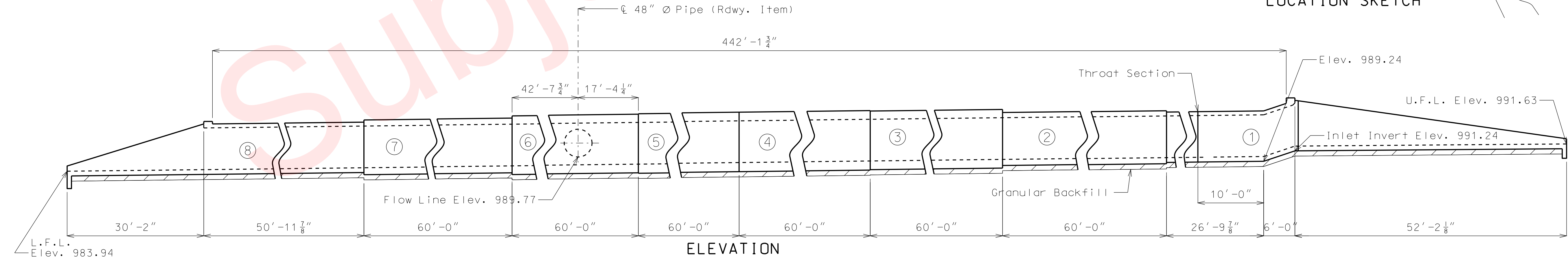
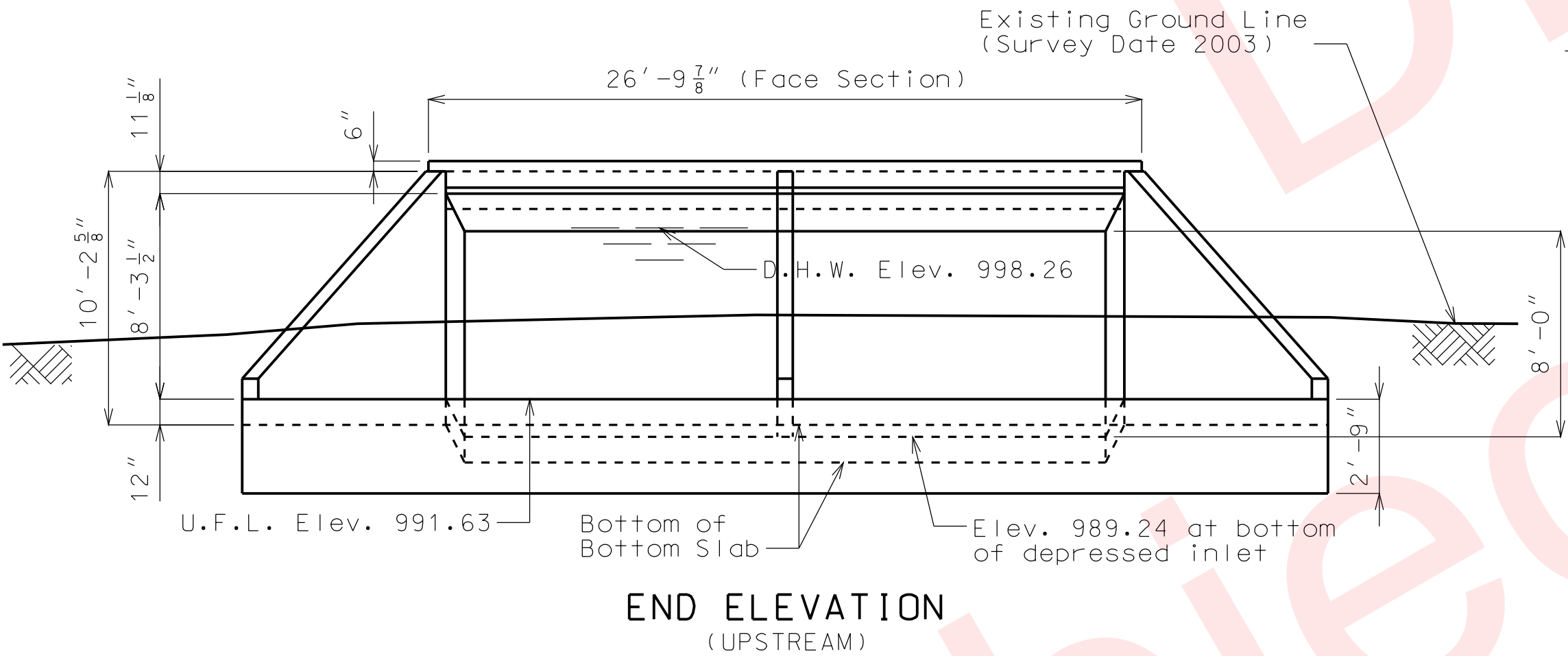


CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet

HYDROLOGIC DATA
Drainage Area = 1.38 (sq. mi.) (Hilly)
Design High Water (DHW) Elev. = 998.26
Design High Water Frequency = 50 (year)
Design High Water Discharge = 1,298.18 (cfs)
Backwater/Base Flood Data (100 year)
High Water Elev. = 999.23
Design Discharge = 2,188.78 (cfs)
Estimated Backwater = 2.43 (ft)
Outlet Velocity = 21.61 (ft/sec)
Roadway Overtopping
Design Elev. (1' below shoulder) = 1,034.37
Design Discharge ≥ 2,667.86 (cfs)
Design Frequency > 500 (year)

ESTIMATED QUANTITIES			FINAL QUANTITIES
Class 4 Excavation	cu. yard	1,945	
Class B-1 Concrete (Culverts-Bridge)	cu. yard	1,375.0	
Reinforcing Steel (Culverts-Bridge)	pound	124,200	



GENERAL NOTES:

Design Specifications:

2002 - AASHTO 17th Edition
Load Factor Design

Design Unit Stresses:

Class B-1 concrete (Box Culvert) f'c = 4,000 psi
Reinforcing steel (Grade 60), fy = 60,000 psi

Design Loading:

HS20 Modified
Military 24,000 # Tandem Axle
Earth 120 #/ft.³
Equivalent fluid pressure
30 #/ft.³ (Min.) - 60 #/ft.³ (Max.)

Reinforcing Steel:

Minimum clearance to reinforcing steel shall be 1-1/2", unless otherwise shown.

Miscellaneous:

Provide grading of the channel bottom within the limits of the R/W as needed for culvert flowline elevations and transition of the channel bed to the culvert openings.

Taper channel banks to match end of culvert opening as required. (Roadway Item)

"Sec" refers to the sections in the standard and supplemental specifications unless specified otherwise.

Provide an inlet for a 48" Ø pipe on the east wall of structure at Proposed Rte. I-49 Sta. 794+58.35, offset 36.48' right. Flow line Elev. 989.77. Verify and coordinate location and skew of pipe with roadway plans. For details of Pipe Inlet, see Missouri Standard Plans drawing 703.60.

Traffic Handling:

See Roadway Plans for traffic control.

Precast Option:

The box shown below indicating whether a precast or cip box was used should be checked by MoDOT Construction personnel:

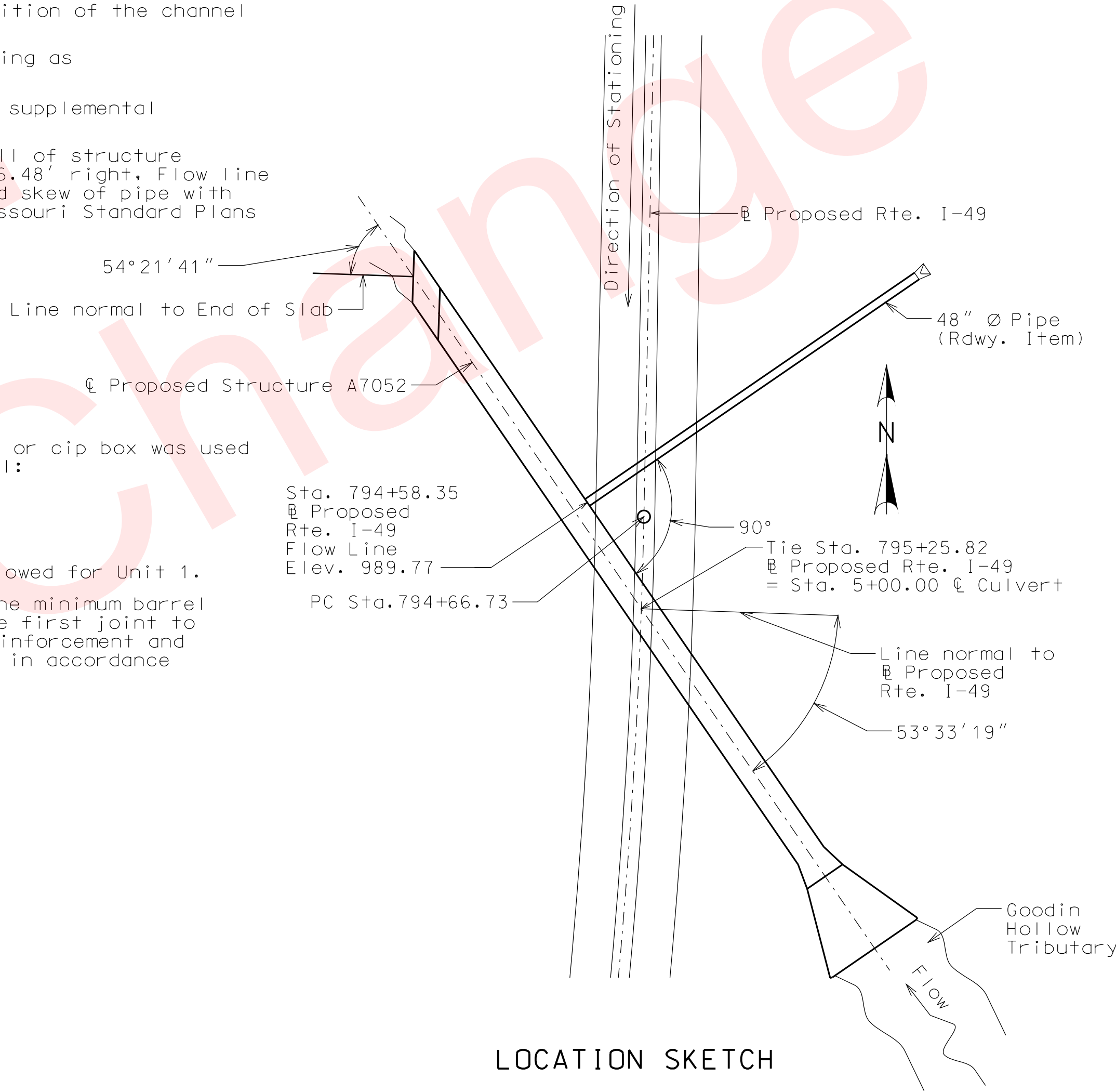
- ☐ Precast Box used
☐ Cast-in-Place Box used

The use of precast box sections shall not be allowed for Unit 1.

When alternate precast box sections are used, the minimum barrel length measured along the shortest wall from the first joint to the outside of the headwall, shall be 3'-2". Reinforcement and dimensions for the wings and headwalls shall be in accordance with Missouri Standard Plans drawing.

CURVE DATA

PI STA. 808+04.90
Δ 35°20'41.50" RT.
D 1°21'51.1"
R 4200.00'
T 1338.16'
L 2590.91'
SE VARIES
W = 0.0 FT



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED

2/25/2010

ROUTE STATE

I-49 MO

DISTRICT SHEET NO.

BR 2

COUNTY

McDONALD

JOB NO.

J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

A7052

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL

JEFFERSON CITY, MO 65102

1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

DETAIL "A"

DETAIL "B"

DETAIL "C"

PLAN OF BOTTOM SLAB

DETAILS OF UNIT NO. 1

Notes:

- For Typical Developed Section Thru Unit No. 1, see Sheet No. 7.
- For Plan of Top Slab, see Sheet No. 5.
- * Top and Bottom slab F-Bars shall be bent in field to follow transition of bottom slab as shown on Sheet No. 6.
- ** #4-F105 denoted shall be bent in field as shown.

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 4 of 10

DATE PREPARED
2/25/2010

ROUTE
1-49

STATE
MO

DISTRICT
BR

SHEET NO.
4

COUNTY
McDONALD

JOB NO.
J7P0601

CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A7052

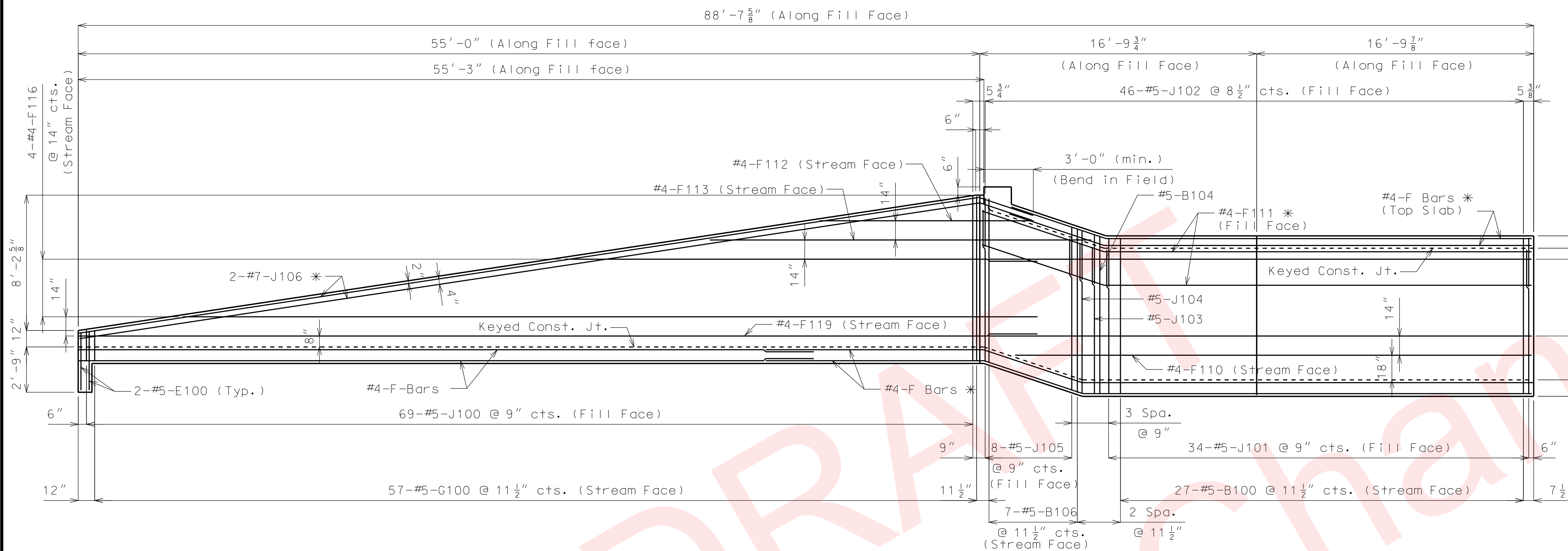
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

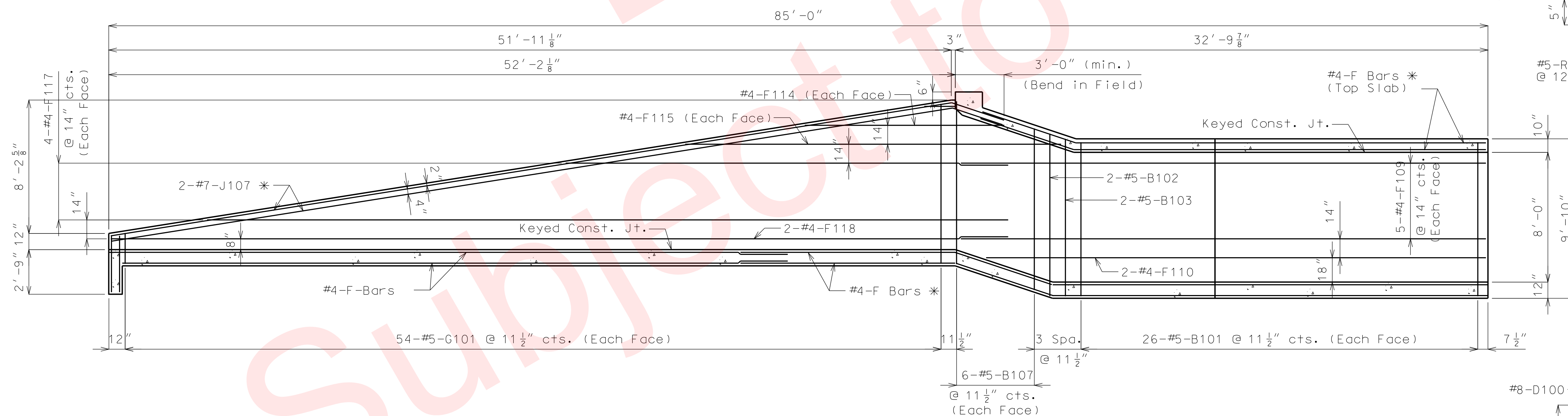
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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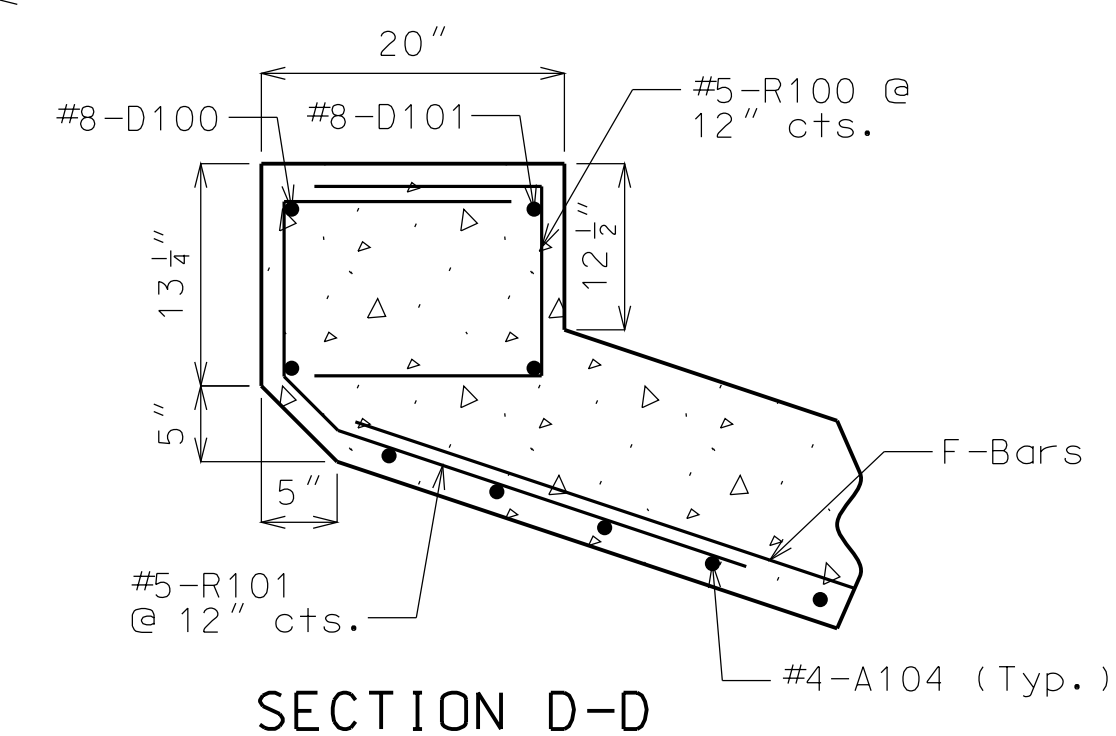
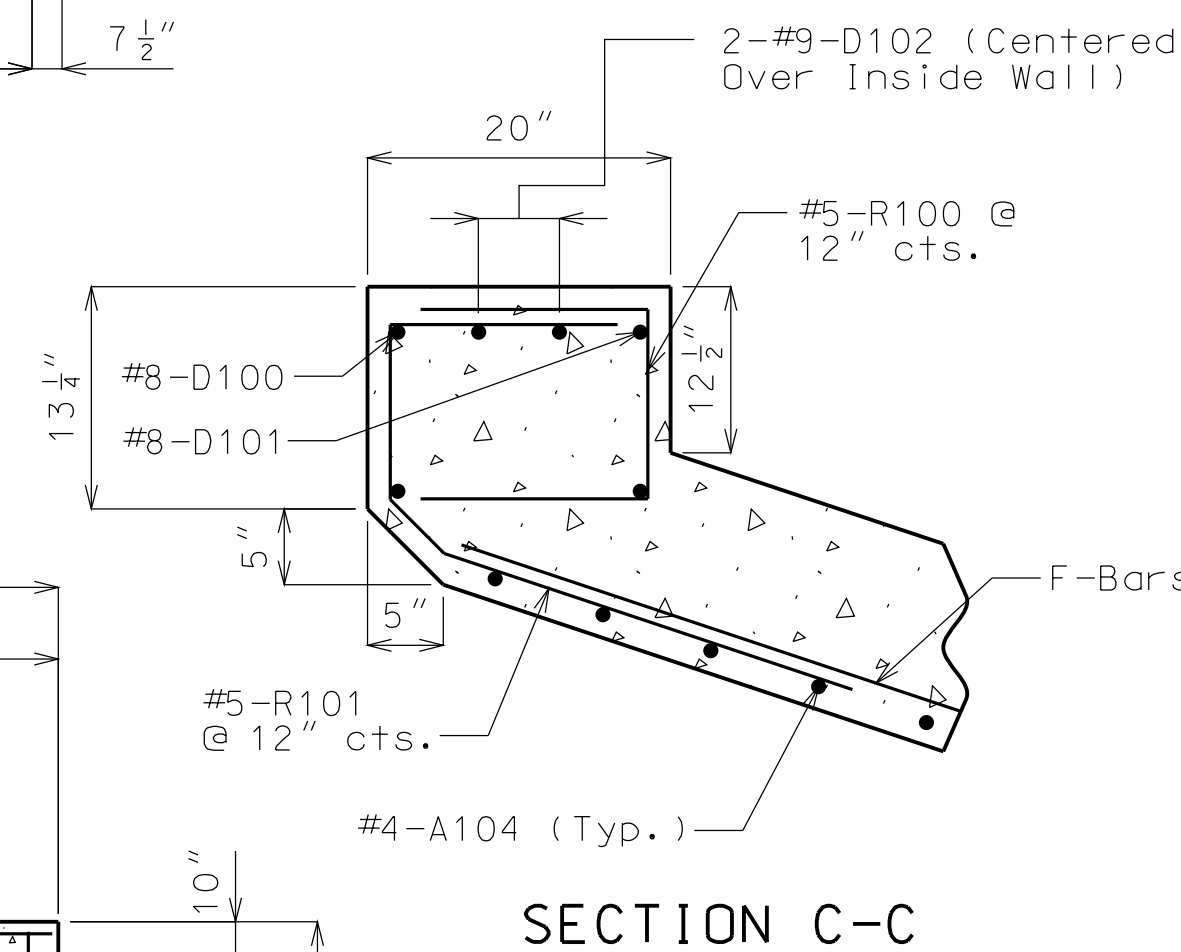
CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet



DEVELOPED ELEVATION A-A



SECTION B-B



Notes:

Spacing for J-Bars is along a line parallel to ϕ Structure (see Plan View).

For location of Developed Elevation A-A and Section B-B, see Sheet No. 5.

For location of Section C-C and Section D-D, see Sheet No. 5.

Keyed Construction Joint not shown for clarity.

* F-Bars & J-Bars denoted shall be bent in field as shown.

DETAILS OF UNIT NO. 1

Detailed May 2009
Checked Jun. 2009

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 6 of 10

"THIS MEDIA SHOULD
NOT BE CONSIDERED
A CERTIFIED
DOCUMENT."

DATE PREPARED
2/25/2010

ROUTE
1-49
DISTRICT
BR

STATE
MO
SHEET NO.
6

COUNTY
McDONALD
JOB NO.
J7P0601
CONTRACT ID.

PROJECT NO.

BRIDGE NO.
A7052

DESCRIPTION

DATE

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION



105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

[illegible]

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

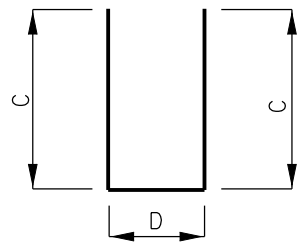
CAUTION: Currently being re-designed as a double 12'x 8' with slope-tapered inlet

BILL OF REINFORCING STEEL

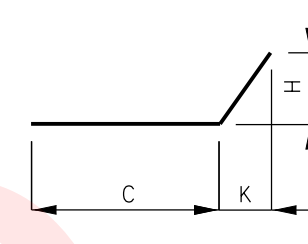
NO.	REQ'D.	MARK NO.	SIZE	MARK	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	DIMENSIONS						NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
											B	C	D or F	E	H	K			
											FT.	FT.	FT.	FT.	FT.	FT.	FT. IN.	FT. IN.	LBS.
					Barrel Section														
					UNIT 2														
121	4	A1			Top Slab	20				1	18.083						18'-1"	18'-1"	1462
121	4	A2			Bottom Slab	20				1	18.083						18'-1"	18'-1"	1462
208	5	J3			Top Corner	19				1	2.975	2.989					5'-12"	5'-10"	1266
208	5	J4			Bottom Corner	19				1	9.024	2.901					11'-11"	11'-8"	2560
128	5	B1			Interior Wall	20				1			1.000				11'-5"	11'-5"	1556
128	5	B2			Exterior Wall	20				1	9.917						9'-11"	9'-11"	1325
58	5	H1			Top Slab	20				1	6.506						6'-6"	6'-6"	394
58	5	H2			Top Slab	20				1	4.572						4'-7"	4'-7"	277
104	5	H3			Bottom Slab	20				1	6.154						6'-2"	6'-2"	668
76	4	F1			Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034
					UNIT 3														
97	5	A1			Top Slab	20				1	18.417						18'-5"	18'-5"	1865
112	5	A2			Bottom Slab	20				1	18.417						18'-5"	18'-5"	2153
194	5	J3			Top Corner	19				1	3.384	3.195					6'-7"	6'-5"	1305
242	4	J4			Bottom Corner	19				1	9.279	3.106					12'-5"	12'-3"	1986
128	5	B1			Interior Wall	10				1		1.000		10.917			12'-11"	12'-8"	1690
128	5	B2			Exterior Wall	20				1	10.917						10'-11"	10'-11"	1459
58	5	H1			Top Slab	20				1	6.390						6'-5"	6'-5"	387
58	5	H2			Top Slab	20				1	5.148						5'-2"	5'-2"	312
121	6	H3			Bottom Slab	20				1	7.455						7'-5"	7'-5"	1356
76	4	F1			Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034
					UNIT 4														
97	5	A1			Top Slab	20				1	18.583						18'-7"	18'-7"	1882
112	5	A2			Bottom Slab	20				1	18.583						18'-7"	18'-7"	2173
194	5	J3			Top Corner	19				1	3.436	3.210					6'-8"	6'-6"	1319
242	4	J4			Bottom Corner	19				1	9.421	3.121					12'-7"	12'-5"	2011
128	5	B1			Interior Wall	10				1		1.000		11.083			13'-1"	12'-10"	1712
172	5	B2			Exterior Wall	20				1	11.083						11'-1"	11'-1"	1990
58	5	H1			Top Slab	20				1	6.420						6'-5"	6'-5"	389
58	5	H2			Top Slab	20				1	5.172						5'-2"	5'-2"	313
121	6	H3			Bottom Slab	20				1	7.490						7'-6"	7'-6"	1362
76	4	F1			Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034
					UNIT 5														
97	5	A1			Top Slab	20				1	18.583						18'-7"	18'-7"	1882
112	5	A2			Bottom Slab	20				1	18.583						18'-7"	18'-7"	2173
194	5	J3			Top Corner	19				1	3.436	3.210					6'-8"	6'-6"	1319
242	4	J4			Bottom Corner	19				1	9.421	3.121					12'-7"	12'-5"	2011
128	5	B1			Interior Wall	10				1		1.000		11.083			13'-1"	12'-10"	1712
172	5	B2			Exterior Wall	20				1	11.083						11'-1"	11'-1"	1990
58	5	H1			Top Slab	20				1	6.420						6'-5"	6'-5"	389
58	5	H2			Top Slab	20				1	5.172						5'-2"	5'-2"	313
121	6	H3			Bottom Slab	20				1	7.490						7'-6"	7'-6"	1362
76	4	F1			Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034
					UNIT 6														
97	5	A1			Top Slab	20				1	18.417						18'-5"	18'-5"	1865
112	5	A2			Bottom Slab	20				1	18.417						18'-5"	18'-5"	2153
194	5	J3			Top Corner	19				1	3.384	3.195					6'-7"	6'-5"	1305
242	4	J4			Bottom Corner	19				1	9.279	3.106					12'-5"	12'-3"	1986
128	5	B1			Interior Wall	10				1		1.000		10.917			12'-11"	12'-8"	1690
128	5	B2			Exterior Wall	20				1	10.917						10'-11"	10'-11"	1459
58	5	H1			Top Slab	20				1	6.390						6'-5"	6'-5"	387
58	5	H2			Top Slab	20				1	5.148						5'-2"	5'-2"	312
121	6	H3			Bottom Slab	20				1	7.455						7'-5"	7'-5"	1356
76	4	F1			Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034
					UNIT 7														
121	4	A1			Top Slab	20				1	18.250						18'-3"	18'-3"	1475
81	5	A2			Bottom Slab	20				1	18.250						18'-3"	18'-3"	1543
208	5	J3			Top Corner	19				1	3.025	3.003					6'-0"	5'-11"	1280
194	5	J4			Bottom Corner	19				1	9.176	3.003					12'-2"	12'-1"	2439
128	5	B1			Interior Wall	10				1		1.000		10.083			12'-1"	11'-10"	1578
128	5	B2			Exterior Wall	20				1	10.083						10'-1"	10'-1"	1347
58	5	H1			Top Slab	20				1	6.537						6'-6"	6'-6"	396
58	5	H2			Top Slab	20				1	4.417						4'-5"	4'-5"	267
112	5	H3			Bottom Slab	20				1	6.183						6'-2"	6'-2"	723
76	4	F1			Temp. Steel	20				1	59.750						59'-9"	59'-9"	3034

BILL OF REINFORCING STEEL

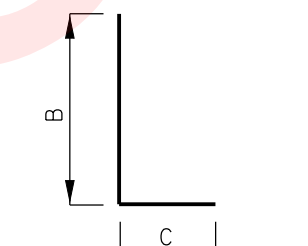
NO.	REQ'D.	MARK NO.	SIZE	MARK	LOCATION	SHAPE NO.	STIRRUP (S)	EPOXY (E)	VARIES (V)	NO. EACH	DIMENSIONS						NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT
											B	C	D or F	E	H	K			
											FT.	FT.	FT.	FT.	FT.	FT.	FT. IN.	FT. IN.	LBS.
					Totals														30965
4																			56007
5																			5372
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10																			0
11					TOTALS														92340.0



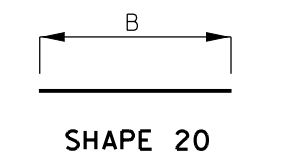
SHAPE 10



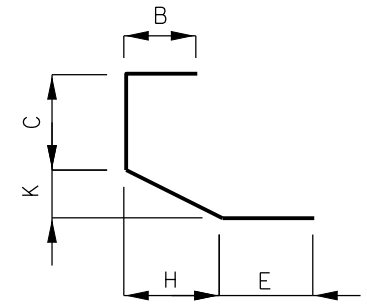
SHAPE 15



SHAPE 19



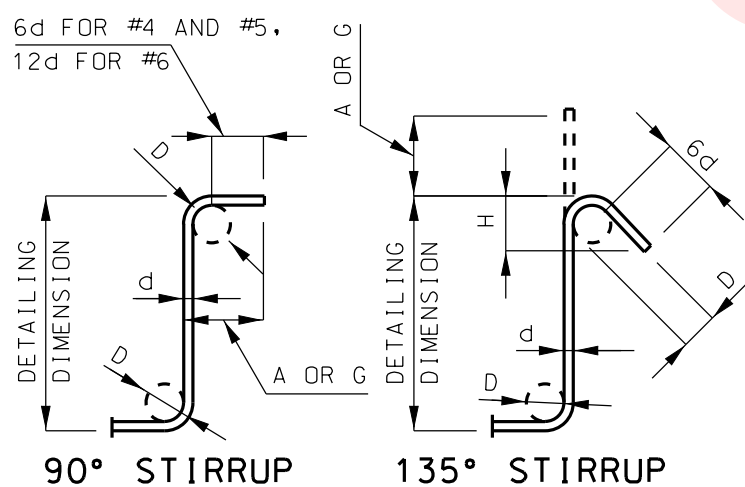
SHAPE 20



SHAPE 27

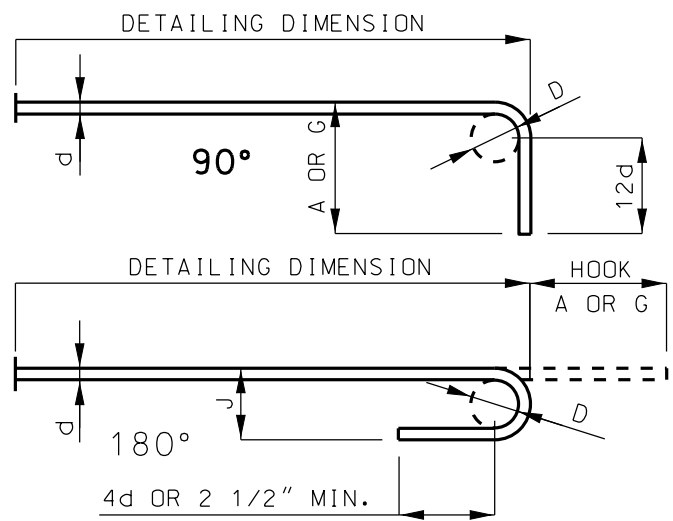
SPLICE LENGTH		MAX BAR LENGTH	
BAR SIZE	NON-EPOXY	BAR SIZE	NON-EPOXY
#4	21 IN.	#4	60 FT.
#5	26 IN.	#5	60 FT.
#6	31 IN.	#6	60 FT.
#7	39 IN.	#7	60 FT.
#8	51 IN.	#8	60 FT.
#9	65 IN.	#9	60 FT.
#10	82 IN.	#10	60 FT.
#11	101 IN.	#11	60 FT.

NOTE:
THE BAR LIST IS BASED ON THE MISSOURI STANDARD PLANS.
THIS BAR LIST IS FOR QUANTITY ESTIMATION PURPOSE ONLY AND SHALL BE VERIFIED OR MODIFIED BY THE CONTRACTOR.



STIRRUP HOOK DIMENSIONS				
BAR SIZE	D (IN.)	90° HOOK A OR G	135° HOOK A OR G	APPROX. H
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"

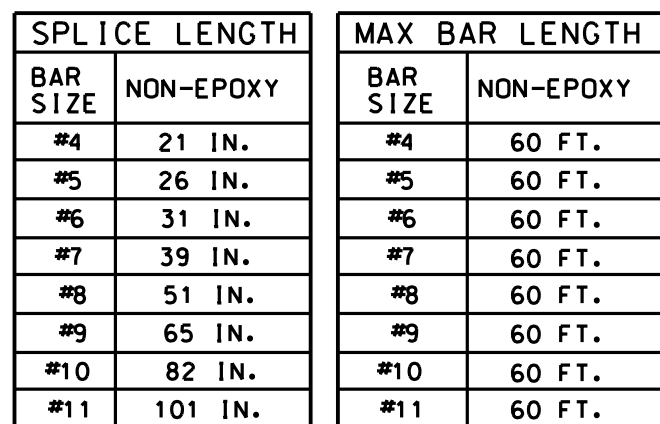
NOTE: UNLESS OTHERWISE NOTED DIAMETER "D" IS THE SAME FOR ALL BENDS AND HOOKS ON A BAR.



END HOOK DIMENSIONS				
BAR SIZE	D (IN.)	GRADE 60		
		180° HOOKS A OR G	J	90° HOOKS A OR G
#4	3"	6"	4"	8"
#5	3 3/4"	7"	5"	10"
#6	4 1/2"	8"	6"	12"
#7	5 1/4"	10"	7"	14"
#8	6"	11"	8"	16"
#9	9 1/2"	15"	11 3/4"	19"
#10	10 3/4"	17"	13 1/4"	22"
#11	12"	19"	14 3/4"	24"

NOTE:
ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
FB = BARS MAY BE BENT IN FIELD TO FIT.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.<

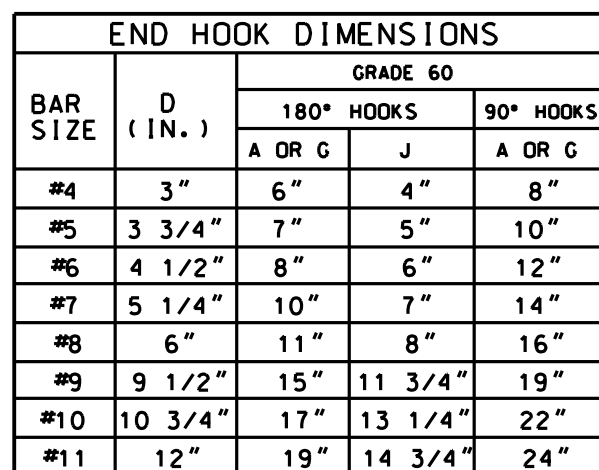
BILL OF REINFORCING STEEL

[illegible]

NOTE:
THE BAR LIST IS BASED ON THE MISSOURI
STANDARD PLANS.
THIS BAR LIST IS FOR QUANTITY
ESTIMATION PURPOSE ONLY AND SHALL BE
VERIFIED OR MODIFIED BY THE CONTRACTOR.

[illegible]

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



ALL STANDARD HOOKS AND BENDS OTHER THAN 180 DEGREE ARE TO BE BENT WITH SAME
PROCEDURE AS FOR 90 DEGREE STANDARD HOOKS.
HOOKS AND BENDS SHALL BE IN ACCORDANCE WITH THE PROCEDURES AS SHOWN ON THIS SHEET.
FB = BARS MAY BE BENT IN FIELD TO FIT.
E = EPOXY COATED REINFORCEMENT.
S = STIRRUP.
BASIC DIMENSIONS VARY IN EQUAL INCREMENTS BETWEEN DIMENSIONS SHOWN ON THIS LINE
AND THE FOLLOWING LINE. A BLANK IN THE SECOND LINE REPRESENTS THE SAME BAR DIMENSION AS THAT
IN THE FIRST LINE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ADD A SPLICE LENGTH TO A BAR
LENGTH WHICH EXCEEDS ITS MAXIMUM ALLOWABLE LENGTH.
NO. EA. = NUMBER OF BARS OF EACH LENGTH.
NOMINAL LENGTHS ARE BASED ON OUT TO OUT DIMENSIONS SHOWN IN BENDING DIAGRAMS AND ARE LISTED
FOR CONCRETEORS USE. NEAREST INCH.
ACTUAL LENGTHS ARE MEASURED ALONG CENTERLINE BAR TO THE NEAREST INCH.
PAYWEIGHTS ARE BASED ON ACTUAL LENGTHS.
REINFORCING STEEL (GRADE 60) FY = 60,000 PSI.