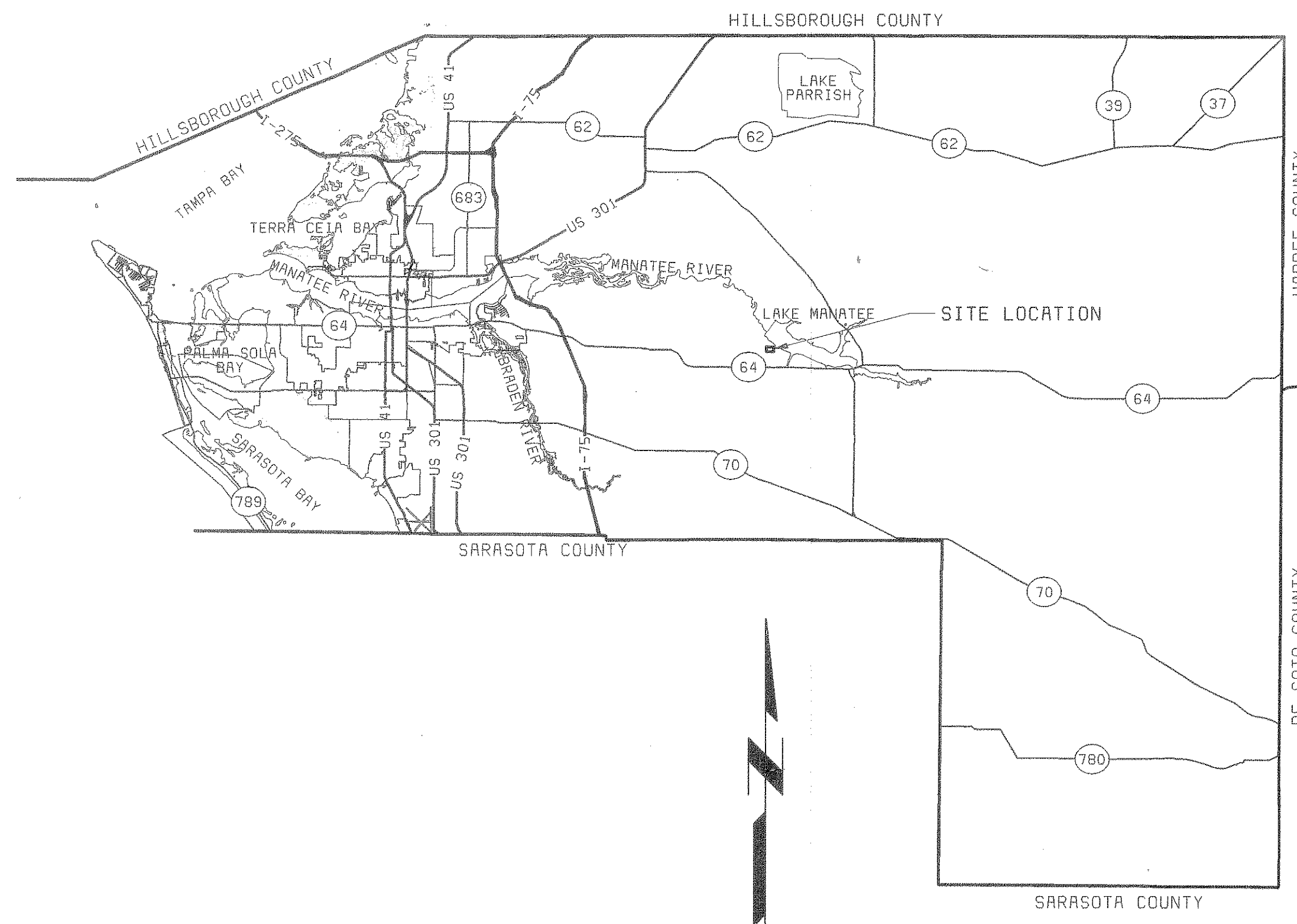


DRAWINGS FOR MANATEE COUNTY, FLORIDA WATER TREATMENT PLANT

LABORATORY EXPANSION AND PILOT PLANT

AUGUST 1998



PROJECT RECORD
AUGUST, 2000

LIST OF DRAWINGS

CIVIL

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- C-2 ENLARGED SITE PLAN
- C-3 SECTIONS AND DETAILS
- C-4 SAMPLE LINES SCHEMATIC

LANDSCAPING & IRRIGATION

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- LS-2 LANDSCAPE DETAILS
- IR-1 IRRIGATION PLAN

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- A-2 SOUTH AND WEST ELEVATIONS
- A-3 GROUND FLOOR PLAN
- A-4 SECOND FLOOR PLAN
- A-5 SECOND FLOOR ROOF PLAN & DETAILS
- A-6 BUILDING SECTIONS
- A-7 ENLARGED LAB PLAN - NORTH
- A-8 ENLARGED LAB PLAN - SOUTH
- A-9 ENLARGED LOCKER & RESTROOM PLAN
- A-10 ROOM FINISH, DOOR & WINDOW SCHEDULES
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- S-5 SECTIONS AND DETAILS
- S-6 STANDARD CONCRETE DETAILS

MECHANICAL

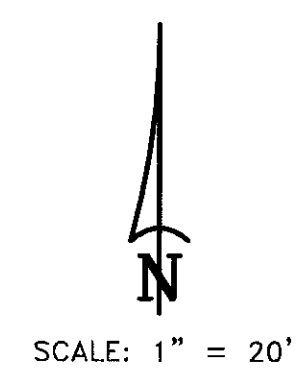
- M-1 MECHANICAL LEGENDS AND ABBREVIATIONS
- M-2 PLUMBING GROUND FLOOR PLAN
- M-3 PLUMBING SECOND FLOOR PLAN
- M-4 PLUMBING SCHEMATICS
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ELECTRICAL

- E-1 LEGEND AND ABBREVIATIONS
- E-2 ONE-LINES
- E-3 ONE-LINES
- E-4 MISCELLANEOUS ONE-LINES, SCHEMATICS & DETAILS
- E-5 SCHEMATICS
- E-6 GROUND FLOOR POWER PLAN
- E-7 GROUND FLOOR LIGHTING PLAN
- E-8 SECOND FLOOR POWER & LIGHTING PLAN
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PILOT PLANT

- P-1 FLOOR PLANS
- P-2 PROCESS SCHEMATIC
- P-2A HYDRAULIC PROFILES
- P-3 PLANS AND SECTIONS
- P-4 PLANS AND SECTIONS



- CERTIFICATE OF SURVEYOR**

RANDALL E. BRITT, REGISTERED LAND SURVEYOR, FLA. CERT. NO. 3979
NOTE: NOT VALID UNLESS IMPRINTED WITH EMBOSSED LAND SURVEYOR'S SEAL

L.A.M. MANAGEMENT INC.

C-1

SHEET
OF

1400 OGDEN ROAD	SUITE "B"	VENICE, FLORIDA	34292	(941)493-1396
6398 DANNER DRIVE	UNIT 3	SARASOTA, FLORIDA	34240	(941)377-8454

Revision: Added Parking & Valve Location With Elevations 4/7/00

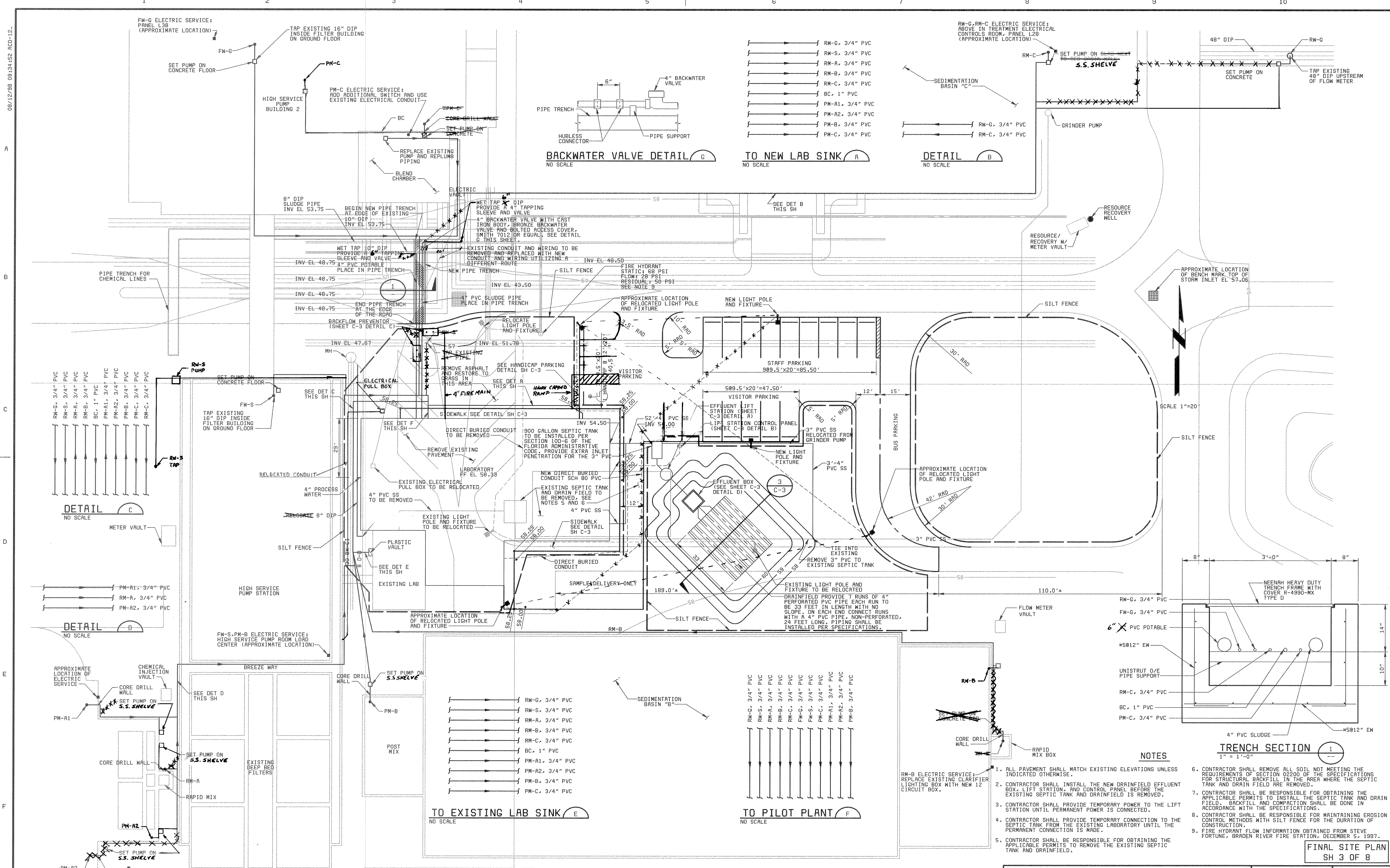
LABORATORY EXPANSION AND PILOT PLANT
GENERAL SITE PLAN

21-41

DESIGNED _____ TSM
DETAILED _____ VVR, AJM
CHECKED _____ RAM
APPROVED _____
DATE _____



PROJECT NO.
28551



28551-310-000-C002
G1027
F000000

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED	TSM
DETAILED	VVR, RJM
CHECKED	RAM
APPROVED	
DATE	

Black & Veatch
Tampa, Florida

PROJECT NO.
28551

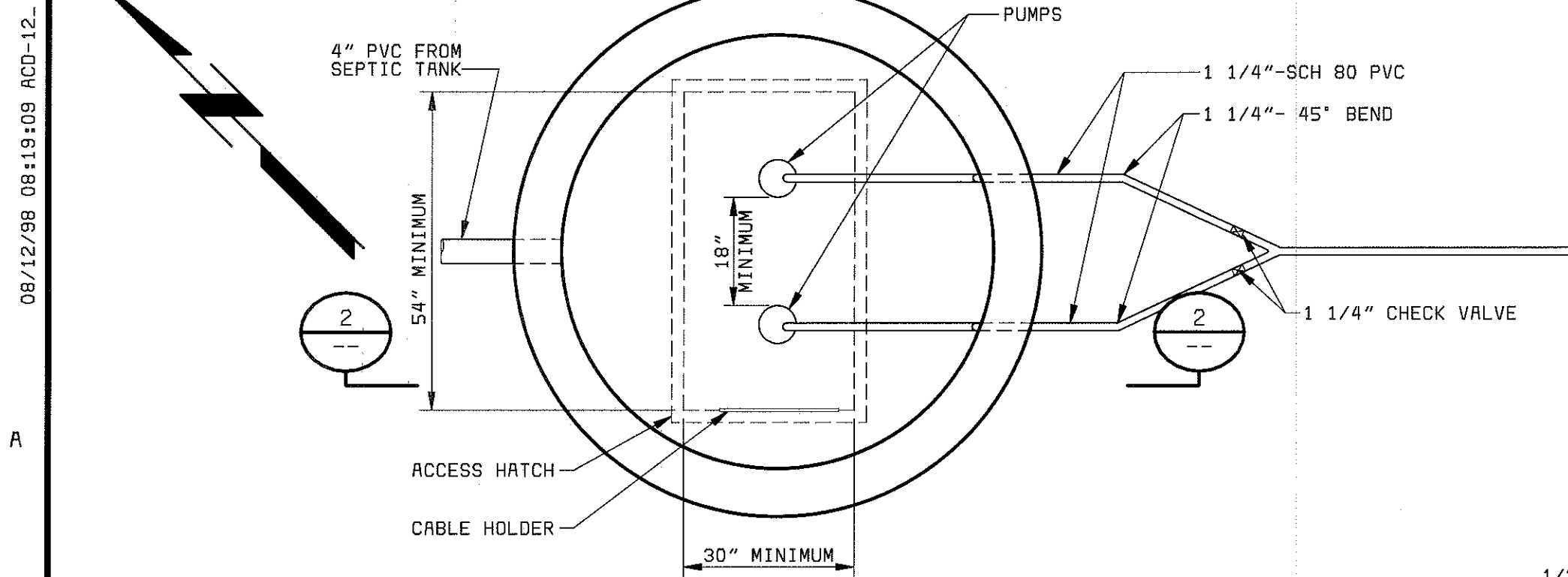
MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION AND PILOT PLANT
ENLARGED SITE PLAN

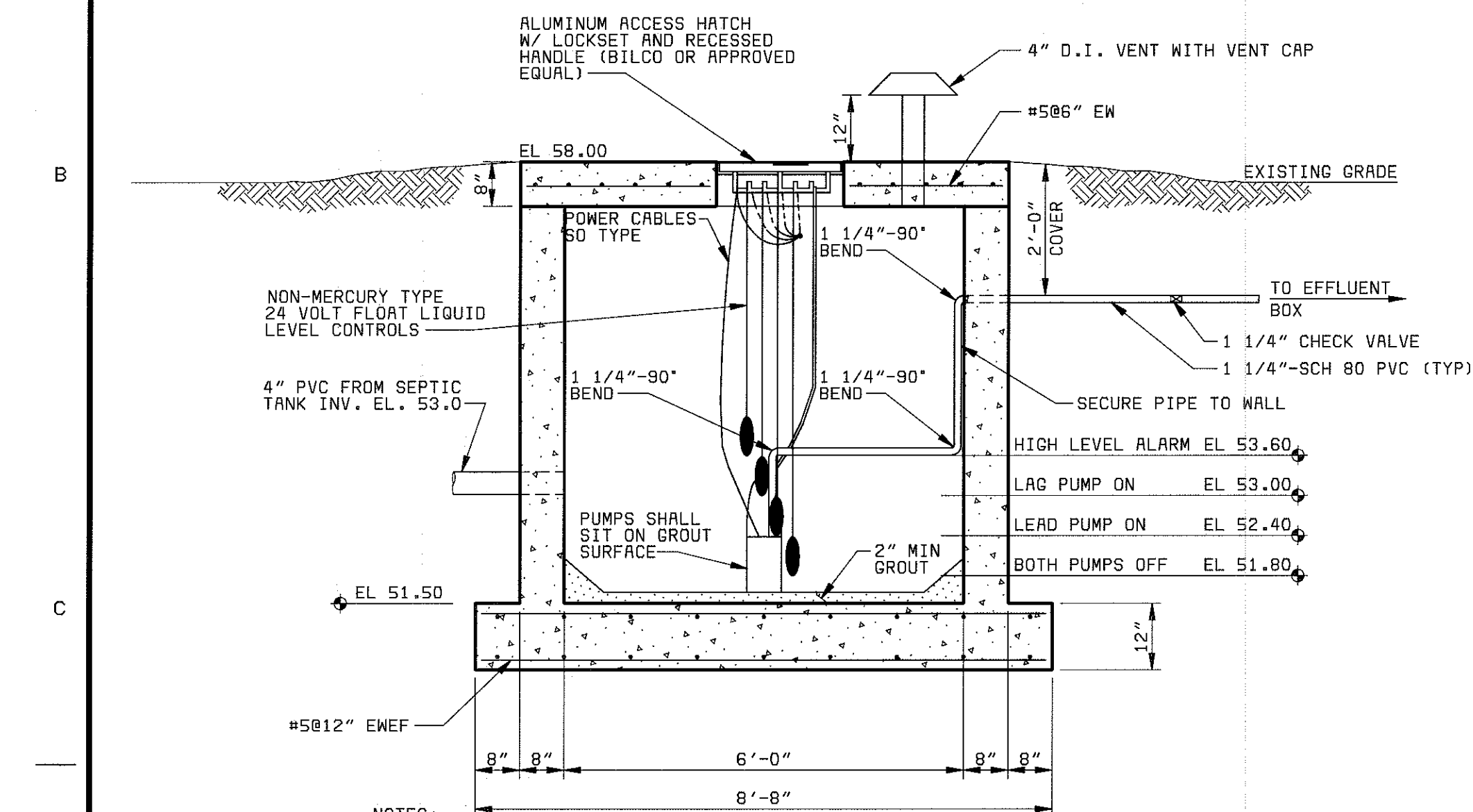
FINAL SITE PLAN
SH 3 OF 8

C-2

SHEET
OF

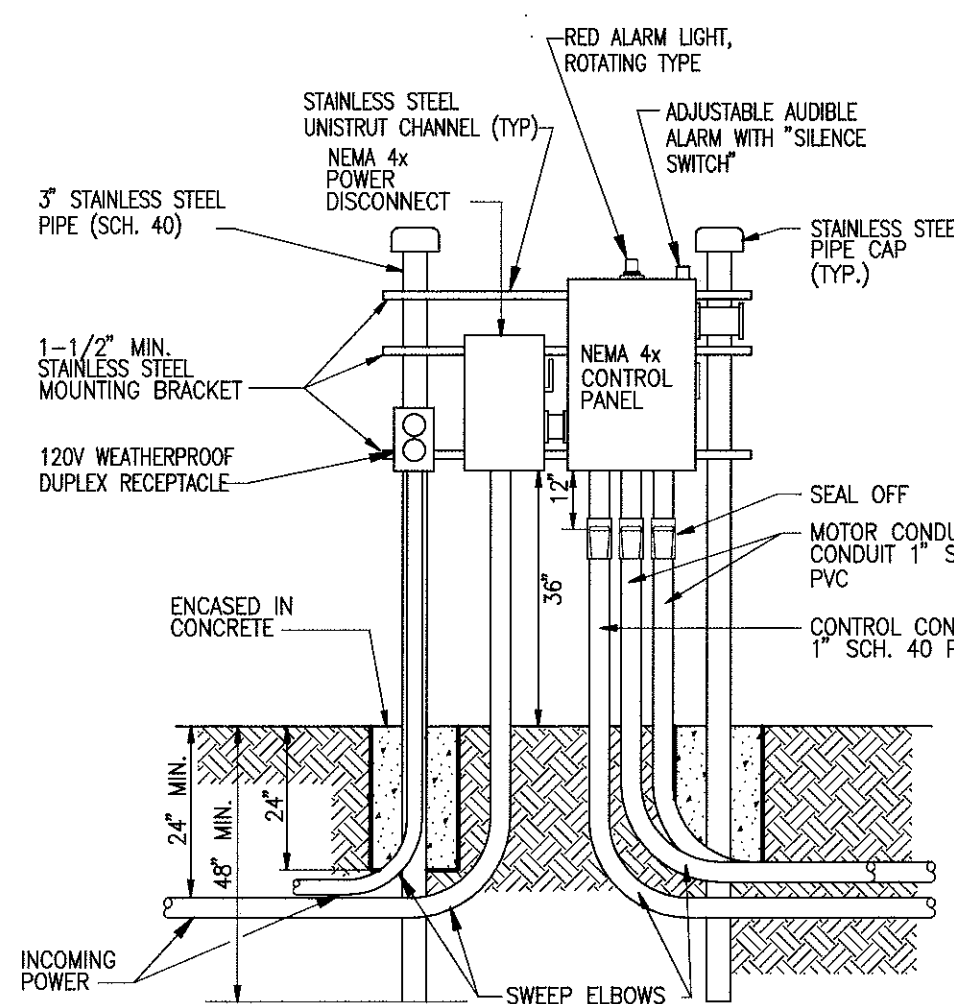


EFFLUENT LIFT STATION
1/2" = 1'-0"

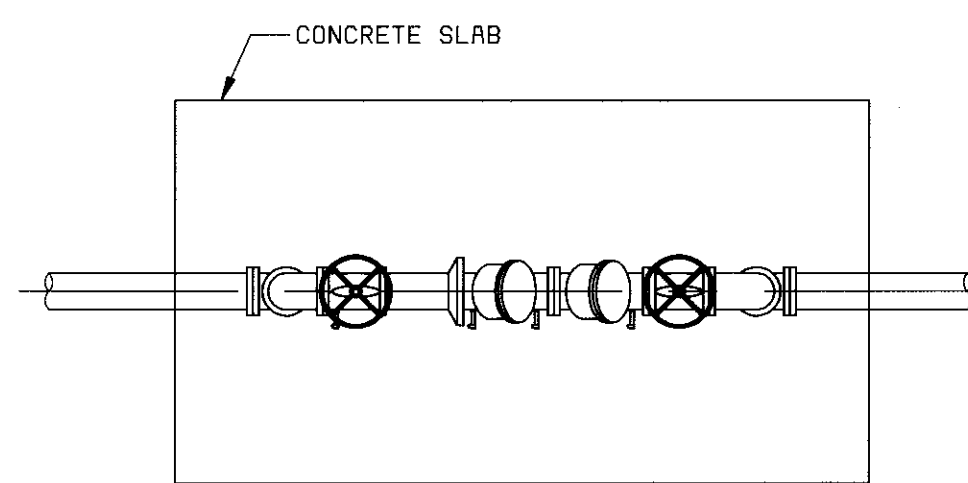


- NOTES:
1. ALL EXPOSED METAL SHALL BE PRINTED WITH 2 COATS OF EXTERIOR ENAMEL PAINT.
 2. WET WELL SHALL BE COATED WITH COAL TAR INSIDE AND OUT. (TWO COATS, 9 MILS EACH.)
 3. ALL LOCATIONS WHERE PIPES ENTER OR LEAVE THE WET WELL SHALL BE MADE WATERTIGHT WITH WALL SLEEVE OR NON-SHRINK GROUT.
 4. THERE SHALL BE NO VALVES OR ELECTRICAL JUNCTION BOXES IN WET WELL.
 5. WET WELL COVER SHALL BE ALUMINUM WITH 316 S.S. HARDWARE AND LOCK BRACKET.
 6. PUMPS SHALL BE:
MANUFACTURER: GRUNDOS; MODEL: AP12; MM. SPEED: 3350 RPM;
DISCHARGE SIZE: 1 1/4"; VOLTAGE: 115; 1/2 HP MAX. SOLID SIZE: 7/16".
 7. OPERATING CONDITIONS SHALL BE ONE PUMP 29.5 GPM @23 FEET TDH, AND TWO PUMPS 34.5 GPM @ 27 FEET TDH.
 8. ALL HARDWARE IN WET WELL SHALL BE STAINLESS STEEL.

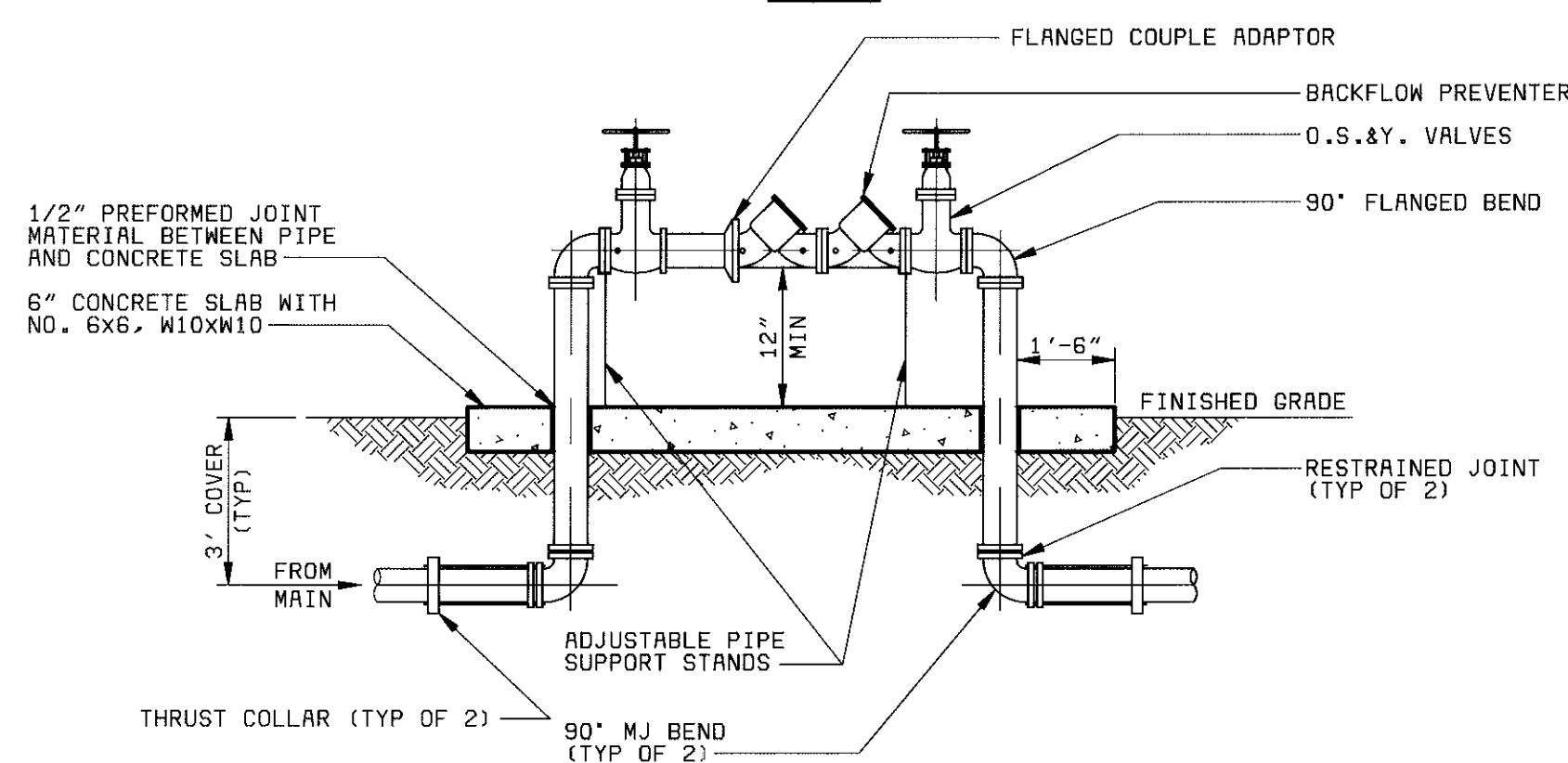
SECTION 2
1/2" = 1'-0"



**LIFT STATION CONTROL PANEL
INSTALLATION DETAIL**
NO SCALE



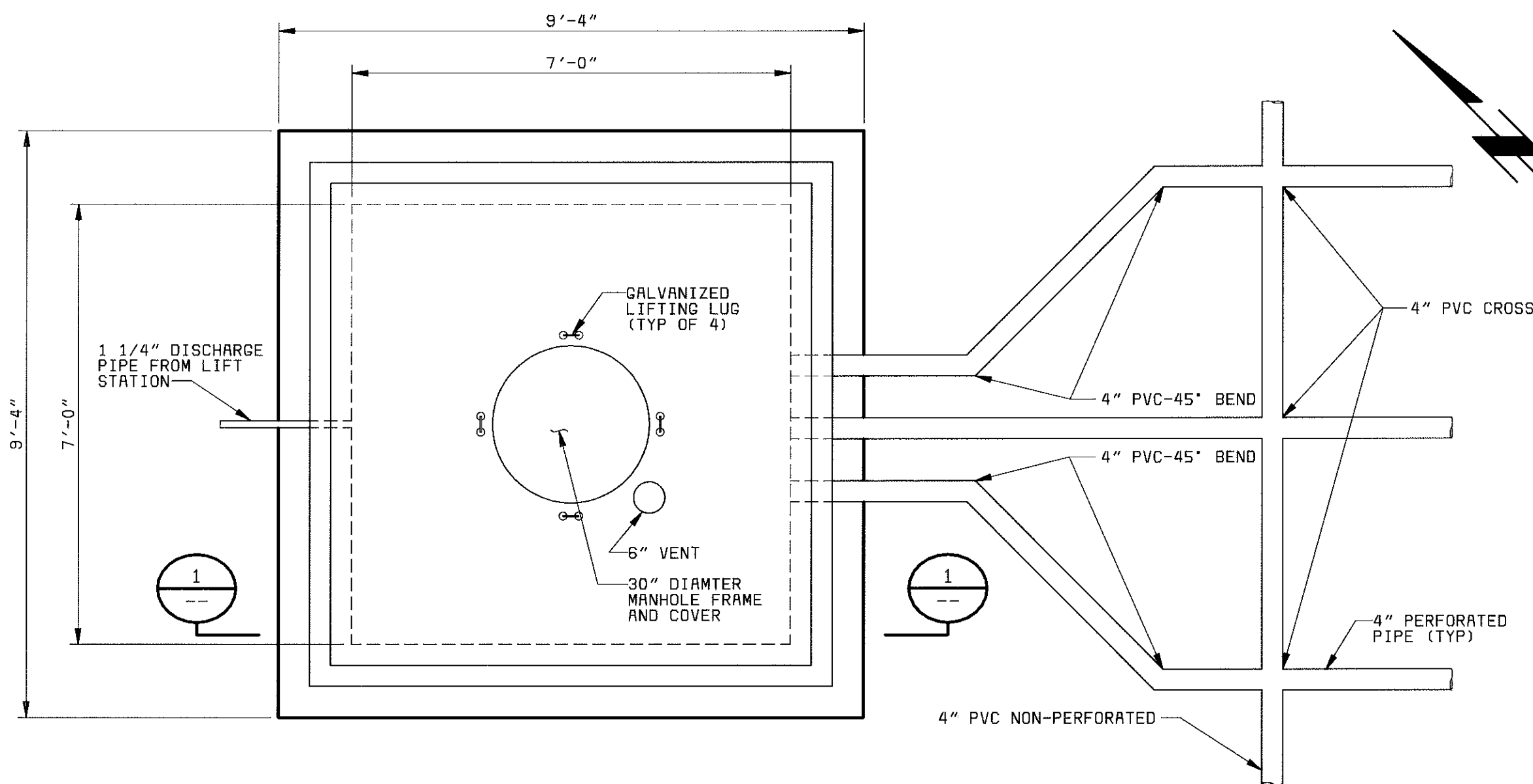
PLAN



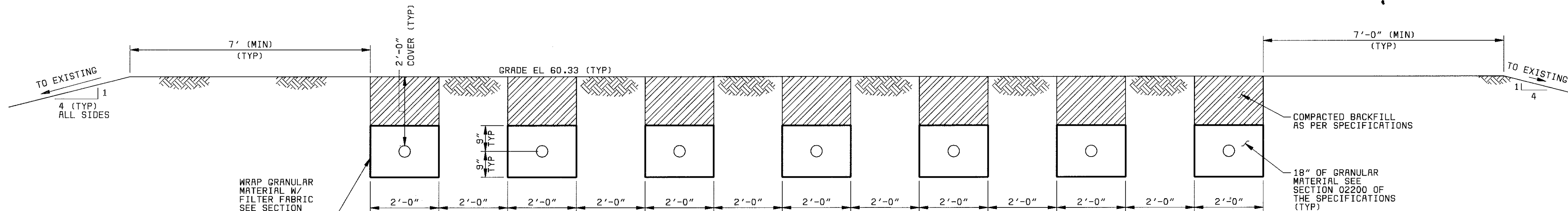
SECTION

- NOTES:
1. ALL PIPE AND FITTINGS 2" AND SMALLER SHALL BE THREADED BRASS. PROVIDE UNIONS EACH SIDE OF BACKFLOW PREVENTOR.
 2. ALL ABOVE GROUND PIPE LARGER THAN 2" SHALL BE FLANGED DUCTILE IRON.

REDUCED PRESSURE BACKFLOW PREVENTER
NO SCALE



EFFLUENT BOX DETAIL
1/2" = 1'-0"



SECTION 3
1/2" = 1'-0"



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Tampa, Florida

PROJECT NO.
28551

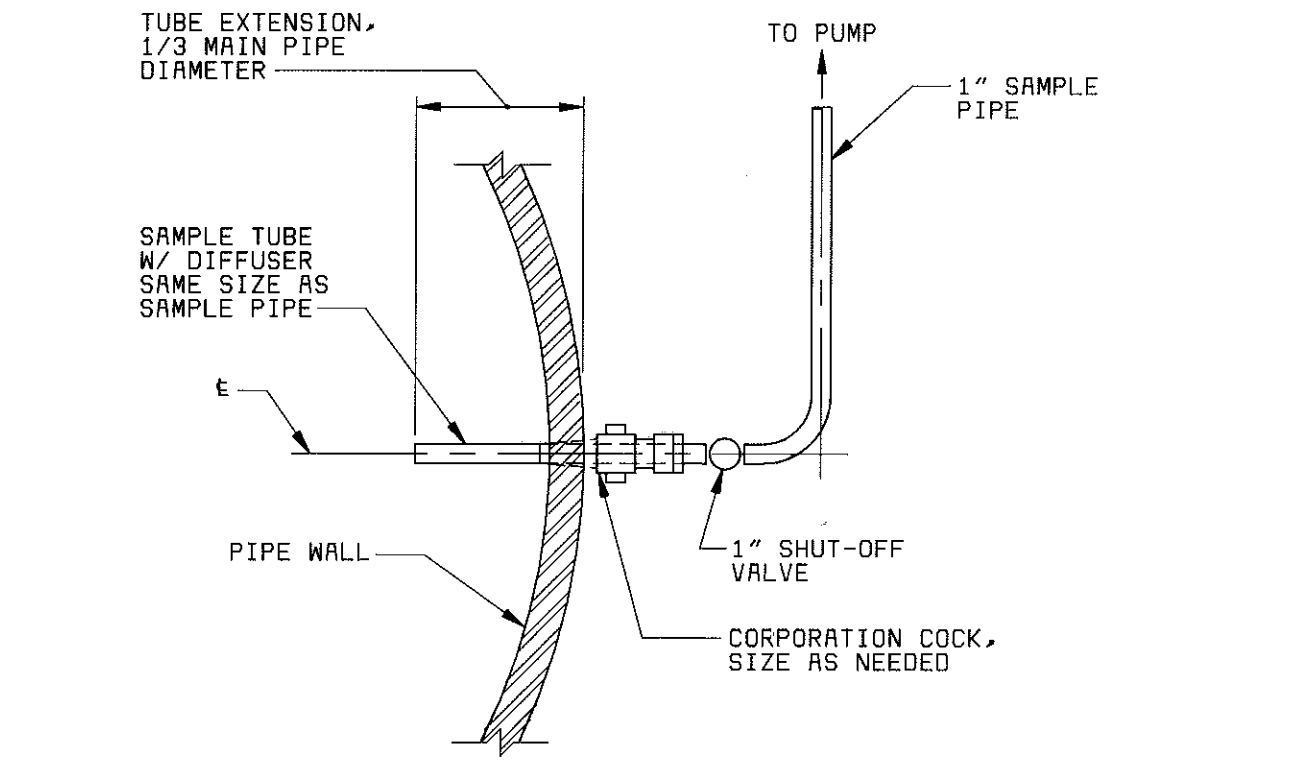
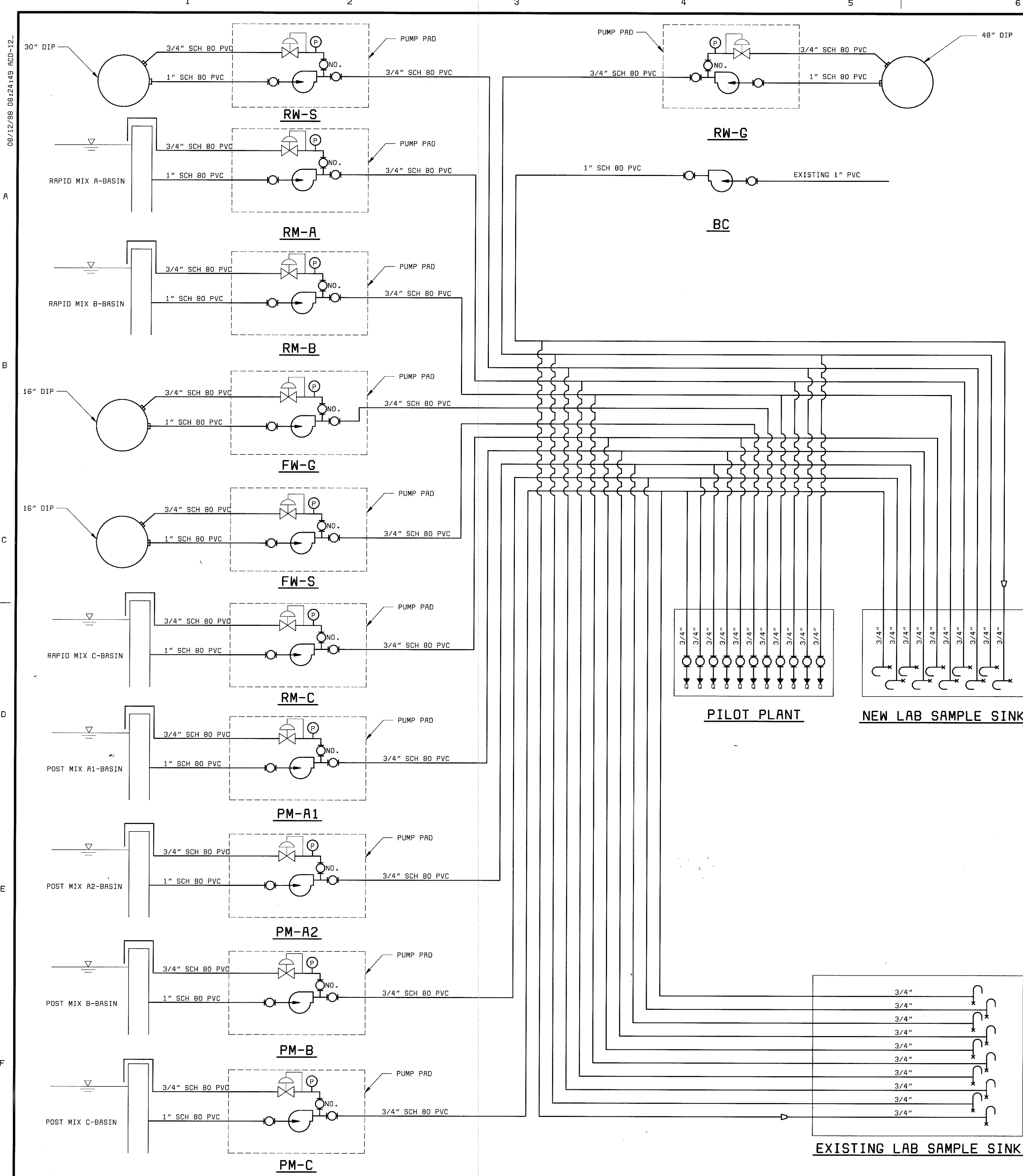
**MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP**

**LABORATORY EXPANSION AND PILOT PLANT
SECTIONS AND DETAILS**

21-41

C-3

**SHEET
OF**

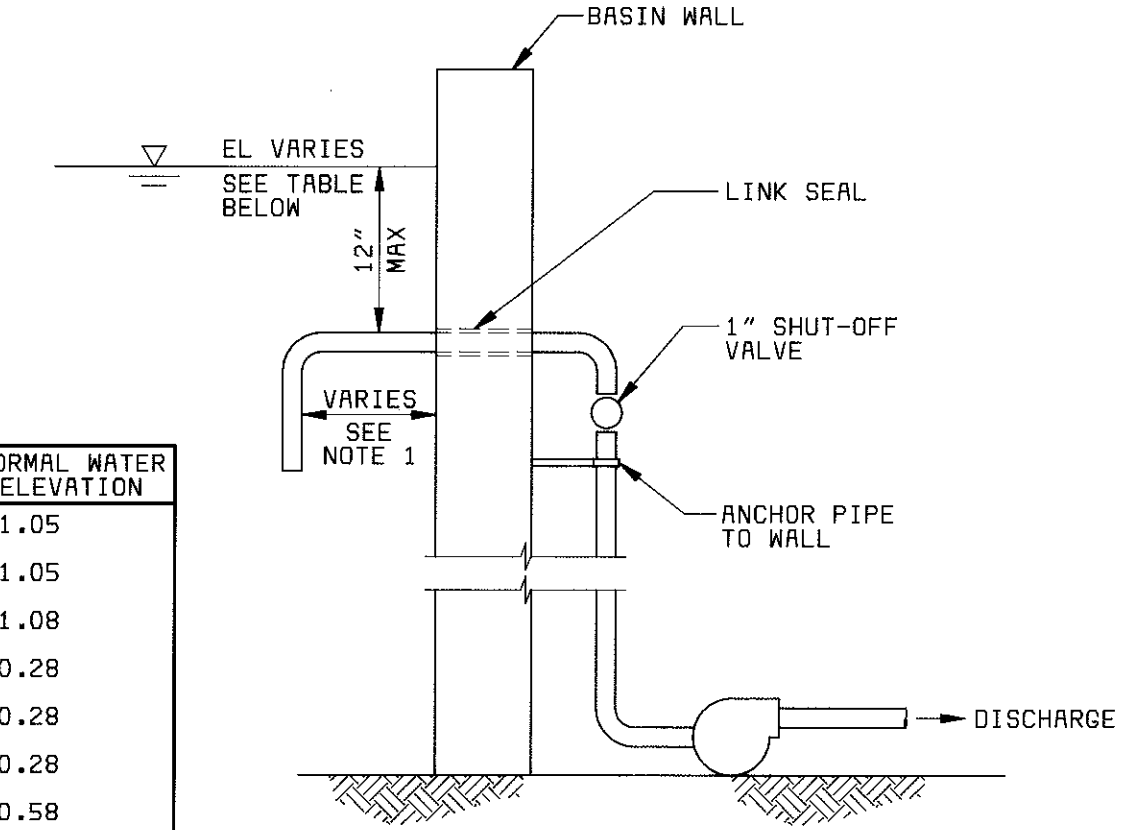


TYPICAL PIPE SECTION FOR SAMPLE PIPES
NO SCALE

BASIN	NORMAL WATER ELEVATION
RM-A	71.05
RM-B	71.05
RM-C	71.08
PM-A1	70.28
PM-A2	70.28
PM-B	70.28
PM-C	70.58

- TAPPING NOTES:**
1. CONTRACTOR SHALL COORDINATE LOCATION OF PIPE IN EACH BASIN WITH THE OWNER.
 2. CONTRACTOR SHALL COORDINATE WORK WITH OWNER TO ALLOW ADEQUATE TIME TO DRAW THE BASINS DOWN.
 3. CONTRACTOR SHALL ONLY DO ONE BASIN WALL AT A TIME.
 4. CONTRACTOR SHALL CORE DRILL BASIN WALLS TO INSERT SAMPLE LINES. SAMPLE LINES SHALL BE CENTERED IN THE CORED WALLS BEFORE SEALING USING LINK SEAL. THE FINISHED WORK SHALL BE WATER TIGHT.

TYPICAL WALL TAPPING DETAIL
NO SCALE



- LEGEND**
- QUICK CONNECT/DISCONNECT COUPLING
 - FAUCET
 - BALL VALVE
 - SAMPLE PUMP
 - REDUCER
 - NO.
 - PRESSURE SUSTAINING VALVE
 - PRESSURE GAUGE

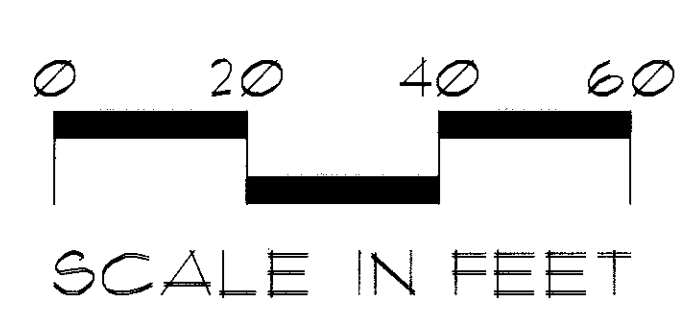
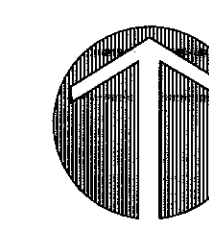
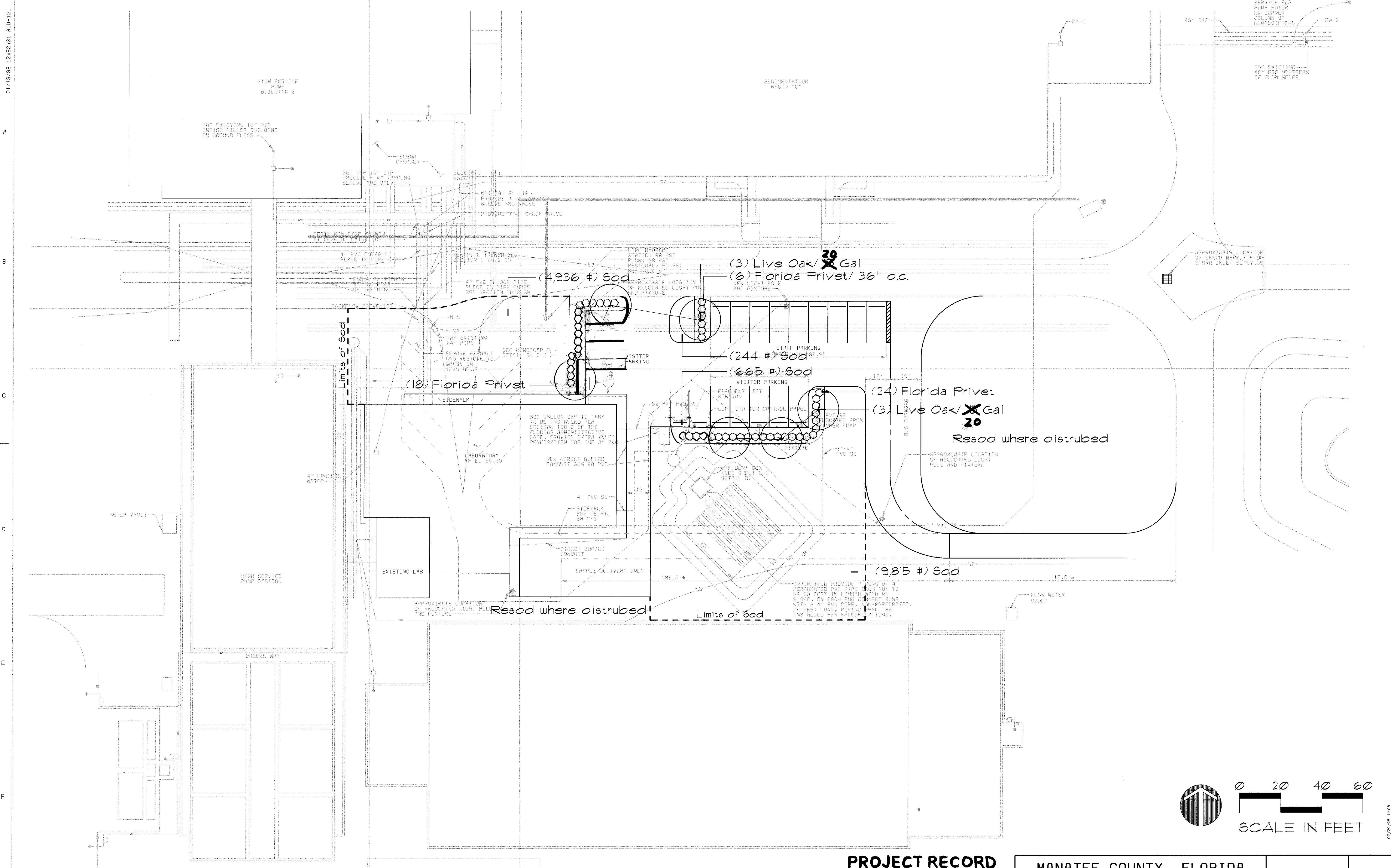
PROJECT RECORD

MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP		C-4 SHEET OF
LABORATORY EXPANSION AND PILOT PLANT SAMPLE LINES SCHEMATIC		
PROJECT NO. 28551	21-41	

DESIGNED _____ TSM
 DETAILED _____ TSM-VVR
 CHECKED _____ RAM
 APPROVED _____
 DATE _____



DATE _____ REVISIONS AND RECORD OF ISSUE _____ NO. BY CK APP _____



SCALE IN FEET

07/29/98-11:08
Location:
F:\28551\03\27\LAB.PLAN\LS-1

PROJECT RECORD

28551-310-000-C002	61027	F000000
4/00	CONFORMED TO CONSTRUCTION RECORD	16
DATE	REVISIONS AND RECORD OF ISSUE	NO. BY CK APP

GENESIS GROUP
Engineering • Landscaping Architecture • Planning • Surveying
2910 North US Highway 90, Suite 100 Tampa, Florida 33605
813-920-4900 Fax 813-920-4900 www.genesis.com
Chgo • Jacksonville • Orlando • Tallahassee • Tampa

DESIGNED	KLC
DETAILED	KLC
CHECKED	RCF/ALH
APPROVED	RCF
DATE	4/16/98

Black & Veatch
Tampa, Florida

PROJECT NO.
28551

MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP	21-41	LS-1 SHEET OF
LABORATORY EXPANSION AND PILOT PLANT LANDSCAPE PLAN		

01/13/98 12:52:31 ACD-12-

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07/29/98-11:08
kcaashn
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 **GENESIS**
GROUP

Engineers • Landscapes Architects • Planners • Surveyors

3910 North US Highway 301, Suite 140 Tampa, Florida 33611
(813)462-4590 Fax: (813)462-4899 www.genesis-co.com

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Tampa, Florida

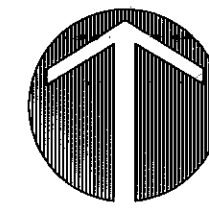
MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

21-41

SHEET
OF



1. REFER TO PLANTING PLAN AND COORDINATE IRRIGATION TRENCH LOCATIONS TO AVOID PROPOSED TREES AND LARGE SHRUBS.
2. MAIN LINE PIPING SHALL BE BURIED TO HAVE MINIMUM COVER OF 18" FROM PROPOSED GRADE. LATERAL PIPING DOWNSTREAM OF AUTO VALVE SHALL BE BURIED A MINIMUM COVER OF 12".
3. VERIFY CONDITIONS AS SHOWN ON DRAWINGS AT THE SITE PRIOR TO COMMENCEMENT OF WORK UNDER THIS CONTRACT.
4. IRRIGATION INSTALLATION SHALL CONFORM TO LOCAL/ STATE CODES AS REQUIRED.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL ADJUSTMENT OF SPRINKLER ARC AND RADIUS TO ASSURE COVERAGE.
6. CONTRACTOR SHALL PROVIDE AS-BUILT IRRIGATION PLANS TO OWNER.
7. 120 VOLT WIRING TO BE INSTALLED BY LICENCED ELECTRICIAN PER NEC AND LOCAL CODES.
8. ALL WIRE VALVE CONNECTIONS SHALL BE PERFORMED WITH TYPE "UF" NO. 14 WIRE AND W/P. WIRE CONNECTERS MANUFACTURED SPECIFICALLY FOR IRRIGATION CONNECTIONS. WIRE NUTS SHALL NOT BE ACCEPTABLE.
9. IF THE CONTRACTOR IN THE COURSE OF WORK FINDS OR SUSPECTS ANY DISCREPANCY BETWEEN THE DRAWINGS AND THE PHYSICAL CONDITIONS OF THE SITE OR WORK, OR ANY ERRORS OR OMISSIONS ON THE CONTRACT DRAWINGS OR SPECIFICATIONS, HE SHALL IMMEDIATELY NOTIFY THE OWNER IN WRITING, AND THE OWNER WILL PROMPTLY VERIFY THE SAME. ANY WORK DONE AFTER SUCH DISCOVERY, UNLESS AUTHORIZED SHALL BE DONE AT THE CONTRACTOR'S RISK.



0 20 40 60

SCALE IN FEET

PROJECT RECORD

				4/00	CONFORMED TO CONSTRUCTION RECORD	16			
				DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	AP



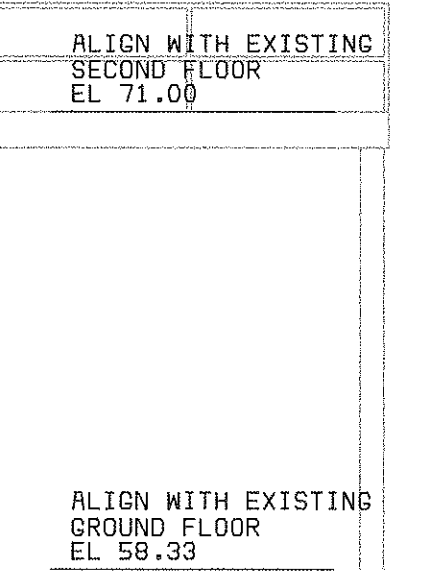
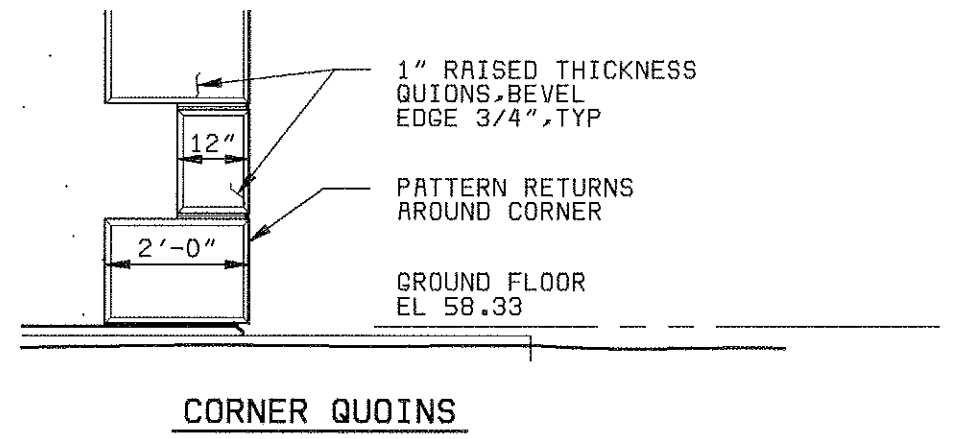
DESIGNED _____ KLC
 DETAILED _____ KLC
 CHECKED _____ RCF/ ALH
 APPROVED _____ RCF
 DATE _____ 4/16/98



Black & Veatch
Tampa, Florida

PROJECT NO.
28551

MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP	21-41	IR-1
LABORATORY EXPANSION AND PILOT PLANT IRRIGATION PLAN		SHEET OF



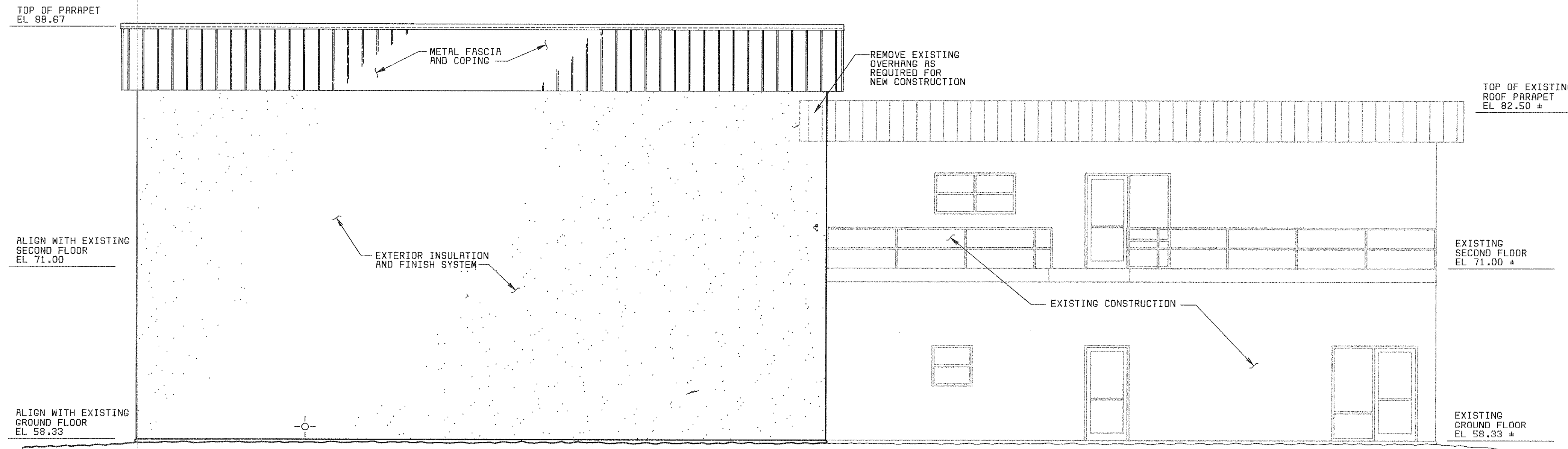
HEET
OF

DESIGNED _____ MAJ _____
 DETAILED _____ GWD _____
 CHECKED _____ MAJ _____
 APPROVED _____
 DATE _____

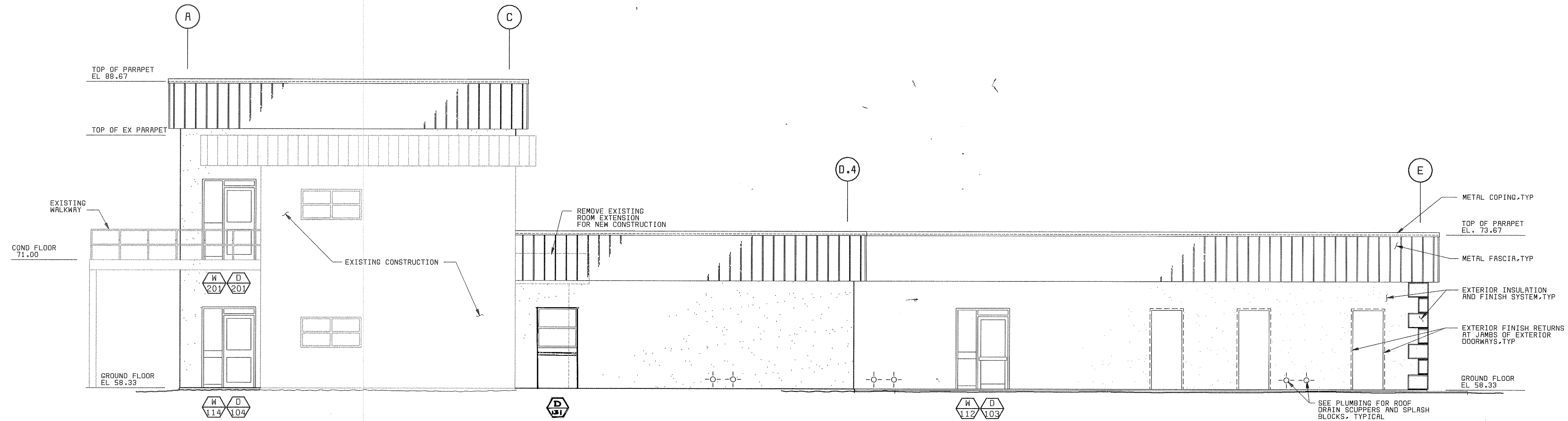


PROJECT NO.
28551

05/1/97 11:00:00 RCD-12



WEST ELEVATION
3/16" = 1'-0"



SOUTH ELEVATION
3/16" = 1'-0"

PROJECT RECORD

4/60				CONFORMED TO CONSTRUCTION RECORD				13			
DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED MAJ
DETAILED GWD
CHECKED MAJ
APPROVED
DATE



PROJECT NO.
28551

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

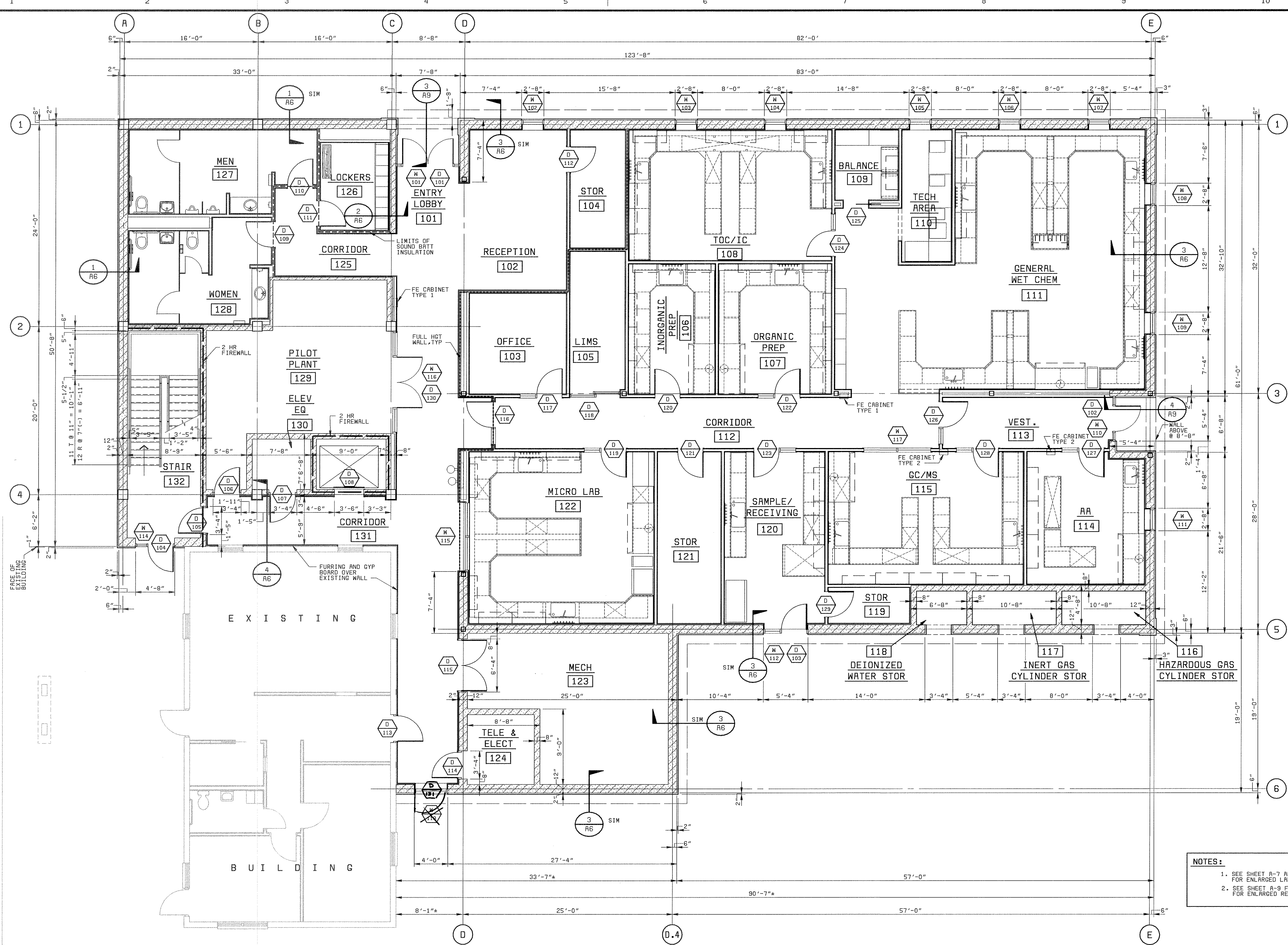
LABORATORY EXPANSION
ARCHITECTURAL
SOUTH AND WEST ELEVATIONS

21-41

A-2
SHEET
OF

28551-310-232-R100
G1027
F000000

05/1/97 11:00:00 ACD-12
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C
D
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NOTES:
1. SEE SHEET A-7 AND A-8 FOR ENLARGED LABORATORY PLANS
2. SEE SHEET A-9 FOR ENLARGED RESTROOM PLANS

GROUND FLOOR PLAN
3/16" = 1'-0"

PROJECT RECORD

MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP	21-41	A-3
LABORATORY EXPANSION ARCHITECTURAL GROUND FLOOR PLAN		SHEET OF

				4/20		CONFORMED TO CONSTRUCTION RECORD		18			
				DATE		REVISIONS AND RECORD OF ISSUE		NO.		BY CK APP	

DESIGNED	MAJ
DETAILED	TMB
CHECKED	MAJ
APPROVED	
DATE	



PROJECT NO.
28551

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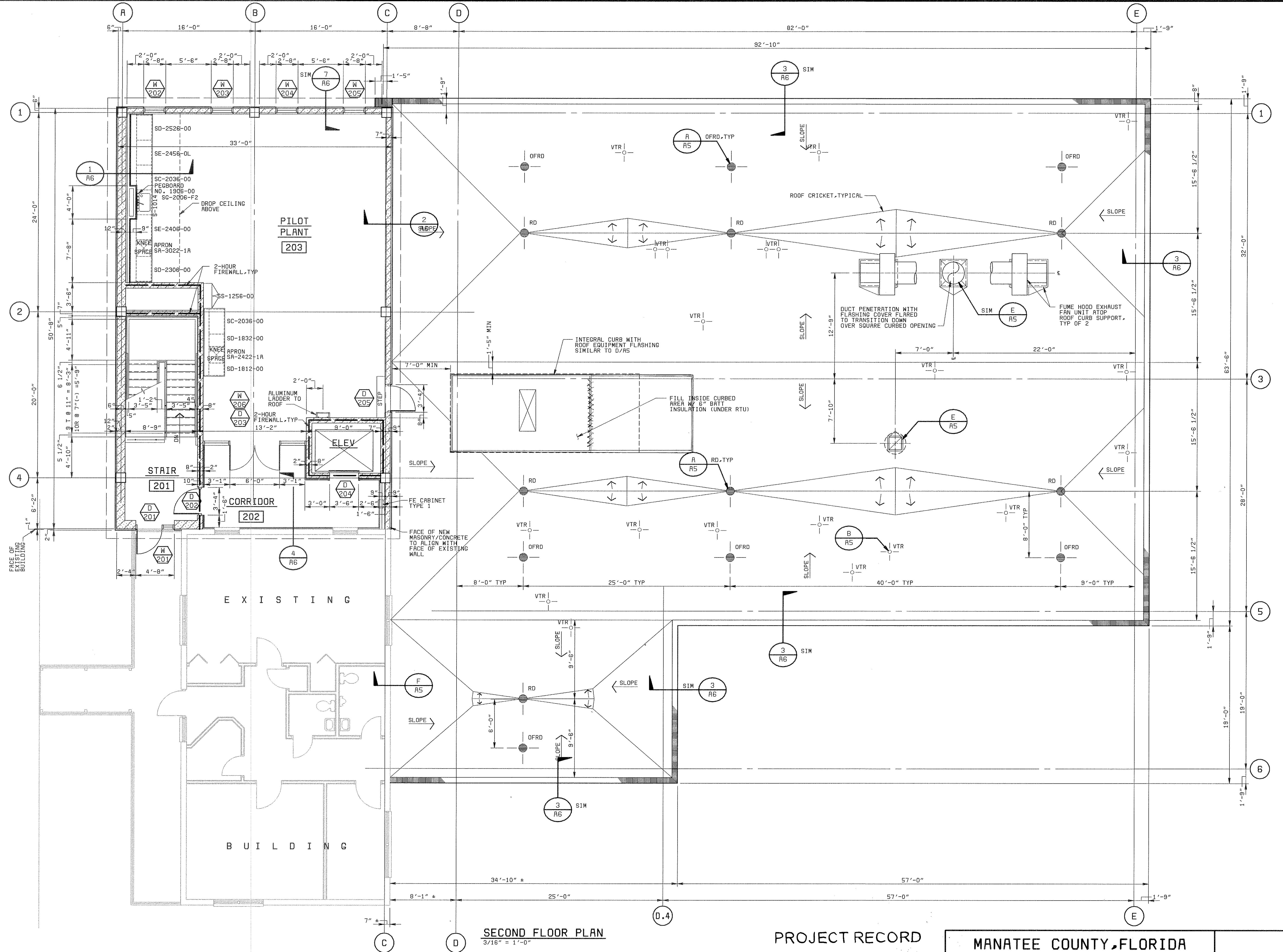
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F



SECOND FLOOR PLAN

3/16" = 1'-0"

PROJECT RECORD

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION
ARCHITECTURAL
SECOND FLOOR PLAN

PROJECT NO.
28551

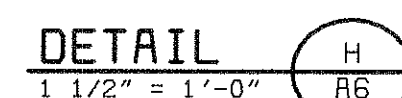
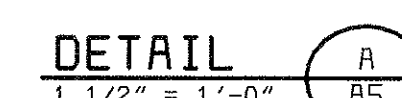
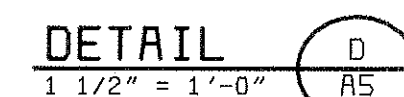
DESIGNED MAJ
DETAILED TMB
CHECKED
APPROVED
DATE



A-4

SHEET
OF

21-41



21-41

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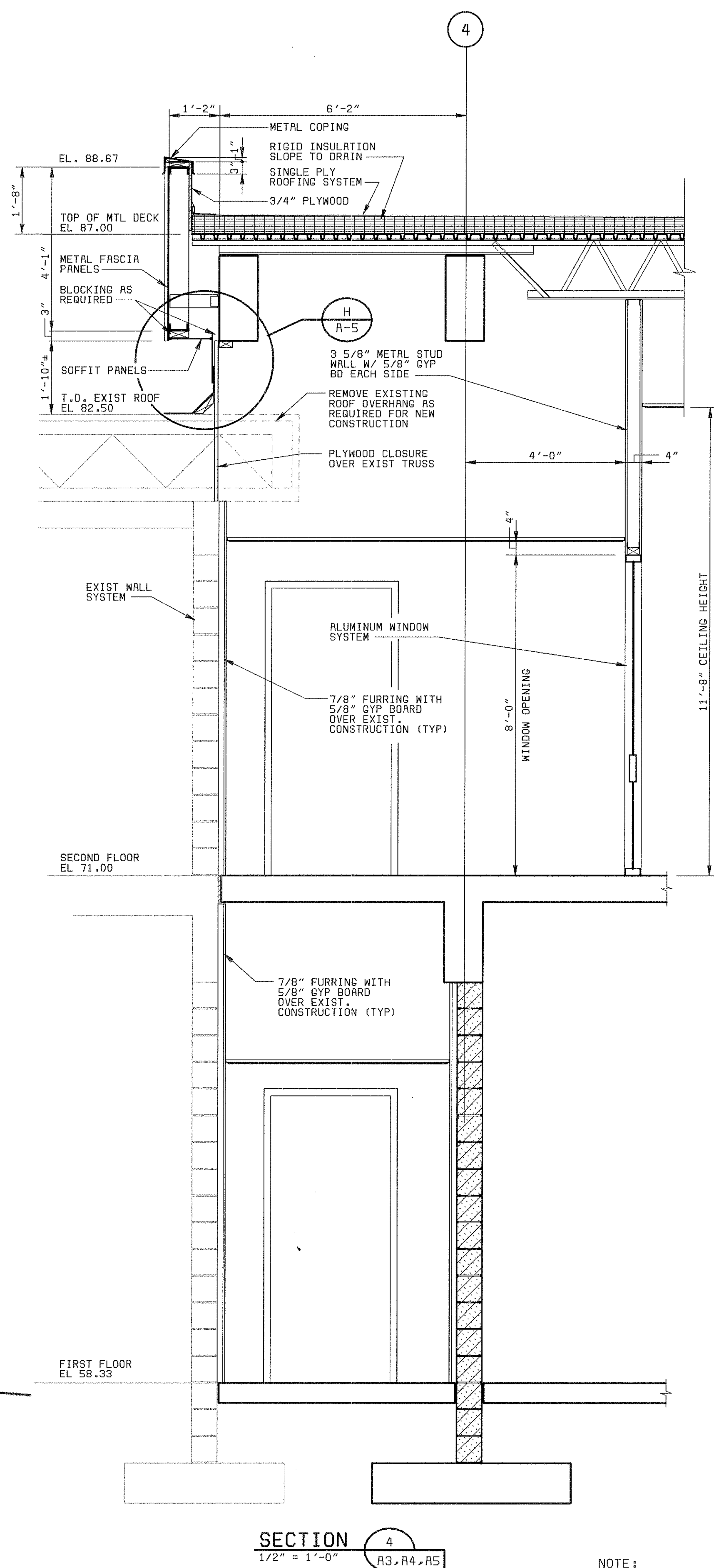
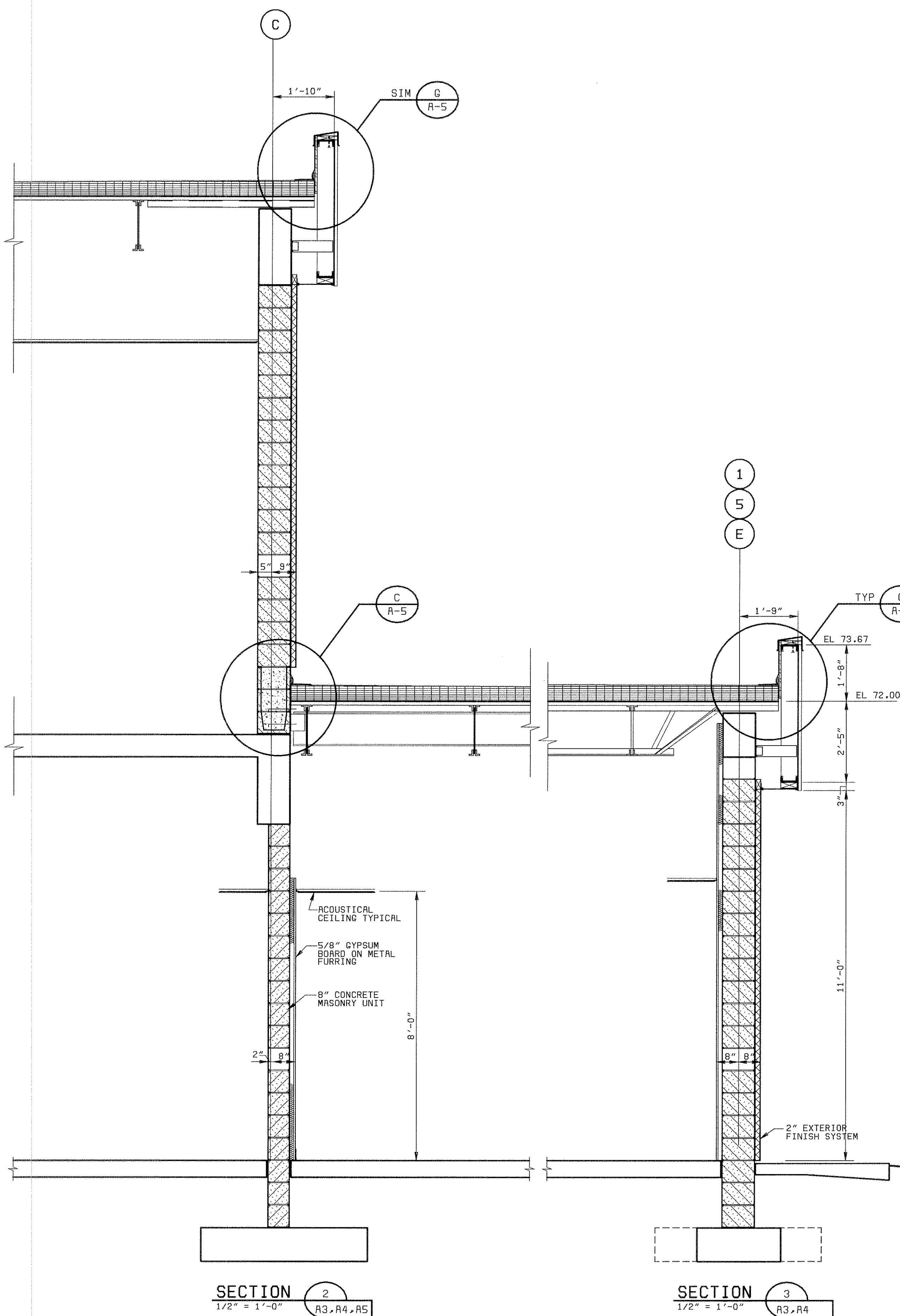
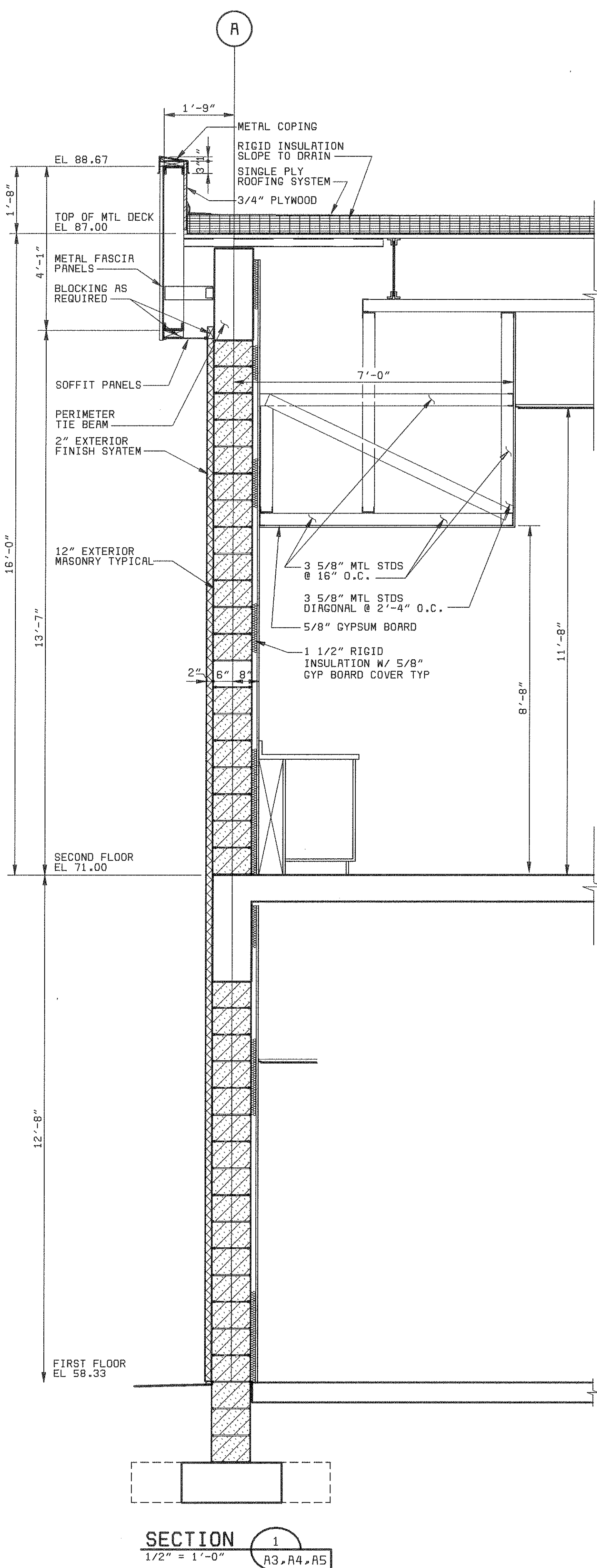
B

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NOTE:
SEE STRUCTURAL DRAWINGS
FOR MASONRY REINFORCING

PROJECT RECORD

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION
ARCHITECTURAL
BUILDING SECTIONS

PROJECT NO.
28551

DESIGNED MAJ
DETAILED RB
CHECKED MAJ
APPROVED
DATE



DATE REVISIONS AND RECORD OF ISSUE NO. BY CK APP

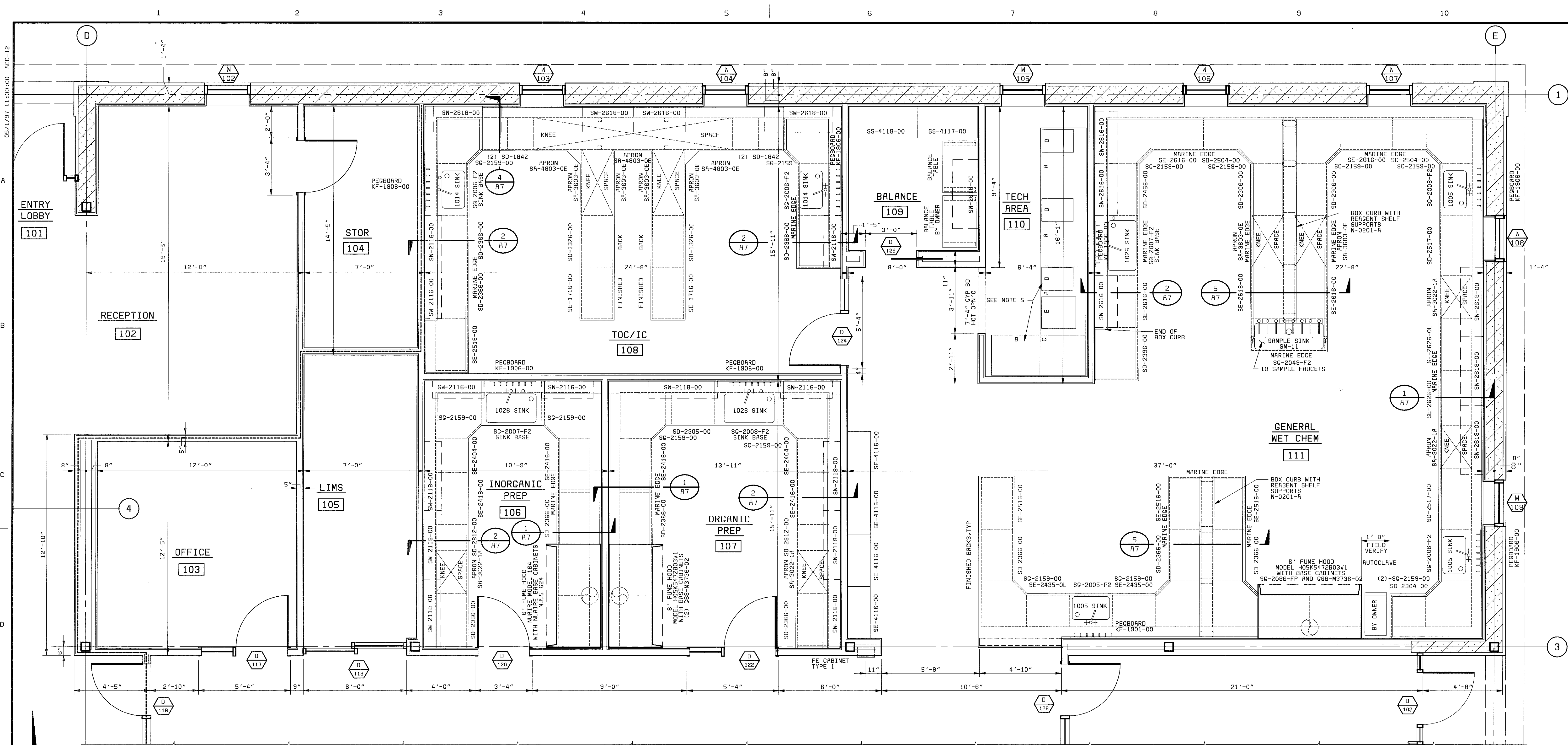
A-6

SHEET
OF

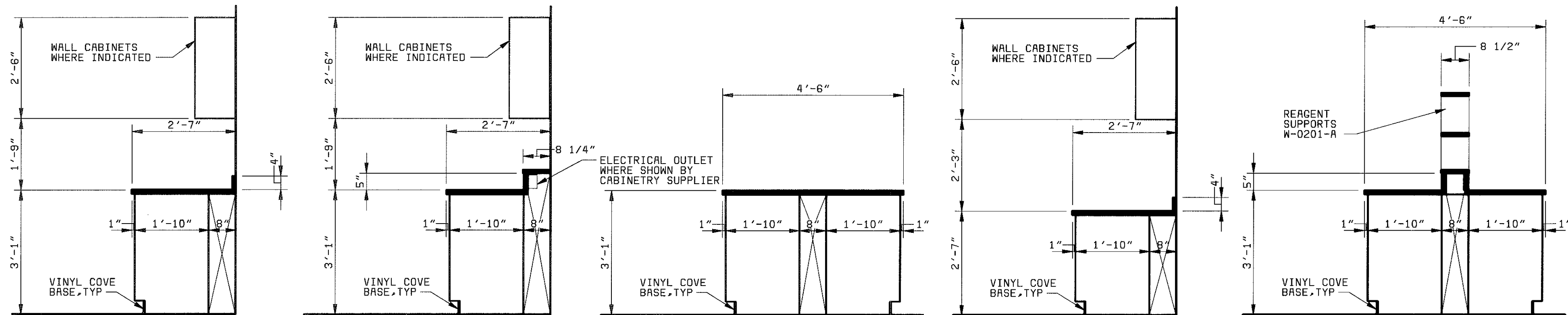
21-41

CCG, DWG, NO: 28551-310-232-R003

28551-310-232-R003
61027
F000000



FLOOR PLAN
3/8" = 1'-0"



NOTES:

- ALL LABORATORY FURNITURE NUMBERS SHOWN ARE THOSE OF KEWAUNEE CORPORATION.
- PROVIDE FILLER PANELS WHERE REQUIRED FOR COMPLETE INSTALLATION.
- FOR DUPLEX ELECTRICAL OUTLET IN PEDESTALS AND BOX CURBS, SEE ELECTRICAL DRAWINGS.
- ALL KNEE SPACES AT UNITS WITH PLUMBING CHASE SHALL HAVE BACK PANELS, KNEE SPACE AREAS AT PENINSULARS AND ISLANDS SHALL HAVE APRONS BOTH SIDES.
- ALL FURNITURE IN ROOM 110 REFERENCE RUBBERMAID "ASPIRA" OFFICE PRODUCTS
A = 9100 - DESK UNIT
B = 9200 - DESK UNIT
C = 9410 - CORNER UNIT
E = 9636 - KEYBOARD UNIT
- PROVIDE END WALL BACKSPASH WHERE REQ'D FOR LABORATORY WORK TOPS.

PROJECT RECORD

DESIGNED MAJ		PROJECT NO. 28551		MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP		A-7
DETAILED TMB				LABORATORY EXPANSION ARCHITECTURAL ENLARGED LAB PLAN - NORTH		
CHECKED MAJ						SHEET OF
APPROVED						
DATE						
DATE REVISIONS AND RECORD OF ISSUE NO. BY CK APP						



06/12/97 07:29:12 ACD-12-

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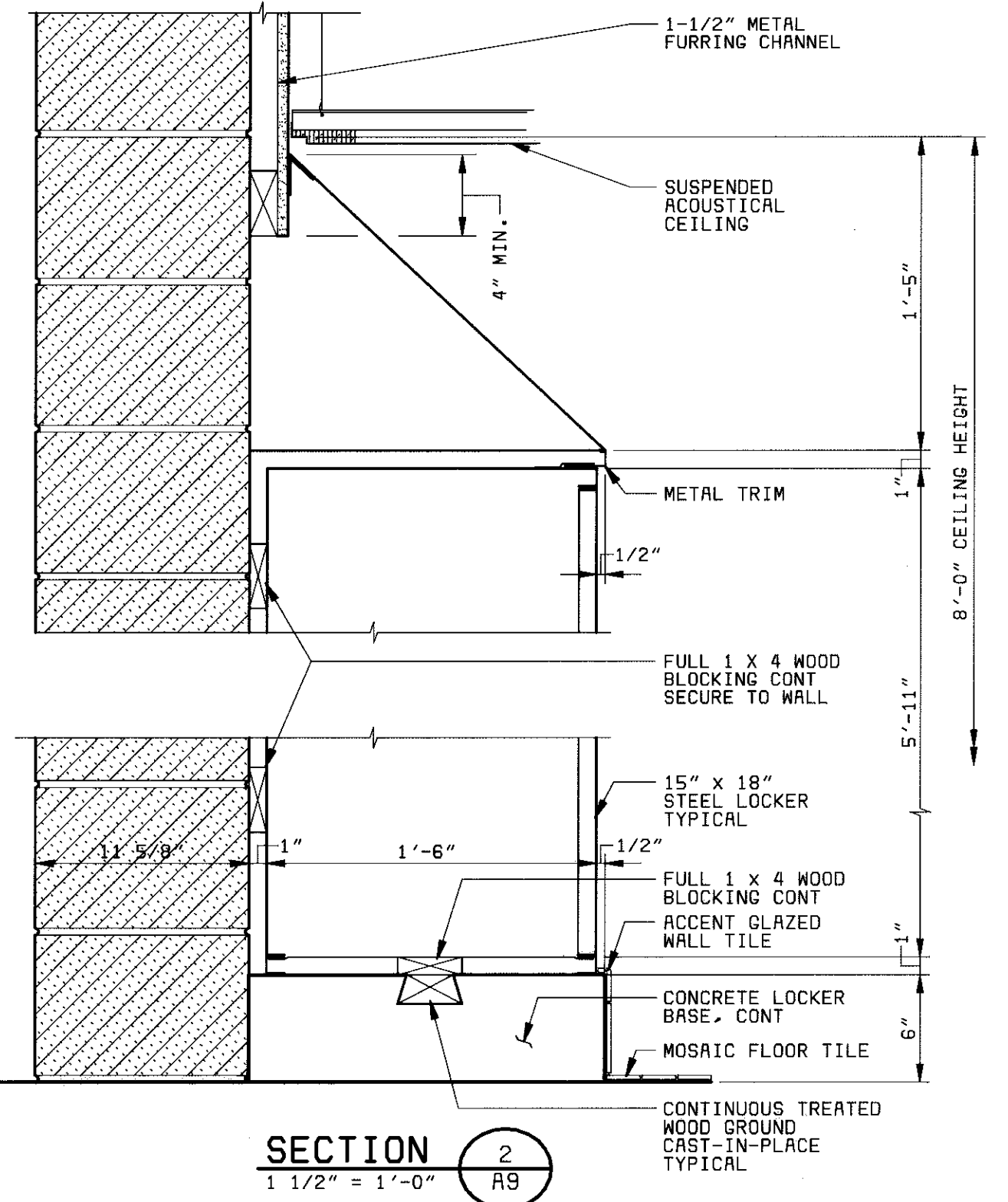
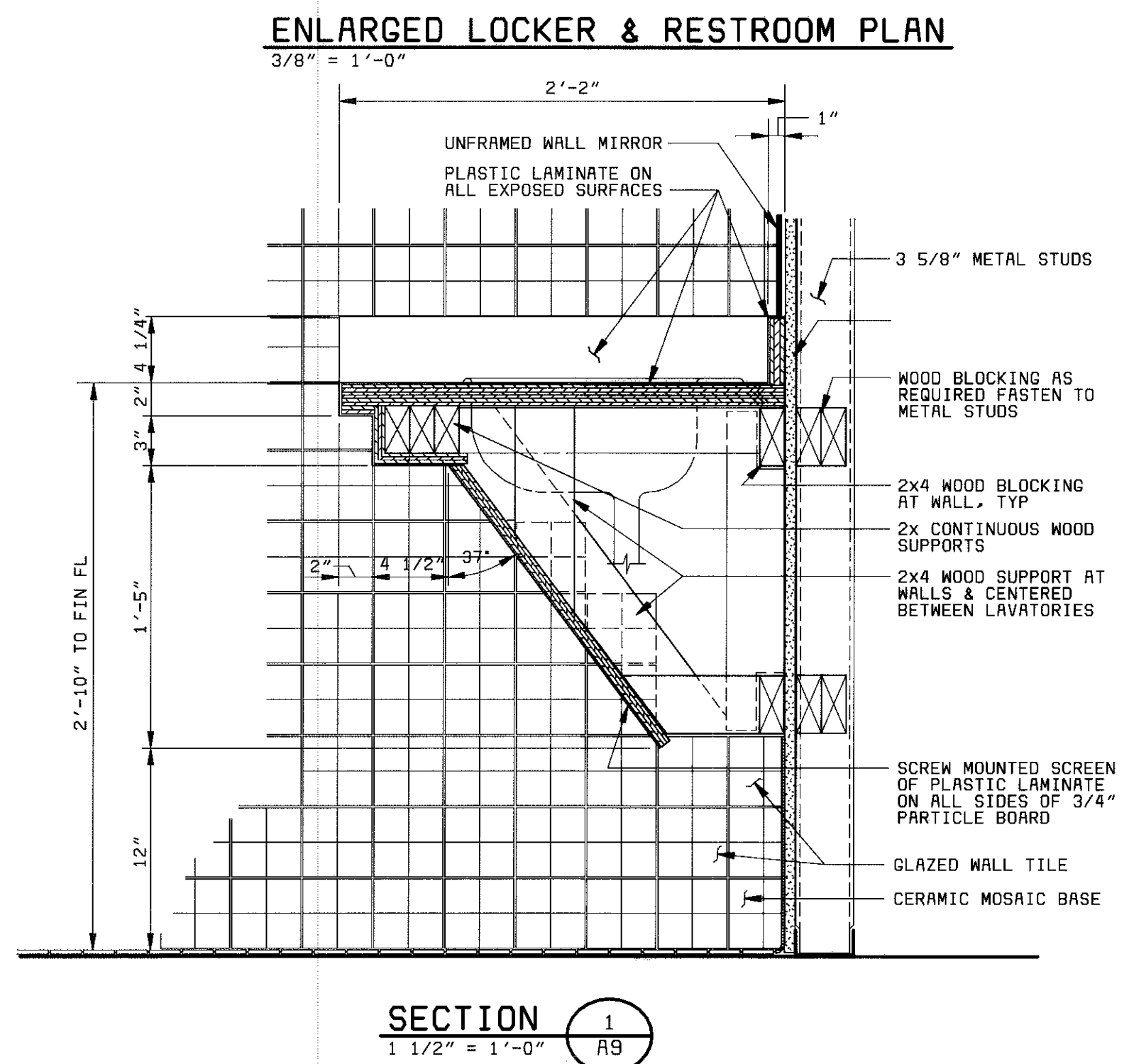
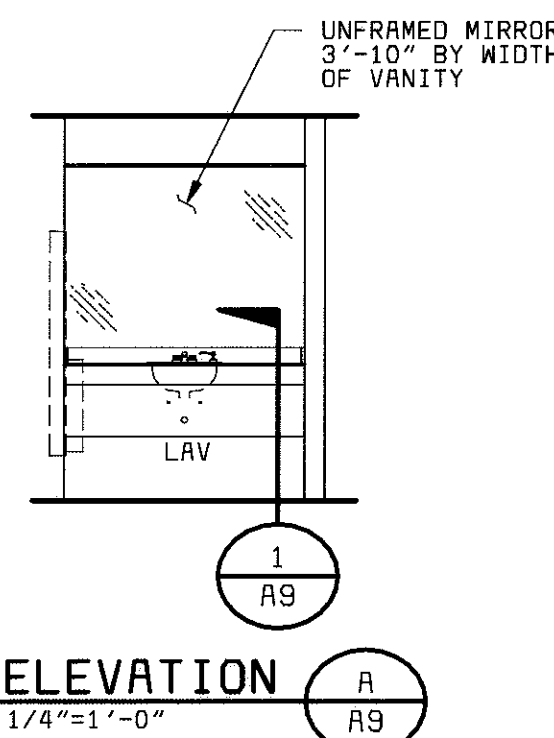
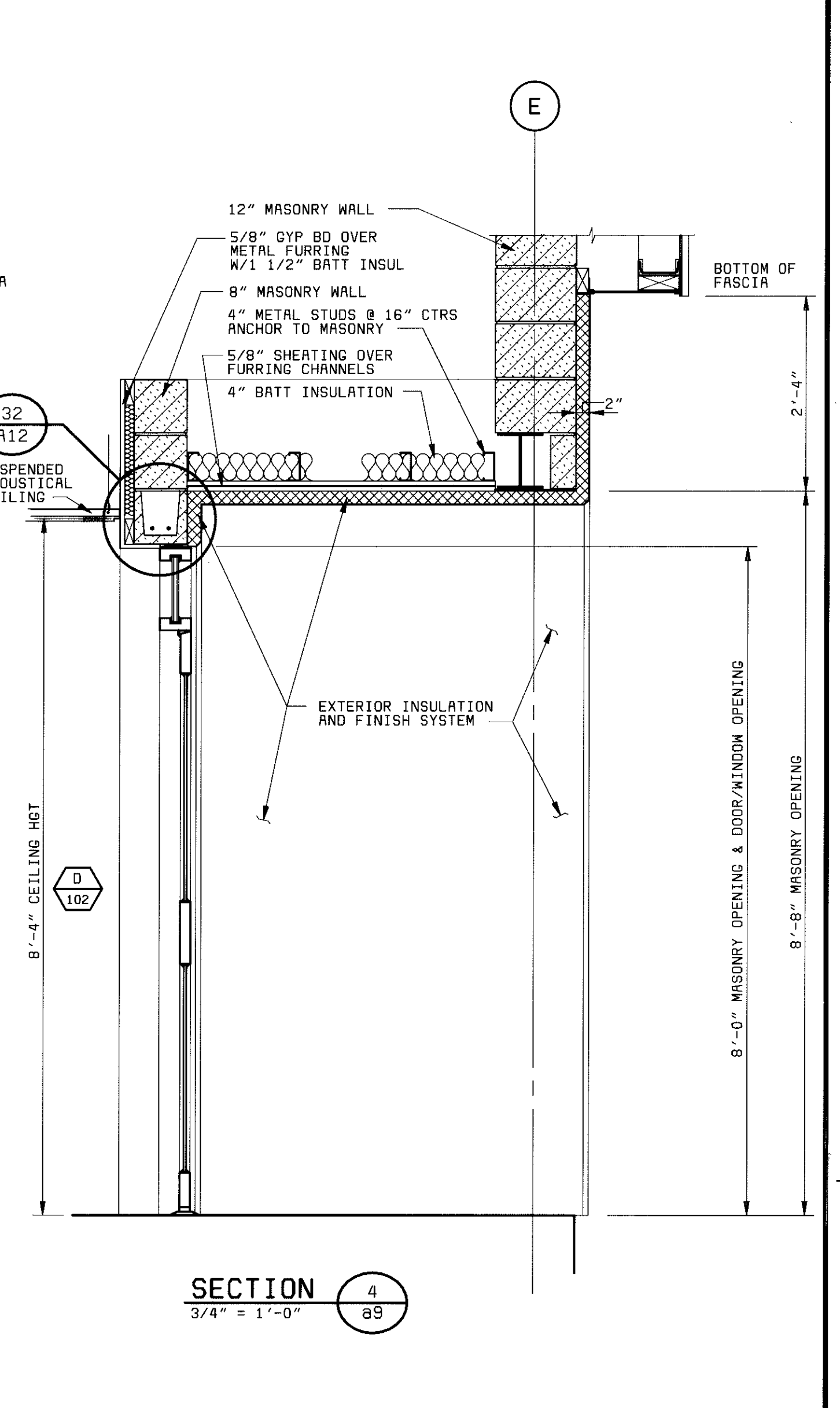
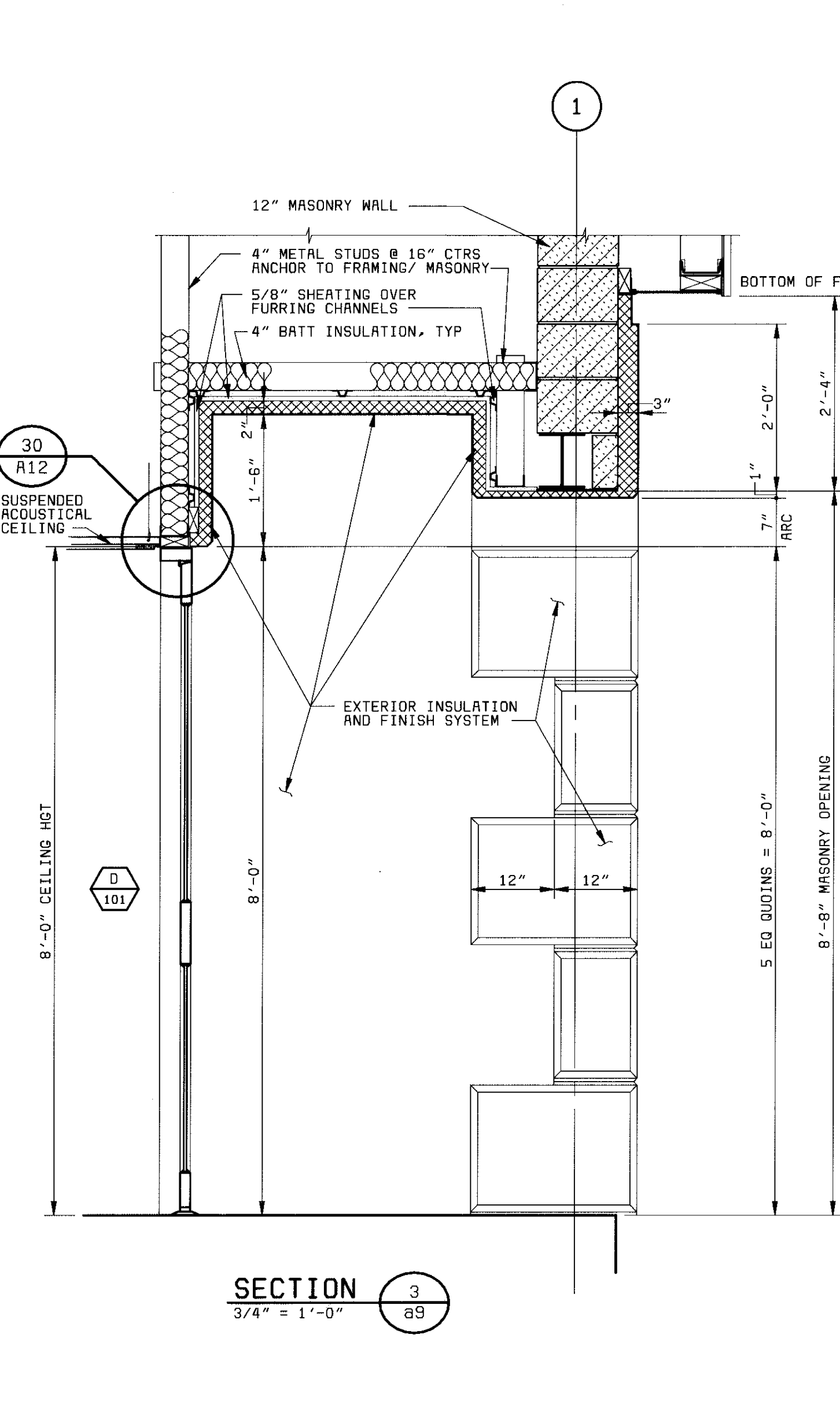
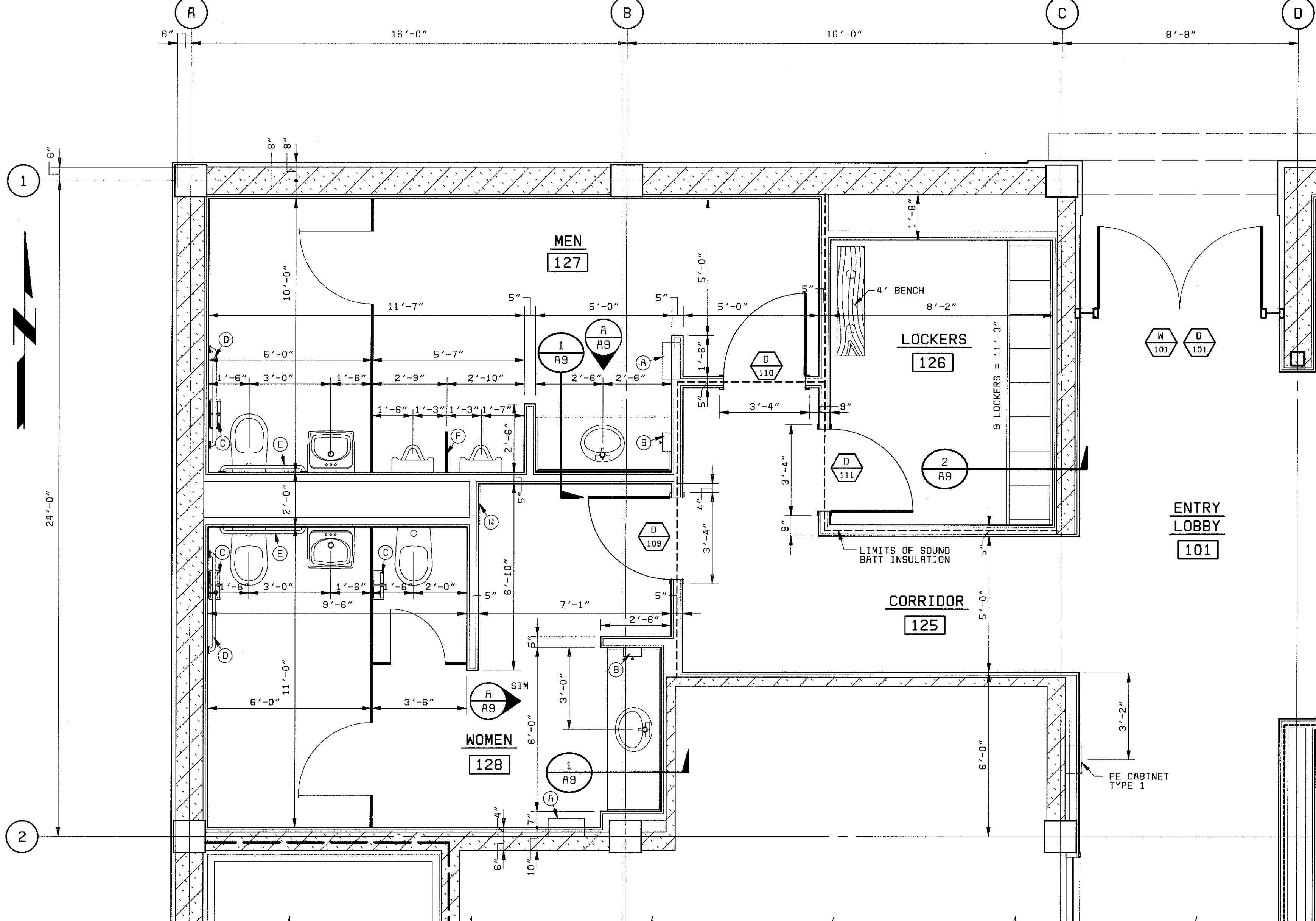
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K

L



ACCESSORY SCHEDULE

ITEM	MOUNTING HEIGHT
A TOWEL DISPENSER & WASTE RECEPT	
B SOAP DISPENSER	2'-8"
C TOILET PAPER HOLDER	
D GRAB BAR (48" LONG)	
E GRAB BAR (36" LONG)	
F URINAL SCREEN	
G ACCESS DOOR	

NOTE: DIMENSIONS ARE TO TOP OF UNIT

PROJECT RECORD

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP
LABORATORY EXPANSION
ARCHITECTURAL
ENLARGED LOCKER & RESTROOM PLAN

21-41

A-9

SHEET
OF

DESIGNED MAJ
DETAILED TMB
CHECKED MAJ
APPROVED
DATE



PROJECT NO.
28551

DATE REVISIONS AND RECORD OF ISSUE NO. BY CK APP

28551-310-232-R006
G1027
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ROOM FINISH SCHEDULE																			
RM NO	ROOM NAME	FLOOR	WALLS												CEILING			REMARKS	
			NORTH			SOUTH			EAST			WEST							
			MATRL	FINISH	BASE	MATRL	FINISH	BASE	MATRL	FINISH	BASE	MATRL	FINISH	BASE	MATRL	FINISH	HEIGHT		
GROUND FLOOR LABORATORY																			
101	ENTRY / CORRIDOR	CO	RT	AL	FF	-	GB	PT	VB	GB	PT	VB	GB	PT	VB	SA	FF	8'-0"	
102	RECEPTION	CO	CP	GB	PT	VB	GB	PT	VB	GB	PT	VB	GB	PT	VB	SA	FF	8'-0"	
103	LAB OFFICE	CO	CP	GB	PT	VB	GB	PT	VB	GB	PT	VB	GB	PT	VB	SA	FF	8'-4"	
104	STORAGE	CO	RT	GB	PT	VB	GB	PT	VB	GB	PT	VB	GB	PT	VB	SA	FF	8'-0"	
105	LAB INFO MAMGT SYSTEM	CO	CP	GB	PT	VB	AL	FF	-	GB	PT	VB	GB	PT	VB	SA	FF	8'-0"	
106	INORGANIC PREP LAB	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
107	ORGANIC PREP LAB	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
108	TOC / IC LAB	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
109	BALANCE ROOM	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-0"	
110	TECHNICIAN WORK	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
111	GENERAL CHEMICAL LAB	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
112	LAB CORRIDOR	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
113	VESTIBULE	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
114	AA LAB	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
115	GC / MS LAB	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
116	HAZARDOUS GAS STRG	CO	FS	CB	PT	-	CB	PT	-	CB	PT	-	CB	PT	-	GB	PT	8'-8"	OUTDOOR ROOM
117	INERT GAS STORAGE	CO	FS	CB	PT	-	CB	PT	-	CB	PT	-	CB	PT	-	GB	PT	8'-8"	OUTDOOR ROOM
118	DEIONIZED WATER STRG	CO	FS	CB	PT	-	CB	PT	-	CB	PT	-	CB	PT	-	GB	PT	8'-8"	OUTDOOR ROOM
119	STORAGE	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	PT	8'-0"	
120	SAMPLE RECEIVING	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
121	GENERAL STORAGE	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
122	MICROBIOLOGY LAB	CO	RT	GB	WT	VB	GB	WT	VB	GB	WT	VB	GB	WT	VB	SA	FF	8'-4"	
123	EQUIPMENT ROOM	CO	FS	CB	PT	-	CB	PT	-	CB	PT	-	CB	PT	-	EXP	PT	13'-0"	
124	ELECTRICAL ROOM	CO	RT	CB	PT	VB	CB	PT	VB	CB	PT	VB	CB	PT	VB	SA	FF	8'-0"	
125	RESTROOM CORRIDOR	CO	RT	GB	PT	VB	GB	PT	VB	GB	PT	VB	GB	PT	VB	SA	FF	8'-0"	
126	LOCKER ROOM	CO	RT	GB	PT	VB	GB	PT	VB	GB	PT	VB	GB	PT	VB	SA	FF	8'-0"	
127	RESTROOM - MEN	CO	MT	GB	WT	MT	GB	WT	MT	GB	WT	MT	GB	WT	MT	SA	FF	8'-0"	
128	RESTROOM - WOMEN	CO	MT	GB	WT	MT	GB	WT	MT	GB	WT	MT	GB	WT	MT	SA	FF	8'-0"	
129	PILOT PLANT EQUIP	CO	RT	CB	EP	VB	CB	EP	VB	CB	EP	VB	CB	EP	VB	EXP	PT	12'-0"	NOTE 1
130	ELEVATOR EQUIPMENT	CO	FS	CB	PT	-	CB	PT	-	CB	PT	-	CB	PT	-	EXP	PT	12'-0"	
131	ACCESS CORRIDOR	CO	RT	GB	PT	VB	GB	PT	VB	GB	PT	VB	GB	PT	VB	SA	FF	8'-0"	
132	STAIRWAY	CO	RT	CB	PT	VB	GB	PT	VB	GB	PT	VB	GB	PT	VB	SA	FF	8'-4"	NOTE 1

SECOND FLOOR LABORATORY																			
201	STAIRWAY	CO	RT	CB	PT	VB	CB	PT	VB	CB	PT	VB	CB	PT	VB	SA	FF	8'-4"	NOTE 1
202	CORRIDOR	CO	RT	GB	PT	VB	GB	PT	VB	GB	PT	VB	GB	PT	VB	SA	FF	8'-4"	
203	PILOT PLANT EQUIP	CO	RT	CB	EP	VB	CB	EP	VB	CB	EP	VB	CB/GB	EP	VB	SA/GB	FF/PT	VARIES	NOTE 1 & 2

AL - ALUMINUM / GLASS
AT - ACOUSTICAL TREATMENT
CB - CONCRETE BLOCK
CO - CONCRETE

EIFS - EXTERIOR INSUL. FINISH SYSTEM
EP - EPOXY PAINT
EX - EXISTING
EXP - EXPOSED CONSTRUCTION

FF - FACTORY FINISH
FS - FLOOR SEALER
GB - GYPSUM BOARD
HM - HOLLOW METAL

MD - METAL DECK
MT - CERAMIC MOSAIC TILE
NO - NONE
PT - PAINT

RT - RUBBER TILE
SA - SUSPENDED ACOUSTICAL CEILING
VB - RESILIENT COVE BASE
WT - CERAMIC WALL TILE

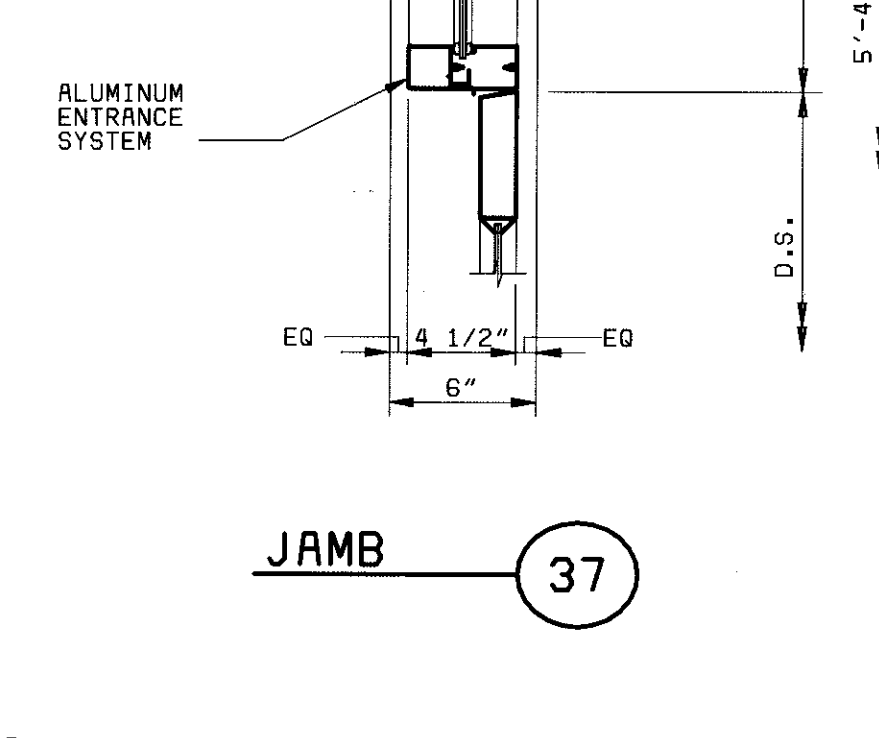
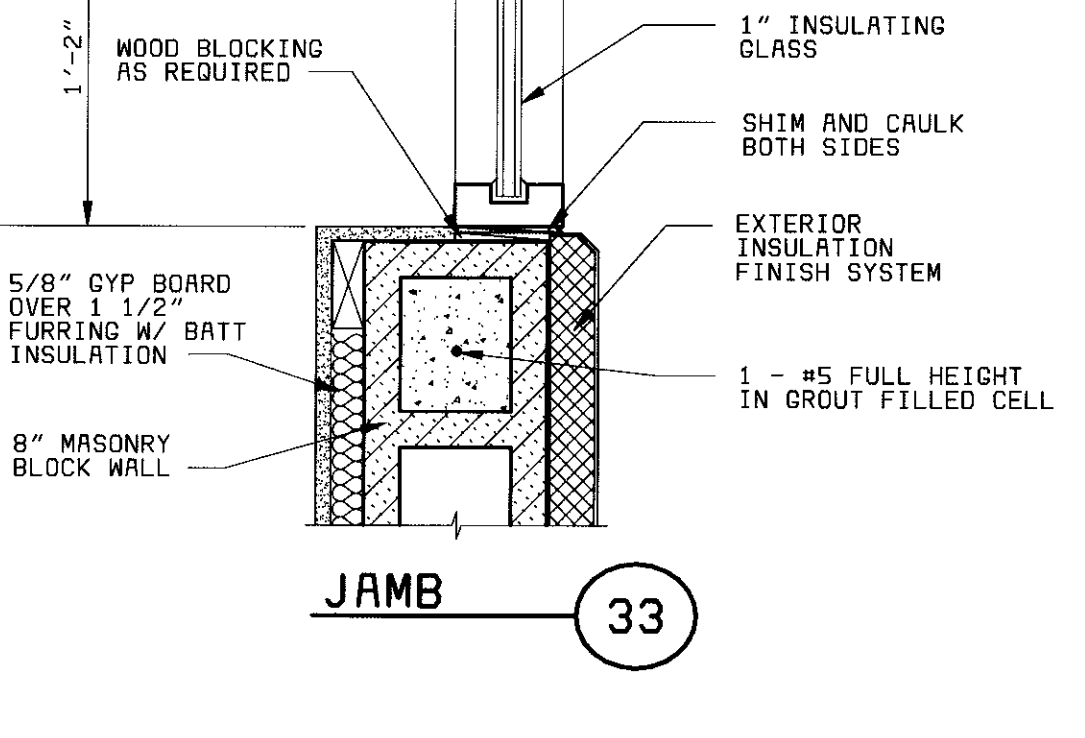
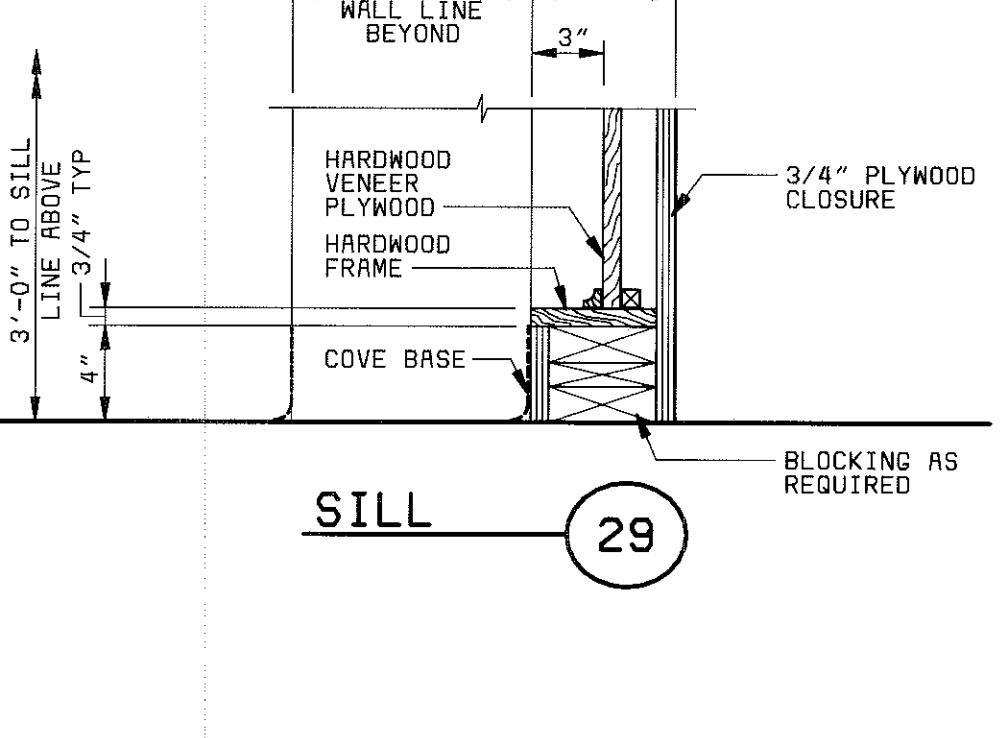
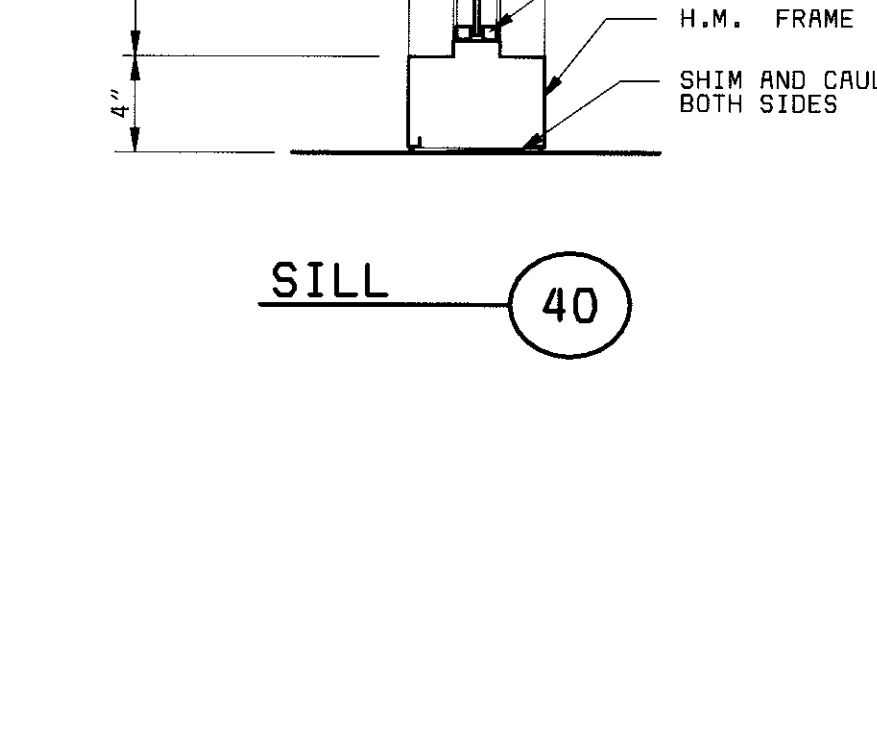
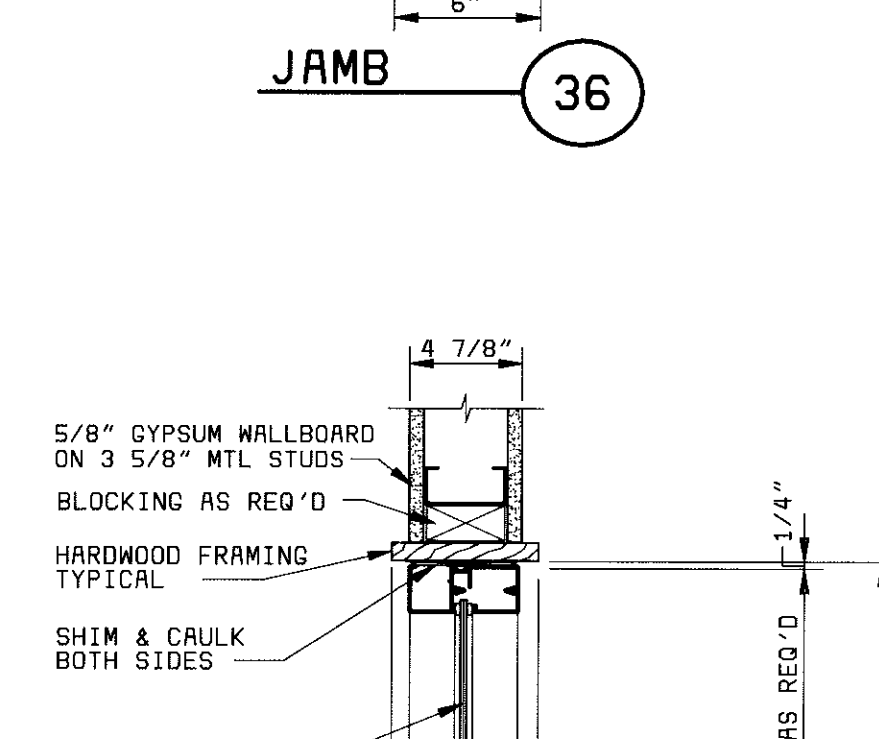
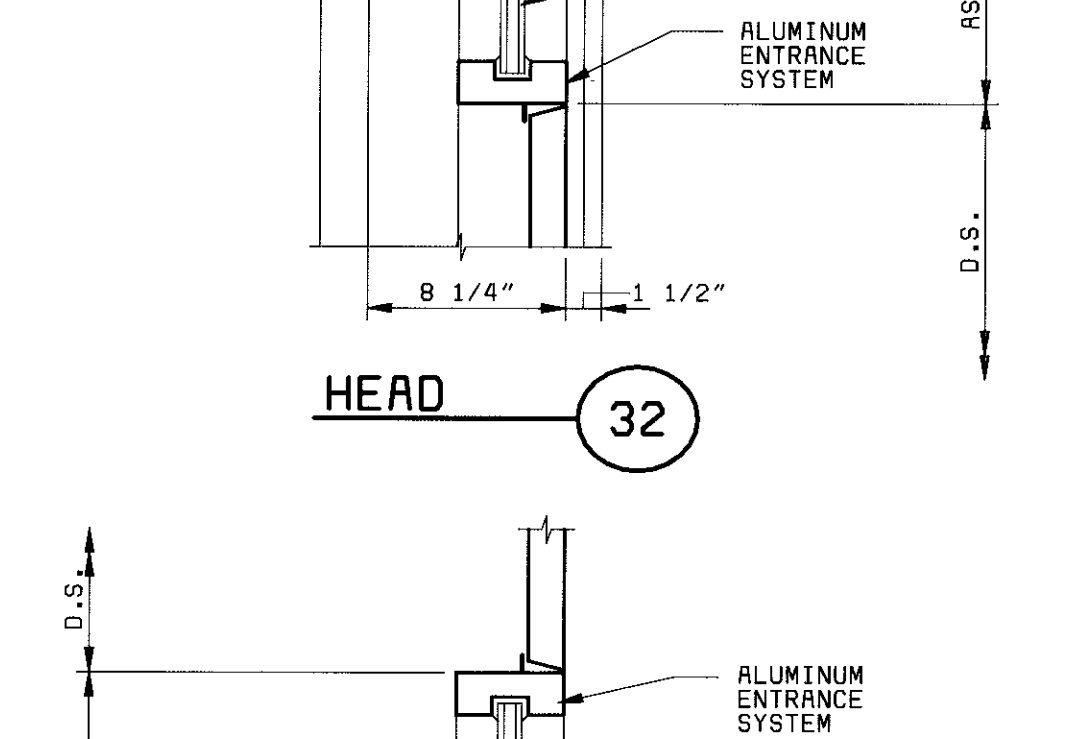
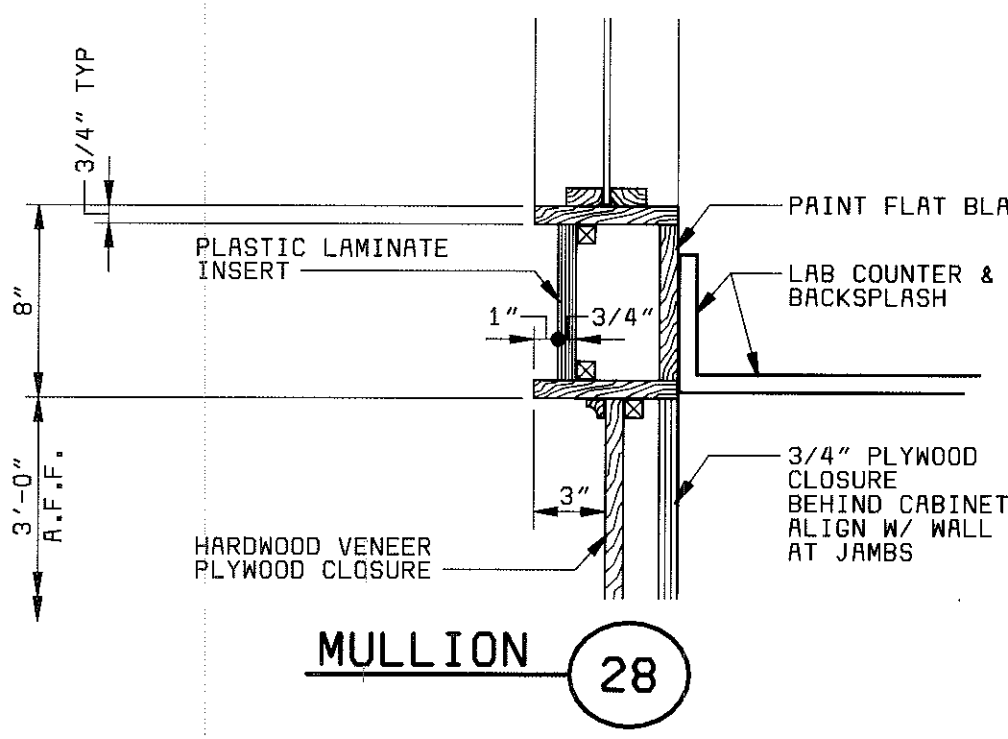
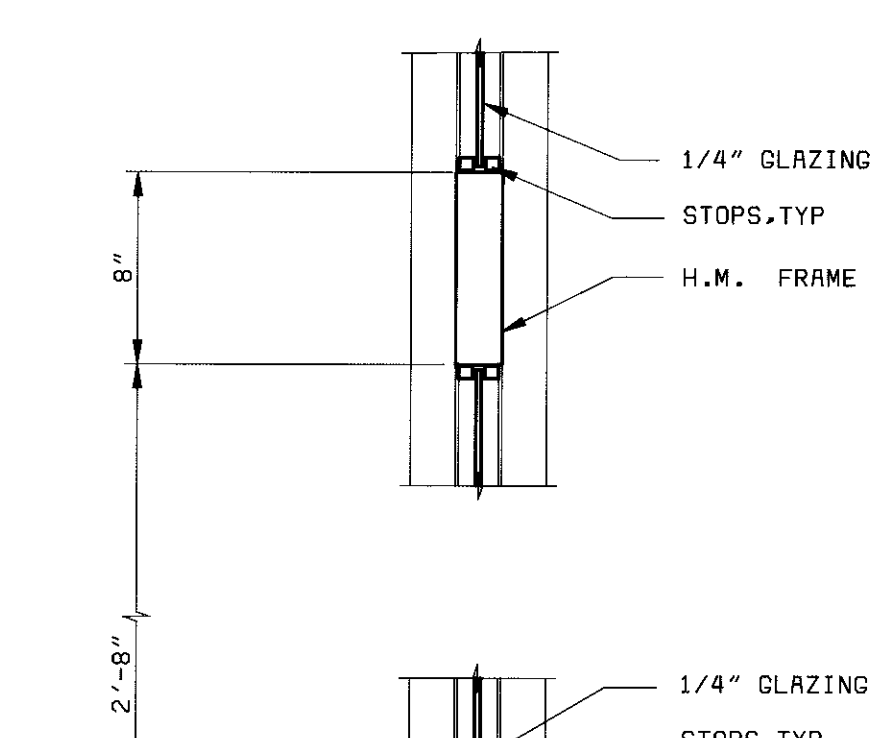
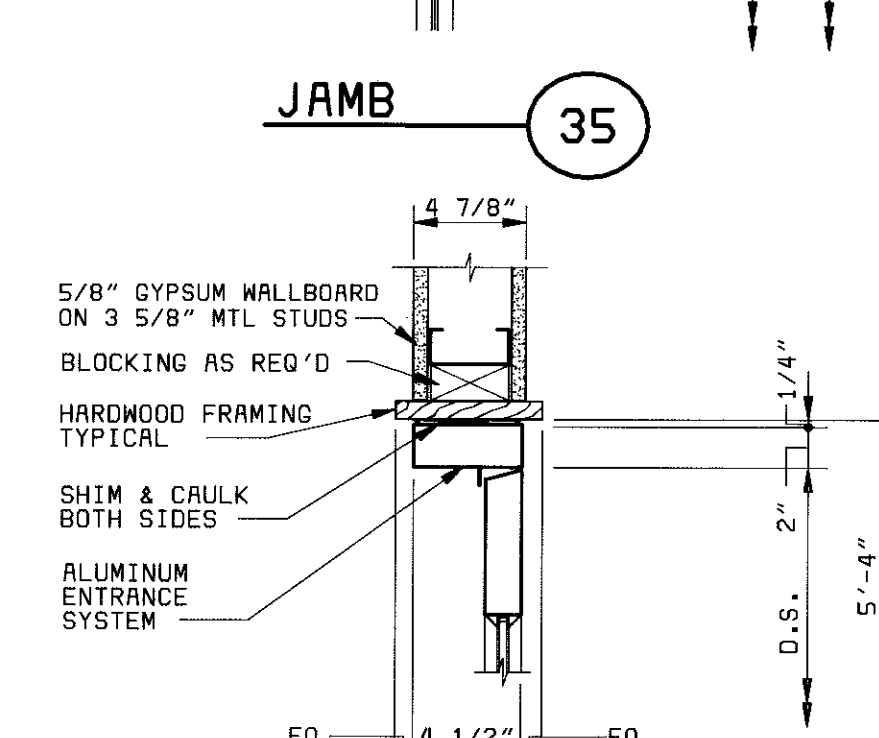
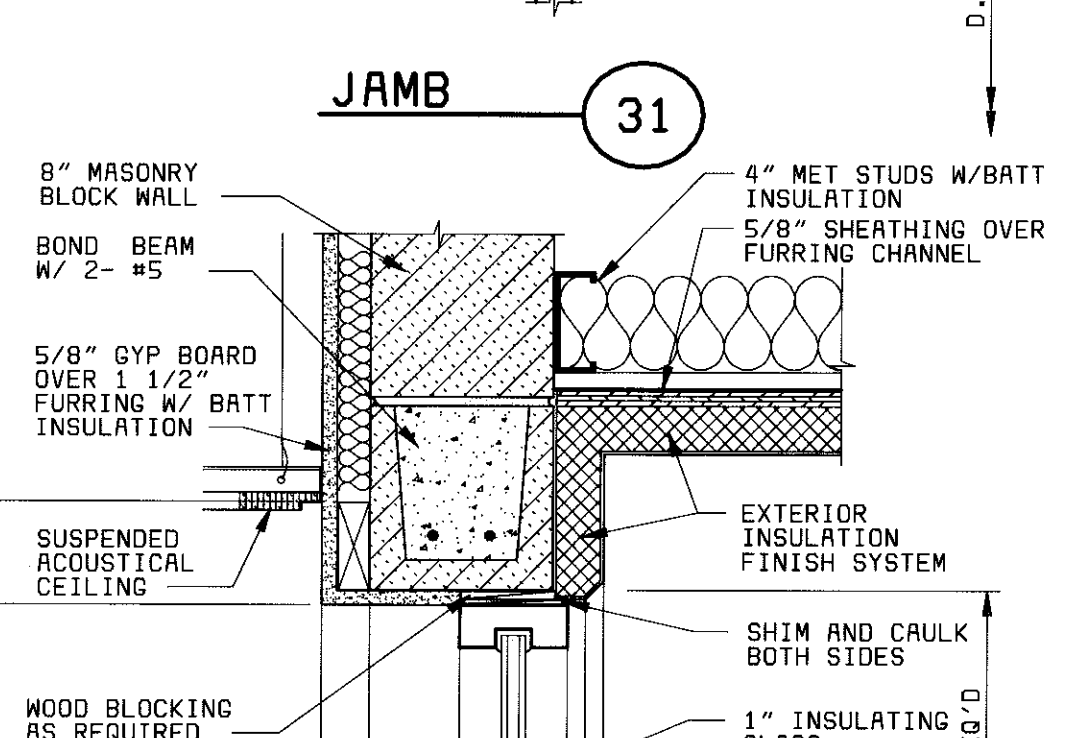
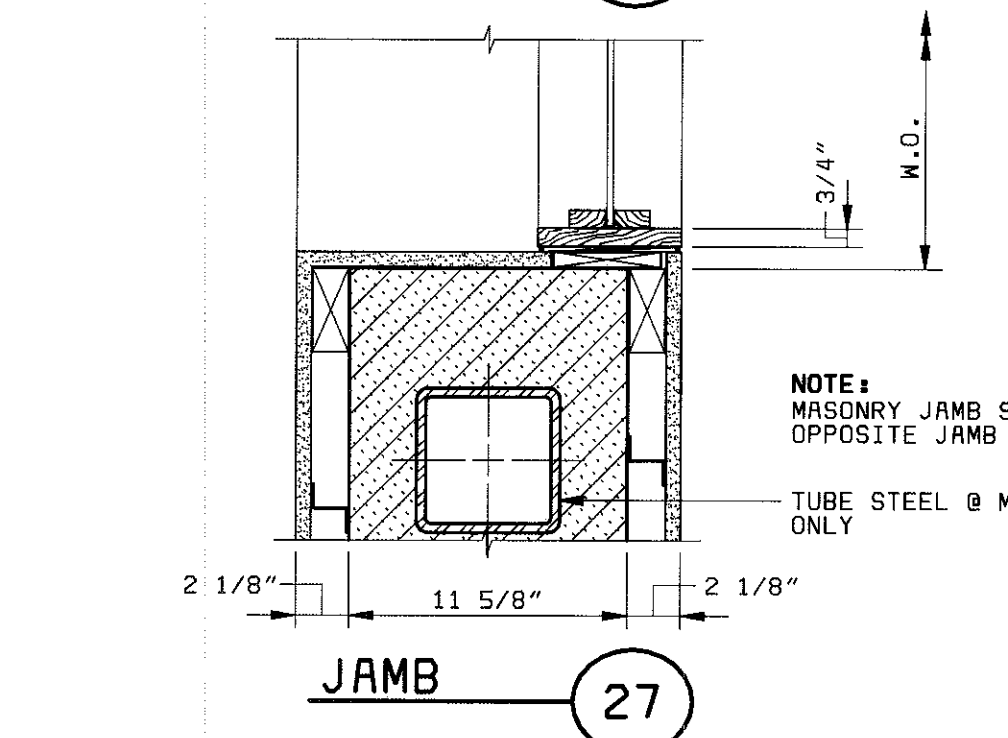
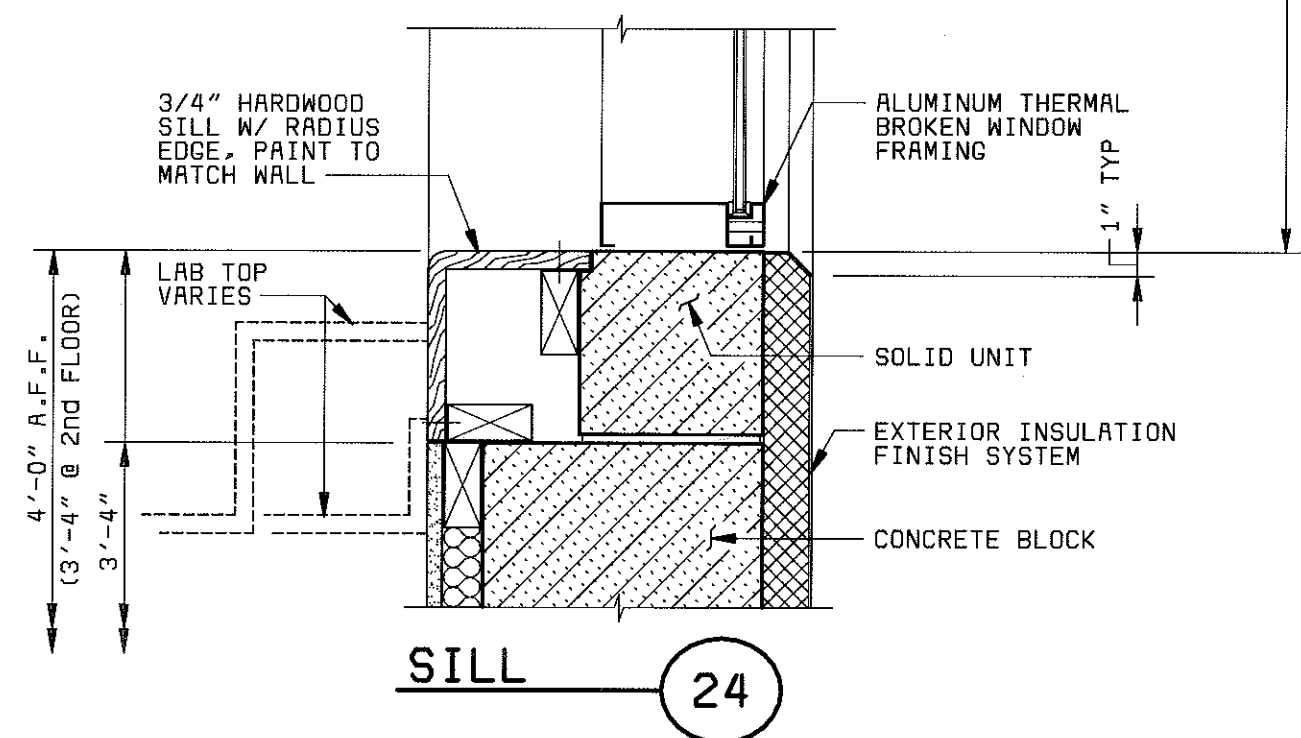
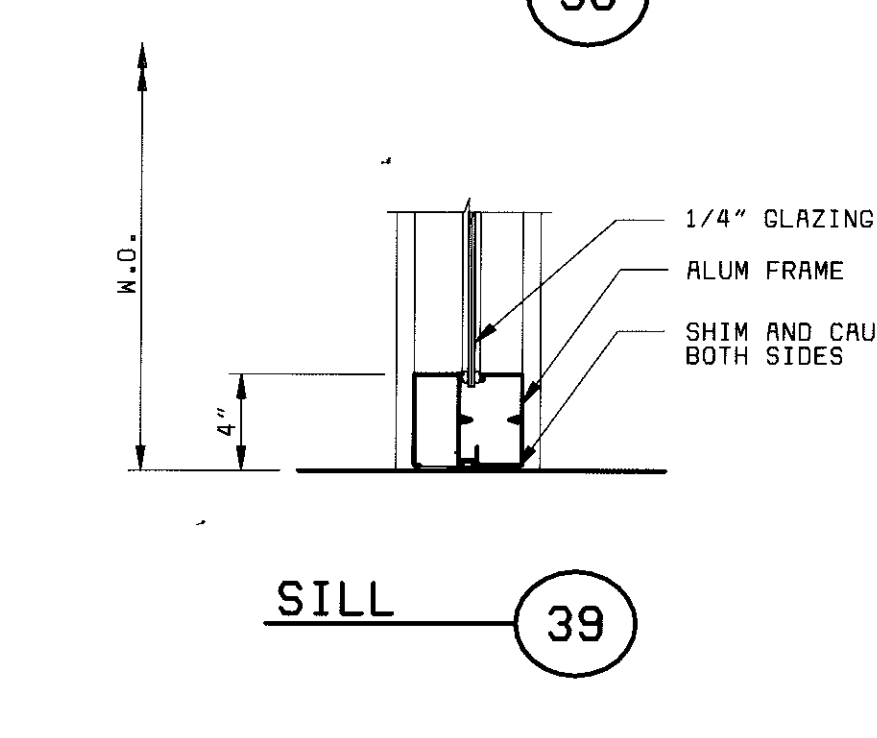
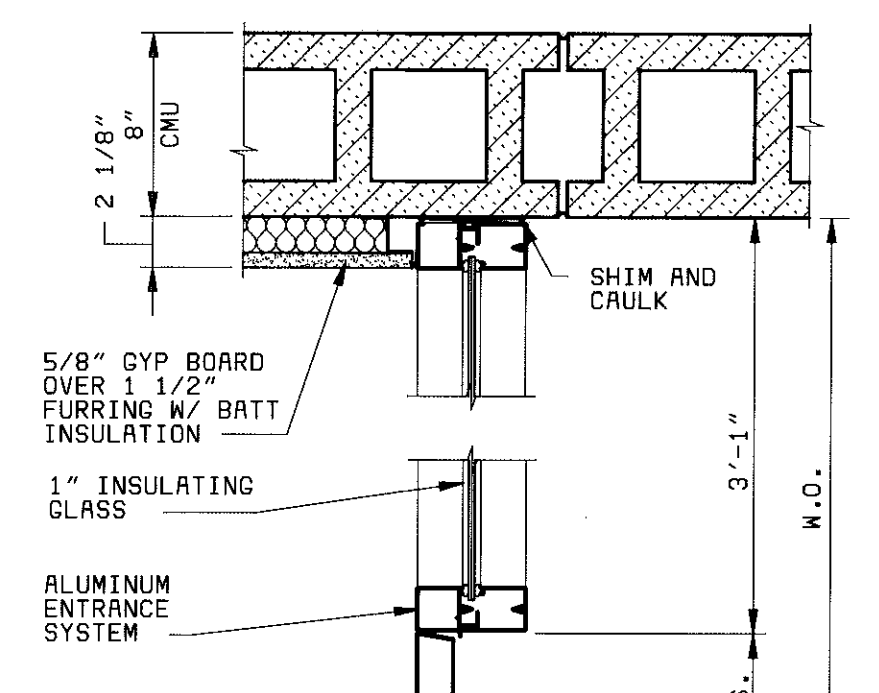
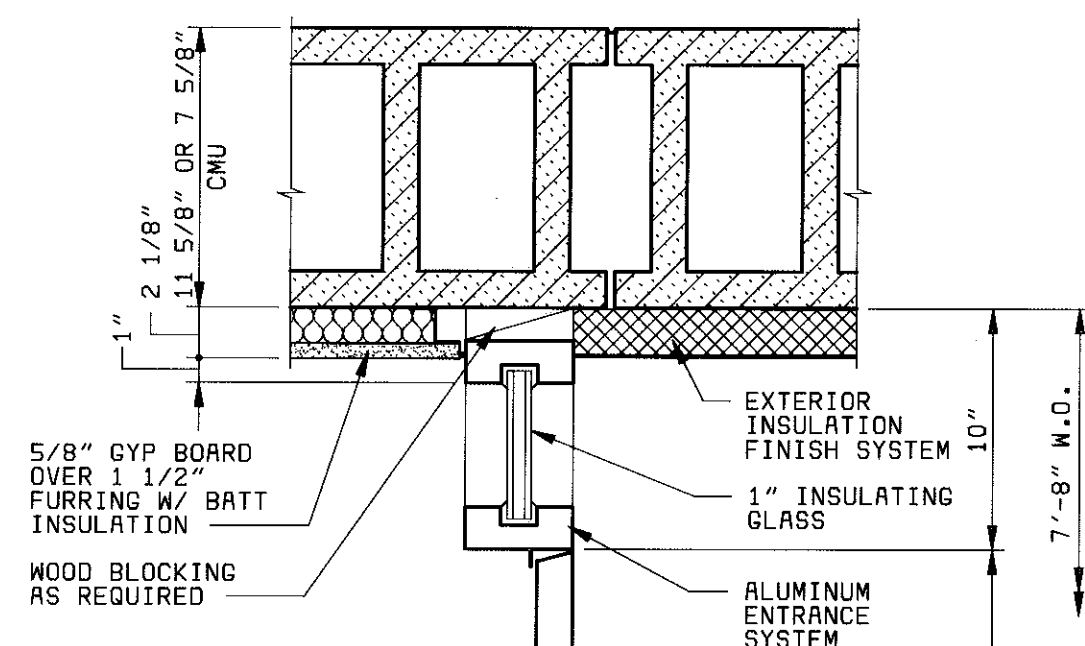
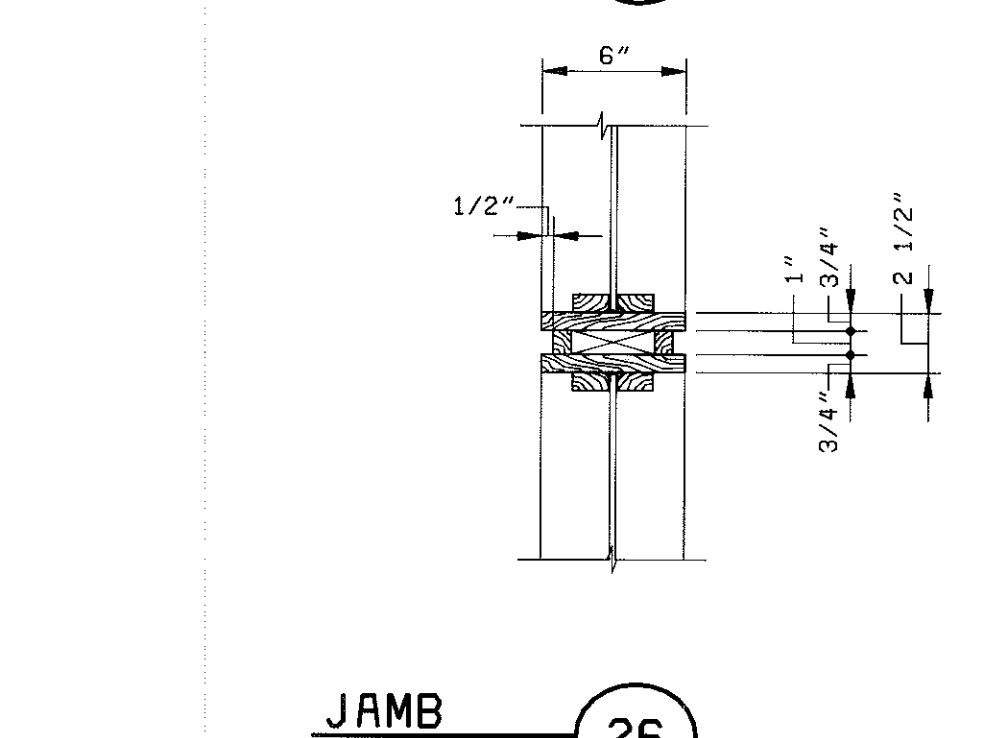
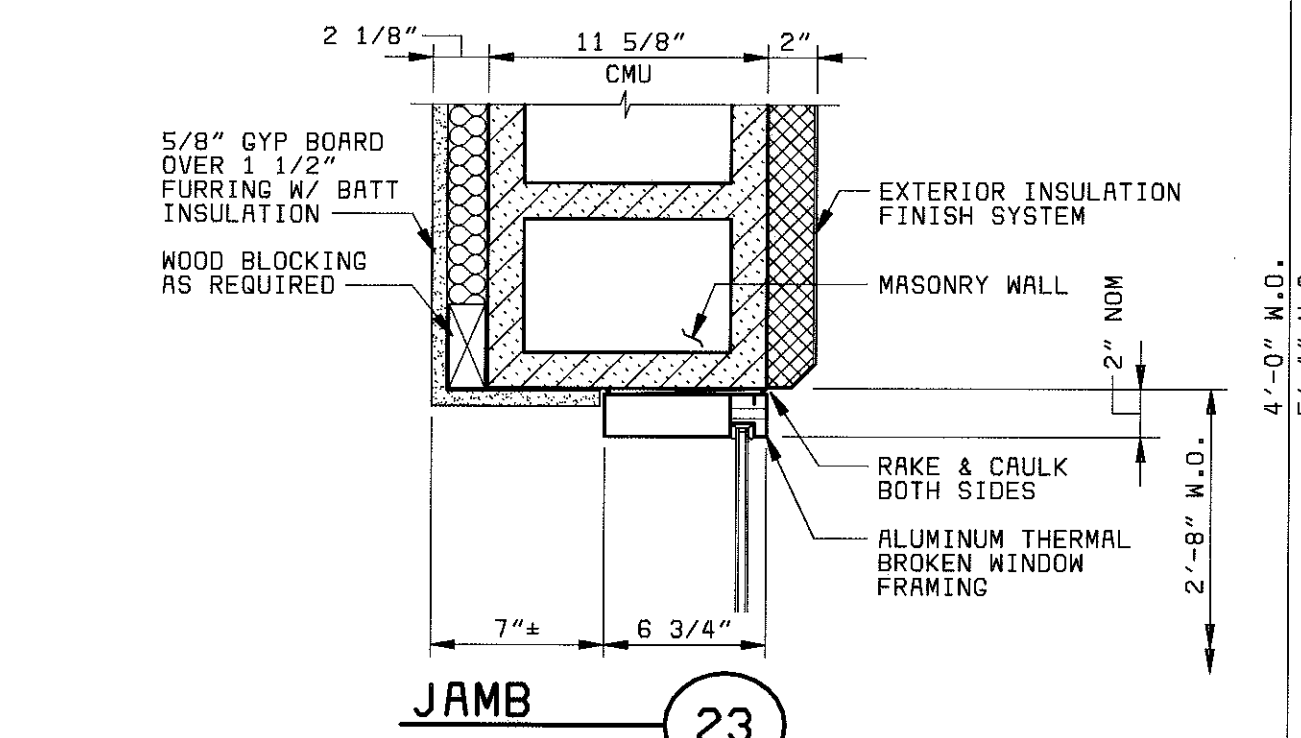
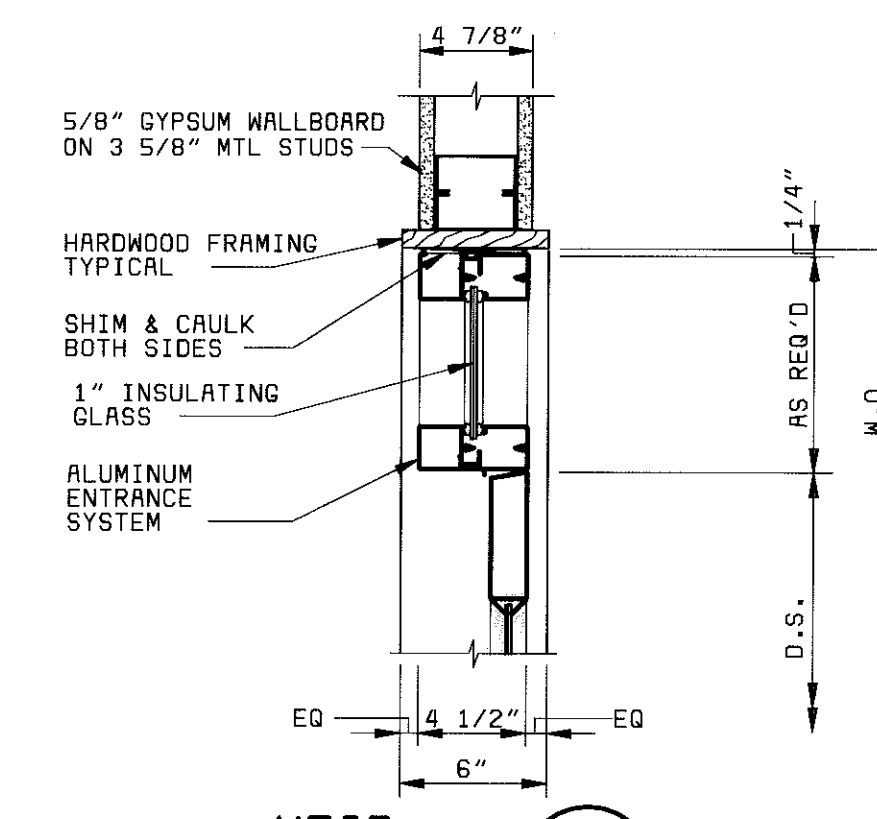
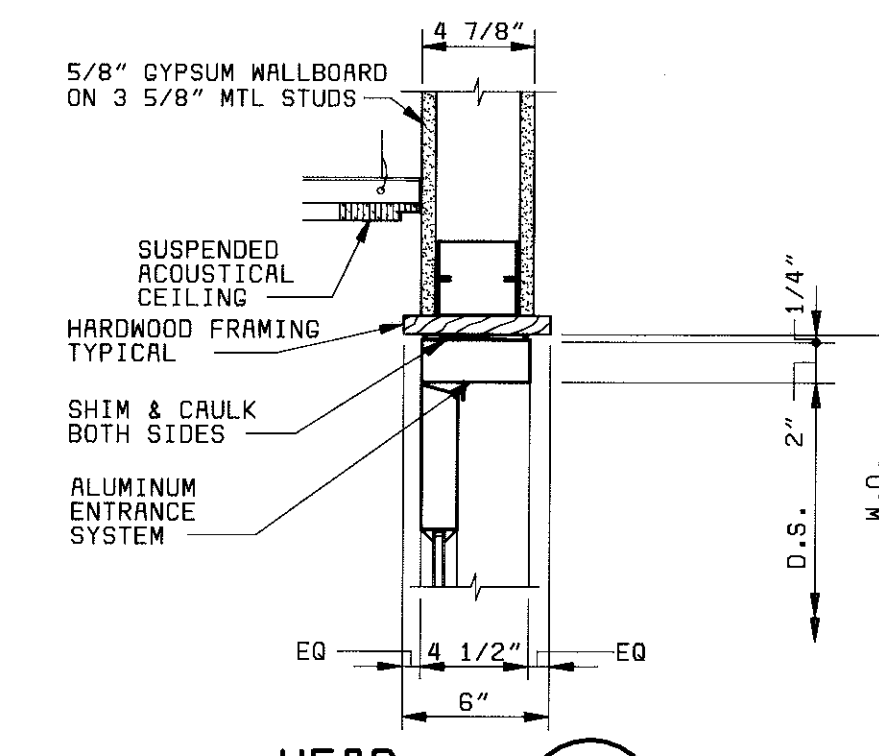
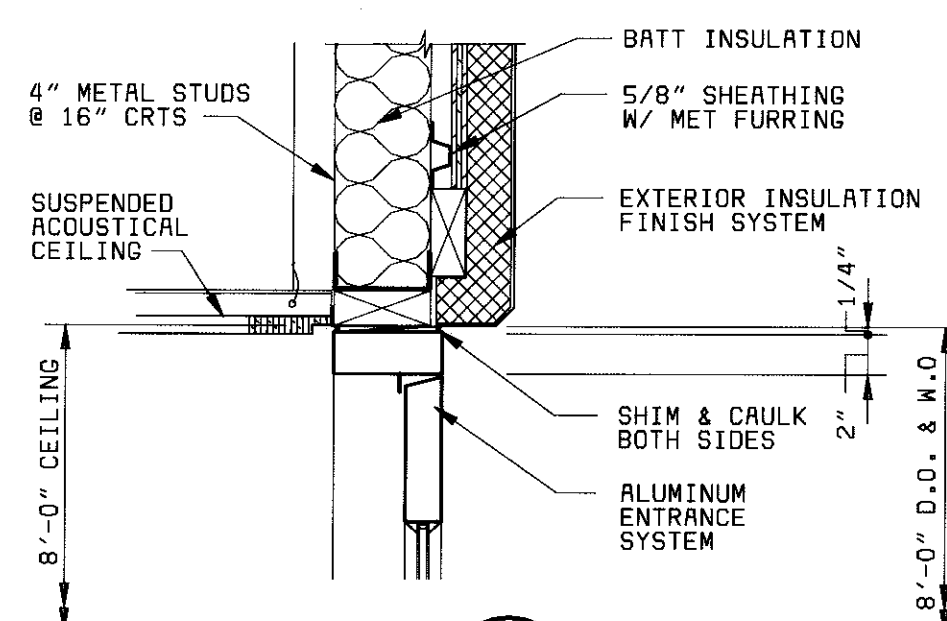
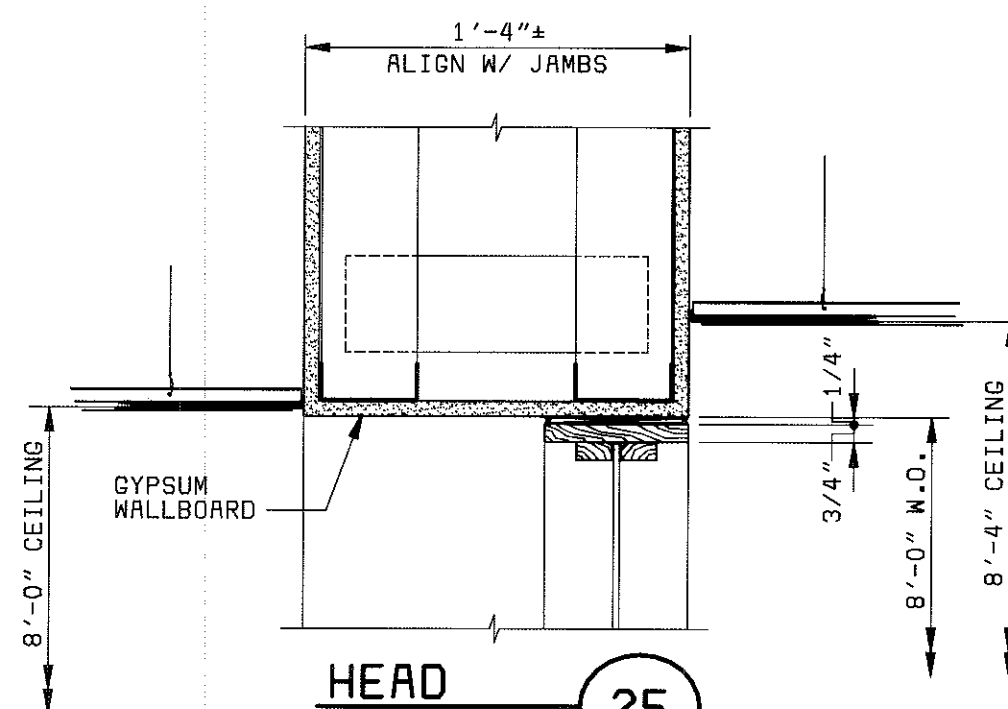
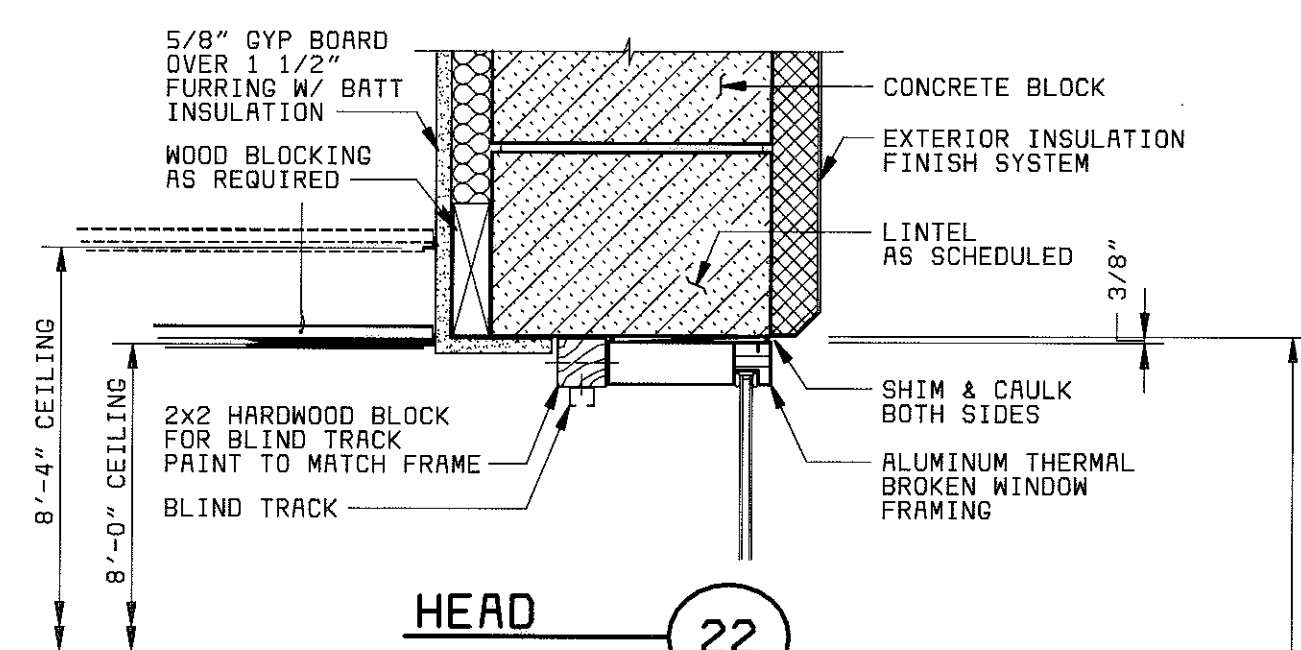
NOTE 1:
BLOCK FILLER PRIMER REQUIRED PRIOR TO PAINTING OF MASONRY.

NOTE 2:
CEILING HEIGHT VARIES FROM 8'-8" TO 11'-8".

WINDOW SCHEDULE												
NO (W)	OPENING W X H	WINDOW							LINTEL		REMARKS	
		TYPE	HEAD	JAMB	SILL	MULL	ELEV	GLASS	TYPE	LENGTH		
GROUND FLOOR LABORATORY												
101	7'-8"x8'-0" INCL DOOR	AL	SIM 30	31	39	-	GG	1" TINTED INSULATING			SEE D-101	
102	2'-8"x4'-0"	AL	22	23	24	-	AA	1" TINTED INSULATING			BLINDS	
103	2'-8"x4'-0"	AL	22	23	24	-	AA	1" TINTED INSULATING			BLINDS	
104	2'-8"x4'-0"	AL	22	23	24	-	AA	1" TINTED INSULATING			BLINDS	
105	2'-8"x4'-0"	AL	22	23	24	-	AA	1" TINTED INSULATING			BLINDS	
106	2'-8"x4'-0"	AL	22	23	24	-	AA	1" TINTED INSULATING			BLINDS	
107	2'-8"x4'-0"	AL	22	23	24	-	AA	1" TINTED INSULATING			BLINDS	
108	2'-8"x4'-0"	AL	22	23	24	-	AA	1" TINTED INSULATING			BLINDS	
109	2'-8"x4'-0"	AL	22	23	24	-	AA	1" TINTED INSULATING			BLINDS	
110	5'-4"x8'-0" INCL DOOR	AL	SIM 32	31/33	39	-	FF	1" TINTED INSULATING			SEE D-102	
111	2'-8"x4'-0"	AL	22	23	24	-	AA	1" TINTED INSULATING			BLINDS	
112	5'-4"x8'-0" INCL DOOR	AL	SIM 32	SIM 33	39	-	EE	1" TINTED INSULATING			SEE D-103	
113	4'-0"x4'-0"	AL	22	23	24	-	AA	1" TINTED INSULATING			BLINDS	
114	4'-8"x8'-0" INCL DOOR	AL	SIM 32	SIM 33	39	-	EE	1" TINTED INSULATING			SEE D-104	
115	8'-0"x8'-0"	WD	25	26/27	29	28	CC	1/4" TEMPERED			BLINDS	
116	12'-0"x8'-0"	AL	16	13	18	17	DD	1/4" TEMPERED			SEE D-130	
117	8'-0"x4'-0"	HM	8	SIM 8	SIM 8	SIM 9	BB	1/4" TEMPERED			BLINDS	
SECOND FLOOR LABORATORY												
201	4'-8"x8'-0" INCL DOOR	AL	SIM 32	SIM 33	38	-	EE	1" TINTED INSULATING			SEE D-201	
202	2'-8"x5'-4"	AL	22	23	24	-	AA	1" TINTED INSULATING				
203	2'-8"x5'-4"	AL	22	23	24	-	AA	1" TINTED INSULATING				
204	2'-8"x5'-4"	AL	22	23	24	-	AA	1" TINTED INSULATING				
205	2'-8"x5'-4"	AL	22	23	24	-	AA	1" TINTED INSULATING				
206	12'-6"x8'-0" INCL DR	AL	SIM 34				GG	1/4" TEMPERED			SEE D-203	

DOOR SCHEDULE													
NO (D)	DOOR SIZE	DOOR					FRAME		LINTEL		LABEL	HDW GROUP	REMARKS
		TYPE	HEAD	JAMB	SILL	ELEV	TYPE	SIZE	TYPE	LENGTH			
GROUND FLOOR LABORATORY													
101	3'-0"x7'-10" PAIR	AL	30	31		H	AL	4.500				1/RE1	SEE W-101
102	3'-0"x7'-2"	AL	32	31.33		G	AL	4.500				1/RE2	SEE W-110
103	3'-0"x7'-2"	AL	SIM 32	33		J	AL	4.500				1/RE4	SEE W-112
104	3'-0"x7'-2"	AL	SIM 32	SIM 33		F	AL	4.500				A/RE2	SEE W-114
105	3'-0"x7'-2"	HM	1	2	3	D	HM	6.750			B-1	9	
106	3'-0"x7'-2"	HM	1	2	3	D	HM	6.750				3	
107	3'-0"x7'-2"	HM	1	2	3	A	HM	6.750				3	
108	3'-6"x7'-0"	ELEV	19	20	21	-	-	-				-	B1 - PARTING
109	3'-0"x7'-2"	WD	SIM 8	10	SIM 3	B	HM	5.875				11	
110	3'-0"x7'-2"	WD	SIM 8	10	SIM 3	B	HM	5.875				11	
111	3'-0"x7'-2"	WD	SIM 8	10	SIM 3	B	HM	5.875				8	
112	3'-0"x7'-2"	WD	SIM 4	4	SIM 3	B	HM	5.875				7	
113	3'-0"x7'-2"± *	WD	1	2	3	C	HM	6.750				7	* EXISTING WALL - FIELD VERIFY
114	3'-0"x7'-2"	HM	1	2	3	A	HM	6.750				5	
115	3'-0"x7'-2" PAIR	HM	SIM 8	9/10	SIM 3	A	HM	6.750				4	
116	3'-0"x7'-2"	AL	38	36/37	SIM 3	J / EE	AL	4.500				1/RE6	SIDELIGHT
117	3'-0"x7'-2"	WD	SIM 8	9/10	SIM3/40	K / L	HM	5.875				6	SIDELIGHT
118	3'-0"x7'-0"	AL	14	15	-	E	AL	4.500				1/RE5	SLIDING DOOR / SIDELIGHT
119	3'-0"x7'-2"	WD	SIM 8	9/10	SIM3/40	C / L	HM	5.875				8	SIDELIGHT
120	3'-0"x7'-2"	WD	SIM 8	10	SIM 3	C	HM	5.875				8	
121	3'-0"x7'-2"	WD	SIM 8	9/10	SIM 3	B	HM	5.875				7	
122	3'-0"x7'-2"	WD	SIM 8	9/10	SIM3/40	C / L	HM	5.875				8	SIDELIGHT
123	3'-0"x7'-2"	WD	SIM 8	9/10	SIM3/40	C / L	HM	5.875				8	SIDELIGHT
124	3'-0"x7'-2"	WD	SIM 8	9/10	SIM3/40	C / L	HM	5.875				8	SIDELIGHT
125	3'-0"x7'-4"	WD	11	13	SIM 3	C	WD	-				10	SLIDING POCKET DOOR
126	3'-0"x7'-2"	AL	38	36/37	SIM 3	J / EE	AL	4.500				1/RE7	SIDELIGHT
127	3'-0"x7'-2"	WD	SIM 8	9/10	SIM3/40	C / L	HM	5.875				8	SIDELIGHT
128	3'-0"x7'-2"	WD	SIM 8	9/10	SIM3/40	C / L	HM	5.875				8	SIDELIGHT
129	3'-0"x7'-2"	WD	SIM 8	10	SIM 3	B	HM	5.875				7	
130	3'-0"x7'-10" PAIR	AL	SIM 16	13	SIM 3	J	AL	4.500				1/RE3	SIDELIGHT
SECOND FLOOR LABORATORY													
201	3'-0" X 7'-2"	AL	SIM 32	SIM 39		F	AL	4.50				1/RE2	SEE W-201
202	3'-0" X 7'-2"	HM	1	2	3	D	HM	6.75			B-1	9	
203	3'-0" X 7'-10" PAIR	AL	34	35		J	AL	4.50				1/RE3	SEE W-206
204	3'-6" X 7'-0"	ELEV	19	20	21	-	-	-				-	B1 - PARTING
205	3'-0" X 6'-6"	HM	5	6	7	A	HM	6.75				2	

05/02/97 11:15:56 ACD-12



NOTE:
ALL DETAILS AT 1 1/2"=1'-0"
UNLESS NOTED OTHERWISE

PROJECT RECORD

[illegible]

DESIGNED _____ MAJ
DETAILED _____ DAY, TMB
CHECKED _____ MAJ
APPROVED _____
DATE _____



PROJECT NO.	28551
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MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION
ARCHITECTURAL
WINDOW DETAILS

21-41

A-12

SHEET
OF

08/05/87 15:22:12 RCD-12-

A

B

C

D

E

F

A

B

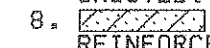
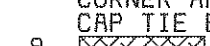
C

D

E

F

PLAN NOTES:

1. TOP OF SLAB ELEV. 56.33'. TYPICAL UNLESS NOTED OTHERWISE AS THUS ELEV.
2. TOP OF FOOTING ELEVATION 56.33' TYPICAL UNLESS NOTED OTHERWISE.
3. WITHIN THE BUILDING AREA, FOLLOWING CLEARING OF THE SITE, ALL FILL AND NATURAL SOIL MATERIAL TO A MINIMUM OF ONE FOOT BELOW STRIPPED GRADE, SHALL BE COMPACTED TO A DRY DENSITY OF AT LEAST 95% OF MODIFIED PROCTOR (ASTM D-1557). ALL SOFT MATERIAL ENCOUNTERED DURING EXCAVATION OF FOOTINGS SHALL BE REMOVED AND REPLACED WITH CONTROLLED LOW STRENGTH FLOWABLE CONCRETE (F'c = 200 PSI) OR A WELL-COMPACTED CRUSHED FOOT NO. 57 OR FOOT NO. 87 STONE. THE AREA BENEATH THE BUILDING, INCLUDING A MINIMUM SIX INCHES OF SUBGRADE BENEATH ALL SLABS-ON-GRADE, SHALL BE BROUGHT UP TO FINISHED SUBGRADE LEVELS WITH A CLEAN, FINE SAND FILL WITH LESS THAN 10% PASSING THE NO. 200 SIEVE. APPROVED SAND SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 12 INCHES IN THICKNESS AND SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY. THE COMPACTION OF EACH LIFT SHALL BE CONFIRMED WITH DENSITY TESTS BEFORE THE NEXT LIFT IS PLACED.
4. SLAB ON GRADE TO BE CONCRETE SLAB ON VAPOR BARRIER (10MIL OR 2X6MIL W/ 12" LAPPED AND SEALED SEAMS OVER 6" MINIMUM THICKNESS. WELL COMPACTED SAND FILL. REINFORCE 6" SLABS W/ #5@12" EW CENTERED. REINFORCE 10" SLABS W/ 2 LAYERS OF #5@12" EW.
5. MASONRY WALL LOCATIONS PER ARCH DWGS. CENTER STRIP FTGS BENEATH WALLS OR AS INDICATED. FILL ALL CELLS WITH GROUT BELOW FLOOR LEVEL.
6. SEE SITE PLAN FOR EXTERIOR STOOPS AND SIDEWALKS.
7. LOCATE ELEVATOR PIT AND MACHINE ROOM CONCRETE WALLS BENEATH CORRESPONDING MASONRY WALLS. SEE ARCH DWGS. FOR WALL THICKNESS AND LOCATIONS.  DENOTES WALLS TO BE REINFORCED W/ #5@24" O.C. & 1-#5 ER JAMB AND CORNER. INDICATED WALLS SHALL BE FULLY GROUTED.
8.  DENOTES 12" LOADBEARING CONCRETE BLOCK WALL REINFORCED W/ #5 @ 24" O.C. TYPICAL. 2-#5 VERT IN ADJACENT CELLS AT EACH OPENING AND 1-#5 VERTICAL EACH CORNER AND FREE EDGE. STANDARD HOOK VERTICAL BARS INTO CAP TIE BEAM.
9.  DENOTES NON-LOADBEARING CONCRETE BLOCK WALL. NOMINAL THICKNESS AS SHOWN ON ARCHITECTURAL PLAN AND REINFORCED W/ #5 @ 48" O.C. TYPICAL. 1-#5 VERT IN EACH JAMB AND 1-#5 VERTICAL EACH CORNER AND FREE EDGE.
10. WF-30 DENOTES WALL FOOTING 30"W X 12"D AT ALL 12" BLOCK WALLS (TYP. U.N.D.) REINFORCED W/ 4-#6 LONG STEEL AND #5 @ 12" O.C. BOTTOM. #5 @ 48" DWLS INTO WALL.
11. WF-24 DENOTES WALL FOOTING 24"W X 12"D AT ALL 12" BLOCK WALLS (TYPICAL U.N.D.) REINFORCED W/ 3-#6 LONG STEEL AND #5 @ 12" O.C. BOTTOM. #5 @ 48" DWLS INTO WALL.
12. SEE MECHANICAL AND PLUMBING DRAWINGS FOR FLOOR DRAINS AND SCREED LINES TO DRAINS.
13. FOR GENERAL STRUCTURAL NOTES SEE SHEET S-3.
14. ALL MASONRY WALLS SHALL BE LATERALLY SUPPORTED AT TOP. SEE DETAILS ON SHEET S-3 AND S-5.

FOUNDATION AND GROUND FLOOR PLAN

3/16" = 1'-0" FIN FLR EL 56.33
* FIELD VERIFY DIMENSIONS

PROJECT RECORD

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION
STRUCTURAL
FOUNDATION AND GROUND FLOOR PLAN

21-41

S-1

SHEET
OF

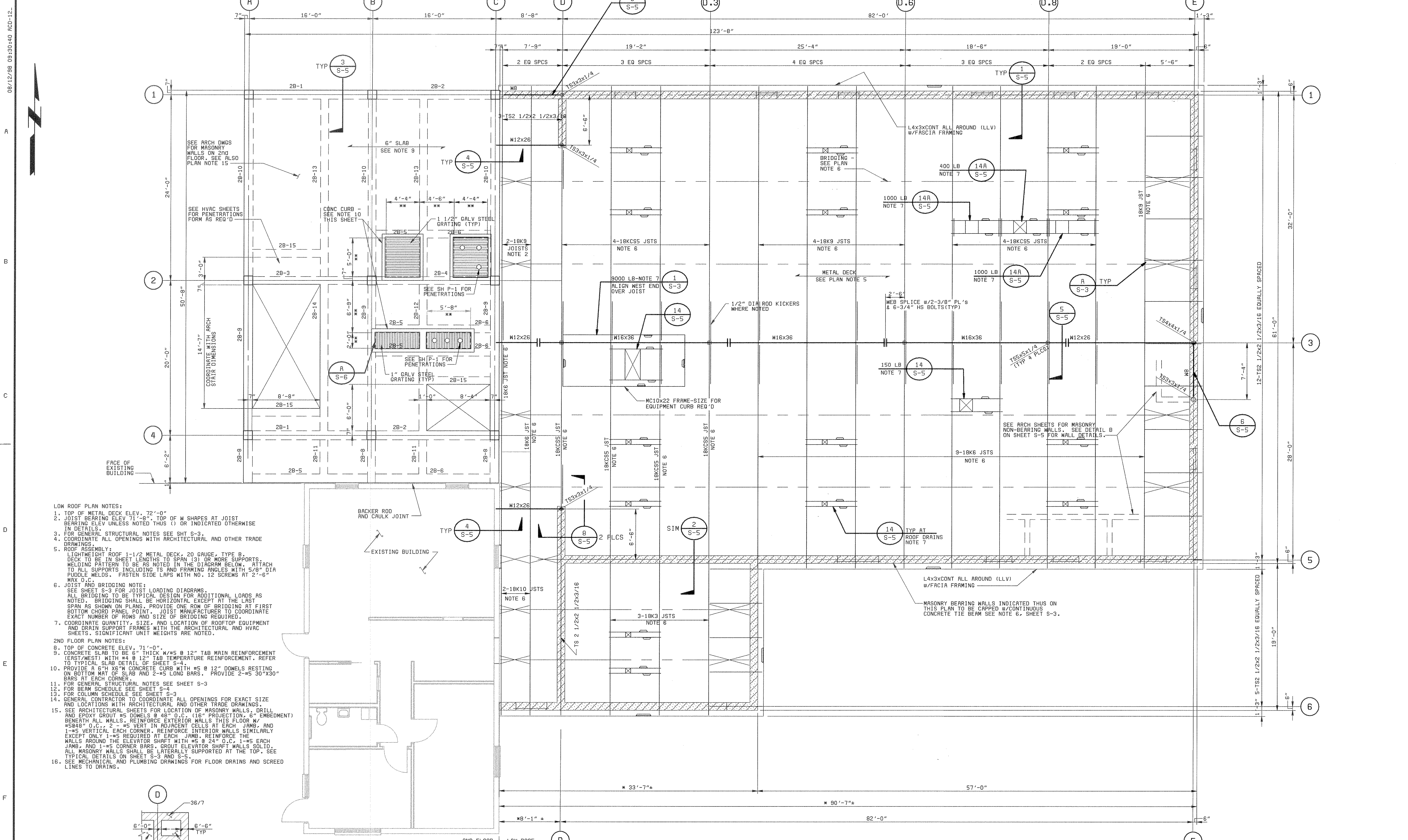
DESIGNED: FJP
DETAILED: LGT
CHECKED: RNS
APPROVED: _____
DATE: _____



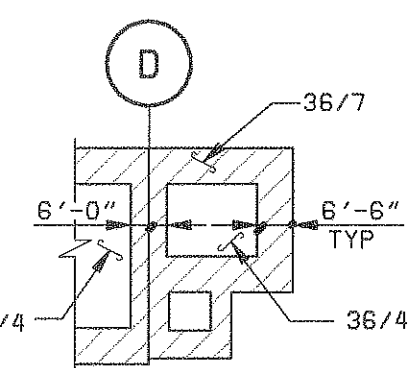
Black & Veatch
Tampa, Florida

PROJECT NO.
28551

DATE REVISIONS AND RECORD OF ISSUE NO. BY CK APP



- LOW ROOF PLAN NOTES:
1. TOP OF METAL DECK ELEV. 72'-0"
 2. JOIST BEARING ELEV. 71'-9", TOP OF W SHAPES AT JOIST BEARING ELEV. UNLESS NOTED THUS () OR INDICATED OTHERWISE IN DETAILS.
 3. FOR GENERAL STRUCTURAL NOTES SEE SHT S-3.
 4. COORDINATE ALL OPENINGS WITH ARCHITECTURAL AND OTHER TRADE DRAWINGS.
 5. ROOF ASSEMBLY:
LIGHTWEIGHT ROOF 1-1/2" METAL DECK, 20 GAUGE, TYPE B.
DECK TO BE IN SHEET LENGTHS TO SPAN (3) OR MORE SUPPORTS.
WELDING PATTERN TO BE AS NOTED IN THE DIAGRAM BELOW. ATTACH TO ALL SUPPORTS INCLUDING TS AND FRAMING ANGLES WITH 5/8" DIA PUDDLE WELDS. FASTEN SIDE LAPS WITH NO. 12 SCREWS AT 2'-6" MAX O.C.
 6. JOIST AND BRIDGING NOTE:
SEE SHEET S-3 FOR JOIST LOADING DIAGRAMS.
ALL BRIDGING TO BE TYPICAL DESIGN FOR ADDITIONAL LOADS AS NOTED. BRIDGING SHALL BE HORIZONTAL EXCEPT AT THE LAST SPAN AS SHOWN ON PLANS. PROVIDE ONE ROW OF BRIDGING AT FIRST BOTTOM CHORD PANEL POINT. JOIST MANUFACTURER TO COORDINATE EXACT NUMBER OF ROWS AND SIZE OF BRIDGING REQUIRED.
 7. COORDINATE QUANTITY, SIZE, AND LOCATION OF ROOFTOP EQUIPMENT AND DRAIN SUPPORT FRAMES WITH THE ARCHITECTURAL AND HVAC SHEETS. SIGNIFICANT UNIT WEIGHTS ARE NOTED.
- 2ND FLOOR PLAN NOTES:
8. TOP OF CONCRETE ELEV. 71'-0"
 9. CONCRETE SLAB TO BE 6" THICK W/ #5 @ 12" T&B MAIN REINFORCEMENT (EAST/WEST) WITH #5 @ 12" T&B TEMPERATURE REINFORCEMENT. REFER TO TYPICAL SLAB DETAIL OF SHEET S-4.
 10. PROVIDE A 6" X 6" CONCRETE CURB WITH #5 @ 12" DOWELS RESTING ON BOTTOM MAT OF SLAB AND 2-#5 LONG BARS. PROVIDE 2-#5 30"x30" BARS AT EACH CORNER.
 11. FOR GENERAL STRUCTURAL NOTES SEE SHEET S-3.
 12. FOR BEAM SCHEDULE SEE SHEET S-4.
 13. FOR COLUMN SCHEDULE SEE SHEET S-3.
 14. GENERAL CONTRACTOR TO COORDINATE ALL OPENINGS FOR EXACT SIZE AND LOCATION WITH ARCHITECTURAL AND OTHER TRADE DRAWINGS.
 15. SEE ARCHITECTURAL SHEETS FOR LOCATION OF MASONRY WALLS, DRILL AND EPOXY GROUT #5 DOWELS @ 48" O.C. (16" PROJECTION, 6" EMBEDMENT) BENEATH ALL WALLS. REINFORCE EXTERIOR WALLS THIS FLOOR W/ #5 @ 12" O.C. 2-#5 VERT IN ADJACENT CELLS AT EACH JAMB. AND 1-#5 VERTICAL EACH CORNER. REINFORCE INTERIOR WALLS SIMILARLY EXCEPT ONLY 1-#5 REQUIRED AT EACH JAMB. REINFORCE THE WALLS AROUND THE ELEVATOR SHAFT WITH #5 @ 24" O.C. 1-#5 EACH JAMB. AND 1-#5 CORNER BARS. GROUT ELEVATOR SHAFT WALLS SOLID. ALL MASONRY WALLS SHALL BE LATERALLY SUPPORTED AT THE TOP. SEE TYPICAL DETAILS ON SHEET S-3 AND S-5.
 16. SEE MECHANICAL AND PLUMBING DRAWINGS FOR FLOOR DRAINS AND SCREED LINES TO DRAINS.



SECOND FLOOR/LOWER ROOF FRAMING PLAN

3/16" = 1'-0"
* FIELD VERIFY DIMENSIONS
** INDICATED DIMENSIONS SHALL BE VERIFIED TO PROVIDE CLEARANCE FOR PILOT PLANT EQUIPMENT ACTUALLY FURNISHED.

PROJECT RECORD

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION
STRUCTURAL
SECOND FLOOR/ROOF FRAMING PLAN

PROJECT NO.
28551

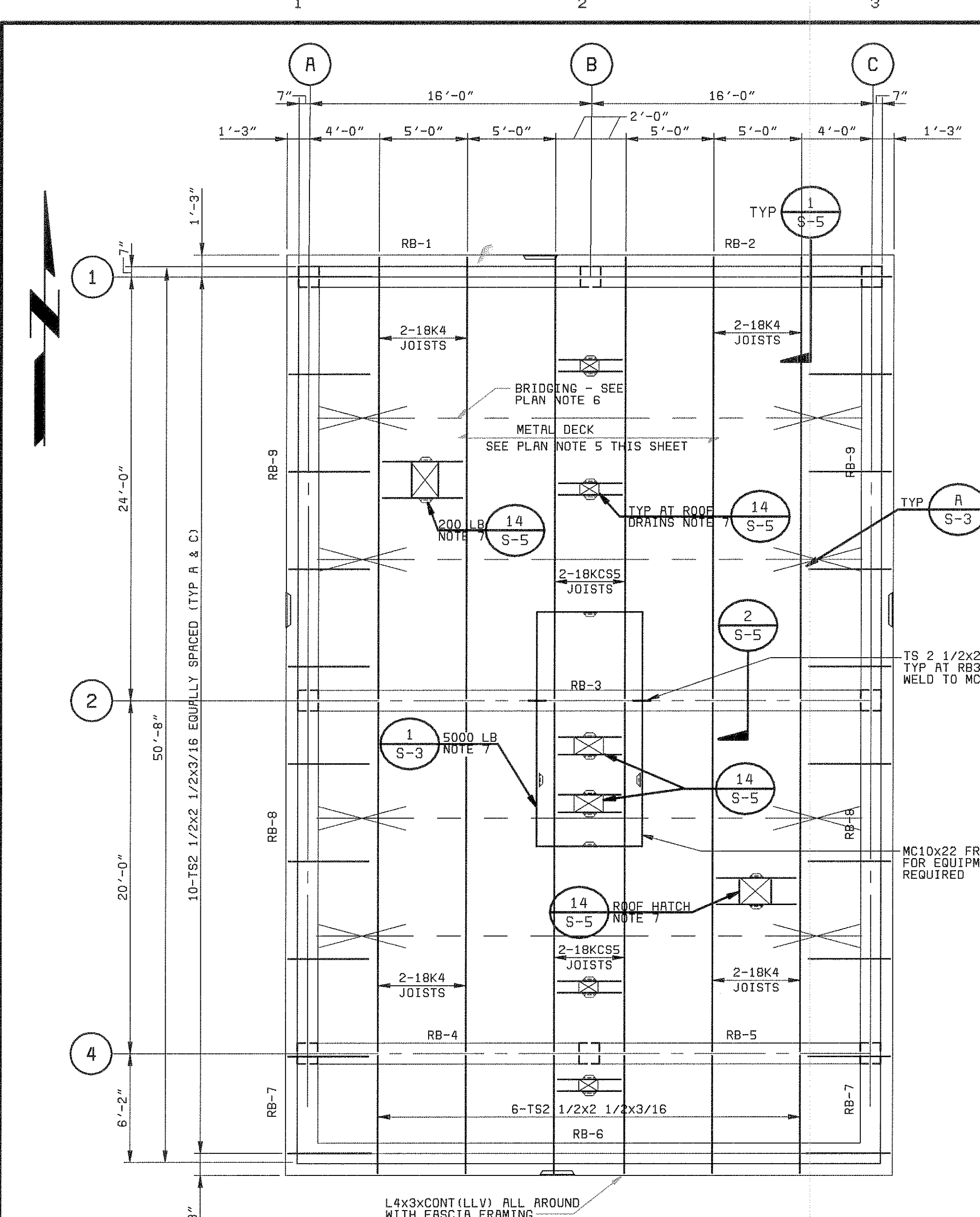
S-2

SHEET
OF

21-41

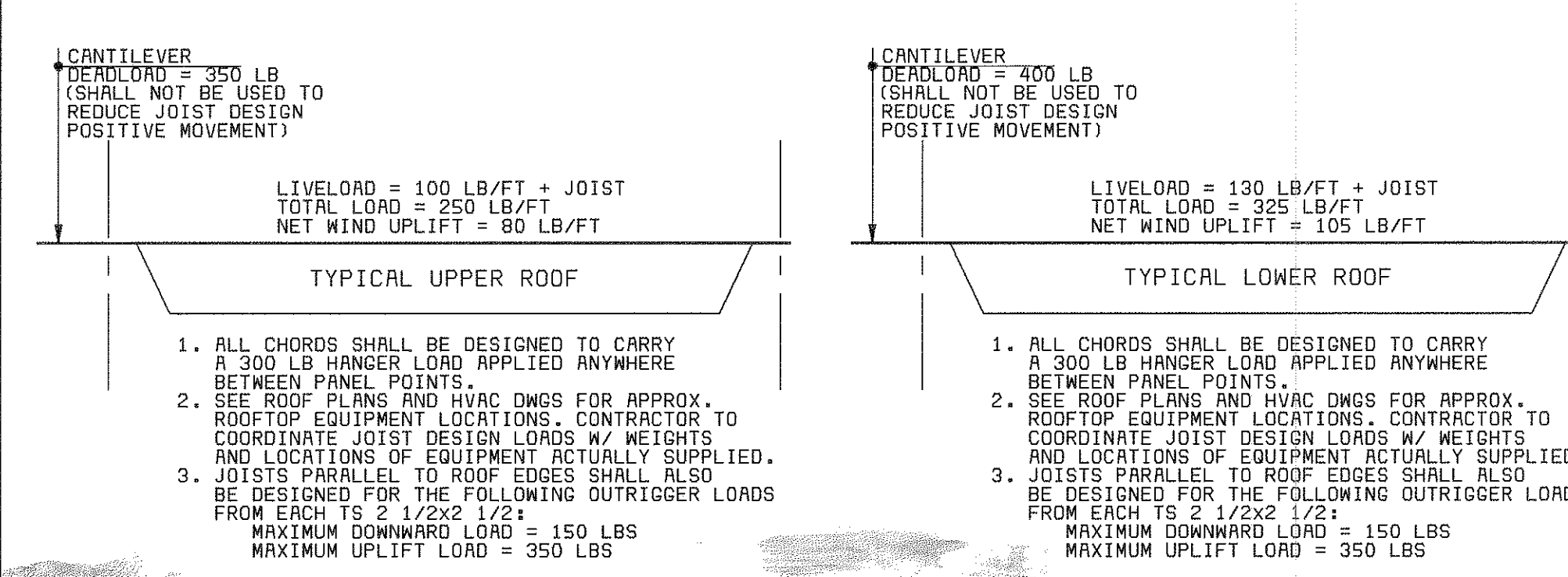
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08/12/98 11:41:44 RCD-12-
28551-310-232-5300
G1027
FG00000



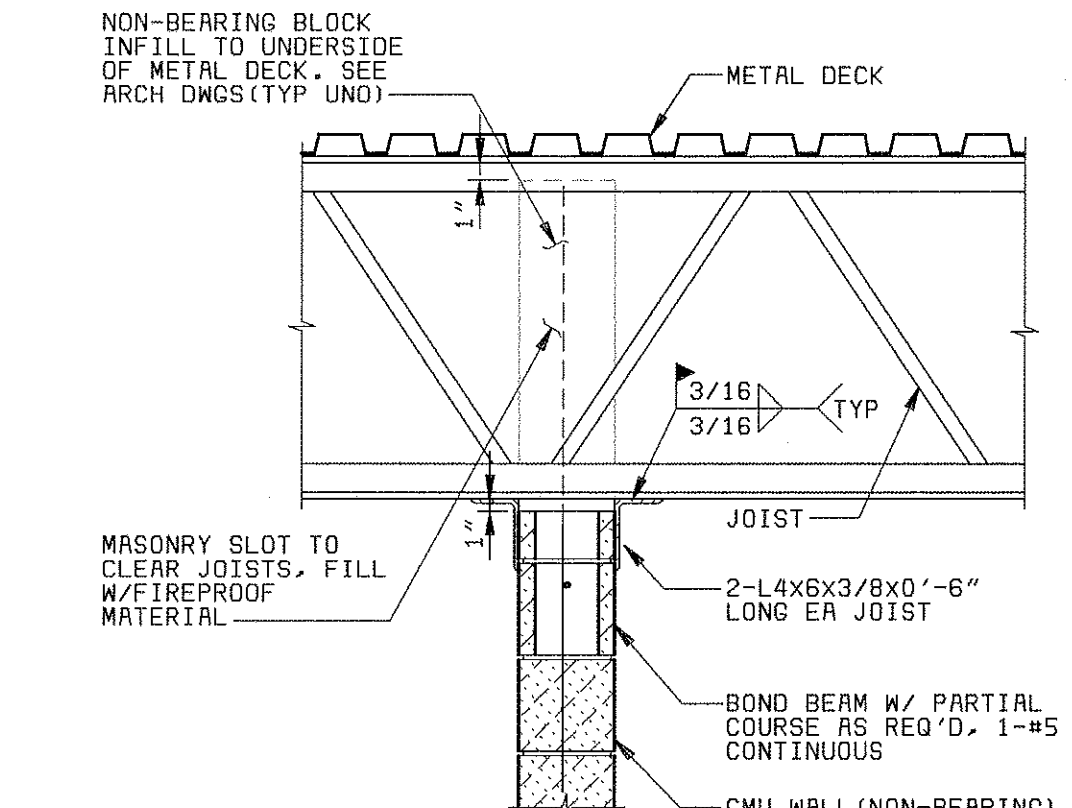
UPPER ROOF PLAN NOTES:

1. TOP OF METAL DECK ELEV. 87.00
2. TOP OF CONCRETE ELEV. 86.64
3. FOR GENERAL STRUCTURAL NOTES SEE SHT S-3.
4. COORDINATE ALL OPENINGS WITH ARCHITECTURAL AND OTHER TRADE DRAWINGS.
5. ROOF ASSEMBLY:
SEE THIS SHEET FOR TYP. JOIST LOADING DIAGRAMS. LIGHTWEIGHT ROOF 1-1/2" METAL DECK, 20 GAUGE, TYPE B. DECK TO BE IN SHEET LENGTHS TO SPAN (3) OR MORE SUPPORTS. WELDING PATTERN TO BE 3/8" AT ALL SUPPORTS EXCEPT ALONG THE ROOF PERIMETER (6 FT. WIDE STRIP) WHERE WELDING PATTERN SHALL BE 3/8". SIDE LAPS WITH NO. 12 SCREWS AT 2'-6" MAX O.C.
6. JOIST AND BRIDGING NOTE:
ALL BRIDGING TO BE HORIZONTAL BRIDGING EXCEPT AT THE LAST SPAN AS SHOWN ON PLANS. PROVIDE ONE ROW OF BRIDGING AT FIRST BOTTOM CHORD PANEL POINT. JOIST MANUFACTURER TO COORDINATE EXACT NUMBER OF ROWS AND SIZE OF BRIDGING REQUIRED.
7. COORDINATE QUANTITY, SIZE, AND LOCATION OF ROOFTOP EQUIPMENT AND DRAIN SUPPORT FRAMES WITH THE ARCH AND HVAC DWGS. SIGNIFICANT UNIT WEIGHTS ARE NOTED.
8. ALL MASONRY WALLS BELOW ROOF SHALL BE LATERALLY SUPPORTED AT TOP. SEE TYPICAL DETAILS ON SHEET S-3 AND S-5.

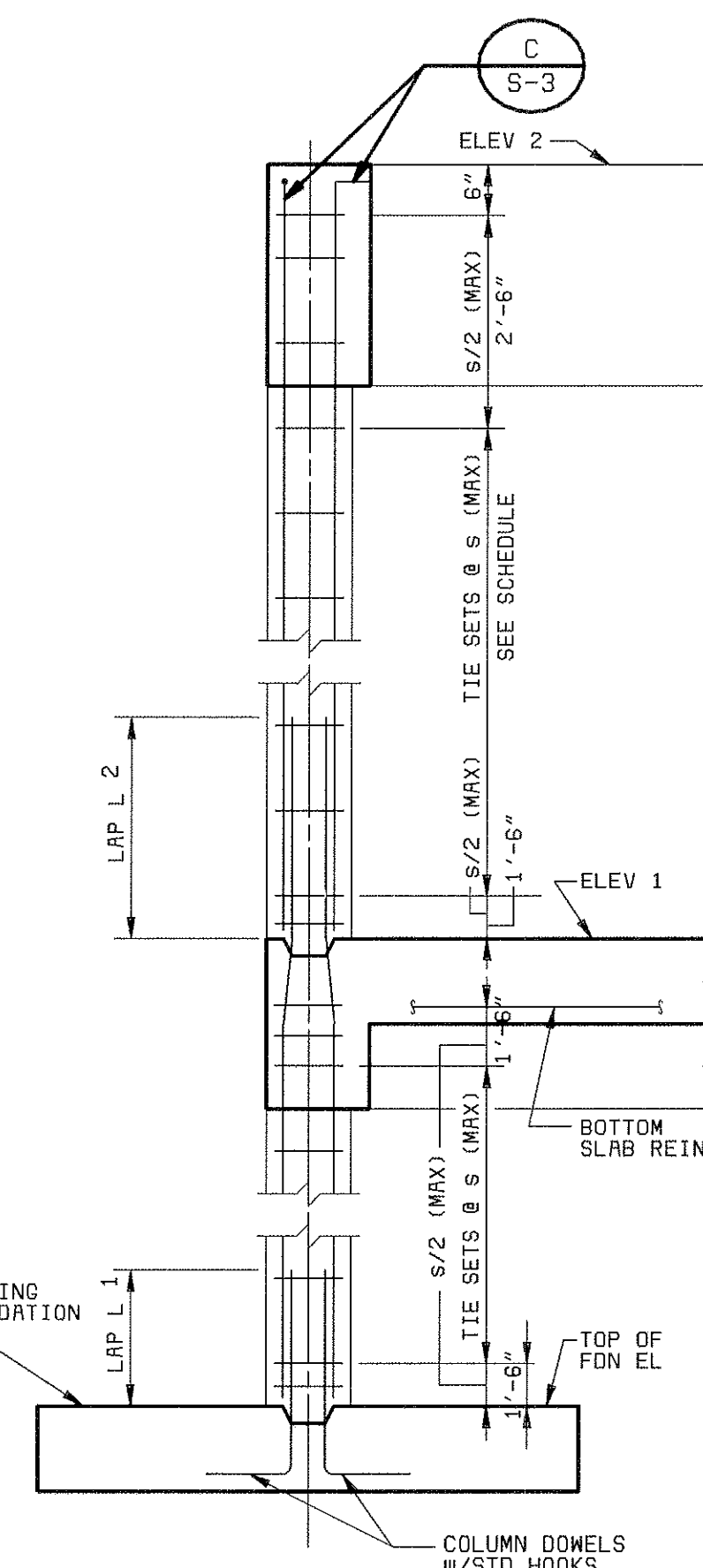


TYPICAL JOIST LOADING DIAGRAMS
NO SCALE

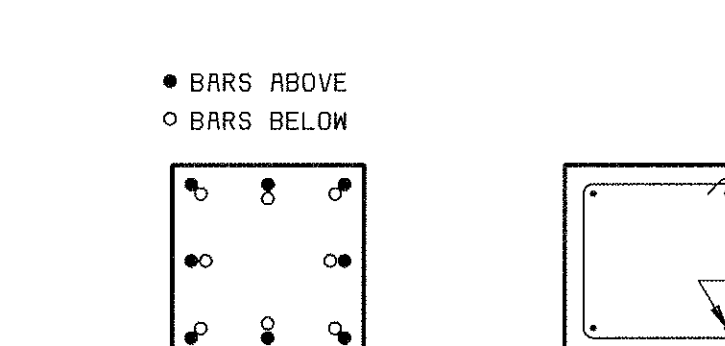
NON-BEARING BLOCK WALL SUPPORT TYP DETAIL (PERPENDICULAR TO JOIST)
3/4" = 1'-0"



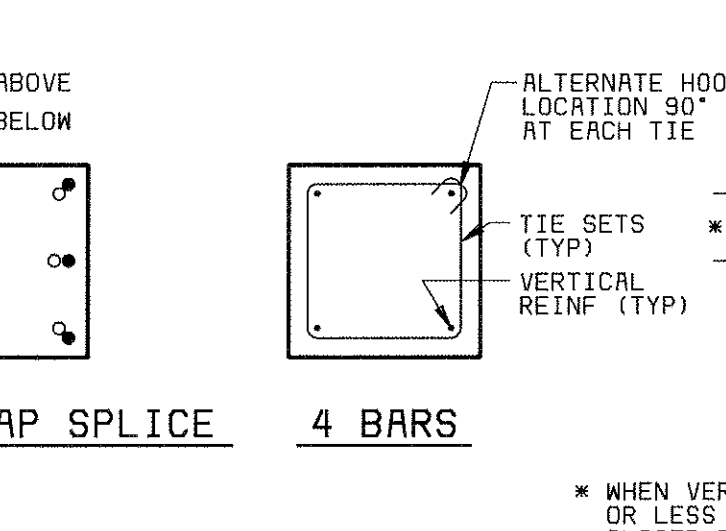
TYPICAL COLUMN
NO SCALE



TYPICAL LAP SPLICE
4 BARS

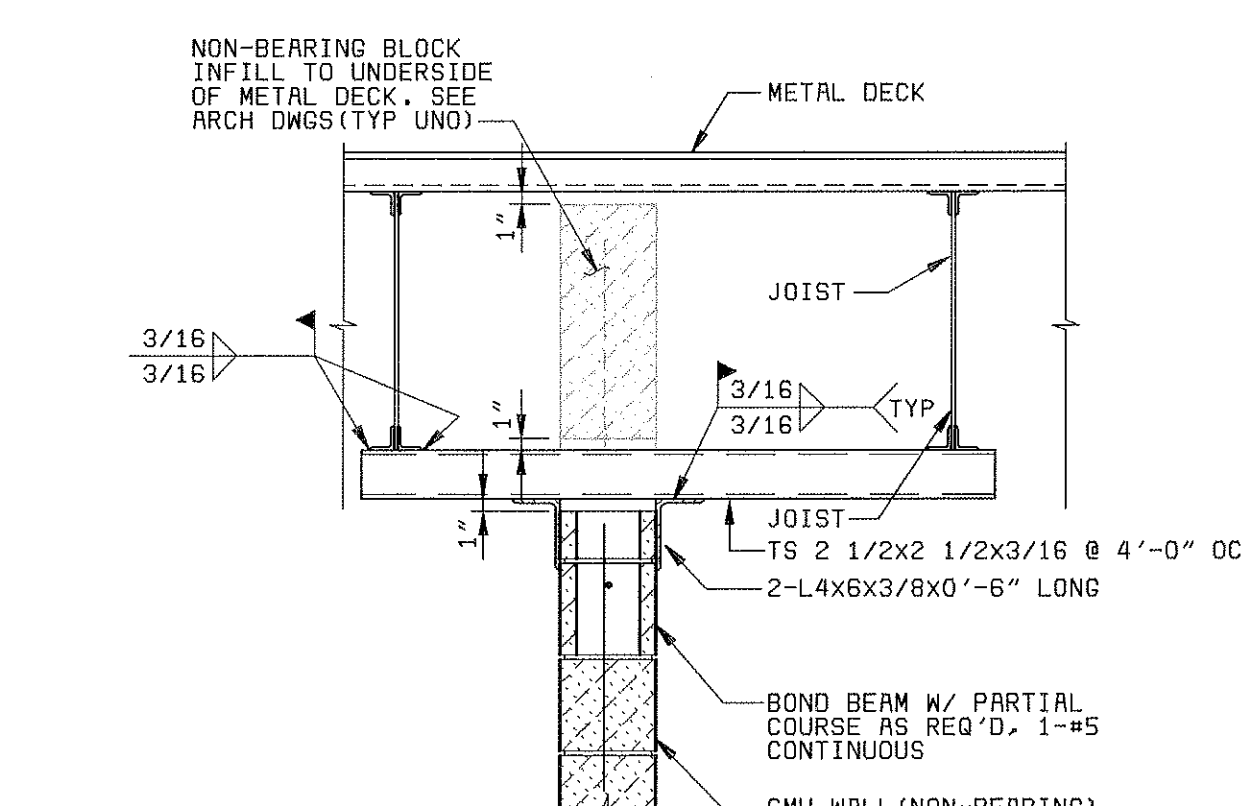


TYPICAL COLUMN SECTIONS
NO SCALE

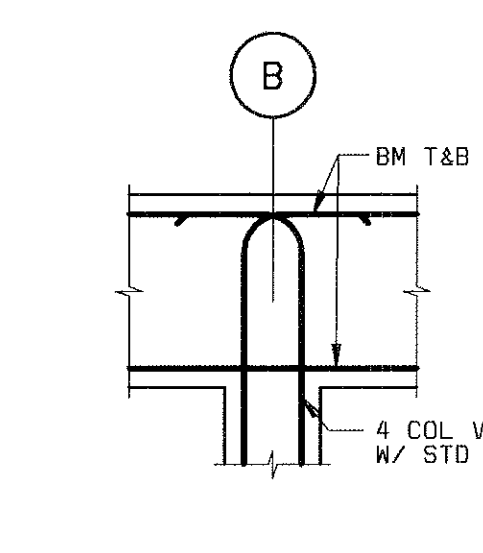


SCHEDULE FOR COLUMN			
COLUMN NO.	CF1	CF2	CF3
ELEV 2	86.64'	86.64'	
SECTION			
SECTION TYPE			
SIZE	1'-2" SQ	1'-2" SQ	
VERTICAL REINF	4-#8	4-#8	
TIES	#3 @ 12"	#3 @ 12"	
LAP L2	3'-6"	3'-6"	
ELEV 1	71.00'	71.00'	
SECTION			
SECTION TYPE			
SIZE	1'-2" SQ	1'-2" SQ	
VERTICAL REINF	8-#8	8-#9	
TIES	#3 @ 12"	#3 @ 12"	
LAP L1	2'-6"	2'-10"	
TOP OF FDN EL	56.33'	56.33'	
DOWELS	8-#8	8-#9	
COMMENTS			

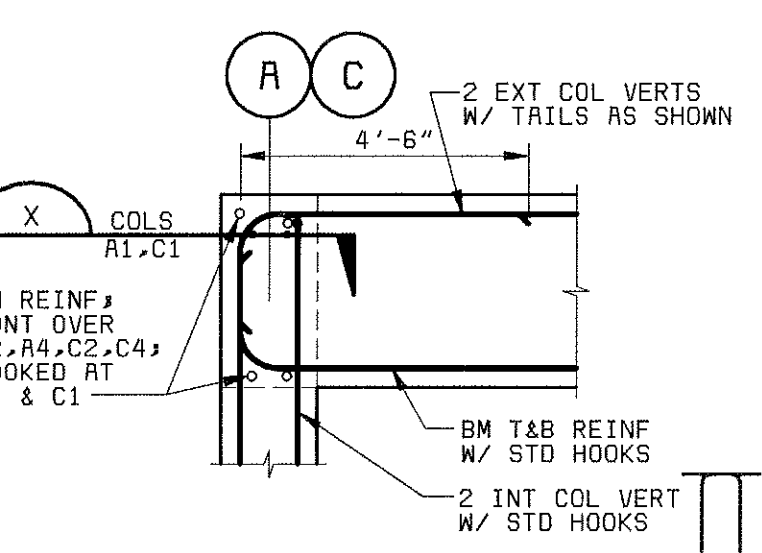
NON-BEARING BLOCK WALL SUPPORT TYP DETAIL (PARALLEL TO JOIST)
3/4" = 1'-0"



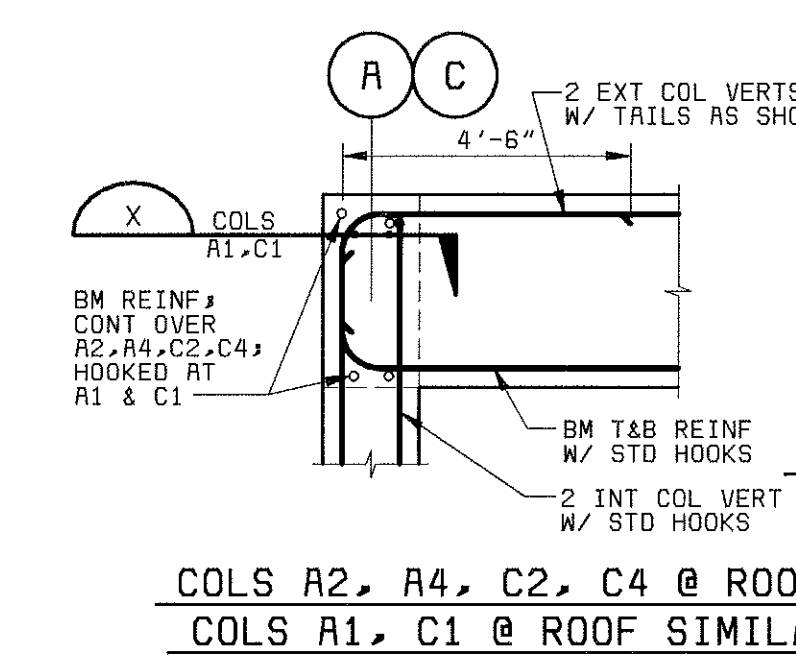
COLS B1, B4 @ ROOF



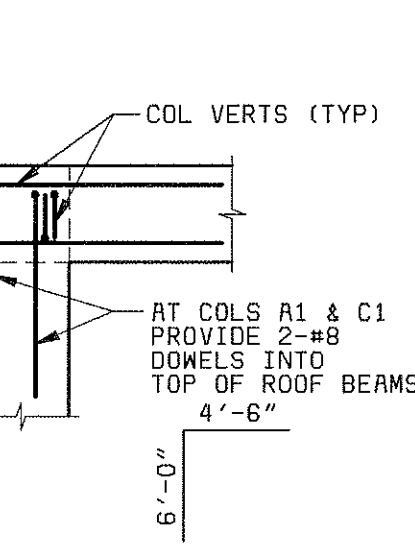
COLS A2, A4, C2, C4 @ ROOF
COLS A1, C1 @ ROOF SIMILAR



COLUMN REINF DETAILS
NO SCALE



COL VERTS (TYP)



PROJECT RECORD

MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP		S-3
LABORATORY EXPANSION STRUCTURAL UPPER ROOF FRAMING PLAN		
DESIGNED: FJP/RNS DATE: _____	PROJECT NO.: 28551	21-41 SHEET OF
DATE: _____	DATE: _____	



08/12/98 11:38:23 ACD-12-

A

B

C

D

E

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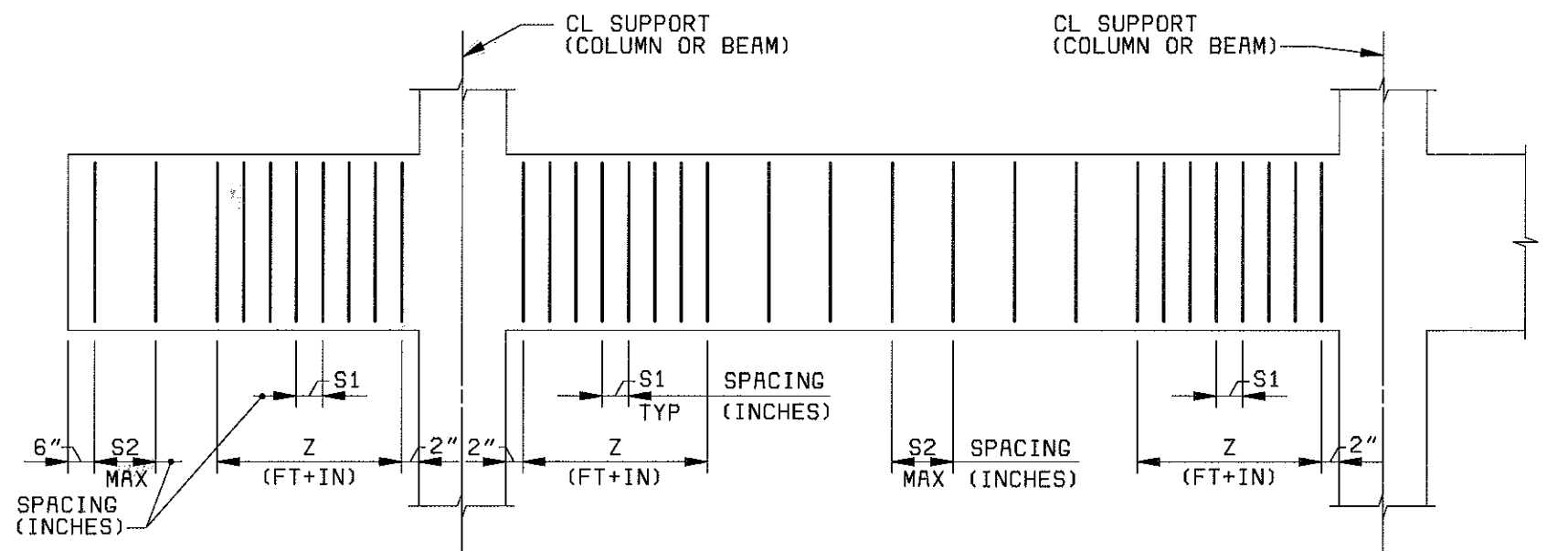
28551-310-232-S400
G1027
F000000

BEAM SCHEDULE

MARK	TYPE	BEAM SIZE		BOTTOM REINF				END TOP REINF			INT TOP REINF			SIDE FACE REINF (EF)	STIRRUPS					REMARKS	
		WIDTH	DEPTH	CONT	ADD	x	x ¹	x ²	CONT	ADD	y ¹	CONT	ADD		y ²	TYPE	SIZE	S1	Z		S2
2B-1	E	14	32	2-#8					2-#9			2-#9			2-#5	SA	#4			9	
2B-2	E	14	32	2-#8					2-#9			2-#9			2-#5	SA	#4			9	
2B-3	E	14	32	2-#8					2-#9			2-#9			2-#5	SA	#4			12	
2B-4	E	14	32	2-#8					2-#9			2-#9			2-#5	SA	#4			12	
2B-5	E	12	20	2-#8					2-#7			2-#7			1-#5	SA	#4			12	
2B-6	E	12	20	2-#8					2-#7			2-#7			1-#5	SA	#4			12	
2B-7	NOT USED																				
2B-8	C	14	32	2-#8					2-#9			-			2-#5	SA	#4			12	
2B-9	I	14	32	2-#9					2-#9			2-#9			2-#5	SA	#4			12	
2B-10	E	14	32	2-#9					2-#9			2-#9			2-#5	SA	#4			12	
2B-11	C	12	20	2-#8					2-#9			-			1-#5	SA	#4			8	
2B-12	I	12	20	2-#9					2-#9			2-#9			1-#5	SA	#4			12	
2B-13	E	12	20	2-#8					2-#9			2-#9			1-#5	SA	#4			12	
2B-14	I	12	32	2-#9					2-#9			2-#9			2-#5	SA	#4			12	
2B-15	S	12	20	2-#8					2-#7			-			1-#5	SA	#4			12	
RB-1	E	14	32	2-#8					2-#9			2-#9			2-#5	SA	#4			12	
RB-2	E	14	32	2-#8					2-#9			2-#9			2-#5	SA	#4			12	
RB-3	S	14	32	3-#9					2-#9			-			2-#5	SA	#4			12	
RB-4	E	14	32	2-#8					2-#9			2-#9			2-#5	SA	#4			12	
RB-5	E	14	32	2-#8					2-#9			2-#9			2-#5	SA	#4			12	
RB-6	S	12	32	2-#9					2-#9			-			2-#5	SA	#4			12	
RB-7	C	14	32	2-#8					2-#9			-			2-#5	SA	#4			9	
RB-8	I	14	32	2-#9					2-#9			2-#9			2-#5	SA	#4			12	
RB-9	E	14	32	2-#9					2-#9			2-#9			2-#5	SA	#4			12	

BEAM NOTES:

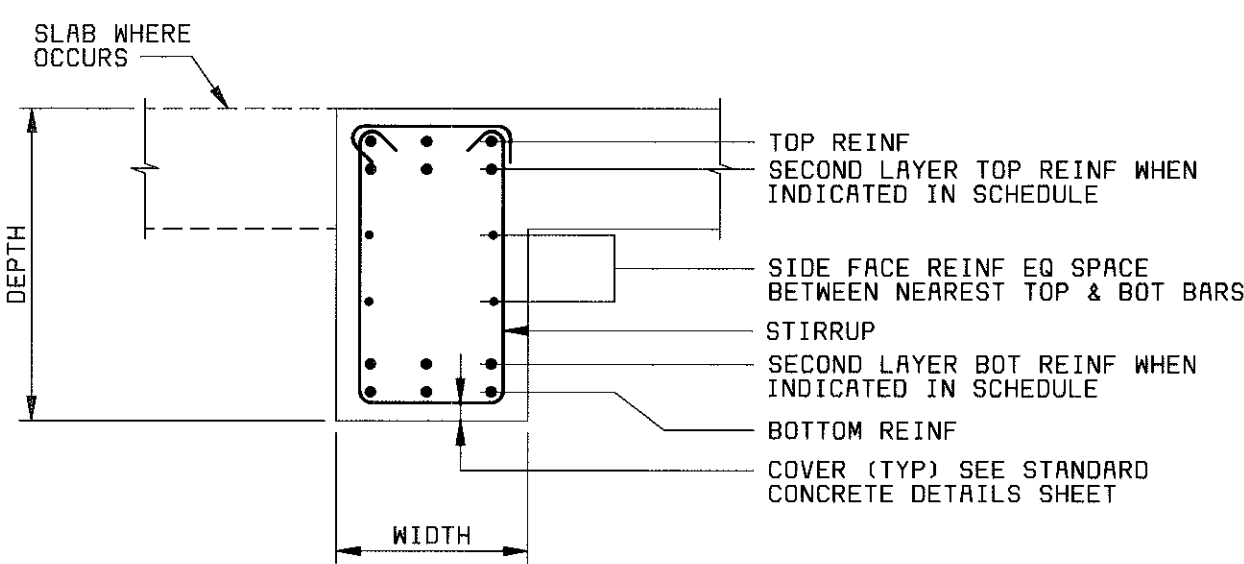
- UNLESS INDICATED OTHERWISE IN BEAM SCHEDULE, CONTINUOUS BOTTOM REINF SHALL HAVE LAP SPLICES CENTERED ON THE CENTERLINE OF THE SUPPORT USING 75% OF THE LAP SPlice LENGTH INDICATED ON THE STANDARD CONCRETE DETAILS SHEET. USE THE LAP SPlice REQUIREMENT OF THE SMALLER TOP BAR IF BAR SIZES IN ADJACENT SPANS DIFFER. AT THE CONTRACTORS OPTION, BOTTOM REINF MAY BE MADE CONTINUOUS, WITHOUT SPLICING, ACROSS THE SUPPORT IF BARS IN THE ADJACENT SPAN ARE EQUAL IN SIZE AND QUANTITY.
- CONTINUOUS END AND INTERIOR TOP REINF SHALL BE LAPPED AT MIDSPAN BETWEEN SUPPORTS USING 75% OF THE LAP SPlice LENGTH INDICATED ON THE STANDARD CONCRETE DETAILS SHEET. USE THE LAP SPlice REQUIREMENT OF THE SMALLER TOP BAR, IF THE BAR SIZES EACH SIDE OF MIDSPAN DIFFER. AT THE CONTRACTORS OPTION, TOP REINF MAY BE MADE CONTINUOUS, WITHOUT SPLICING, IF THE TOP BARS EACH SIDE OF MIDSPAN ARE EQUAL IN SIZE AND QUANTITY.
- CONTINUOUS TOP AND BOTTOM BARS SHALL BE PLACED IN THE BEAM SECTION SUCH THAT ONE OF THE CONTINUOUS BARS IS LOCATED IN EACH CORNER OF THE BEAM STIRRUPS.
- ALL TOP AND BOTTOM BARS SHALL BE PLACED IN ONE LAYER UNLESS INDICATED OTHERWISE. WHERE MORE THAN ONE LAYER IS NOTED, PROVIDE GREATER OF 2.5 INCHES OR 3 BAR DIAMETER CLEAR BETWEEN LAYERS.
- SIDE FACE REINF SHALL BE CONTINUOUS WITH LAP SPLICES CENTERED AT THE CENTERLINE OF THE SUPPORT. A 90 DEGREE STANDARD HOOK SHALL BE PROVIDED AT THE EXTERIOR ENDS OF END SPANS. SCHEDULED SIDE FACE REINF SHALL BE SPACED EQUALLY ON EACH FACE.
- PROVIDE MINIMUM #5 STIRRUP SUPPORT BARS IN ALL CORNERS OF STIRRUPS WHEN TOP OR BOTTOM BARS ARE NOT PRESENT. LAP #5 BARS 1'-8" MIN TO SCHEDULED REINF.
- UNLESS INDICATED OTHERWISE, CONSECUTIVE STIRRUP CROSSTIES SHALL HAVE THEIR 90 DEGREE HOOK PLACED ON OPPOSITE SIDES. IN THE EVENT THAT A SLAB FRAMES INTO ONLY ONE SIDE OF A BEAM, THEN THE 90 DEGREE HOOK SHALL BE PLACED ON THE SLAB SIDE CONSISTENTLY. IN THE EVENT A BEAM IS NOT CONFINED BY A SLAB ON EITHER SIDE, THE STIRRUP CROSSTIE SHALL HAVE TWO 135 DEGREE HOOKS AND NO 90 DEGREE HOOK.
- ABBREVIATIONS USED:
ADD = ADDITIONAL
BOT = BOTTOM
CONT = CONTINUOUS
EE = EACH END
EF = EACH FACE
EQ = EQUAL
INT = INTERIOR
LE = LEFT END
RE = RIGHT END
REINF = REINFORCEMENT
STD = STANDARD (PER ACI 318)
T = TOP
TYP = TYPICAL



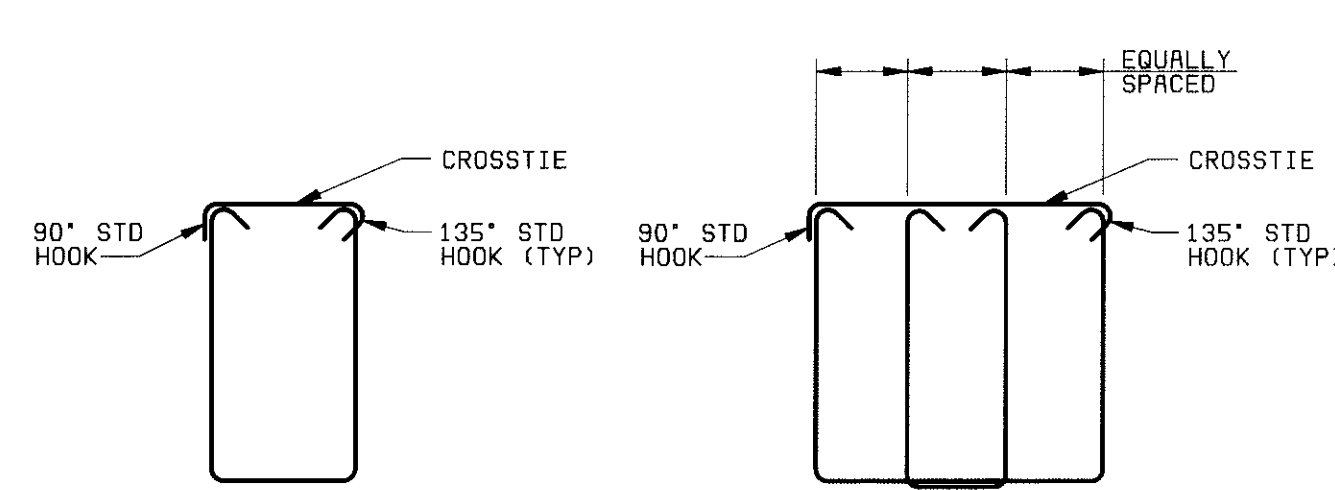
CANTILEVER SPAN

END, INTERIOR OR SINGLE SPAN

STIRRUP SPACING LAYOUT



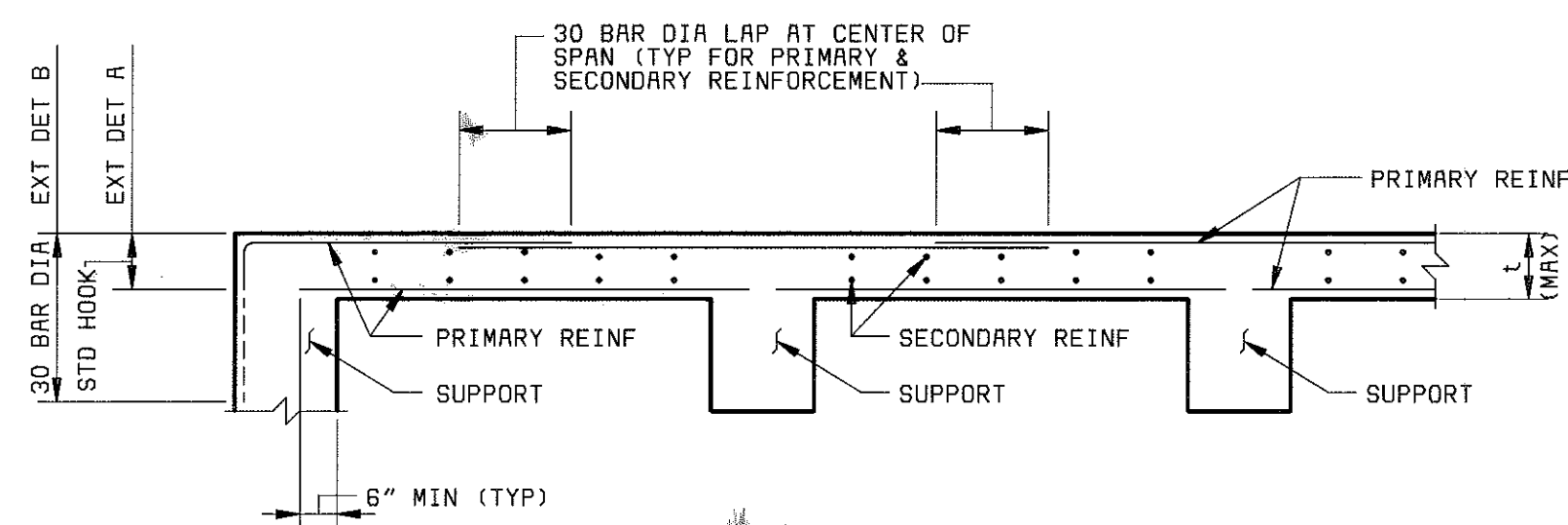
TYPICAL BEAM SECTION



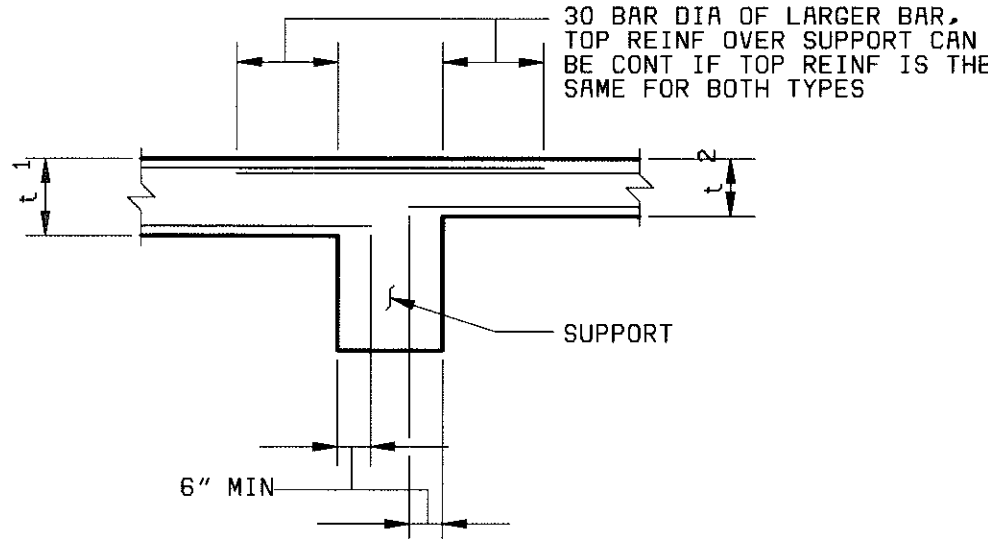
TYPE SA

TYPE SB

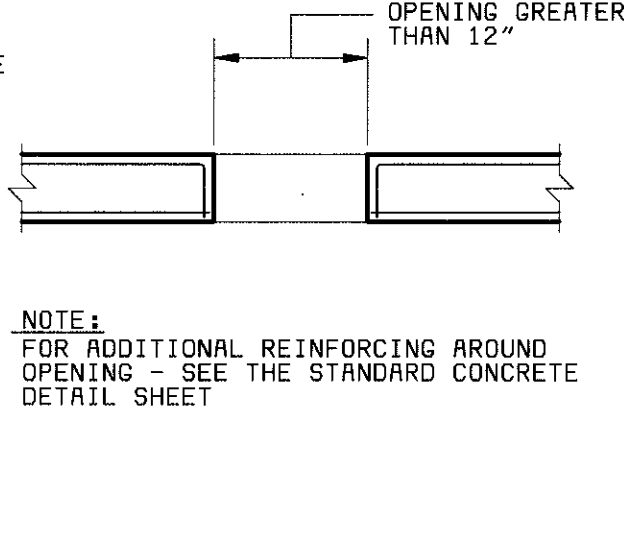
STIRRUP DETAILS



TYPICAL SUSPENDED SLAB DETAIL



SLAB INTERACTION DETAIL



DETAIL AT OPENINGS

TYPICAL SLAB DETAILS

PROJECT RECORD

DESIGNED: F.J.P./RNS
DETAILED: JJM
CHECKED: RNS
APPROVED: _____
DATE: _____



PROJECT NO.
28551

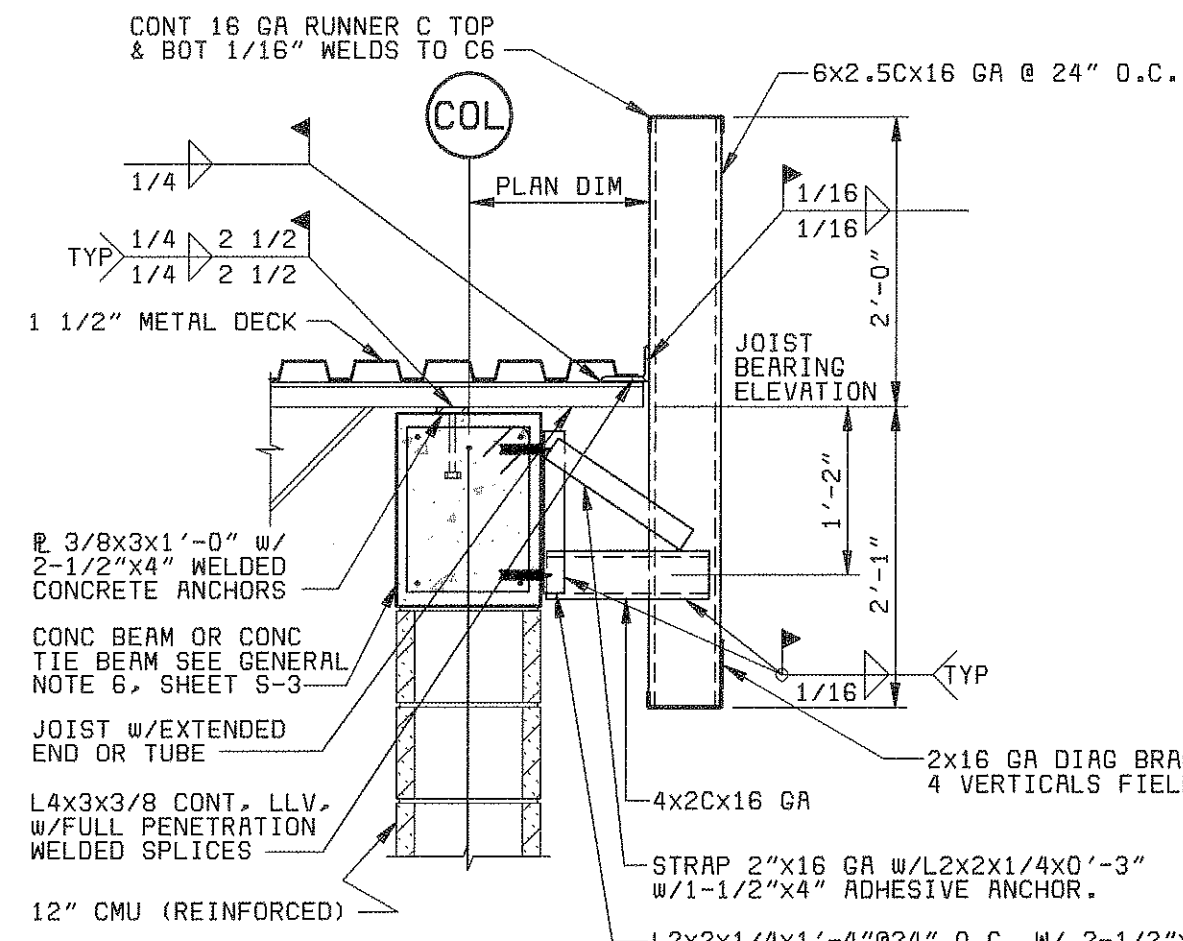
MANATEE COUNTY, FLORIDA
MANATEE COUNTY WWTP

STANDARD BEAM SCHEDULE
AND TYPICAL SLAB DETAILS

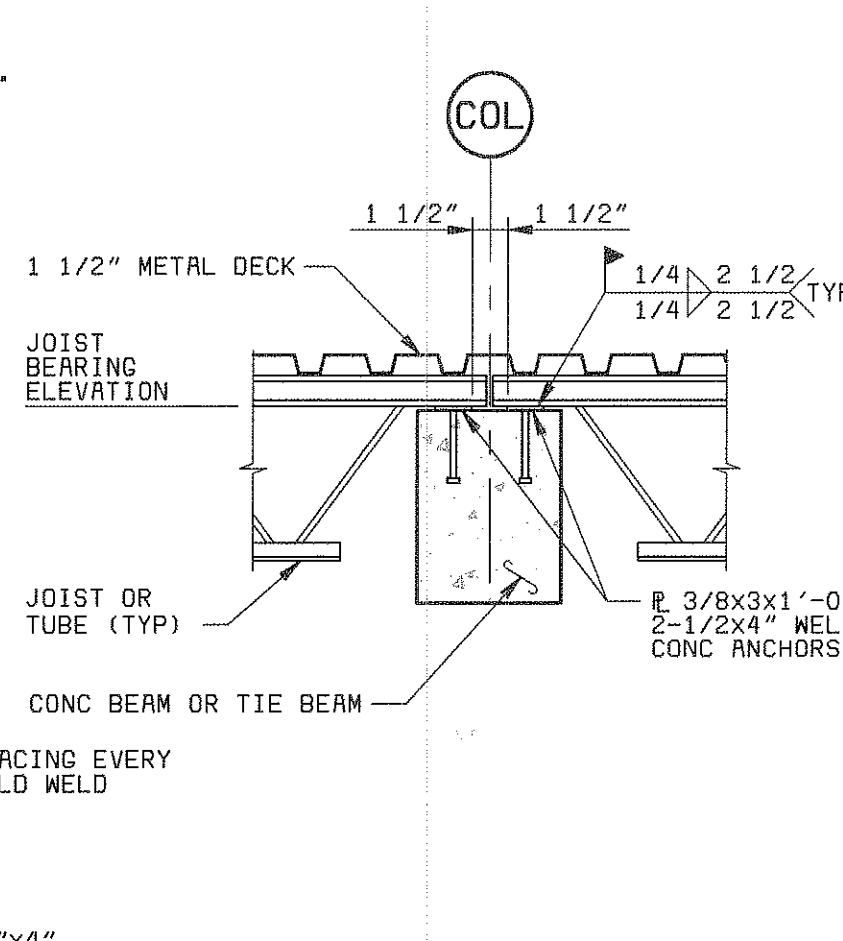
21-41

S-4

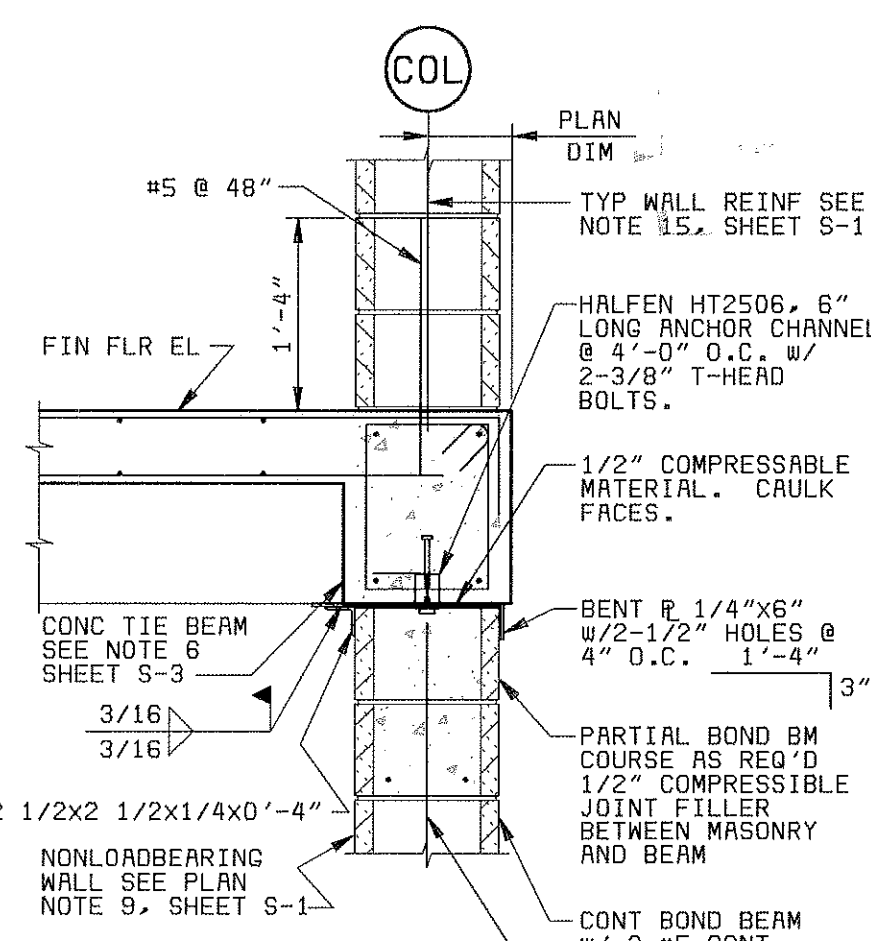
SHEET
OF



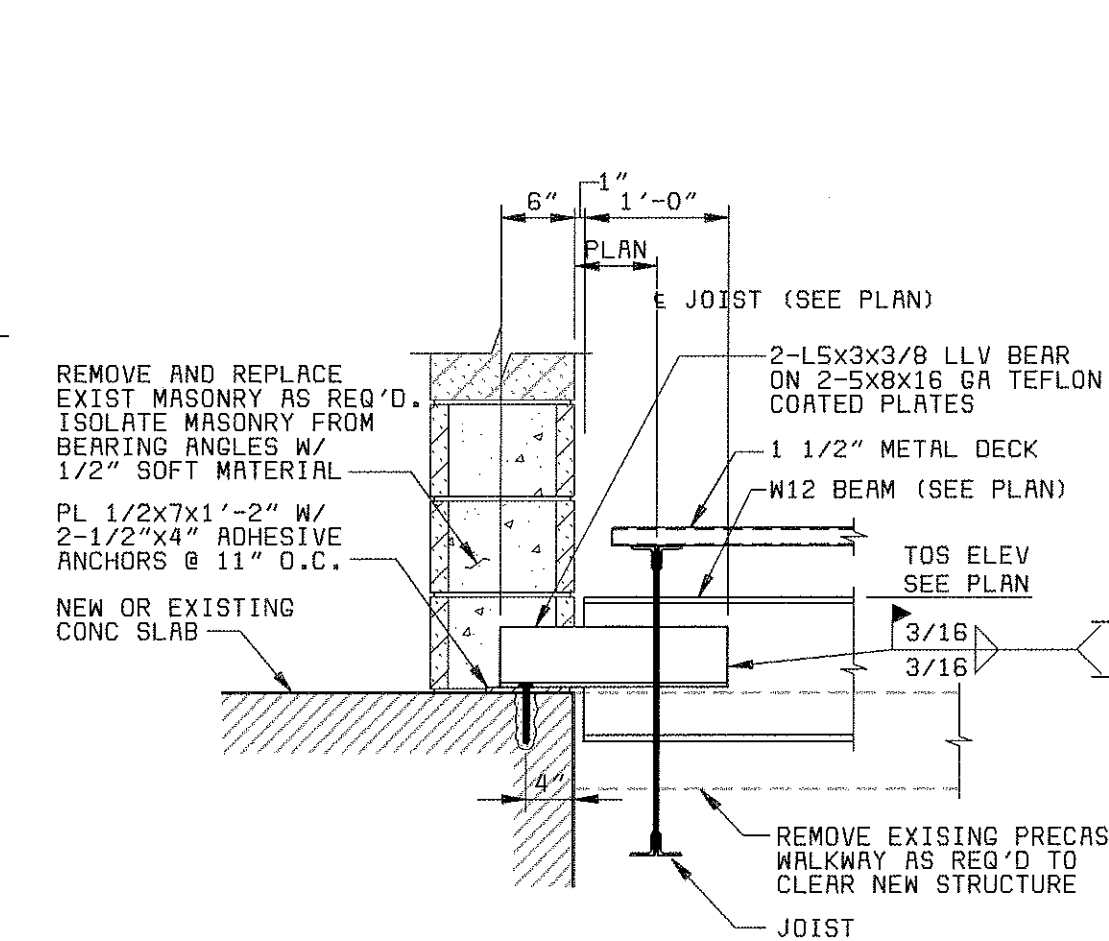
SECTION 1
3/4" = 1'-0" S-2, S-3



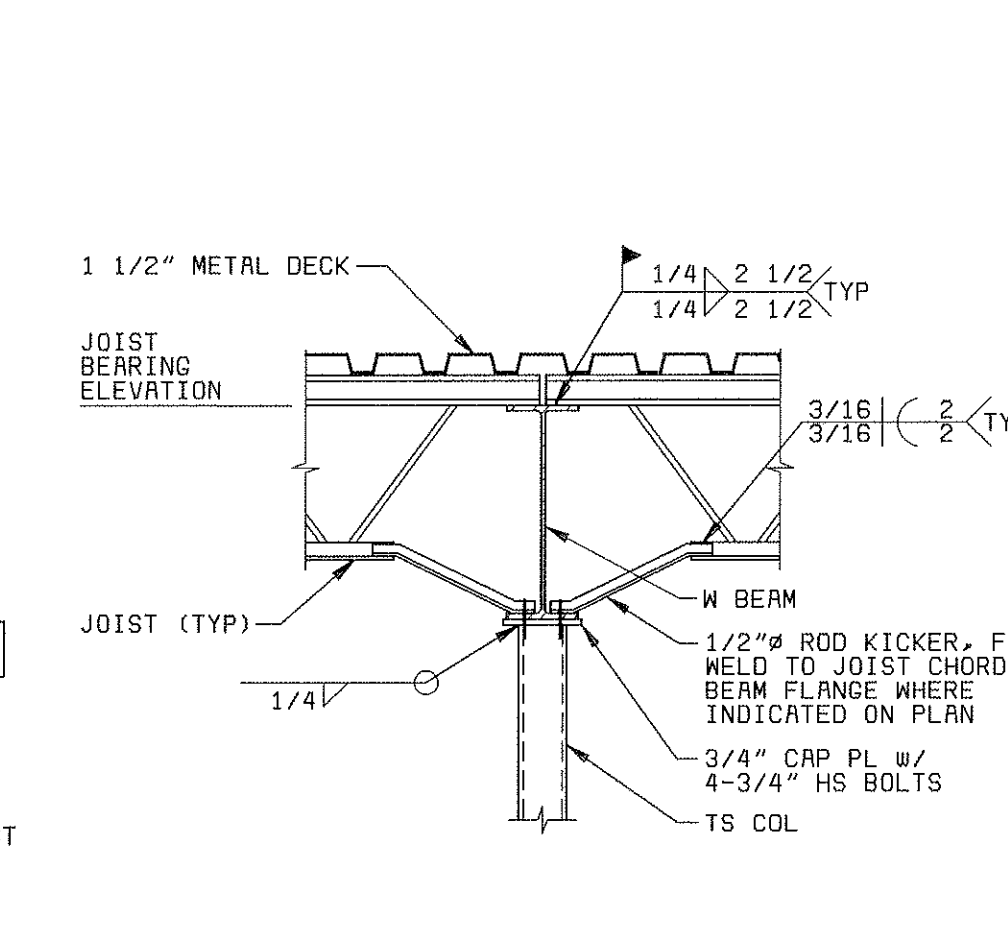
SECTION 2
3/4" = 1'-0" S-2, S-3



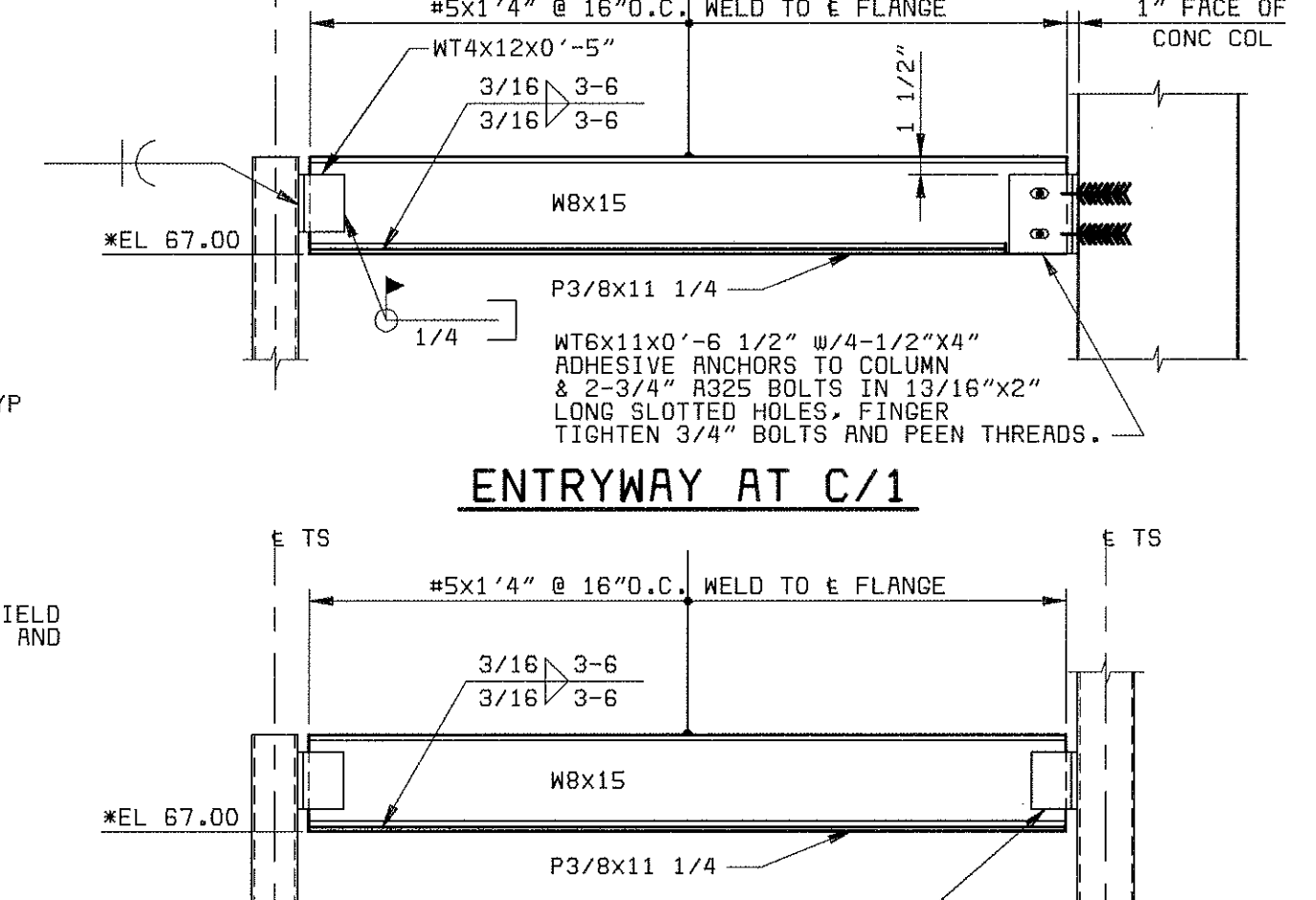
SECTION 3
S-2 TYP WALL REINF SEE
NOTE 9, SHEET S-1
 $\frac{3}{4}'' = 1'-0''$



SECTION 4
S-2

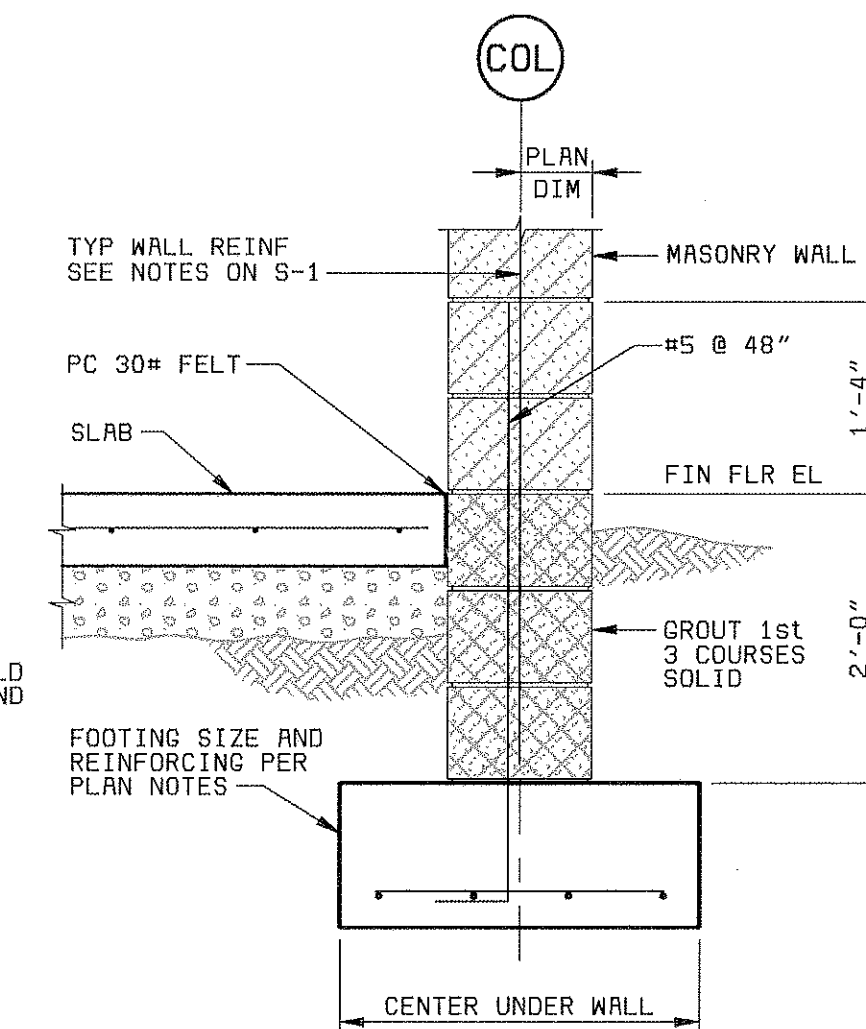
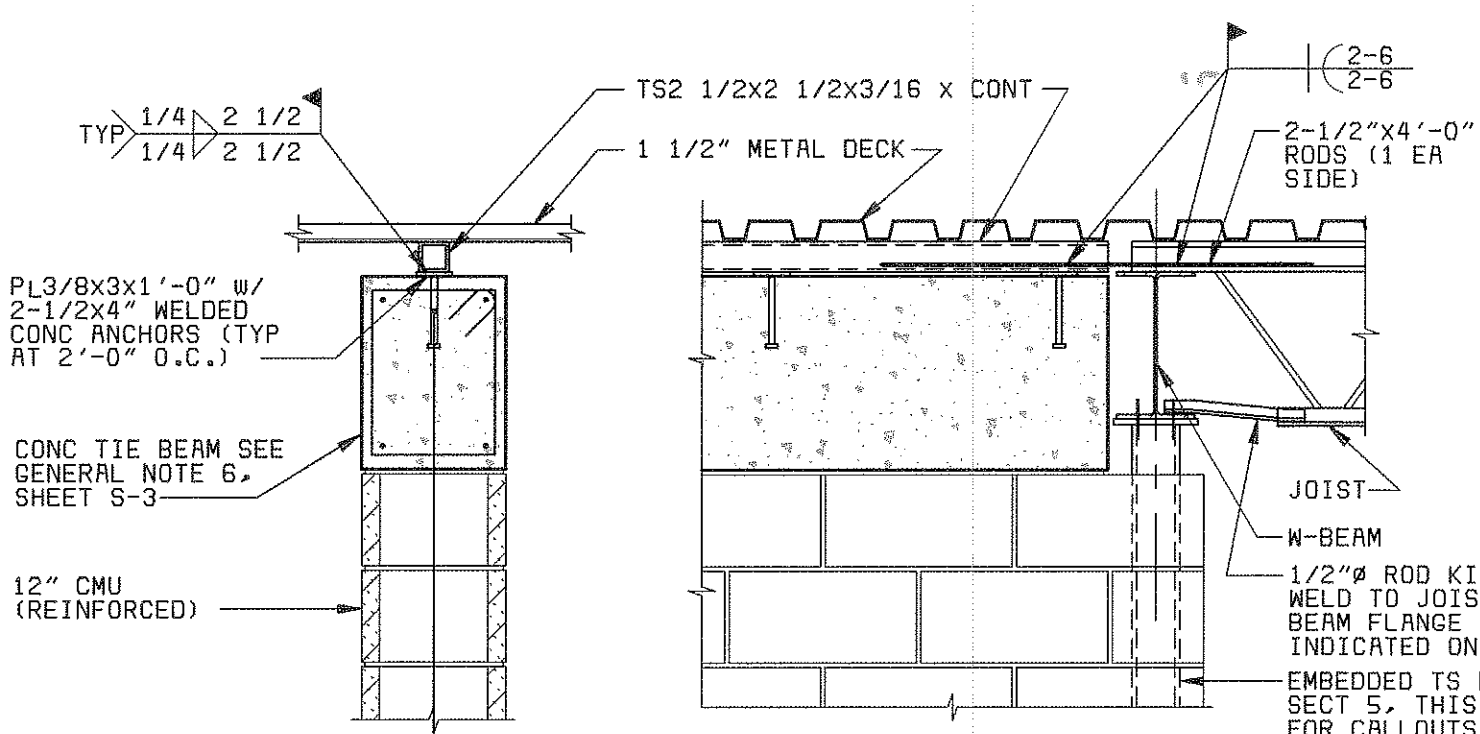


SECTION 5
S-2
3/4" = 1'-0"

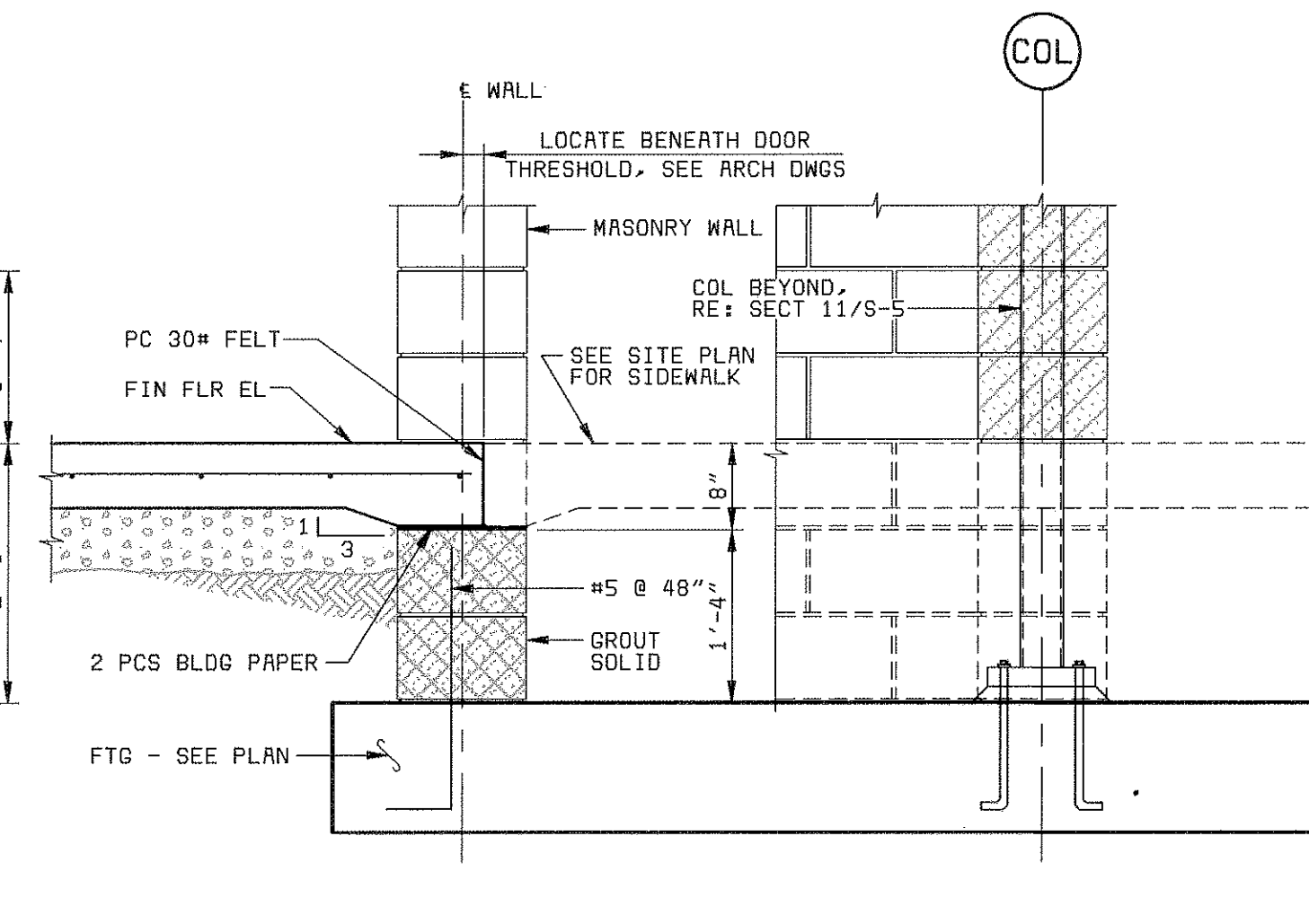


ENTRYWAY AT C/1

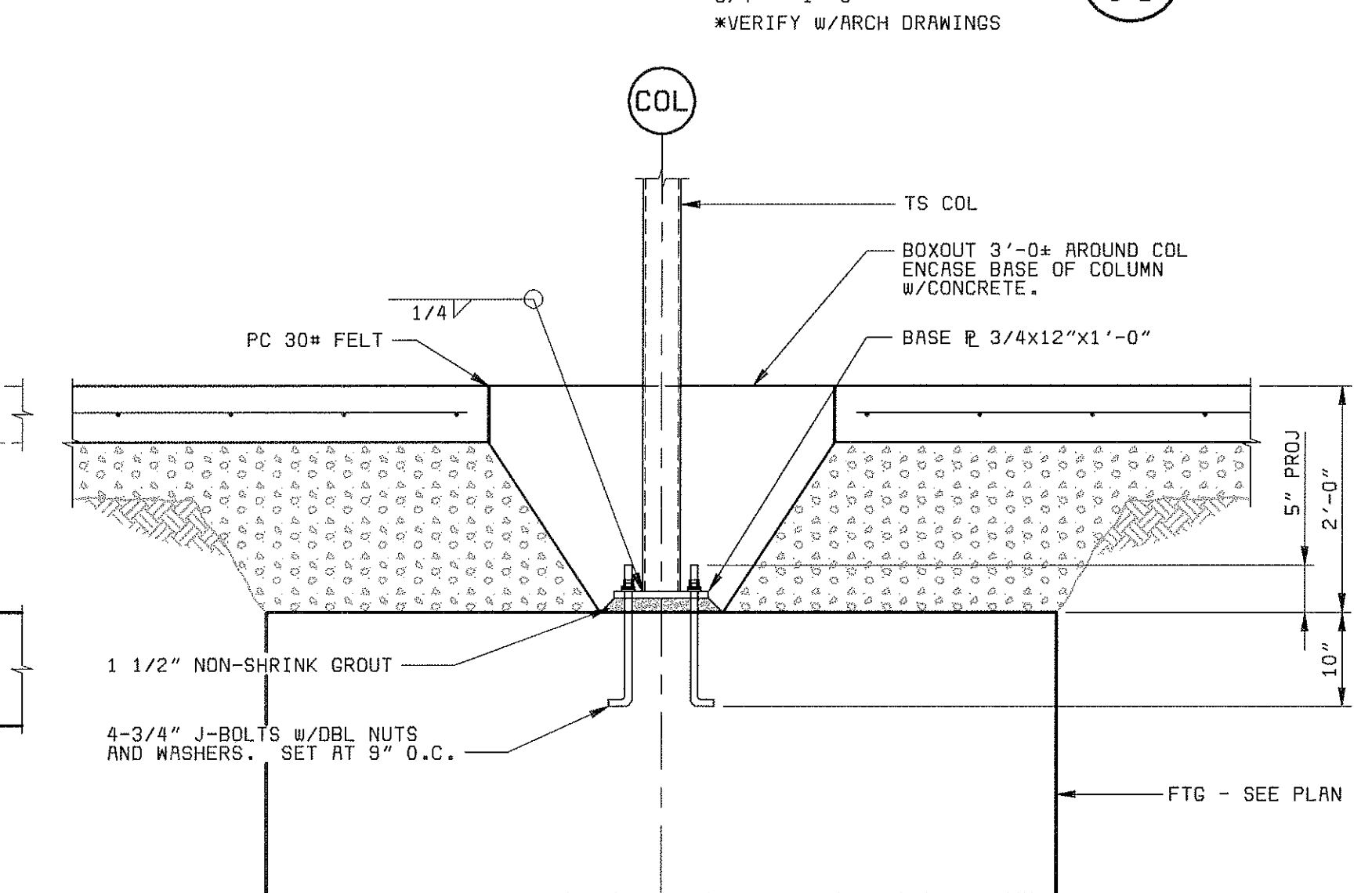
ENTRYWAY AT E/3
SPECIAL INTELS (6)



SECTION 9
3/4" = 1'-0" S-1



SECTION 10
3/4" = 1'-0" S-1

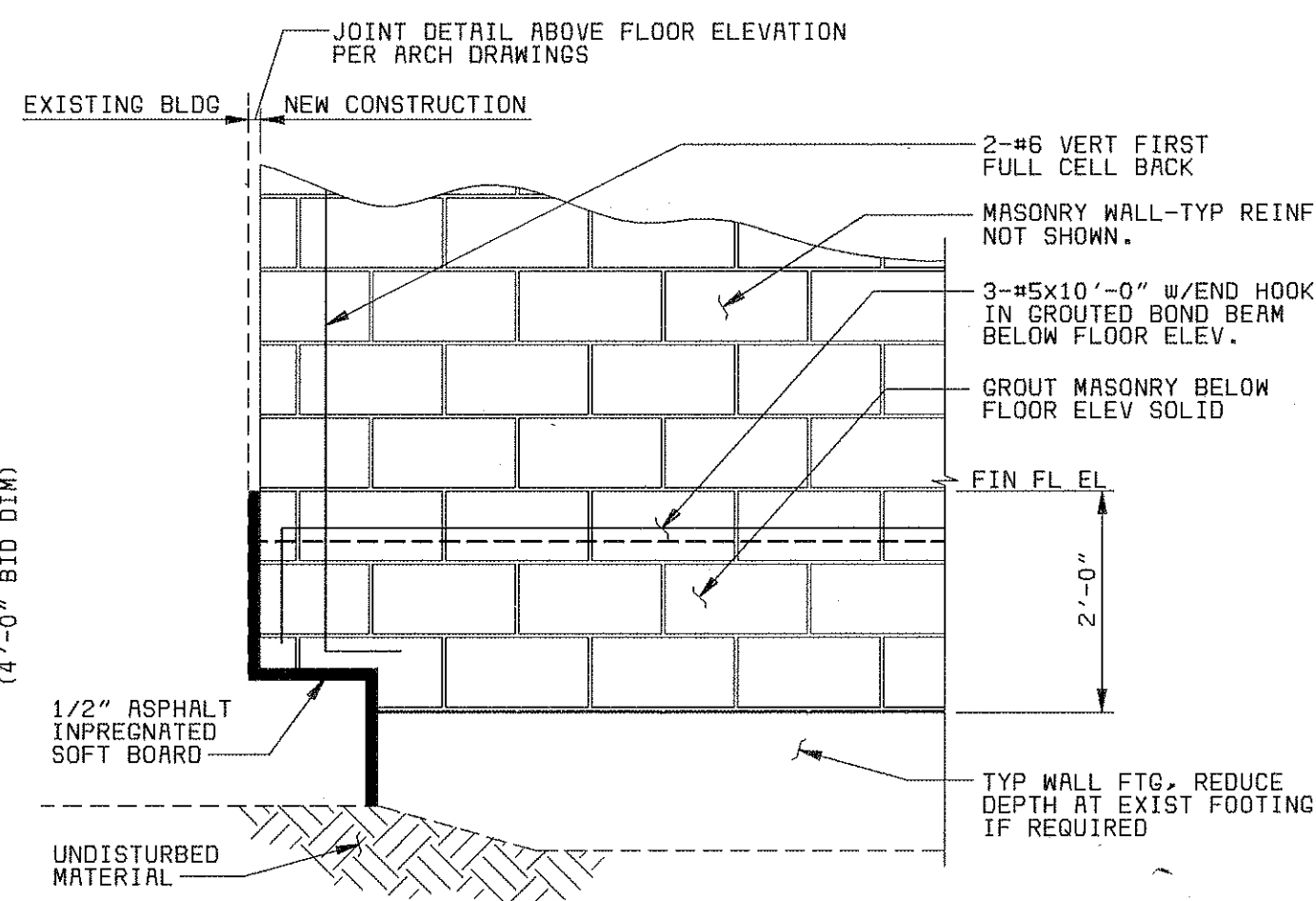
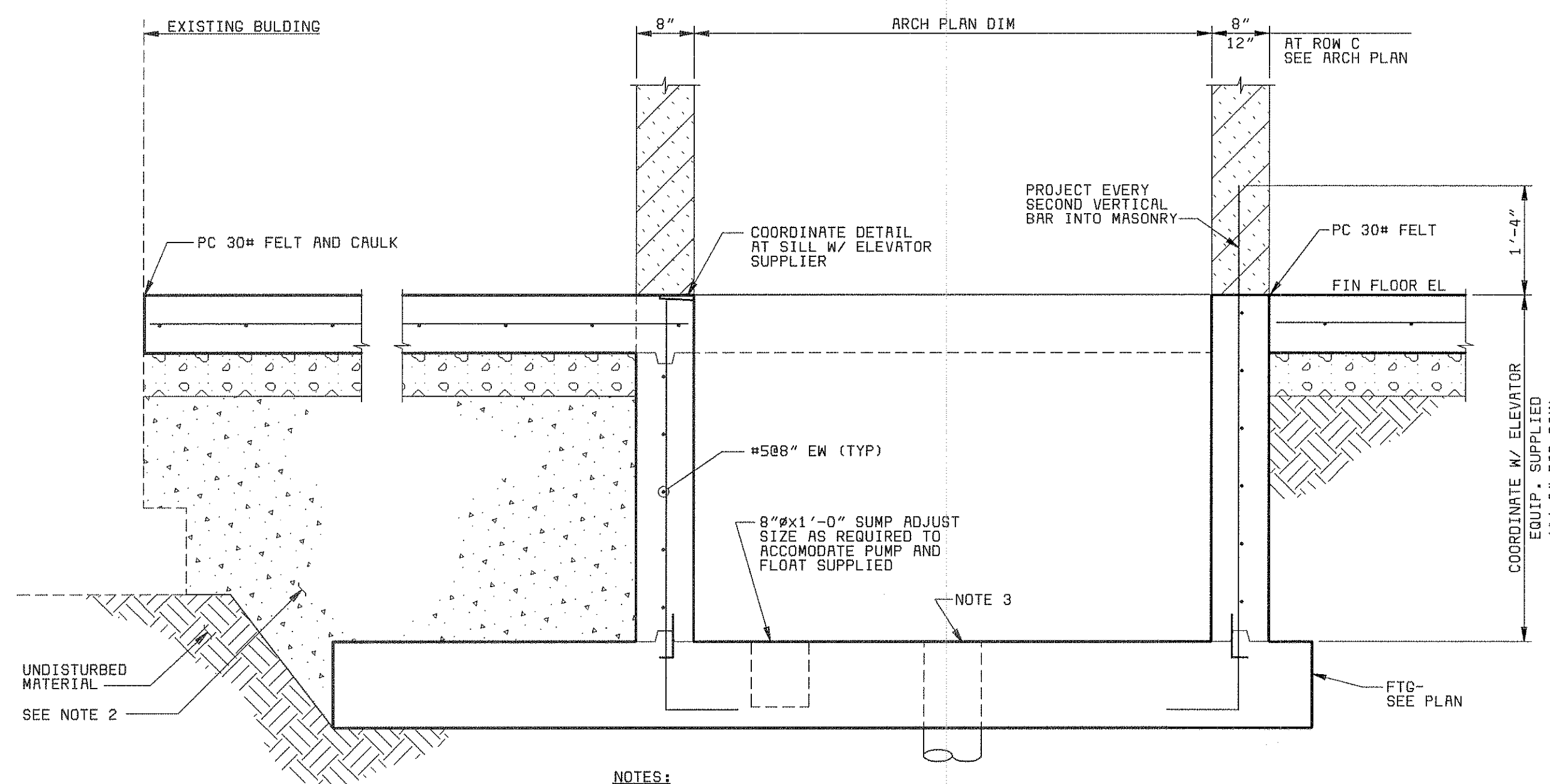


SECTION 11
 $\frac{3}{4}'' = 1'-0''$ S-1

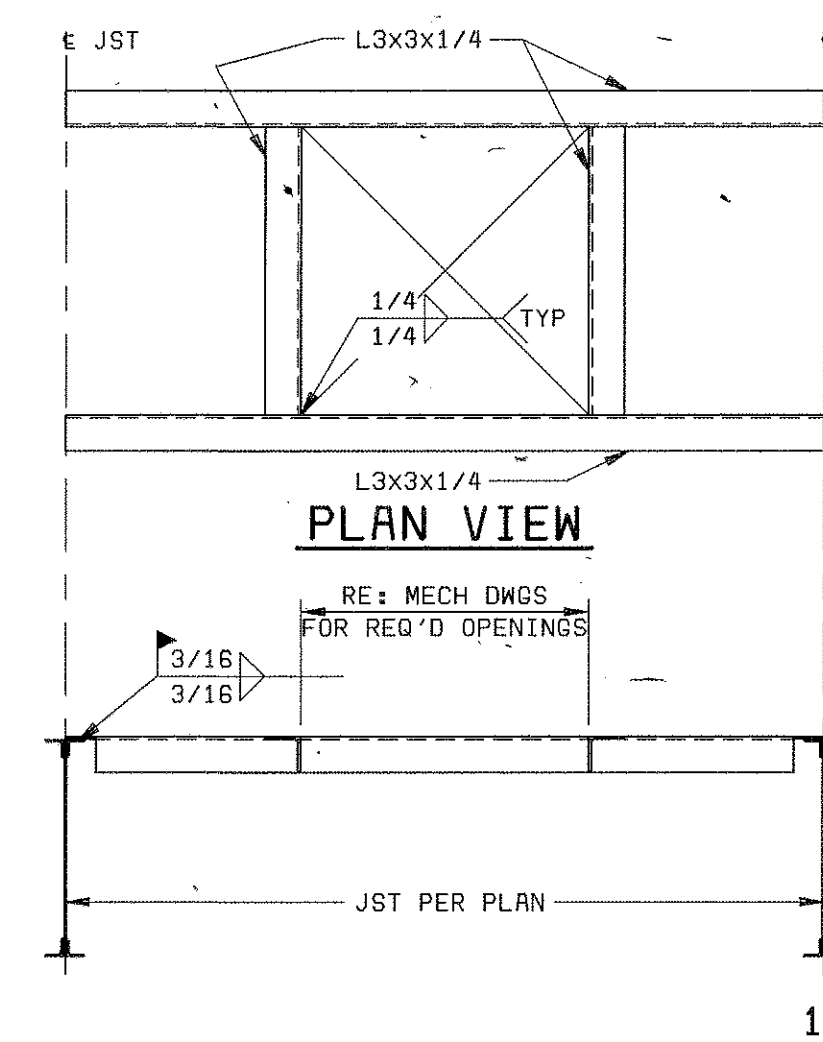
NOT USED

SECTION 7
3/4" = 1'-0"

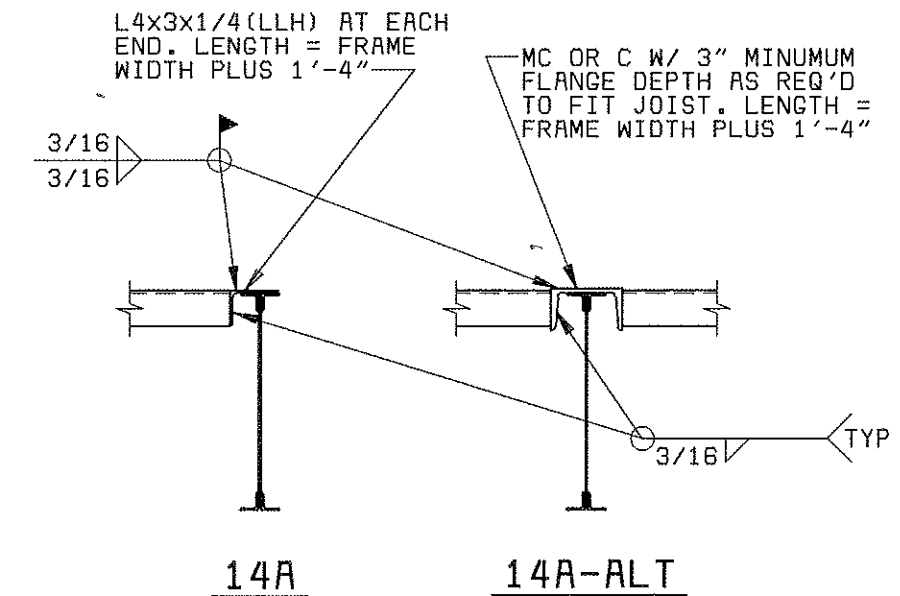
SECTION 8
S-2
3/4" = 1'-0"



SECTION 13
3/4" = 1'-0" S-1



SECTION 14.14A
NO SCALE S-2, S-3



14A 14A-ALT

SECTION 12
3/4" = 1'-0" S-1

- NOTES:**
1. THE EXISTING BLDG FOOTINGS MUST NOT BE UNDERMINED. CONTRACTOR SHALL PROTECT EXISTING FOOTINGS DURING ALL ADJACENT CONSTRUCTION.
 2. BACKFILL WITH CONTROLLED LOW STRENGTH FLOWABLE FILL (CLSF) TO 200 GRD WITHIN 8'-0" OF EXISTING FOOTINGS.
 3. HYDRAULIC RAM NOT SHOWN. COORDINATE PIT DIMENSIONS W/ EQUIPMENT FURNISHED. FILL AROUND RAM SLEEVE W/ CONCRETE AS REQUIRED.

[illegible]

DESIGNED _____ FJP, RWS
DETAILED _____ LGT
CHECKED _____ RNS
APPROVED _____
DATE _____



PROJECT NO
28551

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION
STRUCTURAL
SECTIONS AND DETAILS

21-41

5-5
SHEET

PROJECT RECORD

DATE REVISIONS AND RECORD OF ISSUE NO. BY CK APP

DESIGNED F.J.P./RNS
DETAILED J.J.M.
CHECKED RNS
APPROVED
DATE



Black & Veatch
Tampa, Florida

PROJECT NO.
28551

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

STANDARD CONCRETE DETAILS

21-41

S-6

SHEET
OF

SPLICE & DEVELOPMENT LENGTHS (UNLESS NOTED OTHERWISE ON THE DRAWINGS)											CONCRETE COVER FOR REINFORCEMENT	
(f'c=4000 PSI)											LOCATION	MINIMUM COVER
BEAMS AND COLUMNS						WALLS, SLABS AND FOOTINGS						
BAR SIZE	LENGTH OF LAPPED SPLICES FOR REINF (INCHES)		LENGTH OF END ANCHORAGE FOR DEVELOPMENT OF REINFORCEMENT (INCHES)			LENGTH OF LAPPED SPLICES FOR REINF (INCHES)		LENGTH OF END ANCHORAGE FOR DEVELOPMENT OF REINFORCEMENT (INCHES)			BAR SIZE	
	*TOP BARS	OTHERS	*TOP BARS	OTHERS	HOKED BARS	*TOP BARS	OTHERS	*TOP BARS	OTHERS	HOKED BARS		
3	19	16	14	12	6	19	16	14	12	6	3	
4	24	19	19	15	7	24	19	19	15	7	4	
5	31	24	24	18	9	31	24	24	18	9	5	
6	40	31	28	22	10	36	28	28	22	10	6	
7	54	42	33	25	12	54	42	42	32	12	7	
8	71	55	39	30	14	102	78	55	42	14	8	
9	90	70	50	38	15	129	99	69	53	15	9	
10	115	88	63	49	17	163	126	88	68	17	10	
11	141	108	77	60	19	201	154	154	119	19	11	
14	---	---	105	81	33	---	---	210	162	33	14	
18	---	---	155	119	43	---	---	309	238	43	18	

* TOP BARS ARE HORIZONTAL BARS SO PLACED THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.
HORIZONTAL BARS IN WALLS ARE TO BE PROVIDED WITH LAP LENGTHS AS REQUIRED FOR TOP BARS.
VERTICAL BARS MAY BE CONSIDERED AS OTHER BARS.

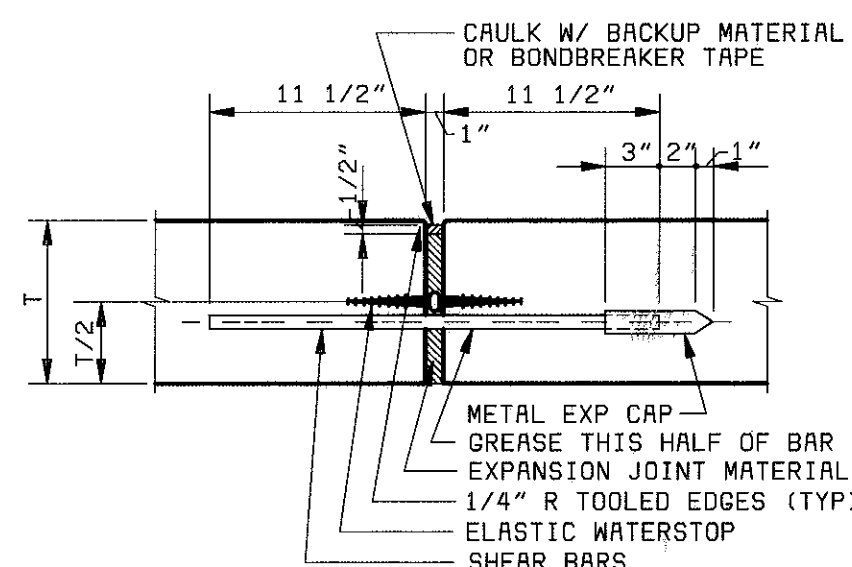
LAPPED SPlice LENGTH FOR STRAIGHT BARS SIZE 9 THROUGH 11 AND DEVELOPMENT LENGTH FOR BAR SIZE 11 (IN THE TABLE ABOVE) MAY HAVE A DEVELOPMENT LENGTH AND LAPPED SPlice LENGTH OF 0.8 TIMES THE LENGTH SHOWN IN THE TABLE ABOVE.

LAPPED SPLICES SHALL NOT BE MADE AT POINTS OF MAXIMUM STRESS UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR AS DETERMINED BY THE ENGINEER.

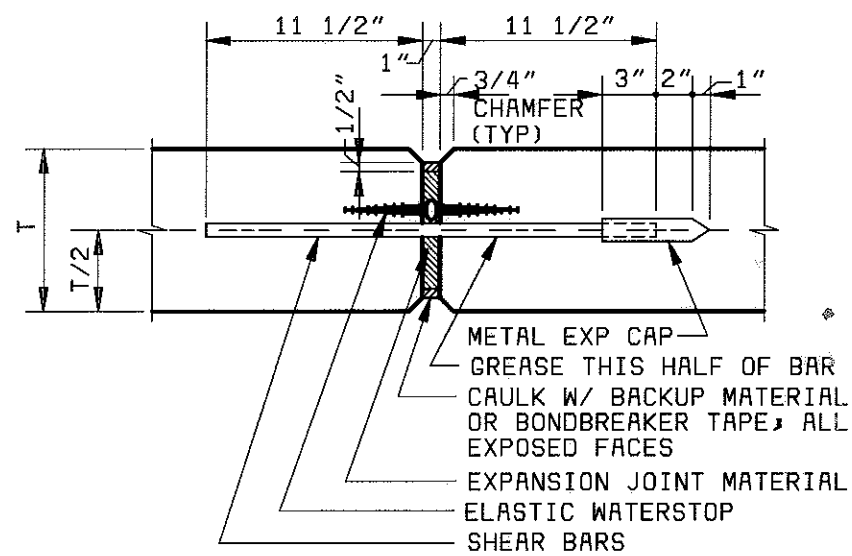
GENERAL NOTE:
DETAILS ON THIS SHEET APPLY TO ALL DRAWINGS UNLESS OTHERWISE NOTED

EXPANSION JOINTS

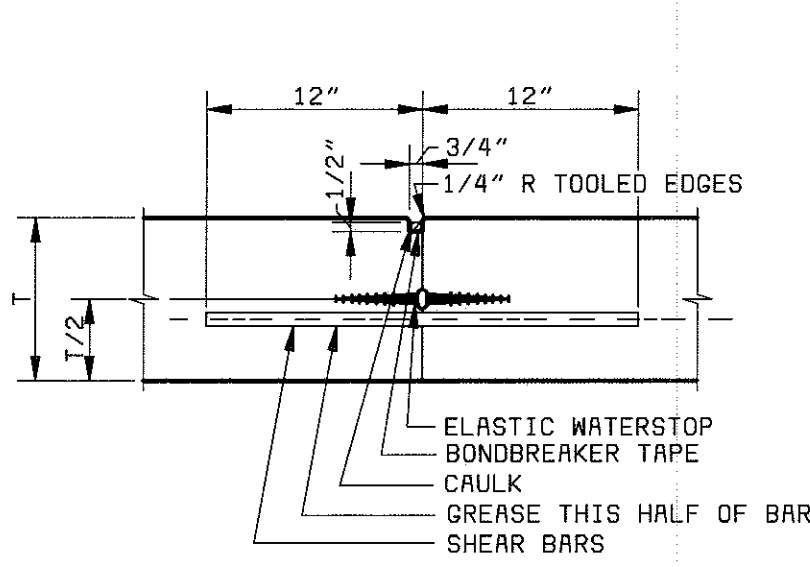
NOTE:
"EJ W/WS" - WITH ELASTIC WATERSTOP
"EJ" - WITHOUT ELASTIC WATERSTOP



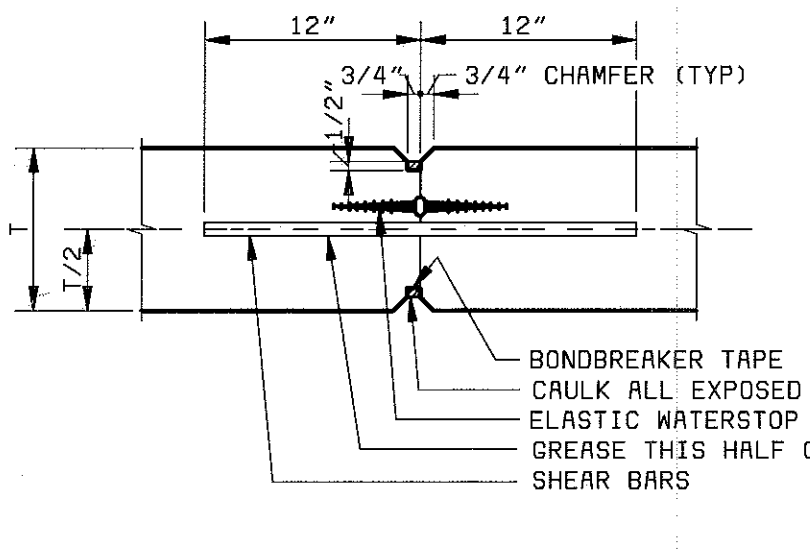
SLABS



WALLS



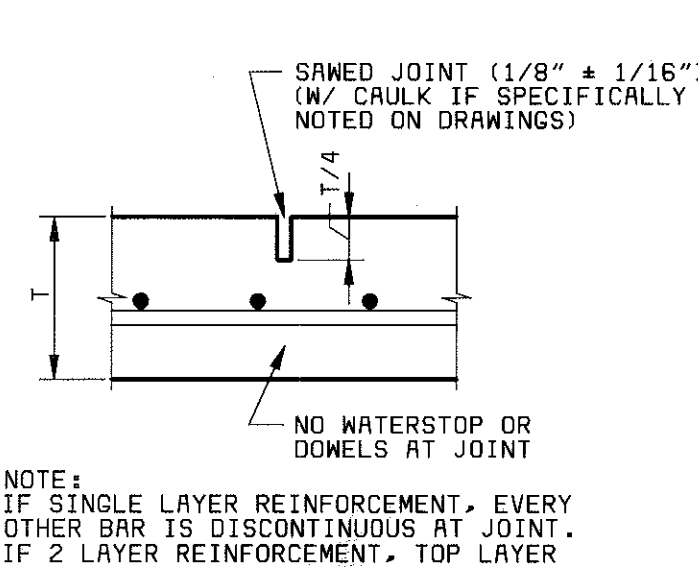
SLABS



WALLS

CONTRACTION JOINTS

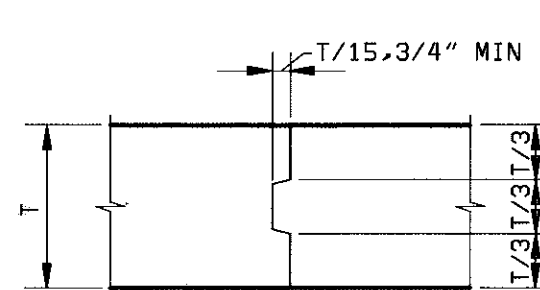
NOTE:
"CJ W/WS" - WITH ELASTIC WATERSTOP
"CJ" - WITHOUT ELASTIC WATERSTOP



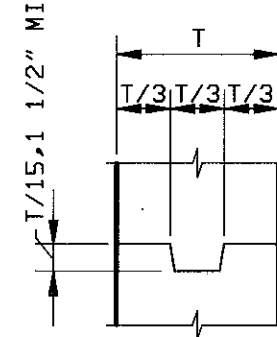
SAWED CONTRACTION JOINT SLAB-ON-GRADE

NOTES:
1. TYPICAL CONTRACTION JOINT NOTES
1 THRU 3 NOT APPLICABLE
2. "SJ" - NO WATERSTOP
3. JOINT FORMED WITH TOOL OR INSERT STRIP MAY BE SUBSTITUTED FOR SAWED TYPE ONLY WITH PRIOR ACCEPTANCE BY THE ENGINEER.

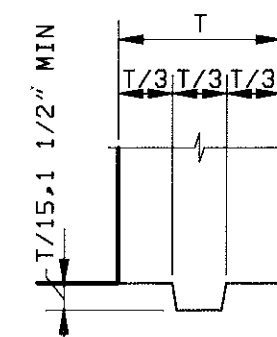
JOINTS WITHOUT WATERSTOPS



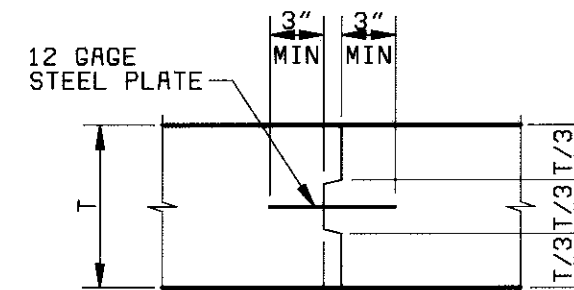
SLABS



WALLS

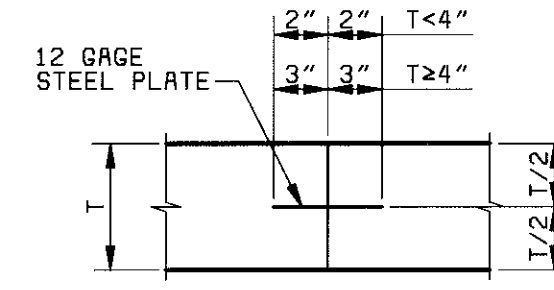


BASE OF WALLS



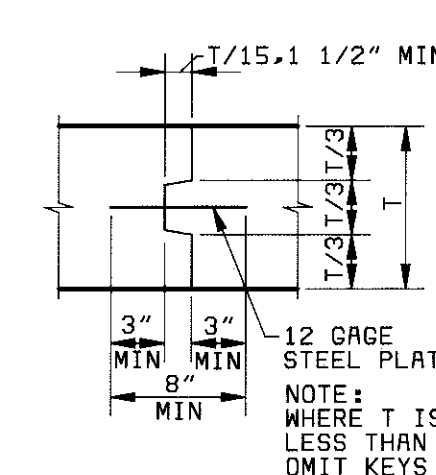
SECTION

T>12"



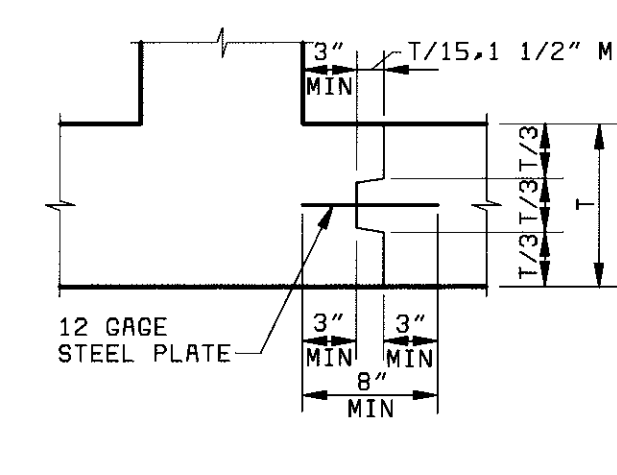
SECTION

T<12"



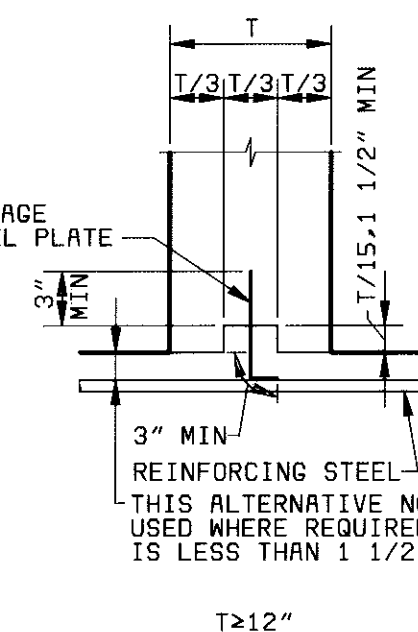
WALLS

T>12"

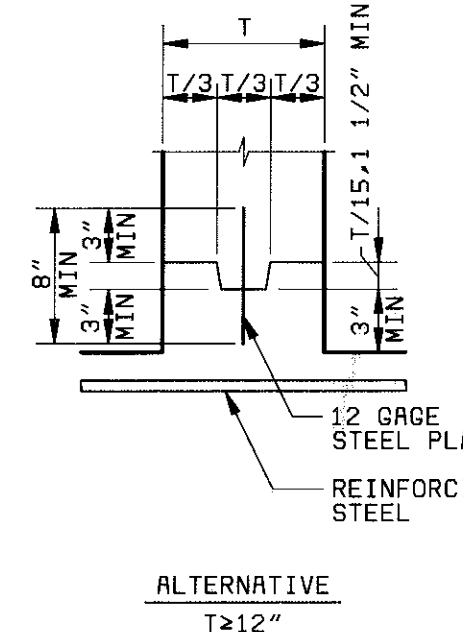


CORNERS

T>12"

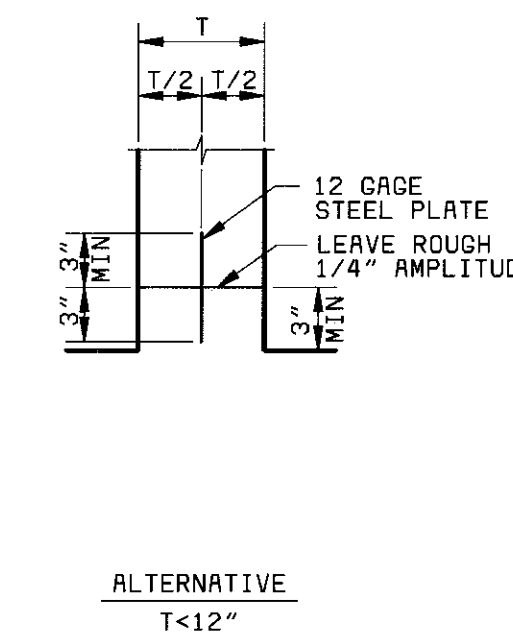


T>12"



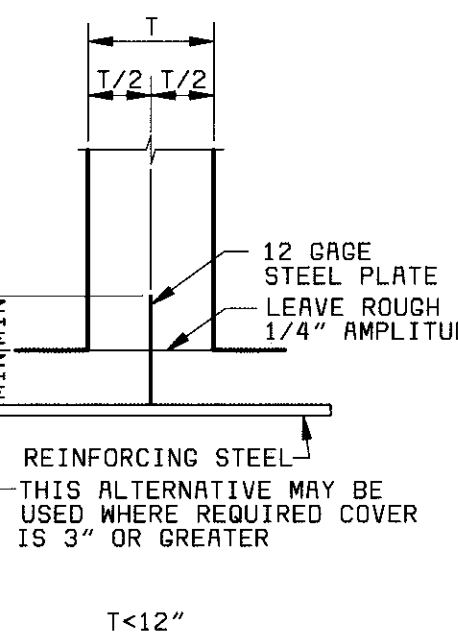
ALTERNATIVE

T>12"



ALTERNATIVE

T<12"



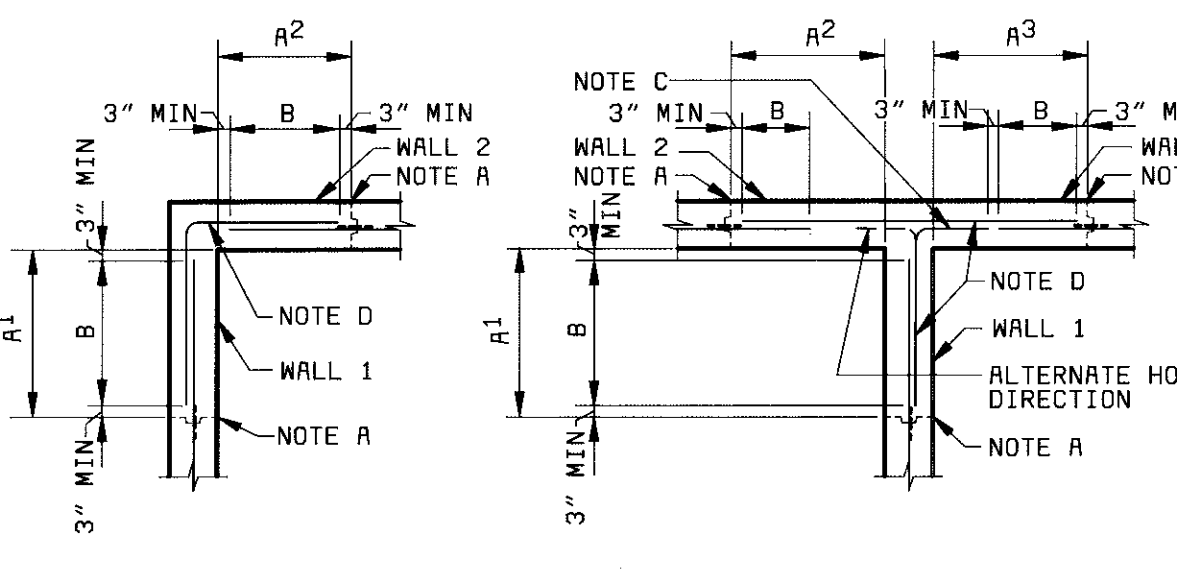
T<12"

BASE OF WALLS

JOINTS WITH WATERSTOPS

TYPICAL CONSTRUCTION JOINTS

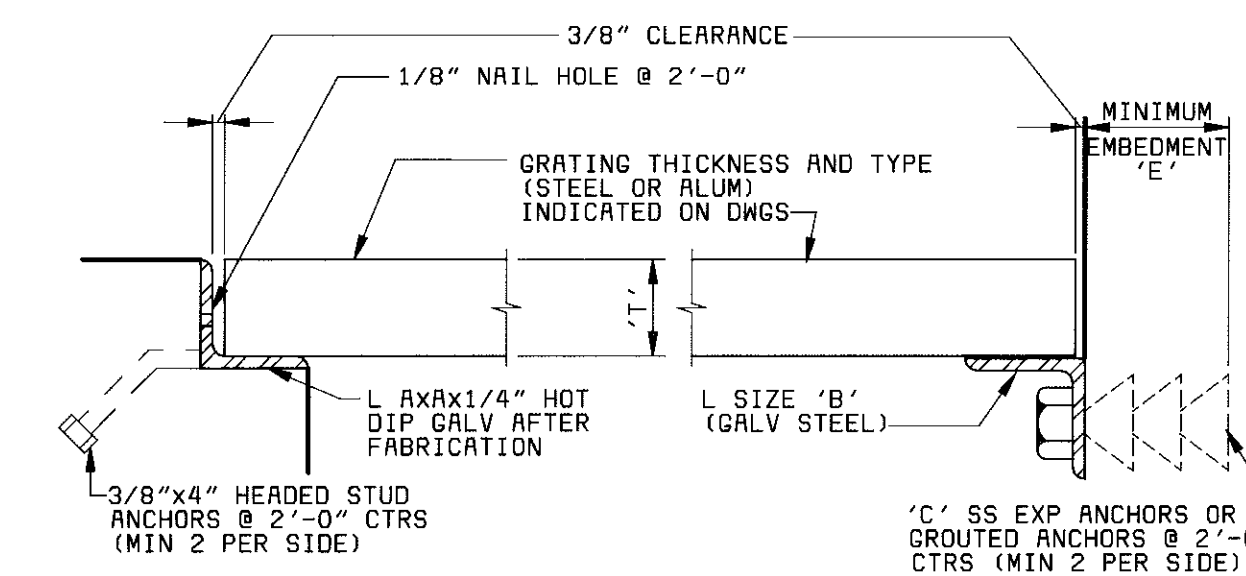
NOTE:
1. REINFORCING STEEL IS CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS
2. "CSJ W/WS" - WITH WATERSTOP
3. "CSJ" - WITHOUT WATERSTOP



A = VERTICAL CONSTRUCTION JOINT NEAREST TO WALL CORNER.
B = DISTANCE FROM INSIDE CORNER FACE TO NEAREST VERTICAL CONSTRUCTION JOINT IN SIMILARLY NUMBERED WALL. B SHALL NOT BE LESS THAN DIMENSIONS INDICATED BY THESE DETAILS, NOR GREATER THAN INDICATED ON PLAN DRAWINGS, BUT IN ANY CASE SHALL NOT EXCEED 30 FEET IN LIQUID CONTAINMENT STRUCTURES OR 40 FEET IN OTHER STRUCTURES.

B = OPTIONAL SPlice LOCATION UNLESS SPECIFICALLY NOTED ON PLAN DRAWINGS. SPlice LENGTH SHALL NOT BE LESS THAN THAT REQUIRED FOR TOP BARS AS SHOWN IN TABLE ON THIS SHEET. USE SPlice LENGTH FOR THE SMALLER OF THE TWO BARS BEING SPliced.

C = STANDARD HOOK
D = TYPICAL CORNER REINFORCEMENT. SIZE SHALL MATCH LARGEST ADJACENT WALL HORIZONTAL REINFORCEMENT. SPACING SHALL MATCH MINIMUM ADJACENT WALL HORIZONTAL REINFORCEMENT SPACING.



GRATING THICKNESS (T')	L SIZE AXAX1/4	L SIZE 'B'	'C' EXP ANCHOR DIA	MIN 'E'
1	1 1/4x1 1/4	2 1/2x2 1/2x1/4	1/2"	4 1/8"
1 1/4	1 1/2x1 1/2	2 1/2x2 1/2x1/4	1/2"	4 1/8"
1 1/2	1 3/4x1 3/4	2 1/2x2 1/2x1/4	1/2"	4 1/8"
1 3/4	2x2	3x3x3/8	3/4"	6 3/8"
2	2 1/2x2 1/2	3x3x3/8	3/4"	6 3/8"
2 1/4	2 1/2x2 1/2	3x3x3/8	3/4"	6 3/8"
2 1/2	3x3	3x3x3/8	3/4"	6 3/8"

* TRIM AND BEVEL UPSTANDING LEG TO FIT

GRATING SUPPORT

3" = 1'-0"

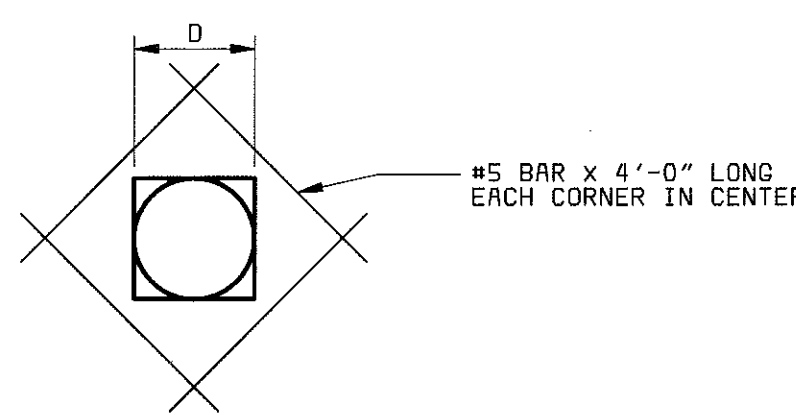
MAIN REINFORCEMENT FOR ALL STRUCTURES

TYPICAL HORIZONTAL CORNER REINFORCING DETAILS

NOTES:
1. VERTICAL REINFORCING NOT SHOWN
2. THESE DETAILS SHALL BE APPLICABLE TO ALL WALL CORNERS UNLESS NOTED OTHERWISE ON THE DRAWINGS.

TYPICAL EXTRA REINFORCING AT OPENINGS 12" TO ≤ 54"

(TYPICAL REQUIRED UNLESS ADDITIONAL REINFORCEMENT SPECIFICALLY INDICATED AT OPENINGS ON DRAWINGS)



FOR OPENINGS
12" ≤ D ≤ 21"

ISOLATED RE-ENTRANT
CORNERS

FOR CIRCULAR OPENINGS
21" < D ≤ 54"

THICKNESS OF CONCRETE	BAR SIZE	RECT OPNG	CIRC OPNG
<12"	4	3'-0"	D+12"
12" TO 18"	5	3'-0"	D+12"
>18"	6	3'-8"	D+12"

B=THE REQUIRED LENGTH FOR LAPPED SPlice FOR TOP BARS AS SHOWN ON THIS SHEET

FOR RECTANGULAR OPENINGS
21" < D ≤ 54"

28551-310-247-P001
61027
FC00000

ABBREVIATIONS		
A AC AD AE AFD AFF AFM AHU ALUM AP APPROX AR AS ASTM ATU AUTO AVG AVS	ALARM, COMPRESSED AIR OUTLET AIR COMPRESSOR ACCESS DOOR, AIR DRYER AVERAGING ELEMENT AIR FLOW, AIRFOIL ADJUSTABLE FREQUENCY DRIVE ABOVE FINISH FLOOR AIR FLOW MONITOR AIR HANDLING UNIT ALUMINUM ACCESS PANEL APPROXIMATE AIR RECEIVER AIR SEPARATOR AMERICAN SOCIETY OF TESTING MATERIALS AIR TERMINAL UNIT AUTOMATIC AVERAGE AUTOMATIC VALVE STATION	HZ HERTZ I INTAKE I&R INSTITUTE OF BOILER AND RADIATOR MANUFACTURERS IN INCHES INV INVERT JS JANITOR'S SINK KS KITCHEN SINK KW KILOWATT L LINED DUCT, LOUVER LAT LEAVING AIR TEMPERATURE LAV LAVATORY LBS POUNDS LD COMBINATION LOUVER/DAMPER LIGHT/VENTILATOR UNIT LI LEVEL INDICATOR LS LABORATORY SINK, LEVEL SWITCH LWT LEAVING WATER TEMPERATURE
B BDD BF BFF BFP BH BI BL BLDC BLR BOD BOT BTUH BU	BELT DRIVE, BLOW THROUGH BACKDRAFT DAMPER BLIND FLANGE BELOW FINISH FLOOR BACKFLOW PREVENTER BASEBOARD HEATER BACKWARD INCLINED, BUILT-IN THERMOSTAT BOTTOM LEVEL BUILDING BLOWER BOTTOM OF DUCT ELEVATION BOTTOM BRITISH THERMAL UNITS PER HOUR BELL-UP	MAU MAKE-UP AIR UNIT MAX MAXIMUM MFR MANUFACTURER MIN MINIMUM MOD MODULATING MOP MOP SINK NC NORMALLY CLOSED NO NORMALLY OPEN, NUMBER NPSHR NET POSITIVE SUCTION HEAD REQUIRED NT NEUTRALIZATION TANK
C CAU CB CBD CC CCU CD CDMP CENTR CF CFM CH CO CONC CONN CONT CP CS CT CU CV CWET CWP	CHANNEL, CONVECTOR, COOLING, COOLING (MAKE ON RISE) CARBON ADSORPTION UNIT CENTRIFUGAL BLOWER COUNTERBALANCE BACKDRAFT DAMPER COOLING COIL CARBON CANNISTER UNIT CONTROL DAMPER CONDENSED WATER PUMP CENTRIFUGAL CABINET FAN CUBIC FEET PER MINUTE CABINET HEATER, CONVECTION HEATER CLEANOUT CONCRETE CONNECTION CONTINUATION CIRCULATING PUMP CUP SINK COOLING TOWER CONDENSING UNIT CHECK VALVE, CONTROL VALVE CHILLED WATER EXPANSION TANK CHILLED WATER PUMP	OR OUTSIDE AIR OC ODOR CONTROL OCD ODOR CONTROL DAMPER OCF ODOR CONTROL FAN ODS ODOR CONTROL FLOW SWITCH OCS ODOR CONTROL LEVEL SWITCH OCP ODOR CONTROL PANEL OCPs ODOR CONTROL PRESSURE SWITCH OCS ODOR CONTROL SCRUBBER OD OUTSIDE DIAMETER ORD OVERFLOW ROOF DRAIN ORP OXIDATION REDUCTION POTENTIAL
D DB DDC DEH DF DH DIA Ø DN DSN DX	DIRECT DRIVE, DRAW-THRU DIRECT BULB DIRECT DIGITAL CONTROL DEHUMIDIFIER DRINKING FOUNTAIN, DUCT FAN DUCT HEATER DIAMETER DUCT MOUNTED DOWN DOWNSPOUT NOZZLE DIRECT EXPANSION	P PNEUMATIC PD PRESSURE DROP (INCHES OF WATER FOR AIR, FEET OF WATER FOR FLUIDS) PDI PLUMBING AND DRAINAGE INSTITUTE PF PROPELLER FAN PL PLATE POS POSITION PPM PARTS PER MILLION PROP PROPELLER PRS PRESSURE REDUCING STATION PRV PRESSURE REDUCING VALVE PS PRESSURE SWITCH PSI POUNDS PER SQUARE INCH PSIA POUNDS PER SQUARE INCH ABSOLUTE PSIG POUNDS PER SQUARE INCH GAUGE PTAC PACKAGE TERMINAL AIR CONDITIONER
E EA EAT EC ECH EDH EF EFF EGS EHC EIH EIP EQU ES ES/EEW ESP EIT EUH EV EWC EWH EWT	ELECTRIC, ELECTRIC OPERATOR, EXHAUST EACH EXHAUST AIR ENTERING AIR TEMPERATURE ECONOMIZER, EVAPORATIVE COOLER ELECTRIC CABINET HEATER ELECTRIC DUCT HEATER EMERGENCY EYE WASH EXHAUST FAN EFFICIENCY EMERGENCY GAS SCRUBBER ELECTRIC HEATING COIL ELECTRIC INFRARED HEATER ELEVATION EQUIPMENT EMERGENCY SHOWER, EMERGENCY SWITCH EMERGENCY SHOWER AND EYEWASH EXTERNAL STATIC PRESSURE EXPANSION TANK ELECTRIC UNIT HEATER EXHAUST VALVE ELECTRIC WATER COOLER ELECTRIC WATER HEATER ENTERING WATER TEMPERATURE	RA REACTIVATION AIR, RETURN AIR RAC ROOM AIR CONDITIONER RCS REMOTE CONTROL STATION RD ROOF DRAIN RH RELATIVE HUMIDITY, ROOF HOOD RHP ROOFTOP HEAT PUMP RPM REVOLUTIONS PER MINUTE RTU ROOFTOP AIR CONDITIONING UNIT
F FBD FC FCO FCU FD FDB FEF FLEX FM FPM FRP FS FSW FT	DEGREES FAHRENHEIT FACE AND BYPASS DAMPER FORWARD CURVED FLOOR CLEANOUT FAN COIL UNIT FIRE DAMPER, FLOOR DRAIN DEGREES FAHRENHEIT DRY BULB FUME EXHAUST FAN FLEXIBLE FLOW METER FEET PER MINUTE FIBERGLASS REINFORCED PLASTIC PIPE FLOOR SINK, FLOW SWITCH FILTER SURFACE WASH FEET, FIN TUBE HEATER, FLOW TUBE	SA SUPPLY AIR SCD SMOKE CONTROL DAMPER SCFM STANDARD CUBIC FEET PER MINUTE SCP SCRUBBER CONTROL PANEL SF SQUARE FEET SUPPLY FAN SH SHEET, SHOWER SIM SIMILAR SMD SMOKE DETECTOR SP STATIC PRESSURE (INCHES OF WATER) SPS STATIC PRESSURE SENSOR SRP SCRUBBER CHEMICAL RECIRCULATION PUMP SS STAINLESS STEEL SSK SERVICE SINK SSS SUBMERSIBLE SUMP PUMP STD STANDARD SV SERVICE VALVE, SHUTOFF VALVE, SUPPLY VALVE
G GA GALV GD GIH GPM GUH GV GW GWH	GAS OUTLET, GREEN GAUGE GALVANIZED GARBAGE DISPOSER GAS INFRARED HEATER GALLONS PER MINUTE GAS UNIT HEATER GATE VALVE GLASS WASHER GAS WATER HEATER	T THERMOSTAT TCP TEMPERATURE CONTROL PANEL TCV TEMPERATURE CONTROL VALVE TD TRENCH DRAIN TE TEMPERATURE ELEMENT TEMP TEMPERATURE TI TEMPERATURE INDICATOR TL TOP LEVEL TS TIP SPEED TYP TYPICAL
H HC HE HEH HP HO HOA HR HUH HUM HV HWB HWP	HAND OPERATOR, HEATING, HEATING (MAKE ON FALL), HEIGHT, HORIZONTAL, HUMIDISTAT HEATING COIL HEAT EXCHANGER, HELIUM HOSE FAUCET HEAT PUMP, HORSEPOWER HAND-OFF HAND-OFF-AUTO HEAT RECOVERY UNIT, HOUR HEATING WATER UNIT HEATER HUMIDIFIER HOSE VALVE HEATING WATER BOILER HEATING WATER PUMP	UR URINAL V VERTICAL VAC VACUUM OUTLET VANE VANEAXIAL VAV VARIABLE AIR VOLUME VB VACUUM BREAKER VCD VOLUME CONTROL DAMPER VF VANEAXIAL FAN VP VACUUM PUMP VSP VERTICAL COLUMN SUMP PUMP VTR VENT THROUGH ROOF W WIDE FLANGE, WIDTH WB WET BULB WBP WATER BOOSTER PUMP WC WATER CHILLER, WATER CLOSET, WATER COLUMN WCO WALL CLEANOUT WF WALL FAN WG WATER GAUGE WH WALL HEATER, WALL HYDRANT WHA WATER HAMMER ARRESTOR WITH PDI DESIGNATION WM WALL MOUNTED WST WATER STORAGE TANK WT WEIGHT WV WATER CONTROL VALVE ZD ZONE DAMPER

VALVES	
	ANGLE VALVE
	BACKFLOW PREVENTER (SCHEMATIC 2" & SMALLER)
	BACKFLOW PREVENTER
	BACKWATER VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GATE VALVE
	GLOBE VALVE
	PLUG VALVE
	PRESSURE REGULATING VALVE
	PRESSURE REDUCING VALVE
	THREE WAY VALVE
PIPE FITTINGS	
	CAP
	DRAIN OR BELL-UP (SCHEMATIC)
	EXPANSION COMPENSATOR
	INSULATING NIPPLE
	REDUCER
	SLEEVE
	TEST PLUG
	UNION
PIPING SPECIALTIES	
	AUTOMATIC VALVE STATION
	FLEXIBLE CONNECTION
	FLOW CONTROL VALVE
	FLOW SENSOR METER
	HOSE FAUCET
	HOSE FAUCET W/VACUUM BREAKER
	HOSE VALVE W/HOSE NIPPLE
	MANUAL AIR VENT
	PRESSURE REDUCING STATION
	PRESSURE RELIEF VALVE
	QUICK COUPLING
	STRAINER W/DRAIN VALVE
	SUCTION DIFFUSER (SCHEMATIC)
	WALL HYDRANT
	WALL HYDRANT W/VACUUM BREAKER
	WATER METER
CONTROLS AND INSTRUMENTATION	
	THERMOSTAT WITH NUMBER
	REMOTE BULB THERMOSTAT WITH NUMBER
	TEMPERATURE ELEMENT
	ELECTRIC OPERATOR
	ENTHALPY CONTROLLER
	SOLENOID OPERATOR
	MOTOR OPERATOR
	PRESSURE DIFFERENTIAL SWITCH WITH NUMBER
	HUMIDISTAT WITH NUMBER
	SMOKE DETECTOR WITH NUMBER
	PRESSURE GAUGE W/SHUTOFF VALVE
	VACUUM GAUGE W/SHUTOFF VALVE
	INSTRUMENT TEST OPENING
	DRAFT GAUGE
	STEM TYPE THERMOMETER
	DIAL TYPE THERMOMETER
	PRESSURE SWITCH W/SHUTOFF VALVE

LEGEND	
PIPING	
GENERAL	
	PIPING ABOVE FLOOR
	PIPING BELOW FLOOR
	PIPE TURNING UP
	PIPE TURNING DOWN
FUEL GAS	
	NATURAL GAS
	PROPANE GAS
	SLUDGE GAS
HVAC	
	CHILLED WATER RETURN
	CHILLED WATER SUPPLY
	CONDENSATE
	CONDENSER WATER RETURN
	CONDENSER WATER SUPPLY
	HEATING WATER RETURN
	HEATING WATER SUPPLY
	REFRIGERANT
SPECIAL	
	ACETYLENE
	ARGON
	COMPRESSED AIR
	HELIUM
	HYDROGEN
	METHANE
	NITROGEN
	NITROUS OXIDE
	OXYGEN
	VACUUM
WASTE	
	CHEMICAL RESISTANT WASTE
	CHEMICAL RESISTANT VENT
	INDIRECT DRAINAGE
	PROCESS WASTE
	SANITARY DRAINAGE
	STORM DRAINAGE
	SLUDGE DRAIN
	SUMP PUMP DISCHARGE
	VENT
WATER	
	LAB GRADE WATER
	FILTER SURFACE WASH
	FIRE PROTECTION WATER
	NONPOTABLE COLD WATER
	NONPOTABLE HOT WATER
	PLANT WATER
	POTABLE COLD WATER
	POTABLE HOT WATER
	POTABLE HOT WATER CIRCULATING
	SERVICE WATER
	TEMPERED OR BLENDED WATER
	TEMPERED NONPOTABLE WATER

AIR INLET AND OUTLET IDENTIFICATION	
	SIZE-WIDTH BY HEIGHT (INCHES)
	FLEXIBLE DUCT DIAMETER (INCHES, IF USED)
	24"x10"-10" SR-1-760
	CFM THRU DEVICE
	DEVICE DESIGNATION
	DEVICE GROUP: R-REGISTER, G-GRILLE, D-DIFFUSER
	DEVICE TYPE: S-SUPPLY, E-EXHAUST, R-RETURN

PLUMBING	
	BELL-UP DRAIN W/TRAP
	BLENDING VALVE
	CLEANOUT IN VERTICAL RISER
	DOWNSPOUT NOZZLE
	EMERGENCY SHOWER/EYEWASH
	FLOOR DRAIN
	P-TRAP (PLAN)
	P-TRAP (SCHEMATIC)
	ROOF DRAIN
	SHOWER
	SPLASHBLOCK
	WATER HAMMER ARRESTOR W/ PDI SIZE DESIGNATION
HVAC	
	DUCTWORK DIMENSIONS, THE FIRST DIMENSION IS THE SIDE SEEN.
	INCLINED RISE IN RESPECT TO DIRECTION OF AIRFLOW
	INCLINED DROP IN RESPECT TO DIRECTION OF AIRFLOW
	REGISTER, GRILLE OR DIFFUSER
	DIFFUSER FOR FLEXIBLE DUCT
	DUCTWORK DIMENSIONS, THE FIRST DIMENSION IS THE SIDE THE LEADER LINE TOUCHES
	NEGATIVE PRESSURE DUCT
	POSITIVE PRESSURE DUCT
	FLEXIBLE CONNECTION
	DIRECTION OF AIR FLOW
	CONTROL DAMPER
	TURNING VANES
	VOLUME CONTROL DAMPER
	FIRE DAMPER
	ROUND TO SQUARE TRANSITION
	FLEXIBLE DUCTWORK
	ROUND OR FLEXIBLE DUCT TAKEOFF

GENERAL MECHANICAL NOTES	
PLUMBING:	
1.	ALL HOSE FAUCETS AND HOSE VALVES SHALL BE INSTALLED 3'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.
2.	CLEANOUTS ON SOIL AND WASTE PIPING INSIDE STRUCTURES SHALL BE LOCATED A MAXIMUM OF 50'-0" ON CENTERS. CLEANOUTS SHALL BE PROVIDED AT THE BASE OF EACH SOIL OR WASTE STACK.
3.	ALL HOSE FAUCETS, WALL HYDRANTS, AND OTHER OUTLETS ON THE NONPOTABLE WATER OR SERVICE WATER LINES WHICH COULD BE USED FOR DRINKING OR DOMESTIC USE SHALL BE POSTED WITH AN ALUMINUM TAG IN THE SHAPE OF A 4" EQUILATERAL TRIANGLE BEARING THE LEGEND "DANGER: WATER UNSAFE" IN LETTERS 7/16" IN HEIGHT. THIS TAG SHALL BE SECURELY ATTACHED IN A VISIBLE LOCATION DIRECTLY ABOVE OR BELOW THE OUTLET. THE TAG SHALL BE PAINTED ORANGE AND THE LETTERS BLACK.
4.	INSTALL ALL ABOVE GRADE WATER, DRAIN, WASTE, AND VENT PIPING TO AVOID INTERFERENCES WITH STRUCTURE, PIPING, EQUIPMENT, AND CONDUIT. UNLESS OTHERWISE INDICATED BY A CENTERLINE OR INVERT ELEVATION, ALL PLUMBING PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE.
6.	WATER SUPPLY PIPING TO HOSE FAUCETS AND HOSE VALVES SHALL BE SECURED WITH A PIPE SUPPORT WITHIN 12 INCHES OF THE FIXTURE.
7.	INSULATING FITTINGS SHALL BE PROVIDED IN PIPING SYSTEMS AS REQUIRED TO PREVENT THE CONTACT OF DISSIMILAR METALS. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
HVAC:	
1.	"SCREENED" (LIGHT) DELINEATION DENOTES EXISTING FACILITIES AND IS FOR REFERENCE ONLY. EXISTING FACILITY INFORMATION WAS TAKEN FROM PREVIOUS DRAWINGS, CONSTRUCTION RECORDS, DATA, AND FIELD SURVEY INFORMATION. ACTUAL LOCATION, ARRANGEMENT, AND DIMENSIONS SHALL BE FIELD VERIFIED AND WORK INSTALLED TO MEET ACTUAL CONDITIONS AND LOCATIONS ENCOUNTERED. "GOLD" (DARK) DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.
2.	FOR ROOFTOP EQUIPMENT CURB, FLUES, AND FLASHING DETAILS, SEE ARCHITECTURAL DRAWINGS.
3.	SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL EQUIPMENT BASE DETAILS.
4.	INSTALL ALL HEATING VENTILATING AND AIR CONDITIONING EQUIPMENT AND DUCTWORK TO AVOID INTERFERENCES WITH STRUCTURE, PIPING, EQUIPMENT, CONDUIT, ETC. UNLESS OTHERWISE INDICATED WITH A BOTTOM OF DUCT ELEVATION, ALL DUCTWORK SHALL BE ROUTED AS HIGH AS POSSIBLE, WITH A MINIMUM HEIGHT OF 8'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED ON THE DRAWINGS. DUCTWORK INSTALLED ABOVE SUSPENDED CEILINGS SHALL BE INSTALLED TO ALLOW A MINIMUM 6 INCH CLEARANCE BETWEEN THE CEILING AND BOTTOM OF THE DUCTWORK.
5.	DUCTWORK SHALL BE FABRICATED, REINFORCED, SUPPORTED, AND SEALED FOR OPERATING PRESSURES INDICATED IN THE SCHEDULES FOR THE EQUIPMENT IT SERVES. ALL DUCTWORK SHALL HAVE A MINIMUM SMACNA PRESSURE CLASSIFICATION OF ONE INCH.
6.	DUCT SIZES INDICATED ARE CLEAR DIMENSIONS INSIDE THE DUCT OR DUCT LINING. SHEET METAL SIZES ARE LARGER FOR INTERNALLY LINED DUCTWORK. ALL RECTANGULAR SUPPLY AND RETURN DUCT SHALL BE INTERNALLY LINED. ALL CIRCULAR SUPPLY DUCT SHALL BE EXTERNALLY WRAPPED. EXHAUST DUCT SHALL NOT BE LINED OR WRAPPED.
7.	AIRTIGHT ACCESS DOORS SHALL BE PROVIDED TO ALLOW INSPECTION OF ALL FIRE DAMPERS, CONTROL DAMPERS, FILTERS, AND DUCT MOUNTED HEATING COILS. THE ACCESS DOORS SHALL BE OF A SIZE SUITABLE FOR THE DUCTWORK DIMENSIONS AND SHALL NOT BE LESS THAN 12" X12" UNLESS OTHERWISE INDICATED.
8.	FLEXIBLE DUCTWORK SHALL NOT EXCEED 10'-0" IN LENGTH.
9.	DIRECT DIGITAL CONTROL (DDC) PANELS ASSOCIATED WITH THE ELECTRIC DUCT HEATERS ARE NOT SHOWN ON THE HVAC DRAWINGS BUT SHALL BE LOCATED AT THE RESPECTIVE HEATER LOCATION.
10.	DIFFUSERS WITH BALANCE DAMPERS INSTALLED IN THE FLEXIBLE DUCT TAKEOFFS SHALL NOT HAVE AN OPPOSED BLADE DAMPER MOUNTED IN THE THROAT OF THE DIFFUSER.
11.	ALL HANGERS, BRACKETS, OR BRACES FOR DUCTWORK, EQUIPMENT, AND PIPING ARE NOT INDICATED ON THE DRAWINGS. REFER TO THE SPECIFICATIONS FOR SUPPORT REQUIREMENTS NOT SHOWN ON THE PLANS.
12.	DUCT CONNECTIONS TO EQUIPMENT, PIPING SIZES TO EQUIPMENT, AND EQUIPMENT SUPPORTS SHALL BE VERIFIED AND ADJUSTED TO MATCH ACTUAL EQUIPMENT FURNISHED.
13.	ELECTRIC DUCT HEATERS SHALL BE INSTALLED WITH A MINIMUM DISTANCE OF 4 FEET FROM ALL DUCTWORK TRANSITIONS AND OBSTRUCTIONS ON BOTH SIDES OF THE HEATER.
14.	PRESSURE DIFFERENTIAL SWITCHES LOCATED ACROSS PRE FILTERS SHALL BE INITIALLY SET AT 0.5 INCH WATER COLUMN. ALL OTHER PRESSURE DIFFERENTIAL SWITCH INITIAL SETTINGS SHALL BE AS INDICATED ON THE PLANS.
15.	OUTSIDE AIR INLETS SHALL BE LOCATED A MINIMUM OF 10' AWAY FROM ANY EXHAUST AIR OR PLUMBING VENT OUTLET.
16.	ALL MATERIALS, FITTINGS, COVERS, AND EQUIPMENT INSTALLED IN RETURN AIR PLENUMS SHALL BE NONCOMBUSTIBLE AND UL LISTED FOR USE IN RETURN AIR PLENUMS.

* THIS IS A GENERAL LEGEND AND ABBREVIATION SHEET FOR PLUMBING AND HVAC DRAWINGS. SOME ITEMS CONTAINED ON THIS SHEET MAY NOT BE USED ON THIS SPECIFIC PROJECT.

PROJECT RECORD

DESIGNED	RDJ
DETAILED	BOL
CHECKED	MLP
APPROVED	
DATE	



PROJECT NO.
28551

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION
MECHANICAL LEGENDS AND
ABBREVIATIONS

21-41

M-1

SHEET
OF

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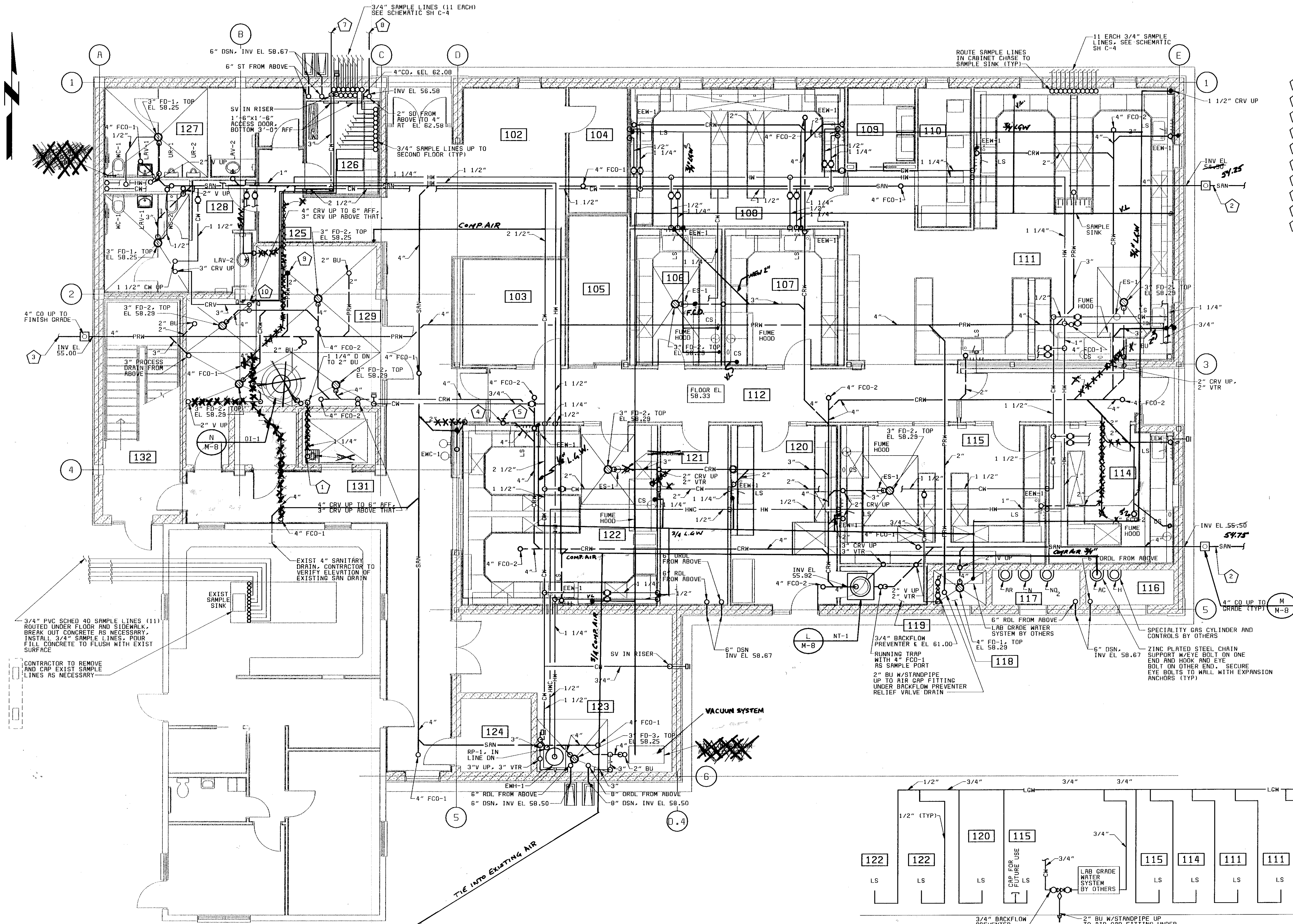
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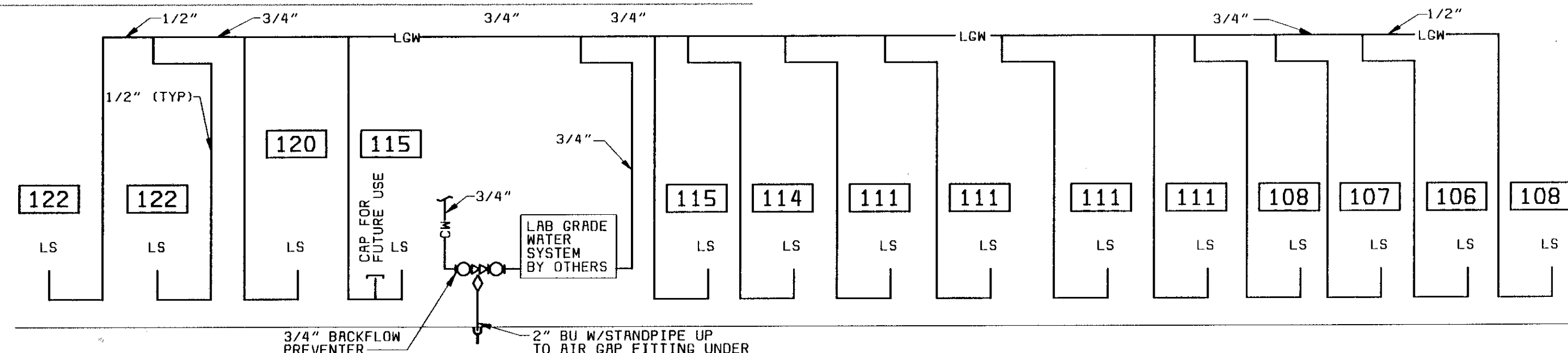
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- PLAN NOTES:**
- 1 1 1/4" SUMP PUMP DISCHARGE UP WITH CHECK VALVE AND SV IN RISER.
 - 2 4" SANITARY TO PUMPING STATION, SEE SH C-2.
 - 3 4" PROCESS DRAIN TO WASHWATER DRAIN, SEE SH C-2.
 - 4 4" CHEMICAL RESISTANT WASTE FROM ABOVE, SEE SH M-3.
 - 5 CO AT EL 59.00 BEHIND WALL ACCESS PLATE.
 - 6 4" UP TO TAPPED FLANGE, 3" INSULATING NIPPLE AND BUTTERFLY VALVE 3'-0" AFF.
 - 7 4" POTABLE WATER SUPPLY, EL 54.00, SEE SH C-2.
 - 8 4" SD, INV EL 55.00, SEE SH C-2.
 - 9 2" BU PLUGGED FOR FUTURE USE.
 - 10 3/4" FW-S AND FW-G TO BE ROUTED TO LOCATION SHOWN UP TO QUICK CONNECTS AT 6" AFF.

GROUND FLOOR PLAN
3/16" = 1'-0"



LAB GRADE WATER PIPING RISER DIAGRAM
NO SCALE

NOTE: CONTRACTOR TO FIELD ROUTE. SUBMIT ROUTING PLAN TO ENGINEER BEFORE INSTALLATION.

PROJECT RECORD

CONFORMED TO CONSTRUCTION RECORD				AB	
DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED: RMC
DETAILED: DLB
CHECKED: MLP
APPROVED: _____
DATE: _____



PROJECT NO.
28551

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP
LABORATORY EXPANSION
PLUMBING
GROUND FLOOR PLAN

21-41

M-2
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OF



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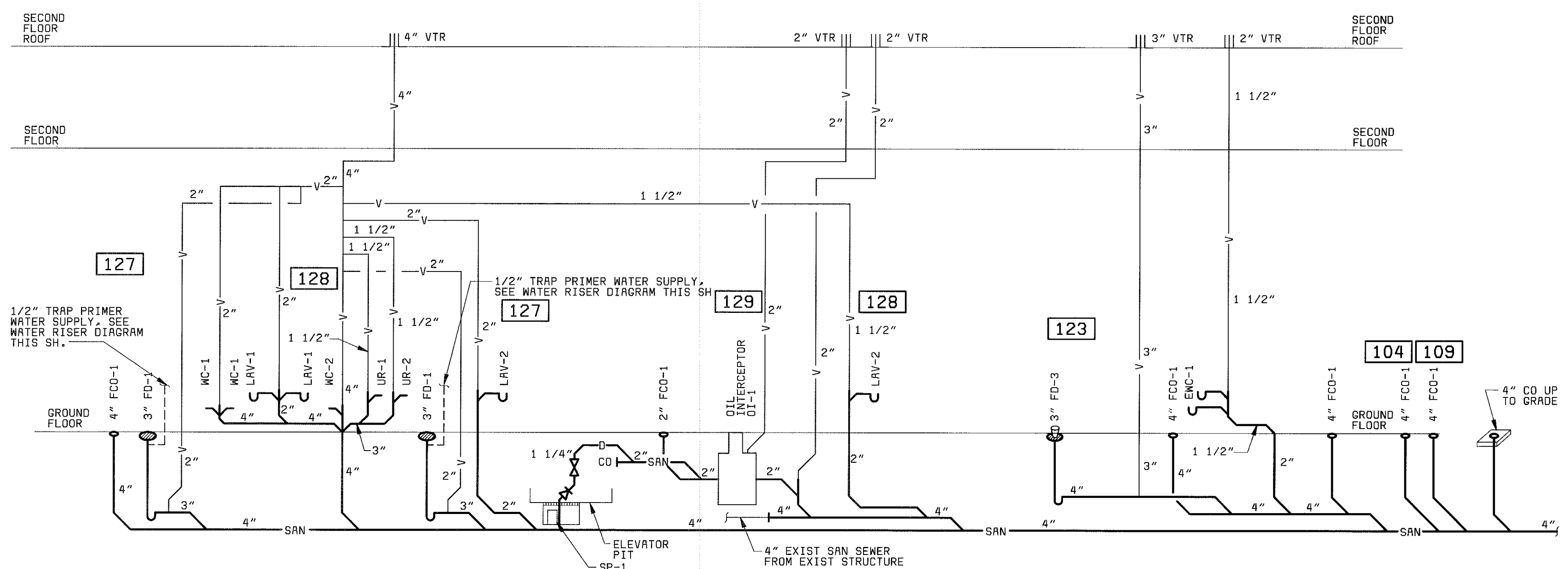
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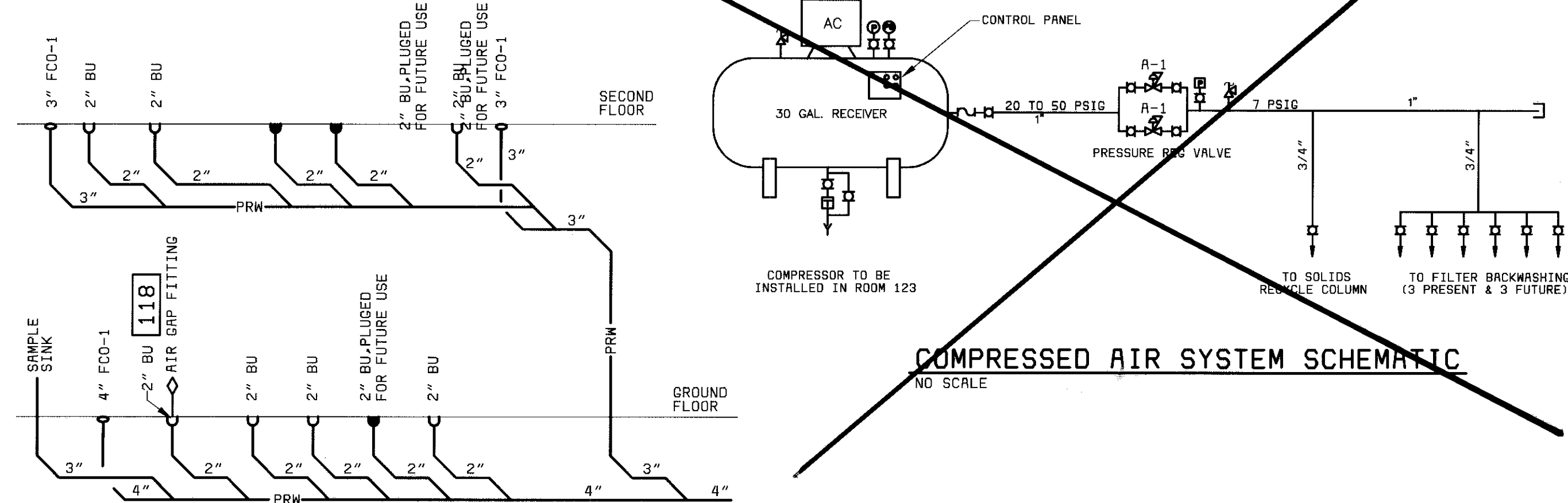
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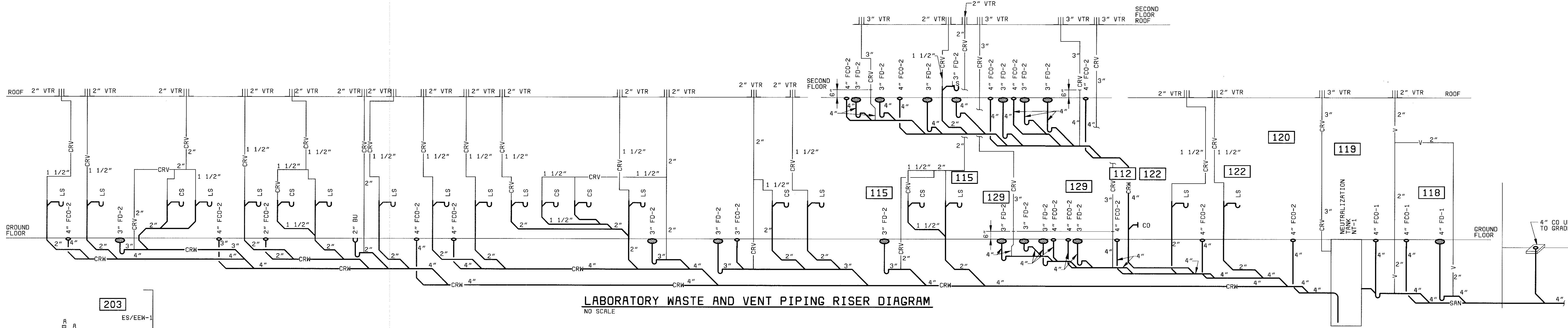
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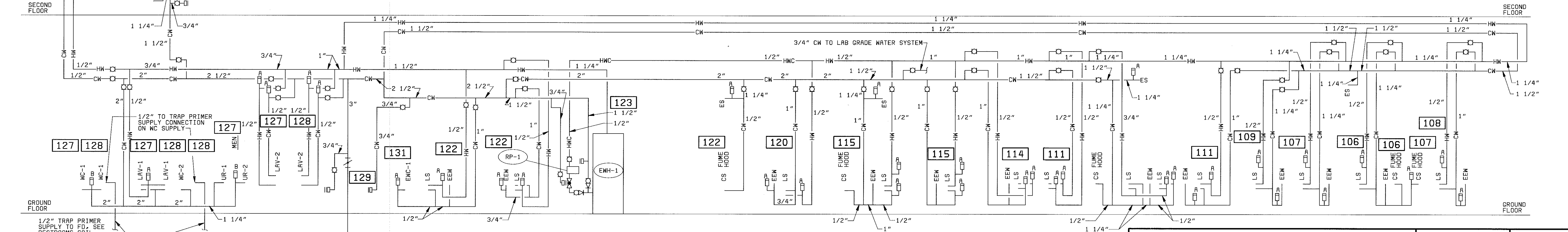
SANITARY SOIL, WASTE, AND VENT PIPING RISER DIAGRAM
NO SCALE



PROCESS WASTE RISER DIAGRAM
NO SCALE



LABORATORY WASTE AND VENT PIPING RISER DIAGRAM
NO SCALE



WATER PIPING RISER DIAGRAM
NO SCALE

PROJECT RECORD

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION
PLUMBING SCHEMATICS

21-41

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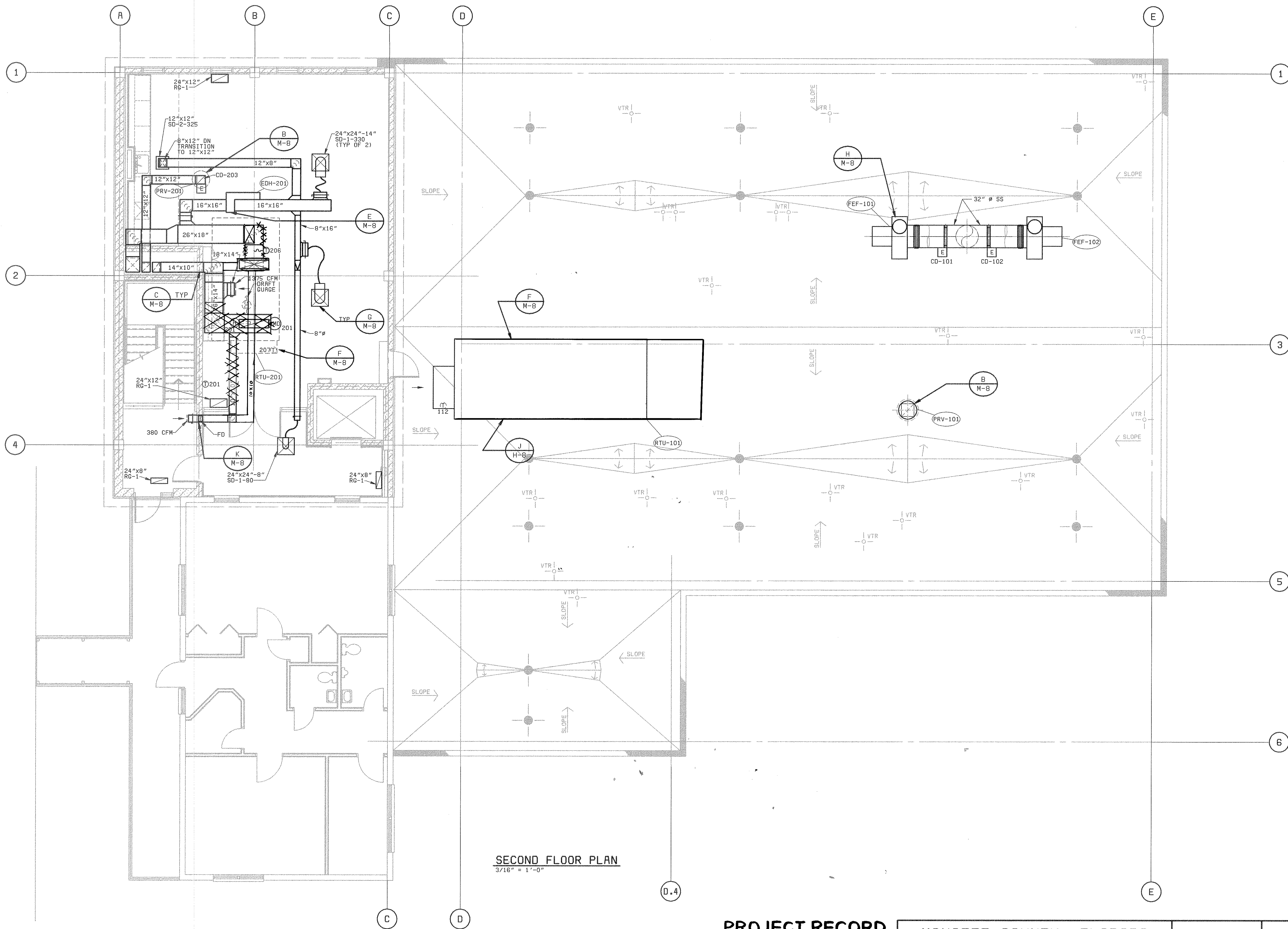
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SECOND FLOOR PLAN
3/16" = 1'-0"

PROJECT RECORD

MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP		21-41	M-6
LABORATORY EXPANSION HVAC SECOND FLOOR PLAN			SHEET OF

CONFORMED TO CONSTRUCTION RECORD		DATE		REVISIONS AND RECORD OF ISSUE		NO.		BY		CK		APP	

DESIGNED	ROJ
DETAILED	BDL
CHECKED	DWN
APPROVED	
DATE	



PROJECT NO.
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AIR OUTLET & INLET DEVICE SCHEDULE

SYMBOL	MODEL	FRAME/ BORDER	MATERIAL	FINISH	DAMPER TYPE	ACCESSORIES	REMARKS
SD-1	APDNE	LAY-IN	ALUMINUM	BAKED OFF-WHITE ENAMEL	--	--	
SD-2	SMD	FLANGED	ALUMINUM	BAKED OFF-WHITE ENAMEL	OPPOSED	--	
SR-1	32DAL	FLANGED	ALUMINUM	BAKED OFF-WHITE ENAMEL	OPPOSED	--	
ED-1	APDRE	LAY-IN	ALUMINUM	BAKED OFF-WHITE ENAMEL	--	--	
EG-1	80DAL	LAY-IN	ALUMINUM	BAKED OFF-WHITE ENAMEL	OPPOSED	--	
ER-1	70DAL	FLANGED	ALUMINUM	BAKED OFF-WHITE ENAMEL	OPPOSED	--	
RD-1	SMD	FLANGED	ALUMINUM	BAKED OFF-WHITE ENAMEL	OPPOSED	--	
RG-1	80	LAY-IN	ALUMINUM	BAKED OFF-WHITE ENAMEL	--	--	
RR-1	70DAL	FLANGED	ALUMINUM	BAKED OFF-WHITE ENAMEL	OPPOSED	--	
NOTES: 1. EQUIPMENT SCHEDULE MODEL NUMBERS BASED ON PRICE COMPANY							

HEATER SCHEDULE

UNIT NO	LOCATION	AIRFLOW (CFM)	AIR PD (IN WG)	OUTPUT CAPACITY		WATER FLOW (GPM)	WATER PD (FT)	MOTOR HP	POWER SUPPLY VOLTS/PHASE	REMARKS
				(BTUH)	(KW)					
EDH-101	LAB	510	0.07	12,400	3.6	-	-	-	480/3	
EDH-102	LAB	630	0.07	12,900	3.8	-	-	-	480/3	
EDH-103	LAB	725	0.09	14,900	4.4	-	-	-	480/3	
EDH-104	LAB	670	0.08	15,000	4.4	-	-	-	480/3	
EDH-105	LAB	1190	0.08	24,400	7.1	-	-	-	480/3	
EDH-106	LAB	1250	0.08	29,900	8.8	-	-	-	480/3	
EDH-107	LAB	1125	0.12	24,300	7.1	-	-	-	480/3	
EDH-108	LAB	1190	0.08	25,100	7.4	-	-	-	480/3	
EDH-109	LAB	520	0.05	12,700	3.7	-	-	-	480/3	
EDH-110	LAB	1190	0.08	24,900	7.3	-	-	-	480/3	
EDH-201	PILOT	1065	0.06	23,700	7.0	-	-	-	480/3	
EDH-202	PILOT	280	0.07	7,300	2.1	-	-	-	480/3	
EDH-203	PILOT	400	0.05	9,400	2.8	-	-	-	480/3	
EDH-204	PILOT	680	0.08	11,500	3.7	-	-	-	480/3	
EDH-205	PILOT	975	0.06	26,900	7.9	-	-	-	480/3	

TEMPERATURE SENSOR SCHEDULE

UNIT NO	LOCATION/ ROOM NO	TYPE	SET POINT (F)	EQUIPMENT CONTROLLED	REMARKS
T-101	LAB/103	1	75	EDH-101	
T-102	LAB/105	1	75	EDH-102	
T-103	LAB/106	1	75	EDH-103	
T-104	LAB/108	1	75	EDH-104	
T-105	LAB/107	1	75	EDH-105	
T-106	LAB/111	1	75	EDH-106	
T-107	LAB/114	1	75	EDH-107	
T-108	LAB/115	1	75	EDH-108	
T-109	LAB/120	1	75	EDH-109	
T-110	LAB/122	1	75	EDH-110	
T-111	LAB	2	--	RTU-101	
T-112	LAB	3	--	RTU-101	
T-201	PILOT/203	1	75	EDH-201	
T-202	PILOT/126	1	75	EDH-202	
T-203	PILOT/102	1	75	EDH-203	
T-204	PILOT/	1	75	EDH-204	
T-205	PILOT/	1	75	EDH-205	
T-206	PILOT	2	--	RTU-201	
T-207	PILOT	3	--	RTU-201	
TYPE NOTES: SEE SPECIFICATION FOR SENSOR TYPE MODEL.					

ROOF TOP AIR CONDITIONING UNIT SCHEDULE

UNIT NO	LOCATION	AIRFLOW (CFM)	ESP (IN WG)	INDOOR FAN MOTOR HP	MINIMUM CIRCUIT AMPACITY	POWER SUPPLY VOLTS/ PHASE	COOLING				HEATING		APPROX WT (LBS)
							EAT		CAPACITY (BTUH)		EAT	CAPACITY	
							(FDB)	(FWB)	SENSIBLE	TOTAL	(FDB)	(KW)	
RTU-101	LAB	9,000	1.00	10	133	480/3	94	78	379,100	721,800	36	60	8,350
RTU-201	PILOT	3,400	2.00	5	34	480/3	86	68	112,700	149,800	-	-	3,450
NOTE: SELECTIONS TO BE MADE AT A CONDENSER ENTERING AIR TEMPERATURE OF 105 F DB.													

PLUMBING FIXTURE AND EQUIPMENT SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER MODEL	REMARKS
WC-1	WATER CLOSET, WALL MOUNT, FLUSH VALVE, 1.6 GAL/FLUSH MAX.	KOHLER K-4330 KINGSTON	(1)
WC-2	WATER CLOSET, WALL MOUNT, FLUSH VALVE, 1.6 GAL/FLUSH MAX.	KOHLER K-4330 KINGSTON	
UR-1	URINAL, WALL MOUNT, FLUSH VALVE, 1.0 GAL/FLUSH MAX.	KOHLER K-4960-T BARDON	
UR-2	URINAL, WALL MOUNT, FLUSH VALVE, 1.0 GAL/FLUSH MAX.	KOHLER K-4960-T BARDON	(1)
L-1	LAVATORY, WALL HUNG, 21 X 18 INCHES, WITH 1.5 GPM AERATED FAUCET AND POP-UP DRAIN.	LAVATORY-KOHLER K-2005 KINGSTON FAUCET-KOHLER K-15583 CORALAIS	(1)
L-2	LAVATORY COUNTERTOP, 20 X 17 INCHES, OVAL, WITH 1.5 GPM AERATED FAUCET AND GRID DRAIN.	LAVATORY-KOHLER K-2195 PENNINGTON FAUCET-KOHLER K-15598 CORALAIS	
EW-1	ELECTRIC WATER COOLER, WALL MOUNTED, DUAL HEIGHT, TWO BUBBLERS, 8 GPH, 120 VOLT, 1 PHASE, 60 HZ.	HAWS-HWC8-2RF	(1)
ES-1	EMERGENCY SHOWER, VERTICAL 1" IPS SUPPLY.	HAWS-8162V	
ES/EEW-1	EMERGENCY SHOWER/EYEWASH COMBINATION, PEDESTAL MOUNTED, 1-1/4 INCH IPS SUPPLY.	HAWS-8309	
OI-1	OIL INTERCEPTOR, STEEL 42" DIA. X 36" HIGH TANK 24" DIA X 18" HIGH ACCESS SECTION ON TOP, 2" INLET, OUTLET, AND VENT CONNECTIONS, PIPED AS INDICATED ON THE DRAWINGS.	WHEELER TANK	
NT-1	NEUTRALIZATION TANK, 55 GALLON, 4 INCH INLET AND OUTLET, 3 INCH VENT CONNECTIONS.	ORION STYLE 5	
EW-1	ELECTRIC WATER HEATER, 30 GALLON STORAGE, 25 GPH RECOVERY AT 100 F RISE 6 KW, 480V, 3 PHASE 60 HZ.	STATE SB6-30-6-IFE-ASME-NSF	
RP-1	IN-LINE HOT WATER CIRCULATING PUMP, 3 GPM, 5 FT HEAD, 92W, 120 VOLT, 1 PHASE, 60 HZ, WITH AUTOMATIC TIMER.	BELL & GOSSETT NBF-12	
FD-1	MEDIUM DUTY CAST IRON FLOOR DRAIN, ADJUSTABLE TOP, NICKEL BRONZE STRAINER, TRAP PRIMER CONNECTION.	SMITH 2010C-6A-P050 SERIES	
FD-2	CORROSION RESISTANT FLOOR DRAIN, POLYPROPYLENE BODY AND GRATE.	ORION FD-1 SERIES	
FD-3	MEDIUM DUTY CAST IRON FLOOR DRAIN, ADJUSTABLE TOP, CAST IRON GRATE, 6 INCH DIAMETER FUNNEL.	SMITH 2310 SERIES WITH FIG 3581-NB FUNNEL	
FCO-1	HEAVY DUTY FLOOR CLEANOUT, SECURED ROUND ADJUSTABLE NICKEL BRONZE TOP.	SMITH 4113 SERIES	
FCO-2	CORROSION RESISTANT FLOOR CLEANOUT, POLYPROPYLENE BODY, NICKEL BRONZE COVER.	ORION FFCO-RD-NB SERIES	
RD-1	CAST IRON PRIMARY ROOF DRAIN.	SMITH 1010-E SERIES	
ORD-1	CAST IRON OVERFLOW ROOF DRAIN.	SMITH 1010-E SERIES	
REMARKS: 1. FIXTURE AND INSTALLATION SHALL BE ADA COMPLIANT.			

CONTROL DAMPER SCHEDULE

UNIT NO	LOCATION	TYPE	NOMINAL SIZE (WXH)	OPERATOR	REMARKS
CD-101	FEF-101	2	32" DIA	2P	
CD-102	FEF-102	2	32" DIA	2P	
CD-103	PRV-101	1	SZ TO FIT	2P	
CD-201	PRV-201	1	SZ TO FIT	2P	
TYPE NOTES: SEE SPECIFICATION FOR CONTROL DAMPER TYPE MODEL. OPERATOR NOTES: 2P - TWO POSITION M - MODULATING E - ELECTRIC P - PNEUMATIC					

PLUMBING FIXTURE CONNECTION SCHEDULE

SYMBOL	FIXTURE	WATER		SANITARY	
		HOT	COLD	WASTE	VENT
WC	WATER CLOSET	-	1"	4"	2"
UR	URINAL	-	3/4"	2"	1 1/2"
LAV	LAVATORY	1/2"	1/2"	1 1/2"	1 1/2"
LS	LABORATORY SINK	1/2"	1/2"	1 1/2"	1 1/2"
EW-1	ELECTRIC WATER COOLER	-	1/2"	1 1/2"	1 1/2"
ES	EMERGENCY SHOWER	-	1"	-	-
EEW	EMERGENCY EYE WASH	-	1/2"	-	-
ESEEW	EMERGENCY SHOWER AND EMERGENCY EYE WASH	-	1 1/4"	-	-
CS	CUP SINK	-	1/2"	1 1/2"	1 1/2"

FAN SCHEDULE

UNIT NO	LOCATION	AIRFLOW (CFM)	ESP (IN WG)	MOTOR HP	POWER SUPPLY VOLTS/PHASE	MIN WHEEL (IN)	DRIVE	APPROX WT (LBS)	REMARKS
FEF-101	LAB	7,210	1.50	3	480/3	30	B	700	
FEF-102	LAB	7,210	1.50	3	480/3	30	B	700	
PRV-101	LAB	1,890	0.75	1/2	480/3	16 5/8	B	100	
PRV-201	PILOT	735	0.50	1/4	120/1	11 5/8	D	37	
DRIVE NOTES: D - DIRECT B - BELT									

SEQUENCE OF OPERATION

1. LABORATORY SYSTEMS.
- 1.1. RTU-101. ROOFTOP AIR CONDITIONING UNIT RTU-101 SHALL BE CONTROLLED BY ITS UNIT MOUNTED DIRECT DIGITAL CONTROLLER.
- 1.1.1. OCCUPIED FAN OPERATION. WHEN THEN UNIT IS IN THE OCCUPIED SYSTEM OPERATING MODE THE INDOOR FAN SHALL OPERATE CONTINUOUSLY. THE UNIT INLET DAMPER SHALL BE PROVEN OPEN BEFORE THE INDOOR FAN IS PERMITTED TO START. THE OCCUPIED SYSTEM OPERATING MODE SHALL BE SET AT DIRECT DIGITAL CONTROL PANEL DCP-101.
- 1.1.2. UNOCCUPIED FAN OPERATION. WHEN THE UNIT IS IN THE UNOCCUPIED SYSTEM OPERATING MODE THE INDOOR FAN SHALL BE DE-ENERGIZED AND THE INLET DAMPER SHALL BE CLOSED. IN THE EVENT ONE OF THE ASSOCIATED ZONE THERMOSTATS DETECTS A SPACE TEMPERATURE ABOVE THE COOLING SETBACK TEMPERATURE OR BELOW THE HEATING SETBACK TEMPERATURE THE INLET DAMPER SHALL OPEN AND THE INDOOR FAN SHALL BE ENERGIZED. THE ASSOCIATED ZONE THERMOSTATS ARE THERMOSTATS T-101 THROUGH T-110. THE UNOCCUPIED SYSTEM OPERATING MODE AND SETBACK TEMPERATURES SHALL BE SET AT DIRECT DIGITAL CONTROL PANEL DCP-101. EACH THERMOSTAT SHALL BE EQUIPED TO OVERRIDE THE UNOCCUPIED MODE.
- 1.1.3. MECHANICAL COOLING. THE UNIT SHALL BE IN MECHANICAL COOLING MODE WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE THE DISCHARGE TEMPERATURE SETPOINT (INITIALLY 55 F). UPON A CALL FOR COOLING THE UNIT COMPRESSORS SHALL BE CYCLED ON TO MAINTAIN THE DESIRED DISCHARGE TEMPERATURE AS READ BY TEMPERATURE SENSOR T-111. THE DISCHARGE TEMPERATURE SHALL BE RESET UPWARDS TO THE GREATEST TEMPERATURE LEVEL THAT WILL SATISFY THE ZONE RE-QUIRING THE COLDEST AIR. THE DISCHARGE TEMPERATURE SHALL NOT BE RESET IF HUMIDITY SENSOR H-101 DETECTS A RELATIVE HUMIDITY ABOVE A PREDETERMINED SETPOINT (INITIALLY 60 PERCENT).
- 1.1.4. HEATING. THE UNIT SHALL BE IN THE HEATING MODE WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW THE DISCHARGE TEMPERATURE SETPOINT. UPON A CALL FOR HEATING THE UNIT ELECTRIC HEATING COIL SHALL BE STAGED TO MAINTAIN THE DESIRED DISCHARGE TEMPERATURE.
- 1.1.5. HIGH FILTER LOSS. IN THE EVENT THE PRESSURE DROP ACROSS THE PRE-FILTER OR THE PRESSURE DROP ACROSS THE COMBINATION OF THE CARBON AND FINAL FILTER SECTIONS EXCEEDS THEIR RESPECTIVE PRESET VALUES (INITIALLY 0.5 AND 2.0 IN. WC), AN ALARM INDICATOR AT THE UNIT CONTROLLER SHALL BE ENERGIZED.
- 1.1.6. LOW DISCHARGE TEMPERATURE. IN THE EVENT THE DISCHARGE TEMPERATURE FALLS BELOW THE LOW DISCHARGE TEMPERATURE SETPOINT (INITIALLY 40 F), AN ALARM INDICATOR SHALL BE ENERGIZED AT THE UNIT CONTROLLER. THE UNIT SHALL BE DE-ENERGIZED IF NO ACTION IS TAKEN ON THE ALARM AFTER A 10 MINUTE PERIOD.
- 1.1.7. REMOTE ALARM INDICATOR. A REMOTE ALARM INDICATOR ON DIRECT DIGITAL CONTROL PANEL DCP-101 SHALL BE ILLUMINATED IN THE EVENT THAT EITHER HIGH FILTER LOSS OR LOW DISCHARGE TEMPERATURE HAS BEEN DETECTED.
- 1.1.8. RESTART MODE. A RESTART SUBROUTINE SHALL BE PROGRAMMED INTO THE UNIT CONTROLLER. IN RESTART MODE, LOW DISCHARGE TEMPERATURE DETECTION SHALL BE BYPASSED.
- 1.2. FEF-101. FUME HOOD EXHAUST FAN FEF-101 SHALL BE CONTROLLED BY AN "ON-OFF-AUTO" SELECTOR SWITCH LOCATED ON THE FACE OF TEMPERATURE CONTROL PANEL TCP-101. WHEN THE SWITCH IS IN THE "AUTO" POSITION THE FAN SHALL BE INTERLOCKED WITH THE INDOOR FAN OF RTU-101. FEF-101 SHALL BE ENERGIZED WHEN THE INDOOR FAN OF RTU-101 IS ENERGIZED. CONTROL DAMPER CD-101 SHALL BE PROVEN OPEN BEFORE FEF-101 IS ALLOWED TO START.
- 1.3. FEF-102. FUME HOOD EXHAUST FAN FEF-102 SHALL BE CONTROLLED BY AN "ON-OFF-AUTO" SELECTOR SWITCH LOCATED ON THE FACE OF TEMPERATURE CONTROL PANEL TCP-101. WHEN THE SWITCH IS IN THE "AUTO" POSITION THE FAN SHALL BE INTERLOCKED WITH THE INDOOR FAN OF RTU-101. FEF-102 SHALL BE ENERGIZED WHEN THE INDOOR FAN OF RTU-101 IS ENERGIZED. CONTROL DAMPER CD-102 SHALL BE PROVEN OPEN BEFORE FEF-102 IS ALLOWED TO START. FEF-102 AND FEF-101 SHALL BE INTERLOCKED SUCH THAT BOTH FANS WILL NOT BE ALLOWED TO OPERATE AT ONE TIME.
- 1.4. PRV-101. POWER ROOF VENTILATOR PRV-101 SHALL BE CONTROLLED BY A "ON-OFF-AUTO" SELECTOR SWITCH LOCATED ON THE FACE OF TEMPERATURE CONTROL PANEL TCP-101. WHEN THE SWITCH IS IN THE "AUTO" POSITION THE FAN SHALL BE INTERLOCKED WITH THE INDOOR FAN OF RTU-101. PRV-101 SHALL BE ENERGIZED WHEN THE INDOOR FAN OF RTU-101 IS ENERGIZED. CONTROL DAMPER CD-103 SHALL BE PROVEN OPEN BEFORE PRV-101 IS ALLOWED TO START.
- 1.5. EDH-101 THROUGH EDH-110. ELECTRIC DUCT HEATERS EDH-101 THROUGH EDH-110 SHALL BE CONTROLLED BY INDIVIDUAL DIRECT DIGITAL CONTROLLERS AND THEIR RESPECTIVE ZONE THERMOSTATS T-101 THROUGH T-110.
2. PILOT PLANT SYSTEMS.
- 2.1. RTU-201. ROOFTOP AIR CONDITIONING UNIT RTU-201 SHALL BE CONTROLLED BY ITS UNIT MOUNTED DIRECT DIGITAL CONTROLLER.
- 2.1.1. OCCUPIED FAN OPERATION. WHEN THEN UNIT IS IN THE OCCUPIED SYSTEM OPERATING MODE THE INDOOR FAN SHALL OPERATE CONTINUOUSLY. THE OCCUPIED SYSTEM OPERATING MODE SHALL BE SET AT DIRECT DIGITAL CONTROL PANEL DCP-101.
- 2.1.2. UNOCCUPIED FAN OPERATION. WHEN THE UNIT IS IN THE UNOCCUPIED SYSTEM OPERATING MODE THE INDOOR FAN SHALL BE DE-ENERGIZED, THE RETURN AIR DAMPER SHALL BE OPENED FULLY, AND THE OUTDOOR AIR DAMPER SHALL BE CLOSED. IN THE EVENT ONE OF THE ASSOCIATED ZONE THERMOSTATS DETECTS A SPACE TEMPERATURE ABOVE THE COOLING SETBACK TEMPERATURE, OR BELOW THE HEATING SETBACK TEMPERATURE THE INDOOR FAN SHALL BE ENERGIZED. THE UNIT INLET DAMPER SHALL REMAIN CLOSED AND PRV-201 SHALL REMAIN DE-ENERGIZED. THE ASSOCIATED ZONE THERMOSTATS ARE THERMOSTATS T-201 THROUGH T-203. THE UNOCCUPIED SYSTEM OPERATING MODE AND SETBACK TEMPERATURES SHALL BE SET AT DIRECT DIGITAL CONTROL PANE DCP-101. EACH THERMOSTAT SHALL BE EQUIPED TO OVERRIDE THE UNOCCUPIED MODE.
- 2.1.3. MECHANICAL COOLING. THE UNIT SHALL BE IN MECHANICAL COOLING MODE WHEN THE MIXED AIR TEMPERATURE IS ABOVE THE DISCHARGE TEMPERATURE SETPOINT (INITIALLY 55 F). UPON A CALL FOR COOLING THE UNIT COMPRESSORS SHALL BE CYCLED ON TO MAINTAIN THE DESIRED DISCHARGE TEMPERATURE AS READ BY TEMPERATURE SENSOR T-211. THE DISCHARGE TEMPERATURE SHALL BE RESET UPWARDS TO THE GREATEST TEMPERATURE LEVEL THAT WILL SATISFY THE ZONE RE-QUIRING THE COLDEST AIR. THE DISCHARGE TEMPERATURE SHALL NOT BE RESET IF HUMIDITY SENSOR H-201 DETECTS A RELATIVE HUMIDITY ABOVE A PREDETERMINED SETPOINT (INITIALLY 60 PERCENT).
- 2.1.4. ECONOMIZER CONTROL. THE UNIT SHALL ENTER ECONOMIZER MODE WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW THE RESET DISCHARGE TEMPERATURE SETPOINT. THE ECONOMIZER SHALL MODULATE THE OUTSIDE AIR DAMPER AND THE RETURN AIR DAMPER TO MAINTAIN THE RESET DISCHARGE TEMPERATURE SETPOINT.
- 2.1.5. SMOKE DETECTED. IN THE EVENT SMOKE IS DETECTED BY SMOKE DETECTOR SMD-201, THE UNIT SHALL BE DE-ENERGIZED AND AN ALARM INDICATOR AT THE UNIT CONTOLLER SHALL BE ILLUMINATED.
- 2.1.6. HIGH FILTER LOSS. IN THE EVENT THE PRESSURE DROP ACROSS THE FILTER SECTION EXCEEDS ITS PRESET VALUE (INITIALLY 0.5 IN. WC), AN ALARM INDICATOR AT THE UNIT CONTROLLER SHALL BE ENERGIZED.
- 2.1.7. REMOTE ALARM INDICATOR. A REMOTE ALARM INDICATOR ON DIRECT DIGITAL CONTROL PANEL DCP-101 SHALL BE ILLUMINATED IN THE EVENT SMOKE OR HIGH FILTER LOSS IS DETECTED.
- 2.1.8. RESTART MODE. A RESTART SUBROUTINE SHALL BE PROGRAMMED INTO THE UNIT CONTROLLER. IN RESTART MODE, SMOKE DETECTION SHALL BE BYPASSED.
- 2.2. PRV-201. POWER ROOF VENTILATOR PRV-201 SHALL BE CONTROLLED BY A "ON-OFF-AUTO" SELECTOR SWITCH LOCATED ON THE FACE OF TEMPERATURE CONTROL PANEL TCP-101. WHEN THE SWITCH IS IN THE "AUTO" POSITION THE FAN SHALL BE INTERLOCKED WITH THE INDOOR FAN OF RTU-201. PRV-201 SHALL BE ENERGIZED WHEN THE INDOOR FAN OF RTU-201 IS ENERGIZED EXCEPT WHEN RTU-201 IS IN UNOCCUPIED MODE. CONTROL DAMPER CD-201 SHALL BE PROVEN OPEN BEFORE PRV-201 IS ALLOWED TO START.
- 2.3. EDH-201 THROUGH EDH-205. ELECTRIC DUCT HEATERS EDH-201 THROUGH EDH-203 SHALL BE CONTROLLED BY INDIVIDUAL DIRECT DIGITAL CONTROLLERS AND THEIR RESPECTIVE ZONE THERMOSTATS T-201 THROUGH T-205.

PROJECT RECORD

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

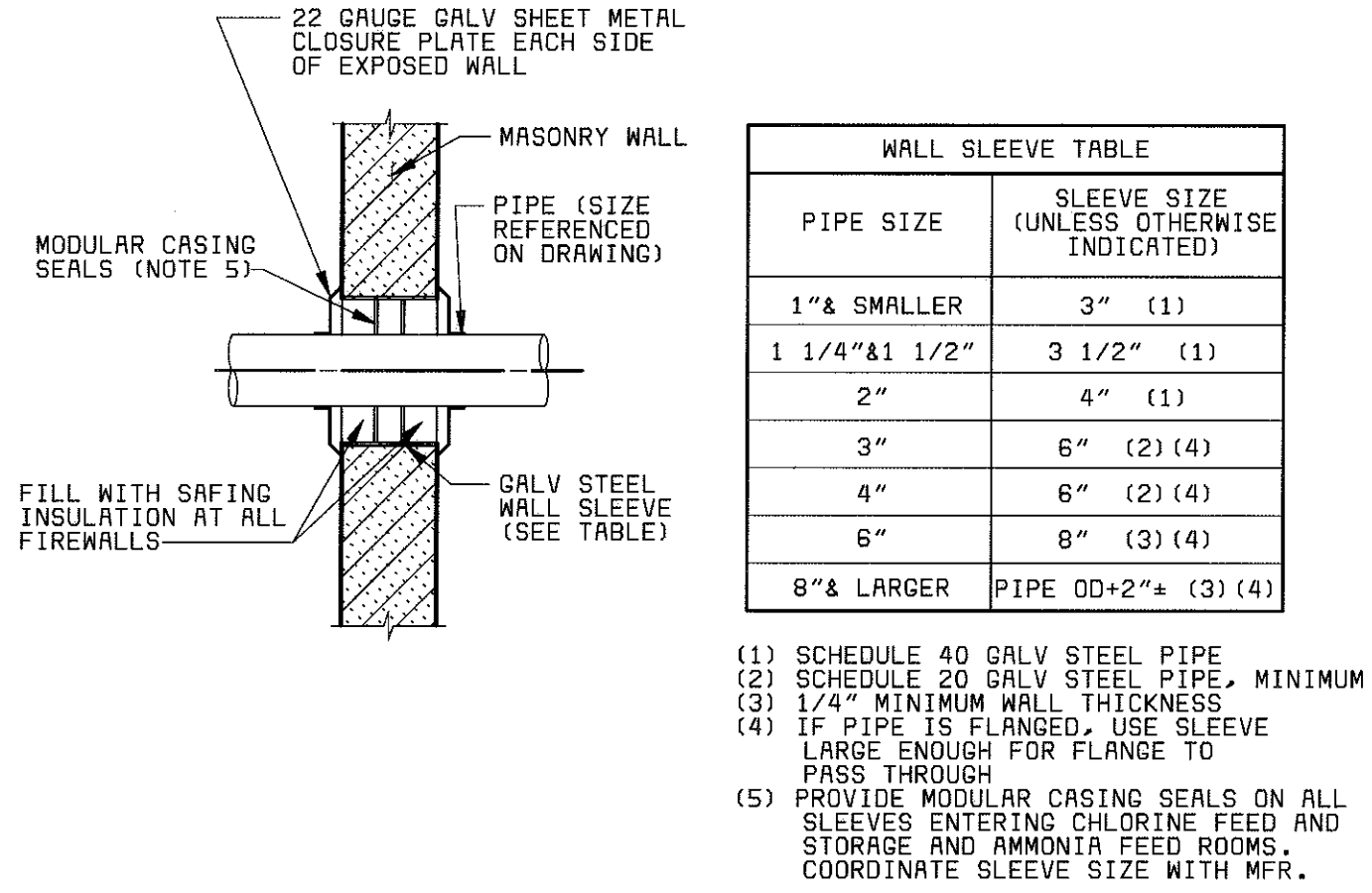
LABORATORY EXPANSION
SCHEDULES AND
SEQUENCE OF OPERATIONS

21-41

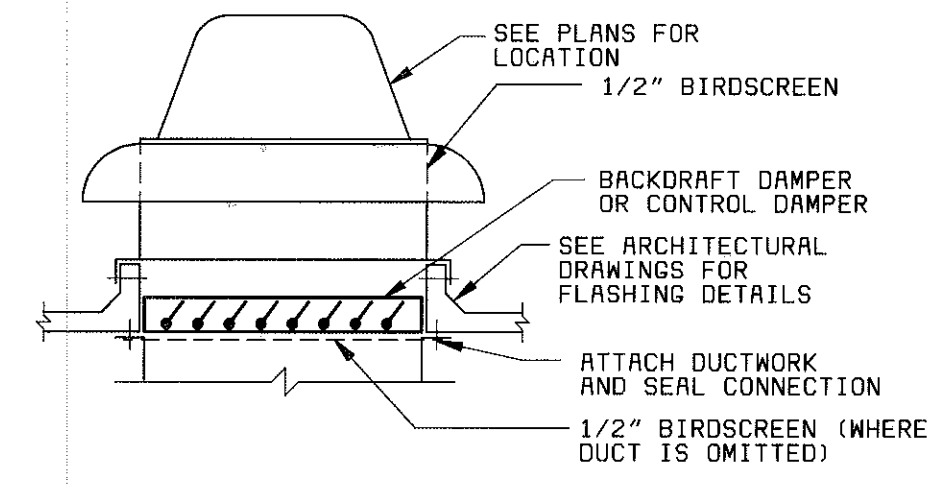
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SHEET
OF

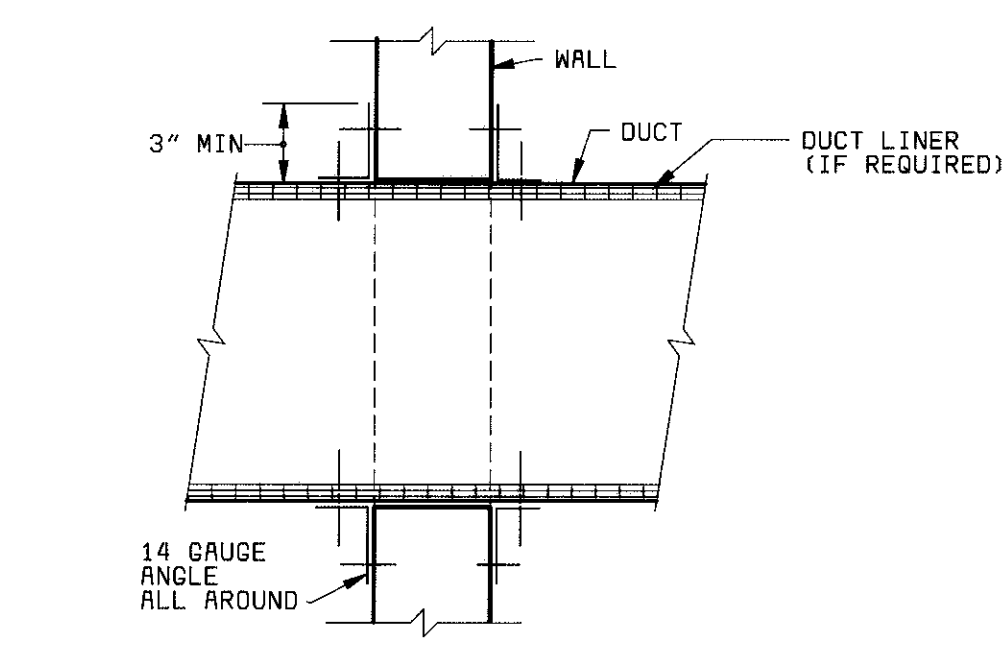
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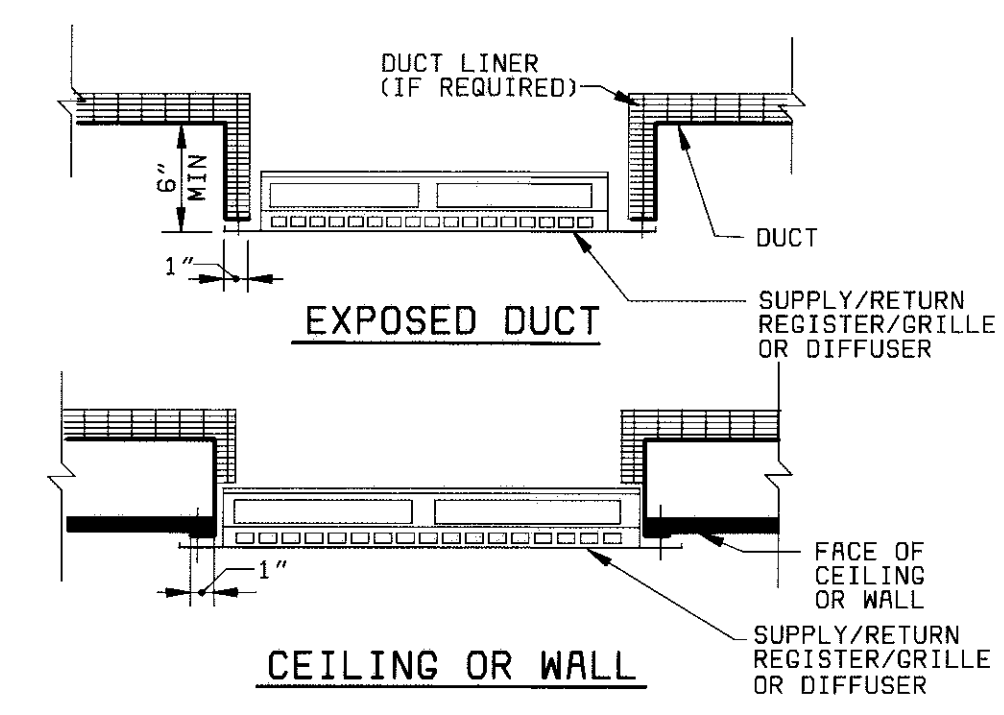
MASONRY WALL SLEEVE (A)
NO SCALE



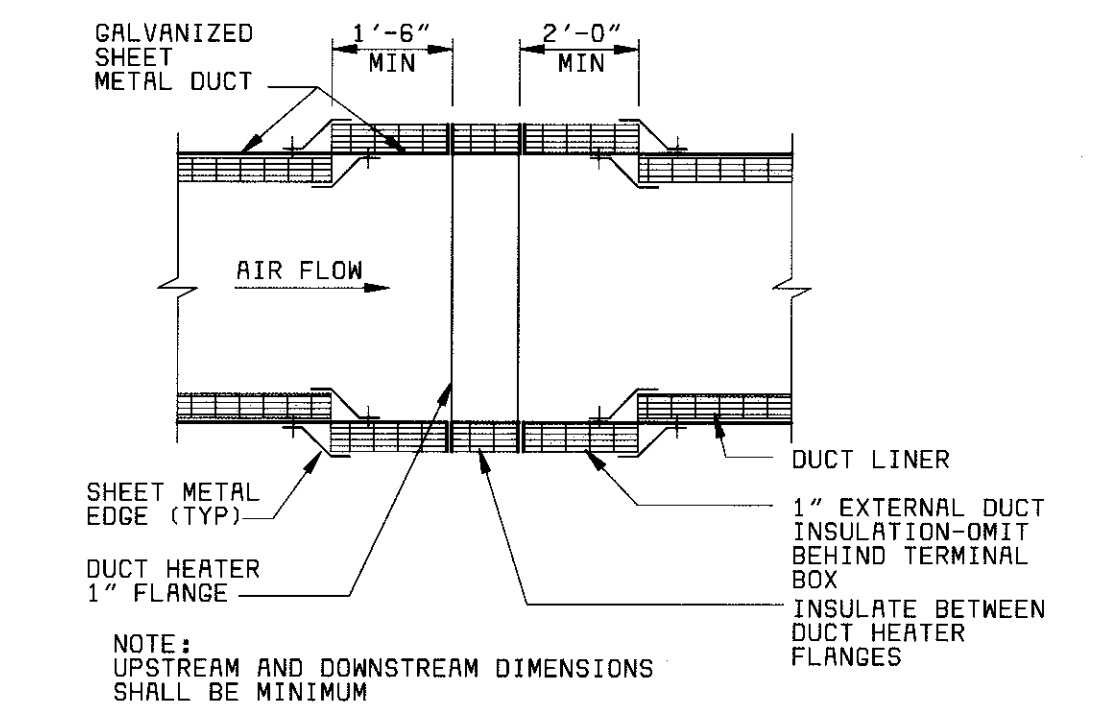
POWER ROOF VENTILATOR (B)
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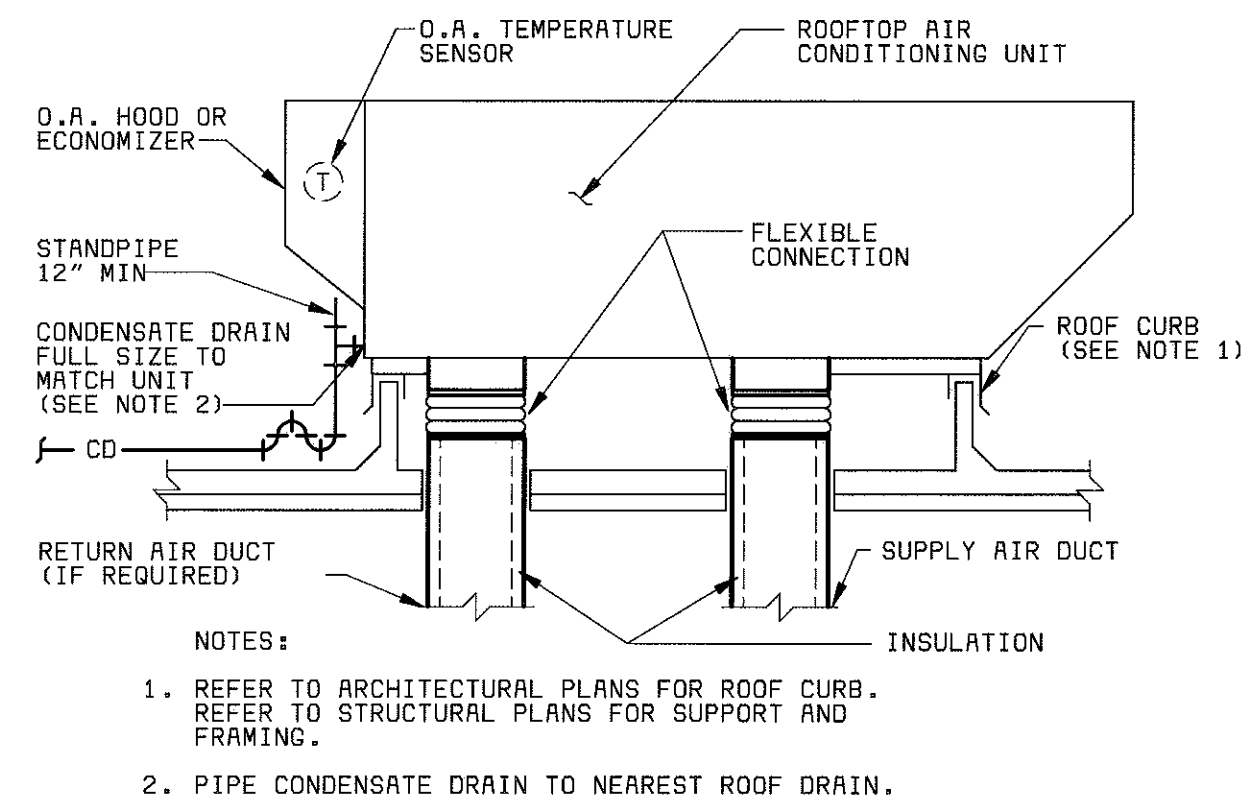
INTERIOR WALL PENETRATION (C)
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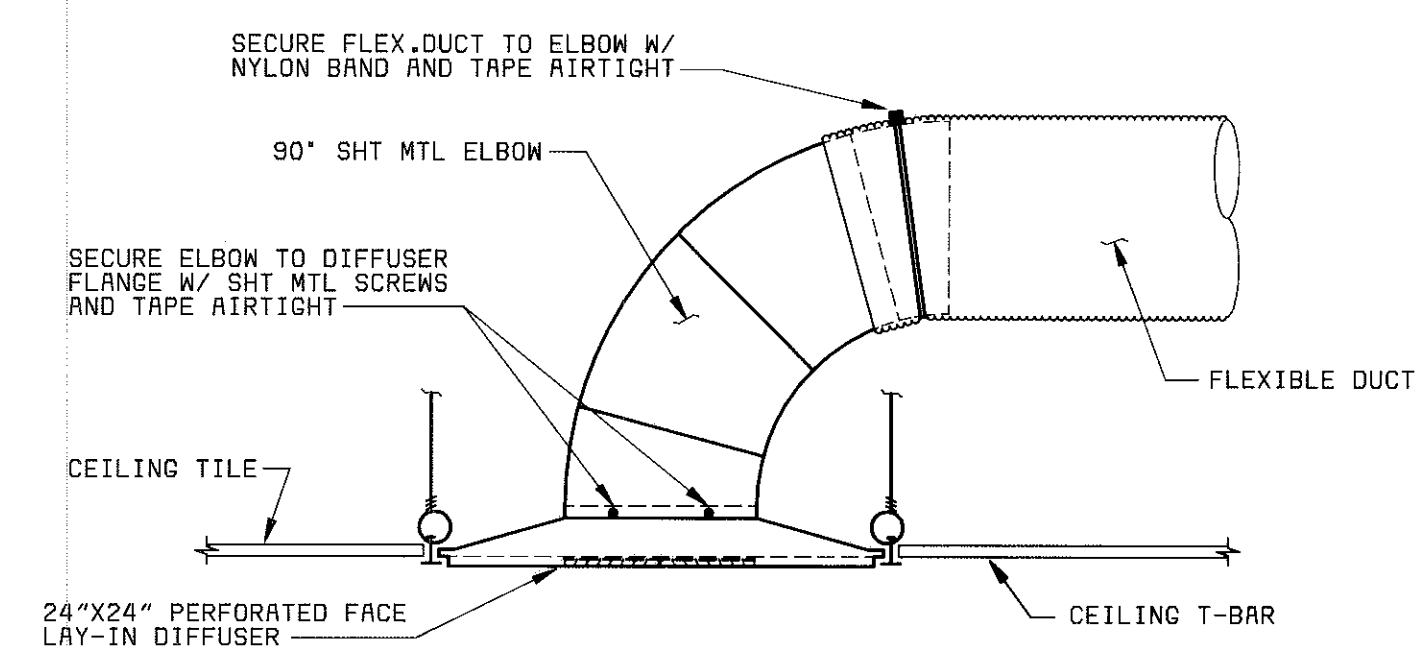
REGISTER/GRILLE (D)
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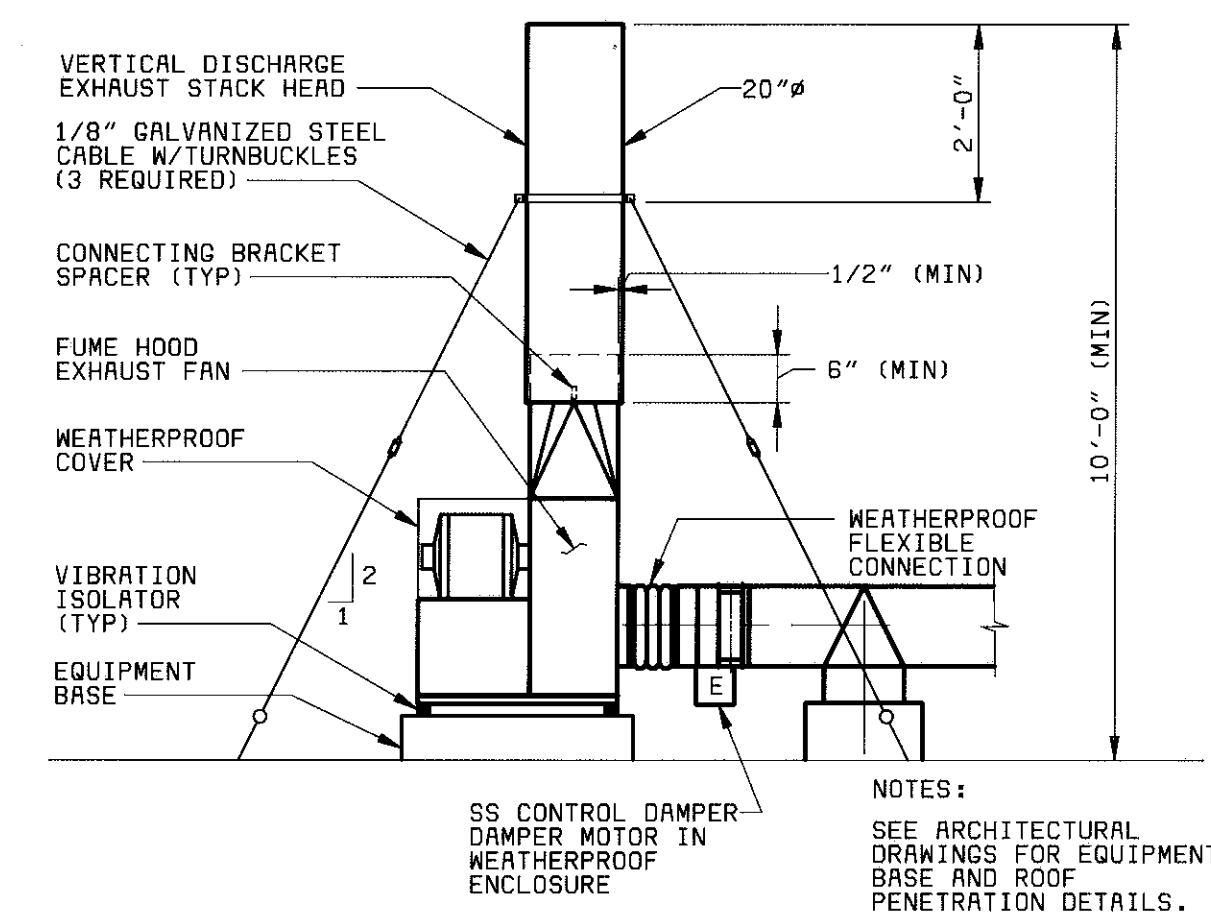
ELECTRIC DUCT HEATER CONNECTION (E)
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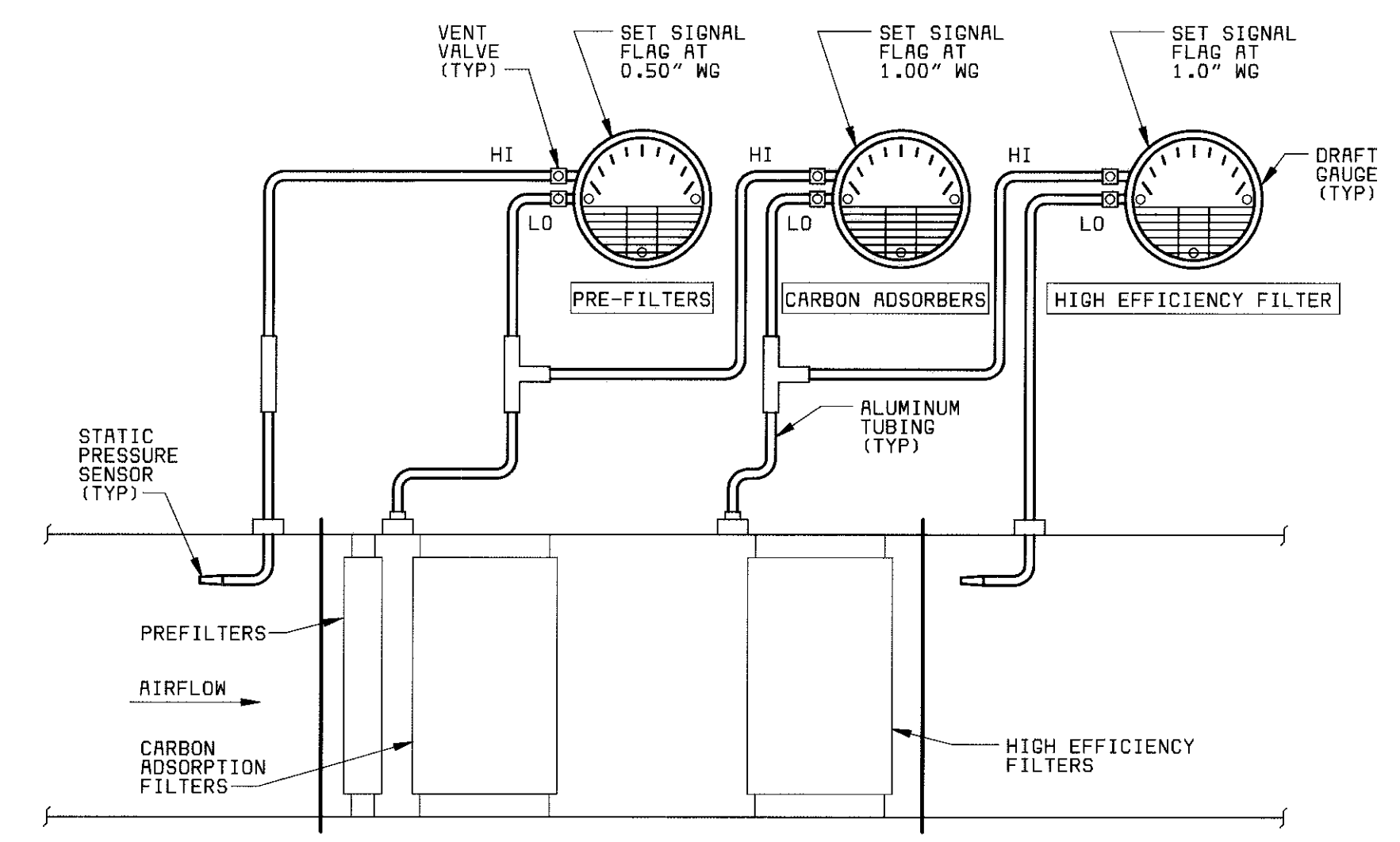
ROOFTOP AIR CONDITIONING UNIT (F)
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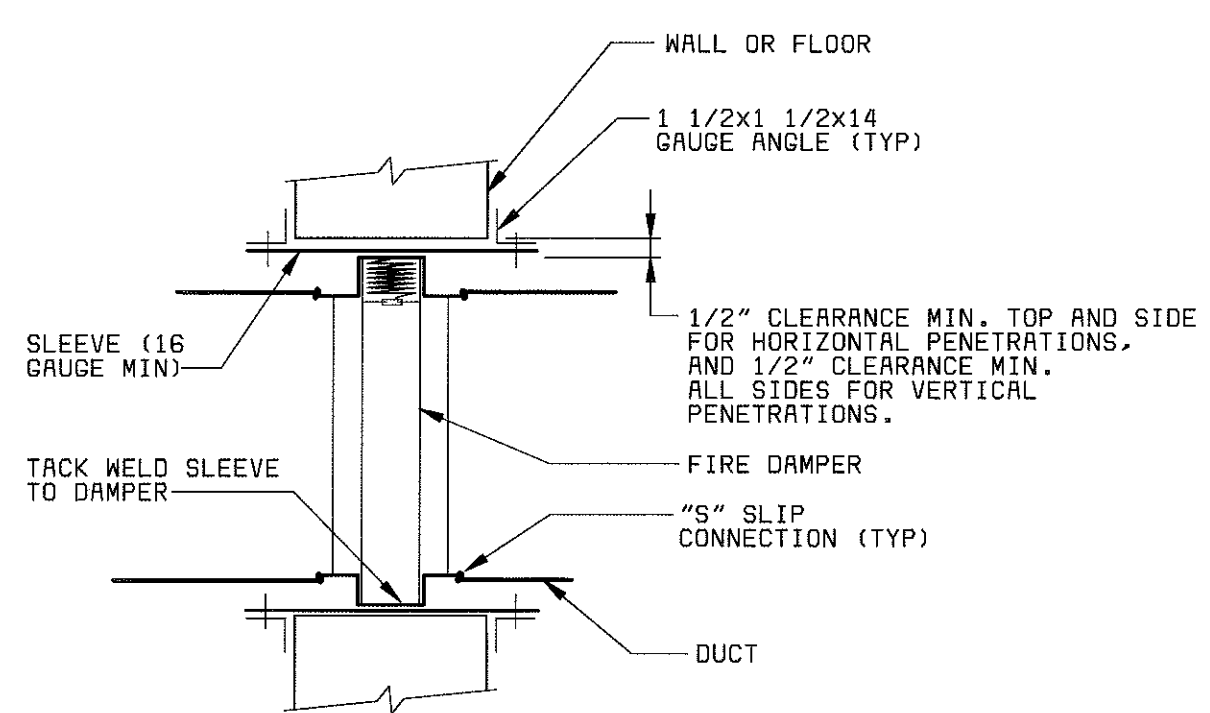
CEILING DIFFUSER (G)
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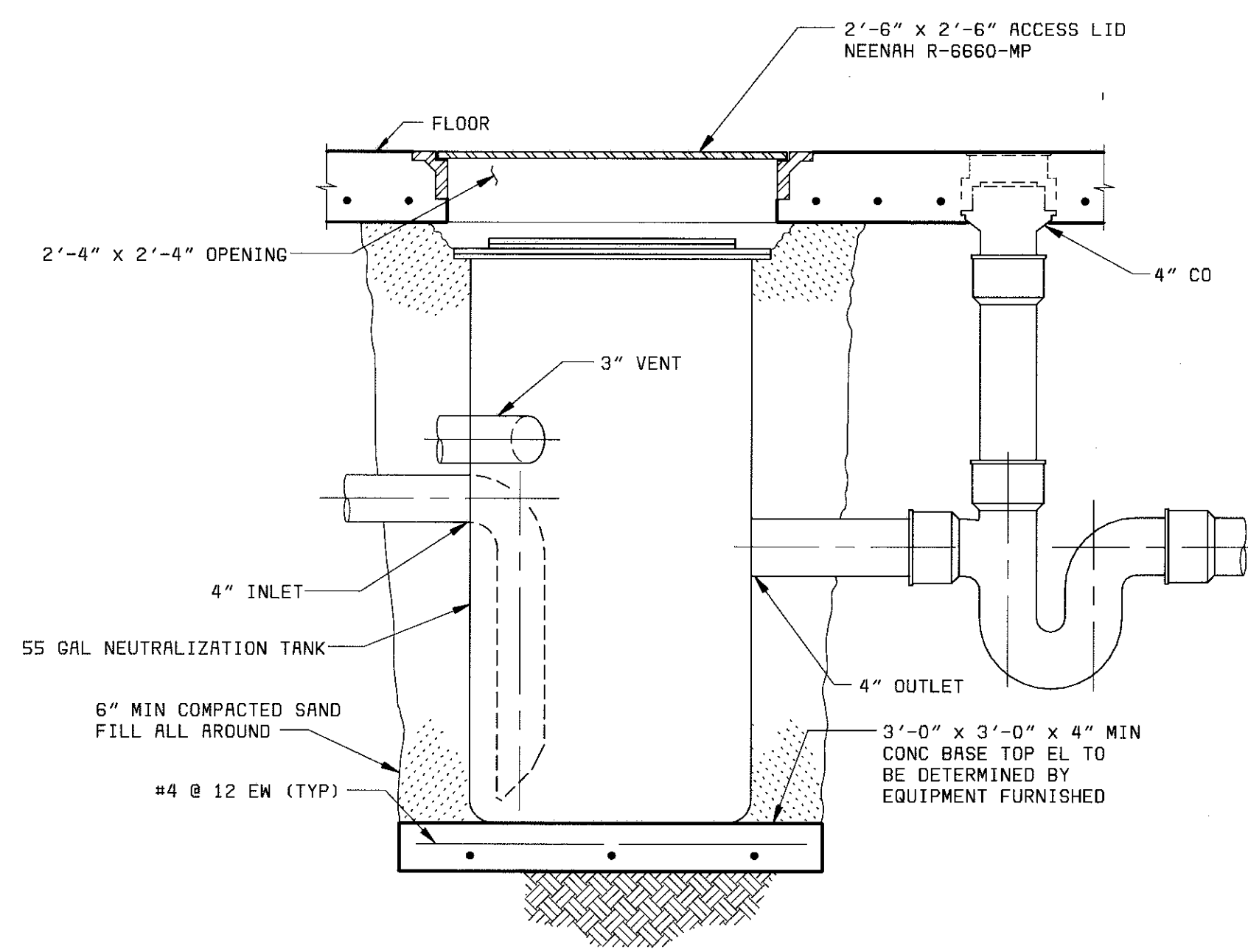
FUME HOOD EXHAUST FAN (H)
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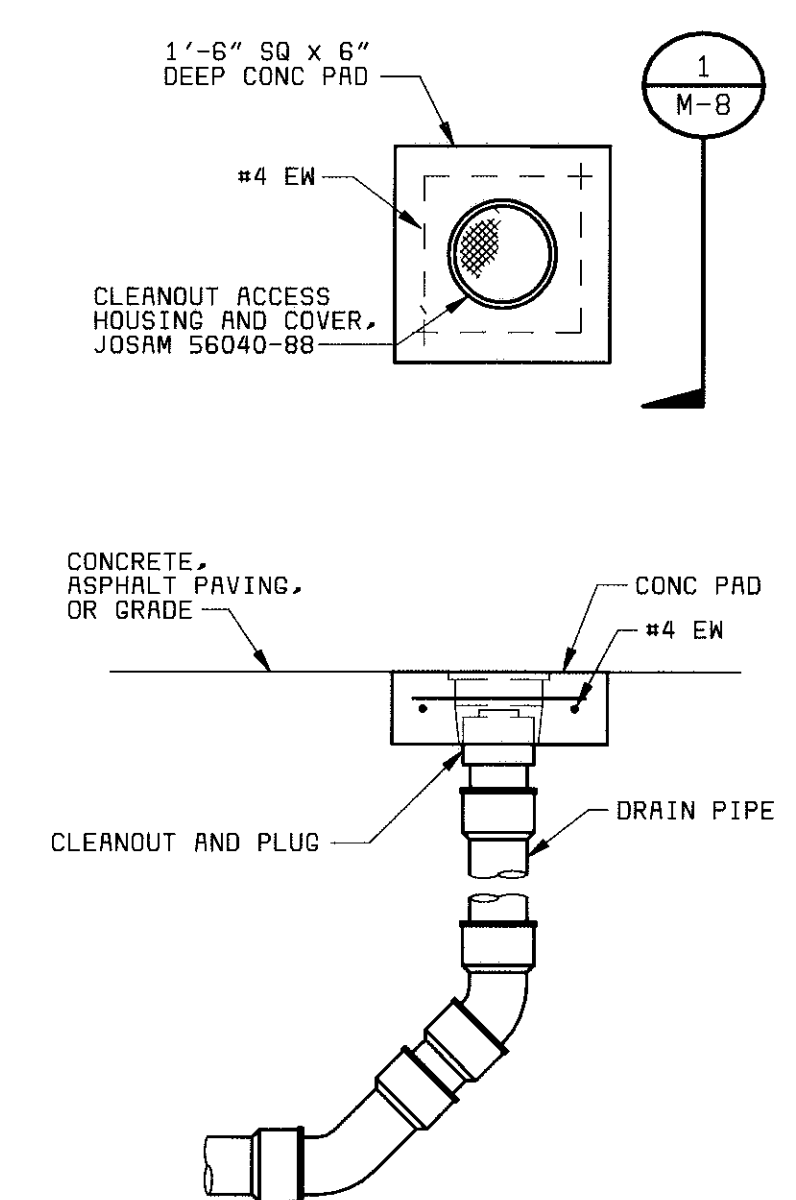
THREE GAUGE SYSTEM (J)
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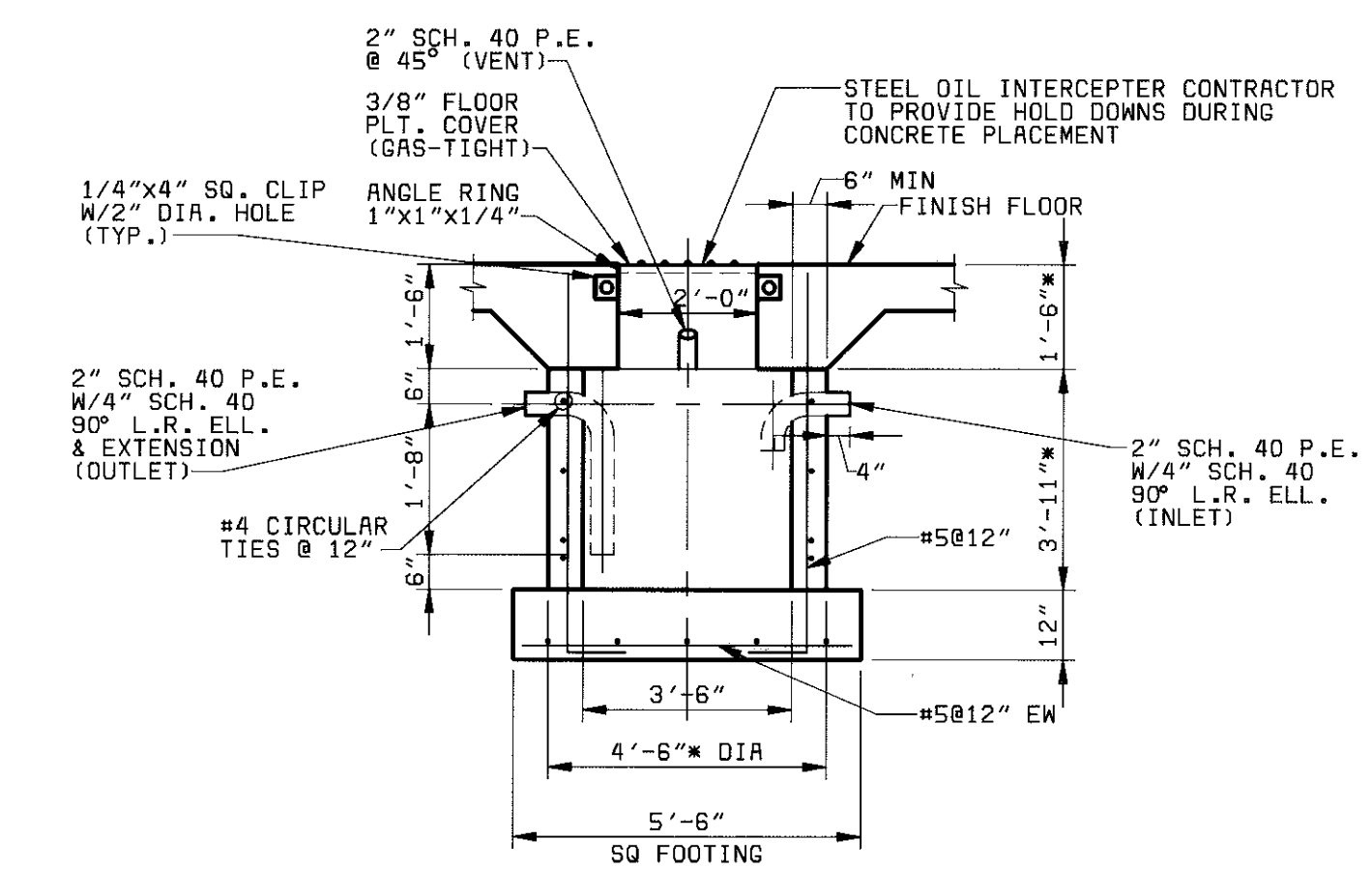
FIRE DAMPER (K)
NO SCALE



SECTION L (L)
NO SCALE



SECTION M (M)
NO SCALE



SECTION N (N)
NO SCALE

CLEANOUT UP TO GRADE (M)
NO SCALE

PROJECT RECORD

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION
MECHANICAL DETAILS

PROJECT NO.
28551

M-8

SHEET
OF

21-41

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A

B

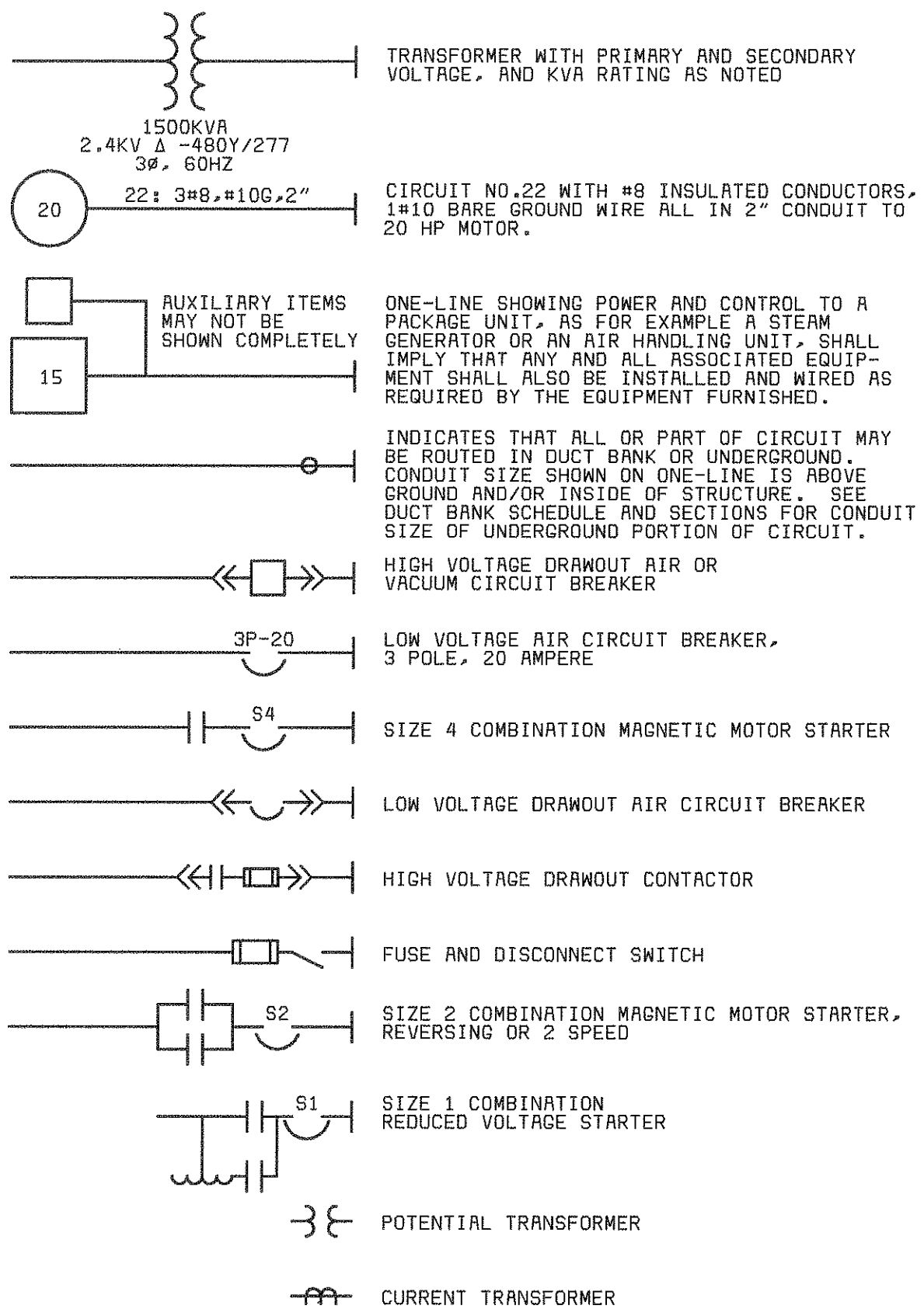
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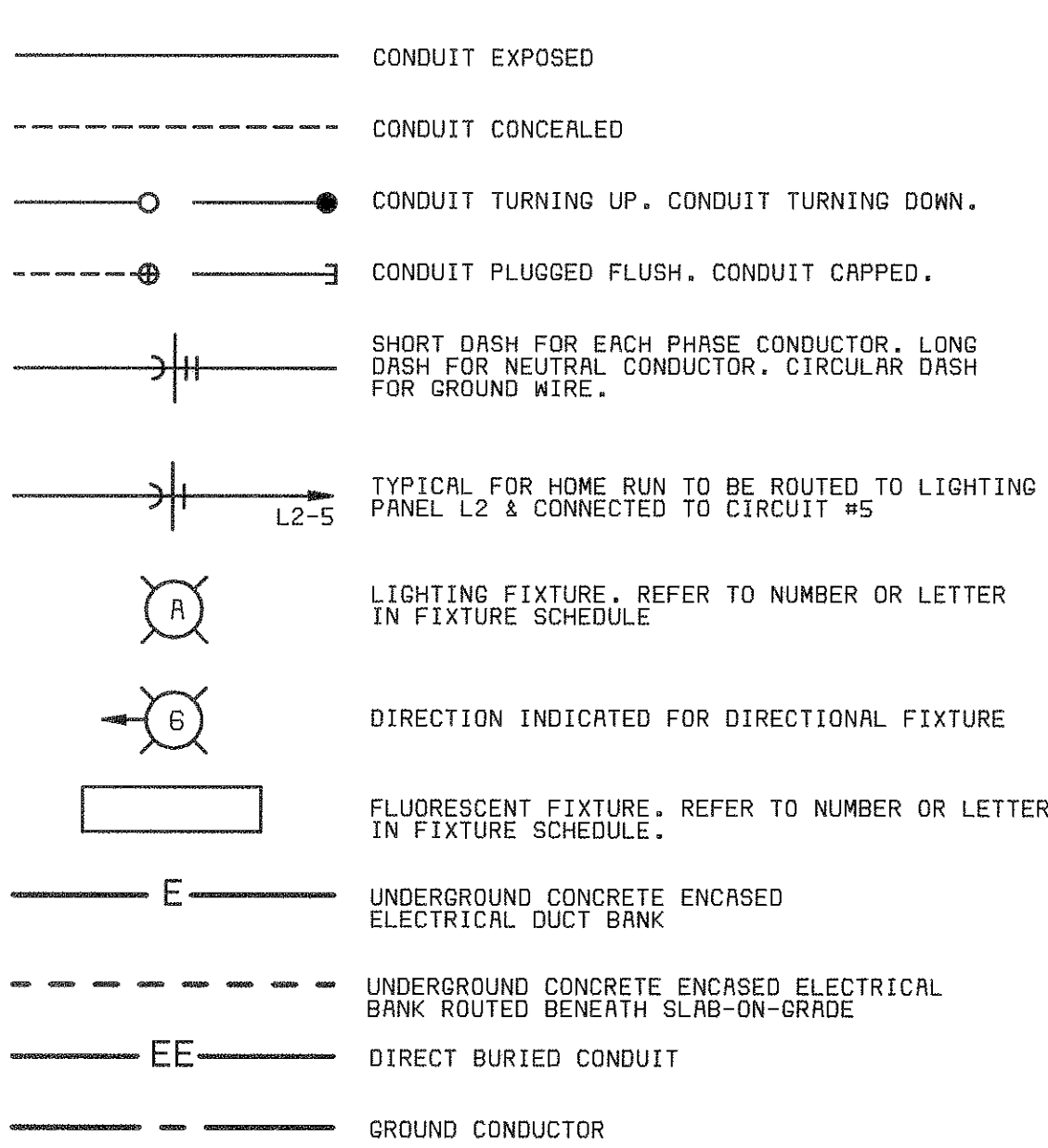
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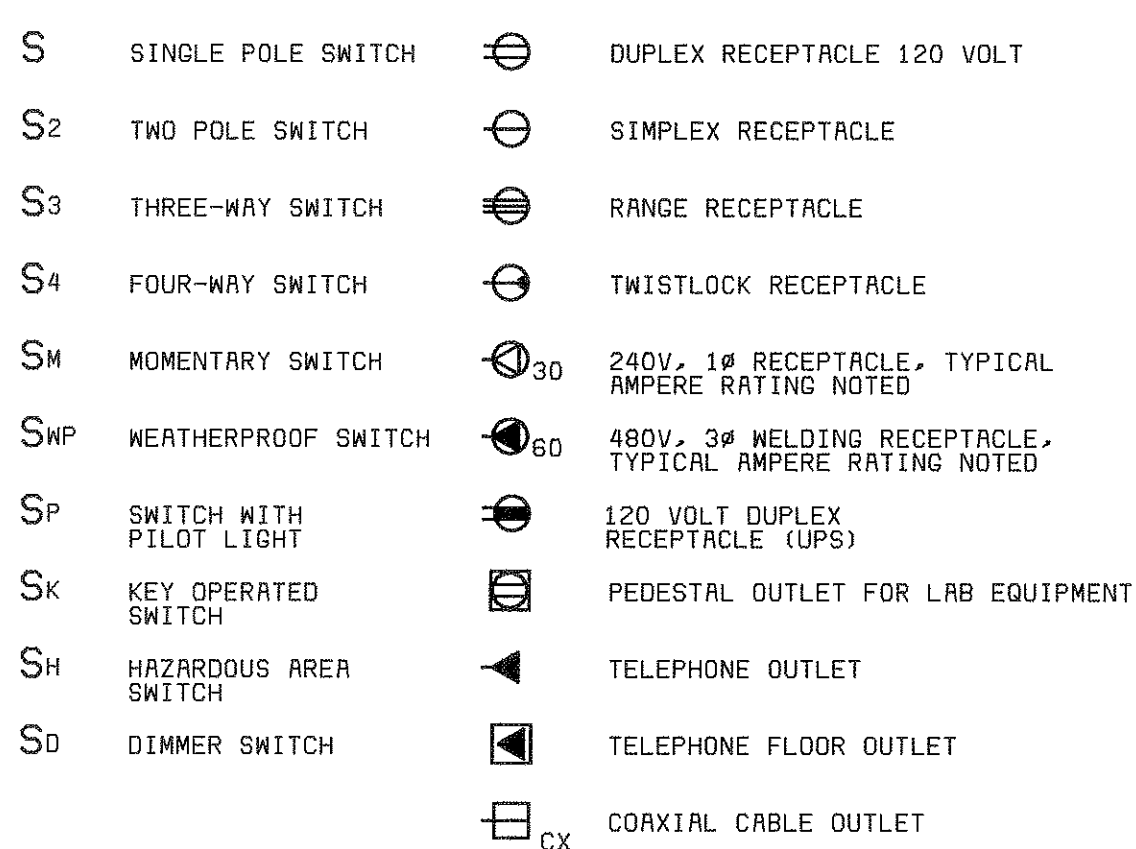
ONE-LINE DIAGRAM LEGEND



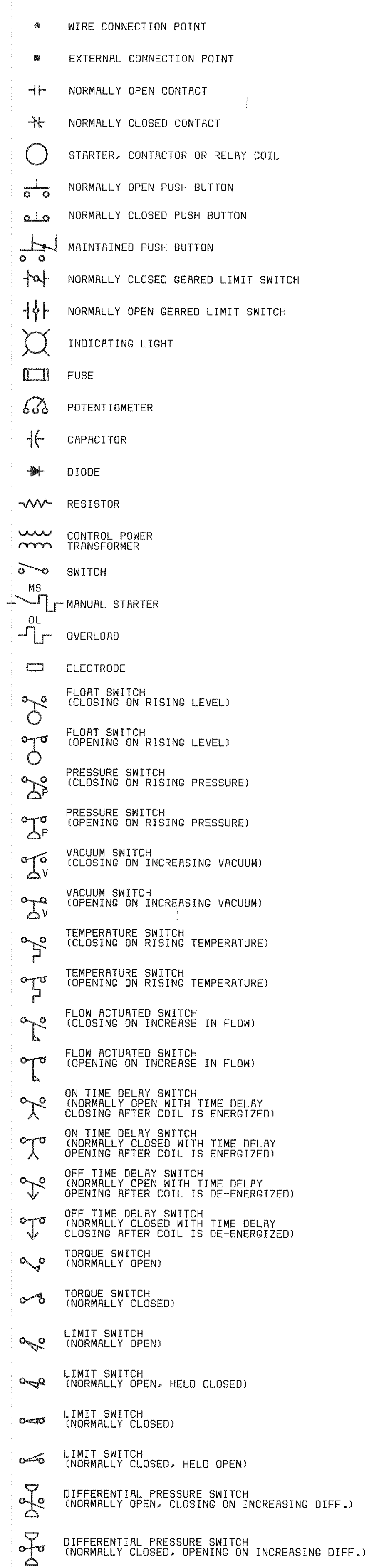
CONDUIT & WIRING INSTALLATION LEGEND



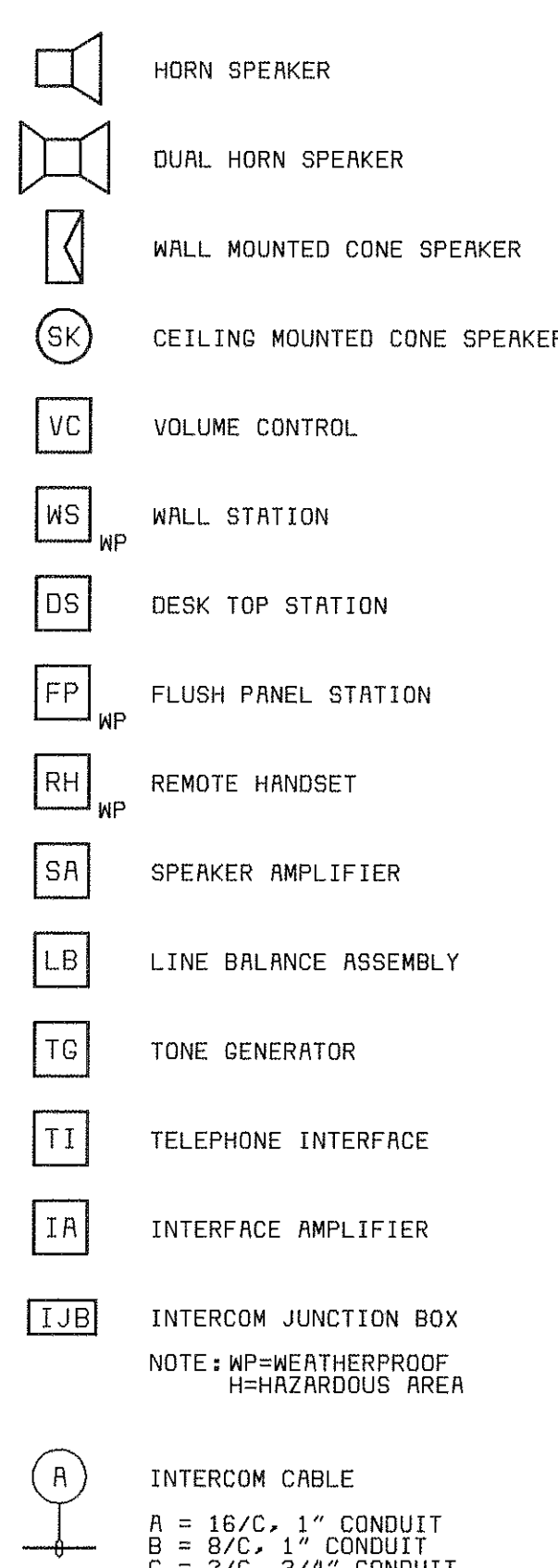
SWITCH & OUTLET SYMBOLS



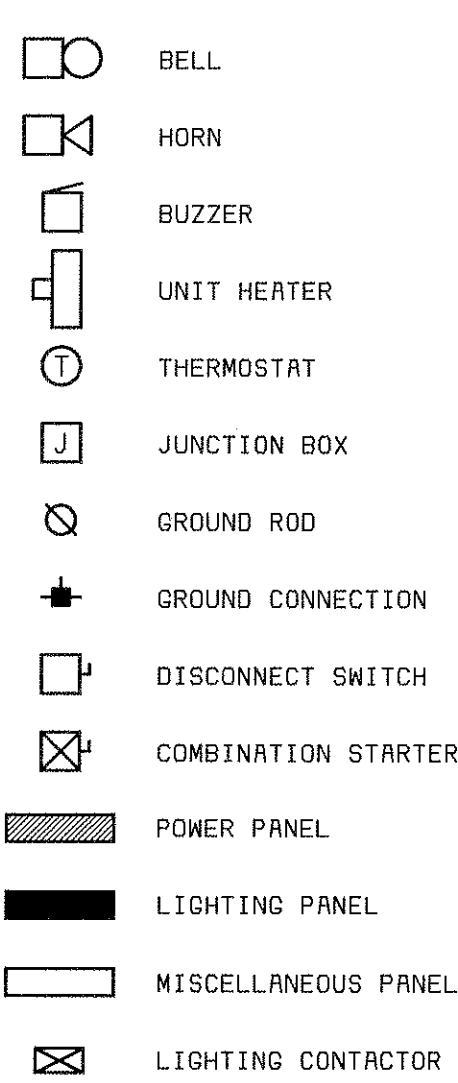
SCHEMATIC SYMBOLS



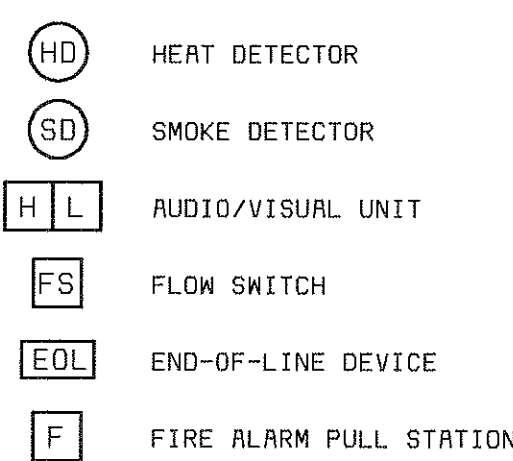
COMMUNICATION SYMBOLS



MISCELLANEOUS SYMBOLS



FIRE ALARM SYSTEM LEGEND



ABBREVIATIONS

A	AMBER, AMPERE, ALARM	M	MAGNETIC MOTOR STARTER
AC	ALTERNATING CURRENT	MA	MILLIAMPERE
ACB	AIR CIRCUIT BREAKER	MCC	MOTOR CONTROL CENTER
AFD	ADJUSTABLE FREQUENCY DRIVE	MCLU	MOTOR CONTROL LINEUP
AM	AMMETER	MCM	THOUSAND CIRCULAR MIL
ANN	ANNUNCIATOR	MD	MOISTURE DETECTOR
AR	ALARM RELAY	MFM	MAGNETIC FLOW METER
AS	AMMETER SWITCH	MFR	MANUFACTURER
AWG	AMERICAN WIRE GAGE	MH	MANHOLE OR MOUNTING HEIGHT
		MOV	MOTOR OPERATED VALVE
		MS	MANUAL MOTOR STARTER
BC	BATTERY CHARGER	MSH	MOTOR SPACE HEATER
BR	BRAKE	MV	MILLIVOLT
BT	BEARING TEMPERATURE	MVA	MEGA VOLT AMPERE
C	CLOSE, COUNTER OR CONTACTOR	N	NEUTRAL
CAP	CAPACITOR	NC	NORMALLY CLOSED
CB	CIRCUIT BREAKER	NO	NORMALLY OPEN, NUMBER
CB"A"	CIRCUIT BREAKER AUXILIARY CONTACT (OPEN WHEN BREAKER IS OPEN OR TRIPPED CLOSED WHEN BREAKER IS CLOSED)		
CB"B"	CIRCUIT BREAKER AUXILIARY CONTACT (CLOSED WHEN BREAKER IS OPEN OR TRIPPED OPEN WHEN BREAKER IS CLOSED)	O	OPEN
		OCB	OIL CIRCUIT BREAKER
CI	CELL INTERLOCK	OL	OVERLOAD
CKT	CIRCUIT		
CL2	CHLORINE	P	PRIMARY
COS	CABLE OPERATED SWITCH	PB	PUSH BUTTON OR PULL BOX
CP	CONTROL PANEL	PC	PROGRAMMABLE CONTROLLER
CPT	CONTROL POWER TRANSFORMER	PF	POWER FACTOR METER
CR	CURRENT OR CONTROL RELAY	PH	PHASE, CHEMICAL TERM
CS	CONTROL STATION	PRS	PROXIMITY SWITCH
CT	CYCLE TIMER OR CURRENT TRANSFORMER	PS	PRESSURE SWITCH
CTC	CYCLE TIMER CLUTCH	PT	POTENTIAL TRANSFORMER, PROGRAM TIMER
CTM	CYCLE TIMER MOTOR	2P	2 POLE
2/C	2 CONDUCTOR		
4/C	4" CONDUIT		
		R	RED, RAISE, RELAY OR REVERSE
DC	DIRECT CURRENT	RECP	RECEPTACLE
DI	DOOR INTERLOCK	RES	RESISTOR
DM	DAMPER MOTOR OR DEMAND METER	RT	REPEATING TIMER
DPDT	DOUBLE POLE DOUBLE THROW	RTD	RESISTANCE TYPE TEMP DETECTOR
DPST	DOUBLE POLE SINGLE THROW	RTU	REMOTE TERMINAL UNIT
DPR	DIFFERENTIAL PRESSURE REGULATOR		
DPS	DIFFERENTIAL PRESSURE SWITCH	S2	SIZE 2 STARTER
DS	DISCONNECT SWITCH	SH	SPACE HEATER
DVLS	DISCHARGE VALVE LIMIT SWITCH	SN	SOLID NEUTRAL
		SO	SOLENOID OILER
EC	EMPTY CONDUIT	SP	SINGLE POLE
EL	ELEVATION OR EMERGENCY LIGHT	SPDT	SINGLE POLE DOUBLE THROW
EMH	ELECTRICAL MANHOLE	SPST	SINGLE POLE SINGLE THROW
ER	ELECTRODE RELAY	SS	SELECTOR SWITCH
ES	END SWITCH	SUPV	SUPERVISORY CONTROL
ETM	ELAPSED TIME METER	SV	SOLENOID VALVE
EX	EXISTING	SWGR	SWITCHGEAR
F	FORWARD	T	THERMOSTAT, TIMER, OR TOTALIZER
FS	FLOW SWITCH	TACH	TACHOMETER
		TB	TERMINAL BLOCK
G	GREEN OR GROUND	TC	TIMER CLUTCH
GO	GROUND DETECTOR	TD	TIME DELAY RELAY
GEN	GENERATOR	TEMP	TEMPERATURE
GFI	GROUND FAULT INTERRUPTER	TM	TIMER MOTOR
GLS	GEARED LIMIT SWITCH	TQ	TORQUE
#GG	#8 GROUND WIRE	TTB	TELEPHONE TERMINAL BOX
H	HIGH OR HUMIDISTAT	UG	UNDERGROUND
HC	HOT CIRCUIT	UV	UNDER VOLTAGE
HH	HANDHOLE	UPS	UNINTERRUPTIBLE POWER SUPPLY
HMT	HIGH MOTOR TEMPERATURE		
HOR	HAND-OFF-AUTO	V	VOLTS
HP	HORSEPOWER	VA	VOLT AMPERE
HWCO	HIGH WATER CUTOFF	VLS	VALVE LIMIT SWITCH
HZ	HERTZ (CYCLE)	VM	VOLTMETER
		VPI	VALVE POSITION INDICATOR
		VS	VOLTMETER SWITCH
I/O	INPUT/OUTPUT	W	WHITE OR WATTS
INST	INSTANTANEOUS	WH	WATTHOUR METER
J	JUNCTION BOX	WM	WATT METER
JB	JUNCTION BOX	WP	WEATHERPROOF
K	KEY INTERLOCK	X	AUXILIARY RELAY
KV	KILOVOLT	XFMR	TRANSFORMER
KVA	KILOVOLT AMPERE	XP	EXPLOSION PROOF
KVAR	KILOVAR		
KW	KILOWATT		
KWH	KILOWATT HOUR	Y	YELLOW
L	LOW, LEVEL	Z	AUXILIARY RELAY
LA	LIGHTNING ARRESTER	ZS	POSITION SWITCH
LC	LIGHTING CONTACTOR		
LOR	LOCAL-OFF-REMOTE		
LS	LIMIT OR LEVEL SWITCH		
LWCO	LOW WATER CUTOFF		

1-1PR#16S	ONE, SINGLE PAIR, TWISTED, SHIELDED #16 CABLE
3-7/C#14	THREE, SINGLE, SEVEN CONDUCTOR #14 MULTICONDUCTOR CONTROL CABLES

AREA DESIGNATIONS

THE SPECIAL AREA DESIGNATION BOXES, AS DEFINED BELOW, ARE LOCATED ON THE PLAN DRAWINGS TO DEFINE ELECTRICAL INSTALLATION REQUIREMENTS. DESIGNATION BOXES ARE LOCATED WITHIN ROOM OR BELOW ROOM NUMBER. ALL INDOOR AREAS NOT INDICATED OTHERWISE ARE AREA TYPE I AND MINIMUM NEMA TYPE 1 ENCLOSURES.	
AREA TYPE 1A	CORROSIVE CHEMICAL FEED AND STORAGE ROOMS. CONDUIT SYSTEM SHALL BE EXPOSED PVC RIGID NON-METALLIC CONDUIT WITH PVC FITTINGS, BOXES, AND ACCESSORIES.
AREA TYPE 4	INDOOR WET LOCATIONS SUCH AS VAULTS, HOSEDOWN AREAS, BASEMENTS, ETC. MINIMUM NEMA TYPE 4 ENCLOSURE FOR EQUIPMENT AND GASKETED FITTINGS IN A CONDUIT SYSTEM.
AREA TYPE 7A	CLASS 1, DIVISION 1 AREA AS DEFINED BY NEC. ALL EQUIPMENT AND CONDUIT SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.
AREA TYPE 7B	CLASS 1, DIVISION 2, GROUP C AND D (METHANE, GASOLINE) AS DEFINED BY NEC. EQUIPMENT AND CONDUITS SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.
AREA TYPE 12	INDOOR, DRY, DIRTY AREA. REQUIRES MINIMUM NEMA TYPE 12 GASKETED ENCLOSURES FOR ALL EQUIPMENT AND GASKETED FITTINGS IN CONDUIT SYSTEMS.

GENERAL REQUIREMENTS

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS NOT SHOWN ON THE PLANS. THIS SHALL INCLUDE ALL CONDUITS SHOWN ON THE ONE-LINES AND HOME-RUNS SHOWN ON THE PLAN DRAWINGS. CONDUITS SHALL BE ROUTED AS DEFINED IN THE SPECIFICATIONS.
- SPARE WIRES SHALL BE TAPED AND COILED.
- IF EQUIPMENT SUPPLIED BY MANUFACTURER HAS A LARGER LOAD THAN VALUE SHOWN, THE CABLE CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE ENLARGED, AS REQUIRED, TO ACCOMMODATE THE HIGHER VALUE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING PROPERLY SIZED STARTER OVERLOADS FOR EQUIPMENT FURNISHED.
- LIGHTING AND RECEPTACLE CIRCUITS SHOWN ON THE FLOOR PLANS ARE NOT SHOWN ON THE ONE-LINES.
- IN AREAS WHERE THERE ARE OVERHEAD BRIDGE CRANES, HOISTS, ETC., NO CONDUITS SHALL BE RUN OVERHEAD THAT WILL INTERFERE WITH THE OPERATION OF THE EQUIPMENT.

GENERAL NOTES

- SOLID LINES (————) INDICATE NEW WORK OR EQUIPMENT.
- SCREENED LINES (————) INDICATE EXISTING WORK OR EQUIPMENT.
- DASHED LINES (--- ---) INDICATE FUTURE WORK OR EQUIPMENT.
- THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
- INFORMATION RELATED TO CIRCUIT IDENTIFICATION, WIRE & CONDUIT SIZES, AND ROUTING, IS ON THE FOLLOWING DRAWING TYPES.
 - ONE-LINE DIAGRAMS SHOW CIRCUIT IDENTIFICATION, WIRE QUANTITY AND SIZES, AND CONDUIT SIZE WITHIN STRUCTURES. ONE-LINE DIAGRAMS ALSO INDICATE ORIGIN AND DESTINATION OF CIRCUITS, AND IDENTIFY CIRCUITS ROUTED UNDERGROUND.
 - FOR CIRCUITS WITHOUT UNDERGROUND PORTIONS, BUILDING FLOOR PLANS SHOW LOCATION OF EQUIPMENT FOR DETERMINING CIRCUIT LENGTH WITHIN THE STRUCTURE. FOR CIRCUITS WITH UNDERGROUND PORTIONS, ANTICIPATED PENETRATION OF UNDERGROUND CONDUITS ARE SHOWN ON STRUCTURE PLANS FOR DETERMINING THE LENGTH OF THE IN-STRUCTURE PORTIONS OF CIRCUITS. BUILDING FLOOR PLANS MAY ALSO SHOW HOME RUNS FOR LIGHTING, RECEPTACLE, AND OTHER MISCELLANEOUS EQUIPMENT CIRCUITS.
 - SITE PLANS INDICATE THE GENERAL ROUTING OF UNDERGROUND CONDUITS AND DUCT BANKS. CIRCUITS ROUTED IN UNDERGROUND CONDUITS OR DUCT BANKS ARE INDICATED IN DUCT BANK SECTIONS REFERENCED ON THE SITE PLAN.
 - DUCT BANK SECTIONS AND SCHEDULES IDENTIFY CONDUIT SIZE, CONDUIT MATERIAL, ARRANGEMENT OF THE UNDERGROUND CONDUITS, AND CIRCUITS ROUTED IN EACH UNDERGROUND CONDUIT.

PROJECT RECORD

DESIGNED _____ JCB
DETAILED _____ JCB
CHECKED _____ JRH
APPROVED _____
DATE _____



PROJECT NO.
28551

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

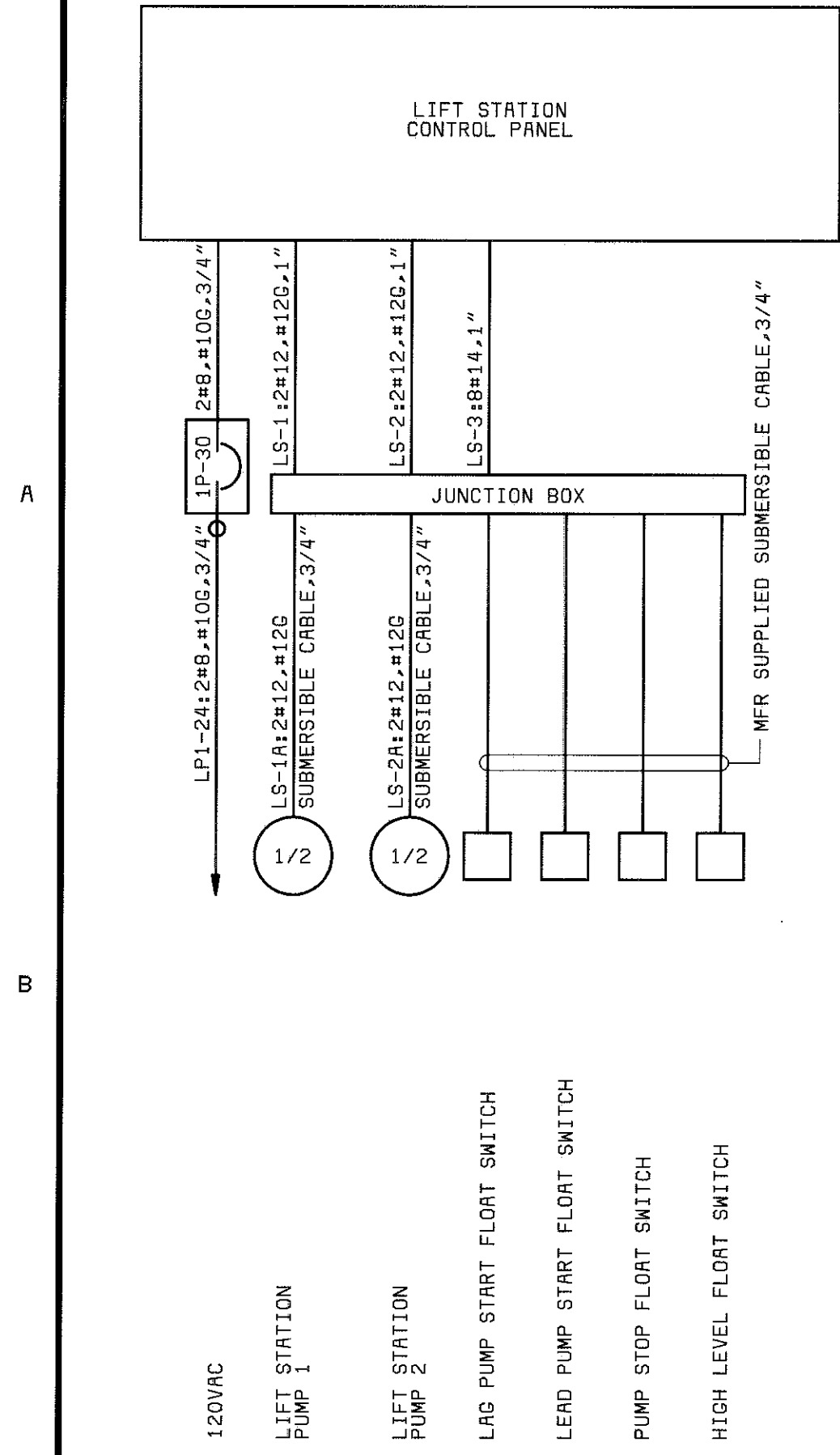
LABORATORY EXPANSION
ELECTRICAL
LEGEND & ABBREVIATIONS

21-41

E-1

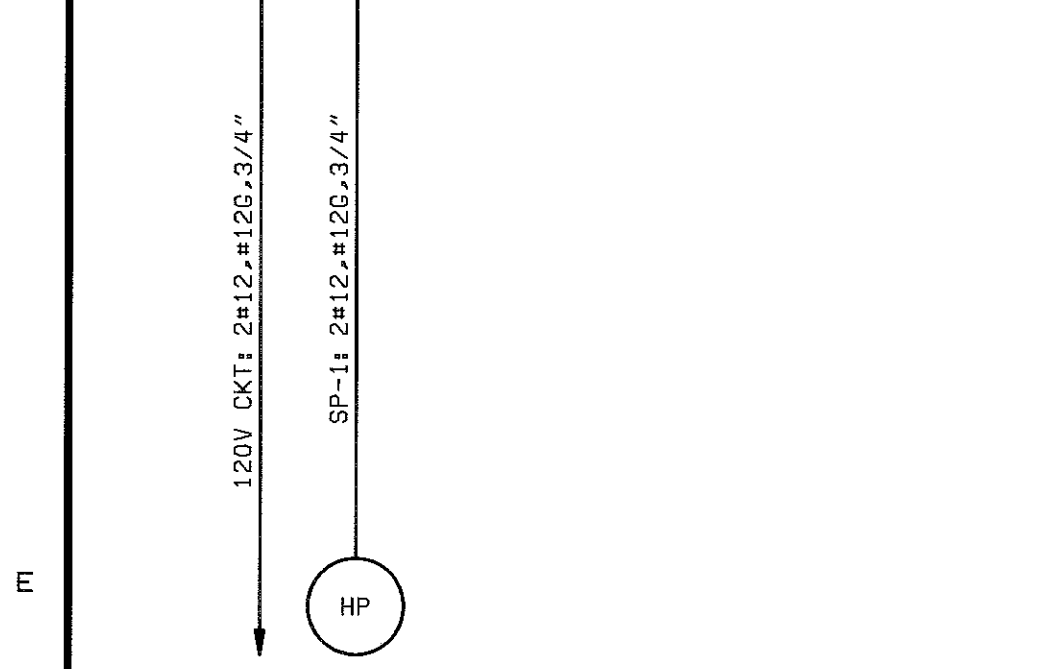
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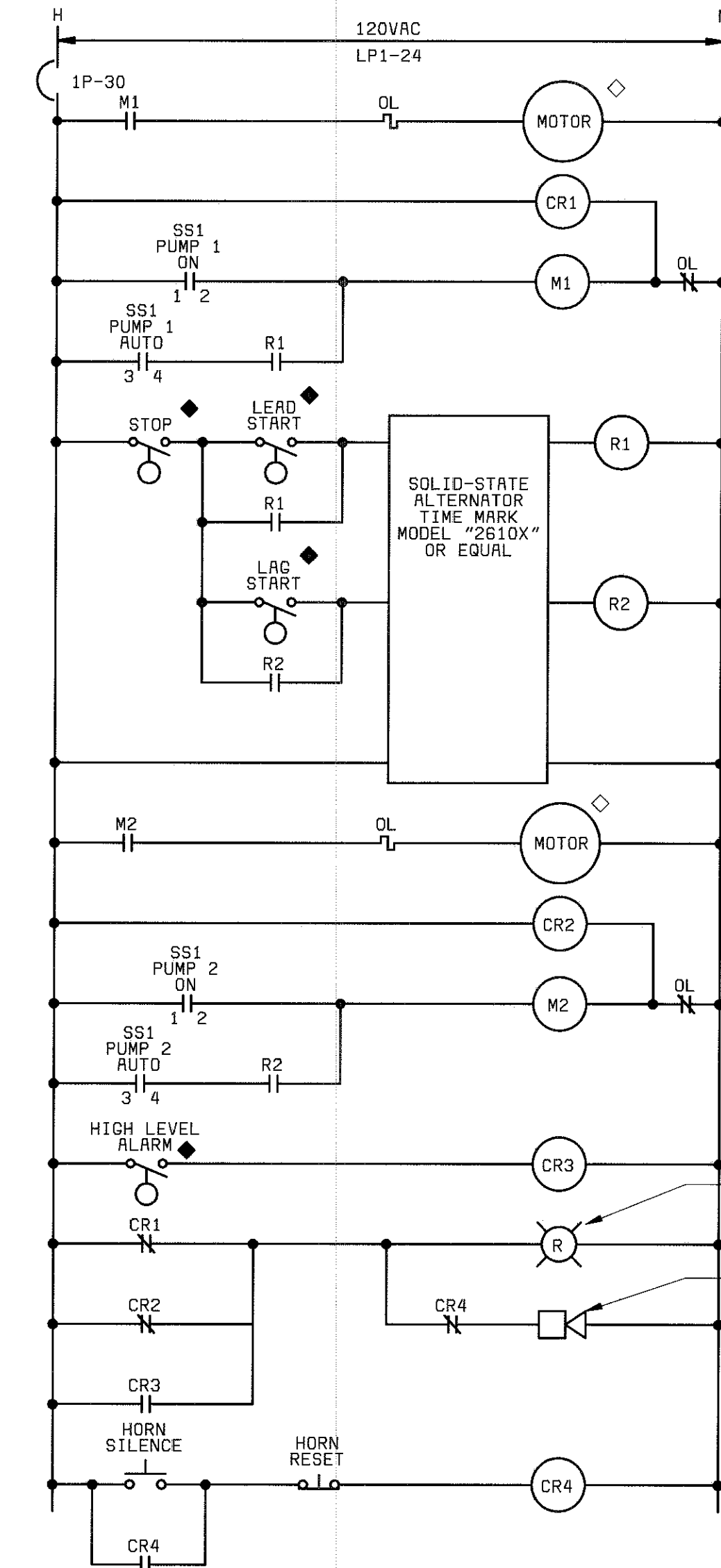


LIFT STATION CONTROL PANEL ONE-LINE

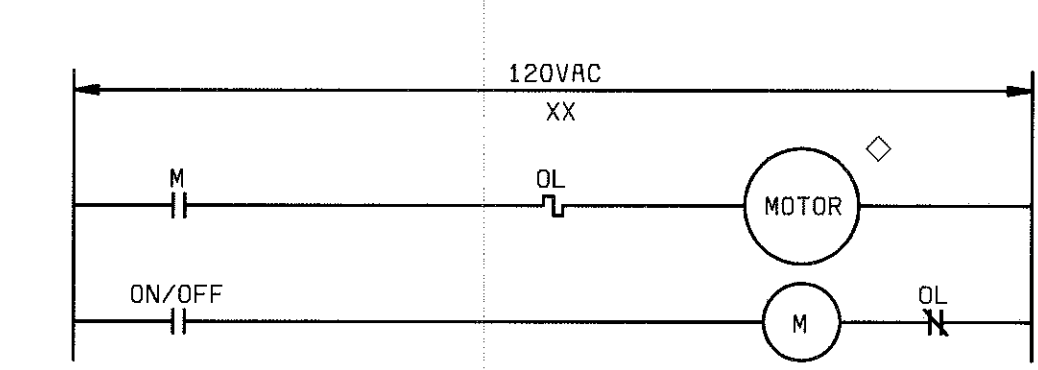
SAMPLE PUMP			HP
RAW WATER GROUND	3/4		1/2
RAW WATER SURFACE	3/4		1/2
RAPID MIX A-BASIN	3/4		1/2
RAPID MIX B-BASIN	3/4		1/2
RAPID MIX C-BASIN	3/4		1/2
FILTERED WATER GROUND	3/4		1/2
FILTERED WATER SURFACE	3/4		1/2
BLEND CHAMBER	3/4		1/2
POST MIX A1	3/4		1/2
POST MIX A2	3/4		1/2
POST MIX B	3/4		1/2
POST MIX C	3/4		1/2



TYPICAL SAMPLE PUMP ONE-LINE



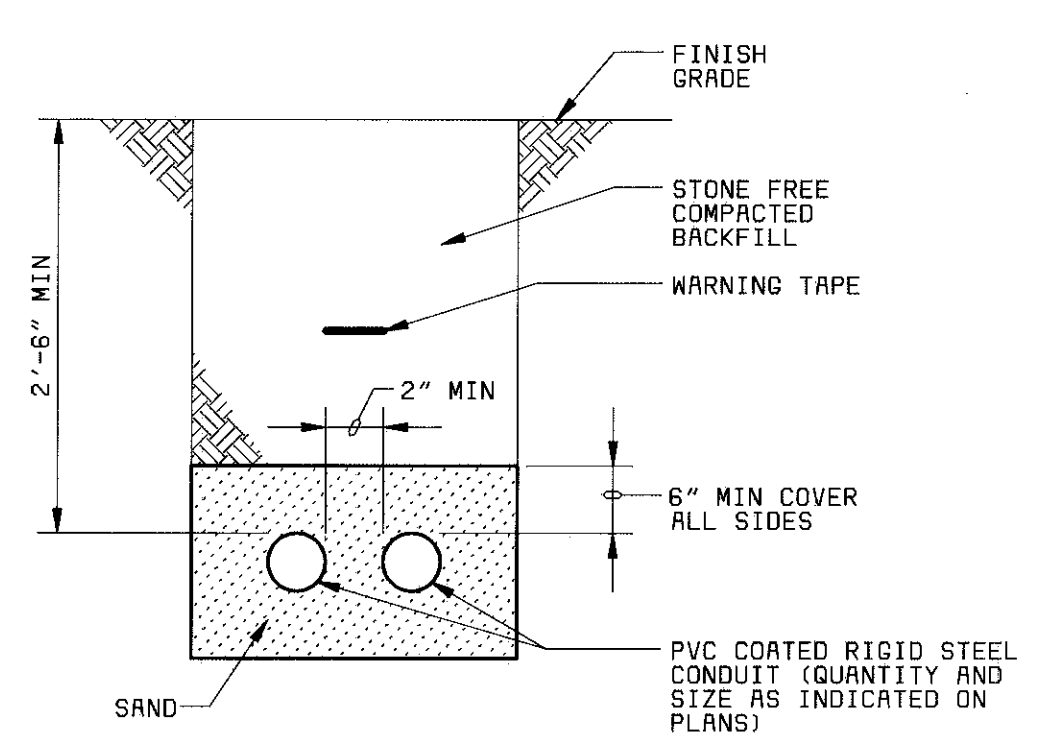
LIFT STATION PUMP CONTROL PANEL



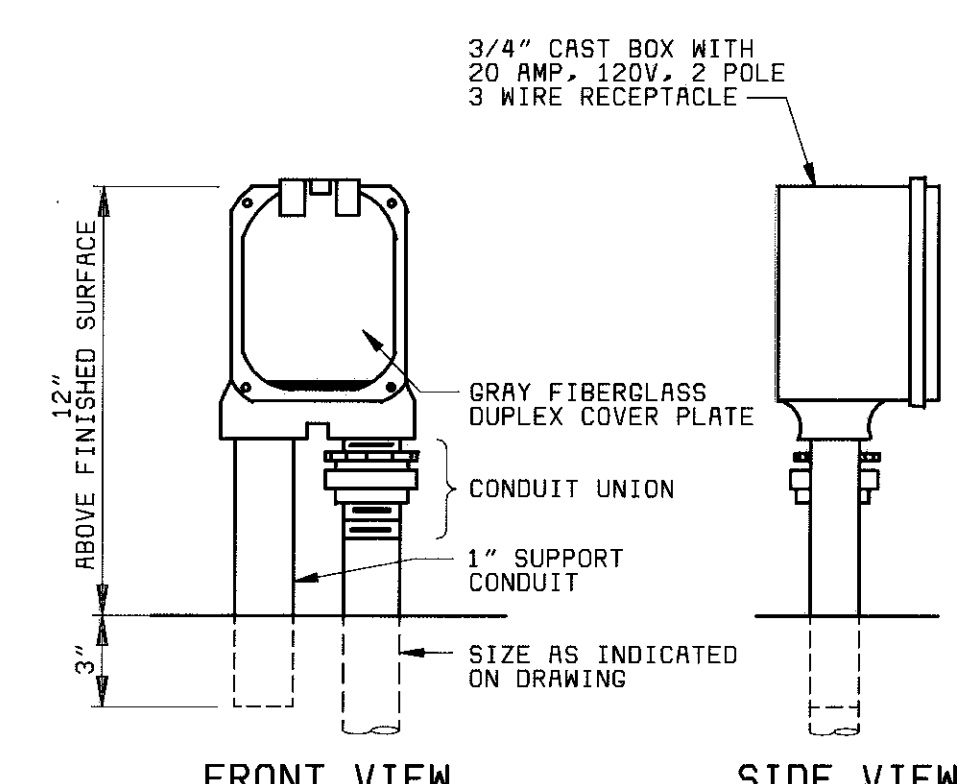
TYPICAL SAMPLE PUMP

EDWARDS ADAPTARCON ROTATING BEACON, NEMA 4X ENCLOSURE, MOUNTED ON TOP OF CONTROL PANEL, CAT. NO. SSR-NS-100WH

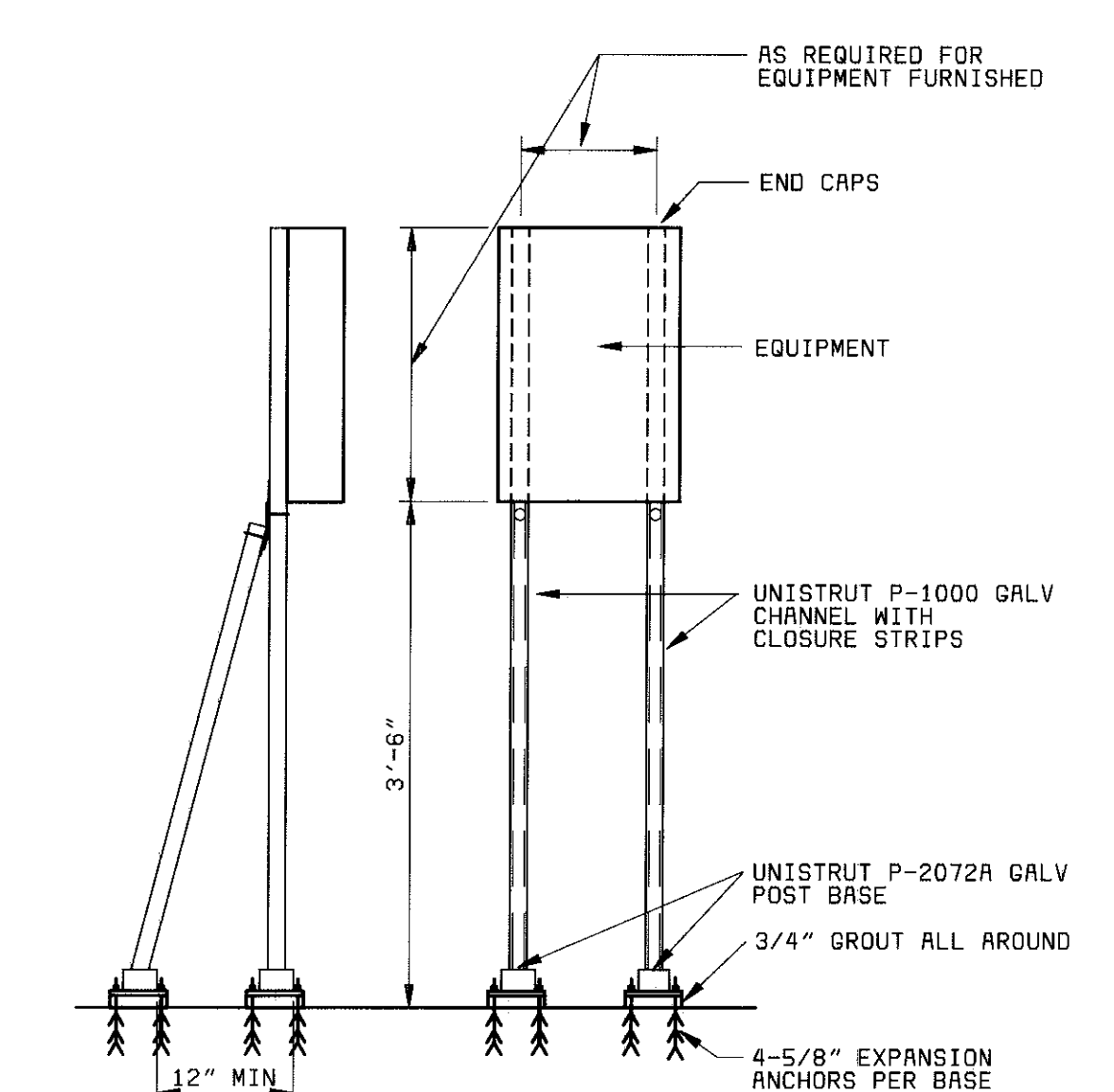
EDWARDS ADAPTA HORN, GRILLE WEATHERPROOF, CORROSION RESISTANT FINISH, CAT. NO. 876-NS



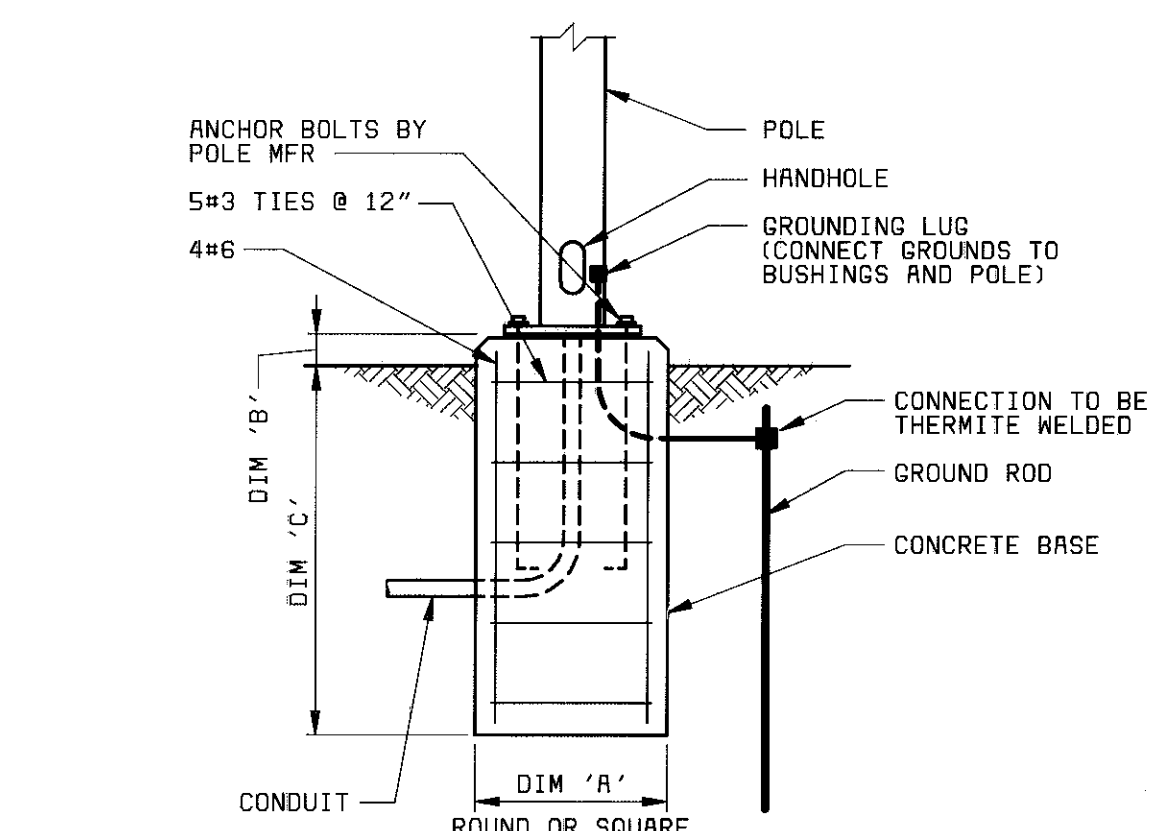
TYPICAL DIRECT BURIED CONDUIT SECTION



TYPICAL WEATHERPROOF RECEPTACLE MOUNTING DETAIL



TYPICAL EQUIPMENT MOUNTING DETAIL



TYPICAL LIGHTING POLE MOUNTING DETAIL

SELECTOR SWITCH DEVELOPMENT:			
CONTACTS	POSITION		
	ON	OFF	AUTO
1-2	X		
3-4			X

SYMBOL LEGEND:

- ◇ AT DRIVEN EQUIPMENT
- ◆ REMOTE FROM STARTER AND DRIVEN EQUIPMENT

- NOTES:
- SEE DRAWING E-1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
 - 120VAC POWER TO SAMPLE PUMPS SHALL ORIGINATE AT PANELS INDICATED ON PLAN DRAWING C-2. UTILIZE SPARE 1P-20 AMP CIRCUIT BREAKERS WHEN AVAILABLE. PROVIDE NEW 1P-20 AMP CIRCUIT BREAKERS FOR PANELS AS REQUIRED.
 - MANUAL MOTOR STARTERS FOR SAMPLE PUMPS ARE TO BE WALL-MOUNTED OR UNISTRUT MOUNTED PER TYPICAL EQUIPMENT MOUNTING DETAIL AS PUMP LOCATION NECESSITATES.
 - SEE SHEET C-2 FOR LOCATION OF SAMPLE PUMPS.
 - SEE SHEET C-3 FOR LIFT STATION PLAN.

PROJECT RECORD

DESIGNED SLK.MAP	PROJECT NO. 28551	MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP	E-4
DATE	28551	LABORATORY EXPANSION ELECTRICAL - MISCELLANEOUS ONE-LINES, SCHEMATICS & DETAILS	21-41
DATE			SHEET OF

08/04/98 13:42:42 RCD-12.C3

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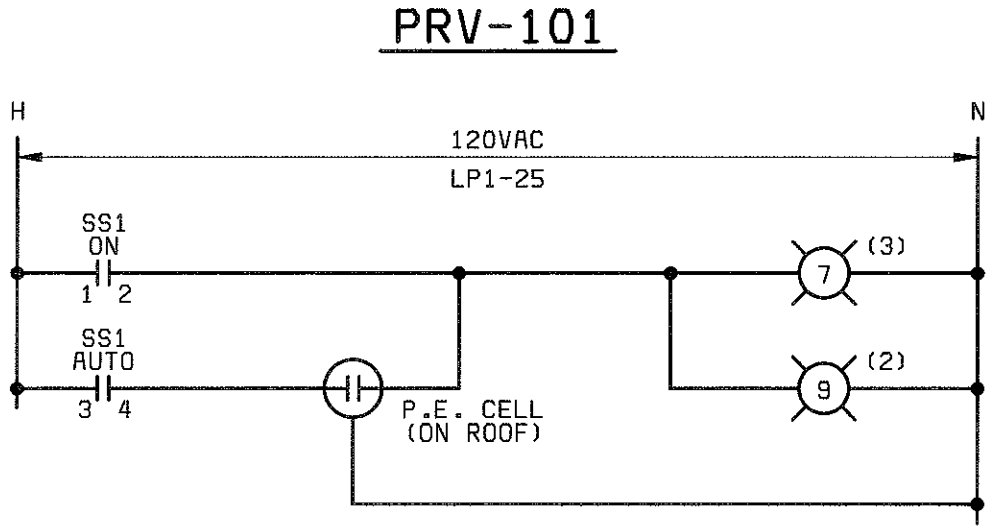
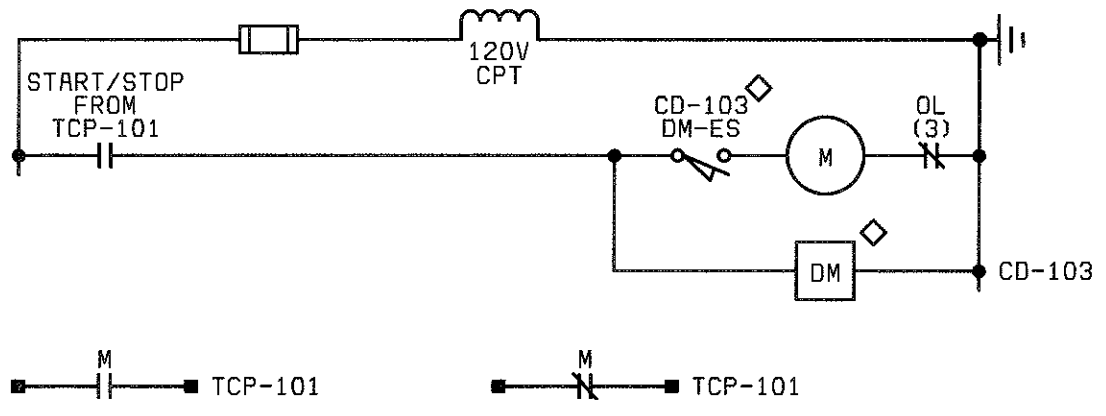
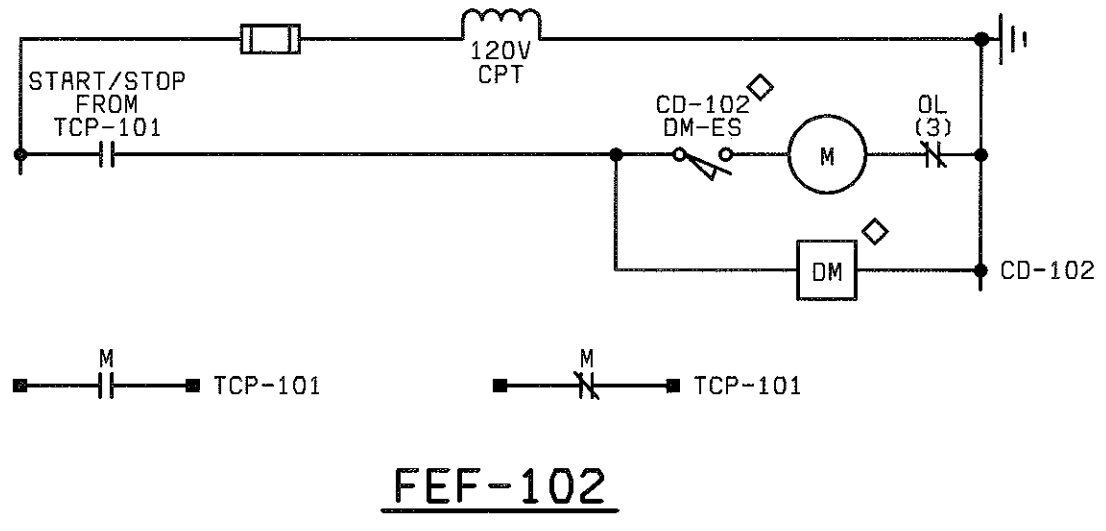
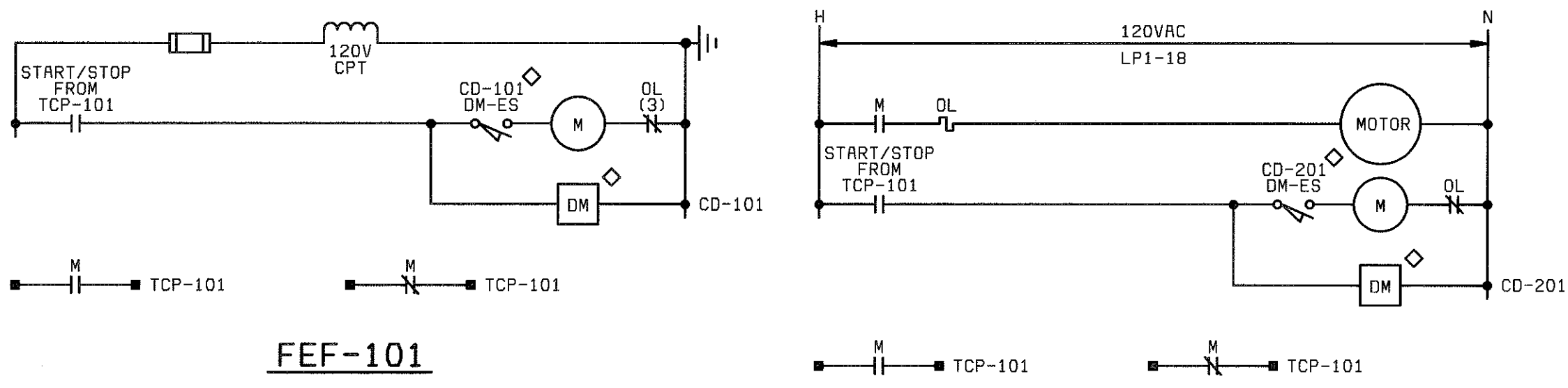
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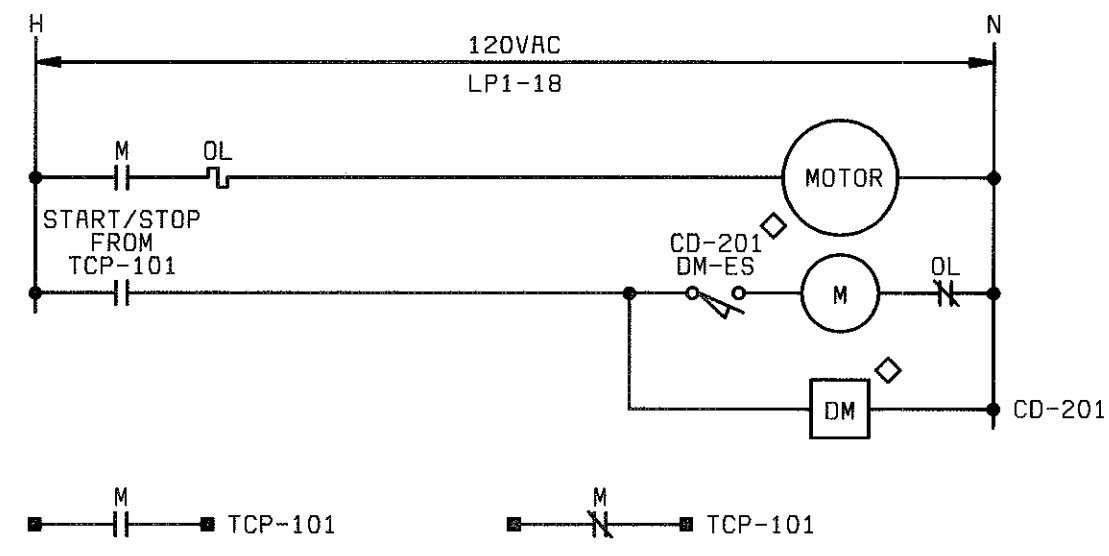
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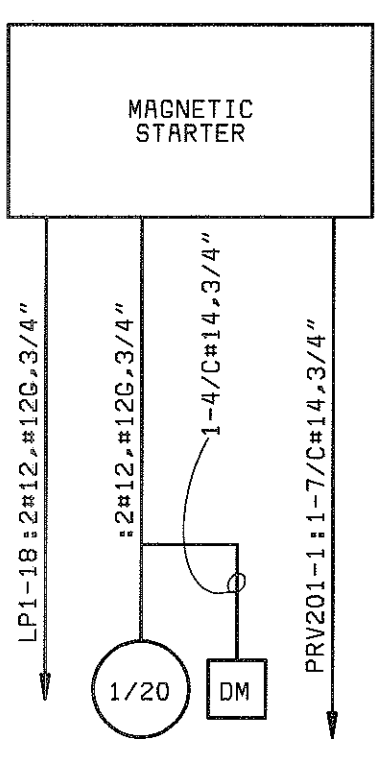
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OUTSIDE LIGHTING CONTROL



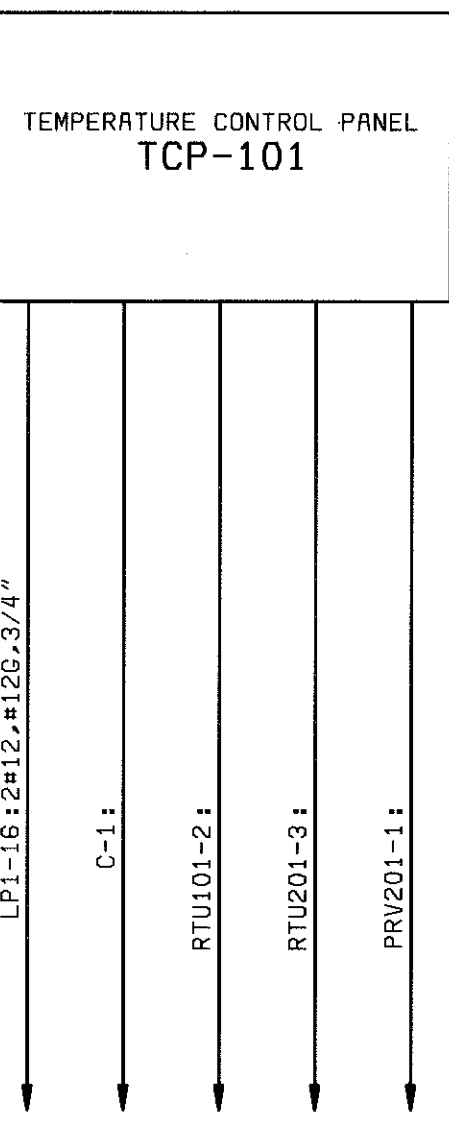
PRV-201



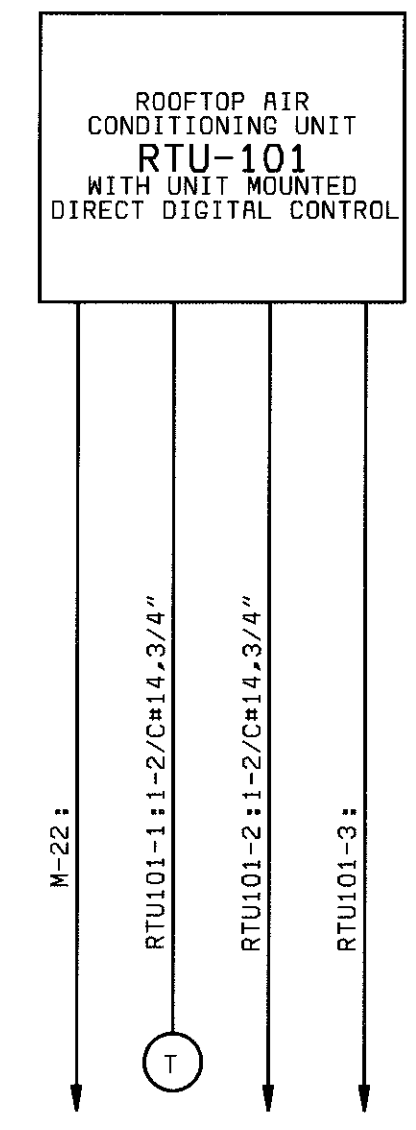
PRV-201 ONE-LINE

PANELBOARD: LP-1	BUS: COPPER	MAINS: 3P-100A MAIN BREAKER
SERVICE: 120/208V, 3Ø, 4W, S/N	RATING: 225A	LOCATION: MECHANICAL ROOM
MOUNTING: SURFACE		ROOM 123
LOAD	P BKR CKT# BKR P	LOAD
LIGHTS - CORRIDOR 101, 112, 125 & 131	1 20 1 2 20 1	RECP - RM 101, 124 & ROOF
LIGHTS - RM 102, 104 & 108	1 20 3 4 20 1	RECP - RM 123
LIGHTS - RM 103, 105, 106 & 107	1 20 5 6 20 1	RECP - RM 112, 113 & OUTSIDE
LIGHTS - RM 109 & 111	1 20 7 8 20 1	RECP - RM 101, 126, 127, 128 & OUTSIDE
LIGHTS - RM 110 & 111	1 20 9 10 20 1	RECP - RM 202, 203 & ROOF
LIGHTS - RM 114 THRU 119	1 20 11 12 20 1	RECP - RM 203
LIGHTS - RM 120, 121 & 122	1 20 13 14 20 1	RECP - RM 203
LIGHTS - RM 123 & 124	1 20 15 16 20 1	TCP-101
LIGHTS - RM 126 THRU 130	1 20 17 18 20 1	PRV-201
LIGHTS - RM 201, 202 & 203	1 20 19 20 20 1	ELEVATOR PIT LIGHTS & RECP
LIGHTS - RM 203	1 20 21 22 20 1	ELEVATOR CAR LIGHTS
LIGHTS - RM 203	1 20 23 24 30 1	LIFT STATION CONTROL PANEL
LIGHTS - OUTSIDE	1 20 25 26 20 1	LIFT STATION RECEPTACLE
LANDSCAPE IRRIGATION CONTROLLER JB	1 20 27 28 20 1	RECP - RM 117 & 118
LIGHTS - OUTSIDE	1 20 29 30 20 1	VACUUM PUMP
SPARE	1 20 31 32 20 1	SPARE
SPARE	1 20 33 34 20 1	SPARE
SPARE		35 36
SPARE		37 38
SPARE		39 40
SPARE		41 42
SPARE		SPACE

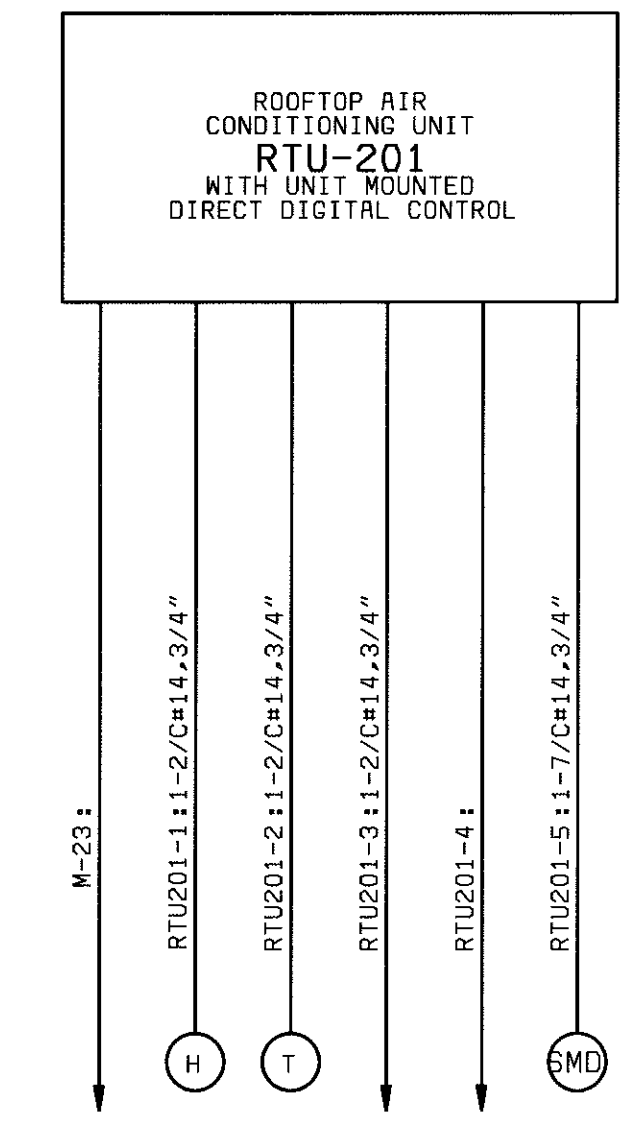
PANELBOARD: PP-1	BUS: COPPER	MAINS: 3P-150A MAIN BREAKER
SERVICE: 120/208V, 3Ø, 4W, S/N	RATING: 225A	LOCATION: MECHANICAL ROOM
MOUNTING: SURFACE		ROOM 123
LOAD	P BKR CKT# BKR P	LOAD
RECP - RM 102 & 103	1 20 1 2 20 1	RECP & FUME HOOD - RM 114 - HWH
RECP - RM 102 & 104	1 20 3 4 20 1	RECP - RM 115 (REFRIG & PRECISION GCA)
RECP - RM 105	1 20 5 6 20 1	RECP - RM 120 (REFRIGERATOR)
RECP - RM 106	1 20 7 8 20 1	RECP & FUME HOOD - RM 115, 120 & 121
FUME HOODS - RM 106 & 107	1 20 9 10 20 1	RECP & FUME HOOD - RM 120, 121 & 122
RECP - RM 107	1 20 11 12 20 1	RECP - RM 122
RECP - RM 108 (REFRIGERATOR)	1 20 13 14 20 1	RECP - RM 122
RECP - RM 108	1 20 15 16 20 1	RECP - RM 122 (REFRIGERATOR)
RECP - RM 109 & 110	1 20 17 18 30 2	RECP - RM 122 (AUTOCLAVE)
RECP - RM 111	1 20 19 20 --	--
RECP - RM 111	1 20 21 22 20 1	SPARE
RECP & FUME HOOD - RM 111	1 20 23 24 20 1	SPARE
RECP - RM 111 (PRECISION GCA-18GC)	1 20 25 26 20 1	SPARE
RECP - RM 111 (AUTOCLAVE)	2 30 27 28 20 1	SPARE
--	-- 29 30 20 1	SPARE
SPACE		31 32
SPACE		33 34
SPACE		35 36
SPACE		37 38
SPACE		39 40
SPACE		41 42
SPACE		SPACE



TCP-101 ONE-LINE



RTU-101 ONE-LINE



RTU-201 ONE-LINE

LIGHTING FIXTURE SCHEDULE				
SYMBOL	LAMP	MTG HGT	DESCRIPTION	MANUFACTURER
①	F32T8/SP35/RS 2850 LUMENS	CEILING MOUNTED- RECESSED	2'x2', 2-LAMP FLUORESCENT STATIC TROFFER FOR LAY-IN GRID CEILING, WHITE STEEL FRAME & ACRYLIC LENS, 120V.	LITHONIA 2SPG232A12120GEB
②	F32T8/SP35/RS 2850 LUMENS	CEILING MOUNTED- RECESSED	2'x4', 3-LAMP FLUORESCENT STATIC TROFFER FOR LAY-IN GRID CEILING, WHITE STEEL FRAME & ACRYLIC LENS, 120V.	LITHONIA 2SPG332A12120GEB
③	F32T8/SP35/RS 2850 LUMENS	CEILING MOUNTED- RECESSED	2'x4', 4-LAMP FLUORESCENT STATIC TROFFER FOR LAY-IN GRID CEILING, WHITE STEEL FRAME & ACRYLIC LENS, 120V.	LITHONIA 2SPG432A12120GEB
④	F32T8/SP35/RS 2850 LUMENS	7'-6" ABOVE FLOOR	2-LAMP FLUORESCENT COMMERCIAL WALL BRACKET WITH UP AND DOWN LIGHT, 120V.	LITHONIA WB232A120GEB
⑤	F32T8/SP35/RS 2850 LUMENS	7'-6" ABOVE FLOOR	2-LAMP FLUORESCENT ALL PURPOSE WALL BRACKET WITH MATTE WHITE OPAL ACRYLIC DIFFUSER, 120V.	LITHONIA WC232A120GEB
⑥	F32T8/SP35/RS 2850 LUMENS	8'-6" ABOVE FLOOR OR AS NOTED	2-LAMP INDUSTRIAL FLUORESCENT, 10% UPLIGHT WITH PORCELAIN REFLECTOR, PENDANT MOUNT, 120V.	LITHONIA AF10232120P0GEB
⑦	LU50 4000 LUMENS	1'-6" ABOVE DOOR	50W HIGH PRESSURE SODIUM WALL-PACK, DARK BRONZE DIE-CAST ALUMINUM HOUSING, PRISMATIC GLASS REFRACTOR, 120V.	LITHONIA TWL50S120
⑧	F18DBX/SPX35/4P 1160 LUMENS	CEILING MOUNTED- RECESSED	18W DOUBLE TWIN-TUBE, 6" FLUORESCENT DOWNLIGHT WITH SPECULAR ALZAK REFLECTOR, 120V.	LITHONIA AF1/18DTT6AR120GEB
⑨	PLF13TT/27K FURNISHED WITH FIXTURE	CEILING MOUNTED- RECESSED	13W TWIN TUBE FLUORESCENT DOWNLIGHT, HIGH-ABUSE CLEAR PRISMATIC POLYCARBONATE LENS, DAMP LOCATION, 120V.	LITHONIA VRR 13TT120
⑩	100W, A-19 1750 LUMENS	WALL MTD SEE NOTE	100W INCANDESCENT ENCLOSED & GASKETED WITH GLOBE & GUARD, 120V.	CROUSE-HINDS VXHBF25GP
⑪	LU250 28,000 LUMENS	25'-0" SQUARE STRAIGHT ALUMINUM POLE	250 WAT HIGH PRESSURE SODIUM FIXTURE, TYPE 111 DISTRIBUTION, 4" MOUNTING ARM, CORROSION-RESISTANT NATURAL ALUMINUM FINISH, 120V	LITHONIA #KSF2-250S-R3-120-SP04-SFCRDNA WITH #SSA256GDM19ANA POLE

NOTE: FLUORESCENT FIXTURES MARKED WITH "EL" SHALL BE EQUIPPED WITH EMERGENCY BATTERY PACK.

PANELBOARD: UPS	BUS: COPPER	MAINS: 3P-250A MAIN BREAKER
SERVICE: 120/208V, 3Ø, 4W, S/N	RATING: 400A	LOCATION: MECHANICAL ROOM
MOUNTING: SURFACE		ROOM 123
LOAD	P BKR CKT# BKR P	LOAD
RECP - RM 108	1 20 1 2 20 1	RECP - RM 115
RECP - RM 108	1 20 3 4 20 1	RECP - RM 115
RECP - RM 114	1 20 5 6 20 1	RECP - RM 115
RECP - RM 114	1 20 7 8 20 1	RECP - RM 115
RECP - RM 114	2 30 9 10 20 1	RECP - RM 115
--	-- 11 12 20 1	SPARE
SPARE	1 20 13 14 20 1	SPARE
SPACE		15 16
SPACE		17 18
SPACE		SPACE

SYMBOL LEGEND
◇ AT DRIVEN EQUIPMENT

SWITCH DEVELOPMENT	
SS1	POSITION
CONTACTS	ON AUTO
1-2	X
3-4	X

- NOTES:
- SEE DRAWING E-1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
 - SPARE CONTACTS SHALL BE PROVIDED FOR EACH STARTER AS DESCRIBED IN THE SPECIFICATIONS.
 - UNLESS OTHERWISE NOTED, DEVICES SHOWN ON THIS DRAWING SHALL BE SUPPLIED AS AN INTEGRAL PART OF THE STARTER. DEVICES LOCATED OUTSIDE OR REMOTE FROM THE STARTER ARE IDENTIFIED BY A LOCATION SYMBOL AS DEFINED IN THE DEVICE LOCATION LEGEND.
 - RELAY AND TIMER DESIGNATIONS APPLY TO INDIVIDUAL SCHEMATIC ONLY.
 - CONTROL SETTINGS, ALARM LIMITS, AND SIMILAR ADJUSTABLE LIMITS ARE INTENDED TO BE FOR INITIAL STARTUP. ADJUSTABLE SETTINGS SHALL BE TESTED AND CHANGED BY CONTRACTOR, IF REQUIRED FOR PROPER SEQUENCING AND OPERATION.

PROJECT RECORD

4/00	CONFORMED TO CONSTRUCTION RECORD	18
DATE	REVISIONS AND RECORD OF ISSUE	NO. BY CK APP

DESIGNED	JCB
DETAILED	JCB
CHECKED	JRH
APPROVED	
DATE	



PROJECT NO.
28551

MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP	21-41	E-5 SHEET OF
LABORATORY EXPANSION ELECTRICAL SCHEMATICS		

FOR LANDSCAPE IRRIGATION CONTROLLER

JB

LP1-27

EDH-202

EDH-202

GF1

127

126

T-202

125

102

104

108

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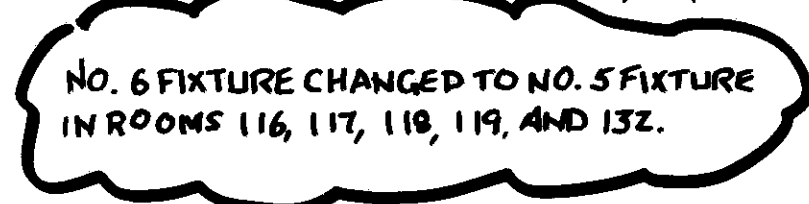
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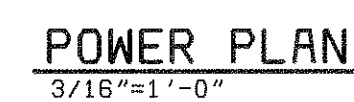
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445

446



SHEET
OF



1. SEE DRAWING E-1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
2. SEE FIXTURE SCHEDULE ON DRAWING E-3.

PROJECT RECORD

MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

LABORATORY EXPANSION
ELECTRICAL
SECOND FLOOR POWER & LIGHTING PLAN

E-8

SHEET
OF

21-41

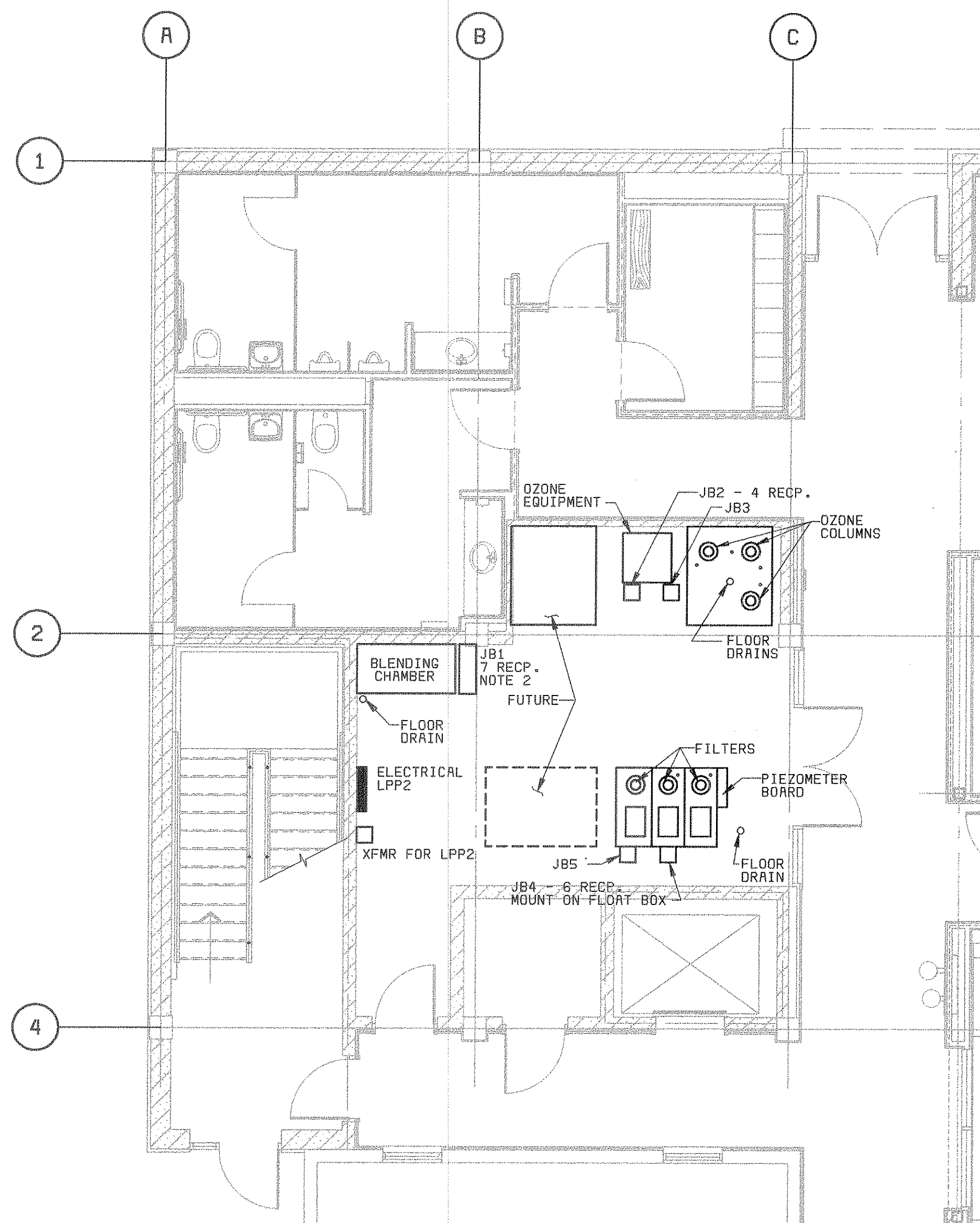
CCG. DWG. NO: 28551-310-232-E003

DESIGNED _____ JCB
 DETAILED _____ JCB
 CHECKED _____ JRH
 APPROVED _____
 DATE _____

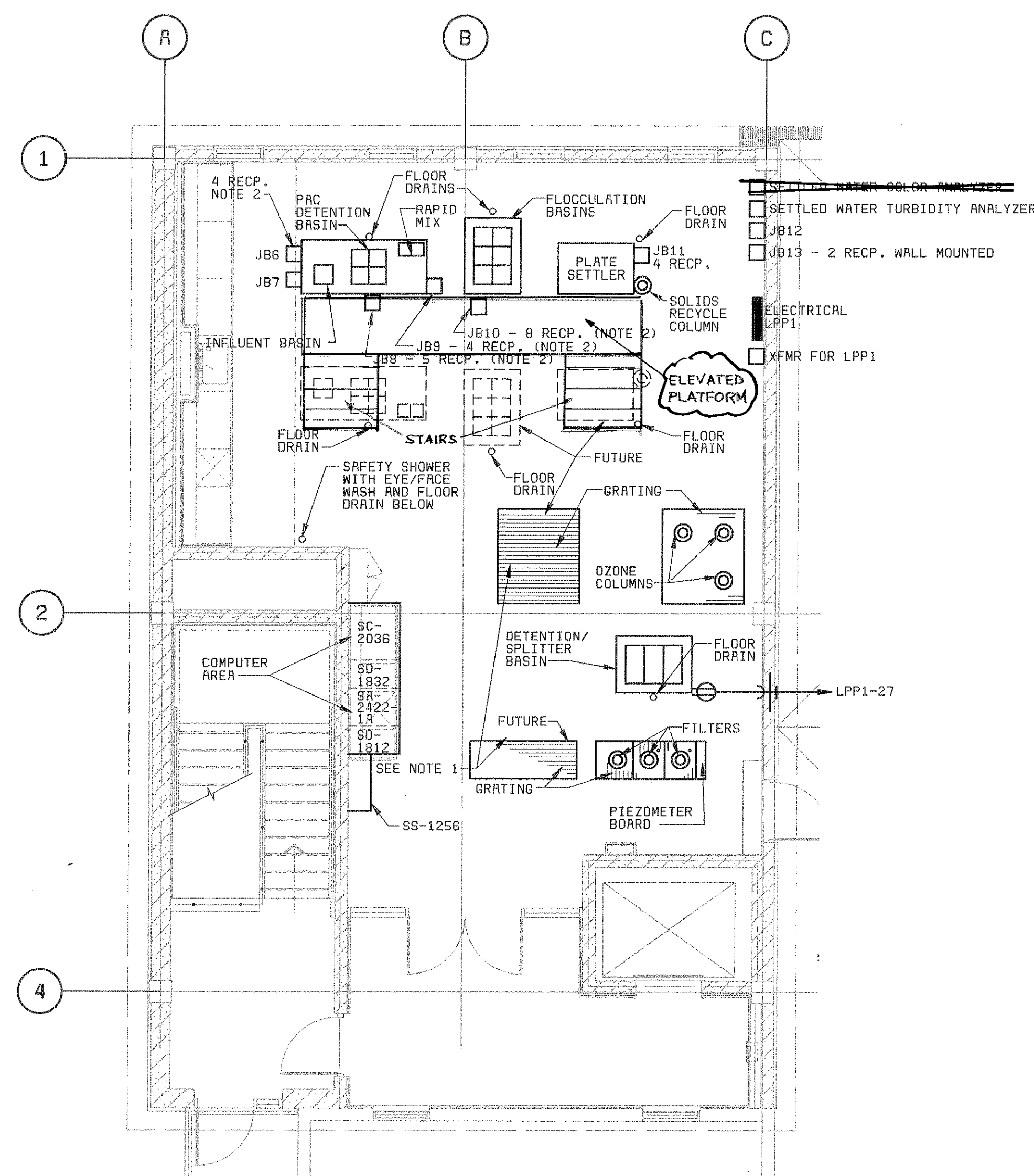


PROJECT NO.	28551
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05/13/98 08:51:10 RCD-12-



GROUND FLOOR PLAN
3/16" = 1'-0"



SECOND FLOOR PLAN
3/16" = 1'-0"

NOTES:

1. SEE SHEET E-1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
2. MOUNT JUNCTION BOX ON SUPPORT STRUCTURE.
3. JUNCTION BOXES ARE TO BE PROVIDED WITH THE NUMBER OF RECEPTACLES INDICATED. SEE SPECIFICATION SECTION 16050 FOR FURTHER DETAILS.

PROJECT RECORD

28551-320-000-C100	G1027	FG000000
400	CONFORMED TO CONSTRUCTION RECORD	
DATE	REVISIONS AND RECORD OF ISSUE	NO. BY CK APP

DESIGNED _____ HLS
DETAILED _____ RJE
CHECKED _____ RAH
APPROVED _____
DATE _____



Black & Veatch
Tampa, Florida

PROJECT NO.
28551

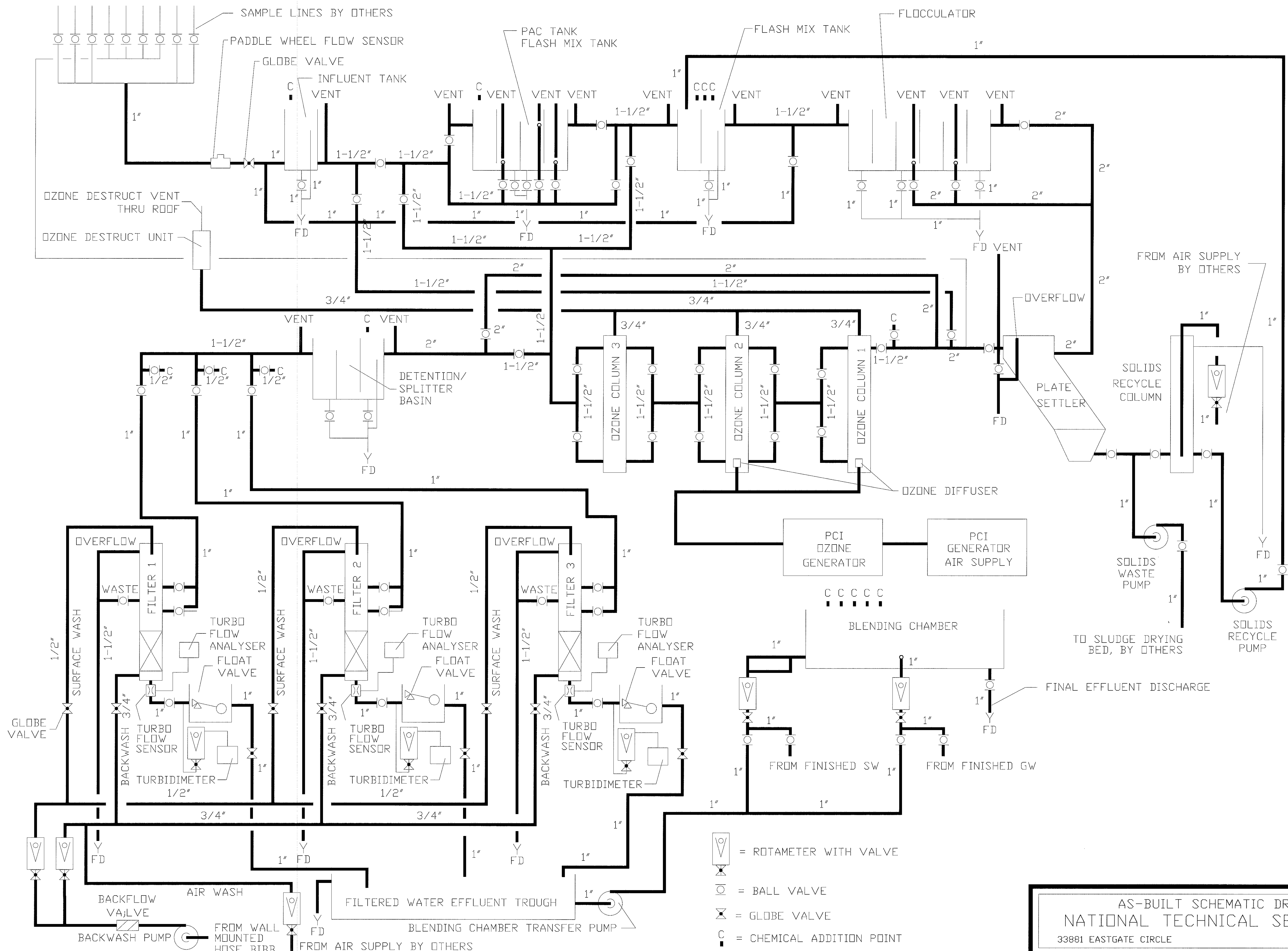
MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

PILOT PLANT
FLOOR PLANS

21-41

P-1

SHEET
OF



AS-BUILT SCHEMATIC DRAWN BY
NATIONAL TECHNICAL SERVICES INC.
 33881 EASTGATE CIRCLE CORVALLIS, OREGON

PROJECT RECORD

						4/00	CONFORMED TO CONSTRUCTION RECORD				MB				
						DATE	REVISIONS AND RECORD OF ISSUE				NO.	BY	CK	APP	

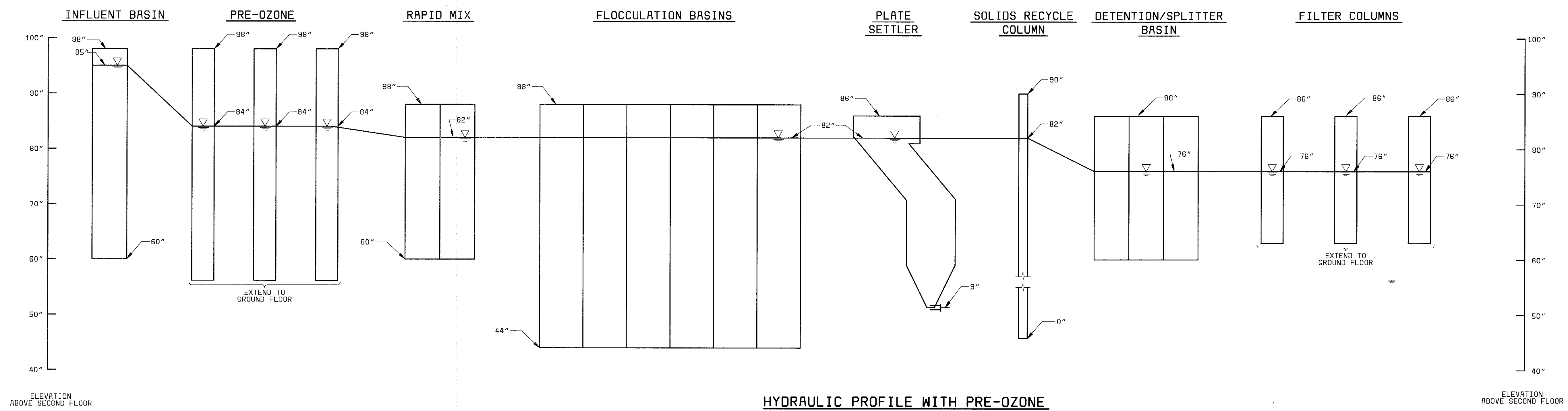
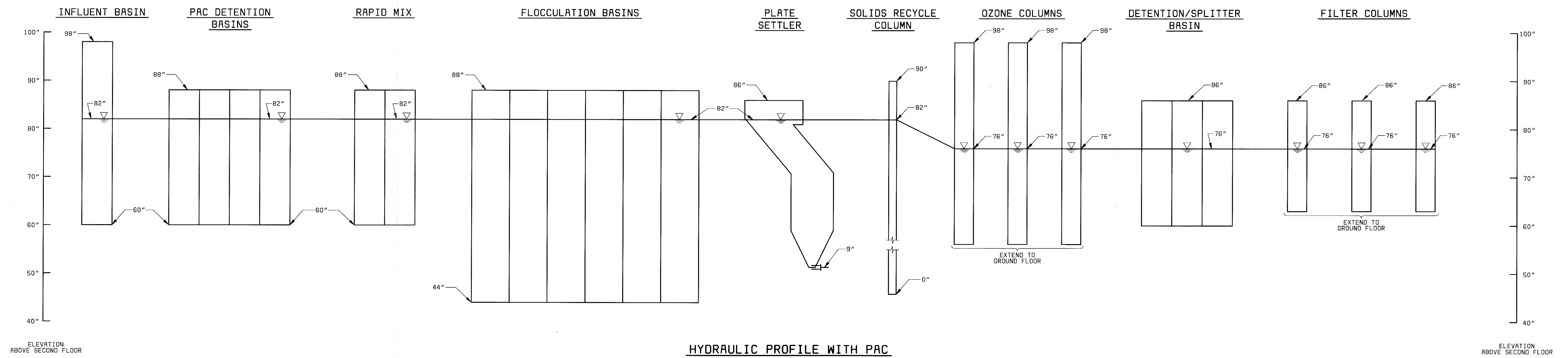
DESIGNED	
DETAILED	
CHECKED	
APPROVED	
DATE	



PROJECT NO.
 28551

MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP		21-41	P-2
PILOT PLANT PROCESS SCHEMATIC			SHEET OF

G1027
 F600000



PROJECT RECORD

[illegible]

DESIGNED _____	HLS
DETAILED _____	RJE
CHECKED _____	RAH
APPROVED _____	
DATE _____	



PROJECT NO.	28551
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MANATEE COUNTY, FLORIDA
MANATEE COUNTY WTP

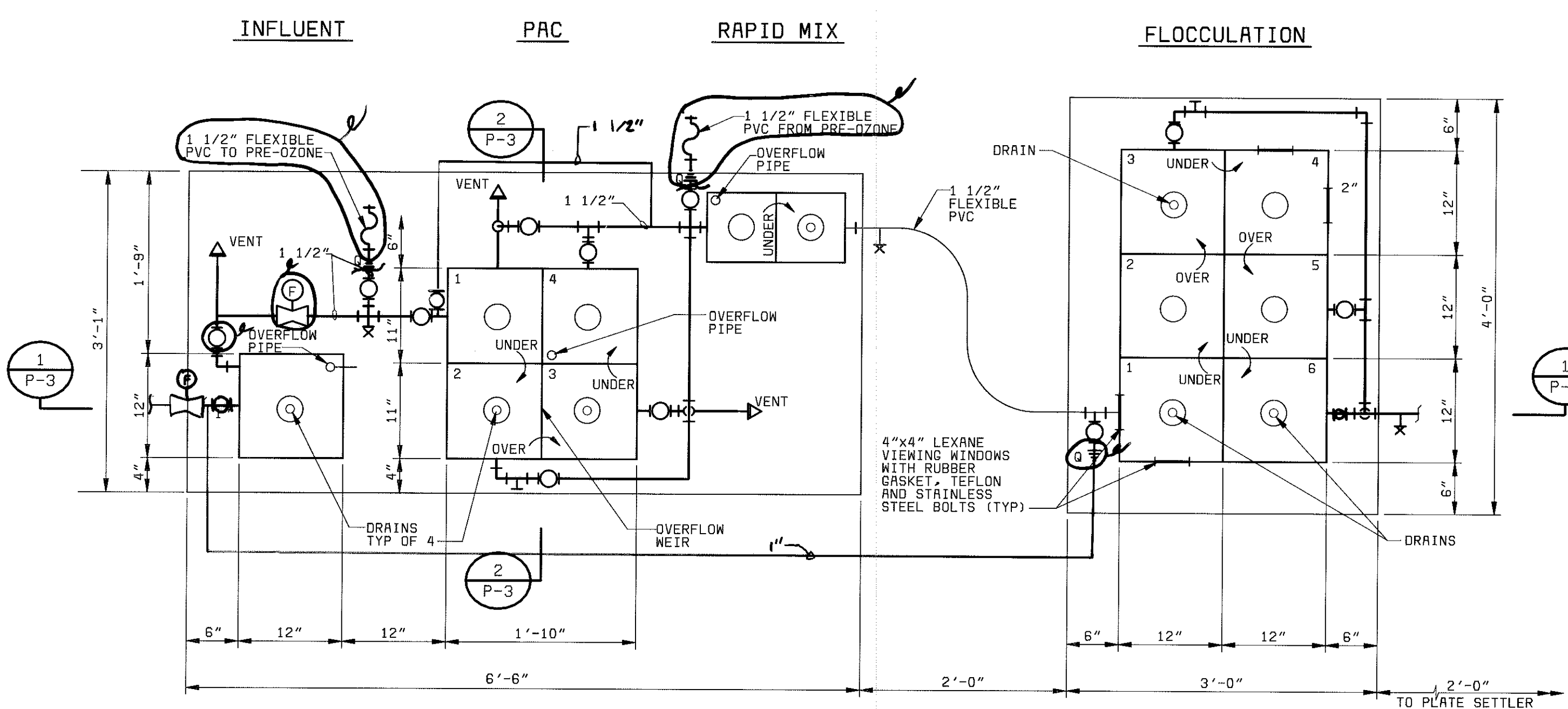
PILOT PLANT HYDRAULIC PROFILES

21-41

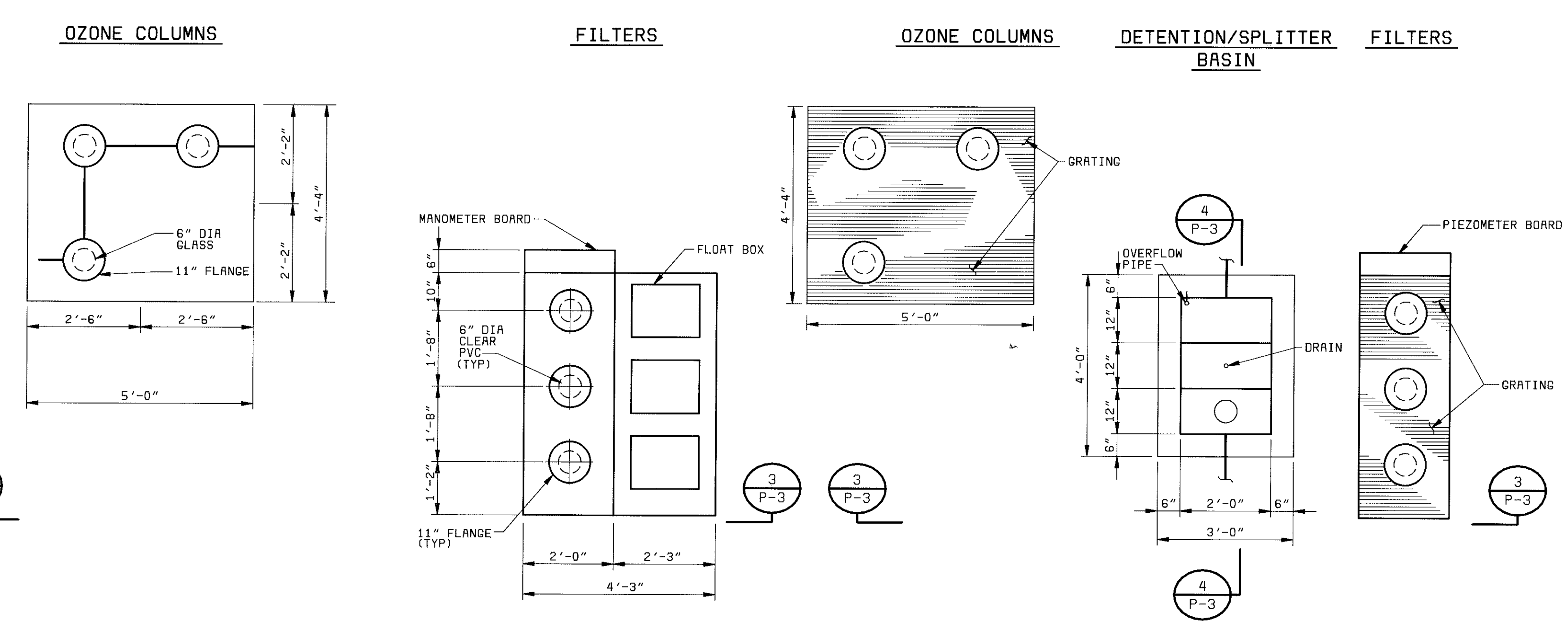
P-2A

SHEET
OF

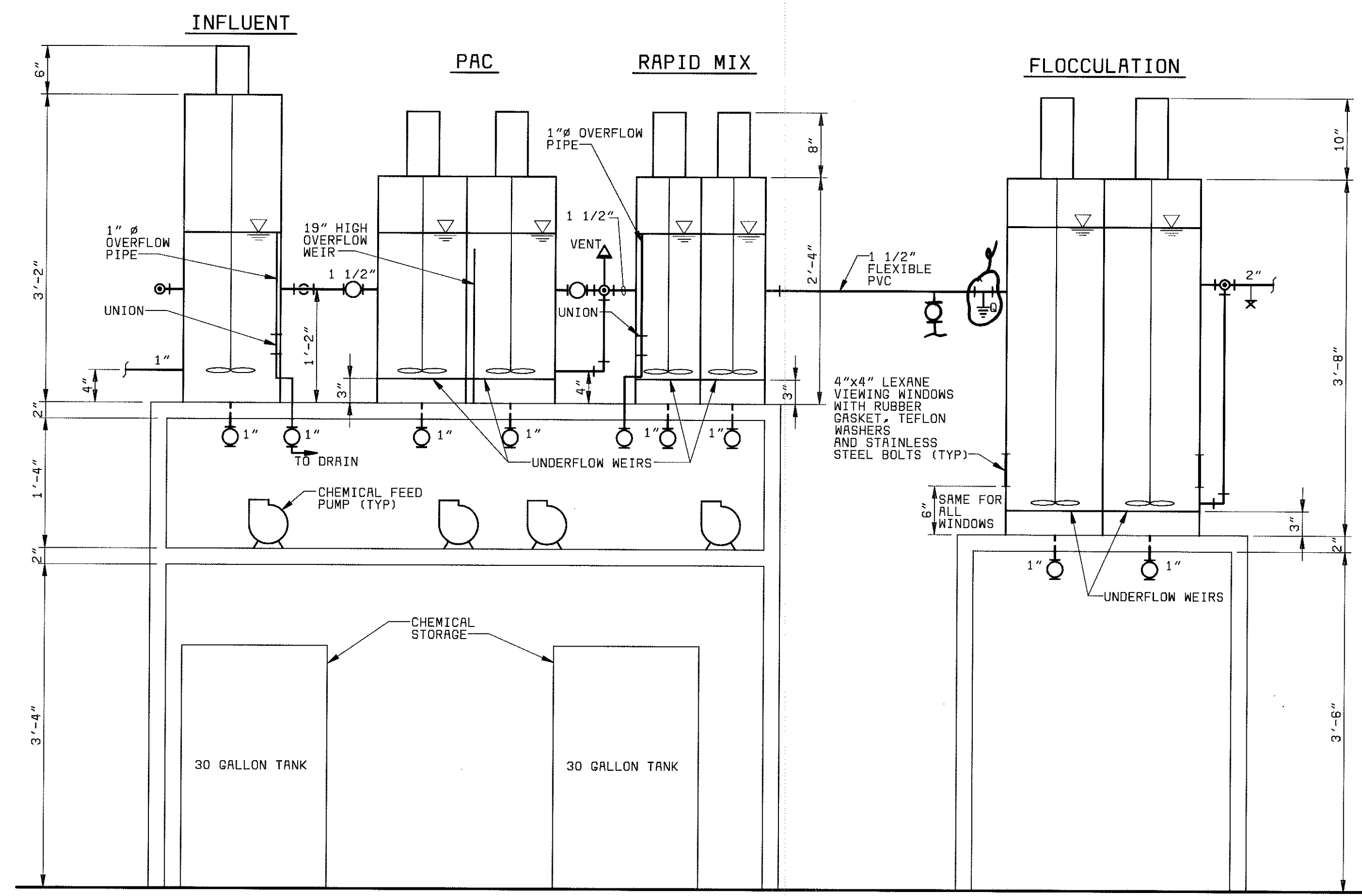
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28551-320-000-0003
61027
P000000



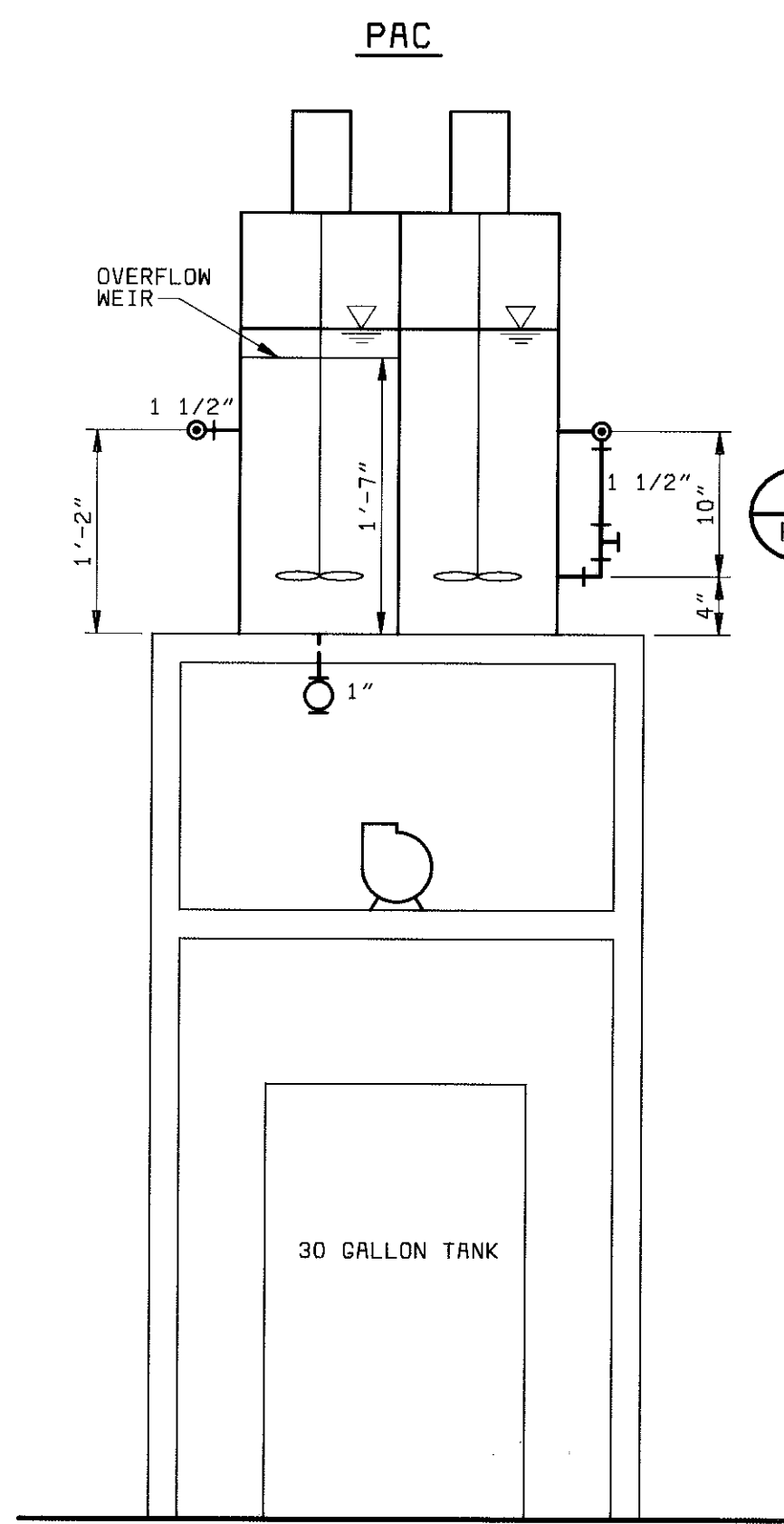
PLAN
1" = 1'-0"



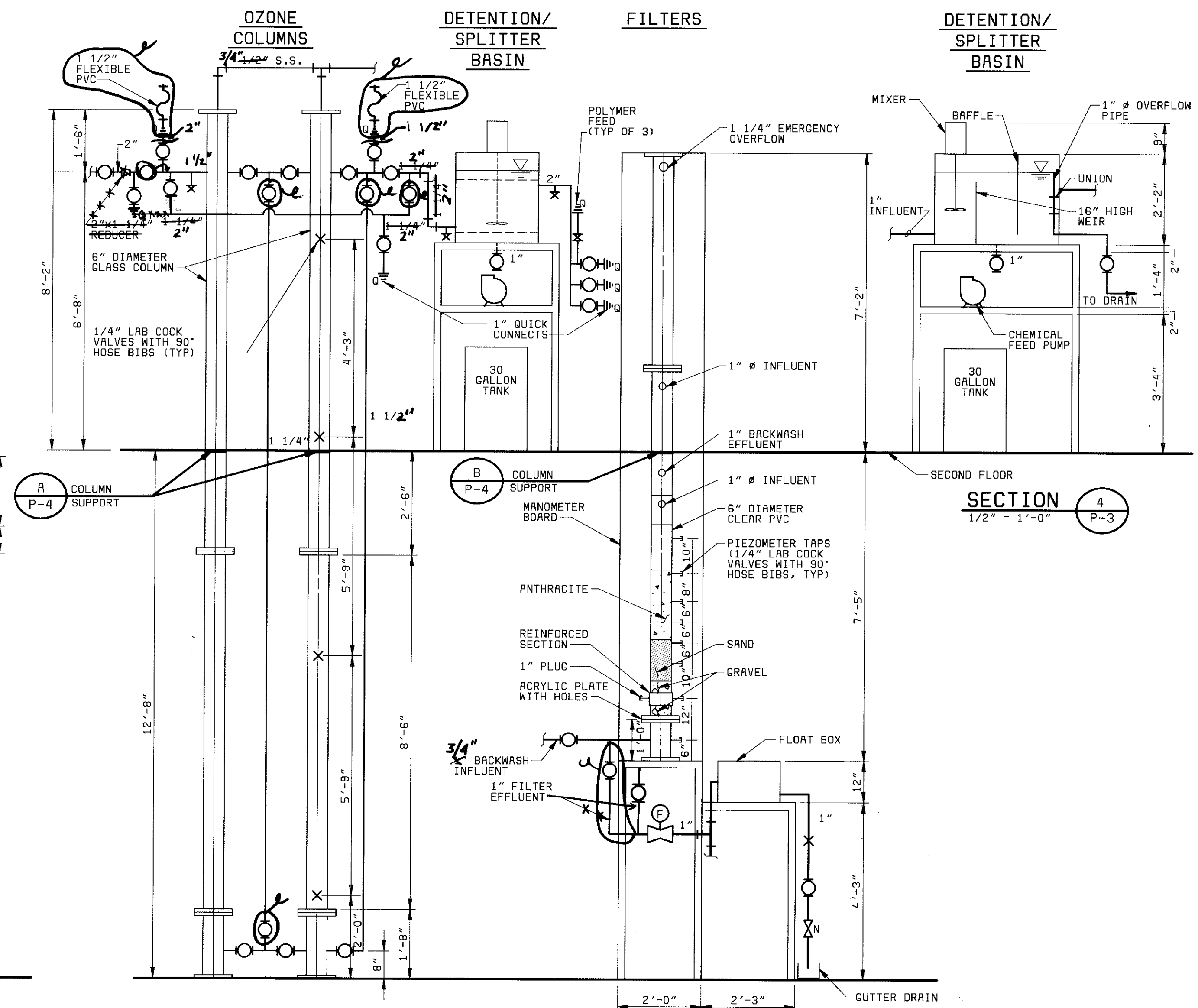
SECOND FLOOR ARRANGEMENT
1/2" = 1'-0"



SECTION 1
1" = 1'-0"



SECTION 2
1" = 1'-0"



SECTION 3
1/2" = 1'-0"

PROJECT RECORD

DESIGNED	HLS
DETAILED	RJE
CHECKED	RAH
APPROVED	
DATE	

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

DESIGNED	HLS
DETAILED	RJE
CHECKED	RAH
APPROVED	
DATE	



PROJECT NO.
28551

MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP	P-3
PILOT PLANT PLANS AND SECTIONS	SHEET OF
21-41	

08/12/98 11:48:10 ACD-12

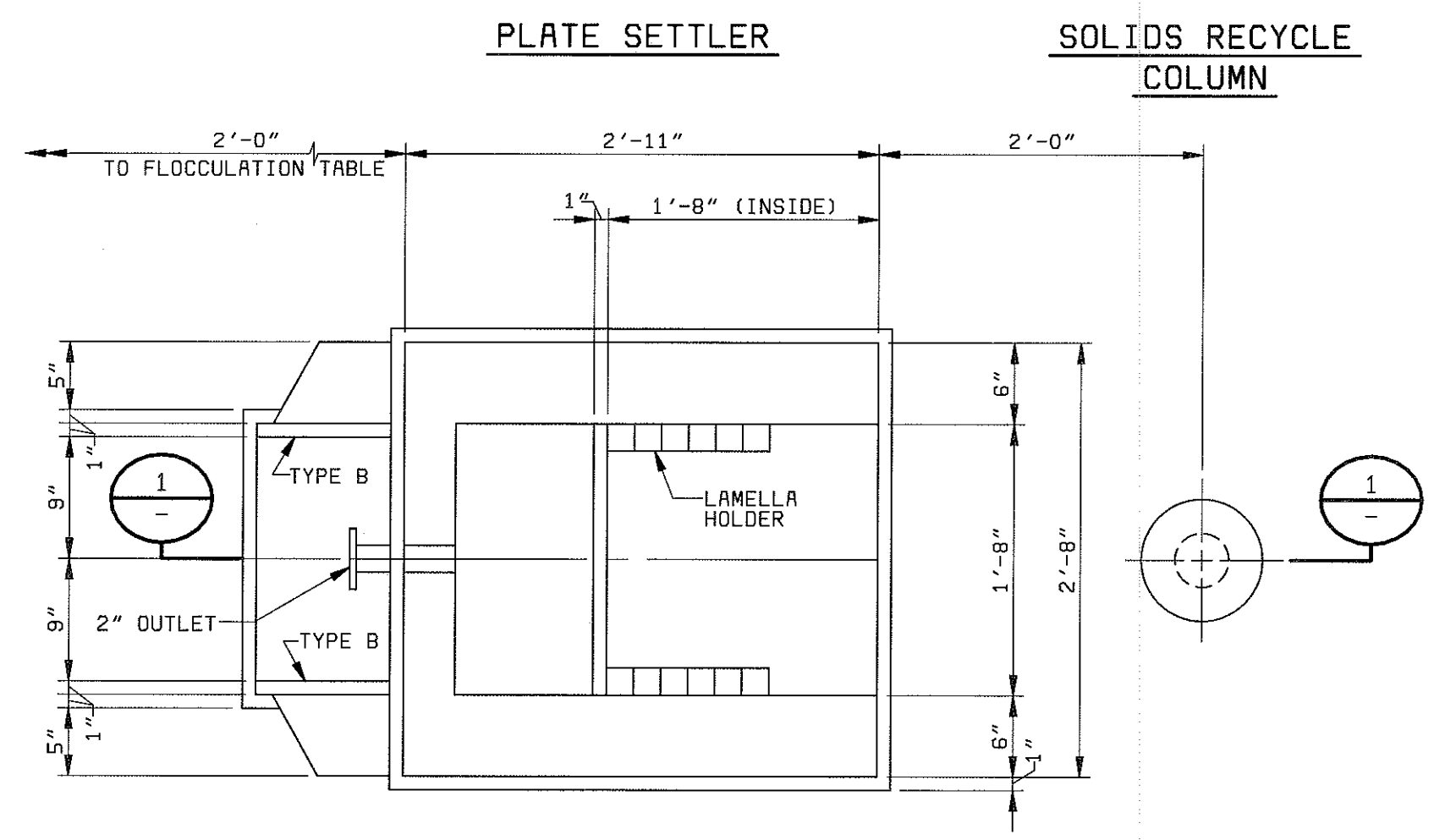
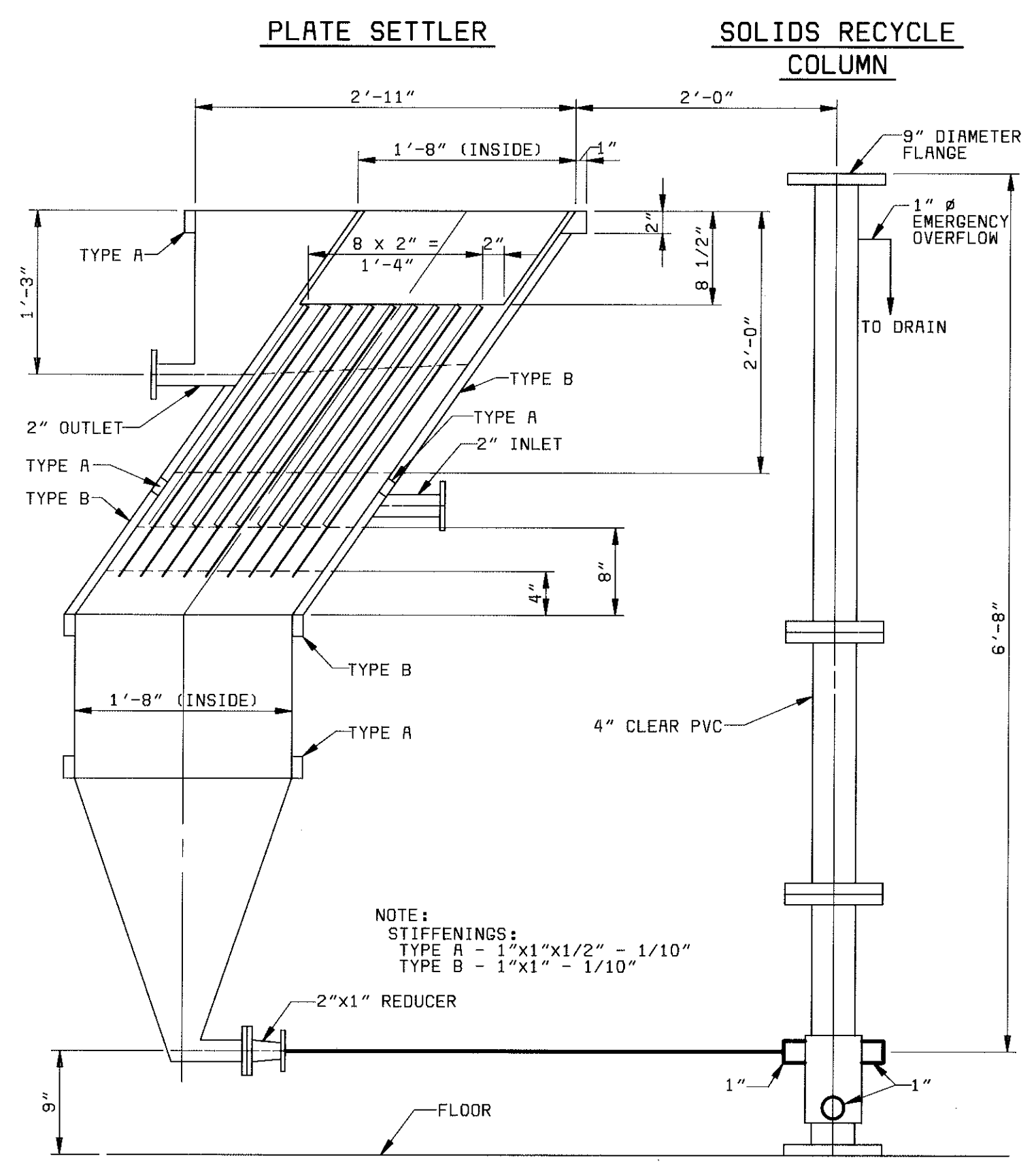
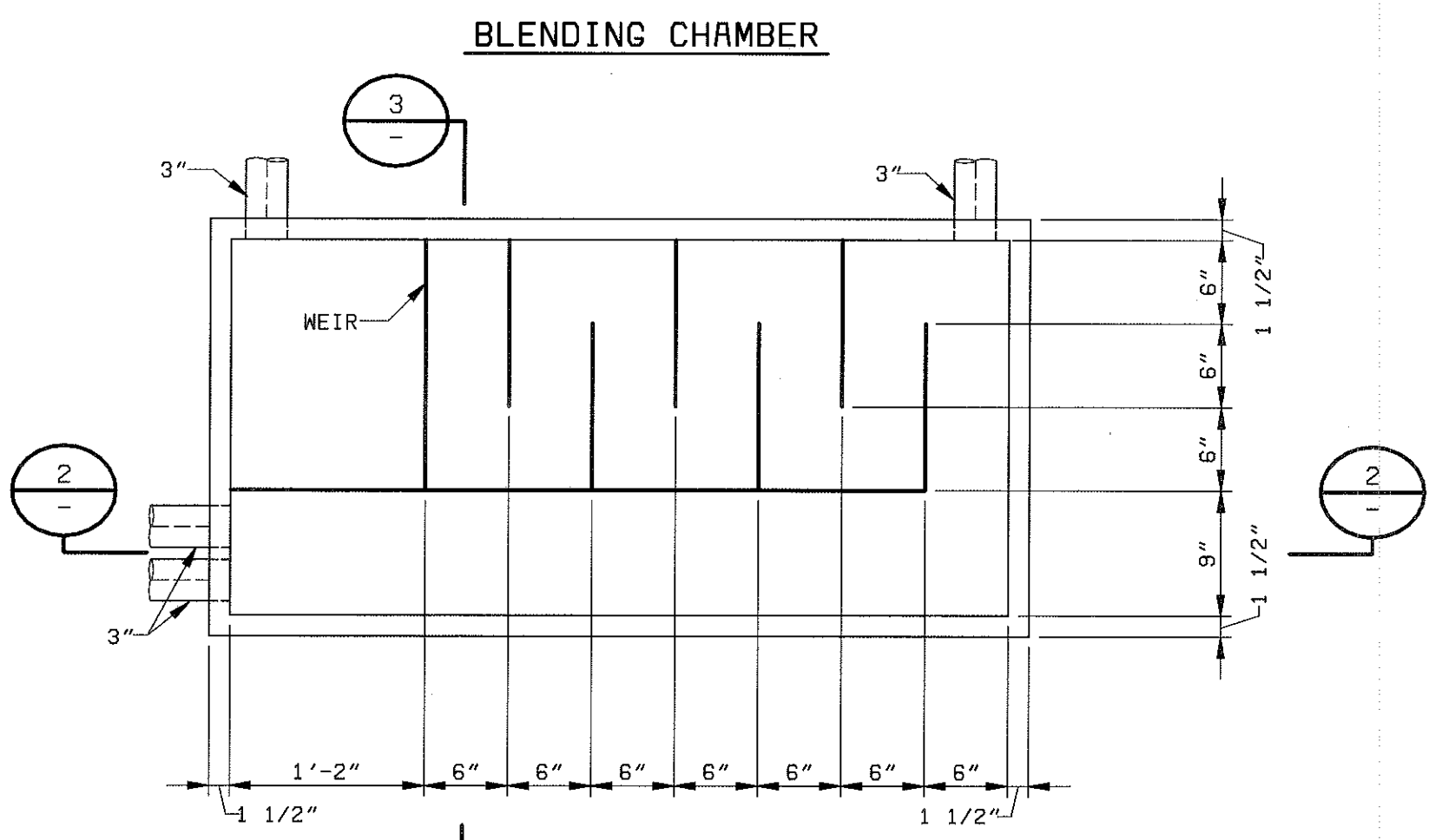


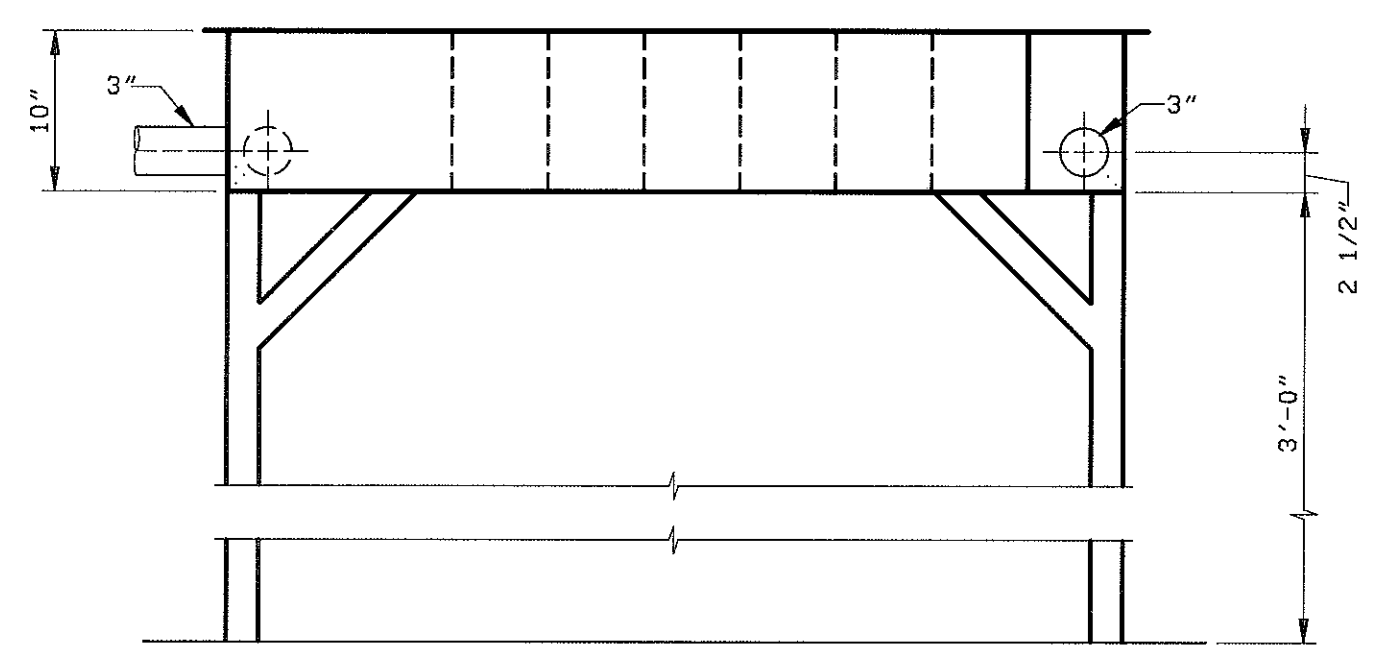
PLATE SETTLER PLAN
1" = 1'-0"



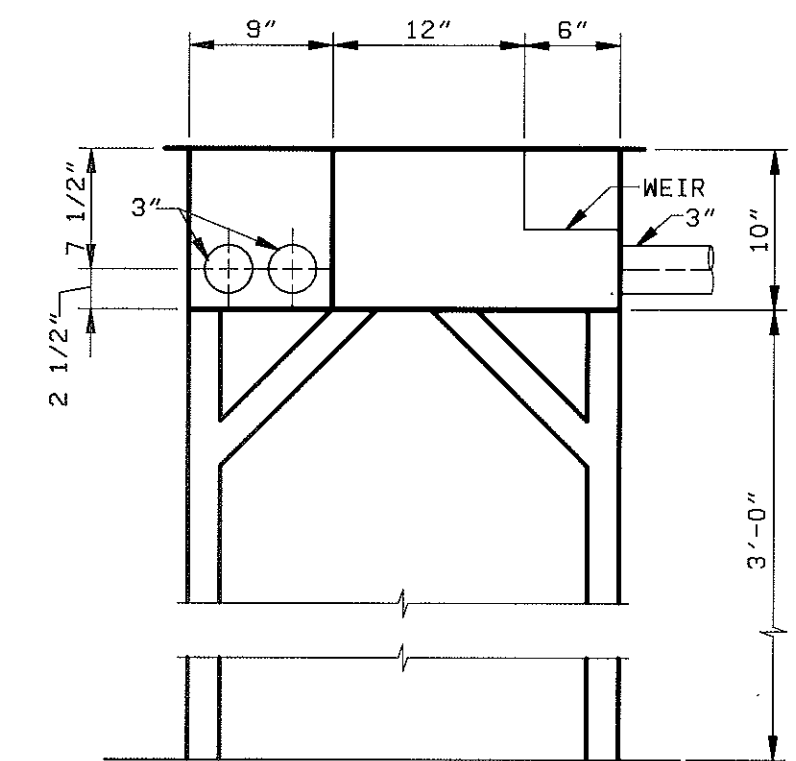
SECTION 1
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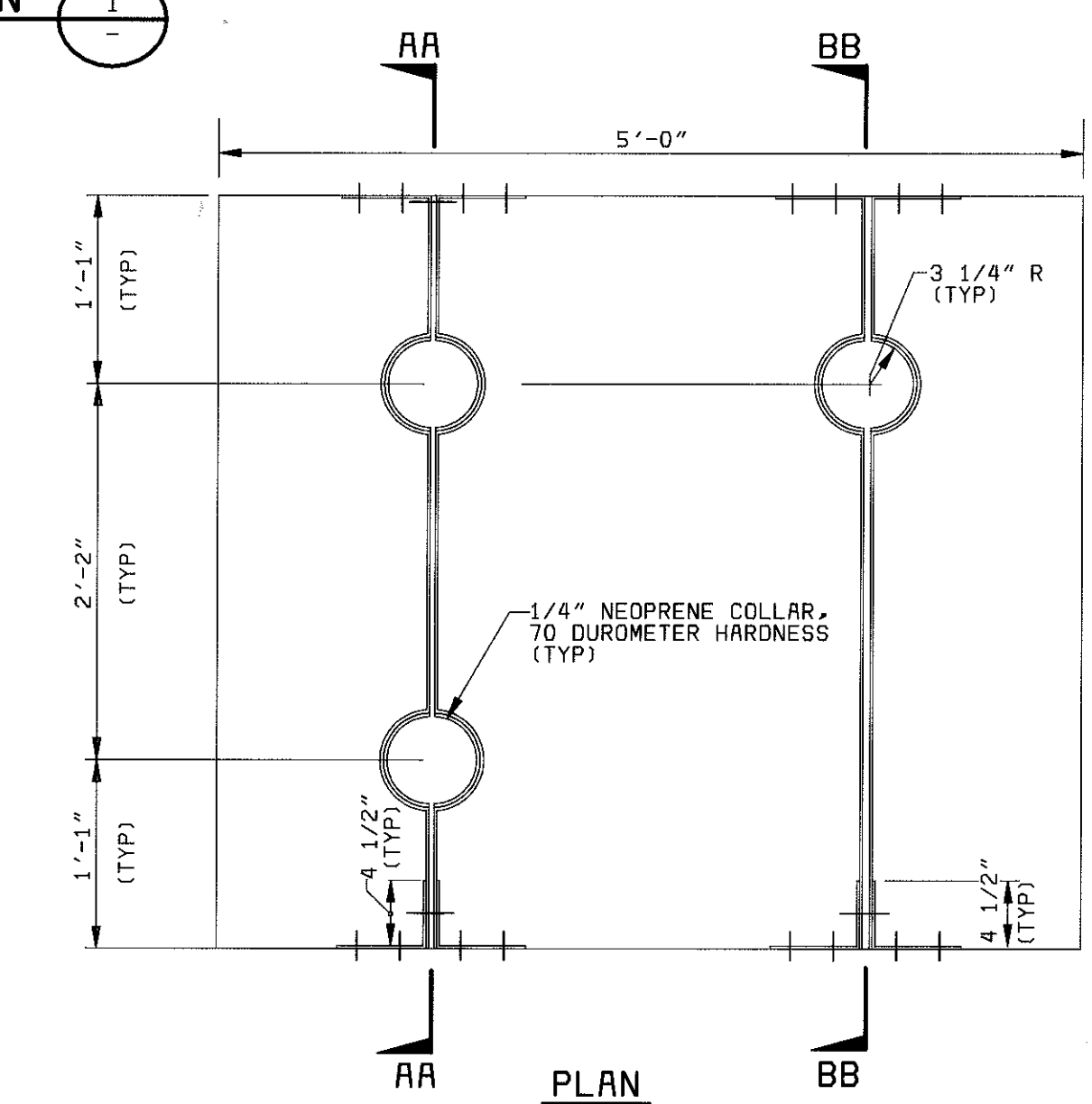
BLENDING CHAMBER PLAN
1" = 1'-0"



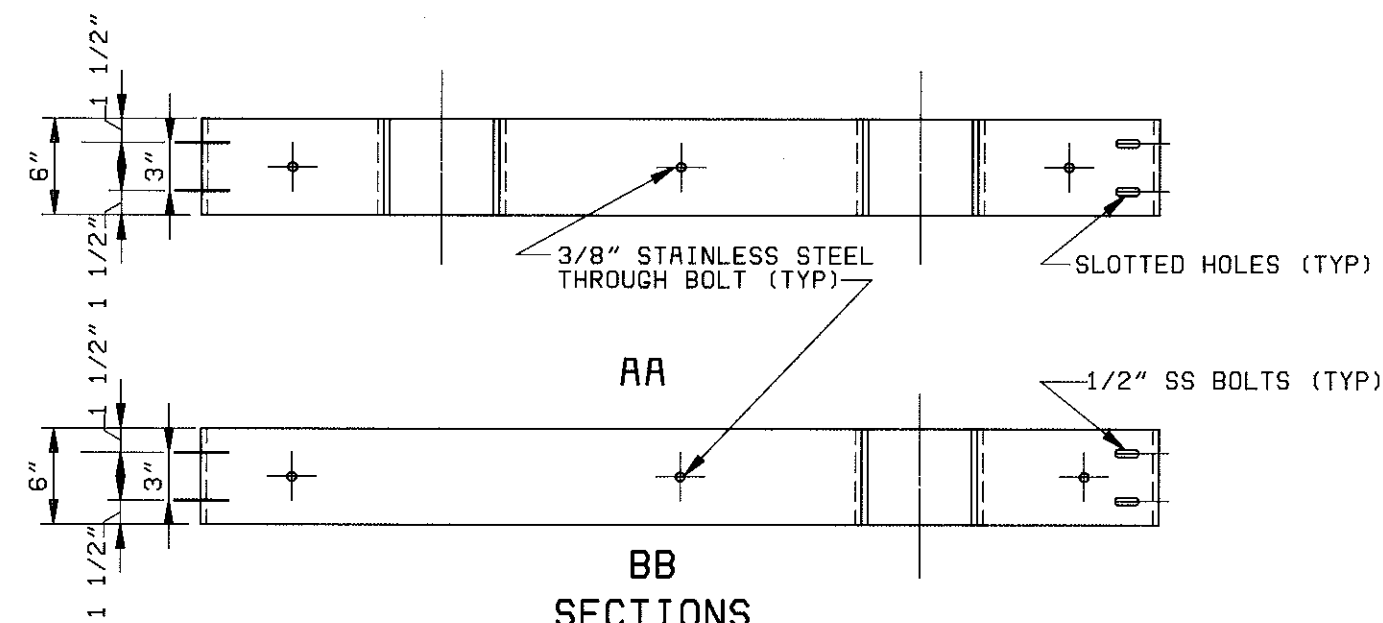
SECTION 2
1" = 1'-0"



SECTION 3
1" = 1'-0"



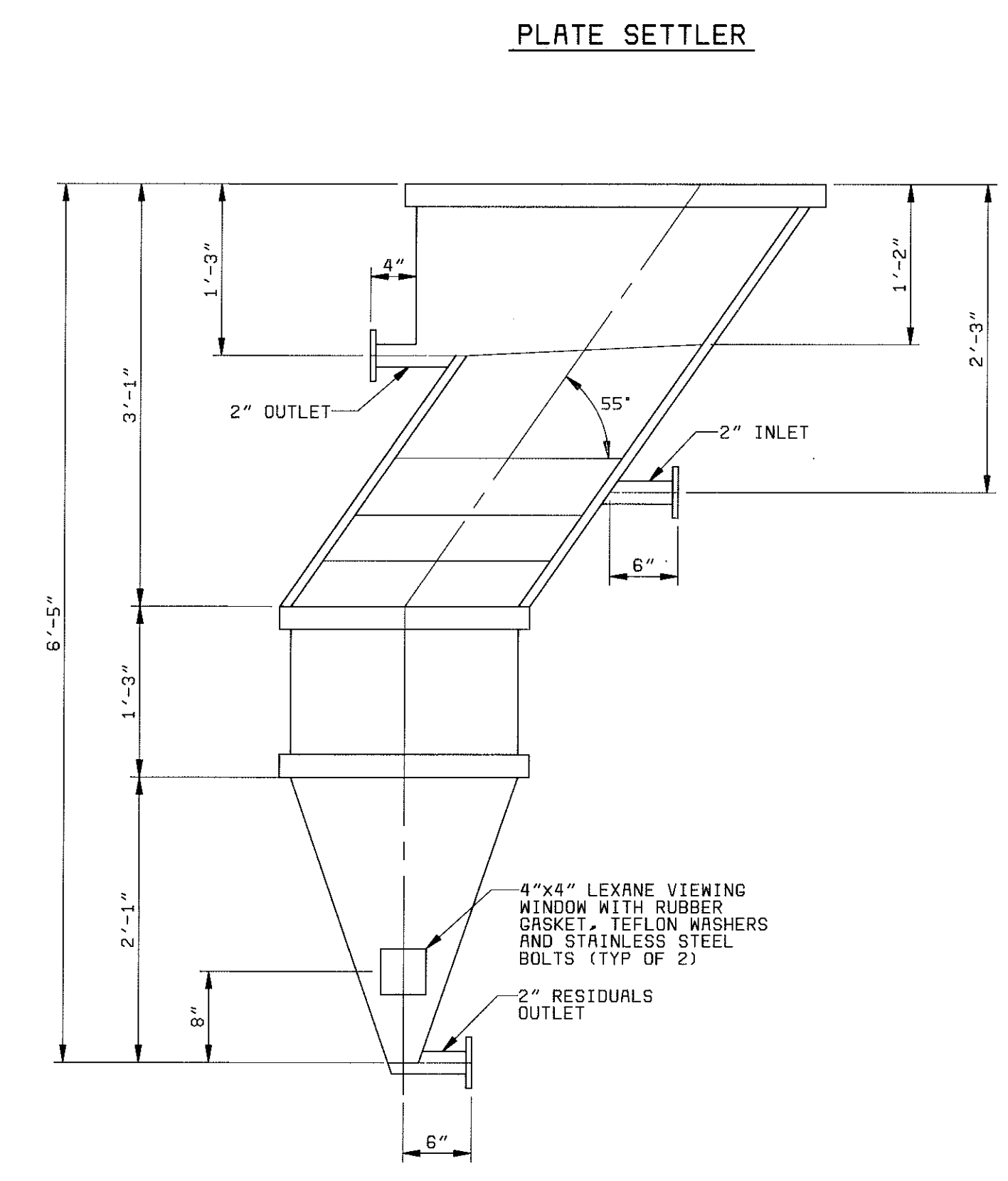
PLAN



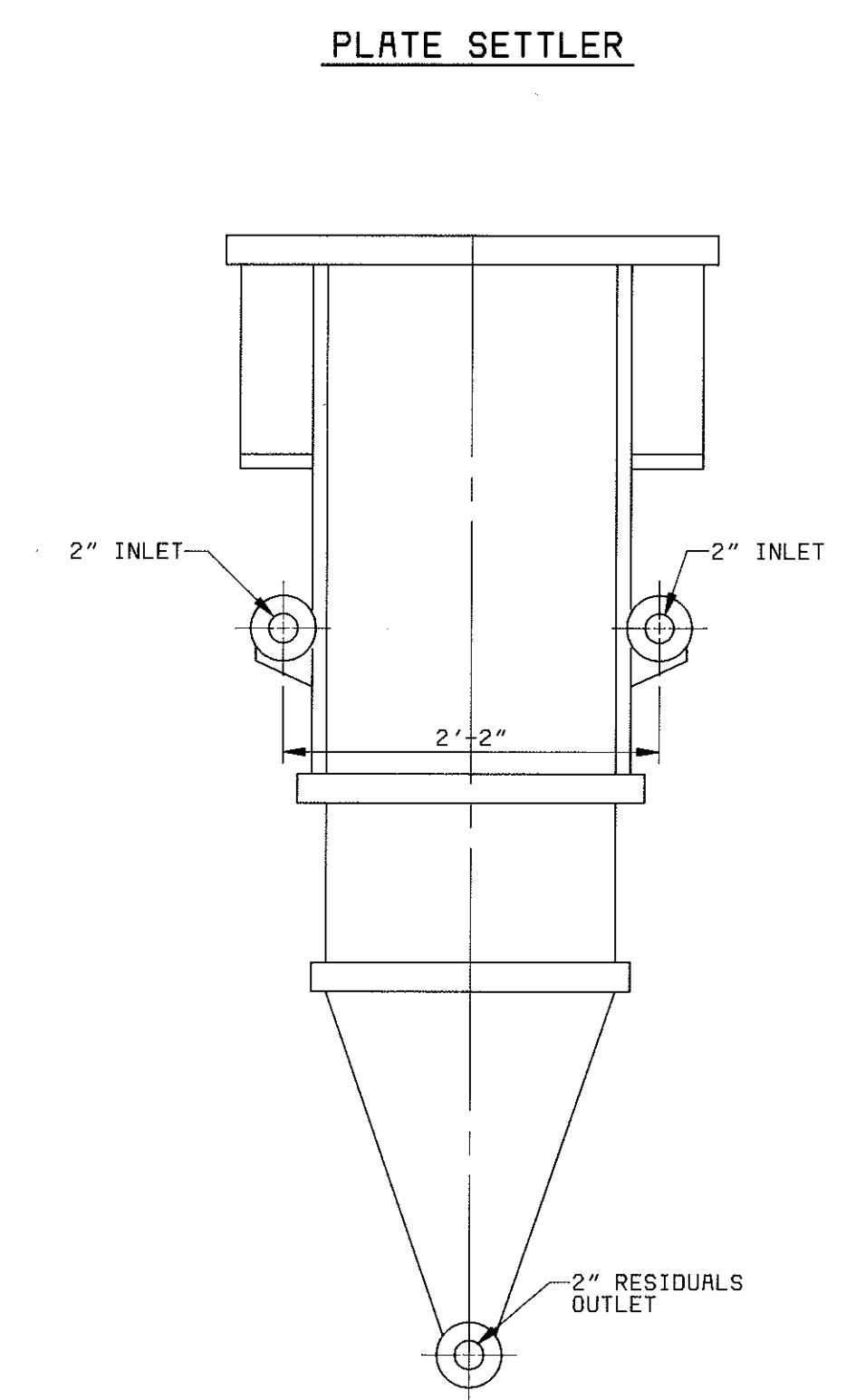
SECTIONS

- NOTES:
1. LATERAL SUPPORTS TO BE INSTALLED AROUND EA OF 3 OZONE COLUMNS.
2. FABRICATE SUPPORT FROM 3/16" STAINLESS STEEL.
3. DIMENSIONS TO BE FIELD VERIFIED

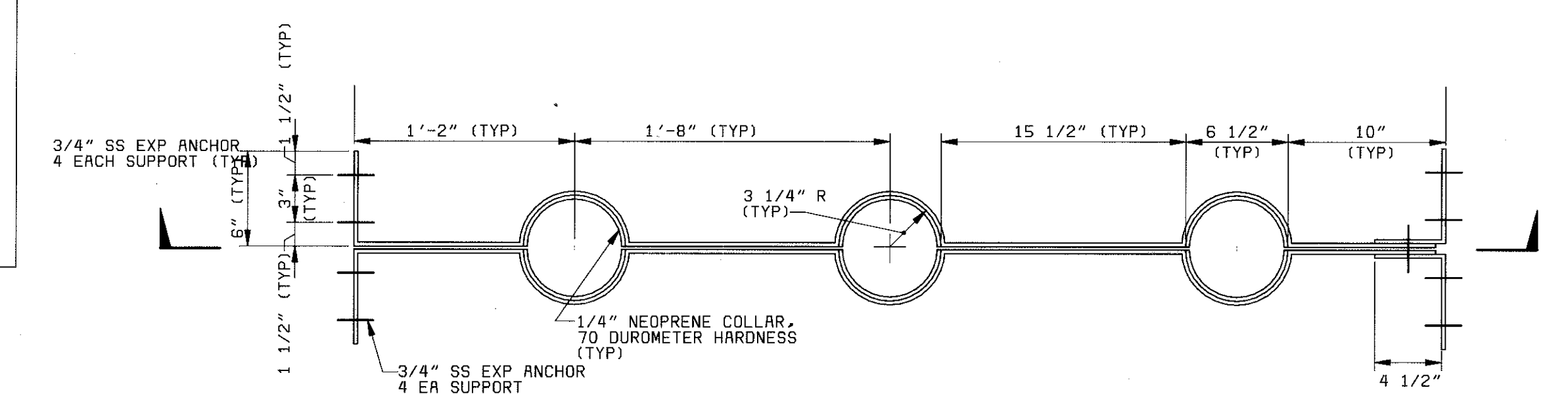
OZONE COLUMN SUPPORTS
1" = 1'-0"



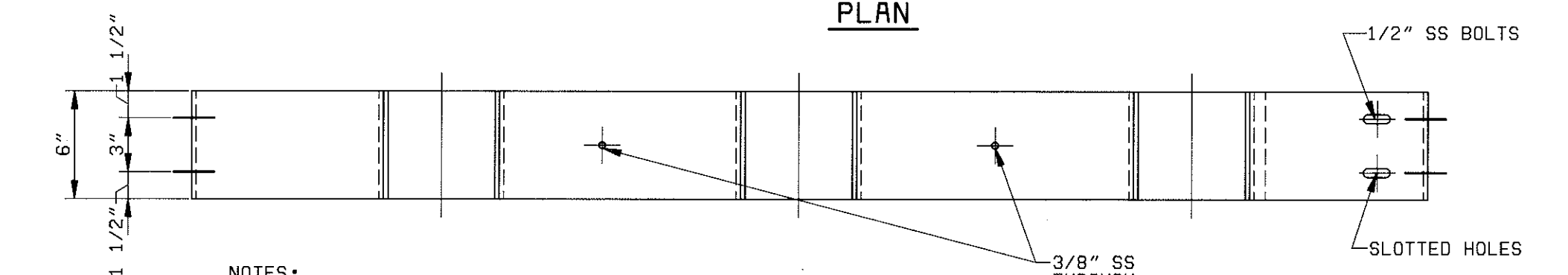
ELEVATION
1" = 1'-0"



ELEVATION
1" = 1'-0"



PLAN



SECTION

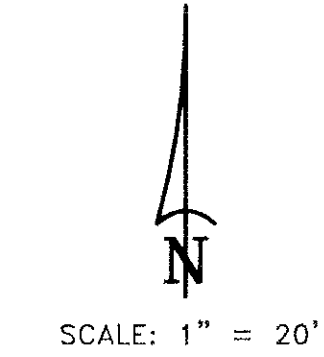
- NOTES:
1. LATERAL SUPPORTS TO BE INSTALLED AROUND EA OF 3 FILTER COLUMNS.
2. FABRICATE SUPPORT FROM 3/16" STAINLESS STEEL.
3. DIMENSIONS TO BE FIELD VERIFIED

FILTER COLUMN SUPPORTS
1 1/2" = 1'-0"

PROJECT RECORD

MANATEE COUNTY, FLORIDA MANATEE COUNTY WTP		PILOT PLANT PLANS AND SECTIONS	21-41	SHEET OF
PROJECT NO. 28551				
DESIGNED: HLS	BLACK & VEATCH Tampa, Florida			
DETAILED: RJE				
CHECKED: RAH				
APPROVED:				
DATE:				

28551-320-000-C001
G1027
F600000



- CERTIFICATE OF SURVEYOR**

CERTIFICATE OF SURVEYOR

I, THE UNDERSIGNED REGISTERED LAND SURVEYOR, DO HEREBY CERTIFY THAT THIS PLAT IS A TRUE REPRESENTATION OF THE LANDS DESCRIBED AND SHOWN HEREON ACCORDING TO A SURVEY MADE UNDER MY DIRECTION AND SUPERVISION AND THAT THIS SURVEY MEETS THE MINIMUM TECHNICAL STANDARDS FOR LAND SURVEYING IN THE STATE OF FLORIDA (CHAPTER 61G17-6, FLORIDA ADMINISTRATIVE CODE PURSUANT TO SECTION 472.027, FLORIDA STATUTES)

[Signature]

JANUARY 15, 2000

DATE OF SURVEY

Randall E. Britt

RANDALL E. BRITT, REGISTERED LAND SURVEYOR, FLA. CERT. NO. 3979

NOTE: NOT VALID UNLESS IMPRINTED WITH EXPOSURE AND SURVEYOR'S SEAL

CERTIFIED TO:
L.A.M. MANAGEMENT INC.

FIELD BOOK: 327 PAGE(S): 107-108
JOB NUMBER: 99-02-59

DAVE I. CORVELLING, INC.
LAND SURVEYORS AND MAPPERS
CERTIFICATE OF AUTHORIZATION NO. L.B. 6638

AD SUITE "B"	VENICE, FLORIDA	(941)493-1396
DRIVE UNIT 3	SARASOTA, FLORIDA	(941)377-8455

SUITE "B"	VENICE, FLORIDA	34292	(941)493-1396
UNIT 3	SARASOTA, FLORIDA	34240	(941)377-8454

SUITE "B" VENICE, FLORIDA
UNIT 3 SARASOTA, FLORIDA

1400 OGDEN ROAD
6398 DANNER DRIVE

Andall E. Britt

JANUARY 15, 2000

Revision: Added Parking & Valve Location With Elevations 4/7/00

LABORATORY EXPANSION AND PILOT PLANT
GENERAL SITE PLAN

21-41

C-1

SHEET
OF

DESIGNED _____ TSM
DETAILED _____ VVR, RJM
CHECKED _____ RAM
APPROVED _____
DATE _____



PROJECT NO.
28551