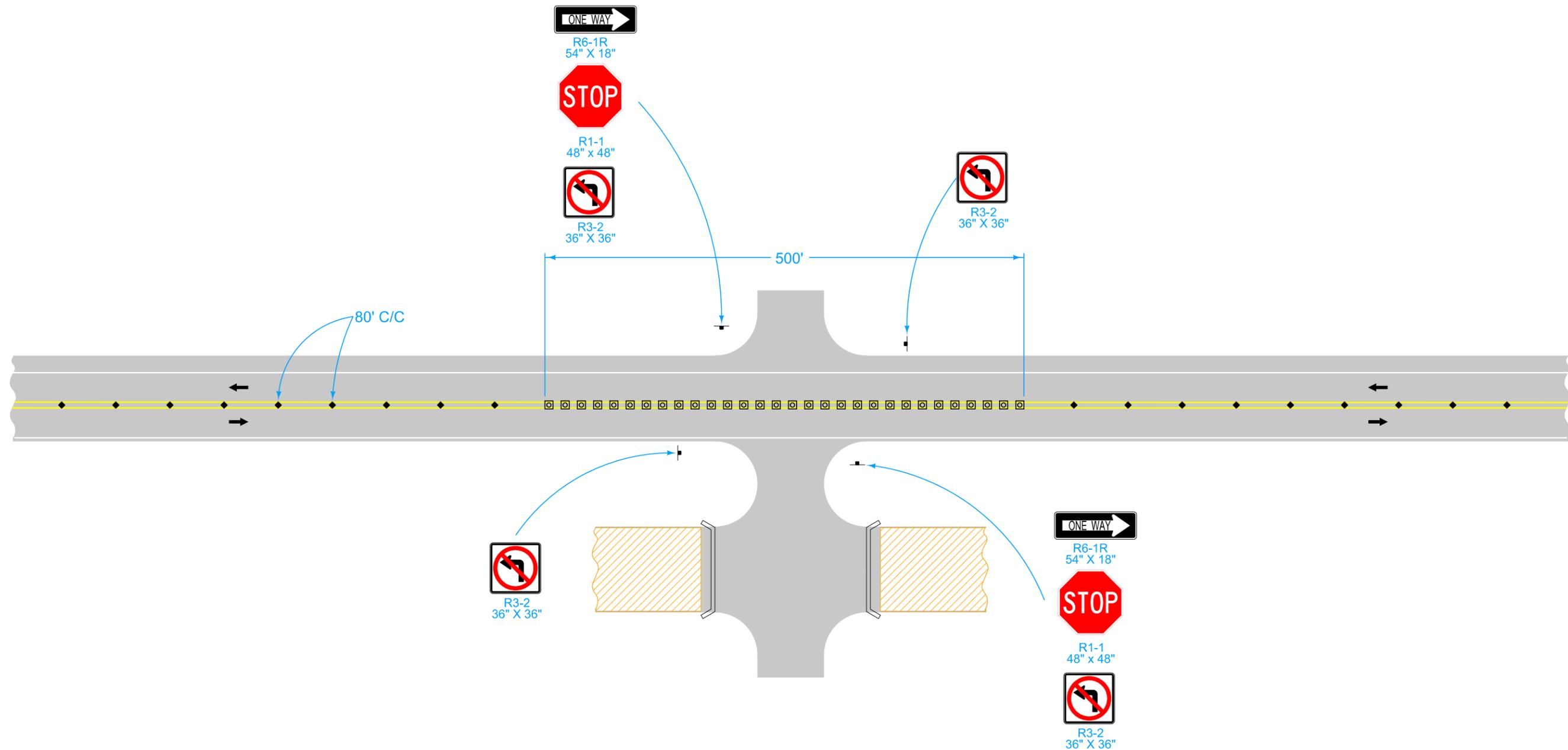
LEGEND

⬇	Traffic Sign	⊠	Temporary Lane Separator System
•	42" Channelizer	▨	Work Area
x	Drum	■	Detour Pavement
◆	Tubular Marker	←	Direction of Traffic
○●	Temporary Floodlighting	⌒	Safety Closure (Refer to TC-252)



- ① Refer to SI-881 for sign details.
- ⑦ Add below R11-2 already included in Safety Closure.
- ⑨ Place TLSS from start of ramp gore to end of temporary ramp crossover.
- ⑩ Place TLSS from start of full width decel lane to end of ramp gore.

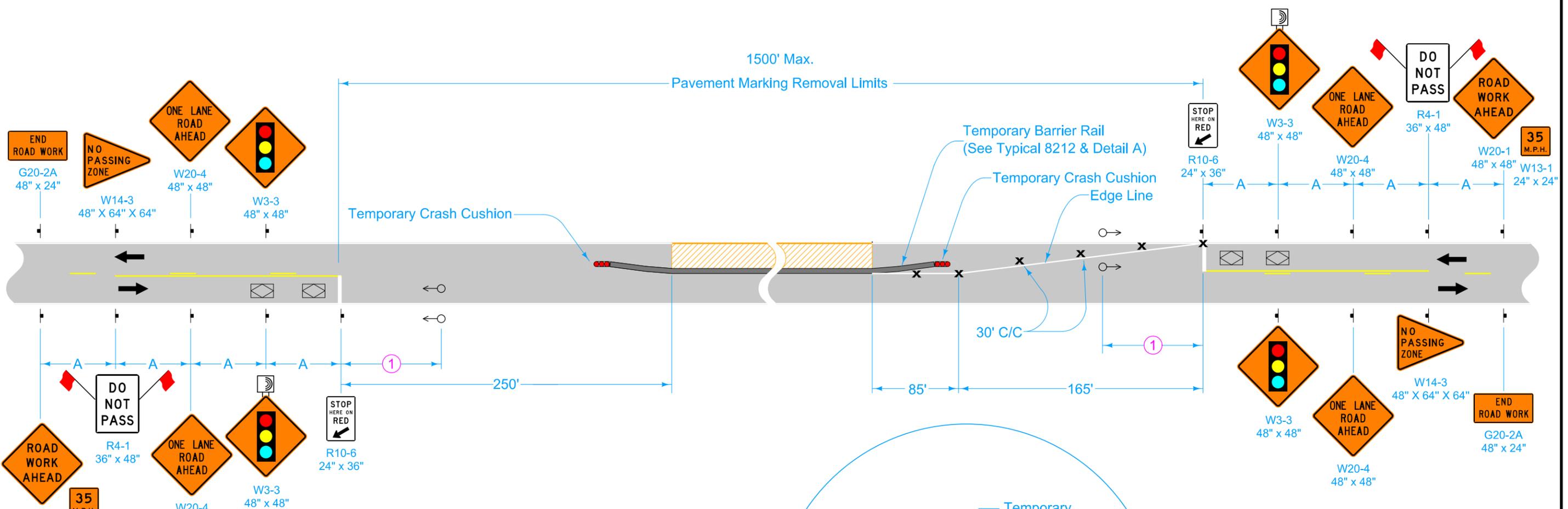
<p>STANDARD ROAD PLAN</p> <p>REVISIONS: Added note 11, and added raised pavement markings.</p> <p style="text-align: right;"><i>Steve Miller</i> APPROVED BY DESIGN METHODS ENGINEER</p>	REVISION 20 10-21-25
	<h1>TC-61</h1> <p>SHEET 5 of 6</p>
	<p>TWO-LANE, TWO WAY OPERATION</p>



Traffic Control for At-Grade Intersections
(Right-In, Right-Out)

LEGEND	
	Traffic Sign
	Tubular Marker
	Direction of Traffic
	Temporary Lane Separator System
	Work Area
	Safety Closure (Refer to TC-252)

	REVISION
	20 10-21-25
	TC-61
STANDARD ROAD PLAN	
SHEET 6 of 6	
REVISIONS: Added note 11, and added raised pavement markings.	
 APPROVED BY DESIGN METHODS ENGINEER	
TWO-LANE, TWO WAY OPERATION	



TIMING FOR ACTUATED SIGNALS

Distance Between Stop Lines (ft)	All Red (secs.)
1550	**27-36
1450	**25-33
1350	**23-31
1250	**21-29
1150	**20-26
1050	*21-36
950	*19-33
850	*17-30
750	*15-27
650	*14-23
550	*12-20

Recommended Settings, (secs.)

Initial = 12.0
 Extension = 2.5
 Maximum Green = 45.0
 Yellow = 5.0
 All Red = (see table)

* Range of values are based on operating speeds between 20 and 35 mph
 ** Range of values are based on operating speeds between 30 and 40 mph

LEGEND

- Vehicle Detection Area
- Temporary Crash Cushion
- Direction of Traffic
- Traffic Sign
- Drum
- Type 'B' High-Intensity Flashing Warning Light
- Work Area
- Temporary Traffic Signal

SPEED LIMIT (mph)*	A
35 or less	250'
40 - 45	350'
50 or greater	500'

Place Concrete Barrier Markers at 10 ft C/C on bridge rail.

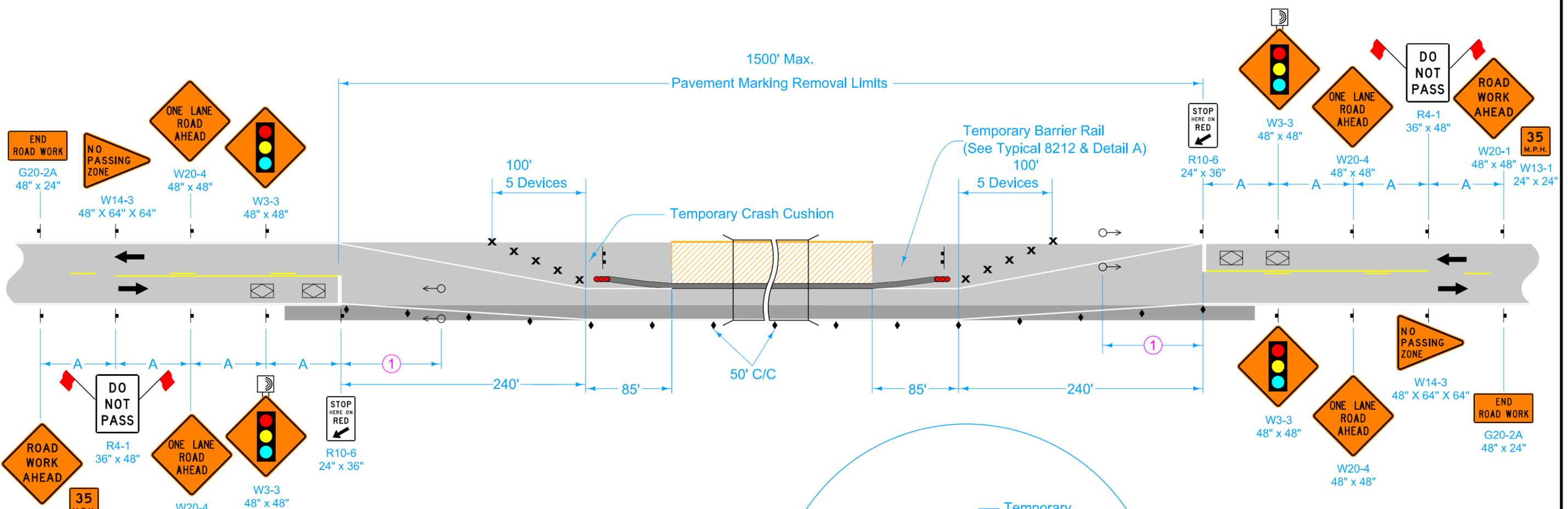
① Locate signal heads 70 to 100 feet beyond stop bar. Adjust location of signal heads as field conditions warrant.

Possible Contract Items:
 Pavement Marking Items
 Pavement Markings Removed
 Temporary Barrier Rail
 Temporary Crash Cushions
 Temporary Traffic Signals
 Traffic Control

Possible Tabulations:
 108-22
 108-28
 108-30
 108-33

IOWA DOT	REVISION	
	10	10-21-25
STANDARD ROAD PLAN		
TC-217		
SHEET 1 of 1		
REVISIONS: Added detail A, and adjusted all red times.		
 APPROVED BY DESIGN METHODS ENGINEER		
LANE CLOSURE WITH SIGNALS AND TBR		

* Speed Limit refers to regulatory speed limit before road work.



LEGEND

- Type III Barricade
- Single White Delineators (mount back to back)
- Vehicle Detection Area
- Temporary Crash Cushion
- Direction of Traffic
- Traffic Sign
- Drum
- Type 'B' High-Intensity Flashing Warning Light
- Work Area
- Temporary Traffic Signal

TIMING FOR ACTUATED SIGNALS

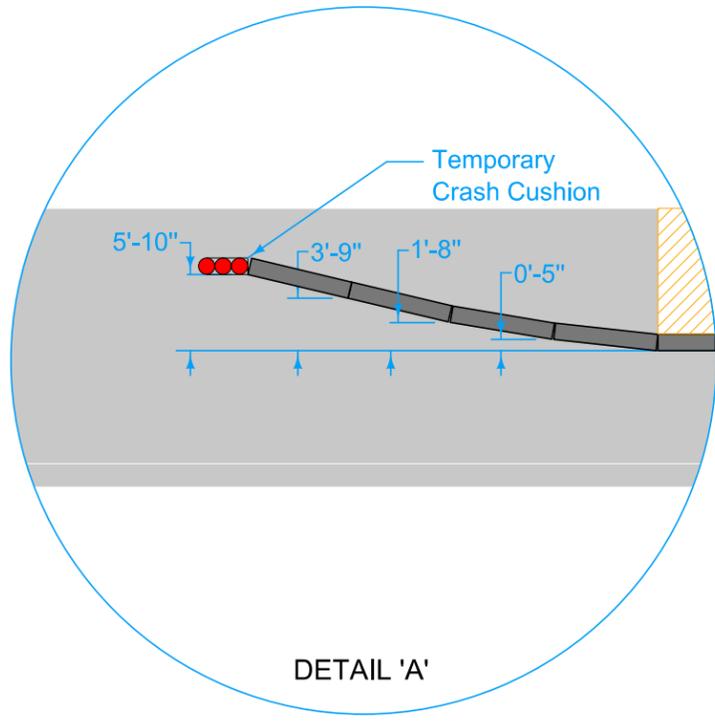
Distance Between Stop Lines (ft)	All Red (secs.)
1550	**27-36
1450	**25-33
1350	**23-31
1250	**21-29
1150	**20-26
1050	*21-36
950	*19-33
850	*17-30
750	*15-27
650	*14-23
550	*12-20

Recommended Settings, (secs.)

Initial = 12.0
 Extension = 2.5
 Maximum Green = 45.0
 Yellow = 5.0
 All Red = (see table)

* Range of values are based on operating speeds between 20 and 35 mph
 ** Range of values are based on operating speeds between 30 and 40 mph

SPEED LIMIT (mph)*	A
35 or less	250'
40 - 45	350'
50 or greater	500'



- Possible Contract Items:
- Pavement Marking Items
 - Pavement Markings Removed
 - Temporary Barrier Rail
 - Temporary Crash Cushions
 - Temporary Traffic Signals
 - Traffic Control

- Possible Tabulations:
- 108-22
 - 108-28
 - 108-30
 - 108-33

Place Concrete Barrier Markers at 10 ft C/C on bridge rail.

① Locate signal heads 70 to 100 feet beyond stop bar. Adjust location of signal heads as field conditions warrant.

* Speed Limit refers to regulatory speed limit before road work.

SIGN PLACEMENT ON
TYPE III BARRICADES



Typical Sign Placement



Sign Placement with
Supplemental Sign

Possible Contract Items:
Traffic Control
Safety Closures
Portable Dynamic Message Sign

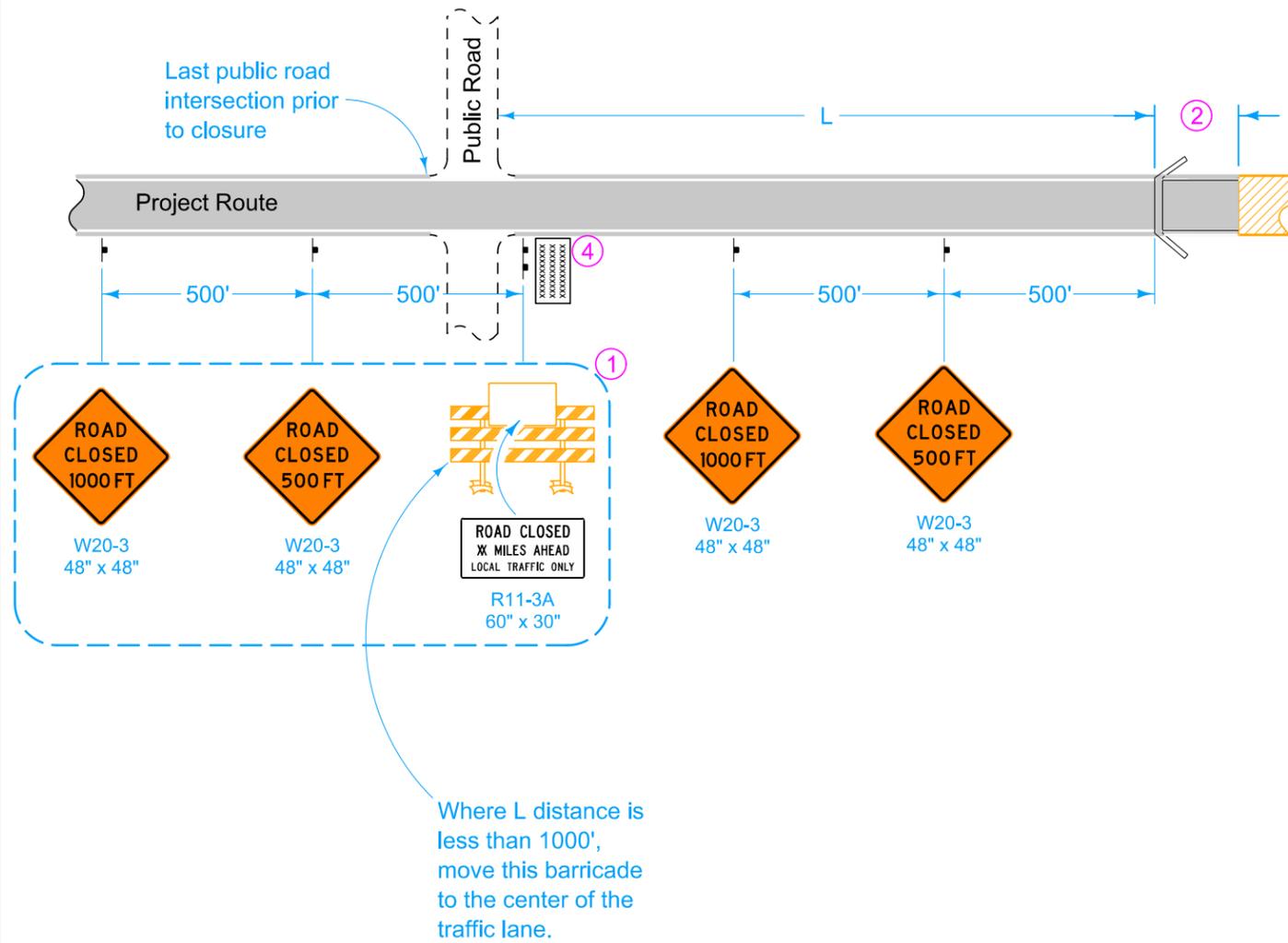
Possible Tabulation:
108-13A

	REVISION	
	7	10-21-25
STANDARD ROAD PLAN		TC-252
		SHEET 1 of 4
REVISIONS: Added sheet 4, closure of turn lanes.		

Shawn Miller
APPROVED BY DESIGN METHODS ENGINEER

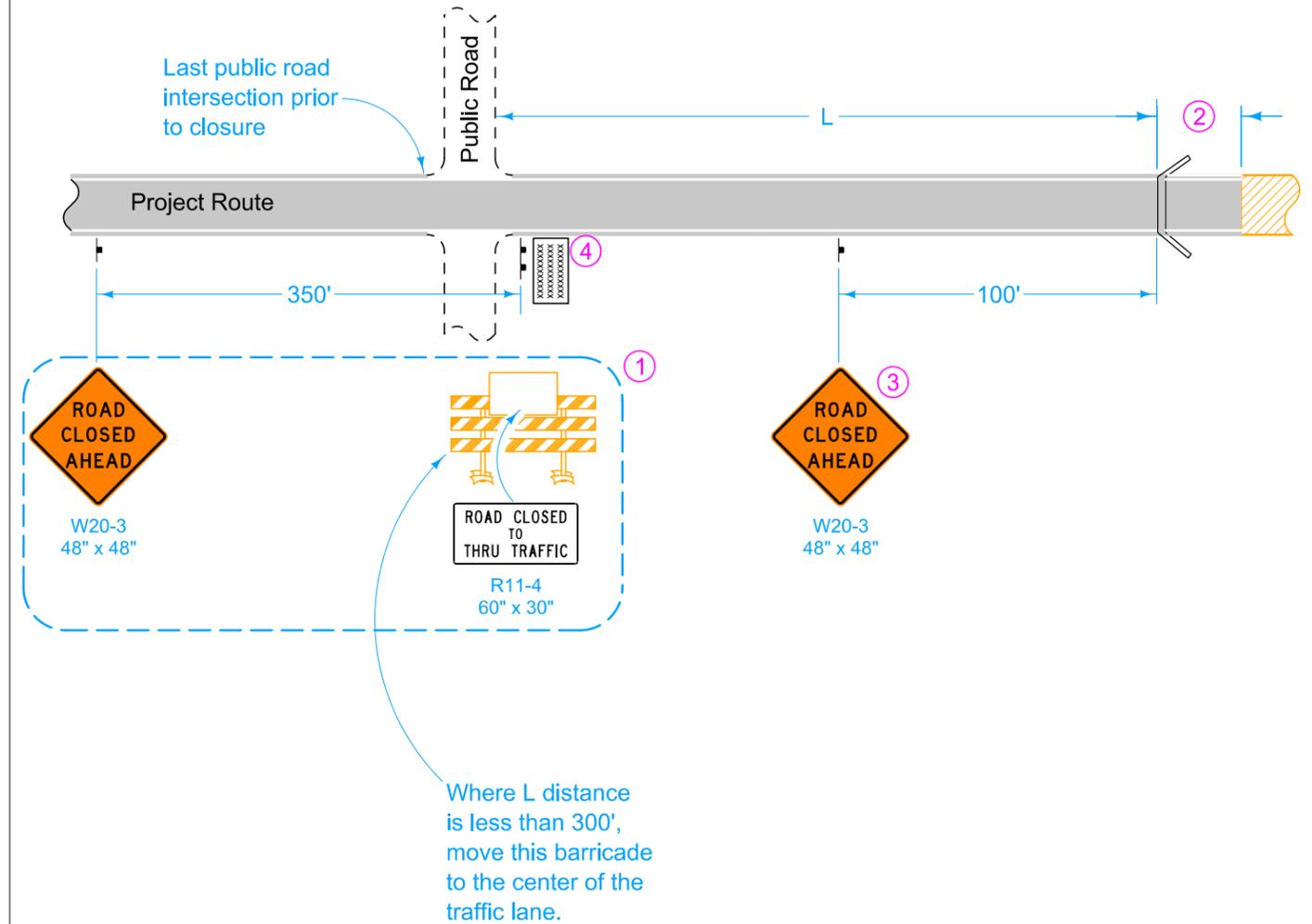
ROUTES CLOSED TO TRAFFIC

SITUATION 1 (RURAL)
Project Route Closure



Where L distance is less than 1000', move this barricade to the center of the traffic lane.

SITUATION 1 (URBAN)
Project Route Closure



Where L distance is less than 300', move this barricade to the center of the traffic lane.

LEGEND

- Traffic Sign
- Type III Barricade
- Portable Dynamic Message Sign
- Work Area
- Road Closure

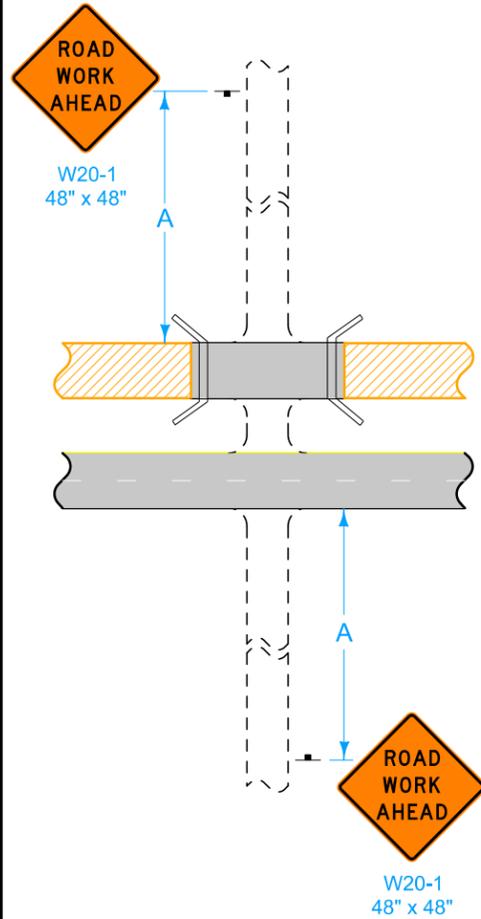
- ① In situation 1, if the intersection is the point of detour these signs and barricade will become the responsibility of the contracting authority and may be modified by the contracting authority to fit detour signing.
- ② When possible, a 100' buffer is desirable.
- ③ When L is less than 300 feet, omit the ROAD CLOSED AHEAD sign.

- ④ Place for 7 calendar days prior to closure. The Engineer will determine the message to display. Remove when road is closed. Use of Portable Dynamic Message Sign is optional on non-primary roadways.

	REVISION	
	7	10-21-25
TC-252		
SHEET 2 of 4		
REVISIONS: Added sheet 4, closure of turn lanes.		
APPROVED BY DESIGN METHODS ENGINEER		
ROUTES CLOSED TO TRAFFIC		

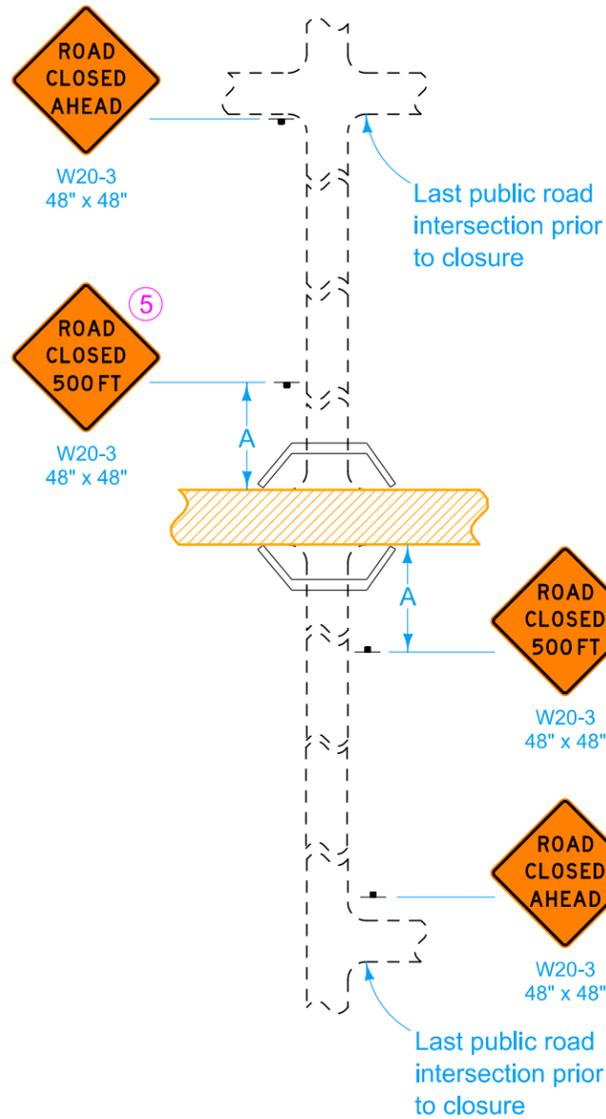
SITUATION 2

Public cross-traffic maintained.
No access to project.



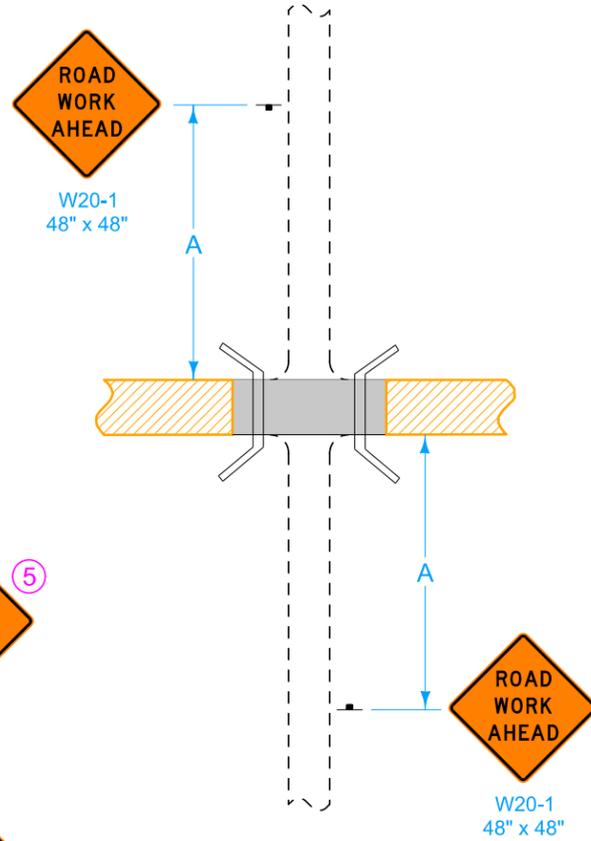
SITUATION 3

No access to project
(Applicable to T-intersections)



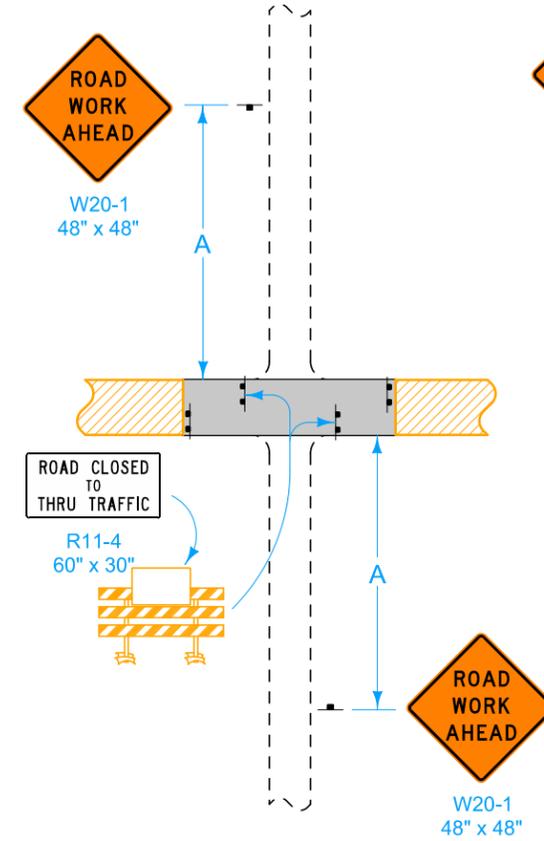
SITUATION 4

Public cross-traffic maintained.
No access to project.



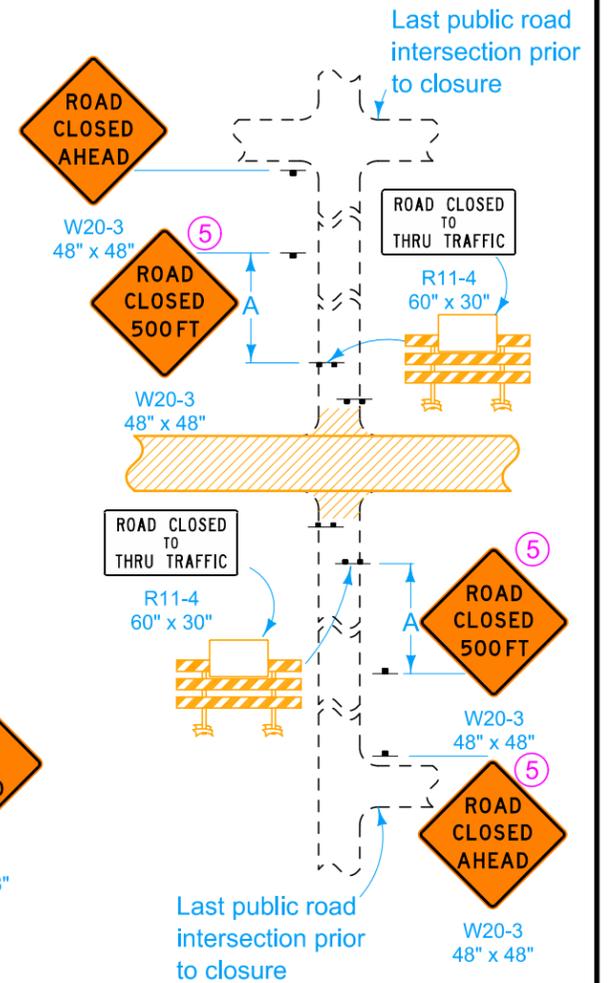
SITUATION 5

Public cross-traffic maintained.
Contractor and resident access.



SITUATION 6

No public access. Contractor and resident access only.
(Applicable to T-intersections)



During suspension of work, (such as over winter):

- Use Situation 2 on two-lane to four-lane projects.
- Situation 5 is preferred where cross-traffic is maintained.

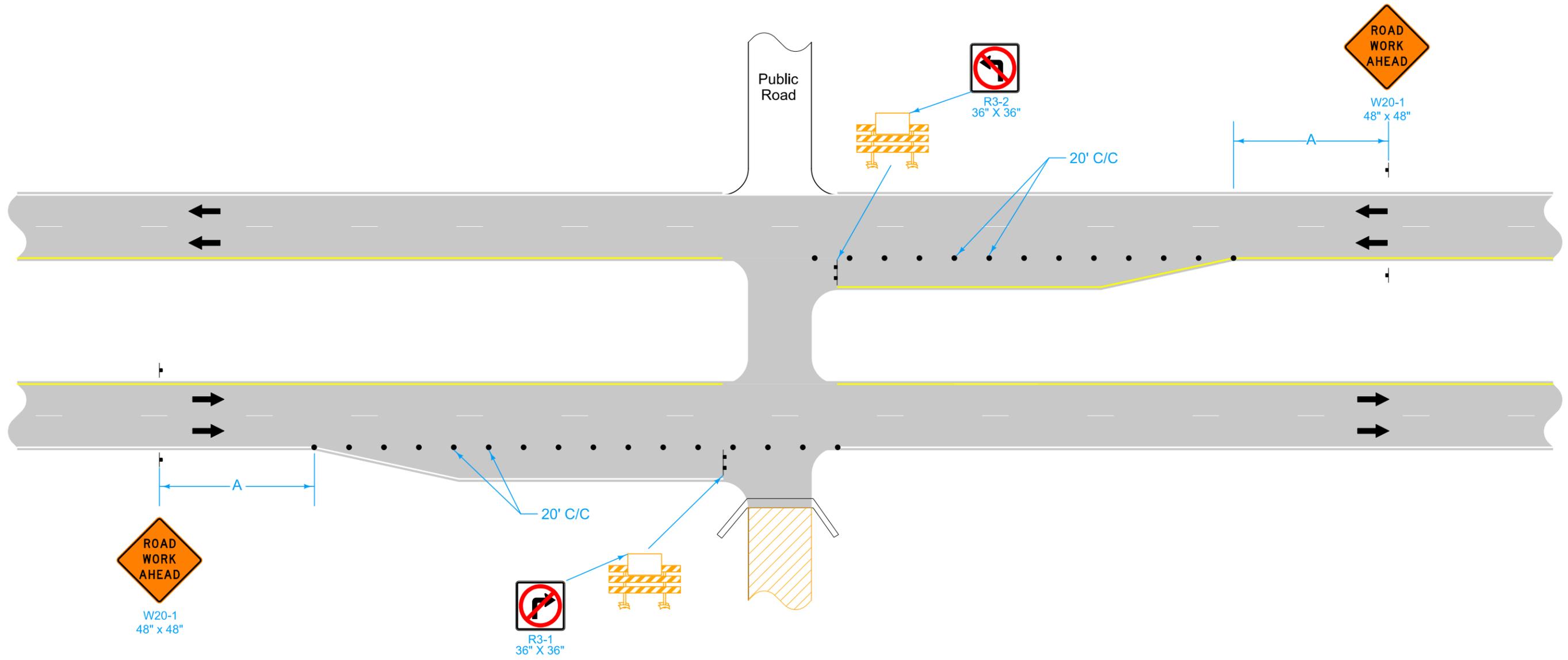
⑤ When the distance between the last public road intersection and the ROAD CLOSED or ROAD CLOSED TO THRU TRAFFIC barricade is less than 1,000 feet, omit the ROAD CLOSED 500 FT sign.

LEGEND

- Traffic Sign
- Type III Barricade
- Work Area
- Road Closure

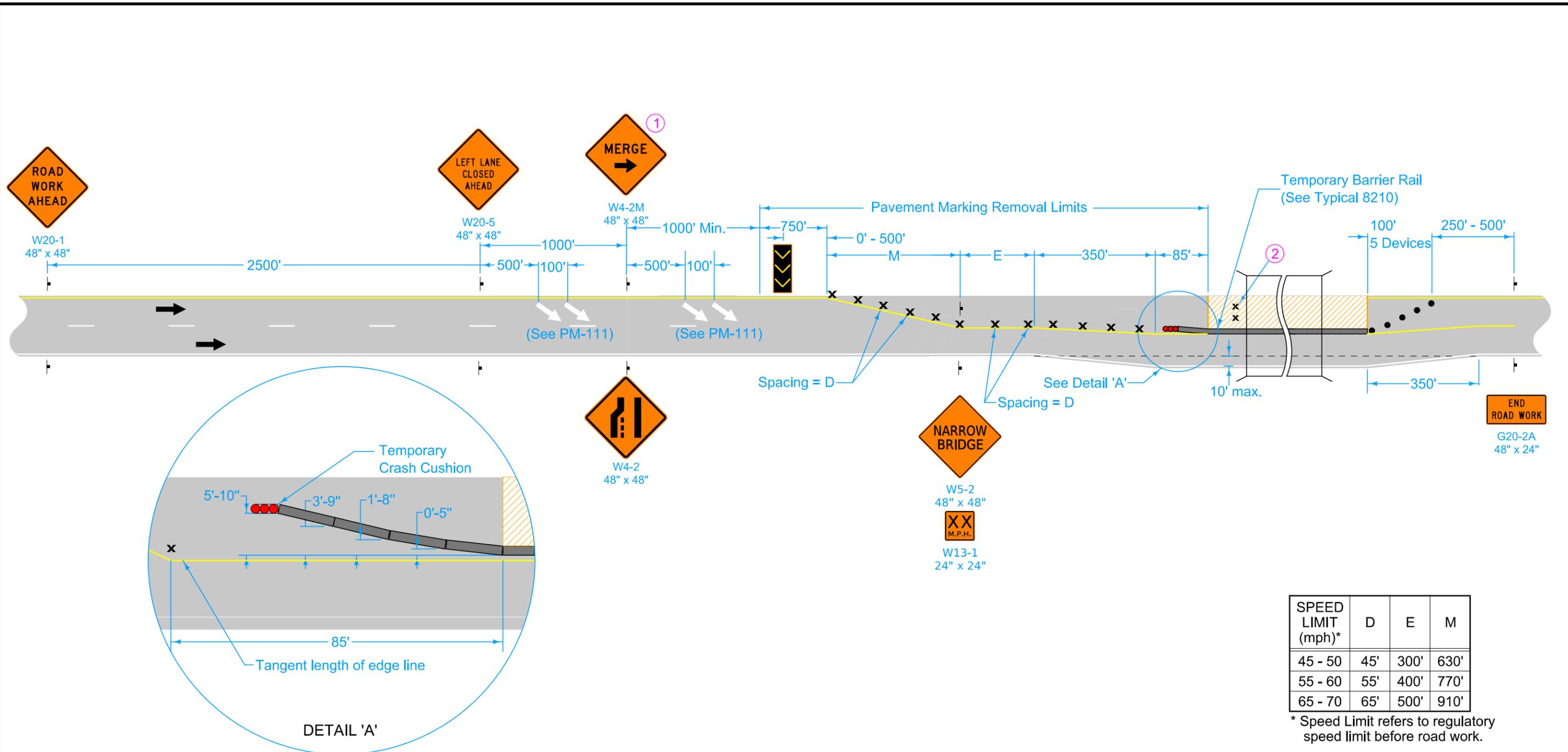
Location	A
Urban	200'
Rural	500'

IOWA DOT STANDARD ROAD PLAN	REVISION	
	7	10-21-25
REVISIONS: Added sheet 4, closure of turn lanes.		TC-252 SHEET 3 of 4
APPROVED BY DESIGN METHODS ENGINEER		
ROUTES CLOSED TO TRAFFIC		



LEGEND	
	42" Channelizer
	Traffic Sign
	Type III Barricade
	Work Area
	Road Closure

	REVISION	
	7	10-21-25
STANDARD ROAD PLAN		TC-252
REVISIONS: Added sheet 4, closure of turn lanes.		SHEET 4 of 4
 APPROVED BY DESIGN METHODS ENGINEER		
ROUTES CLOSED TO TRAFFIC		



SPEED LIMIT (mph)*	D	E	M
45 - 50	45'	300'	630'
55 - 60	55'	400'	770'
65 - 70	65'	500'	910'

* Speed Limit refers to regulatory speed limit before road work.

LEGEND	
↑	Traffic Sign
x	Drum
•	42" Channelizer
←←←	Arrow Board
●●●	Temporary Crash Cushion
▨	Work Area
←	Direction of Traffic

Place Concrete Barrier Markers at 10 ft C/C on bridge rail.

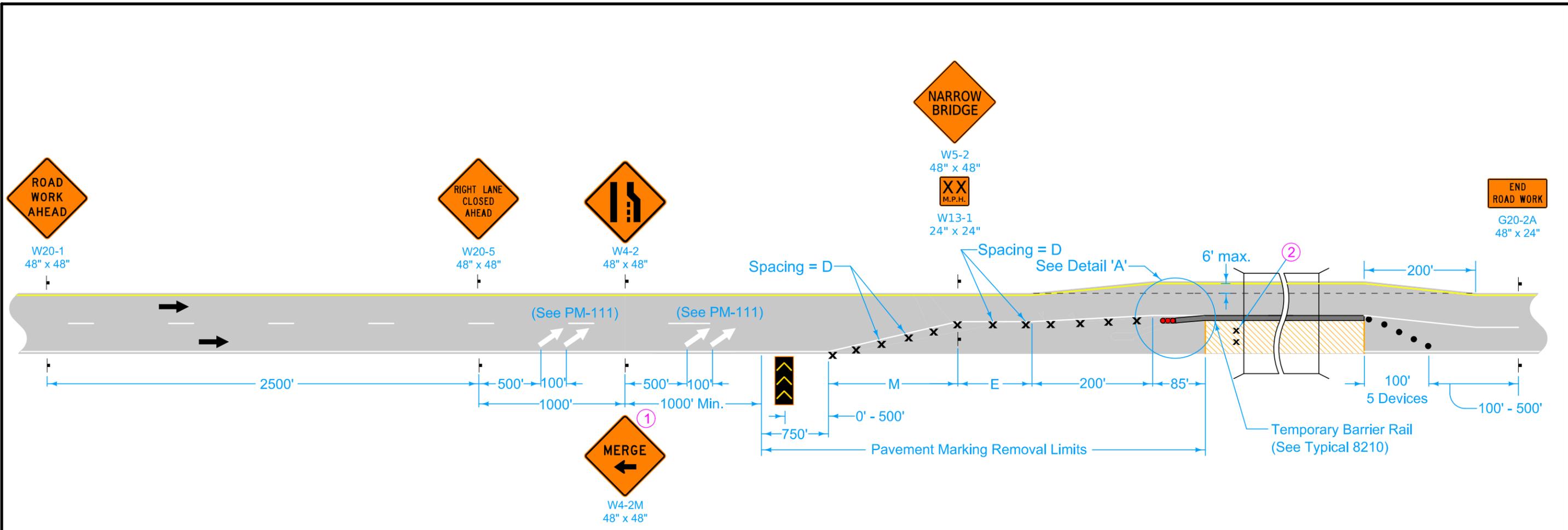
① Refer to SI-881 for sign details.

② For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.

Possible Contract Items:
 Painted Symbols and Legends
 Pavement Marking Items
 Pavement Markings Removed
 Symbols and Legends Removed
 Temporary Barrier Rail
 Temporary Crash Cushions

Possible Tabulations:
 108-22
 108-29
 108-30
 108-33

	REVISION	
	22	10-21-25
STANDARD ROAD PLAN		TC-421
REVISIONS: Adjusted taper width and length. Adjusted sign layout.		SHEET 1 of 2
APPROVED BY DESIGN METHODS ENGINEER		
LANE CLOSURE WITH TBR		

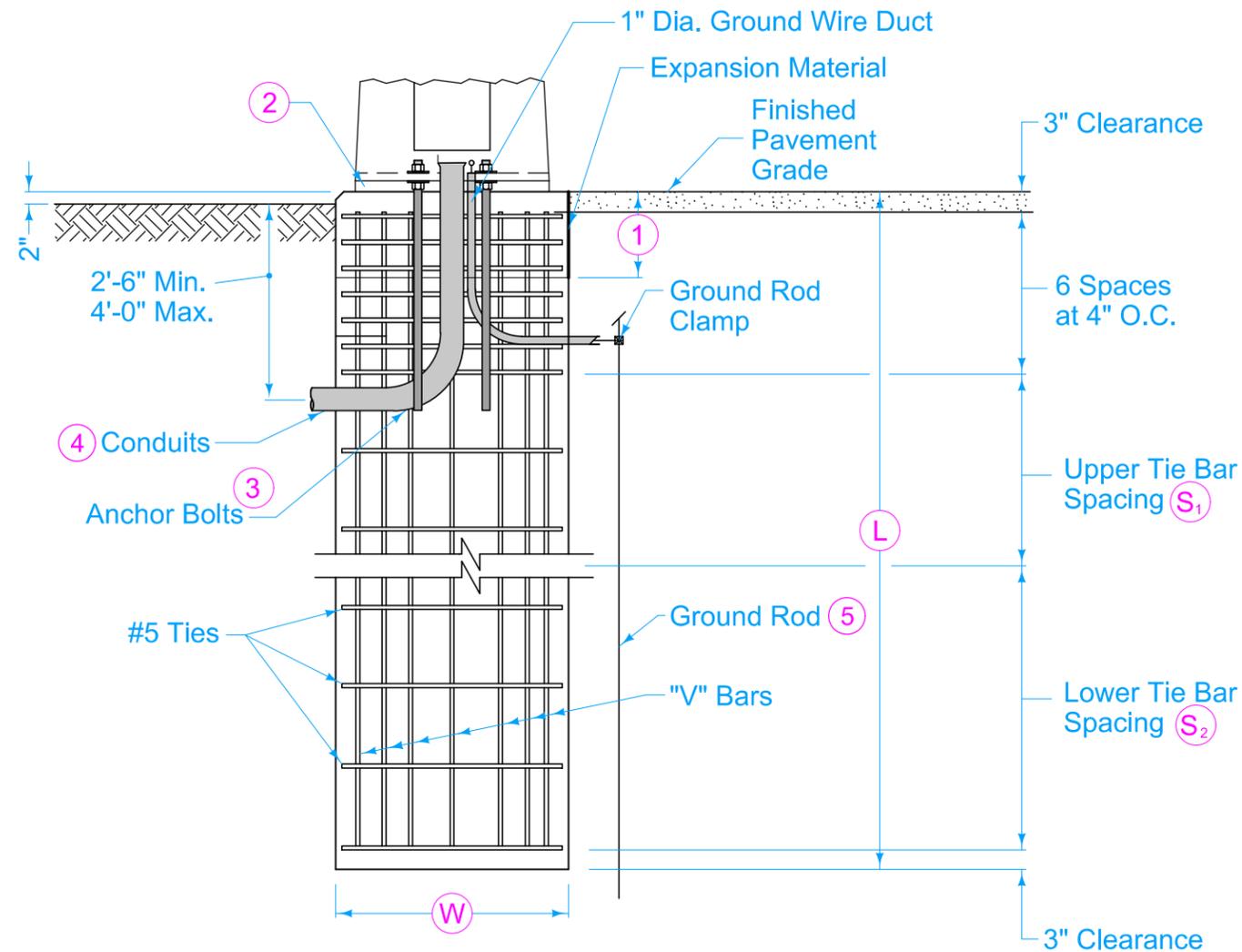


LEGEND	
†	Traffic Sign
x	Drum
•	42" Channelizer
←←←	Arrow Board
●●●	Temporary Crash Cushion
▨	Work Area
←	Direction of Traffic

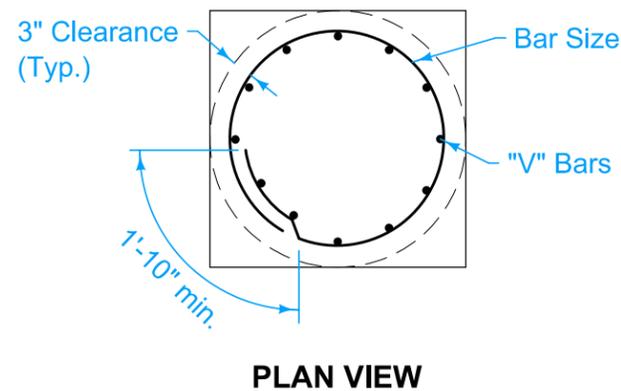
① Refer to SI-881 for sign details.

② For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.

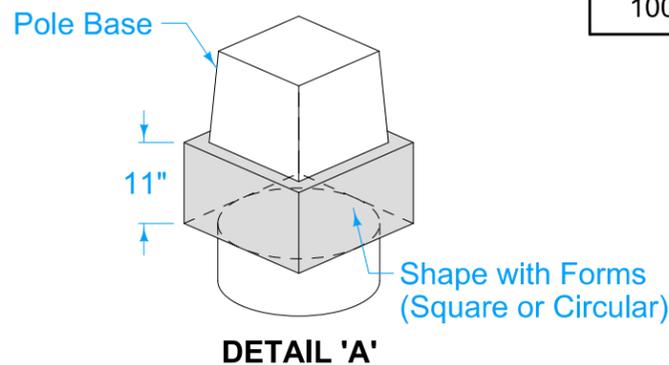
	REVISION
	22 10-21-25
STANDARD ROAD PLAN	
TC-421	
SHEET 2 of 2	
REVISIONS: Adjusted taper width and length. Adjusted sign layout.	
APPROVED BY DESIGN METHODS ENGINEER	
LANE CLOSURE WITH TBR	



**MAST ARM POLE FOUNDATION IN SOIL
TYPE A FOUNDATION**



PLAN VIEW



DETAIL 'A'

The Type A Foundation is the normally required foundation construction. Where rock is encountered, the Engineer may approve the use of the Type B or C Foundation. Prior to installing a foundation in rock, obtain a subsurface investigation certified by a geotechnical engineer licensed in the State of Iowa.

- ① Shape top 11 inches with forms. See Detail 'A'.
- ② Install rodent guard or non-shrink grout with weep hole.
- ③ Furnish nut, nut and plate, or nut and anchor bolt assembly ring plate on embedded end.
- ④ Provide conduits as per plans.
- ⑤ Install ground rod adjacent to foundation or in adjacent handhole.

Max. Mast Arm Length	Foundation		"V" Bars			Tie Bars				
	W	L	Count	Size	Length	Count	Upper Spacing		Lower Spacing	
							# Spaces	S ₁	# Spaces	S ₂
35'-0"	3'-0"	12'-0"	12	#8	11'-6"	17	9	12"	N/A	N/A
45'-0"	3'-0"	14'-0"	12	#8	13'-6"	19	11	12"	N/A	N/A
55'-0"	3'-0"	16'-0"	12	#8	15'-6"	25	12	8"	5	12"
60'-0"	3'-0"	18'-0"	13	#8	17'-6"	28	15	8"	5	12"
70'-0"	3'-6"	18'-0"	12	#10	17'-6"	28	15	8"	5	12"
80'-0"	3'-6"	21'-0"	14	#10	20'-6"	40	28	6"	4	12"
90'-0"	4'-0"	22'-0"	16	#10	21'-6"	42	24	6"	10	8"
100'-0"	4'-0"	24'-0"	18	#10	23'-6"	47	32	6"	7	8"

		REVISION	
		6	10-21-25
FIGURE 8010.102	STANDARD ROAD PLAN	TS-102 SHEET 1 of 4	

REVISIONS: Updated Sudas and IDOT Logos.

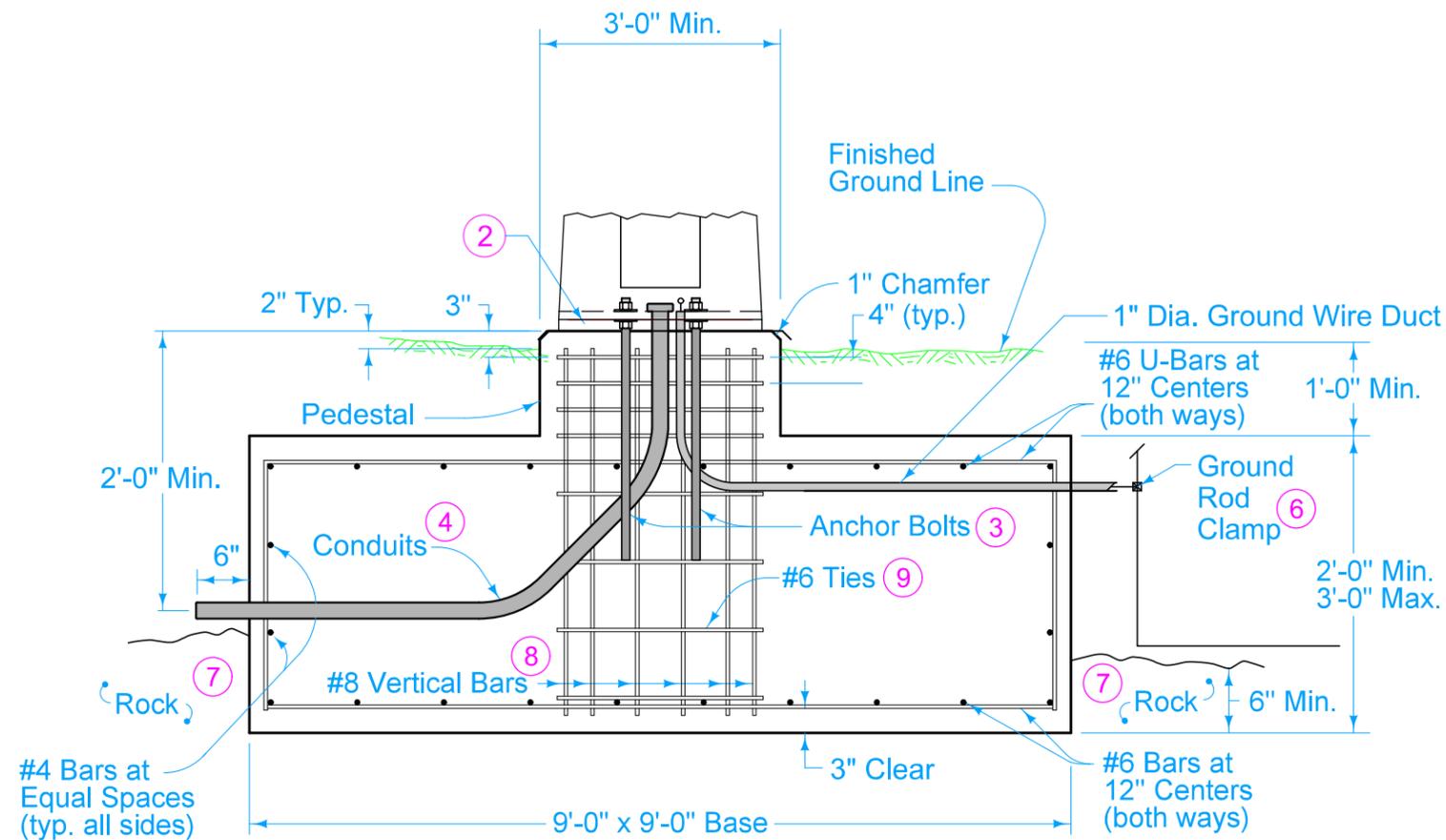
SUDAS DIRECTOR
 DESIGN METHODS ENGINEER

Type B Foundation is applicable for traffic signal poles with mast arm lengths up to 60 feet.

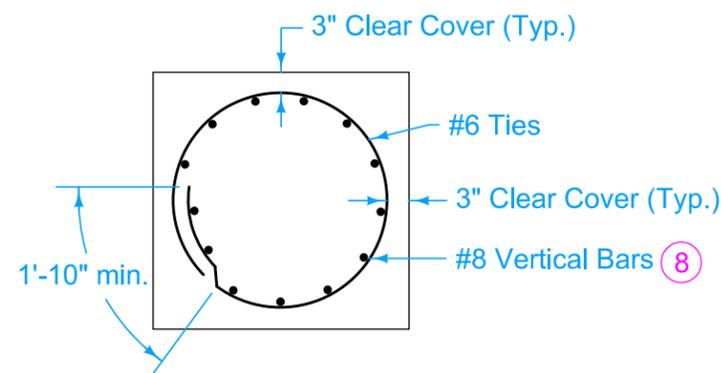
If the excavation for a Type B Foundation is left open for more than 1 calendar day, install temporary barrier rail if any part of the excavation is located within the clear zone. Temporary barrier rail layout requires the Engineer's approval.

Competent rock has an average unconfined compressive strength (q_u) of at least 2.0 ksi and rock quality designation of at least 90%. Conditions not meeting minimum requirements will require either:

- A site specific design, or
- Using the parameters for Mast Arm Pole Foundation in Soil.



**MAST ARM POLE FOUNDATION IN ROCK
TYPE B FOUNDATION**

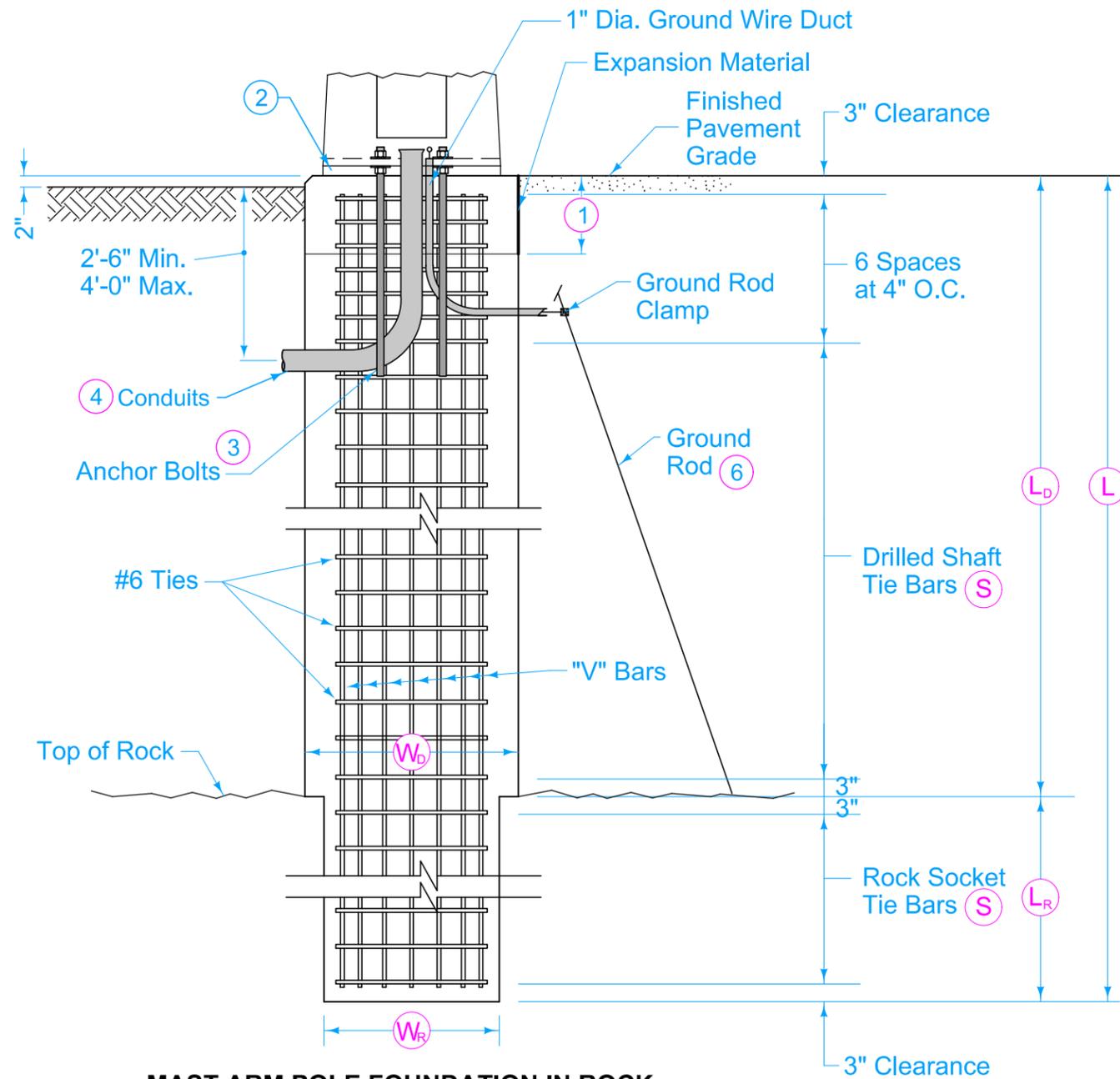


PLAN VIEW

- ② Install rodent guard or non-shrink grout with weep hole.
- ③ Furnish nut, nut and plate, or nut and anchor bolt assembly ring plate on embedded end.
- ④ Provide conduits as per plans.
- ⑥ When in contact with rock, place ground rods as specified in National Electrical Code, current edition, adjacent to foundation or in adjacent handhole.
- ⑦ Cast foundation concrete against competent rock. If foundation is formed, place backfill with concrete cast against rock.
- ⑧ Place 13 equally spaced #8 vertical bars.
- ⑨ #6 bars spaced at 8 inch maximum. Ties may be welded to vertical bars.

		REVISION	
		6	10-21-25
FIGURE 8010.102	STANDARD ROAD PLAN	TS-102	
		SHEET 2 of 4	

REVISIONS:	Updated Sudas and IDOT Logos.
 SUDAS DIRECTOR	 DESIGN METHODS ENGINEER



- ① Shape top 11 inches with forms. See Detail 'A'.
- ② Install rodent guard or non-shrink grout with weep hole.
- ③ Furnish nut, nut and plate, or nut and anchor bolt assembly ring plate on embedded end.
- ④ Provide conduits as per plans.
- ⑥ When in contact with rock, place ground rods as specified in National Electrical Code, current edition, adjacent to foundation or in adjacent handhole.

Max. Mast Arm Length	Foundation						"V" Bars			Tie Bars
	W _D Min.	W _R Min.	L ^{***} Max.	L _D	L _R ^{****}		Count	Size	Length	S Spacing
					Broken Rock*	Competent Rock**				
35'-0"	3'-0"	2'-6"	12'-0"	VARIES L _D = (L - L _R)	4'-6"	3'-0"	13	#8	L - 6"	6"
45'-0"	3'-0"	2'-6"	14'-0"		4'-6"	3'-0"	13	#8	L - 6"	6"
55'-0"	3'-0"	2'-6"	16'-0"		4'-6"	3'-0"	13	#8	L - 6"	6"
60'-0"	3'-0"	2'-6"	18'-0"		4'-6"	3'-0"	13	#8	L - 6"	6"
70'-0"	3'-6"	3'-0"	18'-0"		5'-6"	3'-6"	14	#9	L - 6"	5½"
80'-0"	3'-6"	3'-0"	21'-0"		5'-6"	3'-6"	14	#9	L - 6"	5½"
90'-0"	4'-0"	3'-6"	22'-0"		6'-0"	4'-0"	15	#10	L - 6"	5½"
100'-0"	4'-0"	3'-6"	24'-0"		6'-0"	4'-0"	15	#10	L - 6"	5½"

*Broken rock has an average unconfined compressive strength (q_u) of at least 1.0 ksi and rock quality designation of at least 20%.

**Competent rock has an average unconfined compressive strength (q_u) of at least 2.0 ksi and rock quality designation of at least 90%.

***Total foundation length L must be sufficient to provide a 3 inch clearance between the bottom of the traffic signal pole anchor bolts and the bottom of the rock socket.

****The Rock Socket Length L_R can be decreased if the total length of the shaft is L long as shown in the table.

Conditions not meeting minimum requirements will require site specific designs or shall use the Type A Foundation Soil parameters.

**MAST ARM POLE FOUNDATION IN ROCK
TYPE C FOUNDATION**

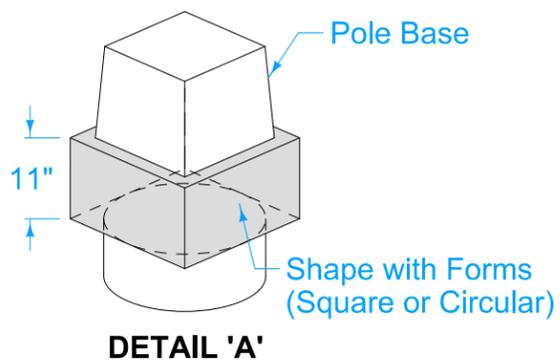
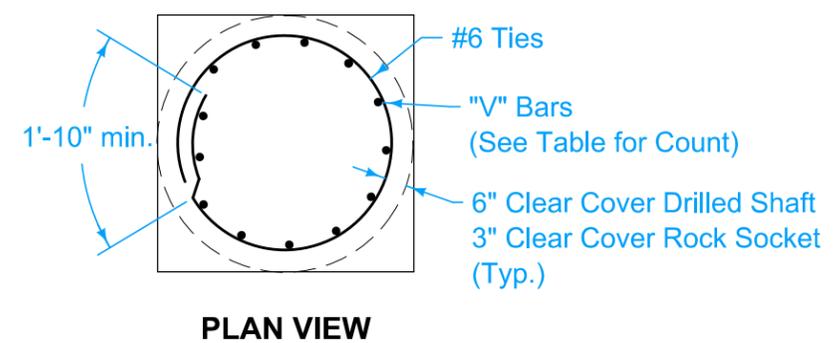
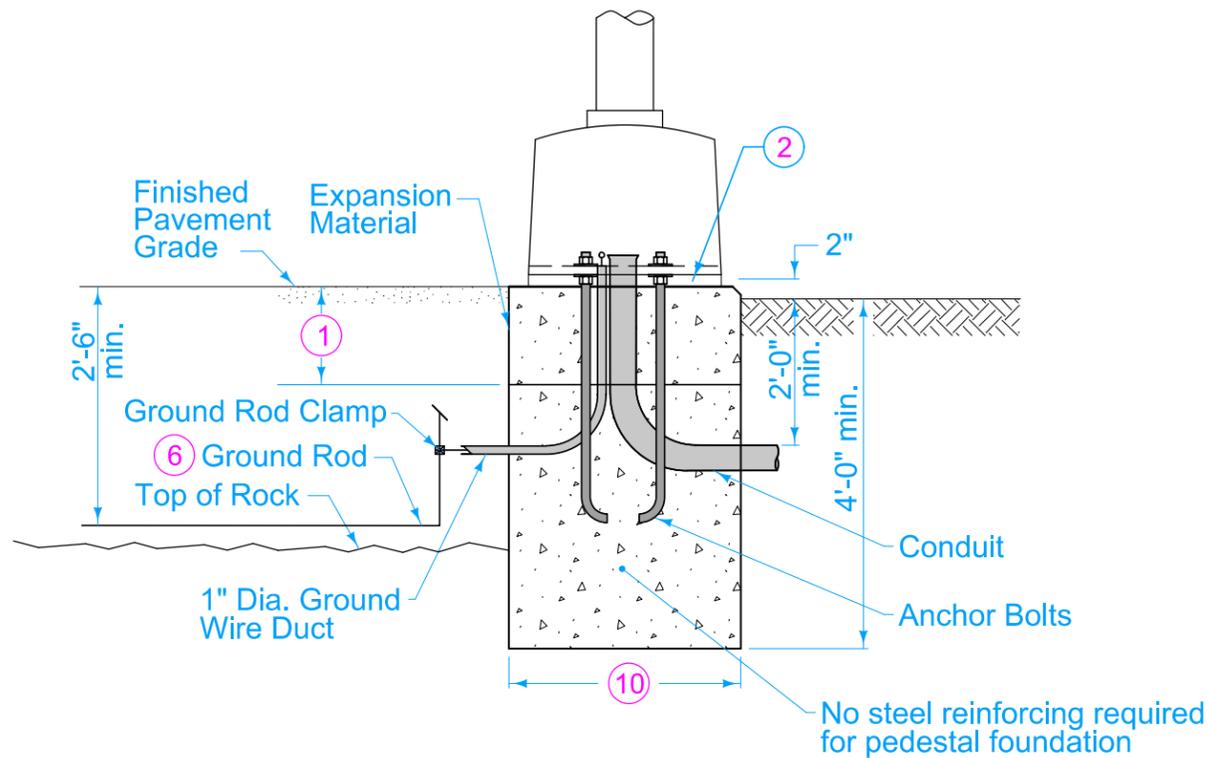
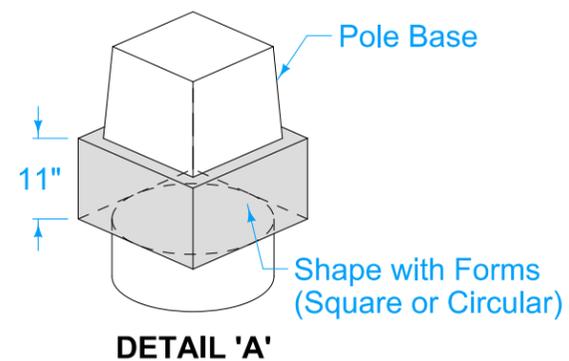


FIGURE 8010.102 SHEET 3 OF 4

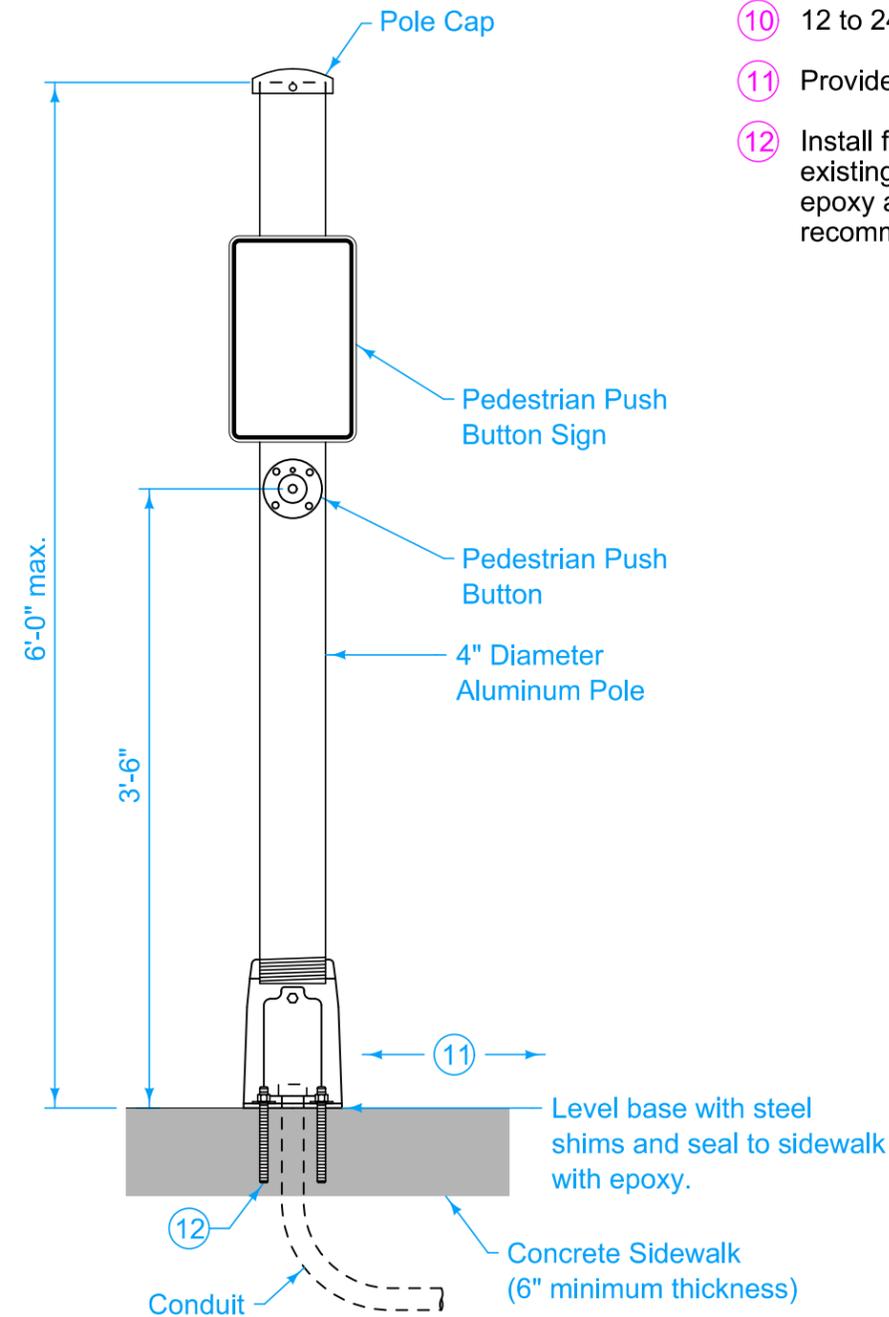
		REVISION	
		6	10-21-25
FIGURE 8010.102	STANDARD ROAD PLAN	TS-102	
SHEET 3 of 4			
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
TRAFFIC SIGNAL POLE FOUNDATION			



PEDESTAL POLE FOUNDATION IN SOIL OR ROCK



DETAIL 'A'



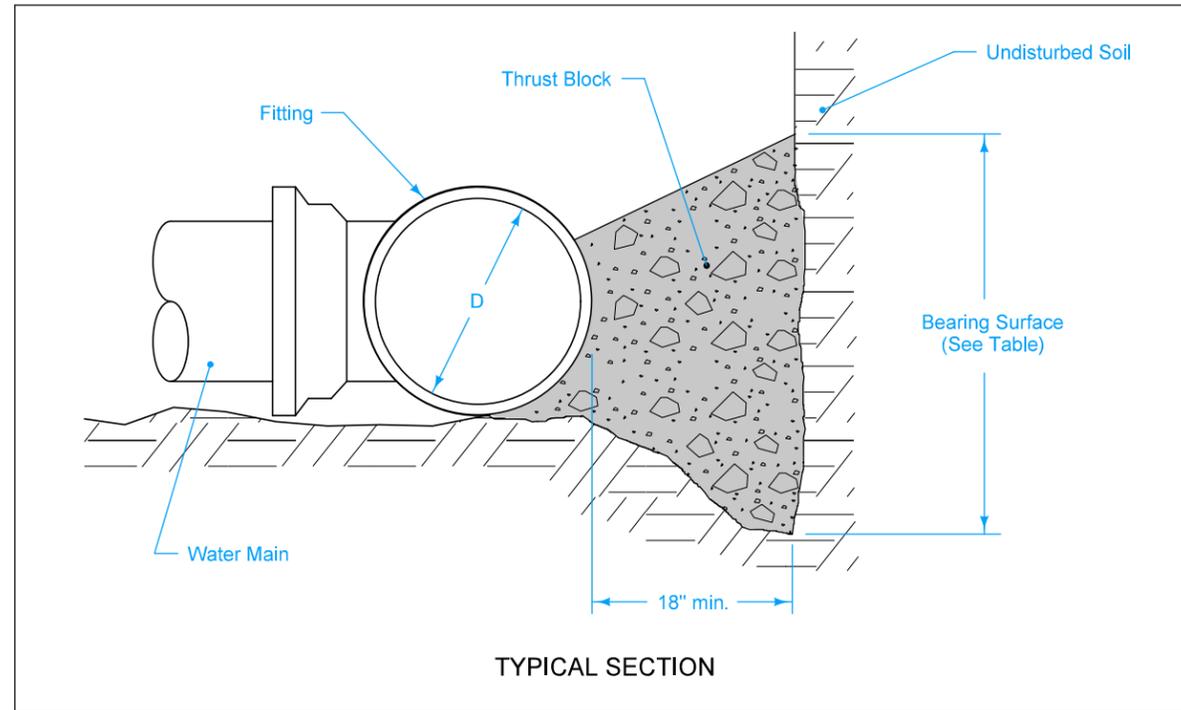
ALTERNATE PUSH BUTTON POLE SIDEWALK MOUNTING

- ① Shape top 11 inches with forms. See Detail 'A'.
- ② Install rodent guard or non-shrink grout with weep hole.
- ⑥ When in contact with rock, place ground rods as specified in National Electrical Code, current edition, adjacent to foundation or in adjacent handhole.
- ⑩ 12 to 24 inch diameter as shown in contract documents.
- ⑪ Provide 4 foot accessible path adjacent to push button pole.
- ⑫ Install four anchor bolts, washers, and nuts in new or existing concrete sidewalk by drilling and anchoring with epoxy adhesive. Provide bolts according to manufacturer's recommendations.

		REVISION	
		6	10-21-25
FIGURE 8010.102	STANDARD ROAD PLAN	TS-102 SHEET 4 of 4	

REVISIONS: Updated Sudas and IDOT Logos.

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Extend thrust blocks to undisturbed soil. Excavation into trench wall may be necessary.

Form vertical surfaces of poured concrete thrust blocks except on bearing surface.

Encase all fittings in polyethylene wrap. Do not allow concrete to directly contact joints or fitting bolts.

Diameter of Pipe, D (inches)	MINIMUM BEARING SURFACE (sf)				
	Bends				Tees and Dead Ends
	11 $\frac{1}{4}$ ^o	22 $\frac{1}{2}$ ^o	45 ^o	90 ^o	
4	1	1	2	4	3
6	1	2	4	8	6
8	2	4	7	14	10
10	3	6	11	21	15
12	4	8	16	29	21
14	5	11	21	39	28
16	7	14	27	50	36
18	9	17	34	63	45
20	11	21	42	78	55
24	15	31	60	111	78
30	24	47	92	171	120
36	34	67	132	244	173

Minimum surface area based on water pressure of 150 psi and allowable soil pressure of 1,000 psf.

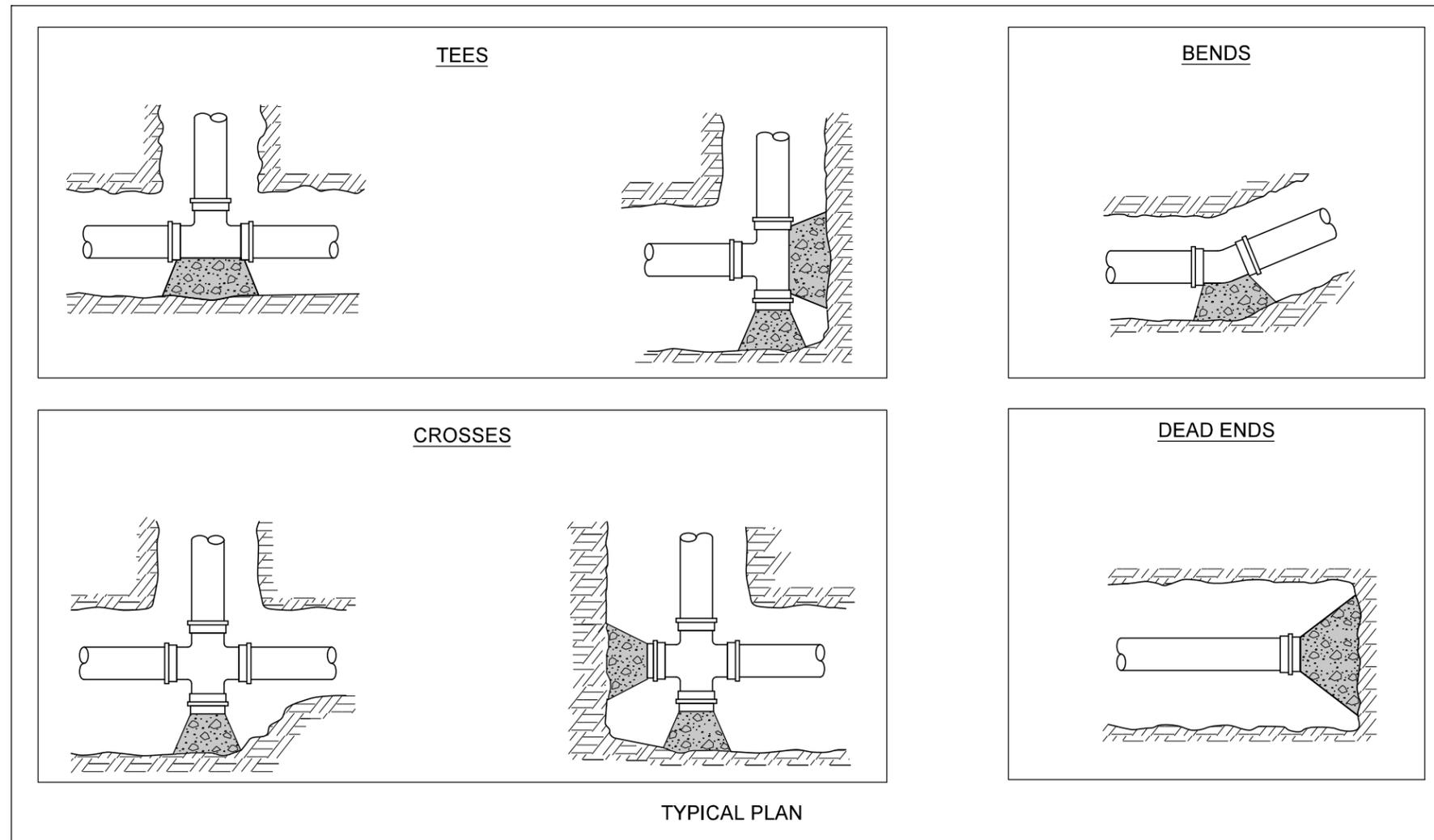
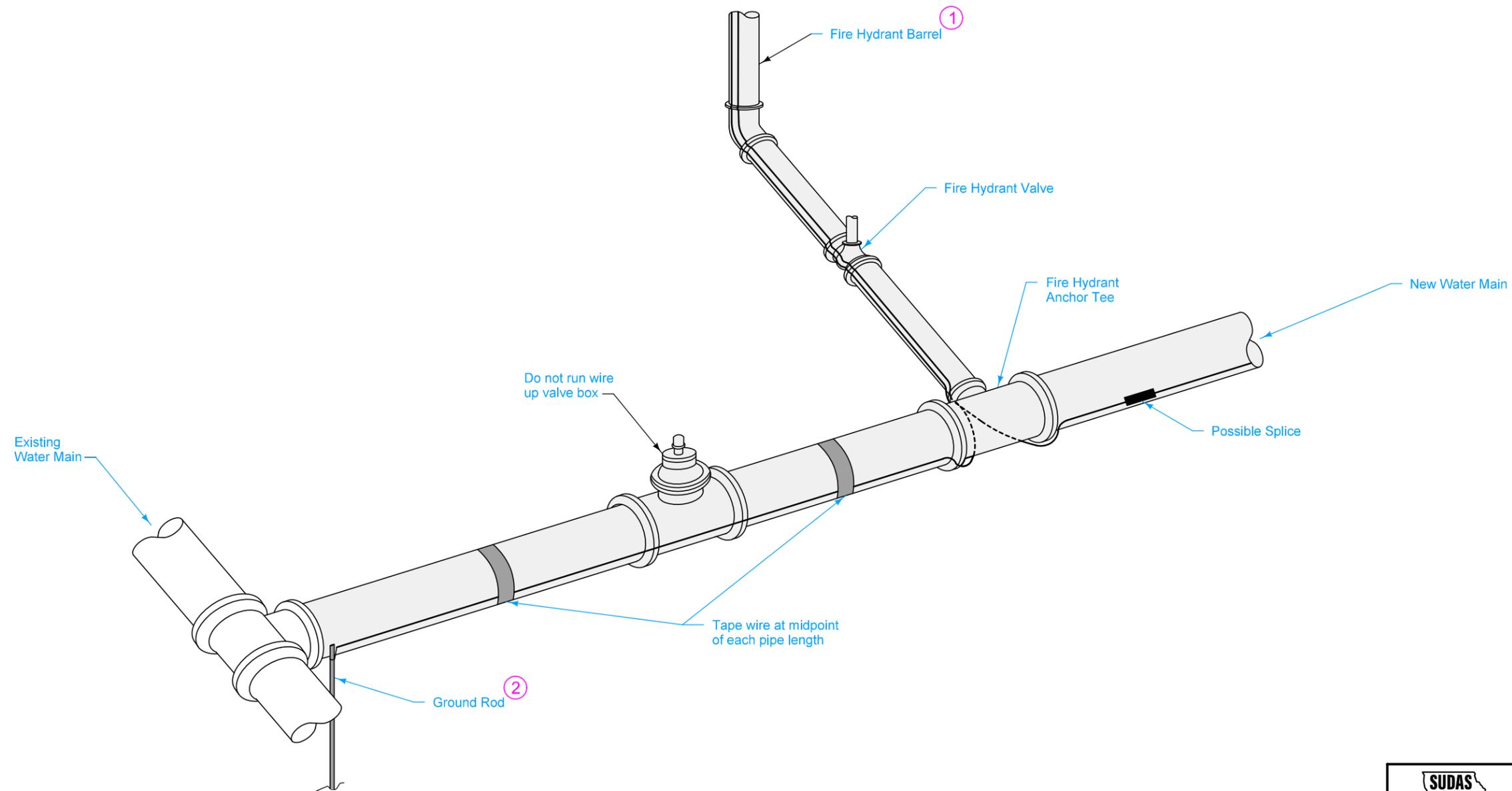


FIGURE 5010.101 SHEET 1 OF 2

		REVISION	
		2	10-21-25
FIGURE 5010.101	STANDARD ROAD PLAN	WM-101 SHEET 1 of 2	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
THRUST BLOCKS			

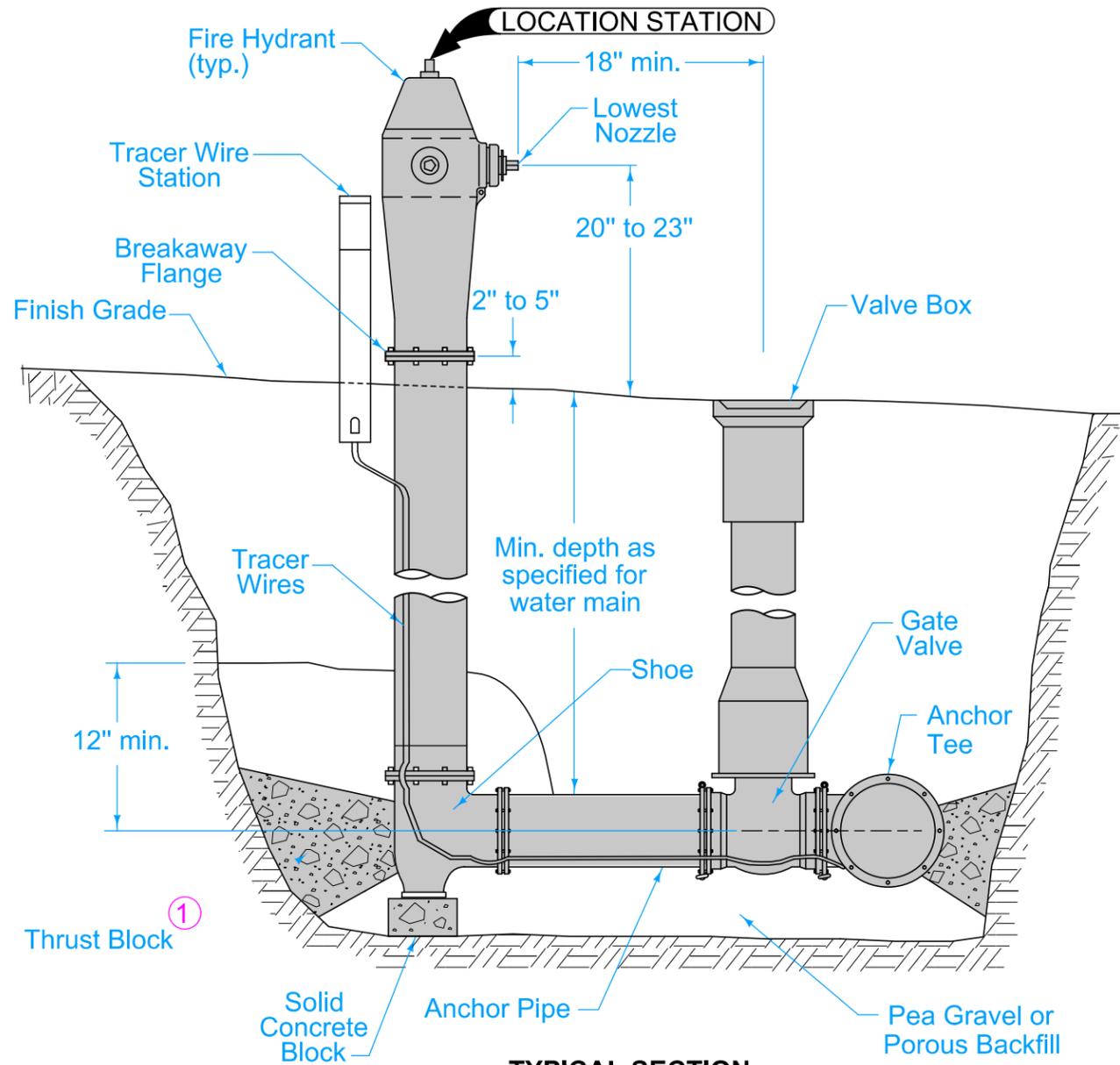
- ① Extend tracer wire up fire hydrant barrel to internal terminals of tracer wire station and back down. Refer to WM-201 for details of fire hydrant assembly.
- ② Clamp tracer wire to ground rod at system termination points.



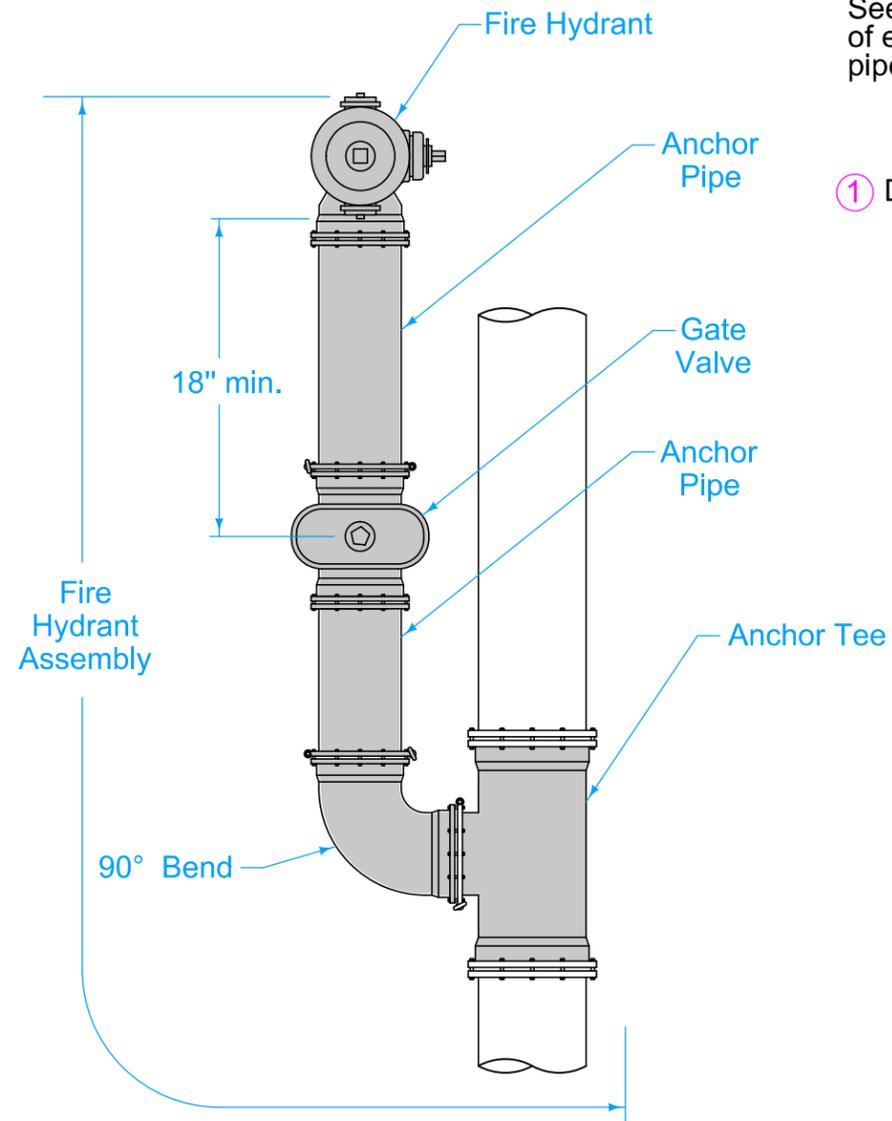
TYPICAL INSTALLATION

FIGURE 5010.102 SHEET 1 OF 1

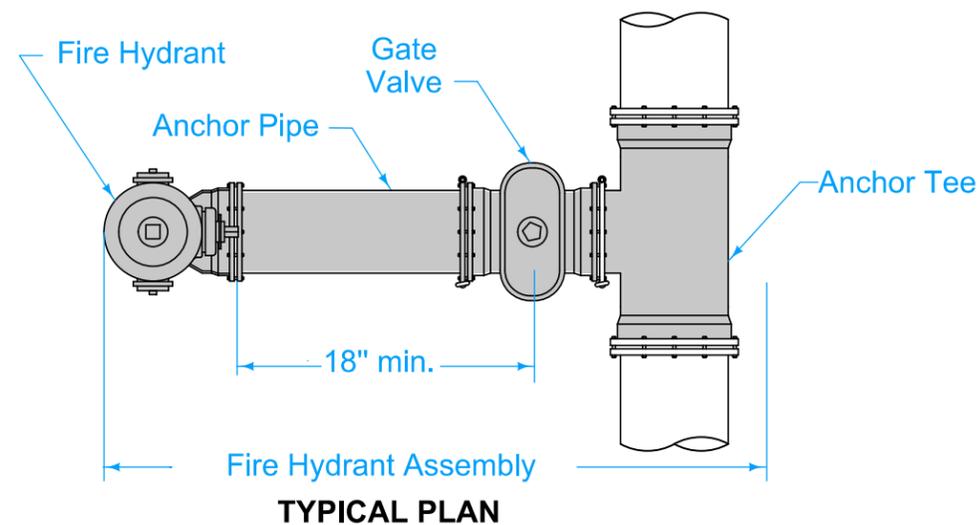
		REVISION	
		2	10-21-25
FIGURE 5010.102	STANDARD ROAD PLAN	WM-102	
		SHEET 1 of 1	
REVISIONS: Updated Sudas and IDOT Logos.			
 SUDAS DIRECTOR		 DESIGN METHODS ENGINEER	
TRACER SYSTEM			



TYPICAL SECTION



ALTERNATE PLAN



TYPICAL PLAN

Use ductile iron pipe with restrained mechanical joints for fire hydrant assembly and anchor tee.

All shaded items are included in the Fire Hydrant Assembly bid item.

See the contract documents for the location of each hydrant and the length of anchoring pipe.

① Do not cover drain holes or tracer wire.

FIGURE 5020.201 SHEET 1 OF 1

		REVISION	
		5	10-21-25
FIGURE 5020.201	STANDARD ROAD PLAN	WM-201	
SHEET 1 of 1			

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FIRE HYDRANT ASSEMBLY