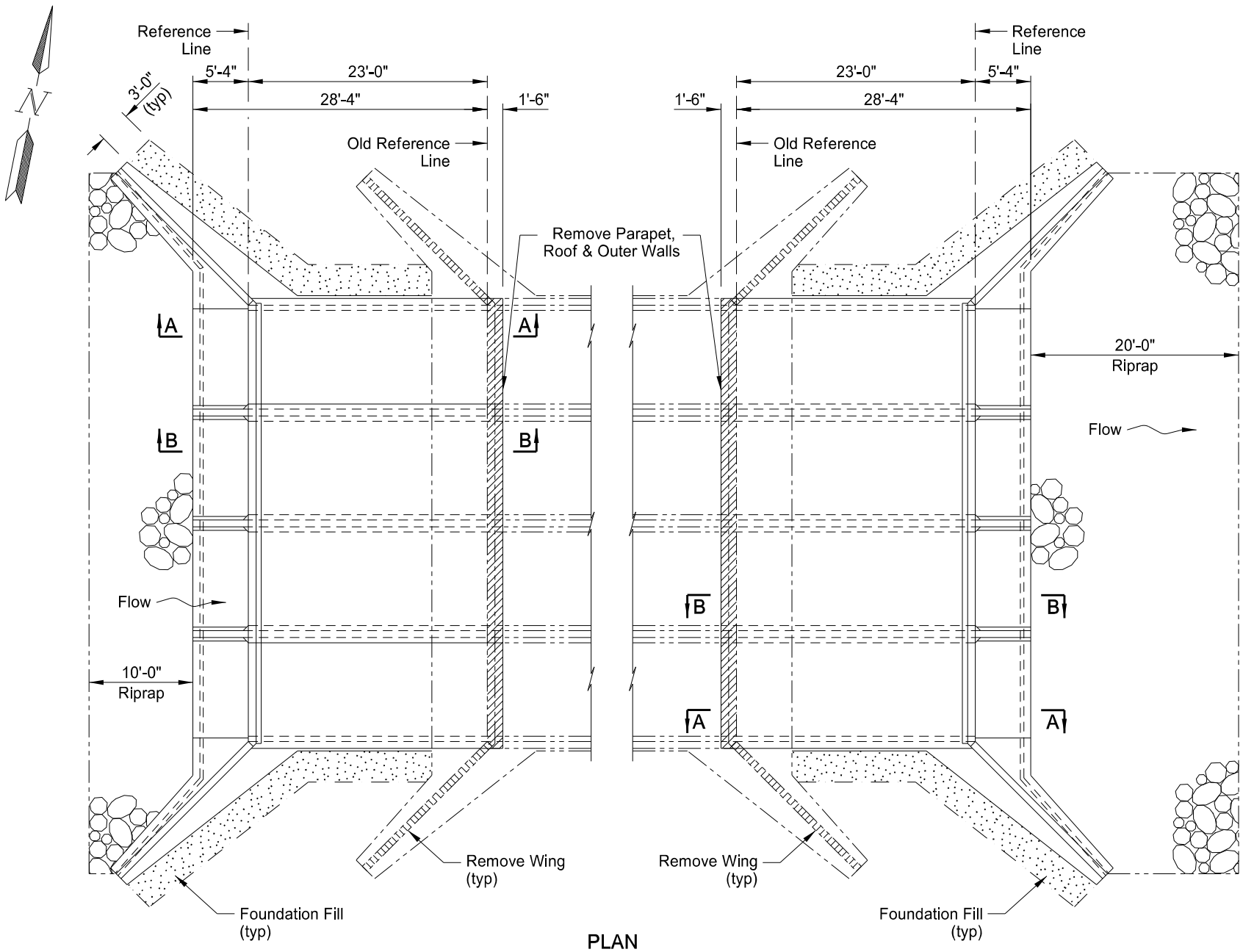
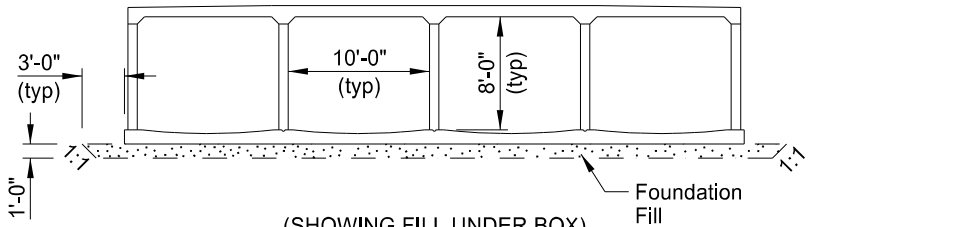


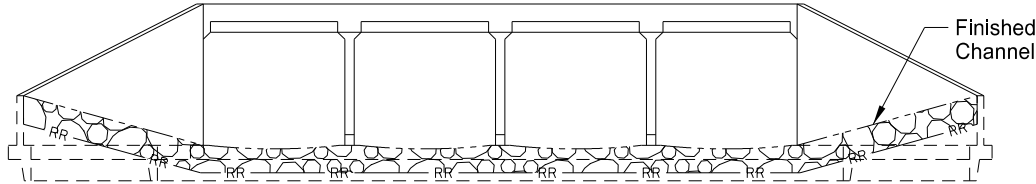
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	project number	170	1



PLAN



SECTION



(SHOWING FINISHED SECTION)
END VIEW

NOTE:

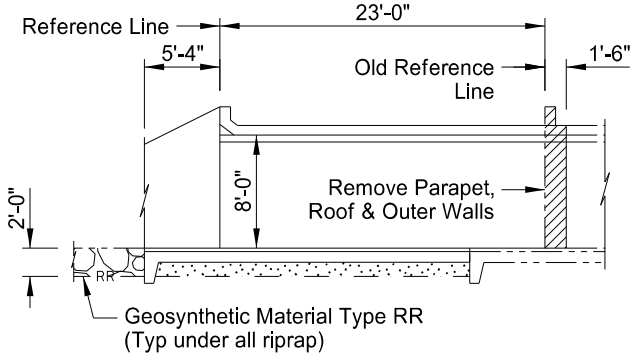
Provide a 1'-0" minimum depth of foundation fill under the floor. Remove and replace all unsound material under the box extension with foundation fill. The Engineer will determine the depth required.

DESIGN STRENGTHS:

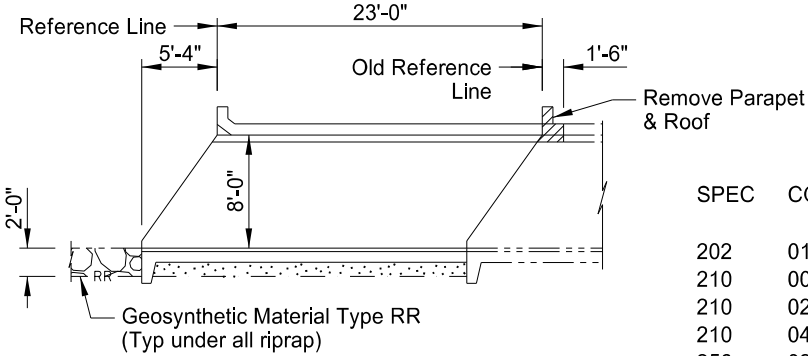
$f'_c = 3,000$ psi ~ Class AE-3 Concrete
 $f_y = 60,000$ psi ~ Reinforcing Steel

Load & Resistance Factor Design

This drawing
is preliminary
and not for
construction or
implementation
purposes.



A-A



B-B

BOX CULVERT BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0101	REMOVAL OF CONCRETE	EA	1
210	0050	BOX CULVERT EXCAVATION	EA	1
210	0210	FOUNDATION FILL	CY	125
210	0405	FOUNDATION PREPARATION-BOX CULVERT	EA	1
256	0200	RIPRAP GRADE II	CY	105
602	1131	CLASS AE-3 CONCRETE-BOX CULVERT	CY	203.4
612	0114	REINFORCING STEEL-GRADE 60-BOX CULVERT	LBS	27,326
709	0155	GEOSYNTHETIC MATERIAL TYPE RR	SY	210

SPECIAL PROVISIONS	
SSP 2	MIGRATORY BIRD TREATY ACT
HL-93 DESIGN LOADING	
LOCATION	
CLEAR SPAN 4 x 10' CLEAR HEIGHT 8' MAXIMUM FILL 0' STATION: 0000+00.00	
REINFORCED CONCRETE QUADRUPLE BOX CULVERT EXTENSION LAYOUT	
ND DEPARTMENT OF TRANSPORTATION BRIDGE DIVISION	

		23 U.S.C. 407 NDDOT Reserves All Objections		STATE	PROJECT NO.	SECTION NO.	SHEET NO.
				ND	project number	170	2

NOTES

100

SCOPE OF WORK: Work at this site consists of extending a quadruple 10' x 8' reinforced concrete box culvert 23'-0" on both ends.

202

REMOVAL OF CONCRETE: Remove portions of existing culvert end where extension is to be attached. Remove 1'-6" of existing concrete to expose the existing reinforcing steel at the parapet, roof, and outside walls at the vertical junction with the wing. Remove existing wing walls in entirety. Cut rebar protruding from the floor under the wing walls flush with the top surface of the floor. Leave existing floor and cutoff walls in place.

602

CLASS AE-3 CONCRETE: The strength requirements of Section 802.01 A.2 "Class AE and AAE Mixes" are revised to develop a design compressive strength of 3,000 psi (AE-3) and 4,000 psi (AAE-3) at 28 days.

Cast the following elements of each section in one continuous run:

1.

Floor slab and wing footings

2.

Each intermediate wall up to the bottom of fillets

3.

Each sidewall up to the bottom of fillets with its adjacent wings complete to the top

4.

Roof slab and parapets

Allow the concrete in the walls to set at least two hours before the roof slab is poured.

If the existing wall and roof thicknesses are different than the new thicknesses, align the inner surfaces and taper the exterior surfaces in the first 1'-6" of the barrel.

602

CURING CONCRETE: Wet cure all concrete surfaces not covered by forms. Cover the concrete with a double thickness of burlap. Maintain surface moisture between the final finish and placement of burlap by periodic applications of a light fog spray of water. Keep the burlap continuously moist until the end of the curing period.

602

WEATHER LIMITATIONS: All requests in accordance with 602.04 C.4 "Weather Limitations" require approval from the NDDOT Bridge Division.

612

REINFORCING STEEL: Place bolsters and bar supports for the roof steel at a maximum of 4 foot spacing.

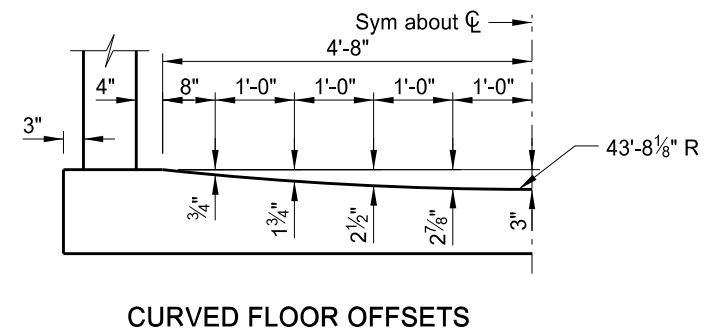
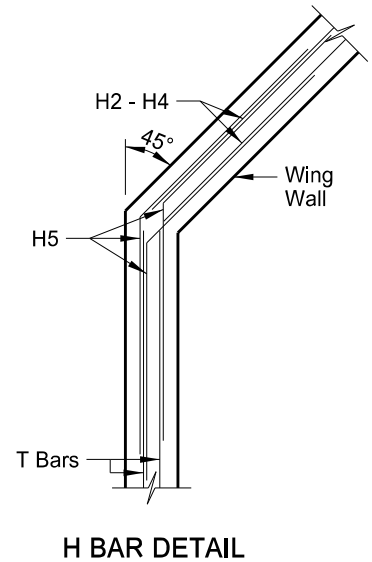
Dimensions of bent bars are given out to out.

This document is preliminary and not for construction or implementation purposes.

PRELIMINARY

10/11/2022 3:08:45 PM R:\SUPPORT\Teams\Bridge\Bridge Plan Stds\Box_Culvert_Extension_0_Skew\2022\Box_Culvert_Extension_0_Skew\170BR_002_NOTES.docm

0-000.000-2

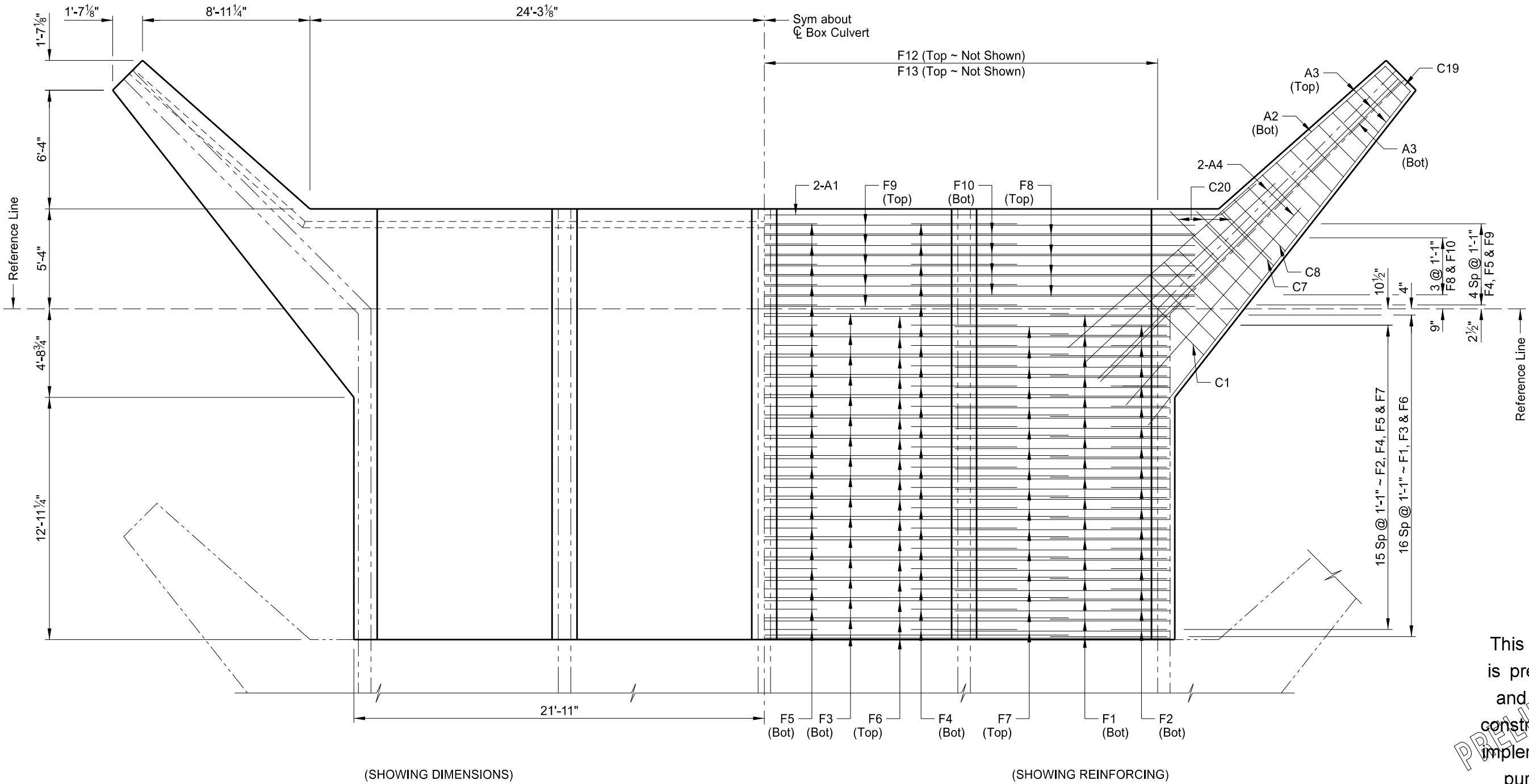


This drawing is preliminary and not for construction or implementation purposes.

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construction or
implementation

BARREL SECTION & WING DETAILS

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	project number	170	4



FLOOR PLAN

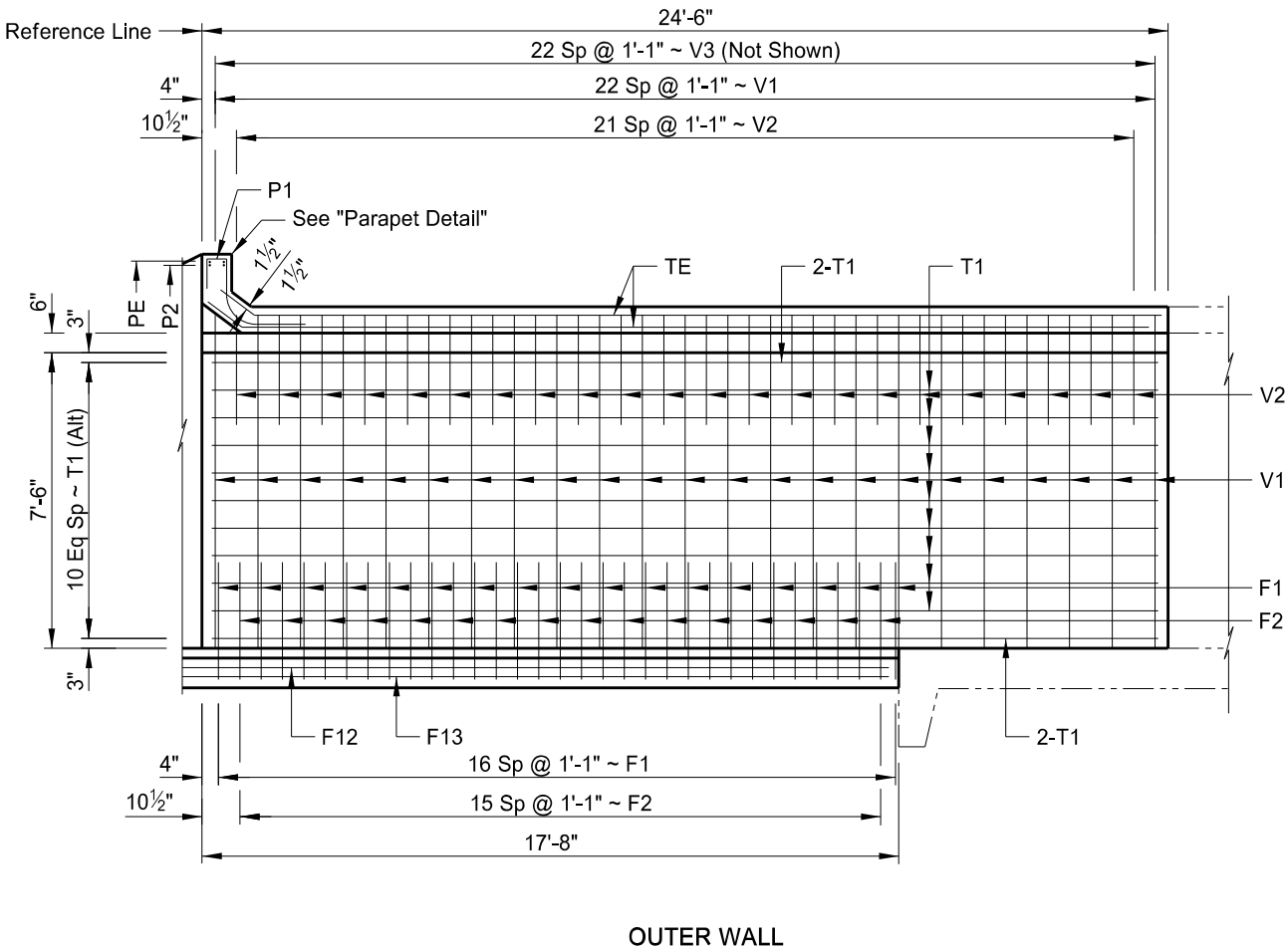
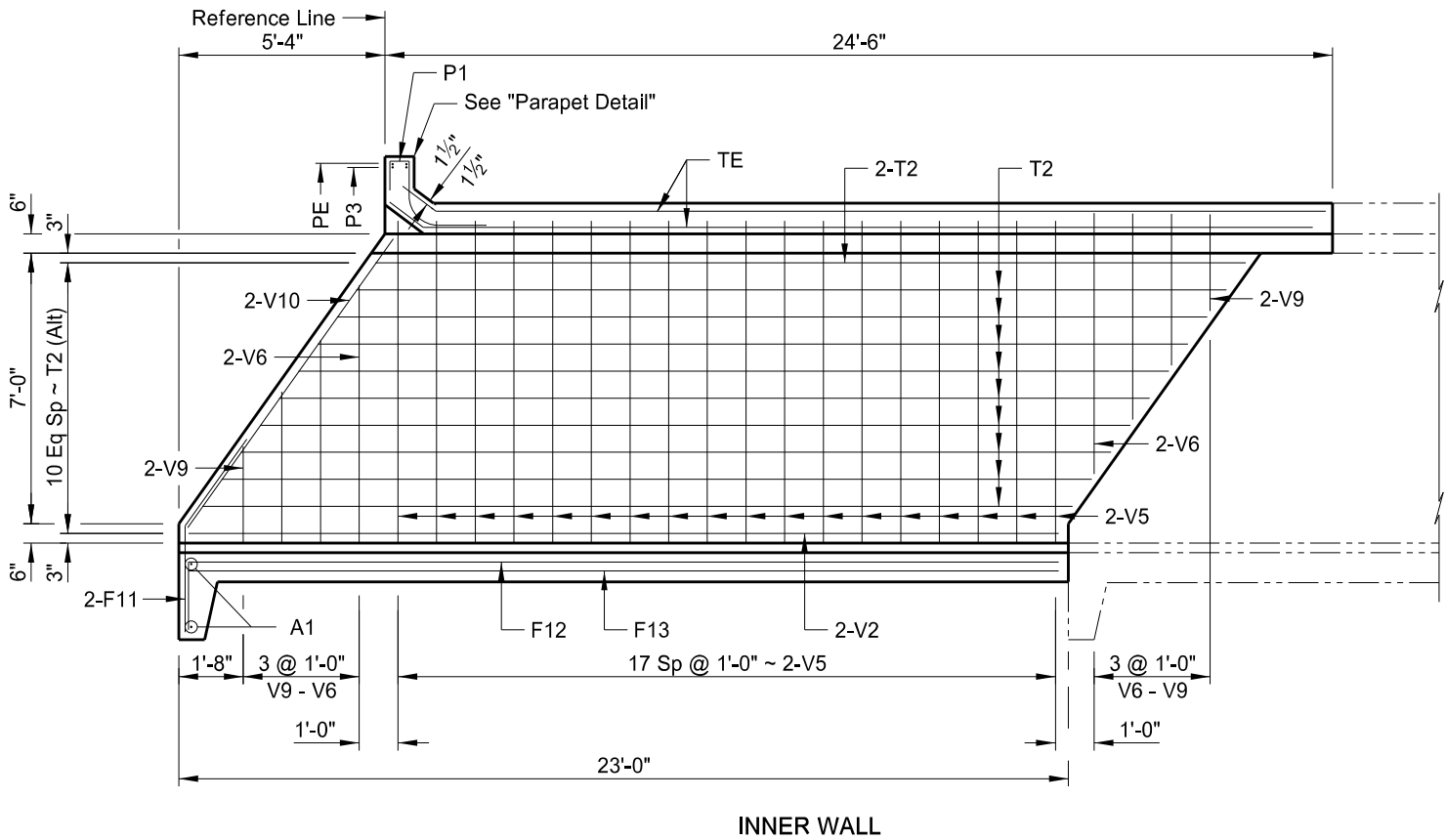
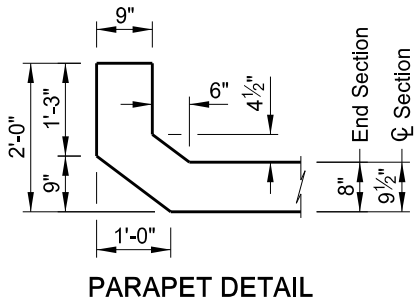
This drawing is preliminary and not for construction or implementation purposes.

PRELIMINARY

LOCATION

FLOOR DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	project number	170	5



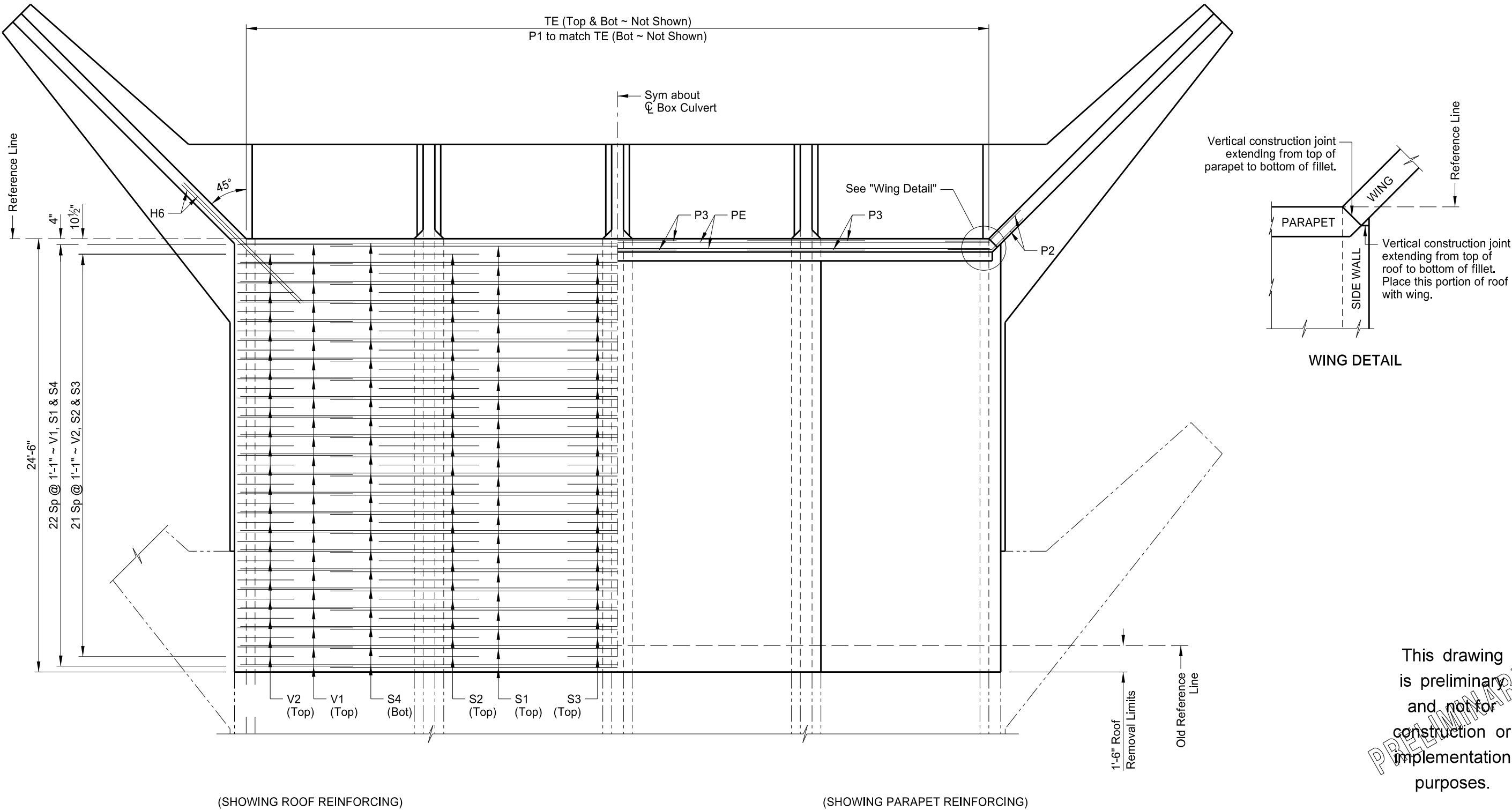
LONGITUDINAL SECTIONS

This drawing
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implementation
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LOCATION

WALL DETAILS &
PARAPET DETAIL

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	project number	170	6



(SHOWING ROOF REINFORCING)

(SHOWING PARAPET REINFORCING)

ROOF PLAN

This drawing is preliminary and not for construction or implementation purposes.

LOCATION

ROOF DETAILS

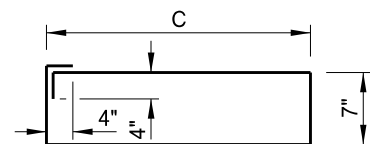
BAR LIST (CONSTANT)					BAR LIST (VARIABLE)					23 U.S.C. 407 NDDOT Reserves All Objections		STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
MARK	SIZE	NO.	LENGTH	SHAPE	MARK	SIZE	NO.	LENGTH	SHAPE			ND	project number	170	7
W1	7	4	11'-0"	BENT	V1	5	92	14'-8"	BENT	NOTES: 1. Verify the quantity, size, and shape of the bar reinforcement against the structure drawings and immediately notify the Engineer of any discrepancies. Discrepancies in the bar list will not be cause for adjustment of the contract unit price. 2. All dimensions are out to out of bars. 3. Nominal length of each bent bar or cut bar is the sum total of the detailing dimensions for that bar, unless otherwise noted. 4. The radius dimension in the "Bar Details" indicates the outside radius.					
W2	7	4	10'-8"	BENT	V2	5	88	5'-8"	BENT						
W3	6	4	10'-1"	BENT	V3	4	92	8'-4"	STR.						
W4	6	4	9'-9"	BENT	V5	4	216	8'-4"	STR.						
W5	6	4	9'-5"	BENT											
W6	5	4	8'-11"	BENT	F1	4	68	9'-0"	BENT						
W7	5	4	8'-7"	BENT	F2	4	64	5'-9"	BENT						
W8	4	4	8'-2"	BENT	F3	5	34	32'-6"	STR.						
W9	4	4	7'-9"	BENT	F4	6	84	5'-8"	STR.						
W10	4	4	7'-5"	BENT	F5	5	42	5'-8"	STR.						
W11	4	4	7'-1"	BENT	F6	5	34	43'-4"	STR.						
W12	4	4	6'-8"	BENT	F7	5	64	11'-6"	STR.						
W13	4	4	6'-4"	BENT											
W14	4	4	6'-0"	BENT	S1	5	46	32'-6"	STR.						
W15	4	4	5'-7"	BENT	S2	6	88	5'-8"	STR.						
W16	4	4	5'-3"	BENT	S3	6	44	5'-8"	STR.						
W17	4	4	4'-11"	BENT	S4	6	46	42'-8"	STR.						
W18	4	4	4'-7"	BENT											
					T1	4	52	24'-0"	STR.						
C1	5	4	12'-0"	BENT	T2	4	78	22'-6"	STR.						
C2	5	4	11'-8"	BENT	TE	4	146	24'-0"	BENT						
C3	5	4	11'-4"	BENT											
C4	5	4	11'-0"	BENT											
C5	5	4	10'-8"	BENT											
C6	5	4	10'-4"	BENT											
C7	4	4	9'-10"	BENT											
C8	4	4	10'-10"	BENT											
C9	4	4	10'-6"	BENT											
C10	4	4	10'-2"	BENT											
C11	4	4	9'-10"	BENT											
C12	4	4	9'-6"	BENT											
C13	4	4	9'-0"	BENT											
C14	4	4	8'-8"	BENT											
C15	4	4	8'-4"	BENT											
C16	4	4	8'-0"	BENT											
C17	4	4	7'-8"	BENT											
C18	4	4	7'-4"	BENT											
C19	4	4	7'-0"	BENT											
C20	4	12	5'-9"	BENT											
H1	7	16	18'-7"	STR.											
H2	4	24	17'-7"	STR.											
H3	4	8	13'-1"	STR.											
H4	4	8	8'-11"	STR.											
H5	4	108	6'-0"	BENT											
H6	6	8	9'-6"	STR.											
O1-O12	4	4 SETS	77'-0"	STR.											
A1	6	8	27'-9"	BENT											
A2	6	4	11'-11"	STR.											
A3	6	16	22'-8"	STR.											
A4	6	16	14'-1"	STR.											
P1	4	88	4'-7"	BENT											
P2	6	8	5'-0"	BENT											
P3	6	12	6'-8"	STR.											
PE	6	8	22'-0"	STR.											
V6	4	24	6'-9"	STR.											
V7	4	24	5'-4"	STR.											
V8	4	24	3'-11"	STR.											
V9	4	24	2'-6"	STR.											
V10	6	12	9'-2"	STR.											
F8	5	8	46'-0"	STR.											
F9	5	10	46'-0"	STR.											
F10	5	8	46'-0"	STR.											
F11	6	12	5'-6"	BENT											
F12	4	58	24'-3"	BENT											
F13	4	58	22'-6"	STR.											

CONCRETE QUANTITIES (ONE END)	
ENTIRE FLOOR	40.5 CY
TWO OUTSIDE WALLS & TWO WINGS	15.0 CY
INSIDE WALLS	12.8 CY
ENTIRE ROOF	33.4 CY
TOTAL	101.7 CY

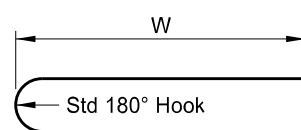
This drawing is preliminary and not for construction or implementation purposes.

PRELIMINARY

QUANTITIES	
CLASS AE-3 CONCRETE	203.4 CY
REINFORCING STEEL	27,326 LBS
LOCATION	
REINFORCING BAR LIST	

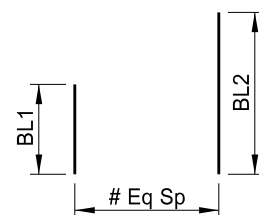


C1 - C7



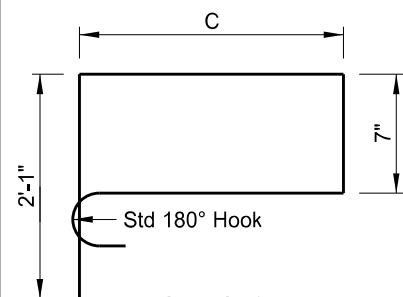
W1 - W18

MARK	"W"
W1	10'- 2"
W2	9'- 10"
W3	9'- 5"
W4	9'- 1"
W5	8'- 9"
W6	8'- 4"
W7	8'- 0"
W8	7'- 8"
W9	7'- 3"
W10	6'- 11"
W11	6'- 7"
W12	6'- 2"
W13	5'- 10"
W14	5'- 6"
W15	5'- 1"
W16	4'- 9"
W17	4'- 5"
W18	4'- 1"

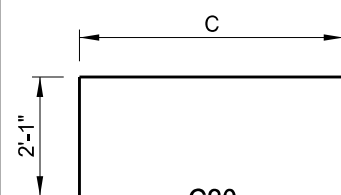


MARK	LENGTH 1 SET	BL1	BL2	SPACES
O1-O12	77'-0"	3'-5"	9'-5"	11

STRAIGHT BAR SET DETAIL

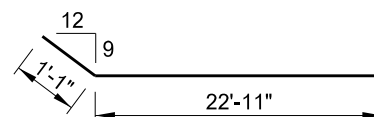


C8 - C19

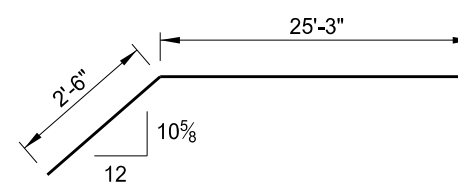


C20

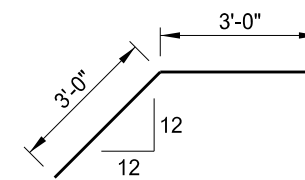
MARK	"C"
C1	5'- 1"
C2	4'- 11"
C3	4'- 9"
C4	4'- 7"
C5	4'- 5"
C6	4'- 3"
C7	4'- 0"
C8	3'- 10"
C9	3'- 8"
C10	3'- 6"
C11	3'- 4"
C12	3'- 2"
C13	2'- 11"
C14	2'- 9"
C15	2'- 7"
C16	2'- 5"
C17	2'- 3"
C18	2'- 1"
C19	1'- 11"
C20	3'- 8"



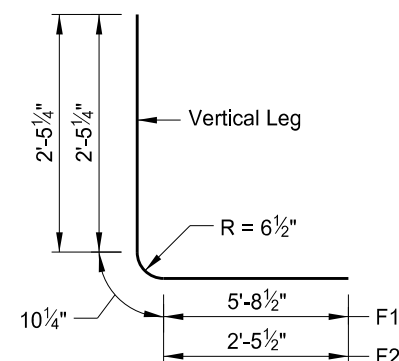
TE



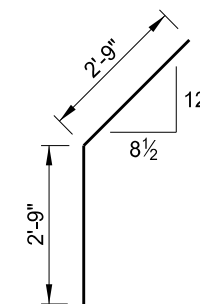
A1



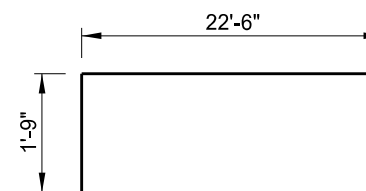
H5



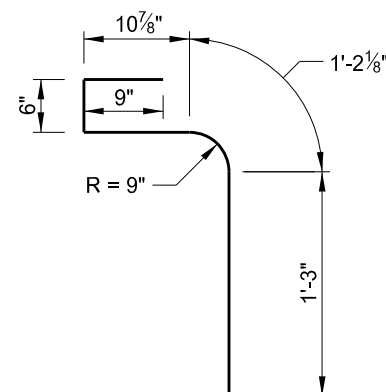
F1 & F2



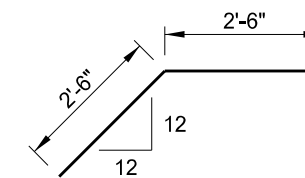
F11



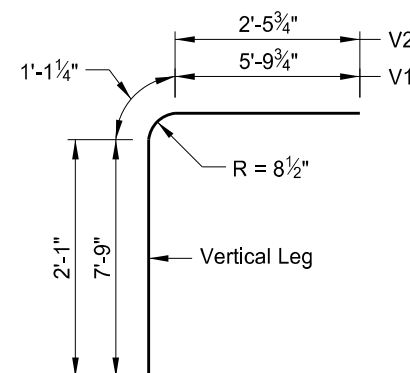
F12



P1



P2



V1 & V2

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LOCATION

BAR DETAILS