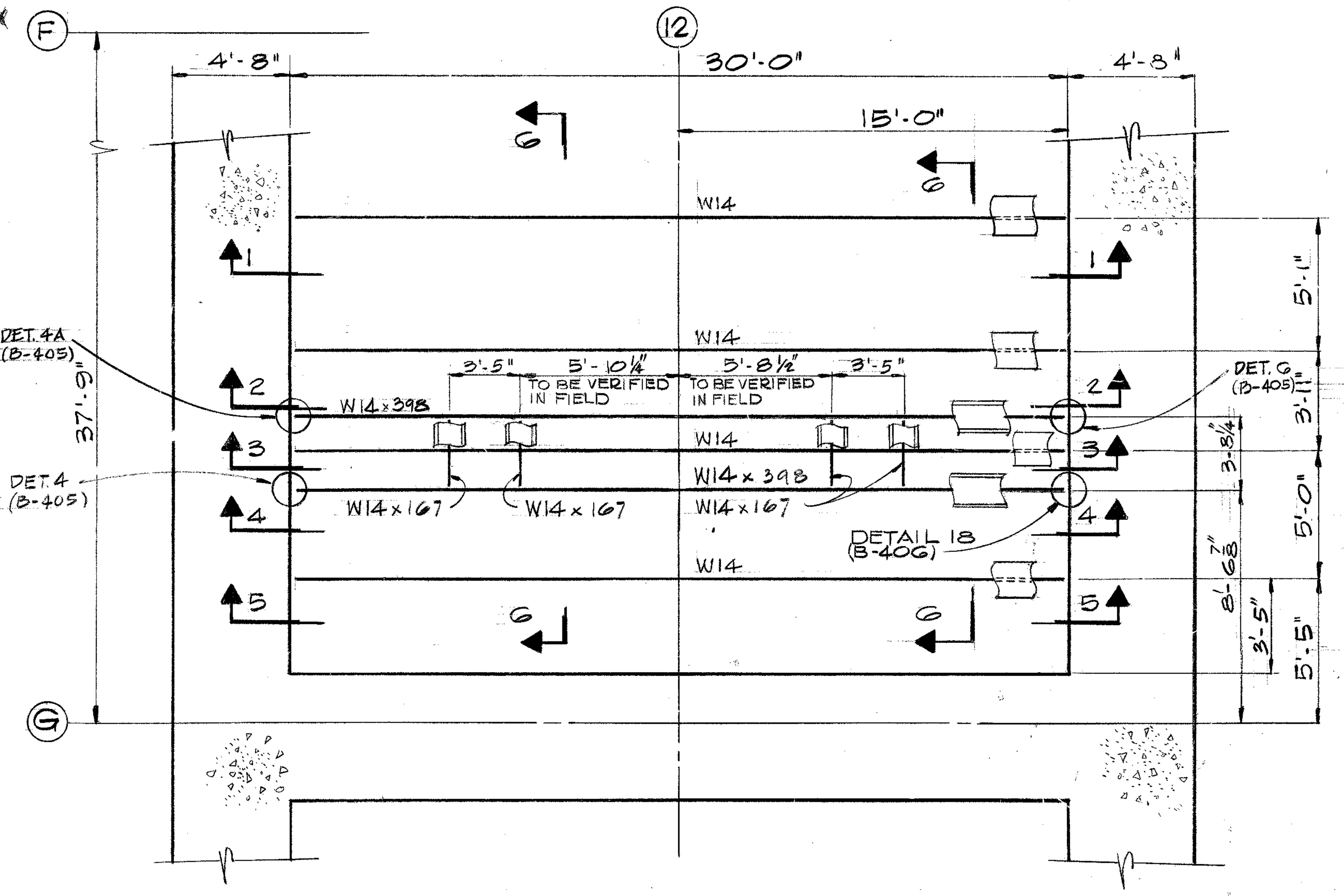
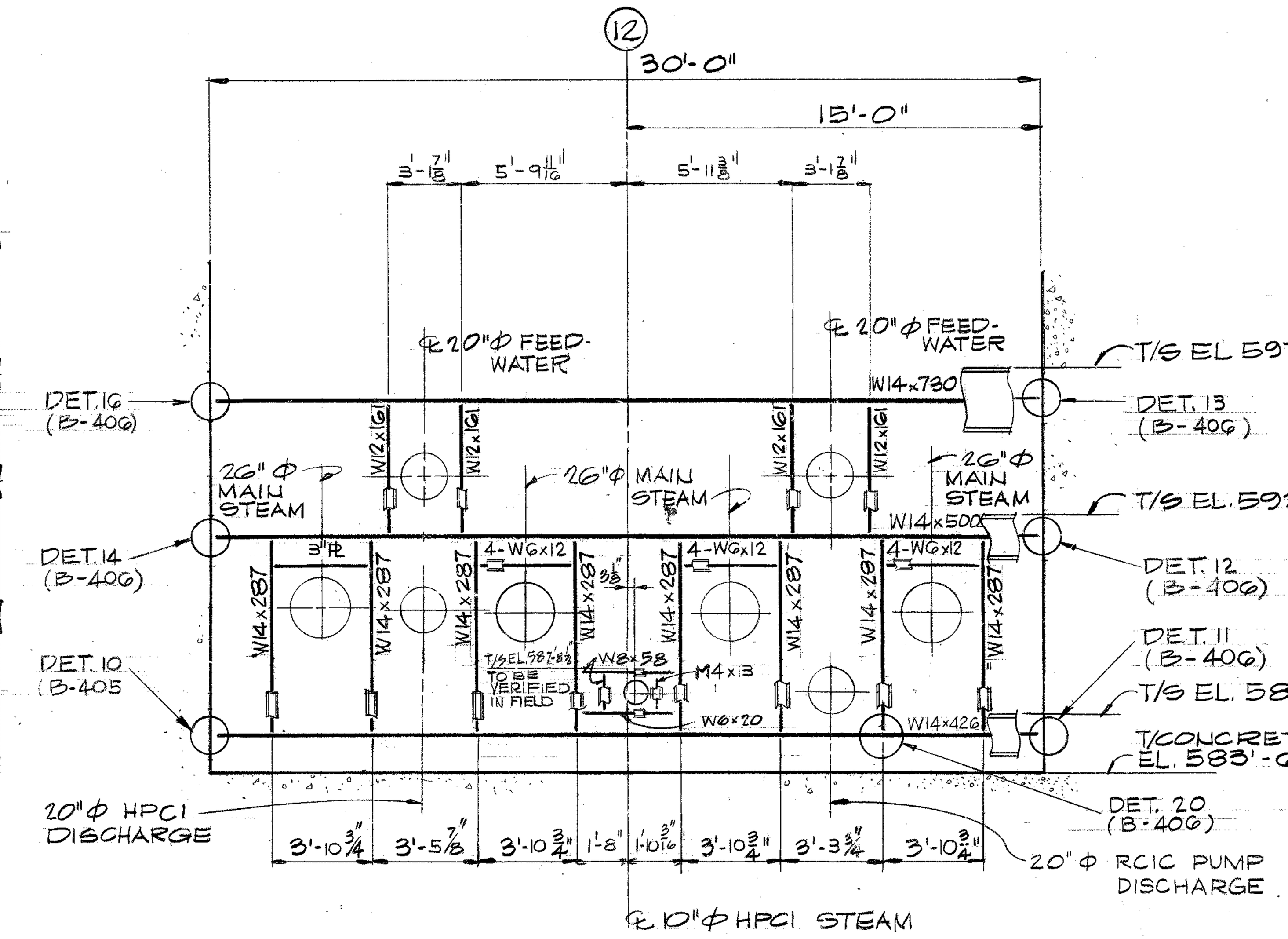
S&L REV. RECORD		
REV.	DATE	DESCRIPTION
0	4-5-77	FOR INTERNAL COMMENTS
1	4-18-77	FOR CLIENT'S COMMENTS
2	8-1-77	MATERIAL PROCUREMENT
3	11-11-77	FOR DETAILING AND MATERIAL PROCUREMENT

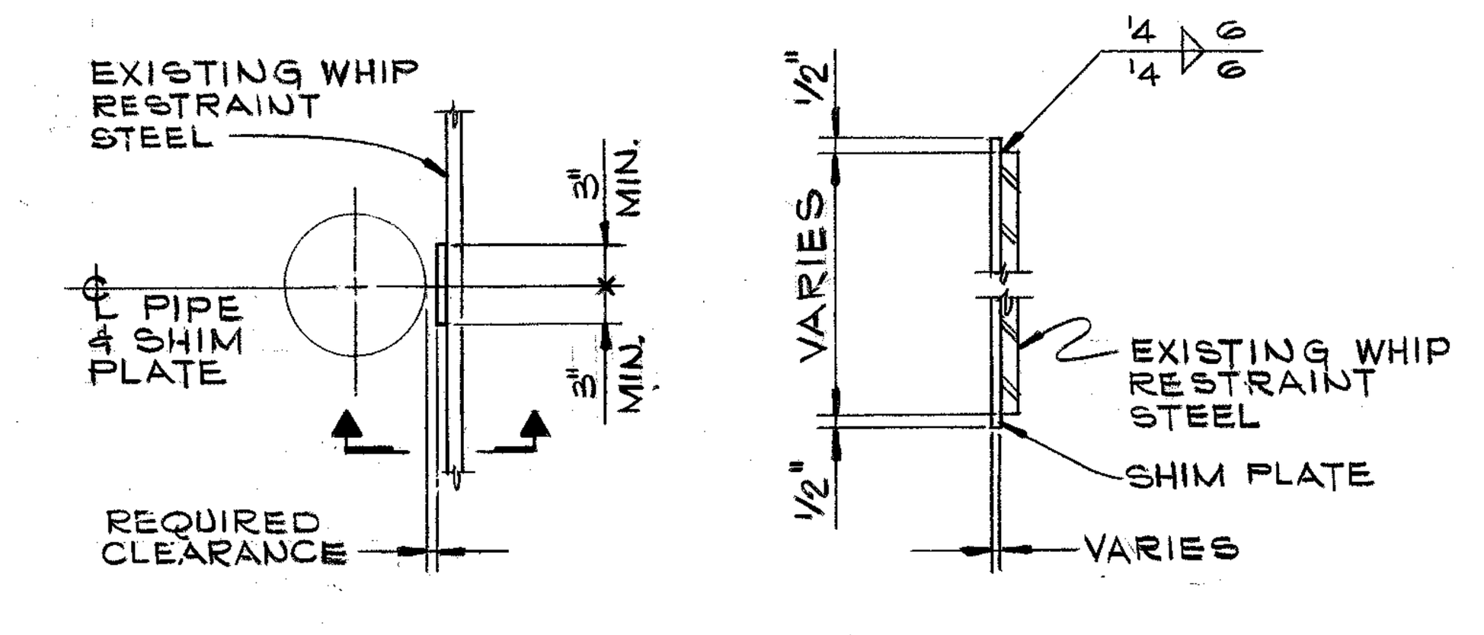


PLAN AT EL. 618'-8"



SECTION 1

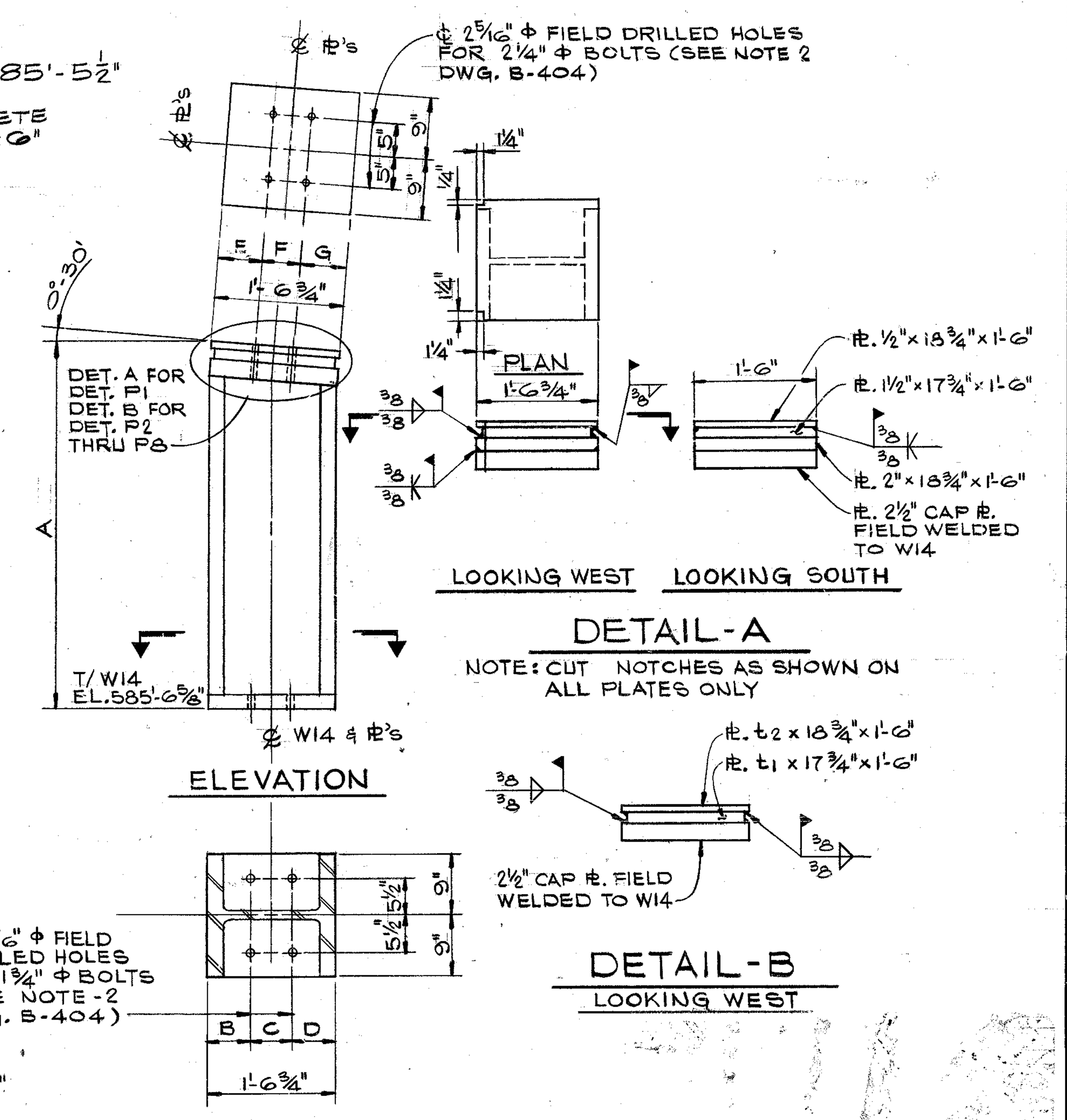
FOR DETAILS SEE ELEVATION A DWG. B-404



TYPICAL SHIM PLATE DETAIL

(SEE NOTE: 6)

SCALE: 3/4"=1'-0"



ELEVATION

DETAIL-A

DETAIL-B

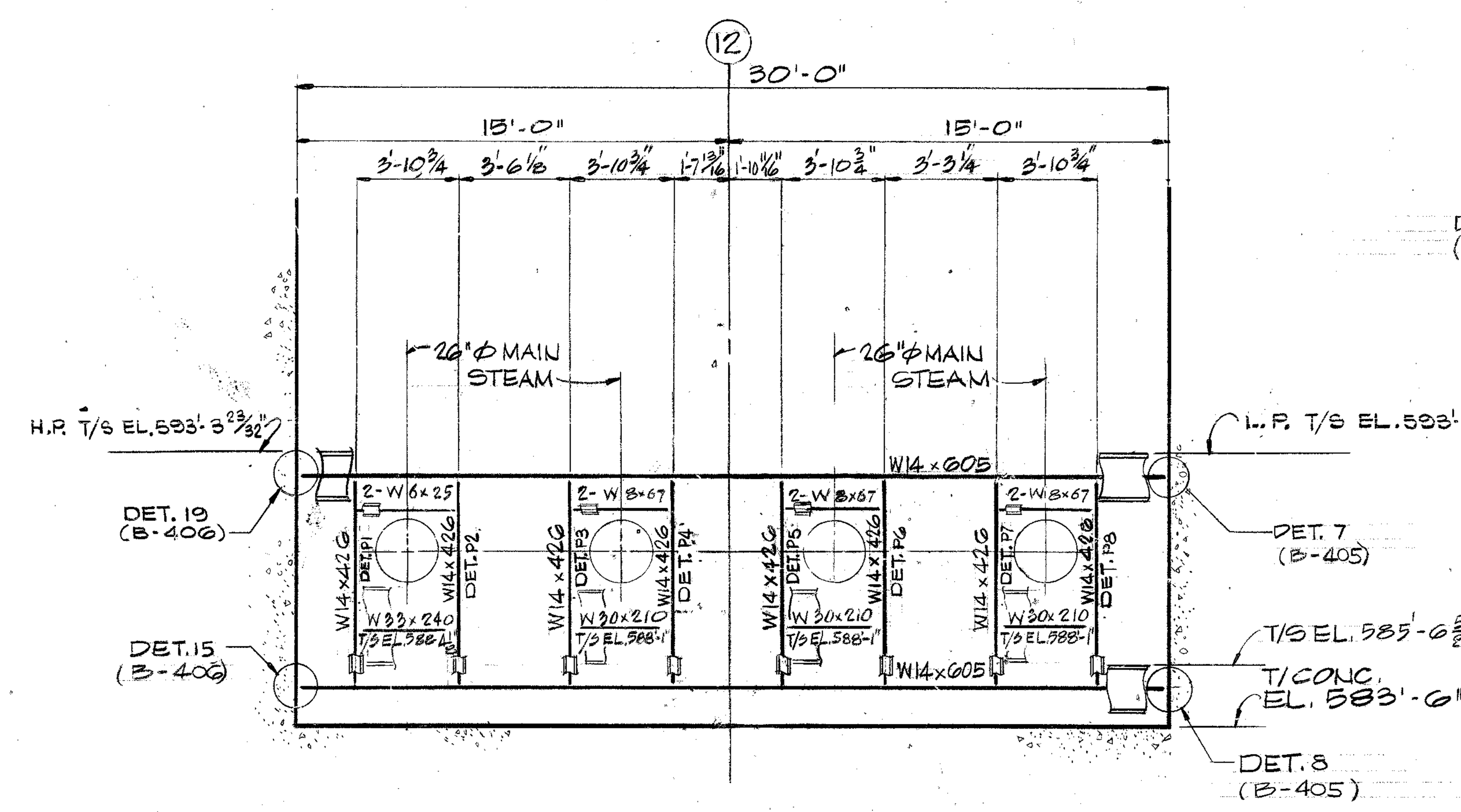
LOOKING WEST

SECTIONAL PLAN

DETAILS P1 THRU P8

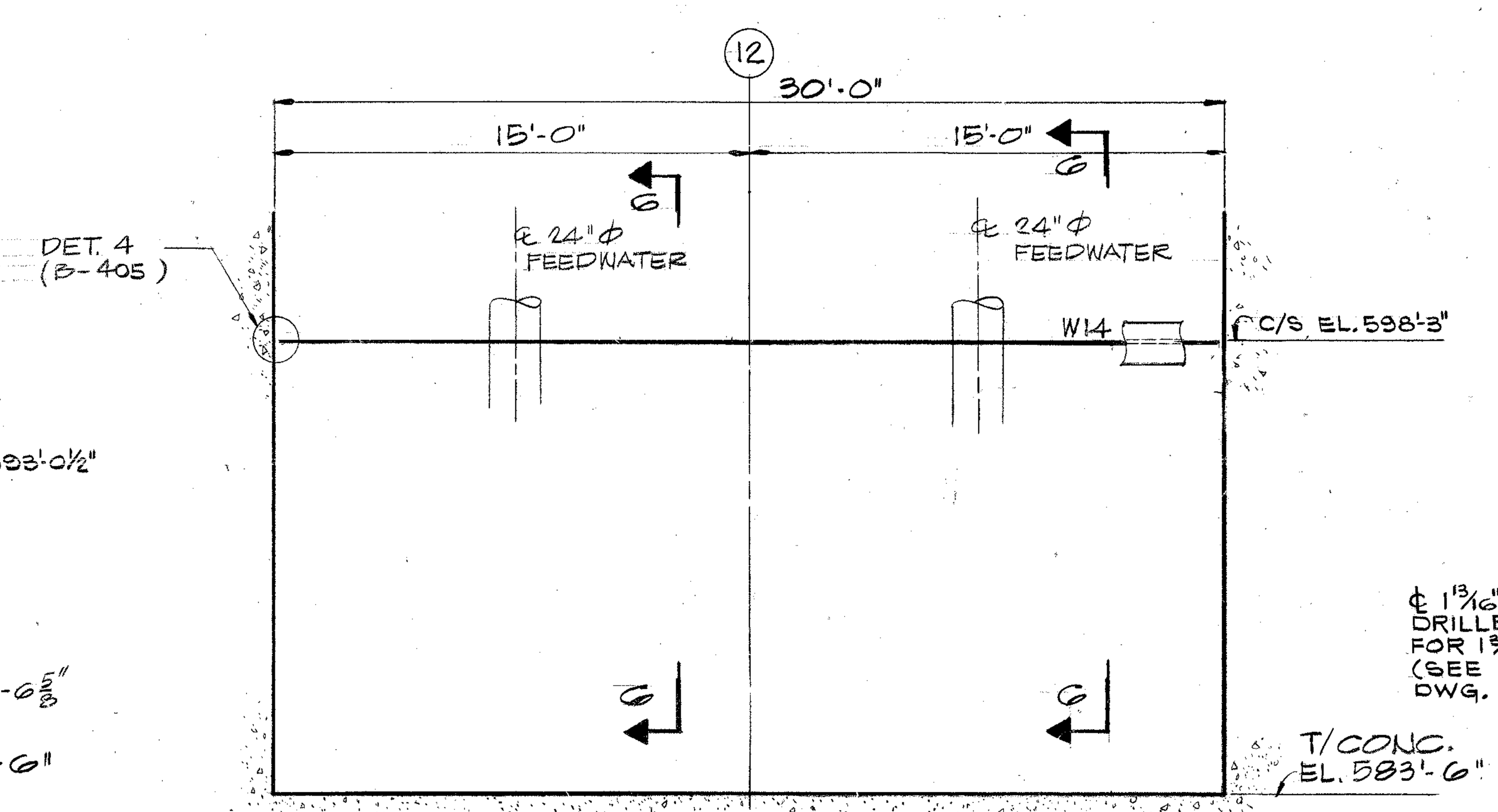
LOOKING WEST

SCALE: 3/4"=1'-0"



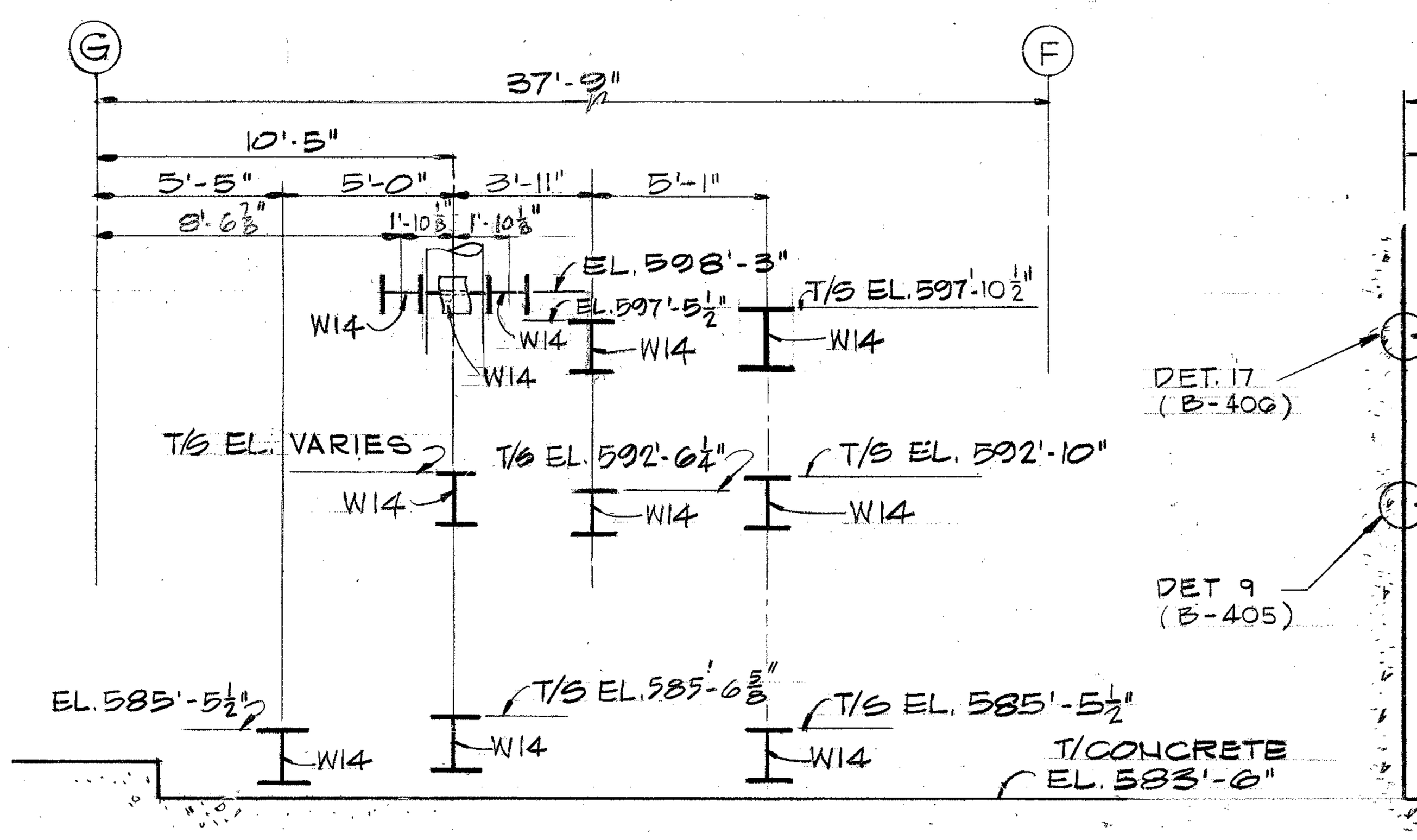
SECTION 3

FOR DETAILS SEE ELEVATION C DWG. B-404

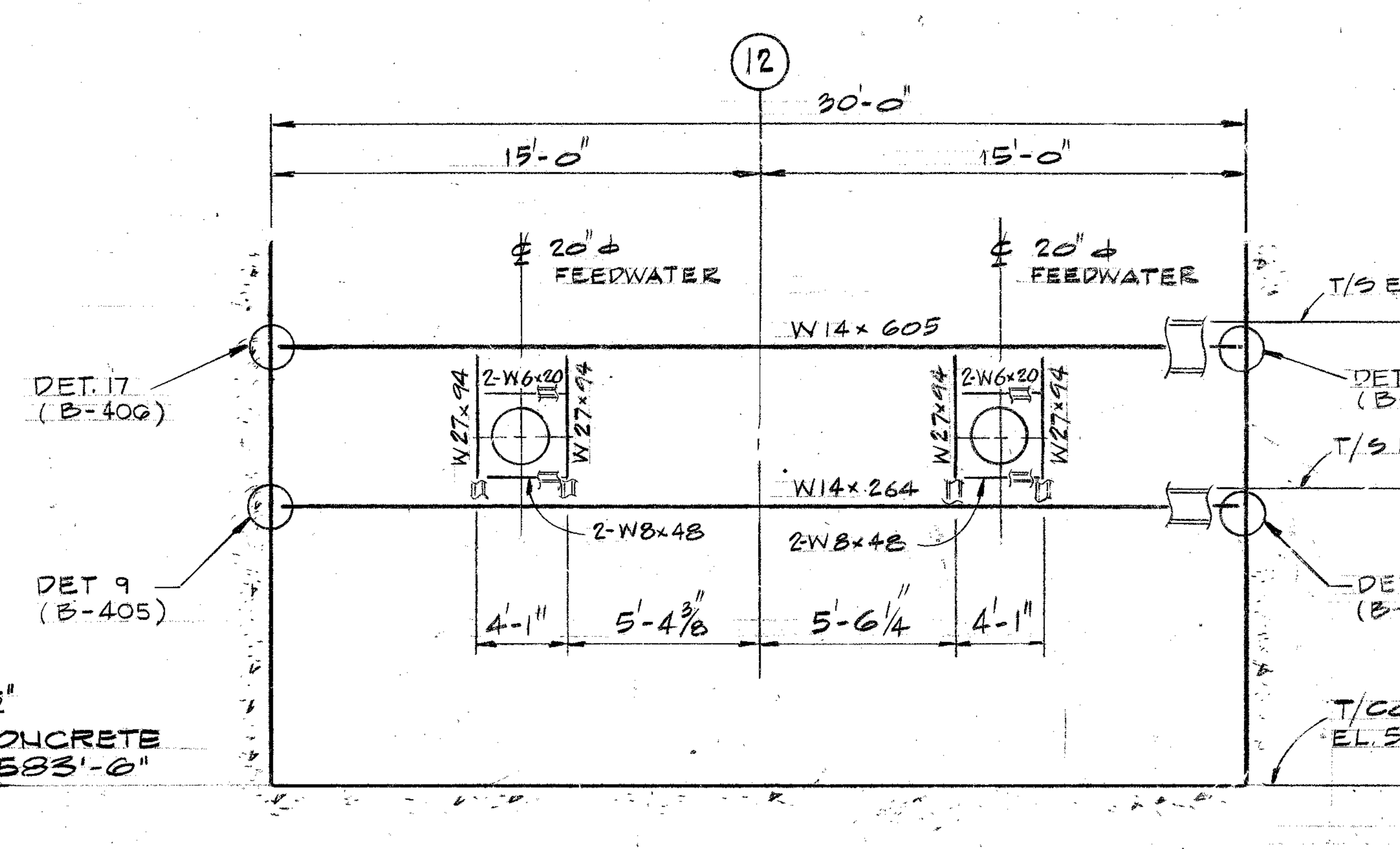


SECTION 4

FOR DETAILS SEE PLAN D DWG. B-404.

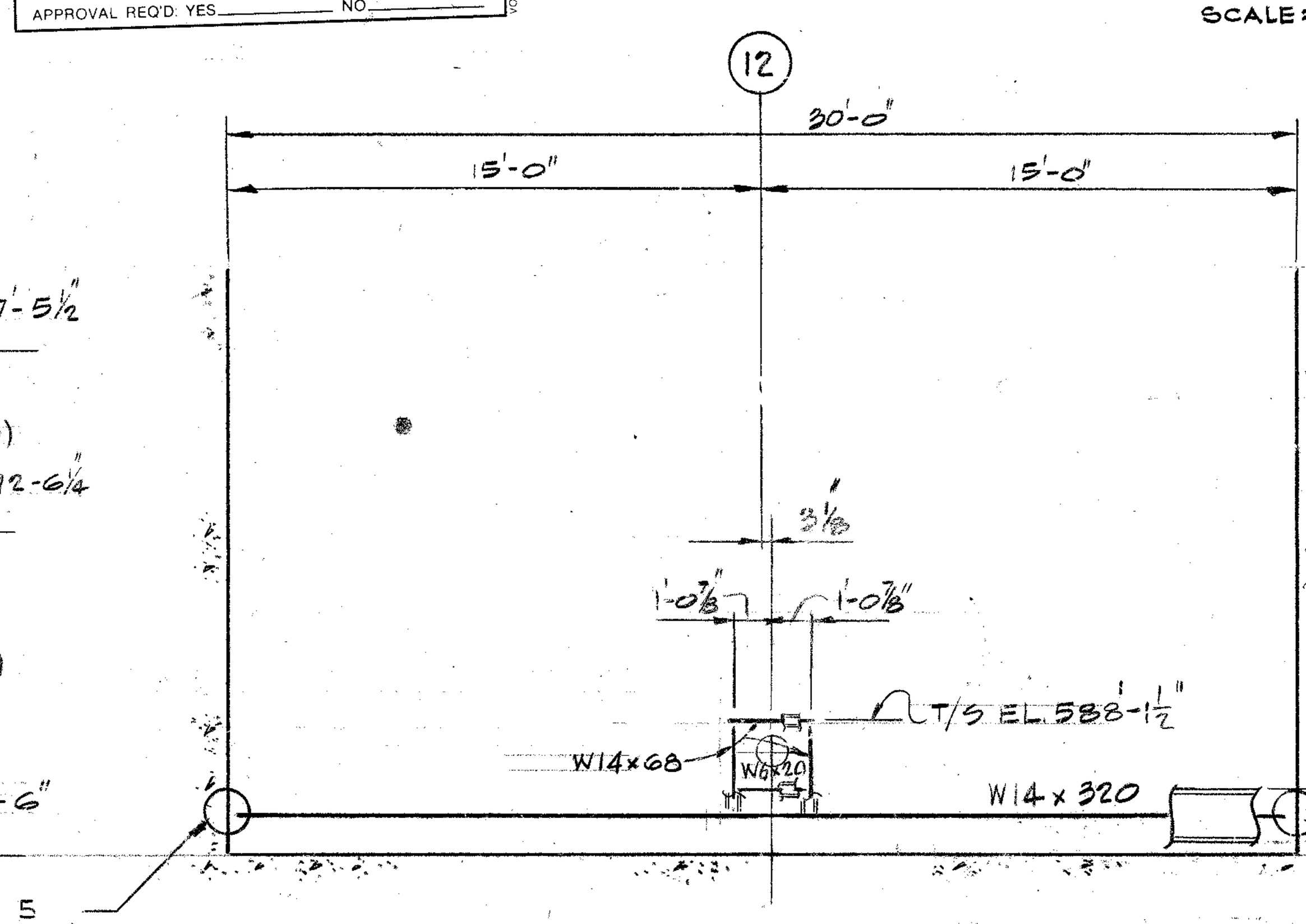


SECTION 6



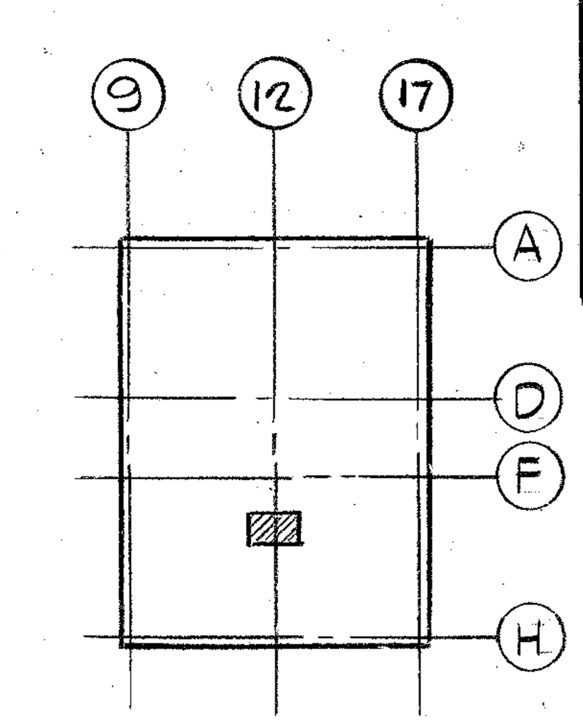
SECTION 2

FOR DETAILS SEE ELEVATIONS B & B, DWG. B-404



SECTION 5

FOR DETAILS SEE ELEVATION E DWG. B-404.



KEY PLAN

GENERAL NOTES FOR BILL OF MATERIAL BM/B2-15C

1. ALL WORK ON THESE DRAWINGS SHALL BE IN ACCORDANCE WITH BILL OF MATERIAL BM/B2-15C UNLESS OTHERWISE NOTED.
2. ALL MATERIALS SHALL CONFORM TO BILL OF MATERIAL BM/B2-15C AND AS NOTED IN THESE GENERAL NOTES.
3. ASTM A325-X AND ASTM A490-X BOLTS SHALL BE PROVIDED AS CALLED FOR ON THESE DRAWINGS HAVING THE THREADS EXCLUDED FROM THE SHEAR PLANE.
6. MATERIAL USED FOR SHIMMING SHALL BE A-588 CARBON STEEL. SHIMS SHALL BE 6" MIN. LENGTH AND CENTERED ON THE BEAM FLANGE.
7. ALL ROCK BOLTS SHALL BE AS MANUFACTURED BY "WILLIAMS FORM ENGINEERING CORPORATION" OR EQUAL AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
9. ALL CORED HOLES IN CONCRETE FOR THROUGH BOLTS SHALL BE 1/2 IN. LARGER THAN THE BOLT DIAMETER.
10. ALL CORED HOLES SHALL BE FILLED WITH NON-SHRINK GROUT OF EQUAL OR GREATER STRENGTH THAN THE CONCRETE AND INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
11. CUTTING OF REINFORCING BARS WHEN CORING HOLES IN THE CONCRETE SHALL NOT BE PERMITTED.
12. AN EXACT LOCATION OF ALL CORED HOLES SHALL BE DOCUMENTED IN THE FIELD AND THE INFORMATION FORWARDED TO SARGENT AND LUNDY FOR REVIEW.
13. FIELD MEASUREMENTS SHALL BE PERFORMED PRIOR TO FABRICATION OF ANY STEEL.
14. LOCATION OF EXISTING EMBEDDED PLATES SHALL BE VERIFIED IN FIELD.
15. ALL GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000PSI AT 28 DAYS.
16. ALL ASTM A193 GRADE B7 BOLTS IN NON-SLOTTED STEEL TO STEEL CONNECTION SHALL BE TIGHTENED TO A BOLT TENSION NOT LESS THAN 10% NOR MORE THAN 20% OF THE SPECIFIED MINIMUM TENSILE STRENGTH OF THE BOLT. THIS SHALL BE DONE IN TWO STEPS.
    1. TENSION THE BOLT TO PRODUCE THE REQUIRED STRESS.
    2. AFTER A MIN. PERIOD OF 24 HOURS THE TENSION IN THE BOLTS WILL BE CHECKED & RETENSIONED AS REQUIRED TO INSURE THAT THE PROPER TENSION IS OBTAINED. (THIS IS TO COMPENSATE FOR ANY JOINT RELAXATION.)
17. ROCK BOLTS AND THRU BOLTS SHALL BE INSTALLED FOR THE TENSION LOADS GIVEN IN THE TABLE ON DWG. B-403.
19. GROUT PAD THICKNESS OF 1½" IS A NOMINAL DIMENSION & MAY VARY TO FIT FIELD CONDITIONS. GROUT PAD THICKNESS SHALL BE AT LEAST 1".
20. ALL BOLTS IN SLIDING CONNECTIONS SHALL HAVE A STANDARD WASHER W/HEAVY HEX NUT (EXPOSED SLOT LOCATIONS SHALL HAVE 5/16" ℞ WASHER) AND SHALL BE STAKED (THREADS INTERRUPTED) AT BOLT THREAD PORTION CLOSEST TO OUTER MOST NUT THREAD AFTER THE HEAVY HEX NUT IS TORQUED TO VALUE GIVEN IN TABLE "A" FOR THE DIAMETER OF BOLT USED. ALL BOLTS SHALL BE SET AT ℄ OF SLOT OR AS TO ALLOW A MINIMUM OF ¼" THERMAL MOVEMENT OF STEEL AWAY FROM THE FIXED END AT THE TIME OF BOLT INSTALLATION. TORQUE VALUES OF HEAVY HEX NUTS SHALL BE VERIFIED WITHIN SPECIFIED RANGE GIVEN IN TABLE "A". STAKING TO BE VERIFIED AFTER TORQUE. INSPECTION TO BE DONE TO EACH BOLT IN EACH SLIDING CONNECTION.

TABLE "A" - TORQUING REQUIREMENTS FOR SLIDING CONNECTIONS

BOLT SIZE (IN.)	TORQUE RANGE FOR HEAVY HEX NUT (LB.-FT.)	MIN. TORQUE FOR JAM NUT (LB.-FT.)
3/4, 7/8, 1, 1 1/8, 1 1/4, 1 3/8	75 ± 25	50
1 1/2, 1 3/4, 2 1/2	150 ± 25	150

DETAIL NO.	t_1	t_2	A	B	C	D	E	F	G
P1	SEE DET. A	SEE DET. A	6'-0 9/16"	6¼"	6"	6½"	6 1/16"	6"	6 11/16"
P2	1"	2"	6'-0 1/16"	5½"	6"	7¼"	5½"	6"	7¼"
P3	2"	5/8"	5'-11¾"	7 1/8"	6"	5 5/8"	7 1/8"	6"	5 5/8"
P4	2"	5/8"	5'-11 7/16"	7 1/8"	6"	5 5/8"	7 1/8"	6"	5 5/8"
P5	1½"	1/2"	5'-10¾"	6¼"	6"	6½"	6¼"	6"	6½"
P6	1"	3/4"	5'-10¼"	5 7/8"	6"	6 7/8"	5 7/8"	6"	6 7/8"
P7	1"	1/2"	5'-10 1/8"	6 9/16"	6"	6 3/16"	6 9/16"	6"	6 3/16"
P8	3/4"	3/8"	5'-9 5/8"	6 3/8"	6"	6 3/8"	6 3/8"	6"	6 3/8"

6C721-2538

LATEST REVISION R

STATE OF MICHIGAN GLEN A. CHAUVIN ENGINEER No. 22139 REGISTERED PROFESSIONAL ENGINEER

NUCLEAR SAFETY RELATED

ARMS-INFORMATION SYSTEMS
DTC DDDACS DSN C-2538
PAGE ___ REV R PIS ___
December 2, 1985
PIS T22010 ___ RECIPIENT
APPROVAL REQ'D: YES ___ NO ___

ALL PREVIOUS REVISIONS TO THIS DOCUMENT HAVE BEEN APPROVED BY EDISON AND ARE IN FILE ON MICROFILM IN DOCUMENT CONTROL. 11/27/85

REV.	DESCRIPTION	ORDER	MADE BY / DATE	CH'K BY / DATE
I	CORRECTED NOTE 19 PER DECO LETTER F2581-0487	SARGENT & LUNDY OFW 8BPIAO	02-25-81	P. Daun 3-4-81
Q	DELETED DETS. 20 & 21 PER ABN 3549-1 & ADDED DET. 20 PER EDP 3550 REV. A.	SARGENT & LUNDY OFW 8BPIAO	K. Spreil 8-16-85	8-19-85
P	REV. NOTE 20 PER DCR C-1370 REV. A	SARGENT & LUNDY OFW 8BPIAO	M. Petrosian 5-14-84	T. A. Ali 10/11/84
O	REVISED NOTE 16 PER DCR P-11917.	SARGENT & LUNDY OFW 8BPIAO	D. Young 3-22-84	3-22-84
N	DELETED NOTES 4, 5 & 18 & ADDED NOTE 20.	SARGENT & LUNDY OFW 8BPIAO	R. Naruke 4-27-83	D. H. Kim 4-28-83
M	ADDED DETAIL MARK 20 AND DETAIL MARK 21 ON SECT. 1 PER DCN 6627	SARGENT & LUNDY OFW 8BPIAO	J. Blake 6/23/82	6-23-82
L	DCR I-1702 DOES NOT AFFECT THIS DWG.	SARGENT & LUNDY OFW 8BPIAO	5/11/82	S. Dutta 5-11-82
K	ADD. DETAILS P1 THRU P8 & REVISED SECT. 3 PER DCR P-8665E & DCR P-8839A. REV. SECT. 2 PER DCR P-8680B & REV. SECT. 5 PER DCR P-8870A	SARGENT & LUNDY OFW 8BPIAO	10-21-81	S. Dutta 10-29-81
R	ORIGINAL RETURNED TO DECO. ANY MODIFICATION OR ADDITION TO THIS DRAWING BY AN ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.	SARGENT & LUNDY OFW 8BPIAO	11-20-85	M. Alvi 11-20-85

ENGINEER: M. Zatorian 12-19-77
APPROVED: 12/20/77
JOB NO. 5285-13
DRAWING NO. B-400

SARGENT & LUNDY ENGINEERS CHICAGO

THE DETROIT EDISON CO. ENGINEERING DEPARTMENTS

DRAWN BY: M.A. CANTOS JR. DATE 4-5-77

TITLE: STEAM TUNNEL LOWER PIPE WHIP RESTRAINT FRAMES PLAN & SECTIONS UNIT 2

LOCATION: ENRICO FERMI ATOMIC POWER PLANT

APERT. CD. TITLE: DOCUMENT CONTROL NO. T22 01 0 000 DA 060

STM TUNNEL LWR PIPE WHIP RESTR FR

DRAWING NUMBER: 6C721-2538

SCALE: 1/4" = 1'-0"

USE DIMENSIONS ONLY DO NOT SCALE

ORDER FOR WORK: 8BPIAO

DE FORM DS 71 REV. 5-71 PTG. 1-73