STANDARD PLANS

FOR INFORMATION ONLY

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9	BM-01	Bedding and Backfill for Drainage Structures (Sheet 2)	10/26/2023	5/8/2024
10	CB-01	Concrete Open Top Catch Basin (12’ Max. Depth)(24” x 36” Max. Pipe)(Specify Grate Type)	11/2/2000	
11	CB-02	Concrete Open Top Catch Basin (12’ Max. Depth)(42” x 72” Max. Pipe)(Specify Grate Type)	11/2/2000	
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15	CB-07	R. C. Catch Basin, Curb & Gutter Opening (4” Mount. or 6” Barr.)(Max. Pipe 42” x 72”)(Max. Depth 12’)	11/2/2000	
16	CB-08	Dbl. Comb.-Type Catch Basin (4” mount or 6” Barr.)(Max. Pipe Parallel to Curb: 72” RCP or 84” CMP)(Max. Pipe Perpendicular to Curb: 84” RCP or 96” CMP)(Max Depth 20’)	10/7/2010	
17	CB-09	Comb. Type Catch Basin (Trunk line Under Pavement)(4” mount. or 6” Barr.)(Max. Pipe Parallel to Curb: 84” RCP or 96” CMP)(Max. Pipe Perpendicular to Curb: 84” RCP or 96” CMP)(Max. Depth: 20’)	10/7/2010	
18	CB-Adjust	Adjusting / Conversion of Existing Catch Basins or Manholes	10/30/2019	2/5/2020
19	CC-30-20	2’ to 5’ Span x 2’ to 5’ Height R. C. Box Culvert (Single Opening)(Obsolete-use for extensions only)	1/5/1978	
20	CC.S.M. 4-6.S.45°.1	4’ x 4’, 5’ x 5’, 6’ x 6’ R. C. Box Culvert (Multiple Openings)	1/11/1978	
21	CC.S.M. 4-6.S.60°.1	4’ x 4’, 5’ x 5’, 6’ x 6’ R. C. Box Culvert (Multiple Openings)	1/11/1978	
22	CC.S.M. 4-6.S.75°.1	4’ x 4’, 5’ x 5’, 6’ x 6’ R. C. Box Culvert (Multiple Openings)	1/11/1978	
23	CC.S.M. 4-6.S.90°.1	4’ x 4’, 5’ x 5’, 6’ x 6’ R. C. Box Culvert (Multiple Openings)	1/11/1978	
24	CC.S.M. 5.R.45°.1	5’ x 4’ R.C. Box Culvert (Multiple Openings)	1/5/1978	
25	CC.S.M. 5.R.60°.1	5’ x 4’ R.C. Box Culvert (Multiple Openings)	1/5/1978	
26	CC.S.M. 5.R.75°.1	5’ x 4’ R.C. Box Culvert (Multiple Openings)	1/11/1978	
27	CC.S.M.5.R. 90°.1	5’ x 4’ R.C. Box Culvert (Multiple Openings)	1/11/1978	
28	CC.S.M. 6-7.R. 45°.1	6’ x 4’, 6’ x 5’, 7’ x 4’, R.C. Box Culvert (Multiple Openings)	1/5/1978	
29	CC.S.M. 6-7.R. 60°.1	6’ x 4’, 6’ x 5’, 7’ x 4’, R. C. Box Culvert (Multiple Openings)	1/11/1978	
30	CC.S.M. 6-7. R. 75°.1	6’ x 4’, 6’ x 5’, 7’ x 4’ R. C. Box Culvert (Multiple Openings)	1/5/1978	
31	CC.S.M. 6-8.R.90°.1	6’ x 4’, 6’ x 5’, 7’ x 4’, 7’ x 5’, 7’ x 6’, 8’ x 5’, 8’ x 6’, R. C. Box Culvert (Multiple Openings)	1/11/1978	
32	CC.S.M. 7-8.R. 45°.1	7’ x 5’, 7’ x 6’, 8’ x 5’, 8’ x 6’ R. C. Box Culvert (Multiple Openings)	1/11/1978	
33	CC.S.M. 7-8.R. 60°.1	7’ x 5’, 7’ x 6’, 8’ x 5’, 8’ x 6’ R.C. Box Culvert (Multiple Openings)	1/5/1978	

PAGE NO.	STANDARD PLAN NUMBER	DESCRIPTION	REVISION DATE	EFFECTIVE FOR THE LETTING OF
34	CC.S.M. 7-8.R. 75°.1	7’ x 5’, 7’ x 6’, 8’ x 5’, 8’ x 6’ R.C. Box Culvert (Multiple Openings)	1/11/1978	
35	CC.S.M. 7-10.S.45°.1	7’ x7’, 8’ x 8’, 9’ x 9’, 10’ x 10’ R.C. Box Culvert (Multiple Openings)	1/11/1978	
36	CC.S.M. 7-10.S.60°.2	7’ x 7’, 8’ x 8’, 9’ x 9’, 10’ x 10’ R.C. Box Culvert (Multiple Openings)	1/5/1978	
37	CC.S.M. 7-10.S.75°.1	7’ x 7’, 8’ x 8’, 9’ x 9’, 10’ x 10’ R.C. Box Culvert (Multiple Openings)	1/11/1978	
38	CC.S.M. 7-10.S.90°.1	7’ x7’, 8’ x 8’, 9’ x 9’, 10’ x 10’ R.C. Box Culvert (Multiple Openings)	1/5/1978	
39	CC.S.M. 8-9.R.90°.1	9’ x 7’, 9’ x 8’, 8’ x 7’, R.C. Box Culvert (Multiple Openings)	1/11/1978	
40	CC.S.M. 10.R.45°.1	10’ x 7’, 10’ x 8’, 10’ x 9’ R.C. Box Culvert (Multiple Openings)	1/11/1978	
41	CC.S.M. 10.R.60°.1	10’ x 7’, 10’ x 8’, 10’ x 9’ R.C. Box Culvert (Multiple Openings)	1/11/1978	
42	CC.S.M. 10.R.90°.1	10’ x 7’, 10’ x 8’, 10’ x 9’ R.C. Box Culvert (Multiple Openings)	1/5/1978	
43	CC.S.S. 4-6.RS.45°.1	4’ x 6’ span x 3’ to 6’ height R.C. Box Culvert (Single Opening)	1/11/1978	
44	CC.S.S. 4-7.RS.60°.1	4’ to 7’ span x 3’ to 6’ height R.C. Box Culvert (Single Opening)	1/11/1978	
45	CC.S.S. 4-7. RS.75°.1	4’ to 7’ span x 3’ to 6’ height R.C. Box Culvert (Single Opening)	1/11/1978	
46	CC.S.S. 4-7.RS.90°.1	4’ to 7’ span x 3’ to 6’ height R.C. Box Culvert (Single Opening)	1/5/1978	
47	CC.S.S. 7-10.RS.45°.1	7’ to 10’ span x 4’ to 10’ height R.C. Box Culvert (Single Opening)	1/11/1978	
48	CC.S.S. 7-10.RS.60°.1	7’ to 10’ span x 7’ to 10’ height R.C. Box Culvert (Single Opening)	1/11/1978	
49	CC.S.S. 7-10.RS.75°.1	7’ to 10’ span x 7’ to 10’ height R.C. Box Culvert (Single Opening)	1/11/1978	
50	CC.S.S. 7-10. RS.90°.1	7’ to 10’ span x 7’ to 10’ height R.C. Box Culvert (Single Opening)	1/5/1978	
51	CC.S.S. 8-10.R.60°.1	8’ to 10’ span x 4’ to 6’ height R.C. Box Culvert (Single Opening)	1/11/1978	
52	CC.S.S. 8-10.R.75°.1	8’ to 10’ span x 4’ to 6’ height R.C. Box Culvert (Single Opening)	1/11/1978	
53	CC.S.S. 8-10.R.90°.1	8’ to 10’ span x 4’ to 6’ height R.C. Box Culvert (Single Opening)	1/11/1978	
54	CC.S.S. 12.RS.75°.2	12’ x 12’ R.C. Box Culvert (Single Opening)	1/11/1978	
55	CM-49	Expansion and Construction Joint for Concrete Structures	10/1/2008	1/1/2009
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57	CP-01	Portland Cement Concrete Pavement Details (Sheet 1)	10/13/2021	6/8/2022
58	CP-01	Portland Cement Concrete Pavement Details (Sheet 2)	10/13/2021	6/8/2022
59	CP-01	Portland Cement Concrete Pavement Details (Sheet 3)	10/13/2021	6/8/2022
60	CPR-01	Concrete Joints and Cracks Rehab	1/12/2021	8/10/2022
61	CPR-02	Patching CRCP and PCCP	4/26/2022	8/10/2022

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63	DW-01	Driveways on Curbed Roadways	8/4/2022	12/14/2022
64	DW-01	Driveways on Non-Curbed Roadways	8/4/2022	12/14/2022
65	DW-01	Turnout and Driveway Tie-In Details	8/4/2022	12/14/2022
66	EC-01	Temporary Erosion Control Details (Sheet 1)	10/1/2008	1/1/2009
67	EC-01	Temporary Erosion Control Details (Sheet 2)	10/1/2008	1/1/2009
68	FN-01	Chain Link Fence & Gates (4, 5, 6, & 7ft)	11/3/2011	6/13/2012
69	FN-02	Field and Line Type Fence (Wood Post) (Sheet 1)	11/3/2011	6/13/2012
70	FN-02	Field and Line Type Fence (Steel Post) (Sheet 2)	11/3/2011	6/13/2012
71-78	GR-201	Highway Guard Rails (Sheets 1-8)	6/13/2017	7/12/2017
79	GR-MASH-BC	Highway Guard Rail (MASH) Application for Box Culverts	1/3/2019	6/12/2019
80	GR-MASH-OFF	Highway Guard Rail (MASH) Off-System Bridge Application	1/3/2019	6/12/2019
81-91	GR-MASH-ON	Highway Guard Rail (MASH) On-System Bridge Application (Sheets 1-11)	4/13/2023	8/9/2023
92	GRR-01	Side Mount Guard Rail (For Box Culverts)	5/3/2022	10/12/2022
93	GRR-02	Top Mounted Guard Rail (For Box Culverts)	5/3/2022	10/12/2022
94	GRR-03	Anchor Block & Bridge Rail Rehabilitation for Low Concrete Post and Rail	5/3/2022	10/12/2022
95	GRR-04	Guard Rail Anchor Block Rehabilitation for Concrete Post & Rail (Alternate 1)	5/3/2022	10/12/2022
96	GRR-05	Guard Rail Anchor Block Rehabilitation for Concrete Post & Rail (Alternate 2)	5/3/2022	10/12/2022
97	GRR-06	Approach Guard Rail for Structures with Flexible Rails	5/3/2022	10/12/2022
98	GRR-07	New Jersey Barrier Rail Retrofit (For Structures Greater than 60 ft. Long)	5/3/2022	10/12/2022
99	GRR-08	New Jersey Barrier Rail Retrofit (For Structures Less than 60 ft. Long)	5/3/2022	10/12/2022
100	GRR-09	Guard Rail Rehabilitation (Flat Deck Precast Bridges)	5/3/2022	10/12/2022
101	GRR-10	Side Mounted Guard Rail for Bridges	5/3/2022	10/12/2022
102	GRR-11	Side Mounted Guard Rail (Concrete Deck with Timber Stringers)	5/3/2022	10/12/2022
103	GRR-12	Side Mounted Bridge Rail	5/3/2022	10/12/2022
104	GRR-13	Guard Rail Terminating On Brush Curb Bridge Rail	5/3/2022	10/12/2022
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106	GRR-15	Guard Rail Rehabilitation (Concrete Deck)	5/3/2022	10/12/2022
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109	HS-03	Object Markers, Mileposts, and Dead End Road Installations	4/7/2014	2/11/2015

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113	MB-01	Mailbox Installation Details (Sheet 2)	4/4/2022	8/10/2022
114-119	MC-01	Details of Grates, Grate Frames and Covers for Catch Basins and Manholes	5/25/2018	12/12/2018
120	MH-06	R.C. Manhole, Maximum Dimensions: 11’-10” x 7’-2”, Maximum Depth 20’	5/18/2011	
121	MISC SPAN-COMMON	Miscellaneous Span Details: Index, Crown, Deck Placement Formwork @ Link Slab	5/12/2021	1/12/2022
122	MISC DECK-DRAIN	Miscellaneous Span Details: Deck Drains	5/12/2021	1/12/2022
123-124	MISC JOINT-NP	Miscellaneous Span Details: Sealed Expansion Joint - End Dams and Preformed Neoprene	5/12/2021	1/12/2022
125-126	MISC JOINT-SC	Miscellaneous Span Details: Sealed Expansion Joint - End Dams and Preformed Silicone	5/12/2021	1/12/2022
127	MISC JOINT-SC-P	Miscellaneous Span Details: Poured Silicone Joint	5/12/2021	1/12/2022
128	PC-01	Precast Catch Basins and Manholes	10/2/2023	3/13/2024
129	PED-01 (1 of 5)	Pedestrian Facilities: General Notes and Misc. Details	7/21/2022	12/14/2022
130	PED-01 (2 of 5)	Pedestrian Facilities: Curb Ramps and Detectable Warning Location	7/21/2022	12/14/2022
131	PED-01 (3 of 5)	Pedestrian Facilities: Typical Crossing Layouts	7/21/2022	12/14/2022
132	PED-01 (4 of 5)	Pedestrian Facilities: Detectable Warning Surfaces	7/21/2022	12/14/2022
133	PED-01 (5 of 5)	Pedestrian Facilities: Joint Details	7/21/2022	12/14/2022
134	PG-DRAIN (DOUBLE)	Double Paved Gutter Drain	9/22/2020	5/12/2021
135	PG-DRAIN (SINGLE)	Single Paved Gutter Drain	9/22/2020	5/12/2021
136	PG-DRAIN WITH SIDEWALK (DOUBLE)	Double Paved Gutter Drain with Sidewalk	9/22/2020	5/12/2021
137	PG-DRAIN WITH SIDEWALK (SINGLE)	Single Paved Gutter Drain with Sidewalk	9/22/2020	5/12/2021
138	PM-01	Centerline and Edgeline Markings	2/28/2019	8/14/2019
139	PM-02	Pavement Word and Symbol Markings for Non-Interstate Use	2/28/2019	8/14/2019
140	PM-03	Pavement Word and Symbol Markings for Interstate Use	2/28/2019	8/14/2019
141	PM-04	Auxiliary, Deceleration and Acceleration Lanes and Gore Striping Layouts	2/28/2019	8/14/2019
142	PM-05	Typical Intersection Striping Layouts	2/28/2019	8/14/2019
143	PM-06	Lane Reduction and Island Layouts	2/28/2019	8/14/2019
144	PM-07	Railway Crossing Layout	2/28/2019	8/14/2019
145	PM-08	Pedestrian/Bike Striping Layout	2/28/2019	8/14/2019
146	PM-09	Roundabout Striping Layout	2/28/2019	8/14/2019

PAGE NO.	STANDARD PLAN NUMBER	DESCRIPTION	REVISION DATE	EFFECTIVE FOR THE LETTING OF
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148	R-CB-11	Concrete Manhole (36” x 36") (10’ Max. Depth)	3/1/2011	3/1/2011
149	R-CB-11 MOD	Concrete Manhole (36” x Open Max. Pipe)(10’ Max. Depth)	3/1/2011	3/1/2011
150	R-CB-36	Sanitary Sewer R.C. Manhole	10/22/2008	1/1/2009
151	R-CB-38	Concrete Open Top Catch Basin (60” x 60” Max. Pipe)(24” Max. Depth)	11/17/2008	3/1/2009
152	RCB-EXTENSION	Standard Method for Extending Reinforced Concrete Box Culverts for 90° and Skewed Crossings.	4/8/2009	7/29/2009
153	R-CP-100 REV	Alternate Load Transmission Assembly for Expansion and Dummy Joints	3/19/1984	
154	RM-01	Right Of Way Monuments	2/1/2021	5/12/2021
155	RM-37	Portable Steel Rail Cattle Guard (42# to 45# Deck Rails)	3/24/1977	
156	RM-37 Mod.	Portable Steel Rail Cattle Guard (55# Min. Deck Rails)	3/24/1977	
157-173	RS-01	Roadside Signing Standards (Sheets 1-17)	7/1/2022	12/14/2022
174	RW-01	Miscellaneous Retaining Wall Details T & L Types 2’ 0” thru 6’ 0’ Heights	6/13/2017	7/12/2017
175	SAM-1(Sheet 1)	Metal Pipe Wall Thickness and Connecting Bands, Fill Height for Metal Pipe (Sheet 1)	10/5/2005	
176	SAM-1(Sheet2)	Metal Pipe Wall Thickness and Connecting Bands, Fill Height for Metal Pipe (Sheet 2)	10/5/2005	
177	SC-01	Typical Speed Change Lane for Interstate Highways	11/21/2005	
178	SW-01	Shoulder Wedge	10/25/2022	3/8/2023
179	SWBS-100	Steel Wire Bar Supports	3/6/2013	8/1/2013
180	TTC-00 (A)	Temporary Traffic Control, General Notes Sheet	2/7/2025	6/11/2025
181	TTC-00 (B)	Temporary Traffic Control, General Notes Sheet	2/7/2025	6/11/2025
182	TTC-00 (C)	Temporary Traffic Control, General Notes Sheet	2/7/2025	6/11/2025
183	TTC-00 (D)	Temporary Traffic Control, Layout for Placement of Road Work, Next XX Miles, and End Road Work Signs	2/7/2025	6/11/2025
184	TTC-01	Temporary Traffic Control, For Work Greater than 15 Feet From the Traveled Way	2/7/2025	6/11/2025
185	TTC-02	Temporary Traffic Control, Layout For Work Less than 15 Feet From the Traveled Way	2/7/2025	6/11/2025
186	TTC-03	Temporary Traffic Control, Layout For Lane Closures on Two Lane Roads With Two-Way Traffic Near Intersections (Flagging Operations)	2/7/2025	6/11/2025
187	TTC-04	Temporary Traffic Control, Layout For Lane Closures on Two Lane Roads With Two-Way Traffic (Flagging Operations)	2/7/2025	6/11/2025
188	TTC-05	Temporary Traffic Control, For On-Site Diversion With Two-Way Traffic	2/7/2025	6/11/2025
189	TTC-06	Temporary Traffic Control, For Lane Closures on Four-Lane Undivided Highways	2/7/2025	6/11/2025
190	TTC-07	Temporary Traffic Control, For Closure of Two Adjacent Lanes On Four-Lane Undivided Highways	2/7/2025	6/11/2025

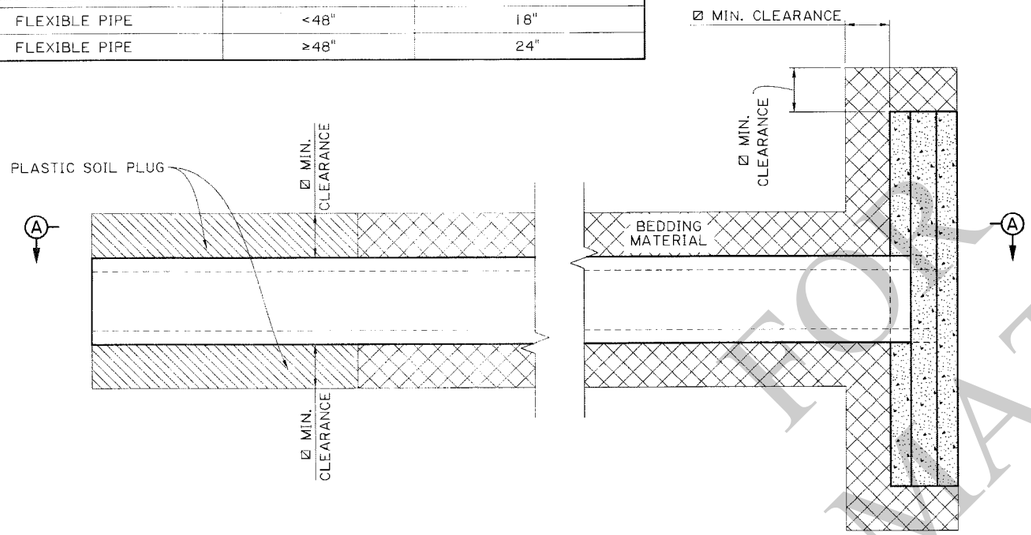
PAGE NO.	STANDARD PLAN NUMBER	DESCRIPTION	REVISION DATE	EFFECTIVE FOR THE LETTING OF
191	TTC-08	Temporary Traffic Control, For Median Crossover On Non-Interstate Divided Highways	2/7/2025	6/11/2025
192	TTC-09	Temporary Traffic Control, For Lane Closures On Divided Highways (Does not Include ramp entrance or exit tapers)	2/7/2025	6/11/2025
193	TTC-10	Temporary Traffic Control, For Lane and Sidewalk Closures In Urban Areas With Speed Limit Less Than or Equal to 40 MPH)	2/7/2025	6/11/2025
194	TTC-11	Temporary Traffic Control, For Lane Closure Using Temporary Barrier Rail On Divided Highway (Includes Freeways)	2/7/2025	6/11/2025
195	TTC-12	Temporary Traffic Control, For Lane Closures Through Ramp Entrance and Exit Tapers	2/7/2025	6/11/2025
196	TTC-13	Temporary Traffic Control, For Closure of Two Lanes on a Multi-Lane Highway	2/7/2025	6/11/2025
197	TTC-14	Temporary Traffic Control, For Louisiana Left On Interstate Highways	2/7/2025	6/11/2025
198	TTC-15	Temporary Traffic Control, For Short Duration Closing of Divided Highways	2/7/2025	6/11/2025
199	TTC-16	Temporary Traffic Control, For Road Closures	2/7/2025	6/11/2025
200	TTC-17	Temporary Traffic Control, Moving Operations for Interstate and Multi-Lane Roadways	2/7/2025	6/11/2025
201	TTC-18	Temporary Traffic Control, For Moving Operations On Two-Way Two-Lane Roadways	2/7/2025	6/11/2025
202	TTC-19	Temporary Traffic Control, For Traffic Signal Installation and Maintenance at an Intersection	2/7/2025	6/11/2025
203	WP-01	Right of Way Monument Witness Posts	2/1/2021	5/12/2021

10/23/2023 09:45

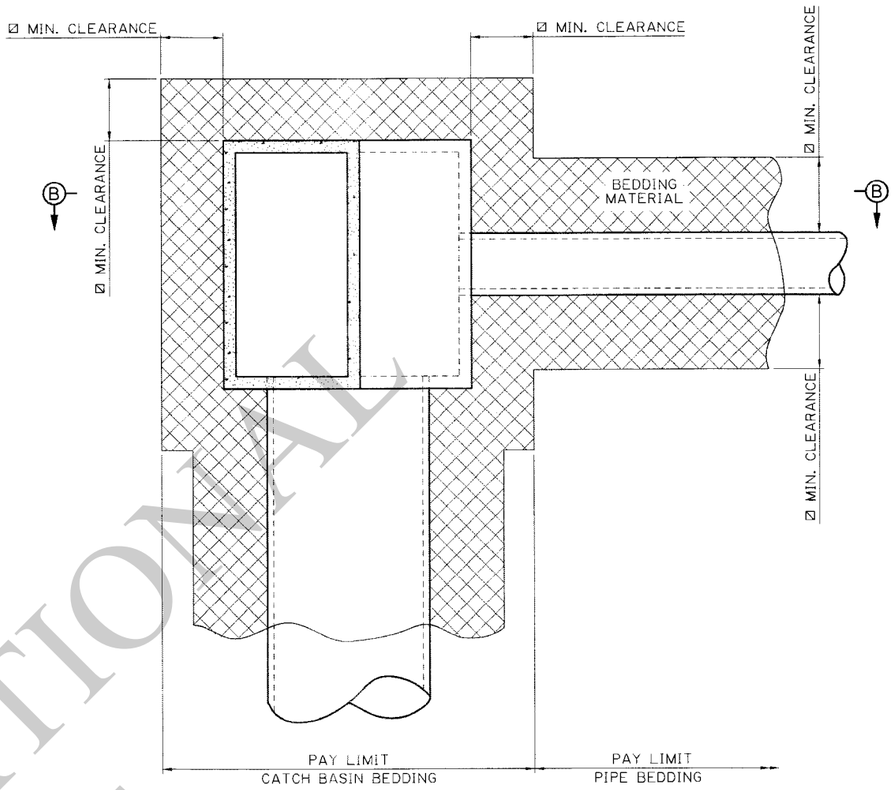
GENERAL NOTES :

1. REINFORCED CONCRETE PIPE AND FLEXIBLE PIPE ARE SHOWN AS TYPICAL STRUCTURES. DETAILS ALSO APPLY TO REINFORCED CONCRETE BOX CULVERT, REINFORCED CONCRETE PIPE ARCH, CORRUGATED METAL PIPE ARCH, AND CORRUGATED STRUCTURAL PLATE STRUCTURES.
2. CONSTRUCTION COVER REQUIREMENTS MAY EXCEED FINAL COVER.
3. CROSS DRAIN DETAILS APPLY TO ALL REACHES OF PIPE UNDER RIGID OR FLEXIBLE ROADWAYS.
4. FOR STRUCTURES INSTALLED OUTSIDE THE LIMITS OF THE ROADWAY, THE 12" OF FINAL BACKFILL ABOVE TYPE B BACKFILL UP TO THE EXISTING GROUND SHALL BE PLASTIC SOIL BLANKET MATERIAL. IF THE EMBANKMENT TO BE INSTALLED IS GREATER THAN 12" ABOVE EXISTING GROUND IN THE AREA OVER THE STRUCTURE, THEN THE PLASTIC SOIL BLANKET IS NOT REQUIRED AND TYPE B BACKFILL MAY EXTEND TO EXISTING GROUND.

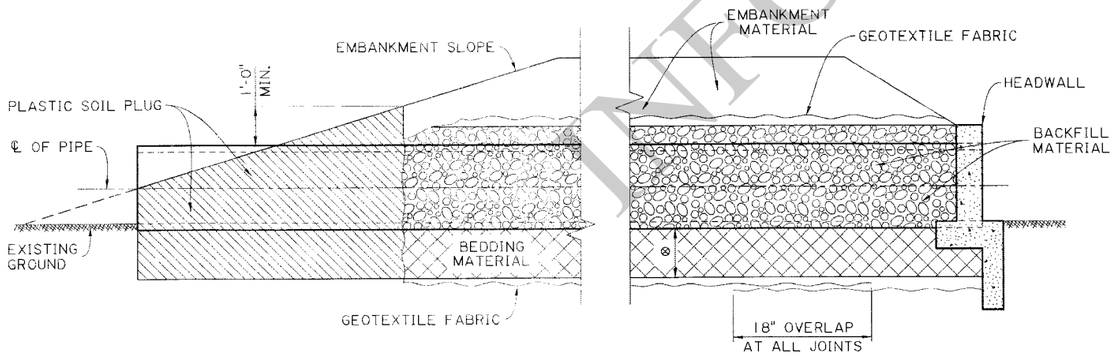
Ø MINIMUM TRENCH CLEARANCE		
TYPE OF STRUCTURE	INSIDE DIAMETER	MIN. CLEARANCE
REINFORCED CONCRETE	ALL	18"
FLEXIBLE PIPE	<48"	18"
FLEXIBLE PIPE	≥48"	24"



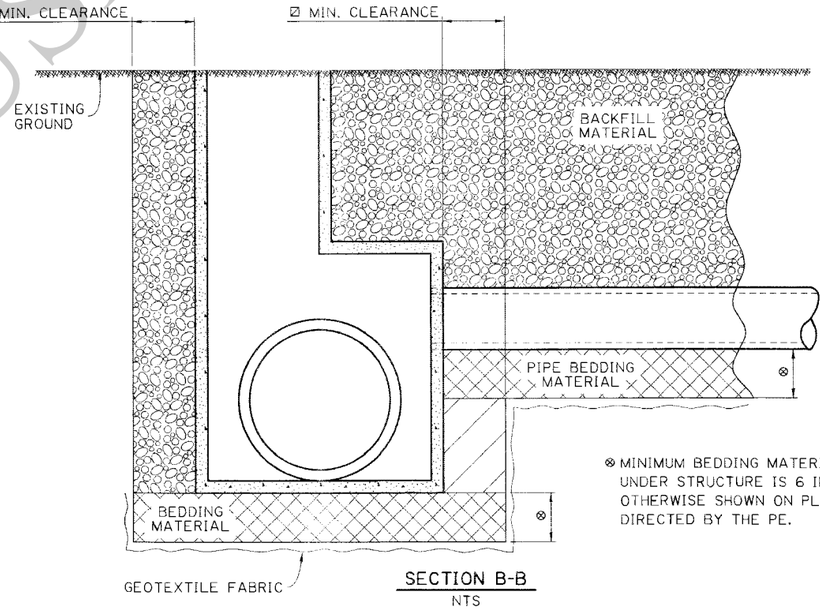
TYPICAL CROSS DRAIN INSTALLATION
WITH AND WITHOUT HEADWALL
(EMBANKMENT MATERIAL NOT SHOWN FOR CLARITY)
NTS



TYPICAL CATCH BASIN AND STORM DRAIN INSTALLATION
NTS



SECTION A-A
WITH AND WITHOUT HEADWALL
NTS



SECTION B-B
NTS

⊗ MINIMUM BEDDING MATERIAL THICKNESS UNDER STRUCTURE IS 6 INCHES UNLESS OTHERWISE SHOWN ON PLANS OR AS DIRECTED BY THE PE.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	C. NICKEL
CHECK	J. RAUSER
DETAIL	L. HASTINGS
CHECK	A. NICKEL
REVIEW	C. NICKEL
SERIES #	1 OF 2

STATE OF LOUISIANA
CHRISTOPHER J. NICKEL
License No. 36579
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
10/23/2023

APPROVED BY CHIEF ENGINEER:
DATE: 10/26/2023

DRAINAGE STRUCTURES
BEDDING & BACKFILL

STANDARD PLAN BM-01

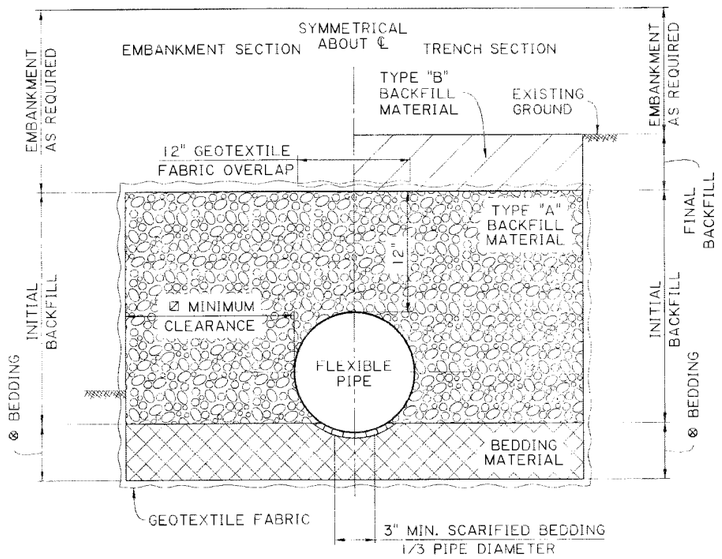
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
PAVEMENT & GEOTECHNICAL SERVICES

⍁ MINIMUM TRENCH CLEARANCE		
TYPE OF STRUCTURE	INSIDE DIAMETER	MIN. CLEARANCE
REINFORCED CONCRETE	ALL	18"
FLEXIBLE PIPE	<48"	18"
FLEXIBLE PIPE	≥48"	24"

⊗ MINIMUM BEDDING MATERIAL THICKNESS UNDER STRUCTURE IS 6 INCHES UNLESS OTHERWISE SHOWN ON PLANS OR AS DIRECTED BY THE PE.

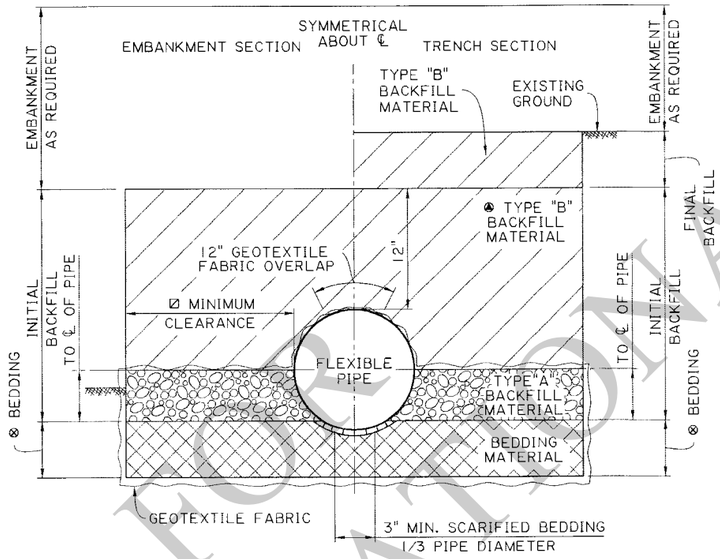
⚠ NO BEDDING MATERIAL REQUIRED UNLESS OTHERWISE SPECIFIED ON THE PLANS OR AS DIRECTED BY THE PE.

✪ REFER TO NOTE 3 ON SHEET 1 OF THIS SERIES.



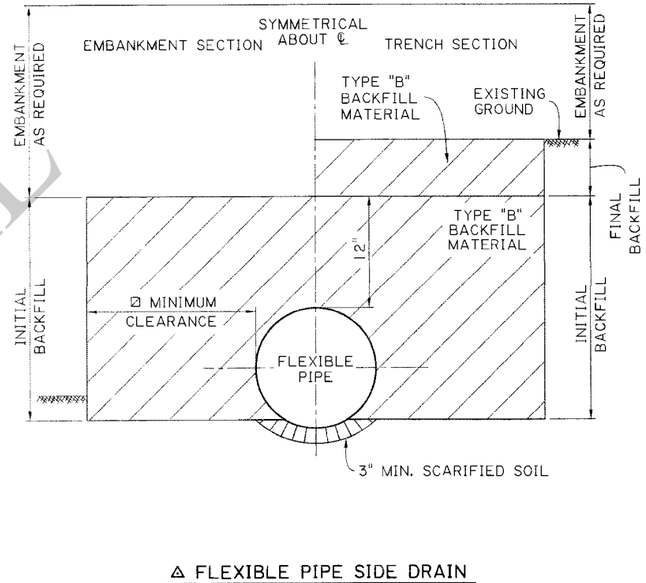
FLEXIBLE PIPE CROSS DRAIN

TRENCH AND EMBANKMENT INSTALLATIONS
SCALE: 1½"=1'-0"



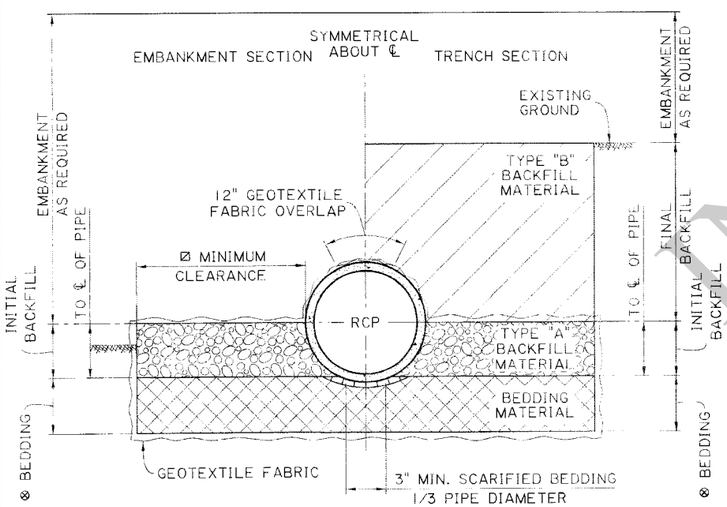
FLEXIBLE PIPE STORM DRAIN

TRENCH AND EMBANKMENT INSTALLATIONS
SCALE: 1½"=1'-0"



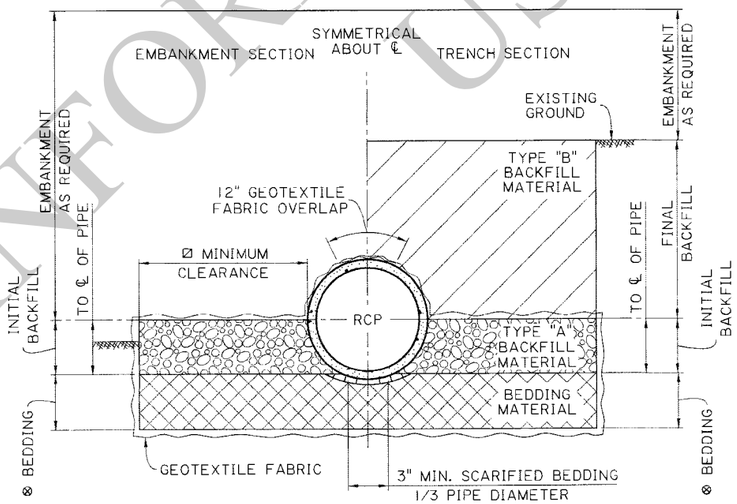
⚠ FLEXIBLE PIPE SIDE DRAIN

TRENCH AND EMBANKMENT INSTALLATIONS
SCALE: 1½"=1'-0"



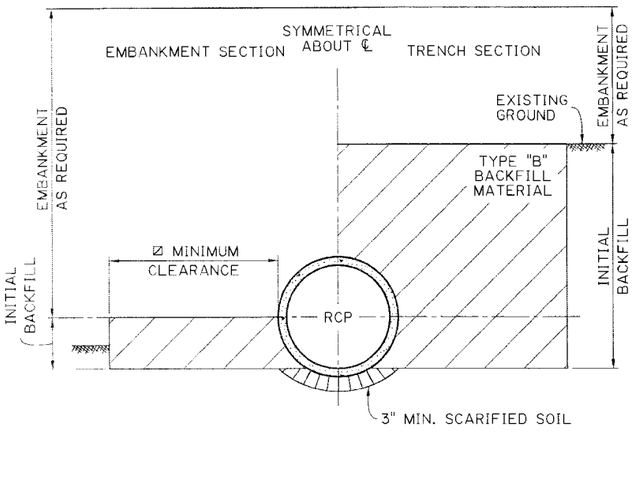
REINFORCED CONCRETE PIPE CROSS DRAIN

TRENCH AND EMBANKMENT INSTALLATIONS
SCALE: 1½"=1'-0"



REINFORCED CONCRETE PIPE STORM DRAIN

TRENCH AND EMBANKMENT INSTALLATIONS
SCALE: 1½"=1'-0"



⚠ REINFORCED CONCRETE PIPE SIDE DRAIN

TRENCH AND EMBANKMENT INSTALLATIONS
SCALE: 1½"=1'-0"

FOR INFORMATION USE

09:18
10/23/2023

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN C. NICKEL | CHECK J. RAUSER | DETAIL L. HASTINGS | CHECK A. NICKEL | REVIEW C. NICKEL | SERIES # 2 OF 2

STATE OF LOUISIANA
CHRISTOPHER J. NICKEL
Family No. 30572
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
10/23/2023

APPROVED BY CHIEF ENGINEER:
DATE: 10/26/2023

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DRAINAGE STRUCTURES

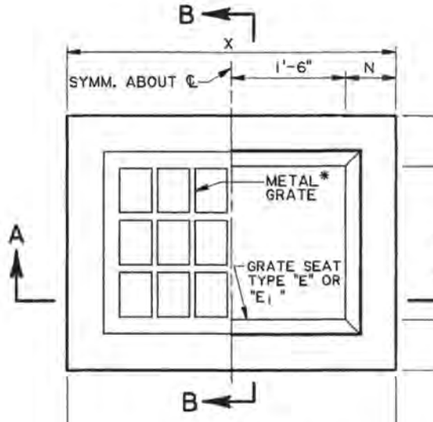
TYPICAL SECTIONS FOR CROSS DRAINS & SIDE DRAINS

STANDARD PLAN NO. BM-01

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
PAVEMENT & GEOTECHNICAL SERVICES

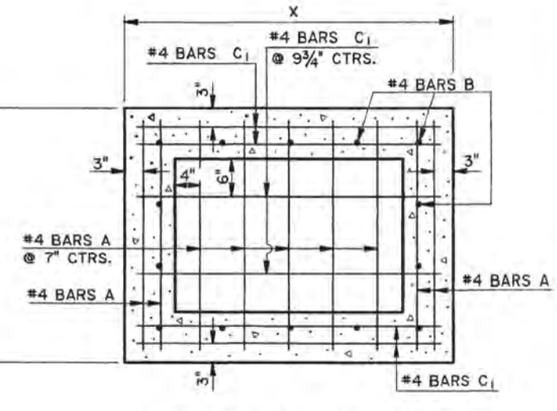
5/4/2020 14:23

DIMENSIONS			
DEPTH OF BASIN	N	X	Y
FT.	IN.	FT.- IN.	FT.- IN.
0 - 8	7	4-2	3-2¼
8.1 - 12	8	4-4	3-4¼



PLAN

* GRATE TO BE TYPE "B" OR "C"
TYPE "B" SHOWN.

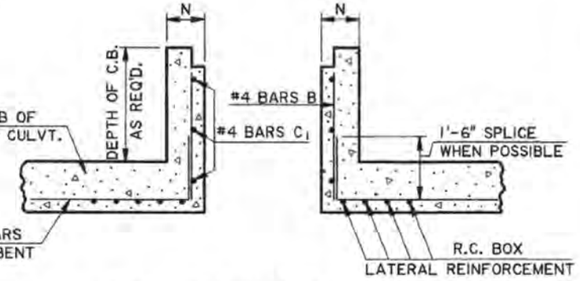


HORIZONTAL SECTION

SHOWING BOTTOM SLAB REINFORCING STEEL

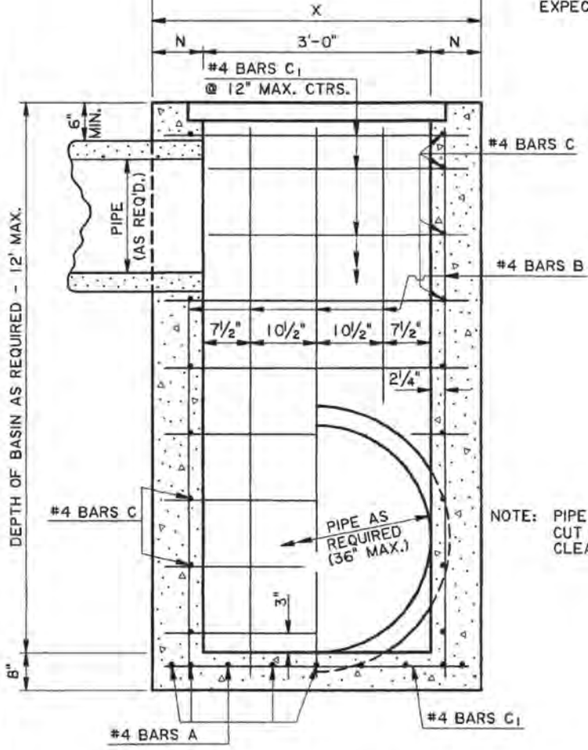
NOTE: TYPE "B" GRATE TO BE USED WHERE NO PEDESTRIAN TRAFFIC IS EXPECTED.

TYPE "C" GRATE TO BE USED WHERE PEDESTRIAN TRAFFIC IS EXPECTED.



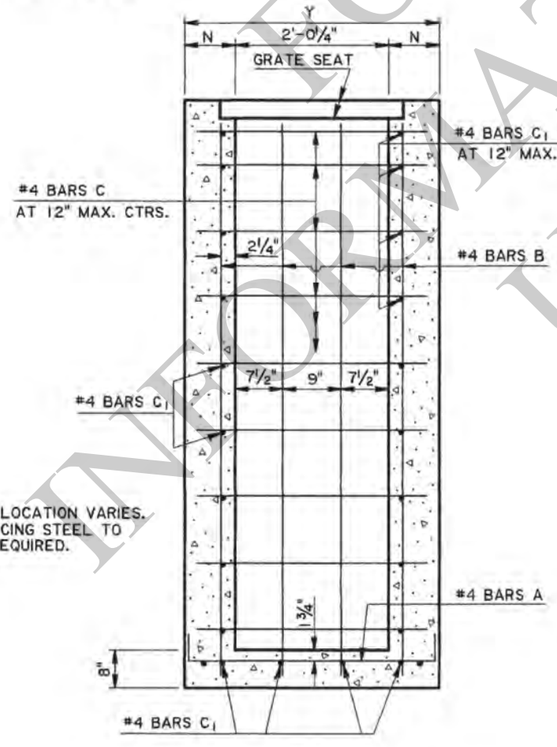
LONGITUDINAL SECTION

SHOWING CATCH BASIN
USED WITH R.C. BOX CULVERT.

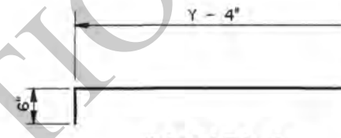


SECTION A-A

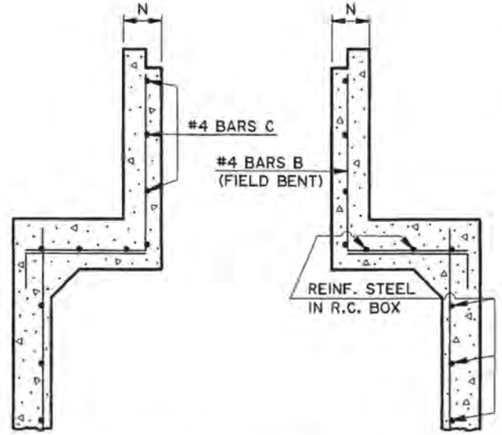
NOTE: PIPE SIZE & LOCATION VARIES. CUT REINFORCING STEEL TO CLEAR, AS REQUIRED.



SECTION B-B



#4 BARS A



TRANSVERSE SECTION

SHOWING CATCH BASIN
USED WITH R.C. BOX CULVERT.

GENERAL NOTES:

SECTION 702 OF THE CURRENT DOTD STANDARD SPECIFICATIONS SHALL APPLY.

DIMENSIONS RELATING TO REINFORCING STEEL ARE TO BAR CENTERS.

VERTICAL REINFORCING STEEL MAY BE SPLICED. SPLICE LENGTH IS 35 DIAMETERS.

FOR DETAILS OF GRATE AND SEAT, SEE STD. PLAN MC-01 (TYPE B or C).

SEE PLANS FOR TYPE OF GRATE TO BE USED FOR EACH CATCH BASIN.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | FEDERAL PROJECT | STATE PROJECT

DESIGNED PAA | DETAILED KAJ | DATE 1-31-97
CHECKED | CHECKED WMR | SHEET 1 OF 1

DATE 11-2-00 | BY JCM | Converted Metric CB-01M to English CB-01
APPROVED BY CHIEF ENGINEER | DATE | REVISION DESCRIPTION

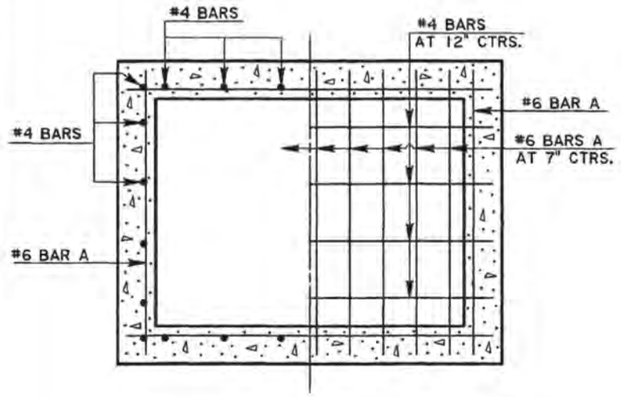
CONCRETE OPEN TOP CATCH BASIN
Max. Pipe: 36" x 24"
Max. Depth: 12'
To Be Used In Conjunction With Std. Plan MC-01

STANDARD PLAN CB-01

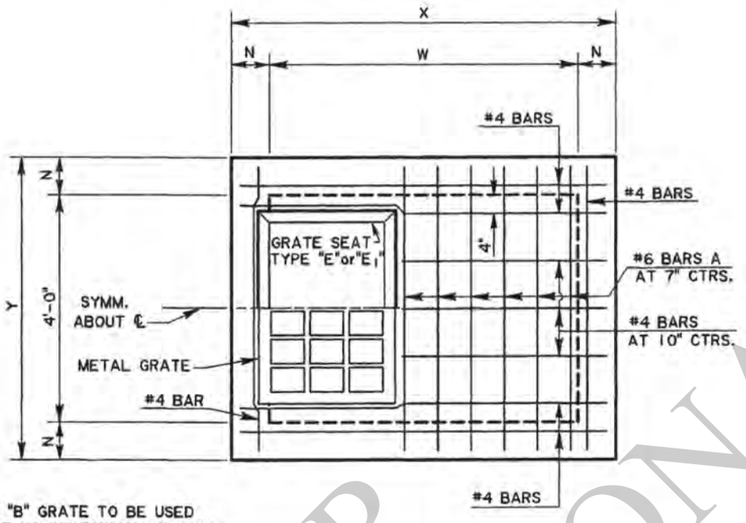
HYDRAULICS SECTION

IP_PWP:dms09544\CB-01.dgn

5/4/2020 14:24



SECTIONAL PLAN
(SHOWING BOTTOM SLAB & WALLS)



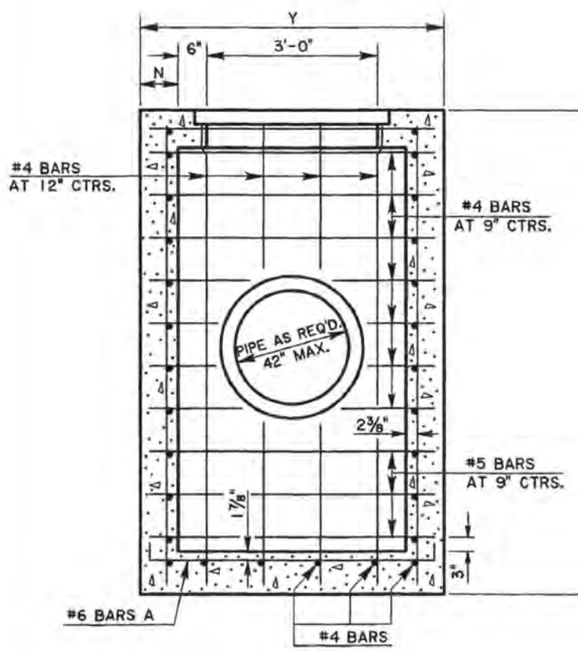
NOTE: TYPE "B" GRATE TO BE USED WHERE NO PEDESTRIAN TRAFFIC IS EXPECTED.

TYPE "C" GRATE TO BE USED WHERE PEDESTRIAN TRAFFIC IS EXPECTED.

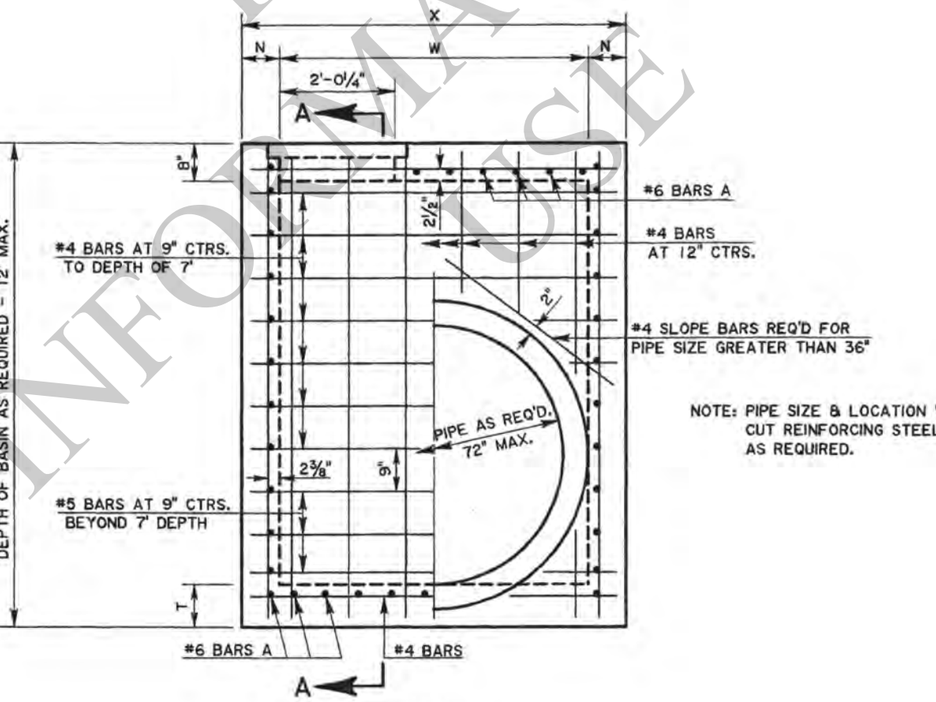
PLAN
GRATE TO BE TYPE "B" or "C".
TYPE "B" SHOWN.

DIMENSIONS										
TRUNK PIPE	DEPTH TO 8'					DEPTH 8' TO 12'				
	N	T	W	X	Y	N	T	W	X	Y
INCH	INCH	INCH	FT-IN	FT-IN	FT-IN	INCH	INCH	FT-IN	FT-IN	FT-IN
42	7	9	4-3	5-5	5-2	8	9	4-3	5-7	5-4
48	7	9	4-10	6-0	5-2	8	9	4-10	6-2	5-4
54	7	9	5-5	6-7	5-2	8	9	5-5	6-9	5-4
60	7	10	6-0	7-2	5-2	8	10	6-0	7-4	5-4
66	7	10	6-7	7-9	5-2	8	10	6-7	7-11	5-4
72	7	10	7-2	8-4	5-2	8	10	7-2	8-6	5-4

NOTE: X AND W DIMENSIONS MAY BE VARIED FOR SKEWED PIPE, BUT W SHALL NOT EXCEED 7'-2".

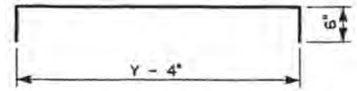


SECTION A-A



ELEVATION

NOTE: PIPE SIZE & LOCATION VARIES. CUT REINFORCING STEEL TO CLEAR, AS REQUIRED.



#6 BARS A
(4½" Diam. Pin)

GENERAL NOTES:

SECTION 702 OF THE CURRENT DOTD STANDARD SPECIFICATIONS SHALL APPLY.

DIMENSIONS RELATING TO REINFORCING STEEL ARE TO BAR CENTERS.

VERTICAL REINFORCING STEEL MAY BE SPLICED. SPLICE LENGTH IS 35 DIAMETERS.

FOR DETAILS OF GRATE AND SEAT, SEE STD. PLAN MC-01 (TYPE B or C).

SEE PLANS FOR TYPE OF GRATE TO BE USED FOR EACH CATCH BASIN.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | FEDERAL PROJECT | STATE PROJECT

DESIGNED PAA | DETAILED KAJ | CHECKED WMR | DATE 1-31-97 | SHEET 1 OF 1

DATE 11-2-00 | BY JCM | REVISION DESCRIPTION: Converted Metric CB-02M to English CB-02

APPROVED BY CHIEF ENGINEER:

DATE: 11-2-00

CONCRETE OPEN TOP CATCH BASIN

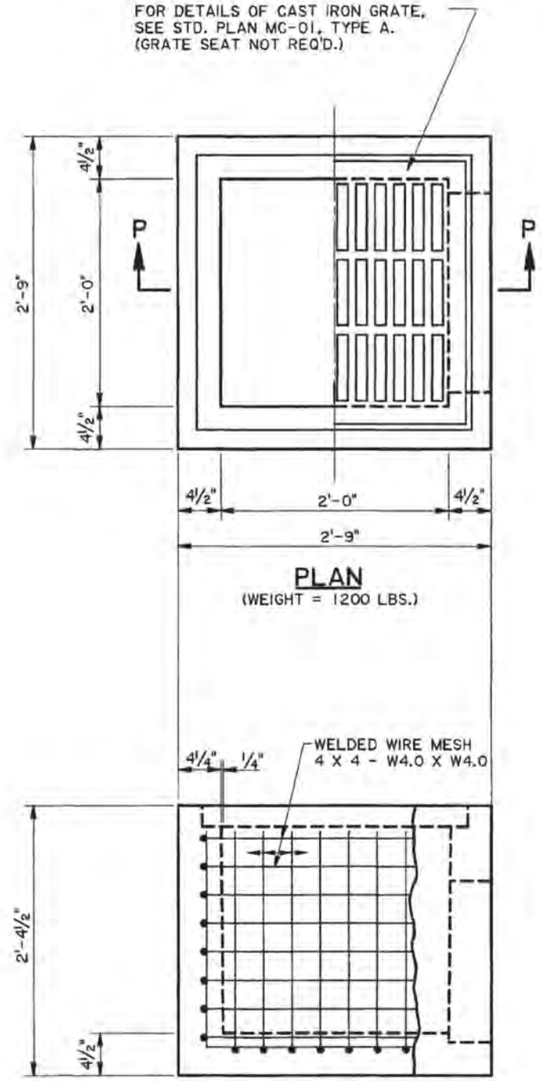
Max. Pipes: 72" x 42"
Max. Depth: 12'
To Be Used In Conjunction With Std. Plan MC-01

STANDARD PLAN CB-02

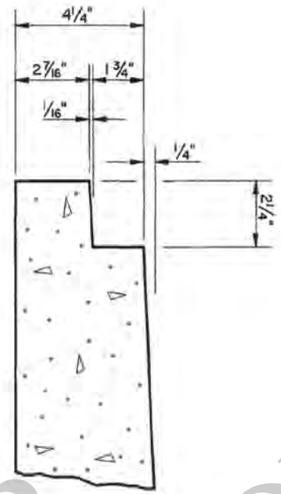
HYDRAULICS SECTION

IP_PWP:dms09544\CB-02.dgn

5/4/2020 14:24



PLAN
(WEIGHT = 1200 LBS.)



DETAIL A
ALL DIMENSIONS TYPICAL

GENERAL NOTES:

ALL CONCRETE TO BE CLASS "P".

SETTING TOLERANCE TO BE +0 & -1".

WELDED WIRE MESH TO BE OVERLAPPED A MINIMUM 3" FOR SPLICE.

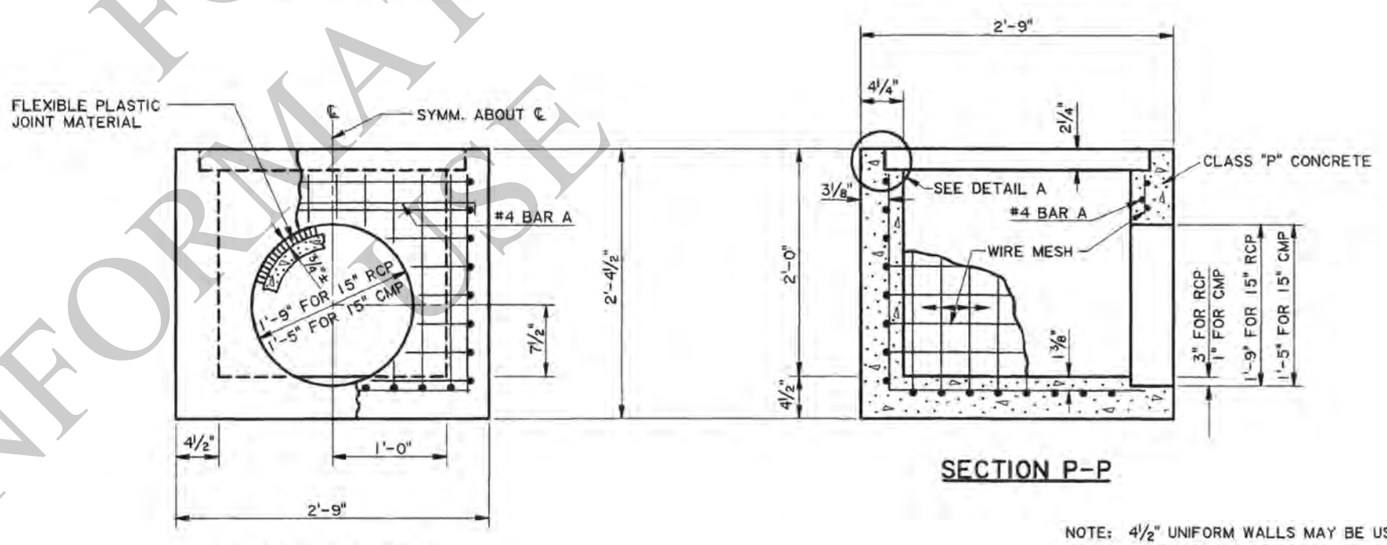
OPENING TO MATCH TYPE OF PIPE SPECIFIED ON PLAN/PROFILE OR SUMMARY OF DRAINAGE STRUCTURES.

THE MANUFACTURER SHALL BE RESPONSIBLE FOR THE PLACEMENT OF ALL PICK-UP AND HANDLING DEVICES.

AFTER PLACEMENT OF PIPE, THE OPENING AROUND PIPE SHALL BE FILLED WITH FLEXIBLE PLASTIC JOINT MATERIAL.

DIMENSIONS RELATING TO REINFORCED STEEL ARE TO BAR CENTERS.

ELEVATION



END ELEVATION

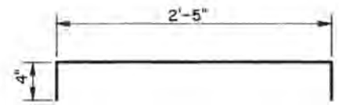
SECTION P-P

NOTE: 4½" UNIFORM WALLS MAY BE USED AT SUPPLIER'S OPTION.

NOT TO BE USED WHERE SUBJECT TO VEHICULAR TRAFFIC.

NOTE: STANDARD PLAN MC-01 (DETAILS OF GRATES, FRAMES, SEATS, LIDS, ETC.) MAY BE OBTAINED FROM:

HYDRAULICS SECTION
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
P.O. BOX 94245
CAPITOL STATION
BATON ROUGE, LA 70804



#4 BAR A

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED CDJ	DETAILED KAJ	1-30-80
CHECKED	CHECKED WMR	SHEET 1 OF 1

REVISION DESCRIPTION	DATE	BY
Redrafted Original Standard	11-2-00	WMR

APPROVED BY CHIEF ENGINEER: Rs Dzluk
DATE: 11-2-00

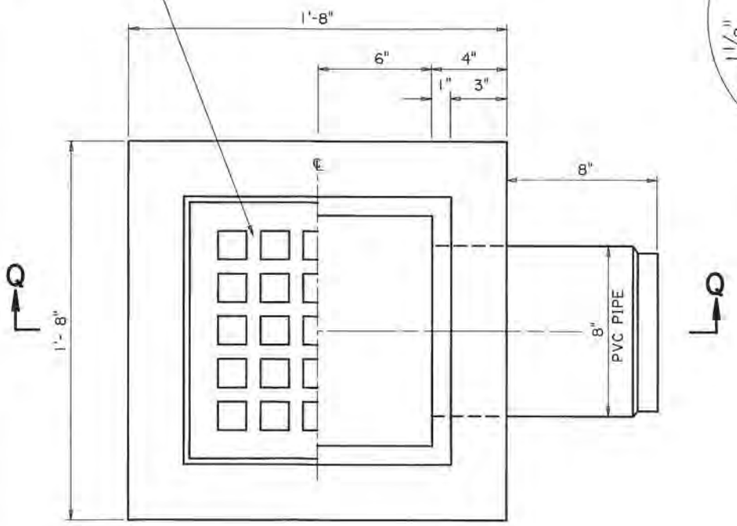
PRECAST OPEN TOP CATCH BASIN
MAX. PIPE: 15" DEPTH: MINIMUM
TO BE USED IN CONJUNCTION WITH STANDARD PLAN MC-01.

STANDARD PLAN CB-04

HYDRAULICS SECTION

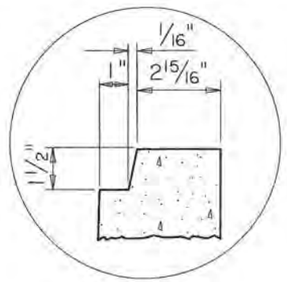
IP_PWP:dms09544\CB-04.dgn

FOR DETAILS OF CAST IRON GRATE, SEE STD. PLAN MC-01, TYPE D.



PLAN

WEIGHT APPROX. 460 LBS PLUS GRATE
RIGHT HALF OF GRATE NOT SHOWN FOR CLARITY



INSET A

(TYPICAL)

NOTE:

STANDARD PLAN MC-01 (DETAILS OF GRATES, FRAMES, SEATS LIDS, ETC.), MAY BE OBTAINED FROM:

HYDRAULICS & STANDARD PLANS
DEPARTMENT OF TRANSPORTION
AND DEVELOPMENT
P.O. BOX 94245
CAPITOL STATION
BATON ROUGE, LA 70804

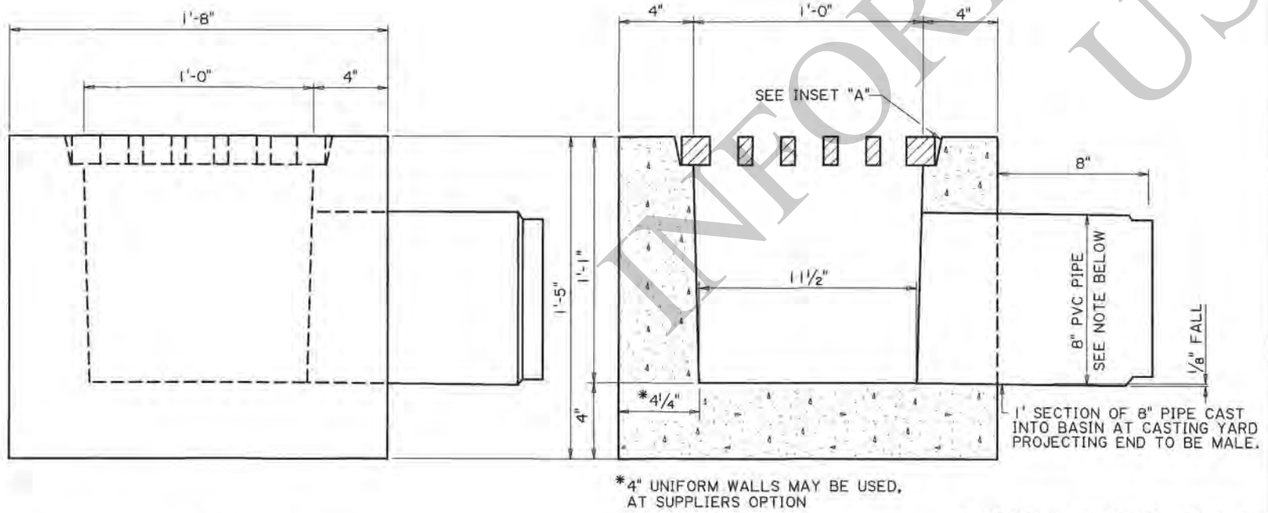
PRECAST OPTION

NOTES:

CONCRETE TO BE CLASS A1.

CATCH BASIN TO BE SUPPLIED COMPLETE, INCLUDING C.I. GRATE.

THE CATCH BASIN SUPPLIER SHALL BE RESPONSIBLE FOR SELECTION AND PLACEMENT OF ANY PICK-UP AND HANDLING DEVICES. SETTING TOLERANCE TO BE +0 & -1".



ELEVATION

SECTION Q-Q

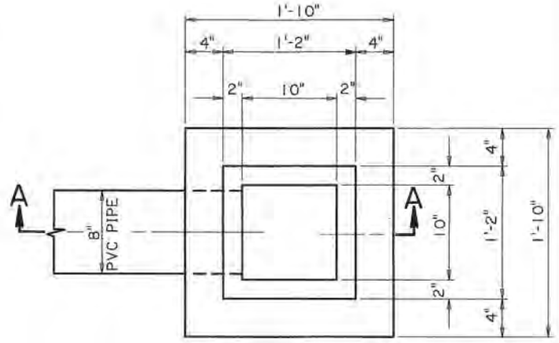
NOT TO BE USED WHERE SUBJECT TO VEHICULAR TRAFFIC

*4" UNIFORM WALLS MAY BE USED, AT SUPPLIERS OPTION

AN 8" RESILIENT BOOT CONNECTOR (SUCH AS A-LOK, Z-LOK OR QUIK-LOK) IS ALLOWED AS AN ALTERNATE TO CAST-IN-PLACE PIPE DETAIL

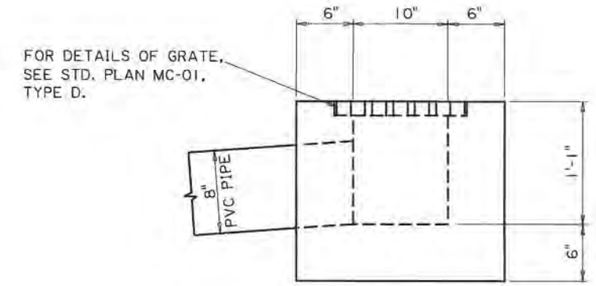
CAST-IN-PLACE OPTION

CLASS "M" CONCRETE

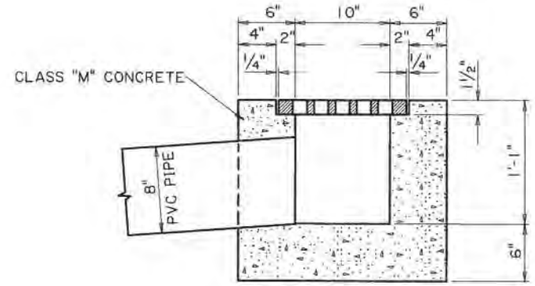


PLAN

GRATE NOT SHOWN



ELEVATION



SECTION A-A

NOT TO BE USED WHERE SUBJECT TO VEHICULAR TRAFFIC

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	CHECK	DETAIL	CHECK	REVIEW	SERIES #
CDJ	JCM	TL	MH	5-17-17	1 OF 1

STATE OF LOUISIANA
MITRA HASHEMIEH
REG. No. 26546
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
2/5/2019

APPROVED BY CHIEF ENGINEER:
DATE: 2/6/2019

CONCRETE CATCH BASIN

YARD DRAIN TYPE - PRECAST OR CAST-IN-PLACE MAX. PIPE: 8"

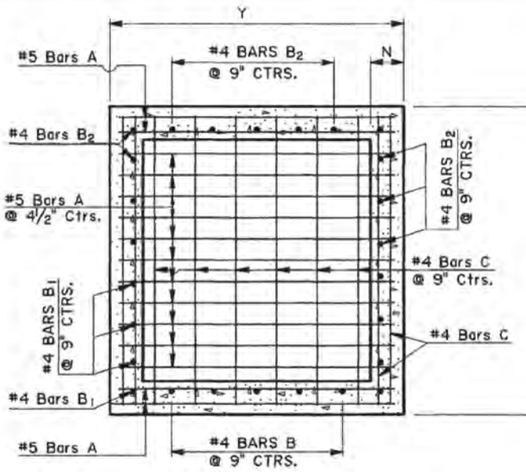
To be used in conjunction with Std. Plan MC-01

STANDARD PLAN NO. CB-05

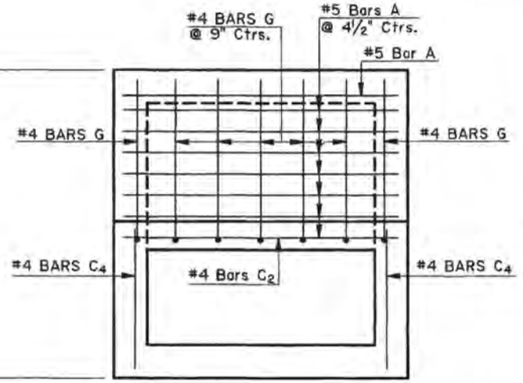
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

HYDRAULICS SECTION

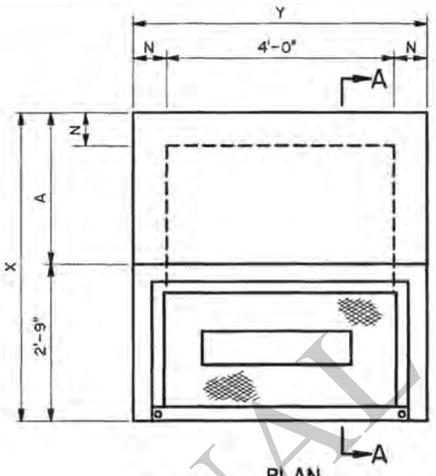
9/21/2020 09:46



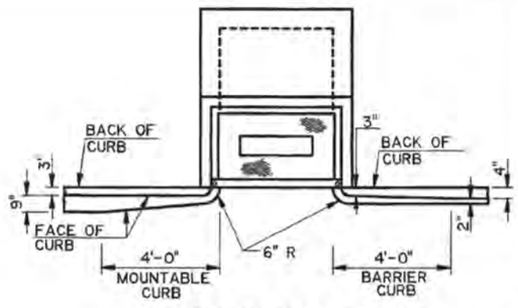
SECTION
SHOWING BOTTOM SLAB REINFORCING STEEL



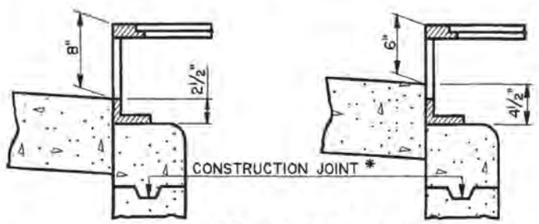
PLAN
SHOWING TOP SLAB REINFORCING STEEL



PLAN
FOR DETAILS OF METAL GRATE AND COVER, SEE STD. PLAN MC-01, TYPE "H".



TRANSITION IN CURB WIDTH
(TYPICAL)

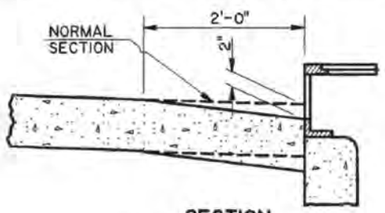


INLET CONFIGURATION

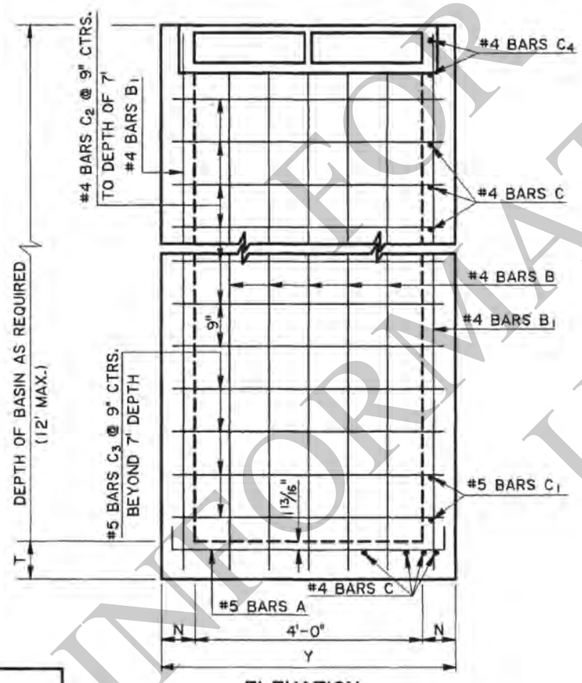
WHEN USED WITH 6" BARRIER CURB

WHEN USED WITH 4" MOUNTABLE CURB

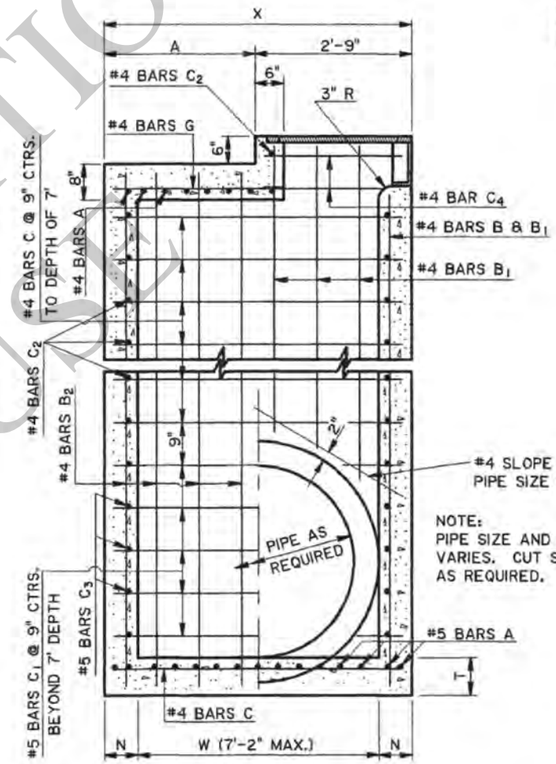
*NOTE:
THE BASIN SHALL NOT BE CONSTRUCTED ABOVE BOTTOM OF PAVEMENT ELEVATION UNTIL THE PAVING ADJACENT TO THE BASIN IS IN PLACE.



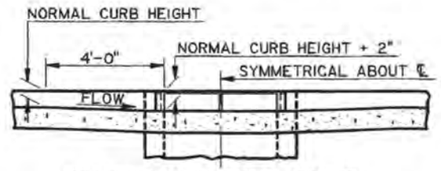
SECTION
SHOWING PAVEMENT SUMP
TYPICAL



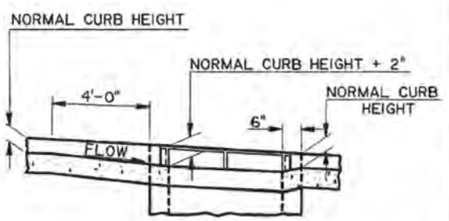
ELEVATION



SECTION A-A



TRANSITION IN CURB HEIGHT
CATCH BASIN AT LOW POINT



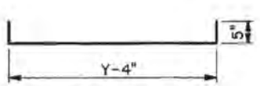
TRANSITION IN CURB HEIGHT
CATCH BASIN ON A GRADE

CONCRETE CATCH BASIN

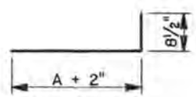
PIPE DIA. ①	W ②	T	DEPTH LESS THAN 8'				DEPTH FROM 8' TO 12'			
			X	Y	N	A	X	Y	N	A
In	Ft-In	In	Ft-In	Ft-In	In	Ft-In	Ft-In	Ft-In	In	Ft-In
15 to 24	2-6	8	3-8	5-2	7	0-11	3-10	5-4	8	1-1
30	3-1	8	4-3	5-2	7	1-6	4-5	5-4	8	1-8
36	3-8	8	4-10	5-2	7	2-1	5-0	5-4	8	2-3
42	4-3	8	5-5	5-2	7	2-8	5-7	5-4	8	2-10
48	4-10	8	6-0	5-2	7	3-3	6-2	5-4	8	3-5
54	5-5	9	6-7	5-2	7	3-10	6-9	5-4	8	4-0
60	6-0	9	7-2	5-2	7	4-5	7-4	5-4	8	4-7
72	7-2	9	8-4	5-2	7	5-7	8-6	5-4	8	5-9

① REFERS TO SIDEWALL PIPE OR "TRUNKLINE". FRONTWALL OR "CROSSING PIPE" MAY NOT EXCEED 42".

② W AND X DIMENSIONS MAY BE VARIED FOR SKEWED PIPE, BUT W SHALL NOT EXCEED 7'-2".



#5 BARS A



#4 BARS G

FOR INFORMATIONAL USE

SHEET NUMBER		
PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED CDJ CHECKED HJB	DETAILED KAJ CHECKED WMR	DATE 1-31-97 SHEET 1 OF 1

	BY	DATE
	J C M	11-2-00
REVISION DESCRIPTION	Converted Metric CB-06M to English CB-06	
APPROVED BY CHIEF ENGINEER		

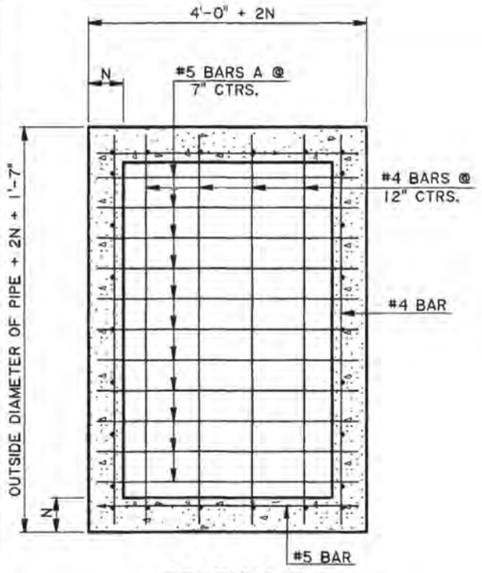
CONCRETE CATCH BASIN
CURB OPENING
4" MOUNTABLE OR 6" BARRIER CURB
MAX. PIPES: 42" X 72", MAX. DEPTH: 12'

STANDARD PLAN CB-06

HYDRAULICS SECTION

IP_PWP:dms09544\CB-06.dgn

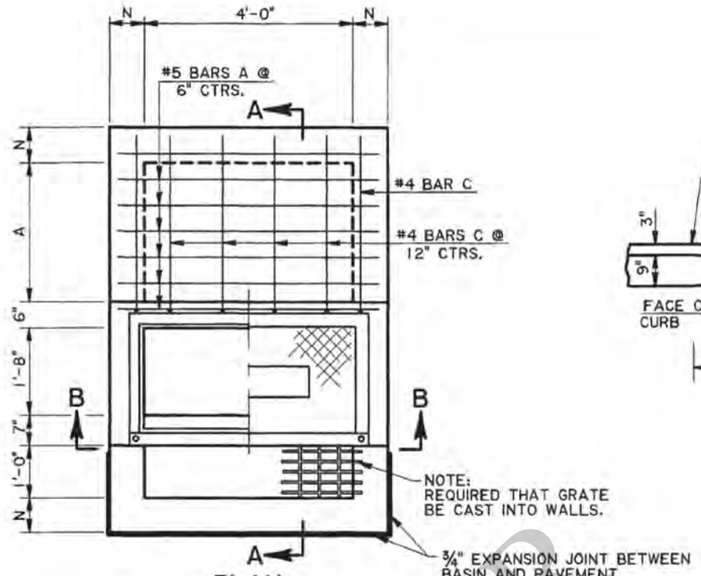
9/21/2020 09:46



SECTION

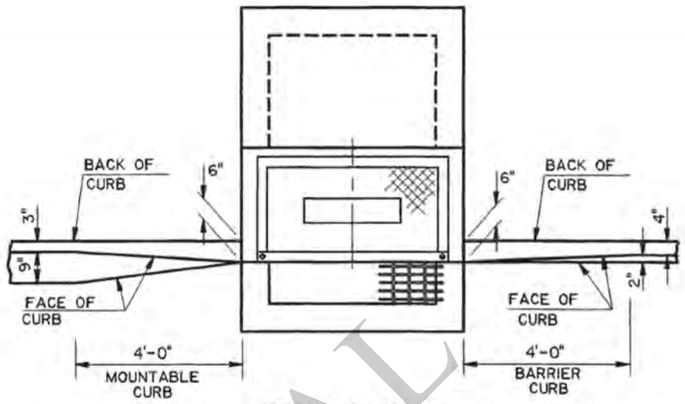
SHOWING BOTTOM SLAB REINFORCING STEEL

NOTE:
THE BASIN SHALL NOT BE CONSTRUCTED ABOVE BOTTOM OF PAVEMENT ELEVATION UNTIL PAVEMENT ADJACENT TO THE BASIN IS IN PLACE.



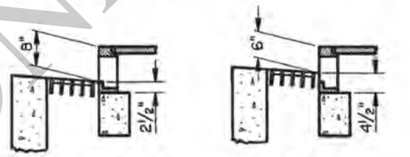
PLAN

FOR DETAILS OF METAL COVER, FRAME AND GRATE, SEE STD. PLAN MC-01, TYPE H & TYPE I.



TRANSITION IN CURB WIDTH

(TYPICAL)



INLET CONFIGURATION

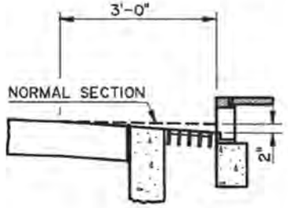
WHEN USED WITH 6" BARRIER CURB

WHEN USED WITH 4" MOUNTABLE CURB

DEPTH OF BASIN	N
FT	IN
LESS THAN 8	7
8 TO 12	8

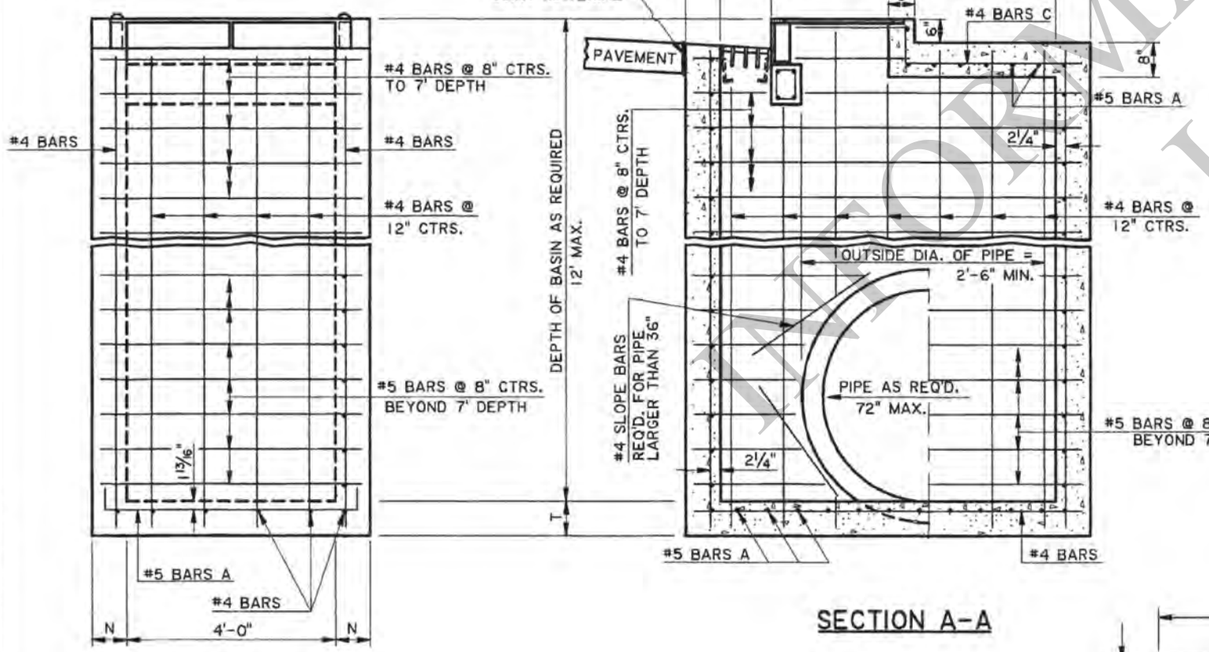
PIPE DIAMETER	A	T
IN	FT-IN	IN
15 TO 24	0-4	8
30	0-11	8
36	1-6	8
42	2-1	8
48	2-8	8
54	3-3	9
60	3-10	9
72	5-0	10

NOTE:
DIMENSION "A" MAY BE VARIED FOR SKEWED PIPE, BUT MAY NOT EXCEED 5'-0".



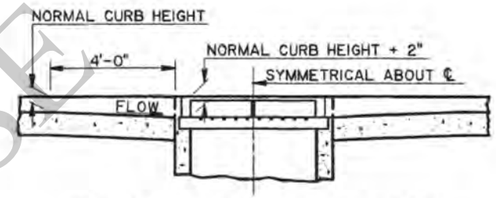
SECTION

(SHOWING PAVEMENT SUMP TYPICAL)

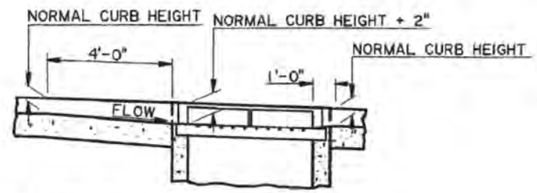


ELEVATION

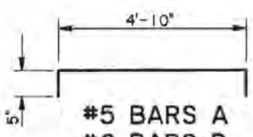
SECTION A-A



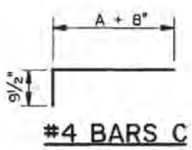
TRANSITION IN CURB HEIGHT CATCH BASIN AT LOW POINT



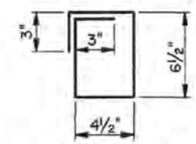
TRANSITION IN CURB HEIGHT CATCH BASIN ON A GRADE



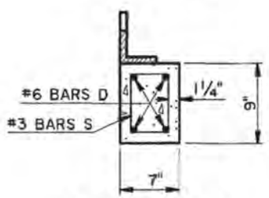
#5 BARS A
#6 BARS D



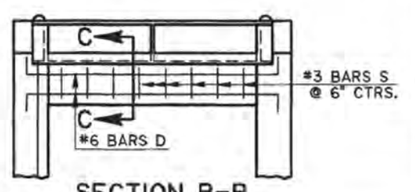
#4 BARS C



#3 BARS S



SECTION C-C



SECTION B-B

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | FEDERAL PROJECT | STATE PROJECT

DESIGNED CDJ | DETAILED KAJ | DATE 1-31-97
CHECKED | CHECKED WMR | SHEET 1 OF 1

BY	REVISION DESCRIPTION	DATE	APPROVED BY CHIEF ENGINEER
JCM	Redrafted & Converted Metric CB-07 to English CB-07	11-2-00	

DATE: 11-2-00

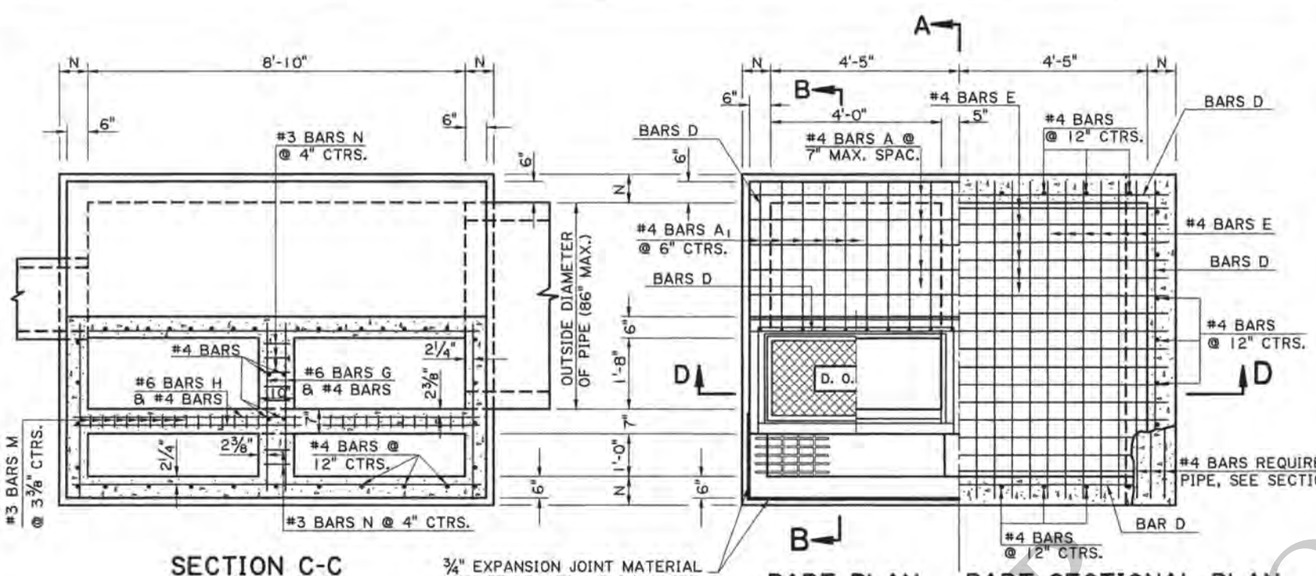
CONCRETE CATCH BASIN
CURB AND GUTTER OPENING
4" Mountable Or 6" Barrier Curb
Max. Pipes: 42" x 72", Max. Depth: 12'

STANDARD PLAN CB-07

HYDRAULICS SECTION

IP_PWP:dms09544\CB-07.dgn

9/21/2020 09:46



SECTION C-C

¾" EXPANSION JOINT MATERIAL BETWEEN BASIN AND PAVEMENT

PART PLAN
(SHOWING TOP SLAB)

PART SECTIONAL PLAN
(SHOWING REINFORCING IN BOTTOM SLAB AND WALLS)

#3 BARS N

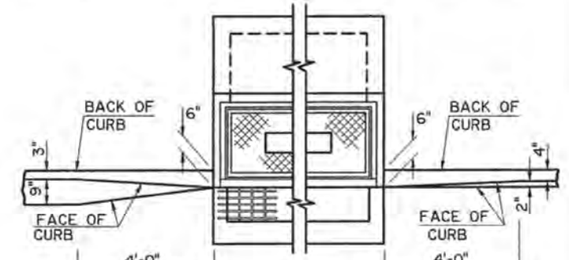
#3 BARS M

GENERAL NOTES:

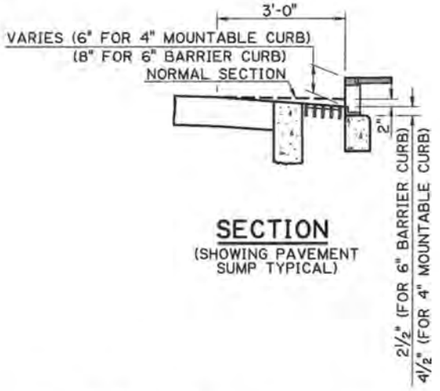
1. CATCH BASIN IS DESIGNED ACCORDING TO 4TH ED. 2007 AASHTO LRFD PROCEDURES. SECTION 702 OF THE DOTD STANDARD SPECIFICATIONS SHALL APPLY.
2. CONCRETE: ALL CONCRETE SHALL BE CLASS "M" MINOR STRUCTURE. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾ IN. EXCEPT AS NOTED.
3. REINFORCING STEEL: REINFORCING STEEL SHALL BE GRADE 60. DIMENSIONS ARE TO BAR CENTERS. MINIMUM COVER FOR REINFORCING BARS SHALL BE 2 IN. CLEAR UNLESS SHOWN OTHERWISE.
4. AS DEPTH INCREASES THE WALL AND SLAB THICKNESSES AND REINFORCEMENT SHOULD BE INCREASED AS SHOWN IN THE TABLE BELOW. THE CONTRACTOR HAS THE OPTION TO PROVIDE THE MAXIMUM REQUIRED WALL THICKNESS FOR THE FULL DEPTH OF THE STRUCTURE.

DEPTH RANGE	WALLS			BOTTOM SLAB		
	N	D BARS		T	E BARS	
	IN.	SIZE	SPAC.,IN.	IN.	SIZE	SPAC.,IN.
0' TO 7'	6.0	4	4.5	6.0	4	7.5
7'-1" TO 11'	7.0	4	5.0	6.5	4	5.5
11'-1" TO 18'	8.0	5	5.5	7.5	4	4.5
18'-1" TO 20'	8.5	5	5.5	8.0	4	4.0

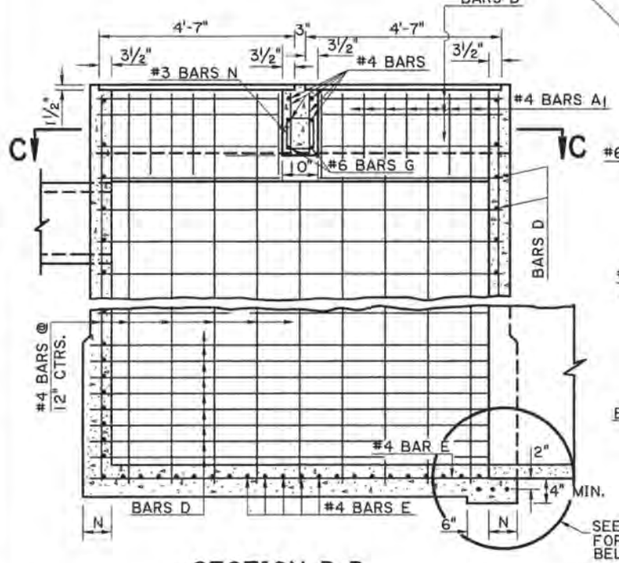
5. FOR DETAILS OF METAL COVER, FRAME, AND GRATE, SEE STD. PLAN MC-01, TYPE H & TYPE I.
6. THE CONTRACTOR WILL NOT POUR ABOVE THE BOTTOM OF THE SLAB UNTIL THE PAVING ADJACENT TO THE CATCH BASIN HAS BEEN COMPLETED.



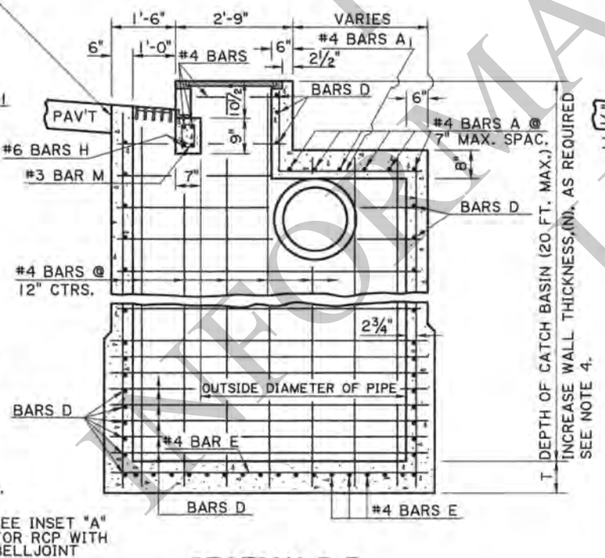
TRANSITION IN CURB WIDTH
(TYPICAL)



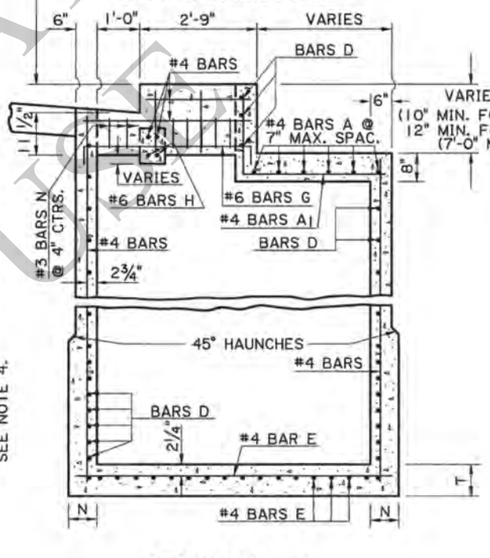
SECTION
(SHOWING PAVEMENT SUMP TYPICAL)



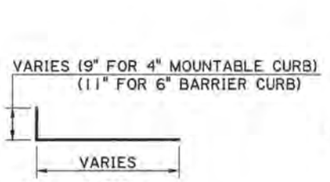
SECTION D-D



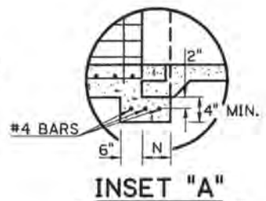
SECTION B-B



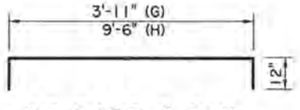
SECTION A-A
SHOWING MOUNTABLE CURB



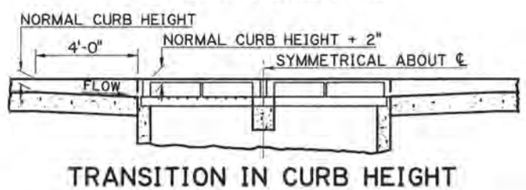
#4 BARS A1



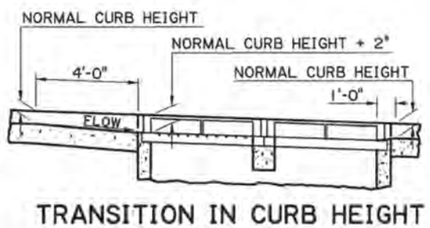
INSET "A"
RCP WITH BELLJOINT



#6 BARS G & H



TRANSITION IN CURB HEIGHT
CATCH BASIN AT LOW POINT



TRANSITION IN CURB HEIGHT
CATCH BASIN ON A GRADE

FOR INFORMATIONAL USE

SHEET NUMBER		
PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED PAA CHECKED	DETAILED KAJ CHECKED WMR	DATE 7-16-97 SHEET 1 OF 1

BY	DATE	REVISION DESCRIPTION
MH	10-7-10	Revised To 2007 AASHTO LRFD Procedures
JCM	11-2-00	Converted Metric CB-08M to English CB-08

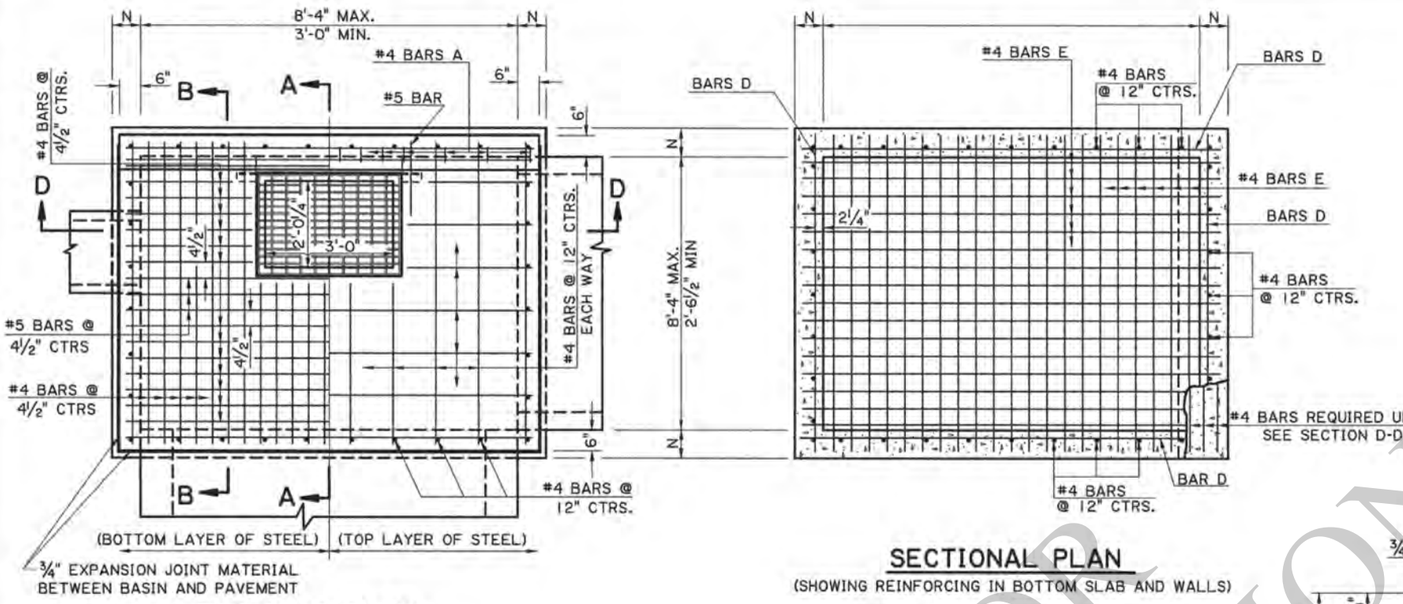
APPROVED BY CHIEF ENGINEER: Dustin F. Spears
DATE: 10-7-10

CONCRETE CATCH BASIN
DOUBLE COMBINATION TYPE
4' Mountable Or 6" Barrier Curb
Max. Pipes: 72" x 84" RCP, Max. Depth: 20'

STANDARD PLAN CB-08

HYDRAULICS SECTION

IP_PWP:dms09544\CB-08.dgn



TOP SLAB PLAN

SECTIONAL PLAN

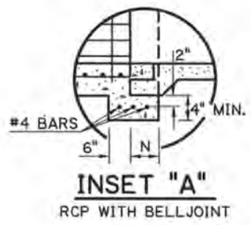
(SHOWING REINFORCING IN BOTTOM SLAB AND WALLS)

GENERAL NOTES:

1. CATCH BASIN IS DESIGNED ACCORDING TO 4TH ED. 2007 AASHTO LRFD PROCEDURES. SECTION 702 OF THE DOTD STANDARD SPECIFICATIONS SHALL APPLY.
2. CONCRETE: ALL CONCRETE SHALL BE CLASS "M" MINOR STRUCTURE. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾ IN. EXCEPT AS NOTED.
3. REINFORCING STEEL: REINFORCING STEEL SHALL BE GRADE 60. DIMENSIONS ARE TO BAR CENTERS. MINIMUM COVER FOR REINFORCING BARS SHALL BE 2 IN. CLEAR UNLESS SHOWN OTHERWISE.
4. AS DEPTH INCREASES THE WALL AND SLAB THICKNESSES AND REINFORCEMENT SHOULD BE INCREASED AS SHOWN IN THE TABLE BELOW. THE CONTRACTOR HAS THE OPTION TO PROVIDE THE MAXIMUM REQUIRED WALL THICKNESS FOR THE FULL DEPTH OF THE STRUCTURE.

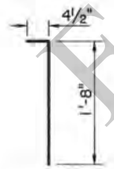
DEPTH RANGE	WALLS			BOTTOM SLAB		
	N	D BARS		T	E BARS	
	IN.	SIZE	SPAC.,IN.	IN.	SIZE	SPAC.,IN.
0' TO 9'	6.0	4	5.0	6.0	4	6.5
9'-1" TO 12'	6.5	4	4.5	6.5	4	6.0
12'-1" TO 16'	7.0	5	5.5	7.0	4	5.0
16'-1" TO 20'	7.5	5	5.0	7.5	4	4.5

5. FOR DETAILS OF METAL GRATE AND GRATE SEAT, SEE STD. PLAN MC-01, TYPE C & TYPE F.
6. THE CONTRACTOR WILL NOT POUR ABOVE THE BOTTOM OF THE SLAB UNTIL THE PAVING ADJACENT TO THE CATCH BASIN HAS BEEN COMPLETED.

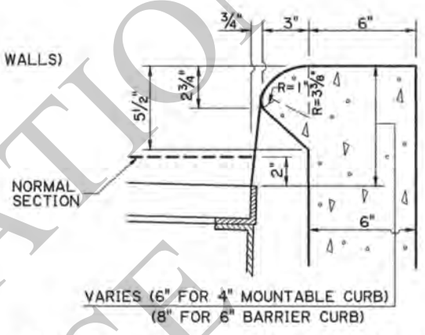


INSET "A"

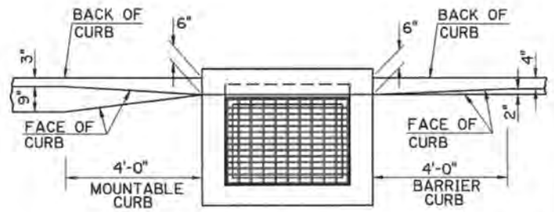
RCP WITH BELLJOINT



#4 BARS A

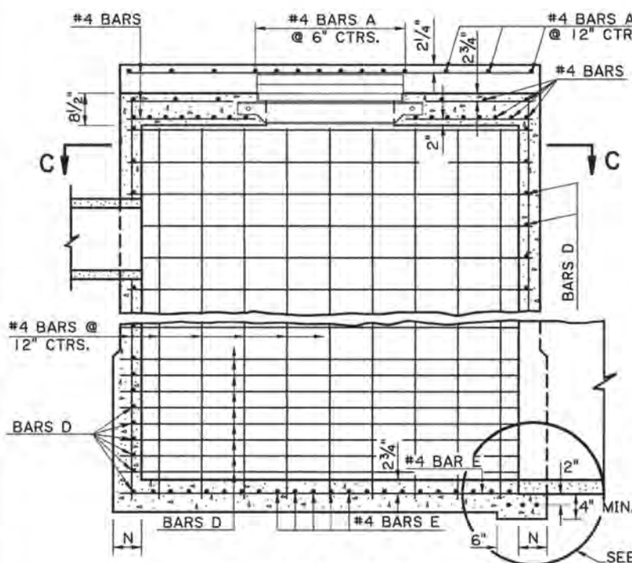


DETAIL OF OPENING IN CURB

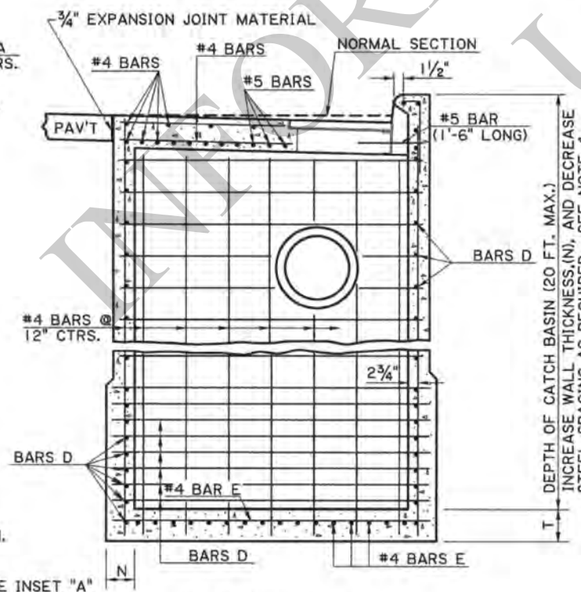


TRANSITION IN CURB WIDTH

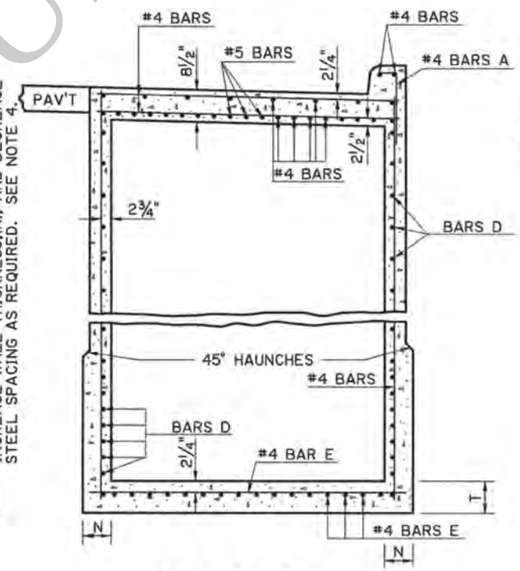
(TYPICAL)



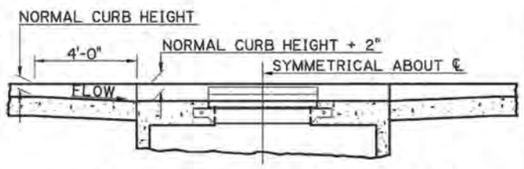
SECTION D-D



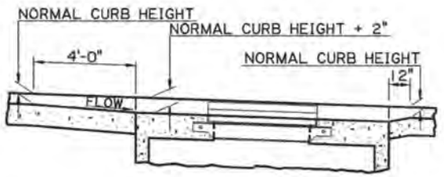
SECTION A-A



SECTION B-B



TRANSITION IN CURB HEIGHT CATCH BASIN AT LOW POINT



TRANSITION IN CURB HEIGHT CATCH BASIN ON A GRADE

FOR INFORMATIONAL USE

DESIGNED	PAA
CHECKED	
DETAILED	KAJ
CHECKED	WMR
DATE	8-22-97
SHEET	1 OF 1
PARISH	
FEDERAL PROJECT	
STATE PROJECT	
SHEET NUMBER	

10-7-10	Revised To 2007 AASHTO LRFD Procedures	MH
11-2-00	Converted Metric CB-09 to English CB-09	JCM
DATE	REVISION DESCRIPTION	BY

APPROVED BY: CHIEF ENGINEER: Chad Hamilton
DATE: 10-7-10

COMBINATION TYPE CATCH BASIN (TRUNKLINE UNDER PAVEMENT)
4" Mountable Or 6" Barrier Curb
Max. Pipe: 84"x 84" RCP, Max. Depth: 20'
STANDARD PLAN CB-09

HYDRAULICS SECTION

5/4/2020 14:25

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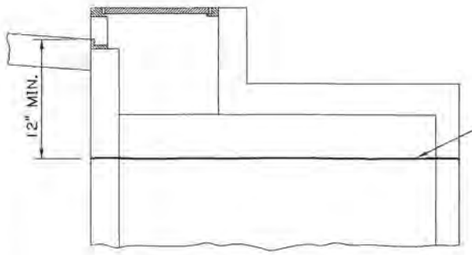
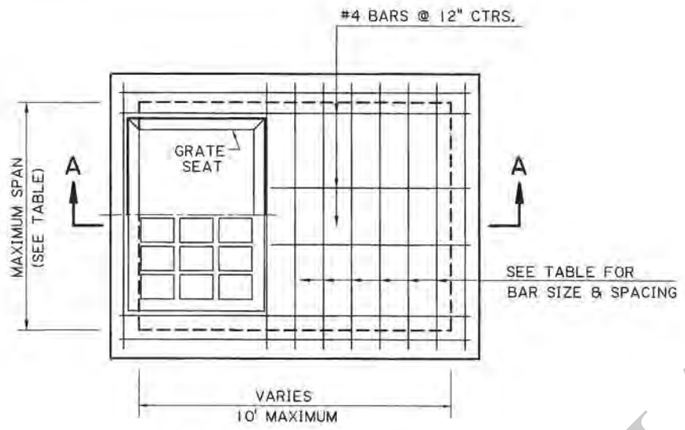
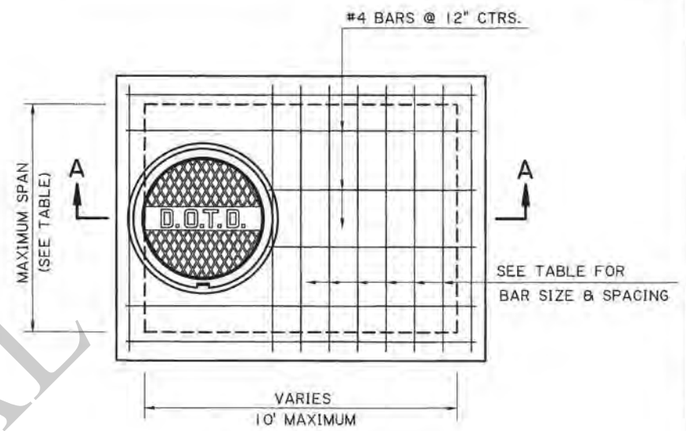


SECTION
EXISTING STRUCTURE



CATCH BASIN PLAN
SHOWING NEW CONSTRUCTION
GRATE TO BE TYPE "B" OR "c".
TYPE "B" SHOWN.*



MANHOLE PLAN
SHOWING NEW CONSTRUCTION

* TYPE "B" AND "C" GRATES SHOULD NOT BE USED IN THE TRAVEL LANE.

TYPE "B" GRATE IS TO BE USED WHERE NO PEDESTRIAN TRAFFIC AND NO VEHICULAR TRAFFIC IS EXPECTED. (DITCHES, ETC.)

TYPE "C" GRATE IS TO BE USED WHERE PEDESTRIAN TRAFFIC AND/OR LIGHT VEHICULAR TRAFFIC IS EXPECTED. (DRIVEWAYS, SHOULDERS, ETC.)

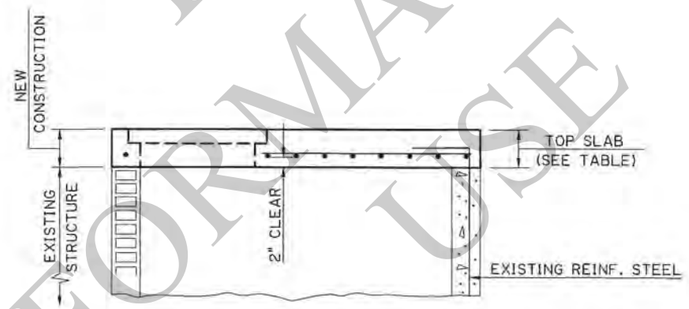
GENERAL NOTES:

DIMENSIONS RELATING TO REINFORCED STEEL ARE TO BARS CENTERS.

FOR DETAILS OF CATCH BASIN GRATE AND SEAT, SEE STD. PLAN MC-01 (TYPE B OR C).

FOR DETAILS OF MANHOLE CAST IRON COVER AND SEAT, SEE STD. PLAN MC-01 (TYPE K OR K_1).

PROJECT SPECIFICATIONS FOR MANHOLES, JUNCTION BOXES AND CATCH BASINS SHALL APPLY.



SECTION A-A
SHOWING NEW CONSTRUCTION FOR CATCH BASIN OR MANHOLE
(FOR CONCRETE OR BRICK WALL)

MAXIMUM SPAN	TOP SLAB	BAR SIZE	BAR SPACING
4'	8"	#5	8"
6'	8½"	#5	6"
8'	9½"	#5	5"
9'	10½"	#5	4"

ADJUSTMENT/CONVERSION OF EXISTING CATCH BASINS OR MANHOLES

NOTE:
1) FOR ALL CATCH BASIN ADJUSTMENTS, THIS DETAIL SHOULD BE INCLUDED IN THE PLANS AND PAID FOR WITH APPROPRIATE PAY ITEMS.
2) FOR ALL CATCH BASIN AND MANHOLE CONVERSIONS (CATCH BASIN TOP TO MANHOLE TOP OR MANHOLE TOP TO CATCH BASIN TOP), THIS DETAIL SHOULD BE INCLUDED IN THE PLANS ALONG WITH THE APPROPRIATE STANDARD PLAN/SPECIAL DETAIL TO CONSTRUCT THE NEW TOP. IF NO STANDARD PLAN/SPECIAL DETAIL IS INCLUDED, THE TOP IS TO BE BUILT AS SHOWN ON THIS DETAIL. ALL CONVERSIONS SHOULD BE PAID FOR WITH APPROPRIATE PAY ITEMS.
3) FOR ALL MANHOLE ADJUSTMENTS GREATER THAN 7", THIS DETAIL SHOULD BE INCLUDED IN THE PLANS AND PAID FOR WITH APPROPRIATE PAY ITEMS.
4) FOR ALL MANHOLE ADJUSTMENTS LESS THAN OR EQUAL TO 7", MANHOLE ADJUSTMENT RINGS MAY BE USED. SHOULD BE PAID FOR WITH APPROPRIATE PAY ITEMS AND NO DETAIL IS NEEDED IN THE PLANS. REFER TO STANDARD PLAN MC-01.
5) FOR ALL CATCH BASIN/MANHOLE ADJUSTMENTS, CLEAN EXISTING GRATES/FRAMES AS PER PROJECT SPECIFICATIONS FOR MANHOLES, JUNCTION BOXES AND AND CATCH BASINS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	CHECK	DETAIL	CHECK	REVIEW	SERIES #
PAA	MH	KAJ	MH	5-7-19	1 OF 1

STATE OF LOUISIANA
MITRA HASHEMIEH
REG. No. 28548
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
5/7/2019

APPROVED BY CHIEF ENGINEER:
DATE: 10/30/19

ADJUSTMENT/CONVERSION OF EXISTING CATCH BASINS OR MANHOLES

CB-ADJUST

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

HYDRAULICS DESIGN

2/26/2019 09:20

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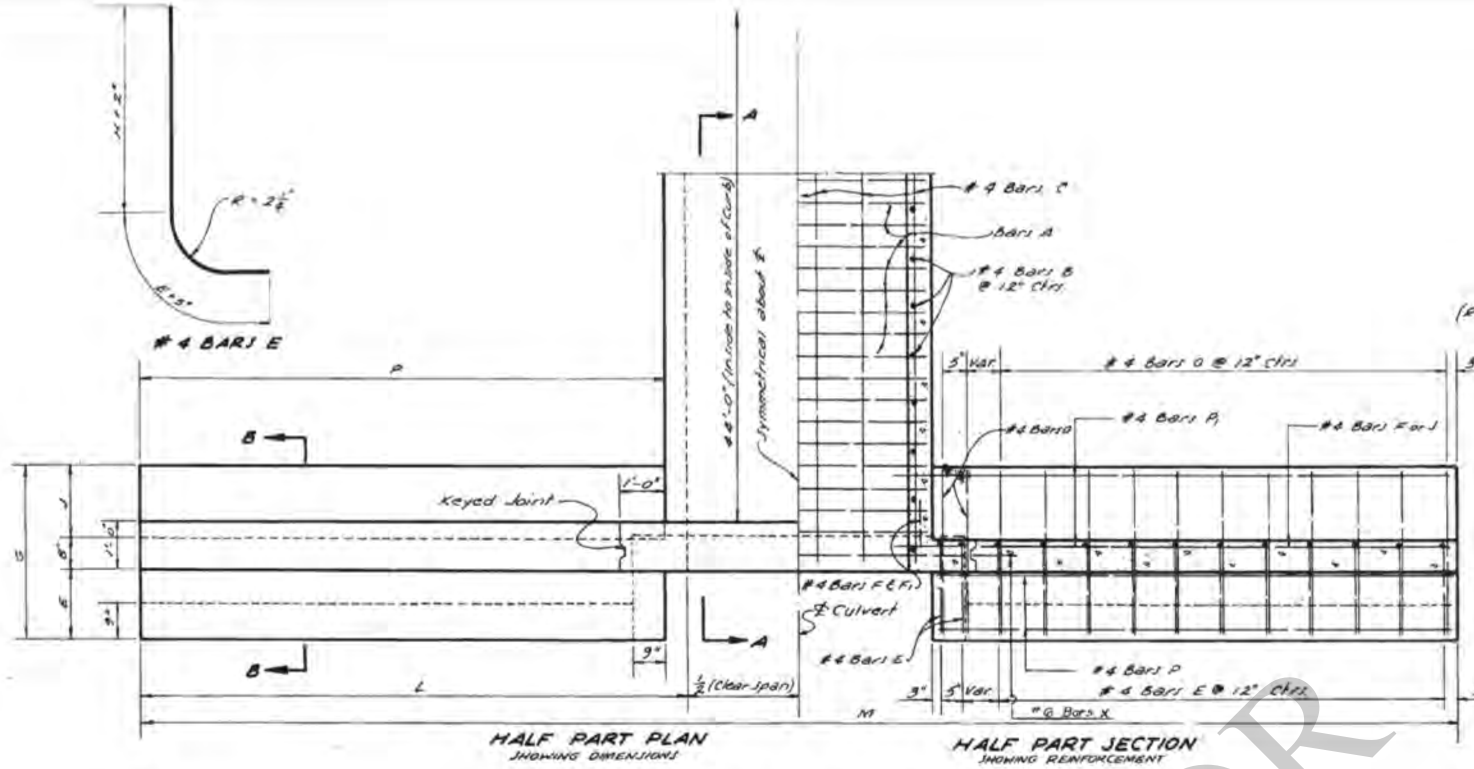
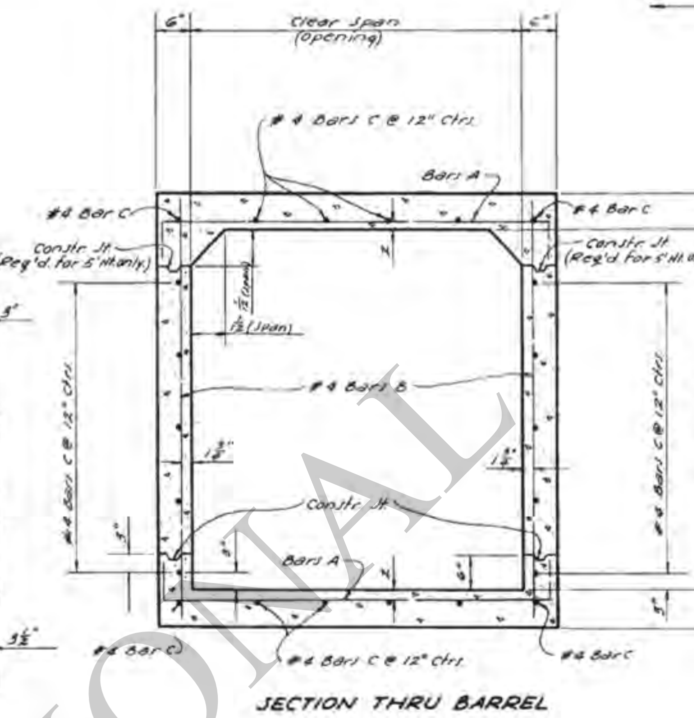
F.A.P.	STATE PROJECT	PARISH	SHEET NO.

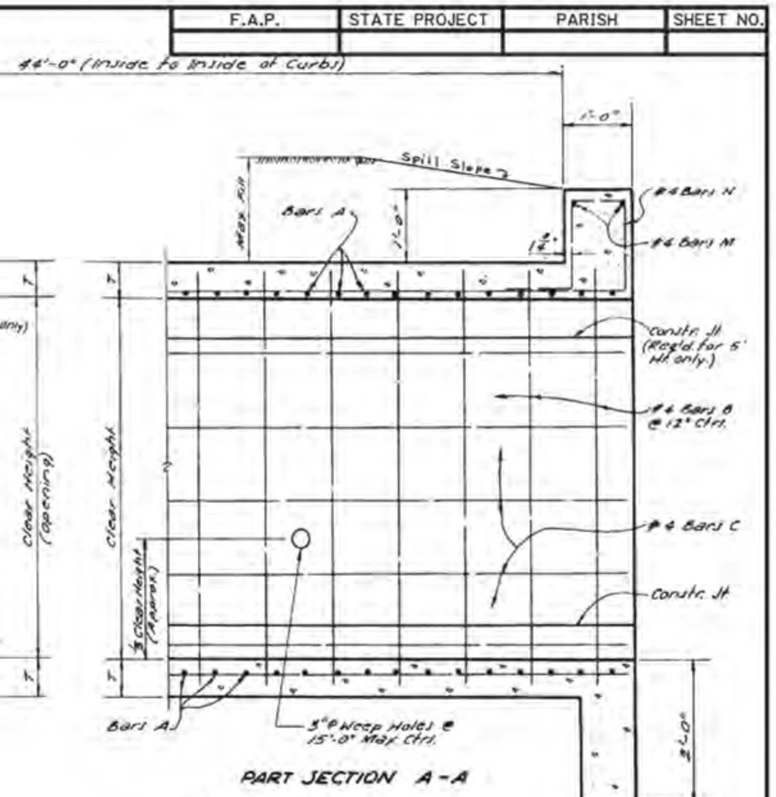


HALF PART PLAN
SHOWING DIMENSIONS

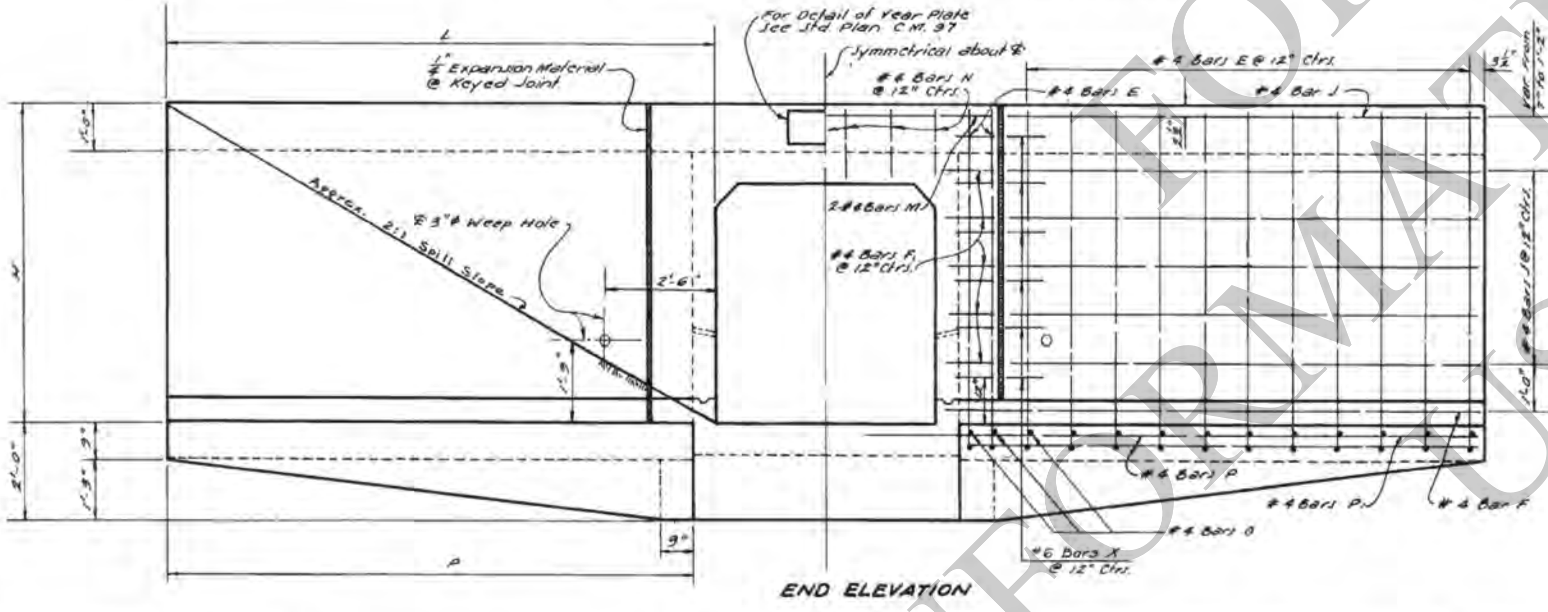
HALF PART SECTION
SHOWING REINFORCEMENT



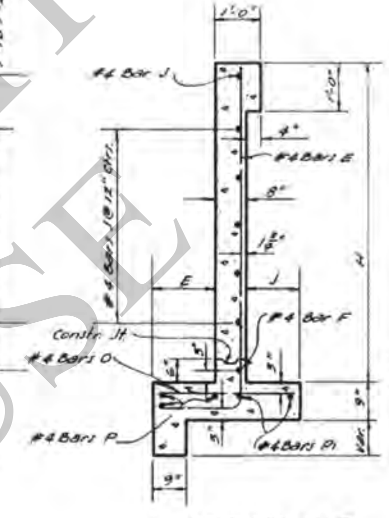
SECTION THRU BARREL



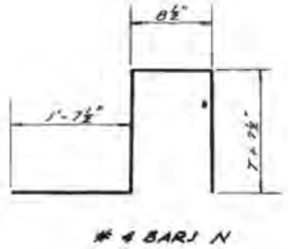
PART SECTION A-A



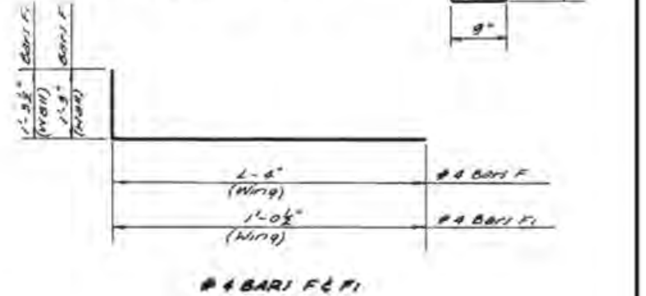
END ELEVATION



SECTION B-B



#4 BARS N



#4 BARS F & F1

BARS A

GENERAL NOTES:
CONSTRUCTION SPECIFICATIONS: Latest Approved La. Dept. of Highways Std. Specs.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1957 as amended to Dec. 31, 1958.
LIVE LOAD: H20-S16-44.
All Exposed Corners to have ¾" chamfer unless otherwise noted.
Reinforcement shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.

Dimensions relating to Reinforcing Steel are to Bar Centers.
Concrete to be class "A".
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Details of Joints, See Std. Plan C.M.-48.

DIMENSIONS															BILL OF REINFORCING STEEL FOR 44'-0" CULVERT																												QUANTITIES				OPENINGS	
OPENINGS			MAX. FILL			BARREL		WINGS & CURBS							BARREL REINFORCEMENT								WING AND CURB REINFORCEMENT Ⓐ																				PER LIN. FT. OF BARREL		44'-0" CULVERT			
CLEAR SPAN	CLEAR HEIGHT	AREA	TOP SLAB	BOTT. SLAB	WALLS	T	Z	E	J	G	H	L	P	M	BARS A				#4 BARS B		#4 BARS C		#4 BARS E		#4 BARS F		#4 BARS F1		#4 BARS J		#4 BARS N		#4 BARS O		#4 BARS P		#4 BARS P1		#4 BARS M		#6 BARS X		STEEL	CONC.	STEEL	CONC.	CLEAR SPAN	CLEAR HEIGHT
FEET	FT.-IN.	SQ. FT.	FEET	FEET	FEET	IN.	IN.	FT.-IN.	FT.-IN.	FT.-IN.	FT.-IN.	FT.-IN.	FT.-IN.	FT.-IN.	SIZE	No	LENGTH FT.-IN.	SPACE IN.	No	LENGTH FT.-IN.	No	LENGTH * FT.-IN.	No	LENGTH FT.-IN.	No	LENGTH FT.-IN.	No	LENGTH FT.-IN.	No	LENGTH FT.-IN.	No	LENGTH FT.-IN.	No	LENGTH FT.-IN.	No	LENGTH FT.-IN.	No	LENGTH FT.-IN.	No	LENGTH FT.-IN.	No	LENGTH FT.-IN.	LBS.	CU. YDS.	LBS.	CU. YDS.	FEET	FT. IN.
2	2-0	4	44	42	54	6	1¾	0-9	0-8	2-1	3-6	6-0	5-6	14-0	#4	220	3-8	5	92	2-8	10	47-2	28	4-10	4	6-11	8	2-4	12	4-2	6	4-7	28	1-8	12	5-2	8	6-10	4	4-5	12	2-0	22.00	0.1862	1340	18.02	2	2-0
3	2-0	6	28	27	51	6½	1 13/16	0-9	0-8	2-1	3-6½	6-1	5-7	15-2	#5	170	4-8	6½	92	2-9	12	47-2	28	4-10½	4	7-0	8	2-4	12	4-5	8	4-8	28	1-8	12	5-3	8	6-11	4	5-5	12	2-0	29.66	0.2369	1717	15.58	3	2-0
	2-6	7.5	28	27	35	6½	1 13/16	0-9	0-8	2-1	4-0½	7-1	6-7	17-2	#5	170	4-8	6½	92	3-3	14	47-2	32	5-4½	4	8-0	8	2-4	16	5-3	8	4-8	32	1-8	12	6-3	8	7-11	4	5-5	12	2-0	31.67	0.2556	1877	17.46		2-6
	3-0	9	28	27	24	6½	1 13/16	1-0	0-8	2-4	4-6½	8-1	7-7	19-2	#5	170	4-8	6½	92	3-9	14	47-2	36	6-1½	4	9-0	12	2-4	16	6-3	8	4-8	36	1-11	12	7-3	8	8-11	4	5-5	16	2-0	32.33	0.2739	1895	19.68		3-0
4	2-0	8	21	20	50	7	1 13/16	0-9	0-8	2-1	3-7	6-2	5-8	16-4	#5	200	5-8	5½	92	2-10	14	47-2	28	4-11	4	7-1	8	2-4	12	4-4	10	4-9	28	1-8	12	5-4	8	7-0	4	6-5	12	2-0	38.93	0.2942	2152	18.45	4	2-0
	2-6	10	21	20	36	7	1 13/16	0-9	0-8	2-1	4-1	7-2	6-8	18-4	#5	200	5-8	5½	92	3-4	16	47-2	32	5-5	4	8-1	8	2-4	16	5-4	10	4-9	32	1-8	12	6-4	8	8-0	4	6-5	12	2-0	40.93	0.3128	2312	20.33		2-6
	3-0	12	21	20	24	7	1 13/16	1-0	0-8	2-4	4-7	8-2	7-8	20-4	#5	200	5-8	5½	92	3-10	16	47-2	36	6-2	4	9-1	12	2-4	16	6-4	10	4-9	36	1-11	12	7-4	8	9-0	4	6-5	16	2-0	41.60	0.3313	2431	22.56		3-0
	4-0	16	21	20	13	7	1 13/16	1-3	0-10	2-9	5-7	10-2	9-8	24-4	#5	200	5-8	5½	92	4-10	18	47-2	44	7-5	4	11-1	16	2-4	20	8-4	10	4-9	44	2-4	12	9-4	8	11-0	4	6-5	20	2-0	44.27	0.3683	2741	27.37		4-0
5	2-0	10	17	15	46	7½	1 13/16	0-9	0-8	2-1	3-7½	6-4	5-10	17-8	#5	220	6-8	5	92	2-11	18	47-2	28	4-11½	4	7-3	8	2-4	12	4-6	12	4-10	28	1-8	12	5-6	8	7-2	4	7-5	12	2-0	47.36	0.3585	2645	21.67	5	2-0
	2-6	12.5	17	15	33	7½	1 13/16	0-9	0-8	2-1	4-1½	7-4	6-10	19-8	#5	220	6-8	5	92	3-5	18	47-2	32	5-5½	4	8-3	8	2-4	16	5-6	12	4-10	32	1-8	12	6-6	8	8-2	4	7-5	12	2-0	49.96	0.3768	2743	23.57		2-6
	3-0	15	17	15	23	7½	1 13/16	1-0	0-8	2-4	4-7½	8-4	7-10	21-8	#5	220	6-8	5	92	3-11	18	47-2	36	6-2½	4	9-3	12	2-4	16	6-6	12	4-10	36	1-11	12	7-6	8	9-2	4	7-5	16	2-0	50.65	0.3953	2862	25.82		3-0
	4-0	20	17	15	13	7½	1 13/16	1-3	0-10	2-9	5-7½	10-4	9-10	25-8	#5	220	6-8	5	92	4-11	20	47-2	44	7-5½	4	11-3	16	2-4	20	8-6	12	4-10	44	2-4	12	9-6	8	11-2	4	7-5	20	2-0	53.30	0.4324	3173	30.65		4-0
	5-0	25	17	15	7	7½	1 13/16	1-5	1-2	3-3	6-7½	12-4	11-10	29-8	#5	220	6-8	5	92	5-11	22	47-2	52	8-7½	4	13-9	20	2-4	24	10-6	12	4-10	52	2-10	12	11-6	8	13-2	4	7-5	24	2-0	55.98	0.4694	3513	36.17		5-0

* Length includes 1-1'-6" Lap Splice

Ⓐ #6 Bars X to be ¾" ⌀ Smooth and Greased for 1'-0" of Length

APPROVED BY:
Dempsey D. White 1-5-78
CHIEF ENGINEER DATE

DATE	DESCRIPTION	BY
[illegible]	Rev. Weep Hole Note	W.T.S.
[illegible]	Rev. General Notes for Steel	W.B.M.
7-12-68	Rev. #4 Bars P & Quantities	W.E.M.
5-2-67	Added Axle Steel	W.E.M.
6-2-64	Deformed Dowels X to Smooth	W.E.M.
11-13-61	Added #6 Dowels @ Keyed Jt.	[illegible]
9-25-59	No and Length of Bars C	M.C.L.

REVISIONS

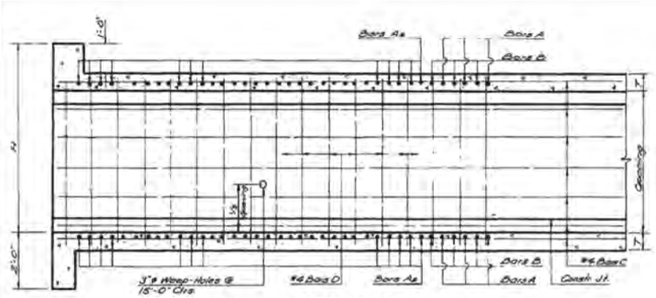
CC-30-20

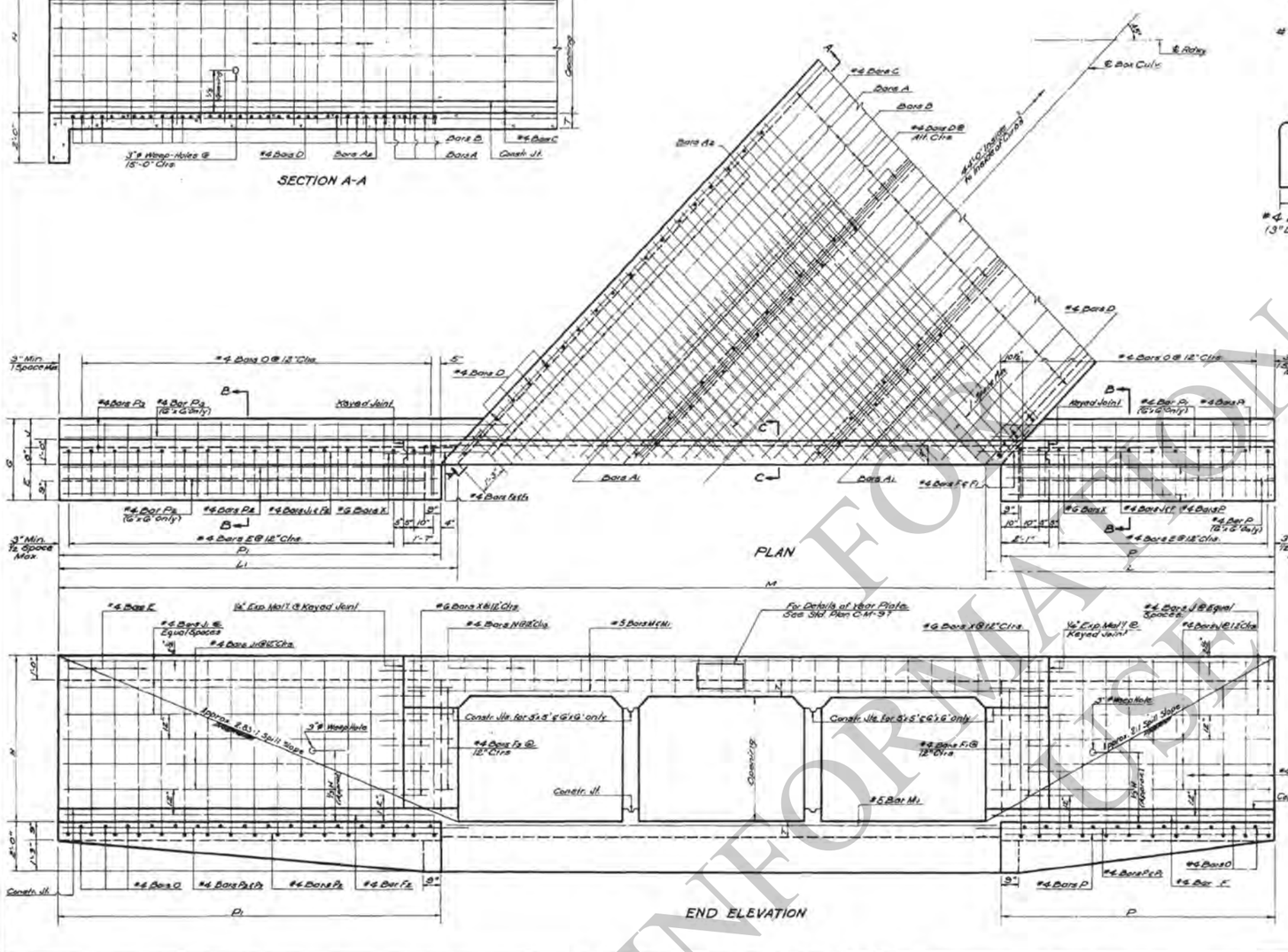
STANDARD PLAN
REINFORCED CONC. BOX CULVERT
STRAIGHT WINGWALLS
2:1 SPILL SLOPE NORMAL TO CHANNEL
2' THRU 5' CLEAR SPANS, 2' THRU 5' CLEAR HTS.
DATED May 19, 1959

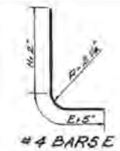
STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

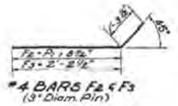
DESIGNED Malamas	DETAILED Malamas	TRACED E. C. Johnson
CHECKED F.E. Marcum	CHECKED F.E. Marcum	CHECKED Malamas

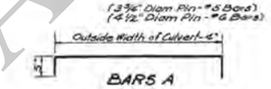
FOR INFORMATIONAL USE

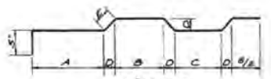


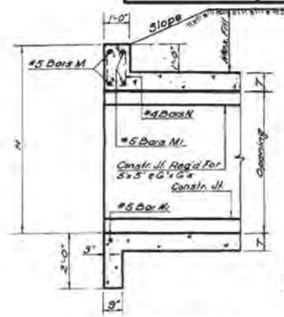


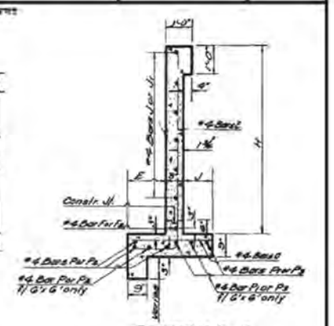


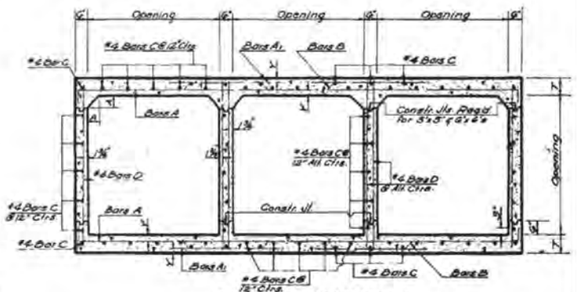












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FOR INFORMATIONAL USE

APPROVED BY:
Dempsey D. White 1-11-78
CHIEF ENGINEER DATE

CC·S·M·4-6·S·45°·1

F.A.P.	STATE PROJECT	PARISH	SHEET NO.

DIMENSIONS FOR BARS B

SIZE	PIN DIAM.	A	B	C	D	E
4'x4'	3⅜"	3'-2⅝"	2'-2⅝"	1'-8⅝"	3⅝"	4½"
5'x5'	3¾"	3'-11⅝"	2'-8⅝"	2'-2⅛"	3⅞"	5½"
6'x6'	4½"	4'-7⅝"	3'-1¼"	2'-7¾"	4½"	6"

DIMENSIONS

OPENINGS SIZE Feet	OPENINGS No.	OPENINGS AREA Sq. Ft.	MAX. FILL SLAB Ft.	MAX. FILL WALLS Ft.	BARREL T In.	BARREL A In.	BARREL Y In.	WINGS AND CURBS E Ft.-In.	J Ft.-In.	G Ft.-In.	H Ft.-In.	L Ft.-In.	L1 Ft.-In.	P Ft.-In.	P1 Ft.-In.	M Ft.-In.	QUANTITIES PER LIN. FT. OF BARREL STEEL Pounds	PER LIN. FT. OF BARREL CONCRETE Cu. Yds.	44'-0" CULVERT STEEL Pounds	44'-0" CULVERT CONCRETE Cu. Yds.	OPENINGS No.	OPENINGS SIZE Feet
4x4	2	32	25	13	7	4	1 3/16	1-3	0-10	2-9	5-7	10-5½	14-1½	9-9	13-5	36-7¼	85.26	0.6408	4373	43.60	2	4x4
	3	48	32													42-11 9/16	127.77	0.9136	7,117	57.34	3	
	4	64														49-3 5/16	170.27	1.1862	9,838	71.07	4	
	5	80														65-8 5/16	212.77	1.4588	11,652	84.82	5	
	6	96														62-0 1/16	255.27	1.7315	14015	98.55	6	
5x5	2	50	21	7	7½	5	1 5/16	1-5	1-2	3-3	6-7⅛	12-5½	17-1½	11-9	16-5	44-5 3/16	118.52	0.8231	6578	57.21	2	5x5
	3	75	27													52-2½	170.56	1.1767	9504	74.94	3	
	4	100														59-11¾	227.60	1.5303	12,517	92.68	4	
	5	125														67-9 3/16	284.64	1.8840	15,726	110.40	5	
	6	150														75-6½	341.68	2.2377	18,990	128.14	6	
6x6	2	72	15	5	8	6	1⅞	1-7	1-6	3-9	7-8	14-5½	20-1½	13-9	19-5	52-3⅛	137.72	1.0185	8,154	72.23	2	6x6
	3	108	20													61-5 15/16	206.89	1.4599	11,750	94.26	3	
	4	144														70-7 11/16	276.06	1.9012	15,468	116.29	4	
	5	180														79-10	345.23	2.3426	19,390	138.32	5	
	6	216														83-0 9/16	414.40	2.7839	23,403	160.35	6	

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS SIZE Feet	No.	BARS A Size	BARS A No.	BARS A Length Ft.-In.	BARS A Spac. In.	BARS A1 Size	BARS A1 No.	BARS A1 Length Ft.-In.	BARS A1 Spac. In.	BARS A2 Size	BARS A2 No.	BARS A2 Short Bar Ft.-In.	BARS A2 Var. In.	BARS A2 Long Bar Ft.-In.	BARS A2 Spac. In.	BARS B Size	BARS B No.	BARS B Length Ft.-In.	BARS B Spac. In.	#4 BARS C No.	#4 BARS C ①Length Ft.-In.	#4 BARS D No.	#4 BARS D Length Ft.-In.	#4 BARS D Spac. In.
4x4	2	#5	74	10-0	12	#5	84	3'-10	6/12	#5	64	1-9	6.000	8-3	6	#5	76	10-2¾	12	38	47-10	141	4-10	12
	3	#5	60	14-6	12	#5	208	3-10	6/12	#5	100	1-9	6.000	13-3	6	#5	66	14-11½	12	56	47-10	188	4-10	12
	4	#6	56	19-0	12	#5	336	3-10	6/12	#5	136	1-9	6.000	18-3	6	#5	58	19-8¼	12	74	47-10	235	4-10	12
	5	#5	48	23-6	12	#5	480	3-10	6/12	#5	172	1-9	6.000	22-8	6	#5	48	24-5	12	92	47-10	282	4-10	12
	6	#5	38	28-0	12	#5	658	3-10	6/12	#5	208	1-9	6.000	27-3	6	#5	40	29-1½	12	110	47-10	329	4-10	12
5x5	2	#5	84	12-0	10	#5	116	4-4	5/10	#5	96	1-9	5.0000	11-4	5	#5	86	12-3¼	10	45	47-10	141	5-11	12
	3	#5	72	17-6	10	#5	260	4-4	5/10	#5	148	1-9	5.0000	16-9	5	#5	72	18-0½	10	66	47-10	188	5-11	12
	4	#5	58	23-0	10	#5	426	4-4	5/10	#5	200	1-9	5.0000	22-2	5	#5	60	23-9¾	10	87	47-10	235	5-11	12
	5	#5	46	28-6	10	#5	624	4-4	5/10	#5	252	1-9	5.0000	27-7	5	#5	48	29-7	10	108	47-10	282	5-11	12
	6	#5	34	34-0	10	#5	846	4-4	5/10	#5	304	1-9	5.0000	33-0	5	#5	34	35-4¼	10	129	47-10	329	5-11	12
6x6	2	#6	58	14-0	14	#6	82	5-2	7/14	#6	80	1-9	7.0000	12-10	7	#6	60	14-3½	14	62	47-10	168	7-0	10
	3	#6	46	20-6	14	#6	192	5-2	7/14	#6	128	1-9	7.0000	19-10	7	#6	46	21-1	14	76	47-10	224	7-0	10
	4	#6	34	27-0	14	#6	318	5-2	7/14	#6	172	1-9	7.0000	26-3	7	#6	36	27-10½	14	100	47-10	280	7-0	10
	5	#6	24	33-6	14	#6	472	5-2	7/14	#6	216	1-9	7.0000	32-8	7	#6	24	34-8	14	124	47-10	336	7-0	10
	6	#6	12	40-0	14	#6	640	5-2	7/14	#6	260	1-9	7.0000	39-1	7	#6	14	41-5½	14	140	47-10	392	7-0	10

① Includes 1-1'-6" Lap Splice

CURB AND WING REINFORCEMENT

OPENINGS SIZE Feet	No.	#4 BARS E No.	#4 BARS E Length Ft.-In.	#4 BARS F No.	#4 BARS F Length Ft.-In.	#4 BARS F1 No.	#4 BARS F1 Length Ft.-In.	#4 BARS F2 No.	#4 BARS F2 Length Ft.-In.	#4 BARS F3 No.	#4 BARS F3 Length Ft.-In.	#4 BARS J No.	#4 BARS J Length Ft.-In.	#4 BARS J1 No.	#4 BARS J1 Length Ft.-In.	#4 BARS O No.	#4 BARS O Length Ft.-In.	#4 BARS P No.	#4 BARS P Length Ft.-In.	#4 BARS P1 No.	#4 BARS P1 Length Ft.-In.	#4 BARS P2 No.	#4 BARS P2 Length Ft.-In.	#4 BARS P3 No.	#4 BARS P3 Length Ft.-In.	#4 BARS N No.	#4 BARS N Length Ft.-In.	#5 BARS M No.	#5 BARS M Length Ft.-In.	#5 BARS M1 No.	#5 BARS M1 Length Ft.-In.	Ⓐ #6 BARS X No.	Ⓐ #6 BARS X Length Ft.-In.
4x4	2	48	7-5	2	10-9	8	3-0	2	15-5	8	3-6	10	7-4	10	11-6	44	2-4	6	9-5	4	10-7	6	13-1	4	16-0	26	4-3	4	16-7	6	13-0	20	2-0
	3																									40	4-3	4	22-11	6	19-4	20	2-0
	4																									52	4-3	4	29-3	6	25-8	20	2-0
	5																									64	4-3	4	35-8	6	32-1	20	2-0
	6																									78	4-3	4	①43-10	6	38-5	20	2-0
5x5	2	56	8-7½	2	12-9	10	3-0	2	18-5	10	3-6	12	9-4	12	14-6	54	2-10	6	11-5	4	12-7	6	16-1	4	19-4	32	4-4	4	19-4	6	15-9	24	2-0
	3																									48	4-4	4	27-2	6	23-7	24	2-0
	4																									64	4-4	4	34-11	6	31-4	24	2-0
	5																									78	4-4	4	①44-7	6	39-1	24	2-0
	6																									94	4-4	4	①52-4	6	①48-9	24	2-0
6x6	2	68	9-10	2	14-9	12	3-0	2	21-5	12	3-6	14	11-4	14	17-6	64	3-4	8	13-5	6	14-7	8	19-1	6	22-8	38	4-5	4	22-2	6	18-7	28	2-0
	3																									56	4-5	4	31-5	6	27-10	28	2-0
	4																									74	4-5	4	①42-5	6	37-0	28	2-0
	5																									94	4-5	4	①51-7	6	①46-0	28	2-0
	6																									112	4-5	4	①60-10	6	①57-3	28	2-0

① Includes 1-1'-10" Lap Splice

GENERAL NOTES:

Construction Specifications: Latest Approved La. Dept. of Hwy. Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 as amended by Int. Spec. 1964
Live Load: HS20-44 or Military Loading, Whichever is greater
All Concrete to be class "A".
All Exposed Corners to have ¾" chamfer, unless otherwise noted.
Reinforcement Shall Be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617
Dimensions relating to reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) Shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.

Ⓐ #6 Bars X to be ¾" ø Smooth and Greased for 1'-0" of Length

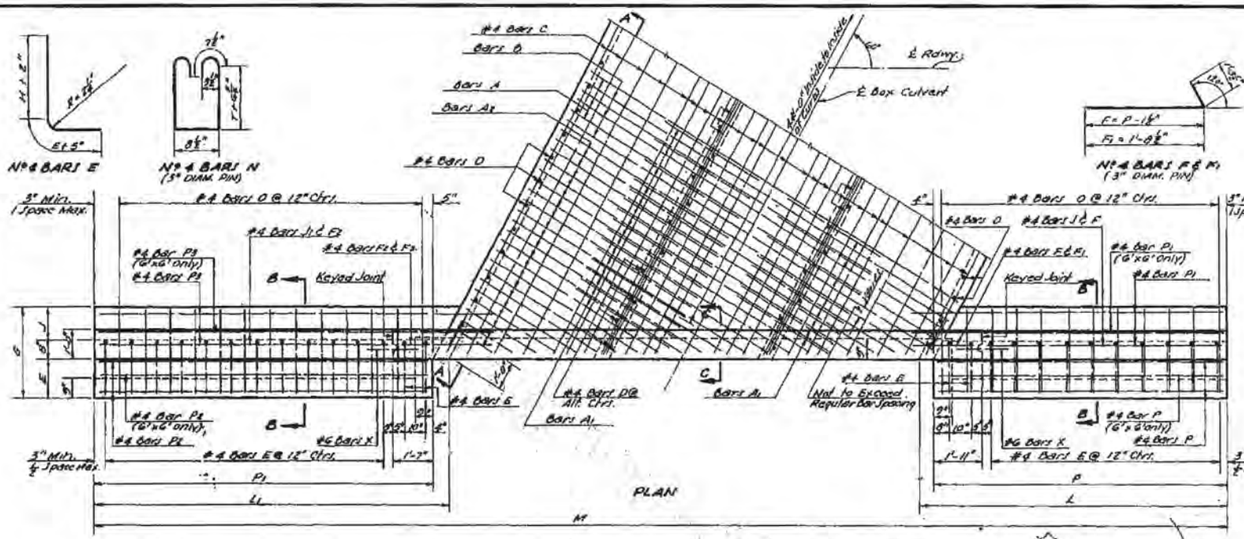
DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
5-30-75	Revised Spill Slope	W.T.J.
6-8-72	Rev. General Notes For Steel	W.E.M.
4-27-67	Added Axle Steel.	W.E.M.
12-14-64	4'x4' & 5'x5' Spans Rev. to Military Loading, 3' Spans Deleted	W.E.M.
4-5-64	Deformed Dowels [illegible]	W.E.M.

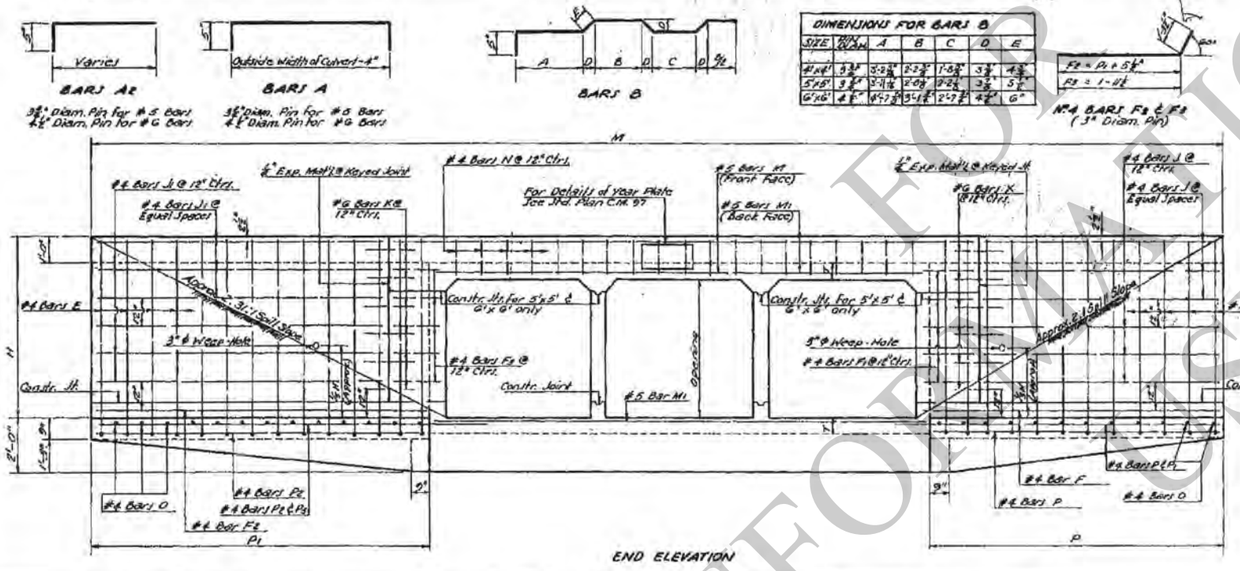
REVISIONS

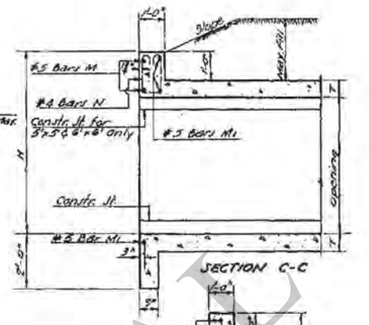
STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 45° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED June 19 1962 4'x4' 5'x5' 6'x6'

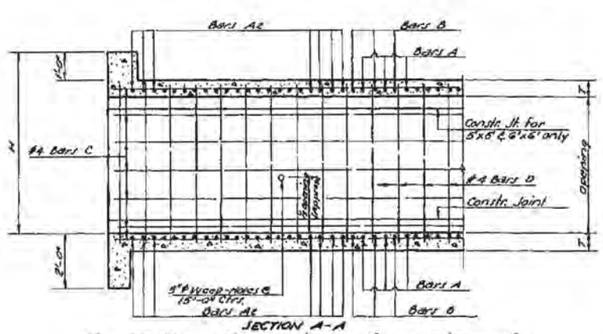
STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

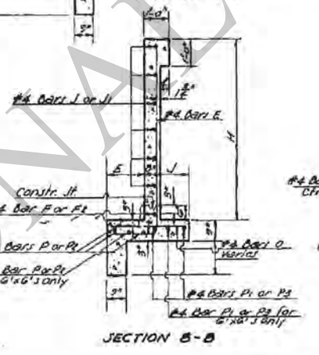
DESIGNED M. Yoshii | DETAILED N.K. Bruns | TRACED [illegible]
CHECKED J. O. Hester | CHECKED M. Yoshii | CHECKED M. [illegible]
IN CHARGE OF

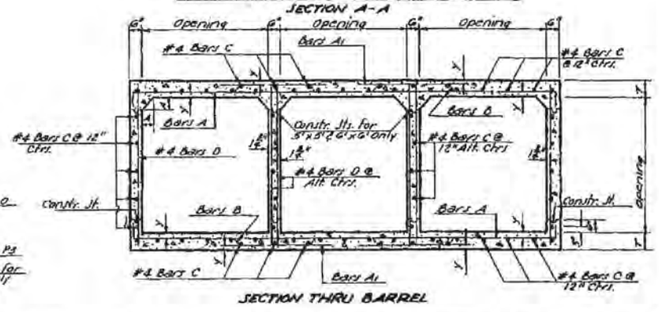












F.A.P.	STATE PROJECT	PARISH	SHEET NO.

FOR INFORMATIONAL USE

DIMENSIONS FOR BARS B

SIZE	PIN DIAM.	A	B	C	D	E
4'x4'	3 1/2"	3'-2 5/8"	2'-2 1/2"	1'-8 5/8"	3 7/8"	4 3/4"
5'x5'	3 1/2"	3'-11 1/16"	2'-0 3/8"	2'-2 1/4"	3 7/8"	5 1/2"
6'x6'	4 1/2"	4'-7 3/8"	3'-1 1/2"	2'-7 1/2"	4 1/2"	6"

DIMENSIONS																	QUANTITIES				OPENINGS	
OPENINGS			MAX. FILL		BARREL			WINGS AND CURBS									PER LINEAR FOOT OF BARREL		44'-0" CULVERT			
SIZE FT.	N°	AREA Sq. Ft.	SLAB Ft.	WALLS Ft.	T In.	A In.	Y In.	E Ft.-In.	J Ft.-In.	G Ft.-In.	H Ft.-In.	L Ft.-In.	L1 Ft.-In.	P Ft.-In.	P1 Ft.-In.	M Ft.-In.	STEEL Pounds	CONC. Cu. Yds.	STEEL Pounds	CONC. Cu. Yds.	N°	SIZE FT.
4x4	2	32	25	13	7	4	1 13/16	1-3	0-10	2-9	5-7	10-1 15/16	11-9 15/16	9-7	11-3	31-9 5/8	85.26	0.6409	4,818	41.75	2	4x4
	3	48	32													37-0	127.77	0.9138	6,907	55.17	3	
	4	64														42-2 5/8	170.27	1.1892	9,046	68.59	4	
	5	80														47-4 5/16	212.77	1.4589	11,286	82.01	5	
	6	96														52-7 1/16	255.27	1.7315	13,470	95.43	6	
5x5	2	50	21	7	7 1/2	5	1 13/16	1-5	1-2	3-3	6-7 1/2	12-1 15/16	13-11 15/16	11-7	13-5	38-3 1/2	113.52	0.8231	6,374	54.54	2	5x5
	3	75	27													44-1 1/4	170.56	1.1767	9,214	71.88	3	
	4	100														50-0 1/4	227.60	1.5303	12,142	89.21	4	
	5	125														57-4	284.64	1.8840	15,015	106.54	5	
	6	150														63-8 3/16	341.68	2.2377	18,085	123.87	6	
6x6	2	72	15	5	8	6	1 1/8	1-7	1-6	3-9	7-8	14-3 15/16	16-2 15/16	13-9	16-5	45-7 1/4	187.72	1.0185	7,942	69.14	2	6x6
	3	108	20													53-1 1/8	206.89	1.4599	11,368	90.69	3	
	4	144														60-7 1/2	278.09	1.9012	14,954	112.24	4	
	5	180														68-1 1/2	345.23	2.3426	18,528	133.79	5	
	6	216														75-7 3/4	414.40	2.7839	22,414	155.34	6	

C·C·S·M·4-6·S·60°·I

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS SIZE FT.	N°	BARS A SIZE	BARS A N°	BARS A Length Ft.-In.	BARS A Spc. In.	BARS A1 SIZE	BARS A1 N°	BARS A1 Length Ft.-In.	BARS A1 Spc. In.	BARS A2 SIZE	BARS A2 N°	BARS A2 Short Bar Ft.-In.	BARS A2 Var. In.	BARS A2 Long Bar Ft.-In.	BARS A2 Spc. In.	BARS B SIZE	BARS B N°	BARS B Length Ft.-In.	BARS B Spc. In.	#6 ⊕ BARS C N°	#6 ⊕ BARS C Length Ft.-In.	#4 BARS D N°	#4 BARS D Length Ft.-In.	#4 BARS D Spc. In.
4x4	2	#5	82	10-0	12	#5	94	3-10	4/12	#5	36	2-2	10.3100	9-1	6	#5	82	10-2 3/4	12	30	47-5	138	4-10	12
	3	#5	76	14-6	12	#5	196	3-10	4/12	#5	56	2-2	10.3940	13-5	6	#5	78	14-11 1/2	12	56	47-5	184	4-10	12
	4	#5	72	19-0	12	#5	312	3-10	4/12	#5	76	2-2	10.3869	17-9	6	#5	72	19-8 1/4	12	74	47-5	230	4-10	12
	5	#5	68	23-6	12	#5	444	3-10	4/12	#5	100	2-2	10.5150	22-11	6	#5	66	24-5	12	92	47-5	276	4-10	12
	6	#5	60	28-0	12	#5	572	3-10	4/12	#5	120	2-2	10.3780	27-3	6	#6	62	29-1 3/4	12	110	47-5	322	4-10	12
5x5	2	#5	94	12-0	10	#5	114	4-4	5/10	#5	56	2-2	8.6094	11-6	5	#5	94	12-3 1/2	10	45	47-5	138	5-11	12
	3	#5	88	17-6	10	#5	244	4-4	5/10	#5	84	2-2	8.6500	16-7	5	#5	88	18-0 1/2	10	66	47-5	184	5-11	12
	4	#5	80	23-0	10	#5	392	4-4	5/10	#5	116	2-2	8.6429	22-4	5	#5	80	23-9 1/2	10	87	47-5	230	5-11	12
	5	#5	72	28-6	10	#5	540	4-4	5/10	#5	144	2-2	8.6571	27-5	5	#5	74	29-7	10	108	47-5	276	5-11	12
	6	#5	64	34-0	10	#5	720	4-4	6/10	#5	176	2-2	8.6652	33-2	5	#5	66	35-4 1/2	10	129	47-5	322	5-11	12
6x6	2	#6	66	14-0	14	#6	82	5-2	7/14	#6	48	2-2	12.0964	13-9	7	#6	66	14-3 1/4	14	52	47-5	166	7-0	10
	3	#6	60	20-6	14	#6	176	5-2	7/14	#6	72	2-2	11.8476	19-4	7	#6	60	21-1	14	76	47-5	224	7-0	10
	4	#6	52	27-0	14	#6	288	5-2	7/14	#6	100	2-2	11.9250	26-5	7	#6	54	27-10 1/2	14	100	47-5	280	7-0	10
	5	#6	46	33-6	14	#6	400	5-2	7/14	#6	124	2-2	12.1000	32-5	7	#6	46	34-6	14	124	47-5	336	7-0	10
	6	#6	40	40-0	14	#6	544	5-2	7/14	#6	152	2-2	12.1081	39-0	7	#6	40	41-5 1/4	14	148	47-5	392	7-0	10

⊕ Includes 1-1'-6" Lap Splice.

⊕ Includes 1-1'-10" Lap Splice.

WING AND CURB REINFORCEMENT

OPENINGS SIZE FT.	N°	#4 BARS E N°	#4 BARS E Length Ft.-In.	#4 BARS F N°	#4 BARS F Length Ft.-In.	#4 BARS F1 N°	#4 BARS F1 Length Ft.-In.	#4 BARS F2 N°	#4 BARS F2 Length Ft.-In.	#4 BARS F3 N°	#4 BARS F3 Length Ft.-In.	#4 BARS J N°	#4 BARS J Length Ft.-In.	#4 BARS J1 N°	#4 BARS J1 Length Ft.-In.	#4 BARS O N°	#4 BARS O Length Ft.-In.
4x4	2	44	7-5	2	10-9	8	3-0	2	13-0	8	3-9	10	7-4	10	9-4	42	2-4
	3																
	4																
	5																
	6																
5x5	2	52	8-7 1/2	2	12-9	10	3-0	2	15-2	10	3-5	12	9-4	12	11-6	50	2-10
	3																
	4																
	5																
	6																
6x6	2	62	9-10	2	14-11	12	3-0	2	18-0	12	3-9	14	11-6	14	14-4	60	3-4
	3																
	4																
	5																
	6																

OPENINGS SIZE FT.	N°	#4 BARS P N°	#4 BARS P Length Ft.-In.	#4 BARS P1 N°	#4 BARS P1 Length Ft.-In.	#4 BARS P2 N°	#4 BARS P2 Length Ft.-In.	#4 BARS P3 N°	#4 BARS P3 Length Ft.-In.	#5 BARS M N°	#5 BARS M Length Ft.-In.	#5 BARS M1 N°	#5 BARS M1 Length Ft.-In.	#4 BARS N N°	#4 BARS N Length Ft.-In.	#6 BARS X Ⓐ N°	#6 BARS X Ⓐ Length Ft.-In.
4x4	2	6	9-3	4	10-8	6	10-11	4	13-4	4	13-11	6	10-7	22	4-3	20	2-0
	3									4	19-1	6	15-9	32	4-3	20	2-0
	4									4	24-4	6	21-0	42	4-3	20	2-0
	5									4	29-6	6	26-2	52	4-3	20	2-0
	6									4	34-8	6	31-4	62	4-3	20	2-0
5x5	2	6	11-3	4	12-8	6	13-1	4	15-8	4	16-3	6	12-10	26	4-4	24	2-0
	3									4	22-7	6	19-3	39	4-4	24	2-0
	4									4	28-11	6	25-7	52	4-4	24	2-0
	5									4	35-3	6	31-11	64	4-4	24	2-0
	6									4	⊕43-5	6	38-3	76	4-4	24	2-0
6x6	2	8	13-5	6	14-10	8	15-11	6	18-0	4	18-6	6	15-2	30	4-5	28	2-0
	3									4	26-0	6	22-8	46	4-5	28	2-0
	4									4	33-6	6	30-2	60	4-5	28	2-0
	5									4	⊕42-10	6	37-8	76	4-5	28	2-0
	6									4	⊕50-5	6	⊕47-0	90	4-5	28	2-0

Ⓐ #6 Bars X to be 3/4" Ø Smooth and Greased for 1'-0" of Length

APPROVED BY:
Dempsey D. [illegible]
CHIEF ENGINEER
1-11-78
DATE

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Latest Approved La. Dept. of Highways Standard Specifications.

DESIGN SPECIFICATIONS: A.A.S.H.O. 1961 as Amended by Int. Spec. 1964

LIVE LOAD: HS 20-44, or Military Loading, Whichever is Greater.

All Concrete to be Class "A"

All Exposed Corners to have ¾" Chamfer, unless Otherwise noted.

Reinforcement Shall be Billet-Steel A.S.T.M. A 615 or Rail-Steel A.S.T.M. A 616 or Axle-Steel A.S.T.M. A 617.

Dimensions Relating to Reinforcing Steel are to Bar Centers.

A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.

For Detail of Joints, See Std. Plan C.M.-49.

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
2-22-75	Rev. Slope Intercept	W.T.J.
6-8-72	Rev. General Notes & Rr. Steel	W.E.M.
4-27-67	Added Axle Steel	W.E.M.
10-14-64	Rev. 4' & 5' Spans to Military Loading & Deleted 3' Spans	W.E.M.
6-1-64	Rev. Dim. P. for 6'x6's	W.E.M.
4-5-64	Oversize Dowels 'X' to Smooth	W.E.M.

REVISIONS

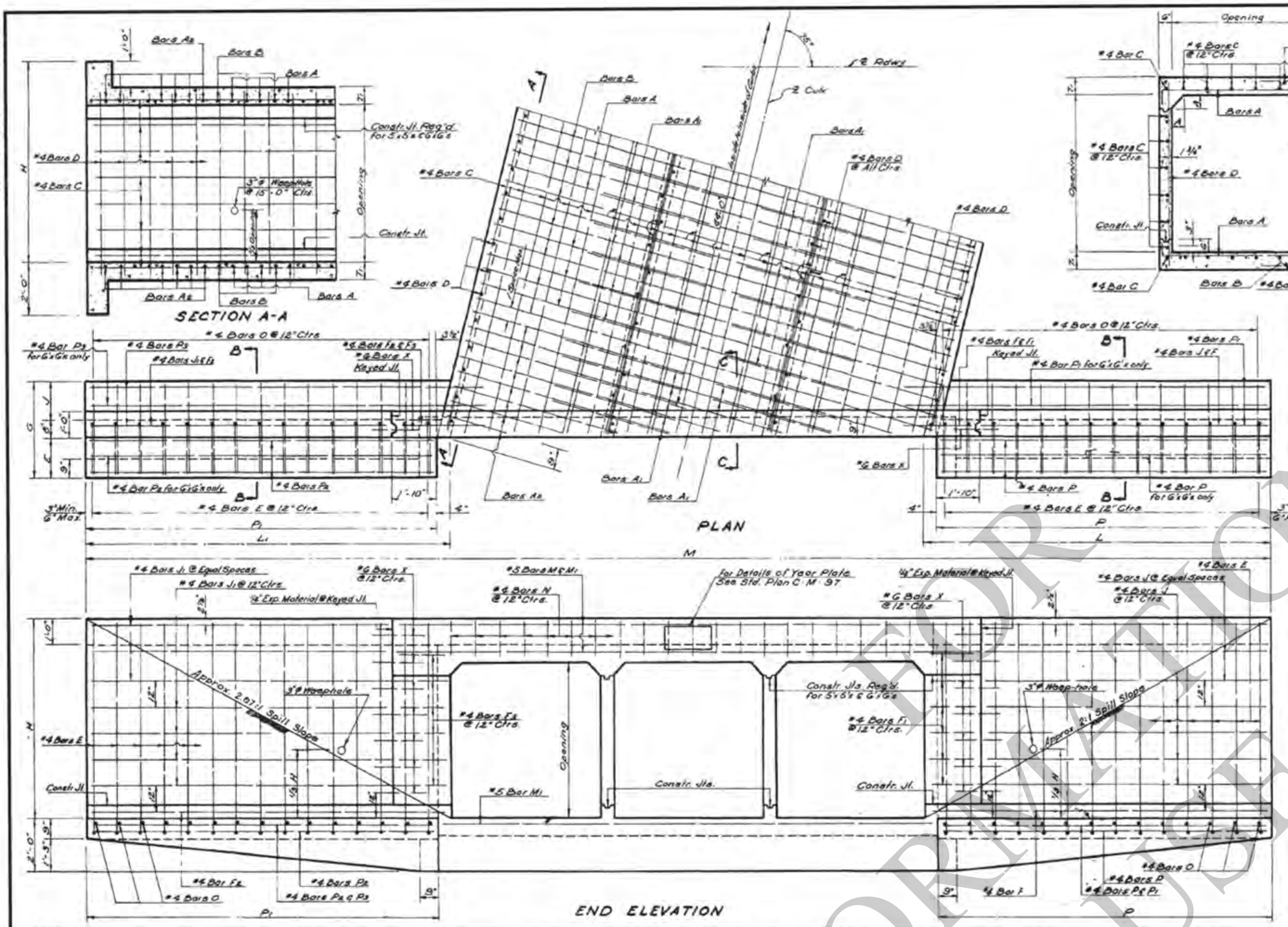
STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 60° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
4'x4' TO 6'x6'
DATED Oct. 16 1962

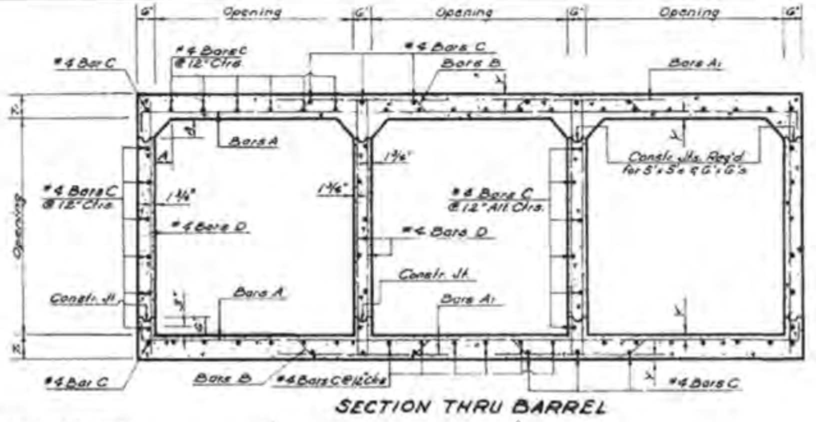
STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED	G.A.H.	DETAILED	J.H.A.	TRACED	T.C. [illegible]
CHECKED	M.Y.Y.	CHECKED	N.K. Brown	CHECKED	V.E. [illegible]

10/18/2018 15:25
IP_PWP:dms09544\CCSM4-6S75_1.dgn

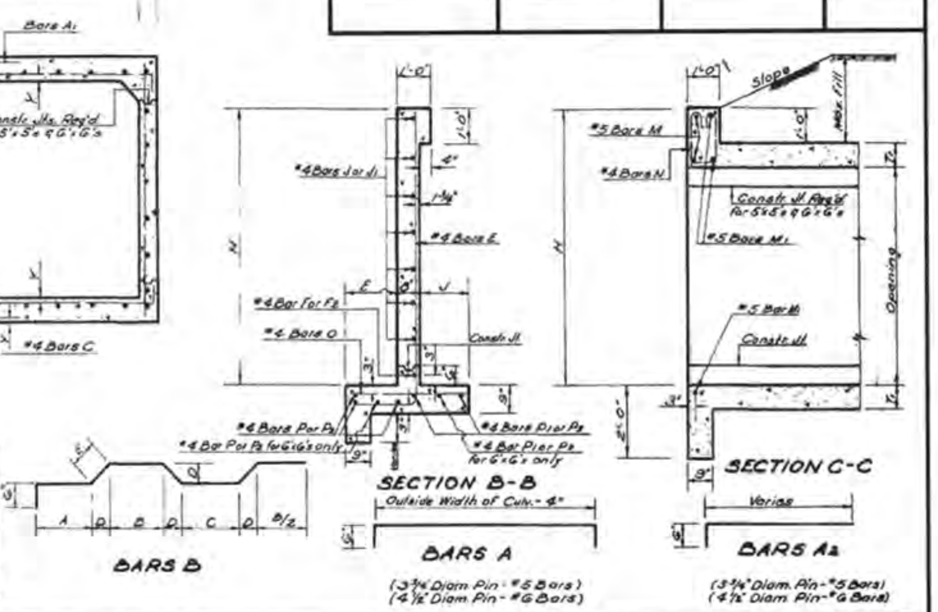
F.A.P.	STATE PROJECT	PARISH	SHEET NO.





DIMENSIONS FOR BARS B

SIZE	PIN DIAM	A	B	C	D	E
4'x4'	3¾"	3'-2 3/16"	2'-2⅝"	1-0⅝"	3⅜"	4½"
5'x5'	3¾"	3'-11 1/16"	2'-8⅛"	2'-2⅛"	3⅞"	5½"
6'x6'	4½"	4'-7⅞"	3'-1 9/16"	2'-7 3/16"	4 1/16"	6"



DIMENSIONS																	QUANTITIES				OPENINGS	
OPENINGS			MAX. FILL		BARREL			WINGS AND CURB									PER LIN. FT. OF BARREL		44'-0" CULVERT (ALONG ℄)			
SIZE FEET	NO.	AREA SQ. FT.	SLAB FEET	WALL FEET	T1 IN.	A IN.	Y IN.	E FT-IN	J FT-IN	G FT-IN	H FT-IN	L FT-IN	L1 FT-IN	P FT-IN	P1 FT-IN	M FT.-IN.	STEEL LBS.	CONC. CU. YDS.	STEEL LBS.	CONC. CU. YDS.	NO.	SIZE FEET
4x4	2	32	25	13	7	4	1 11/16	1-5	0-10	2-9	5-7	10-1¼	10-4½	9-7	9-10	29-3⅛	85.96	0.6409	4,755	40.73	2	4x4
	3	48	32													33-10 13/16	128.46	0.9136	6,853	54.01	3	
	4	64														38-6 13/16	170.96	1.1862	8,917	67.28	4	
	5	80														43-2⅝	213.46	1.4589	10,979	80.55	5	
	6	96														47-10⅝	255.96	1.7315	13,145	93.82	6	
5x5	2	50	21	7	7½	5	1 11/16	1-5	1-2	3-3	6-7½	12-2¼	13-1¼	11-8	12-7	36-1 9/16	114.35	0.8231	6,340	53.71	2	5x5
	3	75	27													41-10 3/16	171.39	1.1767	9,135	70.87	3	
	4	100														47-6½	228.43	1.5303	11,901	88.02	4	
	5	125														53-2⅞	285.48	1.8840	14,777	105.16	5	
	6	150														58-11 5/16	342.52	2.2377	17,547	122.31	6	
6x6	2	72	15	5	8	6	1 3/16	1-7	1-6	3-9	7-8	14-4¾	15-1 3/16	13-10	14-7	42-4 7/16	138.68	1.0185	7868	67.63	2	6x6
	3	108	20													49-1 7/16	207.75	1.4599	11264	88.86	3	
	4	144														55-10 3/16	276.82	1.9012	14712	110.28	4	
	5	180														62-6 15/16	346.09	2.3426	18156	131.62	5	
	6	216														69-3 7/16	415.26	2.7833	21729	152.96	6	

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

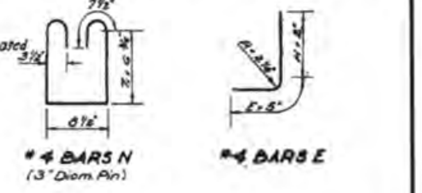
OPENINGS		BARREL REINFORCEMENT																						
		BARS A				BARS A1				BARS A2						BARS B				#4 BARS D			#4 BARS C	
SIZE FEET	NO.	SIZE	NO	LGTH. FT-IN	SPAC IN.	SIZE	NO.	LGTH. FT-IN	SPAC IN	SIZE	NO	SHORT BAR FT-IN.	VAR. IN.	LONG BAR FT-IN.	SPAC IN.	SIZE	NO	LGTH. FT.-IN	SPAC IN.	NO	LGTH FT.-IN.	SPAC IN.	NO.	①LGTH. FT-IN.
4x4	2	#5	86	10-2	12	#5	90	3-10	6 12	#5	16	3-0	22.3333	8-7	6	#5	88	10-4⅞	12	138	4-10	12	38	47-2
	3	#5	84	14-8	12	#5	182	3-10	6 12	#5	28	3-0	22.3333	14-2	6	#5	84	15-1½	12	184	4-10	12	56	47-2
	4	#5	82	19-2	12	#5	294	3-10	6 12	#5	36	3-0	22.3750	17-11	6	#5	82	19-10⅛	12	230	4-10	12	74	47-2
	5	#5	80	23-8	12	#5	396	3-10	6 12	#5	44	3-0	22.4000	21-8	6	#5	80	24-7	12	276	4-10	12	92	47-2
	6	#5	76	28-2	12	#5	512	3-10	6 12	#5	56	3-0	22.3846	27-3	6	#5	78	29-3⅞	12	322	4-10	12	110	47-2
5x5	2	#5	102	12-2	10	#5	110	4-4	5 10	#5	24	3-0	18.6000	10-9	5	#5	104	12-5¼	10	138	5-11	12	45	47-2
	3	#5	98	17-8	10	#5	232	4-4	5 10	#5	40	3-0	18.6667	17-0	5	#5	100	18-2½	10	184	5-11	12	66	47-2
	4	#5	96	23-2	10	#5	356	4-4	5 10	#5	52	3-0	18.6667	21-8	5	#5	96	23-11¾	10	230	5-11	12	87	47-2
	5	#5	92	28-8	10	#5	496	4-4	5 10	#5	68	3-0	18.6875	27-11	5	#5	92	29-9	10	276	5-11	12	108	47-2
	6	#5	88	34-2	10	#5	620	4-4	5 10	#5	80	3-0	18.6842	32-7	5	#5	90	35-6¼	10	322	5-11	12	129	47-2
6x6	2	#6	74	14-2	14	#6	82	5-2	7 or 14	#6	20	3-0	26.2500	11-8	7	#6	74	14-5⅝	14	168	7-0	10	52	47-2
	3	#6	70	20-8	14	#6	168	5-2	7 or 14	#6	32	3-0	26.1429	18-3	7	#6	72	21-3	14	224	7-0	10	76	47-2
	4	#6	68	27-2	14	#6	264	5-2	7 or 14	#6	44	3-0	26.1000	24-9	7	#6	68	28-0½	14	280	7-0	10	100	47-2
	5	#6	64	33-8	14	#6	360	5-2	7 or 14	#6	56	3-0	26.1538	31-4	7	#6	66	34-10	14	336	7-0	10	124	47-2
	6	#6	62	40-2	14	#6	470	5-2	7 or 14	#6	68	3-0	26.1250	37-10	7	#6	62	41-7½	14	392	7-0	10	148	47-2

OPENINGS		WINGS AND CURBS REINFORCEMENT																													
		#4 BARS E		#4 BARS F		#4 BARS F1		#4 BARS F2		#4 BARS F3		#4 BARS J		#4 BARS J1		#4 BARS O		#4 BARS P		#4 BARS P1		#4 BARS P2		#4 BARS P3		#4 BARS N		#5 BARS M		#5 BARS M1	
SIZE FEET	NO.	NO	LGTH FT-IN	NO.	LGTH. FT-IN.	NO	LGTH FT-IN	NO	LGTH. FT-IN	NO	LGTH. FT-IN.	NO	LGTH. FT-IN.	NO	LGTH. FT-IN	NO	LGTH. FT-IN	NO	LGTH. FT-IN.	NO	LGTH FT-IN.	NO	LGTH FT-IN	NO	LGTH FT-IN.	NO	LGTH. FT-IN	NO	LGTH. FT-IN	NO	LGTH. FT-IN.
4x4	2	40	7-5	2	10-10	8	3-0	2	11-4½	8	3-3	10	7-5	10	7-8	40	2-4	6	9-3	4	10-10	6	9-6	4	11-6	20	4-3	4	12-11	6	9-6
	3																									30	4-3	4	17-7	6	14-1
	4																									38	4-3	4	22-3	6	18-9
	5																									48	4-3	4	26-11	6	23-5
	6																									58	4-3	4	31-7	6	28-1
5x5	2	50	8-7½	2	12-11	10	3-0	2	14-1½	10	3-3	12	9-6	12	10-5	50	2-10	6	11-4	4	12-11	6	12-3	4	14-4	24	4-4	4	15-0	6	11-6
	3																									36	4-4	4	20-8	6	17-3
	4																									48	4-4	4	26-5	6	22-11
	5																									58	4-4	4	32-1	6	28-7
	6																									70	4-4	4	37-9	6	34-4
6x6	2	58	9-10	2	15-1	12	3-0	2	16-1½	12	3-3	14	11-4	14	12-5	58	3-4	8	13-6	6	16-1	8	14-3	6	16-5	28	4-5	4	17-1	6	13-7
	3																									42	4-5	4	23-10	6	20-4
	4																									56	4-5	4	30-6	6	27-1
	5																									68	4-5	4	37-3	6	33-9
	6																									82	4-5	4	①45-10	6	①43-4

OPENINGS		Ⓐ #6 BARS X	
SIZE FEET	NO.	NO	LGTH. FT-IN.
4x4	2	20	2-0
	3	20	2-0
	4	20	2-0
	5	20	2-0
	6	20	2-0
5x5	2	24	2-0
	3	24	2-0
	4	24	2-0
	5	24	2-0
	6	24	2-0
6x6	2	28	2-0
	3	28	2-0
	4	28	2-0
	5	28	2-0
	6	28	2-0

① Includes 1'-6" Lap Splice
② Includes 1'-10" Lap Splice

Ⓐ 6 Bars X to be ¾" Ø Smooth and Greased for 1'-0" of Length.



GENERAL NOTES:

Construction Specifications: Latest Approved La. Dept. of Highways Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 as amended by Int. Spec. 1964. Live Load HS 20-44, or Military Loading, whichever is greater.
All Concrete to be Class "A".
All exposed Corners to have ¾" Chamfer, unless otherwise noted.
Reinforcement Shall be Billet-Steel A.S.T.M. A 615 or Rail-Steel A.S.T.M. A 616 or Axle-Steel A.S.T.M. A 617.
Dimensions relating to Reinforcing Steel are to bar centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-48.

5-30-78	Revised Spill Slope	W.I.J.			
6-8-72	Rev. General Notes for Steel	N.E.M.			
3-2-66	Added Axle Steel	W.C.A.	1-1980	Rev. Weep Hole Note	W.T.J.
Date	Description	By	Date	Description	By

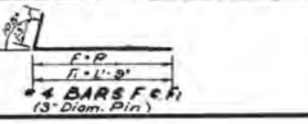
STANDARD PLAN
MULTIPLE OPENINGS
REINF. CONCRETE BOX CULVERT
STRAIGHT WINGS 75° CROSSING
4'x4' - 5'x5' 6'x6'
DATED Jan. 20 1962

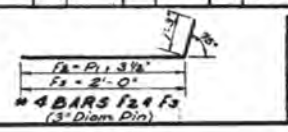
STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED M. Yoshii	DETAILED M. Yoshii	TRACED [illegible]
CHECKED R.Q. Nettle	CHECKED N.E. Marcum	CHECKED [illegible]

4-5-80	3-4¼" Revised Total Steel	N.E.B.
12-14-64	4'x4' Quantities Revised to Military Loading	N.E.M.
4-5-66	Deformed Dowels "X" to Smooth	N.E.M.
9-11-63	4x4' & 5x5' Added	[illegible]
DATE	DESCRIPTION	BY

REVISIONS



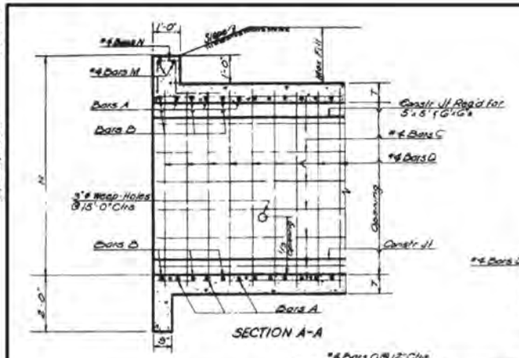


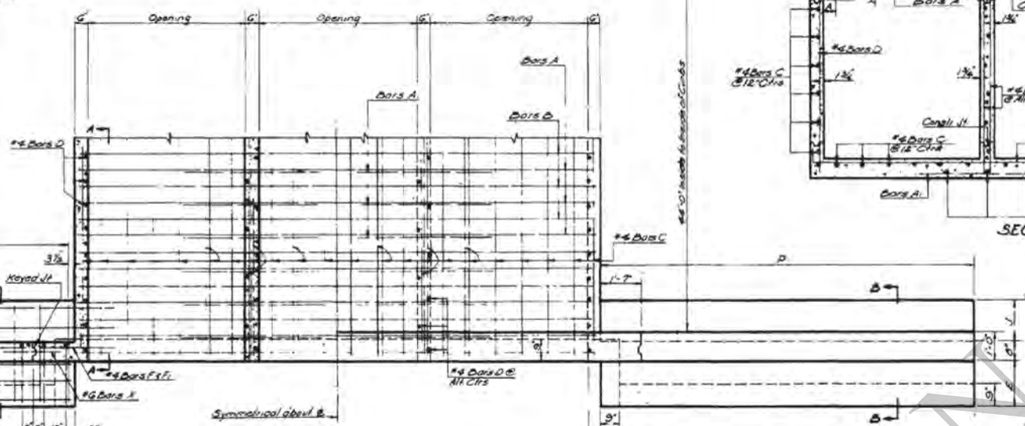
APPROVED BY:
Dempsey D. White 1-11-78
CHIEF ENGINEER DATE

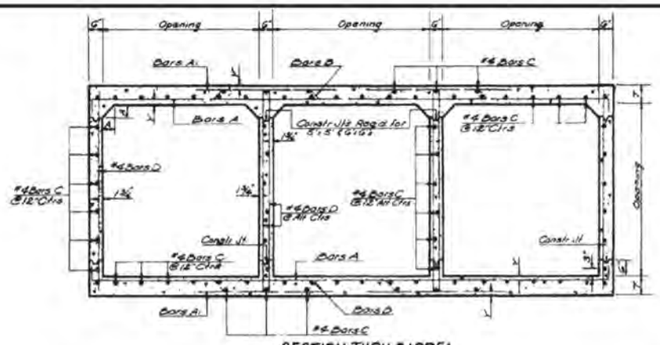
C·C·S·M·4-6·S·75°·1

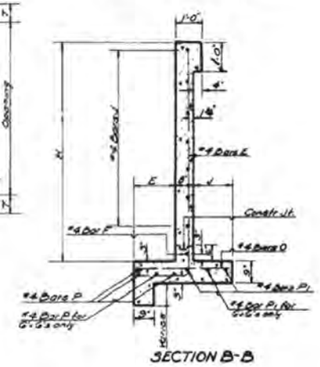
FOR INFORMATIONAL USE

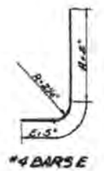
F.A.P.	STATE PROJECT	PARISH	SHEET NO.

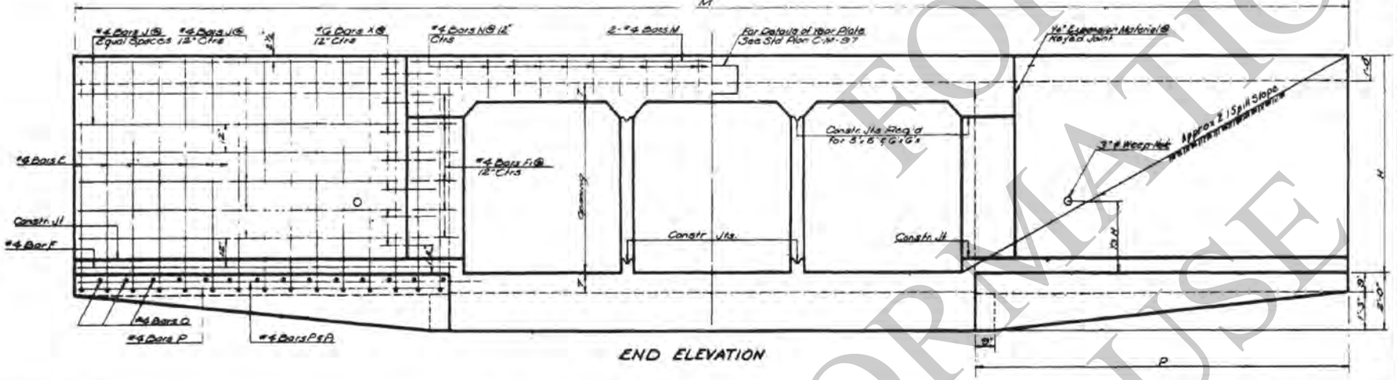












DIMENSIONS																		QUANTITIES				OPENINGS	
OPENINGS			MAX FILL		BARREL			WINGS & CURBS										PER LINEAL FT OF BARREL		FOR 0'-0" OF CHEMERT			
SIZE	NO	AREA	SLAB	WALL	T	A	Y	E	J	G	H	L	P	M				STEEL	CONCRETE	STEEL	CONCRETE	NO	SIZE
FEET		SQ FT	FEET	FEET	IN	IN	IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN	FT-IN				LBS.	CU. YDS.	LBS	CU. YDS.		FEET
4x4	2	32	25														28-0	85.26	0.8609	4660	40.18	2	4X4
	3	48															32-6	127.77	0.9139	6654	53.41	3	
	4	64	32	13	7	4	1 1/16	1-8	0-10	2-8	3-7	3-9	3-3				37-0	170.27	1.1862	8867	66.64	4	
	5	80															41-6	212.77	1.4569	10873	79.87	5	
	6	96															46-0	255.27	1.7315	12856	93.10	6	
5x5	2	50	21														34-0	113.52	0.8231	6,169	52.60	2	5X5
	3	75															39-6	170.56	1.1767	8,850	69.69	3	
	4	100	27	7	7 1/2	5	1 15/16	1-5	1-2	3-3	3-7 1/2	11-9	11-3				45-0	227.60	1.5303	11,537	86.79	4	
	5	125															50-6	284.64	1.8840	14,218	103.89	5	
	6	150															56-0	341.68	2.2377	16,905	120.98	6	
6x6	2	72	15														42-0	137.72	1.0185	7,704	67.54	2	6X6
	3	108															48-6	206.89	1.4589	10,957	88.81	3	
	4	144	20	5	8	6	1 7/8	1-7	1-6	3-9	7-8	14-2	14-3				55-0	276.06	1.9012	14,216	110.08	4	
	5	180															61-6	345.23	2.3428	17,469	131.34	5	
	6	216															68-0	414.40	2.7839	20,733	152.61	6	

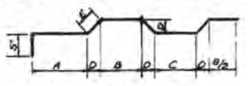
BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

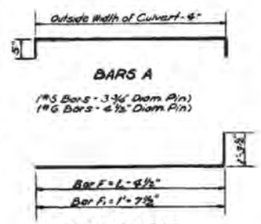
OPENINGS		BARREL REINFORCEMENT																										WING AND CURB REINFORCEMENT																												OPENINGS	
		BARS A				BARS A1				BARS B				#6 BARS C			#6 BARS D			#6 BARS E			#6 BARS F			#6 BARS F1			#6 BARS J			#6 BARS M			#6 BARS N			#6 BARS O			#6 BARS P			#6 BARS P1			#6 BARS X				
SIZE	NO.	SIZE	NO.	LENGTH FT-IN.	SPAC. IN.	SIZE	NO	LENGTH FT-IN.	SPAC. IN	SIZE	NO	LENGTH FT-IN.	SPAC. IN	NO	LENGTH FT-IN	SPAC. IN	NO	LENGTH FT-IN	SPAC. IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	LENGTH FT-IN.	NO	SIZE
FEET																																																						FEET
4x4	2	#5	80	10-0	12	#5	92	3-10	12	#5	92	10-0 3/4	12	36	47-2	138	4-10	12	40	7-5	4	10-8	16	2-11	20	3-4	4	12-1	20	4-8	36	2-4	12	8-11	8	10-7	20	2-0	2																			4x4
	3	#5	92	10-6	12	#5	104	3-10	12	#5	92	10-11 3/4	12	50	47-2	184	4-10	12	40	7-5	4	10-8	16	2-11	20	3-6	4	16-7	28	4-8	36	2-4	12	8-11	8	10-7	20	2-0	3																			
	4	#5	92	19-0	12	#5	216	3-10	12	#5	92	19-6	12	74	47-2	230	4-10	12	40	7-5	4	10-8	16	2-11	20	3-8	4	21-1	38	4-9	36	2-4	12	8-11	8	10-7	20	2-0	4																			
	5	#5	92	23-6	12	#5	340	3-10	12	#5	92	28-5	12	92	47-2	276	4-10	12	40	7-5	4	10-8	16	2-11	20	3-8	4	25-7	46	4-9	36	2-4	12	8-11	8	10-7	20	2-0	5																			
	6	#5	92	28-6	12	#5	460	3-10	12	#5	92	29-1 1/2	12	110	47-2	322	4-10	12	40	7-5	4	10-8	16	2-11	20	3-8	4	30-1	55	4-9	36	2-4	12	8-11	8	10-7	20	2-0	6																			
5x5	2	#5	110	12-0	10	#5	110	4-4	10	#5	110	12-3 1/2	10	45	47-2	138	5-11	12	48	8-7 1/2	4	12-8	20	2-11	24	3-9	4	14-1	24	4-10	44	2-10	12	10-11	8	12-7	24	2-0	2																			5x5
	3	#5	110	17-6	10	#5	220	4-4	10	#5	110	18-0 1/2	10	66	47-2	184	5-11	12	48	8-7 1/2	4	12-8	20	2-11	24	3-9	4	19-7	34	4-10	44	2-10	12	10-11	8	12-7	24	2-0	3																			
	4	#5	110	23-0	10	#5	330	4-4	10	#5	110	23-8 1/2	10	87	47-2	230	5-11	12	48	8-7 1/2	4	12-8	20	2-11	24	3-9	4	25-1	46	4-10	44	2-10	12	10-11	8	12-7	24	2-0	4																			
	5	#5	110	28-6	10	#5	440	4-4	10	#5	110	29-7	10	108	47-2	276	5-11	12	48	8-7 1/2	4	12-8	20	2-11	24	3-9	4	30-7	56	4-10	44	2-10	12	10-11	8	12-7	24	2-0	5																			
	6	#5	110	34-0	10	#5	550	4-4	10	#5	110	35-4 1/2	10	129	47-2	322	5-11	12	48	8-7 1/2	4	12-8	20	2-11	24	3-9	4	36-1	68	4-10	44	2-10	12	10-11	8	12-7	24	2-0	6																			
6x6	2	#6	78	14-0	14	#6	78	5-2	14	#6	80	14-3 1/2	14	52	47-2	165	7-0	10	60	9-10	4	15-8	24	2-11	28	12-6	4	16-1	28	6-11	56	3-4	16	13-11	12	15-7	28	2-0	2																			6x6
	3	#6	78	20-6	14	#6	156	5-2	14	#6	80	21-1	14	76	47-2	230	7-0	10	60	9-10	4	15-8	24	2-11	28	12-4	4	22-7	40	6-11	56	3-4	16	13-11	12	15-7	28	2-0	3																			
	4	#6	78	27-0	14	#6	234	5-2	14	#6	80	27-10 1/2	14	100	47-2	295	7-0	10	60	9-10	4	15-8	24	2-11	28	12-4	4	29-1	54	6-11	56	3-4	16	13-11	12	15-7	28	2-0	4																			
	5	#6	78	33-6	14	#6	312	5-2	14	#6	80	34-8	14	124	47-2	330	7-0	10	60	9-10	4	15-8	24	2-11	28	12-4	4	35-7	66	6-11	56	3-4	16	13-11	12	15-7	28	2-0	5																			
	6	#6	78	40-0	14	#6	390	5-2	14	#6	80	41-5 1/2	14	148	47-2	385	7-0	10	60	9-10	4	15-8	24	2-11	28	12-4	4	⑧ 43-7	80	6-11	56	3-4	16	13-11	12	15-7	28	2-0	6																			

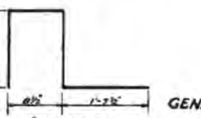
⑧ Includes 1'-1"-G" Lap Splice.

Ⓐ #6 Bars X to be 3/4"⑧ Smooth and Greased for 1'-0" of Length.

DIMENSIONS FOR BARS B						
SIZE	DIA. PIN	A	B	C	D	E
4x4	3 1/8	3'-2 3/16"	2'-2 5/8"	1'-0 5/16"	3 3/8"	4 5/8"
5x5	3 1/8	3'-11 1/16"	2'-8 1/16"	2'-2 1/8"	3 3/8"	5 5/8"
6x6	4 1/8	4'-7 7/16"	3'-3 7/16"	2'-7 3/8"	4 1/8"	6"







GENERAL NOTES:

Construction Specifications: Latest Approved La. Dept of Highways Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 as amended by Int. Spec. 1964
Live Load H.S. 20-44 or Military Loading, whichever is Greater
All Concrete to be Class "A"
All Exposed Corners to have 3/4" Chamfer, unless otherwise noted.
Reinforcement shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617
Dimensions relative to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand. For Detail of Joints, See Std. Plan C.M.-48.

C·C·S·M·4-6·S·90·1

Approved by

Chief Engineer — Date 1-11-78

1-11-78	Rev. Wing Walls & Curbs	W.E.H.	
6-8-76	Rev. General Notes & Steel	W.E.H.	
8-27-69	Added Rail Steel	W.E.H.	
8-15-68	Revised Wing Walls	A.L.B.G.	
12-[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	

STANDARD PLAN
MULTIPLE OPENINGS
REINF. CONCRETE BOX CULVERT
STRAIGHT HDWLS. 2:1 SPILL SLOPE
4'x4' 5'x5' 6'x6'

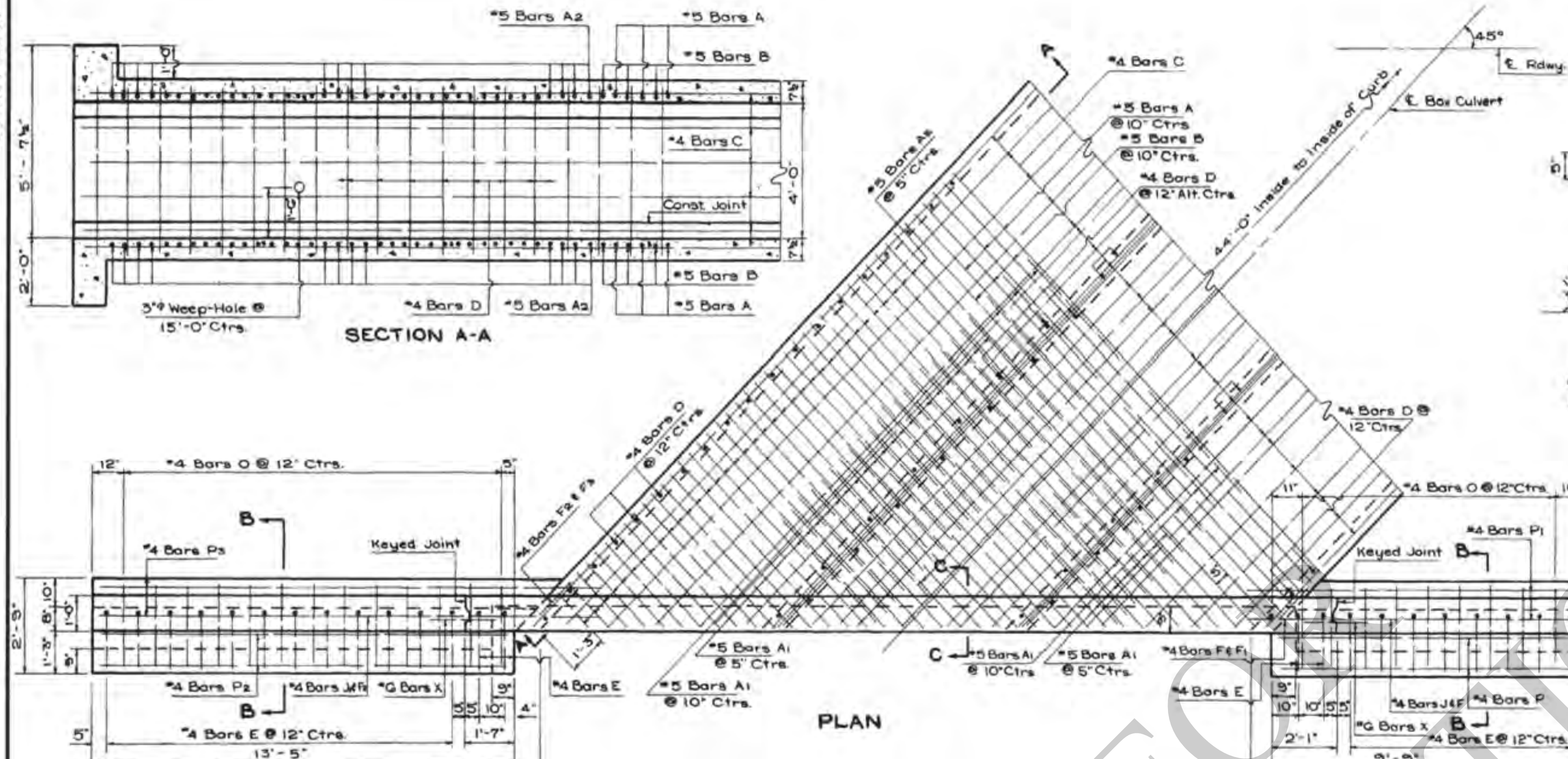
DATED MAY 15 1962

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

FOR INFORMATIONAL USE

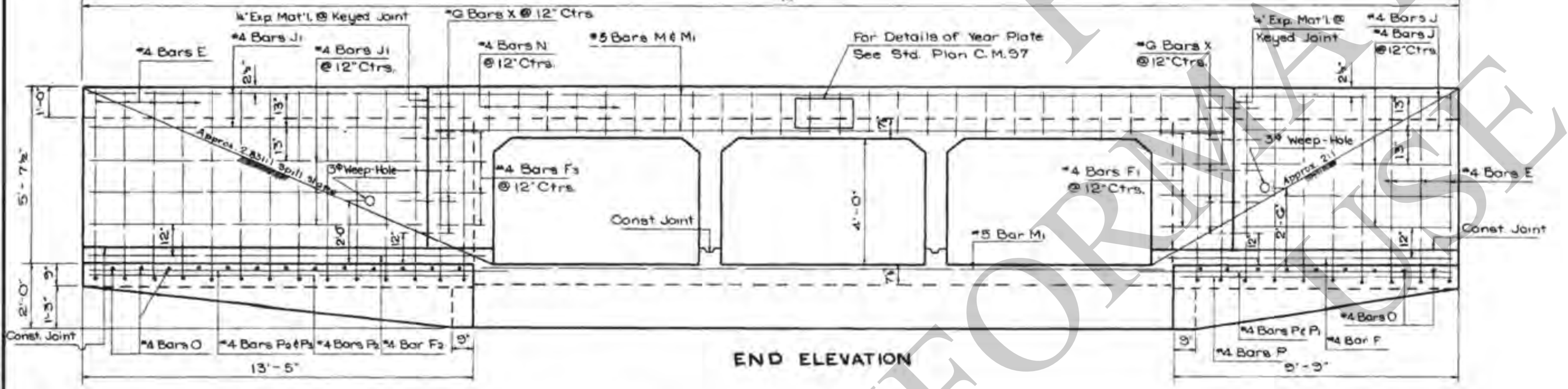
8/22/2017 09:04
IP_PWP:dms09544\CCSM4-6S90_1.dgn

F.A.P.	STATE PROJECT	PARISH	SHEET NO.



SECTION A-A

PLAN



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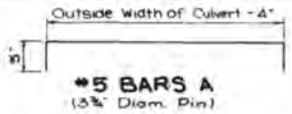
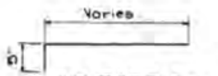
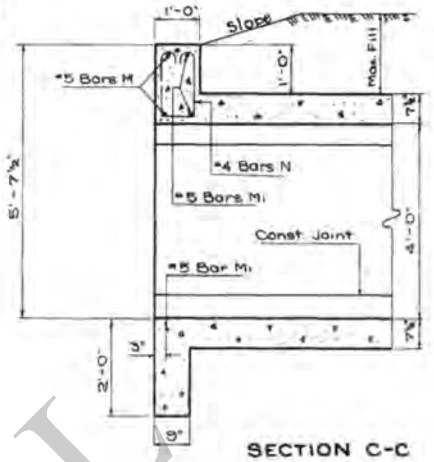


#5 BARS A
(3¾" Diam. Pin)



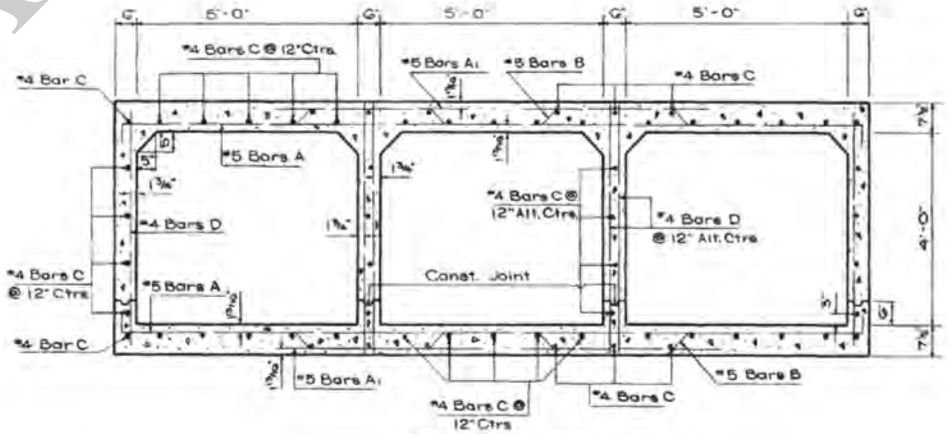
#5 BARS A2
(3¾" Diam. Pin)

#4 BARS F & F1
(3" Diam. Pin)

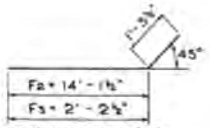


SECTION C-C

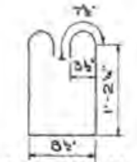
SECTION B-B



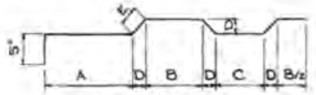
SECTION THRU BARREL



#4 BARS F2 & F3
(3" Diam. Pin)



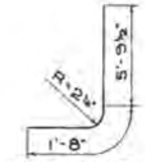
#4 BARS N
(3" Diam. Pin)



#5 BARS B

DIMENSIONS FOR BARS B

Size	Pin Diam.	A	B	C	D	E
5'×4'	3¾"	3'-11¼"	2'-8⅛"	2'-2⅛"	3⅞"	5½"



#4 BARS E

GENERAL NOTES

Construction Specifications: Latest Approved La. Dept. of Hwy. Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 as Amended by Int. Spec., 1964.
Live Load: HS 20-44 or Military Loading, Whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to Have ¾" Chamfer, Unless Otherwise Noted.
Reinforcement Shall be Billet-Steel A.S.T.M. A 615 or Rail-Steel A.S.T.M. A 616 or Axle-Steel A.S.T.M. A 617

Dimensions Relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.

DIMENSIONS / QUANTITIES

OPENINGS Size Feet	OPENINGS No.	OPENINGS Area Sq. Ft.	MAX. FILL Slab Feet	MAX. FILL Wall Feet	WINGS & CURBS M Ft.-In.		PER LINEAR FT. OF BARREL Steel Lbs.	PER LINEAR FT. OF BARREL Concrete Cu. Yds.	FOR 44'-0" OF CULVERT Steel Lbs.	FOR 44'-0" OF CULVERT Concrete Cu. Yds.	OPENINGS No.	OPENINGS Size Feet
5×4	2	40	21	13	39-5¾		109.51	0.7675	6133	49.97	2	5×4
	3	60	27		47-2½		165.22	1.1026	8995	66.83	3	
	4	80			54-11⅞		220.92	1.4378	11945	83.69	4	
	5	100			62-9¼		276.62	1.7729	15090	100.56	5	
	6	120			70-6½		332.33	2.1080	18291	117.42	6	

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS Size Feet	OPENINGS No.	#5 Bars A No.	#5 Bars A Length Ft.-In.	#5 Bars A1 No.	#5 Bars A1 Length Ft.-In.	#5 Bars A2 No.	#5 Bars A2 Short Bar Ft.-In.	#5 Bars A2 Var. In.	#5 Bars A2 Long Bar Ft.-In.	#5 Bars B No.	#5 Bars B Length Ft.-In.	#4 Bars C No.	#4 Bars C ①Length Ft.-In.	#4 Bars D No.	#4 Bars D Length Ft.-In.
5×4	2	84	12-0	116	4-4	96	1-9	50000	11-4	86	12-3¼	42	47-10	141	4-11
	3	72	17-6	280	4-4	148	1-9	50000	16-9	72	18-0½	62	47-10	188	4-11
	4	58	23-0	426	4-4	200	1-9	50000	22-2	60	23-9¾	82	47-10	235	4-11
	5	46	28-6	624	4-4	252	1-9	50000	27-7	48	29-7	102	47-10	282	4-11
	6	34	34-0	846	4-4	304	1-9	50000	33-0	34	35-4¼	122	47-10	329	4-11

WINGS AND CURBS REINFORCEMENT

OPENINGS Size Feet	OPENINGS No.	#4 Bars E No.	#4 Bars E Length Ft.-In.	#4 Bars F No.	#4 Bars F Length Ft.-In.	#4 Bars F1 No.	#4 Bars F1 Length Ft.-In.	#4 Bars F2 No.	#4 Bars F2 Length Ft.-In.	#4 Bars F3 No.	#4 Bars F3 Length Ft.-In.	#4 Bars J No.	#4 Bars J Length Ft.-In.	#4 Bars J1 No.	#4 Bars J1 Length Ft.-In.	#4 Bars O No.	#4 Bars O Length Ft.-In.
5×4	2	48	7-5½	2	10-9	8	3-0	2	15-5	8	3-6	10	7-4	10	11-6	44	2-4
	3	48	7-5½	2	10-9	8	3-0	2	15-5	8	3-6	10	7-4	10	11-6	44	2-4
	4	48	7-5½	2	10-9	8	3-0	2	15-5	8	3-6	10	7-4	10	11-6	44	2-4
	5	48	7-5½	2	10-9	8	3-0	2	15-5	8	3-6	10	7-4	10	11-6	44	2-4
	6	48	7-5½	2	10-9	8	3-0	2	15-5	8	3-6	10	7-4	10	11-6	44	2-4

OPENINGS Size Feet	#4 Bars P No.	#4 Bars P Length Ft.-In.	#4 Bars P1 No.	#4 Bars P1 Length Ft.-In.	#4 Bars P2 No.	#4 Bars P2 Length Ft.-In.	#4 Bars P3 No.	#4 Bars P3 Length Ft.-In.	#4 Bars N No.	#4 Bars N Length Ft.-In.	#5 Bars M No.	#5 Bars M Length Ft.-In.	#5 Bars M1 No.	#5 Bars M1 Length Ft.-In.	Ⓐ #6 Bars X No.	Ⓐ #6 Bars X Length Ft.-In.	OPENINGS No.	OPENINGS Size Feet
5×4	6	9-5	4	10-7	6	13-1	4	16-0	32	4-4	4	19-4	6	15-9	20	2-0	2	5×4
	6	9-5	4	10-7	6	13-1	4	16-0	48	4-4	4	27-2	6	23-7	20	2-0	3	
	6	9-5	4	10-7	6	13-1	4	16-0	64	4-4	4	34-11	6	31-4	20	2-0	4	
	6	9-5	4	10-7	6	13-1	4	16-0	78	4-4	4	44-7 ②	6	39-1	20	2-0	5	
	6	9-5	4	10-7	6	13-1	4	16-0	94	4-4	4	52-4 ②	6	48-9 ②	20	2-0	6	

① Includes 1-1'-6" Lap Splice

② Includes 1-1'-10" Lap Splice

Ⓐ #6 Bars X to be ¾"⌀ Smooth and Greased for 1'-0" of Length

C.C.S.M.5.R.45°-1

APPROVED BY:
Dempsey D. White 1-5-78
CHIEF ENGINEER DATE

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 45° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED Aug. 28, 1967 2 THRU 6 - 5'×4'

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DATE	DESCRIPTION	BY
1-5-78	Rev. Weep Hole Note	W.T.J.
5-30-75	Revised Spill Slope	W.T.J.
6-8-72	Rev. Gen. Notes For Steel	W.E.M.

REVISIONS

DESIGNED W. E. M.	DETAILED A. P. Booz	TRACED E. S. Johnson, Jr.
CHECKED N. K. B.	CHECKED B. L. Burke	CHECKED W. E. Marcum
IN CHARGE OF		

FOR INFORMATIONAL USE

28-NOV-2007 09:53

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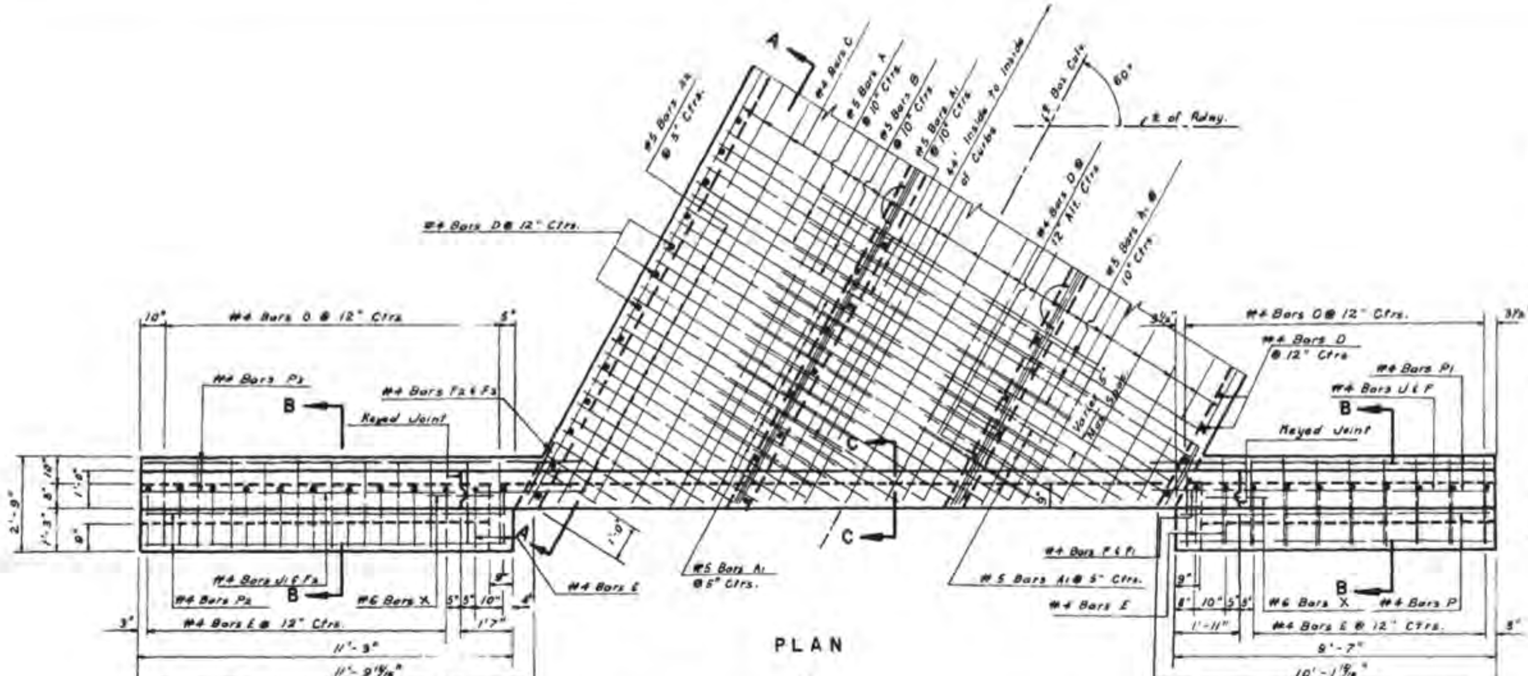
F.A.P.	STATE PROJECT	PARISH	SHEET NO.



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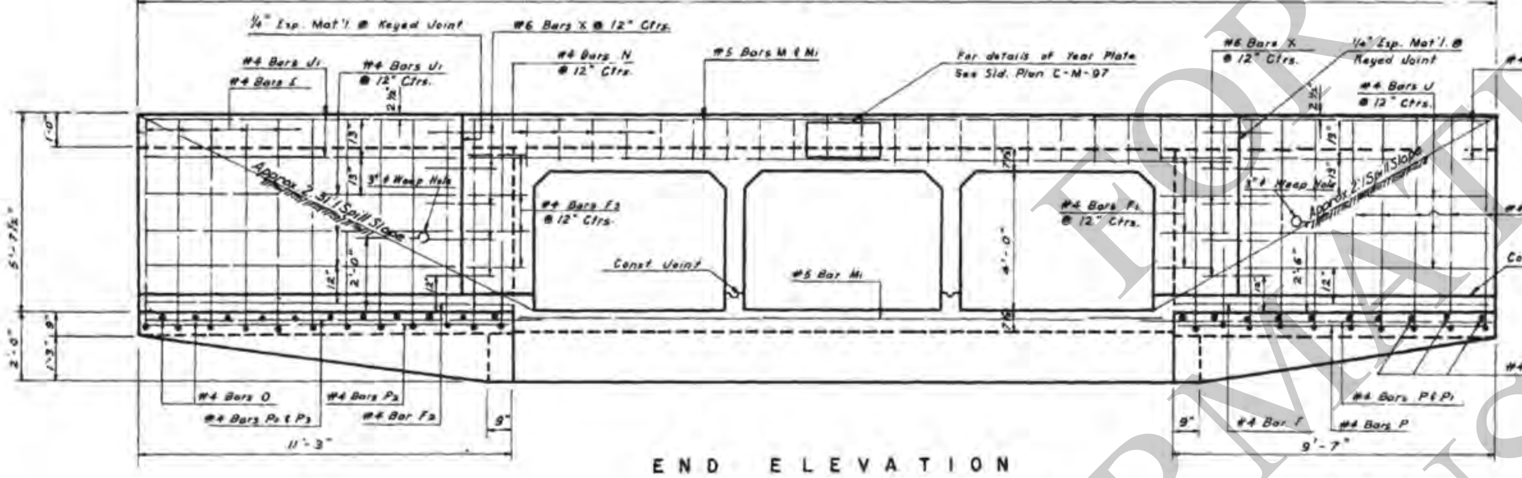

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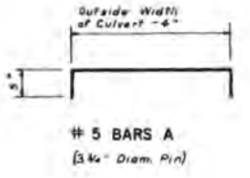
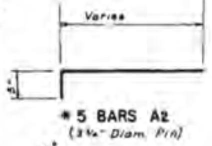


#5 BARS A
(3 3/4" Diam. Pin)



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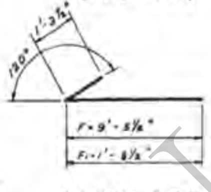
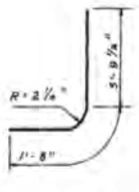
(3 3/4" Diam. Pin)



#4 BARS F & F1
(3" Diam. Pin)



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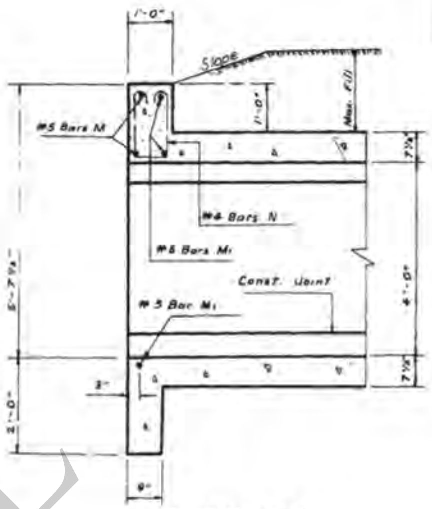

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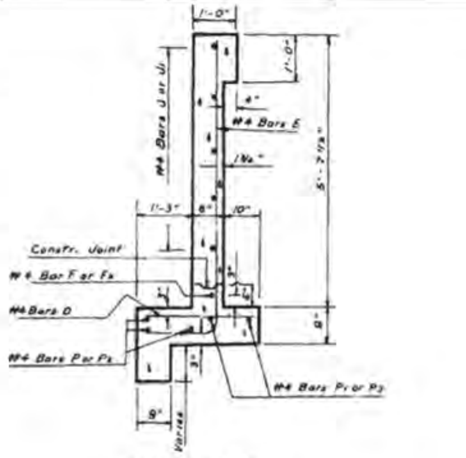

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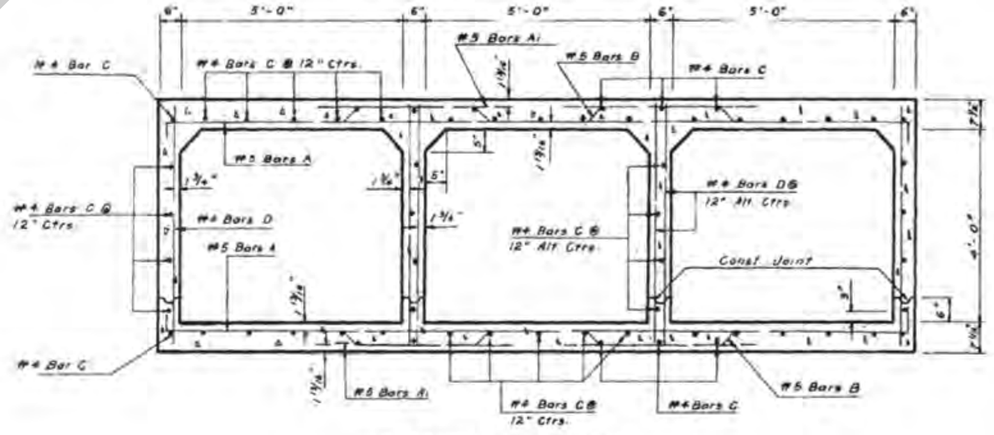

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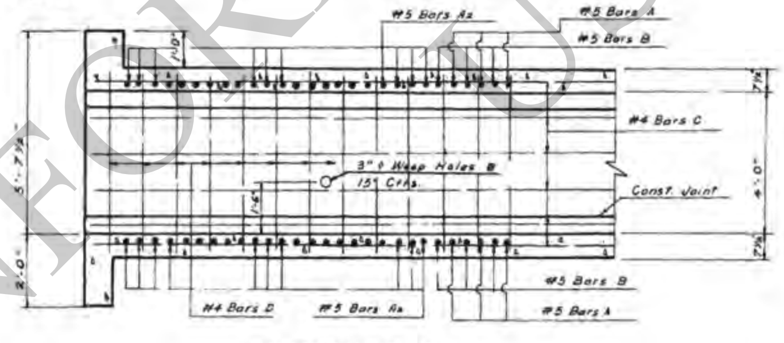

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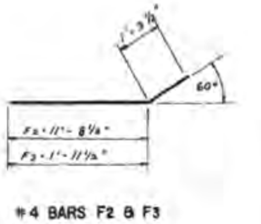

#4 BARS F2 & F3
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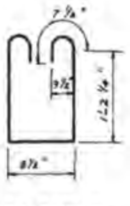

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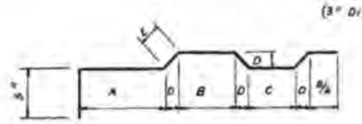


#5 BARS B

GENERAL NOTES

Construction Specification: Latest approved La. Dept. of Hwy. Standard Specification.
Design Specifications: A.A.S.H.O. 1961 as amended by Int. Spec., 1964
Live Load: HS 20-44 or Military loading, whichever is greater.
All concrete to be Class "A".
All exposed corners to have 3/4" Chamfer, unless otherwise noted.
Reinforcement Shall Be Billet-Steel A.S.T.M. A 615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617
Dimensions relating to Reinforcing Steel are to Bar centers
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C-M.-49.

DIMENSIONS						QUANTITIES				OPENINGS	
OPENINGS			MAX. FILL		WINGS & CURBS	PER LINEAR FT. OF BARREL		FOR 44'-0" OF CULVERT			
SIZE FEET	NO.	AREA SQ. FT.	SLAB FEET	WALL FEET	M FT. - IN.	STEEL LBS	CONCRETE CU. YDS.	STEEL LBS.	CONCRETE CU. YDS	NO.	SIZE FEET
5x4	2	40	21	13	34 - 1 3/16	109.51	0.7675	5967	47.97	2	5x4
	3	60	27		40 - 5 9/16	165.22	1.1026	8745	64.45	3	
	4	80			46 - 9 3/4	220.92	1.4378	11610	80.92	4	
	5	100			53 - 2	276.62	1.7729	14421	97.40	5	
	6	120			59 - 6 5/16	332.33	2.1080	17429	113.88	6	

DIMENSIONS FOR BARS B						
SIZE	PIN DIAM.	A	B	C	D	E
5'x4'	3 3/4"	3'-11 1/16"	2'-8 1/8"	2'-2 1/8"	3 7/8"	5 1/2"

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

SIZE		BARREL REINFORCEMENT															
		#5 BARS A		#5 BARS A1		#5 BARS A2				#5 BARS B		#4 BARS C		#4 BARS D			
SIZE FEET	NO.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	SHORT BAR Ft.-In.	VAR. In.	LONG BAR Ft.-In.	NO.	LENGTH Ft.-In.	NO.	① LENGTH Ft.-In.	NO.	LENGTH Ft.-In.		
5x4	2	94	12-0	114	4-4	56	2-2	8.6154	11-6	94	12-3 1/4	42	47-5	138	4-11		
	3	88	17-6	244	4-4	84	2-2	8.6500	16-7	88	18-0 1/2	62	47-5	184	4-11		
	4	80	23-0	392	4-4	116	2-2	8.6429	22-4	80	23-9 3/4	82	47-5	230	4-11		
	5	72	28-6	540	4-4	144	2-2	8.6571	27-5	74	29-7	102	47-5	276	4-11		
	6	64	34-0	720	4-4	176	2-2	8.6512	33-2	66	35-4 1/4	122	47-5	322	4-11		

① Includes 1-1'-6" Lap Splice

SIZE		WINGS AND CURBS REINFORCEMENT																																OPENINGS	
		#4 BARS E		#4 BARS F		#4 BARS F1		#4 BARS F2		#4 BARS F3		#4 BARS J		#4 BARS J1		#4 BARS O		#4 BARS P		#4 BARS P1		#4 BARS P2		#4 BARS P3		#5 BARS M		#5 BARS M1		#4 BARS N		#6 BARS X Ⓐ			
SIZE FEET	NO.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	LENGTH Ft.-In.	NO.	SIZE FEET
5x4	2	44	7-5 1/2	2	10-9	8	3-0	2	13-0	8	3-3	10	7-4	10	9-4	42	2-4	6	9-3	4	10-8	6	10-11	4	13-4	4	16-3	6	12-10	26	4-4	20	2-0	2	5x4
	3																									4	22-7	6	19-3	38	4-4			3	
	4																									4	28-11	6	25-7	52	4-4			4	
	5																									4	35-3	6	31-11	64	4-4			5	
	6																									4	② 43-5	6	38-3	76	4-4			6	

② Includes 1'-10" Lap Splice.
Ⓐ #6 Bars X to be 3/4" φ smooth & greased for 1'-0" of Length.

CC·S·M·5·R·60°-1

Dempsey D. White 1-5-78
CHIEF ENGINEER DATE

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 60° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
2 THRU 6-5'x4'

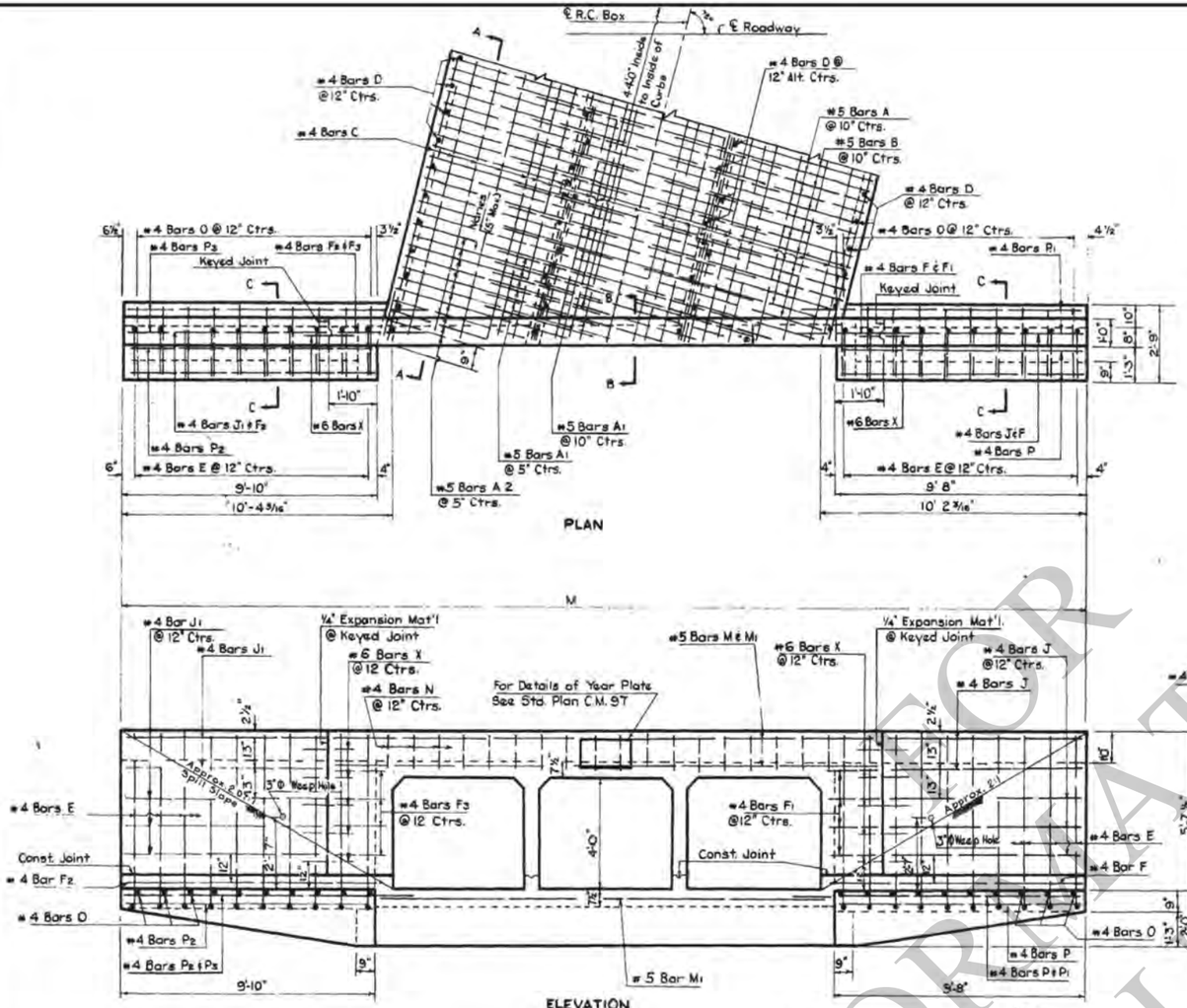
DATED September 22, 1967

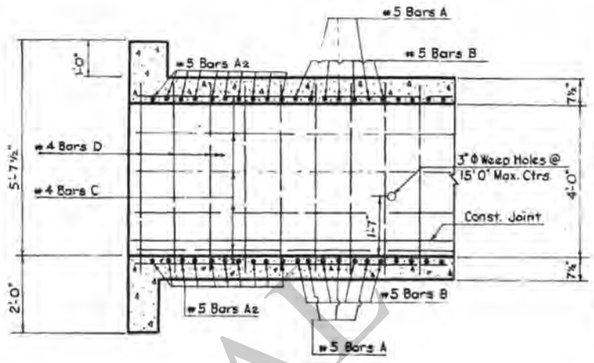
REVISIONS		
DATE	DESCRIPTION	BY
1-5-78	Rev. Weep Hole Note	W.T.J.
2-20-75	Rev. Slope Intercept	W.T.J.
6-8-72	Rev. General Notes for Steel	W.E.M.

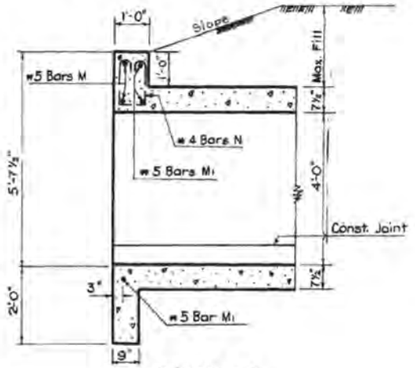
STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

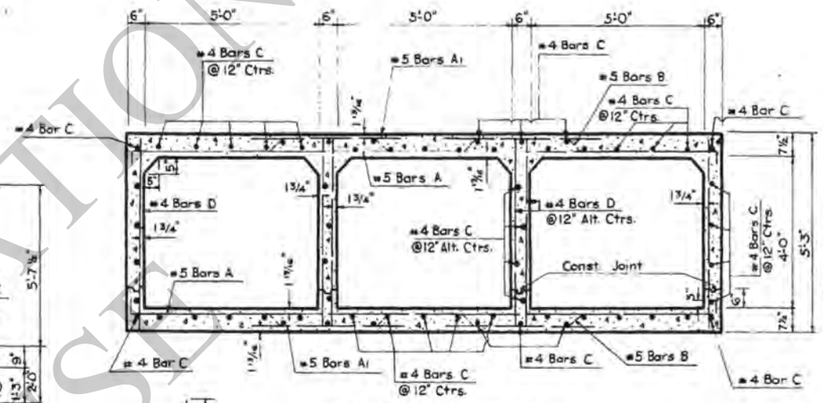
DESIGNED W.E. Marcum DETAILED B.L. Burke TRACED C. Breaux
CHECKED N.K. Brown CHECKED W.E. Marcum CHECKED W.E. Marcum
IN CHARGE OF

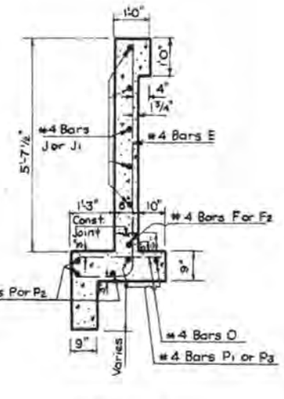
FOR INFORMATIONAL USE

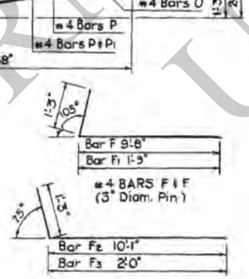


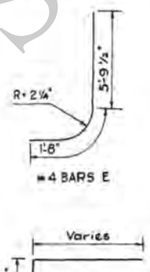


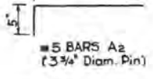


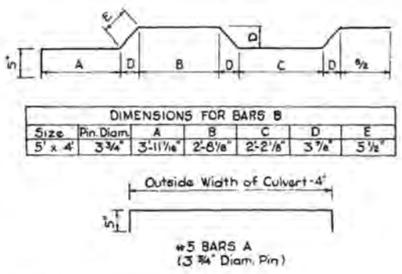












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F.A.P.	STATE PROJECT	PARISH	SHEET NO.

PLAN

SECTION A-A

SECTION B-B

ELEVATION

SECTION THRU BARREL

SECTION C-C

DIMENSIONS FOR BARS B						
Size	Pin. Diam.	A	B	C	D	E
5' x 4'	3 3/4"	3'-11 1/16"	2'-8 1/8"	2'-2 1/8"	3 7/8"	5 1/2"

#5 BARS A (3 3/4" Diam. Pin)

GENERAL NOTES

Construction Specifications: Latest Approved La. Dept. of Hwy. Standard Specifications.
Design Specifications: A.A.S.H.O. 1969 as Amended by Int. Specs., 1972.
Live Load: HS 20-44 or Military Loading, Whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have 3/4" Chamfer, Unless Otherwise Noted. Reinforcement Shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M.A. 616 or Axle-Steel A.S.T.M.A. 617.
Dimensions relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.

DIMENSIONS						QUANTITIES					
OPENINGS			MAX. FILL		WINGS & CURBS	PER LINEAR FOOT OF BARREL		FOR 44'-0" OF CULVERT		OPENINGS	
SIZE FEET	NO.	AREA SQ. FT.	SLAB FEET	WALL FEET	M FEET-INCHES	STEEL LBS.	CONCRETE CU. YDS.	STEEL LBS.	CONCRETE CU. YDS.	NO.	SIZE FEET
5x4	2	40	21	13	31 - 4 7/8	109.51	0.7675	5877	46.93	2	5 x 4
	3	60	27		37 - 1 3/16	165.22	1.1026	8610	63.23	3	
	4	80			42 - 9 1/2	220.92	1.4378	11314	79.52	4	
	5	100			48 - 5 7/8	276.62	1.7729	14125	95.82	5	
	6	120			54 - 2 3/16	332.33	2.1080	16832	112.12	6	

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

Barrel reinforcement:

SIZE FEET	NO.	#5 BARS A NO.	#5 BARS A LENGTH Ft.-In.	#5 BARS A1 NO.	#5 BARS A1 LENGTH Ft.-In.	#5 BARS A2 NO.	#5 BARS A2 SHORT BAR Ft.-In.	#5 BARS A2 VAR. In.	#5 BARS A2 LONG BAR Ft.-In.	#5 BARS B NO.	#5 BARS B LENGTH Ft.-In.	#4 BARS C NO.	#4 BARS C LENGTH① Ft.-In.	#4 BARS D NO.	#4 BARS D LENGTH Ft.-In.
5x4	2	102	12-0	110	4-4	24	2-11	18.6000	10-8	104	12-3 1/4	42	47-2	138	4-11
	3	98	17-6	232	4-4	40	2-11	18.6667	16-11	100	18-0 1/2	62	47-2	184	4-11
	4	96	23-0	356	4-4	52	2-11	18.6667	21-7	96	23-9 3/4	82	47-2	230	4-11
	5	92	28-6	496	4-4	68	2-11	18.6250	27-9	92	29-7	102	47-2	276	4-11
	6	88	34-0	624	4-4	80	2-11	18.6316	32-5	90	35-4 1/4	122	47-2	322	4-11

Wings and curbs reinforcement:

SIZE FEET	#4 BARS E NO.	#4 BARS E LENGTH Ft.-In.	#4 BARS F NO.	#4 BARS F LENGTH Ft.-In.	#4 BARS F1 NO.	#4 BARS F1 LENGTH Ft.-In.	#4 BARS F2 NO.	#4 BARS F2 LENGTH Ft.-In.	#4 BARS F3 NO.	#4 BARS F3 LENGTH Ft.-In.	#4 BARS J NO.	#4 BARS J LENGTH Ft.-In.	#4 BARS J1 NO.	#4 BARS J1 LENGTH Ft.-In.	#4 BARS O NO.	#4 BARS O LENGTH Ft.-In.	#4 BARS P NO.	#4 BARS P LENGTH Ft.-In.	#4 BARS P1 NO.	#4 BARS P1 LENGTH Ft.-In.	#4 BARS P2 NO.	#4 BARS P2 LENGTH Ft.-In.	#4 BARS P3 NO.	#4 BARS P3 LENGTH Ft.-In.
5x4	40	7-5 1/2	2	10-11	8	3-0	2	11-4	8	3-3	10	7-6	10	7-8	40	2-4	6	9-4	4	10-11	6	9-6	4	11-6

#5 BARS M NO.	#5 BARS M LENGTH Ft.-In.	#5 BARS M1 NO.	#5 BARS M1 LENGTH Ft.-In.	#4 BARS N NO.	#4 BARS N LENGTH Ft.-In.	#6 BARS X④ NO.	#6 BARS X④ LENGTH Ft.-In.	OPENINGS NO.	OPENINGS SIZE FEET
4	15-0	6	11-6	24	4-4	20	2-0	2	5x4
4	20-8	6	17-3	36	4-4			3	
4	26-5	6	22-11	48	4-4			4	
4	32-1	6	28-7	58	4-4			5	
4	37-9	6	34-4	70	4-4			6	

① Includes 1-1'-6" Lap Splice

④ #6 Bars X to be 3/4" φ Smooth & Greased for 1'-0" of Length.

DATE	DESCRIPTION	BY
1-11-78	Rev., Weep Hole Note	W.T.J.
5-30-75	Revised Spill Slope	W.T.J.

REVISIONS

C.C.S.M. 5-R. 75°. 1

APPROVED BY:
Dempsey D. White 1-11-78
CHIEF ENGINEER DATE

STANDARD PLAN
MULTIPLE OPENING REINFORCED CONCRETE BOX CULVERT

STRAIGHT WINGS 75° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED Feb. 1973 2 THRU 6-5'x4'

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED W. Marcum	DETAILED C. Johnston	TRACED donna knight
CHECKED N. Brown	CHECKED J.J. Ribos	CHECKED C.D.J.

FOR INFORMATIONAL USE

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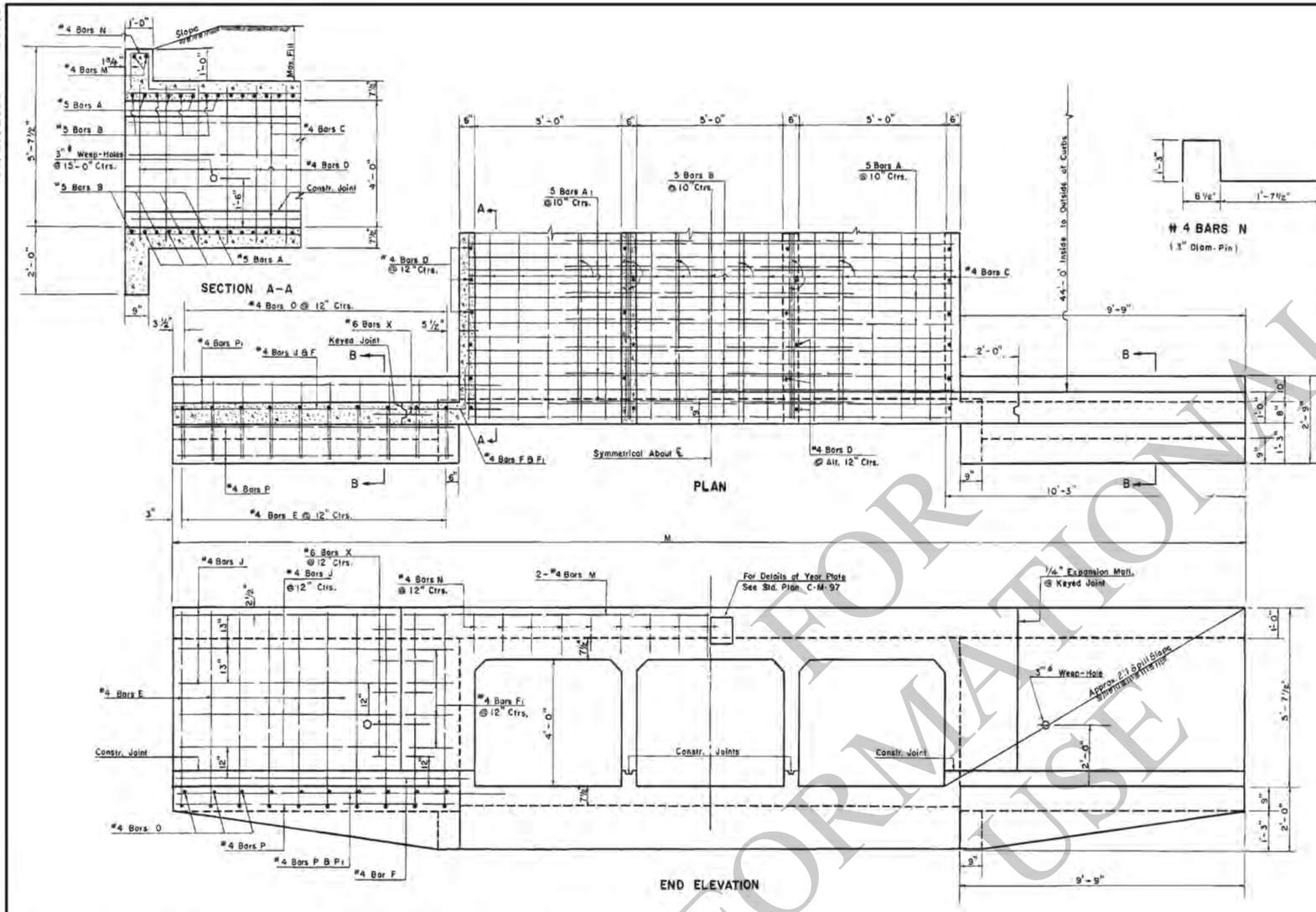
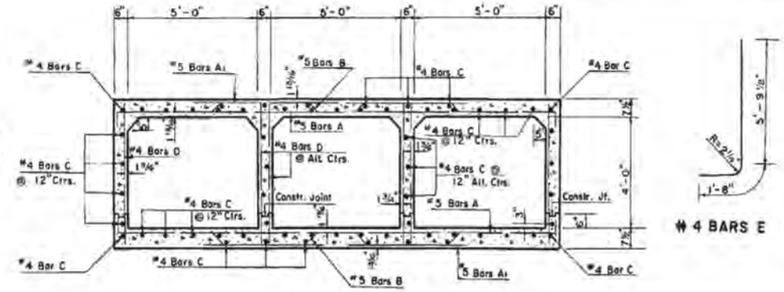
F.A.P.	STATE PROJECT	PARISH	SHEET NO.

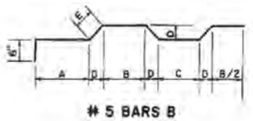




SECTION THRU BARREL

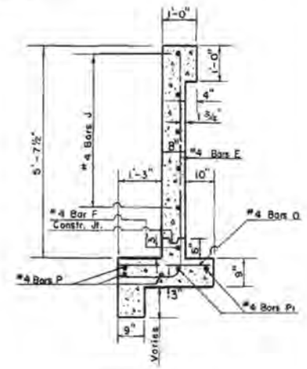
4 BARS N
(3" Diam. Pin)

4 BARS E

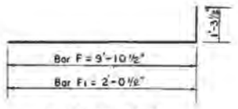


5 BARS B

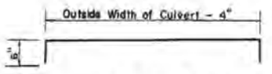
DIMENSION FOR BARS B						
SIZE	PIN DIAM	A	B	C	D	E
5'X 4'	3¾	3-11⅛	2-8⅛	2'-2⅛	3⅛	5½



SECTION B-B



#4 BARS F & F1
(3" Diam. Pin)



#5 BARS A
(3¾" Diam. Pin)

DIMENSIONS						QUANTITIES				OPENINGS	
OPENINGS			MAX. FILL		WINGS & CURBS	PER LINEAR FT. OF BARREL		FOR 44'-0" OF CULVERT			
SIZE	NO.	AREA	SLAB	WALL	M	STEEL	CONCRETE	STEEL	CONCRETE	NO.	SIZE
FEET		SQ.FT.	FEET	FEET	FT.-IN.	LBS.	CU.YDS.	LBS.	CU. YDS.		FEET
5X4	2	40	27	13	31-0	110.35	0.7675	5835	46.81	2	5X4
	3	60			36-6	166.05	1.1026	8453	63.06	3	
	4	80			42-0	221.75	1.4377	11078	79.30	4	
	5	100			47-6	277.46	1.7729	13697	95.55	5	
	6	120			53-0	333.16	2.1080	16322	111.79	6	

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

OPENINGS		BARREL REINFORCEMENT										WINGS AND CURBS REINFORCEMENT																				OPENINGS
		#5 BAR A		#5 BARS A1		#5 BARS B		#4 BARS C ①		#4 BARS D		#4 BARS E		#4 BARS F		#4 BARS F1		#4 BARS J		#4 BARS M		#4 BARS N		#4 BARS O		#4 BARS P		#4 BARS P1		#6 BARS X Ⓐ		
SIZE	NO.	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	SIZE
FEET			FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FT.-IN.		FEET
5X4	2	110	12-2	110	4-4	110	12-5¼	42	47-2	138	4-11	40	7-5½	4	11-2	16	3-4	20	7-5	4	14-11	24	4-10	40	2-4	12	9-5	8	11-1	20	2-0	2	5X4
	3	110	17-8	220	4-4	110	18-2½	62	47-2	184	4-11	40	7-5½	4	11-2	16	3-4	20	7-5	4	20-5	34	4-10	40	2-4	12	9-5	8	11-1	20	2-0	3	
	4	110	23-2	330	4-4	110	23-11¾	82	47-2	230	4-11	40	7-5½	4	11-2	16	3-4	20	7-5	4	25-11	46	4-10	40	2-4	12	9-5	8	11-1	20	2-0	4	
	5	110	28-8	440	4-4	110	29-9	102	47-2	276	4-11	40	7-5½	4	11-2	16	3-4	20	7-5	4	31-5	56	4-10	40	2-4	12	9-5	8	11-1	20	2-0	5	
	6	110	34-2	550	4-4	110	35-6¼	122	47-2	322	4-11	40	7-5½	4	11-2	16	3-4	20	7-5	4	36-11	68	4-10	40	2-4	12	9-5	8	11-1	20	2-0	6	

① Includes One 1'-6" Lap Splice.

Ⓐ #6 Bars X to be ¾" ø Smooth and Greased for 1'-0" of Length.

General Notes:
Construction Specifications: Latest Approved La. Dept. of Highways Standard Specifications.
Design Specifications: A. A. S. H. O. 1961 as Amended by Int. Spec. 1964.
Live Load: HS 20-44 or Military Loading, Whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to Have ¾" Chamfer, Unless Otherwise Noted.
Reinforcement Shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617
Dimensions Relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.

APPROVED BY:
Dwayne D. White
CHIEF ENGINEER
1-11-78
DATE

C·C·S·M· 5·R· 90ª 1

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 2:1 SPILL SLOPE
2 THRU 6-5'X4'
DATED Sept. 7, 1965

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
1-28-76	Rev. Slope Intercept	W.T.J.
6-8-72	Rev. General Notes for Steel	W.E.M.
9-5-67	Steel & Conc. Quant. Rev.	W.E.M.
5-2-67	Added Info Steel	W.E.M.

REVISIONS

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED W.E. Marcum	DETAILED Earl J. Martel	TRACED E.P. Eichmeier
CHECKED N.K. Brown	CHECKED W.E. Marcum	CHECKED Al Shows
IN CHARGE OF		

FOR INFORMATIONAL USE

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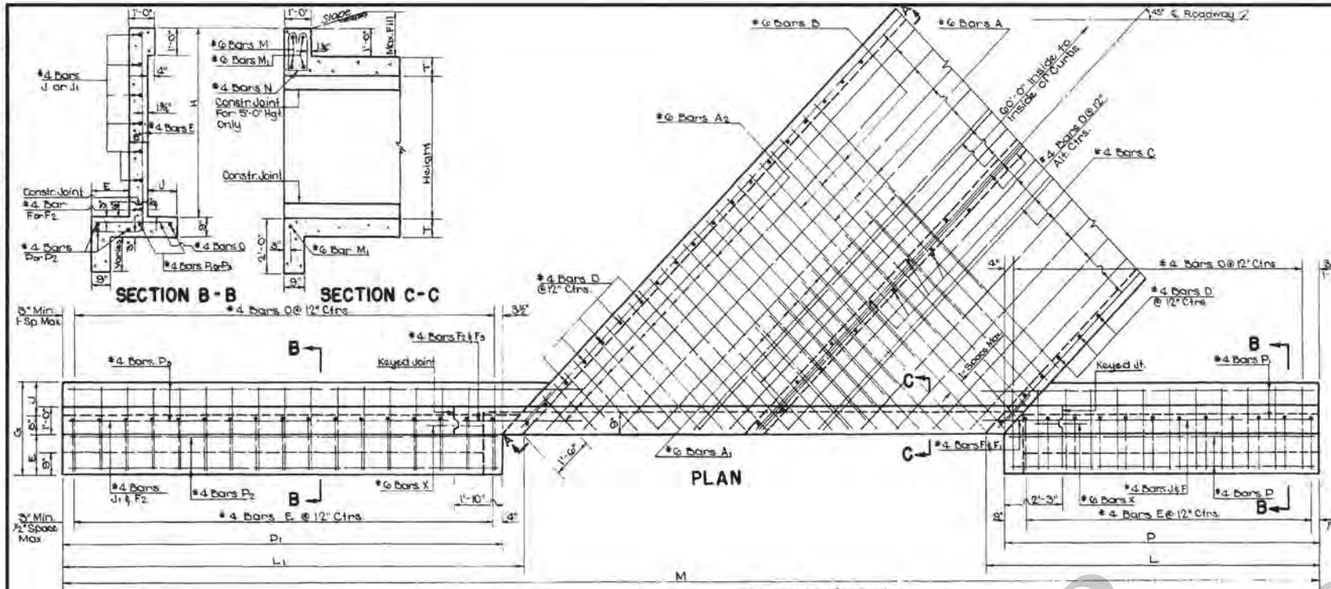
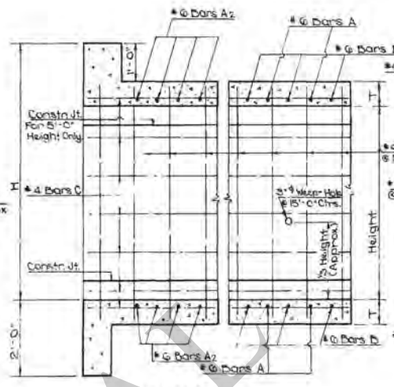
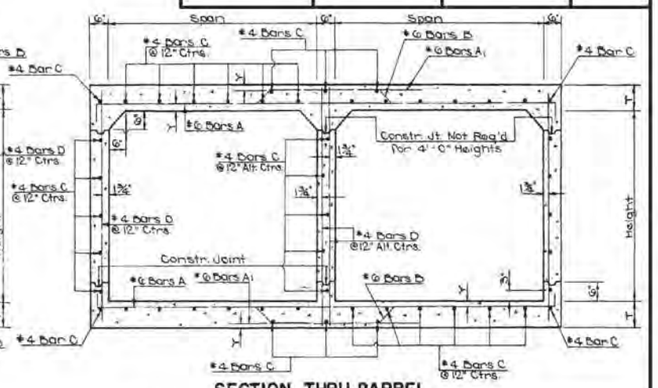
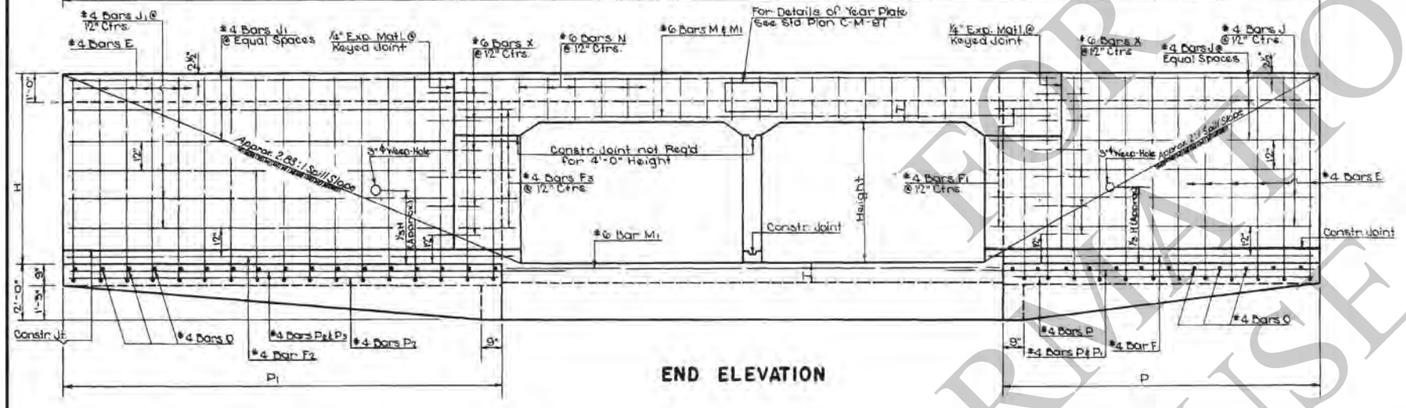
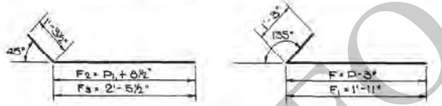
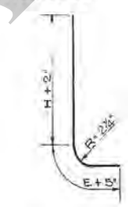


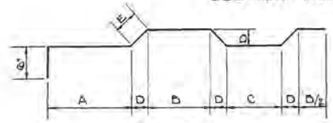


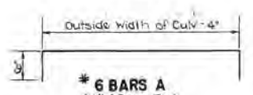


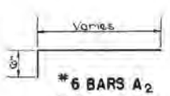


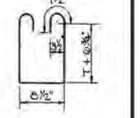












DIMENSIONS FOR BARS B						
SIZE	DIAM. PIN	A	B	C	D	E
6'-0"	4½"	4'-7⅝"	3'-1⅝"	2'-7⅝"	4¼"	6"
7'-0"	4½"	5'-4⅝"	3'-7⅛"	3'-1⅛"	4¾"	6¾"

DIMENSIONS																	QUANTITIES				OPENINGS	
OPENINGS		NO.	AREA	MAX. FILL		BARREL		WINGS AND CURBS									PER LIN. FT OF BARREL		60'-0" CULVERT			
SIZE FEET			Sq. FT.	SLABS FT.	WALLS FT.	T IN.	Y IN.	E FT-IN.	J FT-IN.	G FT-IN.	H FT-IN.	L FT-IN.	L_1 FT-IN.	P FT-IN.	P_1 FT-IN.	M FT-IN.	STEEL POUNDS	CONCRETE CU.YDS.	STEEL POUNDS	CONCRETE CU.YDS.	NO.	SIZE FEET
6×4	2	48	16	20	12	8	1⅞	1-3	10	2-8	5-8	10-6½	14-6½	10-0	13-10	42-11⅞	127.76	0.9074	9,190	71.79	2	6×4
	3	72														52-1⅞	193.32	1.3117	13,734	96.56	3	
	4	96														61-3⅝	258.88	1.7161	18,457	125.32	4	
	5	120														70-6⅛	324.45	2.1204	23,242	152.09	5	
	6	144														79-8⅝	401.17	2.5247	28,373	178.85	6	
6×5	2	60	20	20	12	8	1⅞	1-5	1-2	3-3	6-8	12-0½	17-5½	12-0	16-9	41-10⅛	131.76	0.9630	9,701	78.94	2	6×5
	3	90														51-0½	196.66	1.3856	14,320	107.81	3	
	4	120														60-2⅝	265.56	1.8087	19,117	135.60	4	
	5	150														75-5⅛	332.46	2.2315	24,007	163.73	5	
	6	180														84-7⅝	410.52	2.6344	29,223	191.66	6	
7×4	2	56	18	20	12	8½	1⅞	1-3	10	2-8	5-8½	10-8½	14-6½	10-0	13-10	45-9⅛	149.66	1.0540	10,682	81.42	2	7×4
	3	84														56-4⅝	227.84	1.5309	14,640	112.93	3	
	4	112														64-11⅝	305.20	2.0077	21,616	144.44	4	
	5	140														77-6⅛	382.86	2.4848	27,450	175.94	5	
	6	168														86-8⅝	472.54	2.8814	33,672	207.45	6	

BILL OF REINFORCING STEEL FOR 60'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS Size Feet	No.	*6 BARS A No.	*6 BARS A Length Ft-In	*6 BARS A Spac In.	*6 BARS A_1 No.	*6 BARS A_1 Length Ft-In.	*6 BARS A_1 Spac In.	*6 BARS A_2 Short Bar No.	*6 BARS A_2 Short Bar Ft-In.	*6 BARS A_2 Var. In.	*6 BARS A_2 Long Bar Ft-In.	*6 BARS A_2 Spac In.	*6 BARS B No.	*6 BARS B Length Ft-In.	*6 BARS B Spac In.	*4 BARS C No.	*4 BARS C Length Ft-In.	*4 BARS D No.	*4 BARS D Length Ft-In.
6×4	2	64	14-2	14	112	5-2	14	80	2-1	7.0000	13-2	7	86	14-5⅜	14	46	63-10	168	5-0
	3	74	20-5	14	244	5-2	14	124	2-1	7.0000	19-7	7	76	21-3	14	66	63-10	252	5-0
	4	62	27-2	14	406	5-2	14	172	2-1	7.0000	26-1	7	62	26-0⅝	14	90	63-10	315	5-0
	5	50	33-8	14	580	5-2	14	210	2-1	7.0000	33-0	7	52	34-10	14	112	63-10	378	5-0
	6	40	40-2	14	764	5-2	14	260	2-1	7.0000	39-5	7	40	④45-9⅜	14	134	63-10	441	5-0
6×5	2	64	14-2	14	112	5-2	14	80	2-1	7.0000	13-2	7	86	14-5⅜	14	49	63-10	169	6-0
	3	74	20-5	14	244	5-2	14	124	2-1	7.0000	19-7	7	76	21-3	14	72	63-10	252	6-0
	4	62	27-2	14	406	5-2	14	172	2-1	7.0000	26-1	7	62	26-0⅝	14	95	63-10	315	6-0
	5	50	33-8	14	580	5-2	14	210	2-1	7.0000	33-0	7	52	34-10	14	118	63-10	378	6-0
	6	40	40-2	14	764	5-2	14	260	2-1	7.0000	39-5	7	40	④45-9⅜	14	141	63-10	441	6-0
7×4	2	56	16-2	15	122	5-6	6⅜	104	2-1	6.4800	15-7	6½	86	16-6	15	50	63-10	189	5-1
	3	74	23-6	15	268	5-6	6⅜	156	2-1	6.5000	22-0	6½	76	24-4	15	74	63-10	252	5-1
	4	60	31-2	13	448	5-6	6⅜	212	2-1	6.5000	30-3	6½	60	32-2	13	96	63-10	315	5-1
	5	46	36-6	15	650	5-6	6⅜	260	2-1	6.5000	35-10	6½	46	40-0	15	122	63-10	378	5-1
	6	32	③46-4	15	892	5-6	6⅜	324	2-1	6.5000	④45-5	6½	32	③50-0	15	146	63-10	441	5-1

CURBS AND WINGS REINFORCEMENT

*4 BARS E No.	*4 BARS E Length Ft-In.	*4 BARS F No.	*4 BARS F Length Ft-In.	*4 BARS F_1 No.	*4 BARS F_1 Length Ft-In.	*4 BARS F_2 No.	*4 BARS F_2 Length Ft-In.	*4 BARS F_3 No.	*4 BARS F_3 Length Ft-In.	*4 BARS J No.	*4 BARS J Length Ft-In.	*4 BARS J_1 No.	*4 BARS J_1 Length Ft-In.	*4 BARS O No.	*4 BARS O Length Ft-In.	*4 BARS P No.	*4 BARS P Length Ft-In.	*4 BARS P_1 No.	*4 BARS P_1 Length Ft-In.	*4 BARS P_2 No.	*4 BARS P_2 Length Ft-In.	*4 BARS P_3 No.	*4 BARS P_3 Length Ft-In.	*4 BARS N No.	*4 BARS N Length Ft-In.	*6 BARS M No.	*6 BARS M Length Ft-In.	*6 BARS M_1 No.	*6 BARS M_1 Length Ft-In.	Ⓐ *6 BARS X No.	Ⓐ *6 BARS X Length Ft-In.
46	7-6	2	11-0	8	3-2	2	15-10	6	3-9	10	7-5	10	11-8	46	2-4	6	9-8	4	10-10	6	13-6	4	10-5	36	4-5	4	22-7	6	18-7	20	2-0
																								56	4-5	4	31-10	6	27-10	20	2-0
																								74	4-5	4	⑤43-2	6	37-0	20	2-0
																								92	4-5	4	⑤52-4	6	⑤46-4	20	2-0
																								110	4-5	4	⑤61-7	6	⑤57-1	20	2-0
58	8-8	2	13-0	10	3-2	2	18-9	6	3-9	12	9-5	12	14-7	58	2-10	6	11-8	4	12-10	6	16-5	4	19-8	36	4-5	4	22-7	6	18-7	24	2-0
																								56	4-5	4	31-10	6	27-10	24	2-0
																								74	4-5	4	⑤43-2	6	37-0	24	2-0
																								92	4-5	4	⑤52-4	6	⑤46-4	24	2-0
																								110	4-5	4	⑤61-7	6	⑤57-1	24	2-0
46	7-0½	2	11-0	8	3-2	2	15-10	6	3-9	10	7-5	10	11-8	46	2-4	6	9-8	4	10-10	6	13-6	4	16-5	44	4-6	4	25-5	6	21-5	20	2-0
																								64	4-6	4	36-1	6	32-0	20	2-0
																								85	4-6	4	⑤46-10	6	⑤44-10	20	2-0
																								106	4-6	4	⑤59-5	6	⑤55-5	20	2-0
																								126	4-6	4	⑤70-0	6	⑤66-0	20	2-0

① Incl. One 1'-6" Lap Splice.
② Incl. One 2'-2" Lap Splice.
③ Does Not Incl. Lap Splice. When Bar Length Exceeds 40'-0" Add One 2'-2" Lap Splice.

Ⓐ *6 Bars X to be ⅜" ϕ Smooth and Greased For 1'-0" of Length.

APPROVED BY:
Dempsey DeWhitt 1-5-78
CHIEF ENGINEER DATE

General Notes:

Construction Specifications: Latest Approved La. Dept. of Hwys. Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 as Amended by Int. Specs. 1964.
Live Load: HS 20-44 or Military, Whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to Have ¾" Chamfer, Unless Otherwise Noted.
Reinforcement Shall Be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.
Dimensions Relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.

C·C·S·M·6-7·R-45°·1

STANDARD PLAN
MULTIPLE OPENINGS
REINF. CONCRETE BOX CULVERT
STRAIGHT WINGS 45° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED Dec. 29, 1964 6'x4' 6'x5' 7'x4'

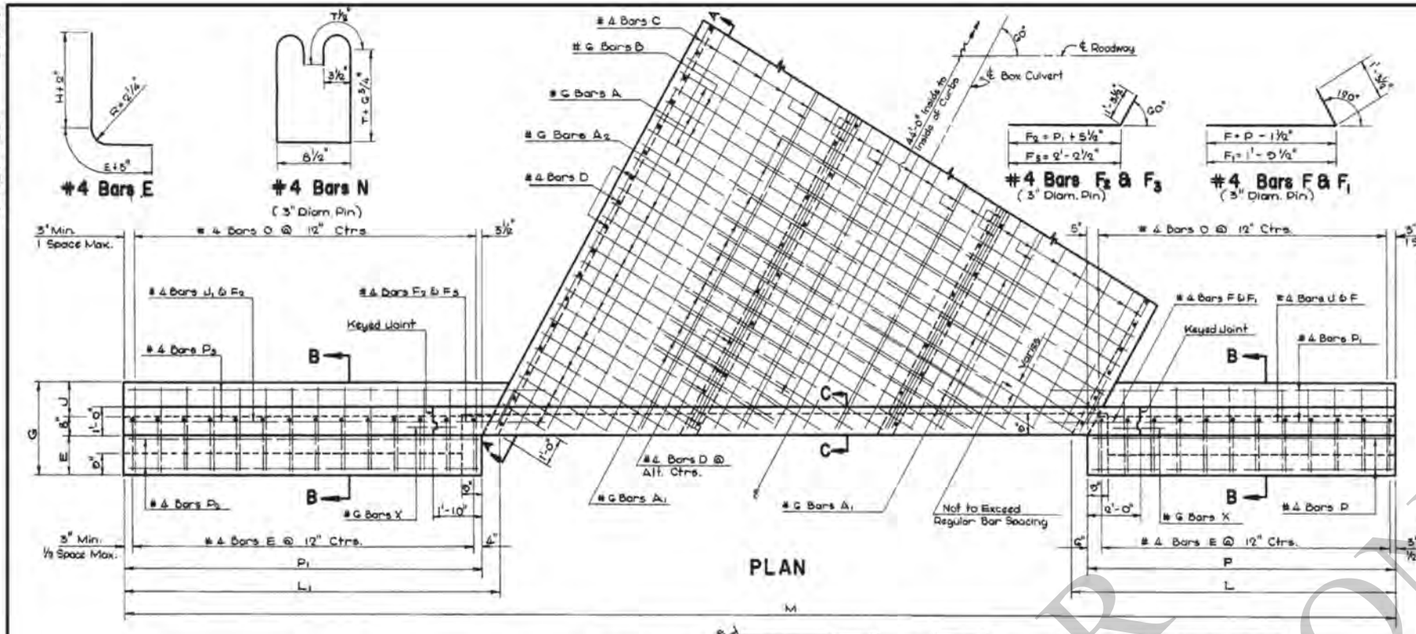
STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

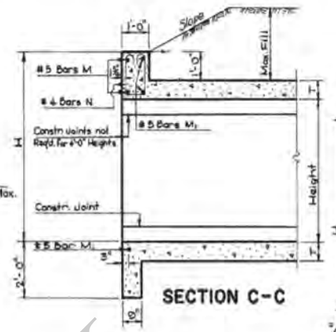
DESIGNED	DETAILED Earl J. Martel	TRACED J.L. Read
CHECKED	CHECKED W.E. Grice	CHECKED W.E. Grice
IN CHARGE OF		

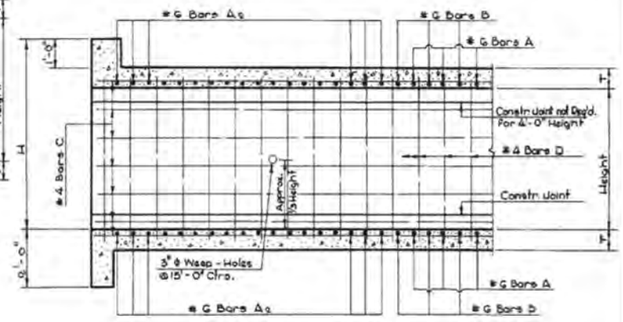
DATE	DESCRIPTION	BY
1-5-78	Rev. Weep Hole Note	W.T.J.
6-10-75	Rev. Slope Intercept	W.T.J.
6-8-72	Rev. General Notes For Steel	W.E.M.
4-27-64	Added Axle Steel	W.E.M.

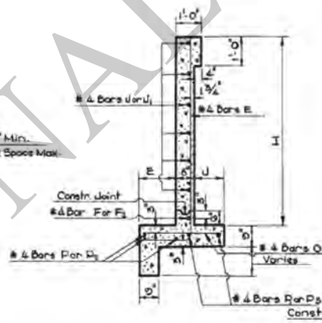
REVISIONS

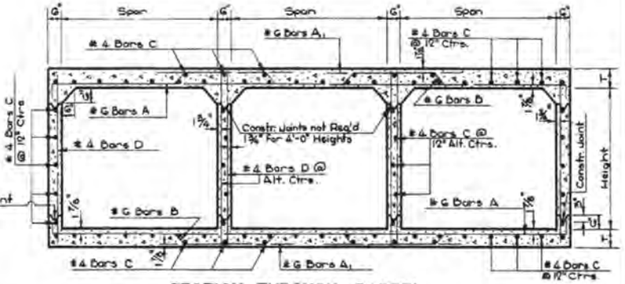
FOR INFORMATIONAL USE

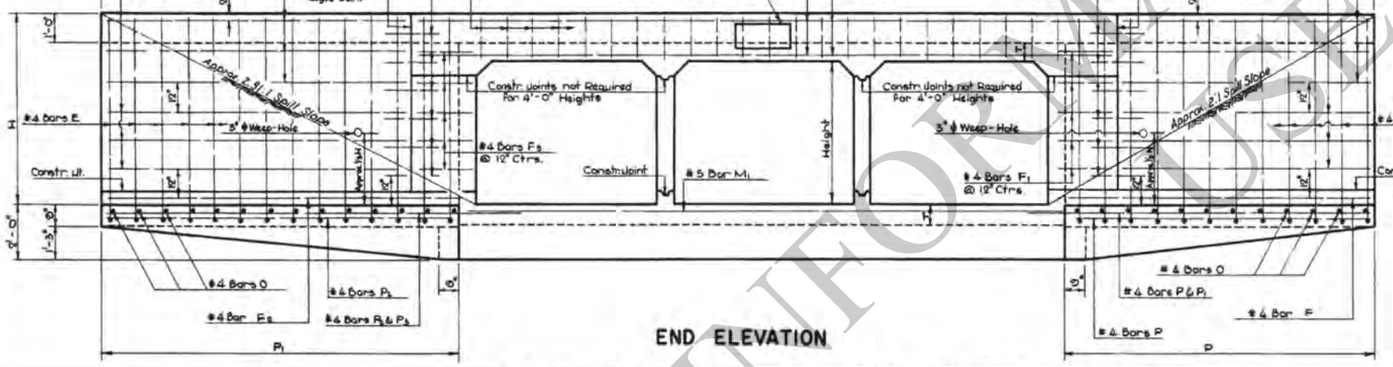












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F.A.P.	STATE PROJECT	PARISH	SHEET NO.

DIMENSIONS FOR BARS B					
SPAN	A	B	C	D	E
6'-0"	4'-7⅞"	5'-1½"	2'-7¾"	4¼"	6"
7'-0"	5'-4⅞"	5'-7¼"	3'-1¼"	4¾"	6¾"

DIMENSIONS															QUANTITIES				OPENINGS	
OPENINGS			MAX. FILL		BBL.	WINGS AND CURBS									PER LINEAR FOOT OF BARREL		44'-0" CULVERT			
SIZE	Nº	AREA	SLAB	WALLS	T	E	J	G	H	L	L1	P	P1	M	STEEL	CONC.	STEEL	CONC.	Nº	SIZE
FT.		Sq. Ft.	Ft.	Ft.	In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Pounds	Cu.Yds.	Pounds	Cu.Yds.		FT.
6x4	2	48	16	12	8	1-3	0-10	2-9	5-8	10-3 15/16	12-1 15/16	9-9	11-7	36-11 1/16	127.76	0.9074	6808	55.05	2	6x4
	3	72	20											44-5 1/8	193.32	1.3117	10148	74.69	3	
	4	96												51-11 3/16	258.88	1.7161	13568	94.72	4	
	5	120												59-5 1/4	324.45	2.1204	16965	114.56	5	
	6	144												66-11 5/16	401.17	2.5247	20946	134.40	6	
6x5	2	60	15	7	8	1-5	1-2	3-3	6-8	12-3 15/16	14-2 15/16	11-9	13-8	41-0 1/16	131.76	0.9630	7305	61.62	2	6x5
	3	90	20											48-6 1/8	198.66	1.3858	10617	82.31	3	
	4	120												56-0 3/16	265.56	1.8087	14099	103.01	4	
	5	150												63-6 1/4	332.46	2.2315	17558	123.70	5	
	6	180												71-0 5/16	410.52	2.6544	21602	144.39	6	
7x4	2	56	12	12	8½	1-3	0-10	2-9	5-8½	10-4 15/16	12-1 15/16	9-10	11-7	39-3 5/16	149.88	1.0540	7966	62.23	2	7x4
	3	84	16											47-11 1/16	227.54	1.5300	11865	85.57	3	
	4	112												56-7 5/16	305.20	2.0077	15887	108.92	4	
	5	140												65-3 9/16	382.86	2.4846	20092	132.26	5	
	6	168												73-11 1/16	472.54	2.9614	24665	155.61	6	

APPROVED BY:
Dempsey D. White 1-11-78
CHIEF ENGINEER DATE

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS		#6 BARS A			#6 BARS A1			#6 BARS A2					#6 BARS B			#4 BARS C		#4 BARS D		
SIZE	Nº	Nº	Length	Spc.	Nº	Length	Spc.	Nº	Short Bar	Var.	Long Bar	Spc.	Nº	Length	Spc.	Nº	Length ①	Nº	Length	Spc.
FT.			Ft.-In.	In.		Ft.-In.	In.		Ft.-In.	In.	Ft.-In.	In.		Ft.-In.	In.		Ft.-In.		Ft.-In.	In.
6x4	2	66	14-2	14	88	5-2	7/14	48	2-3	12.0909	13-4	7	66	14-5½	14	46	47-5	138	5-0	12
	3	60	20-8	14	176	5-2	7/14	72	2-3	12.1176	19-5	7	60	21-3	14	68	47-5	184	5-0	12
	4	52	27-2	14	264	5-2	7/14	100	2-3	12.1136	26-6	7	54	28-0½	14	90	47-5	230	5-0	12
	5	46	33-8	14	400	5-2	7/14	124	2-3	12.1000	32-6	7	48	34-10	14	112	47-5	276	5-0	12
	6	40	①42-4	14	544	5-2	7/14	152	2-3	12.1081	39-7	7	40	①43-9½	14	134	47-5	322	5-0	12
6x5	2	66	14-2	14	88	5-2	7/14	48	2-3	12.0909	13-4	7	66	14-5½	14	45	47-5	138	6-0	12
	3	60	20-8	14	176	5-2	7/14	72	2-3	12.1176	19-5	7	60	21-3	14	72	47-5	184	6-0	12
	4	52	27-2	14	264	5-2	7/14	100	2-3	12.1136	26-6	7	54	28-0½	14	98	47-5	230	6-0	12
	5	46	33-8	14	400	5-2	7/14	126	2-3	12.1000	32-6	7	48	34-10	14	118	47-5	276	6-0	12
	6	40	①42-4	14	544	5-2	7/14	152	2-3	12.1081	39-7	7	40	①43-9½	14	141	47-5	322	6-0	12
7x4	2	68	16-2	13	88	5-8	[illegible]	60	2-3	[illegible]	15-4	6½	70	16-6	13	50	47-5	138	5-1	12
	3	60	23-8	13	192	5-8	[illegible]	92	2-3	[illegible]	22-10	6½	62	24-4	13	74	47-5	184	5-1	12
	4	52	31-2	13	312	5-8	[illegible]	124	2-3	[illegible]	30-4	6½	54	32-2	13	98	47-5	230	5-1	12
	5	44	38-8	13	448	5-8	[illegible]	156	2-3	[illegible]	37-10	6½	46	40-0	13	122	47-5	276	5-1	12
	6	36	①46-4	13	600	5-8	[illegible]	188	2-3	[illegible]	①45-4	6½	38	①50-0	13	146	47-5	322	5-1	12

WINGS AND CURBS REINFORCEMENT

OPENINGS		#4 BARS E		#4 BARS F		#4 BARS F1		#4 BARS F2		#4 BARS F3		#4 BARS J		#4 BARS J1		#4 BARS O		#4 BARS P		#4 BARS P1		#4 BARS P2		#4 BARS P3		#5 BARS M		#5 BARS M1		#4 BARS N		#6 BARS X Ⓐ	
SIZE	Nº	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length	Nº	Length
FT.			Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.
6x4	2	44	7-6	2	10-11	8	3-1	2	13-4	8	3-6	10	7-5	10	9-5	44	2-4	6	9-5	4	10-10	6	11-3	4	15-8	4	18-10	6	15-2	32	4-5	20	2-0
	3																									4	26-4	6	22-8	46	4-5	20	2-0
	4																									4	33-10	6	30-2	62	4-5	20	2-0
	5																									4	②43-3	6	37-8	76	4-5	20	2-0
	6																									4	②50-9	6	③47-0	92	4-5	20	2-0
6x5	2	52	8-8	2	12-11	10	3-1	2	15-5	10	3-6	12	9-5	12	11-6	52	2-10	6	11-5	4	12-10	6	13-4	4	15-9	4	18-10	6	15-2	32	4-5	24	2-0
	3																									4	26-4	6	22-8	46	4-5	24	2-0
	4																									4	33-10	6	30-2	62	4-5	24	2-0
	5																									4	③43-3	6	37-8	76	4-5	24	2-0
	6																									4	②50-9	6	③47-0	92	4-5	24	2-0
7x4	2	44	7-6½	2	11-0	8	3-1	2	13-4	8	3-6	10	7-6	10	9-5	44	2-4	6	9-6	4	10-11	6	11-3	4	13-8	4	21-2	6	17-6	36	4-6	20	2-0
	3																									4	29-10	6	26-2	54	4-6	20	2-0
	4																									4	38-6	6	34-10	70	4-6	20	2-0
	5																									4	②49-0	6	③45-4	88	4-6	20	2-0
	6																									4	②57-8	6	③54-0	100	4-6	20	2-0

① Includes 1-1'-6" Lap Splice ② Includes 1-2'-2" Lap Splice ③ Includes 1-1'-10" Lap Splice Ⓐ #6 Bars X to be ¾" ⌀ Smooth and Greased Per 1'-0" of Length

④ Does not Include Lap Splice. When Bar Length Exceeds 40'-0", Add 1-2'-2" Lap Splice.

GENERAL NOTES:
CONSTRUCTION SPECIFICATIONS: Latest Approved La. Dept. of Highways Standard Specifications.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1961 as Amended by Int. Spec. 1964
LIVE LOAD: HS20-44 or Military, Whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have 3/4" Chamfer, Unless Otherwise Noted.
Reinforcement Shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.
Dimensions Relating to Reinforcing Steel are to Bar Centers.
Place about 2 Cu. Ft. of Large Size Gravel or Loose Rock
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.

C-C-S-M-6-7-R-60°-1

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
8-20-75	Rev. Slope Intercept	W.T.J.
6-8-72	Rev. General Notes For Steel	W.E.M.
4-27-67	Added Axle Steel	W.E.M.

REVISIONS

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 60° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED DEC. 31, 1964 6'x4', 6'x5' & 7'x4'

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED N.K.B.	DETAILED W.E. Grice	TRACED T. WILLIAMS
CHECKED W.E.M.	CHECKED W.E. Marcum	CHECKED W.E. Marcum
IN CHARGE OF		

FOR INFORMATIONAL USE

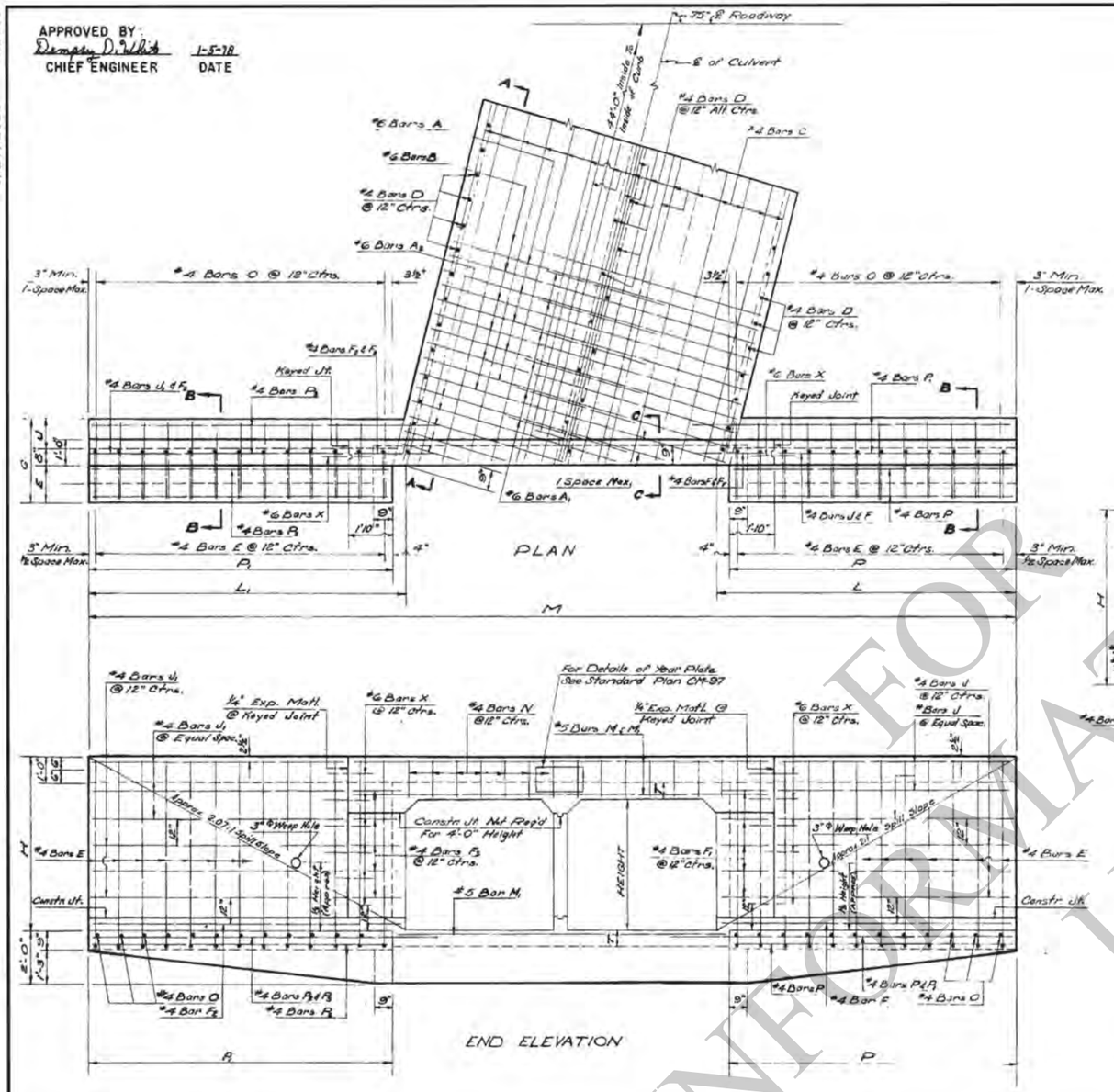
4/27/2015 15:03

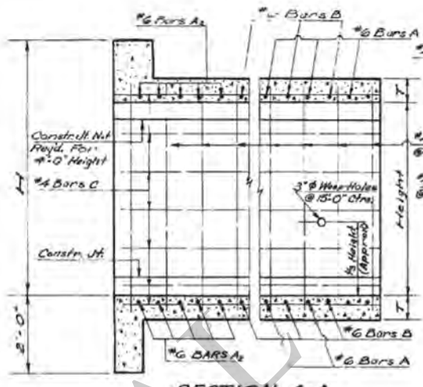
IP_PWP:dms09544\CCSM6-7R75_1.dgn

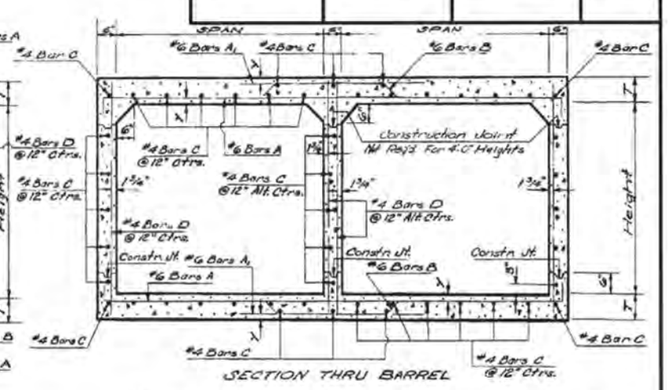
APPROVED BY:
Dempsey D. Wilds
CHIEF ENGINEER

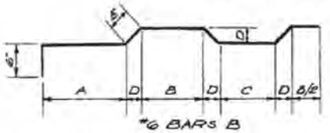
1-5-18
DATE

F.A.P.	STATE PROJECT	PARISH	SHEET NO.

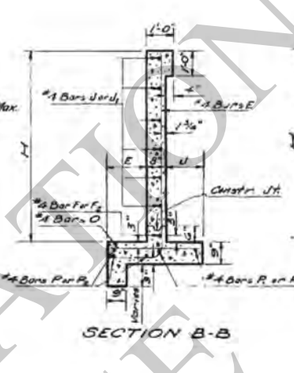


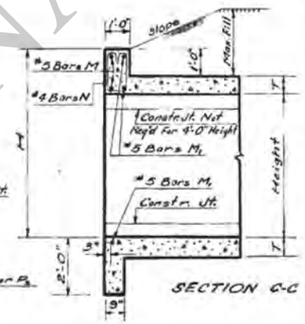


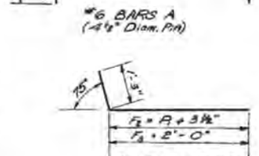


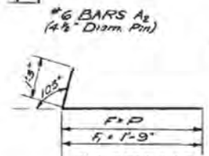


DIMENSIONS FOR BARS B						
SPAN	DIAM PIN	A	B	C	D	E
6'-0"	4½"	4'-7⅝"	3'-1⅝"	2'-7½"	4¼"	6"
7'-0"	4½"	5'-4⅝"	3'-7½"	3'-1⅛"	4⅝"	6½"









DIMENSIONS																		QUANTITIES				OPENING	
OPENINGS SIZE		AREA	MAX FILL @ MASS	BARREL WALLS		T	Y	E	J	WINGS AND CURBS G	H	L	L1	P	P1	M		PER LIN FT OF BARREL STEEL	CONCRETE	44'0" CULVERT STEEL	CONCRETE	NO.	SIZE
FEET	NO.	SQ.FT.	FEET	FEET		IN.	IN.	Ft-In.	Ft-In.	Ft-In.	Ft. In.	Ft-In.	Ft-In.	Ft-In.	Ft-In.	Ft-In.		POUNDS	CU.YDS.	POUNDS	CU.YDS.		FEET
6x4	2	48	20	12	8	1⅞	1-3	0-10	2-9	5-8	10-4⅝	11-1⅜	9-10	10-7		34-4⅝		127.76	0.3074	6858	34.15	2	
	3	72														41-1⅞		193.32	1.5117	10048	73.77	3	
	4	96														47-10⅛		268.88	1.7161	13520	93.39	4	6x4
	5	120														54-6⅞		324.45	2.1804	16596	113.02	5	
	6	144														61-3⅝		401.17	2.3247	20398	132.64	6	
6x5	2	60	20	7	8	1⅞	1-5	1-2	3-3	6-6	12-4⅝	13-1⅜	11-10	12-7		38-4⅝		181.76	0.9650	7295	60.58	2	
	3	90														45-1⅞		198.66	1.5856	10506	81.06	3	
	4	120														51-10⅛		265.56	1.8087	13845	101.54	4	6x5
	5	150														58-6⅜		332.46	2.2315	17182	122.02	5	
	6	180														65-3⅝		410.52	2.6544	21068	142.49	6	
7x4	2	56	16	12	8½	1⅞	1-3	0-10	2-9	5-8½	10-4⅝	11-1⅜	9-10	10-7		36-5⅜		149.86	1.0540	7878	61.21	2	
	3	84														44-2⅛		227.54	1.3509	11670	84.31	3	
	4	112														51-10⅝		305.20	2.0077	15466	107.41	4	7x4
	5	140														59-3⅛		382.86	2.4846	19417	130.52	5	
	6	168														67-1⅝		472.54	2.9614	23919	153.62	6	

General Notes:
Construction Specifications: Latest Approved La. Dept. of Highway Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 As Amended By Int. Spec. 1964.
Live Load: H.S. 20-44 or Military; Whichever is Greater.
All Concrete To Be Class "A".
All Exposed Corners To Have ¾" Chamfer Unless Otherwise Noted.
Reinforcement Shall Be Billet Steel A.S.T.M. A615 or Rail Steel A.S.T.M. A 616 or Axle Steel A.S.T.M. A 617
Dimensions Relating To Reinforcing Steel Are To Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) Shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-99.

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS SIZE		#6 BARS A		#6 BARS A1		#6 BARS A2					#6 BARS B		#4 BARS C		#4 BARS D	
FEET	NO.	NO.	Length Ft.-In.	Spac. In.	NO.	Length Ft.-In.	Spac. In.	NO.	SHORT BAR Ft.-In.	VAR. Ft.-In.	LONG BAR Ft.-In.	SPAC. In.	NO.	Length Ft.-In.	Spac. In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.
6x4	2	74	14-2	14	38	5-2	14	20	3-0	24.2500	11-9	7	74	14-5½	14	46	47-2	138	5-0
	3	70	20-0	14	168	5-2	14	32	3-0	24.1429	18-3	7	72	21-3	14	68	47-2	184	5-0
	4	68	27-2	14	264	5-2	14	44	3-0	24.1000	24-9	7	68	28-0½	14	90	47-2	230	5-0
	5	64	33-8	14	360	5-2	14	56	3-0	24.1538	31-4	7	66	34-10	14	112	47-2	276	5-0
	6	62	②42-4	14	470	5-2	14	68	3-0	24.1250	37-10	7	62	41-3½	14	134	47-2	322	5-0
6x5	2	74	14-2	14	52	5-2	14	20	3-0	24.2500	11-9	7	74	14-5½	14	49	47-2	138	6-0
	3	70	20-0	14	168	5-2	14	32	3-0	24.1429	18-3	7	72	21-3	14	72	47-2	184	6-0
	4	68	27-2	14	264	5-2	14	44	3-0	24.1000	24-9	7	68	28-0½	14	95	47-2	230	6-0
	5	64	33-8	14	360	5-2	14	56	3-0	24.1538	31-4	7	66	34-10	14	118	47-2	276	6-0
	6	62	②42-4	14	470	5-2	14	68	3-0	24.1250	37-10	7	62	41-3½	14	141	47-2	322	6-0
7x4	2	76	16-2	13	88	5-8	9⅛	28	3-0	24.3333	15-2	6½	78	16-6	13	50	47-2	138	5-1
	3	74	23-8	13	150	5-8	9⅛	40	3-0	24.2222	21-2	6½	76	24-8	13	73	47-2	184	5-1
	4	70	31-2	13	232	5-8	9⅛	56	3-0	24.1500	29-3	6½	70	32-2	15	98	47-2	230	5-1
	5	66	38-8	13	392	5-8	9⅛	72	3-0	24.2333	37-4	6½	66	40-0	13	122	47-2	276	5-1
	6	62	②48-4	13	514	5-8	9⅛	88	3-0	24.2381	②45-5	6½	62	②50-9	13	146	47-2	322	5-1

CURBS AND WINGS REINFORCEMENT

OPENINGS SIZE		#4 BARS E		#4 BARS F		#4 BARS F1		#4 BARS F2		#4 BARS F3		#4 BARS J		#4 BARS J1		#4 BARS O		#4 BARS P		#4 BARS P1		#4 BARS P2		#4 BARS P3		#4 BARS N		#5 BARS M		#5 BARS M1		#6 BARS X
FEET	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.	NO.	Length Ft.-In.
6x4	42	7-6	2	11-1	8	3-0	2	12-1½	8	3-3	10	7-8	10	8-5	42	2-4	6	9-6	4	11-1	6	10-3	4	12-3	28	4-5	4	17-1	6	15-7	20	2-0
																									42	4-5	4	23-10	6	20-4	20	2-0
																									56	4-5	4	30-6	6	27-1	20	2-0
																									68	4-5	4	37-3	6	33-9	20	2-0
																									82	4-5	4	③45-10	6	③42-4	20	2-0
6x5	50	8-8	2	13-1	10	3-0	2	14-1½	10	3-3	12	9-8	12	10-5	50	2-10	6	11-6	4	13-1	6	12-3	4	14-4	28	4-5	4	17-1	6	15-7	24	2-0
																									42	4-5	4	23-10	6	20-4	24	2-0
																									56	4-5	4	30-6	6	27-1	24	2-0
																									68	4-5	4	37-3	6	33-9	24	2-0
																									82	4-5	4	③45-10	6	③42-4	24	2-0
7x4	42	7-6½	2	11-1	8	3-0	2	12-1½	8	3-3	10	7-8	10	8-5	42	2-4	6	9-6	4	11-1	6	10-3	4	12-3	32	4-6	4	18-2	6	16-8	20	2-0
																									48	4-6	4	26-11	6	25-5	20	2-0
																									64	4-6	4	34-8	6	31-2	20	2-0
																									80	4-6	4	④44-4	6	39-0	20	2-0
																									94	4-6	4	⑤52-1	6	⑤46-7	20	2-0

① Includes One 1'-6" Lap Splice ② Incl. One 2'-2" Lap Splice ③ Does Not Include Lap Splice When Bar Length Exceeds 40'-0" Add One 2'-2" Lap Splices ④ Include One 1'-10" Lap Splice ⑤ #6 Bars X To Be ¾" ϕ Smooth & Greased For 1'-0" of Length

NO.	DATE	DESCRIPTION	BY
1-5-18		Rev. Weep Hole Note	W.T.J.
5-30-75		Revised Spill Slope	W.T.J.
2-3-72		Rev. Specifications for Steel	W.E.M.
4-26-67		Axle Steel Added	W.E.M.

REVISIONS

CC·S·M·6-7·R·75°-1

STANDARD PLAN
MULTIPLE OPENINGS
REINF. CONCRETE BOX CULVERT
STRAIGHT WINGS 75° CROSSING
2:1 SPILL SLOPE, NORMAL TO CHANNEL
DATED 2-4-16 6x4' 6x6' 7x4'

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED W.E.M. | DETAILED C.W.J. | TRACED R.G.P.
CHECKED N.K.B. | CHECKED E.M.P. | CHECKED J.F.S.
IN CHARGE OF

FOR INFORMATIONAL USE

7/26/2018 14:19

IP_PWP:dms09544\CCSM6-8R90_1.dgn

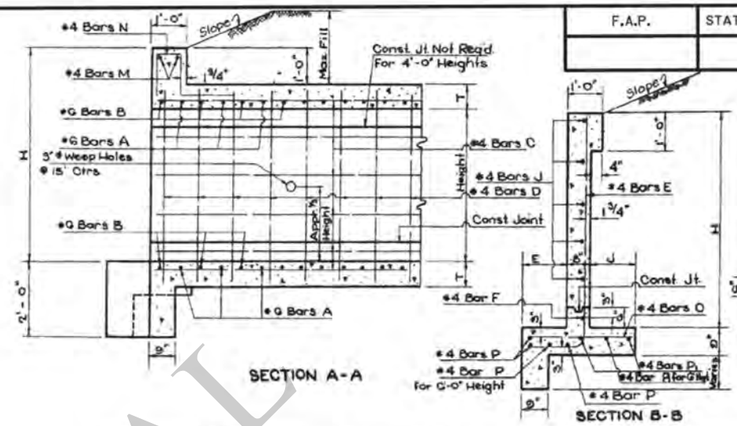
F.A.P.	STATE PROJECT	PARISH	SHEET NO.

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

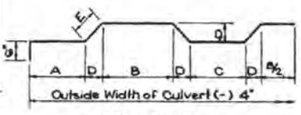
OPENINGS		BARREL														WINGS AND CURBS																									
SIZE	No.	#6 BARS A			#6 BARS A1			#6 BARS B			#4 BARS C		#4 BARS D			#4 BARS E		#4 BARS F		#4 BARS F1		#4 BARS J		#4 BARS M		#4 BARS N		#4 BARS O		#4 BARS P		#4 BARS P1		#6 BARS X					
		No.	Length Ft-In.	Spa In.	No.	Length Ft-In.	Spa In.	No.	Length Ft-In.	Spa In.	No.	Length Ft-In.	No.	Length Ft-In.	Spa In.	No.	Length Ft-In.	No.	Length Ft-In.	No.	Length Ft-In.	No.	Length Ft-In.	No.	Length Ft-In.	No.	Length Ft-In.	No.	Length Ft-In.	No.	Length Ft-In.	No.	Length Ft-In.	No.	Length Ft-In.					
FEET																																								
6x4	2	76	14-2	14	76	5-2	14	60	14-5½	14	46	47-2	136	5-0	12	40	7-6	4	11-3	16	3-2	20	7-8	4	16-7	28	4-11	40	2-4	12	9-6	8	11-2	20	2-0					
	3	76	20-8	14	156	5-2	14	80	21-3	14	98	47-2	184	5-0	12									4	23-1	40	4-11														
	4	76	27-2	14	234	5-2	14	100	28-0½	14	150	47-2	230	5-0	12									4	29-7	54	4-11														
	5	76	33-8	14	312	5-2	14	120	34-10	14	112	47-2	276	5-0	12									4	36-1	66	4-11														
	6	76	③42-4	14	390	5-2	14	140	③43-9½	14	134	47-2	322	5-0	12									4	④44-1	80	4-11														
6x5	2	76	14-2	14	78	5-2	14	60	14-5½	14	49	47-2	138	6-0	12	48	8-8	4	13-3	20	3-2	24	9-8	4	16-7	28	4-11	48	2-10	12	11-6	8	13-2	24	2-0					
	3	76	20-8	14	156	5-2	14	80	21-3	14	72	47-2	184	6-0	12									4	23-1	40	4-11														
	4	76	27-2	14	234	5-2	14	100	28-0½	14	96	47-2	230	6-0	12									4	29-7	54	4-11														
	5	76	33-8	14	312	5-2	14	120	34-10	14	118	47-2	276	6-0	12									4	36-1	66	4-11														
	6	76	③42-4	14	390	5-2	14	140	③43-9½	14	141	47-2	322	6-0	12									4	④44-1	80	4-11														
7x4	2	84	16-2	13	84	5-8	13	60	16-6	13	50	47-2	136	5-1	12	40	7-6½	4	11-3	16	3-2	20	7-8	4	18-7	32	5-0	40	2-4	12	9-6	8	11-2	20	2-0					
	3	84	23-8	13	168	5-8	13	86	24-4	13	74	47-2	184	5-1	12									4	26-1	48	5-0														
	4	84	31-2	13	252	5-8	13	86	32-2	13	98	47-2	230	5-1	12									4	33-7	62	5-0														
	5	84	38-8	13	336	5-8	13	86	40-0	13	122	47-2	276	5-1	12									4	③42-7	78	5-0														
	6	84	③46-4	13	420	5-8	13	86	③50-0	13	146	47-2	322	5-1	12									4	③50-1	92	5-0														
7x5	2	84	16-2	13	84	5-8	13	86	16-6	13	53	47-2	136	6-1	12	48	8-8½	4	13-3	20	3-2	24	9-8	4	18-7	32	5-0	48	2-10	12	11-6	8	13-2	24	2-0					
	3	84	23-8	13	168	5-8	13	86	24-4	13	78	47-2	184	6-1	12									4	26-1	48	5-0														
	4	84	31-2	13	252	5-8	13	86	32-2	13	103	47-2	230	6-1	12									4	33-7	62	5-0														
	5	84	38-8	13	336	5-8	13	86	40-0	13	128	47-2	276	6-1	12									4	③42-7	78	6-0														
	6	84	③46-4	13	420	5-8	13	86	③50-0	13	153	47-2	322	6-1	12									4	③50-1	86	6-0														
7x6	2	84	16-2	13	84	5-8	13	86	16-6	13	56	47-2	136	7-1	10	56	9-10½	4	15-3	24	3-2	28	11-8	4	18-7	32	5-0	56	3-4	16	13-6	12	15-2	28	2-0					
	3	84	23-8	13	168	5-8	13	86	24-4	13	82	47-2	224	7-1	10									4	26-1	48	5-0														
	4	84	31-2	13	252	5-8	13	86	32-2	13	106	47-2	280	7-1	10									4	33-7	62	5-0														
	5	84	38-8	13	336	5-8	13	86	40-0	13	134	47-2	336	7-1	10									4	③42-7	78	5-0														
	6	84	③46-4	13	420	5-8	13	86	③50-0	13	160	47-2	392	7-1	10									4	③50-1	92	5-0														
8x5	2	92	18-5	12	92	6-2	12	92	18-9¼	12	57	47-2	138	6-2	12	48	8-9	4	13-4	20	3-3	24	9-8	4	20-10	36	5-1	48	2-10	12	11-6	8	13-2	24	2-0					
	3	92	27-0	12	164	6-2	12	92	27-8½	12	84	47-2	184	6-2	12									4	29-5	54	5-1														
	4	92	35-7	12	276	6-2	12	92	36-7¾	12	111	47-2	230	6-2	12									4	38-0	72	5-1														
	5	92	③46-4	12	368	6-2	12	92	③47-9	12	138	47-2	276	6-2	12									4	③48-1	88	5-1														
	6	92	③54-11	12	460	6-2	12	92	③56-8¼	12	165	47-2	322	6-2	12									4	③56-8	106	5-1														
8x6	2	92	18-5	12	92	6-2	12	92	18-9¼	12	60	47-2	138	7-2	12	56	9-11	4	15-4	24	3-3	28	11-8	4	20-10	36	5-1	56	3-4	16	13-6	12	15-2	28	2-0					
	3	92	27-0	12	164	6-2	12	92	27-8½	12	88	47-2	184	7-2	12									4	29-5	54	5-1														
	4	92	35-7	12	276	6-2	12	92	36-7¾	12	116	47-2	230	7-2	12									4	38-0	72	5-1														
	5	92	③46-4	12	368	6-2	12	92	③47-9	12	144	47-2	276	7-2	12									4	③48-1	88	5-1														
	6	92	③54-11	12	460	6-2	12	92	③56-8¼	12	172	47-2	322	7-2	12									4	③56-8	106	5-1														

① Includes One 1'-6" Lap Splice. ② Includes One 2'-2" Lap Splice. ③ #6 Bars 'X' to be ¾" ⌀ Smooth & Greased for 1'-0" of Length.

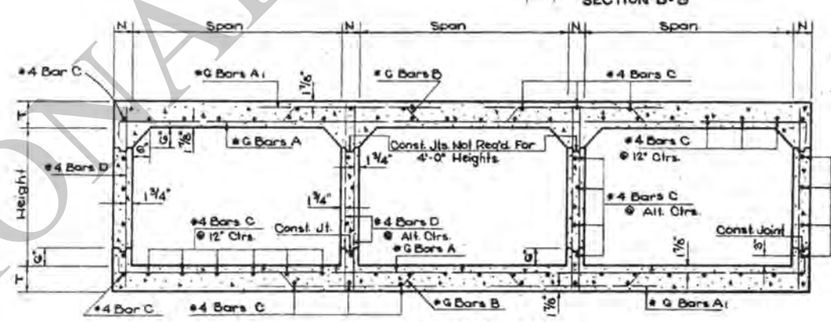
DIMENSIONS													QUANTITIES				
OPENINGS			MAX. FILL	BARREL		WINGS AND CURBS							PER LIN FOOT OF BARREL		44'-0" CULVERT		OPENINGS
SIZE	No.	AREA	SLAB	WALL	T	N	E	J	G	H	L	P	M	STEEL	CONCRETE	STEEL	CONCRETE	No.	SIZE
FEET		Sq Ft	Feet	Feet	In.	In.	Ft-In	Ft-In	Ft-In	Ft-In	Ft-In	Ft-In	Ft-In	Pounds	Cu. Yds.	Pounds	Cu. Yds.		Feet
6x4	2	48	16	20	12	8	6	1-3	10	2-9	5-8	10-4	9-10	33-2	127.76	0.9074	6674	53.64	2	6x4
	3	72												39-8	185.32	1.3117	9760	73.20	3	
	4	96												46-2	258.88	1.7161	12,653	92.77	4	
	5	120												52-8	324.45	2.1204	15,940	112.33	5	
	6	144												59-2	401.17	2.5247	19,551	131.89	6	
6x5	2	60	15	20	7	8	6	1-5	1-2	3-3	6-8	12-4	11-10	37-2	151.76	0.9030	7072	60.02	2	6x5
	3	90												43-8	198.66	1.3858	10,220	80.43	3	
	4	120												50-2	265.56	1.8067	13,376	100.84	4	
	5	150												56-8	332.46	2.2315	16,524	121.26	5	
	6	180												63-2	410.52	2.6544	20,196	141.67	6	
7x4	2	56	12	16	12	8½	6	1-3	10	2-9	5-8½	10-4	9-10	35-2	149.88	1.0540	7713	60.69	2	7x4
	3	84												42-8	227.54	1.5309	11,372	83.72	3	
	4	112												50-2	305.20	2.0077	15,024	106.75	4	
	5	140												57-8	382.86	2.4846	18,687	129.76	5	
	6	168												65-2	472.54	2.9614	22,892	152.80	6	
7x5	2	70	12	16	7	8½	6	1-5	1-2	3-3	6-8½	12-4	11-10	39-2	153.69	1.1096	8111	67.07	2	7x5
	3	105												46-8	232.88	1.6049	11,832	90.95	3	
	4	140												54-2	311.58	2.1003	15,546	114.83	4	
	5	175												61-8	390.88	2.5957	19,272	138.71	5	
	6	210												69-2	481.69	3.0910	23,530	162.59	6	
7x6	2	84	11	16	5	8½	6	1-7	1-6	3-9	7-8½	14-4	13-10	43-2	190.74	1.1651	8,756	74.07	2	7x6
	5	126												50-2	242.02	1.6790	12,566	98.80	3	
	4	168												56-2	325.29	2.1929	16,410	123.53	4	
	5	210												65-8	404.57	2.7068	20,245	148.27	5	
	6	252												73-2	487.86	3.2207	24,622	173.00	6	
8x5	2	80	10	14	9	9	7	1-5	1-2	3-3	6-9	12-5	11-10	41-5	180.67	1.3267	9973	77.46	2	8x5
	3	120												50-0	273.96	1.9226	13,771	106.05	3	
	4	160												58-7	367.30	2.5170	18,165	134.61	4	
	5	200												67-2	473.03	3.1111	23,162	163.17	5	
	6	240												75-9	586.94	3.7053	27,558	191.73	6	
8x6	2	96	9	13	5	9	7	1-7	1-6	3-9	7-9	14-5	13-10	45-8	184.66	1.3935	9,677	84.92	2	8x6
	3	144												54-0	279.33	2.0092	14,566	114.47	3	
	4	192												62-7	373.96	2.9250	18,766	144.03	4	
	5	240												71-2	481.64	3.2407	23,652	173.59	5	
	6	288												79-8	579.29	3.8565	28,312	203.14	6	

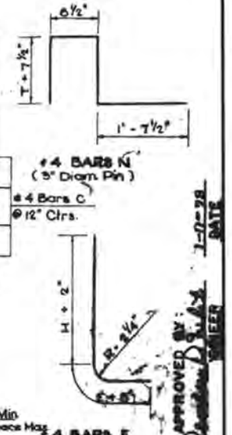


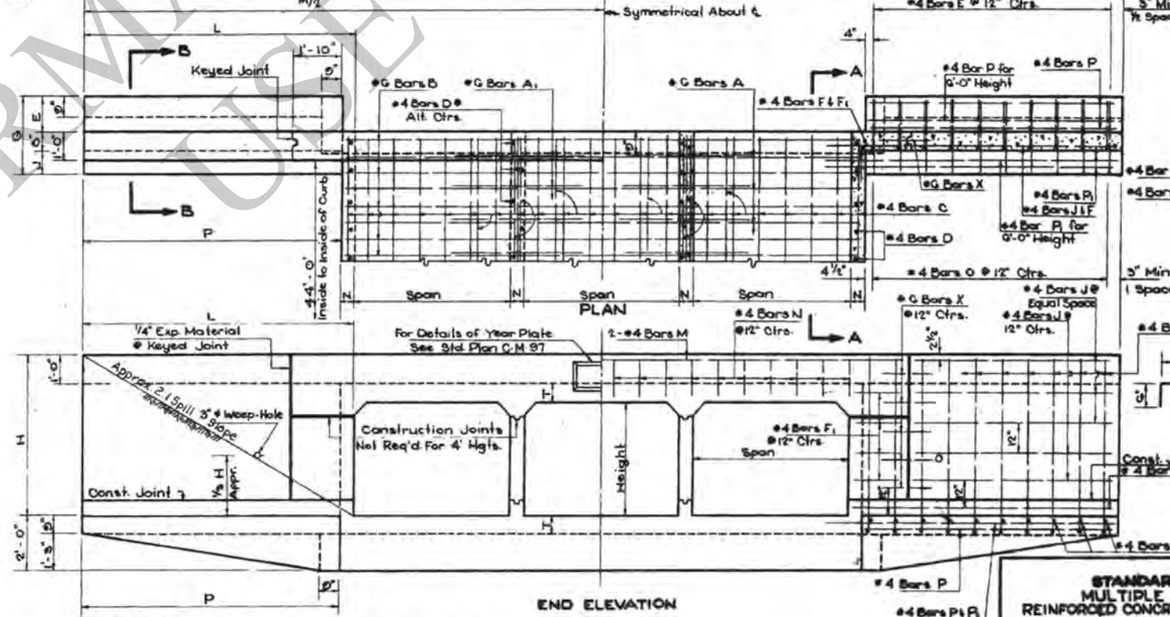
DIMENSION FOR BARS B					
SPAN	A	B	C	D	E
6'-0"	4'-7⅞"	3'-1¾"	2'-7¾"	4¼"	6"
7'-0"	5'-4⅝"	3'-7¼"	3'-1¼"	4¾"	6¾"
8'-0"	6'-2⅜"	4'-1⅝"	3'-6¾"	5¼"	7⅜"



#6 BARS B (4½" Diam. Pin)







#4 BARS E

#4 Bar F	L - 4½"
#4 Bars F1	L - 4½" + N

#4 BARS F & F1 (5" Diam. Pin)

C.C.S.M. 6-8-R-90°-1

GENERAL NOTES:
Construction Specifications: Latest Approved La. Dept of Highways Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 as amended by Int. Spec. 1964
Live Load H S 20-44 or Military Loading, whichever is greater.
All Concrete to be Class 'A'.
All Exposed Corners to Have ¾" Chamfer, Unless Otherwise Noted.
Reinforcement Shall be Billet A.S.T.M. A 615 or Rail Steel A.S.T.M. A 616 or Axle Steel A.S.T.M. A 617
Dimensions Relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) Shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-48.

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 2:1 SPILL SLOPE
6x4, 6x5, 7x4, 7x5, 7x6, 8x5 & 8x6

DATED July 1, 1964

REVISIONS			
1-1-65	Title, W.S.& Slope, Notes		
1-1-66	Title, Spacing Differential		
6-1-67	Bar Designations to Steel		
7-1-67	Added Side Bars		
12-1-67	Bar Designations Stirrups		
DATE	DESCRIPTION	BY	

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED	M.E. Morrison	APPROVED	Earl J. Rhodes
CHECKED	M.E. Brown	CHECKED	L. Broussard
CHECKED		CHECKED	
IN CHARGE OF			

INFORMATIONAL USE

F.A.P.	STATE PROJECT	PARISH	SHEET NO.

5/21/2018 08:50

SECTION B-B

SECTION C-C

PLAN

END ELEVATION

SECTION THRU BARREL

SECTION A-A

6 BARS B

DIMENSION FOR BARS B							
Span	Dim. Pin	A	B	C	D	E
7'-0"	4½"	5'-4⅜"	3'-7¼"	3'-1⅛"	4 ¾"	6 ¾"
8'-0"	4½"	6'-2⅜"	4'-1¾"	3'-6¾"	5¼"	7 ⅞"

DIMENSIONS																QUANTITIES			
OPENINGS			MAX. FILL		BARREL		WINGS AND CURBS									PER LIN. FT. OF BARREL		60'-0" CULVERT	
SIZE	№	AREA	SLABS	WALLS	T	N	E	J	G	H	L	L_1	P	P_1	M	STEEL	CONCRETE	STEEL	CONCRETE
Feet		Sq. Ft	Feet	Feet	In.	In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Pounds	Cu. Yds.	Pounds	Cu. Yds.
7x5	2	70	12												50-8½	153.89	1.1096	11104	89.63
	3	105													61-4½	232.85	1.6040	16637	122.30
	4	140	16	7	8½	6	1-5	1-2	3-3	6-8½	12-8½	17-6½	12-0	16-10	71-1	311.86	2.1003	22295	154.87
	5	175													86-6	390.86	2.8957	28225	187.64
	6	210													98-2½	461.89	3.0010	34724	220.31
7xG	2	84	11												55-8½	160.74	1.1681	12080	96.56
	3	126													66-3½	242.02	1.6700	17610	132.80
	4	168	16	5	8½	6	1-7	1-6	3-9	7-8½	14-8½	20-5½	14-0	19- 9	76-10½	323.95	2.1929	23416	166.92
	5	210													87-5½	404.57	2.7065	29487	200.06
	6	252													96-1½	497.86	3.2707	35135	233.89
8x5	2	80	10												53-11½	160.67	1.3287	12058	103.86
	3	120													66-0½	273.06	1.9228	19580	142.93
	4	160	14	9	9	7	1-5	1-2	3-3	6-9	12-9⅞	17-7⅞	12-0	16-10	78-6½	367.30	2.5170	26203	182.00
	5	200													90-4½	473.63	3.1111	33717	221.07
	6	240													102-5½	566.04	3.7053	41227	260.14
8xG	2	96	9												56 9½	184.68	1.3955	13576	113.33
	3	144													70-10½	279.33	2.0092	20114	153.75
	4	192	13	5	9	7	1-7	1-6	3-9	7-9	14-9⅞	20-5⅞	14-0	19- 8	83-0½	373.96	2.6250	27003	194.18
	5	240													95-1½	461.64	3.2407	34612	234.61
	6	288													107-5½	576.20	3.8565	42207	275.04

BILL OF REINFORCING STEEL FOR 60'-0" CULVERT

BARREL REINFORCEMENT

OPENING		#G BARS A		#G BARS A_1		#G BARS A_2			#G BARS D		#4 BARS C		#4 BARS D	
Size	№	№	Length	Spac.	№	Length	Spac.	№	Staff Bar	Var.	Long Bar	Spac.	№	Length	Spac.	№	Length	Spac.	№	Length
Feet			Ft.-In.	In.		Ft.-In.	In.		Ft.-In.	In.	Ft.-In.	In.		Ft.-In.	In.		Ft.-In.	In.		Ft.-In.
7 x 5	2	86	16- 2	13	122	5-8	⑮13	104	2-1	G.6500	15- 7	G½	88	16- 6	13	53	G3-10	189	G-1	12
	3	74	23- 8	13	908	5-8	⑮13	156	2-1	G.6500	22- 8	G½	76	24- 4	13	78	G3-10	252	G-1	12
	4	60	31- 2	13	448	5-8	⑮13	210	2-1	G.6500	30- 3	G½	60	32- 2	13	103	G3-10	315	G-1	12
	5	46	38- 8	13	656	5-8	⑮13	263	2-1	G.6500	37-10	G½	46	40- 0	13	128	G3-10	378	G-1	12
	6	32	⑤48- 4	13	892	5-8	⑮13	324	2-1	G.6500	⑤ 5- 5	G½	32	⑤50- 0	13	153	G3-10	441	G-1	12
7xG	2	86	16- 2	13	122	5-8	⑮13	104	2-1	G.6800	15- 7	G⅝	88	16- 6	13	53	G3-10	228	7-1	10
	3	74	23- 8	13	908	5-8	⑮13	156	2-1	G.6800	22- 8	G⅝	76	24- 4	13	78	G3-10	304	7-1	10
	4	60	31- 2	13	448	5-8	⑮13	210	2-1	G.6800	30- 3	G⅝	60	32- 2	13	103	G3-10	380	7-1	10
	5	46	38- 8	13	656	5-8	⑮13	263	2-1	G.6800	37-10	G⅝	46	40- 0	13	128	G3-10	456	7-1	10
	6	32	⑤48- 4	13	892	5-8	⑮13	324	2-1	G.6800	⑤ 5- 5	G⅝	32	⑤50- 0	13	153	G3-10	532	7-1	10
8 x 5	2	90	18- 5	12	134	G-2	⑫12	108	2-2	G.6000	17- 8	G	90	18- 6	12	57	G3-10	169	G-2	12
	3	72	27- 0	12	500	G-2	⑫12	156	2-2	G.6000	26- 9	G	74	27- 8½	12	84	G3-10	252	G-2	12
	4	56	35- 7	12	584	G-2	⑫12	204	2-2	G.6000	34- 6	G	58	36-7½	12	111	G3-10	315	G-2	12
	5	40	⑤46- 4	12	744	G-2	⑫12	332	2-2	G.6000	⑤43- 0	G	40	⑤47- 0	12	138	G3-10	378	G-2	12
	6	20	⑤54-11	12	1020	G-2	⑫12	404	2-2	G.6000	⑤52- 1	G	22	⑤56-6½	12	165	G5-10	441	G-2	12
8 x G	2	90	18- 5	12	134	G-2	⑫12	108	2-2	G.6000	17- 8	G	90	18- 6	12	60	G3-10	169	7-2	12
	3	72	27- 0	12	500	G-2	⑫12	156	2-2	G.6000	26- 9	G	74	27- 8½	12	88	G3-10	252	7-2	12
	4	56	35- 7	12	584	G-2	⑫12	204	2-2	G.6000	34- 6	G	58	36-7½	12	116	G3-10	315	7-2	12
	5	40	⑤46- 4	12	744	G-2	⑫12	332	2-2	G.6000	⑤43- 0	G	40	⑤47- 0	12	144	G3-10	378	7-2	12
	6	20	⑤54-11	12	1020	G-2	⑫12	404	2-2	G.6000	⑤52- 1	G	22	⑤56-6½	12	172	G5-10	441	7-2	12

CURBS AND WINGS REINFORCEMENT

OPENING		#4 BARS E		#4 BARS F		#4 BARS F_1		#4 BARS F_2		#4 BARS F_3		#4 BARS J		#4 BARS O		#4 BARS P		#4 BARS P_1		#4 BARS P_2		#4 BARS P_3		#4 BARS N		#G BARS M		#G BARS M_1		#G BARS X	
Size	№	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length
Feet			Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.
7 x 5	58	8- 8½	2	13-0	10	3-2	2	18-10	10	3-9	12	9-5	12	14-8	58	2-10	6	11-8	4	12-10	6	16-6	4	19- 9	44	4-6	4	95- 5	C	21- 5	24	2-0
																									64	4-6	4	36- 1	C	32- 0	24	2-0
																									86	4-6	4	@48-10	C	@44-10	24	2-0
																									106	4-6	4	@50- 5	C	@55- 5	24	2-0
																									126	4-6	4	@70- 0	C	@66- 0	24	2-0
7xG	68	9-10½	2	15-0	12	3-2	2	21- 9	12	3-9	14	11-5	14	17-7	68	3- 4	8	13-8	6	14-10	8	19-5	6	23- 0	44	4-6	4	95- 5	C	21- 5	28	2-0
																									64	4-6	4	36- 1	C	32- 0	28	2-0
																									86	4-6	4	@48-10	C	@44-10	28	2-0
																									106	4-6	4	@50- 5	C	@55- 5	28	2-0
																									126	4-6	4	@70- 0	C	@66- 0	28	2-0
8 x 5	58	8- 9	2	13-2	10	3-3½	2	19- 0	10	3-10½	12	9-5	12	14-8	58	2-10	6	11-8	4	12-10	6	16-6	4	19- 9	50	4-7	4	28- 8	C	24- 7	24	2-0
																									76	4-7	4	@42-11	C	36- 9	24	2-0
																									98	4-7	4	@55- 1	C	@51- 1	24	2-0
																									122	4-7	4	@67- 2	C	@63- 2	24	2-0
																									146	4-7	4	@79- 4	C	@75- 4	24	2-0
8 x G	68	9-11	2	15-2	12	3-3½	2	21-10	12	3-10½	14	11-5	14	17-6	68	3- 4	8	13-8	6	14-10	8	19-4	6	22-11	50	4-7	4	28- 8	C	24- 7	28	2-0
																									76	4-7	4	@42-11	C	36- 9	28	2-0
																									98	4-7	4	@55- 1	C	@51- 1	28	2-0
																									122	4-7	4	@67- 2	C	@63- 2	28	2-0
																									146	4-7	4	@79- 4	C	@75- 4	28	2-0

① Includes one 1'-6" Lap Splice ② Includes one 2'-2" Lap Splice ③ Does not include Lap Splice. When Bar length exceeds 40'-0" add one 2'-2" Lap Splice. Ⓐ #G Bars X to be ¾" ϕ Smooth and Greased For 1'-0" Length

#4 BARS F_2 & F_3 (3" Diam Pin)

#4 BARS F & F_1 (3" Diam Pin)

#4 BARS E

#4 BARS N (5" Diam. Pin)

#6 BARS A (4½" Diam. Pin)

#6 BARS A_2 (4½" Diam. Pin)

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Latest Approved La. Dept. of Hwy. Standard Specifications.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1961 as amended by INT. SPECIFICATIONS 1964.
LIVE LOAD: HS 20-44 or Military; Whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have ¾" Chamfer, Unless Otherwise Noted.
Reinforcement Bars shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.
Dimensions Relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) Shall be Placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M. - 49.

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERT
STRAIGHT WINGS 45° SKEW
2:1 SPILL SLOPE NORMAL TO CHANNEL
7'X5' 7'X6' 8'X5' 8'X6'

DATED JANUARY 20, 1966

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
5-30-79	Revised Spill Slopes	W.T.J.
6-8-92	Rev. Gen. Notes For Steel	W.E.M.
5-2-01	Added Axle Steel	W.E.M.

REVISIONS

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED W.E.M.	DETAILED EARL MARTEL	TRACED T. WILLIAMS
CHECKED N.K.B.	CHECKED W.E. MARCUM	CHECKED W.E. Marcum
IN CHARGE OF		

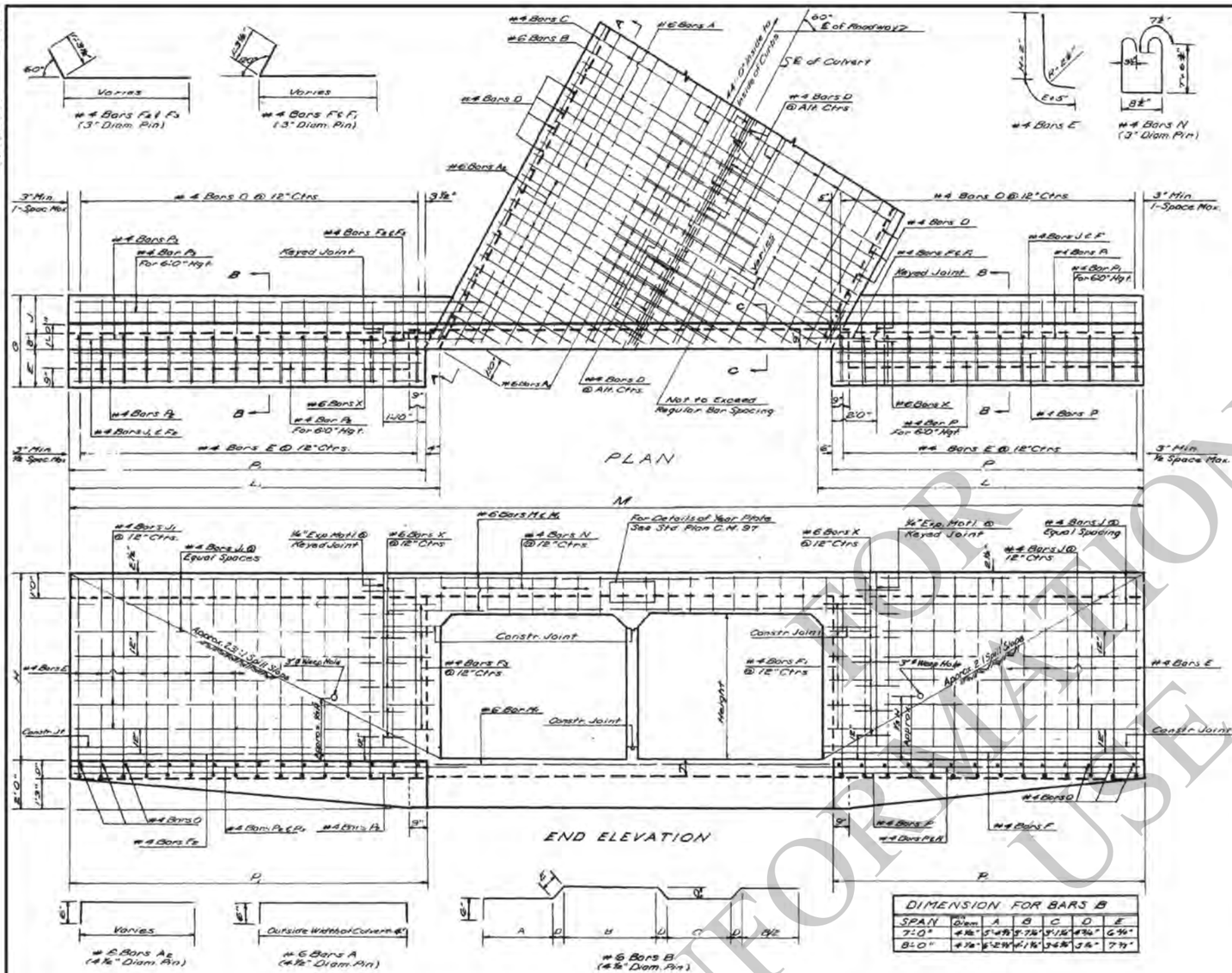
APPROVED BY: Thomas D. Wallace, CHIEF ENGINEER — DATE 1-11-78

CG-S-M-7-8-R-45-1

FOR INFORMATIONAL USE

IP_PWP:dms09544\CCSM7-8R45_1.dgn

F.A.P.	STATE PROJECT	PARISH	SHEET NO.



DIMENSIONS

OPENINGS SIZE FEET	NO.	AREA SQ. FT.	MAX. FILL SLAB FEET	MAX. FILL WALL FEET	BARREL T IN.	BARREL N IN.	WINGS AND CURBS E FT-IN	J FT-IN	G FT-IN	H FT-IN	L FT-IN	L1 FT-IN	P FT-IN	P1 FT-IN	M FT-IN	QUANTITIES PER LIN. FT. OF BARREL STEEL LBS.	CONC. CU. YDS.	44'-0" CULVERT (ALONG ℄) STEEL LBS.	CONC. CU. YDS.	OPENINGS NO.	OPENINGS SIZE FEET
7'x5'	2	70	12		8½	6	1'-5	1'-2	3'-3	6'-8½	12'-4⅝	14'-3⅝	11'-10	13'-9	13'-3½	153.89	1.1096	8,461	60.96	2	7'x5'
	3	105													32'-1¼	292.89	1.6049	12,868	93.06	3	
	4	140	16	7											60'-9½	311.88	2.1003	16,387	113.26	4	
	5	175													89'-3⅞	390.88	2.3957	20,876	141.47	5	
	6	210													78'-1¾	481.89	3.0310	25,583	165.61	6	
7'x6'	2	84	11												47'-6½	160.74	1.1651	9,122	76.07	2	7'x6'
	3	126													56'-2⅛	242.02	1.6790	13,234	101.14	3	
	4	168	16	5	8½	6	1'-7	1'-6	3'-9	7'-8½	14'-4⅝	16'-4⅜	13'-10	15'-10	64'-10½	323.29	1.1923	17,404	126.20	4	
	5	210													73'-6⅞	404.57	2.7068	21,868	151.26	5	
	6	252													82'-3⅜	497.86	3.2207	26,683	176.32	6	
8'x5'	2	80	10												46'-0¼	180.67	1.3287	9,754	79.39	2	8'x5'
	3	120													55'-11⅜	273.96	1.9228	14,476	108.33	3	
	4	160	14	3	8	7	1'-5	1'-2	3'-3	6'-9	12'-6½	14'-3½	11'-10	13'-9	65'-10½	367.30	2.5170	19,407	137.86	4	
	5	200													75'-9⅞	473.63	3.1111	24,857	166.80	5	
	6	240													85'-8¼	574.94	3.7059	30,800	195.13	6	
8'x6'	2	96	9												52'-1⅝	184.68	1.3935	10,293	87.04	2	8'x6'
	3	144													60'-0⅞	279.33	2.0092	15,057	116.98	3	
	4	192	13	5	9	7	1'-7	1'-6	3'-9	7'-9	14'-6⅝	16'-6⅞	13'-10	15'-10	69'-11⅝	373.98	2.6250	20,051	146.92	4	
	5	240													78'-10⅜	481.64	3.2401	25,364	176.85	5	
	6	288													88'-3½	576.29	3.8565	30,969	206.79	6	

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS SIZE FEET	NO.	#6 BARS A NO.	#6 BARS A LENGTH FT-IN	#6 BARS A Spc. IN	#6 BARS A1 NO.	#6 BARS A1 LENGTH FT-IN	#6 BARS A1 Spc. IN	#6 BARS A2 NO.	#6 BARS A2 UNDRP BAR FT-IN	#6 BARS A2 Van FT-IN	#6 BARS A2 LONG BAR FT-IN	#6 BARS A2 Spc. IN	#6 BARS B NO.	#6 BARS B LENGTH FT-IN	#6 BARS B Spc. IN	#4 BAR C NO.	#4 BAR C LENGTH FT-IN	#4 BARS D NO.	#4 BARS D LENGTH FT-IN
7'x5'	2	68	16'-2	13	88	5'-8	6½ in 9¾	60	2'-3	11'-2¼	13'-4	6¾	70	16'-6	13	53	47'-5	138	5'-1
	3	60	23'-8	13	132	5'-8	6½ in 9¾	90	2'-3	11'-2¼	22'-10	6¾	62	24'-4	13	78	47'-5	184	6'-1
	4	52	31'-2	13	176	5'-8	6½ in 9¾	120	2'-3	11'-2¼	30'-4	6¾	54	32'-2	13	103	47'-5	230	6'-1
	5	44	38'-8	13	220	5'-8	6½ in 9¾	150	2'-3	11'-2¼	37'-10	6¾	46	40'-0	13	128	47'-5	276	6'-1
	6	36	②48'-4	13	264	5'-8	6½ in 9¾	180	2'-3	11'-2¼	②45'-4	6¾	38	③50'-0	13	153	47'-5	322	6'-1
7'x6'	2	68	16'-2	13	88	5'-8	6½ in 9¾	60	2'-3	11'-2¼	15'-4	6¾	70	16'-6	13	53	47'-5	148	7'-1
	3	60	23'-8	13	132	5'-8	6½ in 9¾	90	2'-3	11'-2¼	22'-10	6¾	62	24'-4	13	78	47'-5	204	7'-1
	4	52	31'-2	13	176	5'-8	6½ in 9¾	120	2'-3	11'-2¼	30'-4	6¾	54	32'-2	13	103	47'-5	260	7'-1
	5	44	38'-8	13	220	5'-8	6½ in 9¾	150	2'-3	11'-2¼	37'-10	6¾	46	40'-0	13	128	47'-5	316	7'-1
	6	36	②48'-4	13	264	5'-8	6½ in 9¾	180	2'-3	11'-2¼	②45'-4	6¾	38	③50'-0	13	153	47'-5	372	7'-1
8'x5'	2	80	18'-5	12	98	6'-2	6 in 9¾	70	2'-4	10.3889	17'-11	6	72	18'-9¼	12	57	47'-5	138	6'-2
	3	62	27'-0	12	148	6'-2	6 in 9¾	112	2'-4	10.3704	25'-8	6	64	27'-0½	12	84	47'-5	194	6'-2
	4	52	35'-7	12	198	6'-2	6 in 9¾	152	2'-4	10.3783	34'-4	6	54	36'-7¾	12	111	47'-5	250	6'-2
	5	42	②46'-4	12	244	6'-2	6 in 9¾	192	2'-4	10.3830	②43'-0	6	44	③47'-9	12	138	47'-5	306	6'-2
	6	32	②54'-11	12	290	6'-2	6 in 9¾	232	2'-4	10.3966	②51'-8	6	34	③55'-0½	12	165	47'-5	362	6'-2
8'x6'	2	70	18'-5	12	98	6'-2	6 in 9¾	76	2'-4	10.3889	17'-11	6	72	18'-9¼	12	60	47'-5	138	7'-2
	3	66	27'-0	12	148	6'-2	6 in 9¾	112	2'-4	10.3704	25'-8	6	64	27'-0½	12	88	47'-5	194	7'-2
	4	52	35'-7	12	198	6'-2	6 in 9¾	152	2'-4	10.3783	34'-4	6	54	36'-7¾	12	116	47'-5	250	7'-2
	5	42	②46'-4	12	244	6'-2	6 in 9¾	192	2'-4	10.3830	②43'-0	6	44	③47'-9	12	144	47'-5	306	7'-2
	6	34	②54'-11	12	290	6'-2	6 in 9¾	232	2'-4	10.3966	②51'-8	6	34	③55'-0½	12	172	47'-5	362	7'-2

WINGS AND CURBS REINFORCEMENT

OPENINGS SIZE FEET	NO.	#6 BARS E NO.	#6 BARS E LENGTH FT-IN	#4 BARS F NO.	#4 BARS F LENGTH FT-IN	#4 BARS F1 NO.	#4 BARS F1 LENGTH FT-IN	#4 BARS F2 NO.	#4 BARS F2 LENGTH FT-IN	#4 BARS F3 NO.	#4 BARS F3 LENGTH FT-IN	#4 BARS J NO.	#4 BARS J LENGTH FT-IN	#4 BARS J1 NO.	#4 BARS J1 LENGTH FT-IN	#4 BARS O NO.	#4 BARS O LENGTH FT-IN	#4 BARS P NO.	#4 BARS P LENGTH FT-IN	#4 BARS P1 NO.	#4 BARS P1 LENGTH FT-IN	#4 BARS P5 NO.	#4 BARS P5 LENGTH FT-IN	#4 BARS P6 NO.	#4 BARS P6 LENGTH FT-IN	#4 BARS N NO.	#4 BARS N LENGTH FT-IN	#6 BARS M NO.	#6 BARS M FT-IN	#6 BARS M1 NO.	#6 BARS M1 FT-IN	#6 BARS X NO.	#6 BARS X LENGTH FT-IN
7'x5'	2	52	8'-8½	2	13'-0	10	3'-1	2	13'-6	10	3'-6	12	9'-6	12	11'-7	32	2'-10	6	11'-6	4	12'-11	6	13'-5	4	16'-0	36	4'-6	4	21'-2	6	17'-6	24	2'-0
	3																									54	4'-6	4	29'-10	6	26'-2	24	2'-0
	4																									70	4'-6	4	38'-6	6	34'-10	24	2'-0
	5																									88	4'-6	4	②49'-4	6	②45'-8	24	2'-0
	6																									106	4'-6	4	③59'-0	6	③54'-4	24	2'-0
7'x6'	2	60	9'-10½	2	15'-0	12	3'-1	2	17'-7	12	3'-6	14	11'-6	14	13'-8	60	3'-4	8	13'-6	6	14'-11	8	15'-6	6	18'-3	36	4'-6	4	21'-2	6	17'-6	28	2'-0
	3																									54	4'-6	4	29'-10	6	26'-2	28	2'-0
	4																									70	4'-6	4	38'-6	6	34'-10	28	2'-0
	5																									88	4'-6	4	②49'-4	6	②45'-8	28	2'-0
	6																									106	4'-6	4	③59'-0	6	③54'-4	28	2'-0
8'x5'	2	52	8'-8½	2	13'-1	10	3'-2	2	15'-7	10	3'-7	12	9'-6	12	11'-7	52	2'-10	6	11'-6	4	12'-11	6	13'-5	4	16'-0	40	4'-7	4	23'-3	6	20'-2	24	2'-0
	3																									60	4'-7	4	33'-8	6	30'-0	24	2'-0
	4																									80	4'-7	4	②45'-9	6	39'-11	24	2'-0
	5																									100	4'-7	4	③55'-8	6	③52'-0	24	2'-0
	6																									120	4'-7	4	③65'-7	6	③61'-11	24	2'-0
8'x6'	2	60	9'-11	2	15'-1	12	3'-2	2	17'-8	12	3'-7	14	11'-6	14	13'-8	60	3'-4	8	13'-6	6	14'-11	8	15'-6	6	18'-3	40	4'-7	4	23'-3	6	20'-2	28	2'-0
	3																									60	4'-7	4	33'-8	6	30'-0	28	2'-0
	4																									80	4'-7	4	②45'-9	6	39'-11	28	2'-0
	5																									100	4'-7	4	③55'-8	6	③52'-0	28	2'-0
	6																									120	4'-7	4	③65'-7	6	③61'-11	28	2'-0

② INCLUDES ONE 1:6 LAP SPLICE. ② INCLUDES ONE 8'-2" LAP SPLICE. ③ DOES NOT INCLUDE LAP SPLICE, WHEN LENGTH OF BAR EXCEEDS 40'-0", ADD 2'-2" LAP SPLICE. Ⓐ #6 BARS "X" TO BE 3¼" ø SMOOTH AND GREASED FOR 1'-10" OF LENGTH.

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: LATEST APPROVED LA. DEPT OF HIGHWAYS STANDARD SPECIFICATIONS.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1961 AS AMENDED BY INT. SPEC. 1964
LIVE LOAD: H.S. 20-44 OR MILITARY, WHICHEVER IS GREATER.
ALL CONCRETE TO BE CLASS "A".
ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER, UNLESS OTHERWISE NOTED.
REINFORCEMENT SHALL BE BILLET STEEL, A.S.T.M. A-615
OR RAIL STEEL A.S.T.M. A-616 OR AXLE STEEL A.S.T.M. A-617.
DIMENSIONS RELATING TO REINFORCING STEEL ARE TO BAR CENTERS.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with the rate bank at each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M. - 98.

APPROVED BY:
Dempsey D. Stelly 1-5-78
CHIEF ENGINEER DATE

CC·S·M·7-8·R·60°-1

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERT
STRAIGHT WINGS 60° CROSSING
7'x5' 7'x6' 8'x5' 8'x6'

DATED May 26, 1965

NO.	DESCRIPTION	BY
1-5-78	Rev. Weep Hole Note	W.T.J.
2-20-75	Rev. Slope Intercept	W.T.J.
4-6-72	Rev. Gen. Notes For Steel	W.E.M.
9-2-21	Added A-16 Sheet	W.E.M.

REVISIONS

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED Marcum	DETAILED E. Martel	TRACED J. Durnin
CHECKED Brown	CHECKED Brown	CHECKED A.F. Berg
IN CHARGE OF		

FOR INFORMATIONAL USE

9/5/2018 11:22
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28-NOV-2007 09:59
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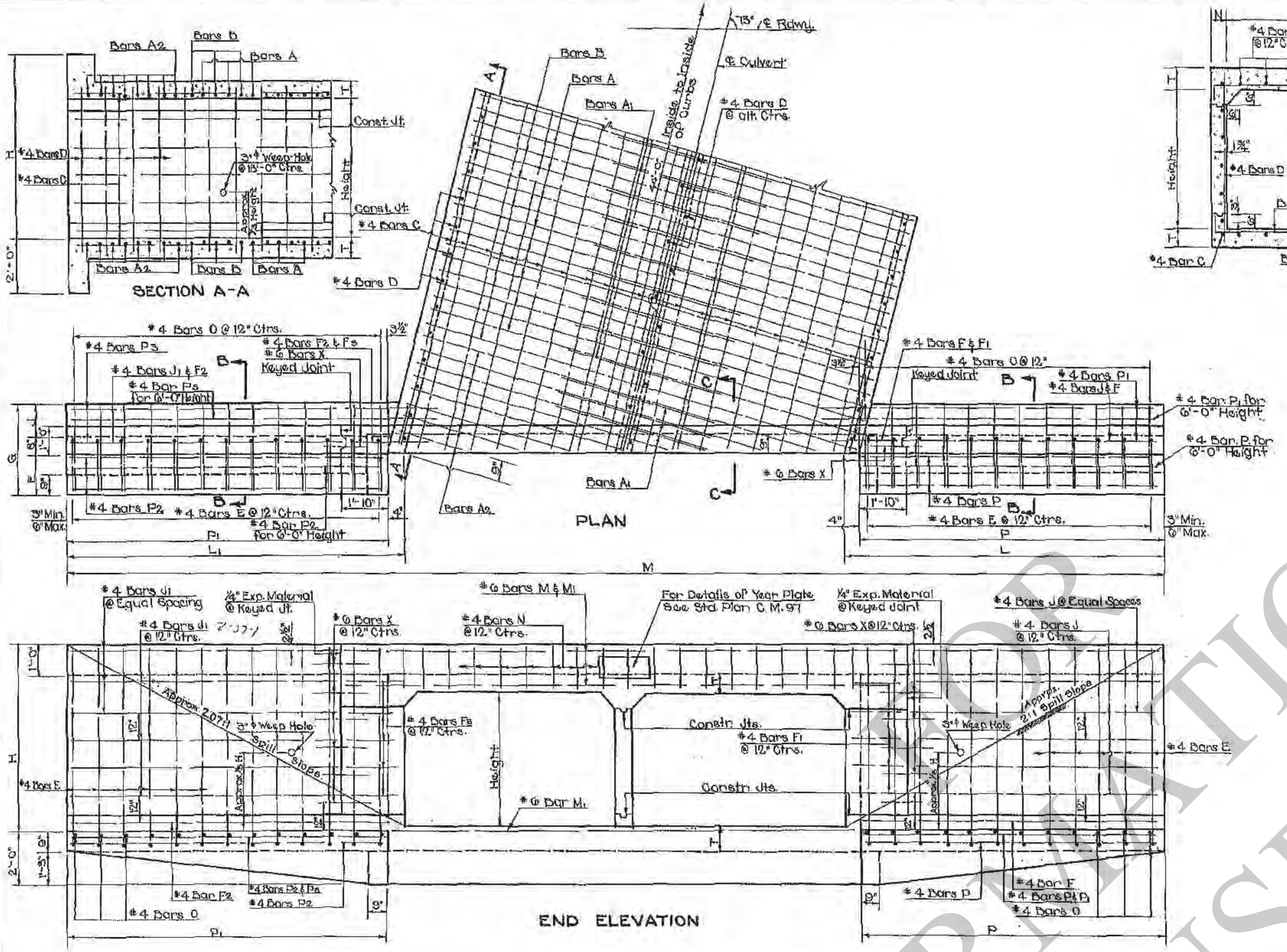
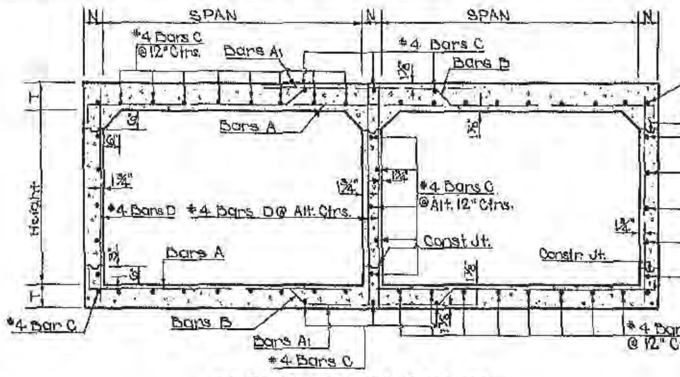
F.A.P.	STATE PROJECT	PARISH	SHEET NO.



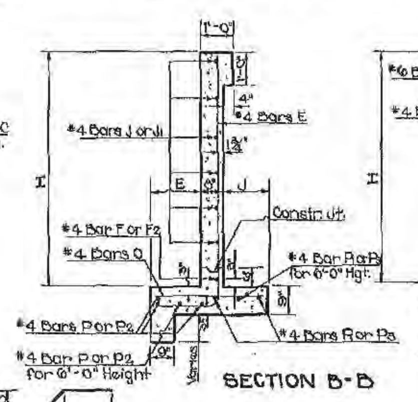
SECTION A-A

PLAN

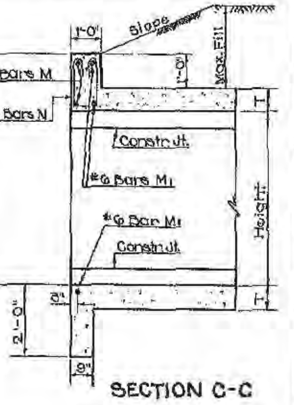
END ELEVATION



SECTION THRU BARREL

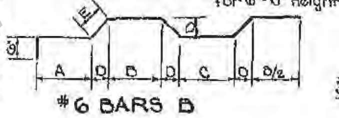


SECTION B-B

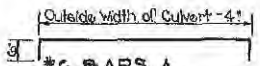


SECTION C-C

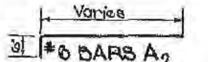
DIMENSIONS FOR BARS B						
Span	Pin Diam.	A	B	C	D	E
7'-0"	4½"	5'-4⅝"	3'-7¼"	3'-1¼"	4¾"	6¾"
8'-0"	4½"	6'-2⅝"	4'-1¾"	3'-6¾"	6¼"	7⅜"



#6 BARS B

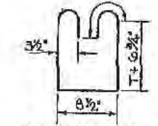


#6 BARS A
(4½" Diam. Pin)

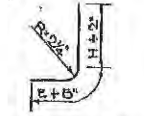


#6 BARS A2
(4½" Diam. Pin)

DIMENSIONS																QUANTITIES				OPENINGS	
OPENINGS			MAX. FILL		BARREL		WINGS AND CURBS									PER LIN. FT. OF BARREL		44'-0" CULVERT (ALONG ℄)			
SIZE FEET	NO.	AREA SQ. FT.	SLAB FEET	WALL FEET	T IN.	N IN.	E FT.-IN.	J FT.-IN.	G FT.-IN.	H FT.-IN.	L FT.-IN.	L1 FT.-IN.	P FT.-IN.	P1 FT.-IN.	M FT.-IN.	STEEL LBS.	CONC. CU. YDS.	STEEL LBS.	CONC. CU. YDS.	NO.	SIZE FEET
7x5	2	70	12	7	8½	6	1-5	1-2	3-3	6-8½	12-4¼	13-1¼	11-10	12-7	40-5 9/16	153.69	1.1096	8,358	67.66	2	7x5
	3	105	16												48-2¾	232.89	1.6049	12,264	91.61	3	
	4	140													55-11 5/16	311.66	2.1003	16,142	115.56	4	
	5	175													63-9 1/16	390.66	2.5957	20,196	139.51	5	
	6	210													71-6¾	481.69	3.0910	24,774	163.46	6	
7x6	2	84	11	5	8½	6	1-7	1-6	3-9	7-8½	14-4¼	15-1¼	13-10	14-7	44-5 9/16	160.74	1.1651	9,009	74.72	2	7x6
	3	126	16												52-2¾	242.02	1.6790	13,014	99.53	3	
	4	168													59-11 5/16	323.29	2.1929	16,949	124.34	4	
	5	210													67-9 1/16	404.57	2.7068	21,175	149.14	5	
	6	252													75-6¾	497.86	3.2207	25,863	173.95	6	
8x5	2	80	10	9	9	7	1-5	1-2	3-3	6-9	12-5¼	13-2¼	11-10	12-7	42-9½	160.67	1.3267	9,064	76.10	2	8x5
	3	120	14												51-8⅛	273.98	1.9228	14,246	106.75	3	
	4	160													60-6¾	367.30	2.5170	18,954	135.39	4	
	5	200													69-5 3/16	473.63	3.1111	24,079	164.04	5	
	6	240													78-4 1/16	566.94	3.7053	29,028	192.69	6	
8x6	2	96	9	5	9	7	1-7	1-6	3-9	7-9	14-5¼	15-2¼	13-10	14-7	46-9½	164.66	1.5935	10,194	85.60	2	8x6
	3	144	13												55-8⅛	279.33	2.0092	14,620	115.24	3	
	4	192													64-6¾	373.98	2.6250	19,587	144.88	4	
	5	240													73-5 3/16	481.64	3.2407	24,775	174.53	5	
	6	288													82-4 1/16	576.29	3.8565	29,767	204.17	6	



#4 BARS N
(3" Diam Pin)



#4 BARS E

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS		BARS A				BARS A1				BARS A2						BARS B				#4 BARS D			#4 BARS C	
SIZE FEET	NO.	SIZE	NO.	LGTH. FT.-IN.	SPAC. IN.	SIZE	NO.	LGTH. FT.-IN.	SPAC. IN.	SIZE	NO.	SHORT BAR FT.-IN.	VAR. IN.	LONG BAR FT.-IN.	SPAC. IN.	SIZE	NO.	LGTH. FT.-IN.	SPAC. IN.	NO.	LGTH. FT.-IN.	SPAC. IN.	NO.	①LGTH. FT.-IN.
7x5	2	#6	76	16-2	13	#6	88	5-8	6½ 13	#6	28	3-0	24.3333	15-2	6½	#6	76	16-6	13	138	6-1	12	53	47-2
	3	#6	74	23-8	13	#6	180	5-8	6½ 13	#6	40	3-0	24.2222	21-2	6½	#6	76	24-4	13	184	6-1	12	78	47-2
	4	#6	70	31-2	13	#6	282	5-8	6½ 13	#6	56	3-0	24.2308	29-3	6½	#6	70	32-2	13	230	6-1	12	103	47-2
	5	#6	66	38-8	13	#6	392	5-8	6½ 13	#6	72	3-0	24.2353	37-4	6½	#6	66	40-0	13	276	6-1	12	128	47-2
	6	#6	62	③48-4	13	#6	514	5-8	6½ 13	#6	88	3-0	24.2381	③45-5	6½	#6	62	②50-0	13	322	6-1	12	153	47-2
7x6	2	#6	76	16-2	13	#6	88	5-8	6½ 13	#6	28	3-0	24.3333	15-2	6½	#6	76	16-6	13	168	7-1	10	56	47-2
	3	#6	74	23-8	13	#6	180	5-8	6½ 13	#6	40	3-0	24.2222	21-2	6½	#6	76	24-4	13	224	7-1	10	82	47-2
	4	#6	70	31-2	13	#6	282	5-8	6½ 13	#6	56	3-0	24.2308	29-3	6½	#6	70	32-2	13	280	7-1	10	106	47-2
	5	#6	66	38-8	13	#6	392	5-8	6½ 13	#6	72	3-0	24.2353	37-4	6½	#6	66	40-0	13	336	7-1	10	134	47-2
	6	#6	62	③48-4	13	#6	514	5-8	6½ 13	#6	88	3-0	24.2381	③45-5	6½	#6	62	②50-0	13	392	7-1	10	160	47-2
8x5	2	#6	84	18-5	12	#6	96	6-2	6 12	#6	32	3-1	22.4286	16-2	6	#6	84	18-9¼	12	138	6-2	12	57	47-2
	3	#6	78	27-0	12	#6	200	6-2	6 12	#6	52	3-1	22.4167	25-6	6	#6	78	27-8½	12	184	6-2	12	84	47-2
	4	#6	72	35-7	12	#6	312	6-2	6 12	#6	72	3-1	22.4118	34-10	6	#6	74	36-7¾	12	230	6-2	12	111	47-2
	5	#6	68	③46-4	12	#6	428	6-2	6 12	#6	88	3-1	22.3810	③42-3	6	#6	70	③47-9	12	276	6-2	12	138	47-2
	6	#6	64	③54-11	12	#6	568	6-2	6 12	#6	108	3-1	22.3846	③51-7	6	#6	64	③56-8¼	12	322	6-2	12	165	47-2
8x6	2	#6	84	18-5	12	#6	96	6-2	6 12	#6	32	3-1	22.4286	16-2	6	#6	84	18-9¼	12	138	7-2	12	60	47-2
	3	#6	78	27-0	12	#6	200	6-2	6 12	#6	52	3-1	22.4167	25-6	6	#6	78	27-8½	12	184	7-2	12	88	47-2
	4	#6	72	35-7	12	#6	312	6-2	6 12	#6	72	3-1	22.4118	34-10	6	#6	74	36-7¾	12	230	7-2	12	116	47-2
	5	#6	68	③46-4	12	#6	428	6-2	6 12	#6	88	3-1	22.3810	③42-3	6	#6	70	③47-9	12	276	7-2	12	144	47-2
	6	#6	64	③54-11	12	#6	568	6-2	6 12	#6	108	3-1	22.3846	③51-7	6	#6	64	③56-8¼	12	322	7-2	12	172	47-2

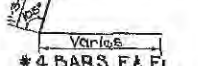
WINGS AND CURBS REINFORCEMENT

OPENINGS		#4 BARS E		#4 BARS F		#4 BARS F1		#4 BARS F2		#4 BARS F3		#4 BARS J		#4 BARS J1		#4 BARS O		#4 BARS P		#4 BARS P1		#4 BARS P2		#4 BARS P3		#4 BARS N		#6 BARS M		#6 BARS M1		Ⓐ #6 BARS X	
SIZE FEET	NO.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.	NO.	LGTH. FT.-IN.
7x5	2	50	8-8½	2	13-2	10	3-0½	2	14-1½	10	3-3	12	9-8	12	10-5	50	2-10	6	11-6	4	13-0	6	12-3	4	14-4	32	4-6	4	19-2	6	15-8	24	2-0
	3																									48	4-6	4	26-11	6	23-5	24	2-0
	4																									64	4-6	4	34-8	6	31-2	24	2-0
	5																									80	4-6	4	②44-8	6	39-0	24	2-0
	6																									94	4-6	4	③52-5	6	③46-11	24	2-0
7x6	2	58	9-10½	2	15-2	12	3-0½	2	16-1½	12	3-3	14	11-8	14	12-5	58	3-4	8	13-6	6	15-0	8	14-3	6	16-5	32	4-6	4	19-2	6	15-8	28	2-0
	3																									48	4-6	4	26-11	6	23-5	28	2-0
	4																									64	4-6	4	34-8	6	31-2	28	2-0
	5																									80	4-6	4	③44-8	6	39-0	28	2-0
	6																									94	4-6	4	③52-5	6	③46-11	28	2-0
8x5	2	50	8-9	2	13-3	10	3-2	2	14-2½	10	3-4	12	9-8	12	10-5	50	2-10	6	11-6	4	13-0	6	12-3	4	14-4	36	4-7	4	21-6	6	18-0	24	2-0
	3																									56	4-7	4	30-5	6	26-11	24	2-0
	4																									72	4-7	4	39-3	6	35-10	24	2-0
	5																									92	4-7	4	③50-4	6	③46-10	24	2-0
	6																									108	4-7	4	③59-2	6	③55-9	24	2-0
8x6	2	58	9-11	2	15-2	12	3-2	2	16-2½	12	3-4	14	11-8	14	12-5	58	3-4	8	13-6	6	15-0	8	14-3	6	16-5	36	4-7	4	21-6	6	18-0	28	2-0
	3																									56	4-7	4	30-5	6	26-11	28	2-0
	4																									72	4-7	4	39-3	6	35-10	28	2-0
	5																									92	4-7	4	③50-4	6	③46-10	28	2-0
	6																									108	4-7	4	③59-2	6	③55-9	28	2-0

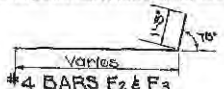
① Includes One 1'-6" Lap Splice.
② Includes One 2'-2" Lap Splice.
③ Does not Include Lap Splice, When Length of Bar Exceeds 40', Add 2'-2" Lap Splice.

Ⓐ #6 Bars X to be ¾" ϕ Smooth and Greased for 1'-0" of Length.

CC-S-M-7-8-R-75°-1



#4 BARS F & F1
(3" Dia Pin)



#4 BARS F2 & F3
(3" Dia Pin)

APPROVED BY:
Dempsey D. White
CHIEF ENGINEER
1-11-78
DATE

GENERAL NOTES:
Construction Specifications: Latest Approved La. Dept. of Highways Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 as Amended by Int. Spec. 1964.
Live Load HS 20-44 on Military; Whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have ¾" Chamfer, Unless Otherwise Noted.
Reinforcement Shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.
Dimensions Relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-43.

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
5-30-75	Revised Spill Slope	W.T.J.
6-8-72	Rev. Gen. Notes For Steel	W.E.M.
5-2-67	Added Axle Steel	W.E.M.

REVISIONS

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 75° CROSSING
7'x5' 7'x6' 8'x5' 8'x6'

DATED Nov. 24 1964

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED W.E. Marcum	DETAILED N. Knapp	TRACED J.L. Read
CHECKED N.K. Brown	CHECKED W.E. Grice	CHECKED W.E. Marcum

IN CHARGE OF

FOR INFORMATIONAL USE

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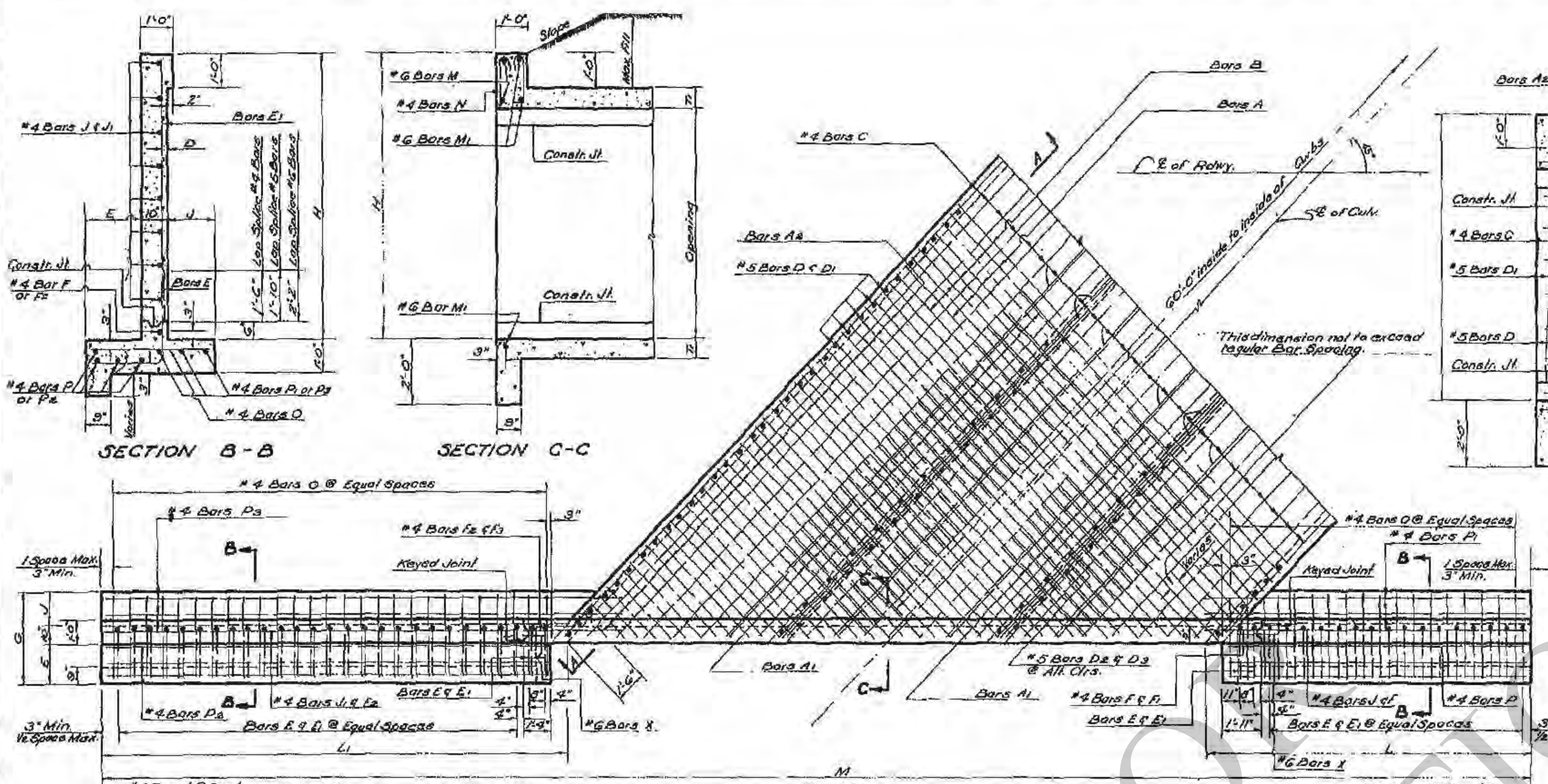
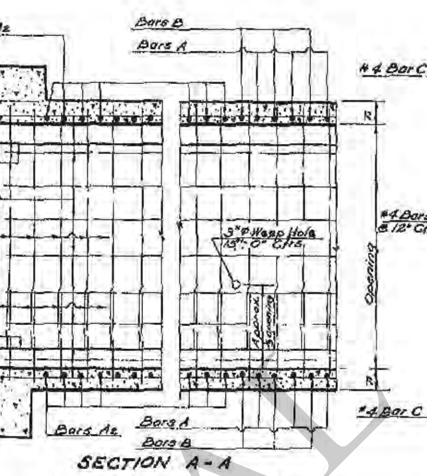
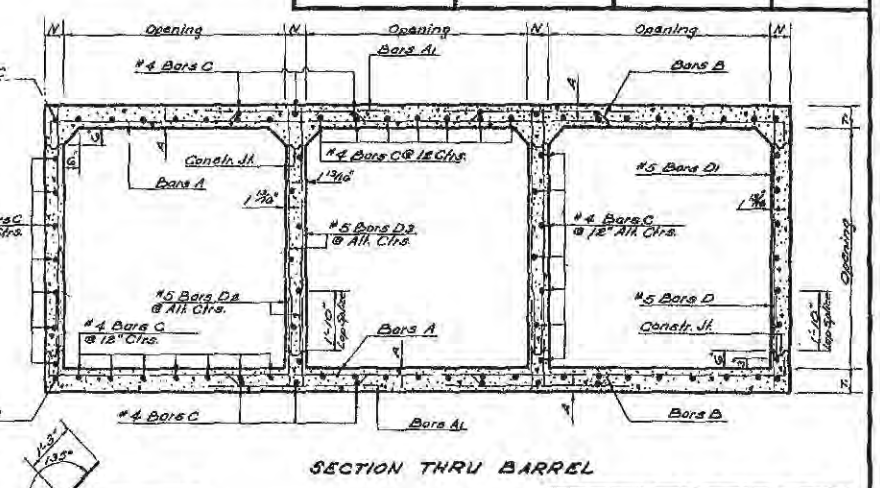
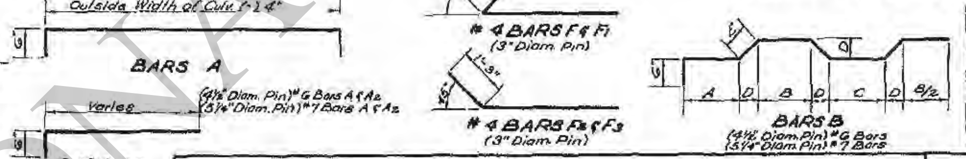
F.A.P.	STATE PROJECT	PARISH	SHEET NO.

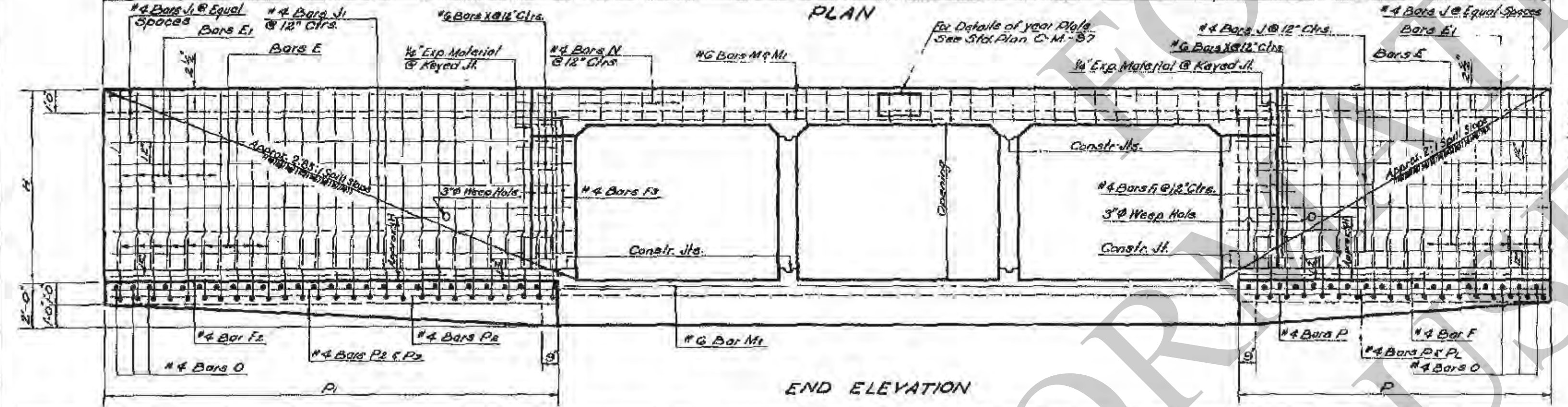


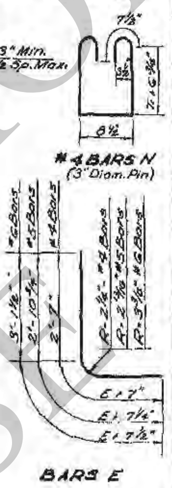






DIMENSIONS FOR BARS B					
SIZE	A	B	C	D	E
7'x7'	5'-5⅝	3'-8¼	3'-1¼"	4¾"	6¼"
8'x8'	6'-3⅜	4'-2⅝	3'-6¾	5¼"	7⅜"
9'x9'	7'-1⅛	4'-9¼	4'-0¼"	5¾"	8⅛"
10'x10'	7'-10 13/16	5'-3⅞	4'-5⅞	6⅛"	8⅝"





DIMENSIONS																		QUANTITIES 60'-0" ALONG ℄ OF CULVERT			
OPENINGS			MAX. FILL		BARREL			WINGS AND CURBS										PER LINEAR FOOT OF BARREL		TOTAL QUANTITIES	
SIZE FT.	NO.	AREA SQ. FT.	SLAB FT.	WALL FT.	T1 IN.	N IN.	A IN.	E FT-IN.	J FT-IN.	G FT-IN.	D IN.	H FT-IN.	L FT-IN.	L1 FT-IN.	P FT-IN.	P1 FT-IN.	M FT-IN.	STEEL LBS.	CONC. CU. YDS.	STEEL LBS.	CONC. ⊕ CU. YDS.
7x7	2	98	11	6	8½	7	1⅞	1-10	1-7	4-3	1 5/16	8-8½	16-3⅞	23-0⅞	15-6	22-3	60-0¼	177.86	1.2886	13563	118.77
	3	147	15														70-8 13/16	264.86	1.8570	19590	155.42
	4	196															81-5 5/8	351.83	2.4154	25748	192.07
	5	245															92-2 7/16	438.82	2.9738	32163	228.71
	6	294															102-11	537.82	3.5322	39148	265.36
8x8	2	128	9	5	9	8	1⅞	2-0	2-0	4-10	1 13/16	8-9	18-5⅝	26-2 5/16	17-6	25-3	66-2½	210.50	1.6111	16407	147.89
	3	192	13														80-5 9/16	313.92	2.2994	23641	192.89
	4	256															92-8⅝	417.34	2.9877	31063	237.90
	5	320															104-11 11/16	533.78	3.6759	39096	282.90
	6	384															117-2¾	637.20	4.3642	47463	327.90
9x9	2	162	7	5	9½	8	1⅞	2-2	2-4	5-4	1 13/16	10-9½	20-3⅞	29-0⅞	19-3	28-0	75-10⅝	252.18	1.9560	20089	179.25
	3	243	11														89-8⅛	375.85	2.7870	28675	233.42
	4	324															103-5 9/16	499.44	3.6181	37631	287.57
	5	405															117-3 1/16	637.39	4.4491	47863	341.73
10x10	2	200	5	5	10	10	1 15/16	2-5	2-8	5-11	1⅞	11-10	22-10⅜	32-2⅛	21-8	31-0	84-5 13/16	299.05	2.3333	24979	215.00
	3	300	8														99-9 11/16	445.65	3.3200	35216	279.11
	4	400															115-1½	610.35	4.3066	46472	343.23
	5	500															130-5⅜	756.94	5.2932	57911	407.34

⊕ Quantities do not include Expansion Joint Block

BILL OF REINFORCING STEEL FOR 60'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS		BARS A				BARS A1				BARS A2						BARS B				#5 BARS D & D1				#5 BARS D2 & D3				#4 BARS C	
SIZE FT.	NO.	SIZE	NO.	LENGTH FT-IN.	S.P. IN.	SIZE	NO.	LENGTH FT-IN.	S.P. IN.	SIZE	NO.	SHORT BAR FT-IN.	VARIATION IN.	LONG BAR FT-IN.	S.P. IN.	SIZE	NO.	LENGTH FT-IN.	S.P. IN.	NO.	LGTH. BARS D FT-IN.	LGTH. BARS D1 FT-IN.	S.P. IN.	NO.	LGTH. BARS D2 FT-IN.	LGTH. BARS D3 FT-IN.	S.P. IN.	NO.	① LENGTH FT-IN.
7x7	2	#6	86	16-5	13	#6	122	5-8	13 / 6½	#6	104	2-2	6.5000	15-8½	6½	#6	86	16-9	13	126	2-10	7-0	12	63	2-10	7-0	12	59	63-10
	3	#6	72	24-0	13	#6	272	5-8	13 / 6½	#6	160	2-2	6.5000	23-3½	6½	#6	74	24-8	13	126	2-10	7-0	12	126	2-10	7-0	12	86	63-10
	4	#6	58	31-7	13	#6	450	5-8	13 / 6½	#6	216	2-2	6.5000	30-10½	6½	#6	60	32-7	13	126	2-10	7-0	12	189	2-10	7-0	12	113	63-10
	5	#6	44	39-2	13	#6	656	5-8	13 / 6½	#6	272	2-2	6.5000	38-5½	6½	#6	46	40-6	13	126	2-10	7-0	12	252	2-10	7-0	12	140	63-10
	6	#6	30	②48-11	13	#6	890	5-8	13 / 6½	#6	328	2-2	6.5000	①46-0½	6½	#6	32	①50-7	13	126	2-10	7-0	12	315	2-10	7-0	12	167	63-10
8x8	2	#6	90	18-8	12	#6	134	6-3	6 / 12	#6	128	2-3	6.0000	17-9	6	#6	90	19-0¼	12	126	2-11	8-1	12	63	2-11	8-1	12	66	63-10
	3	#6	72	27-4	12	#6	308	6-3	6 / 12	#6	200	2-3	6.0000	26-9	6	#6	72	28-0½	12	126	2-11	8-1	12	126	2-11	8-1	12	96	63-10
	4	#6	54	36-0	12	#6	510	6-3	6 / 12	#6	268	2-3	6.0000	35-3	6	#6	56	37-0¾	12	126	2-11	8-1	12	189	2-11	8-1	12	126	63-10
	5	#6	38	②46-10	12	#6	748	6-3	6 / 12	#6	336	2-3	6.0000	②43-9	6	#6	38	②46-3	12	126	2-11	8-1	12	252	2-11	8-1	12	156	63-10
	6	#6	20	②55-6	12	#6	1032	6-3	6 / 12	#6	408	2-3	6.0000	②52-9	6	#6	20	②57-3¼	12	126	2-11	8-1	12	315	2-11	8-1	12	186	63-10
9x9	2	#6	92	20-11	11	#6	152	6-9	5½ / 11	#6	160	2-4	5.5000	20-2½	5½	#6	94	21-3¾	11	144	2-11	9-1	10½	72	2-11	9-1	10½	73	63-10
	3	#6	72	30-8	11	#6	344	6-9	5½ / 11	#6	244	2-4	5.5000	29-10	5½	#6	72	31-5½	11	144	2-11	9-1	10½	144	2-11	9-1	10½	106	63-10
	4	#6	48	40-5	11	#6	580	6-9	5½ / 11	#6	332	2-4	5.5000	39-11	5½	#6	50	41-7¼	11	144	2-11	9-1	10½	216	2-11	9-1	10½	139	63-10
	5	#6	28	②52-4	11	#6	860	6-9	5½ / 11	#6	416	2-4	5.5000	②49-6½	5½	#6	30	②53-11	11	144	2-11	9-1	10½	288	2-11	9-1	10½	172	63-10
10x10	2	#7	70	23-2	14	#7	118	7-8	7 / 14	#7	140	2-5	7.0000	22-3	7	#7	70	23-7	14	168	3-0	10-2	9	84	3-0	10-2	9	80	63-10
	3	#7	50	34-0	14	#7	276	7-8	7 / 14	#7	216	2-5	7.0000	33-4	7	#7	50	34-10	14	168	3-0	10-2	9	168	3-0	10-2	9	116	63-10
	4	#7	32	④47-5	14	#7	464	7-8	7 / 14	#7	288	2-5	7.0000	④45-10	7	#7	34	④48-8	14	168	3-0	10-2	9	252	3-0	10-2	9	152	63-10
	5	#7	12	④58-3	14	#7	696	7-8	7 / 14	#7	364	2-5	7.0000	④59-11	7	#7	14	④59-11	14	168	3-0	10-2	9	336	3-0	10-2	9	188	63-10

WINGS AND CURBS REINFORCEMENT

OPENINGS		BARS E				BARS E1				#4 BARS F		#4 BARS F1		#4 BARS F2		#4 BARS F3		#4 BARS J		#4 BARS J1		BARS O				#4 BARS P		#4 BARS P1		#4 BARS P2		#4 BARS P3		#4 BARS N		#6 BARS M		#6 BARS M1		Ⓐ #6 BARS X	
SIZE FT.	NO.	SIZE	NO.	LENGTH FT-IN.	S.P. IN.	SIZE	NO.	LENGTH FT-IN.	S.P. IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	SIZE	NO.	LENGTH FT-IN.	S.P. IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.	NO.	LENGTH FT-IN.
7x7	2	#4	84	5-0	11	#4	84	8-0	11	2	16-6	14	2-9½	2	24-6½	14	3-6	16	13-3	16	20-7	#4	76	3-10	12	8	15-2	6	16-2	8	21-11	6	25-9	44	4-6	4	25-0	6	21-9	32	2-0
	3																																	66	4-6	4	36-8	6	32-6	32	2-0
	4																																	86	4-6	4	②48-7	6	②45-6	32	2-0
	5																																	108	4-6	4	②59-4	6	②56-1	32	2-0
	6																																	130	4-6	4	②70-0	6	②66-10	32	2-0
8x8	2	#5	104	5-6	10	#4	104	9-1	10	2	18-7½	16	2-11	2	27-8	16	3-7½	18	15-3	18	23-7	#4	88	4-5	12	8	17-2	6	18-2	8	24-11	6	29-2	50	4-7	4	28-2	6	24-11	36	2-0
	3																																	74	4-7	4	②42-7	6	37-8	36	2-0
	4																																	100	4-7	4	②54-10	6	②51-8	36	2-0
	5																																	124	4-7	4	②67-1	6	②63-11	36	2-0
	6																																	148	4-7	4	②79-4	6	②76-2	36	2-0
9x9	2	#5	140	5-8	8	#4	140	10-1	8	2	20-6	18	3-0½	2	30-6	18	3-8½	22	17-0	22	26-4	#4	110	4-11	10	8	18-11	6	18-11	8	27-8	6	32-1	56	4-8	4	31-4	6	28-2	40	2-0
	3																																	84	4-8	4	②47-3	6	②44-1	40	2-0
	4																																	112	4-8	4	②61-0	6	②57-11	40	2-0
	5																																	140	4-8	4	②74-10	6	②71-8	40	2-0
10x10	2	#5	148	6-2	8½	#5	148	11-2	8½	2	23-0½	20	3-2	2	33-7½	20	3-10	24	19-5	24	29-4	#5	116	5-6	11	8	21-4	6	22-4	8	30-8	6	35-7	62	4-9	4	34-6	6	31-4	44	2-0
	3																																	94	4-9	4	②52-0	6	②48-10	44	2-0
	4																																	124	4-9	4	②67-4	6	②64-1	44	2-0
	5																																	154	4-9	4	②84-10	6	②79-5	44	2-0

① Includes one 1'-6" Lap Splice
② Includes one 2'-2" Lap Splice
③ Does not include Lap Splice, when length of Bar exceeds 40'-0", add 2'-2" Lap Splice.
④ Includes One 2'-7" Lap Splice
⑤ Does not include Lap Splice, when Length of Bar Exceeds 40'-0", add 2'-7" Lap Splice
⑥ Includes Two 2'-2" Lap Splices

Ⓐ #6 Bars X to be ¾" Ø Smooth and Greased for 1'-0" of Length

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Latest Approved La. Dept. of Highways Std. Specs.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1961 as amended by Int. Spec. 1964.
LIVE LOAD: HS 20-44, or Military Loading, whichever is Greater.
All Concrete to be Class "A"
All Exposed Corners to have ¾" chamfer, unless otherwise noted.
Reinforcement shall be Billet Steel A.S.T.M. A 615 or Rail Steel A.S.T.M. A 616 or Axle Steel A.S.T.M. A 617
For Detail of Joints, See Std. Plan C.M.-48.
Dimensions relating to Reinforcing Steel are to Bar Ctrs.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.

APPROVED BY:
Dempsey D. White 1-11-78
CHIEF ENGINEER DATE

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
6-10-76	Rev. Slope Intercept	W.T.J.
6-8-72	Rev. General Notes for Steel	W.E.M.
5-2-67	Added Axle Steel	W.E.M.
12-18-64	Rev. General Notes	W.E.M.
6-16-64	8x8, 9x9 & 10x10 Added	W.E.M.
4-8-64	Deformed Dowels X to Smooth	W.E.M.

REVISIONS

CC·S·M·7-10·S·45°·1

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 45° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED Jan. 26, 1962 7'x7' TO 10'x10'

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

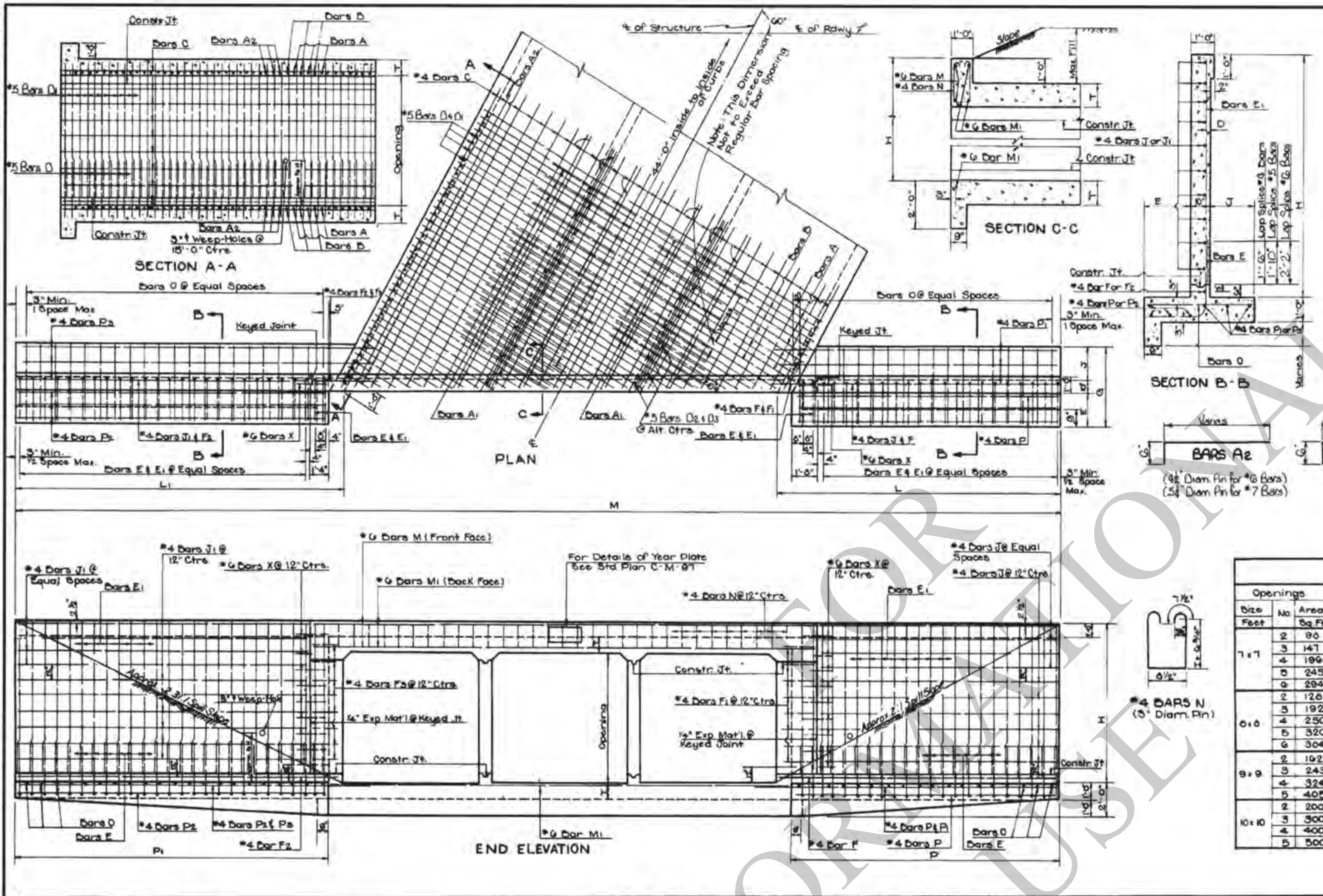
DESIGNED M. Yorkell	DETAILED M. Yorkell	TRACED [illegible]
CHECKED J. A. Hester	CHECKED W.E. Wareman	CHECKED W.E. Wareman

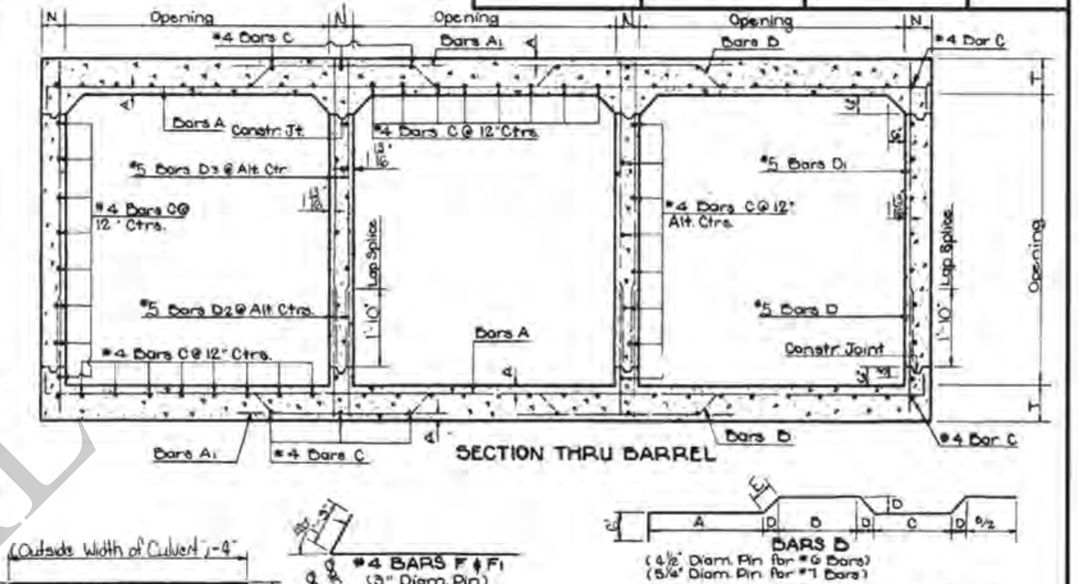
FOR INFORMATIONAL USE ONLY

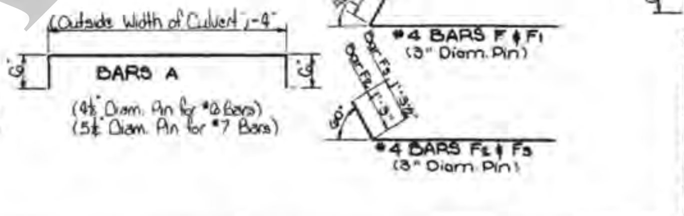
11/4/2015 14:20

IP PWP:dms09544\CCSM7-10S60_2.dgn

F.A.P.	STATE PROJECT	PARISH	SHEET NO.





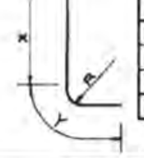


DIMENSIONS FOR BARS B					
Size	A	B	C	D	E
7'x7'	5'-5⅝"	3'-8½"	3'-1¼"	4¾"	6¾"
8'x8'	6'-3⅜"	4'-2⅜"	3'-6⅜"	5¼"	7⅝"
9'x9'	7'-1⅛"	4'-9½"	4'-0¼"	5⅜"	8⅛"
10'x10'	7'-10 15/16"	5'-3⅜"	4'-5⅞"	6⅛"	8⅜"

DIMENSIONS / QUANTITIES FOR 44'-0" ALONG ℄ OF CULVERT

Openings Size Feet	No.	Area Sq. Ft.	Max. Fill Slab	Max. Fill Walls	Barrel T	Barrel N	Barrel A	E Ft.-In.	J Ft.-In.	G Ft.-In.	D In.	H Ft.-In.	L Ft.-In.	L1 Ft.-In.	P Ft.-In.	P1 Ft.-In.	M Ft.-In.	Per Linear Foot of Barrel Steel Lbs.	Per Linear Foot of Barrel Concrete Cu. Yds.	Total Steel Lbs.	Total Concrete Cu. Yds.
7x7	2	98	11	6	8½	7	1⅞	1-10	1-7	4-3	1⅞	8-0½	16-8⅛	19-1⅛	16-0	18-5	52-7½	177.86	1.2986	10,453	93.75
	3	147	15														61-4⅞	264.85	1.8570	14,830	120.89
	4	196															70-1⅝	351.83	2.4154	19,331	148.02
	5	245															78-10⅜	438.82	2.9738	23,983	175.16
	6	294															87-7⅛	537.82	3.5322	29,051	202.30
8x8	2	128	9	5	9	8	1⅞	2-0	2-0	4-10	1⅞	9-9	18-2½	21-2½	17-5	20-5	58-7 1/16	210.50	1.6111	12,574	115.60
	3	192	13														68-7½	313.92	2.2994	17,806	149.00
	4	256															78-7⅝	417.34	2.9877	23,247	182.31
	5	320															88-7⅝	533.78	3.6759	29,153	215.62
	6	384															98-7⅞	637.20	4.3642	34,982	248.93
9x9	2	162	7	5	9½	9	1 5/16	2-2	2-4	5-4	1 3/16	10-9½	20-5⅝	23-6⅝	19-7	22-8	65-7½	252.18	1.9560	15,431	140.70
	3	243	11														76-10⅝	375.85	2.7870	21,683	180.77
	4	324															88-1⅝	499.44	3.6181	28,232	220.84
	5	405															99-4⅜	637.30	4.4491	35,443	260.92
10x10	2	200	5	5	10	10	1 5/16	2-5	2-8	5-11	1⅞	11-10	22-4⅞	26-4⅞	21-5	25-5	72-9½	298.05	2.3333	19,308	168.59
	3	300	9														85-3⅛	445.65	3.3200	26,819	216.02
	4	400															97-10	610.35	4.3066	34,820	263.44
	5	500															110-4⅛	756.34	5.2932	43,301	310.87

General Notes:
Construction Specifications: Latest Approved La. Dept. of Highways Standard Specifications.
Design Specifications A.A.S.H.O. 1961 as Amended by Int. Spec. 1964.
Live Load H.S. 20-44, or Military Loading, Whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have ¾" Chamfer, Unless Otherwise Noted.
Reinforcement Shall Be Billet-Steel A.S.T.M. A 615 or Rail-Steel A.S.T.M. A 616 or Axle-Steel A.S.T.M. A 617
Dimensions Relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.



DIMENSIONS FOR BARS E				
Opening	Bar Size	R	X	Y
7'x7'	#4	2½"	2'-7"	2'-5"
8'x8'	#5	2 13/16"	2'-10⅜"	2'-7¼"
9'x9'	#5	2 13/16"	2'-10⅞"	2'-9½"
10'x10'	#6	3⅜"	3'-1½"	3'-0½"

BARS E

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

Openings Size Feet	No.	Bars A Size	Bars A No.	Bars A Length Ft.-In.	Bars A Spac. In.	Bars A1 Size	Bars A1 No.	Bars A1 Length Ft.-In.	Bars A1 Spac. In.	Bars A2 Size	Bars A2 No.	Bars A2 Short Bar Ft.-In.	Bars A2 Variation In.	Bars A2 Long Bar Ft.-In.	Bars A2 Spac. In.	Bars B Size	Bars B No.	Bars B Length Ft.-In.	Bars B Spac. In.	#5 Bars D & D1 No.	Length Bars D Ft.-In.	Length Bars D1 Ft.-In.	Spac. In.	#5 Bars D2 & D3 No.	Length Bars D2 Ft.-In.	Length Bars D3 Ft.-In.	Spac. In.	#4 Bars C No.	#4 Bars C Length Ft.-In.
7x7	2	#6	68	16-5	13	#6	80	5-8	6½/13	#6	60	2-4	11.2857	15-6	6½	#6	70	16-9	13	94	2-10	7-0	12	47	2-10	7-0	12	59	47-5
	3	#6	60	24-0	13	#6	192	5-8	6½/13	#6	92	2-4	11.2727	23-0	6½	#6	62	24-8	13	94	2-10	7-0	12	94	2-10	7-0	12	86	47-5
	4	#6	52	31-7	13	#6	312	5-8	6½/13	#6	124	2-4	11.2661	30-6	6½	#6	54	32-7	13	94	2-10	7-0	12	141	2-10	7-0	12	113	47-5
	5	#6	44	39-2	13	#6	456	5-8	6½/13	#6	156	2-4	11.2632	38-0	6½	#6	46	40-6	13	94	2-10	7-0	12	188	2-10	7-0	12	140	47-5
	6	#6	36	②48-11	13	#6	600	5-8	6½/13	#6	188	2-4	11.2609	②45-6	6½	#6	38	②50-7	13	94	2-10	7-0	12	235	2-10	7-0	12	167	47-5
8x8	2	#6	70	18-8	12	#6	98	6-3	6/12	#6	76	2-5	10.3888	18-0	6	#6	72	19-0½	12	94	2-11	8-1	12	47	2-11	8-1	12	66	47-5
	3	#6	60	27-8	12	#6	216	6-3	6/12	#6	116	2-5	10.3929	26-8	6	#6	62	28-0½	12	94	2-11	8-1	12	94	2-11	8-1	12	96	47-5
	4	#6	50	36-0	12	#6	354	6-3	6/12	#6	156	2-5	10.3947	35-4	6	#6	52	37-0½	12	94	2-11	8-1	12	141	2-11	8-1	12	126	47-5
	5	#6	40	①46-10	12	#6	512	6-3	6/12	#6	196	2-5	10.3956	①44-0	6	#6	42	①48-5	12	94	2-11	8-1	12	188	2-11	8-1	12	156	47-5
	6	#6	30	①55-6	12	#6	690	6-3	6/12	#6	236	2-5	10.3960	①52-8	6	#6	32	①57-3½	12	94	2-11	8-1	12	235	2-11	8-1	12	186	47-5
9x9	2	#6	76	20-11	11	#6	108	6-9	5½/11	#6	92	2-6	9.5455	20-0	5½	#6	76	21-3½	11	106	2-11	9-1	10½	53	2-11	9-1	10½	73	47-5
	3	#6	64	30-8	11	#6	240	6-9	5½/11	#6	140	2-6	9.5294	29-6	5½	#6	64	31-5½	11	106	2-11	9-1	10½	106	2-11	9-1	10½	106	47-5
	4	#6	50	40-5	11	#6	402	6-9	5½/11	#6	192	2-6	9.5319	39-10	5½	#6	50	41-7½	11	106	2-11	9-1	10½	159	2-11	9-1	10½	139	47-5
	5	#6	38	①52-4	11	#6	580	6-9	5½/11	#6	240	2-6	9.5254	①49-4	5½	#6	40	①53-11	11	106	2-11	9-1	10½	212	2-11	9-1	10½	172	47-5
10x10	2	#7	58	23-2	14	#7	86	7-8	7/14	#7	80	2-7	12.1053	21-9	7	#7	58	23-7	14	124	3-0	10-2	9	62	3-0	10-2	9	80	47-5
	3	#7	46	34-0	14	#7	192	7-8	7/14	#7	124	2-7	12.1333	32-11	7	#7	48	34-10	14	124	3-0	10-2	9	124	3-0	10-2	9	116	47-5
	4	#7	34	③47-5	14	#7	318	7-8	7/14	#7	168	2-7	12.1220	③44-0	7	#7	36	③48-6	14	124	3-0	10-2	9	186	3-0	10-2	9	152	47-5
	5	#7	24	③58-3	14	#7	476	7-8	7/14	#7	212	2-7	12.1154	③55-1	7	#7	24	③59-11	14	124	3-0	10-2	9	248	3-0	10-2	9	188	47-5

WINGS AND CURB REINFORCEMENT

Openings Size Feet	No.	Bars E Size	Bars E No.	Bars E Length Ft.-In.	Bars E Spac. In.	Bars E1 Size	Bars E1 No.	Bars E1 Length Ft.-In.	Bars E1 Spac. In.	#4 Bars F No.	#4 Bars F Length Ft.-In.	#4 Bars F1 No.	#4 Bars F1 Length Ft.-In.	#4 Bars F2 No.	#4 Bars F2 Length Ft.-In.	#4 Bars F3 No.	#4 Bars F3 Length Ft.-In.	#4 Bars J No.	#4 Bars J Length Ft.-In.	#4 Bars J1 No.	#4 Bars J1 Length Ft.-In.	Bars O Size	Bars O No.	Bars O Length Ft.-In.	Bars O Spac. In.	#4 Bars P No.	#4 Bars P Length Ft.-In.	#4 Bars P1 No.	#4 Bars P1 Length Ft.-In.	#4 Bars P2 No.	#4 Bars P2 Length Ft.-In.	#4 Bars P3 No.	#4 Bars P3 Length Ft.-In.	#4 Bars N No.	#4 Bars N Length Ft.-In.	#6 Bars M No.	#6 Bars M Length Ft.-In.	#6 Bars M1 No.	#6 Bars M1 Length Ft.-In.	#6 Bars X Ⓐ No.	#6 Bars X Length Ft.-In.
7x7	2	#4	76	5-0	11	#4	76	8-0	11	2	17-2	14	2-8	2	20-4	14	3-2	18	14-0	18	16-9	#4	68	3-10	12	8	15-6	6	17-0	8	18-1	6	21-0	36	4-6	4	20-8	6	17-10	32	2-0
	3																																	54	4-6	4	29-5	6	26-7	32	2-0
	4																																	72	4-6	4	38-2	6	35-4	32	2-0
	5																																	88	4-6	4	②49-1	6	②46-3	32	2-0
	6																																	106	4-6	4	②57-10	6	②55-0	32	2-0
8x8	2	#5	92	5-6	10	#4	92	9-1	10	2	18-8	16	2-10	2	22-5	16	3-3	18	15-5	18	18-9	#4	74	4-5	12	8	17-1	6	18-5	8	20-1	6	23-4	42	4-7	4	23-3	6	20-4	36	2-0
	3																																	62	4-7	4	33-3	6	30-4	36	2-0
	4																																	82	4-7	4	②45-5	6	②42-6	36	2-0
	5																																	102	4-7	4	②55-5	6	②52-7	36	2-0
	6																																	122	4-7	4	②65-5	6	②62-7	36	2-0
9x9	2	#5	126	5-8	8	#4	126	10-1	8	2	20-11	18	2-11	2	24-9	18	3-4	22	17-7	22	21-0	#4	100	4-11	10	8	19-3	6	20-7	8	22-4	6	25-8	46	4-8	4	25-10	6	23-0	40	2-0
	3																																	70	4-8	4	37-1	6	34-3	40	2-0
	4																																	92	4-8	4	②50-8	6	②47-8	40	2-0
	5																																	114	4-8	4	②61-9	6	②58-11	40	2-0
10x10	2	#6	132	6-2	8½	#5	132	11-2	8½	2	22-10	20	3-0	2	27-7	20	3-5	24	19-6	24	23-9	#5	102	5-6	11	8	21-1	6	22-5	8	25-1	6	28-7	52	4-9	4	28-5	6	25-7	44	2-0
	3																																	76	4-9	4	②43-1	6	38-1	44	2-0
	4																																	102	4-9	4	②55-7	6	②52-9	44	2-0
	5																																	126	4-9	4	②68-2	6	②65-3	44	2-0

① Includes 1-1'-6" Lap Splice.
② Includes 1-2'-2" Lap Splice.
③ Does not Include Lap Splice. When Bar Length Exceeds 60'-0" Add 1-2'-2" Lap Splice
④ Includes one 2'-7" Lap Splice

③ Does not Include Lap Splice when Bar Length Exceeds 40'-0", Add 2'-7" Lap Splice.

General Notes Cont'd
For Detail of Joints, See Std. Plan C.M.-48.

Ⓐ #6 Bars X to be ¾"⌀ Smooth and Greased for 1'-0" of Length

CC·S·M·7-10·S·60°·2

APPROVED BY:
Dempsey D. White 1-5-78
CHIEF ENGINEER DATE

1-5-78	Rev. Weep Hole Note	W.T.J.
5-20-76	Rev. Steel Quan 10x10	W.T.J.
2-20-75	Rev. Slope Intercept	W.T.J.
6-8-77	Rev. General Notes for Steel	W.E.M.
5-2-07	Added Axle Steel	W.E.M.

DATE	DESCRIPTION	BY
2-15-64	Rev. General Notes	W.E.M.
9-2-64	Added 9'x9' & 10'x10'	W.E.M./N.K.B.
4-2-64	Deformed Dowels X to Smooth	W.E.M.
9-4-63	Added 3-6 no. 8'x8'	W.E.M.
5-29-63	7'x7' Added	

REVISIONS

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 60° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED October 25 1962 7'x 7' TO 10' x 10'

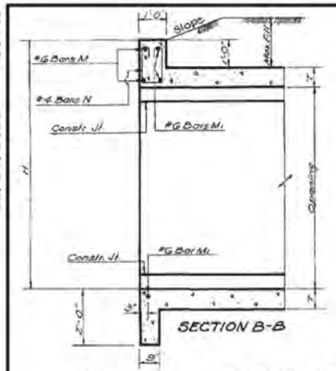
STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

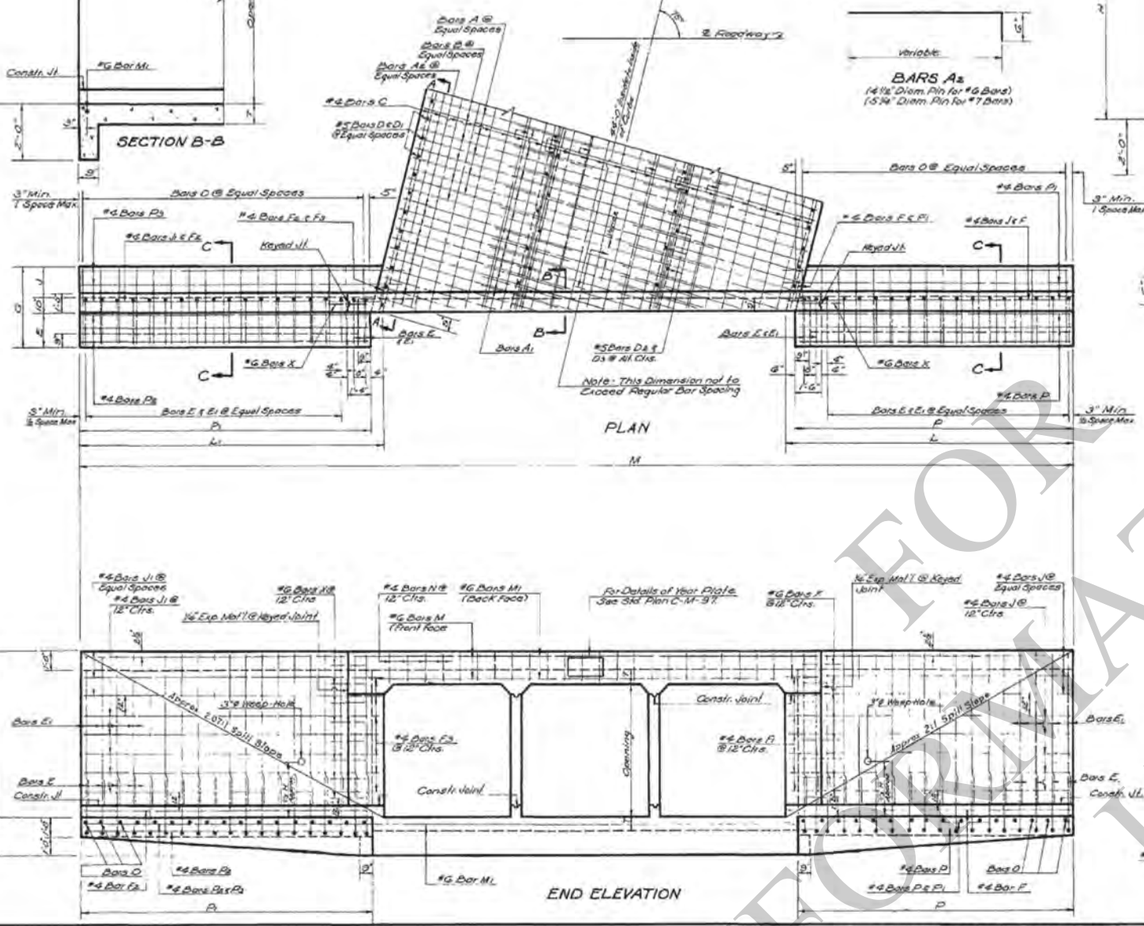
DESIGNED G.A.H./M.Y.Y.	DETAILED	TRACED C.
CHECKED	CHECKED	CHECKED

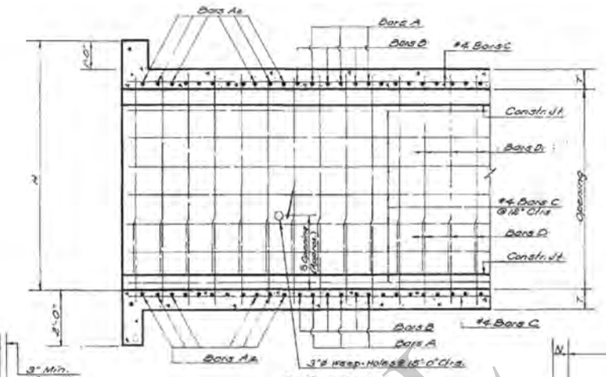
BRIDGE DESIGN SECTION

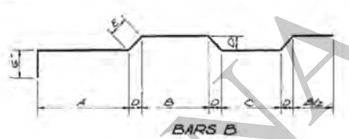
FOR INFORMATIONAL USE

F.A.P.	STATE PROJECT	PARISH	SHEET NO.

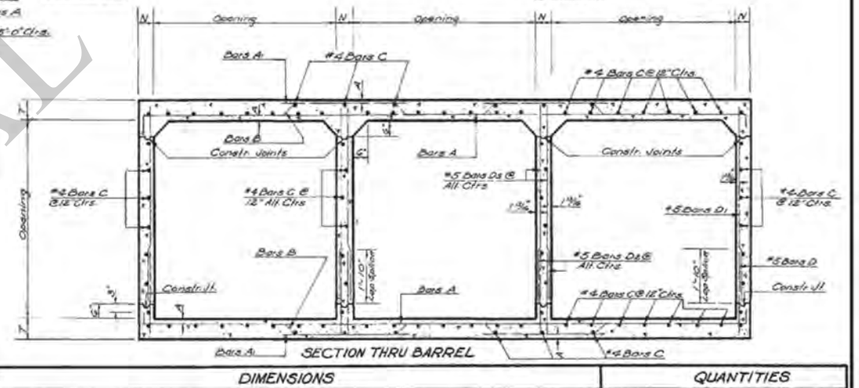


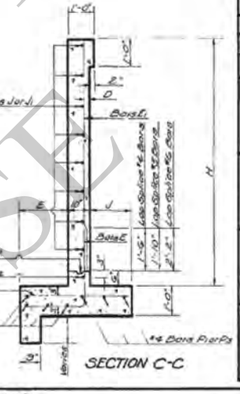




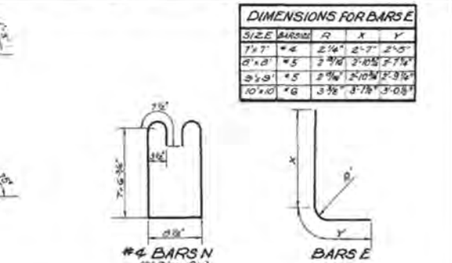


DIMENSIONS FOR BARS B						
SIZE	PIN DIAM	A	B	C	D	E
7'x 7'	14 ½"	6'-5 ⅝"	3'-8⅝"	3'-1⅜"	2'-4⅜"	6'-9¼"
8'x 8'	14 ½"	7'-5 ⅝"	4'-2⅝"	3'-9⅜"	2'-8⅜"	7'-7⅛"
9'x 9'	14 ½"	8'-5 ⅝"	4'-8⅝"	4'-2⅜"	3'-0⅜"	8'-5⅛"
10'x10'	15¼"	9'-5 ⅝"	5'-3⅞"	4'-8⅜"	3'-4⅜"	9'-3⅛"





DIMENSIONS FOR BARS E				
SIZE	BARS	R	X	Y
7'x 7'	#4	2'-1¼"	2'-7"	2'-5"
8'x 8'	#5	2'-9⅛"	3'-10⅝"	3'-7⅛"
9'x 9'	#5	2'-9⅛"	3'-10⅝"	3'-9⅛"
10'x10'	#6	3'-3⅛"	3'-7⅛"	3'-0⅝"



BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS		BARS A			BARS A1			BARS A2				BARS B				#5 BARS D & D1				#5 BARS D2 & D3				#4 BARS C	
Size	No.	Size	Length Ft.-In.	Sp. In.	Size	No.	Length Ft.-In.	Size	No.	Short Bar Ft.-In.	Variation In.	Long Bar Ft.-In.	Sp. In.	Size	No.	Length Ft.-In.	Sp. In.	No.	Light Bars D Ft.-In.	Light Bars D1 Ft.-In.	Sp. In.	No.	Light Bars D2 & D3 Ft.-In.	Light Bars D3 Ft.-In.	Sp. In.	No.	Length Ft.-In.
7'x7'	2	#6	16'-8	13	#6	85	5'-8	#6	28	3'-1	24.3333	16'-3	6½	#6	76	16'-9	13	32	2'-10	5'-0	12	46	2'-10	5'-0	12	59	47'-2
	3	#6	16	24'-0	13	#6	100	5'-8	#6	44	3'-1	24.3000	23'-6	6½	#6	74	24'-6	13	32	2'-10	7'-0	12	92	2'-10	7'-0	12	89	47'-2
	4	#6	16	31'-7	13	#6	282	5'-8	#6	56	3'-1	24.2308	29'-4	6½	#6	70	32'-7	13	32	2'-10	7'-0	12	138	2'-10	7'-0	12	113	47'-2
	5	#6	16	39'-2	13	#6	392	5'-8	#6	72	3'-1	24.2353	37'-5	6½	#6	66	40'-6	13	32	2'-10	7'-0	12	184	2'-10	7'-0	12	140	47'-2
	6	#6	16	⑧48'-11	13	#6	564	5'-8	#6	88	3'-1	24.3391	⑧45'-6	6½	#6	62	⑧50'-7	13	32	2'-10	7'-0	12	230	2'-10	7'-0	12	167	47'-2
8'x8'	2	#6	18	15'-8	12	#6	96	6'-3	#6	36	3'-2	22.3359	16'-1	6	#6	82	19'-0⅛	12	32	2'-11	8'-1	12	46	2'-11	8'-1	12	66	47'-2
	3	#6	18	23'-4	12	#6	200	6'-3	#6	52	3'-2	22.4167	25'-7	6	#6	76	28'-0⅛	12	32	2'-11	8'-1	12	92	2'-11	8'-1	12	96	47'-2
	4	#6	18	32'-0	12	#6	312	6'-3	#6	72	3'-2	22.4118	34'-11	6	#6	74	37'-0⅛	12	32	2'-11	8'-1	12	138	2'-11	8'-1	12	126	47'-2
	5	#6	18	⑦46'-10	12	#6	430	6'-3	#6	60	3'-2	22.3810	⑦42'-4	6	#6	70	⑦46'-3	12	32	2'-11	8'-1	12	184	2'-11	8'-1	12	156	47'-2
	6	#6	18	⑦55'-6	12	#6	568	6'-3	#6	100	3'-2	22.3846	⑦51'-8	6	#6	62	⑦57'-3⅛	12	32	2'-11	8'-1	12	230	2'-11	8'-1	12	186	47'-2
9'x9'	2	#6	88	20'-11	11	#6	104	6'-9	#7	44	3'-3	20.5000	20'-4	5½	#6	88	21-3½	11	106	2'-11	9'-1	10½	55	2'-11	9'-1	10½	73	47'-2
	3	#6	82	30'-8	11	#6	216	6'-9	#7	66	3'-3	20.5333	28'-11	5½	#6	84	31'-5½	11	106	2'-11	9'-1	10½	106	2'-11	9'-1	10½	106	47'-2
	4	#6	76	40'-5	11	#6	344	6'-9	#7	88	3'-3	20.5238	39'-2	5½	#6	78	41-7½	11	106	2'-11	9'-1	10½	159	2'-11	9'-1	10½	139	47'-2
	5	#6	70	⑨52'-4	11	#6	486	6'-9	#7	112	3'-3	20.5185	⑨49'-5	5½	#6	72	⑨53'-11	11	106	2'-11	9'-1	10½	212	2'-11	9'-1	10½	172	47'-2
10'x10'	2	#7	68	25'-2	14	#7	80	7'-8	#7	36	3'-4	26.1250	20'-9	7	#7	70	23'-7	14	124	3'-0	10'-2	9	62	3'-0	10'-2	9	80	47'-2
	3	#7	64	34'-0	14	#7	172	7'-8	#7	56	3'-4	26.1538	31'-8	7	#7	64	34'-10	14	124	3'-0	10'-2	9	124	3'-0	10'-2	9	116	47'-2
	4	#7	54	⑧47'-5	14	#7	270	7'-8	#7	76	3'-4	26.1111	⑧42'-6	7	#7	60	⑧48'-8	14	124	3'-0	10'-2	9	186	3'-0	10'-2	9	152	47'-2
	5	#7	54	⑧58'-3	14	#7	364	7'-8	#7	96	3'-4	26.1304	⑧53'-5	7	#7	54	⑧59'-11	14	124	3'-0	10'-2	9	248	3'-0	10'-2	9	188	47'-2

WINGS AND CURBS REINFORCEMENT Ⓐ

OPENINGS		BARS E			BARS E1			#4 BARS F	#4 BARS F1	#4 BARS F2	#4 BARS F3	#4 BARS J	#4 BARS J1	BARS O		#4 BARS P	#4 BARS P1	#4 BARS P2	#4 BARS P3	#4 BARS J2	#4 BARS N	#6 BARS M	#6 BARS M1	#6 BARS Y	
Size	No.	Size	Length Ft.-In.	Sp. In.	Size	No.	Length Ft.-In.	No.	Length Ft.-In.	No.	Length Ft.-In.	No.	Length Ft.-In.	Size	No.	Length Ft.-In.	No.	Length Ft.-In.	No.	Length Ft.-In.	No.	Length Ft.-In.	No.	Length Ft.-In.	No.	Length Ft.-In.
7'x7'	#4	74	5'-0	11	#4	74	8'-0	2	17'-2	14	2'-8½	2	18'-4	14	2'-10½	16	18'-0	16	18'-0	#4	66	3'-10	12	6	15'-6
8'x8'	#5	90	5'-6	10	#4	90	9'-1	10	2	19'-4	16	2'-9½	2	20'-5	16	2'-11½	18	18'-1	18	17'-0	#4	74	4'-5	12	6	17'-7
9'x9'	#5	122	5'-8	8	#4	122	10'-1	8	2	21'-7	18	3'-0½	2	22'-6	18	3'-0½	22	18'-3	22	18'-0	#4	98	4'-11	10	8	13'-9
10'x10'	#6	128	6'-2	8½	#5	126	11'-2	8½	2	23'-8	20	2'-11½	2	25'-1	20	3'-1½	24	20'-1	24	21'-6	#5	98	5'-6	11	8	21'-7

OPENINGS		BARS O			#4 BARS N		#6 BARS M		#6 BARS M1		#6 BARS Y	
Size	No.	Size	Length Ft.-In.	Sp. In.	No.	Length Ft.-In.	No.	Length Ft.-In.	No.	Length Ft.-In.	No.	Length Ft.-In.
7'x7'	6	#6	17'-0	6	16'-4	6	18'-8	32	4'-6	4	16'-7	6	15'-11	32	2'-0
								48	4'-6	4	32'-5	6	23'-9	32	2'-0
								64	4'-6	4	34'-3	6	31'-8	32	2'-0
								80	4'-6	4	⑧34'-4	6	39'-6	32	2'-0
								96	4'-6	4	⑧52'-5	6	⑧43'-6	32	2'-0
8'x8'	6	#6	19'-1	6	18'-4	6	20'-8	36	4'-7	4	20'-11	6	18'-3	36	2'-0
								54	4'-7	4	29'-11	6	27'-3	36	2'-0
								72	4'-7	4	38'-10	6	36'-2	36	2'-0
								90	4'-7	4	⑧50'-0	6	⑧43'-4	36	2'-0
								108	4'-7	4	⑧51'-0	6	⑧54'-4	36	2'-0
9'x9'	6	#6	21'-6	6	20'-9	6	22'-10	40	4'-8	4	25'-3	6	20'-7	40	2'-0
								60	4'-8	4	33'-4	6	30'-8	40	2'-0
								80	4'-8	4	⑧35'-7	6	⑧42'-11	40	2'-0
								100	4'-8	4	⑧55'-8	6	⑧53'-0	40	2'-0
10'x10'	6	#6	23'-1	6	22'-10	6	25'-4	40	4'-9	4	25'-7	6	22'-11	44	2'-0
								60	4'-9	4	36'-9	6	34'-2	44	2'-0
								80	4'-9	4	⑧50'-2	6	⑧47'-6	44	2'-0
								100	4'-9	4	⑧61'-5	6	⑧58'-9	44	2'-0

① Includes 1'-1'-6" Lap Splice.
② Includes 1'-2'-2" Lap Splice.
③ Does not Include Lap Splice; When Length of Bar Exceeds 40'-0", Add 2'-2" Lap Splice.
④ Includes 1'-2'-7" Lap Splice
⑤ Does not Include Lap Splice; When Length of Bar Exceeds 40'-0", Add 2'-7" Lap Splice.

Ⓐ #6 Bars X to be ¾"ø Smooth and Greased for 1'-0" of Length

CC·S·M·7-10·S·75°·1

DIMENSIONS			QUANTITIES				
OPENINGS	MAX. FILL	BARREL	WINGS AND CURBS				PER LIN. FT. OF BARREL 44'-0" CULVERT
SIZE	AREA	SLAB	WALL	T	N	A	E	J	G	D	H	L	Li	P	Pi	M	STEEL	CONC.	STEEL	CONC.
Ft.	Sq. Ft.	Ft.	Ft.	In.	In.	In.	Ft.-In.	Ft.-In.	Ft.-In.	In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Pounds	Cu. Yds.	Pounds	Cu. Yds.
7'x7'	2	56	11														48-5⅞	177.86	1.2986	10,227	31.46
	3	147															56-7⅞	264.85	1.8570	14,486	118.33
	4	196	18	6	8½	7	1⅞	1'-10	1'-7	4'-3	1'-3⅛	3'-8⅝	16'-5⅛	17'-3⅛	16'-10	16'-8	64'-6 ⅛	351.83	2.4154	18,737	145.20
	5	245															72'-4⅝	438.82	2.9738	23,159	172.07
	6	294															80'-2⅛	537.82	3.5382	28,127	196.94
8'x8'	2	128	9														55'-8⅞	210.80	1.6111	12,452	113.35
	3	182															64'-2⅛	313.82	2.2994	17,467	146.76
	4	256	13	5	9	8	1⅞	2'-0	2'-0	4'-10	1'-3⅛	3'-9	18'-7⅝	18'-4⅝	17'-11	18'-8	73'-2	417.36	2.9877	22,642	179.76
	5	330															82'-1⅞	533.78	3.6759	28,947	212.78
	6	396															91'-1½	637.20	4.3642	33,698	245.73
9'x9'	2	162	7														61'-8⅜	252.18	1.9560	15,209	138.24
	3	243															71'-8⅞	375.85	2.7870	21,182	177.95
	4	324	11	5	8½	8	1⅞	2'-2	2'-4	5'-4	1'-3⅝	10'-9⅜	20'-10⅝	21'-5⅜	20'-1	20'-8	81'-10⅝	499.44	3.8181	27,444	217.66
	5	405															91'-11⅞	637.39	4.4491	34,331	257.37
10'x10'	2	200	5														68'-4⅞	299.05	2.3333	18,930	165.54
	3	300	9	5	10	10	1⅞	2'-5	2'-8	5'-11	1'-3	11'-10	22'-9⅞	24'-0⅜	21'-11	23'-2	79'-7⅞	445.85	3.3200	26,123	212.55
	4	400															90'-9½	610.35	4.3066	34,078	258.57
	5	500															102'-0⅝	756.94	5.2932	41,656	306.58

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: Latest Approved La. Dept. of Highways Std. Specs.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1961 as amended by Int. Spec. 1962.
LIVE LOAD: HS 20-44, or Military Loading, whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have ¾" Chamfer, unless Otherwise noted.
Reinforcement shall be Billet Steel A.S.T.M. A 615 or Rail Steel A.S.T.M. A 616 or Axle Steel A.S.T.M. A 617.
Dimensions relating to Maintaining Steel are to Bar Ctrs.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M. - 99.

APPROVED BY:
Dumas D. Phillips 1-11-78
CHIEF ENGINEER DATE

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 75° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED June 15 1962 7'x7' TO 10'x10'

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED M. Yoshie	DETAILED G.H. Allen	TRACED W. Hebert
CHECKED Q.A.H.	CHECKED M. Yoshie	CHECKED W.C.W.
IN CHARGE OF		

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
5-30-75	Revised Spill Slope	W.T.J.
REVISIONS		

DATE	DESCRIPTION	BY
6-8-78	Rev. Sponsors' Note for Skew	W.E.M.
6-27-67	Added Axle Steel	W.E.M.
12-15-64	Rev. General Notes	W.T.M.
6-3-64	DEFORMED BARS 1" TO SMOOTH	W.E.M.
REVISIONS		

FOR INFORMATIONAL USE ONLY

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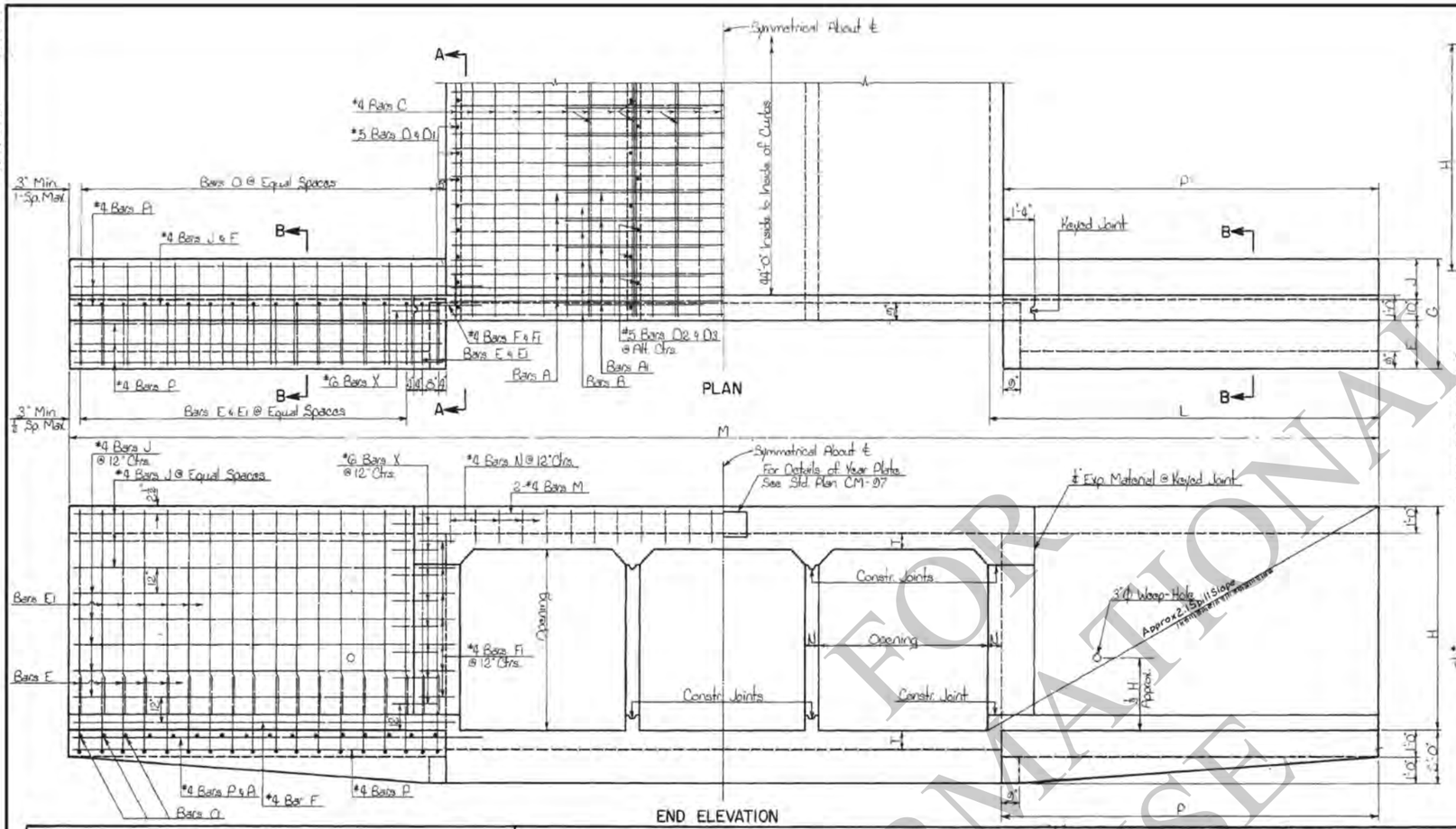
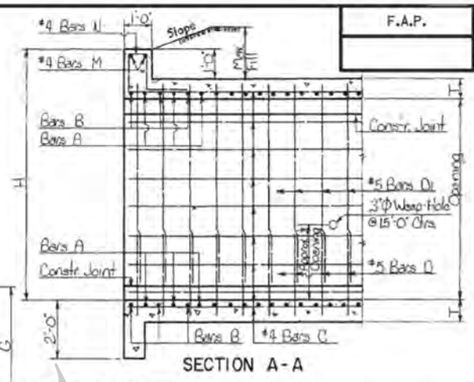
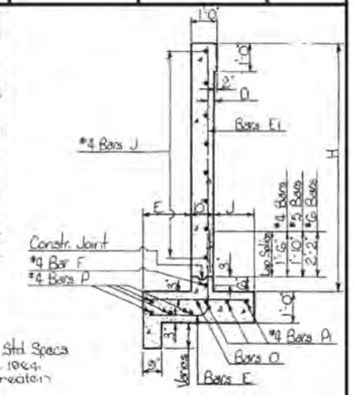
F.A.P.	STATE PROJECT	PARISH	SHEET NO.





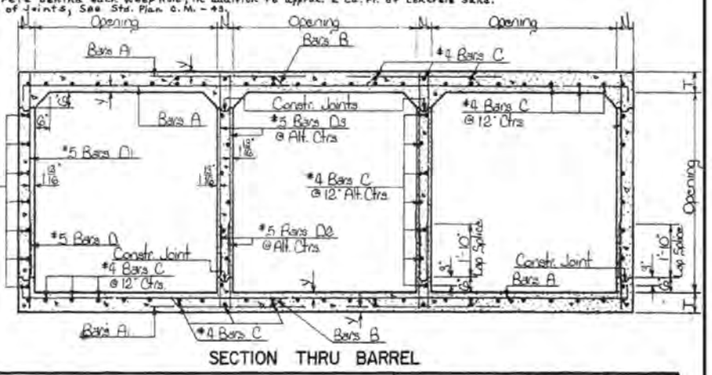
SECTION A-A



SECTION B-B

GENERAL NOTES:

Construction Specifications: Latest Approved La. Dept. of Highways Std. Specs.
Design Specifications: A.A.S.H.O. 1961 as amended by Int. Specs. 1964.
Live Load: H S 20-44, or Military Loading, whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have ¾" Chamfer unless otherwise noted.
Reinforcement shall be **Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.**
Dimensions relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Details of Joints, See Std. Plan C.M.-93.



SECTION THRU BARREL

DIMENSIONS

OPENINGS SIZE (Feet)	No.	AREA Sq. Ft.	MAXFILL SLABWALLS Ft.	MAXFILL WALLS Ft.	BARREL T (In.)	BARREL N (In.)	BARREL Y (In.)	WINGS AND CURBS D (In.)	E (Ft-In)	J (Ft-In)	G (Ft-In)	H (Ft-In)	L (Ft-In)	P (Ft-In)	M (Ft-In)
7x7	2	98	11		6½	7	13⅞	12½	1-10	1-7	4-3	8-8½	16-5	15-10	47-5
	3	147													55-0
	4	196	15	6											62-7
	5	245													70-2
	6	294													77-9
8x8	2	128	9		9	8	18⅞	15⅝	2-0	2-0	4-10	9-9	18-6	17-10	53-8
	3	192													62-4
	4	256	13	5											71-0
	5	320													79-8
	6	384													88-4
9x9	2	162	7		9½	9	18⅞	15⅝	2-2	2-4	5-4	10-2⅝	20-8	19-11	60-1
	3	243	11	5											69-10
	4	324													79-7
	5	405													89-4
10x10	2	200	5		10	10	18⅞	15⅝	2-5	2-8	5-11	11-10	22-8	21-10	66-2
	3	300	9	5											77-0
	4	400													87-10
	5	500													98-8

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

BARS A Size	No.	Length Ft-In	Length In	BARS A1 Size	No.	Length Ft-In	Length In	BARS B Size	No.	Length Ft-In	Length In	*4 BARS C No.	*4 BARS C Length Ft-In	*5 BARS D & D1 No.	*5 BARS D & D1 Length Ft-In	*5 BARS D2 & D3 No.	*5 BARS D2 & D3 Length Ft-In
*6	64	16-5	13	*6	64	5-8	13	*6	64	16-9	19	58	47-2	32	2-10	7-0	12
*6	64	24-0	13	*6	64	5-8	13	*6	64	24-0	13	86	47-2	32	2-10	7-0	12
*6	64	31-7	13	*6	64	5-8	13	*6	64	32-7	18	113	47-2	32	2-10	7-0	12
*6	64	39-2	13	*6	64	5-8	13	*6	64	40-6	13	140	47-2	32	2-10	7-0	12
*6	64	46-11	13	*6	64	5-8	13	*6	64	50-7	13	167	47-2	32	2-10	7-0	12
*6	64	16-8	12	*6	64	6-3	12	*6	64	19-0	12	66	47-2	32	2-11	8-1	12
*6	64	27-8	12	*6	64	6-3	12	*6	64	28-0	12	96	47-2	32	2-11	8-1	12
*6	64	36-0	12	*6	64	6-3	12	*6	64	37-0	12	126	47-2	32	2-11	8-1	12
*6	64	46-10	12	*6	64	6-3	12	*6	64	46-3	12	156	47-2	32	2-11	8-1	12
*6	64	55-6	12	*6	64	6-3	12	*6	64	57-3¼	12	186	47-2	32	2-11	8-1	12
*6	100	20-11	11	*6	100	6-3	11	*6	100	21-3½	11	73	47-2	100	2-11	9-1	10⅝
*6	100	30-8	11	*6	100	6-3	11	*6	100	31-5½	11	102	47-2	100	2-11	9-1	10⅝
*6	100	40-5	11	*6	100	6-3	11	*6	100	41-7½	11	139	47-2	100	2-11	9-1	10⅝
*6	100	52-4	11	*6	100	6-3	11	*6	100	53-1	11	172	47-2	100	2-11	9-1	10⅝
*7	78	23-2	14	*7	78	7-8	14	*7	80	23-7	14	80	47-2	124	3-0	10-2	9
*7	78	34-0	14	*7	156	7-8	14	*7	80	34-10	14	116	47-2	124	3-0	10-2	9
*7	78	47-5	14	*7	234	7-8	14	*7	80	46-8	14	152	47-2	124	3-0	10-2	9
*7	78	58-3	14	*7	312	7-8	14	*7	80	59-11	14	188	47-2	124	3-0	10-2	9

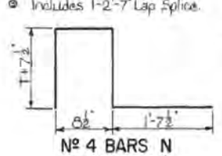
WINGS AND CURBS REINFORCEMENT

BARS E Size	No.	Length Ft-In	Length In	BARS E1 Size	No.	Length Ft-In	Length In	*4 BARS F No.	*4 BARS F Length Ft-In	*4 BARS F1 No.	*4 BARS J No.	*4 BARS J Length Ft-In	BARS O Size	No.	Length Ft-In	Length In	*4 BARS P No.	*4 BARS P Length Ft-In	*4 BARS A1 No.	*4 BARS A1 Length Ft-In	*4 BARS N No.	*4 BARS N Length Ft-In	*4 BARS M No.	*4 BARS M Length Ft-In	*6 BARS X No.	*6 BARS X Length Ft-In
																			32	5-0	4	17-10	32	2-0	
																			48	5-0	4	25-5	32	2-0	
																			64	5-0	4	33-0	32	2-0	
																			78	5-0	4	42-1	32	2-0	
																			92	5-0	4	50-8	32	2-0	
																			36	5-1	4	20-1	36	2-0	
																			54	5-1	4	28-9	36	2-0	
*5	68	5-6	10	*4	68	9-1	10	4	19-5	32	2-10	36	16-2	*4	72	6-5	12	16	17-6	12	19-2	72	5-1	4	37-5	36	2-0	
																			84	5-1	4	47-7	36	2-0	
																			104	5-1	4	56-3	36	2-0	
																			42	5-2	4	22-4	40	2-0	
																			60	5-2	4	32-1	40	2-0	
*5	80	5-8	8	*4	80	10-1	8	4	21-7	36	2-11	44	15-3	*4	96	4-11	10	16	19-7	12	21-3	80	5-2	4	43-4	40	2-0	
																			100	5-2	4	53-1	40	2-0	
																			46	5-3	4	24-7	44	2-0	
																			68	5-3	4	35-5	44	2-0	
*6	124	6-2	8½	*5	124	11-2	8½	4	23-7	40	3-0	48	20-2	*5	96	5-6	11	16	21-6	12	23-2	90	5-3	4	47-9	44	2-0	
																			110	5-3	4	58-7	44	2-0	

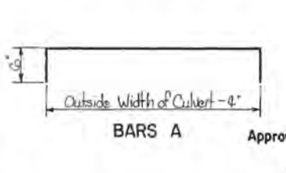
QUANTITIES

PER LINEAR FOOT OF BARREL REINF. STEEL Lbs.	PER LINEAR FOOT OF BARREL CONC. Cu. Yds.	44'-0" CULVERT REINF. STEEL Lbs.	44'-0" CULVERT CONC. Cu. Yds.	OPENINGS SIZE (Feet)	OPENINGS No.
177.86	1.2866	2,906.8	20.54		2
264.85	1.8570	14,055	117.33		3
351.83	2.4154	18,142	144.121	7x7	4
438.82	2.9736	22,237	170.91		5
537.62	3.5322	26,874	197.71		6
210.50	1.0611	12,111	112.62		2
313.82	2.2804	16,976	145.53		3
417.34	2.9877	21,841	178.43	8x8	4
533.77	3.6759	27,302	211.34		5
637.20	4.3642	32,168	244.24		6
252.18	1.9560	14,912	136.09		2
375.85	2.7870	20,736	176.58	9x9	3
499.44	3.6181	26,571	216.20		4
637.30	4.4491	33,059	255.80		5
289.05	2.3333	18,555	163.55		2
445.05	3.3200	25,436	210.44	10x10	3
610.35	4.3066	33,155	252.53		4
756.94	5.2932	40,020	304.22		5

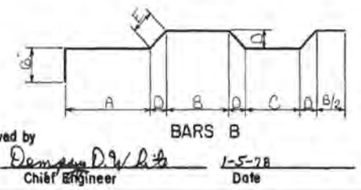
① Includes 1-1'-6" Lap Splice.
② Includes 1-2'-2" Lap Splice.
③ Includes 1-2'-7" Lap Splice.



№ 4 BARS N (3" DIAM. PIN)



BARS A



BARS B

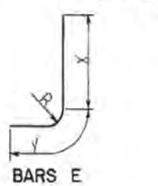
Approved by Dan Chief Engineer D.W.L.B. 1-5-78 Date

DIMENSIONS FOR BARS B						
SIZE	PIN DIAM.	A	B	C	D	E
7x7	4½"	5'-5⅜"	3'-0⅜"	3'-1⅝"	4½"	6⅜"
8x8	4½"	6'-3⅜"	4'-0⅜"	3'-6⅜"	5½"	7⅜"
9x9	4½"	7'-1⅜"	4'-9⅜"	4'-0⅜"	5½"	8⅜"
10x10	5½"	7'-10⅜"	5'-3⅜"	4'-5⅜"	6⅜"	8⅜"

DIMENSIONS FOR BARS E				
SIZE	BAR SIZE	R	X	Y
7x7	#4	2½"	2'-7"	2'-5"
8x8	#5	2½"	2'-10"	2'-7½"
9x9	#5	2½"	2'-10"	2'-9½"
10x10	#6	3½"	3'-1½"	3'-0⅜"

CC·S·M·7-10·S·90°·1

Ⓐ #6 Bars X to be ¾"ϕ Smooth and Greased for 1'-0" of Lgth.



BARS E

№ 4 BARS F & F1 (3" DIA. PIN)

DATE	DESCRIPTION	BY
1-25-56	Rev. Weep Hole Note	W.T.J.
	Rev. Slope Inforced	W.T.J.
6-8-72	Rev. General Notes for Steel	W.E.M.
# 27-97	Added Axle Steel	W.E.M.
12-15-66	Rev. General Notes	W.E.M.
4-3-64	DEFORMED DOWELS "X" TO SMOOTH	W.E.M.

REVISIONS

STANDARD PLAN
MULTIPLE OPENINGS
REINF. CONCRETE BOX CULVERTS
STRAIGHT HDWLS. 2:1 SPILL SLOPE
7'x7' TO 10'x10'

DATED Sept. 13, 1962

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

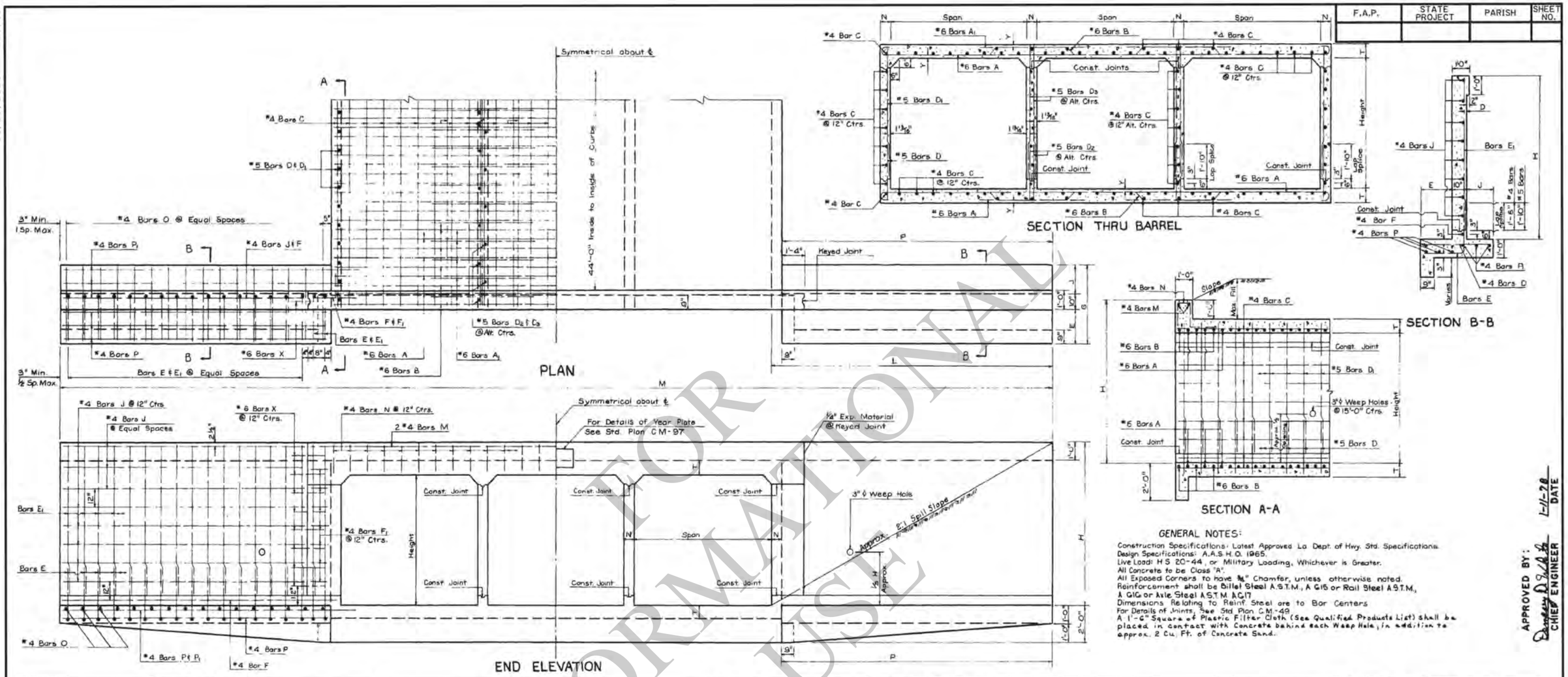
DESIGNED M. Yoshii DETAILED H. Allen TRACED C. Ford
CHECKED R. Marcon CHECKED R. Marcon CHECKED M. Yoshii
BRIDGE DESIGN SECTION

FOR INFORMATIONAL PURPOSES ONLY

3/3/2020 13:45
IP_PWP:dms09544\CCSM7-10S90_1.dgn

10/29/2015 14:40

F.A.P.	STATE PROJECT	PARISH	SHEET NO.



GENERAL NOTES:

Construction Specifications: Latest Approved La. Dept. of Hwy. Std. Specifications.
Design Specifications: A.A.S.H.O. 1965.
Live Load: H S 20-44 or Military Loading, Whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have ¾" Chamfer, unless otherwise noted.
Reinforcement shall be Billet Steel A.S.T.M., A 615 or Rail Steel A.S.T.M., A 616 or Axle Steel A.S.T.M. A 617.
Dimensions Relating to Reinf. Steel are to Bar Centers.
For Details of Joints, See Std. Plan C.M.-49.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contract with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.

APPROVED BY: Dewey D. Hall Jr. CHIEF ENGINEER
1-1-78 DATE

DIMENSIONS

OPENINGS SIZE Ft.	OPENINGS NO	OPENINGS AREA Sq Ft	MAX. FILL SLAB Ft.	MAX. FILL WALLS Ft.	BARREL T In.	BARREL N In.	BARREL Y In.	WINGS AND CURBS D In.	E Ft-In.	J Ft-In.	G Ft-In.	H Ft-In.	L Ft-In.	P Ft-In.	M Ft-In.
8x7	2	112	9												49-5
	3	168													58-0
	4	224	13	6	9	7	1⅞	1⅜	1-10	1-7	4-3	8-9	16-5	15-10	66-7
	5	280													75-2
	6	336													83-9
9x7	2	126	9												51-8
	3	189													61-4
	4	252	12	8	9½	8	1⅞	1⅜	1-10	1-7	4-3	8-9½	16-6	15-10	71-0
	5	315													80-8
9x8	2	144	8												55-10
	3	216													65-6
	4	288	12	5	9½	8	1⅞	1 13/16	2-0	2-0	4-10	9-9½	18-7	17-11	75-2
	5	360													84-10

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

	Bars A				Bars A1				Bars B				*4 Bars C		*5 Bars D & D1			*5 Bars D2 & D3			
	Size	No	Length Ft-In	Spacing In	Size	No	Length Ft-In	Spacing In	Size	No	Length Ft-In	Spacing In	No	Length Ft-In	No	Length Bars D Ft-In	Length Bars D1 Ft-In	No	Length Bars D2 Ft-In	Length Bars D3 Ft-In	Spacing In
8x7	*6	92	18-9½	12	*6	92	6-2	12	*5	92	19-1¾	12	63	47-2	92	2-11	7-1	12	46	2-11	7-1	12
	*6	92	27-4½	12	*6	184	6-2	12	*5	92	28-1	12	92	47-2	92	2-11	7-1	12	92	2-11	7-1	12
	*6	92	35-11½	12	*6	276	6-2	12	*5	92	37-0½	12	121	47-2	92	2-11	7-1	12	138	2-11	7-1	12
	*6	92	⑤46-8½	12	*6	368	6-2	12	*5	92	⑤48-1¼	12	150	47-2	92	2-11	7-1	12	184	2-11	7-1	12
	*6	92	⑤55-3½	12	*6	460	6-2	12	*5	92	⑤57-0¾	12	179	47-2	92	2-11	7-1	12	230	2-11	7-1	12
9x7	*6	100	21-0½	11	*6	100	6-9	11	*5	102	21-5¼	11	67	47-2	92	2-11	7-1	12	46	2-11	7-1	12
	*6	100	30-6½	11	*6	200	6-9	11	*6	102	31-6	11	98	47-2	92	2-11	7-1	12	92	2-11	7-1	12
	*6	100	40-4½	11	*6	300	6-9	11	*6	102	41-6¾	11	129	47-2	92	2-11	7-1	12	138	2-11	7-1	12
	*6	100	⑤52-2½	11	*6	400	6-9	11	*6	102	⑤53-9¾	11	160	47-2	92	2-11	7-1	12	184	2-11	7-1	12
9x8	*6	100	21-0½	11	*6	100	6-9	11	*6	102	21-5¼	11	70	47-2	92	2-11	8-1	12	46	2-11	8-1	12
	*6	100	30-8½	11	*6	200	6-9	11	*6	102	31-6	11	102	47-2	92	2-11	8-1	12	92	2-11	8-1	12
	*6	100	40-4½	11	*6	300	6-9	11	*6	102	41-6¾	11	134	47-2	92	2-11	8-1	12	138	2-11	8-1	12
	*6	100	⑤52-2½	11	*6	400	6-9	11	*6	102	⑤53-9¾	11	166	47-2	92	2-11	8-1	12	184	2-11	8-1	12

WINGS AND CURBS REINFORCEMENT

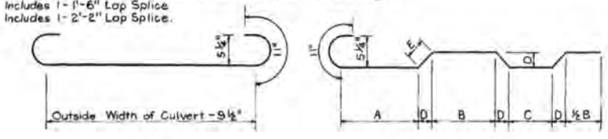
	Bars E				Bars E1				*4 Bars F	*4 Bars F1	*4 Bars J	Bars O			*4 Bars P		*4 Bars R	*4 Bars N		*4 Bars M		*6 Bars X ⑥
	Size	No	Length Ft-In	Spacing In	Size	No	Length Ft-In	Spacing In	No Length Ft-In	No Length Ft-In	No Length Ft-In	Size	No	Length Ft-In	No	Length Ft-In	No Length Ft-In	No	Length Ft-In	No	Length Ft-In	No	Length Ft-In
8x7	*4	72	5-0	11	*4	72	8-1	11	4 17-4	28 2-9	32 14-2	*4	64	3-10	12	16	15-6	12	17-2	36	5-1	4
																				54	5-1	4
																				70	5-1	4
																				88	5-1	4
																				104	5-1	4
9x7	*4	72	5-0	11	*4	72	8-1	11	4 17-5	28 2-10	32 14-2	*4	64	3-10	12	16	15-6	12	17-2	40	5-2	4
																				60	5-2	4
																				80	5-2	4
																				98	5-2	4
9x8	*5	88	5-6	10	*4	88	9-1	10	4 19-6	32 2-10	36 16-3	*4	72	4-5	12	16	17-7	12	19-3	40	5-2	4
																				60	5-2	4
																				80	5-2	4
																				98	5-2	4

QUANTITIES

OPENINGS SIZE Ft.	OPENINGS NO	PER LINEAR FOOT OF BARREL: REINF STEEL Lbs	PER LINEAR FOOT OF BARREL: CONC. Cu. Yds.	44'-0" CULVERT: REINF STEEL Lbs.	44'-0" CULVERT: CONC. Cu. Yds.
8x7	2	205.86	1.4583	11 287	98.22
	3	306.82	2.0957	16 038	128.77
	4	407.78	2.7330	20 782	159.32
	5	521.76	3.3704	26 136	189.67
	6	622.72	4.0077	30 880	220.42
9x7	2	237.37	1.7099	12 801	110.15
	3	355.28	2.4588	18 360	145.97
	4	473.20	3.2078	23 922	181.75
	5	605.31	3.9568	30 132	217.60
9x8	2	242.51	1.7840	13 649	121.08
	3	362.13	2.5576	19 288	158.05
	4	481.75	3.3313	24 930	194.98
	5	615.58	4.1049	31 219	231.94

C·C·S·M·8-9·R·90°·1

⑥ *6 Bars "X" to be ⅜" ϕ Smooth and Greased for 1'-0" of Length.
⑤ Includes 1-1'-6" Lap Splice.
④ Includes 1-2'-2" Lap Splice.



*6 BARS A

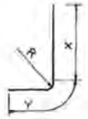
*6 BARS B

DIMENSIONS FOR BARS B

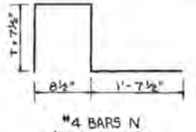
SIZE	PIN DIAM.	A	B	C	D	E
6'x7'	4½"	5'-11⅝"	4'-1⅜"	3'-6⅜"	5½"	7⅜"
9'x7'	4½"	6'-9⅜"	4'-8⅛"	4'-0⅛"	5½"	8⅛"
9'x8'	4½"	6'-9⅜"	4'-8⅛"	4'-0⅛"	5½"	8⅛"

DIMENSIONS FOR BARS E

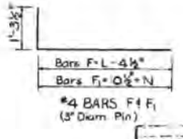
SIZE	BAR SIZE	R	X	Y
8'x7'	*4	2½"	2'-7"	2'-5"
9'x7'	*4	2½"	2'-7"	2'-5"
9'x8'	*5	2 3/8"	2'-10⅜"	2'-7⅛"



BARS E



*4 BARS N (3" Diam. Pin)



*4 BARS F & F1 (3" Diam. Pin)

STANDARD PLAN
MULTIPLE OPENINGS
REINF. CONCRETE BOX CULVERT
STRAIGHT HDWLS. 2:1 SPILL SLOPE
8'x7' **9'x7'** **9'x8'**
DATED: Dec. 19 1969

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED	W. E. M.	DETAILED	J. R.	TRACED	M. B. R.
CHECKED	N. K. B.	CHECKED	C. D. J.	CHECKED	
IN CHARGE OF					

DATE	DESCRIPTION	BY
1-1-78	Rev. Weep Hole Note.	W.T.J.
1-28-76	Rev. Slope Intercept	W.T.J.
6-8-72	Rev. General Notes for Steel	W.E.M.

REVISIONS

FOR INFORMATIONAL USE

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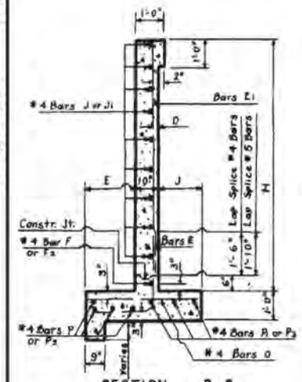
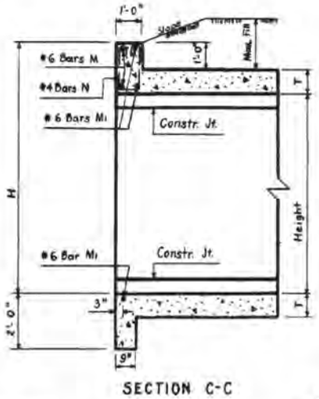
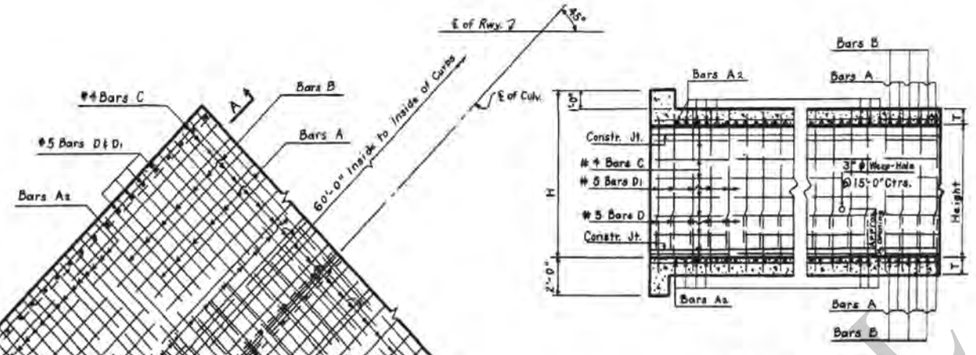
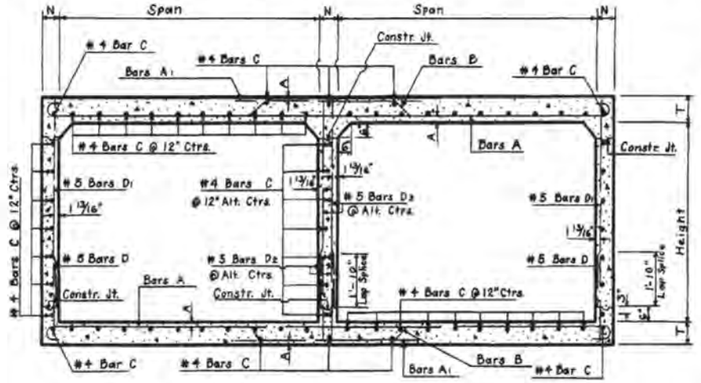
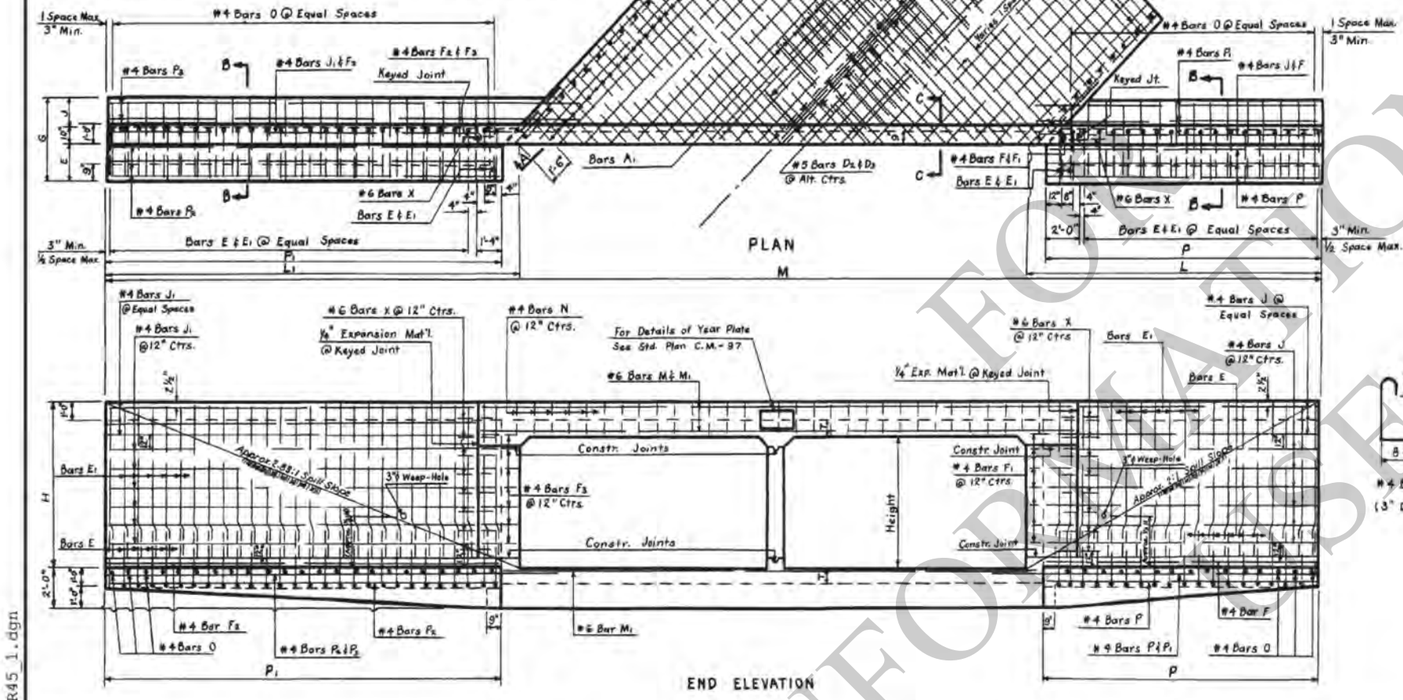
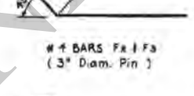


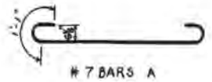


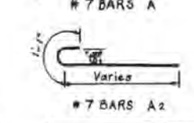


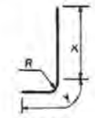


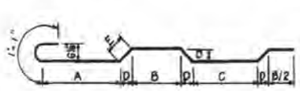












F.A.P.	STATE PROJECT	PARISH	SHEET NO.

DIMENSIONS FOR BARS E				
Opening	Bar Size	R	X	Y
10'x 7'	#4	2¼"	2'-7"	2'-6"
10'x 8'	#5	2 13/16"	2'-10¾"	2'-7¾"
10'x 9'	#5	2 13/16"	2'-10¾"	2'-9¼"

DIMENSIONS FOR BARS B					
SIZE	A	B	C	D	E
10'x7'	7'-5 9/16"	5'-1 7/8"	4'-5 7/8"	6 1/8"	8 5/8"
10'x8'	7'-6 9/16"	5'-2 7/8"	4'-5 7/8"	6 1/8"	8 5/8"
10'x9'	7'-6 9/16"	5'-2 7/8"	4'-5 7/8"	6 1/8"	8 5/8"

DIMENSIONS																		QUANTITIES FOR 60'-0" ALONG ℄ OF CULVERT			
OPENINGS			MAX. FILL		BARREL			WINGS AND CURBS										PER LINEAR FOOT OF BARREL		TOTAL QUANTITIES	
SIZE	NO.	AREA	SLAB	WALL	T	N	A	E	J	G	D	H	L	L1	P	P1	M	STEEL	CONC.	STEEL	CONC. @
FT.		SQ. FT.	FT.	FT.	IN.	IN.	IN.	FT.-IN.	FT.-IN.	FT.-IN.	IN.	FT.-IN.	FT.-IN.	FT.-IN.	FT.-IN.	FT.-IN.	FT.-IN.	LBS.	CU. YDS.	LBS.	CU. YDS.
10x7	2	140	6	8	10	8	1 15/16	1-11	1-8	4-5	1¾	8-10	16-10¾	23-8⅝	15-11	22-9	69-9⅜	270.50	1.8951	19816	158.92
	3	210	10														84-10⅜	405.93	2.7356	29456	213.83
	4	280															99-11⅜	559.47	3.5761	39925	268.73
	5	350															115-0⅜	694.90	4.4167	50713	323.64
10x8	2	160	5	6	10	9	1 15/16	2-0	2-0	4-10	1 9/16	9-10	18-5⅝	26-9¾	17-5	25-9	74-7⅝	277.38	2.0586	20841	177.36
	3	240	10														89-10 1/16	415.11	2.9537	30477	235.71
	4	320															105-0½	570.94	3.8488	41164	294.06
	5	400															120-2⅞	708.67	4.7438	52149	352.40
10x9	2	180	5	5	10	9	1 15/16	2-2	2-4	5-4	1 15/16	10-10	20-4⅞	29-0⅜	19-4	28-0	78-9⅝	287.96	2.1420	22449	191.48
	3	270	10														94-0 1/16	423.21	3.0648	32307	251.57
	4	360															109-2½	588.56	3.9877	43216	311.67
	5	450															124-4⅞	729.81	4.9105	54424	371.76

@ Quantities do not Include Expansion Joint Block.

BILL OF REINFORCING STEEL FOR 60'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS		BARS A				BARS A1				BARS A2						BARS B				#5 BARS D & D1				#5 BARS D2 & D3				#4 BARS C	
SIZE FT.	NO.	SIZE	NO.	LENGTH FT.-IN.	SP. IN.	SIZE	NO.	LENGTH FT.-IN.	SP. IN.	SIZE	NO.	SHORT BAR FT.-IN.	VARIATION IN.	LONG BAR FT.-IN.	SP. IN.	SIZE	NO.	LENGTH FT.-IN.	SP. IN.	NO.	LENGTH BARS D FT.-IN.	LENGTH BARS D1 FT.-IN.	SP. IN.	NO.	LENGTH BARS D2 FT.-IN.	LENGTH BARS D3 FT.-IN.	SP. IN.	NO.	LENGTH FT.-IN.
10x7	2	#7	68	23-3½	14	#7	120	7-7	7, 14	#7	140	2-7	7.0000	22-5	7	#7	70	23-8½	14	126	3-0	7-2	12	63	3-0	7-2	12	71	63-10
	3	#7	52	33-11½	14	#7	276	7-7	7, 14	#7	212	2-7	7.0000	32-11	7	#7	52	34-9½	14	126	3-0	7-2	12	126	3-0	7-2	12	104	63-10
	4	#7	34	47-2½②	14	#7	466	7-7	7, 14	#7	264	2-7	7.0000	43-5④	7	#7	34	48-5½②	14	126	3-0	7-2	12	189	3-0	7-2	12	137	63-10
	5	#7	14	57-10½②	14	#7	700	7-7	7, 14	#7	360	2-7	7.0000	54-6④	7	#7	14	59-6½②	14	126	3-0	7-2	12	252	3-0	7-2	12	170	63-10
10x8	2	#7	70	23-6½	14	#7	118	7-7	7, 14	#7	140	2-8	7.0000	22-6	7	#7	70	23-11½	14	126	3-0	8-2	12	63	3-0	8-2	12	74	63-10
	3	#7	52	34-3½	14	#7	272	7-7	7, 14	#7	212	2-8	7.0000	33-0	7	#7	52	35-1½	14	126	3-0	8-2	12	126	3-0	8-2	12	108	63-10
	4	#7	32	47-7½②	14	#7	468	7-7	7, 14	#7	288	2-8	7.0000	44-1④	7	#7	32	48-10½②	14	126	3-0	8-2	12	189	3-0	8-2	12	142	63-10
	5	#7	14	58-4½②	14	#7	692	7-7	7, 14	#7	360	2-8	7.0000	54-7④	7	#7	16	60-0½②	14	126	3-0	8-2	12	252	3-0	8-2	12	176	63-10
10x9	2	#7	70	23-6½	14	#7	118	7-7	7, 14	#7	140	2-8	7.0000	22-6	7	#7	70	23-11½	14	144	3-0	9-2	10½	72	3-0	9-2	10½	77	63-10
	3	#7	52	34-3½	14	#7	272	7-7	7, 14	#7	212	2-8	7.0000	33-0	7	#7	52	35-1½	14	144	3-0	9-2	10½	144	3-0	9-2	10½	112	63-10
	4	#7	32	47-7½②	14	#7	468	7-7	7, 14	#7	288	2-8	7.0000	44-1④	7	#7	32	48-10½②	14	144	3-0	9-2	10½	216	3-0	9-2	10½	147	63-10
	5	#7	14	58-4½②	14	#7	692	7-7	7, 14	#7	360	2-8	7.0000	54-7④	7	#7	16	60-0½②	14	144	3-0	9-2	10½	288	3-0	9-2	10½	182	63-10

WINGS AND CURBS REINFORCEMENT

OPENINGS		BARS E				BARS E1				#4 BARS F		#4 BARS F1		#4 BARS F2		#4 BARS F3		#4 BARS J		#4 BARS J1		#4 BARS O			#4 BARS P		#4 BARS P1		#4 BARS P2		#4 BARS P3		#4 BARS N		#6 BARS M		#6 BARS M1		#6 BARS X Ⓐ	
SIZE FT.	NO.	SIZE	NO.	LENGTH FT.-IN.	SP. IN.	SIZE	NO.	LENGTH FT.-IN.	SP. IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	SP. IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.	NO.	LENGTH FT.-IN.
10x7	2	#4	94	5-1	10	#4	94	8-2	10	2	17-0	14	3-0	2	25-1	14	3-7	18	13-7	18	21-1	76	4-0	12	8	15-7	6	16-9	8	22-5	6	26-4	62	4-9	4	33-11	6	30-7	32	2-0
	3																																92	4-9	4	51-2③	6	47-10③	32	2-0
	4																																122	4-9	4	66-3③	6	62-11③	32	2-0
	5																																152	4-9	4	81-4③	6	78-0③	32	2-0
10x8	2	#5	96	5-6	11	#4	96	9-2	11	2	18-8	16	3-1	2	26-3	16	3-8	20	15-1	20	24-1	86	4-5	12	8	17-1	6	18-2	8	25-5	6	29-8	62	4-9	4	34-3	6	30-11	36	2-0
	3																																92	4-9	4	51-7③	6	48-4③	36	2-0
	4																																124	4-9	4	66-10③	6	63-6③	36	2-0
	5																																154	4-9	4	82-0③	6	78-9③	36	2-0
10x9	2	#5	140	5-8	8	#4	140	10-2	8	2	20-6	18	3-1	2	30-6	18	3-8	22	17-0	22	26-4	114	4-11	10	8	19-0	6	20-0	8	27-8	6	32-1	62	4-9	4	34-3	6	30-11	40	2-0
	3																																92	4-9	4	51-7③	6	48-4③	40	2-0
	4																																124	4-9	4	66-10③	6	63-6③	40	2-0
	5																																154	4-9	4	82-0③	6	78-9③	40	2-0

① Includes one 1'-6" Lap Splice.
② Includes one 2'-7" Lap Splice.
③ Includes one 2'-2" Lap Splice.
④ Does not include Lap Splice. When Length of Bar Exceeds 40'-0" add 2'-7" Lap Splice.

Ⓐ #6 Bars X to be ¾" ⌀ Smooth and Greased for 1'-0" of Length.

General Notes:

CONSTRUCTION SPECIFICATIONS: Latest Approved La. Dept. of Highways Std. Specs.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1969 as amended by Int. Spec. 1971.
LIVE LOAD: HS 20-44 or Military Loading Whichever is Greater.
All Concrete to be Class "A"
All Exposed Corners to have ¾" Chamfer, Unless Otherwise Noted.
Reinforcement Shall Be Billet Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.
Dimensions relating to Reinforcing Steel are to Bar Ctrs.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Details of Joints, See Standard Plan CM-49

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 45° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED March 20 1972 10'x 7' TO 10'x 9'

CCS·M·10·R·45°·1

APPROVED BY:
Dempsey D. White 1-11-78
CHIEF ENGINEER DATE

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
6-10-75	Revised Slope Intercept	W.T.J.
6-8-72	Rev. General Notes for Steel	W.E.M.

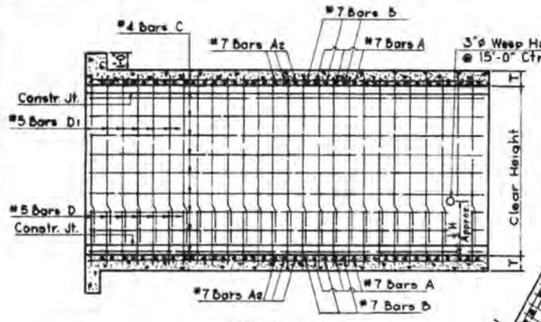
REVISIONS

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

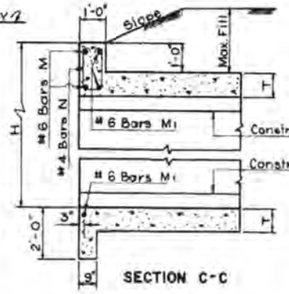
DESIGNED	DETAILED J.D. BACCI	TRACED E.B. ALLEN
CHECKED	CHECKED H. BAROUSSE	CHECKED J.D. BACCI

FOR INFORMATIONAL USE

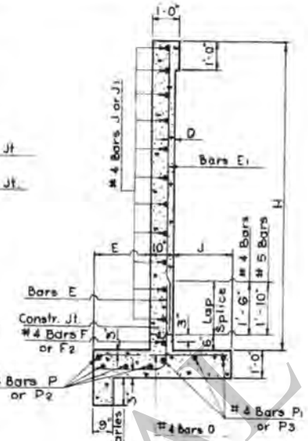
F.A.P.	STATE PROJECT	PARISH	SHEET NO.



SECTION A-A



SECTION C-C



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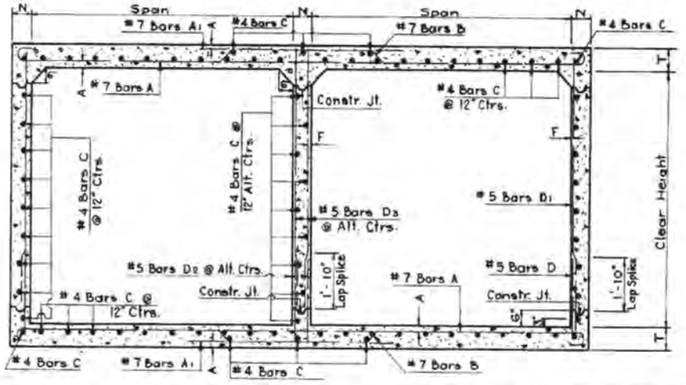
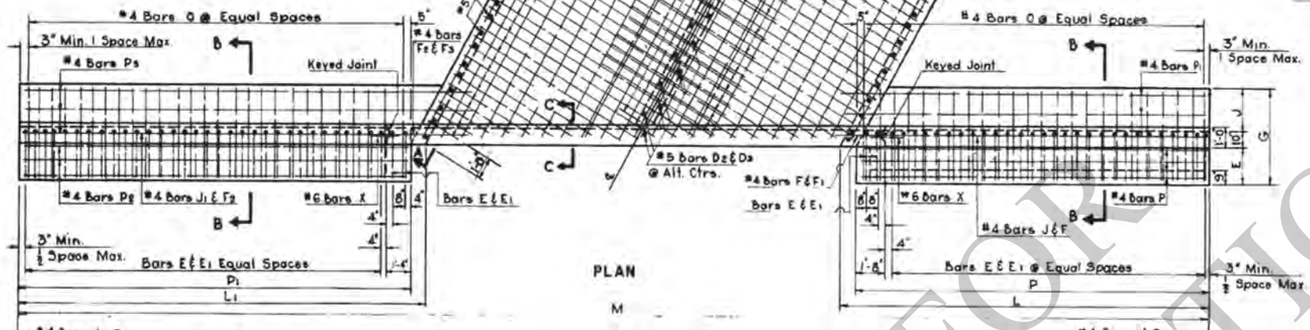
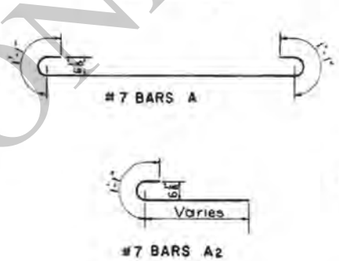
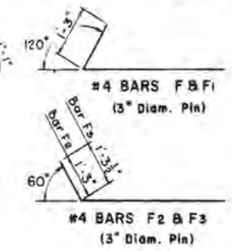


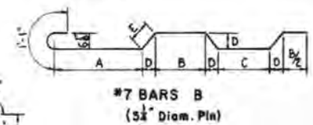
SECTION THRU BARREL



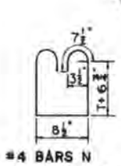




DIMENSIONS FOR BARS E				
Opening	Bar Size	R	X	Y
10'x7'	#4	2 1/2"	2'-7"	2'-6"
10'x8'	#5	2 1/2"	2'-10"	2'-7"
10'x9'	#5	2 1/2"	2'-10"	2'-9"



DIMENSIONS FOR BARS B					
Size	A	B	C	D	E
10x7	7'-5 1/8"	5'-1 1/8"	4'-5 5/8"	6 1/2"	8 3/4"
10x8	7'-6 11/16"	5'-2 1/8"	4'-5 5/8"	6 1/2"	8 3/4"
10x9	7'-6 11/16"	5'-2 1/8"	4'-5 5/8"	6 1/2"	8 3/4"



DIMENSIONS																									QUANTITIES FOR 44'-0" ALONG ℄ OF CULVERT			
Openings			Max. Fill	Barrel				Wings and Curbs																	Per Linear Foot of Barrel		Total Quantities	
Size	No	Area	Slab(Wall)	T	N	A	F	E	J	G	D	H	L	L1	P	P1	M								Steel	Concrete	Steel	Concrete
Feet		Sq. Ft.	Feet	In.	In.	In.	In.	Ft-In	Ft-In	Ft-In	In.	Ft-In	Ft-In	Ft-In	Ft-In	Ft-In	Ft-In								Lbs.	Cu. Yds.	Lbs.	Cu. Yds.
10X7	2	140	6	10	8	1 15/16	1 15/16	1-11	1-8	4-5	1 3/4	8-10	16-6 1/4	19-5 1/4	15-9	18-8	59-9 1/2								270.50	1.8951	15,040	122.95
	3	210															72-1 1/2								405.93	2.7356	21,910	163.55
	4	280															84-5 1/16								559.47	3.5761	29,647	204.22
	5	350															96-9								694.90	4.4167	37,518	244.85
10X8	2	160	5	10	9	1 15/16	1 15/16	2-0	2-0	4-10	1 13/16	9-10	18-8 3/8	22-0 3/8	17-10	21-2	64-8 3/8								277.38	2.0566	15,876	136.37
	3	240															77-1 3/8								415.11	2.9537	27,989	181.54
	4	320															89-6 3/8								570.94	3.8488	30,666	224.71
	5	400															101-11 3/8								708.67	4.7438	38,644	297.89
10X9	2	180	5	10	8	1 15/16	1 15/16	2-2	2-4	5-4	1 13/16	10-10	21-1 3/16	23-5 3/8	20-3	22-7	66-6 1/16								267.96	2.1420	17,138	150.33
	3	270															80-11 1/16								429.21	3.0648	24,469	194.79
	4	360															93-4 1/16								588.56	3.9877	32,302	239.25
	5	450															105-9 1/16								729.81	4.9105	40,437	283.71

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS	#7 BARS A				#7 BARS A1				#7 BARS A2								#7 BARS B				#5 BARS D2 & D1					#5 BARS D2 & D3					#4 BARS C	
SIZE	No.	No.	LENGTH	SP.	No.	LENGTH	SP.	No.	SHORT BAR	VARIATION	LONG BAR	SP.	No.	SHORT BAR	VARIATION	LONG BAR	SP.	No.	LENGTH	SP.	No.	LGTH. BARS D2	LGTH. BARS D1	SP.	No.	LGTH. BARS D2	LGTH. BARS D3	SP.	No.	LENGTH	
FT.			FT. - IN.	IN.		FT. - IN.	IN.		FT. - IN.	FT.-IN.	FT.-IN.	IN.		FT. - IN.	FT.-IN.	FT.-IN.	IN.		FT. - IN.	IN.		FT.-IN.	FT.-IN.	IN.		FT.-IN.	FT.-IN.	IN.		FT.-IN.	
10X7	2	58	23 - 3 1/2	14	86	7 - 7	7/14	80	2 - 8	12.1053	21 - 10	7	58	23 - 0 1/2	14	94	3 - 0	7 - 2	12	47	3 - 0	7 - 2	12	71	47 - 5						
	3	46	33 - 11 3/8	14	192	7 - 7	7/14	124	2 - 8	12.1333	33 - 0	7	46	34 - 9 3/8	14	94	3 - 0	7 - 2	12	94	3 - 0	7 - 2	12	104	47 - 5						
	4	36	47 - 2 1/2 ①	14	316	7 - 7	7/14	164	2 - 8	12.1250	43 - 1 ⑧	7	36	46 - 5 1/2 ⑧	14	94	3 - 0	7 - 2	12	141	3 - 0	7 - 2	12	137	47 - 5						
	5	26	57 - 10 1/2 ①	14	472	7 - 7	7/14	208	2 - 8	12.1176	54 - 2 ⑧	7	26	59 - C 1/2 ⑧	14	94	3 - 0	7 - 2	12	188	3 - 0	7 - 2	12	170	47 - 5						
10X8	2	58	23 - C 3/8	14	86	7 - 7	7/14	80	2 - 9	12.1053	21 - 11	7	58	23 - 11 1/2	14	94	3 - 0	8 - 2	12	47	3 - 0	8 - 2	12	74	47 - 5						
	3	46	34 - 3 1/2	14	192	7 - 7	7/14	124	2 - 9	12.1333	33 - 1	7	46	35 - 1 1/2	14	94	3 - 0	8 - 2	12	94	3 - 0	8 - 2	12	106	47 - 5						
	4	36	47 - 7 1/2 ①	14	316	7 - 7	7/14	164	2 - 9	12.1250	43 - 2 ⑧	7	36	48 - 10 1/2 ⑧	14	94	3 - 0	8 - 2	12	141	3 - 0	8 - 2	12	142	47 - 5						
	5	26	58 - 4 1/2 ①	14	472	7 - 7	7/14	208	2 - 9	12.1176	54 - 3 ⑧	7	26	C0 - 0 1/2 ⑧	14	94	3 - 0	8 - 2	12	188	3 - 0	8 - 2	12	176	47 - 5						
10X9	2	58	23 - C 3/8	14	86	7 - 7	7/14	80	2 - 9	12.1053	21 - 11	7	58	23 - 11 1/2	14	106	3 - 0	9 - 2	10 1/2	53	3 - 0	9 - 2	10 1/2	77	47 - 5						
	3	46	34 - 3 1/2	14	192	7 - 7	7/14	124	2 - 9	12.1333	33 - 1	7	48	35 - 1 1/2	14	106	3 - 0	9 - 2	10 1/2	106	3 - 0	9 - 2	10 1/2	112	47 - 5						
	4	36	47 - 7 1/2 ①	14	316	7 - 7	7/14	164	2 - 9	12.1250	43 - 2 ⑧	7	36	48 - 10 1/2 ⑧	14	106	3 - 0	9 - 2	10 1/2	159	3 - 0	9 - 2	10 1/2	147	47 - 5						
	5	26	58 - 4 1/2 ①	14	472	7 - 7	7/14	208	2 - 9	12.1176	54 - 3 ⑧	7	26	C0 - 0 1/2 ⑧	14	106	3 - 0	9 - 2	10 1/2	212	3 - 0	9 - 2	10 1/2	182	47 - 5						

WINGS AND CURBS REINFORCEMENT

OPENINGS	BARS E				BARS E1				#4 BARS F		#4 BARS F1		#4 BARS F2		#4 BARS F3		#4 BARS J		#4 BARS J1		#4 BARS O		#4 BARS P		#4 BARS P1		#4 BARS P2		#4 BARS P3		#4 BARS N		#6 BARS M		#6 BARS M1		#6 BARS X Ⓐ	
SIZE	No.	LENGTH FT.-IN.	SP. IN.	SIZE	No.	LENGTH FT.-IN.	SP. IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.	No.	LENGTH FT.-IN.
10X7	#4	64	5-1	10	#4	84	8-2	10	2	17-0	14	2-10	2	20-8	14	3-3	18	15-9	18	17-0	70	4-0	12	8	15-5	G	16-9	8	18-4	G	21-4	50	4-9	4	27-10	G	25-0	32	2-0
																																74	4-9	4	42-4⑧	G	37-4	32	2-0
																																100	4-9	4	54-6⑧	G	51-9	32	2-0
																																124	4-9	4	66-11⑧	G	64-1	32	2-0
10X8	#5	88	5-6	11	#4	88	9-2	11	2	19-2	16	2-11	2	23-3	16	3-4	20	15-10	20	19-6	78	4-5	12	8	17-6	G	18-10	8	20-10	G	24-0	50	4-9	4	28-1	G	25-3	36	2-0
																																76	4-9	4	42-6⑧	G	37-8	36	2-0
																																100	4-9	4	55-1⑧	G	52-3	36	2-0
																																126	4-9	4	67-6⑧	G	64-8	36	2-0
10X9	#5	128	5-8	8	#4	128	10-2	8	2	21-7	18	2-11	2	24-8	18	3-4	22	18-3	22	20-11	102	4-11	10	8	19-11	G	21-2	8	22-3	G	25-7	50	4-9	4	28-1	G	25-3	40	2-0
																																76	4-9	4	42-8⑧	G	37-6	40	2-0
																																100	4-9	4	55-1⑧	G	52-3	40	2-0
																																126	4-9	4	67-6⑧	G	64-8	40	2-0

① Includes 1-2'-7" Lap Splice.
⑧ Includes 1-1'-6" Lap Splice.
⑨ Includes 1-2'-2" Lap Splice.
⊕ Does not Include Lap Splice. When Bar Length Exceeds 40'-0", Add 1-2'-7" Lap Splice.

Ⓐ #C Bars X to be 3/4" Smooth and Greased for 1'-0" of Length.

APPROVED BY:
Dewey D. White
CHIEF ENGINEER
1-11-78
DATE

GENERAL NOTES:
Design Specifications: A.A.S.H.O. 1969 as Amended to 1971.
Construction Specifications: Latest Approved Louisiana Department of Highways Standard Specifications.
All Concrete to be Class "A".
All Exposed Corners to Have 3/4" Chamfer Unless Otherwise Noted.
Reinforcement Shall be Intermediate or Hard Grade A.S.T.M. A15, or Axle Steel A.S.T.M. A160, or Rail Steel A.S.T.M. A16, Conforming to A.S.T.M. A305.
Dimensions Relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu.Ft. of Concrete Sand.
For Details of Joints, See Standard Plan CM-49

CC-S-M-10-R-60°-1

REVISIONS		
DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J
8-1-75	Rev. Spill Slope	W.T.J

STANDARD PLAN
MULTIPLE OPENINGS
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 60° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED May 28 1975 10'x7', 10'x8' & 10'x9'

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

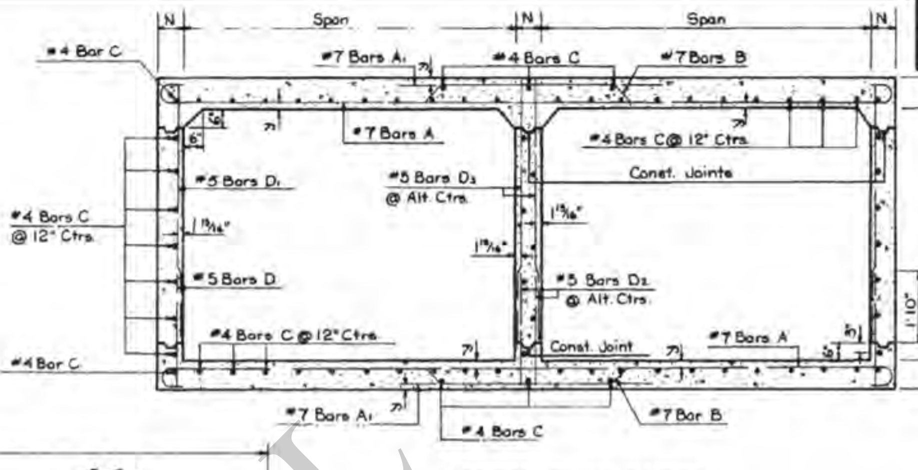
DESIGNED	DETAILED Barousse	TRACED A.L. Carrick
CHECKED	CHECKED Bacci	CHECKED Barousse

INFORMATIONAL PURPOSES ONLY NOT FOR CONSTRUCTION

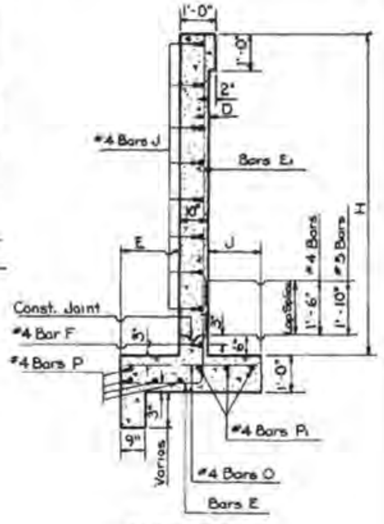
28-NOV-2007 09:49
R:\Standard Plans\English\Old Sheets\CCSM10R60_1.dgn

6/26/2020 15:00
IP_PWP:dms09544\CCSM10R90_1.dgn

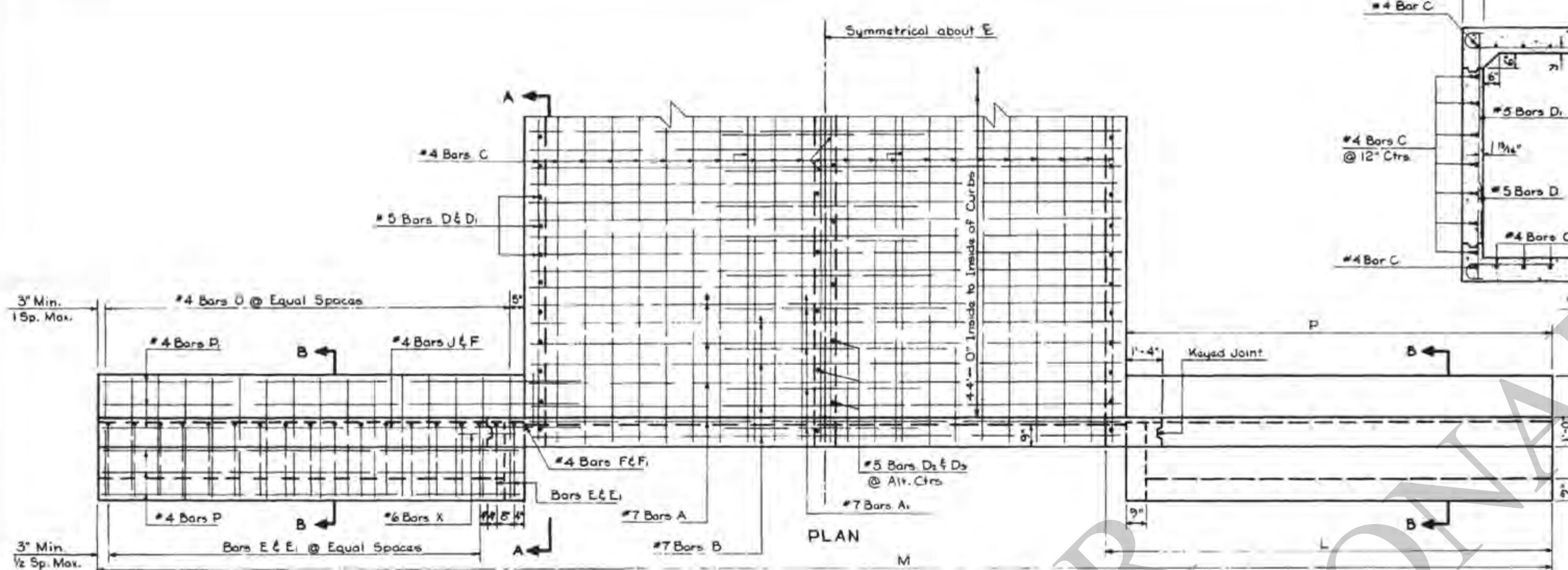
F.A.P.	STATE PROJECT	PARISH	SHEET NO.



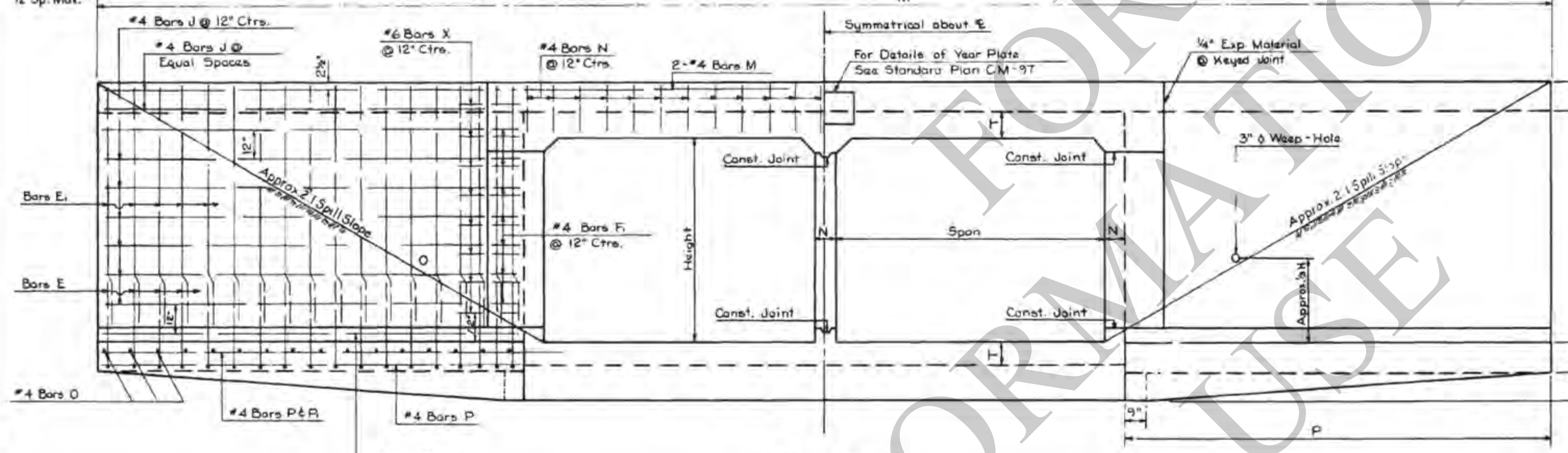
SECTION THRU BARREL



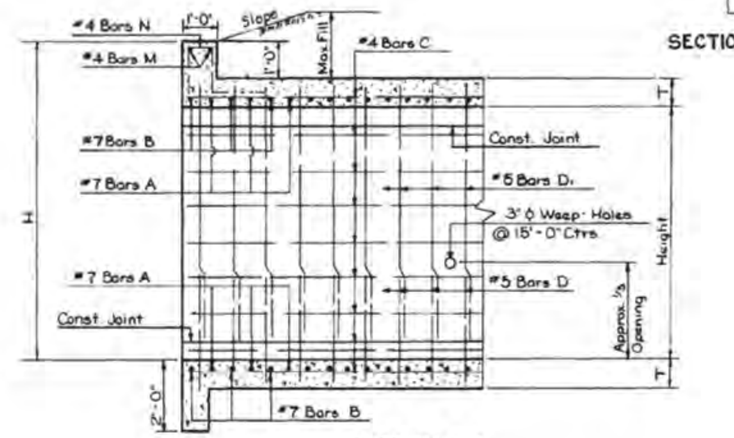
SECTION B-B



PLAN



END ELEVATION



SECTION A-A

GENERAL NOTES:

Construction Specifications: Latest Approved La. Dept. of Highway Std. Specifications.
Design Specifications: A.A.S.H.O. 1969.
Live Load: HS 20-44 or Military Loading, Whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have ¾" Chamfer, unless Otherwise noted.
Reinforcement shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.
Dimensions Relating to Reinf. Steel are to Bar Centers.
For Details of Joints See Std. Plan C.M.-49.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.

APPROVED BY: Dempsey D. Webb
CHIEF ENGINEER
1-5-78
DATE

C·C·S·M-10-R·90°-1

DIMENSIONS

OPENINGS			MAX. FILL		BARREL			WINGS AND CURBS							
SIZE	NO.	AREA	SLAB	WALLS	T	N	Y	D	E	J	G	H	L	P	M
Ft.		Sq. Ft.	Ft.	Ft.	In.	In.	In.	In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft.-In.	Ft. In.
10x7	2	140	6	8	10	8	1 5/16	1 3/4	1-11	1-8	4-5	8-10	16-9	16-1	54-2
	3	210	10												64-10
	4	280													75-6
	5	350													86-2
10x8	2	160	5	6	10	9	1 15/16	1 13/16	2-0	2-0	4-10	9-10	19-2	18-5	59-1
	3	240	10												69-10
	4	320													80-7
	5	400													91-4
10x9	2	180	5	5	10	9	1 13/16	1 13/16	2-2	2-4	5-4	10-10	20-8	19-11	62-1
	3	270	10												72-10
	4	360													83-7
	5	450													94-4

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

SIZE	NO.	BARS A				BARS A₁				BARS B				#4 BARS C		#5 BARS D & D₁				#5 BARS D₂ & D₃			
		Size	No.	Length	Spac.	Size	No.	Length	Spac.	Size	No.	Length	Spac.	No.	① Length	No.	Length Bars D	Length Bars D₁	Spac.	No.	Length Bars D₂	Length Bars D₃	Spac.
Ft.				Ft.-In.	In.			Ft.-In.	In.			Ft.-In.	In.		Ft.-In.		Ft.-In.	Ft.-In.	In.		Ft.-In.	Ft.-In.	In.
10x7	2	#7	78	23-3½	14	#7	78	7-7	14	#7	80	23-8½	14	71	47-2	92	3-0	7-2	12	46	3-0	7-2	12
	3	#7	78	33-11½	14	#7	156	7-7	14	#7	80	34-9½	14	104	47-2	92	3-0	7-2	12	92	3-0	7-2	12
	4	#7	78	47-2½②	14	#7	234	7-7	14	#7	80	48-5½②	14	137	47-2	92	3-0	7-2	12	138	3-0	7-2	12
	5	#7	78	57-10½②	14	#7	312	7-7	14	#7	80	59-6½②	14	170	47-2	92	3-0	7-2	12	184	3-0	7-2	12
10x8	2	#7	78	23-6½	14	#7	78	7-7	14	#7	80	23-11½	14	74	47-2	92	3-0	8-2	12	46	3-0	8-2	12
	3	#7	78	34-3½	14	#7	156	7-7	14	#7	80	35-1½	14	108	47-2	92	3-0	8-2	12	92	3-0	8-2	12
	4	#7	78	47-7½②	14	#7	234	7-7	14	#7	80	48-10½②	14	142	47-2	92	3-0	8-2	12	138	3-0	8-2	12
	5	#7	78	58-4½②	14	#7	312	7-7	14	#7	80	60-0½②	14	176	47-2	92	3-0	8-2	12	184	3-0	8-2	12
10x9	2	#7	78	23-6¼	14	#7	78	7-7	14	#7	80	23-11½	14	77	47-2	106	3-0	9-2	10½	53	3-0	9-2	10½
	3	#7	78	34-3½	14	#7	156	7-7	14	#7	80	35-1½	14	112	47-2	106	3-0	9-2	10½	106	3-0	9-2	10½
	4	#7	78	47-7½②	14	#7	234	7-7	14	#7	80	48-10½②	14	147	47-2	106	3-0	9-2	10½	159	3-0	9-2	10½
	5	#7	78	58-4½②	14	#7	312	7-7	14	#7	80	60-0½②	14	182	47-2	106	3-0	9-2	10½	212	3-0	9-2	10½

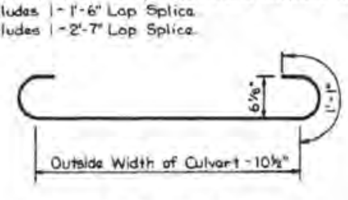
WINGS AND CURBS REINFORCEMENT

SIZE	NO.	BARS E				BARS E₁				#4 BARS F		#4 BARS F₁		#4 BARS J		BARS O				#4 BARS P		#4 BARS P₁		#4 BARS N		#4 BARS M		#6 BARS X ⓐ	
		Size	No.	Length	Spac.	Size	No.	Length	Spac.	No.	Length	No.	Length	No.	Length	Size	No.	Length	Spac.	No.	Length	No.	Length	No.	Length	No.	Length	No.	Length
Ft.				Ft.-In.	In.			Ft.-In.	In.		Ft.-In.		Ft.-In.		Ft.-In.			Ft.-In.	In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.		Ft.-In.
10x7	2	#4	80	5-1	10	#4	80	8-2	10	4	17-8	28	2-10	36	14-5	#4	64	4-0	12	16	15-9	12	17-5	44	5-3	4	24-1	32	2-0
	3																							66	5-3	4	34-9	32	2-0
	4																							88	5-3	4	46-1①	32	2-0
	5																							108	5-3	4	57-7①	32	2-0
10x8	2	#5	84	5-6	11	#4	84	9-2	11	4	20-1	32	2-11	40	16-9	#4	72	4-5	12	16	18-1	12	19-9	46	5-3	4	24-4	36	2-0
	3																							66	5-3	4	35-1	36	2-0
	4																							88	5-3	4	47-4①	36	2-0
	5																							110	5-3	4	58-1①	36	2-0
10x9	2	#5	120	5-8	8	#4	120	10-2	8	4	21-7	36	2-11	44	18-3	#4	96	4-11	10	16	19-7	12	21-3	46	5-3	4	24-4	40	2-0
	3																							66	5-3	4	35-1	40	2-0
	4																							88	5-3	4	47-4①	40	2-0
	5																							110	5-3	4	58-1①	40	2-0

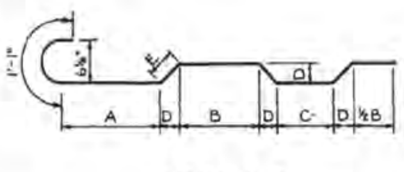
QUANTITIES

PER LINEAR FOOT OF BARREL		44'-0" CULVERT		OPENINGS	
REINF. STEEL	CONC.	REINF. STEEL	CONC.	SIZE	NO.
Lbs.	Cu. Yds.	Lbs.	Cu. Yds.	Ft.	
270.50	1.8951	14448	119.84	10x7	2
405.93	2.7356	20803	159.98		3
559.47	3.5761	27997	200.13		4
694.90	4.4167	34345	240.28		5
277.38	2.0586	15277	135.07	10x8	2
415.11	2.9537	21732	177.74		3
570.94	3.8488	29032	220.41		4
708.67	4.7438	35494	263.07		5
287.96	2.1420	16554	145.88	10x9	2
429.21	3.0648	23177	189.82		3
588.56	3.9877	30645	233.76		4
729.81	4.9105	37275	277.71		5

ⓐ #6 Bars "X" to be ¾" ɸ Smooth and Greased for 1'-0" of Length
① Includes 1-1'-6" Lap Splice.
② Includes 1-2'-7" Lap Splice.



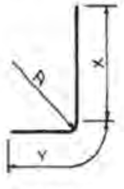
#7 BARS A



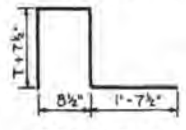
#7 BARS B

DIMENSIONS FOR BARS B						
SIZE	PIN DIAM.	A	B	C	D	E
10'x7'	5¼"	7'-5 11/16"	5'-1⅞"	4'-5⅞"	6⅛"	8⅝"
10'x8'	5¼"	7'-6 9/16"	5'-2⅞"	4'-5⅞"	6⅛"	8⅝"
10'x9'	5¼"	7'-6 9/16"	5'-2⅞"	4'-5⅞"	6⅛"	8⅝"

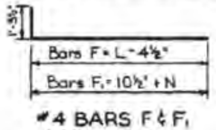
DIMENSIONS FOR BARS E				
SIZE	BAR SIZE	R	X	Y
10'x7'	#4	2¼"	2'-7"	2'-6"
10'x8'	#5	2 13/16"	2'-10¾"	2'-7¾"
10'x9'	#5	2 13/16"	2'-10¾"	2'-9¾"



BARS E



#4 BARS N
(3" Diam. Pin)



#4 BARS F & F₁
(3" Diam. Pin)

DATE	DESCRIPTION	BY
1-5-78	Rev. Weep Hole Note	W.T.J.
1-28-75	Rev. Slope Intercept	W.T.J.
6-8-72	Rev. General Notes for Steel	W.E.M.

REVISIONS

STANDARD PLAN
MULTIPLE OPENINGS

REINF. CONCRETE BOX CULVERT

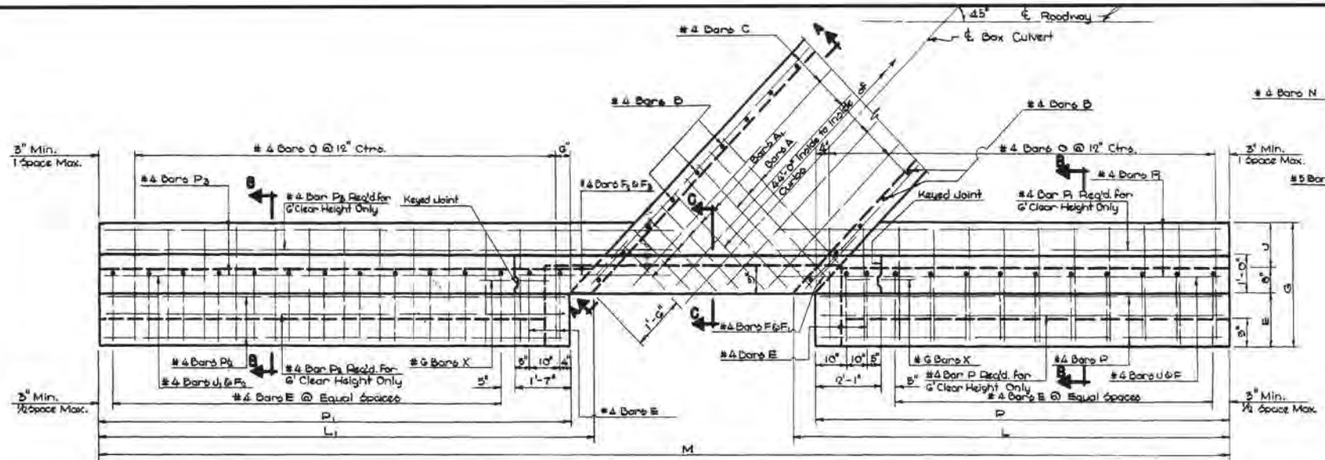
STRAIGHT HDWLS. 2:1 SPILL SLOPE
10'x7' 10'x8' 10'x9'
DATED Sept. 7 1971

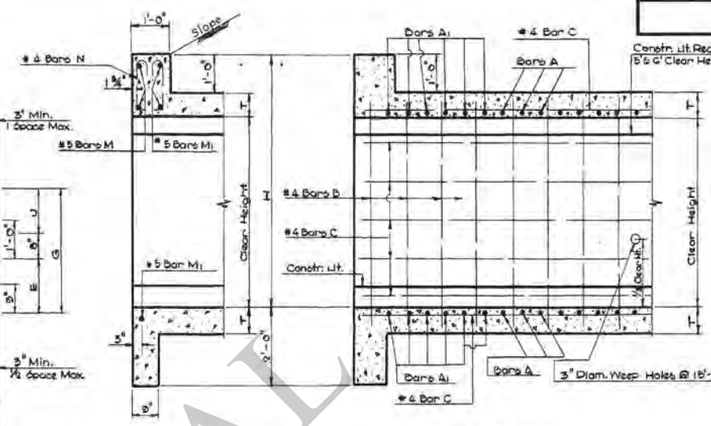
STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED
DETAILED J.D. Bocci
TRACED J. McManus II
CHECKED
CHECKED J.J. Ribos
CHECKED J. D. Bocci
IN CHARGE OF

FOR INFORMATIONAL USE

F.A.P.	STATE PROJECT	PARISH	SHEET NO.



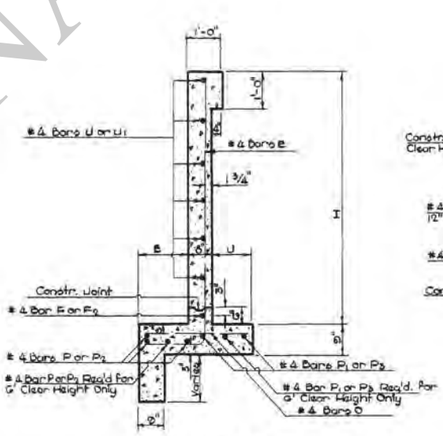


SECTION C-C

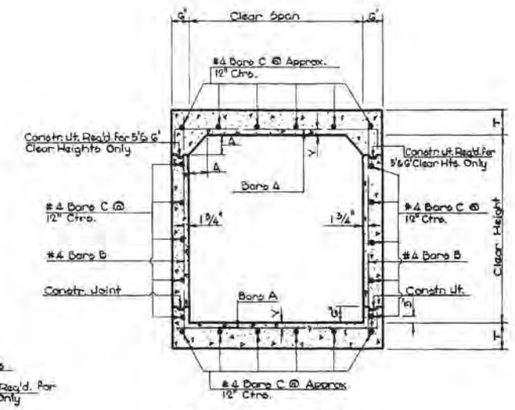
SECTION A-A

GENERAL NOTES:

CONSTRUCTION SPECIFICATIONS: LATEST APPROVED LA. DEPT. OF HIGHWAY STANDARD SPECIFICATIONS.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1961 AS AMENDED BY INT. SPEC. 1964 LIVE LOAD HS20-44 OR MILITARY LOADING, WHICHEVER IS GREATER
ALL CONCRETE TO BE CLASS "A"
ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER UNLESS OTHERWISE NOTED.
REINFORCEMENT SHALL BE BILLET-STEEL A.S.T.M. A615 OR RAIL-STEEL A.S.T.M. A616 OR AXLE-STEEL A.S.T.M. A617.
DIMENSIONS RELATING TO REINFORCING STEEL ARE TO BAR CENTERS.
A 1'-6" SQUARE OF PLASTIC FILTER CLOTH (SEE QUALIFIED PRODUCTS LIST) SHALL BE PLACED IN CONTACT WITH CONCRETE BEHIND EACH WEEP HOLE, IN ADDITION TO APPROX. 2 CU. FT. OF CONCRETE SAND.
FOR DETAIL OF JOINTS, SEE STD. PLAN C.M.-49.



SECTION B-B



SECTION THRU BARREL

DIMENSIONS

OPENINGS			MAX. FILL	BARREL			WINGS AND CURBS									
CLEAR SPAN	CLEAR HEIGHT	AREA	SLAB	WALL	A	T	Y	E	U	G	H	L	L_1	P	P_1	M
FT.	FT.	SQ. FT.	FT.	FT.	IN.	IN.	IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.
4	3	12	28	23	4	7½	1⅜	1-0	0-8	2-4	4-7½	8-5½	11-11½	7-0	11-3	26-0⅞
	4	16	28	13	4	7½	1⅜	1-5	0-10	2-0	5-7½	10-5½	14-2½	9-3	13-6	30-3⅞
5	3	15	22	23	5	8	1⅞	1-0	0-8	2-4	4-8	8-5½	11-11½	7-0	11-3	27-5⅜
	4	20	22	12	5	8	1⅞	1-3	0-10	2-0	5-8	10-5½	14-2½	9-3	13-6	31-8½
	5	25	21	7	5	8	1⅞	1-5	1-2	3-3	6-8	12-5½	17-2½	11-0	15-6	36-9⅝
6	3	18	17	22	6	8½	1⅞	1-0	0-8	2-4	4-8½	8-5½	11-11½	7-0	11-3	28-10⅜
	4	24	17	12	6	8½	1⅞	1-3	0-10	2-0	5-8½	10-5½	14-11½	9-0	14-3	33-10⅞
	5	30	17	7	6	8½	1⅞	1-5	1-2	3-3	6-8½	12-5½	17-7½	11-0	15-6	38-11⅜
	6	36	17	5	6	8½	1⅞	1-7	1-7	3-10	7-8½	14-5½	20-2½	13-0	18-0	45-1⅞

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENINGS		BARS A				BARS A_1						#4 BARS B			#4 BARS C	
CLEAR SPAN	CLEAR HEIGHT	SIZE	NO.	LGTH. FT-IN.	SPAC. IN.	SIZE	NO.	SHORT BAR LGTH. FT-IN.	VAR. IN.	LONG BAR LGTH. FT-IN.	SPAC. IN.	NO.	LGTH. FT-IN.	SPAC. IN.	NO.	LGTH. FT-IN.
FT.	FT.															
4	3	#8	222	5-G	4½	#5	36	2-6	4.5000	5-0	4½	84	5-11	12	16	47-10
	4	#8	222	5-G	4½	#5	36	2-0	4.5000	5-0	4½	84	4-11	12	18	47-10
5	3	#8	180	6-G	5½	#6	36	2-0	5.5000	5-8	5½	84	4-0	12	16	47-10
	4	#8	180	6-G	5½	#6	36	2-0	5.5000	5-8	5½	84	5-0	12	20	47-10
	5	#8	180	6-G	5½	#6	36	2-0	5.5000	5-8	5½	84	6-0	12	22	47-10
6	3	#8	172	7-G	5½	#6	48	2-0	5.4545	7-0	5½	84	4-1	12	20	47-10
	4	#8	172	7-G	5½	#6	48	2-0	5.4545	7-0	5½	84	5-1	12	22	47-10
	5	#8	172	7-G	5½	#6	48	2-0	5.4545	7-0	5½	84	6-1	12	24	47-10
	6	#8	172	7-G	5½	#6	48	2-0	5.4545	7-0	5½	112	7-1	10	26	47-10

WINGS AND CURB REINFORCEMENT Ⓐ

OPENINGS		#4 BARS E			#4 BARS F		#4 BARS F_1		#4 BARS F_2		#4 BARS F_3		#4 BARS J		#4 BARS U		#4 BARS N		#6 BARS O		#4 BARS P		#4 BARS P_1		#4 BARS P_2		#4 BARS P_3		#5 BARS M		#5 BARS M_1		#6 BARS X	
CLEAR SPAN	CLEAR HEIGHT	NO.	LGTH. FT-IN.	SPAC. IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT. IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT. IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT-IN.	NO.	LGTH. FT-IN.
FT.	FT.																															
4	3	40	G-0½	12	2	8-9	G	3-0	2	13-5	G	3-G	8	5-4	8	9-4	14	4-4	38	1-11	G	7-5	4	8-7	G	10-11	4	13-8	4	10-2	G	G-7	16	2-0
	4	48	7-5½	12	2	10-0	8	3-0	2	15-G	8	3-G	10	7-4	10	11-7	14	4-4	46	2-4	G	9-5	4	10-7	G	13-2	4	16-1	4	10-2	G	G-7	20	2-0
5	3	40	G-3	12	2	8-9	G	3-0	2	13-3	G	3-G	8	5-4	8	9-4	16	4-5	38	1-11	G	7-5	4	8-7	G	10-11	4	13-8	4	11-7	G	8-0	16	2-0
	4	48	7-G	12	2	10-0	8	3-0	2	15-G	8	3-G	10	7-4	10	11-7	16	4-5	46	2-4	G	9-5	4	10-7	G	13-2	4	16-1	4	11-7	G	8-0	20	2-0
	5	56	8-8	12	2	12-0	10	3-0	2	18-G	10	3-G	12	9-4	12	14-7	16	4-5	56	2-10	G	11-5	4	12-7	G	16-2	4	19-5	4	11-7	G	8-0	24	2-0
6	3	40	G-3½	12	2	8-9	G	3-0	2	13-3	G	3-G	8	5-4	8	9-4	20	4-G	38	1-11	G	7-5	4	8-7	G	10-11	4	13-8	4	13-0	G	9-5	16	2-0
	4	48	7-G½	12	2	10-0	8	3-0	2	15-G	8	3-G	10	7-4	10	12-4	20	4-G	48	2-4	G	9-5	4	10-7	G	13-11	4	16-10	4	13-0	G	9-5	20	2-0
	5	56	8-8½	12	2	12-0	10	3-0	2	18-G	10	3-G	12	9-4	12	14-7	20	4-G	56	2-10	G	11-5	4	12-7	G	16-2	4	19-5	4	13-0	G	9-5	24	2-0
	6	64	9-10½	12	2	14-0	12	3-0	2	21-G	12	3-G	14	11-4	14	17-7	20	4-G	GG	3-5	8	13-5	G	14-7	8	19-2	G	22-10	4	13-0	G	9-5	28	2-0

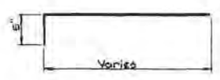
QUANTITIES

OPENINGS		PER LINEAR FT. OF BARREL		44'-0" CULVERT	
CLEAR SPAN	CLEAR HEIGHT	STEEL	CONC.	STEEL	CONC.
FT.	FT.	LBS.	CU. YDS.	LBS.	CU. YDS.
4	3	46.52	0.3467	2816	25.42
	4	49.10	0.3857	3142	30.65
5	3	59.97	0.4138	3467	28.80
	4	62.64	0.4505	3794	34.04
	5	65.31	0.4879	4177	40.43
6	3	67.97	0.4877	3862	32.48
	4	70.64	0.5247	4213	38.10
	5	73.32	0.5617	4573	44.14
	6	77.88	0.5988	5174	51.47

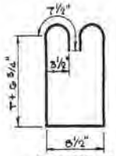
① Includes 1-1'-6" Lap Splice

Ⓐ #6 Bars X to be 3/4" diam. smooth and greased for one foot of length

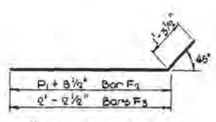
BARS A
(3⅜" Diam. Pin - # 5 Bars)
(4½" Diam. Pin - # 6 Bars)



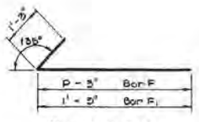
BARS A_1
(3¾" Diam. Pin - # 5 Bars)
(4½" Diam. Pin - # 6 Bars)



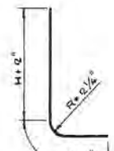
4 BARS N
(3" Diam. Pin)



#4 BARS F_2 & F_3
(3" Diam. Pin)



#4 BARS F & F_1
(3" Diam. Pin)



#4 BARS E

APPROVED BY:
Dwayne D. Wilds 1-11-78
CHIEF ENGINEER DATE

STANDARD PLAN
REINFORCED CONCRETE BOX CULVERTS
STRAIGHT WINGS 45° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
3' THRU 6' HEIGHTS 4' THRU 6' SPANS
DATED 8-11-, 1964

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
5-30-75	Revised Spill Slope	W.T.J.
6-6-72	Rev. General Notes for Steel	W.E.M.
5-2-67	Added Axle Steel	W.E.M.
12-16-64	Rev. # 5 Bars for Military Loading & 3' Span Deleted	W.E.M.

REVISIONS

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

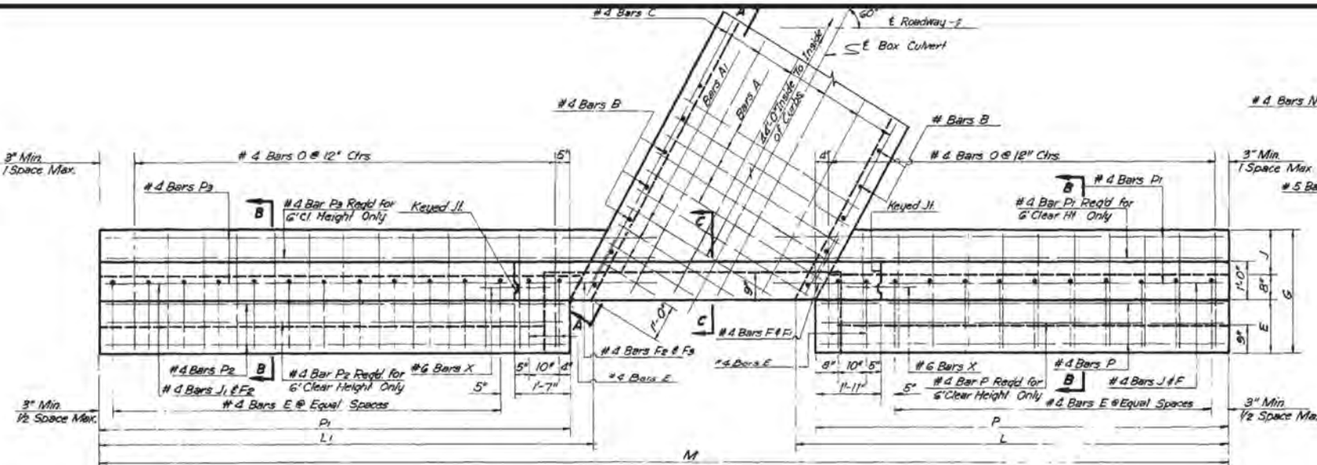
DESIGNED M. YOSHII	DETAILED J. L. ARCENEAUX	TRACED T. WILLIAMS
CHECKED Q. HESTER	CHECKED M.R. BROWN	CHECKED

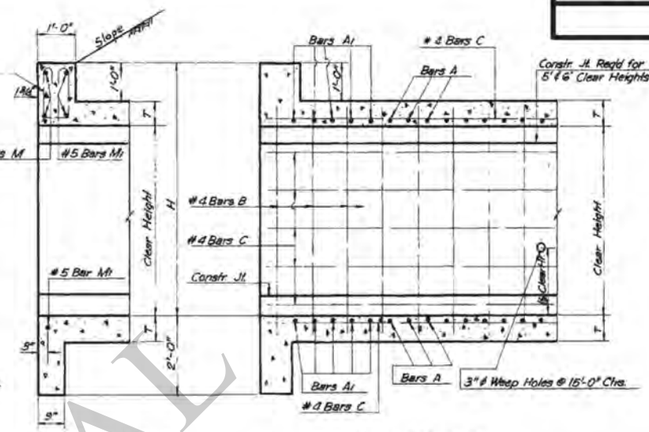
IN CHARGE OF

FOR INFORMATIONAL USE

28-NOV-2007 10:01
R:\Standard Plans\English\Old Sheets\CCSS4-6RS45_1.dgn
C-C-S-S 4-6-RS-45°-1

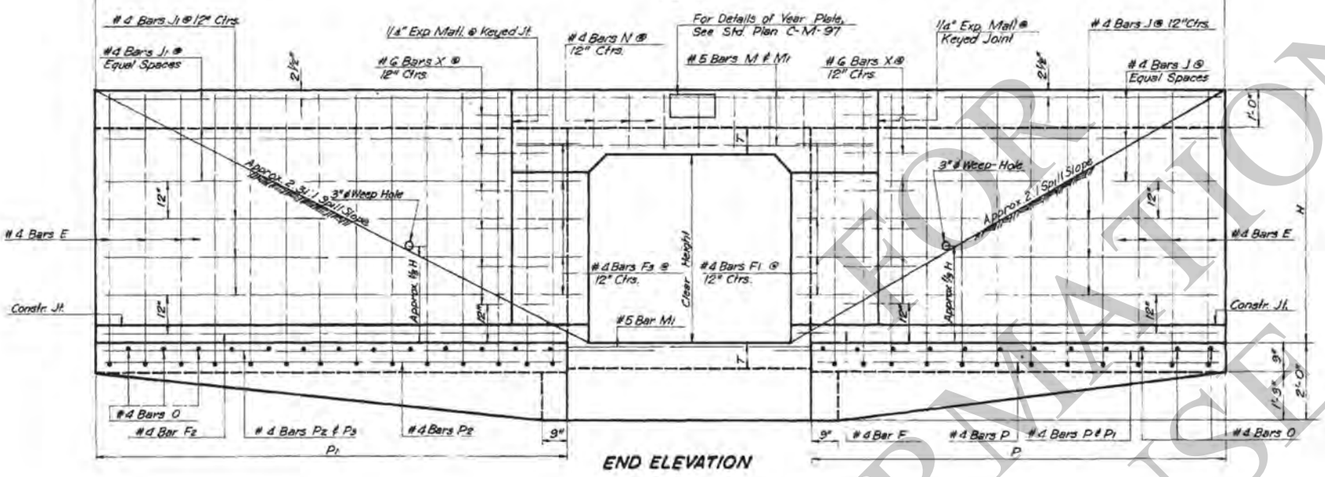
F.A.P.	STATE PROJECT	PARISH	SHEET NO.

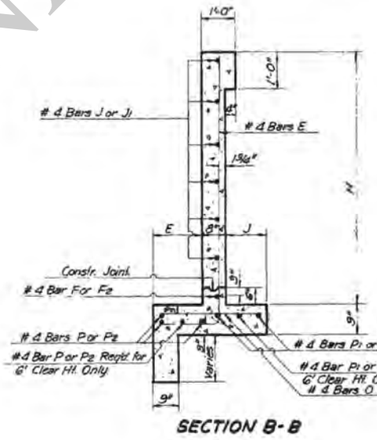


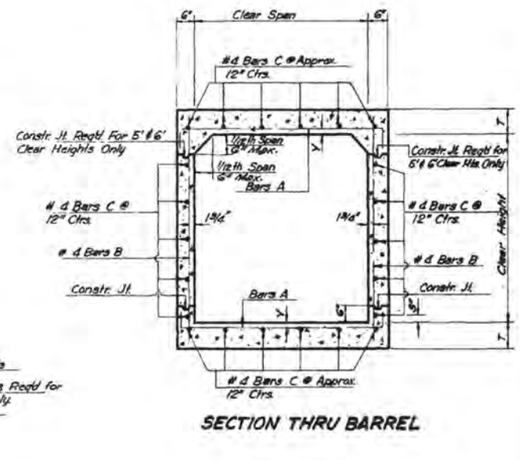


GENERAL NOTES

Construction Specifications: Latest Approved La. Dept of Highways Standard Specifications.
Design Specifications: AASHO 1961 as Amended by Int. Spec. 1964
Live Load: HS 20-44, or Military Loading, Whichever is Greater.
All Concrete to be Class "A"
All Exposed Corners To Have 3/4" Chamfer, Unless Otherwise Noted.
Reinforcement Shall Be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A 617.
Dimensions Relating To Reinforcing Steel Are To Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.







DIMENSIONS

OPENINGS CLEAR SPAN FT.	OPENINGS CLEAR HEIGHT FT.	OPENINGS AREA SQ.FT.	MAX. FILL SLAB FT.	MAX. FILL WALL FT.	BARREL T IN.	BARREL Y IN.	WINGS AND CURBS E FT-IN.	J FT-IN.	G FT-IN.	H FT-IN.	L FT-IN.	L1 FT-IN.	P FT-IN.	P1 FT-IN.	M FT-IN.
4	3	12	28	23	7½	1⅛	1'-0	0'-8	2'-4	4'-7⅛	8'-2⅝	9'-9⅝	7'-8	9'-3	12'-8⅝
	4	16	28	13	7½	1⅛	1'-3	0'-10	2'-9	5'-7⅛	9'-2⅛	11'-3⅝	9'-8	11'-3	16'-3⅝
5	3	15	22	29	8	1⅞	1'-0	0'-8	2'-4	4'-8	8'-3⅝	9'-9⅝	7'-9	9'-3	23'-1⅝
	4	20	22	12	8	1⅞	1'-3	0'-10	2'-9	5'-8	10'-3⅝	11'-10⅝	9'-9	11'-4	28'-0⅝
	5	25	21	7	8	1⅞	1'-5	1'-2	3'-3	6'-8	12'-3⅝	13'-11⅝	11'-9	13'-5	32'-1⅝
6	3	18	17	22	8½	1⅞	1'-0	0'-8	2'-4	4'-8⅝	8'-6⅝	9'-3⅝	7'-10	9'-3	25'-2
	4	24	17	12	8½	1⅞	1'-3	0'-10	2'-9	5'-8⅝	10'-4⅝	11'-9⅝	9'-10	11'-5	29'-4
	5	30	17	7	8½	1⅞	1'-5	1'-2	3'-3	6'-8⅝	12'-4⅝	13'-11⅝	11'-10	13'-5	33'-4
	6	36	17	5	8½	1⅞	1'-7	1'-7	3'-10	7'-8⅝	14'-4⅝	16'-3⅝	13'-10	15'-3	38'-2
7	3	21	15	21	9	1⅞	1'-0	0'-8	2'-4	4'-5	8'-3⅝	9'-9⅝	7'-10	9'-3	19'-3⅝
	4	28	15	12	9	1⅞	1'-3	0'-10	2'-9	5'-5	10'-4⅝	11'-11⅝	9'-10	11'-5	23'-5⅝
	5	35	14	6	9	1⅞	1'-5	1'-2	3'-3	6'-5	12'-4⅝	13'-11⅝	11'-10	13'-3	27'-7⅝
	6	42	14	5	9	1⅞	1'-7	1'-7	3'-10	7'-5	14'-4⅝	16'-3⅝	13'-10	15'-3	32'-1⅝

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT	BARS A SIZE	BARS A NO.	BARS A LGTH FT-IN.	BARS A SPAC IN.	BARS A1 SIZE	BARS A1 NO.	BARS A1 SHORT BAR FT-IN.	BARS A1 VAR IN.	BARS A1 LONG BAR FT-IN.	BARS A1 SPAC IN.	#4 BARS B NO.	#4 BARS B LGTH FT-IN.	#4 BARS B SPAC IN.	#4 BARS C NO.	#4 BARS C LGTH FT-IN.
4	#5	232	5'-6	4½	#5	20	2'-2	7.7500	4'-8	4½	92	3'-11	12	16	47'-5
	#5	232	5'-6	4½	#5	20	2'-2	7.7500	4'-8	4½	92	4'-11	12	18	47'-5
5	#6	188	6'-6	5½	#6	20	2'-2	9.5000	5'-4	5½	92	4'-0	12	18	47'-5
	#6	188	6'-6	5½	#6	20	2'-2	9.5000	5'-4	5½	92	5'-0	12	20	47'-5
	#6	188	6'-6	5½	#6	20	2'-2	9.5000	5'-4	5½	92	6'-0	12	22	47'-5
6	#6	184	7'-6	5½	#6	28	2'-2	9.5000	6'-11	5½	92	4'-1	12	20	47'-5
	#6	184	7'-6	5½	#6	28	2'-2	9.5000	6'-11	5½	92	5'-1	12	22	47'-5
	#6	184	7'-6	5½	#6	28	2'-2	9.5000	6'-11	5½	92	6'-1	12	24	47'-5
	#6	184	7'-6	5½	#6	28	2'-2	9.5000	6'-11	5½	112	7'-1	10	26	47'-5
7	#6	200	8'-6	5	#6	36	2'-2	8.6250	7'-11	5	92	4'-2	12	22	47'-5
	#6	200	8'-6	5	#6	36	2'-2	8.6250	7'-11	5	92	5'-2	12	24	47'-5
	#6	200	8'-6	5	#6	36	2'-2	8.6250	7'-11	5	92	6'-2	12	26	47'-5
	#6	200	8'-6	5	#6	36	2'-2	8.6250	7'-11	5	112	7'-2	10	28	47'-5

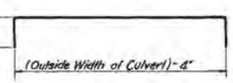
WINGS AND CURB REINFORCEMENT	#4 BARS E NO.	#4 BARS E LGTH FT-IN.	#4 BARS E SPAC IN.	#4 BARS F NO.	#4 BARS F LGTH FT-IN.	#4 BARS F1 NO.	#4 BARS F1 LGTH FT-IN.	#4 BARS F2 NO.	#4 BARS F2 LGTH FT-IN.	#4 BARS F3 NO.	#4 BARS F3 LGTH FT-IN.	#4 BARS J NO.	#4 BARS J LGTH FT-IN.	#4 BARS J1 NO.	#4 BARS J1 LGTH FT-IN.	#4 BARS N NO.	#4 BARS N LGTH FT-IN.	#4 BARS O NO.	#4 BARS O LGTH FT-IN.	#4 BARS P NO.	#4 BARS P LGTH FT-IN.	#4 BARS P1 NO.	#4 BARS P1 LGTH FT-IN.	#4 BARS P2 NO.	#4 BARS P2 LGTH FT-IN.	#5 BARS M NO.	#5 BARS M LGTH FT-IN.	#5 BARS M1 NO.	#5 BARS M1 LGTH FT-IN.	#6 BARS X NO.	#6 BARS X LGTH FT-IN.
	36	6'-2½	12	2	8'-10	6	3'-0	2	11'-0	6	3'-3	8	5'-5	8	7'-4	10	4'-4	34	1'-11	6	7'-4	4	8'-9	6	8'-11	4	11'-2	4	8'-3	6	5'-4	16	2'-0
	44	7'-5½	12	2	10'-10	8	3'-0	2	13'-0	8	3'-3	10	7'-5	10	9'-4	10	4'-4	42	2'-4	6	9'-4	4	10'-9	6	10'-11	4	13'-3	4	8'-3	6	5'-4	20	2'-0
	44	7'-6	12	2	8'-11	6	3'-0	2	11'-0	6	3'-3	8	5'-6	8	7'-4	14	4'-5	34	1'-11	6	7'-5	4	8'-10	6	8'-11	4	11'-2	4	9'-10	6	6'-6	16	2'-0
	44	7'-6	12	2	10'-11	8	3'-0	2	13'-0	8	3'-3	10	7'-6	10	9'-5	14	4'-5	42	2'-4	6	9'-5	4	10'-10	6	11'-0	4	13'-4	4	9'-10	6	6'-6	20	2'-0
	52	8'-8	12	2	12'-11	10	3'-0	2	15'-2	10	3'-3	12	9'-6	12	11'-6	14	4'-5	50	2'-10	6	11'-5	4	12'-10	6	13'-1	4	15'-8	4	9'-10	6	6'-6	24	2'-0
	36	6'-3½	12	2	9'-0	6	3'-0	2	11'-0	6	3'-3	8	5'-7	8	7'-4	16	4'-6	34	1'-11	6	7'-6	4	8'-11	6	8'-11	4	11'-2	4	11'-0	6	7'-8	18	2'-0
	44	7'-6½	12	2	11'-0	8	3'-0	2	13'-2	8	3'-3	10	7'-7	10	9'-6	16	4'-6	42	2'-4	6	9'-6	4	10'-11	6	11'-1	4	13'-5	4	11'-0	6	7'-8	20	2'-0
	52	8'-8½	12	2	13'-0	10	3'-0	2	15'-2	10	3'-3	12	9'-7	12	11'-6	16	4'-6	50	2'-10	6	11'-6	4	12'-11	6	13'-1	4	15'-8	4	11'-0	6	7'-8	24	2'-0
	62	9'-10½	12	2	15'-0	12	3'-0	2	18'-0	12	3'-3	14	11'-7	14	14'-4	16	4'-6	60	3'-5	8	13'-6	6	14'-11	8	15'-11	6	18'-9	4	11'-0	6	7'-8	28	2'-0
	36	6'-4	12	2	9'-0	6	3'-0	2	11'-0	6	3'-3	8	5'-7	8	7'-6	18	4'-7	34	1'-11	6	7'-6	4	8'-11	6	8'-11	4	11'-2	4	12'-2	6	8'-10	16	2'-0
	44	7'-7	12	2	11'-0	8	3'-0	2	13'-2	8	3'-3	10	7'-7	10	9'-6	18	4'-7	42	2'-4	6	9'-6	4	10'-11	6	11'-1	4	13'-5	4	12'-2	6	8'-10	20	2'-0
	52	8'-9	12	2	13'-0	10	3'-0	2	16'-0	10	3'-3	12	9'-7	12	12'-4	18	4'-7	50	2'-10	6	11'-6	4	12'-11	6	13'-11	4	16'-6	4	12'-2	6	8'-10	24	2'-0
	62	9'-11	12	2	15'-0	12	3'-0	2	18'-0	12	3'-3	14	11'-7	14	14'-4	18	4'-7	60	3'-5	8	13'-6	6	14'-11	8	15'-11	6	18'-9	4	12'-2	6	8'-10	28	2'-0

QUANTITIES PER LINEAR FT. OF BARREL STEEL LBS.	PER LINEAR FT. OF BARREL CONC. CU YDS.	44'-0" CULVERT STEEL LBS.	44'-0" CULVERT CONC. CU YDS.
46.52	0.3467	2729	24.18
48.19	0.3837	3042	29.11
59.87	0.4198	3368	27.51
62.64	0.4509	3683	32.51
66.21	0.4879	4086	38.20
67.97	0.4817	3773	31.15
70.64	0.5247	4085	36.20
73.32	0.5617	4438	41.86
77.88	0.5965	5018	48.84
61.64	0.4849	4424	34.31
64.25	0.5219	4741	39.91
66.89	0.5389	5112	46.11
70.46	0.5758	5571	52.61

OPENINGS CLEAR SPAN FT-IN.	OPENINGS CLEAR HEIGHT FT-IN.
4	3
	4
5	3
	4
	5
6	3
	4
	5
	6
7	3
	4
	5
	6

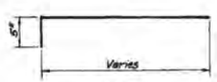
① Includes 1'-1'-6" Lap Splices

Ⓐ *6 Bars X to be ¼"ø Smooth and Greased for 1'-0" of Length



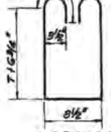
BARS A

(3¾" Diam. Pin - #5 Bars)
(4½" Diam. Pin - #6 Bars)



BARS A1

(3¾" Diam. Pin - #5 Bars)
(4½" Diam. Pin - #6 Bars)



#4 BARS N

(3" Diam. Pin)

#4 BARS F2 & F3

(3" Diam. Pin)

#4 BARS F & F1

(3" Diam. Pin)

#4 BARS E

No.	Date	By	Description
1-21-72			Rev. Sheet Bolt Note
2-21-73			Rev. Slope Except
6-18-81			Rev. General Notes (to Spec)
5-20-82			Rev. Wing Steel
8-18-82			Rev. # 6 Bars to be Smooth
3-3-83			Revised Wing Steel "E" Dimensions
3-3-84			Revised Wing Steel "E" Dimensions
8-16-85			Rev. Wing Steel
DATE			REVISIONS

STANDARD PLAN

REINF. CONCRETE BOX CULVERTS
STRAIGHT WINGS 60° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
5' THROUGH 8' HEIGHTS 6' THRU 12' SPANS

DATE: JULY 20, 1962

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED: 20 YEARS	DETAILED: J. H. ALLEN	TRACED: B. E. ARCENEAUX	
CHECKED: D. REEVES	CHECKED: M. HOWELL	CHECKED: M. FRANCIS	
IN CHARGE OF:			

APPROVED BY: [signature] CHIEF ENGINEER 1/11/78 DATE

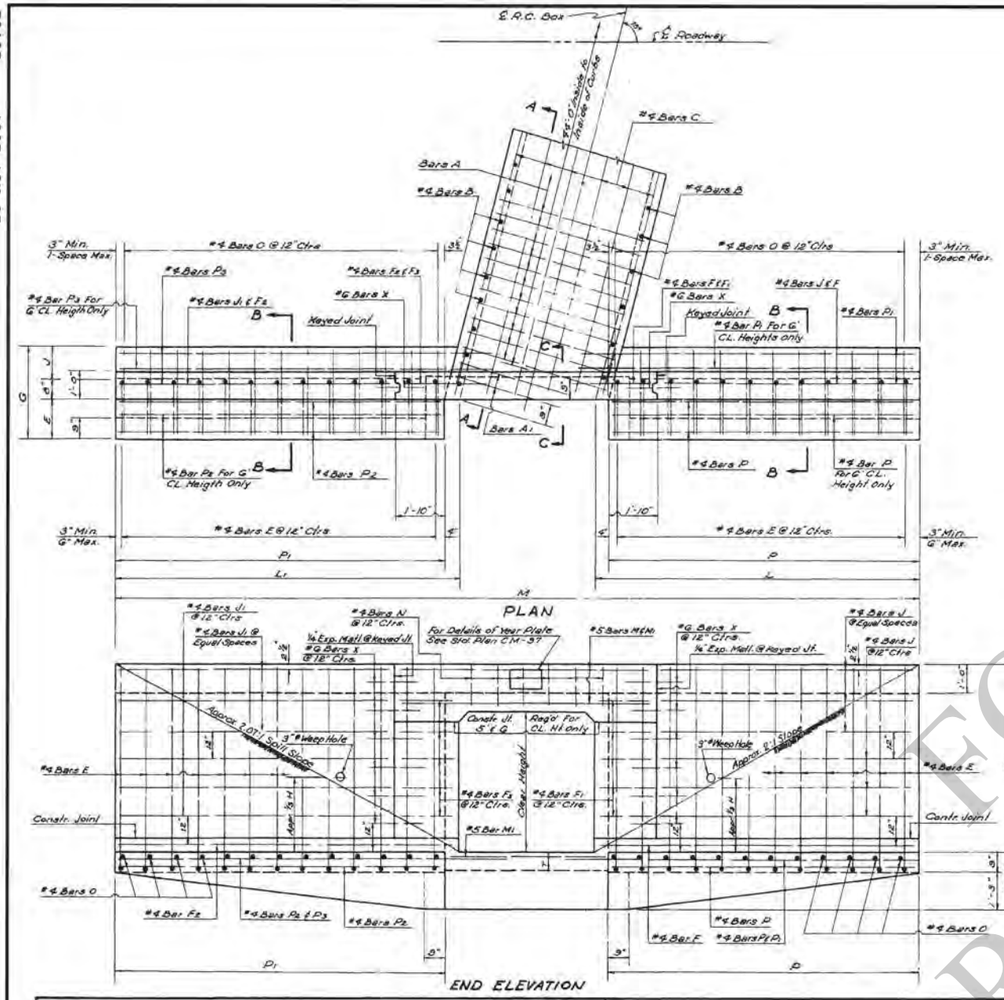
C·C·S·S·4-7·R·S·60°·1

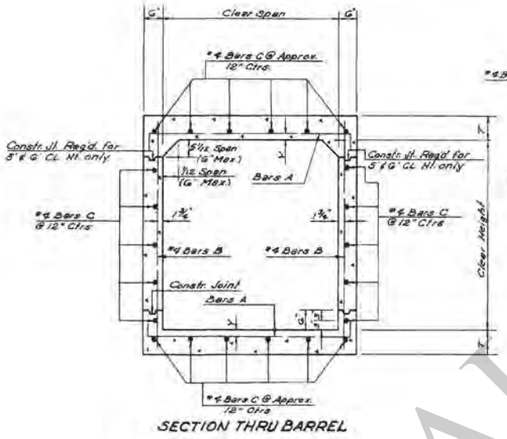
FOR FORMATIONAL USE

IP_PWP:dms09544\CCSS4-7RS60_1.dgn
6/2/2021 13:14

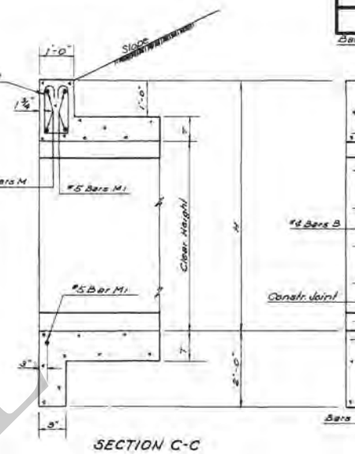
28-NOV-2007 10:02

F.A.P.	STATE PROJECT	PARISH	SHEET NO.

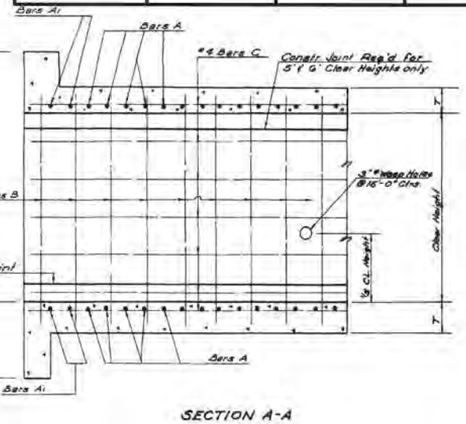




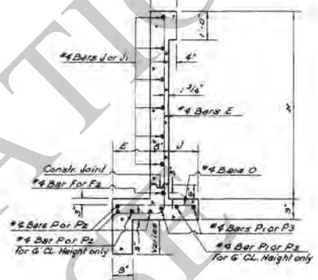
SECTION THRU BARREL



SECTION C-C



SECTION A-A



SECTION B-B

GENERAL NOTES:

Construction Specifications: Latest Approved La. Dept. of Highways. Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 as amended by Int. Spec. 1964
Live Load: H.S 20-44 or Military Loading, Whichever is Greater.
All Concrete to be Class "A"
All Exposed Corners to have ¾" Chamfer, Unless Otherwise noted.
Reinforcement Shall Be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.
Dimensions relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand. For Detail of Joints, See Std. Plan C.M.-49.

DIMENSIONS

OPENING CLEAR SPAN (FT.)	OPENING CLEAR HEIGHT (FT.)	MAX. FILL AREA (SQ. FT.)	BARREL SLAB (FT.)	BARREL WALL (FT.)	BARREL T (IN.)	BARREL Y (IN.)	WING AND CURBS E (FT-IN)	J (FT-IN)	G (FT-IN)	H (FT-IN)	L (FT-IN)	L1 (FT-IN)	P (FT-IN)	P1 (FT-IN)	M (FT-IN)
4	3	12	28	23	7½	1⅜	1-0	0-8	2-4	4-7½	6-3⅜	8-4 3/16	7-9	7-10	20-3½
	4	16	28	13	7½	1⅜	1-3	0-10	2-9	5-7½	10-3⅜	10-4 3/16	9-9	9-10	24-3½
5	3	15	22	23	8	1⅜	1-0	0-8	2-4	4-8	8-4⅜	8-4 3/16	7-10	7-10	21-10⅜
	4	20	22	12	8	1⅜	1-3	0-10	2-9	5-8	10-4⅜	10-4 3/16	9-10	9-10	25-10⅜
	5	25	21	7	8	1⅜	1-5	1-2	3-3	6-8	12-4⅜	13-1 3/16	11-10	12-7	30-7⅜
6	3	18	17	22	8½	1⅜	1-0	0-8	2-4	4-8½	8-4⅜	8-4 3/16	7-10	7-10	22-10⅜
	4	24	17	12	8½	1⅜	1-3	0-10	2-9	5-8½	10-4⅜	11-1 3/16	9-10	10-7	27-7⅜
	5	30	17	7	8½	1⅜	1-5	1-2	3-3	6-8½	12-4⅜	13-1 3/16	11-10	12-7	31-7⅜
	6	36	17	5	8½	1⅜	1-7	1-7	3-10	7-8½	14-4⅜	15-1 3/16	13-10	14-7	35-7⅜
7	3	21	15	21	9	1⅜	1-0	0-8	2-4	4-9	8-4⅜	9-1 3/16	7-10	8-7	24-8⅜
	4	28	15	12	9	1⅜	1-3	0-10	2-9	5-9	10-4⅜	11-1 3/16	9-10	10-7	28-8⅜
	5	35	14	6	9	1⅜	1-5	1-2	3-3	6-9	12-4⅜	13-1 3/16	11-10	12-7	32-8⅜
	6	42	14	5	9	1⅜	1-7	1-7	3-10	7-9	14-4⅜	15-1 3/16	13-10	14-7	36-8⅜

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENING CLEAR SPAN (FT.)	OPENING CLEAR HEIGHT (FT.)	BARS A SIZE	BARS A NO.	BARS A LGTH. (FT-IN)	BARS A SPAC. (IN)	BARS A1 SIZE	BARS A1 NO.	BARS A1 SHORT BAR (FT-IN)	BARS A1 VAR. BAR (IN.)	BARS A1 LONG BAR (FT-IN)	BARS A1 SPAC. (IN)	BARS B NO.	BARS B LGTH. (FT-IN)	BARS B SPAC. (IN)	#4 BARS C NO.	#4 BARS C LGTH.① (FT-IN.)
4	3	#5	238	5'-6	4½	#5	8	2-11	17.0000	4'-6	4½	32	3'-11	12	16	47'-2
	4	#5	238	5'-6	4½	#5	8	2-11	17.0000	4'-6	4½	32	4'-11	12	16	47'-2
5	3	#6	186	6'-6	5½	#6	6	2-11	21.0000	4'-8	5½	32	4'-0	12	16	47'-2
	4	#6	186	6'-6	5½	#6	6	2-11	21.0000	4'-8	5½	32	5'-0	12	20	47'-2
	5	#6	186	6'-6	5½	#6	6	2-11	21.0000	4'-8	5½	32	6'-0	12	22	47'-2
6	3	#6	192	7'-6	5½	#6	12	2-11	20.5000	6'-6	5½	32	4'-1	12	20	47'-2
	4	#6	192	7'-6	5½	#6	12	2-11	20.5000	6'-6	5½	32	5'-1	12	22	47'-2
	5	#6	192	7'-6	5½	#6	12	2-11	20.5000	6'-6	5½	32	6'-1	12	24	47'-2
	6	#6	192	7'-6	5½	#6	12	2-11	20.5000	6'-6	5½	112	7'-1	10	26	47'-2
7	3	#6	210	8'-6	5	#6	16	2-11	18.6667	7'-7	5	32	4'-2	12	22	47'-2
	4	#6	210	8'-6	5	#6	16	2-11	18.6667	7'-7	5	32	5'-2	12	24	47'-2
	5	#6	210	8'-6	5	#6	16	2-11	18.6667	7'-7	5	32	6'-2	12	26	47'-2
	6	#6	210	8'-6	5	#6	16	2-11	18.6667	7'-7	5	112	7'-2	10	28	47'-2

WING AND CURB REINFORCEMENT

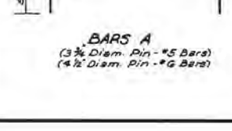
OPENING CLEAR SPAN (FT.)	OPENING CLEAR HEIGHT (FT.)	#4 BARS E NO.	#4 BARS E LGTH. (FT-IN)	#4 BARS E SPAC. (IN)	#4 BARS F NO.	#4 BARS F LGTH. (FT-IN)	#4 BARS F1 NO.	#4 BARS F1 LGTH. (FT-IN)	#4 BARS F2 NO.	#4 BARS F2 LGTH. (FT-IN)	#4 BARS P3 NO.	#4 BARS P3 LGTH. (FT-IN)	#4 BARS J NO.	#4 BARS J LGTH. (FT-IN)	#4 BARS N NO.	#4 BARS N LGTH. (FT-IN)	#4 BARS O NO.	#4 BARS O LGTH. (FT-IN)	#4 BARS P NO.	#4 BARS P LGTH. (FT-IN)	#4 BARS P1 NO.	#4 BARS P1 LGTH. (FT-IN)	#4 BARS P2 NO.	#4 BARS P2 LGTH. (FT-IN)	#5 BARS M NO.	#5 BARS M LGTH. (FT-IN)	#5 BARS N1 NO.	#5 BARS N1 LGTH. (FT-IN)	#6 BARS X NO.	#6 BARS X LGTH. (FT-IN)
4	3	32	6'-2½	12	2	3'-0	6	3'-0	2	3'-4	6	3'-3	8	5'-7	8	5'-8	10	4'-4	32	1'-11	6	7'-5	4	3'-0	6	7'-6	4	3'-5	4	8'-3	6	9'-10
	4	40	7'-5½	12	2	11'-0	6	3'-0	2	11'-9	6	3'-3	10	7'-7	10	7'-8	10	4'-4	40	2'-4	6	9'-5	4	11'-0	6	9'-6	4	11'-6	4	8'-3	6	9'-10
5	3	32	6'-3	12	2	3'-1	6	3'-0	2	3'-4	6	3'-3	8	5'-8	8	5'-8	12	4'-5	32	1'-11	6	7'-6	4	3'-1	6	7'-6	4	3'-5	4	3'-4	6	5'-10
	4	40	7'-6	12	2	11'-1	6	3'-0	2	11'-4	6	3'-3	10	7'-8	10	7'-8	12	4'-5	40	2'-4	6	9'-6	4	11'-1	6	9'-6	4	11'-6	4	3'-4	6	5'-10
	5	50	8'-8	12	2	13'-1	10	3'-0	2	14'-1	10	3'-3	12	9'-8	12	10'-5	12	4'-5	50	2'-10	6	11'-6	4	13'-1	6	12'-3	4	14'-4	4	3'-4	6	5'-10
6	3	32	6'-3½	12	2	3'-1	6	3'-0	2	3'-9	6	3'-3	8	5'-8	8	5'-8	16	4'-6	32	1'-11	6	7'-6	4	3'-1	6	7'-6	4	3'-5	4	10'-4	6	6'-10
	4	40	7'-6½	12	2	12'-1	6	3'-0	2	12'-1	6	3'-3	10	7'-8	10	7'-8	16	4'-6	40	2'-4	6	9'-6	4	11'-1	6	10'-3	4	12'-3	4	10'-4	6	6'-10
	5	50	8'-8½	12	2	13'-1	10	3'-0	2	14'-1	10	3'-3	12	9'-8	12	10'-5	16	4'-6	50	2'-10	6	11'-6	4	13'-1	6	12'-3	4	14'-4	4	10'-4	6	6'-10
	6	58	9'-10½	12	2	15'-1	12	3'-0	2	16'-1	12	3'-3	14	11'-8	14	12'-5	16	4'-6	58	3'-5	6	13'-6	6	15'-1	8	14'-3	6	16'-5	4	10'-4	6	6'-10
7	3	34	6'-4	12	2	3'-1	6	3'-0	2	10'-1	6	3'-3	8	5'-8	8	6'-5	18	4'-7	38	1'-11	6	7'-6	4	3'-1	6	8'-3	4	10'-2	4	11'-5	6	7'-11
	4	42	7'-7	12	2	11'-1	6	3'-0	2	12'-1	6	3'-3	10	7'-8	10	8'-5	18	4'-7	42	2'-4	6	9'-6	4	11'-1	6	10'-3	4	12'-3	4	11'-5	6	7'-11
	5	50	8'-9	12	2	13'-1	10	3'-0	2	14'-1	10	3'-3	12	9'-8	12	10'-5	18	4'-7	50	2'-10	6	11'-6	4	13'-1	6	12'-3	4	14'-4	4	11'-5	6	7'-11
	6	58	9'-11	12	2	15'-1	12	3'-0	2	16'-1	12	3'-3	14	11'-8	14	12'-5	18	4'-7	58	3'-5	6	13'-6	6	15'-1	8	14'-3	6	16'-5	4	11'-5	6	7'-11

QUANTITIES

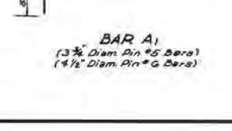
OPENING CLEAR SPAN (FT.)	OPENING CLEAR HEIGHT (FT.)	PER LINEAR FT OF BARREL STEEL (LBS.)	PER LINEAR FT OF BARREL CONC. (CU.YDS.)	44'-0" CULVERT STEEL (LBS.)	44'-0" CULVERT CONC. (CU.YDS.)
4	3	46.52	0.3667	2674	23.45
	4	45.13	0.3837	2981	28.28
5	3	53.97	0.4138	3325	26.78
	4	62.64	0.4503	3633	31.53
	5	65.31	0.4873	3586	37.55
6	3	67.97	0.4877	3708	30.32
	4	70.64	0.5247	9037	35.54
	5	73.32	0.5617	9376	41.13
	6	77.88	0.5905	9920	47.47
7	3	61.56	0.5648	9376	34.30
	4	69.22	0.6019	9685	39.27
	5	86.89	0.6383	5024	44.07
	6	91.48	0.6759	5570	51.82

① Includes One 1'-6" Lap Splice.

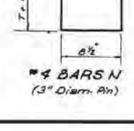
Ⓐ #6 Bars X to be ¾"ø Smooth and Greased for 1'-0" of Length



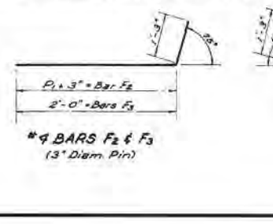
BARS A
(⅜ Diam. Pin - #5 Bars)
(½ Diam. Pin - #6 Bars)



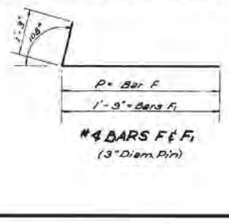
BAR A1
(⅜ Diam. Pin #5 Bars)
(½ Diam. Pin #6 Bars)



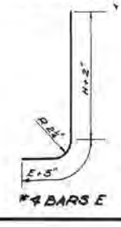
#4 BARS N
(3" Diam. Pin)



#4 BARS F2 & F3
(3" Diam. Pin)



#4 BARS F & F1
(3" Diam. Pin)



#4 BARS E

APPROVED BY:

CHIEF ENGINEER

1-11-78
DATE

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note.	W.T.J.
6-10-75	Rev. Slope Intersect	W.T.J.
6-28-72	Rev. General Note for Steel	W.E.M.
4-27-71	Added Axle Steel	W.E.M.
12-16-66	Rev. 8'-6" Spacing to Multiples of 6"	W.E.M.
	Loading & Deleted 3' Slopes	

REVISIONS

STANDARD PLAN

REINFORCED CONCRETE BOX CULVERT
STRAIGHT WINGS 75° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
4' THRU 7' SPANS 3' THRU 6' HEIGHTS

DATED Sept. 28, 1964

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED W.E.M.	DETAILED E.J. Martel	TRACED K. Mitchell
CHECKED N.K.B.	CHECKED W.E. Marcum	CHECKED W.E. Marcum
IN CHARGE OF		

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C·C·S·S 4-7 RS 75-1
INFORMATIONAL PURPOSES ONLY

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28-NOV-2007
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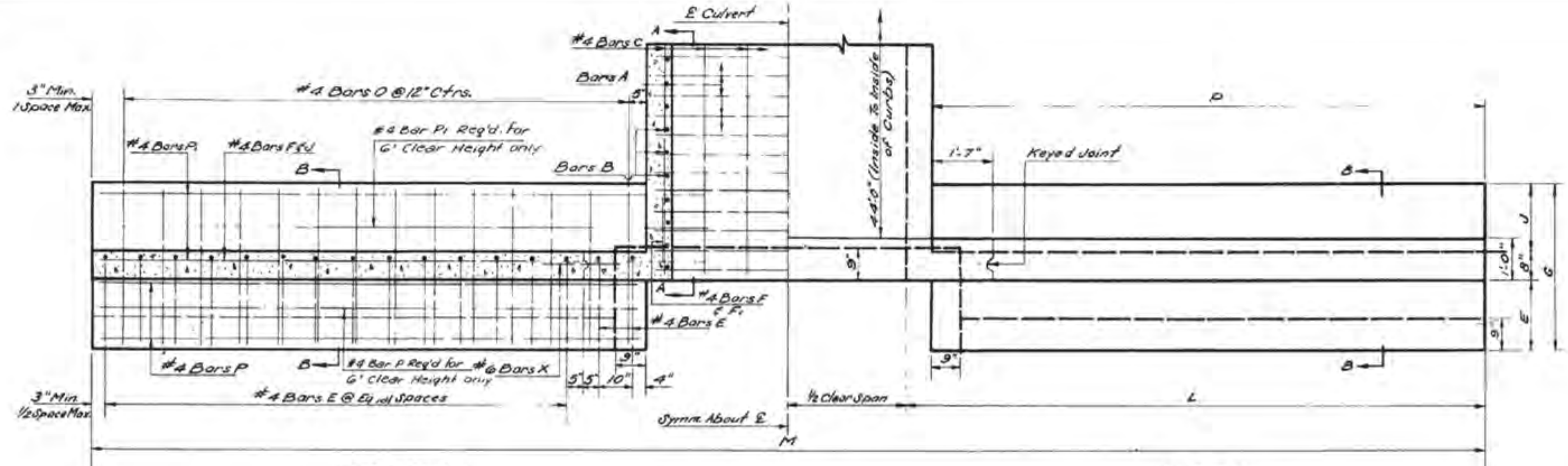
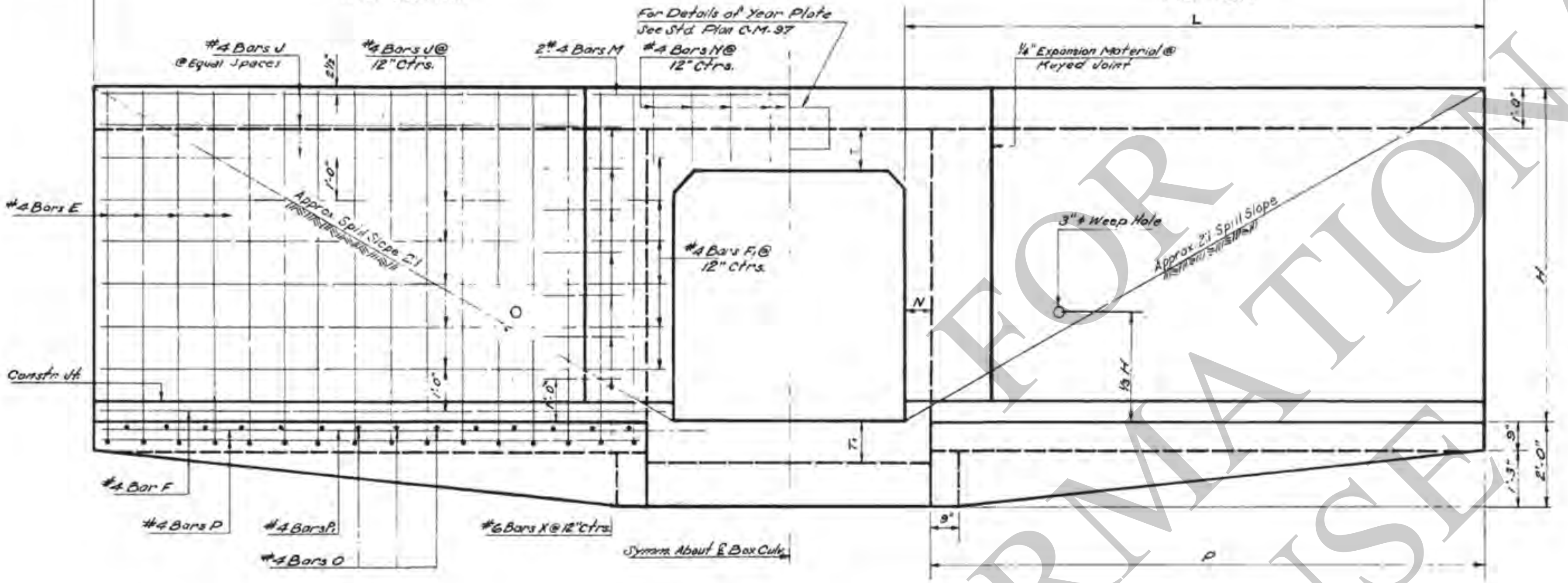
F.A.P.	STATE PROJECT	PARISH	SHEET NO.

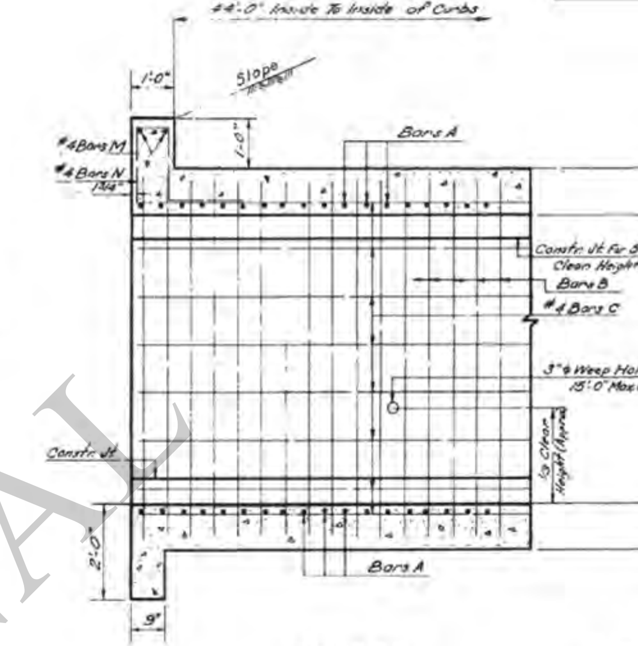


HALF SECTION

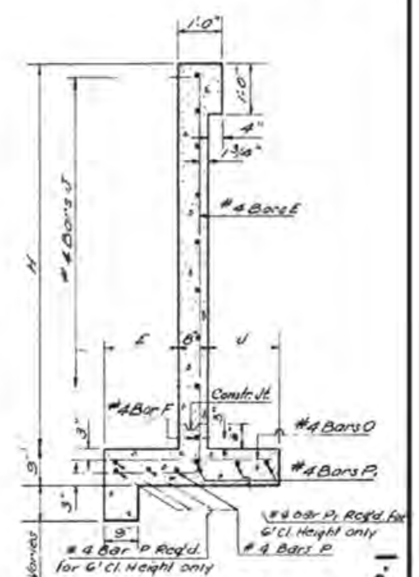
HALF PLAN



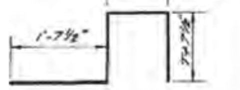
END ELEVATION



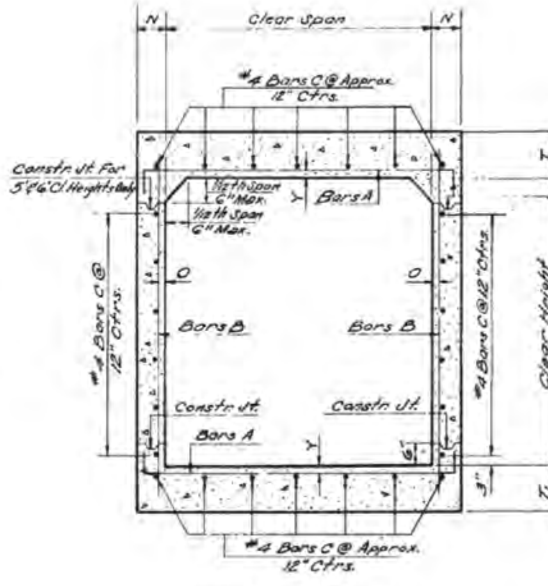
SECTION A-A



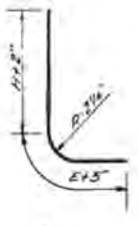
SECTION B-B



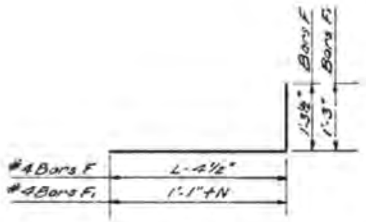
#4 BARS N
(3" Diam Pin)



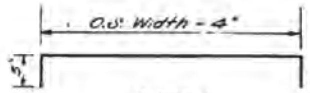
SECTION THRU BARREL



#4 BARS E



#4 BARS F & F1
(3" Diam. Pin)



BARS A

(3¾" Diam Pin For #5 Bars A)
(4½" Diam. Pin for #6 Bars A)

Ⓐ #6 Bars X to be ¾" ϕ Smooth and Greased for 1'-0" of Length.

DIMENSIONS

OPENINGS CLEAR SPAN FEET	OPENINGS CLEAR HEIGHT FEET	AREA SQ.FT.	MAX. FILL SLAB FEET	MAX. FILL WALL FEET	BARREL N IN.	BARREL T IN.	BARREL T1 IN.	BARREL O IN.	BARREL Y IN.	WINGS & CURBS E FT-IN.	J FT-IN.	G FT-IN.	H FT-IN.	L FT-IN.	P FT-IN.	M FT-IN.
4	3	12	28	23	6	7½	7½	1¾	1 13/16	1-0	0-8	2-4	4-7½	7-11	7-5	19-10
	4	16	28	13	6	7½	7½	1¾	1 13/16	1-3	0-10	2-9	5-7½	9-11	9-5	23-10
5	3	15	22	23	6	8	8	1¾	1⅞	1-0	0-8	2-4	4-8	7-11	7-5	20-10
	4	20	22	12	6	8	8	1¾	1⅞	1-3	0-10	2-9	5-8	9-11	9-5	24-10
	5	25	21	7	6	8	8	1¾	1⅞	1-5	1-2	3-3	6-8	11-11	11-5	28-10
6	3	18	17	22	6	8½	8½	1¾	1⅞	1-0	0-8	2-4	4-8½	8-9	8-3	23-6
	4	24	17	12	6	6½	8½	1¾	1⅞	1-3	0-10	2-9	5-8½	10-9	10-3	27-6
	5	30	17	7	6	8½	8½	1¾	1⅞	1-5	1-2	3-3	6-8½	12-9	12-3	31-6
	6	36	17	5	6	8½	8½	1¾	1⅞	1-7	1-7	3-10	7-8½	14-9	14-3	35-6
7	3	21	15	21	6	9	9	1¾	1⅞	1-0	0-8	2-4	4-9	8-9	8-3	24-6
	4	28	15	12	6	9	9	1¾	1⅞	1-3	0-10	2-9	5-9	10-9	10-3	28-6
	5	35	14	6	6	9	9	1¾	1⅞	1-5	1-2	3-3	6-9	12-9	12-3	32-6
	6	42	14	5	6	9	9	1¾	1⅞	1-7	1-7	3-10	7-9	14-9	14-3	36-6

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

CLEAR SPAN FEET	CLEAR HEIGHT FEET	BARREL REINFORCEMENT BARS A SIZE	BARS A NO.	BARS A LENGTH FT-IN	BARS A SPAC. IN.	BARS B SIZE	BARS B NO.	BARS B LENGTH FT-IN.	BARS B SPAC. IN.	#4 BARS C* NO.	#4 BARS C* LENGTH FT-IN.
4	3	#5	246	5-6	4½	#4	92	3-11	12	16	47-2
	4	#5	246	5-6	4½	#4	92	4-11	12	18	47-2
5	3	#6	202	6-6	5½	#4	92	4-0	12	18	47-2
	4	#6	202	6-6	5½	#4	92	5-0	12	20	47-2
	5	#6	202	6-6	5½	#4	92	6-0	12	22	47-2
6	3	#6	202	7-6	5½	#4	92	4-1	12	20	47-2
	4	#6	202	7-6	5½	#4	92	5-1	12	22	47-2
	5	#6	202	7-6	5½	#4	92	6-1	12	24	47-2
	6	#6	202	7-6	5½	#4	110	7-1	10	26	47-2
7	3	#6	220	9-6	5	#4	92	4-2	12	22	47-2
	4	#6	220	8-6	5	#4	92	5-2	12	24	47-2
	5	#6	220	8-6	5	#4	92	6-2	12	26	47-2
	6	#6	220	8-6	5	#4	110	7-2	10	28	47-2

CLEAR SPAN FEET	CLEAR HEIGHT FEET	WING & CURB REINFORCEMENT #4 BARS E NO.	#4 BARS E LENGTH FT-IN.	#4 BARS E SPAC. IN.	#4 BARS F NO.	#4 BARS F LENGTH FT-IN.	#4 BARS F1 NO.	#4 BARS F1 LENGTH FT-IN	#4 BARS J NO.	#4 BARS J LENGTH FT-IN.	#4 BARS N NO.	#4 BARS N LENGTH FT-IN.
4	3	32	6-2½	12	4	8-10	12	2-10	16	5-6	10	4-10
	4	40	7-5½	12	4	10-10	16	2-10	20	7-6	10	4-10
5	3	32	6-3	12	4	8-10	12	2-10	16	5-6	12	4-11
	4	40	7-6	12	4	10-10	16	2-10	20	7-6	12	4-11
	5	48	8-8	12	4	12-10	20	2-10	24	9-6	12	4-11
6	3	36	6-3½	12	4	9-8	12	2-10	16	6-4	14	5-0
	4	44	7-6½	12	4	11-8	16	2-10	20	8-4	14	5-0
	5	52	8-8½	12	4	13-8	20	2-10	24	10-4	14	5-0
	6	60	9-10½	12	4	15-8	24	2-10	28	12-4	14	5-0
7	3	36	6-4	12	4	9-8	12	2-10	16	6-4	16	5-1
	4	44	7-7	12	4	11-8	16	2-10	20	8-4	16	5-1
	5	52	8-9	12	4	13-8	20	2-10	24	10-4	16	5-1
	6	60	9-11	12	4	15-8	24	2-10	28	12-4	16	5-1

CLEAR SPAN FEET	CLEAR HEIGHT FEET	#4 BARS O NO.	#4 BARS O LENGTH FT-IN.	#4 BARS P NO.	#4 BARS P LENGTH FT-IN.	#4 BARS P1 NO.	#4 BARS P1 LENGTH FT-IN.	#4 BARS M NO.	#4 BARS M LENGTH FT-IN.	Ⓐ #6 BARS X NO.	#6 BARS X LENGTH FT-IN.
4	3	28	1-11	12	7-1	8	8-9	4	7-7	16	2-0
	4	36	2-4	12	9-1	8	10-9	4	7-7	20	2-0
5	3	28	1-11	12	7-1	8	8-9	4	8-7	16	2-0
	4	36	2-4	12	9-1	8	10-9	4	8-7	20	2-0
	5	44	2-10	12	11-1	8	12-9	4	8-7	24	2-0
6	3	32	1-11	12	7-11	8	9-7	4	9-7	16	2-0
	4	40	2-4	12	9-11	8	11-7	4	9-7	20	2-0
	5	48	2-10	12	11-11	8	13-7	4	9-7	24	2-0
	6	56	3-5	16	13-11	12	15-7	4	9-7	28	2-0
7	3	32	1-11	12	7-11	8	9-7	4	10-7	16	2-0
	4	40	2-4	12	9-11	8	11-7	4	10-7	20	2-0
	5	48	2-10	12	11-11	8	13-7	4	10-7	24	2-0
	6	56	3-5	16	13-11	12	15-7	4	10-7	28	2-0

*Includes One 1'-6" Lap Splice

QUANTITIES

PER LIN. FT. OF BARREL STEEL LBS.	PER LIN. FT. OF BARREL CONC. CU. YDS.	44'-0" CULVERT STEEL LBS.	44'-0" CULVERT CONC. CU. YDS.	OPENINGS CLEAR SPAN FEET	OPENINGS CLEAR HEIGHT FEET
46.52	0.3467	2634	23.08	4	3
49.15	0.3837	2938	27.86		4
59.97	0.4138	3274	26.34	5	3
62.64	0.4509	3579	31.12		4
65.31	0.4879	3912	36.58		5
67.97	0.4877	3700	30.60	6	3
70.64	0.5247	4012	35.51		4
73.32	0.5617	4352	41.10		5
77.88	0.5988	4887	47.45		6
81.54	0.5648	4313	34.31	7	3
84.22	0.6019	4625	39.23		4
86.89	0.6389	4965	44.83		5
91.48	0.6759	5501	51.18		6

GENERAL NOTES:

Construction Specifications: Latest Approved La. Dept. of Highways Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 As Amended by Int. Spec. 1964. Live Load HS 20-44 or Military Load, whichever is Greater.
All Concrete To Be Class "A"
All Exposed Corners To Have ¾" Chamfer, Unless Otherwise noted.
Reinforcement Bars shall be Billet Steel A.S.T.M. A 615 or Rail Steel A.S.T.M. A 616 or Axle Steel A.S.T.M. A 617.
Dimensions Relating To Reinforcing Steel are to bar centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.

[illegible]	Rev. Weep Hole Note	W.T.J.
[illegible]	[illegible]	W.T.J.
[illegible]	Revised General Notes for Steel	W.E.M.
[illegible]	Added Axle Steel	W.E.M.
DATE	DESCRIPTION	BY

12-14-64	Rev. 4' & 5' Spans to Military Loading & Deleted 3' Span	W.E.M.
4-3-64	DEFORMED DOWELS 'X' TO SMOOTH	W E M
7-27-62	4' Thru 7' Cl. Spans Added	J.H.A. / M.K.Y.
DATE	DESCRIPTION	BY

STANDARD PLAN
REINF. CONCRETE BOX CULVERTS
STRAIGHT WINGS 90° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
DATED April 23 1962 3' To 6' HEIGHTS 4' To 7' SPANS

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED Q A Hester | DETAILED Q A Hester | TRACED R.O.
CHECKED M Yoshii | CHECKED [illegible] | CHECKED Q A Hester

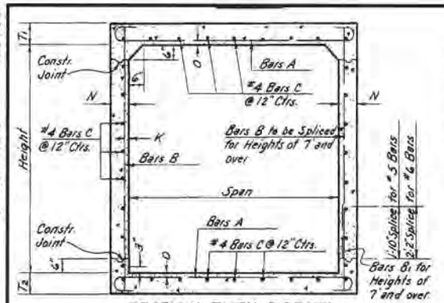
APPROVED BY:
CHIEF ENGINEER
1-5-78
DATE
C·C·S·S·4-7·R·S·90°·1

FOR INFORMATIONAL USE

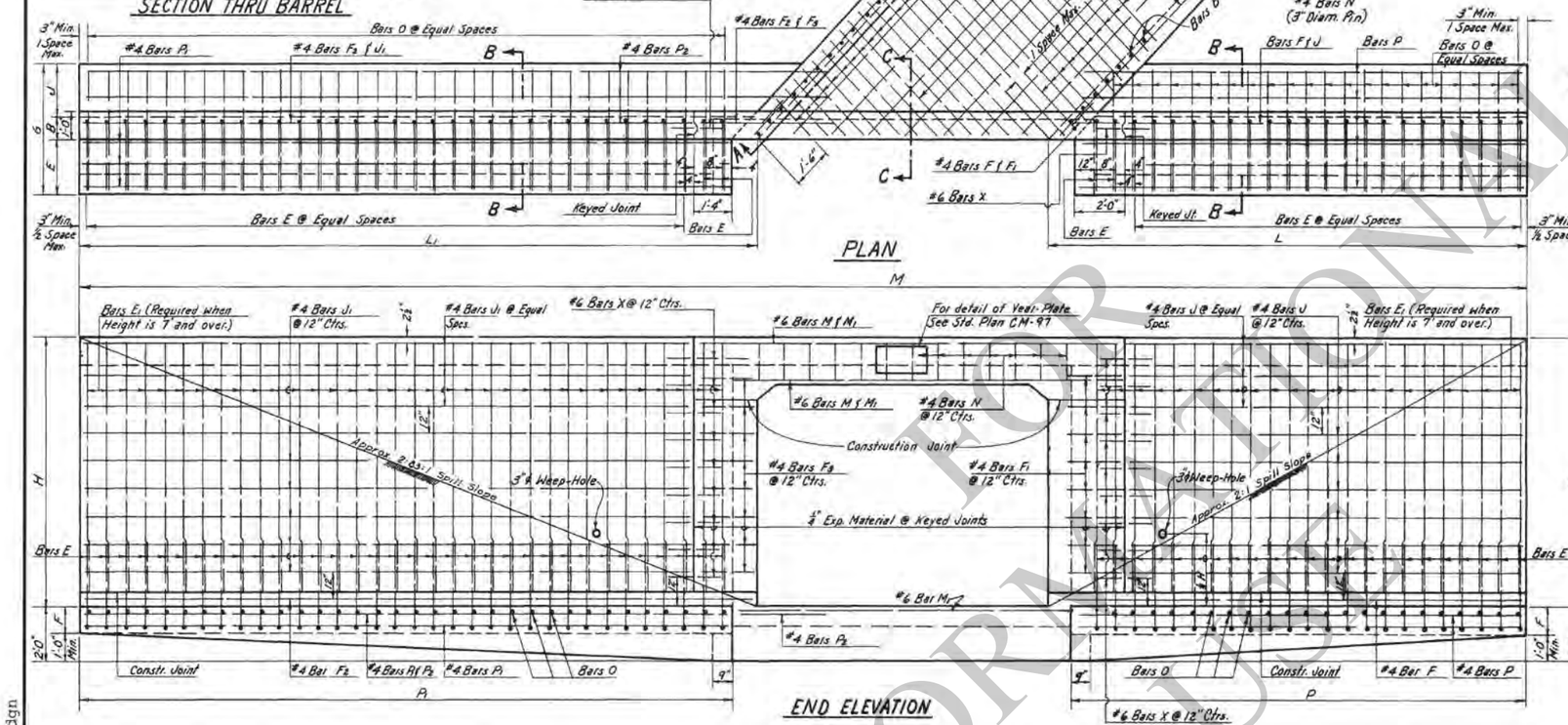
F.A.P.	STATE PROJECT	PARISH	SHEET NO.

GENERAL NOTES

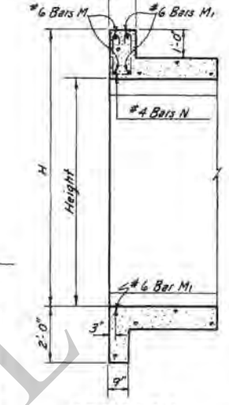
Construction Specifications: Latest approved La Dept of Highways Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 as amended by Int Spec 1966.
Live Load: HS 20-44 or Military; whichever is Greater.
All Concrete to be Class "A".
All exposed corners to have ¾" chamfer unless otherwise noted.
Reinforcement shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.
Dimensions relating to Reinforcing Steel are to bar centers.
A 1'-0" Square of Plastic Filter Cloth (See Qualified Products List) Shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For details of Joints, See Std. Plan CM-99.



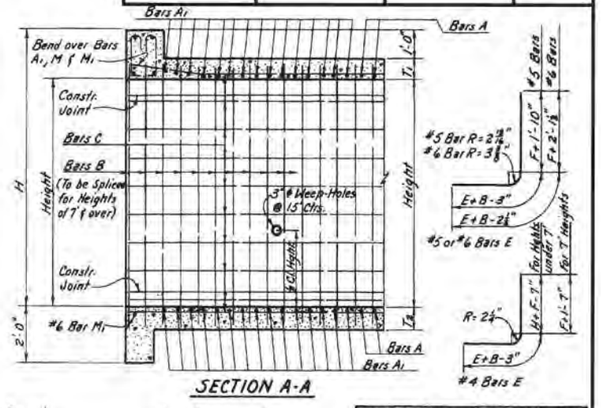
SECTION THRU BARREL



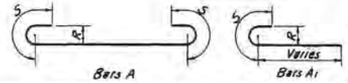
END ELEVATION



SECTION C-C



SECTION A-A



DIMENSIONS - BARS A AND A₁		
Size	R	S
#6	5⅛"	0'-11"
#7	6⅞"	1'-1"

DIMENSIONS — BARREL

Opening Span in Feet	Height in Feet	T_1 In.	T_2 In.	N In.	O In.	K In.
7	4	9	9	6	1⅞	1⅜
	5	9	9	6	1⅞	1⅜
	6	9	9	6	1⅞	1⅜
	7	9	9	7	1⅞	1⅜
8	4	10	10	6	1⅞	1¾
	5	10	10	6	1⅞	1¾
	6	10	10	7	1⅞	1¾
	7	10	10	7	1⅞	1¾
	8	10	10	8	1⅞	1¾
9	5	10½	10½	7	1⅝	1¾
	6	10½	10½	7	1⅝	1¾
	7	10½	10½	8	1⅝	1¾
	8	10½	10½	8	1⅝	1¾
	9	10½	10½	9	1⅝	1¾
10	5	11	11	8	1⅛	1⅜
	6	11	11	8	1⅛	1½
	7	11	11	8	1⅛	1⅝
	8	11	11	9	1⅛	1⅝
	9	11	11	9	1⅛	1⅝
	10	11	11	10	1⅛	1⅝

DIMENSIONS — WINGS AND CURBS

Opening Span in Feet	Height in Feet	B In.	E Ft-In.	J Ft-In.	G Ft-In.	F In.	H Ft-In.	L Ft-In.	L_1 Ft-In.	P Ft-In.	A Ft-In.	M Ft-In.
7	4	6	1-3	0-10	2-9	9	5-9	10-6½	14-10½	9-10	14-2	35-3⅜
	5	6	1-5	1-2	3-3	9	6-9	12-6½	17-6½	11-10	17-0	40-1⅜
	6	6	1-7	1-7	3-10	9	7-9	14-6½	20-7½	13-10	19-11	45-0⅜
	7	6	1-9	1-11	4-5	12	8-9	16-8⅝	23-6⅝	15-11	22-9	50-2⅜
8	4	8	1-3	0-10	2-9	9	5-10	10-6¼	14-10½	9-10	14-2	36-8⅜
	5	8	1-5	1-2	3-3	9	6-10	12-6¼	17-10½	11-10	17-2	41-8⅜
	6	8	1-7	1-7	3-10	9	7-10	14-6¼	21-0⅝	13-8	20-3	46-11⅜
	7	8	1-9	1-11	4-5	12	8-10	16-8⅝	23-6⅝	15-11	22-9	51-7⅜
	8	8	1-11	2-0	4-10	12	9-10	18-4⅝	26-8⅝	17-5	25-9	56-4⅜
9	5	8	1-5	1-2	3-3	9	6-10½	12-7⅜	17-11⅞	11-10	17-2	43-4⅜
	6	8	1-7	1-7	3-10	9	7-10½	14-6⅞	21-0⅞	13-9	20-3	48-4⅜
	7	8	1-9	1-11	4-5	12	8-10½	16-10⅜	23-8⅜	15-11	22-9	53-3⅜
	8	8	1-11	2-0	4-10	12	9-10½	18-4⅝	26-8⅝	17-5	25-9	57-9⅜
	9	8	2-2	2-4	5-4	12	10-10½	20-3⅜	29-0⅜	19-3	28-0	62-1⅜
10	5	8	1-5	1-2	3-3	9	6-11	12-9⅛	18-1⅛	11-10	17-2	45-0⅜
	6	8	1-7	1-6	3-9	9	7-11	14-9⅛	21-2⅛	13-10	20-3	50-1⅜
	7	8	1-9	1-8	4-5	12	8-11	16-10⅞	23-9⅞	15-11	22-10	54-9⅜
	8	9	1-11	2-0	4-10	12	9-11	19-2⅜	26-9⅜	18-2	25-9	60-2⅜
	9	9	2-2	2-4	5-4	12	10-11	20-11⅝	29-7⅝	19-11	28-7	64-9⅜
	10	9	2-4	2-8	5-10	12	11-11	22-11⅜	32-2⅜	21-9	31-0	69-3

QUANTITIES — PER LIN. FT. BARREL (44'-0" CULVERT Above ℄)

Opening Span in Feet	Height in Feet	Steel Lbs.	Concrete Cu. Yds.
7	4	88.12	0.6019
	5	80.79	0.6309
	6	95.35	0.6759
	7	107.29	0.7654
8	4	96.88	0.7150
	5	98.56	0.7500
	6	103.44	0.8344
	7	116.16	0.8776
	8	121.82	0.9805
9	5	122.30	0.8843
	6	124.97	0.9275
	7	138.97	1.0247
	8	143.40	1.0741
	9	150.80	1.1538
10	5	133.28	1.0257
	6	135.95	1.0751
	7	145.08	1.1245
	8	158.61	1.2346
	9	163.80	1.2901
	10	175.06	1.4187

QUANTITIES — PER LIN. FT. BARREL (44'-0" CULVERT Above ℄)

Opening Span in Feet	Height in Feet	Steel Lbs.	Concrete Cu. Yds.
7	4	35.53⅜	0.4194
	5	40.32	0.4608
	6	45.06	0.5166
	7	50.24	0.5844
8	4	36.83⅜	0.4739
	5	41.88⅜	0.5388
	6	46.94⅜	0.6356
	7	51.73⅜	0.7844
	8	56.43⅜	0.9140
9	5	43.43⅜	0.6043
	6	48.43⅜	0.6815
	7	53.33⅜	0.8562
	8	57.93⅜	0.9606
	9	62.13⅜	1.0431
10	5	45.03⅜	0.6307
	6	50.13⅜	0.7211
	7	54.93⅜	0.8290
	8	59.03⅜	0.9540
	9	64.93⅜	1.0367
	10	69.3	1.1458

BILL OF REINFORCING STEEL (FOR 44'-0" CULVERT)

BARREL REINFORCEMENT — BARS A

Opening Span in Feet	Height in Feet	Size	No.	Lgth. Ft.-In.	Spac. In.
7	4	#6	200	9-0½	5
	5	#6	180	9-0½	5
	6	#6	180	9-0½	5
	7	#6	184	9-2⅝	5
8	4	#6	180	10-0½	5
	5	#6	180	10-0½	5
	6	#6	180	10-2½	5
	7	#6	180	10-2½	5
	8	#6	180	10-4½	5
9	5	#7	146	11-5½	6
	6	#7	146	11-5½	6
	7	#7	146	11-7½	6
	8	#7	146	11-7½	6
	9	#7	146	11-9½	6
10	5	#7	142	12-7⅛	6
	6	#7	142	12-7⅛	6
	7	#7	142	12-7⅛	6
	8	#7	142	12-9¼	6
	9	#7	142	12-9¼	6
	10	#7	142	12-11⅜	6

BARREL REINFORCEMENT — BARS A_1

Opening Span in Feet	Height in Feet	Size	No.	Short Bar Ft.-In.	Var. In.	Long Bar Ft.-In.	Spac. In.
7	4	#6	60	2-3	5	8-1	5
	5	#6	60	2-3	5	8-1	5
	6	#6	60	2-3	5	8-1	5
	7	#6	60	2-4	5	8-2	5
8	4	#6	72	2-3	5	9-4	5
	5	#6	72	2-3	5	9-4	5
	6	#6	72	2-4	5	9-5	5
	7	#6	72	2-4	5	9-5	5
	8	#6	72	2-5	5	9-6	5
9	5	#7	68	2-5	6	10-5	6
	6	#7	68	2-5	6	10-5	6
	7	#7	68	2-6	6	10-6	6
	8	#7	68	2-6	6	10-6	8
	9	#7	68	2-7	6	10-7	6
10	5	#7	76	2-7	6	11-7	6
	6	#7	76	2-7	6	11-7	6
	7	#7	76	2-7	6	11-7	6
	8	#7	76	2-8	6	11-8	6
	9	#7	76	2-8	6	11-8	6
	10	#7	76	2-9	6	11-9	6

BARREL REINFORCEMENT — BARS B & B_1, #4 BARS C

Opening Span in Feet	Height in Feet	Size	No.	Spac. In.	Bars B Lgth. Ft.-In.	Bars B_1 Lgth. Ft.-In.	No.	Lgth.① Ft.-In.
7	4	#4	94	12	5-2		24	47-10
	5	#4	94	12	6-2		26	47-10
	6	#4	112	10	7-2		28	47-10
	7	#4	94	12	7-1	2-11	30	47-10
8	4	#4	94	12	5-4		26	47-10
	5	#4	94	12	6-4		28	47-10
	6	#4	94	12	7-4		30	47-10
	7	#5	84	12	7-2	3-0	32	47-10
	8	#5	98	11½	8-2	3-0	34	47-10
9	5	#4	94	12	6-5		30	47-10
	6	#4	94	12	7-5		32	47-10
	7	#4	94	12	7-2	3-0	34	47-10
	8	#5	98	11½	8-2	3-0	38	47-10
	9	#5	108	10½	9-2	3-0	38	47-10
10	5	#4	94	12	6-6		32	47-10
	6	#4	94	12	7-6		34	47-10
	7	#4	126	9	7-3	2-9	36	47-10
	8	#4	98	12	8-3	3-1	38	47-10
	9	#5	118	9½	9-3	3-1	40	47-10
	10	#5	94	12	10-3	3-5	42	47-10

① Includes 1'-6" Lap-Splice.

CURB AND WING REINFORCEMENT — BARS E

Opening Span in Feet	Height in Feet	Size	No.	Lgth. Ft.-In.	Spac. In.
7	4	#5	50	7-7	12
	5	#6	60	8-9	12
	6	#6	70	9-11	12
	7	#6	84	11-1	10
8	4	#6	76	10-0	11
	5	#6	86	11-4	10
	6	#6	86	11-5	11
	7	#6	94	12-5	10
	8	#6	94	12-6	11
9	5	#6	60	8-10½	12
	6	#6	76	10-0½	11
	7	#6	94	11-1	10
	8	#6	94	11-2	11
	9	#6	140	12-4	8
10	5	#6	60	8-11	12
	6	#6	76	10-1	11
	7	#6	94	11-2	10
	8	#6	98	12-3	11
	9	#6	142	12-5	8
	10	#6	148	12-6	8½

CURB AND WING REINFORCEMENT — BARS E_1

Opening Span in Feet	Height in Feet	Size	No.	Lgth. Ft.-In.	Spac. In.
8	4	#4	94	8-2	10
	5	#4	96	9-2	11
9	5	#4	94	8-2	10
	6	#4	94	8-4	10
	7	#4	98	9-3	11
	8	#4	98	9-3	11
	9	#4	140	10-2	8
10	5	#4	94	8-3	10
	6	#4	94	8-4	10
	7	#4	98	9-3	11
	8	#4	98	9-3	11
	9	#4	142	10-3	8
	10	#5	148	11-3	8½

CURB AND WING REINFORCEMENT — #4 BARS F & F_1

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	2	10-11
	5	2	12-11
	6	2	14-11
	7	2	16-11
8	4	2	10-11
	5	2	12-11
	6	2	14-11
	7	2	16-11
	8	2	18-6
9	5	2	13-2
	6	2	15-2
	7	2	17-0
	8	2	18-6
	9	2	20-6
10	5	2	13-2
	6	2	15-2
	7	2	17-1
	8	2	18-6
	9	2	21-2
	10	2	23-2

CURB AND WING REINFORCEMENT — #4 BARS F_2 & F_3

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	2	16-2
	5	2	19-0
	6	2	21-11
	7	2	25-0
8	4	2	16-2
	5	2	19-2
	6	2	22-4
	7	2	25-0
	8	2	28-1
9	5	2	19-3
	6	2	22-4
	7	2	25-1
	8	2	28-1
	9	2	30-6
10	5	2	19-5
	6	2	22-6
	7	2	25-3
	8	2	28-3
	9	2	31-1
	10	2	33-7

CURB AND WING REINFORCEMENT — #4 BARS F_4 & F_5

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	6	3-3
	5	6	3-3
	6	6	3-3
	7	6	3-6
8	4	8	3-3
	5	8	3-3
	6	8	3-4
	7	8	3-6
	8	8	3-7
9	5	10	3-4
	6	10	3-4
	7	10	3-7
	8	10	3-8
	9	10	3-8
10	5	10	3-5½
	6	10	3-5½
	7	10	3-8
	8	10	3-9
	9	10	3-10
	10	10	3-10

CURB AND WING REINFORCEMENT — #4 BARS J & J_1

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	10	7-6
	5	12	9-6
	6	14	11-5
	7	18	13-7
8	4	10	7-6
	5	12	9-6
	6	16	11-5
	7	18	13-7
	8	18	13-7
9	5	12	9-6
	6	14	11-5
	7	16	13-7
	8	18	13-7
	9	20	15-11
10	5	12	9-6
	6	14	11-5
	7	16	13-7
	8	18	13-7
	9	20	15-10
	10	24	19-5

CURB AND WING REINFORCEMENT — #4 BARS J_1 & J_2

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	10	12-0
	5	12	15-4
	6	14	18-3
	7	18	21-1
8	4	10	12-6
	5	12	15-6
	6	16	18-7
	7	18	21-1
	8	18	21-2
9	5	12	15-6
	6	14	18-7
	7	16	21-2
	8	18	21-2
	9	20	24-1
10	5	12	15-6
	6	14	18-7
	7	16	21-2
	8	18	21-2
	9	20	24-1
	10	24	29-4

CURB AND WING REINFORCEMENT — #4 BARS M & M_1

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	22	4-7
	5	22	4-7
	6	22	4-7
	7	22	4-7
8	4	24	4-9
	5	24	4-9
	6	24	4-9
	7	24	4-9
	8	24	4-9
9	5	28	4-10
	6	28	4-10
	7	28	4-10
	8	28	4-10
	9	28	4-10
10	5	30	4-11
	6	30	4-11
	7	30	4-11
	8	30	4-11
	9	32	4-11
	10	32	4-11

CURB AND WING REINFORCEMENT — BARS O

Opening Span in Feet	Height in Feet	Size	No.	Lgth. Ft.-In.	Spac. In.
7	4	#4	46	2-4	12
	5	#4	56	2-10	12
	6	#4	66	3-5	12
	7	#4	76	4-0	12
8	4	#4	46	2-4	12
	5	#4	56	2-10	12
	6	#4	66	3-5	12
	7	#4	76	4-0	12
	8	#4	86	4-5	12
9	5	#4	56	2-10	12
	6	#4	66	3-5	12
	7	#4	76	4-0	12
	8	#4	86	4-5	12
	9	#4	112	4-11	10
10	5	#5	120	6-5	10½
	6	#5	120	6-5	10½
	7	#5	120	6-5	10½
	8	#5	120	6-5	10½
	9	#5	120	6-5	10½
	10	#5	120	6-5	10½

CURB AND WING REINFORCEMENT — #4 BARS P & P_1

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	10	9-10
	5	10	11-6
	6	10	13-10
	7	14	15-7
8	4	10	9-6
	5	10	11-6
	6	14	13-5
	7	14	15-7
	8	14	17-1
9	5	10	11-6
	6	14	13-5
	7	14	15-7
	8	14	17-1
	9	14	18-11
10	5	10	11-6
	6	14	13-6
	7	14	15-7
	8	14	17-1
	9	14	18-11
	10	16	21-5

CURB AND WING REINFORCEMENT — #4 BARS P_2 & A

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	6	13-10
	5	6	16-10
	6	6	19-11
	7	6	22-5
8	4	6	13-10
	5	6	16-10
	6	6	19-11
	7	6	22-5
	8	6	25-5
9	5	6	16-10
	6	6	19-11
	7	6	22-5
	8	6	25-5
	9	6	27-8
10	5	6	16-10
	6	6	19-11
	7	6	22-6
	8	6	25-5
	9	6	27-8
	10	6	30-8

CURB AND WING REINFORCEMENT — #4 BARS A_1 & F_2

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	4	14-1
	5	4	16-10
	6	4	19-11
	7	4	22-5
8	4	4	14-1
	5	4	16-10
	6	4	19-11
	7	4	22-6
	8	4	25-5
9	5	4	16-10
	6	4	19-11
	7	4	22-6
	8	4	25-5
	9	4	27-8
10	5	4	16-10
	6	4	19-11
	7	4	22-6
	8	4	25-5
	9	4	27-8
	10	4	30-8

CURB AND WING REINFORCEMENT — #6 BARS M & M_1

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	4	9-10
	5	4	11-10
	6	4	13-8
	7	4	15-11
8	4	4	9-10
	5	4	11-10
	6	4	13-8
	7	4	15-11
	8	4	17-5
9	5	4	11-10
	6	4	13-9
	7	4	15-11
	8	4	17-5
	9	4	19-3
10	5	4	11-10
	6	4	13-9
	7	4	15-11
	8	4	17-5
	9	4	19-3
	10	4	21-9

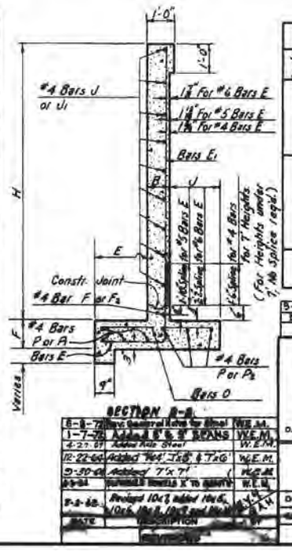
CURB AND WING REINFORCEMENT — #6 BARS M_2 & M_3

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	4	14-2
	5	4	17-0
	6	4	19-11
	7	4	22-9
8	4	4	14-2
	5	4	17-2
	6	4	20-3
	7	4	22-9
	8	4	25-9
9	5	4	17-2
	6	4	20-3
	7	4	22-9
	8	4	25-9
	9	4	28-7
10	5	4	17-2
	6	4	20-3
	7	4	22-9
	8	4	25-9
	9	4	28-7
	10	4	31-0

CURB AND WING REINFORCEMENT — #6 BARS M_3 & X

Opening Span in Feet	Height in Feet	No.	Lgth. Ft.-In.
7	4	4	35-3⅜
	5	4	40-1⅜
	6	4	45-0⅜
	7	4	50-2⅜
8	4	4	36-8⅜
	5	4	41-8⅜
	6	4	46-11⅜
	7	4	51-7⅜
	8	4	56-4⅜
9	5	4	43-4⅜
	6	4	48-4⅜
	7	4	53-3⅜
	8	4	57-9⅜
	9	4	62-1⅜
10	5	4	45-0⅜
	6	4	50-1⅜
	7	4	54-9⅜
	8	4	59-0⅜
	9	4	64-9⅜
	10	4	69-3

Ⓐ #6 Bars X to be ¾"ϕ Smooth and Greased for 1'-0" of Length



MAXIMUM FILL									
Span in Feet	Height in Feet	Area Sq. Ft.	Slab	Wall	Span in Feet	Height in Feet	Area Sq. Ft.	Slab	Wall
7	4	28	15	12	9	5	45	12	8
	5	35	14	6		6	54	12	5
	6	42	14	5		7	63	11	8
	7	49	13	6		8	72	11	5
8	4	32	14	11		9	81	10	5
	5	40	13	6	10	5	50	6'	11"
	6	48	13	5		6	60	6'	6'
	7	56	13	6		7	70	6'	6'
	8	64	12	5		8	80	6'	6'
						9	90	6'	6'
						10	100	6'	6'

APPROVED BY:
CHIEF ENGINEER — DATE 1-11-78

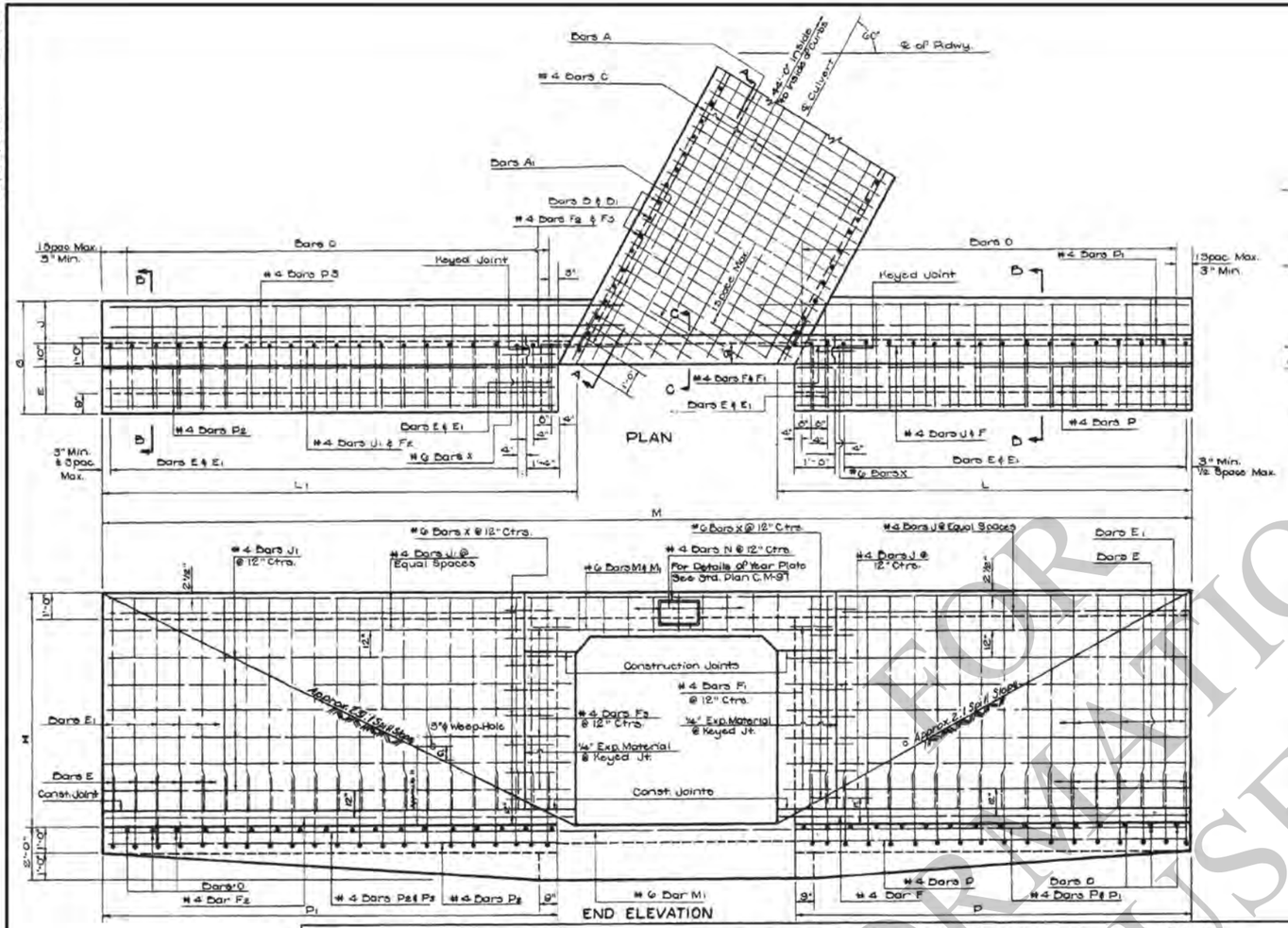
DATE	DESCRIPTION	BY	DATE	DESCRIPTION	BY
5-30-76	Revised Spill Slope	W.T.J.	1-78	Rev. Weep Hole Note	W.T.J.
REVISIONS			REVISIONS		

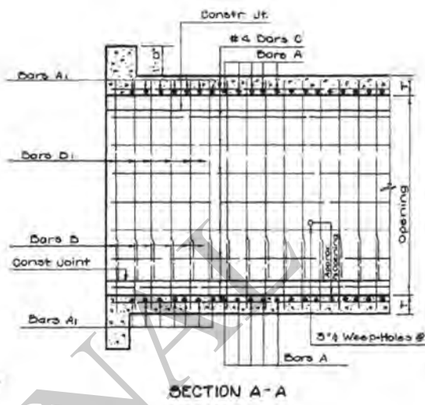
STANDARD PLAN
REINF. CONCRETE BOX CULVERTS
STRAIGHT WINGWALLS 45° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
7' TO 10' SPANS 4' TO 10' HEIGHTS
DATED: Nov 30, 1961

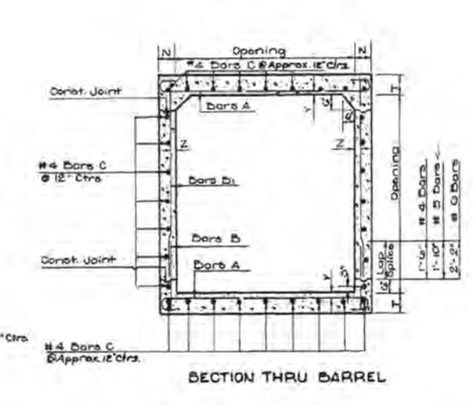
STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

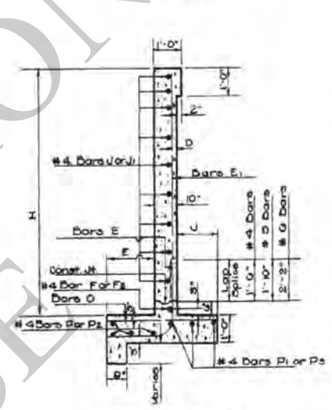
DESIGNED	Q.A.H.	DETAILED	Q.A.H.	TRACED	
QUANTITIES		CHECKED		CHECKED	

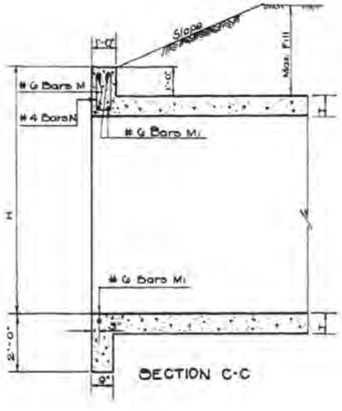
DATE	DESCRIPTION	BY
6-8-66	Revised Material Notes for Steel	W.E.M.
1-7-70	Added B & B' Bars	W.E.M.
4-27-71	Added Note Sheet	W.E.M.
12-22-66	Added "A4" "A8" & "A10"	W.E.M.
12-30-68	Added "A4" "A7"	W.E.M.
2-3-71	Revised Heights & "X" to Match	W.E.M.
2-2-72	Revised 10x8

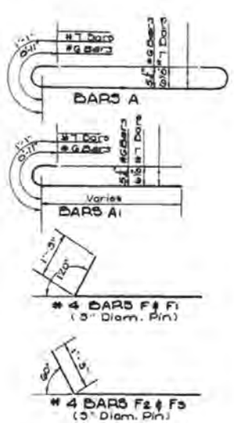


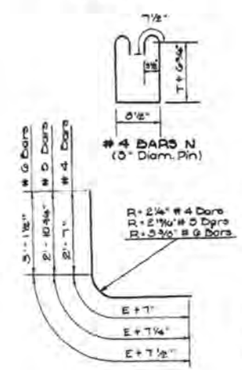












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FOR INFORMATIONAL USE

F.A.P.	STATE PROJECT	PARISH	SHEET NO.

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

Openings Clear Span (Feet)	Openings Clear Height (Feet)	Bars A Size	Bars A No.	Bars A *Length (Ft-In)	Bars A Spac. (In.)	Bars A1 Size	Bars A1 No.	Bars A1 Short (Ft-In)	Bars A1 Var. (In.)	Bars A1 Long (Ft-In)	Bars A1 Spac. (In.)	Bars B & B1 Size	Bars B & B1 No.	Bars B & B1 Length B (Ft-In)	Bars B & B1 Length B1 (Ft-In)	Bars B & B1 Spac. (In.)	#4 Bars C No.	#4 Bars C *Length (Ft-In)
7	7	#6	200	8-2½	5	#6	36	2-6	0.6250	8-3	5	#5	84	2-11	7-1	12	30	47-5
8	7	#6	198	10-2½	5	#6	40	2-6	0.6667	9-0	5	#4	124	3-0	7-2	9	32	47-5
	8	#6	198	10-4½	5	#6	40	2-7	0.6667	9-1	5	#5	94	3-0	8-2	12	34	47-5
9	7	#7	164	11-7½	6	#7	36	2-8	0.5750	9-7	6	#5	94	3-0	7-2	12	34	47-5
	8	#7	164	11-7½	6	#7	36	2-8	0.5750	9-7	6	#5	98	3-0	8-2	11½	36	47-5
	9	#7	162	11-9½	6	#7	40	2-9	[illegible]	10-7	6	#5	106	3-0	9-2	10½	38	47-5
10	7	#7	158	12-7½	6	#7	44	2-8	0.4000	11-4	6	#4	124	2-8	7-3	9	36	47-5
	8	#7	158	12-9½	6	#7	44	2-9	0.4000	11-5	6	#5	94	3-1	8-3	12	38	47-5
	9	#7	158	12-9½	6	#7	44	2-9	0.4000	11-5	6	#5	118	3-1	9-3	9½	40	47-5
	10	#7	158	12-11½	6	#7	44	2-10	0.4000	11-6	6	#6	94	3-5	10-3	12	42	47-5

WINGS AND CURBS REINFORCEMENT

Clear Span	Clear Height	Bars E & E1 Size E	Bars E & E1 Size E1	Bars E & E1 No.	Length E (Ft-In)	Length E1 (Ft-In)	Bars E & E1 Spac. (In.)	*4 Bars F No.	*4 Bars F Length (Ft-In)	*4 Bars F1 No.	*4 Bars F1 Length (Ft-In)	*4 Bars F2 No.	*4 Bars F2 Length (Ft-In)	*4 Bars F3 No.	*4 Bars F3 Length (Ft-In)	*4 Bars J No.	*4 Bars J Length (Ft-In)	*4 Bars J1 No.	*4 Bars J1 Length (Ft-In)
7	7	#4	#4	84	5-1	8-1	10	2	16-11	14	2-8½	2	20-7	14	3-1½	18	13-9	18	17-0
8	7	#4	#4	84	5-1	8-2	10	2	16-11	14	2-9	2	20-7	14	3-2	18	13-9	18	17-0
	8	#5	#4	90	5-6	9-2	10	2	19-4	16	2-10	2	23-1	16	3-2½	20	16-1	20	19-5
9	7	#4	#4	84	5-1	8-2	10	2	16-10	14	2-10	2	20-8	14	3-2½	18	13-7	18	17-0
	8	#5	#4	86	5-6	9-2	11	2	19-3	16	2-10	2	22-5	16	3-2½	20	16-0	20	18-9
	9	#5	#4	128	5-8	10-2	8	2	21-7	18	2-11	2	24-8	18	3-3½	22	18-3	22	20-11
10	7	#4	#4	84	5-1	8-5	10	2	17-0	14	2-10	2	20-8	14	3-3	18	13-9	18	17-0
	8	#5	#4	88	5-6	9-5	11	2	19-2	16	2-11	2	23-9	16	3-3½	20	15-10	20	19-6
	9	#5	#4	128	5-8	10-5	8	2	21-1	18	2-11	2	25-4	18	3-3½	22	17-9	22	21-7
	10	#6	#5	134	6-1	11-5	8½	2	23-6	20	3-0	2	27-9	20	3-4½	24	20-1	24	23-8

Clear Span	Clear Height	*6 Bars M No.	*6 Bars M Length (Ft-In)	6 Bars M1 No.	6 Bars M1 Length (Ft-In)	*4 Bars N No.	*4 Bars N Length (Ft-In)	Bars O Size	Bars O No.	Bars O Length (Ft-In)	Bars O Spac. (In.)	*4 Bars P No.	*4 Bars P Length (Ft-In)	#4 Bars P1 No.	#4 Bars P1 Length (Ft-In)	*4 Bars P2 No.	*4 Bars P2 Length (Ft-In)	*4 Bars P3 No.	*4 Bars P3 Length (Ft-In)	Ⓐ *6 Bars X No.	Ⓐ *6 Bars X Length (Ft-In)
7	7	4	11-10	6	9-0	18	4-7	#4	70	4-0	12	8	15-5	6	16-8	8	18-4	6	21-3	32	2-0
8	7	4	13-0	6	10-2	22	4-9	#4	70	4-0	12	8	15-5	6	16-9	8	18-4	6	21-4	32	2-0
	8	4	13-3	6	10-4	22	4-9	#4	78	4-5	12	8	17-9	6	19-1	8	20-9	6	24-0	36	2-0
9	7	4	14-4	6	11-6	24	4-10	#4	70	4-0	12	8	15-3	6	16-6	8	18-4	6	21-3	32	2-0
	8	4	14-4	6	11-6	24	4-10	#4	76	4-5	12	8	17-8	6	18-11	8	20-1	6	23-3	36	2-0
	9	4	14-7	6	11-8	24	4-10	#4	102	4-11	10	8	19-11	6	21-2	8	22-3	6	25-7	40	2-0
10	7	4	15-6	6	12-8	26	4-11	#4	70	4-0	12	8	15-5	6	16-9	8	18-4	6	21-4	32	2-0
	8	4	15-9	6	12-11	26	4-11	#4	78	4-5	12	8	17-9	6	18-10	8	20-10	6	24-0	36	2-0
	9	4	15-9	6	12-11	26	4-11	#4	104	4-11	10	8	19-5	6	20-9	8	22-11	6	26-4	40	2-0
	10	4	15-11	6	13-1	26	4-11	#5	108	5-5	10½	8	21-9	6	23-1	8	25-0	6	28-7	44	2-0

*Includes 1'-6" Lap Splice.

Ⓐ *6 Bars X to be ¾" ø Smooth and Greased for 1'-0" of Length.

DIMENSIONS

Openings Clear Span (Feet)	Openings Clear Height (Feet)	Openings Area (Sq. Ft.)	Max. Fill Slab (Feet)	Max. Fill Wall (Feet)	Barrel N (In.)	Barrel T (In.)	Barrel Y (In.)	Barrel Z (In.)	Wings & Curbs E (Ft-In)	J (Ft-In)	G (Ft-In)	H (Ft-In)	D (Ft-In)	L (Ft-In)	L1 (Ft-In)	P (Ft-In)	P1 (Ft-In)	M (Ft-In)	Quantities per Linear Foot of Barrel Steel (Lbs.)	Quantities per Linear Foot of Barrel Conc. (Cu. Yds.)	44'-0" Culvert (Along ℄) Steel (Lbs.)	44'-0" Culvert (Along ℄) Conc. (Cu. Yds.)	Openings Clear Span (Feet)	Openings Clear Height (Feet)
7	7	49	13	6	7	9	1⅞	1 13/16	1-11	1-8	4-5	8-8	1¾	16-5 5/16	19-6 5/16	15-9	18-8	43-10 3/16	107.29	0.7654	7023	68.28	7	7
8	7	56	13	6	7	10	1⅞	1¾	1-11	1-8	4-5	8-10	1¾	16-5 1/16	19-4 1/16	15-9	18-8	46-0	113.08	0.8776	7511	73.77	8	7
	8	64	12	5	8	10	1⅞	1 13/16	2-0	2-0	4-10	9-10	1 13/16	18-10⅛	21-10⅛	18-1	21-1	45-11⅜	120.81	0.9805	8301	86.53		8
9	7	63	11	8	8	10½	1 15/16	1 13/16	1-11	1-8	4-5	8-9½	1⅜	16-4¼	19-5¼	15-7	18-8	46-2 3/16	138.97	1.0247	8520	80.68	9	7
	8	72	11	5	8	10½	1 15/16	1 13/16	2-0	2-0	4-10	9-10½	1 13/16	18-9¼	21-2¼	18-0	20-5	50-4 3/16	143.40	1.0741	9204	90.35		8
	9	81	10	5	9	10½	1 15/16	1 13/16	2-2	2-4	5-4	10-10½	1 13/16	21-1⅛	23-5⅜	20-3	22-7	54-11½	150.80	1.1898	10474	104.45		9
10	7	70	6	6	8	11	1 15/16	1¾	1-11	1-8	4-5	8-11	1¾	16-0¼	19-5¼	15-9	18-8	47-6 1/16	145.08	1.1245	8809	85.67	10	7
	8	80	6	6	9	11	1 15/16	1 13/16	2-0	2-0	4-10	9-11	1 13/16	18-8⅝	22-0⅝	17-10	21-2	52-3⅜	153.61	1.2346	9738	98.62		8
	9	90	6	6	9	11	1 15/16	1 13/16	2-2	2-4	5-4	10-11	1 13/16	20-7⅜	24-1⅜	19-9	23-3	56-3⅜	168.80	1.2901	11074	109.50		9
	10	100	6	6	10	11	1 15/16	1⅞	2-4	2-8	5-10	11-11	1⅞	23-0⅜	26-3⅜	22-1	26-4	60-10 11/16	175.06	1.4187	13240	125.08		10

GENERAL NOTES:
CONSTRUCTION SPECIFICATIONS: Latest Approved La. Dept. of Highways Std. Specs.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1961 as Amended by Int. Spec. 1964
Live Load: HS 20-44 or Military Loading, whichever is Greater.
All Exposed Corners to be Chamfered ¾" Unless Otherwise Noted.
Reinforcing Steel Shall be Billet-Steel A.S.T.M. A 615 or Rail-Steel A.S.T.M. A 616 or Axle-Steel A.S.T.M. A 617.
Dimensions to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in Contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
All Concrete to be Class "A".
For Details of Joints, See Std. Plan C-M-49.

APPROVED BY:
Dempsey D. White
CHIEF ENGINEER

1-11-78
DATE

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
2-20-75	Rev. Slope Intercept	W.T.J.
6-8-72	Rev. Gen. Notes For Steel	W.E.M.
1-21-70	Added 9×7, 9×8 & 9×9	W.E.M.
4-27-67	Added Axle Steel	W.E.M.
6-15-65	Bars B & B1 on 10' Span	W.E.M.
9-30-64	Added 7'×7'	W.E.M.
4-3-64	DEFORMED DOWELS "X" TO SMOOTH	W.E.M.
9-20-63	Added 8×7 & 8×8	[illegible]

REVISIONS

STANDARD PLAN
REINFORCED CONC. BOX CULVERT
STRAIGHT WINGWALLS 60° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
7' THRU 10' CLEAR SPANS & CL. HTS.

DATED 5.28 1963

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

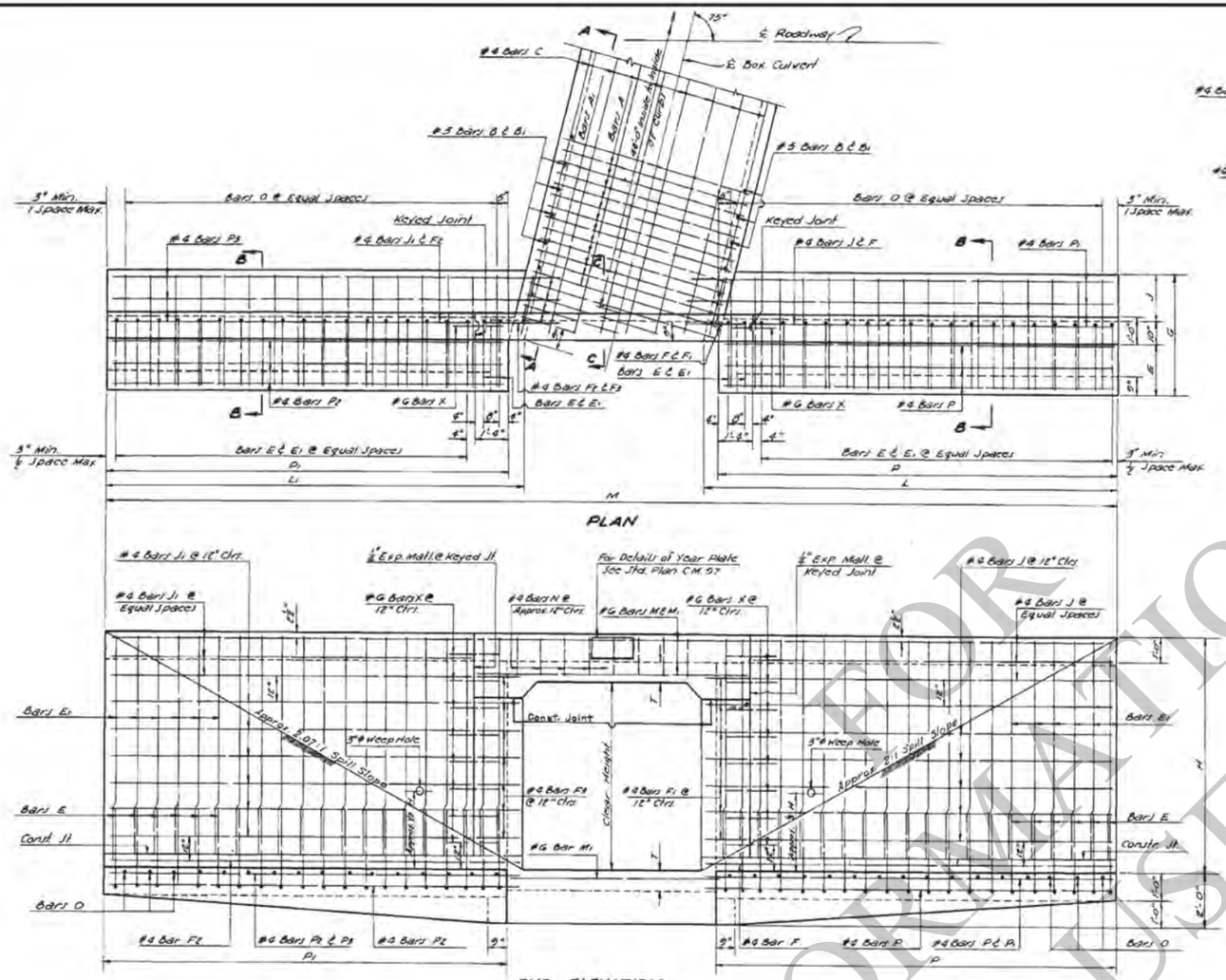
DESIGNED M. Yoshii	DETAILED M. Yoshii	TRACED Jane Read
CHECKED J. Q. Nettles	CHECKED R.C. Mascum	CHECKED R.C. Mascum

BRIDGE DESIGN SECTION

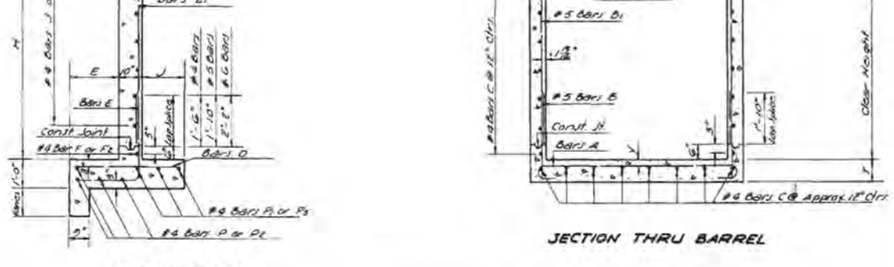
CC-S-S-7-10-RS-60°-1

2/28/2013 15:56

F.A.P.	STATE PROJECT	PARISH	SHEET NO.



OPENING		QUANTITIES PER LIN. FT. OF BARREL		44'-0" CULVERT	
CLEAR SPAN	CLEAR HGT.	STEEL	CONC.	STEEL	CONC.
FT.	FT.	LBS.	CU. YDS.	LBS.	CU. YDS.
7	7	107.29	0.7754	6866	66.07
8	7	116.18	0.8776	7315	71.51
	8	121.82	0.9605	8146	83.55
9	7	138.87	1.0247	8402	78.12
	8	143.40	1.0741	9023	87.57
	9	150.80	1.1898	10244	101.49
10	7	148.83	1.1245	8902	83.92
	8	153.61	1.2348	9544	95.19
	9	163.80	1.2901	10878	108.33
	10	173.27	1.4187	12881	121.64



DIMENSIONS

OPENING CLEAR SPAN	OPENING CLEAR HGT.	MAX. FILL	SLAB	WALL	BARREL AREA	BARREL N	BARREL T	BARREL O	BARREL Y	WINGS AND CURBS E	WINGS AND CURBS J	WINGS AND CURBS G	WINGS AND CURBS H	WINGS AND CURBS L	WINGS AND CURBS L1	WINGS AND CURBS P	WINGS AND CURBS P1	WINGS AND CURBS M
FT.	FT.	SQ. FT.	FT.	FT.	IN.	IN.	IN.	IN.	FT.IN.	FT.IN.	FT.IN.	FT.IN.	FT.IN.	FT.IN.	FT.IN.	FT.IN.	FT.IN.	FT.IN.
7	7	49	13	6	7	9	1⅞	1⅞	1-11	1-8	4-5	8-5	16-6¾	16-10½	16-1	16-3	41-9⅞	46-2⅝
8	7	56	13	6	7	10	1¾	1¾	1-11	1-8	4-5	8-10	16-8¼	16-10½	16-1	16-3	41-9⅞	46-2⅝
	8	64	12	5	8	10	1⅝	1⅝	2-0	2-0	4-10	9-10	18-7⅜	19-4½	17-1	16-8	46-6⅝	51-0⅝
9	7	63	11	8	8	10½	1⅞	1⅞	1-11	1-8	4-5	9-10½	16-9⅝	17-7½	16-1	16-11	43-8¼	48-1⅛
	8	72	11	5	8	10½	1¹⁵⁄₁₆	1¹⁵⁄₁₆	2-0	2-0	4-10	9-10½	18-4½	19-1⅝	17-8	18-5	46-8¼	51-0⅛
	9	81	10	5	9	10½	1¹⁵⁄₁₆	1¹⁵⁄₁₆	2-2	2-4	5-4	10-10½	20-8⅝	21-5⅝	18-11	20-8	51-5⅜	56-0⅜
10	7	70	8	7	8	11	1¾	1¹⁵⁄₁₆	1-11	1-8	4-5	8-11	16-9⅝	17-7½	16-1	16-11	44-3⅝	48-8⅜
	8	80	7	6	9	11	1¹³⁄₁₆	1¹⁵⁄₁₆	2-0	2-0	4-10	9-11	18-5⅝	19-2½	17-8	18-5	47-1⅞	51-8⅝
	9	90	6	5	9	11	1¹³⁄₁₆	1¹³⁄₁₆	2-2	2-4	5-4	10-11	20-8⅝	21-5⅝	19-11	20-8	52-5⅜	57-0⅜
	10	100	6	6	10	11	1¾	1¹³⁄₁₆	2-4	2-8	5-10	11-11	22-3⅜	24-0⅜	21-10	23-2	57-0⅜	61-7⅜

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

OPENING CLEAR SPAN	OPENING CLEAR HGT.	BARS A SIZE	BARS A N°	BARS A LGTH. FT.IN.	BARS A IRR. IN.	#5 BARS B & B1 SIZE	#5 BARS B & B1 N°	#5 BARS B & B1 LENGTH SHORT BAR FT.IN.	#5 BARS B & B1 LENGTH VAR. FT.IN.	#5 BARS B & B1 LENGTH LONG BAR FT.IN.	#5 BARS B & B1 IRR. IN.	#6 BARS C SIZE	#6 BARS C N°	#6 BARS C LGTH. FT.IN.
7	7	#6	208	10-2½	5	#6	20	3-3	18.5000	9-5	5	#6	92	7-11
8	7	#6	208	10-4½	5	#6	20	3-4	19.5001	9-6	5	#6	96	8-2
	8	#6	208	10-4½	5	#6	20	3-4	19.5001	9-6	5	#6	96	8-2
9	7	#7	174	11-7½	6	#7	16	3-5	22.3333	9-0	6	#7	82	6-11
	8	#7	174	11-7½	6	#7	16	3-5	22.3333	9-0	6	#7	96	8-2
	9	#7	174	11-9½	6	#7	16	3-6	22.3333	9-1	6	#7	106	9-0
10	7	#7	172	12-7½	6	#7	20	3-5	22.5000	10-11	6	#7	92	8-1
	8	#7	172	12-9½	6	#7	20	3-6	22.5000	11-0	6	#7	92	8-1
	9	#7	172	12-9½	6	#7	20	3-6	22.5000	11-0	6	#7	116	10-0
	10	#7	172	12-11½	6	#7	20	3-7	22.5000	11-1	6	#7	150	13-0

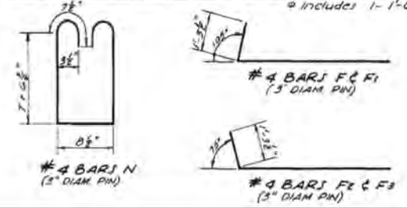
WINGS AND CURB REINFORCEMENT (Ⓐ)

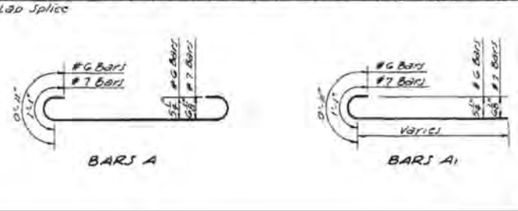
OPENING CLEAR SPAN	OPENING CLEAR HGT.	BARS E & E1 SIZE E	BARS E & E1 SIZE E1	BARS E & E1 N°	BARS E & E1 LENGTH E FT.IN.	BARS E & E1 LENGTH E1 FT.IN.	BARS E & E1 IRR. IN.	#4 BARS F N°	#4 BARS F LGTH. FT.IN.	#4 BARS F1 N°	#4 BARS F1 LGTH. FT.IN.	#4 BARS F2 N°	#4 BARS F2 LGTH. FT.IN.	#6 BARS F3 N°	#6 BARS F3 LGTH. FT.IN.	#6 BARS J N°	#6 BARS J LGTH. FT.IN.	#4 BARS J1 N°	#4 BARS J1 LGTH. FT.IN.	#4 BARS N N°	#4 BARS N LGTH. FT.IN.	BARS O SIZE	BARS O LGTH. FT.IN.	BARS O IRR. IN.	#4 BARS P N°	#4 BARS P LGTH. FT.IN.	#4 BARS P1 N°	#4 BARS P1 LGTH. FT.IN.	#4 BARS P2 N°	#4 BARS P2 LGTH. FT.IN.	#6 BARS M N°	#6 BARS M LGTH. FT.IN.	#6 BARS M1 N°	#6 BARS M1 LGTH. FT.IN.	#6 BARS Y N°	#6 BARS Y LGTH. FT.IN.
7	7	#4	#6	80	5-1	8-1	10	2	17-5	16	2-7	2	17-11	14	2-11	18	14-5	18	14-7	20	4-9	G4	4-0	12	8	15-9	6	17-3	8	15-11	6	18-2	4	10-7	6	8-1	32	2-0
8	7	#4	#6	80	5-1	8-2	10	2	17-5	14	2-7	2	17-11	14	2-11	18	14-5	18	14-7	20	4-9	64	4-0	12	8	15-9	6	17-3	8	15-11	6	18-2	4	11-7	6	9-1	32	2-0
	8	#4	#6	80	5-1	8-2	10	2	19-4	16	2-8	2	20-5	16	3-0	20	16-3	20	17-0	20	4-9	74	#4	4-5	12	8	17-7	6	19-1	8	18-4	6	20-8	4	11-9	6	9-3	36	2-0
9	7	#4	#6	82	5-1	8-2	10	2	17-6	14	2-8	2	18-8	14	3-0	18	14-5	18	15-3	22	4-10	66	#4	4-0	12	8	15-9	6	17-3	8	16-7	6	18-11	4	12-10	6	10-4	32	2-0
	8	#4	#6	82	5-1	8-2	10	2	18-8	14	3-0	2	20-2	16	3-0	20	16-0	20	18-9	22	4-10	72	#4	4-5	12	8	17-4	6	18-10	8	18-1	6	20-5	4	12-10	6	10-4	36	2-0
	9	#4	#6	122	5-8	10-2	8	2	21-5	18	2-9	2	22-6	18	3-1	22	18-3	22	19-0	22	4-10	98	#4	4-11	10	8	19-7	6	21-1	8	20-4	6	22-8	4	13-0	6	10-6	40	2-0
10	7	#4	#6	82	5-1	8-3	10	2	17-6	14	2-8	2	18-8	14	3-0	18	14-5	18	15-3	24	4-11	66	#4	4-0	12	8	15-9	6	17-3	8	16-7	6	18-11	4	13-10	6	11-4	32	2-0
	8	#4	#6	82	5-1	8-3	10	2	19-2	16	2-9	2	20-3	16	3-1	20	16-0	20	16-9	24	4-11	72	#4	4-5	12	8	17-4	6	18-10	8	18-1	6	20-5	4	14-0	6	11-6	36	2-0
	9	#5	#6	122	5-8	10-3	8	2	21-5	18	2-9	2	22-6	18	3-1	22	18-3	22	19-0	24	4-11	98	#4	4-11	10	8	19-7	6	21-1	8	20-4	6	22-8	4	14-0	6	11-6	40	2-0
	10	#5	#6	126	6-1	11-3	8½	2	23-5	20	2-10	2	25-1	20	3-2	24	20-2	24	21-6	24	4-11	102	#5	5-5	10½	8	21-6	6	23-0	8	22-10	6	25-2	4	14-2	6	11-8	44	2-0

Ⓐ #6 Bars X to be ¾"ø Smooth and Greased for 1'-0" of Length

@ Includes 1-1'-6" Lap Splice

GENERAL NOTES:
Construction Specifications: Latest Approved La. Dept. of Highways Std. Specifications.
Design Specifications: A.A.S.H.O. 1961 as Amended by Int. Spec. 1964
Live Load: H S 20-44, or Military Loading, whichever is greater.
All Concrete to be Class "A".
All Exposed Corners to have ¾" Chamfer, unless Otherwise Noted
Reinforcement Shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.
Dimensions Relating to Reinforcing Steel are to Bar Centers
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in Contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-49.





STANDARD PLAN
REINF. CONCRETE BOX CULVERTS
STRAIGHT WINGS 75° CROSSING
2:1 SPILL SLOPE
7' THRU 10' CLEAR SPANS & CLEAR HEIGHTS
DATED Apr. 29, 1968

DATE	DESCRIPTION	BY
1-11-74	Rev. Weep Hole Note	W.T.J.
5-30-75	Revised Spill Slope	N.T.J.
6-8-72	Rev. General Notes for Steel	W.E.M.
2-4-72	Added 8'x7'-6" & 8'x10' Spans	W.E.M.
6-27-72	Added Alt. Steel	W.E.M.
12-15-72	Rev. General Notes	W.E.M.
11-13-64	8'x8' Added & Notes Rev.	W.E.M.
4-1-64	DEFORMED DOWELS X "G SMOOTH	W.E.M.

REVISIONS

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS
DESIGNED W.E.M. | DETAILED | TRACED
CHECKED | CHECKED W.E.M. | CHECKED W.E.M.
BRIDGE DESIGN SECTION

C·C·S·S·7-10·RS·75°·1

APPROVED BY: Thomas D. Wills 1-11-78
CHIEF ENGINEER DATE

FOR INFORMATIONAL USE

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8/26/2014 15:48

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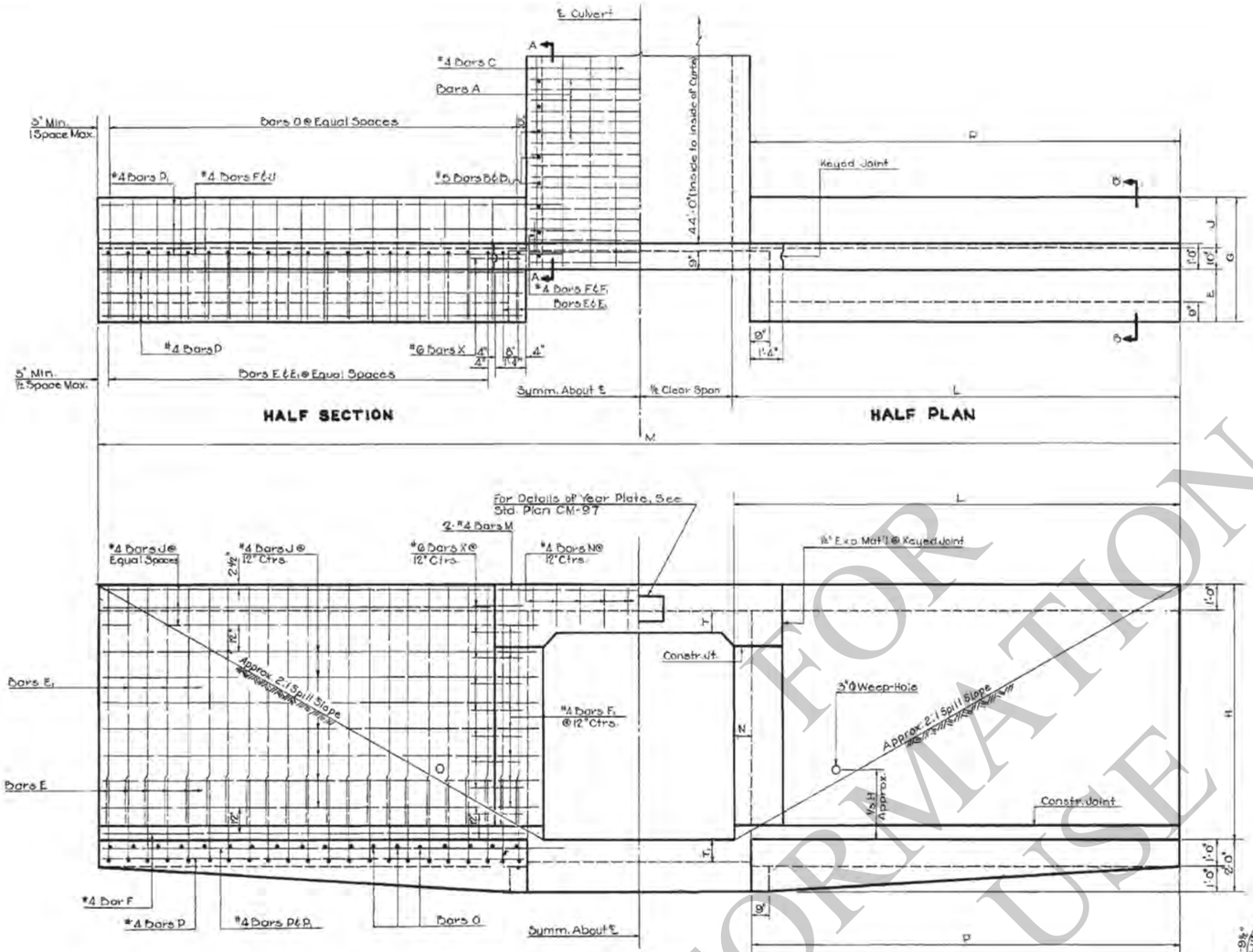
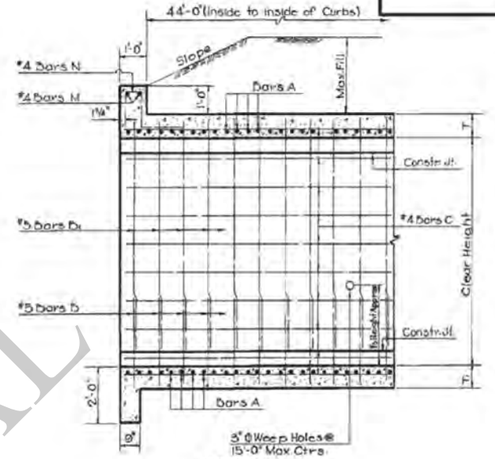
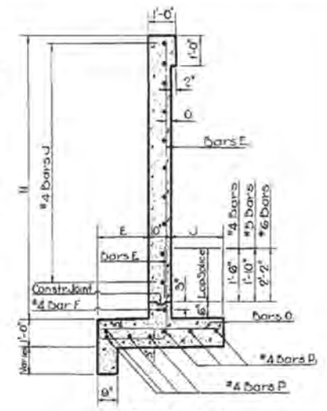
F.A.P.	STATE PROJECT	PARISH	SHEET NO.





SECTION A-A



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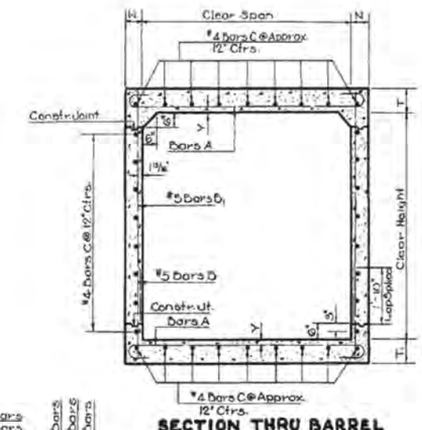
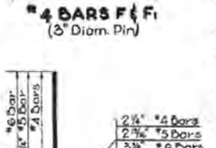
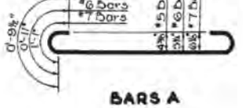


SECTION THRU BARREL

*4 BARS N
(3" Diam. Pin)



*4 BARS F & F,
(3" Diam. Pin)



BARS A

BAR E

C·C·S·S·7-10·R·S·90°1

DIMENSIONS

OPENINGS Clear Span	OPENINGS Clear Height	OPENINGS Area	MAX. FILL Slab	MAX. FILL Wall	BARREL N	BARREL T	BARREL T,	BARREL O	BARREL Y	WINGS & CURBS E	J	G	H	L	P	M
FT.	FT.	SQ. FT.	FT.	FT.	IN.	IN.	IN.	IN.	IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.
7	7	49	13	6	7	9	9	1'-¾	1'-⅜	1'-11	1'-8	4'-5	8'-9	16'-8	16'-1	40'-4
8	7	56	13	6	7	10	10	1'-¾	1'-⅞	1'-11	1'-8	4'-5	8'-10	16'-8	16'-1	41'-4
	8	64	12	5	8	10	10	1'-⅜	1'-⅞	2'-0	2'-0	4'-10	9'-10	18'-7	17'-11	45'-2
9	7	63	11	5	8	10½	10½	1'-¾	1'-⅝	1'-11	1'-8	4'-5	8'-10½	16'-9	16'-1	42'-0
	8	72	11	5	8	10½	10½	1'-⅜	1'-⅝	2'-0	2'-0	4'-10	9'-10½	18'-1	17'-5	47'-2
	9	81	10	5	9	10½	10½	1'-⅜	1'-⅝	2'-2	2'-4	5'-4	10'-10½	20'-9	20'-0	50'-9
10	7	70	6	6	8	11	11	1'-¾	1'-⅞	1'-11	1'-8	4'-5	8'-11	16'-10	16'-2	43'-8
	8	80	6	6	8	11	11	1'-⅜	1'-⅞	2'-0	2'-0	4'-10	8'-11	18'-2	18'-5	48'-4
	9	90	6	6	9	11	11	1'-⅜	1'-⅝	2'-2	2'-4	5'-4	10'-11	20'-3	20'-0	51'-6
	10	100	6	6	10	11	11	1'-⅜	1'-⅝	2'-4	2'-8	5'-10	11'-11	22'-8	21'-10	55'-4

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT	BARS A SIZE	BARS A NO.	BARS A LENGTH FT-IN.	BARS A SPAC IN.	*5 BARS D & D, NO.	*5 BARS D & D, LENGTH D FT-IN.	*5 BARS D & D, LENGTH D, FT-IN.	*5 BARS D & D, SPAC IN.	*4 BARS C NO.	*4 BARS C LENGTH FT-IN.
7	#6	220	9'-2⅝	5	92	2'-11	7'-1	12	30	47'-2
8	#6	220	10'-2⅝	5	92	3'-0	7'-2	12	32	47'-2
	#6	220	10'-4⅜	5	96	3'-0	8'-2	11⅜	34	47'-2
9	#7	184	11'-7⅛	6	92	3'-0	7'-2	12	34	47'-2
	#7	184	11'-7⅛	6	96	3'-0	8'-2	11⅜	36	47'-2
	#7	184	11'-9⅛	6	106	3'-0	9'-2	10⅜	38	47'-2
10	#7	184	12'-7⅛	6	92	3'-1	7'-3	12	36	47'-2
	#7	184	12'-8⅛	6	92	3'-1	8'-3	12	38	47'-2
	#7	184	12'-8⅛	6	118	3'-1	10'-3	9½	40	47'-2
	#7	184	12'-11⅛	6	130	3'-1	10'-3	8½	42	47'-2

WINGS AND CURBS REINFORCEMENT	BARS E & E, SIZE	BARS E & E, NO.	BARS E & E, LENGTH E FT-IN.	BARS E & E, LENGTH E, FT-IN.	BARS E & E, SPAC IN.	*4 BARS F NO.	*4 BARS F LENGTH FT-IN.	*4 BARS F, NO.	*4 BARS F, LENGTH FT-IN.	*4 BARS J NO.	*4 BARS J LENGTH FT-IN.	*4 BARS M NO.	*4 BARS M LENGTH FT-IN.	*4 BARS N NO.	*4 BARS N LENGTH FT-IN.	BARS O NO.	BARS O SIZE	BARS O LENGTH FT-IN.	BARS O SPAC IN.	*4 BARS P NO.	*4 BARS P LENGTH FT-IN.	*4 BARS P, NO.	*4 BARS P, LENGTH FT-IN.	*6 BARS X NO.	*6 BARS X LENGTH FT-IN.
7	#4	60	5'-1	8'-1	10	4	17'-7	28	2'-8	36	14'-5	4	10'-3	16	5'-1	66	#4	4'-0	12	16	15'-9	12	17'-5	32	2'-0
8	#4	60	5'-1	8'-2	10	4	17'-7	28	2'-8	36	14'-5	4	11'-5	20	5'-3	64	#4	4'-0	12	16	15'-9	12	17'-5	32	2'-0
	#4	60	5'-6	9'-2	10	4	19'-6	32	2'-9	40	16'-3	4	11'-5	20	5'-3	72	#4	4'-5	12	16	17'-7	12	19'-3	36	2'-0
9	#4	60	5'-1	8'-2	10	4	17'-8	28	2'-9	36	14'-5	4	12'-5	22	5'-4	64	#4	4'-0	12	16	15'-9	12	17'-5	32	2'-0
	#4	60	5'-6	9'-2	10	4	20'-0	32	2'-9	40	16'-3	4	12'-5	22	5'-4	72	#4	4'-5	12	16	18'-1	12	19'-9	36	2'-0
	#4	60	5'-6	9'-2	11	4	21'-8	36	2'-10	44	18'-4	4	12'-7	22	5'-4	80	#4	4'-11	10	16	19'-8	12	21'-4	40	2'-0
10	#4	60	5'-1	8'-3	10	4	17'-9	28	2'-9	36	14'-6	4	13'-5	24	5'-5	64	#4	4'-0	12	16	15'-10	12	17'-6	32	2'-0
	#4	60	5'-1	8'-3	10	4	20'-1	32	2'-10	40	16'-5	4	13'-7	24	5'-5	72	#4	4'-5	12	16	18'-1	12	19'-5	36	2'-0
	#4	60	5'-6	9'-3	11	4	21'-8	36	2'-10	44	18'-4	4	13'-7	24	5'-5	96	#4	4'-11	10	16	19'-8	12	21'-4	40	2'-0
	#4	60	6'-1	11'-3	8½	4	23'-7	40	2'-11	48	20'-2	4	13'-9	24	5'-5	100	#5	5'-5	10½	16	21'-6	12	23'-2	44	2'-0

ℂ Includes 1-1'-6" Lap Splice

Ⓐ *6 Bars X to be ¾"ø Smooth and Greased for 1'-0" of Length.

QUANTITIES

PER LIN. FT. OF BARREL STEEL	PER LIN. FT. OF BARREL CONC.	44'-0" CULVERT STEEL	44'-0" CULVERT CONC.	OPENING CLEAR SPAN	OPENING CLEAR HEIGHT
LBS.	CU.YDS.	LBS.	CU.YDS.	FT.	FT.
107.29	0.7654	6732	65.82	7	7
116.18	0.8776	7184	71.25	8	7
121.82	0.9805	7970	82.68		8
135.97	1.0247	8259	76.24	9	7
143.40	1.0741	8864	88.20		8
150.80	1.1698	10085	100.71		9
148.83	1.1245	8733	83.18	10	7
153.61	1.2346	9454	93.82		8
163.80	1.2901	10,725	105.53		9
173.27	1.4187	12,617	119.86		10

General Notes:
Construction Specifications: Latest Approved La. Dept. of Highways Standard Specifications.
Design Specifications: A.A.S.H.O. 1961 as Amended by 1st Spec. 1964.
Live Load HS 20-44 or Military Loading, whichever is Greater.
All Concrete to be Class "A".
All Exposed Corners to have ¾" Chamfer, Unless Otherwise Noted.
Reinforcement Shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.
For Detail of Joints, See Std. Plan C.M.-69.
Dimensions Relating to Reinforcing Steel are to Bar Centers.
A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) Shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.

APPROVED BY:
Dempsey D. White 1-5-78
CHIEF ENGINEER DATE

DATE	DESCRIPTION	BY
1-5-78	Rev. Weep Hole Note.	W.T.J.
1-26-76	Rev. Slope Intercept	W.T.J.
	REVISIONS	

DATE	DESCRIPTION	BY
6-5-72	Rev. General Notes for Steel	W.E.M.
4-27-67	Added Axle Steel	W.E.M.
12-10-64	Rev. General Notes	W.E.M.
4-5-64	DEFORMED DOWELS X'D SMOOTH	W.E.M.
6-7-63	ALL 10' SPANS ADDED	W.E.M.
4-9-62	7' & 7' Added	W.E.M.
8-10-62	All 9' Spans added.	W.E.M.
	REVISIONS	

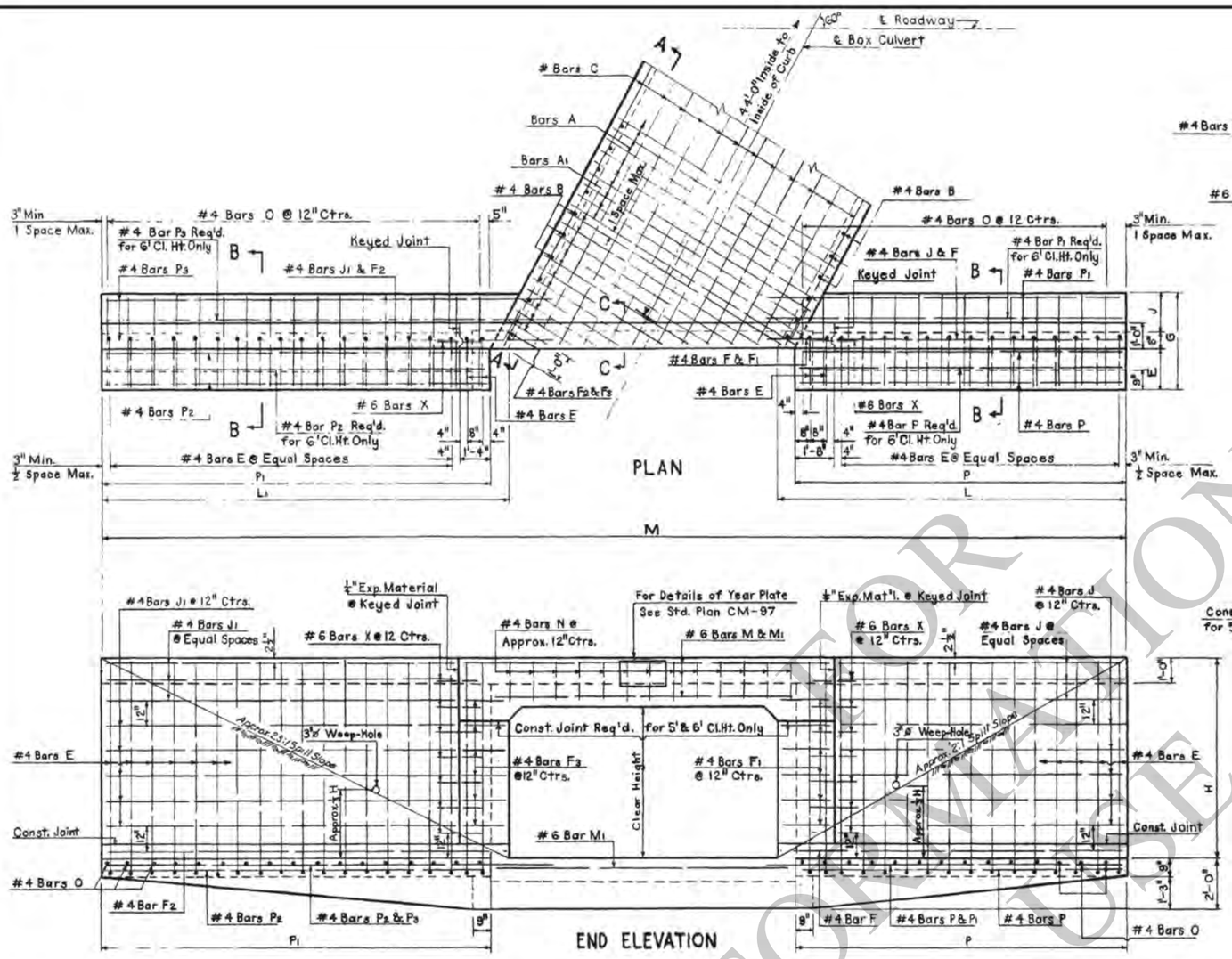
STANDARD PLAN
REINF. CONCRETE BOX CULVERTS
STRAIGHT WINGS 90° CROSSING
2:1 SPILL SLOPE
7' THRU 10' CLEAR SPANS & CLEAR HEIGHTS
DATED May 31 1962

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED J. D. White DETAILED W. H. Allen TRACED & CHECKED
CHECKED W. E. Manson CHECKED M. Yoshii CHECKED W. H. Allen
IN CHARGE OF

FOR INFORMATIONAL USE

F.A.P.	STATE PROJECT	PARISH	SHEET NO.



GENERAL NOTES:

Construction Specifications: Latest Approved La. Department of Highways Standard Specifications.

Design Specifications: A.A.S.H.O. 1969 as Amended to 1971.

Live Load: HS. 20-44 or Military Loading Whichever is Greater.

All Concrete to be Class "A".

All Exposed Corners to have ¾" Chamfer, Unless Otherwise Noted.

Reinforcement Shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.

Dimensions Relating to Reinforcing Steel are to Bar Centers.

A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.

For Details of Joints, See Std. Plan C.M.-95.

C.C.S.S.8-10-R-60°-1

APPROVED BY: Dominque DeWitt — CHIEF ENGINEER — 1-11-78 DATE

DIMENSIONS

OPENING CLEAR SPAN	OPENING CLEAR HEIGHT	AREA	MAX. FILL SLAB	MAX. FILL WALL	BARREL N	BARREL T	BARREL Y	WING AND CURBS E	J	G	H	L	L1	P	P1	M
FT.	FT.	SQ. FT.	FT.	FT.	IN.	IN.	IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.	FT-IN.
8	4	32	14	11	6	10	1 15/16	1-3	0-10	2-9	5-10	10-9 9/16	12-5 15/16	10-3	11-11	32-6 1/8
	5	40	13	8	6	10	1 7/16	1-5	1-2	3-3	6-10	12-8 9/16	14-6 9/16	12-3	14-0	36-7 3/8
	6	48	13	5	7	10	1 7/16	1-7	1-7	3-10	7-10	14-10 1/16	17-4 1/16	14-2	16-8	41-5
9	5	45	12	8	7	10 ½	1	1-5	1-2	3-3	6-10 ½	12-11 1/16	14-8 1/16	12-3	14-0	37-11 7/16
	6	54	12	5	7	10 ½	1	1-7	1-7	3-10	7-10 ½	14-10 1/16	17-4 1/16	14-2	16-8	42-6 1/16
10	5	50	10	11	8	11	1	1-5	1-2	3-3	6-11	13-0 ½	14-8 ½	12-3	14-0	39-4 1/16
	6	60	10	6	8	11	1	1-7	1-7	3-10	7-11	14-11 ½	17-5 ½	14-2	16-8	43-11 1/16

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

BARREL REINFORCEMENT

BARS A SIZE	BARS A No.	BARS A LGTH. FT-IN.	BARS A SPAC. IN.	BARS A1 SIZE	BARS A1 No.	BARS A1 SHORT BAR FT-IN.	BARS A1 VAR. IN.	BARS A1 LONG BAR FT-IN.	BARS A1 SPAC. IN.	#4 BARS B No.	#4 BARS B LGTH. FT-IN.	#4 BARS B SPAC. IN.	#4 BARS C No.	#4 BARS C LGTH. FT-IN.
#6	198	10-0½	5	#6	40	2-5	8.6667	8-11	5	94	5-4	12	26	47-5
#6	198	10-0½	5	#6	40	2-5	8.6667	8-11	5	94	6-4	12	28	47-5
#6	198	10-0½	5	#6	40	2-6	8.6667	8-0	5	94	7-4	12	30	47-5
#7	162	11-5½	6	#7	40	2-7	10.4444	10-5	6	84	6-5	12	30	47-5
#7	162	11-5½	6	#7	40	2-7	10.4444	10-5	6	84	7-5	12	32	47-5
#7	160	12-7½	6	#7	44	2-8	10.4000	11-4	6	84	6-6	12	32	47-5
#7	160	12-7½	6	#7	44	2-8	10.4000	11-4	6	84	7-6	12	34	47-5

WING AND CURB REINFORCEMENT

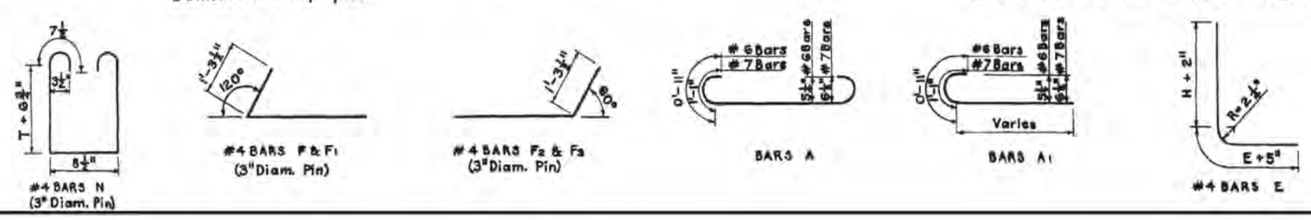
#4 BARS E No.	#4 BARS E LGTH. FT-IN.	#4 BARS E SPAC. IN.	#4 BARS F No.	#4 BARS F LGTH. FT-IN.	#4 BARS F1 No.	#4 BARS F1 LGTH. FT-IN.	#4 BARS F2 No.	#4 BARS F2 LGTH. FT-IN.	#4 BARS F3 No.	#4 BARS F3 LGTH. FT-IN.	#4 BARS J No.	#4 BARS J LGTH. FT-IN.	#4 BARS J1 No.	#4 BARS J1 LGTH. FT-IN.	#6 BARS M No.	#6 BARS M LGTH. FT-IN.	#6 BARS M1 No.	#6 BARS M1 LGTH. FT-IN.	#4 BARS N No.	#4 BARS N LGTH. FT-IN.	#4 BARS O No.	#4 BARS O LGTH. FT-IN.	#4 BARS P No.	#4 BARS P LGTH. FT-IN.	#4 BARS P1 No.	#4 BARS P1 LGTH. FT-IN.	#4 BARS P2 No.	#4 BARS P2 LGTH. FT-IN.	#4 BARS P3 No.	#4 BARS P3 LGTH. FT-IN.	#6 BARS X No.	#6 BARS X LGTH. FT-IN.
48	7-8	12	2	11-5	8	2-8	2	13-8	8	3-0	12	8-3	12	10-3	4	12-10	6	10-0	20	4-9	44	2-4	6	9-11	4	11-5	6	11-7	4	14-1	20	2-0
56	8-10	12	2	13-5	10	2-9	2	15-9	10	3-0	14	10-3	14	12-4	4	12-10	6	10-0	20	4-9	52	2-10	6	11-11	4	13-5	6	13-8	4	16-3	24	2-0
70	10-0	11	2	13-5	12	2-10	2	18-6	12	3-1	16	12-2	16	15-0	4	13-0	8	10-2	20	4-9	62	3-5	8	13-10	6	15-4	8	16-4	6	19-2	28	2-0
56	8-10½	12	2	13-6	10	2-10	2	15-10	10	3-1	14	10-3	14	12-4	4	14-2	6	11-4	24	4-10	52	2-10	8	11-11	4	13-5	6	13-8	4	16-3	24	2-0
70	10-0½	11	2	15-5	12	2-10	2	18-6	12	3-1	16	12-2	16	15-0	4	14-2	6	11-4	24	4-10	62	3-5	8	13-10	6	15-4	8	16-4	6	19-2	28	2-0
56	8-11	12	2	13-7	10	2-11	2	15-11	10	3-2	14	10-3	14	12-4	4	15-6	8	12-8	28	4-11	52	2-10	8	11-11	4	13-5	6	13-8	4	16-3	24	2-0
70	10-1	11	2	15-6	12	2-11	2	18-7	12	3-2	16	12-2	16	15-0	4	15-6	6	12-8	28	4-11	62	3-5	8	13-10	6	15-4	8	16-4	6	19-2	28	2-0

QUANTITIES

OPENING CLEAR SPAN	OPENING CLEAR HEIGHT	PER LINEAR FT. OF BARREL STEEL LBS.	PER LINEAR FT. OF BARREL CONC. CU. YDS.	44'-0" CULVERT STEEL LBS.	44'-0" CULVERT CONC. CU. YDS.
FT.	FT.				
8	4	86.89	0.7130	3457	45.78
	5	99.56	0.7500	3813	51.56
	6	103.44	0.8344	6401	60.71
9	5	122.30	0.8843	8918	58.01
	6	124.97	0.9275	7447	65.21
10	5	133.28	1.0257	7450	64.77
	6	135.95	1.0751	7950	72.27

① Includes 1'-6" Lap Splice

Ⓐ #6 Bars "X" to be ¾" ø Smooth and Greased for 1'-0" of Length.



STANDARD PLAN

REINFORCED CONCRETE BOX CULVERT
STRAIGHT WINGS 60° CROSSING
2:1 SPILL SLOPE
8' TO 10' SPANS 4' TO 6' HEIGHTS

DATED JAN. 6, 1972

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED	DETAILED J.J. RIBAS	TRACED M. LANOUX
CHECKED	CHECKED J.D. BACCI	CHECKED J.J. RIBAS

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note.	W.T.J.
2-20-75	Rev. Slope Intercept	W.T.J.
6-8-72	Rev. General Notes for Steel	W.E.M.

REVISIONS

FOR INFORMATIONAL USE

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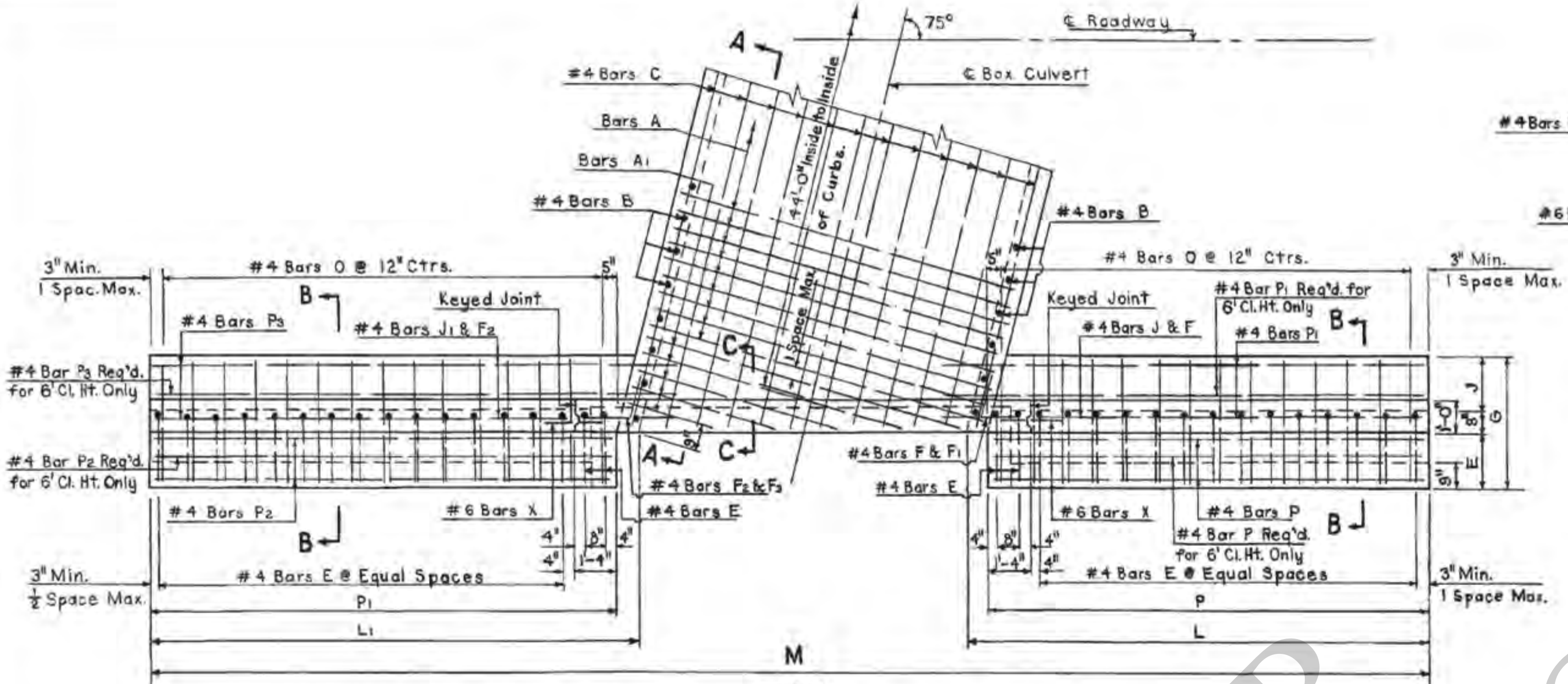
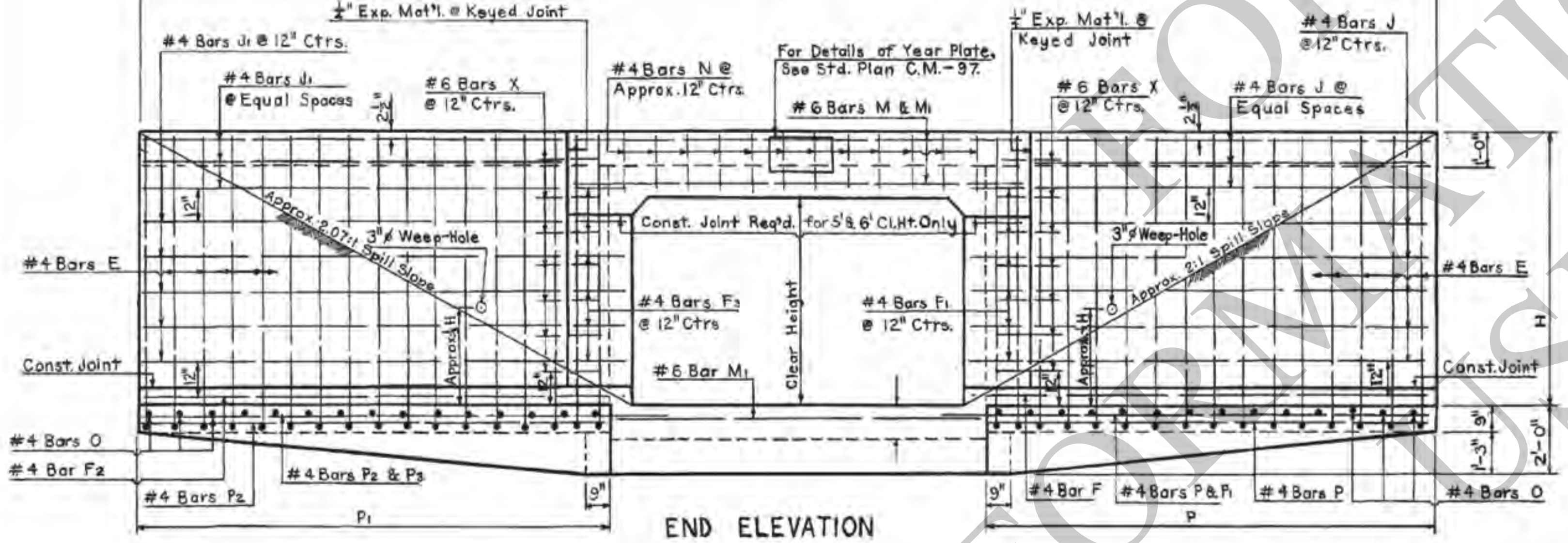
FOR INFORMATIONAL USE

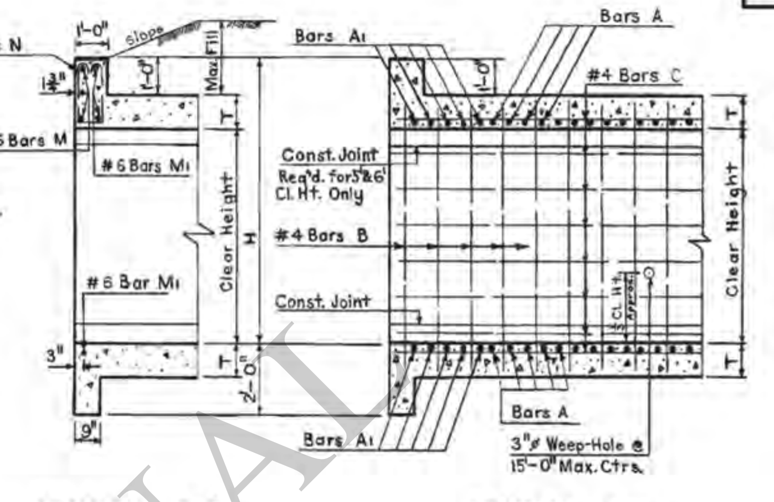
F.A.P.	STATE PROJECT	PARISH	SHEET NO.



PLAN

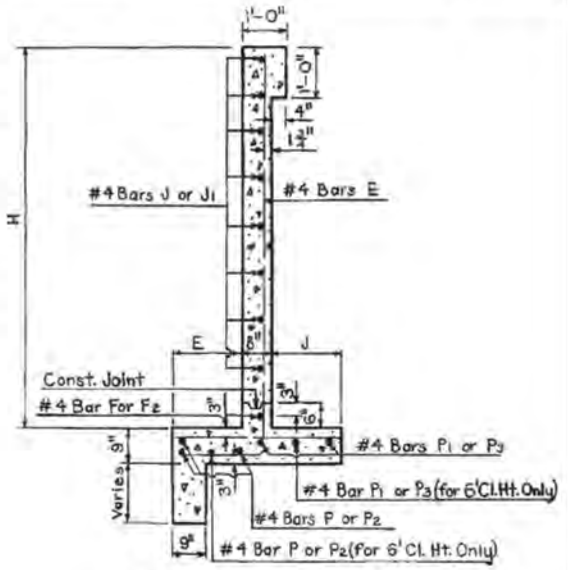


END ELEVATION

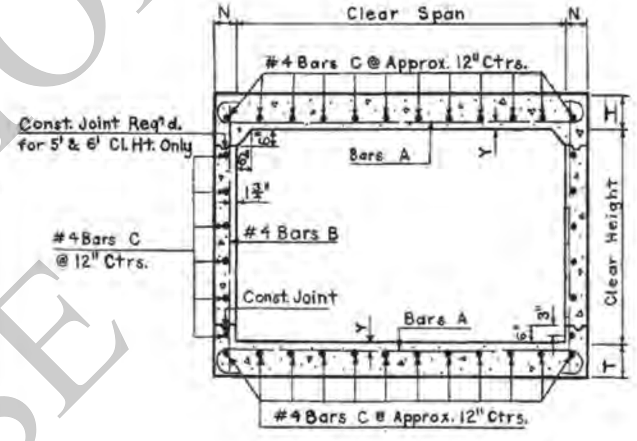


SECTION C-C

SECTION A-A



SECTION B-B



SECTION THRU BARREL

GENERAL NOTES:

Construction Specifications: Latest Approved La. Department of Highways Standard Specifications.

Design Specifications: A.A.S.H.O. 1969 as Amended to 1971.

Live Load: H.S. 20-44 or Military Loading Whichever is Greater.

All Concrete to be Class "A".

All Exposed Corners to have ¾" Chamfer, Unless Otherwise Noted.

Reinforcement Shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.

Dimensions Relating to Reinforcing Steel are to Bar Centers.

A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.

For Details of Joints, See Std. Plan CM-49.

C. C. S.S. 8-10-R-75°-1

APPROVED BY:
Dompsey D. W. White 1-11-78
CHIEF ENGINEER DATE

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

DIMENSIONS

OPENING CLEAR SPAN FT.	OPENING CLEAR HEIGHT FT.	AREA SQ.FT.	MAX. FILL SLAB FT.	MAX. FILL WALL FT.	BARREL N IN.	BARREL T IN.	BARREL Y IN.	WING AND CURBS E FT.-IN.	J FT.-IN.	G FT.-IN.	H FT.-IN.	L FT.-IN.	L1 FT.-IN.	P FT.-IN.	P1 FT.-IN.	M FT.-IN.
8	4	32	14	11	6	10	1$\frac{7}{8}$	1-3	0-10	2-9	5-10	10-8$\frac{3}{16}$	11-5$\frac{3}{16}$	10-2	10-11	30-4$\frac{13}{16}$
	5	40	13	6	6	10	1$\frac{7}{8}$	1-5	1-2	3-3	6-10	12-8$\frac{3}{16}$	13-5$\frac{3}{16}$	12-2	12-11	34-4$\frac{13}{16}$
	6	48	13	5	7	10	1$\frac{7}{8}$	1-7	1-7	3-10	7-10	14-7$\frac{1}{4}$	15-4$\frac{1}{4}$	14-0	14-9	38-2$\frac{7}{8}$
9	5	45	12	8	7	10$\frac{1}{2}$	1$\frac{15}{16}$	1-5	1-2	3-3	6-10$\frac{1}{2}$	12-9$\frac{1}{4}$	13-6$\frac{1}{4}$	12-2	12-11	35-7$\frac{5}{16}$
	6	54	12	5	7	10$\frac{1}{2}$	1$\frac{15}{16}$	1-7	1-7	3-10	7-10$\frac{1}{2}$	14-7$\frac{1}{4}$	15-4$\frac{1}{4}$	14-0	14-9	39-3$\frac{5}{16}$
10	5	50	10	11	8	11	1$\frac{15}{16}$	1-5	1-2	3-3	6-11	12-10$\frac{5}{16}$	13-7$\frac{5}{16}$	12-2	12-11	36-9$\frac{13}{16}$
	6	60	10	6	8	11	1$\frac{15}{16}$	1-7	1-7	3-10	7-11	14-8$\frac{5}{16}$	15-5$\frac{5}{16}$	14-0	14-9	40-5$\frac{13}{16}$

BARREL REINFORCEMENT

CLEAR SPAN FT.	CLEAR HEIGHT FT.	BARS A SIZE	BARS A No.	BARS A LGTH. FT.-IN.	BARS A SPAC. IN.	BARS A1 SIZE	BARS A1 No.	BARS A1 SHORT BAR FT.-IN.	BARS A1 VAR. IN.	BARS A1 LONG BAR FT.-IN.	BARS A1 SPAC. IN.	#4 BARS B No.	#4 BARS B LGTH. FT.-IN.	#4 BARS B SPAC. IN.	#4 BARS C No.	#4 BARS C ① LGTH. FT.-IN.
8	4	#6	212	10-0$\frac{1}{2}$	5	#6	16	3-2	18.6667	7-10	5	92	5-4	12	26	47-2
	5	#6	212	10-0$\frac{1}{2}$	5	#6	16	3-2	18.6667	7-10	5	92	6-4	12	28	47-2
	6	#6	208	10-2$\frac{1}{2}$	5	#6	20	3-3	18.5000	9-5	5	92	7-4	12	30	47-2
9	5	#7	174	11-5$\frac{1}{2}$	6	#7	16	3-4	22.3333	8-11	6	92	6-5	12	30	47-2
	6	#7	174	11-5$\frac{1}{2}$	6	#7	16	3-4	22.3333	8-11	6	92	7-5	12	32	47-2
10	5	#7	172	12-7$\frac{1}{2}$	6	#7	20	3-5	22.5000	10-11	6	92	6-6	12	32	47-2
	6	#7	172	12-7$\frac{1}{2}$	6	#7	20	3-5	22.5000	10-11	6	92	7-6	12	34	47-2

WING AND CURB REINFORCEMENT

CLEAR SPAN FT.	CLEAR HEIGHT FT.	#4 BARS E No.	#4 BARS E LGTH. FT.-IN.	#4 BARS E SPAC. IN.	#4 BARS F No.	#4 BARS F LGTH. FT.-IN.	#4 BARS F1 No.	#4 BARS F1 LGTH. FT.-IN.	#4 BARS F2 No.	#4 BARS F2 LGTH. FT.-IN.	#4 BARS F3 No.	#4 BARS F3 LGTH. FT.-IN.	#4 BARS J No.	#4 BARS J LGTH. FT.-IN.	#4 BARS J1 No.	#4 BARS J1 LGTH. FT.-IN.	#4 BARS N No.	#4 BARS N LGTH. FT.-IN.
8	4	46	7-8	12	2	11-5	8	2-6	2	12-5	8	2-9	12	8-6	12	9-3	20	4-9
	5	54	8-10	12	2	13-5	10	2-6	2	14-5	10	2-9	14	10-6	14	11-3	20	4-9
	6	66	10-0	11	2	15-4	12	2-7	2	16-4	12	2-10	16	12-4	16	13-1	20	4-8
9	5	54	8-10$\frac{1}{2}$	12	2	13-6	10	2-7	2	14-6	10	2-10	14	10-6	14	11-3	22	4-10
	6	66	10-0$\frac{1}{2}$	11	2	15-4	12	2-7	2	16-4	12	2-10	16	12-4	16	13-1	22	4-10
10	5	54	8-11	12	2	13-7	10	2-8	2	14-8	10	2-11	14	10-6	14	11-3	24	4-11
	6	66	10-1	11	2	15-5	12	2-8	2	16-6	12	2-11	16	12-4	16	13-1	24	4-11

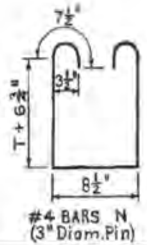
CLEAR SPAN FT.	CLEAR HEIGHT FT.	#4 BARS O No.	#4 BARS O LGTH. FT.-IN.	#4 BARS P No.	#4 BARS P LGTH. FT.-IN.	#4 BARS P1 No.	#4 BARS P1 LGTH. FT.-IN.	#4 BARS P2 No.	#4 BARS P2 LGTH. FT.-IN.	#4 BARS P3 No.	#4 BARS P3 LGTH. FT.-IN.	#6 BARS M No.	#6 BARS M LGTH. FT.-IN.	#6 BARS M1 No.	#6 BARS M1 LGTH. FT.-IN.	Ⓐ #6 BARS X No.	#6 BARS X LGTH. FT.-IN.
8	4	42	2-4	6	9-10	4	11-5	6	10-7	4	12-8	4	11-5	6	8-11	20	2-0
	5	50	2-10	6	11-10	4	13-5	6	12-7	4	14-8	4	11-5	6	8-11	24	2-0
	6	58	3-5	8	13-8	6	15-3	8	14-5	6	16-6	4	11-7	6	9-1	28	2-0
9	5	50	2-10	6	11-10	4	13-5	6	12-7	4	14-8	4	12-8	6	10-2	24	2-0
	6	58	3-5	8	13-8	6	15-3	8	14-5	6	16-6	4	12-8	6	10-2	28	2-0
10	5	50	2-10	6	11-10	4	13-5	6	12-7	4	14-8	4	13-10	6	11-4	24	2-0
	6	58	3-5	8	13-8	6	15-3	8	14-5	6	16-6	4	13-10	6	11-4	28	2-0

QUANTITIES

PER LINEAR FT. OF BARREL STEEL LBS.	PER LINEAR FT. OF BARREL CONC. CU. YDS.	44'-0" CULVERT STEEL LBS.	44'-0" CULVERT CONC. CU. YDS.	OPENING CLEAR SPAN FT.	OPENING CLEAR HEIGHT FT.
96.89	0.7130	5399	44.91	8	4
99.56	0.7500	5747	50.58		5
103.44	0.8344	6282	58.98		6
122.30	0.8843	6791	56.96	9	5
124.97	0.9275	7272	63.45		6
133.28	1.0257	7843	63.67	10	5
135.95	1.0751	7825	70.45		6

① Includes 1'-6" Lap Splice

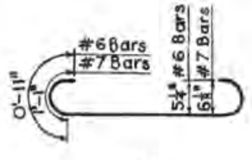
Ⓐ #6 Bars X to be ¾" ⌀ Smooth and Greased for 1'-0" of Length.



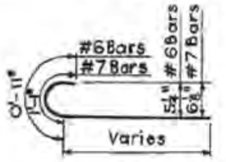
#4 BARS N
(3" Diam. Pin)

#4 BARS F & F1
(3" Diam. Pin)

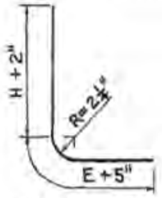
#4 BARS F2 & F3
(3" Diam. Pin)



BARS A



BARS A1



#4 BARS E
(3" Diam. Pin)

1-11-78	Rev. Weep Hole Note	W.T.J.
5-30-75	Revised Spill Slope	W.T.J.
6-6-72	Rev. General Notes for Steel	W.E.M.
DATE	DESCRIPTION	BY

REVISIONS

STANDARD PLAN
REINFORCED CONCRETE BOX CULVERT
STRAIGHT WINGS 75° CROSSING
8' TO 10' SPANS 2:1 SPILL SLOPE 4' TO 6' HEIGHTS
DATED DEC. 29 19 71

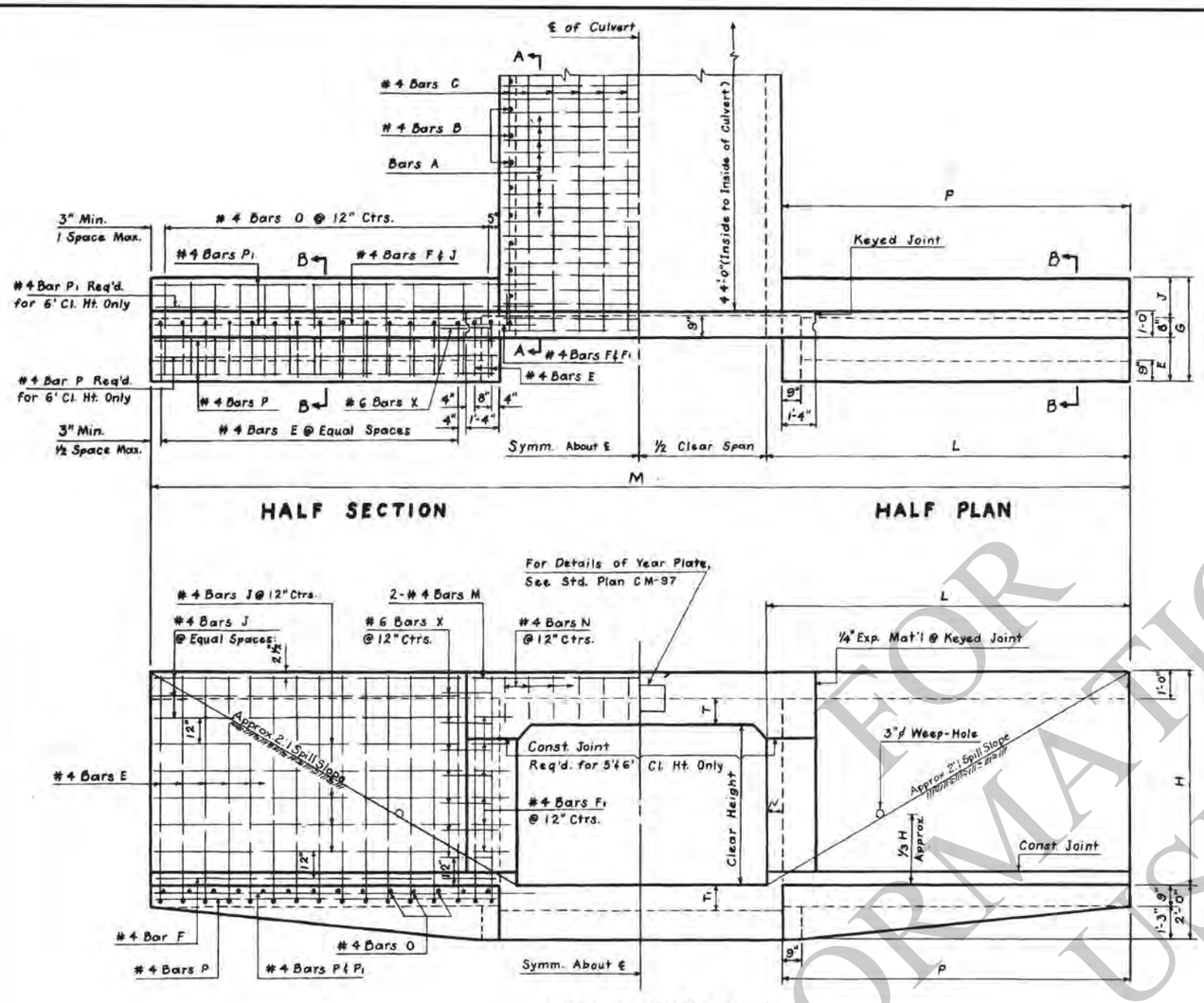
STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

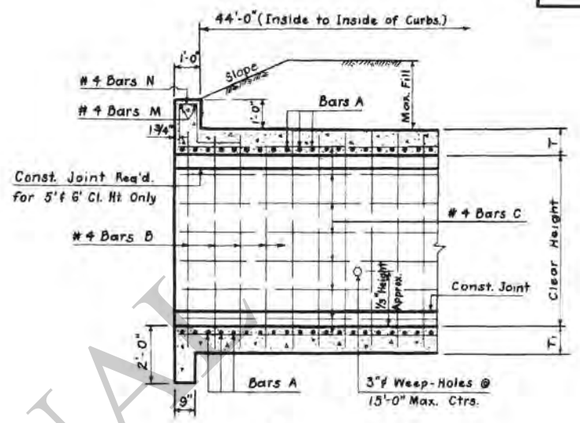
DESIGNED	DETAILED J.J. RIBAS	TRACED M. LANOUX
CHECKED	CHECKED H. BAROUSSE	CHECKED J.D. BACCI

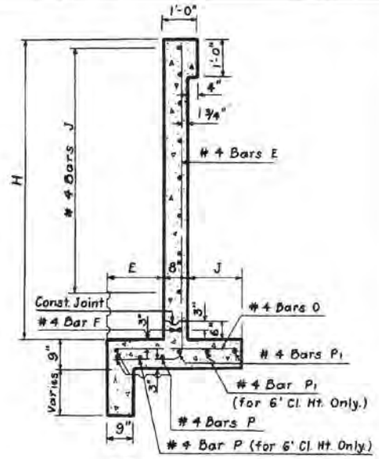
C. C. S.S. 8-10-R-75°-1

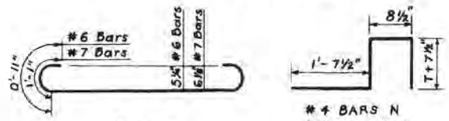
09:08
26-SEP-2011

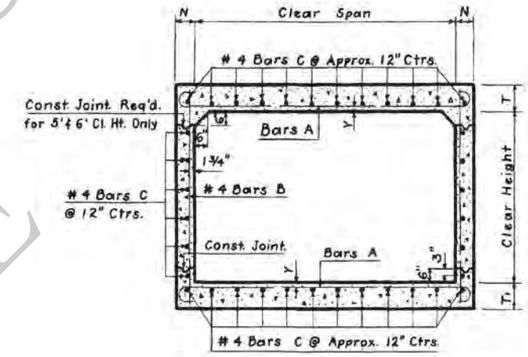
F.A.P.	STATE PROJECT	PARISH	SHEET NO.

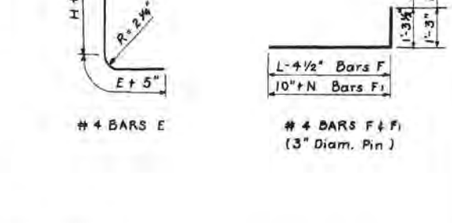












DIMENSIONS

OPENINGS CLEAR SPAN (FT.)	OPENINGS CLEAR HEIGHT (FT.)	AREA (SQ. FT.)	MAX. FILL SLAB (FT.)	MAX. FILL WALL (FT.)	BARREL N (IN.)	BARREL T (IN.)	BARREL T1 (IN.)	BARREL Y (IN.)	WINGS & CURBS E (FT.-IN.)	J (FT.-IN.)	G (FT.-IN.)	H (FT.-IN.)	L (FT.-IN.)	P (FT.-IN.)	M (FT.-IN.)
8	4	32	14	11	6	10	10	1 7/8	1-3	0-10	2-9	5-10	10-8	10-2	29-4
	5	40	13	6	6	10	10	1 7/8	1-5	1-2	3-3	6-10	12-8	12-2	33-4
	6	48	13	5	7	10	10	1 7/8	1-7	1-7	3-10	7-10	14-7	14-0	37-2
9	5	45	12	8	7	10½	10½	1 15/16	1-5	1-2	3-3	6-10½	12-9	12-2	34-6
	6	54	12	5	7	10½	10½	1 15/16	1-7	1-7	3-10	7-10½	14-7	14-0	38-2
10	5	50	10	11	8	11	11	1 15/16	1-5	1-2	3-3	6-11	12-10	12-2	35-8
	6	60	10	6	8	11	11	1 15/16	1-7	1-7	3-10	7-11	14-8	14-0	38-4

BILL OF REINFORCEMENT STEEL FOR 44'-0" CULVERT.

BARREL REINFORCEMENT: BARS A SIZE	BARS A No.	BARS A LENGTH (FT.-IN.)	BARS A SPAC. (IN.)	#4 BARS B No.	#4 BARS B LENGTH (FT.-IN.)	#4 BARS B SPAC. (IN.)	#4 BARS C No.	#4 BARS C LENGTH (FT.-IN.)
#6	220	10-0½	5	92	5-4	12	26	47-2
#6	220	10-0½	5	92	6-4	12	28	47-2
#6	220	10-2½	5	92	7-4	12	30	47-2
#7	184	11-5½	6	92	6-5	12	30	47-2
#7	184	11-5½	6	92	7-5	12	32	47-2
#7	184	12-7½	6	92	6-6	12	32	47-2
#7	184	12-7½	6	92	7-6	12	34	47-2

WINGS AND CURBS REINFORCEMENT Ⓐ: #4 BARS E No.	#4 BARS E LENGTH (FT.-IN.)	#4 BARS E SPAC. (IN.)	#4 BARS F No.	#4 BARS F LENGTH (FT.-IN.)	#4 BARS F1 No.	#4 BARS F1 LENGTH (FT.-IN.)	#4 BARS J No.	#4 BARS J LENGTH (FT.-IN.)	#4 BARS M No.	#4 BARS M LENGTH (FT.-IN.)	#4 BARS N No.	#4 BARS N LENGTH (FT.-IN.)	#4 BARS O No.	#4 BARS O LENGTH (FT.-IN.)	#4 BARS P No.	#4 BARS P LENGTH (FT.-IN.)	#4 BARS P1 No.	#4 BARS P1 LENGTH (FT.-IN.)	#6 BARS X No.	#6 BARS X LENGTH (FT.-IN.)
44	7-8	12	4	11-7	16	2-7	24	8-6	4	11-1	18	5-3	40	2-4	12	9-10	8	11-6	20	2-0
52	8-10	12	4	13-7	20	2-7	28	10-6	4	11-1	18	5-3	48	2-10	12	11-10	8	13-6	24	2-0
64	10-0	11	4	15-6	24	2-8	32	12-4	4	11-3	20	5-3	56	3-5	16	13-8	12	15-4	28	2-0
52	8-10½	12	4	13-8	20	2-8	28	10-6	4	12-3	22	5-4	48	2-10	12	11-10	8	13-6	24	2-0
64	10-0½	11	4	15-6	24	2-8	32	12-4	4	12-3	22	5-4	56	3-5	16	13-8	12	15-4	28	2-0
52	8-11	12	4	13-9	20	2-9	28	10-6	4	13-5	24	5-5	48	2-10	12	11-10	8	13-6	24	2-0
64	10-1	11	4	15-7	24	2-9	32	12-4	4	13-5	24	5-5	56	3-5	16	13-8	12	15-4	28	2-0

QUANTITIES

PER LIN. FT OF BARREL: STEEL (LBS.)	CONC. (CU. YDS.)	44'-0" CULVERT: STEEL (LBS.)	CONC. (CU. YDS.)	OPENING CLEAR SPAN (FT.)	OPENING CLEAR HEIGHT (FT.)
96.89	0.7130	5241	44.44	8	4
99.56	0.7500	5386	50.05		5
103.44	0.8344	6126	58.38		6
122.30	0.8843	6667	56.41	9	5
124.97	0.9275	7143	62.84		6
133.28	1.0257	7188	63.10	10	5
135.95	1.0751	7664	69.82		6

① Includes 1'-6" Lap Splice.

Ⓐ #6 Bars X to be ¾" ϕ Smooth and Greased for 1'-0" of Length.

GENERAL NOTES:

Construction Specifications: Latest Approved La. Dept. of Highways Standard Specifications.

Design Specifications: A.A.S.H.O. 1969 as Amended to 1971.

Live Load: HS 20-44 or Military Loading Whichever is Greater.

All Concrete to be Class "A".

All Exposed Corners to have ¾" Chamfer Unless Otherwise Noted.

Reinforcement Shall be Billet-Steel A.S.T.M. A615 or Rail-Steel A.S.T.M. A616 or Axle-Steel A.S.T.M. A617.

Dimensions Relating to Reinforcing Steel are to Bar Centers.

A 1'-6" Square of Plastic Filter Cloth (See Qualified Products List) Shall be placed in contact with Concrete behind each Weep Hole, in addition to approx. 2 Cu. Ft. of Concrete Sand.

For Detail of Joints, See Std. Plan C.M.-48.

C.C.S.S.8-10-R-90°-1

STANDARD PLAN
REINFORCED CONCRETE BOX CULVERT
STRAIGHT WINGS 90° CROSSING
2:1 SPILL SLOPE
8' TO 10' SPANS 4' TO 6' HEIGHTS
DATED NOV. 30 19 71

APPROVED BY:
CHIEF ENGINEER
1-11-78
DATE

DATE	DESCRIPTION	BY
1-11-78	Rev. Weep Hole Note	W.T.J.
1-28-75	Rev Slope Intercept	W.T.J.
6-8-72	Rev. General Notes for Steel	W.E.M.

REVISIONS

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED	DETAILED J.J. RIBAS	TRACED E.B. ALLEN
CHECKED	CHECKED J.D. BACCI	CHECKED J.D. BACCI

FOR INFORMATIONAL USE

IP_PWP:dms09544\CCSS8-10R90_1.dgn

8/13/2012 14:59

F.A.P.	STATE PROJECT	PARISH	SHEET NO.

BILL OF REINFORCING STEEL FOR 44'-0" CULVERT

OPENINGS CLEAR SPAN FEET	OPENINGS CLEAR HEIGHT FEET	BARREL REINFORCEMENT: BARS A SIZE	BARS A NO.	BARS A LENGTH FT-IN	BARS A SPAC IN.	BARS A1 SIZE	BARS A1 NO.	BARS A1 SHORT FT-IN	BARS A1 VAR IN.	BARS A1 LONG FT-IN	BARS A1 SPAC IN.	BARS B SIZE	BARS B NO.	BARS B LENGTH FT-IN	BARS B SPAC IN.	BARS B1 SIZE	BARS B1 NO.	BARS B1 SHORT FT-IN	BARS B1 VAR IN.	BARS B1 LONG FT-IN	BARS B1 SPAC IN.	#4 BARS C NO.	#4 BARS C LENGTH FT-IN	BARS D E D1 SIZE	BARS D E D1 NO.	BARS D E D1 LENGTH D FT-IN	BARS D E D1 LENGTH D1 FT-IN	BARS D E D1 SPAC IN.
12	8	#7	92	15-3½	5½	#7	16	3-10	12TH	14-1	5½	#8	78	15-10½	6½	#8	12	4-1	24TH	14-2	6½	378	#7-2	#6	116	3-7	12-5	9½
	9																											
	10																											
	11																											
	12	#7	92	15-3½	5½	#7	16	3-10	12TH	14-1	5½	#8	78	15-10½	6½	#8	12	4-1	24TH	14-2	6½	378	#7-2	#6	116	3-7	12-5	9½

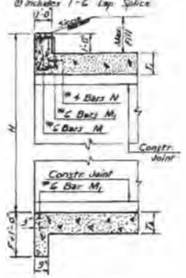
OPENINGS CLEAR SPAN FEET	OPENINGS CLEAR HEIGHT FEET	WINGS AND CURB REINFORCEMENT: BARS E E1 SIZE	BARS E E1 NO.	BARS E E1 LENGTH E FT-IN	BARS E E1 LENGTH E1 FT-IN	BARS E E1 SPAC IN.	#4 BARS F NO.	#4 BARS F LENGTH FT-IN	#7 BARS F1 NO.	#7 BARS F1 LENGTH FT-IN	#4 BARS J NO.	#4 BARS J LENGTH FT-IN	#4 BARS J1 NO.	#4 BARS J1 LENGTH FT-IN	#6 BARS M NO.	#6 BARS M LENGTH FT-IN	#4 BARS N NO.	#4 BARS N LENGTH FT-IN	BARS O SIZE	BARS O NO.	BARS O LENGTH FT-IN	BARS O SPAC IN.	#4 BARS P NO.	#4 BARS P LENGTH FT-IN	#4 BARS P1 NO.	#4 BARS P1 LENGTH FT-IN	#4 BARS Q NO.	#4 BARS Q LENGTH FT-IN	#4 BARS R NO.	#4 BARS R LENGTH FT-IN	#4 BARS S NO.	#4 BARS S LENGTH FT-IN	#6 BARS X NO.	#6 BARS X LENGTH FT-IN
12	8	#7	2	27-11	24	3-2	2	28-11	24	3-5	28	29-4	23	25-1	4	16-11	6	14-1	30	5-3	#6	116	6-11	11	10	25-11	8	27-4	10	26-6	8	29-3	52	2-0
	9																																	
	10																																	
	11																																	
	12	#7	2	27-11	24	3-2	2	28-11	24	3-5	28	29-4	23	25-1	4	16-11	6	14-1	30	5-3	#6	116	6-11	11	10	25-11	8	27-4	10	26-6	8	29-3	52	2-0

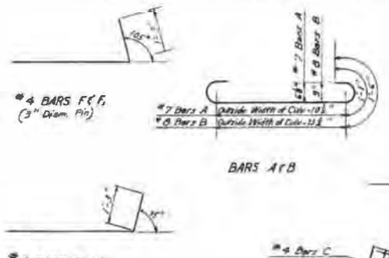
Ⓐ #6 Bars X to be ⅝" Smooth and Greased for 1'-0" of Length.

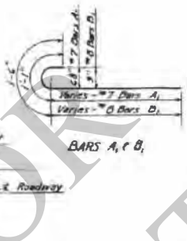
GENERAL NOTES:

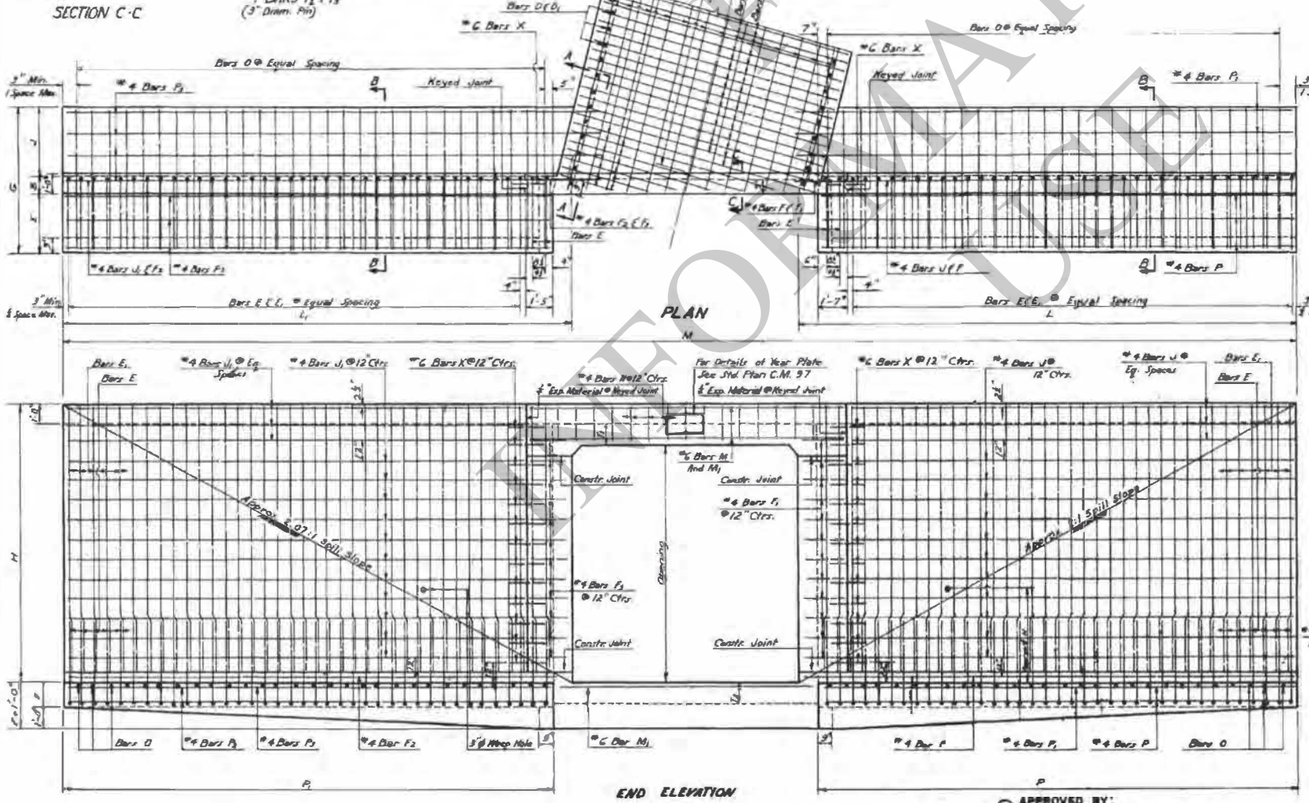
CONSTRUCTION SPECIFICATIONS: Latest Approved La. Dept. of Hwys. Standard Specifications.
DESIGN SPECIFICATIONS: A.A.S.H.O. 1961 as amended to Sept 1961.
LIVE LOAD: H-20, S16-44.
All concrete to be Class "A".
All exposed corners to have ¾" chamfers, unless otherwise noted.
Reinforcement shall be billet steel A.S.T.M. A 615 or Rail-Steel A.S.T.M. A 616 or Axle-Steel A.S.T.M. A 617.
Dimensions relating to reinforcing steel are to bar centers.
A 1'-0" Square of Plastic Filter Cloth (See Qualified Products List) shall be placed in contact with Concrete behind each Weep Hole in addition to approx. 4 Cu. Ft. of Concrete Sand.
For Detail of Joints, See Std. Plan C.M.-4B.

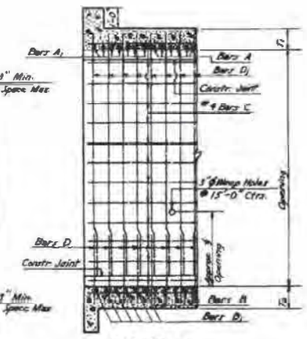
Ⓑ Includes 1'-6" Lap Splice

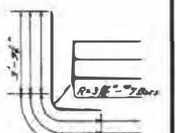


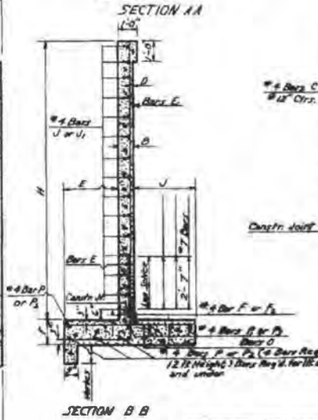


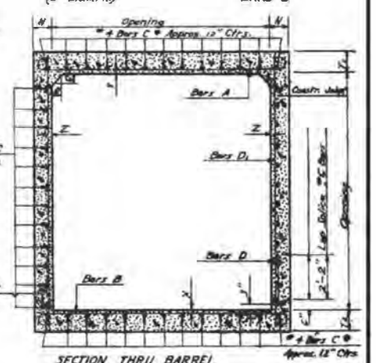












DIMENSIONS

OPENINGS CLEAR SPAN FT.	OPENINGS CLEAR HEIGHT FT.	MAX. FILL AREA SQ. FT.	BARREL SLAB FT.	BARREL WALL FT.	BARREL N IN.	BARREL T1 IN.	BARREL T2 IN.	BARREL X IN.	BARREL Y IN.	BARREL Z IN.	WINGS AND CURBS B FT-IN.	E FT-IN.	F FT-IN.	J FT-IN.	G FT-IN.	H FT-IN.	D IN.	L FT-IN.	L1 FT-IN.	P FT-IN.	P1 FT-IN.	M FT-IN.
12	8																					
	9																					
	10																					
	11																					
	12	144	6	6	12	13	13	2	1 13/16	1 3/8	1'-0	3'-0	1'-3	3'-4	7'-4	14'-1	11 5/8	27'-3½	27'-10½	26'-3	22'-10	17'-6 5/8

QUANTITIES

OPENINGS CLEAR SPAN	OPENINGS CLEAR HEIGHT	PER LINEAR FOOT OF BARREL: STEEL LBS.	PER LINEAR FOOT OF BARREL: CONC. CU. YDS.	44'-0" CULVERT: STEEL LBS.	44'-0" CULVERT: CONC. CU. YDS.
12	8				
	9				
	10				
	11				
	12	240.56	2.021C	13,874	100.42

STANDARD PLAN
REINF. CONCRETE BOX CULVERT
STRAIGHT WINGWALLS 75° CROSSING
2:1 SPILL SLOPE NORMAL TO CHANNEL
12' CLEAR SPAN 8' TO 12' CLEAR HGHT.
DATED Sept. 16, 1962

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED B.G.Nails DETAILED MMB TRACED Z.Reynolds
CHECKED B.G.Nails CHECKED B.G.Nails CHECKED C.Blanchard
IN CHARGE OF BRIDGE DESIGN SECTION

NO.	DESCRIPTION	BY
	12-1-58 Some Minor Revisions	B.G.N.
	6-16-59 Revised Skew Angles	B.G.N.
	6-8-60 Some Minor Revisions	W.B.M.
	6-29-61 Revised Bar Marks	W.B.M.
	9-1961 Revised 1" to Match	W.B.M.
	8-1962 Revised Spacing of Ø Bars	W.B.M.

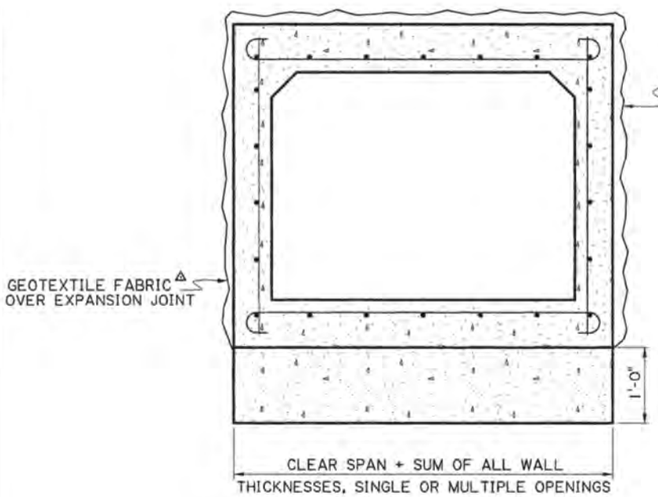
CC-S-S-12-RS-75°-2

APPROVED BY: [signature] CHIEF ENGINEER 1-11-63 DATE

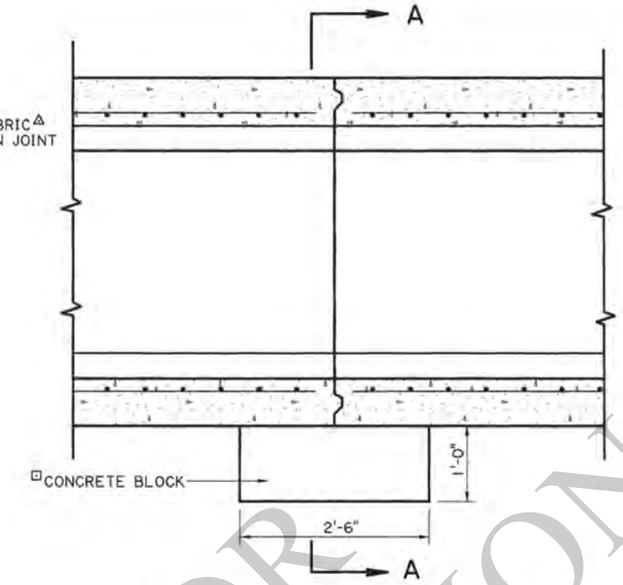
INFORMATIONAL USE

T.P. PWP:dms09544\CCSS12RS75_2.dgn

10/13/2020 15:24



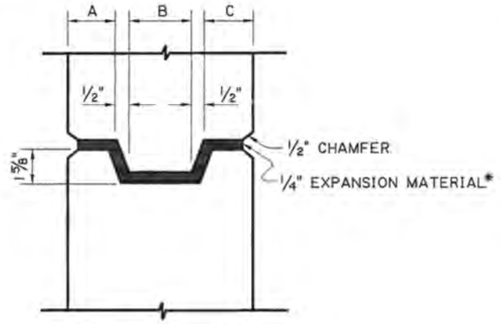
SECTION A-A



LONGITUDINAL BARREL SECTION

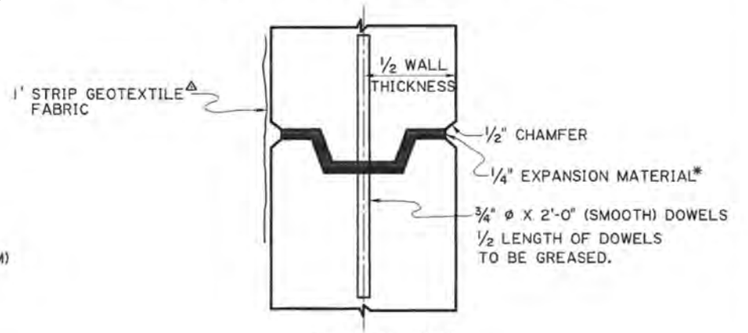
KEYED EXPANSION JOINTS (SEE DETAIL "A") TO BE SPACED SO THAT BARREL SHALL NOT BE CONTINUOUS FOR MORE THAN 200'. NO REINFORCING STEEL SHALL EXTEND THROUGH JOINT.

⊡ CONCRETE BLOCK TO BE PAID FOR AS CLASS "A" CONCRETE. CONCRETE BLOCK IS NOT REQUIRED IF A WORKING TABLE (DRY BOTTOM) IS CAST AS A BASE FOR PLACEMENT IN THE FIELD.

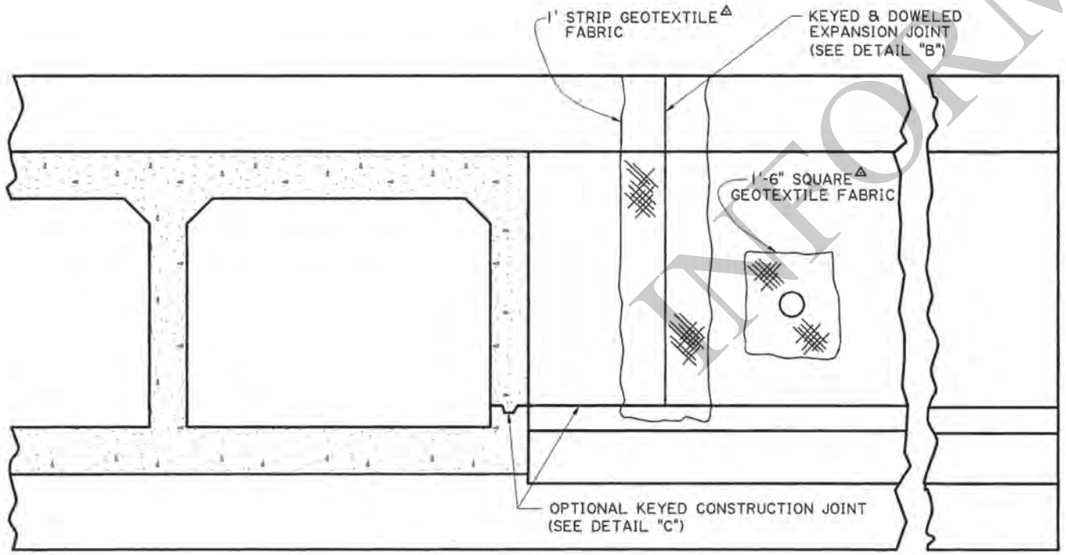


DETAIL "A"
KEYED EXPANSION JOINT

* IN ACCORDANCE WITH PROJECT SPECIFICATIONS FOR PREFORMED JOINT FILLERS (PREFORMED RESILIENT BITUMINOUS TYPES)

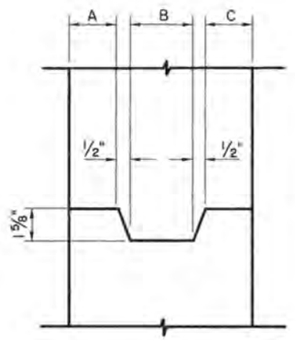


DETAIL "B"
KEYED & DOWELED EXPANSION JOINT
(FOR BOX CULVERT WING WALLS)



SECTION SHOWING REAR SIDE OF WING WALL

WALL OR SLAB	A	B	C
6"	1½"	2"	1½"
6½"	1⅝"	2¼"	1⅝"
7"	1¾"	2½"	1¾"
7½"	2"	2½"	2"
8"	2⅛"	2¾"	2⅛"
8½"	2⅜"	2¾"	2⅜"
9"	2½"	3"	2½"
9½"	2¾"	3"	2¾"
10"	2⅞"	3¼"	2⅞"
10½"	3"	3½"	3"
11"	3⅛"	3¾"	3⅛"
11½"	3¼"	4"	3¼"
12"	3½"	4"	3½"



DETAIL "C"
KEYED CONSTRUCTION JOINT

△ IN ACCORDANCE WITH PROJECT SPECIFICATIONS FOR GEOTEXTILE FABRIC

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	FEDERAL PROJECT	STATE PROJECT

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
	MN / PAA	9-26-94 / 1 OF 1

JDK BY DATE 10-1-08

GENERAL REVISIONS — REVISION DESCRIPTION

APPROVED BY: CHIEF ENGINEER

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

EXPANSION AND CONSTRUCTION JOINT FOR CONCRETE STRUCTURES

STANDARD PLAN CM-49

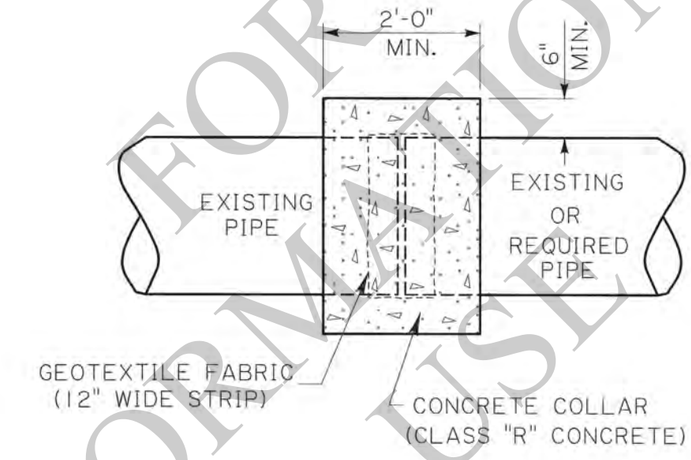
DOTD DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

HYDRAULICS SECTION

IP_PWP:dms09544\CM-49.dgn

CONCRETE COLLAR DETAIL

TO REPAIR EXISTING PIPE JOINT SEPARATION
AND/OR
TO CONNECT EXISTING PIPE TO NEW PIPE



FOR INFORMATIONAL USE

NOTES:

1) NEW PIPE EXTENSION SHALL MATCH EXISTING PIPE IN MATERIAL TYPE AND SIZE BASED ON THE LATEST INDUSTRY STANDARDS.

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN CHECK | DETAIL CHECK | REVIEW | SERIES #

STATE OF LOUISIANA
MITRA HASHEMIEH
REG. No. 28546
REGISTERED PROFESSIONAL ENGINEER IN
CIVIL ENGINEERING
5/5/2022

APPROVED BY CHIEF ENGINEER
DATE: 5/6/2022

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

CONCRETE COLLAR DETAIL

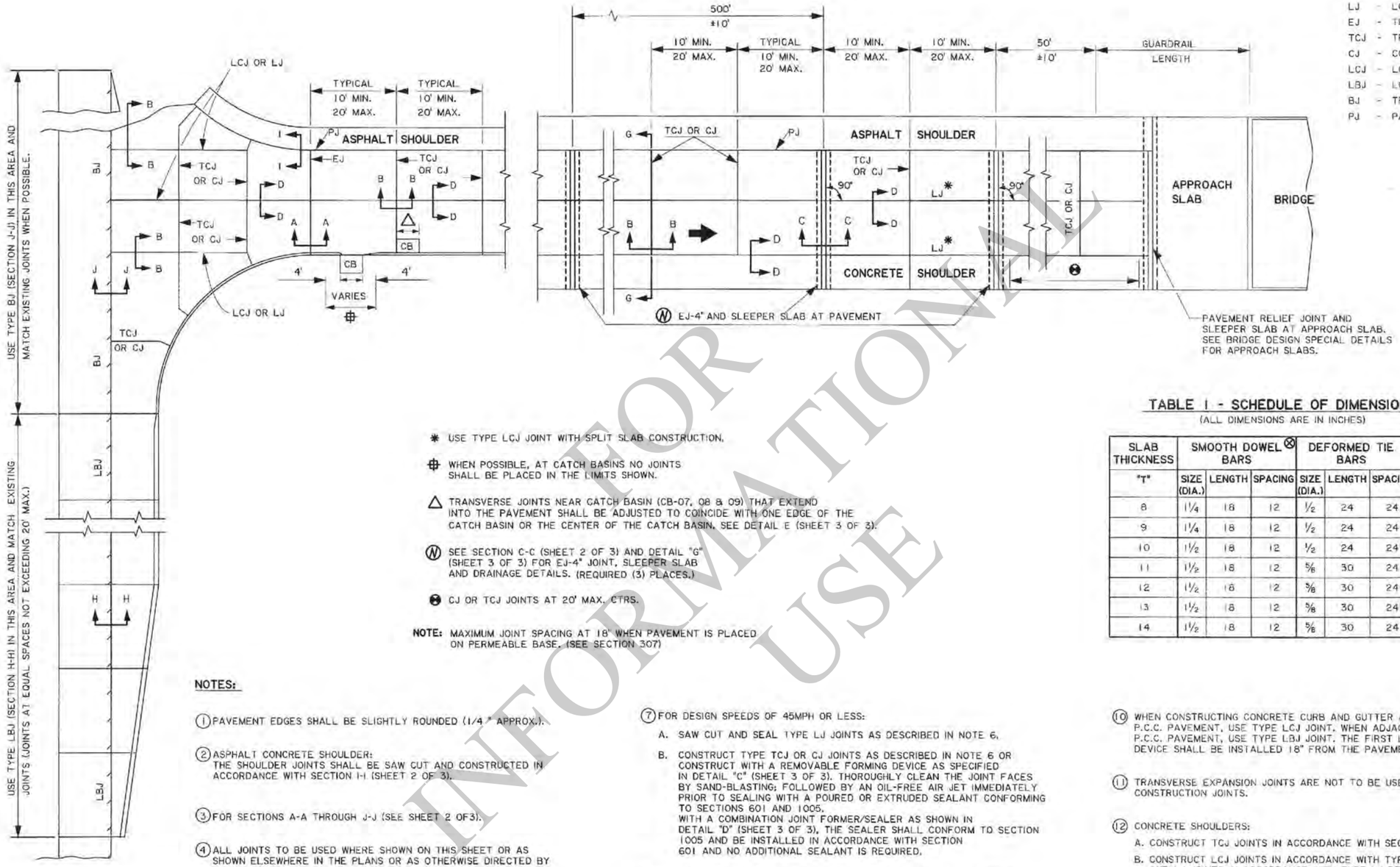
STANDARD PLAN | COLLAR-01

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

HYDRAULICS SECTION

PLAN VIEW

ROADWAY SHOWING JOINTS



JOINT ABBREVIATIONS:

- LJ - LONGITUDINAL JOINT
- EJ - TRANSVERSE EXPANSION JOINT
- TCJ - TRANSVERSE CONTRACTION JOINT
- CJ - CONSTRUCTION JOINT
- LCJ - LONGITUDINAL CONSTRUCTION JOINT
- LBJ - LONGITUDINAL BUTT JOINT
- BJ - TRANSVERSE BUTT JOINT
- PJ - PAVEMENT EDGE SEAL JOINT

✱ USE TYPE LCJ JOINT WITH SPLIT SLAB CONSTRUCTION.

⌖ WHEN POSSIBLE, AT CATCH BASINS NO JOINTS SHALL BE PLACED IN THE LIMITS SHOWN.

△ TRANSVERSE JOINTS NEAR CATCH BASIN (CB-07, 08 & 09) THAT EXTEND INTO THE PAVEMENT SHALL BE ADJUSTED TO COINCIDE WITH ONE EDGE OF THE CATCH BASIN OR THE CENTER OF THE CATCH BASIN. SEE DETAIL E (SHEET 3 OF 3).

Ⓝ SEE SECTION C-C (SHEET 2 OF 3) AND DETAIL "G" (SHEET 3 OF 3) FOR EJ-4" JOINT, SLEEPER SLAB AND DRAINAGE DETAILS. (REQUIRED (3) PLACES.)

CJ OR TCJ JOINTS AT 20' MAX. CTRS.

NOTE: MAXIMUM JOINT SPACING AT 18" WHEN PAVEMENT IS PLACED ON PERMEABLE BASE. (SEE SECTION 307)

TABLE I - SCHEDULE OF DIMENSIONS

(ALL DIMENSIONS ARE IN INCHES)

SLAB THICKNESS	SMOOTH DOWEL ⊗ BARS			DEFORMED TIE ⊠ BARS			KEYWAY ⊛	
"T"	SIZE (DIA.)	LENGTH	SPACING	SIZE (DIA.)	LENGTH	SPACING	A ±1/4"	B ±1/4"
8	1 1/4	18	12	1/2	24	24	2 1/2	1 1/4
9	1 1/4	18	12	1/2	24	24	2 1/2	1 1/4
10	1 1/2	18	12	1/2	24	24	2 1/2	1 1/4
11	1 1/2	18	12	5/8	30	24	2 1/2	1 1/4
12	1 1/2	18	12	5/8	30	24	3	1 1/2
13	1 1/2	18	12	5/8	30	24	3	1 1/2
14	1 1/2	18	12	5/8	30	24	3	1 1/2

NOTES:

(1) PAVEMENT EDGES SHALL BE SLIGHTLY ROUNDED (1/4 " APPROX.).

(2) ASPHALT CONCRETE SHOULDER:
THE SHOULDER JOINTS SHALL BE SAW CUT AND CONSTRUCTED IN ACCORDANCE WITH SECTION I-I (SHEET 2 OF 3).

(3) FOR SECTIONS A-A THROUGH J-J (SEE SHEET 2 OF3).

(4) ALL JOINTS TO BE USED WHERE SHOWN ON THIS SHEET OR AS SHOWN ELSEWHERE IN THE PLANS OR AS OTHERWISE DIRECTED BY THE ENGINEER.

(5) ON TYPE EJ ALTERNATE JOINTS, SPOT WELD ALTERNATE ENDS OF DOWEL BARS TO DOWEL BASKETS AND PLACE EXPANSION TUBES ON FREE ENDS OF DOWEL BARS.

(6) FOR DESIGN SPEEDS GREATER THAN 45MPH:
SAW CUT AND CONSTRUCT THE TYPE LJ, TCJ, AND CJ JOINTS AS IN DETAILS "A, B OR C" TO A DEPTH OF T/3 INCHES. THOROUGHLY CLEAN THE JOINT FACES BY SANDBLASTING; FOLLOWED BY AN OIL-FREE AIR JET IMMEDIATELY PRIOR TO SEALING WITH A POURED OR EXTRUDED SEALANT CONFORMING TO SECTION 1005.

(7) FOR DESIGN SPEEDS OF 45MPH OR LESS:

A. SAW CUT AND SEAL TYPE LJ JOINTS AS DESCRIBED IN NOTE 6.

B. CONSTRUCT TYPE TCJ OR CJ JOINTS AS DESCRIBED IN NOTE 6 OR CONSTRUCT WITH A REMOVABLE FORMING DEVICE AS SPECIFIED IN DETAIL "C" (SHEET 3 OF 3). THOROUGHLY CLEAN THE JOINT FACES BY SAND-BLASTING; FOLLOWED BY AN OIL-FREE AIR JET IMMEDIATELY PRIOR TO SEALING WITH A POURED OR EXTRUDED SEALANT CONFORMING TO SECTIONS 601 AND 1005.
WITH A COMBINATION JOINT FORMER/SEALER AS SHOWN IN DETAIL "D" (SHEET 3 OF 3), THE SEALER SHALL CONFORM TO SECTION 1005 AND BE INSTALLED IN ACCORDANCE WITH SECTION 601 AND NO ADDITIONAL SEALANT IS REQUIRED.

(8) EXCEPT AS NOTED BELOW, DOWEL BARS & TIE BARS SHALL BE HELD IN PLACE BY SUPPORTS SIMILAR TO THE ONES SHOWN, OR APPROVED EQUALS. APPROVED MECHANICAL PLACEMENT OF DOWEL BARS AND TIE BARS WILL BE ALLOWED WITH ALL PAVING METHODS.

(9) INSTALL GEOTEXTILE FABRIC (TYPE B, C, OR D) UNDER ALL TCJ, CJ, AND EJ ALTERNATE JOINTS WHEN CONCRETE PAVEMENT IS PLACED ON PERMEABLE BASE. WHEN DOWEL BARS ARE MECHANICALLY IMPLANTED, THE GEOTEXTILE FABRIC SHALL BE ANCHORED TO THE BASE COURSE WITH PINS.

(10) WHEN CONSTRUCTING CONCRETE CURB AND GUTTER ADJACENT TO NEW P.C.C. PAVEMENT, USE TYPE LCJ JOINT. WHEN ADJACENT TO EXISTING P.C.C. PAVEMENT, USE TYPE LBJ JOINT. THE FIRST LOAD TRANSFER DEVICE SHALL BE INSTALLED 18" FROM THE PAVEMENT EDGE.

(11) TRANSVERSE EXPANSION JOINTS ARE NOT TO BE USED FOR CONSTRUCTION JOINTS.

(12) CONCRETE SHOULDERS:

A. CONSTRUCT TCJ JOINTS IN ACCORDANCE WITH SECTION B-B (SHEET 2 OF 3).

B. CONSTRUCT LCJ JOINTS IN ACCORDANCE WITH TYPE LCJ DETAIL AND LJ JOINTS IN ACCORDANCE WITH TYPE LJ DETAIL. SEE SECTION D-D (SHEET 2 OF 3).

C. USE THE MAXIMUM SHOULDER THICKNESS WHEN DETERMINING DOWEL BAR AND TIE BAR SIZES IN TABLE I.

D. WHEN SKEWED JOINTS ARE USED ON MAINLINE PAVING THE SHOULDER TCJ JOINTS MAY BE SKEWED OR CONSTRUCTED AT 90°.

E. SHOULDER JOINTS AND JOINT MATERIALS SHALL MATCH THE MAINLINE.

F. HEIGHT OF DOWEL BASKET SHALL BE BASED ON THE THINNEST SHOULDER THICKNESS. VARYING HEIGHT DOWEL BASKETS WILL BE ALLOWED TO KEEP THE DOWEL BAR LOCATED WITHIN TOLERANCE.

(13) TIE BARS SHALL NOT BE PLACED WITHIN 18" OF CONTRACTION OR EXPANSION JOINTS.

NOT TO SCALE

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN T. LAM | CHECK D. SMITH | DETAIL T. LAM | CHECK D. SMITH | REVIEW | SERIES # 1 OF 3

STATE OF LOUISIANA
DAVID S. SMITH
License No. 32565
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
10/11/21

APPROVED BY CHIEF ENGINEER: DATE: 10/13/2021

PORTLAND CEMENT CONCRETE PAVEMENT DETAILS

STANDARD PLAN CP-01

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

ROAD DESIGN

NOTES:

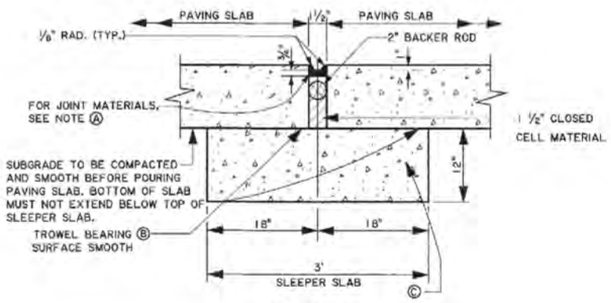
(A) ONE OR TWO COMPONENT SILICONE CONFORMING TO SECTION 1005.

(B) TAR PAPER EQUIVALENT TO 30 lbs./100 ft² SHALL BE PLACED BETWEEN THE SLEEPER SLAB AND THE PAVING SLAB.

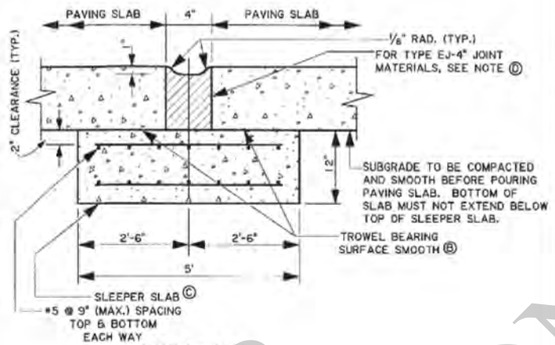
(C) SLEEPER SLAB SHALL BE CONSTRUCTED OF CLASS "A1" OR PAVEMENT TYPE CONCRETE AND INCLUDED IN THE COST OF THE PAVEMENT. PROVIDE DEFORMED GRADE 60 REINFORCING STEEL.

(D) JOINT SHALL BE FILLED WITH A PREFORMED POLYURETHANE FOAM TYPE FILLER CONFORMING TO SECTION 1005.

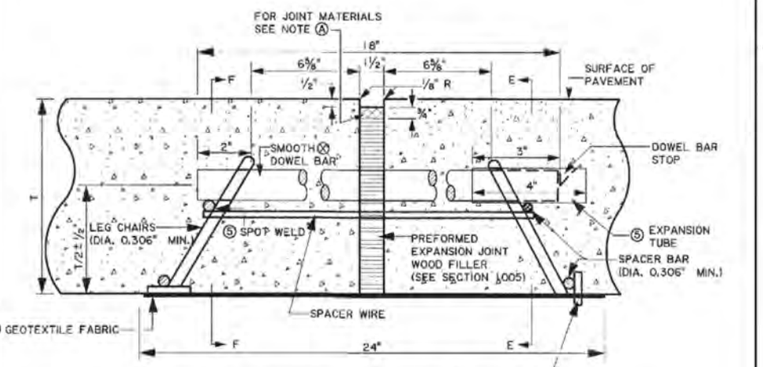
(E) SEE DETAIL "G" - EJ-4" BASE DRAIN OUTLET FOR UNDERDRAIN DETAILS (SHEET 3 OF 3)



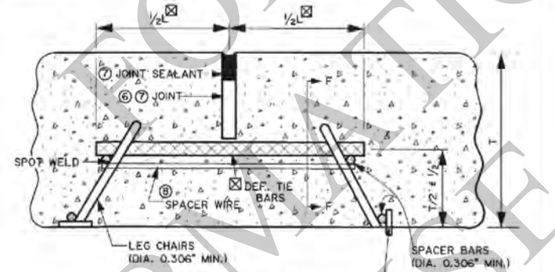
SECTION A-A
TYPE EJ-1½"



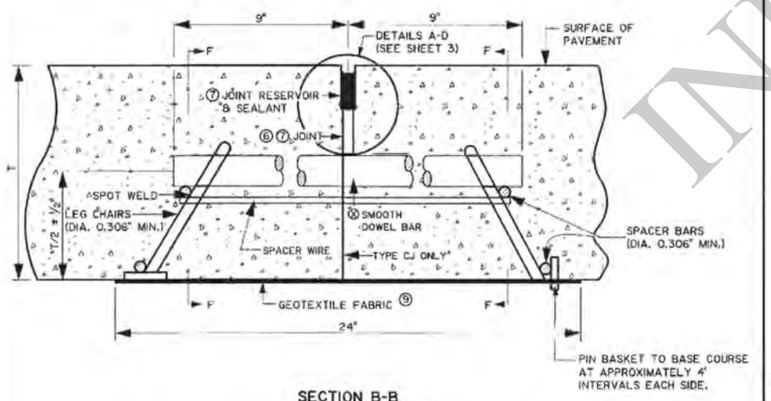
SECTION C-C
TYPE EJ-4" JOINT
AND SLEEPER SLAB



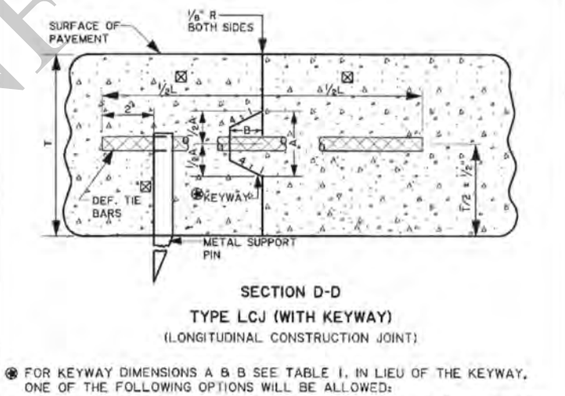
TYPE EJ ALTERNATE ⑧
(TRANSVERSE EXPANSION JOINT)
(NOT ALLOWED FOR DESIGN SPEED > 45 MPH)
⊗ SEE TABLE I (SHEET 1 OF 3)



SECTION D-D
TYPE LJ (WITHOUT KEYWAY)
(LONGITUDINAL JOINT)
(REQUIRED WHEN PAVEMENT WIDTH EXCEEDS 15') (SEE NOTE ⑥)
⊠ SEE TABLE I (SHEET 1 OF 3)



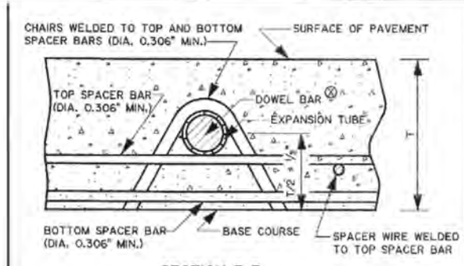
SECTION B-B
TYPE TCJ OR CJ ⑧
(TRANSVERSE CONTRACTION JOINT OR CONSTRUCTION JOINT)
⊗ SEE TABLE I (SHEET 1 OF 3)



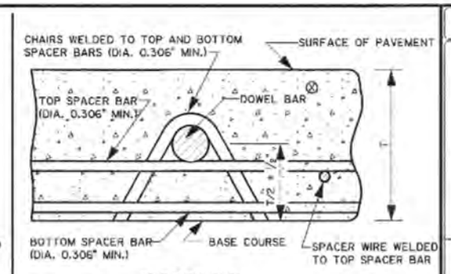
SECTION D-D
TYPE LCJ (WITH KEYWAY)
(LONGITUDINAL CONSTRUCTION JOINT)

⊛ FOR KEYWAY DIMENSIONS A & B SEE TABLE I, IN LIEU OF THE KEYWAY, ONE OF THE FOLLOWING OPTIONS WILL BE ALLOWED:
A. INSTALL TIE BARS OF THE SIZE SHOWN IN TABLE I, AT ½ THE SPACING.
B. INSTALL TIE BARS ¼" LARGER THAN THE TIE BAR DIAMETER SHOWN SHOWN IN TABLE I, AT THE SAME SPACING.

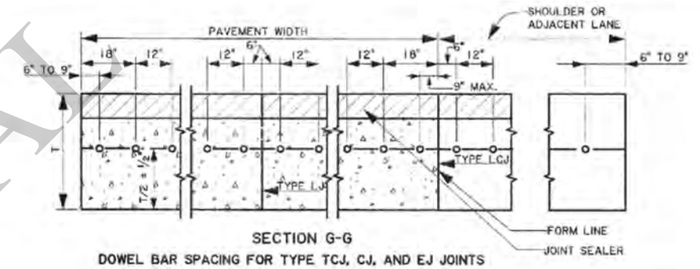
⊠ SEE TABLE I (SHEET 1 OF 3)



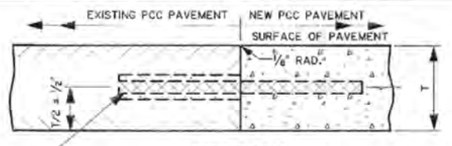
SECTION E-E
⊗ SEE TABLE I (SHEET 1 OF 3)



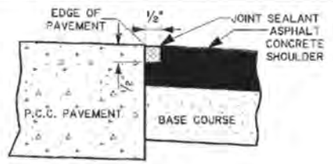
SECTION F-F
⊗ SEE TABLE I (SHEET 1 OF 3)



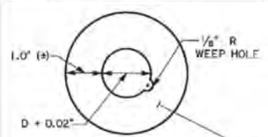
SECTION G-G
DOWEL BAR SPACING FOR TYPE TCJ, CJ, AND EJ JOINTS



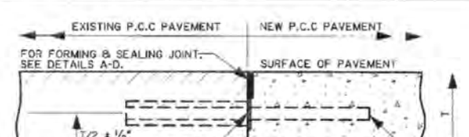
SECTION H-H
TYPE LBJ
(LONGITUDINAL BUTT JOINT)
⊠ DEFORMED TIE BARS OF THE SIZE, LENGTH AND ONE HALF THE SPACING SPECIFIED IN TABLE I SHALL BE USED. THE BARS SHALL BE INSTALLED IN EXISTING PAVEMENT BY DRILLING HOLES ⅛" LARGER THAN THE BAR DIAMETER TO A REQUIRED DEPTH OF ½ THE BAR LENGTH. THE HOLES SHALL BE DRILLED AND FILLED IN ACCORDANCE WITH SECTION 601 BEFORE INSERTION OF THE TIE BARS.



SECTION I-I
TYPE PJ
(HOT POURED SEALANT SECTION 1005)



GROUT RETENTION DISK
D = DOWEL DIAMETER
(INCLUDING PROTECTIVE COATING)



SECTION J-J
TYPE BJ
(TRANSVERSE BUTT JOINT)
⊗ SMOOTH DOWEL BARS OF THE SIZE, LENGTH AND SPACING SPECIFIED IN TABLE I SHALL BE USED. THE BARS SHALL BE INSTALLED IN EXISTING PAVEMENT BY DRILLING HOLES ⅛" LARGER THAN THE BAR DIAMETER TO A REQUIRED DEPTH OF ½ THE BAR LENGTH. THE HOLES SHALL BE DRILLED AND FILLED IN ACCORDANCE WITH SECTION 601 BEFORE INSERTION OF THE DOWEL BARS.

NOT TO SCALE

FOR INFORMATIONAL USE

SHEET NUMBER

AUDITOR

CONTROL SECTION

STATE PROJECT

DESIGN T. LAM
DRAW D. SMITH
DETAIL T. LAM
CHECK D. SMITH
REVISOR
SERIES # 2 OF 3

STATE OF LOUISIANA
DAVID S. SMITH
Utility No. 32063
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
10/11/21

APPROVED BY CHIEF ENGINEER
DATE 10/13/2021

PORTLAND CEMENT CONCRETE PAVEMENT DETAILS

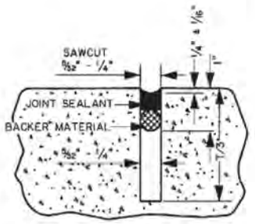
STANDARD SHEET NO. CP-01

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

ROAD DESIGN

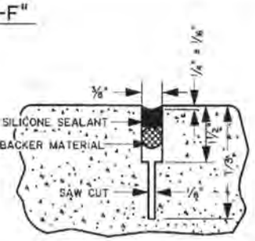
NOTE: SEE STANDARD PLAN DW-01 AND PLANS FOR CURB PLACEMENT DETAILS.

DETAILS "A-F"

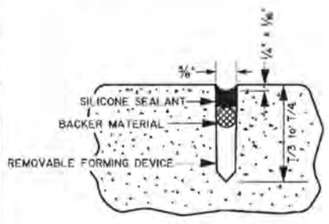


DETAIL "A"

USE THIS DETAIL IN CONJUNCTION WITH TYPE TCJ (SECTION B-B) AND TYPE LJ JOINT (SECTION D-D) AND NOTES ⑥ & ⑦ ON SHEET #1.



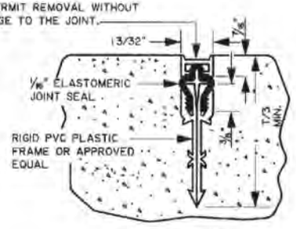
DETAIL "B"



DETAIL "C"

NOT ALLOWED FOR DESIGN SPEEDS GREATER THAN 45 MPH.

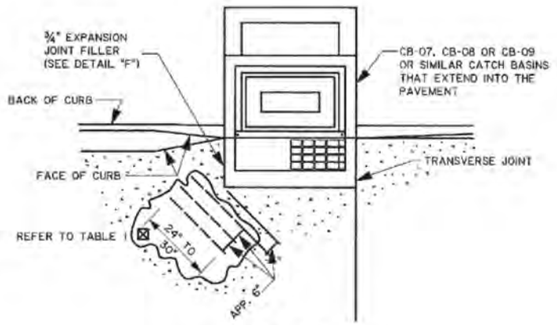
REMOVE CAP AFTER CONCRETE HAS HARDENED SUFFICIENTLY TO PERMIT REMOVAL WITHOUT DAMAGE TO THE JOINT.



DETAIL "D"

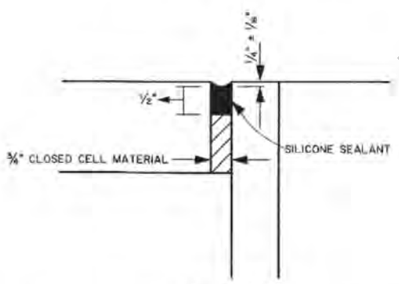
NOT ALLOWED WHEN THE PAVEMENT IS PLACED ON PERMEABLE BASES

NOT ALLOWED FOR DESIGN SPEEDS GREATER THAN 45 MPH.



DETAIL "E"

TRANSVERSE JOINT AT CATCH BASIN

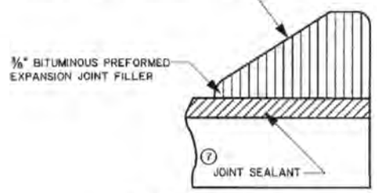


DETAIL "F"

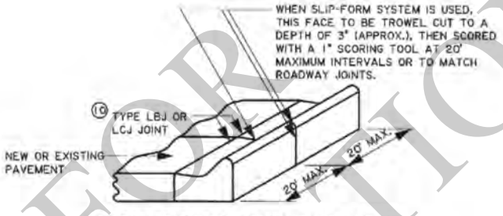
AFTER CATCH BASIN TOP IS POURED, THE TOP OF THE 3/4 " JOINT FILLER IS TO BE REMOVED TO THE DEPTH SHOWN PRIOR TO SEALING. THE CURB FACES ADJACENT TO THE BASIN SHALL ALSO BE SEALED. JOINT FACES SHALL BE CLEANED IN ACCORDANCE WITH SECTION 601.

NOTE:

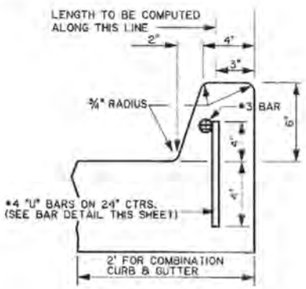
WHEN CURB IS POURED MONOLITHICALLY WITH PAVEMENT, THE BITUMINOUS PREFORMED EXPANSION JOINT FILLER SHALL EXTEND TO THE TOP OF JOINT INSERT. WHEN TRANSVERSE JOINTS ARE CONSTRUCTED BY SAWING, THE INITIAL SAW CUT SHALL EXTEND THRU THE CURBED SECTION (CURB AND UNDERLYING PAVEMENT). THE SUBSEQUENT WIDENING CUT FOR THE JOINT SEALANT RESERVOIR SHALL EXTEND INTO THE CURB FOR A DISTANCE NECESSARY TO ENSURE THE SPECIFIED RESERVOIR DEPTH IS BEING MAINTAINED AT THE GUTTER LINE. ALL CURB FACES REGARDLESS OF CURB TYPE SHALL BE SEALED WHEN TRANSVERSE JOINT IS SAWED THROUGH CURB.



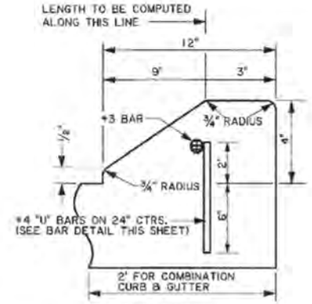
JOINT FILLER DETAIL FOR INTEGRAL CONCRETE CURB (MOUNTABLE OR BARRIER TYPE)



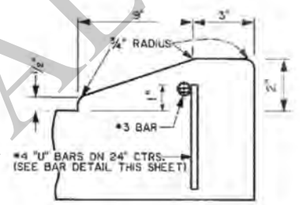
DETAIL SHOWING JOINTS IN CONCRETE CURB AND GUTTER (EXTEND ALL TCJ THROUGH CURB & GUTTER)



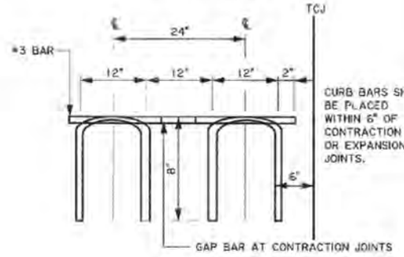
(BARRIER TYPE)



(MOUNTABLE TYPE)



MODIFIED BARRIER OR MOUNTABLE CURB THRU DRIVEWAY



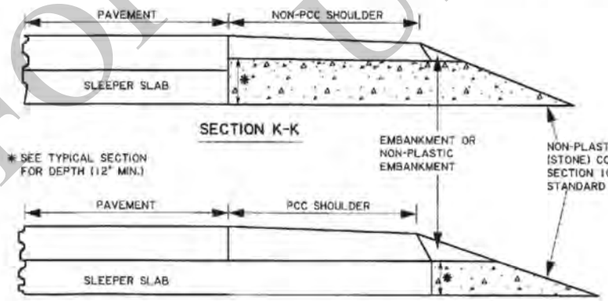
BAR DETAIL

SHOWING DIMENSIONS AND SPACING OF #4 "U" BARS AND LONGITUDINAL BARS FOR CONC. CURB

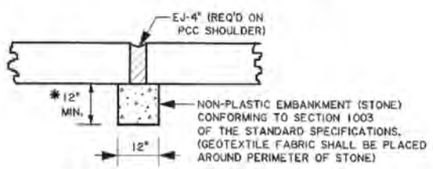
CURB DETAILS

NOTES:

- POUR CURB INTEGRAL WITH PCC PAVEMENT OR GUTTER TO INSURE MONOLITHIC CONSTRUCTION UNLESS OTHERWISE APPROVED BY THE ENGINEER. CURB BARS ARE NOT REQUIRED WHERE CURB IS CONSTRUCTED MONOLITHIC WITH THE PAVEMENT.
- ALL BARS SHOWN SHALL BE DEFORMED REINFORCING STEEL.
- WHEN REPLACING OR ADDING CONCRETE CURB TO EXISTING PAVEMENT, CONNECT THE NEW CONCRETE CURB TO THE PAVEMENT WITH THE DEFORMED REINFORCING STEEL SHOWN BY DRILLING HOLES INTO THE EXISTING PAVEMENT 1/8" LARGER THAN THE BAR DIAMETER. ANCHOR THE BARS WITH AN APPROVED EPOXY RESIN SYSTEM FROM THE DOTD AML. APPLY EPOXY ADHESIVE, COMPLYING WITH AASHTO M235, TYPE V, TO THE SURFACE AREA WHERE THE CONCRETE CURB WILL BE PLACED. INCLUDE ALL COST RELATED TO THE CONSTRUCTION OF THE CURB, INCLUDING THE DRILLED HOLES, DEFORMED REINFORCING BARS, AND EPOXY, IN THE UNIT PRICE FOR THE CURB ITEM.



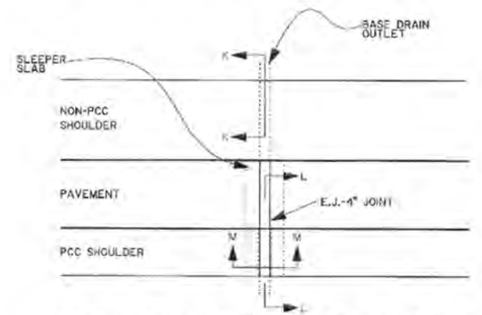
SECTION L-L (WITH CONCRETE SHOULDER)



SECTION M-M

(SLEEPER SLAB NOT SHOWN)

A BASE DRAIN OUTLET WILL BE REQUIRED AT E.J.-4" JOINTS UNLESS A SHOULDER UNDER DRAIN SYSTEM IS SPECIFIED ON THE PLANS, IN WHICH CASE, THE SHOULDER UNDER DRAIN FOR THE E.J. JOINT SHALL BE CONNECTED TO THE NEAREST STORM SEWER OR DISCHARGED THROUGH A HEADWALL. THE COST FOR THE BASE DRAIN OUTLET FOR THE E.J. JOINT IS TO BE INCLUDED IN THE COST OF THE PAVEMENT.



PLAN - BASE DRAIN OUTLET AT 4" E.J. EJ-4" JOINTS

DETAIL "G" - EJ-4" BASE DRAIN OUTLET

NOT TO SCALE

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	CHECK	DETAIL	CHECK	REVISED	SERIES #
T. LAM	D. SMITH	T. LAM	D. SMITH		3 OF 3

STATE OF LOUISIANA
DAVID S. SMITH
License No. 30865
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
10/11/21

APPROVED BY CHIEF ENGINEER
DATE: 10/13/2021

PORTLAND CEMENT CONCRETE PAVEMENT DETAILS

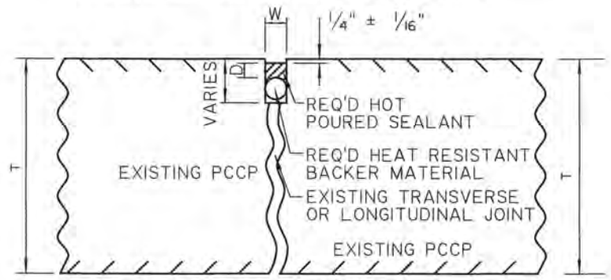
STANDARD PLAN CP-01

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

ROAD DESIGN

12/28/2020 09:58

CLEANING AND RESEALING EXISTING TRANSVERSE AND LONGITUDINAL JOINTS



SECTION VIEW

TRANSVERSE JOINTS

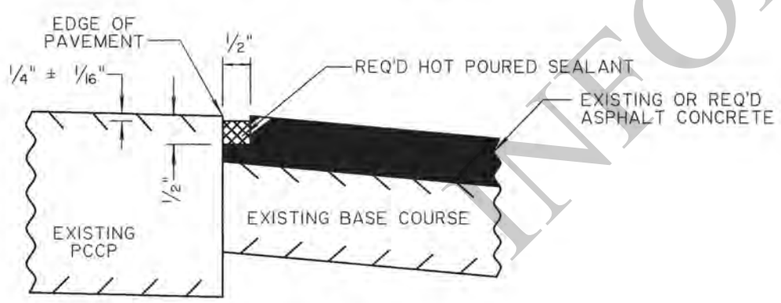
WIDTH (W)	DEPTH (D)	BACKER MATERIAL (DIAMETER)	MINIMUM DEPTH TO REMOVE INCOMPRESSIBLES
1/2" - 1"	1/2"	W + 25%	T/2
1" - 1 1/2"	W/2	W + 25%	T

LONGITUDINAL JOINTS

WIDTH (W)	DEPTH (D)	BACKER MATERIAL (DIAMETER)	MINIMUM DEPTH TO REMOVE INCOMPRESSIBLES
3/8" - 1"	1/2"	W + 25%	T/2
1" - 1 1/2"	W/2	W + 25%	T

NOTES:
1. HOT POURED SEALANT SHALL CONFORM TO SECTION 602.05 OF THE STANDARD SPECIFICATIONS.
2. BACKER MATERIAL SHALL CONSIST OF HEAT RESISTANT, CLOSED-CELL, CROSS-LINKED POLYETHYLENE OR POLYOLEFIN FOAM.
3. ALL WORK ON THIS DETAIL TO BE PAID FOR UNDER ITEM LABELED: CLEANING AND RESEALING EXISTING TRANSVERSE PAVEMENT JOINTS, OR CLEANING AND RESEALING EXISTING LONGITUDINAL PAVEMENT JOINTS.
4. DETAIL NOT TO SCALE.

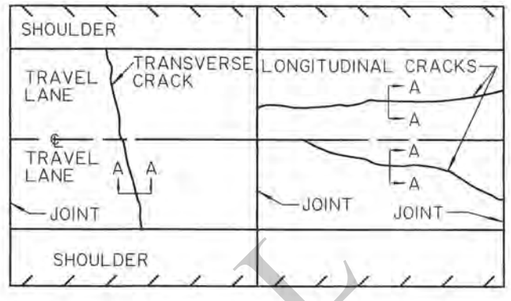
LONGITUDINAL SHOULDER JOINTS



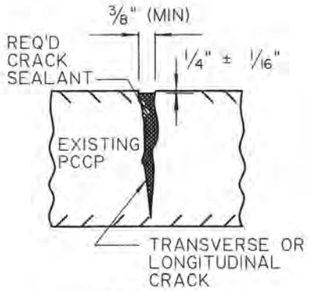
SECTION VIEW

NOTES:
1. HOT POURED SEALANT SHALL CONFORM TO SECTION 602.05 OF THE STANDARD SPECIFICATIONS.
2. ALL WORK ON THIS DETAIL TO BE PAID FOR UNDER THE ITEM LABELED: LONGITUDINAL SHOULDER JOINTS.
3. DETAIL NOT TO SCALE.

CLEANING AND SEALING RANDOM CRACKS



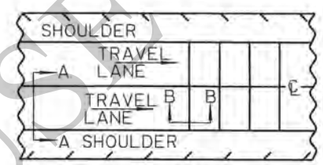
PLAN VIEW



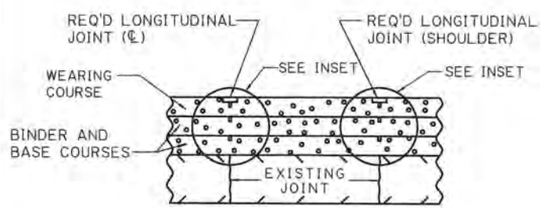
SECTION A-A

NOTES:
1. APPLIES TO RANDOM CRACKS GREATER THAN 3/8" IN WIDTH ON JOINTED PCCP.
2. CRACK SEALING LIMITS SHALL BE AS DIRECTED BY THE PROJECT ENGINEER.
3. SEALANT FOR TRANSVERSE CRACKS SHALL CONFORM TO 602.05 OF THE STANDARD SPECIFICATIONS.
4. SEALANT FOR LONGITUDINAL CRACKS SHALL BE LOW MODULUS TYPE I GRADE A EPOXY RESIN SYSTEM OR SILICONE.
5. ALL WORK ON THIS DETAIL TO BE PAID FOR UNDER ITEM LABELED: CLEANING AND SEALING RANDOM CRACKS.
6. DETAIL NOT TO SCALE.

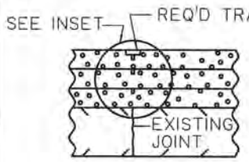
SAWING AND SEALING JOINTS IN ASPHALT CONCRETE OVERLAY



PLAN VIEW



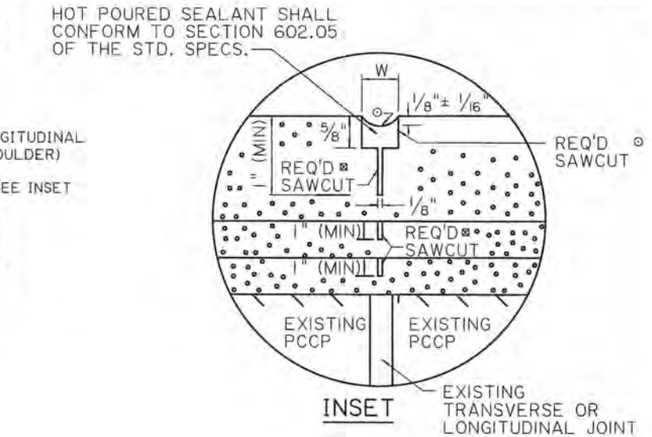
SECTION A-A



SECTION B-B

RESERVOIR DIMENSIONS

SLAB LENGTH	W
50' OR LESS	1/2"
51' OR GREATER	5/8"



INSET

NOTES:
1. SAWCUTS IN ASPHALT CONCRETE LIFTS (⊠) TO BE PAID FOR UNDER ITEM LABELED: SAWCUTS IN ASPHALT CONCRETE LIFTS.
2. SAWING AND SEALING JOINTS IN ASPHALT CONCRETE OVERLAY (⊙) TO BE PAID FOR UNDER ITEMS LABELED: SAWING AND SEALING LONGITUDINAL JOINTS IN ASPHALT CONCRETE OVERLAY, OR SAWING AND SEALING TRANSVERSE JOINTS IN ASPHALT CONCRETE OVERLAY.
3. DETAIL NOT TO SCALE.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN B. MAY | CHECK J. LACOMBE | DETAIL B. MAY | CHECK J. LACOMBE | REVIEW | SERIES # | 1 OF 1

STATE OF LOUISIANA
BRIAN A. MAY
License No. 40505
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
12/28/20

APPROVED BY: CHIEF ENGINEER — DATE: 1/12/2021

CONCRETE JOINTS AND CRACKS REHAB

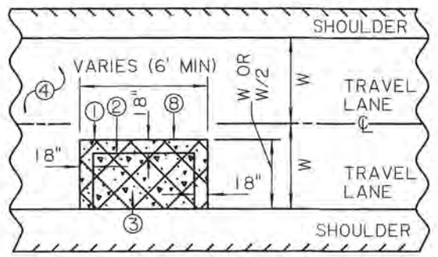
CPR-01

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

ROAD DESIGN

13:13
4/21/2022

PATCHING CRCP

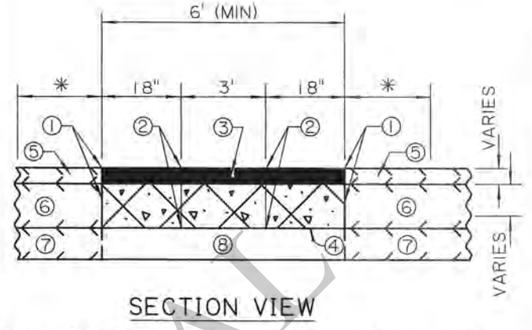


LEGEND

① PARTIAL DEPTH SAW CUT (1 ½" MINIMUM DEPTH).
② FULL DEPTH SAW CUT.
③ CONTINUOUSLY REINFORCED CONCRETE PAVEMENT TO BE REMOVED AND REPLACED.
④ EXISTING CONTINUOUSLY REINFORCED CONCRETE PAVEMENT TO REMAIN.
⑤ EXISTING BASE COURSE TO REMAIN.
⑥ DETERIORATED BASE COURSE TO BE REMOVED AND REPLACED WITH CONCRETE WITHIN PATCHING LIMITS.
⑦ LONGITUDINAL AND TRANSVERSE STEEL TO BE REPLACED WITH THE SAME SIZE AND GRADE AS EXISTING STEEL.
⑧ CONCRETE IN THE SPLICE SECTION SHALL BE REMOVED IN SUCH A MANNER THAT THE EXISTING STEEL IS NOT DAMAGED OR BENT IN ANY DIRECTION.
⑨ THE MAXIMUM SPACING OF SUPPORTING CHAIRS SHALL BE 48".

NOTES:
1. TRANSVERSE SAWCUTS SHALL BE ALLOWED ACROSS ONLY ONE LANE AT A TIME.
2. THE DESIRED CLEARANCE BETWEEN THE PARTIAL DEPTH SAW CUT AND THE NEAREST TRANSVERSE CRACK IS 18". A SHORTER DISTANCE MAY BE USED, BUT NOT LESS THAN 6".
2. ALL WORK ON THIS DETAIL TO BE PAID FOR UNDER ITEM LABELED: PATCHING CONTINUOUSLY REINFORCED CONCRETE PAVEMENT.
3. DETAIL NOT TO SCALE.

PATCHING CRCP WITH HMAC



* AN 18" CLEARANCE BETWEEN THE PARTIAL DEPTH SAW CUT AND THE NEAREST TRANSVERSE CRACK IS DESIRED. A SHORTER DISTANCE MAY BE USED, BUT THE MINIMUM LENGTH MUST NOT BE LESS THAN 6".

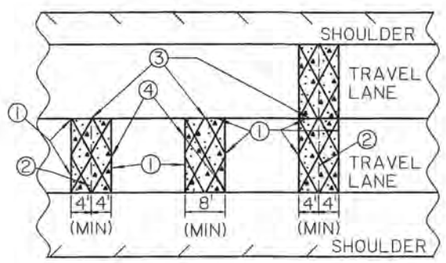
LEGEND

① FULL DEPTH SAW CUT THROUGH EXISTING ASPHALT CONCRETE WITH PARTIAL DEPTH SAW CUT THROUGH CRCP (1 ½" to 2").
② FULL DEPTH SAW CUT THROUGH EXISTING ASPHALT CONCRETE AND CRCP.
③ EXISTING ASPHALT CONCRETE TO BE REMOVED AND REPLACED. (COURSES AND TYPES TO BE AS SHOWN ON THE TYPICAL SECTION).
④ CRCP TO BE REMOVED AND REPLACED (SEE PATCHING CRCP DETAILS).
⑤ EXISTING ASPHALT CONCRETE TO REMAIN.
⑥ EXISTING CRCP TO REMAIN.
⑦ EXISTING BASE COURSE TO REMAIN.
⑧ DETERIORATED BASE COURSE TO BE REMOVED AND REPLACED WITH CONCRETE WITHIN THE PATCHING LIMITS.

NOTES:
1. ALL WORK ON THIS DETAIL TO BE PAID FOR UNDER ITEM LABELED: PATCHING CONTINUOUSLY REINFORCED CONCRETE PAVEMENT.
2. DETAIL NOT TO SCALE.

PATCHING JOINTED PCCP

FULL WIDTH PANEL PATCH

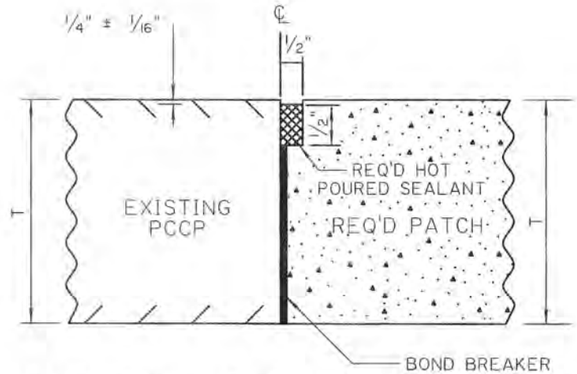


LEGEND

① FULL DEPTH SAW CUT.
② REQUIRED AND EXISTING JOINT.
③ REQUIRED JOINT.
④ REQUIRED CONSTRUCTION JOINT.

NOTES:
1. FOR ALL PATCHES <10 FEET IN LENGTH, PLACE A BOND BREAKER IN THE LONGITUDINAL JOINT OF THE ADJACENT SLAB(S).
2. FOR PATCHES >10 FEET IN LENGTH THAT DO NOT CONTAIN A TRANSVERSE JOINT WITHIN THE PATCH, PLACE TIE BARS IN THE ADJACENT SLAB(S) ALONG THE LONGITUDINAL JOINT.
3. FOR PATCHES >10 FEET IN LENGTH WHERE A TRANSVERSE JOINT IS LOCATED WITHIN THE PATCH, PLACE TIE BARS IN THE ADJACENT SLAB(S) IN THE LONGER PORTION ALONG THE LONGITUDINAL JOINT (WITH RESPECT TO THE EXISTING TRANSVERSE JOINT) AND PLACE A BOND BREAKER IN THE REMAINING SHORTER PORTION OF THE LONGITUDINAL JOINT. FOR THOSE CASES WHERE THE PATCH IS EVENLY SPACED ACROSS THE TRANSVERSE JOINT, PLACE TIE BARS ALONG THE LONGITUDINAL JOINT ON THE LEADING SIDE EDGE OF THE ADJACENT SLAB(S) WITH RESPECT TO TRAFFIC.
4. REMOVE AND REPLACE DETERIORATED BASE COURSE WITH CONCRETE WITHIN THE PATCHING LIMITS. A BOND BREAKER IS REQUIRED BETWEEN THE BASE AND PAVEMENT.
5. THE RECOMMENDED MAXIMUM LENGTH-TO-WIDTH RATIO FOR ALL PCCP PATCHES IS 1.5 (L) TO 1 (W) BETWEEN JOINTS.
6. FOR TRANSVERSE BUTT JOINTS, USE 1" DIAMETER (#8) DOWEL BAR FOR SLAB THICKNESS 8" TO 10" AND 1.25" DIAMETER (#10) DOWEL BAR FOR SLAB THICKNESS >10" SPACED AT 12" CENTER TO CENTER. USE 18" LENGTHS FOR ALL TRANSVERSE BUTT JOINT DOWEL BARS. DRILL HOLES FOR DOWEL BARS INTO THE MIDDLE OF THE VERTICAL FACE OF EXISTING PAVEMENT. DRILL HOLES NO LARGER THAN ⅛" LARGER THAN THE DIAMETER OF THE BAR USED. FILL IN ACCORDANCE WITH SECTION 601 BEFORE INSERTION OF THE DOWEL BARS.
7. CONFORM TO SECTION 601 & CP-01 FOR JOINTS AND BAR SIZES, MATCHING EXISTING JOINT TYPE AND BAR SPACING WHERE POSSIBLE.
8. COAT EXISTING TRANSVERSE VERTICAL FACES WITH NEAT CEMENT JUST PRIOR TO POURING PATCH.
9. SAW AND SEAL ALL JOINTS.
10. PAYMENT FOR ALL WORK PERFORMED IN THIS DETAIL UNDER ITEM: FULL DEPTH PATCHING OF JOINTED CONCRETE PAVEMENT.
11. ANY DAMAGE OR SAWCUTS INTO ADJACENT PANELS SHALL BE PATCHED, AS SHOWN ON THIS PATCHING DETAIL, AT NO DIRECT PAY.
12. DETAIL NOT TO SCALE.

PATCHING JOINTED PCCP



NOTES:
1. HOT POURED SEALANT SHALL CONFORM TO SECTION 602.05 OF THE STANDARD SPECIFICATIONS.
2. ALL WORK ON THIS DETAIL TO BE PAID FOR UNDER ITEM LABELED: FULL DEPTH PATCHING OF JOINTED CONCRETE PAVEMENT.
3. DETAIL NOT TO SCALE.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	B. MAY
CHECK	J. LACOMBE
DETAIL	B. MAY
CHECK	J. LACOMBE
REVIEW	SERIES #1 OF 1

STATE OF LOUISIANA
BRIAN A. MAY
License No. 40505
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/21/22

APPROVED BY CHIEF ENGINEER
DATE: 4/26/2022

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

PATCHING CRCP AND PCCP

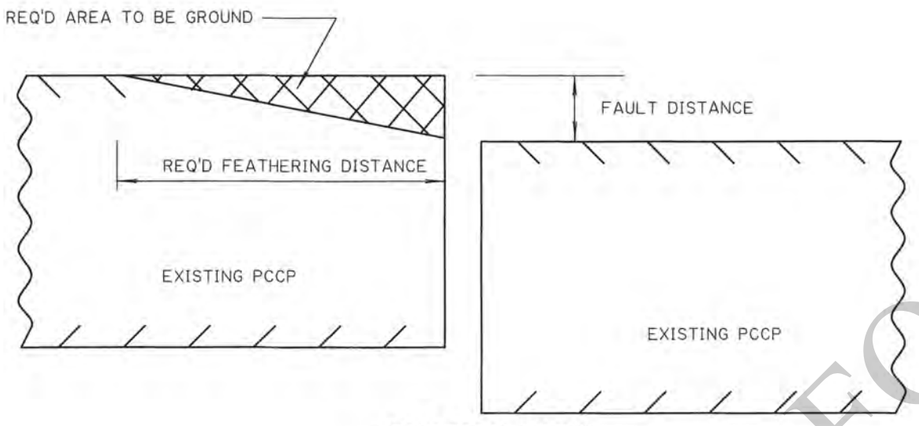
CPR-02

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

ROAD DESIGN

12/28/2020 10:09

GRINDING ISOLATED TRANSVERSE JOINTS

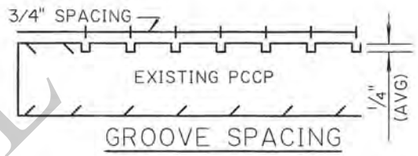


SECTION VIEW

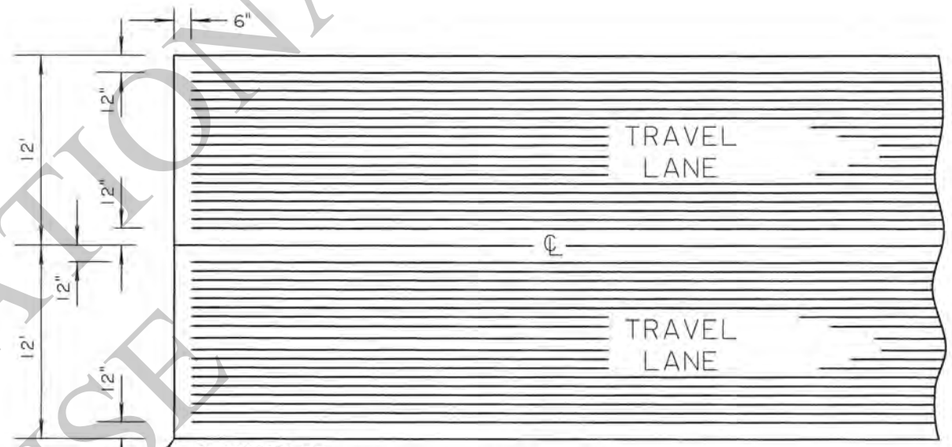
FAULT DISTANCE	FEATHERING DISTANCE
1/4"	5'
3/8"	7.5'
1/2"	10'

NOTES:
1. IF FAULT IS OVER 1/2", REMOVE AND REPLACE THE FAULTED AREA WITH A FULL DEPTH PATCH.
2. ALL GRINDING TO BE DONE PRIOR TO JOINT SEALING.
3. ALL WORK ON THIS DETAIL TO BE PAID FOR UNDER ITEM: MILLING CONCRETE PAVEMENT.
4. DETAIL NOT TO SCALE.

PAVEMENT GROOVING



GROOVE SPACING



PLAN VIEW

SHOWING GROOVES FOR 2 LANES

NOTES:
1. ALL WORK ON THIS DETAIL SHALL BE PAID FOR UNDER ITEM: DIAMOND GROOVING CONCRETE PAVEMENT.
2. DETAIL NOT TO SCALE.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. MAY | CHECK J. LACOMBE | DETAIL B. MAY | CHECK J. LACOMBE | REVIEW | SERIES # 1 OF 1

STATE OF LOUISIANA
BRIAN A. MAY
License No. 40505
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
12/28/20

APPROVED BY CHIEF ENGINEER:
DATE: 1/12/2021

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
CONFEDERATE

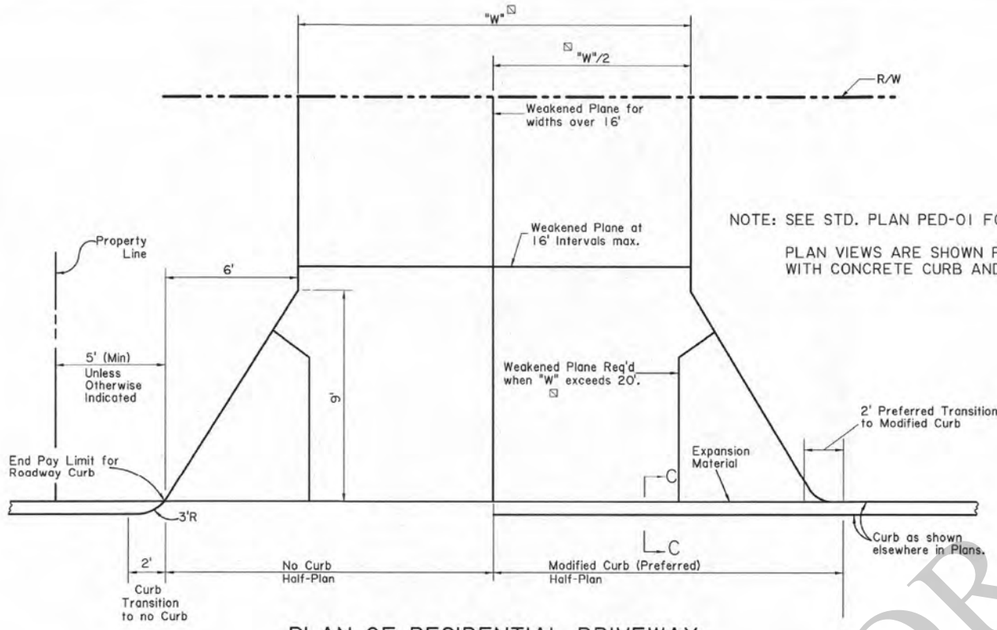
CONCRETE REHAB DETAILS

CPR-03

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

ROAD DESIGN

R:\Unit022\Driveway Standards\DRIVEWAY STANDARDS UPDATE - Aidan Eymard 2021\MicroStation Files\DW01 NEWEST.dgn 8/2/2022 08:53



PLAN OF RESIDENTIAL DRIVEWAY

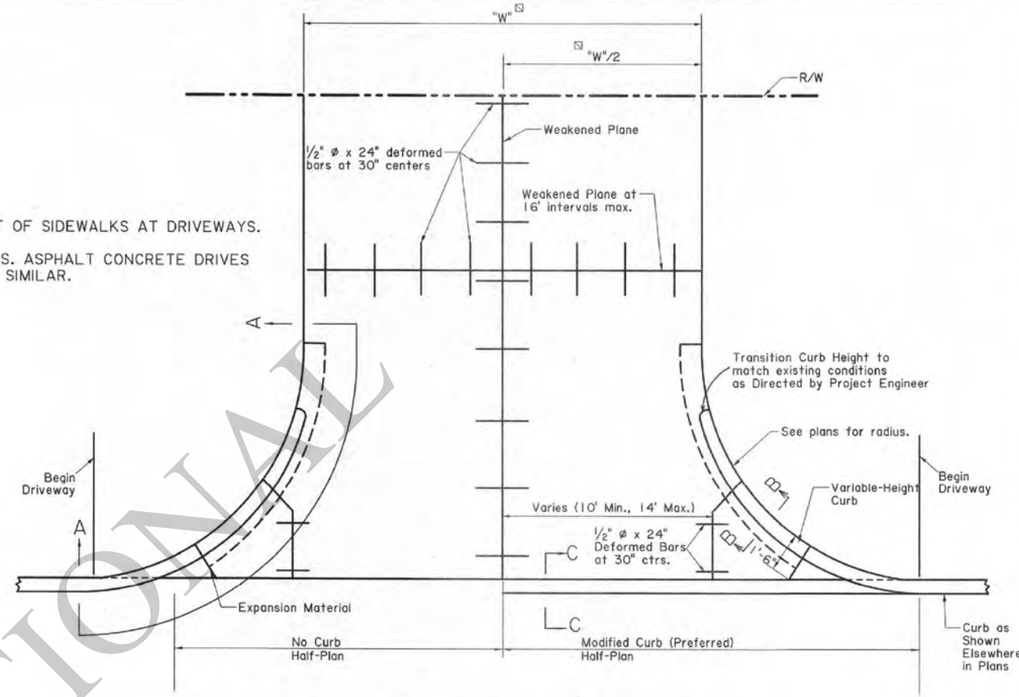
NOTE: SEE STD. PLAN PED-01 FOR TREATMENT OF SIDEWALKS AT DRIVEWAYS.

PLAN VIEWS ARE SHOWN FOR PCC DRIVES. ASPHALT CONCRETE DRIVES WITH CONCRETE CURB AND GUTTER ARE SIMILAR.

NOTE: MODIFIED CURB TO BE PAID FOR AS CURB AND WILL BE USED AS SHOWN IN THE PLANS OR WHEN DIRECTED BY THE PROJECT ENGINEER.

RADII TRANSITION SHAPE MAY BE USED IN LIEU OF A FLARE.

⧅ "W" = Width as per plans

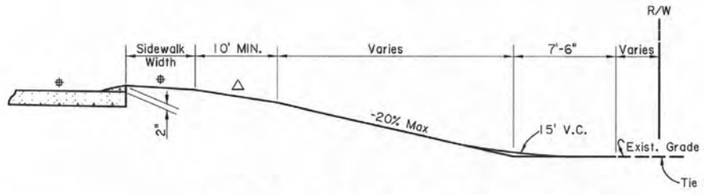


PLAN OF COMMERCIAL DRIVEWAY

NOTE: MODIFIED CURB TO BE PAID FOR AS CURB AND WILL BE USED AS SHOWN IN THE PLANS OR WHEN DIRECTED BY THE PROJECT ENGINEER.

WHEN CURB IS REQUIRED ALONG RADII OF DRIVEWAY, PAYMENT FOR TOE WALL AND CURB WILL BE INCLUDED IN THE PRICE FOR DRIVEWAY ITEMS.

WHEN CURB IS NOT REQUIRED ALONG RADII, TRANSITION CURB AS SHOWN ON RESIDENTIAL DRIVEWAY.



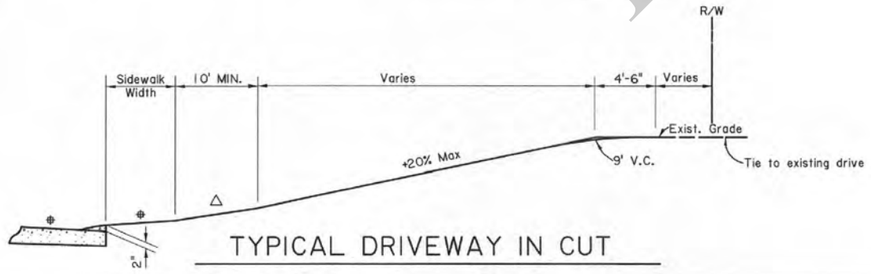
TYPICAL DRIVEWAY IN FILL

NOTES:

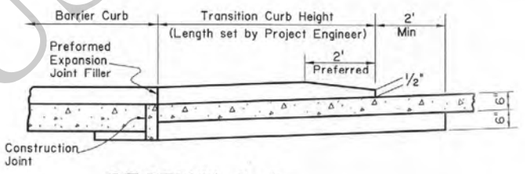
1. DRIVEWAY PROFILES SHOWN ASSUME A SIDEWALK ADJACENT TO THE CURB.

△ 2. MAXIMUM DRIVEWAY GRADE SHALL BE 20% (25% FOR SPECIAL CASES). MAXIMUM BREAK IN GRADE WITHOUT A VERTICAL CURVE SHALL BE 10% FOR CREST AND 9% FOR SAGS, AT NOT LESS THAN 10' INTERVALS.

⊕ 3. ROADWAY AND SIDEWALK SLOPES VARY AS PER PLANS.

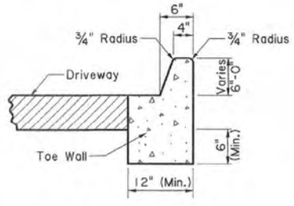


TYPICAL DRIVEWAY IN CUT



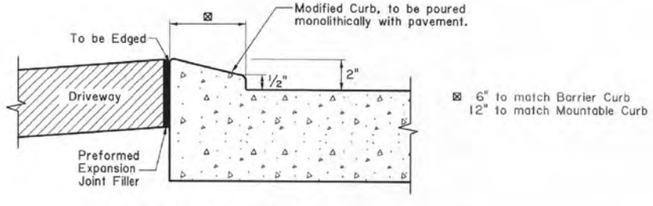
SECTION A-A

(Weakened Plane not shown.)



SECTION B-B

NOTE: For PCC Driveway, Curb, Toe Wall & Driveway to be poured monolithically.



⊠ 6" to match Barrier Curb
12" to match Mountable Curb

SECTION C-C

NOTE: See Std. Plan CP-01 for Curb construction

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	CHECK	DETAIL	CHECK	REVIEW	SERIES # 1 OF 3
P. TONEY	R. MCMILLAN	P. TONEY	R. MCMILLAN	D. SMITH	

STATE OF LOUISIANA
AIDAN EYMARD
License No. 46220
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
8/2/2022

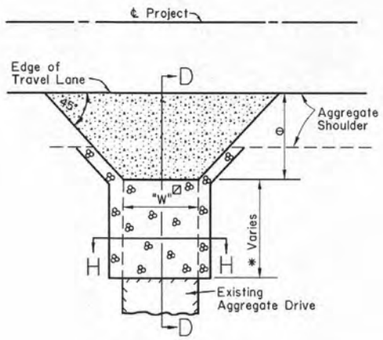
APPROVED BY CHIEF ENGINEER:
DATE: 8/4/2022

DRIVEWAYS ON CURBED ROADWAYS

STANDARD PLAN DW-01

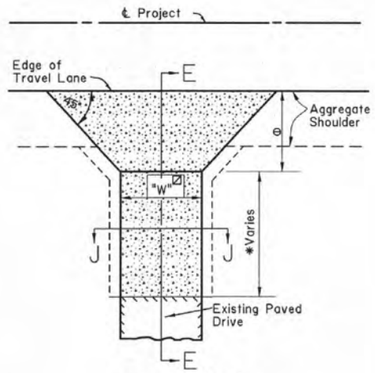
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

STANDARD PLAN



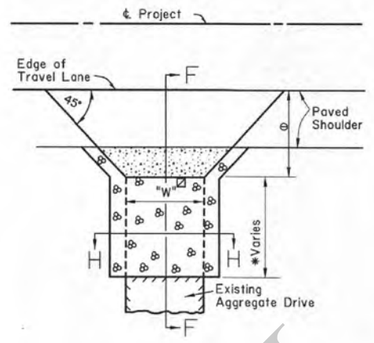
TYPE "A"

Paved Driveway Flare
Along Aggregate Shoulder



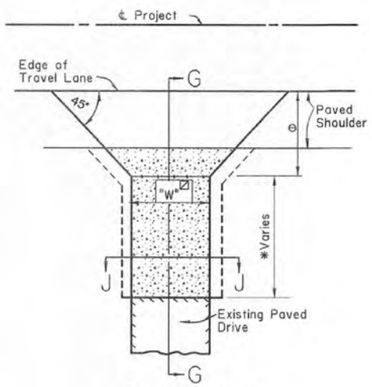
TYPE "B"

Paved Driveway Flare
Along Aggregate Shoulder
Connecting Existing Paved Drive



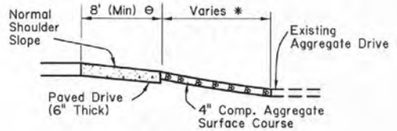
TYPE "C"

Paved Driveway Flare
Along Paved Shoulder

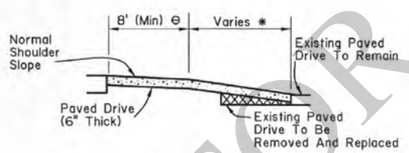


TYPE "D"

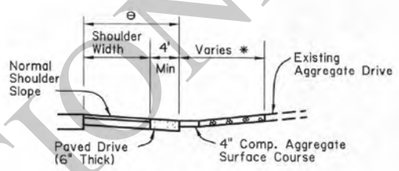
Paved Driveway Flare
Along Paved Shoulder
Connecting Existing Paved Drive



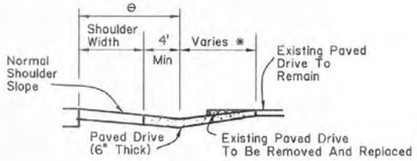
SECTION D-D



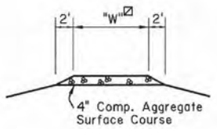
SECTION E-E



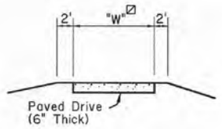
SECTION F-F



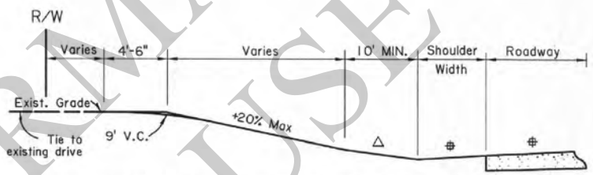
SECTION G-G



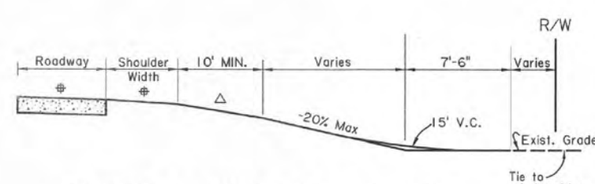
SECTION H-H



SECTION J-J



TYPICAL DRIVEWAY IN CUT



TYPICAL DRIVEWAY IN FILL

☑ "W" = Width as per plans

NOTES:

1. PORTLAND CEMENT CONCRETE DRIVES WILL BE CONSTRUCTED TO REPLACE OR CONNECT TO EXISTING CONCRETE DRIVES.

* 2. SEE PLANS: APPLIES WHERE EXISTING DRIVE IS TO BE REMOVED FOR ROADWAY CONSTRUCTION AND/OR TO ACHIEVE VERTICAL GEOMETRY REQUIREMENTS.

⊖ 3. PAVEMENT SHALL EXTEND 8' MINIMUM FROM EDGE OF PAVED ROADWAY SURFACE (TRAVEL LANE) FOR SINGLE-FAMILY RESIDENTIAL/NON-COMMERCIAL AGRICULTURE TYPE CONNECTIONS, AND 25' FOR TRAFFIC GENERATOR (COMMERCIAL) TYPE CONNECTIONS, OR AS PER THE PLANS. PAVED DRIVEWAY FLARE SHALL EXTEND 4' MINIMUM FROM EDGE OF PAVED SHOULDER. RADII TRANSITION SHAPE MAY BE USED IN LIEU OF FLARE.

4. COMPACTION OF SUBGRADE AND GRADING WORK FOR CONSTRUCTION OF DRIVES SHALL BE SATISFACTORY TO THE ENGINEER AND PAYMENT SHALL BE INCLUDED IN THE DRIVEWAY ITEMS.

△ 5. MAXIMUM DRIVEWAY GRADE SHALL BE 20% (25% FOR SPECIAL CASES). MAXIMUM BREAK IN GRADE WITHOUT A VERTICAL CURVE SHALL BE 10% FOR CRESTS AND 9% FOR SAGS, AT NOT LESS THAN 10' INTERVALS.

⊕ 6. ROADWAY AND SHOULDER SLOPES VARY AS PER PLANS

LEGEND

- ASPHALT
- AGGREGATE
- REMOVAL

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	CHECK	DETAIL	CHECK	REVIEW	SERIES #
P. TONEY	R. MCMILLAN	P. TONEY	R. MCMILLAN	D. SMITH	2 OF 3

STATE OF LOUISIANA
AIDAN EYMARD
License No. 46220
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
8/2/2022

APPROVED BY CHIEF ENGINEER:
DATE: 8/4/2022

DRIVEWAYS ON NON-CURBED ROADWAYS

STANDARD PLAN DW-01

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

STANDARD PLAN

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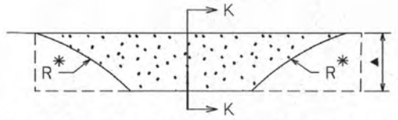
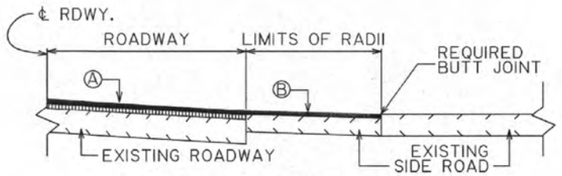
R:\Unit022\Driveway Standards\DRIVEWAY STANDARDS UPDATE - Aidan Eymard 2021\MicroStation Files\Turnout and Drive Tie In for Overlays.dgn 8/2/2022 08:50

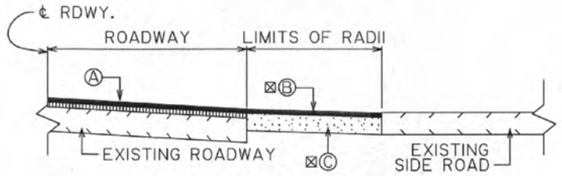
TURNOUT TIE-IN DETAILS FOR OVERLAY PROJECTS



DETAIL OF APRON AT TURNOUT (TYPICAL)



SECTION K-K (PAVED SIDE ROAD)



SECTION K-K (UNPAVED SIDE ROAD)

Ⓐ ASPHALT CONCRETE (COURSES AND TYPES SHOWN ON ROADWAY TYPICAL SECTION)

Ⓑ ASPHALT CONCRETE (THICKNESS SHALL MATCH ROADWAY WEARING SURFACE)

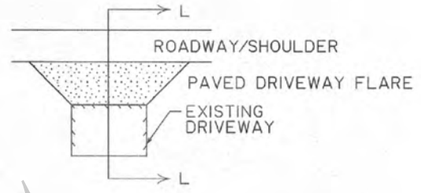
⊠Ⓒ ASPHALT CONCRETE BASE COURSE

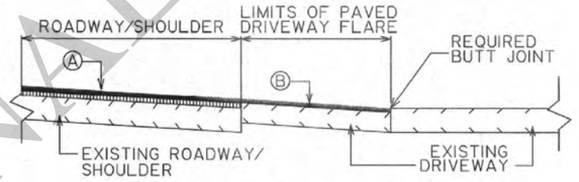
* MATCH EXISTING RADIUS

▲ VERTICAL TRANSITION FROM ROADWAY TO BUTT JOINT TIE-IN WHERE NEEDED

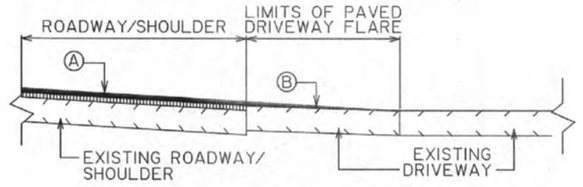
⊠ TOTAL THICKNESS OF WEARING COURSE AND BASE COURSE SHALL BE A MINIMUM OF 6"

DRIVEWAY TIE-IN DETAILS FOR OVERLAY PROJECTS





SECTION L-L (ALTERNATE 1)



SECTION L-L (ALTERNATE 2)

Ⓐ ASPHALT CONCRETE (COURSES AND TYPES SHOWN ON ROADWAY TYPICAL SECTION)

Ⓑ ASPHALT CONCRETE (THICKNESS SHALL MATCH ROADWAY WEARING COURSE)

FOR INFORMATIONAL USE

NOTES:

1. DRIVE WIDTHS AND FLARE DIMENSIONS TO BE ADJUSTED TO MATCH EXISTING CONDITIONS AS DIRECTED BY THE PROJECT ENGINEER.
2. TYPE OF TIE-IN AND LENGTH OF OVERLAY TRANSITION TO BE SET BY PROJECT ENGINEER TO achieve A SUITABLE CONNECTION FOR EXISTING DRIVE.
3. REFER TO SHEET 2 OF DW-01 FOR SUGGESTED TIE-IN CRITERIA OF STEEP GRADES.

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. TONEY	DETAIL	P. TONEY	REVIEW	D. SMITH
CHECK	R. MCMILLAN	CHECK	R. MCMILLAN	SERIES #	3 OF 3

STATE OF LOUISIANA
AIDAN EYMARD
License No. 46220
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
8/2/2022

APPROVED BY CHIEF ENGINEER: DATE: 8/4/2022

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

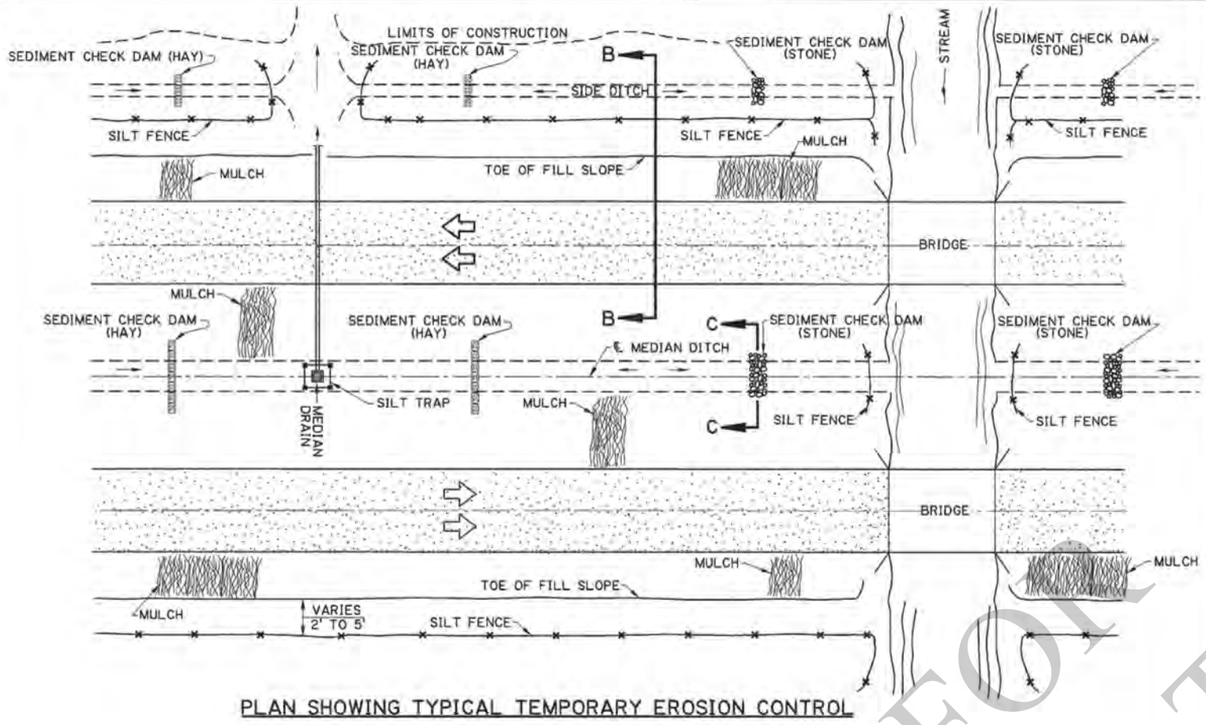
TURNOUT AND DRIVEWAY TIE-IN DETAILS

STANDARD PLAN DW-01

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

STANDARD PLAN

10/13/2020 15:24

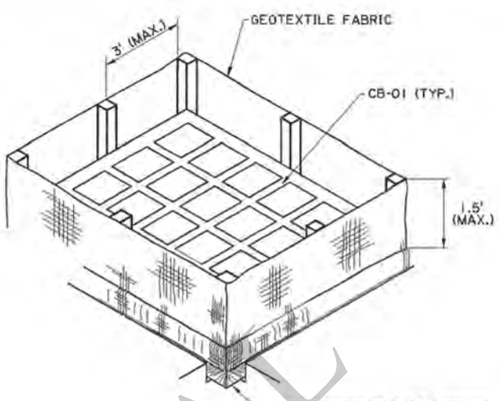


PLAN SHOWING TYPICAL TEMPORARY EROSION CONTROL

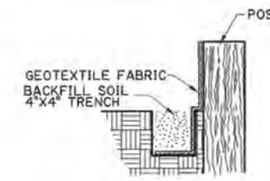
MULCHES

MULCHES ARE THE APPLICATION OF MATS OF MATERIAL PLACED ON THE SOIL SURFACE TO PREVENT EROSION BY PROTECTING THE SOIL SURFACE FROM RAINDROP IMPACT AND TO REDUCE THE VELOCITY OF OVERLAND FLOW. MULCHES CAN BE ORGANIC OR SYNTHETIC. MULCHES SHALL BE IN ACCORDANCE WITH PROJECT SPECIFICATIONS FOR TEMPORARY EROSION CONTROL. A FEW GUIDELINES FOR THE USE OF MULCHES ARE:

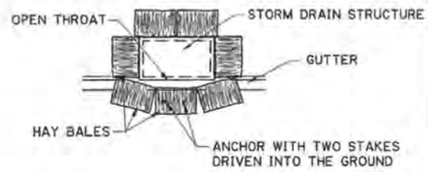
1. USE ON CUT AND EMBANKMENT SLOPES WHICH HAVE NOT BEEN COMPLETED TO PLAN GRADE OR WHERE THE WEATHER OR SOIL CONDITIONS WILL NOT PERMIT COMPLETING THEM WITHIN A REASONABLE TIME
2. USE ON CLEARED, GRUBBED , AND SCALPED AREAS WHERE SOIL EROSION IS LIKELY TO OCCUR
3. USE WITH TEMPORARY SEEDING



ISOMETRIC VIEW SHOWING GEOTEXTILE FABRIC
(BACKFILL SOIL NOT SHOWN)



SECTION THRU TRENCH SHOWING GEOTEXTILE FABRIC

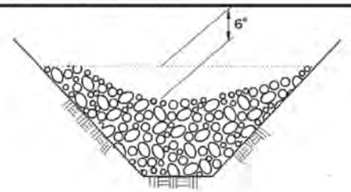


PLAN SHOWING HAY BALES
PAY ITEM: TEMPORARY HAY OR STRAW BALES

TEMPORARY INLET SILT TRAP

THE TEMPORARY DROP INLET SILT TRAP IS TO BE USED FOR SMALL DRAINAGE AREAS (LESS THAN 1 ACRE) WHERE THE STORM DRAIN IS FUNCTIONAL BEFORE THE AREA IS STABILIZED. THE TRAP CAN BE EITHER GEOTEXTILE FABRIC OR HAY BALES.

1. THE GEOTEXTILE FABRIC SHALL CONFORM TO PROJECT SPECIFICATIONS FOR GEOTEXTILE FABRIC (CLASS G).
2. WOODEN STAKES SUPPORTING THE FABRIC SHALL BE 2" X 2" OR 2" X 4" WITH A MINIMUM LENGTH OF 3 FEET. THE STAKES SHALL BE SPACED AROUND THE INLET AT A MAXIMUM SPACING OF 3 FEET.
3. THE HEIGHT OF THE FABRIC ABOVE THE INLET SHALL BE LIMITED TO 1.5' AND THE BOTTOM OF THE FABRIC SHALL BE BURIED IN A TRENCH APPROXIMATELY 4" WIDE BY 4" DEEP. THE FABRIC SHALL BE STAPLED TO THE POST WITH ½" STAPLES.
4. THE TRAP SHOULD BE INSPECTED REGULARLY AND AFTER EACH STORM. THE SEDIMENT SHOULD BE REMOVED AND EACH STAKE SHOULD BE FIRMLY IN THE GROUND.
5. HAY BALES SHALL BE PLACED SO THAT THE BINDING WIRE OR TWINE IS NOT IN CONTACT WITH THE GROUND.



SECTION C-C

TEMPORARY SEDIMENT CHECK DAM (STONE)

PAY ITEM: TEMPORARY SEDIMENT CHECK DAM (STONE)

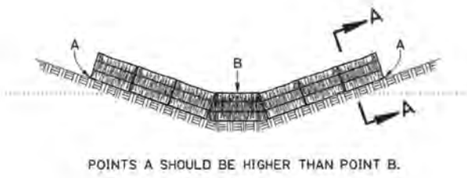
NOTES:
A STONE CHECK DAM IS A SMALL TEMPORARY DAM CONSTRUCTED ACROSS A SWALE OR DRAINAGE DITCH. THE PURPOSE OF THIS MEASURE IS TO REDUCE THE VELOCITY OF CONCENTRATED STORM WATER FLOWS, THEREBY REDUCING EROSION OF THE SWALE OR DITCH. THE STONE CHECK DAM WILL TRAP SMALL AMOUNTS OF SEDIMENTS GENERATED IN THE DITCH ITSELF, HOWEVER IT SHOULD NOT BE USED AS A SEDIMENT TRAPPING DEVICE. A FEW BASIC DESIGN GUIDELINES FOR THE USE OF STONE CHECK DAMS ARE:

1. USE IN SMALL OPEN CHANNELS WHICH DRAIN 10 ACRES OR LESS
2. DO NOT USE IN A LIVE STREAM
3. USE IN A TEMPORARY DITCH OR SWALE WHICH, BECAUSE OF THEIR SHORT LENGTH OF SERVICE, CANNOT RECEIVE A NON- ERODIBLE LINING
4. USE IN PERMANENT DITCHES OR SWALES WHICH WILL NOT RECEIVE A PERMANENT LINING FOR AN EXTENDED PERIOD OF TIME
5. USE IN TEMPORARY OR PERMANENT DITCHES OR SWALES WHICH NEED PROTECTION DURING THE ESTABLISHMENT OF GRASS LININGS
6. FOR STONE SPECIFICATIONS, SEE PROJECT SPECIFICATIONS FOR RIPRAP, (CLASS 2 LB)

SECTION B-B

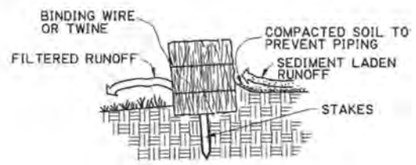
TEMPORARY SILT FENCE APPLICATION

(FOR CONSTRUCTION DETAILS AND SPECIFICATIONS SEE SHEET 2 OF 2.)



POINTS A SHOULD BE HIGHER THAN POINT B.

ELEVATION



SECTION A-A

TEMPORARY SEDIMENT CHECK DAM (HAY)

PAY ITEM: TEMPORARY SEDIMENT CHECK DAM (HAY)

NOTES:
A HAY BALE BARRIER IS A TEMPORARY SEDIMENT BARRIER CONSISTING OF A ROW OF ENTRENCHED AND ANCHORED BALES OF STRAW OR HAY. THE HAY BALE BARRIER IS ALSO USED AS A CHECK DAM TO REDUCE THE VELOCITY IN SMALL DITCHES OR SWALES. THE HAY BALES SHALL BE IN ACCORDANCE WITH PROJECT SPECIFICATIONS FOR TEMPORARY EROSION CONTROL. A FEW BASIC DESIGN GUIDELINES FOR THE USE OF A HAY BALE BARRIER ARE:

1. USE WHERE EROSION WOULD OCCUR IN THE FORM OF SHEET AND RILL EROSION
2. USE IN MINOR SWALES OR DITCHES WHERE THE MAXIMUM DRAINAGE AREA IS 2 ACRES
3. ONLY USE WHERE THE EFFECTIVENESS IS REQUIRED FOR LESS THAN 3 MONTHS
4. DO NOT USE IN LIVE STREAMS OR IN SWALES OR DITCHES WHERE THERE IS A POSSIBILITY OF A WASHOUT

FOR INFORMATIONAL USE

SHEET NUMBER		
PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED JCM CHECKED	DETAILED KAJ CHECKED JCM	DATE 1-14-94 SHEET 1 OF 2

DATE	REVISION DESCRIPTION	BY
10-1-08	REMOVE SPECIFIC PAY ITEM NOS., GENERAL REVISIONS	MH

APPROVED BY CHIEF ENGINEER: Wm. H. Temples DATE: 10-1-08

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

TEMPORARY EROSION CONTROL DETAILS

STANDARD PLAN EC-01

HYDRAULICS SECTION

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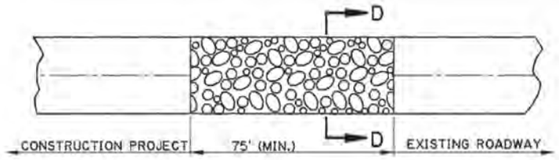
10/13/2020 15:24



PLAN

SECTION D-D

TEMPORARY STONE CONSTRUCTION ENTRANCE

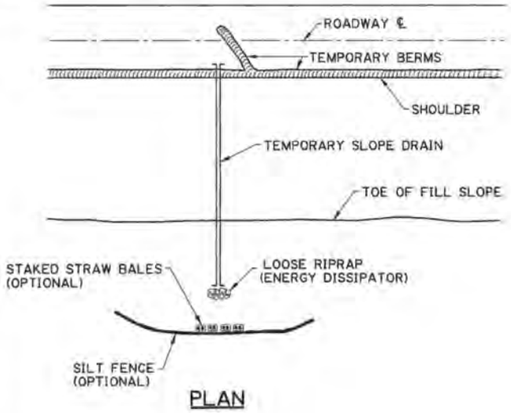
PAY ITEM: TEMPORARY STONE CONSTRUCTION ENTRANCE

NOTES:

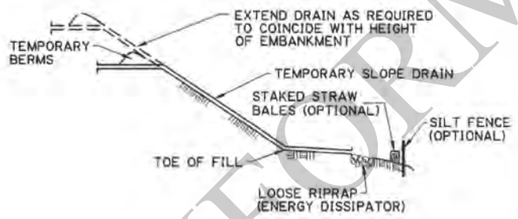
TEMPORARY STONE CONSTRUCTION ENTRANCE AND/OR WASH RACK

A STONE STABILIZED PAD LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON THE CONSTRUCTION SITE TO REDUCE THE AMOUNT OF MUD TRANSPORTED ONTO PUBLIC ROADS. IF THE ACTION OF THE VEHICLE TRAVELING OVER THE GRAVEL PAD IS NOT SUFFICIENT TO REMOVE THE MAJORITY OF THE MUD, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLE ENTERS A PUBLIC ROAD. A FEW BASIC DESIGN GUIDELINES FOR THE USE OF A STONE ENTRANCE AND/OR WASH RACKS ARE:

1. THE STONE LAYER MUST BE AT LEAST 6 INCHES THICK.
2. THE STONE SHALL CONFORM TO PROJECT SPECIFICATIONS FOR RIPRAP (CLASS 2 LB).
3. THE LENGTH OF THE PAD MUST BE A LEAST 75 FEET AND IT MUST EXTEND THE FULL WIDTH OF THE VEHICULAR INGRESS AND EGRESS.
4. A GEOTEXTILE FABRIC UNDERLINER IS REQUIRED. THE GEOTEXTILE FABRIC SHALL BE IN ACCORDANCE WITH PROJECT SPECIFICATIONS FOR GEOTEXTILE FABRIC (CLASS D).
5. IF A WASH RACK IS NECESSARY, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF-SITE.



PLAN



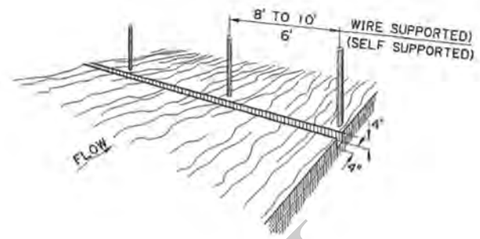
ELEVATION

TEMPORARY SLOPE DRAIN

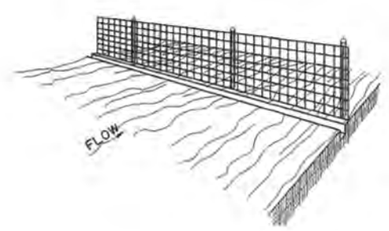
A TEMPORARY SLOPE DRAIN IS A DEVICE USED TO CARRY WATER FROM THE CONSTRUCTION WORK AREA TO A LOWER ELEVATION. SLOPE DRAINS MAY BE PLASTIC SHEET, METAL OR PLASTIC PIPE, STONE GUTTERS, FIBER MATS, OR CONCRETE OR ASPHALT DITCHES. A FEW BASIC DESIGN GUIDELINES FOR THE USE OF A TEMPORARY SLOPE DRAIN ARE:

1. THE SPACING OF THE SLOPE DRAINS VARIES WITH THE ROAD GRADE.
   FOR GRADES: 0.0% - 2.0% USE 500' SPACING
   2.1% - 5.0% USE 200' SPACING
   GREATER THAN 5.0% USE 100' SPACING
2. SLOPE DRAIN MATERIAL: SMOOTH PIPE - 8" MINIMUM - 3 MILS THICK MIN.
   CORRUGATED PIPE - 12" MINIMUM
   PLASTIC SHEETING - 4' WIDE MINIMUM
   PLASTIC SHEETING - 3 MILS THICK MIN.
3. PLASTIC SHEETING CAN BE STAKED DOWN OR WEIGHTED WITH ROCKS OR LOGS. THE AREA UNDER THE SHEETING SHOULD BE SHAPED TO PROVIDE AN ADEQUATE CHANNEL.
4. THE OUTLET END SHOULD BE PROTECTED OR HAVE SOME MEANS OF DISSIPATING ENERGY. THE FLOW SHOULD BE DIRECTED THROUGH A SEDIMENT TRAP SUCH AS A SILT FENCE, HAY BALES, OR OTHER APPROVED SEDIMENT CONTROL DEVICES.
5. TO INSURE PROPER OPERATION, TEMPORARY SLOPE DRAINS SHOULD BE INSPECTED REGULARLY AND AFTER EACH STORM, FOR CLOGGING OR DISPLACEMENT. EROSION AT THE OUTLET SHOULD BE CHECKED AND THE SILT TRAPS CLEANED IF NECESSARY.

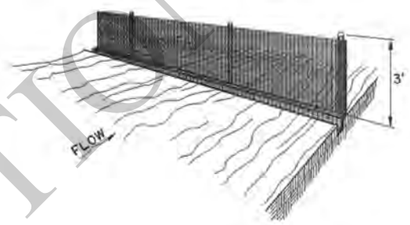
1. SET POSTS AND EXCAVATE A 4" X 4" TRENCH UPSLOPE ALONG THE LINE OF POSTS.



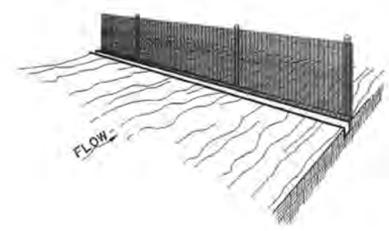
2. STAPLE WIRE FENCING TO THE POSTS.



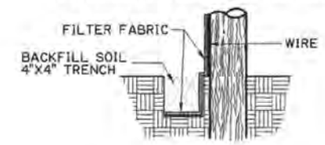
3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT EXCAVATED SOIL.



EXTENSION OF FABRIC INTO THE TRENCH.



CONSTRUCTION OF TEMPORARY SILT FENCING

(WIRE SUPPORTED SILT FENCE IS SHOWN. SELF SUPPORTED SILT FENCE WILL BE CONSTRUCTED ACCORDING TO MANUFACTURERS SPECIFICATIONS.)

NOTES:

SILT FENCING IS A TEMPORARY SEDIMENT BARRIER CONSISTING OF A FILTER FABRIC SUPPORTED BY POSTS AND STRETCHED ACROSS AN AREA TO INTERCEPT AND DETAIN SMALL AMOUNTS OF SEDIMENT. THE SILT FENCING SHALL BE IN ACCORDANCE WITH PROJECT SPECIFICATIONS FOR TEMPORARY EROSION CONTROL. A FEW BASIC GUIDELINES FOR THE USE OF SILT FENCING ARE:

1. USE WHERE EROSION WOULD OCCUR IN THE FORM OF SHEET AND RILL EROSION
2. USE WHERE THE MAXIMUM DRAINAGE AREA BEHIND THE SILT FENCE IS ¼ ACRE PER 100 FEET OF SILT FENCE LENGTH
3. USE WHERE THE MAXIMUM SLOPE LENGTH BEHIND THE BARRIER IS 100 FEET
4. USE THERE THE MAXIMUM GRADIENT BEHIND THE BARRIER IS 2:1
5. DO NOT USE SILT FENCES IN LIVE STREAMS OR IN DITCHES OR SWALES WHERE FLOWS EXCEED ONE CUBIC FOOT PER SECOND

FOR INFORMATIONAL USE

SHEET NUMBER			
PARISH			
FED.PROJECT			
STATE PROJECT			
DESIGNED / CHECKED	JCM	DETAILED / CHECKED	KAJ / JCM
DATE / SHEET	1-14-94	2 OF 2	

		MH	REMOVE SPECIFIC PAY ITEM NOS., GENERAL REVISIONS
		B1	REVISION DESCRIPTION
DATE:	10-1-08	DATE:	10-1-08
APPROVED BY: CHIEF ENGINEER			

TEMPORARY EROSION CONTROL DETAILS

STANDARD SLAB # EC-01

HYDRAULICS SECTION

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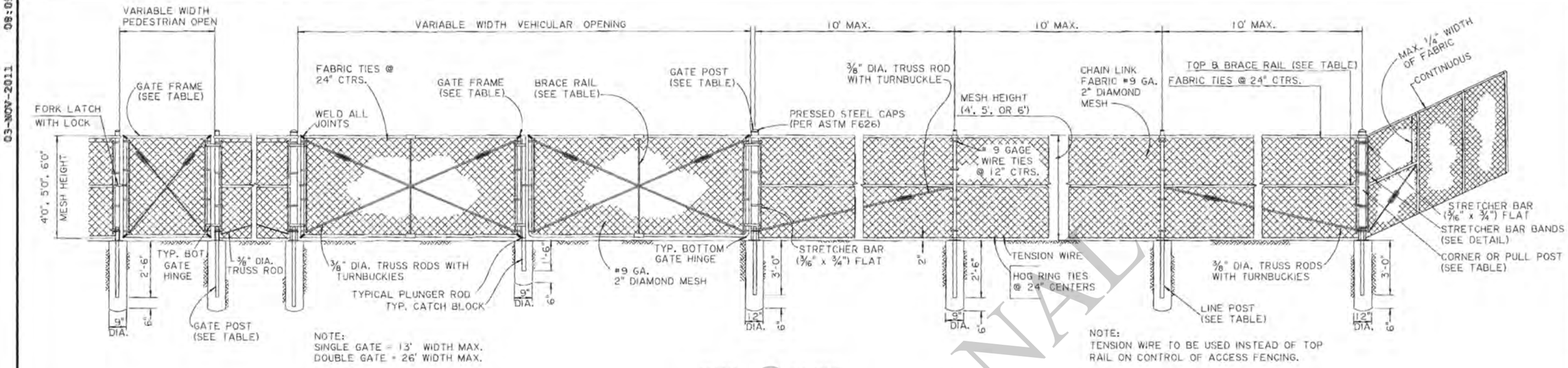
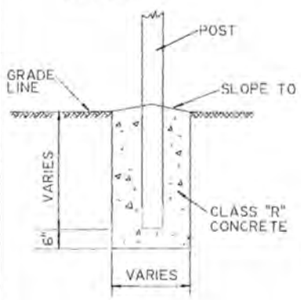


NOTE:
SINGLE GATE = 13' WIDTH MAX.
DOUBLE GATE = 26' WIDTH MAX.

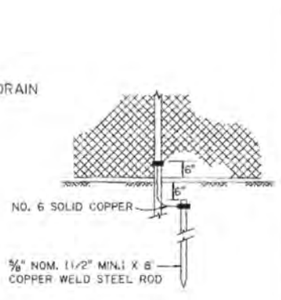
NOTE: TENSION WIRE TO BE USED INSTEAD OF TOP RAIL ON CONTROL OF ACCESS FENCING.

CHAIN LINK FENCE (4', 5', AND 6')

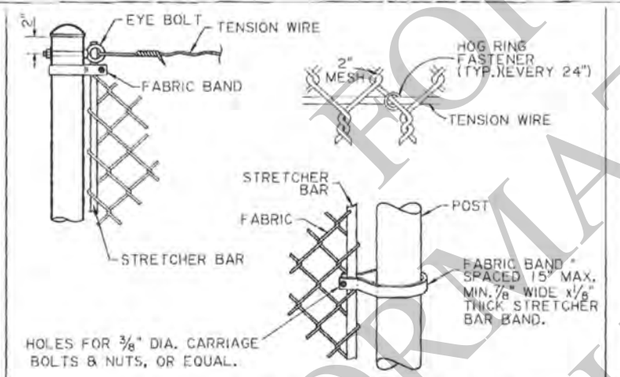
NOTE: ALL CONC. FOOTING SHALL BE CROWNED 2" ABOVE GRADE LINE.



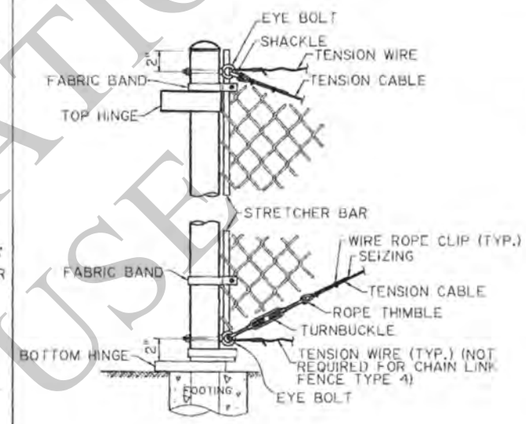
DETAIL OF POST FOOTING



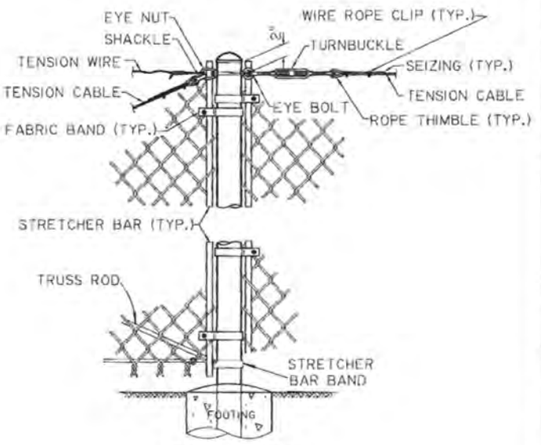
DETAIL OF GROUND WIRES FOR FENCES



FABRIC & TENSION WIRE DETAILS



GATE POST DETAIL



BRACE & TRUSS CONNECTION AT LINE POST

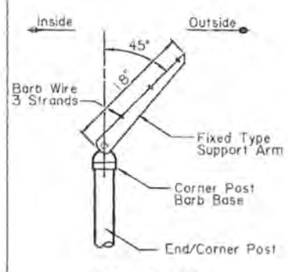
NOTES:

1. THE FENCE INSTALLATION AND DETAILS SHOWN ARE TYPICAL AND MAY VARY IN ACCORDANCE WITH DIFFERENT MANUFACTURERS, PROVIDED THEY MEET THE STANDARD SPECIFICATIONS.
2. TYPICAL INSTALLATION PLAN MAY VARY AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER. LOCATION OF GATES TO BE SHOWN ON PLANS.
3. GROUNDING ROD ASSEMBLIES ARE TO BE INSTALLED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
4. ALL BOLTS TO BE UPSET TO DISCOURAGE VANDALISM.
5. ALL CONNECTION METHODS TO BE APPROVED BY THE PROJECT ENGINEER.
6. LOCATION OF GATES TO BE SHOWN ON PLANS.
7. LATERAL FENCE TO BE SAME CONSTRUCTION AS FRONTAL FENCE.
8. CONTROL OF ACCESS FENCE SHALL BE 5 FT IN HEIGHT UNLESS OTHERWISE NOTED IN THE PLANS.
9. AT EACH LOCATION WHERE AN ELECTRIC TRANSMISSION, DISTRIBUTION, OR SECONDARY LINE CROSSES A FENCE, THE CONTRACTOR SHALL FURNISH AND INSTALL A GROUND CONFORMING TO ARTICLE 250 OF THE NATIONAL ELECTRIC CODE. A GROUND SHALL ALSO BE INSTALLED AT A MAXIMUM SPACING OF 500 FT. ALONG THE FENCE. GROUNDING WILL NOT BE PAID FOR SEPERATELY BUT SHALL BE INCLUDED IN THE COST OF THE FENCE.
10. SEE AASHTO M-181 FOR ADDITIONAL REQUIREMENTS.

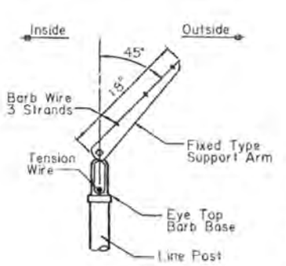
POST & RAIL TABLE

	STANDARD		ALTERNATES			
	OUTSIDE DIA. (INCHES)	LBS. (PER LIN.FT.)	DIMENSION (INCHES)	SECTION	LBS. (PER LIN.FT.)	ASTM F1043 GROUP
LINE POST	2 3/8	3.65	2.375	ROUND	3.12	
			2.25 X 1.70	H	3.26	III
			2.25 X 1.70	HEAVY C	2.78	II
			1.875 X 1.625	STD. C	2.40	II
BRACE RAIL	1 5/8	2.27	1.660	ROUND	1.84	
COR. POST	2 7/8	5.79	2.875	ROUND	4.64	
GATE POST	4.0	9.10	3.500	ROUND	5.71	IC
GATE FRAME	1 5/8	2.72	1.900	ROUND	2.28	

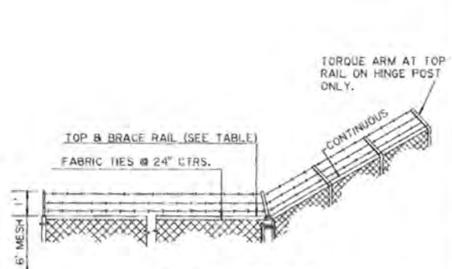
7 FT FENCE



CORNER POST SUPPORT ARM



LINE POST SUPPORT ARM



BARBED WIRE TOP

FOR INFORMATIONAL USE

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DESIGNED ROAD DESIGN | PARISH | FEDERAL PROJECT | STATE PROJECT
DETAILED ROAD DESIGN | 01-07-11
CHECKED | DATE | 11-3-11 | SHEET 1 OF 1
BY | REVISION DESCRIPTION | DATE | APPROVED BY CHIEF ENGINEER

CHAIN LINK FENCE & GATES
4 FT., 5 FT., 6 FT. & 7 FT.
STANDARD PLAN: FN-01

ROAD DESIGN

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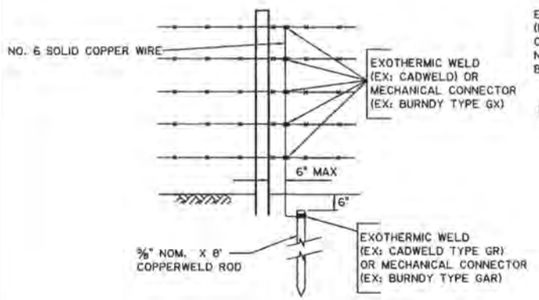
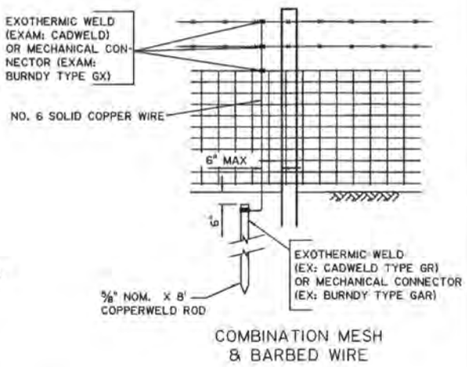
NOTE: GROUNDING DEVICES ARE TO BE INSTALLED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL CONNECTION METHODS TO BE APPROVED BY PROJECT ENGINEER.



5-STRAND BARBED WIRE



COMBINATION MESH & BARBED WIRE

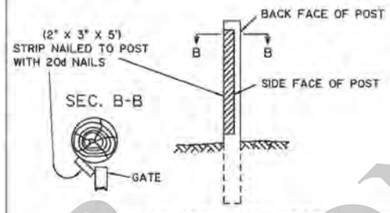
GROUNDING DETAILS

ALL POST DIAMETERS ARE MEAN DIAM. AT SMALL END

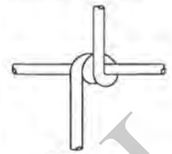
TREATED WOODEN LINE POST
(NOMINAL 4" DIA.)

DETAIL OF STIFF STAY KNOT JOINT
NOMINAL DIAMETER OF ZINC-COATED WIRE, 0.099 in. VARIATION ± 0.004 IN. (DESIGN NO. 939-6-12½")

NOTE: GATES ARE TO OPEN AWAY FROM HIGHWAY UNLESS OTHERWISE DIRECTED BY ENGINEER.



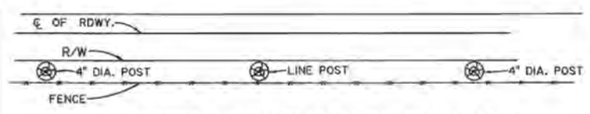
DETAIL AT STOP FOR WOODEN GATE POST



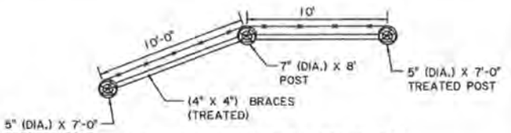
DETAIL OF HINGED JOINT
NOMINAL DIAMETER OF ZINC-COATED WIRE, 0.099 in. VARIATION ± 0.004 IN. (DESIGN NO. 939-6-12½")

SUGGESTED TYPE SCREW HOOK HINGE FOR WOODEN POST
¾" X 7½" SCREW HOOK HINGE

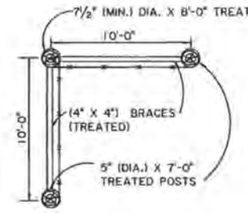
NOTE: LINE POST TO BE LOCATED OUTSIDE OF R/W LINE. WIRE TO BE PLACED ON OUTSIDE OF R/W, UNLESS OTHERWISE DIRECTED BY ENGINEER OR REQUESTED BY PROPERTY OWNER AND APPROVED BY ENGINEER.
FOR CONTROL OF ACCESS, LINE POST TO BE LOCATED WITHIN HIGHWAY R/W.



DETAIL SHOWING LOCATION OF FENCE IN RELATION TO THE R/W LINE

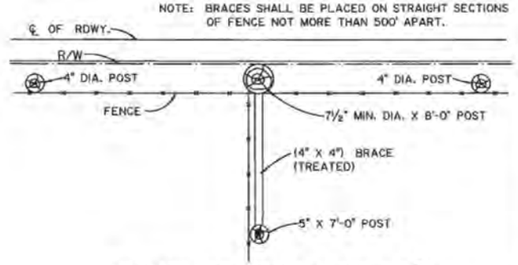


SHOWING BRACES AT OBLIQUE* ANGLE CORNERS



SHOWING BRACES AT RIGHT ANGLE CORNERS*

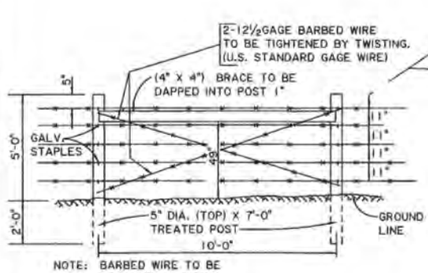
NOTE: BRACES SHALL BE PLACED ON STRAIGHT SECTIONS OF FENCE NOT MORE THAN 500' APART.



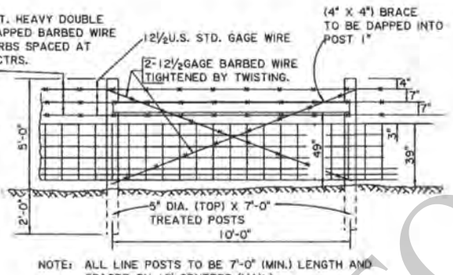
INTERSECTING BRACES ALONG R/W* TO BE INSTALLED IN FENCES

ALL INTERSECTING FENCES TO BE SECURELY ATTACHED TO FRONTAGE FENCE AS SHOWN HERE.

1¾" GALV. STAPLES TO BE USED IN WOODEN POSTS. GALV. STAPLES TO BE PLACED ON TOP AND BOTTOM STRANDS AND EVERY OTHER WIRE BETWEEN, ALTERNATING ON SUCCESSIVE POSTS.



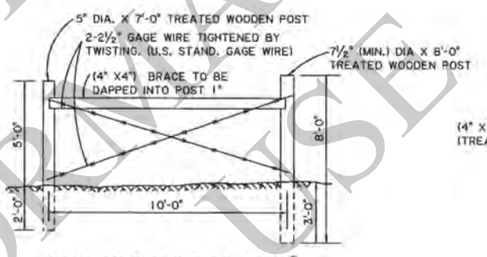
NOTE: BARBED WIRE TO BE STAPLED AT EVERY POST.



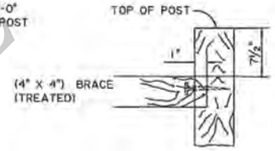
NOTE: ALL LINE POSTS TO BE 7'-0" (MIN.) LENGTH AND SPACED ON 10' CENTERS (MAX.)

SHOWING BRACES IN STRAIGHT LINE OF FENCE*

NOTE: METAL LINE POSTS MAY BE USED IN CONJUNCTION WITH WOODEN CORNER GATE AND BRACE POSTS, PROVIDED THAT METAL AND WOODEN POSTS ARE NOT MIXED BETWEEN CORNER POSTS.



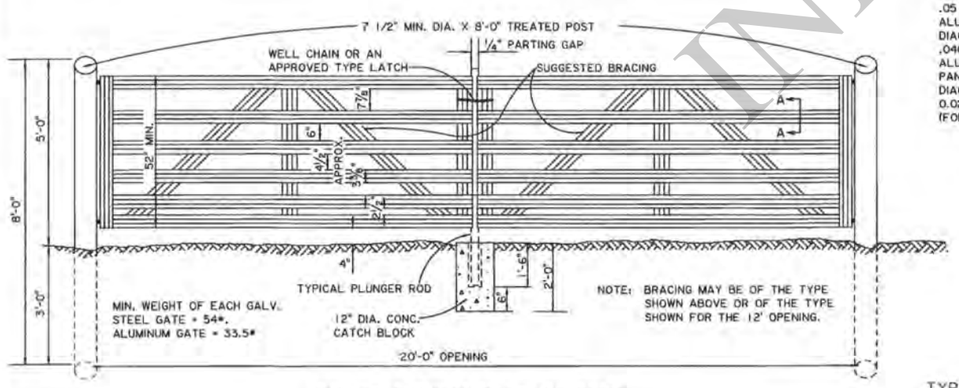
SHOWING BRACES AT GATE* (BACK VIEW)
(FENCE NOT SHOWN)



DETAIL OF BRACE DAPPED INTO POST

*NOTE: FOR ALTERNATE METHOD OF BRACING, SEE SHT. 2 OF THIS STANDARD (FN-02).

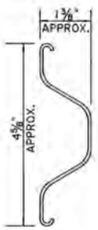
BRACING DETAILS



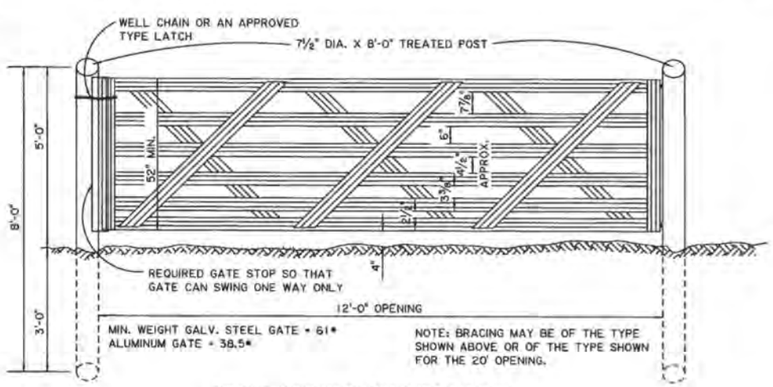
NOTE: BRACING MAY BE OF THE TYPE SHOWN ABOVE OR OF THE TYPE SHOWN FOR THE 12' OPENING.

DOUBLE SWINGING DRIVEWAY GATE (ALUMINUM OR GALVANIZED STEEL)
(SUGGESTED TYPE)

HORIZONTAL PANELS TO BE .051" THICK (MIN.) (FOR ALUM. GATE). VERTICAL AND DIAGONAL BRACES TO BE .040" THICK (MIN.) (FOR ALUM. GATE). HORIZONTAL PANELS, VERTICAL AND DIAGONAL BRACE TO BE 0.025" THICK (MIN.) (FOR GALV. GATE).

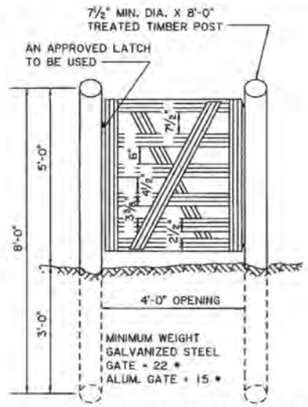


TYPICAL SECTION THRU PANEL SECTION A-A



NOTE: BRACING MAY BE OF THE TYPE SHOWN ABOVE OR OF THE TYPE SHOWN FOR THE 20' OPENING.

SINGLE SWINGING DRIVEWAY GATE (ALUMINUM OR GALVANIZED STEEL)
(SUGGESTED TYPE)



SINGLE SWINGING WALKGATE (ALUMINUM OR GALVANIZED STEEL)
(SUGGESTED TYPE)

FN02-1.DGN

IP_PWP:dms10582\FN02-1.DGN

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH:

DESIGNED ROAD DESIGN
CHECKED CW

DETAILED ROAD DESIGN
CHECKED CW

FEDERAL PROJECT

STATE PROJECT 01-24-11

DATE

SHEET 1 OF 2

REVISION DESCRIPTION BY DATE

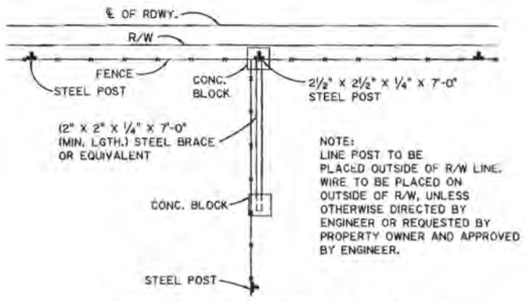
APPROVED BY CHIEF ENGINEER DATE 11/3/11

FIELD AND LINE TYPE FENCE (WOOD POST)

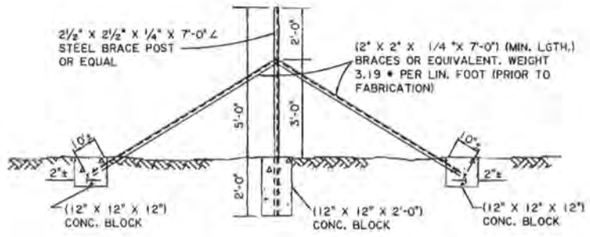
ROAD DESIGN STANDARD PLAN: FN-02

ROAD DESIGN

03-NOV-2011 08:1



INTERSECTING BRACES ALONG R/W TO BE INSTALLED IN FENCES *



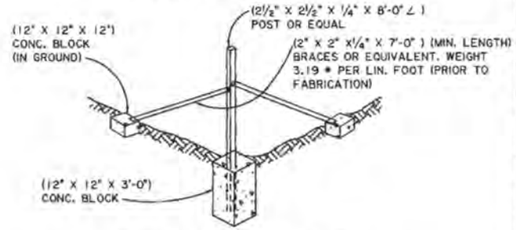
METHOD OF BRACING IN STRAIGHT LINE FENCE (FENCE NOT SHOWN) *

NOTE: LINE POST TO BE PLACED OUTSIDE OF R/W LINE.

FOR CONTROL OF ACCESS, LINE POST TO BE LOCATED WITHIN HIGHWAY R/W.

DETAIL SHOWING LOCATION OF FENCE IN RELATION TO THE R/W LINE

NOTE: FOR DETAILS OF GROUNDING SEE SHEET 1.
* FOR ALTERNATE METHOD OF BRACING SEE SHEET 1 OF THIS STANDARD.

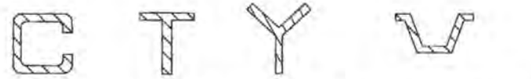


STEEL POST AND BRACES
METHOD OF BRACING CORNERS
OBLIQUE & INTERSECTING FENCES*

NOMINAL WEIGHTS: CORNER END AND BRACING POSTS 4.10 * PER LIN. FOOT (PRIOR TO FABRICATION).

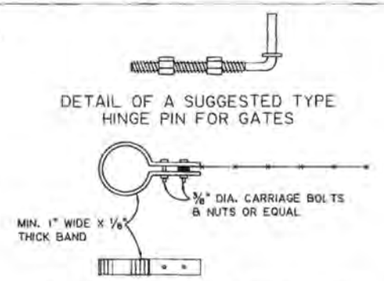
NOTE: WOODEN POSTS MAY BE USED IN CONJUNCTION WITH STEEL CORNER AND GATE POSTS, PROVIDED THAT WOODEN AND METAL POSTS ARE NOT MIXED BETWEEN CORNER POSTS.

* SEE ASTM A702 FOR DIMENSIONS AND DETAILS.



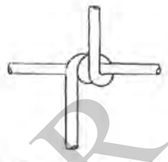
2.25" X 1.70"
2.73 LBS PER FOOT
MIN. YIELD ST. 45 KSI.

SUGGESTED TYPES OF STEEL FENCE POSTS



DETAIL OF A SUGGESTED TYPE HINGE PIN FOR GATES

DETAIL OF SUGGESTED TYPE BAND
NOTE: FOR HOLDING BARBED WIRE AT GATE POSTS.



DETAIL OF HINGED JOINT

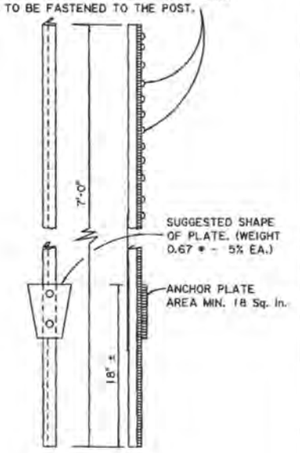
NOMINAL DIA. OF ZINC-COATED WIRE, 0.099 in. (DESIGN NO. 939-6-12 ½)

DETAIL OF STIFF STAY KNOT JOINT

NOMINAL DIA. OF ZINC-COATED WIRE, 0.099 in. (DESIGN NO. 939-6-12 ½)

LINE POST SHALL BE DRIVEN. TOP TO BE PROTECTED TO PREVENT BURRING. NOMINAL WEIGHT 1.33 * PER LINEAR FOOT (PRIOR TO FABRICATION).

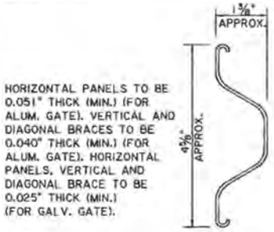
SLOTS, NOTCHES OR APPROVED DEVICE FOR FASTENING WIRE TO POST. A MIN. OF 4 HORIZONTAL WIRES TO BE FASTENED TO THE POST FOR THE MESH WIRE. EACH BARB WIRE TO BE FASTENED TO THE POST.



TYPICAL LINE POST

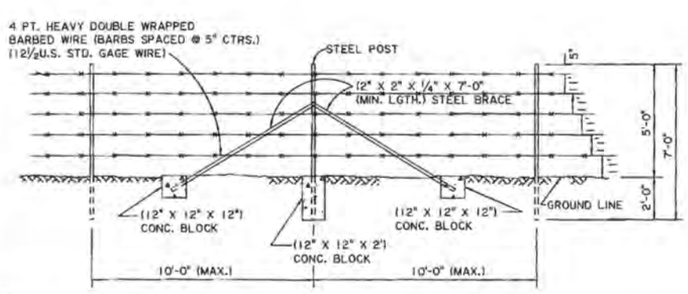
GENERAL NOTES:
GATES ARE TO OPEN AWAY FROM HIGHWAY UNLESS OTHERWISE DIRECTED BY ENGINEER.
ALL INTERSECTING FENCES TO BE SECURELY ATTACHED TO THE FRONTAGE FENCE AS SHOWN.
ALL STEEL POSTS, ANCHOR PLATES, BRACES AND HARDWARE SHALL BE GALVANIZED. (ASTM A 123)

BRACES SHALL BE PLACED ON STRAIGHT SECTIONS OF FENCE NOT MORE THAN 500' APART.
ALL LINE POSTS TO BE 7'-0" (MIN.) LENGTH AND SPACED ON 10' CENTERS (MAX.)

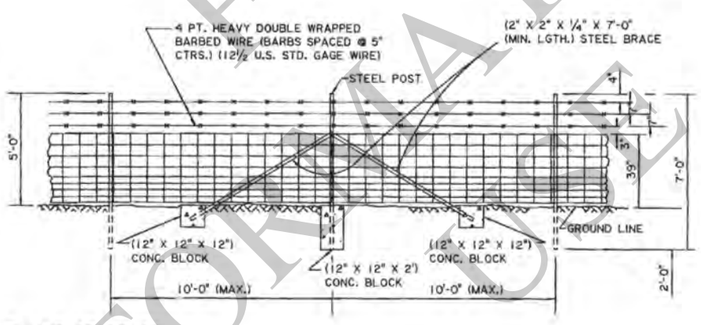


HORIZONTAL PANELS TO BE 0.051" THICK (MIN.) (FOR ALUM. GATE). VERTICAL AND DIAGONAL BRACES TO BE 0.040" THICK (MIN.) (FOR ALUM. GATE). HORIZONTAL PANELS, VERTICAL AND DIAGONAL BRACE TO BE 0.025" THICK (MIN.) (FOR GALV. GATE).

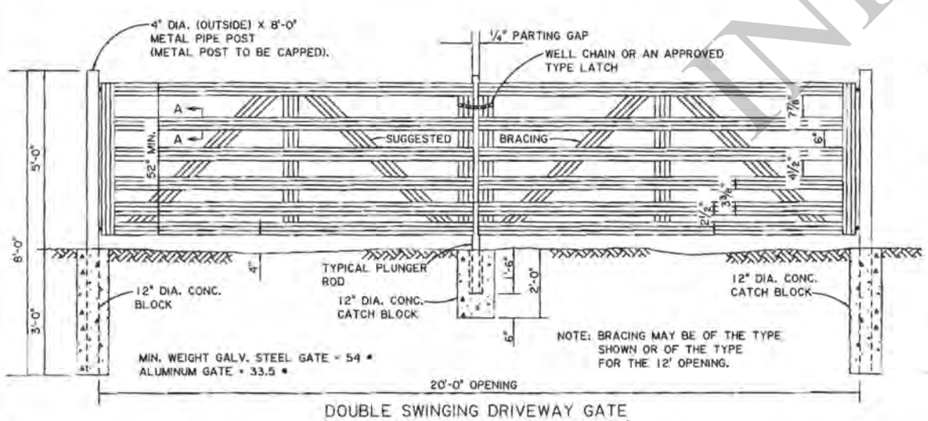
TYPICAL SECTION THRU PANEL A-A



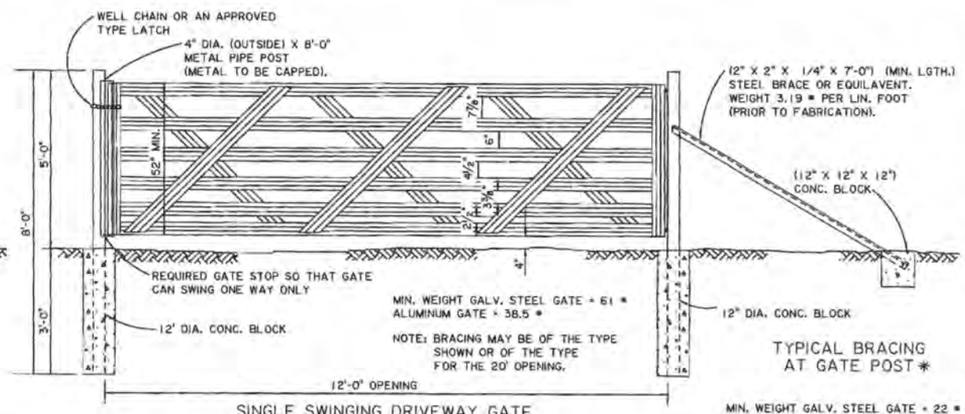
NOTE:
BARBED WIRE TO BE FASTENED AT EVERY POST.



SHOWING BRACE IN STRAIGHT LINE OF FENCE



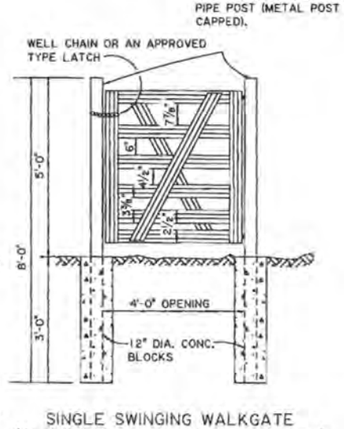
DOUBLE SWINGING DRIVEWAY GATE
(ALUMINUM OR GALVANIZED STEEL)
(SUGGESTED TYPE)



SINGLE SWINGING DRIVEWAY GATE
(ALUMINUM OR GALVANIZED STEEL)

TYPICAL BRACING AT GATE POST *

MIN. WEIGHT GALV. STEEL GATE = 22 *
ALUMINUM GATE = 15 *



SINGLE SWINGING WALKGATE
(ALUMINUM OR GALVANIZED STEEL)
(SUGGESTED TYPE)

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | FEDERAL PROJECT | STATE PROJECT

DESIGNED ROAD DESIGN
CHECKED CW
DETAILED ROAD DESIGN
CHECKED CW
DATE 01-24-11
SHEET 2 OF 2

REVISION DESCRIPTION | BY | DATE

APPROVED BY CHIEF ENGINEER: Richard Z. Savoie DATE: 11 3 11

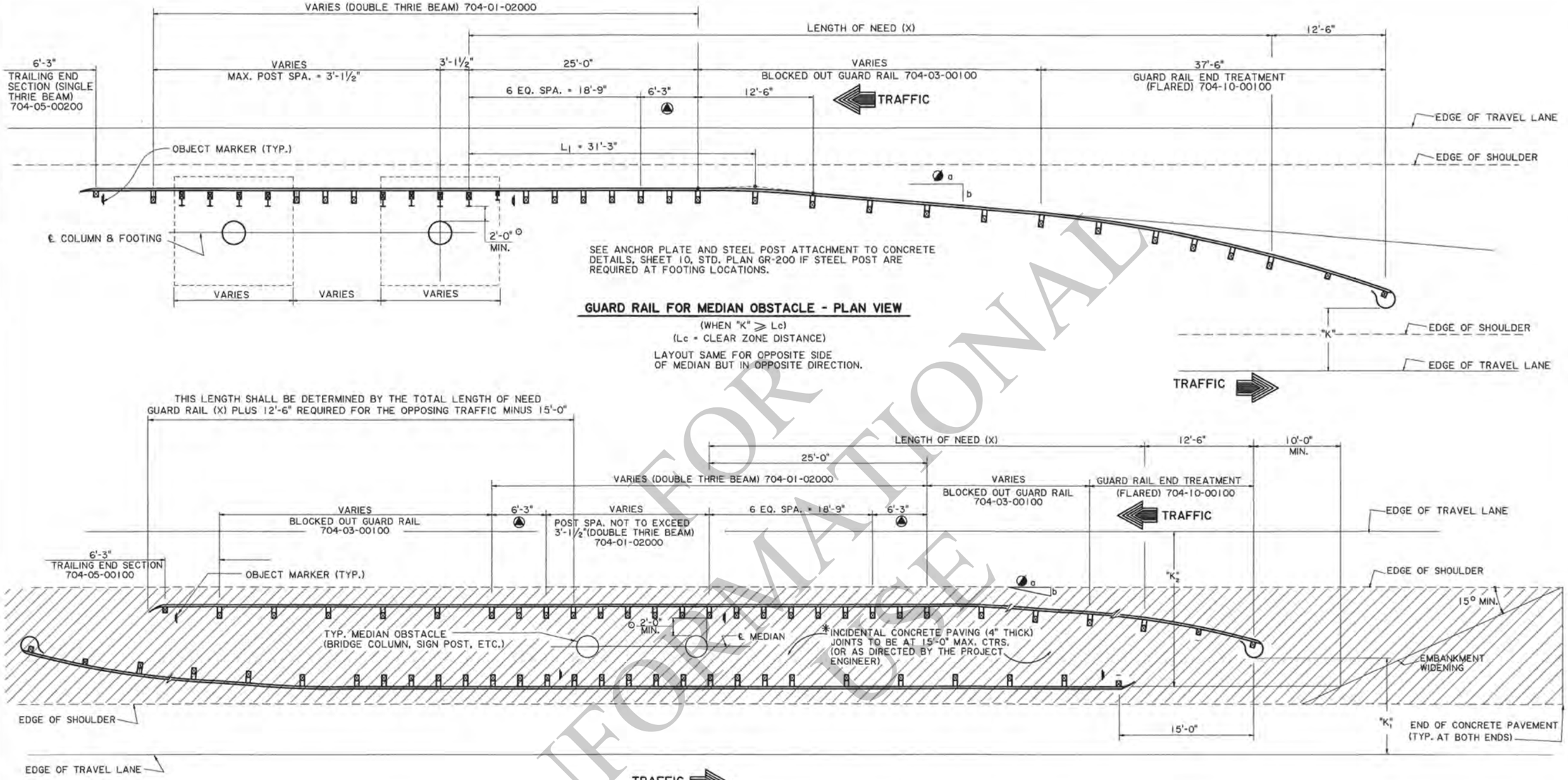
FIELD AND LINE TYPE FENCE (STEEL POST)

ROAD DESIGN STANDARD PLAN: FN-02

ROAD DESIGN

IP_PWP:dms10582\FN02-2.DGN
FN02-2.DGN

08:55
1/24/2019



GUARD RAIL FOR MEDIAN OBSTACLE - PLAN VIEW

(WHEN "K" ⩾ Lc)
(Lc = CLEAR ZONE DISTANCE)

LAYOUT SAME FOR OPPOSITE SIDE OF MEDIAN BUT IN OPPOSITE DIRECTION.

GUARD RAIL FOR MEDIAN OBSTACLE - PLAN VIEW

(ONLY WHEN "K1" < Lc AND "K2" > Lc)
SEE SHT. 2 OF 8 FOR DESIRABLE LAYOUT

NOTES:

THIS STANDARD SHALL BE USED IN CONJUNCTION WITH STANDARD PLAN GR-200

DESIRABLE LOCATION FOR GUARD RAIL: GUARD RAIL SHALL BE PLACED AS FAR AWAY FROM TRAFFIC AS POSSIBLE BUT NO CLOSER THAN 2'-0" FROM THE OBSTACLE AS SHOWN.

FOR CLEARANCES OF MORE THAN 5'-0", ITEM 704-01-02000, GUARD RAIL (DOUBLE THRIE BEAM) (3'-1½" POST SPA.) MAY BE REPLACED BY ITEM 704-01-01020 WHICH IS A SINGLE THRIE BEAM WITH 6'-3" POST SPACING.

FOR CLEAR ZONE DISTANCE (Lc) SEE TABLE 1, SHEET 2, STD. PLAN GR-200. "K", "K1" AND "K2" ARE DISTANCES MEASURED FROM EDGE OF TRAVEL LANE TO BACK FACE OF GUARD RAIL.

* INCIDENTAL CONCRETE PAVING (4" THICK) TO BE PAID FOR UNDER ITEM 706-03-00100, PER SQ. YARD. THE INCIDENTAL CONCRETE WILL BE USED ON THE PROJECT ONLY IF A QUANTITY & PAY ITEM ARE SHOWN ON THE SUMMARY OF ESTIMATED QUANTITIES. SEE SHEET 10, GR-200 STD. PLAN FOR REQUIRED POST PAVING DETAILS.

▲ 6'-3" W BEAM/THRIE BEAM TRANSITION SECTION.

LENGTH OF NEED (X) TO BEGIN AT FIRST POST PRIOR TO OBSTACLE AS SHOWN.

⊙ DIMENSION MEASURED FROM BACK FACE OF GUARD RAIL POST TO FRONT FACE OF OBSTACLE.

◪ FLARE RATE SHALL BE IN ACCORDANCE WITH DESIGN SPEED AS SHOWN ON SHEET 2 STD. PLAN GR-200.

FOR INFORMATIONAL PURPOSES ONLY

SHEET NUMBER	PARISH	FEDERAL PROJECT	STATE PROJECT

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
	G. GRASS / P. FOSSIER	OCT. 2008 / 1 OF 8

DATE	REVISION DESCRIPTION	BY
2-15-17	UPDATED FOR 2016 SPECIFICATIONS	K.M.B.

APPROVED BY CHIEF ENGINEER: Jamie P. Williams DATE: 6-13-2017

STATE OF LOUISIANA
PAUL B. FOSSIER, JR
License No. 21009
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
Paul B. Fossier
5-24-17

HIGHWAY GUARD RAILS
MEDIAN OBSTACLE
2' MIN. CLEARANCE

GR-201

DOTD DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

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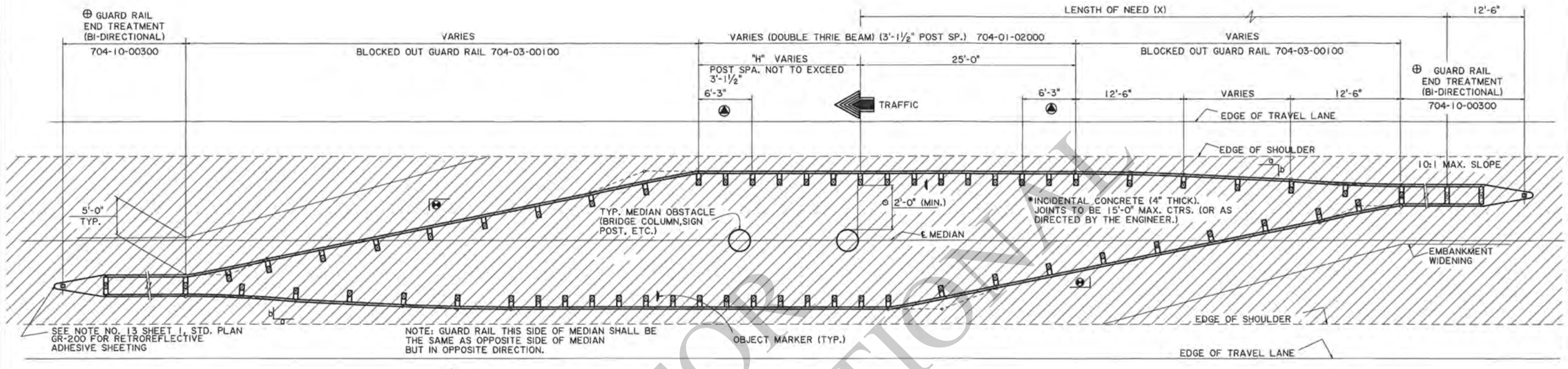
1/24/2019



GUARD RAIL FOR MEDIAN OBSTACLE (DESIRABLE) - PLAN VIEW

(WHEN "K" < Lc, SEE NOTES AND DETAILS SHT. 1 OF 8)

NOTES:

THIS STANDARD PLAN SHALL BE USED IN CONJUNCTION WITH STANDARD PLAN GR-200.

DESIRABLE LOCATION FOR GUARD RAIL: GUARD RAIL SHALL BE PLACED AS FAR AWAY FROM TRAFFIC AS POSSIBLE BUT NO CLOSER THAN 2'-0" FROM THE OBSTACLE SHOWN.

FOR CLEARANCES OF MORE THAN 5'-0", ITEM 704-01-02000, GUARD RAIL (DOUBLE THRIE BEAM) (3'-1½" POST SPA.) MAY BE REPLACED BY ITEM 704-01-01020 WHICH IS SINGLE THRIE BEAM WITH 6'-3" POST SPACING.

FOR CLEAR ZONE DISTANCE (Lc), SEE TABLE 1, SHEET 2, STD. PLAN GR-200

* INCIDENTAL CONCRETE PAVING (4" THICK) IS TO BE PAID FOR UNDER ITEM 706-03-00100 PER SQ. YARD. THE INCIDENTAL CONCRETE WILL BE USED ON THE PROJECT ONLY IF A QUANTITY & PAY ITEM ARE SHOWN ON THE SUMMARY OF ESTIMATED QUANTITIES. SEE SHT. 10, STD. PLAN GR-200 FOR REQUIRED POST PAVING DETAILS.

SEE NOTE 13, SHEET 1, STD. PLAN GR-200 FOR INFORMATION ON RETROREFLECTIVE ADHESIVE SHEETING FOR GUARD RAIL SYSTEMS.

"H" IS THE SHORTEST MULTIPLE OF 6'-3" WHICH EXCEEDS THE HAZARD LENGTH.

⊖ GUARD RAIL SHALL BE FLARED TO MEET THE FRONT THRIE BEAM GUARDRAIL.

⊕ SEE STANDARD ITEM, 704-10-00300 FOR GUARD RAIL END TREATMENT (BI-DIRECTIONAL).

▲ 6'-3" W BEAM/THRIE BEAM TRANSITION SECTION.

⊙ DIMENSION MEASURED FROM BACK FACE OF GUARD RAIL POST TO FRONT FACE OF OBSTACLE.

FOR INFORMATIONAL USE

STATE OF LOUISIANA
PAUL B. FOSSIER, JR
License No. 21029
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5-31-17

SHEET NUMBER

PARISH	FEDERAL PROJECT	STATE PROJECT

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
	G. GRASS / P. FOSSIER	OCT-2008 / 2 OF 8

BY	DATE
K.M.B.	6-13-2017

DATE	REVISION DESCRIPTION
2-15-17	UPDATED FOR 2016 SPECIFICATIONS

APPROVED BY CHIEF ENGINEER: Jamie P. Williams

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

HIGHWAY GUARD RAILS
MEDIAN OBSTACLE
2' MIN. CLEARANCE
(DESIRABLE)

GR-201

BRIDGE AND STRUCTURAL DESIGN

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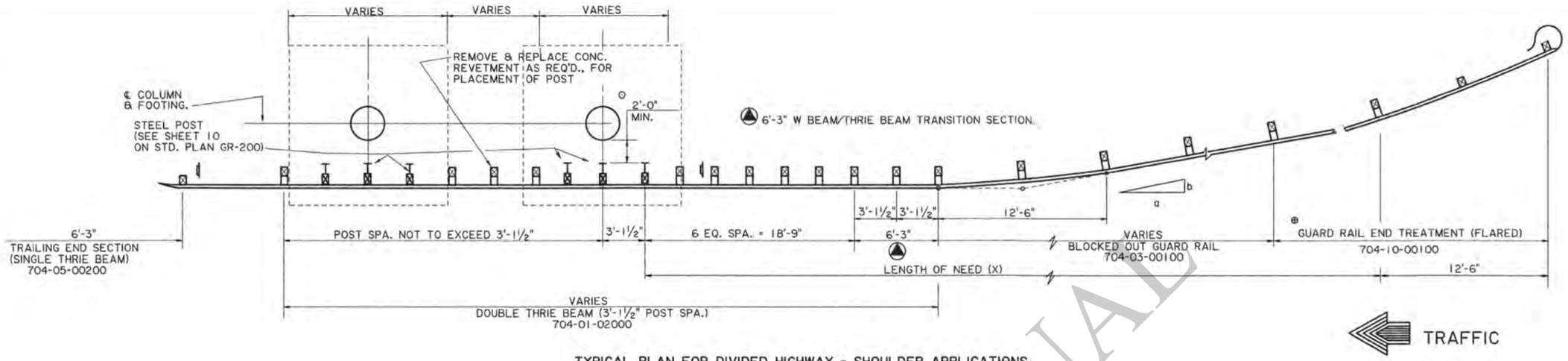
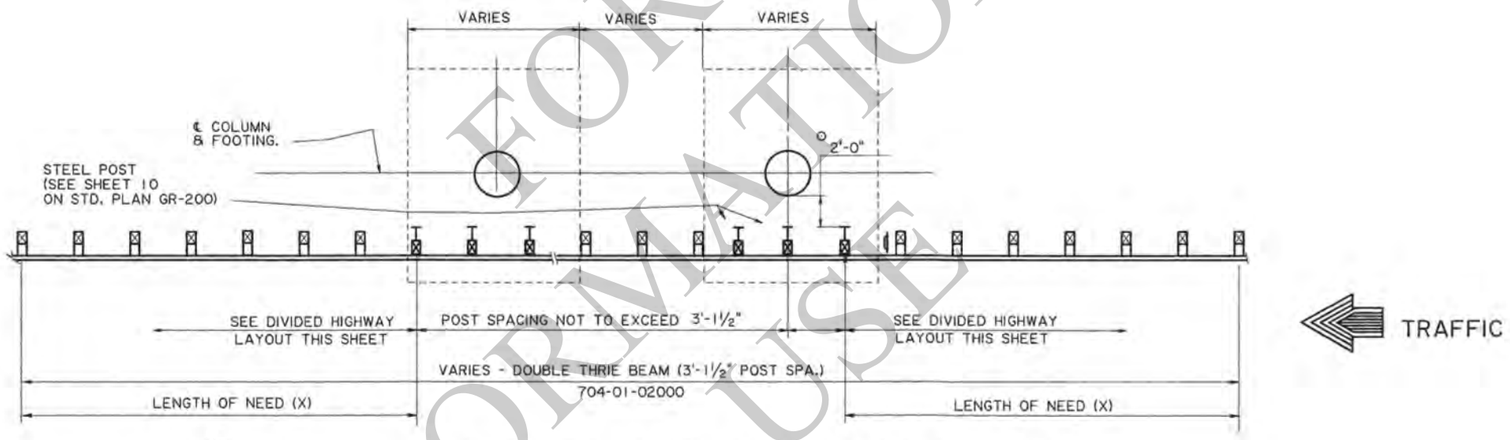
1/24/2019



TYPICAL PLAN FOR DIVIDED HIGHWAY - SHOULDER APPLICATIONS

LAYOUT SAME FOR OPPOSITE SIDE OF HIGHWAY
BUT IN OPPOSITE DIRECTION.



TYPICAL PLAN FOR UNDIVIDED HIGHWAY - SHOULDER APPLICATIONS

LAYOUT SAME FOR OPPOSITE SIDE OF HIGHWAY
BUT IN OPPOSITE DIRECTION.

NOTES:

THIS STANDARD PLAN SHALL BE USED IN CONJUCTION WITH STANDARD PLAN GR-200.

IDEAL LOCATION FOR GUARD RAIL: GUARD RAIL SHALL BE PLACE AS FAR AWAY FROM TRAFFIC AS POSSIBLE BUT NO CLOSER THAN 2'-0" FROM THE OBSTACLE AS SHOWN.

FOR CLEARANCES OF MORE THAN 5'-0", ITEMS 704-01-02000, DOUBLE THRIE BEAM (3'-1½" POST SPA.) & 704-01-01000, SINGLE THRIE BEAM (3'-1½" POST SPA.) MAY BE REPLACED BY ITEM 704-01-01020 WHICH IS A SINGLE THRIE BEAM WITH 6'-3" POST SPACING.

FOR CLEAR ZONE DISTANCE (Lc) SEE TABLE 1, SHEET 2, STD. PLAN GR-200

SEE ANCHOR PLATE AND STEEL POST ATTACHMENT TO CONCRETE DETAILS, SHEET 10, STD. PLAN GR-200 IF STEEL POST ARE REQUIRED AT FOOTING LOCATIONS.

⊙ DIMENSION MEASURED FROM BACK FACE OF GUARD RAIL POST TO FRONT FACE OF OBSTACLE.

⊕ SEE NOTE 11, SHT. 1, GR-200 STD. PLAN

LENGTH OF NEED (X) TO BEGIN AT FIRST POST PRIOR TO THE OBSTACLE AS SHOWN.

FOR EMBANKMENT WIDENING, SEE SHT. 1 STD. PLAN GR-200.

STATE OF LOUISIANA
PAUL B. FOSSIER, JR
License No. 21028
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5-3-17

FOR INFORMATIONAL USE

SHEET NUMBER	PARISH	FEDERAL PROJECT	STATE PROJECT

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
	G. GRASS / P. FOSSIER	OCT. 2008 / 3 OF 8

BY	DATE	REVISION DESCRIPTION
K.M.B.	2-15-17	UPDATED FOR 2016 SPECIFICATIONS

APPROVED BY CHIEF ENGINEER: Jacie P. Williams DATE: 6-13-2017

HIGHWAY GUARD RAILS
DIVIDED AND UNDIVIDED
HIGHWAY SHOULDER APPLICATION
(2' MIN. CLEARANCE)

GR-201

BRIDGE AND STRUCTURAL DESIGN

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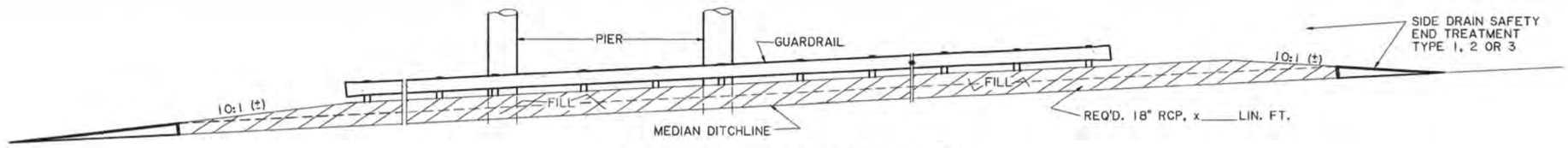
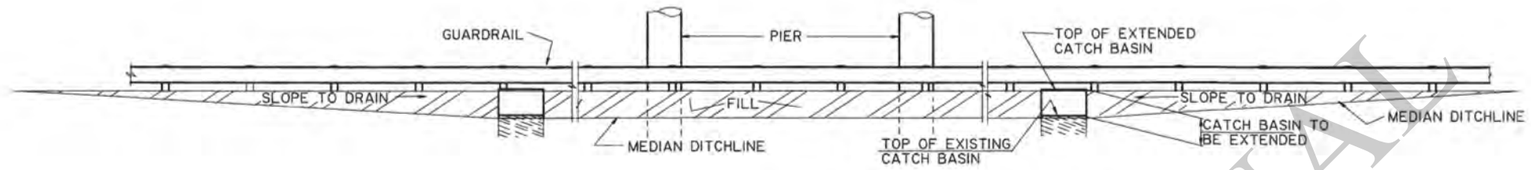
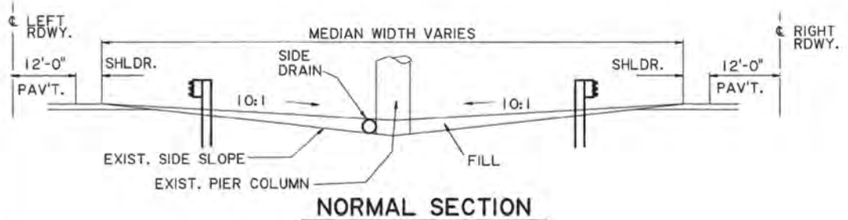


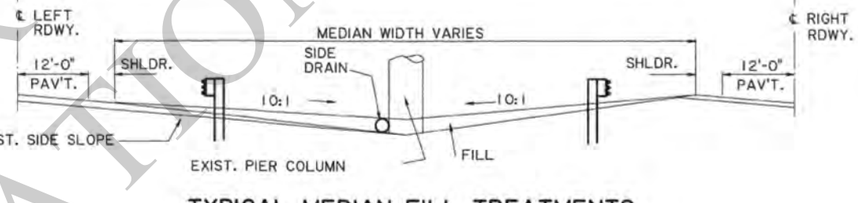
MEDIAN BANK FILL WITH DRAIN FLOW PIPE



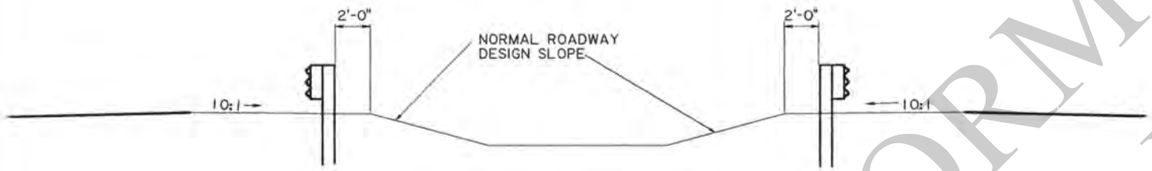
MEDIAN BANK FILL WITH CATCH BASIN



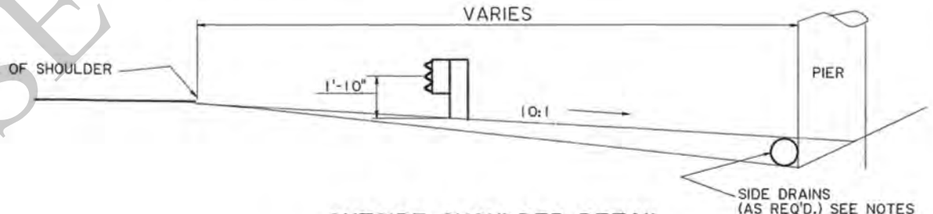
NORMAL SECTION



TYPICAL MEDIAN FILL TREATMENTS



ALTERNATE MEDIAN TREATMENT



OUTSIDE SHOULDER DETAIL

NOTES

UNDER NO CIRCUMSTANCES SHALL THE MEDIAN OR SIDE SLOPE FILL INTERFERE WITH THE DRAINAGE. IF A CATCH BASIN FALLS WITHIN THE AREA OF NEW FILL, IT SHALL BE EXTENDED TO TOP OF THE NEW FILL TO ALLOW PROPER DRAINAGE. IF NECESSARY, PIPES MAY BE USED TO ACCOMMODATE SUBSURFACE DRAINAGE.

SLOPED CATCH BASIN, EXTENDING CATCH BASIN, SIDE DRAIN PIPE AND FILL TO BE PAID FOR UNDER THEIR RESPECTIVE PAY ITEMS.

THIS STANDARD PLAN SHALL BE USED IN CONJUNCTION WITH STANDARD PLAN GR-200.

STATE OF LOUISIANA
PAUL B. FOSSIER, JR
License No. 21028
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5-31-17

FOR INFORMATIONAL USE

08:56
1/24/2019

IP_PWP:d0695358\GR-201-04.dgn

SHEET NUMBER

PARISH	FEDERAL PROJECT	STATE PROJECT

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
	G. GRASS / P. FOSSIER	OCT. 2008 / 4 OF 8

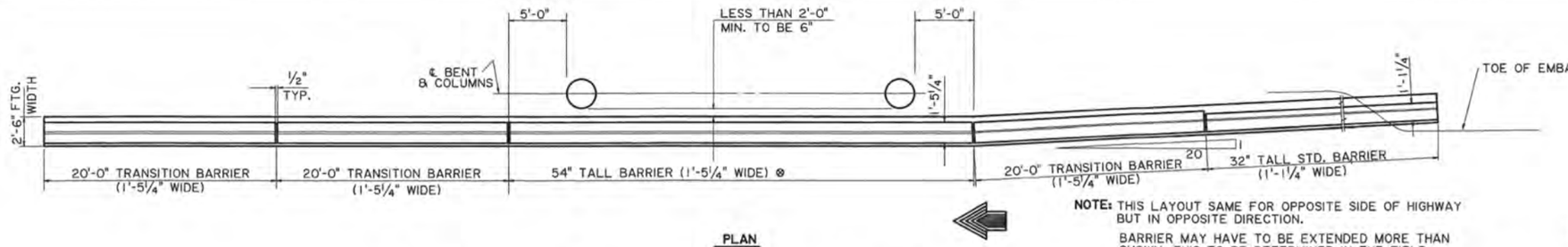
NO.	REVISION DESCRIPTION	BY	DATE
	UPDATED FOR 2016 SPECIFICATIONS	K.M.B.	6-13-2017

2-15-17 DATE
APPROVED BY CHIEF ENGINEER: Jamie P Williams

HIGHWAY GUARD RAILS
DRAINAGE DETAILS

GR-201

BRIDGE AND STRUCTURAL DESIGN

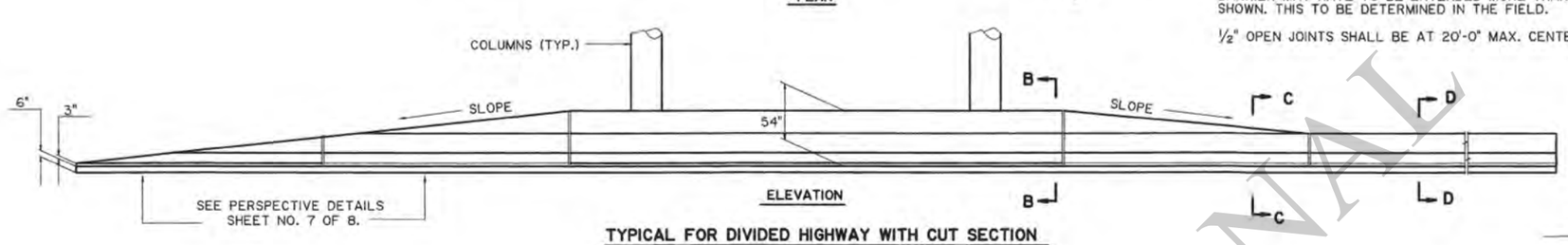


PLAN

NOTE: THIS LAYOUT SAME FOR OPPOSITE SIDE OF HIGHWAY BUT IN OPPOSITE DIRECTION.

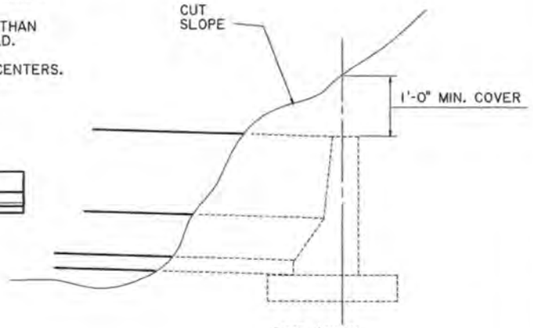
BARRIER MAY HAVE TO BE EXTENDED MORE THAN SHOWN. THIS TO BE DETERMINED IN THE FIELD.

1/2" OPEN JOINTS SHALL BE AT 20'-0" MAX. CENTERS.

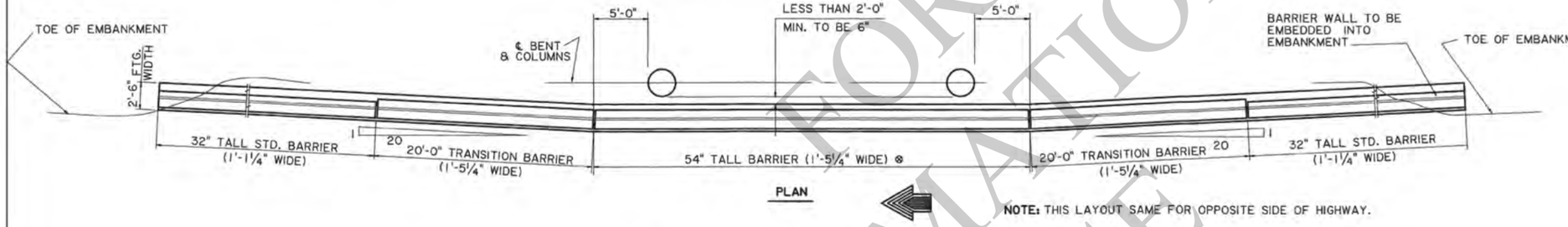


ELEVATION

TYPICAL FOR DIVIDED HIGHWAY WITH CUT SECTION

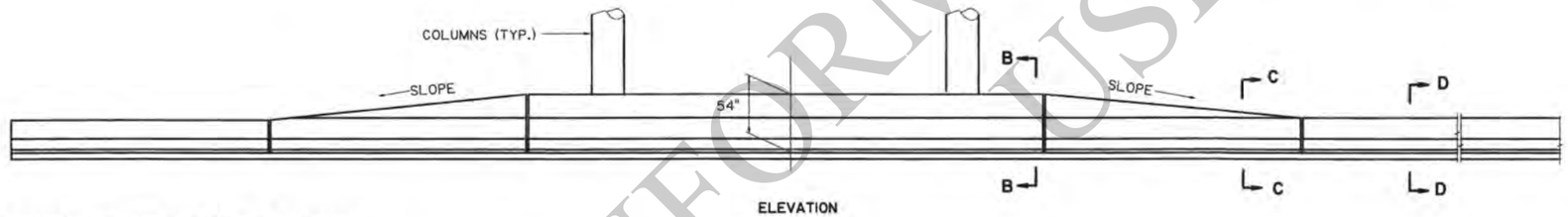


END VIEW
BURIED END OF BARRIER



PLAN

NOTE: THIS LAYOUT SAME FOR OPPOSITE SIDE OF HIGHWAY.



ELEVATION

TYPICAL FOR UNDIVIDED HIGHWAY WITH CUT SECTION

NOTES:

PIER PROTECTION SYSTEM, COMPLETE IN PLACE AND ACCEPTED, WILL BE PAID FOR AT THE CONTRACT PRICE PER EACH UNDER ITEM 810-06-00100, CONCRETE PIER PROTECTION SYSTEM (VEHICLE).

THIS ITEM CONSIST OF FURNISHING AND CONSTRUCTING PIER PROTECTION SYSTEM AT THE LOCATIONS SHOWN ON THE PLANS, IN ACCORDANCE WITH PLAN DETAILS, STANDARD SPECIFICATIONS, AS AMENDED BY THE PROJECT SPECIFICATIONS AND THE FOLLOWING:

PIER PROTECTION SYSTEM CONSISTS OF CONCRETE BARRIER, CONCRETE FOOTING & REMOVAL OF EXISTING REVETMENT.

WHEN GUARD RAILS ARE CONNECTED TO THE CONCRETE BARRIER, THEY SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEMS.

FILL AND REVETMENT SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEMS.

SLOPES OF 10:1 OR FLATTER SHALL BE PLACED IN FRONT OF THE BARRIER.

FOR ADDITIONAL INFORMATION, & SECTIONS B-B, C-C, E-E SEE SHEET 7 & 8 OF 8. DETAILS ON THIS SHEET ARE FOR USE ON FREEWAYS ONLY.

THIS STANDARD PLAN SHALL BE USED IN CONJUNCTION WITH STANDARD PLAN GR-200.

⊗ LENGTH OF 54" BARRIER TO BE DETERMINED BY THE LENGTH OF THE OBJECT TO BE PROTECTED.

FOR INFORMATIONAL USE

STATE OF LOUISIANA
PAUL B. FOSSIER, JR
License No. 21026
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5-31-17

SHEET NUMBER

PARISH	FEDERAL PROJECT	STATE PROJECT

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
K.M.B. BY	G. GRASS P. FOSSIER	OCT. 2008 5 OF 8

DATE: 6-15-2017

NO.	DATE	REVISION DESCRIPTION	BY
1	2-15-17	UPDATED FOR 2016 SPECIFICATIONS	

APPROVED BY CHIEF ENGINEER: Jamie P. Williams

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

HIGHWAY GUARD RAILS
CUT SECTION
(LESS THAN 2'-0" CLEARANCE

GR-201

08:56
1/24/2019
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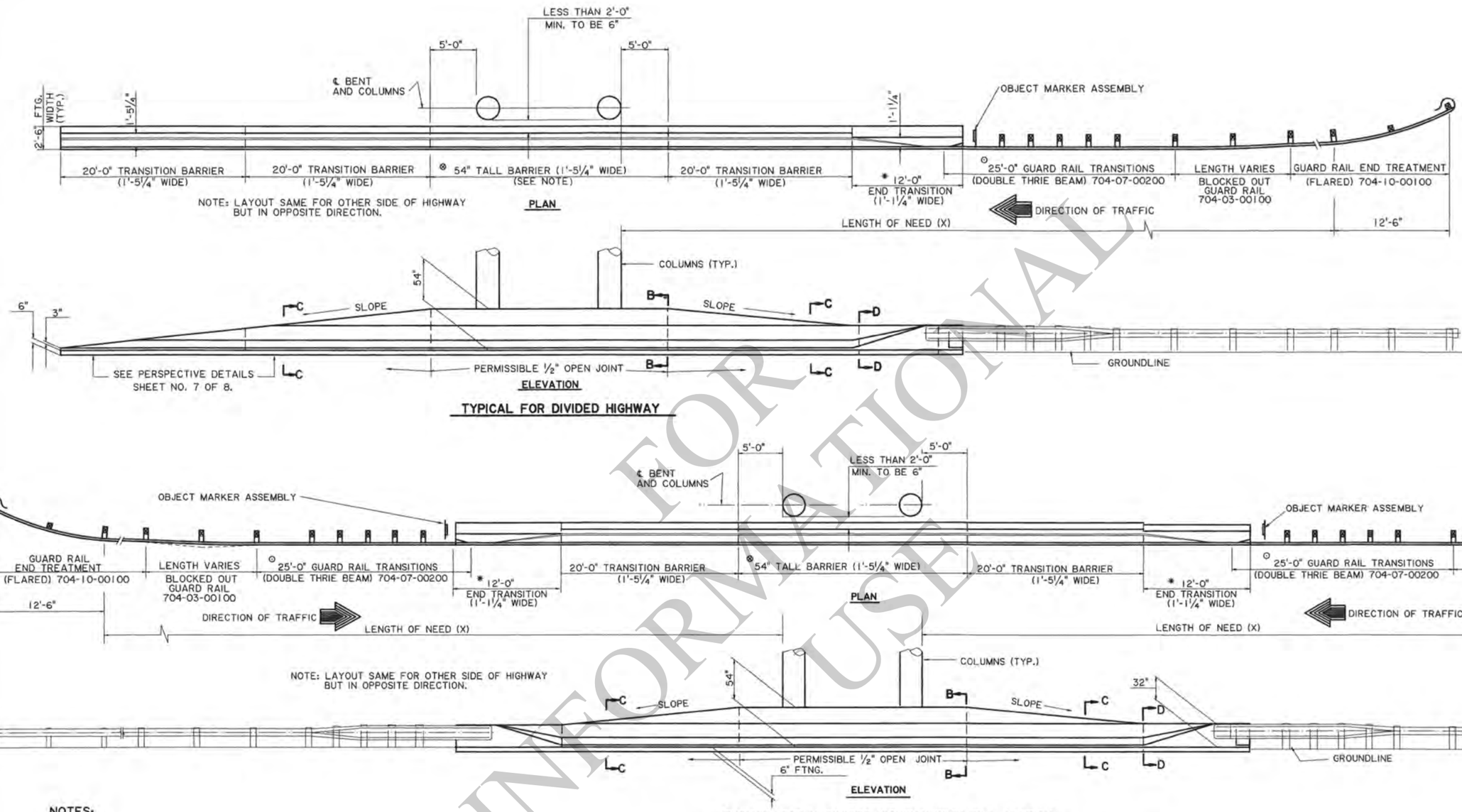
08:56
1/24/2019



TYPICAL FOR DIVIDED HIGHWAY

TYPICAL FOR UNDIVIDED HIGHWAY WITH FILL SECTION

NOTES:

⊗ LENGTH OF 54" TALL BARRIER TO BE DETERMINED BY THE LENGTH OF THE OBJECT TO BE PROTECTED. REGARDLESS OF LENGTH OF NEED (X), A MINIMUM OF 75'-0" GUARD RAIL SHALL BE INSTALLED AT THE END OF CONCRETE BARRIER. WHEN MINIMUM GUARD RAIL IS USED, SEE NOTE 2, SHT. 1 OF GR-200.

FOR ADDITIONAL INFORMATION AND BARRIER RAIL DETAILS, SECTION B-B, C-C, D-D & E-E SEE SHEET 7 AND 8 OF 8.

THIS STANDARD PLAN SHALL BE USED IN CONJUNCTION WITH STANDARD PLAN GR-200.

* FOR REINFORCING DETAILS OF 12'-0" TRANSITION & TAPER, SEE BARRIER RAIL SPECIAL DETAILS.

⊙ 10' CURB REQUIRED, SEE SHT. 3, STD. PLAN GR-200 FOR DETAILS.

FUTURE OVERLAYS:

FOR FUTURE OVERLAY ON THE SHOULDER, WHERE IT MEETS THE PIER PROTECTION, THE OVERLAY SHALL PREFERABLY BE A MAXIMUM OF 3". THUS THE EFFECTIVE HEIGHT OF THE BARRIER AT 32" AND THE ATTACHED THRIE BEAM CAN BE LOWERED UP TO 3" WITHOUT FURTHER MODIFICATION TO THE HEIGHT OF THE BARRIER SYSTEM.

WHEN THE OVERLAY ON THE SHOULDER MUST EXCEED THE 3" MAXIMUM REQUIREMENT, MODIFY THE APPROACH SECTION OF THE PIER PROTECTION SYSTEM AT SECTION D-D TO WHICH THE THRIE BEAM CONNECTS, BY RAISING IT TO A HEIGHT EQUAL TO THE DEPTH OF THE REQUIRED OVERLAY. THIS WOULD ALSO REQUIRE THE GUARDRAIL TO BE RAISED BY AN EQUAL AMOUNT.

STATE OF LOUISIANA
PAUL B. FOSSIER, JR
License No. 21026
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5-31-17

FOR INFORMATIONAL USE

SHEET NUMBER	PARISH	FEDERAL PROJECT	STATE PROJECT

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
	G. GRASS / P. FOSSIER	OCT. 2008 / 6 OF 8

DATE	REVISION DESCRIPTION	BY
2-15-17	UPDATED FOR 2016 SPECIFICATIONS	K.M.B.

APPROVED BY CHIEF ENGINEER: James P. Williams DATE: 6-13-2017

HIGHWAY GUARD RAILS
FILL SECTION
(LESS THAN 2'-0" CLEARANCE)

GR-201

BRIDGE AND STRUCTURAL DESIGN

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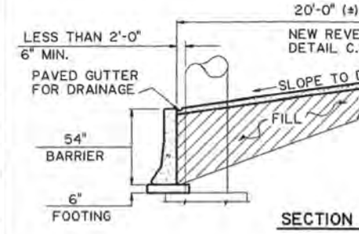
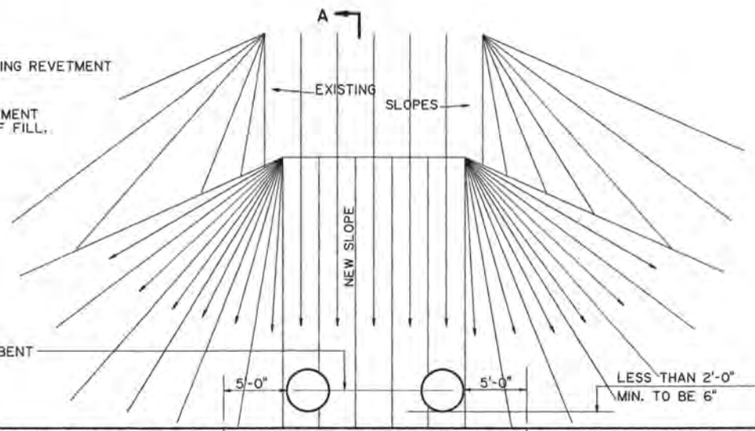
08:56
1/24/2019

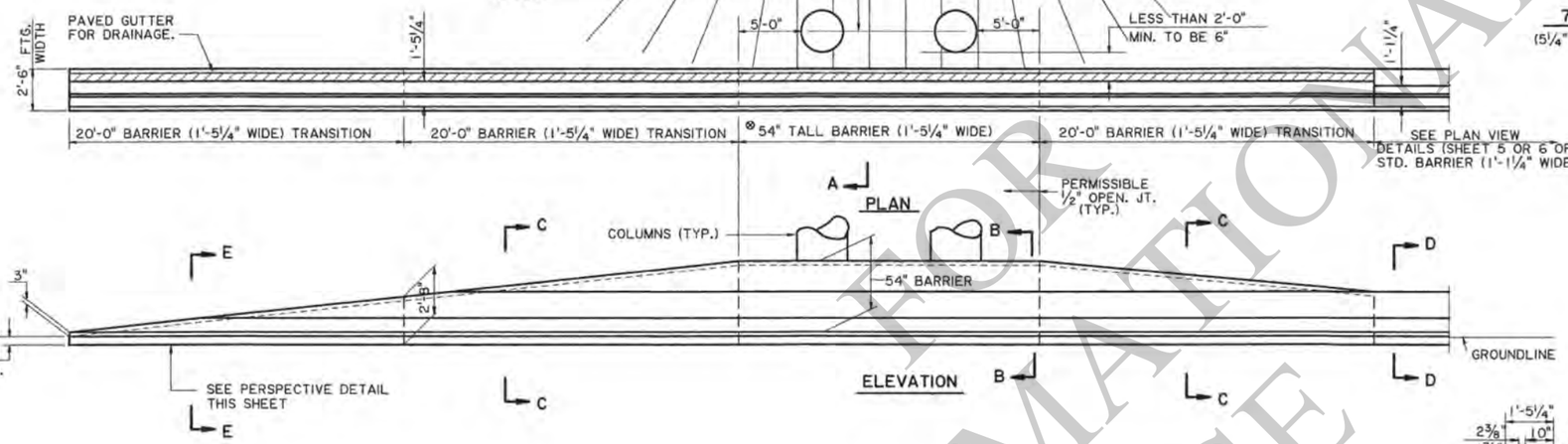


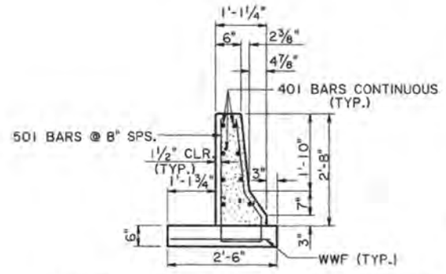
SECTION A - A



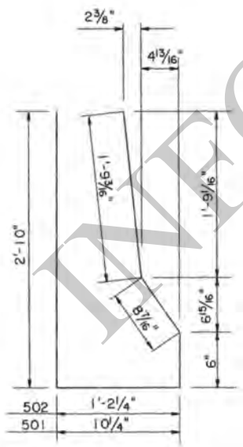
701
(5¼" ϕ PIN)

⊕ 702
(5¼" ϕ PIN)

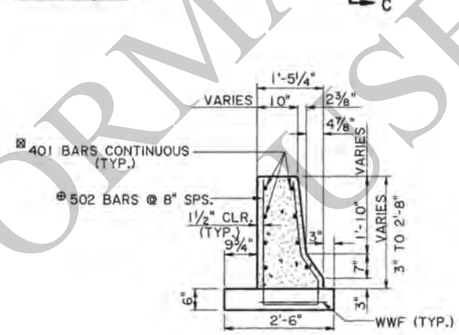




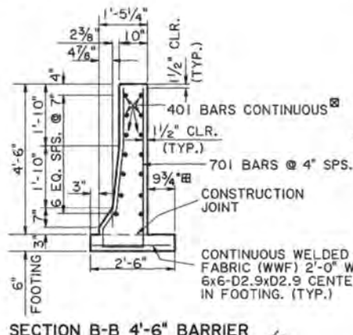
⊙ SECTION D-D @ 2'-8" STANDARD BARRIER



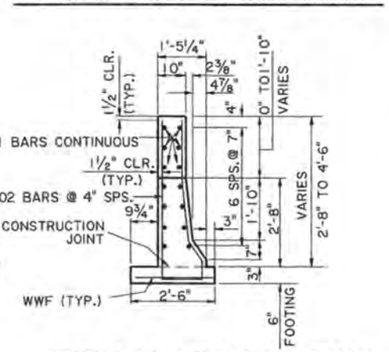
501 & 502 ⊕
(2½" ϕ PIN)
(502 BAR DIMENSIONS VARY)



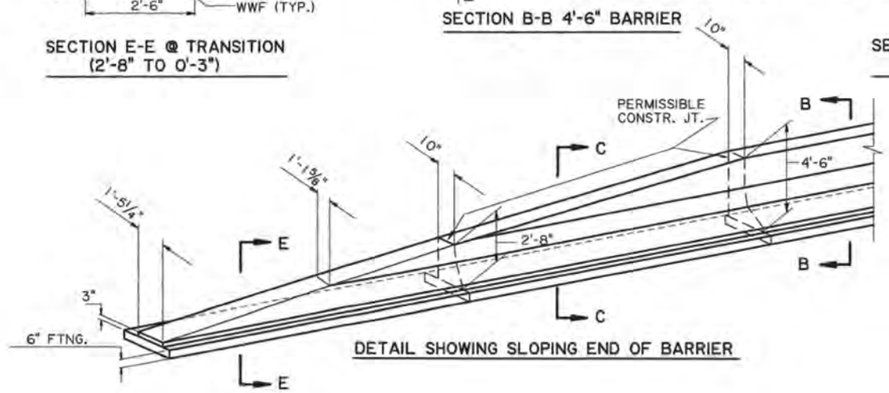
SECTION E-E @ TRANSITION
(2'-8" TO 0'-3")



SECTION B-B 4'-6" BARRIER



SECTION C-C @ TRANSITION BARRIER
(2'-8" TO 4'-6")



DETAIL SHOWING SLOPING END OF BARRIER

NOTES

EXISTING SLOPE SHOWN IS FOR ILLUSTRATION ONLY. (SLOPES VARY AT EACH LOCATION)

⊗ LENGTH OF 54" TALL BARRIER TO BE DETERMINED BY THE LENGTH OF THE OBJECT TO BE PROTECTED.

½" OPEN JOINTS TO BE AT 20'-0" MAX. CTRS.

TRAILING END SHOWN IS FOR USE WITH THE FILL SECTIONS.

FOR TRAILING END ON CUT SECTIONS SEE SHEET 5 OF 8.

SEE SHEET 5 OF 8 FOR OTHER PIER PROTECTION SYSTEM NOTES.

REINFORCING STEEL BAR DETAILS THAT ARE SHOWN ARE FOR FABRICATION. STRAIGHT REBAR DETAILS NOT SHOWN, ONLY THE SIZE IS SHOWN IN THE SECTIONS.

⊕ THESE REINFORCING STEEL BAR DIMENSIONS VARY AND SHALL BE ADJUSTED AND FABRICATED TO FIT IN THE TRANSITION AREA.

THIS STANDARD PLAN SHALL BE USED IN CONJUNCTION WITH STANDARD PLAN GR-200.

⊙ SEE BARRIER RAIL SPECIAL DETAILS FOR FURTHER REINFORCING INFORMATION.

⊠ 401 BARS WILL TERMINATE IN TRANSITION SECTION WITH 1½" REQUIRED BAR CLEARANCE.

⊞ FOOTING WIDTH MAY BE ADJUSTED TO 6" TO FIT AROUND COLUMN INTERFERENCE WHEN NEEDED. ADJUSTMENTS TO BE MADE AT NO ADDITIONAL COST. ANY REVISED DETAILS TO BE APPROVED BY THE ENGINEER

FOR INFORMATION PURPOSE

STATE OF LOUISIANA
PAUL B. FOSSIER, JR
License No. 21409
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5-31-17

SHEET NUMBER			
	PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED / CHECKED	DETAILED / CHECKED	G. GRASS / P. FOSSIER	DATE / SHEET	OCT. 2008 / 7 OF 8
	BY	K.M.B.	DATE: 6-13-2017
2-15-17	UPDATED FOR 2016 SPECIFICATIONS		
DATE	REVISION DESCRIPTION		
APPROVED BY CHIEF ENGINEER			

HIGHWAY GUARD RAILS
BACKFILL SUPPORTED BARRIER
CUT & FILL SECTION

GR-201

BRIDGE AND STRUCTURAL DESIGN

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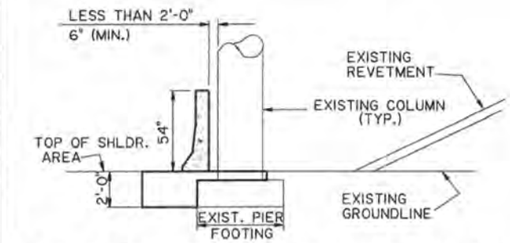
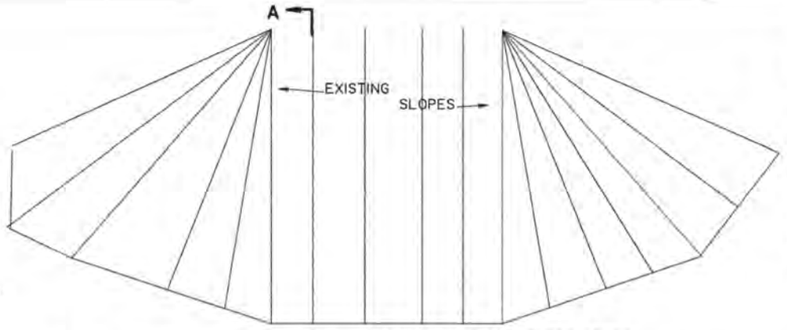
1/24/2019 08:57

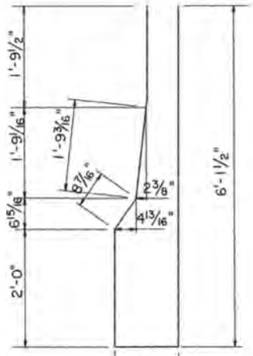


NEW BARRIER FOOTING SHALL BE COPED TO FIT THE EXIST. PIER FOOTING

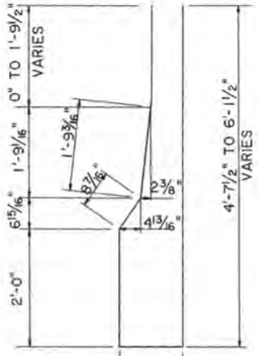
SECTION A - A



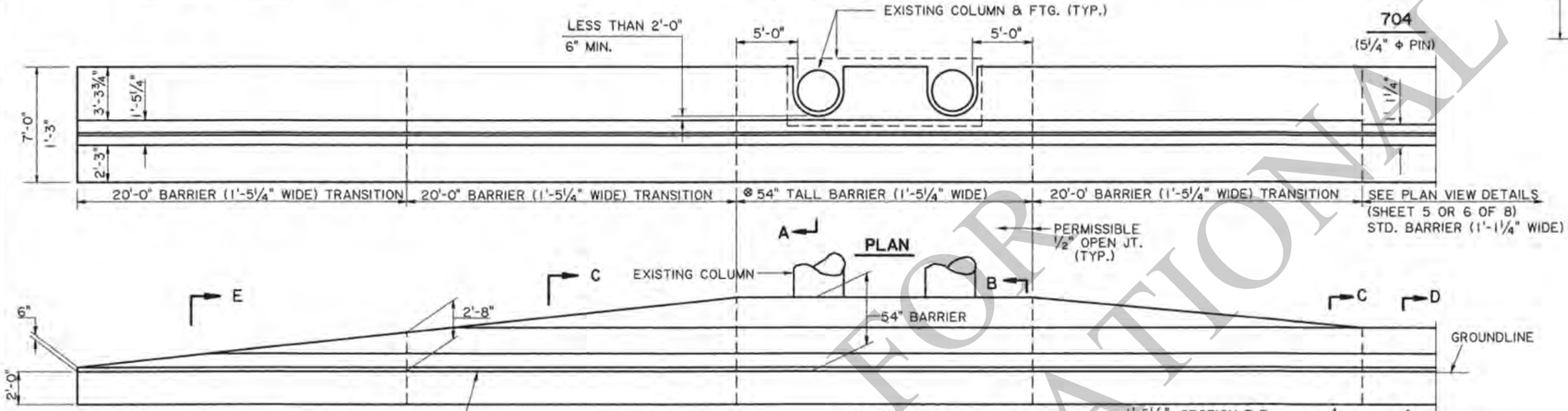
704
(5¼" ϕ PIN)

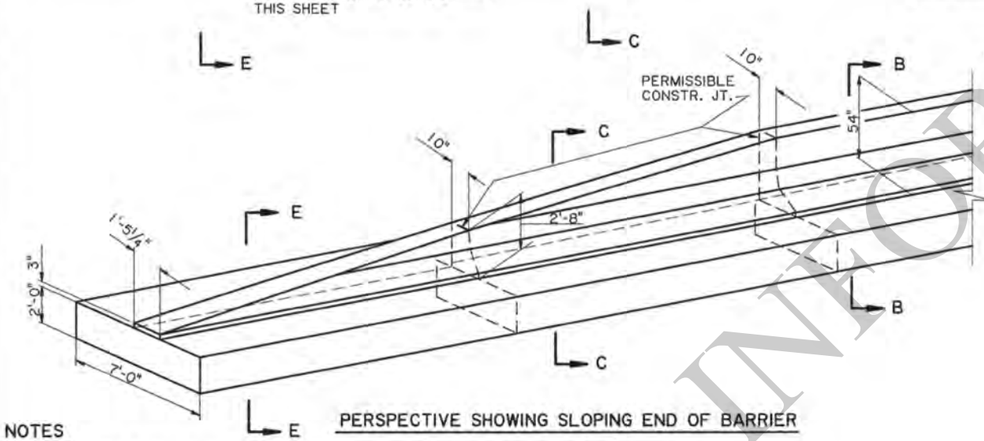


703
(5¼" ϕ PIN)

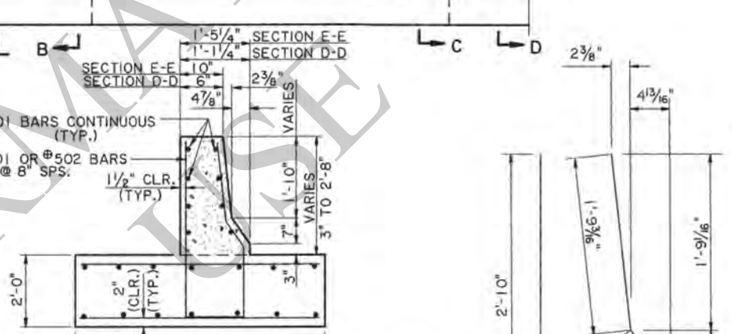


⊕ **705**
(5¼" ϕ PIN)

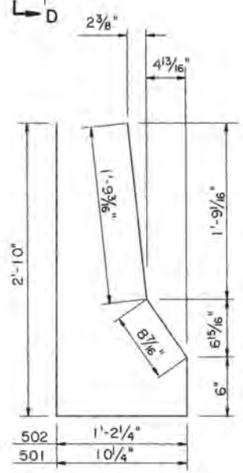




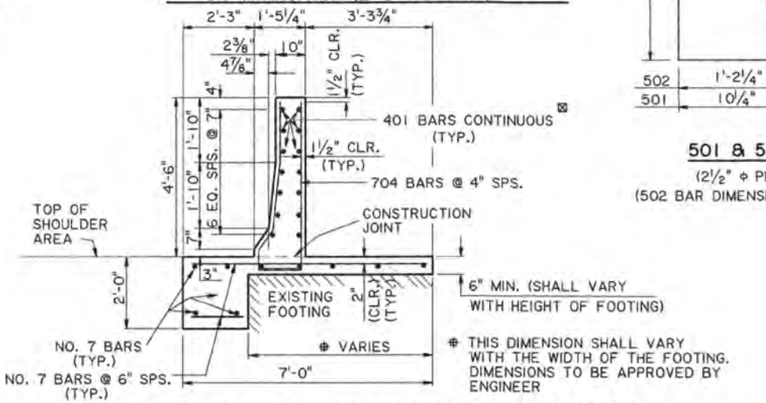
PERSPECTIVE SHOWING SLOPING END OF BARRIER



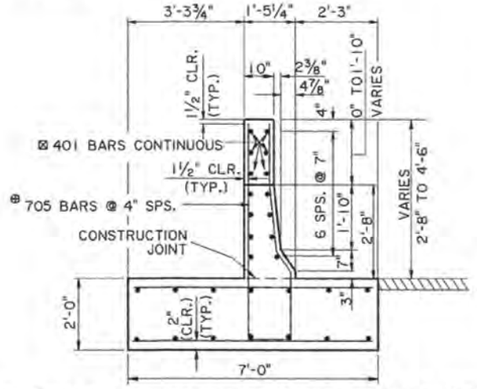
SECTION D-D OR E-E @ STANDARD BARRIER OR TRANSITION (2'-8" TO 0'-3")



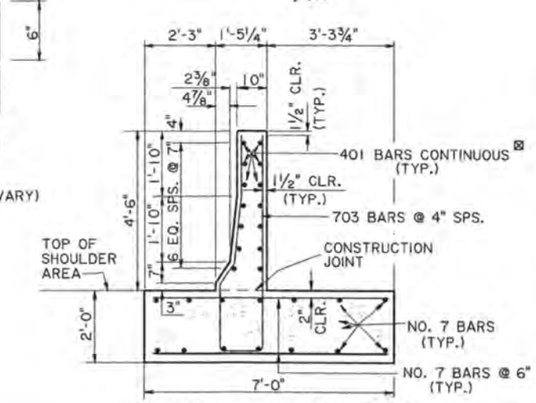
501 & 502 ⊕
(2½" ϕ PIN)
(502 BAR DIMENSIONS VARY)



BARRIER RAILING SECTION AT EXISTING COLUMN & FOOTING



SECTION C-C @ TRANSITION BARRIER (2'-8" TO 4'-6")



SECTION B-B @ 4'-6" BARRIER

NOTES

EXISTING SLOPE SHOWN IS FOR ILLUSTRATION ONLY. (SLOPES VARY AT EACH LOCATION)

⊗ LENGTH OF 54" TALL BARRIER TO BE DETERMINED BY THE LENGTH OF THE OBJECT TO BE PROTECTED

½" OPEN JOINTS TO BE AT 20'-0" MAX. CTRS.

TRAILING END SHOWN IS FOR USE WITH THE FILL SECTIONS.

FOR TRAILING END ON CUT SECTIONS SEE SHEET 5 OF 8.

SEE SHEET 5 OF 8 FOR OTHER PIER PROTECTION SYSTEM NOTES.

REINFORCING STEEL BAR DETAILS THAT ARE SHOWN ARE FOR FABRICATION. STRAIGHT REBAR DETAILS NOT SHOWN AND ONLY THE SIZE IS SHOWN IN THE SECTIONS.

⊕ THESE REBAR DIMENSIONS VARY AND SHALL BE ADJUSTED & FABRICATED TO FIT IN THE TRANSITION AREA.

THIS STANDARD PLAN SHALL BE USED IN CONJUNCTION WITH STANDARD PLAN GR-200

SEE BARRIER RAIL SPECIAL DETAILS FOR FURTHER REINFORCING INFORMATION.

⊠ 401 BAR WILL TERMINATE IN TRANSITION SECTION WITH 1½" REQUIRED BAR CLEARANCE

INFORMATIONAL USE

STATE OF LOUISIANA
PAUL B. FOSSIER, JR
License No. 21629
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5-31-17

SHEET NUMBER

PARISH	FEDERAL PROJECT	STATE PROJECT

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
	G. GRASS / P. FOSSIER	OCT. 2008 / 8 OF 8

NO.	REVISION DESCRIPTION	BY	DATE
6	UPDATED FOR 2016 SPECIFICATIONS	K.M.B.	2-15-17

APPROVED BY CHIEF ENGINEER: Jamie P. Williams
DATE: 6-13-2017

HIGHWAY GUARD RAILS
PIER PROTECTION SYSTEM
SELF-SUPPORTING BARRIER
(CUT & FILL SECTION)

GR-201

BRIDGE AND STRUCTURAL DESIGN

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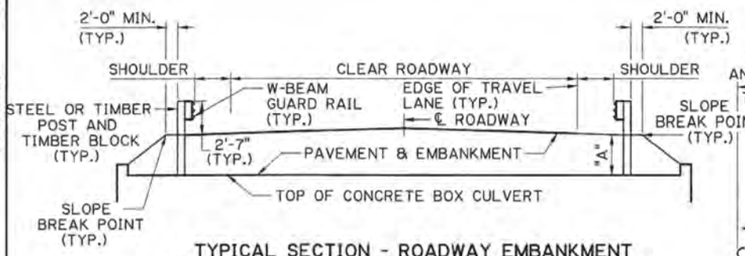
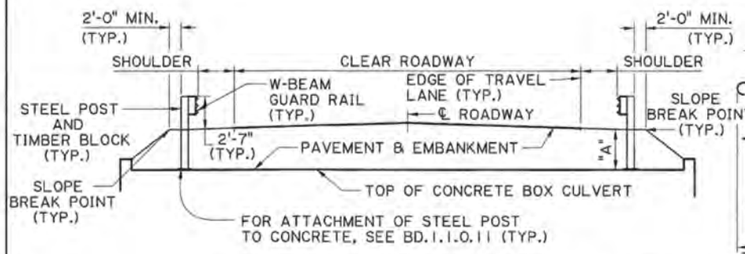


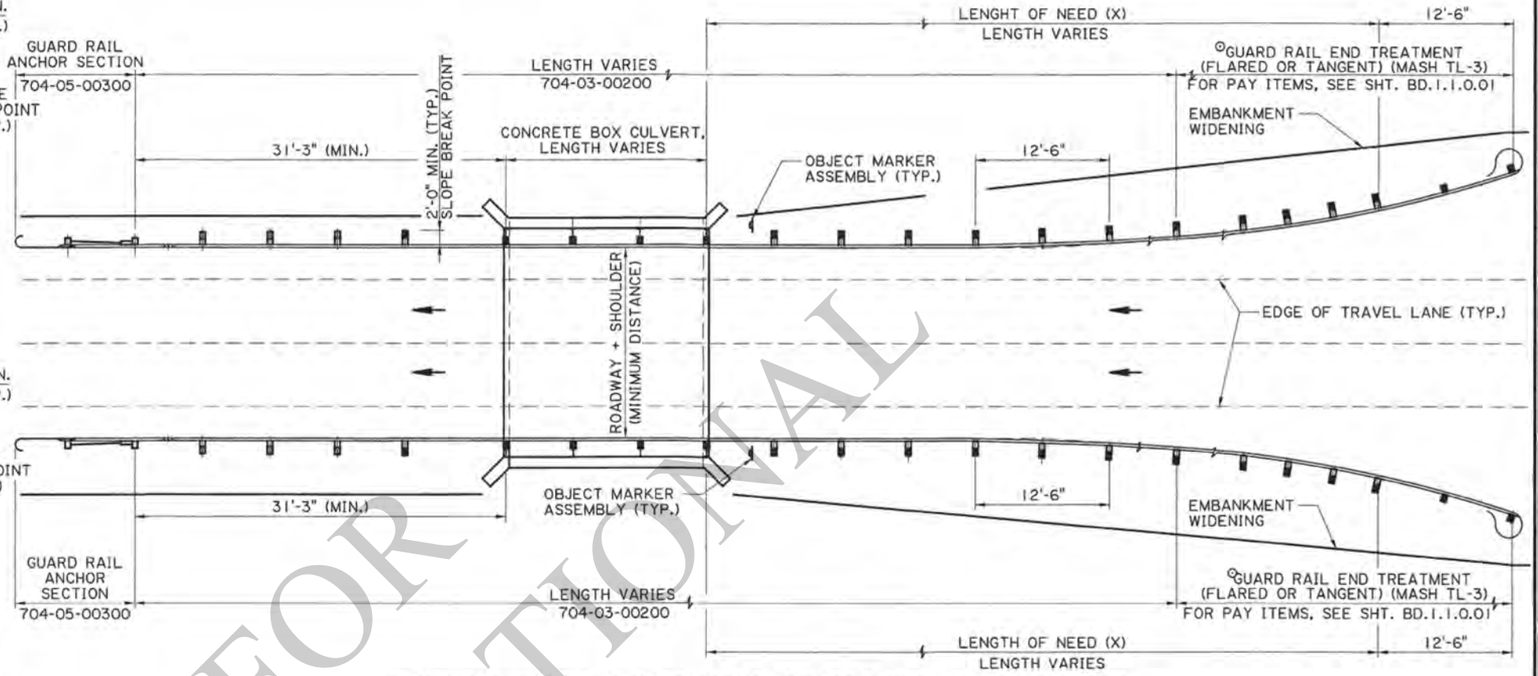
TYPICAL SECTION - ROADWAY EMBANKMENT OVER BOX CULVERT WITH STEEL OR WOOD POST

("A" = > 3'-4")
N.T.S.



TYPICAL SECTION - ROADWAY EMBANKMENT OVER BOX CULVERT WITH STEEL POST ATTACHMENT

("A" = < 3'-4", "A" = MIN. 9")
N.T.S.

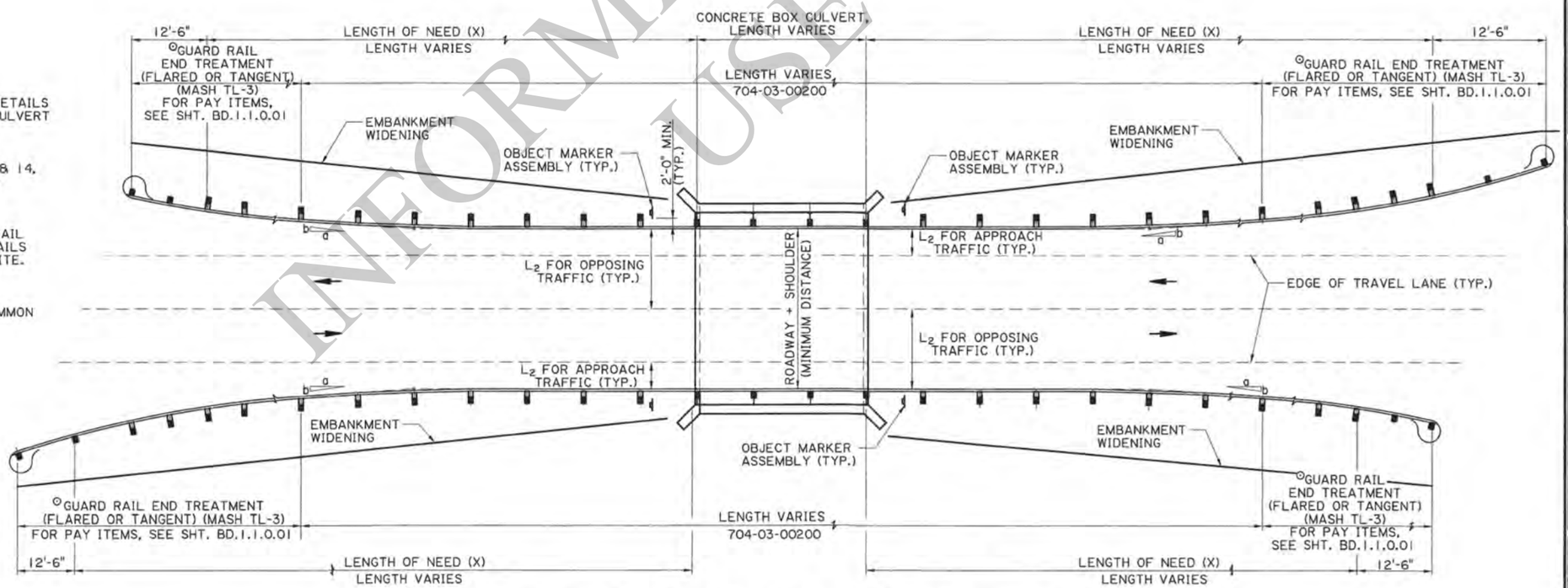


GUARD RAIL LAYOUT OVER CONCRETE BOX CULVERTS - DIVIDED HIGHWAY

HALF PLAN FOR DIVIDED HIGHWAY (LAYOUT SAME FOR OPPOSITE SIDE OF RDWY.)
N.T.S.

NOTES:

1. LENGTH OF NEED (X) AND PLAN LAYOUT DETAILS ARE TO BE DETERMINED FOR EACH BOX CULVERT AT EACH SPECIFIC SITE.
2. FOR END TREATMENTS SEE NOTES 9, 13, & 14, ON BD.1.1.0.01. FLARED OR TANGENT END TREATMENT MAY BE USED.
3. IN ADDITION TO THESE DETAILS, GUARD RAIL LAYOUT AND EMBANKMENT WIDENING DETAILS ARE REQUIRED FOR EACH BOX CULVERT SITE. SEE OTHER PLAN DETAILS.
4. FOR ALL OTHER DETAILS, REFERENCE COMMON DETAILS, BD.1.1.0.01 - BD.1.1.0.11.



GUARD RAIL LAYOUT OVER CONCRETE BOX CULVERTS - UNDIVIDED HIGHWAY

N.T.S.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER
CHECK	K. BRAUNER
DETAIL	J. DOUCET
CHECK	K. BRAUNER
REVIEW	C. GUIDRY
SERIES #	1 OF 1

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
12/18/19

APPROVED BY CHIEF ENGINEER:
DATE: 1/3/19

HIGHWAY GUARD RAIL (MASH) APPLICATION FOR BOX CULVERT

BD.1.3.0.01
GR-MASH-BC
STANDARD PLAN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

9/6/2019 14:40
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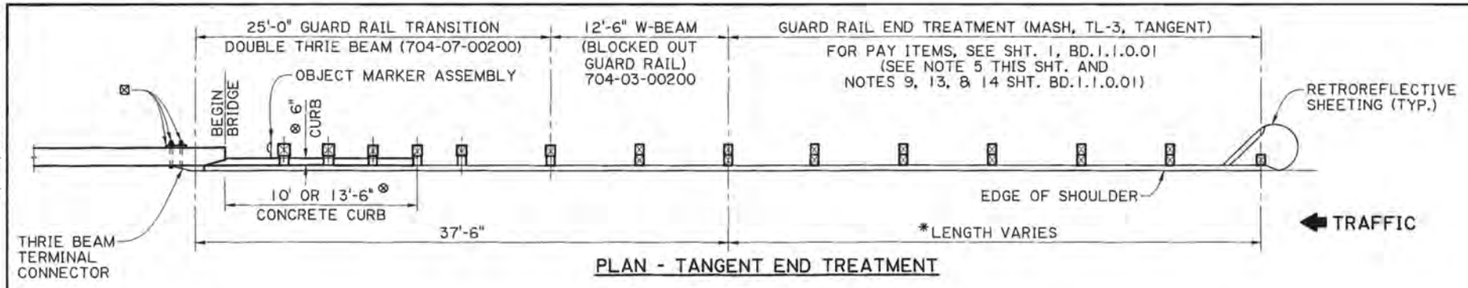
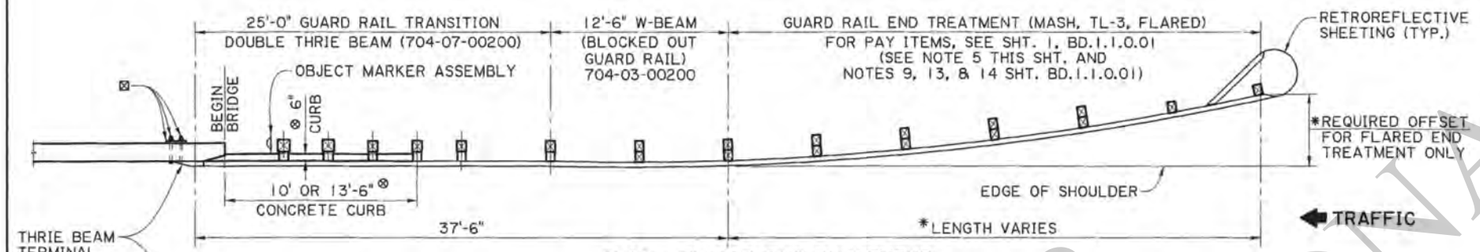
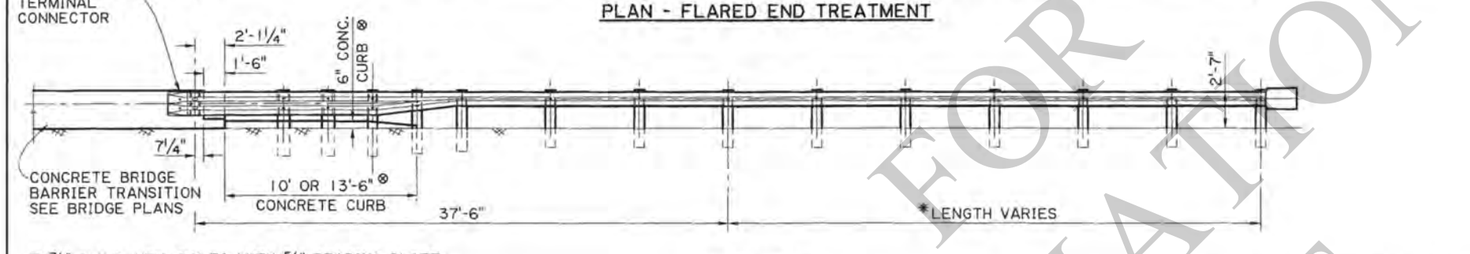


PLAN - TANGENT END TREATMENT

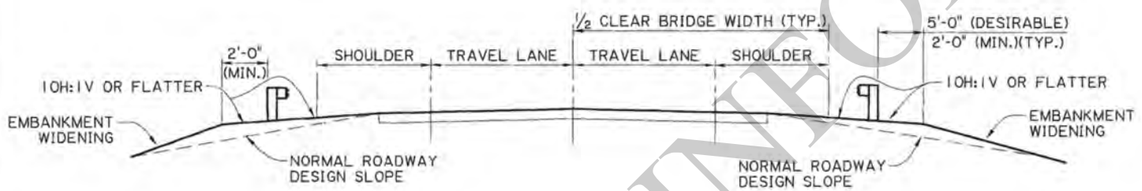


PLAN - FLARED END TREATMENT

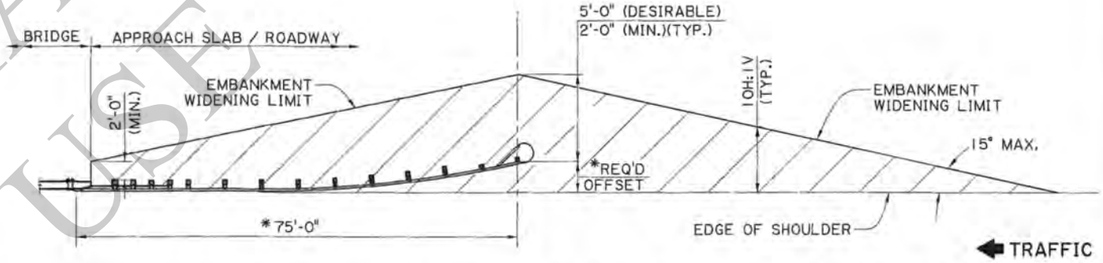


⊠ 7/8" ø H.S. HEX. BOLTS WITH 5/8" BEARING PLATE (SEE STANDARD PLAN BD.1.1.0.09).

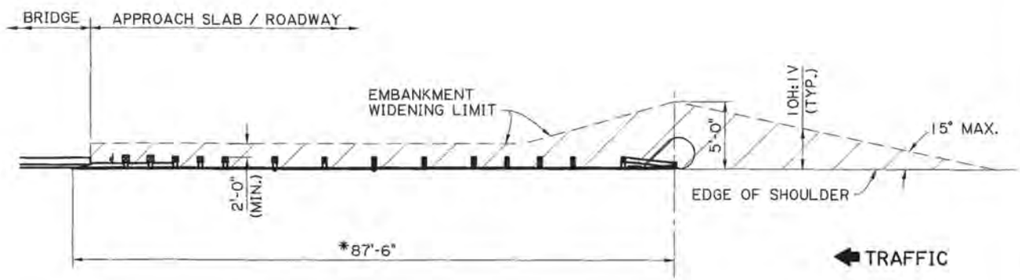
ELEVATION
(NOT TO SCALE)



TYPICAL CROSS SECTION EMBANKMENT WIDENING
(NOT TO SCALE)



TYPICAL PLAN FOR EMBANKMENT WIDENING - FLARED END TREATMENT
(TYPICAL FOR EACH END OF BRIDGE)
(NOT TO SCALE)



TYPICAL PLAN FOR EMBANKMENT WIDENING -TANGENT END TREATMENT
(TYPICAL FOR EACH END OF BRIDGE)
(NOT TO SCALE)

NOTES

1) FOR ADDITIONAL GUARD RAIL DETAILS AND INFORMATION, SEE STANDARD PLAN BD.1.1.0.01 THRU BD.1.1.0.11.

2) FOR CONCRETE BRIDGE BARRIER TRANSITION DETAILS, SEE BRIDGE PLANS.

3) OBJECT MARKERS (TYPE 3) SHALL BE PAID UNDER ITEM 729-16-00300.

4) THE QUANTITY FOR THE EMBANKMENT WIDENING AT BRIDGE ENDS SHALL BE INCLUDED IN THE EMBANKMENT QUANTITY FOR THE ROADWAY.

* 5) USE REQUIRED OFFSET AS PER GUARD RAIL FLARED END TREATMENT REQUIREMENTS. SEE DOTD APPROVED MATERIALS LIST (AML) FOR GUARD RAIL END TREATMENTS (MASH). LENGTH VARIES BASED ON END TREATMENT TYPE USED.

⊗ 6) USE 10'-0" LONG CONCRETE CURB AND 6" CURB HEIGHT FOR 10' APPROACH SLAB, SEE APPROACH SLAB DETAILS FOR FURTHER INFORMATION.

USE 13'-6" LONG CONCRETE CURB FOR ≥ 20' APPROACH SLAB, CURB HEIGHT VARIES FROM 6" TO 2", SEE APPROACH SLAB DETAILS FOR FURTHER INFORMATION.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER
CHECK	K. BRAUNER
DETAIL	J. DOUCET
CHECK	K. BRAUNER
REVIEW	C. GUIDRY
SCALES	1 OF 1

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
12/19/19

APPROVED BY CHIEF ENGINEER:
DATE: 1/3/19

HIGHWAY GUARD RAIL (MASH)
OFF-SYSTEM BRIDGE APPLICATION

BD.1.2.0.01
GR-MASH-OFF
STANDARD B.S.N.

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

3/14/2022 15:49

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GUARD RAIL GENERAL NOTES:

1. DESIGN REFERENCE: THE LATEST EDITIONS OF THE AASHTO ROADSIDE DESIGN GUIDE (RDG) AND THE LADOTD BRIDGE DESIGN AND EVALUATION MANUAL (BDEM), PART II, VOLUME 4 - HIGHWAY SAFETY.
2. GUARD RAIL LENGTH: TOTAL GUARD RAIL LENGTH AND LENGTH OF NEED SHALL BE BASED ON THE LATEST AASHTO ROADSIDE DESIGN GUIDE LENGTH OF NEED REQUIREMENTS. TOTAL LENGTH OF GUARD RAIL SHALL NOT BE LESS THAN 75'-0" BASED ON A LENGTH OF LENGTH OF NEED OF X=62'-6". A DESIGN WAIVER IS REQUIRED FOR GUARD RAIL LENGTHS NOT MEETING THESE REQUIREMENTS.
3. FOR BRIDGES WITH GUARD RAILS IN URBAN AREAS WITH A DESIGN SPEED OF 45 MPH OR LESS, SEE DOTD EDSM NO. II.3.1.4 FOR DESIGN INFORMATION.
4. FOR GUARD RAIL ON EXISTING HIGHWAYS, SEE DOTD EDSM NO. II.3.1.3 FOR DESIGN INFORMATION.
5. EMBANKMENT WIDENING IS TO PROVIDE SLOPES NOT STEEPER THAN 10H:1V IN FRONT OF THE GUARD RAIL.
6. ALL GUARD RAIL COMPONENTS SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFIC PLAN LAYOUT DETAILS, GUARD RAIL DESIGN DATA, PAY ITEMS, AND QUANTITY TABLES PROVIDED IN THE PROJECT PLANS.
7. LONGITUDINAL DIMENSIONS FOR GUARD RAIL ARE MEASURED ALONG THE PROJECTED FACE OF RAILING.
8. THE QUANTITY FOR THE EMBANKMENT WIDENING IS TO BE INCLUDED IN THE EMBANKMENT PAY ITEM QUANTITY FOR THE ROADWAY.
9. A TANGENT END TREATMENT MAY BE USED AS AN ALTERNATE TO THE FLARED END TREATMENT. A ZERO FLARE RATE (b/a=0) IS REQUIRED WHEN THE TANGENT END TREATMENT IS USED AND THE LENGTH OF NEED "X" SHALL BE CALCULATED BASED ON A "ZERO" FLARE RATE.
10. THE POINT WITHIN THE GUARD RAIL END TREATMENT WHERE THE LENGTH OF NEED TERMINATES MAY VARY WITH EACH TYPE OF GUARD RAIL END TREATMENT. THE 12'-6" LENGTH APPLIES TO MOST END TREATMENTS.
11. RETROREFLECTIVE ADHESIVE SHEETING (12" X 2'-8")(TYPE III HIGH INTENSITY OBJECT MARKER PATTERN) SHALL BE APPLIED TO THE END TREATMENT NOSE. SEE THE LATEST LA. STANDARD SPECS. FOR ROADS AND BRIDGES FOR SPECIFICATIONS AND THE SHEETING MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION. FOR PATTERN DETAIL, SEE OBJECT MARKER STANDARD PLANS.
12. GUARD RAIL INSTALLATIONS MAY BE PAVED BY USING CONCRETE PAVING OR ASPHALT CONCRETE. THE INCIDENTAL CONCRETE OR ASPHALT WILL BE USED IF A LAYOUT DETAIL, PAY ITEM, AND QUANTITY IS INDICATED IN THE PLANS. SEE SHEET 11 FOR REQUIRED POST DETAILS WHEN PAVING IS USED AROUND POSTS.
- ⊙13. GUARD RAIL END TREATMENTS SHALL BE SELECTED FROM THE DOTD APPROVED MATERIALS LIST (AML), AND SHALL BE AASHTO MASH, TEST LEVEL 3 (TL-3) UNLESS OTHERWISE NOTED IN THE PLANS. IF TEST LEVEL 2 (TL-2) GUARD RAIL END TREATMENTS ARE USED, A DESIGN WAIVER SHALL BE REQUIRED. IF MASH FLARED END TREATMENTS ARE NOT AVAILABLE, USE GUARD RAIL END TREATMENT, NCHRP 350 - 31" (TL-3 FLARED), WITH APPROVAL OF PROJECT ENGINEER.
- ⊕14. FLARED GUARD RAIL END TREATMENTS (12'-6" OR 18'-9"), (PAY ITEMS 704-10-00105 AND 704-10-00110) ARE GENERIC TEST LEVEL 2 (TL-2) NCHRP 350 SYSTEMS THAT CAN ONLY BE USED WITH PERMISSION FROM THE BRIDGE DESIGN ENGINEER ADMINISTRATOR AND AN APPROVED DESIGN WAIVER. SEE BRIDGE DESIGN SPECIAL DETAILS FOR THESE END TREATMENT DETAILS.
15. GUARD RAIL DESIGN VARIABLES FOR STANDARD PLAN SHEETS:

    L_1 = LENGTH OF TANGENT SECTION OF RAIL IN ADVANCE OF OBJECT. (FT)

    L_2 = DISTANCE FROM EDGE OF TRAVEL LANE TO TANGENT SECTION OF RAIL. (FT)

    L_3 = DISTANCE FROM EDGE OF TRAVEL LANE TO OBJECT OF CONCERN.

    L_R = RUNOUT LENGTH (FT)

    L_C = REQUIRED CLEAR ZONE (FT)

    L_A = DISTANCE FROM THE EDGE OF THE TRAVEL LANE TO THE LATERAL EXTENT OF THE OBJECT. (FT)

    $L_A = L_C$ FOR BRIDGE APPLICATIONS

    X = CALCULATED LENGTH OF NEED (FT)

    Y = DISTANCE FROM EDGE OF THE TRAVEL LANE TO THE BEGINNING OF THE LENGTH OF NEED.

    Z = DISTANCE FROM EDGE OF THE TRAVEL LANE TO THE EDGE OF EMBANKMENT.

    b/a = FLARE RATE (VERTICAL/HORIZONTAL)

    FOR CLEAR ZONE, RUNOUT, FLARE RATE, SHYLINE, AND HORIZONTAL CURVE ADJUSTMENTS, SEE LATEST AASHTO ROADSIDE DESIGN GUIDE AND THE DOTD BRIDGE DESIGN AND EVALUATION MANUAL.
16. STEEL POSTS MAY BE USED AS AN ALTERNATE TO WOOD POSTS, UNLESS SHOWN OTHERWISE.
17. INTERMIXING OF STEEL AND WOOD POSTS IN ANY ONE SECTION OF THE GUARD RAIL SHALL NOT BE PERMITTED.
18. ALL MATERIAL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
19. GUARD RAIL HEIGHT TOLERANCE ALLOWED FOR INSTALLATION IS 1 INCH ABOVE AND 0.5 INCH BELOW THE SPECIFIED HEIGHT.
20. GUARD RAIL TRAILING END ANCHORAGE SHALL BE USED TO ANCHOR DOWNSTREAM END OF GUARD RAIL ONLY WHEN TYPICAL GUARD RAIL END TREATMENTS ARE NOT REQUIRED.
21. STANDARD COMPONENTS: STANDARD GUARD RAIL COMPONENTS, INCLUDING POSTS, PANELS, AND BOLT SYSTEM ARE BASED UPON ENGLISH UNIT CONVERSIONS OF THE AASHTO-AGC-ARTBA JOINT COMMITTEE TASK FORCE 13 REPORT: A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE.
- *22. IF OFF-SYSTEM BRIDGE OR BOX CULVERT DETAILS ARE USED, THE PLANS MUST ALSO INCLUDE THE COMMON DETAILS (SHTS. 1-11).

GUARD RAIL AND RELATED PAY ITEMS :

	202-02-14500	REMOVAL OF GUARD RAIL, (LN FT)
	704-01-01000	GUARD RAIL (SINGLE THRIE BEAM) (3'-1½" POST SPACING), (LN FT)
	704-01-01020	GUARD RAIL (SINGLE THRIE BEAM) (6'-3" POST SPACING), (LN FT)
	704-01-02000	GUARD RAIL (DOUBLE THRIE BEAM) (3'-1½" POST SPACING), (LN FT)
	704-01-02020	GUARD RAIL (DOUBLE THRIE BEAM) (6'-3" POST SPACING), (LN FT)
	704-03-00200	BLOCKED OUT GUARD RAIL - 31", (6'-3" POST SPACING), (LN FT)
	704-04-00200	BLOCKED OUT GUARD RAIL - 31", (DOUBLE FACED, 6'-3" POST SPACING), (LN FT)
	704-05-00300	GUARD RAIL ANCHOR SECTIONS - 31", (TRAILING END), (LN FT)
	704-06-00100	GUARD RAIL BRIDGE ATTACHMENTS, (LN FT)
	704-06-00200	GUARD RAIL BRIDGE ATTACHMENTS (SINGLE THRIE BEAM), (LN FT)
	704-07-00200	GUARD RAIL TRANSITION, (DOUBLE THRIE BEAM), (LN FT)
	704-09-00100	GUARD RAIL ANCHOR BLOCK, (EA.)
⊕	704-10-00105	GUARD RAIL END TREATMENT (FLARED, 12'-6" LENGTH), (EA.)
⊕	704-10-00110	GUARD RAIL END TREATMENT (FLARED, 18'-9" LENGTH), (EA.)
⊙	704-10-00120	GUARD RAIL END TREATMENT, MASH, (TL-3 FLARED), (EA.)
⊙	704-10-00204	GUARD RAIL END TREATMENT, MASH, (TL-2 TANGENT), (EA.)
⊙	704-10-00205	GUARD RAIL END TREATMENT, MASH, (TL-3 TANGENT), (EA.)
⊙	704-10-00305	GUARD RAIL END TREATMENT, MASH, (TL-3 BI-DIRECTIONAL), (EA.)
⊙	704-10-00310	GUARD RAIL END TREATMENT, NCHRP 350 - 31" (TL-3 FLARED), (EA.)
	810-06-00100	CONCRETE PIER PROTECTION SYSTEM (VEHICLE), (LN FT)

⊙ SEE NOTE NO.13

⊕ SEE NOTE NO.14

GUARD RAIL STANDARD PLAN INDEX

	BRIDGE STANDARD INDEX NO.	SERIES	DESCRIPTION
COMMON DETAILS	BD.1.1.0.01	1 OF 11	GENERAL NOTES, PAY ITEMS, STANDARD PLAN INDEX
BRIDGE END AND NON-BRIDGE APPLICATIONS	BD.1.1.0.02	2 OF 11	BRIDGE APPLICATION, TYPICAL LAYOUT
	BD.1.1.0.03	3 OF 11	THRIE BEAM GUARD RAIL TRANSITION TO BRIDGE RAIL
	BD.1.1.0.04	4 OF 11	NON BRIDGE APPLICATION, TYPICAL LAYOUT
	BD.1.1.0.05	5 OF 11	NON BRIDGE APPLICATION, TYPICAL LAYOUT
	BD.1.1.0.06	6 OF 11	TYPICAL DETAILS AND SECTIONS
	BD.1.1.0.07	7 OF 11	TRAILING END DETAILS
	BD.1.1.0.08	8 OF 11	TRAILING END DETAILS
	BD.1.1.0.09	9 OF 11	RAIL STRUCTURAL DETAILS
	BD.1.1.0.10	10 OF 11	GUARD RAIL POST AND BLOCK DETAILS
	BD.1.1.0.11	11 OF 11	MISCELLANEOUS DETAILS, MOW STRIPS AND CONCRETE ANCHORS
* OFF - SYSTEM BRIDGE	BD.1.2.0.01	1 OF 1	OFF-SYSTEM BRIDGE GUARD RAIL DETAILS
* BOX CULVERT DETAILS	BD.1.3.0.01	1 OF 1	BOX CULVERT GUARD RAIL DETAILS

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN P. FOSSIER | CHECK K. BRAUNER | DETAIL J. DOUCET | CHECK K. BRAUNER | REVIEW C. GUIDRY | SERIES # 1 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

APPROVED BY CHIEF ENGINEER: DATE: 4/13/2023

HIGHWAY GUARD RAIL (MASH) GENERAL NOTES, PAY ITEMS AND STANDARD PLAN INDEX

STANDARD PLAN BD.1.1.0.01 GR-MASH-ON

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

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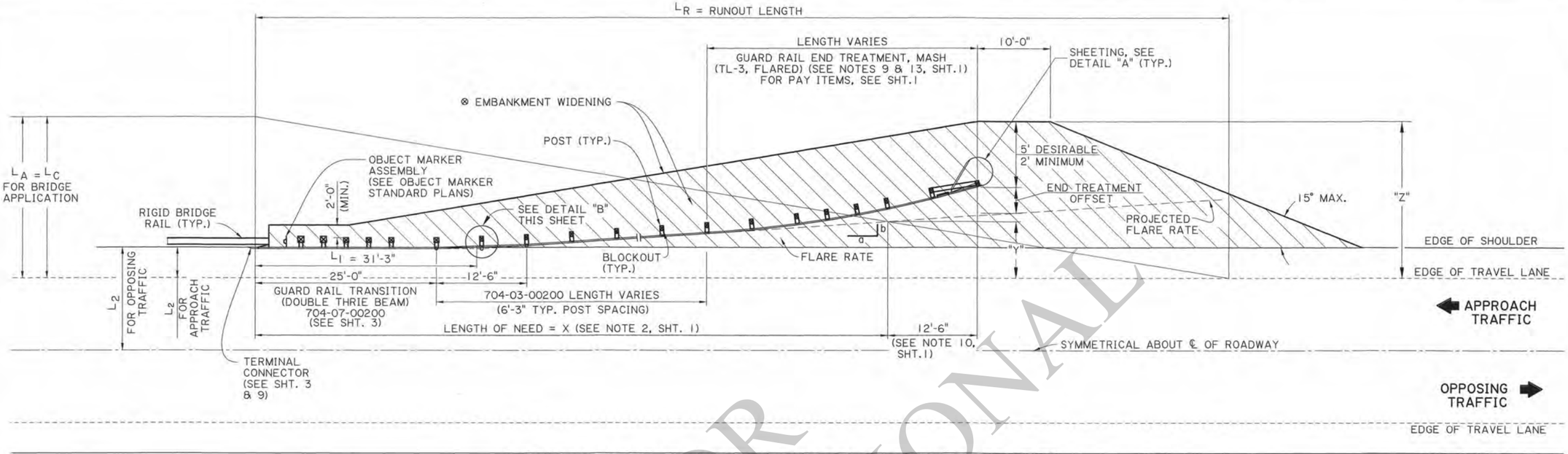
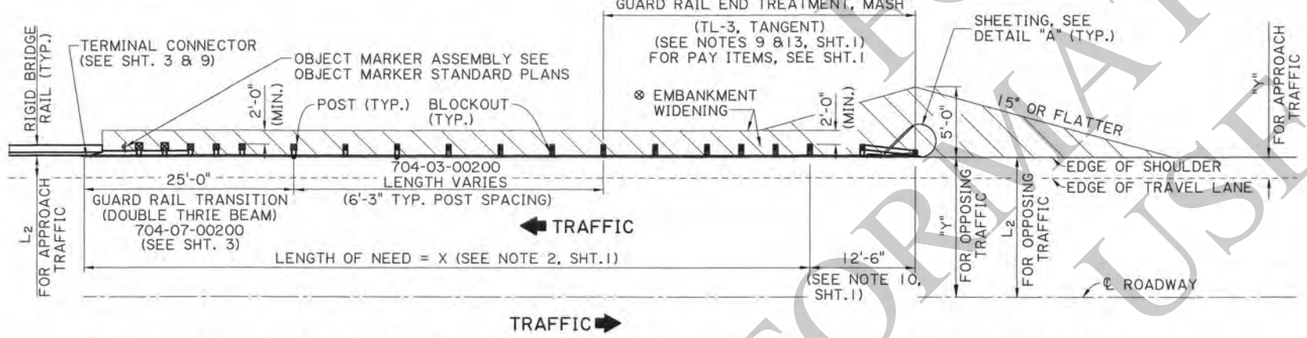


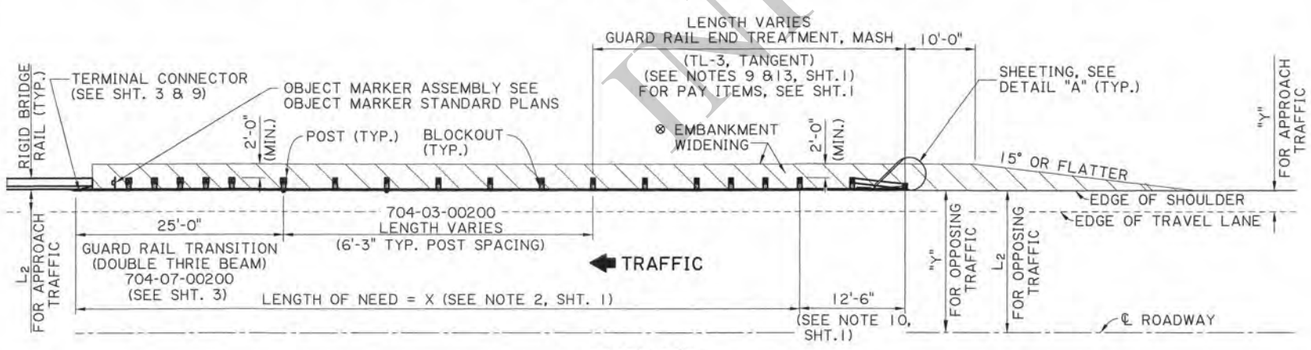
TYPICAL BRIDGE GUARD RAIL LAYOUT WITH FLARED END TREATMENT - PLAN

NOTE: LAYOUT SIMILAR FOR OTHER QUADRANTS OF BRIDGE END
⊗ SEE NOTES 5, 8, AND 12, SHT. 1.



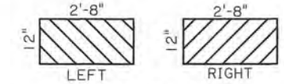
TYPICAL BRIDGE GUARD RAIL LAYOUT WITH TANGENT END TREATMENT - PREFERRED GRADING - PLAN

⊗ SEE NOTES 5, 8, AND 12, SHT. 1.



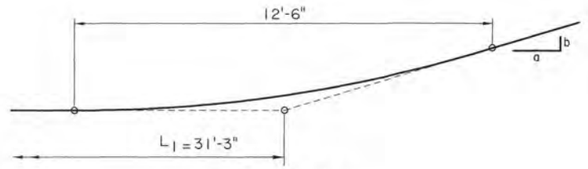
TYPICAL BRIDGE GUARD RAIL LAYOUT WITH TANGENT END TREATMENT - ALTERNATIVE GRADING - PLAN

⊗ SEE NOTES 5, 8, AND 12, SHT. 1.



DETAIL "A"

RETROREFLECTIVE SHEETING
(SEE SHT. 1 NOTE 11)



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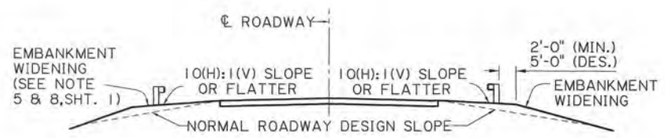

TYPICAL EMBANKMENT WIDENING SECTION

NOTES:

THE DETAILS SHOWN ON THIS SHEET SHALL BE USED TO CONNECT GUARD RAIL TO RIGID BRIDGE RAILS. DETAILS FOR CONNECTING TO A FLEXIBLE BRIDGE RAIL ARE SHOWN ON STANDARD PLAN GRR-06, "APPROACH GUARD RAIL FOR STRUCTURES WITH FLEXIBLE RAILS.".

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT
DESIGN P. FOSSIER	DETAIL J. DOUCET	REVIEW C. GUIDRY
CHECK K. BRAUNER	CHECK K. BRAUNER	SERIES # 2 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

APPROVED BY CHIEF ENGINEER:
DATE: 4/13/2023

HIGHWAY GUARD RAIL (MASH)
BRIDGE APPLICATION
(TYPICAL LAYOUT)

BD.1.1.0.02
STANDARD PLAN GR-MASH-ON

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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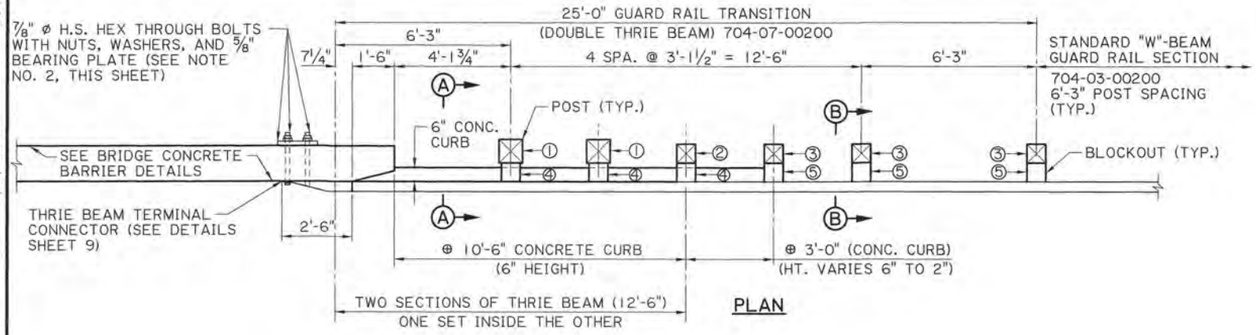
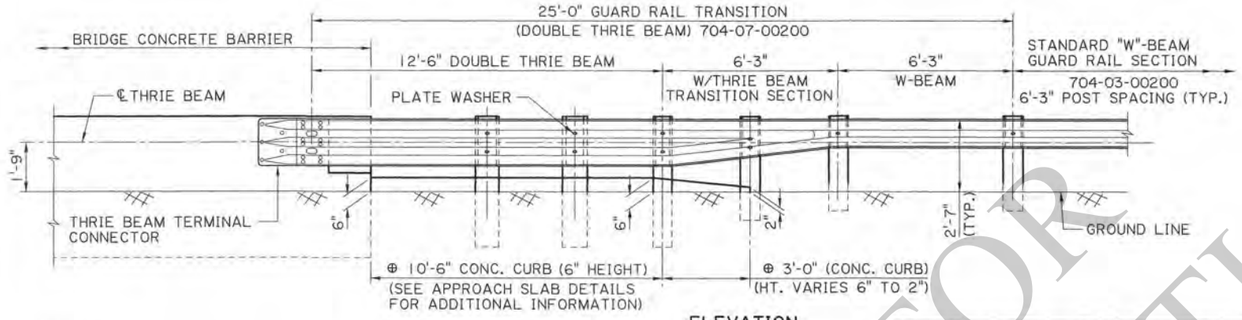




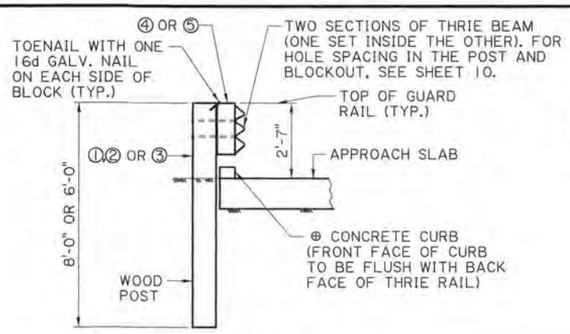
NOTES

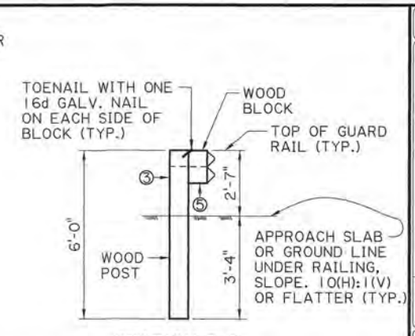
1. THIS GUARD RAIL TRANSITION IS APPROPRIATE FOR CONNECTION TO THE CONCRETE BARRIER SHAPE AS SHOWN. SEE BRIDGE BARRIER RAILING DETAILS FOR INFORMATION.
2. 7/8" ø H.S. BOLTS FOR CONCRETE BARRIER AND THRIE BEAM TERMINAL CONNECTOR SHALL BE ASTM A449. FOR 5/8" STEEL BEARING PLATE, SEE SHEET 9. GALVANIZING SHALL BE IN ACCORDANCE WITH ASTM A153.
* 3. STEEL POST ALTERNATES: STEEL POSTS ARE ALLOWED AS AN ALTERNATE TO WOOD POSTS. USE W8 x 24 STEEL POST ALTERNATE FOR 10" x 10" WOOD POST. USE W6 x 25 STEEL POST ALTERNATE FOR 8" x 8" WOOD POST. USE SAME LENGTHS AS WOOD POSTS.
4. BLOCKOUTS: USE WOOD BLOCKOUTS ONLY, STEEL AND RECYCLED BLOCKOUTS ARE NOT PERMITTED FOR THE GUARD RAIL TRANSITION. ALL WOOD BLOCKOUTS ARE REQUIRED TO BE ROUTED WHEN USED WITH STEEL POSTS. SEE SHEET 10.
5. INTERMIXING OF STEEL AND WOOD POSTS IN THE GUARD RAIL TO BRIDGE RAIL TRANSITION SECTION IS NOT ALLOWED.
⊕ 6. FOR GUARD RAIL TRANSITIONS CONSTRUCTED WITH NEW APPROACH SLABS, CONCRETE CURBS SHALL BE USED AND PAID FOR WITH THE APPROACH SLAB PAY ITEM. FOR GUARD RAIL TRANSITIONS CONSTRUCTED WHEN THE APPROACH SLAB OR PAVEMENT IS EXISTING AND A NEW CURB IS NEEDED, THE ASPHALT CURB ALTERNATE DETAIL SHALL BE USED ON ASPHALT PAVEMENTS, AND PAID FOR UNDER 707-04-00100, "ASPHALT CURB" OR AS INDICATED IN THE PLANS. ON EXISTING CONCRETE PAVEMENTS, THE CONCRETE CURB ALTERNATE DETAIL SHALL BE USED AND PAID FOR UNDER 707-01-00100, "CONCRETE CURB" OR AS INDICATED IN THE PLANS.
7. THE USE OF THIS BRIDGE BARRIER TRANSITION HAS ONLY BEEN APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, THEIR CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

*WOOD POST & WOOD BLOCKOUT FOR GUARD RAIL TRANSITION

NO.	SIZE (WIDTHxDEPTHxLENGTH)
①	10" x 10" x 8'-0" POST
②	8" x 8" x 8'-0" POST
③	8" x 8" x 6'-0" POST
④	8" x 8" x 1'-10" BLOCKOUT
⑤	8" x 8" x 1'-2" BLOCKOUT

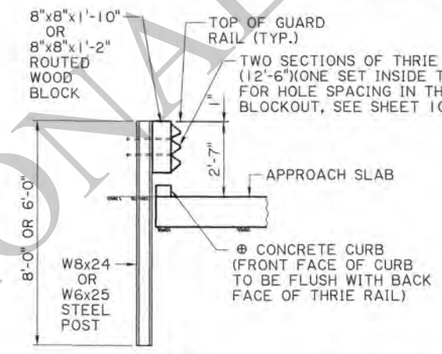
*SEE NOTE FOR STEEL POST ALTERNATE

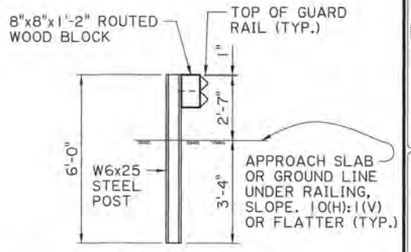




WOOD POST & WOOD BLOCKOUT

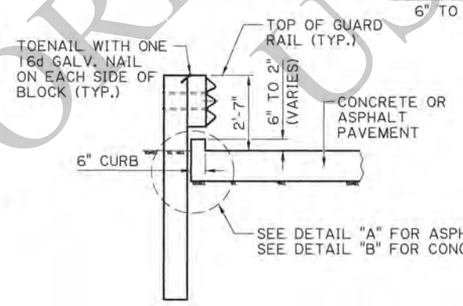
(POST & BLOCKOUT SIZE VARY IN TRANSITION, SEE PLAN VIEW)



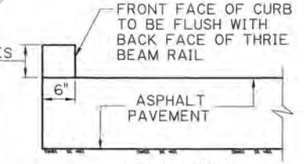


STEEL POST & ROUTED WOOD BLOCKOUT ALTERNATE

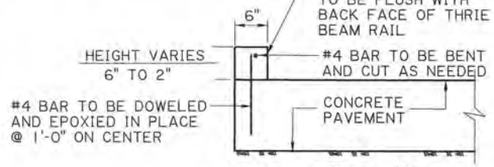
(POST & BLOCKOUT SIZE VARY IN TRANSITION, SEE PLAN VIEW)



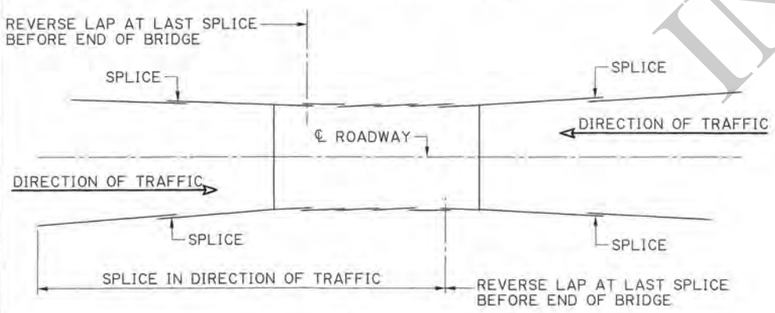
⊕CURB ALTERNATE FOR EXISTING PAVEMENTS - SECTION A-A
N.T.S.



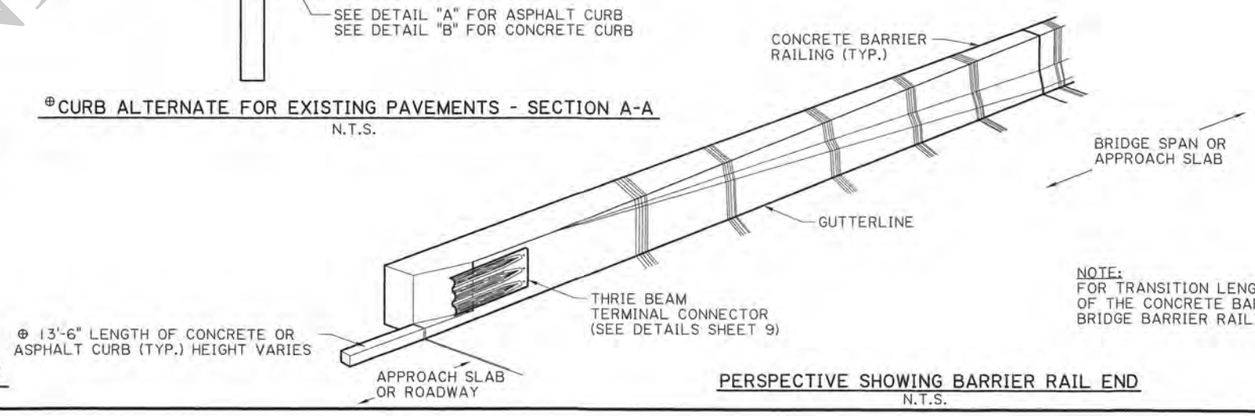
DETAIL "A"
N.T.S.



DETAIL "B"
N.T.S.



LAYOUT SHOWING DIRECTION OF GUARD RAIL SPLICE FOR TWO WAY TRAFFIC
N.T.S.



PERSPECTIVE SHOWING BARRIER RAIL END
N.T.S.

NOTE:
FOR TRANSITION LENGTH & DETAILS OF THE CONCRETE BARRIER, SEE BRIDGE BARRIER RAILING DETAILS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER
CHECK	K. BRAUNER
DETAIL	J. DOUCET
CHECK	K. BRAUNER
REVIEW	C. GUIDRY
SERIES #	3 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

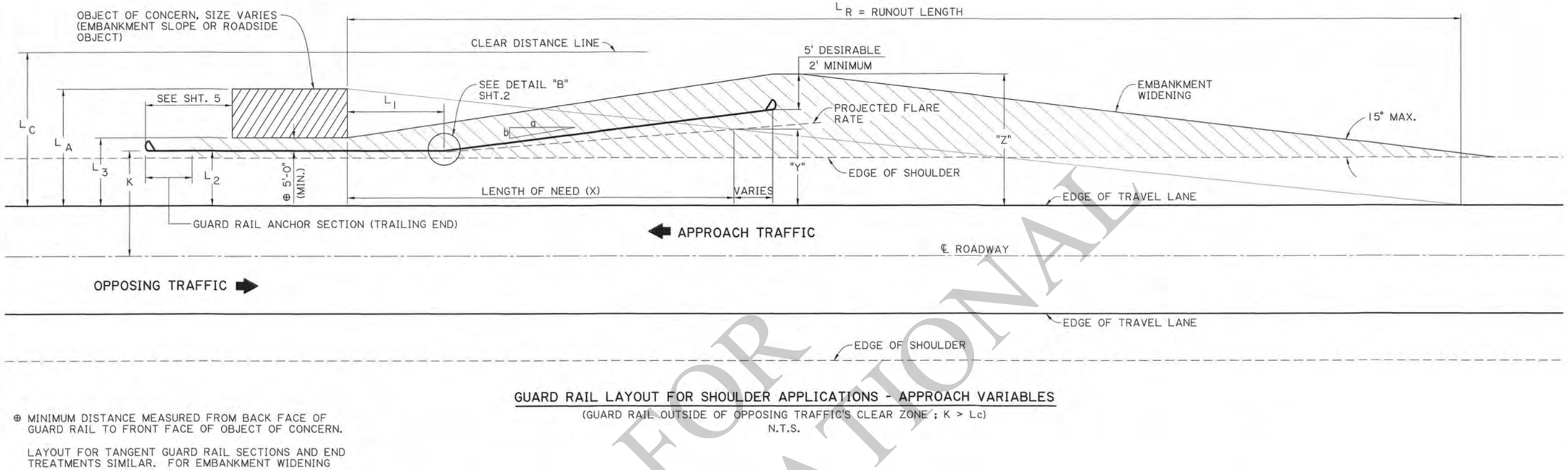
APPROVED BY CHIEF ENGINEER:
DATE: 4/13/2023

HIGHWAY GUARD RAIL (MASH)
THRIE BEAM GUARD RAIL TRANSITION TO BRIDGE RAIL

STANDARD PLAN: BD.1.1.0.03
GR-MASH-ON

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

13:26
3/1/2023

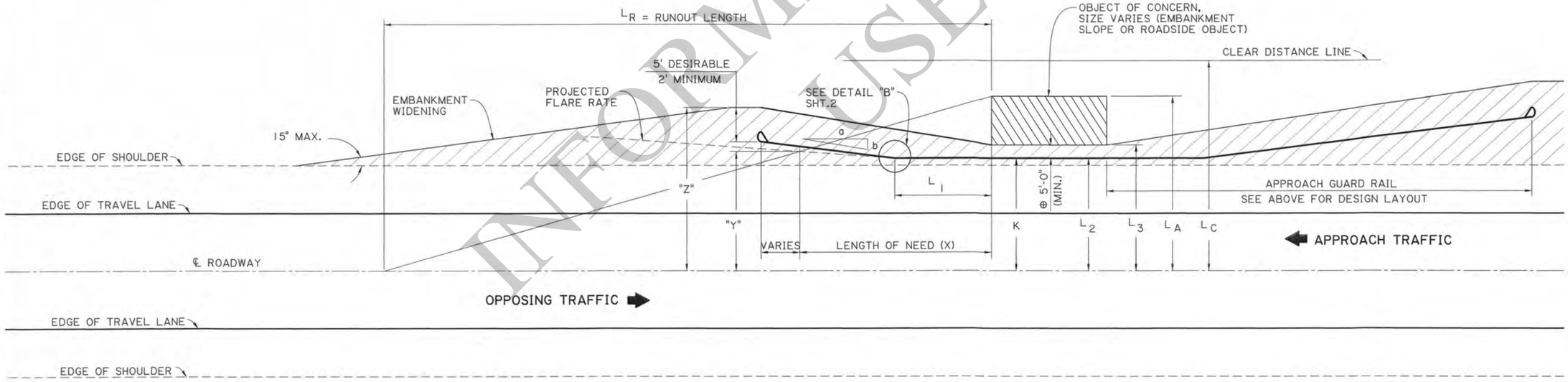


GUARD RAIL LAYOUT FOR SHOULDER APPLICATIONS - APPROACH VARIABLES

(GUARD RAIL OUTSIDE OF OPPOSING TRAFFIC'S CLEAR ZONE ; K > Lc)
N.T.S.

⊕ MINIMUM DISTANCE MEASURED FROM BACK FACE OF GUARD RAIL TO FRONT FACE OF OBJECT OF CONCERN.

LAYOUT FOR TANGENT GUARD RAIL SECTIONS AND END TREATMENTS SIMILAR. FOR EMBANKMENT WIDENING DETAILS, SEE SHT. NO. 2.



GUARD RAIL LAYOUT FOR SHOULDER APPLICATIONS - OPPOSING VARIABLES

(GUARD RAIL INSIDE OF OPPOSING TRAFFIC'S CLEAR ZONE ; K < Lc)
N.T.S.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER
CHECK	K. BRAUNER
DETAIL	J. DOUCET
CHECK	K. BRAUNER
REVIEW	C. GUIDRY
SERIES #	4 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

APPROVED BY CHIEF ENGINEER:
DATE: 4/13/2023

HIGHWAY GUARD RAIL (MASH)
NON-BRIDGE APPLICATION
(TYPICAL LAYOUT)

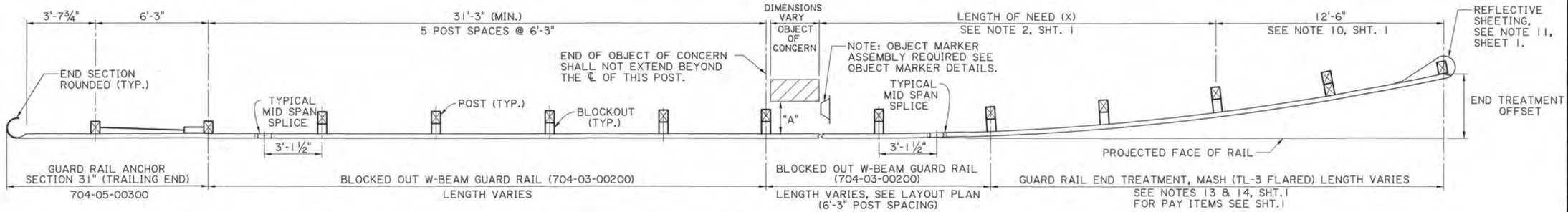
STANDARD PLAN NO. BD.1.1.0.04

GR-MASH-ON

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

IP_PWP:d1074021\BD.1.1.0.04 - HIGHWAY GUARD RAIL (MASH).dgn

13:27
3/1/2023

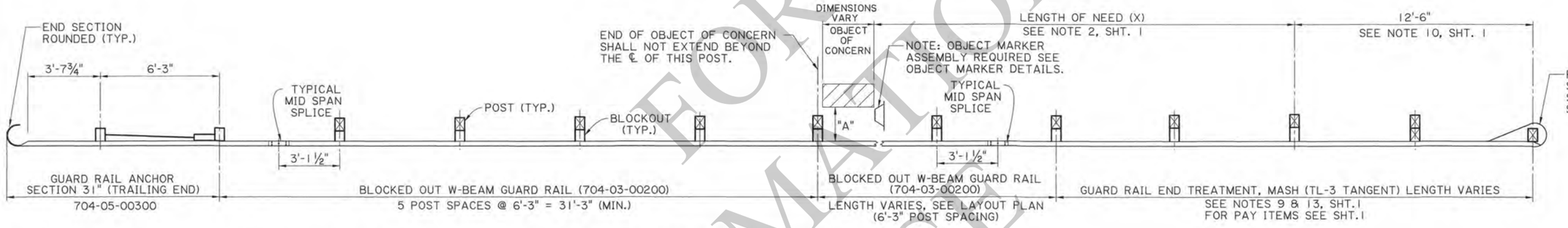


FOR TRAILING END TERMINAL DETAILS AND NOTES, SEE SHTS. 7 & 8.

BACK FACE OF GUARD RAIL TO FRONT FACE OF OBJECT = "A" = 5'-0" MIN.

PLAN - NON-BRIDGE END APPLICATION - FLARED

N.T.S.

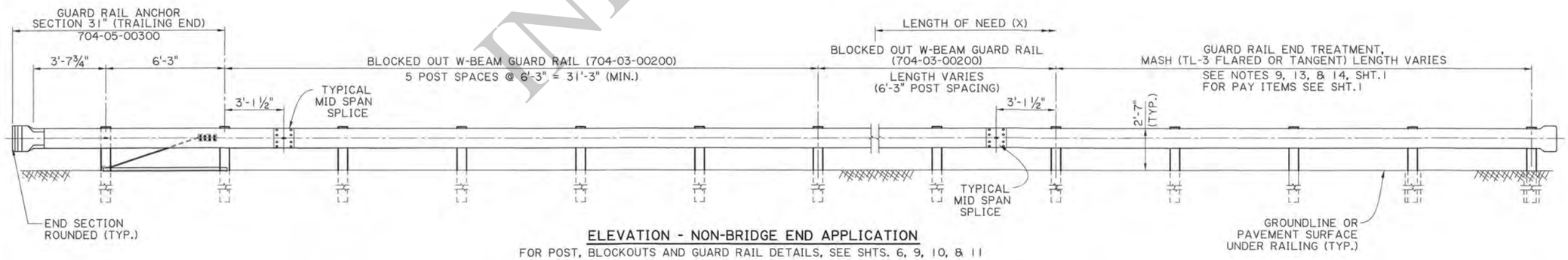


FOR TRAILING END TERMINAL DETAILS AND NOTES, SEE SHTS. 7 & 8.

BACK FACE OF GUARD RAIL TO FRONT FACE OF OBJECT = "A" = 5'-0" MIN.

PLAN - NON-BRIDGE END APPLICATION - TANGENT

N.T.S.



ELEVATION - NON-BRIDGE END APPLICATION

FOR POST, BLOCKOUTS AND GUARD RAIL DETAILS, SEE SHTS. 6, 9, 10, & 11

N.T.S.

FOR INFORMATIONAL USE

SHEET NUMBER		
PARISH	CONTROL SECTION	STATE PROJECT
DESIGN P. FOSSIER / CHECK K. BRAUNER	DETAIL J. DOUCET / CHECK K. BRAUNER	REVIEW C. GUIDRY / SERIES # 5 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

APPROVED BY CHIEF ENGINEER: Christopher P. Knotts
DATE: 4/13/2023

STATE OF LOUISIANA
JOHN BEL EDWARDS
GOVERNOR

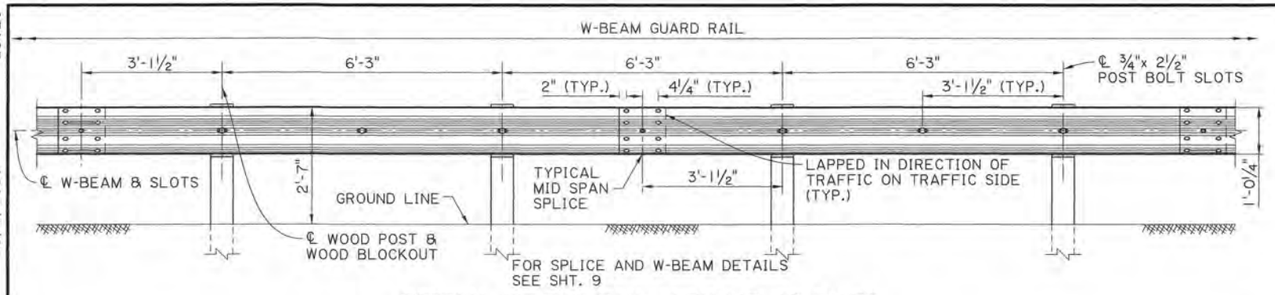
HIGHWAY GUARD RAIL (MASH)
NON-BRIDGE APPLICATION
(TYPICAL LAYOUT)

BD.1.1.1.0.05
STANDARD PLAN
GR-MASH-ON

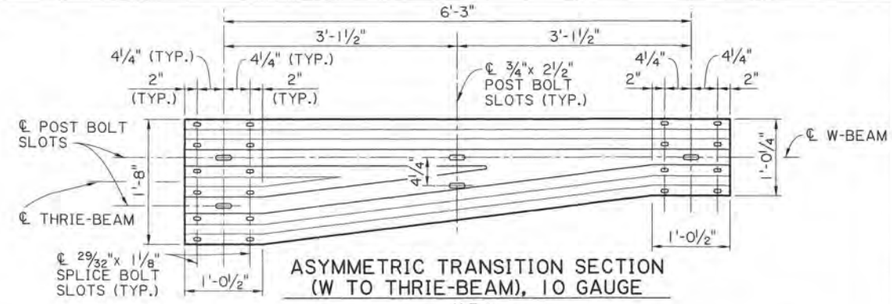
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

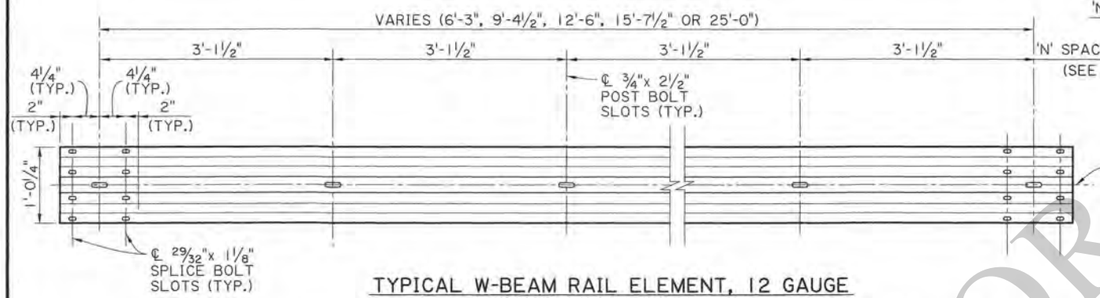
IP_PWP:d1074021\BD.1.1.0.05 - HIGHWAY GUARD RAIL (MASH).dgn



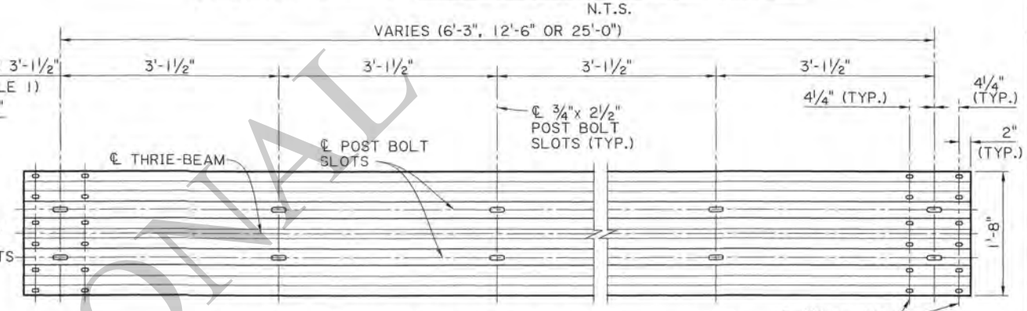
TYPICAL W-BEAM RAIL ELEMENT, 12 GAUGE
N.T.S.



ASYMMETRIC TRANSITION SECTION (W TO THRIE-BEAM), 10 GAUGE
N.T.S.



TYPICAL W-BEAM RAIL ELEMENT, 12 GAUGE
(FOR TRAILING END, SEE SHEET 7)
N.T.S.



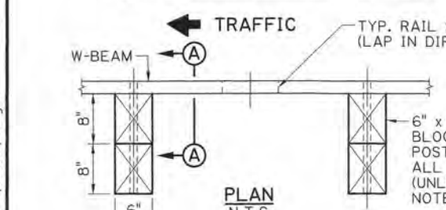
TYPICAL THRIE-BEAM RAIL ELEMENT, 12 GAUGE
N.T.S.

* W6x8.5 MAY BE USED AS AN ALTERNATE.

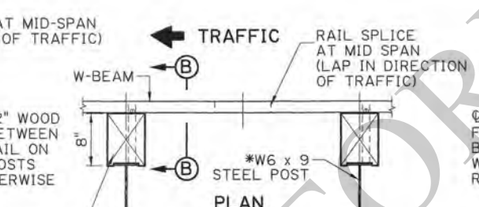
TABLE 1: ELEMENT SUMMARY TABLE:

PANEL TYPE	NUMBER OF SPACES 'N'	GAUGE
6'-3" W-BEAM	2	12
9'-4½" W-BEAM	3	12
12'-6" W-BEAM	4	12
15'-7½" W-BEAM	5	12
25'-0" W-BEAM	8	12

PANEL TYPE	NUMBER OF SPACES 'N'	GAUGE
6'-3" THRIE-BEAM	2	12
12'-6" THRIE-BEAM	4	12
25'-0" THRIE-BEAM	8	12
THRIE-BEAM TRANSITION	2	10

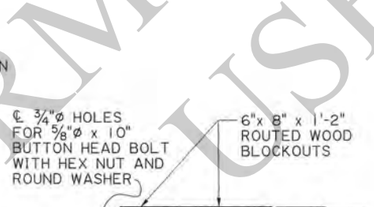


DETAIL OF 6" x 8" x 6'-0" WOOD POSTS⊕ AND WOOD BLOCKS-STD. GUARD RAIL
N.T.S.

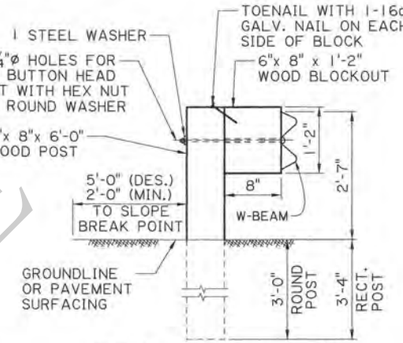


*DETAIL OF W6 x 9 STEEL POSTS AND WOOD BLOCKS-STD. GUARD RAIL
N.T.S.

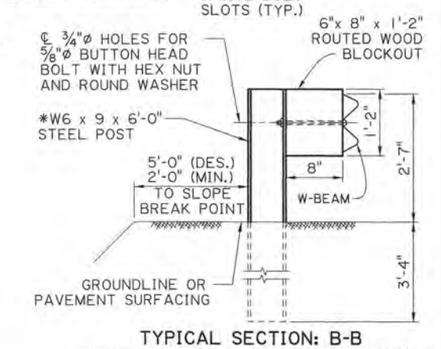
⊕ 7 ½"ø x 6'-0" ROUND WOOD POST AND WOOD BLOCK MAY BE USED IN LIEU OF 6" x 8" X 6'-0" WOOD POSTS AND WOOD BLOCK. SEE SHEET 10.



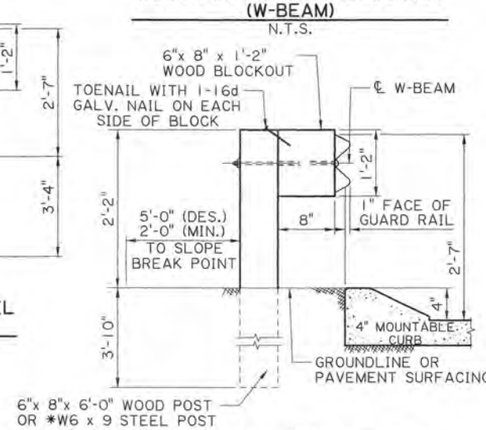
TYPICAL W-BEAM MEDIAN BARRIER DETAIL STEEL POST ONLY
N.T.S.



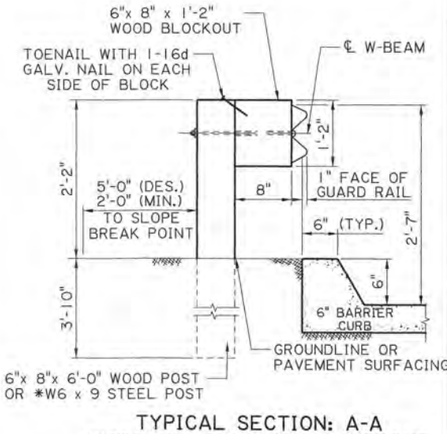
TYPICAL SECTION: A-A⊕ WOOD POST & WOOD BLOCKOUT (W-BEAM)
N.T.S.



TYPICAL SECTION: B-B STEEL POST & WOOD BLOCKOUT (W-BEAM)
N.T.S.



TYPICAL SECTION: A-A WOOD POST & WOOD BLOCKOUT WITH 4" MOUNTABLE CURB
N.T.S.



TYPICAL SECTION: A-A WOOD POST & WOOD BLOCKOUT WITH 6" BARRIER CURB
N.T.S.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN P. FOSSIER CHECK K. BRAUNER
DETAIL J. DOUCET CHECK K. BRAUNER
REVISED C. GUIDRY SERIES # 6 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

APPROVED BY CHIEF ENGINEER: DATE: 4/13/2023

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

HIGHWAY GUARD RAIL (MASH) TYPICAL DETAILS AND SECTIONS

BD.1.1.0.06 GR-MASH-ON STANDARD PLAN

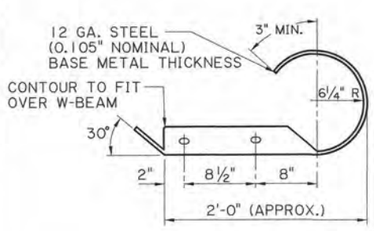
DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

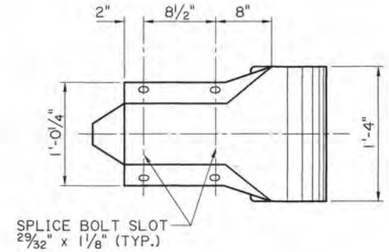
3/1/2023 13:28

IP_PWP:d1074021\BD.1.1.0.06 - HIGHWAY GUARD RAIL (MASH).dgn

13:37
3/1/2023

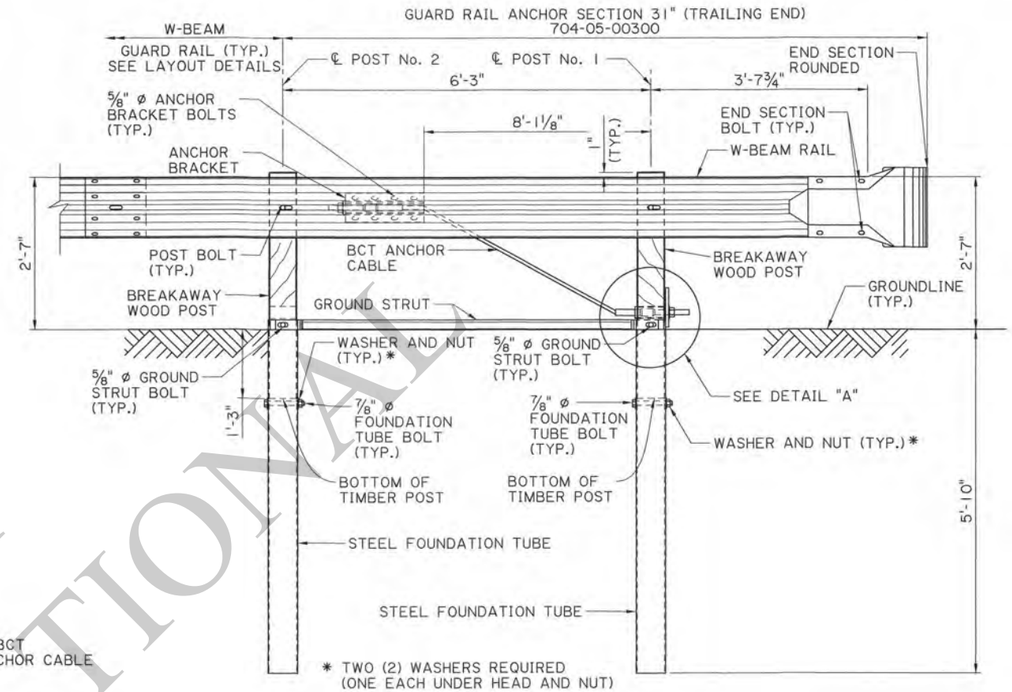


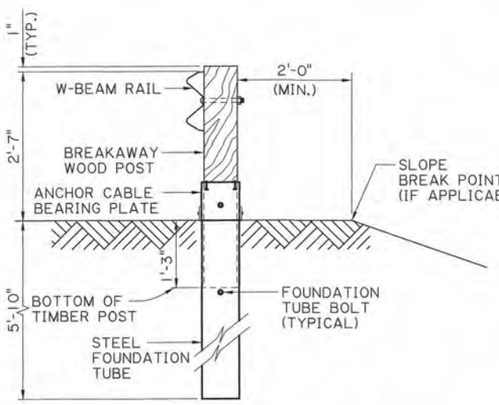
PLAN VIEW



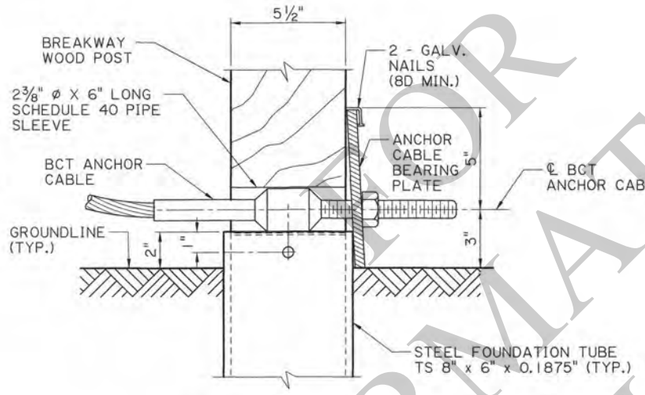
FRONT VIEW

W BEAM END SECTION ROUNDED
N.T.S.

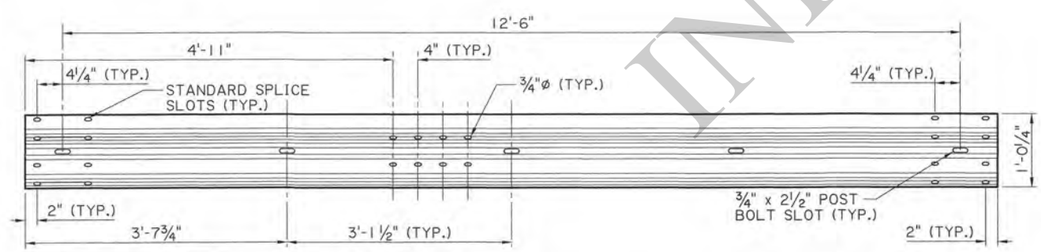




SECTION A-A - POST No. 1
N.T.S.

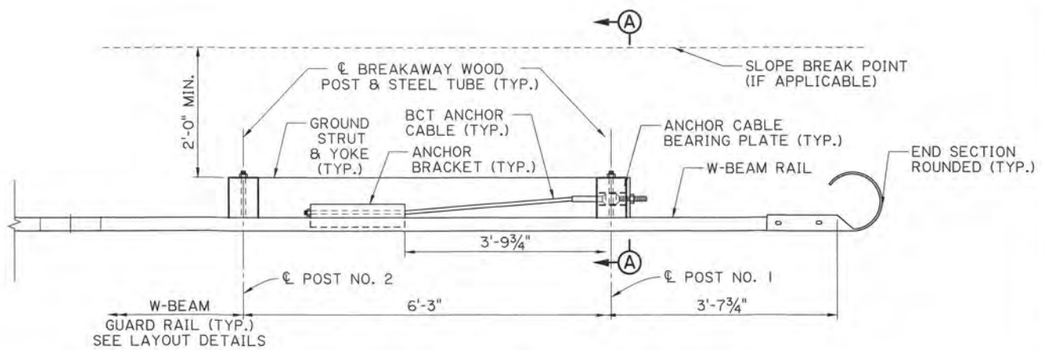


DETAIL "A" - POST No. 1
POST #1 GROUND STRUT NOT SHOWN FOR CLARITY.
POST #2 SIMILAR W/O BCT ANCHOR CABLE AND BEARING PLATE.
N.T.S.



TYPICAL 12'-6" W-BEAM SECTION, 12 GAUGE, TRAILING END SECTION
N.T.S.

TRAILING END RAIL DETAIL - ELEVATION
NOTE: FOR OTHER TRAILING END TERMINAL DETAILS, SEE SHT. 8 OF 11.
N.T.S.



TRAILING END RAIL DETAIL - PLAN
N.T.S.

FOR INFORMATIONAL USE

IP PWP:d1074021\BD.1.1.0.07 - HIGHWAY GUARD RAIL (MASH).dgn

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN P. FOSSIER | DETAIL J. DOUCET | REVIEW C. GUIDRY
CHECK K. BRAUNER | CHECK K. BRAUNER | SERIES # 7 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

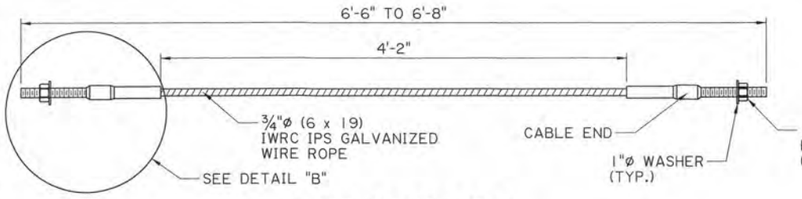
APPROVED BY CHIEF ENGINEER:
DATE: 4/13/2023

HIGHWAY GUARD RAIL (MASH)
TRAILING END DETAILS

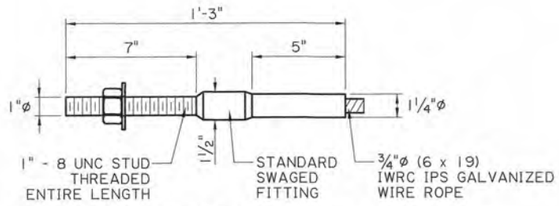
BD.1.1.0.07
GR-MASH-ON
STANDARD PLAN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

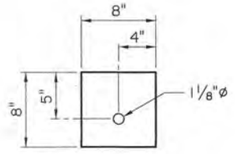
13:38
3/1/2023



BCT ANCHOR CABLE
N.T.S.



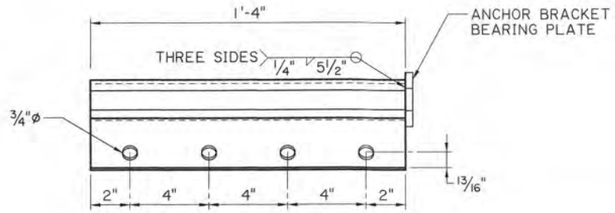
DETAIL "B"

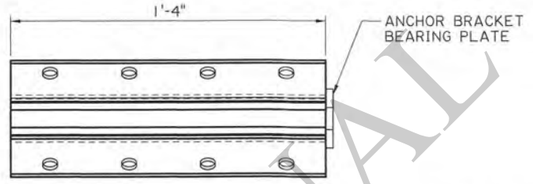


SIDE VIEW

FRONT VIEW

ANCHOR CABLE
BEARING PLATE
N.T.S.



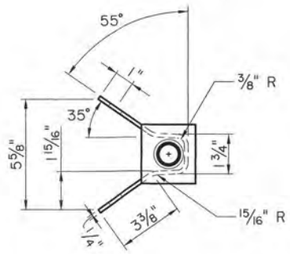


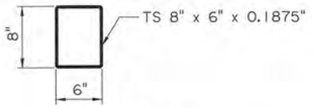
STEEL ANCHOR BRACKET
N.T.S.

NOTES:

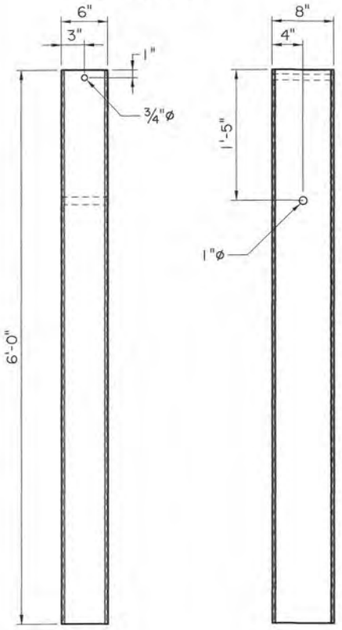
FOUNDATION TUBE BOLTS ARE ⅞" DIAMETER ASTM A307 HEX HEAD BOLT. FOUNDATION TUBE BOLTS REQUIRE ASTM A563 A NUT AND TWO ASTM F844 ⅞" DIAMETER FLAT WASHERS. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.

ANCHOR BRACKET AND GROUND STRUT BOLTS ARE ⅝" DIAMETER ASTM A307 HEX HEAD BOLTS AND REQUIRE ASTM A563 A NUTS AND TWO ASTM F844 ⅝" DIAMETER FLAT WASHERS EACH. INSTALL ONE WASHER UNDER BOLT HEAD AND ONE WASHER UNDER NUT.



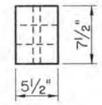


PLAN VIEW

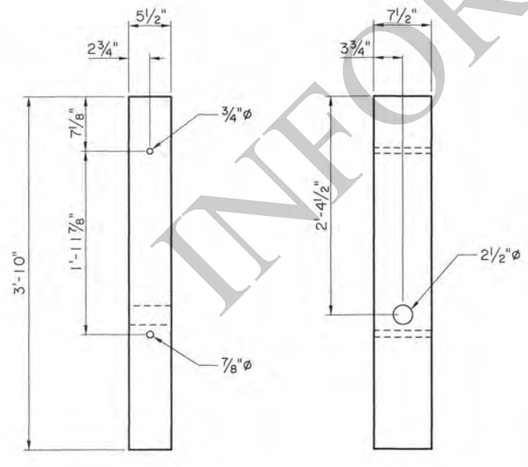


FRONT VIEW SIDE VIEW

FOUNDATION TUBE
N.T.S.

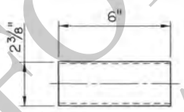


PLAN VIEW

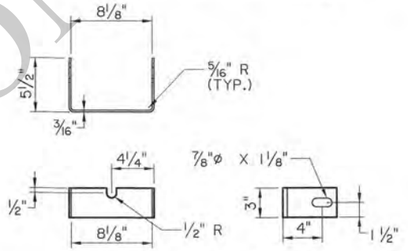


FRONT VIEW SIDE VIEW

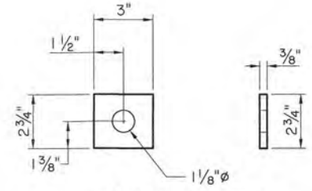
BREAKAWAY WOOD POST
N.T.S.



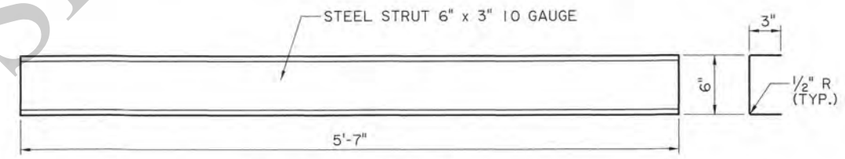
2⅜"ø POST SLEEVE
N.T.S.



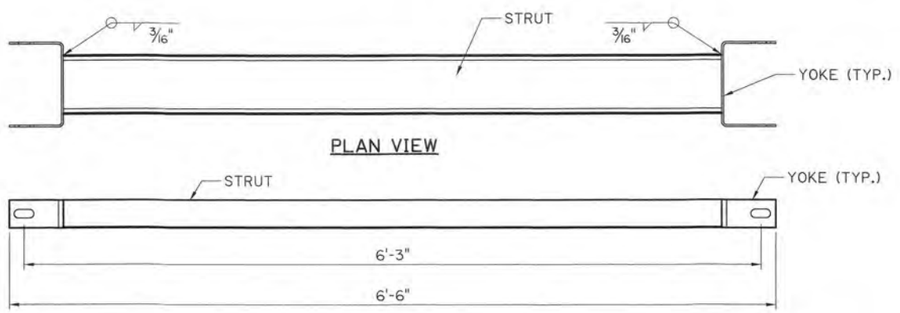
YOKE DETAIL
N.T.S.



ANCHOR BRACKET
BEARING PLATE
N.T.S.



STRUT - PLAN VIEW
N.T.S.



FRONT VIEW
GROUND STRUT DETAIL
N.T.S.

FOR INFORMATIONAL USE

IP_PWP:d1074021\BD.1.1.0.08 - HIGHWAY GUARD RAIL (MASH).dgn

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER	DETAIL	J. DOUCET	REVIEW	C. GUIDRY
CHECK	K. BRAUNER	CHECK	K. BRAUNER	SERIES #	8 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

APPROVED BY CHIEF ENGINEER:
DATE: 4/8/2023

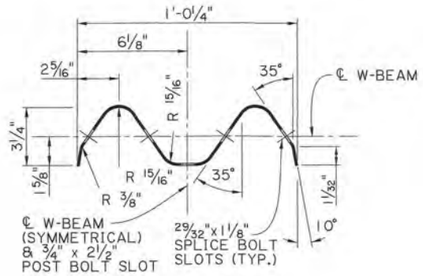
STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

HIGHWAY GUARD RAIL (MASH)
TRAILING END DETAILS

BD.1.1.0.08
GR-MASH-ON
STANDARD PLAN

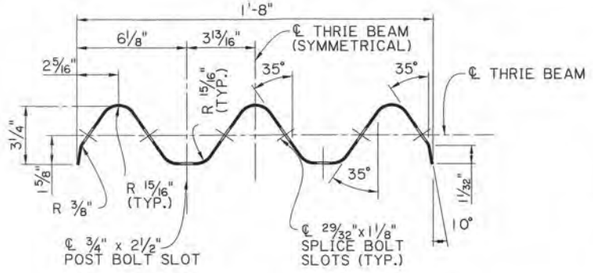
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

3/1/2023 13:39



TYPICAL W BEAM

N.T.S.



TYPICAL THRIE BEAM

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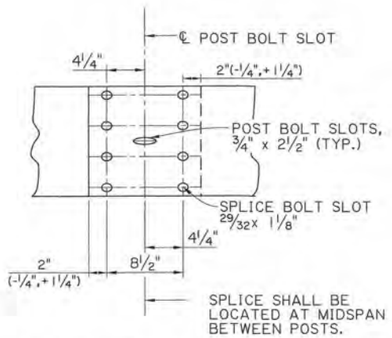
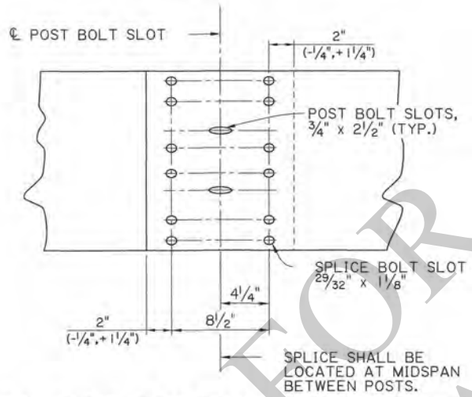


TYPICAL W-BEAM SPLICE DETAIL - ELEVATION

5/8"ø x 1 1/4" BUTTON HEAD OVAL SHOULDER BOLTS WITH 5/8"ø RECESSED HEX NUTS-TOTAL 8 PER SPLICE. LAP IN DIRECTION OF TRAFFIC.

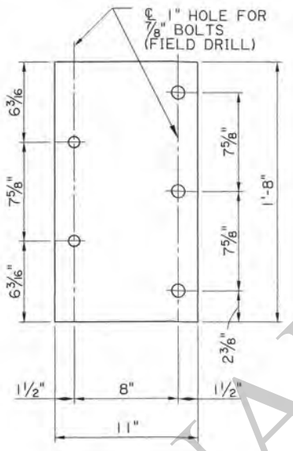
N.T.S.



TYPICAL THRIE BEAM SPLICE DETAIL - ELEVATION

5/8"ø x 1 1/4" BUTTON HEAD OVAL SHOULDER BOLTS WITH 5/8"ø RECESSED HEX NUTS-TOTAL 12 PER SPLICE. LAP IN DIRECTION OF TRAFFIC.

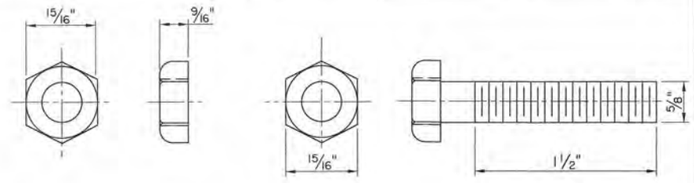
N.T.S.



5/8"ø BEARING PLATE

(FOR ANCHORING THRIE BEAM TO CONCRETE BARRIER RAIL)

N.T.S.

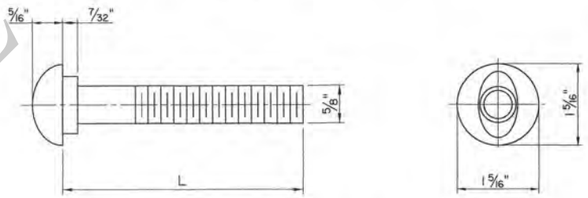


NUT BOLT

5/8"ø HEX BOLT & HEX NUT

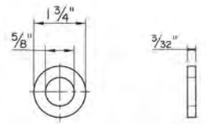
(FOR FASTENING THE ANCHOR BRACKET TO RAIL IN TRAILING END)

N.T.S.



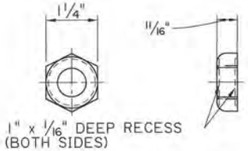
5/8"ø BUTTON HEAD BOLT

N.T.S.



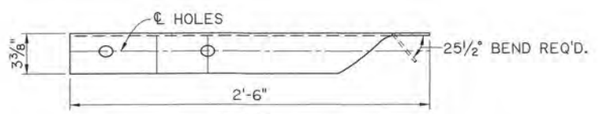
5/8"ø POST BOLT WASHERS

N.T.S.

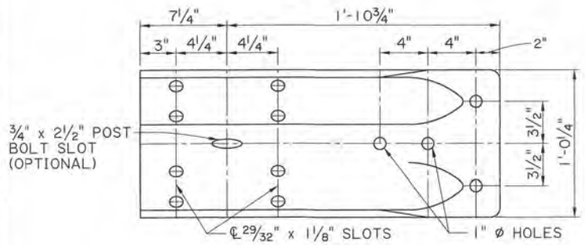


5/8"ø RECESS NUT

N.T.S.



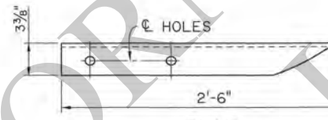
PLAN



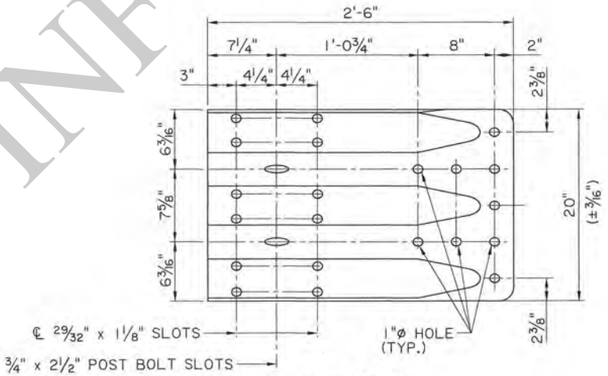
ELEVATION

TYPICAL W BEAM TERMINAL CONNECTOR, 10 GAUGE

N.T.S.



PLAN



ELEVATION

TYPICAL THRIE BEAM TERMINAL CONNECTOR, 10 GAUGE

N.T.S.

5/8"ø BUTTON HEAD NUT	
L	THREAD LENGTH
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
1'-6"	4"
1'-8"	4"

NOTES:

5/8"ø BUTTON HEAD BOLTS:

(1 1/4" LENGTH): THIS BOLT IS USED TO SPLICE RAIL ELEMENTS USED IN THE STANDARD CORRUGATED SHEET STEEL BEAM GUARD RAIL.

(2" LENGTH): THIS BOLT IS FOR FASTENING RAILS TO STEEL POSTS WHEN USED IN THE STANDARD CORRUGATED SHEET STEEL BEAM GUARD RAIL.

(10" LENGTH): THIS BOLT IS USED FOR FASTENING RAILS TO WOOD BLOCK AND STEEL POST IN THE STANDARD CORRUGATED SHEET STEEL BEAM GUARD RAIL.

(1'-6" LENGTH): THIS BOLT IS FOR FASTENING WOOD BLOCKS & WOOD POSTS IN THE STANDARD CORRUGATED SHEET STEEL BEAM GUARD RAIL.

(1'-8" LENGTH): THIS BOLT IS FOR FASTENING NESTED THRIE BEAM TO WOOD BLOCKS AND POST AT THE FIRST TWO POST LOCATIONS IN THE GUARD RAIL TRANSITION AT THE ENDS OF RIGID (CONCRETE) STRUCTURES, UNLESS OTHERWISE SHOWN IN THE PLANS.

5/8" ø BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A 307 GRADE "A" AND NUTS SHALL BE IN ACCORDANCE WITH ASTM A 563 GRADE "A" OR BETTER. BOLTS AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 153.

STEEL POST & PLATES:

ALL STEEL POSTS AND PLATES SHALL CONFORM TO ASTM A 36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM 123, NO PUNCHING, DRILLING OR CUTTING WILL BE PERFORMED AFTER GALVANIZING.

NOTES:

1. ALL RAIL COMPONENTS EXCEPT THE W AND THRIE BEAM TERMINAL CONNECTORS AND THE W TO THRIE BEAM TRANSITION SHALL MEET AASHTO M 180, CLASS "A" (12 GAUGE) METAL THICKNESS WITH A TYPE II COATING. THE W BEAM AND THRIE BEAM TERMINAL CONNECTORS AND TRANSITION SECTIONS SHALL BE CLASS "B" (10 GAUGE) METAL THICKNESS WITH TYPE II COATING.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT#

DESIGN	P. FOSSIER
CHECK	K. BRAUNER
DETAIL	J. DOUCET
CHECK	K. BRAUNER
REVIEW	C. GUIDRY
SERIES #	9 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

APPROVED BY CHIEF ENGINEER:
DATE: 1/13/2023

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

HIGHWAY GUARD RAIL (MASH) RAIL STRUCTURAL DETAILS

BD.1.1.0.09

STANDARD PLAN NO.

GR-MASH-ON

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

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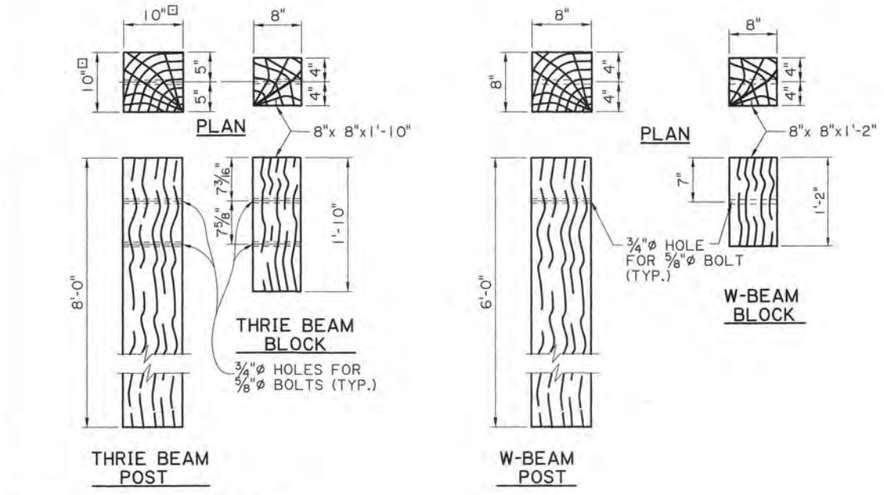
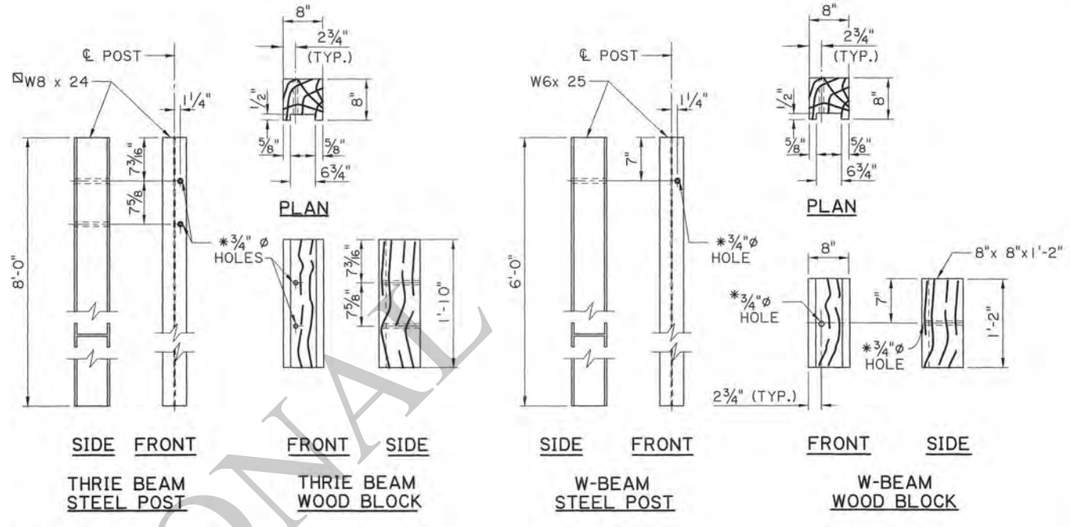


⊡ THRIE BEAM POST IS 8"x 8"x 8'-0" FOR TRANSITION POST No. 3.

WOOD POST AND WOOD BLOCK FOR THRIE BEAM TRANSITION TO BRIDGE RAIL

(POST SIZE, BLOCK SIZE AND HOLE LOCATIONS VARY WITH LOCATION IN TRANSITION, SEE SHT.3)

N.T.S.

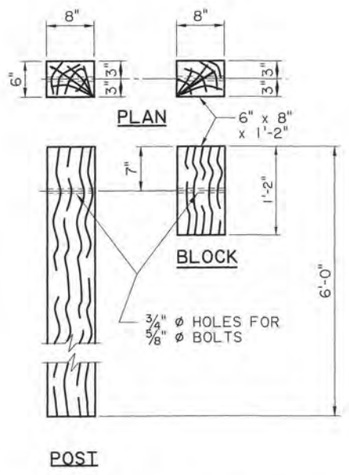


⊠ THRIE BEAM POST IS W6 x 25 (8'-0") FOR TRANSITION POST No. 3.

STEEL POST AND ROUTED WOOD BLOCK FOR THRIE BEAM TRANSITION TO BRIDGE RAIL

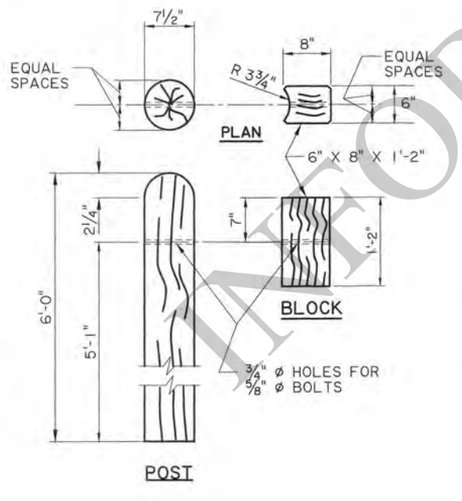
(POST SIZE, BLOCK SIZE AND HOLE LOCATIONS VARY WITH LOCATION IN TRANSITION, SEE SHT.3)

N.T.S.



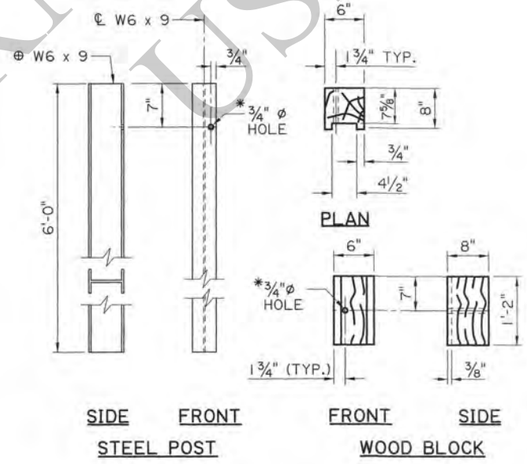
WOOD POST AND WOOD BLOCK FOR STANDARD W-BEAM GUARD RAIL

N.T.S.



ROUND WOOD POST AND WOOD BLOCK FOR STANDARD W-BEAM GUARD RAIL ⊕

N.T.S.



STEEL POST AND ROUTED WOOD BLOCK FOR STANDARD W-BEAM GUARD RAIL

N.T.S.

NOTES:

1. A RECYCLED BLOCK ALTERNATE IS ALLOWED AS A SUBSTITUTE FOR THE WOOD BLOCK ON A 1 FOR 1 BASIS IN A STANDARD BLOCKED-OUT SECTION AT NO ADDITIONAL PAYMENT. RECYCLED BLOCKS SHALL NOT BE USED IN TRANSITIONS, END TREATMENTS, OR IN TRAILING END SECTIONS. THE RECYCLED BLOCK SHALL HAVE FHWA HARDWARE ELIGIBILITY AND SHALL MEET AASHTO MASH REQUIREMENTS.

⊕ 2. A W6 x 8.5 STEEL POST MAY BE USED AS AN ALTERNATE FOR A W6 x 9 POST.

* 3. POST AND BLOCK HOLES SHALL BE DRILLED ADJACENT TO THE DIRECTION OF THE ON-COMING TRAFFIC.

4. ALL WOOD BLOCKS SHALL BE TOE-NAILED TO WOOD POSTS AND BLOCKS (INCLUDING BLOCK COMBINATIONS) WITH A 16d GALVANIZED NAIL TO PREVENT BLOCK ROTATION. (ONE ON EACH SIDE)

⊕ 5. THE ROUND WOOD POST AND WOOD BLOCKOUT IS ALLOWED TO REPLACE THE 6" X 8" STANDARD LINE POST AND BLOCKOUT FOR W BEAM. THE ROUND WOOD POSTS SHALL NOT BE USED AS AN ALTERNATE FOR CRT POSTS, BCT POSTS, OR THE POSTS IN THE GUARD RAIL TO BRIDGE RAIL TRANSITION SECTION. ROUND POSTS SHALL NOT BE USED IN THE TRAILING END SECTION, BEHIND A CURB, OR IN A GUARD RAIL END TREATMENT UNLESS SPECIFICALLY ALLOWED BY THE MANUFACTURER.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	K. BRAUNER	DETAIL	B. ALLEN	REVIEW C. GUIDRY
CHECK	B. ALLEN	CHECK	K. BRAUNER	SERIES # 10 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

APPROVED BY CHIEF ENGINEER:
DATE: 1/13/2023

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

HIGHWAY GUARD RAIL (MASH)
POST AND BLOCK DETAILS

STANDARD PLAN BD.1.1.0.10 GR-MASH-ON

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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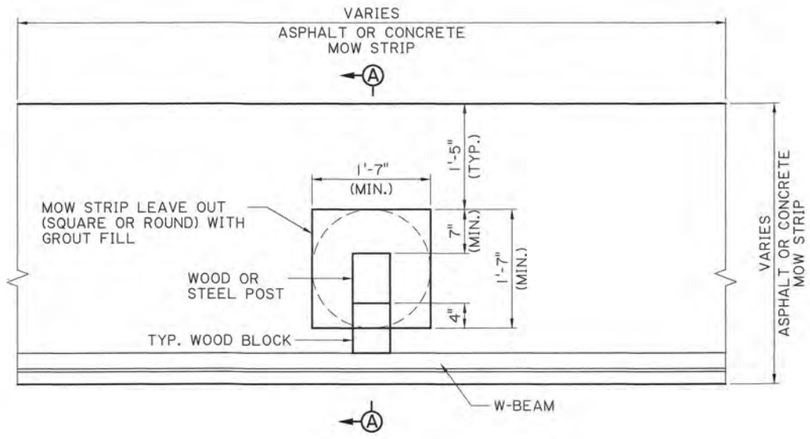
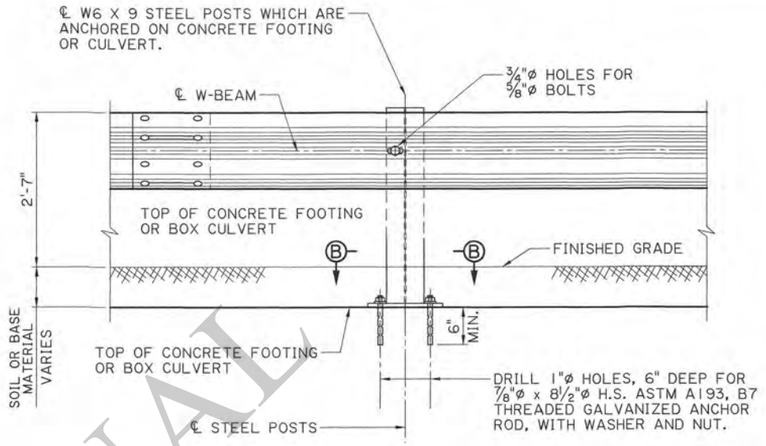
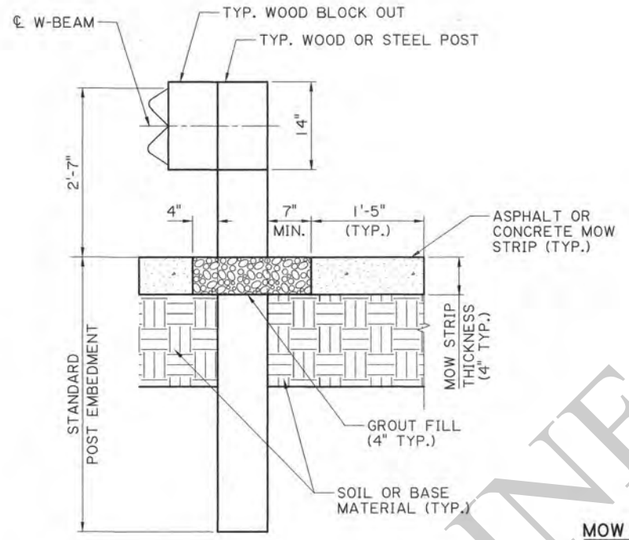


PLAN



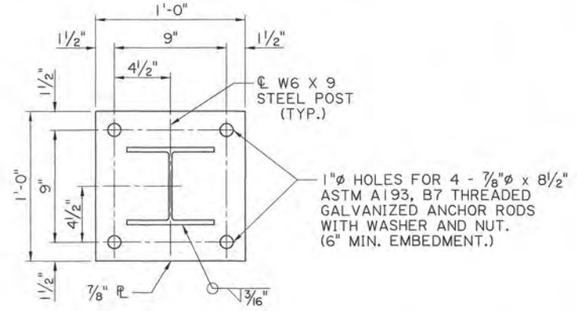
GALVANIZED STEEL BASE PLATE & STEEL POST

SPECIAL POST WITH BASE PLATE TO BE USED WHEN REQUIRED EMBEDMENT OF CONVENTIONAL POST IN SOIL CANNOT BE OBTAINED, FOR BOX CULVERTS OR OTHER CONCRETE FOOTINGS.



SECTION A-A

ASPHALT OR CONCRETE MOW STRIPS
N.T.S.



SECTION B-B

MOW STRIP NOTES:

ALL GUARD RAIL POSTS LOCATED WITHIN CONCRETE OR ASPHALT MOW STRIPS SHALL MEET INSTALLATION REQUIREMENTS SHOWN ON THIS SHEET.

THE LEAVE OUTS SHALL BE FILLED WITH A GROUT MIXTURE CONSISTING OF: 2719 POUNDS SAND, 188 POUNDS TYPE I OR II CEMENT, AND 550 POUNDS OF WATER PER CUBIC YARD WITH A 28 DAY COMPRESSIVE STRENGTH OF 230 PSI OR LESS. PROVIDE GROUT WITH A CONSISTENCY THAT WILL FLOW INTO AND COMPLETELY FILL ALL VOIDS.

ALL LABOR AND MATERIALS TO PLACE GROUT FILL SHALL BE INCLUDED IN PAYMENT FOR CONCRETE OR ASPHALT PAVING PAY ITEMS.

THE USE OF 6" X 8" RECTANGULAR TIMBER POSTS IN MOW STRIPS HAS ONLY BEEN APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, THEIR CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

ANCHOR ROD INSTALLATION

ALL HOLES DRILLED INTO AN EXISTING CONCRETE STRUCTURE SHALL BE CLEANED WITH COMPRESSED AIR AND MAKE THEM FREE OF ANY OIL OR RESIDUE. THREADED RODS TO BE ANCHORED USING THE HILTI RE500 EPOXY ANCHORING SYSTEM. PLACE ANCHOR BOLT IN HOLE IMMEDIATELY AND WAIT FOR THE MANUFACTURER'S CURE TIME. COST FOR LABOR, MATERIAL AND INSTALLMENT OF BASE PLATE & ANCHOR ROD TO BE PAID FOR AS PART OF GUARD RAIL PAY ITEM.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	CHECK	DETAIL	CHECK	REVIEW	SERIES #
K. BRAUNER	B. ALLEN	K. BRAUNER	B. ALLEN	C. GUIDRY	11 OF 11

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3/2/23

APPROVED BY CHIEF ENGINEER:
DATE: 4/13/2023

HIGHWAY GUARD RAIL (MASH)
MOW STRIP AND
CONCRETE ANCHOR DETAILS

BD.1.1.0.11

STANDARD PLAN NO. GR-MASH-ON

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

3/1/2023 13:45
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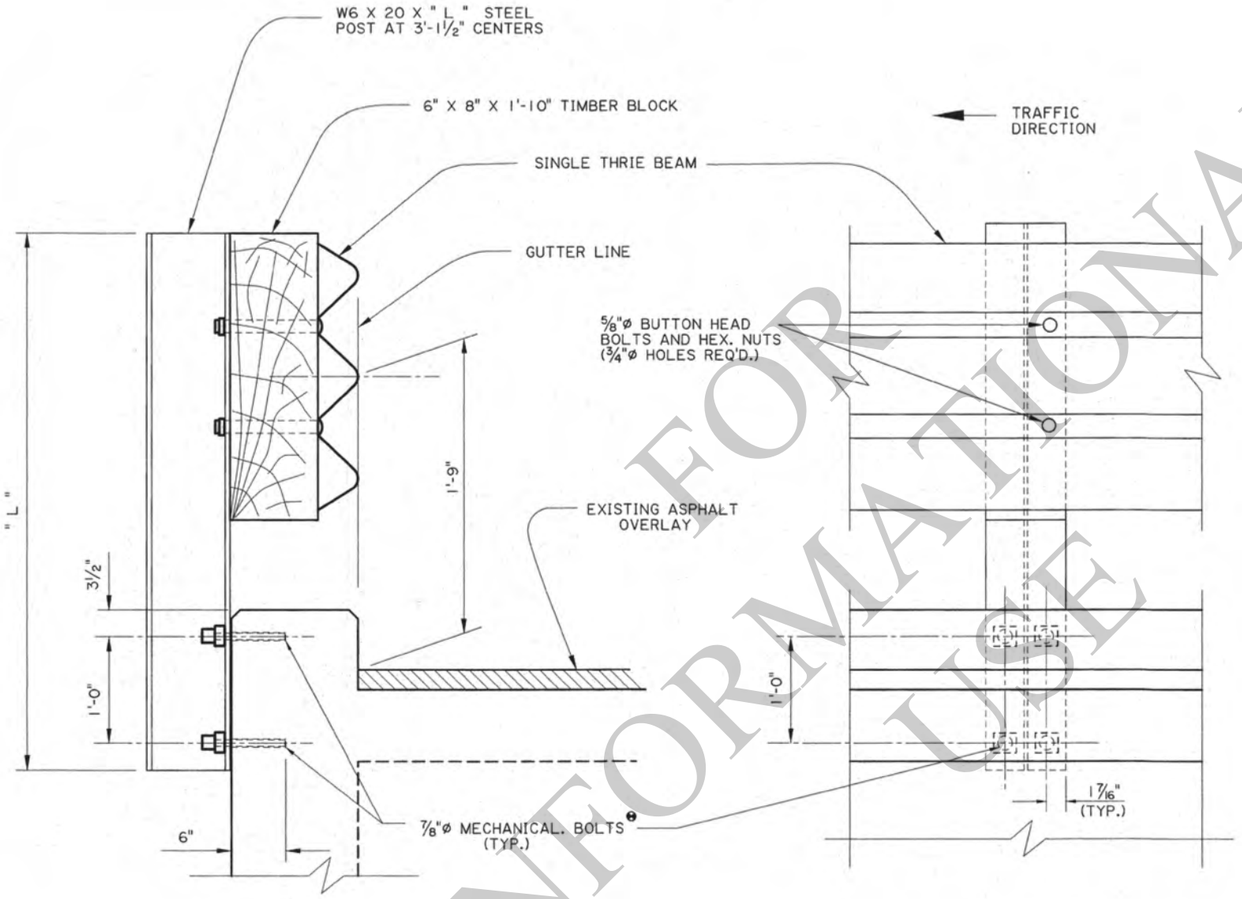
5/12/2022 10:59



SECTION THRU RAIL

VIEW FROM ROADWAY

NOTES

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL WORK AND MATERIALS REQ'D. TO INSTALL GUARD RAIL ON BOX CULVERTS SHALL BE PAID FOR UNDER ITEM 704-01-01000 GUARD RAIL (SINGLE THRIE BEAM) (3'-1½" POST SPACING).

GUARD RAIL SPLICES SHALL BE MADE AT POST LOCATIONS ONLY. LAP IN DIRECTION OF TRAFFIC.

❶ USE ⅞"ø MECHANICAL SYSTEM AS LISTED ON DOTD APPROVED MATERIALS LIST, PRODUCT CATEGORY "CONCRETE ANCHOR SYSTEMS." PLACE BOLT IN HOLES IMMEDIATELY AND WAIT FOR MANUFACTURERS CURE TIME.

ALL STRUCTURAL STEEL SHALL BE ASTM A-36 AND GALVANIZED. ALL ⅝"ø BOLTS SHALL BE ASTM A307.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER	DETAIL	J. DOUCET	REVIEW K. BRAUNER
CHECK	C. GAUDRY	CHECK	P. FOSSIER	SERIES #

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: DATE: 5/3/2022

SIDE MOUNT GUARD RAIL (FOR BOX CULVERTS)

STANDARD PLAN GRR-01

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

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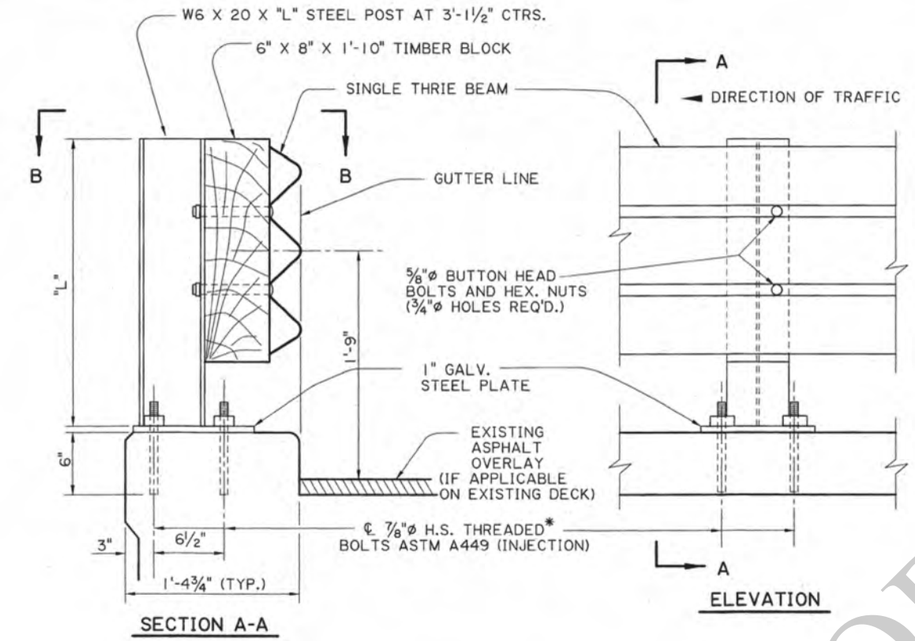
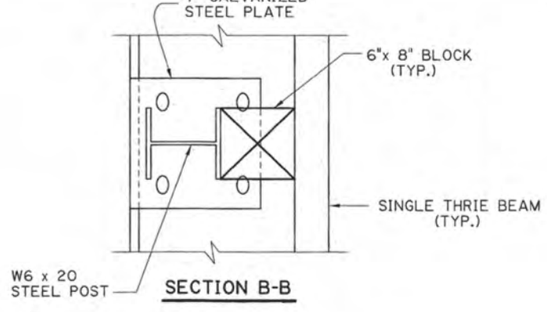
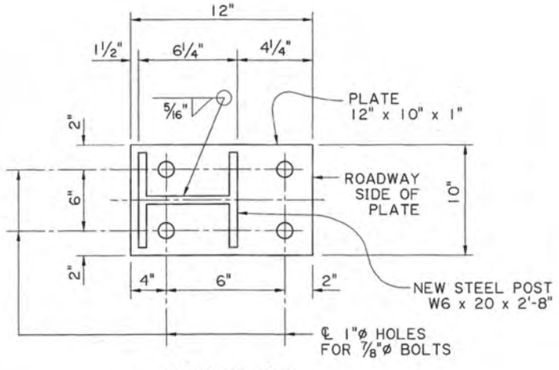
5/12/2022





SECTION B-B



BASE PLATE
FOR POST ASSEMBLY
12" x 10" x 1" STEEL

NOTES

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL WORK AND MATERIALS REQ'D. TO INSTALL GUARD RAIL ON BOX CULVERTS SHALL BE PAID FOR UNDER ITEM 704-01-01000 GUARD RAIL (SINGLE THRIE BEAM) (3'-1½" POST SPA.)

GUARD RAIL SPLICES SHALL BE MADE AT POST LOCATIONS ONLY. LAP IN DIRECTION OF TRAFFIC.

* DRILL 1"ø HOLES, 6" DEEP FOR ⅞"ø GALVANIZED BOLT. USE ⅞" GALVANIZED NUT WITH GALVANIZED CUT WASHER.

ALL HOLES DRILLED INTO AN EXISTING CONCRETE STRUCTURE SHALL BE CLEANED WITH COMPRESSED AIR AND MADE FREE OF ANY OIL OR RESIDUE. HOLES SHALL BE FILLED WITH ⅞"ø INJECTION SYSTEM AS LISTED ON APPROVED MATERIALS LIST, PRODUCT CATEGORY "CONCRETE ANCHOR SYSTEMS." PLACE BOLT IN HOLE IMMEDIATELY AND WAIT FOR MANUFACTURERS CURE TIME.

ALL STRUCTURAL STEEL SHALL BE ASTM A-36 AND GALVANIZED. ALL ⅝"ø BOLTS SHALL BE ASTM A307.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER
CHECK	C. GAUDRY
DETAIL	J. DOUCET
CHECK	P. FOSSIER
REVIEW	K. BRAUNER
SERIES #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER:
DATE: 5/3/2022

TOP MOUNTED GUARD RAIL
(FOR BOX CULVERTS)

STANDARD PLAN NO. GRR-02

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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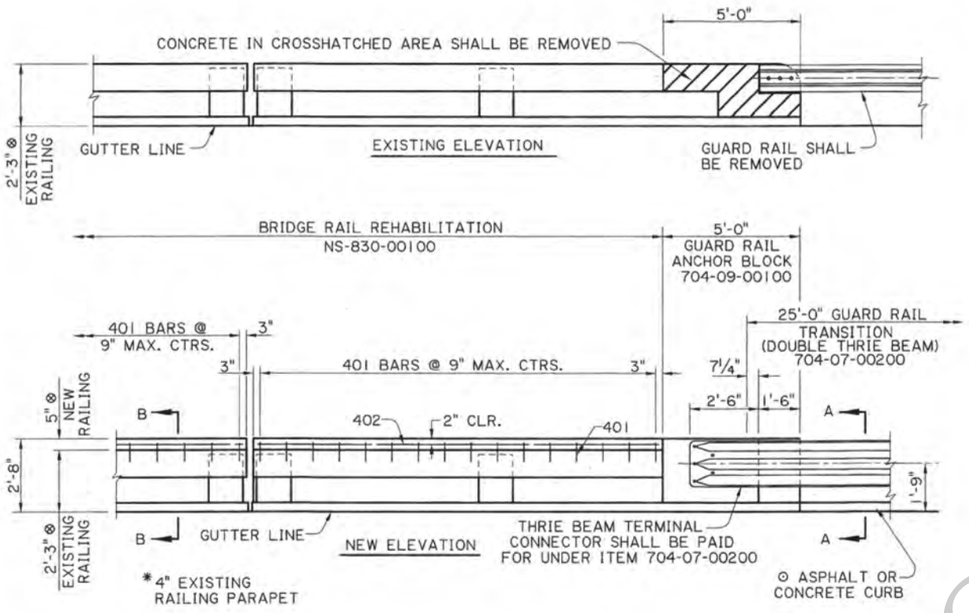
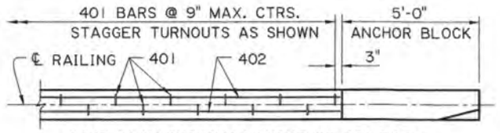
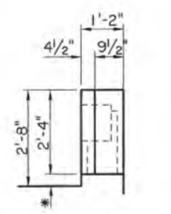


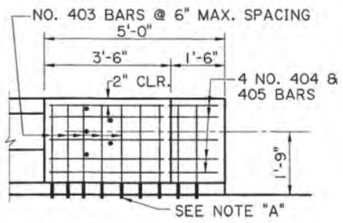


PART PLAN SHOWING LAYOUT OF 401 BARS

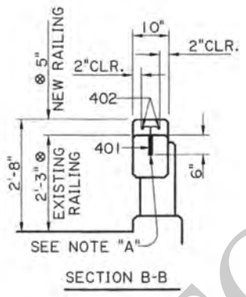
NOTE: HOLES FOR 401 BARS SHALL BE DRILLED ON ℄ RAIL



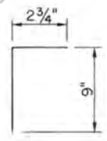
SECTION A-A
(THRIE BEAM NOT SHOWN FOR CLARITY)



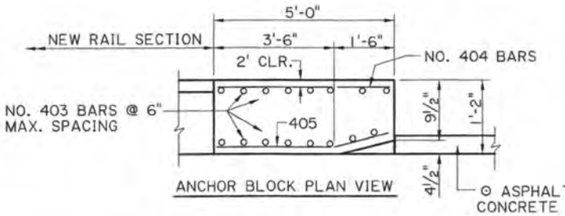
ANCHOR BLOCK ELEVATION



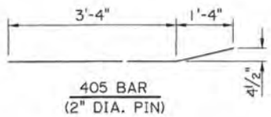
SECTION B-B



401 BARS
(2" DIA. PIN)



ANCHOR BLOCK PLAN VIEW



405 BAR
(2" DIA. PIN)

GENERAL NOTES

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR AND APPROVED BY THE PROJECT ENGINEER.

⊙ FOR CURB & TRANSITION INFORMATION, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH), SHEET 3 OF 11.

⊗ 2'-3" & 5" DIMENSIONS MAY VARY.

BARRIER RAIL REHABILITATION

ALL WORK AND MATERIALS REQUIRED TO RAISE THE EXISTING BARRIER RAIL TO THE REQUIRED HEIGHT OF 2'-8" SHALL BE PAID FOR UNDER: BARRIER RAIL REHABILITATION, PER LIN. FT.

GUARD RAIL ANCHOR BLOCKS

ALL WORK AND MATERIALS REQUIRED TO REMOVE EXISTING RAILING AND CONSTRUCT THE ANCHOR BLOCK SHALL BE PAID FOR UNDER: GUARD RAIL ANCHOR BLOCK, PER EACH, ITEM 704-09-00100

CONCRETE IN CROSS HATCHED AREA SHALL BE REMOVED. THE EXISTING REINFORCING STEEL SHALL REMAIN IN PLACE AND SHALL BE CLEANED AND STRAIGHTENED TO THE SATISFACTION OF THE PROJECT ENGINEER BEFORE POURING NEW CONCRETE.

CONCRETE

NEW CONCRETE SHALL BE CLASS "A1".

NOTE "A"

NO. 401 & 403 BARS SET IN ¾"ø DRILLED HOLES. CLEAN HOLES WITH COMPRESSED AIR AND MAKE THEM FREE OF ANY OIL OR RESIDUE. FILL HOLES WITH A TYPE IV, GRADE 2 OR 3 EPOXY LISTED ON THE APPROVED MATERIALS LIST, PRODUCT CATEGORY "EPOXY RESIN SYSTEMS". PLACE BARS IN HOLES AND WAIT THE MANUFACTURER'S CURE TIME BEFORE POURING NEW CONCRETE.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER
CHECK	C. GAUDRY
DETAIL	J. DOUCET
CHECK	P. FOSSIER
REVIEW	K. BRAUNER
SERIES #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER:
DATE: 5/3/2022

ANCHOR BLOCK & BRIDGE RAIL REHABILITATION FOR LOW CONCRETE POST AND RAIL

STANDARD PLAN GRR-03

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

11:00
5/12/2022
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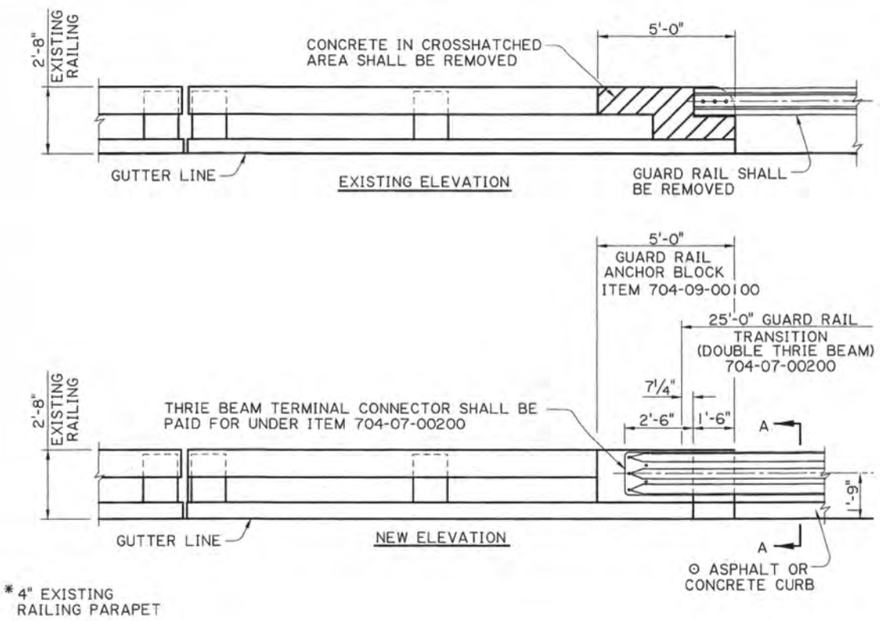
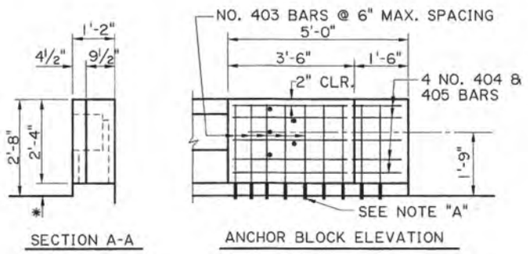
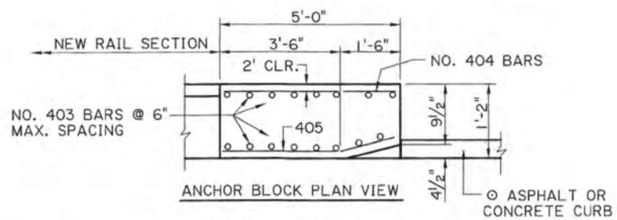
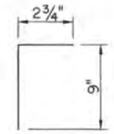


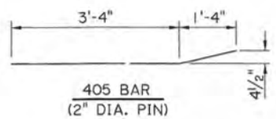
* 4" EXISTING RAILING PARAPET







401 BARS
(2" DIA. PIN)



405 BAR
(2" DIA. PIN)

GENERAL NOTES

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR AND APPROVED BY THE PROJECT ENGINEER.

⊙ FOR CURB & TRANSITION INFORMATION, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH), SHEET 3 OF 11.

GUARD RAIL ANCHOR BLOCKS

ALL WORK AND MATERIALS REQUIRED TO REMOVE EXISTING RAILING AND CONSTRUCT THE ANCHOR BLOCK SHALL BE PAID FOR UNDER: GUARD RAIL ANCHOR BLOCK, PER EACH, ITEM 704-09-00100

CONCRETE IN CROSS HATCHED AREA SHALL BE REMOVED. THE EXISTING REINFORCING STEEL SHALL REMAIN IN PLACE AND SHALL BE CLEANED AND STRAIGHTENED TO THE SATISFACTION OF THE PROJECT ENGINEER BEFORE POURING NEW CONCRETE. THE REINFORCING STEEL IN THE 1'-6" X 4½" SLOT MAY BE CUT OR BENT TO ACCOMMODATE THIS SLOT.

NOTE "A"

NO. 401 & 403 BARS SET IN ¾"ø DRILLED HOLES. CLEAN HOLES WITH COMPRESSED AIR AND MAKE THEM FREE OF ANY OIL OR RESIDUE. FILL HOLES WITH A TYPE IV, GRADE 2 OR 3 EPOXY LISTED ON THE APPROVED MATERIALS LIST, PRODUCT CATEGORY "EPOXY RESIN SYSTEMS". PLACE BARS IN HOLES AND WAIT THE MANUFACTURER'S CURE TIME BEFORE POURING NEW CONCRETE.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER
CHECK	C. GAUDRY
DETAIL	J. DOUCET
CHECK	P. FOSSIER
REVIEW	K. BRAUNER
SERIES #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: DATE: 5/3/2022

GUARD RAIL ANCHOR BLOCK REHABILITATION FOR CONCRETE POST & RAIL (ALTERNATE 1)

STANDARD PLAN GRR-04

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

11:00 5/12/2022

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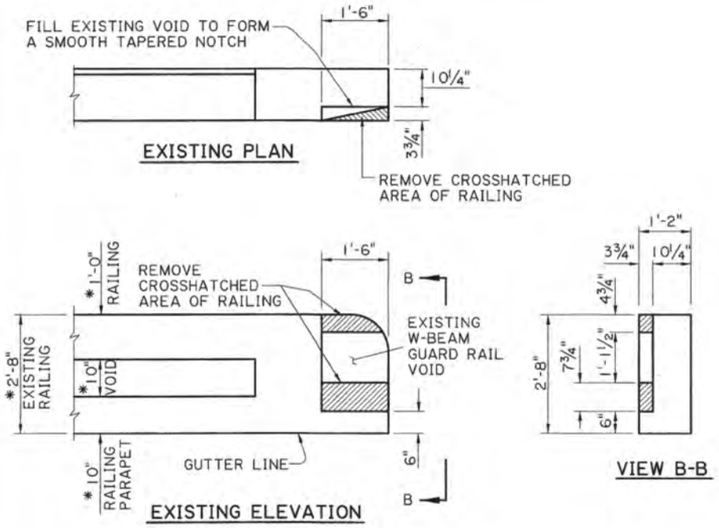
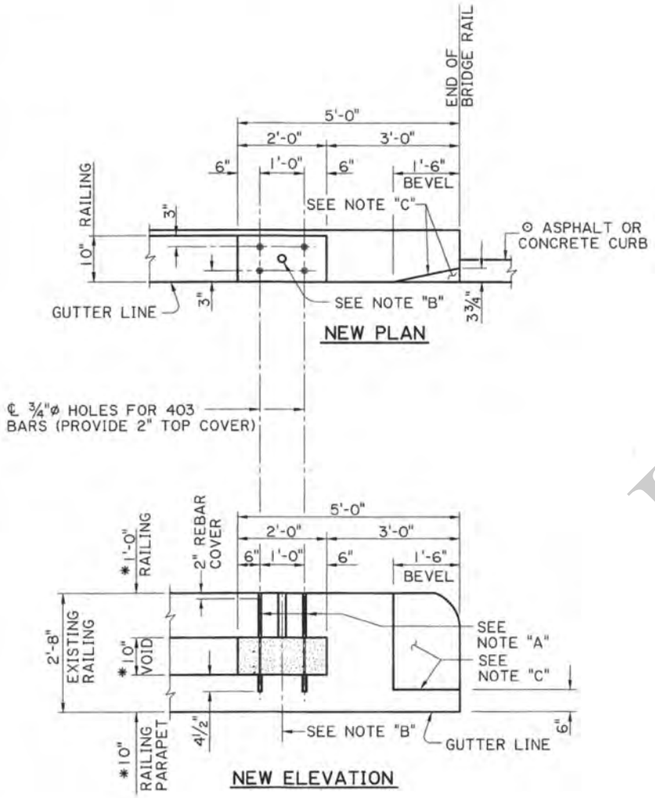
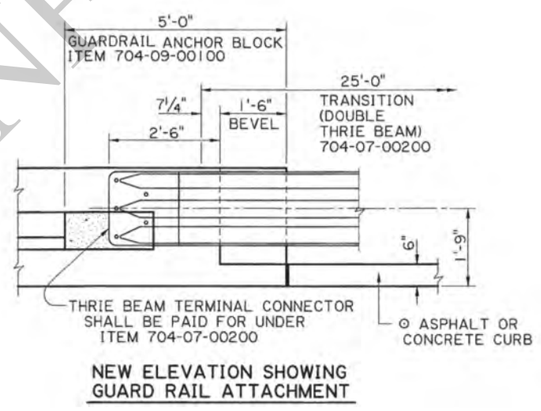
11:00
5/12/2022







GENERAL NOTES

FOR ADDITIONAL INFORMATION ON GUARD RAILS, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

* THESE DIMENSIONS MAY VARY. THE NON-SHRINK GROUT QUANTITY AND 403 BAR LENGTH SHALL BE ADJUSTED ACCORDINGLY.

ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR AND APPROVED BY THE PROJECT ENGINEER.

⊙ FOR CURB & TRANSITION, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH), SHEET 3 OF 11.

GUARD RAIL ANCHOR BLOCKS

ALL WORK AND MATERIALS REQUIRED TO MODIFY EXISTING RAILING SHALL BE PAID FOR UNDER: GUARD RAIL ANCHOR BLOCK, PER EACH, ITEM 704-09-00100.

NOTE "A"

DRILL ¾"ø HOLES THROUGH THE RAILING AND INTO THE RAILING PARAPET AS SHOWN. CLEAN HOLES WITH COMPRESSED AIR TO REMOVE ALL OIL AND RESIDUE. FILL HOLES WITH A TYPE IV, GRADE 2 OR 3 EPOXY LISTED ON THE APPROVED MATERIALS LIST, PRODUCT CATEGORY "EPOXY RESIN SYSTEMS". PLACE 403 BARS (2'-2" LONG) IN HOLES AND WAIT THE MANUFACTURER'S CURE TIME BEFORE POURING NEW CONCRETE.

NOTE "B"

DRILL A 2"ø HOLE THROUGH THE DEPTH OF RAILING. FILL VOID BETWEEN RAILING AND RAILING PARAPET THROUGH THE 2"ø HOLE WITH AN APPROVED FLOWABLE NON-SHRINK GROUT LISTED ON APPROVED MATERIALS LIST, PRODUCT CATEGORY "NON-SHRINK GROUT."

NOTE "C"

AFTER REMOVING THE EXISTING CONCRETE TO CONSTRUCT THE 1'-6" BEVEL FULL HEIGHT, PREPARE THE VERTICAL SURFACE OF THE EXISTING VOID FOR AN EPOXY RESIN JOINT ACCORDING TO SUBSECTION 805.05.8.2 AND PLACE CONCRETE IN VOID. REDRESS AND FORM THE ENTIRE SURFACE OF THE BEVEL TO GIVE A SMOOTH APPEARANCE BY USING A FLOWABLE NON-SHRINK GROUT LISTED ON APPROVED MATERIALS LIST, PRODUCT CATEGORY "NON-SHRINK GROUT."

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	CHECK	DETAIL	CHECK	REVIEW	SERIES #
P. FOSSIER	C. GAUDRY	J. DOUCET	P. FOSSIER	K. BRAUNER	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER:
DATE: 5/5/2022

GUARD RAIL ANCHOR BLOCK REHABILITATION FOR CONCRETE POST & RAIL (ALTERNATE 2)

STANDARD NO. GRR-05

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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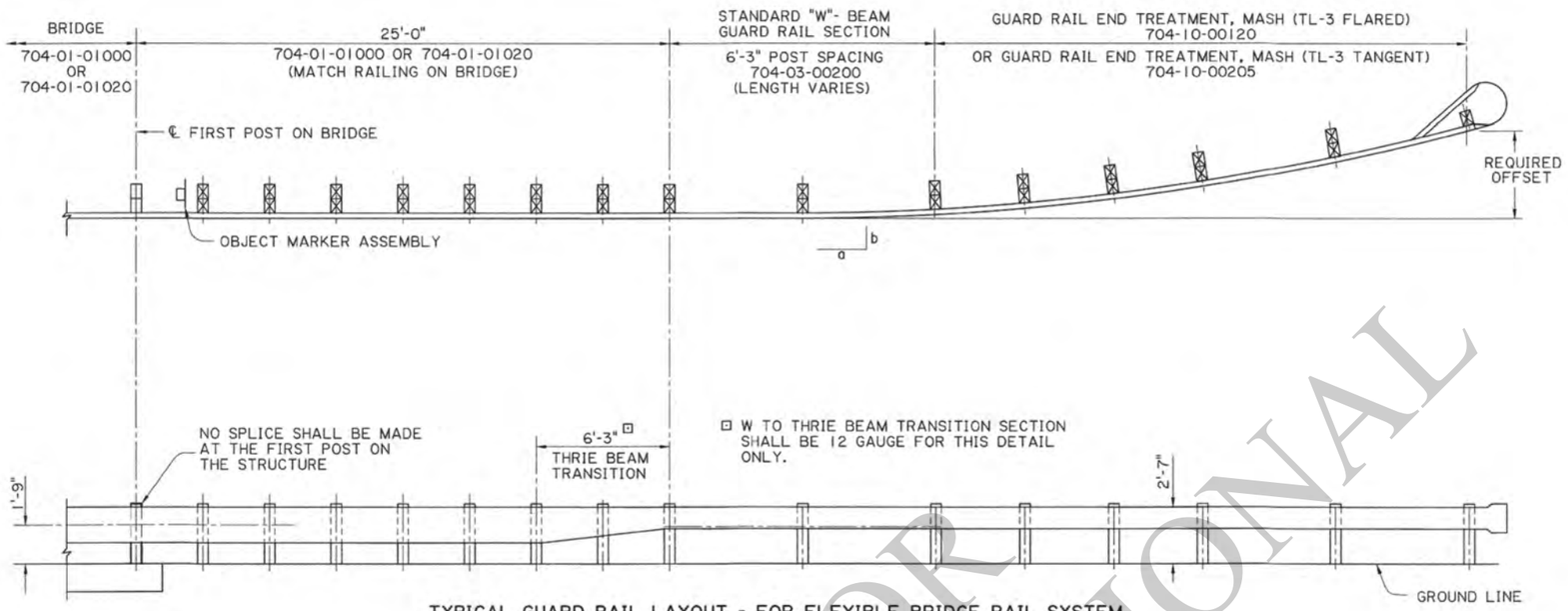


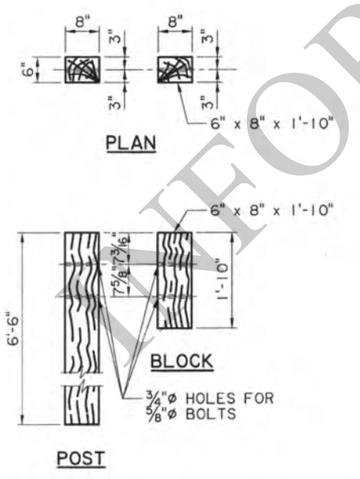
TYPICAL GUARD RAIL LAYOUT - FOR FLEXIBLE BRIDGE RAIL SYSTEM

NOTES

LAYOUTS SHOWN ARE FOR BRIDGE STRUCTURES WHICH HAVE FLEXIBLE BRIDGE RAILING.

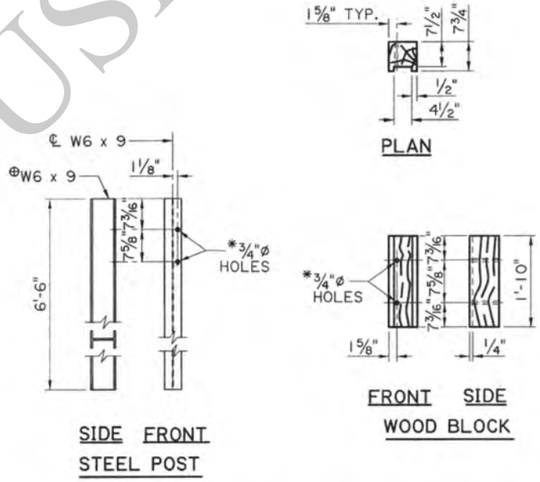
FOR ADDITIONAL INFORMATION ON GUARD RAILS, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.



WOOD POST AND WOOD BLOCK FOR STANDARD THRIE BEAM GUARD RAIL

N.T.S.



STEEL POST AND ROUTED WOOD BLOCK FOR STANDARD THRIE BEAM GUARD RAIL

N.T.S.

⊕ A W6 x 8.5 STEEL POST MAY BE USED AS AN ALTERNATE FOR A W6 x 9 POST.

* POST AND BLOCK HOLES SHALL BE DRILLED ADJACENT TO THE DIRECTION OF THE TRAFFIC.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER	DETAIL	J. DOUCET	K. BRAUNER
CHECK	C. GAUDRY	CHECK	P. FOSSIER	REVISER

SERIES #

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: 5/3/2022 DATE:

APPROACH GUARD RAIL FOR STRUCTURES WITH FLEXIBLE RAILS

STANDARD PLAN GRR-06

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

5/12/2022 11:00

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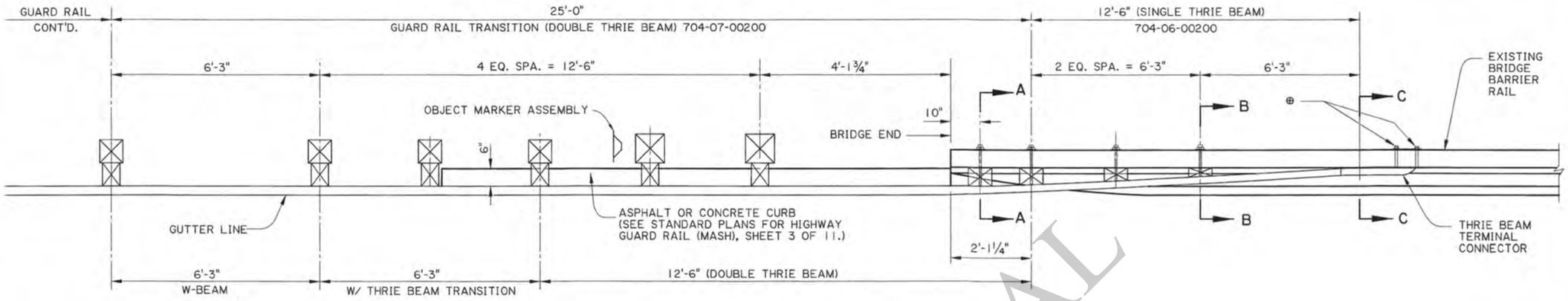
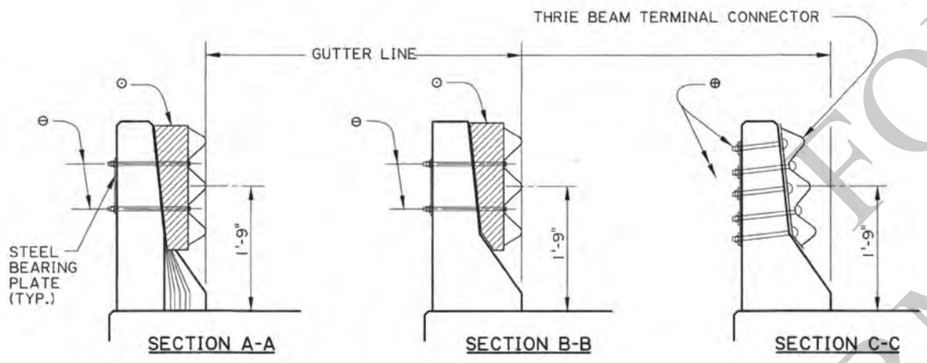
5/12/2022



PLAN VIEW

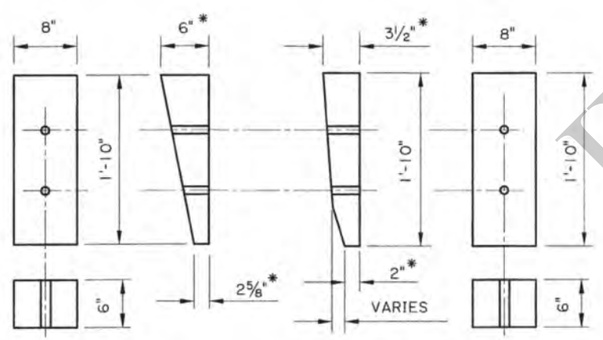


SECTION A-A | SECTION B-B | SECTION C-C

⊕ 5 - ⅞"ø H.S. ASTM A449 HEX THROUGH BOLTS WITH ⅝" BEARING PLATE (SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH), SHEET 9 OF 11.)

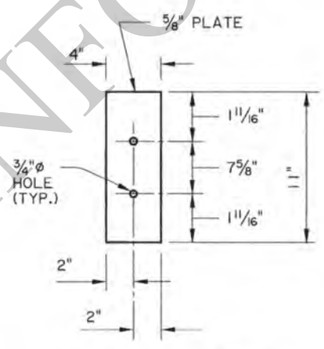
⊖ 2 - ⅝"ø BUTTON HEAD BOLTS WITH ⅝" BEARING PLATE, NUTS, & WASHERS

⊙ 6" x 8" x 1'-10" TREATED TIMBER BLOCK (CUT & SHAPE IN THE FIELD TO FIT).



SHIM BLOCK FOR SECTION A-A

SHIM BLOCK FOR SECTION B-B



STEEL BEARING PLATE

*DIMENSIONS ARE ASSUMED. ADJUST IN THE FIELD AS REQUIRED. HOLES SHALL BE DRILLED IN THE FIELD. SEE NOTE NO. 8.

NOTES:

1. FOR ADDITIONAL INFORMATION ON GUARD RAIL TRANSITION, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH), SHEET 3 OF 11.
2. ALL HARDWARE AND TIMBER USED FOR CONNECTING THE SINGLE THRIE BEAM TO THE EXISTING BRIDGE RAIL SHALL BE PAID FOR UNDER ITEM 704-06-00200, GUARD RAIL BRIDGE ATTACHMENTS (SINGLE THRIE BEAM), PER LIN. FT.
3. ANY DAMAGE DONE TO THE EXISTING STRUCTURE DURING INSTALLATION OF THE GUARD RAIL SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE AND TO THE SATISFACTION OF THE PROJECT ENGINEER.
4. GALV. STEEL OGEE WASHER MAY BE USED IN LIEU OF THE STEEL BEARING PLATE.
5. ALL H.S. BOLTS SHALL BE ASTM A449. ALL ⅝"ø BOLTS SHALL BE ASTM A307.
6. A 25'-0" SECTION OF THRIE BEAM RAIL (WITH NO SPLICE) SHALL BE INSTALLED SYMMETRICALLY WITH RESPECT TO THE SECOND TIMBER BLOCK USED AT THE END OF THE STRUCTURE.
7. THE WOOD SHIM BLOCKS SHALL BE CUT & SHAPED IN THE FIELD TO FIT THE LOCATION WITH A SNUG FIT.
8. THE BOLT HOLES SHALL BE FIELD DRILLED THRU THE GUARD RAIL, SHIM BLOCKS AND THE BARRIER RAIL AT THE SAME TIME.
9. THE GUARD RAIL SHALL NOT PROTRUDE BEYOND THE GUTTER LINE.
10. THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

INFORMATIONAL USE

SHEET NUMBER		
PARISH	CONTROL SECTION	STATE PROJECT
DESIGN P. FOSSIER / CHECK K. BRAUNER	DETAIL J. DOUCET / CHECK P. FOSSIER	REVISED C. GUIDRY / SERIES #

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: DATE: 5/3/2022

NEW JERSEY BARRIER RAIL RETROFIT (FOR STRUCURES GREATER THAN 60 FT. LONG)

STANDARD PLAN GRR-07

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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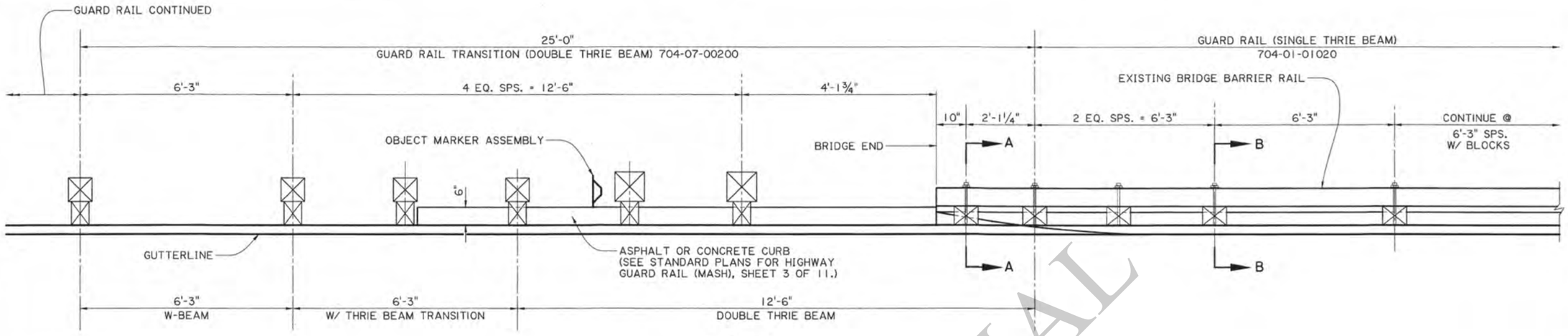
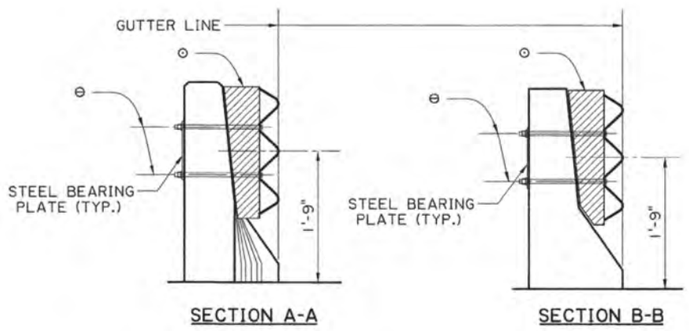


PLAN VIEW

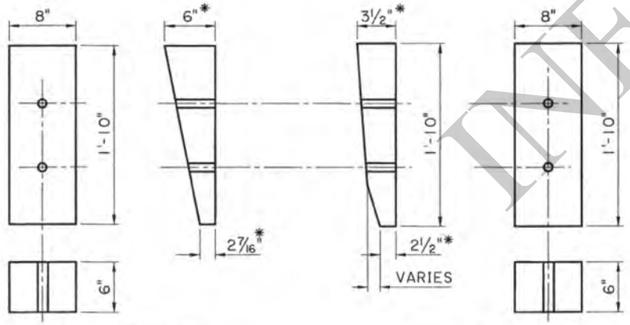


SECTION A-A

SECTION B-B

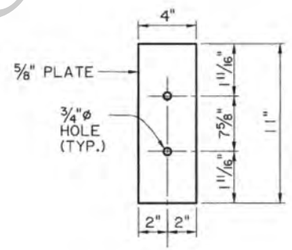
⊖ 2 - ⅝"ø BUTTON HEAD BOLTS WITH ⅝" BEARING PLATE, NUTS, & WASHERS. (TYP.)

⊙ 6" X 8" X 1'-10" TREATED TIMBER BLOCK (CUT & SHAPE IN THE FIELD TO FIT).



SHIM BLOCK FOR SECTION A-A

SHIM BLOCK FOR SECTION B-B



STEEL BEARING PLATE

* DIMENSIONS ARE ASSUMED. ADJUST IN THE FIELD AS REQUIRED. HOLES SHALL BE DRILLED IN THE FIELD. SEE NOTE NO. 8.

NOTES:

1. FOR ADDITIONAL INFORMATION ON GUARD RAIL TRANSITION, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH), SHEET 3 OF 11.
2. ALL HARDWARE AND TIMBER USED FOR CONNECTING THE SINGLE THRIE BEAM TO THE EXISTING BRIDGE RAIL SHALL BE PAID FOR UNDER ITEM 704-01-01020, GUARD RAIL (SINGLE THRIE BEAM), (6'-3" POST SPACING) PER LIN. FT.
3. ANY DAMAGE DONE TO THE EXISTING STRUCTURE DURING INSTALLATION OF THE GUARD RAIL SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE AND TO THE SATISFACTION OF THE PROJECT ENGINEER.
4. GALV. STEEL OGEE WASHER MAY BE USED IN LIEU OF THE STEEL BEARING PLATE.
5. ALL ⅝"ø BOLTS SHALL BE ASTM A307.
6. A 25'-0" SECTION OF GUARD RAIL (WITH NO SPLICE) SHALL BE INSTALLED SYMMETRICALLY WITH RESPECT TO THE SECOND POST ON EACH END OF THE STRUCTURE.
7. THE WOOD SHIM BLOCKS SHALL BE CUT & SHAPED IN THE FIELD TO FIT THE LOCATION WITH A SNUG FIT.
8. THE BOLT HOLES SHALL BE FIELD DRILLED THRU THE GUARD RAIL, SHIM BLOCKS AND THE BARRIER RAIL AT THE SAME TIME.
9. THE GUARD RAIL SHALL NOT PROTRUDE BEYOND THE GUTTER LINE.
10. THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER	DETAIL	J. DOUCET	C. GUIDRY
CHECK	K. BRAUNER	CHECK	P. FOSSIER	
		REVISED		SERIES #

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: DATE: 5/3/2022

NEW JERSEY BARRIER RAIL RETROFIT (FOR STRUCURES LESS THAN 60 FT. LONG)

STANDARD PLAN # GRR-08

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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5/12/2022
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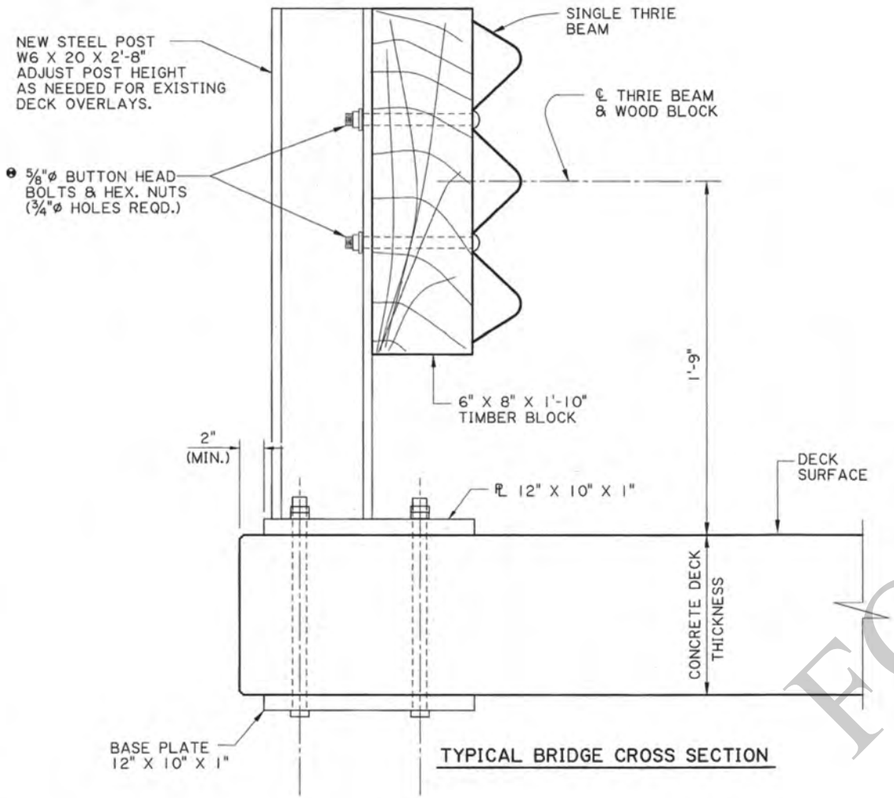
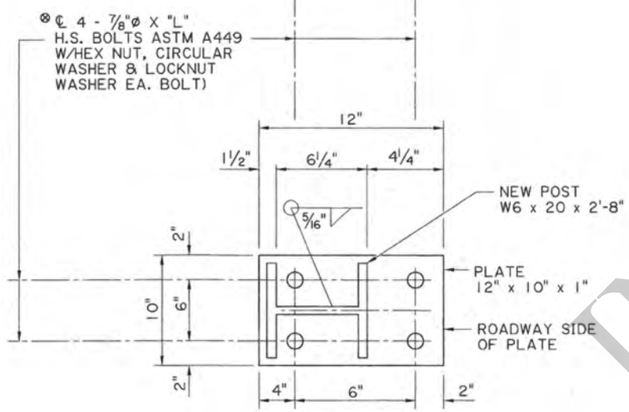


TYPICAL BRIDGE CROSS SECTION



BASE PLATE
FOR POST ASSEMBLY
12" x 10" x 1" STEEL

⊗ BOLTS LENGTH TO BE FIELD MEASURED AND ADJUSTED BASED ON ACTUAL DECK THICKNESS. SUBMIT TO DOTD BRIDGE DESIGN ENGINEER FOR REVIEW BEFORE INSTALLATION

NOTES

ALL HARDWARE INVOLVED SHALL BE REPLACED BY NEW HARDWARE.

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL STRUCTURAL STEEL, POST AND PLATES, SHALL BE ASTM A-36 AND GALVANIZED. ALL 5/8"ø BOLTS SHALL BE ASTM A307.

⊖ THE BOLTS IN THE GUARD RAIL SHALL BE LOCATED ON THE ONCOMING FLANGE TRAFFIC SIDE.

ALTHOUGH ITEM 704-01-01020 CALLS FOR 6'-3" MAX. POST SPACING, THE NEW POST FOR EXISTING PRECAST BRIDGES SHALL BE INSTALLED AT THE SAME LOCATION AS THE OLD ONES. ALL GUARD RAIL SPLICES SHALL BE MADE AT POST LOCATIONS ONLY.

ALL WORK AND MATERIALS REQUIRED TO INSTALL THE NEW GUARD RAIL SHALL BE PAID FOR UNDER ITEM 704-01-01020 GUARD RAIL (SINGLE THRIE BEAM) (6'-3" POST SPA.) PER LIN. FT.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER	DETAIL	J. DOUCET	REVIEW	K. BRAUNER
CHECK	C. GAUDRY	CHECK	P. FOSSIER	SERIES #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: DATE: 5/3/2022

GUARD RAIL REHABILITATION
(FLAT DECK PRECAST BRIDGES)

STANDARD PLAN GRR-09

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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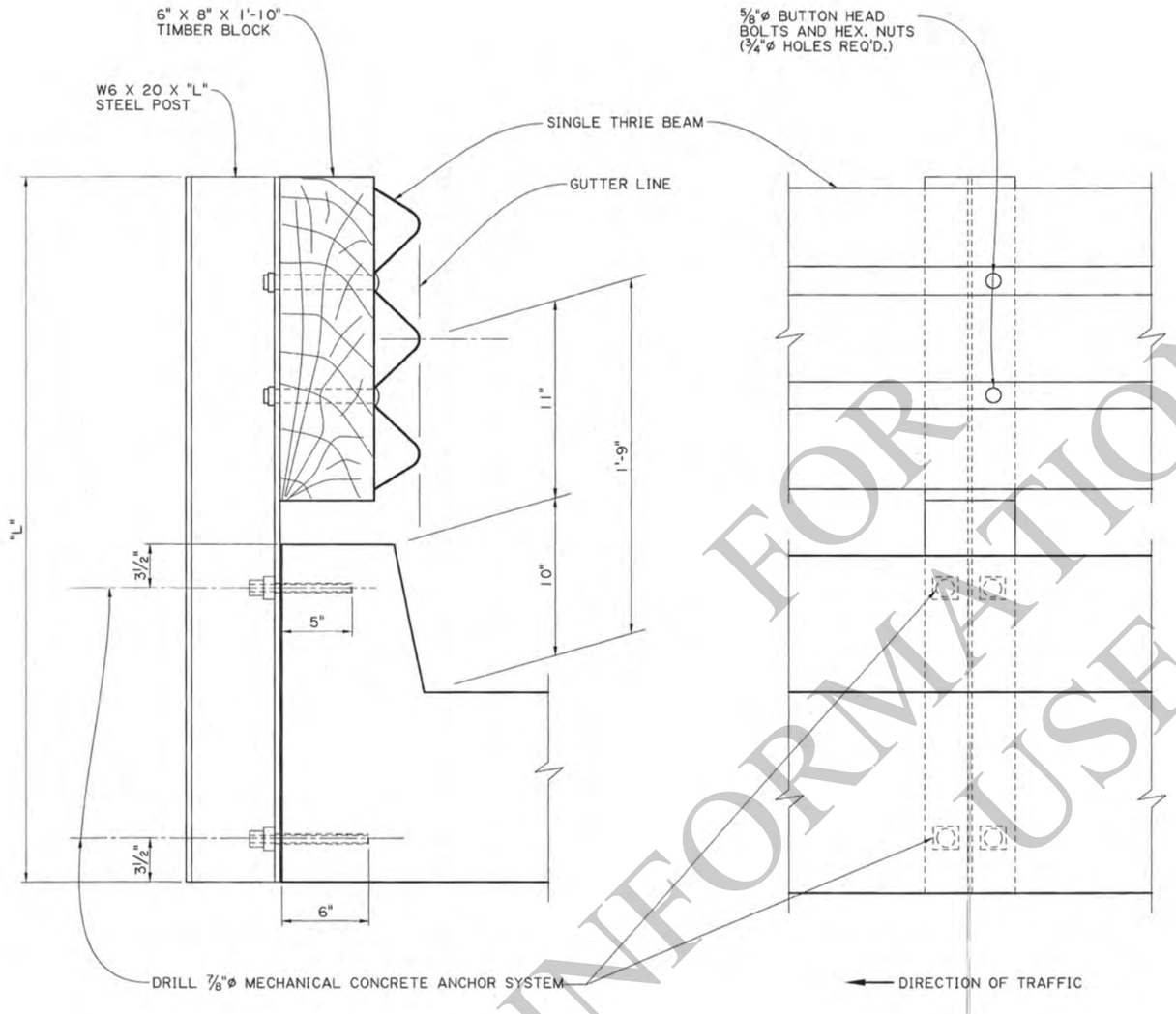

SECTION THRU RAIL

VIEW FROM ROADWAY

NOTES

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL WORK AND MATERIALS REQ'D. TO INSTALL GUARD RAIL ON THIS TYPE STRUCTURE SHALL BE PAID FOR UNDER ITEM 704-01-01020 GUARD RAIL (SINGLE THRIE BEAM).

ALTHOUGH ITEM 704-01-01020 CALLS FOR 6'-3" POST SPACING, THE NEW POST ON THIS TYPE STRUCTURE SHALL BE PLACED IN THE SAME LOCATION AS THE EXISTING ONES.

GUARD RAIL SPLICES SHALL BE MADE AT POST LOCATIONS ONLY. LAP IN DIRECTION OF TRAFFIC.

USE 7/8"ø MECHANICAL SYSTEM AS LISTED ON APPROVED MATERIALS LIST, PRODUCT CATEGORY "CONCRETE ANCHOR SYSTEMS."

ALL STRUCTURAL STEEL SHALL BE ASTM A-36 AND GALVANIZED. ALL 5/8"ø BOLTS SHALL BE ASTM A307.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER
CHECK	C. GAUDRY
DETAIL	J. DOUCET
CHECK	P. FOSSIER
REVIEW	K. BRAUNER
SERIES #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: DATE: 5/3/2022

SIDE MOUNTED GUARD RAIL FOR BRIDGES

STANDARD PLAN GRR-10

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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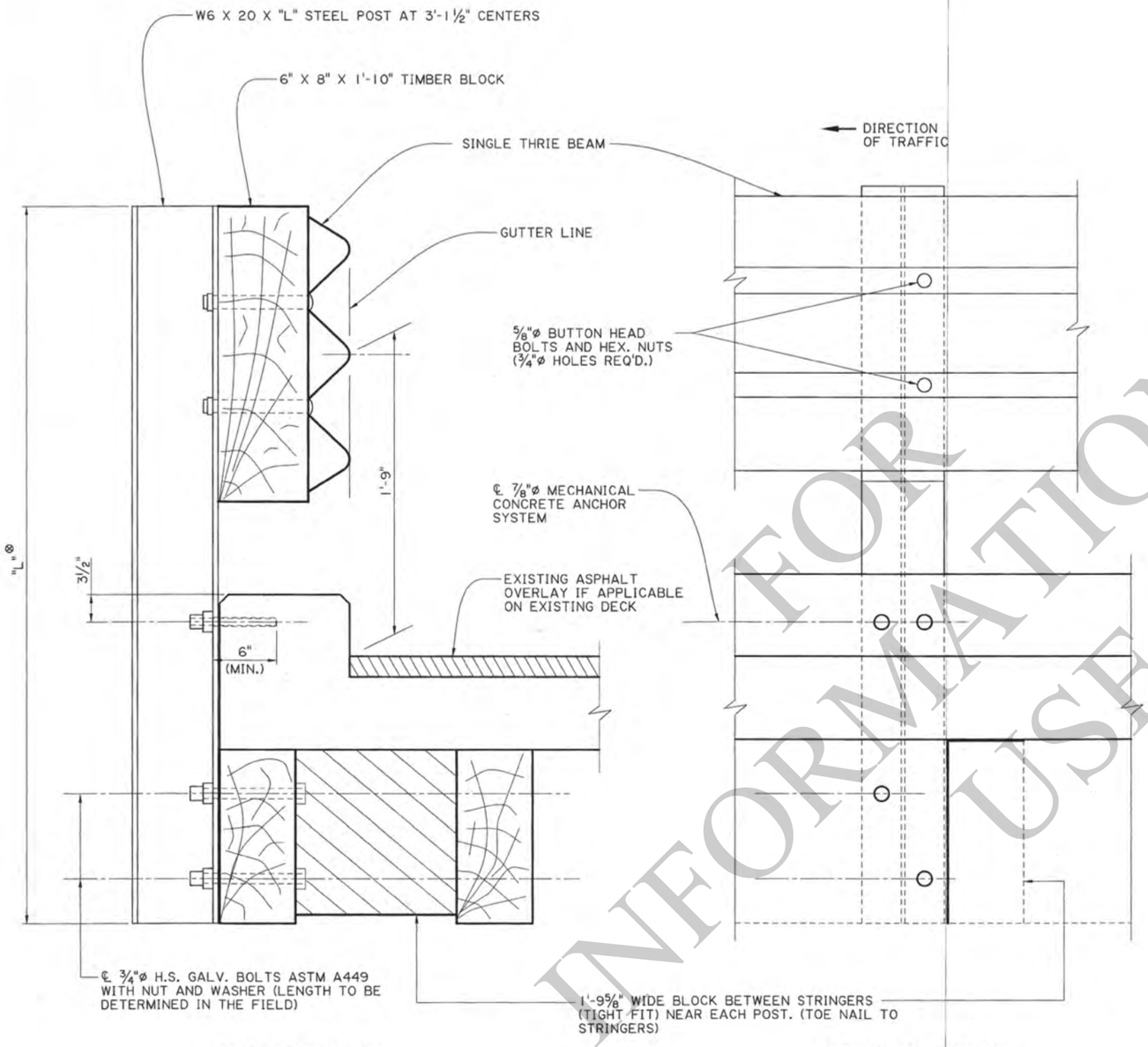

SECTION THRU RAIL

VIEW FROM ROADWAY

NOTES

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL WORK AND MATERIALS REQ'D. TO INSTALL GUARD RAIL ON BRIDGE SHALL BE PAID FOR UNDER ITEM 704-01-01020 GUARD RAIL (SINGLE THRIE BEAM) (6'-3" POST SP.).

GUARD RAIL SPLICES SHALL BE MADE AT POST LOCATIONS ONLY. LAP IN DIRECTION OF TRAFFIC.

USE 7/8"ø MECHANICAL CONCRETE ANCHOR SYSTEM AS LISTED ON APPROVED MATERIALS LIST, PRODUCT CATEGORY "CONCRETE ANCHOR SYSTEMS."

ALL STEEL SHALL BE ASTM A-36 AND GALVANIZED.

ALL 5/8"ø BOLTS SHALL BE ASTM A307.

⊗ W6 x 20 POST TO BE FIELD MEASURED TO DETERMINE LENGTH "L" BY CONTRACTOR.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER	DETAIL	J. DOUCET	REVIEW	K. BRAUNER
CHECK	C. GAUDRY	CHECK	P. FOSSIER	SERIES #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 32567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: Christopher P. Knotts
DATE: 5/3/2022

SIDE MOUNTED GUARD RAIL (CONCRETE DECK WITH TIMBER STRINGERS)

STANDARD No. GRR-11

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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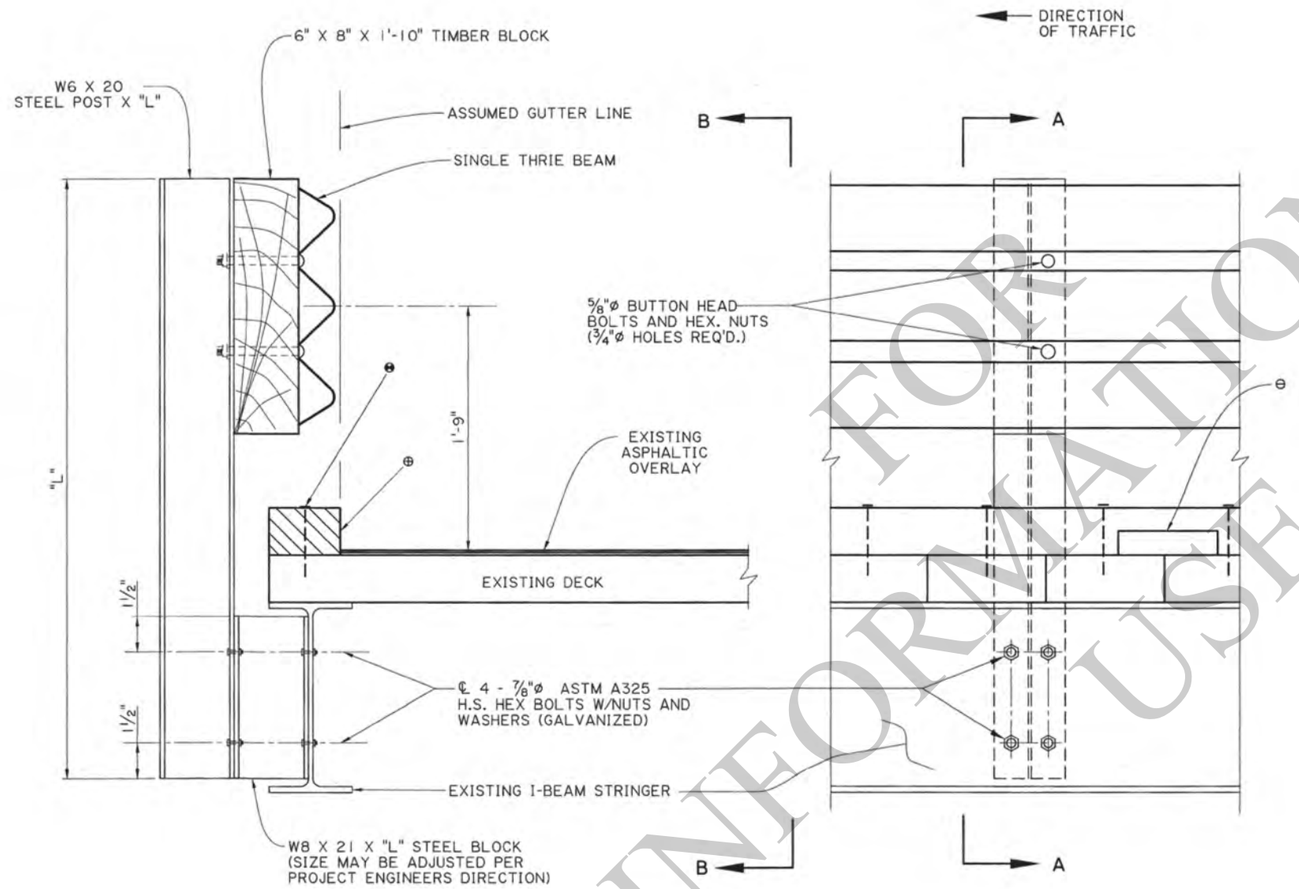
⊖ 2" X 1'-0" NOTCH FOR DRAINAGE

⊕ 4" X 6" X LGTH. OF BRIDGE FELLOE GUARD (NEW) (NOTCH FOR DRAINAGE)

❶ 6⅞" SPIKE AT EACH FLOOR PLANK



SECTION A-A

SECTION B-B

NOTES

ALL WORK AND MATERIAL (INCLUDING THE NEW FELLOE GUARD) REQUIRED TO INSTALL THE NEW BRIDGE RAIL SHALL BE PAID FOR UNDER ITEM 704-01-01020 GUARDRAIL (SINGLE THRIE BEAM) (6'-3" POST SPA.)

EXISTING ASPHALT SHALL BE CLEARED FROM AREA WHERE FELLOE GUARD IS TO BE PLACED SO THAT THE FELLOE GUARD WILL BE ON THE TIMBER DECK.

POST SHALL BE LOCATED AT EACH BENT AND AT INTERMEDIATE POINTS NOT TO EXCEED 6'-3" (EQUALLY SPACED)

IF DIRECTED BY THE PROJECT ENGINEER, A DIAPHRAGM SHALL BE PLACED AT EACH INTERMEDIATE POST BETWEEN THE FIRST AND SECOND STRINGER. (TO BE INCLUDED IN 704-01-01020.

"L" (POST HEIGHT & STEEL BLOCK) SHALL BE DETERMINED IN THE FIELD.

FOR ADDITIONAL INFORMATION ON GUARDRAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL STRUCTURAL STEEL SHALL BE ASTM A36 AND GALVANIZED. ALL ⅝"ø BOLTS SHALL BE ASTM A307.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

INFORMATIONAL USE FOR

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER	DETAIL	J. DOUCET	REVISED	K. BRAUNER
CHECK	C. GAUDRY	CHECK	P. FOSSIER	SERIES #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: DATE: 5/3/2022

SIDE MOUNTED BRIDGE RAIL

STANDARD PLAN GRR-12

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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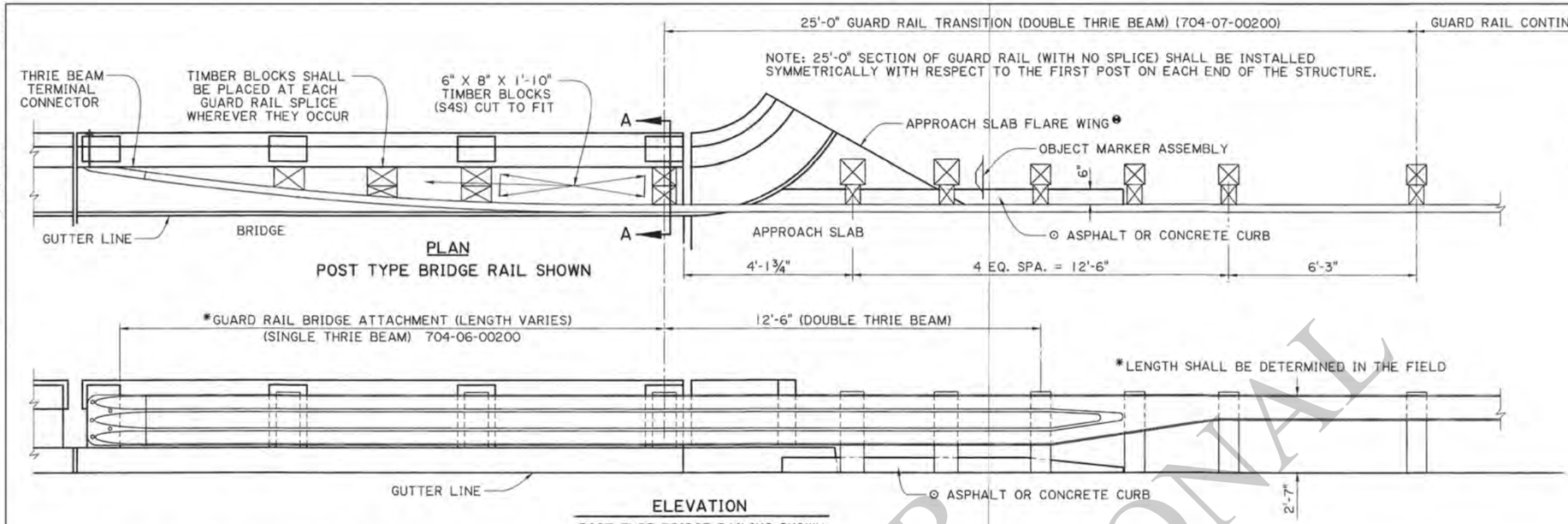
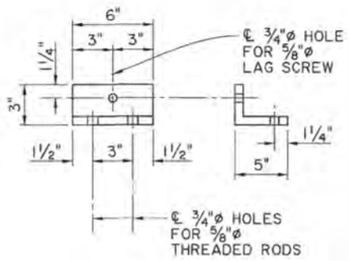
5/12/2022



PLAN
POST TYPE BRIDGE RAIL SHOWN

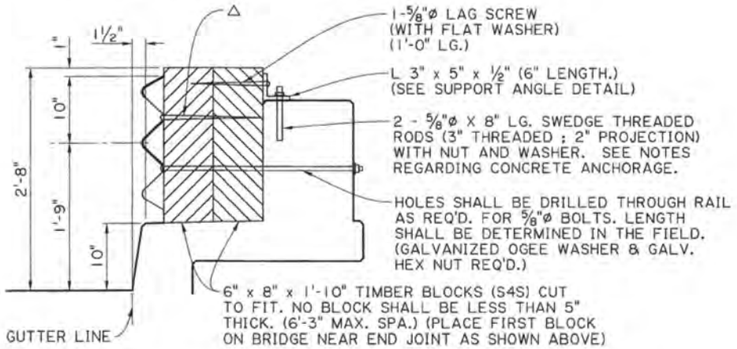
ELEVATION
POST TYPE BRIDGE RAILING SHOWN



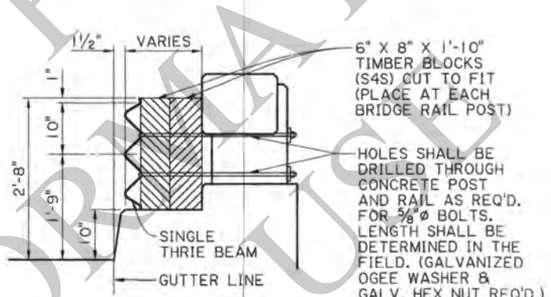
(MOUNT TO TOP OF RAIL FOR BLOCK BACKUP) THE HOLES MAY BE OFFSET TO ACHIEVE INSTALLATION BUT THE 1½" EDGE DISTANCE SHALL BE MAINTAINED.

SUPPORT ANGLE

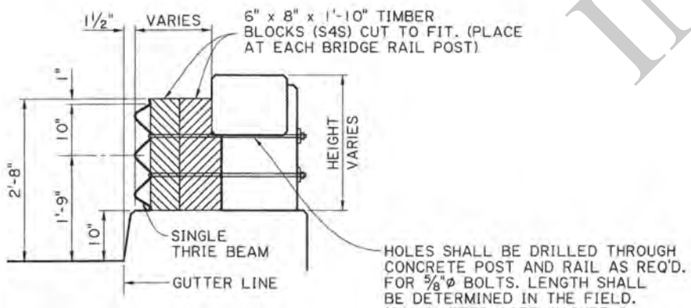
△ ⅝"ø LAG SCREW (WITH PLATE WASHER) SHALL PENETRATE TO THE BACK OF THE REAR BLOCK (LENGTH TO BE DETERMINED IN THE FIELD)



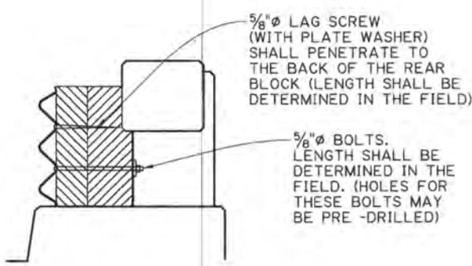
SECTION A-A
SOLID WALL RAILING



SECTION A-A
POST AND RAIL BRIDGE RAIL



SECTION A-A
POST AND RAIL BRIDGE RAIL



VIEW AT GUARD RAIL SPLICES

NOTES:

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

⊙ FOR CURB & TRANSITION INFORMATION, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH), SHEET 3 OF 11.

ALL MATERIALS AND LABOR REQ'D. TO PLACE THE GUARD RAIL ONTO THE BRIDGE SHALL BE PAID FOR UNDER ITEM 704-06-00200.

IF THE EXISTING CONCRETE IS DAMAGED DUE TO DRILLING HOLES FOR BOLTS AND RODS, THE CONTRACTOR SHALL REPAIR THE DAMAGE WITH THE APPROPRIATE MATERIALS AT HIS EXPENSE AND TO THE SATISFACTION OF THE PROJECT ENGINEER.

EXISTING HANDRAIL SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AS DIRECTED BY THE PROJECT ENGINEER.

ALL HOLES (VERTICAL OR HORIZONTAL) DRILLED INTO AN EXISTING CONCRETE STRUCTURE SHALL BE ¾"ø. THEY SHALL BE CLEANED WITH COMPRESSED AIR AND MADE FREE OF ANY OIL OR RESIDUE. HOLES SHALL BE FILLED WITH AN EPOXY INJECTION SYSTEM LISTED ON THE APPROVED MATERIALS LIST, PRODUCT CATEGORY "CONCRETE ANCHOR SYSTEMS." PLACE ROD IN HOLE IMMEDIATELY AND WAIT FOR THE MANUFACTURER'S CURE TIME.

THE LOWER BOLTS IN THE GUARD RAIL AT EACH POST SHALL BE ON THE ONCOMING TRAFFIC SIDE.

IF TIMBER BLOCKS ARE LESS THAN 3" ABOVE THE CONCRETE RAIL IN THE SOLID RAIL ALTERNATE, THE METHOD SHOWN IN THE POST AND RAIL BRIDGE RAIL ALTERNATE SHALL BE UTILIZED.

THE LENGTHS OF THE LAG SCREWS SHALL BE VERIFIED BY THE PROJECT ENGINEER BEFORE INSTALLATION TO ACHIEVE THE PENETRATION CALLED FOR IN THE SOLID WALL ALTERNATE.

❸ IF APPROACH SLAB FLARES EXIST, A 1'-0" X 1'-0" HOLE SHALL BE CUT THRU THE CONCRETE IN THE PROPER LOCATION TO INSTALL POST. AFTER POST IS IN PLACE, COMPACT SOIL AROUND POST AND REDRESS THE SLAB WITH CONCRETE TO THE FINISHED ELEVATION. (NO DIRECT PAY).

ALL STRUCTURAL STEEL SHALL BE ASTM A36 AND GALVANIZED. ALL ⅝"ø BOLTS SHALL BE ASTM A307.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER	DETAIL	J. DOUCET	REVIEW	K. BRAUNER
CHECK	C. GAUDRY	CHECK	P. FOSSIER	SERIES #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER:
DATE: 5/3/2022

GUARD RAIL TERMINATING ON BRUSH CURB BRIDGE RAIL

STANDARD SHEET NO. GRR-13

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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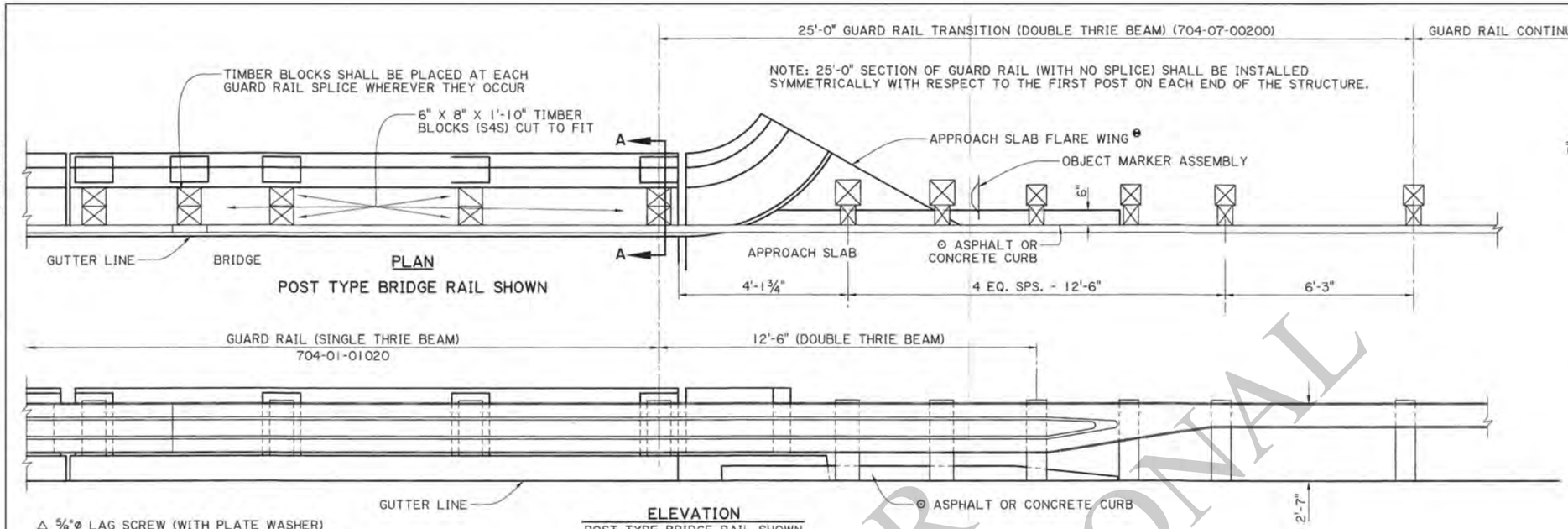
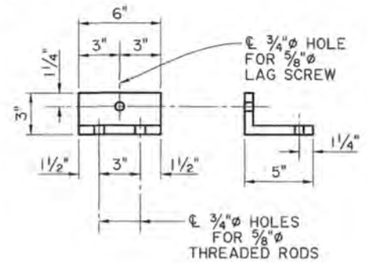
5/12/2022

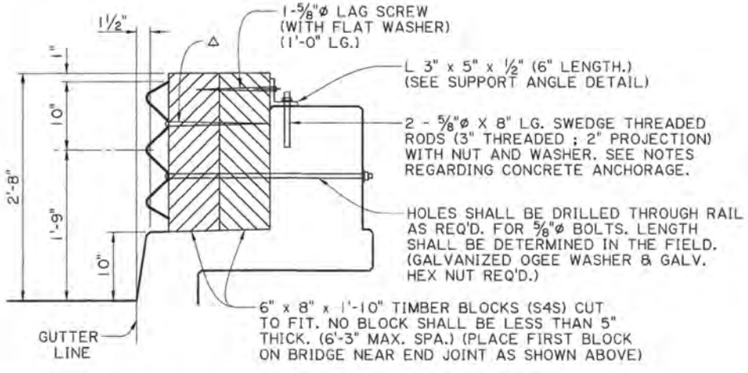


△ ⅝"ø LAG SCREW (WITH PLATE WASHER) SHALL PENETRATE TO THE BACK OF THE REAR BLOCK (LENGTH TO BE DETERMINED IN THE FIELD)

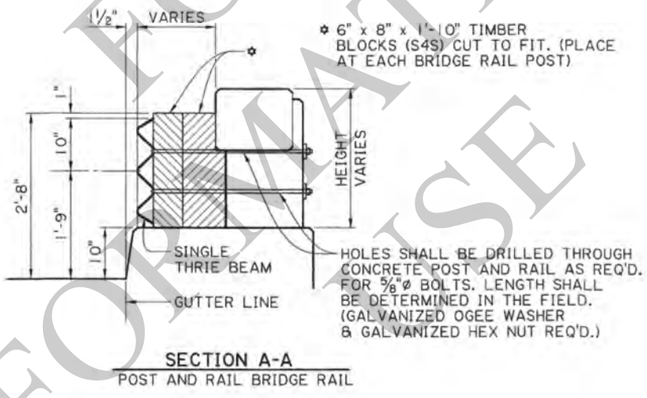


(MOUNT TO TOP OF RAIL FOR BLOCK BACKUP) THE HOLES MAY BE OFFSET TO achieve INSTALLATION BUT THE 1½" EDGE DISTANCE SHALL BE MAINTAINED.

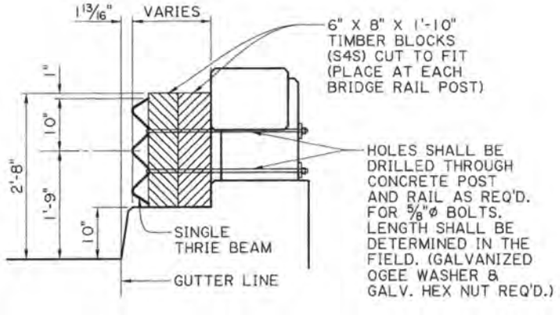
SUPPORT ANGLE



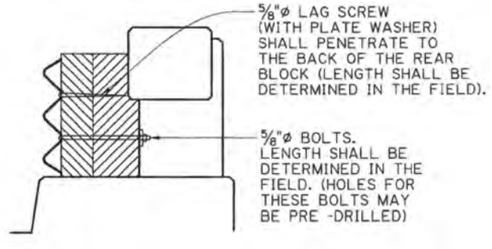
SECTION A-A
SOLID WALL RAILING



SECTION A-A
POST AND RAIL BRIDGE RAIL



SECTION A-A
POST AND RAIL BRIDGE RAIL



VIEW AT GUARD RAIL SPLICES

NOTES:

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL MATERIALS AND LABOR REQ'D. TO PLACE THE GUARD RAIL ONTO THE BRIDGE SHALL BE PAID FOR UNDER ITEM 704-01-01020

⊙ FOR CURB & TRANSITION INFORMATION, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH), SHEET 3 OF 11.

EXISTING HANDRAIL SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AS DIRECTED BY THE PROJECT ENGINEER.

ALL HOLES (VERTICAL OR HORIZONTAL) DRILLED INTO AN EXISTING CONCRETE STRUCTURE SHALL BE ¾"ø. THEY SHALL BE CLEANED WITH COMPRESSED AIR AND MADE FREE OF ANY OIL OR RESIDUE. HOLES SHALL BE FILLED WITH AN EPOXY INJECTION SYSTEM LISTED ON THE APPROVED MATERIALS LIST, PRODUCT CATEGORY "CONCRETE ANCHOR SYSTEMS." PLACE ROD IN HOLE IMMEDIATELY AND WAIT FOR THE MANUFACTURER'S CURE TIME.

THE LOWER BOLTS IN THE GUARD RAIL AT EACH POST SHALL BE ON THE ONCOMING TRAFFIC SIDE.

IF TIMBER BLOCKS ARE LESS THAN 3" ABOVE THE CONCRETE RAIL IN THE SOLID RAIL ALTERNATE, THE METHOD SHOWN IN THE POST AND RAIL BRIDGE RAIL ALTERNATE SHALL BE UTILIZED.

THE LENGTHS OF THE LAG SCREWS SHALL BE VERIFIED BY THE PROJECT ENGINEER BEFORE INSTALLATION TO ACHIEVE THE PENETRATION CALLED FOR IN THE SOLID WALL ALTERNATE.

❸ IF APPROACH SLAB FLARES EXIST, A 1'-0" X 1'-0" HOLE SHALL BE CUT THRU THE CONCRETE IN THE PROPER LOCATION TO INSTALL POST. AFTER POST IS IN PLACE, COMPACT SOIL AROUND POST AND REDRESS THE SLAB WITH CONCRETE TO THE FINISHED ELEVATION. (NO DIRECT PAY).

ALL STRUCTURAL STEEL SHALL BE ASTM A36 AND GALVANIZED. ALL ⅝"ø BOLTS SHALL BE ASTM A307.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL PURPOSE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER
CHECK	C. GAUDRY
DETAIL	J. DOUCET
CHECK	P. FOSSIER
REVIEW	K. BRAUNER
SERVICE #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/27/22

APPROVED BY CHIEF ENGINEER: Chief P. Fossier DATE: 5/3/2022

GUARD RAIL CONTINUOUS ACROSS BRUSH CURB BRIDGE RAIL

ST. STANDARD No. GRR-14

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

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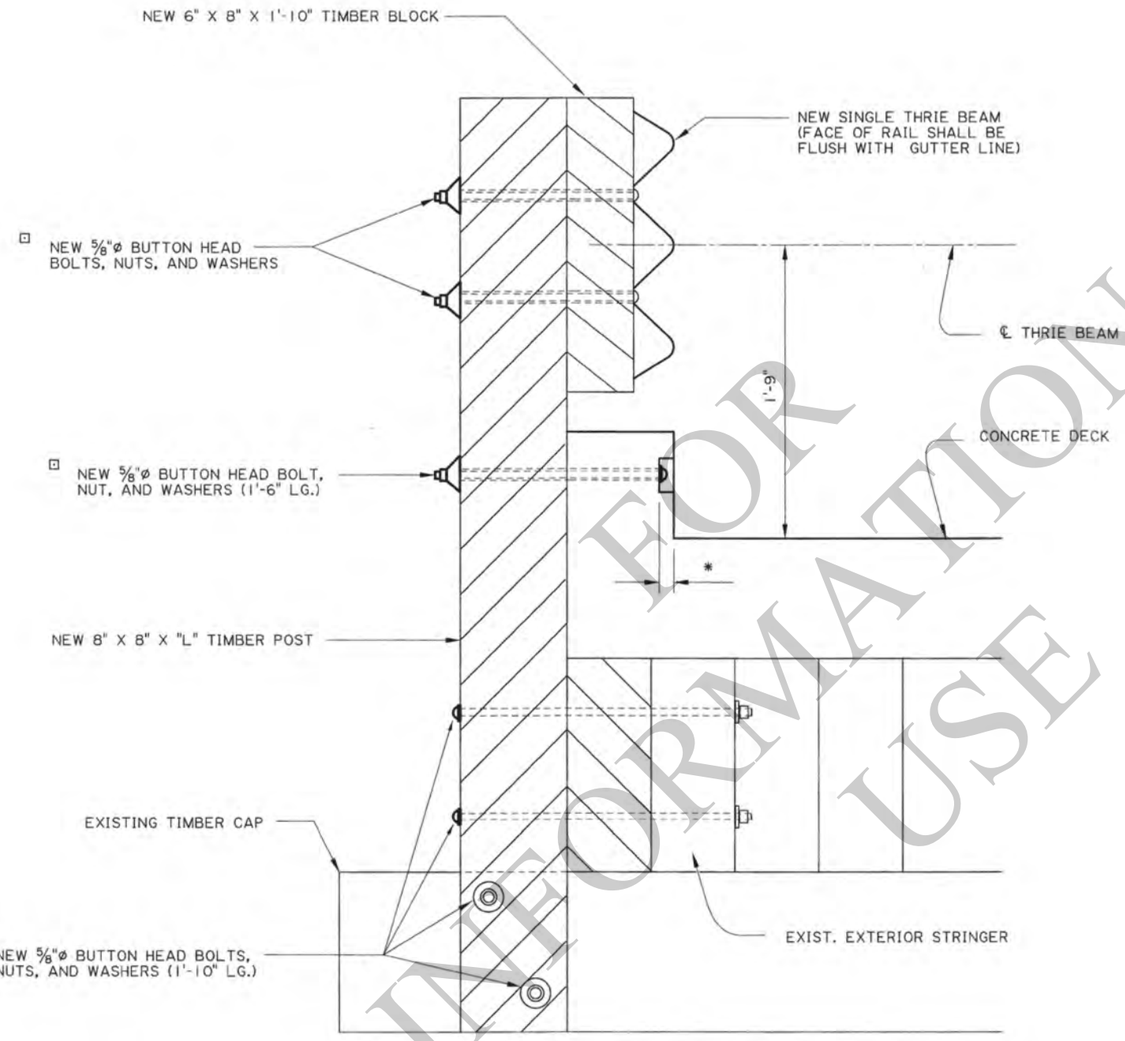

NOTES

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL TIMBER SHALL BE TREATED SOUTHERN YELLOW PINE OR DOUGLAS FIR. (CUT TO FIT). ALL HARDWARE & NAILS INVOLVED SHALL BE REPLACED WITH NEW MATERIALS AND SHALL BE GALVANIZED.

POST SPACING VARIES FROM STRUCTURE TO STRUCTURE. ORIGINAL POST SPACING SHALL BE VERIFIED BY THE PROJECT ENGINEER AND NEW POSTS SHALL BE PLACED AT THESE LOCATIONS. ANY POST AT OTHER THAN THE ORIGINAL POST SPACING SHALL BE REMOVED.

GUARD RAIL SPLICES SHALL BE MADE AT POST LOCATIONS ONLY. LAP IN DIRECTION OF TRAFFIC.

* HOLES IN CONCRETE CURB SHALL BE COUNTER-SUNK SO THE BOLT HEAD WILL NOT PROTRUDE OUTSIDE THE FACE OF CURB. GROUT HOLES WITH APPROPRIATE MATERIAL AFTER BOLT HAS BEEN TIGHTENED.

ALL WORK AND MATERIALS REQ'D. TO COMPLETE GUARD RAIL ON BRIDGE SHALL BE PAID FOR UNDER ITEM 704-01-01020 GUARD RAIL, (SINGLE THRIE BEAM) (6'-3" POST SPA.) PER LIN. FT.

WHEN EXTERIOR STRINGER IS REQ'D. TO BE REPLACED IT SHALL BE DONE AS DIRECTED BY THE PROJECT ENGINEER AND PAID FOR UNDER FORCE ACCOUNT.

⊡ ALL 5/8"ø BOLTS SHALL BE ASTM A307.

ALL BOLT LENGTHS SHALL BE VERIFIED BY FIELD MEASUREMENTS.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER
CHECK	C. GAUDRY
DETAIL	J. DOUCET
CHECK	P. FOSSIER
REVIEW	K. BRAUNER
SERIES #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: DATE: 5/3/2022

GUARD RAIL REHABILITATION (CONCRETE DECK)

STANDARD PLAN GRR-15

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

5/12/2022 11:03

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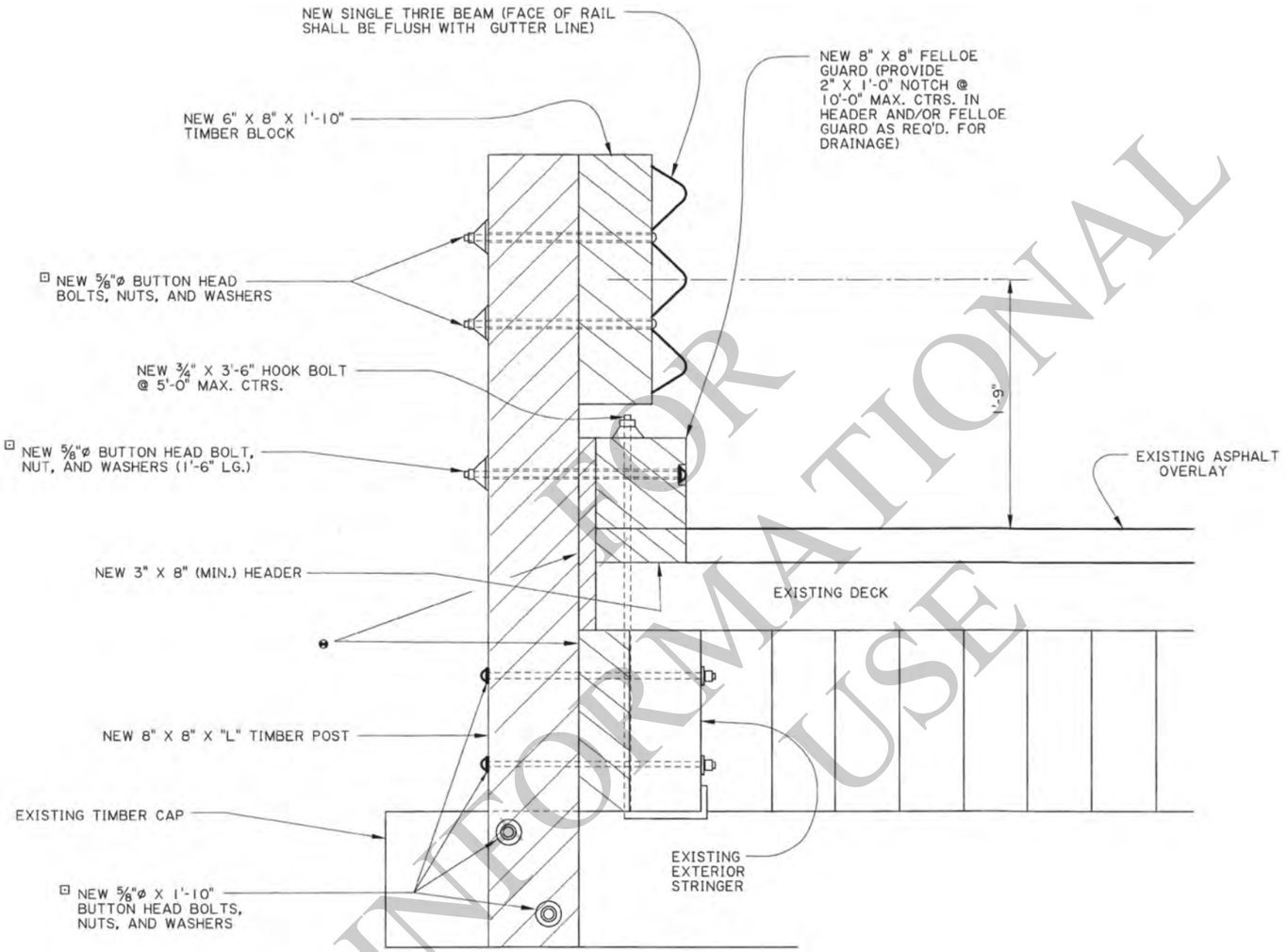
11:03
5/12/2022

⊖ NEW 8" WIDE X 1'-4" LONG TIMBER SHIM BLOCKS (IF REQ'D.) AT EACH 8" X 8" POST. THICKNESS TO BE DETERMINED BY THE CONTRACTOR AND VERIFIED BY THE PROJECT ENGINEER.



TYPICAL SECTION

(NOT TO SCALE)

NOTES

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL TIMBER SHALL BE TREATED SOUTHERN YELLOW PINE OR DOUGLAS FIR. (CUT TO FIT) ALL HARDWARE & NAILS INVOLVED SHALL BE REPLACED WITH NEW MATERIALS AND SHALL BE GALVANIZED.

POST SPACING VARIES FROM STRUCTURE TO STRUCTURE. ORIGINAL POST SPACING SHALL BE VERIFIED BY THE PROJECT ENGINEER AND NEW POST SHALL BE PLACED AT THESE LOCATIONS. ANY POST OTHER THAN THE ORIGINAL POST SPACING SHALL BE REMOVED.

GUARD RAIL SPLICES SHALL BE MADE AT POST LOCATIONS ONLY. LAP IN DIRECTION OF TRAFFIC.

ALL WORK AND MATERIALS REQ'D. TO COMPLETE GUARD RAIL ON BRIDGE SHALL BE PAID FOR UNDER ITEM 704-01-01020 GUARD RAIL, (SINGLE THRIE BEAM) (6'-3" POST SPA.) PER LIN. FT.

WHEN EXTERIOR STRINGER IS REQ'D. TO BE REPLACED IT SHALL BE DONE AS DIRECTED BY THE PROJECT ENGINEER AND PAID FOR UNDER FORCE ACCOUNT.

⊡ ALL 5/8"ø BOLTS SHALL BE ASTM A307.

ALL BOLT LENGTHS SHALL BE VERIFIED BY FIELD MEASUREMENTS.

THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.

INFORMATIONAL FOR IN HOUSE USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	P. FOSSIER	DETAIL	J. DOUCET	REVIEW	K. BRAUNER
CHECK	C. GAUDRY	CHECK	P. FOSSIER	SERIES #	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER: DATE: 5/3/2022

GUARD RAIL REHABILITATION (TIMBER DECK)

STANDARD PLAN GRR-16

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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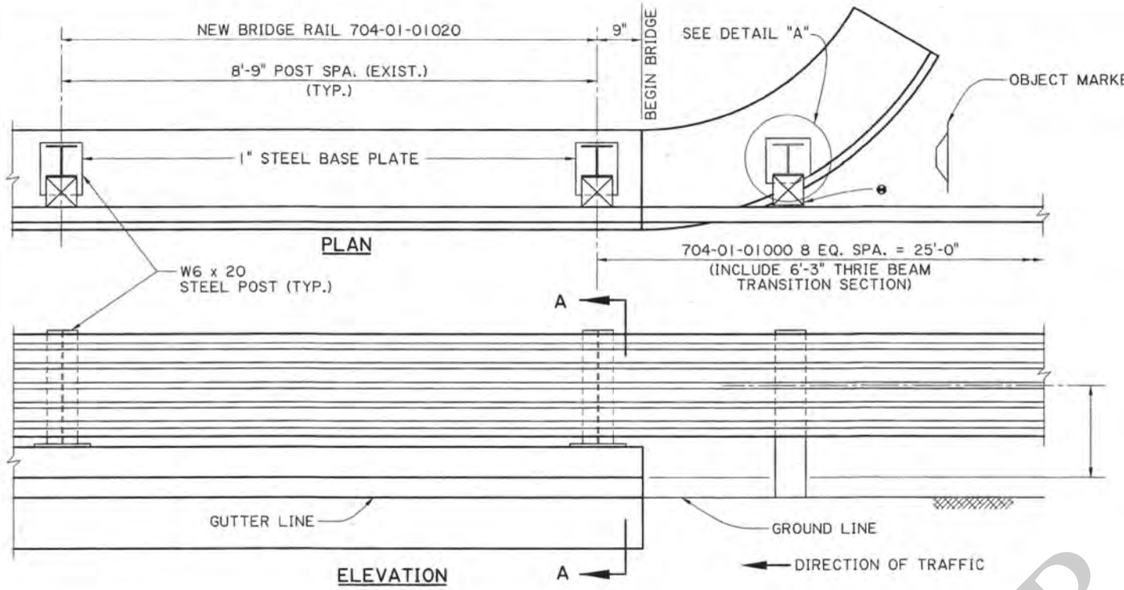
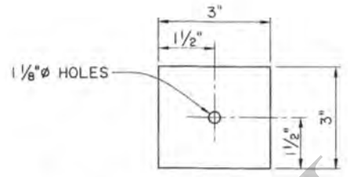
5/12/2022





5/8" GALVANIZED STEEL PLATE

NOTES:

FOR ADDITIONAL INFORMATION ON GUARD RAIL, SEE STANDARD PLANS FOR HIGHWAY GUARD RAIL (MASH).

ALL WORK AND MATERIALS REQ'D. TO INSTALL GUARD RAIL ON THE STRUCTURE SHALL BE PAID FOR UNDER ITEM 704-01-01020

ANY DAMAGE DONE TO THE STRUCTURE DURING CONSTRUCTION NOT RELATED TO THE WORK REQUIRED SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE AND TO THE SATISFACTION OF THE PROJECT ENGINEER.

ALL HOLES (VERTICAL OR HORIZONTAL) DRILLED INTO AN EXISTING CONCRETE STRUCTURE SHALL BE CLEANED WITH COMPRESSED AIR AND MADE FREE OF ANY OIL OR RESIDUE. HOLES SHALL BE FILLED WITH AN INJECTION SYSTEM LISTED ON THE APPROVED MATERIALS LIST, PRODUCT CATEGORY "CONCRETE ANCHOR SYSTEMS." PLACE ROD IN HOLE IMMEDIATELY AND WAIT FOR THE MANUFACTURER'S CURE TIME.

NOMINAL POST SPACING ON THIS SPAN IS 8'-9" (ORIGINAL DESIGN). NEW POST ARE REQUIRED AND SHALL BE INSTALLED AS SHOWN. GUARD RAIL SPLICES SHALL BE MADE AT POST LOCATIONS ONLY. THE POST LOCATED ON THE FLARED BRIDGE END SHALL BE INSTALLED AS SHOWN. IF A FLARED END DOES NOT EXIST A NORMAL 6" X 8" TIMBER POST OR A APPROVED ALTERNATE SHALL BE USED.

* NOTE: (AT END SPAN POST LOCATION ONLY) THE INTERIOR BOLT SHALL BE AS SHOWN. THE OUTER BOLT NEARER TO END JOINT) SHALL BE DRILLED IN THE SAME MANNER AS THE FRONT ANCHOR BOLTS.

ALL STRUCTURAL STEEL SHALL BE ASTM A36 AND GALVANIZED.

☑ THE EXISTING POST SHALL BE REMOVED AND NEW POST BE MOUNTED ON THE TOP OF THE STRUCTURE AS SHOWN AND AT THE SAME SPACING.

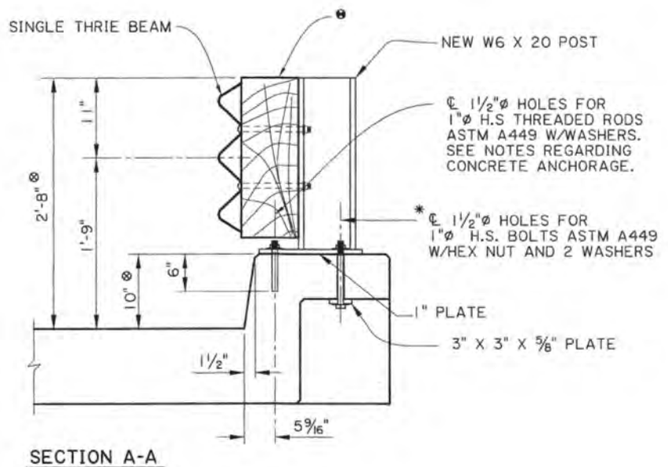
⊖ 6" X 8" X 1'-10" TIMBER BLOCK

✡ ℄ 1½"ø HOLES FOR 1"ø H.S. BOLTS. ASTM A449 W/HEX NUT AND 2 WASHERS

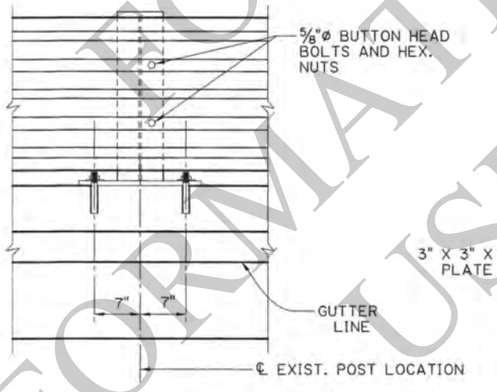
ALL 5/8"ø BOLTS SHALL BE ASTM A307.

⊗ CURB HEIGHT MAY VARY, ADJUST W6 x 20 POST LENGTH AS NEEDED TO MEET 2'-8" DIMENSION.

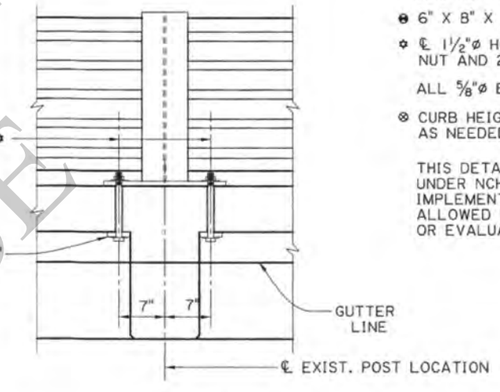
THIS DETAIL WAS DEVELOPED AND APPROVED FOR USE UNDER NCHRP REPORT 350. AS PER LADOTD'S MASH IMPLEMENTATION POLICY, ITS CONTINUED USE IS ALLOWED WHILE A MASH ALTERNATIVE IS DEVELOPED OR EVALUATED.



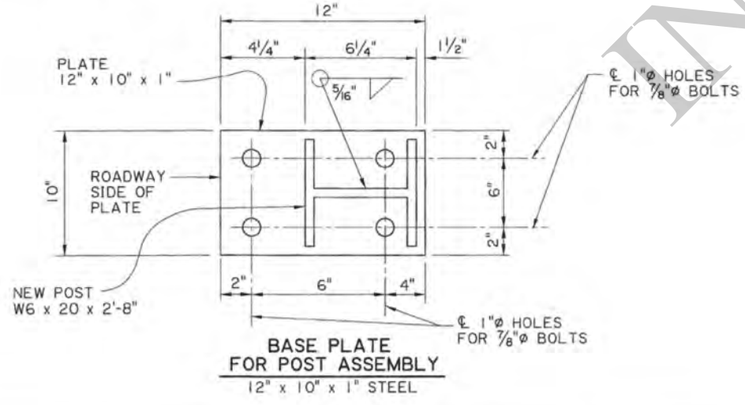
SECTION A-A



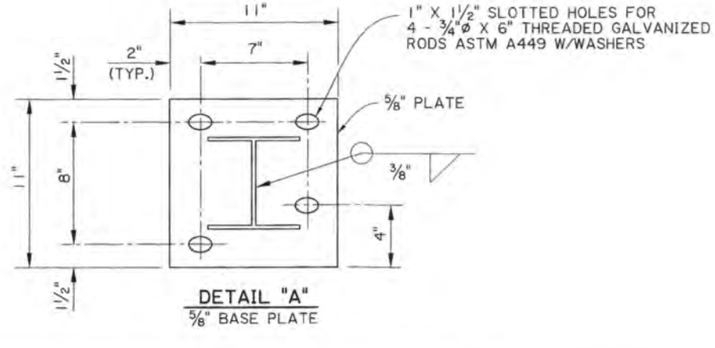
FRONT VIEW



REAR VIEW



BASE PLATE
FOR POST ASSEMBLY
12" x 10" x 1" STEEL



DETAIL "A"
5/8" BASE PLATE

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	CHECK	DETAIL	CHECK	REVIEW	SERIES #
P. FOSSIER	C. GAUDRY	J. DOUCET	P. FOSSIER	K. BRAUNER	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
4/22/22

APPROVED BY CHIEF ENGINEER:
DATE: 5/3/2022

BRIDGE RAIL REHABILITATION
WASKEY BRIDGES

STANDARD PLAN GRR-17

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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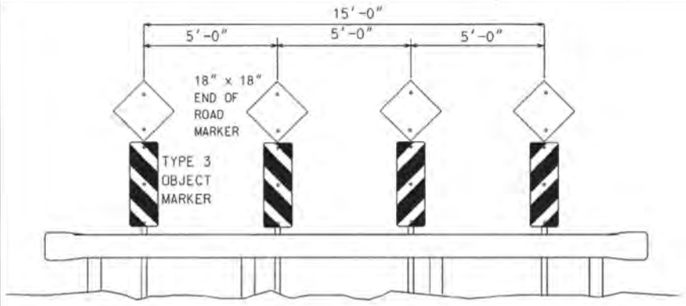


END-OF-ROADWAY INSTALLATION

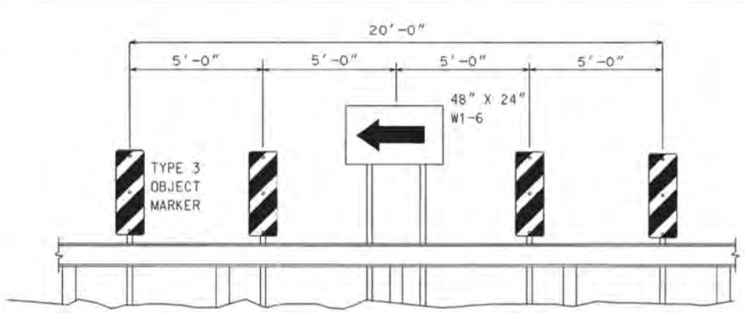
DEAD END ROAD INSTALLATION

(TYPE A - WITH GUARD RAIL, TYPE D - WITHOUT GUARDRAIL)

For End of Road installation Object Marker stripes shall slope downward toward the center.

Guardrail to be installed in accordance with guardrail Standard Plans.

Typical installation requires 25 ft. of rail with flared end sections.



TURN INSTALLATION

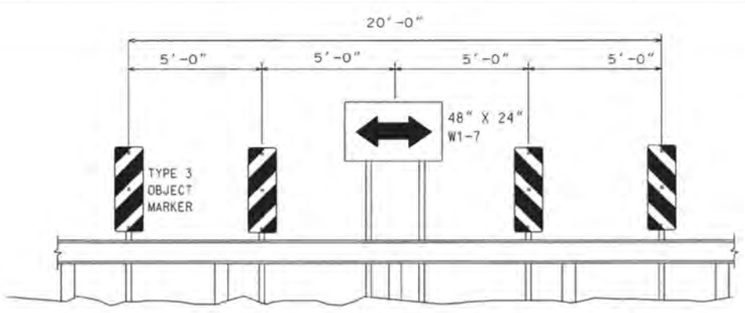
DEAD END ROAD INSTALLATION

(TYPE B - WITH GUARD RAIL, TYPE C - WITHOUT GUARDRAIL)

For Turn installations Object Marker stripes shall slope downward toward the direction of travel.

Guard rail to be installed in accordance with guardrail Standard Plans.

Typical installation requires 25 ft. of rail with flared end sections.



T-INTERSECTION INSTALLATION

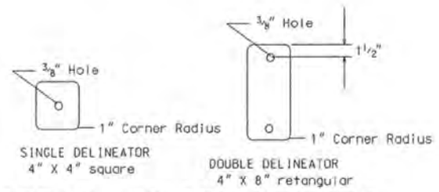
DEAD END ROAD INSTALLATION

(TYPE B - WITH GUARD RAIL, TYPE C - WITHOUT GUARDRAIL)

For T-intersection installations Object Marker stripes shall slope away from center.

Guardrail to be installed in accordance with guardrail Standard Plans.

Typical installation requires 25 ft. of rail with flared end sections.



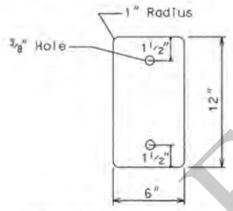
DETAIL OF DELINEATORS

Colors shall be red, white, or yellow.
The sheeting shall be in accordance with DOTD Standard Specification

For alternate Delineator/Flexible Post systems see the DOTD Approved Materials List. Alternates shall have an equivalent area of sheeting and shall not be less than 3 in. wide.

The mounting height shall be the same as for Milepost Markers.

Post penetration in ground shall be a minimum of 2 ft.

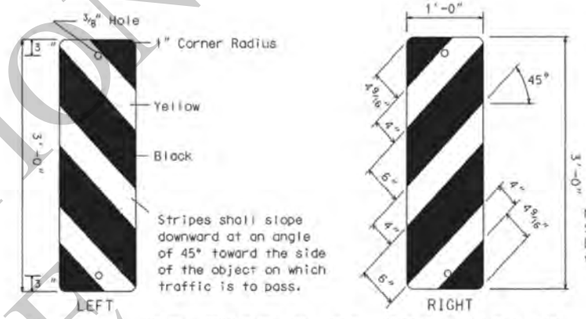


DETAIL OF TYPE 2 OBJECT MARKER

The face shall be yellow. The sheeting shall be in accordance with DOTD Standard Specification. The typical mounting height from the ground line to the bottom of the object marker shall be 36 in.

Post penetration in ground shall be a minimum of 2 ft.

Type 2 Object Markers are typically used in the right-of-way to mark objects for mowing operations.



Note: For mile markers on conventional roads. See the details shown on the Special Signing Details sheets-B. This is in accordance with MUTCD signs D10-4 & D10-5 in Figure 2H-4.

DETAIL OF TYPE 3 OBJECT MARKER

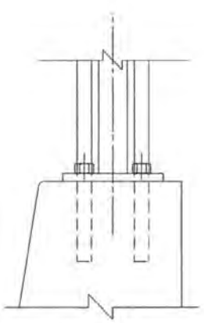
The markings on the Object Markers shall be diagonal, black and yellow stripes. The sheeting shall be in accordance with DOTD Standard Specifications.

Post penetration in ground shall be a minimum of 3 ft.

Type 3 Object Markers are typically used to mark objects in the roadway (travel lanes and shoulder) and to mark guard rail installation (see guard rail Standard Plans).

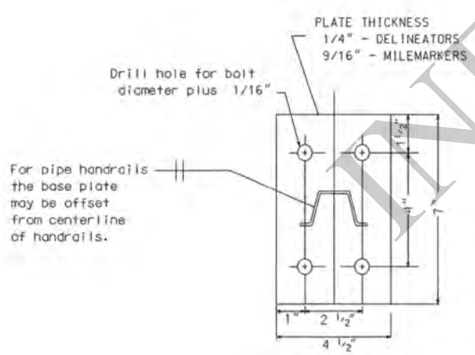
When used for marking objects in the roadway or objects that are 8 ft. or less from the shoulder or curb, the mounting height to the bottom of the object marker should be at least 4 ft. above the surface of the nearest traffic lane.

When used to mark objects more than 8 ft. from the shoulder or curb, the mounting height to the bottom of the object marker should be at least 4 ft. above the ground.



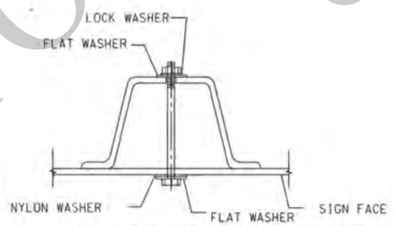
Anchor Bolts
1/4 in. plate - 5/16 in. x 4 in. bolt
9/16 in. plate - 1/2 in. x 5 in. bolt

For bolt anchors see DOTD Approved Materials List.



Steel base plate and channel posts shall be galvanized after fabrication.

DETAIL FOR MOUNTING SIGN POST TO CONCRETE BARRIER RAIL



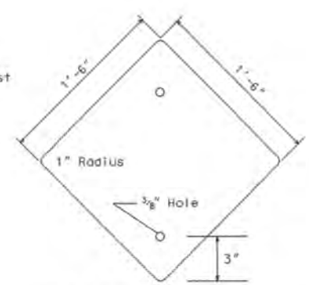
Steel U-channel sign post shall have 3/8 in. dia. holes drilled in channel on 1 in. centers from top of post. Steel tube post (Min. 2.23 lb/ft) may be used in lieu of U-channel posts.
Post Weight: 2.0 lbs/ft - DELINEATORS and TYPE 2 OBJECT MARKERS
2.5 lbs/ft - MILEMARKERS and TYPE 3 OBJECT MARKERS
3.0 lbs/ft - WARNING SIGNS, W1-6, W1-7

Fasteners shall be either bolts or rivets.

Bolts shall be 5/16 in. diameter electroplated steel hex head bolts with one nylon washer, two flat washers, one lock washer, and one vandal resistant hex nut.

Rivets shall be vandal resistant 1/4 in. diameter aluminum blind rivets with smooth, low profile heads on each end.

DETAIL FOR MOUNTING SIGN TO U-CHANNEL POST



DETAIL OF END OF ROAD MARKER

Colors shall be red.

The sheeting shall be in accordance with DOTD Standard Specification.

The minimum mounting height from the ground line to the bottom of the marker shall be 5 ft.

Post penetration in ground shall be a minimum of 3 ft.

MOUNTING DETAILS

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | FEDERAL PROJECT | STATE PROJECT

DESIGNED J. COLVIN
CHECKED P. ALLAIN
DETAILED M.D.ORDOGNE
CHECKED J. COLVIN
DATE 02/13/2013
SHEET

REVISION DESCRIPTION | BY | DATE

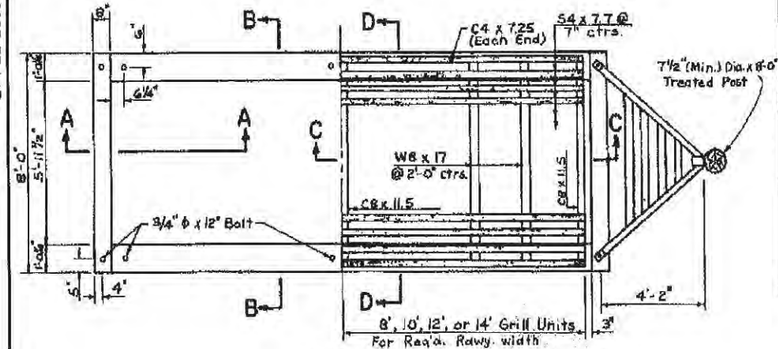
APPROVED BY CHIEF ENGINEER: Laurie P. Williams DATE: 4-7-2014

OBJECT MARKERS AND DEAD END ROAD INSTALLATION

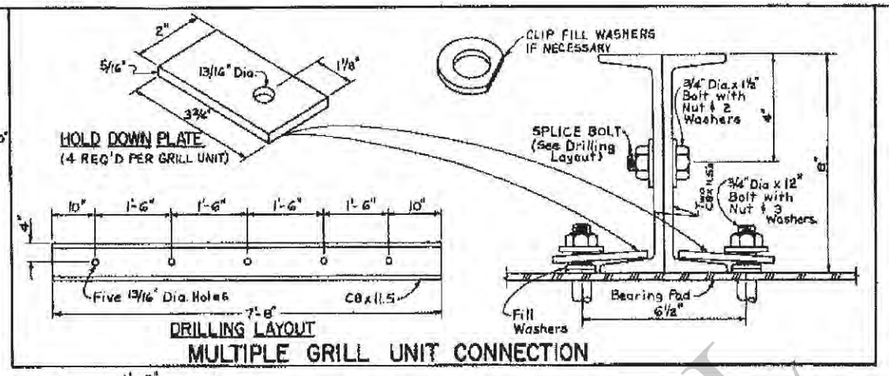
STANDARD PLAN HS-03

TRAFFIC ENGINEERING

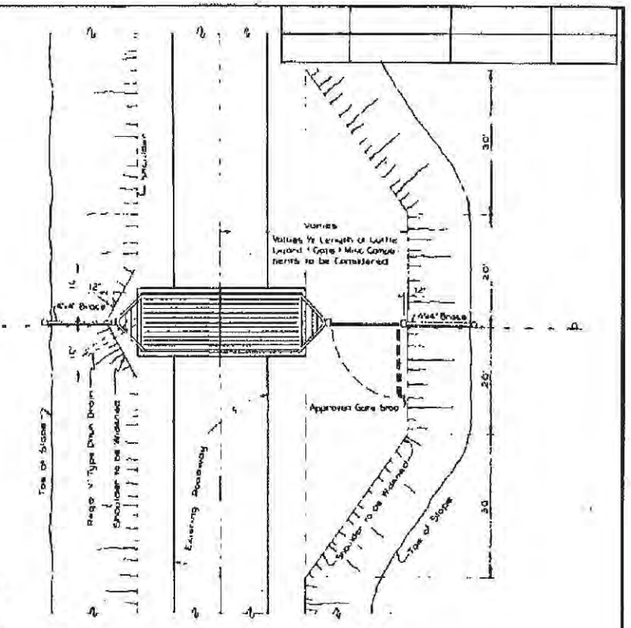
21-FEB-2008 13:39



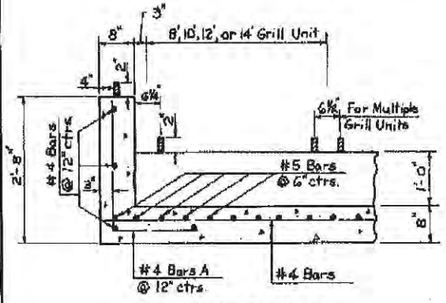
PLAN



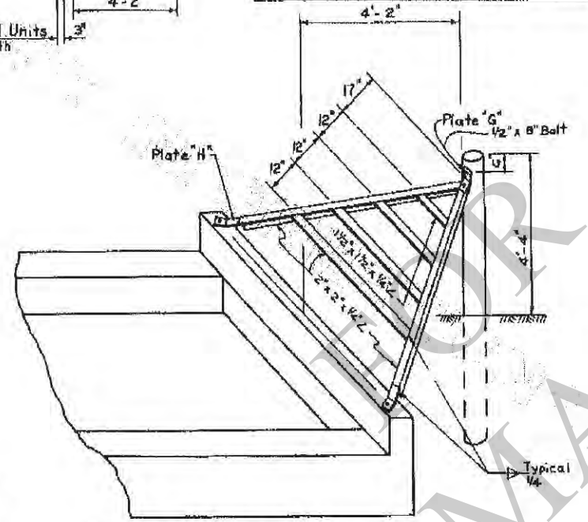
MULTIPLE GRILL UNIT CONNECTION

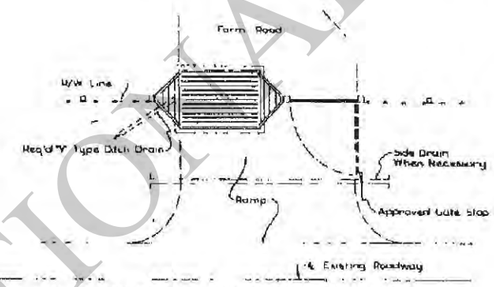


PLAN OF CATTLE GUARD ON STATE SECONDARY OR PARISH ROADS

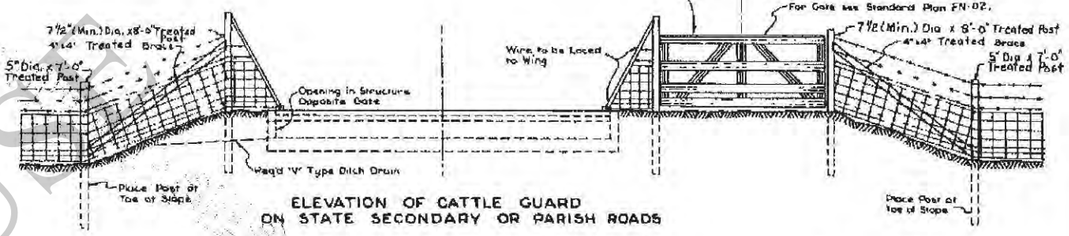


SECTION A-A

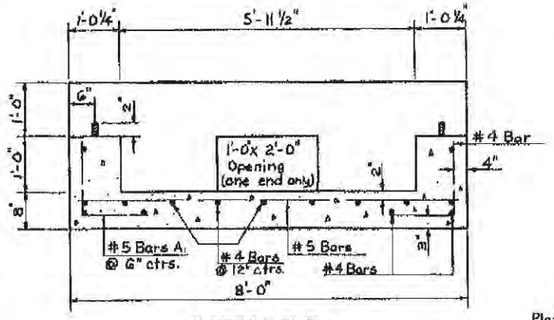




PLAN OF CATTLE GUARD ON R/W LINE



ELEVATION OF CATTLE GUARD ON STATE SECONDARY OR PARISH ROADS



SECTION B-B

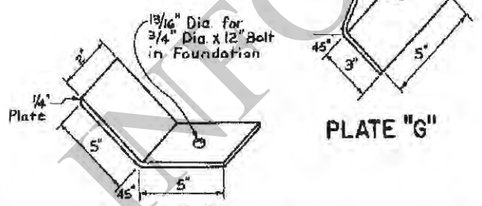
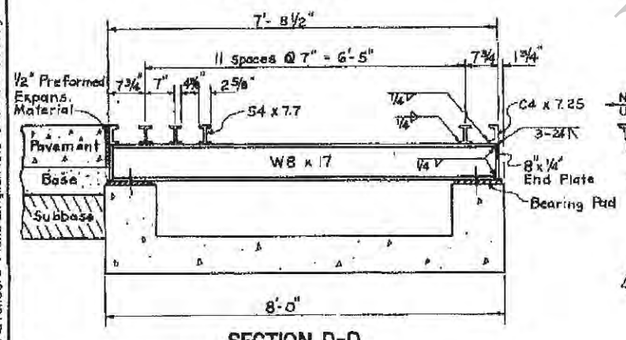
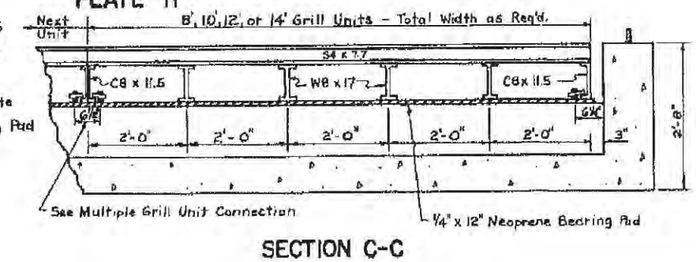


PLATE "H"

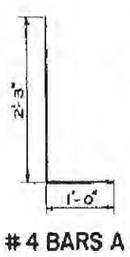
PLATE "G"



SECTION D-D



SECTION C-C



#4 BARS A

#5 BARS A,

GENERAL NOTES:

Concrete shall be Class "A".

All structural steel shall conform to ASTM A-36.

Painting of Grill Units and Wings shall be an Organic Zinc Primer and Topcoat systems according to Std. Spec. Section 811 and related Supplemental Specifications.

Welding shall conform to the D.O.T.D. Std. Specifications and the D.O.T.D. Welding Procedures Manual.

Standard Plan No. KG-01			SHEET 1 OF 1
CATTLE GUARD			
HS20-44 (MS-18) LOADING			
DATED Oct. 19 '81			
STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT			
DESIGNED CDJ	DETAILED JCM	TRACED KAJ	
CHECKED JCM	CHECKED CDJ	CHECKED CDJ	
APPROVED Dempsey L. Little		DATE Oct. 19, 1981	
		CHIEF ENGINEER	

DATE	DESCRIPTION	BY
	REVISIONS	

R:\Standard Plans\English\Old Sheets\KG01.dgn

INFORMATIONAL PURPOSES ONLY

21-FEB-2008 13:42

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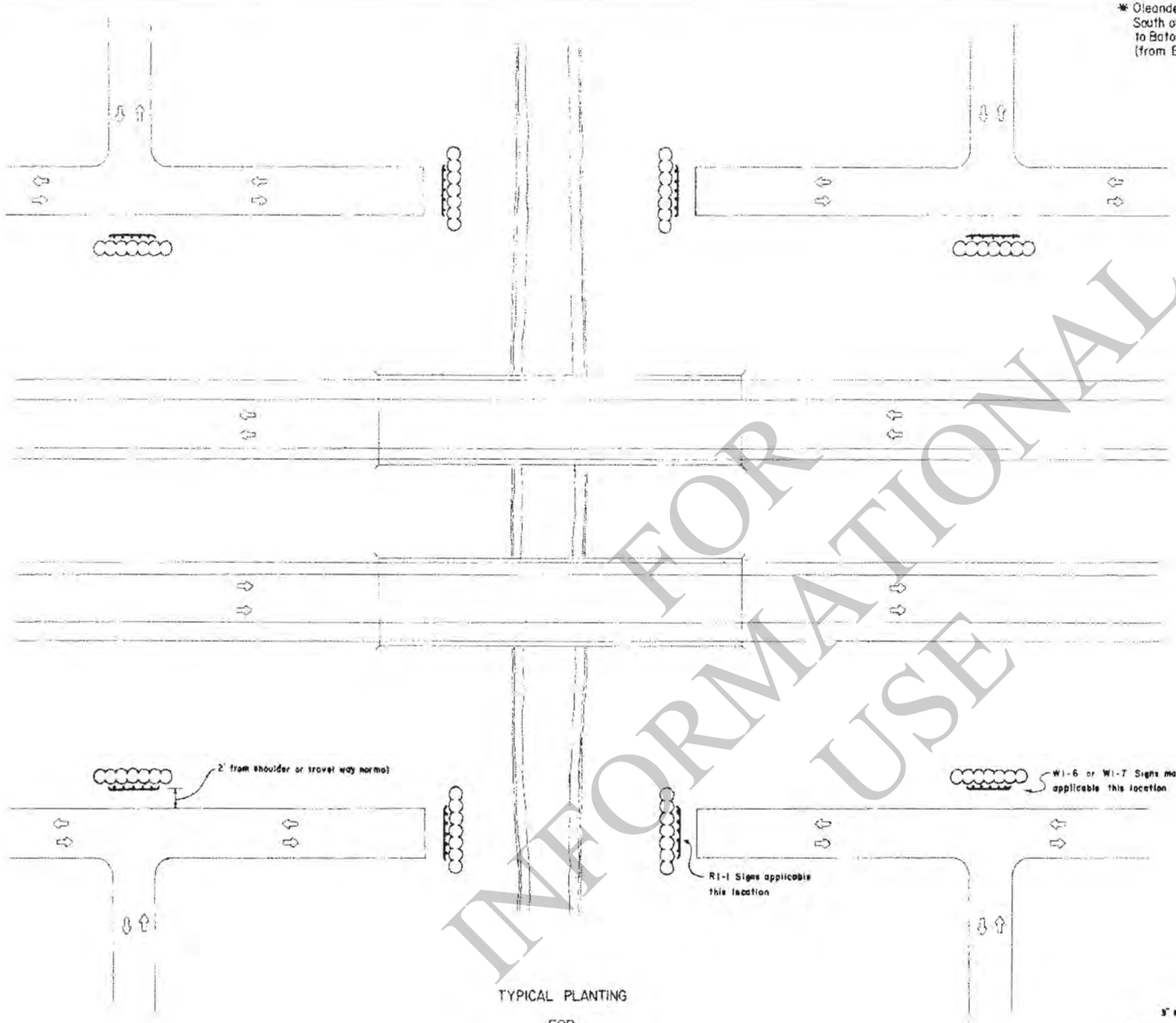
	STATE PROJECT	PARISH	SHEET NO.



TYPICAL PLANTING
FOR
DEAD END ROAD INSTALLATION

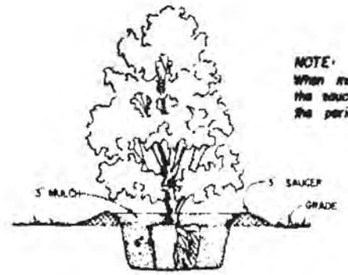
* Oleander will be limited to areas South of I-10 (from Texas State Line to Baton Rouge) and South of I-12 (from Baton Rouge to Slidell).

PLANT MATERIAL

Botanical Name	Common Name & Spacing	Size
Cortaderia argentea	- Pampas grass (4' o.c.)	3'-4'
Jasminum primulinum	- Primrose jasmine (4' o.c.)	24"-30"
Ligustrum japonica	- Wax leaf ligustrum (4' o.c.)	24"-30"
Viburnum odoratissimum	- Sweet viburnum (4' o.c.)	24"-30"
* Nerium oleander	- Oleander (4' o.c.)	3'-4'
Feijoa sellowiana	- Pineapple guava (4' o.c.)	24"-30"
Pyracantha spp	- Firethorn (4' o.c.)	3'-4'

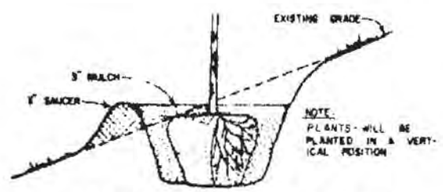
GENERAL NOTE :

1. All shrubbery to be planted a minimum of 6' from barrier. Barrier location should normally be 2' behind shoulder or travel way as directed by the Engineer.
2. Typical Shrubbing locations shown are intended to serve as a guide only. Shrubbery required shall be indicated on the plans or summary sheet or at locations directed by the Engineer. Payment shall be designated by the appropriate landscape pay item.
3. See Project Specifications for planting and acceptance requirements.



NOTE:
When mulching rows or groups of shrubs, the saucer will run continuously along the perimeter of the planting.

SHRUB PLANTING DETAIL



PLANTING ON SLOPES

DATE	DESCRIPTION	BY
	REVISIONS	

STANDARD PLAN NO. LS-01 — PAGE 1 OF 1

TYPICAL LANDSCAPING LAYOUT
FOR USE WITH
DEAD END ROAD INSTALLATIONS

DATED 4/2e 1978

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
OFFICE OF HIGHWAYS

DESIGNED	DETAILED LH	TRACED FB
CHECKED	CHECKED S.B.	CHECKED T.W.

APPROVED Dorothy D. W. Clark, CHIEF ENGINEER — DATE 4/20/78

FOR INFORMATIONAL USE

D_c (FEET)		D_s (FEET)	
MINIMUM	PREFERRED	MINIMUM	PREFERRED
65	100	100	150

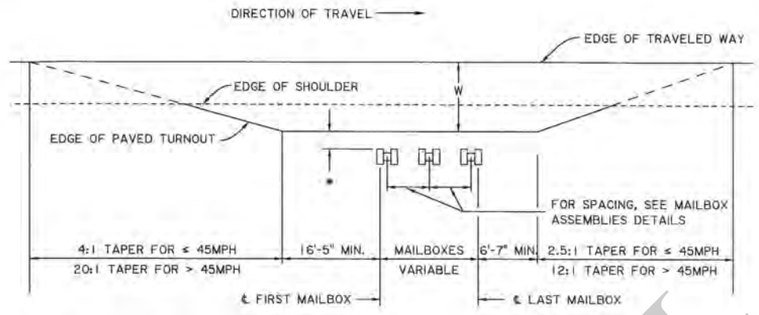
THROUGH ROAD SPEED (M.P.H.)	D_a (FEET)		D_e (FEET)		
	$n\ V_c\ V_m \leq 4000$	$n\ V_c\ V_m > 4000$	$\frac{V_c}{1.5n-.5} \leq 50$	$50 < \frac{V_c}{1.5n-.5} \leq 400$	$\frac{V_c}{1.5n-.5} > 400$
35	65	200	65	100	100
≥ 55	65	295	150	150	200

V_c = AVERAGE DAILY TRAFFIC ON CROSS ROAD (VEHICLES PER DAY)

V_m = AVERAGE DAILY TRAFFIC ON THROUGH ROAD (VEHICLES PER DAY)

n = NUMBER OF MAILBOXES AT MAIL STOP

MINIMUM CLEARANCES TO NEAREST MAILBOX IN MAIL STOPS AT INTERSECTIONS



W = FOR SUGGESTED WIDTHS, SEE TABLE BELOW.
MAILBOXES = A MINIMUM DESIGN FOR ROADS CARRYING LOW-SPEED TRAFFIC AND FOR LOCAL AND COLLECTOR ROADS.
* = FOR MAILBOX FACE OFFSET, SEE TABLE BELOW. 0° - 12°.

DETAIL OF MAILBOX TURNOUT

* SUGGESTED GUIDELINES FOR LATERAL PLACEMENT OF MAILBOXES

HIGHWAY TYPE AND ADT (VPD)	WIDTH OF ALL-WEATHER SURFACE TURNOUT OR AVAILABLE SHOULDER AT MAILBOX[a] (FT)		DISTANCE ROADSIDE FACE OF MAILBOX IS TO BE OFFSET BEHIND EDGE OF TURNOUT OR USABLE SHOULDER (IN)	
	PREFERRED	MINIMUM	PREFERRED	MINIMUM
RURAL HIGHWAY OVER 10,000	12	8	6 to 8	0
RURAL HIGHWAY 1,500 TO 10,000	12	8		
RURAL HIGHWAY 400 TO 1,500	10	8		6[c]
RURAL ROAD UNDER 400	8	6[b]		
RESIDENTIAL STREET WITHOUT CURB OR ALL-WEATHER SHOULDER	6	0		
CURBED RESIDENTIAL STREET OR URBAN AND SUBURBAN AREAS	NOT APPLICABLE		8 to 12[d]	6[d]

NOTES: ADT = AVERAGE DAILY TRAFFIC
VPD = VEHICLES PER DAY

a) IF INCREASE ACCESS IS NEEDED, THE FOLLOWING MAY BE CONSIDERED IN CONJUCTION WITH THE LOCAL POSTMASTER:
- PROVIDE A LEVEL CLEAR SPACE 30 IN. BY 48 IN. CENTERED ON THE BOX FOR EITHER SIDE OR FORWARD APPROACH.
- PROVIDE AN ACCESSIBLE PASSAGE TO AND FROM THE MAILBOX AND PROJECT INTO A CIRCULATION ROUTE--NO MORE THAN 4 IN. IF BETWEEN 28 IN. AND 80 IN.-- SO THAT THE MAILBOX DOES NOT BECOME A PROTRUDING OBJECT FOR PEDESTRIANS WITH IMPAIRED VISION.

b) PROVIDE AN ACCESSIBLE PASSAGE TO AND FROM THE MAILBOX. THE MAILBOX PROJECTION INTO A CIRCULATION ROUTE SHALL NOT BE MORE THAN 4 IN., SO THAT THE MAILBOX DOES NOT BECOME A PROTRUDING OBJECT FOR PEDESTRIANS WITH IMPAIRED VISION.

c) IF A TURNOUT IS PROVIDED, THIS MAY BE REDUCED TO ZERO.

d) BEHIND TRAFFIC-FACE OF CURB.

NOTES:

NO MAILBOX WILL BE PERMITTED WHERE ACCESS IS OBTAINED FROM THE LANES OF A FREEWAY OR WHERE ACCESS IS OTHERWISE PROHIBITED BY LAW OR REGULATION.

MAILBOXES SHALL BE LOCATED ON THE RIGHT-HAND SIDE OF THE ROADWAY IN THE DIRECTION OF DELIVERY ROUTE EXCEPT ON ONE-WAY STREETS WHERE THEY MAY BE PLACED ON EITHER SIDE. THE BOTTOM OF THE BOX SHALL BE SET AT AN ELEVATION (H) ESTABLISHED BY THE U.S. POSTAL SERVICE, USUALLY BETWEEN 3'4" AND 4'0" ABOVE THE ROADWAY SURFACE. THE ROADSIDE FACE OF THE BOX SHALL BE OFFSET FROM THE EDGE OF THE TRAVELED WAY. SEE THE SUGGESTED GUIDELINES FOR LATERAL PLACEMENT OF MAILBOXES AT LEFT.

ALL MAILBOX INSTALLATIONS MUST CONFORM TO THE REQUIREMENTS OF THE U.S. POSTAL SERVICE.

WHERE FEASIBLE, NEW INSTALLATION SHOULD BE LOCATED ON THE FAR RIGHT SIDE OF AN INTERSECTION WITH A ROAD OR DRIVEWAY ENTRANCE. HOWEVER, CONSIDERATION SHOULD BE GIVEN TO
- MINIMIZING WALKING DISTANCE WITHIN THE ROADWAY FOR THE PATRON.
- AVAILABLE STOPPING SIGHT DISTANCE IN ADVANCE OF THE MAILBOX SITE, AND
- POSSIBLE RESTRICTIONS TO CORNER SIGHT DISTANCES AT INTERSECTIONS AND DRIVEWAY ENTRANCES.

FOR LOCATION OF MAILBOXES AT AN INTERSECTING ROADWAY, SEE DETAIL AT LEFT.

MAILBOXES SHALL BE OF LIGHT SHEET METAL OR PLASTIC CONSTRUCTION MANUFACTURED BY AN APPROVED MANUFACTURERS CONFORMING TO THE REQUIREMENTS OF THE U.S. POSTAL SERVICE. MAILBOXES MUST BE FULL-SCALE CRASH TESTED IN ACCORDANCE WITH THE LATEST EDITION OF MASH. NEWSPAPER DELIVERY BOXES SHALL BE OF LIGHT SHEET METAL OR PLASTIC CONSTRUCTION OF MINIMUM DIMENSIONS SUITABLE FOR HOLDING A NEWSPAPER.

MANUFACTURERS WHOSE MAILBOXES HAVE BEEN APPROVED BY THE POSTMASTER GENERAL WILL BE LISTED IN THE POSTAL OPERATION MANUAL (POM) AND PUBLISHED IN THE POSTAL BULLETIN. NO MORE THAN TWO MAILBOXES MAY BE MOUNTED ON A SUPPORT STRUCTURE UNLESS THE SUPPORT STRUCTURE AND MAILBOX ARRANGEMENT HAVE BEEN SHOWN TO BE SAFE BY CRASH TESTING IN ACCORDANCE WITH THE LATEST EDITION OF MASH. HOWEVER, LIGHTWEIGHT NEWSPAPER BOXES MAY BE MOUNTED BELOW THE MAILBOX ON THE SIDE OF THE MAILBOX SUPPORT.

MAILBOX SUPPORTS SHALL NOT BE SET IN CONCRETE UNLESS THE SUPPORT DESIGN HAS BEEN SHOWN TO BE SAFE BY CRASH TESTING IN ACCORDANCE WITH THE LATEST EDITION OF MASH WHEN SO INSTALLED.

POSTS SHALL BE STRONG ENOUGH TO SUPPORT THE BOX, BUT CAPABLE OF BENDING WHEN STRUCK BY AN AUTOMOBILE OR A LIGHT TRUCK. MAXIMUM STRENGTH POSTS ARE EITHER A METAL POST WITH A STRENGTH NO GREATER THAN A 2" DIAMETER STANDARD STRENGTH STEEL PIPE OR A 2#/FT FLANGED CHANNEL OR A 4"X4" WOODEN POST. POSTS ARE ACCEPTABLE MAILBOX SUPPORTS WHEN EMBEDDED NO MORE THAN 24" INTO THE GROUND. A METAL POST SHALL NOT BE FITTED WITH AN ANCHOR PLATE, BUT MAY HAVE AN ANTI-TWIST DEVICE THAT EXTENDS NO MORE THAN 10" BELOW THE GROUND SURFACE.

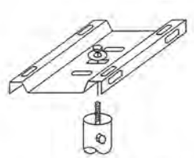
THE POST-TO-BOX ATTACHMENT SHALL BE OF SUFFICIENT STRENGTH TO PREVENT THE BOX FROM SEPARATING FROM THE POST TOP IF THE INSTALLATION IS STRUCK BY AN AUTOMOBILE OR LIGHT TRUCK.

THE MINIMUM SPACING BETWEEN THE CENTERS OF SUPPORT POSTS SHALL BE THREE-FOURTHS THE HEIGHT OF THE POSTS ABOVE THE GROUND LINE

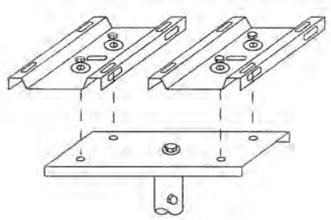
MAILBOX SUPPORT DESIGNS NOT DETAILED WILL BE ACCEPTABLE IF FULL-SCALE CRASH TESTED IN ACCORDANCE WITH THE LATEST EDITION OF MASH AND IF APPROVED BY THE ENGINEER.

FOR POST-TO-BOX ATTACHMENT DETAILS, SEE SHEET 2 OF 2.

MASH - MANUAL FOR ASSESSING SAFETY HARDWARE.

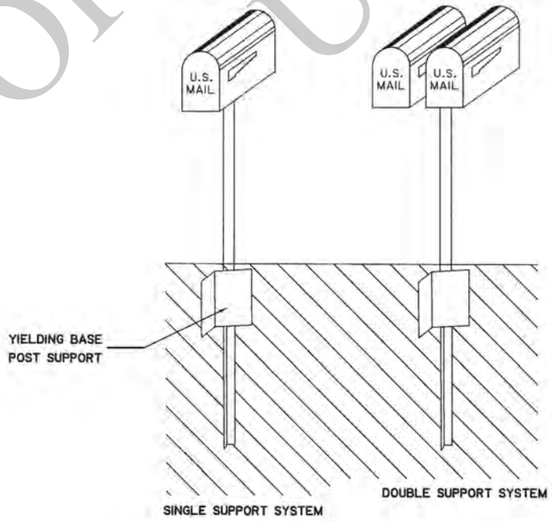


SINGLE MAILBOX MOUNT



DOUBLE MAILBOX MOUNT

SINGLE AND DOUBLE
MAILBOX MOUNTS
SERIES C



EXAMPLES OF
SINGLE AND DOUBLE MAILBOX INSTALLATIONS ⊗
SERIES C

⊗ NOTE: SUPPORT FRAME AND FOUNDATION SHOWN ARE PROPRIETARY PRODUCTS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN H. VU | DETAIL H. VU | REVIEW | SERIES # 1 OF 2
CHK DR D. SMITH | CHK D. SMITH

STATE OF LOUISIANA
HAI D. VU
REG. No. 34755
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
04/04/22

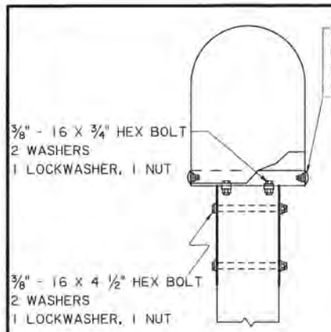
APPROVED BY CHIEF ENGINEER: DATE: 4/4/2022

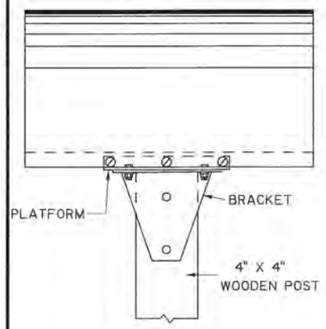
MAILBOX INSTALLATION DETAILS

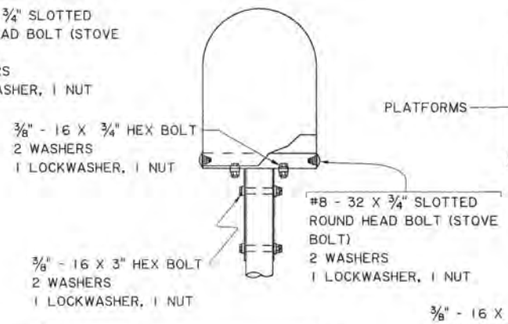
MB-01

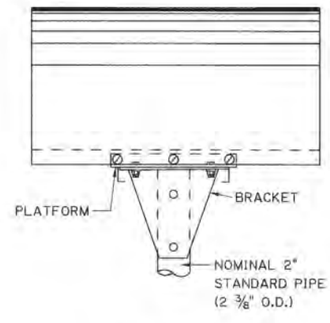
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

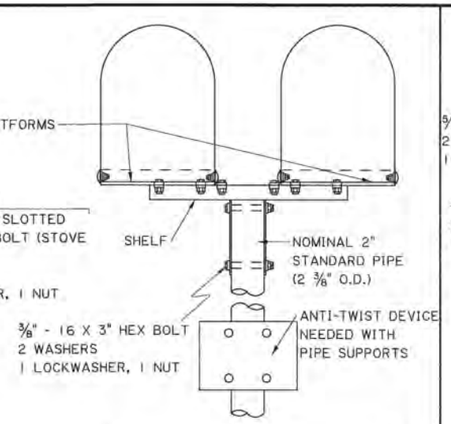
ROAD DESIGN



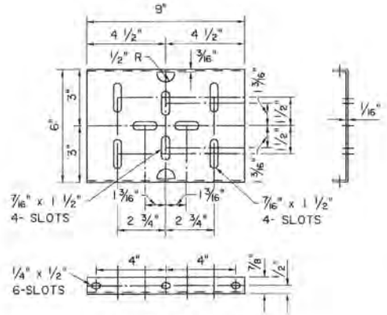




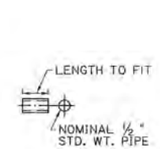


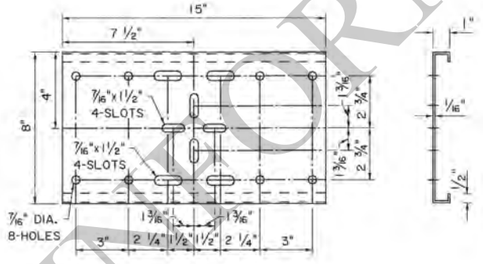


SINGLE AND DOUBLE MAILBOX ASSEMBLIES SERIES A

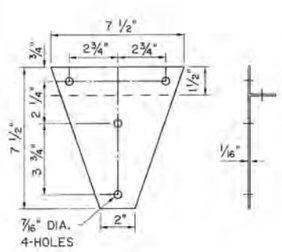


PLATFORM





SHELF



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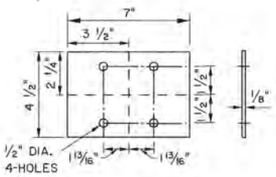
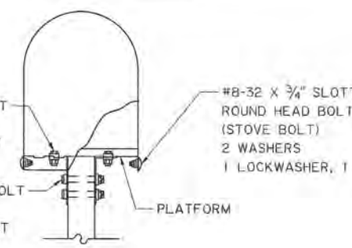
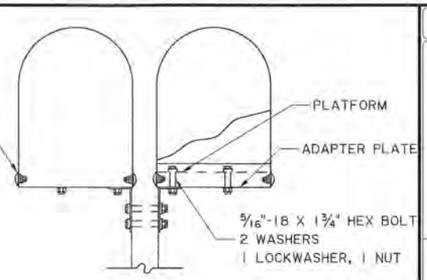
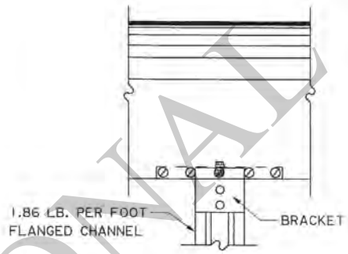


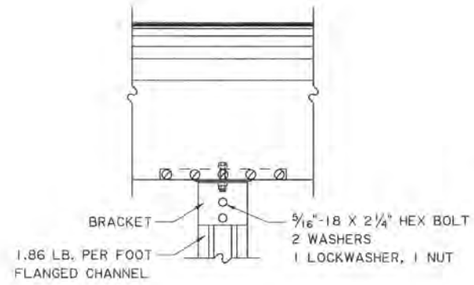
ANTI-TWIST DEVICE

MAILBOX SUPPORT HARDWARE SERIES A

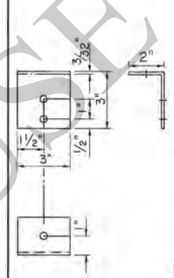








SINGLE AND DOUBLE MAILBOX ASSEMBLIES SERIES B



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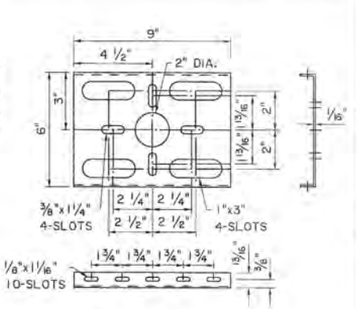
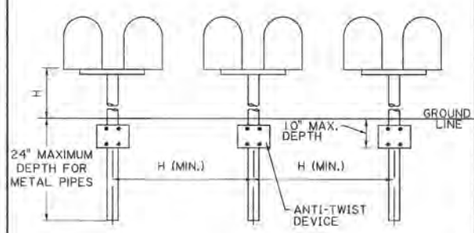
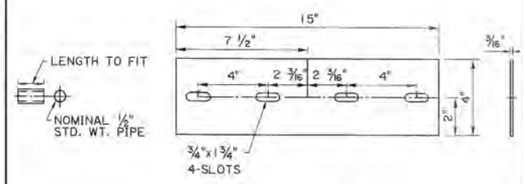


PLATFORM

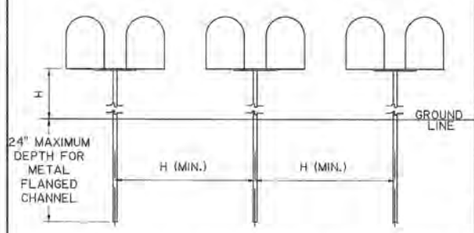


SPACING FOR MULTIPLE POST INSTALLATION SERIES A



SPACER ADAPTER PLATE

MAILBOX SUPPORT HARDWARE SERIES B



SPACING FOR MULTIPLE POST INSTALLATION SERIES B

FOR INFORMATIONAL USE

SHEET NUMBER		
PARISH	CONTROL SECTION	STATE PROJECT
DESIGN H. VU / CHECK D. SMITH	DETAIL H. VU / CHECK D. SMITH	REVIEW * / SERIES * 2 OF 2

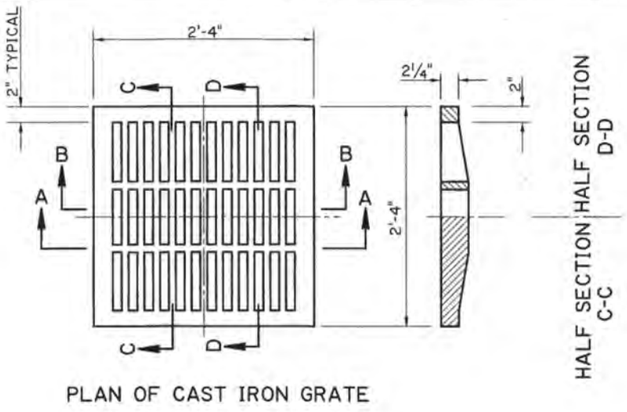
HAI D. VU
REG. No. 24755
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
04/04/22

APPROVED BY CHIEF ENGINEER
DATE: 4/4/2022

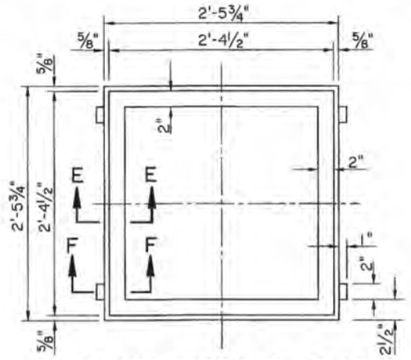
MAILBOX INSTALLATION DETAILS

MB-01

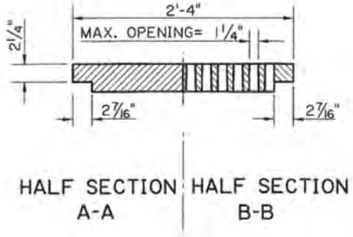
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
ROAD DESIGN

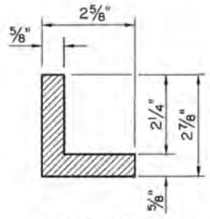


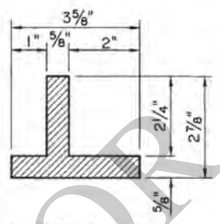
PLAN OF CAST IRON GRATE



PLAN OF CAST IRON FRAME



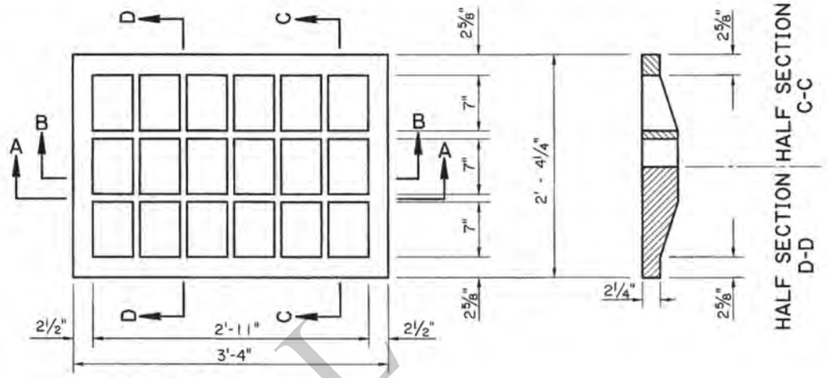




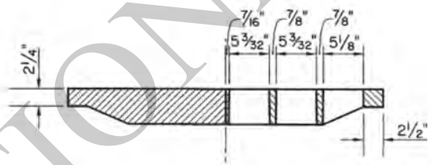
TYPE "A"

CAST IRON GRATE & FRAME

MIN. OPENING = 290 SQ. IN. AREA



PLAN OF CAST IRON GRATE



TYPE "B"

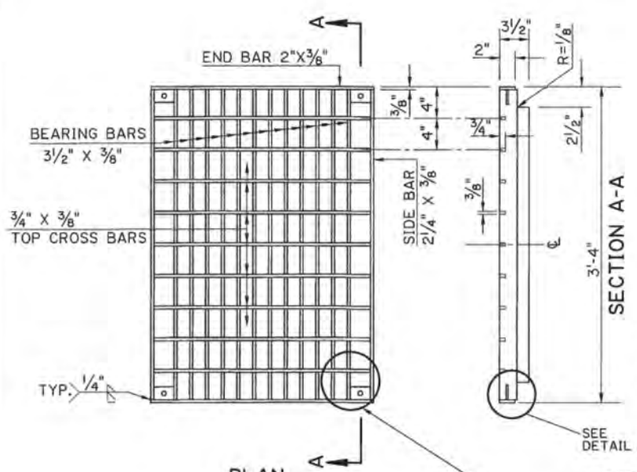
CAST IRON GRATE

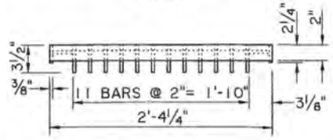
NOTE: UNLESS OTHERWISE STATED, TYPE "E" FRAME WILL BE USED WITH THIS GRATE.

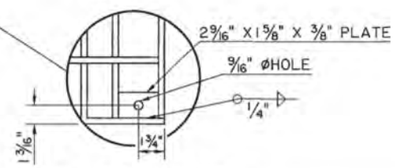
TYPE "C"

STEEL DRAIN GRATE

NOTES:
1. GRATES TO BE GALVANIZED AFTER FABRICATION.
2. UNLESS OTHERWISE STATED, TYPE "E" FRAME IS TO BE USED WITH THESE GRATES. (SEE SHEET 2)
3. SUPPLIER OF GRATE ALSO IS TO FURNISH PRE-FITTED GRATE FRAME.







WELDED & SEALED DRAIN GRATE

ALL JOINTS FULL DEPTH ¼" FILLET WELDS WITH SEAL WELDS TOP AND BOTTOM UNLESS NOTED OTHERWISE.

ALL BEARING BARS TO BE SET FLUSH ON GRATE FRAME.

WEIGHT OF DRAIN GRATE = 233 LBS. ± 5%

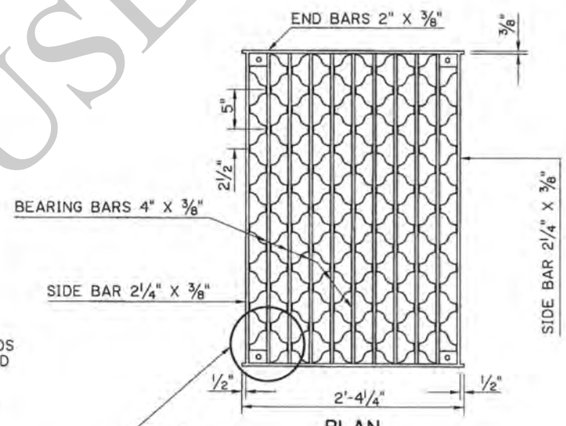
RIVETED RETICULINE DRAIN GRATE (ALTERNATE)

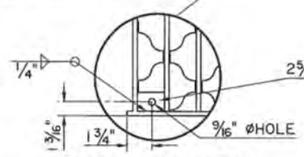
ALL JOINTS FULL DEPTH ¼" FILLET WELDS WITH SEAL WELDS TOP AND BOTTOM UNLESS NOTED OTHERWISE.

ALL BEARING BARS TO BE SET FLUSH ON GRATE FRAME.

CENTER TO CENTER OF BEARING BARS EQUAL 2 5/16" PLUS BEARING BAR THICKNESS.

WEIGHT OF DRAIN GRATE = 266 LBS. ± 5%





STATE OF LOUISIANA
ALDEN M. ALLEN
REG. No. 20252
REGISTERED
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CIVIL ENGINEERING
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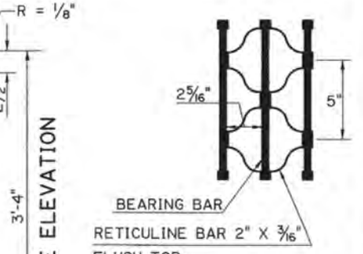
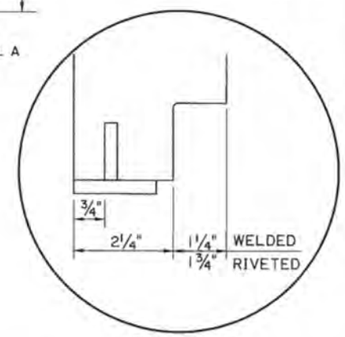


DRAIN GRATE DETAIL (ALTERNATE)



DETAIL A

FOR INFORMATIONAL USE

SHEET NUMBER	PARISH	CONTROL SECTION	STATE PROJECT
DESIGNED AMA CHECKED AMA	DETAILED TL CHECKED AMA	SERIES NUMBER	DATE 9/01/17 1 OF 6

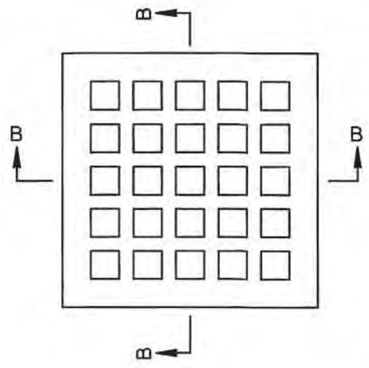
REVISION DESCRIPTION — BY — DATE — APPROVED BY CHIEF ENGINEER

DATE: 5/25/18

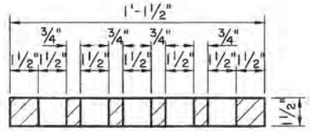
DETAILS OF GRATES, GRATE FRAMES AND COVERS FOR CATCH BASINS AND MANHOLES

STANDARD PLAN | MC-01

DOTD HYDRAULICS SECT.



PLAN

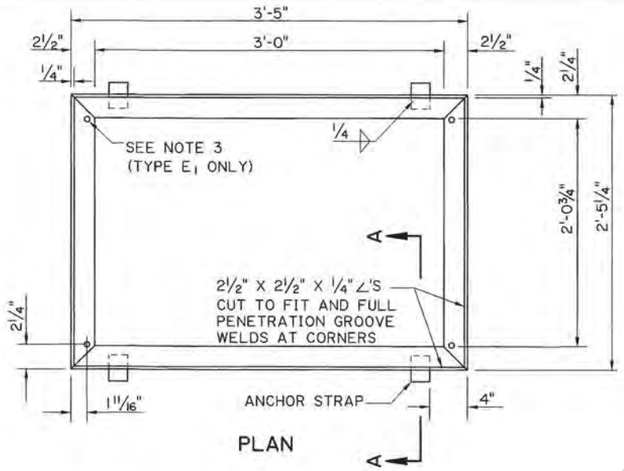


SECTION B-B

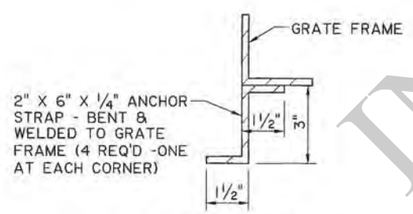
TYPE "D"

CAST IRON GRATE

WEIGHT OF CASTING = 49 LBS



PLAN

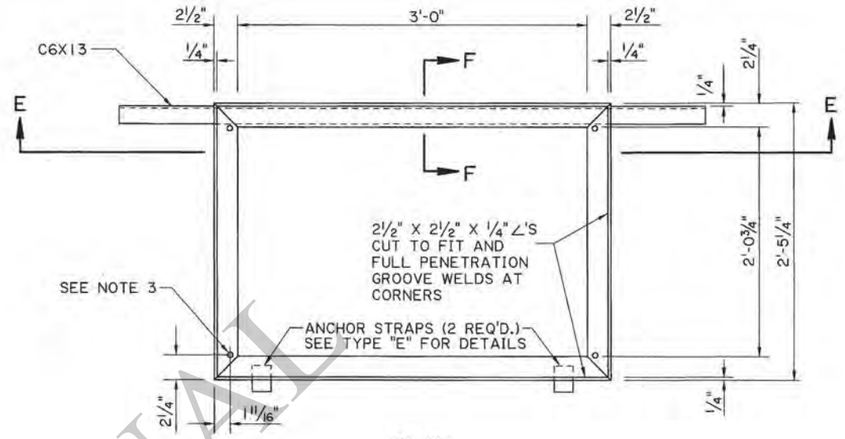


SECTION A-A

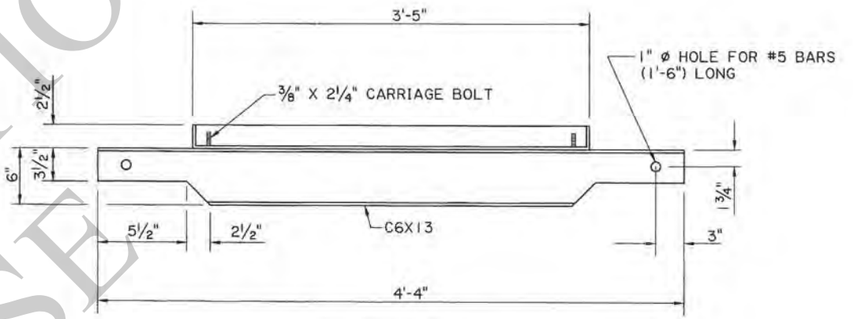
TYPE "E" AND "E₁"

STEEL GRATE FRAME

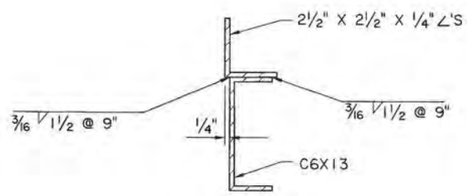
NOTES:
1. GRATE FRAME TO BE GALVANIZED AFTER FABRICATION
2. WEIGHT OF GRATE FRAME = 52 LBS
3. SQUARE PUNCH HOLE PRIOR TO GALVANIZING. ADD A ⅜ ø x 2¼" LONG -16 UNC ROUND HEAD SQUARE NECK CARRIAGE BOLT WITH JAM NUT, HEX HEAD NUT, AND FLAT WASHER (ALL STAINLESS STEEL) AFTER FRAME IS GALVANIZED.



PLAN



SECTION E-E



SECTION F-F

TYPE "F"

STEEL GRATE FRAME

NOTES:
1. GRATE FRAME TO BE GALVANIZED AFTER FABRICATION
2. WEIGHT OF GRATE FRAME = 52 LBS ± 5%
3. SQUARE PUNCH HOLE PRIOR TO GALVANIZING. ADD A ⅜ ø x 2¼" LONG -16 UNC ROUND HEAD SQUARE NECK CARRIAGE BOLT WITH JAM NUT, HEX HEAD NUT, AND FLAT WASHER (ALL STAINLESS STEEL) AFTER FRAME IS GALVANIZED.

STATE OF LOUISIANA
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REG. No. 20252
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IN
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5-25-2018

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SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGNED	AMA
CHECKED	AMA
DETAILED	TL
CHECKED	AMA
SERIES NUMBER	9/01/17 2 OF 6

REVISION DESCRIPTION	BY	DATE

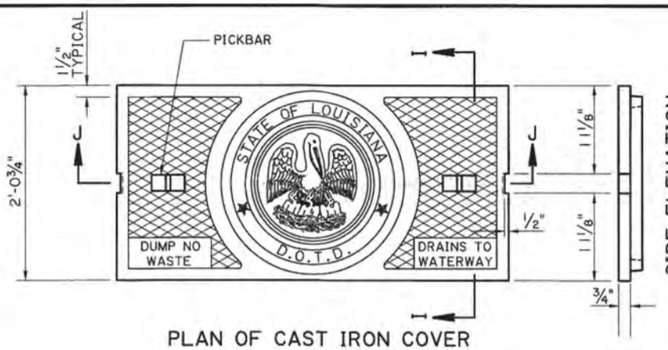
DATE: 5/25/18

APPROVED BY CHIEF ENGINEER:

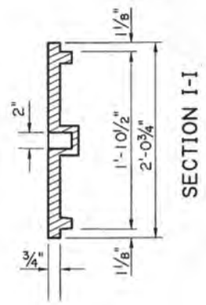
DOTD HYDRAULICS SECT.

DETAILS OF GRATES, GRATE FRAMES AND COVERS FOR CATCH BASINS AND MANHOLES

STANDARD PLAN MC-01

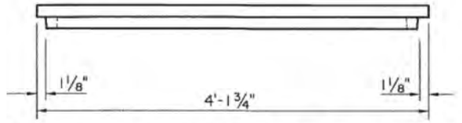


PLAN OF CAST IRON COVER

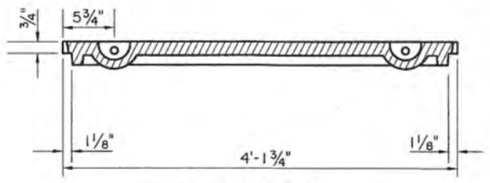


SIDE ELEVATION

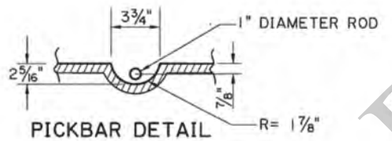
SECTION I-I



FRONT ELEVATION OF CAST IRON COVER



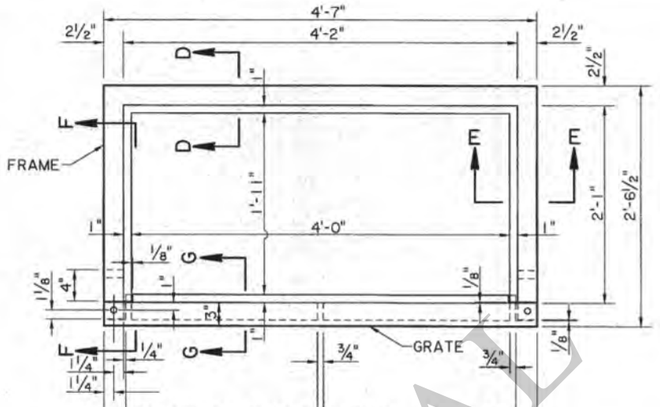
SECTION J-J



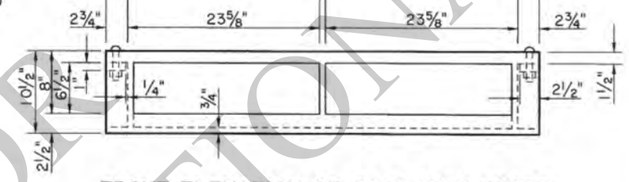
PICKBAR DETAIL

TYPE "H" AND "H1"

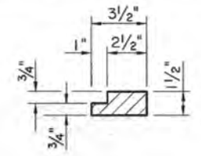
CAST IRON COVER, GRATE AND FRAME



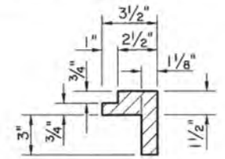
PLAN OF CAST IRON GRATE AND FRAME



FRONT ELEVATION OF CAST IRON GRATE

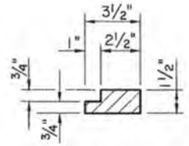


FOR CATCH BASIN "H"

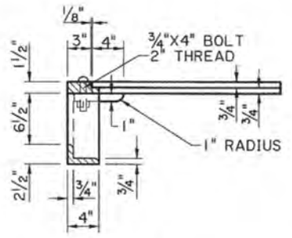


FOR PAVED GUTTER "H1"

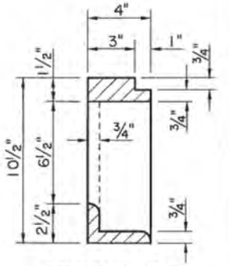
SECTION D-D



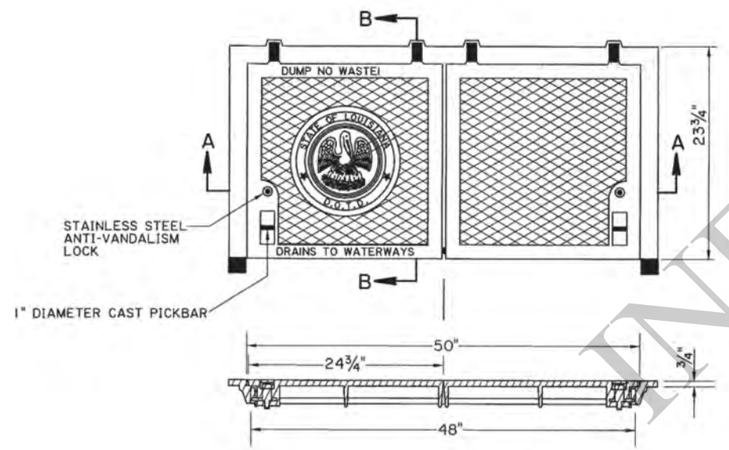
SECTION E-E



SECTION F-F

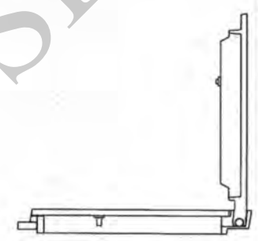


SECTION G-G

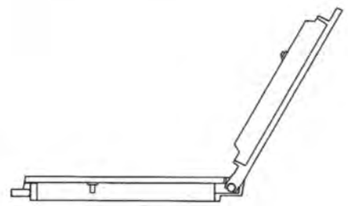


SECTION A-A

SECTION B-B



COVER AT 90 DEGREES
SAFETY STOP POSITION



COVER FULLY OPEN
TO 120 DEGREES

TYPE "Hs"

CAST IRON COVER AND FRAME SHOWN (SEE GRATE ABOVE)

STATE OF LOUISIANA
ALDEN M. ALLEN
REG. No. 20252
DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
PROFESSIONAL ENGINEER
5-25-2018

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT
DESIGNED AMA	DETAILED TL	SERIES NUMBER 9/01/17
CHECKED AMA	CHECKED AMA	3 OF 6

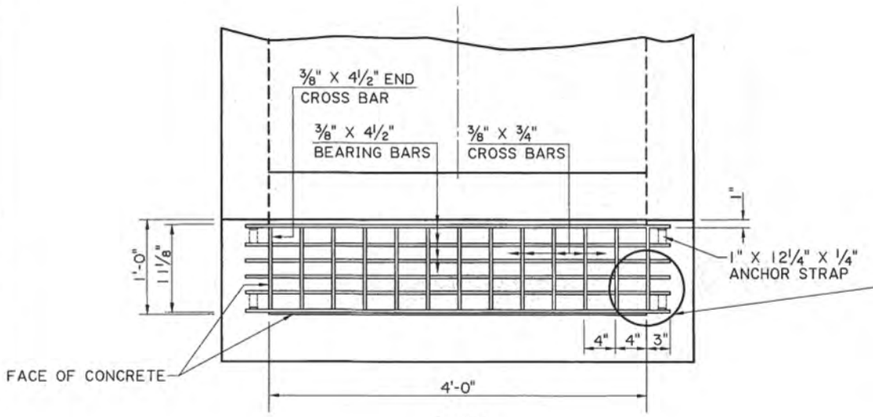
REVISION DESCRIPTION | BY | DATE: 5/25/18

APPROVED BY CHIEF ENGINEER:

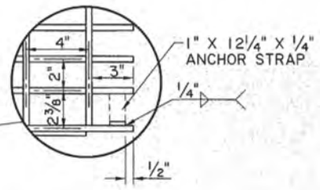
DETAILS OF GRATES, GRATE FRAMES AND COVERS FOR CATCH BASINS AND MANHOLES

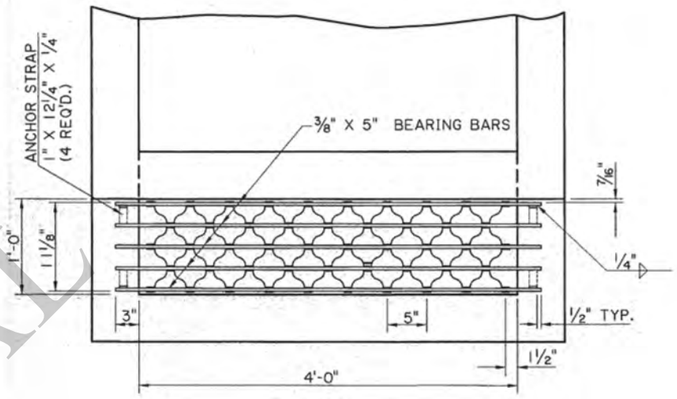
STANDARD PLAN MC-01

DOTD HYDRAULICS SECT.

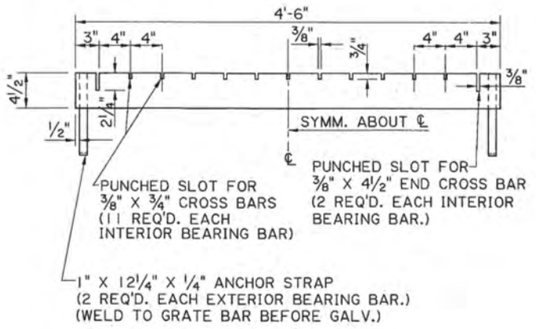


PLAN





PLAN

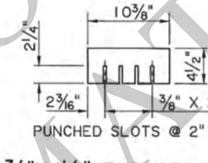


ELEVATION

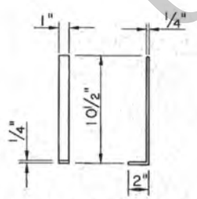
WELDED & SEALED DRAIN GRATE

ALL JOINTS FULL DEPTH 1/4" FILLET WELDS WITH SEAL WELD TOP AND BOTTOM UNLESS NOTED OTHERWISE.

WEIGHT OF DRAIN GRATE = 185 LBS. ± 5%



3/8"X4 1/2" END CROSS BAR
(2 REQ'D. PER GRATE)

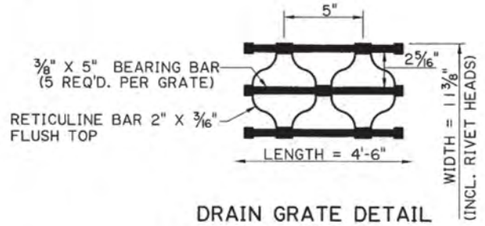


STEEL ANCHOR STRAP
(4 REQ'D. PER GRATE)

TYPE " I "

STEEL DRAIN GRATE

GRATE TO BE GALVANIZED AFTER FABRICATION.



DRAIN GRATE DETAIL
(ALTERNATE)

RIVETED RETICULINE DRAIN GRATE (ALTERNATE)

CENTER TO CENTER OF BEARING BARS EQUAL 2 11/16".

WEIGHT OF DRAIN GRATE = 176 LBS. ± 5%

STATE OF LOUISIANA
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5-25-2018

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PARISH	CONTROL SECTION	STATE PROJECT

DESIGNED	AMA
CHECKED	AMA
DETAILED	TL
CHECKED	AMA
SERIES NUMBER	9/01/17 4 OF 6

REVISION DESCRIPTION — BY — DATE: 5/25/18

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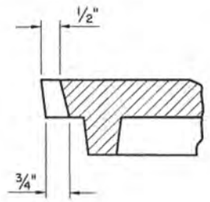
DETAILS OF GRATES, GRATE FRAMES AND COVERS FOR CATCH BASINS AND MANHOLES

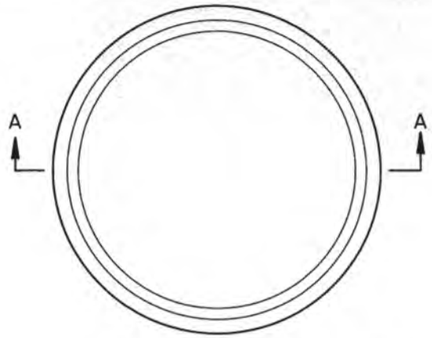
STANDARD PLAN MC-01

DOTD HYDRAULICS SECT.

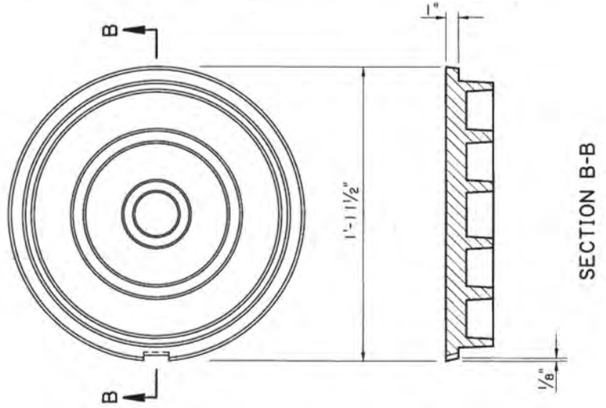
PLAN OF CAST IRON COVER



PICKSLOT DETAIL

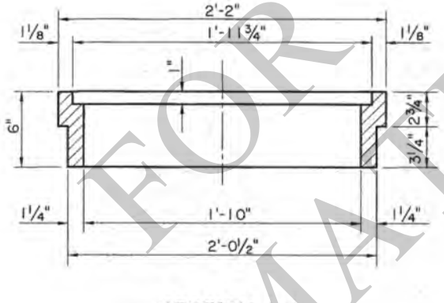


PLAN OF CAST IRON FRAME



BOTTOM OF CAST IRON COVER

SECTION B-B

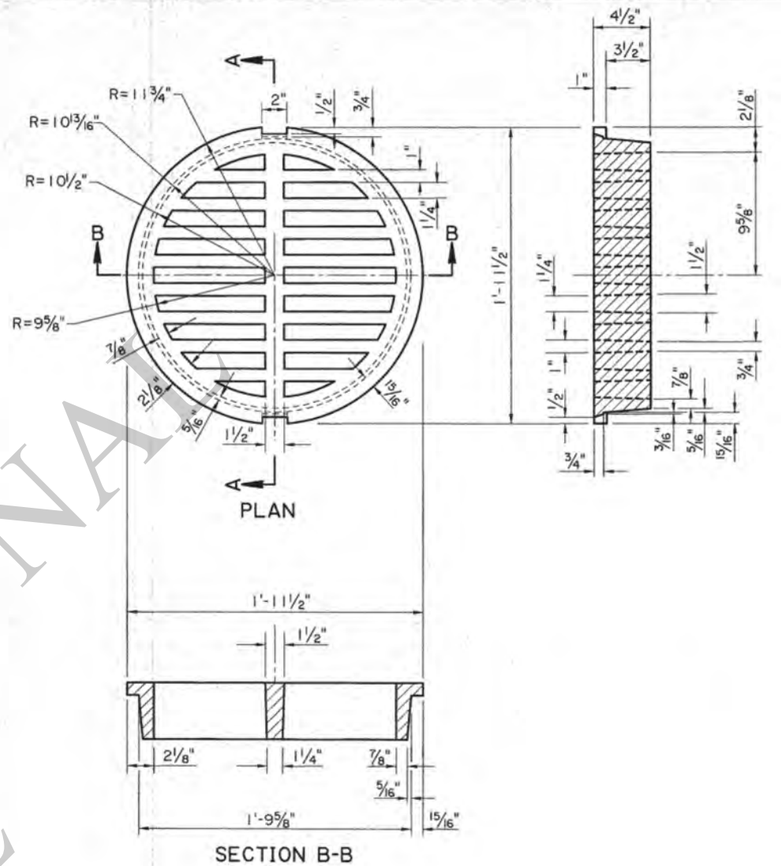


SECTION A-A

TYPE "K"

CAST IRON COVER & FRAME

PICKBAR DETAIL LEFT TO FABRICATOR



PLAN

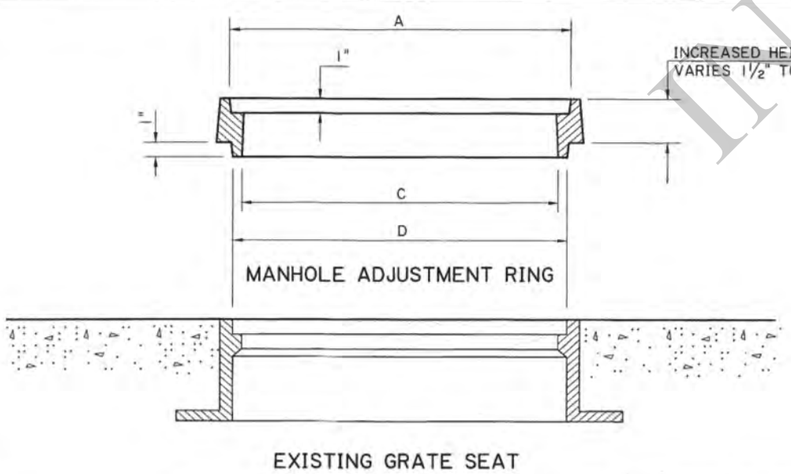
SECTION A-A

SECTION B-B

TYPE "K$_1$"

CAST IRON GRATE

NOTES: 1. APPROX. WEIGHT OF CAST IRON COVER = 250 LBS.
2. TO BE USED WITH TYPE "K" CAST IRON FRAME.



EXISTING GRATE SEAT

MANHOLE ADJUSTMENT RINGS		
A (IN.)	C (IN.)	D (IN.)
23 1/2	22 1/4	23 1/2
23 3/4	22 1/2	23 3/4

MANHOLE ADJUSTMENT RING

CAST IRON OR STEEL

STATE OF LOUISIANA
ALDEN M. ALLEN
REG. No. 20252
REGISTERED
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
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DESIGNED	AMA
CHECKED	AMA
DETAILED	TL
CHECKED	AMA
SERIES NUMBER	9/01/17 5 OF 6

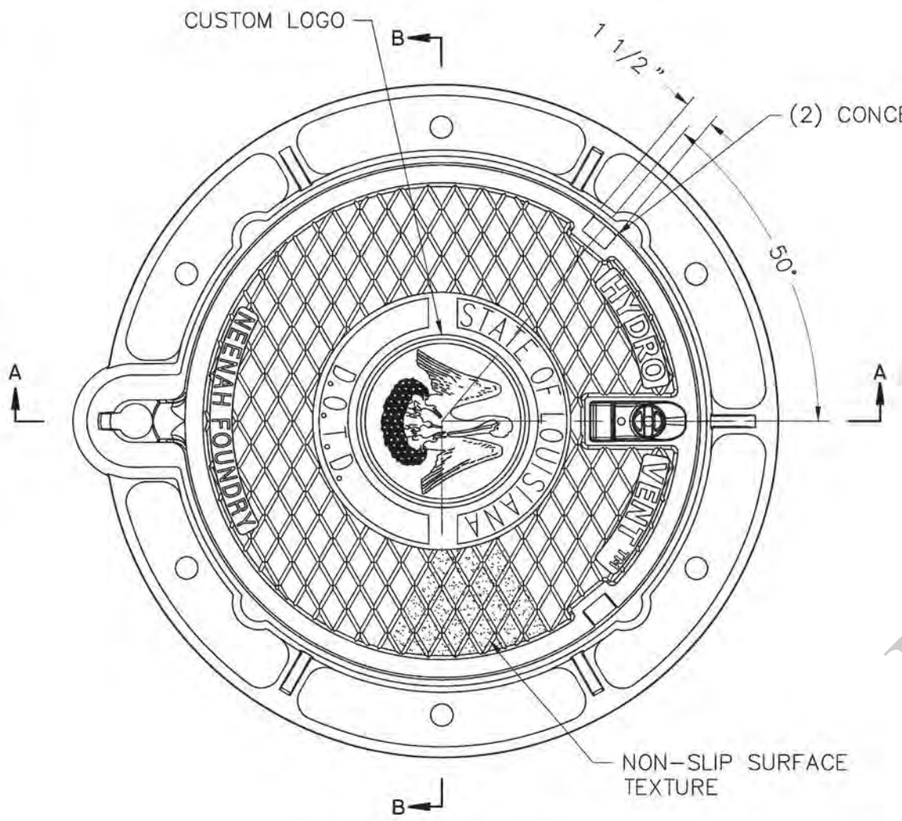
REVISION DESCRIPTION | BY | DATE | APPROVED BY CHIEF ENGINEER

DATE: 5/25/18

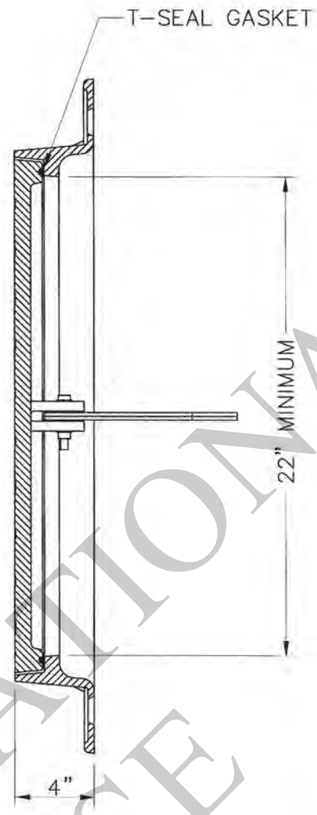
DETAILS OF GRATES, GRATE FRAMES AND COVERS FOR CATCH BASINS AND MANHOLES

STANDARD PLAN MC-01

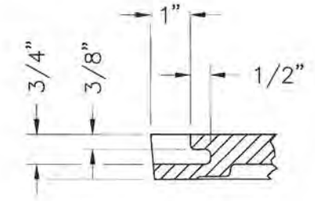
DOTD HYDRAULICS SECT.



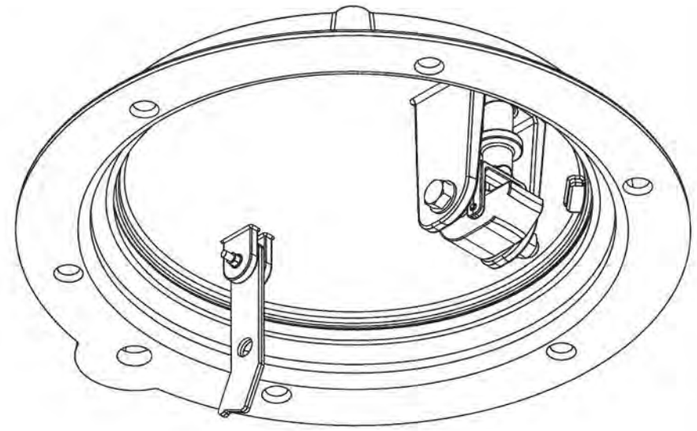
PLAN OF CAST IRON COVER



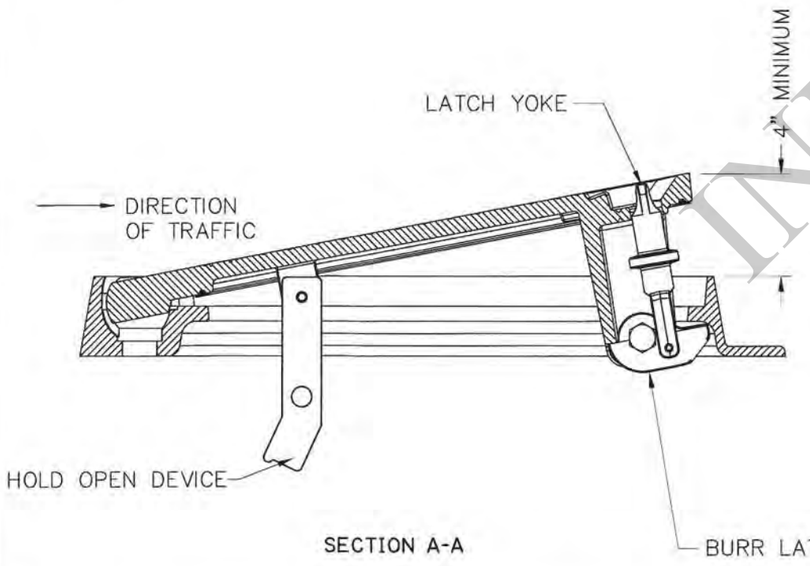
SECTION B-B



CONCEALED PICKHOLE DETAIL



ISOMETRIC BOTTOM VIEW



SECTION A-A

VENTING MANHOLE

CAST IRON COVER AND FRAME

NEENAH FOUNDRY 1650-HV SHOWN
EJ STORMSURGE 24 APPROVED BUT NOT SHOWN

STATE OF LOUISIANA
ALDEN M. ALLEN
REG. No. 20252
REGISTERED
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5-25-2018

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGNED	AMA
CHECKED	AMA
DETAILED	TL
CHECKED	AMA
SERIES NUMBER	12/01/17
	6 OF 6

REVISION DESCRIPTION	BY	DATE: 5/25/18

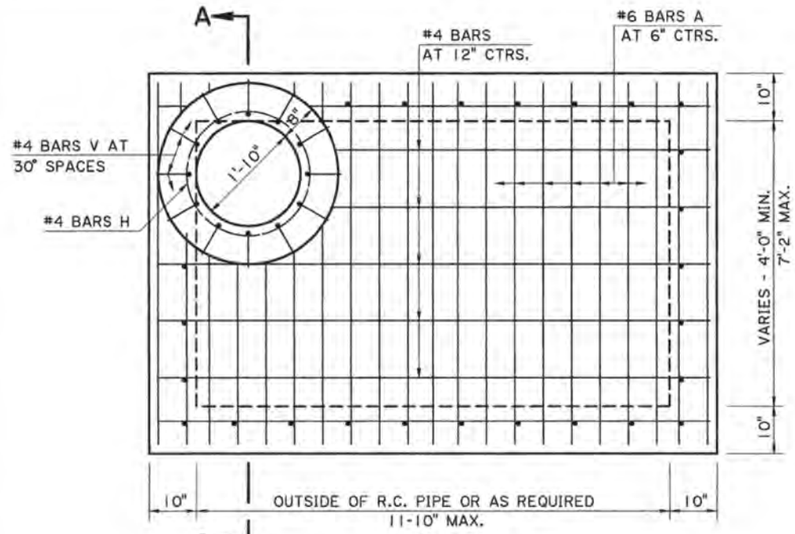
APPROVED BY CHIEF ENGINEER: [signature]

DOTD HYDRAULICS SECT.

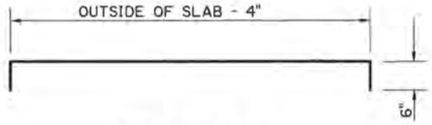
STANDARD PLAN MC-01

DETAILS OF GRATES, GRATE FRAMES AND COVERS
FOR CATCH BASINS AND MANHOLES

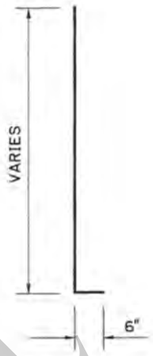
1/16/2020 15:52



PLAN



#6 BARS A



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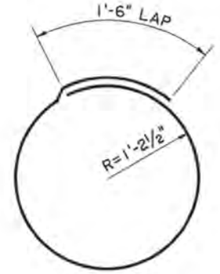

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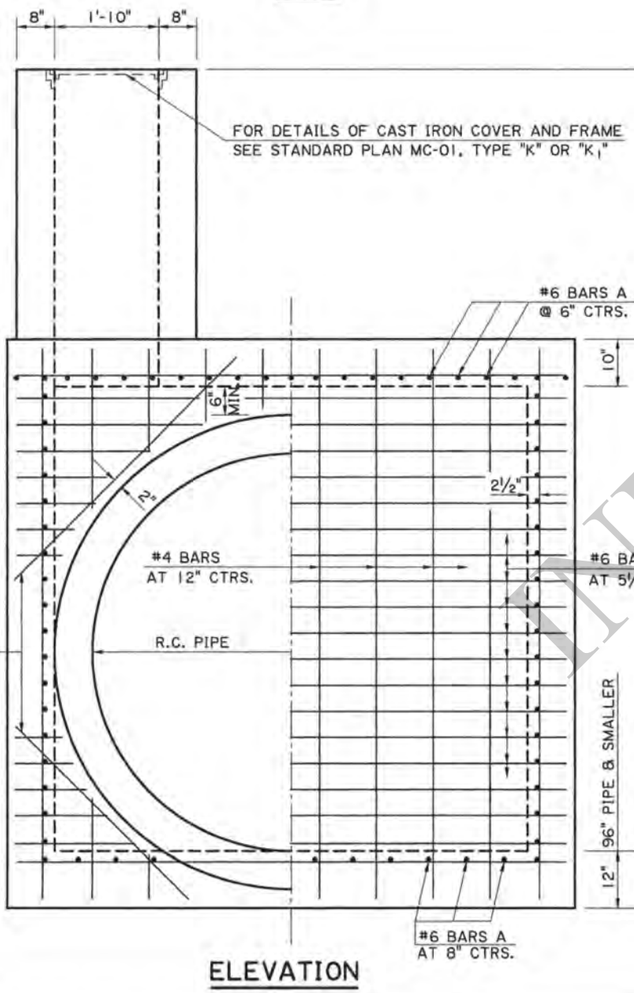
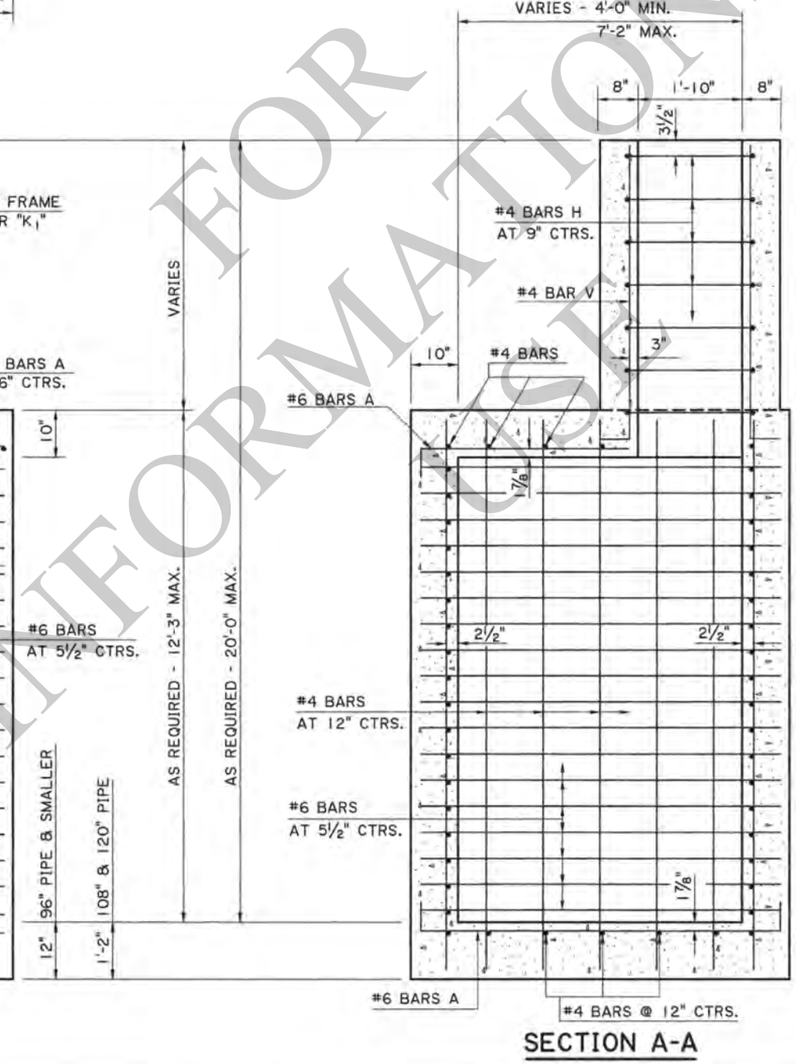
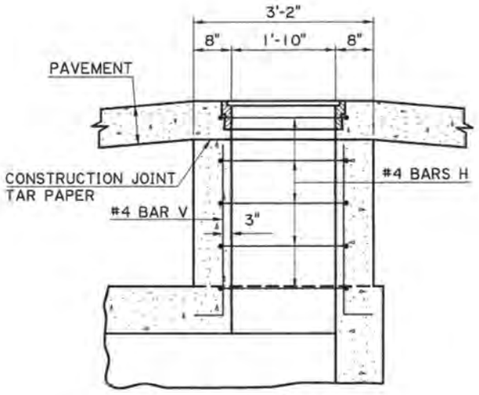


ELEVATION



SECTION A-A



DETAIL A

(MANHOLE IN PAVEMENT AREA)

GENERAL NOTES:

1. MANHOLE IS DESIGNED ACCORDING TO 4TH ED. 2007 AASHTO LRFD PROCEDURES. SECTION 702 OF THE DOTD STANDARD SPECIFICATIONS SHALL APPLY.
2. CONCRETE: ALL CONCRETE SHALL BE CLASS "M" MINOR STRUCTURE. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾ IN. EXCEPT AS NOTED.
3. REINFORCING STEEL: REINFORCING STEEL SHALL BE GRADE 60. DIMENSIONS ARE TO BAR CENTERS. MINIMUM COVER FOR REINFORCING BARS SHALL BE 2 IN. CLEAR UNLESS SHOWN OTHERWISE.
4. SEE "DETAIL A" FOR DETAILS OF MANHOLE IN A PAVEMENT AREA.
5. THE CONTRACTOR WILL NOT POUR ABOVE THE BOTTOM OF THE SLAB UNTIL THE PAVING ADJACENT TO THE MANHOLE HAS BEEN COMPLETED.

FOR INFORMATIONAL USE

REVISION DESCRIPTION	BY	DATE
CORRECTED DRAFTING ERROR OF BARS IN PLAN VIEW	WMR	5-18-11
REVISED TO 2007 AASHTO LRFD PROCEDURES	MH	11-22-10
REDRAFTED, REMOVED MANHOLE STEPS, NEW SHEET	JCM	10-22-08

DESIGNED CDJ
CHECKED HJB
DETAILED CDJ
CHECKED HJB
DATE 10-12-81
SHEET 1 OF 1

PARISH | FEDERAL PROJECT | STATE PROJECT

SHEET NUMBER

APPROVED BY CHIEF ENGINEER: Richard Z Savoie
DATE: 5-18-11

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

R.C. MANHOLE
MAXIMUM DIMENSIONS: 11'-10" X 7'-2"
MAXIMUM DEPTH: 20'

STANDARD PLAN MH-06

DOTD

HYDRAULICS SECTION

IP_PWP:dms09544\MH-06.dgn

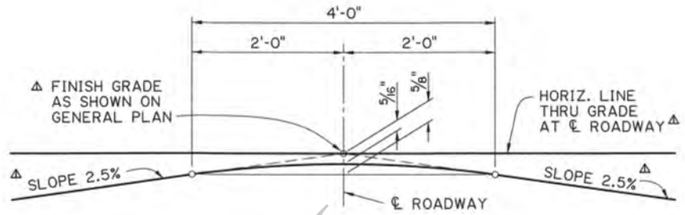
08:21
5/21/2021

MISCELLANEOUS SPAN DETAILS INDEX

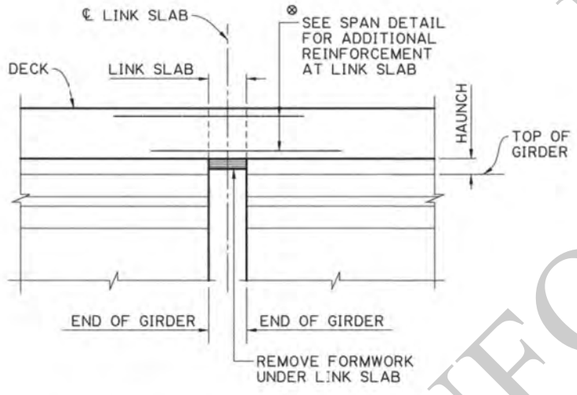
	SERIES	DESCRIPTION
COMMON	1 OF 1	INDEX, CROWN, DECK PLACEMENT, FORMWORK @ LINK SLAB
DECK DRAINS	1 OF 1	DECK DRAINS
EXPANSION JOINTS	1 OF 2	SEALED EXPANSION JOINT - END DAMS AND PREFORMED NEOPRENE
	2 OF 2	SEALED EXPANSION JOINT - END DAMS AND PREFORMED NEOPRENE
	1 OF 2	SEALED EXPANSION JOINT - END DAMS AND PREFORMED SILICONE
	2 OF 2	SEALED EXPANSION JOINT - END DAMS AND PREFORMED SILICONE
	1 OF 1	POURED SILICONE JOINT

MISCELLANEOUS SPAN GENERAL NOTES:

1. SHEETS LISTED IN THE INDEX THAT DO NOT APPLY TO THE PROJECT HAVE NOT BEEN INCLUDED IN THE PLANS.
2. UNLESS STATED OTHERWISE, SECTION NUMBER REFERENCES (SUCH AS "SECTION 805") ARE TO THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES.



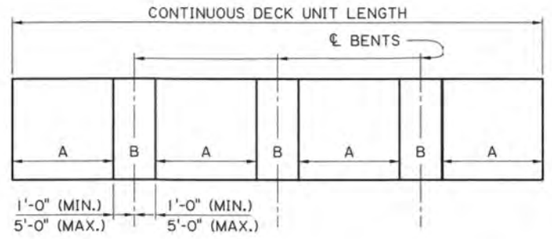
PARABOLIC CROWN AT ROADWAY
(N.T.S.)
⚠ UNLESS OTHERWISE NOTED IN PLANS



FORMWORK AT LINK SLAB
(N.T.S.)
⊗ DECK REINFORCEMENT NOT SHOWN FOR CLARITY. DO NOT PLACE DECK REINFORCEMENT SPLICES WITHIN LIMITS OF LINK SLAB REINFORCEMENT.

DECK PLACEMENT NOTES:

1. CONFORM TO SECTION 805.
2. PLACE DECK UNIT USING ONE CONTINUOUS PLACEMENT.
3. PREVENT INITIAL SET FROM OCCURING WITHIN AND DURING PLACEMENT.
4. LIMIT PLACEMENT DURATION TO 4 HOURS MAXIMUM. IF MORE TIME IS NEEDED, INCLUDE METHOD AND SPECIFICATIONS FOR REDUCING CONCRETE SET TIME IN THE CONCRETE PLACEMENT PLAN REQUIRED BY SECTION 805.
5. IF DECK UNIT PLACEMENT CANNOT BE CONTINUOUS, THE SEGMENTED PLACEMENT SHOWN BELOW MAY BE USED IF PERMITTED BY THE ENGINEER. PLACE AND CURE SEGMENTS "A" TOGETHER PRIOR TO PLACING AND CURING SEGMENTS "B."



SEGMENTED DECK PLACEMENT SEQUENCE
(N.T.S.)

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	CHECK	DETAIL	CHECK	REVIEW	SERIES #
A.LANCASTER	K. KEMP	A.LANCASTER	K. KEMP	Y. SHEN	1 OF 1

STATE OF LOUISIANA
ADAM LANCASTER
License No. 35573
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5/4/2021

APPROVED BY CHIEF ENGINEER: DATE: 5/12/2021

MISC. SPAN DETAILS
INDEX, CROWN, DECK PLACEMENT FORMWORK @ LINK SLAB
SPAN-COMMON
STANDARD PLAN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

IP_PWP:d0964968\BD.5.1.0.01 - Index - Crown Placement Sequence_raster.dgn

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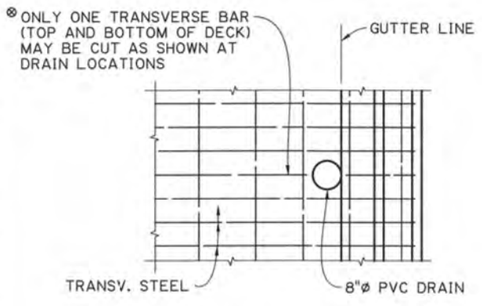
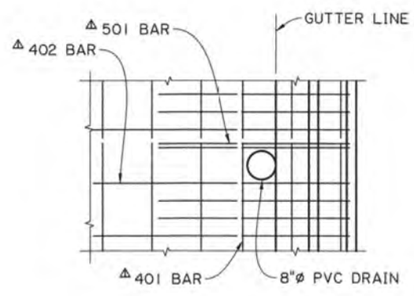
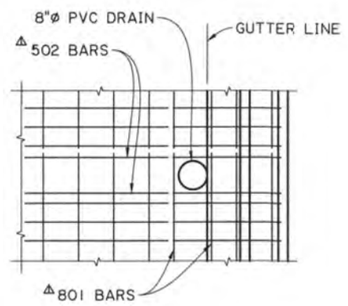
5/21/2021



PLAN AT DECK DRAIN
(GIRDER BRIDGE)



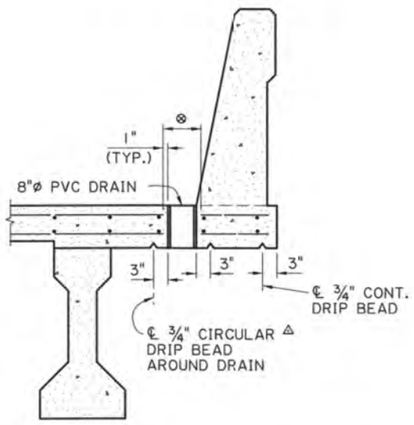
PLAN AT DECK DRAIN
(SLAB SPAN - TOP STEEL)



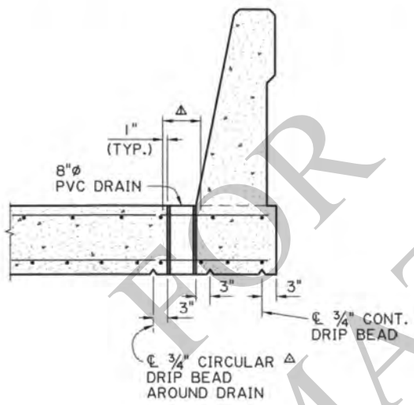
PLAN AT DECK DRAIN
(SLAB SPAN - BOTTOM STEEL)

NOTES:

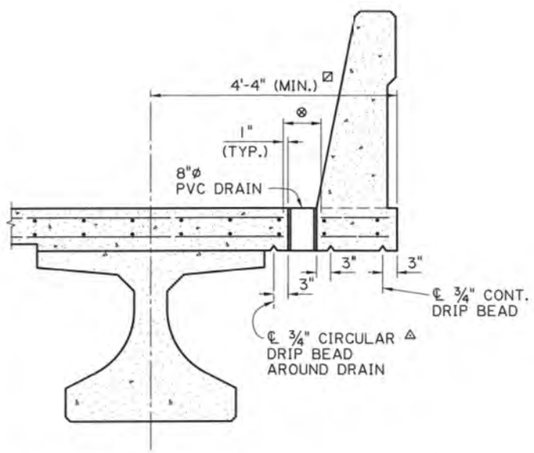
1. PVC DECK DRAINS REQUIRED IF BRIDGE RAILING SLOT DRAINS ARE NOT USED. SEE PROJECT PLANS FOR SPECIFIED TYPE AND LOCATION OF DECK DRAINAGE DEVICES.
△ 2. A ½" EXTENSION OF DECK DRAIN PIPE BELOW THE BOTTOM OF THE DECK MAY BE USED IN LIEU OF CIRCULAR DRIP BEAD.
☒ 3. FOR DECK OVERHANGS LESS THAN 4'-4" USING LG GIRDERS, SLOTTED BARRIERS OR AN ALTERNATE DECK DRAIN CONFIGURATION MUST BE USED.
△ 4. ADJUST SLAB SPAN TOP AND BOTTOM STEEL AS NEEDED (BY SHIFTING OR BUNDLING TO ADJACENT REBAR) TO AVOID DECK DRAINS. MAINTAIN MINIMUM SPECIFIED CONCRETE COVER.
5. BRIDGE RAILING SLOT DRAINS WILL BE PAID FOR AS PART OF THE BRIDGE RAILING PAY ITEM. DECK DRAIN PIPES WILL BE PAID FOR AS PART OF THE DECK CONCRETE PAY ITEM.



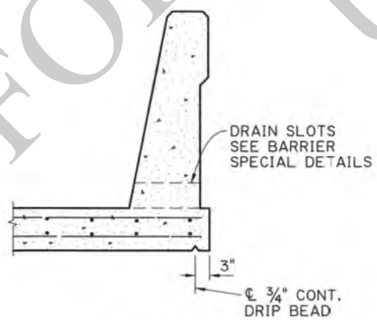
SECTION AT DECK DRAIN - AASHTO GIRDER
(N.T.S.)



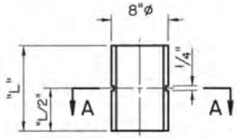
SECTION AT DECK DRAIN - SLAB SPAN
(N.T.S.)



SECTION AT DECK DRAIN - LG GIRDER
(N.T.S.)



SECTION THRU SLOTTED BARRIER
(GIRDER OR SLAB SPAN BRIDGES)
(N.T.S.)



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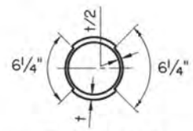

SECTION A-A

DETAIL "A" - PVC DRAIN
SHOWING GROOVE DETAILS
(N.T.S.)

FOR INFORMATIONAL USE

SHEET NUMBER		
PARISH	CONTROL SECTION	STATE PROJECT
DESIGN A.LANCASTER	DETAIL A.LANCASTER	REVIEW Y. SHEN
CHECK K. KEMP	CHECK K. KEMP	SERIES # 1 OF 1

STATE OF LOUISIANA
ADAM LANCASTER
License No. 35573
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5/4/2021

APPROVED BY CHIEF ENGINEER: DATE: 5/12/2021

MISC. SPAN DETAILS
DECK DRAINS

DECK-DRAIN

STANDARD PLAN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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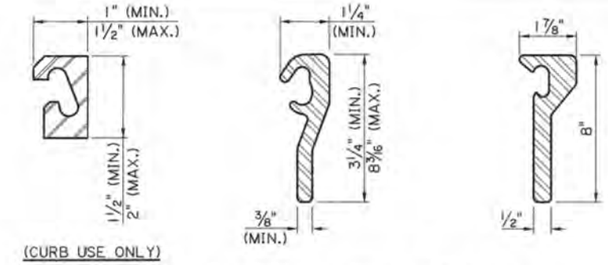


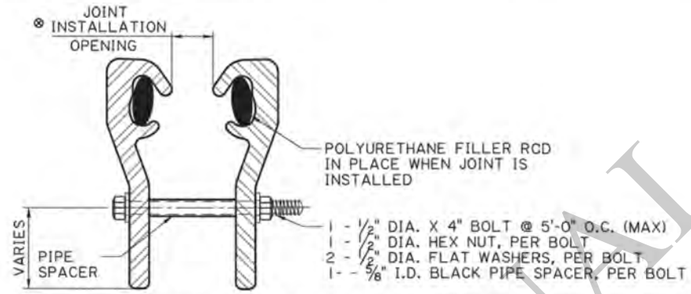
(CURB USE ONLY)

TYPICAL STEEL EXTRUSIONS (END DAMS)

TYPICAL NEOPRENE SEALS

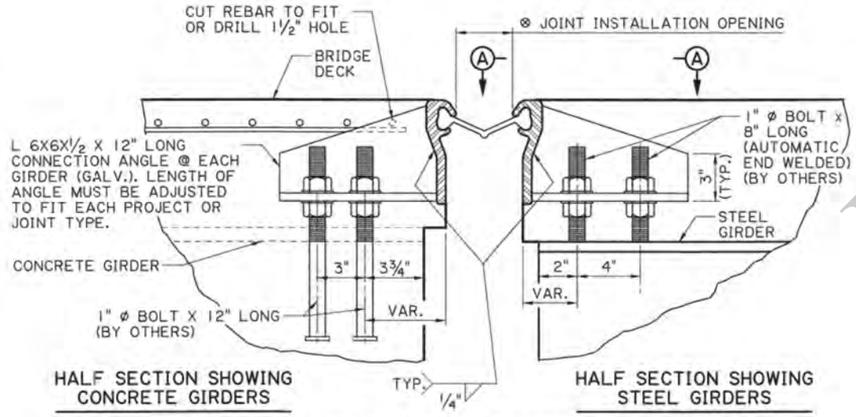
END DAM INSTALLATION PROCEDURE:

1. PLACE END DAM ASSEMBLY AS A UNIT WITH PIPE SPACERS AND BOLTS IN PLACE.
2. ADJUST ASSEMBLY TO CORRECT VERTICAL POSITION AND INSTALLATION OPENING. TIGHTEN ONE SIDE INTO PLACE USING ANCHOR BOLTS IN GIRDERS. HAND TIGHTEN OPPOSITE SIDE.
3. TIGHTEN OPPOSITE SIDE JUST PRIOR TO DECK PLACEMENT.
4. CAST DECK.
5. CUT/REMOVE PIPE SPACER AND BOLT AS SOON AS CONCRETE WILL SUPPORT LOAD WITHOUT OVERSTRESSING OR DAMAGING CONCRETE, BUT NO LONGER THAN 8 HOURS AFTER DECK PLACEMENT.
6. REPAIR DAMAGE TO EXPOSED GALVANIZATION.

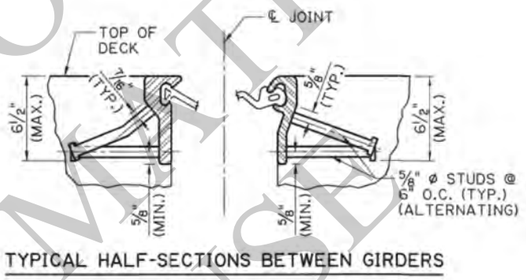


END DAM SHIPPING AND INSTALLATION ASSEMBLY

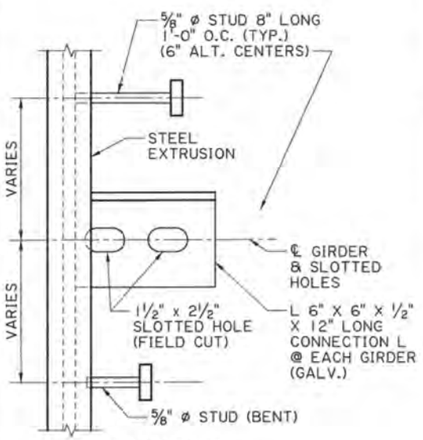
(ANCHOR ANGLES AND ANCHOR STUDS NOT SHOWN)



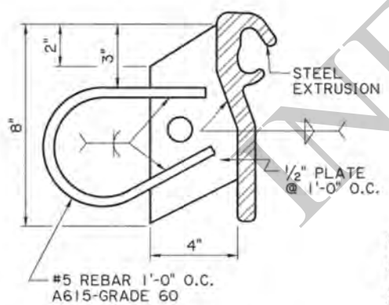
TYPICAL SECTION AT GIRDERS



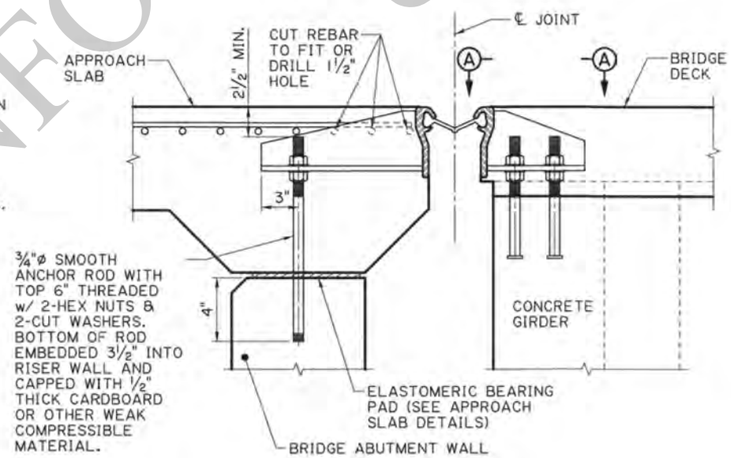
TYPICAL HALF-SECTIONS BETWEEN GIRDERS



SECTION A-A



ALTERNATE SECTION BETWEEN GIRDERS



TYPICAL SECTION AT BRIDGE END (@ GIRDERS)

NOTES:

1. JOINT FABRICATION AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 815.
2. PROVIDE HOT-DIPPED GALVANIZED ANCHOR RODS AND ANCHOR BOLTS IN COMFORMANCE WITH SECTION 807.
3. THE MANUFACTURER'S RECOMMENDED CONSTRUCTION METHODS SHALL BE FOLLOWED.
4. THE NEOPRENE SEAL MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT DURING INITAL SEAL INSTALLATION(S) UNTIL SUCH TIME AS THE PROJECT ENGINEER IS SATISFIED WITH SEAL INSTALLATION. AFTER INITIAL INSTALLATION, PROVIDE SEAL MANUFACTURER'S REPRESENTATIVE AS NEEDED UPON PROJECT ENGINEER'S REQUEST.
5. SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH SECTION 801.
6. SHIP END DAMS IN ACCORDANCE WITH THESE DETAILS.
7. PLACE POLYURETHANE FILLER ROD IN EXTRUSION CAVITY PRIOR TO SHIPMENT. REMOVE FILLER ROD ONLY WHEN NEOPRENE SEAL IS INSTALLED.
8. FOR WELDS, CONFORM TO SECTION 809.
9. JOINTS UP TO FIFTY-FOUR (54) FEET IN LENGTH SHALL BE DELIVERED TO THE JOB SITE IN ONE PIECE. JOINTS OVER FIFTY-FOUR (54) FEET IN LENGTH MAY HAVE PROVISIONS FOR A FIELD SPLICE IN THE END DAM EXTRUSION, PROVIDED THE SPLICE IS PERFORMED IN SHOP-LIKE CONDITIONS IN THE PRESENCE OF THE DOTD FABRICATION INSPECTOR.
10. WELDED SPLICES IN END DAM EXTRUSIONS SHALL BE SHOP SPLICES. EXTRUSION SECTIONS BETWEEN WELDED SHOP SPLICES SHALL NOT BE LESS THAN 15 FEET IN LENGTH, EXCEPT THAT ONE SECTION NO LESS THAN 4 FEET IN LENGTH WILL BE ALLOWED IN THE SHOULDER AREA IF REQUIRED TO MATCH ROADWAY CROSS SECTION. SPLICES SHALL BE OUTSIDE OF WHEEL PATHS. SEE WHEEL PATH LOCATIONS DETAIL.

    WELDED SPLICES SHALL BE BUTT WELDS. WELD MATERIAL IN THE CAVITY WILL BE CAUSE FOR REJECTION. SHOP WELDED SPLICES ARE ALSC REQUIRED WHERE TWO DIFFERENT SHAPES ARE JOINED AT THE CURB WHERE CURB UNITS ARE TURNED UP. SHOW ALL SHOP AND FIELD SPLICE LOCATIONS IN THE SHOP DRAWINGS. SPLICE LOCATIONS MAY BE DESIGNATED WITH A +/- 6 INCH TOLERANCE.
11. BEND STUDS PRIOR TO WELDING. NO BENDING OF STUDS WILL BE ALLOWED AFTER WELDING EXCEPT AS REQUIRED FOR WELDING INSPECTION.
12. REPAIR DAMAGED GALVANIZED COATS IN ACCORDANCE WITH SECTION 811.
13. NEOPRENE SEALS SHALL BE MANUFACTURED AS A CONTINUOUS PIECE WITH ONLY ONE (1) SHOP SPLICE PER JOINT ALLOWED WHEN LENGTH EXCEEDS 50 FEET. SHOW SEAL SPLICE LOCATION ON THE SHOP DRAWINGS. THE NEOPRENE SEAL SHALL CONFORM TO SECTION 1005, WITH THE HARDNESS REQUIREMENT OF ASTM D2628 REVISED TO BE 55-5/+10.

    SEAL SHALL BE BONDED TO EXTRUSION CAVITY WITH A PRE-MIXED ADHESIVE LUBRICATING SOLUTION WHICH SHALL BE USED TO FACILITATE THE SEAL INSTALLATION. THIS ADHESIVE LUBRICANT SHALL BE SELECTED FROM THE DOTD APPROVED MATERIALS LIST. THE LUBRICANT SHOULD FLOW FREELY AND EVENLY COAT THE SEAL AND JOINT FACE. THE LUBRICANT SHALL COMPLETELY COAT THE SEAL AND EXTRUSION CAVITY WHICH REMAINS IN CONTACT.
14. ⊗ SEE PROJECT PLAN JOINT DATA TABLE FOR DESIGN AND INSTALLATION REQUIREMENTS.
15. ANCHOR BOLTS IN GIRDER WILL BE PAID FOR AS PART OF THE GIRDER. ANCHOR RODS IN APPROACH SLAB SUPPORT WALL WILL BE PAID FOR UNDER THE STRUCTURAL METALWORK (ANCHOR BOLTS) PAY ITEM. MEASUREMENT AND PAYMENT OF OTHER END DAM AND SEAL ELEMENTS WILL BE IN ACCORDANCE WITH SECTION 815.
16. JOINTS WILL BE PAID FOR UNDER PAY ITEM SEALED EXPANSION JOINT (END DAMS AND PREFORMED NEOPRENE SEAL).

FOR INFORMATIONAL USE

SHEET NUMBER		
PARISH	CONTROL SECTION	STATE PROJECT
DESIGN A.LANCASTER	DETAIL A.LANCASTER	REVIEW Y. SHEN
CHECK K. KEMP	CHECK K. KEMP	SERIES # 1 OF 2

STATE OF LOUISIANA
ADAM LANCASTER
License No. 35573
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5/4/2021

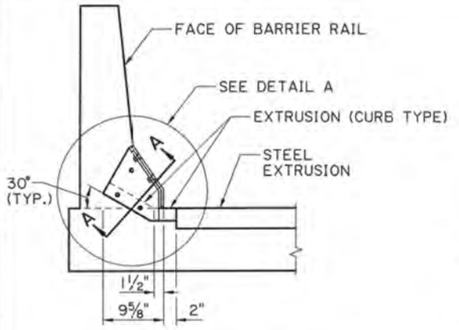
APPROVED BY CHIEF ENGINEER: DATE: 5/12/2021

MISC. SPAN DETAILS

SEALED EXPANSION JOINT - END DAMS AND PREFORMED NEOPRENE

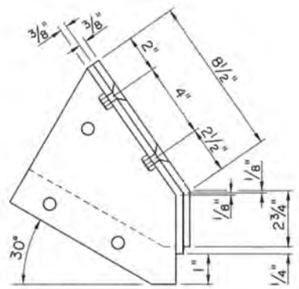
STANDARD PLAN NO. JOINT-NP

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN



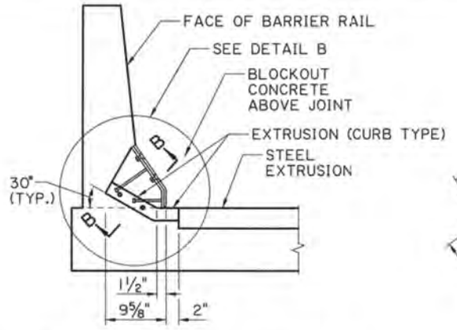
F-SHAPE BARRIER SECTION OPTION 1

(NON-SKEWED STEEL EXTRUSION AT LOW SIDE OF DECK)



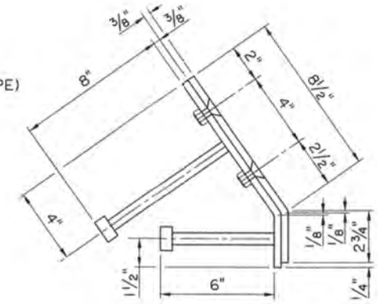
DETAIL A

(SEAL NOT SHOWN)



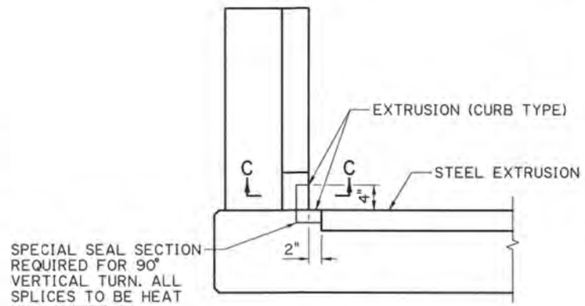
F-SHAPE BARRIER SECTION OPTION 2

(NON-SKEWED STEEL EXTRUSION AT LOW SIDE OF DECK)



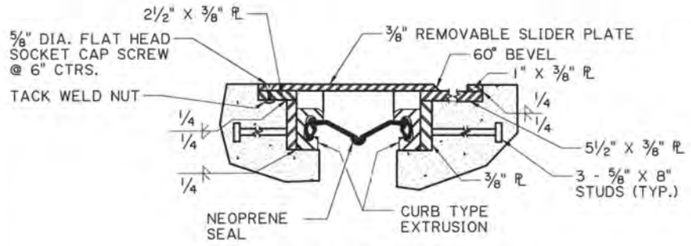
DETAIL B

(SEAL NOT SHOWN)

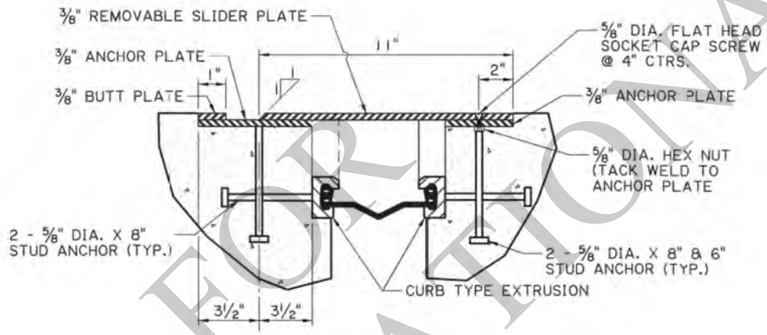


BARRIER SECTION

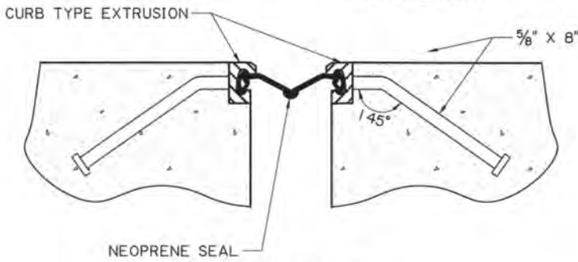
(QUAD BEAM SPANS @ END BENTS)
(LOW SIDE ONLY)



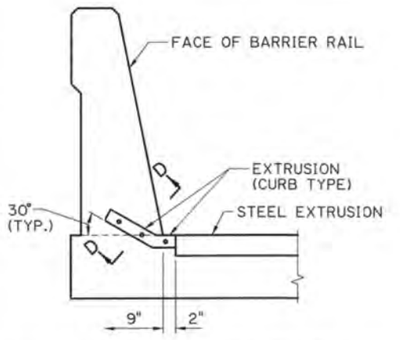
SECTION A-A



SECTION B-B

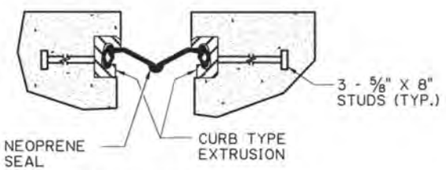


SECTION C-C

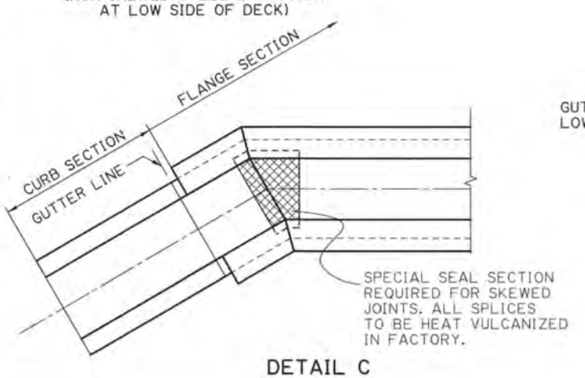


SINGLE SLOPE BARRIER SECTION

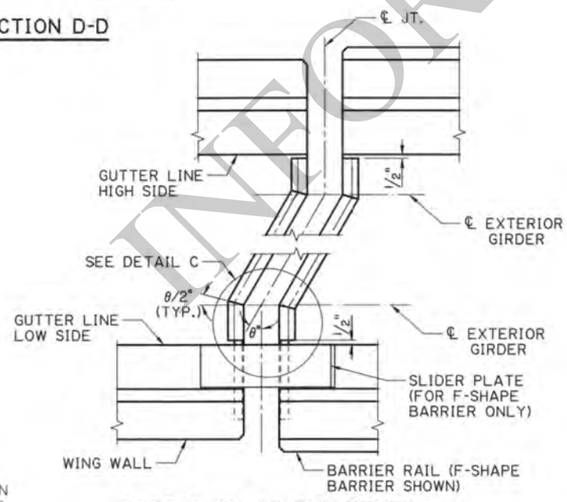
(NON-SKEWED STEEL EXTRUSION AT LOW SIDE OF DECK)



SECTION D-D

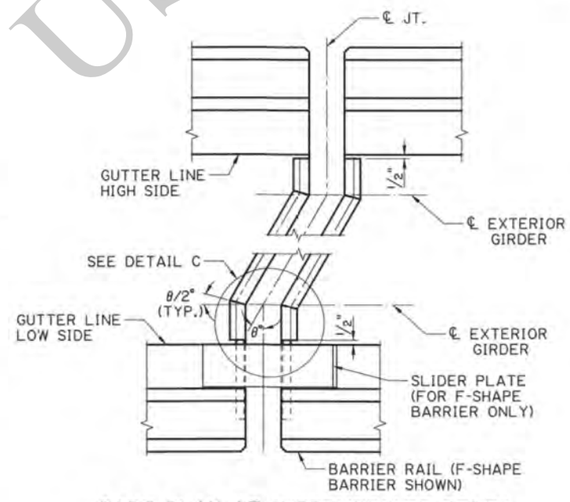


DETAIL C



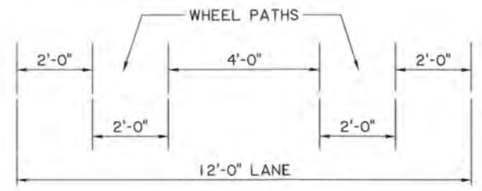
PART PLAN AT END BENTS

(SKEWED JOINT FOR GIRDER BRIDGES)

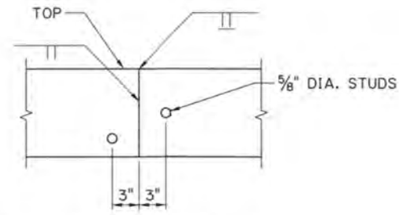


PART PLAN AT INTERMEDIATE BENTS

(SKEWED JOINT FOR GIRDER BRIDGES)



WHEEL PATH LOCATIONS



TYPICAL END DAM SPLICE

FOR INFORMATIONAL USE

08:25 5/21/2021

IP_PWP:d0964968\BD.5.3.1.02 - Sealed Expansion Joint (Preformed Neoprene 2 of 2)_raster.dgn

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	A.LANCASTER
CHECK	K. KEMP
DETAIL	A.LANCASTER
CHECK	K. KEMP
REVIEW	Y. SHEN
SERIES #	2 OF 2

STATE OF LOUISIANA
ADAM LANCASTER
License No. 35573
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5/4/2021

APPROVED BY CHIEF ENGINEER: DATE: 5/12/2021

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

MISC. SPAN DETAILS

SEALED EXPANSION JOINT - END DAMS AND PREFORMED NEOPRENE

STANDARD PLAN: JOINT-NP

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

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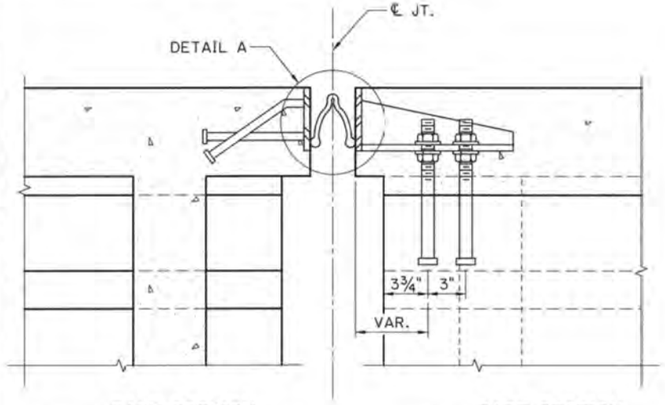
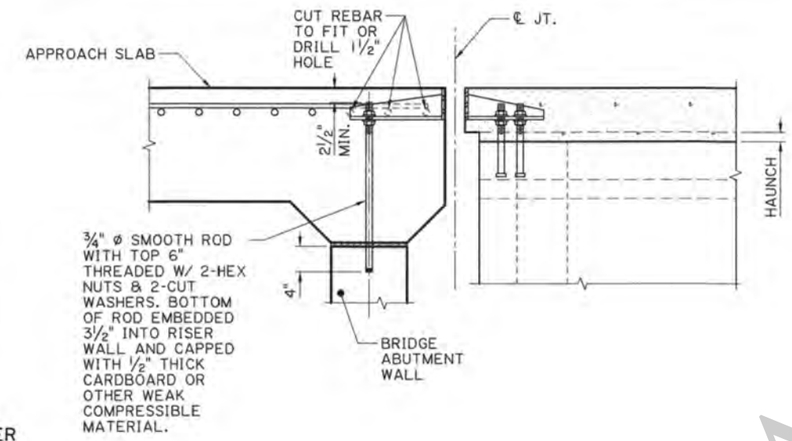
5/21/2021 08:27



PART SECTION
BETWEEN CONCRETE GIRDERS

PART SECTION
AT ℄ OF CONCRETE GIRDER

PREFORMED SILICONE SEAL DETAIL (PPC GIRDERS)
(N.T.S.)

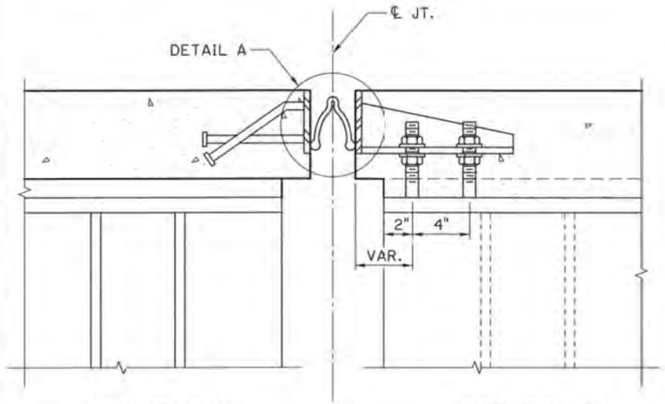


END DAM CONNECTION AT BRIDGE END (@ ℄ GIRDERS)
(N.T.S.)

NOTES:

1. JOINT FABRICATION AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 815.
2. PROVIDE HOT-DIPPED GALVANIZED ANCHOR RODS AND ANCHOR BOLTS IN COMFORMANCE WITH SECTION 807.
3. THE MANUFACTURER'S RECOMMENDED CONSTRUCTION METHODS SHALL BE FOLLOWED.
4. THE SILICONE SEAL MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT DURING INITAL SEAL INSTALLATION(S) UNTIL SUCH TIME AS THE PROJECT ENGINEER IS SATISFIED WITH SEAL INSTALLATION. AFTER INITIAL INSTALLATION, PROVIDE SEAL MANUFACTURER'S REPRESENTATIVE AS NEEDED UPON PROJECT ENGINEER'S REQUEST.
5. SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH SECTION 801.
6. SHIP END DAMS IN ACCORDANCE WITH THESE DETAILS.
7. FOR WELDS, CONFORM TO SECTION 809.
8. JOINTS UP TO FIFTY-FOUR (54) FEET IN LENGTH SHALL BE DELIVERED TO THE JOB SITE IN ONE PIECE. JOINTS OVER FIFTY-FOUR (54) FEET IN LENGTH MAY HAVE PROVISIONS FOR A FIELD SPLICE IN THE END DAM, PROVIDED THE SPLICE IS PERFORMED IN SHOP-LIKE CONDITIONS IN THE PRESENCE OF THE DOTD FABRICATION INSPECTOR.
9. WELDED SPLICES IN END DAMS SHALL BE SHOP SPLICES. END DAM SECTIONS BETWEEN WELDED SHOP SPLICES SHALL NOT BE LESS THAN 15 FEET IN LENGTH, EXCEPT THAT ONE SECTION NO LESS THAN 4 FEET IN LENGTH WILL BE ALLOWED IN THE SHOULDER AREA IF REQUIRED TO MATCH ROADWAY CROSS SECTION. SPLICES SHALL BE OUTSIDE OF WHEEL PATHS. SEE WHEEL PATH LOCATIONS DETAIL.

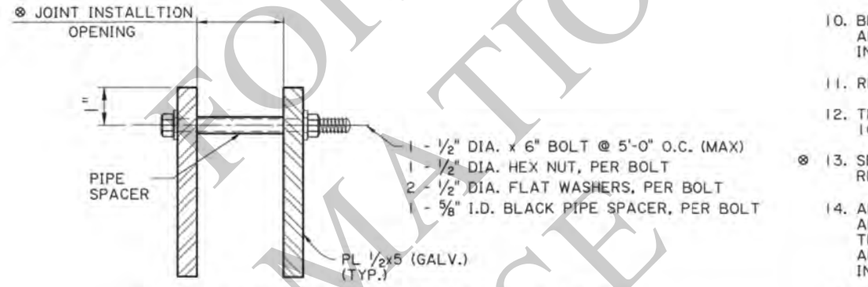
   WELDED SPLICES SHALL BE BUTT WELDS. SHOW ALL SHOP AND FIELD SPLICE LOCATIONS IN THE SHOP DRAWINGS. SPLICE LOCATIONS MAY BE DESIGNATED WITH A +/- 6 INCH TOLERANCE.
10. BEND STUDS PRIOR TO WELDING. NO BENDING OF STUDS WILL BE ALLOWED AFTER WELDING EXCEPT AS REQUIRED FOR WELDING INSPECTION.
11. REPAIR DAMAGED GALVANIZED COATS IN ACCORDANCE WITH SECTION 811.
12. THE SILICONE SEAL AND LOCKING ADHESIVE SHALL CONFORM TO SECTION 1005.
13. ⊗ SEE PROJECT PLAN JOINT DATA TABLE FOR DESIGN AND INSTALLATION REQUIREMENTS.
14. ANCHOR BOLTS IN GIRDER WILL BE PAID FOR AS PART OF THE GIRDER. ANCHOR RODS IN APPROACH SLAB SUPPORT WALL WILL BE PAID FOR UNDER THE STRUCTURAL METALWORK (ANCHOR BOLTS) PAY ITEM. MEASUREMENT AND PAYMENT OF OTHER END DAM AND SILICONE SEAL ELEMENTS WILL BE IN ACCORDANCE WITH SECTION 815.
15. JOINTS SHALL BE PAID FOR UNDER PAY ITEM SEALED EXPANSION JOINT (END DAMS AND PREFORMED SILICONE SEAL).



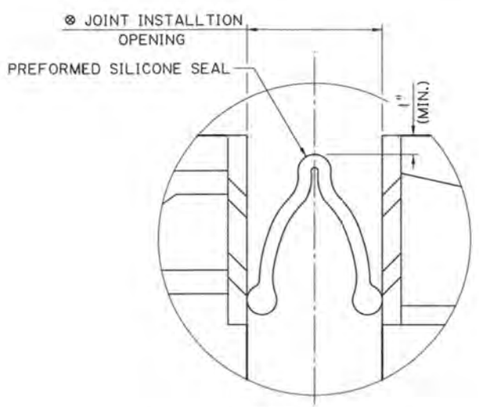
PART SECTION
BETWEEN STEEL GIRDERS

PART SECTION
AT ℄ OF STEEL GIRDER

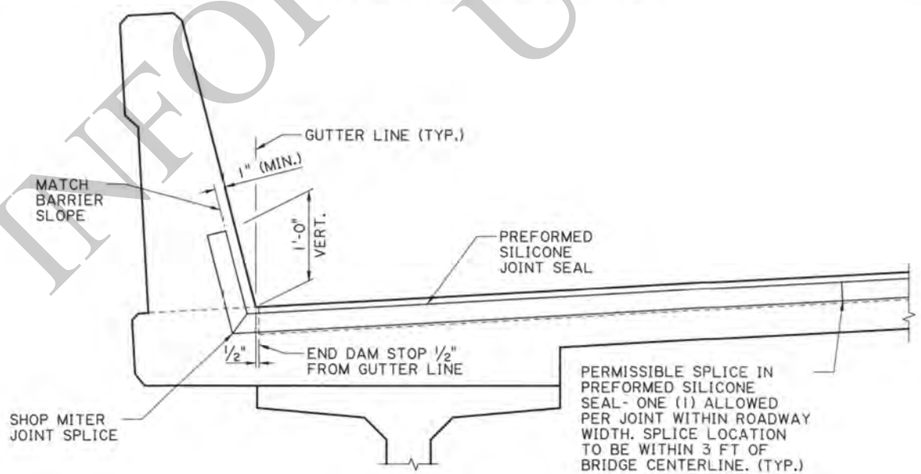
PREFORMED SILICONE SEAL DETAIL (STEEL GIRDERS)
(N.T.S.)



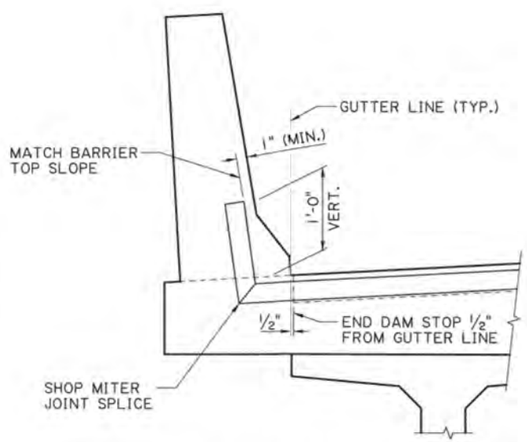
END DAM SHIPPING AND INSTALLATION ASSEMBLY
(ANCHOR ANGLES AND ANCHOR STUDS NOT SHOWN)



DETAIL A
(SILICONE SEAL INSTALLATION RECESS)



36" SINGLE SLOPE BARRIER



F-SHAPE BARRIER

SILICONE SEAL AT GUTTER LINES
(HIGH SIDE AND LOW SIDE)

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	A.LANCASTER
CHECK	K. KEMP
DETAIL	A.LANCASTER
CHECK	K. KEMP
REVIEW	Y. SHEN
SERIES #	1 OF 2

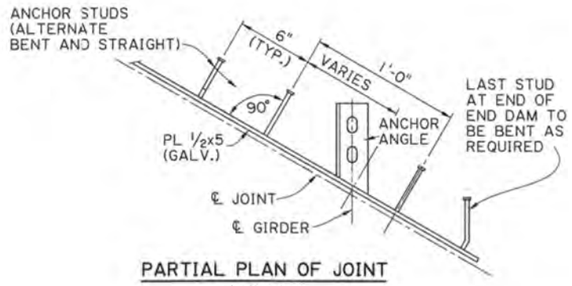
STATE OF LOUISIANA
ADAM LANCASTER
License No. 35573
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5/11/2021

APPROVED BY CHIEF ENGINEER: Christopher P. Knotts
DATE: 5/12/2021

MISC. SPAN DETAILS
SEALED EXPANSION JOINT - END DAMS AND PREFORMED SILICONE

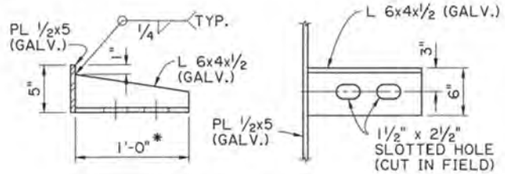
STANDARD PLAN: JOINT-SC

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN



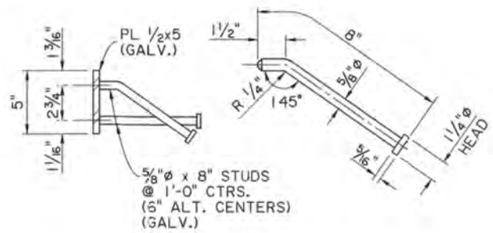
PARTIAL PLAN OF JOINT
(N.T.S.)
(SHOWING TYPICAL END DAM FOR SKEWED JOINT)

PARTIAL PLAN OF JOINT
(N.T.S.)



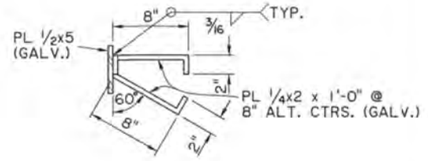
ANCHOR ANGLE
(N.T.S.)

* FOR APPROACH SLAB END DAMS IN A 6" SACRIFICIAL SECTION, USE L 6x4x½ x 1'-3"

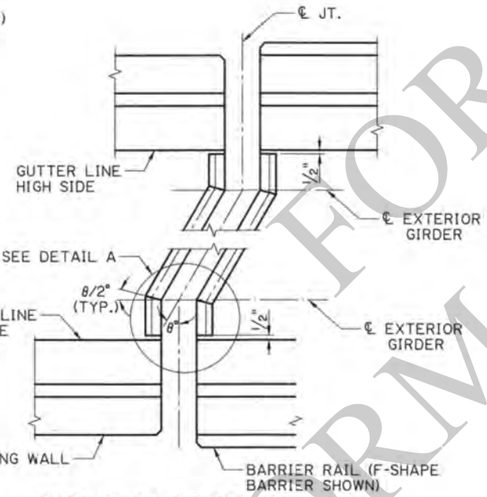


ANCHOR STUD
(N.T.S.)

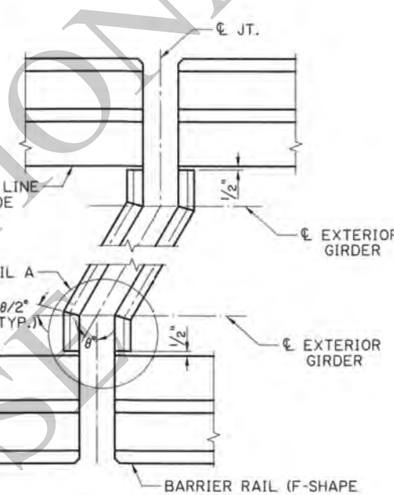
ANCHOR STUDS SHALL BE ⅝" ø x 8" AUTOMATIC END WELDED TYPE. ALL BENDS ARE TO BE MADE PRIOR TO WELDING AND GALVANIZING.



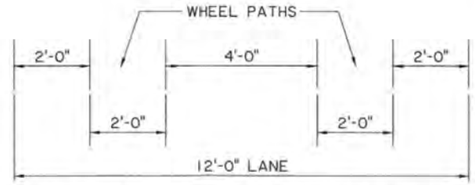
ANCHOR STRAP ALTERNATE
(N.T.S.)



PART PLAN AT END BENTS
(SKEWED JOINT FOR GIRDER BRIDGES)

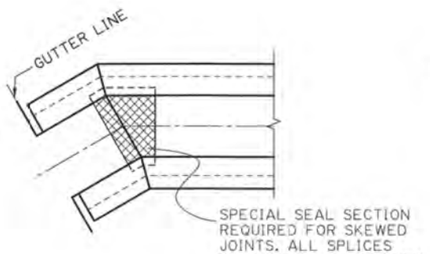


PART PLAN AT INTERMEDIATE BENTS
(SKEWED JOINT FOR GIRDER BRIDGES)

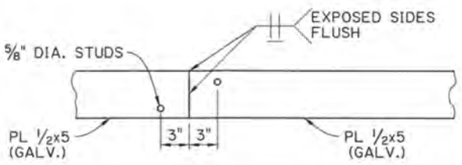


DIMENSIONS SHOWN ARE NORMAL TO DIRECTION OF TRAFFIC.

WHEEL PATH LOCATIONS



DETAIL A

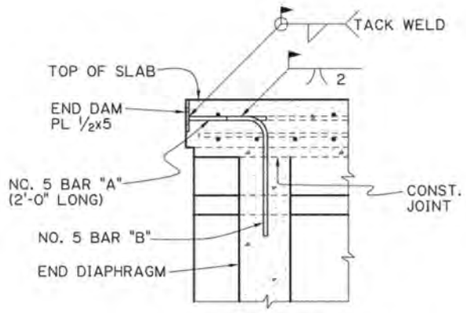


PERMISSIBLE END DAM SPLICE

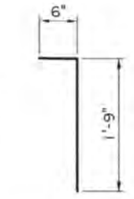
PL ½x5 TO HAVE A UNIVERSAL MILL FACE FINISH ON TOP, OR TOP EDGE IS TO BE FINISHED SMOOTH IF CUT TO MATCH CROWN OF ROADWAY.
(N.T.S.)

END DAM INSTALLATION PROCEDURE:

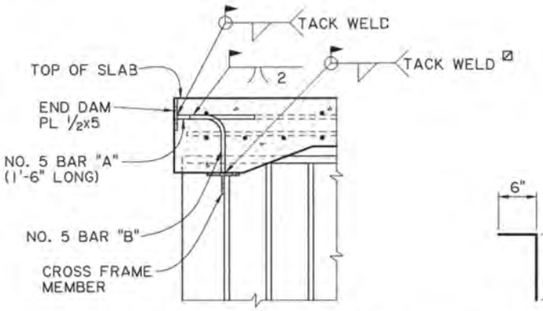
1. ONE END DAM STABILIZER (SEE END DAM STABILIZER DETAIL) IS REQUIRED IN EACH END DIAPHRAGM, EQUALLY SPACED BETWEEN GIRDERS, ON ONE SIDE OF THE JOINT ONLY. FOR CONCRETE GIRDER BRIDGE, CAST NO. 5 BARS "B" IN END DIAPHRAGM CONCRETE. FOR STEEL GIRDER BRIDGE, TACK WELD NO. 5 BARS "B" TO TOP MEMBER OF CROSS DIAPHRAGMS.
2. PLACE END DAM ASSEMBLY AS A UNIT, WITH PIPE SPACERS AND BOLTS IN PLACE.
3. ADJUST ASSEMBLY TO CORRECT VERTICAL POSITION AND JOINT INSTALLATION OPENING. TIGHTEN ONE SIDE INTO PLACE USING ANCHOR BOLTS IN GIRDERS. HAND TIGHTEN OPPOSITE SIDE.
4. LOOSELY TIE NO. 5 BARS "A" TO NO. 5 BARS "B" (END DAM STABILIZER).
5. TACK WELD NO. 5 BARS "A" TO END DAM PLATE.
6. WELD NO. 5 BARS "A" TO NO. 5 BARS "B".
7. TIGHTEN OPPOSITE SIDE OF END DAM ASSEMBLY ANCHORS JUST PRIOR TO DECK POUR.
8. CAST DECK.
9. CUT/REMOVE PIPE SPACER AND BOLT AS SOON AS CONCRETE WILL SUPPORT LOAD WITHOUT OVERSTRESSING OR DAMAGING CONCRETE, BUT NO LONGER THAN 8 HOURS AFTER DECK POUR.
10. REPAIR ANY DAMAGE TO EXPOSED GALVANIZATION.



END DAM STABILIZER
(PARTIAL SECTION BETWEEN PPC GIRDERS)
(N.T.S.)



NO. 5 BAR "B"
(2½" ø PIN)



END DAM STABILIZER
(PARTIAL SECTION BETWEEN STEEL GIRDERS)
(N.T.S.)

☑ FOR WELDING BAR "B" TO CROSS FRAME MEMBER, REMOVE CROSS FRAME MEMBER PROTECTIVE COATING SUFFICIENTLY TO PERMIT WELDING. DO NOT REMOVE COATING WITHIN 2 INCHES OF EDGE OF CROSS FRAME MEMBER FLANGE.

NO. 5 BAR "B"
(2½" ø PIN)

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	A.LANCASTER
CHECK	K. KEMP
DETAIL	A.LANCASTER
CHECK	K. KEMP
REVIEW	Y. SHEN
SERIES #	2 OF 2

STATE OF LOUISIANA
ADAM LANCASTER
License No. 35573
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5/4/2021

APPROVED BY CHIEF ENGINEER: DATE: 5/12/2021

STATE OF LOUISIANA
JOHN BEL EDWARDS
GOVERNOR

MISC. SPAN DETAILS

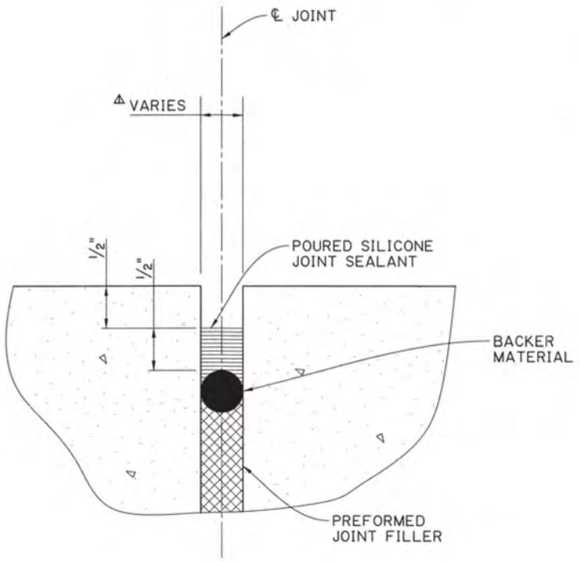
SEALED EXPANSION JOINT - END DAMS AND PREFORMED SILICONE

STANDARD PLAN NO. JOINT-SC

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

IP_PWP:d0964968\BD.5.3.2.02 - Sealed Expansion Joint (Preformed Silicone 2 of 2)_raster.dgn 5/21/2021 08:28



POURED SILICONE JOINT - SECTION
(N.T.S.)

NOTES:

1. JOINT FABRICATION AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 815.
2. THE MANUFACTURER'S RECOMMENDED CONSTRUCTION METHODS SHALL BE FOLLOWED.
3. PREFORMED JOINT FILLER SHALL CONFORM TO SECTION 1005.
4. POURED SILICONE JOINT SEALANT AND BACKER MATERIAL SHALL CONFORM TO SECTION 1005. THE BACKER MATERIAL SHALL BE COMPRESSED TO 80% OR LESS OF ITS ORIGINAL DIAMETER FOR INSTALLATION.
5. SEE THE JOINT DATA TABLE IN PLANS FOR DESIGN AND INSTALLATION REQUIREMENTS.
6. JOINT WILL BE PAID FOR UNDER PAY ITEM JOINT SEAL (POURED).

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	A.LANCASTER
CHECK	K. KEMP
DETAIL	J. W. P.
CHECK	K. KEMP
REVIEW	Y. SHEN
SERIES #	1 OF 1

STATE OF LOUISIANA
ADAM LANCASTER
License No. 35573
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
5/1/2021

APPROVED BY CHIEF ENGINEER:
DATE: 5/12/2021

MISC. SPAN DETAILS

POURED SILICONE JOINT

STANDARD PLAN: JOINT-SC-P

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

08:30
5/21/2021
IP_PWP:d0964968\BD.5.3.3.01 - Poured Silicone Seal_raster.dgn

GENERAL NOTES:

1) THIS STRUCTURE MEETS ALL DOTD HYDRAULIC PERFORMANCE CRITERIA WHEN USED IN ACCORDANCE WITH THE DOTD HYDRAULICS MANUAL AND ALL DOTD HYDRAULIC DESIGN POLICIES.

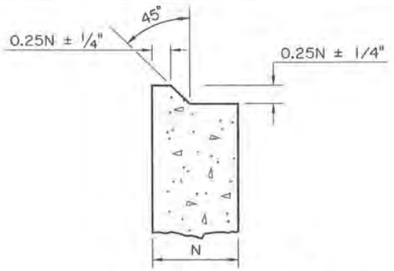
2) PROVIDE PRECAST UNITS AS THE LOWER PORTION OF A COMPOSITE STRUCTURE. PROVIDE CAST-IN-PLACE CONCRETE (SEE APPROPRIATE STANDARD PLAN FOR REQUIRED REINFORCING AND DIMENSIONS) FOR THE TOP 1'-6" OF THE STRUCTURE AS FOLLOWS:
   A) CB-01, CB-02, CB-04, CB-05, AND MANHOLES MAY BE FULLY PRECAST IF THE STRUCTURES ARE NOT EXPOSED TO TRAFFIC LOADS; ELEVATIONS MUST BE FIELD VERIFIED PRIOR TO FABRICATION.
   B) CB-06, CB-07, CB-08, AND CB-09 STRUCTURES MUST HAVE THE TOP 18" CAST-IN-PLACE; ELEVATIONS MUST BE FIELD VERIFIED PRIOR TO FABRICATION.

3) DESIGN IS TO BE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, EIGHTH EDITION, 2017, AND THE LATEST LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES.

4) FINISH CAST-IN-PLACE CONCRETE IN ACCORDANCE WITH OTHER STANDARD PLANS AND 805.

5) FORM PIPE OPENINGS ONLY AS REQUIRED FOR INTERSECTING PIPES. PROVIDE OPENING DIMENSIONS TO ACCOMMODATE PIPE DIAMETER AND SKEW ANGLE. PROVIDE OPENING DIMENSION THAT IS 4±1/2 INCH LARGER THAN OUTSIDE PIPE DIMENSION.

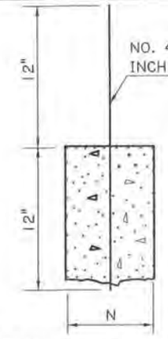
6) RESILIENT CONNECTORS OR CONCRETE COLLARS ARE REQUIRED FOR CONNECTIONS OF ALL PIPE SIZES (EXCEPT YARD DRAIN PIPE AND UNDERDRAINS) WITH COST TO BE INCLUDED IN THE COST OF THE PRECAST STRUCTURE.



JOINT DETAIL A
PRECAST/PRECAST

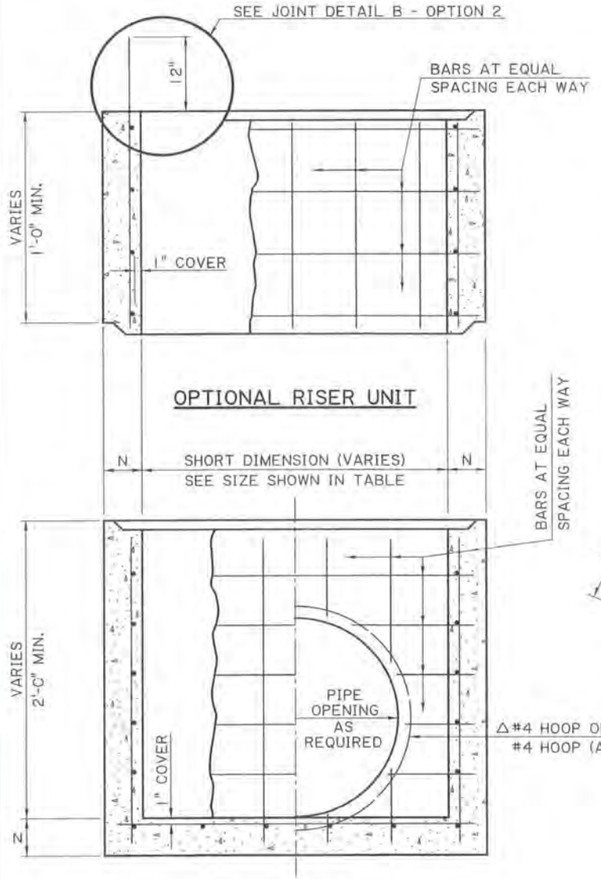
1. SEAL AND WRAP JOINT IN ACCORDANCE WITH 702.04.01

JOINT DETAIL B - OPTION 1
CAST-IN-PLACE/PRECAST



JOINT DETAIL B - OPTION 2
CAST-IN-PLACE/PRECAST

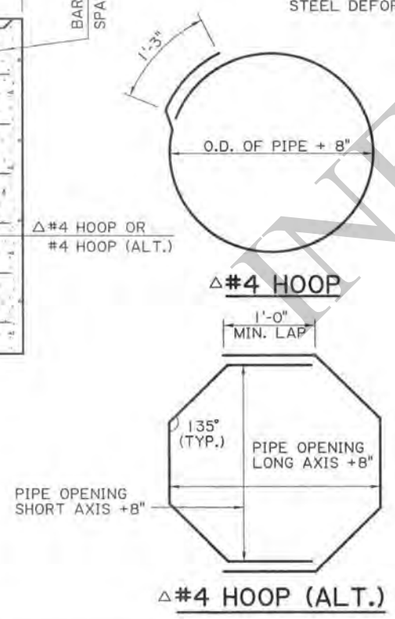
IN OPTIONS 1 AND 2, COAT PRECAST CONCRETE JOINT SURFACE AND A MAXIMUM OF 2 INCHES OF REINFORCING STEEL WITH TYPE V, GRADE 2 OR GRADE 3 EPOXY RESIN CONFORMING TO 1017. APPLY EPOXY RESIN AND PLACE CONCRETE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



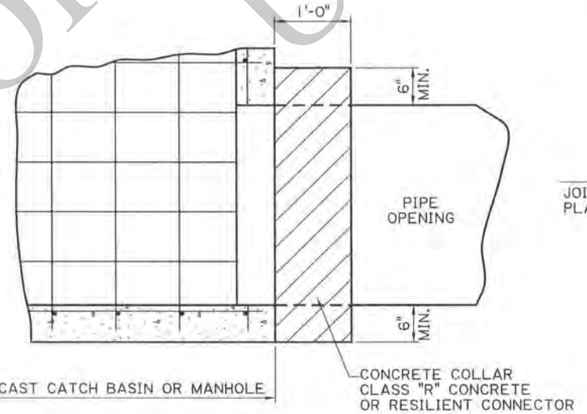
PRECAST UNITS FOR CATCH BASINS & MANHOLES

MAXIMUM HEIGHT	N	4' MAX. DIMENSION			6' MAX. DIMENSION			8' MAX. DIMENSION			10' MAX. DIMENSION		
		⊙TYPICAL SIZES 3'X3', 4'X4'			⊙TYPICAL SIZES 6'X4', 6'X6'			⊙TYPICAL SIZES 8'X4', 8'X6', 8'X8'			⊙TYPICAL SIZES 10'X4', 10'X6', 10'X8', 10'X10'		
FT.	IN.	BAR SIZE	SPAC.* IN.	As⊠ IN²/FT.	BAR SIZE	SPAC.* IN.	As⊠ IN²/FT.	BAR SIZE	SPAC.* IN.	As⊠ IN²/FT.	BAR SIZE	SPAC.* IN.	As⊠ IN²/FT.
8	4	4	6	0.40									
8	6	4	9	0.27	4	8	0.30	4	5.5	0.44	5	5.5	0.68
14	6	4	9	0.27	4	6	0.40	5	5	0.74	5	3.25	1.14
20	6	4	7	0.34	4	4.5	0.53						

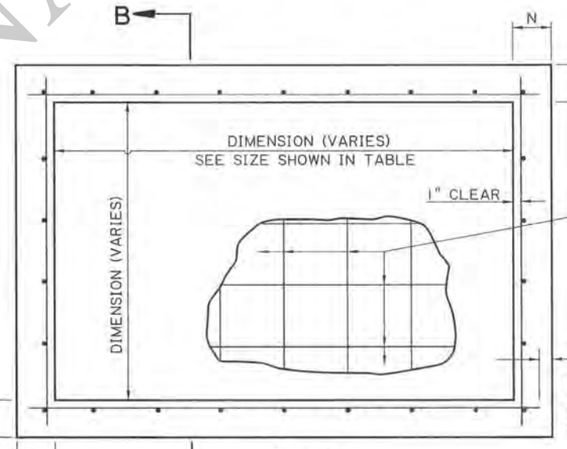
⊙ OTHER SIZES ARE ACCEPTABLE AS LONG AS THE DIMENSIONS DO NOT EXCEED THE MAXIMUM DIMENSIONS.
* BAR SPACING APPLIES TO BOTH DIRECTIONS AND AT ALL LOCATIONS.
⊠ BAR SIZES AND SPACING MAY DIFFER FROM VALUES SHOWN, BUT THE AREA OF STEEL (A_s) SHALL BE EQUAL TO OR GREATER THAN VALUE SHOWN, AND BAR SPACING SHALL NOT EXCEED 1.5 TIMES THE WALL THICKNESS. THE AREA OF STEEL (A_s) MAY BE PROVIDED WITH STEEL DEFORMED WELDED WIRE FABRIC.



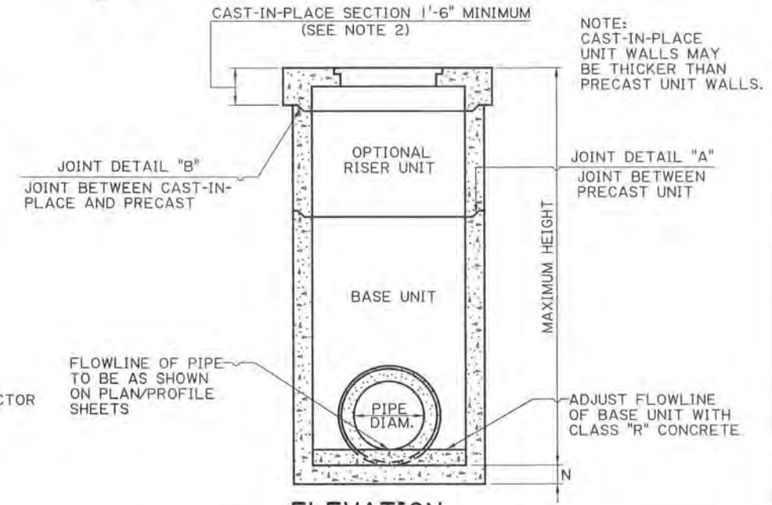
△ #4 HOOP MAY BE USED WHEN PIPE IS CIRCULAR AND CONNECTS TO THE CATCH BASIN AT +/- 90 (DEGREE) ANGLE. #4 HOOP (ALT.) SHALL BE USED FOR NON-CIRCULAR (ELLIPTICAL) PIPES AND ALL PIPES THAT ENTER THE CATCH BASIN AT A SKEWED ANGLE.



PIPE CONNECTION DETAIL



PLAN



ELEVATION
TYPICAL COMPOSITE STRUCTURE

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN | CHECK | DETAIL | CHECK | REVIEW | SERIES # | 1 OF 1

STATE OF LOUISIANA
J. BRYAN CROUCH
REG. No. 29379
REGISTERED PROFESSIONAL ENGINEER IN MECHANICAL ENGINEERING
9/28/23
HYDRAULICS

STATE OF LOUISIANA
XUYONG WANG
REG. No. 32508
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
9/28/23
STRUCTURAL

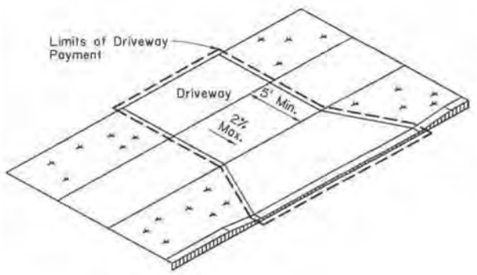
APPROVED BY CHIEF ENGINEER
DATE: 10-2-2023

PRECAST CATCH BASINS AND MANHOLES

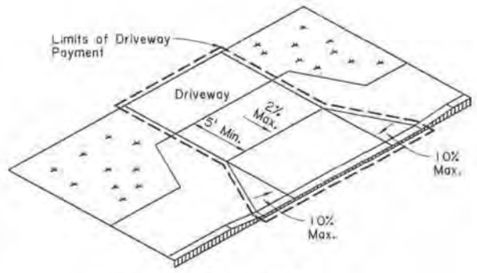
STANDARD PLAN PC-01

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
HYDRAULICS SECTION

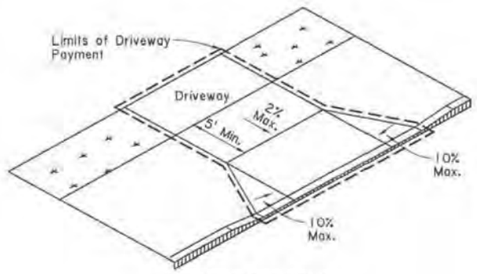
7/14/2022 12:04



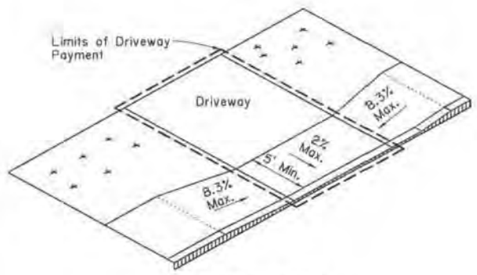
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



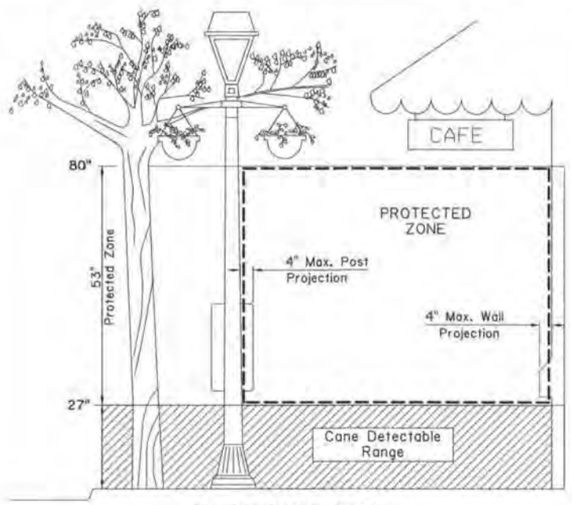
WIDE SIDEWALK



RAMP SIDEWALK

SIDEWALK TREATMENT AT DRIVEWAYS

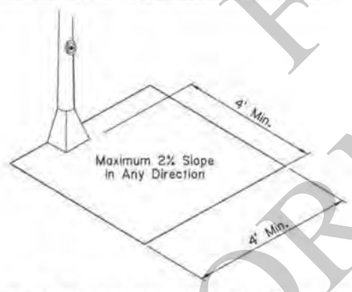
Refer to Driveway Standard Plans for further details.



PROTECTED ZONE

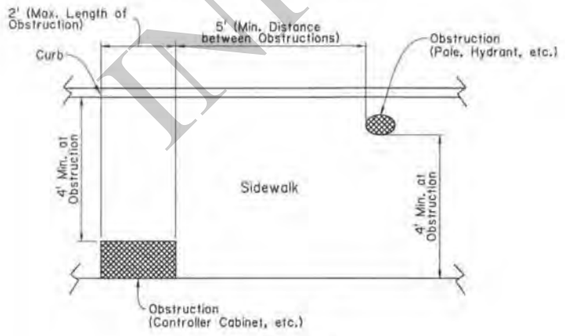
Notes:

1. In pedestrian circulation area, maximum 4" projection for post or wall mounted objects between 27" and 80" above the surface.
2. When an obstruction of a height greater than 27" from the surface would create a protrusion of more than 4" into the pedestrian circulation area, construct additional curb or foundation at the bottom to provide a maximum 4" overhang.
3. Protruding objects of a height less than 27" are detectable by cane and do not require additional treatment.



CLEAR GROUND SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON

Minimum 4' x 4' clear space required at public use fixtures.



PLAN VIEW PLACEMENT OF OBSTRUCTIONS

Items not intended for public use.

PEDESTRIAN FACILITIES GENERAL NOTES

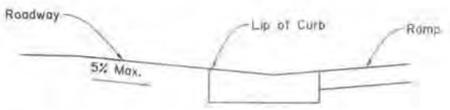
Curb Ramps

1. Maximum allowable cross slope of curb ramp surfaces is 2%; desired cross slope is 1.5%.
2. Theoretical pay areas for curb ramps are as shown on sheet 2, unless otherwise noted in the plans. These areas may be field adjusted as approved by the Project Engineer.
3. Grade breaks at the top and bottom of curb ramps runs shall be perpendicular to the direction of the ramp run.
4. Where curb ramps are located adjacent to a walking surface, a flare must be provided; otherwise a curb may be provided. For an example, refer to curb ramp Type 2 on sheet 2.
5. The landing dimensions are 5'x5' with a maximum 2% slope in any direction. The landing clear width shall be at least as wide as the widest ramp run leading to the landing.
6. Small raised channelization islands, which cannot provide a minimum of 5'x5' landing at the top of ramps, shall be cut through level with the surface of the street.
7. Raised medians should be 6' wide in the direction of pedestrian travel to serve as a pedestrian refuge area. Medians with pedestrian access routes through them shall be designed in accordance with Draft PROWAG.
8. Maneuvering space at the bottom of curb ramps shall be a minimum of 4'x4' completely contained within the crosswalk and completely outside the parallel vehicle travel lane.
9. It is desirable to provide a no-parking zone 50' from crosswalks on each intersection approach or provide a curb extension.
10. Drainage structures should be located on the upstream side of the ramp and located to prevent ponding near the curb ramp. Drainage structures should be placed outside the crosswalk.
11. Slopes of adjoining gutters and roadway surfaces immediately adjacent to the curb ramp shall not exceed 5%. Refer to the Transition from the Curb Ramp to Roadway Detail on sheet 1.
12. Curb ramps should be aligned with the direction of pedestrian travel on the crosswalk or theoretical crosswalk. Refer to sheet 3 for typical crossing layouts and refer to the pavement marking standards for crosswalk markings.
13. Crosswalk markings shall be placed a distance of 24" from the flare on each side of a diagonal curb ramp. Refer to sheet 3 for an example.
14. Curb ramps shall include detectable warning surfaces. Refer to sheet 4 for details of detectable warning surfaces.
15. Where a curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transition or the extent that no remaining section of curb or curb and gutter is less than 5' long or as directed by the Project Engineer. Existing sidewalks shall be removed to the nearest joint beyond the flare slope or to the extent that no remaining section of sidewalk is less than 5' long or as directed by the Project Engineer.

Sidewalks

1. Where a 5' sidewalk cannot be provided due to site constraints, 5'x5' passing areas at intervals not to exceed 200' are required.
2. Where sidewalks and crosswalks are contained within street or highway right-of-way, the grade of the sidewalk or crosswalk shall not exceed the grade of the adjacent street or highway. Where sidewalks are not contained within a street or highway right-of-way, the grade of the sidewalk shall be 5% maximum.
3. Maximum allowable cross slope of sidewalk surfaces is 2%; desired cross slope is 1.5%.
4. Vertical surface discontinuities along a sidewalk shall be 1/2" maximum. Discontinuities between 1/4" and 1/2" shall be beveled at a 1:2 maximum slope.
5. Where sidewalks intersect with streets, detectable warning surfaces are required. Refer to sheet 4 for details of detectable warning surfaces.
6. Traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items shall be placed so as not to obstruct the accessible route.
7. When a sidewalk crosses a driveway and exceeds the 2% maximum cross slope, the driveway or driveway portion shall be reconstructed to meet the 2% maximum cross slope requirement. Refer to driveway standard plans for driveway details.
8. Handrails are not required on sidewalks within highway right-of-way, unless site specific conditions, such as a vertical drop-off, dictate. Where handrails are provided, they must comply with ADAAG 505.
9. To prevent tracking of gravel onto the sidewalk, gravel driveways should be paved from the roadway edge to a point 10' behind the sidewalk or the right-of-way, whichever is less.

ADA - Americans with Disabilities Act
ADAAG - Americans with Disabilities Act Accessibility Guidelines
Draft PROWAG - Draft Public Rights-of-Way Accessibility Guidelines



TRANSITION FROM CURB RAMP TO ROADWAY

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN MAL | CHECK BPW | DETAIL MAL | CHECK BPW | REVIEW | SERIES # 1 OF 5

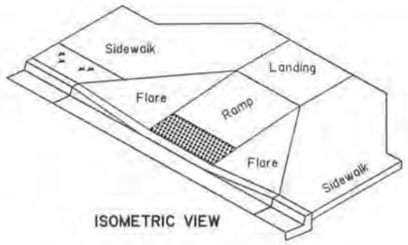
STATE OF LOUISIANA
MELISSA LEBAS
License No. 39111
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
7/19/2022

APPROVED BY CHIEF ENGINEER | DATE: 7/21/2022

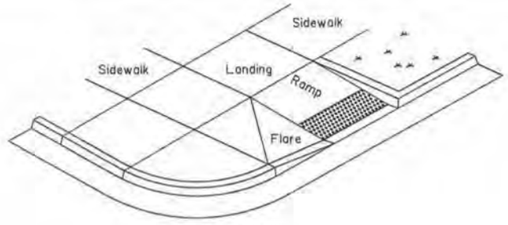
PEDESTRIAN FACILITIES
GENERAL NOTES AND MISC. DETAILS
PED-01

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
STANDARD PLAN

7/14/2022 12:04



ISOMETRIC VIEW



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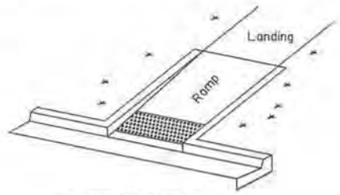

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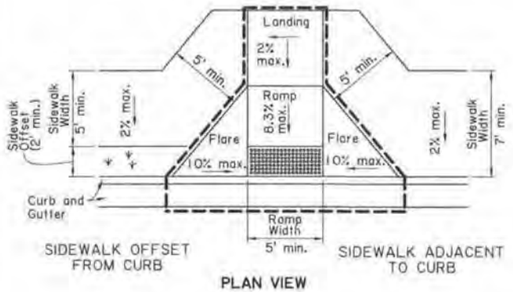
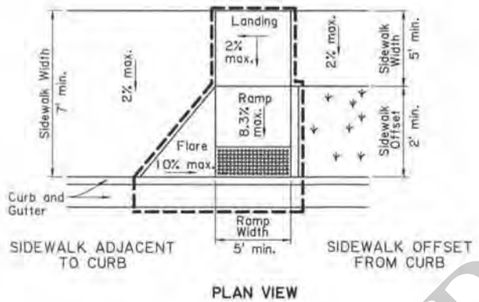


SIDEWALK OFFSET FROM CURB — SIDEWALK ADJACENT TO CURB

PLAN VIEW

TYPE 1

THEORETICAL PAY AREA = 12.8 SQ. YDS.

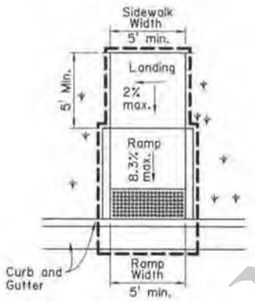


SIDEWALK ADJACENT TO CURB — SIDEWALK OFFSET FROM CURB

PLAN VIEW

TYPE 2

THEORETICAL PAY AREA = 10.4 SQ. YDS.



PLAN VIEW

TYPE 3

THEORETICAL PAY AREA = 8.1 SQ. YDS.

PERPENDICULAR CURB RAMPS

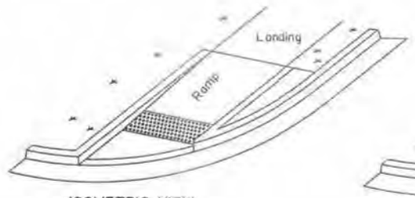
If a level landing of at least 3' cannot be provided, a perpendicular curb ramp should not be used.

LEGEND OF PATTERNS

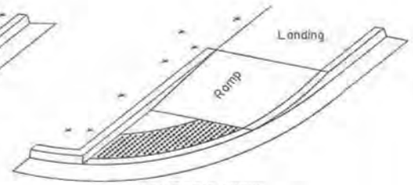
- Denotes Non-Walking Surface Not Part of Pedestrian Path
- Detectable Warning Surface
- Limits of Payment
- Slope

All slopes shown are maximum allowable. The least possible slope that will drain properly should be used.

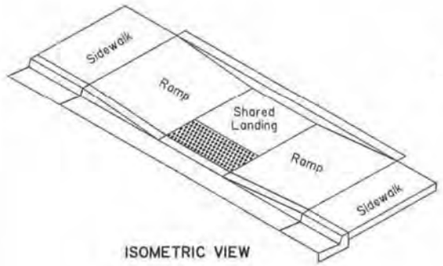
Curb ramps shall be placed and designed where ponding does not occur at the bottom or on the curb ramp.



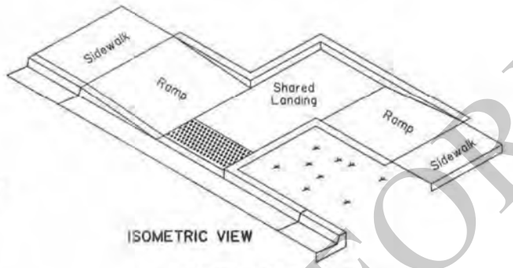
ISOMETRIC VIEW



ISOMETRIC VIEW



ISOMETRIC VIEW



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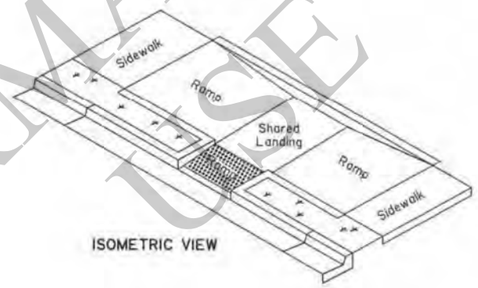

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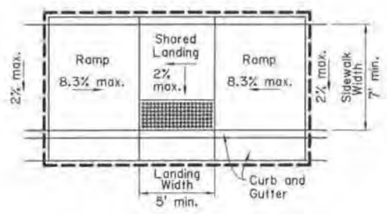
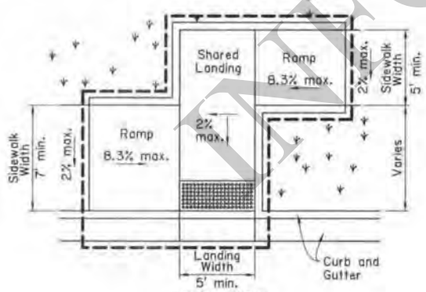


PLAN VIEW

TYPE 4

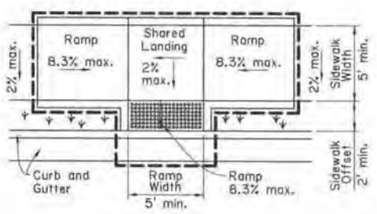
THEORETICAL PAY AREA = 17.9 SQ. YDS.



PLAN VIEW

TYPE 5

THEORETICAL PAY AREA = 19.1 SQ. YDS.



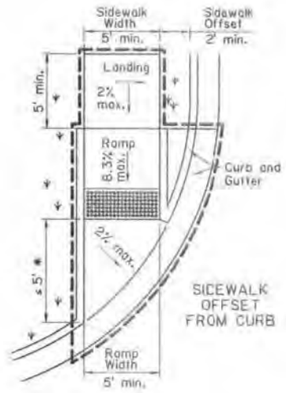
PLAN VIEW

TYPE 6

THEORETICAL PAY AREA = 13.7 SQ. YDS.

PARALLEL CURB RAMPS

COMBINATION CURB RAMP



PLAN VIEW

TYPE 7

THEORETICAL PAY AREA = 13.3 SQ. YDS.

PLAN VIEW

TYPE 8

THEORETICAL PAY AREA = 15.5 SQ. YDS.

DIRECTIONAL CURB RAMPS

* Where the grade break is less than or equal to 5' from the back of curb, place detectable warning surface as shown in Type 7. Where grade break is greater than 5' from the back of the curb, place detectable warning surface as shown in Type 8.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN MAL — CHECK BPW
DETAIL MAL — CHECK BPW
REVIEW — SERIES * 2 OF 5

STATE OF LOUISIANA
MELISSA LEBAS
License No. 35117
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
7/14/2022

APPROVED BY CHIEF ENGINEER — DATE: 7/21/2022

PEDESTRIAN FACILITIES

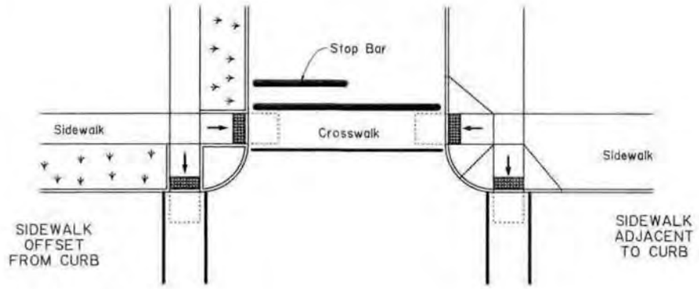
CURB RAMPS AND DETECTABLE WARNING LOCATION

PED-01

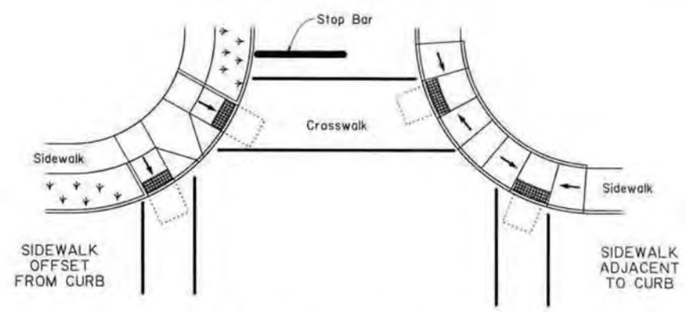
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

STANDARD PLAN

7/14/2022 12:04



DETAIL A: CURB RAMPS PLACED OUTSIDE THE RADIUS OF A CURVE



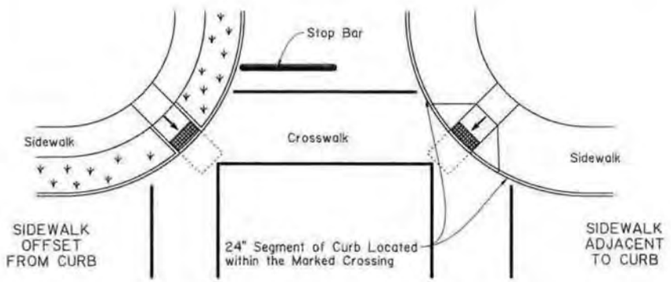
DETAIL B: PAIRED CURB RAMPS PLACED WITHIN THE RADIUS OF A CURVE

GENERAL NOTES:

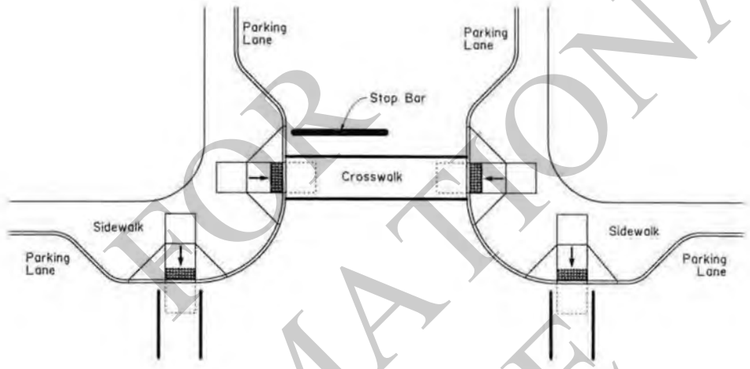
1. Curb ramps placed outside the radius of the curve are preferred. Paired curb ramps placed within the radius of a curve are acceptable. Single curb ramps placed on the apex of a curb should not be used unless site constraints, such as the location of drainage structures, require it.
2. Details and dimensions of curb ramps, sidewalks, and detectable warning surfaces are shown elsewhere.
3. Striping (crosswalks and stop bars) are shown for reference only. Refer to the pavement marking standard plans for striping details.

LEGEND

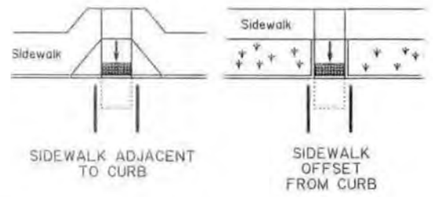
- Denotes non-walking surface not part of pedestrian path
- Detectable Warning Surface
- Maneuvering Space (4'x4' Min.)
- Ramp Surface



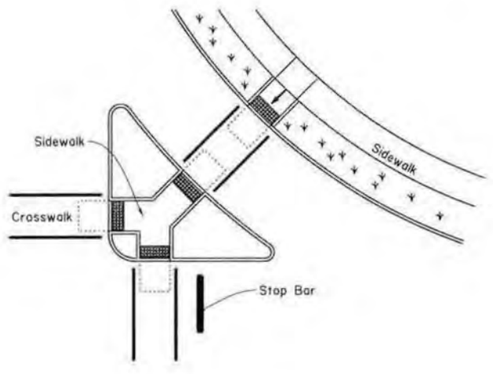
DETAIL C: SINGLE CURB RAMP PLACED ON APEX OF A CURVE (DIAGONAL CURB RAMPS)



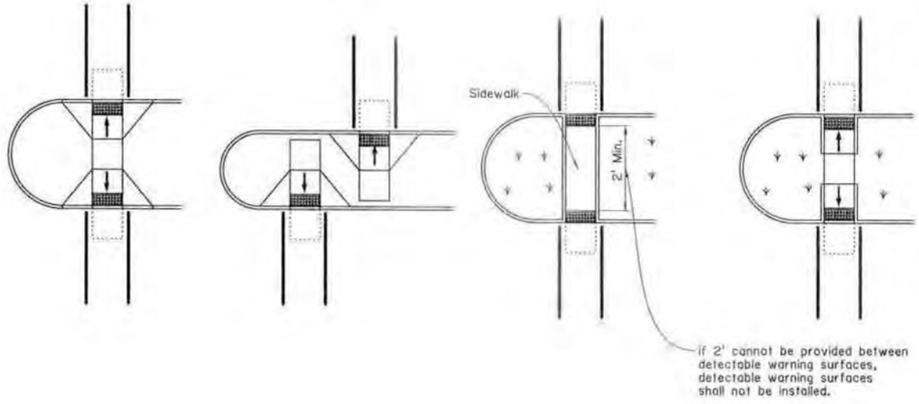
DETAIL D: CURB RAMPS PLACED ON CURB EXTENSION (BULB-OUTS)



DETAIL E: CURB RAMPS PLACED AT MID-BLOCK CROSSING



DETAIL F: SIDEWALKS AND CURB RAMPS AT ISLANDS



DETAIL G: SIDEWALKS AND CURB RAMPS AT MEDIANS

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	CHECK	DETAIL	CHECK	REVIEW	SERIES #
MAL	BPW	MAL	BPW		3 OF 5

STATE OF LOUISIANA
MELISSA LEBAS
License No. 38111
PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
7/19/2022

APPROVED BY CHIEF ENGINEER: DATE: 7/21/2022

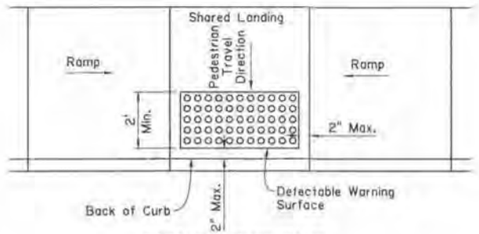
PEDESTRIAN FACILITIES
TYPICAL CROSSING LAYOUTS

PED-01

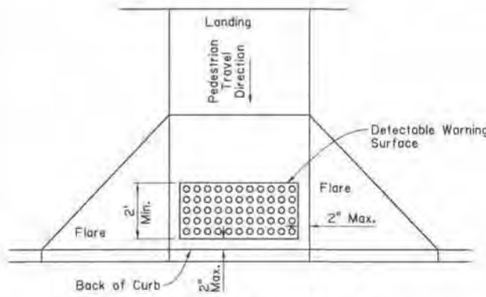
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

STANDARD PLAN

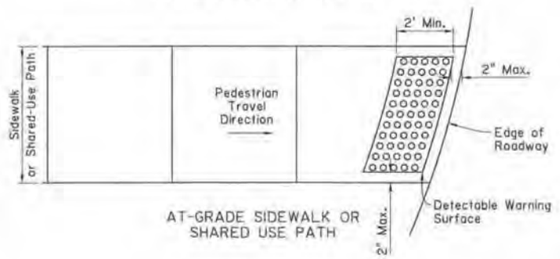
7/14/2022 12:04



PARALLEL CURB RAMP

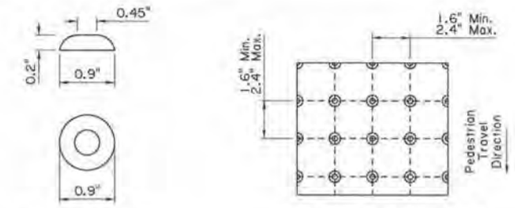


PERPENDICULAR CURB RAMP



AT-GRADE SIDEWALK OR SHARED USE PATH

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE



TRUNCATED DOME

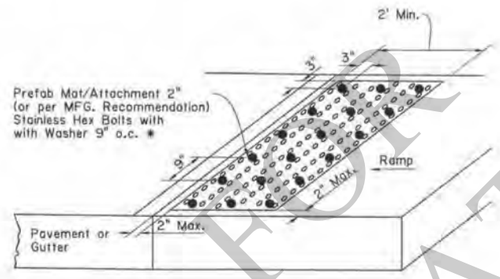
TRUNCATED DOME SPACING

Notes:

Domes shall be arranged in a square in-line pattern or radial pattern

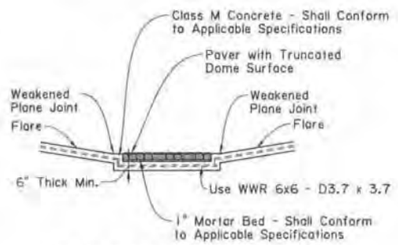
Color Fastness: Paver's composite coloring and ultra-violet stabilization must be homogeneous through the producted.

TRUNCATED DOME DETAILS

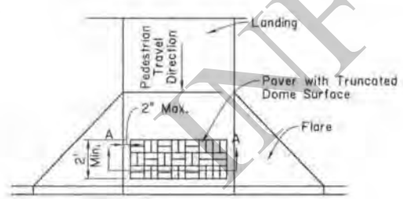


*Note: Retrofit application placed on top of existing ramp with drilled and epoxied bolts. Epoxy full surface area per manufacturer's recommendation.

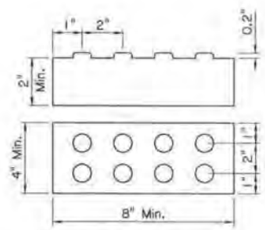
PREFABRICATED MAT OPTION (INLAID)



SECTION A-A



TRUNCATED DOME PATTERN CURB RAMP



PAVER WITH TRUNCATED DOME SURFACE

Notes: Paver units shall meet all requirements of the applicable ASTM Standards. Layout pattern shall be appropriate for size of paver used. 4"x8" pavers shall be laid out in a 2x2 basket weave pattern. 12"x12" pavers shall be laid out in a block pattern.

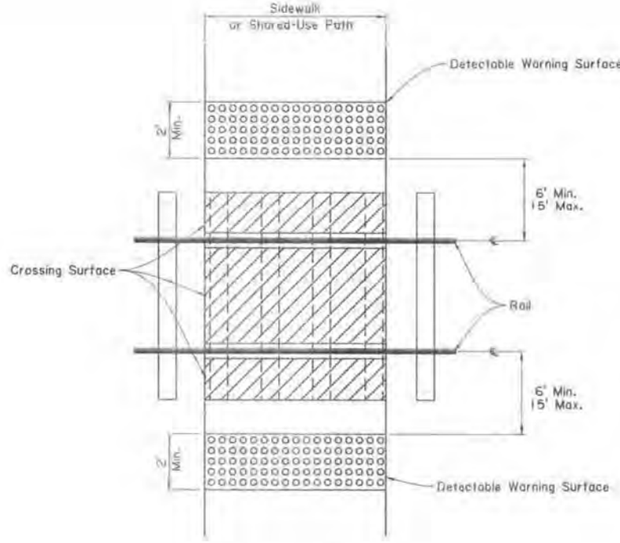
Paver units shall be saw cut only and any cut unit shall not be less than 25% of a full unit.

Installation should meet compliance with Draft PROWAG R302.7.2 (Vertical Surface Discontinuities). Vertical surface discontinuities shall be 1/2" maximum. Discontinuities between 1/4" and 1/2" shall be beveled at a 1:2 maximum slope.

DETECTABLE WARNING SURFACE PAVER OPTION

GENERAL NOTES:

1. For ADA compliance, detectable warning surfaces must be provided on all pedestrian curb ramps, medians and pedestrian refuge islands (width 6' or greater), railroad crossings and at-grade sidewalk and shared-use paths intersecting with roadways.
2. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with ADA guidelines. The surface must contast visually with adjoining surfaces, including side flares, in accordance with Section 706 of the Standard Specifications. Color for detectable warning surface shall contrast visually with adjoining surfaces, either light-on-dark or dark-on-light.
3. Detectable warning surfaces must be slip resistant and not allow water to accumulate.
4. Truncated domes should be aligned perpendicular or radial to the grade break between the curb ramp or at-grade sidewalk and the street.
5. Detectable warning surfaces shall be a minimum of 24" in depth in direction of pedestrian travel and extend the full width of the ramp run or landing where the pedestrian access route enters the street. Some detectable warning products may require a concrete border. The concrete border should not exceed 2".
6. Detectable warning surfaces shall be placed at the back of curb or no greater than 5' from the back of curb. Detectable warning surfaces may be curved along the corner radius. Refer to sheet 2 for typical placement of detectable warning surfaces on curb ramp types.
7. Detectable warning surfaces may be stamped, constructed of brick pavers or inlaid prefabricated mats attached by epoxy adhesive and mechanical attachment. Other detectable warning installations may be installed with approval from the Project Engineer, provided that the detectable warning surface meets ADA guidelines. No painted surfaces will be allowed.
8. Any retrofit application of detectable warning surfaces must have beveled edges. The beveled edge shall not exceed a slope greater than 1:2.



PLAN VIEW

LOCATION OF DETECTABLE WARNING SURFACES AT RAILROAD CROSSINGS

Note: Rows of truncated domes should be aligned parallel with the direction of wheelchair travel.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN MAL
CHECK BPW
DETAIL MAL
CHECK BPW
REVIEW
SERIES * 4 OF 5

STATE OF LOUISIANA
MELISSA LEBAS
License No. 39111
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
Melissa LeBas
7/19/2022

APPROVED BY DOTD ENGINEER: Melissa LeBas DATE: 7/21/2022

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

PEDESTRIAN FACILITIES
DETECTABLE WARNING SURFACES

PED-01

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

STANDARD PLAN

12:04

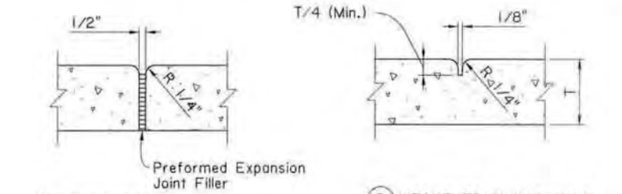
7/14/2022

GENERAL NOTES:

1. Weakened plane joints are required at all sidewalk ramps or driveways slope break lines.
2. Separate curb ramps and landing from adjacent sidewalk with preformed joint filler of 1/2".

JOINT LEGEND

- (A) 1/2" Expansion Joints (Preformed Joint Filler)
- (B) 1/8" Weakened Plane Joint
- (C) Construction Joint
- (D) Cold Joint with Bond Breaker



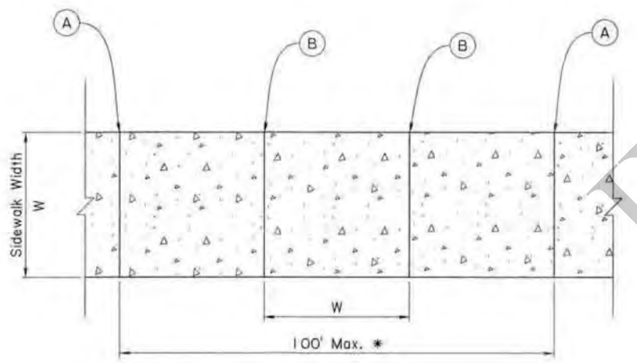
(A) EXPANSION JOINT

(B) WEAKENED PLANE JOINT

(C) CONSTRUCTION JOINT

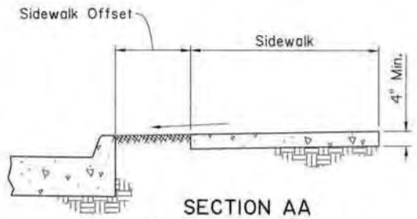
(D) COLD JOINT WITH BOND BREAKER

JOINT DETAILS

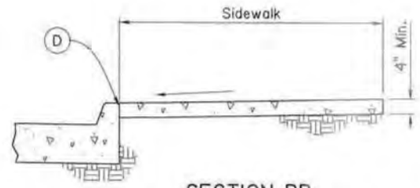


PLAN VIEW
SIDEWALK JOINT LAYOUT

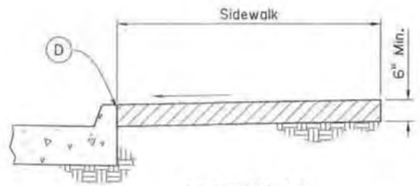
* Joint spacing to be approved by Project Engineer



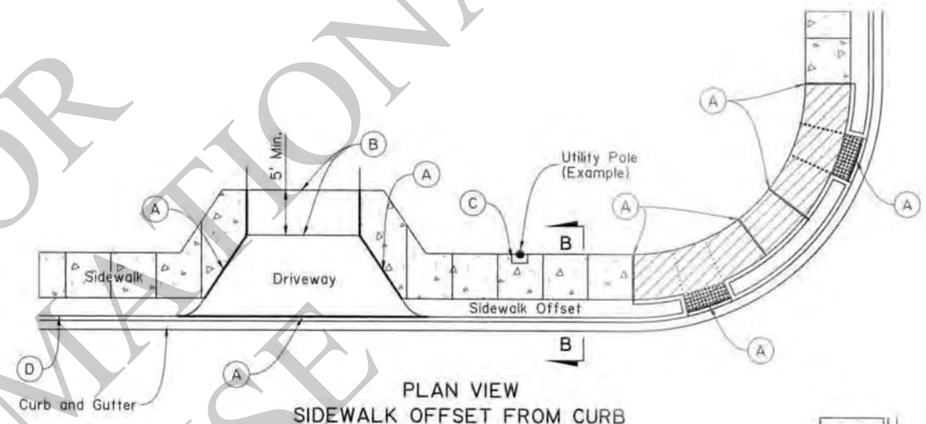
SECTION AA
OFFSET SIDEWALK



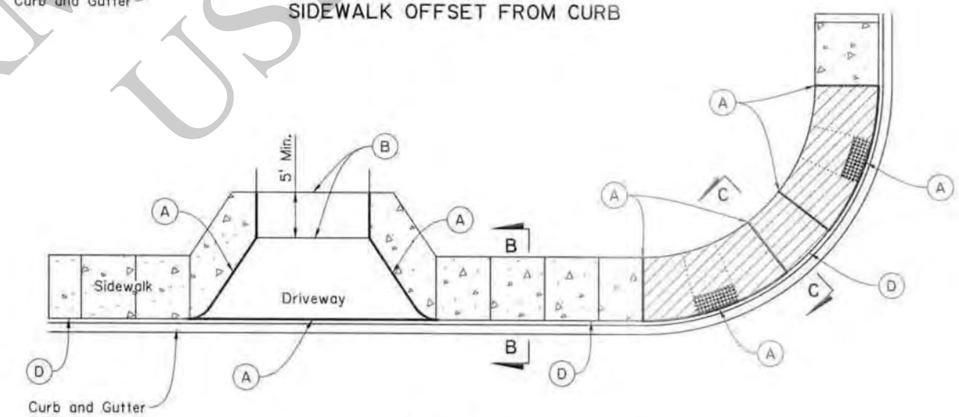
SECTION BB
SIDEWALK ADJACENT TO CURB



SECTION CC
SIDEWALK ADJACENT TO CURB
(WITHIN RADIUS OF TURNOUT)



PLAN VIEW
SIDEWALK OFFSET FROM CURB



PLAN VIEW
SIDEWALK ADJACENT TO CURB

4" Thick Concrete

6" Thick Concrete

Note: Driveways and curb ramps are shown for reference only. Refer to the driveway standard plans and curb ramp sheet for details.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN MAL | CHECK BPW | DETAIL MAL | CHECK BPW | REVIEW | SERIES # 5 OF 5

STATE OF LOUISIANA
MELISSA LEBAS
License No. 39111
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
Melissa Lebas
7/14/2022

APPROVED BY CHIEF ENGINEER: DATE: 7/21/2022

PEDESTRIAN FACILITIES
JOINT DETAILS

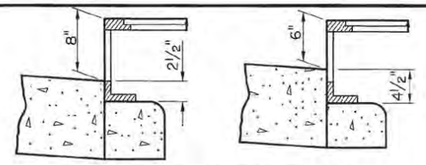
PED-01

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

STANDARD PLAN

GENERAL NOTES:

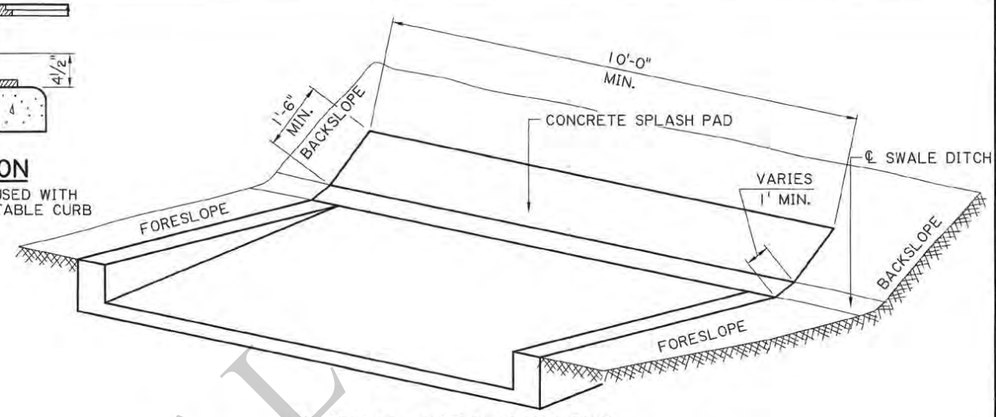
1. THIS STRUCTURE MEETS ALL DOTD HYDRAULIC PERFORMANCE CRITERIA WHEN USED IN ACCORDANCE WITH THE DOTD HYDRAULICS MANUAL AND ALL DOTD HYDRAULIC DESIGN POLICIES.
2. CONSTRUCTION SPECIFICATIONS: LATEST APPROVED LA DOTD STANDARD SPECIFICATIONS.
3. ALL EXPOSED CORNERS SHALL HAVE ¾" CHAMFER UNLESS OTHERWISE NOTED.
4. DIMENSIONS RELATING TO REINFORCING STEEL FABRICATION ARE OUT-TO-OUT OF BARS AND DIMENSIONS RELATING TO REINFORCING STEEL SPACING ARE CENTER-TO-CENTER OF BARS.
5. REINFORCING STEEL SHALL HAVE 2" COVER UNLESS OTHERWISE SPECIFIED.
6. IF PRECAST CATCH BASIN IS USED, PLEASE REFER TO STANDARD PLAN PC-01 FOR DETAILS AND SPECIFICATIONS.
7. PAVED GUTTER DRAINS SHALL BE POURED MONOLITHICALLY.



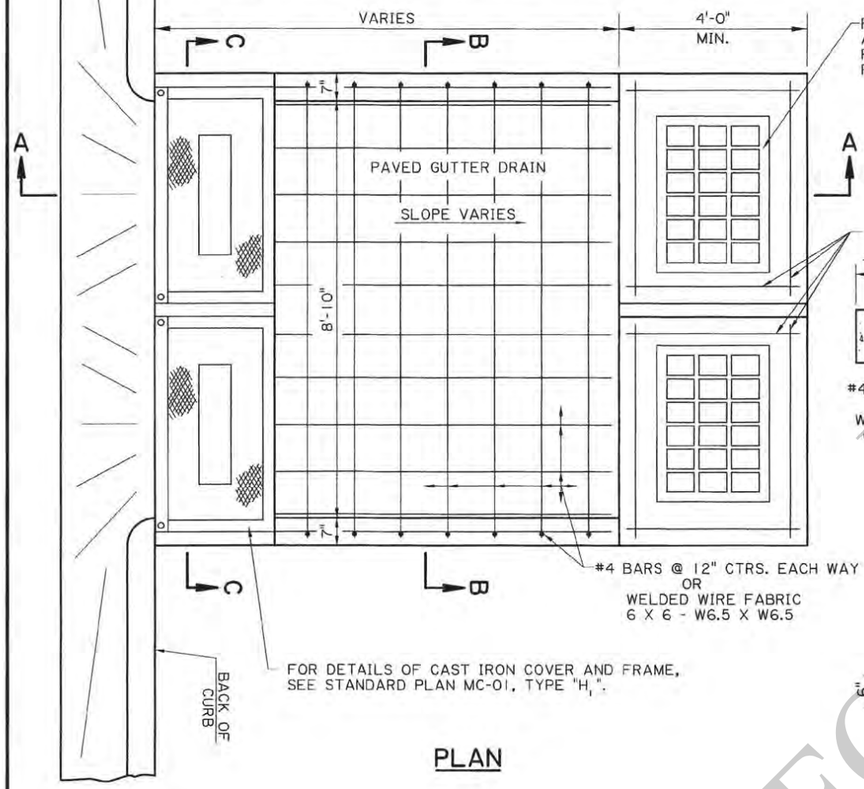
INLET CONFIGURATION

WHEN USED WITH 6" BARRIER CURB

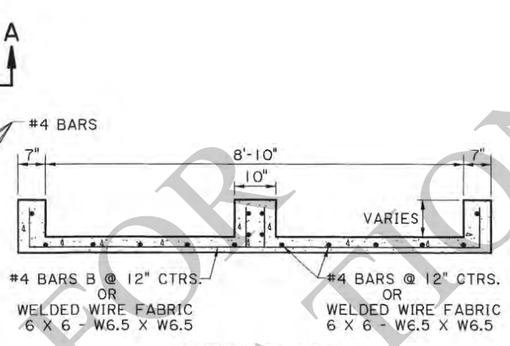
WHEN USED WITH 4" MOUNTABLE CURB



PARTIAL VIEW SHOWING PAVED GUTTER DRAIN WITHOUT DROP INLET

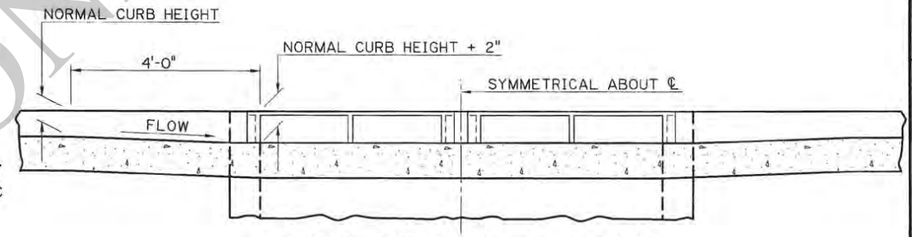


PLAN

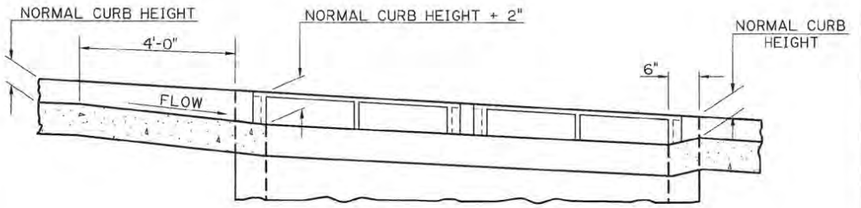


SECTION C-C

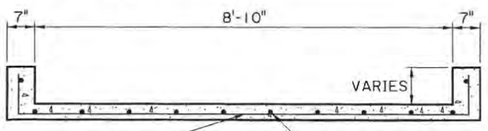
(CAST IRON COVER NOT SHOWN)



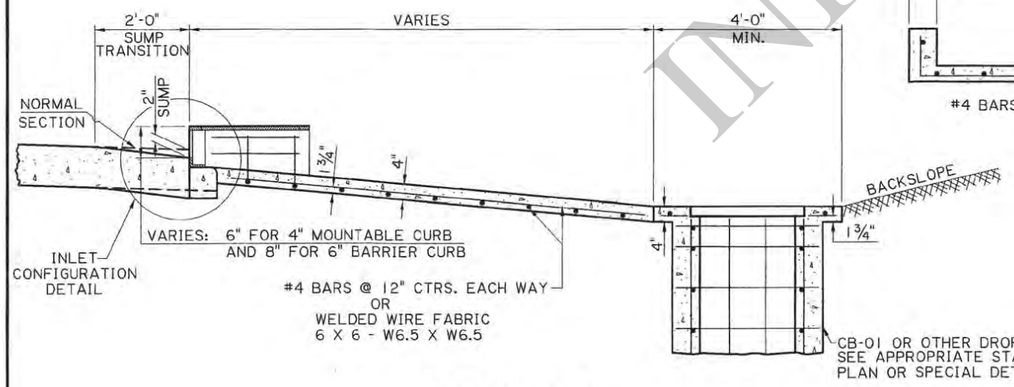
TRANSITION IN CURB HEIGHT GUTTER DRAIN AT LOW POINT



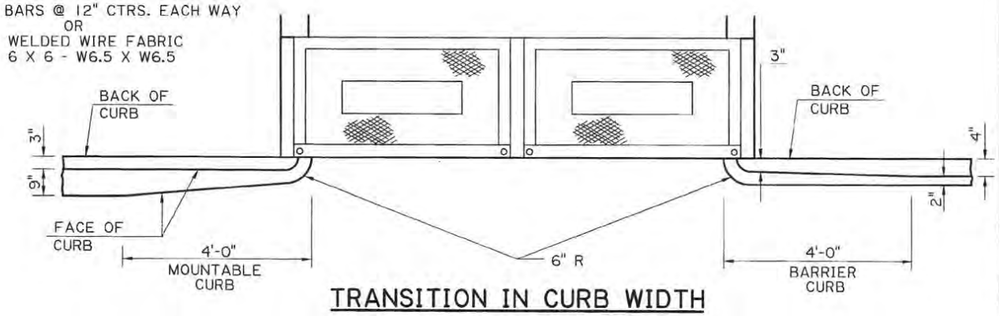
TRANSITION IN CURB HEIGHT GUTTER DRAIN ON A GRADE



SECTION B-B



SECTION A-A



TRANSITION IN CURB WIDTH

(TYPICAL)

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN | CHECK | DETAIL | CHECK | REVIEW | SERIES #

STATE OF LOUISIANA
MITRA HASHEMIEH
REG. No. 28546
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
9/11/2020

HYDRAULICS

STATE OF LOUISIANA
ADAM LANCASTER
REG. No. 35573
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
9/10/20

STRUCTURAL

APPROVED BY CHIEF ENGINEER: DATE: 9/22/2020

DOUBLE PAVED GUTTER DRAIN

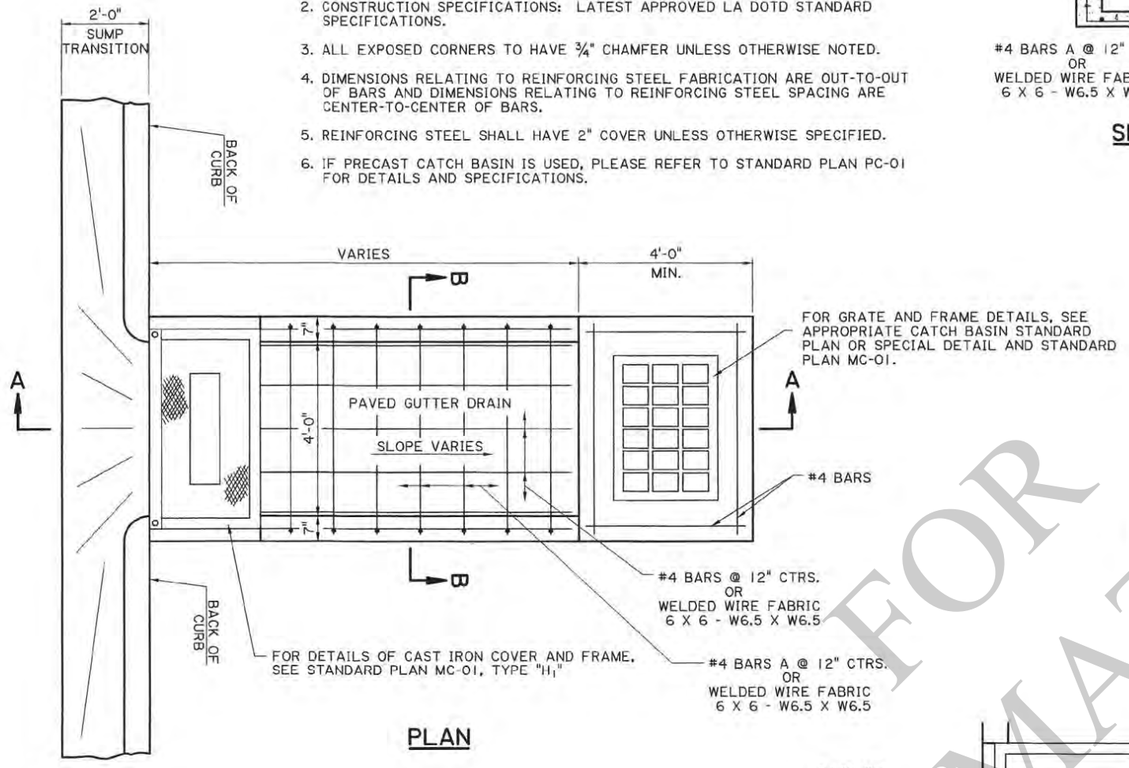
STANDARD PLAN PG-DRAIN (DOUBLE)

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

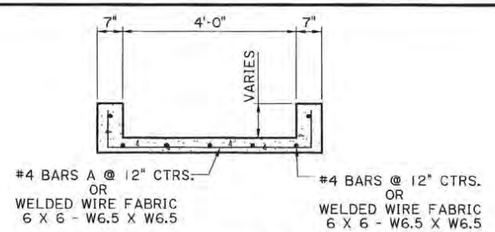
HYDRAULICS SECTION

GENERAL NOTES:

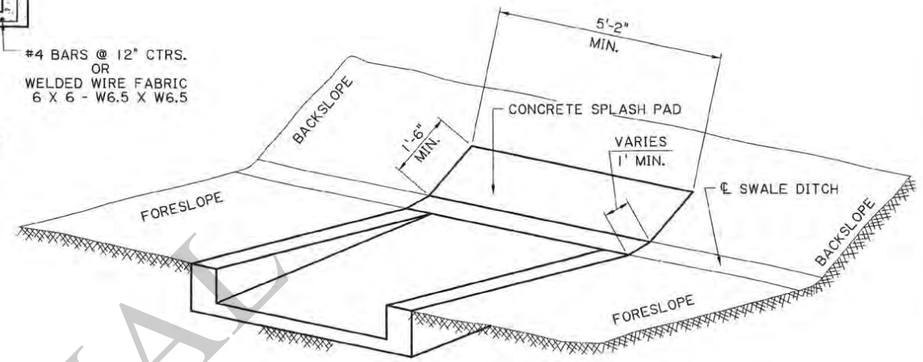
1. THIS STRUCTURE MEETS ALL DOTD HYDRAULIC PERFORMANCE CRITERIA WHEN USED IN ACCORDANCE WITH THE DOTD HYDRAULICS MANUAL AND ALL DOTD HYDRAULIC DESIGN POLICIES.
2. CONSTRUCTION SPECIFICATIONS: LATEST APPROVED LA DOTD STANDARD SPECIFICATIONS.
3. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER UNLESS OTHERWISE NOTED.
4. DIMENSIONS RELATING TO REINFORCING STEEL FABRICATION ARE OUT-TO-OUT OF BARS AND DIMENSIONS RELATING TO REINFORCING STEEL SPACING ARE CENTER-TO-CENTER OF BARS.
5. REINFORCING STEEL SHALL HAVE 2" COVER UNLESS OTHERWISE SPECIFIED.
6. IF PRECAST CATCH BASIN IS USED, PLEASE REFER TO STANDARD PLAN PC-01 FOR DETAILS AND SPECIFICATIONS.



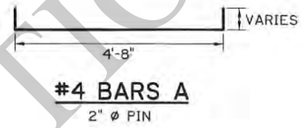
PLAN



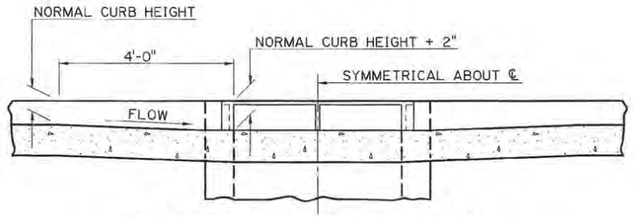
SECTION B-B



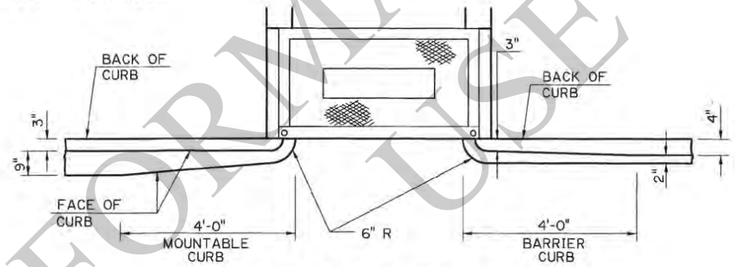
PARTIAL VIEW SHOWING
PAVED GUTTER DRAIN WITHOUT DROP INLET



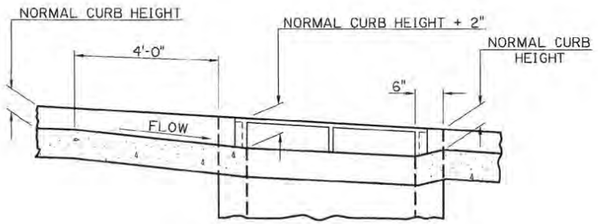
#4 BARS A
2" ø PIN



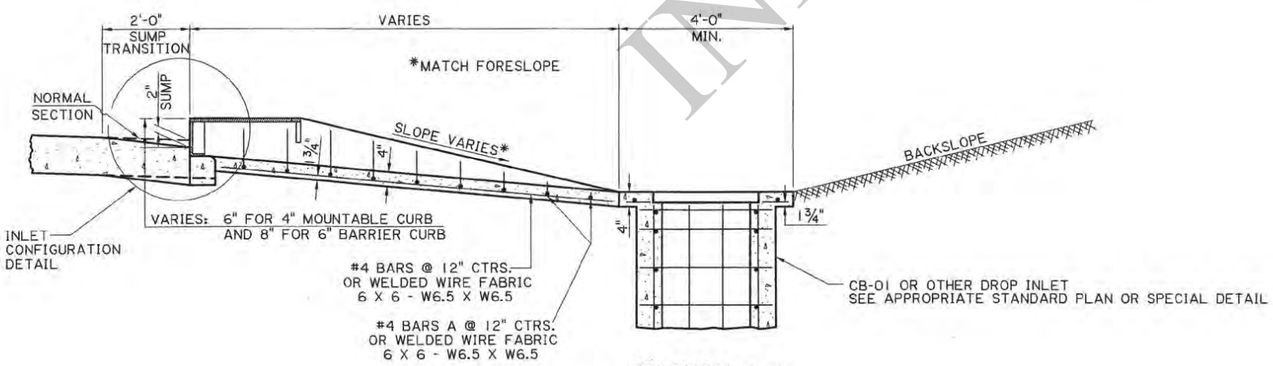
TRANSITION IN CURB HEIGHT
GUTTER DRAIN AT LOW POINT



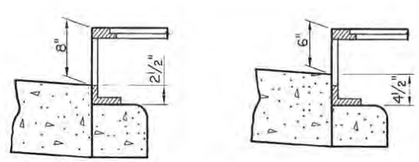
TRANSITION IN CURB WIDTH
(TYPICAL)



TRANSITION IN CURB HEIGHT
GUTTER DRAIN ON A GRADE



SECTION A-A



INLET CONFIGURATION

WHEN USED WITH 6" BARRIER CURB

WHEN USED WITH 4" MOUNTABLE CURB

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN | CHECK | DETAIL | CHECK | REVIEW | SERIES #

STATE OF LOUISIANA
MITRA HASHEMIEH
REG. No. 28546
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
9/11/2020
HYDRAULICS

STATE OF LOUISIANA
ADAM LANCASTER
REG. No. 35573
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
9/10/20
STRUCTURAL

APPROVED BY CHIEF ENGINEER: DATE: 9/22/2020

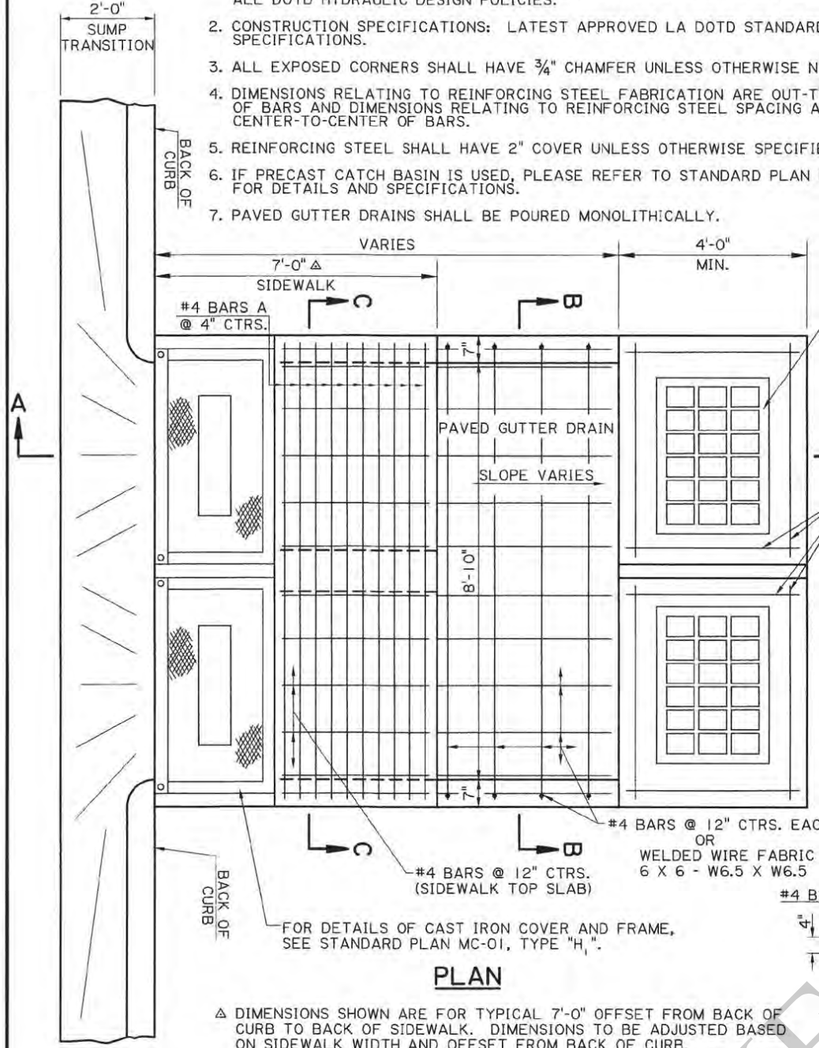
SINGLE PAVED GUTTER DRAIN

STANDARD PLAN: PG-DRAIN (SINGLE)

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
HYDRAULICS SECTION

GENERAL NOTES:

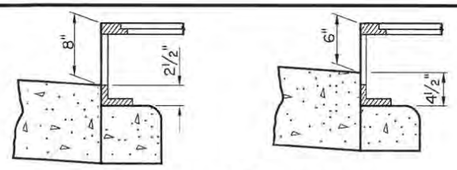
1. THIS STRUCTURE MEETS ALL DOTD HYDRAULIC PERFORMANCE CRITERIA WHEN USED IN ACCORDANCE WITH THE DOTD HYDRAULICS MANUAL AND ALL DOTD HYDRAULIC DESIGN POLICIES.
2. CONSTRUCTION SPECIFICATIONS: LATEST APPROVED LA DOTD STANDARD SPECIFICATIONS.
3. ALL EXPOSED CORNERS SHALL HAVE ¾" CHAMFER UNLESS OTHERWISE NOTED.
4. DIMENSIONS RELATING TO REINFORCING STEEL FABRICATION ARE OUT-TO-OUT OF BARS AND DIMENSIONS RELATING TO REINFORCING STEEL SPACING ARE CENTER-TO-CENTER OF BARS.
5. REINFORCING STEEL SHALL HAVE 2" COVER UNLESS OTHERWISE SPECIFIED.
6. IF PRECAST CATCH BASIN IS USED, PLEASE REFER TO STANDARD PLAN PC-01 FOR DETAILS AND SPECIFICATIONS.
7. PAVED GUTTER DRAINS SHALL BE POURED MONOLITHICALLY.



PLAN

Δ DIMENSIONS SHOWN ARE FOR TYPICAL 7'-0" OFFSET FROM BACK OF CURB TO BACK OF SIDEWALK. DIMENSIONS TO BE ADJUSTED BASED ON SIDEWALK WIDTH AND OFFSET FROM BACK OF CURB.

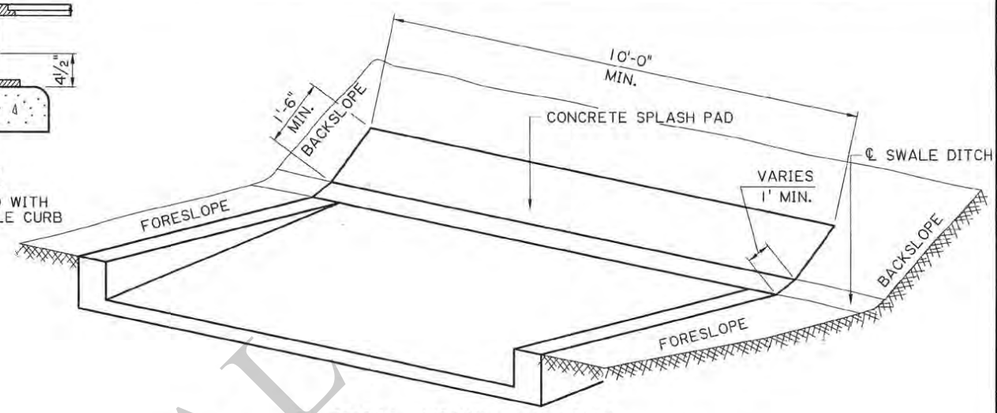
FOR GRATE AND FRAME DETAILS, SEE APPROPRIATE CATCH BASIN STANDARD PLAN OR SPECIAL DETAIL AND STANDARD PLAN MC-01.



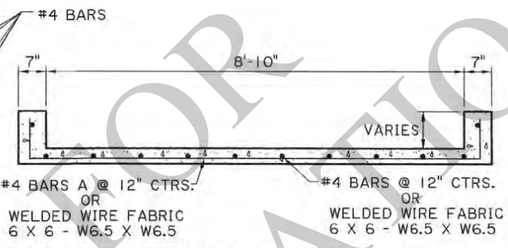
INLET CONFIGURATION

WHEN USED WITH 6" BARRIER CURB

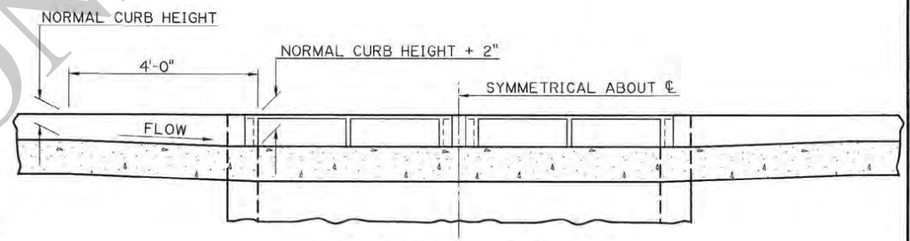
WHEN USED WITH 4" MOUNTABLE CURB



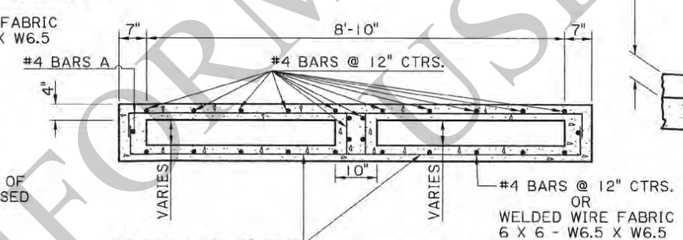
PARTIAL VIEW SHOWING PAVED GUTTER DRAIN WITHOUT DROP INLET



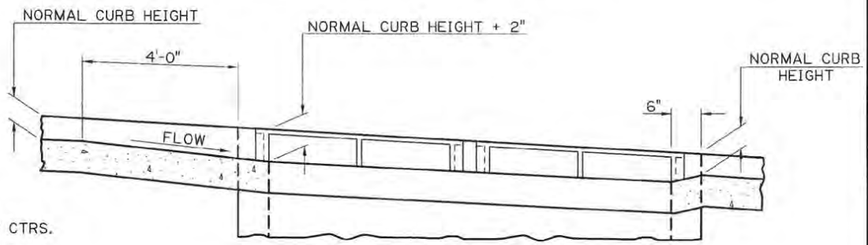
SECTION B-B



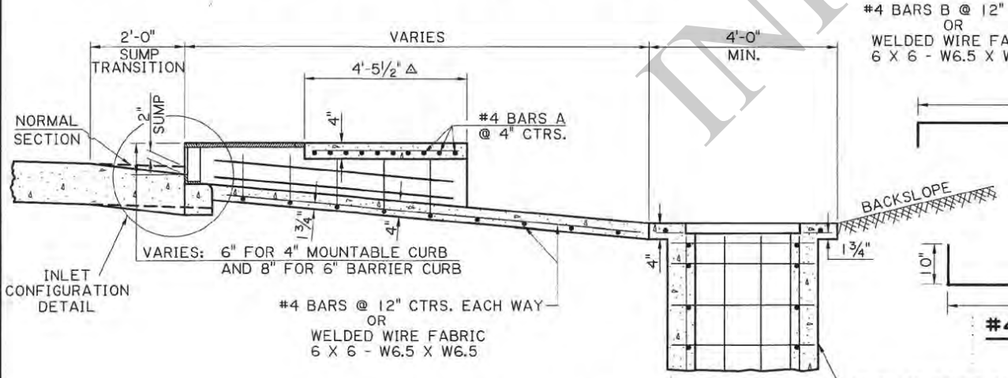
TRANSITION IN CURB HEIGHT GUTTER DRAIN AT LOW POINT



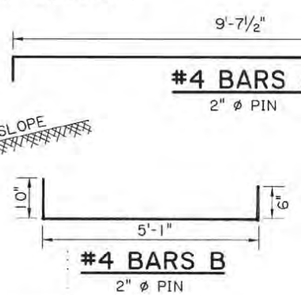
SECTION C-C

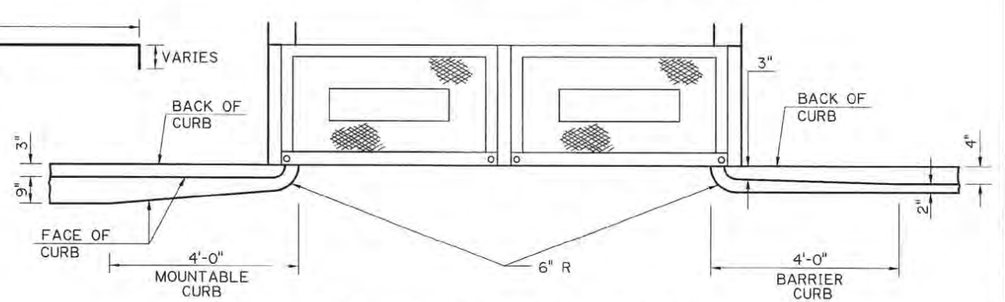


TRANSITION IN CURB HEIGHT GUTTER DRAIN ON A GRADE



SECTION A-A





TRANSITION IN CURB WIDTH

(TYPICAL)

FOR INFORMATIONAL PURPOSES ONLY

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN | CHECK | DETAIL | CHECK | REVIEW | SERIES #

STATE OF LOUISIANA
MITRA HASHEMIEH
REG. No. 28546
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
9/11/2020

HYDRAULICS

STATE OF LOUISIANA
ADAM LANCASTER
REG. No. 35573
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
9/10/20

STRUCTURAL

APPROVED BY CHIEF ENGINEER: DATE: 9/22/2020

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DOUBLE PAVED GUTTER DRAIN WITH SIDEWALK

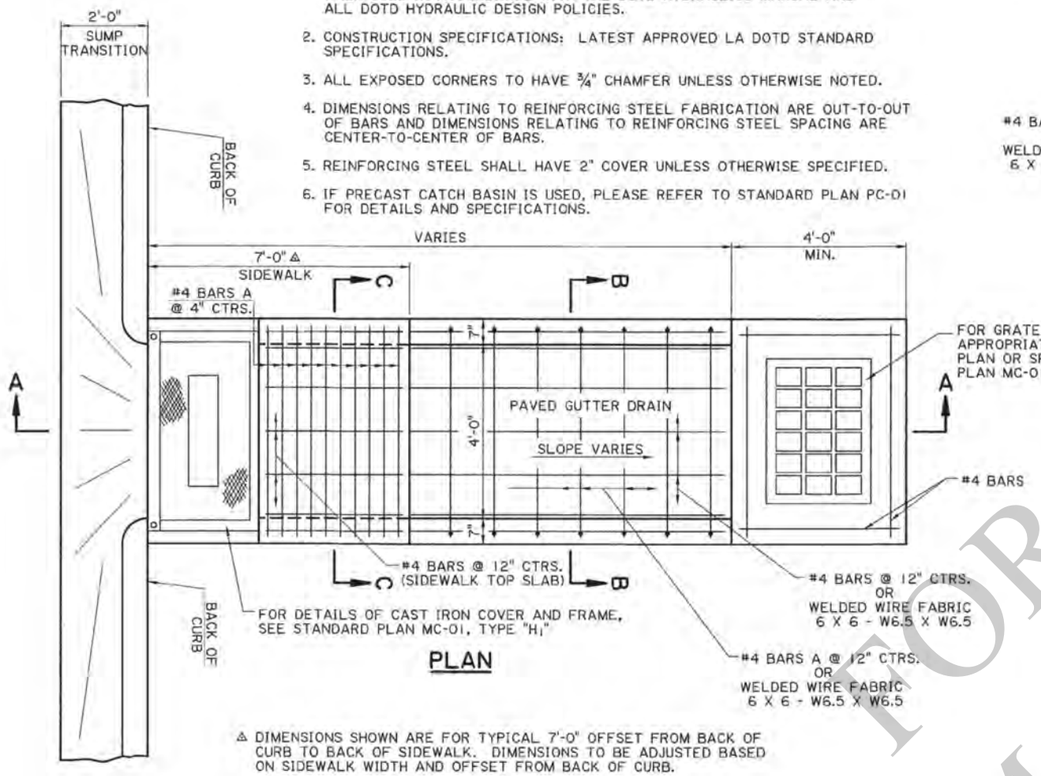
STANDARD PLAN | PG-DRAIN WITH SIDEWALK (DOUBLE)

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

HYDRAULICS SECTION

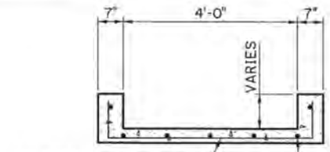
GENERAL NOTES:

1. THIS STRUCTURE MEETS ALL DOTD HYDRAULIC PERFORMANCE CRITERIA WHEN USED IN ACCORDANCE WITH THE DOTD HYDRAULICS MANUAL AND ALL DOTD HYDRAULIC DESIGN POLICIES.
2. CONSTRUCTION SPECIFICATIONS: LATEST APPROVED LA DOTD STANDARD SPECIFICATIONS.
3. ALL EXPOSED CORNERS TO HAVE ¾" CHAMFER UNLESS OTHERWISE NOTED.
4. DIMENSIONS RELATING TO REINFORCING STEEL FABRICATION ARE OUT-TO-OUT OF BARS AND DIMENSIONS RELATING TO REINFORCING STEEL SPACING ARE CENTER-TO-CENTER OF BARS.
5. REINFORCING STEEL SHALL HAVE 2" COVER UNLESS OTHERWISE SPECIFIED.
6. IF PRECAST CATCH BASIN IS USED, PLEASE REFER TO STANDARD PLAN PC-01 FOR DETAILS AND SPECIFICATIONS.

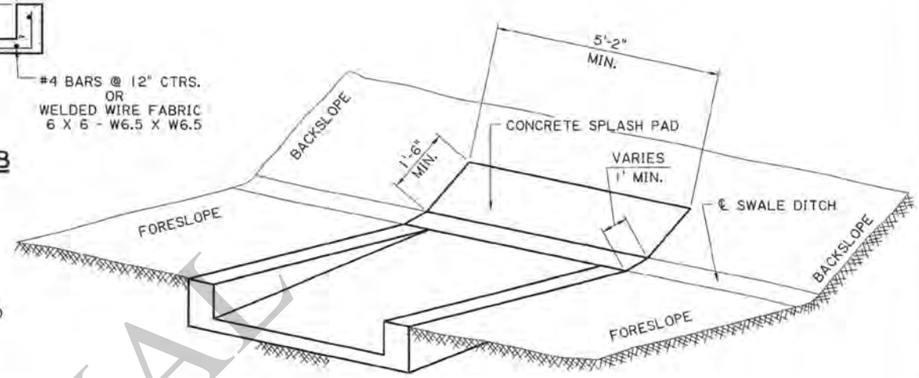


PLAN

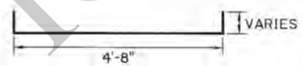
Δ DIMENSIONS SHOWN ARE FOR TYPICAL 7'-0" OFFSET FROM BACK OF CURB TO BACK OF SIDEWALK. DIMENSIONS TO BE ADJUSTED BASED ON SIDEWALK WIDTH AND OFFSET FROM BACK OF CURB.



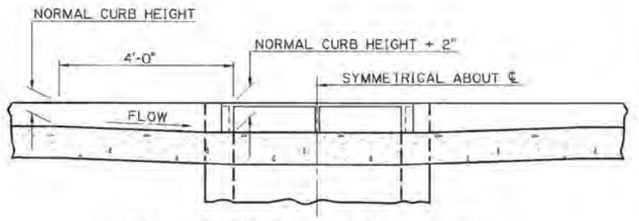
SECTION B-B



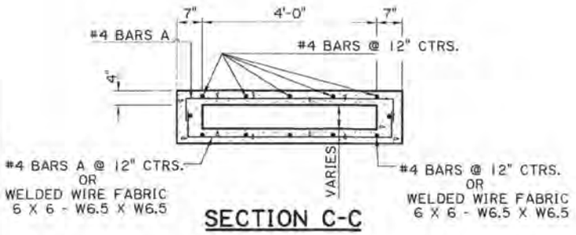
PARTIAL VIEW SHOWING
PAVED GUTTER DRAIN WITHOUT DROP INLET



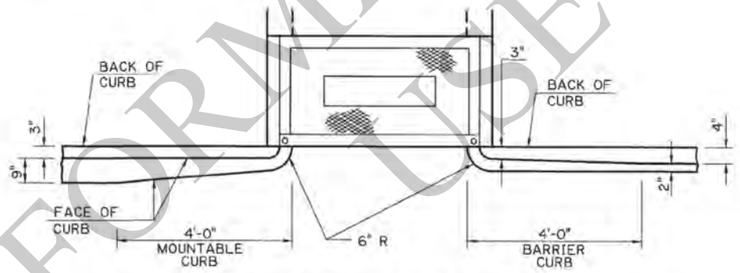
#4 BARS A
2" ø PIN



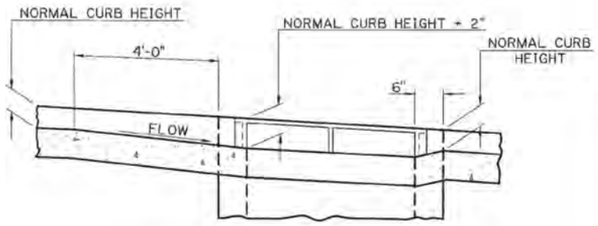
TRANSITION IN CURB HEIGHT
GUTTER DRAIN AT LOW POINT



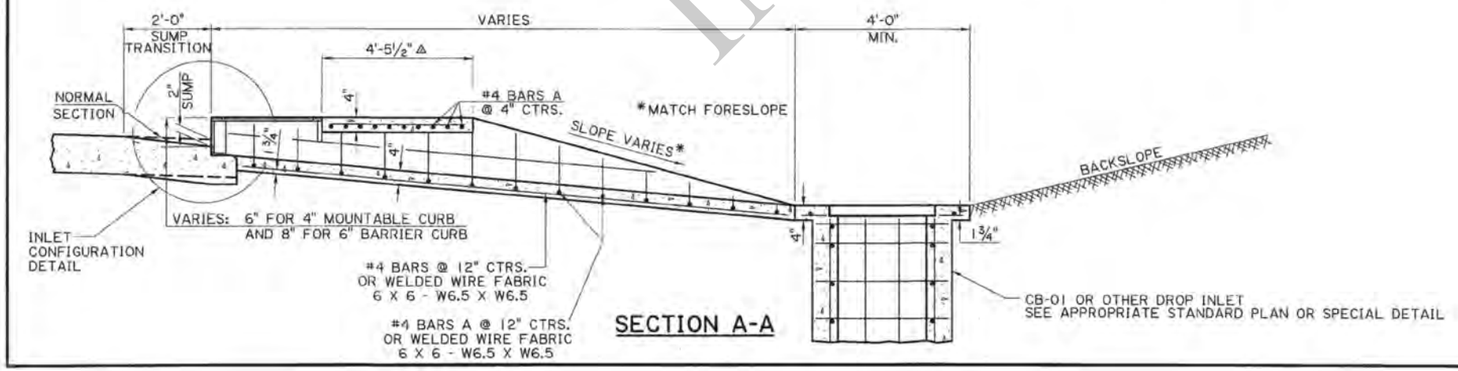
SECTION C-C



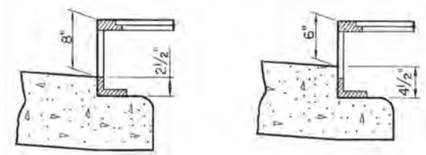
TRANSITION IN CURB WIDTH
(TYPICAL)



TRANSITION IN CURB HEIGHT
GUTTER DRAIN ON A GRADE



SECTION A-A



INLET CONFIGURATION

WHEN USED WITH 6" BARRIER CURB

WHEN USED WITH 4" MOUNTABLE CURB

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT #

DESIGN | CHECK | DETAIL | CHECK | REVIEW | SERIES #

STATE OF LOUISIANA
MITRA HASHEMIEH
REG. No. 28546
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
9/11/2020

HYDRAULICS

STATE OF LOUISIANA
ADAM LANCASTER
REG. No. 35573
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
9/10/20

STRUCTURAL

APPROVED BY DOTD ENGINEER: DATE: 9/22/2020

SINGLE PAVED GUTTER DRAIN WITH SIDEWALK

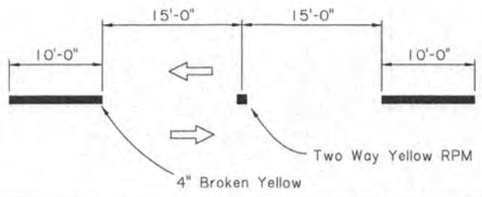
STANDARD PLAN NO. PG-DRAIN WITH SIDEWALK (SINGLE)

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

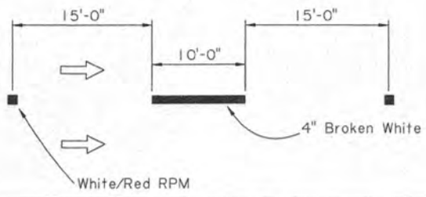
HYDRAULICS SECTION

9/21/2020 09:51

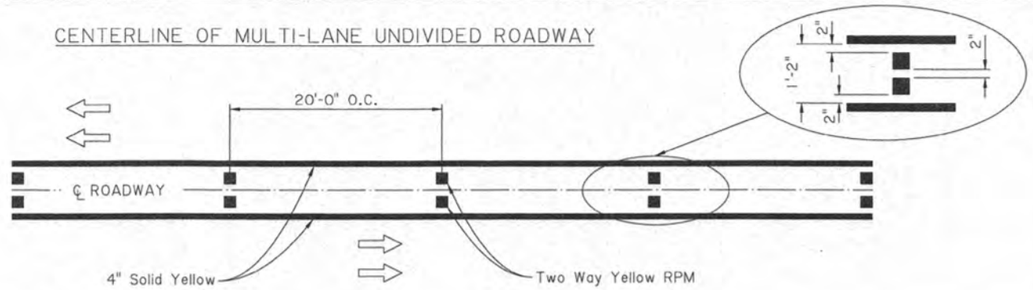
Ⓐ CENTERLINE OF TWO-LANE ROADWAY WITH TWO-WAY TRAFFIC



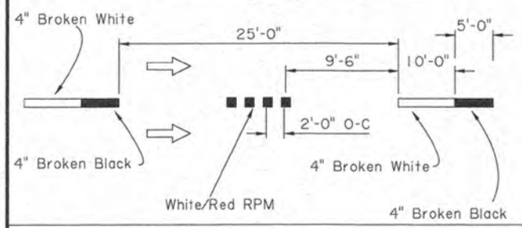
Ⓑ LANE LINE BETWEEN LANES OF TRAFFIC TRAVELING IN THE SAME DIRECTION



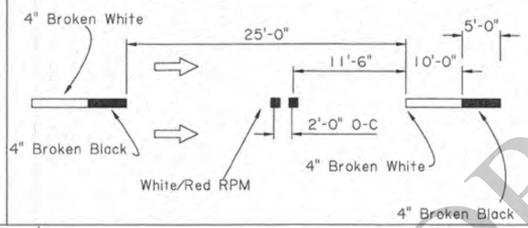
Ⓒ CENTERLINE OF MULTI-LANE UNDIVIDED ROADWAY



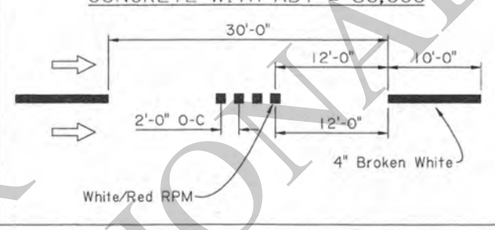
Ⓓ CONTRAST LANE LINE BETWEEN LANES ON PORTLAND CEMENT CONCRETE ADT ≥ 80,000



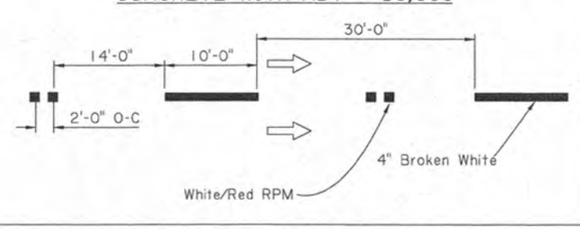
Ⓔ CONTRAST LANE LINE BETWEEN LANES ON PORTLAND CEMENT CONCRETE ADT < 80,000



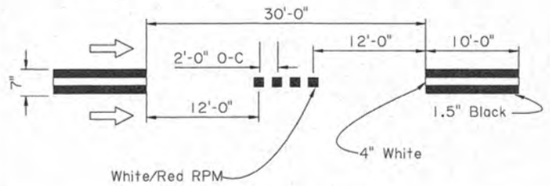
Ⓕ LANE LINE BETWEEN LANES ON ASPHALT CONCRETE WITH ADT ≥ 80,000



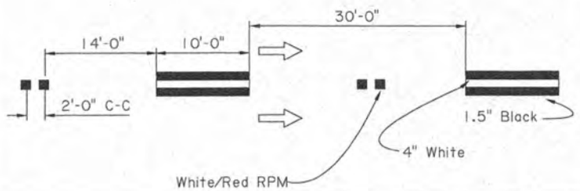
Ⓖ LANE LINE BETWEEN LANES ON ASPHALT CONCRETE WITH ADT < 80,000



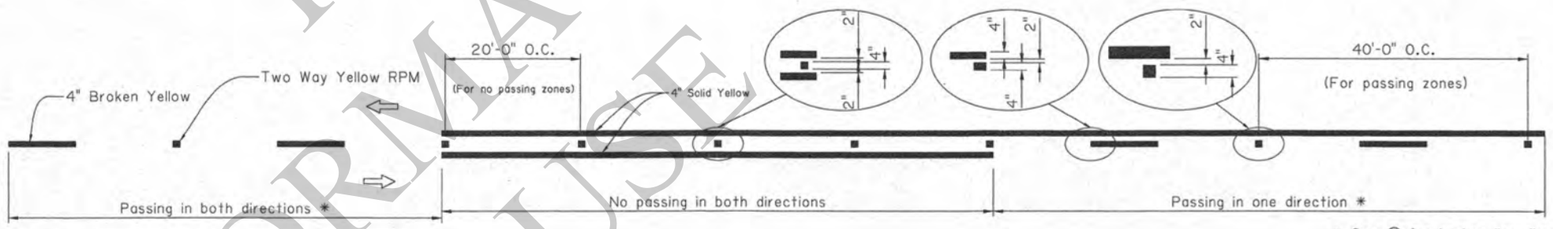
Ⓗ CONTRAST LANE LINE BETWEEN LANES ON PORTLAND CONCRETE ADT ≥ 80,000



Ⓙ CONTRAST LANE LINE BETWEEN LANES ON PORTLAND CONCRETE ADT < 80,000



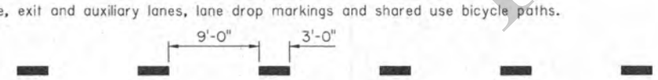
Ⓘ CENTERLINE OF TWO-LANE ROADWAY WITH TWO-WAY TRAFFIC WITH PASSING RESTRICTIONS



* See Ⓐ for broken line dimensions.

Ⓚ TYPE A DOTTED

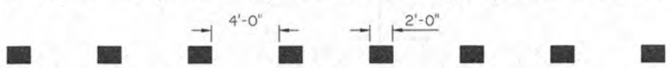
Used for entrance, exit and auxiliary lanes, lane drop markings and shared use bicycle paths.



Note: Width and color shall match line extending unless otherwise noted.

Ⓛ TYPE B DOTTED

Used for lane line extensions through intersections, turn lane taper markings, edge line extensions and bulb outs.



Note: Width and color shall match line extending unless otherwise noted.

GENERAL NOTES:

1. 4" Edge lines shall be placed on all roadways.
2. Place edge lines, centerlines and lane lines to avoid longitudinal joints as directed by the project engineer.
3. Edge lines in a curb and gutter section should be kept out of the gutter and clear from debris.
4. If rumble strips are used, striping details remain unchanged.
5. Centerlines shall be placed on roadways with a traveled way width of 16 feet or greater.
6. Where the clear width of a bridge is less than the clear width of the roadway, reflectorized pavement markers shall be placed adjacent to the edge line at 20' centers.
7. ⇨ indicates the direction of travel (not a pavement marker).
8. For non-interstate striping, use one Raised Reflectorized Pavement Marker.
9. White Reflectorized Pavement Marker faces same direction traffic and red faces opposing traffic.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGNED G. LEBLANC
CHECKED J. COLVIN
DETAILED K. WILLIAMS
CHECKED G. LEBLANC
DATE SHEET

DATE 2/28/19

APPROVED BY CHIEF ENGINEER

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

STATE OF LOUISIANA
GARY N. LeBLANC
REG. No. 28220
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

2-27-19

PM-01
Centerline and Edgeline Markings

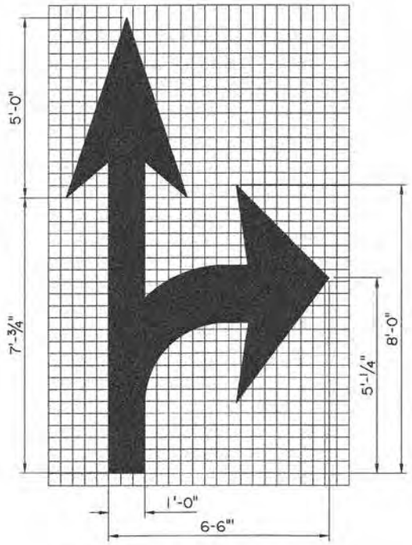
PAVEMENT MARKING DETAILS

DOTD TRAFFIC ENGINEERING

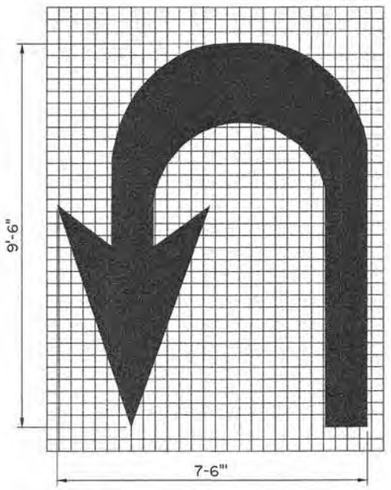
IP_PWP:dms12298\PM-01.dgn

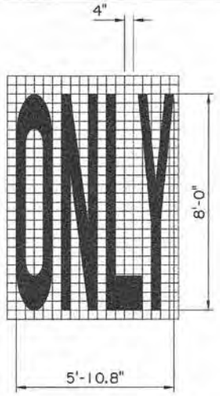
9/21/2020 09:51

Ⓐ TURN ARROW AND ONLY WORD MARKING

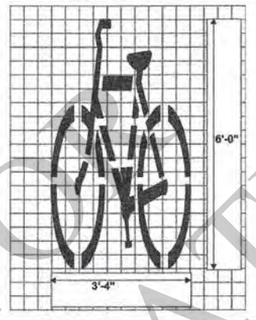


*For left turn arrow, use mirror image.

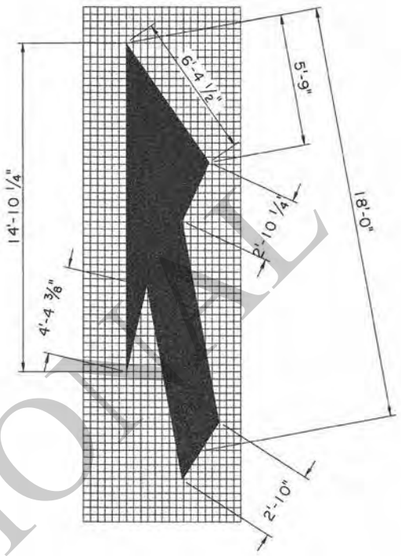




Ⓑ BIKE SYMBOL

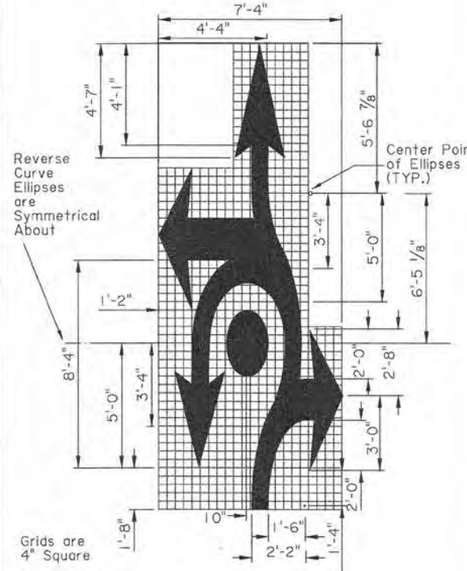


Ⓒ LANE REDUCTION ARROW



*For left lane reduction, use mirror image.

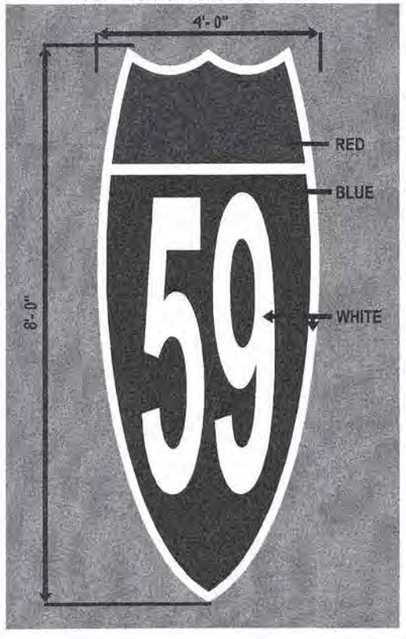
Ⓓ DIRECTIONAL ARROWS FOR ROUNDABOUTS (FISHHOOK)



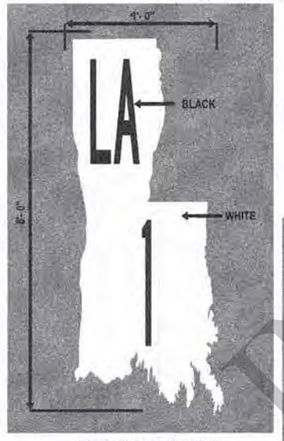
Assume Points Not Dimensioned to be Coincident with Grid Lines

Only Fishhook Combinations That Have Pay Items May Be Used.

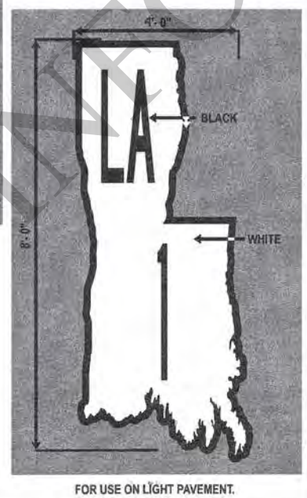
Ⓔ INTERSTATE SHIELD for Non-Interstate Use



Ⓕ STATE HIGHWAY SHIELDS for Non-Interstate Use

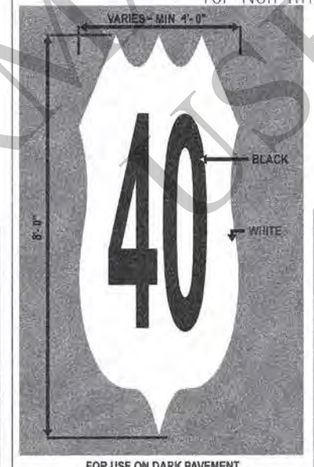


FOR USE ON DARK PAVEMENT.

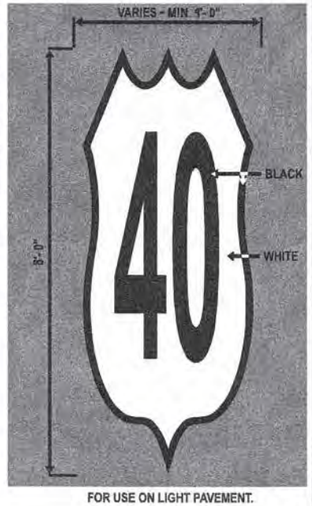


FOR USE ON LIGHT PAVEMENT.

Ⓖ STATE HIGHWAY SHIELDS for Non-Interstate Use

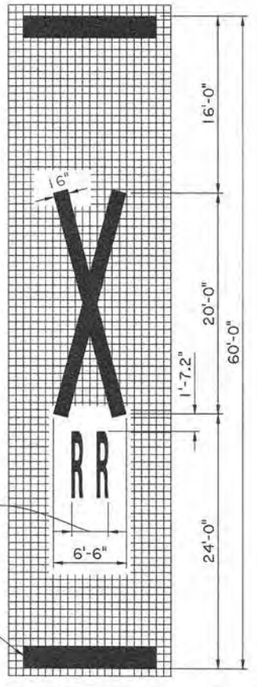


FOR USE ON DARK PAVEMENT.



FOR USE ON LIGHT PAVEMENT.

Ⓗ RAILROAD CROSSING PAVEMENT MARKINGS



STATE OF LOUISIANA
GARY N. LeBLANC
REG. No. 28220
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

2-27-19

FOR INFORMATIONAL PURPOSES ONLY

SHEET NUMBER	
PARISH	
CONTROL SECTION	
STATE PROJECT	
DESIGNED G. LEBLANC	
CHECKED J. COLVIN	
DETAILED K. WILLIAMS	
CHECKED G. LEBLANC	
DATE	
SHEET	

DATE 2/28/19

APPROVED BY CHIEF ENGINEER:

PM-02
Pavement Word and Symbol Markings for Non-Interstate Use

PAVEMENT MARKING DETAILS

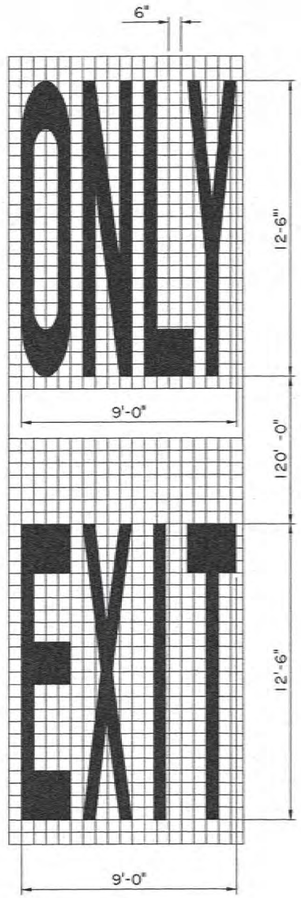
TRAFFIC ENGINEERING

IP_PWP:dms12298\PM-02.dgn

9/21/2020 09:52

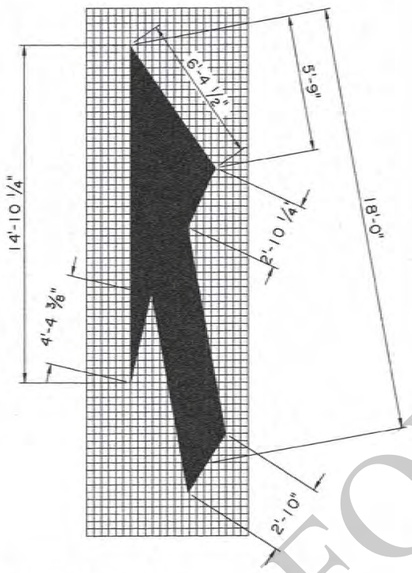
Ⓐ

EXIT ONLY WORD MARKING



Ⓑ

LANE REDUCTION ARROW

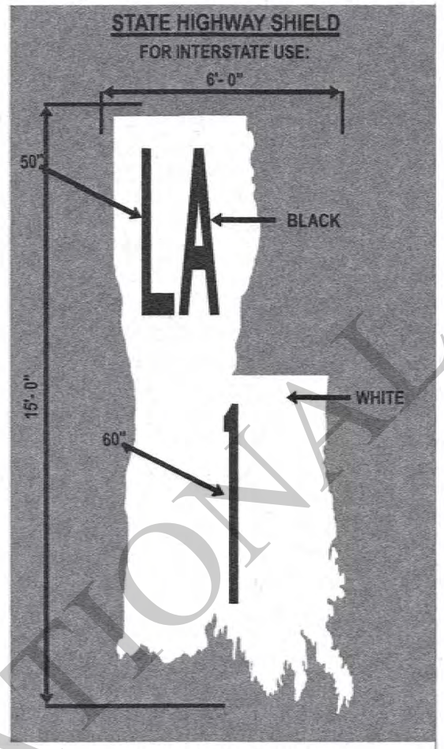


*For left lane reduction, use mirror image.

Ⓒ

STATE HIGHWAY SHIELD

FOR INTERSTATE USE:

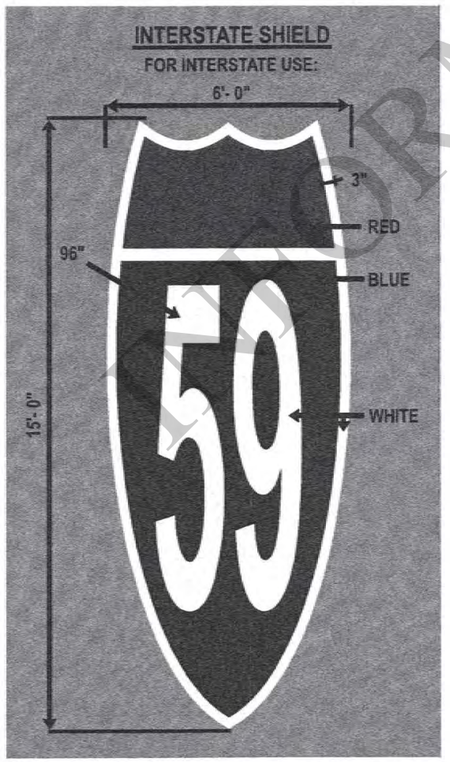


FOR USE ON DARK PAVEMENT.

Ⓓ

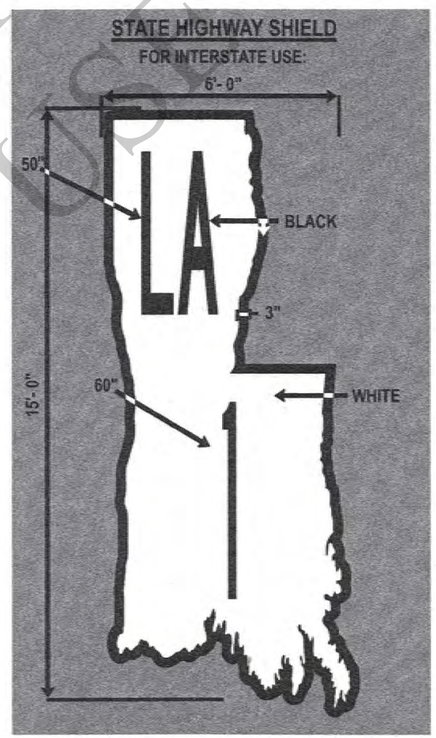
INTERSTATE SHIELD

FOR INTERSTATE USE:



STATE HIGHWAY SHIELD

FOR INTERSTATE USE:



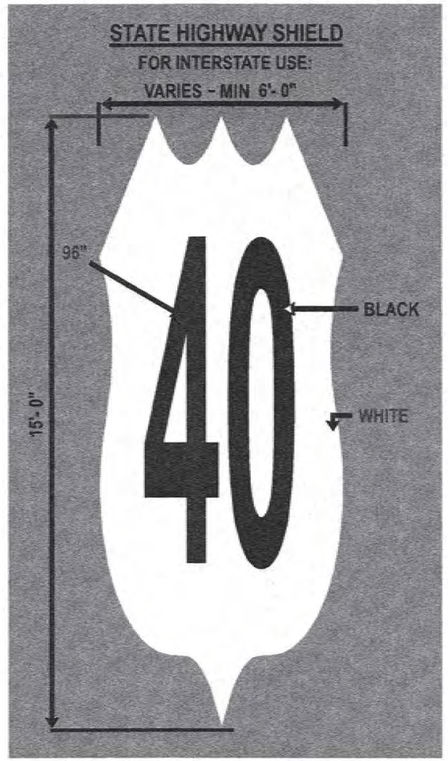
FOR USE ON LIGHT PAVEMENT.

Ⓔ

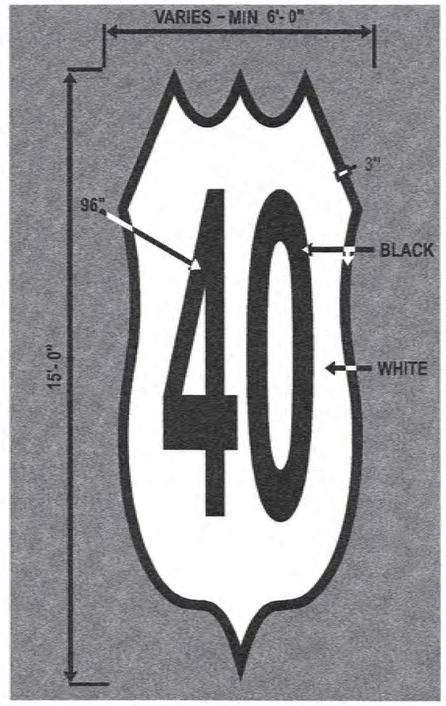
STATE HIGHWAY SHIELD

FOR INTERSTATE USE:

VARIES - MIN 6'-0"



FOR USE ON DARK PAVEMENT.



FOR USE ON LIGHT PAVEMENT.

FOR INFORMATIONAL USE

STATE OF LOUISIANA
GARY N. LeBLANC
REG. NO 28320
REGISTERED
PROFESSIONAL
ENGINEER
CIVIL ENGINEERING

2-27-19

SHEET NUMBER			
	PARISH	CONTROL SECTION	STATE PROJECT
DESIGNED G. LEBLANC CHECKED J. COLVIN			
DETAILED K. WILLIAMS CHECKED G. LEBLANC			
DATE	SHEET		

DATE 2/28/19

APPROVED BY CHIEF ENGINEER:

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

PM-03

Pavement Word and Symbol Markings for Interstate Use

TRAFFIC ENGINEERING | PAVEMENT MARKING DETAILS

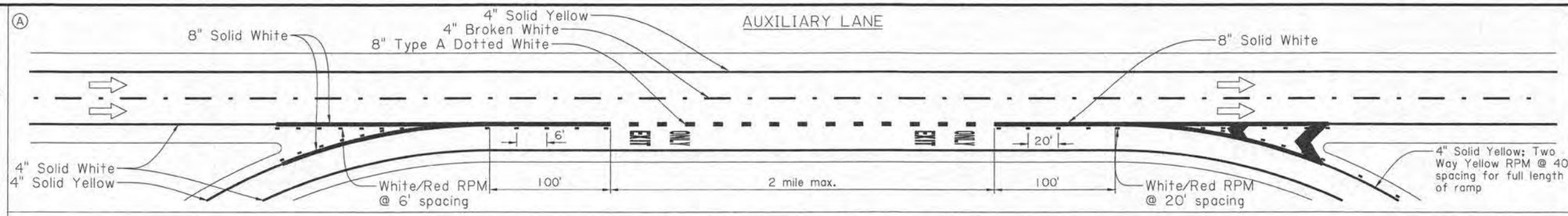
IP_PWP:dms12298\PM-03.dgn

09:52
9/21/2020

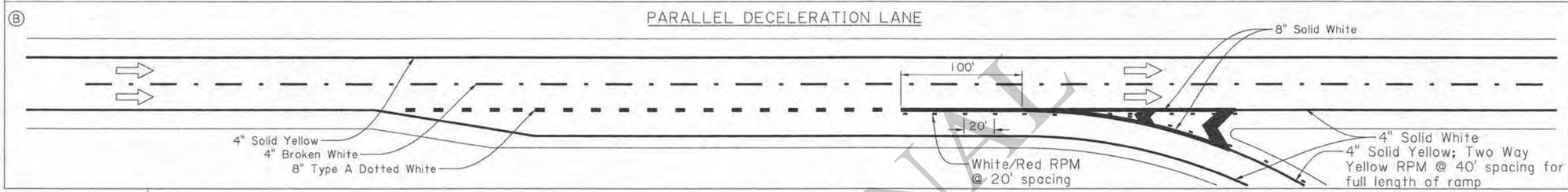
Note:

⇨ indicates the direction of travel (not a pavement marker).

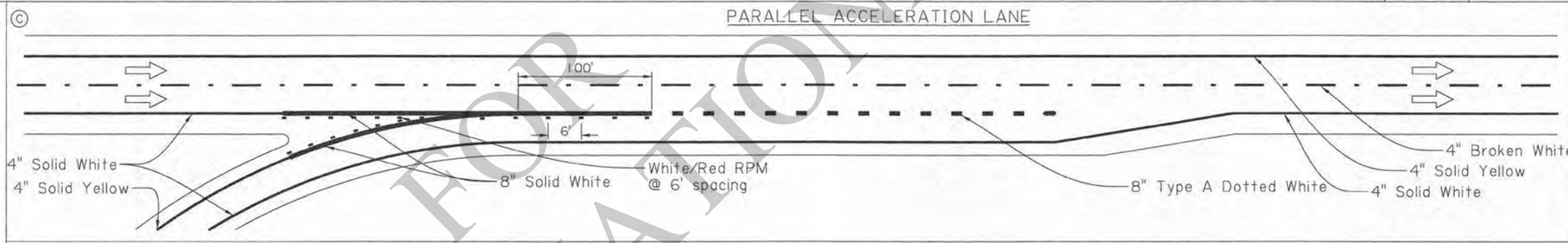
Ⓐ AUXILIARY LANE



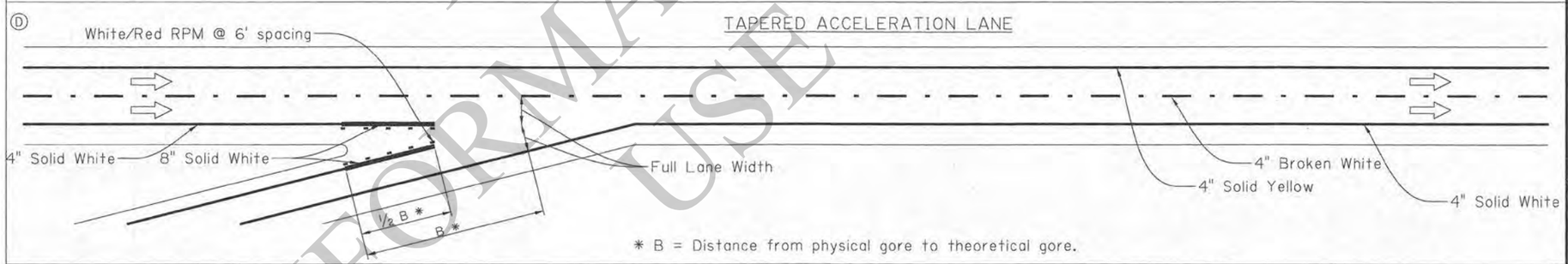
Ⓑ PARALLEL DECELERATION LANE



Ⓒ PARALLEL ACCELERATION LANE

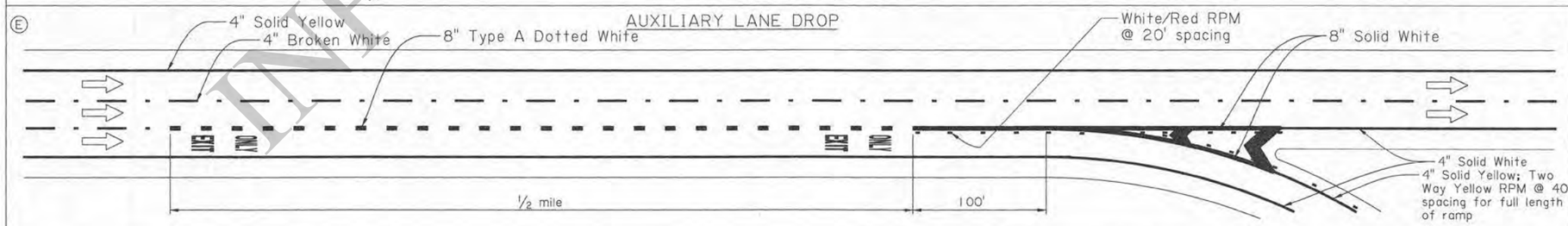


Ⓓ TAPERED ACCELERATION LANE

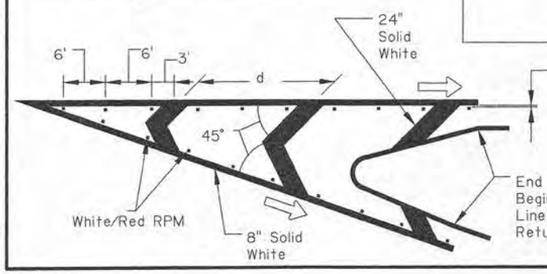


* B = Distance from physical gore to theoretical gore.

Ⓔ AUXILIARY LANE DROP



TYPICAL EXIT GORE MARKINGS



d	Mainline Speed
12'	45 MPH or Less
18'	50 or 55 MPH
24'	60 MPH or Above

FOR INFORMATIONAL USE

STATE OF LOUISIANA
GARY N. LeBLANC
REG. No. 26220
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

2-27-19

SHEET NUMBER		
PARISH	CONTROL SECTION	STATE PROJECT
DESIGNED G. LEBLANC CHECKED J. COLVIN	DETAILED K. WILLIAMS CHECKED G. LEBLANC	DATE SHEET

DATE 2/28/19

APPROVED BY CHIEF ENGINEER: Christopher P. Knotts

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

PM-04

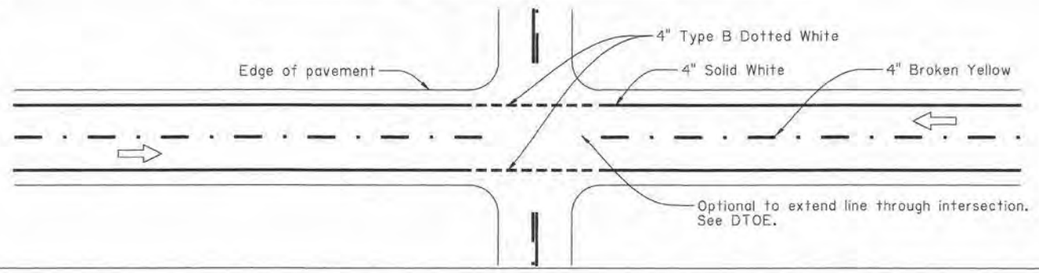
Auxiliary, Deceleration and Acceleration Lanes and Gore Striping Layouts

TRAFFIC ENGINEERING — PAVEMENT MARKING DETAILS

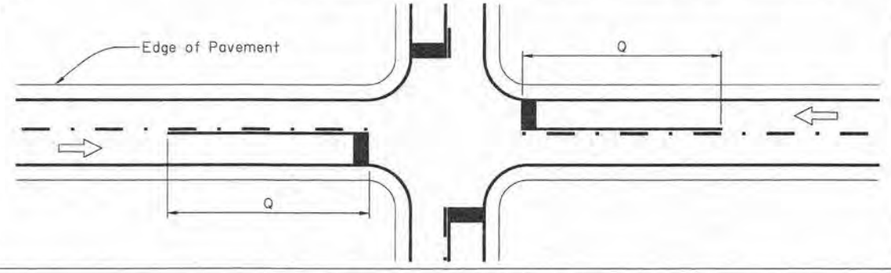
IP_PWP:dms12298\PM-04.dgn

9/21/2020 09:52

Ⓐ UNSIGNALIZED INTERSECTION ON TWO LANE ROADWAY

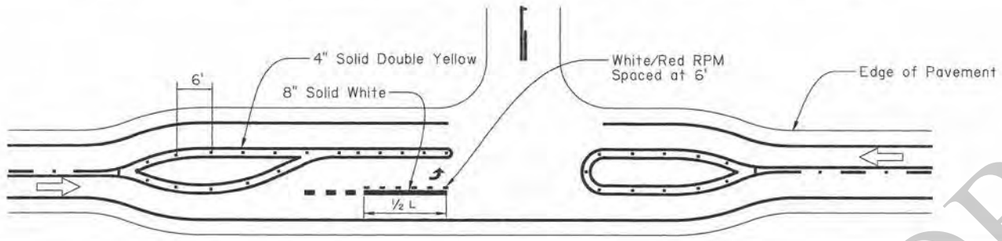


Ⓑ SIGNALIZED INTERSECTION ON TWO LANE ROADWAY

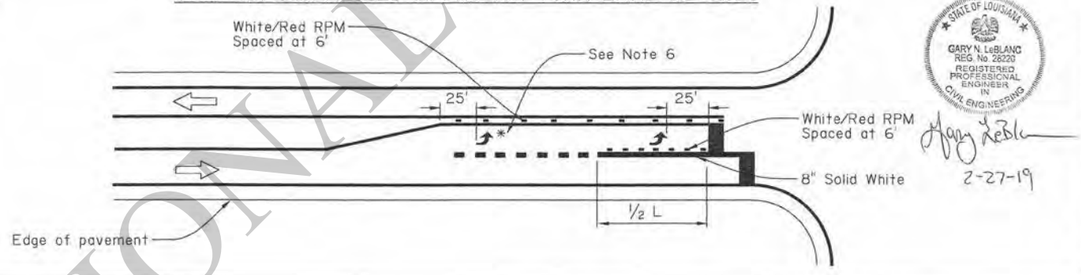


Speed Limit (mph)	Length Q (ft)
<40	100
40	125
45	175
50	250
55	325

Ⓒ UNSIGNALIZED APPROACH LEFT TURN LANE ON TWO LANE ROADWAY



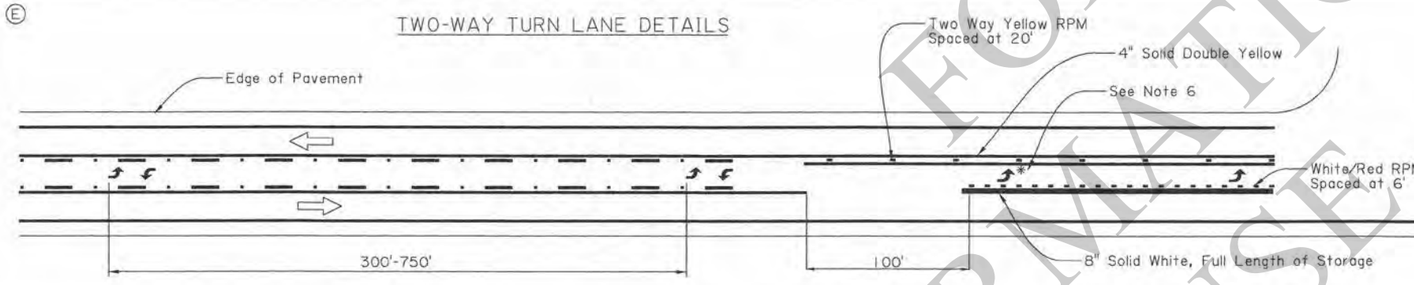
Ⓓ STOP OR SIGNALIZED APPROACH TURN LANE DETAILS

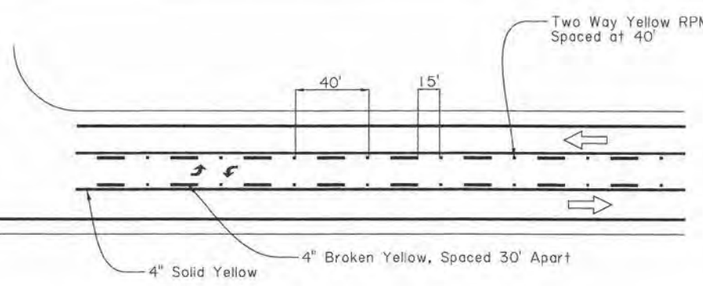


STATE OF LOUISIANA
GARY N. LeBLANC
REG. No. 26220
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

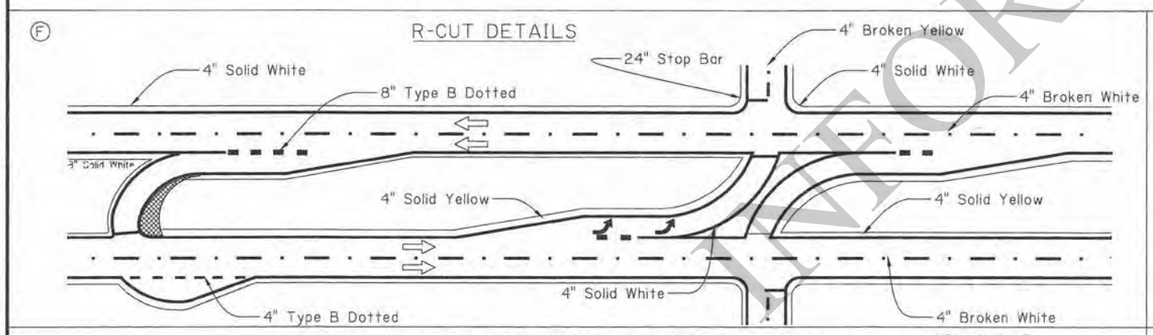
2-27-19

Ⓔ TWO-WAY TURN LANE DETAILS



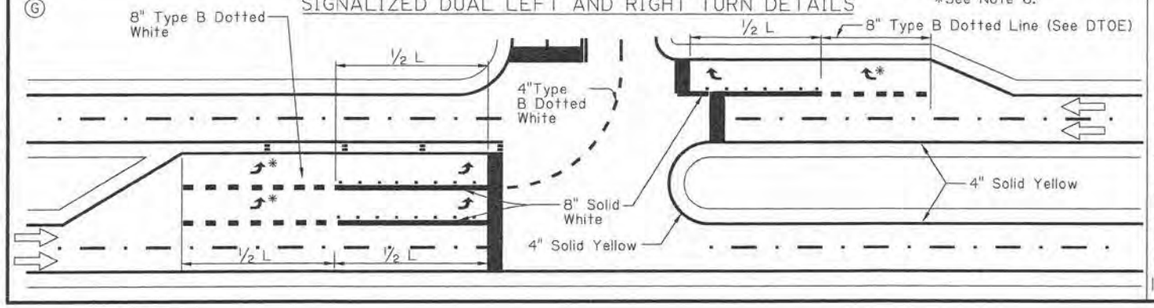


Ⓕ R-CUT DETAILS

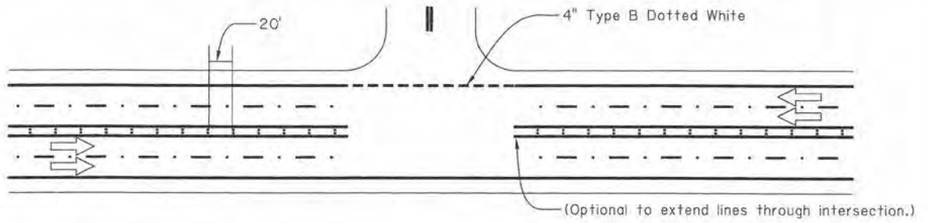


Ⓖ SIGNALIZED DUAL LEFT AND RIGHT TURN DETAILS

*See Note 6.



Ⓗ UNSIGNALIZED INTERSECTION ON A FOUR LANE UNDIVIDED ROADWAY



GENERAL NOTES:

1. If the minor street has edge lines, the edge lines on the major street shall wrap to meet the edge lines on the minor street.
2. Stop bars shall be 24". Stop bars shall not be placed at a distance greater than 30 feet or less than 4 feet from the nearest edge line. Stop bars at right turn lanes should be placed to provide adequate sight distance for right turning traffic.
3. The location of stop bars at left turn lanes should be determined by the turning radius needed by the side street vehicles.
4. See PM-01 for centerline and lane line details.
5. The ONLY word marking shall be used when a through lane terminates as a turn lane.
6. The asterisk (*) indicates that 2nd arrow is optional. If more than two arrows are used, minimum spacing should be 150'.
7. Edge lines should not be broken for driveways.
8. ⇨ indicates the direction of travel (not a pavement marker).
9. L equals the full length of turn lane.
10. Use of dotted lines require DTOE approval.

FOR INFORMATIONAL USE

SHEET NUMBER	
PARISH	
CONTROL SECTION	
STATE PROJECT	
DESIGNED	G. LEBLANC
CHECKED	J. COLVIN
DETAILED	K. WILLIAMS
CHECKED	G. LEBLANC
DATE	2/28/19
SHEET	

APPROVED BY CHIEF ENGINEER:

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

PM-05

Typical Intersection Striping Layouts

PAVEMENT MARKING DETAILS

DOTD TRAFFIC ENGINEERING

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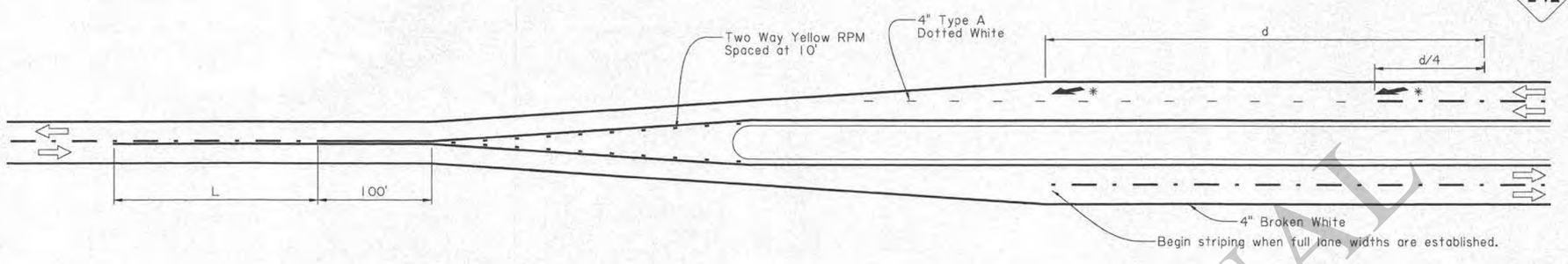
9/21/2020 09:52

Ⓐ

TWO LANE TO FOUR LANE DIVIDED HIGHWAY

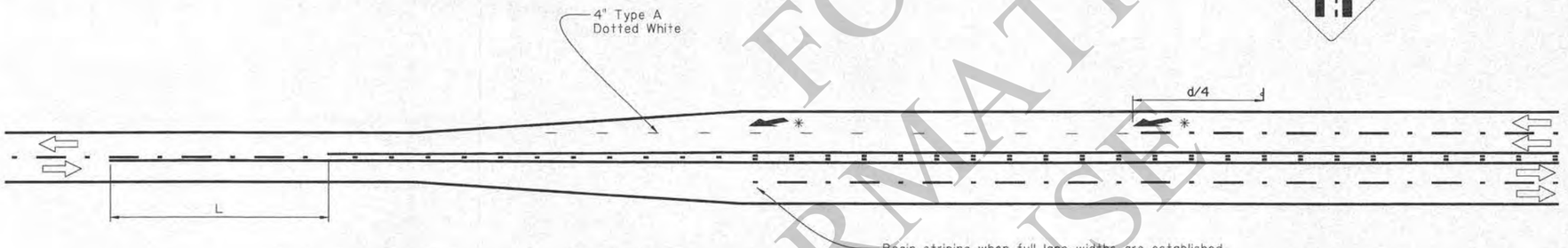


* No more than two reduction arrows shall be used per lane reduction.

85th Percentile or Speed Limit (mph)	Length of No Passing Minimum (L in feet)
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550

Ⓑ

TWO LANE TO FOUR LANE UNDIVIDED HIGHWAY

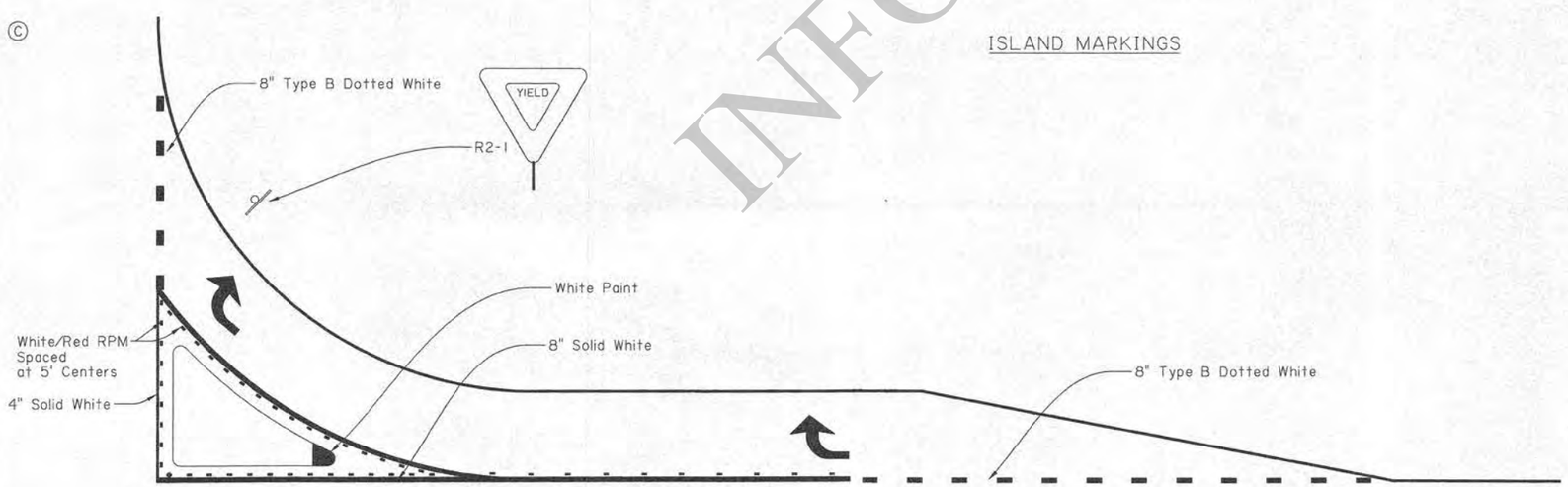


* No more than two reduction arrows shall be used per lane reduction.

85th Percentile or Speed Limit (mph)	Distance, d (ft)
20	225
25	325
30	460
35	565
40	670
45	775
50	885
55	990
60	1100
65	1200
70	1250

Ⓒ

ISLAND MARKINGS



General Notes:

1. ⇨ indicates direction of travel (not a pavement marker).
2. See PM-01 for centerline and lane line details.
3. All dotted lines are optional with DTOE Approval.
4. White paint for island marking shall be a minimum of 2' width or as directed by DTOE.

STATE OF LOUISIANA
GARY N. LeBLANC
REG. No. 28228
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

2-27-19

FOR INFORMATIONAL USE

SHEET NUMBER		
PARISH	CONTROL SECTION	STATE PROJECT
DESIGNED G. LEBLANC CHECKED J. COLVIN	DETAILED K. WILLIAMS CHECKED G. LEBLANC	DATE SHEET

DATE 2/28/19

APPROVED BY CHIEF ENGINEER:

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

PM-06

Lane Reduction and Island Layouts

PAVEMENT MARKING DETAILS

DOTD

TRAFFIC ENGINEERING

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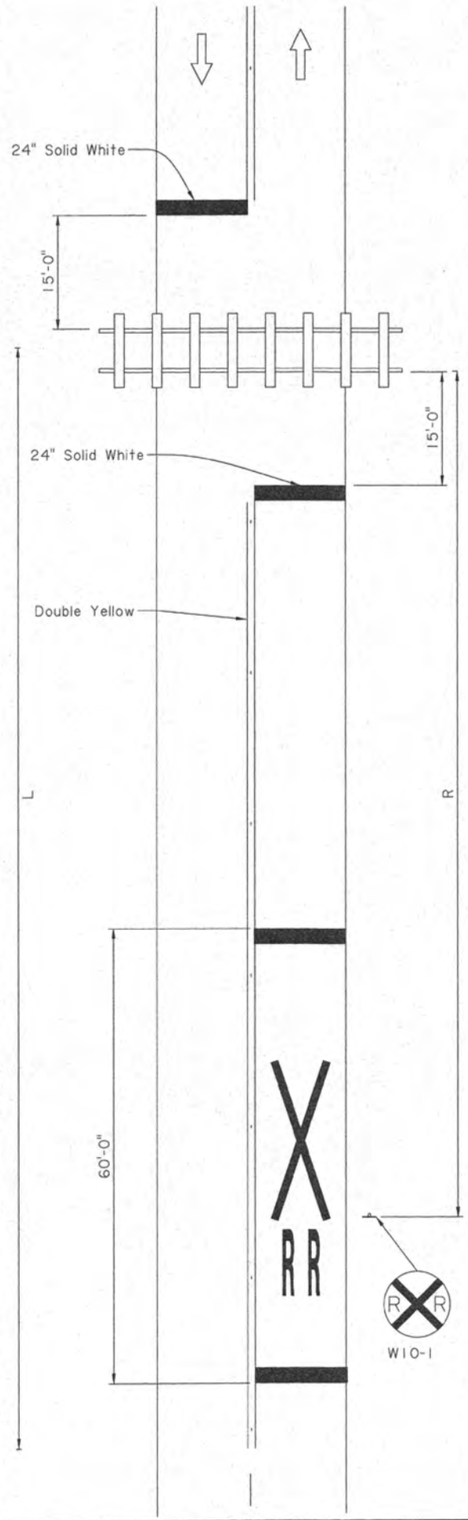
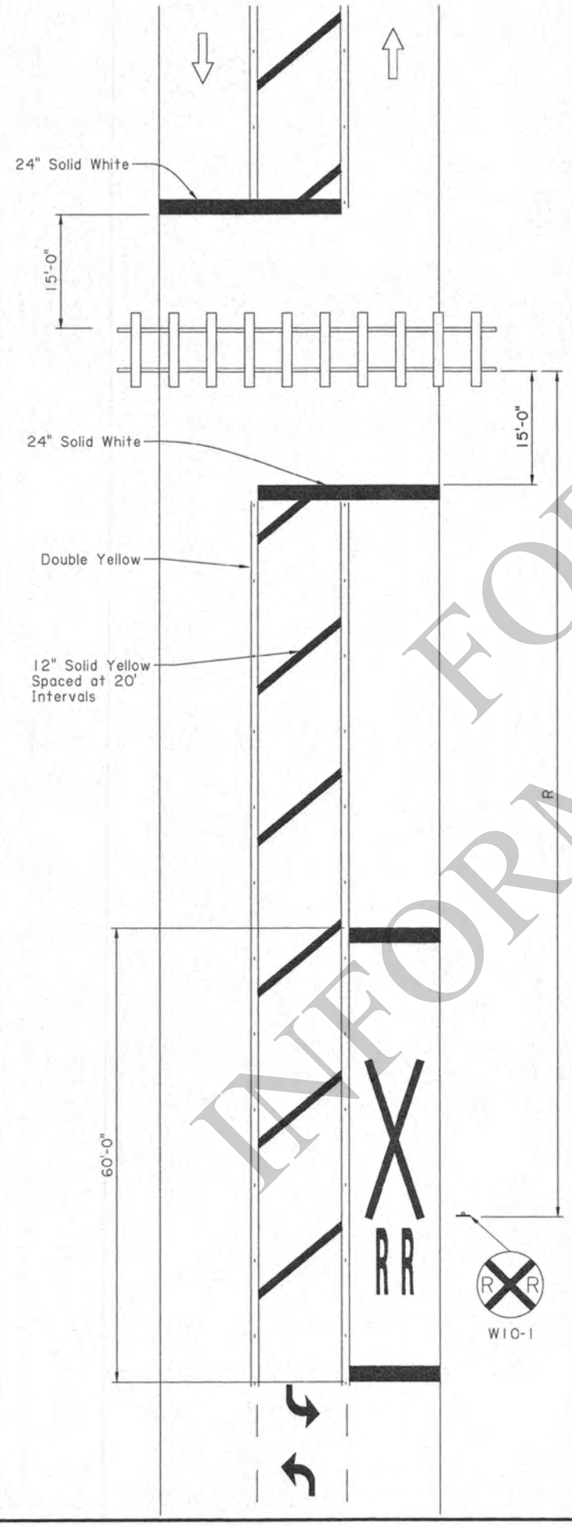
9/21/2020 09:53

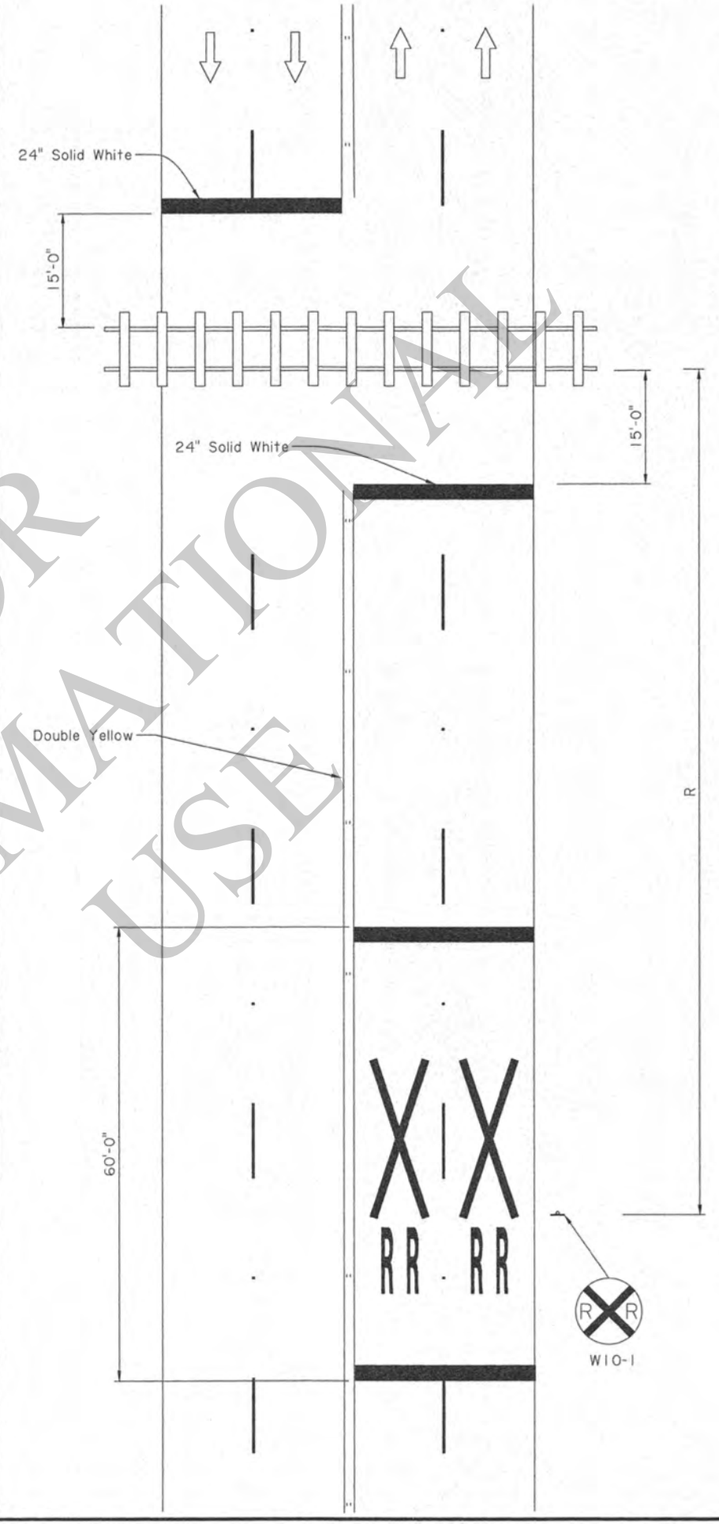
TWO-LANE ROADWAY



THREE-LANE ROADWAY



FOUR-LANE ROADWAY



85th Percentile Speed or Design Speed (mph)	Length of No Passing Zone (L)
25	285'
30	315'
35	335'
40	360'
45	410'
50	460'
≥55	560'

85th Percentile Speed or Posted Speed (mph)	Advanced Placement of Warning Sign (R)
20	100'
25	100'
30	100'
35	100'
40	125'
45	175'
50	250'
55	325'
60	400'
65	475'

Notes:

1. ⇨ indicates the direction of travel (not a pavement marker).
2. No Passing Zone is measured from center of tracks.

STATE OF LOUISIANA
GARY N. LeBLANC
REG. No. 28220
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
2-27-19

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGNED / CHECKED	DETAILED / CHECKED	DATE / SHEET
G. LEBLANC / J. COLVIN	K. WILLIAMS / G. LEBLANC	

DATE 2/28/19

APPROVED BY CHIEF ENGINEER:

STATE OF LOUISIANA

PM-07

Railroad Crossing Layout

PAVEMENT MARKING DETAILS

DOTD

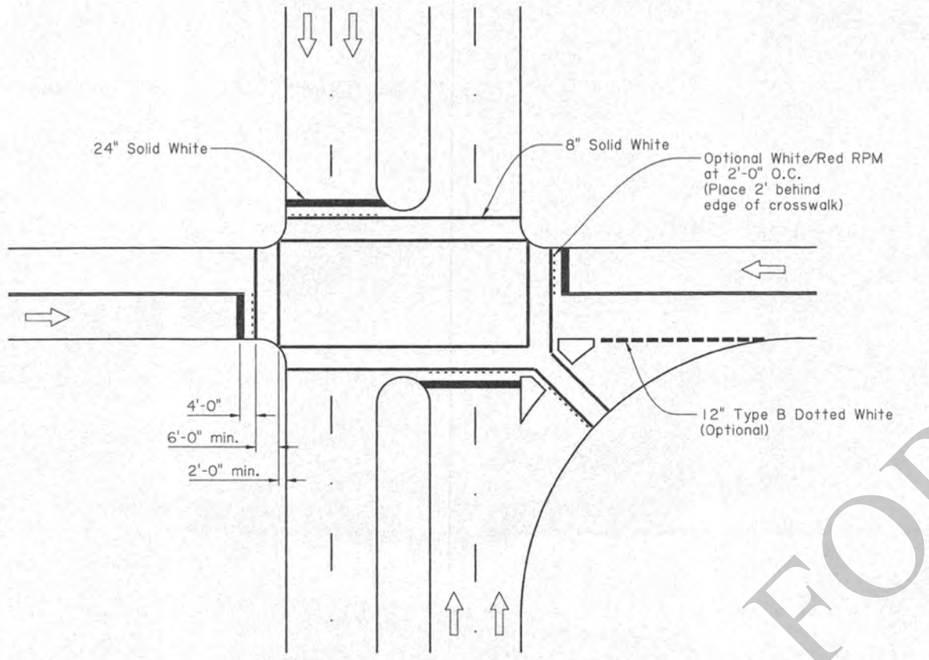
TRAFFIC ENGINEERING

IP_PWP:dms12298\PM-07.dgn

9/21/2020 09:53
11:15
IP_PWP:dms12298\PM-08.dgn

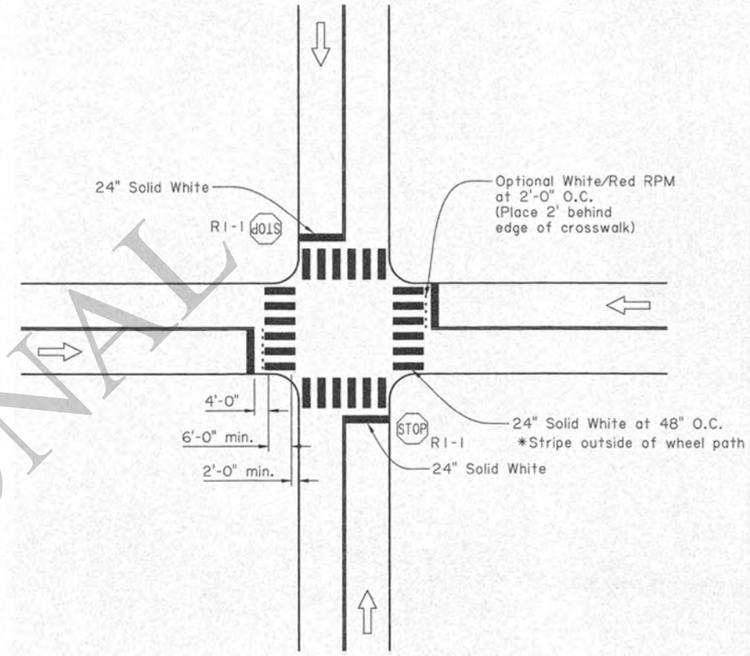
Ⓐ

CROSSWALK MARKINGS AT SIGNALIZED INTERSECTION



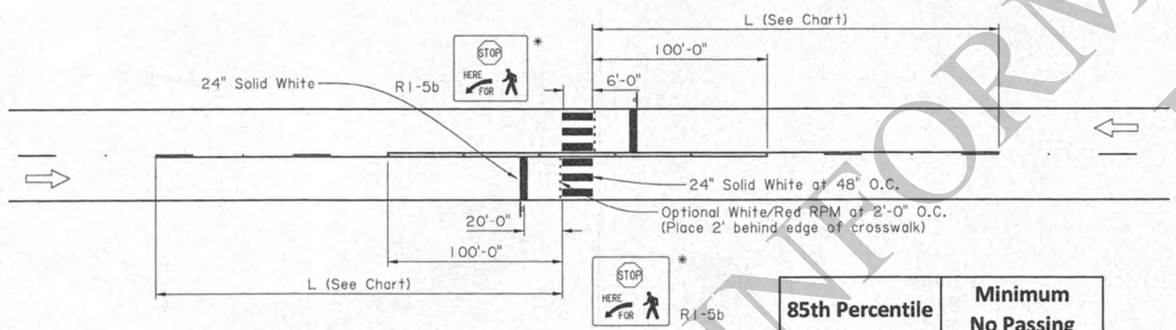
Ⓑ

CROSSWALK MARKINGS AT UNSIGNALIZED INTERSECTION



Ⓒ

MID-BLOCK CROSSWALK MARKINGS

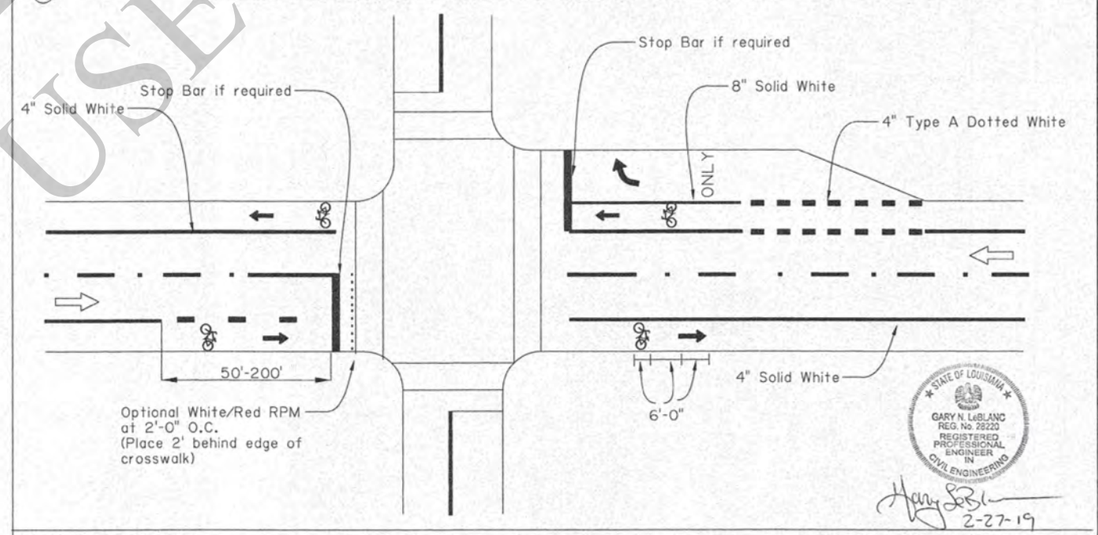


85th Percentile or Speed Limit (mph)	Minimum No Passing on Approach (L in feet)
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550

*If within a school zone, sign may be changed to the In Street Schoolchildren Crossing (R1-6c) sign.

Ⓓ

BIKE LANE AT INTERSECTION WITH RIGHT TURN LANE



GENERAL NOTES:

1. All new and existing crosswalk placement shall require approval by the DTOE and justification through an engineering study.
2. If the width of the existing sidewalk is greater than 6 feet, the width of the crosswalk should match the width of the sidewalk.
3. ⇨ indicates direction of travel (not a pavement marker).
4. Bicycle pavement markings should be placed at the beginning of bike lanes, before and after each intersection with a minimum spacing of 100 ft in urban areas to a maximum of 1000 feet in suburban areas.

FOR INFORMATIONAL USE

SHEET NUMBER		
PARISH	CONTROL SECTION	STATE PROJECT
DESIGNED G. LEBLANC CHECKED J. COLVIN	DETAILED K. WILLIAMS CHECKED G. LEBLANC	DATE SHEET

DATE 9/28/19

APPROVED BY CHIEF ENGINEER:

PM-08

Pedestrian/Bike Striping Layout

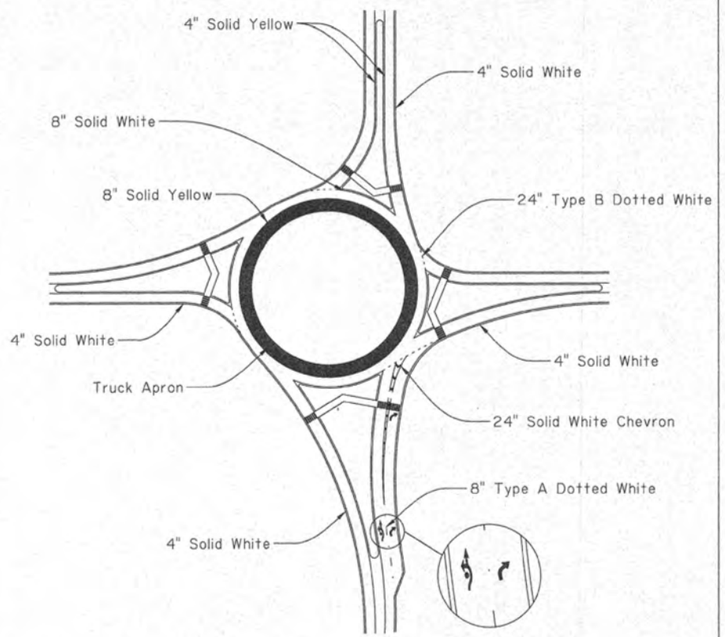
PAVEMENT MARKING DETAILS

DOTD

TRAFFIC ENGINEERING

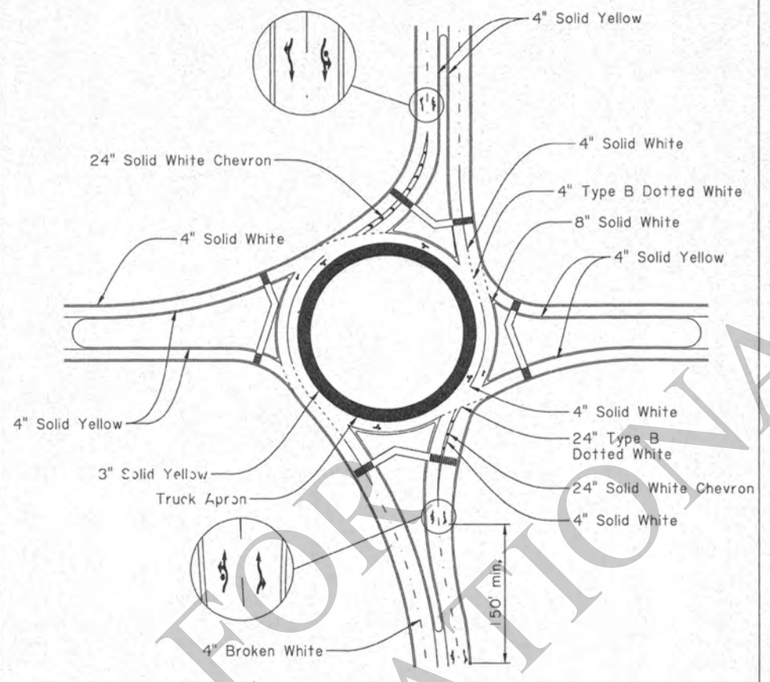
9/21/2020 09:53

(A) ONE-LANE ROUNDABOUT

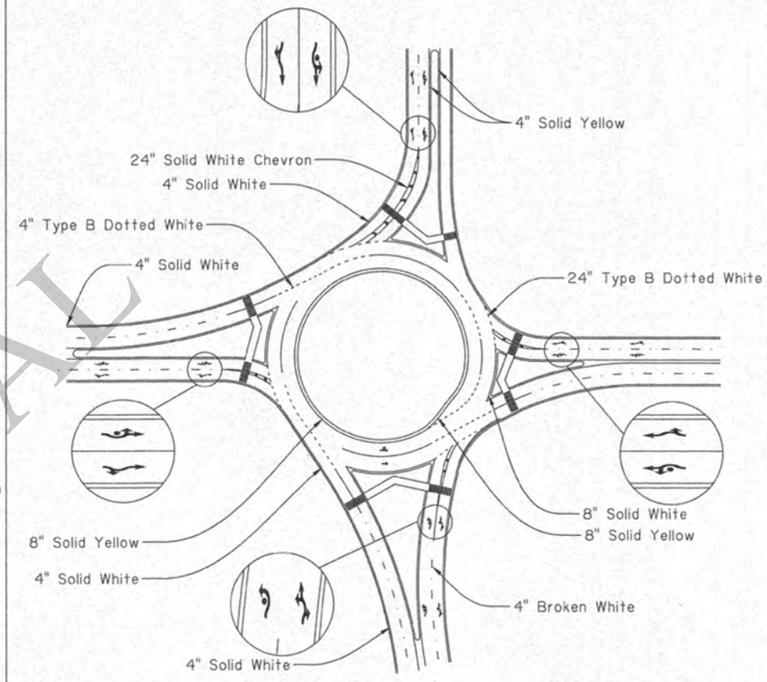


Note: No arrow pavement markings are to be used on single lane approaches.

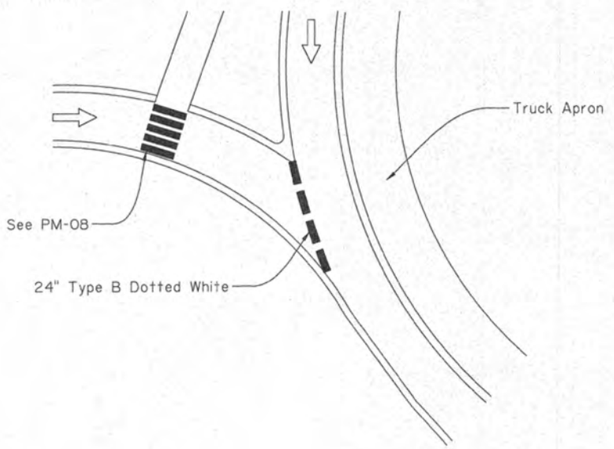
(B) TWO-LANE ROUNDABOUT WITH ONE AND TWO LANE APPROACHES



(C) TWO-LANE ROUNDABOUT



(D) APPROACH DETAILS



Note: ⇨ indicates direction of travel (not a pavement marker).

(E) COMPONENT KEY

The labeled areas above correspond to the portions needed for each type of roundabout traffic arrow.

"C" should only be used in the inside lane.

GENERAL NOTES:

1. Each roundabout approach shall have two sets of arrows. The first set shall be located at the guide sign. The second set shall be located at the theoretical gore of the splitter island.
2. Crosswalks shall be placed a minimum of 20 feet from the edge line of the circulatory roadway. See PM-08 for crosswalk details.
3. See PM-02 for fishhook details.
4. See PM-06 for island details.

STATE OF LOUISIANA
GARY N. LeBLANC
REG. No. 28220
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

2-27-19

FOR INFORMATIONAL USE

SHEET NUMBER		
PARISH	CONTROL SECTION	STATE PROJECT
DESIGNED G. LEBLANC CHECKED J. COLVIN	DETAILED K. WILLIAMS CHECKED G. LEBLANC	
DATE	SHEET	

DATE 4/28/19

APPROVED BY CHIEF ENGINEER: Christopher P. Knotts

PM-09

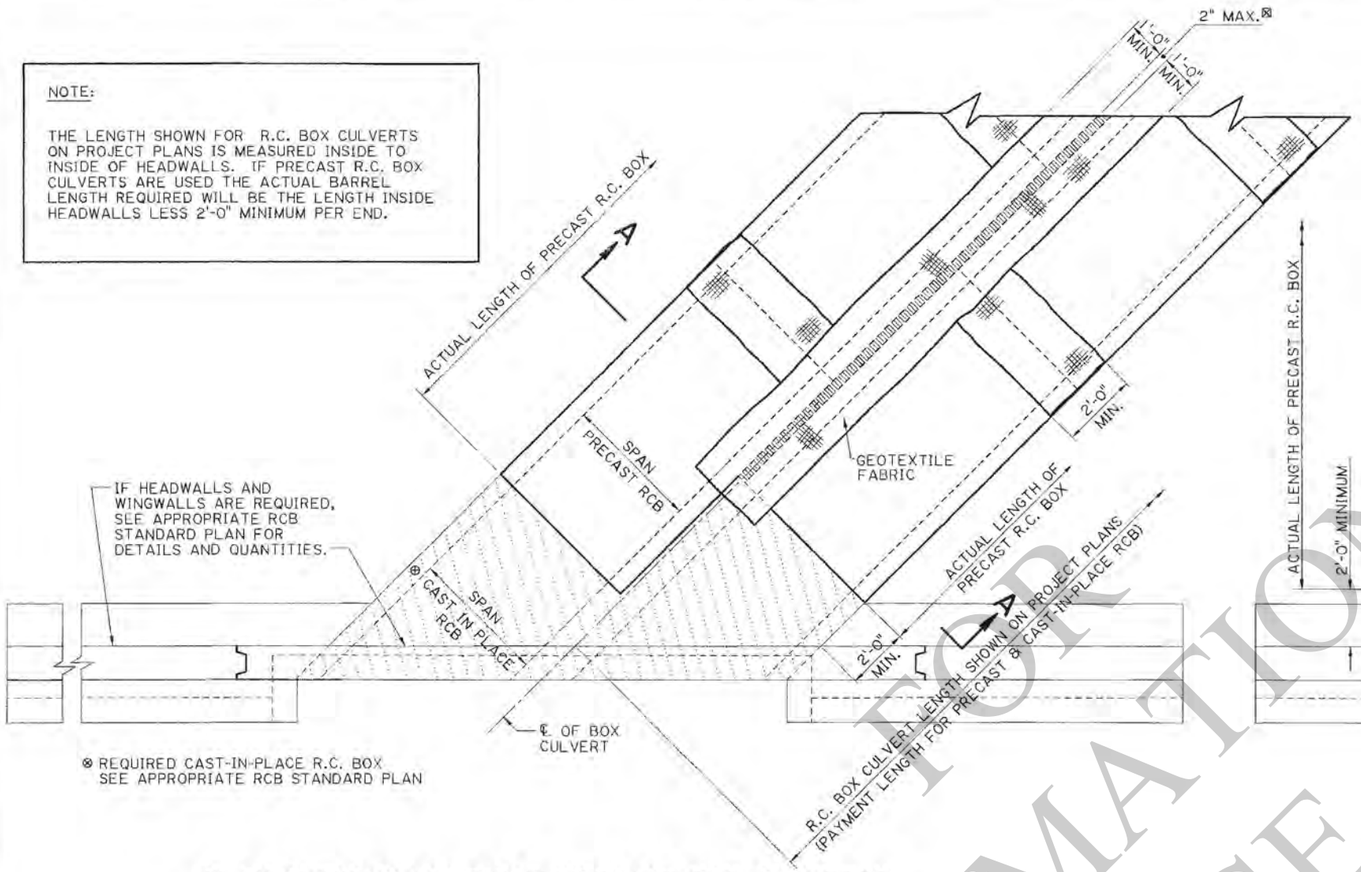
Roundabout Striping Layout

PAVEMENT MARKING DETAILS

DOTD TRAFFIC ENGINEERING

NOTE:

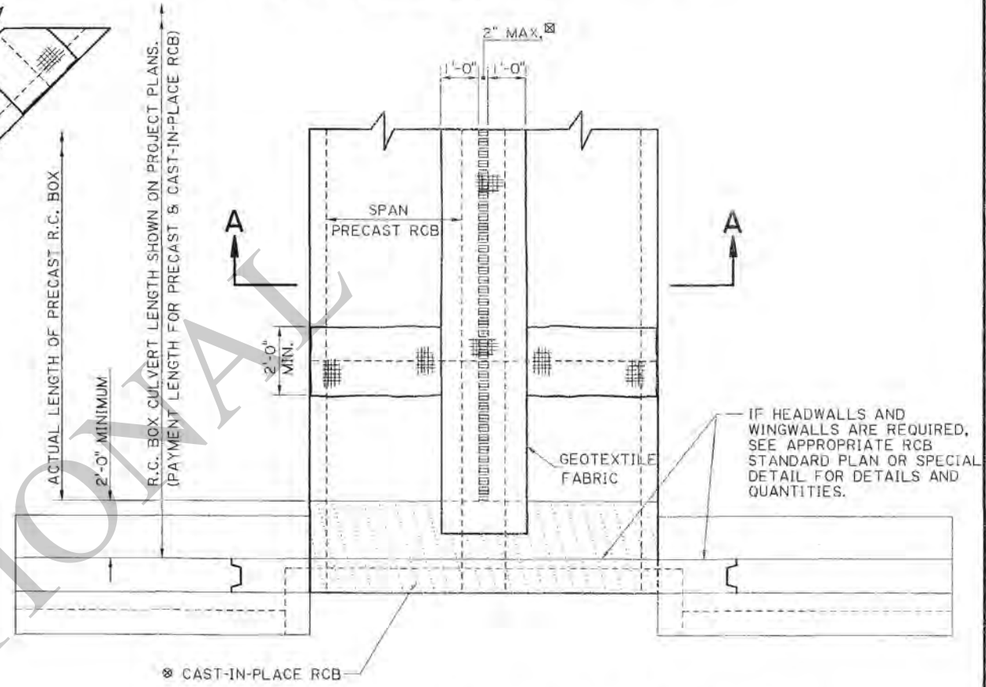
THE LENGTH SHOWN FOR R.C. BOX CULVERTS ON PROJECT PLANS IS MEASURED INSIDE TO INSIDE OF HEADWALLS. IF PRECAST R.C. BOX CULVERTS ARE USED THE ACTUAL BARREL LENGTH REQUIRED WILL BE THE LENGTH INSIDE HEADWALLS LESS 2'-0" MINIMUM PER END.



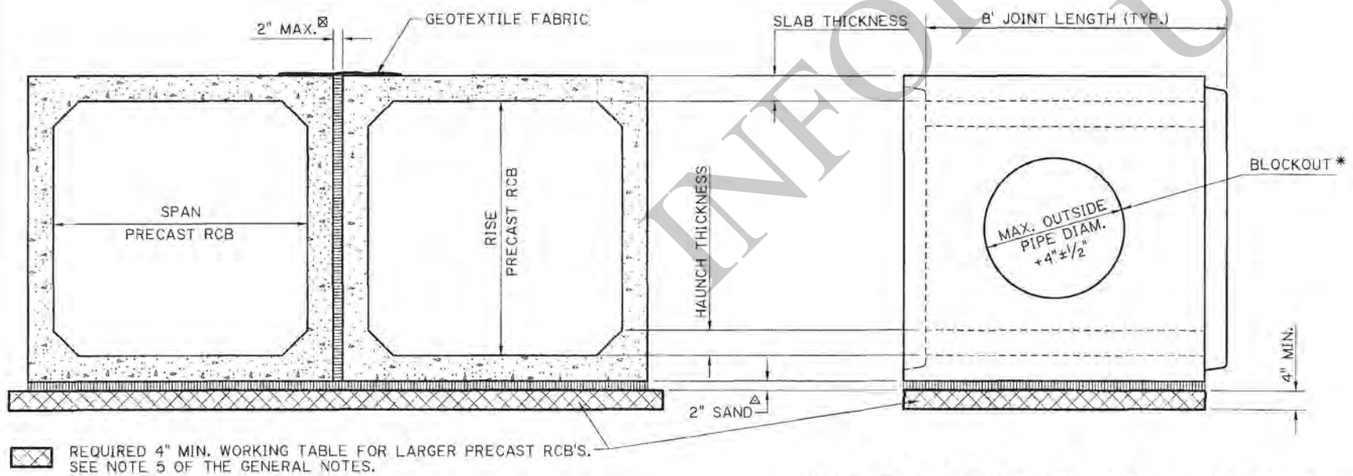
⊗ REQUIRED CAST-IN-PLACE R.C. BOX SEE APPROPRIATE RCB STANDARD PLAN

PLAN SHOWING MULTIPLE PRECAST RCB CULVERTS ON A SKEWED CROSSING WITH HEADWALLS

⊠2" MAX. SPACE ALLOWED BETWEEN PRECAST UNITS, IF NECESSARY. TO BE END BLOCKED AND FILLED WITH SAND OR FLOWABLE FILL. COST TO BE INCLUDED IN COST OF PRECAST RCB.



PLAN SHOWING MULTIPLE PRECAST RCB CULVERTS ON A STRAIGHT (90°) CROSSING WITH HEADWALLS



SECTION A-A

SIDE ELEVATION OF PIPE JOINT SHOWING MAXIMUM BLOCKOUT AND PIPE DIAMETER

GENERAL NOTES

1) FOR GENERAL SPECIFICATIONS OF PRECAST RCB SEE SECTION 805 AND 1016 OF THE LA DOTD STANDARD SPECIFICATIONS.

2) A MINIMUM 2 FOOT WIDE STRIP OF GEOTEXTILE FABRIC SHALL COVER THE ADJOINING LONGITUDINAL EDGES OF MULTI-BARREL BOXES AND JOINTS BETWEEN PRECAST UNITS. FABRIC EDGES AND ENDS SHALL BE SUITABLY SECURED. GEOTEXTILE FABRIC SPECIFICATIONS SHALL CONFORM TO THE SPECIFICATIONS FOR PIPE UNDER SECTION 1019 OF THE LA DOTD STANDARD SPECIFICATIONS. COST TO BE INCLUDED IN COST OF PRECAST RCB.

3) #4 DOWEL BARS, MINIMUM 20" LONG (10" EMBEDDED) AT 12" CENTERS ARE REQUIRED, TO CONNECT THE LAST PRECAST UNIT TO ANY CAST-IN-PLACE SECTION OF BOX.

* 4) BLOCKOUTS FOR PIPE INTO PRECAST RCBS ARE THE RESPONSIBILITY OF THE CONTRACTOR. BLOCKOUT LOCATIONS ARE AS DIRECTED BY THE PROJECT ENGINEER. BLOCKOUT SHALL NOT BE GREATER THAN ½ THE RISE OF PRECAST RCB AND SHALL NOT BE LOCATED IN THE HAUNCH.

△ 5) IN ADDITION TO BEDDING MATERIAL, A MINIMUM 4 INCH THICK, CLASS R CONCRETE, WORKING TABLE WILL BE REQUIRED FOR 6' X 6' AND LARGER PRECAST RCB FIELD INSTALLATIONS. AN ADDITIONAL 2 INCHES OF SAND SHALL BE PLACED AND LEVELED UPON THE CONCRETE WORKING TABLE. COST OF WORKING TABLE AND SAND TO BE INCLUDED IN COST OF PRECAST RCB.

⊗ 6) FOR THE CAST-IN-PLACE PORTIONS OF THE CULVERT, THE REBAR SIZE AND SPACING SHALL MATCH OR EXCEED THE PRECAST SECTIONS. CONTRACTOR TO USE APPROVED PRECAST RCB SHOP DRAWING FOR REBAR REQUIREMENTS.

7) WALL AND SLAB THICKNESSES MAY VARY IN THE TRANSITION AREA BETWEEN THE LAST PRECAST UNIT AND THE CAST-IN-PLACE SECTION OF THE BOX AND HEADWALL. CONTRACTOR SHALL MAKE ADJUSTMENTS TO THE DIMENSIONS AND QUANTITIES OF REINFORCING STEEL AND CONCRETE IN THE CAST-IN-PLACE SECTIONS AS NECESSARY AT NO ADDITIONAL COST.

FOR INFORMATIONAL USE

SHEET NUMBER

FARISH	CONTROL SECTION	STATE PROJECT

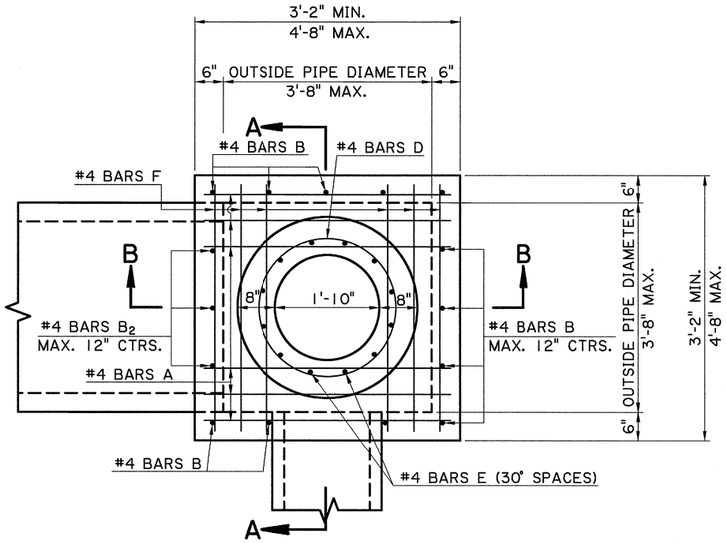
DESIGN	DETAIL	REVIEW	SHEET 1 OF 1
CHECK	CHECK	PROJECT ENGR.	

STATE OF LOUISIANA
MITRA HASHEMIEH
REG. No. 28546
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
7/19/2022

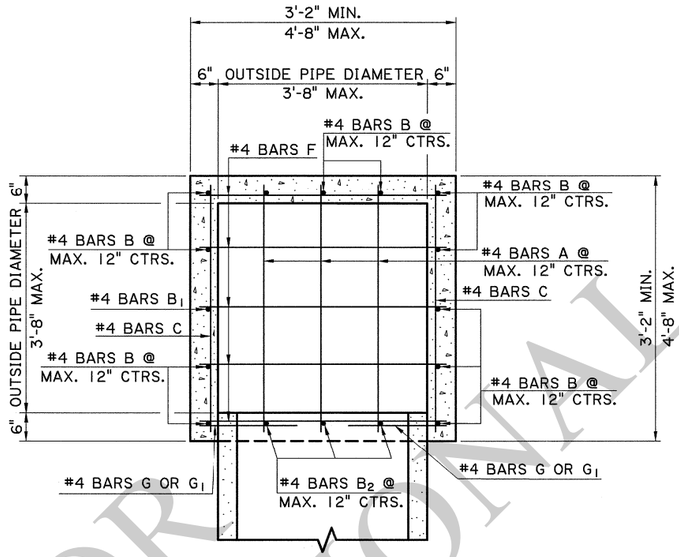
APPROVED BY CHIEF ENGINEER
DATE: 7/20/2022

PRECAST REINFORCED CONCRETE BOX CULVERTS
DETAILS AND SPECIFICATIONS
STANDARD PLAN PRCB-01

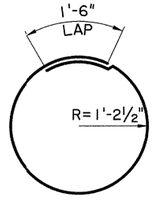
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
HYDRAULICS SECTION



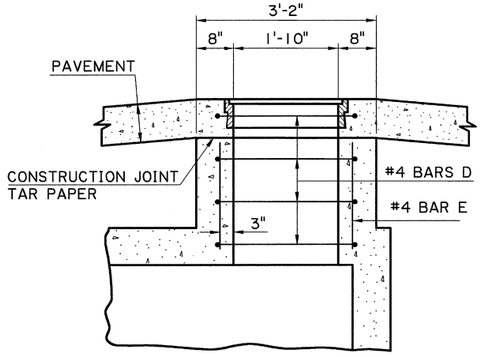
PLAN



SECTION C-C

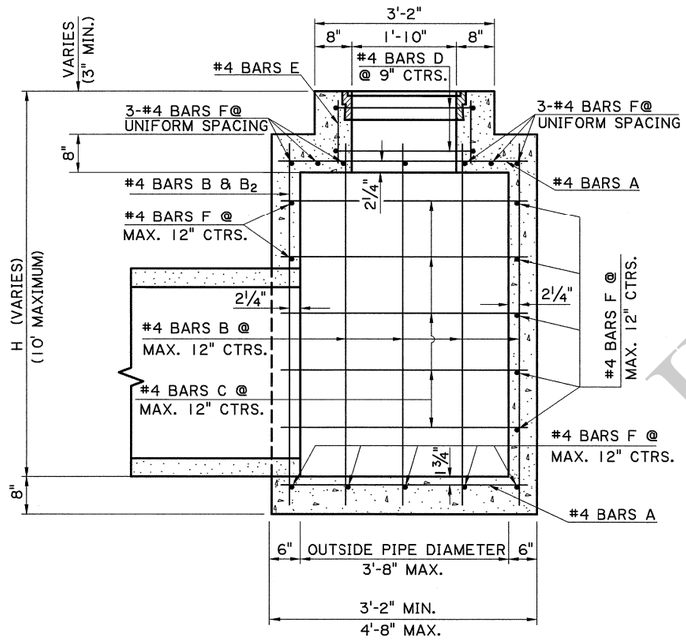


#4 BAR D

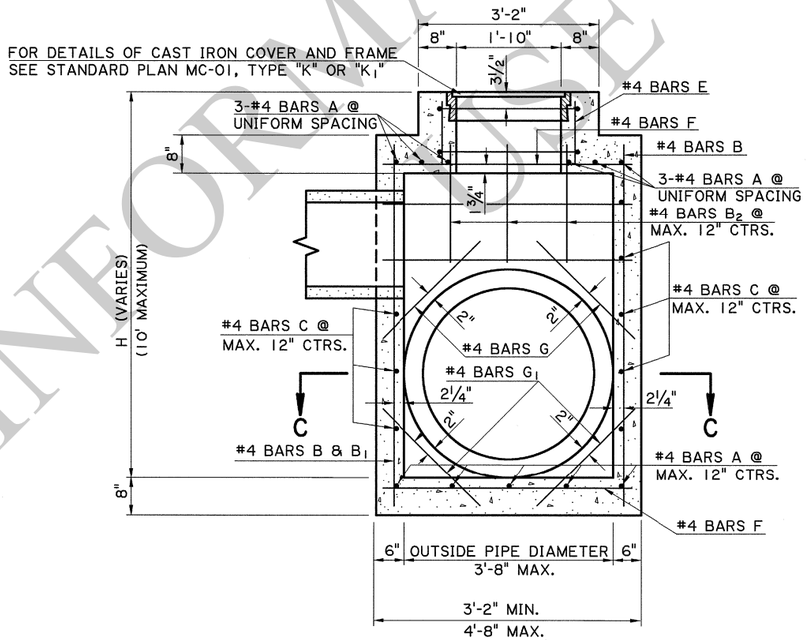


DETAIL A

(MANHOLE IN PAVEMENT AREA)



SECTION B-B



SECTION A-A

GENERAL NOTES:

1. MANHOLE IS DESIGNED ACCORDING TO 4TH ED. 2007 AASHTO LRFD PROCEDURES. SECTION 702 OF THE DOTD STANDARD SPECIFICATIONS SHALL APPLY.
2. CONCRETE: ALL CONCRETE SHALL BE CLASS "M" MINOR STRUCTURE. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾ IN. EXCEPT AS NOTED.
3. REINFORCING STEEL: REINFORCING STEEL SHALL BE GRADE 60. DIMENSIONS ARE TO BAR CENTERS. MINIMUM COVER FOR REINFORCING BARS SHALL BE 2 IN. CLEAR UNLESS SHOWN OTHERWISE.
4. SEE "DETAIL A" FOR DETAILS OF MANHOLE IN A PAVEMENT AREA.
5. THE CONTRACTOR WILL NOT POUR ABOVE THE BOTTOM OF THE SLAB UNTIL THE PAVING ADJACENT TO THE MANHOLE HAS BEEN COMPLETED.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | FEDERAL PROJECT | STATE PROJECT

DESIGNED Q.A. HESTER
CHECKED J.B. SMART
DETAILED Q.A. HESTER
CHECKED T.B. SMART
DATE DEC., 1940
SHEET 1 OF 1

BY	REVISION DESCRIPTION	DATE
WNR	REDRAFTED, REVISED TO AASHTO LRFD PROCEDURES	3-1-11
WTJ	NOTE ON POURING SEQUENCE	4-6-76

APPROVED BY: CHIEF ENGINEER

DATE: 3-1-11

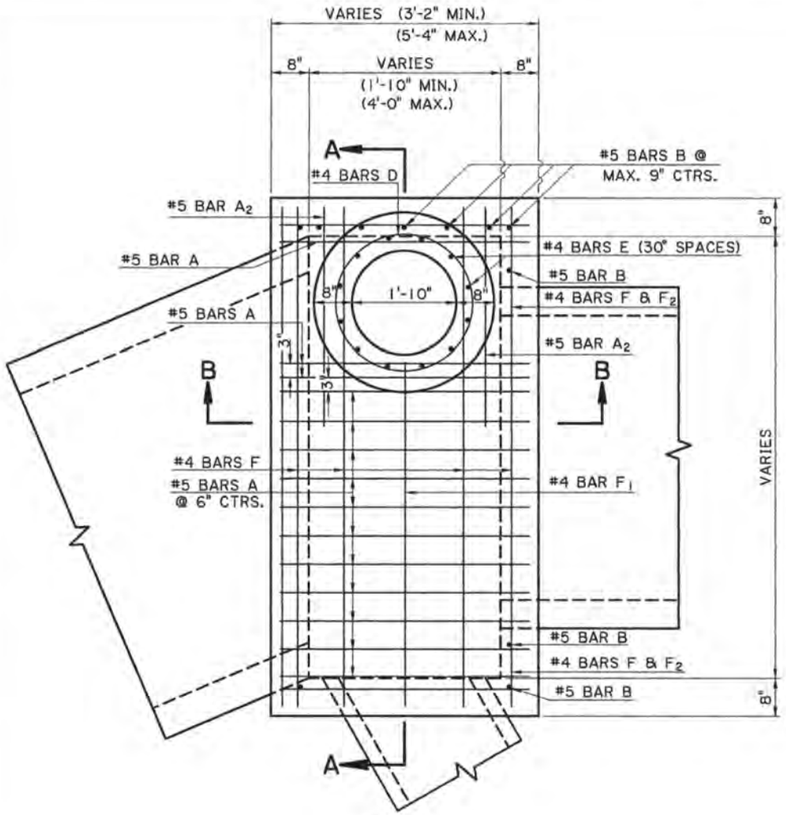
CONCRETE MANHOLE
MAX. PIPES: 36" RCP X 36" RCP
MAX. DEPTH: 10'

STANDARD PLAN R-CB-11

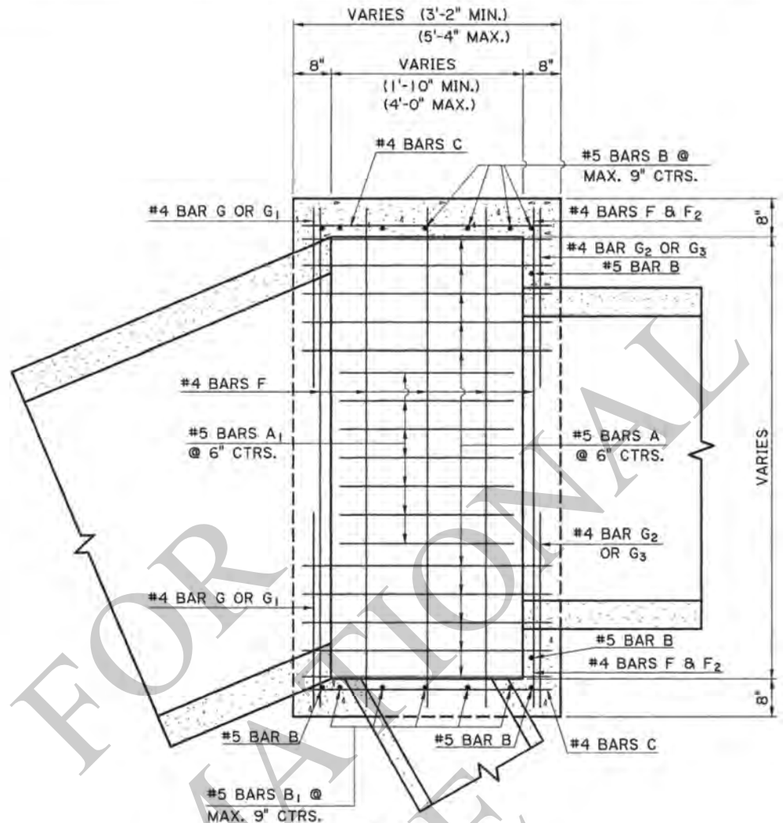
HYDRAULICS SECTION

1/16/2020 15:52
IP_PWP:dms09544\R-CB-11.dgn

6/28/2018 08:43



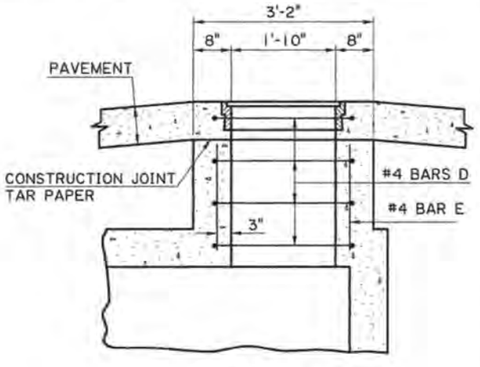
PLAN



SECTION C-C

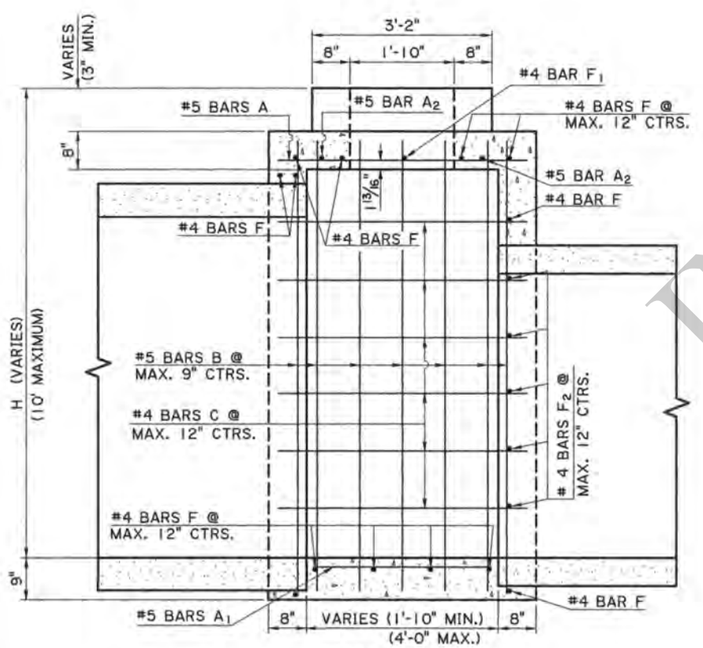
GENERAL NOTES:

1. MANHOLE IS DESIGNED ACCORDING TO 4TH ED. 2007 AASHTO LRFD PROCEDURES. SECTION 702 OF THE DOTD STANDARD SPECIFICATIONS SHALL APPLY.
2. CONCRETE: ALL CONCRETE SHALL BE CLASS "M" MINOR STRUCTURE. ALL EXPOSED EDGES SHALL BE CHAMFERED ¾ IN. EXCEPT AS NOTED.
3. REINFORCING STEEL: REINFORCING STEEL SHALL BE GRADE 60. DIMENSIONS ARE TO BAR CENTERS. MINIMUM COVER FOR REINFORCING BARS SHALL BE 2 IN. CLEAR UNLESS SHOWN OTHERWISE.
4. SEE "DETAIL A" FOR DETAILS OF MANHOLE IN A PAVEMENT AREA.
5. THE CONTRACTOR WILL NOT POUR ABOVE THE BOTTOM OF THE SLAB UNTIL THE PAVING ADJACENT TO THE MANHOLE HAS BEEN COMPLETED.

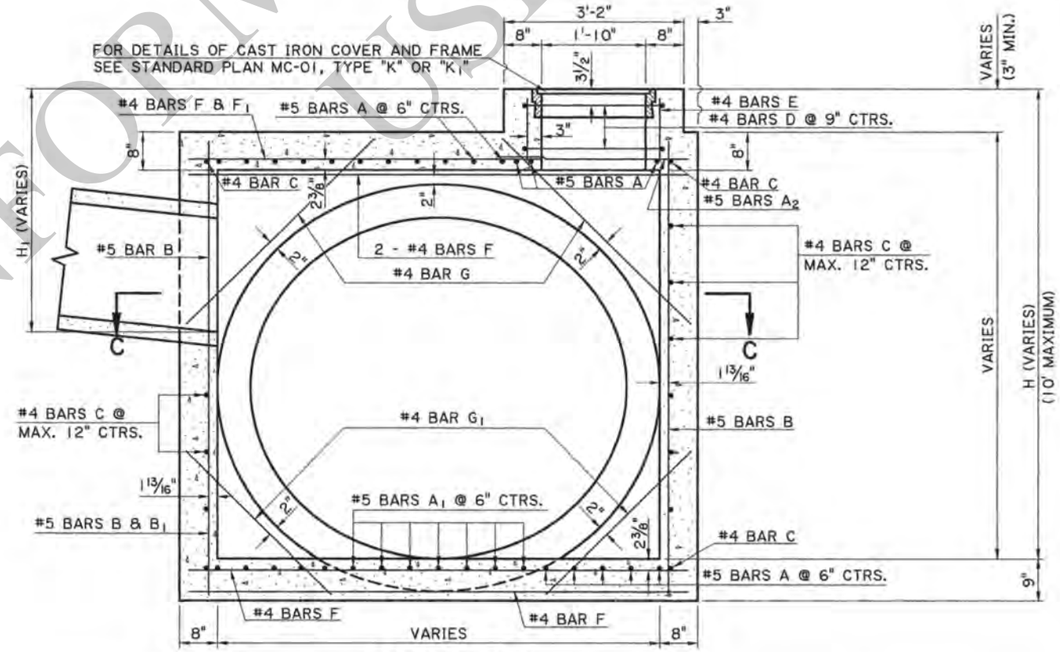


DETAIL A

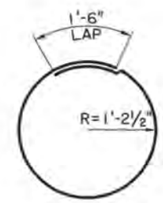
(MANHOLE IN PAVEMENT AREA)



SECTION B-B



SECTION A-A



#4 BAR D

SHEET NUMBER		
PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED CHECKED	DETAILED QAH CHECKED C. LUSK	DATE 5-26-54 SHEET 1 OF 1

NO	DATE	REVISION DESCRIPTION	BY
1	3-1-11	REVISED TO 2007 AASHTO LRFD PROCEDURES	WMR
2	10-22-08	REMOVED MANHOLE STEPS, GRATES, ADDED DETAIL A	JDK

APPROVED BY: CHIEF ENGINEER: David T. Hickman DATE: 3-1-11

CONCRETE MANHOLE
MAX. PIPE: 36" RCP X OPEN
MAX. DEPTH: 10'

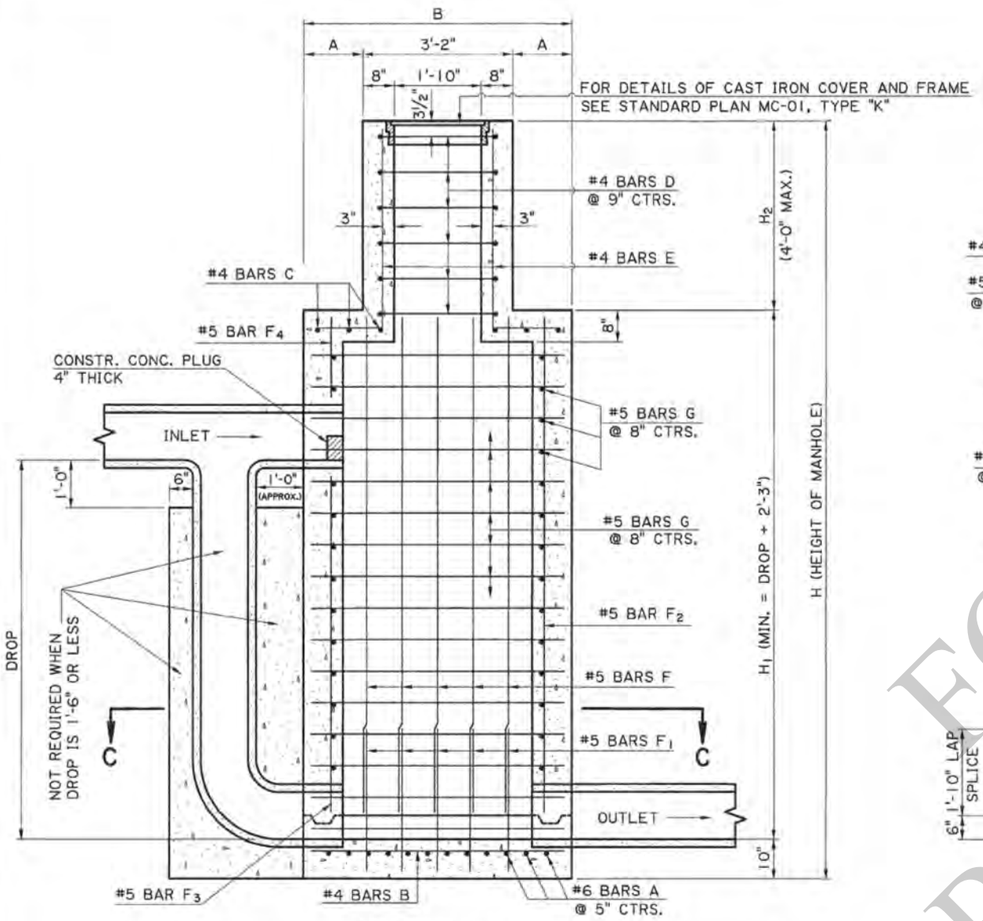
STANDARD PLAN R-CB-11MOD

HYDRAULICS SECTION

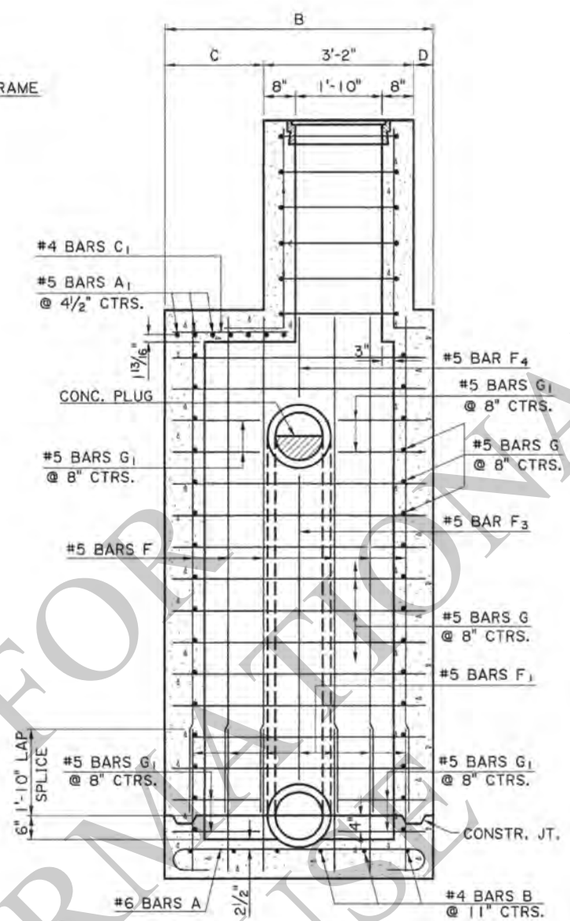
FOR INFORMATIONAL USE

IP PWP:dms09544\R-CB-11MOD.dgn

3/15/2017 09:06

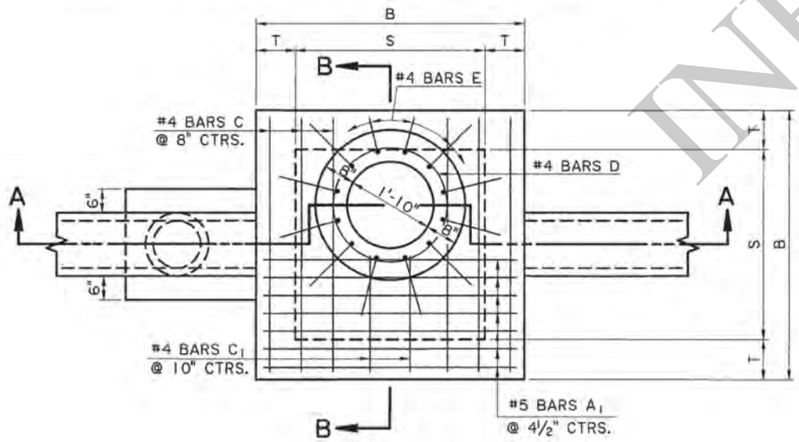


SECTION A-A

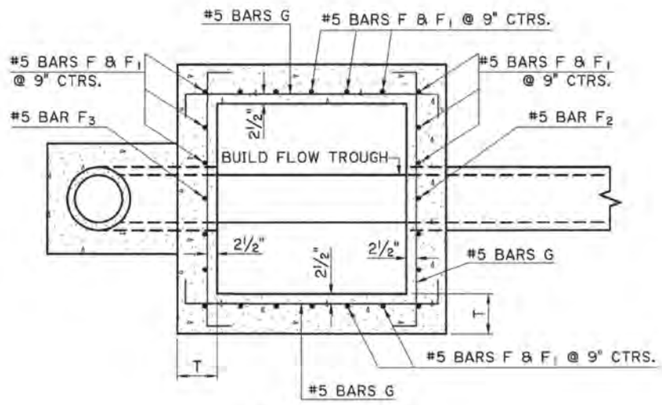


SECTION B-B

NOTE: WHEN DIFFERENCE IN F.L. ELEVATIONS OF INLET AND OUTLET (DROP) DOES NOT EXCEED 1'-6", CONNECTION OF INLET TO MANHOLE WILL BE MADE IN SAME MANNER AS THAT OF OUTLET. (VERTICAL PIPE, ELBOW AND CONCRETE ENCLOSEMENT NOT REQUIRED)



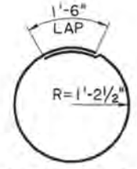
PLAN



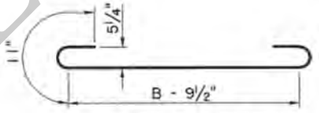
SECTION C-C

GENERAL NOTES:

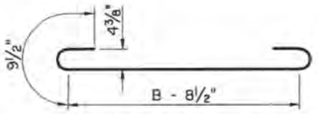
1) PROJECT SPECIFICATIONS FOR MANHOLES SHALL APPLY.
2) PROJECT SPECIFICATIONS FOR REINFORCEMENT SHALL APPLY FOR FURNISHING AND PLACING REINFORCING STEEL.
3) DIMENSIONS RELATING TO REINFORCING STEEL ARE TO BAR CENTERS.
4) SEE "DETAIL A" FOR DETAILS OF MANHOLE IN A PAVEMENT AREA.



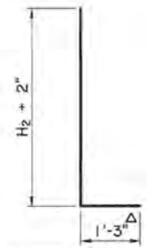
#4 BAR D



#6 BARS A

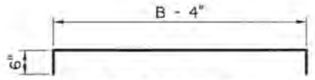


#5 BARS A1



△TO BE CLIPPED FOR CLEARANCE (IF NECESSARY)

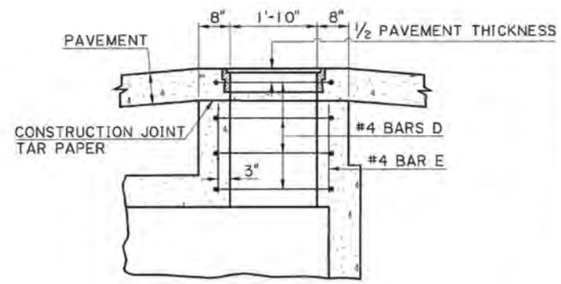
#4 BARS E



#5 BARS G

#5 BARS G1

DIMENSIONS						
H	T	S	B	A	C	D
8' MAX.	8"	3'-6"	4'-10"	0'-10"	1'-5"	0'-3"
8'-1" - 16'	10"	4'-0"	5'-8"	1'-3"	2'-1"	0'-5"
16'-1" - 24'	12"	4'-0"	6'-0"	1'-5"	2'-3"	0'-7"



DETAIL A

(MANHOLE IN PAVEMENT AREA)

INFORMATIONAL USE FOR

SHEET NUMBER			
PARISH	FEDERAL PROJECT	STATE PROJECT	
DESIGNED CHECKED	QAH MARCUM	DATE SHEET	NOV. 1957 1 OF 1
DETAILED JDK. BY	CHECKED		DATE 10-22-08

10-22-08 REDRAFTED, REMOVED MANHOLE STEPS, NEW SHEET
DATE REVISION DESCRIPTION

APPROVED BY CHIEF ENGINEER

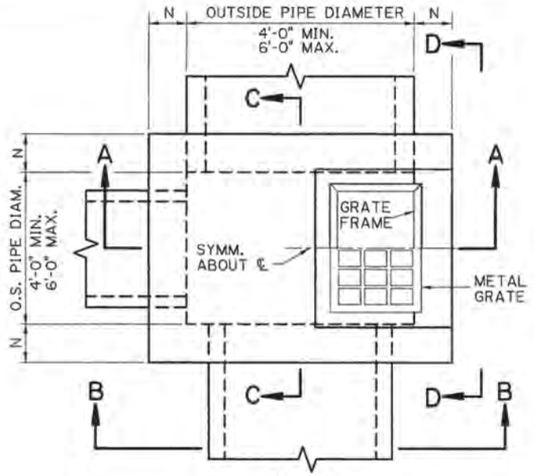
R.C. MANHOLE FOR SANITARY SEWER

STANDARD PLAN R-CB-36

HYDRAULICS SECTION

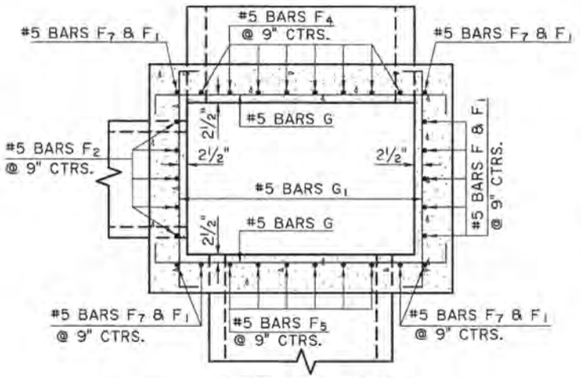
IP_PWP:dms09544\R-CB-36.dgn

1/4/2018 13:07



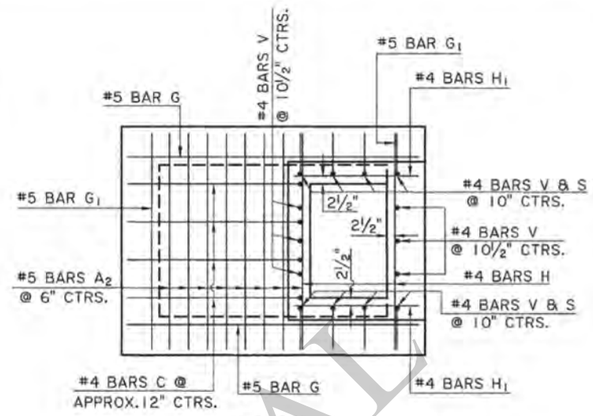
PLAN

GRATE TO BE TYPE "B" OR "C".
TYPE "B" SHOWN.



SECTION E-E

BOTTOM SLAB REINFORCING NOT SHOWN

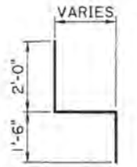


PLAN

SHOWING REINFORCING IN TOP SLAB
(FRAME AND GRATE NOT SHOWN)

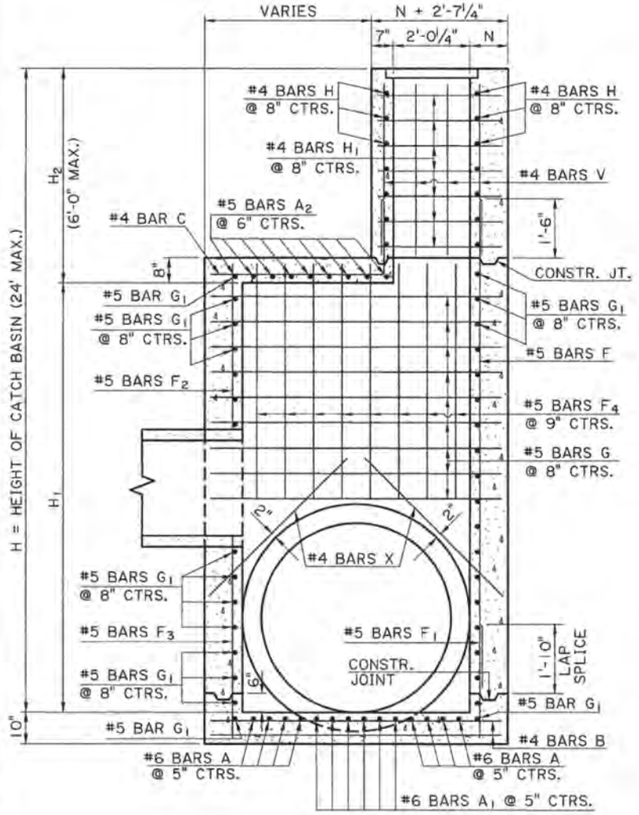
GENERAL NOTES:

1) PROJECT SPECIFICATIONS FOR MANHOLES SHALL APPLY.
2) PROJECT SPECIFICATIONS FOR REINFORCEMENT SHALL APPLY FOR FURNISHING AND PLACING REINFORCING STEEL.
3) DIMENSIONS RELATING TO REINFORCING STEEL ARE TO BAR CENTERS.
4) FOR DETAILS OF GRATE AND FRAME, SEE STANDARD PLAN MC-01 (TYPE "B" OR "C"). TYPE "B" GRATE TO BE USED WHERE NO PEDESTRIAN TRAFFIC IS EXPECTED. TYPE "C" GRATE TO BE USED WHERE PEDESTRIAN TRAFFIC IS EXPECTED.

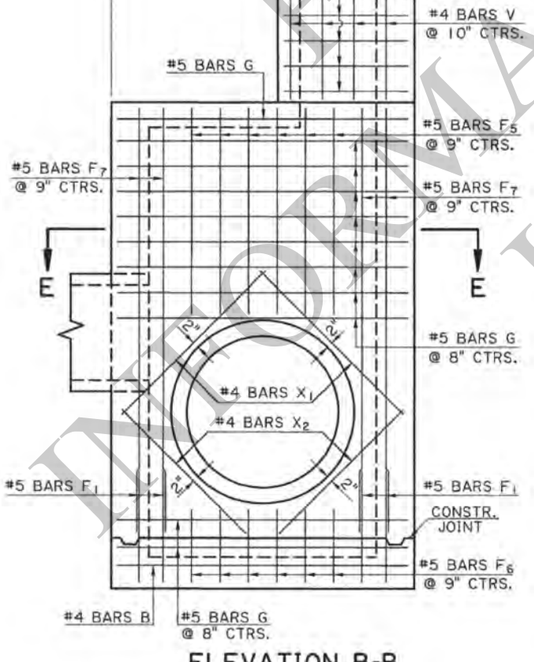


#4 BARS S

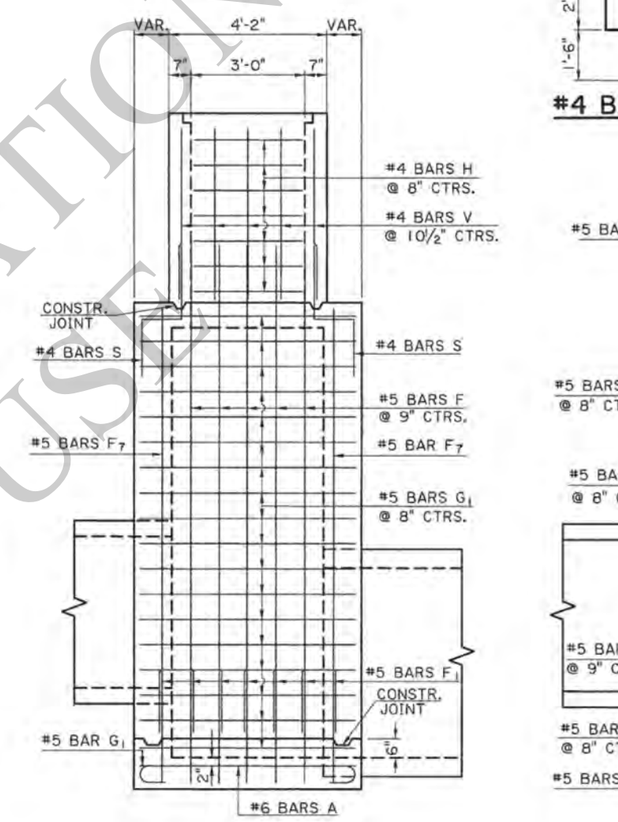
DIMENSIONS	
H	N
12'-9" TO 16'-0"	10"
16'-1" TO 24'-0"	12"



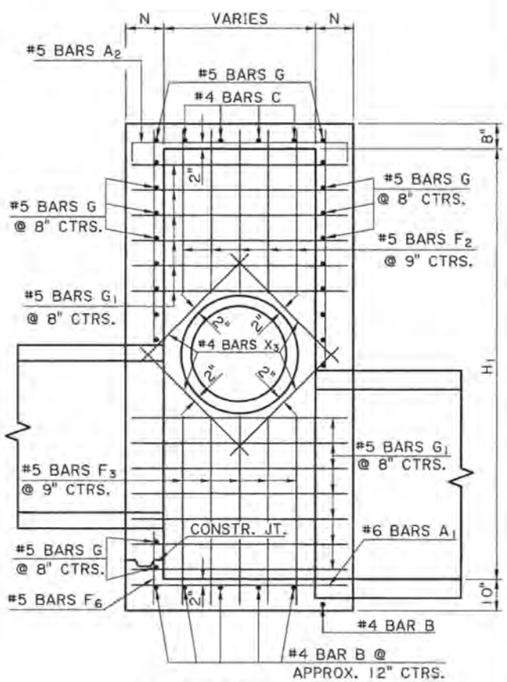
SECTION A-A



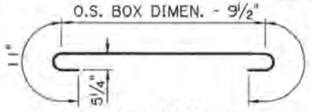
ELEVATION B-B



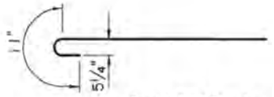
ELEVATION D-D



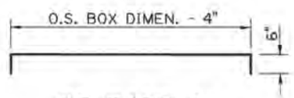
ELEVATION C-C



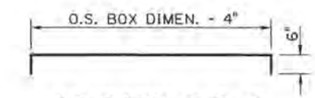
6 BARS A



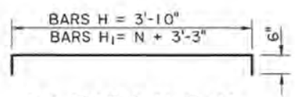
6 BARS A1



#5 BARS A2



#5 BARS G & G1



#4 BARS H & H1

#4 BARS C

FOR INFORMATIONAL USE

SHEET NUMBER			
PARISH	FEDERAL PROJECT	STATE PROJECT	
DESIGNED / CHECKED	Q.A.HESTER / W.E.MARCUM	DETAILED / CHECKED	JDK / BY
DATE / SHEET	JAN. 1958 / 1 OF 1		

NO.	DATE	REVISION DESCRIPTION	BY
1	11-17-08	REDRAFTED, REMOVED MANHOLE STEPS, NEW SHEET	JDK

APPROVED BY CHIEF ENGINEER: *Wm H. Temple* DATE: *11-17-08*

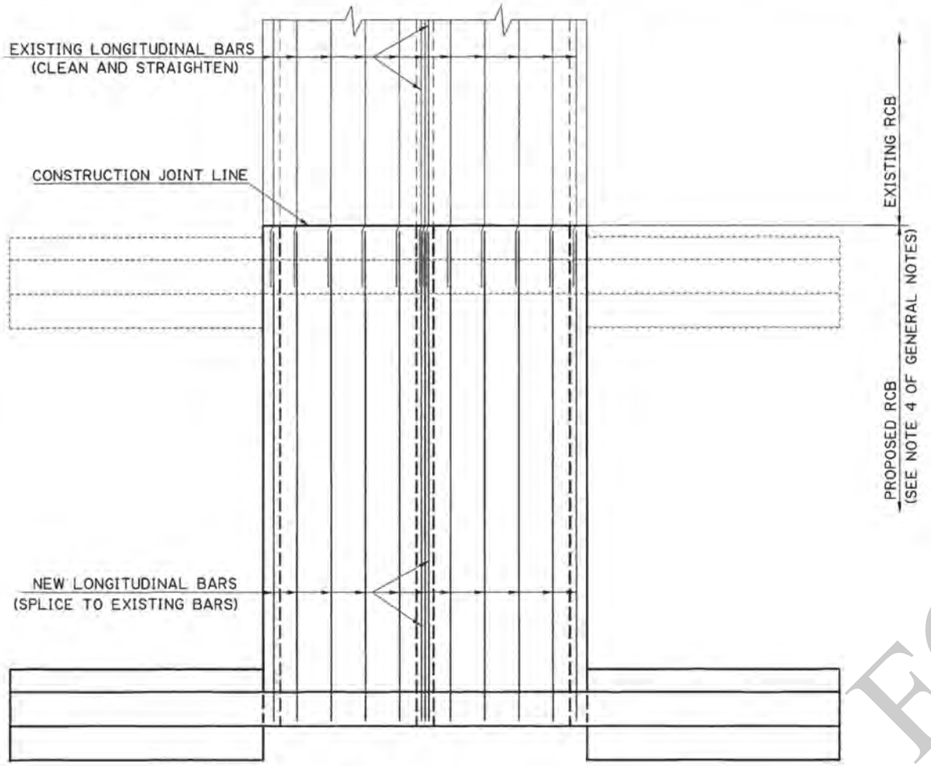
CONCRETE OPEN TOP CATCH BASIN
MAX. PIPES: 60" X 60"
MAX. DEPTH: 24'

STANDARD PLAN R-CB-38

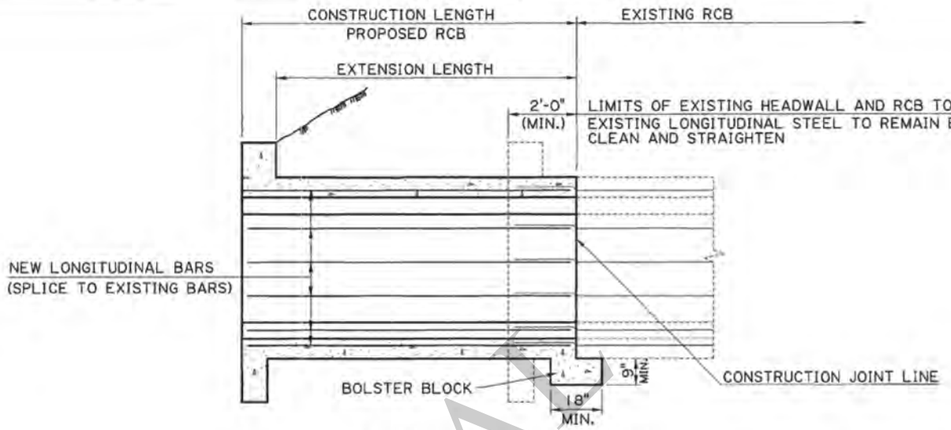
HYDRAULICS SECTION

IP PWP:dms09544\R-CB-38.dgn

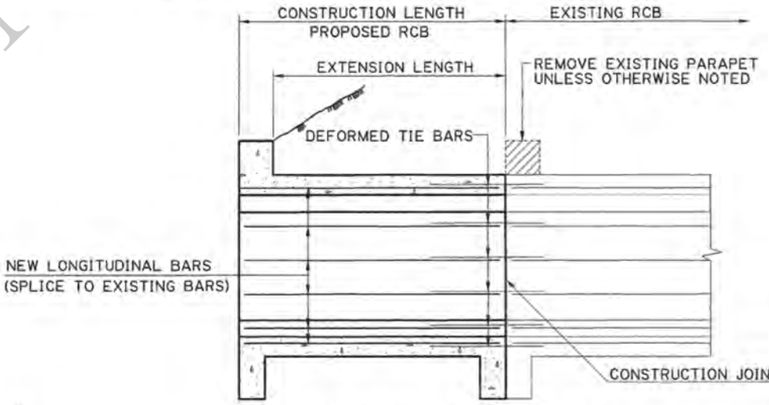
10/18/2018 09:40



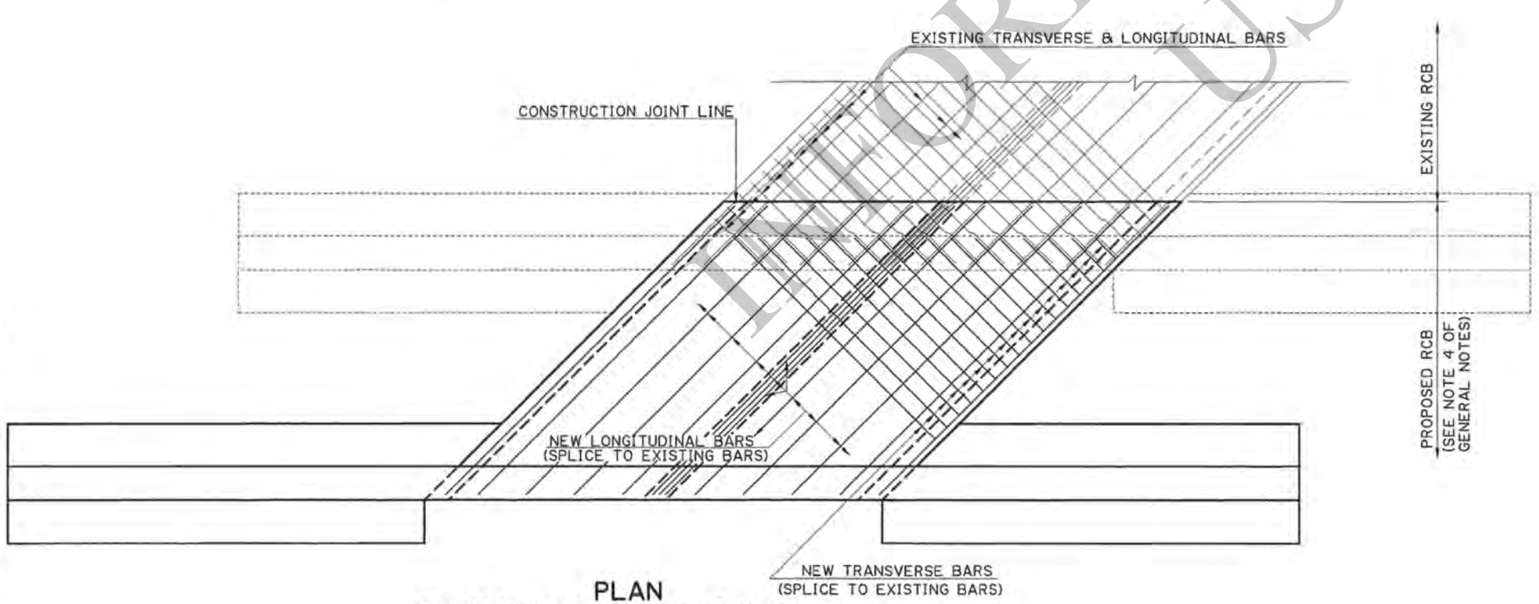
PLAN
EXISTING HEADWALL REMOVED
90° CROSSING



SECTION THRU BARREL
EXISTING HEADWALL REMOVED
90° AND SKEWED CROSSING



SECTION THRU BARREL
EXISTING HEADWALL REMAINS
90° AND SKEWED CROSSING



PLAN
EXISTING HEADWALL REMOVED
SKEWED CROSSING

GENERAL NOTES:

1) ALL CONCRETE TO BE CLASS "A".
2) REINFORCING STEEL TO BE GRADE 60.
3) PROJECT SPECIFICATIONS FOR REINFORCED CONCRETE BOX CULVERT SHALL APPLY.
4) ALL EXTENSIONS WILL BE CONSTRUCTED ACCORDING TO THE STANDARD PLANS OR SPECIAL DETAILS REFERRED TO ON THE SUMMARY OF DRAINAGE STRUCTURES SHEET.
5) WHERE HEADWALL AND EXISTING RCB TO BE REMOVED, PROPOSED LONGITUDINAL STEEL SHALL OVERLAP EXISTING LONGITUDINAL STEEL BY 2'-0" SPLICE. ALL EXISTING LONGITUDINAL STEEL IN SLABS AND WALLS TO BE STRAIGHTENED, CLEANED AND USED AS SPLICE BARS.
6) WHERE EXISTING HEADWALL REMAINS, DEFORMED TIE BARS ARE REQUIRED. DEFORMED TIE BARS SHALL BE #5, 3'-0" IN LENGTH (UNLESS EXTENSION LENGTH REQUIRES SHORTER BARS). HOLES WILL BE DRILLED IN THE EXISTING STRUCTURE TO ALIGN WITH CORRESPONDING LONGITUDINAL BARS IN THE NEW STRUCTURE. THE DEFORMED TIE BARS SHALL BE PLACED IN THE HOLES AND THE HOLES SHALL BE FILLED WITH AN APPROVED MATERIAL FROM QPL52, PRIOR TO POURING CONCRETE FOR THE EXTENSION. THE HOLE DIAMETER SHALL BE IN ACCORDANCE WITH THE EPOXY MANUFACTURER'S RECOMMENDATION.
7) WHERE EXISTING HEADWALL REMAINS, ALL SMOOTH END SURFACES OF EXISTING STRUCTURE SHALL BE ROUGHENED BY CHIPPING PRIOR TO POURING EXTENSION.
8) GROUND PREPARATION SHALL BE IN ACCORDANCE TO STANDARD PLAN BM-01.

FOR INFORMATIONAL USE

SHEET NUMBER
FINISH
FEDERAL PROJECT
STATE PROJECT
DESIGNED
CHECKED
DETAILED KJB
CHECKED JDK
DATE 4-8-09
SHEET 1 OF 1
REVISION DESCRIPTION
BY
DATE 4.8.09
APPROVED BY CHIEF ENGINEER

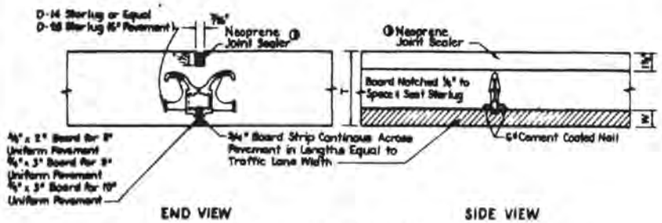
RCB EXTENSIONS
STANDARD METHOD OF EXTENDING REINFORCED CONCRETE BOX CULVERTS 90° AND SKEWED CROSSINGS
STANDARD PLAN RCB-EXTENSION

HYDRAULICS SECTION

IP PWP:dms09544\RCB-EXTENSION.dgn

15-MAY-2014 10:30

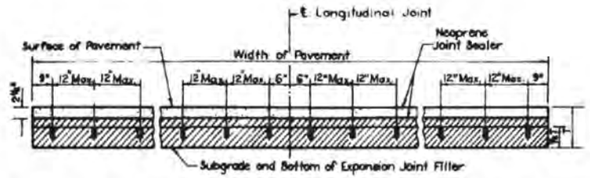
	STATE PROJECT	PARISH	SHEET NO.



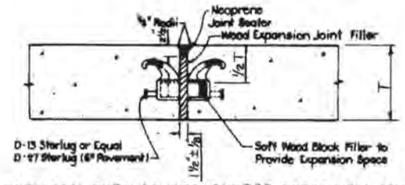
END VIEW SIDE VIEW

ALTERNATE TYPE OF TRANSVERSE DUMMY JOINT

D-14 STARLUG (8", 9", & 10" PAVEMENT)
D-28 STARLUG (6" PAVEMENT)

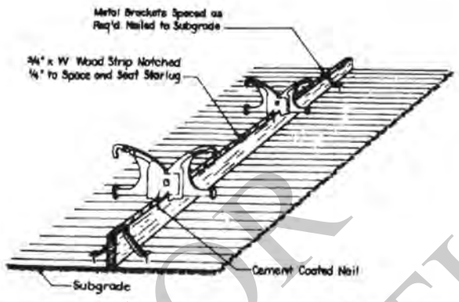


ELEVATION OF EXPANSION JOINT SHOWING SPACING OF STARLUG UNITS

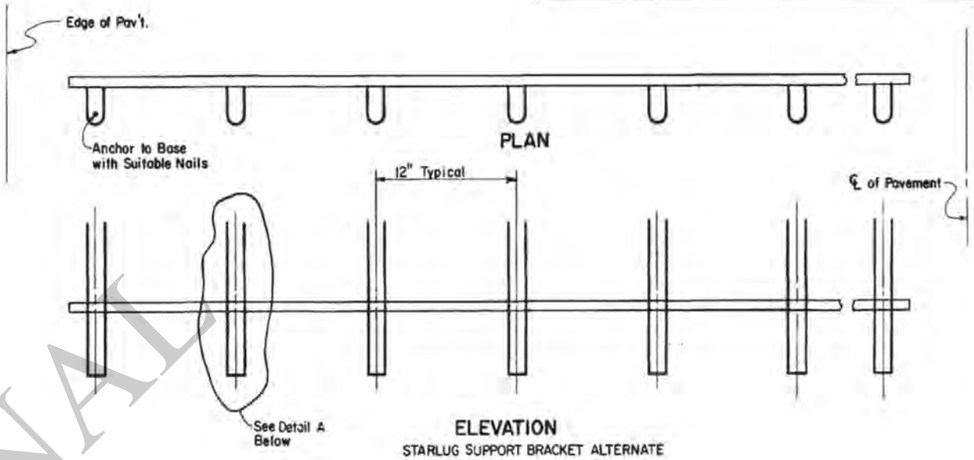


ALTERNATE TYPE OF TRANSVERSE EXPANSION JOINT

D-13 STARLUG
D-27 STARLUG (6" PAVEMENT)

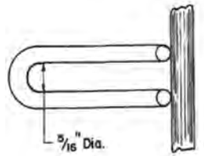


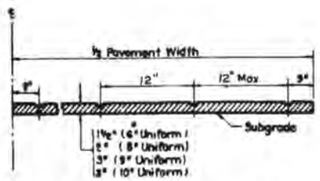
OBLIQUE VIEW OF STARLUG D-14 AND D-28 DUMMY JOINT



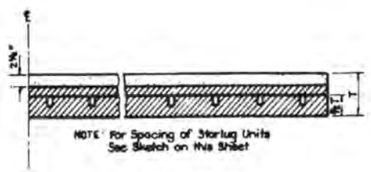
PLAN

ELEVATION
STARLUG SUPPORT BRACKET ALTERNATE

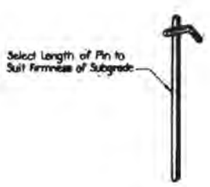




ELEVATION OF DUMMY JOINT SHOWING SPACING OF STARLUG UNITS

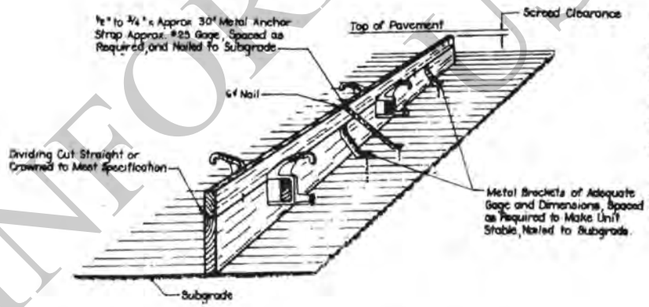


ELEVATION OF BOARD STRIP FOR EXPANSION JOINT

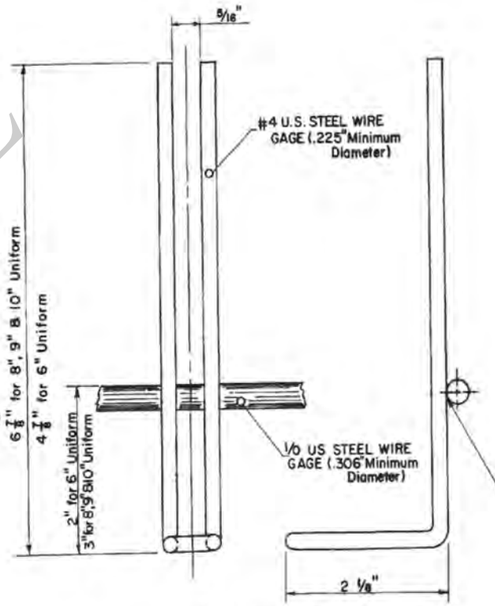


METAL BRACKET
To Be Used On Granular Bases
Spacing and Installation To Be As Directed By The Engineer.

METAL BRACKET
To Be Used On Stabilized Or Treated Bases, Shell Bases and Asphaltic Concrete Bases.



OBLIQUE VIEW OF STARLUG D-13 AND D-27 EXPANSION JOINT



DETAIL A

GENERAL NOTES

If the Contractor Desires to Use Any Other Alternate Device, He Shall, Prior to its Use, Secure Approval by the Engineer.

Alternate Load Transfer Devices or Dowels Shall be Installed Parallel to the Pavement Surface and Center Line.

Joint Braces or Other Suitable Devices May be Used to Align or Hold Joint Assembly in Place While Pavement is Being Laid.

For Pavement Crowns See Typical Paving Section.

Prior to Final Assembly, Each Load Transfer Device Shall Be Tightened According to Manufacturer's Recommendations, to Prevent Excessive Movement Within the Unit Itself. The Contractor Shall Also Be Responsible for Having Each Load Transfer Device Fastened to the Wood Strip in Such a Manner as to Prevent Any Movement.

Starlug Load Transmission Assemblies Shall Be As Indicated in the "Qualified Products List"

Boards Used for Installation of Starlugs Are Subject to Tolerances of ± ⅛".

Use Type CJ or EJ Joints For End of Days Run. (See Standard Plan R-CP-108.)

Reasonable Tolerances To All Dimensions Will Be Determined By The Engineer and Furnished at Time of Installation.

For Sawed Joint Details See Standard Plan R-CP-108.

DATE	DESCRIPTION	BY
3-19-84	Support Bracket Minimum	H.J.B.
10-27-81	Added Wire Bracket	W.T.J.
10-22-80	Rev. Transverse Expansion Joint	W.T.J.
10-6-75	Revised General Note and Added Joint Sealer Type.	H.D.S.
5-9-75	Added General Note	H.D.S.
5-15-73	Revised Starlug Spacing	[illegible]
3-8-73	General Notes	[illegible]
10-10-72	Revised and Retraced	[illegible]

REVISIONS

STANDARD PLAN NO. R-CP-100 REV. SHEET 1 OF 1

ALTERNATE LOAD TRANSMISSION ASSEMBLY FOR EXPANSION AND DUMMY JOINTS

DATED Oct. 1972

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

DESIGNED	DETAILED	TRACED N.M. Brummett
CHECKED	CHECKED	CHECKED Al Shows

APPROVED Dempsey D. White DATE 3/19/84
CHIEF ENGINEER

FOR INFORMATIONAL USE

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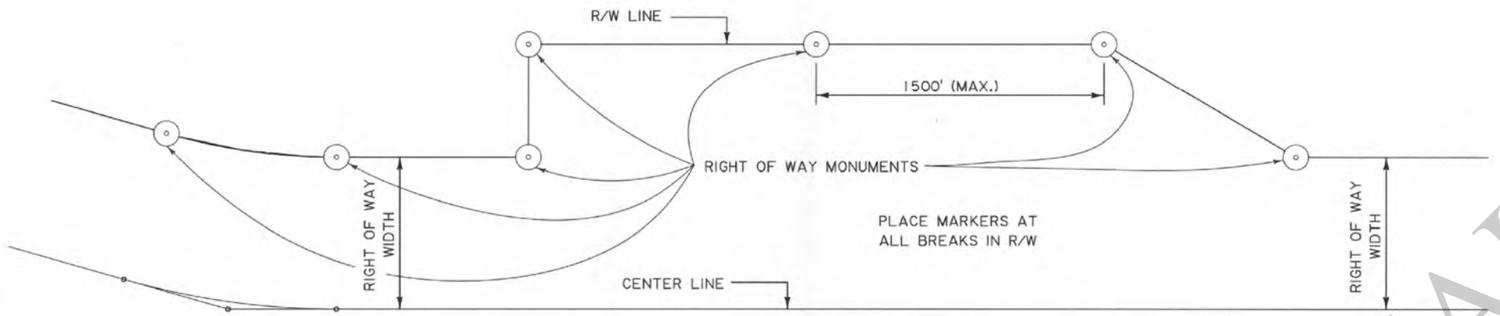


STANDARD RIGHT OF WAY MONUMENT PLAN
MONUMENTS TO BE PLACED AT RIGHT OF WAY INTERSECTIONS

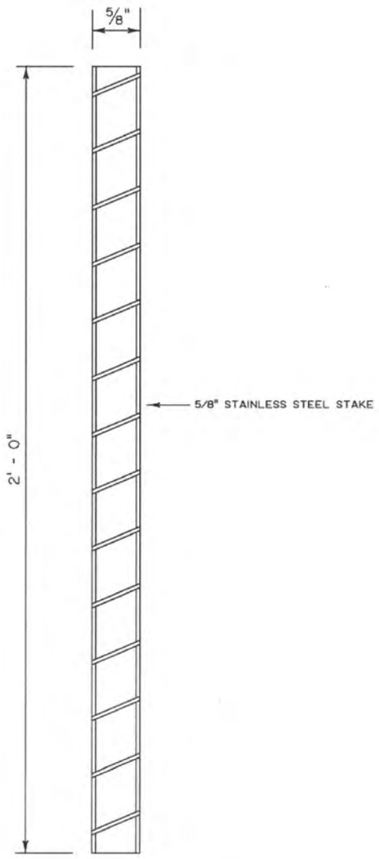
NOTES:

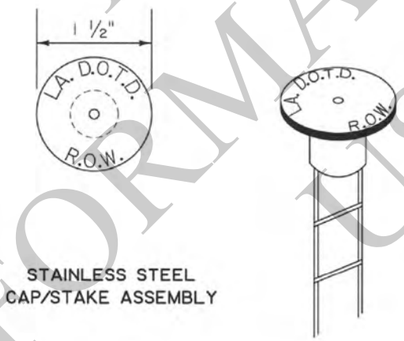
MONUMENTS ARE TO BE PLACED AT EVERY POINT WHERE BREAKS IN THE RIGHT OF WAY OCCUR: AT P.C.'S AND P.T.'S OF CURVES AND AT TOPS OF HILLS AND AT SUCH OTHER INTERMEDIATE POINTS AS ARE NECESSARY TO PROPERLY INDICATE THE RIGHT OF WAY. MONUMENTS SHOULD NOT BE MORE THAN ONE THOUSAND FEET (1000') APART ON CURVES, NOR MORE THAN FIFTEEN HUNDRED FEET (1500') APART ON TANGENTS.

MONUMENTS ARE INDICATED ON PLANS BY THE FOLLOWING SYMBOL. ⊠

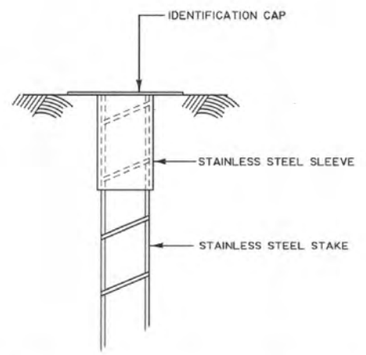
MONUMENTS SHALL BE A 1-1/2" STAINLESS STEEL CAP FASTENED TO A 5/8" (#5) STAINLESS STEEL REBAR BY A STAINLESS STEEL SLEEVE AS INDICATED BELOW.

RIGHT OF WAY MONUMENTS SHALL BE SET BY, OR UNDER THE RESPONSIBLE CHARGE OF A LOUISIANA REGISTERED PROFESSIONAL LAND SURVEYOR IN CONFORMANCE WITH CHAPTER 29, TITLE 46 PART LXI, OF THE RULES OF THE LOUISIANA PROFESSIONAL ENGINEERING AND LAND SURVEYING BOARD.





STAINLESS STEEL
CAP/STAKE ASSEMBLY



SET BOTTOM OF IDENTIFICATION CAP FLUSH
WITH THE EXISTING GROUND

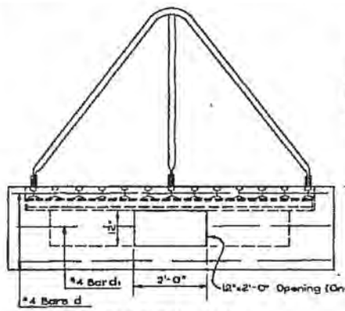
FOR INFORMATIONAL USE

SHEET NUMBER
PARISH | CONTROL SECTION | STATE PROJECT
DESIGN CHECK | DETAIL CHECK | REVIEW SERIES #
ERIC P. LANIER
REG. No. 34084
REGISTERED
PROFESSIONAL
LAND SURVEYOR
APPROVED BY CHIEF ENGINEER:
DATE: 2/1/2021
STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
RIGHT OF WAY MONUMENTS
STANDARD PLAN RM-01
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
LOCATION AND SURVEY

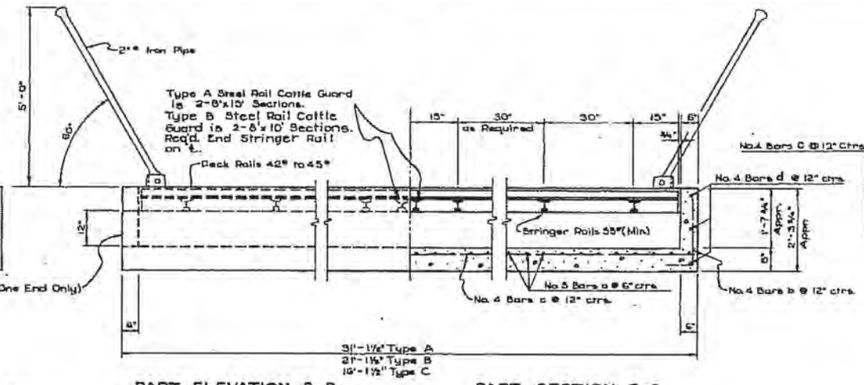
1/28/2021 07:35
T:\ROW Map Standards\STANDARD PLANS\RM01.DGN

23-FEB-2010 14:48

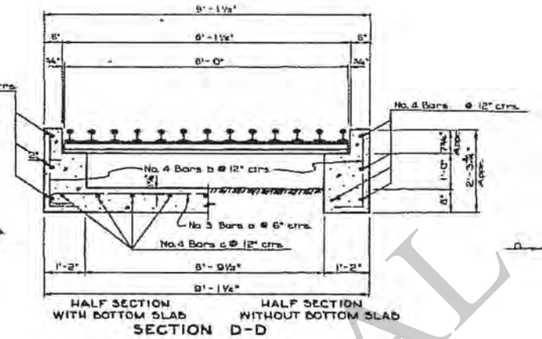
STATE PROJECT	PARISH	SHEET NO.



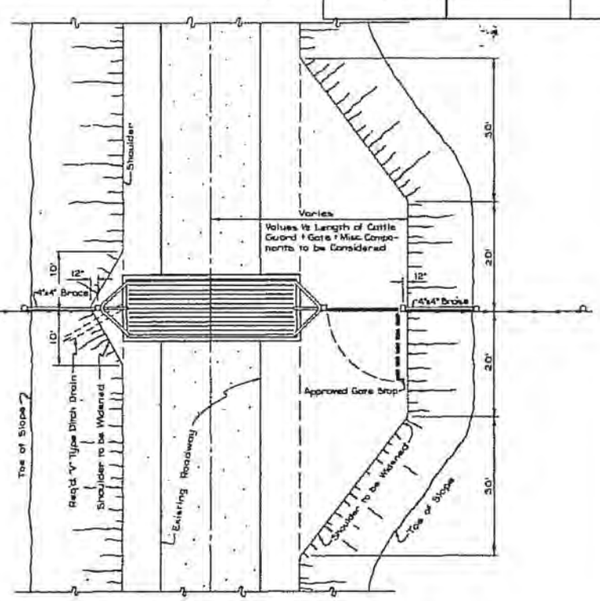
ELEVATION A-A
Showing Horizontal Steel in Wall



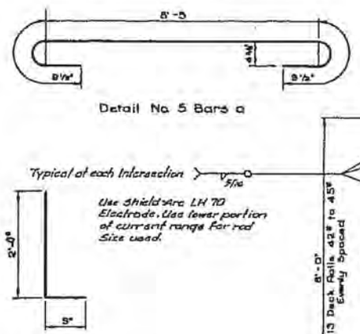
PART ELEVATION B-B

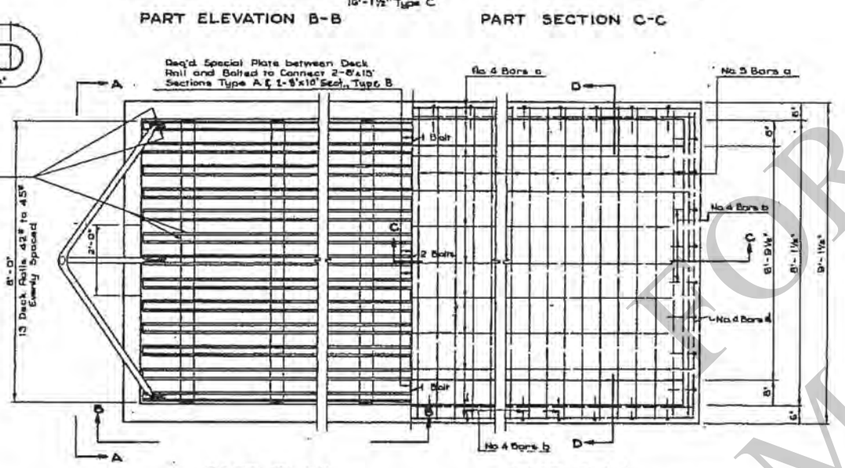


HALF SECTION WITH BOTTOM SLAB | HALF SECTION WITHOUT BOTTOM SLAB
SECTION D-D



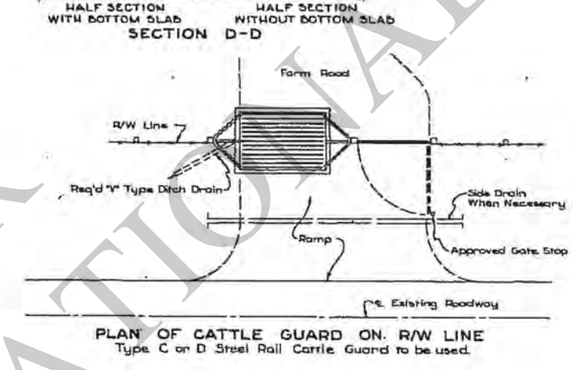
PLAN OF CATTLE GUARD
ON STATE SECONDARY OR PARISH ROADS
Type A or B Steel Rail Cattle Guard to be used.



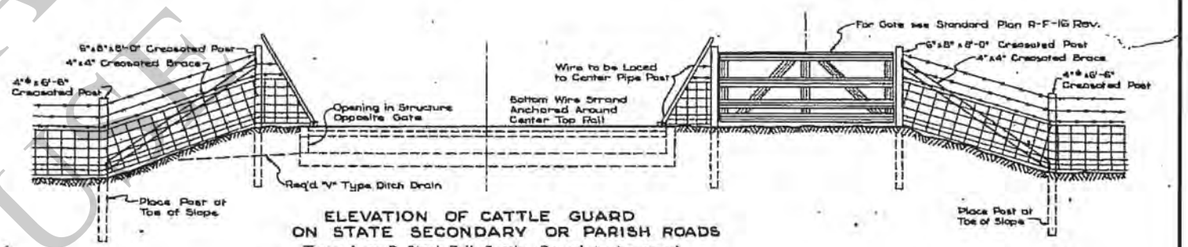


PART PLAN
Showing Steel Rail Cattle Guard

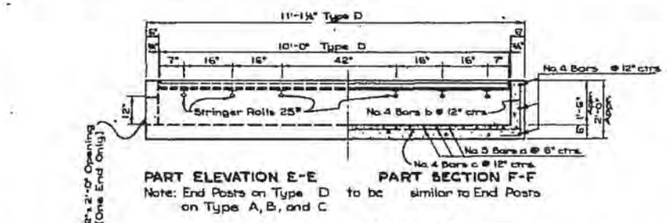
PART PLAN
Showing Reinforcing in Walls and Slab



PLAN OF CATTLE GUARD ON R/W LINE
Type C or D Steel Rail Cattle Guard to be used.

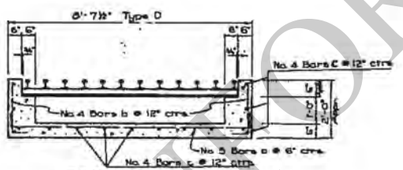


ELEVATION OF CATTLE GUARD
ON STATE SECONDARY OR PARISH ROADS
Type A or B Steel Rail Cattle Guard to be used.

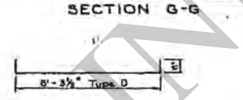


PART ELEVATION E-E
Note: End Posts on Type D to be similar to End Posts on Type A, B, and C

PART SECTION F-F

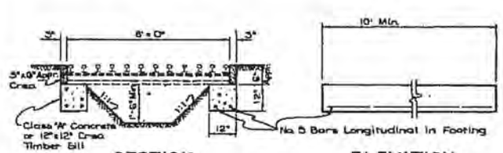


SECTION G-G



Detail No. 5 Bars a

Detail No. 4 Bars b

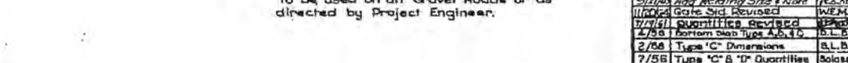


SECTION ELEVATION

Note: Above Footing to be used where Cattle Guard is Temporary and Traffic is Light. Creosoted Timber, Reinforcing Steel and Class "A" Concrete to be included in Bid Price for Steel Rail Cattle Guard.

To Be Used With Type D Steel Rail Cattle Guard.

PART PLAN
Showing Reinforcing in Walls and Slab



DETAIL OF APPROACHES TO CATTLE GUARD
To be used on all Gravel Roads or as directed by Project Engineer.

BILL OF MATERIAL

STEEL RAIL CATTLE GUARD		CONCRETE STRUCTURE	No. 5 BARS a			No. 4 BARS b			No. 4 BARS c			No. 4 BARS d			No. 4 BARS d1			DEFORMED REINFORC. STEEL	FABRICATED CARBON STEEL	CLASS A CONCRETE
TYPE	DIMENSIONS	OVERALL DIMENSIONS	NO.	FT.	IN.	NO.	FT.	IN.	NO.	FT.	IN.	NO.	FT.	IN.	NO.	FT.	IN.	POUNDS	POUNDS	CU. YDS.
A	8' x 30'	9'-1½" x 31'-1½"	62	10	- 0	74	2	- 9	15	30	- 10	5	8	- 10	2	5	- 5	1125	* 8239	10.89
B	8' x 20'	9'-1½" x 21'-1½"	42	10	- 0	54	2	- 9	15	20	- 10	5	8	- 10	2	5	- 5	780	* 5607	7.50
C	8' x 15'	9'-1½" x 16'-1½"	32	10	- 0	44	2	- 8	15	15	- 10	5	8	- 10	2	5	- 5	607	* 4349	5.82
D	7'-6"x 10'	8'-7½" x 11'-1½"	22	9	- 8½	34	2	- 5	15	10	- 10	5	8	- 4	2	5	- 0	408	1375	3.16

Note: Proj. Engineer to check size of Rails and Dimensions before permitting Materials to be ordered.
Quantities shown above are for Cattle Guards with Bottom Slab.
Cattle Guard to be paid for as a Unit, Complete in Place.
Quantities shown for Fab. Carbon Steel do not include lbs, Fastenings, Bolts, Welds, etc.

* Based on 45° Deck Rails and 64° Stringer Rails.

APPROVED: Denney D. Whitt CHIEF ENGINEER DATE: 3-24-77

R-M-37

STANDARD PLAN
PORTABLE STEEL RAIL CATTLE GUARD
8' SPAN; 15', 20' AND 30' LENGTHS
7'-6" SPAN; 10' LENGTH
DATED Nov. 1954 42° TO 45° DECK RAILS

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED	DETAILED B.L.B.	TRACED Rollo
CHECKED	CHECKED	CHECKED
IN CHARGE OF		

DATE	DESCRIPTION	BY
	REVISIONS	
1/19/68	Stringer Rail Weight	H.J.C.
9/5/63	Add McKinley Size & Note	WEM
11/20/62	Gate Std. Revised	WEM
7/9/61	Quantities Revised	WEM
4/58	Bottom Slab Type A&B	B.L.B.
2/58	Type "C" Dimensions	B.L.B.
7/56	Type "C" & "D" Quantities	Solassi
7/55	Retraced	Rollo

R-M-37

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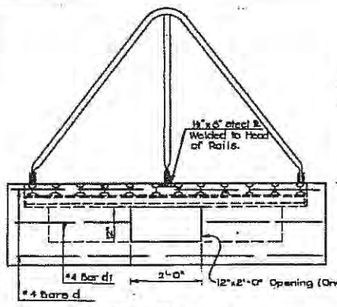
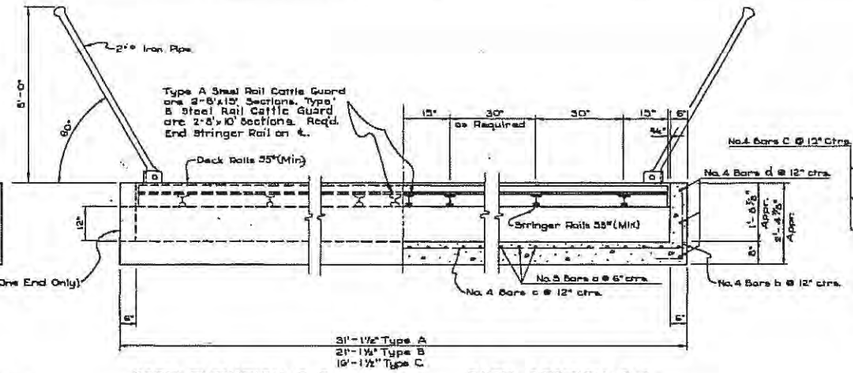
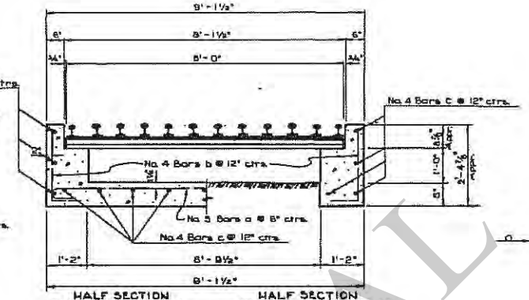
STATE PROJECT	PARISH	SHEET NO.



ELEVATION A-A
Showing Horizontal Steel in Wall

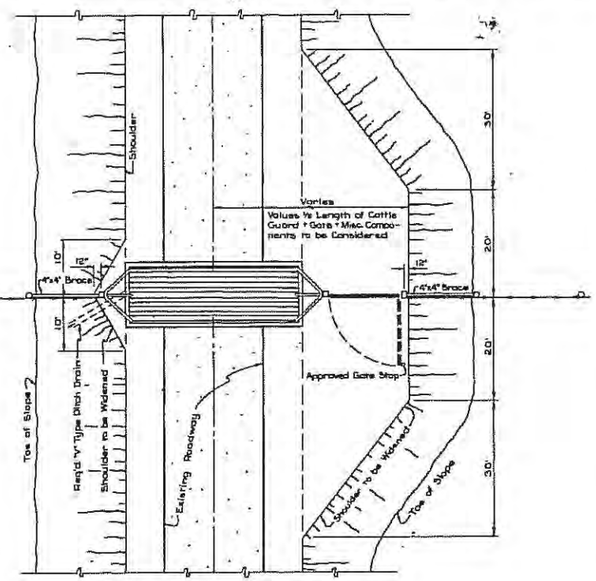


PART ELEVATION B-B

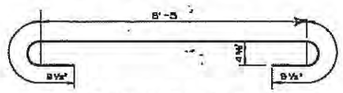


PART SECTION C-C

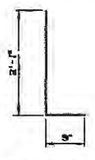
SECTION D-D



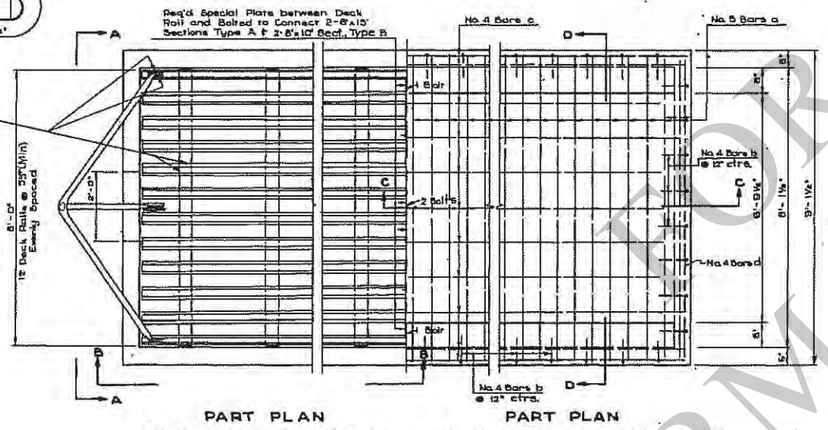
PLAN OF CATTLE GUARD
ON STATE SECONDARY OR PARISH ROADS
Type A or B Steel Rail Cattle Guard to be used.



Detail No. 5 Bars a

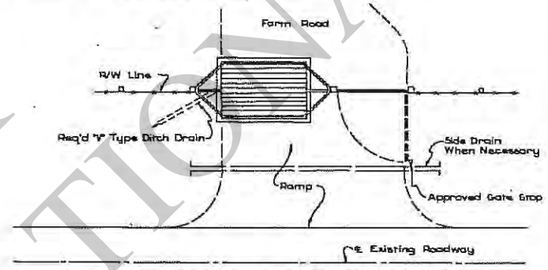


Detail No. 4 Bars b

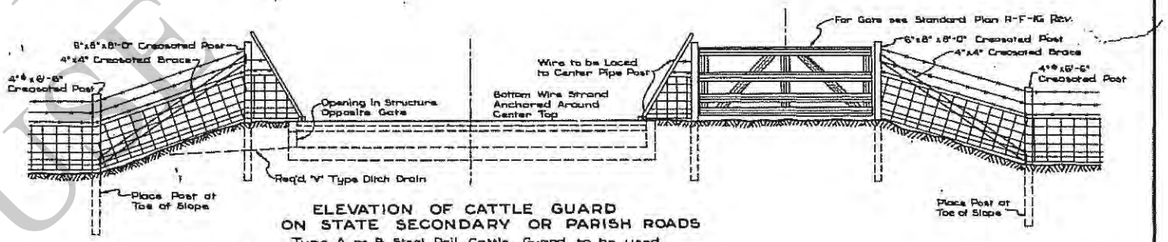


PART PLAN
Showing Steel Rail Cattle Guard

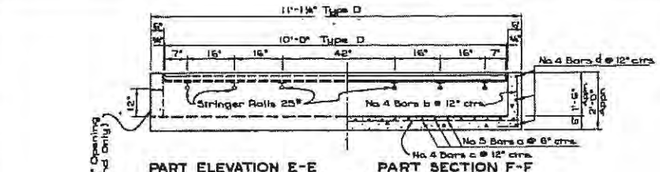
PART PLAN
Showing Reinforcing in Walls and Slab



PLAN OF CATTLE GUARD ON R/W LINE
Type C or D Steel Rail Cattle Guard to be used.

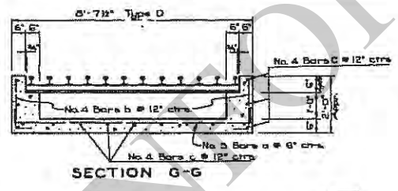


ELEVATION OF CATTLE GUARD
ON STATE SECONDARY OR PARISH ROADS
Type A or B Steel Rail Cattle Guard to be used.

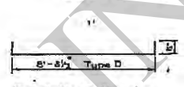


PART ELEVATION E-E
Note: End Posts on Type D to be similar to End Posts on Type A, B, and C

PART SECTION F-F

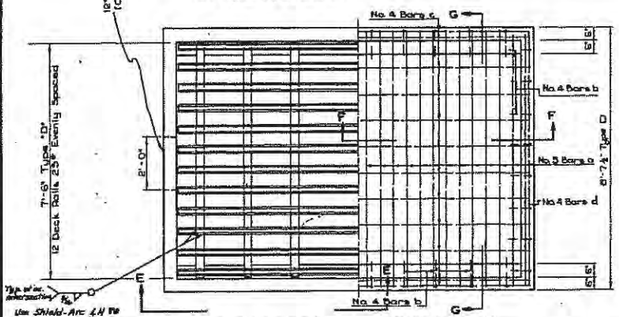


SECTION G-G



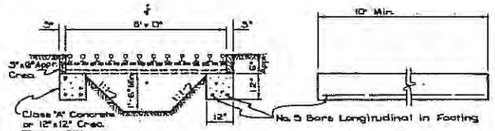
Detail No. 5 Bars a

Detail No. 4 Bars b



PART PLAN

PART PLAN
Showing Reinforcing in Walls and Slab



SECTION ELEVATION

Note: Above Flooring to be used where Cattle Guard is Temporary and Traffic is Light. Creosoted Timber, Reinforcing Steel and Class "A" Concrete to be included in Bid Price for Steel Rail Cattle Guard.

To Be Used With Type D Steel Rail Cattle Guard.

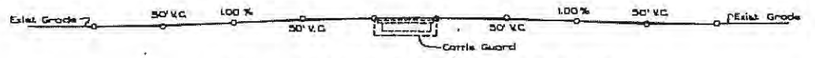
BILL OF MATERIAL

STEEL RAIL CATTLE GUARD		CONCRETE STRUCTURE	No.5 BARS a		No.4 BARS b		No.4 BARS C		No.4 BARS d		No.4 BARS di		DEFORMED REINFORC. STEEL	FABRICATED CARBON STEEL	CLASS A CONCRETE
TYPE	DIMENSIONS	OVERALL DIMENSIONS	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	NO.	FT. IN.	POUNDS	POUNDS	CU. YDS.
A	8' x 30'	9'-1½" x 31'-1½"	62	10 - 0	74	2 - 10	15	30 - 10	5	8 - 10	2	3 - 3	1150	* 10069	10.99
B	8' x 20'	9'-1½" x 21'-1½"	42	10 - 0	54	2 - 10	15	20 - 10	5	8 - 10	2	3 - 3	785	* 8827	7.60
C	8' x 15'	9'-1½" x 16'-1½"	32	10 - 0	44	2 - 10	15	15 - 10	5	8 - 10	2	3 - 3	610	* 4894	5.91
D	7'-6"x10'	8'-7½" x 11'-1½"	22	9 - 5½	84	2 - 5	15	10 - 10	5	6 - 4	2	3 - 0	408	1875	3.16

Note: Proj. Engineer to check size of Rails and Dimensions before permitting Materials to be ordered.
Quantities shown above are for Cattle Guards with Bottom Slab.
Cattle Guard to be paid for as a Unit, Complete in Place.
Quantities shown for Fab. Carbon Steel do not include Re, Fastenings, Bolts, Welds, etc.

* Based on 64# Deck Rails and 64# Stringer Rails

APPROVED: Dan Ray D 9/1/72 DATE 3-24-72
CHIEF ENGINEER



DETAIL OF APPROACHES TO CATTLE GUARD
To be used on all Gravel Roads or as directed by Project Engineer.

DATE	DESCRIPTION	BY
1/19/62	Stringer Rail Weight	H.J.C.
4/19/67	Deck Rail Weight	M.L.H.
9/21/67	Add welding sign & note	W.E.M.
11/20/68	Gate Std. Revised	W.E.M.

REVISIONS

STANDARD PLAN
PORTABLE STEEL RAIL CATTLE GUARD
8' SPAN; 15', 20' AND 30' LENGTHS
7'-6" SPAN; 10' LENGTH
DATED JULY 19 1961 55"(Min) DECK RAILS

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

DESIGNED	DETAILED B.L.B.	TRACED Rails
CHECKED	CHECKED RAH & WEM.	CHECKED RAH
IN CHARGE OF		

R-M-37 MOD.

R-M-37 MOD.

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FOR INFORMATIONAL USE

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6/24/2022

GENERAL NOTES - ROADSIDE TRAFFIC SIGNS

CONSTRUCTION SPECIFICATIONS: CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES. LATEST EDITION EXCEPT AS SUPPLEMENTED OR AMENDED BY THE PLANS, SUPPLEMENTAL SPECIFICATIONS AND/OR SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES AND TRAFFIC SIGNALS, 1994 AND INTERM SPECIFICATIONS.

STEEL: STEEL SHALL CONFORM TO A.S.T.M. A-709, GRADE 36. STEEL TUBING SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF A.S.T.M. DESIGNATION A-36 OR HOT-FORMED TUBING (A-501) OR PIPE (A-53) TYPE "E" OR "S", GRADE "B" OR COLD-FORMED TUBING (A-500) GRADE "B" OR "C", UNLESS OTHERWISE NOTED.

ALUMINUM: ALL ALUMINUM EXCEPT SIGN PANELS SHALL CONFORM TO ASTM B-221, B-308, OR B-429 ALLOY 6061-T6 UNLESS OTHERWISE NOTED. SIGN PANELS SHALL BE .080" THICK ALUMINUM CONFORMING TO ASTM B-209 ALLOY 5052-H38 OR 6061-T6.

CONCRETE AND REINFORCING STEEL: CONCRETE SHALL BE CLASS "M", UNLESS OTHERWISE NOTED. DIMENSIONS RELATING TO REINFORCING STEEL FABRICATION ARE OUT TO OUT OF BAR UNLESS OTHERWISE NOTED. DIMENSIONS RELATING TO REINFORCING STEEL SPACING ARE CENTER TO CENTER OF BAR OR FACE OF CONCRETE TO CENTERLINE OF BAR. REINFORCING STEEL SHALL HAVE A MINIMUM COVERING OF 2" EXCEPT WHEN CONCRETE IS CAST AGAINST THE EARTH THEN THE COVERING WILL BE 3". ALL REINFORCING STEEL SHALL BE GRADE 60. THE FIRST DIGIT OF REINFORCING BAR NUMBER INDICATES THE BAR SIZE. THE TOP EDGES OF THE FOOTING SHALL BE CHAMFERED ¾".

CONCRETE FINISH: ALL PORTIONS OF THE FOOTINGS FOR CANTILEVERS AND TRUSSES ABOVE GROUNDLINE SHALL HAVE A FINISH IN ACCORDANCE WITH LOUISIANA SPECIFICATION. 805.08.3.

WELDING: ALL WELDING SHALL CONFORM TO THE LA. STANDARD SPECIFICATIONS, SECTION 809 AND SUPPLEMENTAL SPECIFICATIONS.

GALVANIZING: ALL STRUCTURAL STEEL AND MISCELLANEOUS STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. DESIGNATION A-123. DAMAGE TO GALVANIZED SURFACES THAT ARE NOT TO BE ENCASED IN CONCRETE SHALL BE REPAIRED IN ACCORDANCE WITH LA. STANDARD SPECIFICATIONS, SECTION 811.08. ALL BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH A.S.T.M. DESIGNATION A-153 . ALL FIELD HOLES IN GALVANIZED MATERIAL SHALL BE TREATED WITH A COLD GALVANIZING COMPOUND FROM THE A.M.L.

BOLTS: UNLESS NOTED, ALL THREADED CONNECTIONS SHALL INCORPORATE A LOCKING DEVICE AND HAVE A MINIMUM OF 3 THREADS BEYOND THE NUTS. ALL BOLTS SHALL BE HIGH STRENGTH BOLTS, A.S.T.M. A-325, UNLESS OTHERWISE NOTED. ANCHOR BOLTS SHALL CONFORM TO AASHTO M314, GRADE 55 (OR APPROVED EQUAL) AND BE HOT DIP GALVANIZED TO A.S.T.M. A-153. STAINLESS STEEL FOR BOLTS SHALL CONFORM TO A.S.T.M. DESIGNATION A-320 B8, CLASS 2 TYPE 304, OR A-193 B8, CLASS 2 TYPE 304, UNLESS OTHERWISE NOTED. STAINLESS STEEL NUTS SHALL CONFORM TO A.S.T.M. DESIGNATION A-194, GRADE 8, TYPE 304. ALUMINUM BOLTS SHALL CONFORM TO A.S.T.M. F-468 ALLOY 2024-T4 AND NUTS ARE A.S.T.M. F-467 ALLOY 6061-T6 OR 6262-T9. WHERE BOLTS ARE USED ON BEVELED SURFACES, BEVELED WASHERS SHALL BE PROVIDED TO GIVE FULL BEARING TO THE HEAD AND/OR THE NUT.

RIVETS: ALL RIVETS SHALL BE ¼" DIAMETER BLIND RIVETS WITH POSITIVE MANDREL RETENTION. THE RIVET BODY AND MANDREL SHALL BE ALUMINUM WITH A ½" MAXIMUM DIAMETER DOME HEAD. THE RIVETS SHALL HAVE A MINIMUM ULTIMATE TENSILE STRENGTH = 875 LBS., AND CONFORM TO ASTM B-316 5056-H32.

BREAK-AWAY BASE: BASES FOR SIGNS LOCATED ADJACENT TO MORE THAN ONE ROADWAY (RAMP TERMINALS, INTERSECTIONS, ETC.) SHALL BE ORIENTED IN THE DIRECTION OF THE HIGHEST SPEED TRAFFIC. ALL MULTI-POST SIGNS WITH A DISTANCE BETWEEN POSTS OF 7'-0" CENTERS OR LESS SHALL HAVE BEVELED BASE CONNECTION. BASE CONNECTIONS SHALL BE WRAPPED PRIOR TO POURING THE FOOTING, WITH MATERIAL SUFFICIENT TO PREVENT CONCRETE SPLATTER ON THE BREAK-AWAY BASE ASSEMBLY.

ANCHOR BOLTS: ANCHOR BOLT NUTS TO BE TIGHTENED A MINIMUM ROTATION OF 240° (⅔ TURNS) FROM THE SNUG TIGHT CONDITION.

SIGN SHEETING: UNLESS OTHERWISE NOTED, ALL SIGN MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 1015 IN THE STANDARD SPECIFICATIONS. IN ORDER TO OBTAIN AN ACCEPTABLE COLOR MATCH BETWEEN MULTIPLE PANELS ON A GUIDE SIGN, ALL OF THE BACKGROUND SHEETING FOR ANY GUIDE SIGN SHALL BE THE MINIMUM WIDTH OF THE LARGEST PANEL AND SHALL COME FROM THE SAME LOT OR RUN NUMBER FROM THE SHEETING MANUFACTURER UNLESS OTHERWISE APPROVED IN WRITING. RETRO-REFLECTIVE SHEETING SHALL BE APPLIED TO ALL PANELS IN SUCH A MANNER THAT THERE ARE NO HORIZONTAL SPLICES.

OVERLAY PANELS FULL SIGN OVERLAY PANELS SHALL BE IN ACCORDANCE WITH SECTION 729.05.3. PARTIAL SIGN OVERLAYS AND ALL SHIELDS SHALL HAVE SHIMS AT ALL RIVETS. SHIMS SHALL BE AT LEAST .080" THICK AND SIZED SO THEY WILL NOT EXTEND BEYOND EDGE OF OVERLAY. RIVETS SHALL BE AS SPECIFIED ON THIS STANDARD DETAIL SHEET.

SIGN LOCATIONS: FOR GROUND MOUNTED SIGN INSTALLATIONS, THE ENGINEER MAY ADJUST THE TYPE D AND E SIGN LOCATIONS INDICATED ON THE PLANS. THIS WILL BE ALLOWED TO AVOID PLACEMENT IN DEEP DITCHES, STEEP BACKSLOPES, TREE LINES, AND ANY OTHER UNACCOUNTED FOR FIELD CONDITIONS AND TO PROVIDE BETTER MESSAGE PRESENTATION. ANY ADJUSTMENTS MUST BE WITH THE CONCURRENCE OF THE GEOMETRIC DESIGN ENGINEER.

SIGN TYPES: TYPE A = SMALL SIGN WITH ONE POST; TYPE B = CLUSTER ASSEMBLY OF TYPE A SIGNS; TYPE D = LARGE RECTANGULAR SIGN ADJACENT TO TRAFFIC MOUNTED WITH MULTIPLE POSTS; TYPE E = SECONDARY SIGN (SUCH AS AN EXIT NUMBER PANEL) ATTACHED TO A LARGE RECTANGULAR PRIMARY SIGN; DELINEATOR, MILEPOST AND OBJECT MARKER SIGNS ARE NOT COVERED UNDER TRAFFIC SIGNS. SEE STANDARD PLAN HS-03.

MISCELLANEOUS: THE CONTRACTOR SHALL MARK THE DATE OF FABRICATION, SHEETING MANUFACTURER CODE, AND SIZE OF SIGN ON THE BACK OF EACH SIGN. FOR EXTRUDED PANEL SIGNS THE LETTER HEIGHT SHALL BE 2". FOR ALL OTHER FLAT SHEETING SIGNS, THE LETTER HEIGHT SHALL BE ¾". THE SIGN ID NUMBERS SHALL FOLLOW THE ABOVE REQUIREMENTS BUT SHALL HAVE A BLUE BACKGROUND WITH WHITE NUMBERS. ALL MARKINGS SHALL HAVE A CLEAR UV PROTECTIVE FILM INSTALLED OVER THEM. SEE DETAIL "A" SHEET 5 OF 17.

POST HINGE SPLICE ON MULTI-POST SIGNS WITH ALL POSTS CONNECTED BY A SECONDARY SIGN SHALL BE LOCATED BELOW THE SECONDARY SIGN. STUB POST SHALL BE ASSEMBLED TO SIGN POST WITH REQUIRED BOLTS AND ONE FLAT WASHER ON EACH BOLT BETWEEN PLATES PRIOR TO SHIPMENT. POST SPLICE SLIP PLATE SHALL BE ASSEMBLED TO MINIMUM BOLT TENSION IN SHOP PRIOR TO SHIPMENT. SIGN POST SHALL BE SHIPPED TO JOB SITE ASSEMBLED WITH ALL HARDWARE REQUIRED IN PLACE AND SECURED. EXPOSED ENDS OF ALL PIPE SHALL BE CAPPED. USE OF SECTIONS PROVIDING EQUAL OR GREATER STRENGTH FOR ANY MEMBER DESIGNATED ON THE PLANS SHALL BE SUBMITTED TO THE BRIDGE ENGINEER FOR APPROVAL.

ALL DIMENSIONS REQUIRED FOR SATISFACTORY INSTALLATION SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE FABRICATION. ADJUSTMENTS SHALL BE MADE AS DIRECTED BY THE ENGINEER.

ALL ALUMINUM SURFACES PLACED IN CONTACT WITH, OR FASTENED TO UNGALVANIZED STEEL MEMBERS SHALL BE THOROUGHLY COATED WITH AN APPROVED ALUMINUM IMPREGNATED CAULKING COMPOUND. PAINT ALUMINUM SECTIONS IN CONTACT WITH CONCRETE WITH A HEAVY COAT OF AN ALKALI RESISTANT BITUMINOUS PAINT OR A COAT OF ZINC CHROMATE PAINT AND ALLOW TO DRY BEFORE PLACING. ALUMINUM ALLOYS SHALL NOT BE PLACED IN CONTACT WITH COPPER, COPPER BASED ALLOYS, LEAD, OR NICKEL.

SHOP DRAWINGS: NOT REQUIRED FOR SIGN BACKING AND SMALL GROUND MOUNTED SIGN SUPPORTS, UNLESS FABRICATOR INTENDS TO DEVIATE FROM THE DETAILS HEREIN. SHOP DRAWING ARE REQUIRED FOR ALL STRUCTURE MOUNTED SIGNS.

WIND LOAD MAP

WIND LOAD MAP LEGEND			
SYMBOL	ROADSIDE MOUNTED		
	ZONE	WIND VELOCITY (MPH)⊗	WIND LOAD (PSF) △
	1	70	20
	2	80	27

⊗ 25 YEAR MEAN RECURRENCE INTERVAL

△ INCLUDES C_d = 1.2

SHEET	BRIDGE STANDARD INDEX NO.	DESCRIPTION
1 OF 17	BD.2.7.2.0.1	WIND LOAD MAP & GENERAL NOTES
2 OF 17	BD.2.7.2.0.2	PANEL DETAILS (TYPE A & B SIGNS)
3 OF 17	BD.2.7.2.0.3	MOUNTING DETAILS (TYPE A & B SIGNS)
4 OF 17	BD.2.7.2.0.4	SPACING OF POSTS FOR GROUND MOUNTED SIGNS
5 OF 17	BD.2.7.2.0.5	EXTRUDED ALUMINUM SIGNS (TYPE D & E SIGNS)
6 OF 17	BD.2.7.2.0.6	EXTRUDED ALUMINUM PANELS (TYPE D & E SIGNS)
7 OF 17	BD.2.7.2.0.7	ROADSIDE MOUNTED SIGNS (TYPE A, B, & D SIGNS)
8 OF 17	BD.2.7.2.0.8	ROADSIDE MOUNTED SIGN DETAILS (TYPE A & B SIGNS)
9 OF 17	BD.2.7.2.0.9	ROADSIDE MOUNTED SIGN DETAILS (TYPE D SIGNS)
10 OF 17	BD.2.7.2.0.10	SQUARE TUBE SIGN DETAILS
11 OF 17	BD.2.7.2.0.11	Z - BRACKET SIGN SUPPORT (F - SHAPE BARRIER)
12 OF 17	BD.2.7.2.0.12	Z - BRACKET SIGN SUPPORT (F - SHAPE BARRIER)
13 OF 17	BD.2.7.2.0.13	Z - BRACKET SIGN SUPPORT (POST AND RAIL BARRIER)
14 OF 17	BD.2.7.2.0.14	Z - BRACKET SIGN SUPPORT (POST AND RAIL BARRIER)
15 OF 17	BD.2.7.2.0.15	CONTRAFLOW SIGNS (GROUND MOUNTED)
16 OF 17	BD.2.7.2.0.16	CONTRAFLOW SIGNS (F - SHAPE BARRIER)
17 OF 17	BD.2.7.2.0.17	CONTRAFLOW SIGNS (POST AND RAIL BARRIER)

IP_PWP:d0964073\Roadside Traffic Signs 01.dgn

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT#

DESIGN K. BRAUNER
CHECK C. GUIDRY
DETAIL K. BRAUNER
CHECK C. GUIDRY
REVIEW C. BOURGEOIS
SERIES # 1 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER: DATE: 7/1/2022

STATE OF LOUISIANA

WIND LOAD MAP & GENERAL NOTES

ROADSIDE SIGNING STANDARDS

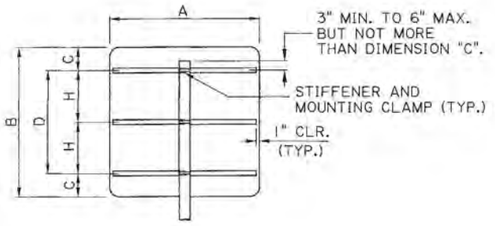
STANDARD PL AX

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

INFORMATIONAL USE ONLY

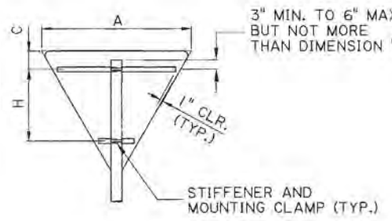
6/24/2022 09:14



SQUARE, RECTANGLE, CIRCLE, OCTAGON AND ROUTE MARKERS

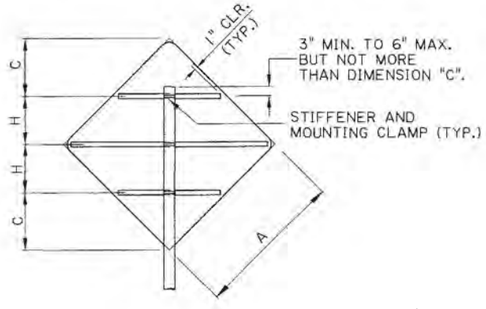
SQUARE, RECTANGLE, CIRCLE, OCTAGON AND ROUTE MARKERS					
A (IN.)	B (IN.)	C (IN.)	D (IN.)	H (IN.)	STIFFENER NUMBER REQUIRED
VARIABLE 12" TO 48"	6	3			1
	12	6			1
	15	7.5			1
	18	9			1
	24	6	12		2
	30	7.5	15		2
	36	7.5	21		2
	48	10	28		2
	60	9	42	21	3
	72	11	6 △	25	3
	84	10.5	6 △	21	4
48	96	12	6 △	24	4

△ LOCATION OF BORDER ANGLE FROM EDGE



EQUILATERAL TRIANGLE

EQUILATERAL TRIANGLE			
A (IN.)	C (IN.)	H (IN.)	STIFFENER NUMBER REQUIRED
24	8		1
30	6	10	2
36	6	12.5	2
48	6	23	2
60	6	33.5	2



DIAMOND

DIAMOND			
A (IN.)	C (IN.)	H (IN.)	STIFFENER NUMBER REQUIRED
24	10	6.97	1
30	12	9.21	2
36	14	11.46	2
48	18.5	15.44	3
60	22.5	19.93	3

NOTES:

NO BOLTS SHALL BE PLACED THROUGH FACE OF SIGN.

ALL TRACK HEAD BOLTS SHALL HAVE HEADS DESIGNED TO FIT AND TRANSMIT LOAD TO BOLT SLOTS IN THE STIFFENER.

STIFFENERS SHALL BE ALUMINUM EXTRUSIONS AS DETAILED ON THIS SHEET UNLESS OTHERWISE NOTED.

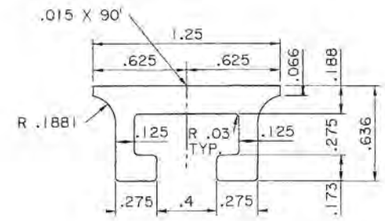
MOUNTING CLAMPS REQUIRED AT EACH HORIZONTAL STIFFENER.

SIGN PANELS AND POSTS SHALL BE THE SIZE REQUIRED ON THE PLANS AND SUMMARY SHEET.

SEE OTHER SHEETS FOR MOUNTING DETAILS.

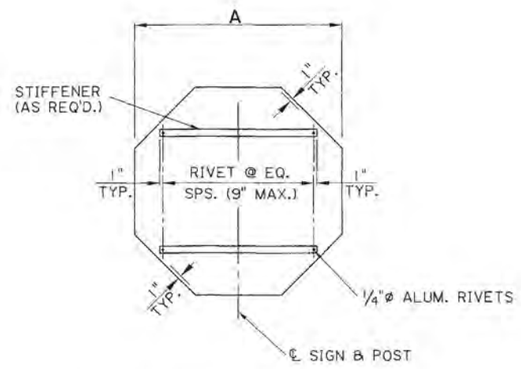
ALL SIGNS THAT REQUIRE BACKING SHALL BE INSTALLED WITH RIVETS.

THIS SHEET TO BE USED WITH WIND LOAD MAP AND GENERAL NOTES SHEET.

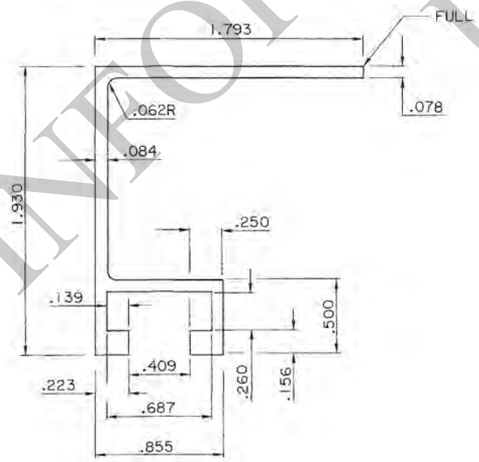


EXTRUDED CHANNEL DETAIL

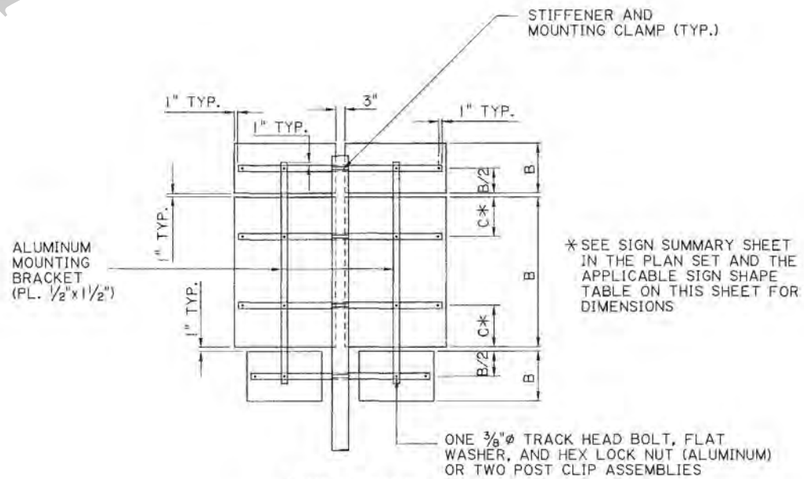
TYPE A SIGNS



TYPICAL SIGN BACKING DETAIL



EXTRUSION STIFFENER
THIS STIFFENER REQUIRES THE USE OF RIVETS



TYPE B SIGN
CLUSTER ASSEMBLY

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	K. BRAUNER
CHECK	C. GUIDRY
DETAIL	K. BRAUNER
CHECK	C. GUIDRY
REVIEW	C. BOURGEOIS
SERIES #	2 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30057
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER: DATE: 7/1/2022

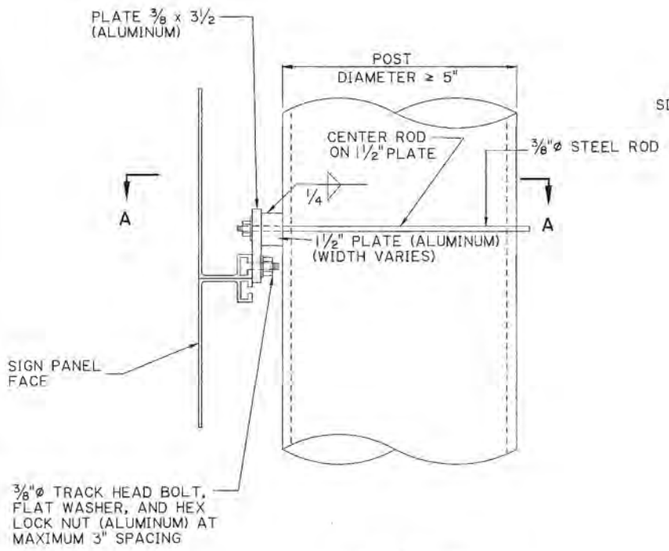
PANEL DETAILS
(TYPE A & B SIGNS)

ROADSIDE SIGNING STANDARDS

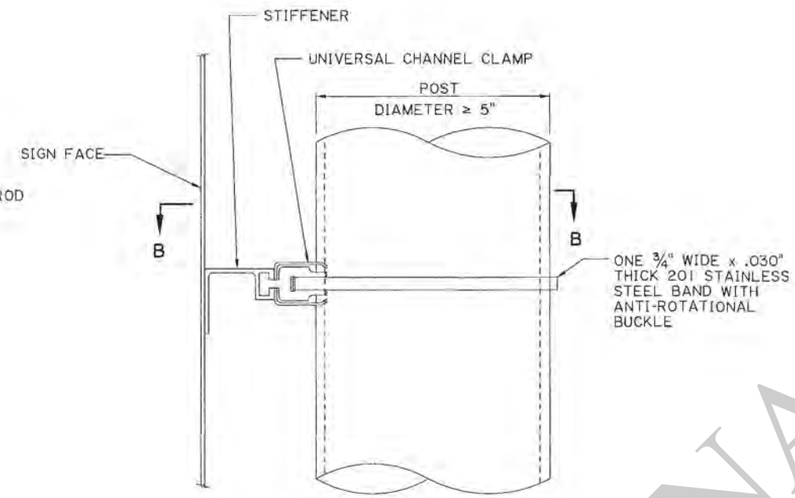
STANDARD PLAN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

IP_PWP:d0964073\Roadside Traffic Signs 02.dgn



ELEVATION
(TYPICAL AT EACH STIFFENER)

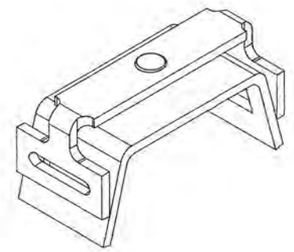


ELEVATION
TYPICAL AT EACH STIFFENER

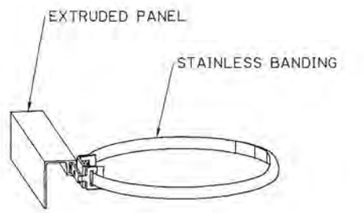
NOTES:
NO BOLTS SHALL BE PLACED THROUGH FACE OF SIGN.

ALL TRACK HEAD BOLTS SHALL HAVE HEADS DESIGNED TO FIT AND TRANSMIT LOAD TO BOLT SLOTS IN THE STIFFENER.

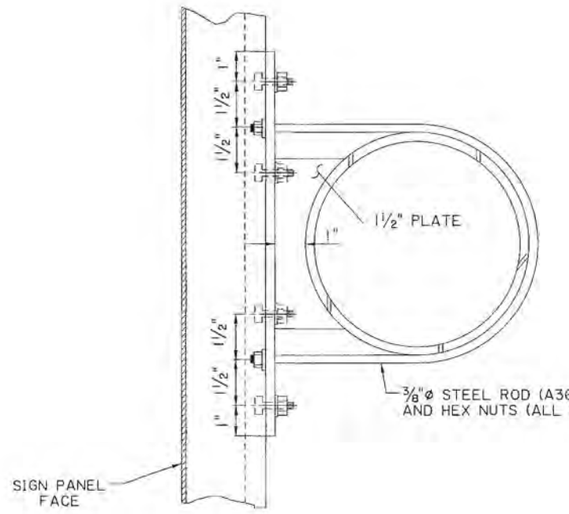
MOUNTING CLAMP REQUIRED AT EACH HORIZONTAL STIFFENER.



STAINLESS STEEL BANDING

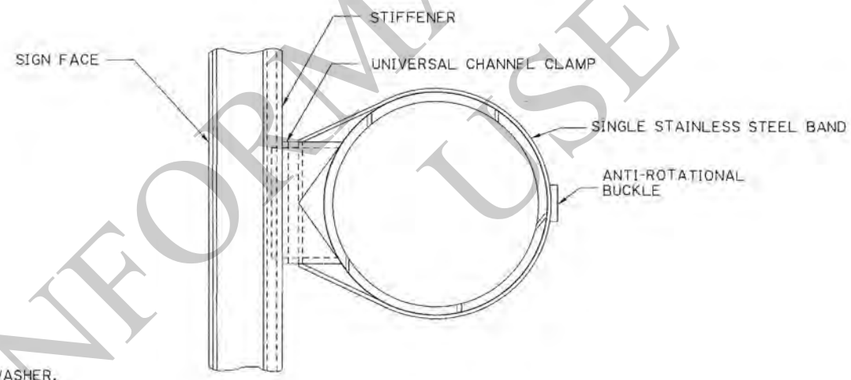


EXTRUDED PANEL BANDING CLIP



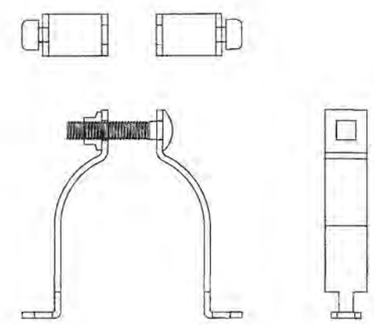
SECTION A-A

MOUNTING DETAIL (TYPE I)
FOR NON-TAPERED ROUND METAL POST SIZES ≥ 5" DIAMETER AND SIGNS > 20 SQ. FT.



SECTION B-B

MOUNTING DETAIL (BAND TYPE)
FOR ALL POSTS ≥ 5" AND WITH SIGN AREAS ≤ 20 SQ. FT. OR LESS THAN 4 FEET WIDE



ROUND POST CLAMPS

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	K. BRAUNER	DETAIL	K. BRAUNER	REVIEW C. BOURGEOIS
CHECK	C. GUIDRY	CHECK	C. GUIDRY	SERIES • 3 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 36567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/21/22

APPROVED BY CHIEF ENGINEER:
DATE: 7/1/2022

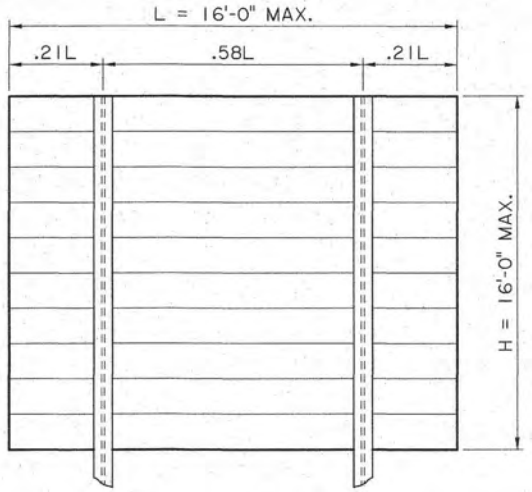
MOUNTING DETAILS (TYPE A & B SIGNS)

ROADSIDE SIGNING STANDARDS
STANDARD PLAN

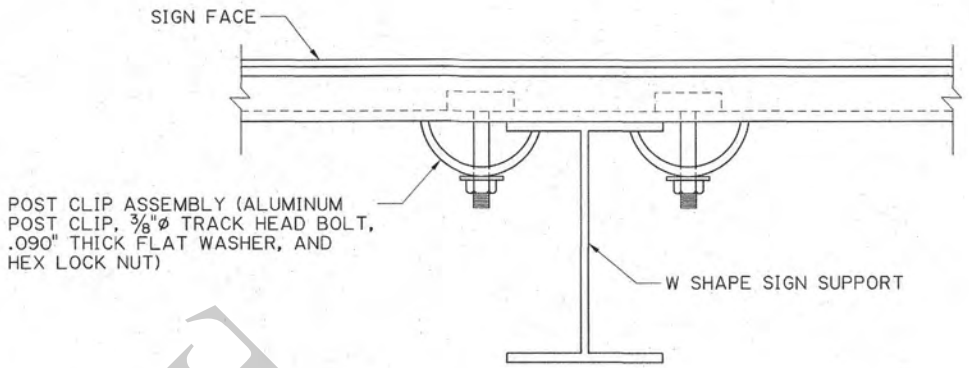
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

6/24/2022 09:16

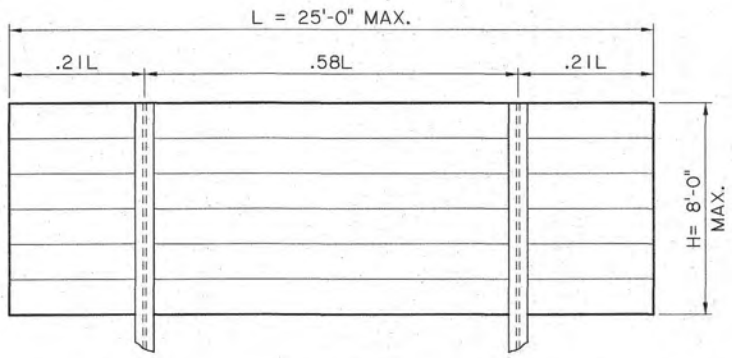
IP_PW2:d0964073\Roadside Traffic Signs 03.dgn



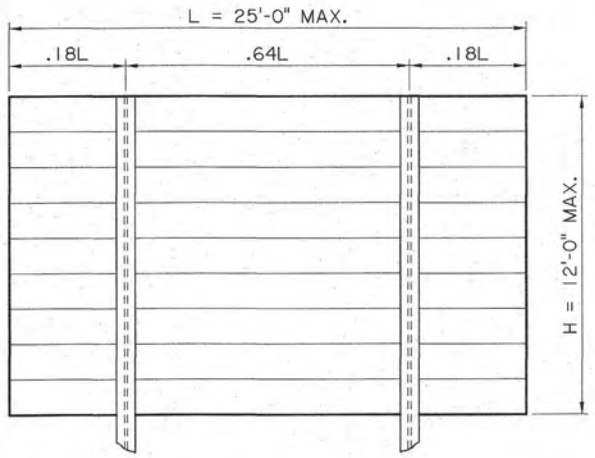
2 POSTS



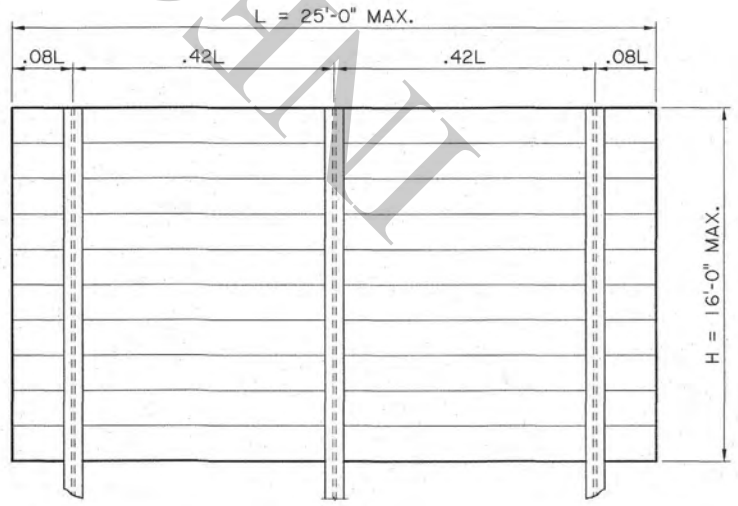
MOUNTING DETAIL (TYPE II)



2 POSTS



2 POSTS



3 POSTS

FOR INFORMATIONAL USE

09:18
6/24/2022

IP_PWP:d0964073\Roadside Traffic Signs 04.dgn

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN K. BRAUNER | DETAIL K. BRAUNER | REVIEW C. BOURGEOIS
CHECK C. GUIDRY | CHECK C. GUIDRY | SERIES # 4 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER:
DATE: 7/1/2022

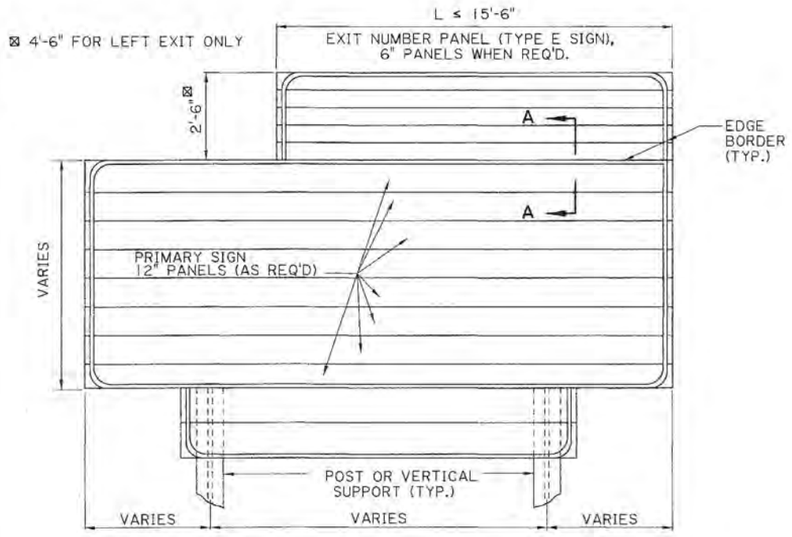
STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

SPACING OF POSTS FOR GROUND MOUNTED SIGNS

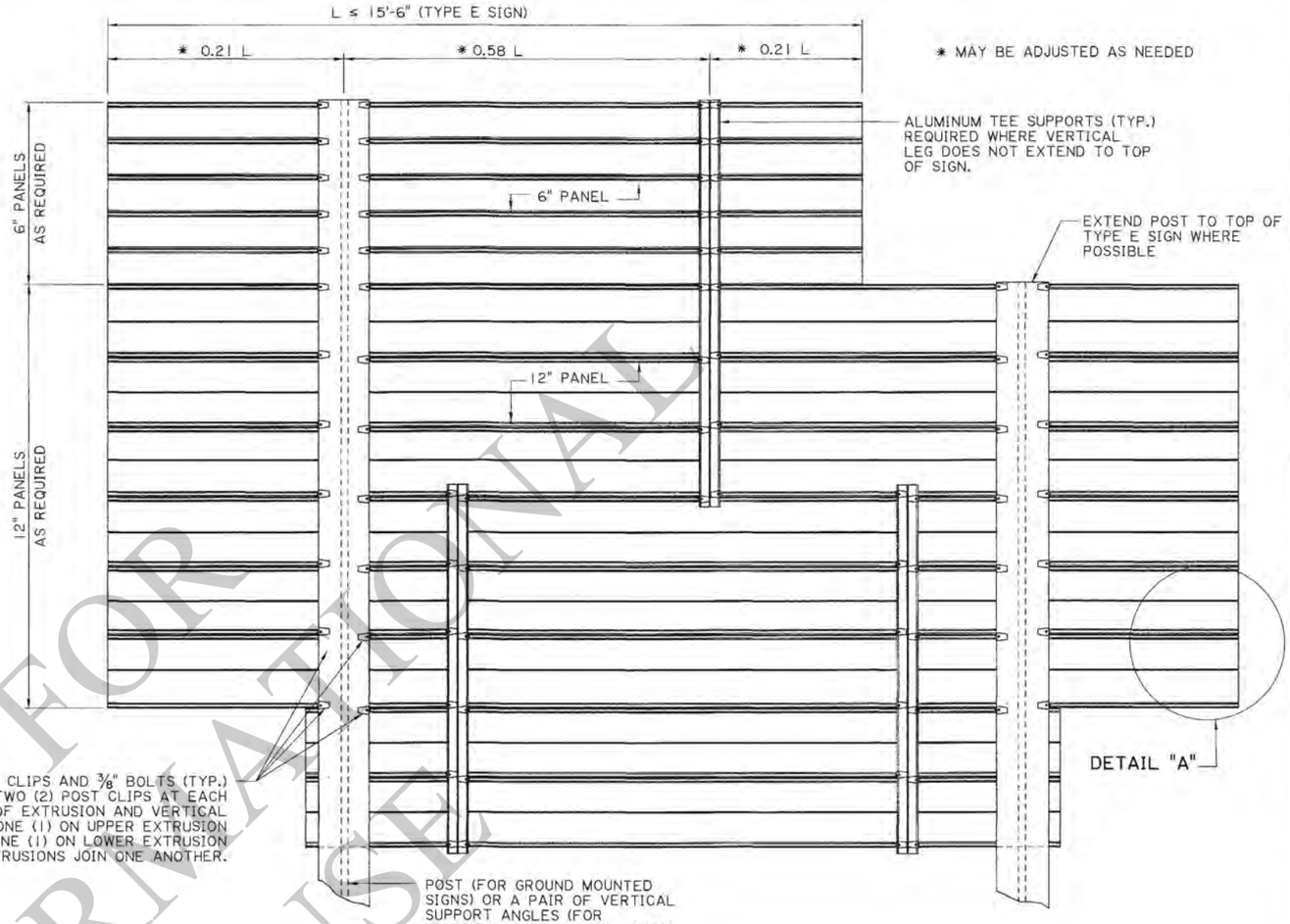
STANDARD PLAN: ROADSIDE SIGNING STANDARDS

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

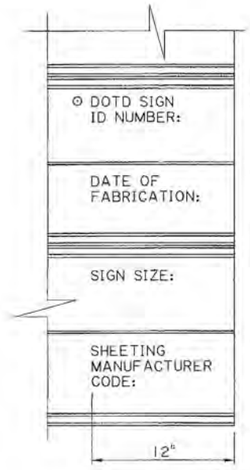
6/24/2022 09:19



FRONT ELEVATION



BACK ELEVATION



DETAIL "A"

2" LETTERING IN LAST 12" OF SIGN, SEE MISCELLANEOUS NOTE ON GENERAL NOTE SHEET OF TRAFFIC SIGN DETAILS.

NOTES:

EXTRUDED ALUMINUM PANELS WILL BE ALLOWED AS AN ALTERNATE TO SIGN PANEL DETAILS FOR TYPE "D" AND "E" GROUND MOUNTED SIGNS ONLY. NUMBER AND SPACING OF POST SHALL MATCH THOSE SHOWN FOR PANEL DETAILS.

ALL 12" EXTRUDED ALUMINUM PANELS SHALL BE ALUMINUM ALLOY 6063-T6.
ALL POST CLIPS SHALL BE ALUMINUM ALLOY 356-T6.
ALL EXTRUDED PANEL BOLTS AND POST CLIP BOLTS SHALL BE ALUMINUM.
ALL HEX LOCK NUTS SHALL BE ALUMINUM ALLOY 2017-T4.
ALL POST CLIP BOLTS SHALL BE TORQUED TO A MINIMUM OF 175 IN-LBS.
ALL POST CLIP BOLTS SHALL HAVE HEADS DESIGNED TO FIT THE BOLT SLOTS IN THE PANELS.

TYPE E SIGNS SHALL BE ATTACHED TO PRIMARY SIGNS WITH ALUMINUM TEE SUPPORTS, (5'-1" LENGTH), POST CLIPS, POST CLIP BOLTS, AND HEX LOCK NUTS.

FOR NEW OVERHEAD SIGNS (INCLUDING FASCIA MOUNTED) INCORPORATING EXISTING MOUNTS, THE CONTRACTOR WILL PLACE VERTICAL SUPPORT ANGLES WITHOUT SPLICES THAT EXTEND THE FULL HEIGHT OF THE EXTRUDED PRIMARY SIGN PANEL.

FOR NEW TYPE D SIGNS INCORPORATING EXISTING MOUNTS, THE EXISTING POST MAY BE REUSED IF THE NEW SIGN PANEL DOES NOT EXTEND OVER 2'-0" ABOVE THE EXISTING POST. SUCH NEW SIGNS WILL BE MOUNTED TO ALUMINUM TEE SUPPORTS BEGINNING AT THE TOP OF THE SIGN AND EXTENDING DOWNWARD FROM THE TOP OF THE POST THE DISTANCE THE NEW SIGN IS ABOVE THE EXISTING POST PLUS 1'-0". ONE TEE IS REQUIRED ADJACENT TO EACH EXISTING POST AND ATTACHED WITH POST CLIPS AS SHOWN FOR NEW TYPE E SIGNS. IF THE NEW SIGN EXTENDS OVER 2'-0" ABOVE THE EXISTING POST, THE CONTRACTOR IS TO REPLACE THE EXISTING POST AND MEET DETAILS FOR NEW CONSTRUCTION.

REFLECTIVE SHEETING FOR EXTRUDED PANELS: ONLY SPLICES THAT OCCUR AS PART OF THE MANUFACTURING PROCESS SHALL BE PERMITTED. A MAXIMUM OF TWO VERTICAL SPLICES ON ANY ONE SIGN FABRICATED USING EXTRUDED PANELS, WITH ONE SPLICE PER EXTRUDED PANELS SHALL BE ALLOWED. ALL "EXIT ONLY" PANELS THAT ARE DETAILED WITH THE TOP AND/OR BOTTOM EDGE NOT AT AN EXTRUDED PANEL EDGE SHALL BE FABRICATED FROM .080" ALUMINUM AND ATTACHED AS AN OVERLAY. ALL OTHER "EXIT ONLY" PANELS SHALL BE FABRICATED BY APPLYING THE YELLOW REFLECTIVE SHEETING ON THE EXTRUDED PANELS. THE REFLECTIVE SHEETING APPLIED TO EXTRUDED PANELS SHALL EXTEND APPROXIMATELY 1/4" OVER EACH SIDE AND SHALL BE ADHERED TO THE SIDE OF THE PANEL.

THIS SHEET TO BE USED WITH WIND LOAD MAP AND GENERAL NOTE SHEET.

FOR INFORMATIONAL USE

I:_PWP:d0964073\Roadside Traffic Signs 05.dgn

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN K. BRAUNER | CHECK C. GUIDRY | DETAIL K. BRAUNER | CHECK C. GUIDRY | REVIEW C. BOURGEOIS | SHEET # 5 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER: DATE: 7/1/2022

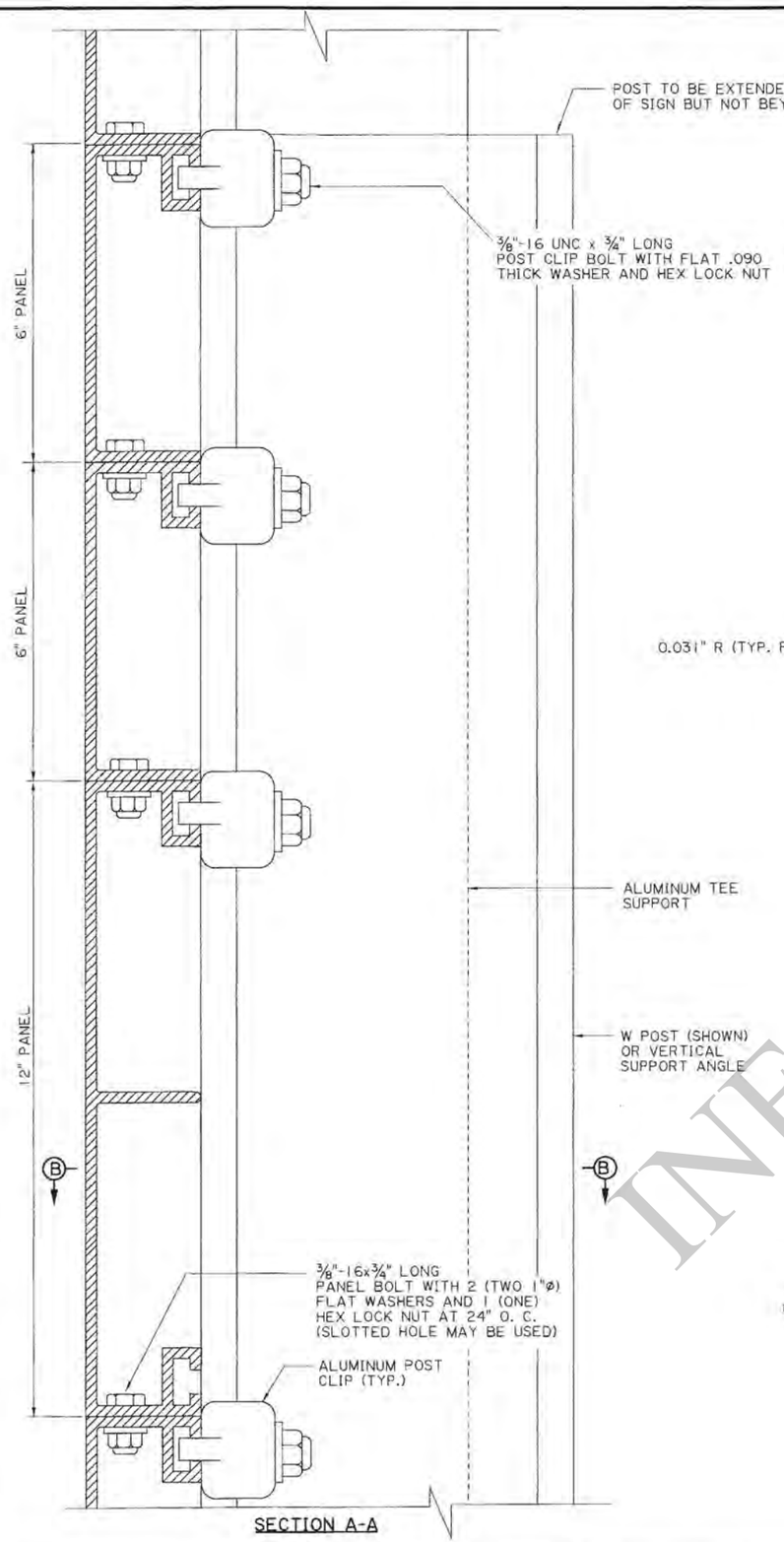
EXTRUDED ALUMINUM SIGNS (TYPE D & E SIGNS)

STANDARD PLAN ROADSIDE SIGNING STANDARDS

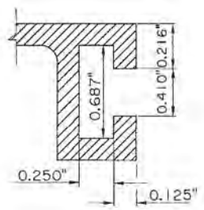
DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

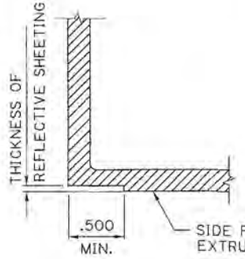
09:20
6/24/2022



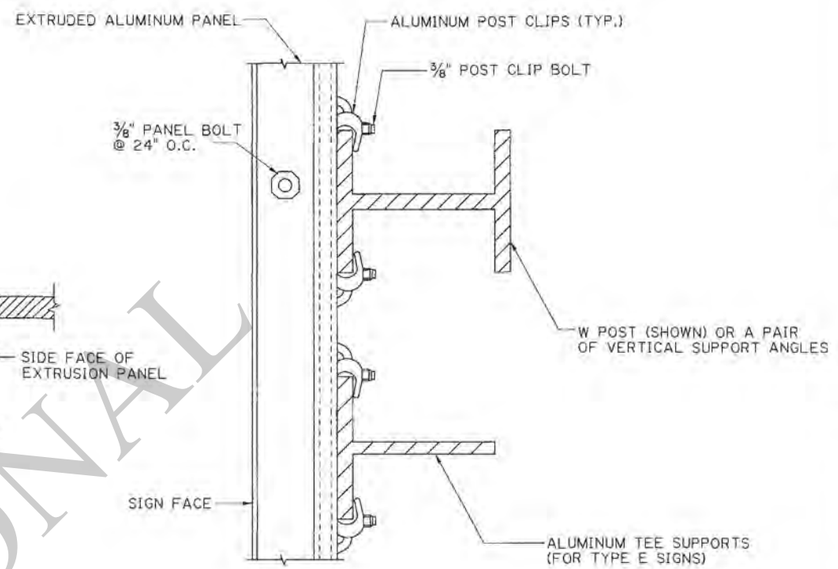
SECTION A-A



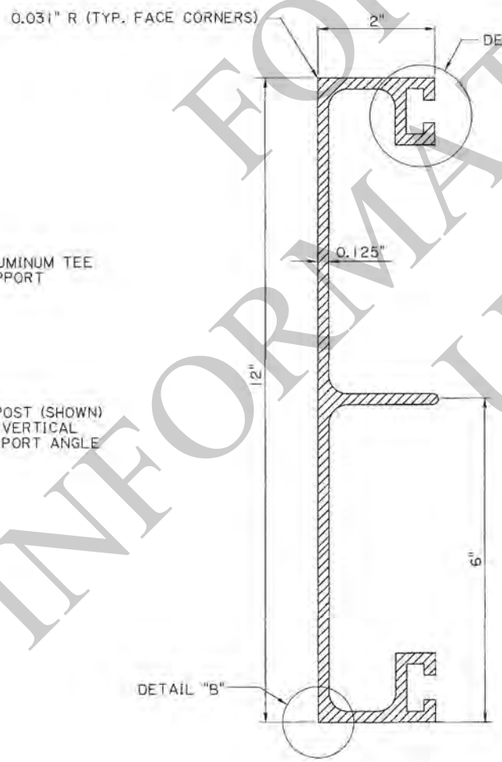
DETAIL "A"



DETAIL "B"

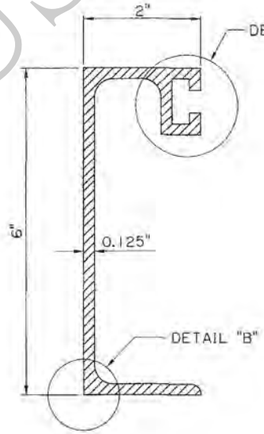


SECTION B-B



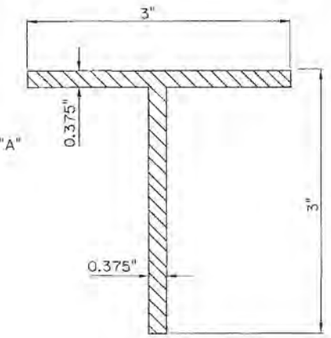
12" PANEL

MINIMUM WALL THICKNESS IS 0.080" UNLESS OTHERWISE SPECIFIED

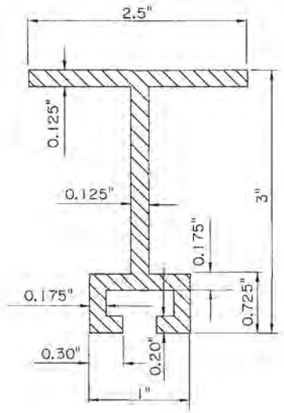


6" PANEL

MINIMUM WALL THICKNESS IS 0.080" UNLESS OTHERWISE SPECIFIED



3"x3"x3/8"



3"x2.5"

ALUMINUM TEE SUPPORTS
FOR TYPE E SIGNS

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	K. BRAUNER
CHECK	C. GUIDRY
DETAIL	K. BRAUNER
CHECK	C. GUIDRY
REVIEW	C. BOURGEOIS
SERIES #	6 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30647
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER: 7/1/2022
DATE:

EXTRUDED ALUMINUM PANELS (TYPE D & E SIGNS)

STANDARD PLAN: ROADSIDE SIGNING STANDARDS

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

IP_PWP:d0964073\Roadside Traffic Signs 06.dgn

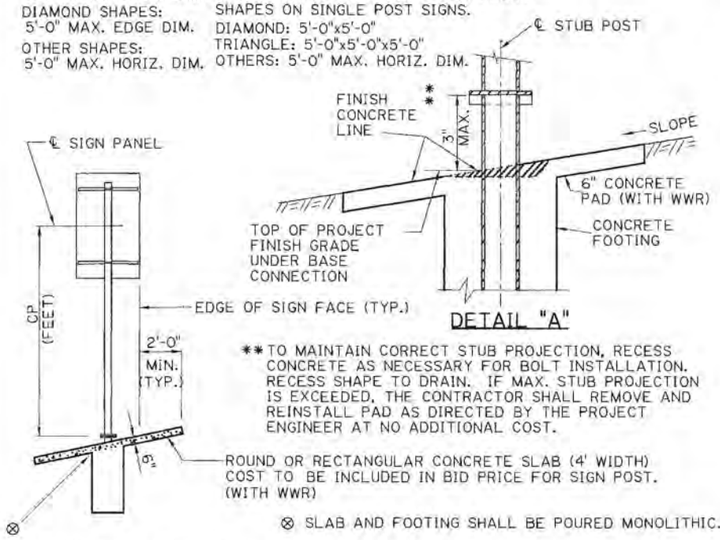
6/24/2022 09:21

TYPE A SIGN

RECTANGULAR SHAPES:
4'-0" MAX. HORIZ. DIM.
DIAMOND SHAPES:
5'-0" MAX. EDGE DIM.
OTHER SHAPES:
5'-0" MAX. HORIZ. DIM.

TYPE B SIGN

CLUSTER ASSEMBLY
MAX. DIM. FOR DIFFERENT SIGN BLANK SHAPES ON SINGLE POST SIGNS.
DIAMOND: 5'-0"x5'-0"
TRIANGLE: 5'-0"x5'-0"x5'-0"
OTHERS: 5'-0" MAX. HORIZ. DIM.



DETAIL "A"

**TO MAINTAIN CORRECT STUB PROJECTION, RECESS CONCRETE AS NECESSARY FOR BOLT INSTALLATION. RECESS SHAPE TO DRAIN. IF MAX. STUB PROJECTION IS EXCEEDED, THE CONTRACTOR SHALL REMOVE AND REINSTALL PAD AS DIRECTED BY THE PROJECT ENGINEER AT NO ADDITIONAL COST.

ROUND OR RECTANGULAR CONCRETE SLAB (4' WIDTH) COST TO BE INCLUDED IN BID PRICE FOR SIGN POST. (WITH WWR)

⊗ SLAB AND FOOTING SHALL BE POURED MONOLITHIC.

SINGLE POST MOUNTS																
CP	TOTAL SQ. FT. SIGN AREA															
	STEEL ALTERNATE															
	ZONE I								ZONE II							
	5	10	15	20	25	30	35		5	10	15	20	25	30	35	
7	1	1	1	2	2	2	3		1	1	2	2	3	3	3	
8			2			2					1					
9						3					2					
10					2								2			
11					3								3			
12	1	2								1						
13	2			2						2					3	
14				3								2			4	
15				3								3			4	
16	2	2	2	3	3	3	3		2	2	3	3	3	3	4	

SINGLE POST PIPE & TUBE SECTIONS	
NO.	STEEL
1	2½" ø SCH. 40
2	3½" ø SCH. 40
3	5" ø SCH. 40
4	6" ø SCH. 40

NOTES:

W POST SECTIONS AND TABLE:
COLUMNS HEADED BY THE NUMBERS 27 AND 20 REPRESENT THE DESIGN WIND PRESSURE IN POUNDS PER SQUARE FOOT.
SEE ACCOMPANYING LOUISIANA WIND MAP TO DETERMINE THE DESIGN WIND PRESURE.
L - LENGTH OF SIGN PANEL DESIGNED.
H - HEIGHT OF SIGN PANEL DESIGNED.
ALL DIMENSIONS ARE IN INCREMENTS OF EVEN FEET.

THIS SHEET TO BE USED WITH WIND LOAD MAP AND GENERAL NOTE SHEET.

CONCRETE SLAB TO BE REINFORCED WITH A.S.T.M. A1064 WWR 4x4-W4.0 x W4.0 AND FINISHED IN ACCORDANCE WITH LA. STD. SPECS. 805.08.5.

✡ 30' MAX. (15' MIN.) FOR FREEWAYS AND EXPRESSWAYS. 15' FOR FRONTAGE ROADS, "BRIDGE ICES BEFORE ROAD" SIGNS, AND TYPE D RAMP SIGNS. SEE SIGN SUMMARY SHEETS. PROJECT ENGINEER MAY ADJUST ON A CASE-BY-CASE BASIS.

⊠ 7' MINIMUM FOR ROUTE MARKERS, WARNING AND REGULATORY SIGNS. 8' MINIMUM FOR GUIDE SIGNS WHEN SECONDARY SIGN MOUNTED BELOW.

⊙ MOUNTING HEIGHT SHALL BE 7'-0" MIN. UNLESS OTHERWISE NOTED ON THE SIGN SUMMARY SHEET. CHEVRON SIGNS (W1-8) MAY BE INSTALLED AT 4'-0" OR HIGHER.

W POST SECTIONS FOR DOUBLE & TRIPLE POST MOUNTINGS																			
PL		STEEL		PL		STEEL		PL		STEEL		PL		STEEL		PL		STEEL	
L	H	27	20	L	H	27	20	L	H	27	20	L	H	27	20	L	H	27	20
5	1	1	1	12	5	2	1	16	5	4	4	21	8	3	3				
5	2	1	1	12	6	2	2	16	6	4	4	21	9	4	3				
5	3	1	1	12	7	2	2	17	4	2	2	21	10	4	3				
5	4	1	1	12	8	2	2	17	5	2	2	21	11	4	4				
5	5	1	1	12	9	2	2	17	6	2	2	21	12	4	4				
5	6	1	1	12	10	2	2	17	7	3	2	21	13	4	3				
6	1	1	1	12	11	3	2	17	8	3	2	21	14	4	3				
6	2	1	1	12	12	3	2	17	9	3	3	21	15	4	4				
6	3	1	1	12	13	3	3	17	10	3	3	21	16	4	4				
6	4	1	1	13	3	1	1	17	11	4	3	22	4	2	2				
6	5	1	1	13	4	1	1	17	12	4	3	22	5	2	2				
6	6	1	1	13	5	2	1	17	13	3	3	22	6	3	2				
6	7	1	1	13	6	2	2	17	14	3	3	22	7	3	3				
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11	9	2	2	16	9	3	2	20	15	4	4	25	11	4	4				
11	10	2	2	16	10	3	3	20	16	4	4	25	12	5	4				
11	11	3	2	16	11	3	3	21	4	2	2	25	13	4	4				
11	12	3	2	16	12	4	3	21	5	2	2	25	14	4	4				
12	3	1	1	16	13	4	3	21	6	3	2	25	15	4	4				
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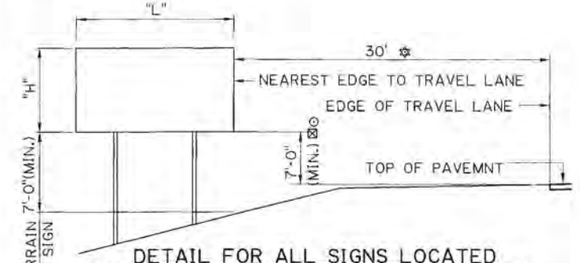
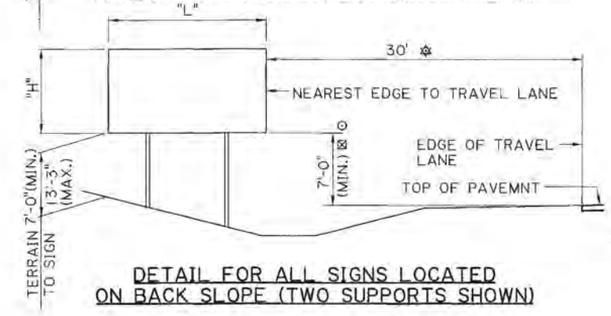
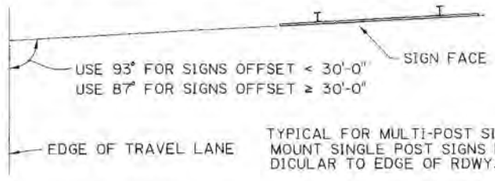
REAR ELEVATION OF SINGLE POST MOUNTING



DETAIL FOR ALL SIGNS LOCATED ON FORE SLOPE (TWO SUPPORTS SHOWN)



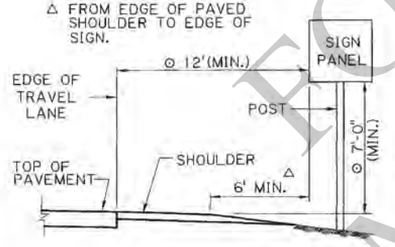
DETAIL FOR ALL SIGNS LOCATED ON BACK SLOPE (TWO SUPPORTS SHOWN)



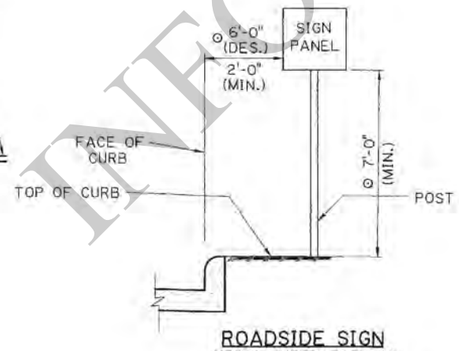
TYPICAL FOR MULTI-POST SIGNS. MOUNT SINGLE POST SIGNS PERPENDICULAR TO EDGE OF RDWY.

LOCATION OF ALL GROUND MOUNTED SIGN STRUCTURES (TWO SUPPORTS SHOWN)

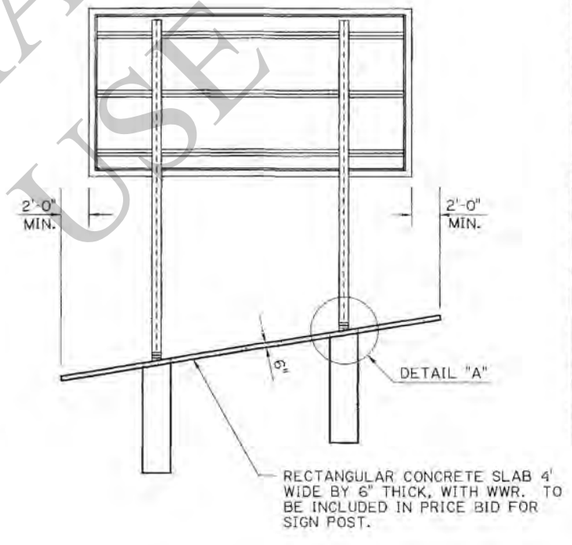
△ FROM EDGE OF PAVED SHOULDER TO EDGE OF SIGN.



ROADSIDE SIGN
RURAL INTERSECTIONS



ROADSIDE SIGN
URBAN INTERSECTIONS



REAR ELEVATION OF MULTI - POST MOUNTING

W SECTIONS	
NO.	STEEL
1	W6x12
2	W8x18
3	W8x24
4	W10x33
5	W12x40
6	W12x45

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN K. BRAUNER
CHECK C. GUIDRY
DETAIL K. BRAUNER
CHECK C. GUIDRY
REVIEW C. BOURGEOIS
SERIES * 7 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 36567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER: DATE: 7/1/2022

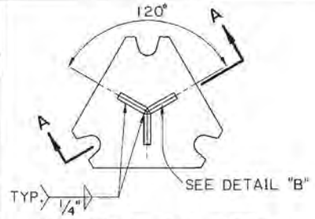
ROADSIDE MOUNTED SIGNS (TYPE A, B, & D SIGNS)

ROADSIDE SIGNING STANDARDS

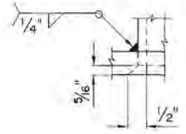
STANDARD PLAN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

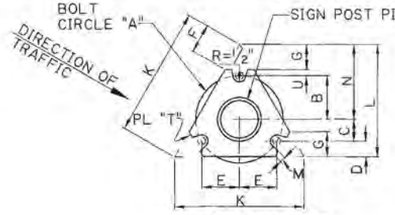
I:_PW\2d0964073\Roadside Traffic Signs 07.dgn



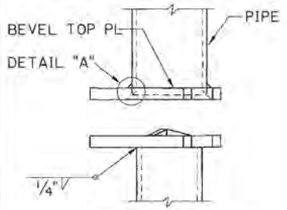
TOP VIEW STUB POST



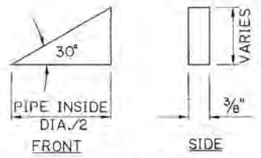
DETAIL "A"



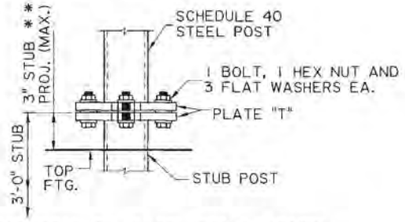
PLAN OF BASE



SECTION A-A



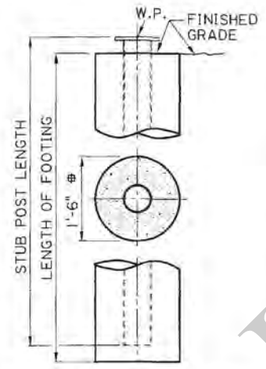
DETAIL "B"
3 REQ'D.



ELEVATION OF BASE CONNECTION
STEEL

MULTI-DIRECTIONAL BASE
SINGLE STEEL POST ONLY

** IF MAX. STUB PROJECTION IS EXCEEDED, CONTRACTOR SHALL REMOVE AND REINSTALL PAD AS DIRECTED BY THE PROJECT ENGINEER AT NO COST TO THE DEPARTMENT.



⊕ FOR 2½"ø (STEEL) POST SECTIONS, FOOTING DIAMETER SHALL BE 1'-0"

FOOTING DETAIL
PIPE SECTIONS

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

SPECIAL CARE SHALL BE TAKEN TO SET THE BASE PLUM TO AVOID EXCESSIVE SHIMMING AT THE BREAK-AWAY FEATURE AFTER FINAL INSTALLATION. EXCESSIVE SHIMMING COULD IMPAIR THE BREAK-AWAY FEATURE FOR WHICH THIS INSTALLATION WAS DESIGNED.

1. BASE SHALL BE ALIGNED AND SET PLUM BEFORE OR IMMEDIATELY AFTER POURING CONCRETE FOOTING.
2. H.S. BOLTS IN BASE PLATE SHALL BE TIGHTENED TO THE PRESCRIBED TORQUE. CARE SHALL BE TAKEN TO AVOID OVERTIGHTING.

FRICTION CAPS:

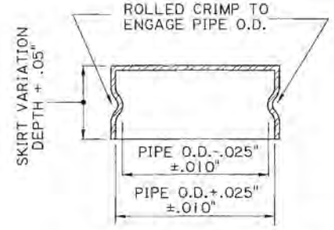
CAPS MAY BE MANUFACTURED FROM EITHER HOT ROLLED OR COLD ROLLED STEEL SHEETS. FOR PIPE SIZES 3½" AND SMALLER THE MINIMUM SHEET METAL THICKNESS SHALL BE 24 GAUGE. THE RIM EDGES SHALL BE REASONABLY STRAIGHT AND SMOOTH. CAPS SHALL BE SIZED AND FORMED IN SUCH A MANNER AS TO PRODUCE A DRIVE-ON FRICTION FIT AND HAVE NO TENDENCY TO ROCK WHEN SEATED ON THE PIPE. THE DEPTH SHALL BE SUFFICIENT TO GIVE POSITIVE PROTECTION AGAINST ENTRANCE OF RAINWATER. THEY SHALL BE FREE OF SHARP CREASES OR INDENTATIONS AND SHOW NO EVIDENCE OF METAL FRACTURE. CAPS SHALL HAVE A ELECTRODEPOSITED COATING OF ZINC IN ACCORDANCE WITH THE REQUIREMENTS OF A.S.T.M. SPECIFICATION B633 SC4, TYPE I.

THIS SHEET TO BE USED WITH WIND LOAD MAP AND GENERAL NOTE SHEET.

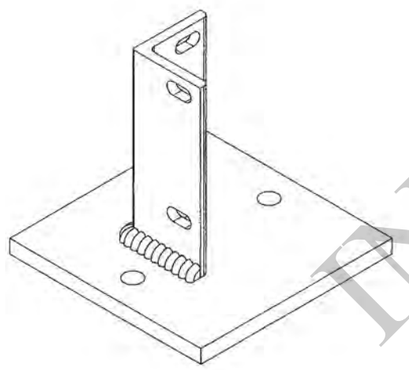
STEEL MULTI-DIRECTIONAL BASE CONNECTION DATA																	
NOMINAL PIPE SIZE	BOLT SIZE ⊙ & TORQUE	WELD SIZE	T	Y	A	B	C	D	E	F	G	K	L	M	N	U
2½" OR 3½" DIA.	5/8" T=226	3/8"	5/8"	7"	7"	3½"	1¾"	1¼"	3"	2 5/16"	2"	10 3/8"	9"	½"	6"	½"

FOR STUB POST LENGTH & FOOTING DIMENSION SEE TABLE BELOW AND FOOTING DETAIL.
⊙ TORQUE IN INCH-LBS., BOLTS ARE HIGH STRENGTH

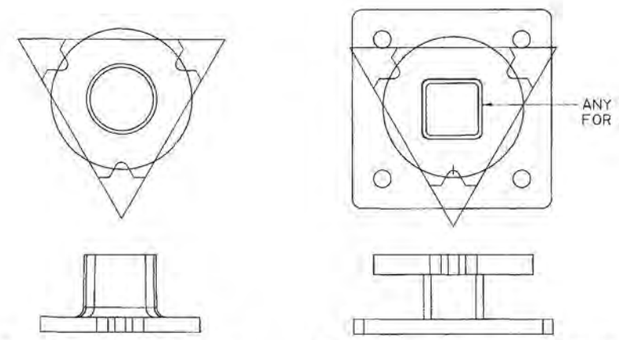
FOOTING DATA			
POST DIA.	STUB L	FOOTING L	CU.YD. CONC.
2½"	36"	36"	0.09
3½"	36"	36"	0.20
5"	48"	48"	0.26



FRICTION CAP DETAIL
USED AT TOP OF ALL POSTS



SURFACE MOUNT FOR MILE MARKERS
(SQUARE TUBE ONLY)



TYPICAL TOP ASSEMBLY

TYPICAL BOTTOM ASSEMBLY

CONCRETE SURFACE MOUNT

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN K. BRAUNER | DETAIL K. BRAUNER | REVIEW C. BOURGEOIS
CHECK C. GUIDRY | CHECK C. GUIDRY | SERIES # 8 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER: DATE: 7/1/2022

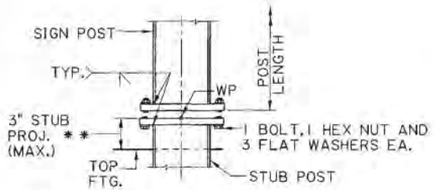
ROADSIDE MOUNTED SIGN DETAILS (TYPE A & B SIGNS)

STANDARD PLAN | ROADSIDE SIGNING STANDARDS

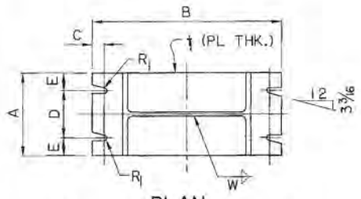
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

6/24/2022 09:24

IP PWP:d0964073\Roadside Traffic Signs 08.dgn

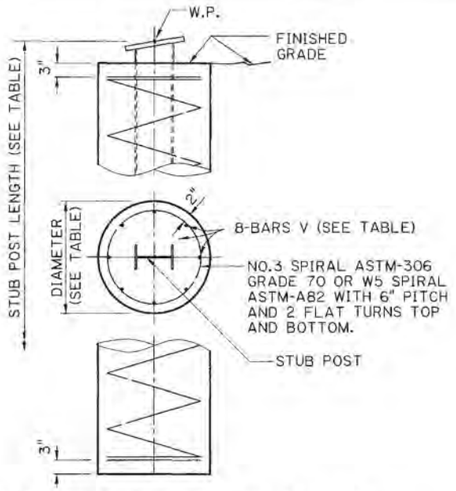


ELEVATION OF HORIZONTAL CONNECTION W SECTION



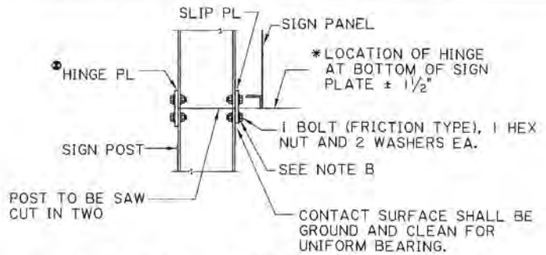
PLAN
BASE PLATE AND POST

ADD ½" FOR BEVELED BASE PLATES



CONCRETE FOOTING DETAIL W SECTION

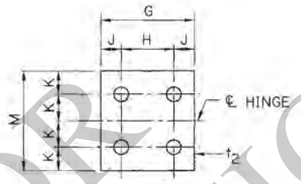
NOTE:
NO REINFORCING STEEL IS REQUIRED FOR 'S' SECTION.



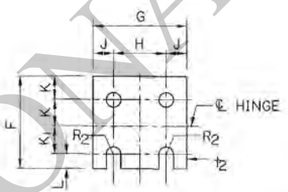
SLIP PLATE CONNECTION DETAIL

⊕ WHEN SIGN IS LOCATED ON SIDE OF ROADWAY WITH TWO WAY TRAFFIC, A SLIP PLATE WILL BE USED ON BOTH SIDES OF THE POST IN LIEU OF THE HINGE PLATE SHOWN

* FOR EXTRUSION SIGN PANEL ALTERNATE, LOCATION OF ℄ HINGE SHALL BE 3½" FROM BOTTOM OF SIGN PANEL.



HINGE PLATE DETAIL



SLIP PLATE DETAIL

BOLT HOLE DIAMETERS TO BE EQUAL TO BOLT DIA. + 1/16" IN POST FLANGE AND SLIP PLATE.

SLIP PLATE CONNECTION NOTES:

1. POST SHALL BE SAW CUT OR TORCH CUT PRIOR TO GALVANIZING.
2. SLIP PLATE SHALL BE INSTALLED WITH H.S. BOLTS AT MINIMUM BOLT TENSION.
3. TIGHTING SHALL BE OBTAINED BY
   (a) TURN OF NUT METHOD; OR
   (b) DIRECT TENSION INDICATOR METHOD USING LOAD INDICATOR WASHER. SEE NOTE A.
4. TIGHTING SHALL BE TO SUCH A DEGREE AS TO OBTAIN MINIMUM BOLT TENSION AS SPECIFIED IN STANDARD SPECIFICATIONS SUBSECTION 807.05, CURRENT AT TIME OF FABRICATION.
5. TIGHTEN BOLTS IN A SYSTEMATIC ORDER TO THE PRESCRIBED MINIMUM BOLT TENSION.

NOTE A:

WHEN HIGH STRENGTH BOLT IS TIGHTENED BY USE OF A DIRECT TENSION INDICATOR, THE INSTALLATION AND INSPECTION SHALL BE IN ACCORDANCE WITH SPECIFICATION FOR STRUCTURAL JOINTS, SECTION 5 AND 6 FOR ASTM A-325 BOLTS APPROVED BY THE RESEARCH COUNCIL ON RIVETED AND BOLTED STRUCTURAL JOINTS. FOR DETAILED INSTALLATION AND INSPECTION PROCEDURES FOLLOWED MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL BE REQUIRED TO SUBMIT BROCHURES TO THE BRIDGE DESIGN ENGINEER FOR APPROVAL.

NOTE B:

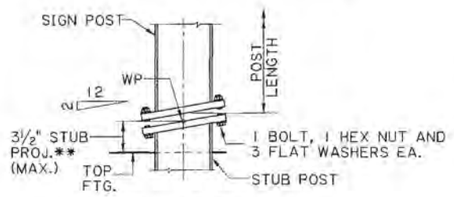
WHEN HIGH STRENGTH BOLT IS TIGHTENED BY USE OF A DIRECT TENSION INDICATOR METHOD, THE WASHER UNDER THE BOLT HEAD SHALL BE A LOAD INDICATOR WASHER.

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

SPECIAL CARE SHALL BE TAKEN TO SET THE BASE PLUMB TO AVOID EXCESSIVE SHIMMING AT THE BREAK-AWAY FEATURE AFTER FINAL INSTALLATION. EXCESSIVE SHIMMING COULD IMPAIR THE BREAK-AWAY FEATURE FOR WHICH THIS INSTALLATION WAS DESIGNED. SHIM PACKS SHOWN ON THIS DRAWING SHOULD BE SUFFICIENT TO ALLOW FOR NORMAL MISALIGNMENT.

1. BASE SHALL BE ALIGNED AND SET PLUMB BEFORE OR IMMEDIATELY AFTER POURING CONCRETE FOOTING.
2. H.S. BOLTS IN BASE PLATE SHALL BE TIGHTENED TO THE PRESCRIBED TORQUE. CARE SHALL BE TAKEN TO AVOID OVERTIGHTING.

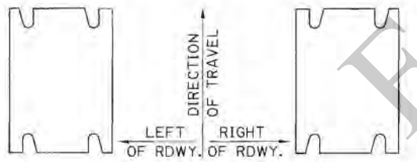
DIRECTION OF HIGHEST SPEED TRAFFIC



ELEVATION OF BEVELED CONNECTION W SECTION

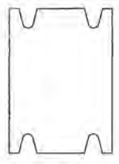
TO BE USED ON ALL MULTI-POST SIGNS WITH DISTANCE BETWEEN POSTS 7'-0" ℄ TO ℄ OR LESS.

** IF MAX. STUB PROJECTION IS EXCEEDED, CONTRACTOR SHALL REMOVE AND REINSTALL PAD AS DIRECTED BY THE PROJECT ENGINEER AT NO COST TO THE DEPARTMENT.



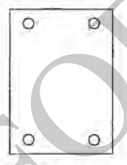
LEFT HAND SLOTS RIGHT HAND SLOTS

FOR ONE-WAY TRAFFIC LANES. FOR TWO-WAY TRAFFIC LANES, USE RIGHT HAND SLOTS ONLY.



TWO-WAY SLOTS

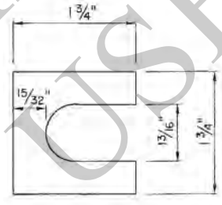
FOR GORE INSTALLATIONS



HOLES

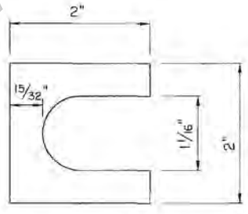
FOR BRIDGE MOUNTED SIGNS & SIGNS BEHIND GUARDRAIL

ORIENTATION AND USE OF SLOTS AND HOLES



* SHIM DETAIL

BOLTS UP TO ¾" ø BOLTS



* SHIM DETAIL

BOLTS UP TO 1" ø BOLTS

* FURNISH 2 SHIMS 0.012"± THICK AND 2 SHIMS 0.032"± THICK PER POST. SHIMS SHALL BE BRASS CONFORMING TO A.S.T.M. SPEC. B-36 AND BE USED AS DIRECTED BY THE PROJECT ENGINEER.

DIMENSION (INCH) / SECTION	BASE CONNECTION DATA										SLIP PLATE & HINGE PLATE DATA									FOOTING DATA				
	BOLT SIZE & * TORQUE LIMITS	A	B	C	D	E	t_1	R	W	W (ALT.) SEE NOTE	F	G	H	J	K	K_1	L	M	t_2	R_2	H.S. BOLT DIA.	STUB LTH.	FTG. DIA.	LTH. OF FTG.	BARS V SIZE	CU. YD. CONC.
W6x12	5/8"ø T= 226-345	4	10	¾	2	1	1½	11/32	5/16	5/16	3⅝	4	2¼	⅞	1	1¼	⅝	4¼	⅜	9/32	½	24	24	48	#5	0.46
W8x18		5¼	12	¾	3	1⅛	1½	11/32	5/16	5/16	4⅛	5¼	2¾	1¼	1⅛	1⅜	¾	4¾	½	11/32	⅝	24	24	60	#6	0.58
W8x24	¾"ø T= 369-554	6½	12½	⅞	3¼	1⅜	1¾	13/32	⅜	7/16	4⅛	6½	3½	1½	1⅛	1⅜	¾	4¾	½	11/32	⅝	30	24	72	#7	0.70
W10x33	1"ø T= 460-735	8	15½	1¼	4½	1¾	2	17/32	⅜	7/16	4⅝	8	5½	1¼	1¼	1½	⅞	5¼	⅝	13/32	¾	30	24	96	#9	0.93
W12x40		8	17½	1¼	4½	1¾	2	17/32	⅜	7/16	4⅝	8	5½	1¼	1¼	1½	⅞	5¼	⅝	13/32	¾	36	24	120	#10	1.16
W12x45		10	17½	1¼	6	2	2	17/32	⅜	7/16	5½	10	5½	2¼	1½	1¾	1	6¼	¾	15/32	⅞	36	36	96	#9	2.09

*BASE PLATE TO POST WELD ALTERNATE (AS AN ALTERNATE TO WELDS SHOWN IN DETAILS, THE POST MEMBERS TABULATED MAY BE WELDED ALL AROUND WITH A FILLET WELD W(ALT.).) ALL BOLTS SHALL HAVE A MINIMUM OF 3 THREADS BEYOND THE NUT. BOLT TORQUE LIMITS ARE IN INCH POUNDS. (THE HIGH STRENGTH BOLTS AT THE BASE CONNECTION SHOULD BE TORQUED WITHIN THE LIMITS SPECIFIED, HOWEVER, THE LOWER LIMIT IS DESIRABLE). FOR NON-BREAKAWAY USE TORQUE LIMITS GIVEN IN THE STANDARD SPECIFICATIONS

FOR INFORMATIONAL USE

SHEET NUMBER

DISTRICT	CONTROL SECTION	STATE PROJECT

DESIGN K. BRAUNER | DETAIL K. BRAUNER | REVIEW C. BOURGEOIS | SERIES - 9 OF 17
CHECK C. GUIDRY | CHECK C. GUIDRY

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER
DATE: 7/1/2022

STATE OF LOUISIANA

ROADSIDE MOUNTED SIGN DETAILS
(TYPE D SIGNS)

ROADSIDE SIGNING STANDARDS
STANDARD PLAN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

6/24/2022 09:31

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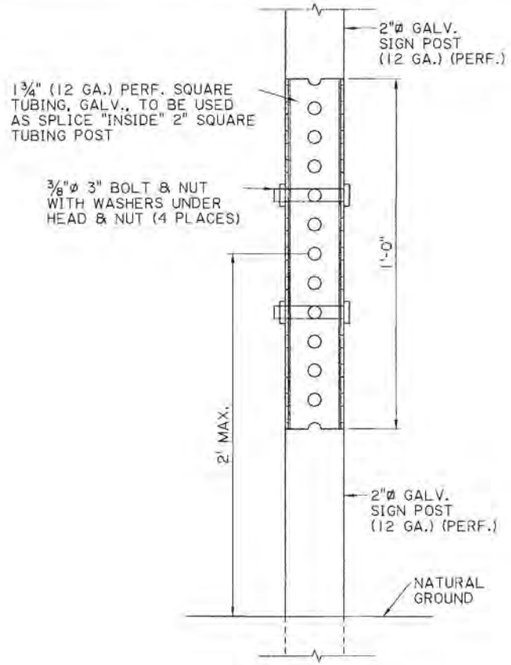
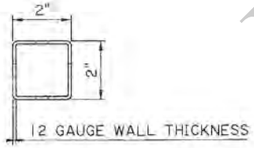
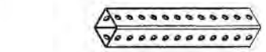
09:32
6/24/2022

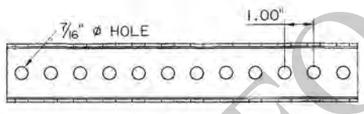


SPLICE JOINT
FOR SIGN 2" POST

FOOTING DETAIL
SQ. TUBE SECTIONS

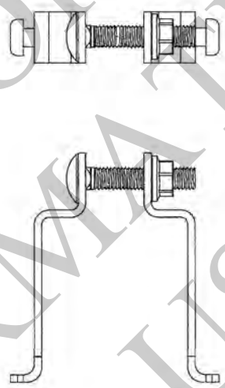






OD	GAUGE	WALL	WEIGHT PER FOOT
2.00"	12GA	0.105"	2.459#

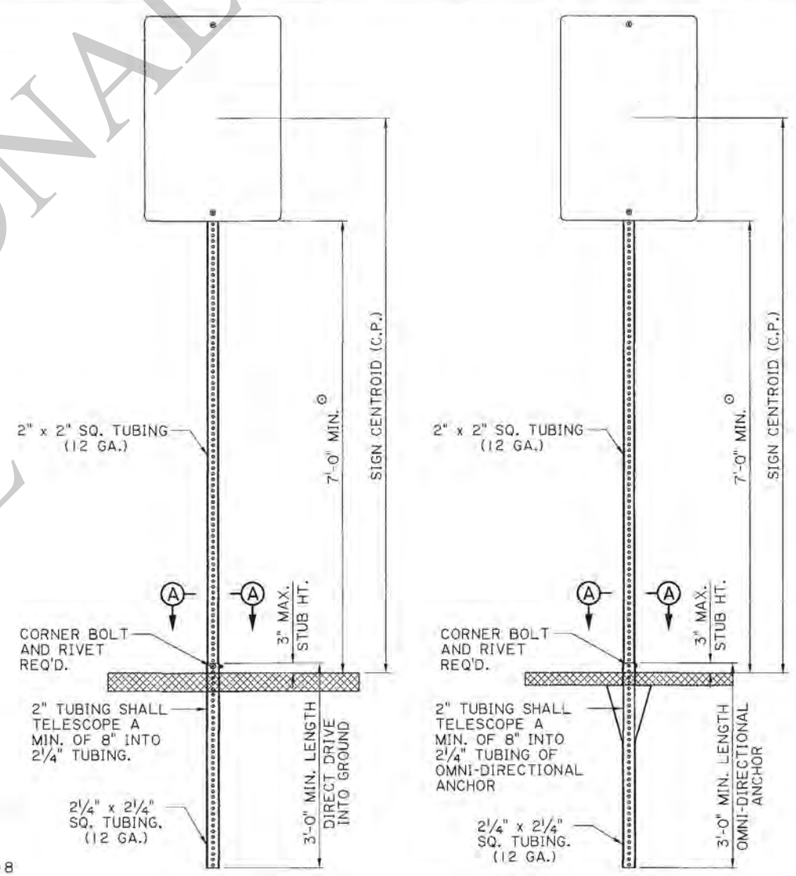
2" SQUARE TUBING



SIGN CLAMP FOR SQUARE POSTS

⅞" WIDE X 11GA. TYPE 304, #2B FINISHED STAINLESS STEEL INCLUDES ⅜" - 16 X 2" CARRIAGE BOLT AND CASE HARDENED FLANGE NUT.

SIGN CENTROID (CP)	ALLOWABLE SIGN AREA (FT^2)			
	70 MPH + 30% GUST		80 MPH + 30% GUST	
	SINGLE POST (2" x 12GA PERF.)	DOUBLE POST (2" x 12GA PERF.)	SINGLE POST (2" x 12GA PERF.)	DOUBLE POST (2" x 12GA PERF.)
14'	3.99	7.98	2.99	5.97
13.5'	4.14	8.28	3.10	6.19
13'	4.30	8.59	3.21	6.43
12.5'	4.47	8.93	3.34	6.68
12'	4.65	9.30	3.48	6.96
11.5'	4.85	9.70	3.63	7.26
11'	5.07	10.14	3.79	7.59
10.5'	5.31	10.62	3.97	7.95
10'	5.57	11.15	4.17	8.34
9.5'	5.86	11.73	4.39	8.77
9'	6.19	12.37	4.63	9.26
8.5'	6.55	13.09	4.90	9.79
8'	6.95	13.90	5.20	10.40
7.5'	7.41	14.81	5.54	11.08
7'	7.93	15.86	5.93	11.86



HARD SOIL LOCATIONS

SOFT SOIL LOCATIONS

NOTES:

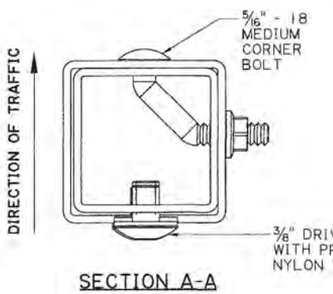
SEE SECTION 1015.02 IN THE STANDARD SPECIFICATIONS FOR INFORMATION RELATED TO THE ALLOWABLE MATERIALS.

SIGNS MOUNTED TO SINGLE SQUARE TUBE POSTS DO NOT REQUIRE STIFFENERS UNLESS THE SIGN HAS AT LEAST ONE SIDE GREATER THAN 36" LONG.

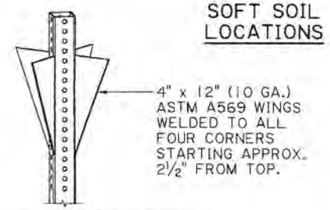
FOR DUAL POSTS, LOCATE POSTS AT 58% SPACING FROM CENTER OF SIGN, OR 21% FROM EACH EDGE OF SIGN. USE STIFFENERS ON BACK OF SIGNS MOUNTED ON DUAL POSTS.

SIGNS MAY BE MOUNTED BACK TO BACK ON THE POST.

⊙ MOUNTING HEIGHT SHALL BE 7'-0" MIN. UNLESS OTHERWISE NOTED ON THE SIGN SUMMARY SHEET. CHEVRON SIGNS (W1-8) MAY BE INSTALLED AT 4'-0" OR HIGHER.



SECTION A-A



OMNI-DIRECTIONAL ANCHOR

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN K. BRAUNER	DETAIL K. BRAUNER	REVIEW C. BOURGEOIS
CHECK C. GUIDRY	CHECK C. GUIDRY	SERIES • 10 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER
DATE: 7/1/2022

SQUARE TUBE SIGN DETAILS

ROADSIDE SIGNING STANDARDS

STANDARD PLAN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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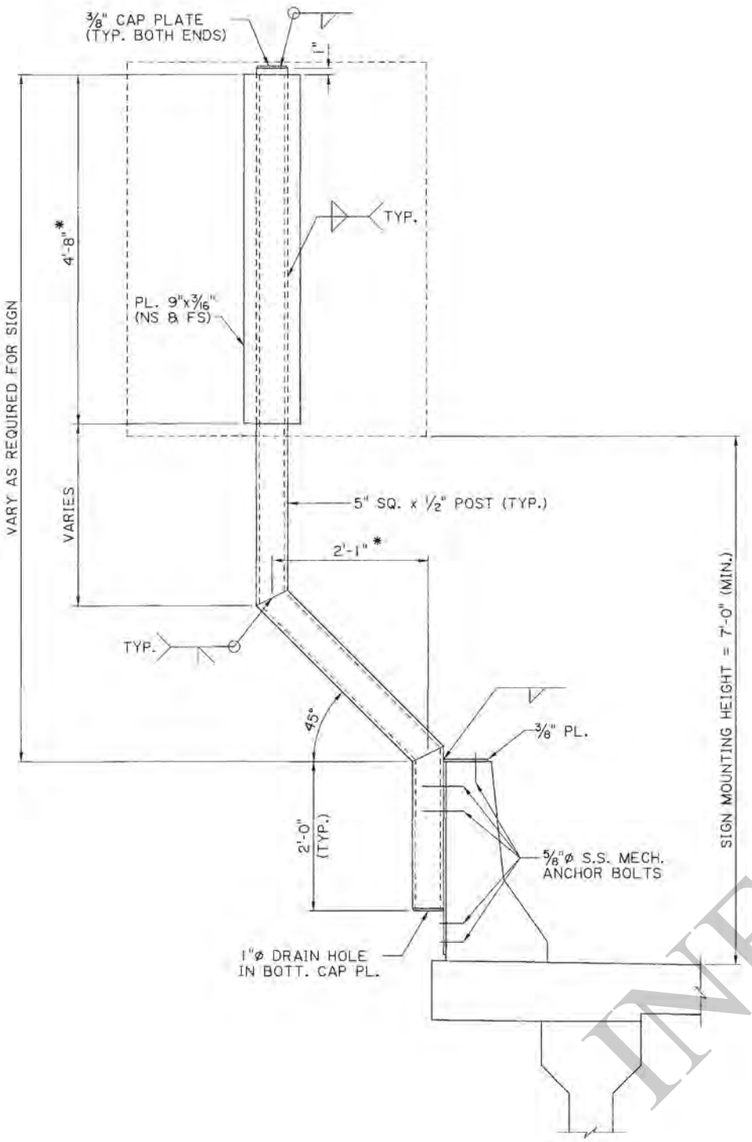
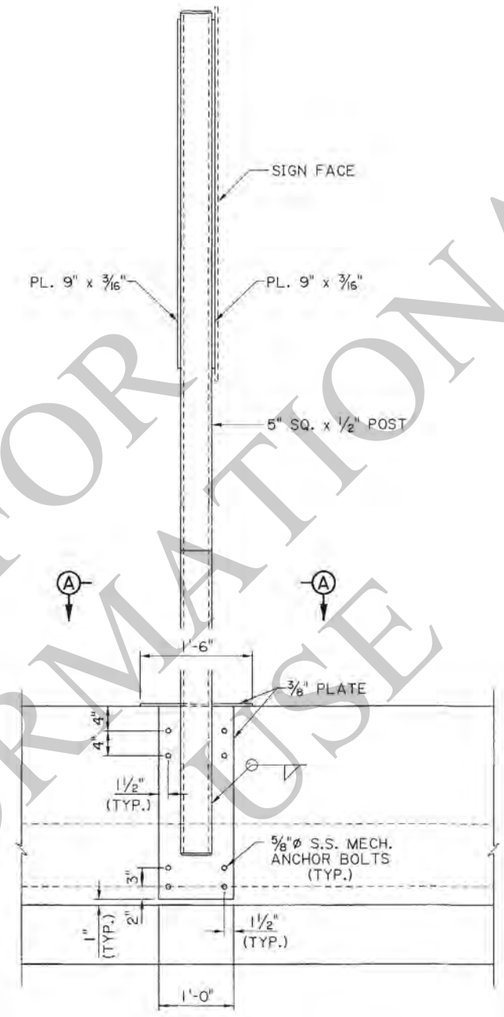
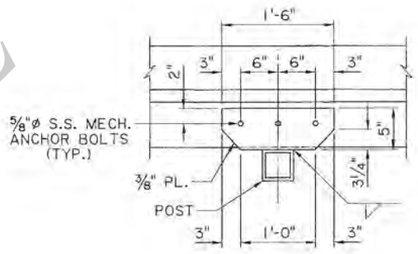


OFFSET SIGN SUPPORT

* DIMENSIONS ARE BASED ON A 5 FT. x 4 FT. SIGN. ADJUST AS NEEDED FOR DIFFERENT SIGN SIZES.



OUTSIDE ELEVATION SHOWING BARRIER
(TYPICAL INSTALLATION)



SECTION A-A

NOTES:

STRUCTURAL MEMBERS SHALL BE AASHTO M270 GRADE 50 STEEL AND SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123.

MECHANICAL ANCHOR BOLTS SHALL BE 5/8"ø STAINLESS STEEL (MIN. FY = 55 ksi) AND SHALL BE SELECTED FROM THE A.M.L. AND INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS. EACH ANCHOR SHALL HAVE AN ALLOWABLE CAPACITY OF 3 KIPS PULLOUT AND 3 KIPS SHEAR AFTER APPLICATION OF ANY REDUCTION FACTORS FOR ANCHOR SPACING AND EDGE DISTANCE.

WELDING SHALL BE IN ACCORDANCE WITH THE BRIDGE WELDING CODE OF THE AMERICAN WELDING SOCIETY (AWS D1.5-10), AND SECTION 809 OF THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, 2016 EDITION.

NO PART OF ANY SIGN SHALL PROTRUDE INTO THE SHOULDER AREA. DIMENSIONS OF SUPPORT POST AND BRACKET SHALL BE ADJUSTED AS NEEDED PRIOR TO FABRICATION.

ANY PORTIONS OF THE EXISTING BARRIER THAT ARE DAMAGED SHALL BE REPAIRED TO THE SATISFACTION OF THE PROJECT ENGINEER.

DIMENSIONS RELATED TO THE BARRIER CONNECTION ARE BASED ON AS-BUILT DRAWINGS AND PREVIOUS STANDARDS. DIMENSIONS SHALL BE ADJUSTED AS NEEDED BASED ON FIELD MEASUREMENTS.

A 1/8" NEOPRENE PAD SHALL BE USED BETWEEN ALL STEEL AND CONCRETE CONTACT SURFACES.

MAX SIGN AREA = 20 SQFT.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN K. BRAUNER | DETAIL K. BRAUNER | REVIEW C. GUIDRY
CHECK V. TOURRES | CHECK V. TOURRES | SERIES • 11 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER: DATE: 7/1/2022

Z - BRACKET SIGN SUPPORT
(F - SHAPE BARRIER)

ROADSIDE SIGNING STANDARDS

STANDARD PLAN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

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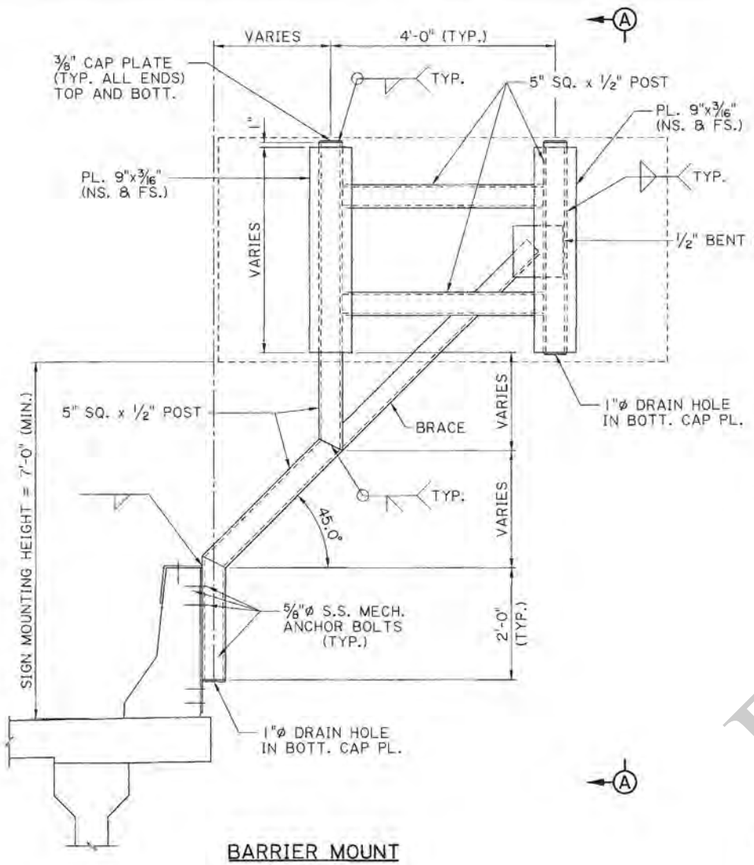
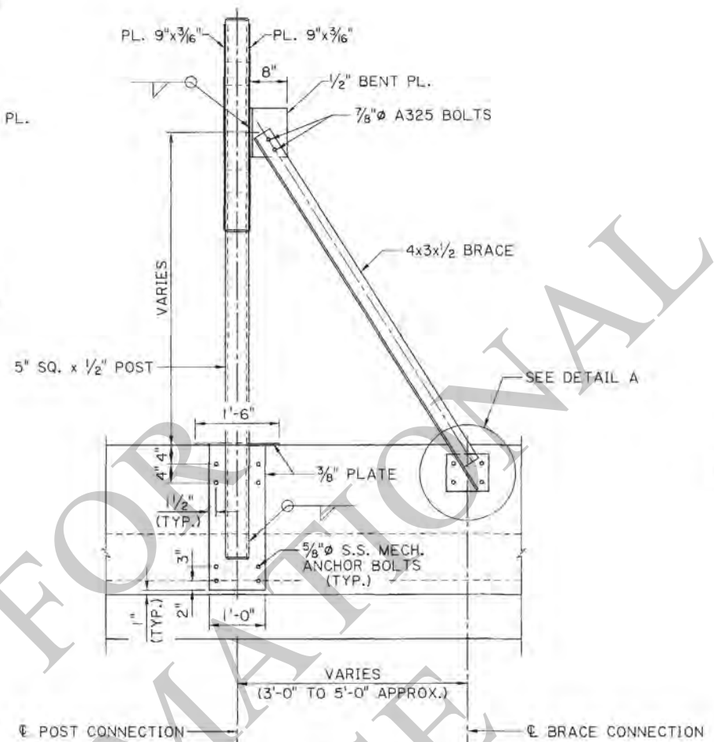
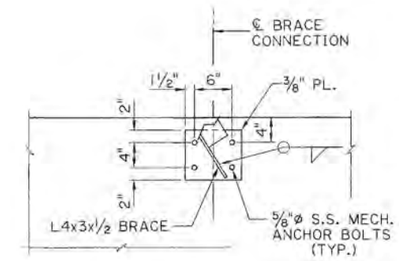


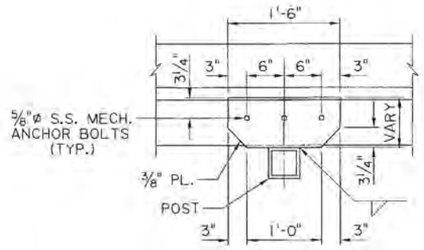
BARRIER MOUNT



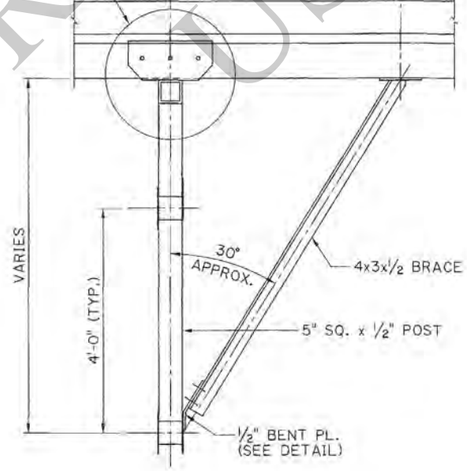
VIEW A-A



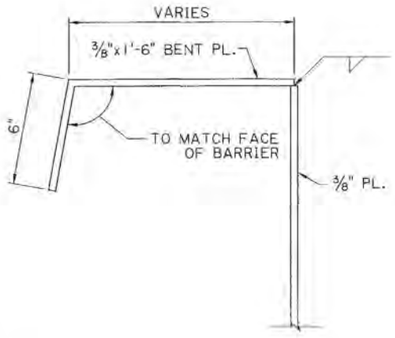
DETAIL A



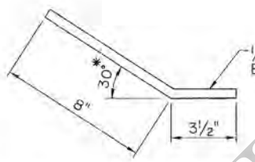
DETAIL B



TOP VIEW



BARRIER CONNECTION DETAIL



1/2" BENT PLATE DETAIL

* ANGLE IS APPROXIMATE. VARY AS NEEDED.

NOTES:

STRUCTURAL MEMBERS SHALL BE AASHTO M270 GRADE 50 STEEL AND SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. A325 BOLTS TO BE GALVANIZED PER ASTM A-153.

MECHANICAL ANCHOR BOLTS SHALL BE 5/8"ø STAINLESS STEEL (MIN. FY = 55 ksi) AND SHALL BE SELECTED FROM THE A.M.L. AND INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS. EACH ANCHOR SHALL HAVE AN ALLOWABLE CAPACITY OF 3 KIPS PULLOUT AND 3 KIPS SHEAR AFTER APPLICATION OF ANY REDUCTION FACTORS FOR ANCHOR SPACING AND EDGE DISTANCE.

WELDING SHALL BE IN ACCORDANCE WITH THE BRIDGE WELDING CODE OF THE AMERICAN WELDING SOCIETY (AWS D1.5-10), AND SECTION 809 OF THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, 2016 EDITION.

NO PART OF ANY SIGN SHALL PROTRUDE INTO THE SHOULDER AREA. DIMENSIONS OF SUPPORT POST AND BRACKET SHALL BE ADJUSTED AS NEEDED PRIOR TO FABRICATION.

ANY PORTIONS OF THE EXISTING BARRIER THAT ARE DAMAGED SHALL BE REPAIRED TO THE SATISFACTION OF THE PROJECT ENGINEER.

DIMENSIONS RELATED TO THE BARRIER CONNECTION ARE BASED ON AS-BUILT DRAWINGS AND PREVIOUS STANDARDS. DIMENSIONS SHALL BE ADJUSTED AS NEEDED BASED ON FIELD MEASUREMENTS.

A 1/8" NEOPRENE PAD SHALL BE USED BETWEEN ALL STEEL AND CONCRETE CONTACT SURFACES.

MAX SIGN AREA = 40 SQFT.

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN K. BRAUNER | CHECK V. TOURRES | DETAIL K. BRAUNER | CHECK V. TOURRES | REVIEW C. GUIDRY | SERIES # 12 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER: DATE: 7/1/2022

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

Z - BRACKET SIGN SUPPORTS (F - SHAPE BARRIER)

STANDARD PLAN NO. ROADSIDE SIGNING STANDARDS

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

09:34 6/24/2022

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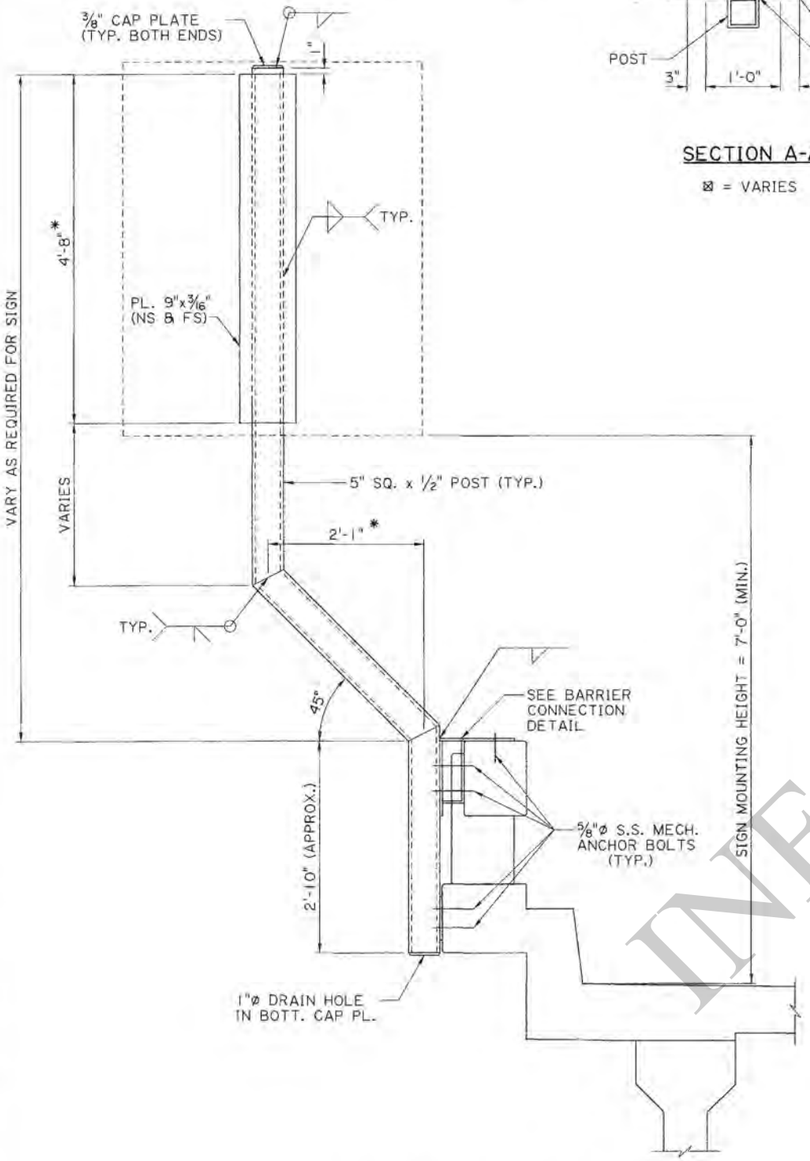
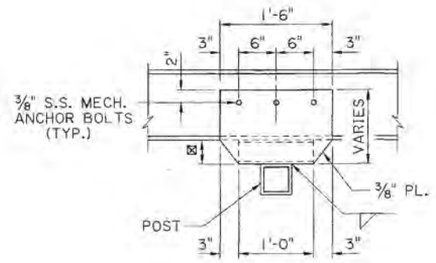
6/24/2022 09:35
IP_PW2:d0964073\Roadside Traffic Signs 13.dgn



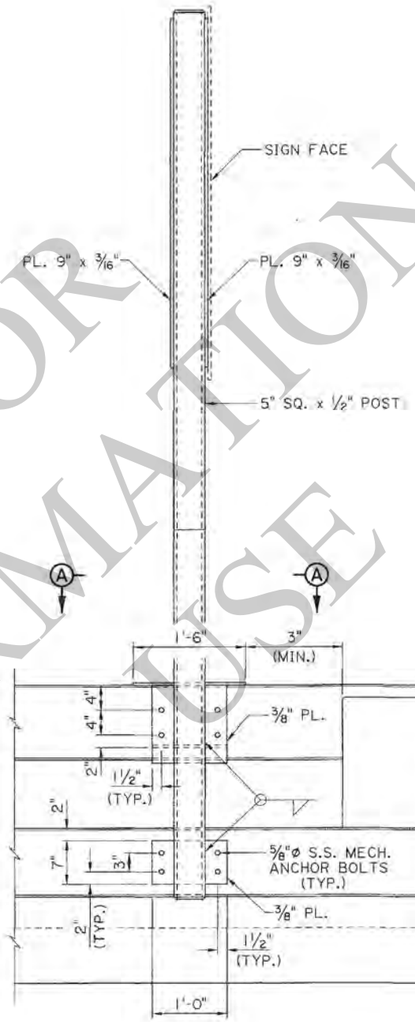
OFFSET SIGN SUPPORT

* DIMENSIONS ARE BASED ON A 5 FT. x 4 FT. SIGN. ADJUST AS NEEDED FOR DIFFERENT SIGN SIZES.

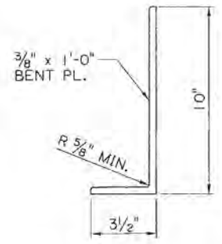


SECTION A-A

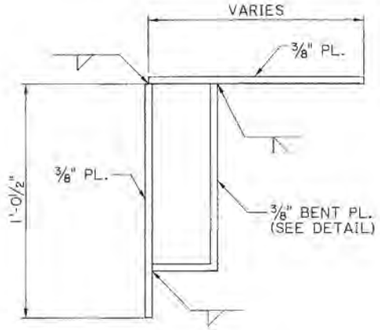
⊠ = VARIES



OUTSIDE ELEVATION SHOWING BARRIER



3/8" BENT PL. DETAIL



BARRIER CONNECTION DETAIL

NOTES:

STRUCTURAL MEMBERS SHALL BE AASHTO M270 GRADE 50 STEEL AND SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123.

MECHANICAL ANCHOR BOLTS SHALL BE 5/8"ø STAINLESS STEEL (MIN. FY = 55 ksi) AND SHALL BE SELECTED FROM THE A.M.L. AND INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS. EACH ANCHOR SHALL HAVE AN ALLOWABLE CAPACITY OF 3 KIPS PULLOUT AND 3 KIPS SHEAR AFTER APPLICATION OF ANY REDUCTION FACTORS FOR ANCHOR SPACING AND EDGE DISTANCE.

WELDING SHALL BE IN ACCORDANCE WITH THE BRIDGE WELDING CODE OF THE AMERICAN WELDING SOCIETY (AWS D1.5-10), AND SECTION 809 OF THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, 2016 EDITION.

NO PART OF ANY SIGN SHALL PROTRUDE INTO THE SHOULDER AREA. DIMENSIONS OF SUPPORT POST AND BRACKET SHALL BE ADJUSTED AS NEEDED PRIOR TO FABRICATION.

ANY PORTIONS OF THE EXISTING BARRIER THAT ARE DAMAGED SHALL BE REPAIRED TO THE SATISFACTION OF THE PROJECT ENGINEER.

DIMENSIONS RELATED TO THE BARRIER CONNECTION ARE BASED ON AS-BUILT DRAWINGS AND PREVIOUS STANDARDS. DIMENSIONS SHALL BE ADJUSTED AS NEEDED BASED ON FIELD MEASUREMENTS.

A 1/8" NEOPRENE PAD SHALL BE USED BETWEEN ALL STEEL AND CONCRETE CONTACT SURFACES.

MAX SIGN AREA = 20 SQFT.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN: K. BRAUNER | CHECK: V. TOURRES
DETAIL: K. BRAUNER | CHECK: V. TOURRES
REVIEW: C. GUIDRY | SERIES # 13 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER:
DATE: 7/1/2022

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

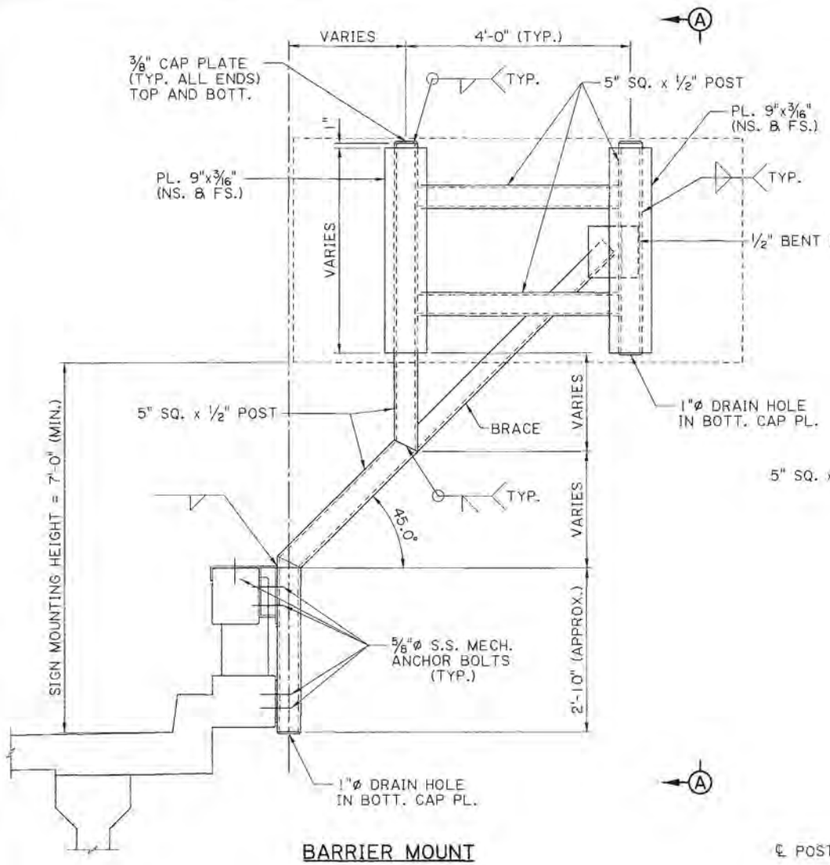
Z - BRACKET SIGN SUPPORT (POST AND RAIL BARRIER)

ROADSIDE SIGNING STANDARDS

STANDARD PLAN

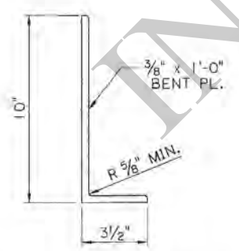
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

BRIDGE AND STRUCTURAL DESIGN

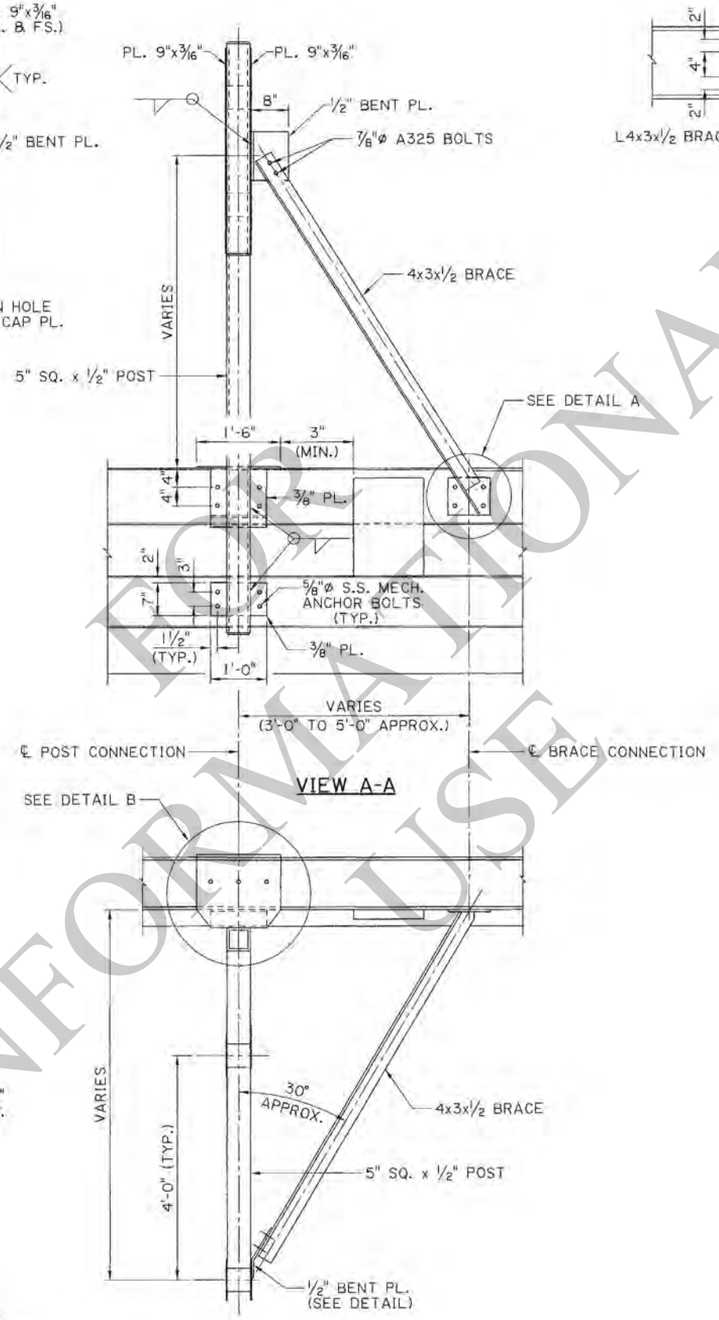


BARRIER MOUNT

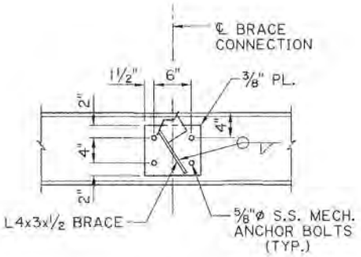
BARRIER CONNECTION DETAIL



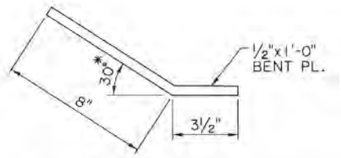
3/8" BENT PL. DETAIL



TOP VIEW

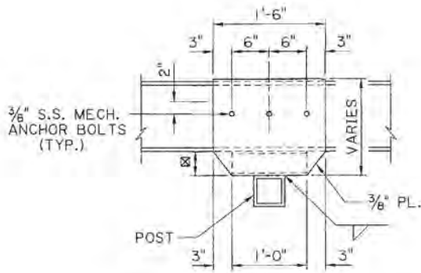


DETAIL A



1/2" BENT PLATE DETAIL

* ANGLE IS APPROXIMATE. VARY AS NEEDED.



DETAIL B

⊠ = VARIES

NOTES:

STRUCTURAL MEMBERS SHALL BE AASHTO M270 GRADE 50 STEEL AND SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. A325 BOLTS TO BE GALVANIZED PER ASTM A-153.

MECHANICAL ANCHOR BOLTS SHALL BE 5/8"ø STAINLESS STEEL (MIN. FY = 55 ksi) AND SHALL BE SELECTED FROM THE A.M.L. AND INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS. EACH ANCHOR SHALL HAVE AN ALLOWABLE CAPACITY OF 3 KIPS PULLOUT AND 3 KIPS SHEAR AFTER APPLICATION OF ANY REDUCTION FACTORS FOR ANCHOR SPACING AND EDGE DISTANCE.

WELDING SHALL BE IN ACCORDANCE WITH THE BRIDGE WELDING CODE OF THE AMERICAN WELDING SOCIETY (AWS D1.5-10), AND SECTION 809 OF THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, 2016 EDITION.

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DIMENSIONS RELATED TO THE BARRIER CONNECTION ARE BASED ON AS-BUILT DRAWINGS AND PREVIOUS STANDARDS. DIMENSIONS SHALL BE ADJUSTED AS NEEDED BASED ON FIELD MEASUREMENTS.

A 1/8" NEOPRENE PAD SHALL BE USED BETWEEN ALL STEEL AND CONCRETE CONTACT SURFACES.

MAX SIGN AREA = 40 SQFT.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN: K. BRAUNER | CHECK: V. TOURRES | DETAIL: K. BRAUNER | CHECK: V. TOURRES | REVIEW: C. GUIDRY | SERIES # 14 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30567
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22.

APPROVED BY CHIEF ENGINEER:
DATE: 7/1/2022

Z - BRACKET SIGN SUPPORT (POST AND RAIL BARRIER)

ROADSIDE SIGNING STANDARDS

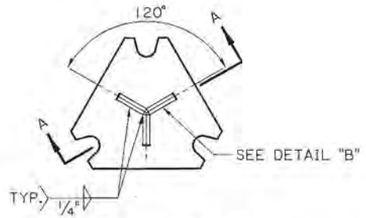
STANDARD PLAN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

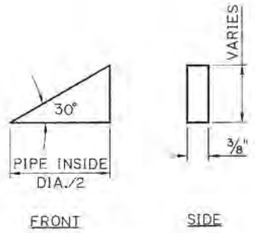
6/24/2022 09:37

IP_PWP:d0964073\Roadside Traffic Signs 14.dgn

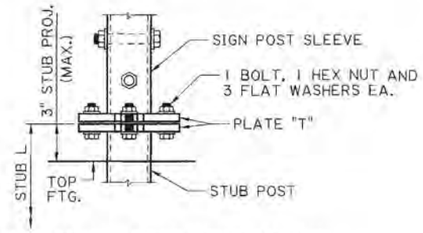
09:38
5/24/2022



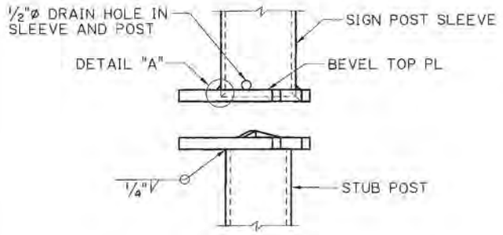
TOP VIEW STUB POST



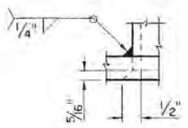
DETAIL "B"
3 REQ'D.



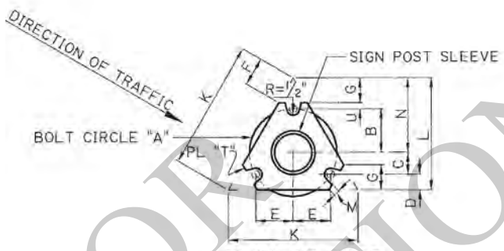
ELEVATION OF BASE CONNECTION
STEEL



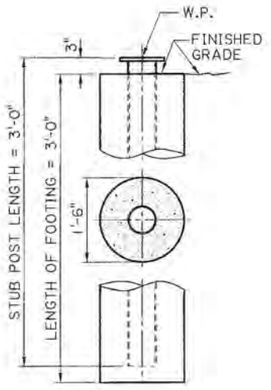
SECTION A-A



DETAIL "A"



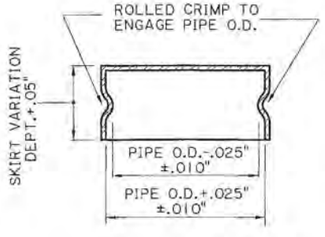
PLAN OF BASE



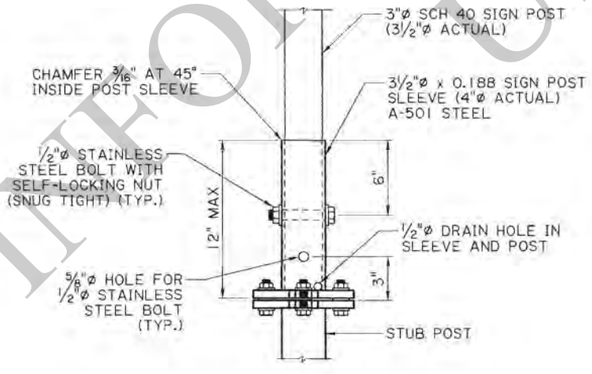
FOOTING DETAIL
PIPE SECTIONS

STEEL MULTI-DIRECTIONAL BASE CONNECTION DATA																
NOMINAL PIPE SIZE FOR POST SLEEVE	BOLT SIZE ⊙ & TORQUE	WELD SIZE	T	A	B	C	D	E	F	G	K	L	M	N	U
3½"ø SCH 40	⅝"ø T=226	⅜"	⅝"	7"	3½"	1¾"	1¼"	3"	2⅝"	2"	10⅜"	9"	½"	6"	½"

FOR STUB POST LENGTH & FOOTING DIMENSION SEE FOOTING DETAIL.
⊙ TORQUE IN INCH-LBS., BOLTS ARE HIGH STRENGTH



FRICTION CAP DETAIL
(USED AT TOP OF ALL POSTS)



POST SLEEVE DETAIL

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

SPECIAL CARE SHALL BE TAKEN TO SET THE BASE PLUMB TO AVOID EXCESSIVE SHIMMING AT THE BREAK-AWAY FEATURE AFTER FINAL INSTALLATION. EXCESSIVE SHIMMING COULD IMPAIR THE BREAK-AWAY FEATURE FOR WHICH THIS INSTALLATION WAS DESIGNED. SHIM PACKS SHOWN ON THIS DRAWING SHOULD BE SUFFICIENT TO ALLOW FOR NORMAL MISALIGNMENT.

1. BASE SHALL BE ALIGNED AND SET PLUMB BEFORE OR IMMEDIATELY AFTER POURING CONCRETE FOOTING.
2. H.S. BOLTS IN BASE PLATE SHALL BE TIGHTENED TO THE PRESCRIBED TORQUE. CARE SHALL BE TAKEN TO AVOID OVERTIGHTING.

FRICTION CAPS:

CAPS MAY BE MANUFACTURED FROM EITHER HOT ROLLED OR COLD ROLLED STEEL SHEETS. THE MINIMUM SHEET METAL THICKNESS SHALL BE 24 GAUGE. THE RIM EDGES SHALL BE REASONABLY STRAIGHT AND SMOOTH. CAPS SHALL BE SIZED AND FORMED IN SUCH A MANNER AS TO PRODUCE A DRIVE-ON FRICTION FIT AND HAVE NO TENDENCY TO ROCK WHEN SEATED ON THE PIPE. THE DEPTH SHALL BE SUFFICIENT TO GIVE POSITIVE PROTECTION AGAINST ENTRANCE OF RAINWATER. THEY SHALL BE FREE OF SHARP CREASES OR INDENTATIONS AND SHOW NO EVIDENCE OF METAL FRACTURE. CAPS SHALL HAVE A ELECTRODEPOSITED COATING OF ZINC IN ACCORDANCE WITH THE REQUIREMENTS OF A.S.T.M. SPECIFICATION B633 SC4, TYPE I.

GALVANIZING:

ALL STEEL POST, PLATE, AND SLEEVE MEMBERS SHALL BE GALVANIZED PER ASTM A-123.

ALL MISC. HARDWARE (EXCEPT FOR STAINLESS STEEL BOLTS) SHALL BE GALVANIZED PER ASTM A-153.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN K. BRAUNER | DETAIL K. BRAUNER | REVIEW D. BOURGEOIS
CHECK C. GUIDRY | CHECK C. GUIDRY | SERIES # 15 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30947
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER: DATE: 7/1/2022

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
COVENDUS

CONTRAFLOW SIGNS
(GROUND MOUNTED)

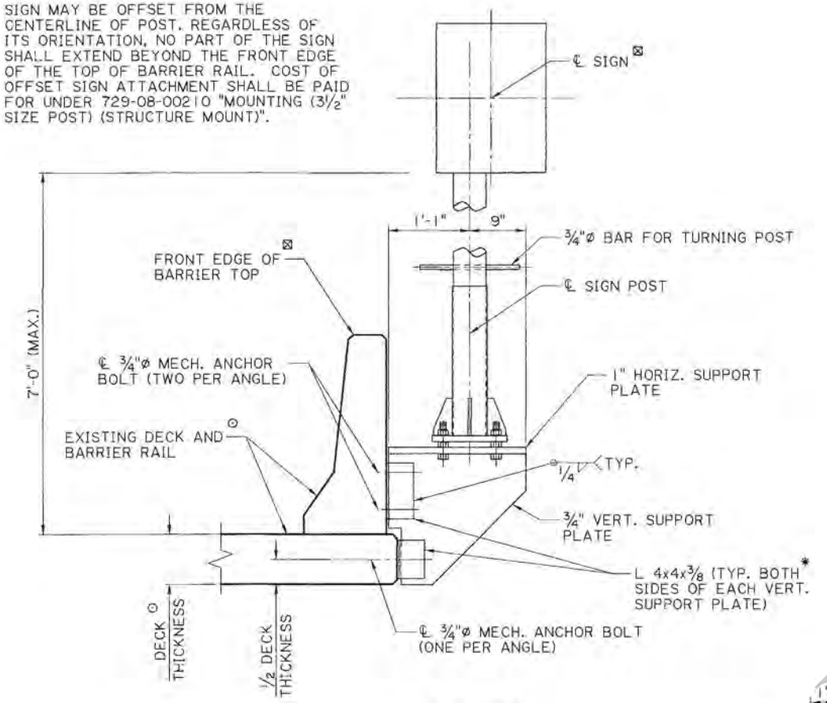
ROADSIDE SIGNING STANDARDS
STANDARD ?.AN

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

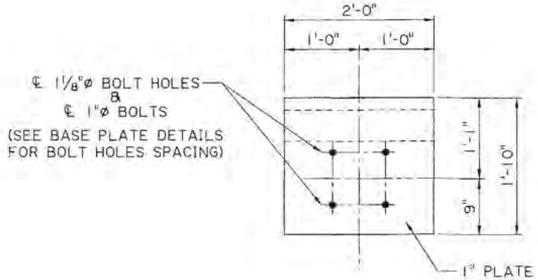
I:_PWP:d0964073\Roadside Traffic Signs 15.dgn

09:39
6/24/2022

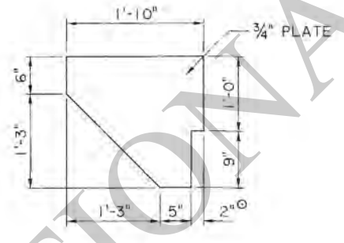
⊠ SIGN MAY BE OFFSET FROM THE CENTERLINE OF POST. REGARDLESS OF ITS ORIENTATION, NO PART OF THE SIGN SHALL EXTEND BEYOND THE FRONT EDGE OF THE TOP OF BARRIER RAIL. COST OF OFFSET SIGN ATTACHMENT SHALL BE PAID FOR UNDER 729-08-00210 "MOUNTING (3½" SIZE POST) (STRUCTURE MOUNT)".



ELEVATION



1" HORIZ. SUPPORT PLATE



¾" VERT. SUPPORT PLATE

SIGN SUPPORT BRACKET DETAILS

NOTES:

STRUCTURAL MEMBERS SHALL BE AASHTO M270 GRADE 50 STEEL AND SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL MISC. HARDWARE (EXCEPT STAINLESS STEEL BOLTS) SHALL BE GALVANIZED AS PER ASTM A-153.

⊙ ALL EXISTING DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO FABRICATION. ANY ADJUSTMENTS TO SUPPORT BRACKET DIMENSIONS SHALL BE APPROVED BY THE ENGINEER.

* EQUIVALENT BENT PLATES MAY BE USED. ADJUST ANGLE OF BEND AS NEEDED TO ATTACH TO BARRIER RAIL.

PAYMENT FOR THE TYPE "A" SIGN POST AND SUPPORT BRACKET SHALL BE UNDER ITEM NO. 729-08-00210, "MOUNTING (3½" SIZE POST) (STRUCTURE MOUNT)".

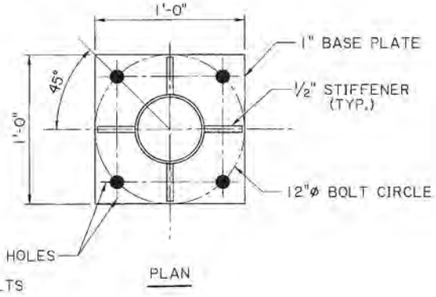
MECHANICAL ANCHOR BOLTS SHALL BE ¾"ø STAINLESS STEEL (MIN. FY = 55 ksi) AND SHALL BE SELECTED FROM THE A.M.L. AND INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS. EACH ANCHOR SHALL HAVE AN ALLOWABLE CAPACITY OF 3 KIPS PULLOUT AND 3 KIPS SHEAR AFTER APPLICATION OF ANY REDUCTION FACTORS FOR ANCHOR SPACING AND EDGE DISTANCE.

A ⅛" NEOPRENE PAD SHALL BE USED BETWEEN ALL STEEL AND CONCRETE CONTACT SURFACES.

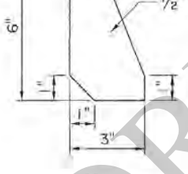
ANY PORTIONS OF THE EXISTING BARRIER THAT ARE DAMAGED SHALL BE REPAIRED TO THE SATISFACTION OF THE PROJECT ENGINEER.

REGARDLESS OF ITS ORIENTATION, NO PART OF ANY SIGN SHALL EXTEND BEYOND THE FRONT EDGE OF THE TOP OF BARRIER RAIL. DIMENSIONS OF SUPPORT POST AND BRACKET SHALL BE ADJUSTED AS NEEDED PRIOR TO FABRICATION.

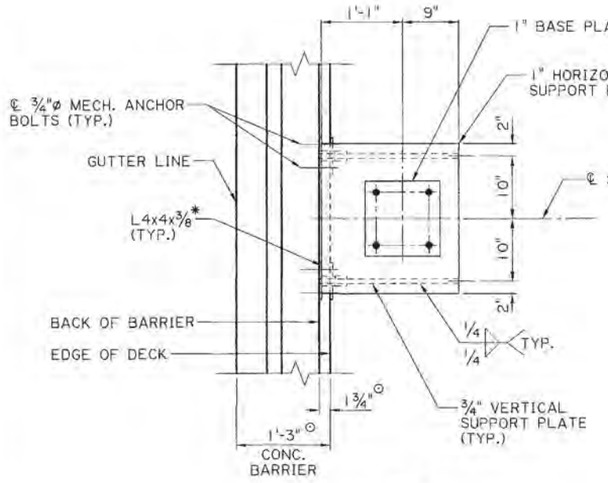
MAXIMUM ALLOWABLE SIGN AREA = 20 SQ. FT.



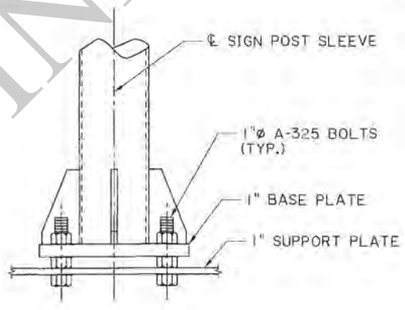
PLAN



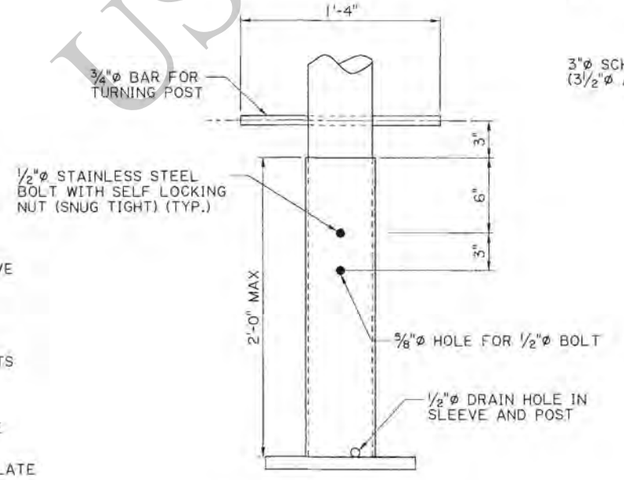
½" STIFFENER



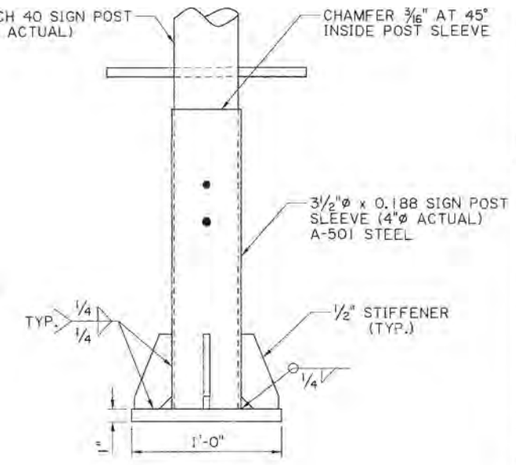
PLAN



1"ø BOLT DETAIL



⅝"ø BOLT DETAIL
(STIFFENERS NOT SHOWN FOR CLARITY)



ELEVATION

1" BASE PLATE & SIGN POST SLEEVE DETAILS

SHEET NUMBER	
PARISH	
CONTROL SECTION	
STATE PROJECT	
DESIGN K. BRAUNER	
CHECK C. GUIDRY	
DETAIL K. BRAUNER	
CHECK C. GUIDRY	
REVIEW C. BOURGEOIS	
SERIES * 16 OF 17	

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 30967
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER: DATE: 7/1/2022

STATE OF LOUISIANA

CONTRAFLOW SIGNS
(F - SHAPE BARRIER)

ROADSIDE SIGNING STANDARDS
STANDARD PLAN

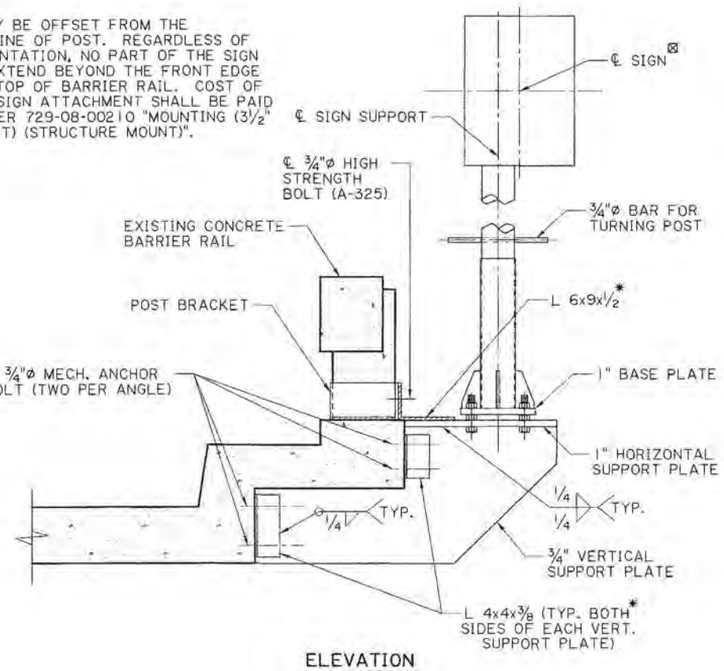
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

INFORMATIONAL USE

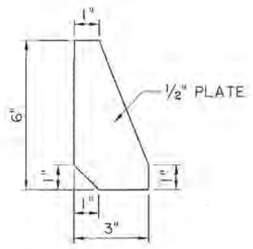
I:\P_PWP:d0964073\Roadside Traffic Signs 16.dgn

6/24/2022 09:40

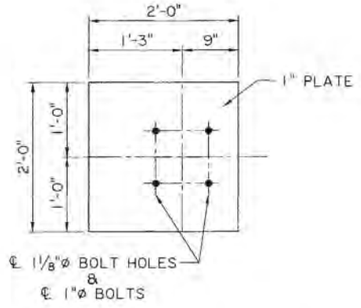
⊠ SIGN MAY BE OFFSET FROM THE CENTERLINE OF POST. REGARDLESS OF ITS ORIENTATION, NO PART OF THE SIGN SHALL EXTEND BEYOND THE FRONT EDGE OF THE TOP OF BARRIER RAIL. COST OF OFFSET SIGN ATTACHMENT SHALL BE PAID FOR UNDER 729-08-00210 "MOUNTING (3½" SIZE POST) (STRUCTURE MOUNT)".



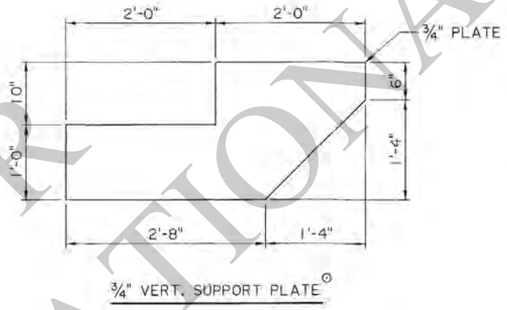
ELEVATION



½" STIFFENER



1" HORIZONAL SUPPORT PLATE
(SEE BASE PLATE DETAILS FOR BOLT HOLES SPACING)



¾" VERT. SUPPORT PLATE ⊙

SIGN SUPPORT BRACKET DETAILS

NOTES:

STRUCTURAL MEMBERS SHALL BE AASHTO M270 GRADE 50 STEEL AND SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL MISC. HARDWARE (EXCEPT STAINLESS STEEL BOLTS) SHALL BE GALVANIZED AS PER ASTM A-153.

⊙ ALL EXISTING DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR PRIOR TO FABRICATION. ANY ADJUSTMENTS TO SUPPORT BRACKET DIMENSIONS SHALL BE APPROVED BY THE ENGINEER.

* EQUIVALENT BENT PLATES MAY BE USED. ADJUST ANGLE OF BEND AS NEEDED TO ATTACH TO BARRIER RAIL.

PAYMENT FOR THE TYPE "A" SIGN POST AND SUPPORT BRACKET SHALL BE UNDER ITEM NO. 729-08-00210, "MOUNTING (3½" SIZE POST) (STRUCTURE MOUNT)".

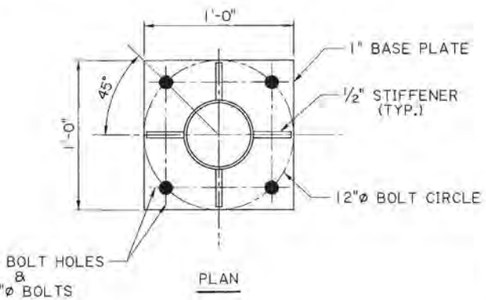
MECHANICAL ANCHOR BOLTS SHALL BE ¾"ø STAINLESS STEEL (MIN. FY = 55 ksi) AND SHALL BE SELECTED FROM THE A.M.L. AND INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS. EACH ANCHOR SHALL HAVE AN ALLOWABLE CAPACITY OF 3 KIPS PULLOUT AND 3 KIPS SHEAR AFTER APPLICATION OF ANY REDUCTION FACTORS FOR ANCHOR SPACING AND EDGE DISTANCE.

A ⅛" NEOPRENE PAD SHALL BE USED BETWEEN ALL STEEL AND CONCRETE CONTACT SURFACES.

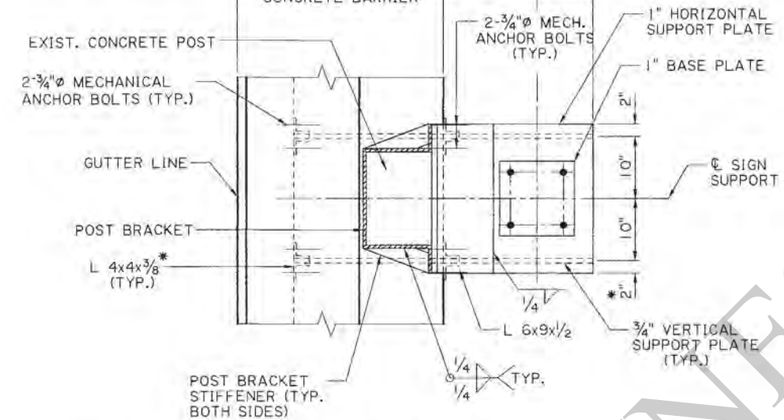
ANY PORTIONS OF THE EXISTING BARRIER THAT ARE DAMAGED SHALL BE REPAIRED TO THE SATISFACTION OF THE PROJECT ENGINEER.

REGARDLESS OF ITS ORIENTATION, NO PART OF ANY SIGN SHALL EXTEND BEYOND THE FRONT EDGE OF THE TOP OF BARRIER RAIL. DIMENSIONS OF SUPPORT POST AND BRACKET SHALL BE ADJUSTED AS NEEDED PRIOR TO FABRICATION.

MAXIMUM ALLOWABLE SIGN AREA = 20 SQ. FT.



PLAN



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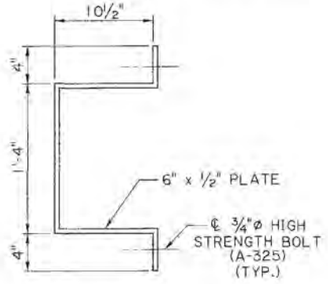
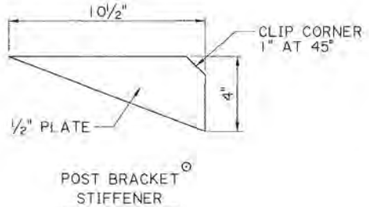
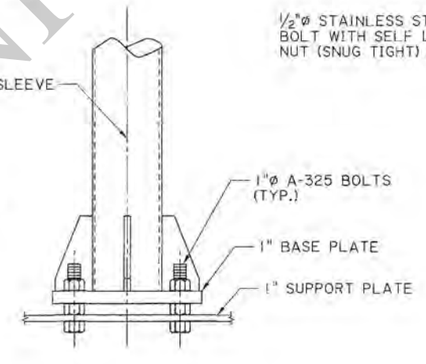


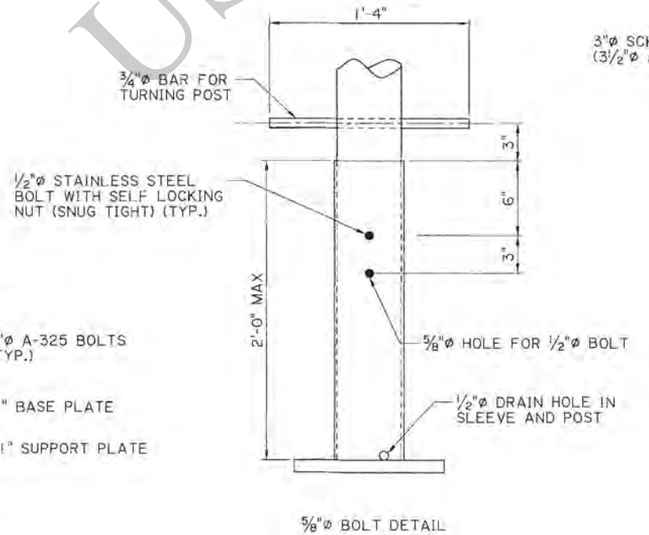
POST BRACKET ⊙



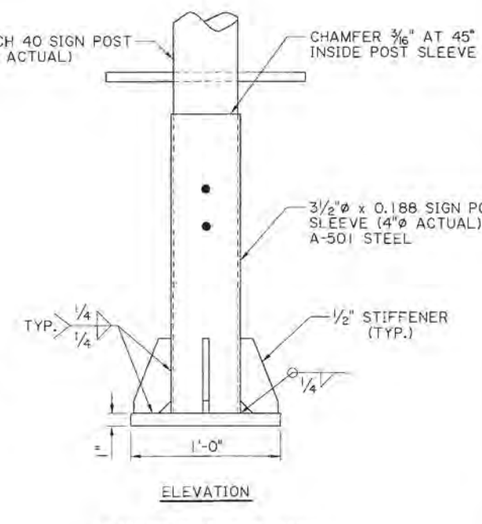
POST BRACKET STIFFENER ⊙



1"ø BOLT DETAIL



⅝"ø BOLT DETAIL
(STIFFENERS NOT SHOWN FOR CLARITY)



ELEVATION

1" BASE PLATE & SIGN POST SLEEVE DETAILS

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	DISTRICT/SECTION	STATE PROJECT

DESIGN	K. BRAUNER	DETAIL	K. BRAUNER	REVIEW	C. BOURGEOIS
CHECK	C. GUIDRY	CHECK	C. GUIDRY	SERIES	17 OF 17

STATE OF LOUISIANA
KURT M. BRAUNER
License No. 35557
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
6/24/22

APPROVED BY CHIEF ENGINEER
DATE: 7/1/2022

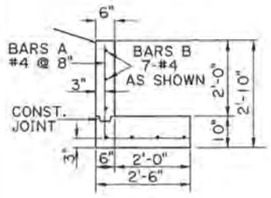
CONTRAFLOW SIGNS (POST AND RAIL BARRIER)

STANDARD PLAN — ROADSIDE SIGNING STANDARDS

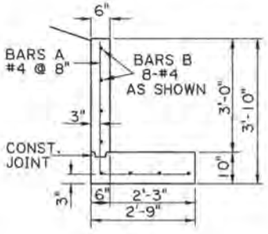
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
BRIDGE AND STRUCTURAL DESIGN

IP_PWP:d0864073\Roadside Traffic Signs 17.dgn

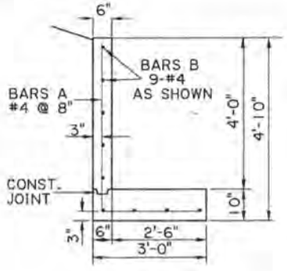
NOTE: MINIMUM CONCRETE COVER SHALL BE 3" FOR THE RETAINING SIDE OF THE WALL AND FOR THE FOOTING, AND 2" FOR THE OPEN SIDE OF THE WALL.



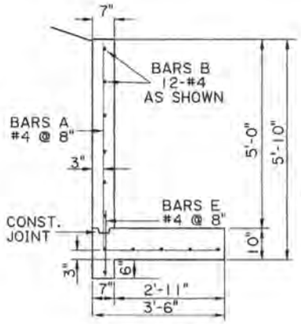
TYPE L2



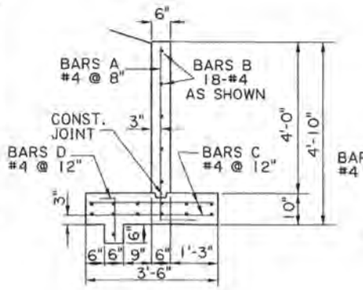
TYPE L3



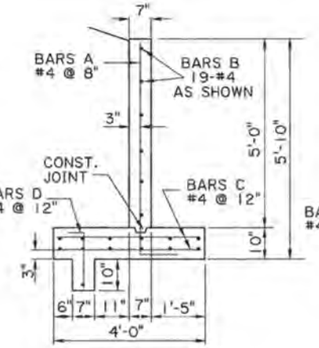
TYPE L4



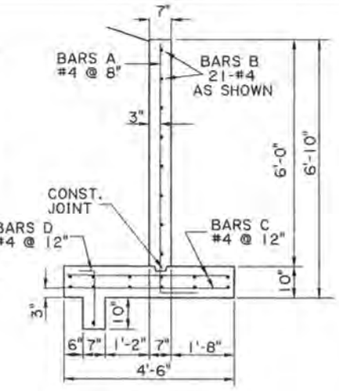
TYPE L5



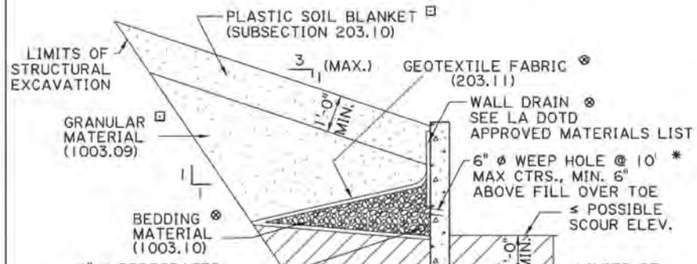
TYPE T4



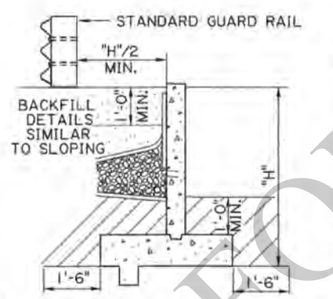
TYPE T5



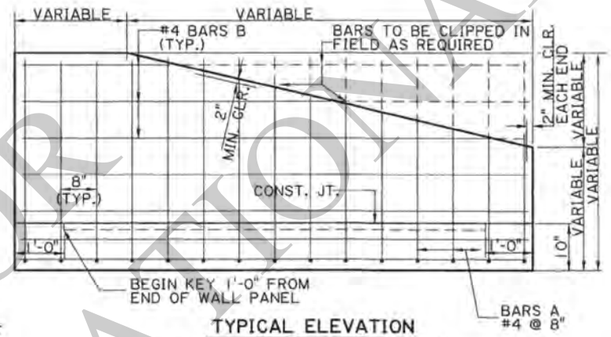
TYPE T6



WALL WITH SLOPING BACKFILL

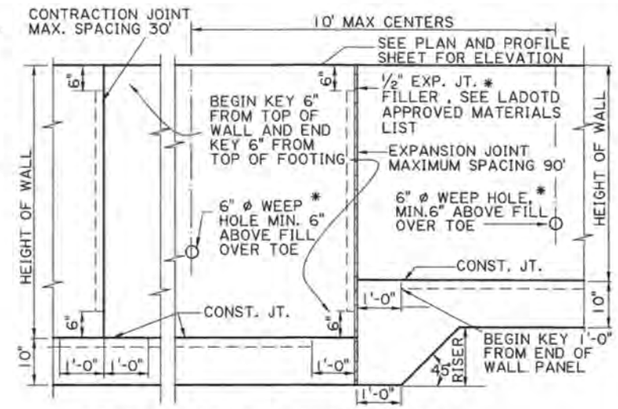


WALL WITH HORIZONTAL BACKFILL



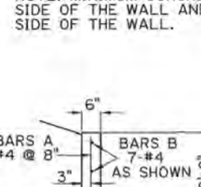
TYPICAL ELEVATION

(SHOWING REINFORCEMENT DETAILS)
SHEAR KEY NOT SHOWN FOR CLARITY



PART ELEVATION OF RETAINING WALL

(SHOWING RISER UNDER FOOTING)



WALL TO FOOTING KEY DETAIL

EXPANSION JOINT DETAIL

CONTRACTION JOINT DETAIL

REBAR DIMENSIONS

WALL TYPE	BAR A SIZE	a	b	LENGTH	BAR C LENGTH	BAR D LENGTH	BAR E LENGTH
L2	#4	2'-5"	2'-1"	4'-6"	—	—	—
L3	#4	3'-5"	2'-4"	5'-9"	—	—	—
L4	#4	4'-5"	2'-7"	7'-0"	—	—	—
L5	#4	5'-5"	3'-1"	8'-6"	—	—	1'-6"
T4	#4	4'-5"	0'-10"	5'-3"	3'-2"	1'-3"	—
T5	#4	5'-5"	1'-1"	6'-6"	3'-8"	1'-7"	—
T6	#4	6'-5"	1'-4"	7'-9"	4'-2"	1'-7"	—

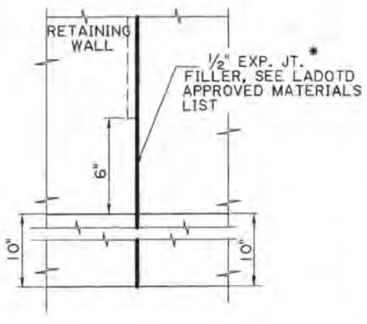
NOTES:
ALL BARS ARE #4
BARS B,C,& E ARE STRAIGHT
BAR B LENGTH = WALL LENGTH BETWEEN JOINTS MINUS 4"

MATERIAL QUANTITIES

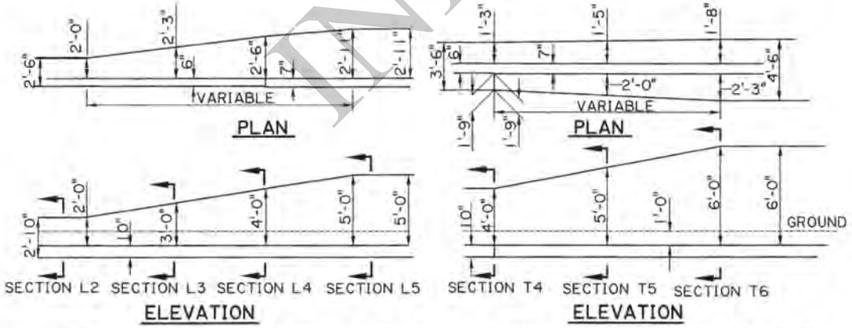
(PER LINEAR FOOT OF WALL)

WALL TYPE	L2	L3	L4	L5	T4	T5	T6
CLASS "A1" CONCRETE (CU. YDS.)	0.077	0.140	0.167	0.211	0.191	0.249	0.287
GRADE 60 STEEL (LBS.)	9.2	11.0	13.0	18.0	22.4	25.2	28.4

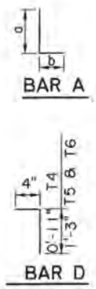
6" ø PERFORATED PIPE UNDERDRAIN TO BE PAID PER LIN. FT.



FOOTING EXPANSION JOINT DETAIL



SLOPING RETAINING WALL



NOTES:
1. CONSTRUCTION SPECIFICATIONS : LATEST APPROVED LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, SUPPLEMENTAL SPECIFICATIONS, AND SPECIAL PROVISIONS.
2. DESIGN SPECIFICATIONS: AASHTO, LRFD FOURTH EDITION 2007 (WITH 2008 AND 2009 INTERIM SPECIFICATIONS).
3. ALL CONCRETE SHALL BE CLASS "A1", CHAMFER ALL EXPOSED CORNERS ¾".
4. DEFORMED REINFORCING BARS SHALL BE GRADE 60. DIMENSIONS RELATING TO REINFORCING STEEL SPACING ARE TO BAR CENTERS.
5. MAXIMUM ALLOWABLE SOIL PRESSURE: 1000 PSF.
6. RETAINING WALLS SHALL BE INVESTIGATED FOR EXCESSIVE VERTICAL AND LATERAL DISPLACEMENT. TOLERABLE VERTICAL AND LATERAL DEFORMATION CRITERIA FOR RETAINING WALL SHALL BE DEVELOPED ON THE FUNCTION AND TYPE OF WALL, ANTICIPATED SERVICE LIFE, AND CONSEQUENCES OF INACCEPTABLE MOVEMENTS TO THE WALL AND ANY POTENTIAL AFFECTED NEARBY STRUCTURE.
7. MAXIMUM SPACING OF EXPANSION JOINT IS 90 FT..
8. MAXIMUM SPACING OF CONTRACTION JOINT IS 30 FT..
9. WALL DRAIN AND PERFORATED PIPE UNDERDRAIN SHALL BE IN ACCORDANCE WITH SECTION 703 OF THE LOUISIANA STANDARD SPECIFICATIONS.

* TO BE INCLUDED WITH COST OF CLASS "A1" CONCRETE.

⊗ TO BE INCLUDED WITH COST OF PERFORATED PIPE UNDERDRAIN.

⊡ BACKFILL MATERIAL TO BE INCIDENTAL TO STRUCTURAL EXCAVATION IN CUT SECTION, AND TO BE PAID AS EMBANKMENT IN FILL SECTION.

STATE OF LOUISIANA
ADAM LANCASTER
License No. 35573
PROFESSIONAL ENGINEER
CIVIL ENGINEERING
5/26/17

FOR INFORMATIONAL PURPOSES ONLY

SHEET NUMBER

PARISH | FEDERAL PROJECT | STATE PROJECT

DESIGNED T. LE
CHECKED J. PELTIER
DETAILED G. GRASS
CHECKED A.LANCASTER
DATE MAY 2017
SHEET

BY | DATE | REVISION DESCRIPTION

DATED 6-13-2017

APPROVED BY DOTD CHIEF ENGINEER: Dennis P. Williams

MISC. RETAINING WALL DETAILS
T & L TYPES
2'-0" THROUGH 6'-0" HEIGHTS

BD.1.2.2.0.01 (RW-01)

BRIDGE AND STRUCTURAL DESIGN

6/16/2017 08:0

IP_PWP:d0695358\RW-01_raster.dgn

9/24/2018 15:55

TABLE 1

CORRUGATED STEEL PIPE
(2 2/3 INCH X 1/2 INCH CORRUGATION)

PIPE DIAMETER INCHES	HEIGHT OF FILL ABOVE TOP OF PIPE IN FEET								MIN. COVER INCHES
	1-10	10.1-15	15.1-20	20.1-25	25.1-30	30.1-35	35.1-40	40.1-50	
8 OR LESS	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	9
10	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	9
12	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	9
15	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	9
18	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14	9
21	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14	9
24	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	12	9
30	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14	12	8	9
36	14 (16)	14 (16)	14 (16)	14 (16)	14	14	10	--	9
42	14 (16)	14 (16)	14 (16)	14 (16)	14	14	12	--	9
48	14 (16)	14 (16)	14 (16)	14 (16)	14	14	12	--	9
54	14	14	14	14	14	12	12	--	9
60	12	12	12	12	12	12	12	--	9
66	10	10	10	10	10	10	10	--	9
72	10	10	10	10	10	10	10	--	9
78	8	8	8	8	8	8	--	--	9
84	8	8	8	8	8	8	--	--	9

DOUBLE LINE RIVETS SINGLE LINE RIVETS

TABLE 2

CORRUGATED STEEL PIPE
(5 INCH X 1 INCH CORRUGATION AND 3 INCH X 1 INCH CORRUGATION)

PIPE DIAMETER INCHES	HEIGHT OF FILL ABOVE TOP OF PIPE IN FEET								MIN. COVER INCHES
	1-10	10.1-15	15.1-20	20.1-25	25.1-30	30.1-35	35.1-40	41.1-50	
36	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14	9
42	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14	9
48	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14	12	9
54	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14	12	12	9
60	14 (16)	14 (16)	14 (16)	14 (16)	14	14	12	10	9
66	14 (16)	14 (16)	14 (16)	14 (16)	14	12	12	8	9
72	14 (16)	14 (16)	14 (16)	14	12	12	12	--	9
78	14 (16)	14 (16)	14 (16)	14	12	12	12	--	9
84	14 (16)	14 (16)	14 (16)	14	12	12	10	--	9
90	14 (16)	14 (16)	14	12	12	12	10	--	12
96	14	14	14	12	12	10	8	--	12
102	14	14	14	12	12	10	8	--	12
108	12	12	12	12	10	8	--	--	12
114	12	12	12	12	10	8	--	--	12
120	12	12	12	12	10	8	--	--	12
126	10	10	10	10	10	--	--	--	12
132	10	10	10	10	8	--	--	--	12
138	10	10	10	10	8	--	--	--	12
144	8	8	8	8	--	--	--	--	12

TABLE 3

CORRUGATED STEEL PIPE ARCH
(5 INCH X 1 INCH CORRUGATION AND 3 INCH X 1 INCH CORRUGATION)

EQUIV. PIPE DIAMETER INCHES	C.M. PIPE ARCH SPAN X RISE INCHES	HEIGHT OF FILL ABOVE TOP OF ARCH (FEET)		MIN. COVER INCHES
		1-4	4.1-9	
36	40 X 31	14 (16)	14 (16)	9
42	46 X 36	14 (16)	14 (16)	9
48	53 X 41	14 (16)	14 (16)	9
54	60 X 46	14 (16)	14 (16)	9
60	66 X 51	14 (16)	14 (16)	9
66	73 X 55	14	14	9
72	81 X 59	14	14	9
78	87 X 63	14	14	9
84	95 X 67	14	14	9
90	103 X 71	12	12	12
96	112 X 75	12	12	12
102	117 X 79	12	12	12
108	128 X 83	10	10	12
114	137 X 87	10	10	12
120	142 X 91	8	8	12

TABLE 4

CORRUGATED STEEL PIPE ARCH
(2 2/3 INCH X 1/2 INCH CORRUGATION)

EQUIV. PIPE DIAMETER INCHES	C.M. PIPE ARCH SPAN X RISE INCHES	HEIGHT OF FILL ABOVE TOP OF ARCH (FEET)		MIN. COVER INCHES
		1-4	4.1-9	
15	17 X 13	14 (16)	14 (16)	9
18	21 X 15	14 (16)	14 (16)	9
21	24 X 18	14 (16)	14 (16)	9
24	28 X 20	14 (16)	14 (16)	9
30	35 X 24	14 (16)	14 (16)	9
36	42 X 29	14 (16)	14 (16)	9
42	49 X 33	14	14	9
48	57 X 38	12	12	9
54	64 X 43	12	12	9
60	71 X 47	10	10	9
66	77 X 52	8	8	9
72	83 X 57	8	8	9

TABLE 5

CORRUGATED ALUMINUM PIPE
(2 2/3 INCH X 1/2 INCH CORRUGATION)

PIPE DIAMETER INCHES	HEIGHT OF FILL ABOVE TOP OF PIPE IN FEET								MIN. COVER INCHES
	1-10	10.1-15	15.1-20	20.1-25	25.1-30	30.1-35	35.1-40	40.1-50	
8 OR LESS	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	9
10	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	9
12	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	12	9
15	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14	12	12	9
18	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	12	12	12	9
21	14 (16)	14 (16)	14 (16)	14 (16)	12	12	12	--	9
24	14 (16)	14 (16)	14	12	12	12	10	--	9
30	14 (16)	14 (16)	12	12	12	--	--	--	9
36	14	14	12	12	--	--	--	--	9
42	14	14	14	14	12	12	12	--	9
48	14	14	12	12	12	12	10	--	9
54	12	12	12	12	12	12	--	--	9
60	10	10	10	10	10	--	--	--	9
66	10	10	10	10	10	--	--	--	9
72	8	8	8	8	--	--	--	--	9

TABLE 6

CORRUGATED ALUMINUM PIPE
(3 INCH X INCH CORRUGATION)

PIPE DIAMETER INCHES	HEIGHT OF FILL ABOVE TOP OF PIPE IN FEET								MIN. COVER INCHES
	1-10	10.1-15	15.1-20	20.1-25	25.1-30	30.1-35	35.1-40	40.1-50	
36	14 (16)	14 (16)	14 (16)	14 (16)	14 (16)	14	14	14	9
42	14 (16)	14 (16)	14 (16)	14 (16)	14	14	14	10	9
48	14 (16)	14 (16)	14 (16)	14	14	14	14	8	9
54	14 (16)	14 (16)	14	14	14	14	12	--	9
60	14 (16)	14 (16)	14	14	14	14	12	--	9
66	14 (16)	14 (16)	14	14	14	12	12	--	9
72	14	14	14	14	12	12	12	--	9
78	14	14	14	14	12	12	12	--	9
84	12	12	12	12	12	12	10	--	9
90	12	12	12	12	12	12	10	--	12
96	12	12	12	12	12	10	8	--	12
102	10	10	10	10	10	10	8	--	12
108	10	10	10	10	10	10	--	--	12
114	8	8	8	8	8	8	--	--	12
120	8	8	8	8	8	8	--	--	12

TABLE 7

CORRUGATED ALUMINUM PIPE
(6 INCH X 1 INCH CORRUGATION)

PIPE DIAMETER INCHES	HEIGHT OF FILL ABOVE TOP OF PIPE IN FEET								MIN. COVER INCHES
	1-10	10.1-15	15.1-20	20.1-25	25.1-30	30.1-35	35.1-40	40.1-50	
30	14 (16)	14 (16)	14 (16)	14 (16)	14	14	12	12	9
36	14 (16)	14 (16)	14 (16)	14	14	14	12	10	9
42	14 (16)	14 (16)	14 (16)	14	14	12	12	10	9
48	14 (16)	14 (16)	14 (16)	14	12	12	10	--	9
54	14 (16)	14 (16)	14 (16)	12	12	10	8	--	9
60	14 (16)	14 (16)	14 (16)	12	10	10	8	--	9
66	14 (16)	14 (16)	14	12	10	8	--	--	9
72	12	12	12	10	8	--	--	--	9
84	10	10	10	10	--	--	--	--	9
96	8	8	8	8	--	--	--	--	12

TABLE 8

CORRUGATED ALUMINUM PIPE ARCH
(2 2/3 INCH X 1/2 INCH CORRUGATION)

EQUIV. PIPE DIAMETER INCHES	C.A. PIPE ARCH SPAN X RISE INCHES	HEIGHT OF FILL ABOVE TOP OF ARCH (FEET)		MIN. COVER INCHES
		1-4	4.1-9	
15	17 X 13	14 (16)	14 (16)	9
18	21 X 15	14 (16)	14 (16)	9
21	24 X 18	14 (16)	14 (16)	9
24	28 X 20	14 (16)	14 (16)	9
30	35 X 24	14	14	9
36	42 X 29	14	14	9
42	49 X 33	12	12	9
48	57 X 38	10	10	9
54	64 X 43	10	10	9
60	71 X 47	8	8	9
66	77 X 52	8	8	9

GENERAL NOTES

1) MINIMUM PIPE WALL THICKNESS AND COATING REQUIREMENTS FOR ALL METAL PIPE WILL BE AS SHOWN ON THE PROJECT PLANS UNDER " SUMMARY OF DRAINAGE STRUCTURES ".

2) JOINT TYPES FOR ALL CIRCULAR AND ARCH METAL PIPE SHALL CONFORM TO CURRENT LA DOTD STANDARD SPECIFICATIONS AND SHALL BE AS SHOWN ON THE SUMMARY OF DRAINAGE STRUCTURE PLAN SHEETS.

GAGE NO.	16	14	12	10	8	
THICKNESS (IN.)	0.060	0.075	0.105	0.135	0.164	ALUMINUM
	0.064	0.079	0.109	0.138	0.168	GALVANIZED STEEL

3) PIPE WALL THICKNESS SHOWN ON PROJECT PLANS MAY VARY FROM PIPE WALL THICKNESS SHOWN IN TABLES DUE TO LOCAL PH, RESISTIVITY AND ABRASIVE CONDITIONS.

4) MINIMUM COVER IS MEASURED FROM TOP OF PIPE TO THE TOP OF THE SUBGRADE. MINIMUM COVER SHOWN IS ADEQUATE FOR H-20 LOADING WHEN PAVEMENT IS IN PLACE. DURING CONSTRUCTION, WHEN HEAVY LOADS MAY BE DRIVEN OVER OR CLOSE TO BURIED STRUCTURE, IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE THE ADDITIONAL COVER NEEDED TO PROTECT THE PIPE.

5) MAXIMUM FILL HEIGHT IS MEASURED FROM TOP OF PIPE TO TOP OF SURFACING.

6) SEE STANDARD SPECIFICATIONS AND STANDARD PLAN BM-01 FOR DETAILS OF BACKFILL PROCEDURES. SPECIAL CARE SHOULD BE TAKEN TO THOROUGHLY COMPACT BACKFILL UNDER PIPE HAUNCHES.

7) FOR CIRCULAR PIPE, THE AVERAGE INSIDE DIAMETER SHALL NOT VARY MORE THAN 1% OR 1/2", WHICHEVER IS GREATER, FROM THE NOMINAL DIAMETER.

8) FOR ARCH PIPE A TOLERANCE OF 1" ± OR 2% OF EQUIVALENT CIRCULAR DIAMETER, WHICHEVER IS GREATER, WILL BE PERMISSIBLE IN SPAN AND RISE.

9) GAGES SHOWN IN PARENTHESES MEET AASHTO REQUIREMENTS AND ARE THE GAGE WHICH WOULD NORMALLY BE USED. THE HEAVIER GAGES (NOT IN PARENTHESES) SHOULD BE USED ON DOTD PROJECTS.

FOR INFORMATIONAL USE

DESIGNED	CDJ
CHECKED	HJB
DETAILED	KAJ
CHECKED	WMR
DATE	SHEET 1 OF 2

SHEET NUMBER	
PARISH	
FEDERAL PROJECT	
STATE PROJECT	

NO.	DESCRIPTION	BY	DATE
10-5-05	Eliminated all reference to Plastic Pipe and Table 9	JDK	
7-3-02	Redrafted, Added Plastic Pipe Table, General Revisions	WMR	
3-27-84	Fill Height Tables - Connecting Bands	HJB	

APPROVED BY: CHIEF ENGINEER: William H. Temple DATE: 10-5-05

METAL PIPE WALL THICKNESS AND CONNECTING BANDS, FILL HEIGHT FOR METAL PIPE

STANDARD PLAN SAM-1

HYDRAULICS SECTION

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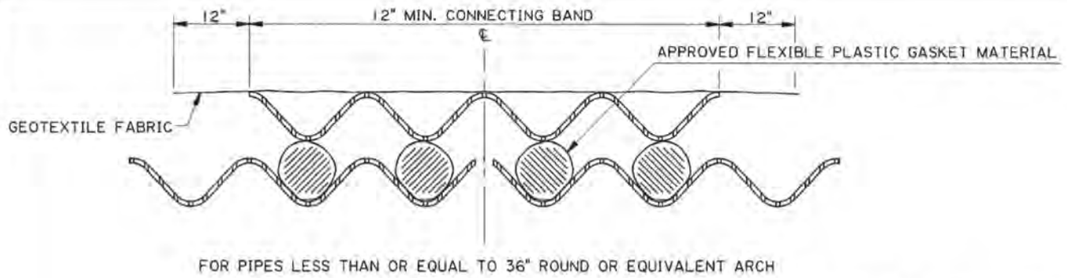
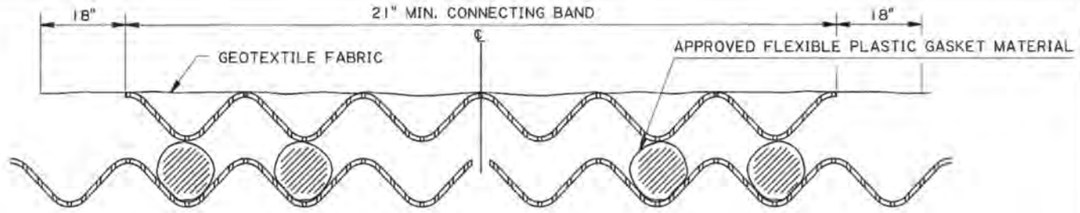


FOR PIPES LESS THAN OR EQUAL TO 36" ROUND OR EQUIVALENT ARCH

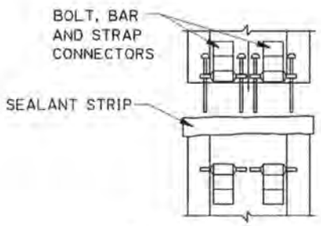


FOR PIPES GREATER THAN 36" ROUND OR EQUIVALENT ARCH
AND FOR ALL SIZES OF 6 X 1 AND 5 X 1 CORRUGATIONS

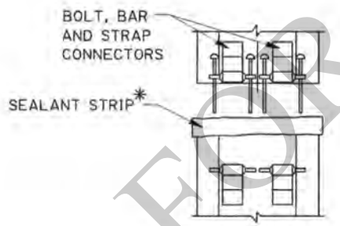
METHOD OF SEALING ANNULAR JOINT AT CONNECTING BAND WHERE TWO PIPE SECTIONS ARE JOINED

FLEXIBLE PLASTIC GASKET SYSTEM

T2 & T3 JOINTS AS SHOWN (WITH RODS & LUGS).
T1 JOINT SIMILAR, EXCEPT REQUIRES ONLY ONE STRIP OF PLASTIC GASKET MATERIAL IN SECOND CORRUGATION EACH SIDE OF JOINT.



CONNECTION DETAIL
DOUBLE HARNESS



CONNECTION DETAIL
DOUBLE HARNESS

*BAND LAP SEALANT TO BE FLEXIBLE PLASTIC GASKET MATERIAL. REQUIRED THICKNESS IN TABLE. REQUIRED WIDTH IS BAND WIDTH PLUS 2".

⊗LOCK SEAM PIPE - 12" MIN.
WELDED SEAM PIPE - 10½" MIN.

SECTION

SECTION

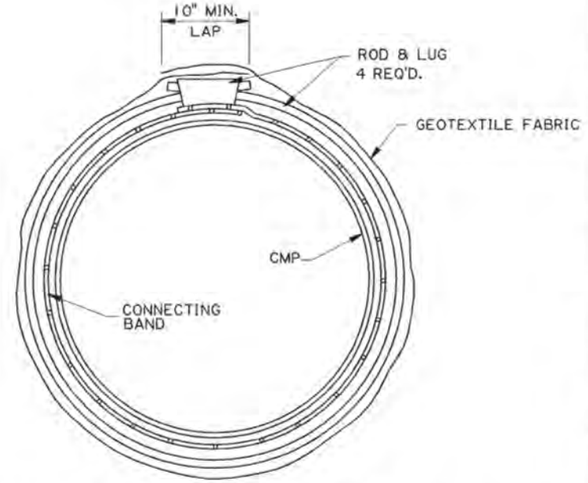
ALTERNATE CONNECTING BANDS
O-RING SYSTEM

GEOTEXTILE FABRIC CLOTH REQUIRED - SAME AS SHOWN ABOVE.

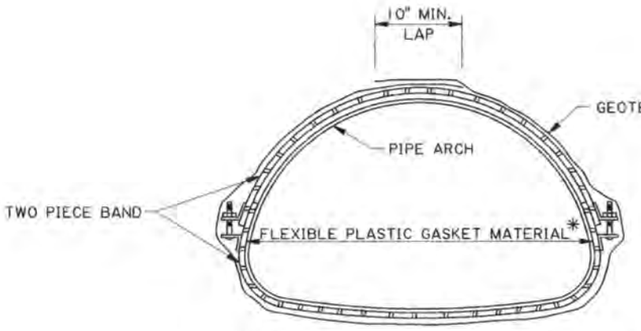
O-RING AND FLEXIBLE GASKET THICKNESS			
PIPE SIZE	CORRUGATION DEPTH	O-RING THICKNESS	FLEXIBLE GASKET THICKNESS
36" & UNDER	½"	13/16"	1"
LARGER THAN 36"	½"	⅞"	1"
ALL SIZES	1"	1⅜"	1½"

GENERAL NOTES:

1) O-RING GASKETS WILL BE REQUIRED WHENEVER O-RING SYSTEM CONNECTING BANDS ARE USED. O-RING GASKETS SHALL BE IDENTIFIED BY SIZE, DIAMETER, BATCH OR REEL NUMBER AND PLANT.
2) HELICAL ENDS SHALL BE RE-ROLLED AS PER CURRENT LA DOTD STANDARD SPECIFICATIONS.
3) FOR O-RING JOINT SYSTEMS, BOLTS SHALL BE TORQUED TO A MINIMUM OF 40 FT.LBS.
4) FOR FLEXIBLE PLASTIC GASKET SYSTEM ROUND PIPE, A MINIMUM OF 4 GALVANIZED ½" DIAMETER STEEL RODS AND LUGS SHALL BE PLACED OVER THE CONNECTING BAND. RODS MAY BE 2 PIECE FOR PIPE LARGER THAN 48".
5) GEOTEXTILE FABRIC SHALL CONFORM TO CURRENT LA DOTD STANDARD SPECIFICATIONS.
6) ARCH PIPE SHALL USE THE FLEXIBLE PLASTIC GASKET SYSTEM WITH APPROVED ANGLES OR STRAPS.
7) ALL GASKET MATERIAL SHALL BE APPROVED PRODUCTS ON CURRENT LA DOTD QUALIFIED PRODUCTS LIST.
8) PIPE JOINTS TO BE IN ACCORDANCE WITH CURRENT LA DOTD STANDARD SPECIFICATIONS.



CONNECTING BAND WITH ROD & LUG
(FLEXIBLE PLASTIC GASKET SYSTEM)



METHOD OF SEALING LONGITUDINAL JOINTS AT TWO PIECE CONNECTING BAND
(FLEXIBLE PLASTIC GASKET SYSTEM)

REVISION DESCRIPTION	DATE	APPROVED BY DOTD CHIEF ENGINEER
Eliminated all reference to Plastic Pipe and Table 9	10-5-05	
Redrafted, Added Plastic Pipe Table, General Revisions	7-3-02	
Fill Height Tables - Connecting Bands	3-27-84	
	10-5-05	

DESIGNED CDJ
CHECKED HJB
DETAILED KAJ
CHECKED WMR
DATE
SHEET 2 OF 2
SHEET NUMBER
DISTRICT
FEDERAL PROJECT
STATE PROJECT
DATE 10-5-05
JDK
WMR
HJB

METAL PIPE WALL THICKNESS AND CONNECTING BANDS, FILL HEIGHT FOR METAL PIPE

STANDARD PLAN SAM-1

HYDRAULICS SECTION

FOR INFORMATIONAL USE

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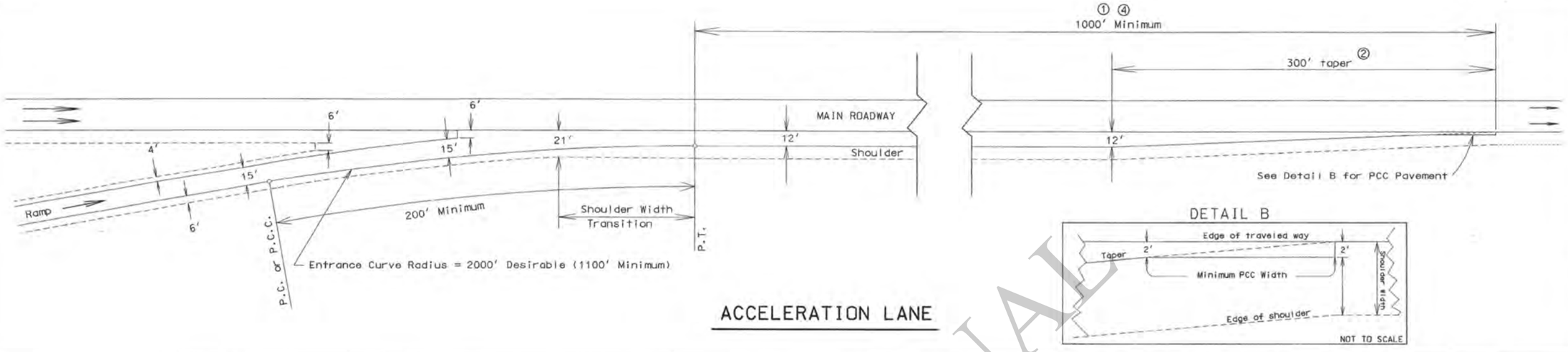
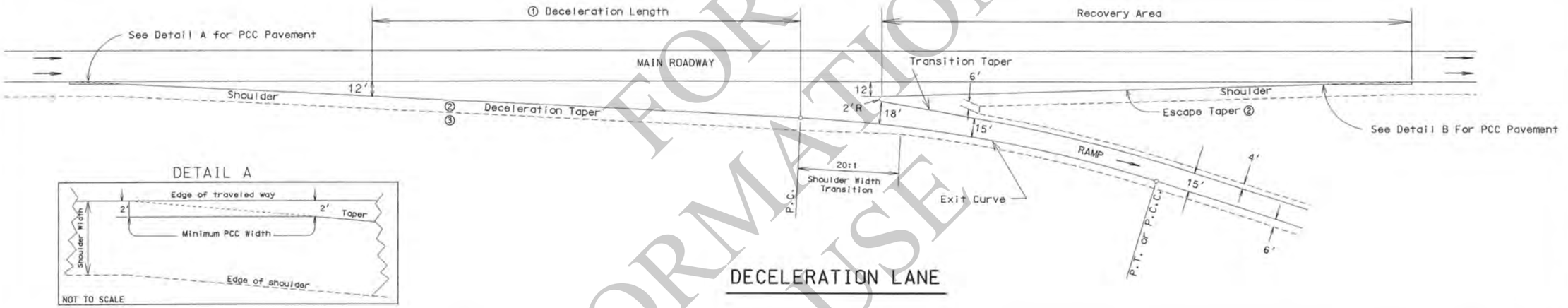
CHECK PRINTS

10/11/2012 14:09



ACCELERATION LANE

DETAIL B



DETAIL A

DECELERATION LANE

SPECIFIC NOTES:

① Length of speed change lanes and recovery area to be increased if grades are equal to or exceed 3%. See Exhibit 10-71 from the 2004 AASHTO book entitled "A Policy On Geometric Design Of Highways And Streets".

② On curved mainline roadways with flat curvature, use a horizontal curve to approximate the taper rate. See Exhibit 10-74 from the 2004 AASHTO entitled "A Policy on Geometric Design of Highways and Streets".

③ Horizontal curves are used instead of deceleration tapers when a lane is dropped. Lane drop escape tapers must be 50:1 to 70:1.

④ 1200' minimum if the ramp and freeway will frequently carry traffic volumes approximately equal to the design capacity of the merging area.

GENERAL NOTES:

1 - Minimum ramp length for diagonal ramps is 1000' measured from physical gore to crossroad and 1200' minimum for ramps near capacity.

2 - A minimum 200' platform along the ramp is required so the ramp vertical alignment approximates the mainline alignment. The platform is measured from the physical nose.

3 - Refer to Exhibit 3-27 from the 2004 AASHTO book entitled "A Policy on Geometric Design of Highways and Streets" for ramp superelevation rates.

4 - The mainline design speed should not be less than the anticipated operating speed.

5 - Where decision sight distance cannot be provided at exits, contact the Design Development Engineer for guidance.

6 - The minimum entrance/exit curve radii must be increased if the mainline cross-slope is less than 2.5%. The maximum cross slope break from mainline to ramp curve must not exceed 5%.

Minimum Conditions Table

Condition	Design Speeds (mph)				Deceleration Length (ft)	Exit Curve Radius (ft)	Escape Taper Rate	Transition Taper Rate	Deceleration Taper Rate
	Mainline	Ramp Gore	Ramp Proper						
			Loop	Diagonal					
A	70	50	25	50 min	340	1050	35:1	25:1	20:1
B	60	45 *	25	45 min	300	850	30:1	22.5:1	17:1
C	50	35	25	35 min	285	500	25:1	17.5:1	14:1

* Rounded upward

TYPICAL SPEED CHANGE LANES FOR INTERSTATE HIGHWAYS

STANDARD PLAN SC-01

Design Development

DESIGNED GNL | DETAILED GNL | CHECKED NKJ | DATE SHEET Sept 2005 1 OF 1

APPROVED BY: [signature] DATE: 11-21-05

APPROVED BY: CHIEF ENGINEER DATE

FOR INFORMATIONAL USE

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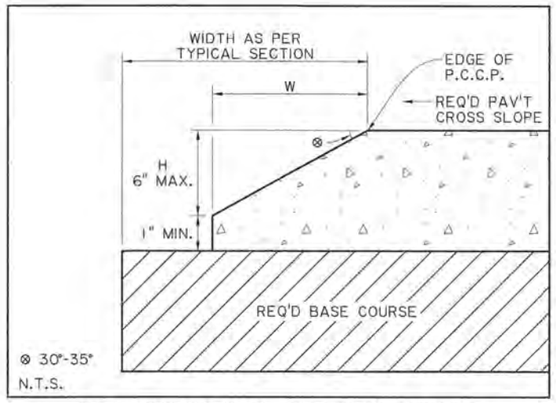
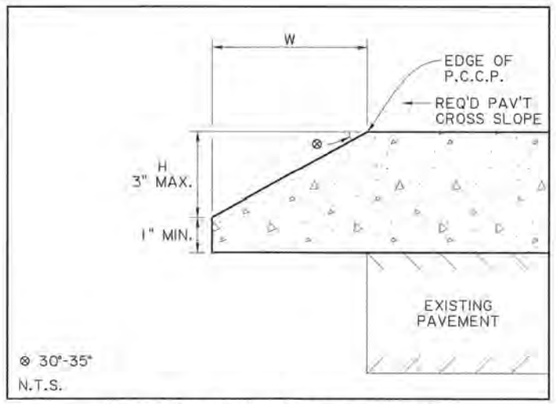
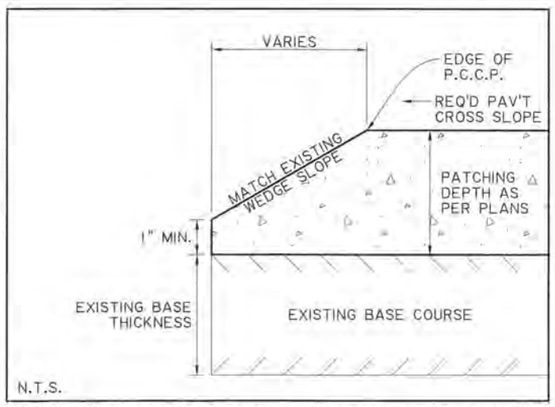
P.C.C.P. SHOULDER WEDGE



P.C.C. SHOULDER WEDGE FOR NEW CONSTRUCTION



P.C.C. SHOULDER WEDGE FOR WHITETOPPING



P.C.C. SHOULDER WEDGE FOR PAVEMENT PATCHING WITH EXISTING WEDGE

NOTES:

1. SHOULDER WEDGES SHALL BE REQUIRED AT THE OUTSIDE EDGES OF THE PAVED ROADWAY (EDGE OF TRAVEL LANE OR EDGE OF PAVED SHOULDER), UNLESS THE TOTAL REQUIRED ASPHALT CONCRETE THICKNESS IS LESS THAN 2" AND FOR PAVEMENT PATCHING PROJECTS WHERE THE EXISTING PAVEMENT DOES NOT HAVE SHOULDER WEDGES.
2. FOR ASPHALT CONCRETE PAVEMENTS, SHOULDER WEDGES SHALL BE UTILIZED ON SINGLE LIFTS IF THE LAYER THICKNESS IS GREATER THAN OR EQUAL TO 2" AND, AT A MINIMUM, ON EACH OF THE TOP 2 LIFTS OF A MULTI-LIFT PAVEMENT.
3. EQUIP THE PAVER WITH A MECHANICAL DEVICE THAT WILL PRODUCE A WEDGE WITH A UNIFORM TEXTURE, SHAPE, AND DENSITY, WHILE AUTOMATICALLY ADJUSTING TO VARYING HEIGHTS ENCOUNTERED ALONG THE PAVEMENT EDGE.
4. THE CONTRACTOR SHALL BLADE AND SHAPE EXISTING GROUND OR SHOULDER MATERIAL TO FORM A UNIFORM SURFACE UNDER THE ASPHALT SHOULDER WEDGE PRIOR TO PLACEMENT OF PAVEMENT.
5. FOR ASPHALT CONCRETE PAVEMENTS, THE MAXIMUM SHOULDER WEDGE HEIGHT ("H") SHALL EQUAL 6". IF THE TOTAL ASPHALT THICKNESS IS GREATER THAN 6", THE CONTRACTOR SHALL STAGE CONSTRUCTION BY PULLING UP THE SHOULDERS OR FORE SLOPE MATERIAL IN THE LOWER LIFTS, THEN UTILIZING THE WEDGE IN EACH OF THE FINAL 2 LIFTS.
6. REQUIRED BASE WIDTHS ARE AS SHOWN ON TYPICAL SECTIONS. IT IS NOT REQUIRED FOR THE BASE COURSE WIDTH TO INCLUDE THE WIDTH OF THE ASPHALT WEDGE. THE ASPHALT WEDGE MAY BE SUPPORTED BY THE EXISTING GROUND, EMBANKMENT, OR SHOULDER MATERIAL. HOWEVER, THE DESIGNER SHOULD MAKE EVERY EFFORT TO SUPPORT THE SHOULDER WEDGE WITH NEW BASE COURSE MATERIAL UNLESS PREVENTED BY PROJECT SCOPE, PHYSICAL RESTRAINTS, OR DEEMED IMPRACTICAL. FOR CONCRETE SHOULDER WEDGES, THE REQUIRED BASE WIDTH SHOULD INCLUDE THE WIDTH OF THE SHOULDER WEDGE AND THE DESIRED ADDITIONAL WIDTH BEYOND THE SURFACING, EXCEPT FOR WHITETOPPING.
7. SEE TYPICAL SECTION SHEETS FOR PAVEMENT DETAILS.
8. THE ANGLE SHOWN FOR AN ASPHALT CONCRETE SHOULDER WEDGE IS MEASURED AFTER COMPACTION.
9. THE SHOULDER WEDGE SHALL NOT BE CONSIDERED PART OF THE REQUIRED PAVEMENT WIDTH.
10. ANGLE OF SHOULDER WEDGE IS MEASURED FROM THE FACE OF THE WEDGE TO A LINE REPRESENTING THE THEORETICAL PROJECTION OF THE PAVEMENT CROSS SLOPE.
11. SHOULDER WEDGES SHALL NOT BE CONSTRUCTED AT INTERSECTIONS, PAVED DRIVEWAYS, OR BEHIND GUARDRAILS UNLESS OTHERWISE NOTED IN THE PLANS OR DIRECTED BY THE PROJECT ENGINEER. IF SHOULDER WEDGES ARE CONSTRUCTED AT THESE LOCATIONS DURING PAVING OPERATIONS, THEY SHALL BE REMOVED BY SAWCUTTING AT NO DIRECT PAY. NO QUANTITY DEDUCTIONS WILL BE MADE IN THE PLANS FOR SUCH GAPS.
12. SHOULDER WEDGES SHALL BE REQUIRED AT THE OUTSIDE EDGES OF WHITETOPPING UNLESS THE REQUIRED THICKNESS IS 2" OR AN ASPHALT SHOULDER IS PROPOSED IN ADDITION TO WHITETOPPING. THE PROPOSED ASPHALT SHOULDER IS REQUIRED TO HAVE WEDGES UNLESS THE TOTAL REQUIRED ASPHALT CONCRETE THICKNESS IS LESS THAN 2".

P.C.C.P. SHOULDER WEDGE QUANTITIES

HEIGHT "H" INCHES	30° WEDGES		35° WEDGES	
	WIDTH "W" INCHES	SQYD PER MILE	WIDTH "W" INCHES	SQYD PER MILE
4.0	6.9	674.7	5.7	557.3
5.0	8.7	850.7	7.1	694.2
6.0	10.4	1016.9	8.6	840.9

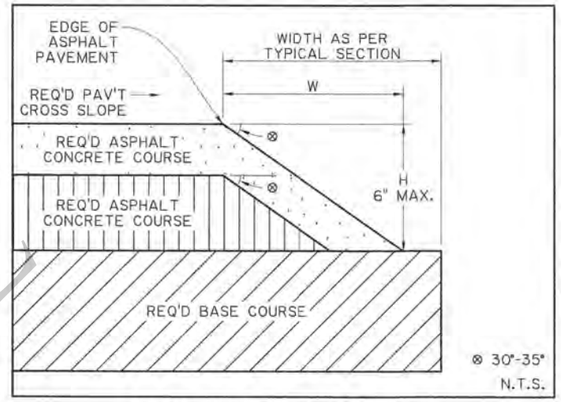
QUANTITIES SHOWN IN PLANS ARE BASED ON A 35° WEDGE
QUANTITIES SHOWN ARE FOR 2 WEDGES (ONE AT EACH SIDE OF ROADWAY)

WHITETOPPING WEDGE QUANTITIES

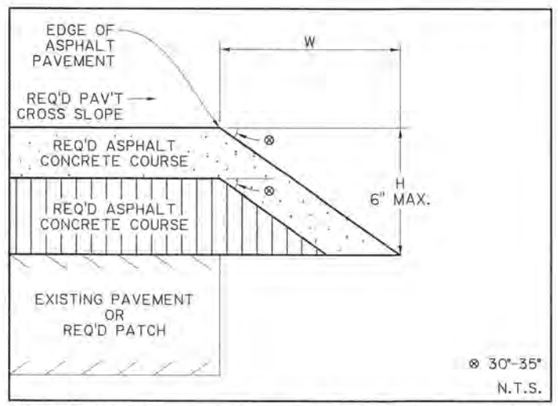
HEIGHT "H" INCHES	30° WEDGES		35° WEDGES	
	WIDTH "W" INCHES	SQYD PER MILE	WIDTH "W" INCHES	SQYD PER MILE
2.0	3.5	342.2	2.9	283.6
3.0	5.2	508.4	4.3	420.4

QUANTITIES SHOWN IN PLANS ARE BASED ON A 35° WEDGE
QUANTITIES SHOWN ARE FOR 2 WEDGES (ONE AT EACH SIDE OF ROADWAY)

ASPHALT CONCRETE SHOULDER WEDGE



ASPHALT CONCRETE SHOULDER WEDGE
FOR NEW CONSTRUCTION OR BASE REHABILITATION



ASPHALT CONCRETE SHOULDER WEDGE FOR OVERLAY OR PATCHING

ASPHALT CONCRETE SHOULDER WEDGE QUANTITIES

HEIGHT "H" INCHES	30° WEDGES		35° WEDGES	
	WIDTH "W" INCHES	TONS PER MILE	WIDTH "W" INCHES	TONS PER MILE
2.0	3.5	18.8	2.9	15.6
2.5	4.3	28.9	3.6	24.2
3.0	5.2	41.9	4.3	34.7
3.5	6.1	57.4	5.0	47.1
4.0	6.9	74.2	5.7	61.3
4.5	7.8	94.4	6.4	77.4
5.0	8.7	117.0	7.1	95.5
5.5	9.5	140.5	7.9	116.8
6.0	10.4	167.8	8.6	138.7

QUANTITIES SHOWN IN PLANS ARE BASED ON A 35° WEDGE
QUANTITIES SHOWN IN TABLE ARE BASED ON 110 LB/SYD IN SQYD
QUANTITIES SHOWN ARE FOR 2 WEDGES (ONE AT EACH SIDE OF ROADWAY)

PRELIMINARY INFORMATIONAL

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN	RAN
CHECK	JML
DETAIL	RAN
CHECK	JML
REVIEW	
SERIES #	1 OF 1

10/24/2022
STATE OF LOUISIANA
RYAN A. NOLAN
License No. 40078
PROFESSIONAL ENGINEER
IN ENGINEERING

APPROVED BY CHIEF ENGINEER
DATE: 10/25/2022

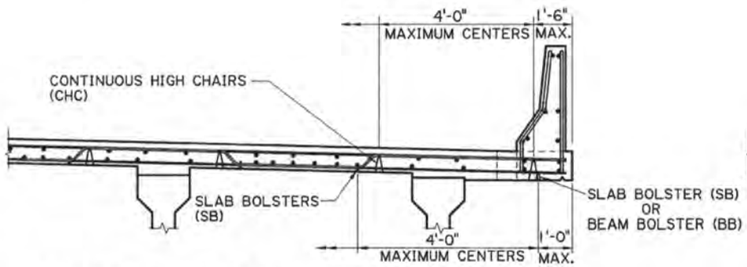
SHOULDER WEDGE

STANDARD PLAN SW-01

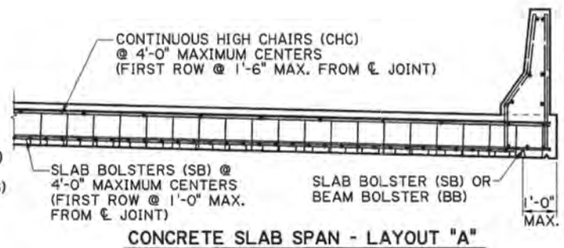
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

ROAD DESIGN

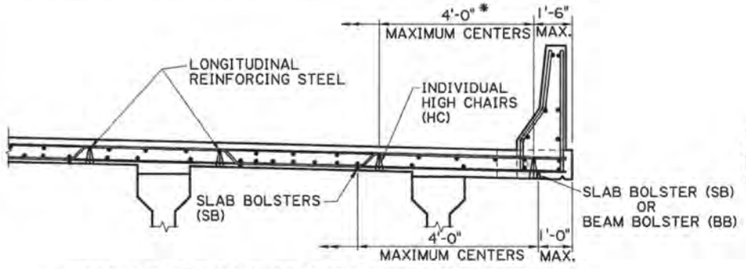
9/21/2020 09:56



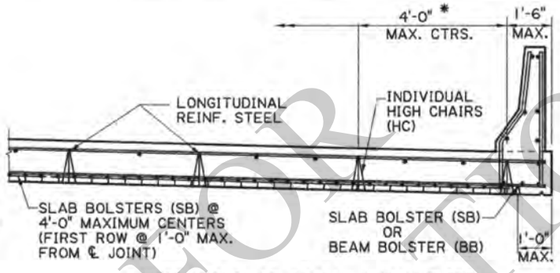
STEEL OR CONCRETE GIRDER SPAN - LAYOUT "A"



CONCRETE SLAB SPAN - LAYOUT "A"



STEEL OR CONCRETE GIRDER SPAN - LAYOUT "B"
(ALTERNATE)



CONCRETE SLAB SPAN - LAYOUT "B"
(ALTERNATE)

GENERAL NOTES:

STEEL WIRE BAR SUPPORTS AND REINFORCING STEEL BARS SHALL BE IN ACCORDANCE WITH THE LATEST APPROVED LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, AS AMENDED BY THE SPECIAL PROVISIONS AND/OR SUPPLEMENTAL SPECIFICATIONS.

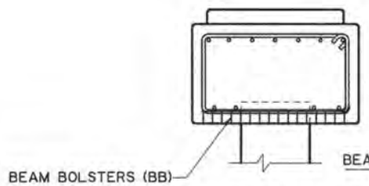
HEIGHT OF BAR SUPPORTS ARE TO BE THAT REQUIRED TO SUPPORT THE REINFORCING BARS AT POSITIONS SHOWN IN THE PLANS.
BAR SUPPORTS ARE NOT INTENDED, AND SHALL NOT BE USED, TO SUPPORT RUNWAYS FOR CONCRETE BUGGIES OR SIMILAR LOADS.

WHEN BAR SUPPORTS ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK THE LAST LEGS ON ADJOINING PIECES, BUT NO BAR SHALL BE PLACED MORE THAN 2" BEYOND THE LAST LEG AT THE END OF A RUN OF ANY CONTINUOUS SUPPORTS.

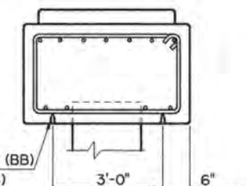
WHERE BAR SUPPORTS ARE USED ON EARTH OR AGGREGATE SUB GRADES, SUITABLE PLATES SHALL BE PROVIDED TO PREVENT DISPLACEMENT OF THE SUPPORT FOOT. ALL BAR SUPPORTS BEARING ON THE FORMS SHALL HAVE RADIUS BEARING LEGS IN THE FORM OF A HOOK (UPTURNED LEGS) OR SPHERICAL FOOT AT THE LOWER END OF THE LEGS.

THE BOTTOM OF BAR SUPPORTS SHALL BE COATED WITH AN ACCEPTABLE EPOXY OR PLASTIC MATERIAL FOR A MINIMUM DISTANCE OF 2 INCHES FROM THE POINT OF CONTACT WITH THE FORMS.

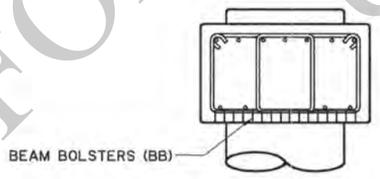
METAL TIE WIRES AND BAR SUPPORTS SHALL BE COATED FULLY WITH AN ACCEPTABLE EPOXY, PLASTIC OR NYLON MATERIAL IF USING EPOXY COATED REINFORCING STEEL.



PILE BENT - LAYOUT "A"



PILE BENT - LAYOUT "B"
(ALTERNATE)



COLUMN BENT

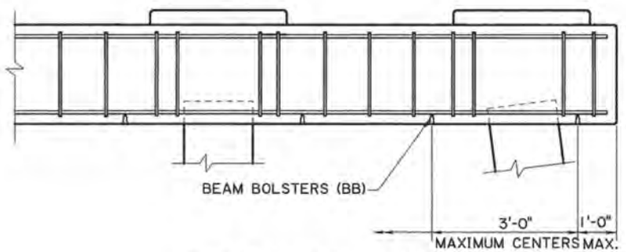
TYPE OF SUPPORT	BAR SUPPORT ILLUSTRATION	MINIMUM WIRE DIAMETER △			REMARKS
		HEIGHT	TOP	LEGS	
SLAB BOLSTER (SB)		ALL	NO. 4 CORRU-GATED	NO. 6	VERTICAL CORRUGATIONS SPACED 1" ON CENTERS
BEAM BOLSTER (BB)		UP TO 2" OVER 2"	NO. 7 NO. 4	NO. 7 NO. 4	
⊡ CONTINUOUS HIGH CHAIR (CHC)		2" TO 5" 5" TO 9" OVER 9"	NO. 2 NO. 2 NO. 2	NO. 4 NO. 2 NO. 0	LAYOUT "A" FOR SPANS
❽ INDIVIDUAL HIGH CHAIR (HC)		2" TO 5" 5" TO 9" OVER 9"	N/A N/A N/A	NO. 4 NO. 2 NO. 0	LAYOUT "B" FOR SPANS (ALTERNATE)

△ AMERICAN STEEL AND WIRE GAUGES.

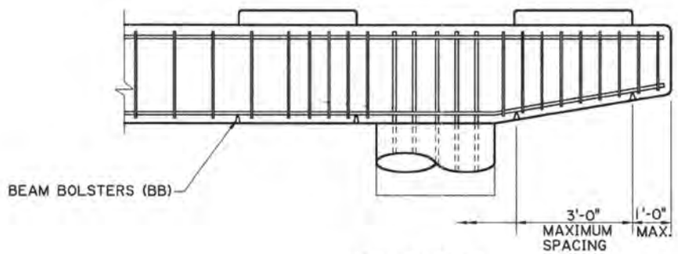
❽ LEGS SHALL BE 20 DEGREES OR LESS WITH VERTICAL WHEN HEIGHT EXCEEDS 1'-0". REINFORCE LEGS WITH WELDED CROSS WIRES OR ENCIRCLING WIRES.

⊡ LEGS SHALL BE 20 DEGREES OR LESS WITH VERTICAL, ON 8¼" CENTER MAXIMUM, WITHIN 4" OF END CHAIR, AND SPREAD BETWEEN LEGS NOT LESS THAN 50% OF NORMAL HEIGHT.

* IF LONGITUDINAL REINFORCING BARS ARE NO. 4, SPACE THE INDIVIDUAL HIGH CHAIRS (HC) @ 3'-0" MAXIMUM CENTERS LONGITUDINALLY; FOR NO. 5 BARS OR LARGER, SPACE @ 4'-0" MAXIMUM CENTERS.



PILE BENT - LAYOUT "A"



COLUMN BENT

FOR INFORMATIONAL USE

STATE OF LOUISIANA
PAUL B. FOSSIER, JR
License No. 21028
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
11-15-12

SHEET NUMBER			
PARISH	CONTROL SECTION		STATE PROJECT
DESIGNED / CHECKED	G. GRASS / F. FOSSIER	DETAILED / CHECKED	OCT. 2008
	P.F.	BY	DATE: 3-6-13
11/15/12	Add Note On Support & Tie Coatings	REVISION DESCRIPTION	
DATE	APPROVED BY CHIEF ENGINEER:		SERIES NUMBER

STEEL WIRE BAR SUPPORT
FOR REINFORCING STEEL

SWBS-100

IP_PWP:d0695358\swbs100.dgn

GENERAL PROVISIONS

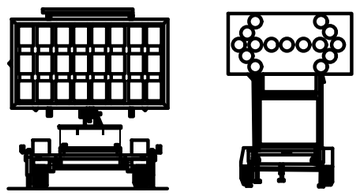
- All temporary traffic control (TTC) devices used shall be in accordance with the Louisiana Standard Specifications for Roads and Bridges, the MUTCD, and shall meet the NCHRP Report 350 or MASH requirements for Test Level 3 devices where applicable.
- Materials used for TTC shall be in accordance with the Louisiana Standard Specifications for Roads and Bridges and, when applicable, the LADOTD AML.
- Placement of TTC devices shall not commence without the approval of the Engineer and until work is about to begin, unless they are covered.
- No lane closures, lane shifts, diversions or detours shall occur without the approval of the Engineer.
- Responsibility is hereby placed upon the contractor for the installation, maintenance and operation of all TTC devices called for in these plans or required by the Engineer for the protection of the traveling public as well as all LADOTD and construction personnel.
- The contractor shall also be responsible for the maintenance of all permanent signs, pavement markings, and traffic signals left in place as essential to the safe movement and guidance of traffic within the project limits unless noted in the plans.
- The DTOE shall serve as a technical advisor to the Engineer for all traffic control matters.
- The Chief Construction Engineer or his appointed designee shall approve all signs and situations not addressed in the plans based on the recommendations of the Project Engineer and the DTOE. All changes shall be noted in all project traffic control diaries.
- The Chief Construction Engineer or his appointed designee shall approve all design speeds of diversions or shifts, if it differs from design plans, based on the recommendations of the Project Engineer and the DTOE.
- All temporary traffic control plans shall comply with the Transportation Management Plan.
- Any additional signs shown in the MUTCD and required by the Engineer shall be installed under Item 713-01-00100.
- Neither work activity nor storage of equipment, vehicles, TMAs, or materials shall occur within the buffer space.
- When a work area has been established on one side of the roadway only, there shall be no conflicting operations or parking on the opposite shoulder within 500 feet of the work area.
- A lighting plan shall be submitted to the Engineer 30 days prior to night work for approval. (See section 713.10 of the Louisiana Standard Specifications for Roads and Bridges.)
- Parking of vehicles or unattended equipment or storage of materials, within the work zone clear zone shall not be permitted unless protected by guardrail or barriers. If the work zone clear zone is not defined on the plan sheets, the Engineer shall verify.
- Immediately upon removal of existing guardrail, the contractor shall install and maintain an NCHRP Report 350 or MASH approved device to protect the blunt end of the bridge or column until new guardrail is installed. After removal of the existing guardrail, new guardrail should be installed within seven (7) days. On non-NHS routes with shoulders less than 8 feet wide: If an NCHRP 350 Report Test Level 3 or MASH device is required but the field conditions of the roadway cannot support a Test Level 3 device, then a Test Level 2 device can be substituted in its place upon approval by the Engineer. If utilized, a TMA is allowed for a maximum of 72 hours.
- All costs associated with temporary crash devices are to be included under the appropriate NS-700 pay item.
- Sight distance should be considered when placing traffic control devices.
- On all mainline Interstates, a minimum of 1.5 feet of paved shoulder on the left and right side shall be maintained at all times.
- On Interstates, a minimum of 11 foot lanes shall be maintained. On all other roadways, a 10 foot minimum travel lane should be maintained where practical.
- TTC Standards are not drawn to scale.
- The contractor shall develop an internal traffic control plan approved by the Engineer prior to each phase.
- Truck restrictions such as (but not limited to) restricting lanes, oversize loads or times of travel, may be required for narrow lanes or other field conditions.
- Temporary concrete barrier shall be placed on a paved surface. This paved surface should follow current design criteria used for paved embankment widening for guardrails.
- Flare rates for temporary concrete barriers should follow the most current guidance in the AASHTO Roadside Design Guide.

PAVEMENT MARKINGS (see AML)

- All pavement markings within the limits of the project or adjacent to the project limits that are in conflict with the project signing or the required traffic movements shall be removed from the pavement by blast cleaning or grinding. (Existing striping shall not be painted over with black paint or covered with tape.)
- If special pavement markings are needed, they shall be reflectorized, removable and accompanied by the proper signage.
- Temporary Raised Pavement Markers may be added to supplement temporary striping in areas of transition, in tapers, in diversions and in other areas of need as shown in the plans or as directed by the Engineer.
- Temporary markings installed in the permanent configuration shall comply with LADOTD pavement marking standard plans, MUTCD and/or the permanent striping plans.

PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS)

- PCMS shall be used on all Interstate Highways. PCMS shall be used on all other roadways (where space is available) with an ADT greater than 20,000.
- When used in advance of a lane closure or a lane shift, the PCMS should be placed on the right hand side of the road a minimum distance of 2 miles in advance of the taper for interstates and to be determined by the Engineer on other highways.
- For interstates and multi-lane highways, if vehicles are queuing beyond the 2 mile PCMS, an additional PCMS should be placed on the right hand side of the road approximately 5 miles in advance of the taper or at the end of the queue, whichever is greater.
- PCMS messages shall be approved by the Engineer. Messages shall be no more than 3 lines and 2 screens.
- Messages shall display only traffic operational, regulatory, warning, and guidance information. PCMS messages shall not display advertising or safety messages. Messages should only convey information concerning the problem/situation, location, and recommended driver action.
- PCMS should be placed as far from the traveled lane as possible. They shall be shielded by guardrail or barriers. If this is not possible they shall be delineated with a min. 3 drum taper spaced at 20ft with a 4th drum alongside the PCMS.
- If the PCMS encroaches on the improved shoulder then the contractor shall install a shoulder closure.
- When the PCMS is not displaying a work zone appropriate message pertaining to the ongoing construction project it shall be shielded by guard rail or barriers, or removed from the work zone clear zone.



ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

SPEED LIMITS

- The Engineer may approve a 10 mph drop in the speed limit for posted speeds of 45 mph or greater and for any construction, maintenance or utility operation that requires one or more of the following:
  - (A) The condition of the traveled way is degraded due to milled surfaces or uneven travel lane lines greater than 1.5 inches.
  - (B) Work is in progress in the immediate vicinity of the travel way requiring lane closures or lane width reductions less than 11 feet.
  - (C) Workers present on the shoulder within 2 feet of the edge of the traveled way without barrier protection.
- The reduced speed zone shall only apply to those portions of the project limits affected. The Engineer may allow SPEED LIMIT WHEN FLASHING signs to supplement reduced speed zones.
- If the speed limit is reduced, speed limit signs shall be placed:
  - (A) beyond major intersections;
  - (B) at one mile intervals in rural areas;
  - (C) at half mile intervals in urban areas.
- At the end of the reduced speed zone, a speed limit sign displaying the original speed limit prior to construction shall be installed.
- For all other speed limit reductions not listed above, the Project Engineer and the DTOE shall recommend the speed reduction to the Chief Construction Engineer or his appointed designee for approval.
- If the speed limit is reduced more than 10 mph, placement of the signs shall be re-evaluated according to the MUTCD.

FLASHING ARROW BOARDS

- All Flashing Arrow Boards shall be 4 feet by 8 feet and Type C.
- Flashing Arrow Boards should be placed on the shoulder. When there is no shoulder or median area, the arrow board shall be placed within the closed lane behind the channelizing devices and as close to the beginning of the taper as practical.
- Flashing arrow boards shall be delineated with retroreflective TTC devices.
- At no time shall the arrow board encroach in the traveled way. When Flashing Arrow Board signs are not being used, they shall be shielded by guard rail or barriers, or removed.
- Arrow boards shall only be used for lane reduction tapers and shall not be used for lane shifts.

ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic
AGC	Associated General Contractors of America
AML	Approved Materials List
ANSI	American National Standards Institute
ATSSA	American Traffic Safety Services Association
B.O.P.	Beginning of Project
DTOE	District Traffic Operations Engineer
E.O.P.	End of Project
LADOTD	Louisiana Department of Transportation and Development
MASH	AASHTO Manual for Assessing Safety Hardware
MUTCD	Manual on Uniform Traffic Control Devices
NCHRP	National Cooperative Highway Research Program
NHS	National Highway System
PCMS	Portable Changeable Message Sign
TMA	Truck Mounted Attenuator
TMC	Traffic Management Center
TTC	Temporary Traffic Control
TTC Standards	Temporary Traffic Control Standard Plans

FOR INFORMATIONAL PURPOSES ONLY

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | DETAIL | REVIEW | SERIES *
CHECK M. RILOVICH | CHECK

APPROVED BY CHIEF ENGINEER: Feb. 7, 2025 DATE:

NO.	DATE	BY
0	4-3-24	BRB

BARRIER INFORMATION AND MINOR CORRECTIONS
REVISION OR CHANGE ORDER DESCRIPTION

STATE OF LOUISIANA

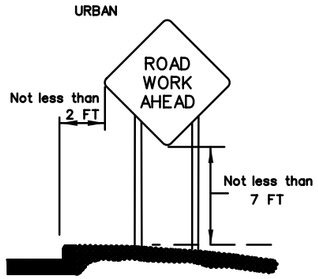
TEMPORARY TRAFFIC CONTROL
GENERAL NOTES SHEET

TTC-00 (A)

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
TRAFFIC ENGINEERING

SIGNS

- All signs used for temporary traffic control shall follow the plans, the LADOTD TTC Standards and the MUTCD.
- Signs shown in the TTC illustrations are typical and may vary with each specific condition.
- One Type B High Intensity light shall be used to supplement the first sign (or pair of signs) that gives warning about a lane closure during nighttime operations (See AML).
- Mesh rollup signs shall not be allowed on any project.
- Contractor shall use caution not to damage existing signs which remain in place. Any LADOTD signs damaged by work operations shall be replaced by the contractor under item 713-01-00100.
- All signs (permanent and temporary) shall be removed or completely covered with a strong, lightweight, opaque material when no longer applicable. (Burlap is not an acceptable material to cover signs).
- At no time shall signs warning against a particular operation be left in place once the operation has been completed or where the condition has been removed.
- Warning signs used for temporary traffic controls shall meet the following guidelines unless otherwise noted in the plans:
  - (A) size shall be 48 inches by 48 inches.
  - (B) see the Louisiana Standard Specifications for Roads and Bridges and the AML for sheeting information.
  - (C) lateral distance of signs shall be a minimum of 6 feet from the edge of shoulder or edge of pavement if no shoulder exists and 2 feet from the back of curb in urban areas (see diagram).
- When portable sign frames are not in use, they shall be moved to an area inaccessible to traffic and not visible to the driver.
- Left side mounted signs will not be required for roadways with a center left turn lane and for undivided roadways.
- Vinyl roll up signs and 1 foot portable sign stands may be used if work zone is in place for 3 days or less. Signs or stands may not be used if there are more than 2 lanes in each direction and if signs do not meet all size, color, retroreflectivity and NCHRP 350 Report or MASH requirements.
- All signs shall be visible to the drivers (i.e. no obstructions such as on street parking or other traffic control devices shall block the sign).
- On divided highways, signs shall be placed on the right and the left as shown on the TTC standards.
- Sign posts:
  - -Signs measuring 10 square feet or less shall be mounted on 1 rigid post
  - -Signs over 10 square feet shall be mounted on 2 rigid posts
  - -Signs over 20 square feet shall be mounted on at least 3 rigid posts
- Rigid sign supports shall be driven to a minimum depth of 3 feet. (If splicing is required, see Allowable Lap Splice U-channel Post.)
- For sign height, see the Rural and Urban diagrams:



LANE CLOSURES

- All proposed lane, road or shoulder closures shall be reviewed by the DTOE and approved by the Engineer.
- Two lane, two-way highways shall have a maximum work area of two miles; all other roadways shall have a four mile maximum work area.
- A queue analysis shall be performed prior to approval of lane closures on all Interstates according to Section 6A.1 of the Traffic Engineering Manual.
- Closure plans and times shall be turned in to the Engineer for review according to the following:
  - (A) 5 working days minimum if traffic control plan has been approved or is contained in the plans.
  - (B) 10 working days minimum and a traffic control plan must be submitted for lane closures not addressed in the plans.
- Weekly updates to the DTOE, Project Engineer, the LADOTD TMC operator and the regional TMC operator (if applicable) will be required for all ongoing lane closures to update the closure status.
- Daily updates to the DTOE, Project Engineer and TMC operator (if applicable) will be required for all projects where active closures are in place.

FLAGGERS

- All flaggers shall be qualified.
- The contractor shall be responsible for training or assuring that all flaggers are qualified to perform flagging duties.
- A Qualified Flagger is one that has completed courses such as those offered by ATSSA or other courses approved by the LADOTD Work Zone Task Force. The contractor shall be responsible for getting the flagger course approved.
- When utilized, a flagger shall use a minimum 18 inch octagonal shape sign on a minimum 6 foot stop/slow paddle and wear ANSI Class 2 Lime Green vest during day time operations and ANSI Class 3 Lime Green ensemble during night operations.
- In all flagging operations, the flagger must be visible from the flagger advance warning sign.
- Flaggers shall not be used on the Interstate.

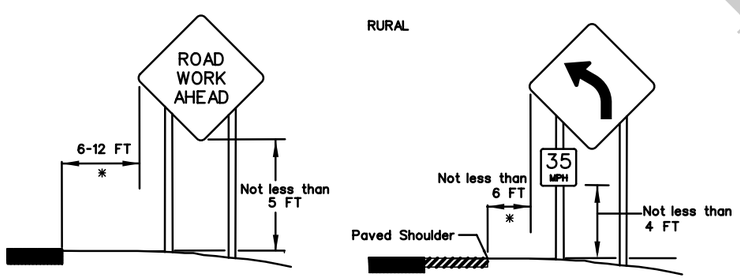
PEDESTRIAN CONSIDERATIONS

- If the TTC zone affects the movement of pedestrians, adequate pedestrian access and walkways shall be provided either through the TTC zone or a designated alternate route.
- Pedestrians should be provided with a convenient and accessible path that replicates as nearly as practical the most desirable characteristics of the existing sidewalk(s) or footpath(s).
- Advance notification of sidewalk closures shall be provided by the maintaining agency.
- No storage of construction materials, equipment, and/or vehicles will be permitted on permanent or temporary bicycle, pedestrian, or transit facilities for any duration of time.

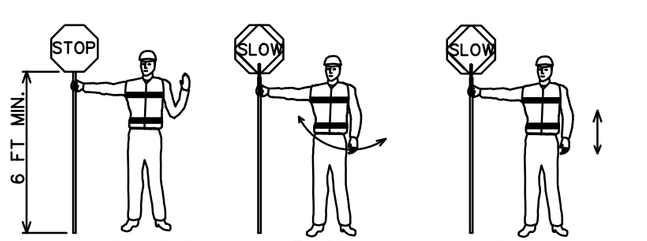
REFERENCES

- The contractor shall be responsible for understanding all rules and requirements in the current edition of the following documents:

1) Louisiana Standard Specifications for Roads and Bridges. http://www.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Standard_Specifications
2) Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD). http://mutcd.fhwa.dot.gov/
3) LADOTD Approved Materials List (AML) Manual. http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Materials_Lab/Pages/Menu_QPL.aspx
4) LADOTD Traffic Engineering Manual http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Traffic_Engineering/Misc%20Documents/Traffic%20Engineering%20Manual.pdf
5) National Cooperative Highway Research Program (NCHRP) Report 350: "Guidelines for Work Zones Traffic Control Devices". http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_rpt_350-a.pdf
6) NCHRP Report 475: "A Procedure for Assessing and Planning Nighttime Highway Construction and Maintenance". http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_rpt_475.pdf
7) NCHRP Report 476: "Guidelines for Design and Operation of Nighttime Traffic Control for Highway Maintenance". http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_rpt_476.pdf
8) NCHRP Report 498: "Illumination Guidelines for Nighttime Highway Work". http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_rpt_498.pdf
9) American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guide.
10) American Traffic Safety Services Association (ATSSA) Quality Guidelines for Work Zone Traffic Control Devices and Features.
11) U.S. Department of Transportation Federal Highway Administration Traffic Control Handbook for Mobile Operations at Night. http://www.dot.state.il.us/blr/1023.pdf



* If lateral distance is not practical, the sign may be placed no less than 2 feet.



To STOP Traffic

Traffic Proceed

To Alert & SLOW Traffic

Use of Hand Sign

Use of Hand Sign

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | DETAIL | REVIEW | SERIES #

CHECK M. RILOVICH | CHECK

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY
1	4-3-24	STORAGE NEAR SIDEWALKS AND MINOR CORRECTIONS	BRB

STATE OF LOUISIANA

TEMPORARY TRAFFIC CONTROL
GENERAL NOTES SHEET

TTC-00 (B)

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

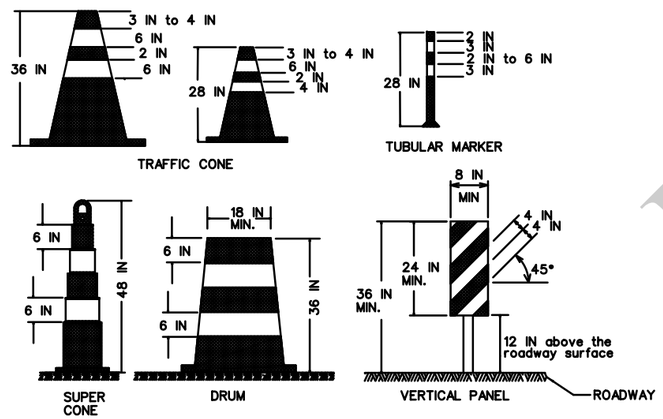
TRAFFIC ENGINEERING

CHANNELIZING DEVICES

- The following devices may be used as channelizing devices: Tubular Markers, Vertical Panels, Cones, Drums and Super Cones.
- 28 inch traffic cones are not allowed on:
  1) Interstates
  2) Highways with speeds greater than 40 mph.
- During nighttime operations, 28 inch and 36 inch cones are not allowed.
- Retroreflective material pattern used on super cones shall match that used on drums.

- Tangent Areas:
  - A) Standard Spacing: See Standard Device Spacing and Buffer Space table.
  - B) Daylight Operations: Drums and super cones are spaced at standard spacing. All other devices are at ½ standard spacing.
  - C) Nighttime Operations: Drums and supercones at standard spacing are the only devices allowed.

- Taper Areas:
  - A) Standard Spacing: See Standard Device Spacing and Buffer Space table.
  - B) Daylight Operations: Drums are spaced at standard spacing. All other devices are ½ standard spacing.
  - C) Nighttime Operations: Drums (at standard spacing) are the only devices allowed.
  - D) Downstream Locations & Flaggers: Drums or supercones at 20' max spacing. The length of taper shall be between 50' - 100' with a minimum of 6 devices.
- Type C steady burn lights shall be used on all channelizing devices in the taper as well as the first two devices in the tangent at night, (see the AML).
- Typical channelizing device lateral placement (do not include when it is used as a divider for opposing directions of traffic) shall be 2 feet off the lane line in the closed lane or shoulder.
- Devices may be adjusted laterally to accomodate ongoing work in the immediate vicinity but must be returned to the closed lane after the work activity has moved.
- Channelizing devices on the lane line shall be of the same type.
- Channelizing devices in each taper shall be of the same type.



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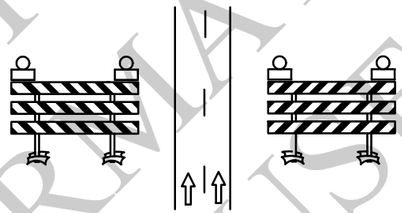
TYPE III BARRICADES

- Only Type III Barricades shall be used in the roadway or shoulder. All barricades shall use Type 3 High Intensity Sheeting on both sides of the barricade.
- All barricades shall be a minimum of 8 feet in length and must meet NCHRP Report 350 or MASH requirements.
- When used for overnight closures, two Type B High Intensity Lights shall supplement all barricades that are placed in a closed lane or that extend across a highway. Two Type A Low Intensity Lights may be used in urban areas if approved by the Engineer (See AML).
- When signs and lights are to be mounted to a barricade, they must meet NCHRP Report 350 or MASH requirements.
- A truck with a TMA may be substituted for a barricade when workers are present.
- Barricades shall be placed:
  - (A) at the beginning of a closed lane or shoulder and at 1,000 foot intervals where no active work is ongoing and the lane must remain closed. A minimum of 2 barricades shall be placed if the lane or shoulder closure is less than 2,000 feet. (One barricade shall be placed at the beginning of the lane closure after the buffer space and one shall be placed in the middle of the lane closure.)
  - (B) before each or group of unfilled holes or holes filled with temporary material.
  - (C) before uncured concrete.
  - (D) in the closed lane on each side of every intersection and crossover. (Do not block sight distance.)
  - (E) in front of piles of material (dirt, aggregate, broken concrete), culverts and equipment which is near the work zone.



TTC for DROP-OFFS

NON-INTERSTATE

Average Drop-off	Current Posted Speed (Prior to Construction)	
	> 45 MPH	≤ 45 MPH
≤ 3 IN	Low Shoulder Sign (Optional)	Low Shoulder Sign (Optional)
> 3 IN ≤ 6 IN	Shoulder Drop Off Sign & Edge Lines or Shoulder Drop Off Sign & Channelizing Device	Shoulder Drop Off Sign
> 6 IN ≤ 10 IN	No Shoulder Sign, Edge Lines & Vertical Panel	No Shoulder Sign & Channelizing Device
> 10 IN	Concrete Barrier (if drop off is < 12 FT from edge of travel lane) & Edge Lines	No Shoulder Sign & Vertical Panel

INTERSTATE

Average Drop-off	
≤ 2 IN	Low Shoulder Sign (Optional)
> 2 IN ≤ 6 IN	Shoulder Drop Off Sign & Edge Lines or Shoulder Drop Off Sign & Channelizing Device
> 6 IN	Concrete Barrier (if drop off is < 12 FT from edge of travel lane), Shoulder Drop Off Sign, & Edge Lines

- If a portable concrete barrier will be required then the deflection shall be considered in the design.
- For Interstate ramps, refer to non-Interstate drop offs.

STANDARD DEVICE SPACING AND BUFFER SPACE

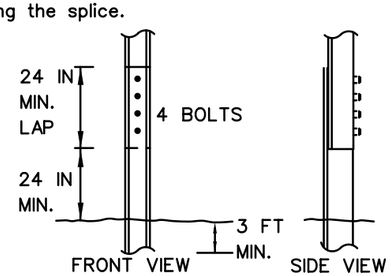
SPEED LIMIT (prior to construction)	MERGING TAPER LENGTH (L) Lane Width (FT)				STANDARD DEVICE SPACING IN FEET		BUFFER SPACE
MPH	9	10	11	12	Along Taper	Along Tangent	FT
25	94	105	115	125	20	40	155
30	135	150	165	180	30	60	200
35	184	205	225	245	35	70	250
40	240	267	294	320	40	80	305
45	405	450	495	540	40	80	360
50	450	500	550	600	40	80	425
55	495	550	605	660	40	80	495
60	540	600	660	720	40	80	570
65	585	650	715	780	40	80	645
70	630	700	770	840	40	80	730
75	675	750	825	900	40	80	820

SPEED LIMIT (prior to construction)	SHIFTING TAPER LENGTH (1/2)(L) Lane Shift (FT)						STANDARD DEVICE SPACING IN FEET		BUFFER SPACE
MPH	2	4	6	8	10	12	Along Taper	Along Tangent	FT
25	11	21	32	42	52	63	20	40	155
30	15	30	45	60	75	90	30	60	200
35	21	41	62	82	102	123	35	70	250
40	27	54	80	107	134	160	40	80	305
45	45	90	135	180	225	270	40	80	360
50	50	100	150	200	250	300	40	80	425
55	55	110	165	220	275	330	40	80	495
60	60	120	180	240	300	360	40	80	570
65	65	130	195	260	325	390	40	80	645
70	70	140	210	280	350	420	40	80	730
75	75	150	225	300	375	450	40	80	820

SPEED LIMIT (prior to construction)	SHOULDER TAPER LENGTH (1/3)(L) Shoulder Width (FT)						STANDARD DEVICE SPACING IN FEET		BUFFER SPACE
MPH	2	4	6	8	10	12	Along Taper	Along Tangent	FT
25	7	14	21	28	35	42	20	40	155
30	10	20	30	40	50	60	30	60	200
35	14	28	41	55	68	82	35	70	250
40	18	36	54	72	89	107	40	80	305
45	30	60	90	120	150	180	40	80	360
50	34	67	100	134	167	200	40	80	425
55	37	74	110	147	184	220	40	80	495
60	40	80	120	160	200	240	40	80	570
65	44	87	130	174	217	260	40	80	645
70	47	94	140	187	234	280	40	80	730
75	50	100	150	200	250	300	40	80	820

- See MUTCD for taper formulas.
- ALLOWABLE LAP SPLICE FOR U-CHANNEL POST

U-Channel posts may be spliced where long lengths are required. The upper section shall overlap the lower section by at least 24 inches. The bottom edge of the upper section of the splice shall be a minimum of 24 inches above the ground. The spliced sections shall be secured with at least four 5/16 inch diameter hex bolts spaced equally along the splice.



PRELIMINARY INFORMATIONAL USE

SHEET NUMBER
PARISH | CONTROL SECTION | STATE PROJECT
DESIGN B. BOUCHER | DETAIL | REVIEW | SERIES *
CHECK M. RILOVICH | CHECK |
APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY
0	4-3-24	DOWNSTREAM TAPERS AND MINOR CORRECTIONS	BRB

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

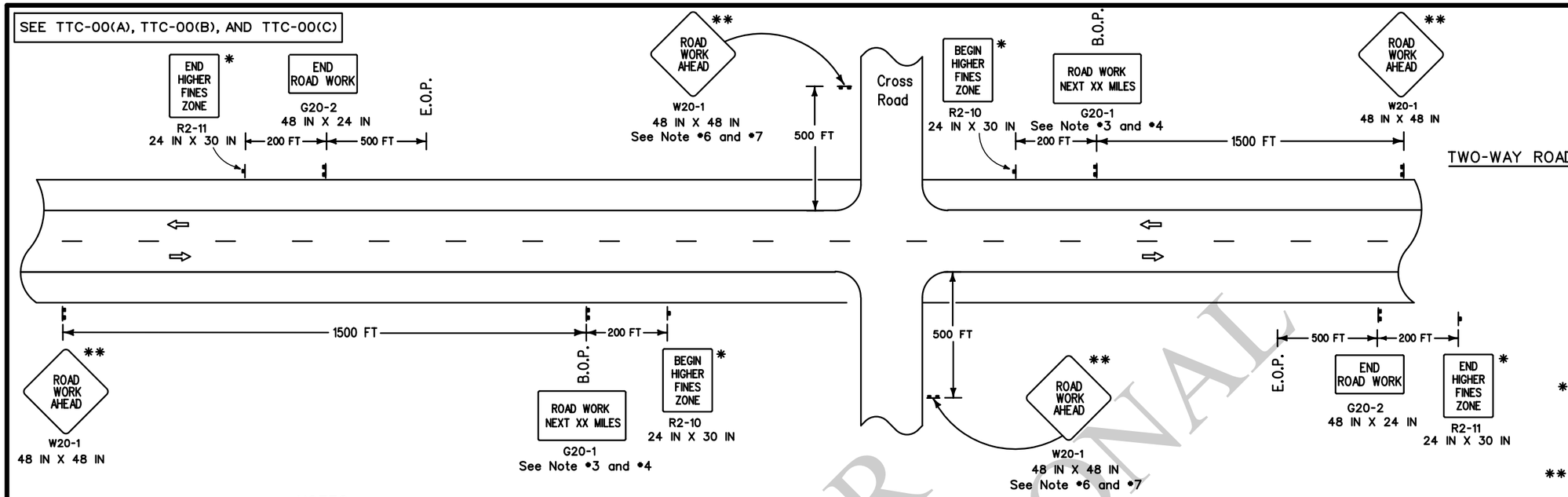
TEMPORARY TRAFFIC CONTROL
GENERAL NOTES SHEET

TTC-00 (C)

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), AND TTC-00(C)



* For divided roadways with speeds ≥ 50 mph use larger sign, 36 IN X 48 IN.

** Any sign of the W20-1 series may be used.

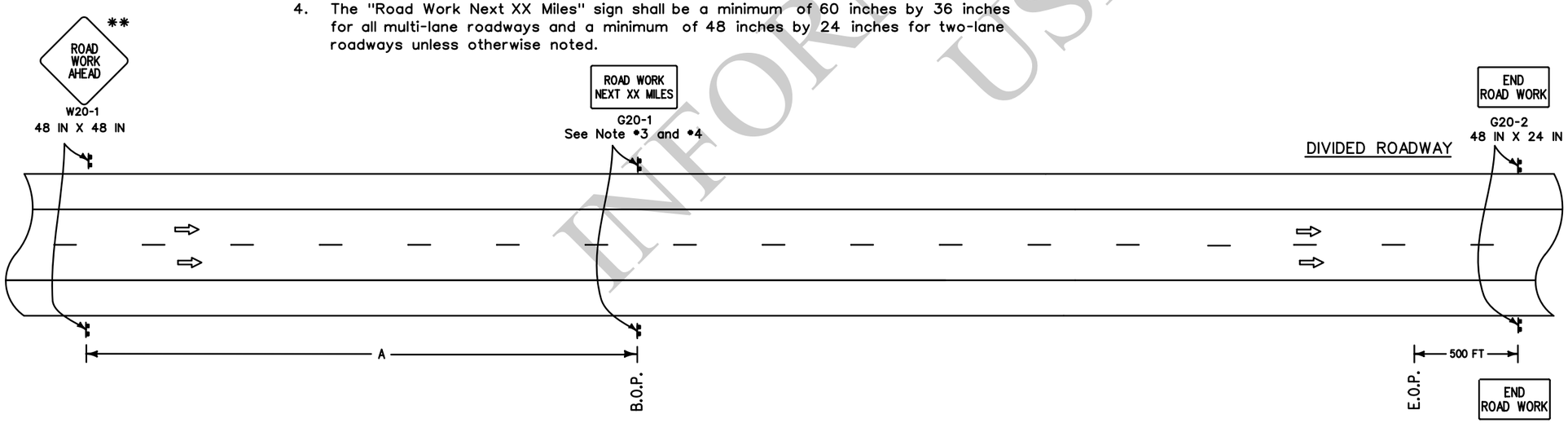
NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C), and other Temporary Traffic Control Sheets as appropriate.

1. This layout represents the minimum traffic controls required for placement of "Road Work Next XX Miles" and "End Road Work" signs.
2. This layout does not replace other TTC Standard Sheets, but is intended as a supplement to the required signing.
3. The distance on the "Road Work Next XX Miles" sign shall be rounded up to the nearest whole mile. This sign shall be placed at the Beginning of Project (B.O.P.) limits. This sign may be omitted if work zone is less than 0.5 miles.
4. The "Road Work Next XX Miles" sign shall be a minimum of 60 inches by 36 inches for all multi-lane roadways and a minimum of 48 inches by 24 inches for two-lane roadways unless otherwise noted.
5. The "End Road Work" sign shall be placed 500 feet past the End of Project (E.O.P.) limits.
6. If "Road Work Ahead" sign is used on a cross road to warn of road work on another route, then "End Road Work" sign is not required.
7. When projects are separated by less than 1 mile, they shall be signed as one project; this may require coordination.

LEGEND

- Traffic Sign
- Direction of Travel



SPEED LIMIT (prior to construction)	SPACING 'A'
≤ 40 mph	1500 FT
45 mph	2640 FT
> 45 mph	5280 FT

- Sign spacing to be adjusted for Horizontal and Vertical curves.
- For work outside of the traveled way, see TTC-01 and TTC-02.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER | PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES *

APPROVED BY CHIEF ENGINEER: Feb. 7, 2025 DATE:

BY BRB

REVISION OR CHANGE ORDER DESCRIPTION
MINOR CORRECTIONS

NO. 4-3-24 DATE

STATE OF LOUISIANA

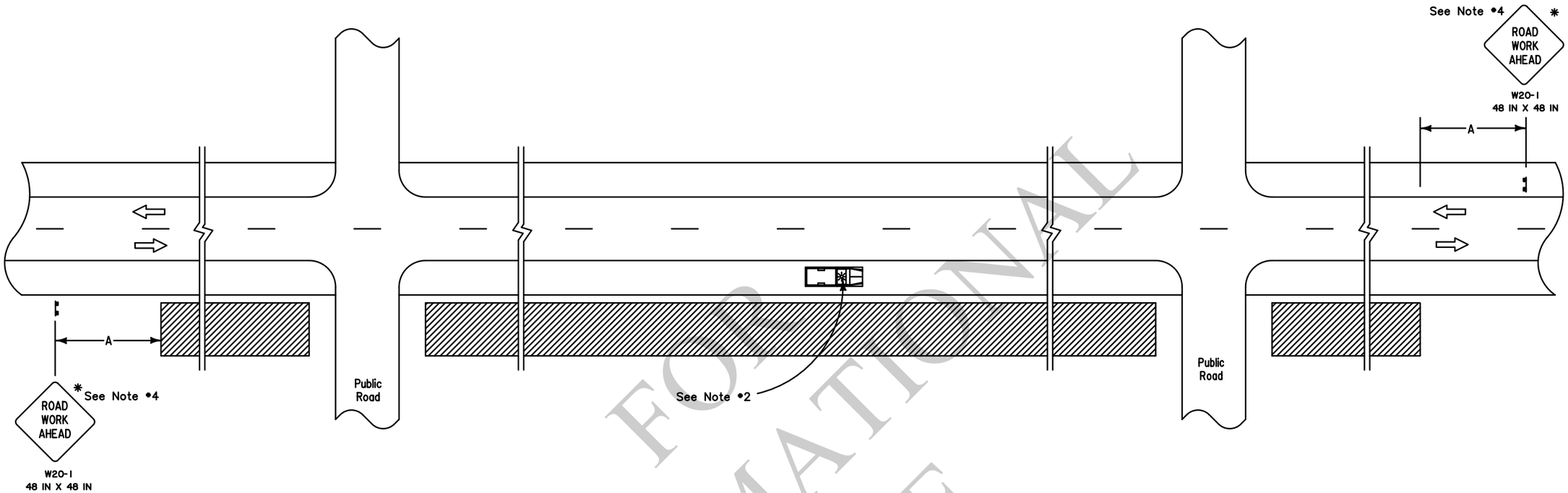
TEMPORARY TRAFFIC CONTROL
LAYOUT FOR PLACEMENT OF ROAD WORK NEXT XX MILES AND END ROAD WORK SIGNS

TTC-00 (D)

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B) AND TTC-00(C)



LEGEND

- Traffic Sign
- Work Area
- Direction of Travel
- ⊙ Truck with Green/Amber Light

SPEED LIMIT (prior to construction)	SPACING
	'A'
≤ 40 mph	500 FT
45-50 mph	1000 FT
≥ 55 mph	1500 FT

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B) and TTC-00(C).

1. This layout represents the minimum traffic controls required for workers and equipment operating more than 15 feet from the travel way.

⊙ 2. If the operation results in equipment or other vehicles being parked closer than 15 feet to the travel way, but not within the roadway, each vehicle shall have an green/amber light.

3. When a work area has been established on one side of the roadway only, there shall be no parking on the opposite shoulder within 500 feet of the work area.

4. Other signs may be used in place of the "Road Work Ahead" sign, such as W21-8 (Mowing), W21-7 (Utility), or W21-6 (Survey) when applicable.

* Any sign of the W20-1 series may be used.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES *

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

BY BRB

MINOR CORRECTIONS — REVISION OR CHANGE ORDER DESCRIPTION — NO. — DATE 4-3-24

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

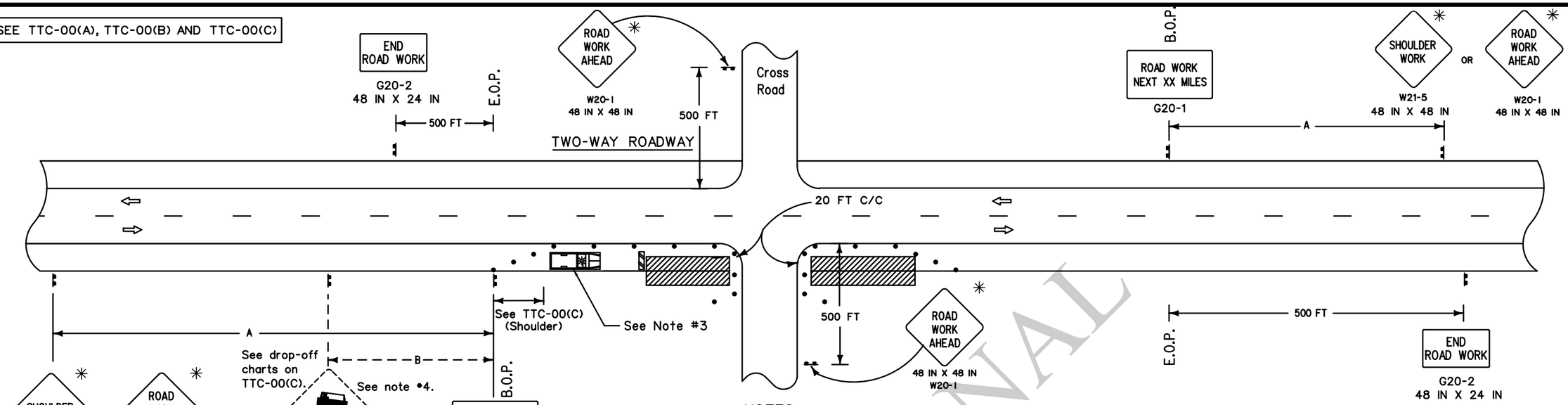
TEMPORARY TRAFFIC CONTROL
FOR WORK GREATER THAN 15 FEET FROM THE TRAVELED WAY

TTC-01

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

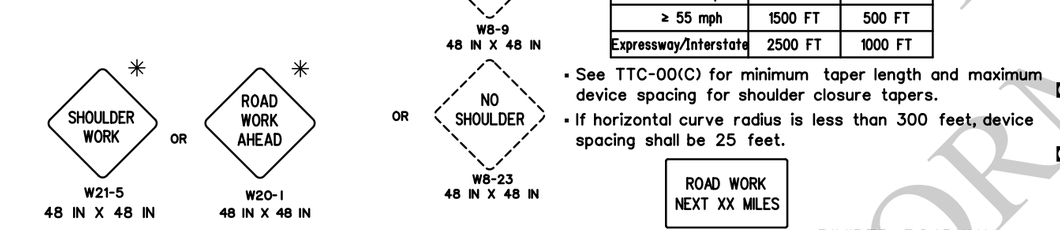
TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B) AND TTC-00(C)

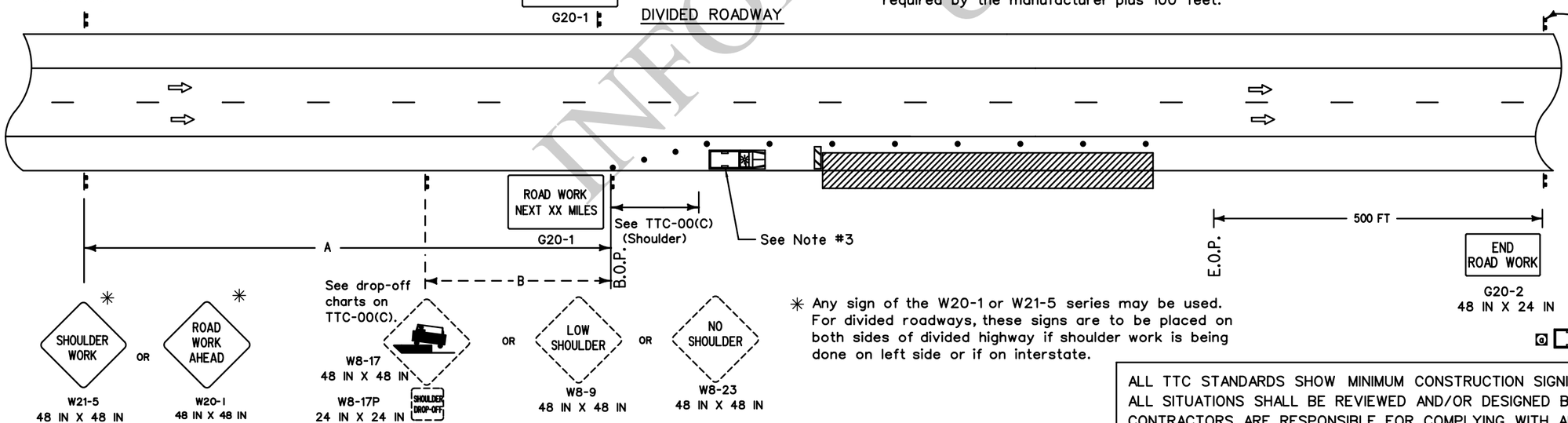


SPEED LIMIT (prior to construction)	SPACING 'A'	SPACING 'B'
≤ 40 mph	500 FT	250 FT
45-50 mph	1000 FT	350 FT
≥ 55 mph	1500 FT	500 FT
Expressway/Interstate	2500 FT	1000 FT

- See TTC-00(C) for minimum taper length and maximum device spacing for shoulder closure tapers.
- If horizontal curve radius is less than 300 feet, device spacing shall be 25 feet.



DIVIDED ROADWAY



NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C)

1. This layout represents the minimum traffic controls required for workers and equipment operating less than 15 feet from the traveled way for more than one hour. Less than one hour, see figure TA-4 of the MUTCD.
2. No signs or barricades are required for equipment operating or work in progress greater than 15 feet from the traveled way. (See TTC-01).
3. Work or equipment confined to a spot location (less than 200 feet) shall be marked by channelizing devices spaced at 25 feet or by a vehicle with a green/amber light visible to traffic. Work extending more than 200 feet of roadway length shall be marked with appropriate devices spaced as noted on TTC-00(C).
4. Applicable drop-off sign options are defined on TTC-00(C).
5. The distance on the "Road Work Next XX Miles" sign shall be rounded up to the nearest whole mile. This sign shall be placed at the Beginning of Project (B.O.P.) limits. This sign may be omitted if work zone is less than 0.5 miles.
6. A vehicle with a flashing green/amber light and a truck mounted attenuator shall be used on all shoulders of all interstates, as well as all roadways with an ADT greater than 20,000 and a pre-construction speed greater than or equal to 40 mph. This vehicle shall move with work operations not to exceed the roll-ahead distance required by the manufacturer plus 100 feet.

✳ Any sign of the W20-1 or W21-5 series may be used. For divided roadways, these signs are to be placed on both sides of divided highway if shoulder work is being done on left side or if on interstate.

LEGEND

- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Work Area
- Direction of Travel
- Truck with Green/Amber Light

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

INFORMATIONAL USE

SHEET NUMBER | PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES #

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

BY BRB

REVISION OR CHANGE ORDER DESCRIPTION
MINOR CORRECTIONS

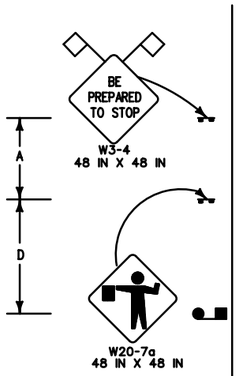
NO. DATE
4-3-24

TEMPORARY TRAFFIC CONTROL
LAYOUT FOR WORK LESS THAN 15 FEET FROM THE TRAVELED WAY

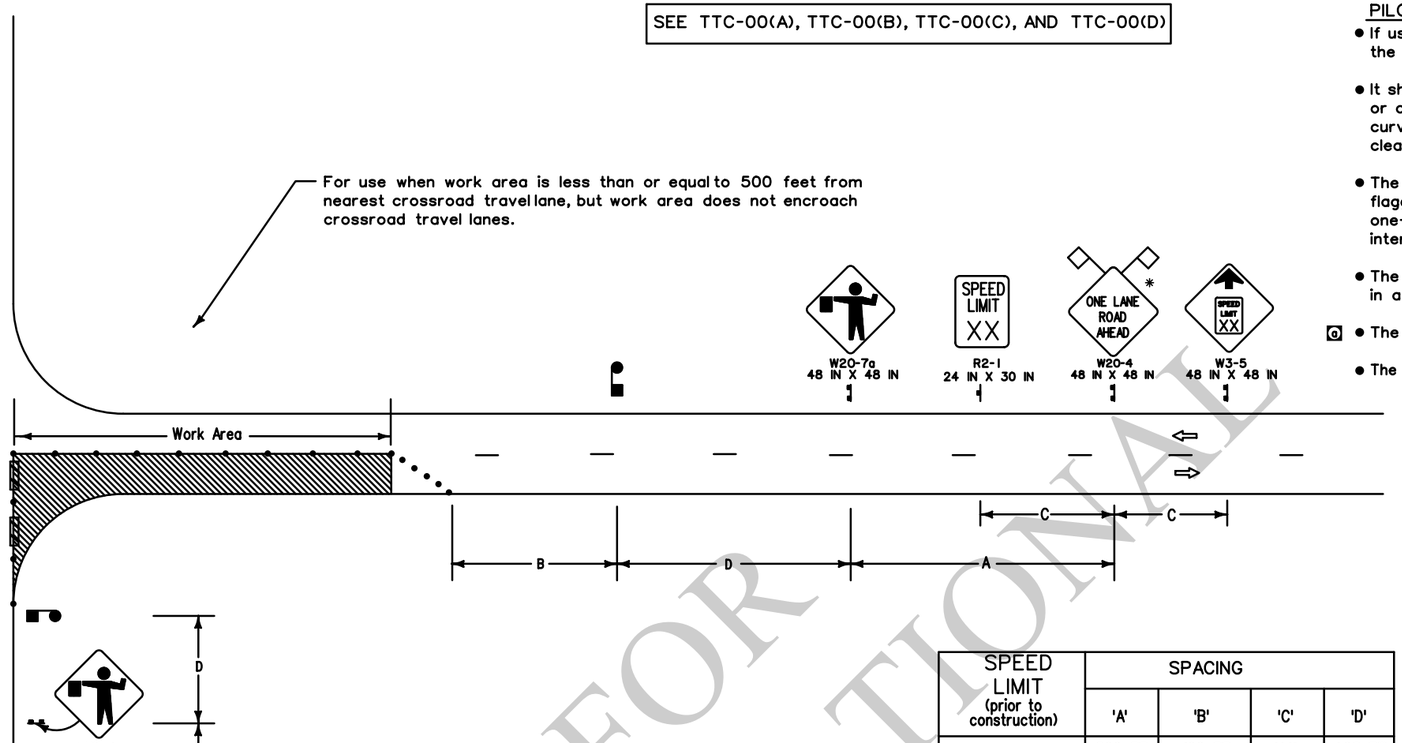
TTC-02

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)



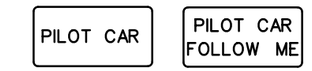
For use when work area is less than or equal to 500 feet from nearest crossroad travel lane, but work area does not encroach crossroad travel lanes.



SPEED LIMIT (prior to construction)	SPACING			
	'A'	'B'	'C'	'D'
≤ 40 mph	500 FT	100 FT	N/A	125 FT
45-50 mph	1000 FT	350 FT	500 FT	350 FT
> 50 mph	1500 FT	500 FT	800 FT	500 FT

PILOT CAR

- If used, a pilot car shall guide a queue of vehicles through the work zone or diversion.
- It shall be used in restricted visibility operations such as lime or cement stabilization, chip seals, or operations in hilly or curvy terrains, where flaggers cannot see each other (no clear line-of-sight).
- The operation of the pilot vehicle shall be coordinated with flagging operations or other controls at each end of the one-lane section and all major driveways and street intersections.
- The pilot car sign should be mounted 7 feet above roadway in a position visible to oncoming and following traffic.
- Q The pilot car shall have a green/amber beacon light.
- The sign mounted on the vehicle shall be two-sided.



LEGEND

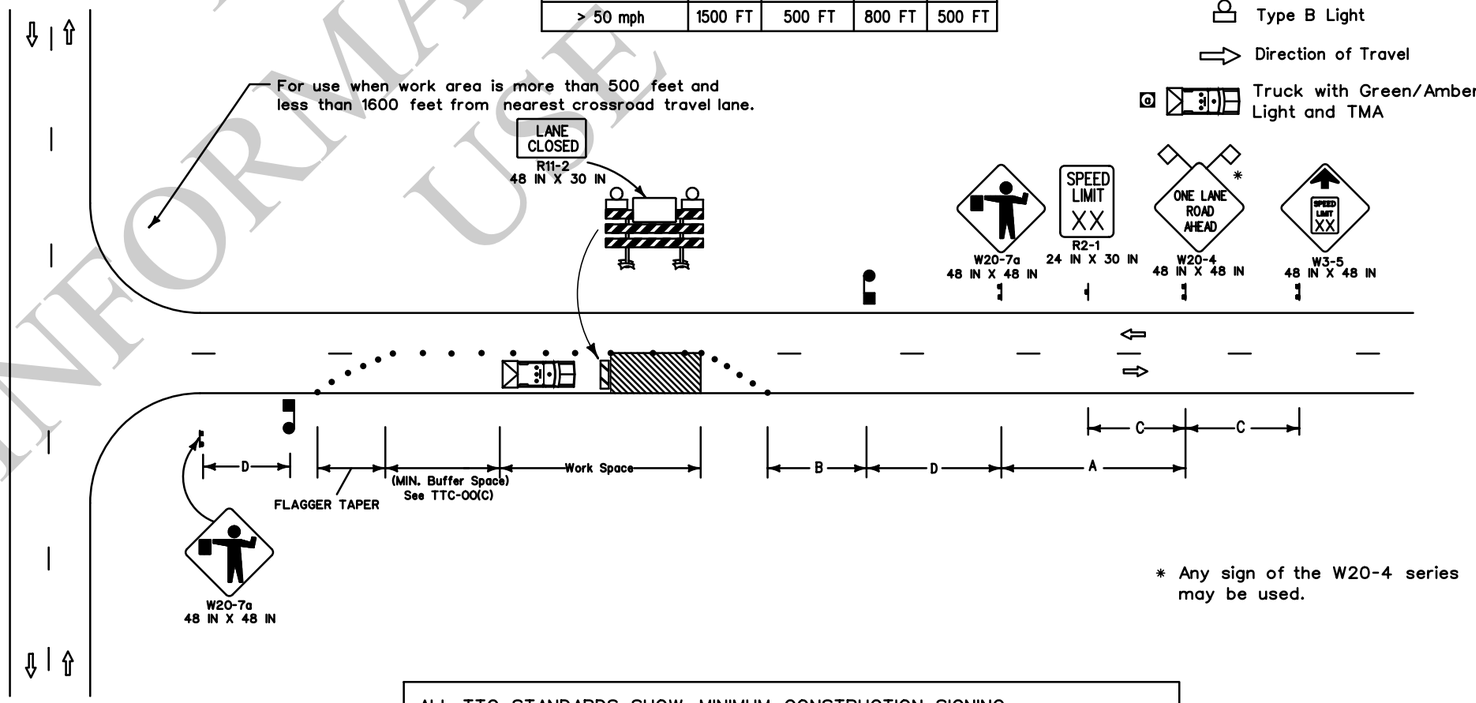
- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Work Area
- Flagger
- Type B Light
- Direction of Travel
- Q Truck with Green/Amber Light and TMA

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C), and TTC-00(D).

1. This layout represents the minimum traffic controls required for lane closures on two-lane roads with two-way traffic less than 1600 feet from an intersection. For advance signing see TTC-00(D).
2. Visual or radio contact shall be required between flaggers at all times. The flagger shall be visible from flagger sign.
3. Only law officers shall direct traffic against a traffic signal indication.
4. If work area is greater than 1600 feet see TTC-04.
5. If a pilot car is required then the contractor is not required to have channelizing devices in the tangent section.
6. Q A vehicle with a flashing green/amber light and a truck mounted attenuator shall be used on all roadways with an ADT greater than 20,000 and a pre-construction speed greater than or equal to 40 mph. This vehicle shall move with work operations not to exceed the roll-ahead distance required by the manufacturer plus 100 feet.

For use when work area is more than 500 feet and less than 1600 feet from nearest crossroad travel lane.



* Any sign of the W20-4 series may be used.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES *

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY
Q	4-3-24	MINOR CORRECTIONS	BRB

STATE OF LOUISIANA

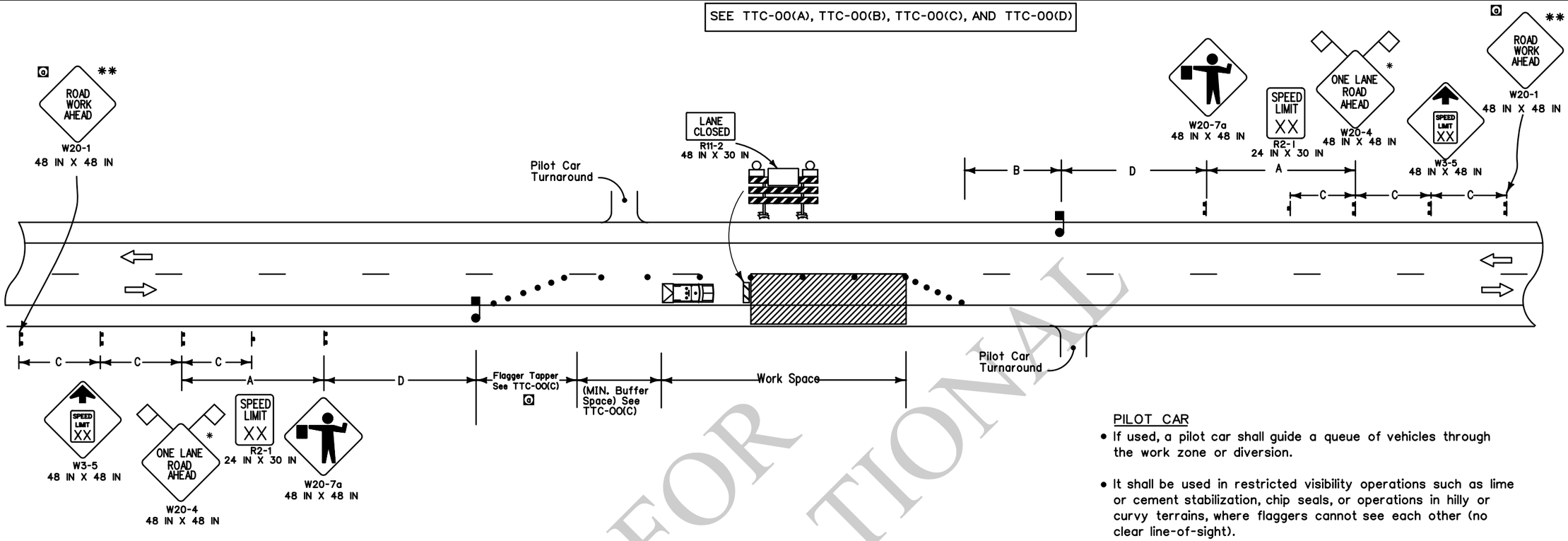
TEMPORARY TRAFFIC CONTROL
LAYOUT FOR LANE CLOSURES ON TWO LANE ROADS WITH TWO-WAY TRAFFIC NEAR INTERSECTIONS (FLAGGING OPERATIONS)

TTC-03

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)



NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C) and TTC-00(D).

1. This layout represents the minimum traffic controls required for lane closures on two-lane roads with two-way traffic greater than 1600 feet from an intersection. For this type of closure either a flagger or a pilot car will be required. For advance signing see TTC-00(D).

2. To prevent vehicles from entering the work area against the flow of traffic, an additional flagger shall be stationed at each intersection, major driveway, railroad crossing, or crossing within the work area.

3. For projects in rural areas the distance between flaggers shall not exceed:
   (A) 2.5 miles for ADT<2,500
   (B) 2.0 miles for 2,500<ADT<5,000
   (C) 1.5 miles for ADT>5,000

4. The flagger station shall be near the beginning of the taper and shall have adequate sight distance to be visible to oncoming traffic. If sight distance cannot be achieved, the distance between flaggers may be extended for a short duration.

5. Visual or radio contact shall be required between flaggers at all times. The flagger shall be visible from the flagger sign.

Q 6. A vehicle with a flashing green/amber light and a truck mounted attenuator shall be used on all roadways with an ADT greater than 20,000 and a pre-construction speed greater than or equal to 40 mph. This vehicle shall move with work operations not to exceed the roll-ahead distance required by the manufacturer plus 100 feet.

7. If a pilot car is required then the contractor is not required to have channelizing devices in the tangent section.

8. If work zone is less than 1600 feet from an intersection see TTC-03.

SPEED LIMIT (prior to construction)	SPACING			
	'A'	'B'	'C'	'D'
≤ 40 mph	500 FT	100 FT	N/A	125 FT
45-50 mph	1000 FT	350 FT	500 FT	350 FT
≥ 55 mph	1500 FT	500 FT	800 FT	500 FT

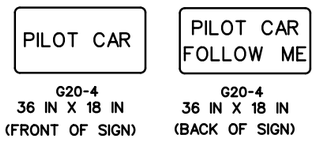
* Any sign of the W20-4 series may be used.

Q ** For extended length projects, if the distance between the current working area and beginning of the project exceeds 2500', an additional W20-1 should be added before the W3-5 sign to remind traffic of the work area.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

PILOT CAR

- If used, a pilot car shall guide a queue of vehicles through the work zone or diversion.
- It shall be used in restricted visibility operations such as lime or cement stabilization, chip seals, or operations in hilly or curvy terrains, where flaggers cannot see each other (no clear line-of-sight).
- The operation of the pilot vehicle shall be coordinated with flagging operations or other controls at each end of the one-lane section and all major driveways and street intersections.
- The pilot car sign should be mounted 7 feet above roadway in a position visible to oncoming and following traffic.
- Q The pilot car shall have an green/amber beacon light.
- The sign mounted on the vehicle shall be two-sided.



LEGEND

- Traffic Sign
- Flagger
- Channelizing Devices
- Type III Barricades
- Work Area
- Type B Light
- Direction of Travel
- Q Truck with Green/Amber Light and TMA

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | DETAIL | REVIEW | SERIES *
CHECK M. RILOVICH | CHECK

APPROVED BY CHIEF ENGINEER: DATE: Feb 7, 2025

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY
Q	4-3-24	ADD W20-1 SIGN, PROJECT LENGTH, MINOR CORRECTIONS	BRB

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

TEMPORARY TRAFFIC CONTROL
LAYOUT FOR LANE CLOSURES ON TWO LANE ROADS WITH TWO-WAY TRAFFIC (FLAGGING OPERATIONS)

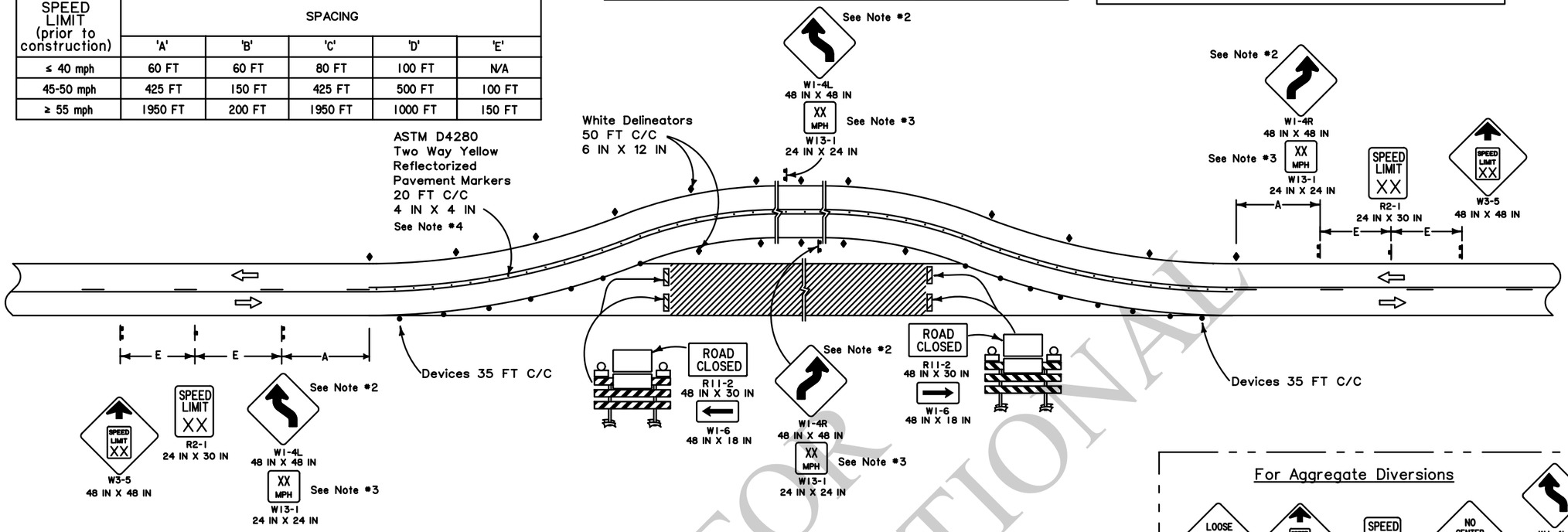
TTC-04

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
TRAFFIC ENGINEERING

SPEED LIMIT (prior to construction)	SPACING				
	'A'	'B'	'C'	'D'	'E'
≤ 40 mph	60 FT	60 FT	80 FT	100 FT	N/A
45-50 mph	425 FT	150 FT	425 FT	500 FT	100 FT
≥ 55 mph	1950 FT	200 FT	1950 FT	1000 FT	150 FT

For tangent distances along the diversion greater than 600 FT

SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)

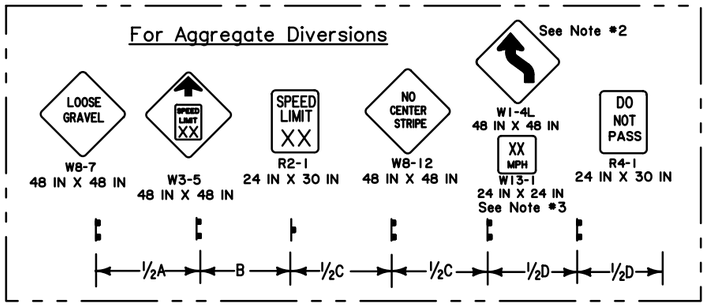


NOTES

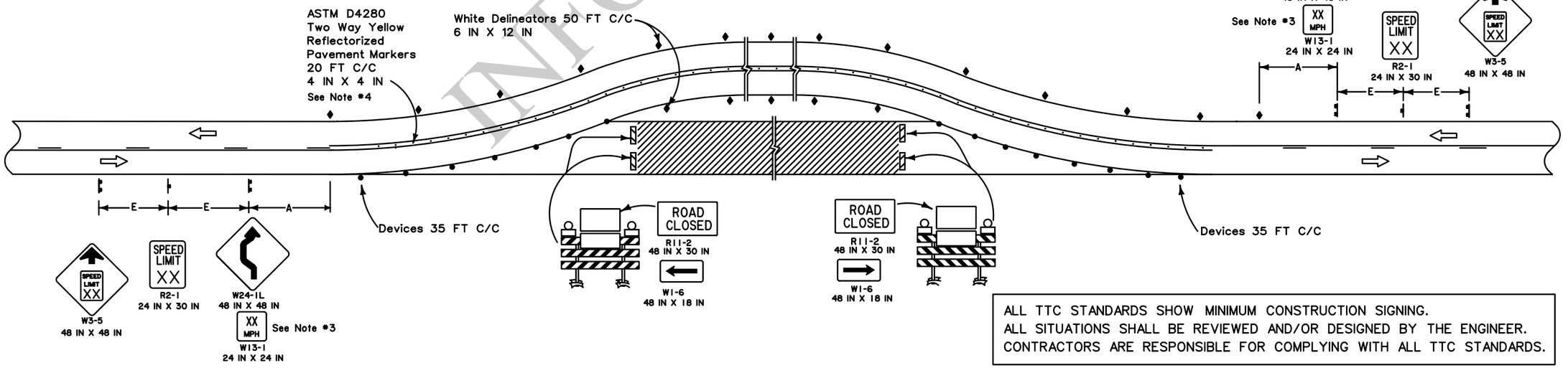
This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C), and TTC-00(D).

1. This layout represents the minimum traffic controls required for a paved or aggregate diversion. For advance signing see TTC-00(D).
2. If advisory speed is less than 35 mph, the reverse curve signs (W1-4L or W1-4R) will be changed to reverse turn sign (W1-3L or W1-3R).
3. Advisory speed plaques (W13-1) shall be required if the difference between the speed limit prior to construction and the advisory speed (determined by an engineering study performed by the DTOE) is 10 mph or greater.
4. Paved Diversions shall be striped with double yellow solid lines and raised pavement markings as per LADOTD Pavement Marking Standards.
5. Aggregate Diversions shall include "Do Not Pass" (R4-1) signs, "Loose Gravel" (W8-7) signs, and "No Center Stripe" (W8-12) signs and either supercones or flex posts to delineate the centerline.

For Aggregate Diversions



For tangent distances along the diversion less than or equal to 600 FT



ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

LEGEND

- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Single White Delineators (6IN X 12 IN)
- Reflectorized Pavement Markers
- Type B Light
- Direction of Travel

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | DETAIL | REVIEW | SERIES *
CHECK M. RILOVICH | CHECK

APPROVED BY CHIEF ENGINEER: DATE: Feb 7, 2025

REVISION OR CHANGE ORDER DESCRIPTION | BY | DATE | NO.

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION

TEMPORARY TRAFFIC CONTROL
FOR ON SITE DIVERSION
WITH TWO-WAY TRAFFIC

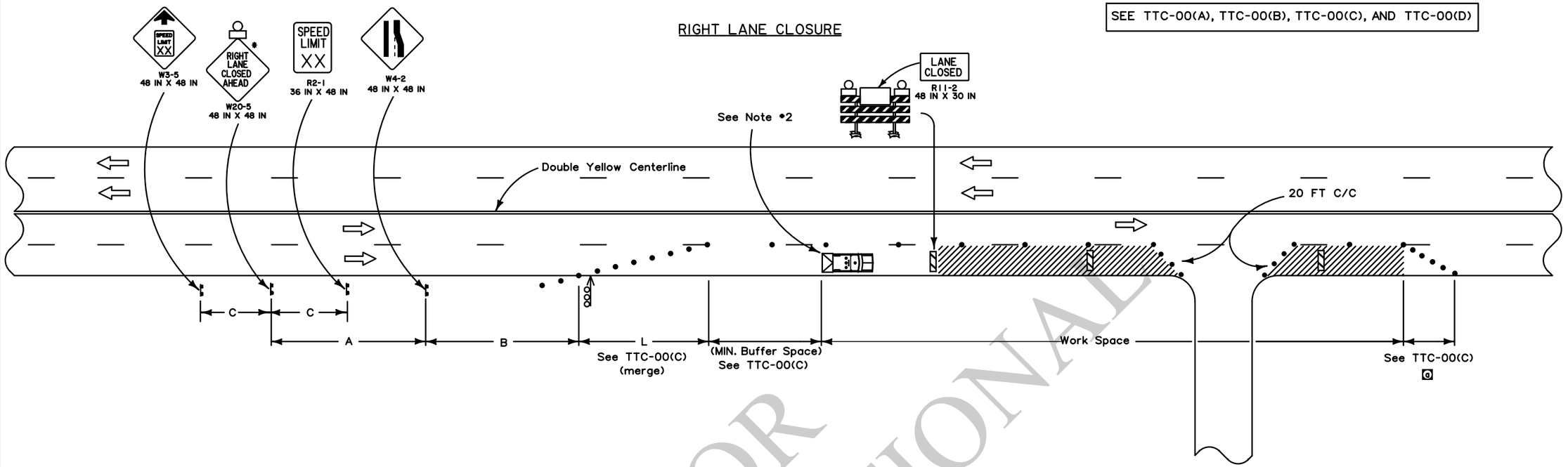
TTC-05

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

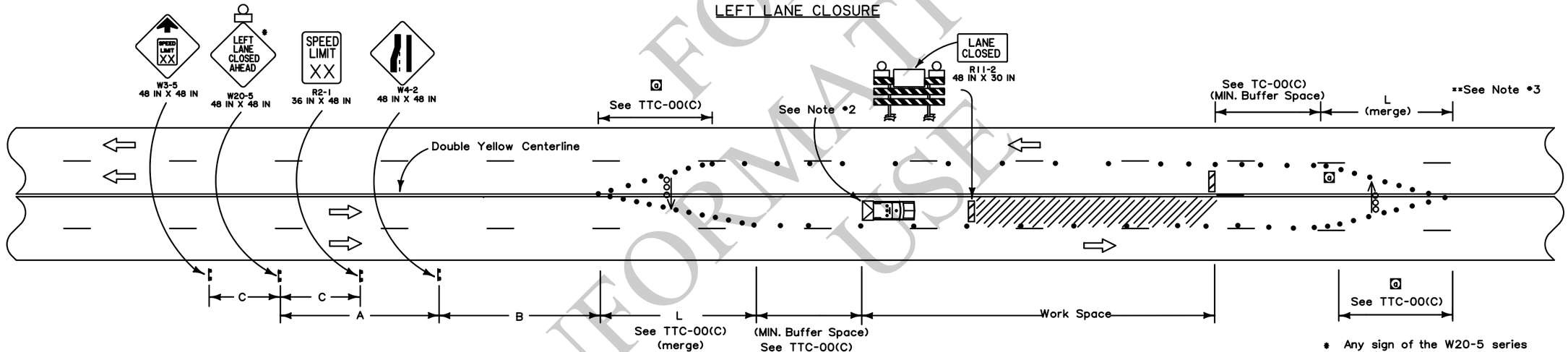
TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)

RIGHT LANE CLOSURE



LEFT LANE CLOSURE



* Any sign of the W20-5 series may be used.

LEGEND

- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Flashing Arrow Board (Type 'C')
- Work Area
- Type B Light
- Direction of Travel
- Truck with Green/Amber Light and TMA

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C), and TTC-00(D).

1. This layout represents the minimum traffic controls required for lane closures on a four-lane undivided highway or a roadway with two-way left turn lanes. This is not for roadways with a speed limit of 55 mph or greater prior to construction. For advance signing see TTC-00(D).
2. A vehicle with a flashing green/amber light and a truck mounted attenuator shall be used on all roadways with an ADT greater than 20,000 and a pre-construction speed greater than or equal to 40 mph. This vehicle shall move with work operations not to exceed the rollahead distance required by the manufacturer plus 100 feet.
3. Advance signing shall match that shown for opposite direction.
4. A flagger shall be used to alert motorists when equipment or workers encroach within 2 feet of an open lane. The flagger shall be posted inside the work zone, adjacent to the open travel lane, and immediately upstream of each operation to facilitate ingress/egress of construction equipment and vehicles. Encroachment shall be held to a minimum.

SPEED LIMIT (prior to construction)	SPACING		
	'A'	'B'	'C'
≤ 40 mph	500 FT	250 FT	N/A
45-50 mph	1000 FT	360 FT	500 FT

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES *

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	BY
1	4-3-24	BRB

CLARIFY TAPER LENGTHS AND MINOR CORRECTIONS
REVISION OR CHANGE ORDER DESCRIPTION

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

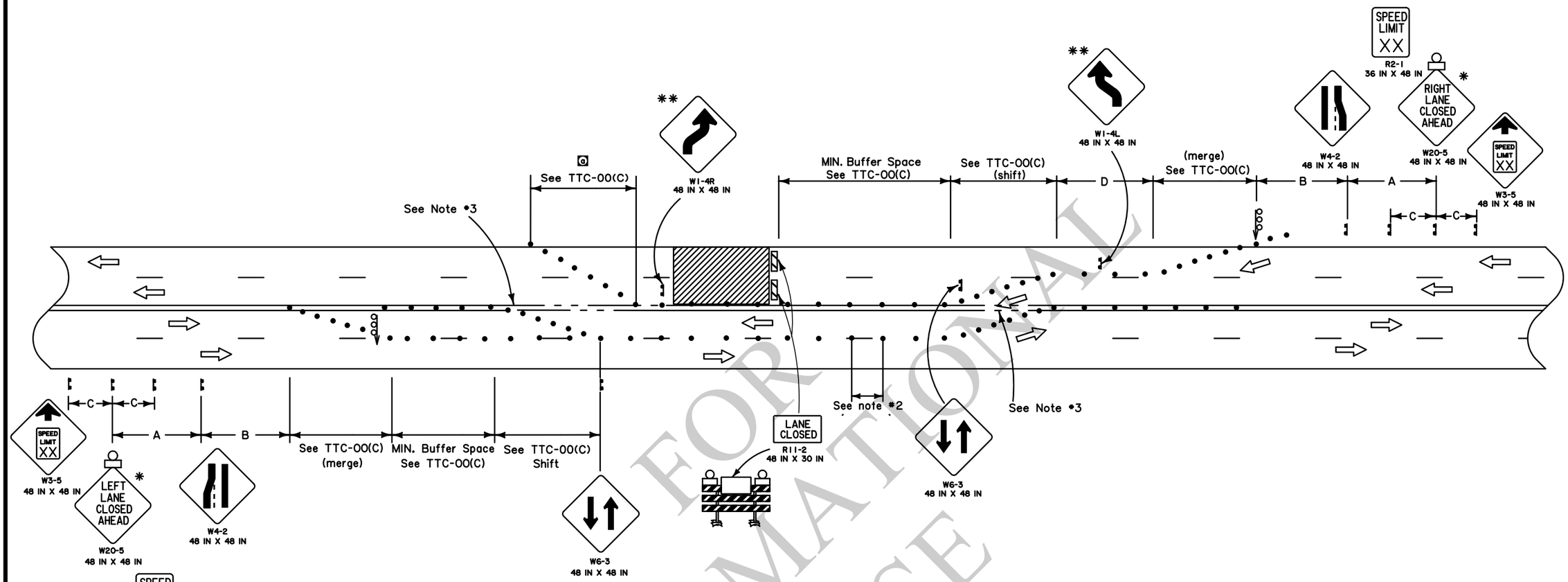
TEMPORARY TRAFFIC CONTROL FOR LANE CLOSURE ON FOUR-LANE UNDIVIDED HIGHWAYS

TTC-06

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)



LEGEND

- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Flashing Arrow Board (Type 'C')
- Work Area
- Type B Light
- Direction of Travel

SPEED LIMIT (prior to construction)	SPACING			
	'A'	'B'	'C'	'D'
25 mph	250 FT	250 FT	N/A	65 FT
30 mph	250 FT	250 FT	N/A	90 FT
35 mph	500 FT	350 FT	N/A	125 FT
40 mph	500 FT	350 FT	N/A	160 FT
45 mph	1000 FT	500 FT	500 FT	270 FT
50 mph	1640 FT	1000 FT	800 FT	300 FT
55 mph	1640 FT	1000 FT	800 FT	330 FT

* Any sign of the W20-5 series may be used.

** In order to give road users advance notice of a lane shift, a Reverse Curve (W1-4, W1-4b or W1-4c) sign should be used when a lane (or lanes) is being shifted to the left or right. If a Reverse Curve sign is used and design speed of the curves is 30 mph or less, a Reverse Turn (W1-3) sign shall be used.

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes sheets TTC-00(A), TTC-00(B), TTC-00(C), and TTC-00(D).

1. This layout represents the minimum traffic controls required for closure of two adjacent lanes on a four-lane undivided highway. For advance signing see TTC-00(D).
2. During daytime operations, traffic cones may be used to seperate traffic lanes. When this layout is authorized to be used during nighttime hours or if the width of the traffic lanes are less than 11 feet, the contractor shall be required to use flex posts or super cones to separate head-to-head (two-lane two way traffic) spaced at 20 feet in tangent and 10 feet in taper.
3. When traffic control is planned to be in place for more than 3 days, conflicting pavement markings shall be removed and temporary markings added.
4. A flagger shall be used to alert motorists when equipment or workers encroach within 2 feet of an open lane. The flagger shall be posted inside the work zone, adjacent to the open travel lane, and immediately upstream of each operation to facilitate ingress/egress of construction equipment and vehicles. Encroachment shall be held to a minimum.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES #

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	BY
0	4-3-24	BRB

CLARIFY TAPER LENGTHS
REVISION OR CHANGE ORDER DESCRIPTION

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

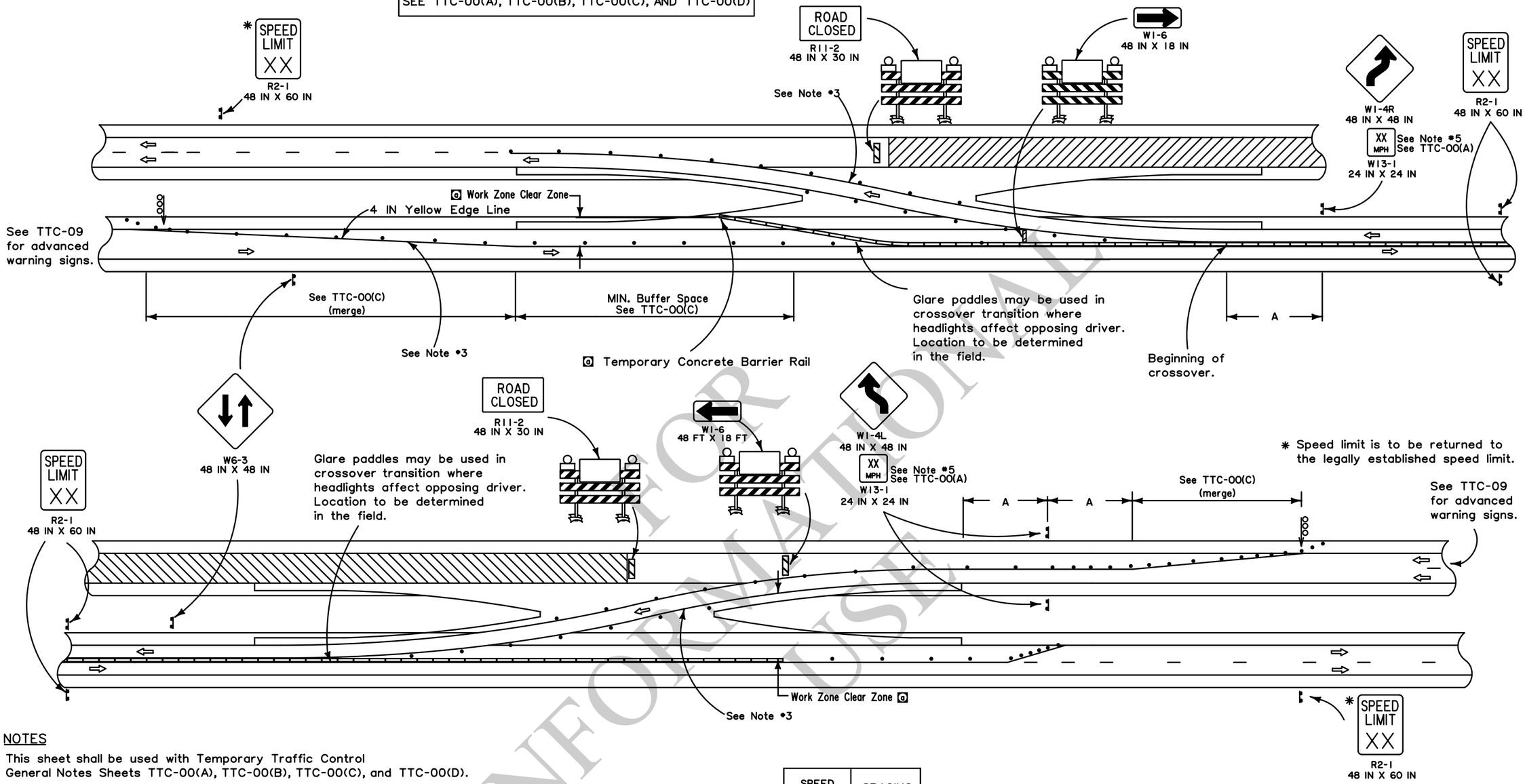
TEMPORARY TRAFFIC CONTROL
FOR CLOSURE OF TWO ADJACENT LANES ON FOUR-LANE UNDIVIDED HIGHWAYS

TTC-07

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)



NOTES

This sheet shall be used with Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C), and TTC-00(D).

1. This layout represents the minimum traffic controls required for median crossovers on divided highways. For advance signing see TTC-00(D) and TTC-09.
2. For posted speed limits prior to construction that are greater than 45 mph, concrete barriers shall be required to separate the lanes of travel. For posted speed limits prior to construction that are 45 mph or less, concrete barriers may be substituted by tubular markers or flexposts.
3. Temporary raised pavement markers spaced at 15 FT C/C shall be used to supplement the white and yellow temporary edge lines through the reverse curves of the crossover. All temporary edge lines between the barrier rail and the beginning of the lane reduction taper shall have temporary raised pavement markers spaced at 15 FT C/C.
4. When traffic control is planned to be in place for more than 3 days, conflicting pavement markings shall be removed and temporary markings added.
5. Advisory speed plaques (W13-1) shall be required if the difference between the speed limit prior to construction and the advisory speed (determined by an engineering study performed by the DTOE) is 10 mph or greater.

SPEED LIMIT (prior to construction)	SPACING
	'A'
25 mph	63 FT
30 mph	90 FT
35 mph	123 FT
40 mph	160 FT
45 mph	270 FT
50 mph	300 FT
55 mph	330 FT

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

LEGEND

- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Flashing Arrow Board (Type 'C')
- Work Area
- Temporary Concrete Barrier
- Type B Light
- Direction of Travel

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES *

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	BY
1	4-3-24	BRB

CLARIFY WORK ZONE CLEAR ZONE AND MINOR CORRECTIONS
REVISION OR CHANGE ORDER DESCRIPTION

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

TEMPORARY TRAFFIC CONTROL FOR MEDIAN CROSSOVER ON DIVIDED HIGHWAYS

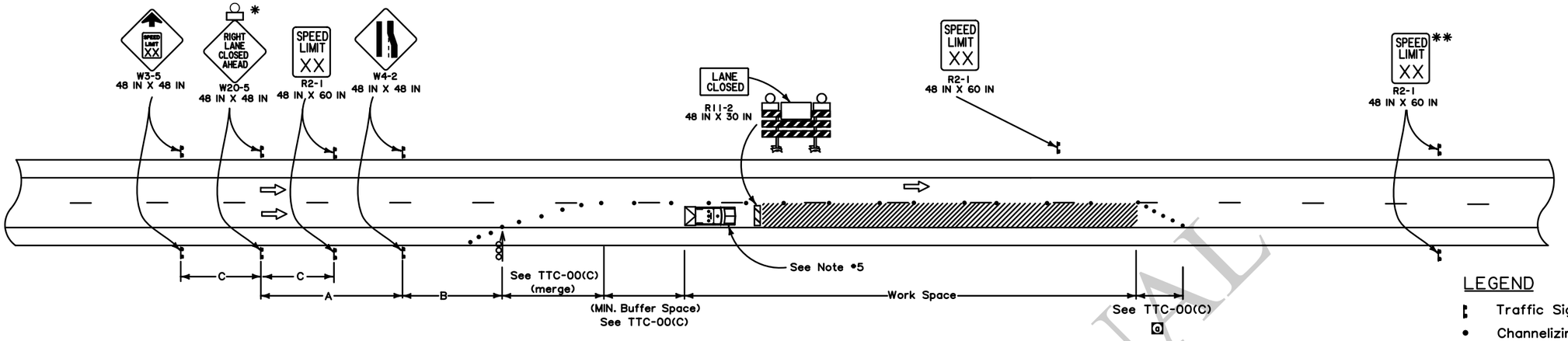
TTC-08

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)

RIGHT LANE CLOSURE



SPEED LIMIT (prior to construction)	SPACING		
	'A'	'B'	'C'
45 mph	1000 FT	500 FT	500 FT
50 mph	1000 FT	500 FT	500 FT
≥ 55 mph	1640 FT	1000 FT	800 FT

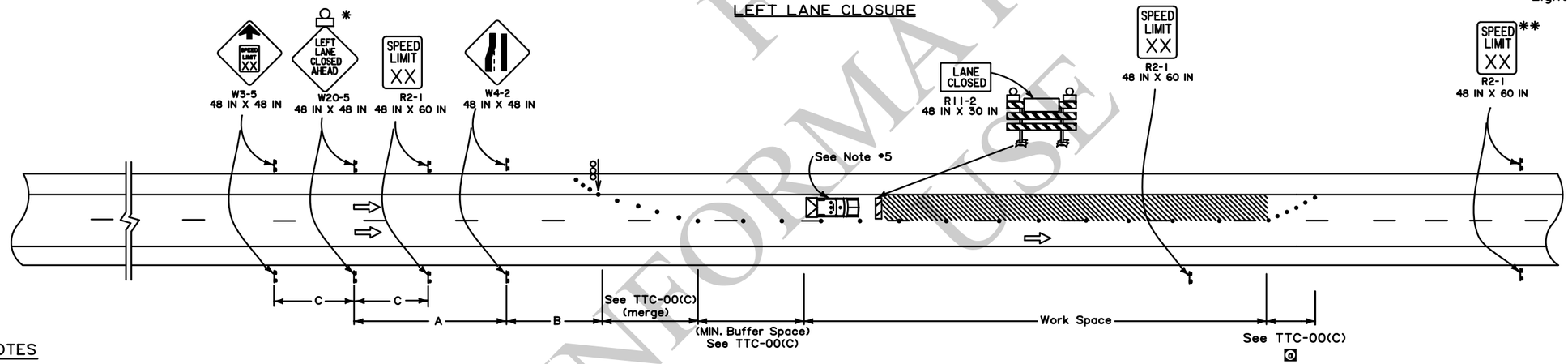
* Any sign of the W20-5 series may be used.

** Speed limit is to be returned to legally established speed limit.

LEGEND

- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Flashing Arrow Board (Type 'C')
- Work Area
- Type B Light
- Direction of Travel
- Truck with Green/Amber Light and TMA

LEFT LANE CLOSURE



NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C), and TTC-00(D).

1. This layout represents the minimum traffic controls required for lane closures on divided highways with speed limits greater than 40 mph. This layout does not cover roadwork where a ramp entrance or an exit taper falls within the work area. For advance signing see TTC-00(D).

2. This layout does not illustrate roadwork near a signal or a major intersection.

3. Sign spacing may be adjusted due to access conditions of the corridor.

4. If speed limit is less than 45 mph, see TTC-10.

5. A vehicle with a flashing green/amber light and a truck mounted attenuator shall be used on all interstate projects or on all roadways with an ADT greater than 20,000 and a pre-construction speed greater than or equal to 40 mph. This vehicle shall move with work operations not to exceed the roll-ahead distance required by the manufacturer plus 100 feet.

6. A flagger shall be used to alert motorists when equipment or workers encroach within 2 feet of an open lane. The flagger shall be posted inside the work zone, adjacent to the open travel lane, and immediately upstream of each operation to facilitate ingress/egress of construction equipment and vehicles. Encroachment shall be held to a minimum.

7. A "Road Work Ahead" sign shall be placed within 1000 feet ahead of the entrance ramp nose for any ramp within the area of traffic control signing.

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ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN: B. BOUCHER | DETAIL | REVIEW | SERIES #
CHECK: M. RILOVICH | CHECK |

APPROVED BY CHIEF ENGINEER: Feb 7, 2025 DATE:

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY
	4-3-24	CLARIFY TAPER LENGTHS AND MINOR CORRECTIONS	BRB

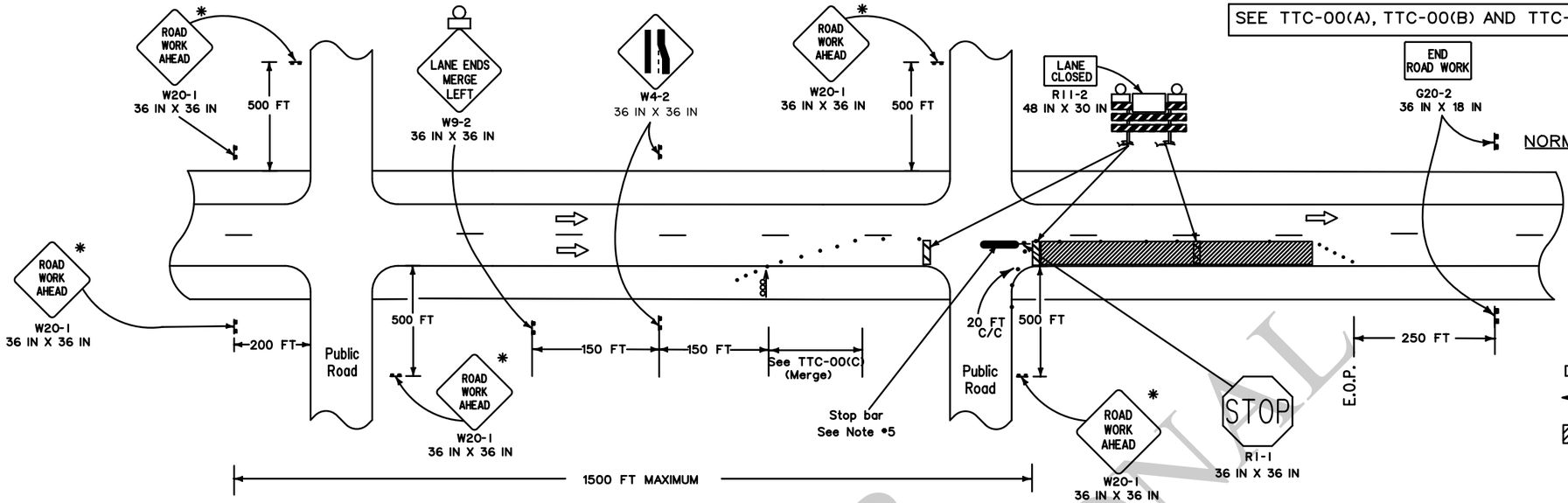
TEMPORARY TRAFFIC CONTROL
FOR LANE CLOSURES ON
DIVIDED HIGHWAYS
(Does not include ramp entrance or exit tapers)

TTC-09

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B) AND TTC-00(C)

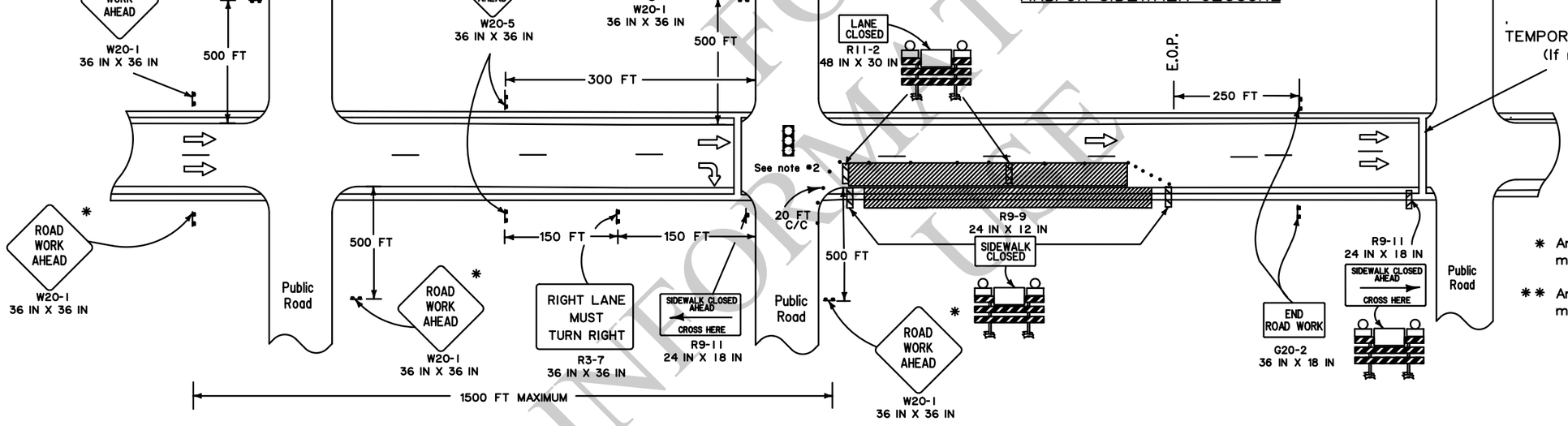
NORMAL LANE CLOSURE



LEGEND

- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Flashing Arrow Board (Type 'C')
- Work Area
- Type B Light
- Direction of Travel

LANE CLOSURE WITH HIGH VOLUME RIGHT TURNS AND/OR SIDEWALK CLOSURE



* Any sign of the W20-1 series may be used.

** Any sign of the W20-5 series may be used.

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B) and TTC-00(C).

1. This layout represents the minimum traffic controls required for lane closures in areas with a grid layout and with speed limits of 40 mph and below. This layout illustrates roadwork near a signal or a major intersection with or without sidewalks.
2. If a signal is involved in the construction zone, a specific temporary traffic signal timing and phasing plan for each phase of construction shall be developed.
3. Bicyclists and pedestrians, including those with disabilities, should be provided with access and reasonably safe passage through the TTC zone.
4. The sign height shall be at least 7 feet in business, commercial, and residential areas and also near parking, pedestrians, bicyclists, or other obstructions.
5. Place stop bars if work duration is greater than 3 days.
6. Place "Road Work Ahead" sign prior to an intersecting alternate route, no more than 1500 feet from the work area.
7. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features in the existing pedestrian facility as defined in the MUTCD.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH	CONTROL SECTION	STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES •

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY

TEMPORARY TRAFFIC CONTROL
FOR LANE AND SIDEWALK CLOSURES
IN URBAN AREAS WITH SPEED LIMIT
LESS THAN OR EQUAL TO 40 MPH

TTC-10

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
TRAFFIC ENGINEERING

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C), and TTC-00(D).

1. This layout represents the minimum traffic controls required for lane closures and lane shift using temporary barrier rail on divided highways. This includes freeways. For advance signing see TTC-00(D).

2. If a ramp entrance or exit taper falls within the work area, refer to standard road plan TTC-12 for traffic control details.

3. When traffic control is planned to be in place for more than 3 days, conflicting pavement markings shall be removed and temporary markings added. Existing broken line pavement marking shall be removed from the W4-2 sign through the work area.

4. For work lasting more than 3 days, a temporary edgeline shall be installed from the start of the merging taper to the far end of the downstream taper.

5. If the lane shift occurs on new pavement or existing shoulder, then W1-4R or W1-4L is required.

6. If a shoulder which is not at full pavement depth is used as a temporary travel lane, advanced signs should direct trucks to use the existing roadway, not the shoulder.

7. When traffic is diverted onto shoulder, additional shoulder work and/or soil stabilizers may be required. Shoulder and embankment stability should be evaluated beforehand.

8. Extra paved surface may be needed to maintain crashworthiness of concrete barriers. These drawings only intend to show a few scenarios/options for handling concrete barriers/attenuators that could be used. [o]

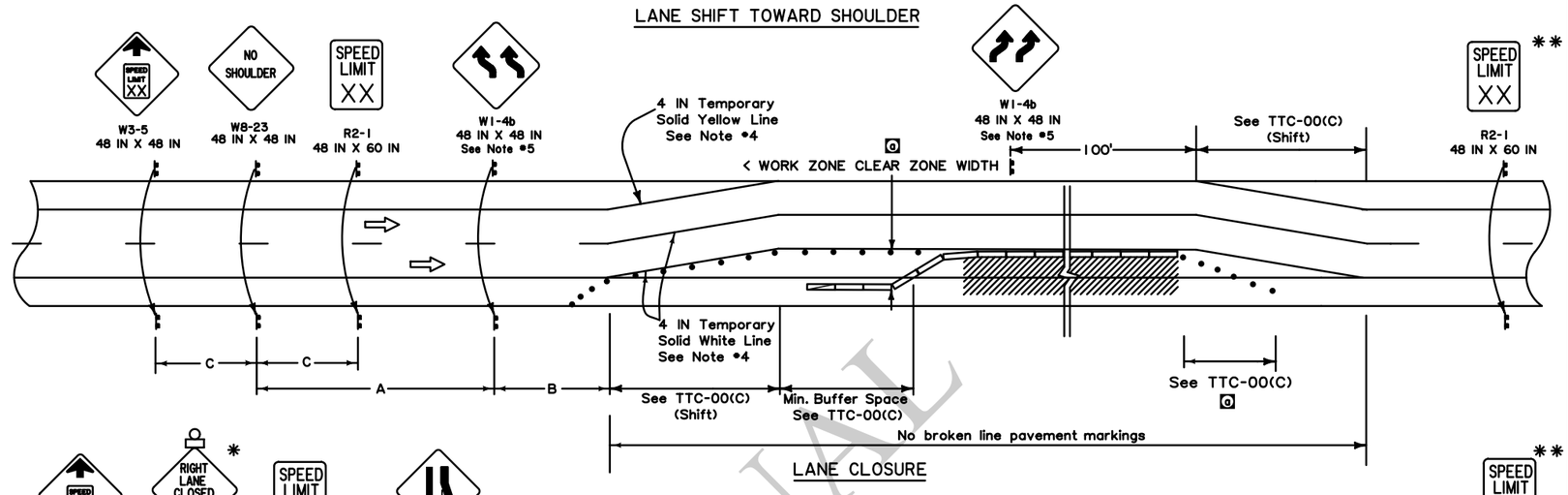
SPEED LIMIT (prior to construction)	SPACING			
	'A'	'B'	'C'	'D'
45 mph	1000 FT	500 FT	500 FT	300 FT
50 mph	1000 FT	500 FT	500 FT	300 FT
≥ 55 mph	1640 FT	1000 FT	800 FT	450 FT

LEGEND

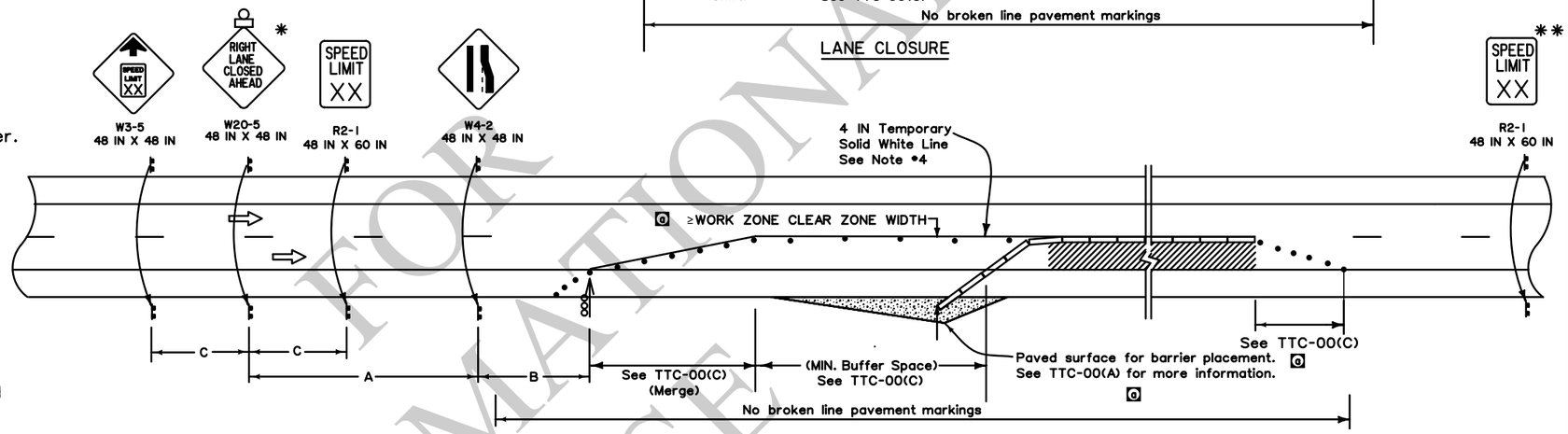
- Traffic Sign
- Channelizing Devices
- Flashing Arrow Board (Type 'C')
- Work Area
- Type B Light
- Concrete Barrier
- Direction of Travel
- [o] Attenuator

SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)

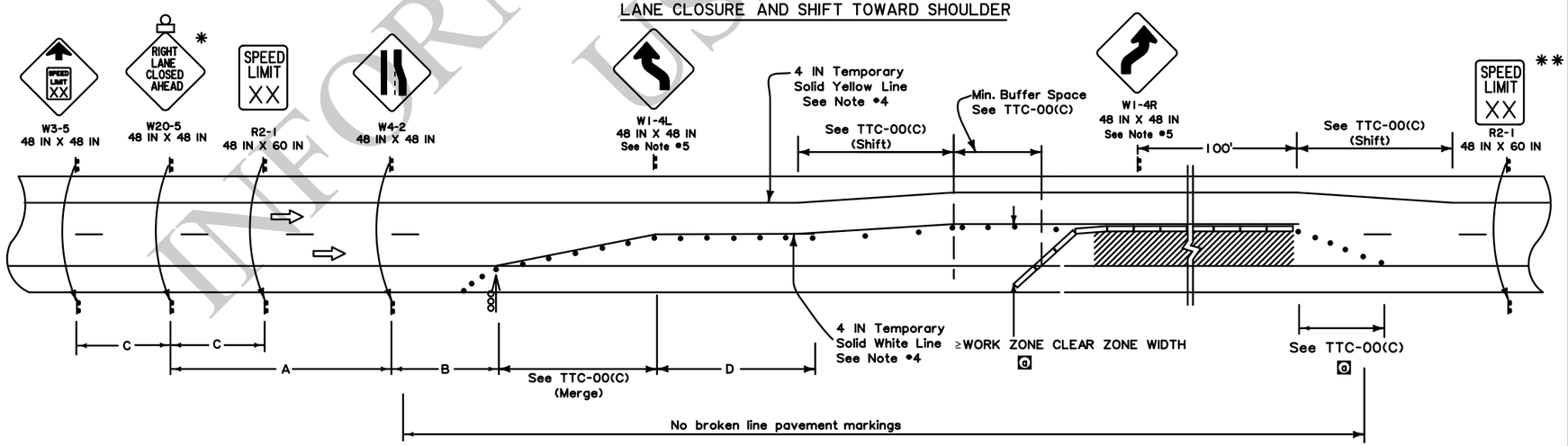
LANE SHIFT TOWARD SHOULDER



LANE CLOSURE



LANE CLOSURE AND SHIFT TOWARD SHOULDER



ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

* Any sign of the W20-5 seriesmay be used.

** Speed limit is to be returned to legally established speed limit.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN: B. BOUCHER | DETAIL | REVIEW | SERIES *
CHECK: M. RILOVICH | CHECK |

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	BY
1	4-3-24	BRB

CLARIFY BARRIER USE AND MINOR CORRECTIONS
REVISION OR CHANGE ORDER DESCRIPTION

STATE OF LOUISIANA — DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

TEMPORARY TRAFFIC CONTROL
FOR LANE CLOSURE USING TEMPORARY BARRIER RAIL ON DIVIDED HIGHWAYS (INCLUDES FREEWAYS)

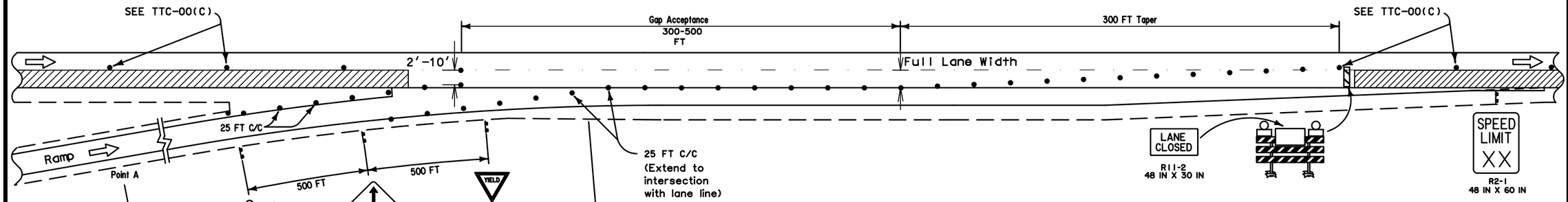
TTC-11

DOTD — LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

FREEWAY ENTRANCE WITH RIGHT LANE CLOSED

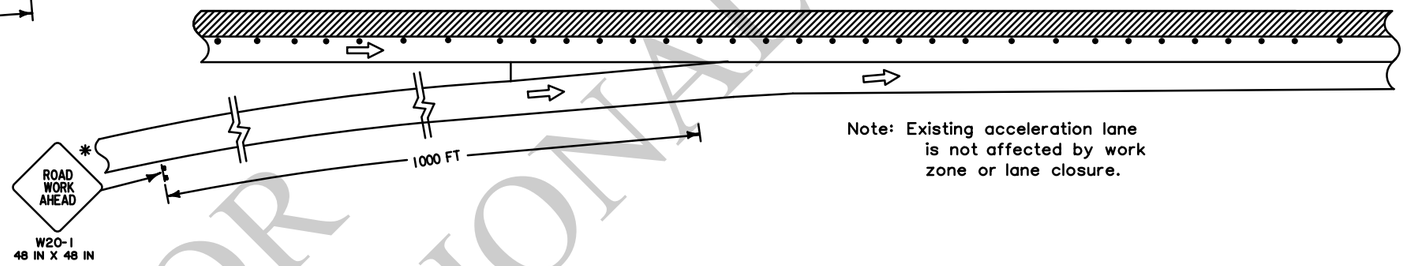
SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)



Point A controls the speed of the ramp, which is the PC or PCC of the curve. Assume that 45 mph is achieved at this point on diagonal ramps and 20 mph is achieved for loop ramps.

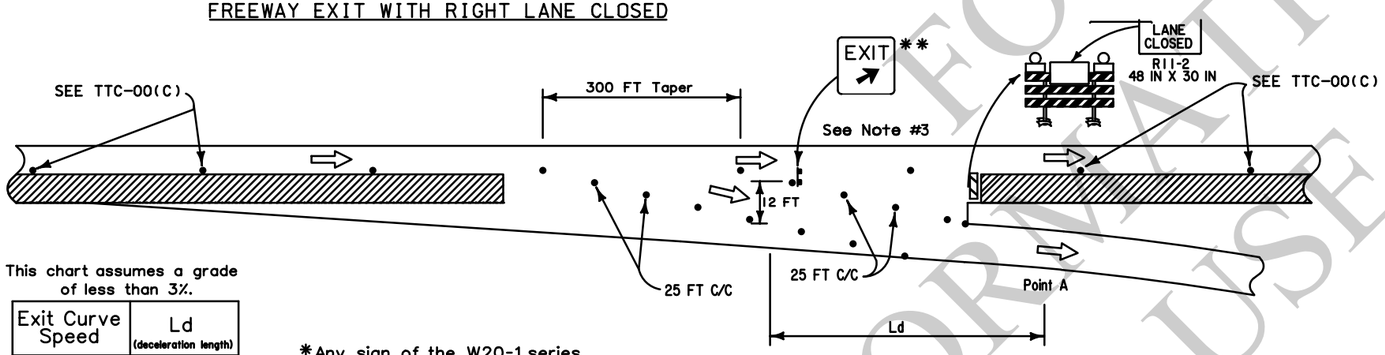
The Minimum Radius prior to Lg should be a minimum of 1000 feet. Anything less than 1000 feet shall be approved by the Engineer.

FREEWAY ENTRANCE WITH LEFT LANE CLOSED



Note: Existing acceleration lane is not affected by work zone or lane closure.

FREEWAY EXIT WITH RIGHT LANE CLOSED



These charts assume a grade of less than 3%.

Diagonal Ramps	Speed Limit (prior to construction)	La (acceleration length)
	70 mph	820 FT
	65 mph	600 FT
	60 mph	600 FT

Loop Ramps	Speed Limit (prior to construction)	La (acceleration length)
	70 mph	1520 FT
	65 mph	1310 FT
	60 mph	1100 FT

For more information, see Chapter 10 of the AASHTO Green Book.

This chart assumes a grade of less than 3%.

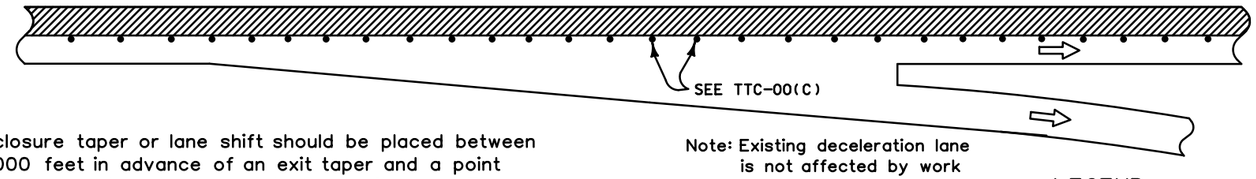
Exit Curve Speed	Ld (deceleration length)
20 mph	500 FT
45 mph	300 FT

For more information, see Chapter 10 of the AASHTO Green Book.

*Any sign of the W20-1 series may be used.

**The temporary green and white "Exit" sign (E5-1) shall be 48 IN X 48 IN.

FREEWAY EXIT WITH LEFT LANE CLOSED



Note: Existing deceleration lane is not affected by work zone or lane closure.

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C), and TTC-00(D).

1. This layout represents the minimum traffic controls required for a temporary work area with lane closures through ramp entrances and exit tapers on a freeway. For advance signing see TTC-00(D).
2. For mainline lane closures see TTC-09, TTC-10 or TTC-11.
3. The mounting height of the temporary "Exit" sign (E5-1) shall be a minimum of 7 feet from the pavement surface to the bottom of the sign. The existing green and white "Exit" sign shall be covered.
4. If acceleration distance (La) and/or gap acceptance (Lg) of 300 feet cannot be achieved, the ramp shall be closed.
5. No lane closure taper or lane shift should be placed between a point 1000 feet in advance of an exit taper and a point 100 feet past the striped gore point of an exit ramp. The Engineer can reduce the 1000 feet distance requirement if field conditions justify the reduction.
6. No lane closure taper or lane shift should be placed between a point 100 feet in advance of the striped gore point of an on ramp and a point that is a distance of 2L from the end of the acceleration lane taper. See TTC-00(C) for taper lengths.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

LEGEND

- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Work Area
- Type B Light
- Direction of Travel

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES #

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO. | DATE | REVISION OR CHANGE ORDER DESCRIPTION | BY

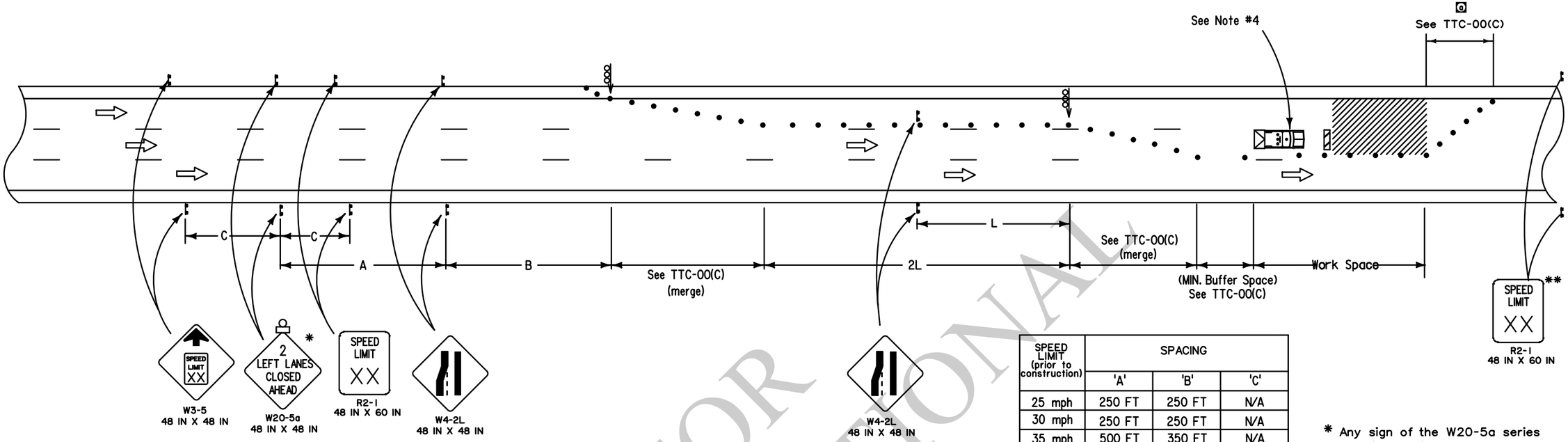
STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

TEMPORARY TRAFFIC CONTROL
FOR LANE CLOSURES THROUGH
RAMP ENTRANCE AND EXIT TAPERS

TTC-12

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)



SPEED LIMIT (prior to construction)	SPACING		
	'A'	'B'	'C'
25 mph	250 FT	250 FT	N/A
30 mph	250 FT	250 FT	N/A
35 mph	500 FT	350 FT	N/A
40 mph	500 FT	350 FT	N/A
45 mph	1000 FT	500 FT	500 FT
50 mph	1000 FT	500 FT	500 FT
≥ 55 mph	1640 FT	1000 FT	800 FT

* Any sign of the W20-5a series may be used.

** Speed limit is to be returned to legally established speed limit.

LEGEND

- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Flashing Arrow Board (Type 'C')
- Work Area
- Type B Light
- Truck with Green/Amber Light and TMA ◘

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C), and TTC-00(D).

1. This layout represents the minimum traffic controls required for two lanes closed on a divided 6 lane or more highway. This road work does not cover road work where a ramp entrance or exit taper falls within the work area. For advance signing see TTC-00(D).

2. This layout does not illustrate road work near a signal or a major intersection.

3. A "Road Work Ahead" sign shall be placed 1000 feet ahead of the entrance ramp nose for any ramp within the area of traffic control signing.

◘ 4. A vehicle with a flashing green/amber light and a truck mounted attenuator shall be used on all interstate projects or on all roadways with an ADT greater than 20,000 and a pre-construction speed greater than or equal to 40 mph. This vehicle shall move with work operations not to exceed the rollahead distance required by the manufacturer plus 100 feet.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN: B. BOUCHER | CHECK: M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES #

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY
◘	4-5-24	CLARIFY TAPER LENGTH AND MINOR CORRECTIONS	BRB

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

TEMPORARY TRAFFIC CONTROL FOR CLOSURE OF TWO LANES ON A MULTI-LANE HIGHWAY

TTC-13

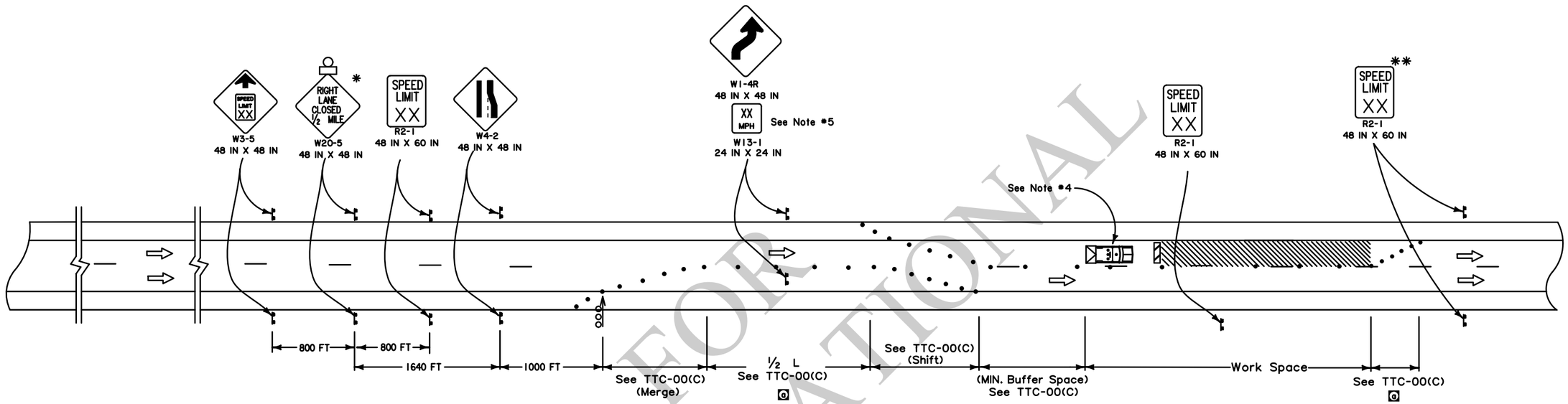
DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), TTC-00(C), AND TTC-00(D)

* Any sign of the W20-5 series may be used.

** Speed limit is to be returned to legally established speed limit.



NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), TTC-00(C) and TTC-00(D).

1. This layout represents the minimum traffic controls required for work in the left lane that would require the left lane to be closed on rural multi-lane divided highways and all interstates where left exit and entrance ramps do not exist. For advance signing see TTC-00(D).

2. This layout does not illustrate road work where a ramp entrance or an exit taper falls within the work area.

3. This layout does not illustrate road work near a signal or a major intersection.

Q 4. A vehicle with a flashing green/amber light and a truck mounted attenuator shall be used on all interstate projects or on all roadways with an ADT greater than 20,000 and a pre-construction speed greater than or equal to 40 mph. This vehicle shall move with work operations not to exceed the roll-ahead distance required by the manufacturer plus 100 feet.

5. Advisory speed plaques (W13-1) shall be required if the difference between the speed limit prior to construction and the advisory speed (determined by an engineering study performed by the DTOE) is 10 mph or greater.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

LEGEND

- Traffic Sign
- Channelizing Devices
- Type III Barricades
- Flashing Arrow Board (Type 'C')
- Work Area
- Type B Light
- Direction of Travel
- Q Truck with Green/Amber Light and TMA

INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES *

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	BY	REVISION OR CHANGE ORDER DESCRIPTION
Q	4-3-24	BRB	CLARIFY TAPER LENGTHS AND MINOR CORRECTIONS

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

TEMPORARY TRAFFIC CONTROL FOR LOUISIANA LEFT ON INTERSTATE HIGHWAYS

TTC-14

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

✳48 hours prior to closure

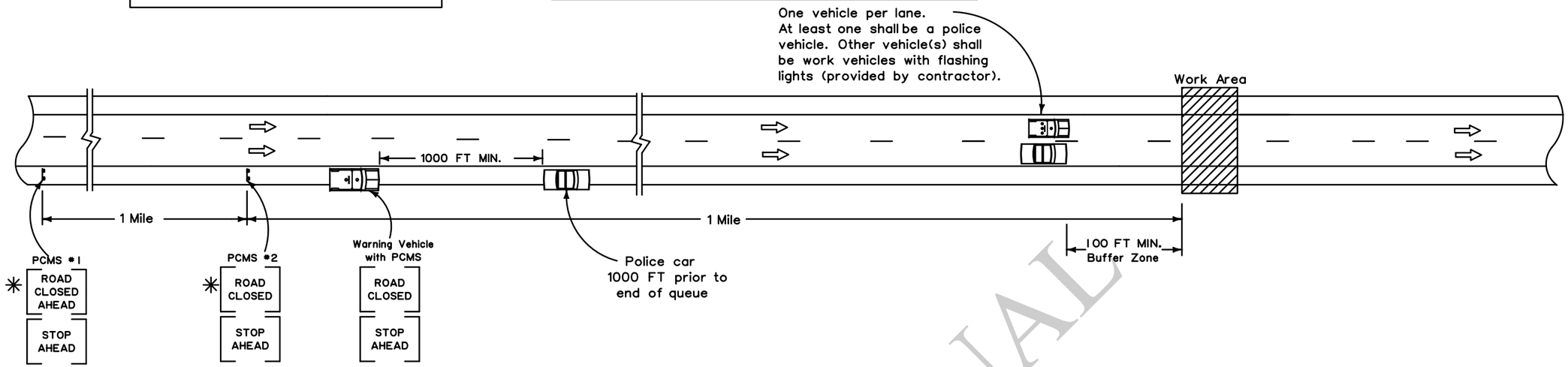
PCMS #1 & #2

ROAD CLOSURE

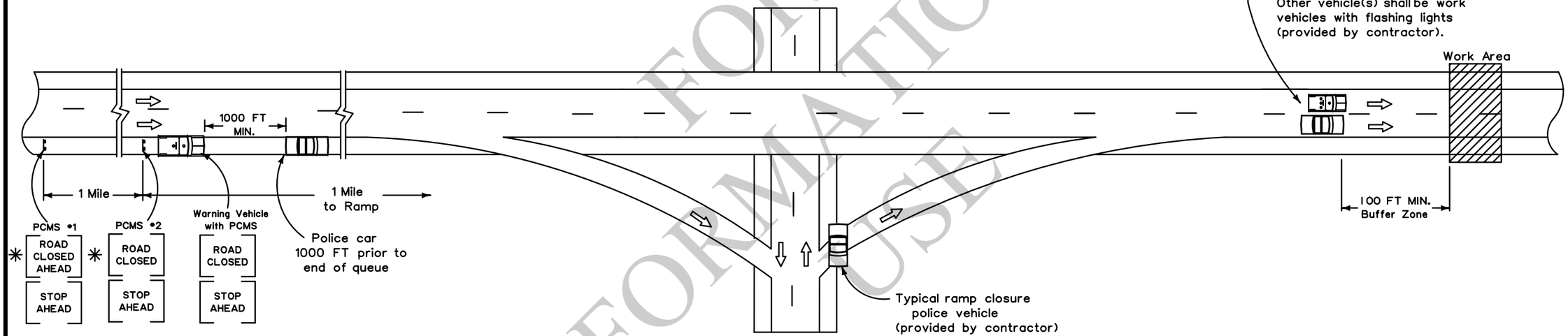
SUNDAY 8 - 9 AM

SEE TTC-00(A), TTC-00(B) AND TTC-00(C)

CLOSURE WHEN NO ALTERNATE ROUTE IS AVAILABLE



CLOSURE WHEN ALTERNATE ROUTE IS AVAILABLE FROM NEAREST EXIT



NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B) and TTC-00(C).

1. This layout represents the minimum traffic controls required for short duration closure of divided highways.
2. This type of highway closure shall only be used for emergencies or for construction operations approved by the Engineer and when the duration of closure will not exceed 15 minutes. After the divided highway has been closed and reopened via this procedure a minimum period of 30 minutes or queue dissipation shall elapse before another short duration closure, except with the approval of the Engineer.
3. A minimum of two police officers and two police cars shall be provided on each approach to the closure. Each police car shall have a roof mounted rotation blue light or blue bar.
4. All workers involved in the closure shall maintain radio communications at all times.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

LEGEND

- Direction of Travel
- Police Car
- Work Vehicle with Green/Amber Light
- Warning Vehicle with PCMS

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | DETAIL | REVIEW | SERIES #

CHECK M. RILOVICH | CHECK

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY
	4-3-24	MINOR CORRECTIONS	BRB

STATE OF LOUISIANA

TEMPORARY TRAFFIC CONTROL
FOR SHORT DURATION CLOSING
OF DIVIDED HIGHWAYS

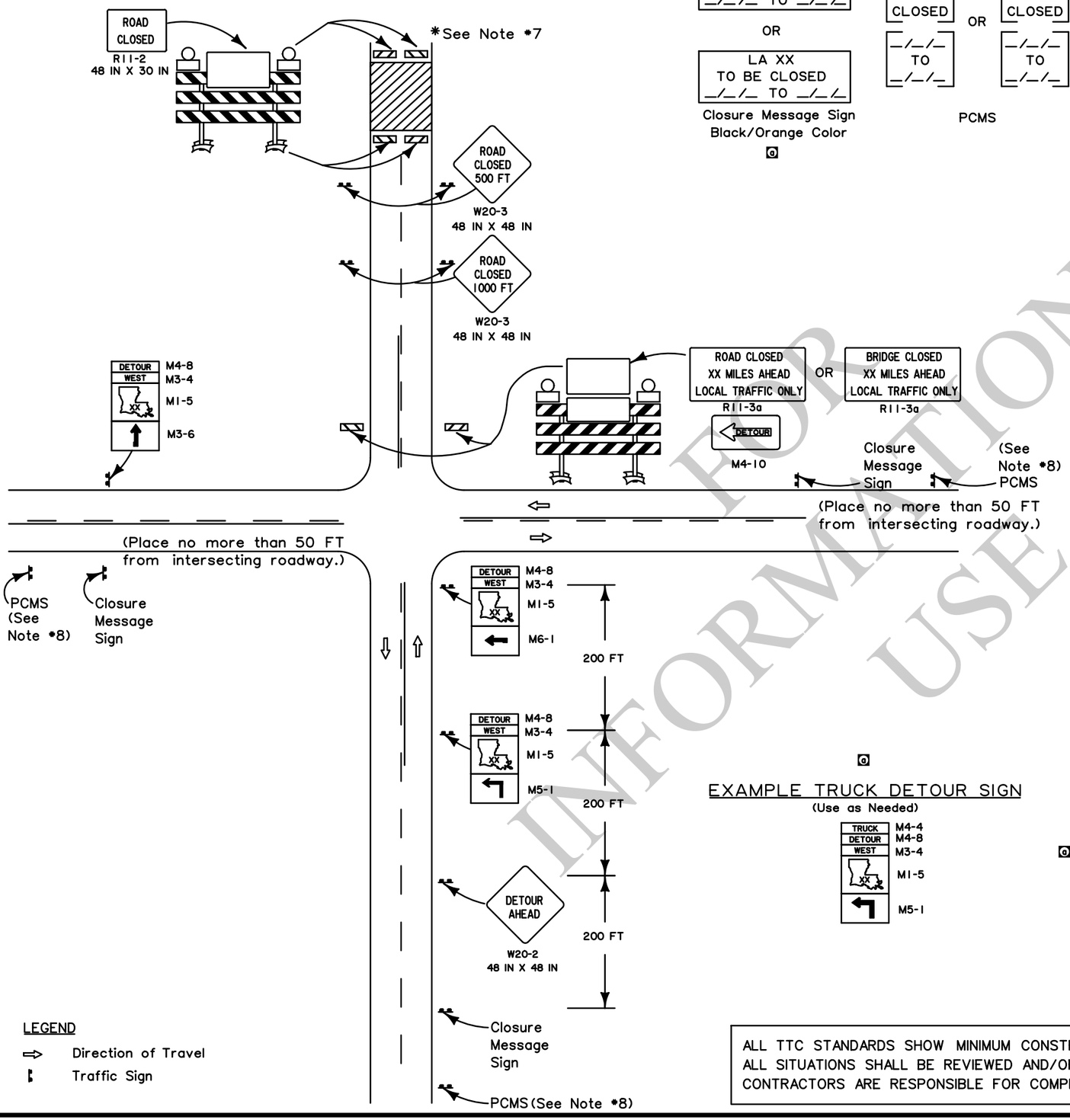
TTC-15

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B) AND TTC-00(C)

ADVANCE WARNING SIGN DURING ROAD CLOSURE



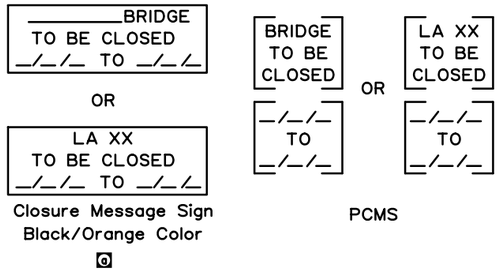
LEGEND

⇨ Direction of Travel

Traffic Sign

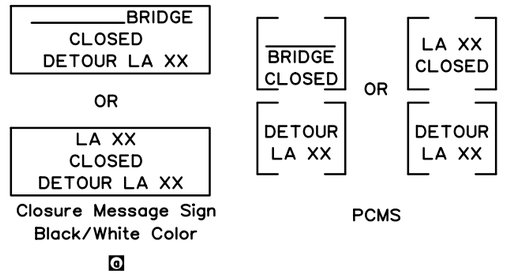
7 DAYS PRIOR TO ROAD CLOSURE

See Note *4 and *8



DURATION OF ROAD CLOSURE

See Note *4 and *8



EXAMPLE TRUCK DETOUR SIGN

(Use as Needed)

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B) and TTC-00(C).

1. This layout represents the generic traffic controls required for road closure on a two-lane roadway. A specific detour plan with all required signs and routes is required for all detours.
2. Any signs in conflict with detour signing shall be removed or covered.
3. Closure Message Sign or PCMS shall be placed 7 days prior to road closure on all approaches to the closure. This sign shall be placed no farther than 50 FT from the work area to be closed.
4. Closure Message Sign or PCMS shall be placed on all approaches to the closure for the duration of the road closure. Minimum letter size on static signs shall be 8 inches.
5. Detour routes shall only be state-maintained routes, unless the project manager has made an agreement with the road owner.
6. Not all detour signs are shown. The DTOE shall approve all detours. The contractor shall be responsible for placing and maintaining all detour signs. There should be a sign at every decision point.
7. The signing is to be mirrored in the opposite direction.
8. PCMS shall be used in addition to the closure message sign on all highways with an ADT greater than 20,000. Place at a location approved by the Engineer.
9. A complete detour map shall be included with the set of plans. If there are changes in the routing, including changes that only affect truck traffic, then the contractor will need to submit them to the Engineer for approval.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FORMATIONAL
INFOR
USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES #

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

BY BRB

DETOUR CLARIFICATIONS AND MINOR CORRECTIONS
REVISION OR CHANGE ORDER DESCRIPTION

NO. 4 DATE 4-3-24

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
TRAFFIC ENGINEERING

TEMPORARY TRAFFIC CONTROL
FOR ROAD CLOSURES

TTC-16

SEE TTC-00(A), TTC-00(B) AND TTC-00(C)

LEGEND

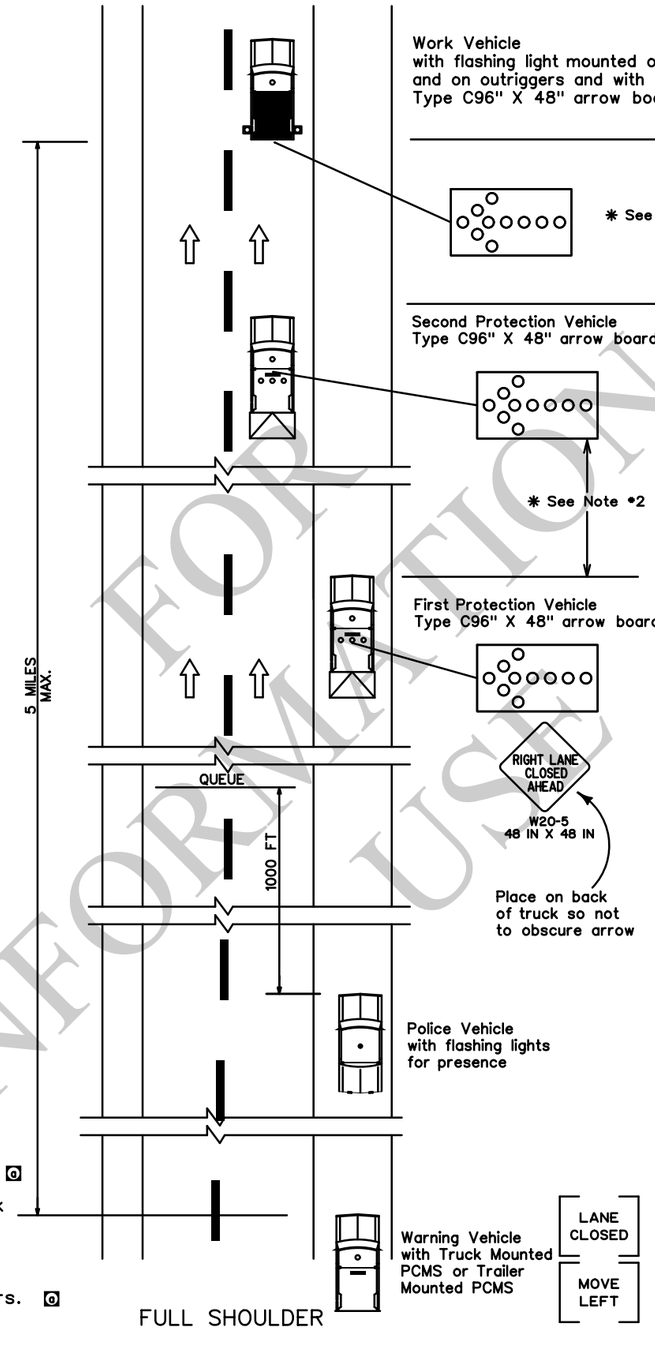
- Flashing Arrow Board (Type 'C')
- Work Area
- Direction of Travel
- Work Vehicle
- Police Vehicle with Flashing Lights
- Truck with Green/Amber Light and TMA
- Warning Vehicle with PCMS

NOTES

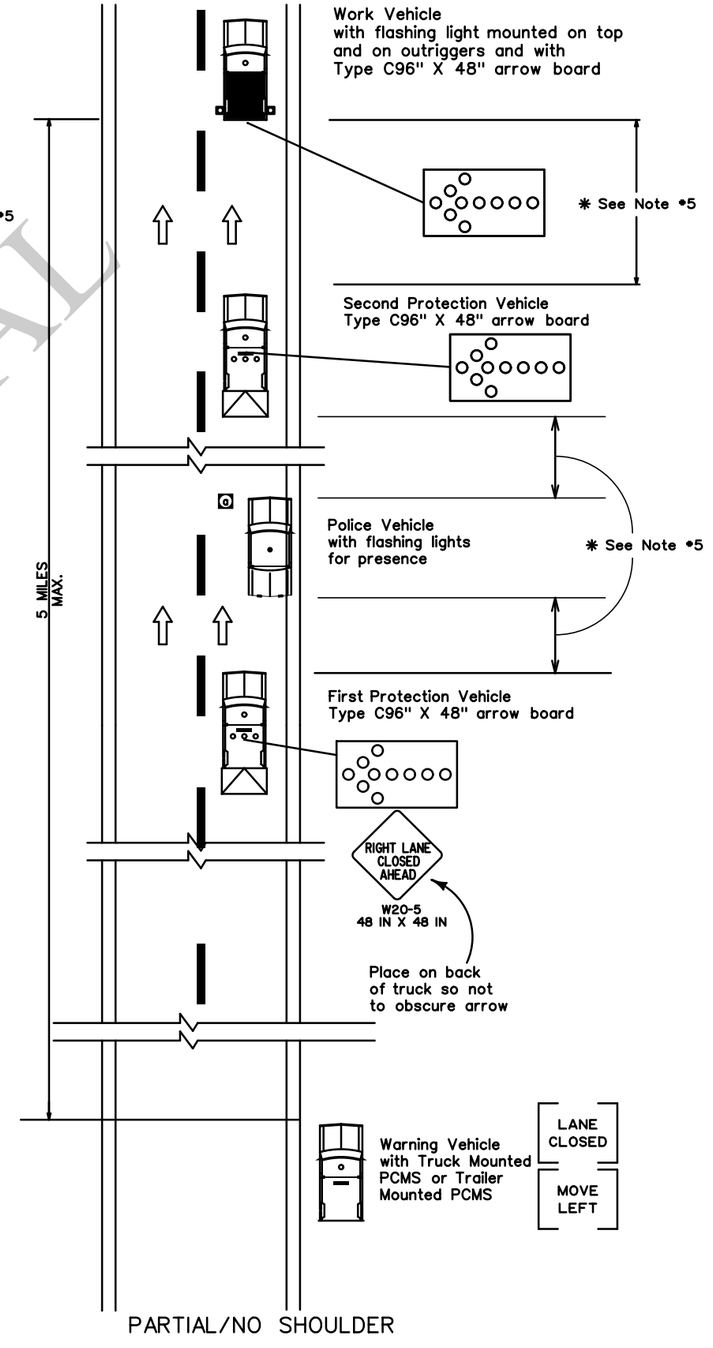
This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B) and TTC-00(C).

1. This layout represents the minimum traffic controls required for moving operations, such as striping, street sweeping, etc., on interstates and multi-lane roadways. This layout shall not be used for placing signs or pavement legends along the roadway.
2. Distances between vehicles shall vary and should be adjusted due to drying time and sign obstructions such as overpasses and hills.
3. Striping operation is shown for the right lane. Left lane operation is the same, but opposite. If the roadway is greater than 2 lanes, a traffic control plan will be designed.
4. If a queue greater than 30 minutes (about 2 miles) exists, the contractor shall cease operations and pull over to the shoulder until the queue dissipates.
5. The protection vehicles shall be equipped with a flashing green/amber light and a truck mounted attenuator. This vehicle shall move with work operations not to exceed the roll-ahead distance required by the manufacturer plus 100 feet.
6. All construction vehicles with flashing lights shall use green/amber colors.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.



FULL SHOULDER



PARTIAL/NO SHOULDER

FOR INFORMATIONAL USE

SHEET NUMBER | PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES *

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	FIGURE ADJUSTMENTS AND MINOR CORRECTIONS	BY
0	4-3-24	REVISION OR CHANGE ORDER DESCRIPTION	BRB

STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

TEMPORARY TRAFFIC CONTROL
MOVING OPERATIONS FOR INTERSTATE AND MULTI-LANE ROADWAYS

TTC-17

DOTD LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), AND TTC-00(C)

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), and TTC-00(C).

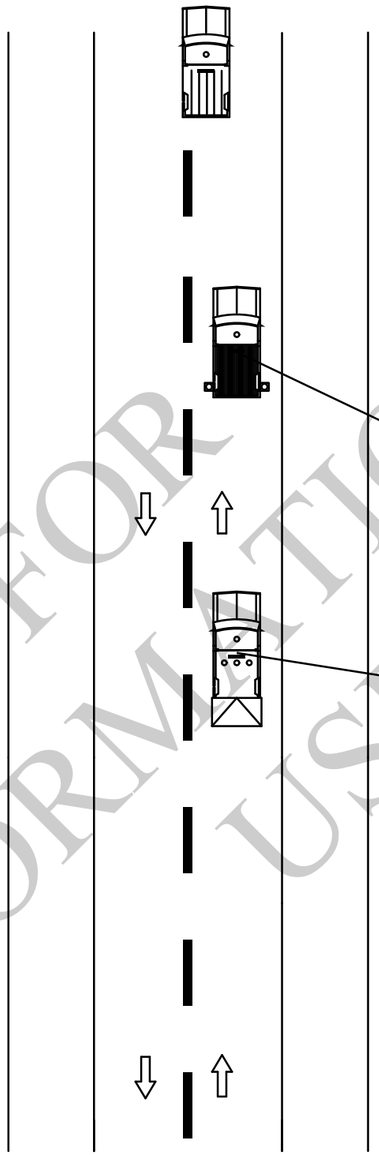
1. This layout represents the minimum traffic controls required for moving operations on two-lane roads with two-way traffic, such as striping, street sweeping, and placement of raised pavement markers.

2. Distances between vehicles may vary and should be adjusted due to drying time and sight obstructions such as overpasses and hills. Vehicles with attenuators shall move with work operations. Buffer space shall not exceed rollahead distance required by the manufacturer plus 100 feet.

3. If a queue greater than 5 minutes (about 1000 feet) exists, the contractor shall cease operations and pull over to the shoulder until the queue dissipates.

4. Flaggers may be used with this layout, if needed. See TTC-00(B).

5. All construction vehicles with flashing lights shall use green/amber colors. ◘



(Optional) Lead Vehicle straddling centerline with flashing lights may be used.

Work Vehicle with flashing light mounted on top and on outriggers and with Type C 96" X 48" arrow board in caution mode

CAUTION
WET PAINT
18 IN X 48 IN

Place this sign on back of work vehicle during striping operations.

First Protection Vehicle with flashing lights and Truck Mounted Attenuator.

ROAD WORK AHEAD *
W20-1
48 IN X 48 IN

OR

CAUTION
STRIPING MACHINE AHEAD
KEEP OFF WET PAINTED LINES
36 IN X 48 IN

Place this sign on back of protection vehicle during striping operations.

LEGEND

⇨ Direction of Travel

Work Vehicle

Lead Vehicle

Protection Vehicle

* Any sign of the W20-1 series may be used.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | DETAIL | REVIEW | SERIES *
CHECK M. RILOVICH | CHECK

APPROVED BY CHIEF ENGINEER: DATE: Feb. 7, 2025

NO.	DATE	REVISION OR CHANGE ORDER DESCRIPTION	BY
1	4-3-24	MINOR CORRECTIONS	BRB

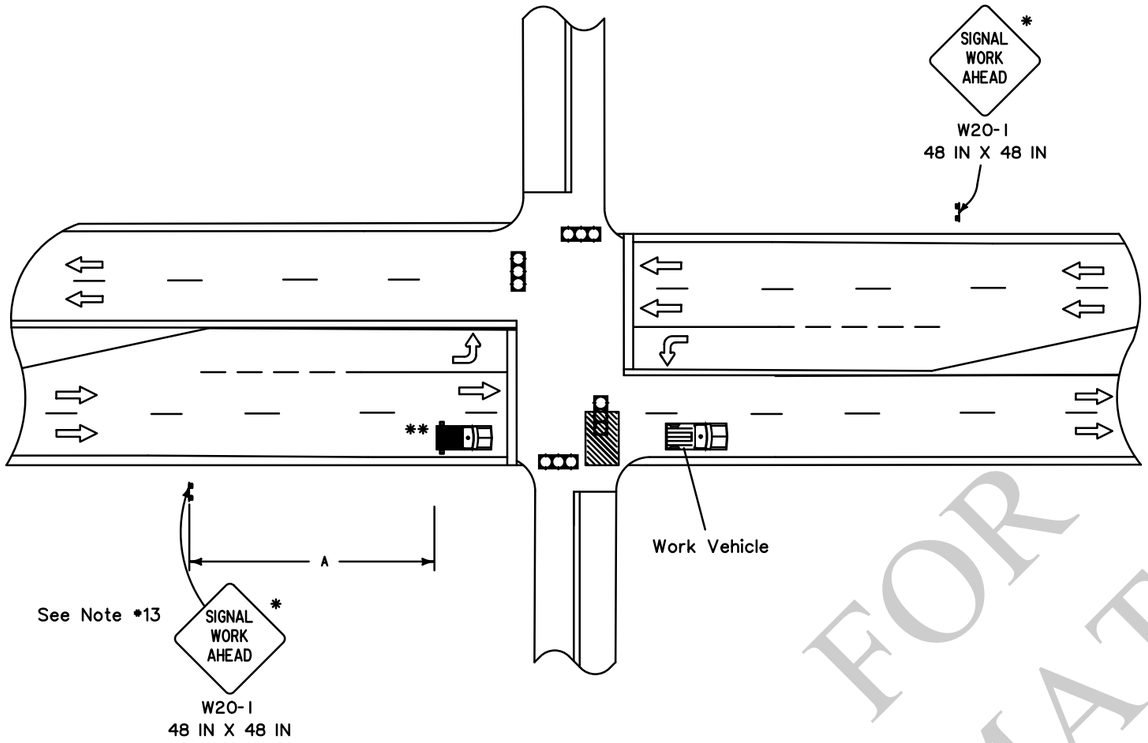
TEMPORARY TRAFFIC CONTROL
FOR MOVING OPERATIONS ON
TWO-WAY TWO-LANE ROADWAYS

TTC-18

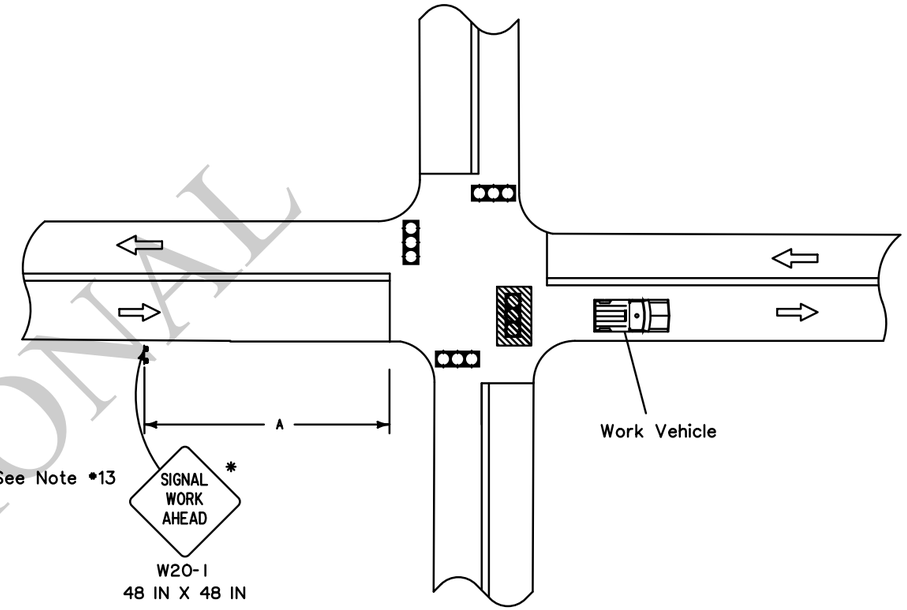
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
TRAFFIC ENGINEERING

SEE TTC-00(A), TTC-00(B), AND TTC-00(C)

SIGNAL WORK ON A MULTI-LANE ROADWAY FOR UP TO ONE HOUR



SIGNAL WORK ON A TWO-LANE TWO-WAY ROADWAY



* Any sign of the W20-1 series may be used.

** For posted speed over 45 mph, use TMA.

SPEED LIMIT (prior to construction)	SPACING 'A'
≤ 40 mph	125 FT
45-50 mph	350 FT
> 50 mph	500 FT

LEGEND

- Traffic Sign
- Work Vehicle
- Truck with Flashing Arrow Panel
- Work Area
- Direction of Travel
- Traffic Signal

NOTES

This sheet shall be used with the Temporary Traffic Control General Notes Sheets TTC-00(A), TTC-00(B), and TTC-00(C).

1. This layout represents the minimum traffic controls required during signal construction and maintenance.
2. For projects with multiple signals, the contractor shall construct only one signal at a time.
3. If the signal at an intersection is turned off, the intersection may operate as a 4-way stop with approval by the Engineer and the DTOE. The contractor shall be responsible for installing and removing all stop signs at the intersection.
4. A detour plan is required if the road will be closed to through traffic at all approaches.
5. A uniformed police officer shall direct traffic for short duration lane closures and signal turn-ons.
6. The turn lane may be used as a through lane if a minimum 10-foot lateral clearance can be maintained and opposing traffic is not impeded.
7. A signal timing and phasing plan shall be developed for each phase of construction.
8. Place "Road Work Ahead" sign prior to an intersecting alternate route, no more than 1500 feet from the work area.
9. The sign height shall be at least 7 feet in business, commercial, and residential areas and also near parking, pedestrians, bicyclists, or other obstructions.
10. All work must be done during off-peak hours.
11. The contractor shall not work on both through lanes at the same time.
12. For signal work on a multi-lane roadway greater than 1 hour, see TTC-09 or TTC-10.
13. If the expected or actual queue length exceeds the distance in Table 2C-4 in the MUTCD, place an additional "Signal Work Ahead" sign (W20-1) at the end of the queue.
14. For two-lane two-way roadways, a police car with flashing lights and 2 police officers will be required for intersection traffic control.
15. Left turn lanes shall be closed whenever work is being performed in path of left hand turner.
16. Position of work vehicle may vary according to work required.

ALL TTC STANDARDS SHOW MINIMUM CONSTRUCTION SIGNING.
ALL SITUATIONS SHALL BE REVIEWED AND/OR DESIGNED BY THE ENGINEER.
CONTRACTORS ARE RESPONSIBLE FOR COMPLYING WITH ALL TTC STANDARDS.

FOR INFORMATIONAL USE

SHEET NUMBER

PARISH | CONTROL SECTION | STATE PROJECT

DESIGN B. BOUCHER | CHECK M. RILOVICH | DETAIL | CHECK | REVIEW | SERIES *

APPROVED BY CHIEF ENGINEER: DATE: Feb 7, 2025

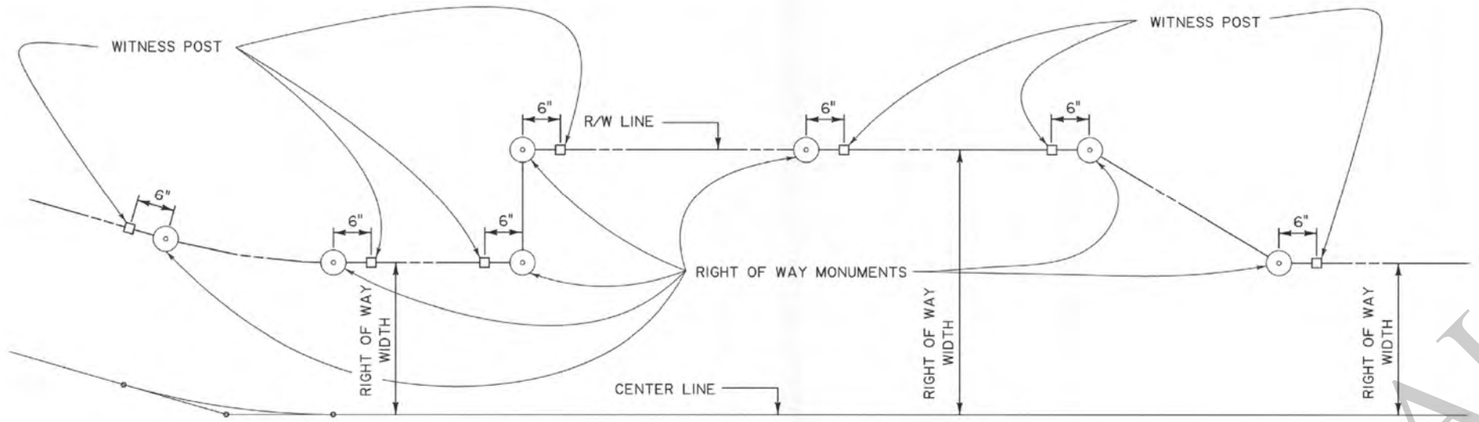
REVISION OR CHANGE ORDER DESCRIPTION | BY | DATE | NO.

TEMPORARY TRAFFIC CONTROL
FOR TRAFFIC SIGNAL INSTALLATION
AND MAINTENANCE AT AN INTERSECTION

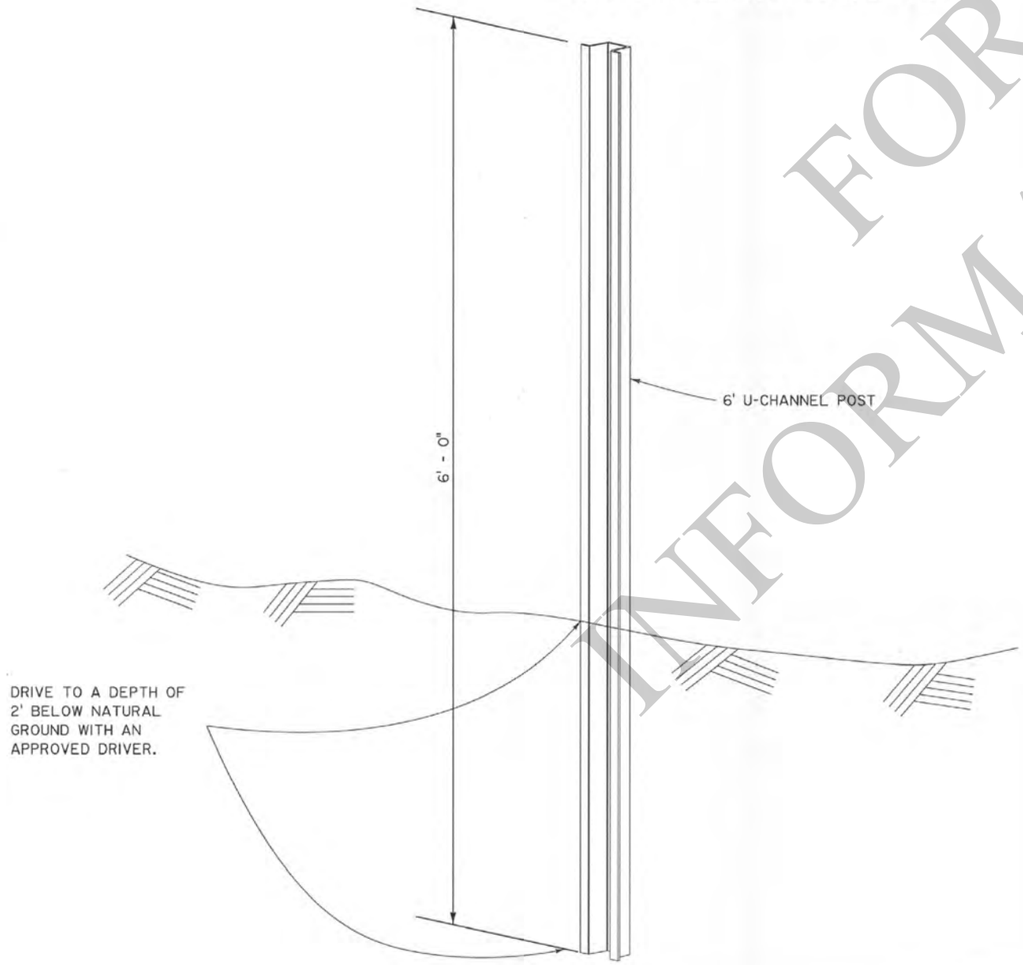
TTC-19

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
TRAFFIC ENGINEERING

1/28/2021 07:37



STANDARD RIGHT OF WAY MONUMENT
WITNESS POST
PLAN SHOWING WHERE POSTS ARE TO BE PLACED



WITNESS POST SHALL CONSIST OF A U-CHANNEL POST AND RIGHT OF WAY MARKER SIGN DESCRIBED FURTHER AS A HEAVY DUTY GALVANIZED U-CHANNEL POST WEIGHING APPROXIMATELY 2 POUNDS PER FOOT, BEING 6 FOOT IN LENGTH, WITH 3/8 INCH BOLT HOLES SPACED 1 INCH APART ALONG THE LENGTH OF THE POST. THE SIGN SHALL BE MADE OF ALUMINUM WITH A THICKNESS OF 1/16 INCH, MEASURING 6 1/2 INCHES BY 10 1/2 INCHES WITH A DURABLE DECAL AND HAVING 2 BOLT HOLES, SPACED 9 INCHES APART, TO ACCOMMODATE A 3/8 INCH BOLT. THE POST AND SIGN MUST MEET THE STANDARDS AS SHOWN ON THE PLANS OR AN APPROVED EQUAL. SUBSTITUTIONS MUST BE APPROVED BY THE LOCATION AND SURVEY SECTION ADMINISTRATOR, BATON ROUGE, LOUISIANA.

THE SIGN SHALL BE FASTENED TO THE POST USING EITHER GALVANIZED OR STAINLESS STEEL BOLTS, NUTS AND WASHERS, WITH SAID BOLT BEING 3/8 INCH DIAMETER AND LONG ENOUGH TO PROTRUDE 1/2 INCH OR LONGER BEYOND THE REAR OF THE POST.

FOR INFORMATIONAL USE

SHEET NUMBER
PARISH
CONTROL SECTION
STATE PROJECT
DESIGN CHECK
DETAIL CHECK
REVIEW
SERIES #
ERIC R. LANIER REG. No. 04784 REGISTERED PROFESSIONAL LAND SURVEYOR
APPROVED BY CHIEF ENGINEER:
DATE: 2/1/2021
STATE OF LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
RIGHT OF WAY MONUMENT WITNESS POST
STANDARD PLAN
WP-01
DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT
LOCATION AND SURVEY

T:\ROW_Map_Standards\STANDARD PLANS\WP01.DGN