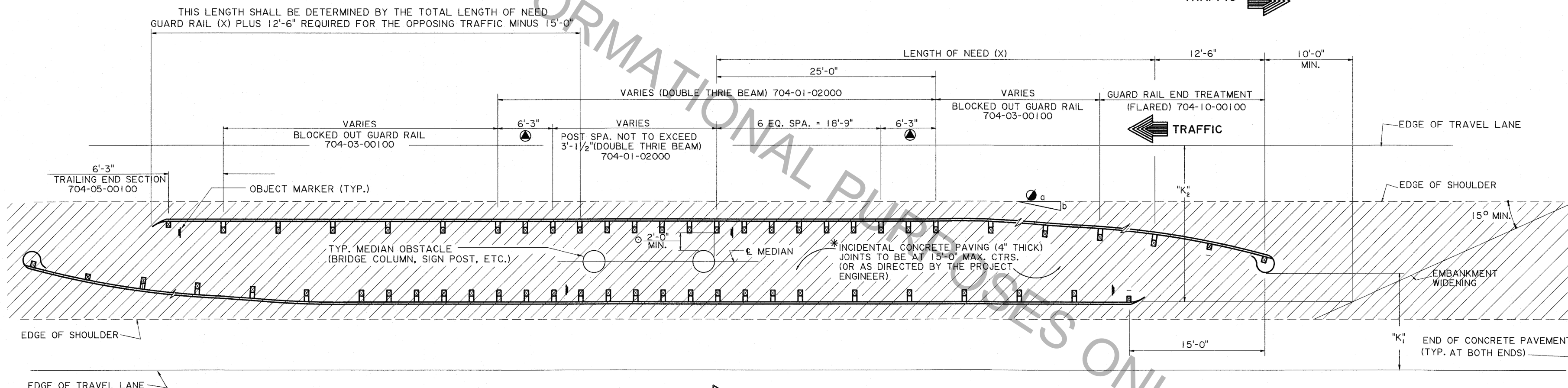


GUARD RAIL FOR MEDIAN OBSTACLE - PLAN VIEW

(WHEN "K" ≥ L_c)
(L_c = CLEAR ZONE DISTANCE)
LAYOUT SAME FOR OPPOSITE SIDE OF MEDIAN BUT IN OPPOSITE DIRECTION.

THIS LENGTH SHALL BE DETERMINED BY THE TOTAL LENGTH OF NEED GUARD RAIL (X) PLUS 12'-6" REQUIRED FOR THE OPPOSING TRAFFIC MINUS 15'-0"



GUARD RAIL FOR MEDIAN OBSTACLE - PLAN VIEW

(ONLY WHEN "K" < L_c AND "K" > L_c)
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'-1 1/2" 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 (L_c) 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.

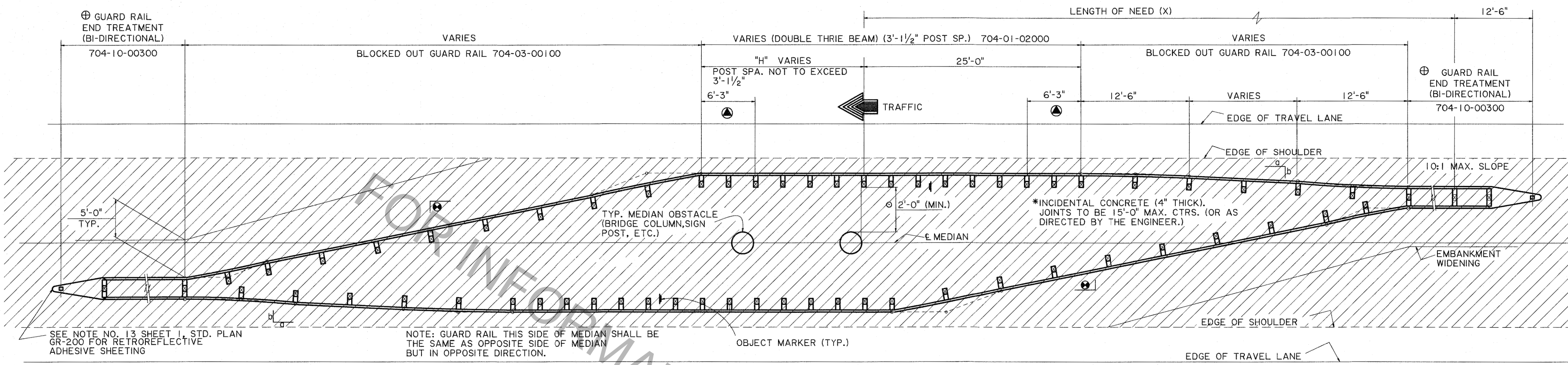
6'-3" W BEAM/THRIE BEAM TRANSITION SECTION.

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.

SHEET NUMBER	PARISH	FEDERAL PROJECT	DATE	OF
			OCT. 2008	1 OF 8
DESIGNED	CHECKED	DATE	SHEET	
			1 OF 8	
K.M.B.		BY		
2-15-17		DATE		
UPDATED FOR 2016 SPECIFICATIONS		REVISION DESCRIPTION		
APPROVED BY		DATE		
CHIEF ENGINEER		6-13-2017		
NAME		P. Williams		
HIGHWAY GUARD RAILS MEDIAN OBSTACLE 2' MIN. CLEARANCE				
BRIDGE AND STRUCTURAL DESIGN				



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'-1/2" 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.

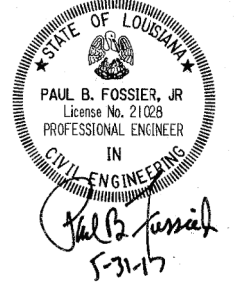
"H" IS THE SHORTEST MULTIPLE OF 6'-3" WHICH EXCEEDS THE HAZARD LENGTH.

⊕ GUARD RAIL SHALL BE FLARED TO MEET THE FRONT THRIE BEAM GUARDRAIL.

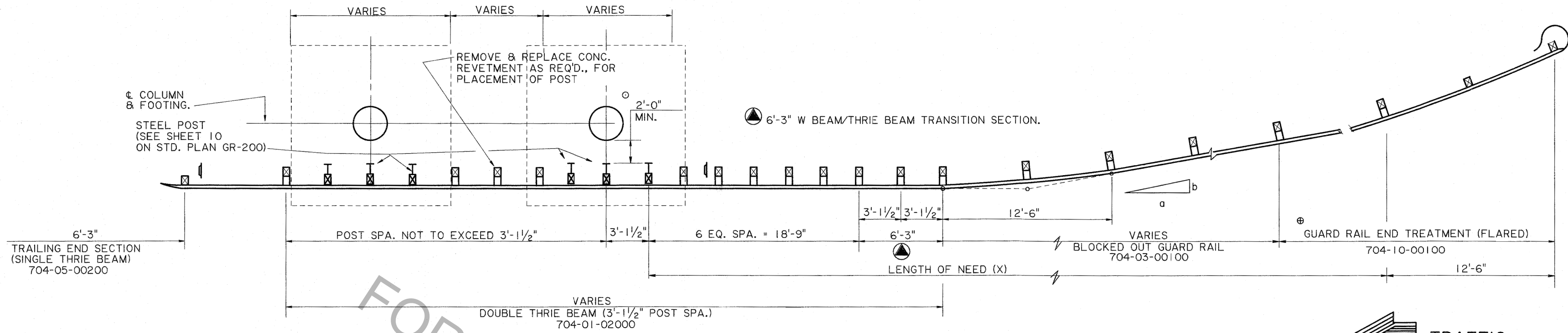
⊕ SEE STANDARD ITEM, 704-10-00300 FOR GUARD RAIL END TREATMENT (BI-DIRECTIONAL).

⊕ 6'-3" W BEAM/THRIE BEAM TRANSITION SECTION.

○ DIMENSION MEASURED FROM BACK FACE OF GUARD RAIL POST TO FRONT FACE OF OBSTACLE.

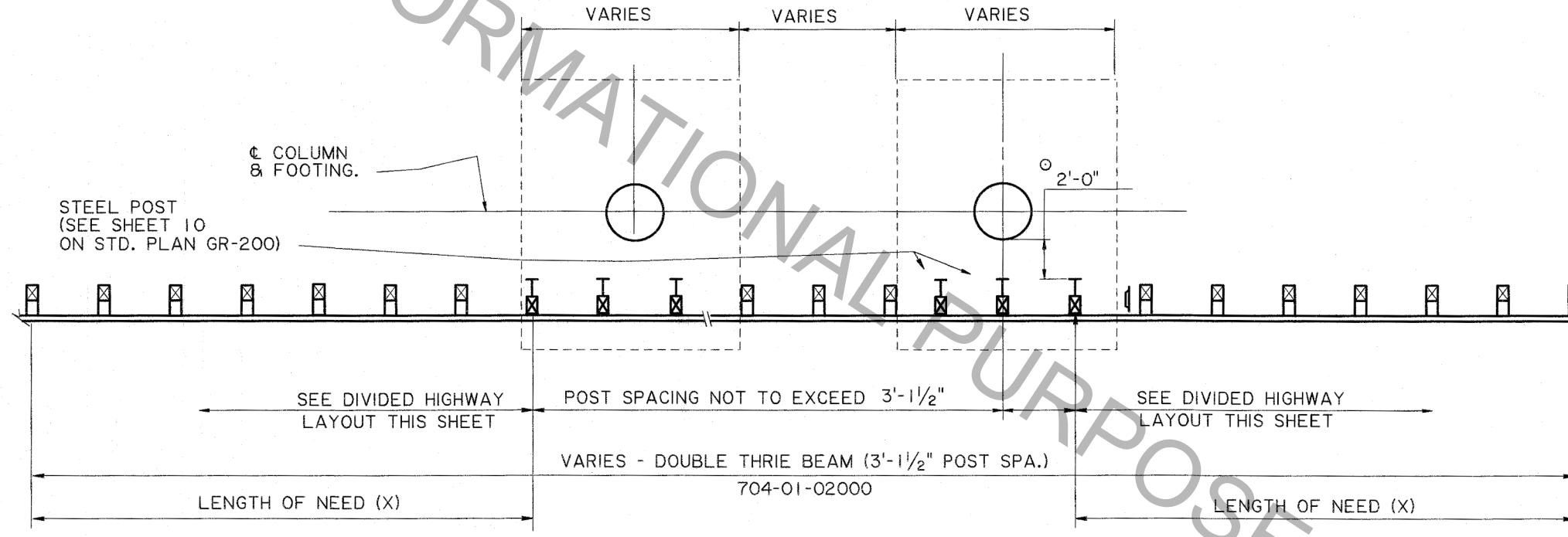


SHEET NUMBER	PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED	CHECKED	DATE	SHEET
2-15-17	K.M.B.	6-13-2017	2 OF 8
UPDATED FOR 2016 SPECIFICATIONS		BY	DATE
REVISION DESCRIPTION		Jessie F. Williams	6-13-2017
APPROVED BY		DATE	
CHIEF ENGINEER			
HIGHWAY GUARD RAILS MEDIAN OBSTACLE 2' MIN. CLEARANCE (DESIRABLE)			
GR-201			
BRIDGE AND STRUCTURAL DESIGN			



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.

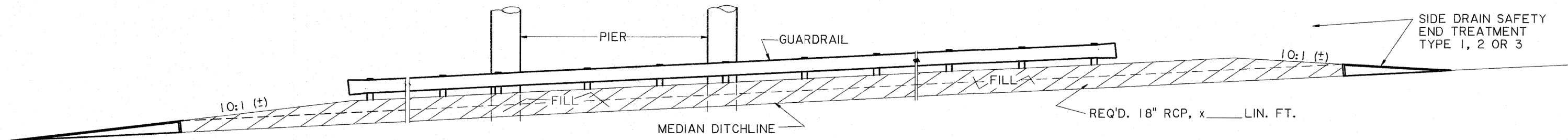
NOTES:

- THIS STANDARD PLAN SHALL BE USED IN CONJUNCTION 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'-1/2" POST SPA.) & 704-01-01000, SINGLE THRIE BEAM (3'-1/2" 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.

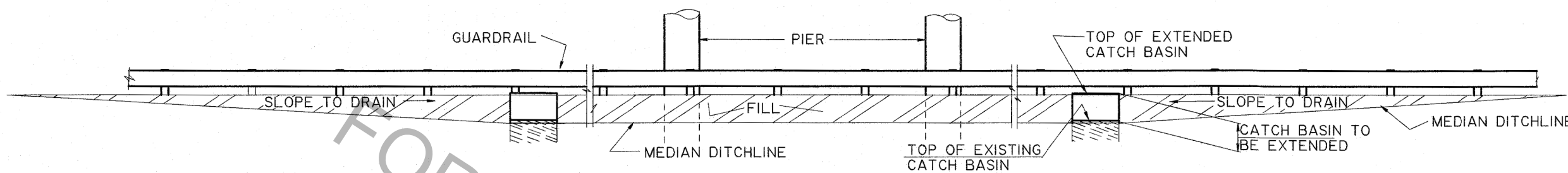


FOR INFORMATIONAL PURPOSES ONLY

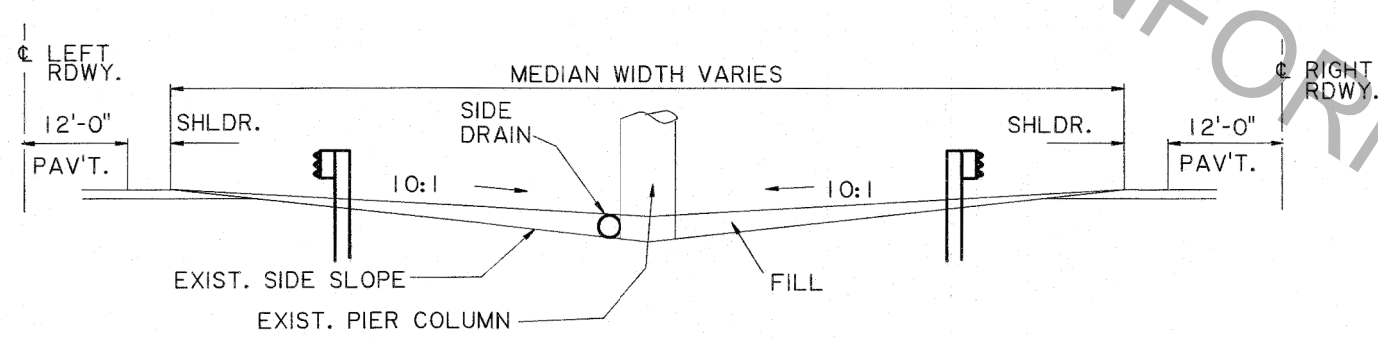
SHEET NUMBER	PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED	CHECKED	DATE	SHEET
2-15-17	DATE	2-15-17	3 OF 8
K.M.B. BY UPDATED FOR 2016 SPECIFICATIONS REVISION DESCRIPTION G. GRASS P. FOSSIER		OCT. 2008 DATE 3 OF 8 SHEET	DATE: 6-13-2017 Jance P. Williams CHIEF ENGINEER
HIGHWAY GUARD RAILS DIVIDED AND UNDIVIDED HIGHWAY SHOULDER APPLICATION (2' MIN. CLEARANCE)			
BRIDGE AND STRUCTURAL DESIGN			



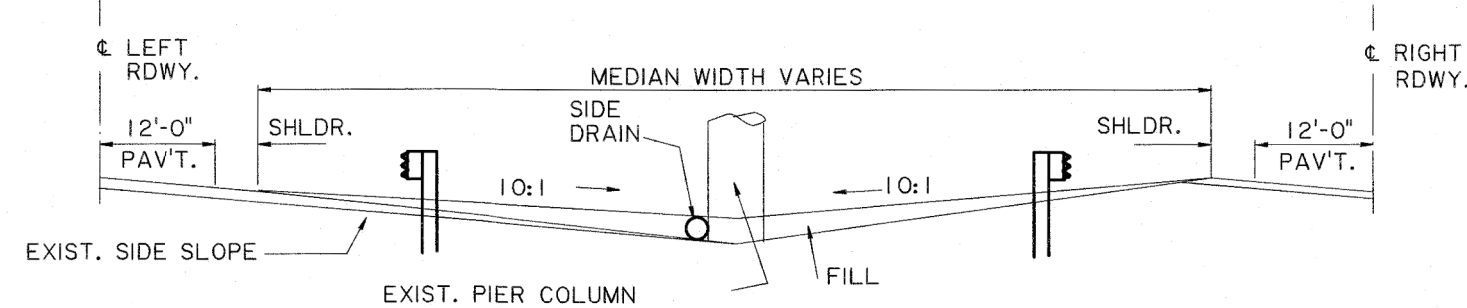
MEDIAN BANK FILL WITH DRAIN FLOW PIPE



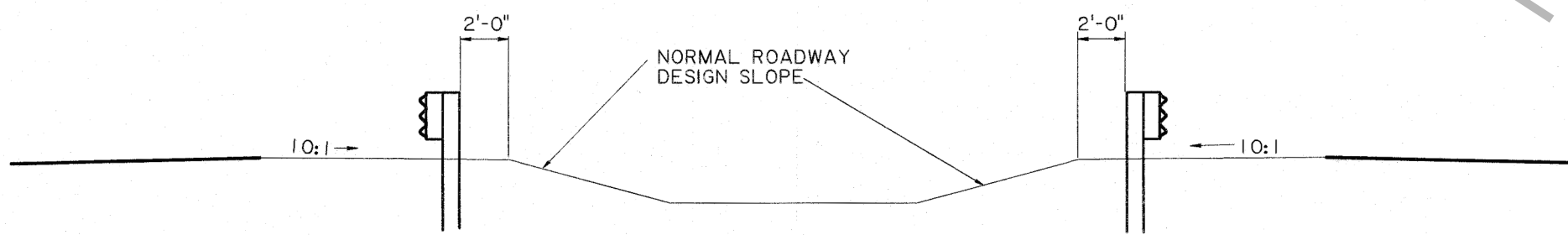
MEDIAN BANK FILL WITH CATCH BASIN



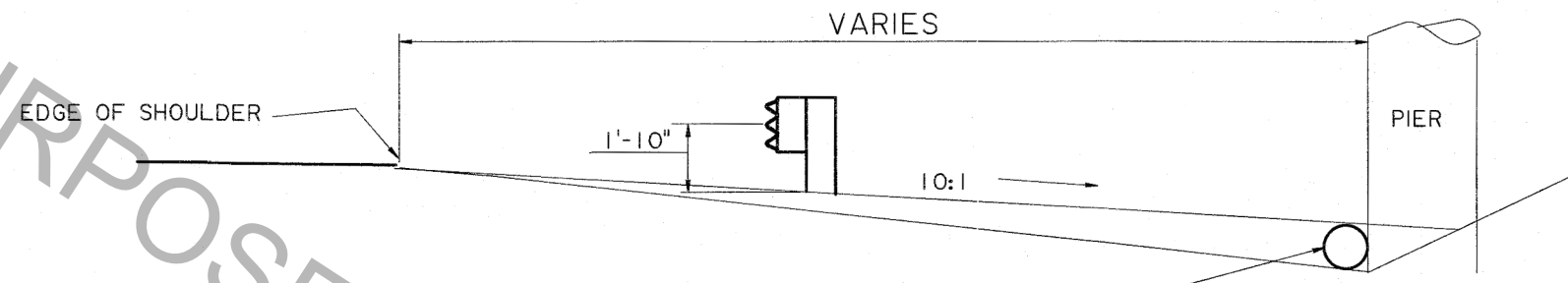
NORMAL SECTION



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.

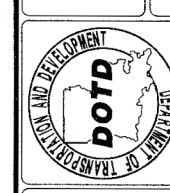
THIS STANDARD PLAN SHALL BE USED IN CONJUNCTION WITH STANDARD PLAN GR-200.

FOR INFORMATIONAL PURPOSES ONLY

SHEET NUMBER	
DESIGNED	
CHECKED	
Detailed by	G. GRASS
Checked by	P. FOSSIER
DATE	OCT. 2008
SHEET	4 OF 8
PARISH	
FEDERAL PROJECT	
STATE PROJECT	
DATE	6-13-2017
BY	Tamara P. Williams
REVISION DESCRIPTION	
DATE	
APPROVED BY	
DATE	2-15-17
REVISION DESCRIPTION	UPDATED FOR 2016 SPECIFICATIONS
CHIEF ENGINEER	

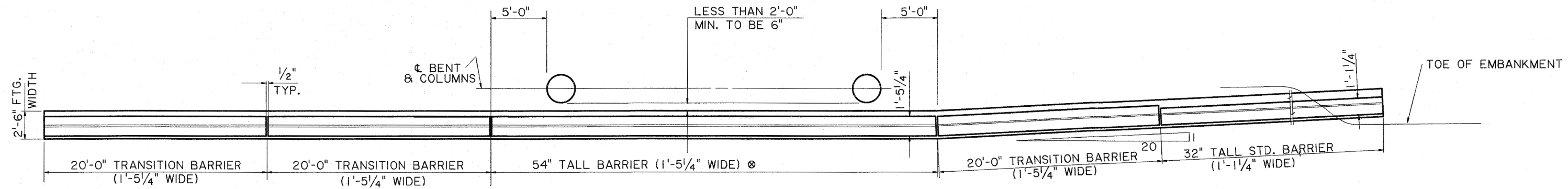


HIGHWAY GUARD RAILS DRAINAGE DETAILS GR-201

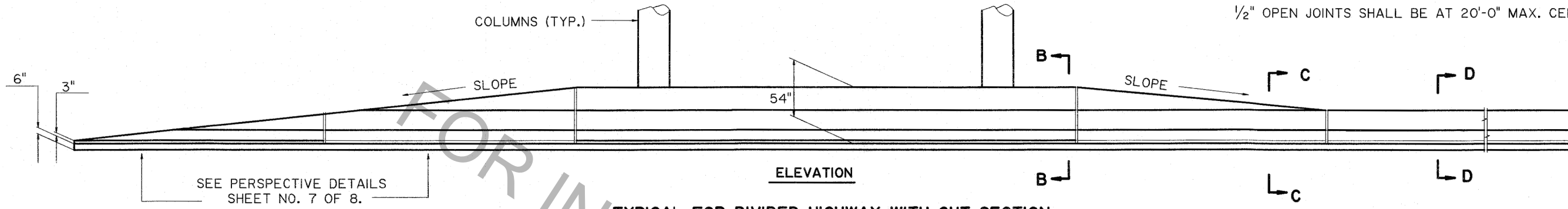


BRIDGE AND STRUCTURAL DESIGN

PAUL B. FOSSIER, JR. License No. 21028 PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

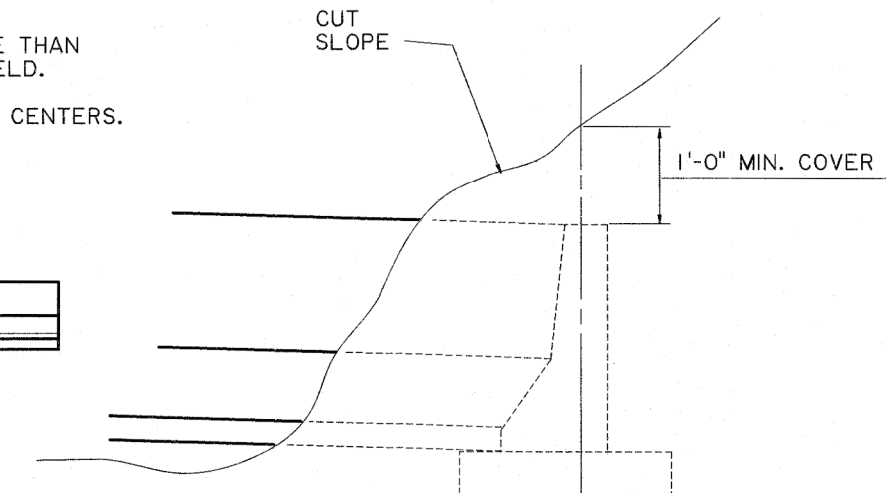


PLAN



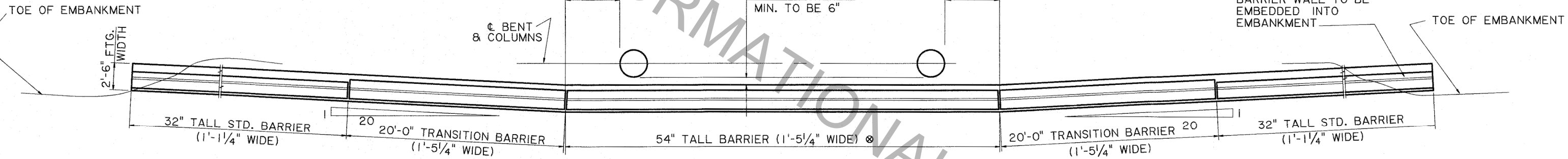
ELEVATION

TYPICAL FOR DIVIDED HIGHWAY WITH CUT SECTION

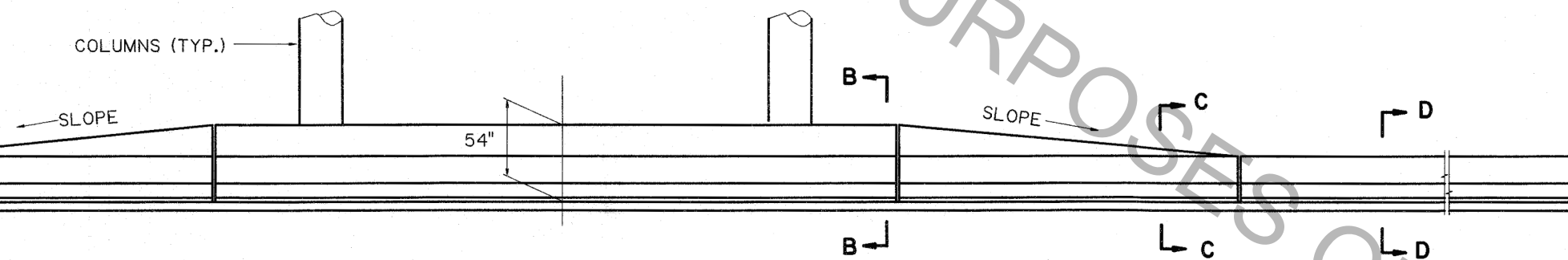


END VIEW

BURIED END OF BARRIER



PLAN



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 RETEMENT.

WHEN GUARD RAILS ARE CONNECTED TO THE CONCRETE BARRIER, THEY SHALL BE PAID FOR UNDER THEIR RESPECTIVE ITEMS.

FILL AND RETEMENT 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.

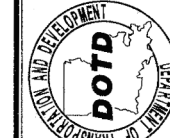
THIS STANDARD PLAN SHALL BE USED IN CONJUNCTION WITH STANDARD PLAN GR-200.

⊗ LENGTH OF 54" BARRIER TO BE DETERMINED BY THE LENGTH OF THE OBJECT TO BE PROTECTED.

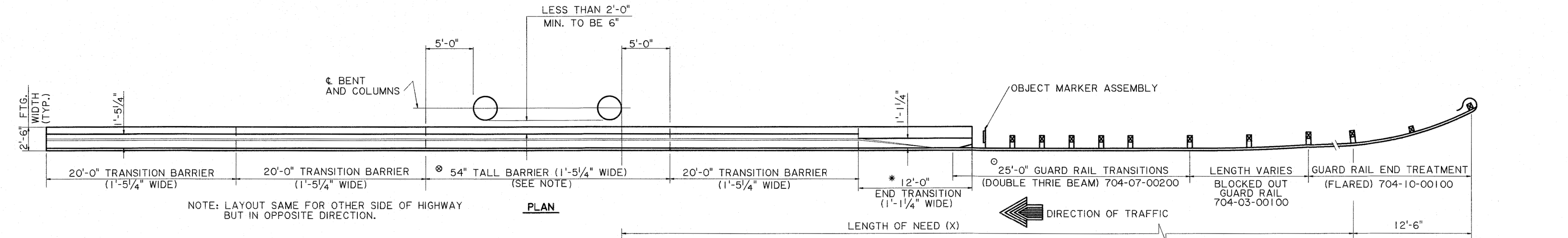
SHEET NUMBER	PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED	CHECKED	DATE	SHEET
DESIGNED BY	CHECKED BY	DATE	SHEET
2-15-17	DATE	2-15-17	5 OF 8
UPDATED FOR 2016 SPECIFICATIONS	REVISION DESCRIPTION	DATE	BY
2-15-17	REVISION DESCRIPTION	2-15-17	J. P. Fossier
APPROVED BY	DATE	DATE	DATE
CHIEF ENGINEER	DATE	DATE	DATE
	DATE	DATE	DATE
	DATE	DATE	DATE



HIGHWAY GUARD RAILS CUT SECTION (LESS THAN 2'-0" CLEARANCE)

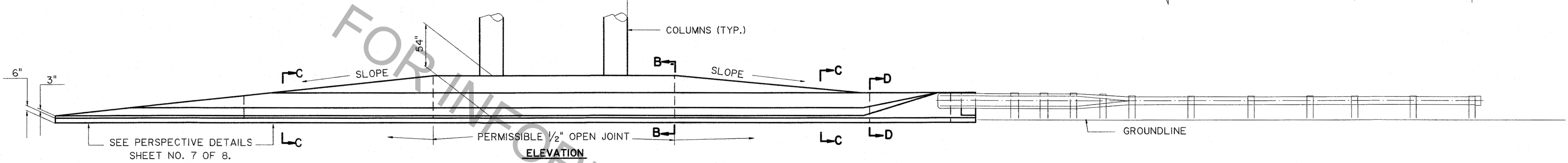


BRIDGE AND STRUCTURAL DESIGN

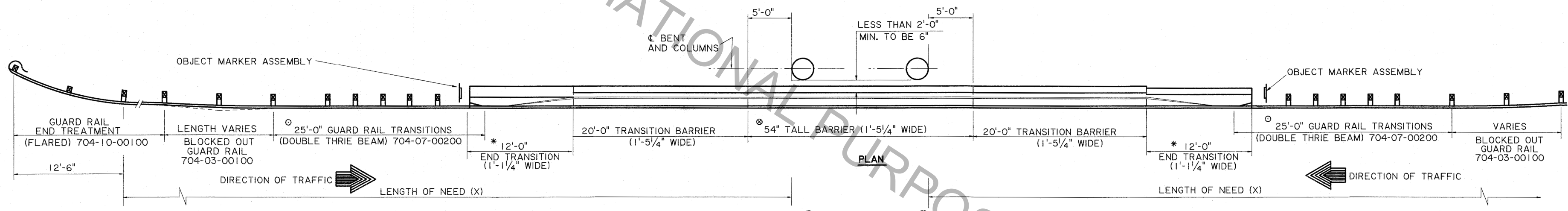


NOTE: LAYOUT SAME FOR OTHER SIDE OF HIGHWAY BUT IN OPPOSITE DIRECTION.

PLAN

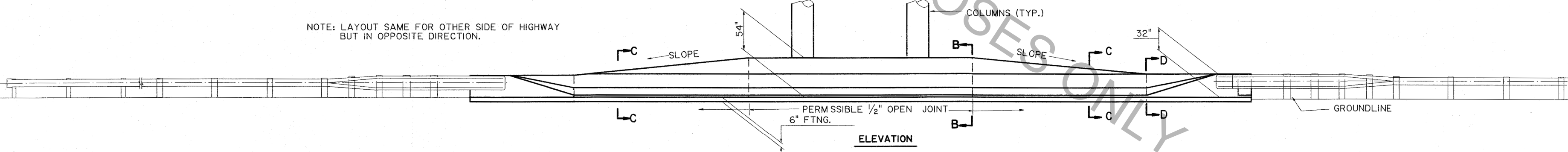


TYPICAL FOR DIVIDED HIGHWAY



NOTE: LAYOUT SAME FOR OTHER SIDE OF HIGHWAY BUT IN OPPOSITE DIRECTION.

PLAN



TYPICAL FOR UNDIVIDED HIGHWAY WITH FILL SECTION

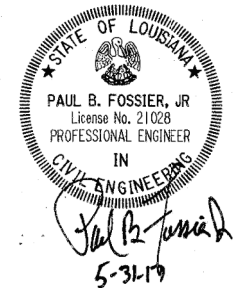
NOTES:

- ⊙ 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.



SHEET NUMBER	PARISH	DESIGNED	DATE
PROJECT	FEDERAL PROJECT	CHECKED	SHEET
PROJECT	DATE	DATE	DATE
PROJECT	PROJECT	PROJECT	PROJECT

G. GRASS
 P. FOSSIER
 OCT. 2008
 6 OF 8

K.M.B.
 BY
 DATE: 6-13-2017

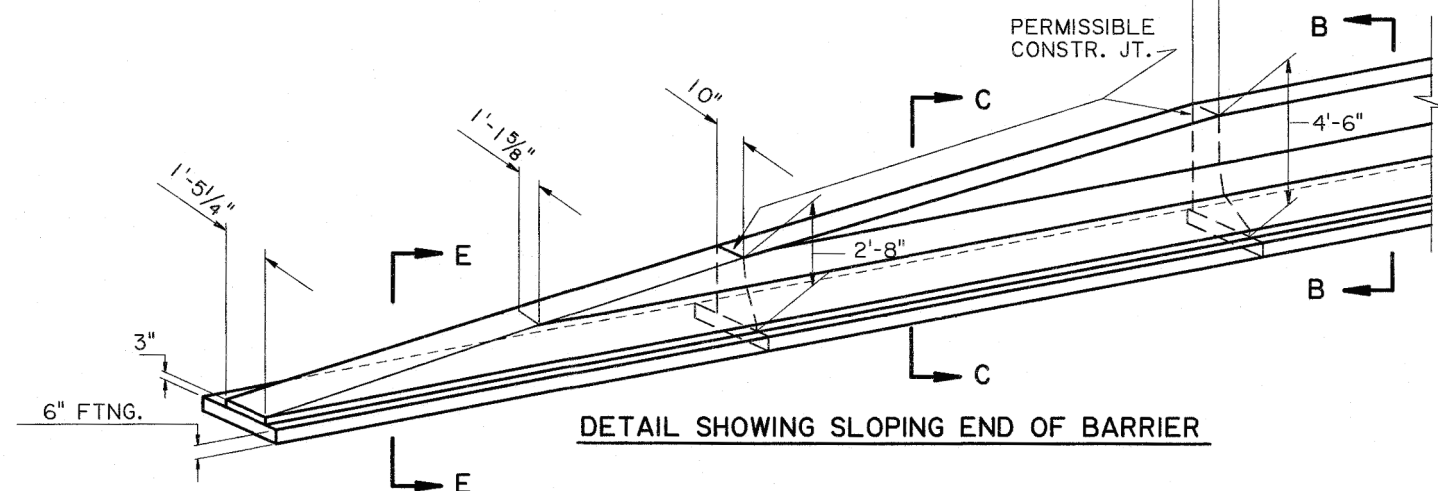
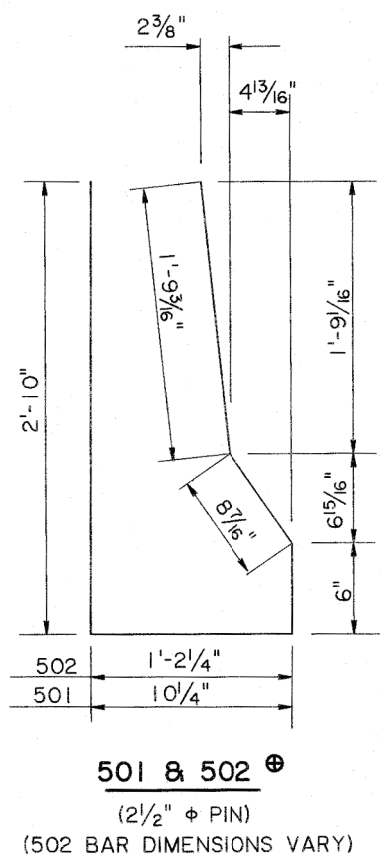
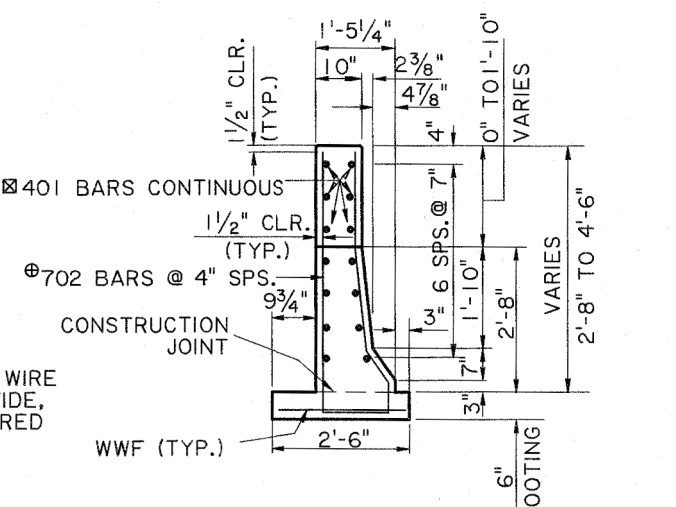
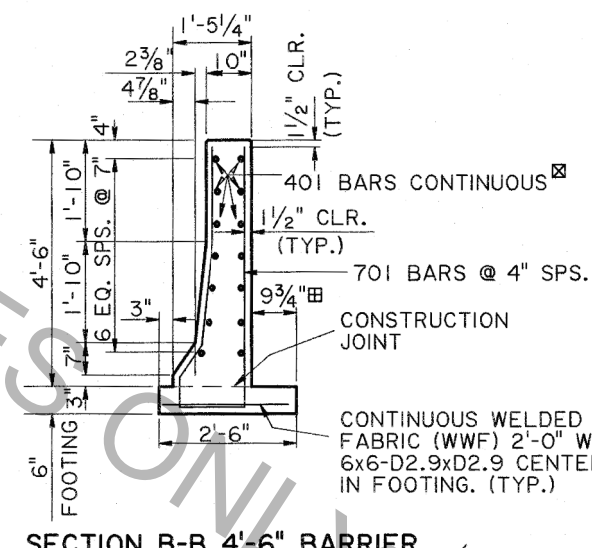
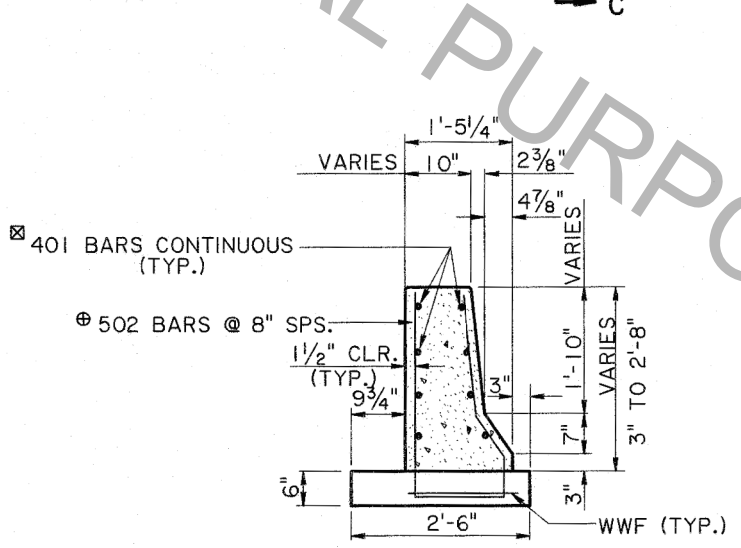
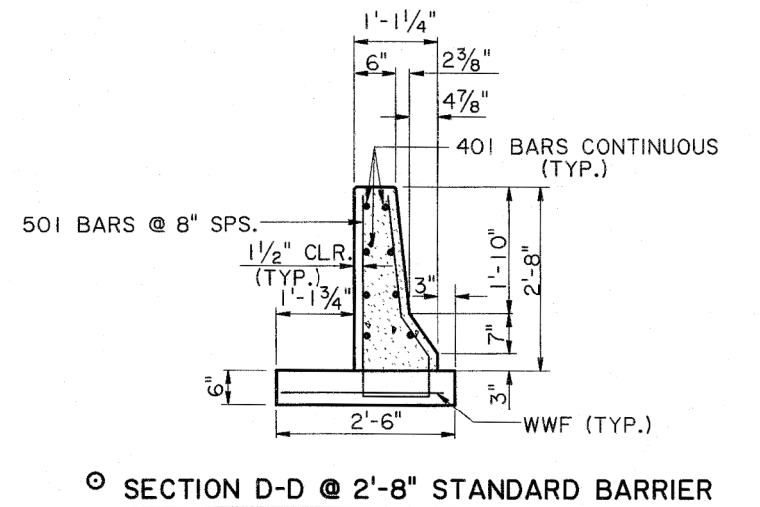
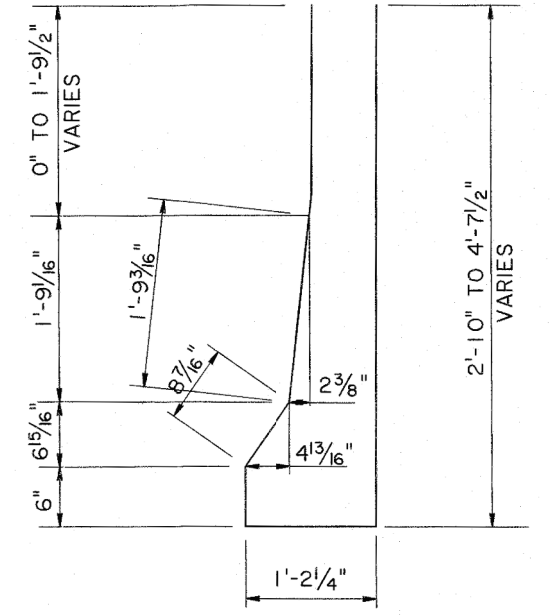
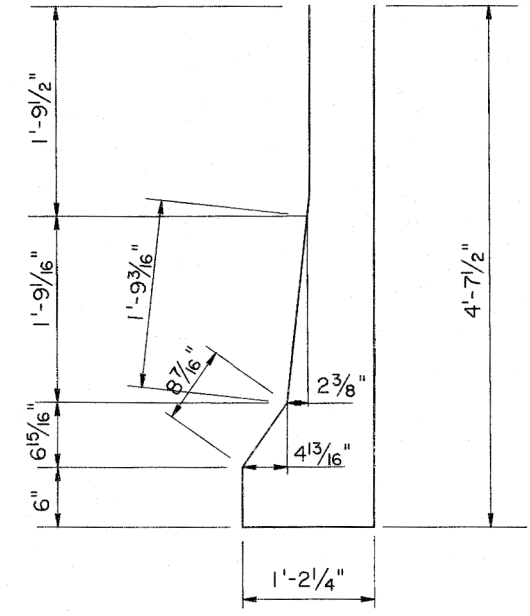
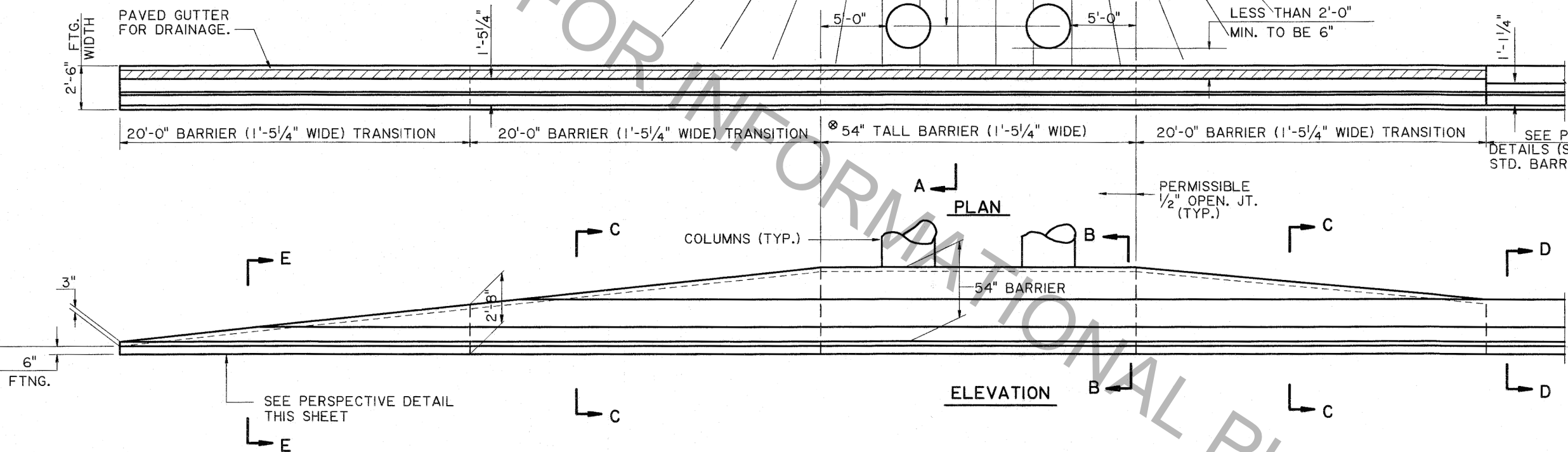
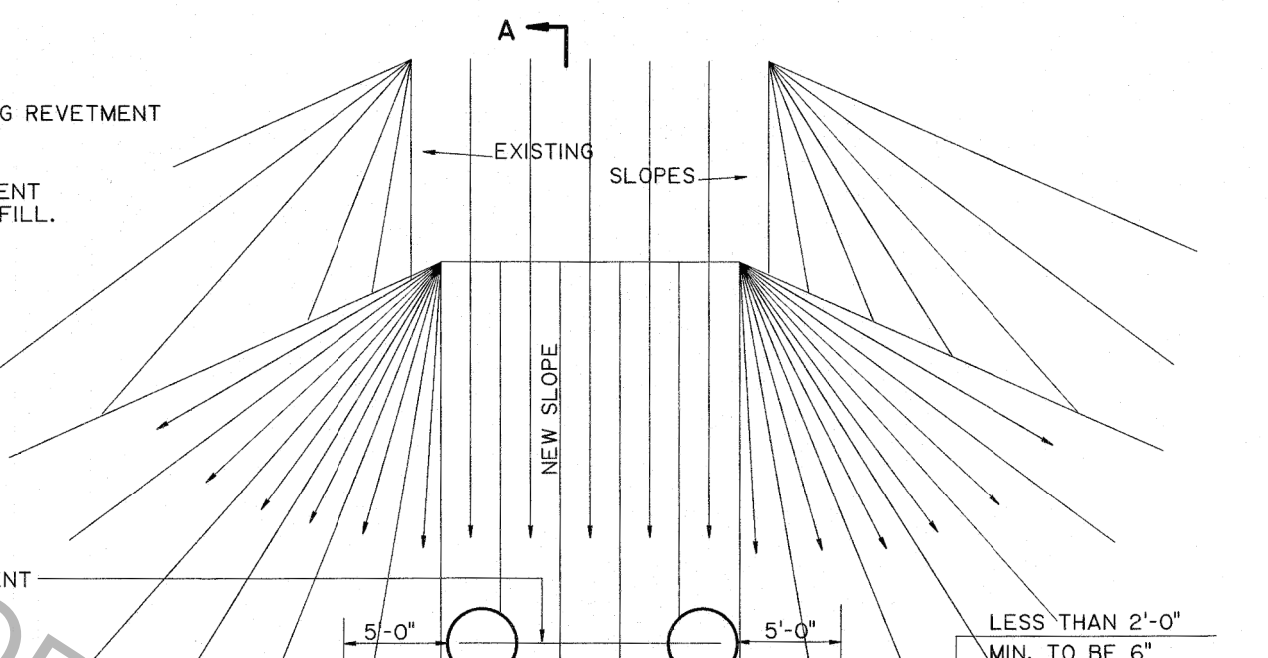
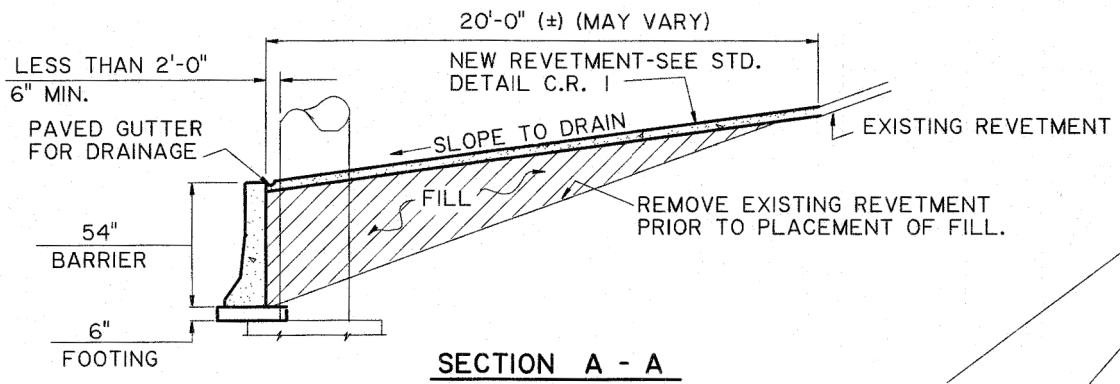
UPDATED FOR 2016 SPECIFICATIONS
 REVISION DESCRIPTION
 DATE: 6-13-2017
 CHIEF ENGINEER: James P. Williams

2-15-17
 APPROVED BY
 CHIEF ENGINEER

STATE OF LOUISIANA
 PROFESSIONAL ENGINEER
 PAUL B. FOSSIER, JR.
 License No. 21028
 CIVIL ENGINEERING
 5-31-19

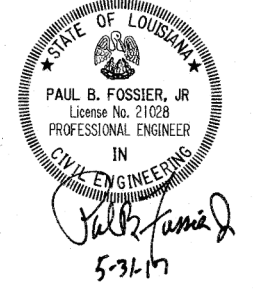
HIGHWAY GUARD RAILS
 FILL SECTION
 (LESS THAN 2'-0" CLEARANCE)
 GR-201

BRIDGE AND STRUCTURAL DESIGN



NOTES

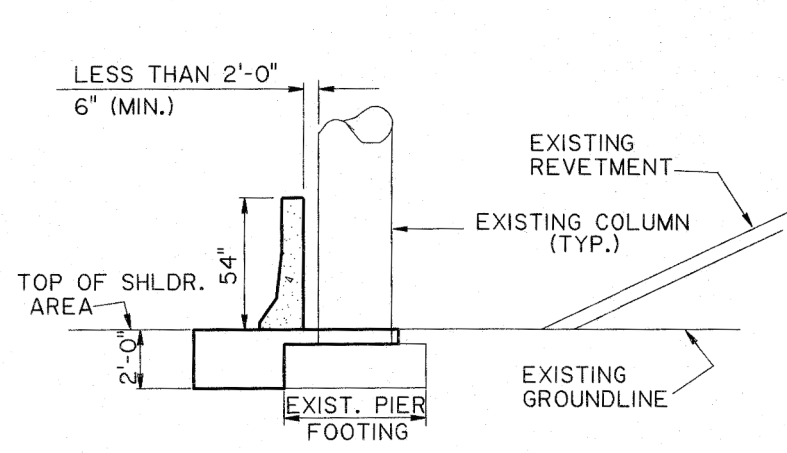
- EXISTING SLOPE SHOWN IS FOR ILLUSTRATION ONLY. (SLOPES VARY AT EACH LOCATION)
- LENGTH OF 54" TALL BARRIER TO BE DETERMINED BY THE LENGTH OF THE OBJECT TO BE PROTECTED.
- 1/2" OPEN JOINTS TO BE AT 20'-0" MAX. CTRS.
- TRAILING END SHOWN IS FOR USE WITH THE FILL SECTIONS.
- FOR TRAILING END ON CUT SECTIONS 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 1/2" 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



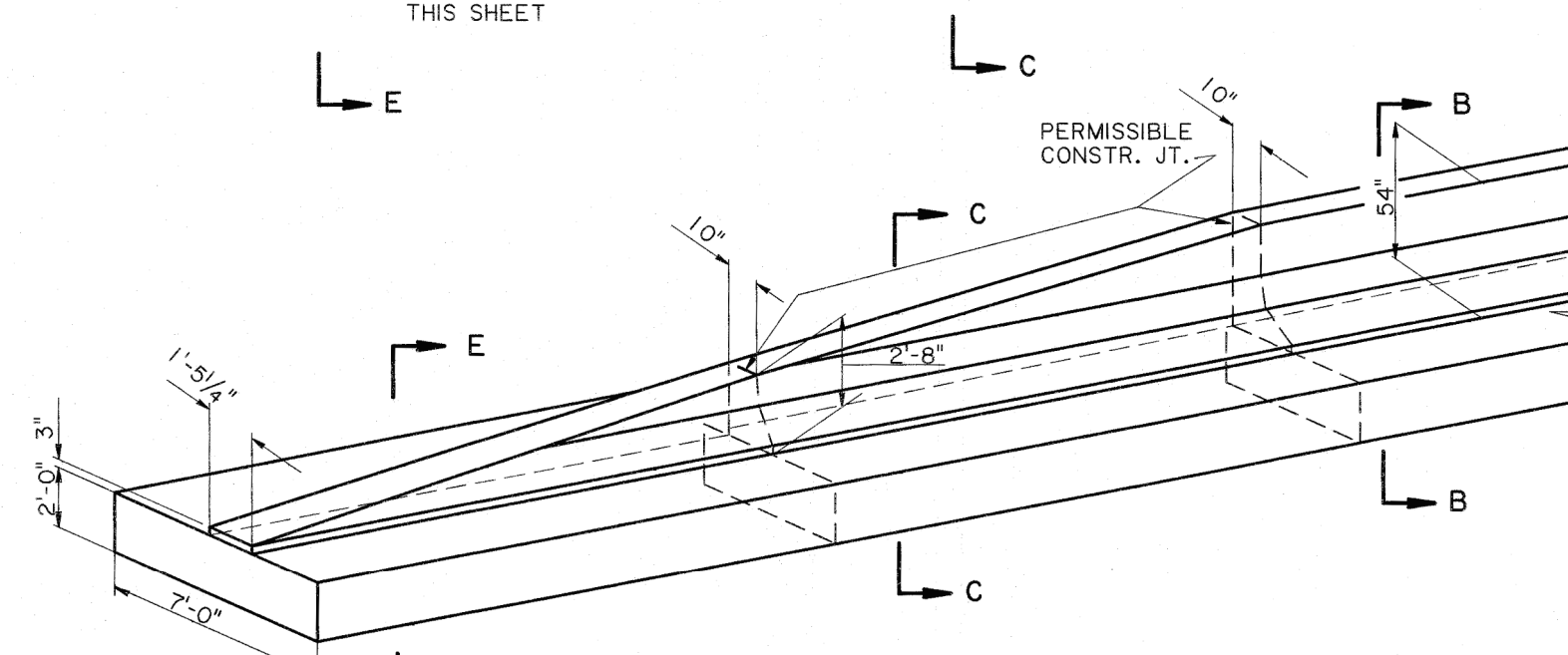
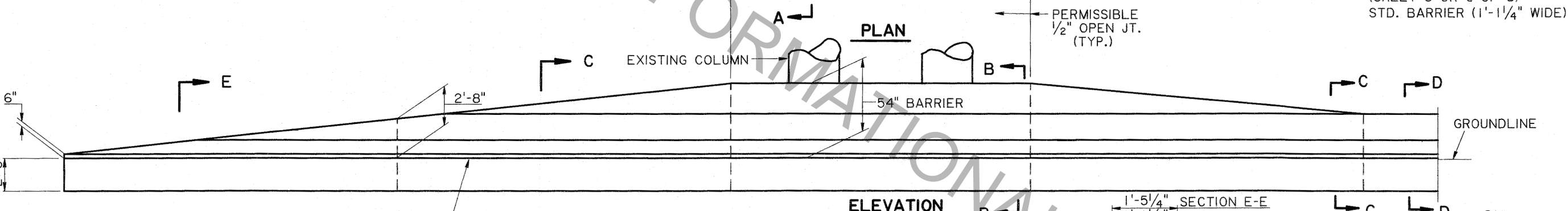
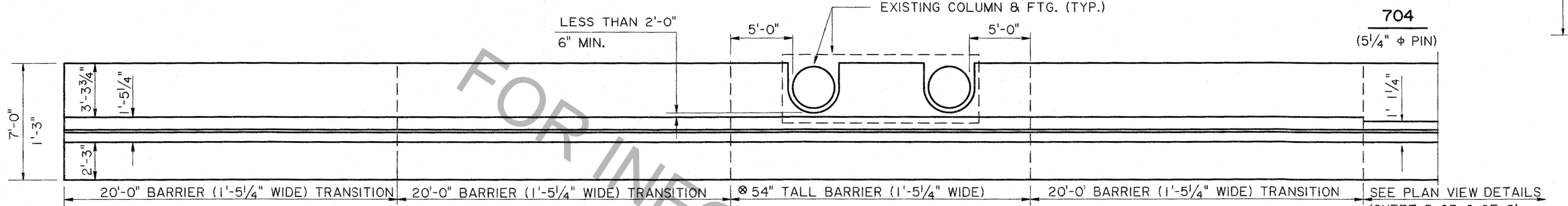
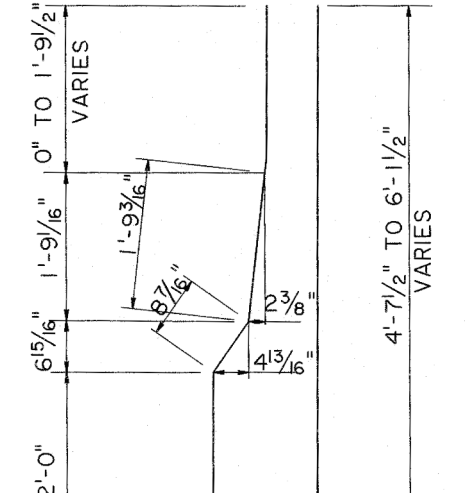
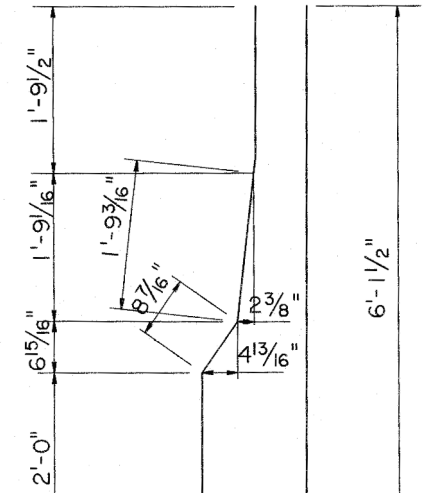
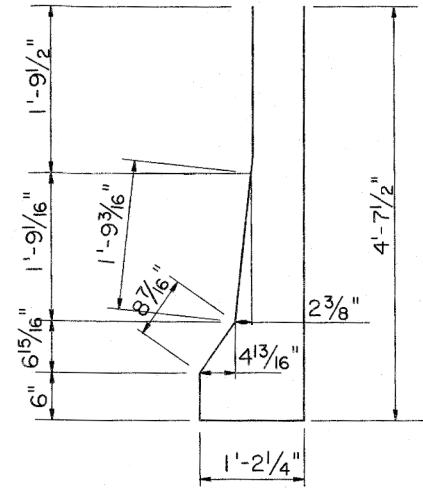
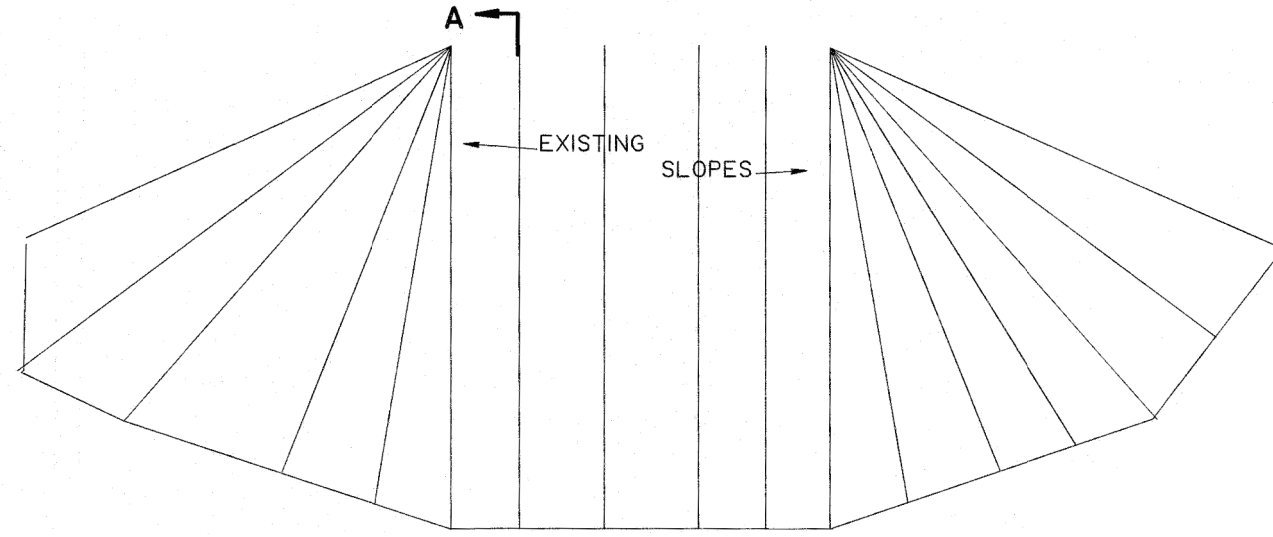
SHEET NUMBER	PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED	CHECKED	DATE	SHEET
BY	DATE	DATE	DATE
REVISION DESCRIPTION	REVISION DESCRIPTION	REVISION DESCRIPTION	REVISION DESCRIPTION
2-15-17	DATE	2-15-17	DATE
UPDATED FOR 2016 SPECIFICATIONS	REVISION DESCRIPTION	DATE	DATE
APPROVED BY	DATE	DATE	DATE
CHIEF ENGINEER	DATE	DATE	DATE
HIGHWAY GUARD RAILS BACKFILL-SUPPORTED BARRIER CUT & FILL SECTION			
BRIDGE AND STRUCTURAL DESIGN			

08:12

6/22/2017

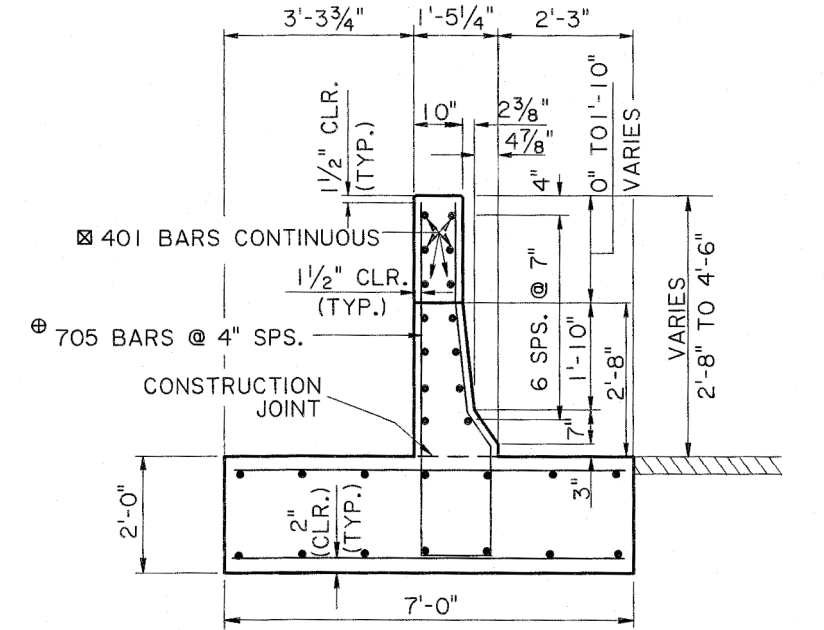
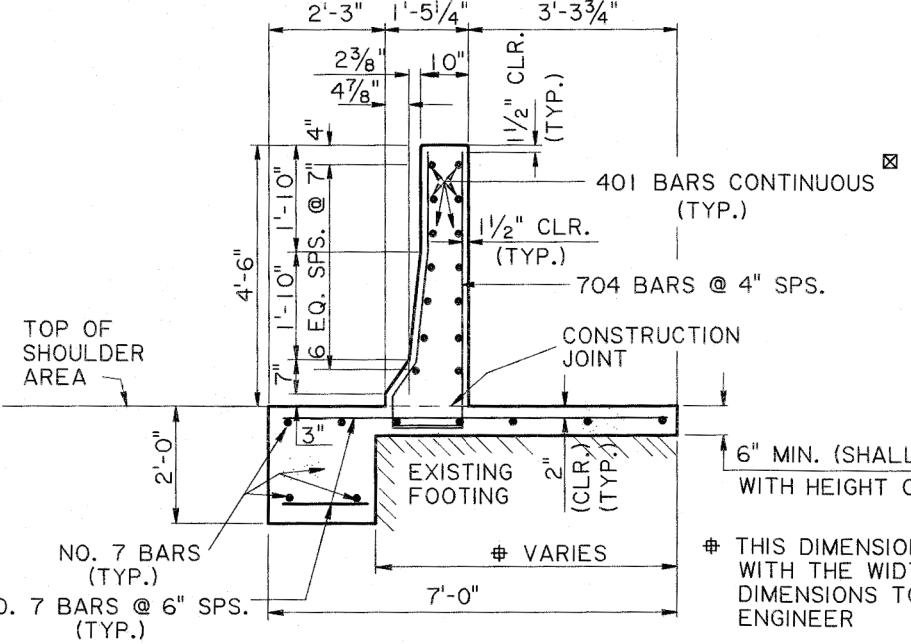
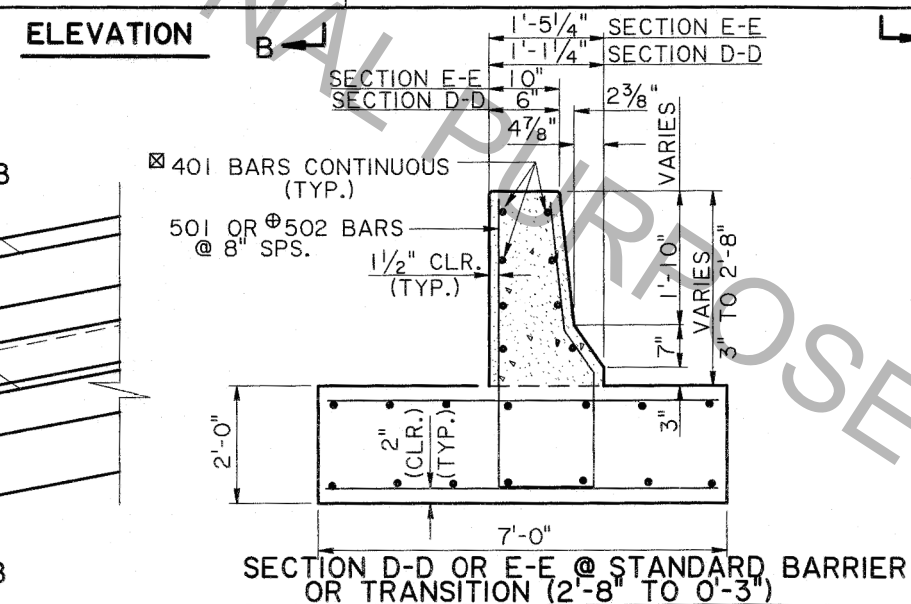


NEW BARRIER FOOTING SHALL BE COPED TO FIT THE EXIST. PIER FOOTING
SECTION A - A

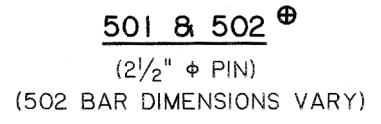


NOTES

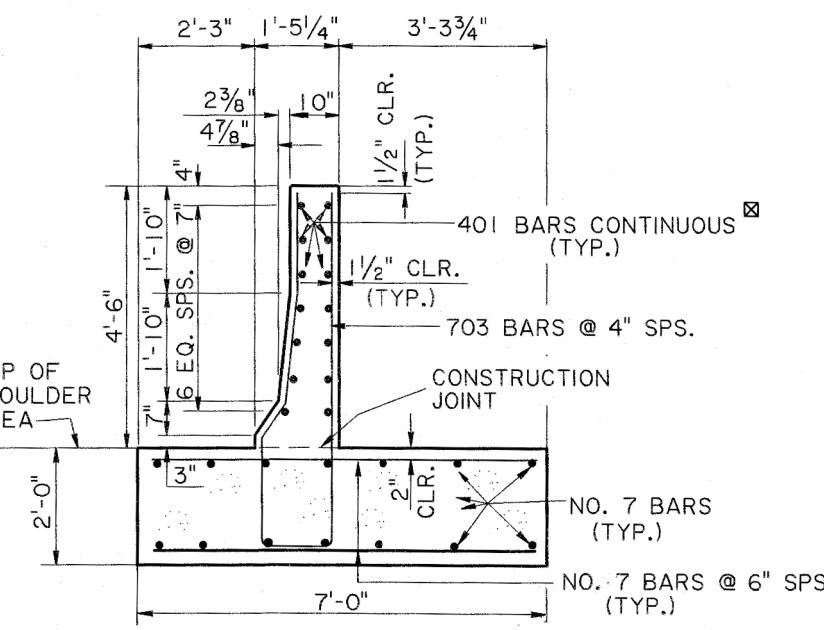
- EXISTING SLOPE SHOWN IS FOR ILLUSTRATION ONLY. (SLOPES VARY AT EACH LOCATION)
- LENGTH OF 54" TALL BARRIER TO BE DETERMINED BY THE LENGTH OF THE OBJECT TO BE PROTECTED
- 1/2" OPEN JOINTS TO BE AT 20'-0" MAX. CTRS.
- TRAILING END SHOWN IS FOR USE WITH THE FILL SECTIONS.
- FOR TRAILING END ON CUT SECTIONS 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 1/2" REQUIRED BAR CLEARANCE



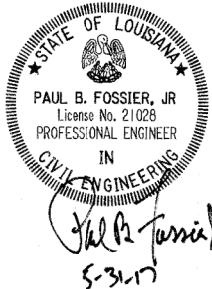
SECTION C-C @ TRANSITION BARRIER (2'-8" TO 4'-6")



501 & 502
(502 BAR DIMENSIONS VARY)



SECTION B-B @ 4'-6" BARRIER



SHEET NUMBER	PARISH	FEDERAL PROJECT	STATE PROJECT
DESIGNED	CHECKED	DATE	SHEET
DATE	REVISION DESCRIPTION	DATE	SHEET
2-15-17	UPDATED FOR 2016 SPECIFICATIONS	6-13-2017	8 OF 8
K.M.B. BY		DATE	
G. GRASS		OCT. 2008	
P. FOSSIER		8 OF 8	
APPROVED BY			
PAUL B. FOSSIER, JR.			
LICENSE NO. 21026			
PROFESSIONAL ENGINEER			
IN			
CIVIL ENGINEERING			
HIGHWAY GUARD RAILS			
PIER PROTECTION SYSTEM			
SELF-SUPPORTING BARRIER			
(CUT & FILL SECTION)			
BRIDGE AND STRUCTURAL DESIGN			