



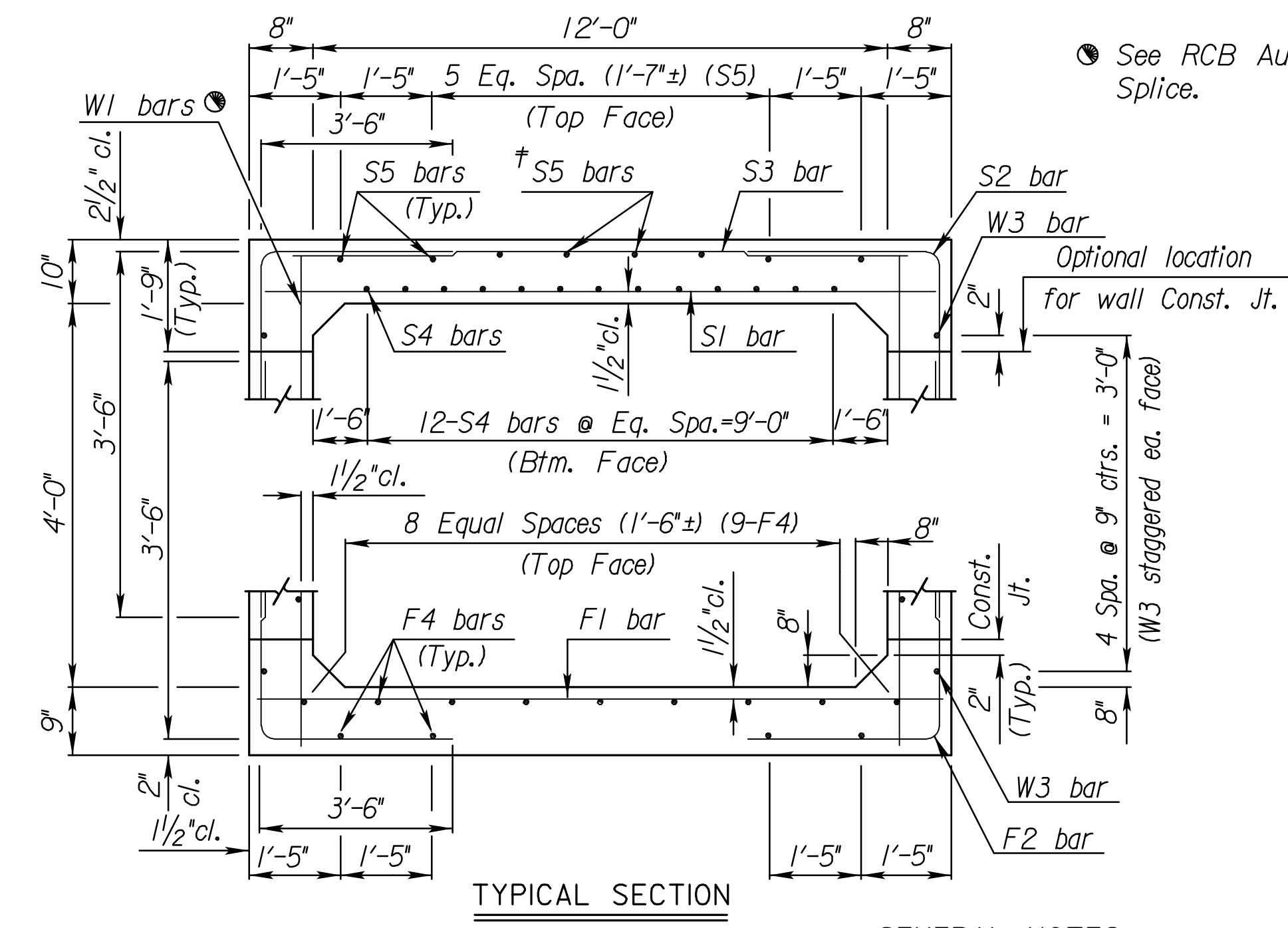
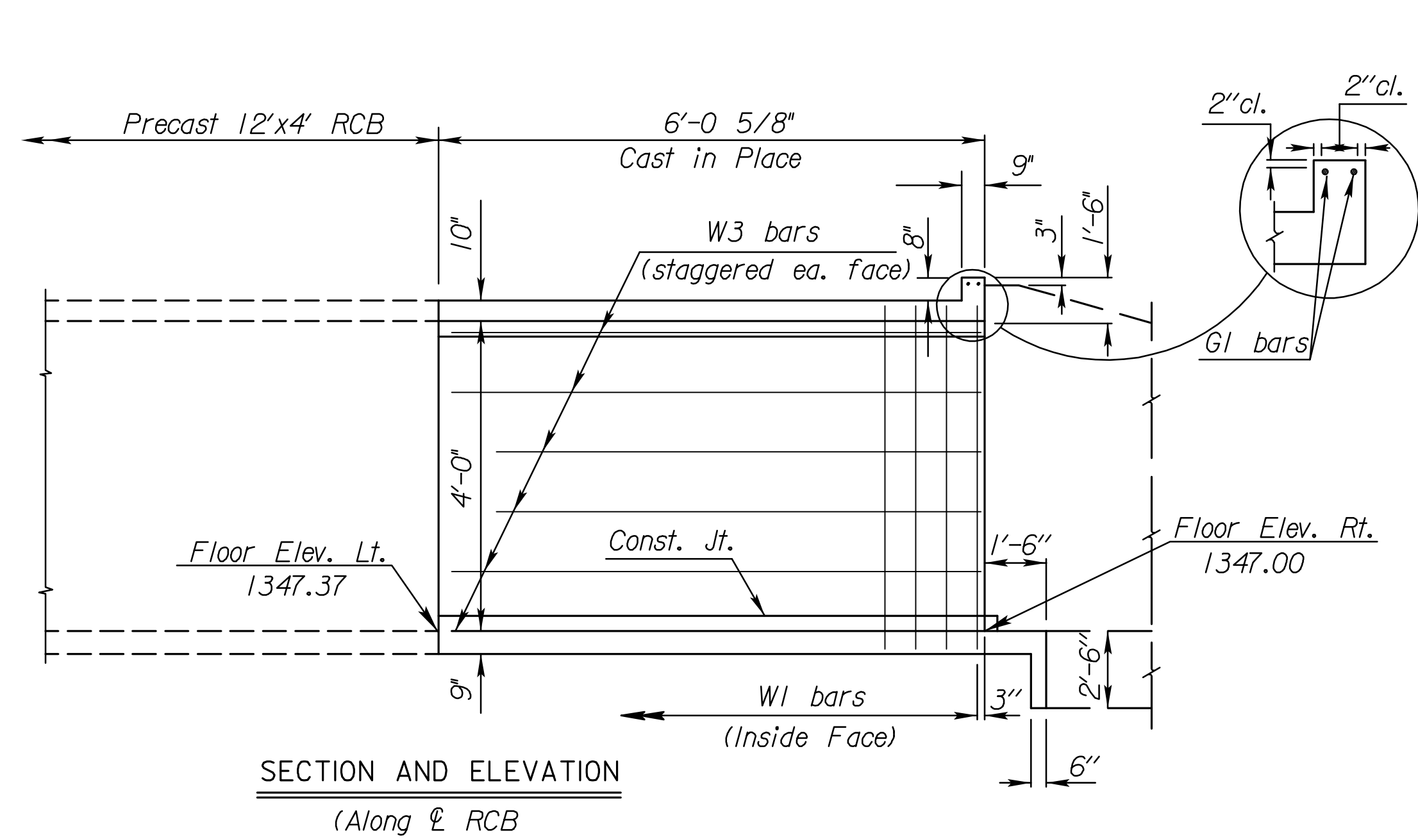
STREET IMPROVEMENTS FOR
135th Street West
from 13th Street to 21st Street North

STORM SEWER
LINE 1
12'x4' RCB
BOX DETAILS
SHEET TITLE
MKEC PROJ #10265
PROJECT NUMBER

DESIGN BY: JRA
DRAWN BY: DMU
CHECKED BY: JRA

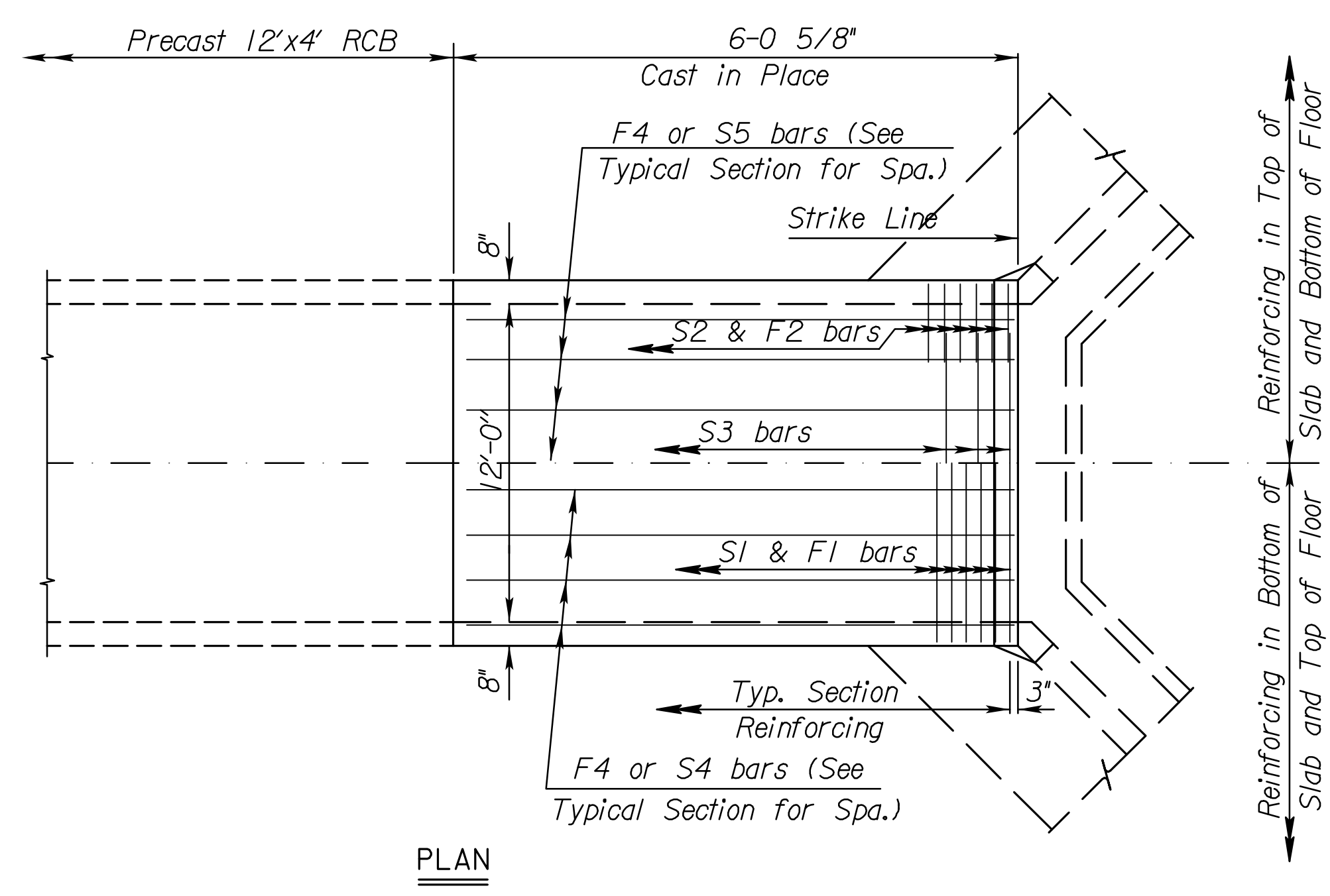
ISSUED: February 2012
REVISED:

SHEET NO.
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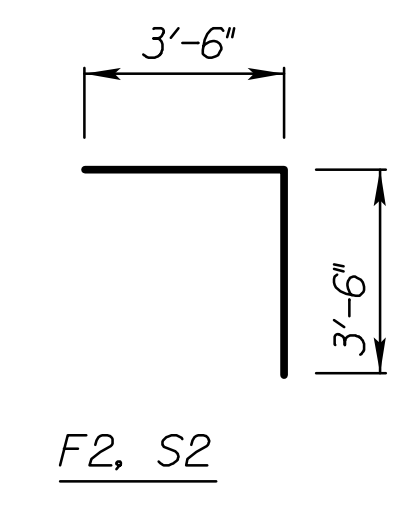


GENERAL NOTES

LOADING: HS20-44 AASHTO Specifications, 1983 Edition.
UNIT STRESSES: Grade 4.0 Concrete; $f'c = 4,000$ p.s.i.
Reinforcing Steel; $f_y = 60,000$ p.s.i.
FILL HEIGHT: Unless otherwise noted, the Design Fill Height is measured from the riding surface at the culvert and shall include the surfacing.
CONCRETE: Grade 4.0 Concrete shall be used throughout. Bevel all exposed edges with a 3/4 inch triangular moulding. Where Grade 4.0 Concrete (AE) is specified, it shall be placed in the top slab above the Construction Joint.
REINFORCING: All reinforcing shall conform to ASTM A615, Grade 60. All dimensions relative to reinforcing steel shall be to centerline of bar unless otherwise noted.
EXCAVATION: Excavation for culverts less than bridge length shall not be paid for directly but shall be subsidiary to Grade 4.0 Concrete. Excavation for RCB Bridges shall be paid for as Class III Excavation.
SEAL COURSE: A Seal Course may be required by the Engineer. The Seal Course shall be unreinforced Concrete (Commercial Grade) to a minimum depth of 3 inches or as determined by the Engineer. Concrete for the seal course shall be paid for at the unit price set for Concrete for Seal Course.
FOUNDATION STABILIZATION: The Foundation Stabilization quantity has been calculated to the limits shown on the "RCB Auxiliary Details" sheet. The depth may be increased by the Engineer. The Contractor may underrun Foundation Stabilization under the barrel if founded on firm material and with the Engineer's approval. Use Foundation Stabilization on all wingwalls unless founded on rock or granular material.
QUANTITIES: The quantities shown in the Culvert Summary include apron and/or soil saver quantities when their construction is required by the plans. Payment for additional quantities that result from including seal course and/or floating apron, as a change in original plans, shall be made at the Unit Price bid for the various items involved.
GRANULAR BACKFILL (WINGWALLS): Special backfill procedures may be required at the direction of the Engineer. See Auxiliary Details Sheet.
STRIKE LINE: Wingwalls and that portion of the RCB outside the Strike Line shall be constructed level. Footing for wingwalls shall be constructed with the culvert floor. See wingwall detail sheet.



NOTE: The work on this sheet shall be subsidiary to "Pipe, SWS, RCBC (12'x4')



BENDING DIAGRAM

All Dimensions are out to out of bars.

For design purposes ONLY. Do NOT use for Construction

Floor Elev. Lt.	Floor Elev. Rt.	Ground Gr. Elev.	Design Fill Ht.	Skew	Left Wings	Right Wings	Scour Apron	Soil Saver	Concrete			Reinf. Steel (Gr. 60)		
									Barrel (Cu.Yds.)	Wings (Cu.Yds.)	Total (Cu.Yds.)	Barrel (Lbs.)	Wings (Lbs.)	Total (Lbs.)
1347.37	1347.00	1353.55	0	0	N/A	FLARED	YES	NO	6.84	7.77	14.61	1050	432	1482

BAR SCHEDULE																				
F1			F2 *				F4			W1				W3			Δ G1			
Size	Spa.	No.	Length	Size	Spa.	No.	Length	Size	No.	Length	Size	Spa.	No.	Length	Size	No.	Length			
6	6 1/2"	11	13'-0"	5	6"	24	7'-0"	4	13	5'-9"	4	1'-1"	12	5'-3"	4	10	5'-9"	5	2	13'-0"
Δ S1			Δ S2 *				Δ S3			Δ S4				Δ S5						
6	6 1/2"	11	13'-0"	5	6"	24	7'-0"	4	1'-0"	6	8'-8"	4	12	5'-9"	4	8	5'-9"			

Δ Epoxy Coated Bars
*See Bending Diagram

Minimum Splice Lengths	
#4	1'-4"
#5	1'-8"
#6	2'-0"

SUMMARY OF QUANTITIES (FOR INFORMATION ONLY)	
Concrete (Grade 4.0)	11.5 C.Y.
Concrete (Grade 4.0)(AE)	3.1 C.Y.
Reinforcing Steel (Gr. 60)	955 Lbs.
Reinforcing Steel (Gr.60)(Epoxy Coated)	530 Lbs.
Foundation Stabilization	6 C.Y.
Concrete for Seal Course (Set)	1 C.Y.
Granular Backfill (Wingwalls)(Set)	1 C.Y.