RELEASED FOR CONSTRUCTION

FLATIRON | DRAGADOS

Work Package	**SA06-E South Approach Finishes - Expansion Joints, Railings & Miscellaneous Details**
Revision	**00**
Submittal Stage	**Released for Construction**
Date	**5/15/2020**
Note	**The prefinal package for this submittal was NA11-E North Approach Finishes - Expansion Joints, Railings & Miscellaneous Details**

RELEASED FOR CONSTRUCTION

FIGG	**Project** Harbor Bridge	**Date** 05/22/20
	Project Number 1721.03	**Designed** WLJ
	Description Harbor Approach Status of Drawings	**Checked** ---

Legend:

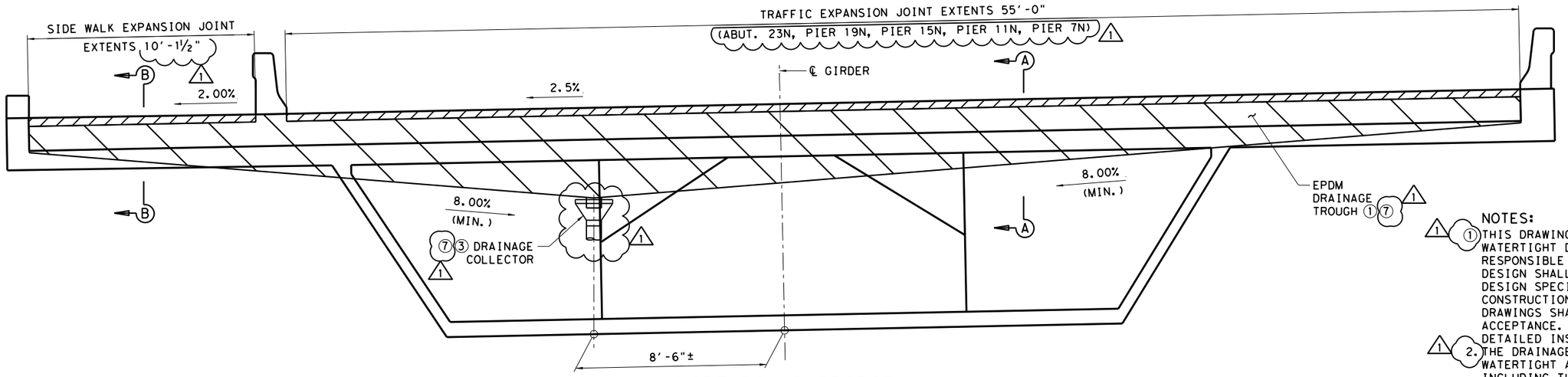
X=Drawing in submittal for review

FIO=Drawing in Submittal For Information Only

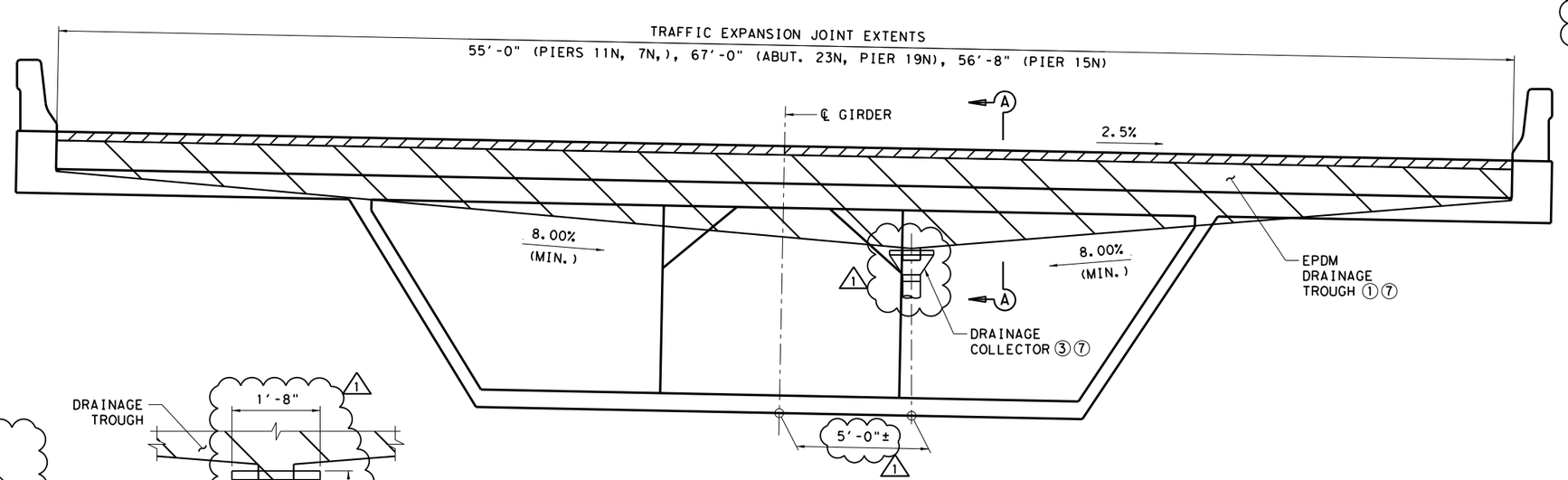
Bold Italics = TxDOT concurrence has been received

SHEET NUMBER	SHEET NAME	S06-E	Rev 0 Subm	Rev 0 Date	Rev 1 Subm	Rev 1 Date	Rev 2 Subm	Rev 2 Date
A299	Expansion Joint Details I	FIO	NA11-E	02/25/20				
A300	Expansion Joint Details II	X	NA11-E	02/25/20	SA06-E	05/22/20		
A300A	Expansion Joint Details III	X	NA11-E	02/25/20	SA06-E	05/22/20		
A300B	Expansion Joint Details IV	FIO	NA11-E	02/25/20				
A300C	Expansion Joint Details V	X	SA06-E	05/22/20				
A300D	Expansion Joint Details VI	X	SA06-E	05/22/20				
A300E	Expansion Joint Details VII	X	SA06-E	05/22/20				
A320A	South Approach Vermin Guard Details	X	SA06-E	05/22/20				
A320B	Ramp Vermin Guard Details	X	SA06-E	05/23/20				
A321	Pier Vermin Guard Details	FIO	NA11-E	04/09/20				

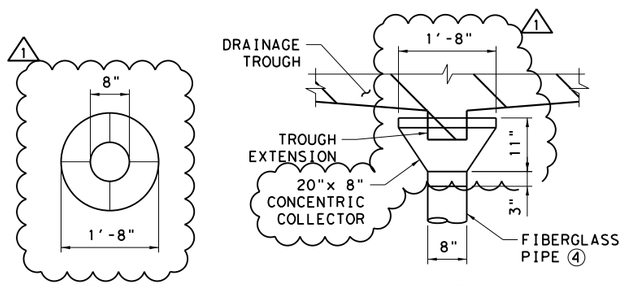
RELEASED FOR CONSTRUCTION



NORTHBOUND BRIDGE
(LOOKING UPSTATION)



SOUTHBOUND BRIDGE
(LOOKING UPSTATION)



COLLECTOR DETAIL

NOTES:

1. ① THIS DRAWING IS A SCHEMATIC OF THE REQUIRED WATERTIGHT DRAINAGE TROUGHS. THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF THE TROUGHS. THE DESIGN SHALL CONFORM TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS. COMPLETE SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR ACCEPTANCE. THE SHOP DRAWINGS SHALL INCLUDE A DETAILED INSTALLATION PLAN.
2. THE DRAINAGE TROUGH IS CONTINUOUS AND WATERTIGHT ACROSS THE WIDTH OF THE JOINT, INCLUDING THE PROJECTION OF THE MEDIAN TRAFFIC RAILING. THE TROUGH SHALL BE DESIGNED SO THAT THERE IS A MINIMUM TRUE CROSS-SLOPE OF 8.00% AT ALL JOINT OPENINGS AND SUCH THAT THERE IS NO TENSION ON THE TROUGH AT THE MAXIMIUM JOINT OPENING.
3. ③ SEE THE DRAINAGE DRAWINGS FOR PIPING BEYOND THE DRAINAGE COLLECTOR.
4. DRAINAGE COLLECTOR AND DRAINAGE TROUGH SHALL BE DESIGNED SUCH THAT ALL WATER IN THE TROUGH ENTERS THE PIPING SYSTEM.
5. THE DRAINAGE TROUGH SHALL BE DESIGNED FOR FUTURE REPLACEMENT BY REMOVING SECTIONS OF THE PLATE ASSEMBLES DURING REPLACEMENT.
6. FOR ADDITIONAL NOTES SEE EXPANSION JOINT DETAILS II. FOR SECTIONS A-A AND B-B, SEE EXPANSION JOINT DETAILS II AND III SHEETS.
7. ⑦ DRAINAGE COLLECTOR AND EPDM DRAINAGE TROUGH ARE NOT REQUIRED AT ABUT. 23N WHERE A STRIPSEAL TYPE EXPANSION JOINT WILL BE USED.
8. FOR ABUTMENT 23N, USE SEALED A2R-XTRA OR APPROVED EQUAL.

HL-93 LOADING

NO.	DATE	REVISION	APRV
1	12/7/20	MISC REVISIONS	CF

FLATIRON/DRAGADOS LLC — FIGG TBPE FIRM #F-4883

Texas Department of Transportation ® 2016

US-181 HARBOR BRIDGE

EXPANSION JOINT DETAILS I

STATE OF TEXAS
CESAR FERNANDES
98112
LICENSED PROFESSIONAL ENGINEER

12/07/20

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RKM	X	(See Title Sheet)		US-181
GRAPHICS DCA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK KLB	TEXAS	CRP	NUECES	A 299
CHECK WLJ	CONTROL 0101	SECTION 06	JOB 095	

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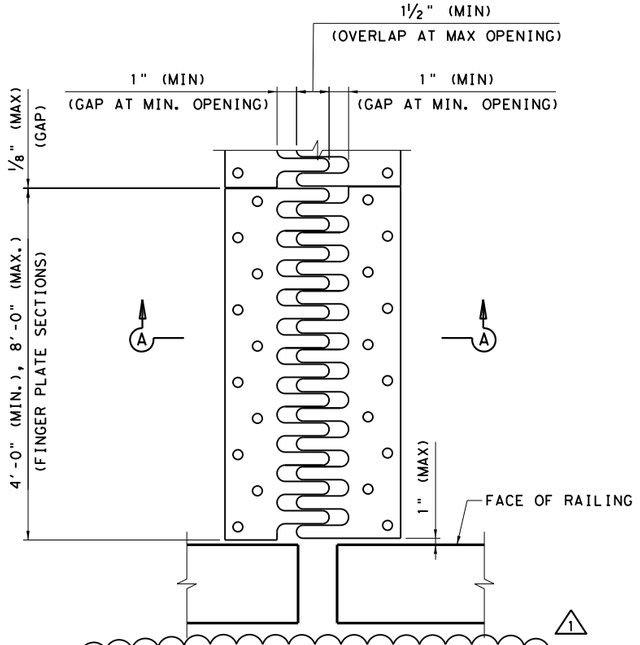
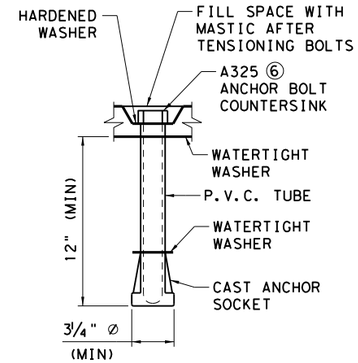
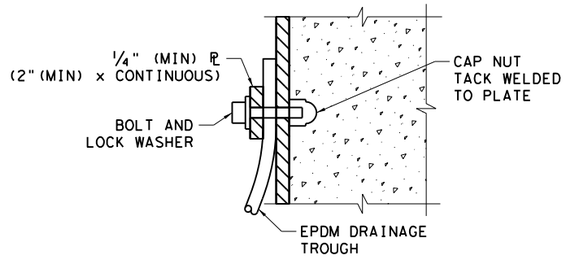


PLAN VIEW - TRAFFIC LANES ①

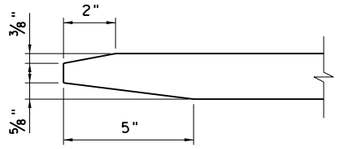


ANCHOR BOLT DETAIL

SECTION A-A ①



DETAIL 'C'



BEVELED TOOTH DETAIL ⑧
(ELEVATION VIEW)

NOTES:

1. THIS DRAWING IS A SCHEMATIC OF THE REQUIRED EXPANSION JOINT DEVICES AND WATERTIGHT DRAINAGE TROUGHS. THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF THE EXPANSION JOINT DEVICES. THE DESIGN SHALL CONFORM TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS. COMPLETE SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR ACCEPTANCE. THE SHOP DRAWINGS SHALL INCLUDE A DETAILED INSTALLATION PLAN AND TEMPERATURE SETTING TABLE.
② THE BLOCKOUT DEPTH IS 1'-5" BEFORE GRINDING. A MAXIMUM OF ½" OF GRINDING MAY REDUCE THE BLOCKOUT DEPTH ACCORDINGLY. THE EXPANSION JOINT DEVICES SHALL NOT BE INSTALLED UNTIL AFTER GRINDING OF THE DECK HAS BEEN COMPLETED.
③ THE GAP DIMENSIONS SHOWN ARE NOMINAL DIMENSIONS AT 70°F AND WILL VARY WITH TIME AND TEMPERATURE. FOR DIMENSION 'X' AND TEMPERATURE SETTING TABLE, SEE EXPANSION JOINT DETAIL III.
④ THE VERTICAL PLATES ARE USED TO SUPPORT THE EXPANSION TROUGH AND SERVE AS A BULKHEAD FOR THE SECONDARY CONCRETE POUR. THEY SHALL BE WELDED TO THE FINGER PLATES AND ARE CONTINUOUS THROUGH THE PROJECTION OF THE MEDIAN TRAFFIC RAILING. THE CONCEPT SHOWS DOUBLE PLATES WITH SLOTTED HOLES AND BOLTS FOR HEIGHT ADJUSTMENT. AN ALTERNATIVE MEANS OF HEIGHT ADJUSTMENT MAY BE PROPOSED IN THE SHOP DRAWINGS.
5. THE STEEL FOR THE FINGER PLATES SHALL CONFORM TO ASTM A709, GRADE 50. ALL OTHER PLATES SHALL CONFORM TO EITHER ASTM A709, GRADE 50 OR ASTM A36. ALL STEEL AND WELDED ANCHOR STUDS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION OF THE ASSEMBLIES.
⑥ THE FINGER PLATE ANCHOR BOLTS SHALL BE GALVANIZED ASTM A3125, GRADE 325 BOLTS. A449 BOLTS MAY BE SUBSTITUTED IF THEY ARE GALVANIZED USING A PROCESS THAT DOES NOT LEAD TO EMBRITTLEMENT OF THE BOLTS. THE ANCHOR BOLTS SHALL BE TENSIONED TO 110% OF THE CALCULATED DESIGN FORCE FROM TRAFFIC LOADINGS NOT TO EXCEED THE ALLOWABLE BOLT CAPACITY. THE METHOD OF TENSIONING SHALL BE SUBMITTED TO THE ENGINEER FOR ACCEPTANCE.
7. ALL OTHER BOLTS, NUTS, AND WASHERS SHALL BE STAINLESS STEEL IN ACCORDANCE WITH ASTM F593, TYPE 304.
⑧ ALTERNATE BEVEL DETAILS MAY BE PROPOSED IN THE SHOP DRAWINGS.
⑨ THE #5 REINFORCING BARS ARE CONTINUOUS ACROSS THE WIDTH OF THE BLOCKOUT. WHERE NECESSARY, A 2'-2" SPLICE MAY BE UTILIZED.
10. THE EXPANSION JOINT DEVICES SHALL NOT BE INSTALLED UNTIL ALL LONGITUDINAL TENDONS IN THE UNITS TO EITHER SIDE OF THE JOINT HAVE BEEN STRESSED. ALL TENDONS ANCHORING ON THE DIAPHRAGM JOINT FACES SHALL BE GROUTED AND HAVE THEIR ANCHORAGE PROTECTION INSTALLED PRIOR TO INSTALLING THE EXPANSION JOINT DEVICES.
11. THE CONCRETE FOR THE SECONDARY POUR SHALL BE THE SAME MIX AS IS UTILIZED FOR THE SEGMENTS.
12. THE INSTALLED EXPANSION JOINT SYSTEM SHALL PROVIDE A SMOOTH RIDING SURFACE.
13. FOR EXPANSION JOINT DEVICE AND MOVEMENTS AT PIER 2N-NB AND PIER 2N-SB SEE MAIN SPAN EXPANSION JOINT DETAILS.

HL-93 LOADING

NO.	DATE	REVISION	APRV
1	05/22/20	REMOVED PIER CALL-OUTS	GGH

FLATIRON/DRAGADOS LLC

FIGG TBPE FIRM #F-4883

Texas Department of Transportation ® 2016

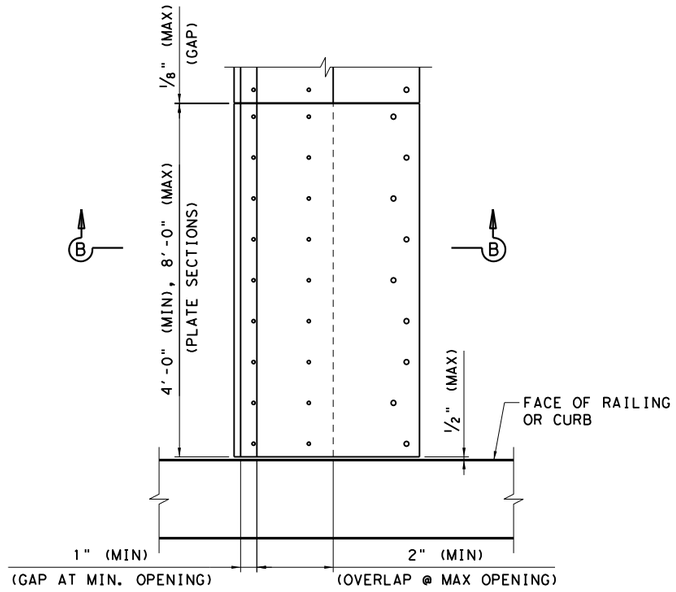
US-181 HARBOR BRIDGE

EXPANSION JOINT DETAILS II

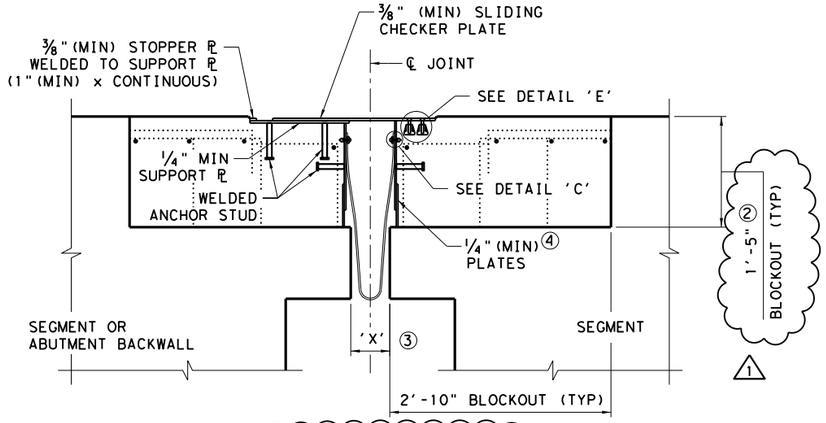
STATE OF TEXAS
CESAR FERNANDES
98112
LICENSED PROFESSIONAL ENGINEER

05/22/20

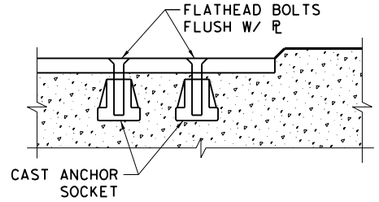
DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RKM	X	(See Title Sheet)		US-181
GRAPHICS DCA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK KLB	TEXAS	CRP	NUECES	A 300
CHECK WLJ	CONTROL 0101	SECTION 06	JOB 095	



PLAN VIEW - SIDEWALK ①



SECTION B-B ④ ①



DETAIL 'E' ①

TEMPERATURE SETTING TABLE (NB)				
PIER/ ABUT	③ 'X'	TOTAL CONTRACTION FROM 70° F (JOINT OPENING)	TOTAL EXPANSION FROM 70° F (JOINT CLOSING)	EXPANSION FOR +10° F TEMP. DIFF.
7N	6"	6.70"	2.05"	0.49"
11N	6"	7.06"	2.15"	0.51"
15N	6"	7.37"	2.34"	0.56"
19N	6"	8.67"	2.58"	0.61"
23N	3"	2.10"	0.53"	0.13"

TEMPERATURE SETTING TABLE (SB)				
PIER/ ABUT	③ 'X'	TOTAL CONTRACTION FROM 70° F (JOINT OPENING)	TOTAL EXPANSION FROM 70° F (JOINT CLOSING)	EXPANSION FOR +10° F TEMP. DIFF.
7N	6"	7.59"	2.14"	0.51"
11N	6"	7.15"	2.20"	0.52"
15N	6"	8.21"	2.40"	0.57"
19N	6"	9.05"	2.65"	0.63"
23N	3"	2.44"	0.54"	0.13"

① NOTES:
1. FOR NOTES AND DETAIL 'C', SEE THE EXPANSION JOINT DETAILS II SHEET.
2. THE BLOCKOUT DEPTH IS 1'-5" BEFORE GRINDING. A MAXIMUM OF 1/2" OF GRINDING MAY REDUCE THE BLOCKOUT DEPTH ACCORDINGLY. THE EXPANSION JOINT DEVICES SHALL NOT BE INSTALLED UNTIL AFTER GRINDING OF THE DECK HAS BEEN COMPLETED.
③ 'X' IS CONCRETE GAP DIMENSION BETWEEN SEGMENTS AT 70°F.
④ FOR PIERS 17S-SBR, 17S-NBR, ABUTMENT 23S-NB, 23S-SB, AND 23S-SBR, USE SEALED EXPANSION JOINT DS BROWN A2R-XTRA OR APPROVED EQUAL.

HL-93 LOADING

TEMPERATURE SETTING TABLE (NB)				
PIER/ ABUT	③ 'X'	TOTAL CONTRACTION FROM 70° F (JOINT OPENING)	TOTAL EXPANSION FROM 70° F (JOINT CLOSING)	EXPANSION FOR +10° F TEMP. DIFF.
6S	6"	5.26"	1.62"	0.39"
9S	6"	4.41"	1.38"	0.39"
10S	6"	5.68"	1.57"	0.45"
15S	6"	8.31"	2.02"	0.57"
17S	6"	5.16"	1.62"	0.41"
20S	6"	5.14"	1.62"	0.39"
23S	3"	1.87"	0.53"	0.13"

TEMPERATURE SETTING TABLE (NBR)				
PIER/ ABUT	③ 'X'	TOTAL CONTRACTION FROM 70° F (JOINT OPENING)	TOTAL EXPANSION FROM 70° F (JOINT CLOSING)	EXPANSION FOR +10° F TEMP. DIFF.
10S-NBR	6"	5.67"	1.57"	0.45"
15S-NBR	6"	9.09"	1.88"	0.54"
17S-NBR	2"	1.89"	0.76"	0.22"

TEMPERATURE SETTING TABLE (SB)				
PIER/ ABUT	③ 'X'	TOTAL CONTRACTION FROM 70° F (JOINT OPENING)	TOTAL EXPANSION FROM 70° F (JOINT CLOSING)	EXPANSION FOR +10° F TEMP. DIFF.
7S	6"	6.01"	1.95"	0.56"
10S	6"	6.17"	1.77"	0.51"
14S	6"	7.00"	1.94"	0.56"
15S	6"	2.30"	0.54"	0.15"
17S	6"	5.38"	1.64"	0.47"
20S	6"	5.06"	1.07"	0.30"
21S	6"	2.12"	0.54"	0.15"
23S	3"	2.15"	0.53"	0.15"

TEMPERATURE SETTING TABLE (SBR)				
PIER/ ABUT	③ 'X'	TOTAL CONTRACTION FROM 70° F (JOINT OPENING)	TOTAL EXPANSION FROM 70° F (JOINT CLOSING)	EXPANSION FOR +10° F TEMP. DIFF.
15S-SBR	6"	2.41"	0.59"	0.17"
17S-SBR	2"	2.40"	0.97"	0.28"
21S-SBR	6"	1.90"	0.54"	0.15"
23S-SBR	2"	2.02"	0.54"	0.15"

NO.	DATE	REVISION	APRV
1	05/15/20	UPDATED AND ADDED SOUTH APPROACH INFORMATION	JMW

FLATIRON/DRAGADOS LLC

FIGG TBPE FIRM #F-4883

Texas Department of Transportation ® 2016

US-181 HARBOR BRIDGE

EXPANSION JOINT DETAILS III

STATE OF TEXAS
CESAR FERNANDES
98112
LICENSED PROFESSIONAL ENGINEER
05/22/20

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RKM	X	(See Title Sheet)		US-181
GRAPHICS DCA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK KLB	TEXAS	CRP	NUECES	A 300A
CHECK WLJ	CONTROL 0101	SECTION 06	JOB 095	

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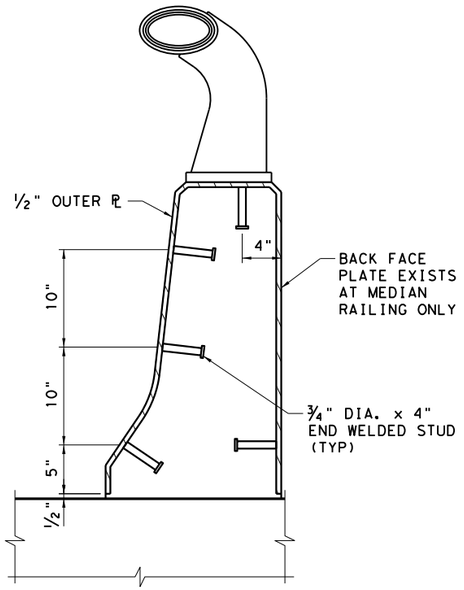
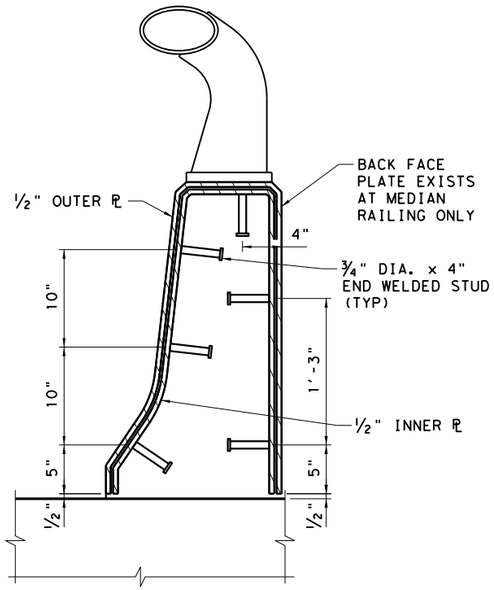


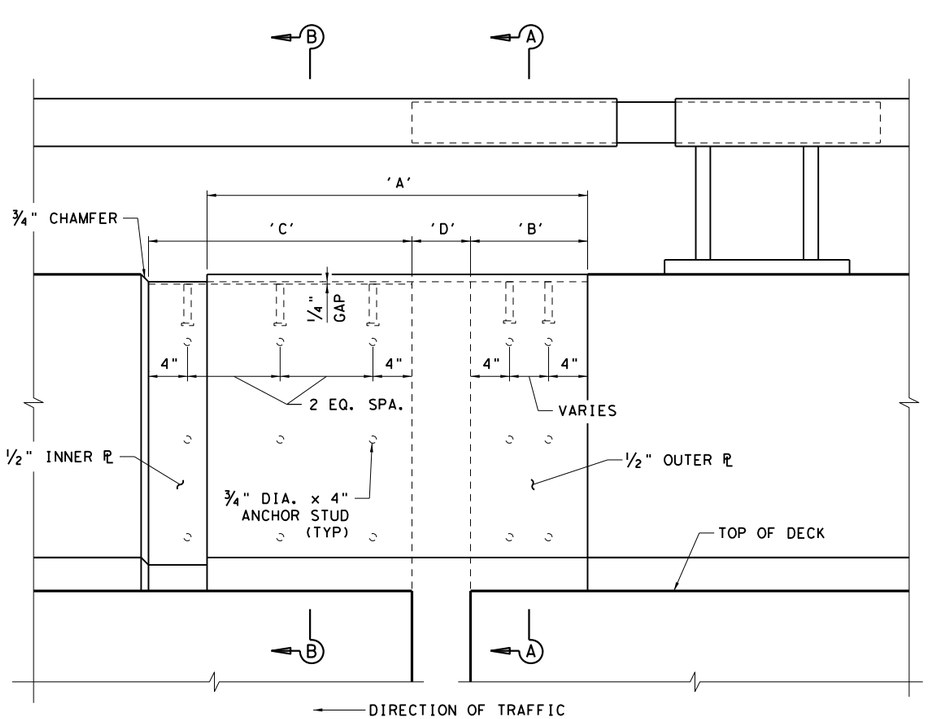
SECTION A-A



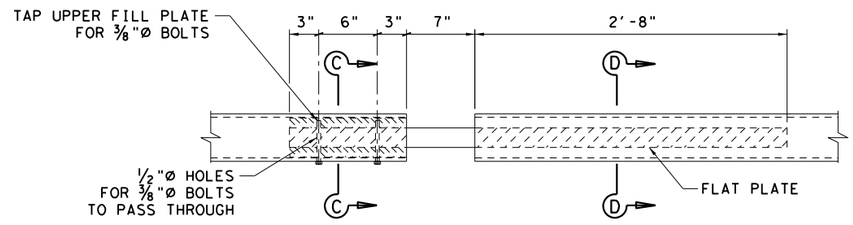
SECTION B-B

*VARIABLE DIMENSIONS				
PIER/ABUT	'A'	'B'	'C'	'D'
7N, 11N, 15N, 19N	3'-2"	1'-0"	2'-0"	6"
23N	2'-8"	1'-0"	1'-7"	3"

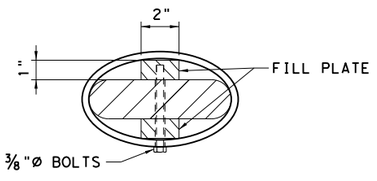
* DIMENSION 'D' IS NOMINAL @ 70°F AND WILL VARY WITH TEMPERATURE AND TIME. PLATES SHALL BE FABRICATED TO LENGTHS SHOWN AND INSTALLED TO DIMENSIONS 'B' & 'C'.



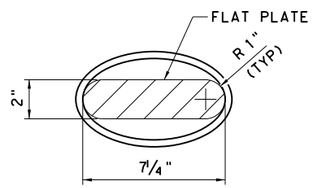
COVER PLATE ELEVATION
(TRAFFIC RAIL TYPE T80HT (MOD))



TUBE SPLICE DETAIL
(NOMINAL DISPLACEMENT)



SECTION C-C



SECTION D-D

NOTES:
1. THIS DRAWING IS SCHEMATIC OF THE REQUIRED RAILING COVER PLATES AT THE EXPANSION JOINTS. COMPLETE SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR ACCEPTANCE.
2. THE STEEL FOR THE COVER PLATES SHALL CONFORM TO ASTM A709, GRADE 50. ALL STEEL AND WELDED ANCHOR STUDS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 AFTER FABRICATION OF THE ASSEMBLIES. PLATES MAY BE BENT OR WELDED.
3. THE OUTSIDE COVER PLATE OUTSIDE SURFACES SHALL BE FLUSH WITH THE BARRIER FACE.
4. TO MAINTAIN ALIGNMENT OF THE COVER PLATES DURING CASTING OF THE RAILING, TEMPORARY CONNECTIONS BETWEEN INNER AND OUTER PLATES MAY BE UTILIZED. TEMPORARY CONNECTIONS SHALL BE REMOVED AS SOON AS POSSIBLE AFTER CASTING TO AVOID DAMAGE DUE TO THERMAL MOVEMENTS.
5. FOR TRAFFIC RAILING DIMENSIONS, REINFORCING AND DETAILS OF THE STEEL RAIL EXPANSION SPLICE, SEE TRAFFIC RAIL TYPE T80HT (MOD) SHEETS.

HL-93 LOADING

NO.	DATE	REVISION	APRV

FLATIRON/DRAGADOS LLC

FIGG TBPE FIRM #F-4883

Texas Department of Transportation ® 2016

US-181 HARBOR BRIDGE

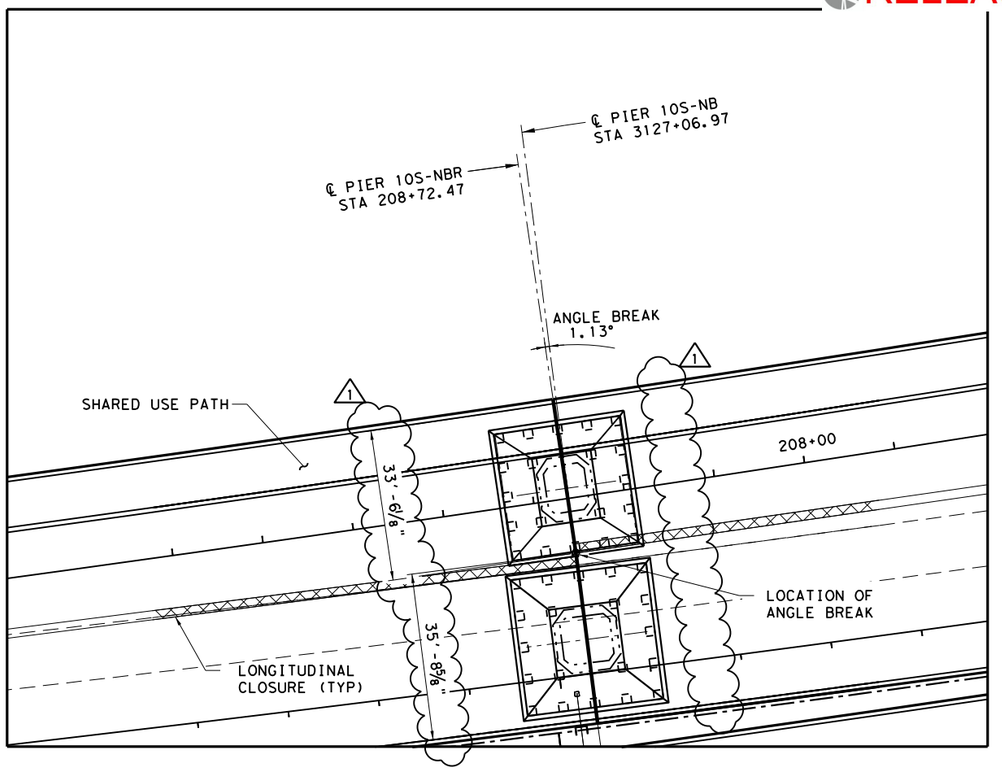
EXPANSION JOINT DETAILS IV

STATE OF TEXAS
CESAR FERNANDES
98112
LICENSED
PROFESSIONAL ENGINEER

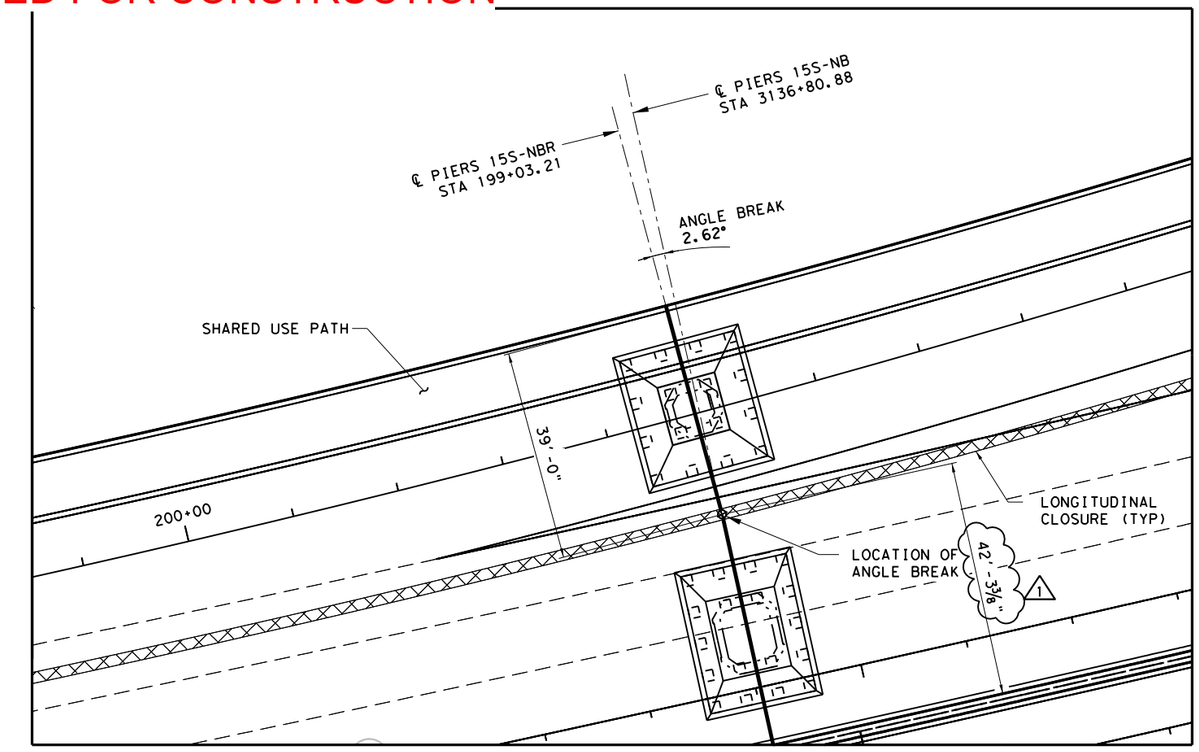
02/25/20

FOR INFORMATION ONLY
SUBMITTED WITH NA11-E

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
RKM	X	(See Title Sheet)		US-181
GRAPHICS DCA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK KLB	TEXAS	CRP	NUECES	A
CHECK WLJ	CONTROL	SECTION	JOB	300B
	0101	06	095	

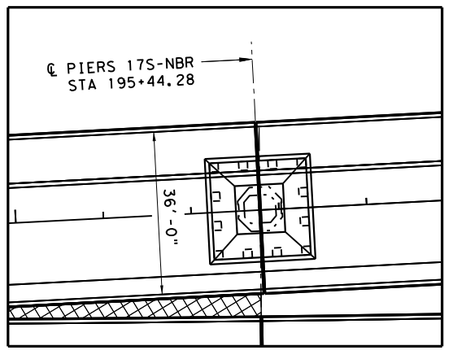


PIERS S10-NB/S10-NBR



PIERS S15-NB/S15-NBR

NOTES:
1. CONTRACTOR TO CONFIRM GEOMETRY FOR EXPANSION JOINT DEVICES PRIOR TO FABRICATION.
2. FOR ADDITIONAL EXPANSION JOINT DETAILS AND NOTES, SEE EXPANSION JOINT DETAILS I THRU IV SHEETS.



PIER S17-NBR

HL-93 LOADING

NO.	DATE	REVISION	APRV
1	12/7/20	MISC REVISIONS	CF

FLATIRON/DRAGADOS LLC

FIGG
TBPE FIRM #F-4883

NDC 0458 South Approach Expansion Joint Revisions.pdf

Texas Department of Transportation ® 2016

US-181 HARBOR BRIDGE

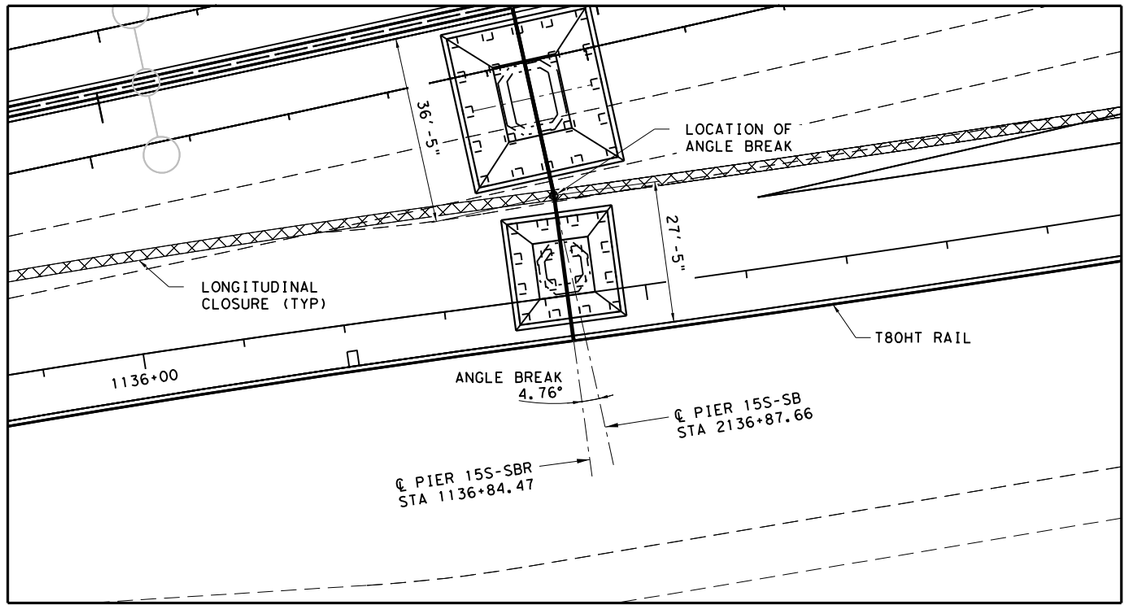
EXPANSION JOINTS DETAIL V

STATE OF TEXAS
CESAR FERNANDES
98112
LICENSED
PROFESSIONAL ENGINEER

12/07/20

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
KLB	X	(See Title Sheet)		US-181
GRAPHICS GAH	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK KLB	TEXAS	CRP	NUECES	A 300C
CHECK MF	CONTROL	SECTION	JOB	
	0101	06	095	

RELEASED FOR CONSTRUCTION



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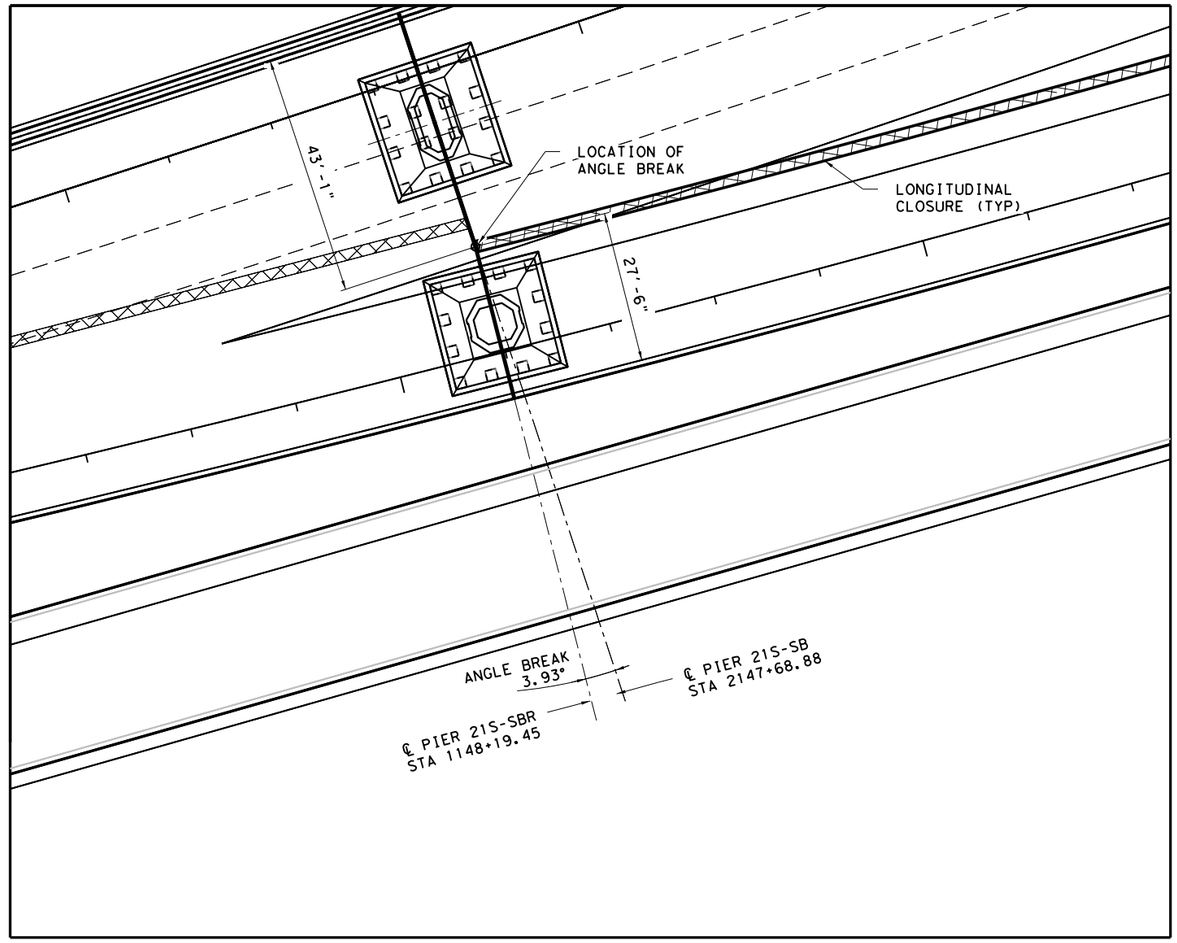

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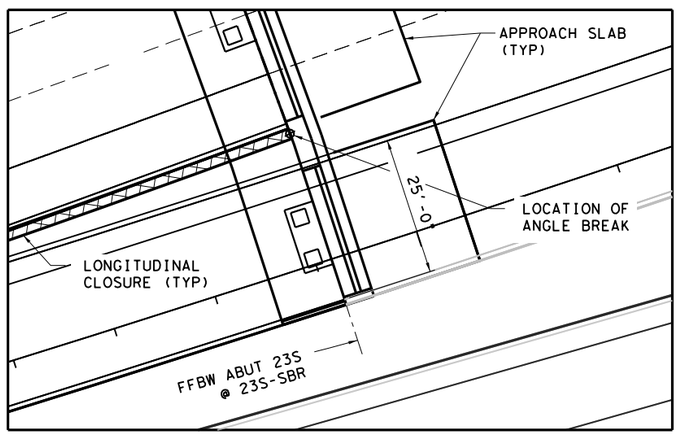

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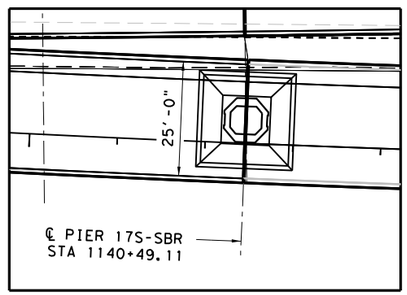


PIER S17-SBR

1

NOTES:
1. CONTRACTOR TO CONFIRM GEOMETRY FOR EXPANSION JOINT DEVICES PRIOR TO FABRICATION.
2. FOR ADDITIONAL EXPANSION JOINT DETAILS AND NOTES, SEE EXPANSION JOINT DETAILS I THRU IV SHEETS.
3. FOR ABUTMENT 23S AND 23SR, USE SEALED A2R-XTRA OR APPROVED EQUAL.

NDC 0458 South Approach Expansion Joint Revisions.pdf

STATE OF TEXAS
CESAR FERNANDES
98112
LICENSED
PROFESSIONAL ENGINEER

12/07/20

HL-93 LOADING

NO.	DATE	REVISION	APRV
1	12/7/20	MISC REVISIONS	CF

FLATIRON/DRAGADOS LLC

FIGG
TBPE FIRM #F-4883

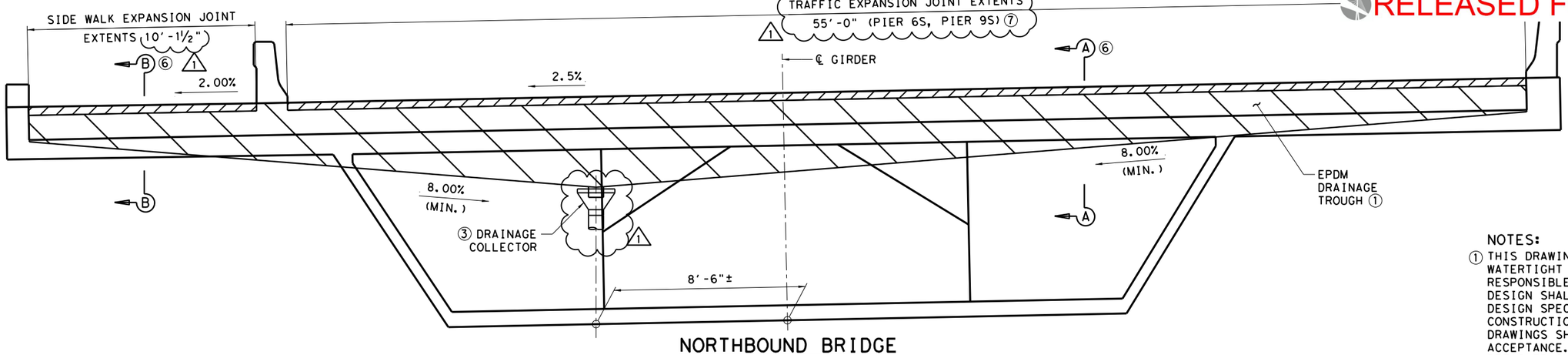
Texas Department of Transportation ® 2016

US-181 HARBOR BRIDGE

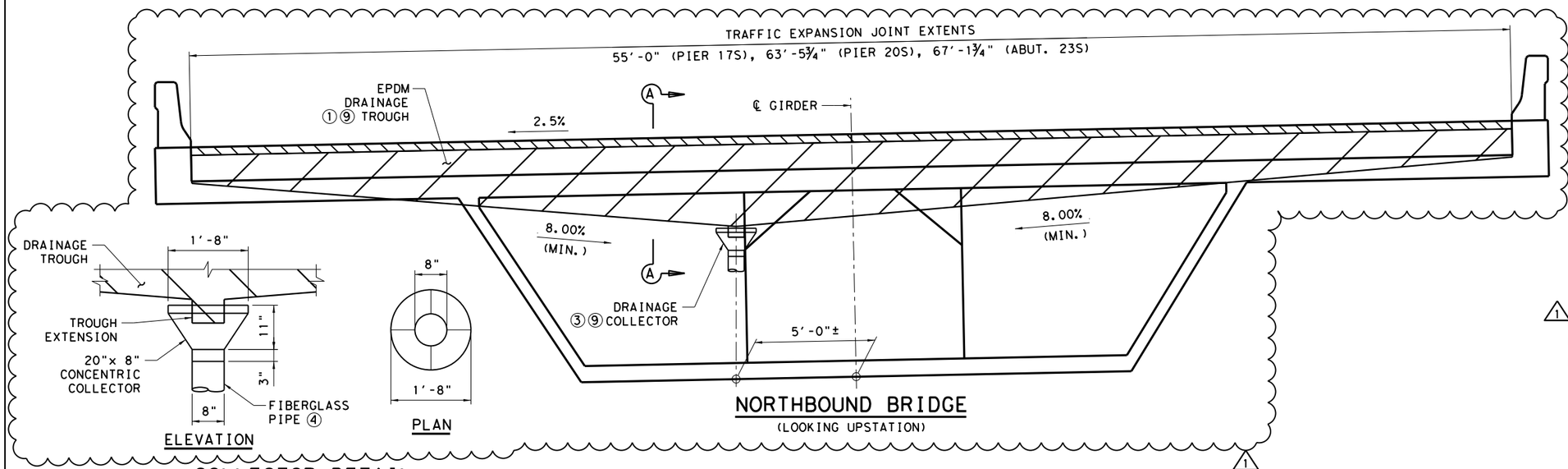
EXPANSION JOINTS DETAILS VI

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
KLB	X	(See Title Sheet)		US-181
GRAPHICS GAH	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK KLB	TEXAS	CRP	NUECES	A 300D
CHECK MF	CONTROL 0101	SECTION 06	JOB 095	

RELEASED FOR CONSTRUCTION

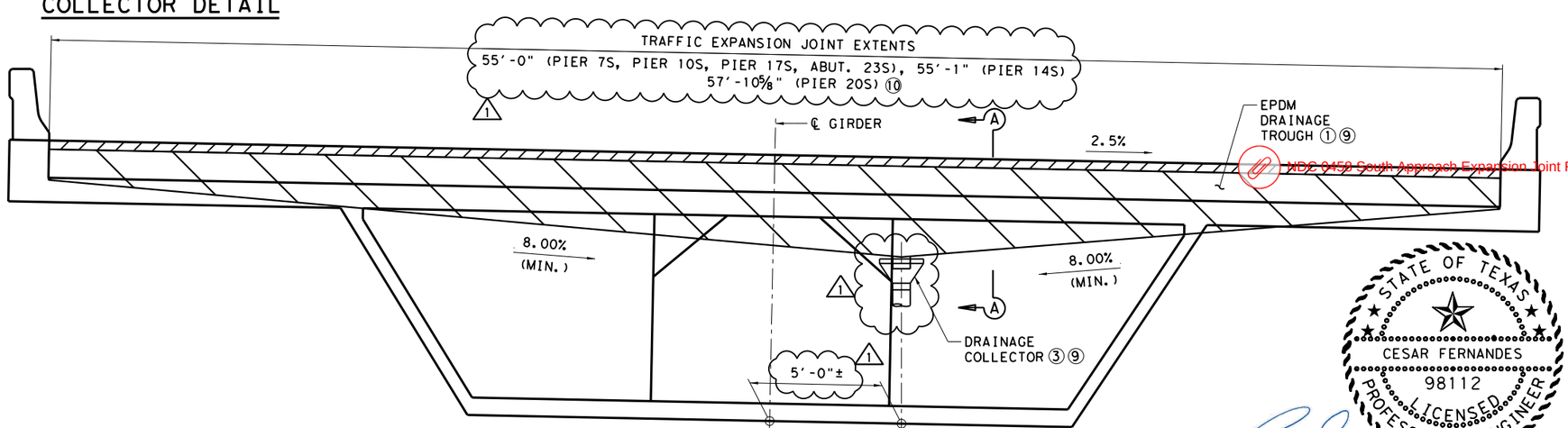


NORTHBOUND BRIDGE
(LOOKING UPSTATION)



NORTHBOUND BRIDGE
(LOOKING UPSTATION)

COLLECTOR DETAIL



SOUTHBOUND BRIDGE
(LOOKING UPSTATION)

NOTES:

① THIS DRAWING IS A SCHEMATIC OF THE REQUIRED WATERTIGHT DRAINAGE TROUGHS. THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF THE TROUGHS. THE DESIGN SHALL CONFORM TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS. COMPLETE SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR ACCEPTANCE. THE SHOP DRAWINGS SHALL INCLUDE A DETAILED INSTALLATION PLAN.

2. THE DRAINAGE TROUGH IS CONTINUOUS AND WATERTIGHT ACROSS THE WIDTH OF THE JOINT, INCLUDING THE PROJECTION OF THE MEDIAN TRAFFIC RAILING. THE TROUGH SHALL BE DESIGNED SO THAT THERE IS A MINIMUM TRUE CROSS-SLOPE OF 8.00% AT ALL JOINT OPENINGS AND SUCH THAT THERE IS NO TENSION ON THE TROUGH AT THE MAXIMUM JOINT OPENING.

③ SEE THE DRAINAGE DRAWINGS FOR PIPING BEYOND THE DRAINAGE COLLECTOR.

④ DRAINAGE COLLECTOR AND DRAINAGE TROUGH SHALL BE DESIGNED SUCH THAT ALL WATER IN THE TROUGH ENTERS THE PIPING SYSTEM.

5. THE DRAINAGE TROUGH SHALL BE DESIGNED FOR FUTURE REPLACEMENT BY REMOVING SECTIONS OF THE PLATE ASSEMBLES DURING REPLACEMENT.

⑥ FOR ADDITIONAL NOTES SEE EXPANSION JOINT DETAILS II. FOR SECTIONS A-A AND B-B, SEE EXPANSION JOINT DETAILS II AND III SHEETS.

⑦ PIER 9S-NB HAS A DUAL BOX CROSS SECTION ON THE UPSTATION SIDE.

8. FOR ABUTMENT 23S AND 23SR, USE SEALED A2R-XTRA OR APPROVED EQUAL.

△1 ⑨ DRAINAGE COLLECTOR AND EPDM DRAINAGE TROUGH ARE NOT REQUIRED AT ABUT. 23S WHERE A STRIPSEAL TYPE EXPANSION JOINT WILL BE USED.

⑩ PIERS 14S-SB AND 20S-SB HAS A DUAL BOX CROSS SECTION ON THE UPSTATION SIDE.

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FLATIRON/DRAGADOS LLC

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MDC 9450 South Approach Expansion Joint Revisions.pdf

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US-181 HARBOR BRIDGE

EXPANSION JOINT DETAILS VII

STATE OF TEXAS
CESAR FERNANDES
98112
LICENSED PROFESSIONAL ENGINEER

12/07/20

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
KLB	X	(See Title Sheet)		US-181
GRAPHICS GAH	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK MF	TEXAS	CRP	NUECES	A 300E
CHECK KLB	CONTROL 0101	SECTION 06	JOB 095	

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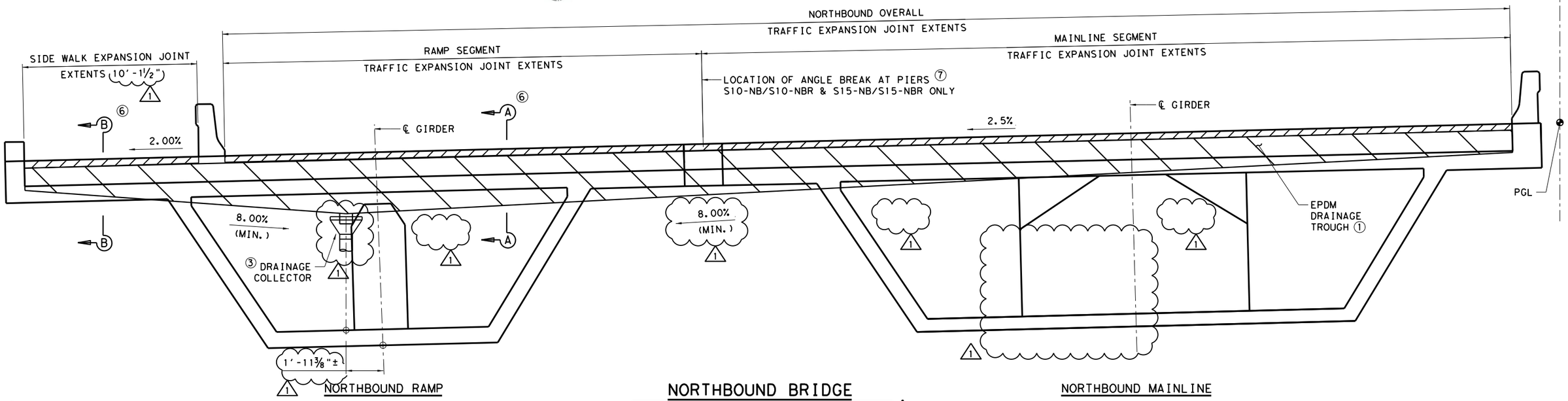

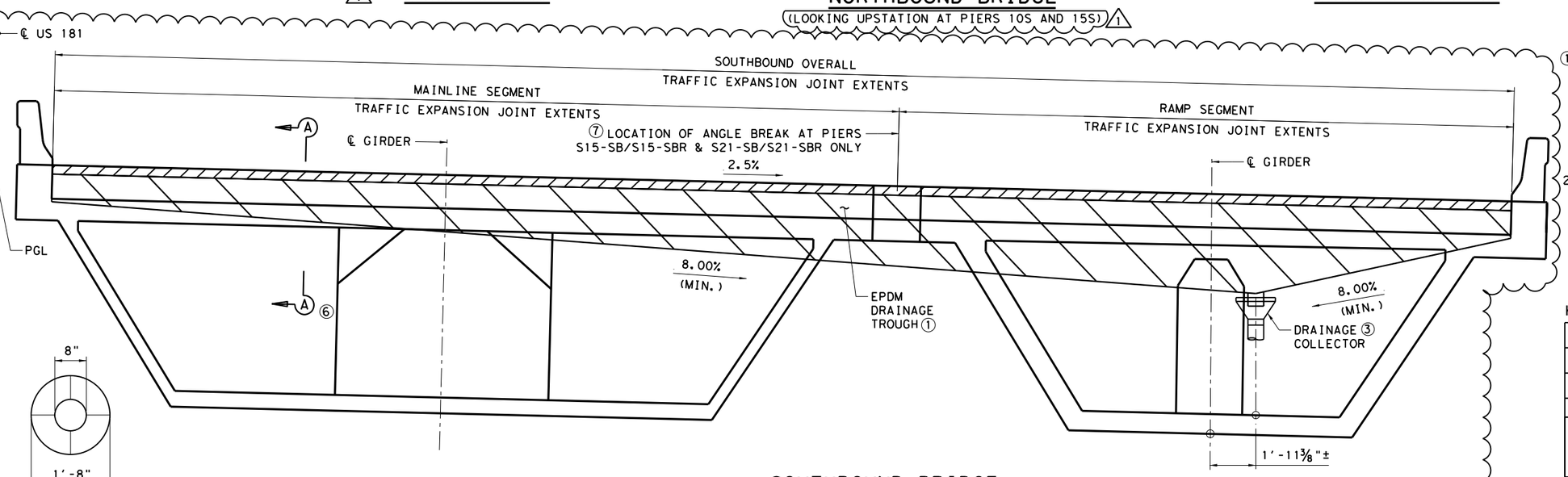

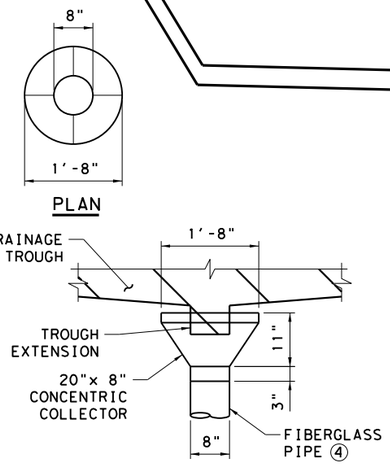

JOINT WIDTH		
PIERS	MAINLINE	RAMP
S10-NB/S10-NBR	35′-8⅝"	22′-0⅛"
S15-NB/S15-NBR	42′-3⅝"	27′-6"
S15-SB/S15-SBR	36′-5"	27′-5"
S21-SB/S21-SBR	43′-1"	27′-6"

NOTES:
① THIS DRAWING IS A SCHEMATIC OF THE REQUIRED WATERTIGHT DRAINAGE TROUGHS. THE FABRICATOR IS RESPONSIBLE FOR THE DESIGN OF THE TROUGHS. THE DESIGN SHALL CONFORM TO THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS. COMPLETE SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR ACCEPTANCE. THE SHOP DRAWINGS SHALL INCLUDE A DETAILED INSTALLATION PLAN.
2. THE DRAINAGE TROUGH IS CONTINUOUS AND WATERTIGHT ACROSS THE WIDTH OF THE JOINT, INCLUDING THE PROJECTION OF THE MEDIAN TRAFFIC RAILING. THE TROUGH SHALL BE DESIGNED SO THAT THERE IS A MINIMUM TRUE CROSS-SLOPE OF 8.00% AT ALL JOINT OPENINGS AND SUCH THAT THERE IS NO TENSION ON THE TROUGH AT THE MAXIMIUM JOINT OPENING.

NOTES (CONT):
③ SEE THE DRAINAGE DRAWINGS FOR PIPING BEYOND THE DRAINAGE COLLECTOR.
4. DRAINAGE COLLECTOR AND DRAINAGE TROUGH SHALL BE DESIGNED SUCH THAT ALL WATER IN THE TROUGH ENTERS THE PIPING SYSTEM.
5. THE DRAINAGE TROUGH SHALL BE DESIGNED FOR FUTURE REPLACEMENT BY REMOVING SECTIONS OF THE PLATE ASSEMBLES DURING REPLACEMENT.
⑥ FOR ADDITIONAL NOTES SEE EXPANSION JOINT DETAILS II. FOR SECTIONS A-A AND B-B, SEE EXPANSION JOINT DETAILS II AND III SHEETS.
⑦ ANGLE BREAK LOCATIONS PROVIDED ON EXPANSION JOINT DETAILS V AND VI SHEETS.

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NO.	DATE	REVISION	APRV
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FLATIRON/DRAGADOS LLC
FIGG TBPE FIRM #F-4883

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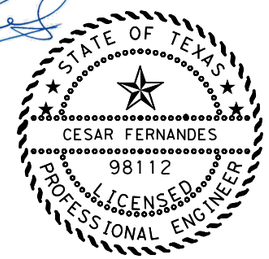
US-181 HARBOR BRIDGE

EXPANSION JOINT DETAILS VIII



12/07/20

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
KLB	X	(See Title Sheet)		US-181
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
GAH	TEXAS	CRP	NUECES	A 300F
CHECK	CONTROL	SECTION	JOB	
MF	0101	06	095	
CHECK				
KLB				