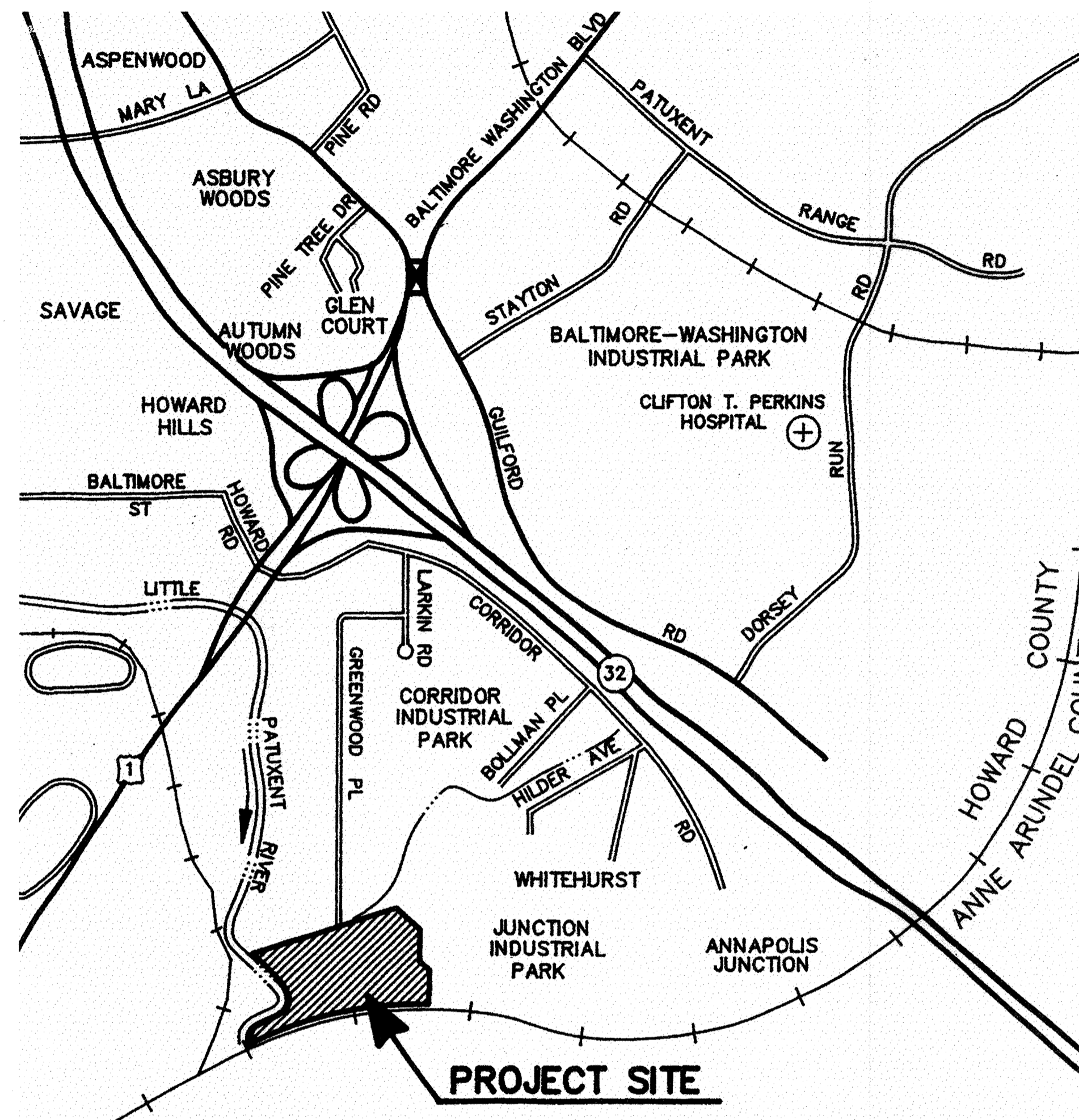


HOWARD COUNTY, MARYLAND

LITTLE PATUXENT WATER RECLAMATION PLANT



ADDITION NO. 6

PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT NO. S-6205
CONTRACT NO. 20-3840

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE CHIEF, BUREAU OF ENGINEERING DATE

CHIEF, BUREAU OF UTILITIES DATE CHIEF, WATER & SEWER DIVISION DATE

THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
ROBERT J. RECTANUS, JR.,
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927



BLACK & VEATCH LLP
Gaithersburg, Maryland

ASSOCIATE DESIGN FIRMS

STANTEC CONSULTING, LTD.
Surrey, British Columbia

BRYANT, BRYANT, & WILLIAMS
Washington, D. C.

A. MORTON THOMAS & ASSOC., INC.
Rockville, Maryland

LACH ELECTRIC CORPORATION
Baltimore, Maryland

CONFORMED TO CONSTRUCTION RECORDS 05/05/05

SHEET
1 OF 88

L1

GENERAL LEGEND

Table with 2 columns: Symbol and Description. Includes categories like SURFACED STREET, ROAD OR DRIVE; BUILDINGS, STRUCTURES; FENCE; EXISTING GROUND CONTOUR; FINISH GRADE CONTOUR; TEST HOLE AND NUMBER; CONCRETE ENCASUREMENT-PLAN; DRAINS OR CULVERTS; TUNNEL CASING - PLAN; GENERAL LAYOUT YARD PIPING; NEW WATER LINE OR SEWER IN PROFILE; NON-CONNECTING PIPING; CONSTRUCTION EASEMENT LINE; EASEMENT LINE; RIGHT-OF-WAY LINE; PROPERTY LINE; PERMANENT EASEMENT LINE; TEMPORARY EASEMENT LINE; UTILITY EASEMENT LINE; SURVEY LINE SECTION LINE; WATER LINE; GAS LINE; TELEPHONE (UNDERGROUND); ELECTRICAL (UNDERGROUND); POWER OR TELEPHONE LINES (OVERHEAD).

MATERIALS LEGEND

Table with 2 columns: Symbol and Description. Includes categories like EARTH OR GRADE; GRANULAR FILL (CRUSHED ROCK OR GRAVEL); ROCK; NEW CONCRETE; EXISTING CONCRETE, PRECAST OR PRESTRESSED CONCRETE; BRICK, FACE; BRICK, COMMON; CONCRETE MASONRY UNITS (CMU); CUT STONE OR SAND FILL, GROUT, MORTAR, AND PLASTER; CAST STONE; WOOD, SHEATHING, PANELING, DECKING, ETC.; WOOD, STUDS, BEAMS, JOISTS, ETC.; RIPRAP; CHECKERED PLATE; STEEL (FOR 1" SCALE & LARGER); STEEL OR ALUMINUM (FOR 3/4" SCALE & SMALLER); BAR GRATING (LINES IN DIRECTION OF SPAN); ALUMINUM; INSULATION (BATT); INSULATION (RIGID).

PIPING SYSTEMS

Table with 2 columns: Symbol and Description. Includes categories like NEW PIPING; UNDERGROUND PIPING; EXISTING PIPING; FUTURE PIPING; ALUM (ALUMINUM SULFATE - (ALUM)); AUX (AUXILIARY PUMP STATION INFLUENT); CL(S) (CHLORINE SOLUTION); CSC (CONCENTRATED PRIMARY SCUM); DRAIN; FIRE (FIRE PROTECTION WATER SYSTEM); FBI (FILTER BASIN INFLUENT); FCI (FINAL CLARIFIER INFLUENT); FE (FILTER EFFLUENT); FEI (FLOW EQUALIZATION INFLUENT); FEE (FLOW EQUALIZATION EFFLUENT); FSU (FERMENTER SUPERNATANT); GAS, NATURAL; GRIT BASIN INFLUENT; HEATING SYSTEM WATER RETURN; HEATING SYSTEM WATER SUPPLY; WATER, POTABLE HOT; HOT WATER CIRCULATING; INSTRUMENT AIR; INTERNAL RECYCLE; LIME; SODIUM HYDROXIDE; SODIUM HYPOCHLORITE; PROCESS, NON-NONPOTABLE; WATER, NON-POTABLE HOT; OVERFLOW; PRIMARY CLARIFIER INFLUENT; PLANT DRAIN; PRIMARY SLUDGE; PROCESS REACTOR INFLUENT; PROCESS WATER, NON POTABLE; RETURN ACTIVATED SLUDGE; SCUM; STORM DRAIN; SANITARY SEWER; VENT; VACUUM; WATER, POTABLE; WASTE ACTIVATED SLUDGE.

VALVE LEGEND

Table with 2 columns: Symbol and Description. Includes categories like PINCH VALVE; PLUG VALVE, ECCENTRIC; PLUG VALVE, NON-ECCENTRIC; BUTTERFLY VALVE; GATE VALVE; BALL VALVE; GLOBE VALVE; CHECK VALVE; 3 WAY VALVE; 4 WAY VALVE; ANGLE VALVE; CHLORINE INSTITUTE VALVE; DIAPHRAGM VALVE; THROTTLING VALVE; BACKWATER VALVE; INLINE PRESSURE RELIEF VALVE; PRESSURE REGULATING VALVE; PRESSURE SUSTAINING OR MAINTAINING VALVE; VACUUM BREAKER; THERMAL SHUTOFF VALVE; EXPLOSION RELIEF VALVE; HOSE FAUCET; HOSE FAUCET W/VACUUM BREAKER; HOSE VALVE W/HOSE NIPPLE; BACKFLOW PREVENTER; SAFETY RELIEF VALVE; VACUUM RELIEF CHECK VALVE.

PIPING ACCESSORIES LEGEND

Table with 2 columns: Symbol and Description. Includes categories like AUTOMATIC DRAIN TRAP; BLIND FLANGE; CALIBRATING COLUMN; CAP OR PLUG; CENTRIFUGE; CLEANOUT; COMPRESSOR OR BLOWER; CROSS; DIAPHRAGM SEAL; DIFFERENTIAL PRESSURE INDICATOR; DIFFERENTIAL PRESSURE SWITCH; DIFFUSER, CHANNEL; DIFFUSER, PIPE; DRAIN OR BELL-UP; DRIP TRAP; DUPLEX STRAINER; ELBOW; ELBOW TURNING DOWN; ELBOW TURNING UP; EXPANSION COMPENSATOR; EXPANSION TANK; FLAME ARRESTER OR CHECK; FLEXIBLE CONNECTOR; FLEXIBLE HOSE OR TUBING; FLOWMETER ELECTROMAGNETIC/ULTRASONIC; FLOW SWITCH; FLOW TUBE; FLUME; GAGE GLASS; HOSE CONNECTION; HOSE REEL; INJECTOR, EDOCTOR, BLENDER; INLINE FILTER; INSULATING NIPPLE; LEVEL SWITCH; MIXER; OIL SEPARATOR; ORIFICE PLATE; PIPE ANCHOR; PIPE GUIDE; PITOT TUBE; PRESSURE GAUGE WITH SNUBBER; PRESSURE SWITCH; PRESSURE TRANSMITTER; PUMP; QUICK COUPLING; REDUCER; ROTAMETER; RUPTURE DISK; SAMPLE TAP; SCREEN; SEDIMENT TRAP/ CONDENSATE ACCUMULATOR; SET STOP METER; SIGHT GLASS; SIGHT FLOW INDICATOR; SILENCER; SLIDE GATE; SLUICE GATE; STATIC MIXER; STOP PLATE; STRAINER/BASKET; SUCTION DIFFUSER; SURGE CHAMBER; TEE; TEE LINE DOWN; TEE LINE UP; TEMPERATURE INDICATOR; TEMPERATURE SENSING ELEMENT; TEMPERATURE SWITCH; TEMPERATURE TRANSMITTER; THERMOMETER; TRAP; UNION; VENT; VENT - SCREENED; VERTICAL MIXER; WALL SLEEVE; WATER HAMMER ARRESTOR; WEIR; WYE; WYE STRAINER; WYE STRAINER WITH BLOWOFF.

ACTUATOR LEGEND

Table with 2 columns: Symbol and Description. Includes categories like AIR, PNEUMATIC; AIR/OIL TANDEM; DIAPHRAGM; ELECTRIC, MOTORIZED; FLOAT; HYDRAULIC; SOLENOID.

EQUIPMENT DESIGNATION

Table with 2 columns: Symbol and Description. Includes categories like AREA DESIGNATION; UNIT NUMBER; EQUIPMENT OR VALVE ABBREVIATION (SEE SPECIFICATIONS SECTION); AREA DESIGNATION: 1 HEADWORKS, 2 GRIT AND FLOW EQUALIZATION, 3 PRIMARY TREATMENT AND WEST FINAL CLARIFICATION, 4 EAST AND WEST PROCESS REACTORS, 5 NORTH BASIN COMPLEX, 6 EAST FINAL CLARIFICATION.

Project information block including: DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND; BLACK & VEATCH, GAITHERSBURG, MARYLAND; PROJECT: LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION; CONTRACT NO. 20-3840; SHEET 3 OF 88; SCALE AS SHOWN; L3.

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- EXISTING LEGEND**
- TREE
 - TREE LINE
 - TRAVERSE MARKER
 - DROP INLET
 - SIGN
 - LIGHT POLE
 - SANITARY MANHOLE
 - WATER VALVE
 - FIRE HYDRANT
 - ELECTRIC MANHOLE
 - TELEPHONE MANHOLE
 - UTILITY POLE
 - INDEX CONTOUR
 - INTERMEDIATE CONTOUR
 - PROPERTY LINE
 - FENCE LINE
 - UNDERGROUND PIPING 12" AND LARGER
 - UNDERGROUND PIPING SMALLER THAN 12"
 - RAILROAD TRACK
 - TEST BORING

- ABBREVIATIONS**
- F FERMENTER
 - FC FINAL CLARIFIER
 - FEB FLOW EQUALIZATION BASIN
 - PC PRIMARY CLARIFIER
 - PR PROCESS REACTOR
 - PS PRIMARY SUBSTATION

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
2. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
4. ALL PLAN DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
5. THE EXISTING TOPOGRAPHY IS TAKEN FROM AERIAL SURVEY WITH MAXIMUM ONE FOOT CONTOUR INTERVALS PREPARED FOR RMT AND ASSOCIATES BY AIR SURVEY CORP., INC. DATED JUNE 1999.
6. THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM, HOWARD COUNTY MONUMENT NOS. 47111 AND 47121 WERE USED FOR THIS PROJECT.
7. WATER IS PUBLIC (HO. CO. LITTLE PATUXENT WATER RECLAMATION PLANT).
8. SEWER IS PUBLIC (HO. CO. LITTLE PATUXENT WATER RECLAMATION PLANT).
9. EXISTING UTILITIES ARE BASED ON LITTLE PATUXENT WATER RECLAMATION PLANT AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO START OF ANY DEMOLITION AND CONSTRUCTION.
10. FLOODPLAIN LIMITS FOR THIS PROJECT WERE TAKEN FROM HOWARD COUNTY STUDY DATED 1986.
11. THE ENTIRE LITTLE PATUXENT WASTEWATER TREATMENT PLANT SITE IS LOCATED IN THE 100 YEAR FLOODPLAIN, ELEV. 143.0.
12. OFFSITE DISPOSAL OF EXCESS MATERIAL WILL BE TO AN APPROVED SITE.
13. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING FACILITIES, STRUCTURES AND UTILITIES FROM DAMAGE UNLESS OTHERWISE SHOWN.
14. OMISSIONS/ADDITIONS OF UTILITIES FOUND DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF ANY CONTRACTOR ENGAGED IN CONSTRUCTION AT THIS SITE. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY AND ALL UTILITY OMISSIONS/ADDITIONS.
15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REMOVE AND LEGALLY DISPOSE OF ANY AND ALL DEMOLISHED/DELETERIOUS MATERIALS.
16. EXISTING PAVEMENT SHALL BE SAWCUT PRIOR TO REMOVAL. SAWCUT DEPTH SHALL BE STRAIGHT, EVEN CUTS. JAGGED EDGES SHALL NOT BE PERMITTED. SAWCUT DEPTH SHALL EXTEND AT LEAST 2/3 TIMES THE THICKNESS OF THE EXISTING PAVEMENT TO BE REMOVED IN PLACE.
17. POSITIVE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES. PONDING OF WATER SHALL NOT BE PERMITTED. ALL PONDING WATER SHALL BE FILTERED THROUGH PORTABLE SEDIMENT TANK PRIOR TO DISCHARGE INTO THE PUBLIC STORM/SEWER SYSTEM.
18. SURFACED STREET AND PARKING AREAS SHALL BE MAINTAINED AT ALL TIMES. ADEQUATE MEANS SHALL BE PROVIDED TO CLEAN TRUCKS AND EQUIPMENT.
19. CONTRACTOR SHALL HAND DIG TEST PITS AT ALL UTILITY CROSSINGS TO DETERMINE THEIR EXACT LOCATION, WELL IN ADVANCE OF ANY DEMOLITION OR CONSTRUCTION.
20. ALL TIES TO EXISTING PAVEMENT/STRUCTURES AND CURBS SHALL BE GRADUALLY TRANSITIONS WITH NO ABRUPT CHANGES.
21. CONTRACTOR SHALL ADJUST ALL UTILITY FRAME AND COVERS TO PROPOSED STRUCTURE GRADE.
22. FOR DEMOLITION/RELOCATION OF YARD PIPING, SANITARY SEWER OR SEWER EFFLUENT SERVING YARD PIPING DEMOLITION PLANS.
23. THE VERTICAL SURVEY IS BASED ON THE CURRENT HOWARD COUNTY PUBLIC WALK CONTROL (NAVD 88). PREVIOUS CONSTRUCTION PROJECTS HAVE REFERENCE DRAWINGS AT THE SITE WERE BASED ON AN EARLIER VERTICAL DATUM. ELEVATIONS OF EXISTING FACILITIES SHOWN ON THESE DRAWINGS HAVE BEEN ADJUSTED TO REFLECT THE VERTICAL DATUM CHANGE. THE CONTRACTOR SHALL VERIFY THE ELEVATION OF ALL EXISTING STRUCTURES WHICH EXIST WITHIN THE BOUNDARY OF THIS CONTRACT.
24. THE SITE PLAN AND EROSION CONTROL PLAN ARE BASED ON THE SITE DEVELOPMENT PLAN (SDP) AMENDMENT DATED APRIL 1, 2003. THE SDP AMENDMENT IS REFERRED TO AS SDP AMENDMENT NO. 1. THE SDP AMENDMENT IS INCLUDED IN THE CONTRACT BY REFERENCE. THE CONTRACTOR SHALL VERIFY WITH HOWARD COUNTY THE LOCATION OF ALL EXISTING STRUCTURES WHICH EXIST WITHIN THE BOUNDARY OF THIS CONTRACT.

TRAVERSE STATIONS

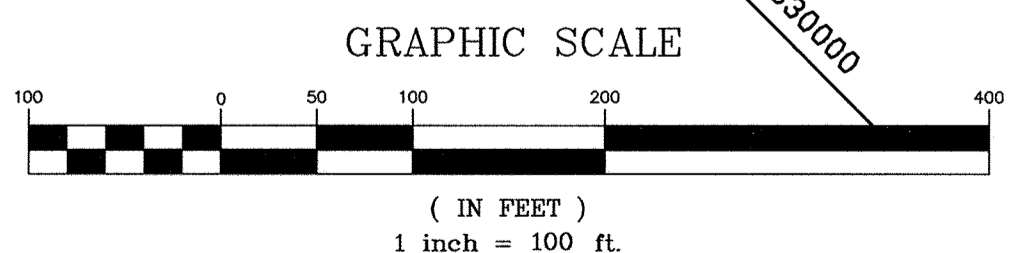
NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
TRAV #22	530410.03	1365394.67		
TRAV #1	530891.94	1365737.20	141.44	PK NAIL SET
TRAV #2	531189.86	1365480.86	140.70	PK NAIL SET
TRAV #3	530714.05	1365488.81	140.83	PK NAIL SET
TRAV #4	530635.03	1365378.47	140.71	PK NAIL SET
TRAV #5	530560.57	1365274.49	140.81	PK NAIL SET
TRAV #6	530599.79	1365236.95	141.20	PK NAIL SET
TRAV #7	530825.66	1365020.78	140.81	PK NAIL SET
TRAV #8	530911.71	1365131.75	140.07	PK NAIL SET
TRAV #9	531019.78	1365271.36	141.27	PK NAIL SET
TRAV #10	531214.69	1365947.63	139.91	PK NAIL SET
TRAV #11	530853.02	1366121.33	142.28	600 NAIL SET

BENCHMARK

HORIZONTAL AND VERTICAL BASED UPON HOWARD COUNTY OPS CONTROL MONUMENTS (THIRD CLASS SURVEY CONTROL) NAD 83/91, NAVD 88.

NAME	NORTHING	EASTING	ELEVATION
47111	530819.908	1366225.547	143.274
47122	531440.211	1365496.525	147.001

- KEY LEGEND**
- 143.3 X EXISTING SPOT ELEVATION
 - 143.3 X PROPOSED SPOT ELEVATION
 - N 532000 STAKEOUT COORDINATES
 - E 1365000
 - MH 5 NEW STORM MANHOLE/DESIGNATOR
 - I-1 NEW STORM INLET/DESIGNATOR
 - SMH 6 NEW SEWER MANHOLE/DESIGNATOR
 - SF SILT FENCE
 - SSF SUPER SILT FENCE
 - AGIP INLET PROTECTION
 - PST PORTABLE SEDIMENT TANK
 - SP SUMP PIT



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE, MD 20852
TEL (301) 881-2545 FAX (301) 881-8814
E-MAIL JBYRNE@AMTEENGINEERING.COM
AMT FILE # 98-154

BLACK & VEATCH LP
Gaithersburg, Maryland

REG. PROF. ENGR. DATE

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MICHAEL JOSEPH WIERCINSKI A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 12816

DES: A. REYES					
DRN: R. ANCHORS					
CHK: A. REYES	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR		
DATE: 04/13/01	06/12/01	ADDENDUM NO. 1			
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

CIVIL

OVERALL SITE PLAN

OWNER/DEVELOPER
HOWARD COUNTY GOVERNMENT
DEPT. OF PUBLIC WORKS
3430 COURTHOUSE DRIVE
ELICOTT CITY, MARYLAND 21043

**LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION**

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
ELECTION DISTRICT NO. 6
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 5 OF 88

L5

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DESIGN WASTEWATER CHARACTERISTICS

	AVERAGE	MAX. MO.	MAX DAY
RAW WASTEWATER			
FLOW, MGD	25	30	40
BOD5			
CONCENTRATION, MG/L	179	194	190
LOAD, LBS/DAY	37,253	48,429	63,330
TSS			
CONCENTRATION, MG/L	178	193	222
LOAD, LBS/DAY	37,084	48,209	74,167
TKN, MG/L			
CONCENTRATION, MG/L	29	29	27
LOAD, LBS/DAY	6,110	7,332	9,165
TP, MG/L			
CONCENTRATION, MG/L	4.9	4.9	6.1
LOAD, LBS/DAY	1,025	1,229	2,049
INTERNAL RECYCLE LOADS			
FLOW, MGD			
BOD5			
CONCENTRATION, MG/L	219	237	233
LOAD, LBS/DAY	2,080	2,705	3,537
TSS			
CONCENTRATION, MG/L	375	406	469
LOAD, LBS/DAY	3,562	4,630	7,123
TKN, MG/L			
CONCENTRATION, MG/L	41	41	39
LOAD, LBS/DAY	390	468	585
TP, MG/L			
CONCENTRATION, MG/L	21	21	26
LOAD, LBS/DAY	198	237	395
TOTAL PLANT LOADS			
FLOW, MGD			
BOD5			
CONCENTRATION, MG/L	180	195	192
LOAD, LBS/DAY	39,333	51,133	66,867
TSS			
CONCENTRATION, MG/L	186	202	233
LOAD, LBS/DAY	40,645	52,839	81,290
TKN, MG/L			
CONCENTRATION, MG/L	30	30	28
LOAD, LBS/DAY	6,500	7,800	9,750
TP, MG/L			
CONCENTRATION, MG/L	5.6	5.6	7.0
LOAD, LBS/DAY	1,222	1,467	2,444
PRIMARY EFFLUENT CHARACTERISTICS			
FLOW, MGD			
BOD5			
CONCENTRATION, MG/L	109	118	116
LOAD, LBS/DAY	23,600	30,680	40,120
TSS			
CONCENTRATION, MG/L	58	63	73
LOAD, LBS/DAY	12,600	16,380	25,200
TKN, MG/L			
CONCENTRATION, MG/L	24	24	22
LOAD, LBS/DAY	5,200	6,240	7,800
TP, MG/L			
CONCENTRATION, MG/L	5.1	5.1	6.3
LOAD, LBS/DAY	1,100	1,320	2,200
EFFLUENT DISCHARGE LIMITATIONS			
	MONTHLY	WEEKLY	
FLOW, MGD			
BOD5 (APR THROUGH OCT)			
CONCENTRATION, MG/L	7.0	10.5	
LOAD, LBS/DAY	1,460	2,189	
BOD5 (NOV THROUGH MAR)			
CONCENTRATION, MG/L	30	45	
LOAD, LBS/DAY	6,255	9,383	
TOTAL SUSPENDED SOLIDS			
CONCENTRATION, MG/L	30	45	
LOAD, LBS/DAY	6,255	9,383	
AMMONIA NITROGEN			
CONCENTRATION, MG/L	1.0	1.5	
LOAD, LBS/DAY	209	313	
TOTAL PHOSPHORUS			
CONCENTRATION, MG/L	1.0	--	
LOAD, LBS/DAY	209	--	
TOTAL NITROGEN, MG/L (ANNUAL AVERAGE)			
	7	--	
DISSOLVED OXYGEN, MG/L (MIN)			
	6.0	--	

RAW WASTEWATER SCREENING

NO. OF SCREENS	3
SCREEN WIDTH, FT/EA	6'-0"
TYPE OF SCREENS	CLIMBER
NOMINAL BAR SPACING, IN	0.25
CLEAN SCREEN CAPACITY, MGD	
1 SCREEN IN SERVICE	50
2 SCREENS IN SERVICE	52

RAW WASTEWATER PUMPING

HEADWORKS PUMPS	
NO. OF EXISTING PUMPS	4
RATED CAPACITY, MGD/EA	5.3
NO. OF NEW PUMPS	2
RATED CAPACITY, MGD/EA	7.5
AUXILIARY PUMP STATION	
NO. OF PUMPS	3
RATED CAPACITY, MGD/EA	9.7
COMBINED PUMPING CAPACITY	
TOTAL CAPACITY, MGD	63.8
FIRM CAPACITY, MGD	55.5

GRIT REMOVAL BASINS

NO. OF BASINS	2
TYPE OF BASINS	DETRITOR
DIMENSIONS, FT	42 X 42 X 3 SWD
RATED CAPACITY, MGD/BASIN	
90% REMOVAL 100 MESH	25
90% REMOVAL 65 MESH	50

FLOW EQUALIZATION

NO. OF BASINS	3
TOTAL VOLUME, MIL. GAL	2.8

PRIMARY CLARIFIERS

DIAMETER EXISTING BASINS, FT	
PC NO. 1	105
PC NOS. 2, 3 AND 4	90
DIAMETER PC NO. 5, FT	105
SIDE WATER DEPTH (ALL BASINS), FT	16.67
TOTAL SURFACE AREA, SQ FT	36,400
TOTAL WEIR LENGTH, FT	1,508
SURFACE OVERFLOW RATES, GPD/SQ FT	
AVERAGE	714
MAX MONTH	857
MAX DAY	1,143
WEIR OVERFLOW RATE, GPD/LIN FT	
AVERAGE	17,244
MAX MONTH	20,693
MAX DAY	27,591

PRIMARY SLUDGE PUMPING

SOUTH PUMP STATION (PC'S 3, 4 AND 5)	
SLUDGE PUMPS	
EXISTING PUMPS	2
NEW PUMP	1
PUMP CAPACITY, GPM/EA	150
SCUM PUMPS	
EXISTING PUMPS	2
PUMP CAPACITY, GPM/EA	100
NORTH PUMP STATION (PC'S 1 AND 2)	
SLUDGE PUMPS	
EXISTING PUMPS	2
PUMP CAPACITY, GPM/EA	150
SCUM PUMPS	
EXISTING PUMPS	2
PUMP CAPACITY, GPM/EA	100

BIOLOGICAL PROCESS REACTORS

NORTH PROCESS REACTORS		AVERAGE	SUMMER MAX MO	WINTER MAX MO
NO. OF REACTOR BASINS	3			
NO. OF REACTOR CELL PER BASIN	10			
REACTOR CELL VOLUMES, GAL/EA				
CELL 1 (ANOXIC)	71,300	16.7%		
CELL 2 (ANAEROBIC)	54,700	12.8%		
CELL 3 (ANAEROBIC/ANOXIC)	28,800	6.7%		
CELLS 4 & 5 (ANOXIC)	60,500	14.2%		
CELLS 6 & 7 (ANOXIC/OXIC)	69,800	16.3%		
CELLS 8, 9 & 10 (OXIC)	142,500	33.3%		
REACTOR ZONE VOLUMES, GAL				
1ST ANOXIC	213,900	8.5%		
ANAEROBIC	250,500	9.9%		
2ND ANOXIC	572,400	22.6%		
SWITCH ZONE	209,400	8.3%		
OXIC	1,282,500	50.7%		
TOTAL	2,528,700	100.0%		

PROCESS LOADING

FLOW, MGD	7.5	9.0	9.0
BOD5, LBS/DAY	8,259	10,301	10,301
TSS, LBS/DAY	4,072	5,163	5,163
TKN, LBS/DAY	1,625	1,925	1,925
TP, LBS/DAY	321	384	384
TEMP, C	20	26	13
RETENTION TIME BY ZONE, HRS			
1ST ANOXIC	0.7	0.6	0.6
ANAEROBIC	0.8	0.7	0.7
2ND ANOXIC	2.5	2.1	1.5
OXIC	4.1	3.4	3.4
TOTAL	8.1	6.7	6.2
SRT, DAYS (ANOXIC + OXIC)	10	7.3	12
MLSS, MG/L (OXIC ZONE)	2,700	2,300	4,000
WASTE ACTIVATED SLUDGE, LBS/DAY	4,522	4,887	5,095
RETURN ACTIVATED SLUDGE			
RAS FLOW, MGD	3.7	3.5	8.9
SOLIDS CONCENTRATION, MG/L	8,000	8,000	8,000
INTERNAL RECYCLE FLOW, MGD	23	27	20
OXYGEN TRANSFER REQ., LBS/HR	600	735	660
AIR REQUIRED, SCFM	4,722	6,711	4,356

EXISTING PROCESS REACTORS

NO. OF REACTOR BASINS	4
NO. OF REACTOR CELL PER BASIN	10
REACTOR CELL VOLUMES, GAL/EA	
CELL 1 (ANOXIC)	259,981
CELL 2 (ANAEROBIC)	199,267
CELL 3 (ANAEROBIC/ANOXIC)	104,304
CELLS 4 & 5 (ANOXIC)	221,062
CELLS 6 & 7 (ANOXIC/OXIC)	253,754
CELLS 8, 9 & 10 (OXIC)	518,406
REACTOR ZONE VOLUMES, GAL	
1ST ANOXIC	526,744
ANAEROBIC	616,874
2ND ANOXIC	1,409,575
SWITCH ZONE	515,662
OXIC	3,158,246
TOTAL	6,227,100

PROCESS LOADING

	AVERAGE	SUMMER MAX MO	WINTER MAX MO
FLOW, MGD	18.5	22.2	22.2
BOD5, LBS/DAY	20,376	25,414	25,414
TSS, LBS/DAY	10,047	12,737	12,737
TKN, LBS/DAY	4,008	4,748	4,748
TP, LBS/DAY	791	948	948
TEMP, C	20	26	13
RETENTION TIME BY ZONE, HRS			
1ST ANOXIC	0.7	0.6	0.6
ANAEROBIC	0.8	0.7	0.7
2ND ANOXIC	2.5	2.1	1.5
OXIC	4.1	3.4	4.0
TOTAL	8.1	6.7	6.7
SRT, DAYS (ANOXIC + OXIC)	10	7.3	12
MLSS, MG/L (OXIC ZONE)	2,750	2,400	4,000
WASTE ACTIVATED SLUDGE, LBS/DAY	11,200	12,200	12,800
RETURN ACTIVATED SLUDGE			
RAS FLOW, MGD	9.5	9.3	21.9
SOLIDS CONCENTRATION, MG/L	8,000	8,000	8,000
INTERNAL RECYCLE FLOW, MGD	56	67	50
OXYGEN TRANSFER REQ., LBS/HR	1,546	1,917	1,700
AIR REQUIRED, SCFM	12,167	17,502	11,220

ANAEROBIC FERMENTER

NO. FERMENTER BASINS	2
BASIN DIAMETER, FT.	50
BASIN SIDE WATER DEPTH, FT	12.15
BASIN VOLUME, GAL/EA	198,800
PRIMARY SLUDGE	
FLOW, GPD	67,000
SOLIDS FEED, LBS/DAY	14,000
ELUTRIATION WATER, GPD	860,000
HYDRAULIC RETENTION TIME, HRS	10.3
SOLIDS RETENTION TIME, DAYS	3-5
FERMENTATE PRODUCTION	
FLOW, MGD	0.911
BOD5 LOAD, LBS/D	5,035
TSS LOAD, LBS/D	1,520
TKN LOAD, LBS/D	433
TP LOAD, LBS/D	12

FINAL CLARIFIERS

NORTH FINAL CLARIFIERS	
NO. OF CLARIFIERS	3
DIAMETER, FT	90
SIDE WATER DEPTH	15
SURFACE AREA, SQ FT/EA	6,362
WEIR LENGTH, LIN FT/EA	264
SURFACE OVERFLOW RATES, GPD/SQ FT	
AVERAGE	393
MAX MONTH	472
MAX DAY	629
WEIR OVERFLOW RATES, GPD/LIN FT	
AVERAGE	9,470
MAX MONTH	11,364
MAX DAY	15,152
SOLIDS LOADING RATES, LBS/DAY/SQ FT	
AVERAGE	13.2
MAX MONTH (WINTER)	31.3
MAX DAY (WINTER)	36.5
EAST & WEST FINAL CLARIFIERS	
NO. OF CLARIFIERS	8
DIAMETER, FT	90
SIDE WATER DEPTH	15.5
SURFACE AREA, SQ FT/EA	6,362
WEIR LENGTH, LIN FT/EA	440
SURFACE OVERFLOW RATES, GPD/SQ FT	
AVERAGE	364
MAX MONTH	436
MAX DAY	582
WEIR OVERFLOW RATES, GPD/LIN FT	
AVERAGE	5,257
MAX MONTH	6,308
MAX DAY	8,411
SOLIDS LOADING RATES, LBS/DAY/SQ FT	
AVERAGE	12.6
MAX MONTH (WINTER)	28.9
MAX DAY (WINTER)	33.8

EFFLUENT FILTERS

NO. OF FILTER BASINS	6
FILTER AREA, SQ FT/BASIN (1 CELL IN BACKWASH)	1,760
TOTAL FILTER AREA, SQ FT	10,560
HYDRAULIC LOADING, GPM/SQ FT	
AVERAGE	1.7
MAX MONTH	2.0
MAX DAY	2.7

FILTER EFFLUENT PUMP STATION

NO. OF PUMPS	5
RATED CAPACITY, MGD/EA	11.25
TOTAL CAPACITY, MGD	54
FIRM CAPACITY, MGD	45

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND



THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
ROBERT J. RECTANUS, JR.,
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927

DES: RJR

DRN: SLF

CHK: WLK

DATE: 2/19/01

LAYOUT/OVERVIEW

CIVIL

PROCESS DESIGN CRITERIA

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

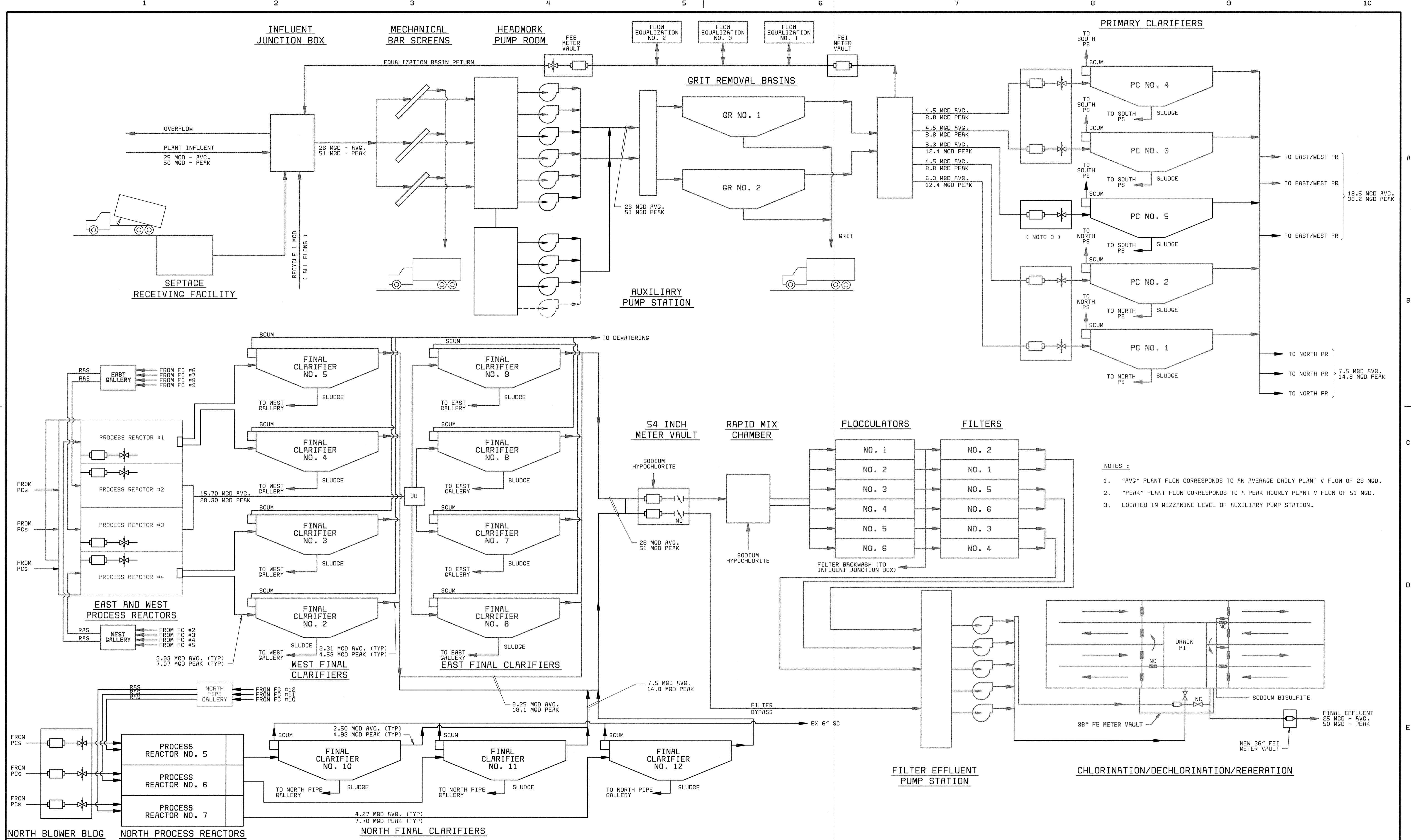
HOWARD COUNTY, MARYLAND

SCALE
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6 OF 88

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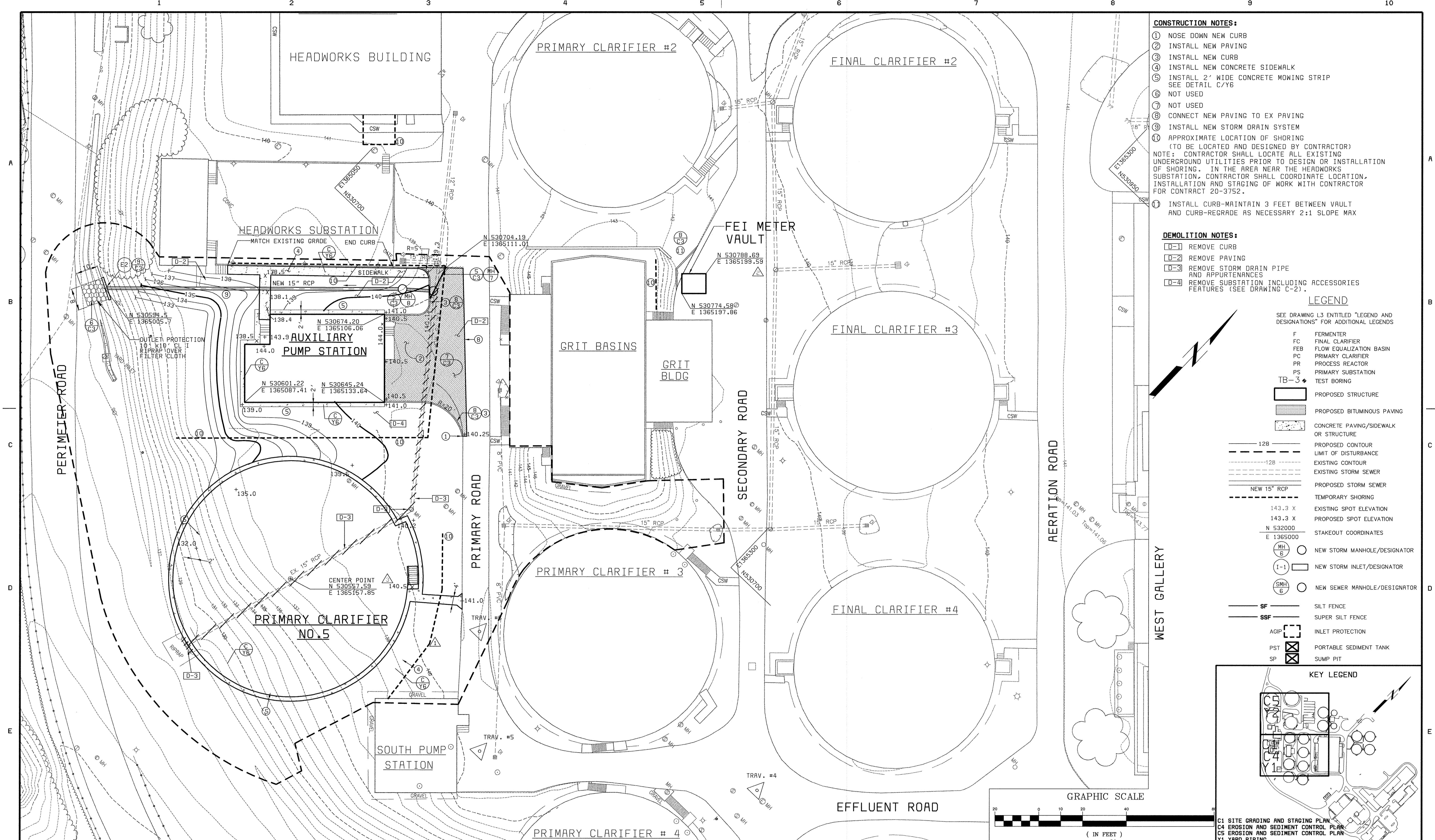
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- NOTES :**
1. "AVG" PLANT FLOW CORRESPONDS TO AN AVERAGE DAILY PLANT V FLOW OF 26 MGD.
 2. "PEAK" PLANT FLOW CORRESPONDS TO A PEAK HOURLY PLANT V FLOW OF 51 MGD.
 3. LOCATED IN MEZZANINE LEVEL OF AUXILIARY PUMP STATION.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	BLACK & VEATCH Gaithersburg, Maryland	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22827	DES: FKA DRN: GRH CHK: WLK DATE: 2/19/01	02/06/04 CONFORMED TO CONSTRUCTION RECORDS REVISIONS AND RECORD OF ISSUE	RHH/RJR/RJR NO. BY CK APP	LAYOUT/OVERVIEW CIVIL LIQUID SCHEMATIC	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 8 OF 88 L8
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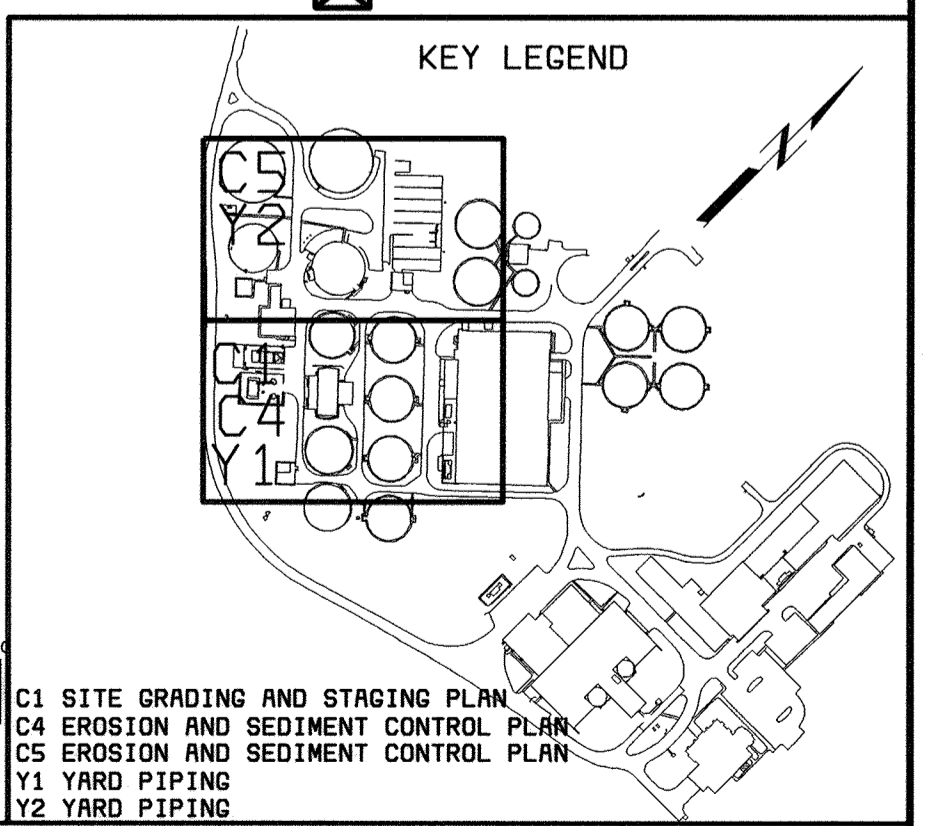
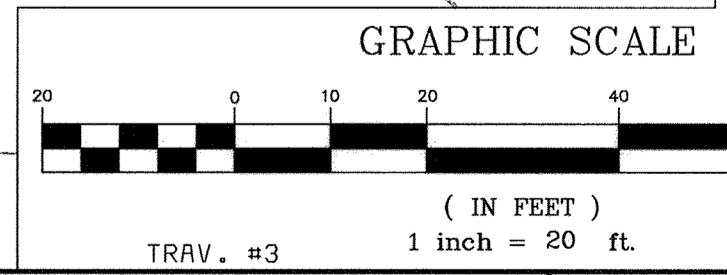
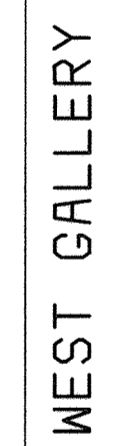


- CONSTRUCTION NOTES:**
- ① NOSE DOWN NEW CURB
 - ② INSTALL NEW PAVING
 - ③ INSTALL NEW CURB
 - ④ INSTALL NEW CONCRETE SIDEWALK
 - ⑤ INSTALL 2' WIDE CONCRETE MOWING STRIP
SEE DETAIL C/Y6
 - ⑥ NOT USED
 - ⑦ NOT USED
 - ⑧ CONNECT NEW PAVING TO EX PAVING
 - ⑨ INSTALL NEW STORM DRAIN SYSTEM
(TO BE LOCATED AND DESIGNED BY CONTRACTOR)
 - ⑩ APPROXIMATE LOCATION OF SHORING
(TO BE LOCATED AND DESIGNED BY CONTRACTOR)
- NOTE: CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES PRIOR TO DESIGN OR INSTALLATION OF SHORING. IN THE AREA NEAR THE HEADWORKS SUBSTATION, CONTRACTOR SHALL COORDINATE LOCATION, INSTALLATION AND STAGING OF WORK WITH CONTRACTOR FOR CONTRACT 20-3752.
- ⑪ INSTALL CURB-MAINTAIN 3 FEET BETWEEN VAULT AND CURB-REGRADE AS NECESSARY 2:1 SLOPE MAX

- DEMOLITION NOTES:**
- D-1 REMOVE CURB
 - D-2 REMOVE PAVING
 - D-3 REMOVE STORM DRAIN PIPE AND APPURTENANCES
 - D-4 REMOVE SUBSTATION INCLUDING ACCESSORIES FEATURES (SEE DRAWING C-2).

LEGEND

- SEE DRAWING L3 ENTITLED "LEGEND AND DESIGNATIONS" FOR ADDITIONAL LEGENDS
- F FERMENTER
 - FC FINAL CLARIFIER
 - FEB FLOW EQUALIZATION BASIN
 - PC PRIMARY CLARIFIER
 - PR PROCESS REACTOR
 - PS PRIMARY SUBSTATION
 - TB-3 TEST BORING
- PROPOSED STRUCTURE
 - PROPOSED BITUMINOUS PAVING
 - CONCRETE PAVING/SIDEWALK OR STRUCTURE
 - PROPOSED CONTOUR
 - LIMIT OF DISTURBANCE
 - EXISTING CONTOUR
 - EXISTING STORM SEWER
 - PROPOSED STORM SEWER
 - TEMPORARY SHORING
 - EXISTING SPOT ELEVATION
 - PROPOSED SPOT ELEVATION
 - N 532000
E 1365000
STAKEOUT COORDINATES
 - MH 5 NEW STORM MANHOLE/DESIGNATOR
 - I-1 NEW STORM INLET/DESIGNATOR
 - SMH 6 NEW SEWER MANHOLE/DESIGNATOR
 - SF SILT FENCE
 - SSF SUPER SILT FENCE
 - AGIP INLET PROTECTION
 - PST PORTABLE SEDIMENT TANK
 - SP SUMP PIT



C1 SITE GRADING AND STAGING PLAN
 C4 EROSION AND SEDIMENT CONTROL PLAN
 C5 EROSION AND SEDIMENT CONTROL PLAN
 Y1 YARD PIPING
 Y2 YARD PIPING

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 CHIEF, BUREAU OF UTILITIES DATE

AMT
 A. MORTON THOMAS AND ASSOCIATES, INC.
 CONSULTING ENGINEERS
 12750 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE, MD 20852
 TEL: (301) 881-2545 FAX: (301) 881-8814
 E-MAIL: JBYRNE@AMTEENGINEERING.COM
 AMT FILE # 98-154

BLACK & VEATCH
 Gaithersburg, Maryland
 REG. PROF. ENGR. DATE

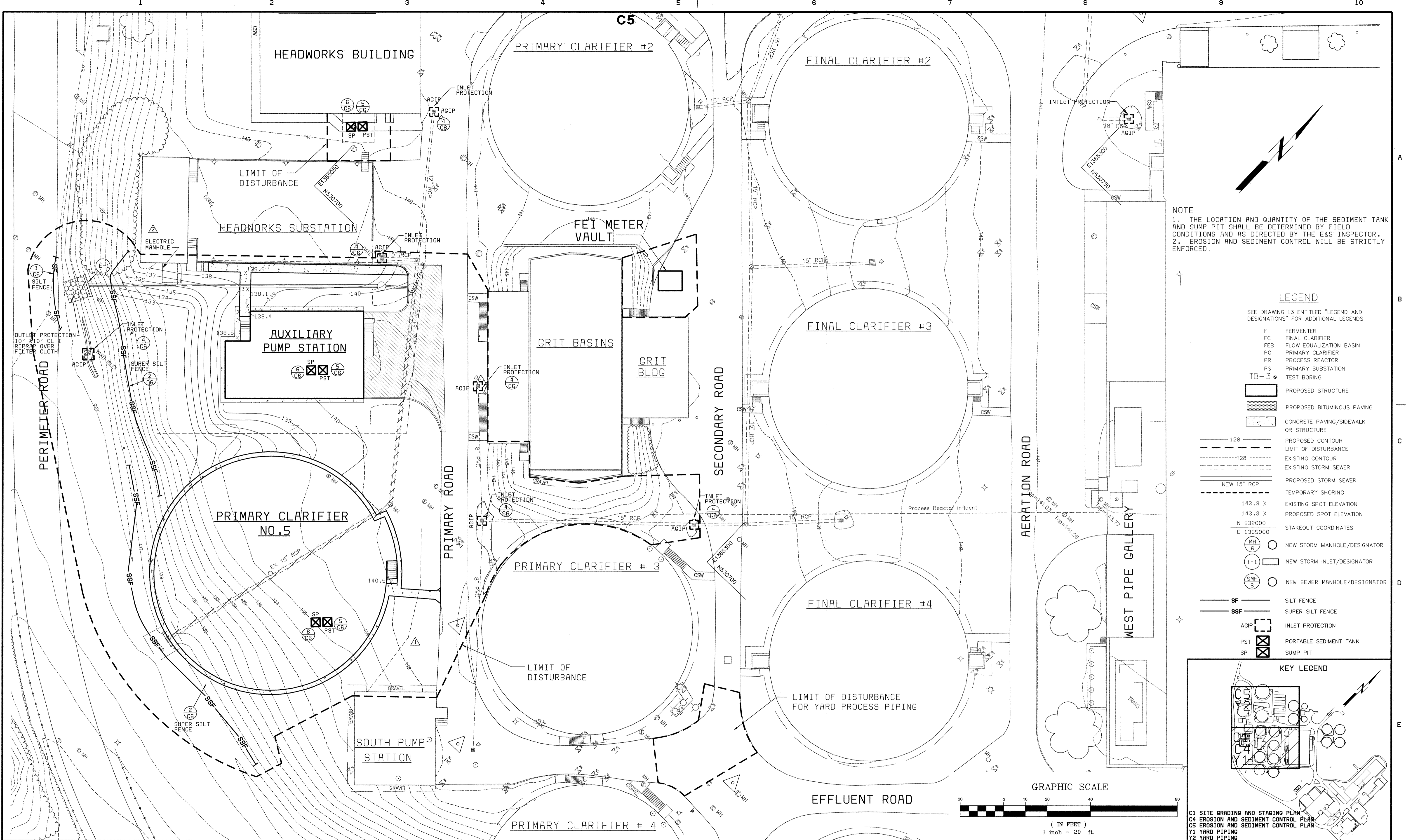
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 MICHAEL JOSEPH WIERCINSKI
 A REGISTERED
 PROFESSIONAL ENGINEER
 IN THE
 STATE OF MARYLAND,
 NO. 12816

DES: A. REYES					
DRN: R. ANCHORS	05/05/05	CONFORMED TO CONSTRUCTION RECORDS			
CHK: A. REYES	6/12/01	ADDENDUM NO. 1			
DATE: 04/13/01	4/13/01	REVISED LOCATION OF SHORING			
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

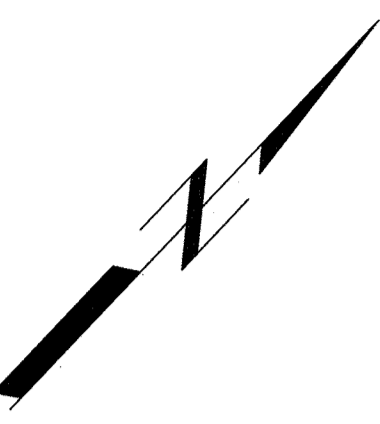
SITE WORK
 CIVIL
 SITE GRADING AND STAGING PLAN

LITTLE PATUXENT WATER RECLAMATION PLANT
 ADDITION NO. 6
 PRELIMINARY AND PRIMARY TREATMENT EXPANSION
 CAPITAL PROJECT S-6205
 CONTRACT NO. 20-3840
 ELECTION DISTRICT NO. 6
 HOWARD COUNTY, MARYLAND

SCALE
 AS
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 SHEET
 10 OF 88
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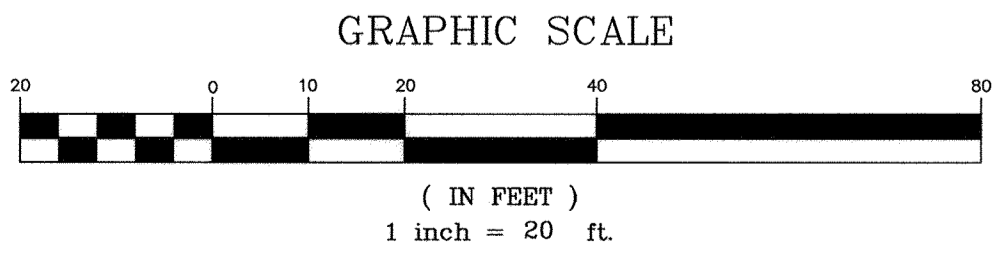
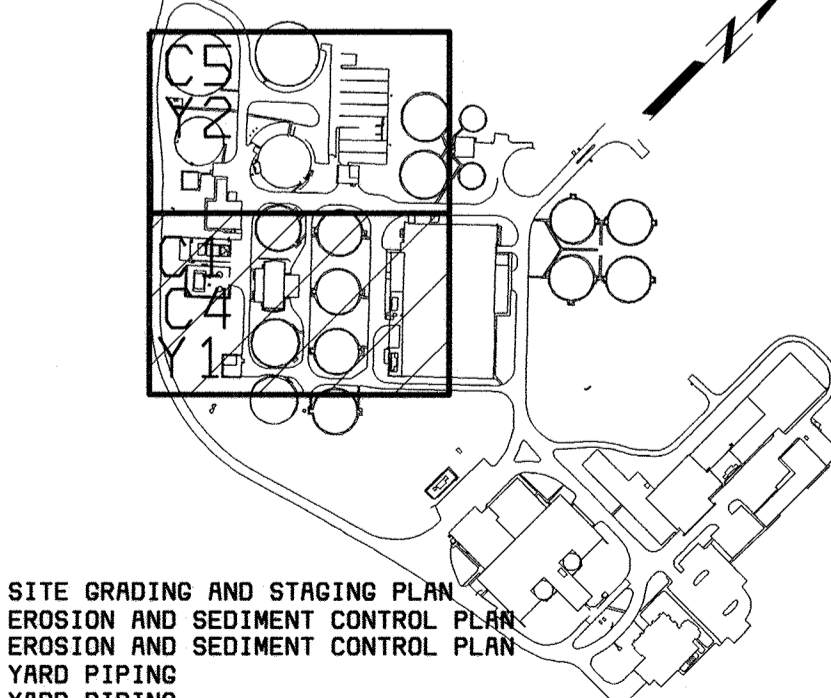
NOTE
 1. THE LOCATION AND QUANTITY OF THE SEDIMENT TANK AND SUMP PIT SHALL BE DETERMINED BY FIELD CONDITIONS AND AS DIRECTED BY THE E&S INSPECTOR.
 2. EROSION AND SEDIMENT CONTROL WILL BE STRICTLY ENFORCED.



LEGEND

- SEE DRAWING L3 ENTITLED "LEGEND AND DESIGNATIONS" FOR ADDITIONAL LEGENDS
- F FERMENTER
 - FC FINAL CLARIFIER
 - FEB FLOW EQUALIZATION BASIN
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 - PROPOSED CONTOUR
 - LIMIT OF DISTURBANCE
 - EXISTING CONTOUR
 - EXISTING STORM SEWER
 - PROPOSED STORM SEWER
 - TEMPORARY SHORING
 - 143.3 X EXISTING SPOT ELEVATION
 - 143.3 X PROPOSED SPOT ELEVATION
 - N 532000 STAKEOUT COORDINATES
 - E 1365000
 - MH NEW STORM MANHOLE/DESIGNATOR
 - I-1 NEW STORM INLET/DESIGNATOR
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 - SF SILT FENCE
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 - AGIP INLET PROTECTION
 - PST PORTABLE SEDIMENT TANK
 - SP SUMP PIT

KEY LEGEND



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

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 Gaithersburg, Maryland

REG. PROF. ENGR. DATE

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DES: A. REYES					
DRN: R. ANCHORS					
CHK: A. REYES	5/05/05	CONFORMED TO CONSTRUCTION RECORDS			
DATE: 04/13/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

CIVIL

EROSION AND SEDIMENT CONTROL PLAN - SHEET 1 OF 2

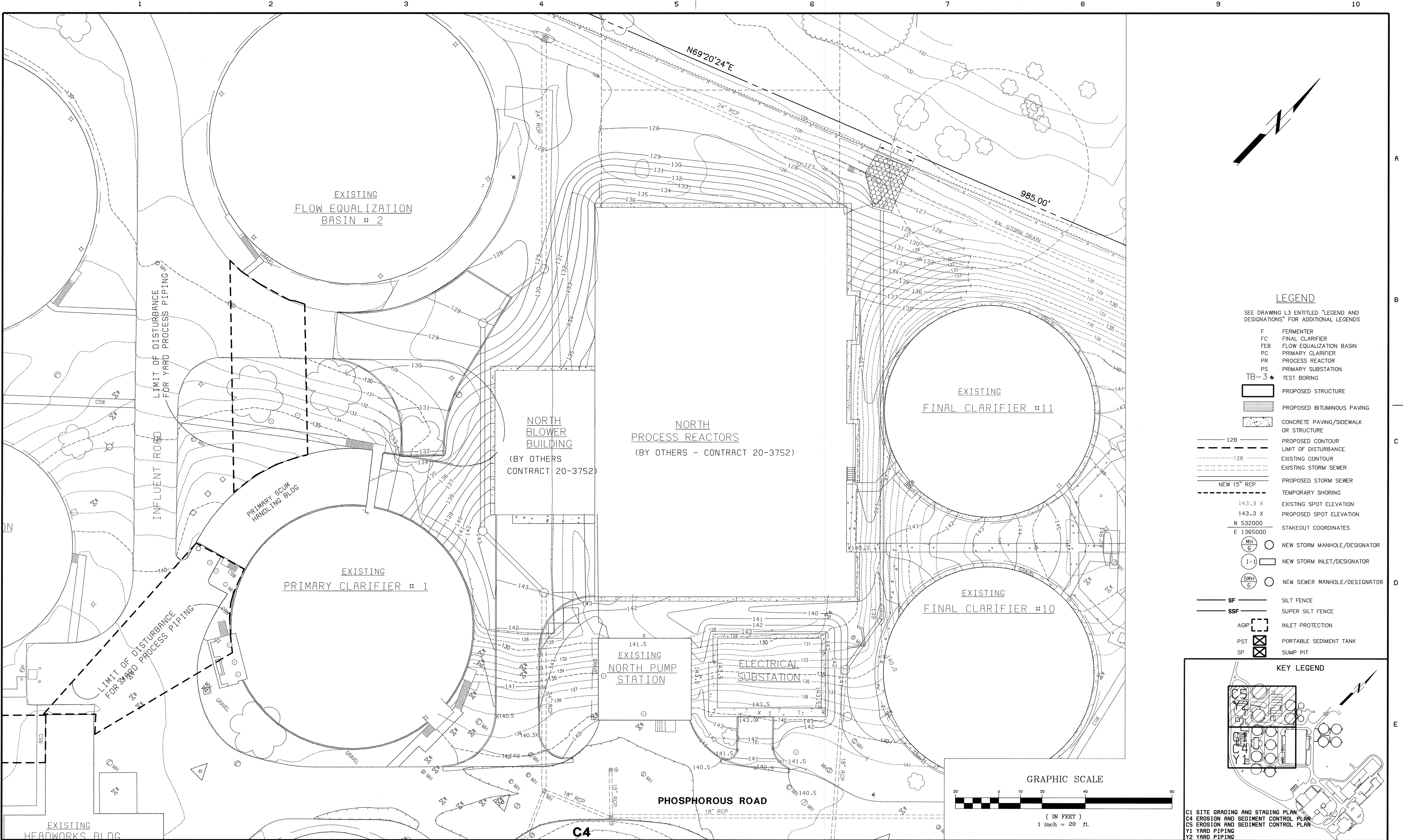
LITTLE PATUXENT WATER RECLAMATION PLANT
 ADDITION NO. 6
 PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
 CONTRACT NO. 20-3840
 ELECTION DISTRICT NO. 6
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 13 OF 88

C4

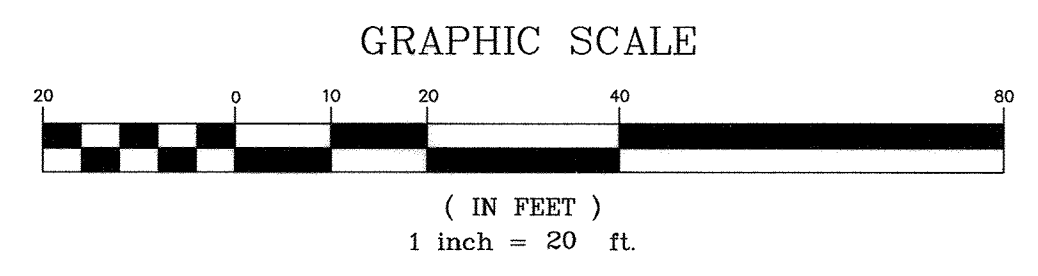
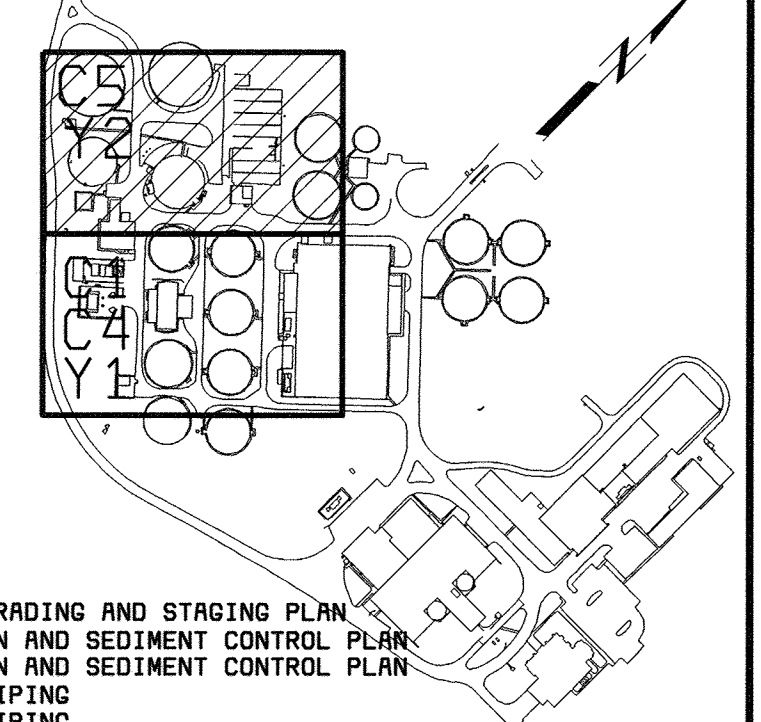


LEGEND

SEE DRAWING L3 ENTITLED "LEGEND AND DESIGNATIONS" FOR ADDITIONAL LEGENDS

- F FERMENTER
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- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- STAKEOUT COORDINATES
- NEW STORM MANHOLE/DESIGNATOR
- NEW STORM INLET/DESIGNATOR
- NEW SEWER MANHOLE/DESIGNATOR
- SILT FENCE
- SUPER SILT FENCE
- INLET PROTECTION
- PORTABLE SEDIMENT TANK
- SUMP PIT

KEY LEGEND



C1 SITE GRADING AND STAGING PLAN
 C4 EROSION AND SEDIMENT CONTROL PLAN
 C5 EROSION AND SEDIMENT CONTROL PLAN
 Y1 YARD PIPING
 Y2 YARD PIPING

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 CHIEF, BUREAU OF UTILITIES DATE

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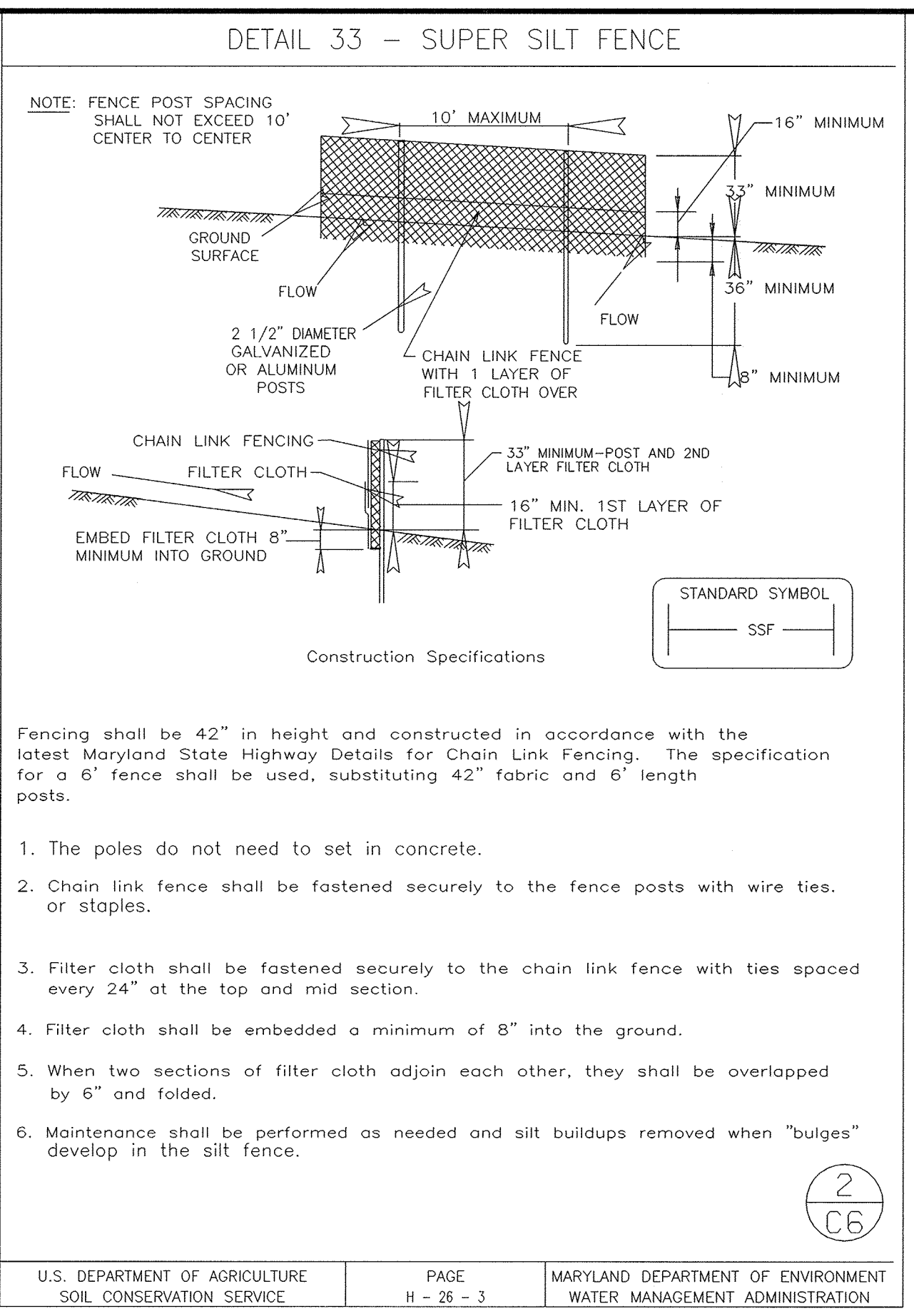
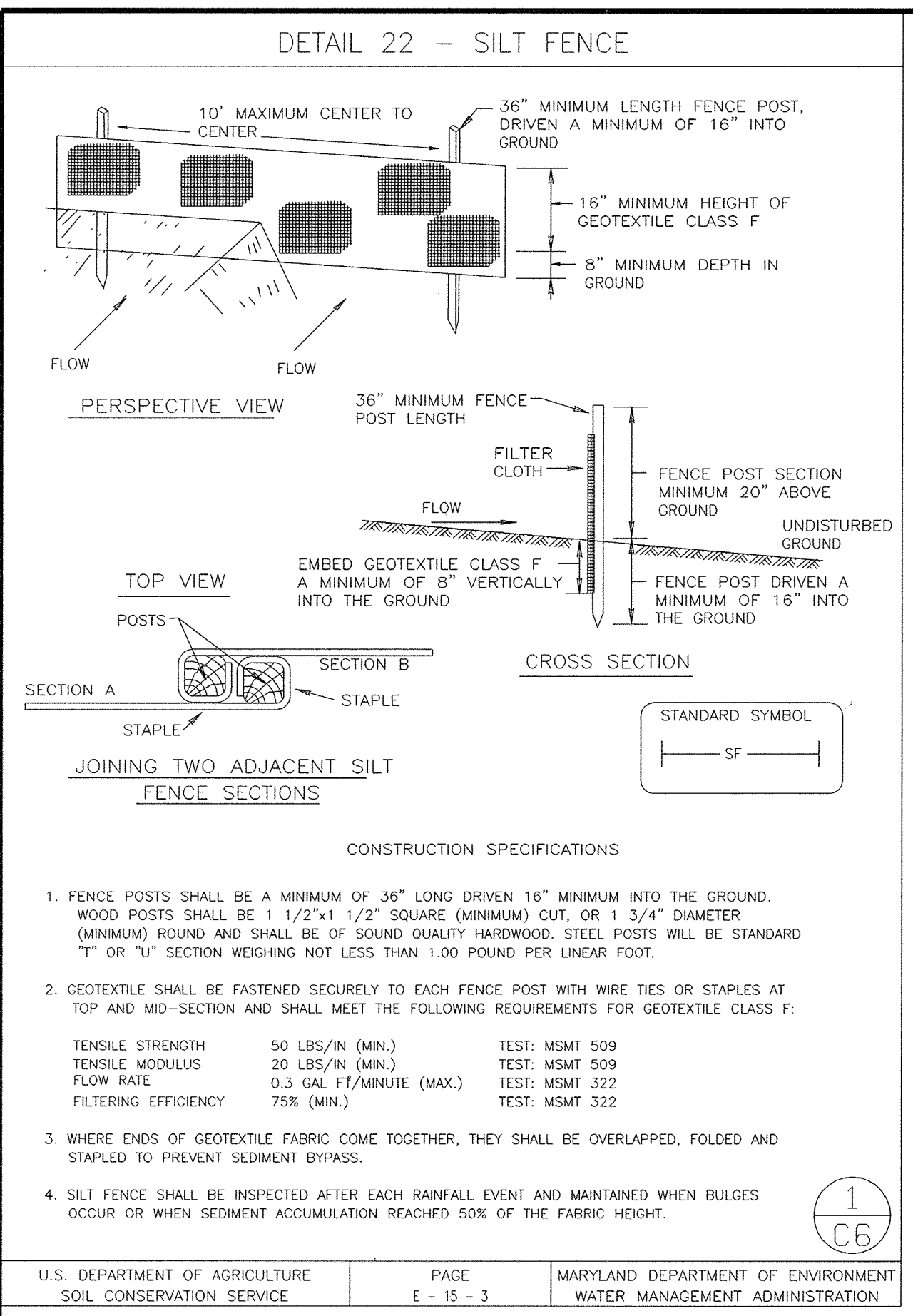
DES: A. REYES					
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DATE: 04/13/01	05/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

CIVIL
**EROSION AND SEDIMENT CONTROL
 PLAN - SHEET 2 OF 2**

LITTLE PATUXENT WATER RECLAMATION PLANT
 ADDITION NO. 6
 PRELIMINARY AND PRIMARY TREATMENT EXPANSION
 CAPITAL PROJECT S-6205
 CONTRACT NO. 20-3840
 ELECTION DISTRICT NO. 6
 HOWARD COUNTY, MARYLAND

SCALE
 AS
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 SHEET
 14 OF 88
C5

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HOWARD SOIL CONSERVATION DISTRICT PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:

- PREFERRED** -- APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ. FT.) AND 600 LBS/ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS/ACRE 30-0-0 UREAFORM FERTILIZER (9 LBS/1000 SQ. FT.)
- ACCEPTABLE** -- APPLY 2 TONS/ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ. FT.) AND 1000 LBS/ACRE 10-10-10 FERTILIZER (23 LBS/1000 SQ. FT.) BEFORE SEEDING. HARROW OR DISK INTO UPPER THREE INCHES OF SOIL.

SEEDING -- FOR THE PERIODS MARCH 1 -- APRIL 30, AND AUGUST 1 -- OCTOBER 15, SEED WITH 60 LBS/ACRE (1.4 LBS/1000 SQ. FT.) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 -- JULY 31, SEED WITH 60 LBS KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS/ACRE (.05 LBS/1000 SQ. FT.) OF WEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 -- FEBRUARY 28, PROTECT SITE BY:

OPTION 1 -- TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING.
OPTION 2 -- USE SOD.
OPTION 3 -- SEED WITH 60 LBS/ACRE KENTUCKY 30 TALL FESCUE AND MULCH WITH 2 TONS/ACRE WELL ANCHORED STRAW.

MULCHING -- APPLY 1-1/2 TO 2 TONS PER ACRE (70 TO 90 LBS/1000 SQ. FT.) OF UNROTTED SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GALLONS PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPE 8 FEET OR HIGHER, USE 348 GALLONS PER ACRE (5 GAL/1000 SQ. FT.) FOR ANCHORING.

MAINTENANCE -- INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE RE-DISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.

SEEDBED PREPARATION: -- LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING, IF NOT PREVIOUSLY LOOSENED.

SOIL AMENDMENTS: -- APPLY 600 LBS/ACRE 10-10-10 FERTILIZER (14 LBS/1000 SQ. FT.)

SEEDING: -- FOR PERIODS MARCH 1 -- APRIL 30 AND FROM AUGUST 15 -- OCTOBER 15, SEED WITH 2-1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ. FT.) FOR THE PERIOD MAY 1 -- AUGUST 14, SEED WITH 3 LBS/ACRE OF WEEPING LOVEGRASS (.07 LBS/1000 SQ. FT.). FOR THE PERIOD NOVEMBER 16 -- FEBRUARY 28, PROTECT SITE BY APPLYING 2 TONS/ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

MULCHING -- APPLY 1-1/2 TO 2 TONS/ACRE (70 TO 90 LBS/1000 SQ. FT.) OF UNROTTED WEED-FREE, SMALL GRAIN STRAW IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 218 GAL. PER ACRE (5 GAL/1000 SQ. FT.) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPE 8 FT. OR HIGHER, USE 348 GAL. PER ACRE (5 GAL/1000 SQ. FT.) FOR ANCHORING.

REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR ADDITIONAL RATES AND METHODS NOT COVERED.

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

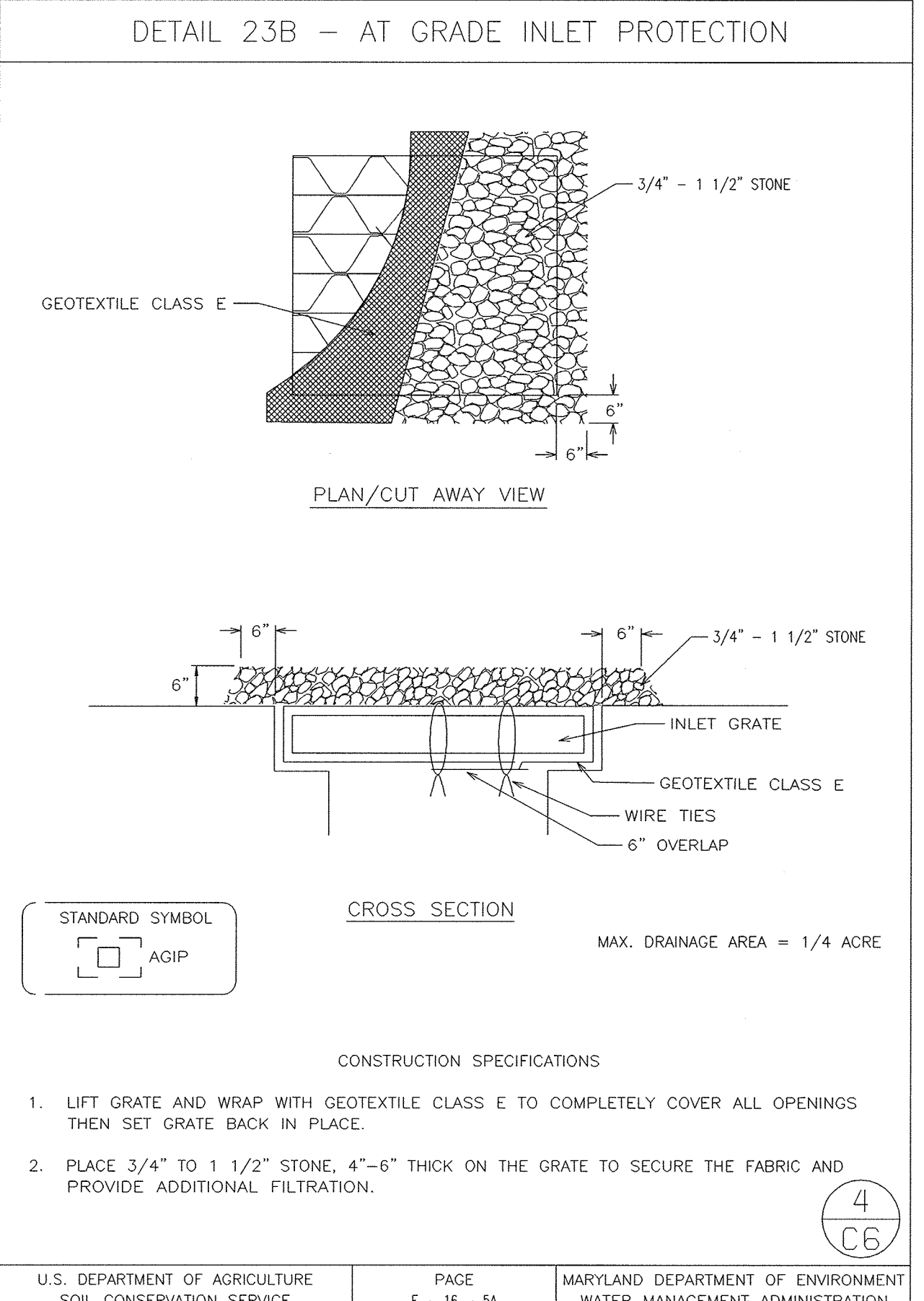
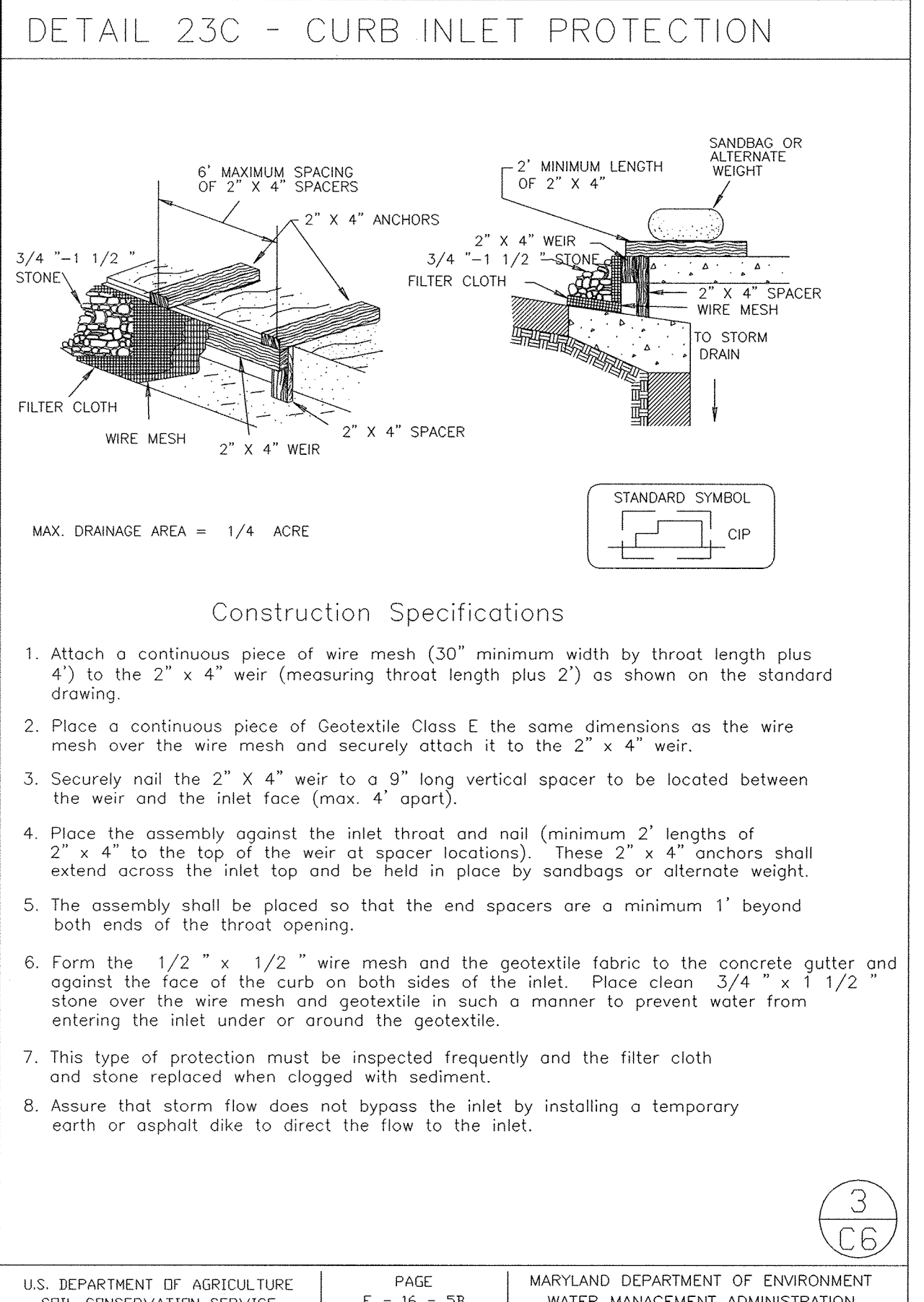
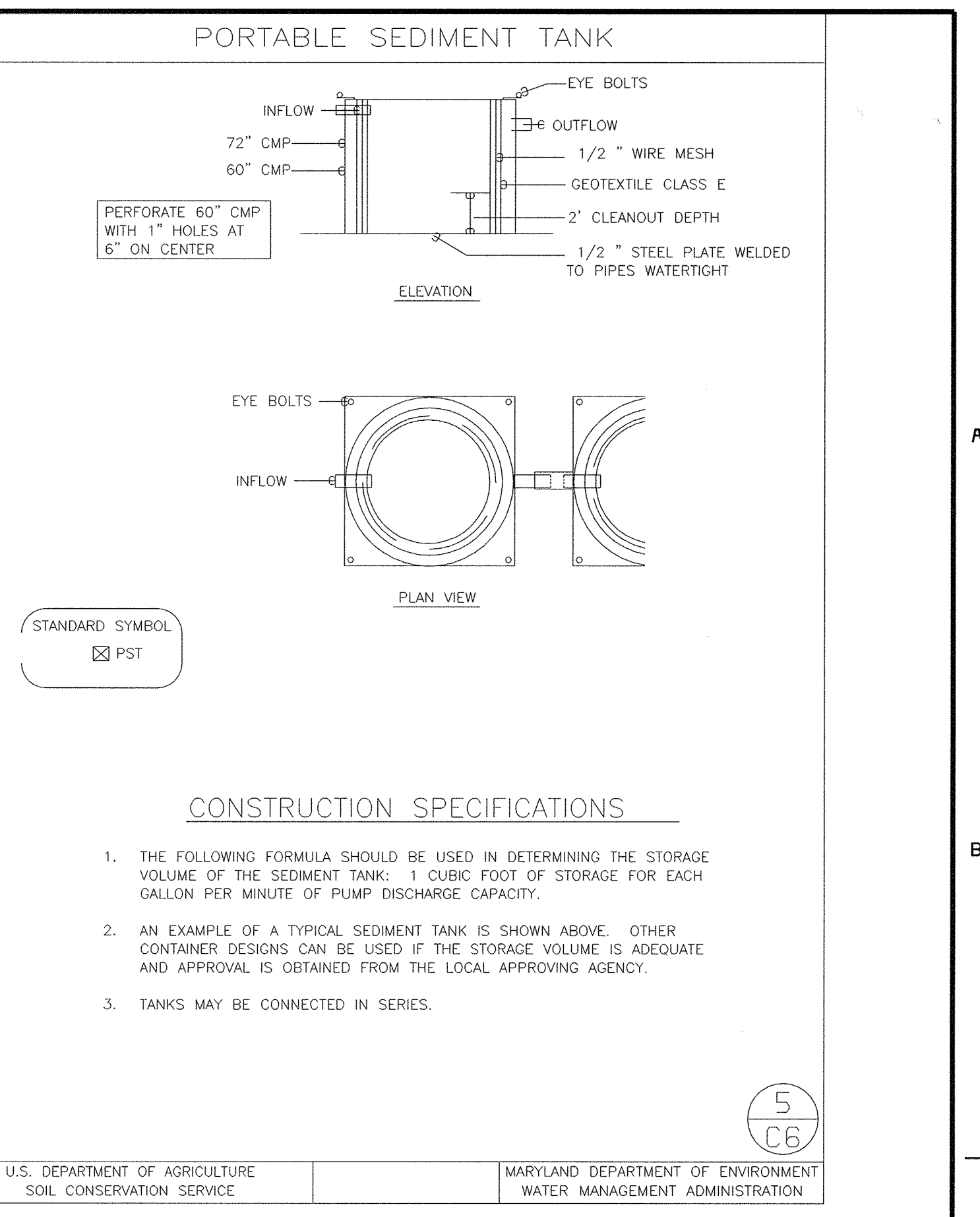
- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
- FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
 - 7 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1.
 - 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL SEDIMENT TRAPS/BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12 OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. 51), SOD (SEC. 54), TEMPORARY SEEDING (SEC. 50) AND MULCHING (SEC. 52). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
- ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:**

TOTAL AREA OF SITE	38.01 ACRES
AREA DISTURBED	0.75 ACRES
AREA TO BE ROOFED OR PAVED	0.33 ACRES
AREA TO BE VEGETATIVELY STABILIZED	0.42 ACRES
TOTAL CUT	3000 CU. YDS. **
TOTAL FILL	2000 CU. YDS. **
OFFSITE WASTE/BORROW AREA LOCATION	2500 CU. YDS. **

** THIS INFORMATION IS NOT TO BE USED BY THE CONTRACTOR
- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
- TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY, WHICHEVER IS SHORTER.

SEQUENCE OF CONSTRUCTION ACTIVITIES

- OBTAIN GRADING PERMIT.
- INSTALL NECESSARY SEDIMENT CONTROL MEASURES AND DEVICES.
- START DEMOLITION WORK AND STABILIZE AREAS TO BE VEGETATED WITH TEMPORARY SEED AND MULCH.
- INSTALL 42" AUX. (Y1)
- EXCAVATE AND BUILD PRIMARY CLARIFIER AND PUMP STATION AND VAULT.
- START INSTALLATION OF UTILITY PIPES, STORM DRAIN AND PROCESS PIPING.
- INSTALL CURB AND GUTTER, PAVING, WALK, ETC.
- STABILIZE AREAS TO BE VEGETATED WITH PERMANENT SEED AND MULCH.
- REMOVE ALL SEDIMENT CONTROL MEASURES AND DEVICES. RESTABILIZE DISTURBED AREAS WITH SEED AND MULCH.
- FINAL STABILIZATION OF SITE.



DETAIL 20B - SUMP PIT

CONSTRUCTION SPECIFICATIONS

- Pit dimensions are variable, with the minimum diameter being 2 times the standpipe diameter.
- The standpipe should be constructed by perforating a 12" to 24" diameter corrugated or PVC pipe. Then wrapping with 1/2" hardware cloth and Geotextile Class E. The perforations shall be 1/2" x 6" slits or 1" diameter holes.
- A base of filter material consisting of clean gravel or #57 stone should be placed in the pit to a depth of 12". After installing the standpipe, the pit surrounding the standpipe should then be backfilled with the same filter material.
- The standpipe should extend 12" to 18" above the lip of the pit or the riser crest elevation (basin dewatering only) and the filter material should extend 3" minimum above the anticipated standing water elevation.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE, MD 20852
TEL (301) 881-2545 FAX (301) 881-0814
E-MAIL: JBYRNE@AMTEENGINEERING.COM
AMT FILE # 98-154

CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH
Gaithersburg, Maryland

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MICHAEL JOSEPH WERCINSKI A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21816

REG. PROF. ENGR. DATE

DES: R. REYES					
DRN: R. ANCHORS					
CHK: R. REYES					
DATE: 04/13/01					
DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
05/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR	RJR

CIVIL

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

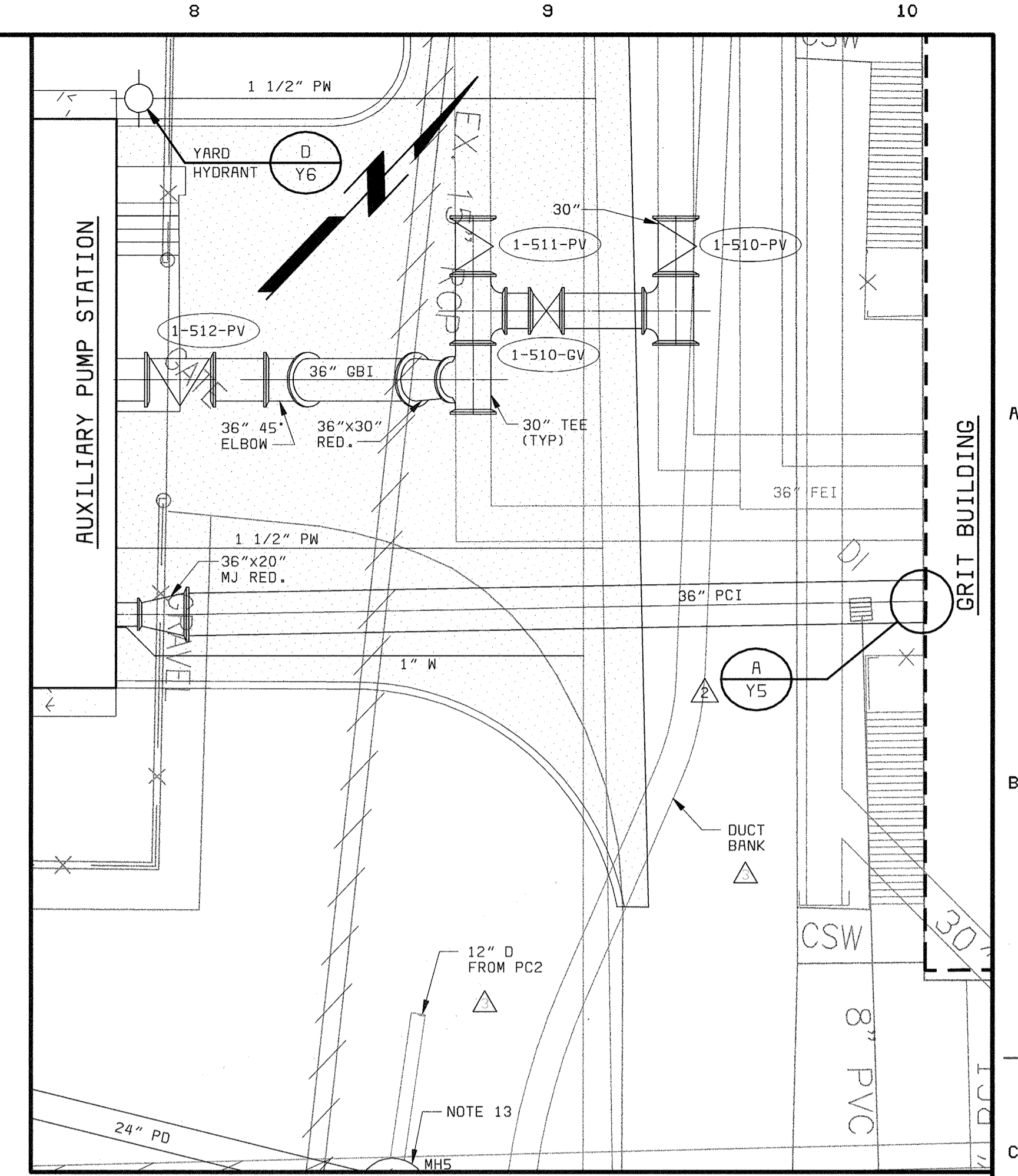
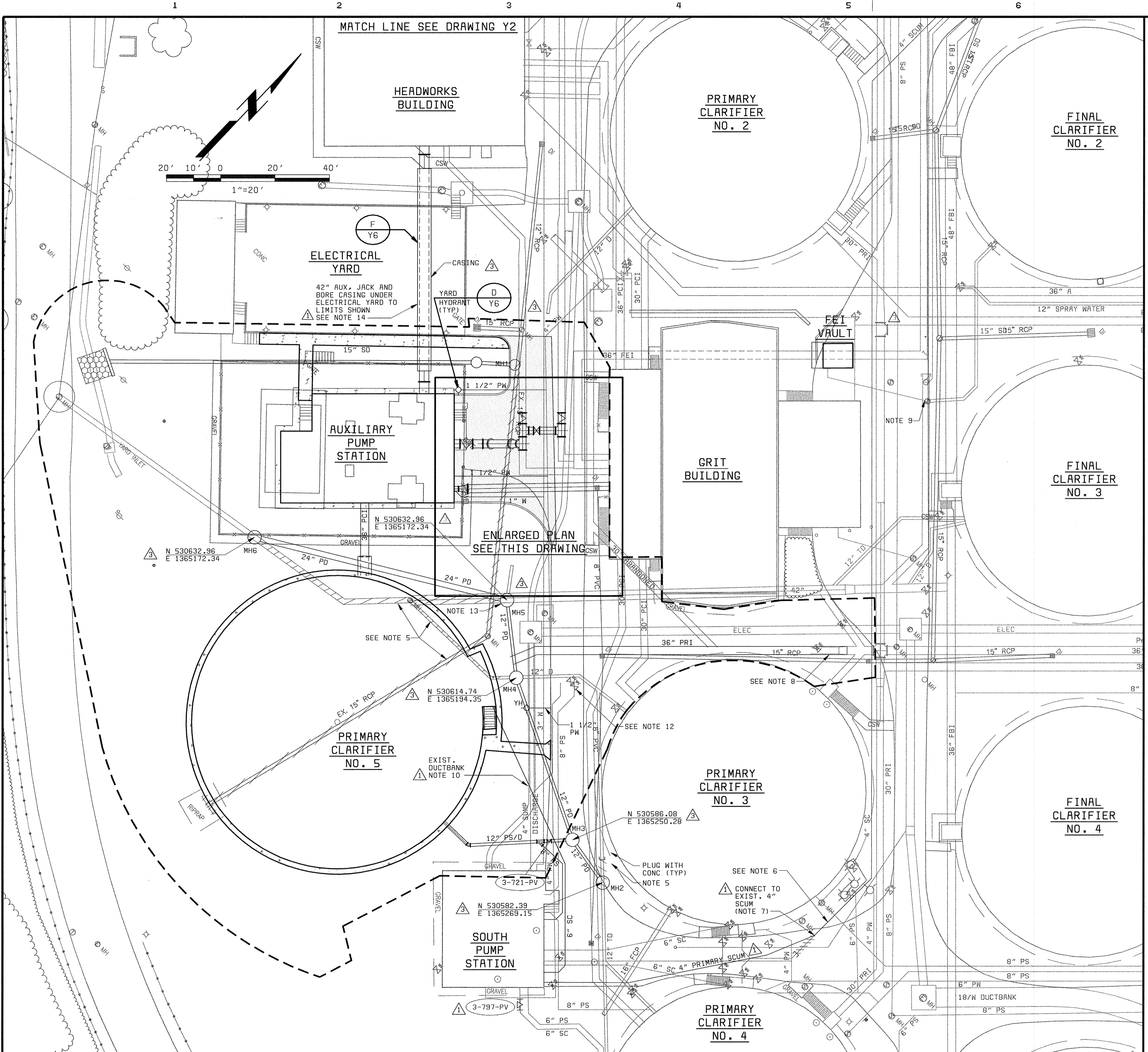
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
ELECTION DISTRICT NO. 6
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 15 OF 88

C6

DS68472
F0568472A

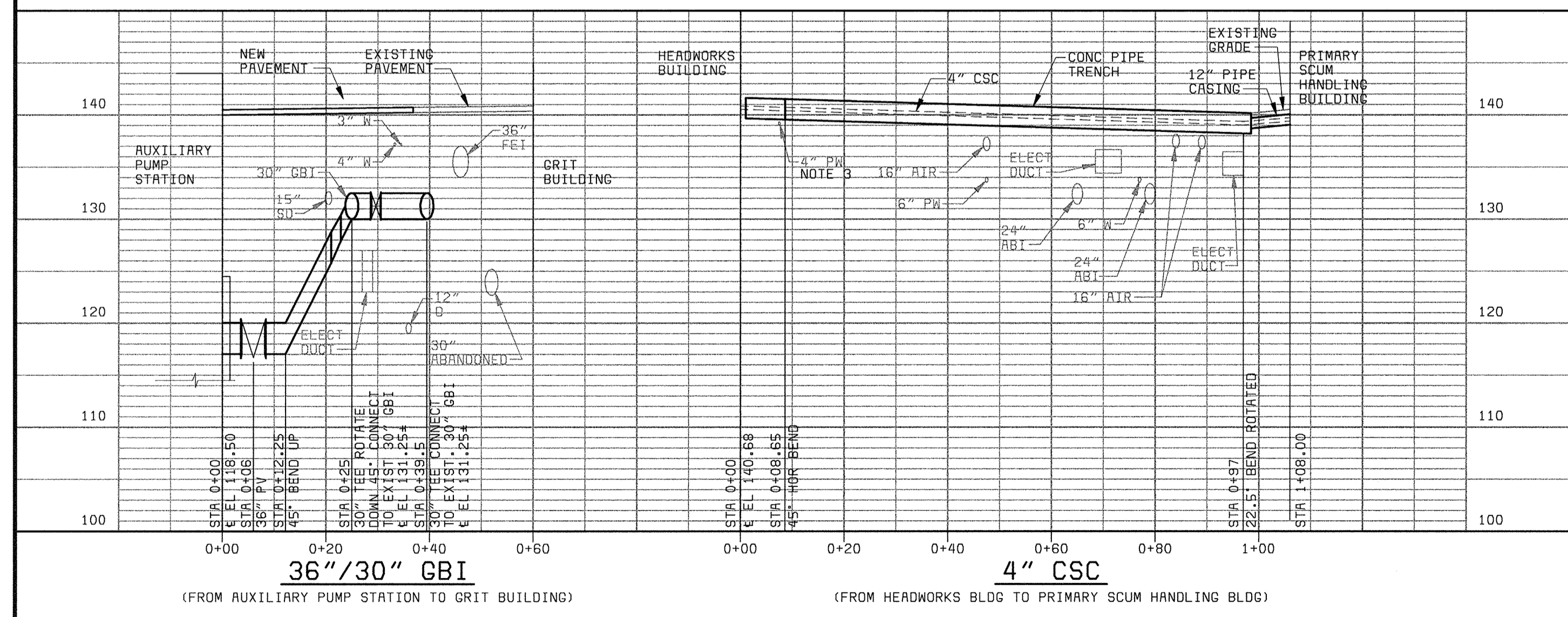
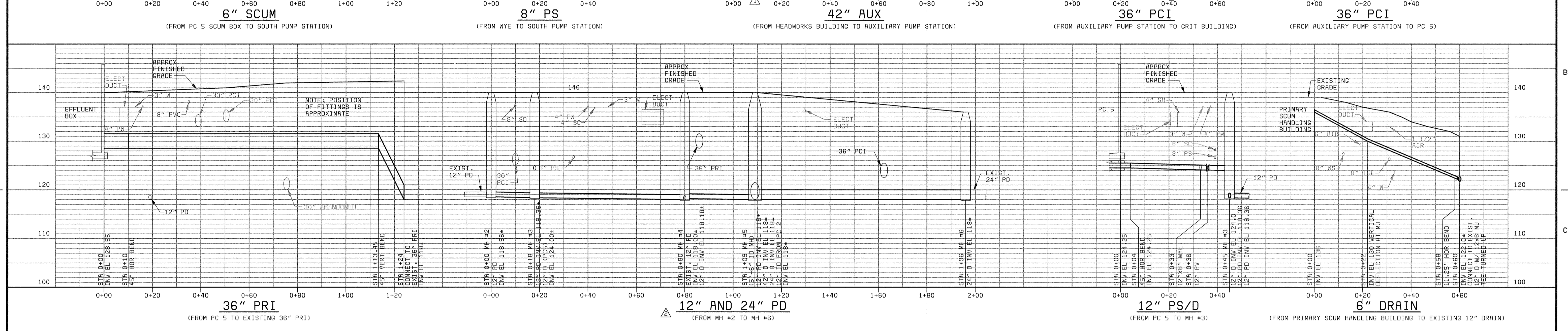
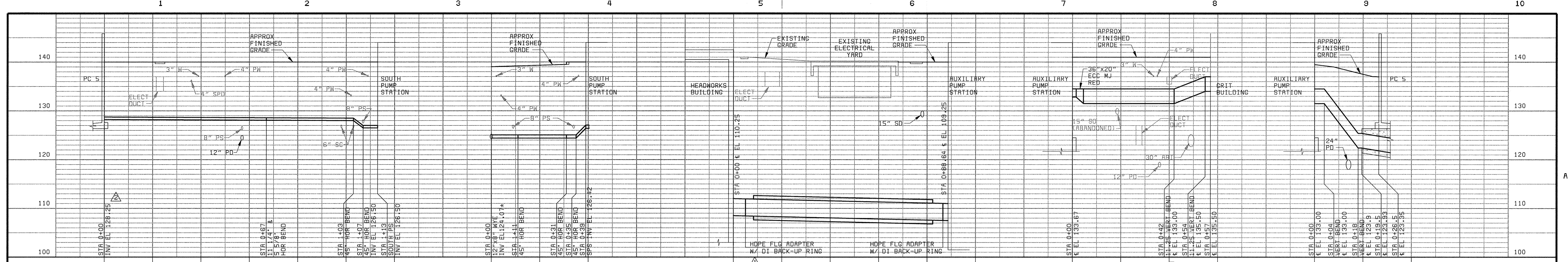


NOTES:

1. SCREENED (LIGHT) DELINEATION SHOWN ON THE DRAWINGS INDICATES EXISTING FACILITIES. SCREENED INFORMATION WAS TAKEN FROM PREVIOUS CONSTRUCTION DRAWINGS. IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED. BOLD (DARK) DELINEATION IS FOR NEW WORK OR LOCATION OF EXISTING CONSTRUCTION TO BE MODIFIED UNDER THIS CONTRACT UNLESS OTHERWISE NOTED.
2. CONTRACTOR TO VERIFY LOCATION, SIZE, TYPE, AND ELEVATIONS OF ALL.
3. PORTION OF EXISTING PROCESS PIPING ARE PROVIDED FOR REFERENCE. LOCATION, SIZE, TYPE, AND ELEVATION ARE BASED ON EXISTING RECORD DRAWINGS THAT WERE AVAILABLE DURING DESIGN. NOT ALL PIPING IS SHOWN WHERE NO CONSTRUCTION WILL TAKE PLACE.
4. ALL EXISTING PIPING TO BE ABANDONED SHALL BE PLUGGED IF NECESSARY AND REMAIN IN PLACE UNLESS OTHERWISE INDICATED.
5. REMOVE EXISTING PIPING.
6. CONTRACTOR TO MECHANICALLY CLEAN (PIC) AND PRESSURE TEST EXISTING 4" SCUM LINE FROM THIS POINT TO PRIMARY SCUM HANDLING BUILDING.
7. IF TESTING OF EXISTING 4" SCUM INDICATES THAT THE PIPE IS IN GOOD CONDITION, AND IS ACCEPTABLE TO OWNER, CONNECT NEW 4" SCUM TO EXISTING 4" SCUM AS SHOWN. REMOVE EXISTING 4" SCUM AS NECESSARY TO ALLOW FOR INSTALLATION OF NEW LINE AND PLUG EXISTING LINE. AT THE OWNERS DISCRETION, THE ENTIRE EXISTING 4" SCUM LINE SHALL BE REPLACED IN THE SAME APPROXIMATE HORIZONTAL LOCATION UNDER BID ALTERNATIVE "b". THE LINE SHALL BE INSTALLED WITH A MINIMUM 3.5' OF COVER.
8. CONTRACTOR TO VERIFY TYPE OF PLUG, REMOVE PLUG AND PROVIDE MJ BELL CONNECTION TO NEW 36" PRI. CONTRACTOR TO VERIFY EXIST. PIPING SIZE AND TO REMOVE PIPING SMALLER THAN 36" IN DIAMETER.
9. CONNECT 1 1/2" SUMP DISCHARGE @ INV EL 137.
10. PROTECT AND SUPPORT EXIST. DUCTBANK WHICH MUST REMAIN OPERATIONAL DURING CONSTRUCTION.
11. CONTRACTOR TO RELOCATE PROPOSED PIPING AS NECESSARY IN CONSULTATION WITH E/PM/CM IF EXIST. PIPING IS NOT AS SHOWN.
12. EXIST. 12" VALVE AND 8" VALVE TO REMAIN IN OPERATION. EXIST. 4" SUMP DISCHARGE TO CONNECT TO NEW MH @ INV EL 118.54.
13. CONNECT EXIST. 12" D TO MH 5 @ EL 118*.
14. DRAWINGS AND SPECIFICATIONS INDICATE MEANS NECESSARY TO JACK AND BORE 60" CASING FOR 42" AUX PIPE UNDER ELECTRICAL YARD. OTHER METHODS OF INSTALLATION, INCLUDING TUNNELING, WILL BE CONSIDERED.

LPWTP
 58472-101-YARD-C-CC83XC01
 58427-101-YARD-C-CC8301A
 058472-3
 F058472A

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: FKA DRN: RLC CHK: WLK DATE: 2/19/01	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">05/05/05</td> <td style="width: 40%;">CONFORMED TO CONSTRUCTION RECORDS</td> <td style="width: 10%;">RHH/RJR/RJR</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>5/31/01</td> <td>ADDENDUM NO. 1</td> <td>KMH</td> <td></td> <td></td> </tr> <tr> <td>3/12/01</td> <td>MODIFICATION TO 4" SCUM, ADD'L NOTES</td> <td>KMH</td> <td></td> <td></td> </tr> <tr> <td>DATE</td> <td>REVISIONS AND RECORD OF ISSUE</td> <td>NO. BY</td> <td>CK</td> <td>APP</td> </tr> </table>	05/05/05	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR			5/31/01	ADDENDUM NO. 1	KMH			3/12/01	MODIFICATION TO 4" SCUM, ADD'L NOTES	KMH			DATE	REVISIONS AND RECORD OF ISSUE	NO. BY	CK	APP	YARDWORK YARD PIPING PLAN SHEET 1 OF 2	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 16 OF 88 Y1
05/05/05	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR																									
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3/12/01	MODIFICATION TO 4" SCUM, ADD'L NOTES	KMH																									
DATE	REVISIONS AND RECORD OF ISSUE	NO. BY	CK	APP																							



- NOTES:
1. REPLACE AIR LINES AS NECESSARY TO PROVIDE 12" VERTICAL CLEARANCE.
 2. CONTRACTOR SHALL EXCAVATE TRENCH AND LOCATE UTILITIES PRIOR TO PIPE INSTALLATION. ADJUSTMENTS TO HORIZONTAL AND VERTICAL ALIGNMENT SHALL BE MADE AS NEEDED.
 3. MAINTAIN 6" MIN VERTICAL CLEARANCE BETWEEN BOTTOM OF PRECAST TRENCH AND TOP OF EXISTING PIPE. RELOCATE EXISTING PIPE AS NECESSARY.

SCALE: HOR 1" = 20'-0"
VERT 1" = 10'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH LLP
Gaithersburg, Maryland

REG. PROF. ENGR. DATE

THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
ROBERT J. RECTANUS, JR.,
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927

DES: ACM, FKA					
DRN: RLC					
CHK: WLK	05/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR
DATE: 2/19/01	06/12/01	ADDENDUM NO. 1			
	DATE	REVISIONS AND RECORD OF ISSUE		NO.	BY

YARDWORK

YARD PIPING PROFILES

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

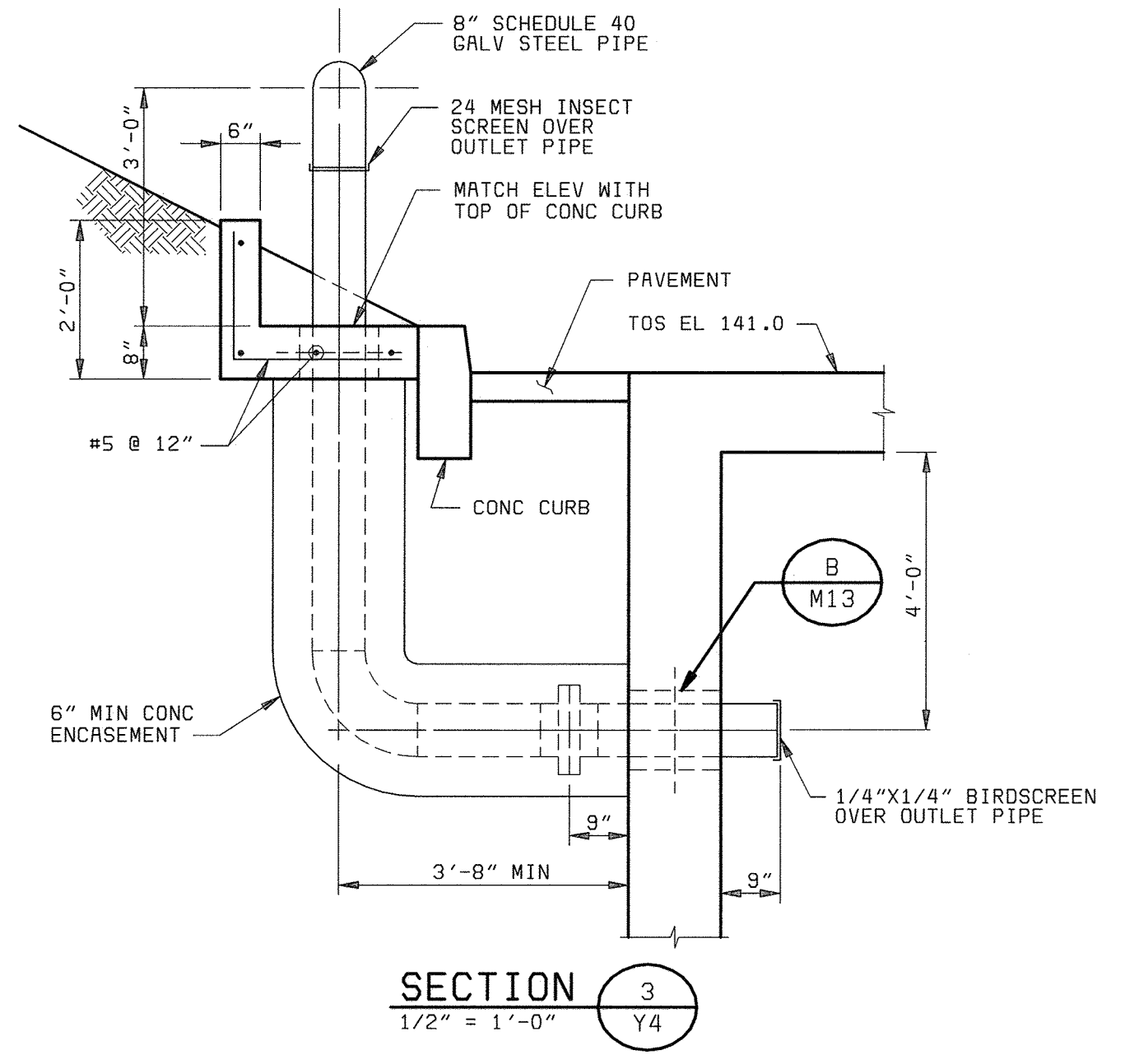
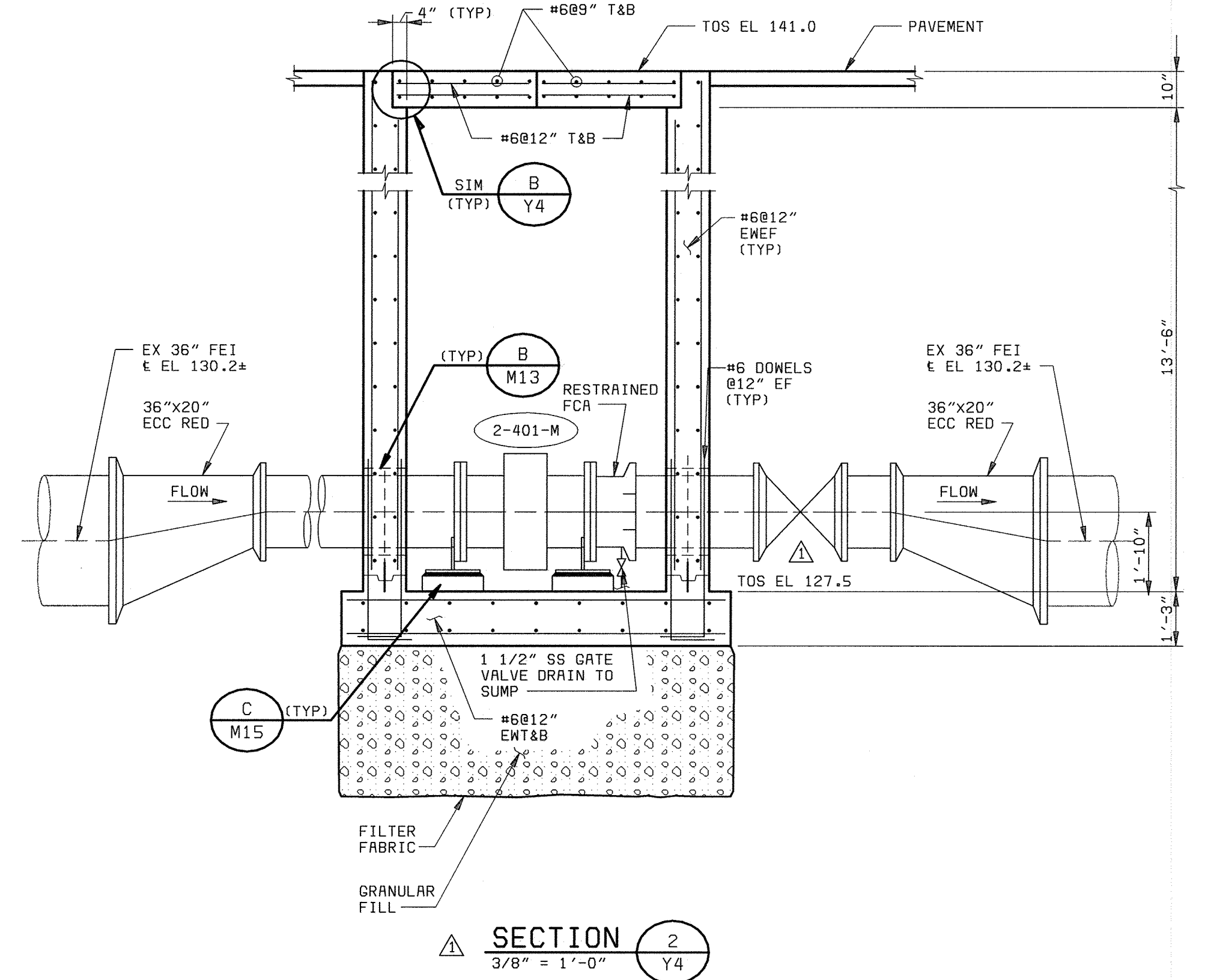
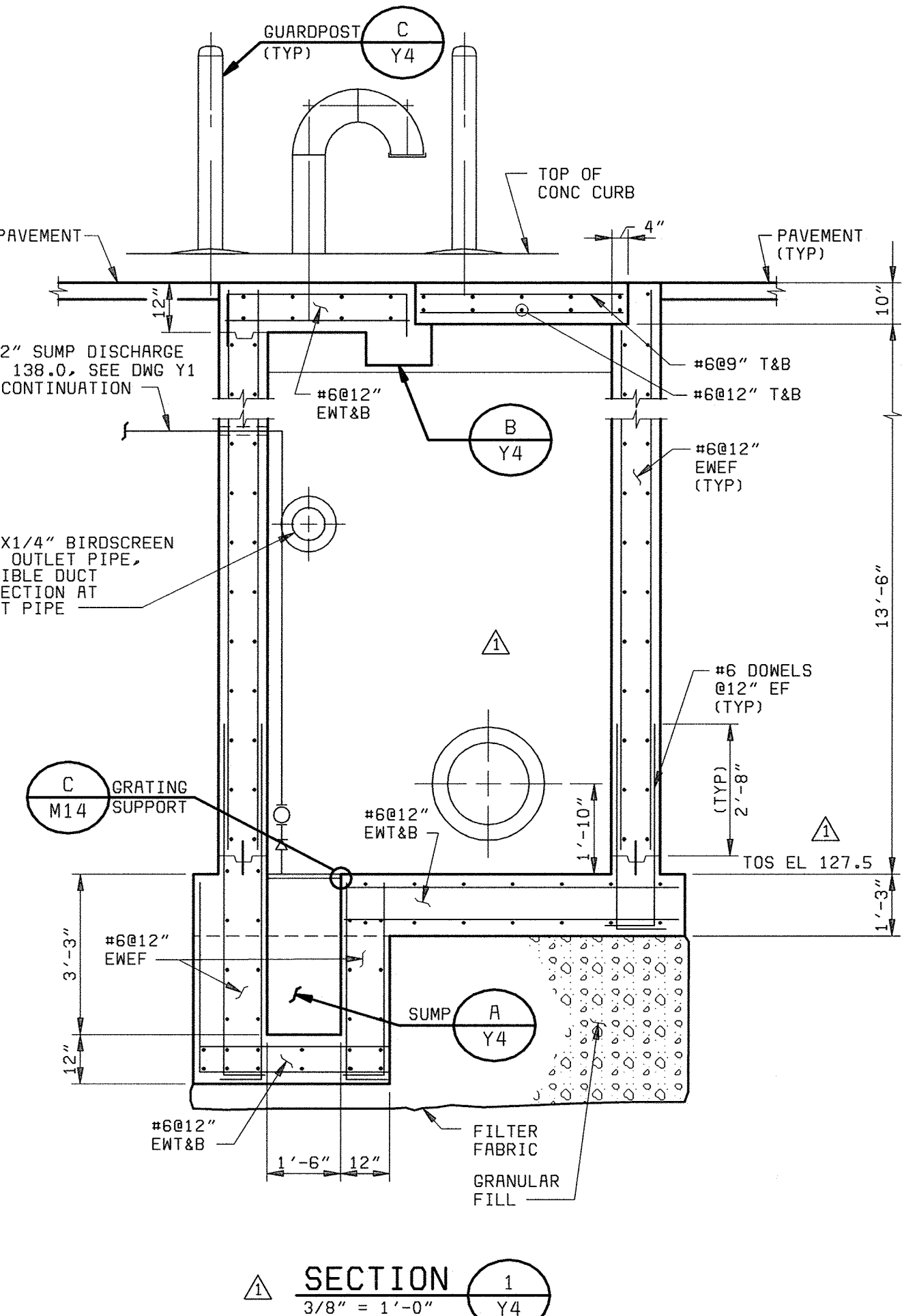
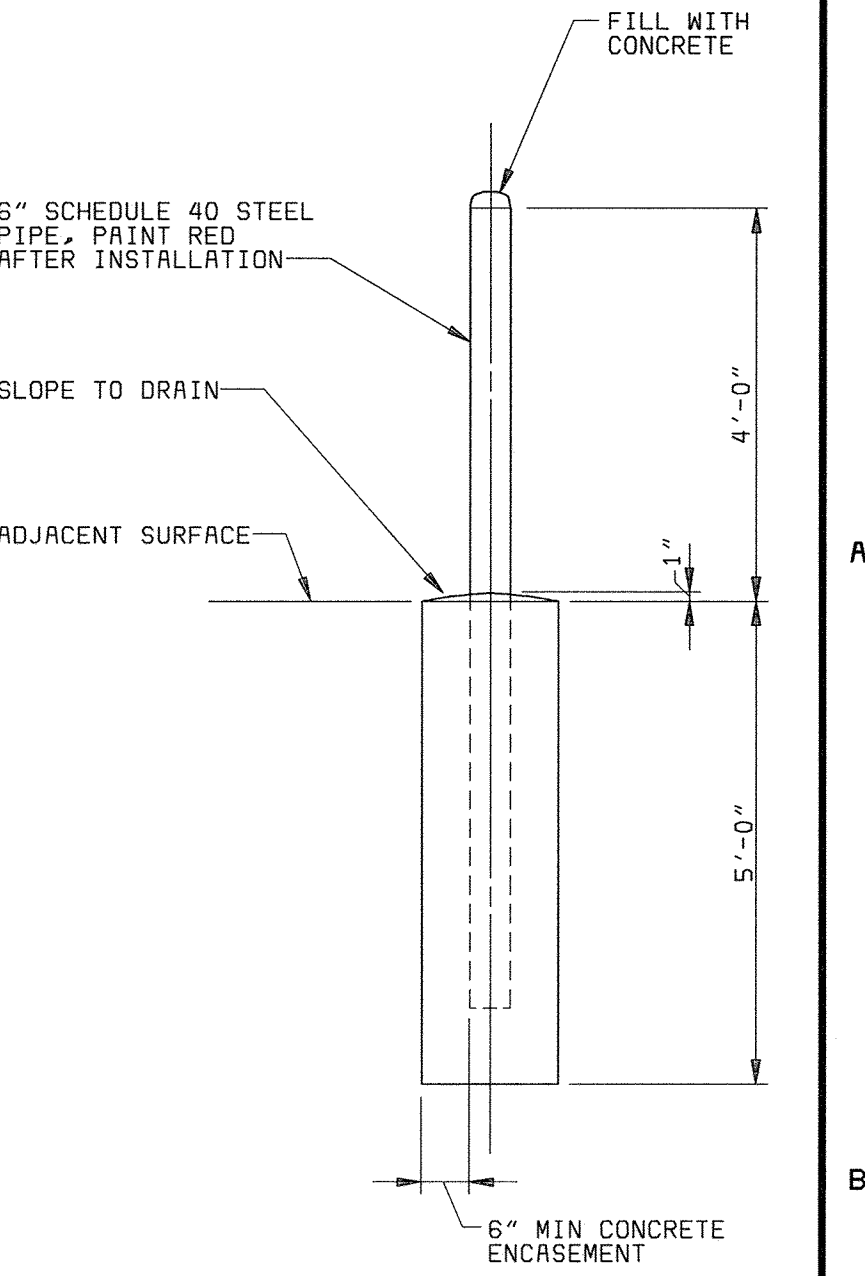
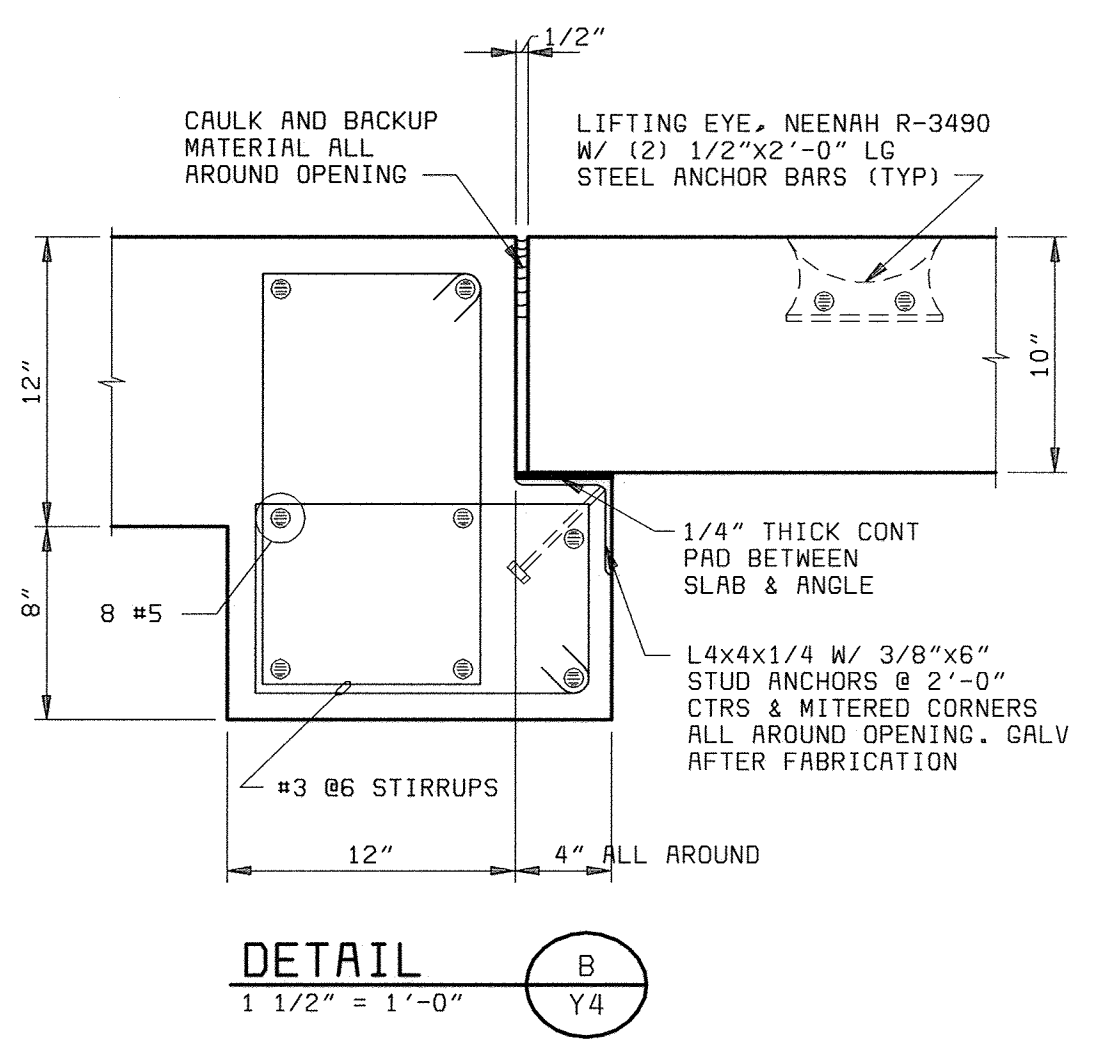
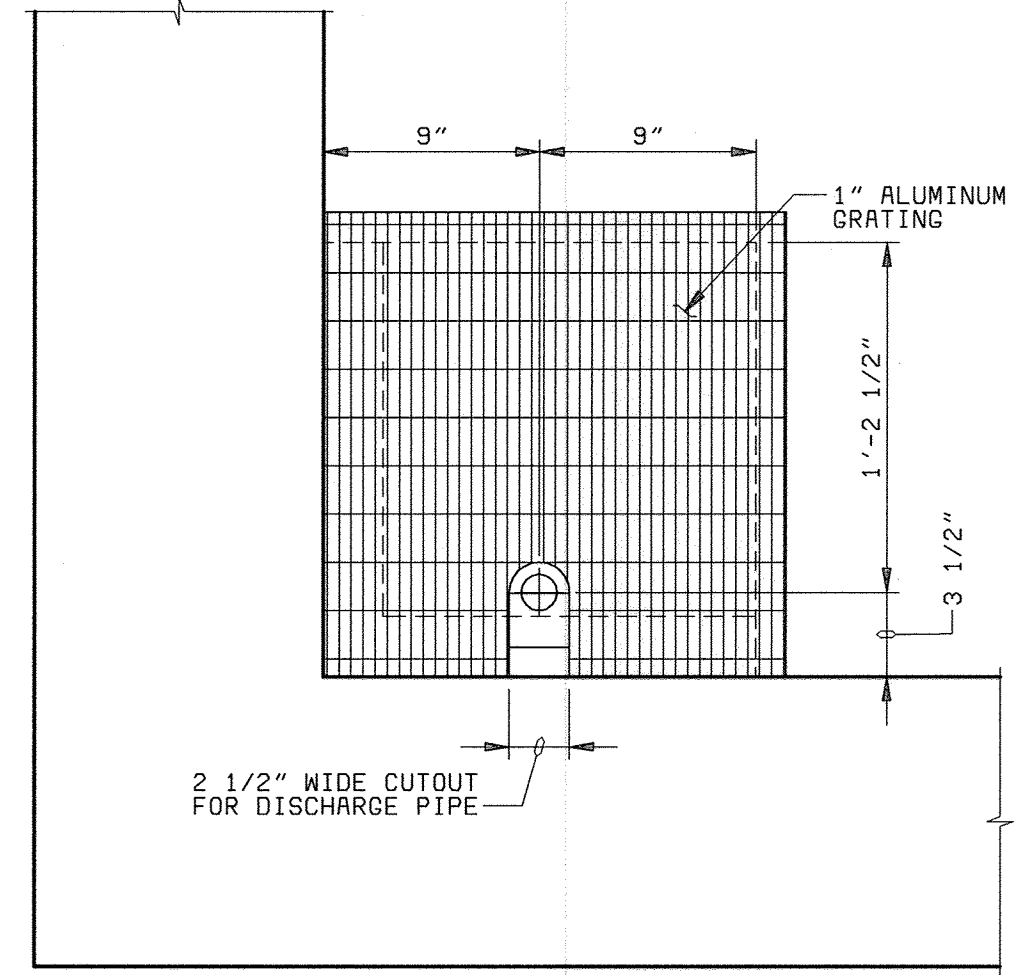
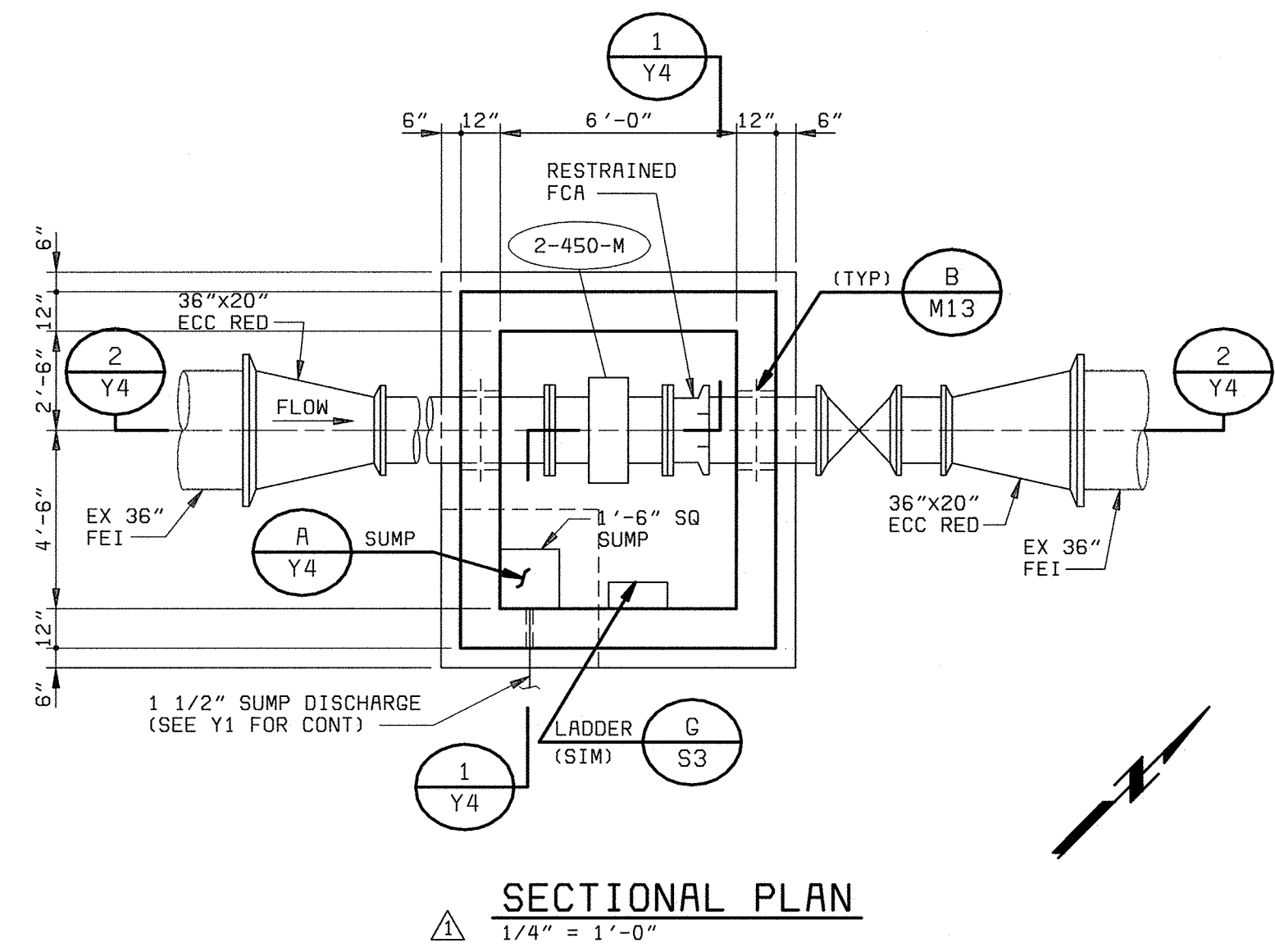
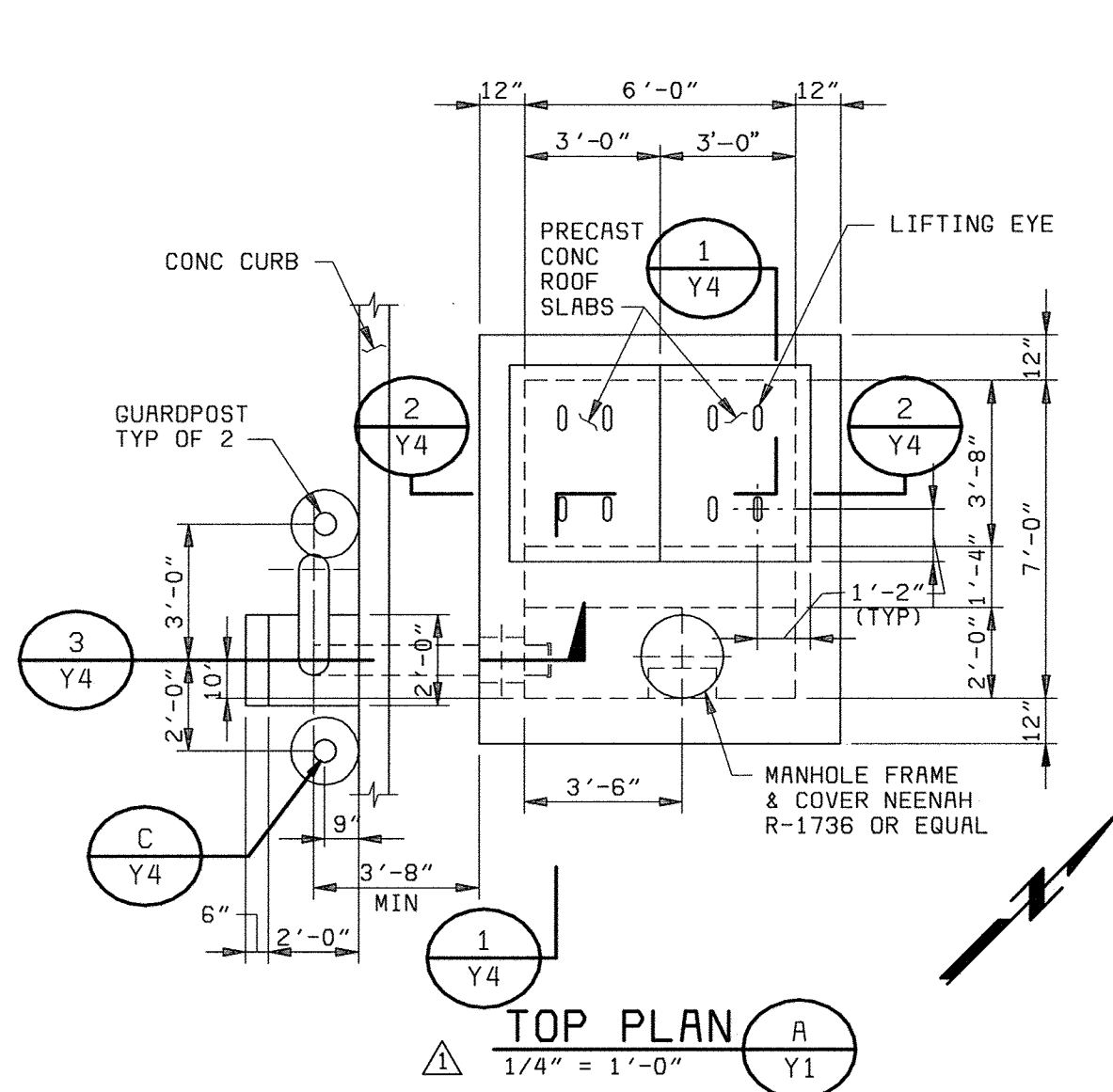
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 18 OF 88

Y3

058472-3
F058472A



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

BLACK & VEATCH
Gaithersburg, Maryland

THIS DRAWING WAS
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AND SEALED BY
ROBERT J. RECTANUS, JR.
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927

DES: FKA					
DRN: RLC					
CHK: WLK					
DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	APP
	05/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	

YARDWORK

**FEI METER VAULT
PLANS, SECTIONS AND DETAILS**

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

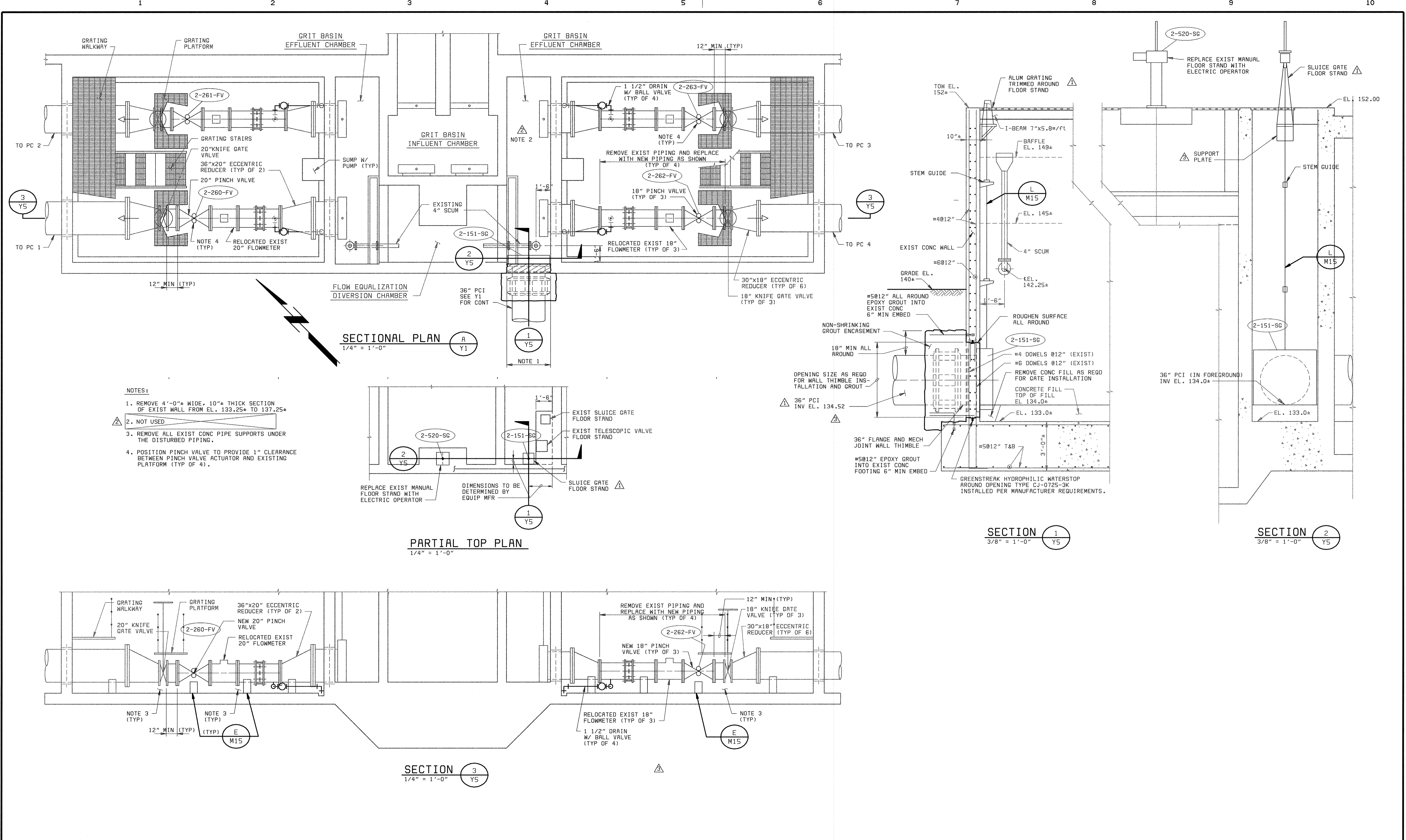
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

SHEET
19 OF 88

Y4



- NOTES:**
1. REMOVE 4'-0" WIDE, 10" THICK SECTION OF EXIST WALL FROM EL. 133.25 TO 137.25
 2. NOT USED
 3. REMOVE ALL EXIST CONC PIPE SUPPORTS UNDER THE DISTURBED PIPING.
 4. POSITION PINCH VALVE TO PROVIDE 1" CLEARANCE BETWEEN PINCH VALVE ACTUATOR AND EXISTING PLATFORM (TYP OF 4).

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH
Gaithersburg, Maryland

REG. PROF. ENCR. DATE

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTOR, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927

DES: FKA,KMH					
DRN: RLC	05/05/05	CONFORMED TO CONSTRUCTION RECORDS			
CHK: WLK	06/27/01	ADDENDUM NO. 3			
DATE: 2/19/01	06/12/01	ADDENDUM NO. 1			
DATE	REVISIONS AND RECORD OF ISSUE		NO.	BY	APP

YARDWORK

GRIT BASIN PLAN AND MISCELLANEOUS DETAILS

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

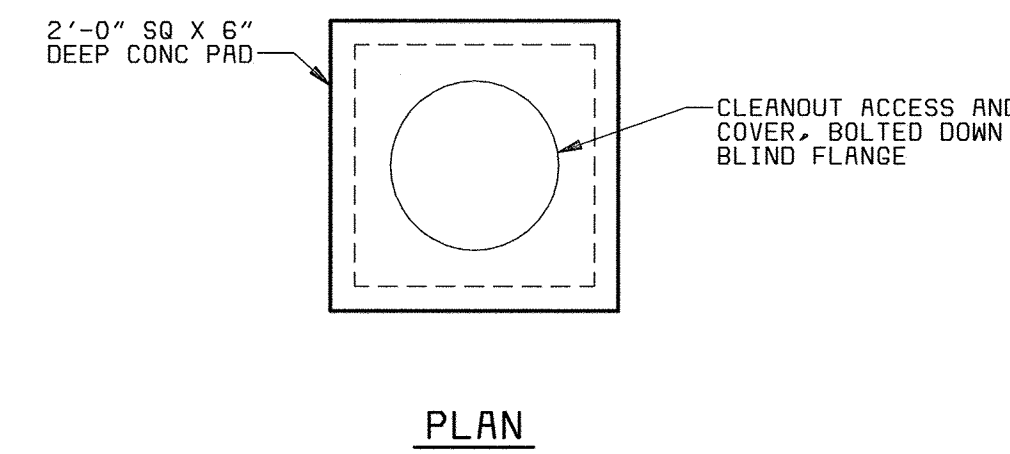
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

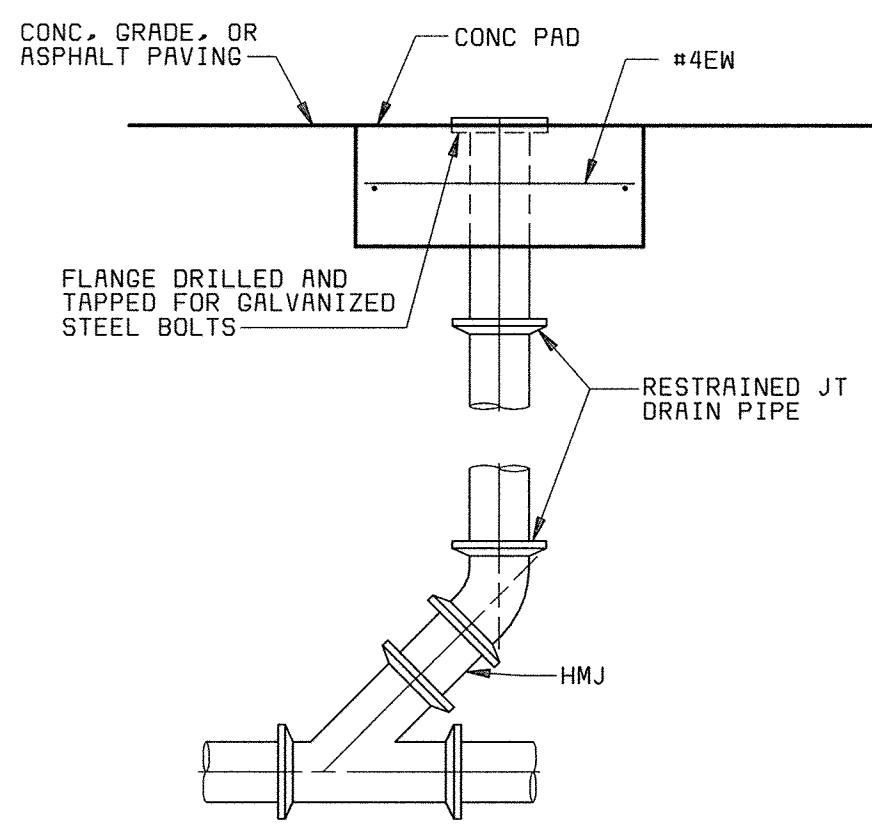
SHEET 20 OF 88

Y5

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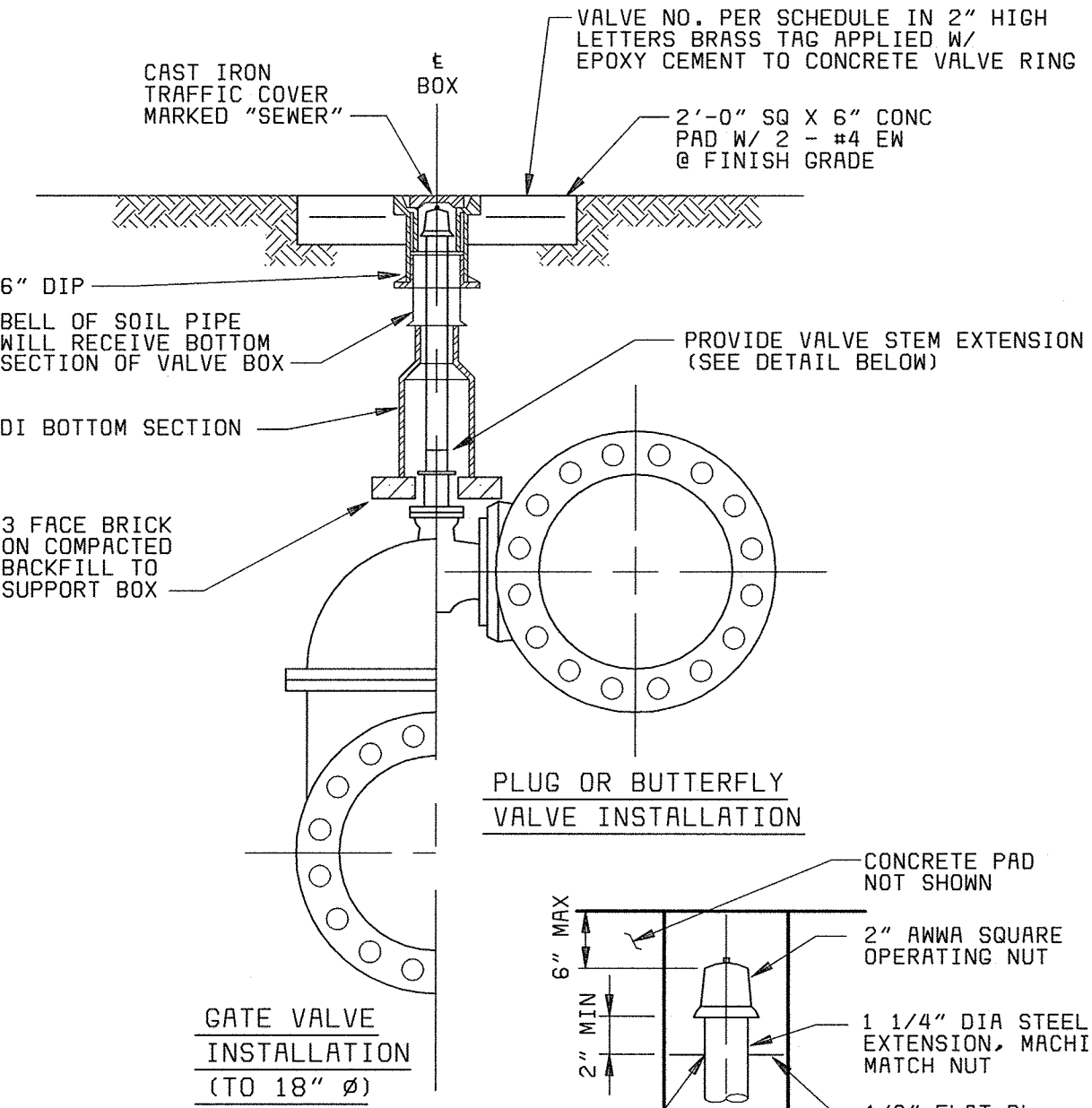


PLAN

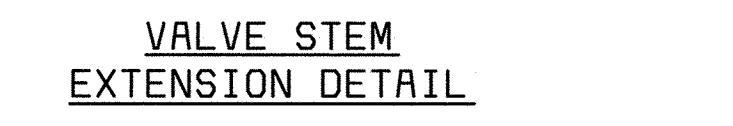


SECTION

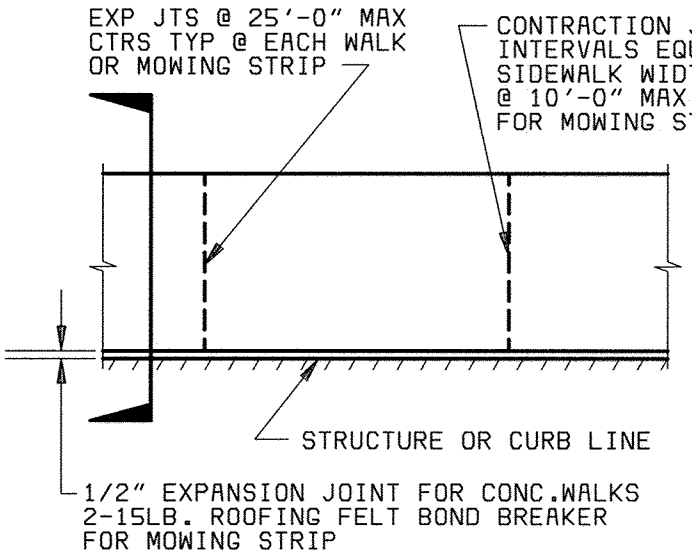
CLEANOUT UP TO GRADE DETAIL (A)
NO SCALE



BURIED VALVE INSTALLATION (B)
NO SCALE



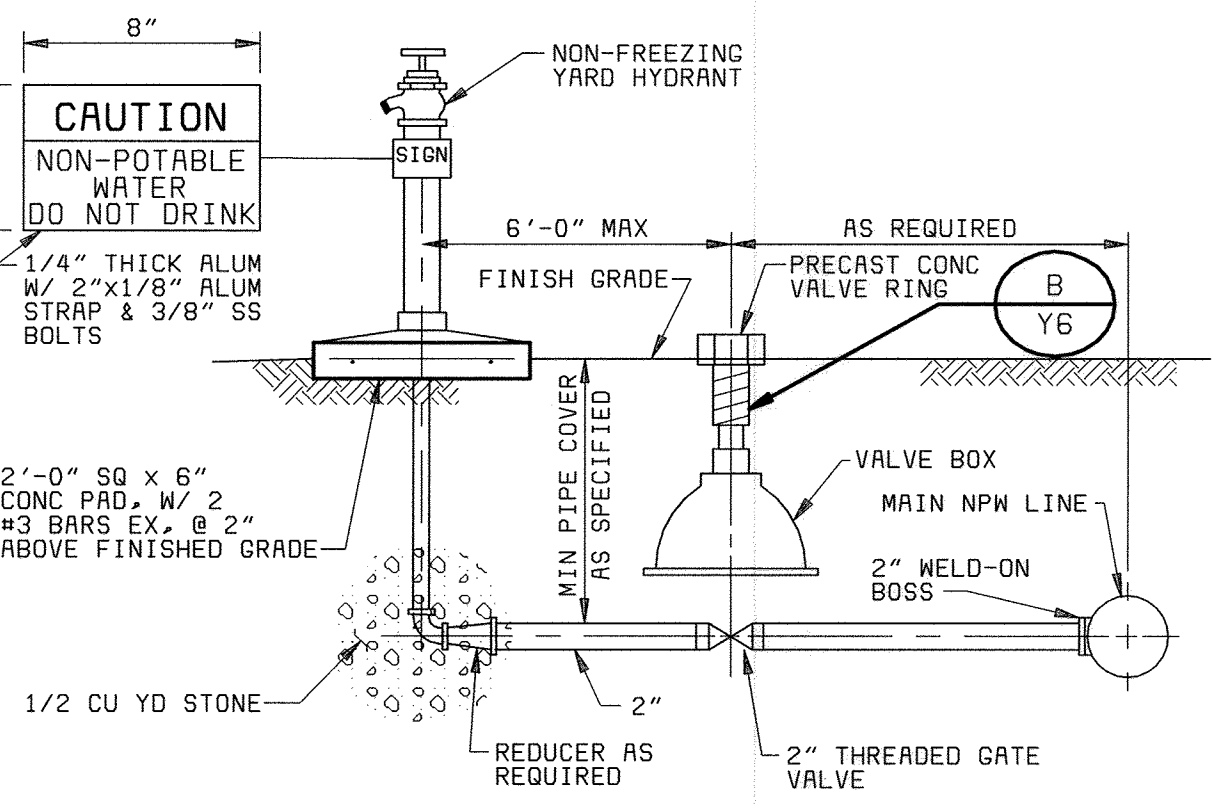
VALVE STEM EXTENSION DETAIL



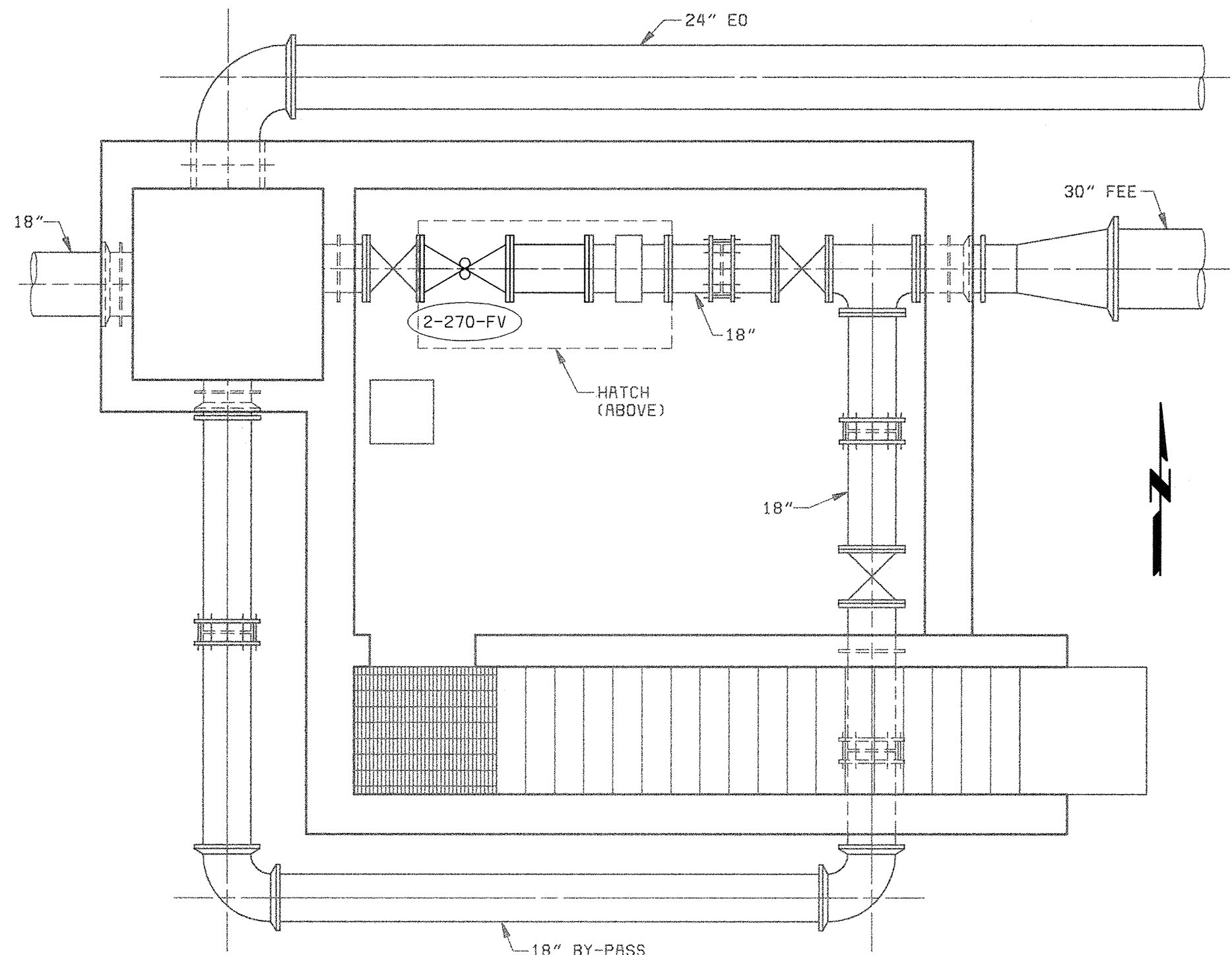
EXPANSION JOINT

CONTRACTION JOINT

MOWING STRIP AND CONCRETE WALK DETAILS (C)
NO SCALE

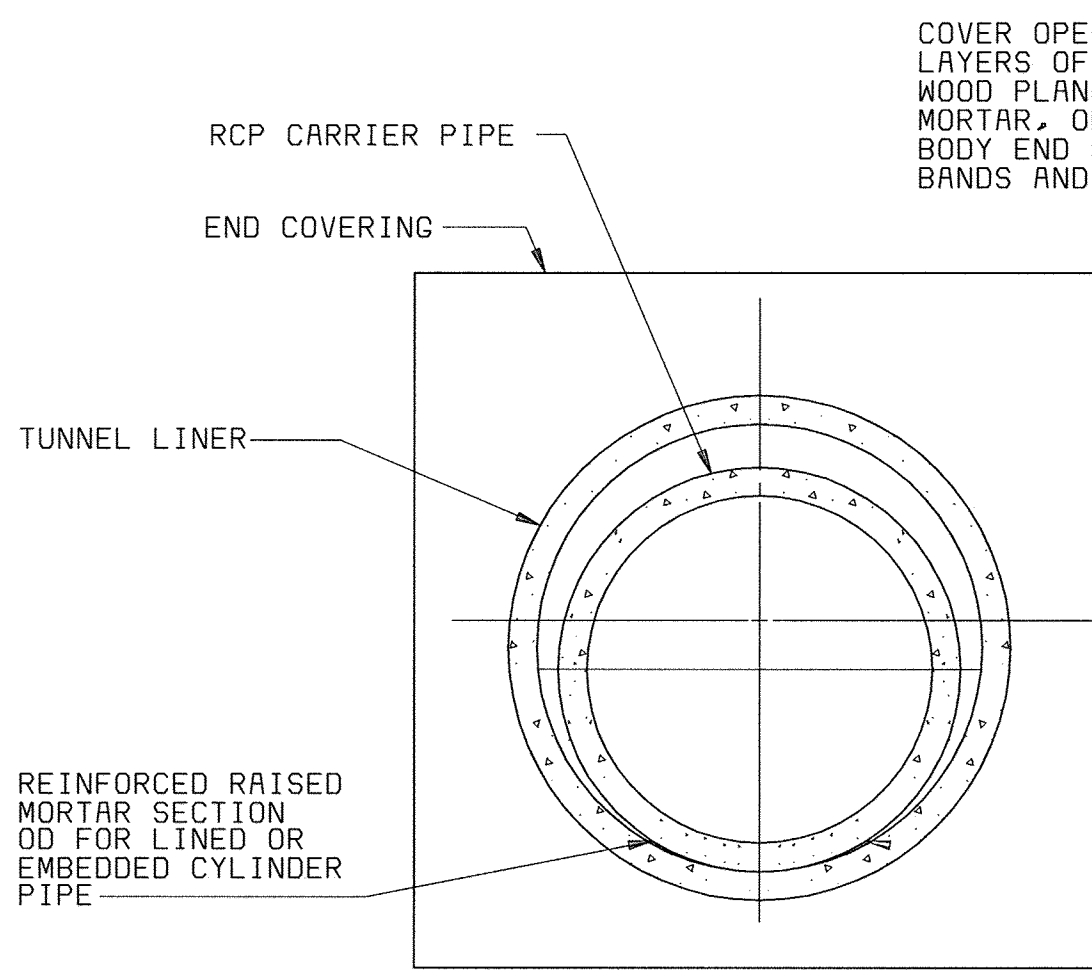


YARD HYDRANT (D)

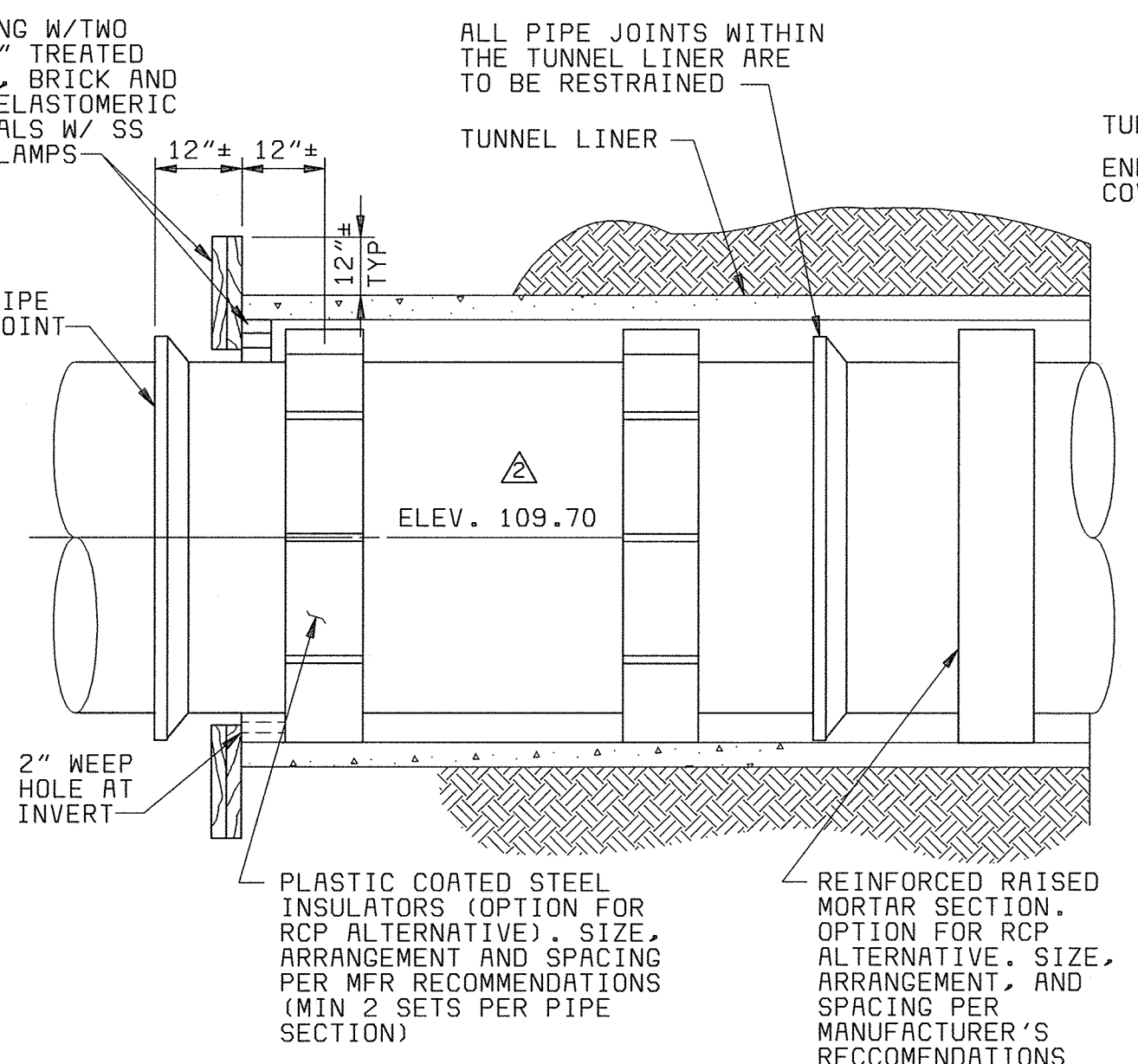


- NOTES:
1. REPLACE EXISTING FLOW EQUALIZATION CONTROL VALVE WITH NEW PINCH VALVE (2-270-FV).
 2. REPLACE EXISTING UPSTREAM PIPE SECTION WITH NEW SECTION OF APPROPRIATE LENGTH TO COMPENSATE FOR THE DIFFERENCE IN LENGTH BETWEEN EXISTING AND NEW PINCH VALVE.

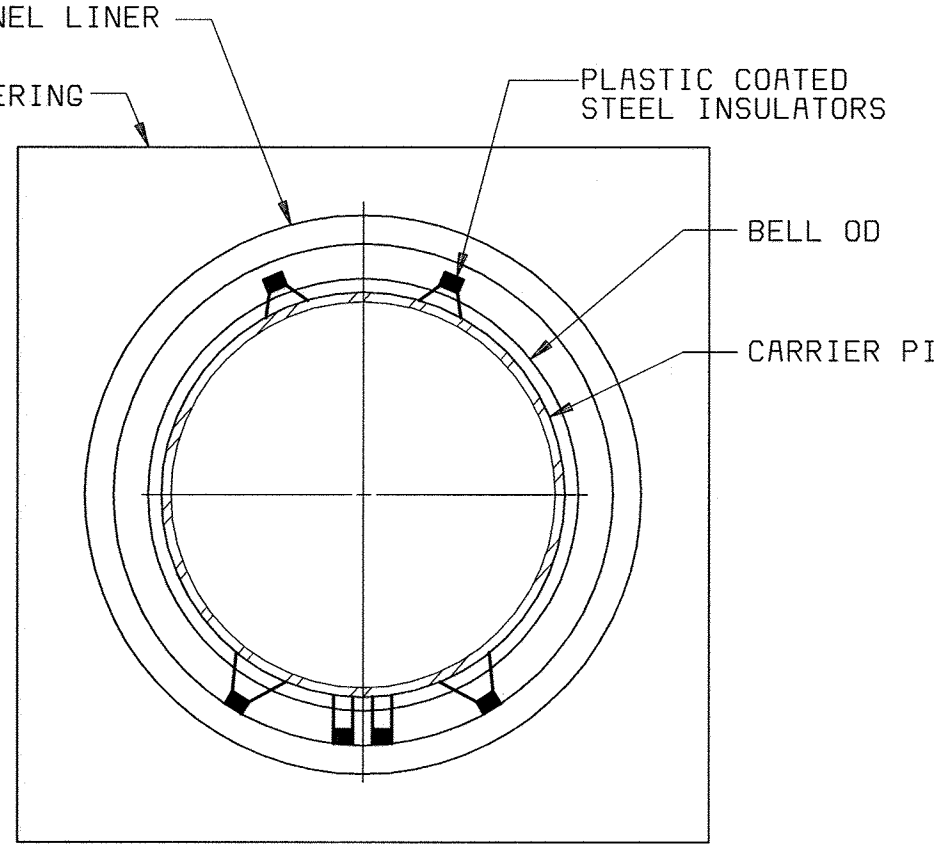
FEB RETURN METER VAULT PLAN (G)
1/4" = 1'-0"



SECTION RCP ALTERNATIVE

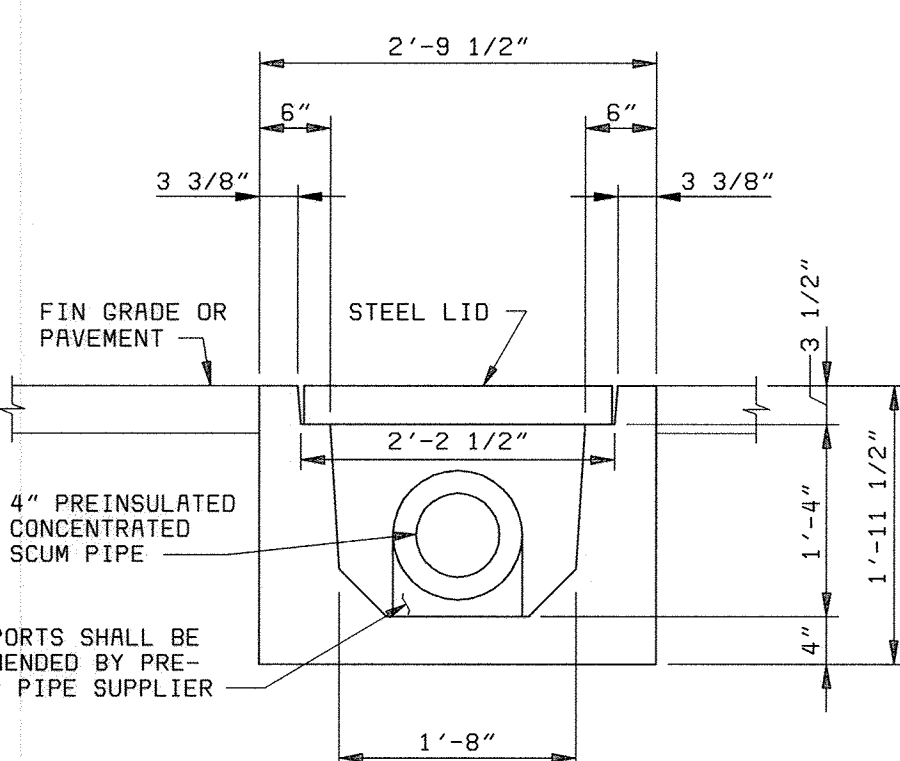


ELEVATION

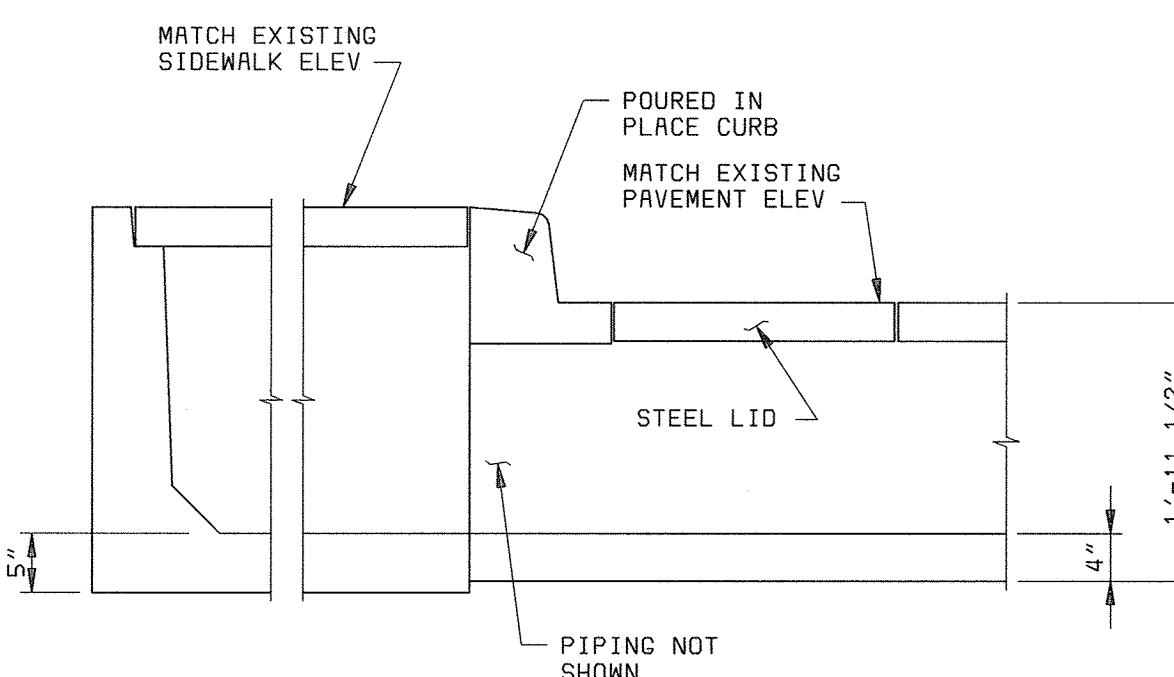


SECTION DIP ALTERNATIVE

TUNNEL CROSSING (F)
NO SCALE



PRECAST CONCRETE TRENCH (H)
3/4" = 1'-0"



CONCRETE TRENCH TRANSITION (I)
NO SCALE (TO BE SUPPLIED BY CONCRETE TRENCH MANUFACTURER)

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HOWARD COUNTY, MARYLAND

BLACK & VEATCH
Gaithersburg, Maryland

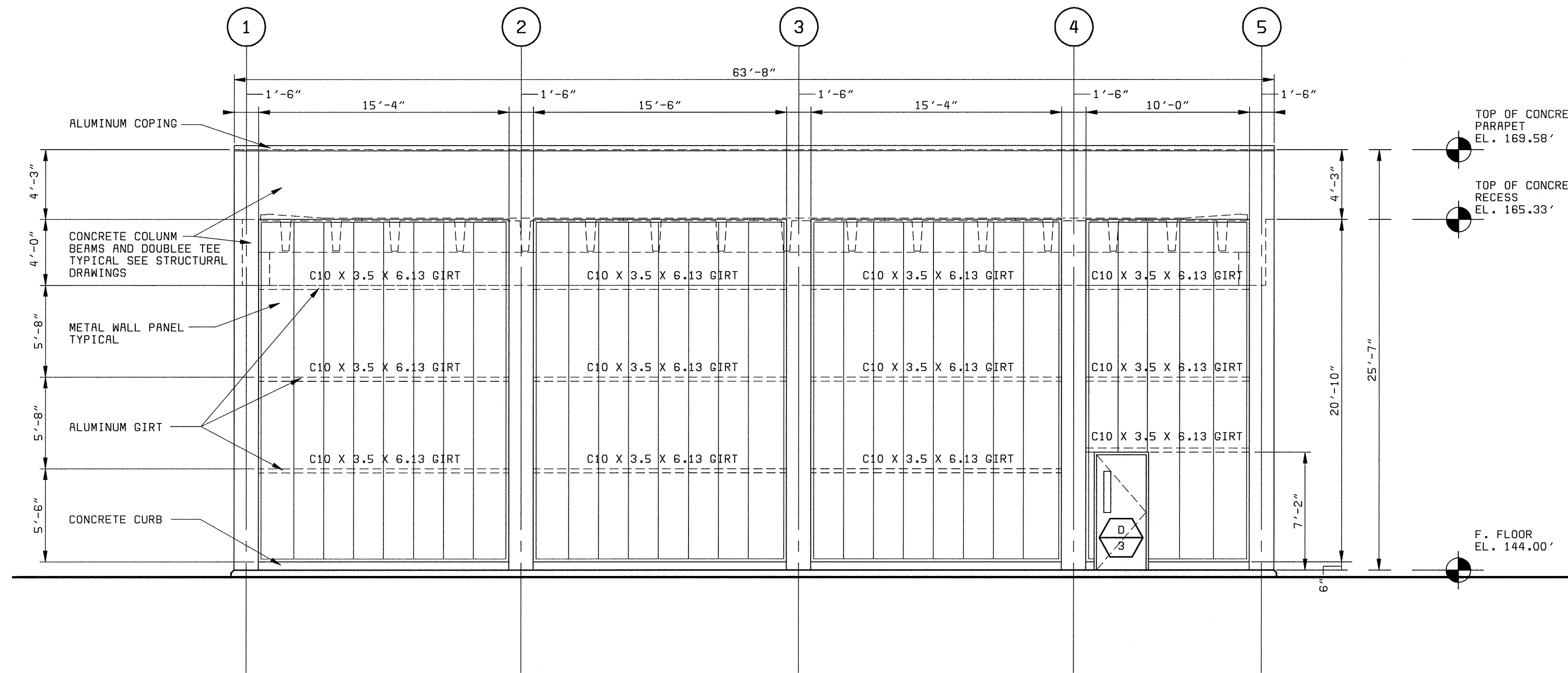
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DES: FKA					
DRN: RLC					
CHK: WLK	05/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
DATE: 2/19/01	06/12/01	ADDENDUM NO. 1			
		REVISIONS AND RECORD OF ISSUE		NO. BY CK APP	

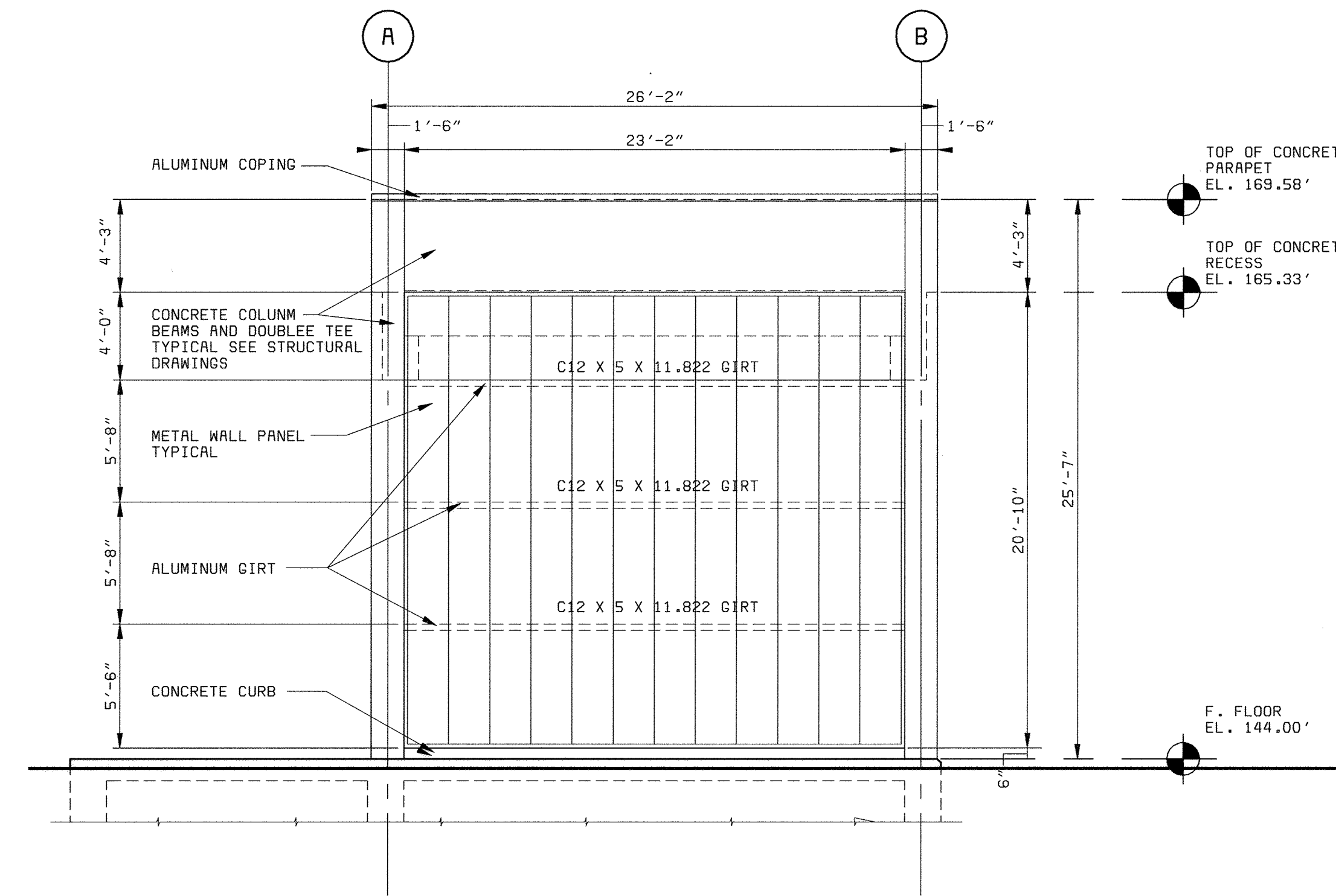
YARDWORK
MISCELLANEOUS YARDWORK DETAILS

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
HOWARD COUNTY, MARYLAND

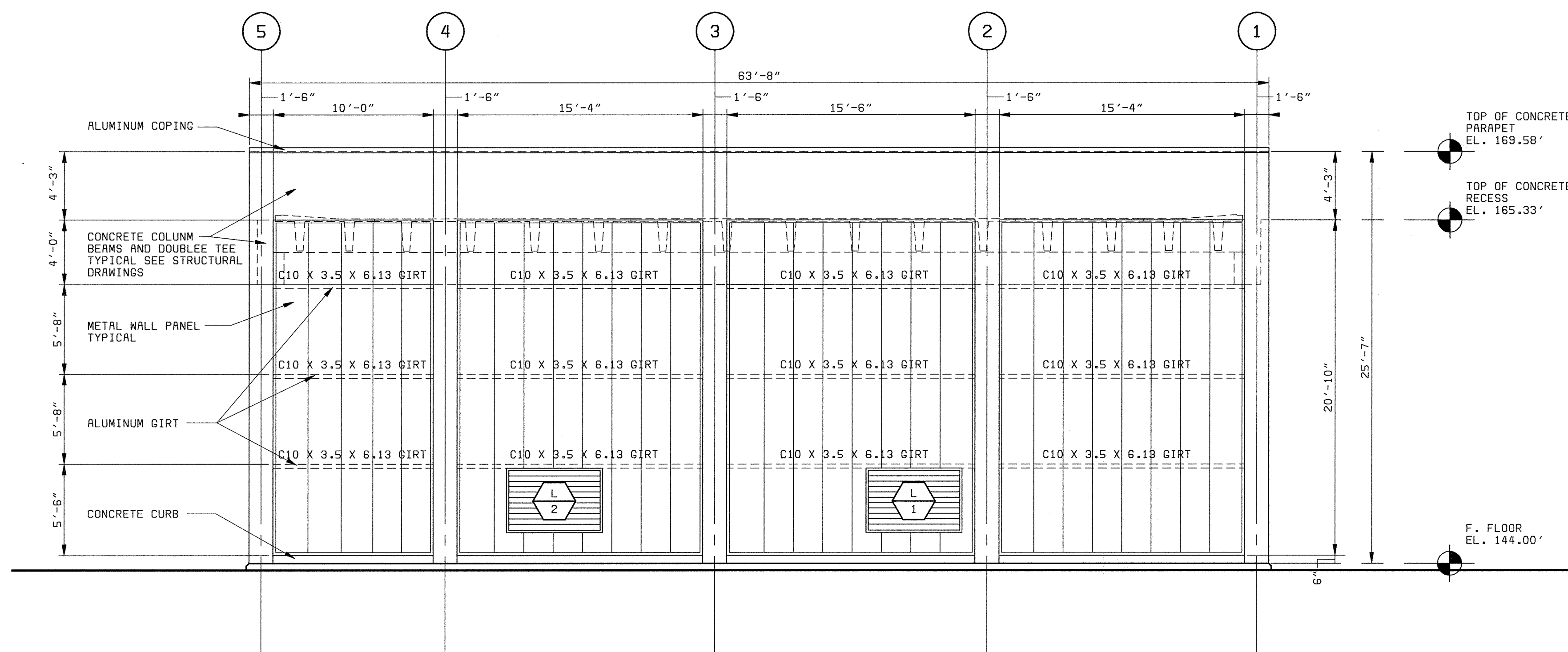
SCALE AS SHOWN
SHEET 21 OF 88
Y6



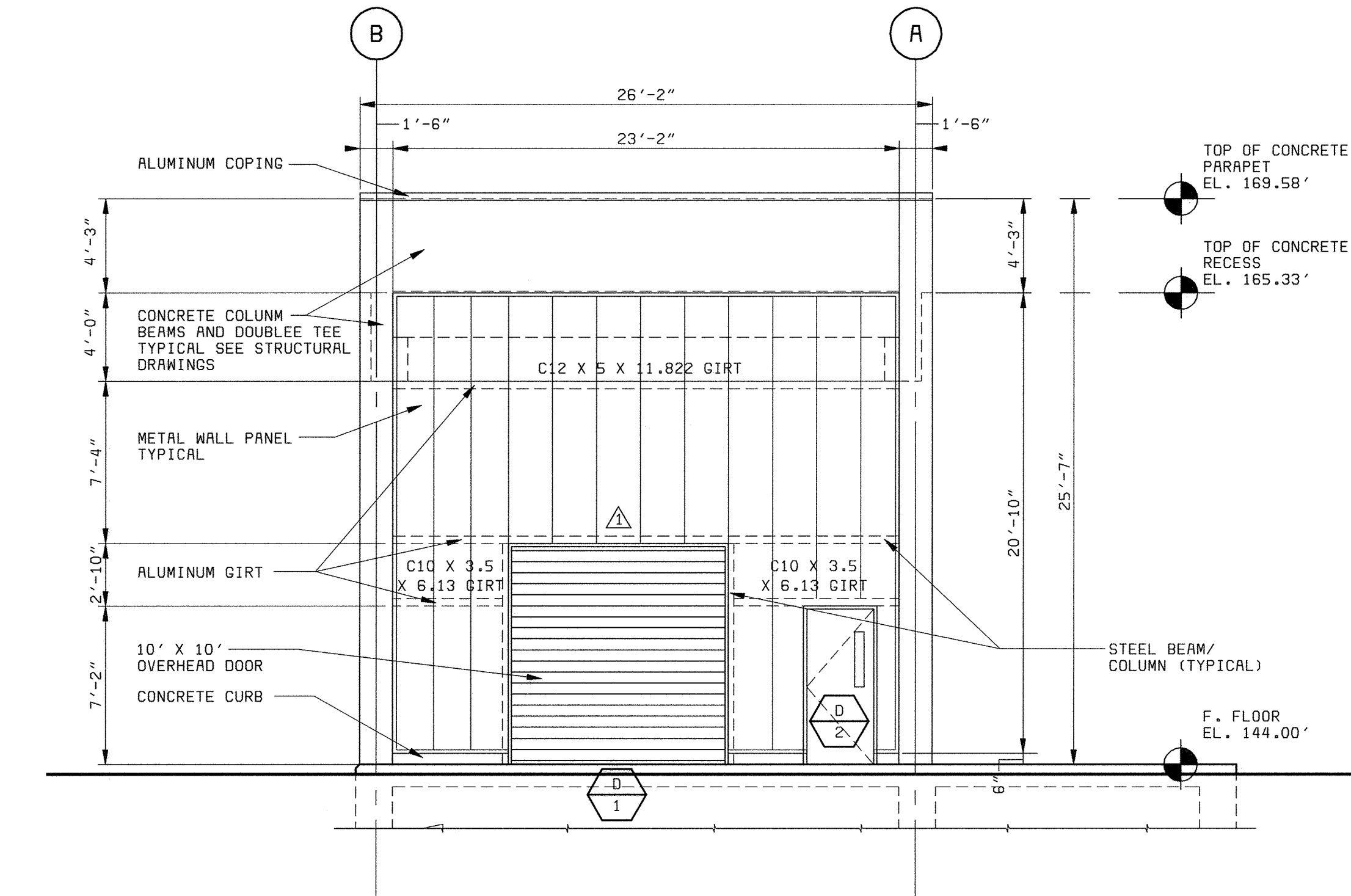
WEST ELEVATION 1
3/16" = 1'-0" A1



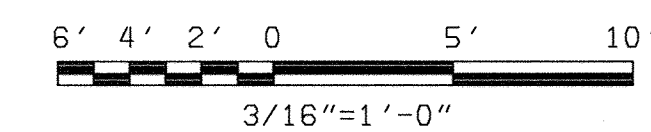
SOUTH ELEVATION 2
3/16" = 1'-0" A1



EAST ELEVATION 1
3/16" = 1'-0" A1



NORTH ELEVATION 2
3/16" = 1'-0" A1



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND



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Gaithersburg, Maryland

THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
CHARLES L. BRYANT
A REGISTERED
ARCHITECT
IN THE
STATE OF MARYLAND,
NO. 1377-R

DES: CH/JS

DRN: JS

CHK: CH

DATE: 2/19/01

5/05/05	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR
REVISIONS AND RECORD OF ISSUE		
NO.	BY	CK APP

ARCHITECTURAL
AUXILIARY PUMPING STATION

ELEVATIONS

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

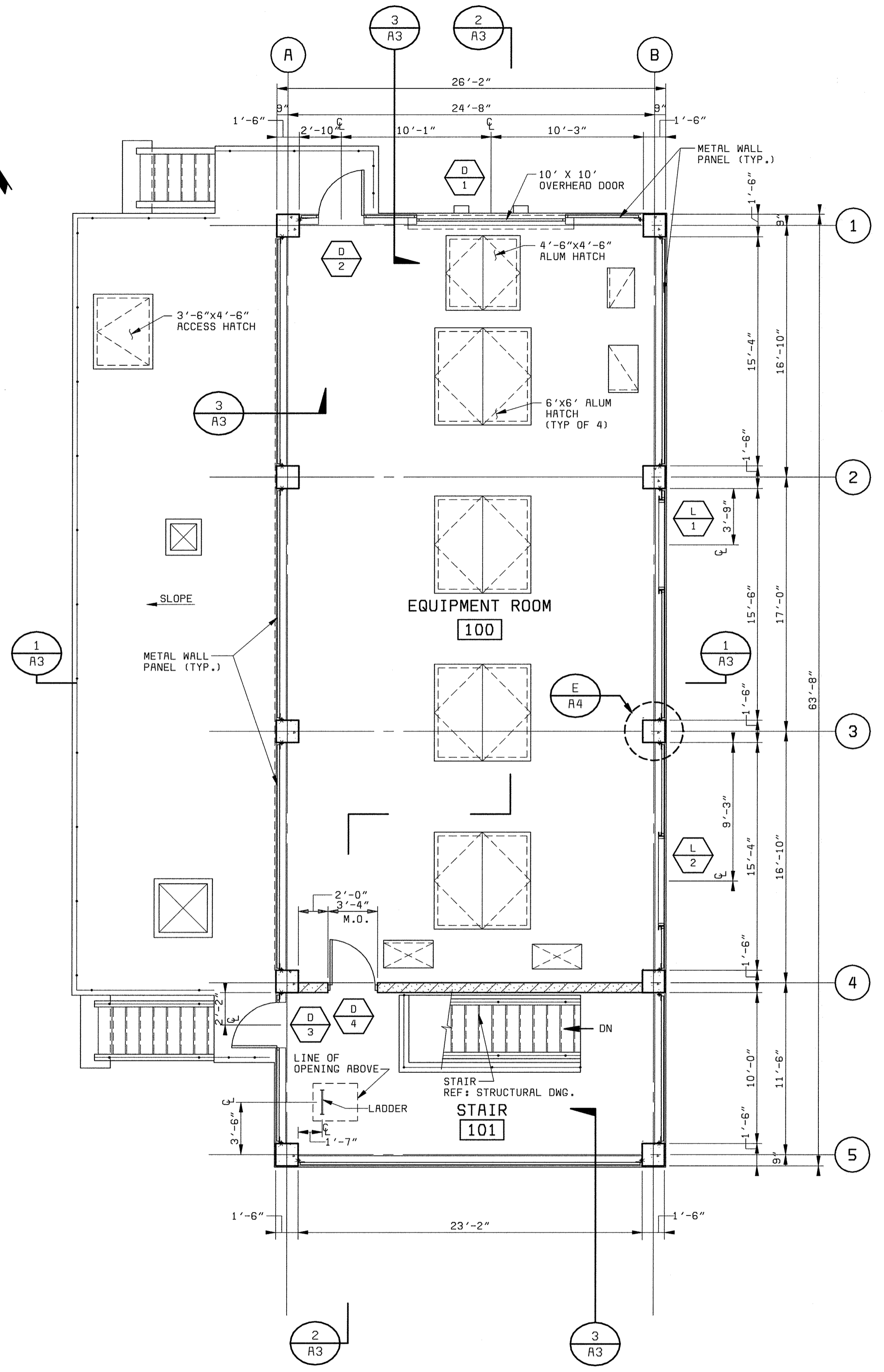
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22 OF 88

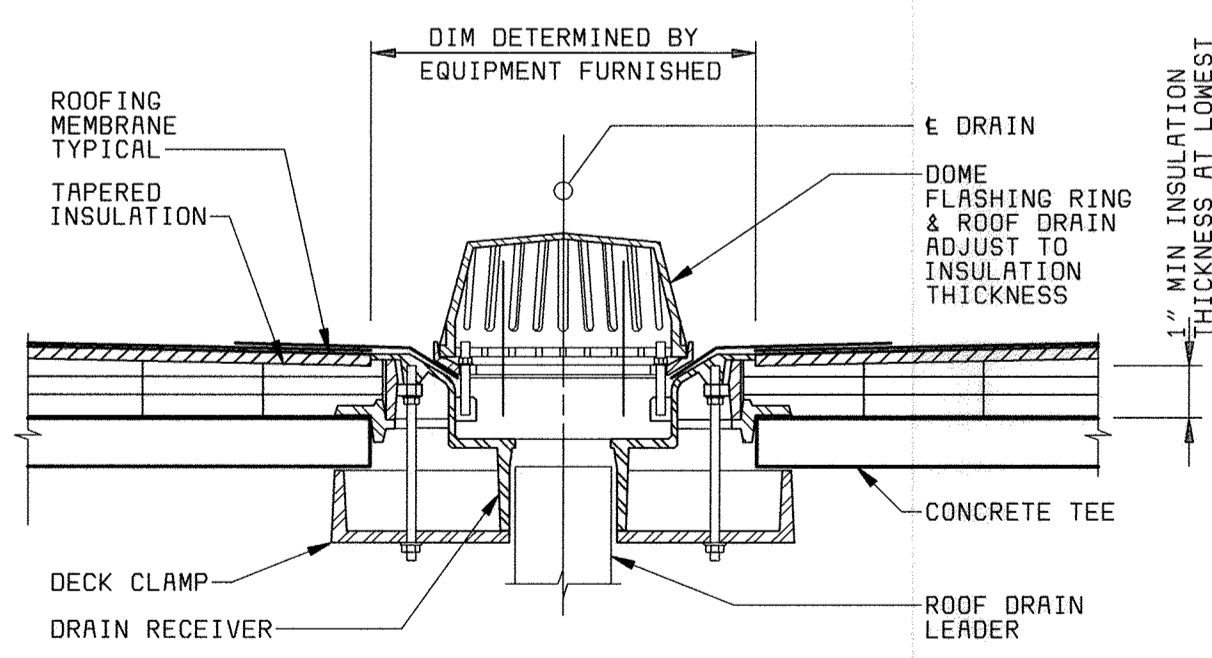
A1

XWLOGO
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058472-3
F058472A

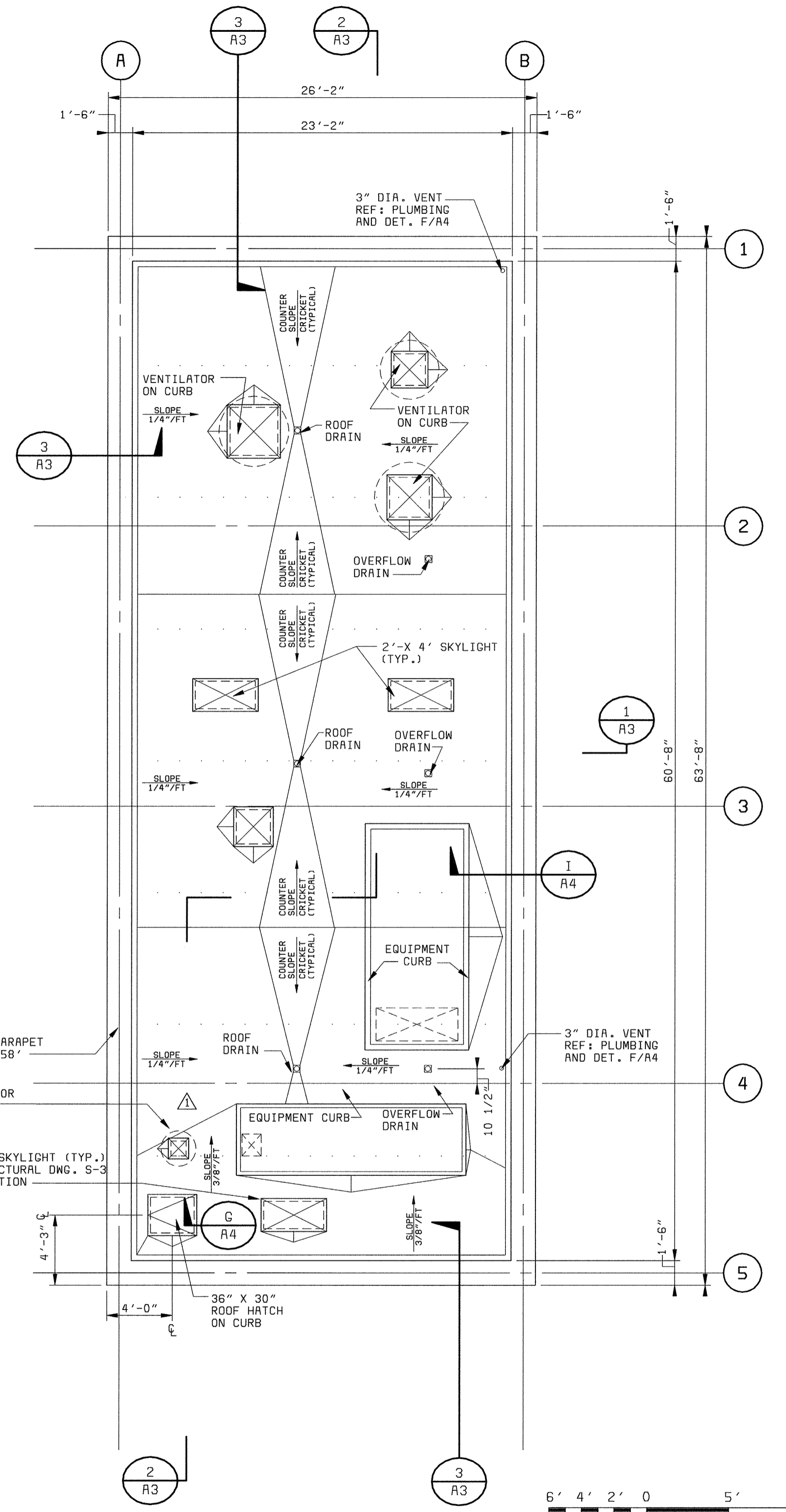
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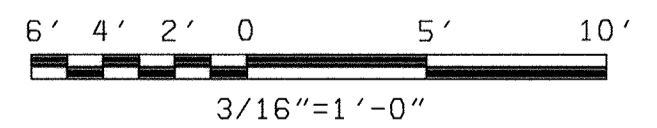
GROUND LEVEL PLAN 1
3/16" = 1'-0"



TYPICAL ROOF DRAIN DETAIL
1 1/2" = 1'-0"

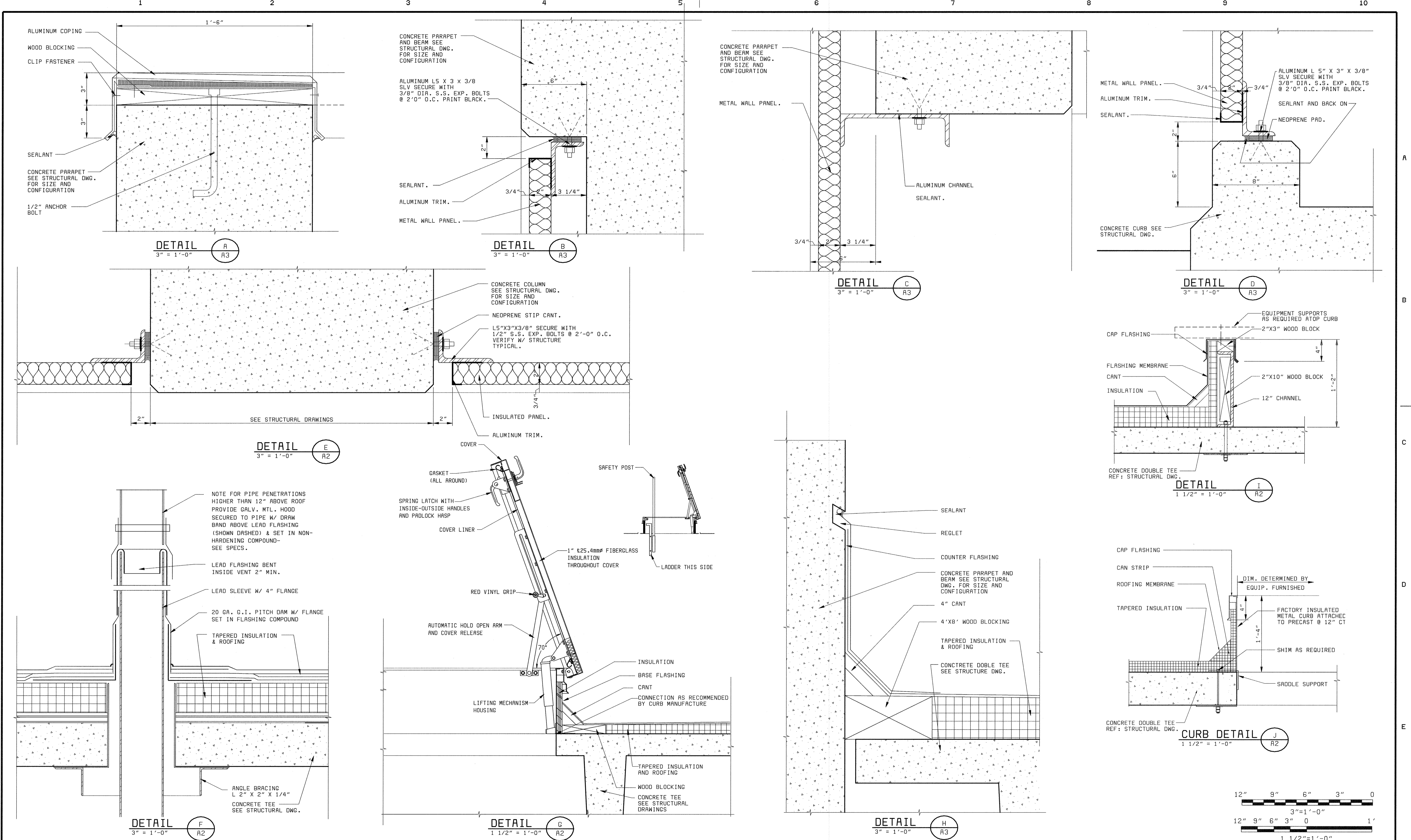


ROOF PLAN 2
3/16" = 1'-0"



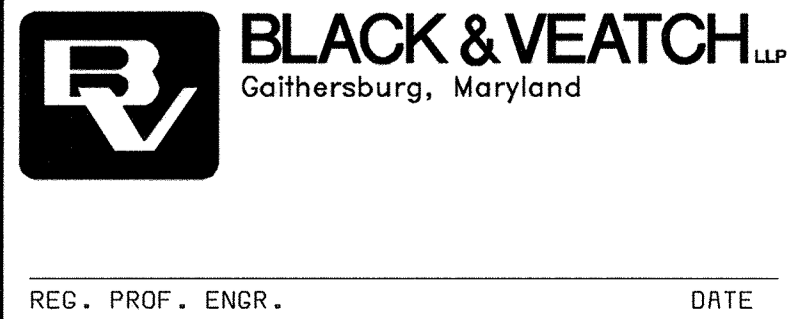
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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND bbw Architects • Designers • Planners Bryant Bryant Williams, P.C. 4201 Connecticut Avenue N.W., Suite 500 Washington, D.C. 20008 (202) 244-2108 REG. PROF. ENGR. DATE	BLACK & VEATCH Gaithersburg, Maryland THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY CHARLES L. BRYANT A REGISTERED ARCHITECT IN THE STATE OF MARYLAND, NO. 1377-R	DES: CH/JS	AUXILLARY PUMPING STATION ARCHITECTURAL		LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
		DRN: JS	OPERATING GROUND LEVEL AND ROOF PLAN			SHEET 23 OF 88
CHIEF, BUREAU OF UTILITIES DATE		CHK: CH	5/05/05	CONFORMED TO CONSTRUCTION RECORDS		A2
		DATE: 2/19/01	7/10/01	CODE REVIEW COMMENT	RHH RJR RJR	
				REVISIONS AND RECORD OF ISSUE	NO. BY CK APP	



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 D58472-3
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DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 CHIEF, BUREAU OF UTILITIES DATE



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 FOR CONSTRUCTION
 AND SEALED BY
 CHARLES L. BRYANT
 A REGISTERED
 ARCHITECT
 IN THE
 STATE OF MARYLAND,
 NO. 1377-R

DES: CH/JS					
DRN: JS					
CHK: CH					
DATE: 5/26/00	5/05/05	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR		
DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP

AUXILIARY PUMPING STATION
 ARCHITECTURAL
 MISCELLANEOUS DETAILS

LITTLE PATUXENT WATER RECLAMATION PLANT
 ADDITION NO. 6
 PRELIMINARY AND PRIMARY TREATMENT EXPANSION
 CAPITAL PROJECT S-6205
 CONTRACT NO. 20-3840
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 25 OF 88
 A4

FINISH SCHEDULE

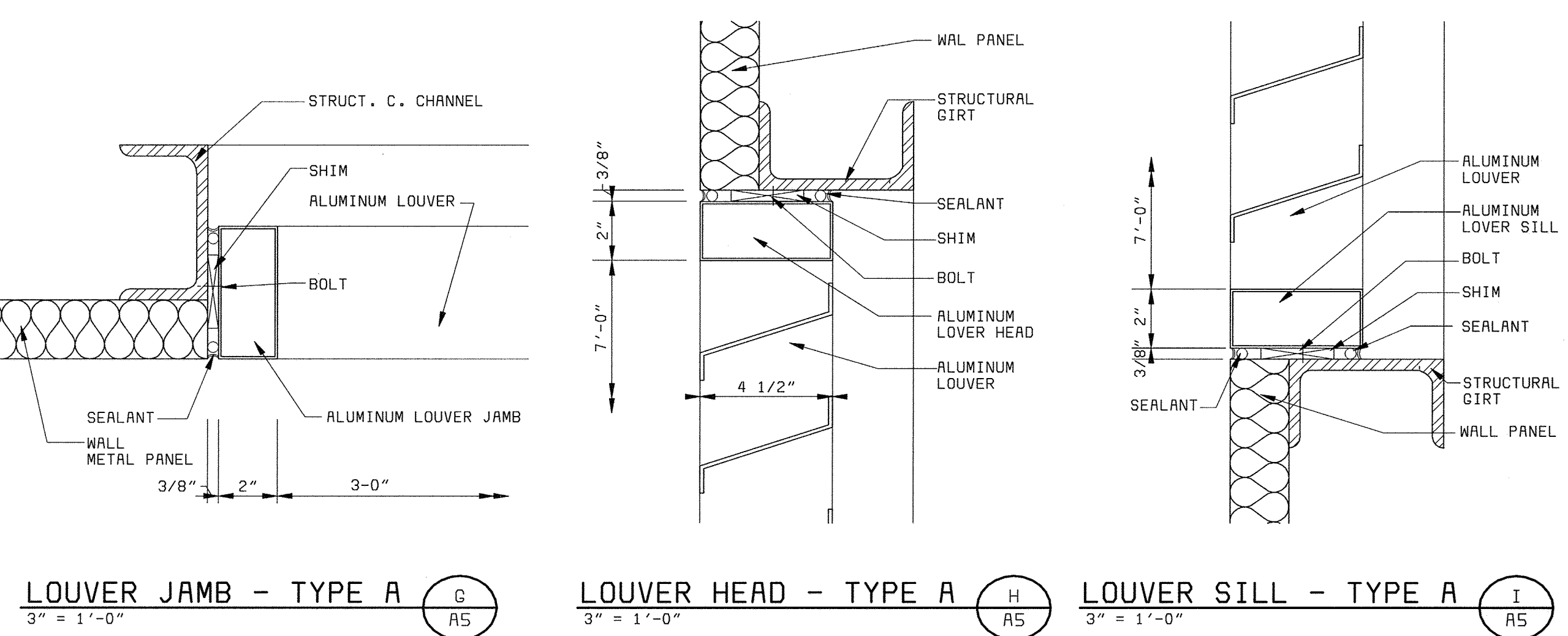
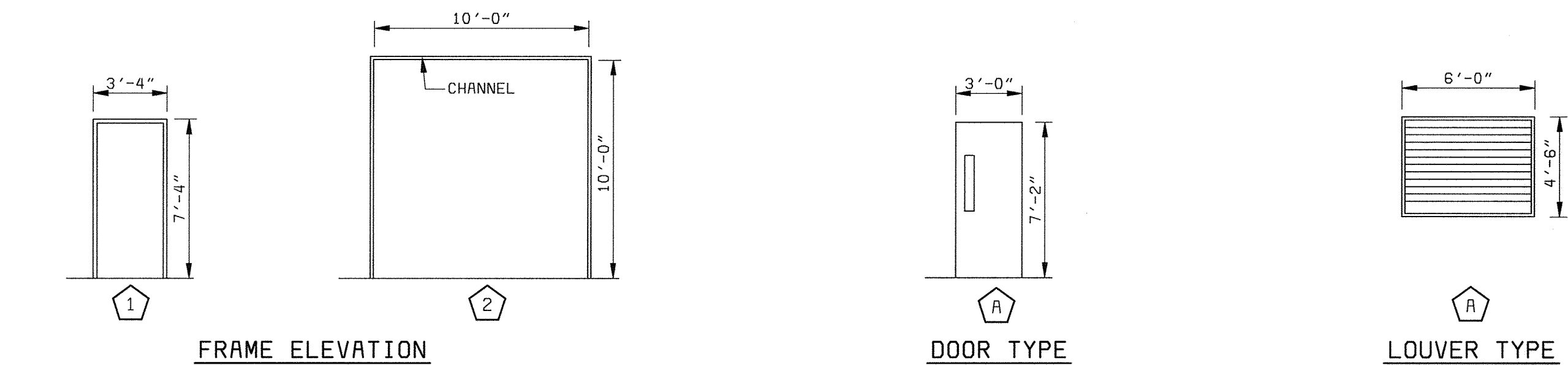
BUILDING	SPACE NUMBER	SPACE NAME	FLOOR	WALL	CEILING	REMARKS
AUXILIARY PUMPING STATION	100	EQUIPMENT ROOM	CONCRETE W/SEALER	MTL WALL PANEL/CMU/PTD	EXPOSED CONC	-
	101	STAIR	CONCRETE W/SEALER	MTL WALL PANEL/CMU/PTD	EXPOSED CONC	-
-	-	-	-	-	-	-

DOOR SCHEDULE

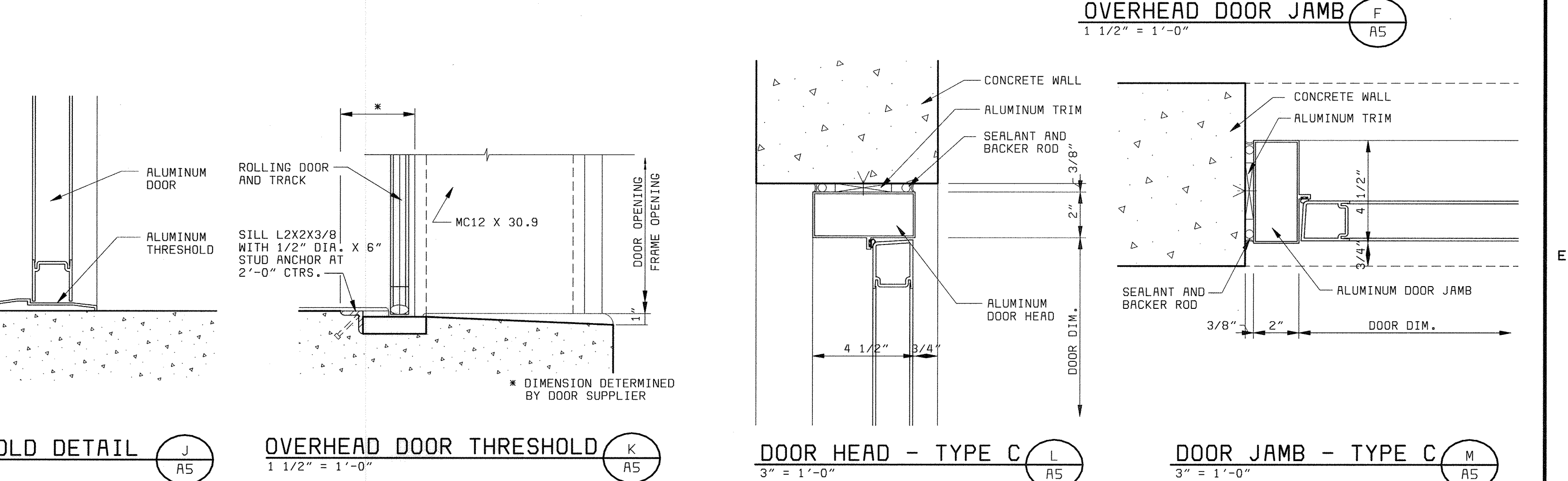
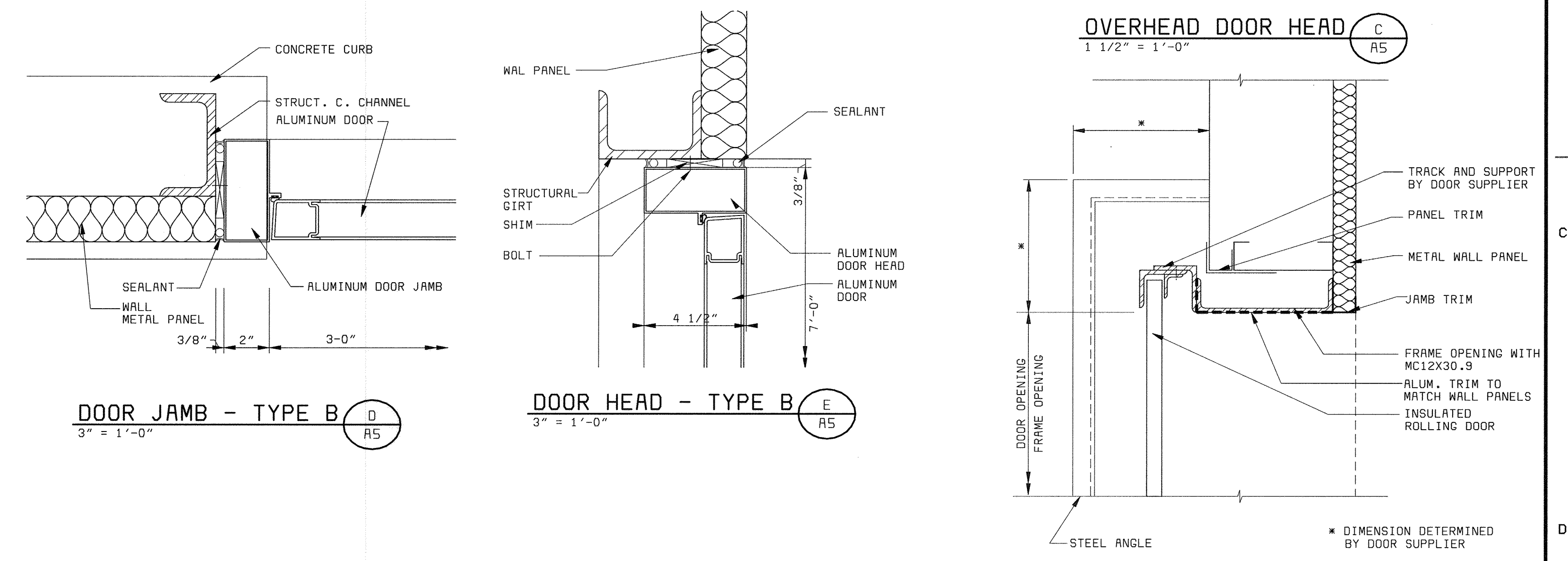
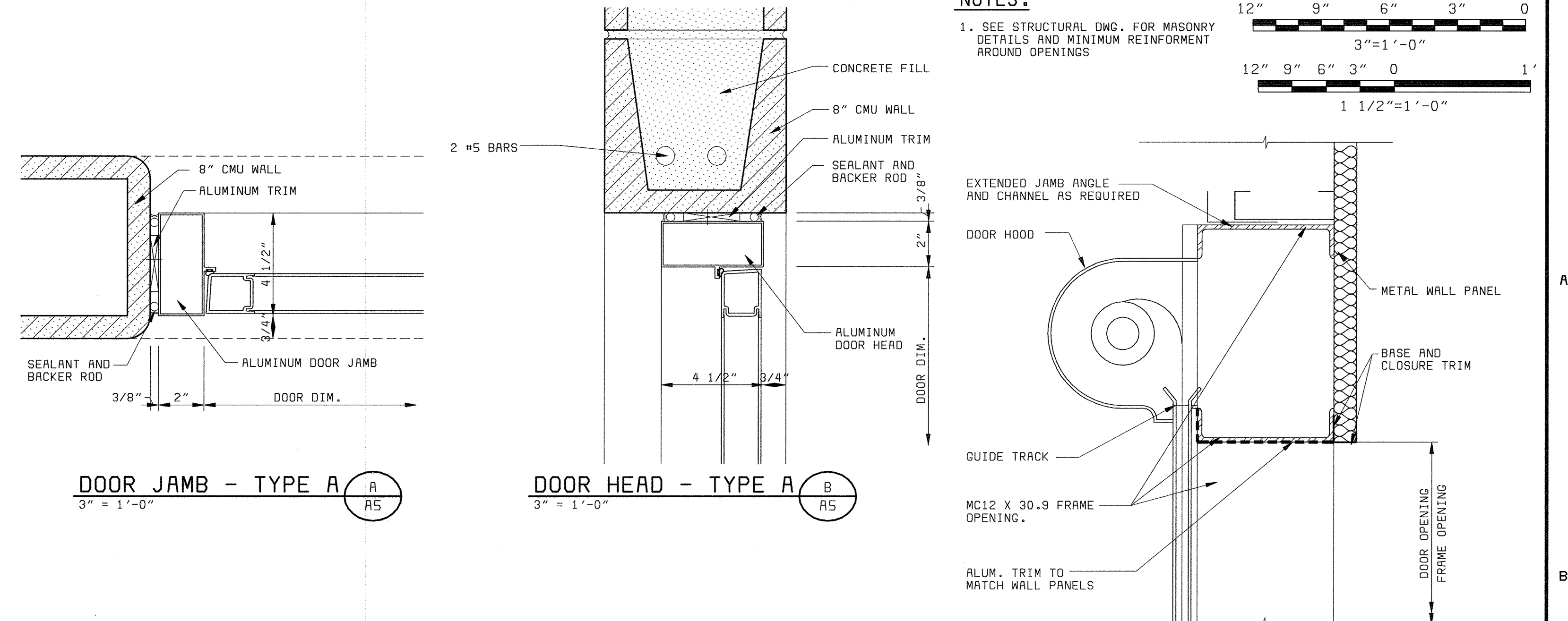
BUILDING	DOOR NUMBER	DOOR SIZE			DOOR TYPE	MATERIAL	FRAME DETAILS			FRAME MATERIAL	FRAME ELEV.	FIRE RATING HRS	REMARKS
		W	H	T			HEAD	JAMB	THRESH				
AUXILIARY PUMPING STATION	1	10'-0"	10'-0"	2"	OVERHEAD DOOR	ALUMINUM	C/A5	F/A5	K/A5	ALUMINUM	2	-	
	2	3'-0"	7'-2"	4 1/2"	A	ALUMINUM	E/A7	D/A5	J/A5	ALUMINUM	1	-	
	3	3'-0"	7'-2"	4 1/2"	A	ALUMINUM	E/A7	D/A5	J/A5	ALUMINUM	1	-	
	4	3'-0"	7'-2"	4 1/2"	B	STEEL	B/A5	A/A5	-	STEEL	1	1	
	5	3'-0"	7'-2"	4 1/2"	B	STEEL	L/A5	M/A5	-	STEEL	1	1	
	6	3'-0"	7'-2"	4 1/2"	B	STEEL	L/A5	M/A5	-	STEEL	1	1	

LOUVER SCHEDULE

BUILDING	LOUVER NUMBER	LOUVER SIZE			TYPE	FRAME DETAILS			REMARKS
		W	H	T		HEAD	JAMB	SILL	
AUXILIARY PUMPING STATION	1	6'-0"	4'-6"	4 1/2"	A	H/A5	G/A5	I/A5	PART OF METAL WALL PANEL
	2	6'-0"	4'-6"	4 1/2"	A	H/A5	G/A5	I/A5	PART OF METAL WALL PANEL
-	-	-	-	-	-	-	-	-	-



<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p>bbw Architects • Designers • Planners Bryant Bryant Williams, P.C. 4201 Connecticut Avenue N.W., Suite 500 Washington, D.C. 20008 (202) 244-2108</p> <p>CHIEF, BUREAU OF UTILITIES DATE</p>	<p>BLACK & VEATCH Gaithersburg, Maryland</p> <p>REG. PROF. ENGR. DATE</p>	<p>THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY CHARLES L. BRYANT A REGISTERED ARCHITECT IN THE STATE OF MARYLAND, NO. 1377-R</p>	<p>DES: CH/JS</p> <p>DRN: JS</p> <p>CHK: CH</p> <p>DATE: 5/26/00</p>	<p>5/05/05 CONFORMED TO CONSTRUCTION RECORDS</p> <p>7/10/01 CODE REVIEW COMMENT</p>	<p>RHH RJR RJR</p> <p>NO. BY CK APP</p>
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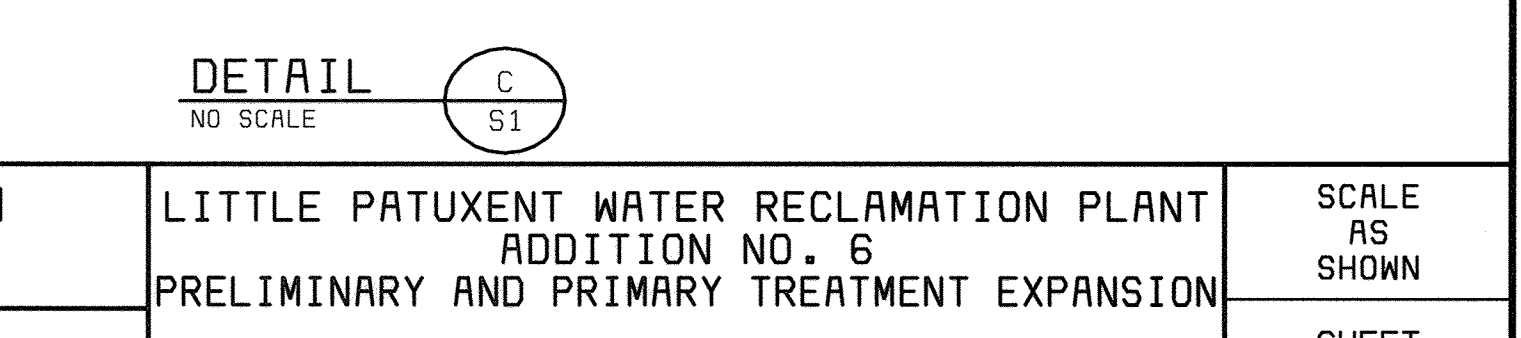
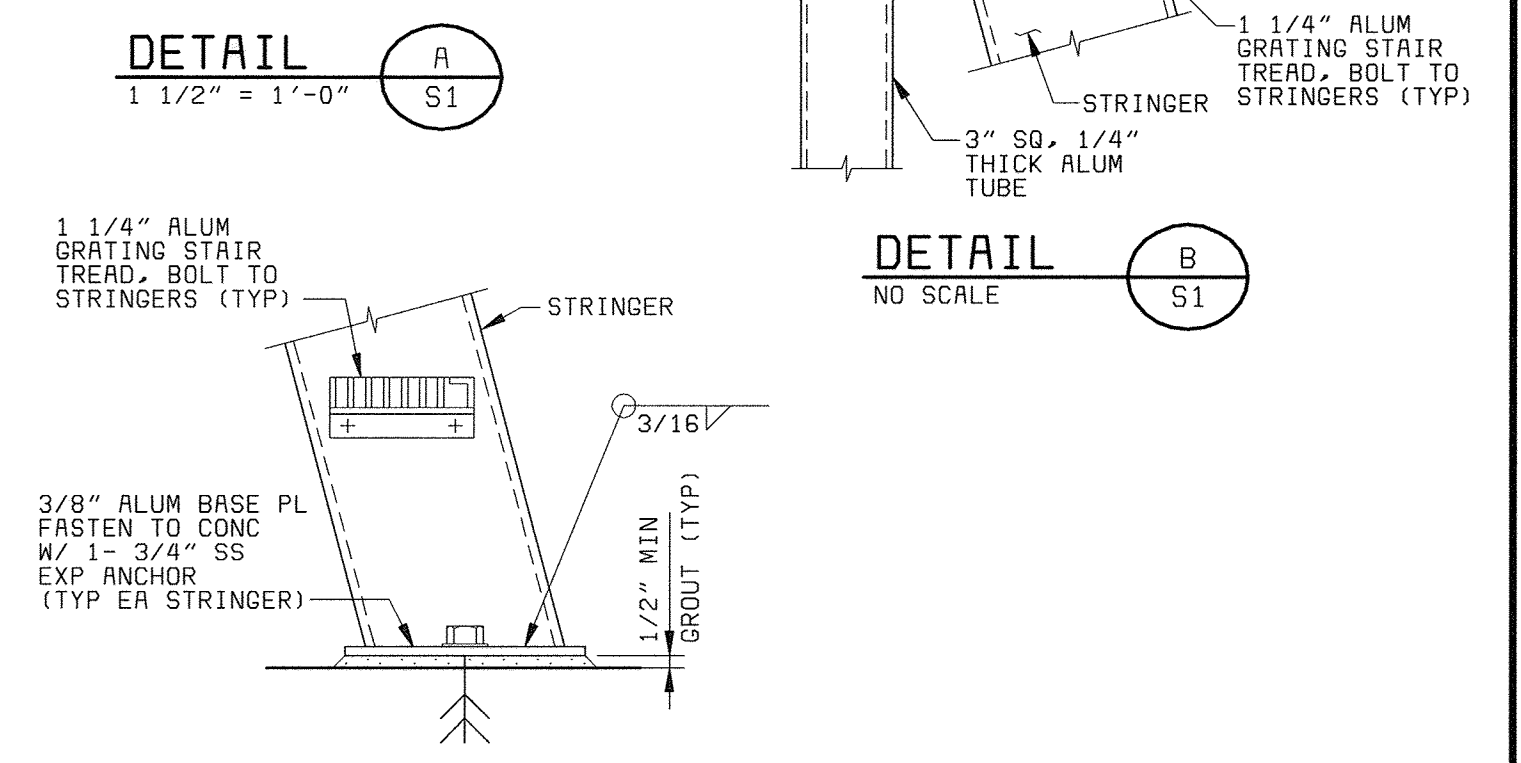
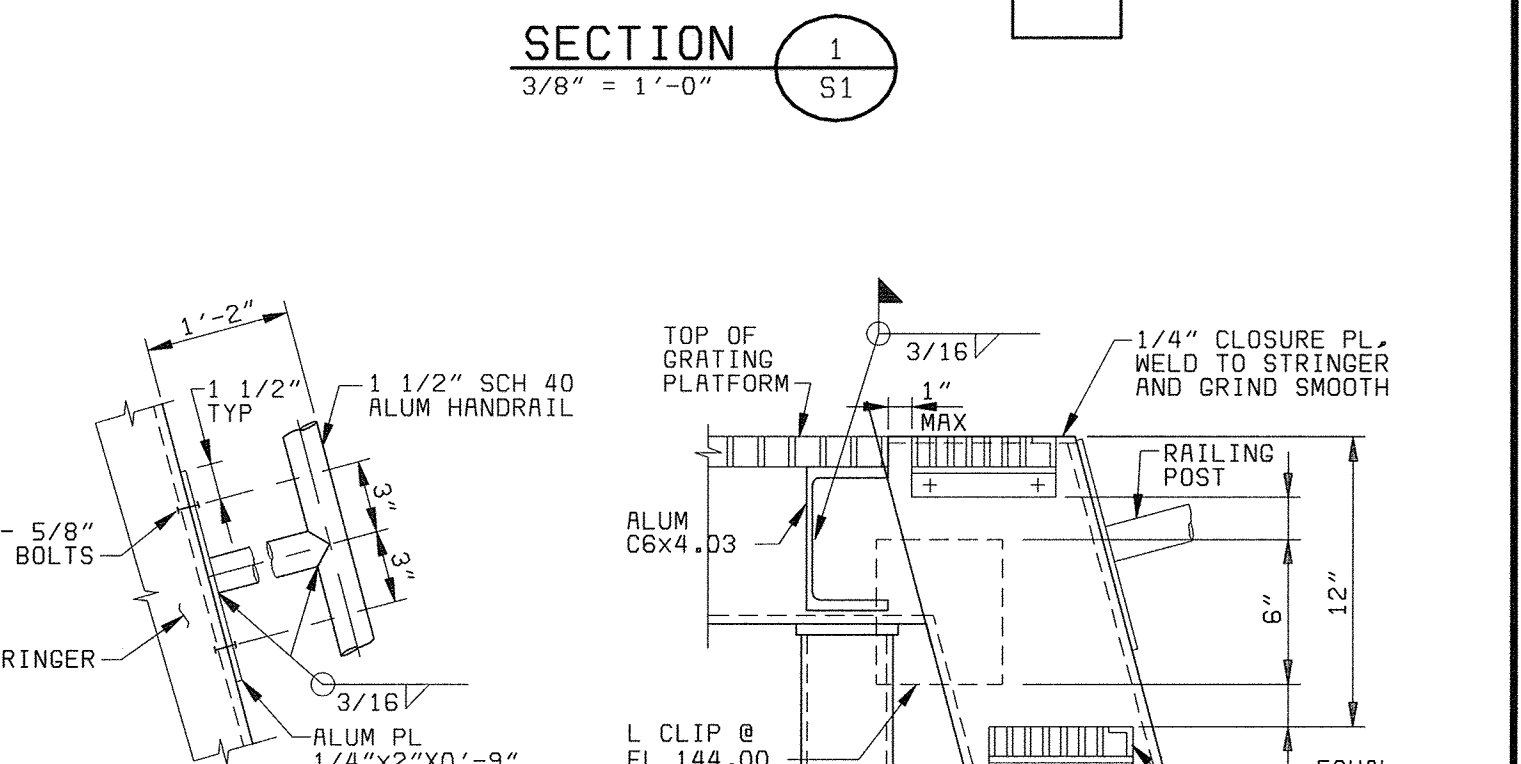
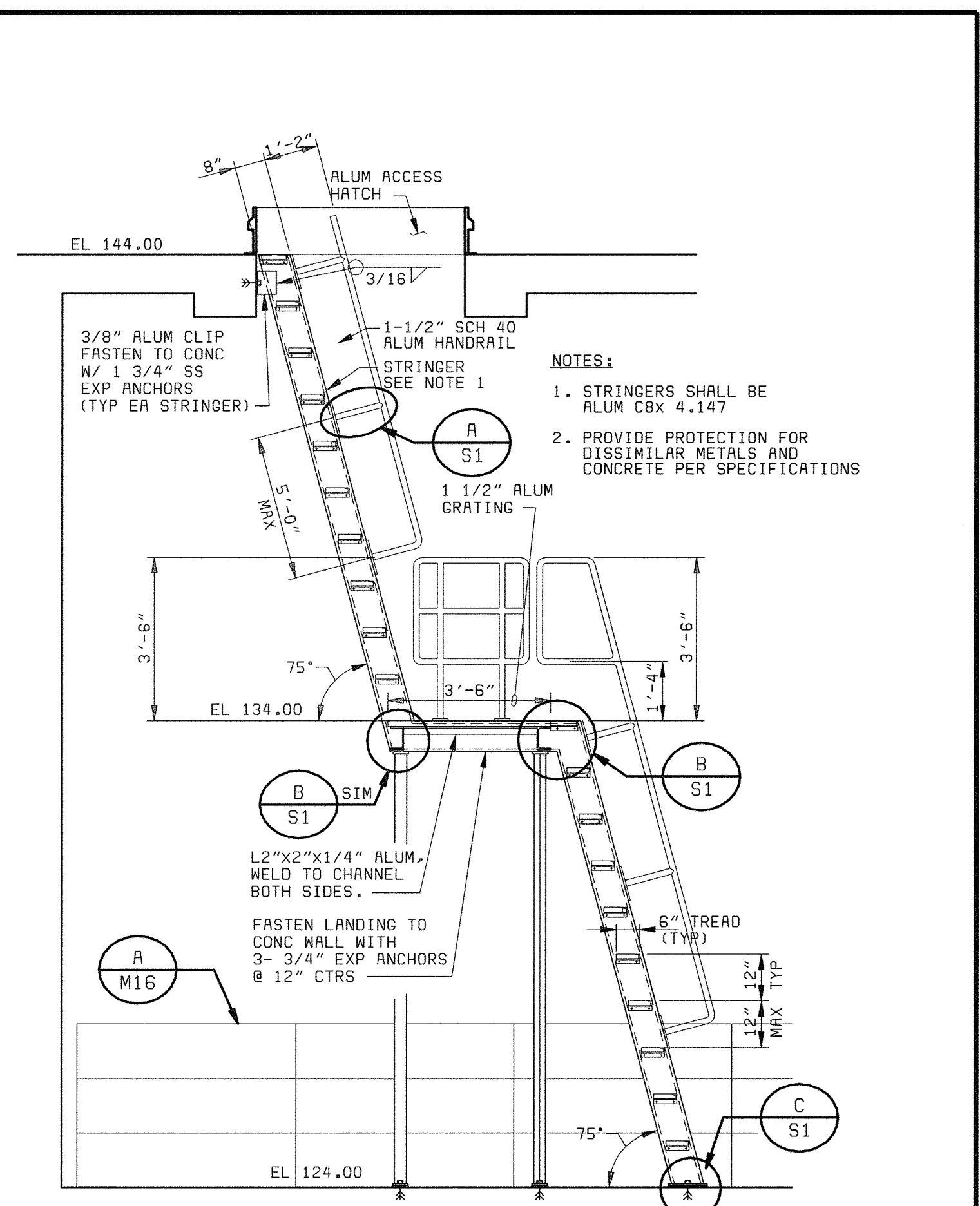
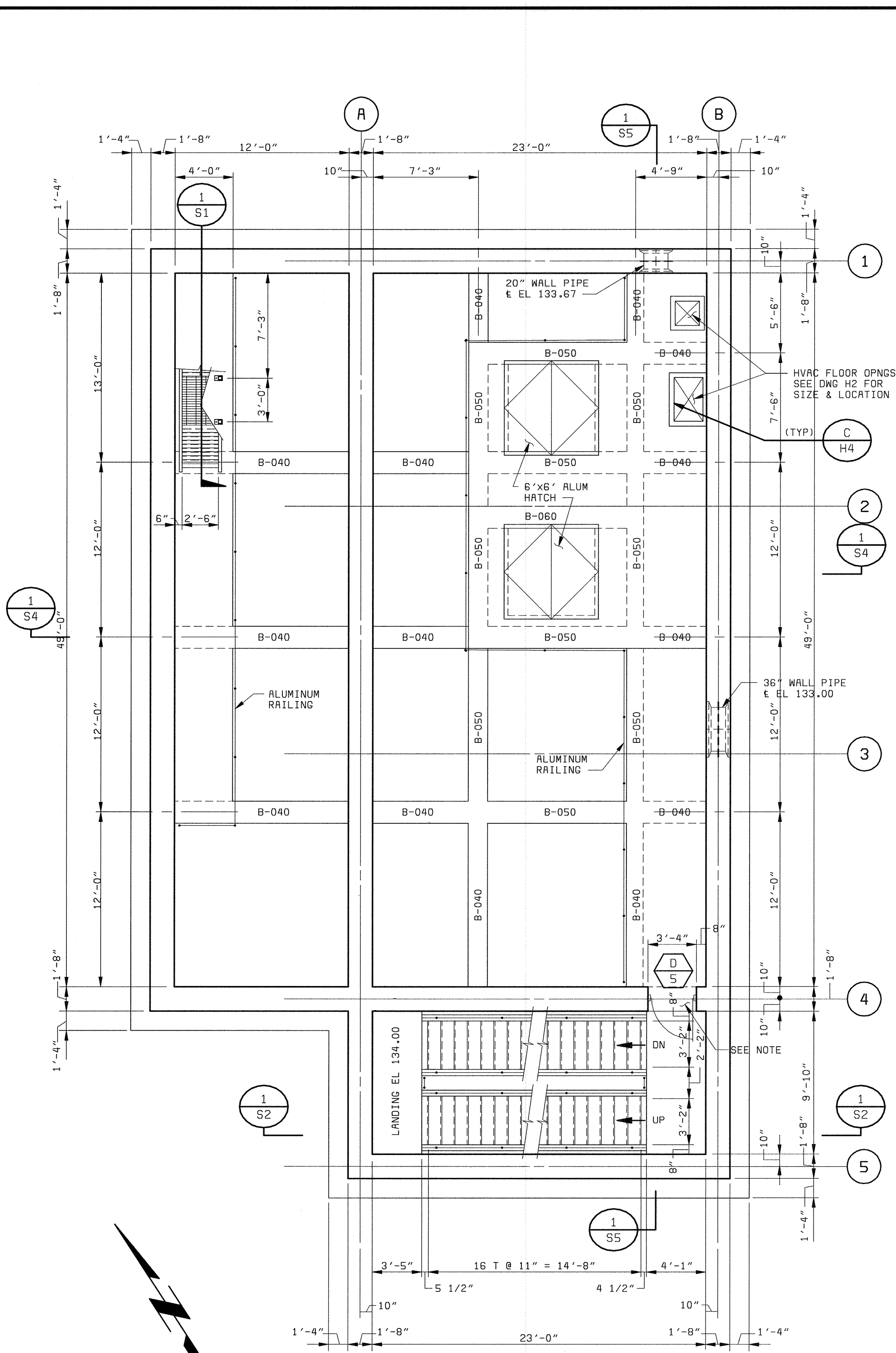
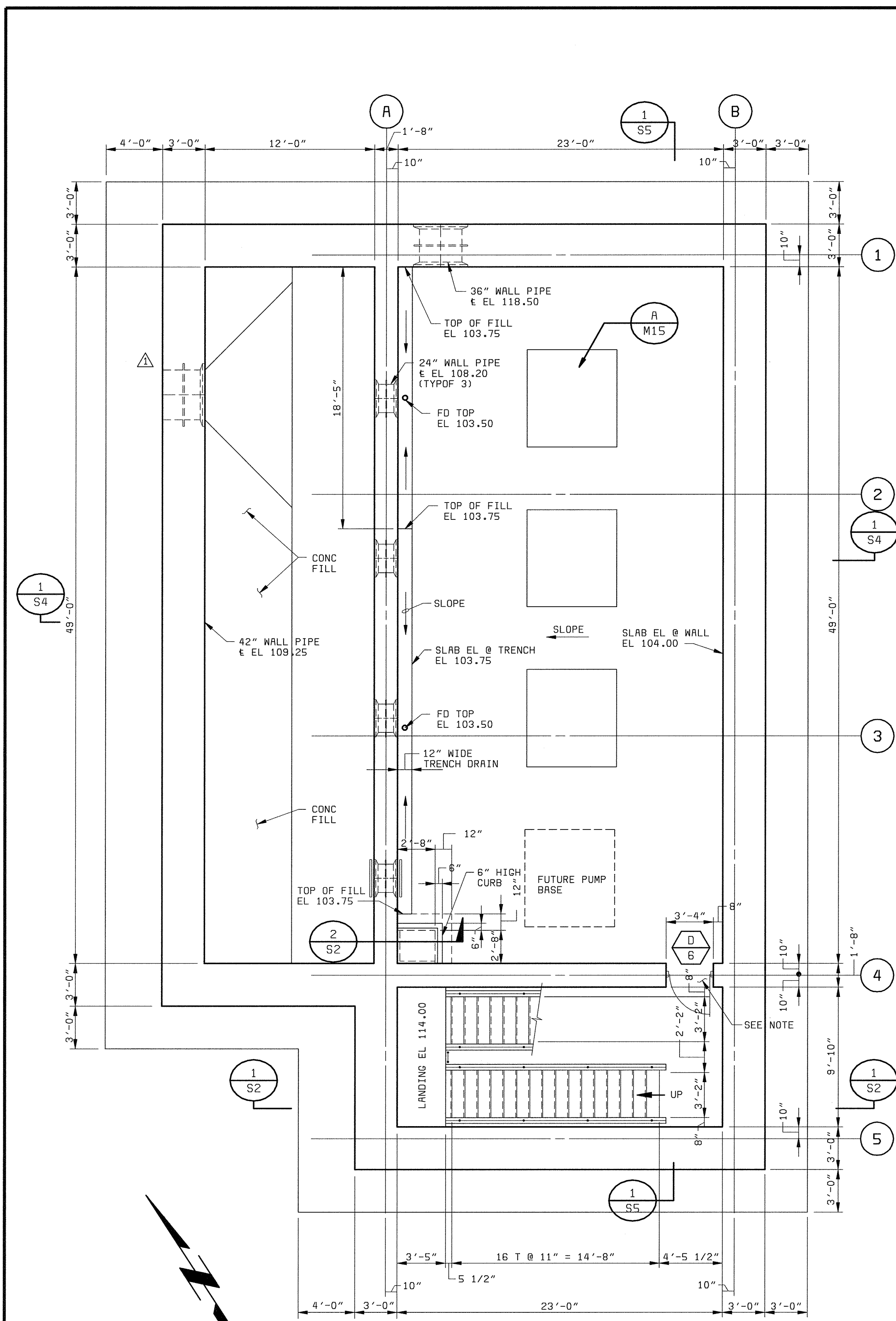


<p>AUXILIARY PUMPING STATION ARCHITECTURAL</p> <p>SCHEDULES AND DOOR AND LOUVER DETAILS</p>	<p>LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION</p> <p>CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840</p> <p>HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 26 OF 88</p> <p>A5</p>
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NOTES:
1. SEE STRUCTURAL DWG. FOR MASONRY DETAILS AND MINIMUM REINFORCEMENT AROUND OPENINGS

12" 9" 6" 3" 0
3"=1'-0"
12" 9" 6" 3" 0
1 1/2"=1'-0"

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XWL060
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05/05/2005 13:05:21



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

BLACK & VEATCH
Gaithersburg, Maryland

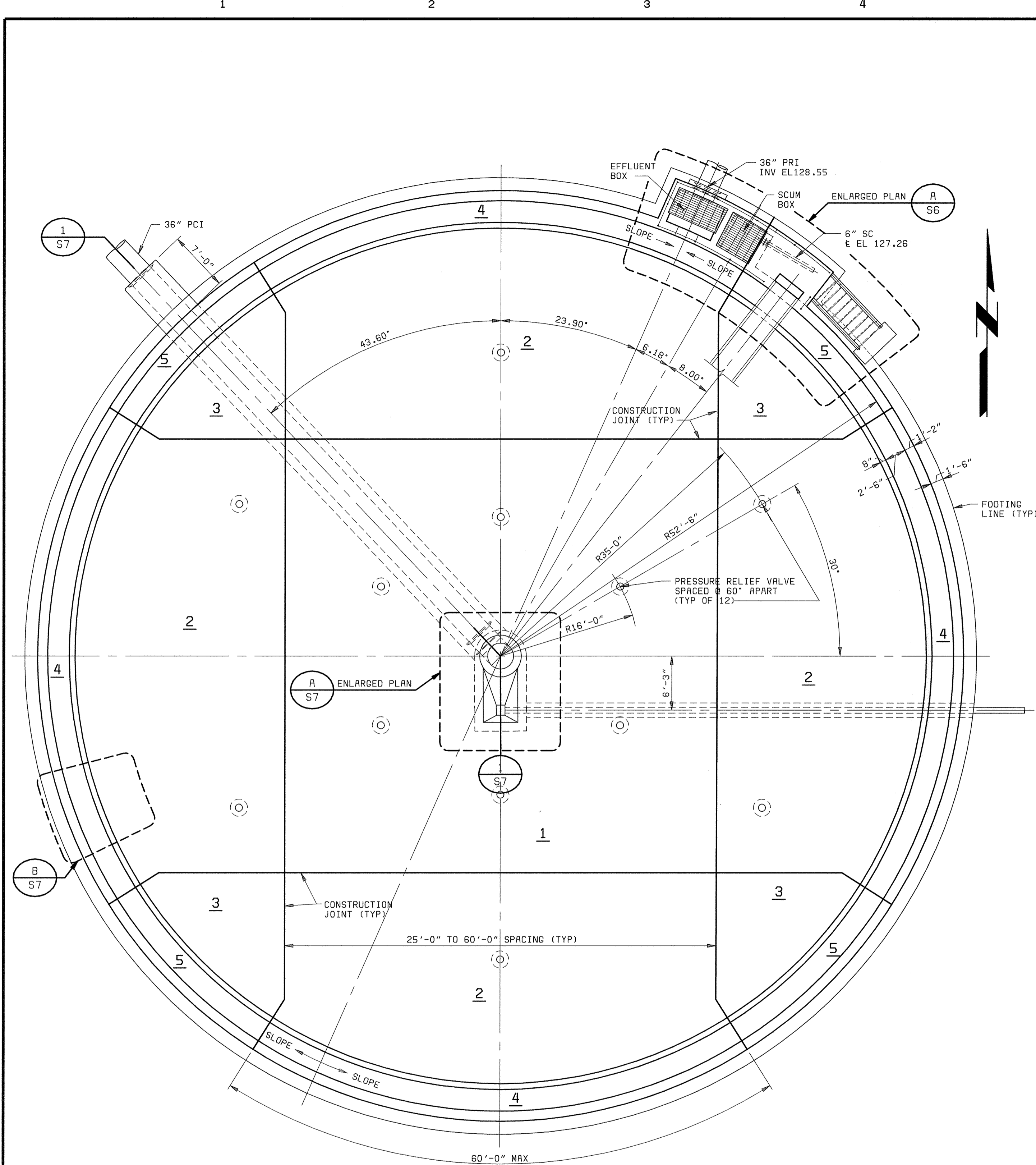
THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
ROBERT J. RECTANUS, JR.
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927

DES: IFH, SLF					
DRN: SLF					
CHK: WDB					
DATE: 2/19/01	05/05/05	CONFORMED TO CONSTRUCTION RECORDS			
		REVISIONS AND RECORD OF ISSUE			

AUXILIARY PUMP STATION
STRUCTURAL
PLANS SECTION AND DETAILS

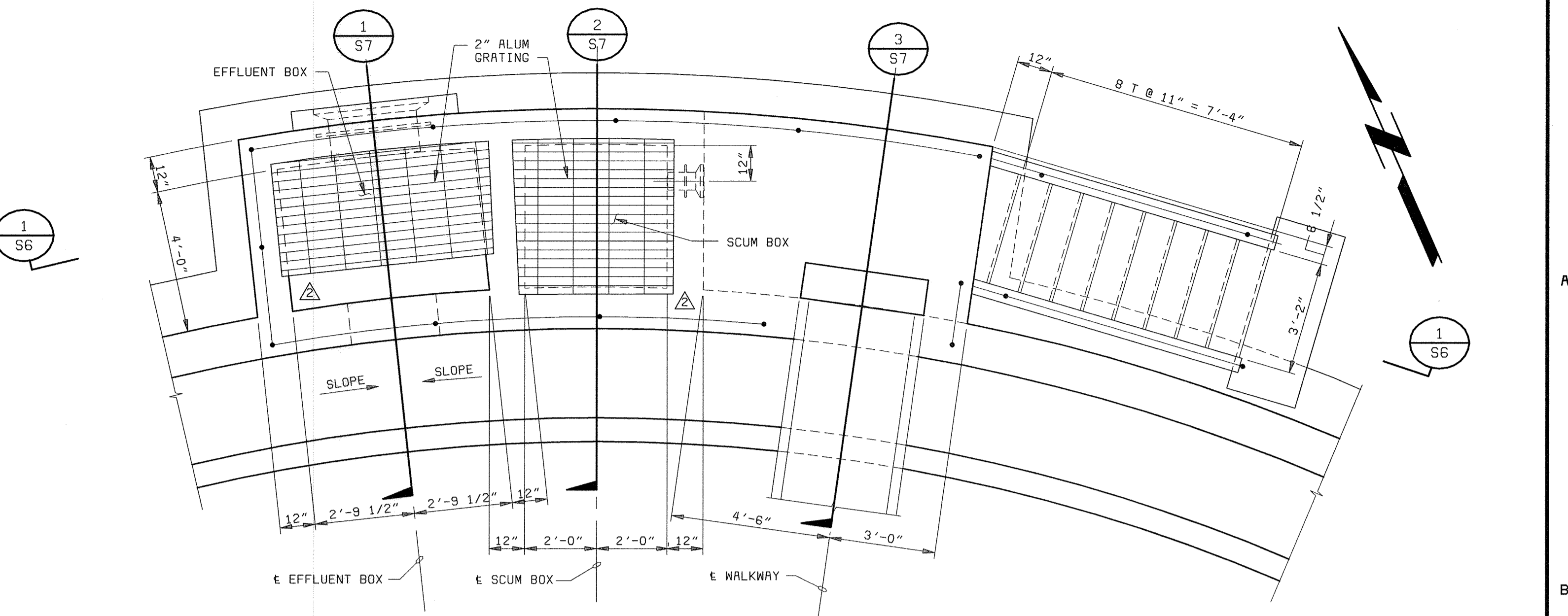
LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 27 OF 88
S1

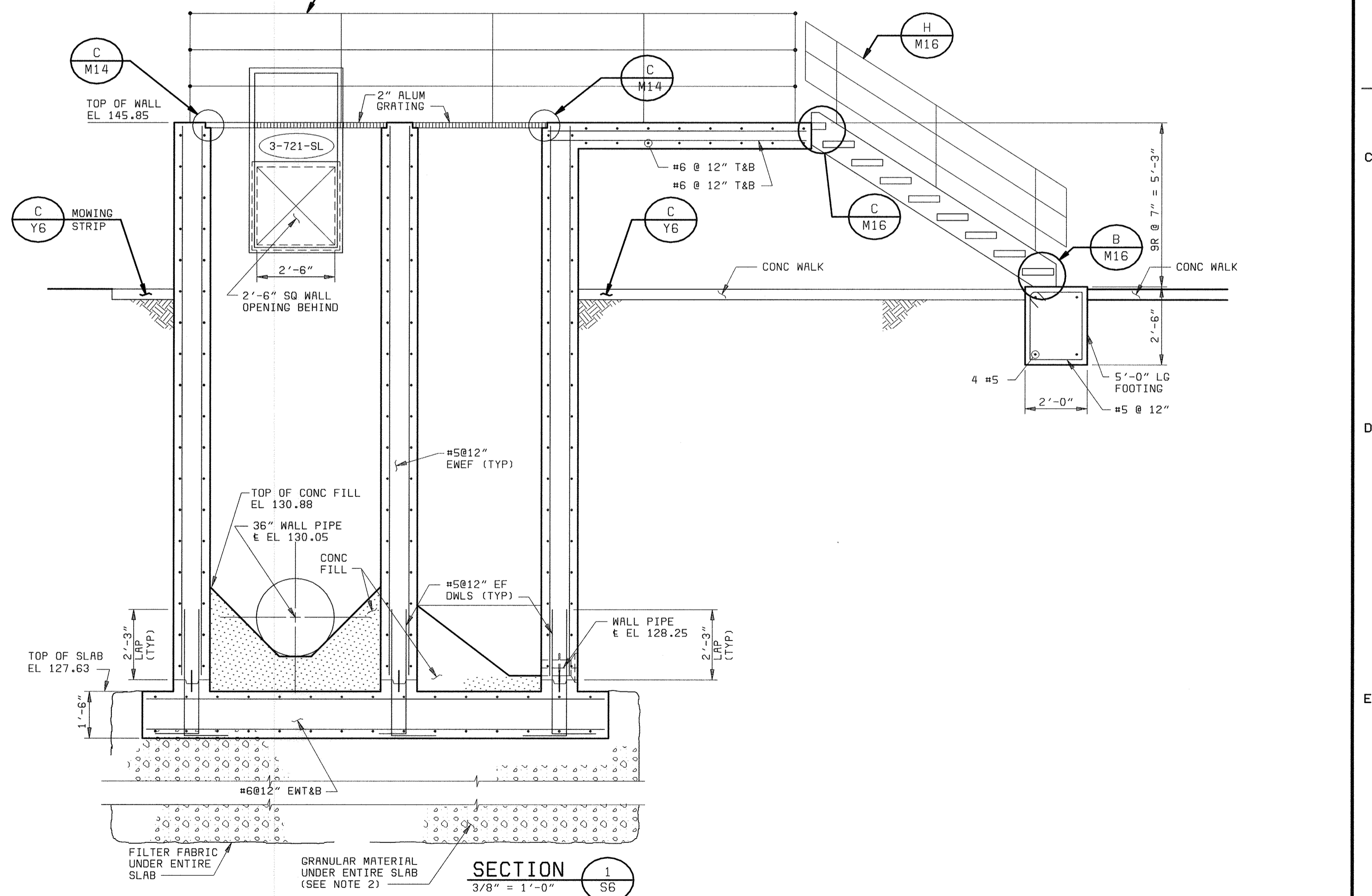


PLAN
1/8" = 1'-0"

- NOTE:**
- 4 INDICATES SLAB POUR SEQUENCE.
 - REMOVE EXISTING STRATUM A FILL MATERIAL TO ELEVATION 121.0* AND REPLACE WITH GRANULAR MATERIAL.
 - THE HIGH POINT OF THE EFFLUENT LAUNDER INVERT SHALL BE EL 142.52.




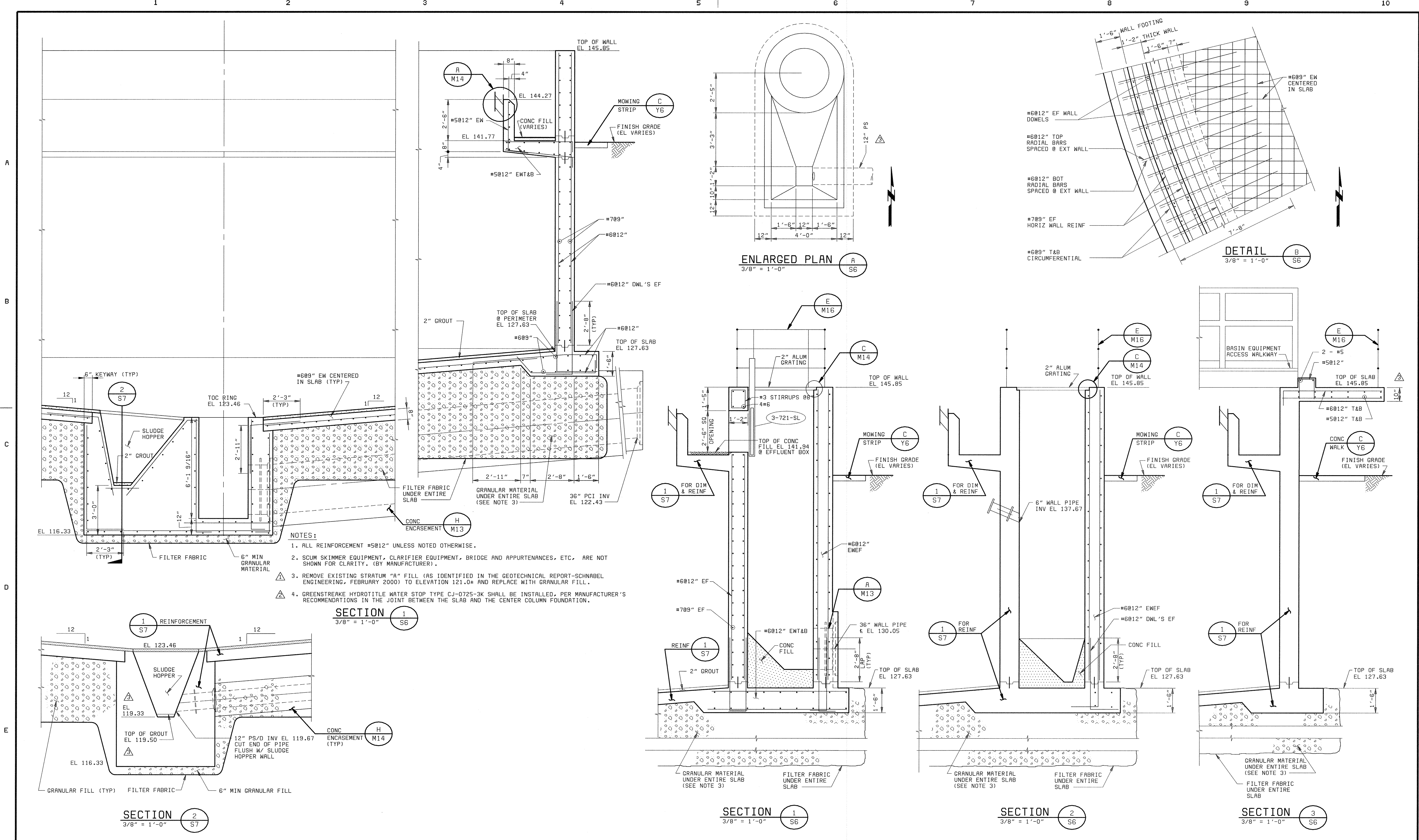
ENLARGED PLAN
3/8" = 1'-0"



SECTION 1-1
3/8" = 1'-0"

XREF: 58472-101-PC-M-R0000546
058472_3
F058472R

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: FKA, SLF					PRIMARY CLARIFIER NO. 5 STRUCTURAL	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: SLF	CHK: WDB	05/05/05	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR			
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP	S6



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: FKA					PRIMARY CLARIFIER NO. 5 STRUCTURAL	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION	SCALE AS SHOWN
			DRN: ABW	05/05/05	CONFORMED TO CONSTRUCTION RECORDS					
			CHK: WDB	06/27/01	ADDENDUM NO. 3			SECTIONS AND DETAILS		
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY		CK	APP

STRUCTURAL NOTES

GENERAL

- FOR LOCATIONS AND DIMENSIONS OF SLEEVES, CURB, OPENINGS AND DEPRESSIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS, REFER TO ARCHITECTURAL, CIVIL/MECHANICAL, YARDWORK, PLUMBING, HVAC AND ELECTRICAL DRAWINGS. CONTRACTOR SHALL VERIFY AND COORDINATE REQUIREMENT FOR AND LOCATION OF ABOVE ITEMS WHETHER SHOWN ON THE STRUCTURAL DRAWING OR NOT.
- EMBEDDED ITEMS, SUCH AS PIPE SLEEVES, CONDUITS AND INSERTS SHALL BE IN PLACE BEFORE CONCRETE IS POURED. REFER TO ARCHITECTURAL, CIVIL/MECHANICAL, YARDWORK, PLUMBING, HVAC AND ELECTRICAL DRAWINGS FOR ITEMS REQUIRING SLEEVES AND EMBEDMENTS IN CONCRETE WHICH ARE NOT SHOWN IN THE STRUCTURAL DRAWINGS.

CONCRETE

- ALL CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH ($f'c$) OF 4000 PSI, UNLESS OTHERWISE SPECIFIED. CEMENT SHALL BE ASTM C150, TYPE II LOW ALKALI FOR ALL STRUCTURES.
- ALL CONCRETE CONSTRUCTION SHALL CONFORM TO THE ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" INCLUDING BAR BENDS AND HOOKS, UNLESS DETAILED OTHERWISE.
- THE LOCATION OF ALL CONSTRUCTION JOINTS AND OTHER TYPES OF JOINTS, OTHER THAN SPECIFIED OR SHOWN ON THE PLANS, SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACING CONCRETE.
- ALL OPENINGS, PIPE SLEEVES, CONDUITS, INSERTS AND OTHER EMBEDDED ITEMS SHALL BE IN PLACE BEFORE CONCRETE IS PLACED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ARCHITECTURAL, CIVIL/MECHANICAL, PLUMBING, HVAC, ELECTRICAL PLANS FOR ITEMS REQUIRING SLEEVES AND EMBEDMENTS IN CONCRETE WHICH ARE NOT INDICATED IN SECTIONS OR FLOOR PLANS. NO PIPES OR SLEEVES SHALL PASS THROUGH STRUCTURAL MEMBERS, UNLESS SHOWN ON STRUCTURAL DRAWINGS OR APPROVED BY THE ENGINEER.
- ALL EXPOSED EDGES AND CORNERS SHALL BE CHAMFERED 3/4" EXCEPT THE TOP EDGES OF WALLS AND SLABS WHICH ARE TO BE TOOLED.
- ALL CONSTRUCTION JOINTS SHALL BE ROUGHENED TO 1/4" AMPLITUDE MINIMUM.

REINFORCING STEEL

- ALL REINFORCING BAR SHALL BE GRADE 60.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 OR ASTM A497.
- DIMENSIONS TO REINFORCING BARS ARE TO BAR CENTERLINES, UNLESS NOTED OTHERWISE. BAR COVER IS CLEAR DISTANCE BETWEEN BAR AND THE CONCRETE SURFACE. BAR COVERS AS SHOWN ON THE "STANDARD CONCRETE DETAILS" SHEET SHALL BE PROVIDED UNLESS NOTED OTHERWISE.
- SPLICING OF REINFORCEMENT FOR WALLS, FOOTINGS AND SLABS SHALL BE AS SHOWN ON THE "STANDARD CONCRETE DETAILS" SHEET, UNLESS NOTED OTHERWISE. WHEN BARS OF DIFFERENT SIZE LAP TO EACH OTHER, SPLICE LENGTH FOR THE SMALLER BAR MAY BE USED.
- UNLESS INDICATED OTHERWISE, ALL DOWELS SHALL HAVE THE SAME SIZE AND SPACING AS THAT OF THE REINFORCING STEEL TO WHICH THEY ARE SPLICED.
- NO WELDING OF REINFORCING BARS SHALL BE PERMITTED, UNLESS NOTED OTHERWISE.

STRUCTURAL STEEL

- UNLESS NOTED OTHERWISE, STRUCTURAL STEEL SHALL CONFORM TO ASTM A36, STRUCTURAL PIPES TO ASTM A53, TYPE E, GRADE B OR ASTM A500, GRADES B, C OR D, OR ASTM A501, STRUCTURAL TUBING TO ASTM A500, GRADE B OR C. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERRECTED IN CONFORMANCE WITH THE LATEST AISC SPECIFICATIONS PARTS 1 THRU 4 AND THE "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS."
- WELDING SHALL BE PERFORMED BY A CERTIFIED WELDER IN ACCORDANCE WITH AWS AND AISC WELDING PROCEDURES AND CODES AS OUTLINED IN THE SPECIFICATIONS.
- ALL STRUCTURAL STEEL WELDING SHALL BE PERFORMED WITH FILLER METAL HAVING A MINIMUM TENSILE STRENGTH OF 70 KSI.

STAINLESS STEEL

- STAINLESS STEEL BOLTS SHALL CONFORM TO ASTM F593. ALLOY GROUP 1 OR 2, UNLESS NOTED OTHERWISE.
- STAINLESS STEEL PLATES, BARS AND RODS SHALL CONFORM TO ASTM A240, TYPE 304L.
- STAINLESS STEEL STRUCTURES SHAPES AND STUDS SHALL CONFORM TO ASTM A276, TYPE 304.

ALUMINUM

- UNLESS NOTED OTHERWISE, ALUMINUM ALLOY IN ALL ALUMINUM STRUCTURAL MATERIALS SHALL BE 6061-T6.
- ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE OR DISSIMILAR METALS SHALL BE COATED OR COVERED WITH A HEAVY COAT OF EPOXY ENAMEL TO PREVENT ALUMINUM-CONCRETE REACTION OR ELECTROLYTIC ACTION.
- ALL ALUMINUM WELDING SHALL CONFORM TO THE PROVISIONS OF THE LATEST STRUCTURAL WELDING CODE (AWS 01.2).
- A CERTIFIED FABRICATOR IS REQUIRED FOR ALL ALUMINUM PANELS AND FRAMES.

MASONRY

- CONCRETE MASONRY UNITS SHALL CONFORM TO ASTM C90. THE TOTAL MASONRY ASSEMBLAGE SHALL HAVE A COMPRESSIVE STRENGTH EQUAL TO 1500 PSI AT 28 DAYS.
- MASONRY MORTAR SHALL CONFORM TO ASTM C270, TYPE S.
- ANY MASONRY IN CONTACT WITH EARTH SHALL BE GROUTED FULL AND BACK PARGED AS REQUIRED.
- ALL BOND BEAMS AND ANY BLOCK CELLS CONTAINING EMBEDMENTS, REINFORCING STEEL, ANCHORS, ETC., SHALL BE FILLED MINIMUM 2,000 PSI CONCRETE FILL. PROVIDE BOND BEAMS W/ MIN 2-#5 HORIZONTAL AT OPENING SILL (EXTENDED 2'-0" MIN BEYOND OPENING AT EACH END), WHERE INDICATED ON ARCH DRAWINGS AND TOP OF WALL UNLESS DETAILED OTHERWISE. BOND BEAM REINF TO BE CONTINUOUS AT CORNERS AND INTERSECTIONS.
- ALL CONCRETE MASONRY OPERATIONS SHALL BE DONE IN ACCORDANCE WITH THE PROVISIONS OF THE BOCA NATIONAL BUILDING CODE / 1996.
- REFER TO ARCHITECTURAL, ELECTRICAL AND MECHANICAL DRAWINGS FOR EMBEDDED ITEMS NOT SHOWN HEREIN AND TO VERIFY SIZE AND LOCATION OF ALL OPENINGS. BEFORE EXECUTING ANYTHING HEREIN SHOWN, THE CONTRACTOR SHALL EXAMINE ACTUAL JOB CONDITIONS AND REPORT TO THE ENGINEER ANY ERROR OMISSION OR DISCREPANCY AFFECTING THE WORK.
- ALL REINFORCING TO BE CONTINUOUS WITH LAP SPLICES EQUAL TO 48 BAR DIAMETERS MINIMUM.

SOIL AND FOUNDATIONS

- ALL EARTHWORK AND FOUNDATION CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL REPORT. IN CASE OF A CONFLICT THE REQUIREMENTS OF THE SPECIFICATIONS SHALL COVER.
- TO FACILITATE SCHEDULING, AT LEAST 48 HOURS ADVANCE NOTICE SHOULD BE GIVEN TO THE INSPECTION ENGINEER PRIOR TO THE REQUIRED INSPECTIONS.
- UNLESS NOTED OTHERWISE, BACKFILL SHALL NOT BE PLACED AGAINST THE WALLS UNTIL THE TOP SLAB HAS BEEN PLACED IN ITS ENTIRETY AND ALL CONCRETE HAS REACHED ITS DESIGN STRENGTH.

LOADING CRITERIA


- DEAD LOADCALCULATED
- LIVE LOADS: (NO LIVE LOAD REDUCTION IS CONSIDERED IN THE DESIGN) Δ
 OPERATION AND PROCESS FLOORS..... 150 PSF
 EQUIPMENT..... ACTUAL
 STAIRS/SERVICE PLATFORMS..... 100 PSF
 GRATING AREAS..... 100 PSF
 ALL FLOORS NOT INDICATED..... 100 PSF
 ROOF..... 30 PSF
 CLEARWELL ROOF..... 100 PSF Δ
 GROUND SNOW LOAD..... 30 PSF Δ
 IMPORTANCE FACTOR..... 1.0
 SNOW EXPOSURE FACTOR..... 0.7 Δ
- LATERAL EARTH PRESSURE 3,000 PSF AND 8,000 PSF
 FROST DEPTH 24 INCHES MINIMUM
- LATERAL SURCHARGE EQUIVALENT OF 2 FT OF SOIL WHERE
 ADJACENT TO ROADWAY
- HYDROSTATIC FLUID PRESSURE 63 PSF/FT
- WIND LOAD:
 BASIC WIND SPEED..... 80 MPH
 EXPOSURE..... C
 IMPORTANCE FACTOR..... 1.0
 INTERNAL PRESSURE COEFFICIENTS (INCLUDING COMPONENTS AND CLADDING)
 Δ KZ..... 0.93
 GN..... 1.27
 CD..... 0.80
 KD..... 0.93
 GCpl..... +0.75
 -0.25
- SEISMIC LOAD:
 AV..... .05
 Ab..... .05
 HAZARD EXPOSURE GROUP..... 1
 PERFORMANCE CATEGORY..... B
 SEISMIC SITE COEFFICIENT (S)..... 1.0
 RESPONSE MODIFICATION FACTOR..... 1.0
 Δ BASIC SEISMIC-FORCE-RESISTING SYSTEM.... BUILDING FRAME SYSTEM
 DESIGN BASE SHERR..... 5 KIPS

A
B
C
D
E
F

A
B
C
D
E
F

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE



BLACK & VEATCH
GaitHERSburg, Maryland

REG. PROF. ENGR. DATE

THIS DRAWING WAS
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AND SEALED BY
ROBERT J. RECTANUS, JR.,
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927

DES: JD									
DRN: ET									
CHK: WDB	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR	RJR			
DATE: 2/19/01	7/10/01	CODE REVIEW COMMENTS		Δ IFH					
	DATE	REVISIONS AND RECORD OF ISSUE		NO.	BY	CK	APP		

GENERAL
STRUCTURAL

STRUCTURAL NOTES

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

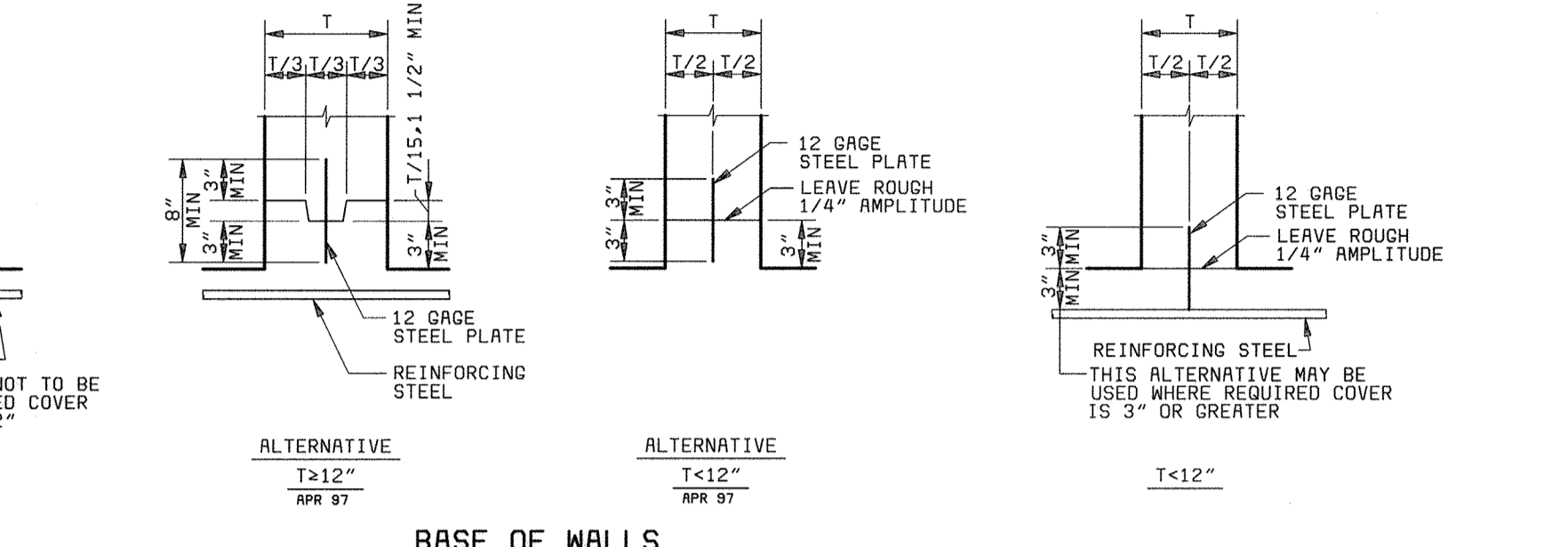
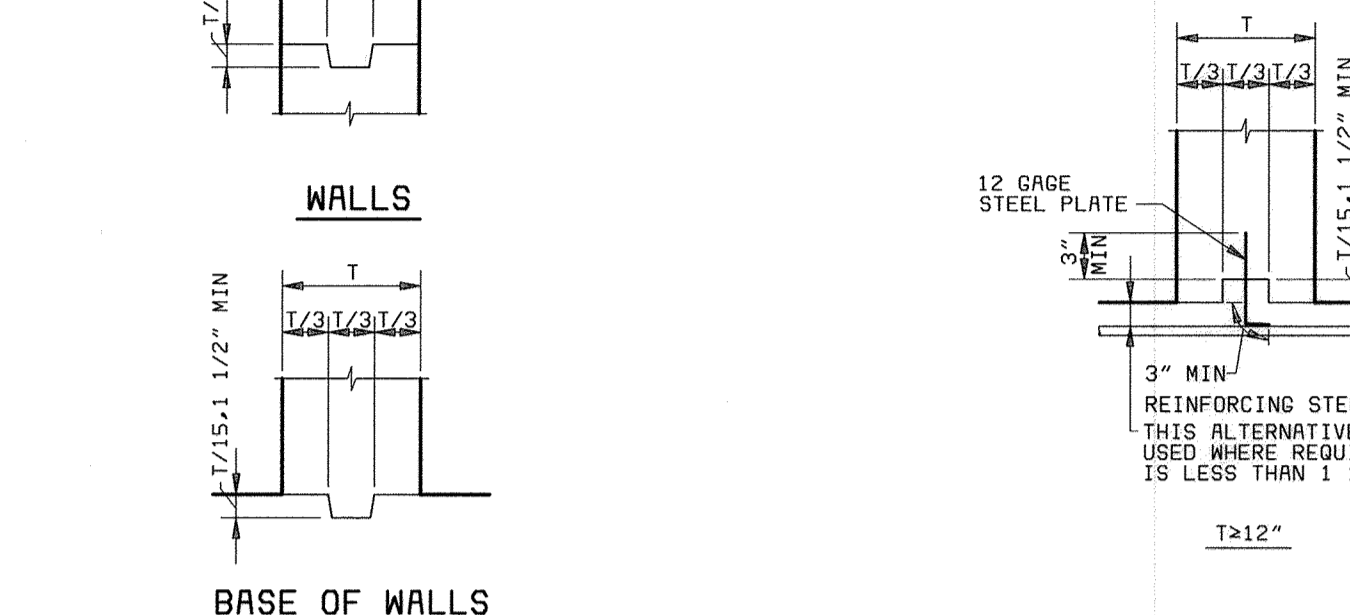
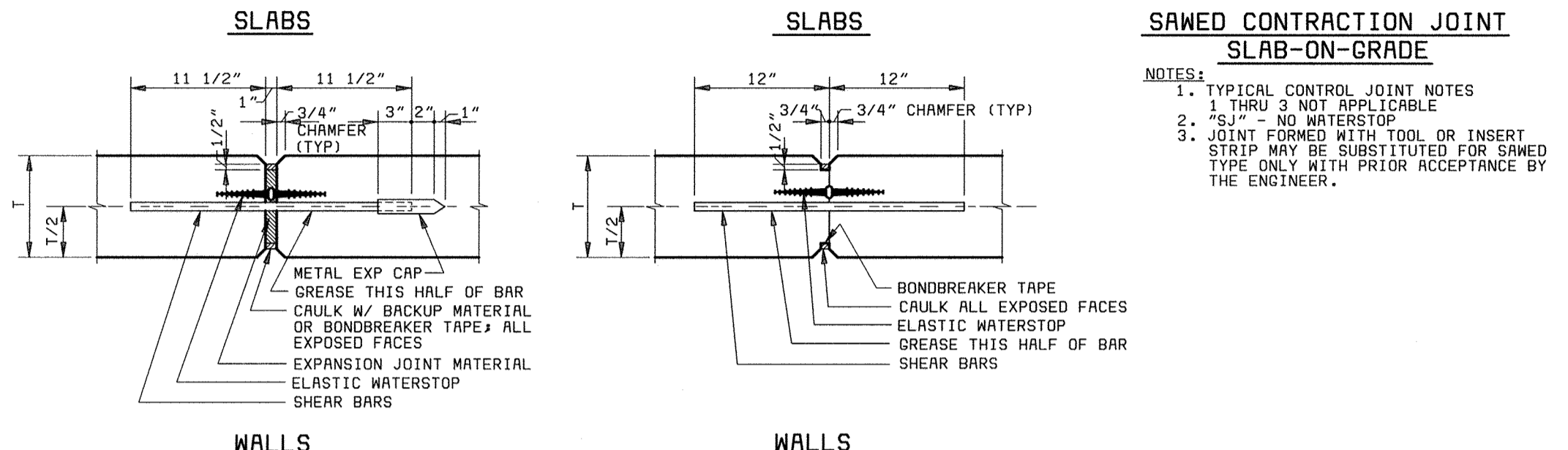
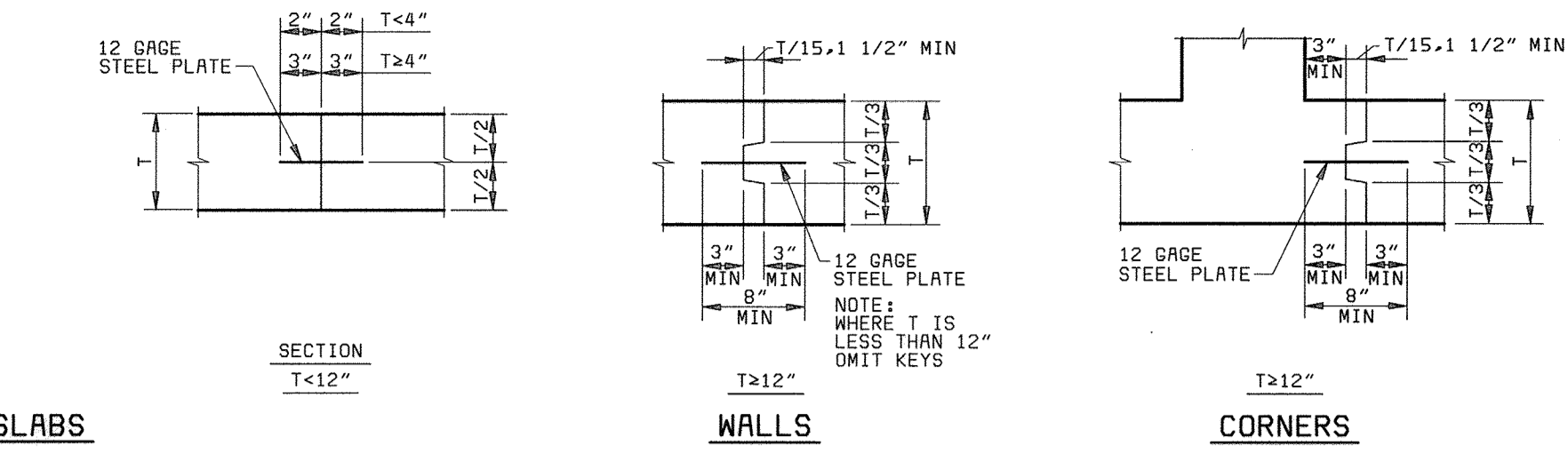
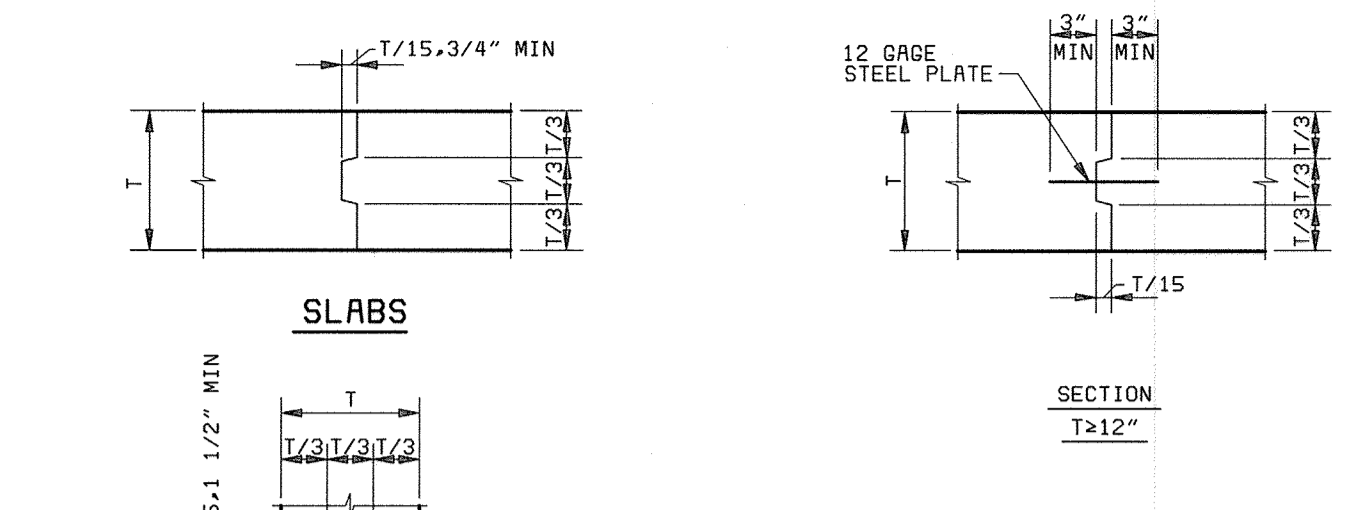
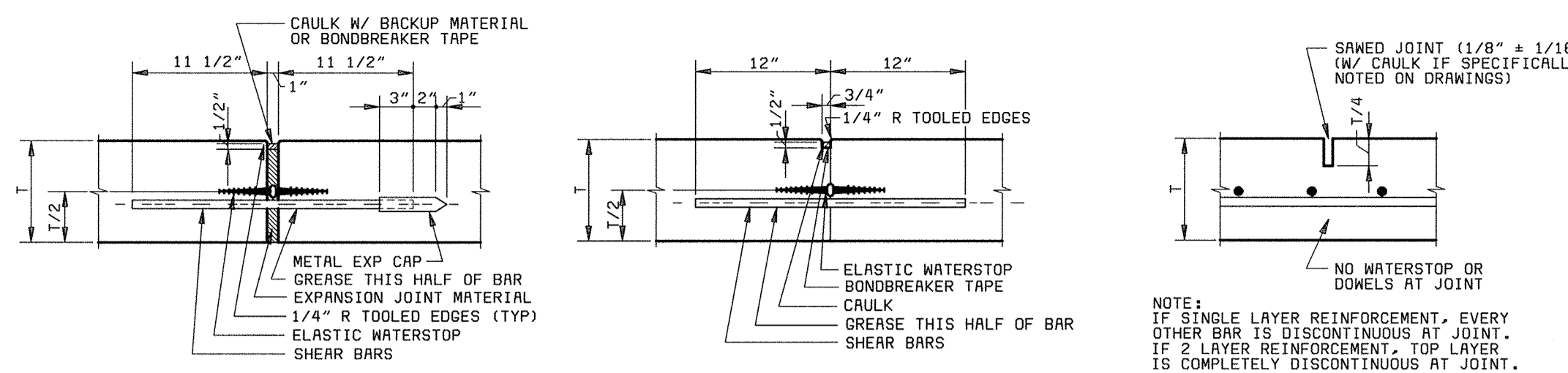
HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

SHEET
35 OF 88

S9

058472-3
F058472A



EXPANSION JOINTS

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

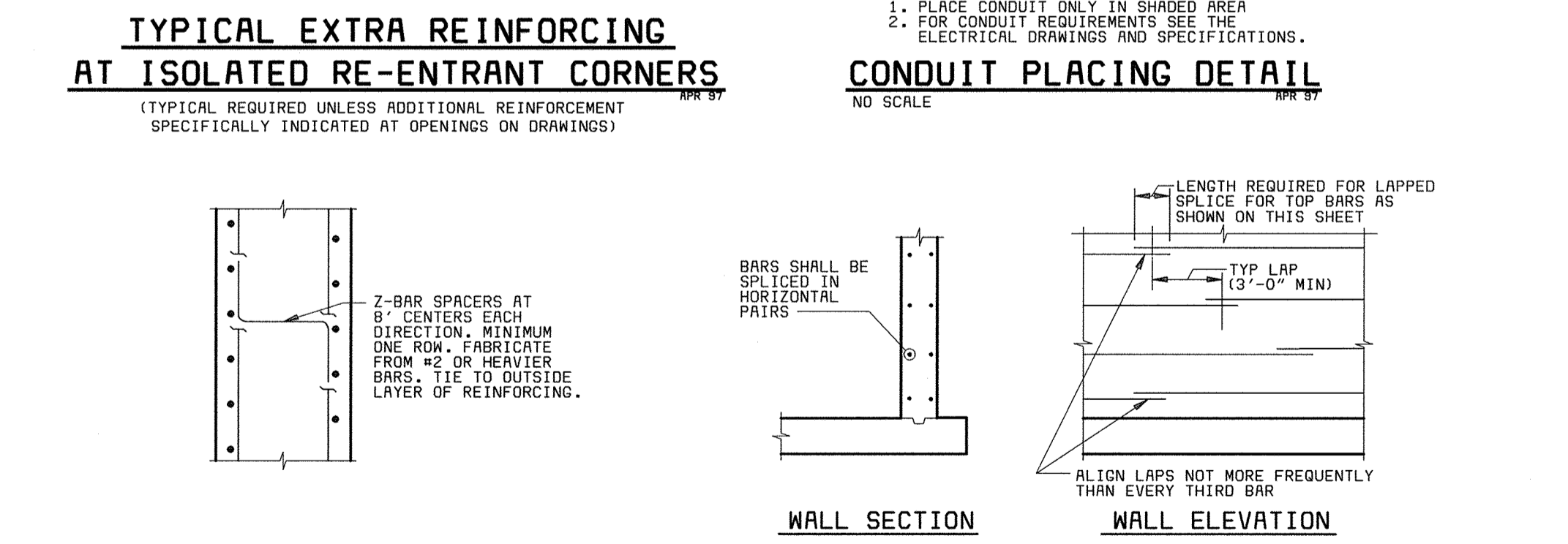
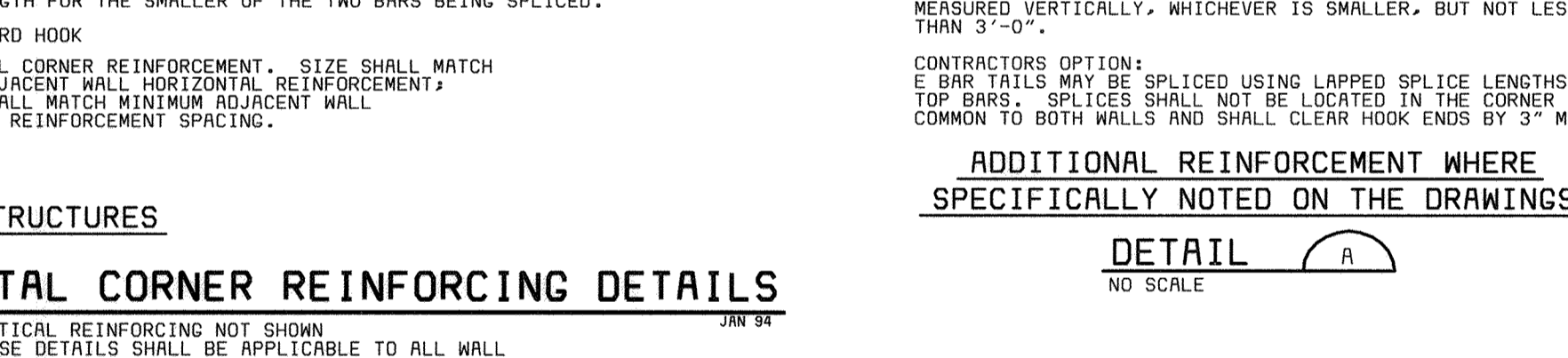
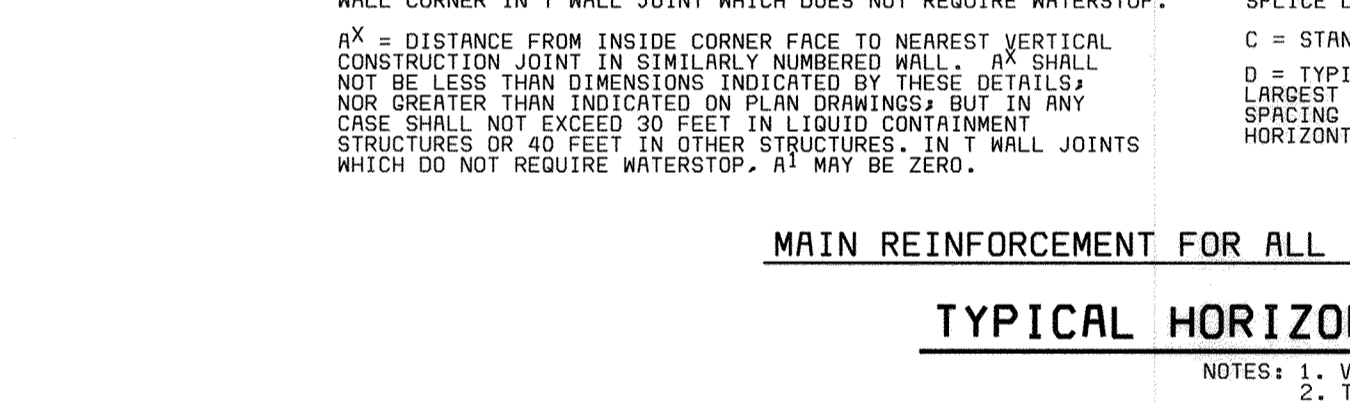
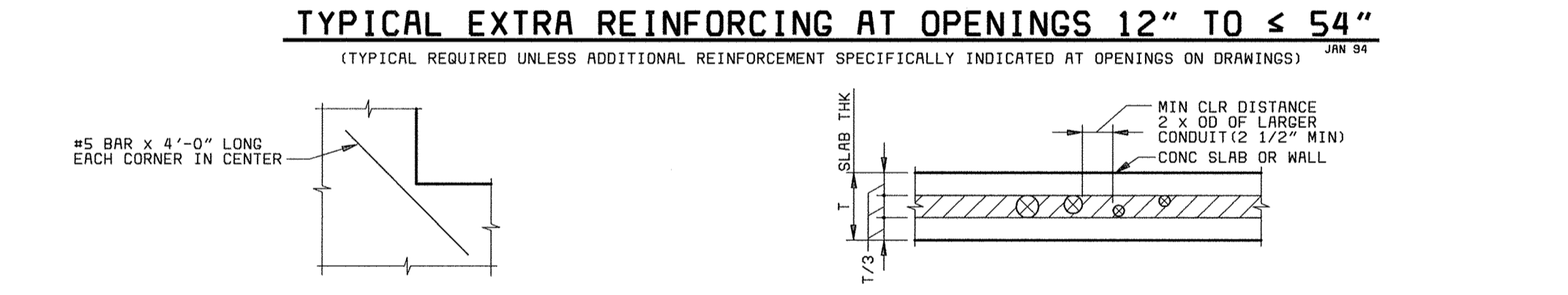
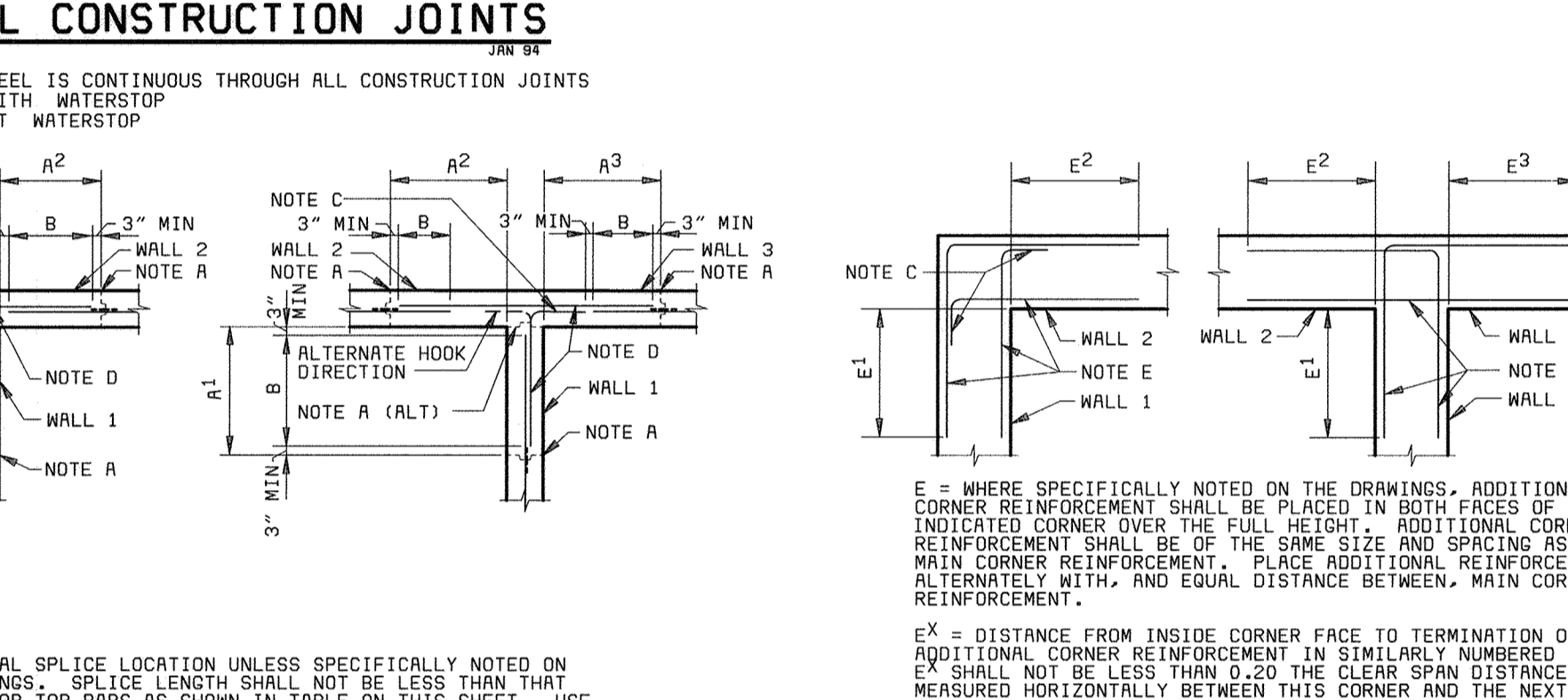
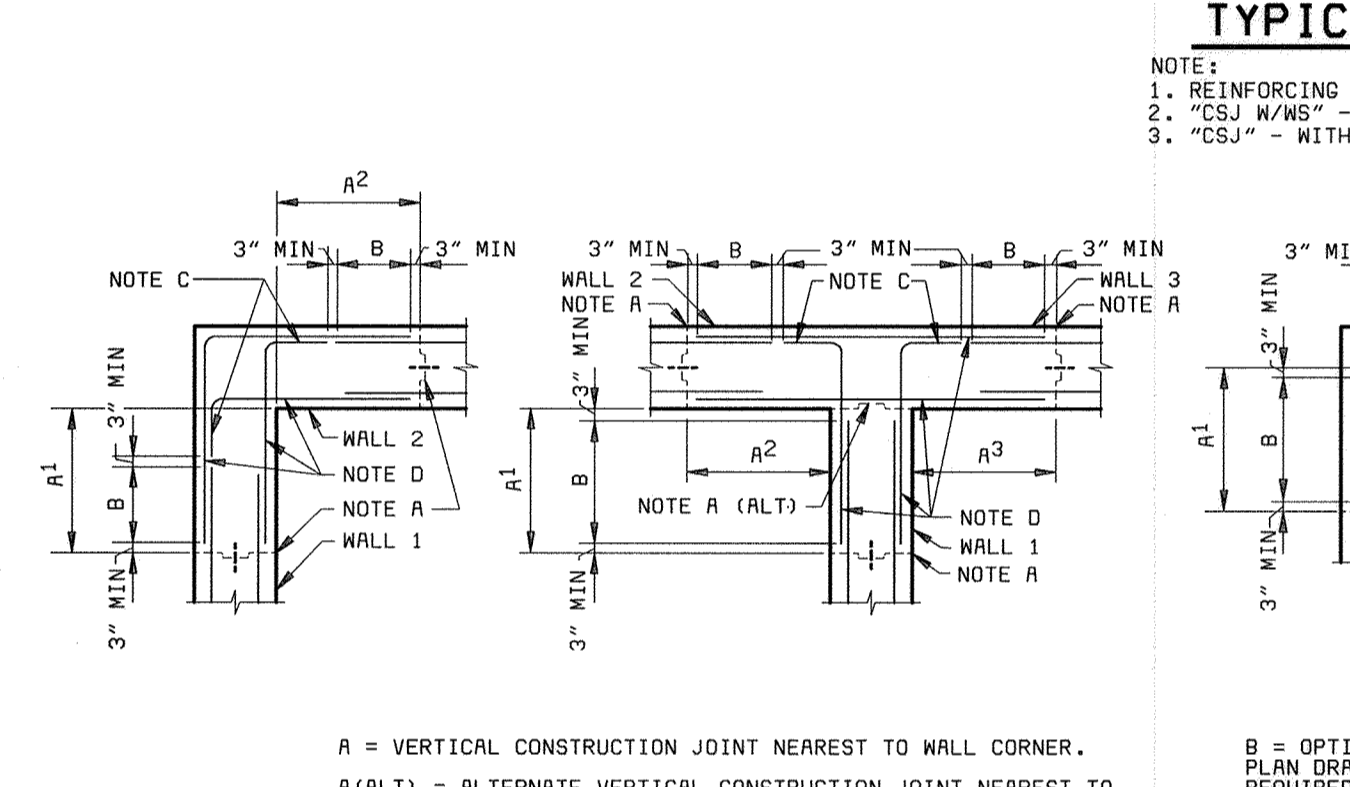
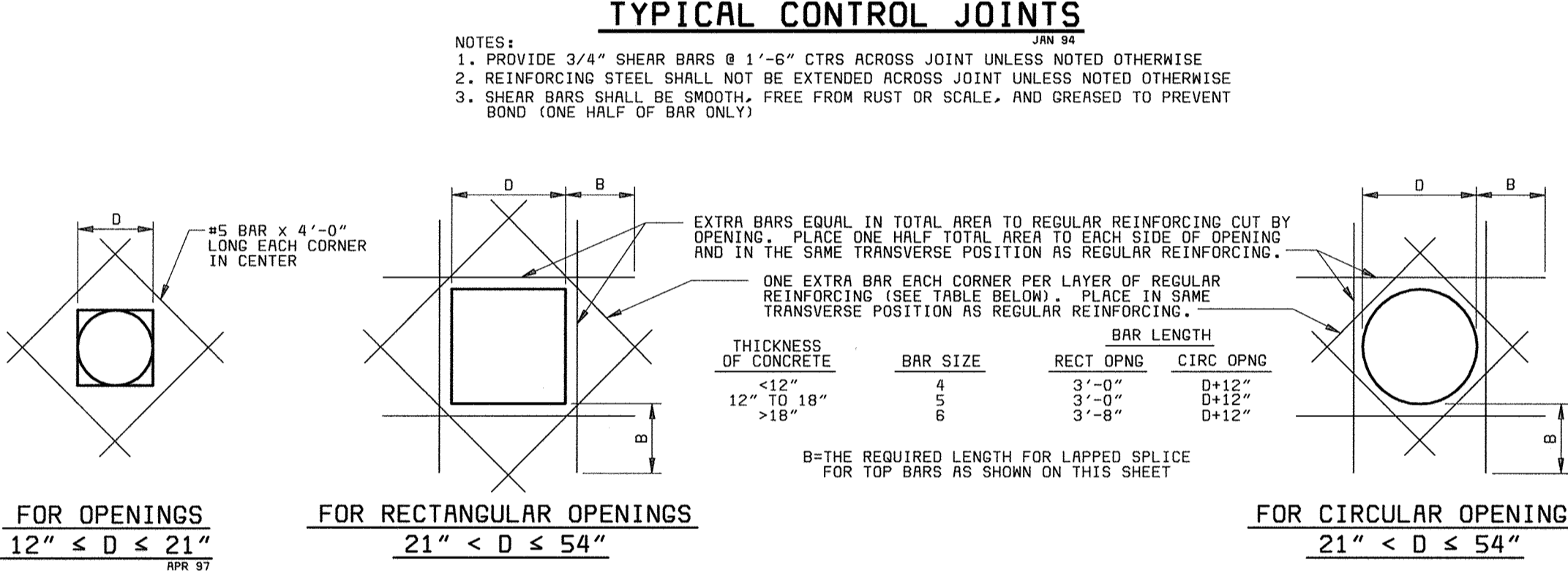
CONTRACTION JOINTS

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

JOINTS WITHOUT WATERSTOPS

JOINTS WITH WATERSTOPS

JOINTS WITH WATERSTOPS



(f'c=4000 PSI)

SPLICE & DEVELOPMENT LENGTHS
(UNLESS NOTED OTHERWISE ON THE DRAWINGS)

BAR SIZE	BEAMS AND COLUMNS					WALLS, SLABS AND FOOTINGS					BAR SIZE
	LENGTH OF LAPPED SPLICES FOR REIN (INCHES)		LENGTH OF END ANCHORAGE FOR DEVELOPMENT OF REINFORCEMENT (INCHES)			LENGTH OF LAPPED SPLICES FOR REIN (INCHES)		LENGTH OF END ANCHORAGE FOR DEVELOPMENT OF REINFORCEMENT (INCHES)			
	*TOP BARS	OTHERS	*TOP BARS	OTHERS	HOOKED BARS	*TOP BARS	OTHERS	*TOP BARS	OTHERS	HOOKED 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	29	22	10	36	28	28	22	10	6
7	54	42	39	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	104	78	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.

IN WALLS, SLABS AND FOOTINGS LAPPED SPLICE LENGTH FOR BARS SIZE 8 THROUGH 11 AND STRAIGHT (NON-HOOKED) END ANCHORAGE DEVELOPMENT LENGTH FOR BAR SIZE 11 (IN TABLE ABOVE) PLACED WITH MORE THAN 2 BAR DIAMETER CLEAR SPACING MAY BE MULTIPLIED BY A FACTOR OF 0.7.

IN BEAMS, COLUMNS, WALLS, SLABS AND FOOTINGS, LAPPED SPLICE LENGTH AND STRAIGHT (NON-HOOKED) END ANCHORAGE DEVELOPMENT LENGTH FOR BARS SIZE 7 THROUGH 11 (IN THE TABLE ABOVE) PLACED WITH MORE THAN 2 BAR DIAMETER CLEAR SPACING MAY BE MULTIPLIED BY A FACTOR OF 0.8. THE MULTIPLICATION FACTORS OF 0.7 AND 0.8 MAY BE COMBINED ONLY FOR BARS COMMON TO THIS NOTE AND THE NOTE ABOVE.

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

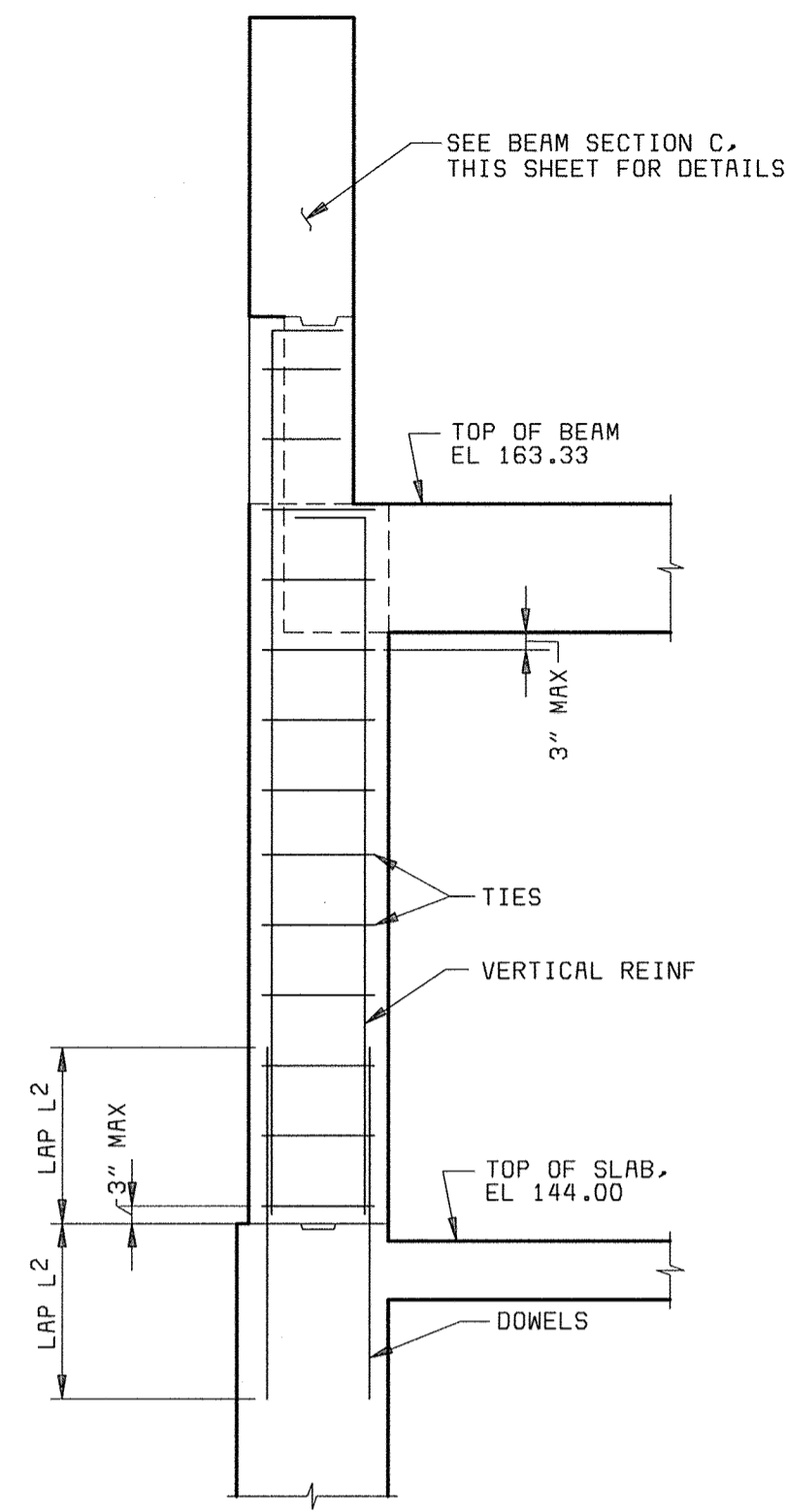
GENERAL NOTE:
DETAILS ON THIS SHEET APPLY TO ALL DRAWINGS UNLESS OTHERWISE NOTED

CONCRETE COVER FOR REINFORCEMENT

LOCATION	MINIMUM COVER
UNFORMED SURFACES ADJACENT TO EXCAVATION	3"
FORMED OR TOP SURFACES EXPOSED TO WEATHER OR SATURATED AIR, SUBMERGED OR IN CONTACT WITH EARTH, INCLUDING STIRRUPS, TIES OR SPIRALS	2"
OTHER LOCATIONS	
BARS IN BEAMS OR GIRDERS, INCLUDING STIRRUPS AND COLUMN SPIRALS OR TIES	1 1/2"
SLABS, WALLS AND JOISTS	1 1/2"
#6 AND LARGER	3/4"
#5 AND SMALLER	3/4"

NOTE: TOLERANCES FOR CONCRETE COVER AND THE FABRICATION AND PLACING OF REINFORCEMENT SHALL CONFORM TO ACI 117.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927 REG. PROF. ENGR. DATE	DES: STD DRN: RLC CHK: WDB DATE: 2/19/01	02/06/04 CONFORMED TO CONSTRUCTION RECORDS REVISIONS AND RECORD OF ISSUE	RHH RJR RJR NO. BY CK APP	GENERAL STRUCTURAL STANDARD CONCRETE DETAILS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 36 OF 88 S10
		DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE		DES: STD DRN: RLC CHK: WDB DATE: 2/19/01		GENERAL STRUCTURAL STANDARD CONCRETE DETAILS	



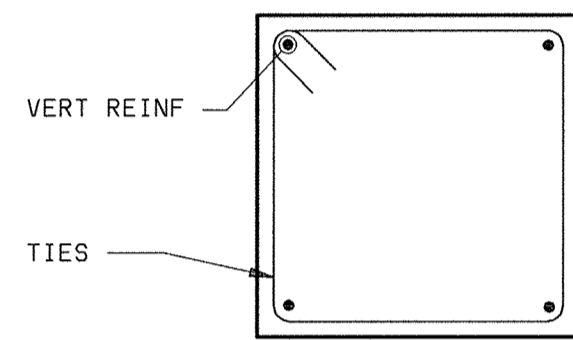
ELEVATION TYPE I

COLUMN REINFORCING SCHEDULE	
ELEVATION TYPE	I
AUXILIARY PUMP STATION	
TOP OF BEAM/COLUMN	163.33
SECTION TYPE	1
SIZE	18"x18"
VERTICAL REINF	4-#9
TIES	#3@12"
LAP L ²	4'-8"
TOP OF SLAB EL	144.00

NOTE:

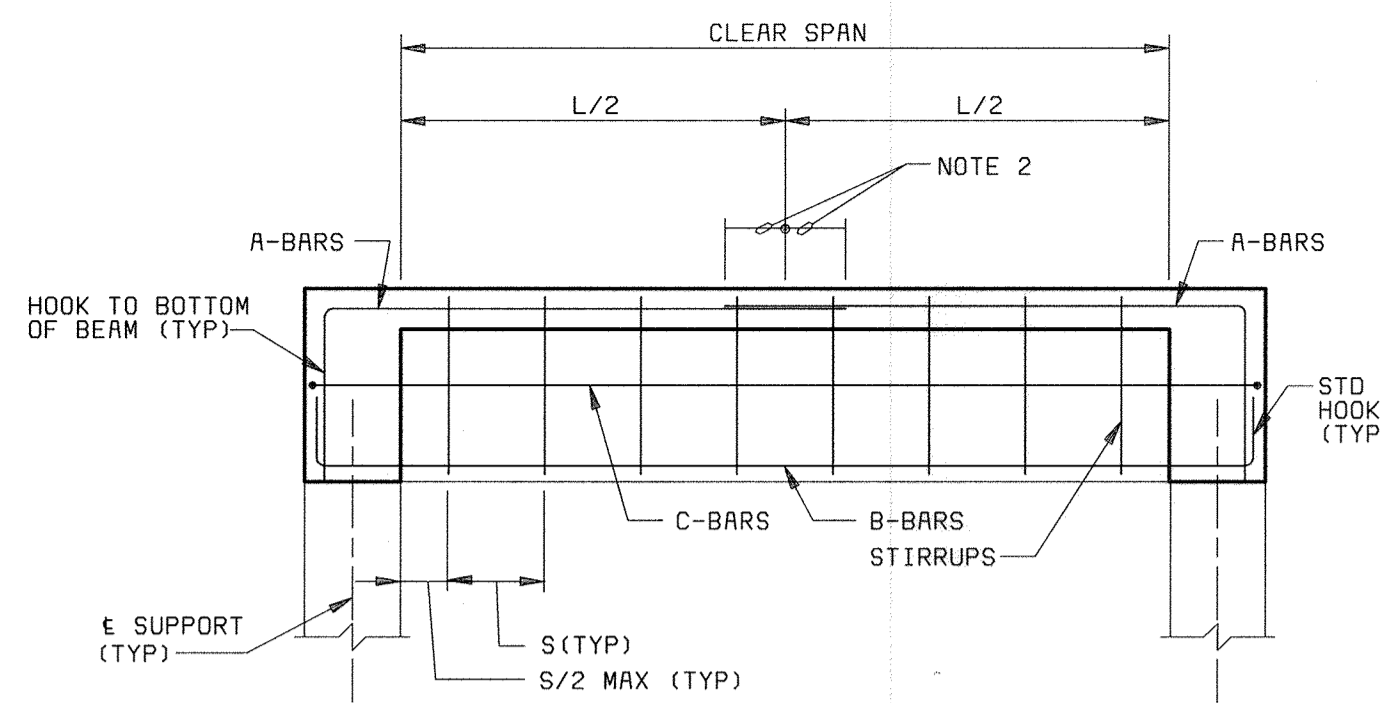
1. FOR TOP OF FDN, SEE PLAN.

COLUMN SCHEDULE		
COLUMN ROW	A	B
AUXILIARY PUMP STATION		
1	I	I
2	I	I
3	I	I
4	I	I
5	I	I

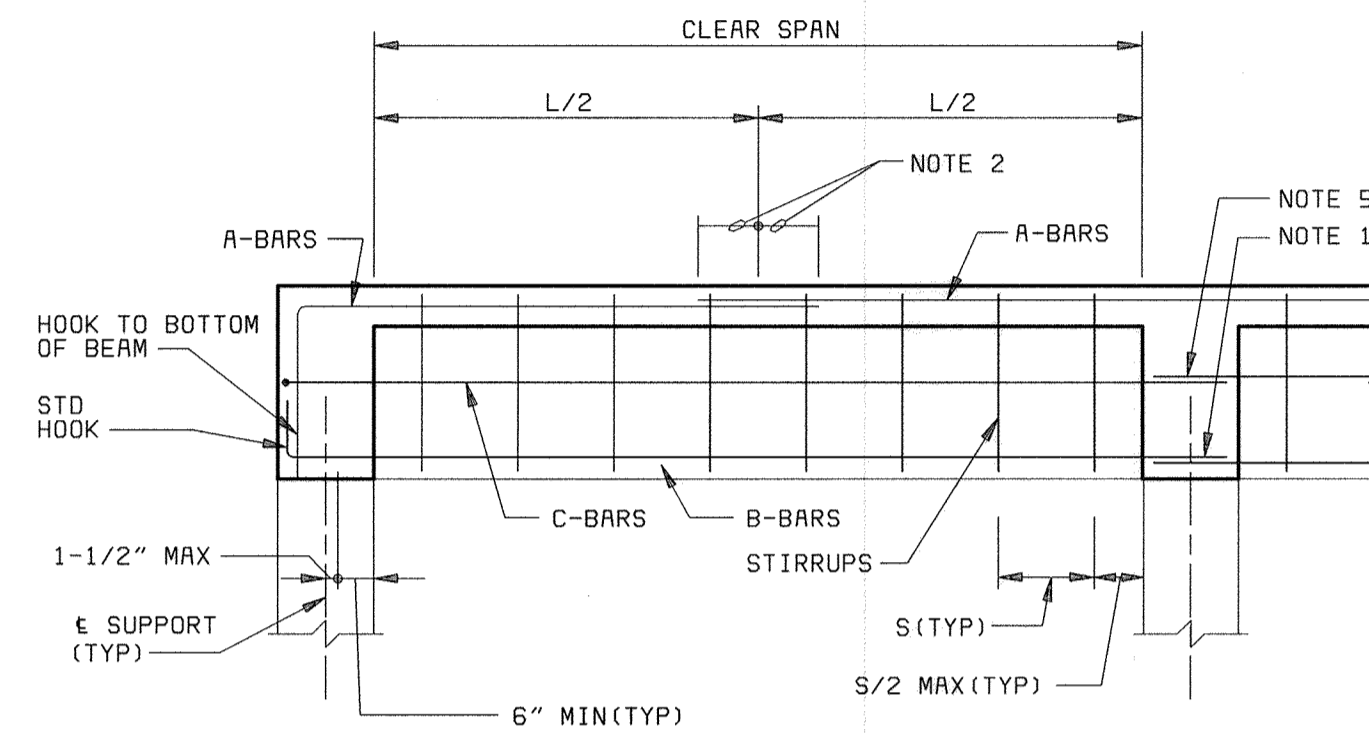


COLUMN SECTION

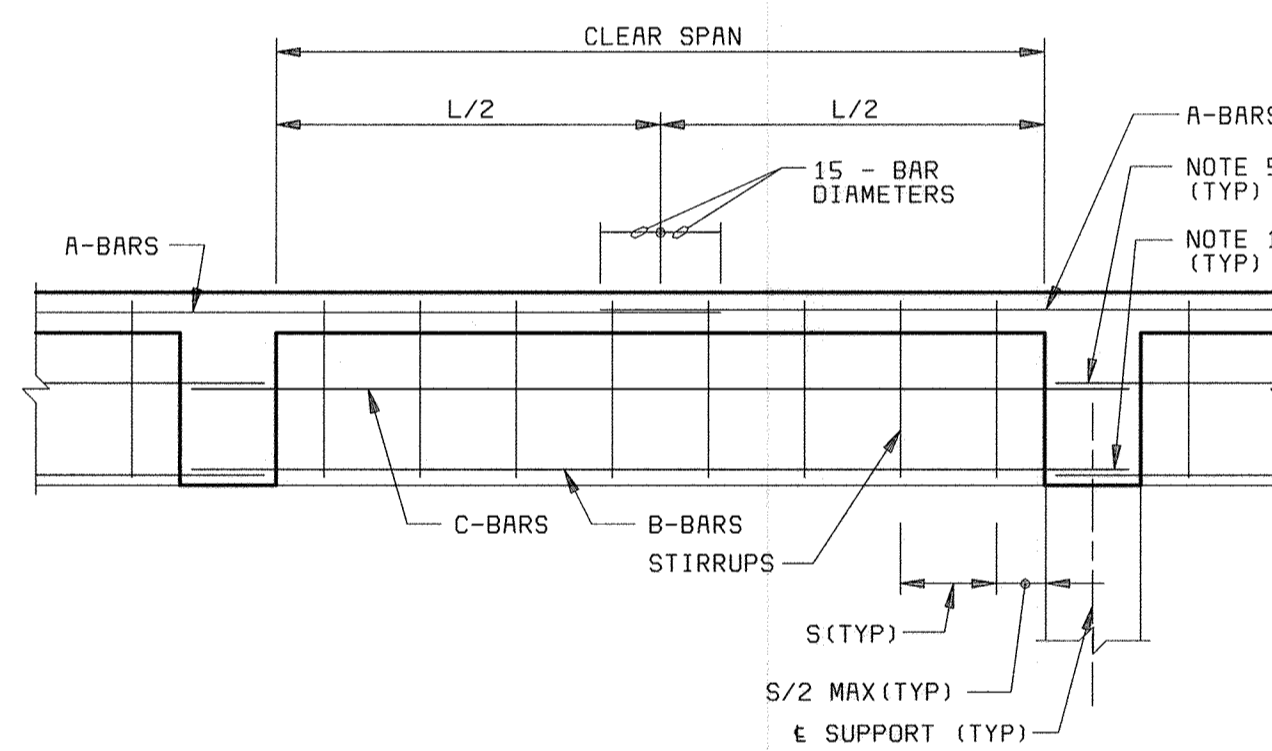
COLUMN REINFORCEMENT ELEVATIONS
NO SCALE



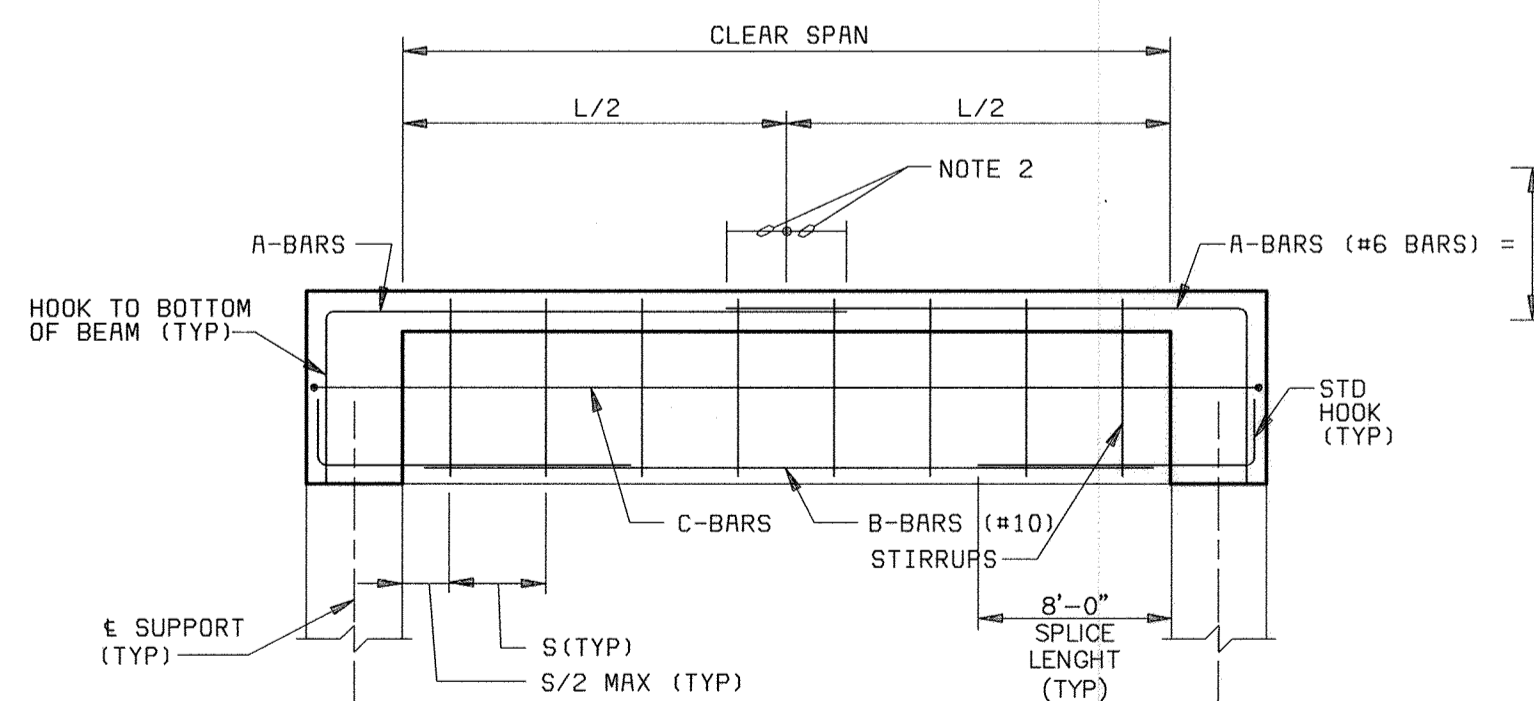
TYPE I



TYPE II

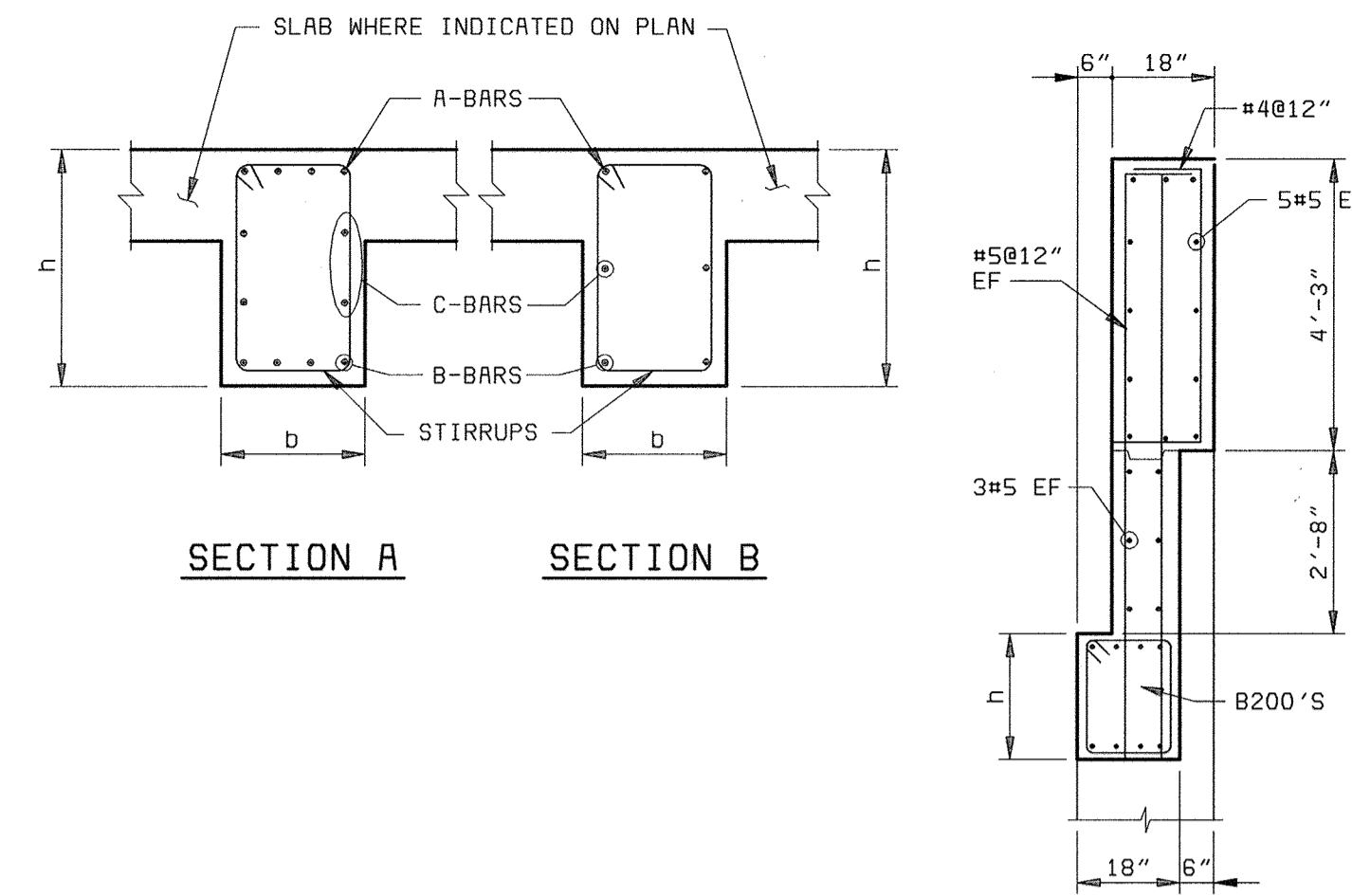


TYPE III



TYPE I

BEAM B-101 AND B-102
NO SCALE



BEAM SECTIONS

BEAM SCHEDULE									
BEAM NO.	BEAM TYPE	BEAM SECTION	b (IN)	h (IN)	A BARS	B BARS	C BARS	STIRRUPS SIZE @ S	COMMENTS
AUXILIARY PUMP STATION									
B-040	II	A	18	18	4#9	4#9	2#9	#3@8"	12#9 TOTAL
B-050	III	A	18	18	4#9	4#9	2#9	#3@8"	12#9 TOTAL
B-101	I	B	20	24	4#6	4#10	1#6	#4@10"	
B-102	I	B	16	16	3#5	3#5	-	#3@6"	
B-201	II	C	18	24	4#7	4#7	2#6	#3@10"	SEE SECTION C ABOVE
B-202	III	C	18	24	4#7	4#7	2#6	#3@10"	SEE SECTION C ABOVE
B-203	I	C	18	24	4#7	4#7	2#6	#3@10"	SEE SECTION C ABOVE

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 S10. USE THE LAP SPLICE REQUIREMENT OF THE SMALLER BOTTOM BAR IF BAR SIZES IN ADJACENT SPANS DIFFER. AT THE CONTRACTORS OPTION, BOTTOM REINF MAY BE 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 BARS, 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 SIDE.

BEAM DETAILS
NO SCALE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND



THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
ROBERT J. RECTANUS, JR.,
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927

DES: IFH

DRN: RLC

CHK: WDB

DATE: 2/19/01

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
05/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR	RJR

GENERAL
STRUCTURAL

COLUMN AND BEAM SCHEDULES

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

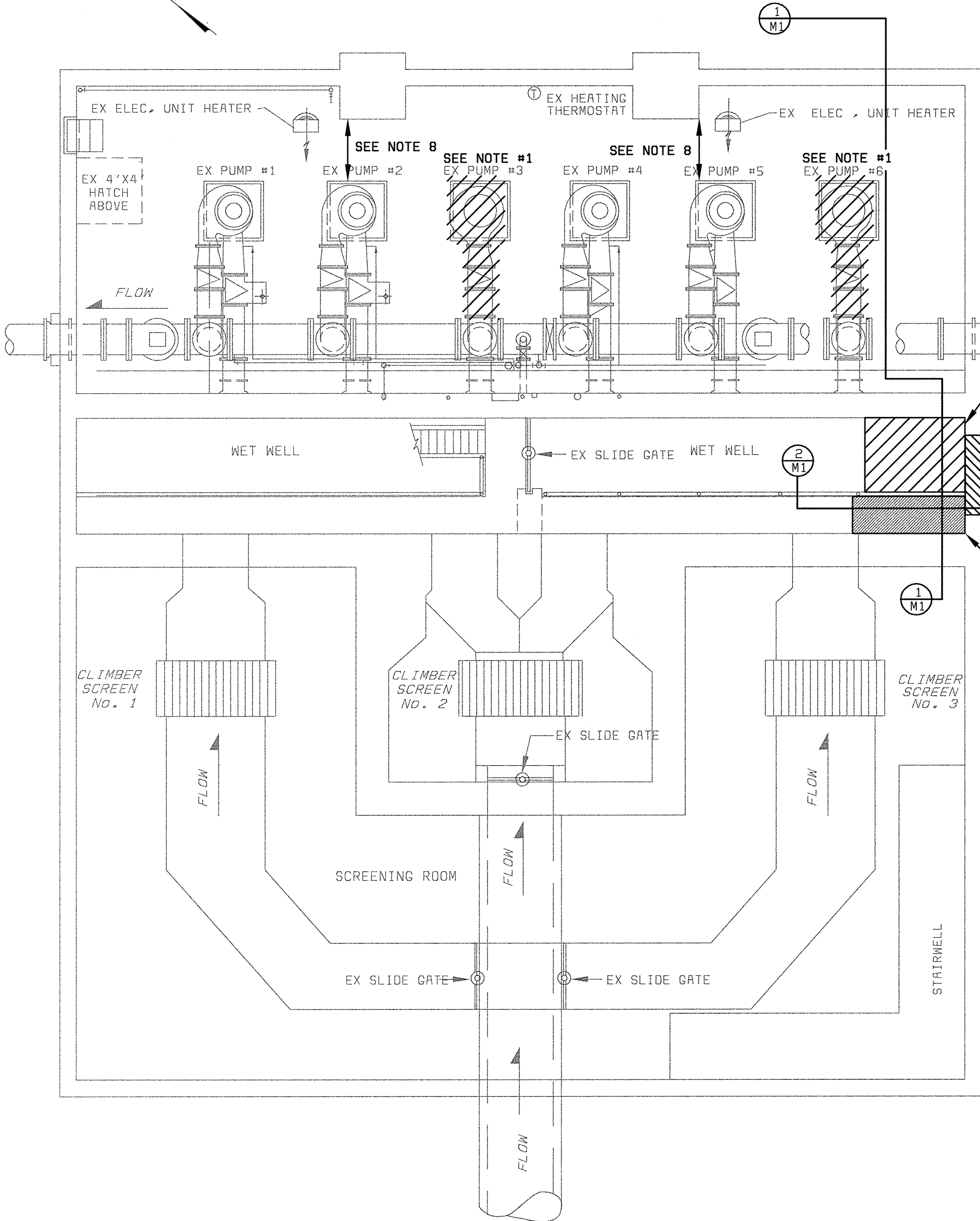
SCALE
AS
SHOWN

SHEET
37 OF 88

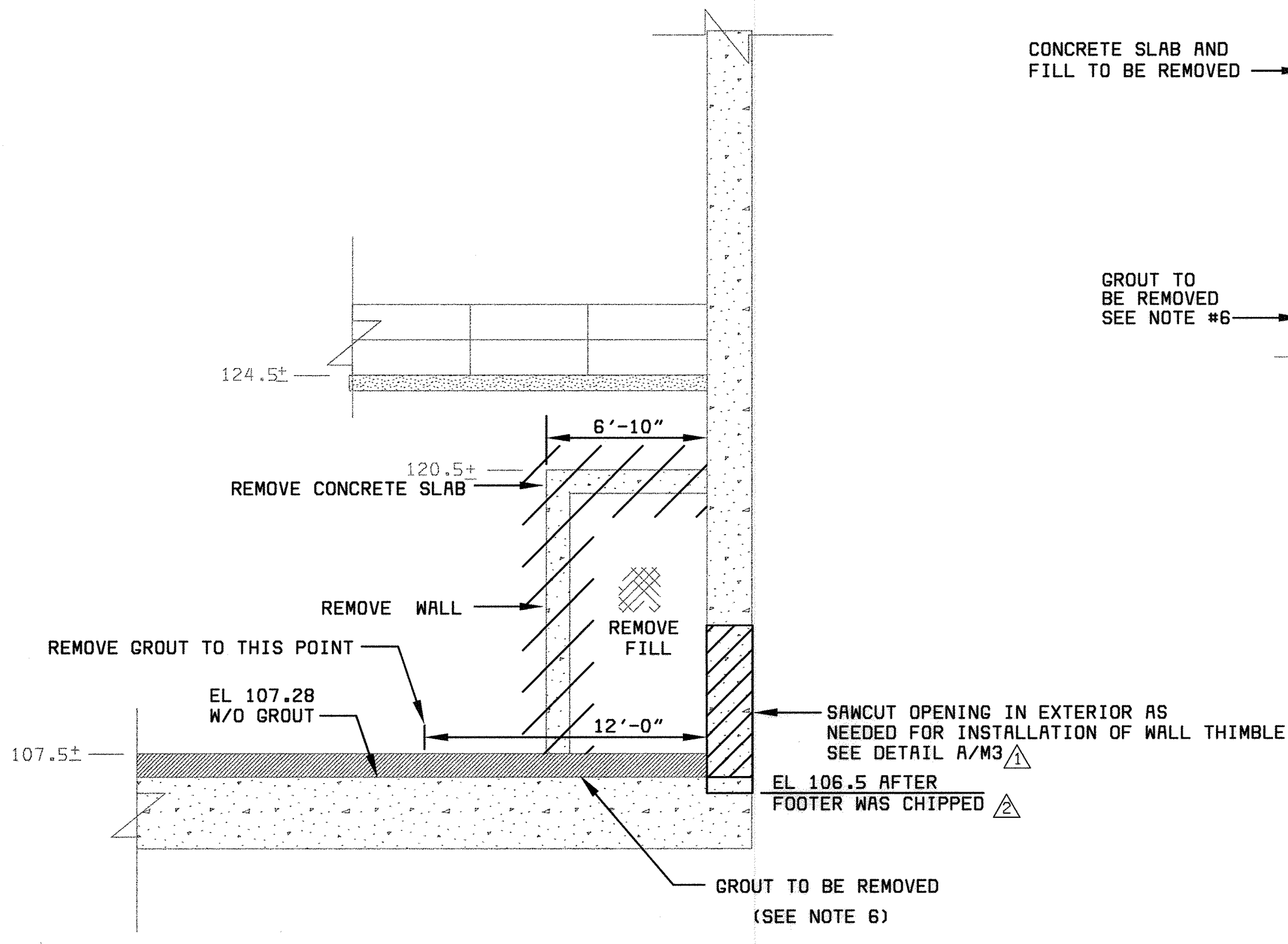
S11

DEMOLITION NOTES

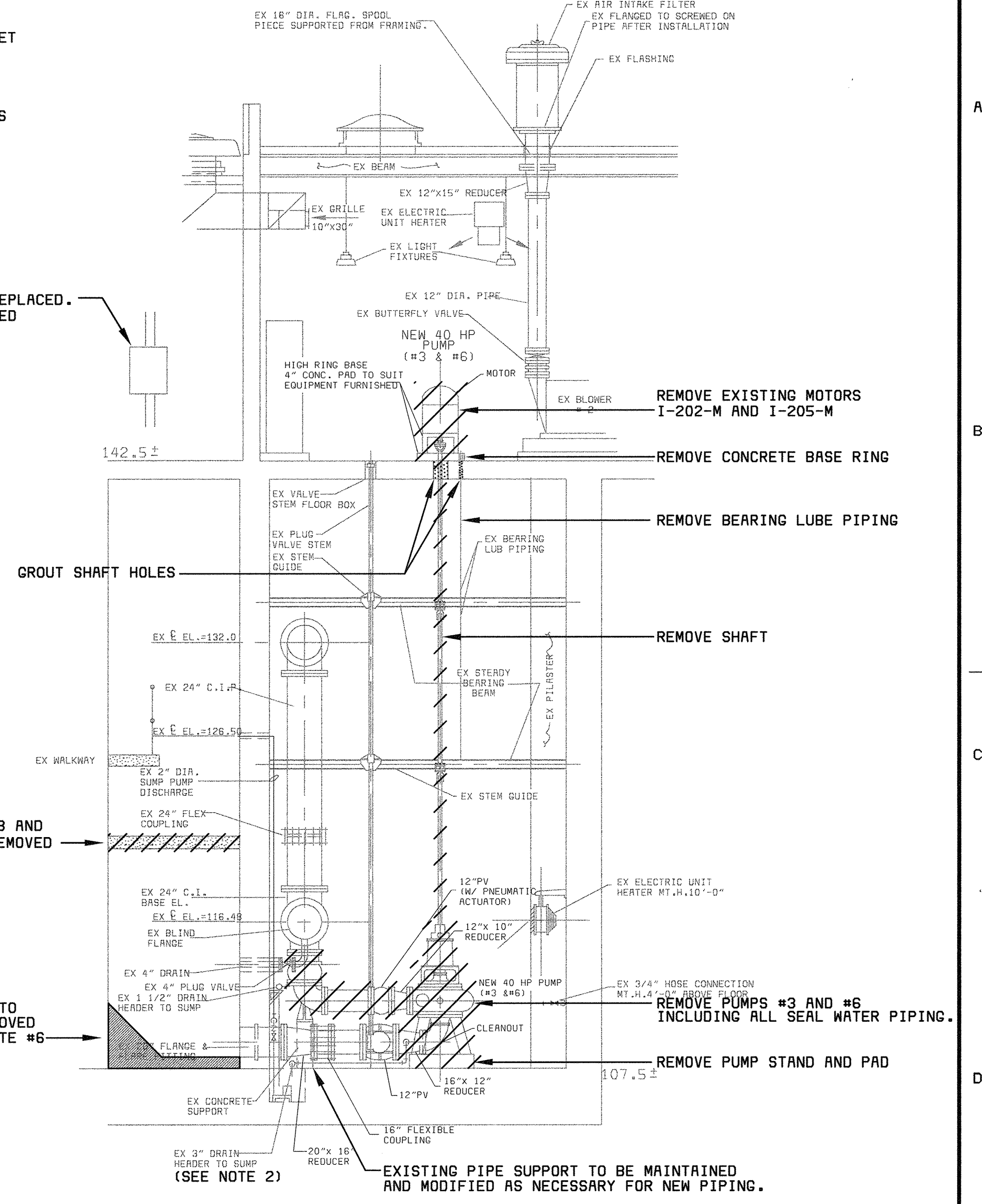
1. REMOVE MAIN SEWAGE PUMPS #3 AND #6, PUMP STAND, CONCRETE BASE, EFFLUENT PIPING, VALVES, MOTORS, MOTOR DRIVE SHAFTS AND BEARINGS.
2. REMOVE VOLUTE DRAIN PIPING (FROM TAP IN SUCTION REDUCER TO DRY PIT SUMP) FOR ALL 6 PUMPS. FOR PUMPS 1, 2, 4, AND 5, REPLACE DRAIN PIPING WITH PIPE PLUG IN SUCTION REDUCER.
3. MAINTAIN EXISTING SUCTION PIPING, PNEUMATIC AIR PIPING, VALVE CONTROL WIRING, VALVES AND STEMS.
4. REMOVE ELECTRICAL WIRING FROM PUMPS #3 AND #6, BACK TO AND INCLUDING VFD'S. (SEE SHEETS E4 AND E5)
5. PNEUMATIC AIR SYSTEM MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION.
6. EXISTING GROUT FILL SHALL BE REMOVED FROM THE POINT SHOWN TO THE EXTERIOR WET WELL WALL. NEW GROUT SHALL BE INSTALLED TO PROVIDE MAXIMUM 2:1 SLOPE TRANSITION FROM EXISTING GROUT FILLET TO 4" IN FRONT OF 42" PIPE INVERT.
7. MAIN SEWAGE PUMP STATION SHALL REMAIN IN SERVICE THROUGHOUT DEMOLITION AND CONSTRUCTION. ONE HALF OF PUMP STATION MAY BE SHUT DOWN FOR SHORT PERIODS TO ALLOW FOR PUMP REPLACEMENT AND WORK IN WET WELL. CONTRACTOR SHALL COORDINATE ALL SHUT DOWNS WITH PLANT STAFF. SHUTDOWNS SHALL BE SCHEDULED FOR LOW FLOW PERIODS. BYPASS PUMPING SHALL BE PROVIDED BY THE CONTRACTOR TO INSURE ADEQUATE PUMPING CAPACITY WHILE MAIN SEWAGE PUMPS ARE SHUT DOWN. SLUICE GATES ISOLATING SCREEN CHANNELS AND WET WELL MAY LEAK. APPROPRIATE SAND BAGGING AND DEWATERING/BYPASS PUMPING SHALL BE PROVIDED BY THE CONTRACTOR.
8. THERE IS LIMITED CLEAR SPACE BETWEEN EXISTING PUMPS AND EXISTING PILASTER (4"± BETWEEN PILASTER AND PUMP BASE, 43"± BETWEEN PILASTER AND PUMP VOLUTE). IN ORDER TO INSTALL NEW PUMPS, EXISTING FLUSHING WATER PIPING AND HOSE BIBS, ELECTRICAL CONDUIT AND SOCKETS MAY NEED TO BE TEMPORARILY RELOCATED.



DEMOLITION PLAN
SCALE 3/16" = 1'-0"



DEMOLITION SECTION
SCALE 3/16" = 1'-0"



DEMOLITION SECTION
SCALE 3/16" = 1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES DATE

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE, MD 20852
TEL. (301) 881-2545 FAX (301) 881-0814
E-MAIL: JBYRNE@AMTEENGINEERING.COM
AMT FILE # 98-154

BLACK & VEATCH
Gaithersburg, Maryland
REG. PROF. ENGR. DATE

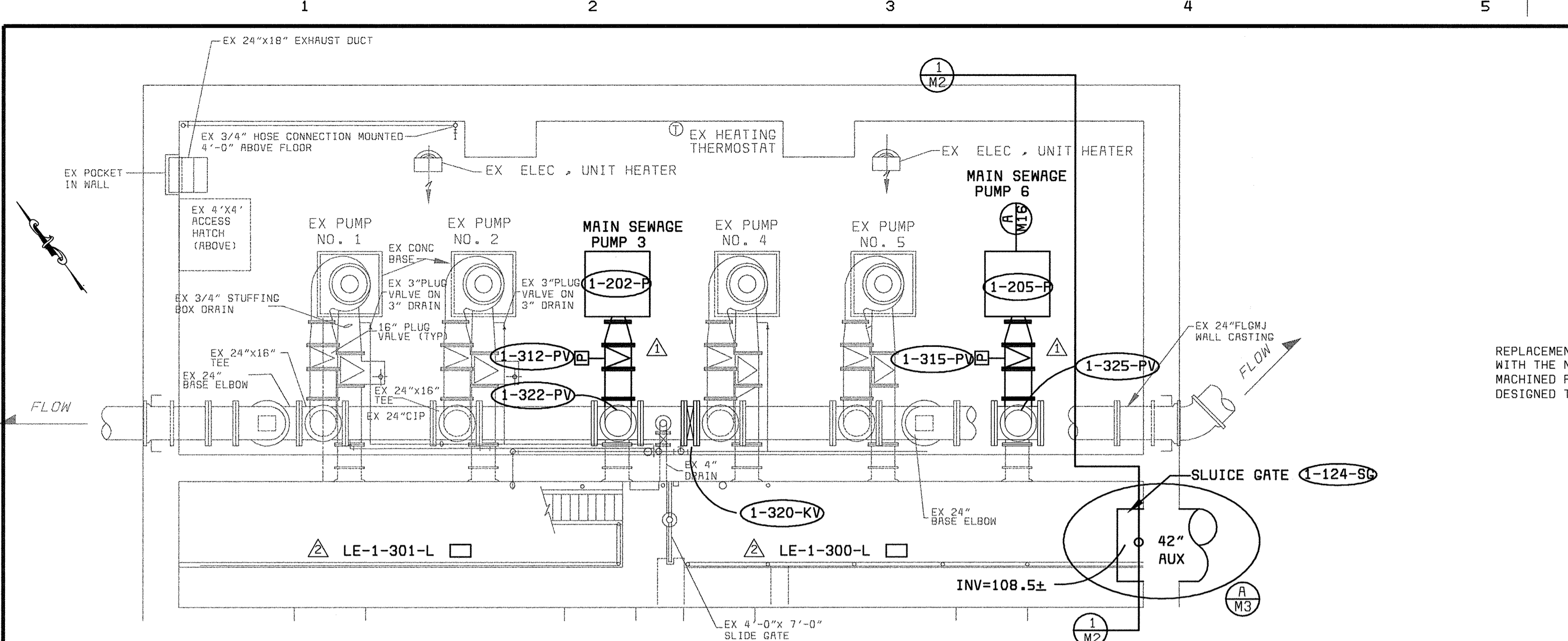
THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MICHAEL JOSEPH WIERCINSKI A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 12816

DES: A. REYES					
DRN: R. ANCHORS					
CHK: A. REYES	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR
DATE: 04/13/01	6/12/01	ADDENDUM NO. 1			
	DATE	REVISIONS AND RECORD OF ISSUE		NO.	BY

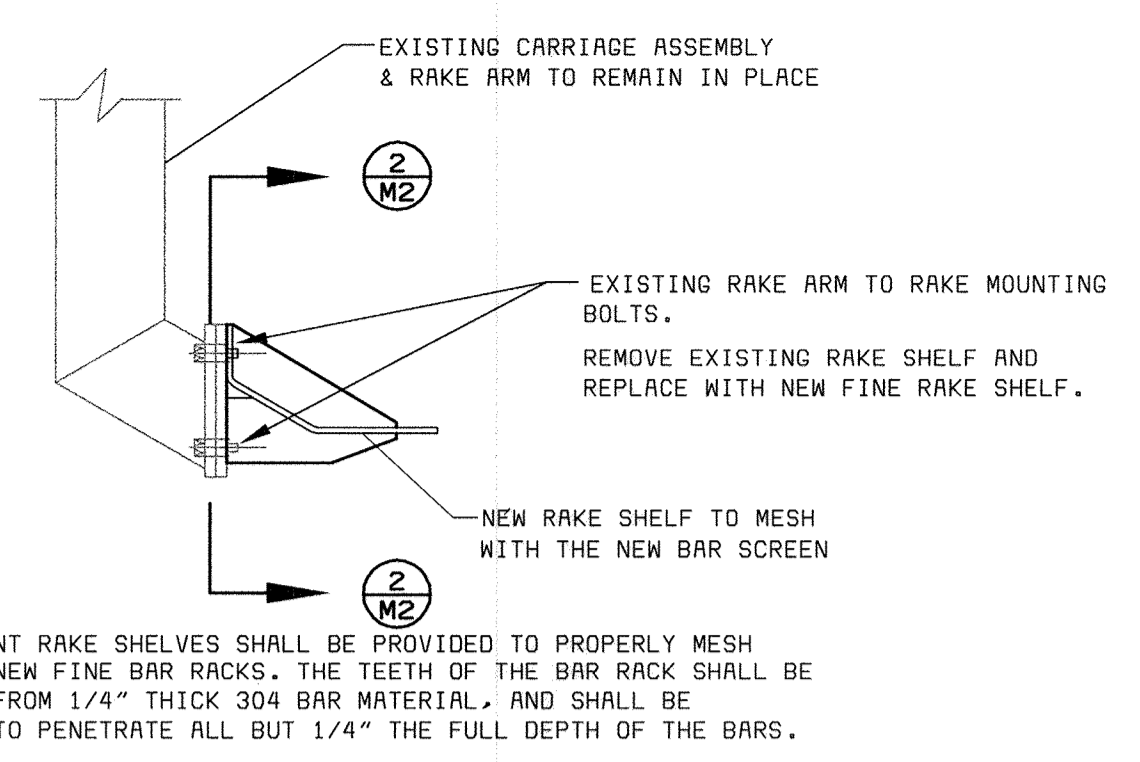
CIVIL
HEADWORKS BUILDING, LOWER LEVEL
DEMOLITION PLAN AND SECTION

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
ELECTION DISTRICT NO. 6
HOWARD COUNTY, MARYLAND

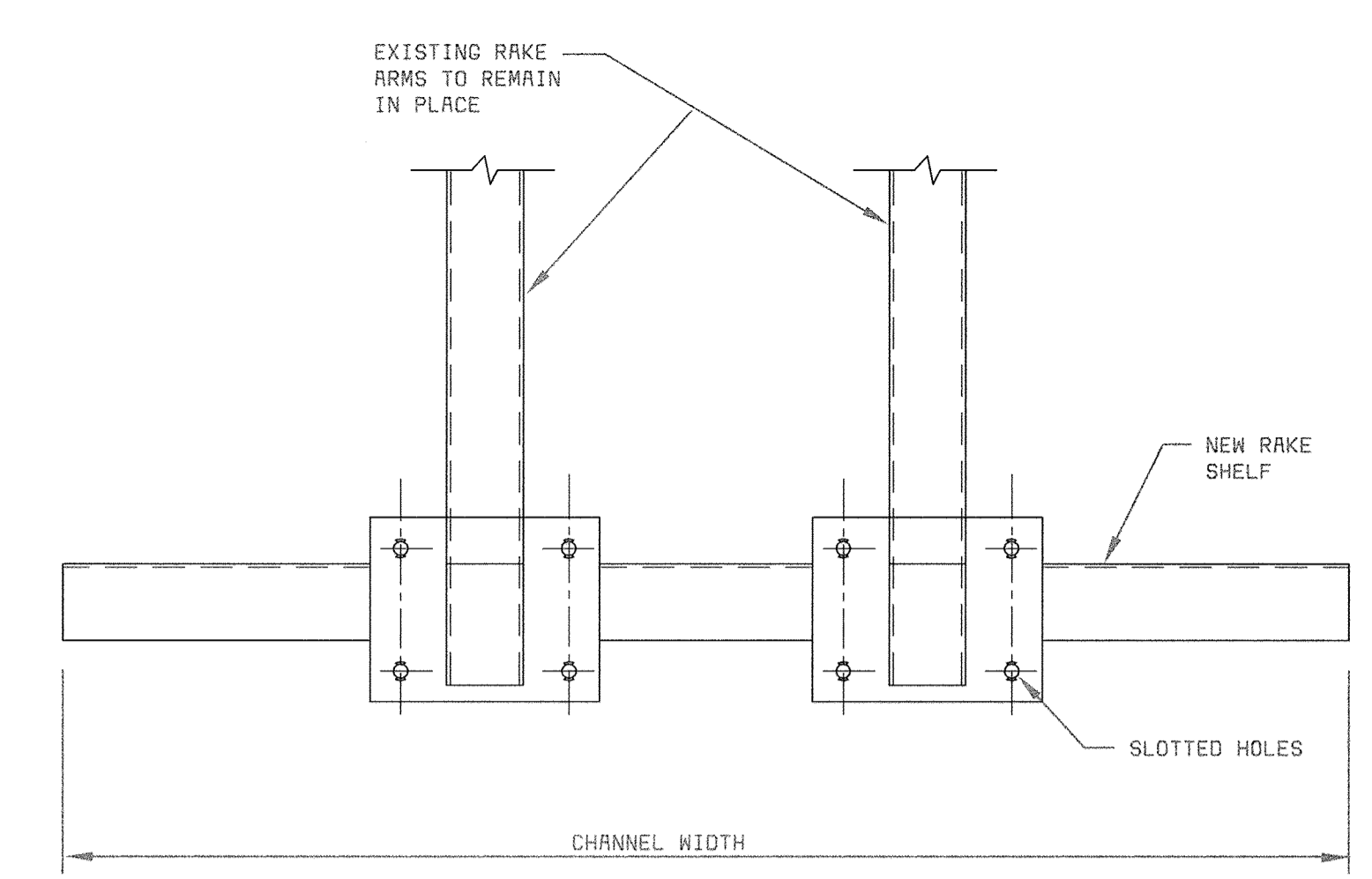
SCALE AS SHOWN
SHEET 38 OF 88
M1



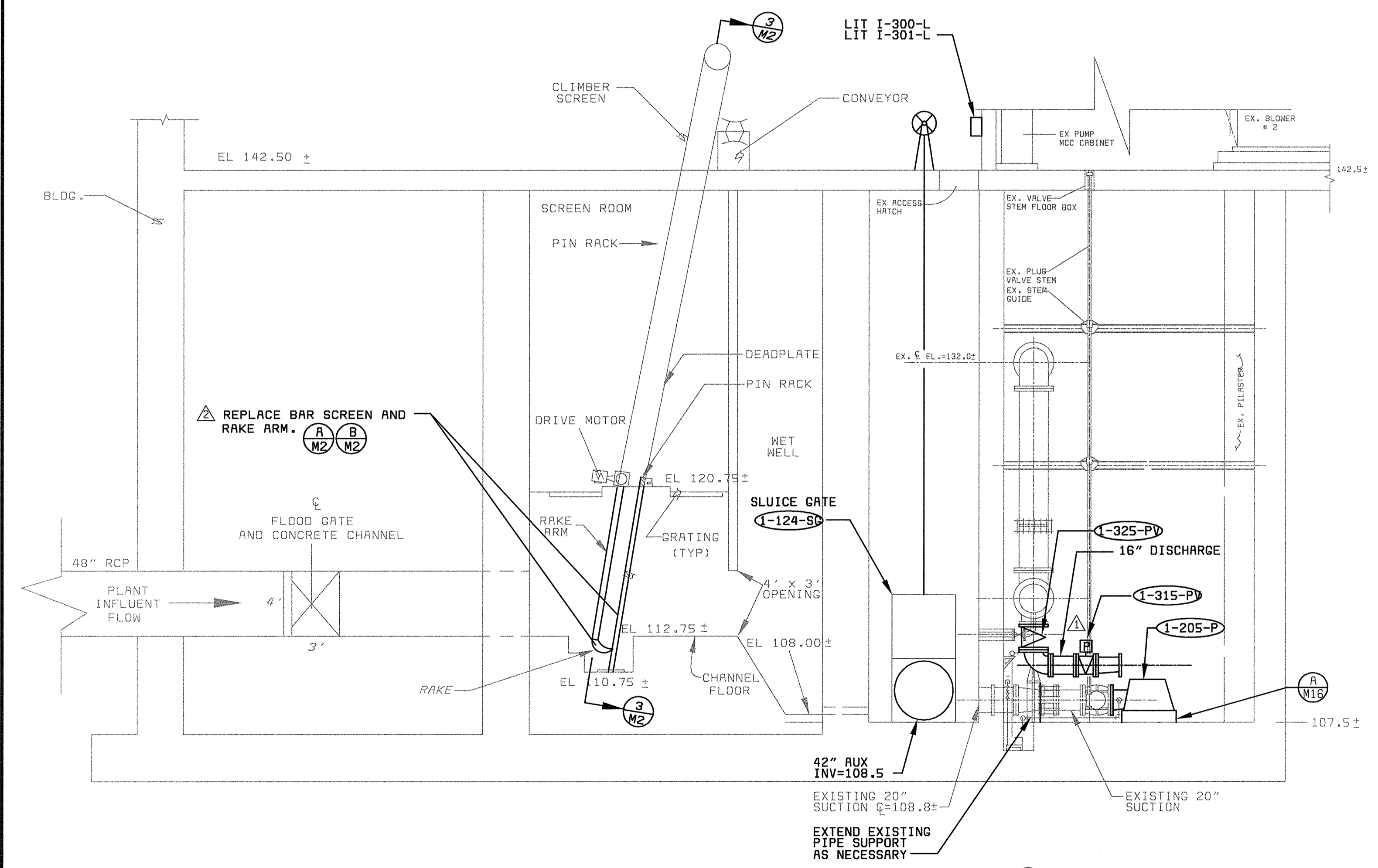
PUMP NO 3 AND NO 6 REPLACEMENT
SCALE 3/16" = 1'-0"



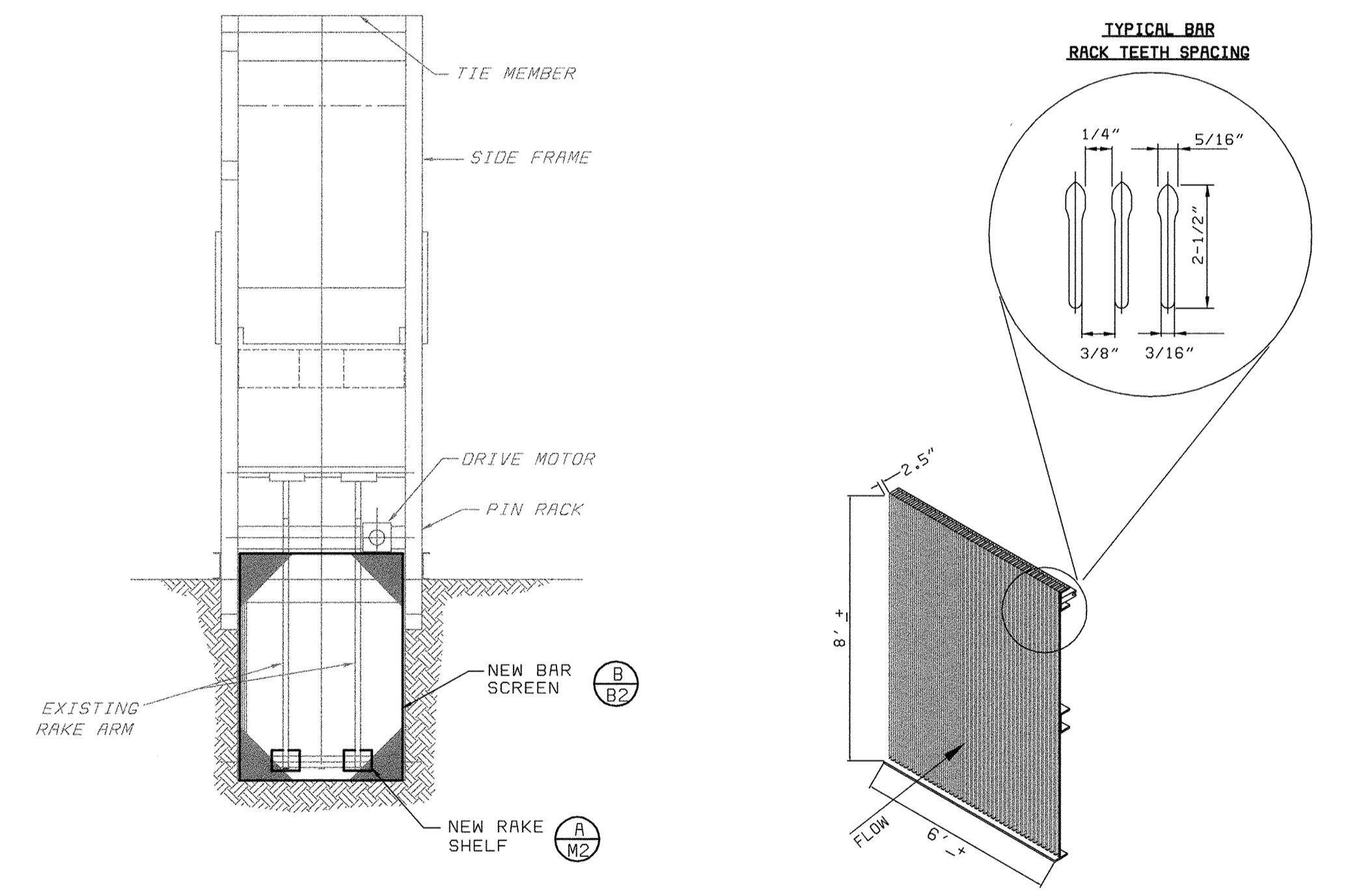
RAKE SHELF DETAIL
NOT TO SCALE



SECTION 2



CLIMBER SCREEN ELEVATION VIEW
SCALE 3/16" = 1'-0"



SECTION 3

FRONT VIEW

TYPICAL BAR SCREEN PANEL DETAIL
NOT TO SCALE

THE BAR SCREEN SHALL CONSIST OF 5/16" X 3/16" X 2-1/2" EXTRUDED 304 STAINLESS STEEL BARS, FORMED STRAIGHT AND TRUE, AND HELD FIRMLY AND ACCURATELY AT TOP, BOTTOM AND IN BETWEEN AS REQUIRED TO PROVIDE 1/4" CLEAR OPENINGS. THE BAR SCREEN SHALL BE DESIGNED SO AS TO UTILIZE THE ORIGINAL ANCHORAGE OF THE BAR SCREEN BEING REPLACED. BAR SCREEN MADE FROM SHEARED BAR MATERIAL ARE NOT ACCEPTABLE.

ONLY TWO BAR SCREENS REPLACED. COUNTY MADE SUBSEQUENT MODIFICATION TO BAR SPACING.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

AMT
A. MORTON THOMAS AND ASSOCIATES, INC.
CONSULTING ENGINEERS
12750 TWINBROOK PARKWAY, SUITE 300, ROCKVILLE, MD 20852
TEL (301) 881-2545 FAX (301) 881-8814
E-MAIL: JBYRNE@AMTENGINEERING.COM
AMT FILE # 98-154

BLACK & VEATCH LLP
Gaithersburg, Maryland
REG. PROF. ENGR. DATE

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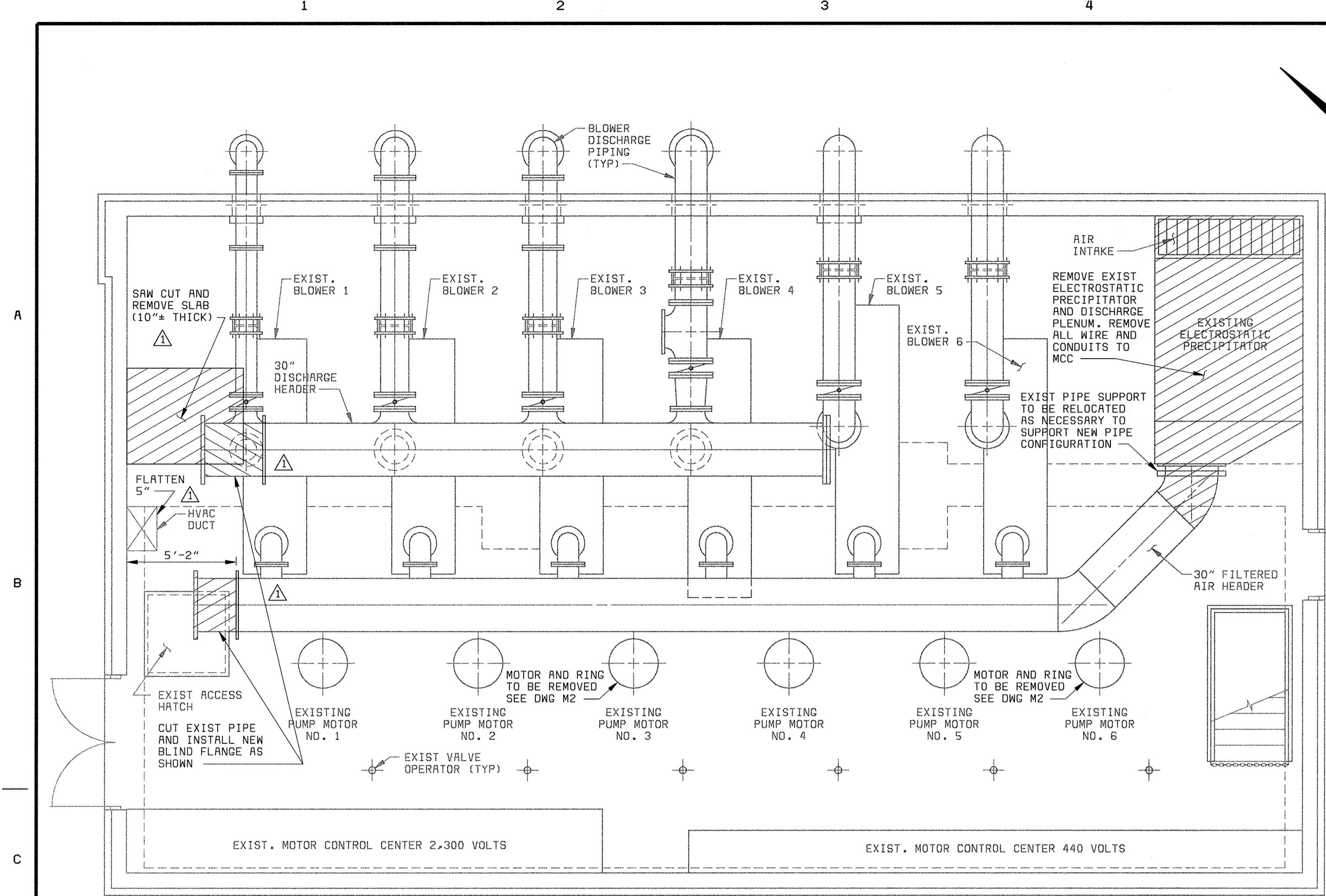
DES: A. REYES					
DRN: R. ANCHORS					
CHK: A. REYES	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR
DATE: 04/13/01	6/27/01	ADDENDUM NO. 3			
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

CIVIL
HEADWORKS BUILDING PLAN AND SECTION

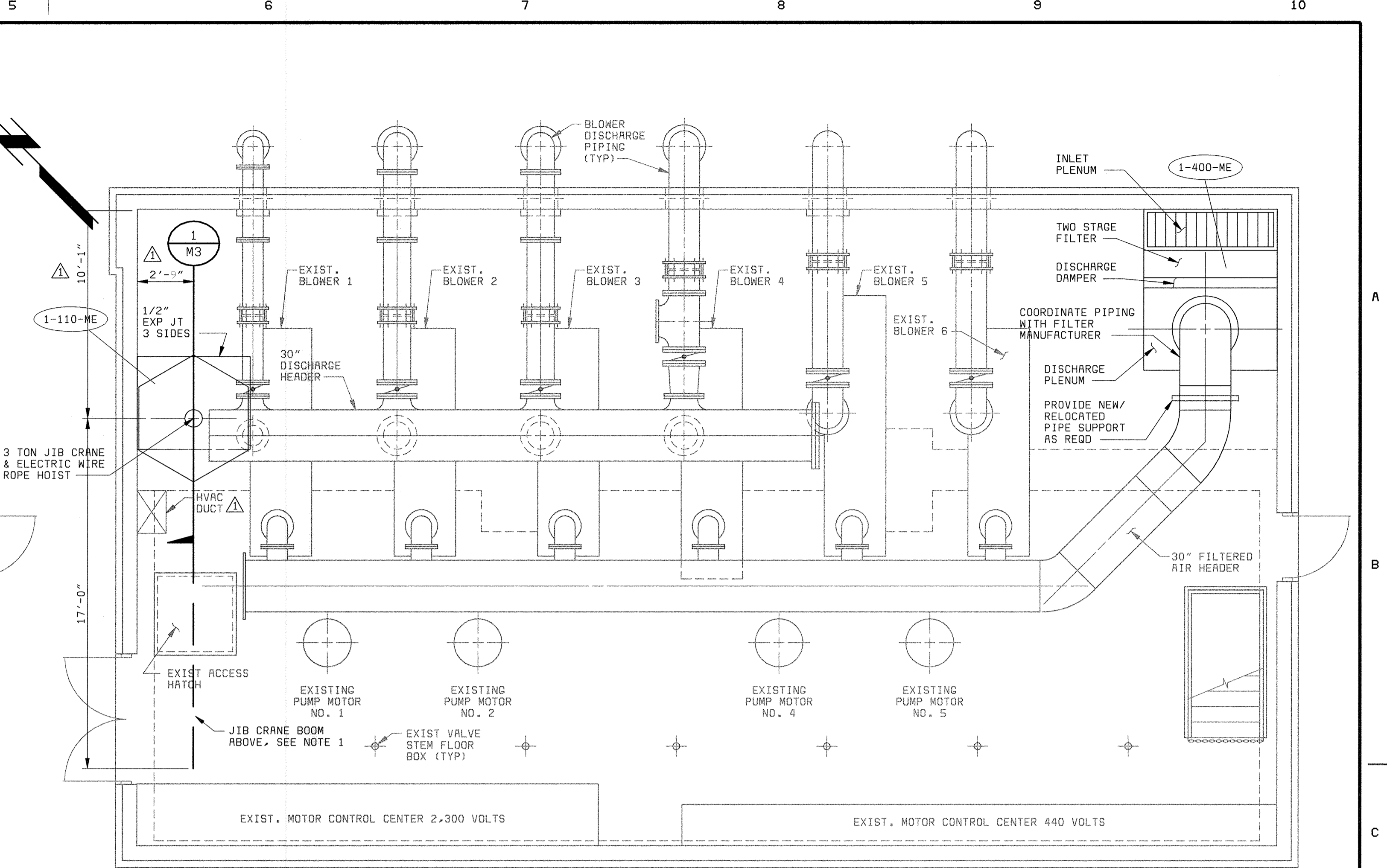
LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
ELECTION DISTRICT NO. 6
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
SHEET 39 OF 88
M2

0569472 F0569472A

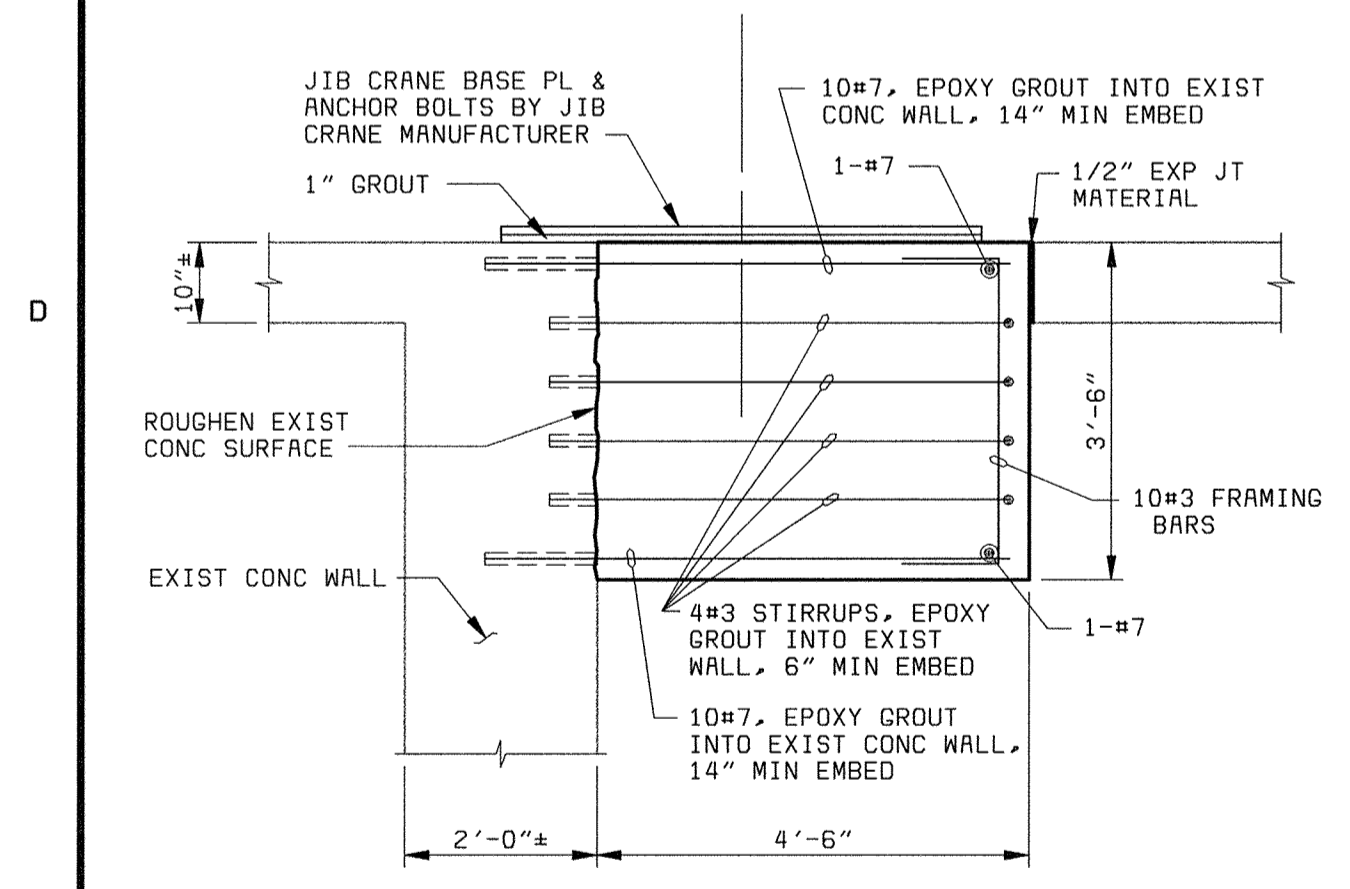


BLOWER ROOM DEMOLITION PLAN
1/4" = 1'-0"

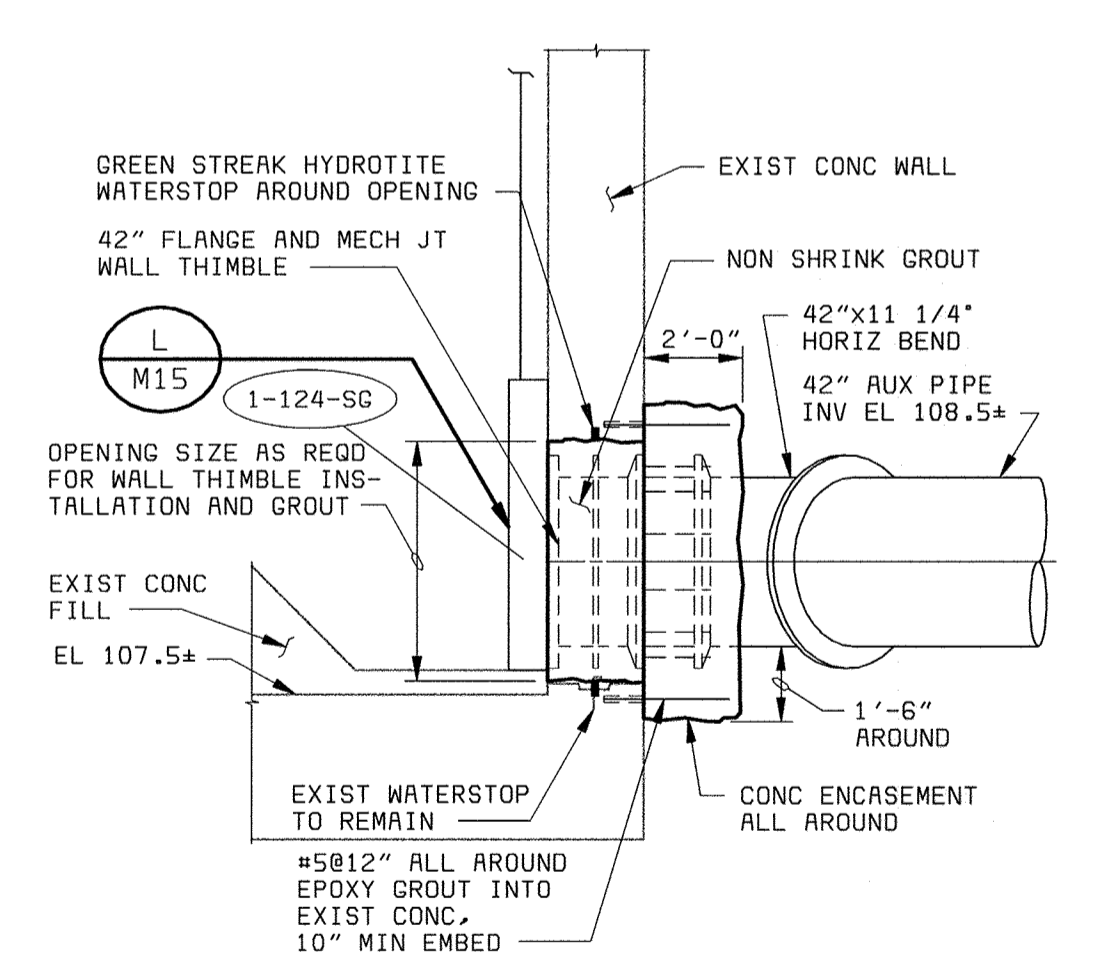


BLOWER ROOM PLAN
1/4" = 1'-0"

NOTES:
1. TRIM 30" DISCHARGE HEADER IF NECESSARY.



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



DETAIL A
1/4" = 1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH
Gaithersburg, Maryland
REG. PROF. ENGR. DATE

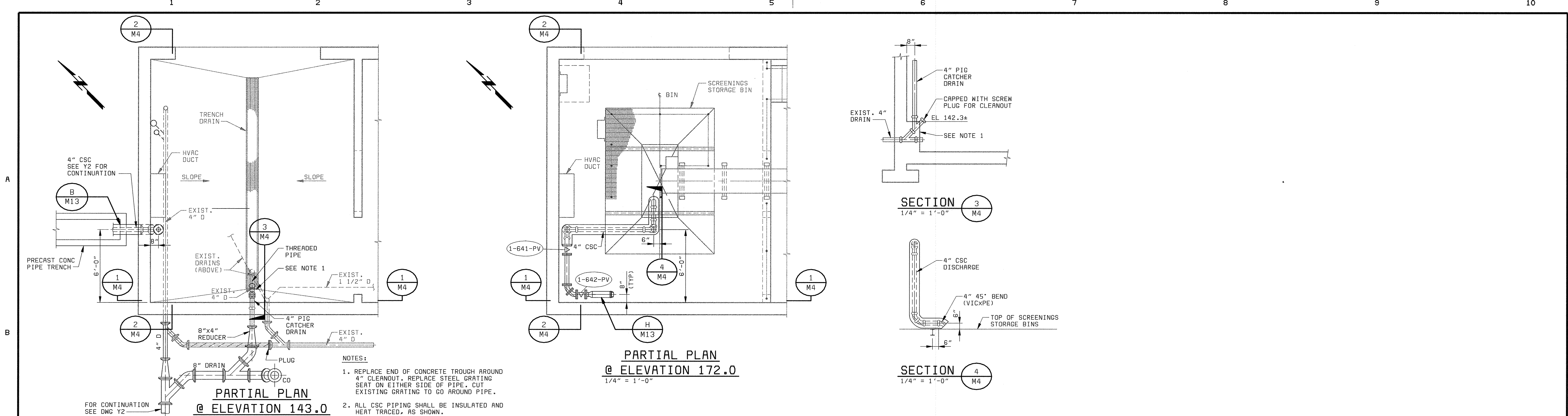
THIS DRAWING WAS
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FOR CONSTRUCTION
AND SEALED BY
ROBERT J. REGANUS, JR.,
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927

DES: KMH					
DRN: RLC					
CHK: WLK					
DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

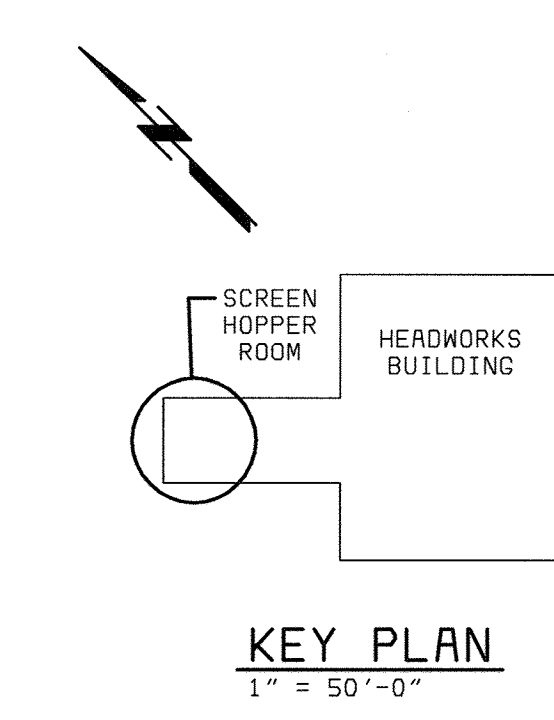
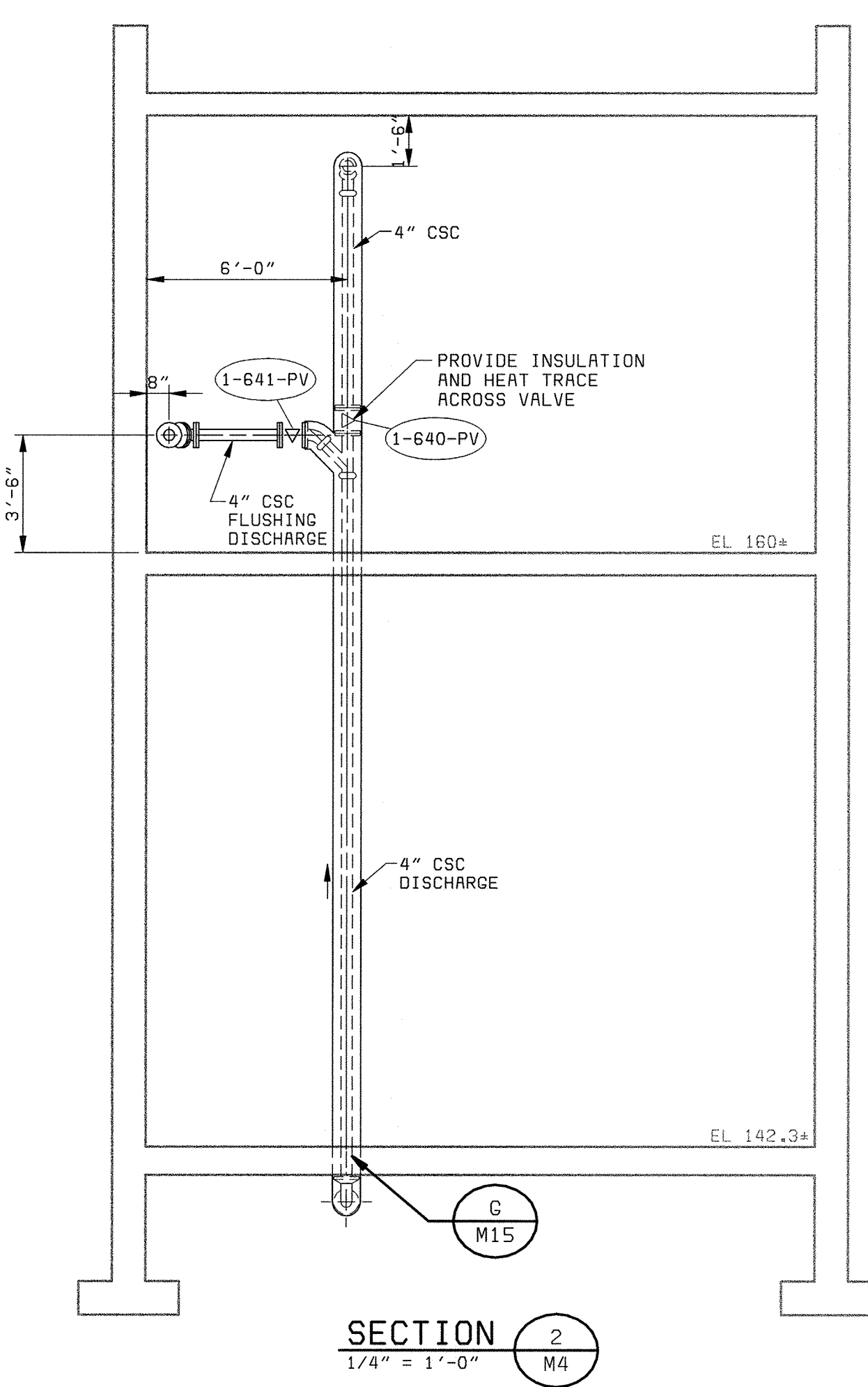
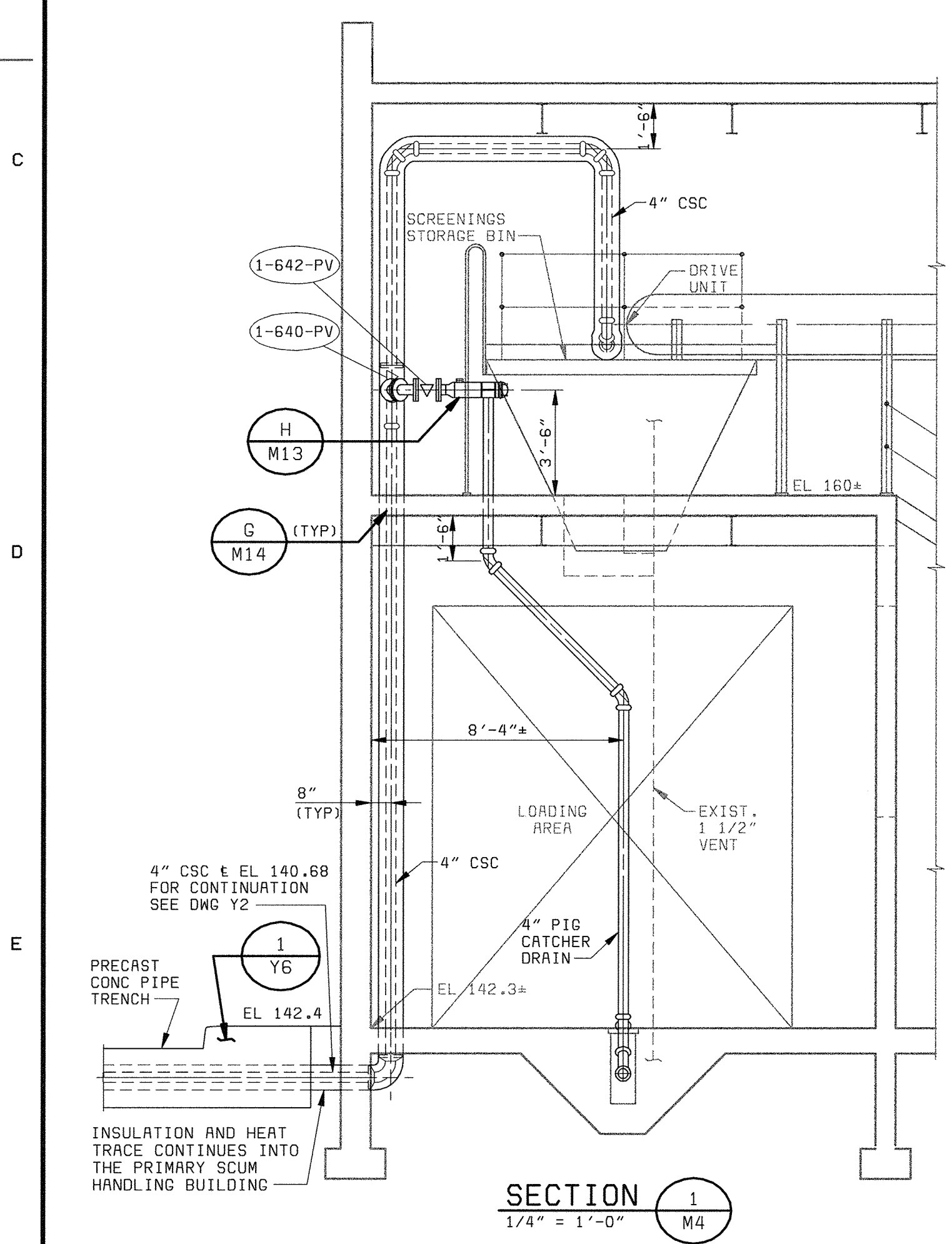
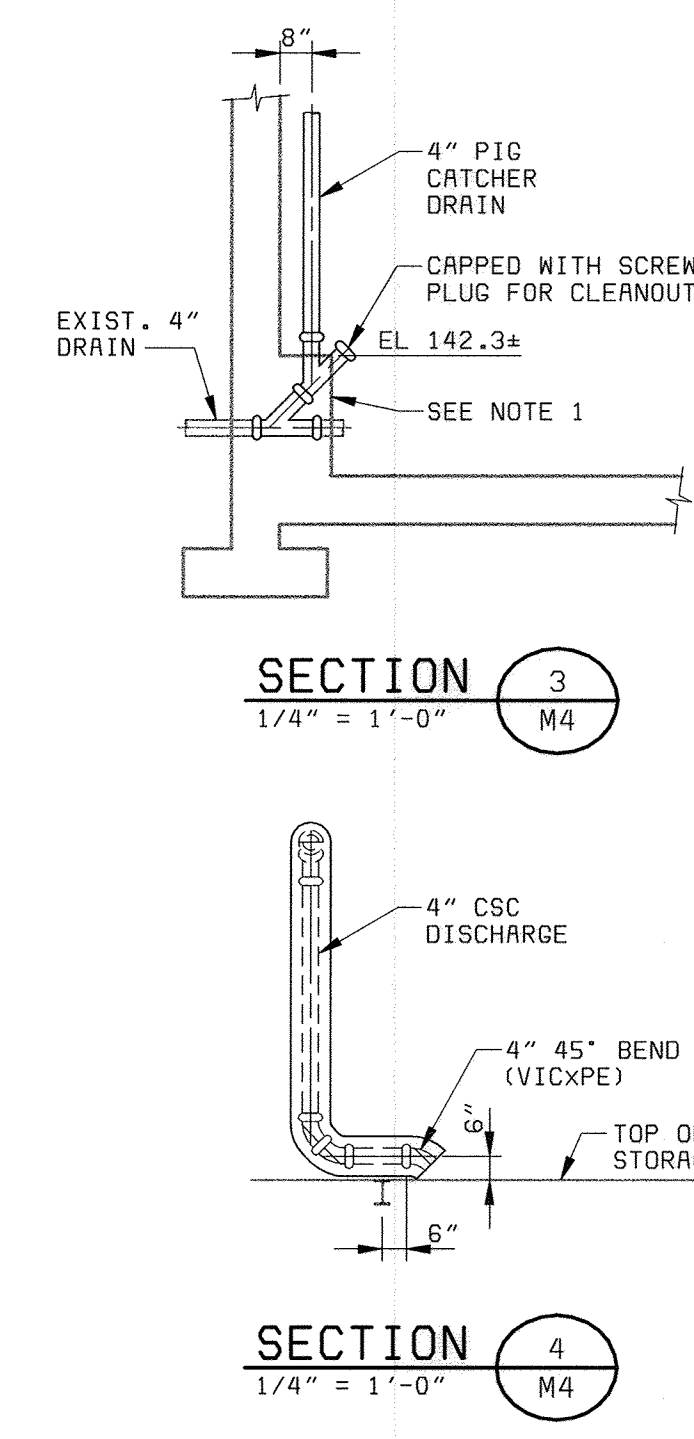
**HEADWORKS BUILDING
MECHANICAL**
**BLOWER ROOM PLANS,
SECTION AND DETAIL**

**LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION**
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN
SHEET
40 of 88
M3

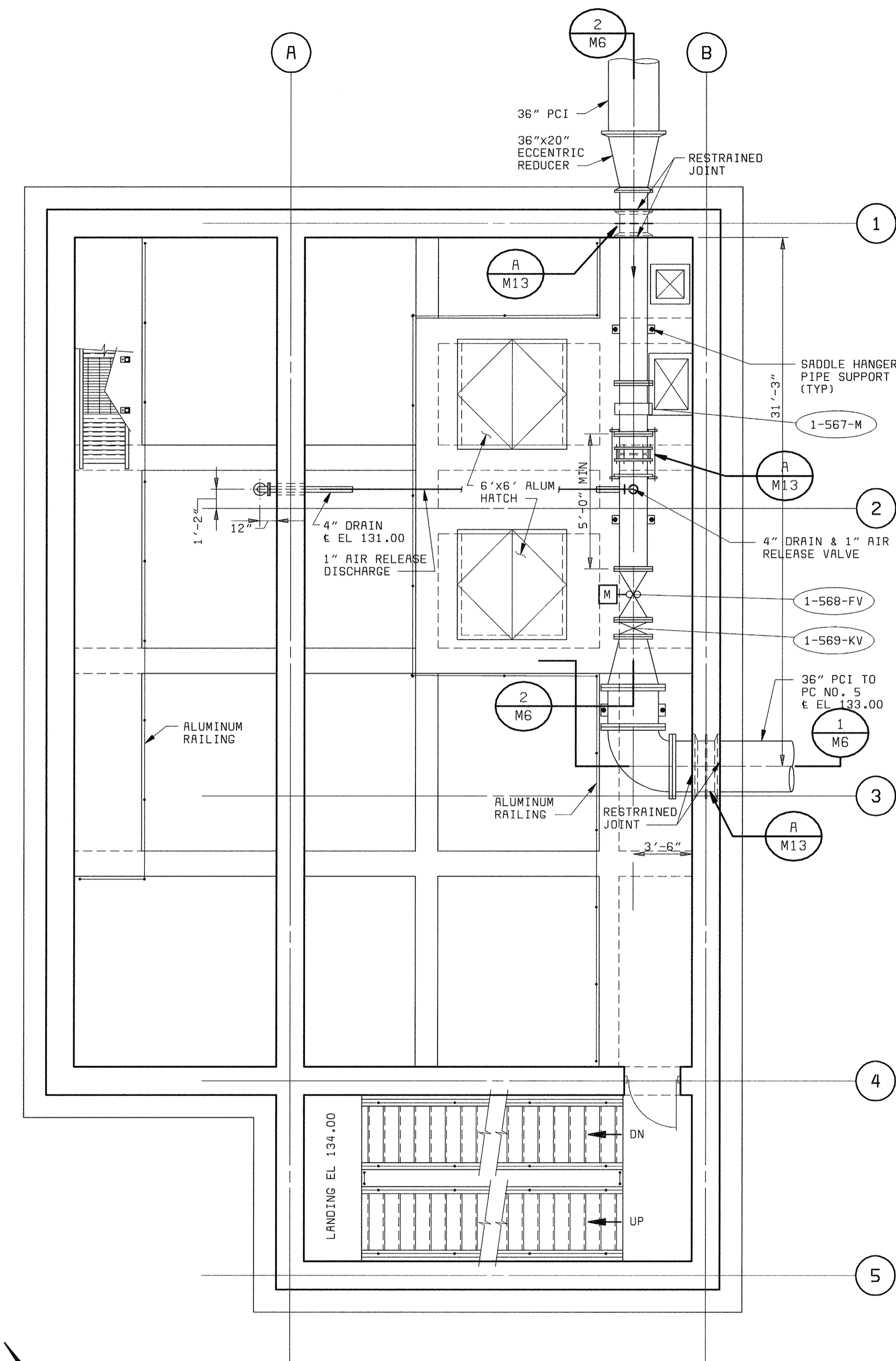
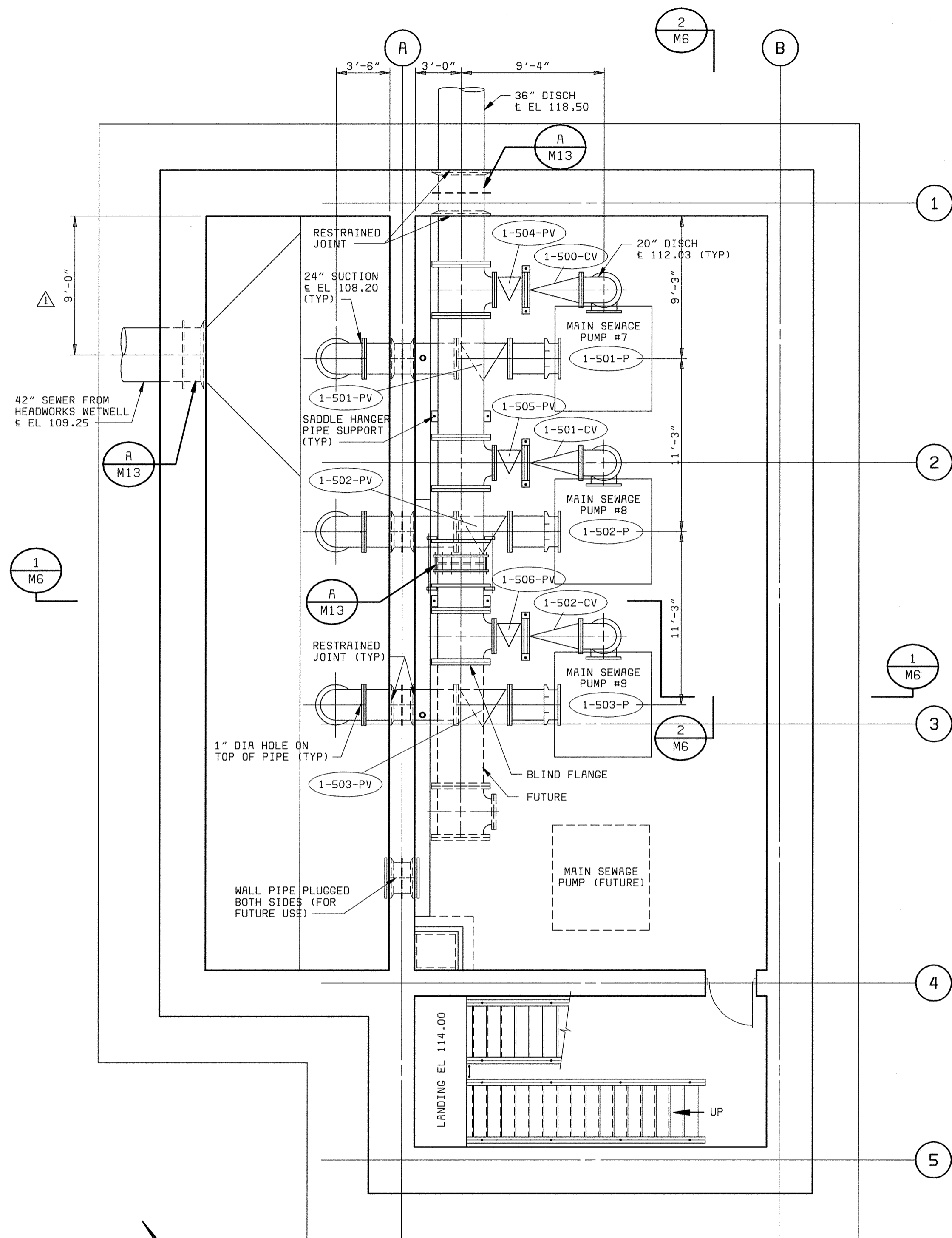


- NOTES:
1. REPLACE END OF CONCRETE TROUGH AROUND 4" CLEANOUT. REPLACE STEEL GRATING SEAT ON EITHER SIDE OF PIPE. CUT EXISTING GRATING TO GO AROUND PIPE.
 2. ALL CSC PIPING SHALL BE INSULATED AND HEAT TRACED, AS SHOWN.



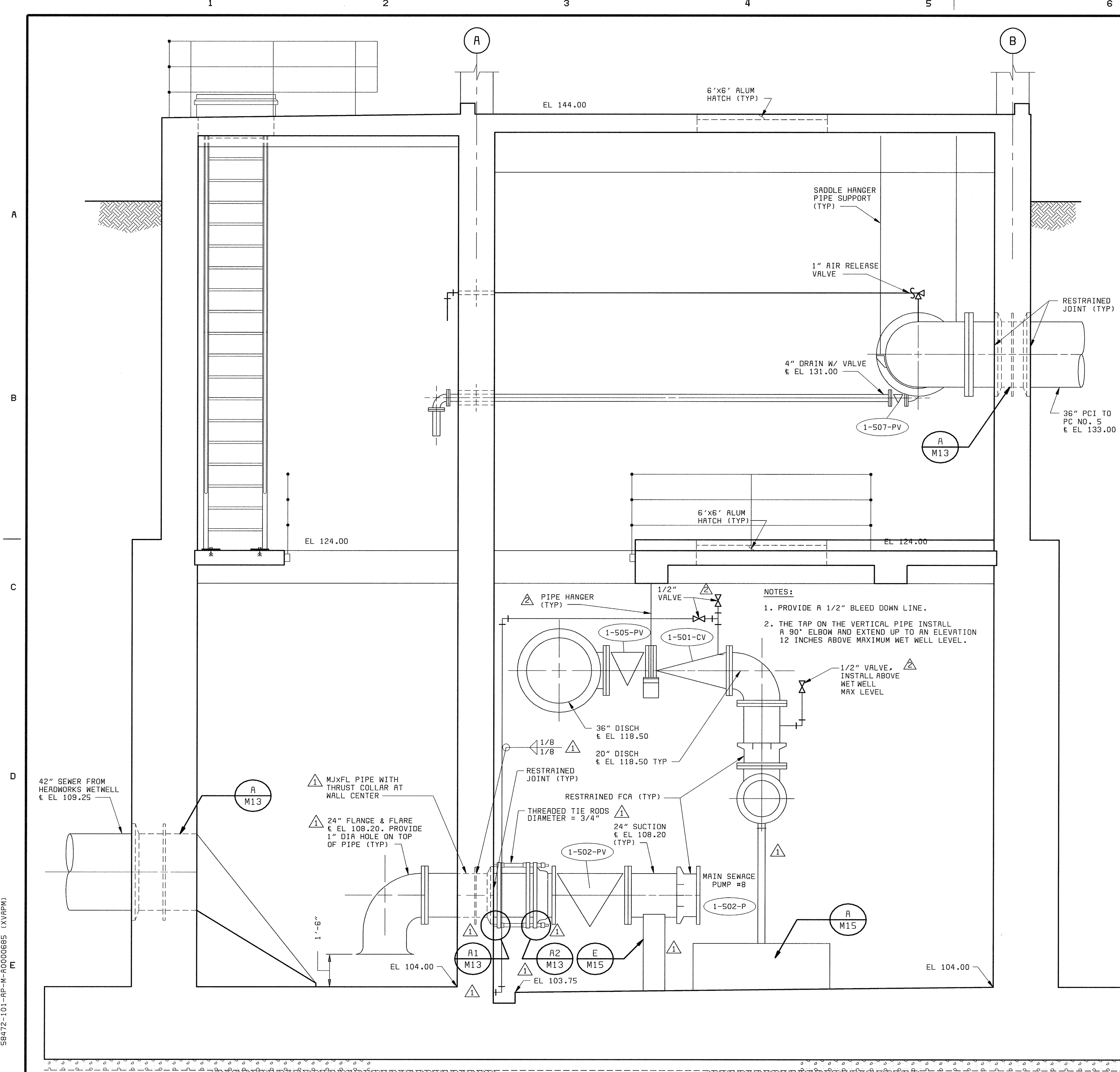
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENDR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: KMH							HEADWORKS BUILDING MECHANICAL SCREEN HOPPER ROOM PLANS AND SECTIONS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: RLC	CHK: WLK	DATE: 2/19/01	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR				

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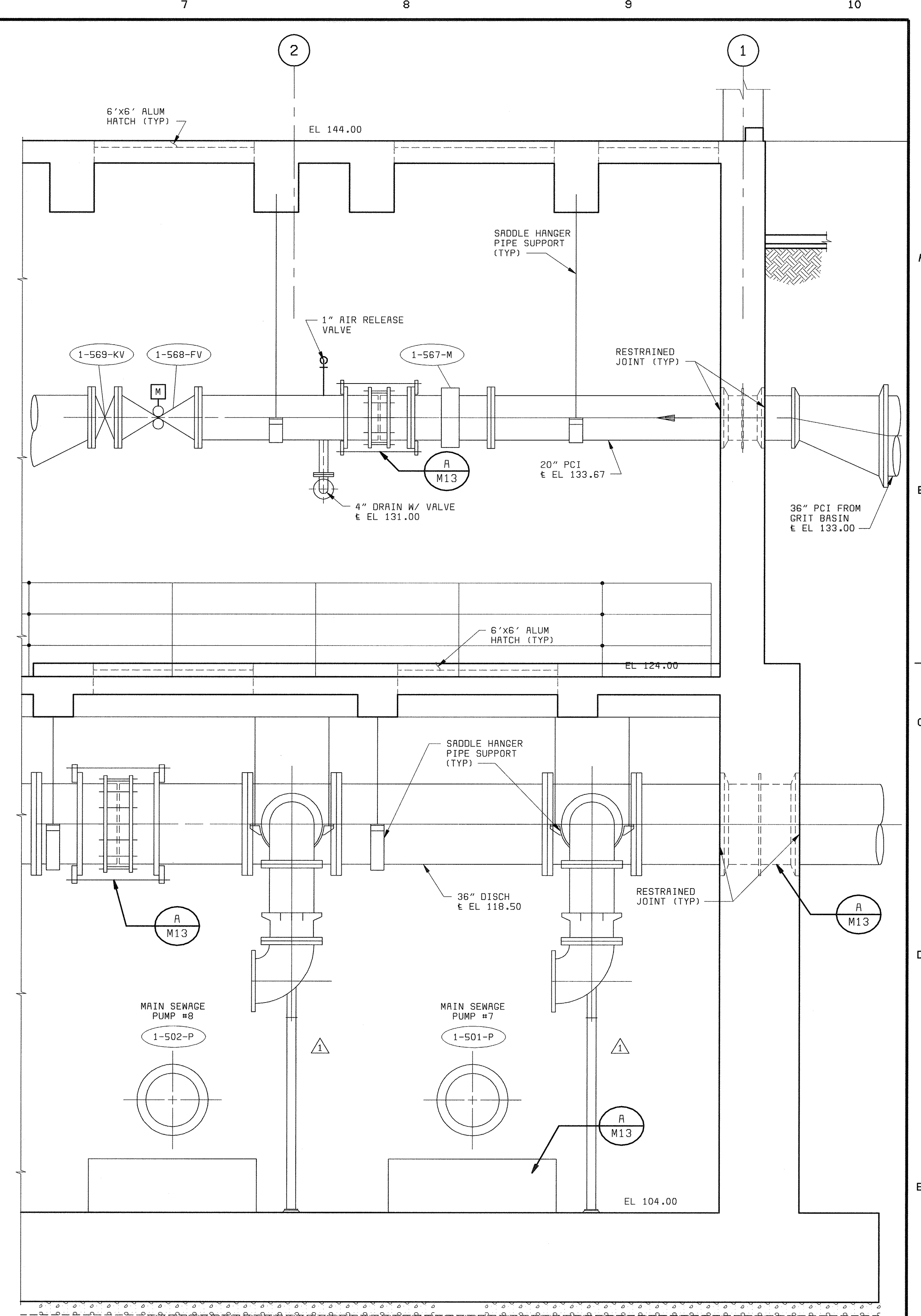


58472-101-AP-M-20000000N (X)/RPM
05/18/2005 07:44:17

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: KMH, SLF							AUXILIARY PUMP STATION MECHANICAL LOWER LEVEL AND SECTIONAL PLANS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: SLF									
			CHK: WLK									M5
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE							



SECTION 1
3/8" = 1'-0" (M5)



SECTION 2
3/8" = 1'-0" (M5)

58472-101-RP-M-FOO0685 (XV/RPM)

05/31/2005 09:46:53

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH
Gaithersburg, Maryland
REG. PROF. ENGR. DATE

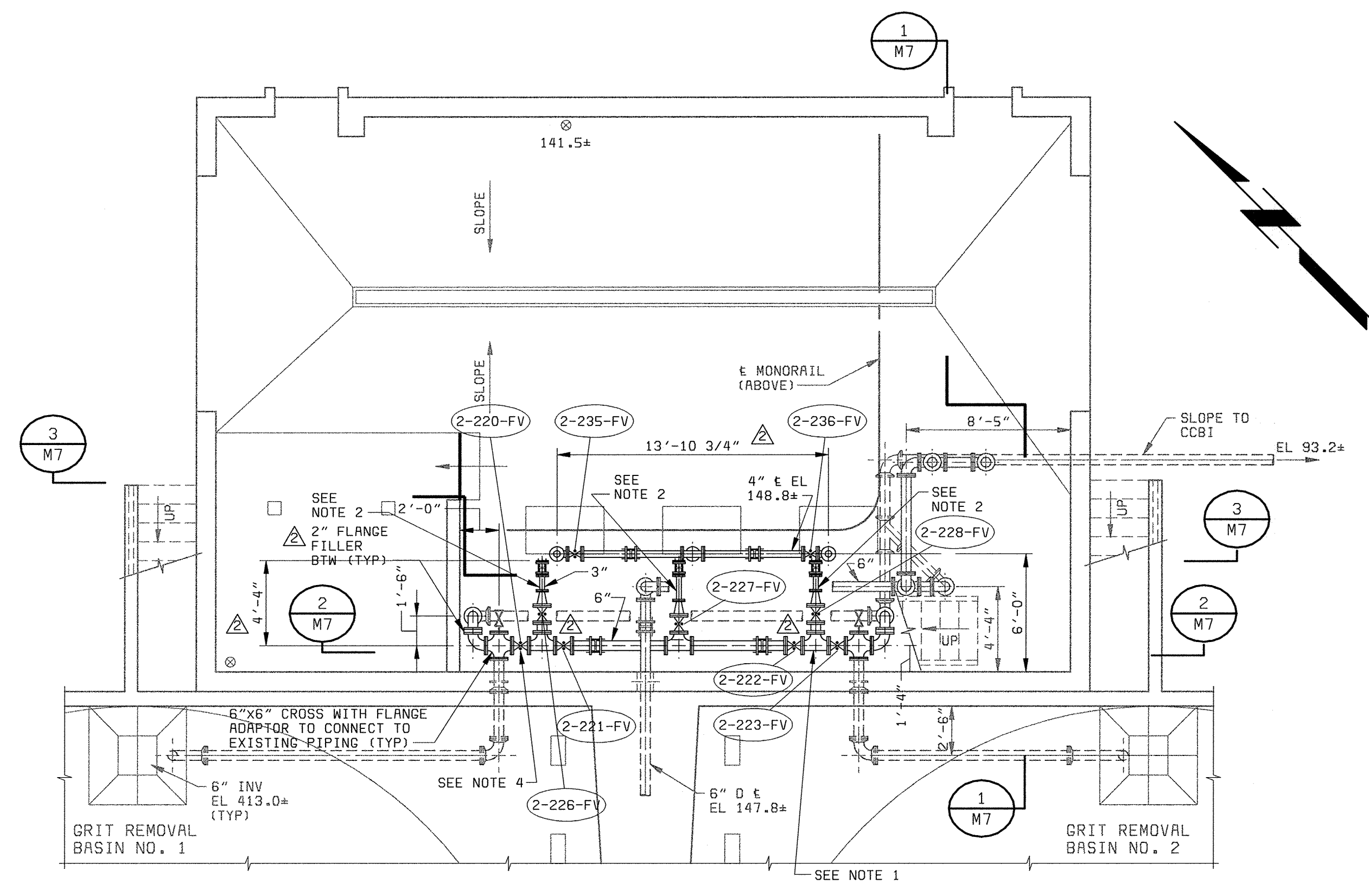
THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
ROBERT J. RECTRUS, JR.,
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927

DES: KMH, SLF					
DRN: SLF					
CHK: WLK	02/06/04	CONFORMED TO CONSTRUCTION RECORDS			
DATE: 2/19/01	06/11/01	ADDENDUM NO. 2			
		REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

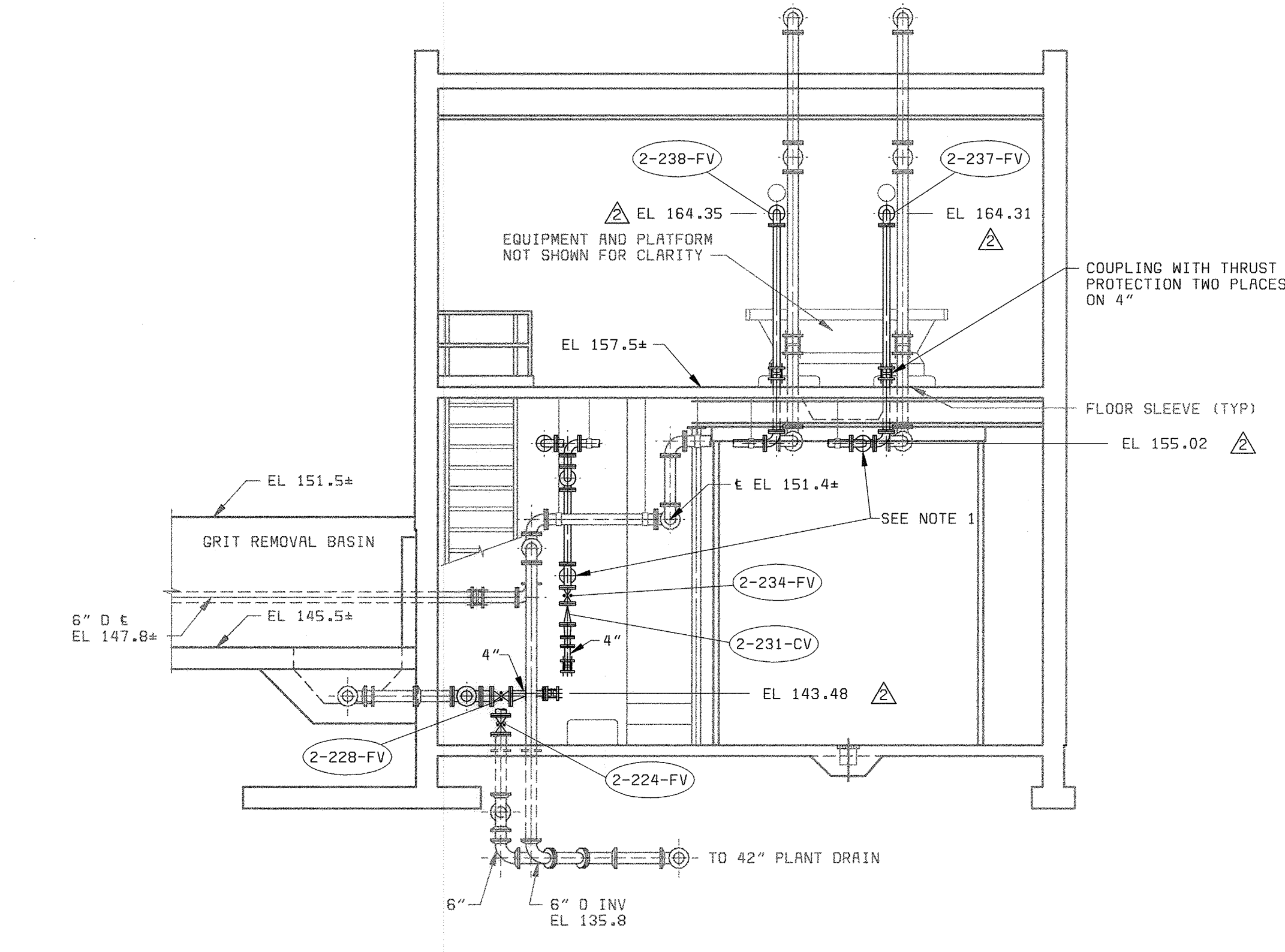
AUXILIARY PUMP STATION
MECHANICAL
SECTIONS

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
HOWARD COUNTY, MARYLAND

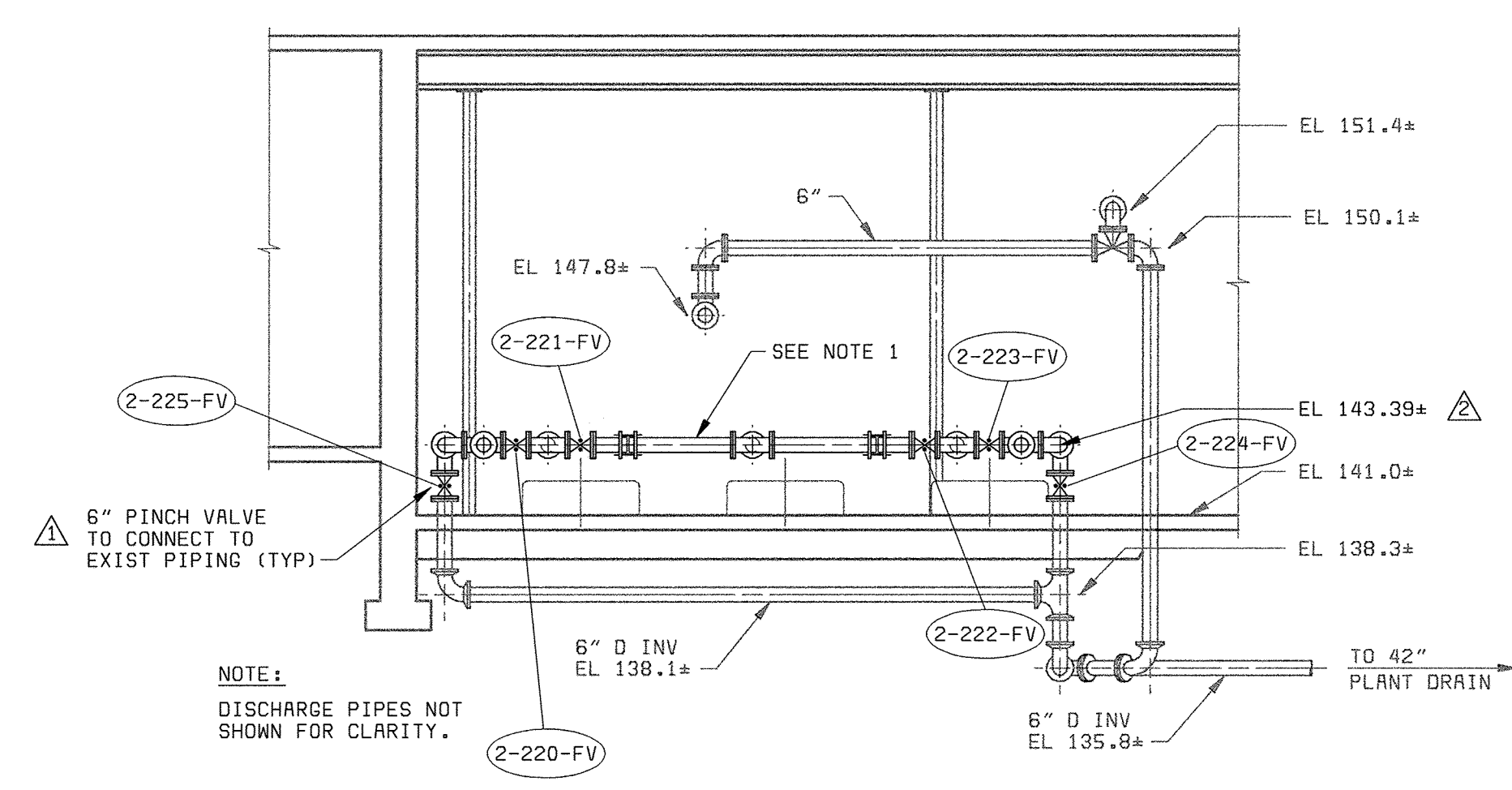
SCALE
AS
SHOWN
SHEET
43 of 88
M6



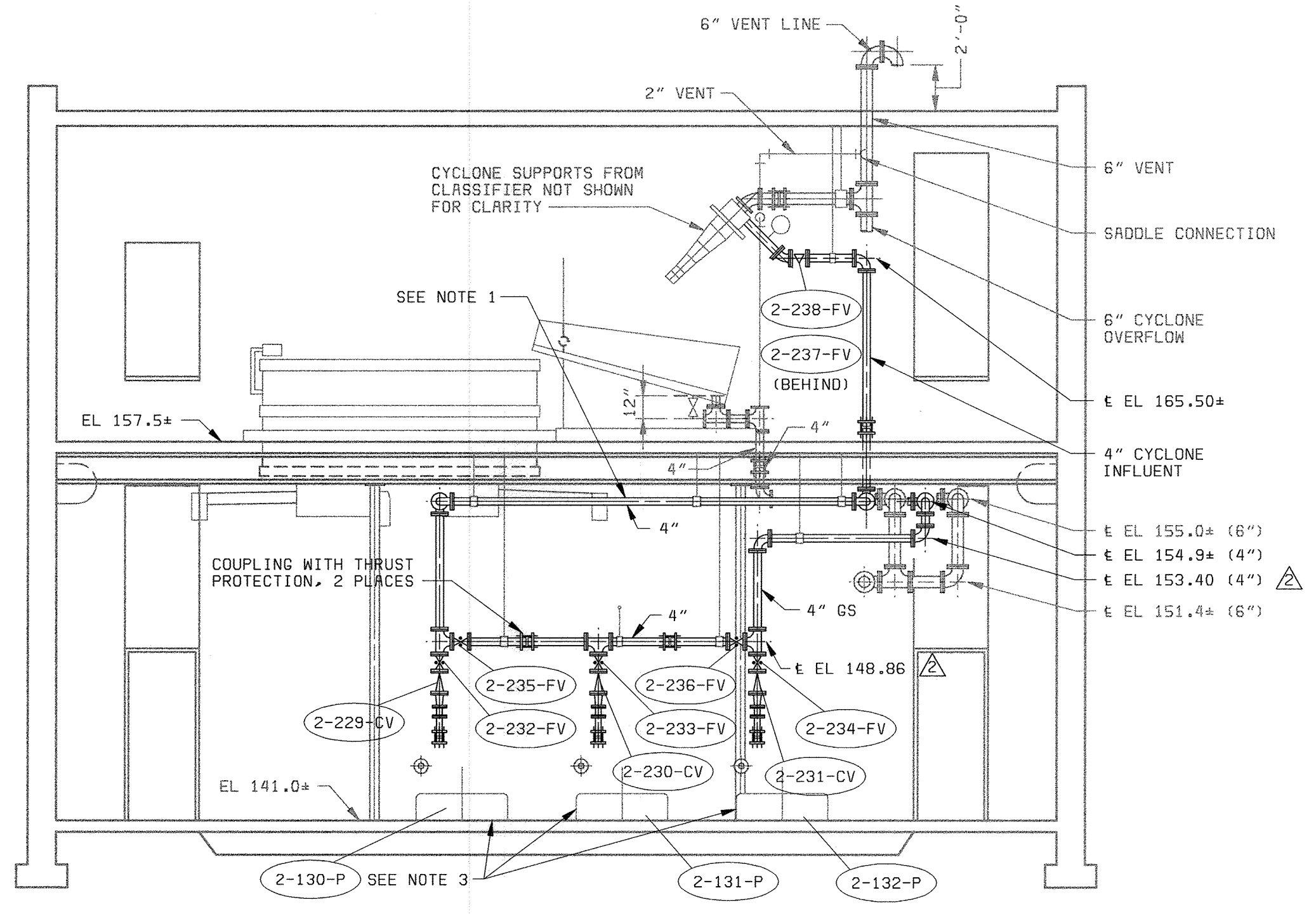
LOWER FLOOR PLAN
3/16" = 1'-0"



SECTION 1
3/16" = 1'-0" M7



SECTION 2
3/16" = 1'-0" M7



SECTION 3
3/16" = 1'-0" M7

- NOTES:**
1. PIPING, VALVES, AND FITTINGS TO BE REPLACED WITH NEW D.I. PIPING OF SAME SIZE AND CONFIGURATION. PIPING AND FITTINGS TO BE GROOVED IN ACCORDANCE WITH SPECIFICATIONS.
 2. PROVIDE FLUSHING CONNECTION ON EACH PUMP SUCTION LINE (TAP, BALL VALVE, HOSE CONNECTION (TYPICAL OF 3)).
 3. EXISTING WEMCO PUMP TO BE REPLACED WITH SAME (TYPICAL OF 3). ALL ELECTRICAL AND CONTROL WIRING TO BE RECONNECTED TO NEW PUMPS.
 4. PLUG VALVES TO BE REPLACED BY PINCH VALVES.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH
Gaithersburg, Maryland
REG. PROF. ENGR. DATE

THIS DRAWING WAS
ORIGINALLY APPROVED
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ROBERT J. RECTANUS, JR.,
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927

DES: MH					
DRN: GRH					
CHK: WLK	05/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH RJR RJR	
DATE: 2/19/01	06/12/01	ADDENDUM NO. 1		IFH	
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

**GRIT HANDLING BUILDING
MECHANICAL**

PLAN AND SECTIONS

**LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION**

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

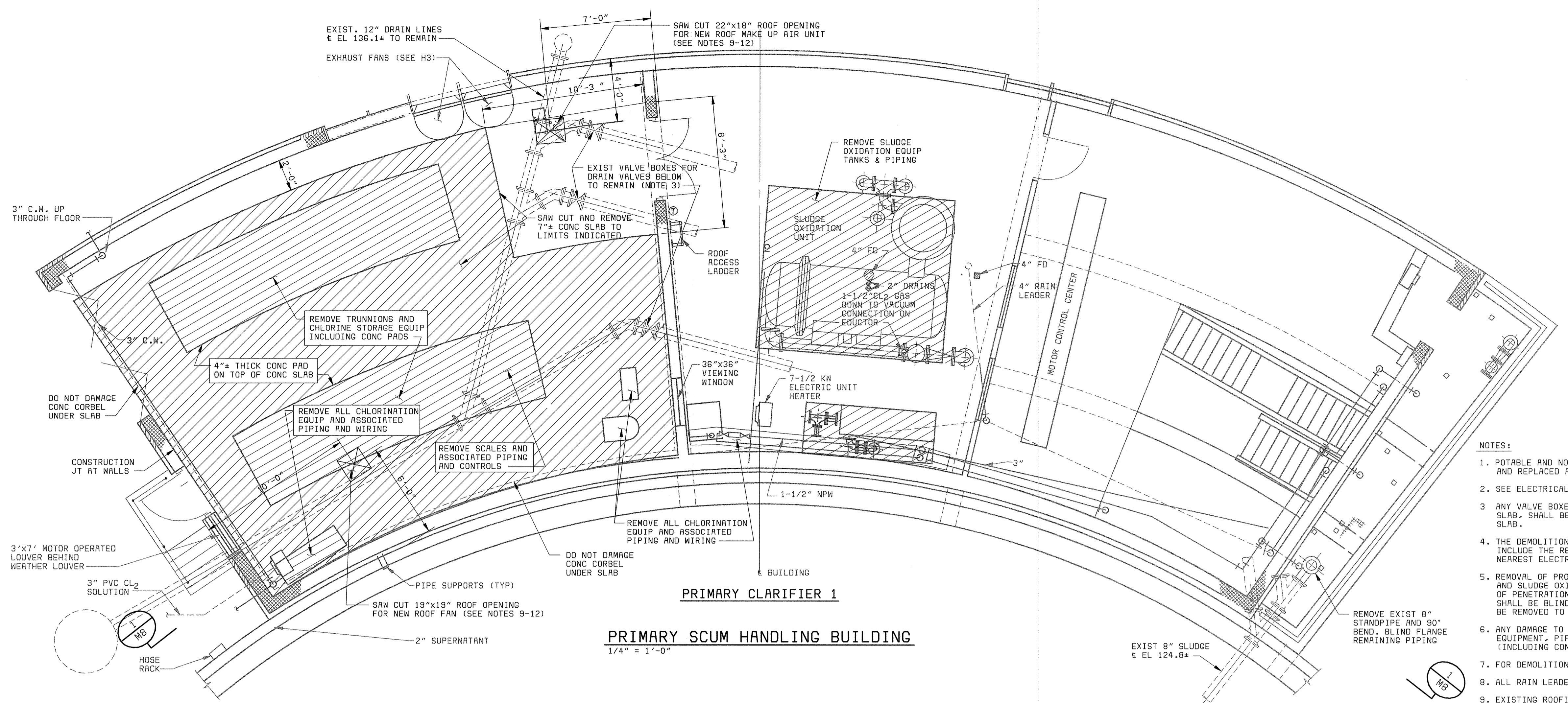
HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

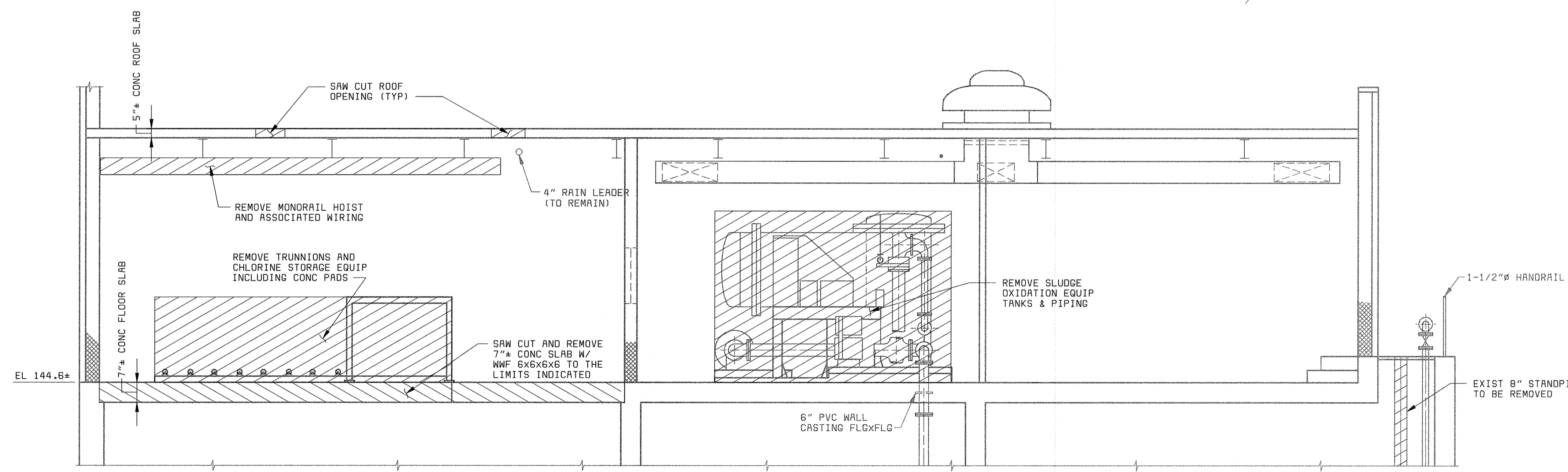
SHEET
44 OF 88

M7

A
B
C
D
E
F

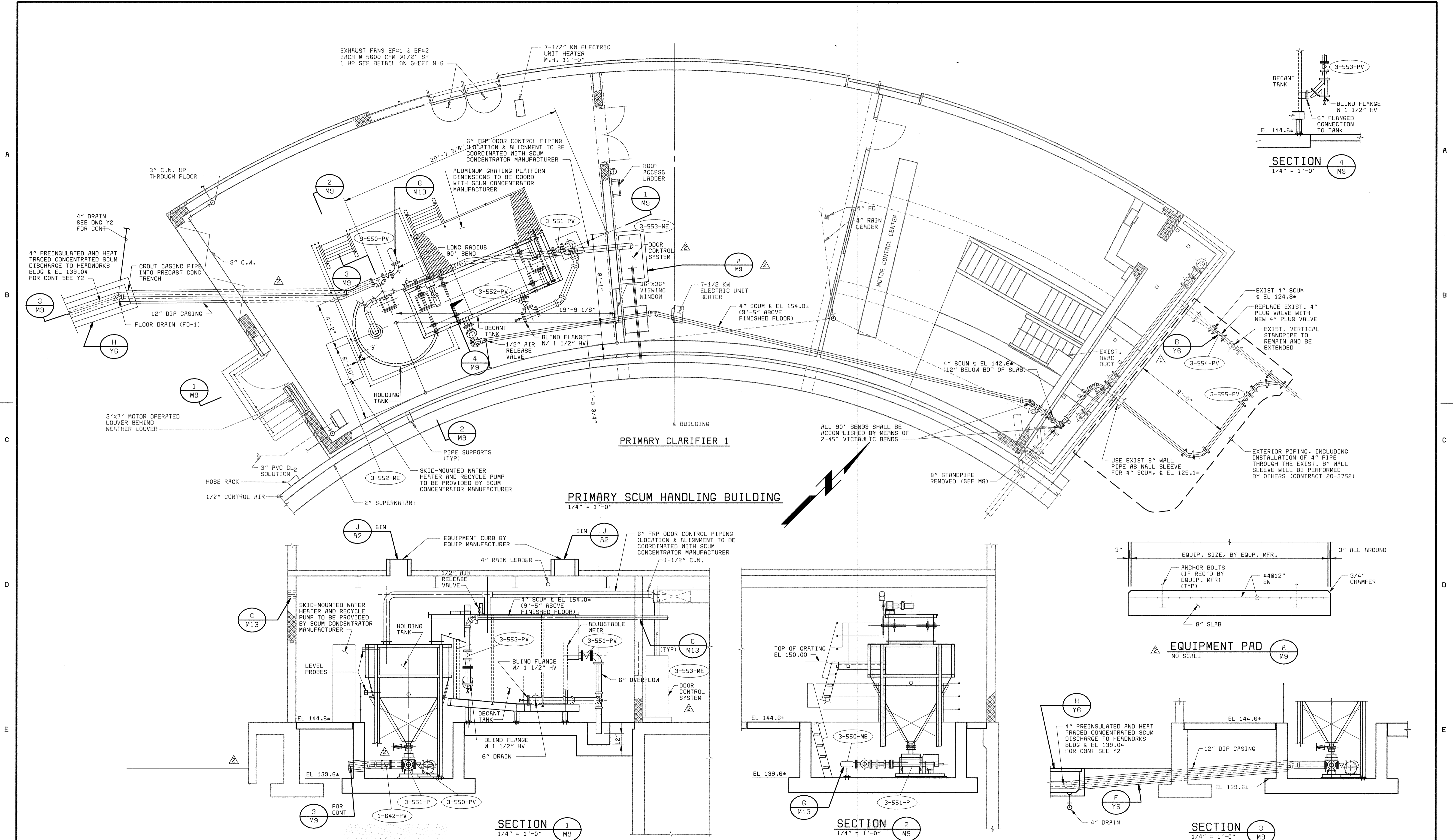


- NOTES:**
- POTABLE AND NON POTABLE WATER PIPING SHALL BE DEMOLISHED AND REPLACED AS INDICATED ON DWG P2.
 - SEE ELECTRICAL DWGS FOR ELECTRICAL DEMOLITION.
 - ANY VALVE BOXES AND STEMS DISTURBED BY DEMOLITION OF CONC SLAB, SHALL BE PROTECTED AND/OR REPLACED AND SET INTO NEW SLAB.
 - THE DEMOLITION OR REMOVAL OF ANY ELECTRICAL EQUIPMENT SHALL INCLUDE THE REMOVAL OF ELECTRICAL WIRING AND CONDUIT TO THE NEAREST ELECTRICAL PANEL OR MCC.
 - REMOVAL OF PROCESS PIPING INDICATED IN THE CHLORINE ROOM AND SLUDGE OXIDATION ROOM SHALL BE TO THE FURTHEST POINT OF PENETRATION (WALL, FLOOR OR CEILING). EXISTING WALL PIPE SHALL BE BLIND FLANGED. PIPES PASSING THROUGH WALLS SHALL BE REMOVED TO THE NEXT SUPPORTED JOINT.
 - ANY DAMAGE TO WALLS OR FLOORS CAUSED BY THE REMOVAL OF EQUIPMENT, PIPING, PIPE SUPPORT, AND ELECTRICAL EQUIPMENT (INCLUDING CONDUIT) SHALL BE REPAIRED TO ORIGINAL CONDITIONS.
 - FOR DEMOLITION OF HVAC EQUIPMENT SEE DWG H3.
 - ALL RAIN LEADER PIPING SHALL REMAIN.
 - EXISTING ROOFING IS A MODIFIED BITUMEN GARLAND ROOFING SYSTEM WHICH WAS INSTALLED IN 1999 WITH A 20 YEAR WARRANTY. ROOFING CONTRACTOR SHALL COORDINATE ALL ROOFING MODIFICATIONS WITH GERALD ROOFING AS SPECIFIED IN THE WARRANTY AND OBTAIN THEIR APPROVAL.
 - CONTRACTOR SHALL OBTAIN WRITTEN CERTIFICATION FROM THE MANUFACTURER OF THIS EXISTING ROOFING SYSTEM CERTIFYING THAT THE INSTALLER IS APPROVED BY THE MANUFACTURER FOR INSTALLATION OF THE SPECIFIED ROOFING SYSTEM. PROVIDE A COPY OF THE CERTIFICATION TO THE ENGINEER PRIOR TO THE START OF THE ROOFING WORK.
 - THE ROOF INSTALLATION SHALL BE GUARANTEED BY THE INSTALLER A PERIOD OF ONE YEAR FROM THE FINAL ACCEPTANCE BY THE OWNER.
 - CONTRACTOR SHALL PROVIDE CERTIFICATION FROM THE ROOFING MANUFACTURER THAT THE 20 YEAR WARRANTY IS STILL IN EFFECT AS A RESULT OF THEIR APPROVAL. SUBMIT A COPY OF THE MANUFACTURER'S ROOF INSPECTION REPORT TO THE OWNER ALONG WITH THE WARRANTY. THE WARRANTY OR AN ATTACHMENT TO THE WARRANTY SHALL SPECIFICALLY LIST THE PRODUCTS COVERED BY THE WARRANTY FOR THIS PROJECT.

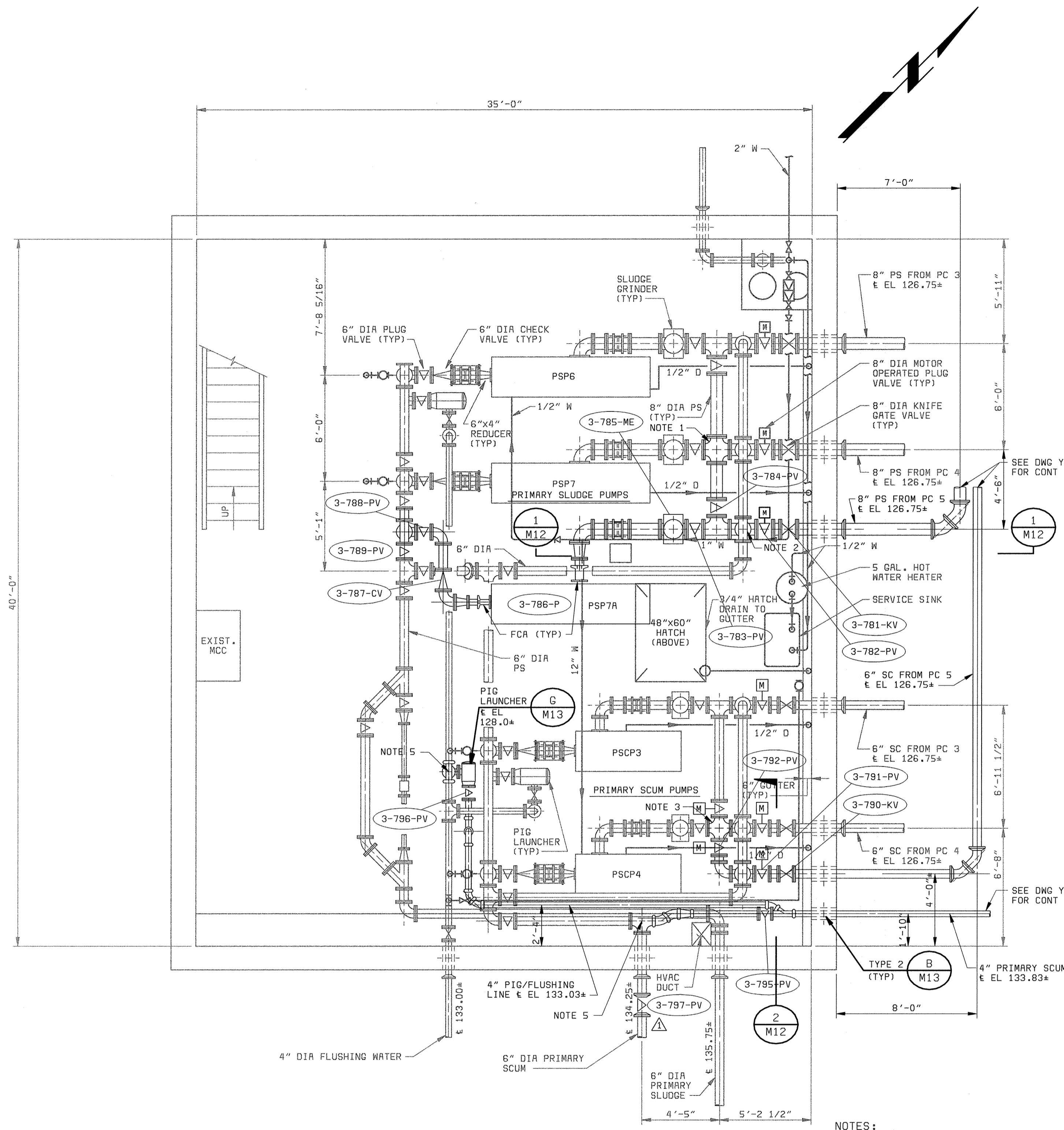


SECTION 1
1/4" = 1'-0" M8

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: KMH		PRIMARY SCUM HANDLING BUILDING MECHANICAL	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION	SCALE AS SHOWN SHEET 45 OF 88 M8
			DRN: CMM				
			CHK: WLK	DATE: 2/19/01	02/06/04 CONFORMED TO CONSTRUCTION RECORDS REVISIONS AND RECORD OF ISSUE		



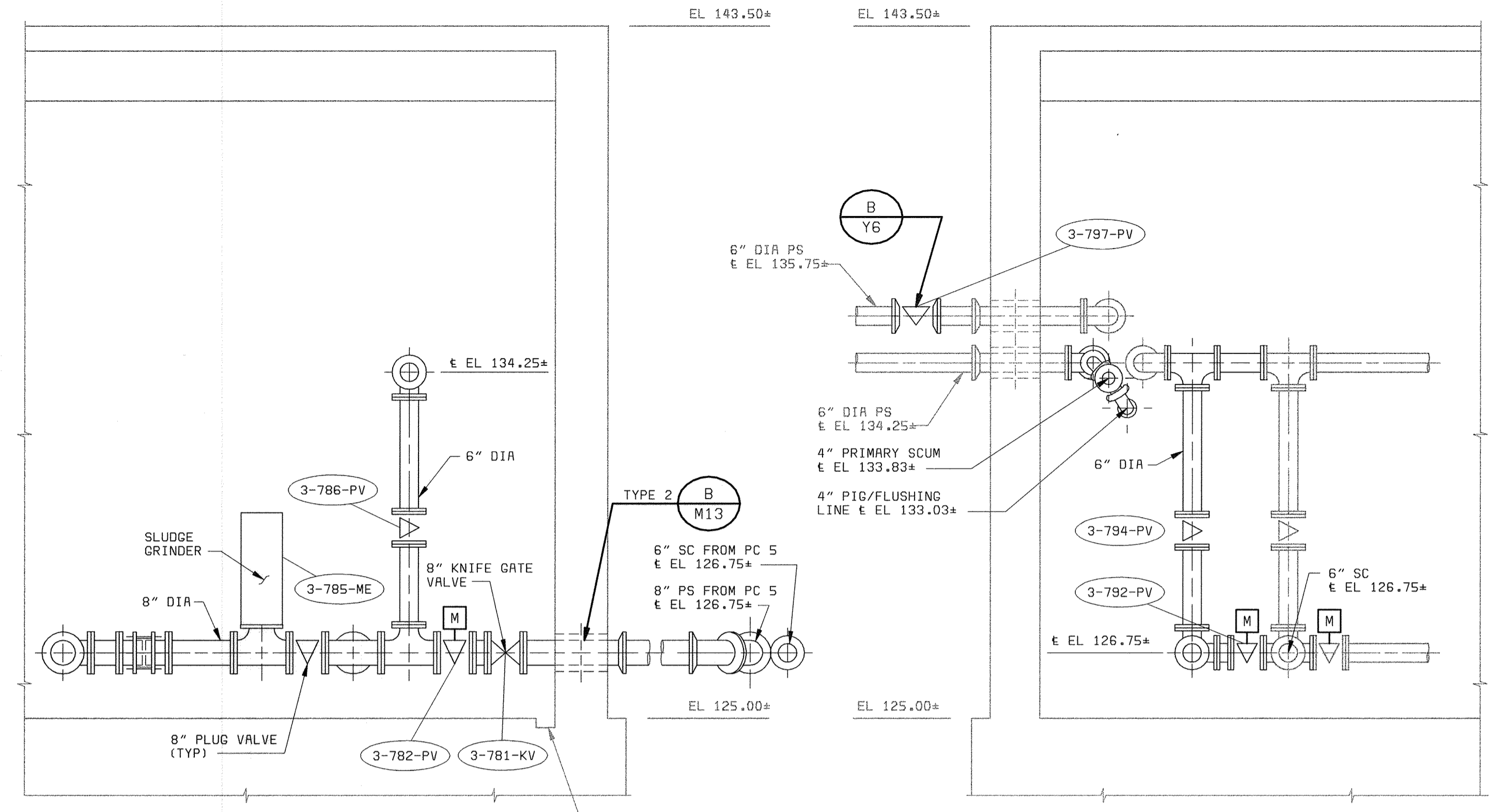
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22827	DES: KMH	PRIMARY SCUM HANDLING BUILDING		LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 46 OF 88 M9
			DRN: CMM CHK: WLK DATE: 2/19/01	05/05/05 06/12/01 DATE	CONFORMED TO CONSTRUCTION RECORDS ADDENDUM NO. 1 REVISIONS AND RECORD OF ISSUE		



SOUTH PUMPING STATION - BASEMENT PLAN
1/4" = 1'-0"

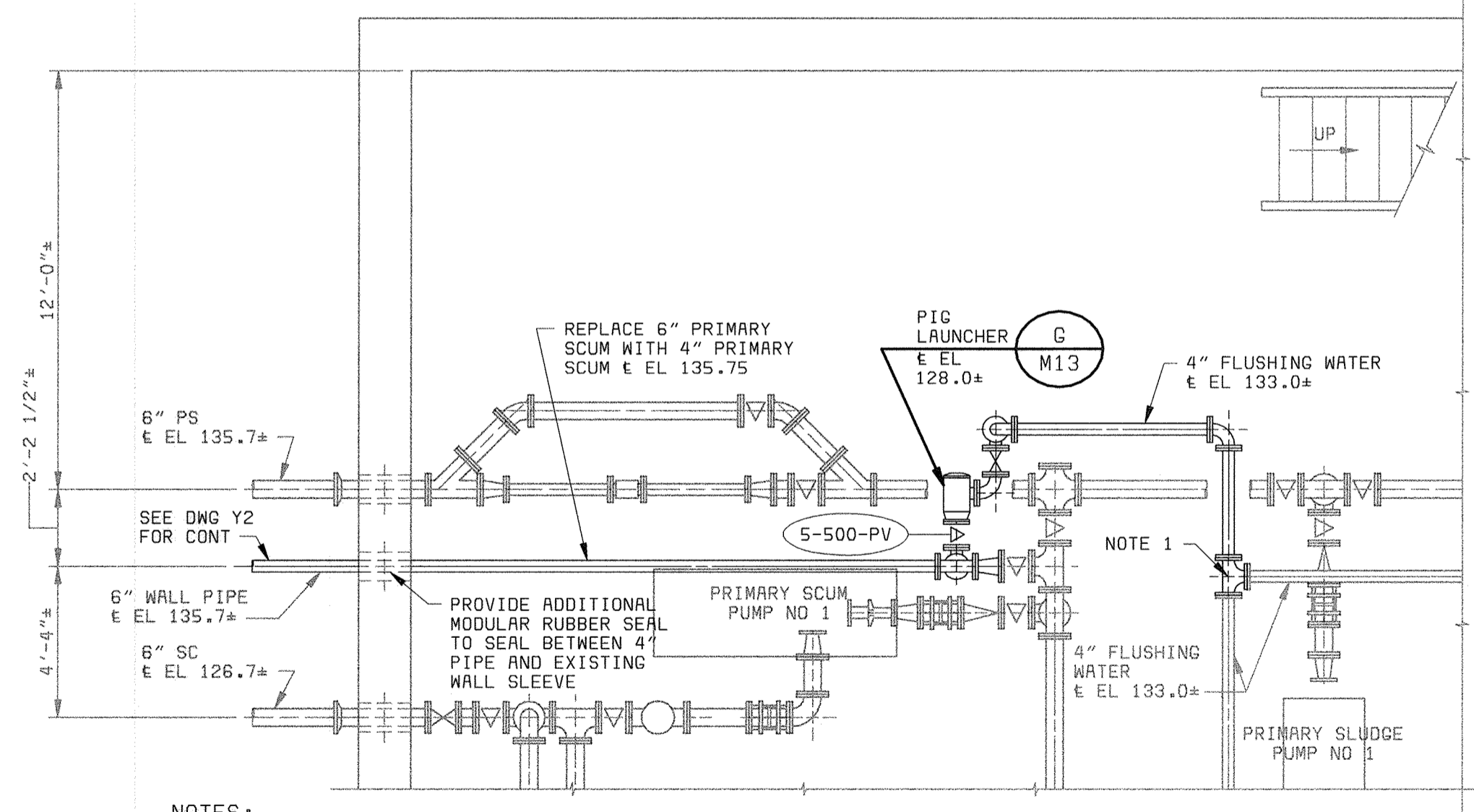
NOTES:

1. REPLACE EXIST. 8" TEE WITH NEW 8" CROSS.
2. NEW 8" TEE.
3. REPLACE EXIST. 6" TEE WITH NEW 6" CROSS.
4. REPLACE EXIST 6" ELBOW WITH NEW 6" TEE.
5. IF NECESSARY, INSTALL FLUSHING WATER SHUTOFF VALVE IN VERTICAL POSITION.



SECTION 1
3/8" = 1'-0" M12

SECTION 2
3/8" = 1'-0" M12

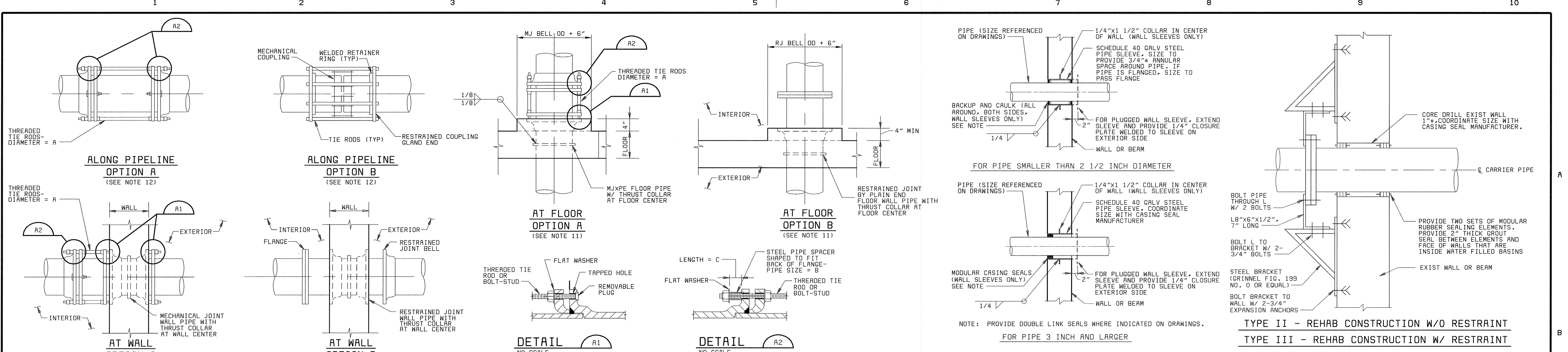


NOTES:

1. REPLACE EXIST 4" ELBOW WITH NEW 4" TEE AS SHOWN.
2. THE CONNECTION FROM THE PIG LAUNCHER INTO THE PROPOSED 4" SCUM PIPE SHALL BE THROUGH A Y-FITTING INSTALLED IN THE 4" SCUM PIPE. THE MAIN LINE OF THE Y SHALL BE HORIZONTAL AND THE BRANCH SHALL BE INSTALLED DOWN AND TO THE RIGHT IN THE DRAWING. THE BRANCH SHALL CONNECT AT 45 DEGREE BEND WHICH SHALL CONNECT TO THE VERTICAL PIPE FROM THE PIG LAUNCHER.

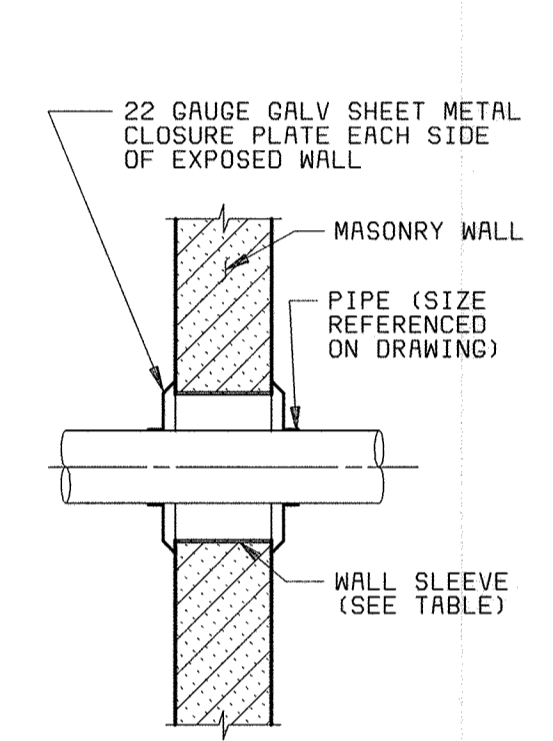
NORTH PUMPING STATION - PARTIAL BASEMENT PLAN
1/4" = 1'-0"

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND. NO. 22927	DES: FKA							NORTH & SOUTH PUMP STATIONS MECHANICAL BASEMENT PLANS AND SECTIONS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: GRH	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR						
			CHK: WLK	06/27/01	ADDENDUM NO. 3							
			DATE: 2/19/01		ADDENDUM NO. 1							M12
				DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP			



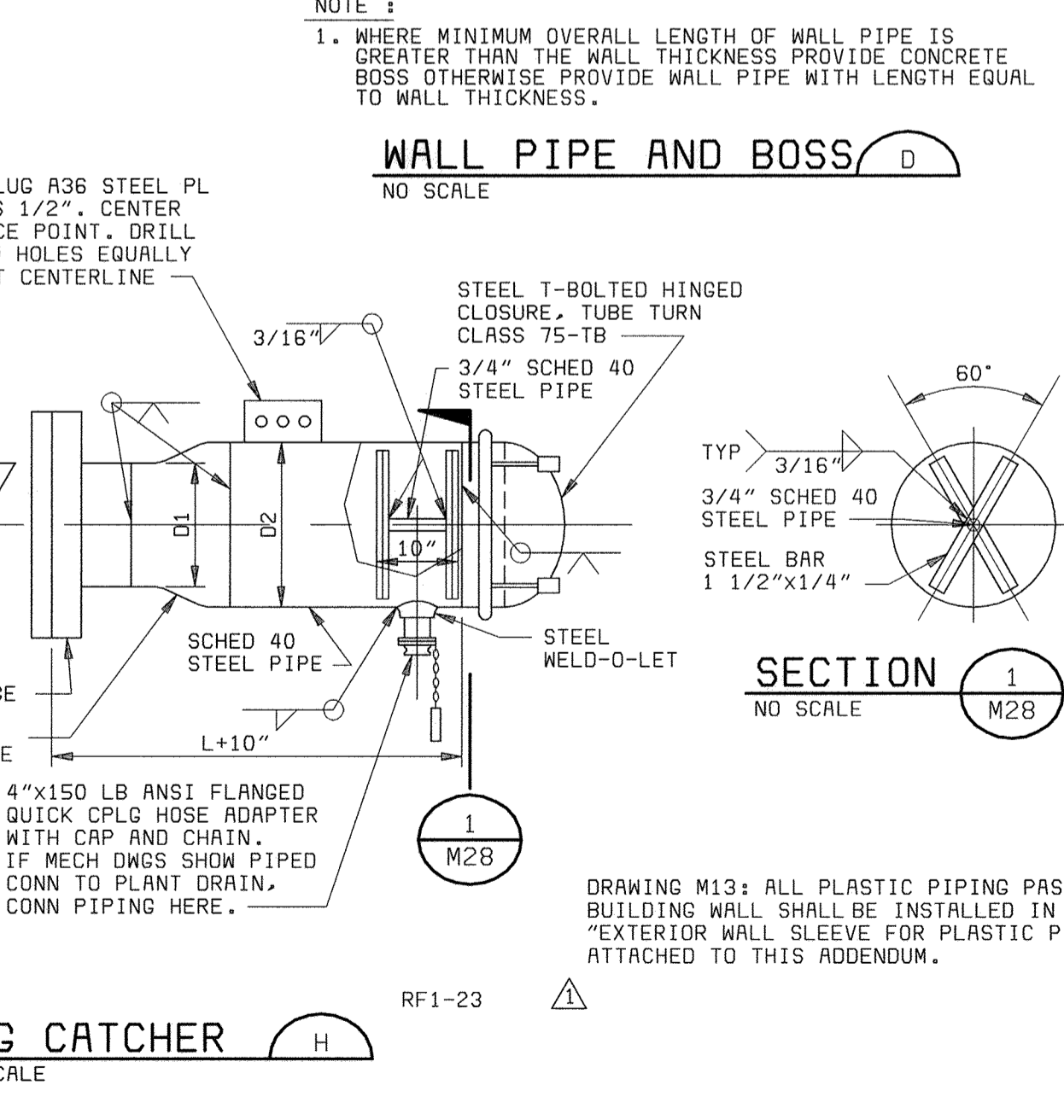
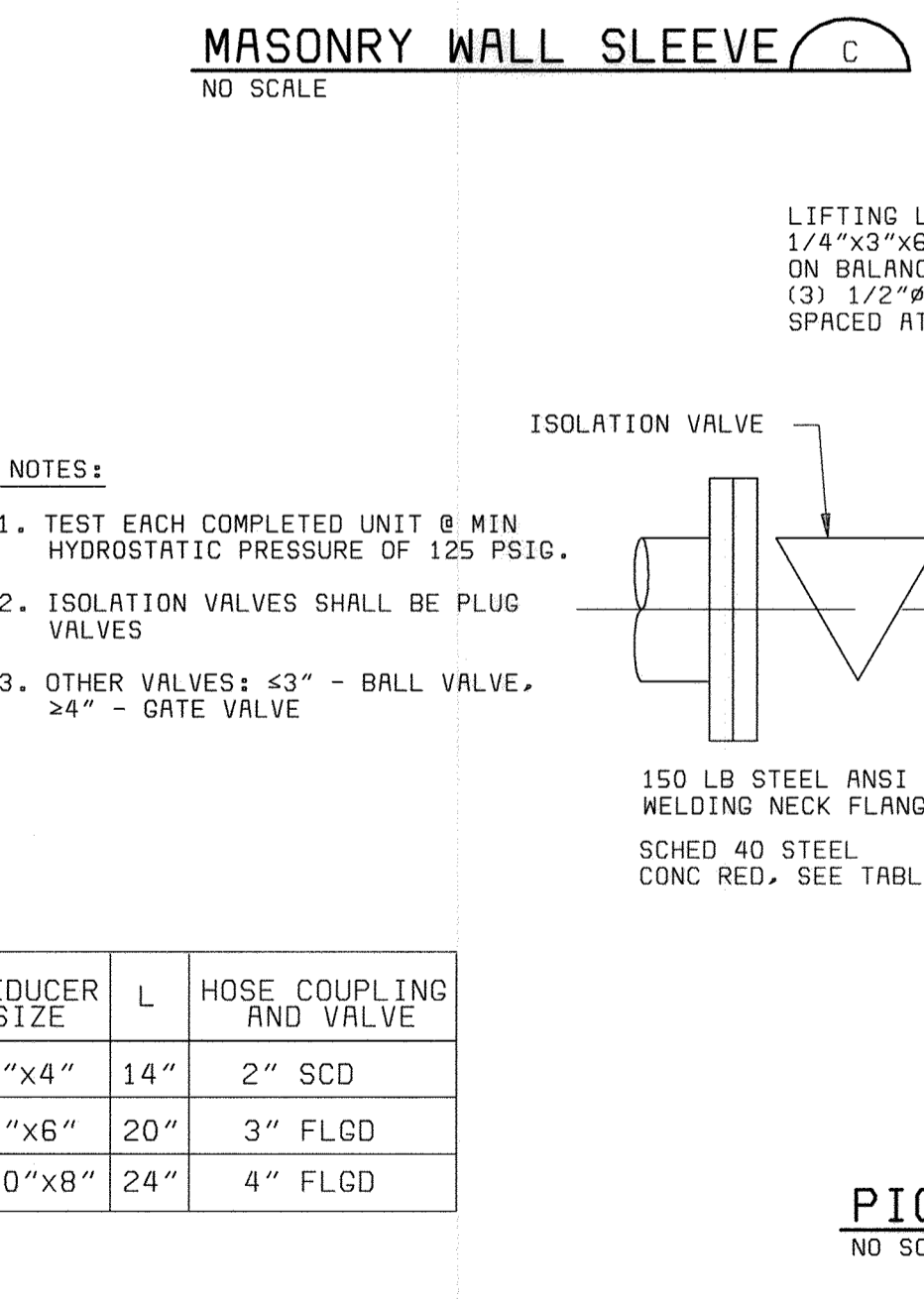
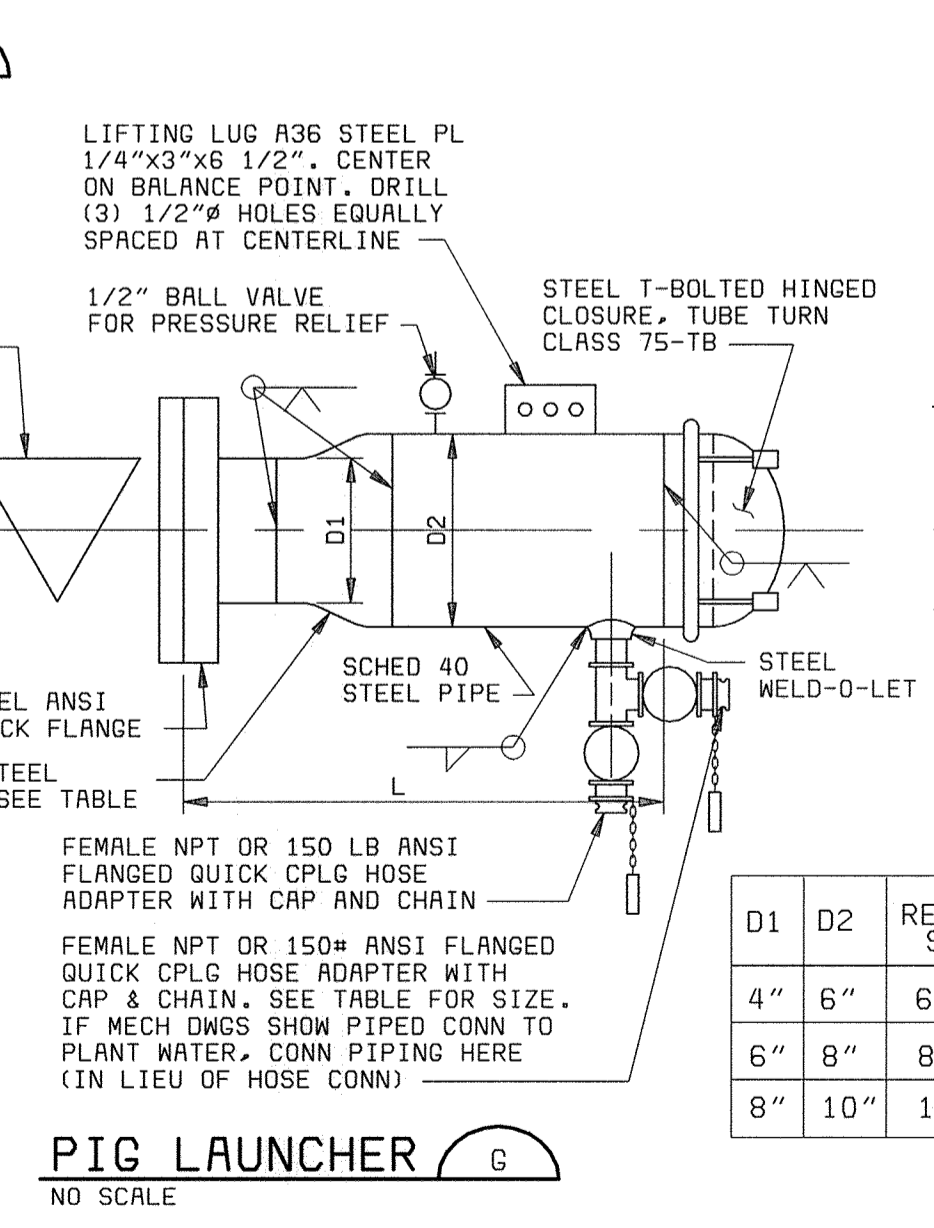
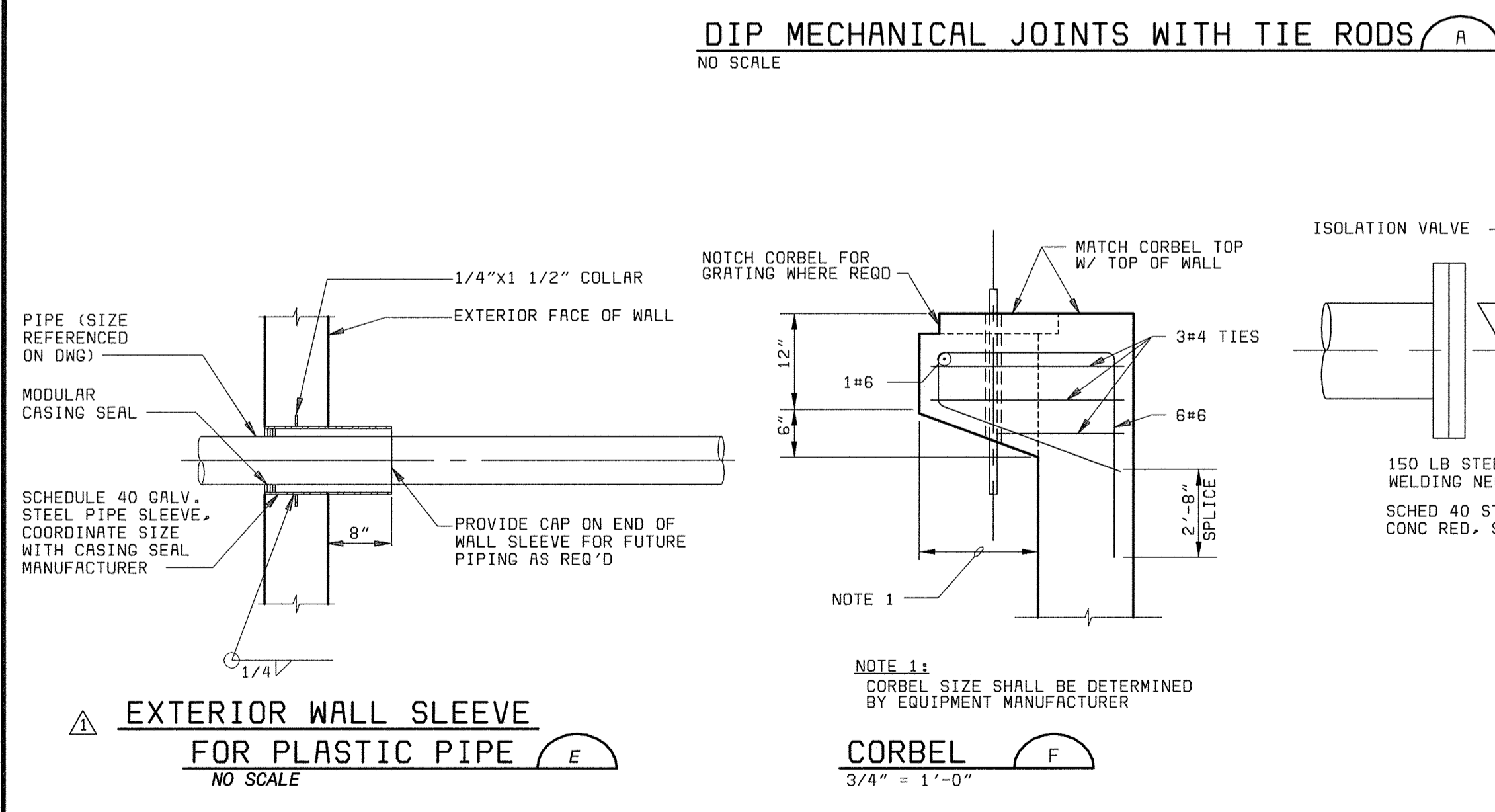
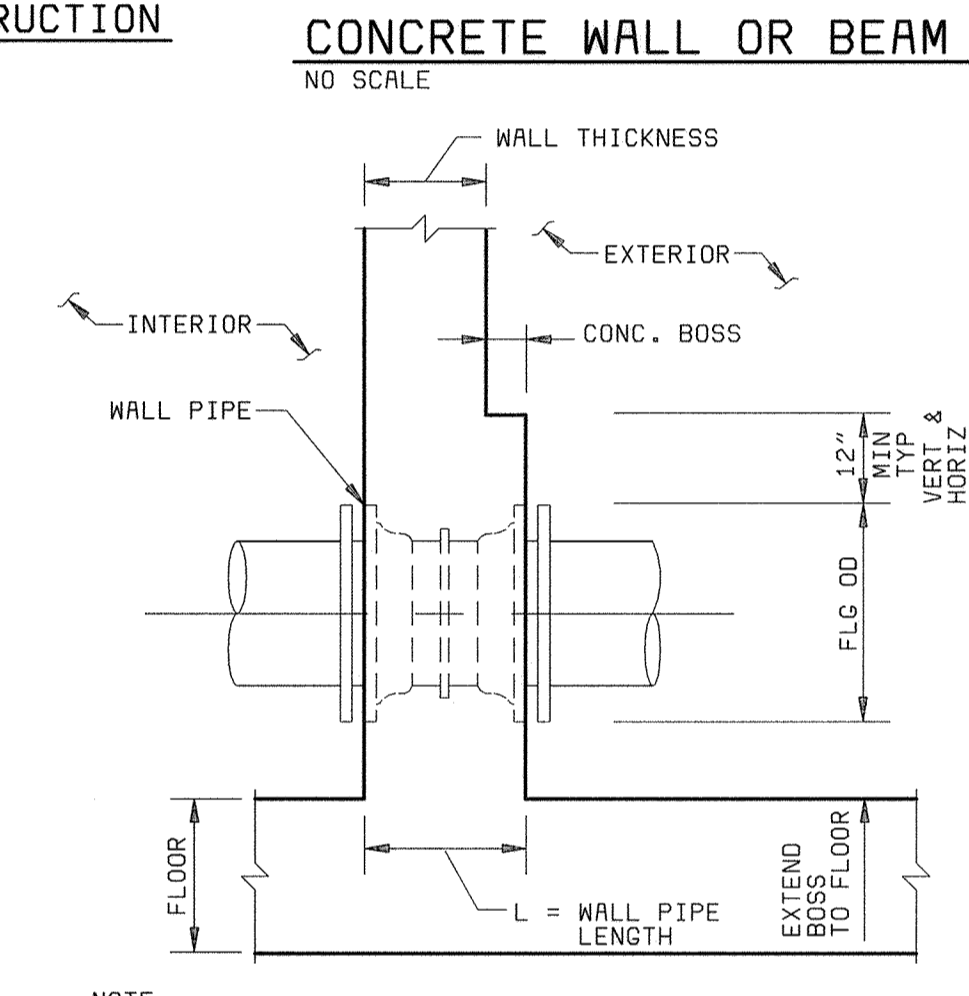
PIPE SIZE	A TIE ROD DIAMETER	B SPACER NOM. DIA	C SPACER LENGTH	NO. RODS
3" - 8"	3/4"	3/4"	2 1/2"	2
10" - 12"	3/4"	1"	2 1/2"	2
14"	3/4"	1"	3 1/2"	2
16" - 20"	3/4"	1"	3 1/2"	4
24"	3/4"	1"	3 1/2"	6
30"	1"	1 1/4"	4"	8
36"	1"	1 1/4"	4"	8
42"	1 1/4"	1 1/2"	4"	8
48"	1 1/4"	1 1/2"	4"	12

- NOTES:**
- EXCEPT WHERE TIE RODS ARE REQUIRED, BOLTS FOR FOLLOWER RINGS SHALL BE BOLT-STUDS ON ALL WALL PIPES AND TEE HEAD BOLTS IN OTHER LOCATIONS.
 - WALL PIPE FITTINGS SHALL BE DUCTILE IRON AND SHALL HAVE A PRESSURE RATING NOT LESS THAN 250 PSI.
 - TIE RODS SHALL BE INSTALLED IN PAIRS, DIAMETRICALLY OPPOSITE EACH OTHER, IN THE BOLT CIRCLE OF THE PIPE.
 - ALL BOLT HOLES IN THE WALL OR FLOOR CASTINGS SHALL BE DRILLED AND TAPPED AND SIZED IN ACCORDANCE WITH COLUMN A. PLASTIC PROTECTIVE CAPS OR THREADED INSERTS SHALL BE PLACED IN THE TAPPED BOLT HOLES TO PROTECT THE BOLT HOLES FROM FILLING WITH CONCRETE DURING THE PLACEMENT OF CONCRETE. EXTENSIONS OF THE CAP OR THREADED INSERT SHALL HAVE SUFFICIENT LENGTH TO PLACE BOLT IN FINAL POSITION.
 - BOLT HOLES IN ALL WALL CASTINGS, EXCEPT IN 6, 8, AND 14 INCH PIPE SIZES, SHALL BE ORIENTED WITH THE BOLT HOLES STRADDLING THE VERTICAL CENTERLINE OF HORIZONTAL PIPE.
 - BOLT HOLES IN WALL CASTINGS FOR 6, 8, 14, AND 20 INCH PIPE SIZES SHALL BE ORIENTED ON THE HORIZONTAL CENTERLINE OF HORIZONTAL PIPE.
 - BOLT HOLES FOR FLOOR CASTINGS SHALL BE PLACED SIMILAR TO WALL CASTINGS.
 - TIE ROD MATERIALS SHALL BE ASTM A307 OR EQUAL FOR ALL DUCTILE IRON WALL AND FLOOR CASTINGS. HIGH STRENGTH BOLT MATERIALS SHALL NOT BE USED IN HARNESSING PIPE JOINTS TO DUCTILE IRON PIPE OR WALL PIPE CASTINGS.
 - ALL WALL AND FLOOR CASTINGS SHALL BE NOTCHED OR PERMANENTLY MARKED AT THE TWO PIPE CENTERLINES.
 - TIE ROD INSTALLATION AT MECHANICAL JOINT WALL OR FLOOR SLEEVES SHALL BE THE SAME AS USED FOR MECHANICAL JOINT WALL OR FLOOR PIPES.
 - AT CONTRACTOR'S OPTION, RESTRAINED JOINT WALL PIPES MAY BE USED IN PLACE OF MECHANICAL JOINT WALL OR FLOOR PIPES SHOWN ON THE DRAWINGS WHERE APPROPRIATE LENGTHS ARE AVAILABLE AND SPACE FOR TRANSITION PIECES ARE AVAILABLE. FLANGE WALL PIPES WILL NOT BE ACCEPTABLE UNLESS OTHERWISE INDICATED.
 - AT CONTRACTOR'S OPTION, RESTRAINED COUPLING GLAND ENDS (AS MANUFACTURED BY AMERICAN CAST IRON PIPE COMPANY) WITH MECHANICAL COUPLING MAY BE USED IN PLACE OF HARNESSING MECHANICAL JOINTS AS SHOWN ON THE DRAWINGS WHERE SPACE IS AVAILABLE.



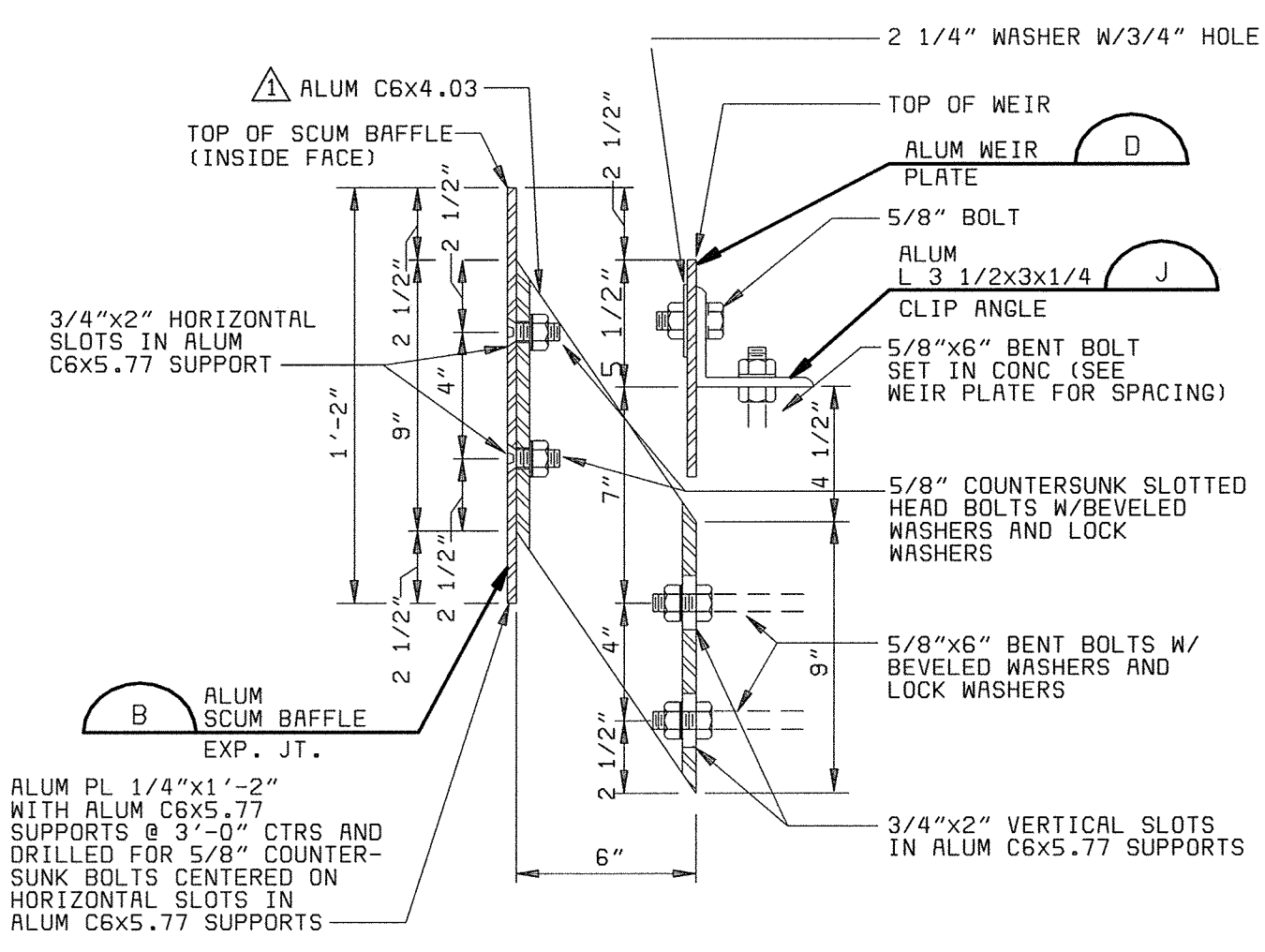
WALL SLEEVE TABLE

PIPE SIZE	SLEEVE SIZE (UNLESS OTHERWISE INDICATED)
1" & SMALLER	3" (1)
1 1/4" & 1 1/2"	3 1/2" (1)
2"	4" (1)
3"	6" (2) (4)
4"	6" (2) (4)
6"	8" (3) (4)
8" & LARGER	PIPE OD+2" (3) (4)



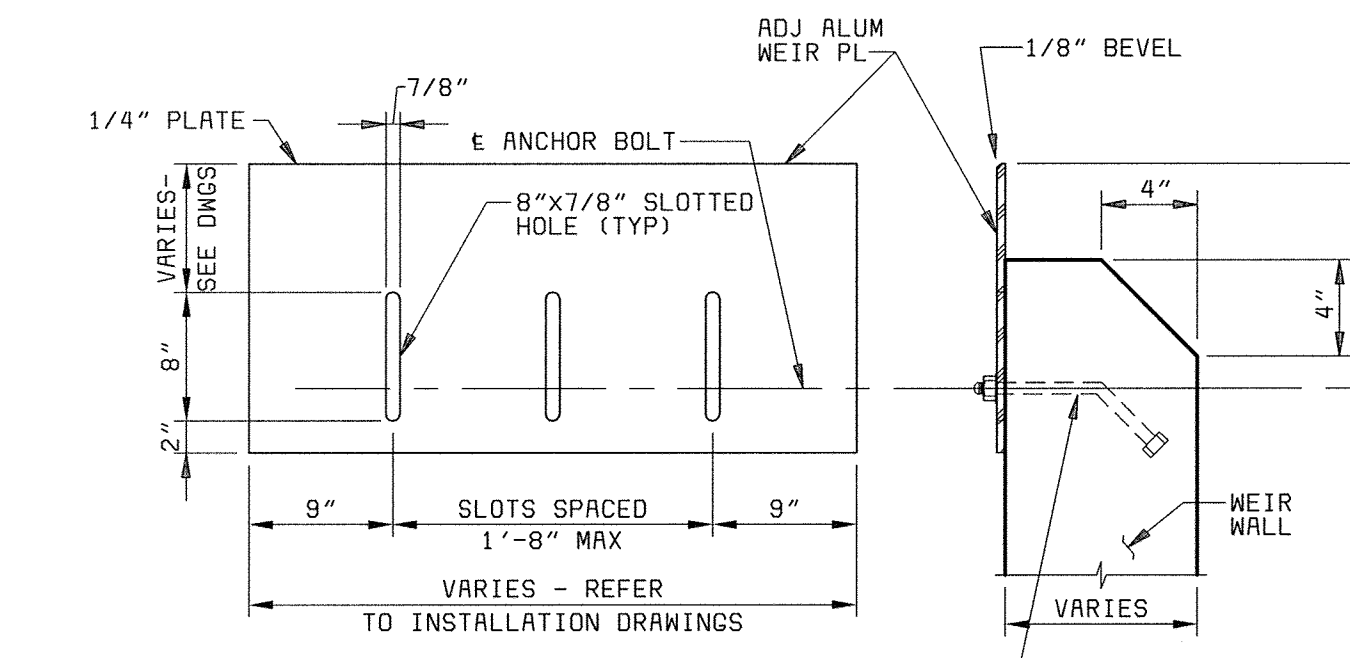
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENCR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: DMP DRN: WHS,VVR CHK: WLK DATE: 2/19/01	05/05/05 06/27/01	CONFORMED TO CONSTRUCTION RECORDS ADDENDUM NO. 3	GENERAL MECHANICAL MISCELLANEOUS DETAILS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 50 OF 88 M13
			REVISIONS AND RECORD OF ISSUE NO. BY CK APP	HOWARD COUNTY, MARYLAND				

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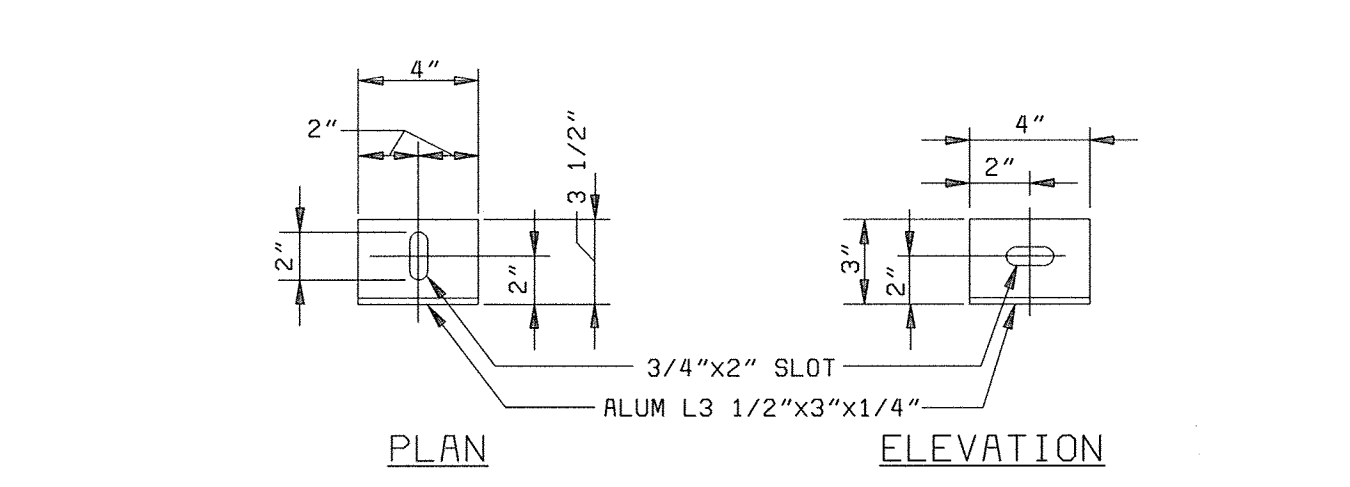


- NOTES:**
1. SURFACE OF CONCRETE AND ADJACENT SIDE OF WEIR PLATE TO BE COATED WITH A HEAVY LAYER OF SEALANT PRIOR TO PLACING WEIR PLATE.
 2. ALL BOLTS, NUTS, AND WASHERS TO BE STAINLESS STEEL.
 3. 5/8" EPOXY COATED THREADED ROD MAY BE USED IN LIEU OF ANCHOR BOLTS AT CONTRACTORS OPTION.
 4. ALL SURFACES OF ALUMINUM IN CONTACT WITH CONCRETE SHALL BE COATED WITH COAL TAR PAINT.
 5. SEE SPECIFICATION SECTION 05990, STRUCTURAL AND MISCELLANEOUS METALS FOR ADDITIONAL REQUIREMENTS.
 6. SEE SPECIFICATION SECTIONS 11410 AND 11435, CIRCULAR CLARIFYING EQUIPMENT AND SECONDARY WASTE WATER TREATMENT CLARIFYING EQUIPMENT, FOR MODIFICATIONS TO WEIR AND SCUM BAFFLE IN VICINITY OF SCUM BOXES.

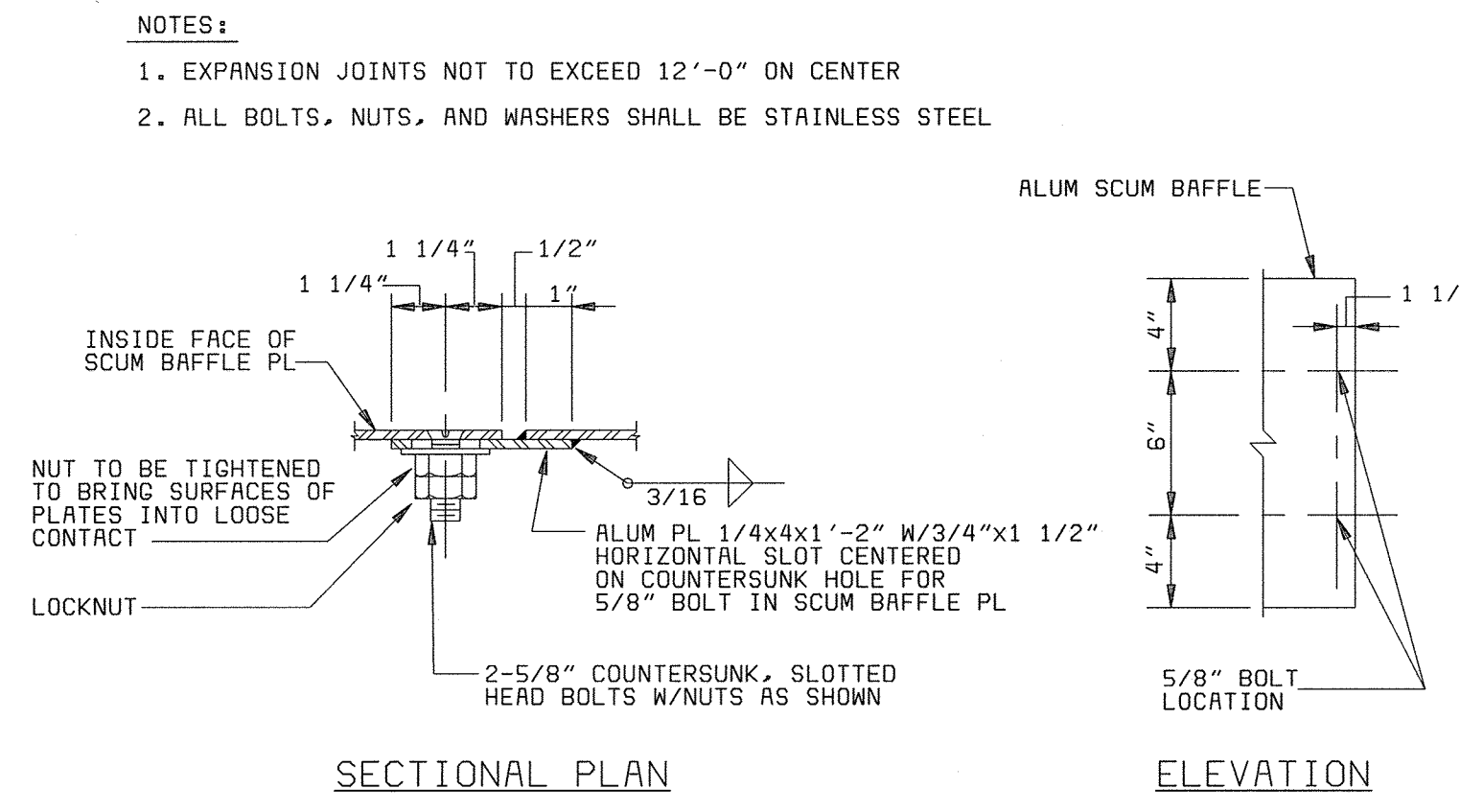
SCUM BAFFLE & WEIR SUPPORT (A)
NO SCALE



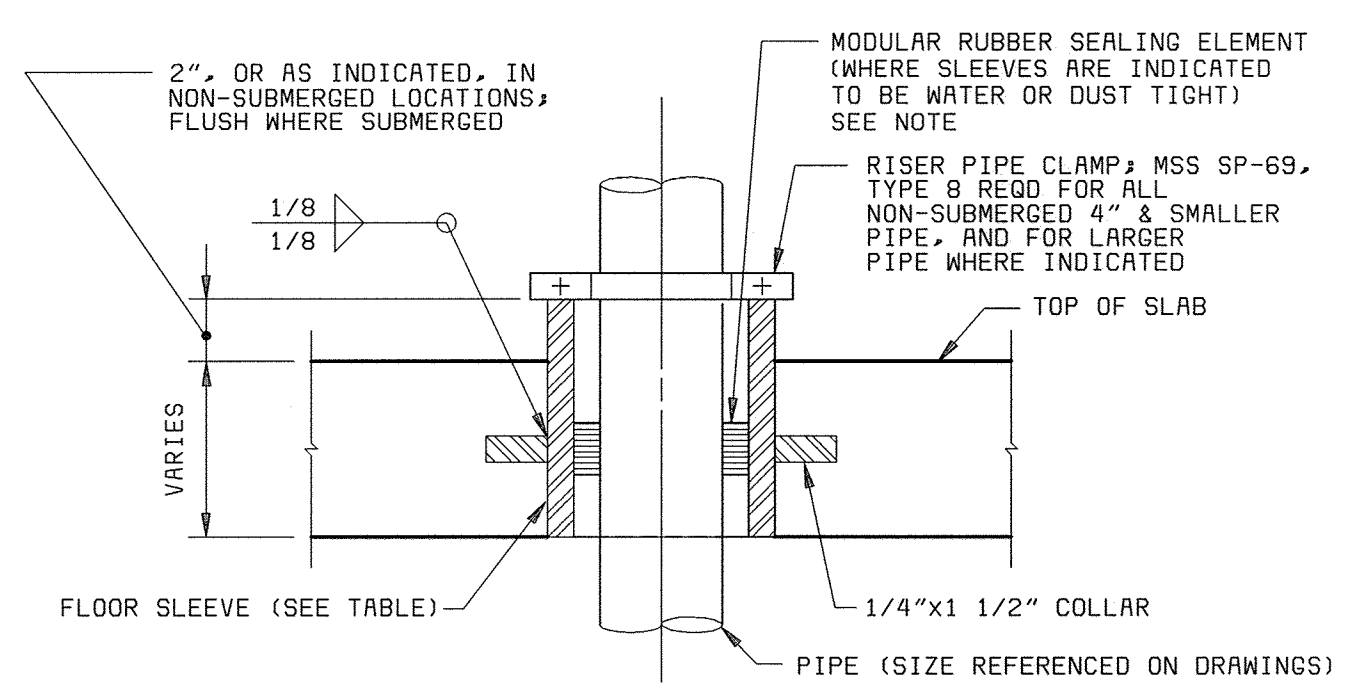
WEIR PLATE (E)
NO SCALE



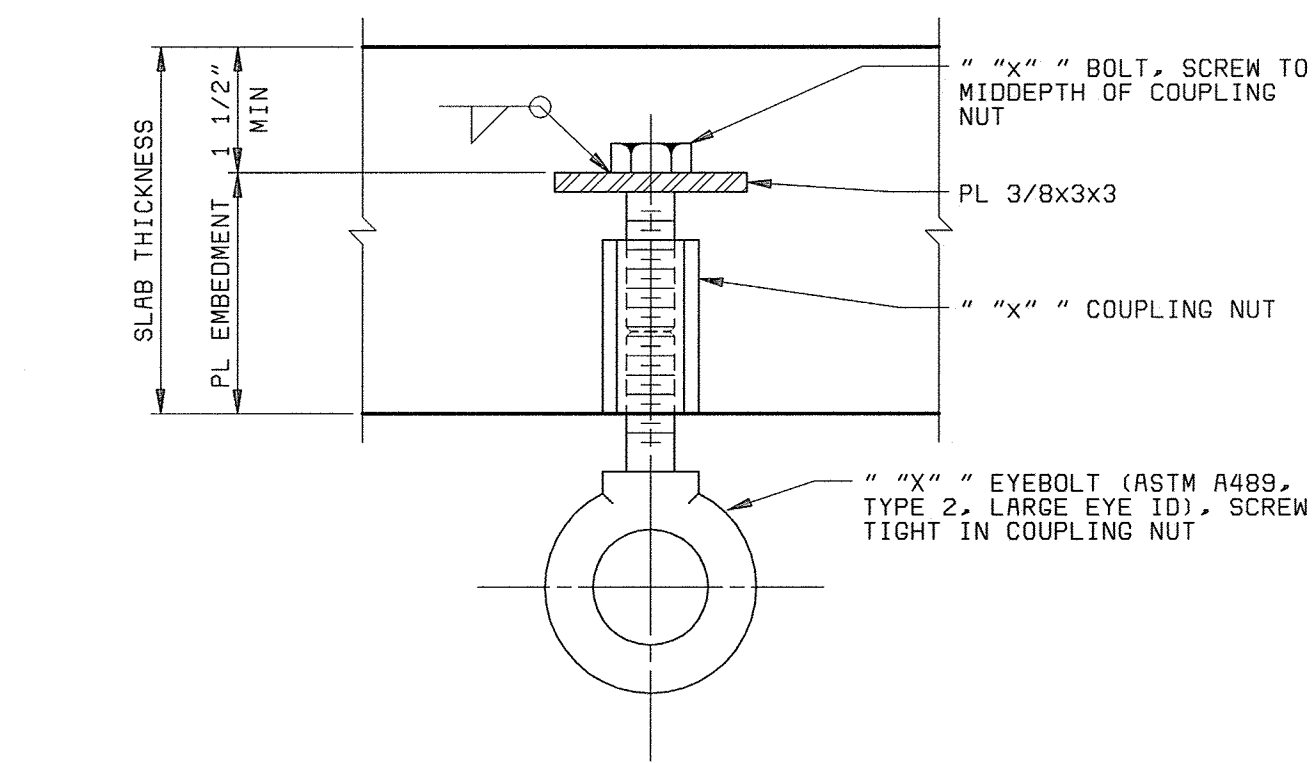
WEIR CLIP ANGLE (J)
NO SCALE



SCUM BAFFLE EXPANSION JOINT (B)
1" = 1'-0"

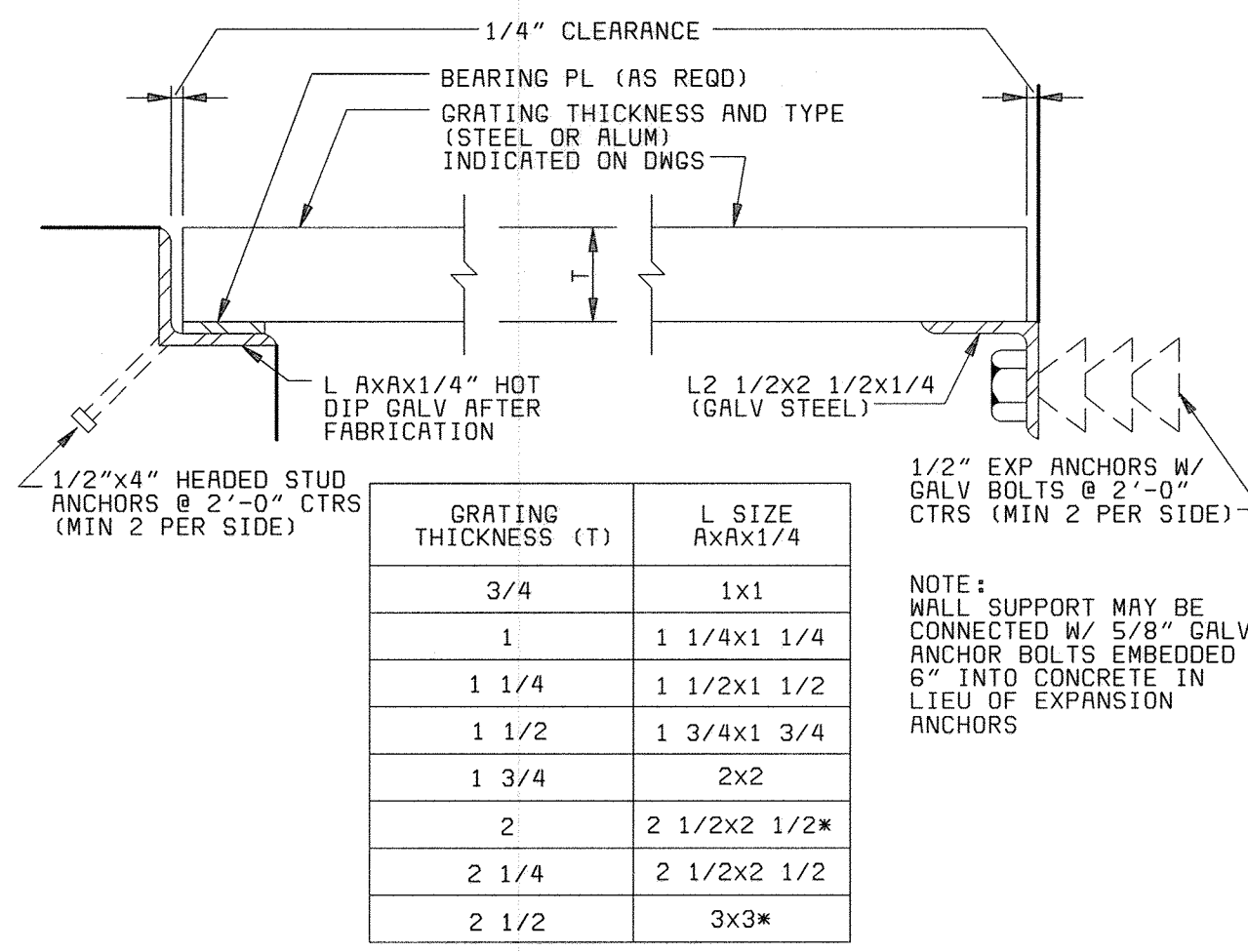


FLOOR SLEEVE NEW CONSTRUCTION (F)
NO SCALE



TYPICAL EYEBOLT (K)
NO SCALE

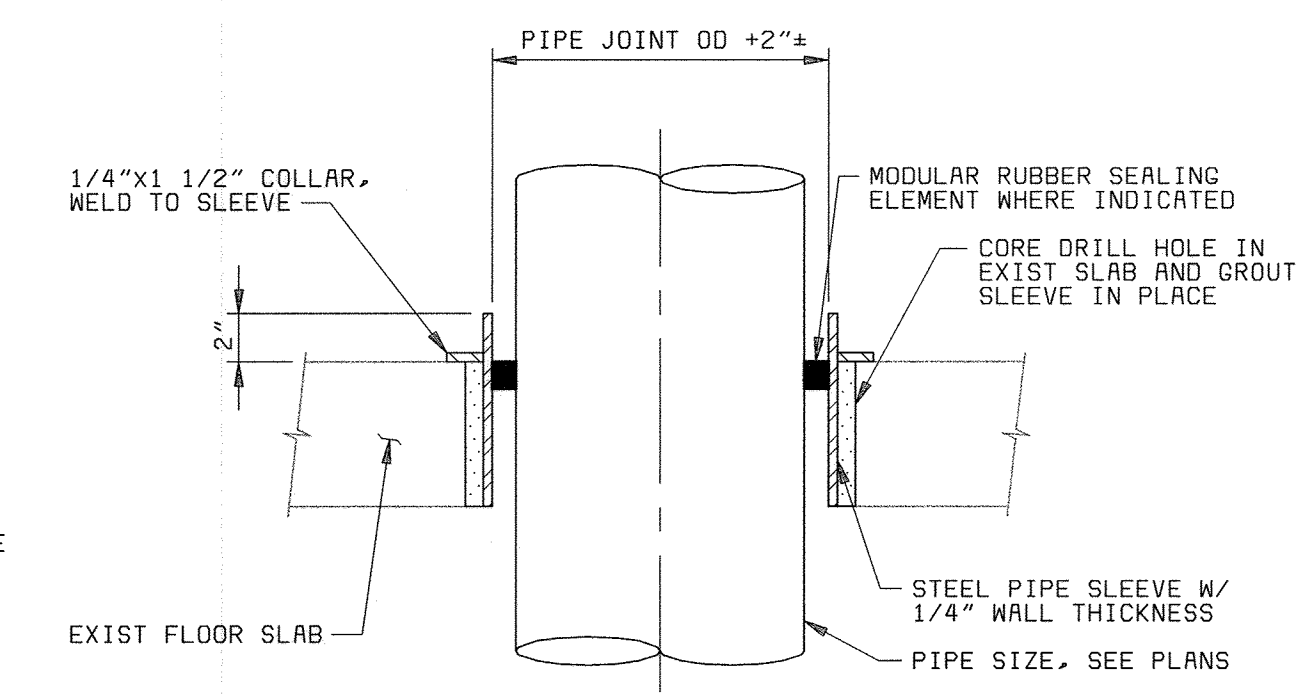
SAFE WORKING LOAD-POUNDS	BOLT SIZE DIA X LENGTH (IN)	SLAB THICKNESS (MINIMUM)	PL EMBED DEPTH (MINIMUM)	COUPLING NUT SIZE DIA X LENGTH IN	EYEBOLT SIZE IN
4000	3/4 x 3 1/4	6	4	3/4 x 2 1/4	3/4
6000	3/4 x 5 1/4	8	6	3/4 x 2 1/4	3/4
8000	1 x 5	8	6	1 x 3	1



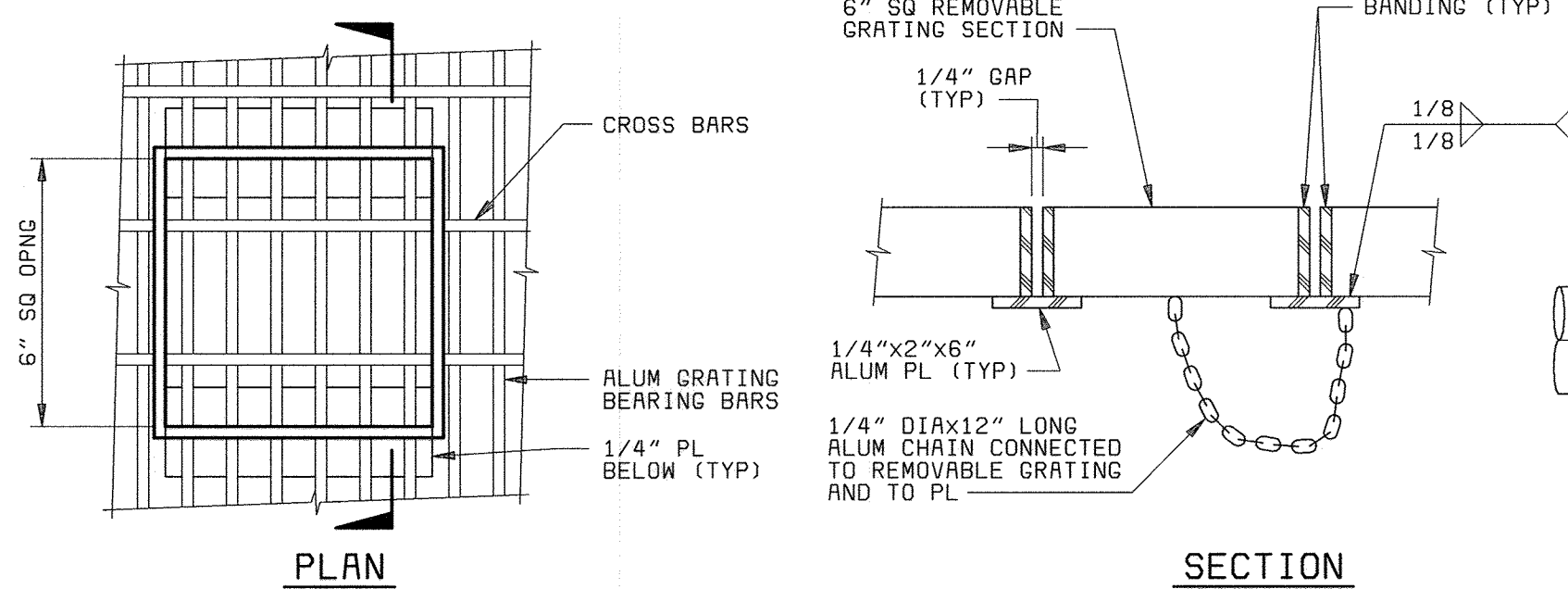
GRATING THICKNESS (T)	L SIZE AXAX1/4
3/4	1x1
1	1 1/4x1 1/4
1 1/4	1 1/2x1 1/2
1 1/2	1 3/4x1 3/4
1 3/4	2x2
2	2 1/2x2 1/2
2 1/4	2 1/2x2 1/2
2 1/2	3x3

- NOTES:**
- * 1/4" BEARING PL REQD. (WELD TO L)
 - NOTE: WHERE NOTED ON PLANS, USE ALUMINUM ANGLES AND SS ANCHORS SAME SIZE AS CALLED OUT ABOVE FOR GALVANIZED.

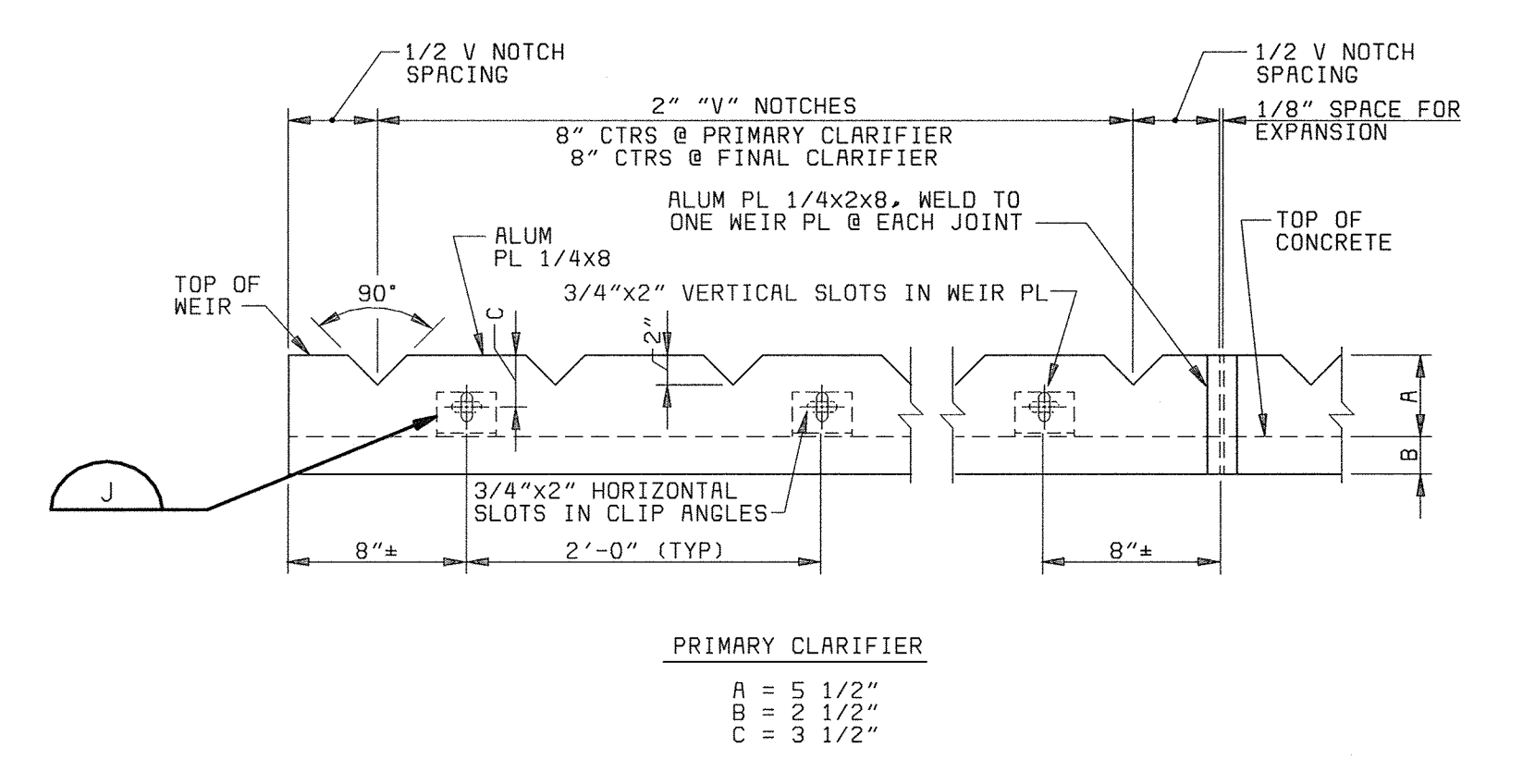
GRATING SUPPORT (C)
NO SCALE



FLOOR SLEEVE REHAB CONSTRUCTION (G)
NO SCALE



REMOVABLE GRATING DETAIL (L)
NO SCALE

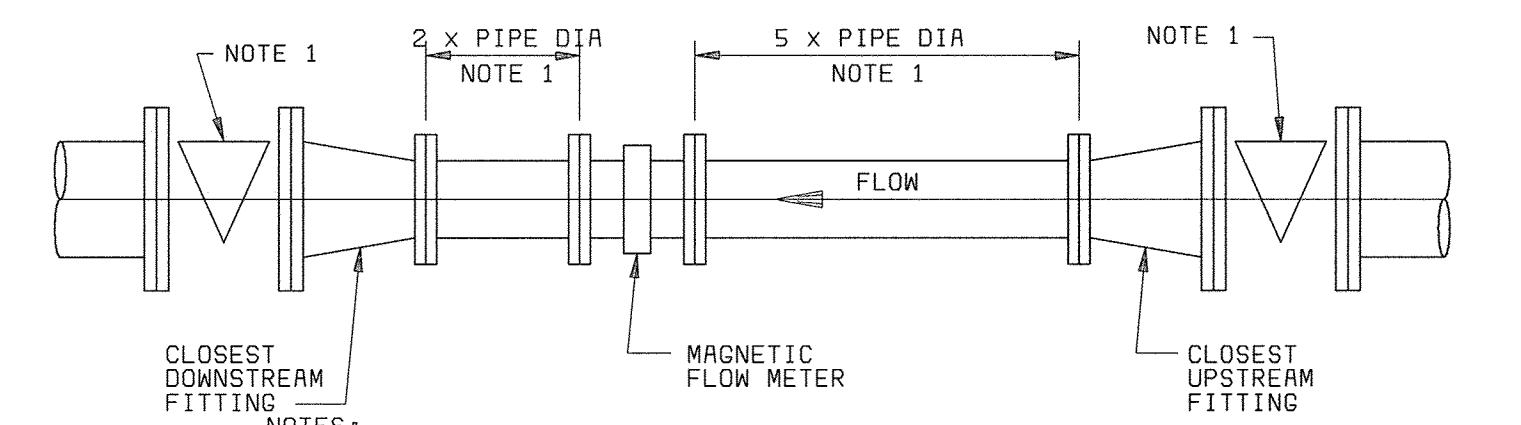


V-NOTCH WEIR PLATE (D)
NO SCALE

- NOTES:**
1. TOP EDGE OF WEIR PL. & "V" NOTCHES TO BE MACHINED TO A TRUE EDGE. SURFACE OF CONC. & ADJACENT SIDE OF WEIR PL. TO BE COATED W/ HEAVY LAYER OF SEALANT PRIOR TO INSTALLATION. WEIR PL.'S FOR CIRCULAR TANKS TO BE BENT TO RADIUS. MAXIMUM WEIR PLATE LENGTH 11'-4".
 2. ALL SURFACES OF ALUMINUM IN CONTACT WITH CONCRETE SHALL BE COATED WITH EPOXY ENAMEL PAINT.

- NOTE:**
1. IF D IS LESS THAN 1'-6", PROVIDE ENCASEMENT CONTINUOUS TO SLAB. IF D IS GREATER THAN 1'-6", ENCASEMENT MAY BE SEPARATED FROM SLAB UNLESS OTHERWISE INDICATED ON DRAWINGS. FILL VOID BETWEEN TOP OF ENCASEMENT AND BOTTOM OF SLAB WITH COMPACTED GRANULAR MATERIAL.
 2. PROVIDE A BELL AT THE END OF CONCRETE ENCASEMENT WHERE PIPELINE CHANGES FROM AN ENCASED PIPELINE TO A BURIED PIPELINE.

CONCRETE ENCASEMENT (H)
NO SCALE

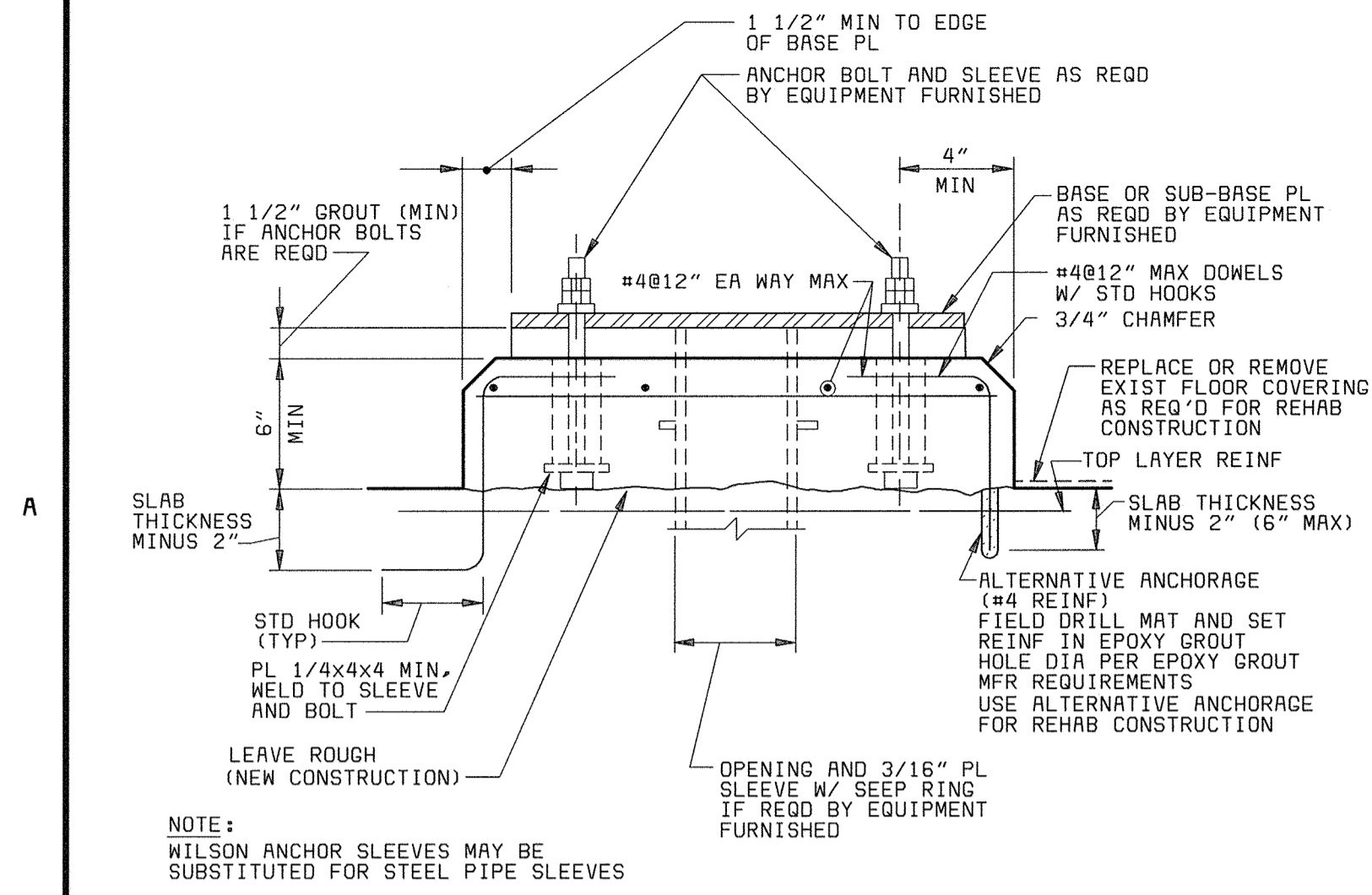


MAGNETIC FLOW METER INSTALLATION (M)
NO SCALE

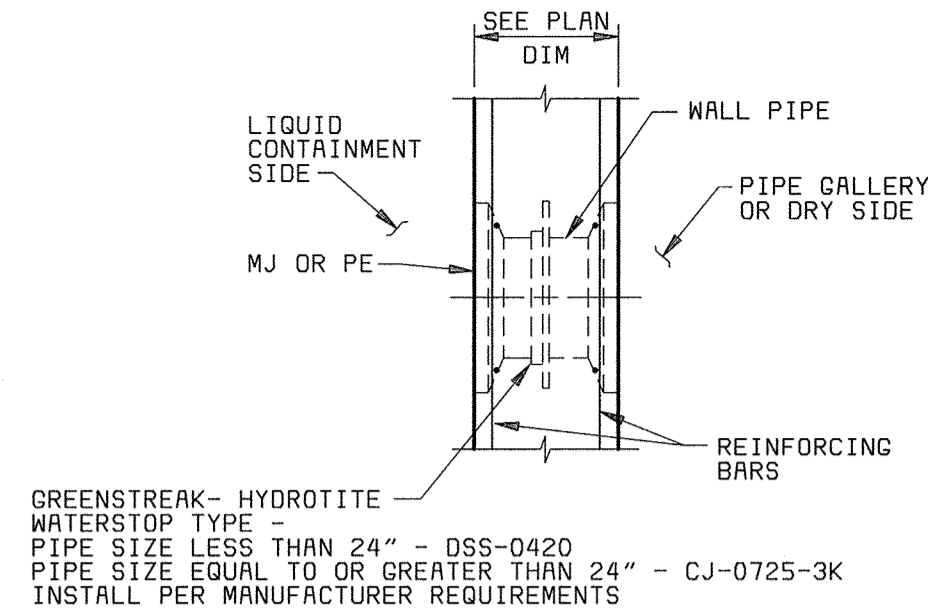
- NOTES:**
1. MINIMUM UPSTREAM AND DOWNSTREAM STRAIGHT PIPE LENGTHS SHALL BE MAINTAINED FOR ALL MAGNETIC FLOW METER INSTALLATIONS.
 2. SHUTOFF VALVES AS SHOWN ON THE DRAWINGS.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: DMP								GENERAL MECHANICAL MISCELLANEOUS DETAILS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: WHS.VVR	CHK: WLK	05/05/05	CONFORMED TO CONSTRUCTION RECORDS	RHR/RJR/RJR	NO. BY CK APP	SHEET 51 OF 88				
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE							M14	

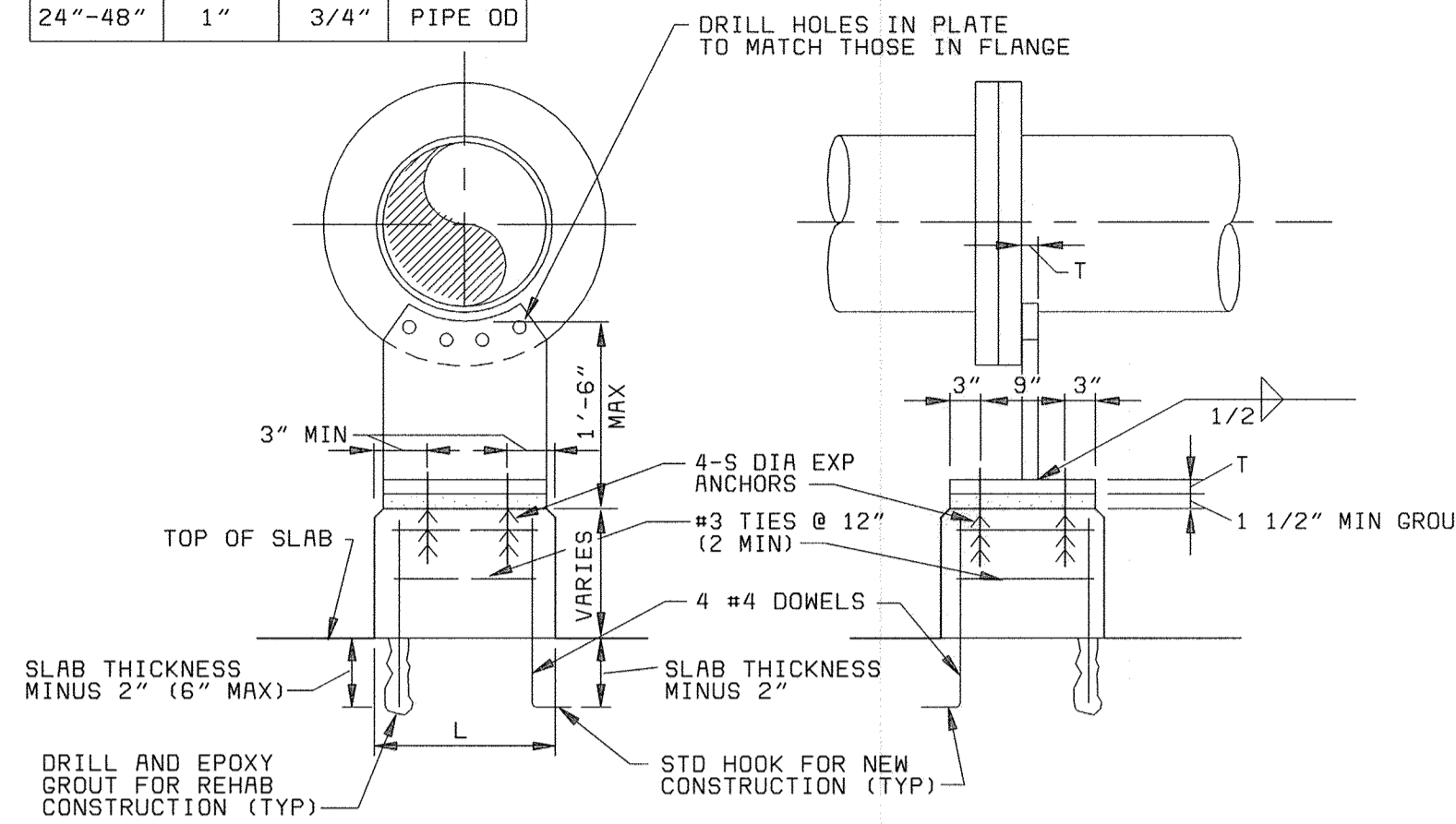
PIPE SIZE	T	S	L
<24"	3/4"	5/8"	PIPE OD
24"-48"	1"	3/4"	PIPE OD



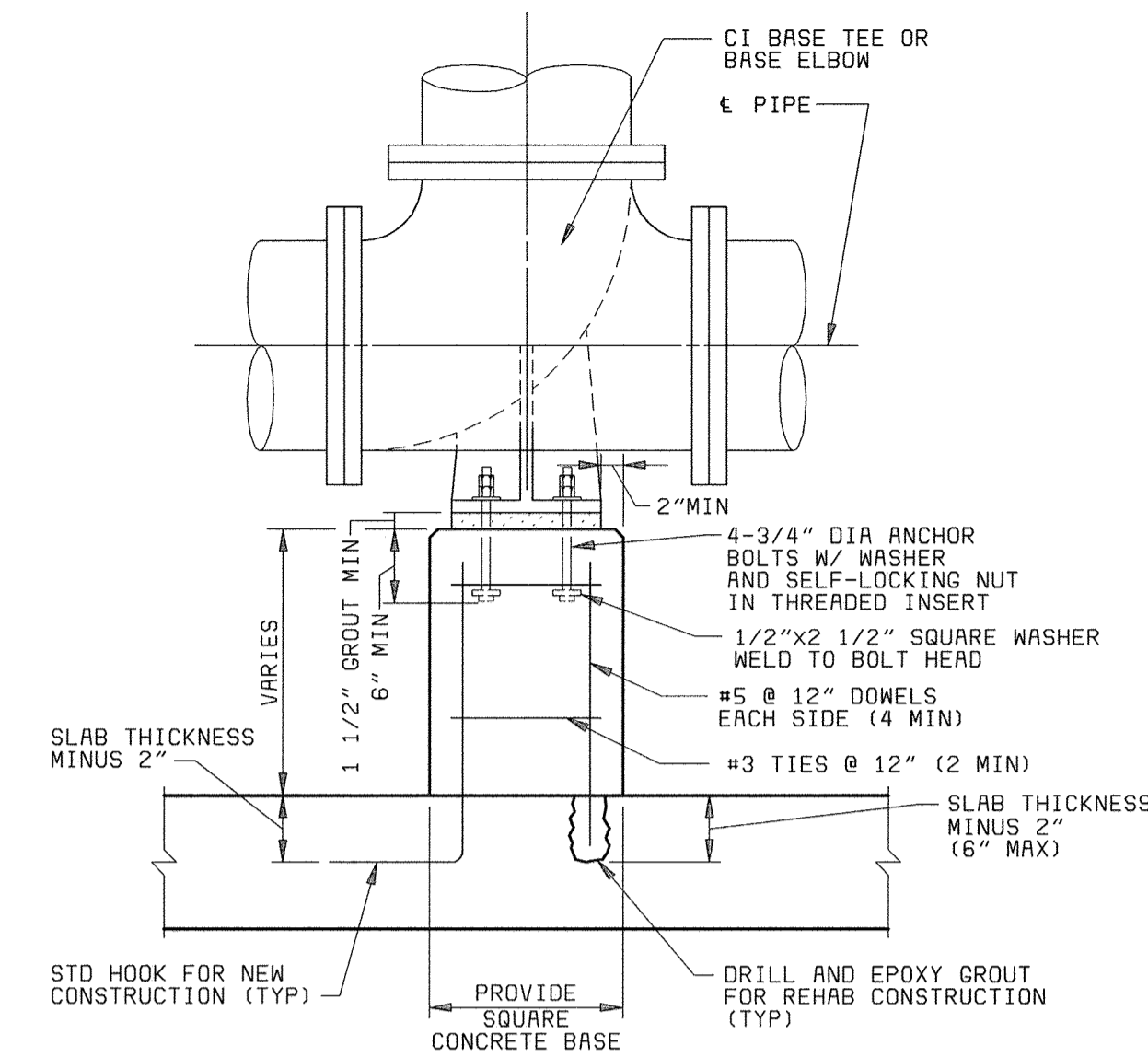
EQUIPMENT BASE (A)
NO SCALE



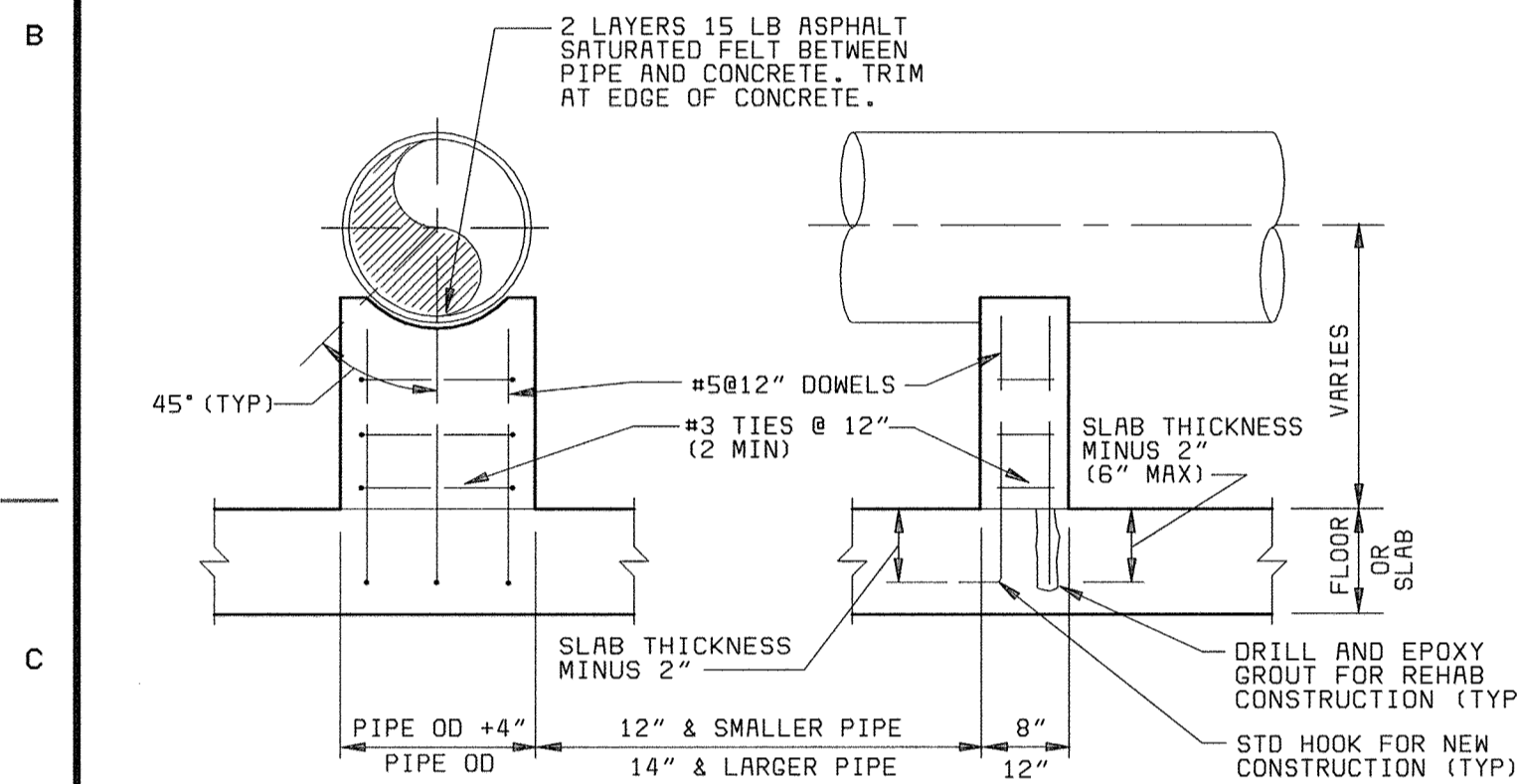
EXPANDABLE WATERSTOP (B)
3/4" = 1'-0"



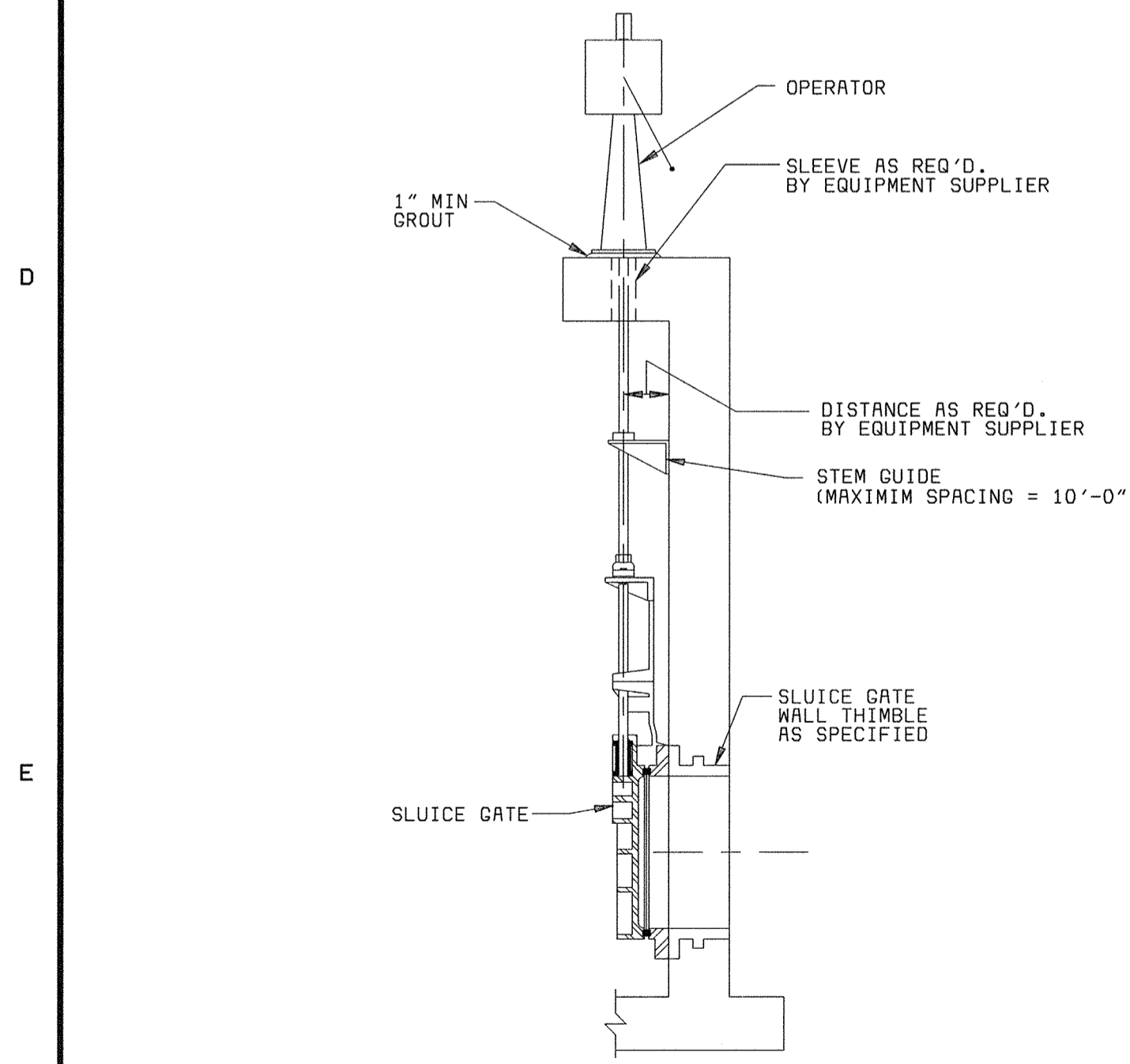
FLANGE PIPE SUPPORT (C)
NO SCALE



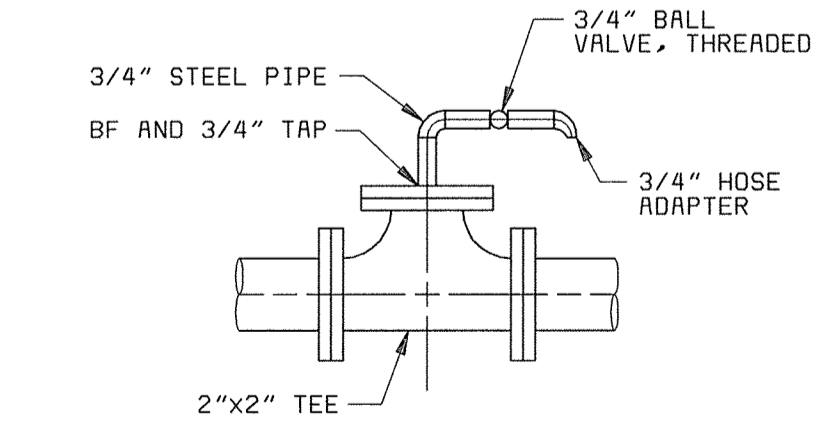
DUCTILE IRON BASE TEE OR ELBOW (D)
NO SCALE



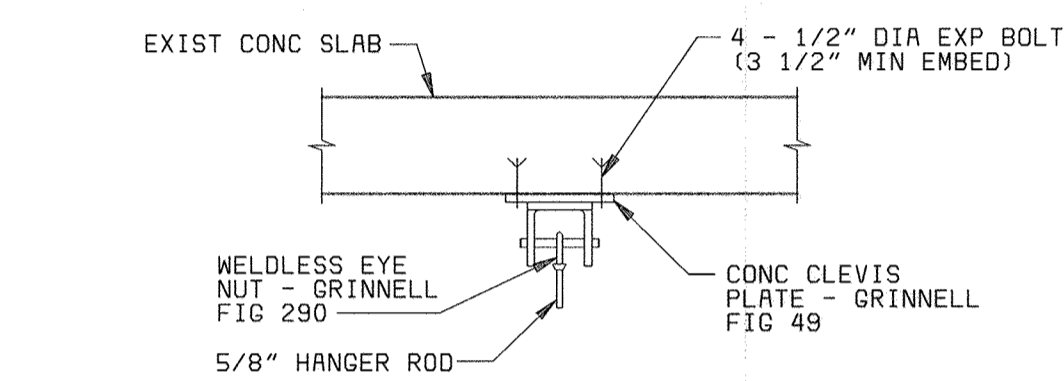
CONCRETE PIPE SUPPORT (E)
NO SCALE



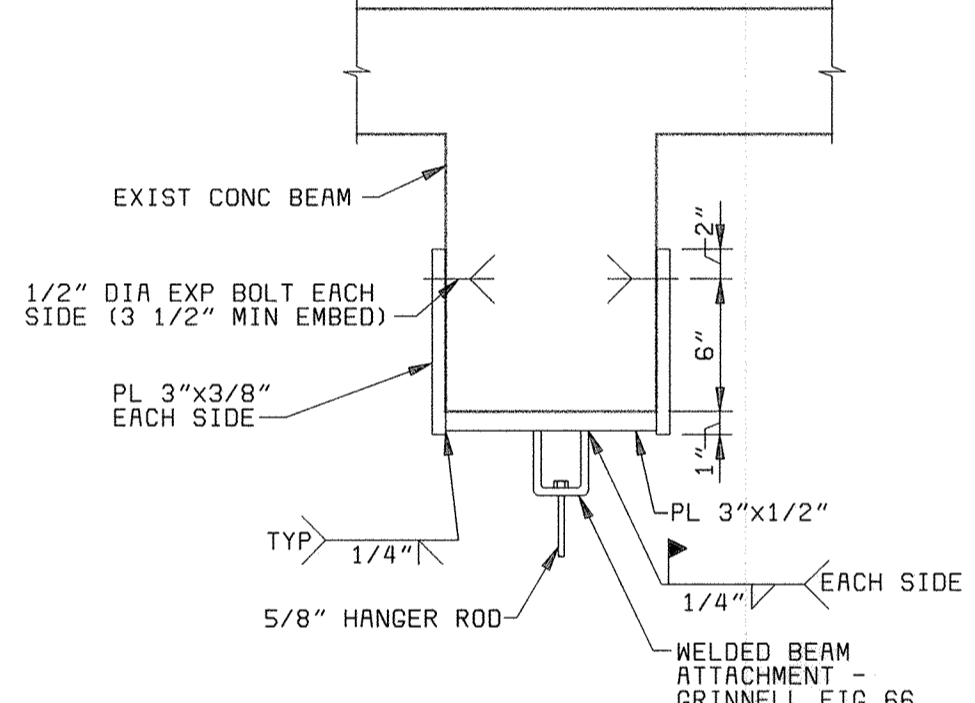
SLUICE GATE (L)
NO SCALE



AIR RELEASE VALVE DETAIL (M)
NO SCALE

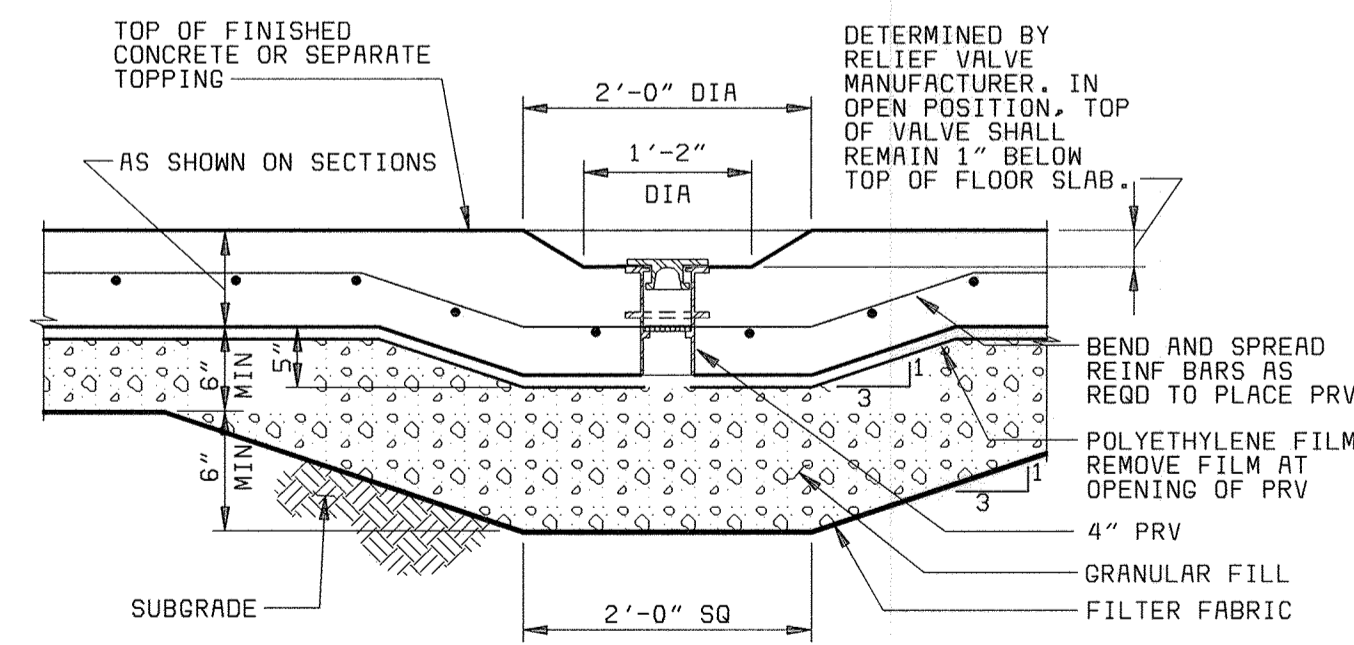


CONNECTION TO SLAB

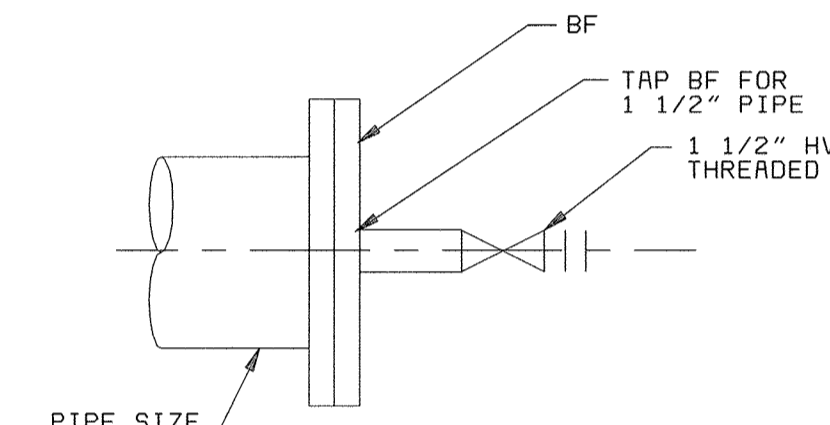


CONNECTION TO BEAM

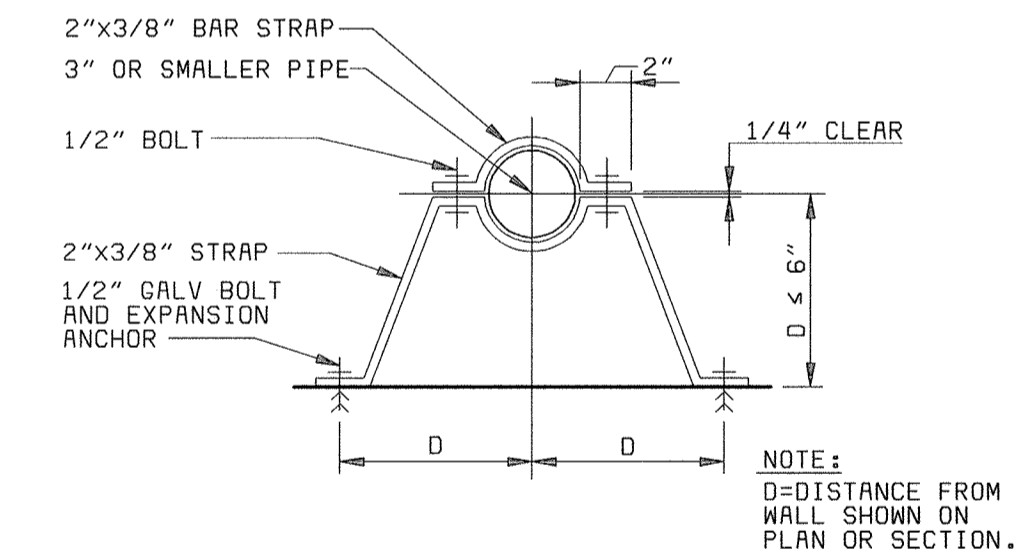
PIPE HANGER ROD SUPPORT (G)
NO SCALE (EXISTING CONSTRUCTION)



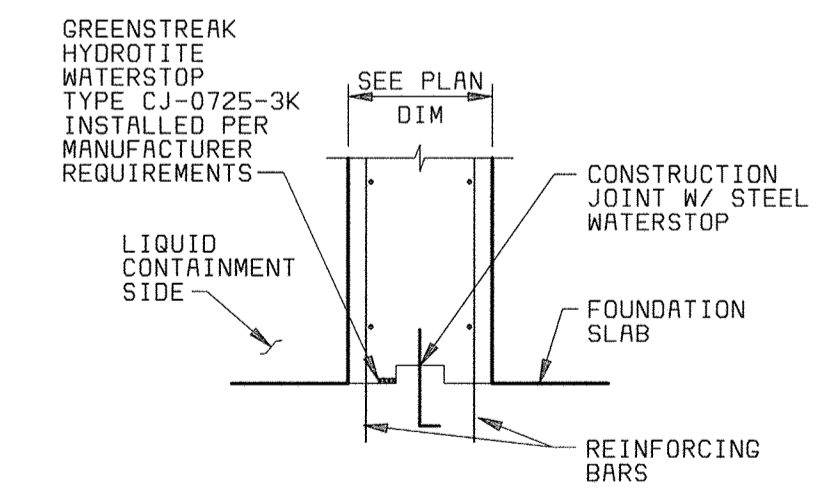
PRESSURE RELIEF VALVE (N)
NO SCALE



FLUSHING CONNECTION (J)
NO SCALE



VERTICAL PIPE SUPPORT (K)
NO SCALE



EXPANDABLE WATERSTOP (P)
3/4" = 1'-0"

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND



BLACK & VEATCH LLP
Gaithersburg, Maryland

THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
ROBERT J. RECTINUS, JR.
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 22927

DES: DMP
DRN: WHS, VVR
CHK: WLK
DATE: 2/19/01

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
05/05/05	CONFORMED TO CONSTRUCTION RECORDS				

GENERAL
MECHANICAL

MISCELLANEOUS DETAILS

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

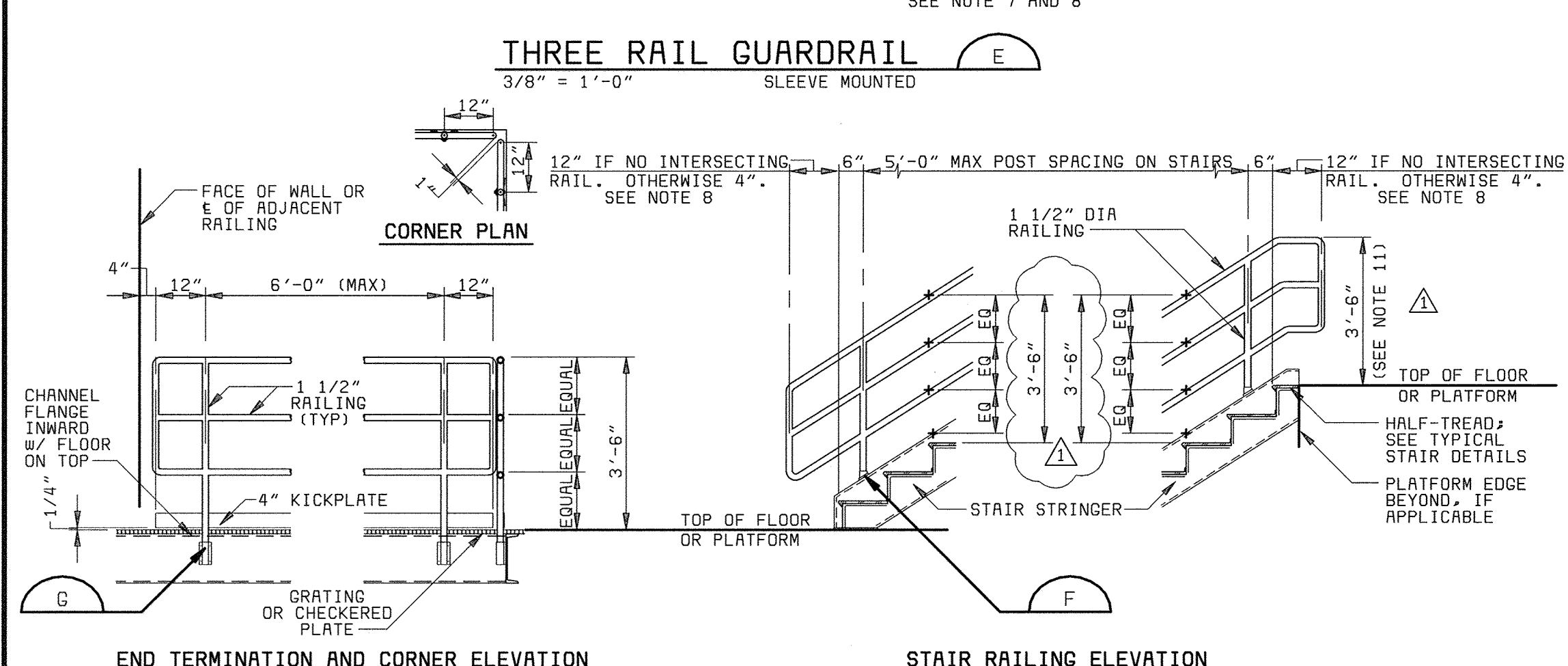
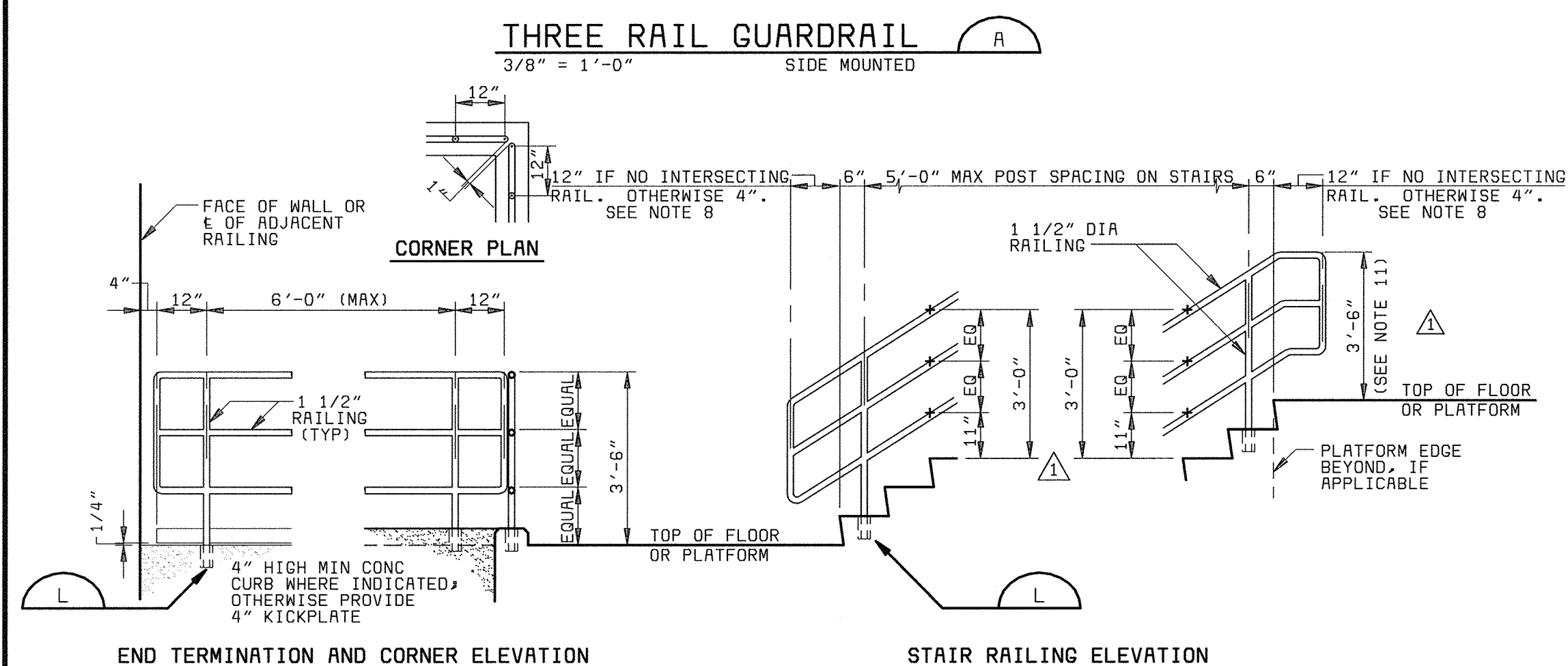
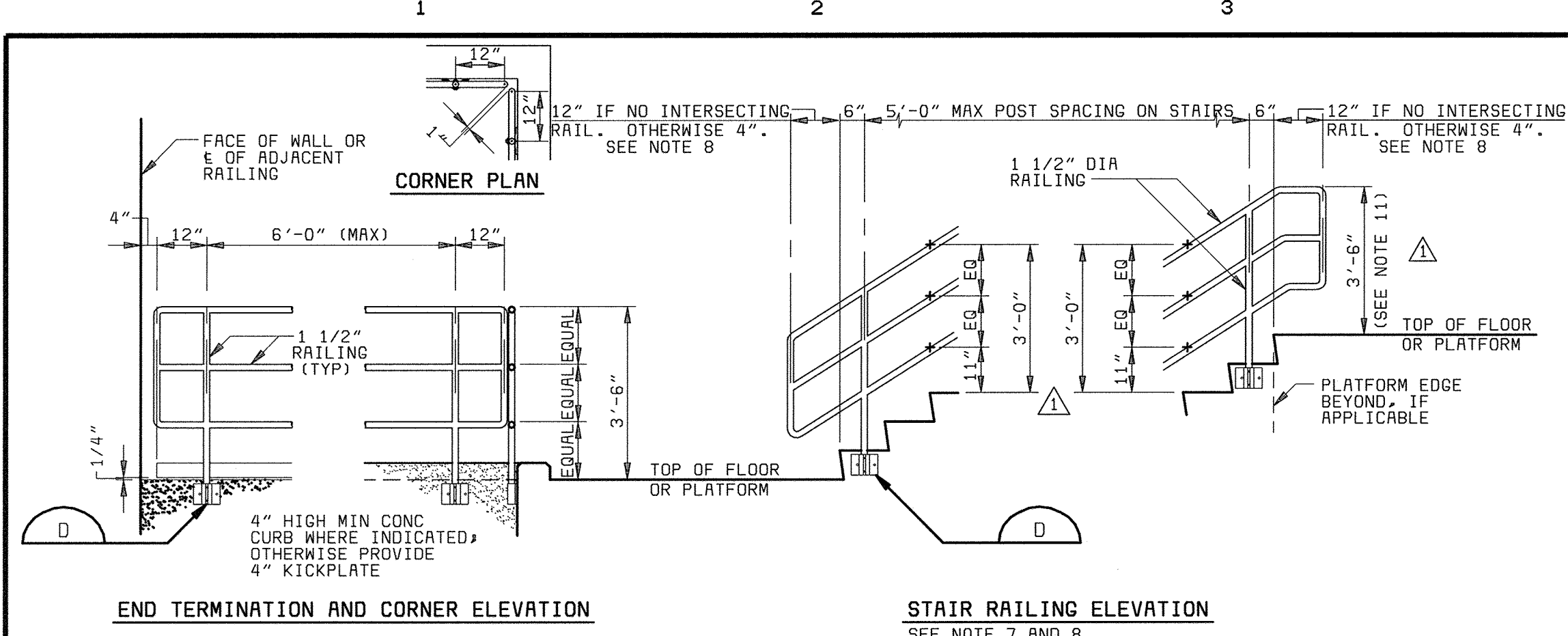
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

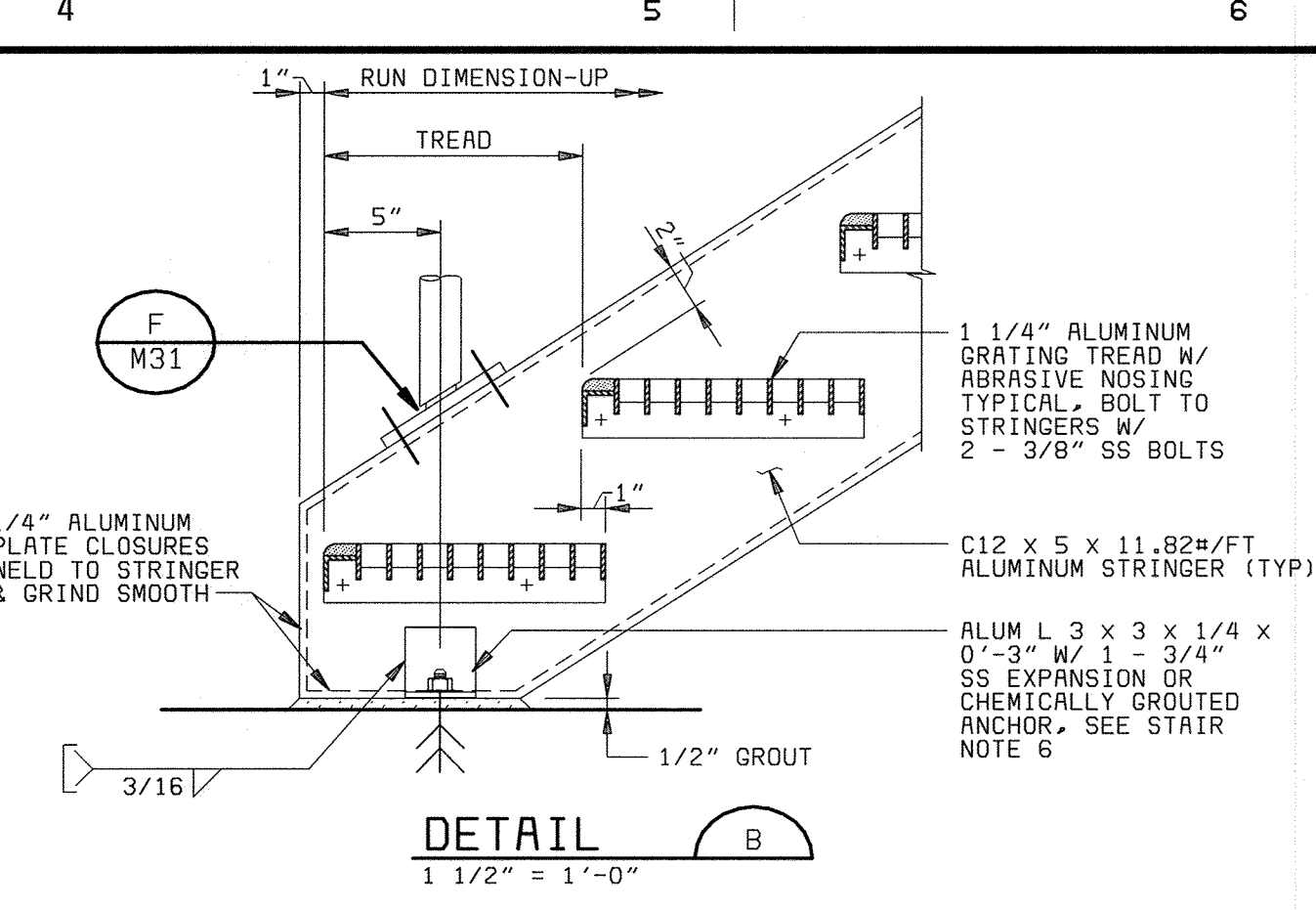
SHEET
52 OF 88

M15



NOTES:

- ALL RAILING SHALL BE THREE RAIL OR PICKET TYPE UNLESS INDICATED OTHERWISE ON THE DESIGN DRAWINGS. RAILING IN AREAS INDICATED TO BE ACCESSIBLE TO THE PUBLIC SHALL BE PICKET TYPE, UNLESS ANOTHER CONFIGURATION IS ACCEPTABLE TO THE ENGINEER, AND SHALL PROVIDE FOR NO UNGUARDED GAP NO GREATER THAN A 4 INCH DIAMETER SPHERE. RAILING MATERIAL AND FABRICATION SHALL BE AS INDICATED ON THE DESIGN DRAWINGS AND IN THE PROJECT SPECIFICATIONS FOR HANDRAILING AND GUARDRAILING.
- ALL RAILING SHALL BE DESIGNED AND FABRICATED IN COMPLIANCE WITH THE MOST STRINGENT REQUIREMENTS OF NOTE 3 BELOW THE APPLICABLE LOCAL BUILDING CODE, OSHA 29 CFR PART 1926 SUBPART R, AND ALL OTHER PERTINENT OSHA REGULATIONS AND LOCAL SAFETY REGULATIONS.
- GUARDRAILING SHALL BE DESIGNED TO WITHSTAND A UNIFORM HORIZONTAL LOAD OF 50 POUNDS PER FOOT WITH A SIMULTANEOUS VERTICAL LOAD OF 100 POUNDS PER FOOT APPLIED TO THE TOP RAIL. HANDRAILING SHALL BE DESIGNED TO WITHSTAND A UNIFORM HORIZONTAL LOAD OF 50 POUNDS PER FOOT APPLIED TO THE TOP RAIL. IN ADDITION, GUARDRAILING AND HANDRAILING SHALL BE DESIGNED TO WITHSTAND A CONCENTRATED LOAD OF 200 POUNDS APPLIED IN ANY DIRECTION. AT ANY POINT ON THE RAILING SYSTEM, THE 200 POUND CONCENTRATED LOAD NEED NOT BE APPLIED SIMULTANEOUSLY WITH THE 50 POUNDS PER FOOT UNIFORM HORIZONTAL LOAD.
- GUARDRAILING AND HANDRAILING SHALL BE DESIGNED AND FABRICATED IN CONFIGURATIONS REQUIRED TO FIT THE LOCATIONS INDICATED ON THE DESIGN DRAWINGS. CONTRACTOR SHALL VERIFY FINAL DIMENSIONS BEFORE FABRICATION.
- EXPANSION ANCHORS FOR GUARDRAILING AND HANDRAILING SHALL BE STAINLESS STEEL, HILTI "KWIK-BOLT II", ITW RAMSET/REDHEAD "TRUBOLT WEDGE ANCHOR", OR POWERS RAWL "RAWL-STUD ANCHOR".

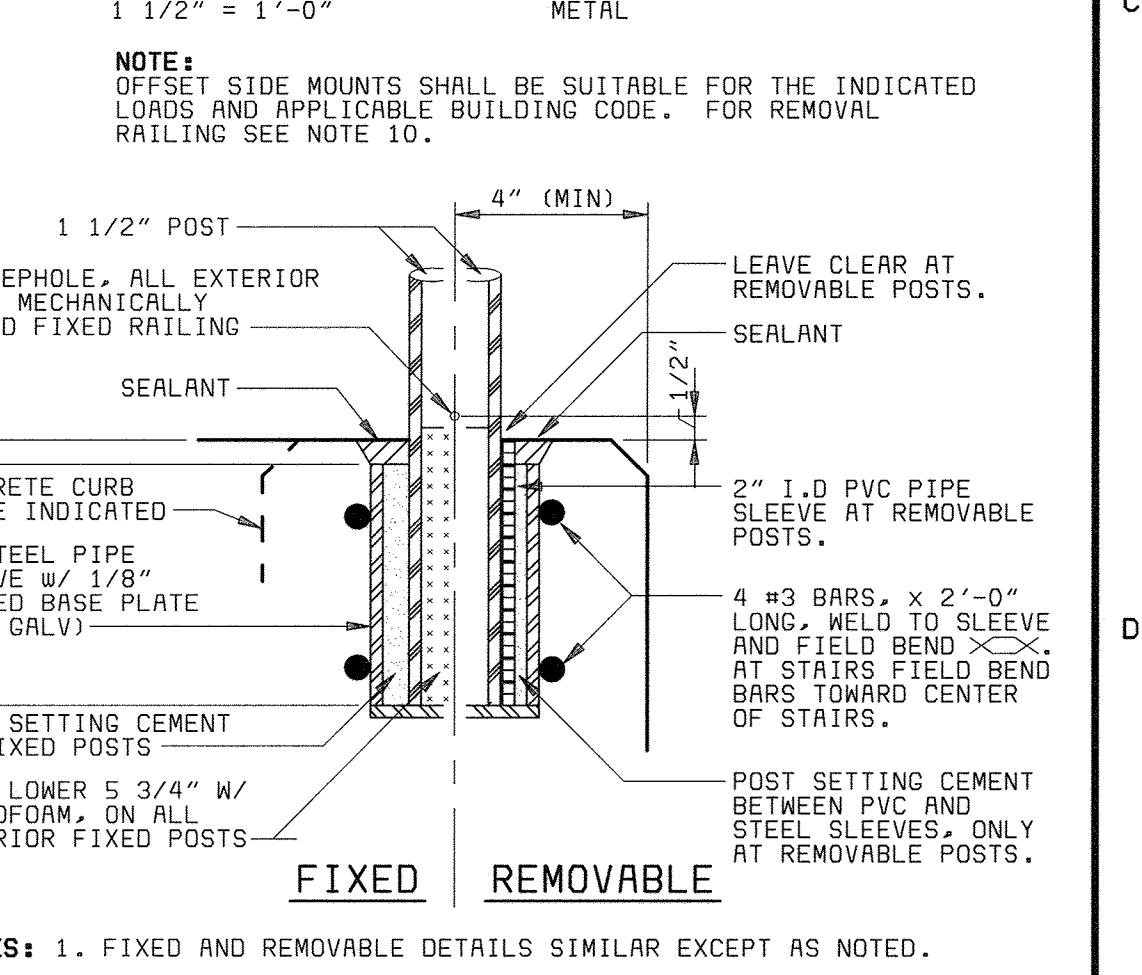
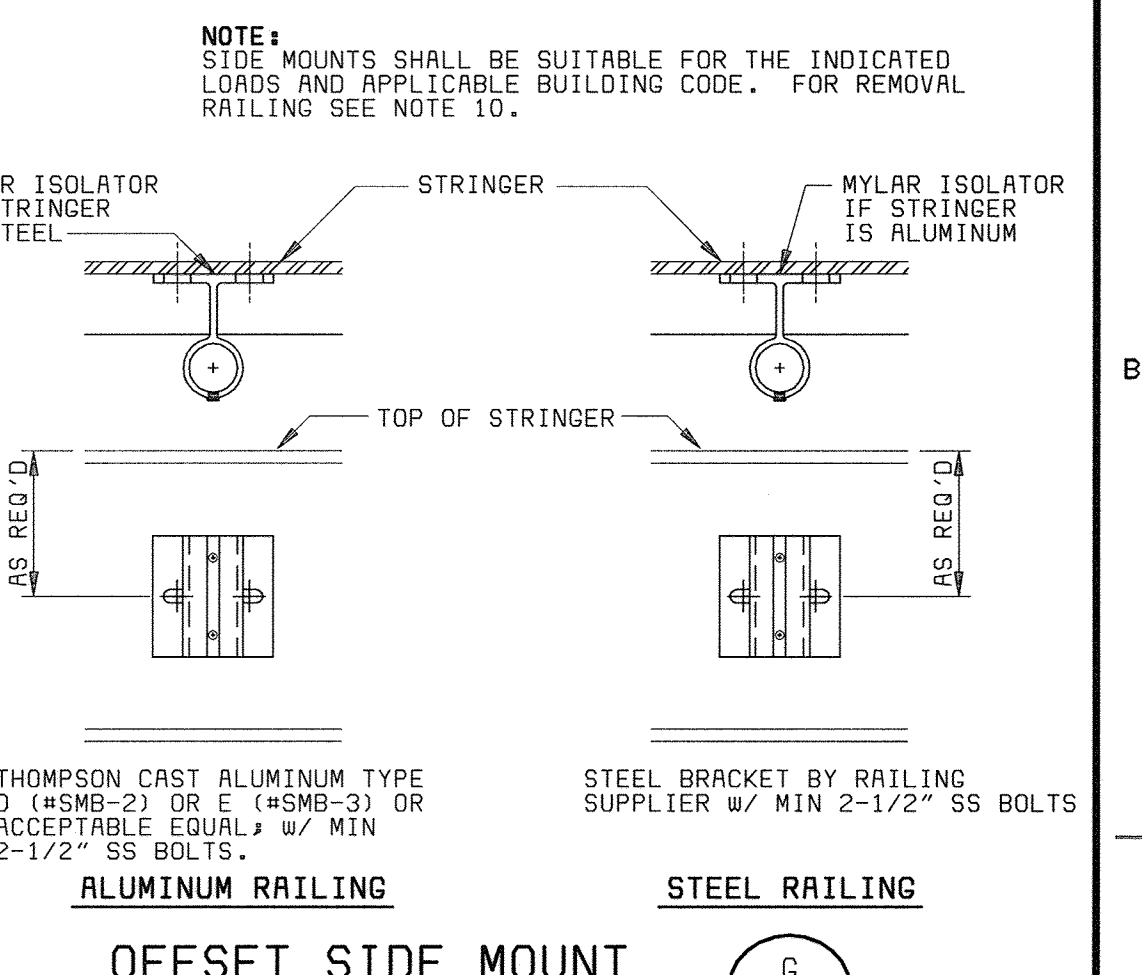
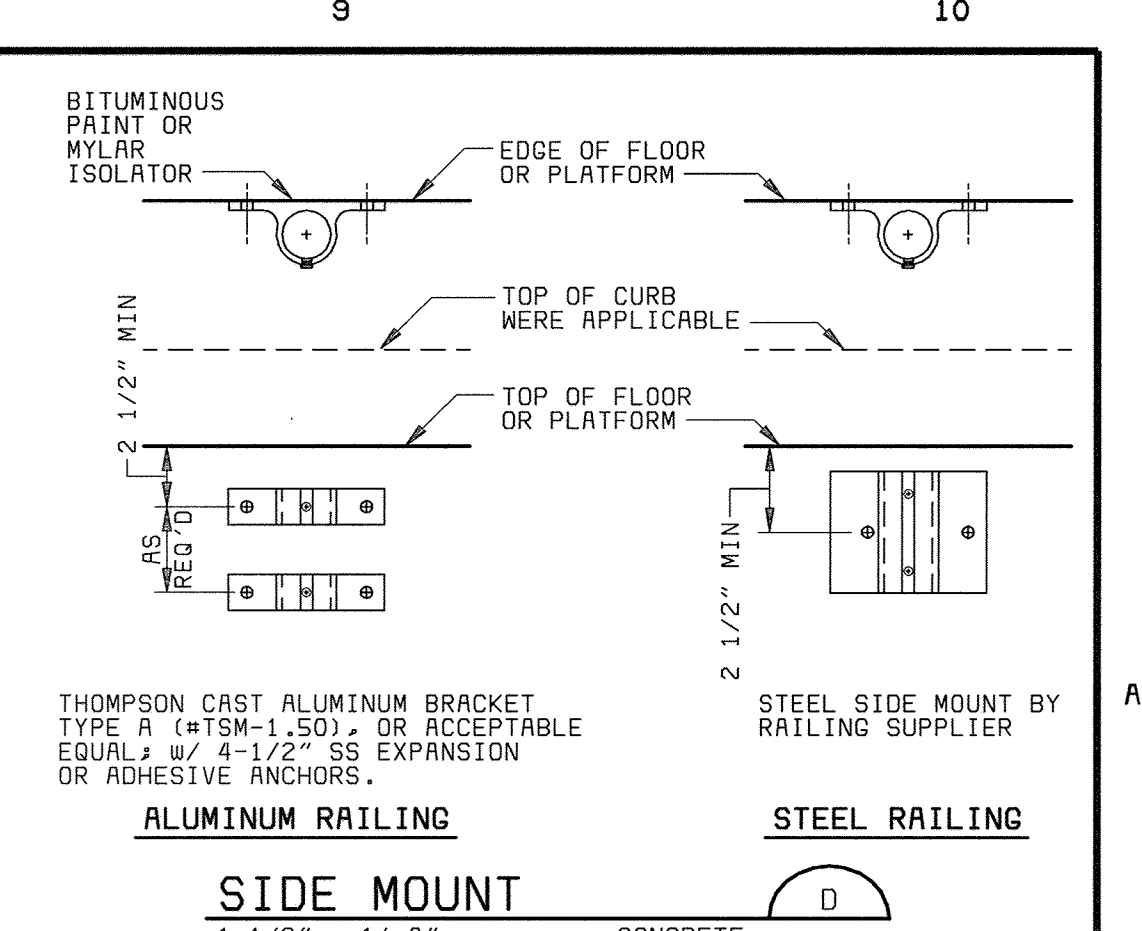
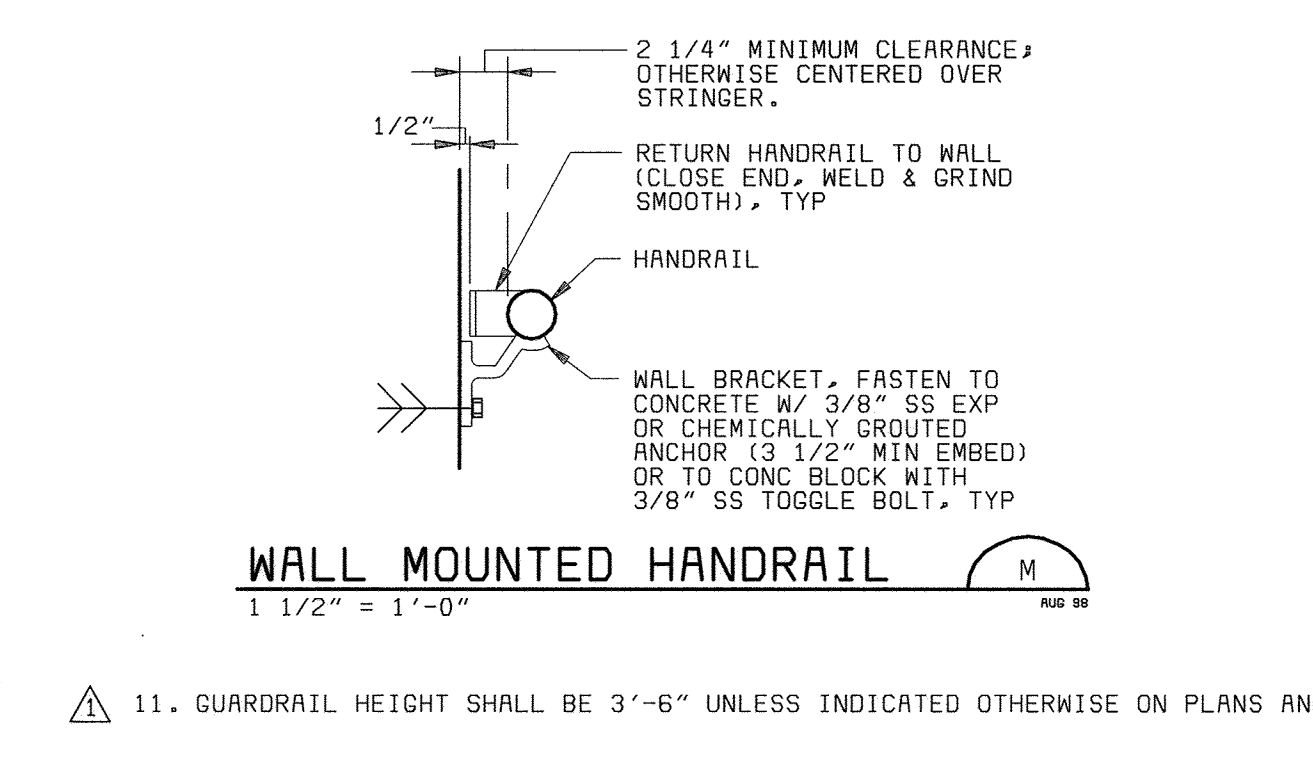
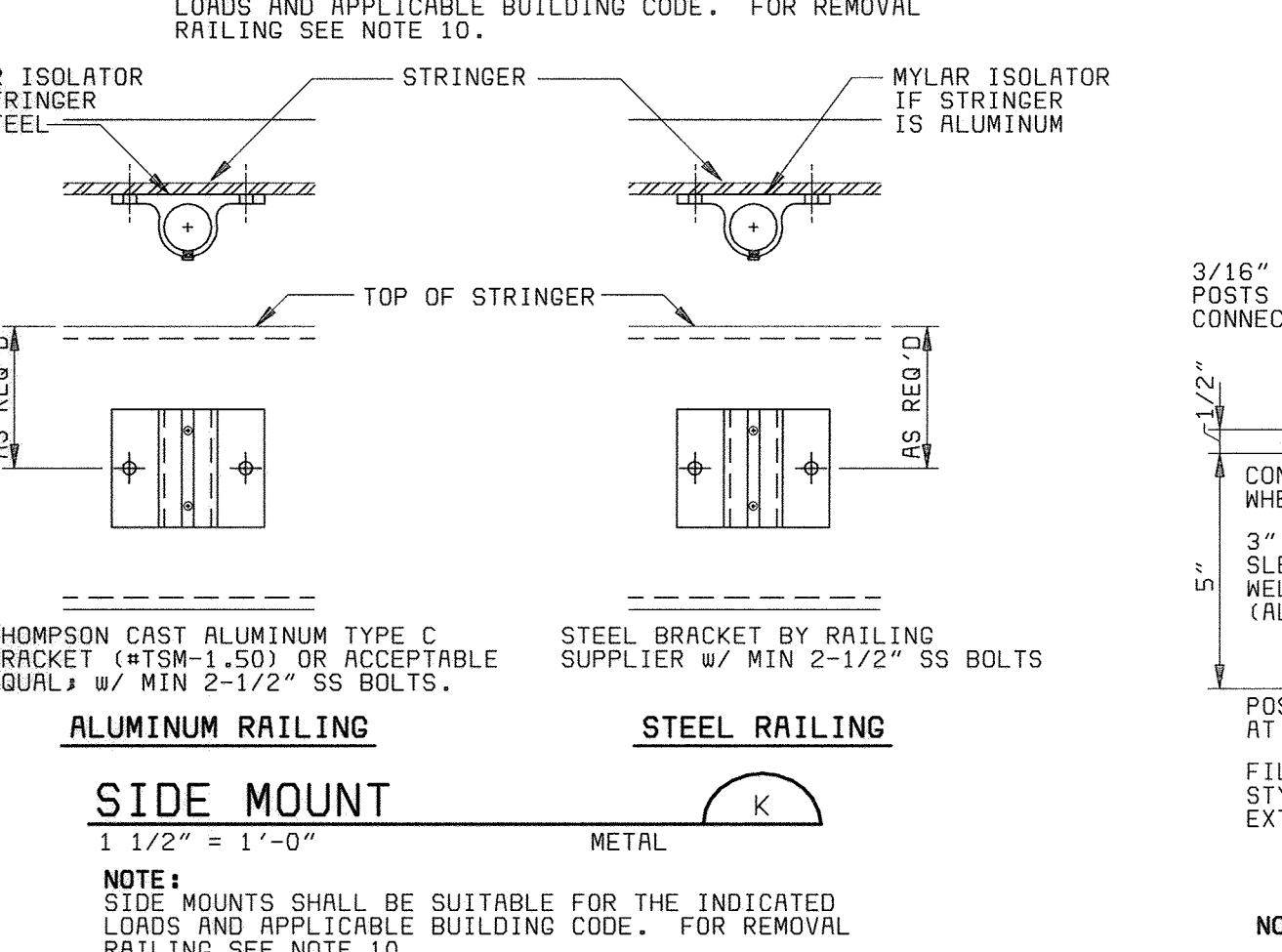
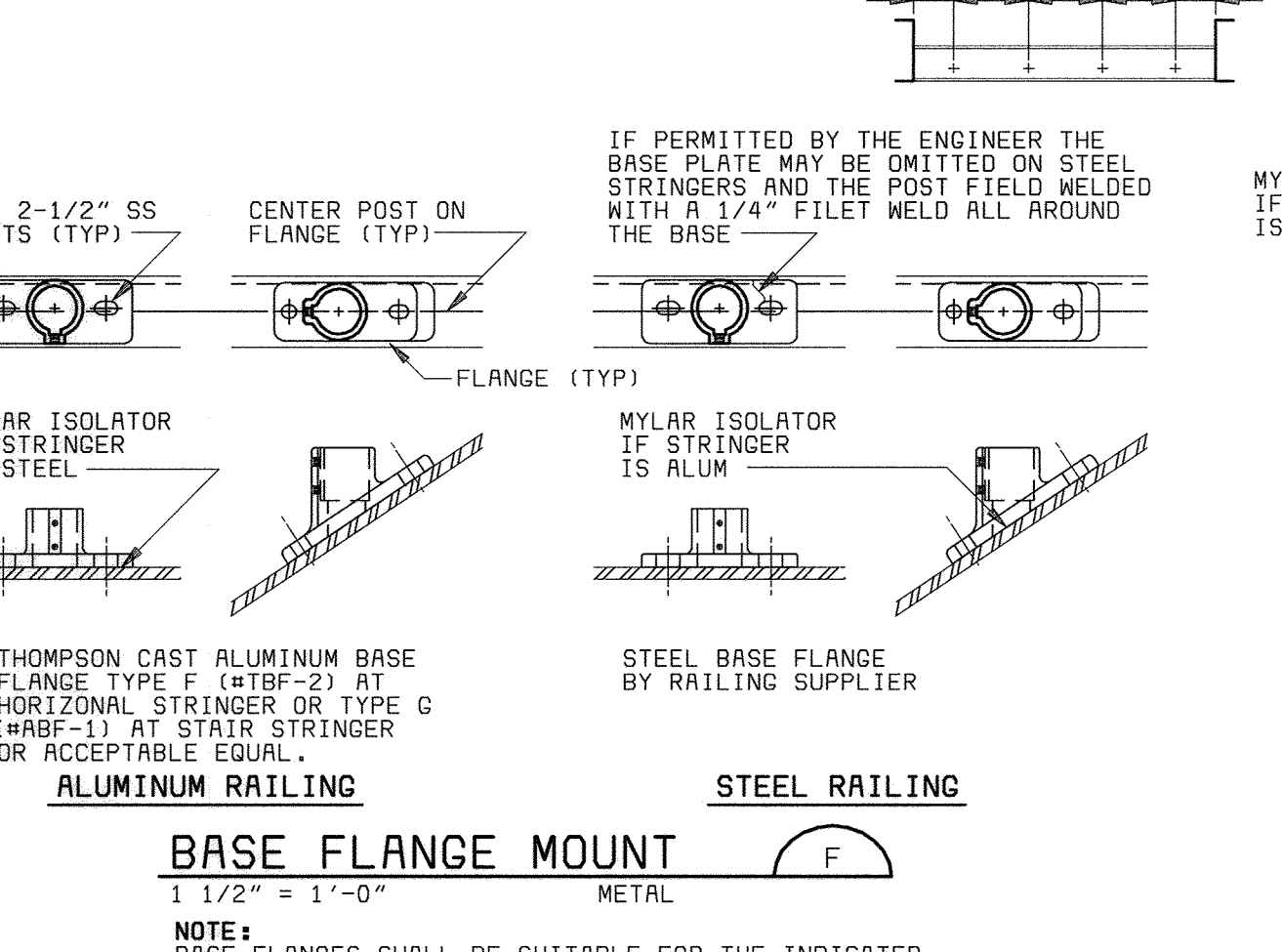
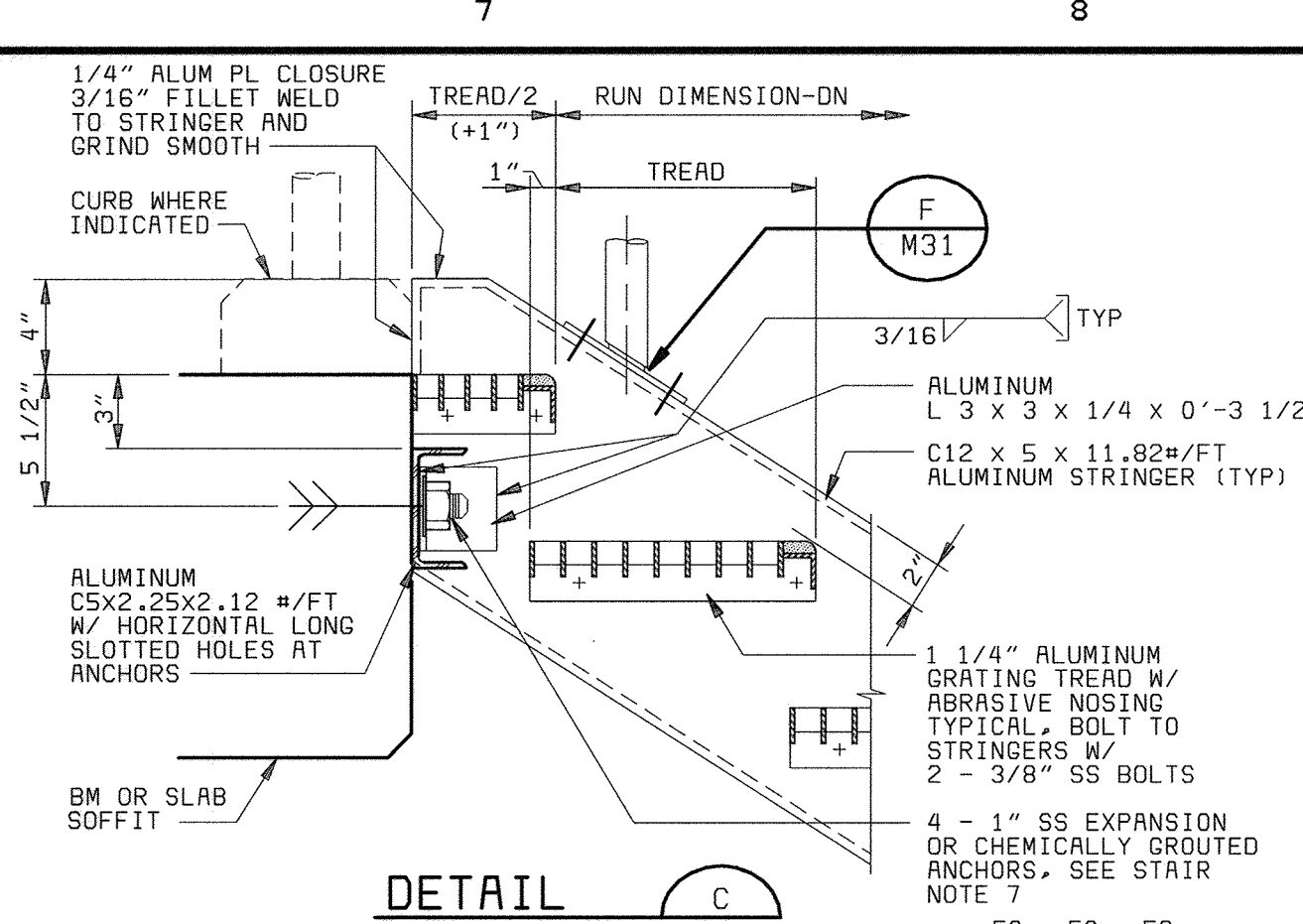
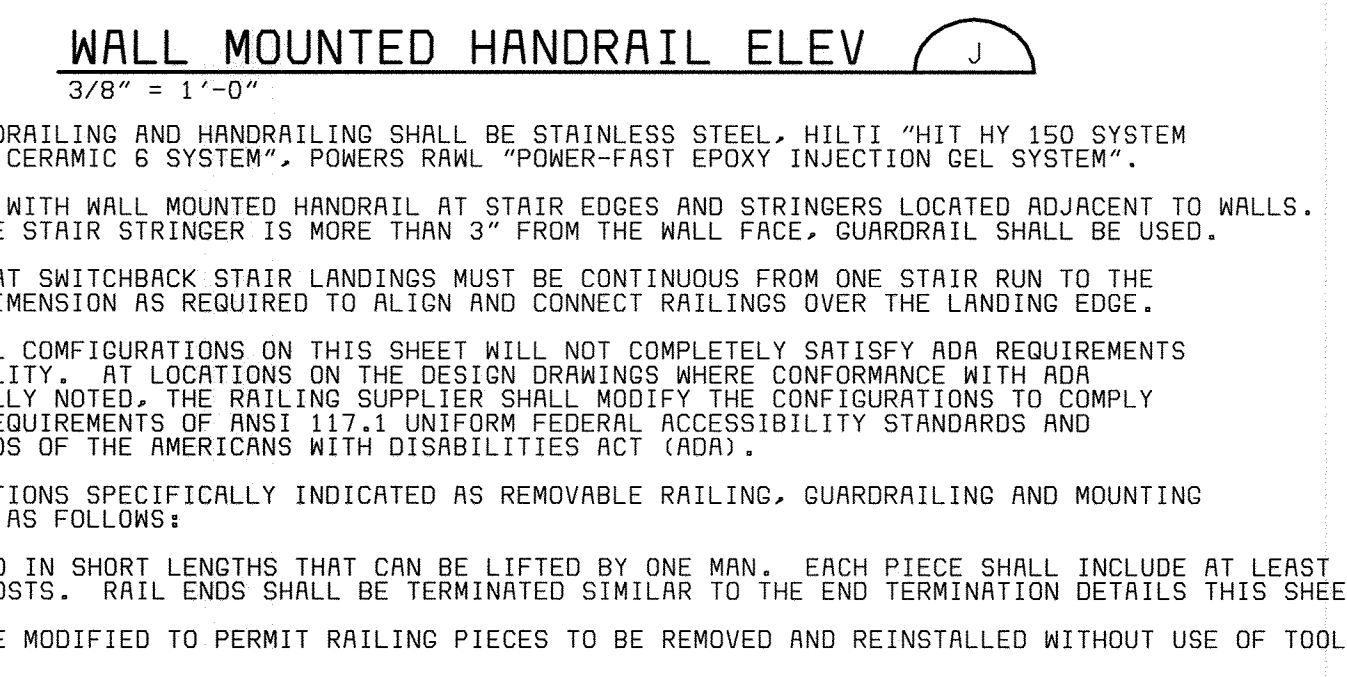


ALUMINUM GRATING STAIR NOTES:

- ALL MISCELLANEOUS ALUMINUM SHAPES ON THIS SHEET TO BE ROLLED TO ALUMINUM ASSOCIATION STANDARD STRUCTURAL SHAPES.
- DESIGNATION LEGEND FOR ALUMINUM SHAPES:

CHANNEL: C 12 x 5 x 11.822 #/FT
 FLANGE DEPTH: 5 x 5 x 3/8
 FLANGE WIDTH: L 5 x 5 x 3/8
 MEMBER WEIGHT: L 5 x 5 x 3/8
 ANGLE: L 5 x 5 x 3/8

- WELDS NOT DIMENSIONED ON THE DRAWINGS SHALL BE SIZED TO DEVELOP THE FULL STRENGTH OF THE LEAST STRENGTH COMPONENT OF THE CONNECTION.
- ALTERNATIVE 3/8" ANCHORAGES INCLUDE:
 - HILTI 3/8" SS KWIK BOLT II, 4 1/4" MIN EMBEDMENT; ICBO REPORT #4627
 - 3/8" SS THREADED ROD, NUT AND BOLT; SET IN HILTI HIT C-100 ADHESIVE MIN 5 1/4" EMBEDMENT; ICBO REPORT #4016
 - RAMSET 3/8" SS TRUBOLT, 4 1/2" MIN EMBEDMENT; ICBO REPORT #1372
 - 3/8" SS THREADED ROD, NUT AND BOLT; SET IN RAMSET EPCON CERAMIC 6 EPOXY MINIMUM 5" EMBEDMENT; ICBO REPORT #4285
 - 3/8" ASTM A307 CAST-IN-PLACE ANCHOR BOLT, GRADE A OR C, WITH NUT AND WASHER. ALL GALVANIZED. 9" MINIMUM EMBEDMENT, 4" HOOK.
- ALTERNATIVE 1/2" ANCHORAGES INCLUDE:
 - HILTI 1/2" SS KWIK BOLT II, 3 1/2" MIN EMBEDMENT; ICBO REPORT #4627
 - 1/2" SS THREADED ROD, NUT AND BOLT; SET IN HILTI HIT C-100 ADHESIVE MIN 4 1/4" EMBEDMENT; ICBO REPORT #4016
 - RAMSET 1/2" SS TRUBOLT, 4 1/8" MIN EMBEDMENT; ICBO REPORT #1372
 - 1/2" SS THREADED ROD, NUT AND BOLT; SET IN RAMSET EPCON CERAMIC 6 EPOXY MIN 4 1/8" EMBEDMENT; ICBO REPORT #4285
 - 1/2" ASTM A307 CAST-IN-PLACE ANCHOR BOLT, GRADE A OR C, WITH NUT AND WASHER. ALL GALVANIZED. 9" MINIMUM EMBEDMENT, 6" HOOK.
- ALTERNATIVE 3/4" ANCHORAGES INCLUDE:
 - HILTI 3/4" SS KWIK BOLT II, 4 3/4" MIN EMBEDMENT; ICBO REPORT #4627
 - 3/4" SS THREADED ROD, NUT, BOLT; SET IN HILTI HIT C-100 ADHESIVE MIN 5 5/8" EMBEDMENT; ICBO REPORT #4016
 - RAMSET 3/4" SS TRUBOLT, 6 3/8" MIN EMBEDMENT; ICBO REPORT #1372
 - 3/4" SS THREADED ROD, NUT, BOLT; SET IN RAMSET EPCON CERAMIC 6 EPOXY MINIMUM 5" EMBEDMENT; ICBO REPORT #4285
 - 3/4" ASTM A307 CAST-IN-PLACE ANCHOR BOLT, GRADE A OR C, WITH NUT AND WASHER. ALL GALVANIZED. 9" MINIMUM EMBEDMENT, 6" HOOK.
- ALTERNATIVE 1" ANCHORAGES INCLUDE:
 - HILTI 1" SS KWIK BOLT II, 6" MIN EMBEDMENT; ICBO REPORT #4627
 - 1" SS THREADED ROD, NUT AND BOLT; SET IN HILTI HIT C-100 ADHESIVE MIN 6 1/4" EMBEDMENT; ICBO REPORT #4016
 - RAMSET 1" SS TRUBOLT, 7 3/8" MIN EMBEDMENT; ICBO REPORT #1372
 - 1" SS THREADED ROD, NUT AND BOLT; SET IN RAMSET EPCON CERAMIC 6 EPOXY MINIMUM 5" EMBEDMENT; ICBO REPORT #4285
 - 1" ASTM A307 CAST-IN-PLACE ANCHOR BOLT, GRADE A OR C, WITH NUT AND WASHER. ALL GALVANIZED. 9" MINIMUM EMBEDMENT, 6" HOOK.



NOTES:

- FIXED AND REMOVABLE DETAILS SIMILAR EXCEPT AS NOTED.
- THE REMOVABLE SLEEVE MOUNT DETAIL SHALL NOT BE USED IN NET LOCATIONS SUBJECT TO FREEZING. SUBSTITUTE A REMOVABLE BASE FLANGE OR SIDE MOUNT DETAIL.

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

BLACK & VEATCH
 Gathersburg, Maryland

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, No. 22927

DES: IFH					
DRN: RLC					
CHK: WLK	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
	8/28/01	CODE REVIEW COMMENTS		IFH	
DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CHK APP

GENERAL MECHANICAL
 MISCELLANEOUS DETAILS

LITTLE PATUXENT WATER RECLAMATION PLANT
 ADDITION NO. 6
 PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
 CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

SCALE AS SHOWN
 SHEET 53 OF 88
 M16

ABBREVIATIONS

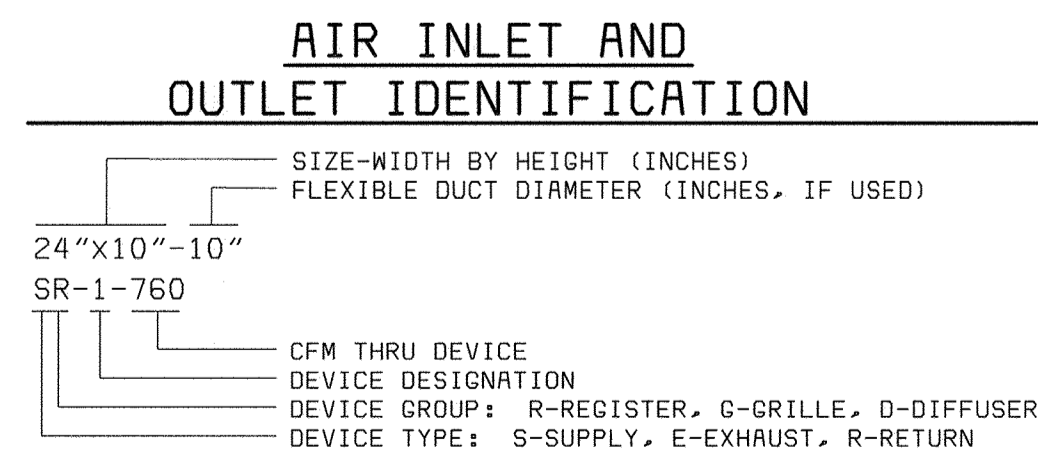
A AC AD AE AF AFD AFF AFM AHU ALUM AP APPROX AR AS ASTM ATU AUTO AVG AVS	ALARM, COMPRESSED AIR OUTLET AIR COMPRESSOR ACCESS DOOR, AIR DRYER AVERAGING ELEMENT AIR FLOW, AIRFOIL ADJUSTABLE FREQUENCY DRIVE ABOVE FINISH FLOOR AIR FLOW MONITOR AIR HANDLING UNIT ALUMINUM ACCESS PANEL APPROXIMATE AIR RECEIVER AIR SEPARATOR AMERICAN SOCIETY OF TESTING MATERIALS AIR TERMINAL UNIT AUTOMATIC AVERAGE AUTOMATIC VALVE STATION	BTU BU	BOTTOM BRITISH THERMAL UNITS PER HOUR BELL-UP	DEH DF DM DIA DIA DIA DIA DN DSN DX	DEHUMIDIFIER DRINKING FOUNTAIN, DUCT FAN DIAMETER DIAMETER DUCT MOUNTED DOWN DOWNSPOUT NOZZLE DIRECT EXPANSION	EXIST EXISTING	EXISTING	CWH GAS WATER HEATER	KS KW	KITCHEN SINK KILOWATT	OCF OCFS OCLS OCPL OCPS OCS OD ORD ORP	ODOR CONTROL FAN ODOR CONTROL FLOW SWITCH ODOR CONTROL LEVEL SWITCH ODOR CONTROL PANEL ODOR CONTROL PRESSURE SWITCH ODOR CONTROL SCRUBBER OUTSIDE DIAMETER OVERFLOW ROOF DRAIN OXIDATION REDUCTION POTENTIAL	RA RAC RCS RD REQD RH	REACTIVATION AIR, RETURN AIR ROOM AIR CONDITIONER REMOTE CONTROL STATION ROOF DRAIN REQUIRED RELATIVE HUMIDITY, ROOF HOOD	TL TS TYP UR V VAC VANE VAV VBS VCD VCF VDF VSP VTR	TOP LEVEL TIP SPEED, TAMPER SWITCH TYPICAL URNAL VERTICAL VACUUM OUTLET VANERXIAL VARIABLE AIR VOLUME VACUUM BREAKER VOLUME CONTROL DAMPER VANERXIAL FAN VACUUM PUMP VERTICAL COLUMN SUMP PUMP VENT THRU ROOF
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LEGEND

GENERAL MECHANICAL NOTES

GENERAL	PIPE FITTINGS	VALVES	HVAC	PLUMBING
<p>PIPING ABOVE FLOOR OR GRADE</p> <p>PIPING BELOW FLOOR OR GRADE</p> <p>PIPE TURNING UP</p> <p>PIPE TURNING DOWN</p> <p>FUEL GAS</p> <p>NATURAL GAS</p> <p>PROPANE GAS</p> <p>HVAC</p> <p>CHILLED WATER RETURN</p> <p>CHILLED WATER SUPPLY</p> <p>CONDENSATE DRAIN</p> <p>CONDENSER WATER RETURN</p> <p>CONDENSER WATER SUPPLY</p> <p>HEATING WATER RETURN</p> <p>HEATING WATER SUPPLY</p> <p>LOW PRESSURE CONDENSATE</p> <p>LOW PRESSURE STEAM (<15 PSIG)</p> <p>REFRIGERANT</p> <p>SPECIAL</p> <p>ACETYLENE</p> <p>ARGON</p> <p>COMPRESSED AIR</p> <p>HELIUM</p> <p>HYDROGEN</p> <p>METHANE</p> <p>NITROGEN</p> <p>NITROUS OXIDE</p> <p>OXYGEN</p> <p>VACUUM</p> <p>WASTE</p> <p>CHEMICAL RESISTANT WASTE</p> <p>CHEMICAL RESISTANT VENT</p> <p>INDIRECT DRAIN</p> <p>SANITARY DRAIN</p> <p>STORM DRAIN</p> <p>SUMP PUMP DISCHARGE</p> <p>VENT</p> <p>ODOR CONTROL</p> <p>SCRUBBER RECIRCULATION</p> <p>FOUL AIR</p> <p>WATER</p> <p>COLD WATER - NONPOTABLE</p> <p>COLD WATER - POTABLE</p> <p>DEIONIZED WATER</p> <p>DISTILLED WATER</p> <p>FIRE PROTECTION WATER</p> <p>HOT WATER CIRCULATING - POTABLE</p> <p>HOT WATER - NONPOTABLE</p> <p>HOT WATER - POTABLE</p> <p>PROCESS WATER</p> <p>SERVICE WATER</p> <p>SOFTENED WATER</p> <p>TEMPERED OR BLENDED WATER</p> <p>TEMPERED NONPOTABLE WATER</p>	<p>BLIND FLANGE</p> <p>CAP</p> <p>DRAIN OR BELL-UP (SCHEMATIC)</p> <p>REDUCER</p> <p>SLEEVE</p> <p>TEST PLUG</p> <p>UNION</p> <p>PIPING SPECIALTIES</p> <p>AUTOMATIC VALVE STATION</p> <p>BASKET STRAINER</p> <p>COMBINATION PUMP DISCHARGE VALVE</p> <p>FLEXIBLE CONNECTION</p> <p>FLOW CONTROL VALVE</p> <p>FLOW SENSOR METER</p> <p>HOSE FAUCET</p> <p>HOSE FAUCET W/VACUUM BREAKER</p> <p>HOSE VALVE W/HOSE NIPPLE</p> <p>AIR VENT</p> <p>PRESSURE REDUCING STATION</p> <p>PRESSURE RELIEF VALVE</p> <p>PRESSURE/TEMPERATURE RELIEF VALVE</p> <p>QUICK COUPLING</p> <p>ROTAMETER</p> <p>SIGHT FLOW INDICATOR</p> <p>SUCTION DIFFUSER (SCHEMATIC)</p> <p>WALL HYDRANT</p> <p>WALL HYDRANT W/VACUUM BREAKER</p> <p>METER</p> <p>WYE STRAINER</p> <p>WYE STRAINER W/BLOWOFF</p> <p>VACUUM BREAKER</p> <p>FIRE PROTECTION</p> <p>ALARM CHECK VALVE - WET SYSTEM</p> <p>DRY PIPE VALVE</p> <p>FIRE DEPARTMENT CONNECTION</p> <p>FLOW SWITCH</p> <p>SUPERVISORY (TAMPER) SWITCH</p>	<p>ANGLE VALVE</p> <p>BACKFLOW PREVENTER (2" & SMALLER)</p> <p>BACKFLOW PREVENTER</p> <p>BACKWATER VALVE</p> <p>BALL VALVE</p> <p>BUTTERFLY VALVE</p> <p>CHECK VALVE</p> <p>GATE VALVE</p> <p>GLOBE VALVE</p> <p>PLUG VALVE</p> <p>PRESSURE REDUCING VALVE</p> <p>THREE WAY VALVE</p> <p>CONTROLS AND INSTRUMENTATION</p> <p>DIAL TYPE THERMOMETER</p> <p>DRAFT GAUGE</p> <p>ELECTRIC OPERATOR (EXPLOSION PROOF)</p> <p>ELECTRIC OPERATOR (MODULATING)</p> <p>ELECTRIC OPERATOR (2 POSITION)</p> <p>FLOW SWITCH</p> <p>GAUGE ACTIVATOR/ISOLATOR</p> <p>HUMIDISTAT WITH NUMBER</p> <p>INSTRUMENT TEST OPENING</p> <p>LEVEL SWITCH</p> <p>PRESSURE DIFFERENTIAL SWITCH WITH NUMBER</p> <p>PRESSURE GAUGE W/SHUTOFF VALVE</p> <p>PRESSURE SWITCH</p> <p>REMOTE BULB THERMOSTAT WITH NUMBER</p> <p>SMOKE DETECTOR WITH NUMBER</p> <p>SOLENOID OPERATOR</p> <p>STEM TYPE THERMOMETER</p> <p>TEMPERATURE ELEMENT</p> <p>THERMOSTAT WITH NUMBER</p> <p>VACUUM GAUGE W/SHUTOFF VALVE</p>	<p>CONTROL DAMPER</p> <p>DIFFUSER FOR FLEXIBLE DUCT</p> <p>DIRECTION OF AIR FLOW</p> <p>DUCTWORK DIMENSIONS, THE FIRST DIMENSION IS THE SIDE SEEN. (L) INDICATES INTERNALLY LINED DUCTWORK. (W) INDICATES EXTERNALLY WRAPPED DUCTWORK.</p> <p>DUCTWORK DIMENSIONS, THE FIRST DIMENSION IS THE SIDE THE LEADER LINE TOUCHES</p> <p>FIRE DAMPER</p> <p>FLEXIBLE CONNECTION</p> <p>FLEXIBLE DUCTWORK</p> <p>INCLINED DROP IN RESPECT TO DIRECTION OF AIRFLOW</p> <p>INCLINED RISE IN RESPECT TO DIRECTION OF AIRFLOW</p> <p>NEGATIVE PRESSURE DUCT</p> <p>POSITIVE PRESSURE DUCT</p> <p>REGISTER, GRILLE OR DIFFUSER</p> <p>ROUND OR FLEXIBLE DUCT TAKEOFF</p> <p>ROUND TO SQUARE TRANSITION</p> <p>TURNING VANES</p> <p>VOLUME CONTROL DAMPER</p>	<p>BELL-UP DRAIN W/TRAP</p> <p>CLEANOUT (FLOOR)</p> <p>CLEANOUT (PIPE)</p> <p>BLENDED VALVE</p> <p>DOWNSPOUT NOZZLE</p> <p>EMERGENCY SHOWER/EYEWASH</p> <p>FLOOR DRAIN</p> <p>HOSE REEL</p> <p>P-TRAP</p> <p>ROOF DRAIN</p> <p>SHOWER</p> <p>SPLASHBLOCK</p> <p>WATER HAMMER ARRESTOR W/ POI SIZE DESIGNATION</p> <p>PLUMBING (SCHEMATIC)</p> <p>AIR-GAP FITTING</p> <p>BELL-UP DRAIN</p> <p>FLOOR CLEANOUT</p> <p>FLOOR DRAIN</p> <p>FLOOR DRAIN W/FUNNEL</p> <p>P-TRAP</p> <p>VENT THROUGH ROOF (VTR)</p>

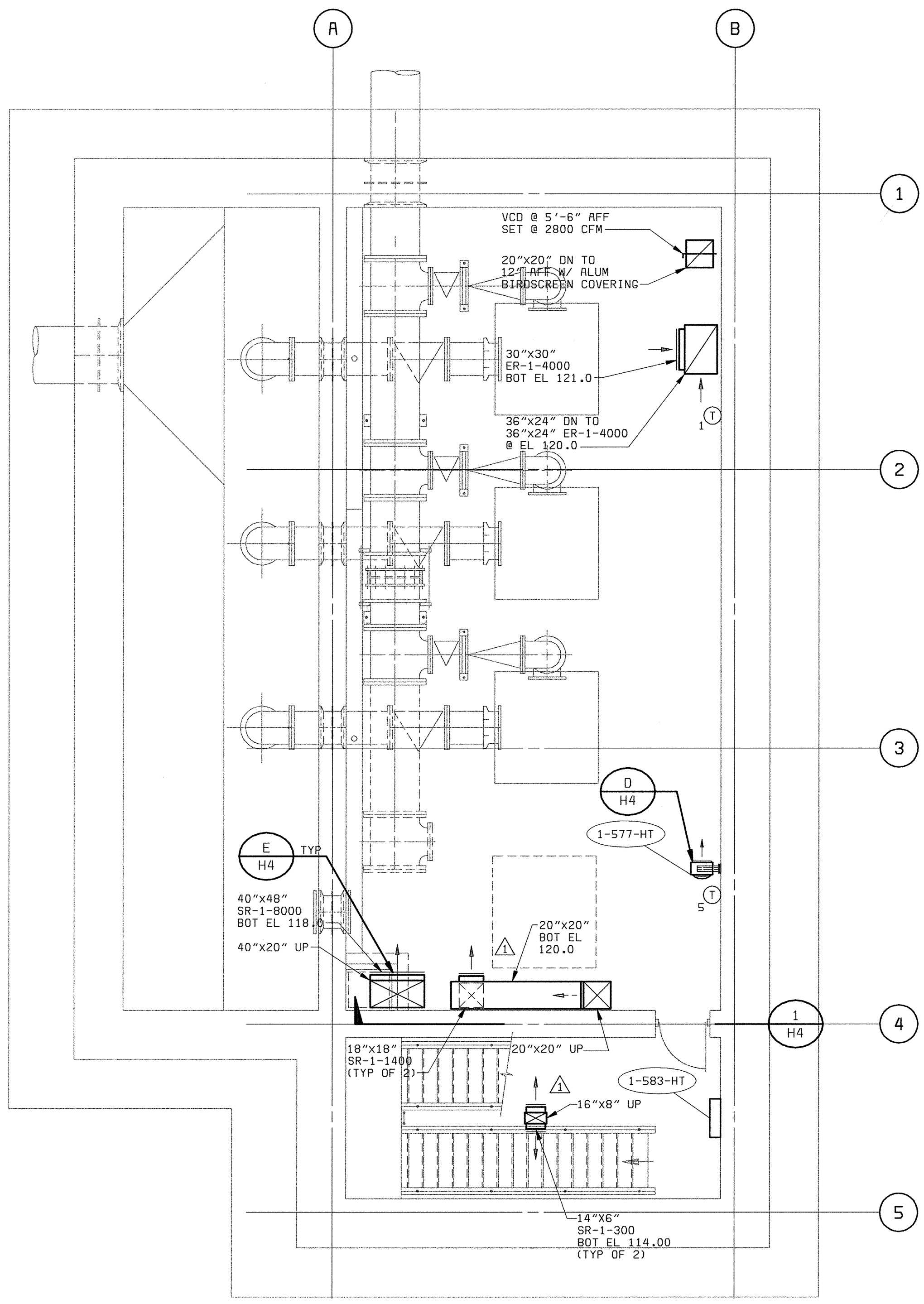
- THIS IS A GENERAL LEGEND AND ABBREVIATION SHEET FOR PLUMBING AND HVAC DRAWINGS. SOME ITEMS CONTAINED ON THIS SHEET MAY NOT BE USED ON THIS SPECIFIC PROJECT.
- FOR ROOFTOP EQUIPMENT CURB, FLUES, AND FLASHING DETAILS, SEE ARCHITECTURAL DRAWINGS.
- SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL EQUIPMENT BASE DETAILS.
- "SCREENED" DELINEATION DENOTES EXISTING AND NEW FACILITIES AND IS FOR REFERENCE ONLY. "LIGHT" LINE DELINEATION DENOTES EXISTING MECHANICAL EQUIPMENT AND SYSTEMS. EXISTING FACILITY AND MECHANICAL SYSTEMS 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. "BOLD" (DARK) DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.
- ALL MATERIALS, FITTINGS, COVERS, AND EQUIPMENT INSTALLED IN RETURN AIR PLENUMS SHALL BE NONCOMBUSTIBLE AND UL LISTED FOR USE IN RETURN AIR PLENUMS.
- METAL ROOF DECKING SHALL NOT BE USED FOR THE SUPPORT OF EQUIPMENT, PIPING, OR DUCTWORK.
- 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.
- OUTSIDE AIR INLETS SHALL BE LOCATED A MINIMUM OF 10' AWAY FROM ANY EXHAUST AIR OR PLUMBING VENT OUTLET.
- ALL EQUIPMENT, PIPING, AND DUCTWORK SHALL BE ROUTED TO AVOID INTERFERENCES WITH STRUCTURE, OTHER PIPING, EQUIPMENT, DUCTWORK, AND CONDUIT UNLESS SPECIFICALLY DIMENSIONED, THE PIPE AND DUCTWORK ROUTING SHOWN IS INTENDED TO INDICATE GENERAL LOCATION ONLY.
- ALL PIPING AND DUCTWORK SHALL BE ROUTED AS HIGH AS POSSIBLE WITH A MINIMUM HEIGHT OF 8'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE INDICATED BY A CENTERLINE, INVERT, OR BOTTOM OF DUCT ELEVATION.
- PIPING AND DUCTWORK INSTALLED ABOVE SUSPENDED CEILINGS SHALL BE INSTALLED TO ALLOW A MINIMUM 6 INCH CLEARANCE BETWEEN THE CEILING AND PIPING OR BOTTOM OF THE DUCT.
- ALL HOSE FAUCETS AND HOSE VALVES SHALL BE INSTALLED 3'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. WALL HYDRANTS SHALL BE INSTALLED 1'-6" ABOVE GRADE UNLESS OTHERWISE NOTED.
- ALL HOSE FAUCETS AND WALL HYDRANTS SHALL BE NOMINAL 3/4" PIPE SIZE UNLESS OTHERWISE NOTED. ALL HOSE VALVES SHALL BE 1/2" NOMINAL PIPE SIZE UNLESS OTHERWISE NOTED.
- ALL HOSE FAUCETS, WALL HYDRANTS, AND OTHER OUTLETS ON NONPOTABLE WATER LINES WHICH COULD BE USED FOR DRINKING OR DOMESTIC USE SHALL BE POSTED AS REQUIRED BY THE APPLICABLE CODES. IN ABSENCE OF A CODE REQUIREMENT, THE OUTLETS SHALL BE POSTED WITH A TAG IN THE SHAPE OF A 4" EQUILATERAL TRIANGLE BEARING THE LEGEND "DANGER: UNSAFE WATER" IN LETTERS NOT LESS THAN 1/2" IN HEIGHT. THIS TAG SHALL BE SECURELY ATTACHED IN A VISIBLE LOCATION DIRECTLY ABOVE OUTLET. THE TAG SHALL BE PAINTED ORANGE AND THE LETTERS BLACK.
- 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.
- DUCT SIZES INDICATED ARE CLEAR DIMENSIONS INSIDE THE DUCT OR DUCT LINING. SHEET METAL SIZES ARE LARGER FOR INTERNALLY LINED DUCTWORK.
- DUCT CONNECTIONS TO EQUIPMENT, PIPING SIZES TO EQUIPMENT, AND EQUIPMENT SUPPORTS SHALL BE VERIFIED AND ADJUSTED TO MATCH ACTUAL EQUIPMENT FURNISHED.
- ALL RELIEF VALVES SHALL BE PIPED TO FLOOR OR BELLUP DRAINS.
- THE LOCATION OF PIPING AND VALVES TO THE AIR HANDLING EQUIPMENT SHALL NOT INTERFERE WITH FILTER REMOVAL OR AIR HANDLING EQUIPMENT SERVICING.
- ROOFTOP EQUIPMENT SHALL NOT BE LOCATED SUCH THAT ACCESS TO CONTROLS AND TO PERFORM SERVICE FOR EQUIPMENT IS LOCATED WITHIN 6 FEET OF THE BUILDING EDGE.



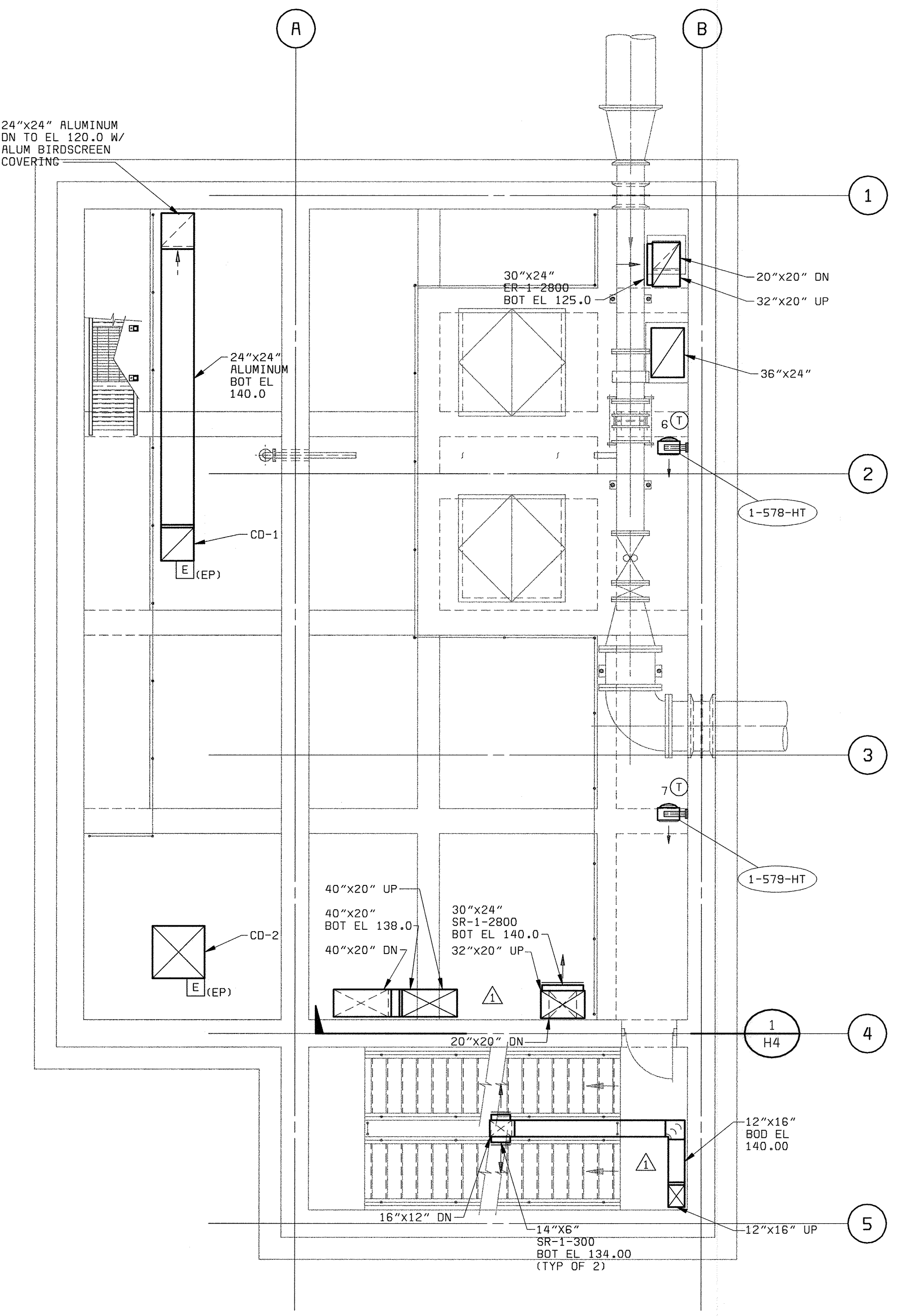
<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p>CHIEF, BUREAU OF UTILITIES DATE</p>	<p>BLACK & VEATCH GaitHERSburg, Maryland</p> <p>REG. PROF. ENGR. DATE</p>	<p>THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PARE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992</p>	<p>DES: GWP,HX</p> <p>DRN: BDL,LDW</p> <p>CHK: DWN</p> <p>DATE: 04/13/01</p>	<p>02/06/04</p> <p>CONFORMED TO CONSTRUCTION RECORDS</p> <p>REVISIONS AND RECORD OF ISSUE</p>	<p>RHH/RJR/RJR</p> <p>NO. BY CK APP</p>	<p>GENERAL HVAC/PLUMBING</p> <p>LEGEND, ABBREVIATIONS AND GENERAL NOTES</p>	<p>LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION</p> <p>CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840</p> <p>HOWARD COUNTY, MARYLAND</p>	<p>SCALE AS SHOWN</p> <p>SHEET 54 of 88</p> <p>H1</p>
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0564723
0564724

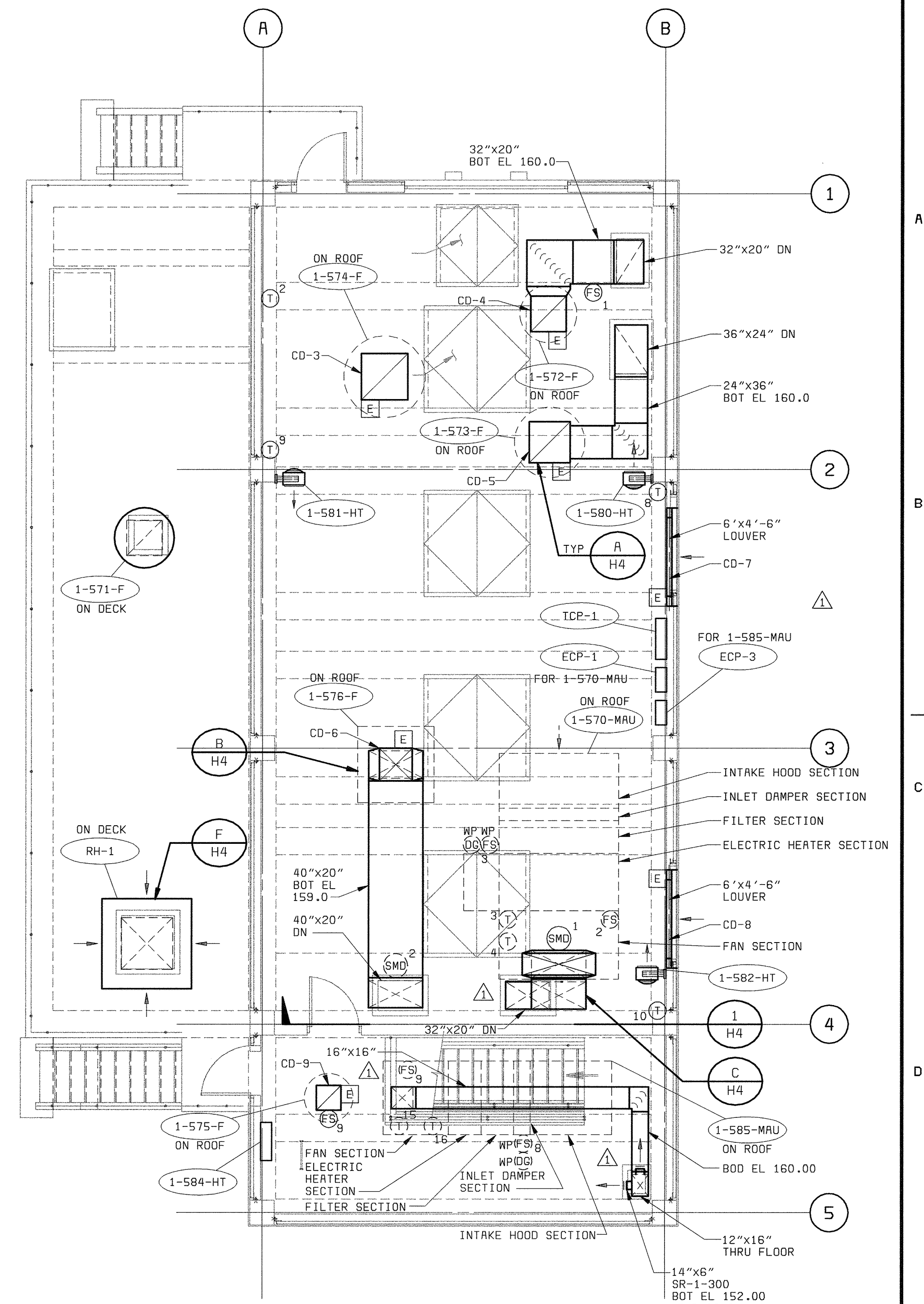
1 2 3 4 5 6 7 8 9 10



LOWER LEVEL PLAN
3/16" = 1'-0"



MEZZANINE LEVEL PLAN
3/16" = 1'-0"



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

GENERAL NOTES

- ALL DUCTWORK SHOWN ON THIS DRAWING SHALL BE GALVANIZED STEEL EXCEPT WHEN INDICATED TO BE ALUMINUM.

XREF: 58472-101-AP-M-R0000153
 XREF: 58472-101-AP-M-R0000685
 058472-3
 F058472A

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH
Gaithersburg, Maryland

REG. PROF. ENGR. DATE

THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
MARTIN L. PAPE
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 21992

DES: GWP,HX					
DRN: BDL,L,DW					
CHK: DWN	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
DATE: 04/13/01	08/28/01	GENERAL REVISIONS		GWP/MLP	
	DATE	REVISIONS AND RECORD OF ISSUE		NO. BY CK APP	

AUXILIARY PUMP STATION
HVAC

LOWER LEVEL, MEZZANINE LEVEL
AND GROUND LEVEL FLOOR PLANS

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

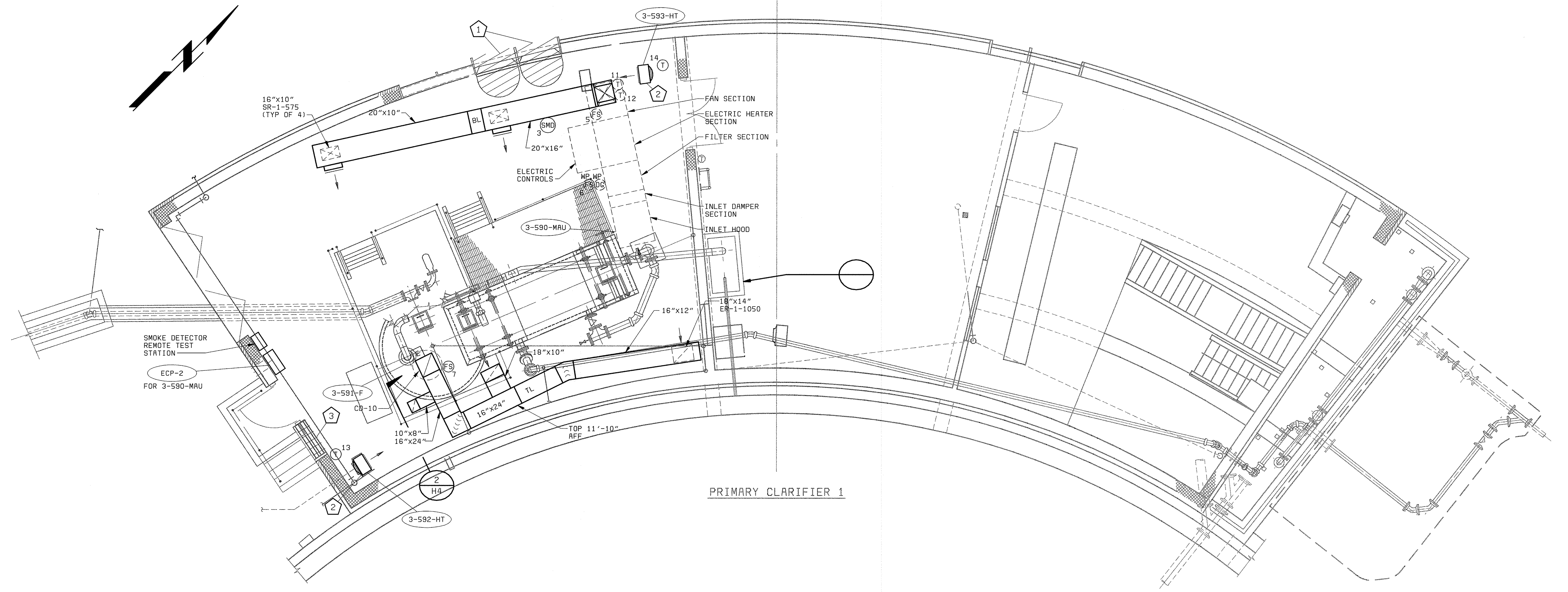
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

SHEET
55 OF 88

H2



SLUDGE OXIDATION BUILDING PLAN
 1/4" = 1'-0"


GENERAL NOTES

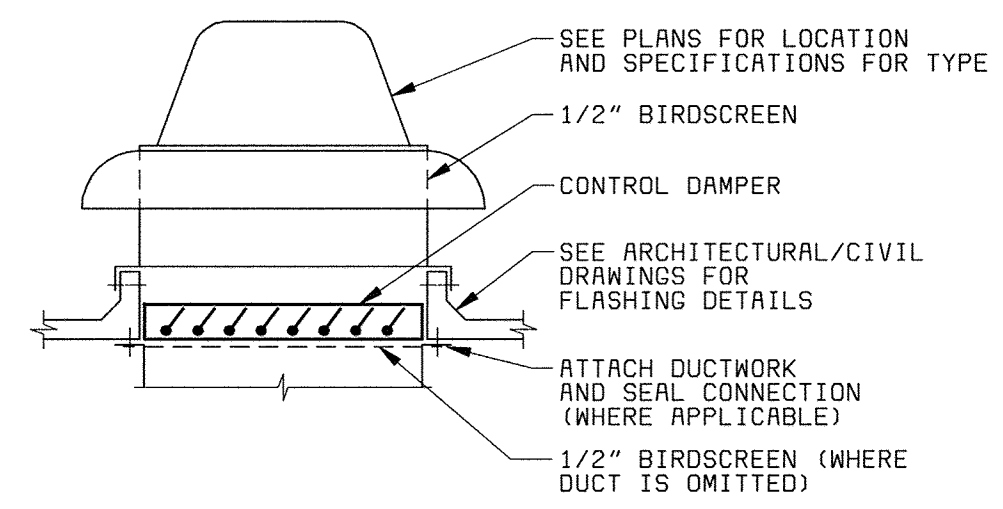
1. ALL DUCTWORK SHOWN ON THIS DRAWING SHALL BE ALUMINUM.

PLAN NOTES:

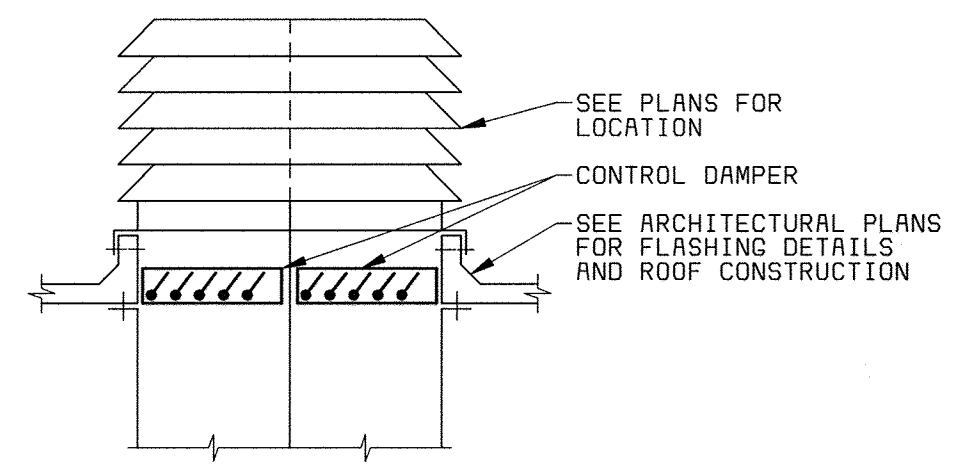
- 1 REMOVE EXISTING EXHAUST FANS. BLANK-OFF TWO 3'x4' LOUVERS.
- 2 REMOVE EXISTING ELECTRIC UNIT HEATER (7.5 KW) AND ASSOCIATED THERMOSTAT. INSTALL A NEW 7.5 KW ELECTRIC UNIT HEATER AND THERMOSTAT.
- 3 REMOVE EXISTING CONTROL DAMPER. BLANK-OFF EXISTING 3'x7' LOUVER.

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 DB6472-3
 P058472R

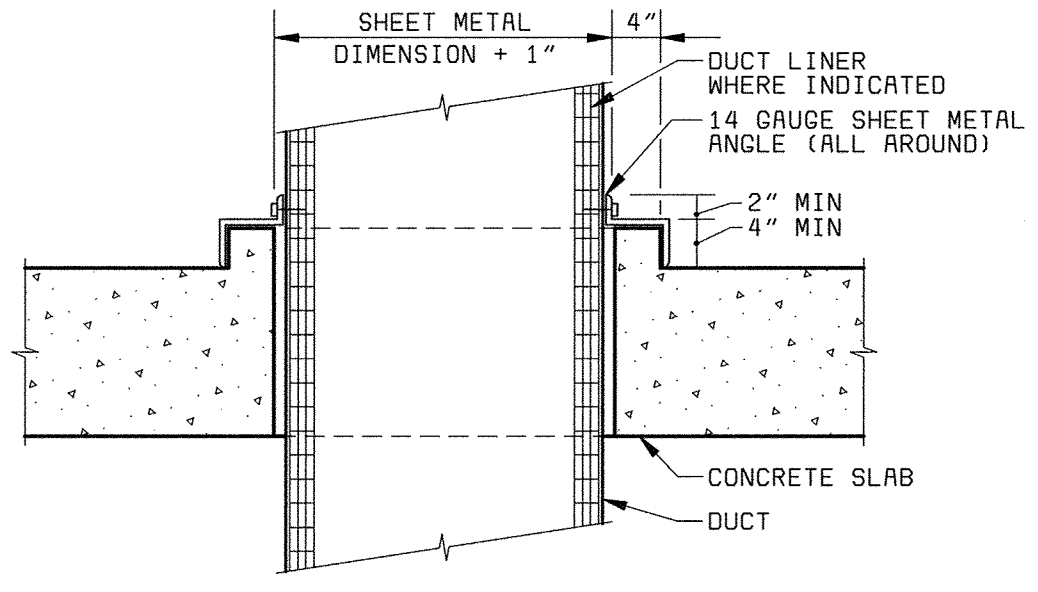
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PAPE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992 DATE: 04/13/01	DES: GWP,HX	02/06/04 CONFORMED TO CONSTRUCTION RECORDS RHH/RJR/RJR	NO. BY CK APP	PRIMARY SCUM HANDLING BUILDING HVAC PRIMARY SCUM HANDLING BUILDING PLAN	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: BDL,LOW CHK: DWN					DATE



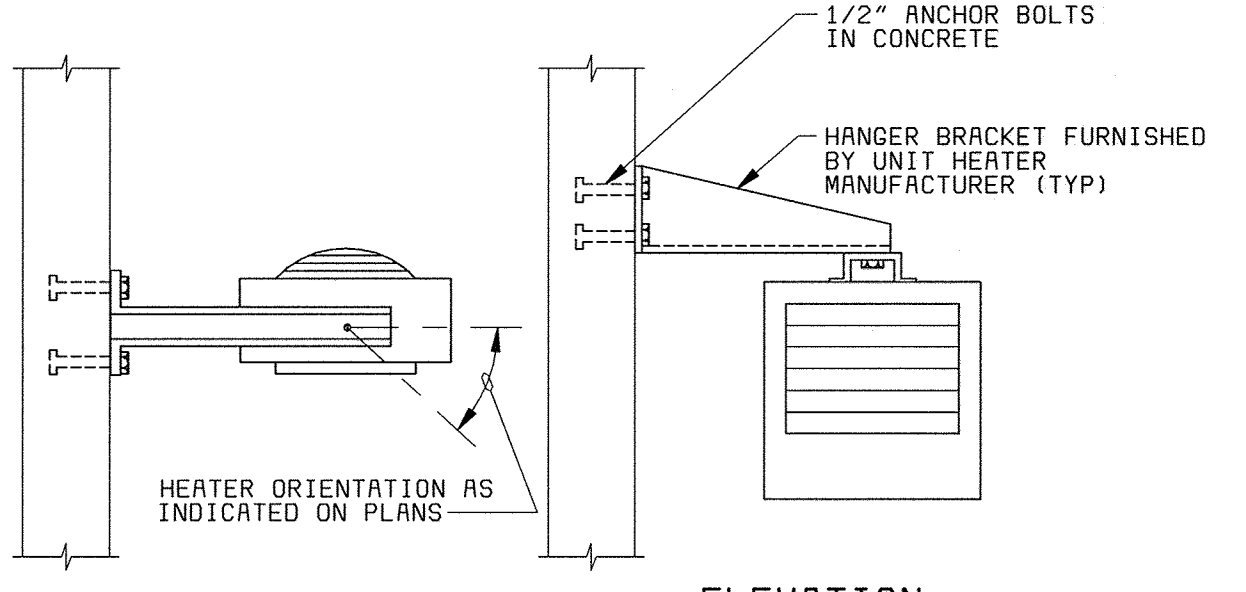
POWER ROOF VENTILATOR A
NO SCALE



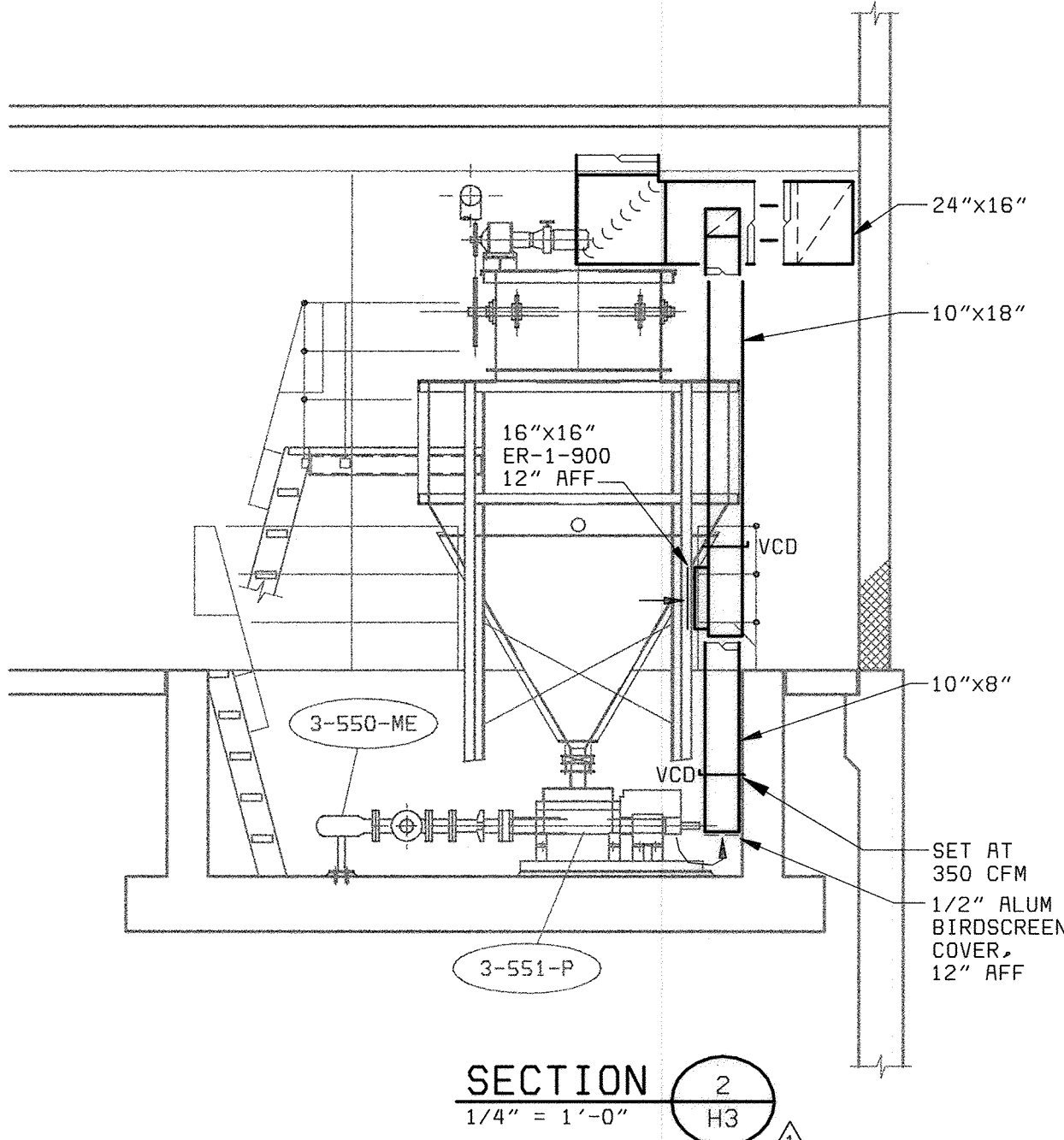
SUPPLY FAN B
NO SCALE



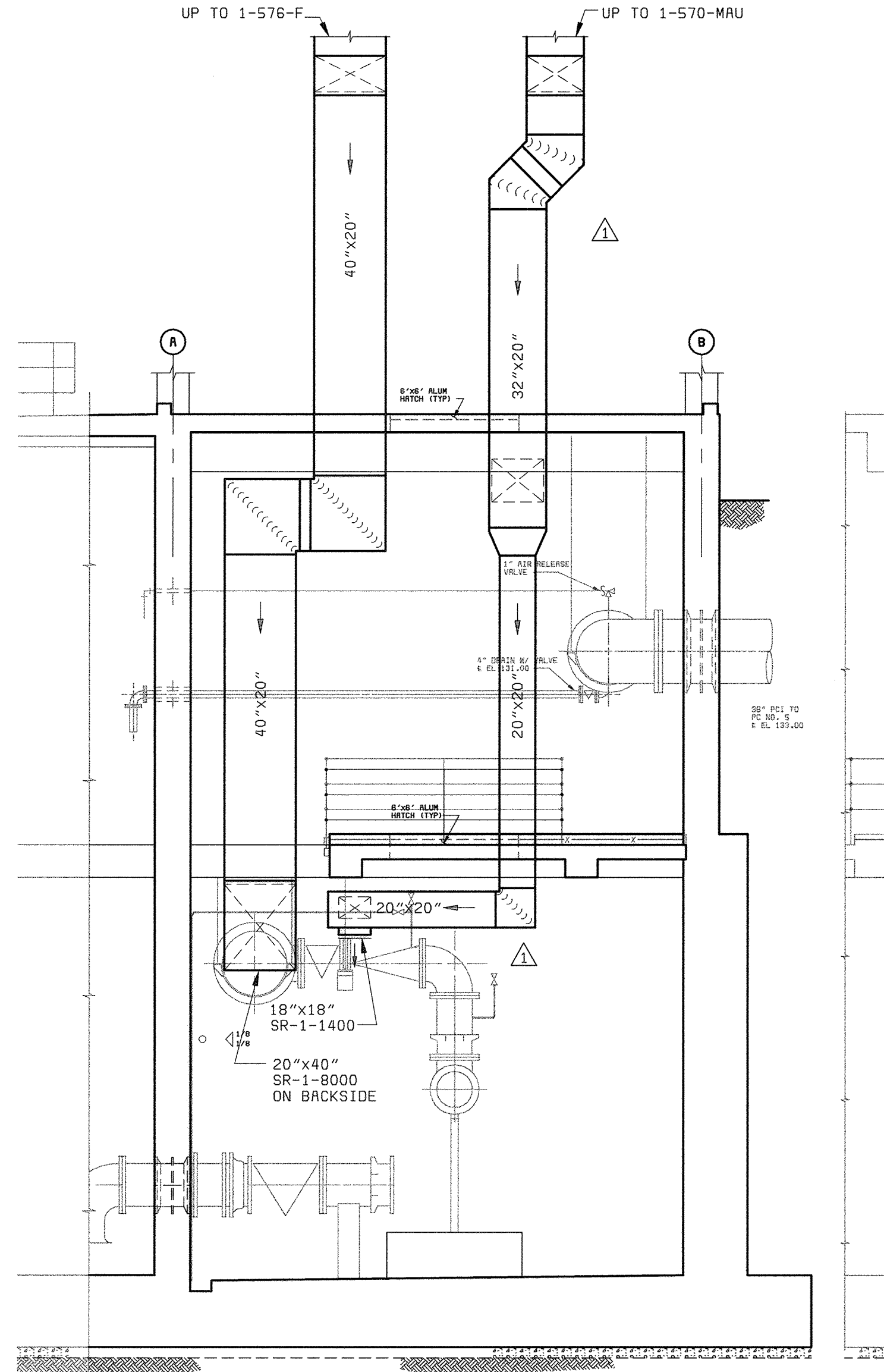
DUCT FLOOR SLEEVE C
NO SCALE



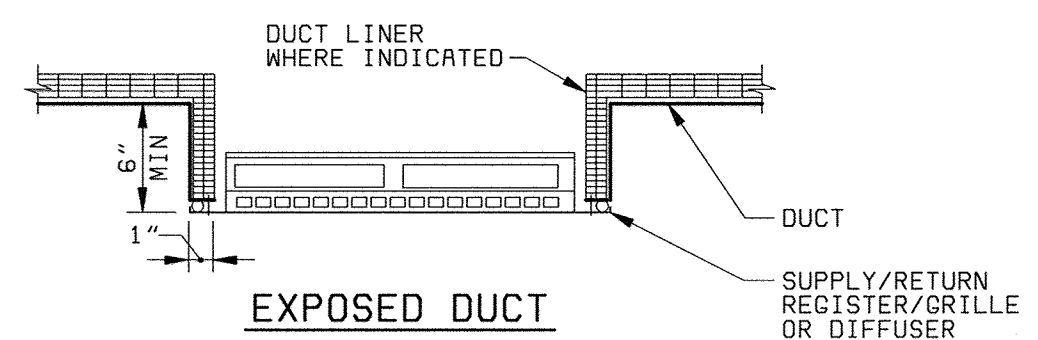
ELECTRIC UNIT HEATER SUPPORT D
NO SCALE



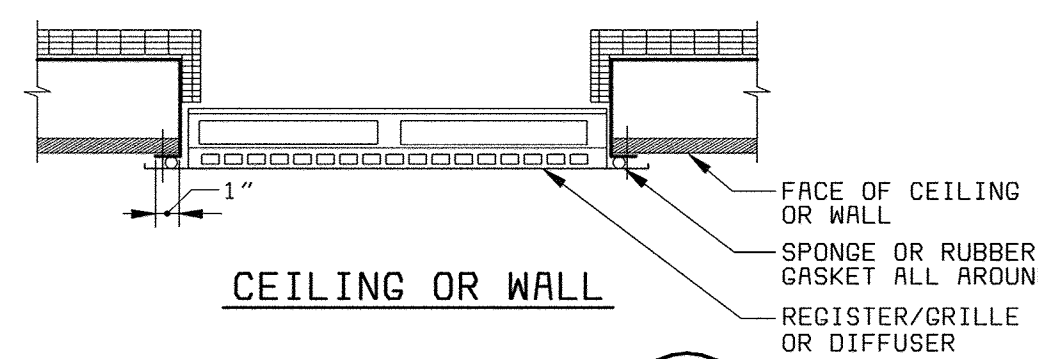
SECTION 2
1/4\"/>



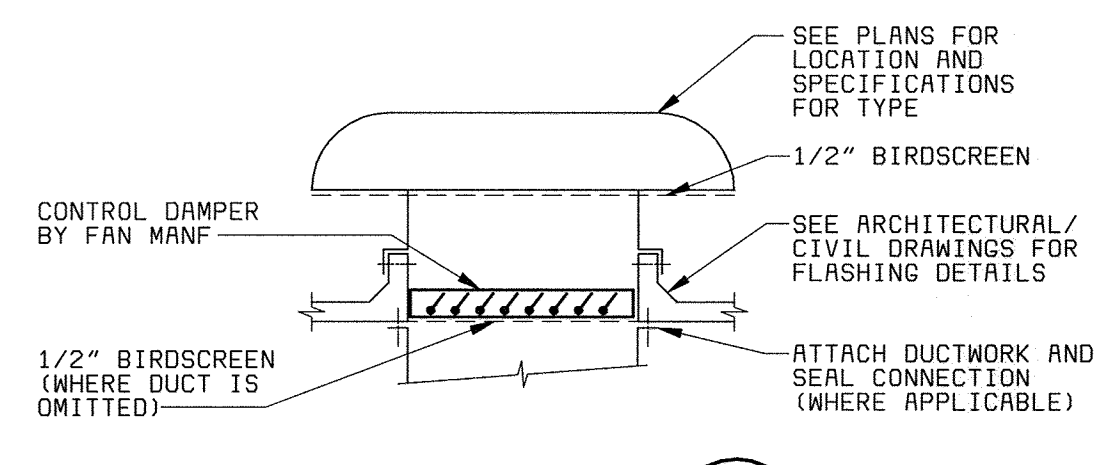
SECTION 1
3/16\"/>



EXPOSED DUCT



REGISTER/GRILLE E
NO SCALE



ROOF HOOD F
NO SCALE

58472-101-M-T00001HRH
58472-101-AP-M-20000000P
58472-101-YRD-C-R0001324
05/19/2004
F058472A

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PAPE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992				DES: GWP,HX DRN: BDL,LDW CHK: DWN DATE: 04/13/01				02/06/04 CONFORMED TO CONSTRUCTION RECORDS 08/28/01 GENERAL REVISIONS REVISIONS AND RECORD OF ISSUE				RHH/RJR/RJR GWP/MLP NO. BY CK APP				HVAC DETAILS AND SECTIONS				LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND				SCALE AS SHOWN SHEET 57 OF 88 H4			
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SYMBOL	MODEL	FRAME/BORDER	MATERIAL	FINISH	DAMPER TYPE	ACCESSORIES	REMARKS
SR-1	301FS	SURFACE	ALUMINUM	ALUMINUM	OPPOSED BLADE		
ER-1	350ZFL	SURFACE	ALUMINUM	ALUMINUM	OPPOSED BLADE		

NOTES: 1. EQUIPMENT SCHEDULE MODEL NUMBERS BASED ON TITUS COMPANY
2. ALL DIFFUSER CORE STYLES ARE 4-WAY UNLESS OTHERWISE INDICATED ON THE PLANS

UNIT NO	LOCATION	AIRFLOW (CFM)	ESP (IN WG)	MOTOR HP	POWER SUPPLY VOLTS/PHASE	MIN WHEEL DIA (IN)	WHEEL TYPE	DRIVE	APPROX WT (LBS)	REMARKS
1-571-F	AUXILIARY PS	5000	0.5	2	480/3	20	C	B	100	1,2,3
1-572-F	AUXILIARY PS	5600	0.50	1.5	480/3	22	C	B	125	3
1-573-F	AUXILIARY PS	8000	0.375	2	480/3	30	C	B	210	3
1-574-F	AUXILIARY PS	13700	0.375	5	480/3	36	C	B	280	3
1-575-F	AUXILIARY PS	1800	0.25	0.33	120/1	13	C	B	60	3
1-576-F	AUXILIARY PS	8000	0.50	5	480/3	18	C	B	290	4, SUPPLY FAN
3-591-F	SCUM CONCENTRAT	2300	0.375	0.5	480/3	16	C	B	90	3, 5

WHEEL TYPE NOTES: C - CENTRIFUGAL
P - PROPELLER

DRIVE NOTES: D - DIRECT
B - BELT

REMARKS: 1 - EXPLOSION-PROOF
2 - NON-SPARKING CONSTRUCTION
3 - POWER ROOF VENTILATOR
4 - ROOF MOUNTED SUPPLY FAN
5 - PROVIDE MOUNTING CURB

UNIT NO	LOCATION	UNIT ORIENTATION	AIRFLOW (CFM)	AIR PD (IN WG)	OUTPUT CAPACITY		WATER FLOW (GPM)	WATER PD (FT)	MOTOR HP	POWER SUPPLY VOLTS/PHASE	APPROX WT (LBS)	REMARKS
					(BTUH)	(KW)						
1-577-HT	AUXILIARY PS	H	310	-	4	-	-	1/50	480/3	35	UNIT HTR	
1-578-HT	AUXILIARY PS	H	310	-	4	-	-	1/50	480/3	35	UNIT HTR	
1-579-HT	AUXILIARY PS	H	310	-	4	-	-	1/50	480/3	35	UNIT HTR	
1-580-HT	AUXILIARY PS	H	310	-	4	-	-	1/50	480/3	35	UNIT HTR	
1-581-HT	AUXILIARY PS	H	310	-	4	-	-	1/50	480/3	35	UNIT HTR	
1-582-HT	AUXILIARY PS	H	310	-	4	-	-	1/50	480/3	35	UNIT HTR	
1-583-HT	AUXILIARY PS	S	200	-	3	-	-	1/50	208/1	35	WALL HTR	
1-584-HT	AUXILIARY PS	S	200	-	3	-	-	1/50	208/1	35	WALL HTR	
3-592-HT	SCUM CONCENTRAT	H	670	-	7.5	-	-	1/10	480/3	50	UNIT HTR	
3-593-HT	SCUM CONCENTRAT	H	670	-	7.5	-	-	1/10	480/3	50	UNIT HTR	

UNIT ORIENTATION NOTES: H - HORIZONTAL DISCHARGE
V - VERTICAL DISCHARGE
S - SURFACE MOUNT

UNIT NO	LOCATION	HEATER TYPE	AIRFLOW (CFM)	ESP (IN WG)	MOTOR HP	POWER SUPPLY VOLTS/PHASE	OUTPUT CAPACITY (KW)	MIN WHEEL DIA (IN)	APPROX WT (LBS)	REMARKS
1-570-MAU	AUXILIARY PS	EH	5600	0.50	5	480/3	92	15	1200	1,2,3
3-590-MAU	SCUM CONCENTRAT	EH	2300	0.375	2	480/3	38	12	500	1,2,3,4
1-585-MAU	PUMP STATION	EH	1800	0.50	1.5	480/3	30	9	500	1,2,3

HEATER TYPE NOTES: EH - ELECTRIC HEATER

REMARKS: 1 - FILTER VELOCITY SHALL NOT EXCEED 350 FEET PER MINUTE.
2 - ROOF MOUNTED.
3 - FOUR STAGES OF HEAT.
4 - PROVIDE EQUIPMENT MOUNTING CURB.

UNIT NO	LOCATION	AIRFLOW (CFM)	AIR PD (IN WC)	TYPE	THROAT SIZE (INXIN)	REMARKS
RH-1	AUXILIARY PS	5000	0.1	I	36x36	1

TYPE NOTES: I - INTAKE

REMARKS: 1 ALUMINUM HOOD CONSTRUCTION

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE



THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PAPE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992

REG. PROF. ENGR. DATE

DES: GWP,HX
DRN: BDL,L,LOW
CHK: DWN
DATE: 04/13/01

NO.	BY	CK	APP
02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR
08/28/01	GENERAL REVISIONS	GWP	MLP

REVISIONS AND RECORD OF ISSUE

HVAC - SEQUENCE OF OPERATIONS

EQUIPMENT TAG NUMBER	CONTROL SWITCH TYPE	CONTROL SWITCH LOCATION	AUTOMATIC CONTROL INTERLOCK	CONTROL DAMPER INTERLOCK	EMERGENCY VENTILATION SHUTOFF SWITCH INTERLOCK	GAS DETECTOR INTERLOCK	SMOKE DETECTOR INTERLOCK	HIGH FILTER LOSS	VENT FAN FAILURE	THERMOSTATS			HUMIDITY-STATS	REMARKS
										ROOM	LOW TEMP	SUPPLY		
1-571-F	0-0	CS		CD-1, CD-2										
1-572-F	0-0-A	TCP-1	1-570-MAU	CD-4			SMD-1,SMD-2		FS-1					
1-573-F	0-0-A	TCP-1	1-576-F	CD-5			SMD-1,SMD-2							
1-574-F	0-0-A	TCP-1		CD-3, CD-7, CD-8						T-2				
1-575-F	0-0-A	TCP-1	1-585-MAU	CD-9			SMD-1,SMD-2		FS-4					
1-576-F	0-0-A	TCP-1		CD-6			SMD-1,SMD-2			T-1				
1-570-MAU	0-0	ECP-1					SMD-1,SMD-2	FS-3	FS-2		T-3	T-4		T-3&4,FS-2&3 FURN W/UNIT
1-585-MAU	0-0	ECP-3						FS-8	FS-9		T-15	T-16		T-15&16,FS-8&9 FURN W/UNIT
1-577-HT	T	WM								T-5				
1-578-HT	T	WM								T-6				
1-579-HT	T	WM								T-7				
1-580-HT	T	WM								T-8				
1-581-HT	T	WM								T-9				
1-582-HT	T	WM								T-10				
1-583-HT	T	BI												
1-584-HT	T	BI												
3-590-MAU	0-0	ECP-2					SMD-3	FS-6	FS-5		T-11	T-12		T-11&12,FS-5&6 FURN W/UNIT
3-591-F	0-0-A	MCC	3-590-MAU	CD-10			SMD-3		FS-7					
3-592-HT	T	WM								T-13				
3-593-HT	T	WM								T-14				

HVAC SEQUENCE OF OPERATIONS NOTES:

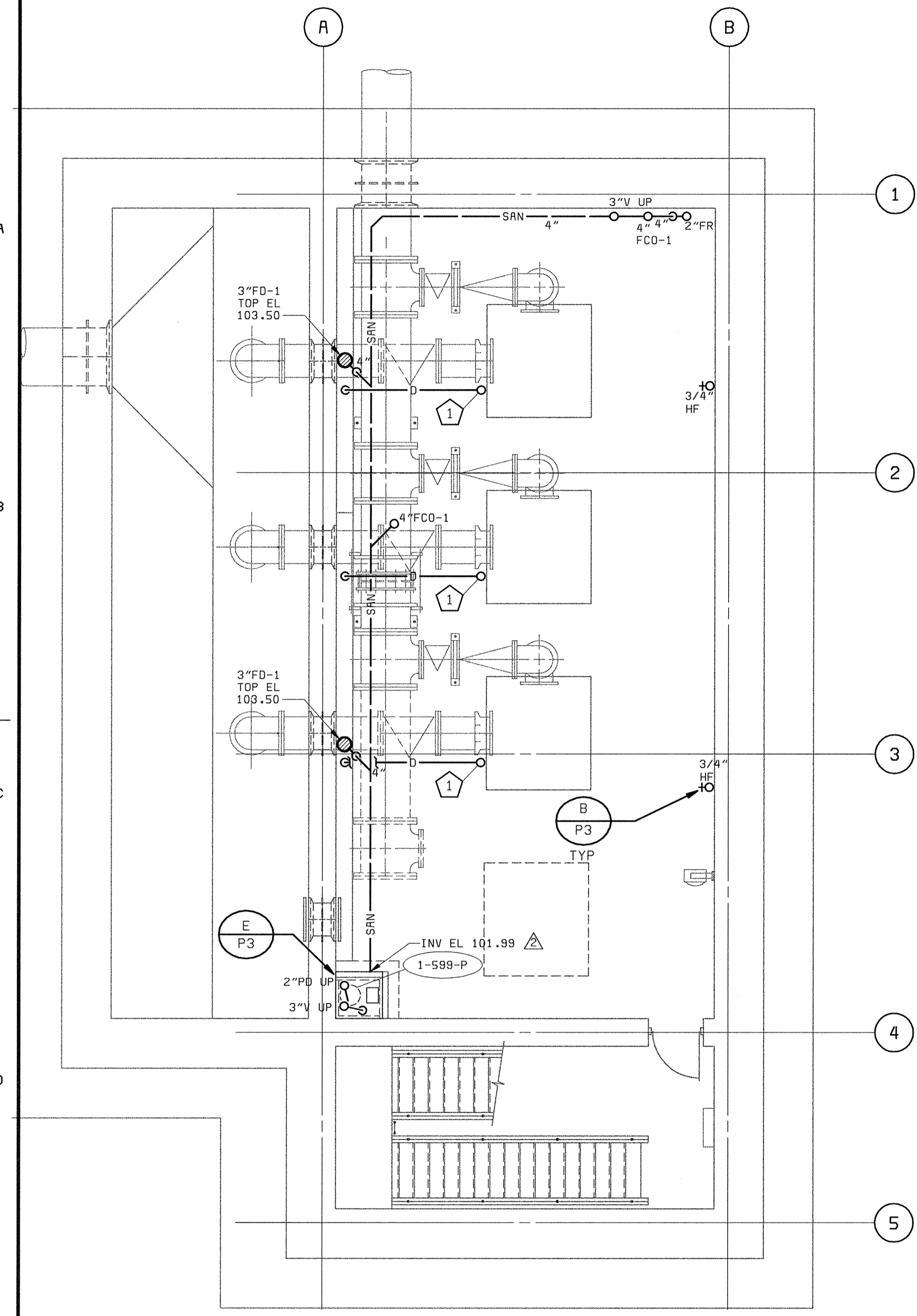
- CONTROL SWITCH TYPE
THE FOLLOWING CONTROL SWITCH TYPE ABBREVIATIONS SHALL APPLY TO THE SEQUENCE OF OPERATIONS:
0-0 ON-OFF
0-0-A ON-OFF-AUTO
T THERMOSTAT
- CONTROL SWITCH LOCATION
THE FOLLOWING CONTROL SWITCH LOCATION ABBREVIATIONS SHALL APPLY:
BI BUILT IN, PROVIDED WITH THE PIECE OF EQUIPMENT ON THE MOTOR STARTER AT THE MOTOR CONTROL CENTER MOUNTED ON A TEMPERATURE CONTROL PANEL
MCC MOUNTED INSIDE THE SPACE EQUIPMENT CONTROL PANEL
ECP EQUIPMENT CONTROL PANEL
CS CONTROL STATION
- AUTOMATIC CONTROL
WHEN THE CONTROL SWITCH IS PLACED IN THE AUTO POSITION, THE EQUIPMENT SHALL BE INTERLOCKED WITH THE INDICATED EQUIPMENT OR CONTROLLED BY THE INDICATED CONTROL DEVICE. THE EQUIPMENT SHALL DE-ENERGIZE WHEN THE AUTOMATIC CONTROL INTERLOCK EQUIPMENT IS DE-ENERGIZED.
- CONTROL DAMPER INTERLOCKS
UNLESS OTHERWISE INDICATED, THE CONTROL DAMPERS SHALL BE PROVEN OPEN BEFORE THE EQUIPMENT IS ALLOWED TO ENERGIZE AND CLOSE WHEN THE EQUIPMENT IS DE-ENERGIZED.
- NOT USED
- NOT USED
- SMOKE DETECTOR INTERLOCK
DUCT MOUNTED SMOKE DETECTOR SMD-1, SMD-2 SHALL SEND SIGNALS OF BOTH "SMOKE DETECTED" AND "SMOKE DETECTOR MALFUNCTION" TO THE SMOKE DETECTOR REMOTE TEST STATION MOUNTED ON THE ASSOCIATED CONTROL PANEL. THE ASSOCIATED EQUIPMENT ITEM AND ALL INTERLOCKED EQUIPMENT SHALL BE DE-ENERGIZED IN THE EVENT SMOKE IS DETECTED.
DUCT MOUNTED SMOKE DETECTOR SMD-3 SHALL SEND SIGNALS OF BOTH "SMOKE DETECTED" AND "SMOKE DETECTOR MALFUNCTION" TO THE SMOKE DETECTOR REMOTE TEST STATION. THE ASSOCIATED EQUIPMENT ITEM AND ALL INTERLOCKED EQUIPMENT SHALL BE DE-ENERGIZED IN THE EVENT SMOKE IS DETECTED.
- HIGH FILTER
A DIFFERENTIAL PRESSURE SWITCH MOUNTED ACROSS THE UNIT FILTER SECTION SHALL SEND AN INDICATION OF DIRTY FILTER CONDITION TO THE ASSOCIATED CONTROL PANEL WHEN THE PRESSURE DIFFERENCE ACROSS THE FILTER SECTION EXCEEDS 0.5 INCHES WATER COLUMN. A DIRTY FILTER ALARM INDICATING LIGHT SHALL BE PROVIDED ON THE ASSOCIATED CONTROL PANEL.
- VENTILATION FAILURE
THE DUCT MOUNTED DIFFERENTIAL PRESSURE SWITCH SHALL ENERGIZE A "VENTILATION FAILURE" INDICATING LIGHT ON THE FACE OF THE ASSOCIATED CONTROL PANEL WHEN THERE IS A LOSS OF VENTILATION AIRFLOW.
FS-7 SHALL BE INTERCONNECTED WITH FS-5 TO ENERGIZE A COMMON "VENTILATION FAILURE" INDICATING LIGHT ON THE FACE OF ECP-2 WHEN THERE IS A LOSS OF VENTILATION AIRFLOW FOR 3-591-F.
- THERMOSTATS - ROOM
THE ROOM THERMOSTAT SHALL ENERGIZE THE PIECE OF EQUIPMENT TO MAINTAIN THE ROOM TEMPERATURE SETPOINT.
- THERMOSTATS - LOW TEMPERATURE
IN THE EVENT THE DISCHARGE AIR FALLS BELOW THE LOW TEMPERATURE THERMOSTAT SETPOINT, THE EQUIPMENT SHALL DE-ENERGIZE AND A "LOW DISCHARGE AIR TEMPERATURE" INDICATING LIGHT ON THE FACE OF THE ASSOCIATED CONTROL PANEL SHALL BE ENERGIZED. INDICATION OF "LOW DISCHARGE AIR TEMPERATURE" SHALL BE SENT FROM THE ASSOCIATED CONTROL PANEL TO THE PLANT CONTROL SYSTEM. AN ADJUSTABLE 0 TO 60 SECOND TIME DELAY RELAY SHALL BE PROVIDED TO PREVENT NUISANCE SHUTDOWNS ON UNIT START UP DURING COLD WEATHER.
- THERMOSTATS - SUPPLY
THE SUPPLY AIR THERMOSTAT LOCATED IN THE UNITS CABINET SHALL MODULATE THE UNIT OUTPUT CAPACITY TO MAINTAIN THE SUPPLY AIR SETPOINT.
- NOT USED
- NOT USED
- NOT USED
- NOT USED
- NOT USED
- NOT USED
- HEATERS
UNIT HEATERS SHALL BE CONTROLLED BY THEIR RESPECTIVE THERMOSTATS. WALL HEATERS SHALL BE CONTROLLED BY THEIR RESPECTIVE BUILT-IN THERMOSTATS.
- TEMPERATURE CONTROL PANELS
TEMPERATURE CONTROL PANELS SHALL BE PROVIDED WITH THE INDICATING LIGHTS, RUNNING LIGHTS, AND SELECTOR SWITCHES AS INDICATED IN THE SEQUENCE OF OPERATIONS. RUNNING LIGHTS SHALL BE PROVIDED FOR EACH CONTROL SWITCH TO INDICATE BOTH ENERGIZED AND DE-ENERGIZED STATUS. INDICATING LIGHT COLORS SHALL BE AS FOLLOWS:
GREEN - DE-ENERGIZED
RED - ENERGIZED
AMBER - ALARM
WHITE - STATUS
TEMPERATURE CONTROL PANELS SHALL BE PROVIDED WITH ALARM CONDITION INDICATING LIGHTS AND ONE ELECTRICALLY ISOLATED CONTACT FOR ANY ALARM CONDITION. THE ISOLATED CONTACT SHALL CLOSE IN THE EVENT THAT ANY ALARM CONDITION EXISTS, AND SHALL PROVIDE REMOTE ANNUNCIATION OF THE COMMON ALARM TO THE PLANT CONTROL SYSTEM.
UNLESS OTHERWISE NOTED, THE CONTROL PANEL LISTED SHALL PROVIDE ALL NECESSARY CONTROLS AND INTERLOCKS TO OPERATE ALL ASSOCIATED CONTROL EQUIPMENT WITH THE EQUIPMENT ITEM AS INDICATED IN THE SEQUENCE OF OPERATION. CONTROL PANELS SHALL PROVIDE A SINGLE ISOLATED CONTACT OUTPUT WHICH CLOSING TO ENERGIZE THE EQUIPMENT ITEM AND OPENS TO DE-ENERGIZE THE EQUIPMENT ITEM.
- THERMOSTAT SETPOINTS
THERMOSTAT SETPOINTS SHALL BE AS FOLLOWS UNLESS INDICATED OTHERWISE.
LOW TEMPERATURE THERMOSTATS - 35°F
HEATERS - 40°F
MAKEUP AIR SUPPLY HEATING - 40°F
VENTILATING EQUIPMENT - 100°F

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

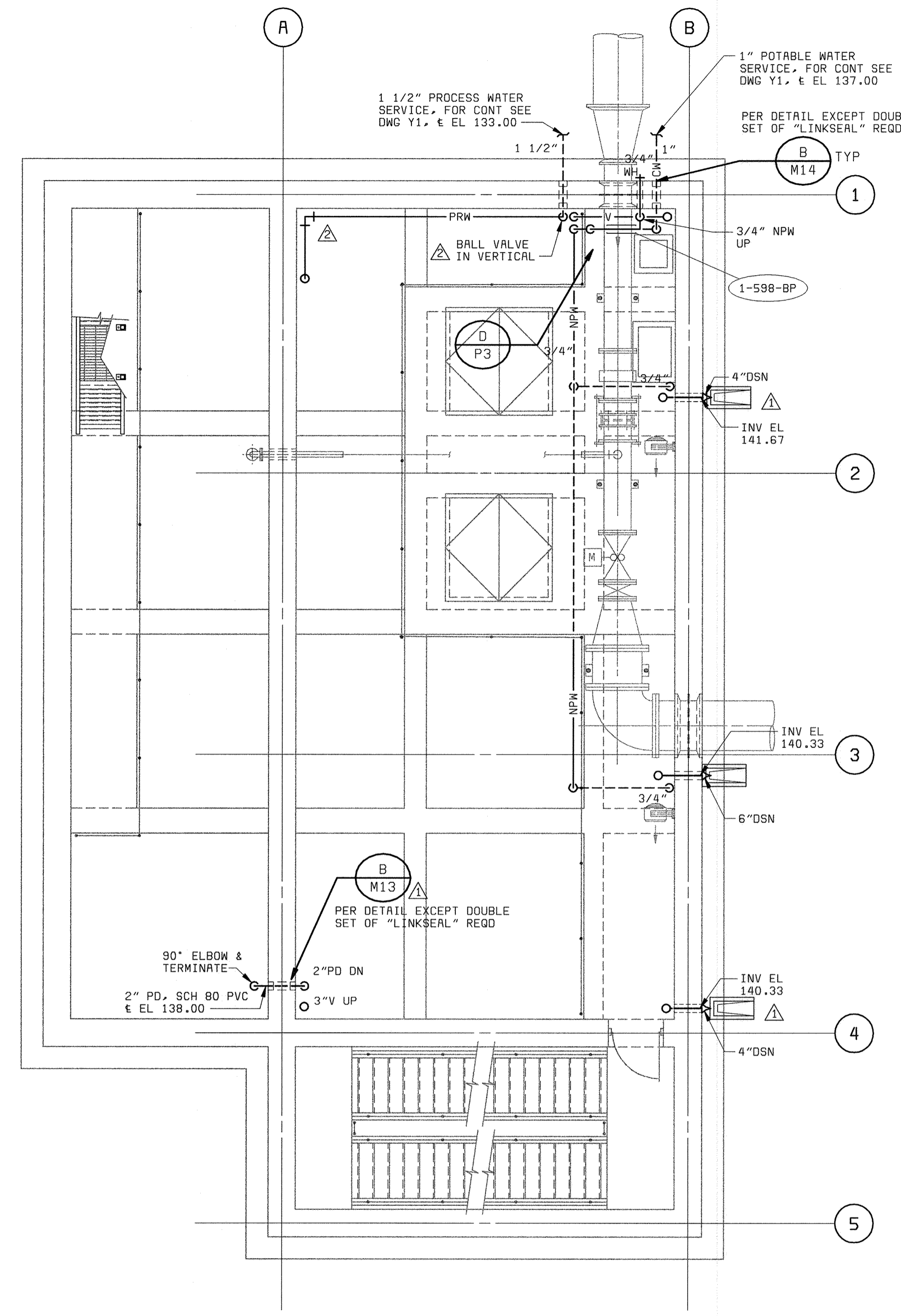
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

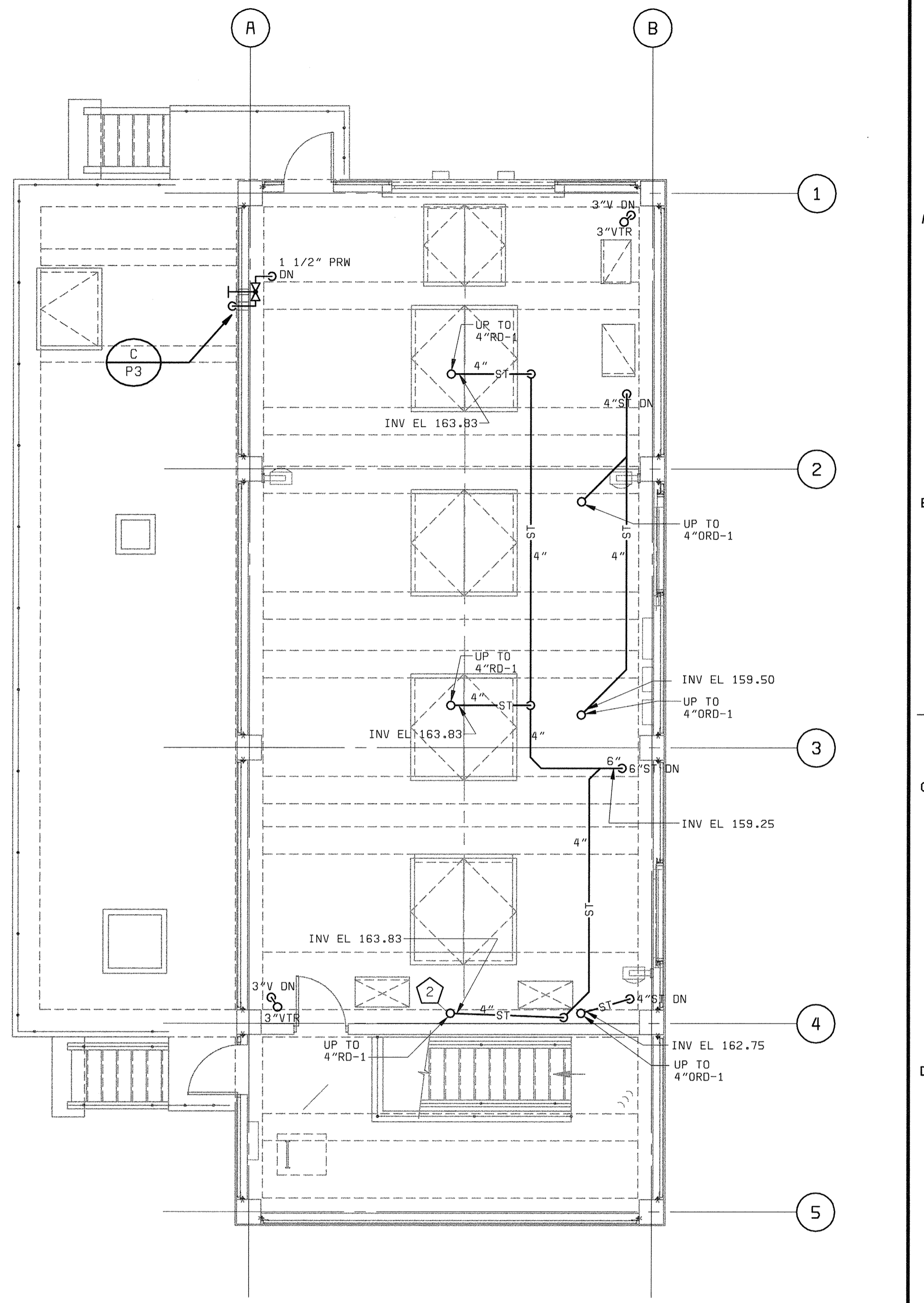
SCALE AS SHOWN
SHEET 58 OF 88
H5



LOWER LEVEL PLAN
3/16" = 1'-0"



MEZZANINE LEVEL PLAN
3/16" = 1'-0"

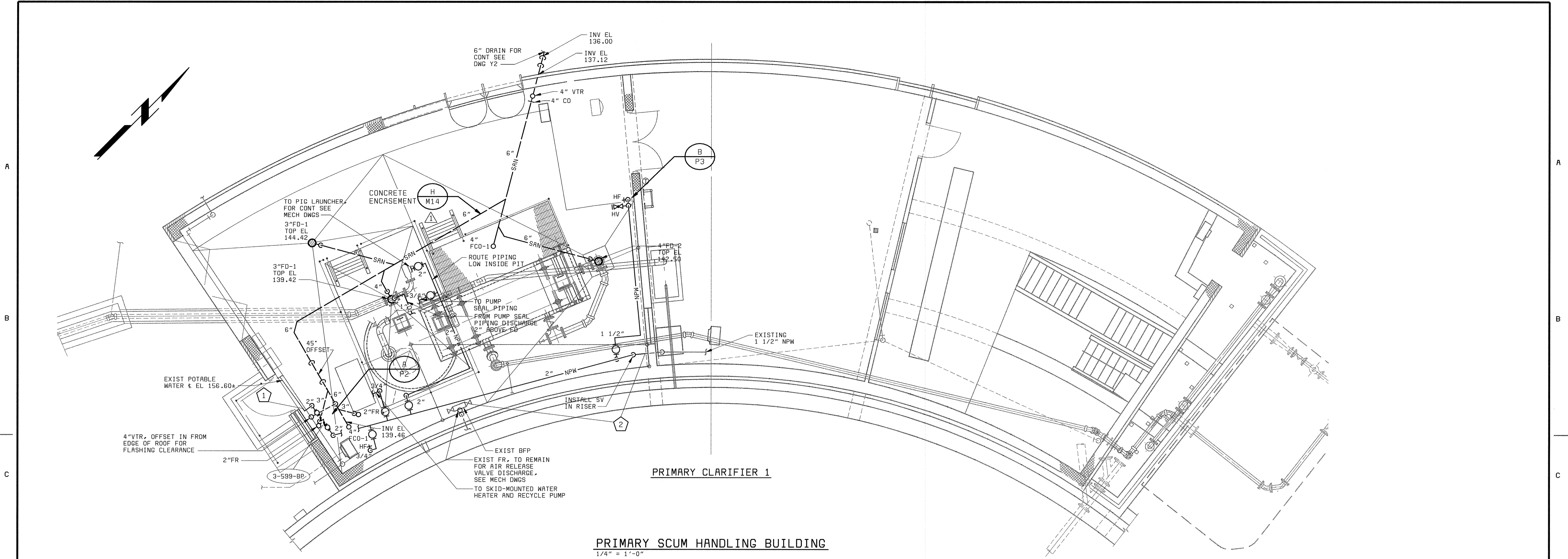


GROUND LEVEL PLAN
3/16" = 1'-0"

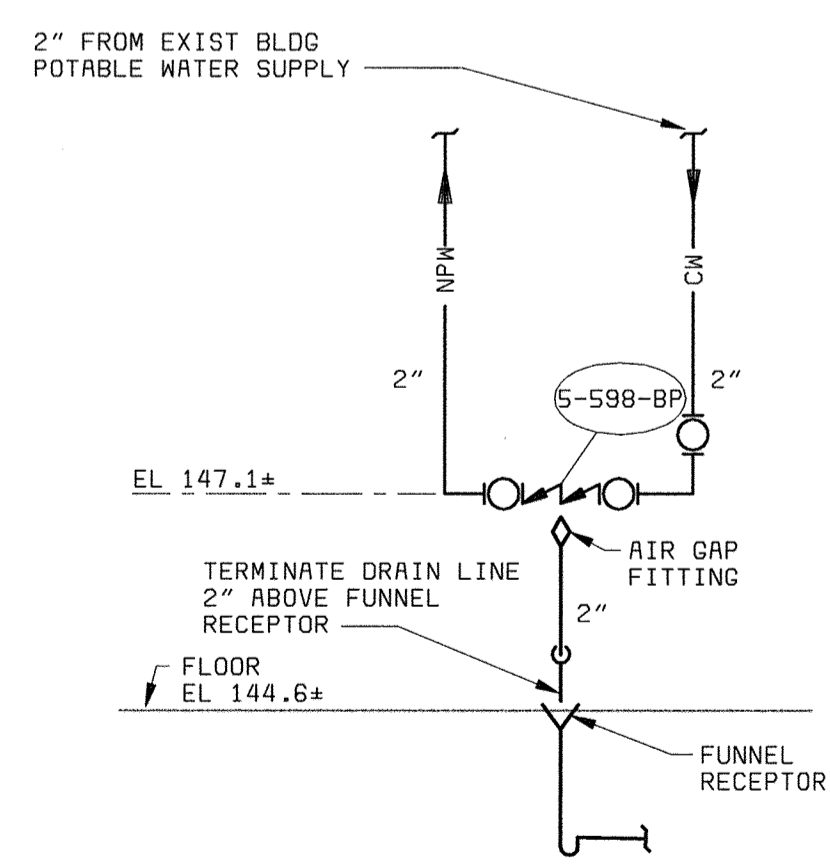
- PLAN NOTES:**
- ① ROUTE 1" DRAIN FROM PUMP DRIP PAN TO TRENCH.
 - ② MODIFY UNDERDECK CLAMP AS REQUIRED TO FIT BETWEEN WALL & WEB OF STRUCTURAL DOUBLE TEE.

XREF: 58472-104-AP-PB-Z000000TP
 XREF: 58472-101-AP-PB-M-Z000000DN
 XREF: 58472-101-AP-PB-M-Z000000BP
 05/19/2005
 05/19/2005

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PAPE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992	DES: JPC DRN: JPC CHK: MLP DATE: 04/13/01	05/05/05 06/12/01 CONFORMED TO CONSTRUCTION RECORDS ADDENDUM #1 REVISIONS AND RECORD OF ISSUE	AUXILIARY PUMP STATION PLUMBING LOWER LEVEL, MEZZANINE LEVEL AND GROUND LEVEL FLOOR PLANS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 59 OF 88 P1
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PRIMARY CLARIFIER 1
PRIMARY SCUM HANDLING BUILDING
 1/4" = 1'-0"



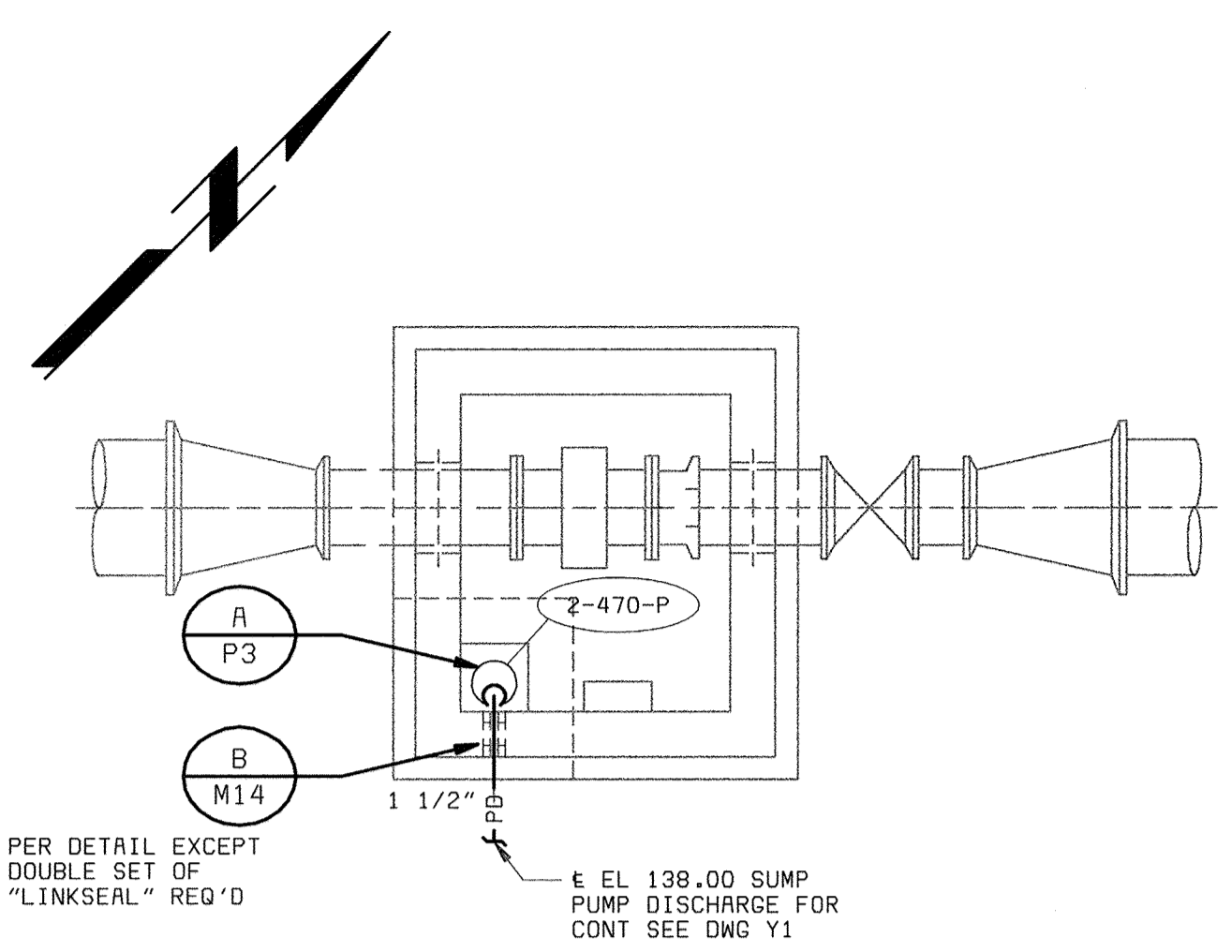
SCUM CONCENTRATOR WATER SUPPLY DETAIL (A)
 NO SCALE

- PLAN NOTES:**
- 1 CONTRACTOR SHALL DEMOLISH EXISTING POTABLE WATER PIPING FROM THIS LOCATION TO EXISTING BACKFLOW PREVENTER. CONTRACTOR SHALL MODIFY EXISTING PIPING TO PROVIDE 2" POTABLE WATER TO NEW BACKFLOW PREVENTER.
 - 2 CONTRACTOR SHALL DEMOLISH EXISTING BACKFLOW PREVENTER. CONTRACTOR SHALL DEMOLISH NONPOTABLE WATER PIPING FROM BACKFLOW PREVENTER TO EXISTING NONPOTABLE WATER PIPING. CONTRACTOR SHALL MODIFY EXISTING PIPING TO RECEIVE SERVICE FROM NEW 2" NONPOTABLE WATER SUPPLY.

XREF 58472-104-PC-H-Z000000TR
 XREF 58472-101-N-100001HRH

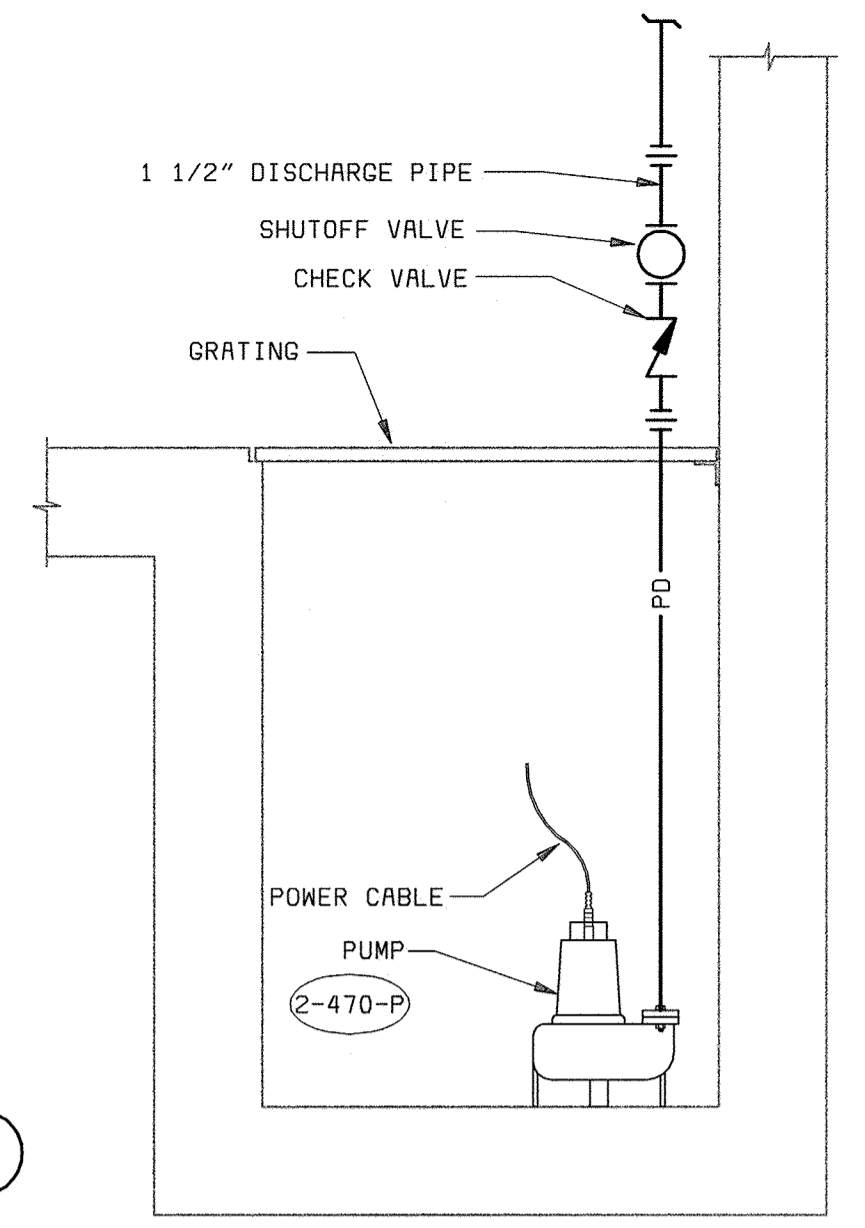
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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PAPE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992	DES: JPC						PRIMARY SCUM HANDLING BUILDING PLUMBING PLAN AND DETAIL	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: JPC	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH RJR/RJR	SHEET 60 OF 88				
			CHK: MLP	06/12/01	ADDENDUM #1						SHEET 60 OF 88
			DATE: 04/13/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP			P2



SECTIONAL PLAN
1/4" = 1'-0"

PER DETAIL EXCEPT DOUBLE SET OF "LINKSEAL" REQ'D
 EL 138.00 SUMP PUMP DISCHARGE FOR CONT SEE DWG Y1



SECTION
FEI METER VAULT
SUMP PUMP DETAIL
NO SCALE

PLUMBING FIXTURE AND EQUIPMENT SCHEDULE			
LABEL	DESCRIPTION	MANUFACTURER MODEL	REMARKS
FD-1	MEDIUM DUTY CAST IRON FLOOR DRAIN, ADJUSTABLE TOP, LOOSE SET CAST IRON GRATE.	SMITH 2310 SERIES	
FD-2	MEDIUM DUTY CAST IRON FLOOR DRAIN, ADJUSTABLE TOP, DOME GRATE.	SMITH 2310-D SERIES	
FCO-1	HEAVY DUTY FLOOR CLEANOUT, SECURED ROUND ADJUSTABLE NICKEL BRONZE TOP.	SMITH 4100 SERIES	
RD-1	CAST IRON PRIMARY ROOF DRAIN.	SMITH 1010-E SERIES	
ORD-1	CAST IRON OVERFLOW ROOF DRAIN	SMITH 1010-E SERIES	
REMARKS:			

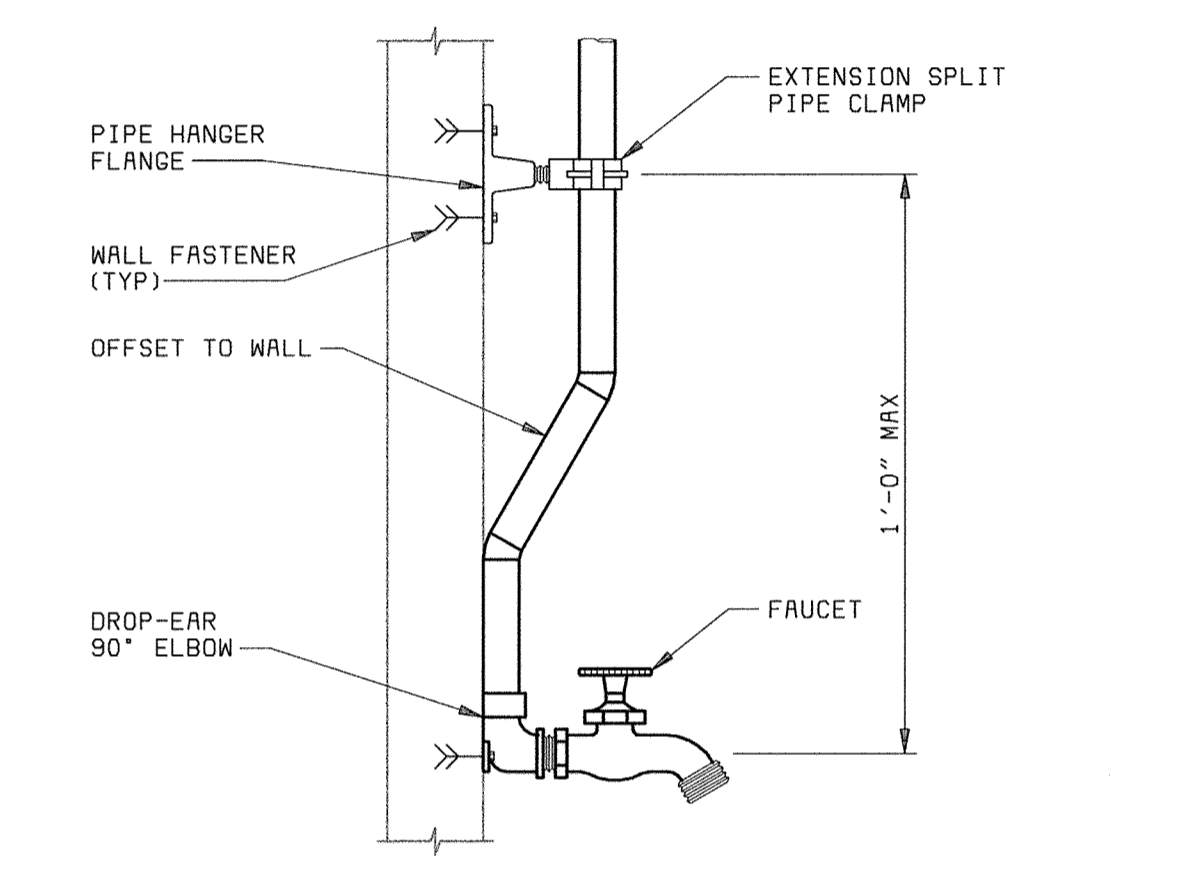
SUMP AND SEWAGE PUMP SCHEDULE															
UNIT NO	LOCATION	TYPE	CAPACITY (GPM)	TOTAL HEAD (FT)	MAX SPEED (RPM)	MOTOR HP	POWER SUPPLY VOLTS/PHASE	DISCHARGE SIZE (IN)	SUMP LEVELS (FT)*				MFR/MODEL	CONTROL TYPE	REMARKS
									OFF	LEAD	LAG	HWA			
1-599-P	AUXILIARY PUMP STATION	SUBMERSIBLE EFFLUENT PUMP	50	44	1750	1 1/2	460/3	2	0.63	1.3	-	4.0	WEIL MODEL 2443	2S	1,2,3
2-470-P	FEI METER VAULT	SUBMERSIBLE SUMP PUMP	25	20	1750	1/3	115/1	1 1/4	0.33	1.0	-	-	WEIL MODEL 1400	1S	2,3

*PUMPS OFF, LEAD PUMP START, LAG PUMP START AND HIGH WATER ELEVATIONS AS MEASURED FROM THE BOTTOM OF THE SUMP.

Control Types: 1S Submersible Simplex "Piggypack" Arrangement
 2S Submersible Medium Duty Simplex Arrangement with Control Panel

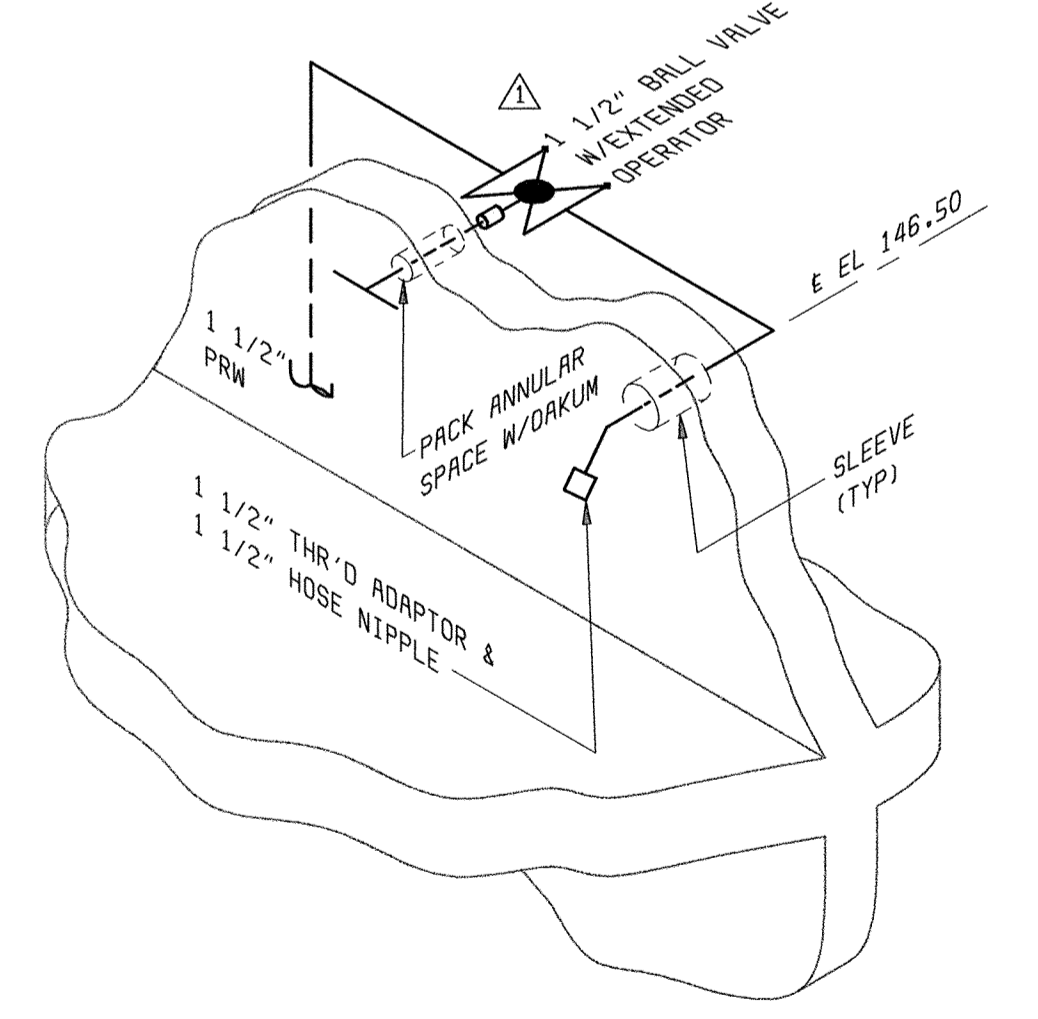
REMARKS
 (1) HIGH WATER ALARM
 (2) SUMP COVER REQUIRED
 (3) LIFTING CHAIN REQUIRED

BACKFLOW PREVENTER SCHEDULE						
UNIT NO	SERVICE	BODY SIZE IN	MAXIMUM FLOW GPM	MAXIMUM DELTA P PSI	MANUFACTURER MODEL	REMARKS
1-598-BP	NONPOTABLE WATER SUPPLY (APS)	1	30	10	WATTS SERIES 909	REDUCED PRESSURE TYPE
3-599-BP	NONPOTABLE WATER SUPPLY (SO)	2	52	10	WATTS SERIES 909	REDUCED PRESSURE TYPE
REMARKS: ABBREVIATIONS IN SERVICE COLUMN ARE: APS-AUXILIARY PUMP STATION BUILDING & SO-SLUDGE OXIDATION BUILDING						

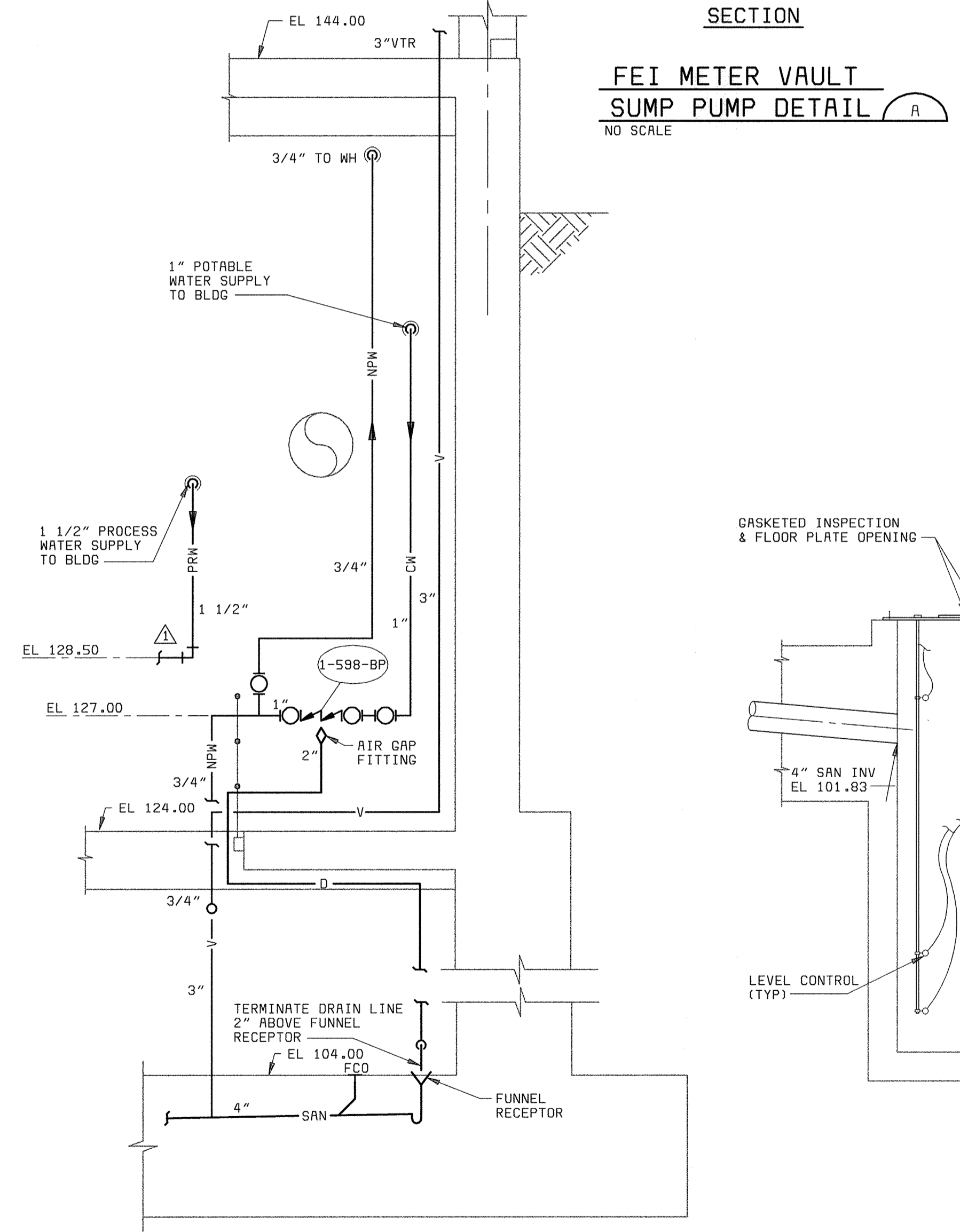


HOSE FAUCET PIPE MOUNTING DETAIL
NO SCALE

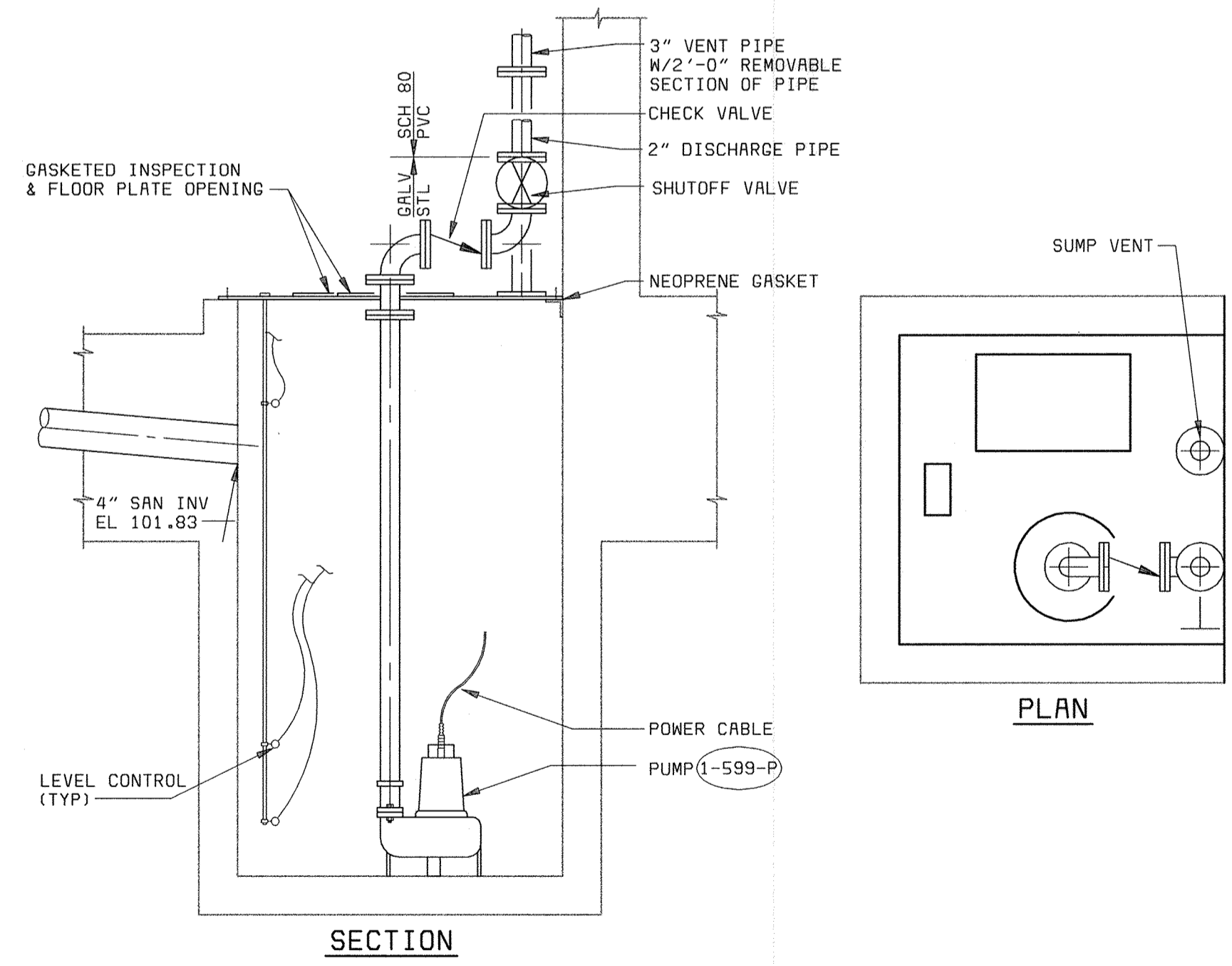
NOTES:
 1. MOUNTING SHALL BE SIMILAR FOR HOSE VALVES.
 2. TOP SUPPLY SHOWN, BOTTOM SUPPLY SIMILAR.



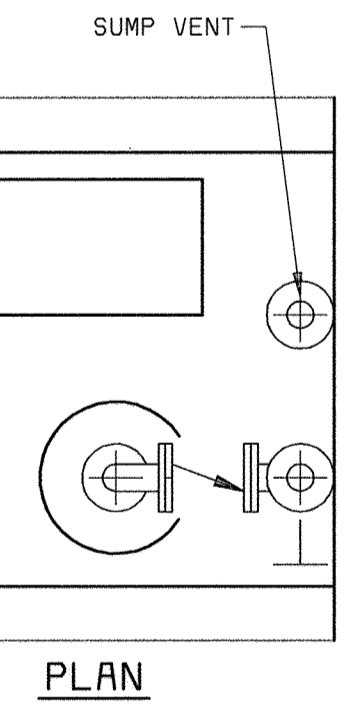
AUXILIARY PUMP STATION
HOSE VALVE DETAIL
NO SCALE



AUXILIARY PUMP STATION WATER SUPPLY DETAIL
NO SCALE



AUXILIARY PUMP STATION
SUMP PUMP DETAIL
NO SCALE



PLAN

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 CHIEF, BUREAU OF UTILITIES DATE



THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PAPE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992

REG. PROF. ENGR. DATE

DES: JPC					
DRN: JPC					
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DATE: 04/13/01	05/05/05	CONFORMED TO CONSTRUCTION RECORDS			
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

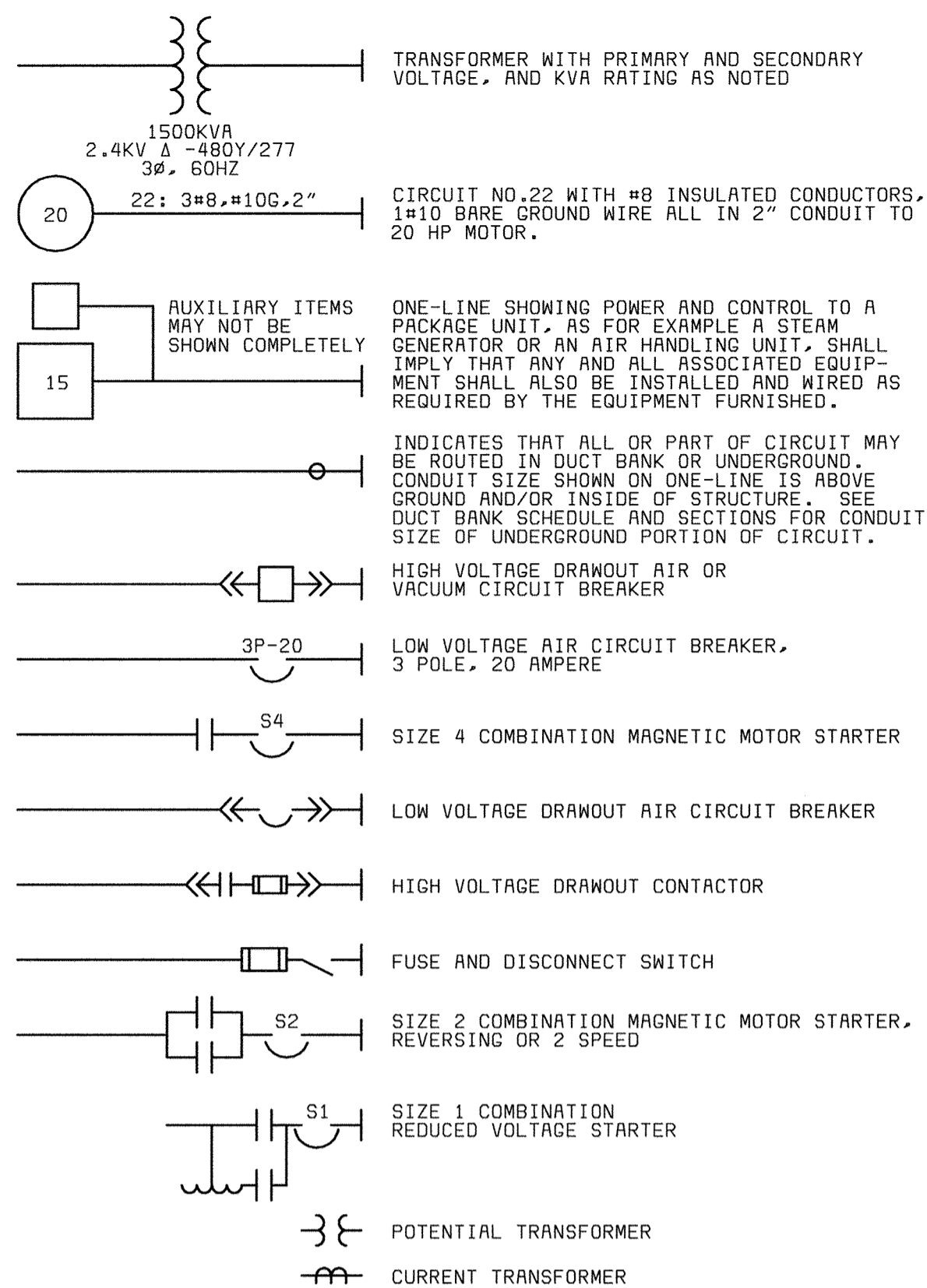
FEI METER VAULT
 PLUMBING
 SECTIONAL PLAN,
 DETAILS, AND SCHEDULES

LITTLE PATUXENT WATER RECLAMATION PLANT
 ADDITION NO. 6
 PRELIMINARY AND PRIMARY TREATMENT EXPANSION
 CAPITAL PROJECT S-6205
 CONTRACT NO. 20-3840
 HOWARD COUNTY, MARYLAND

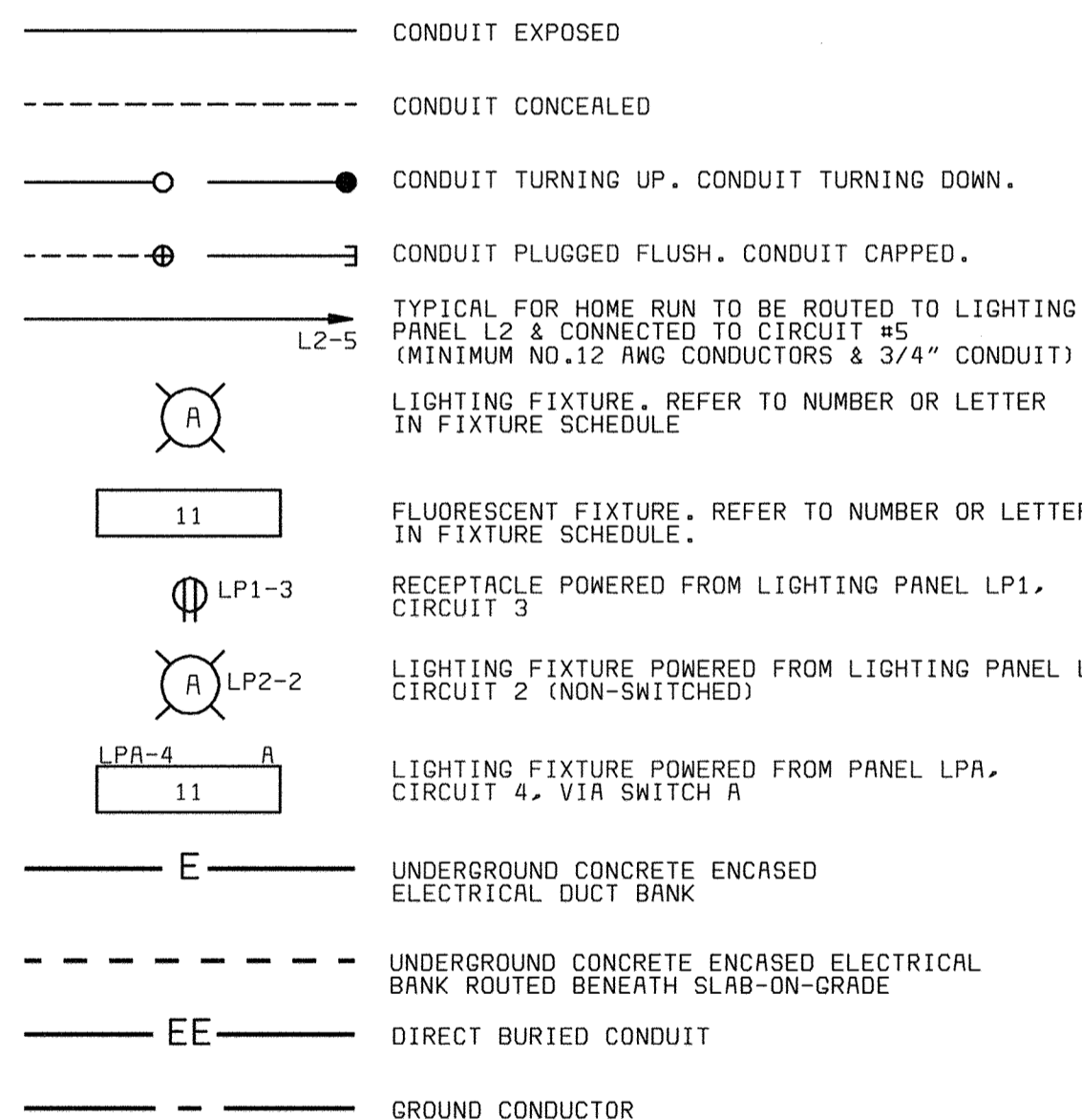
SCALE AS SHOWN
 SHEET 61 OF 88
 P3

XREF: 58472-101-YARD-C-Z000000TM

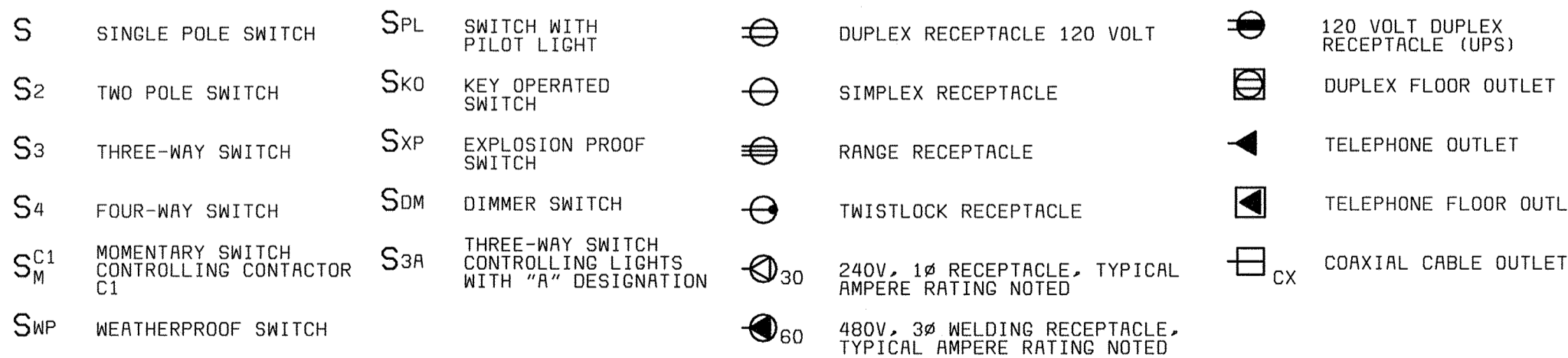
ONE-LINE DIAGRAM LEGEND



CONDUIT & WIRING INSTALLATION LEGEND



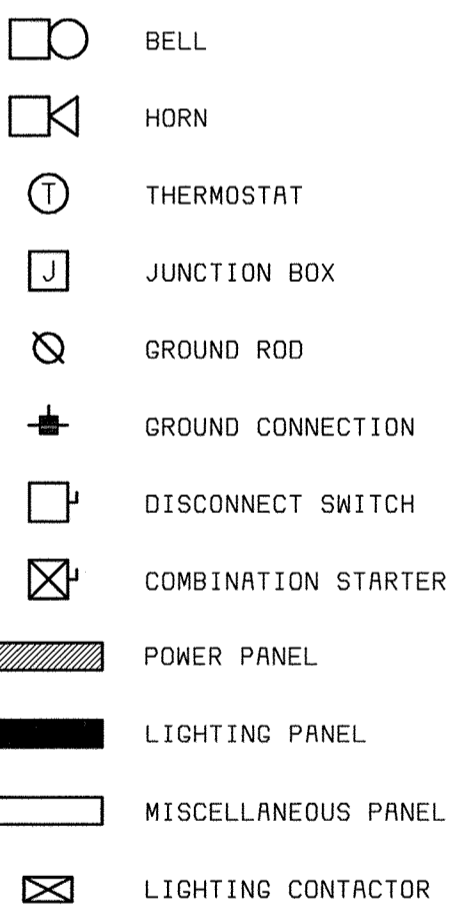
SWITCH & OUTLET SYMBOLS



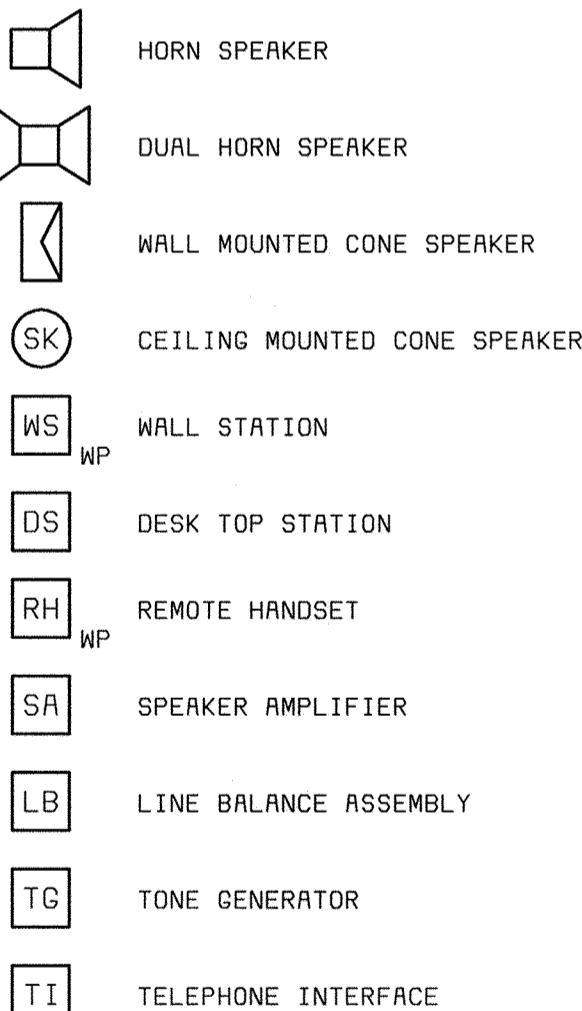
SCHEMATIC SYMBOLS



MISCELLANEOUS SYMBOLS



COMMUNICATION SYMBOLS



ABBREVIATIONS

A	AMBER, AMPERE, ALARM	M	MAGNETIC MOTOR STARTER
AC	ALTERNATING CURRENT	MA	MILLIAMPERE
ACB	AIR CIRCUIT BREAKER	MCB	MAIN CIRCUIT BREAKER
AF	AMPERE FRAME	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
AT	AMPERE TRIP	MH	MANHOLE OR MOUNTING HEIGHT
AWG	AMERICAN WIRE GAGE	MOV	MOTOR OPERATED VALVE
		MPR	MOTOR PROTECTION RELAY
BC	BATTERY CHARGER	MS	MANUAL MOTOR STARTER
BR	BRAKE	MSH	MOTOR SPACE HEATER
BT	BEARING TEMPERATURE	MV	MILLIVOLT
		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)	O	OPEN
CB"B"	CIRCUIT BREAKER AUXILIARY CONTACT (CLOSED WHEN BREAKER IS CLOSED)	OCB	OIL CIRCUIT BREAKER
		OL	OVERLOAD
		ORA	ON-OFF-AUTO
		OOR	ON-OFF-REMOTE
CD	CONTROL DAMPER	P	PRIMARY
CJ	CELL INTERLOCK	PCS	PLANT CONTROL SYSTEM
CKT	CIRCUIT	PB	PUSH BUTTON OR PULL BOX
CL2	CHLORINE	PF	POWER FACTOR METER
COS	CABLE OPERATED SWITCH	PH	PHASE, CHEMICAL TERM
CP	CONTROL PANEL	PIU	PROCESS INTERFACE UNIT (PLC)
CPT	CONTROL POWER TRANSFORMER	PLC	PROGRAMMABLE LOGIC CONTROLLER
CR	CURRENT OR CONTROL RELAY	PP	POWER PANEL
CS	CONTROL STATION	PR	PROTECTIVE RELAYING
CTC	CYCLE TIMER OR CURRENT TRANSFORMER	PR#	PROCESS RELAY #5,6 OR 7
CTM	CYCLE TIMER CLUTCH	PRS	PROXIMITY SWITCH
CTP	CYCLE TIMER MOTOR	PS	PRESSURE SWITCH
CTP/C	CONTROLS TERMINATION PANEL	PT	POTENTIAL TRANSFORMER, PROGRAM TIMER
2/C	2 CONDUCTOR	2P	2 POLE
4"C	4" CONDUIT		
DC	DIRECT CURRENT	R	RED, RAISE, RELAY OR REVERSE
DI	DOOR INTERLOCK	RECP	RECEPTACLE
DM	DAMPER MOTOR OR DEMAND METER	RES	RESISTOR
DPST	DOUBLE POLE DOUBLE THROW	RT	REPEATING TIMER
DPST	DOUBLE POLE SINGLE THROW	RTD	RESISTANCE TYPE TEMP DETECTOR
DPR	DIFFERENTIAL PRESSURE REGULATOR	RTU	REMOTE TERMINAL UNIT
DPS	DIFFERENTIAL PRESSURE SWITCH	RVSS	REDUCED VOLTAGE SOLID STATE STARTER
DS	DISCONNECT SWITCH		
DVLS	DISCHARGE VALVE LIMIT SWITCH	S2	SIZE 2 STARTER
		S2	SUPERVISORY CONTROL AND DATA ACQUISITION
E	ELECTRIC OPERATOR FOR CONTROL DAMPER OR VALVE	SH	SPACE HEATER
EC	EMPTY CONDUIT	SN	SOLID NEUTRAL
ECP	EQUIPMENT CONTROL PANEL	SO	SOLENOID OILER
EL	ELEVATION OR EMERGENCY LIGHT	SP	SINGLE POLE
EMH	ELECTRICAL MANHOLE	SPDT	SINGLE POLE DOUBLE THROW
ER	ELECTRODE RELAY	SPST	SINGLE POLE SINGLE THROW
ES	END SWITCH	SS	SELECTOR SWITCH
ETM	ELAPSED TIME METER	SSM	SOLID STATE METERING
EX	EXISTING	SSS	SOLID STATE STARTER
F	FORWARD	SUPV	SUPERVISORY CONTROL
FS	FLOW SWITCH	SV	SOLENOID VALVE
		SWB	SWITCHBOARD
		SWGR	SWITCHGEAR
G	GREEN OR GROUND	T	THERMOSTAT, TIMER, OR TOTALIZER
GD	GROUND DETECTOR	TACH	TACHOMETER
GEN	GENERATOR	TB	TERMINAL BLOCK
GF	GROUND FAULT INTERRUPTER	TC	TIMER CLUTCH
GLS	GEARED LIMIT SWITCH	TD	TIME DELAY RELAY
#GC	#8 GROUND WIRE	TEMP	TEMPERATURE
		TM	TIMER MOTOR
H	HIGH OR HUMIDISTAT	TQ	TORQUE
HC	HOT CIRCUIT	TS	TEMPERATURE SWITCH
HH	HANDHOLE	TTB	TELEPHONE TERMINAL BOX
HMT	HIGH MOTOR TEMPERATURE		
HOA	HAND-OFF-AUTO	UG	UNDERGROUND
HOR	HAND-OFF-REMOTE	UV	UNDER VOLTAGE
HP	HORSEPOWER	UPS	UNINTERRUPTIBLE POWER SUPPLY
HWC0	HIGH WATER CUTOFF		
HZ	HERTZ (CYCLE)	V	VOLTS
I/O	INPUT/OUTPUT	VA	VOLT AMPERE
INST	INSTANTANEOUS	VAR	VARMETER
J	JUNCTION BOX	VLS	VALVE LIMIT SWITCH
JB	JUNCTION BOX	VM	VOLTMETER
		VPI	VALVE POSITION INDICATOR
K	KEY INTERLOCK	VS	VOLTMETER SWITCH
KV	KILOVOLT		
KVA	KILOVOLT AMPERE	W	WHITE OR WATTS
KVAR	KILOVARR	WH	WATTHOUR METER
KW	KILOWATT	WM	WATT METER
KWH	KILOWATT HOUR	WP	WEATHERPROOF
		X	AUXILIARY RELAY
L	LOW, LEVEL	XFMR	TRANSFORMER
LA	LIGHTNING ARRESTER	XP	EXPLOSION PROOF
LAN	LOCAL AREA NETWORK		
LC	LIGHTING CONTACTOR	Y	YELLOW
LCA	LOCAL-ON-OFF	Z	AUXILIARY RELAY
LOR	LOCAL-OFF-REMOTE	ZS	POSITION SWITCH
LP	LIGHTING PANEL	ZSS	ZERO SPEED SWITCH
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 1 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, 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 CONDUIT 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 DESIGNATED ON THE FLOOR PLANS ARE NOT SHOWN ON THE ONE-LINES. CONDUCTORS FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM NO. 12AWG. CONDUIT FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM 3/4".
- 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.
 - A. 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.
 - B. 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.
 - C. 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.
 - D. DUCT BANK SECTIONS AND SCHEDULES IDENTIFY CONDUIT SIZE, CONDUIT MATERIAL, ARRANGEMENT OF THE UNDERGROUND CONDUITS, AND CIRCUITS ROUTED IN EACH UNDERGROUND CONDUIT.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

BLACK & VEATCH
Gaithersburg, Maryland

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876

DES: GNS					
DRN: MEP					
CHK: JTF					
DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

ELECTRICAL

LEGEND AND ABBREVIATIONS

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

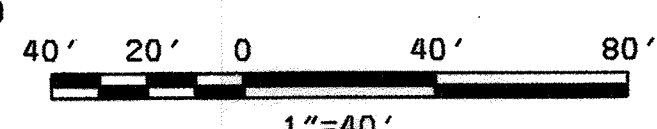
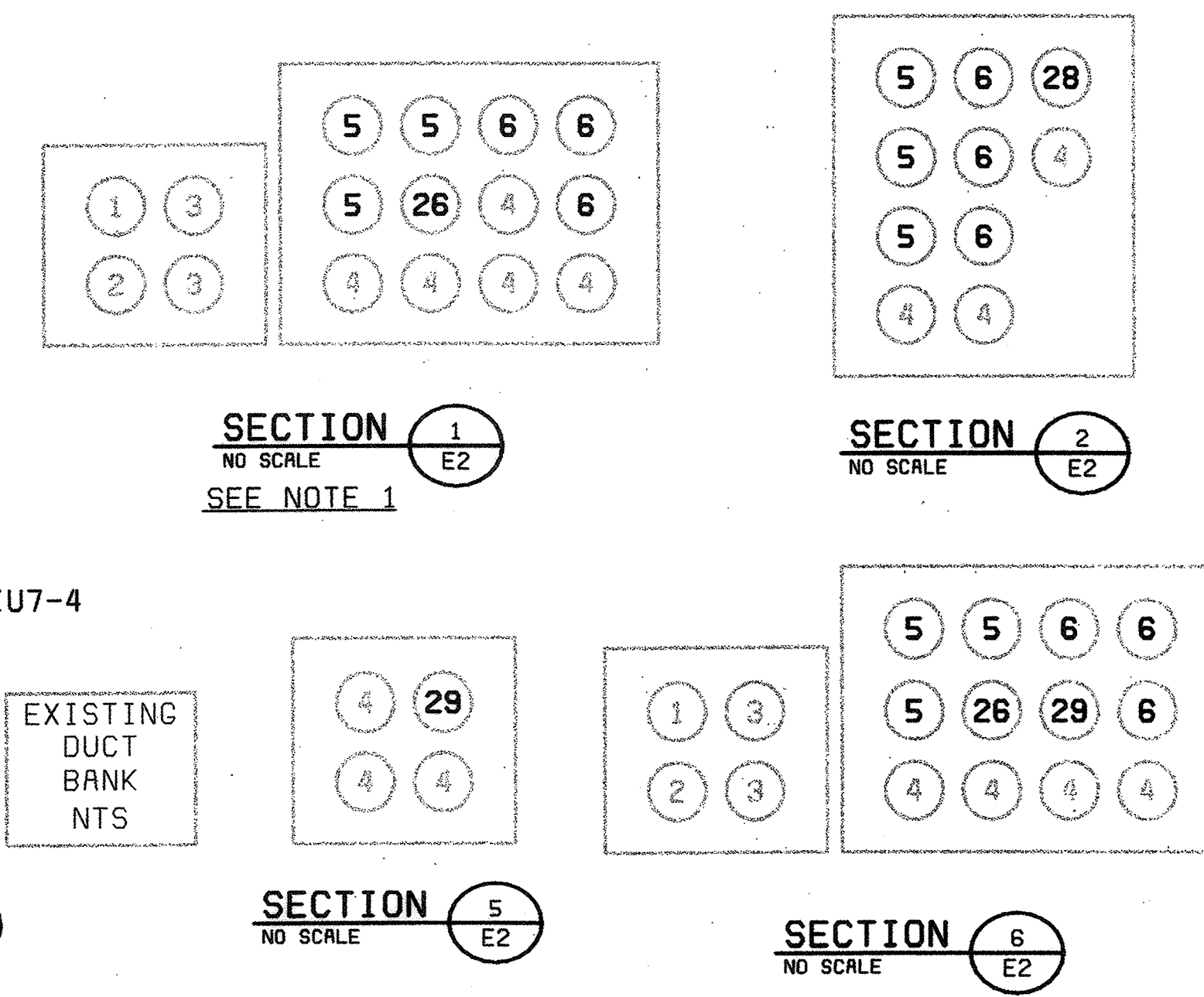
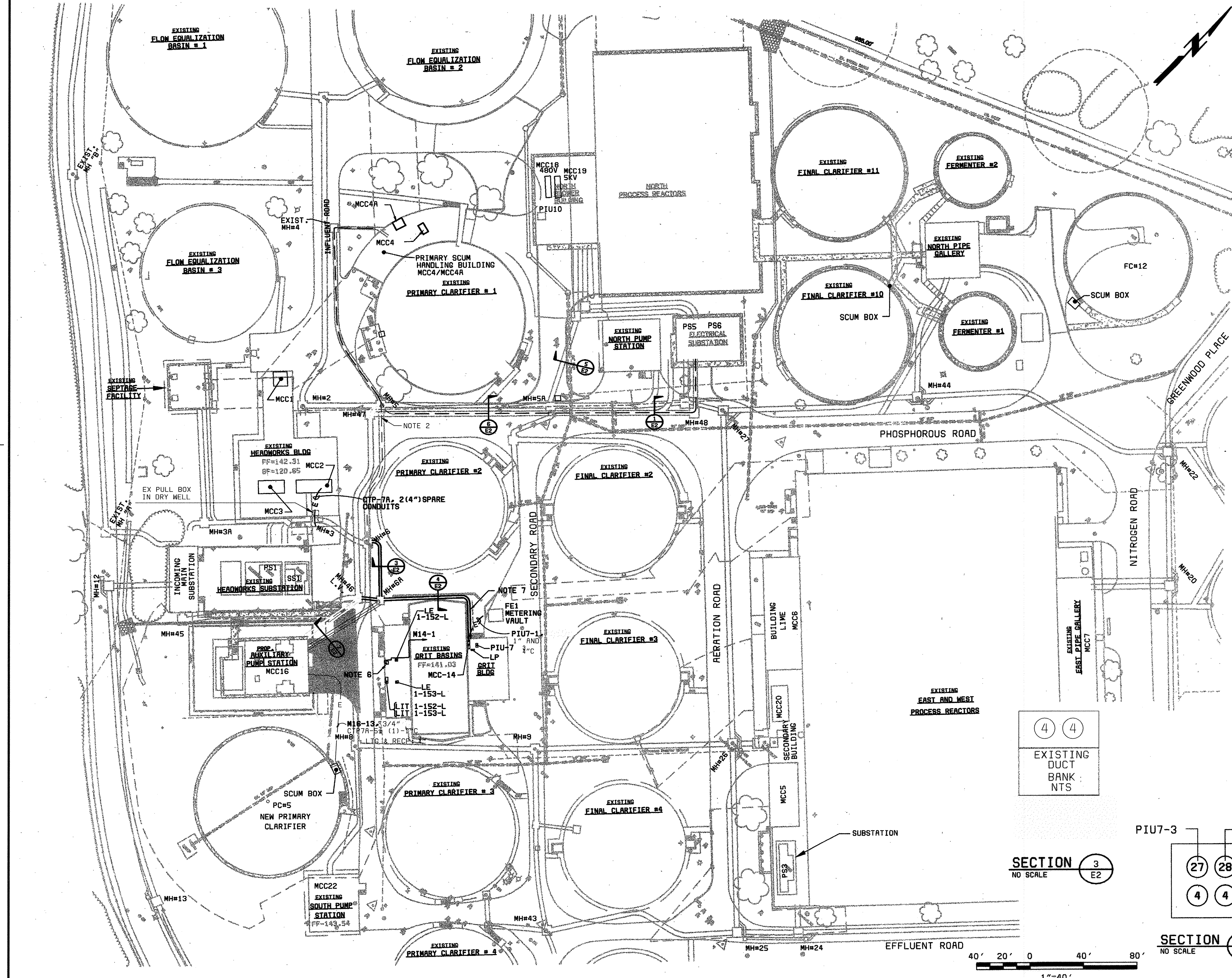
SCALE AS SHOWN

SHEET 62 OF 88

E1

- NOTES:**
- SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
 - MODIFY MH#5 TO REMOVE ONE EXISTING FEED FROM SSI TO MCC4 AND ROUTE M4A-1 TO PRIMARY SCUM BUILDING.
 - MEDIUM VOLTAGE CABLE SHALL REMAIN SEPARATED FROM LOW VOLTAGE CABLES IN ALL DUCT BANKS, MANHOLES AND PULL BOXES.
 - THE ROUTING OF NEW DUCT BANK ADDITIONS IS GENERAL AND THE CONTRACTOR SHALL MAKE SUBSURFACE INVESTIGATION AS NECESSARY TO ENSURE UNOBSTRUCTED PASSAGE BEFORE PLACING THE NEW DUCT BANK. WHERE NEW DUCT BANK CROSSES EXISTING DUCT BANKS THE CONTRACTOR SHALL ROUTE THE NEW DUCT BANK BELOW THE EXISTING DUCT BANKS TO MAINTAIN MINIMUM COVER AS SPECIFIED.
 - MODIFY MH#6A AND MH#6B FOR CIRCUIT PIU7-4 AND SPARE TO ADD DUCT BANK TO NEW AUXILIARY PUMPING STATION.
 - PROVIDE DISCONNECT FOR MOTOR ACTUATOR ON EXISTING SLUICE GATE 2-520-SG ROUTE POWER CIRCUIT BELOW DECK TO END OF WALKWAY AND PARALLEL EXISTING CIRCUITS BELOW WALKWAY TO ELECTRIC ROOM.
 - EXTEND NEW DUCT BANK FROM EXISTING GRIT MH#6A TO GRIT BUILDING ELECTRICAL ROOM ADJACENT TO EXISTING DUCT INTO GRIT BUILDING.
 - FOR DUCT BANK AND CONDUIT ENTRANCE SEE SHEET 20.
 - INSTALL TWO LEVEL TRANSMITTERS 1-152-L AND 1-153-L WITH JUNCTION BOX ON THE NORTH SIDE OF A NEW ALUMINUM CHANNEL AND PLATE SUPPORT STAND 78" HIGH WITH ALUMINUM PLATE SUNSCREEN. ROUTE CONDUIT FROM SENSORS BELOW GRATING EXCEPT FOR FLEXIBLE LIQUID-TIGHT DRIP LOOP AT SENSOR. SEE DETAILS ON I7 AND I19.
 - PROVIDE THREE, 1" INNER-DUCTS IN 4" DUCT #29, ONE (29A), FOR CIRCUIT M4A-1B AND M4A-1A, ONE (29B) FOR SCCP-1, AND ONE (29C) SPARE WITH PULL STRING. AT EACH MANHOLE TURN AND SECURE INNERDUCTS TO SIDE WALL AND PROVIDE THREE 1" RIGID PVC CONDUITS WITH SWEEP ELBOWS AND BELLED ENDS, SECURED TO SIDE WALLS AND SLOPED TO DRAIN TO PROTECT THE CABLES. LEAVING NO MORE THAN 24" GAP BETWEEN THE INNERDUCT AND THE CONDUITS AS NECESSARY FOR PULLING THE CABLES THROUGH EACH MANHOLE.

DUCT BANK SCHEDULE			
CONDUIT NO.	SIZE	CIRCUIT NUMBER	COMMENTS
1	5"	13-2KV B-1	
2	5"	13-2KV S-2	
3	5"	SPARE	
4	4"	SPARE	
5	4"	M16-1	
6	4"	M16-2	
7	4"	M19-1	
8	4"	M19-2	
9	4"	M19-3	
10	4"	M19-4	
11	4"	M19-5	
12	4"	M19-6	
13	4"	CONTROL WIRING FROM P55	
14	4"	CONTROL WIRING FROM P56	
15	2"	POWER AND CONTROL FOR M18-55 IN PLANT PUMP STATION	EXTEND FROM NORTH BLOWER BUILDING
16	3"	M13-52 ODR CONTROL BLOWER	
17	3"	M13-95 ODR CONTROL BLOWER	
18	2"	MCC13-11, MCC13-15, MCC13-23	
19	2"	SPARE	
20	2"	CYPS-14B, 15B	
21	2"	M13-60	
22	2"	M13-60B	
23	2"	M13-11	
24	2"	M13-33	
25	2"	LFB-1-3	
26	4"	M4A-1	
27	4"	PIU7-3	PULL STRING ONLY FOR FUTURE
28	4"	PIU7-4	PULL STRING ONLY FOR FUTURE
29	4"	SEE NOTE 10	

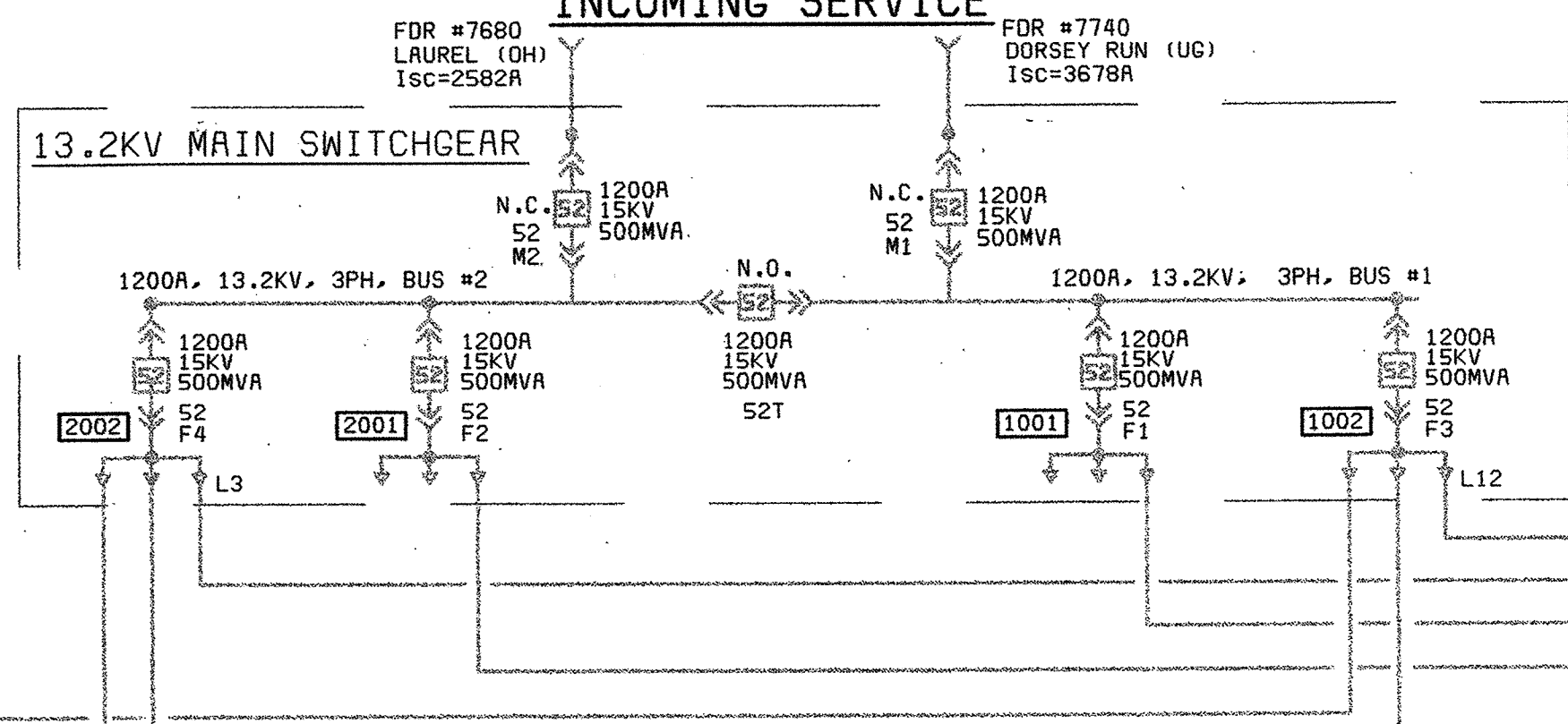


DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	LACH ELECTRIC CORPORATION Baltimore, Maryland	BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY LACHMAN D. KUKREJA A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 19889	DES: L.K.	DRN: M.F.F.	CHK: WB	DATE: 2/19/01	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR	ELECTRICAL SITE LAYOUT PLAN	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
				DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	APP	SHEET 63 OF 88				

E2.TIF

BALTIMORE GAS & ELECTRIC 13.2 KV

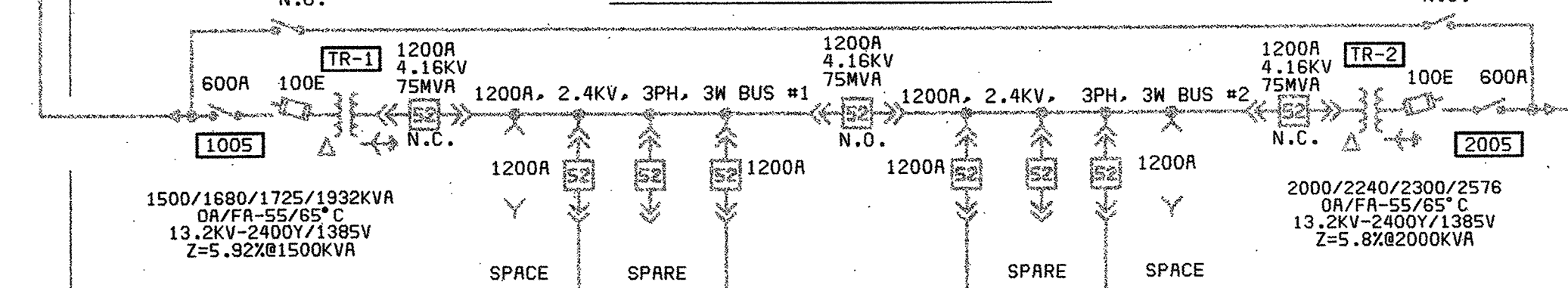
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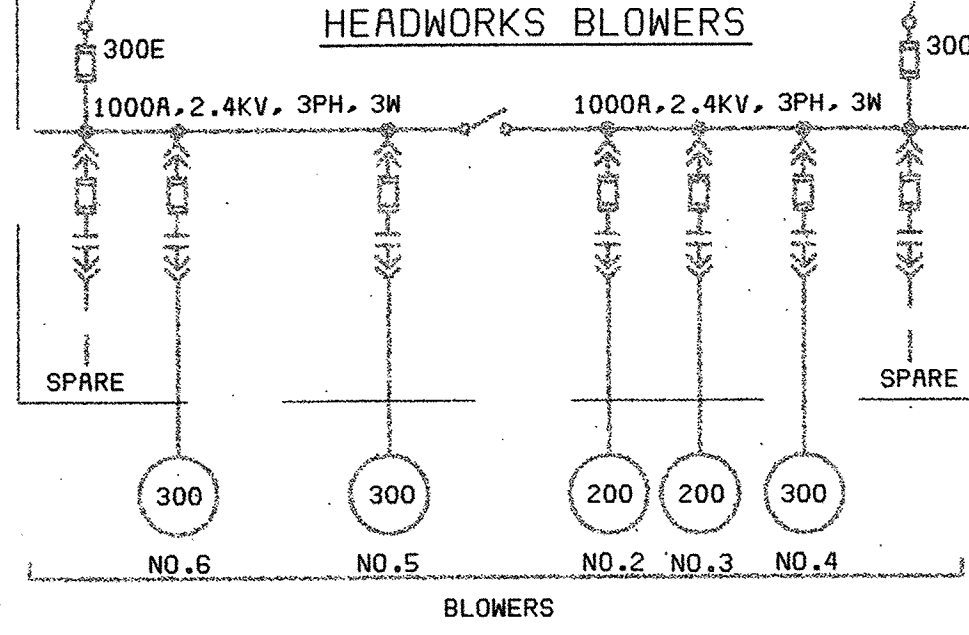
S-1, 3-250kcmil, (15KV), #2G, 5"

S-2, 3-250kcmil, (15KV), #2G, 5"

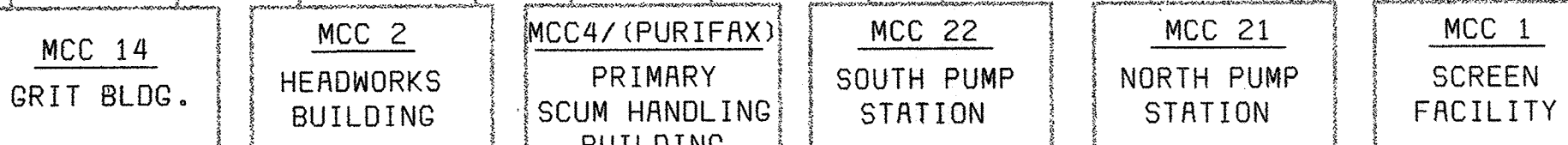
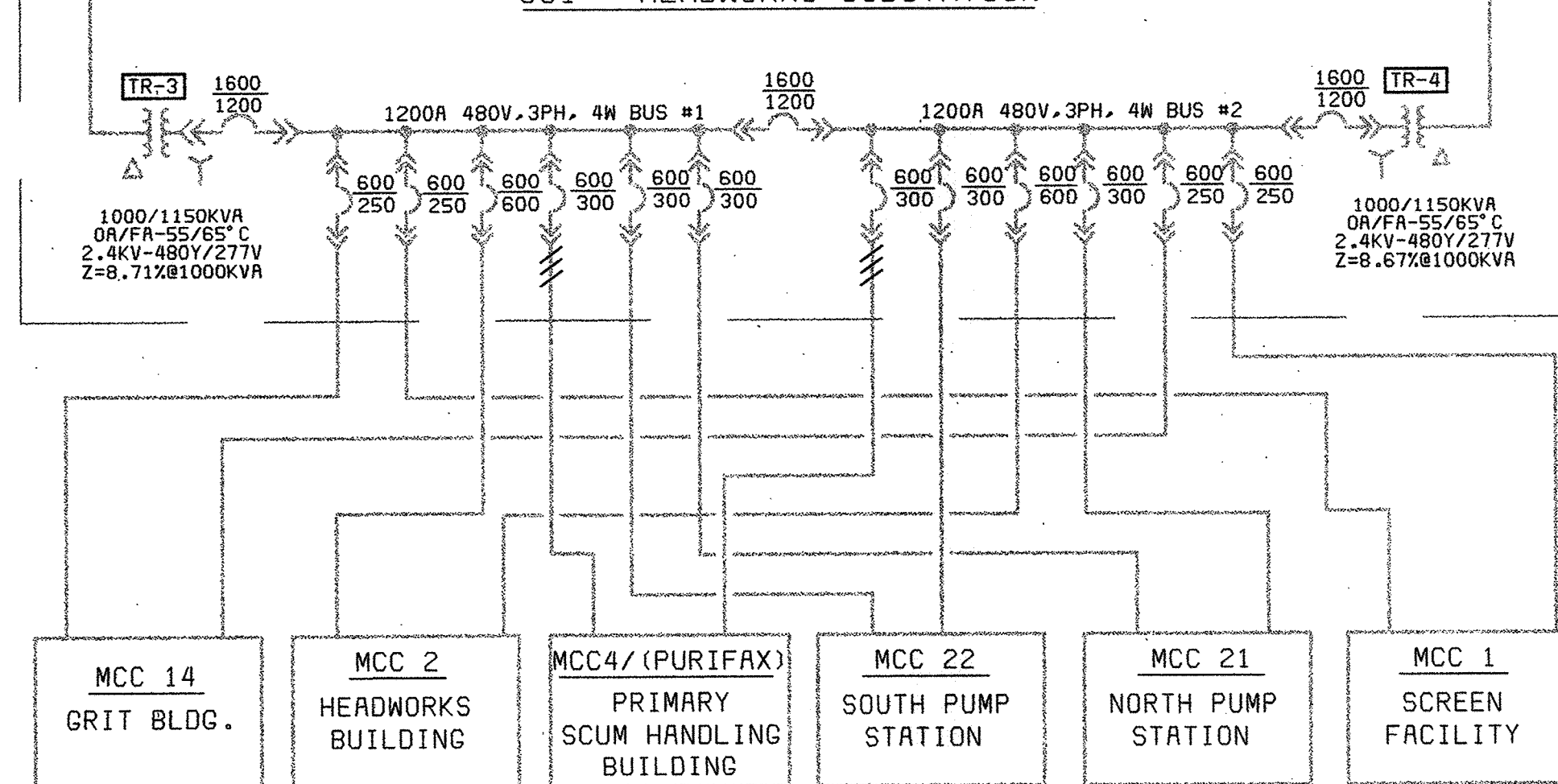
PS1 - BLOWER SUBSTATION



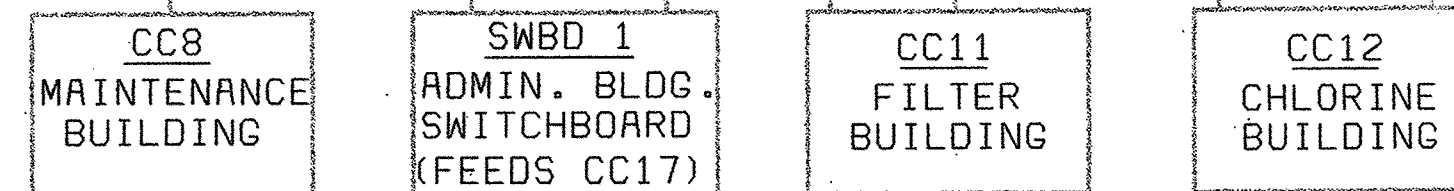
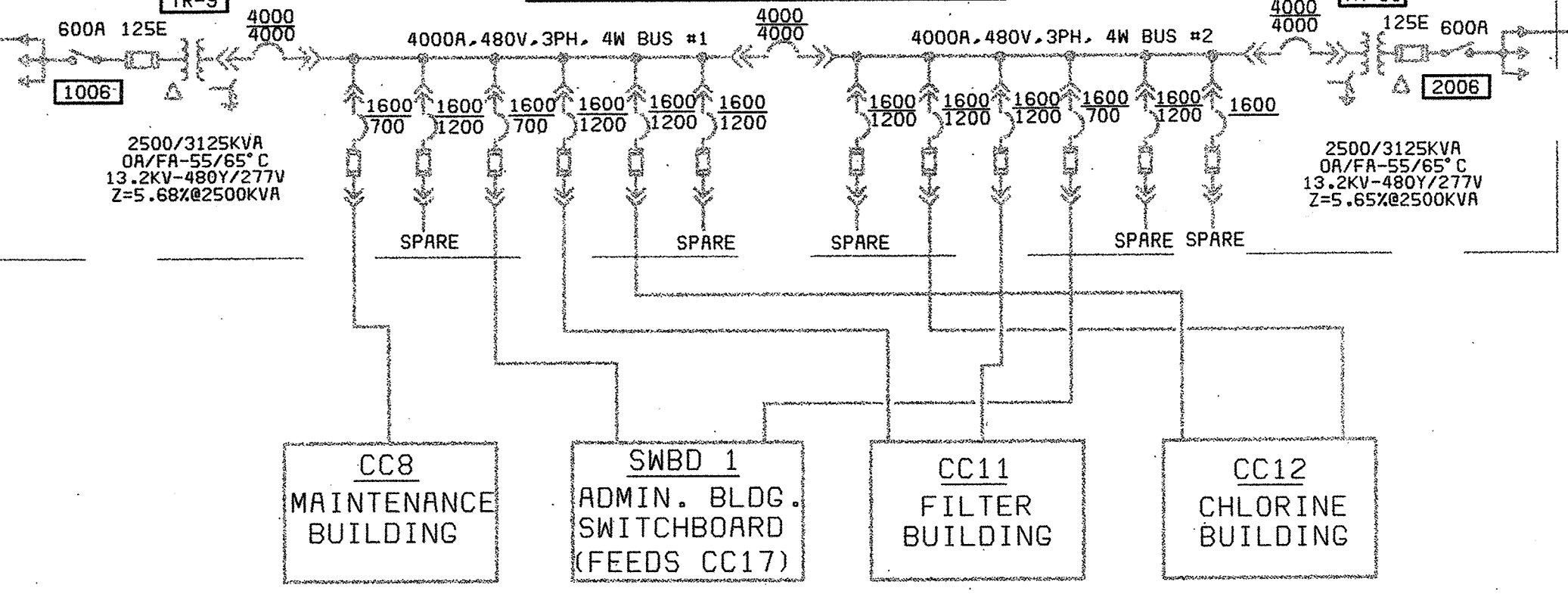
CC3 HEADWORKS BLOWERS



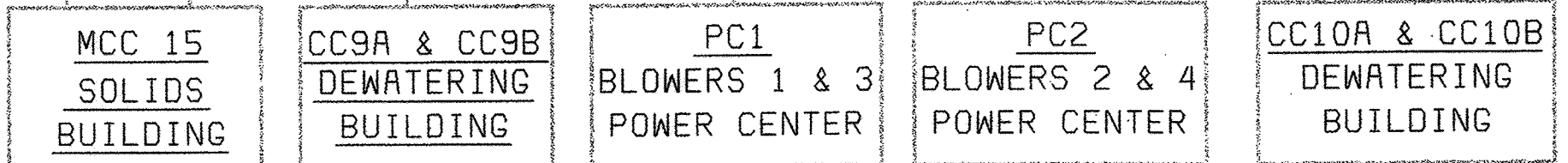
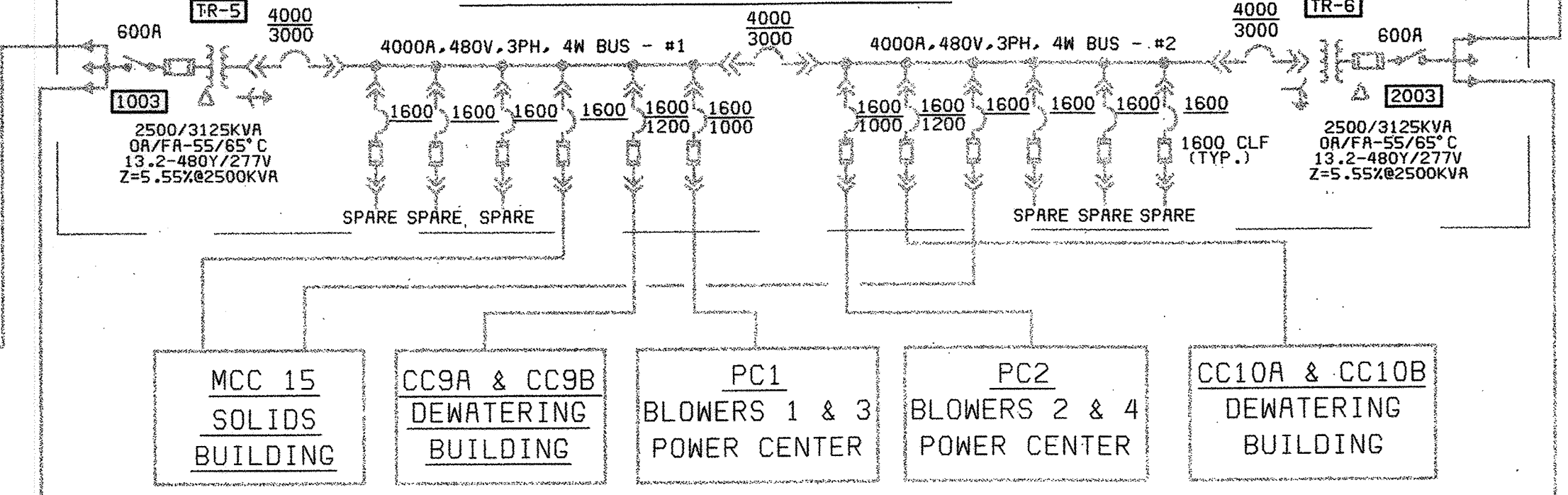
SS1 - HEADWORKS SUBSTATION



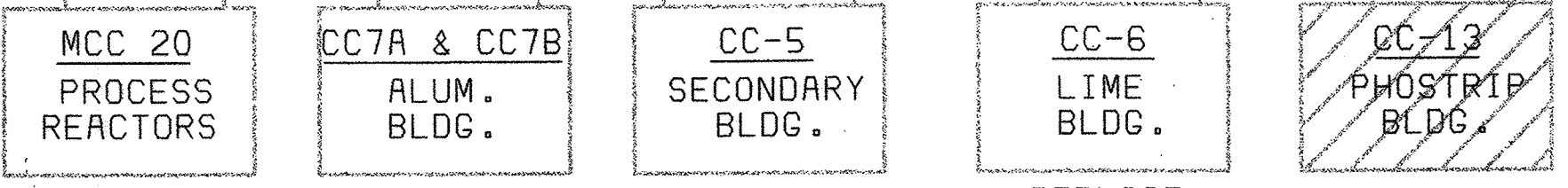
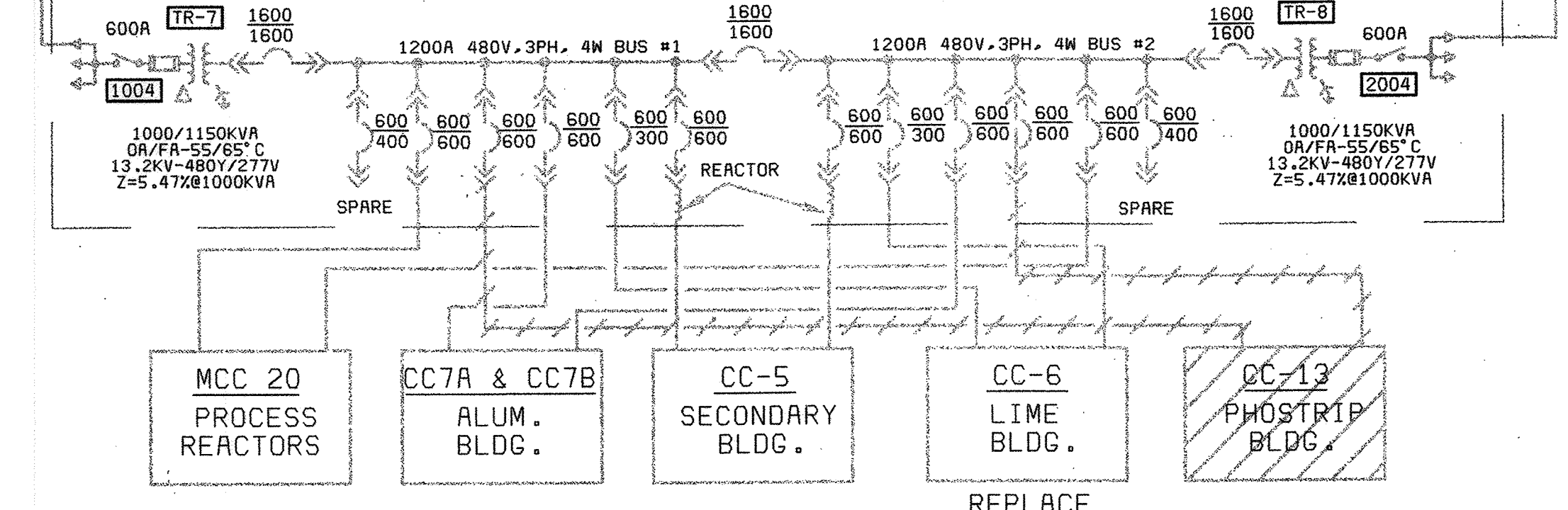
PS4 - EFFLUENT SUBSTATION



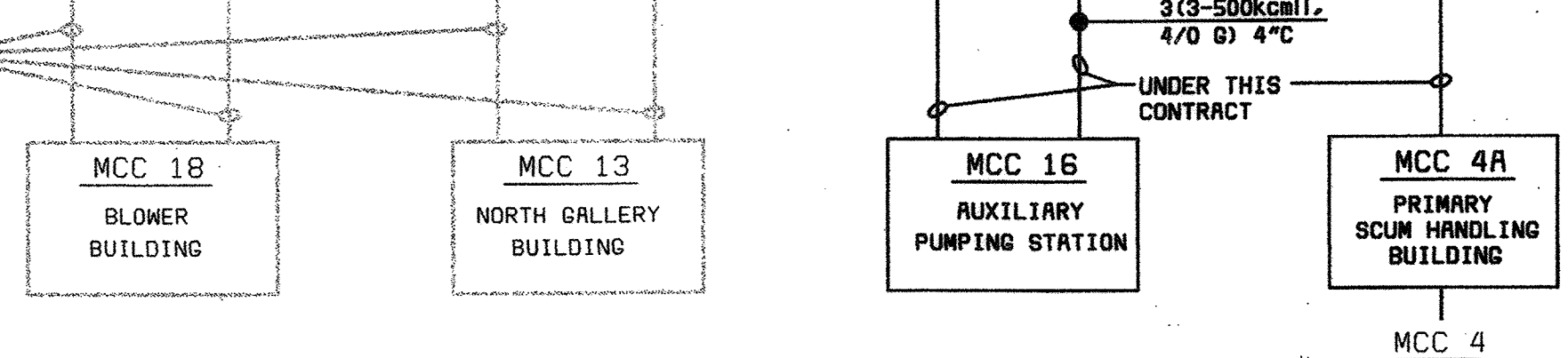
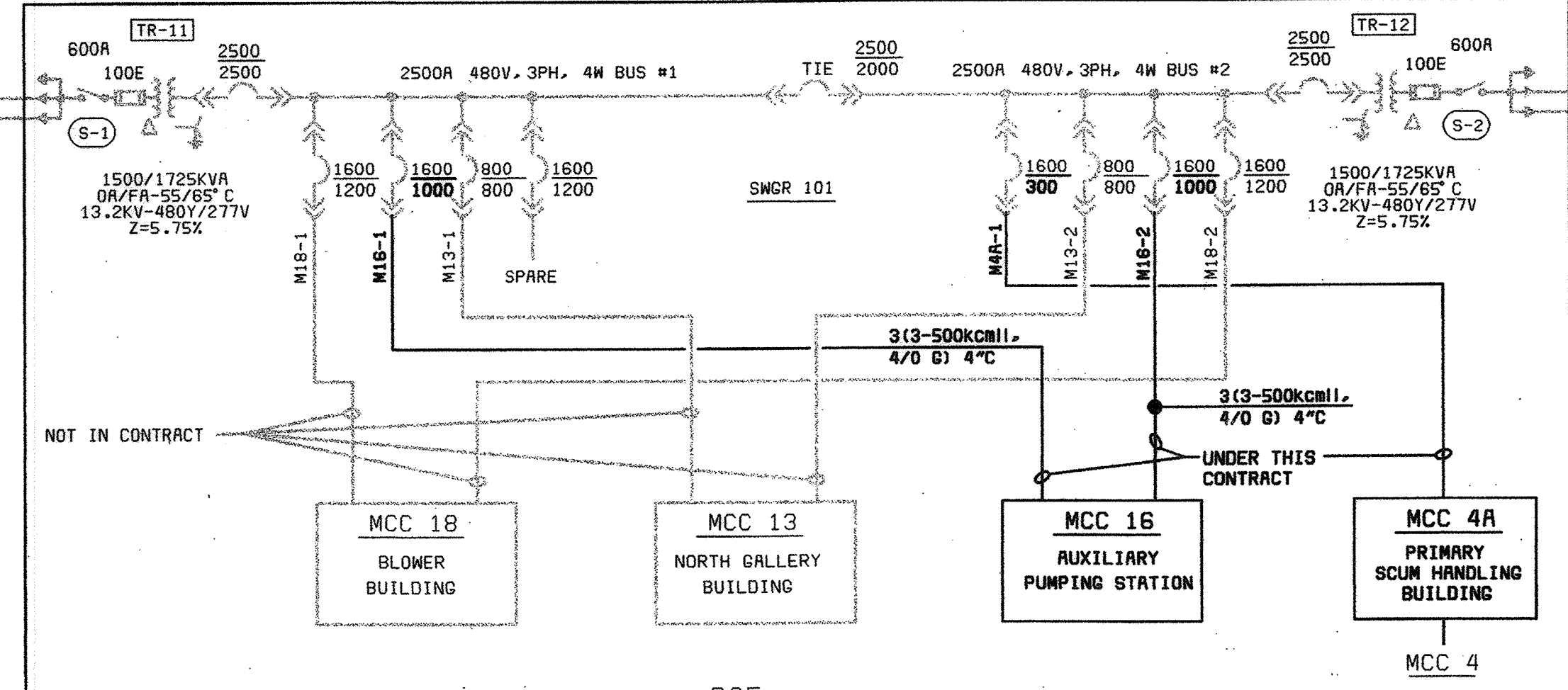
PS2 - DEWATERING SUBSTATION



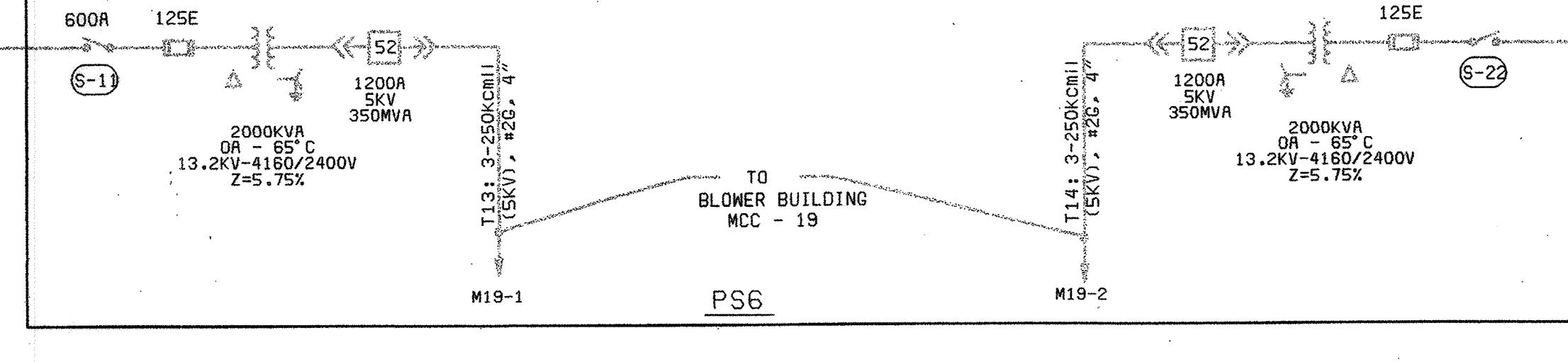
PS3 - SECONDARY SUBSTATION



PS5 AND PS6- NEW ADDITION (BY OTHERS UNDER CONTRACT 20-3752)



PS6



E3.TIF

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES DATE



BLACK & VEATCH
Gaithersburg, Maryland
REG. PROF. ENCR. DATE

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DES: L.K.					
DRN: M.F.F.					
CHK: WB					
DATE: 2/19/01	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

ELECTRICAL
POWER DISTRIBUTION FUNCTIONAL DIAGRAM

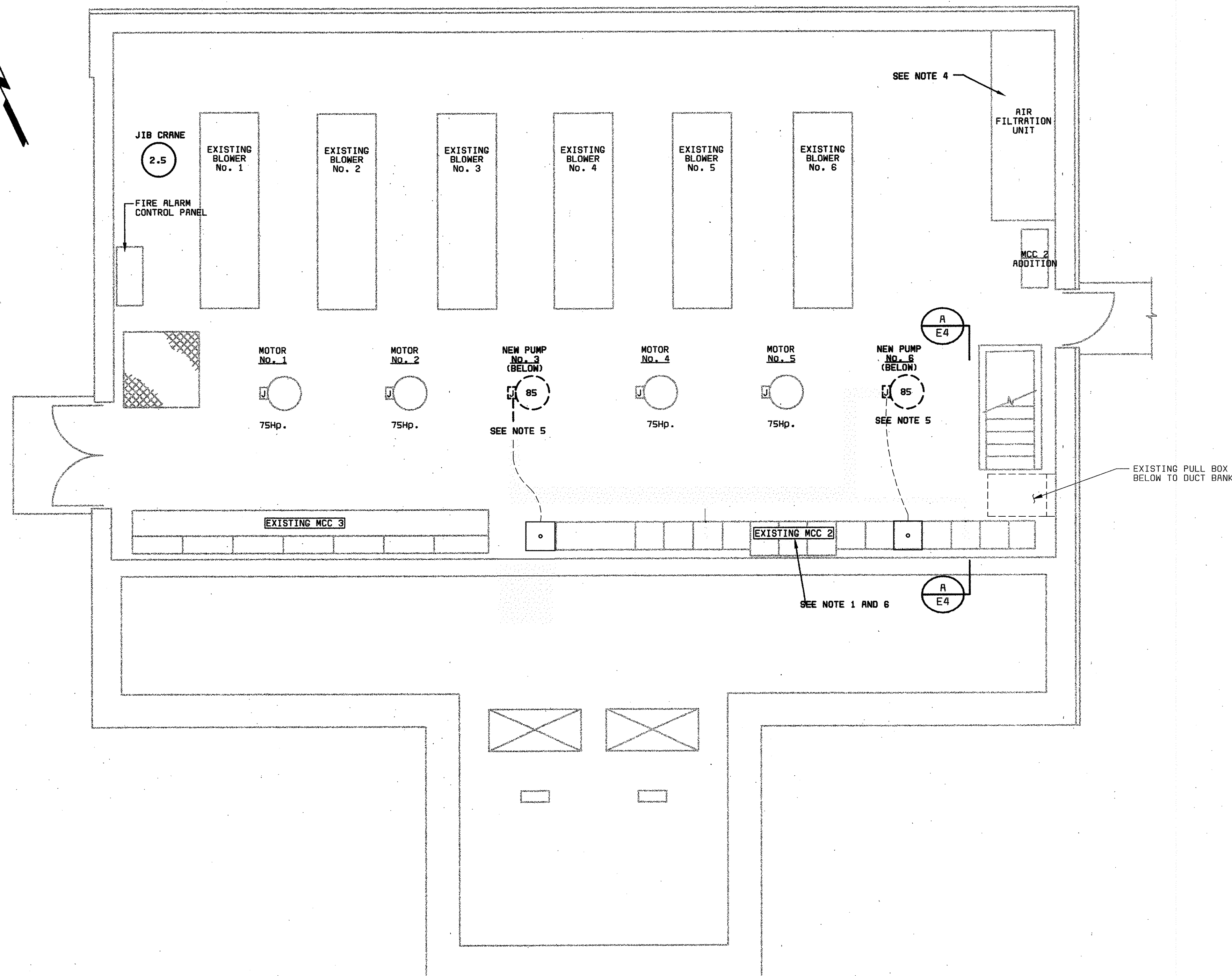
LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
HOWARD COUNTY, MARYLAND

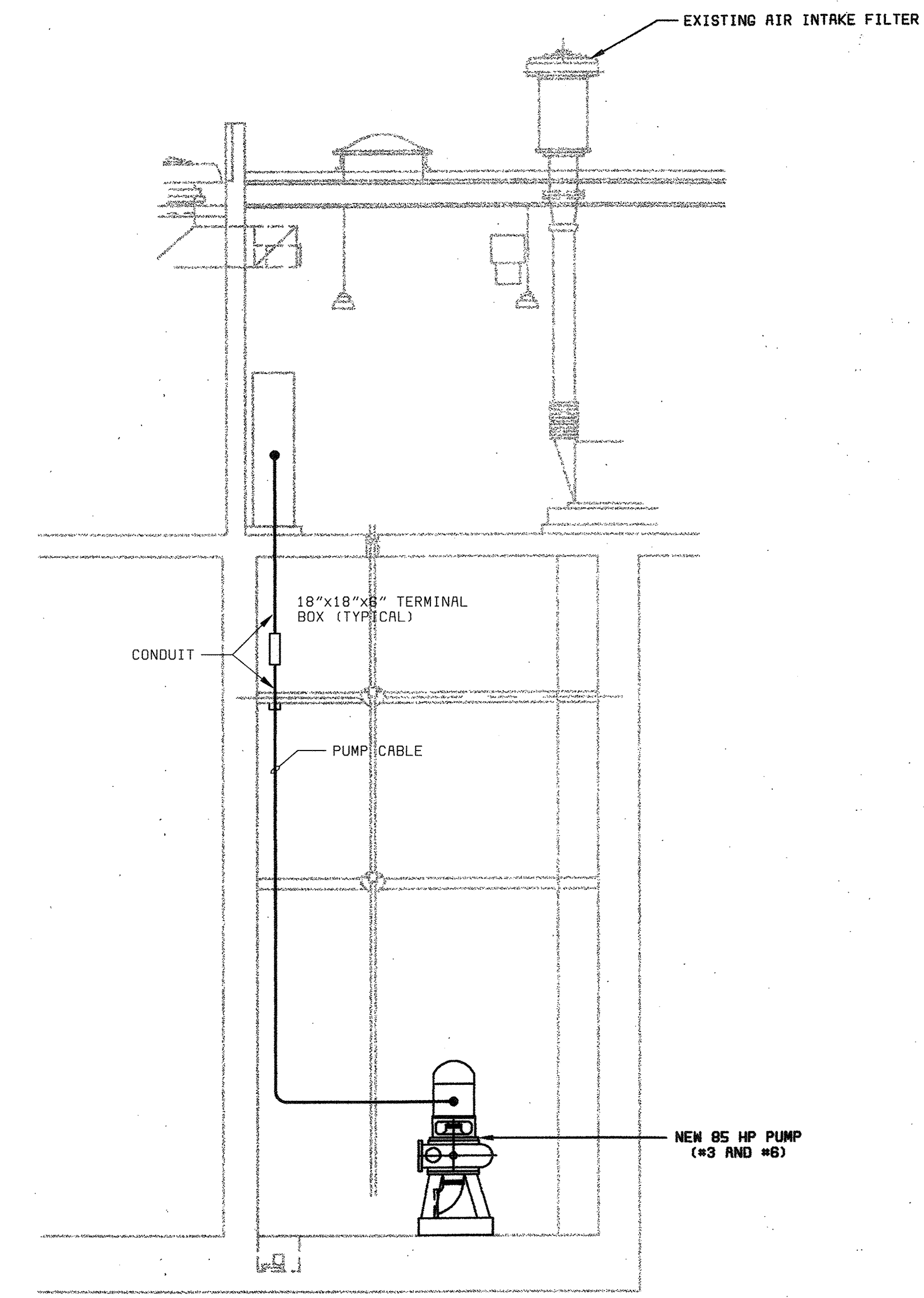
SCALE AS SHOWN
SHEET 64 OF 88
E3

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- NOTES:**
1. NEW MOTORS FOR INFLUENT PUMPS #3 AND #6 ARE TO BE CONSTANT SPEED. CONTRACTOR SHALL PROVIDE ACROSS THE LINE STARTERS IN MCC2.
 2. NO MORE THAN ONE PUMP MAY BE TAKEN OUT OF SERVICE AT ANY ONE TIME.
 3. EXISTING MOTOR NAMEPLATE DATA FOR PUMPS #3 AND #6 IS:
AC WOUND ROTOR MOTOR MANUFACTURED BY CONTINENTAL ELECTRIC CO., NEWARK, N.J. SERIAL NO. S H29052 & H29051, TYPE SNV 50SP 100HP, 695 RPM, THREE PHASE, 60HZ, 460 VOLTS, 138 AMPERES. SECONDARY: 360 VOLTS, 130 AMPERES, CONTINUOUS DUTY, INSULATION CLASS F.
 4. ALL ELECTRICAL WIRING FROM AIR FILTRATION UNIT TO MCC2 PANELBOARD LB SHALL BE DISCONNECTED.
 - 4.1 ELECTRICAL CONTRACTOR TO PROVIDE & INSTALL WIRING FROM MCC2 TO 120 VOLT DAMPER OPERATOR FOR NEW FILTRATION EQUIPMENT.
 5. PROVIDE, INSTALL AND WIRE NEW ACROSS THE LINE STARTER FROM MCC2 TO NEW PUMPS NO. 3 AND 6 LOCATED IN DRY PIT.
 - 5.1 REMOVE EXISTING ADJUSTABLE FREQUENCY DRIVES FROM PUMPS NO. 3 AND 6. SUBMIT TO OWNER FOR PROPER DISPOSAL.
 6. HOWARD COUNTY WILL CO-ORDINATE WITH BUCHART-HORN TO INCLUDE ACROSS THE LINE STARTERS FOR NEW PUMPS NO. 3 AND 6 DURING MCC2 REPLACEMENT.
 7. DRY PIT IS SUBJECT TO OCCASIONAL FLOODING AND ALL ELECTRICAL INSTALLATION BELOW SHALL BE NEMA 6P OR HIGHER WITH CABLE SEALS IN CONDUIT AT ALL EQUIPMENT CONNECTIONS BELOW FIRST FLOOR LEVEL.



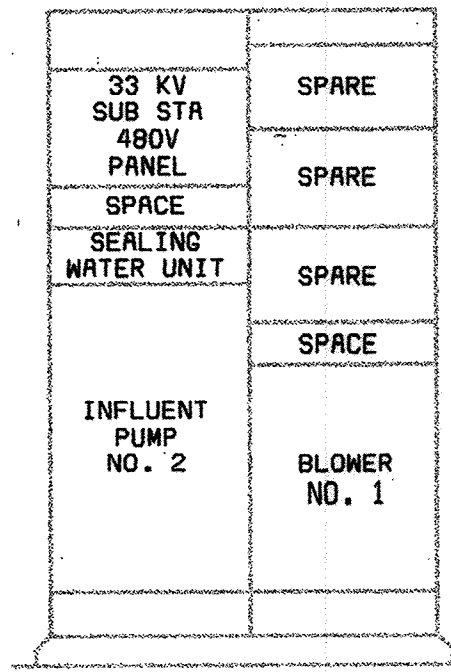
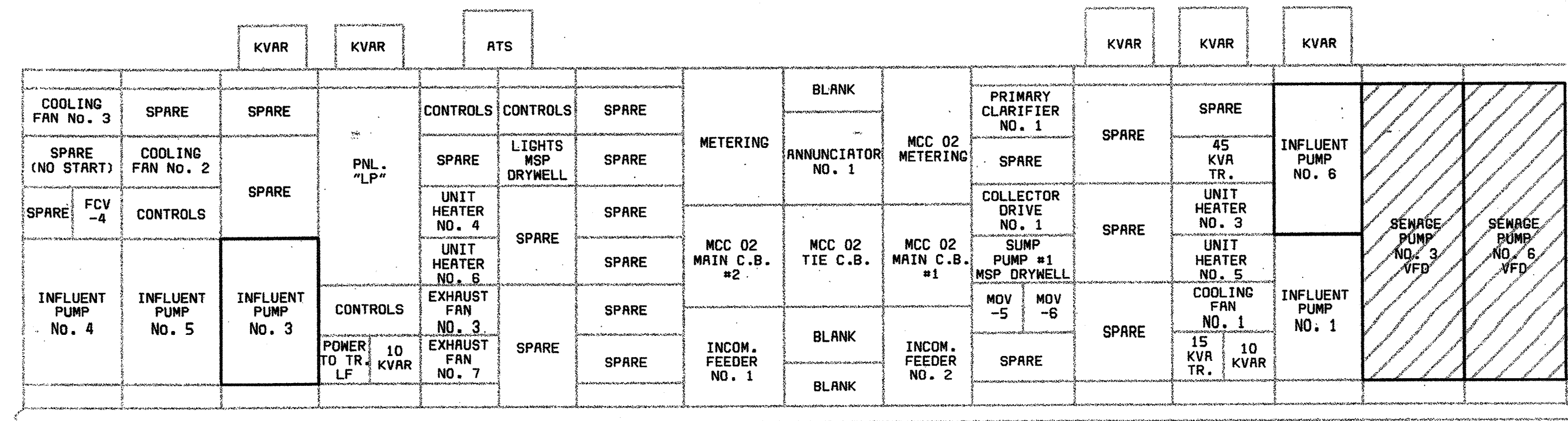
PLAN @ EL. 142.50
SCALE: 1/4" = 1'-0"



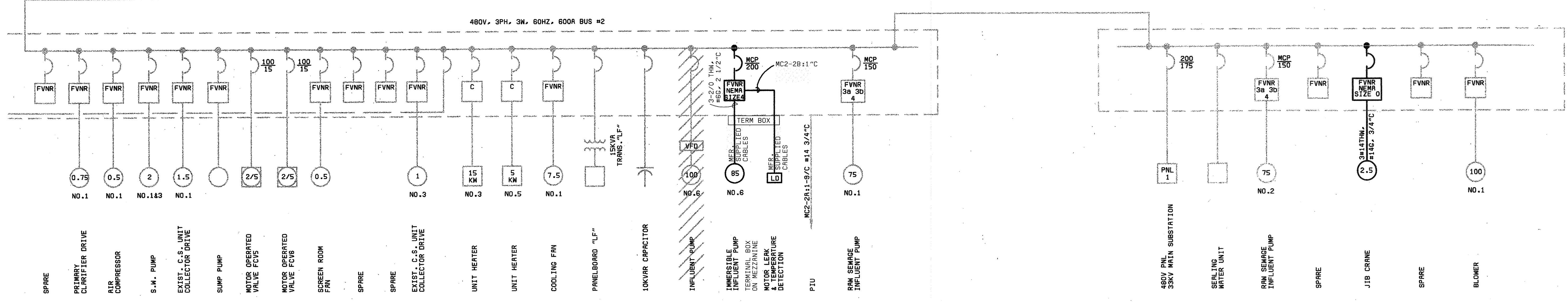
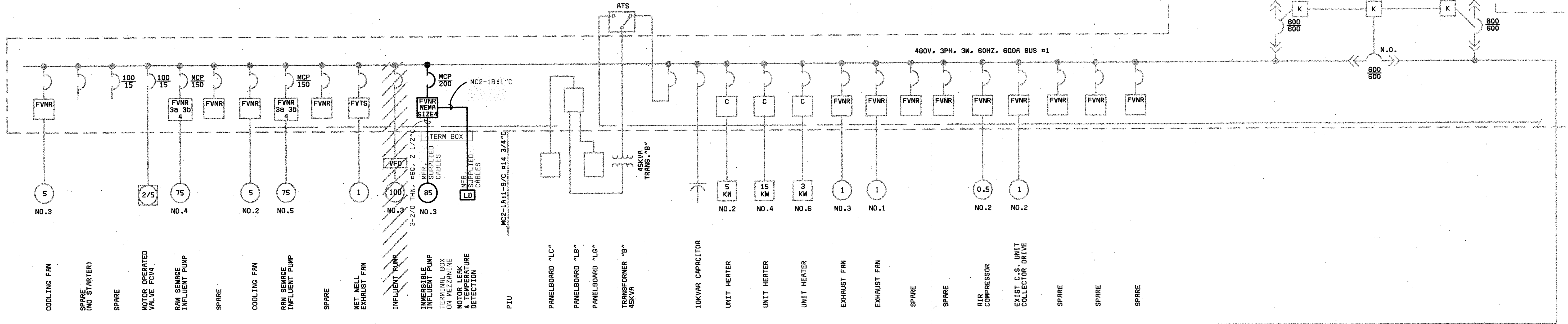
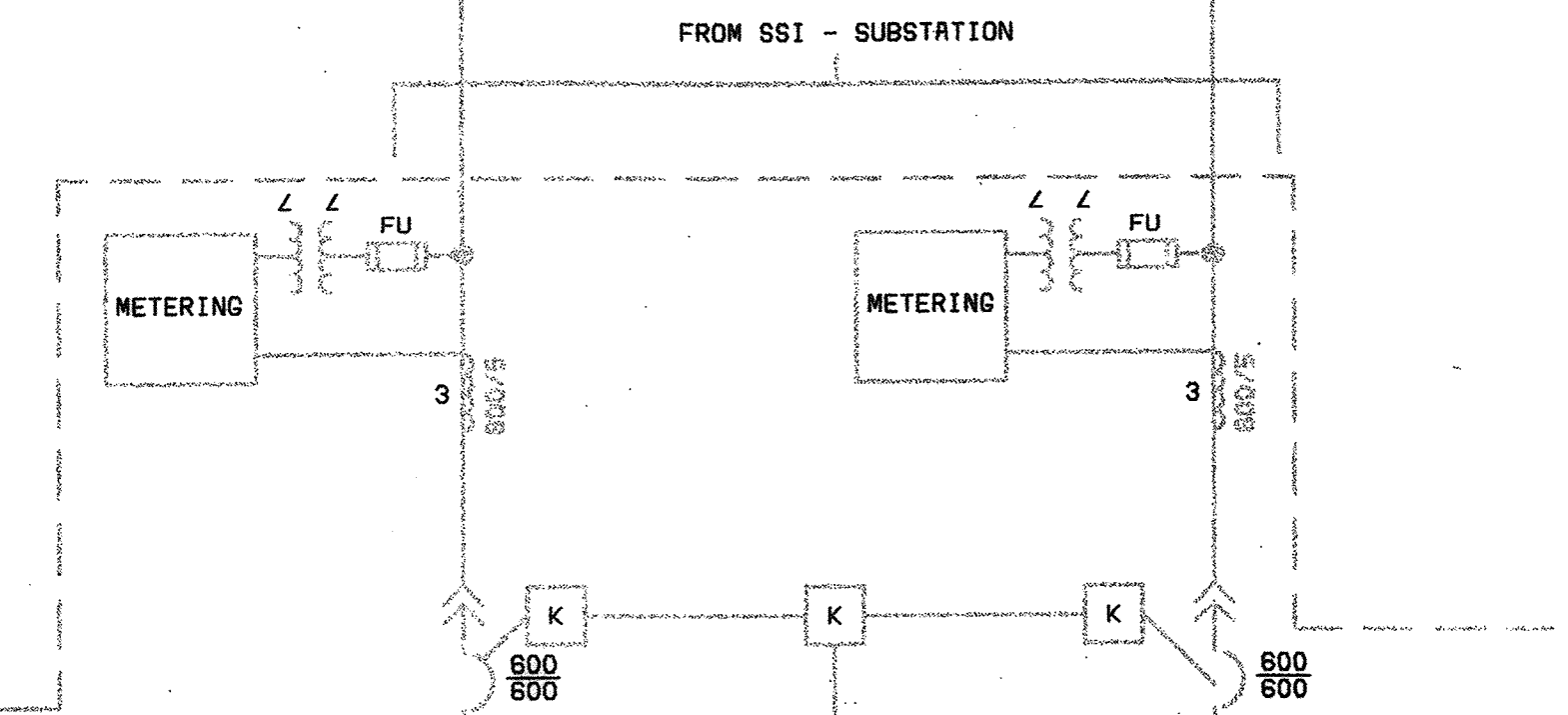
DRY PIT IMMERSIBLE PUMP - LOWER LEVEL
SCALE: 3/16" = 1'-0"

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			CHK: WB		DATE: 2/19/01					REVISIONS AND RECORD OF ISSUE NO. BY CK APP



MCC 2 - FRONT ELEVATION
SCALE: NONE



ONE LINE DIAGRAM
SCALE: NONE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND



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A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 19889

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DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP
	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	

HEADWORKS BUILDING
ELECTRICAL
POWER SYSTEM
ONE LINE DIAGRAM - MCC2

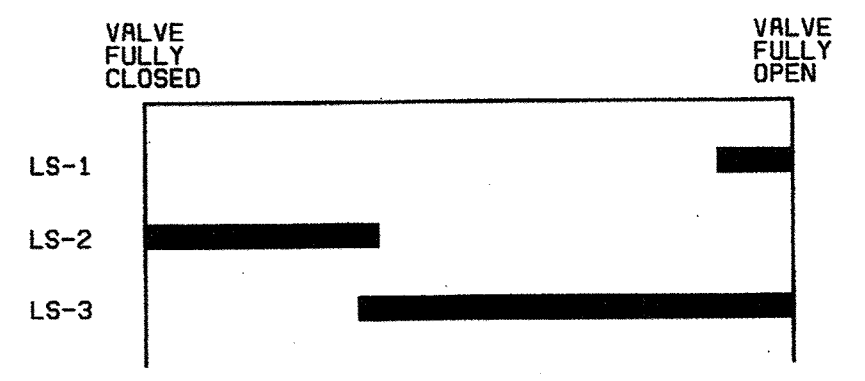
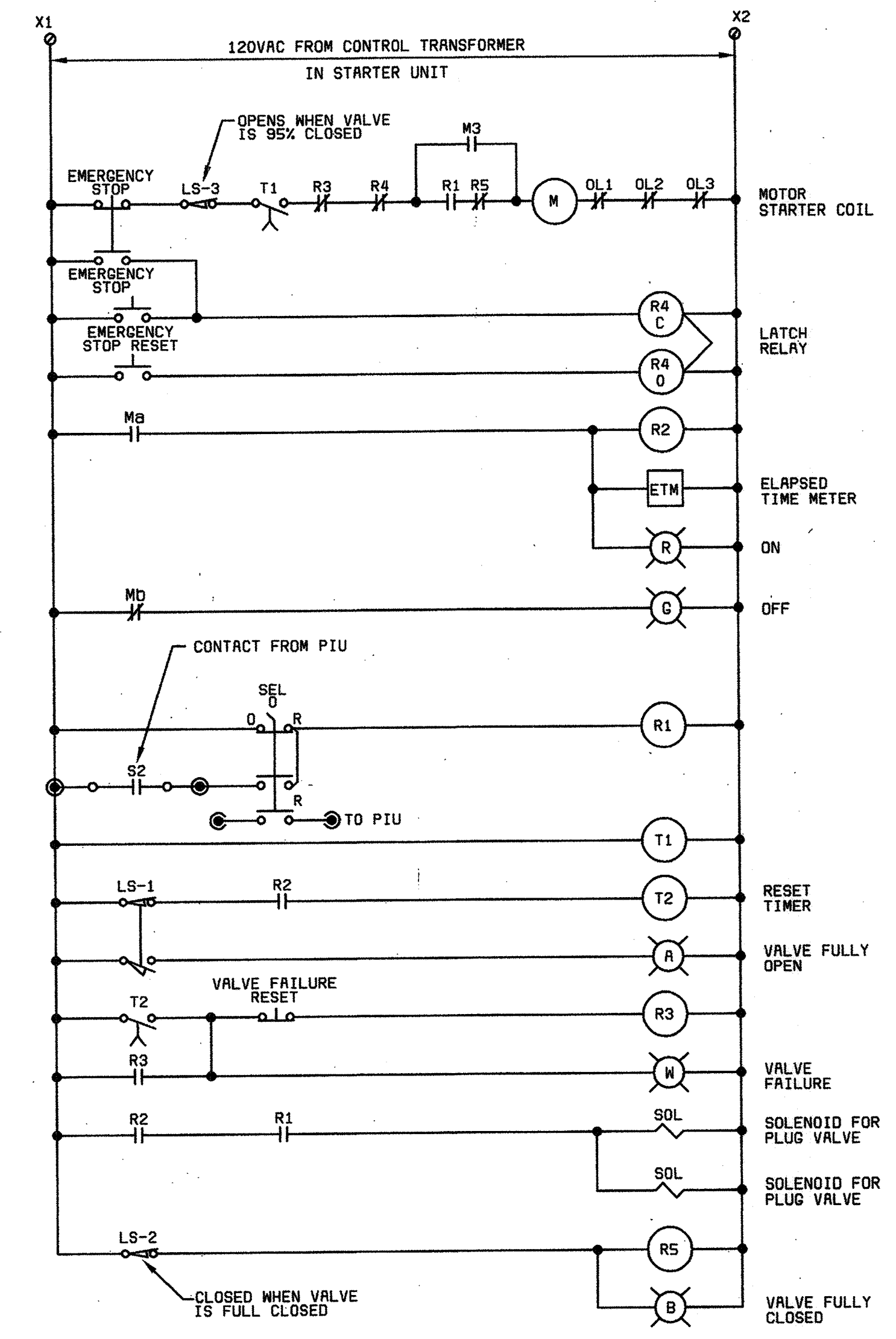
LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN
SHEET
66 OF 88
E5

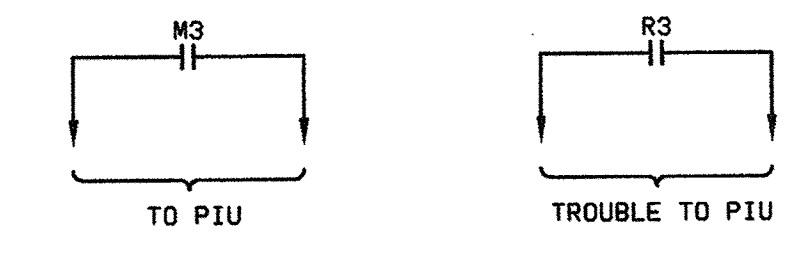
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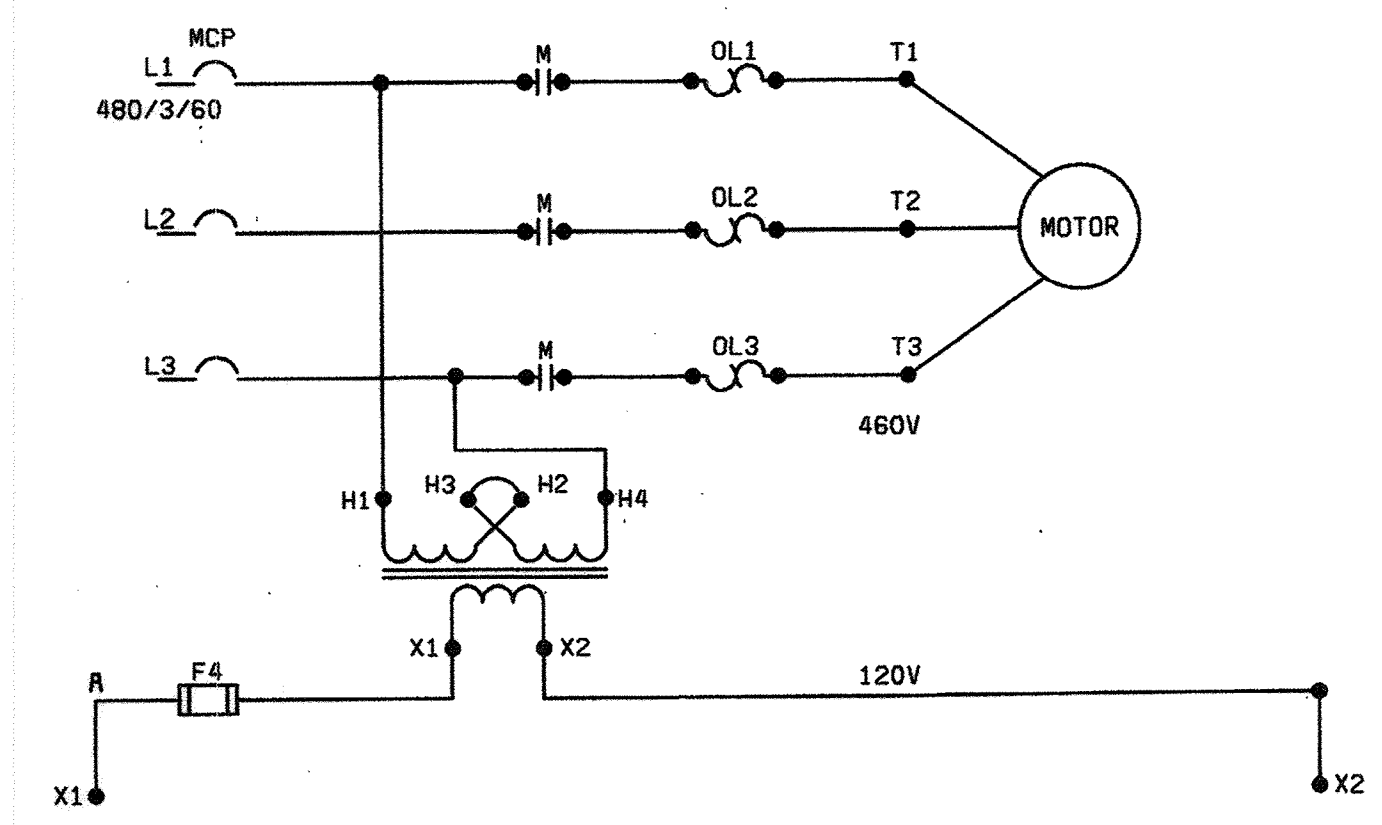
NOTES:
 1. FOR PUMP 3 AND 6 PROVIDE AUXILIARY 24 VOLT CONTROL TRANSFORMER LEAK DETECTION RELAY AND HIGH TEMPERATURE ALARMS, EACH WITH SEPERATE WHITE ALARM LIGHTS, CONTROL RELAYS, RESET BUTTONS AND DRY CONTACTS WIRED TO TERMINAL BLOCKS IN THE MCC.



CAM OPERATED LIMIT SWITCHES



TYPICAL CONSTANT SPEED PUMPING UNIT NO. 3 & 6
 SEE NOTE 1

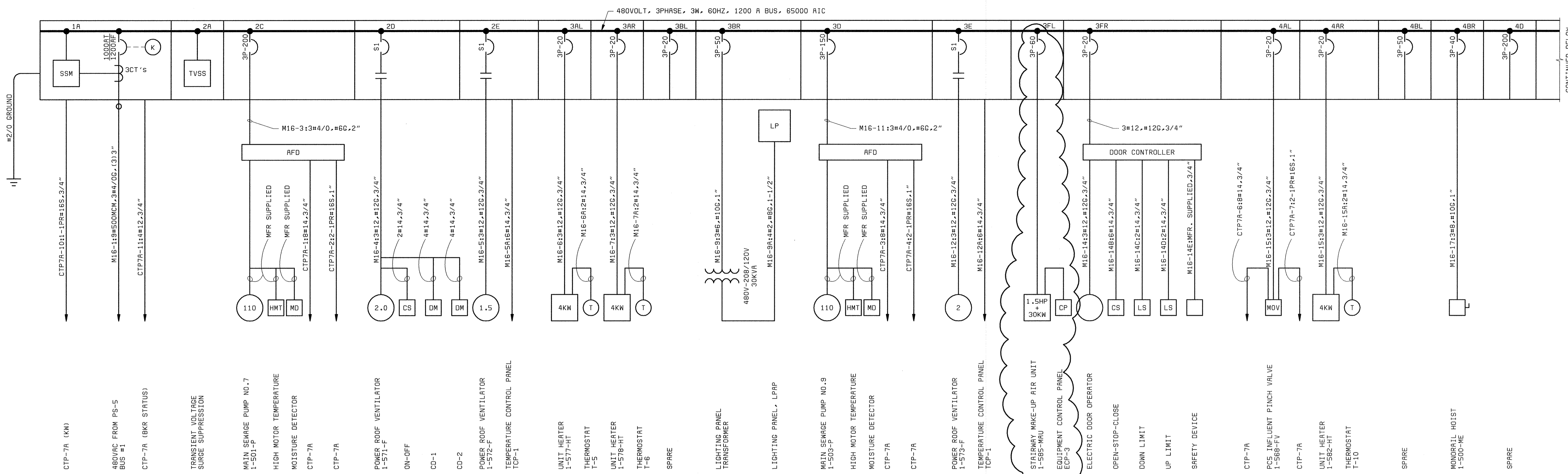


**ACROSS-THE-LINE STARTER
 RAW SEWAGE PUMP #3 & 6**

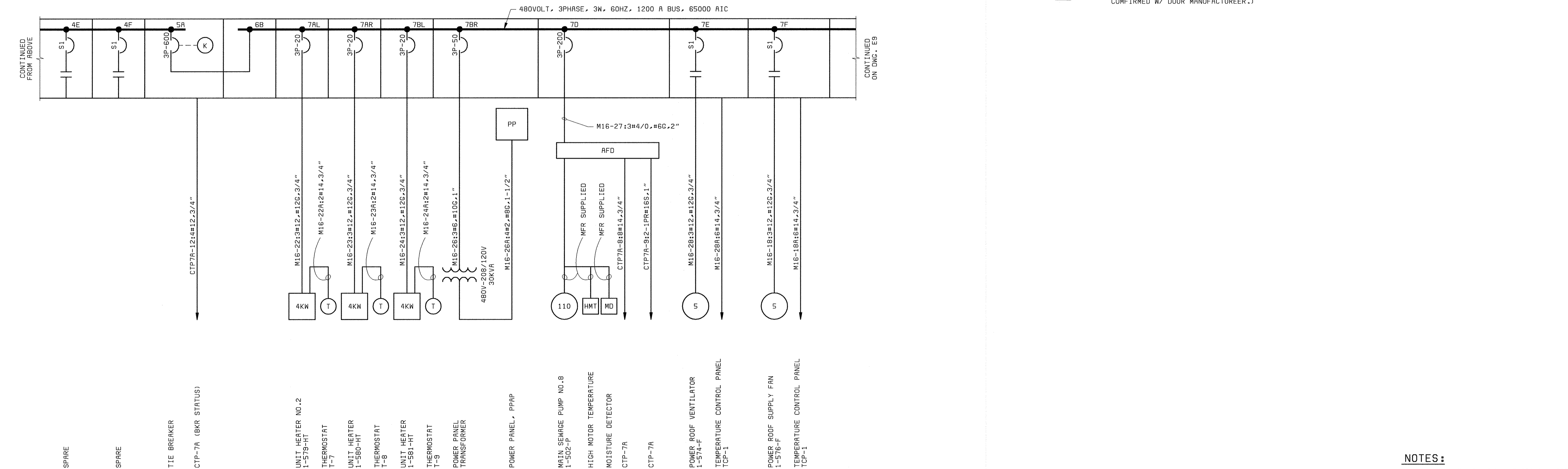
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DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	LACH ELECTRIC CORPORATION Baltimore, Maryland	BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	DES: L.K. DRN: M.F.F. CHK: WB DATE: 2/19/01	02/06/04 CONFORMED TO CONSTRUCTION RECORDS REVISIONS AND RECORD OF ISSUE	RHH/RJR/RJR NO. BY CK APP	HEADWORKS BUILDING ELECTRICAL SCHEMATIC DIAGRAMS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 67 OF 88 E6
			THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY LACHMAN D. KUKREJA A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 19889					



MCC16 ONE-LINE DIAGRAM



MCC16 ONE-LINE DIAGRAM (CONTINUED)

STAIRWAY MAKE-UP AIR UNIT 1-585-MHU

EQUIPMENT CONTROL PANEL ECP-3

* ELECTRIC DOOR OPERATOR

OPEN-STOP-CLOSE

DOWN LIMIT

UP LIMIT

SAFETY DEVICE

PCS INFLUENT PINCH VALVE 1-568-FV

CTP-7A

CTP-7A

UNIT HEATER 1-582-HT

THERMOSTAT T-10

SPARE

THE ELECTRIC DOOR OPERATOR WILL BE APPROXIMATELY 0.5 HP. (TO BE CONFIRMED W/ DOOR MANUFACTURER.)

NOTES:
1. SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH
Gaithersburg, Maryland

REC. PROF. ENGR. DATE

THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876

DES: GNS					
DRN: MDR					
CHK: JTF	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR
DATE: 2/19/01	8/28/01	ADDED 1-585-MAU	TDH	GNS	
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

AUXILIARY PUMP STATION
ELECTRICAL

MCC16 ONE-LINE
DIAGRAM

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

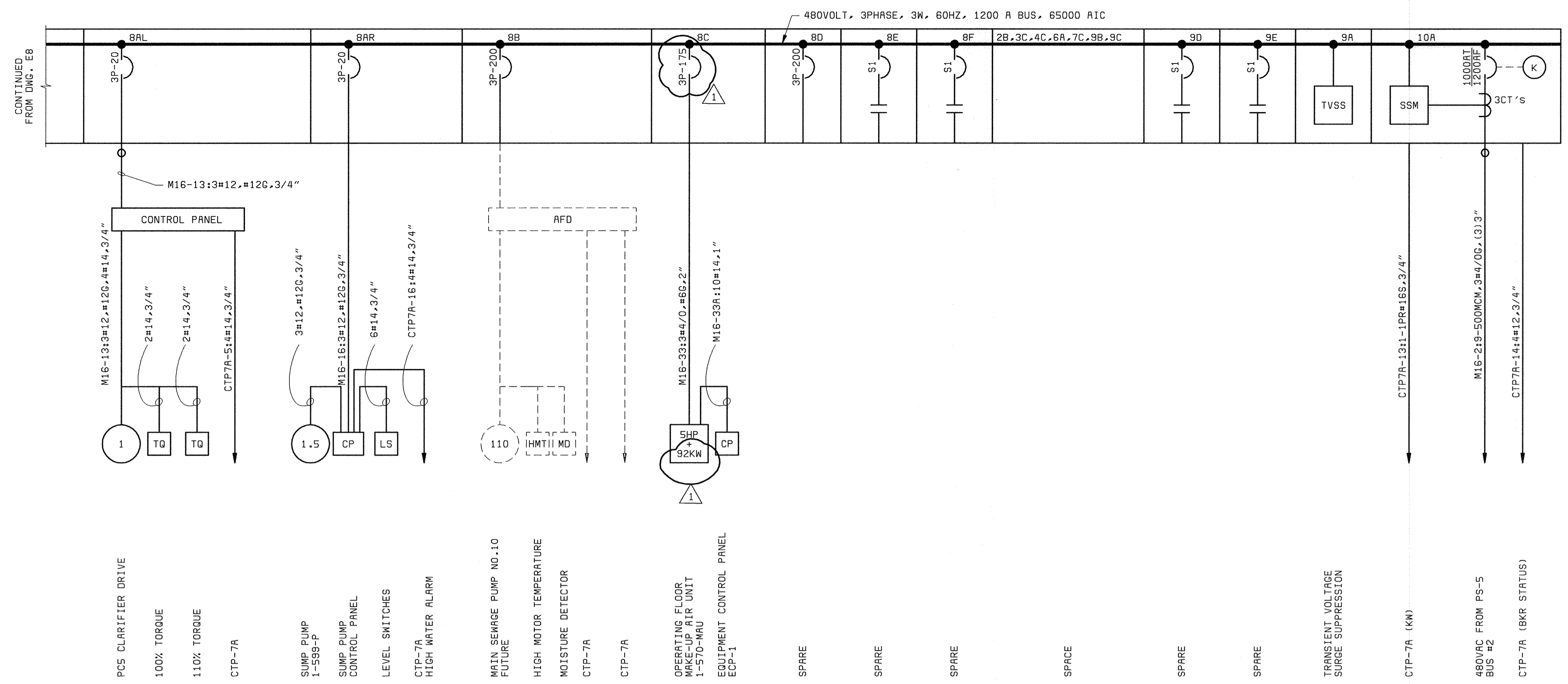
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

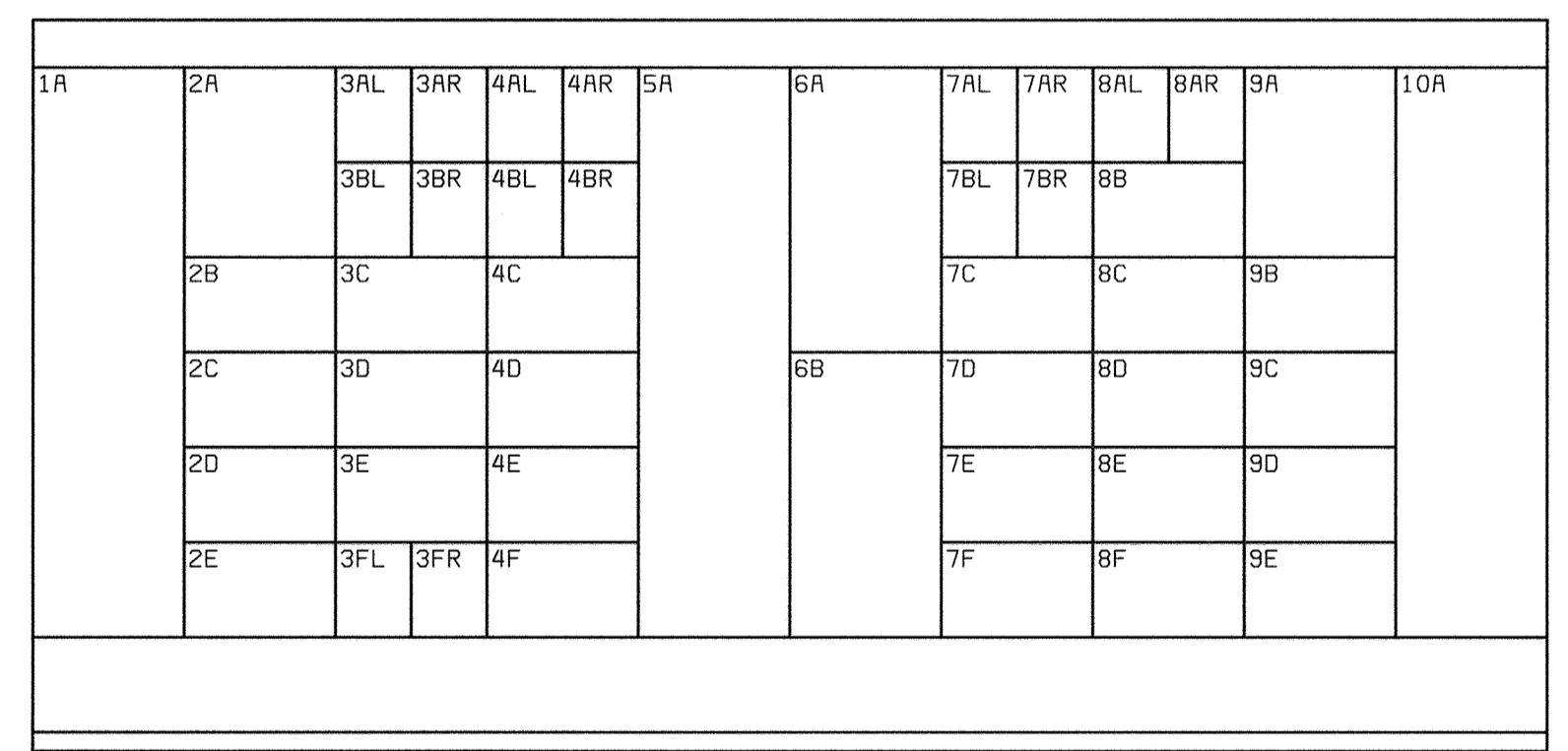
SCALE AS SHOWN

SHEET 68 OF 88

E7



MCC16 ONE-LINE DIAGRAM (CONTINUED)

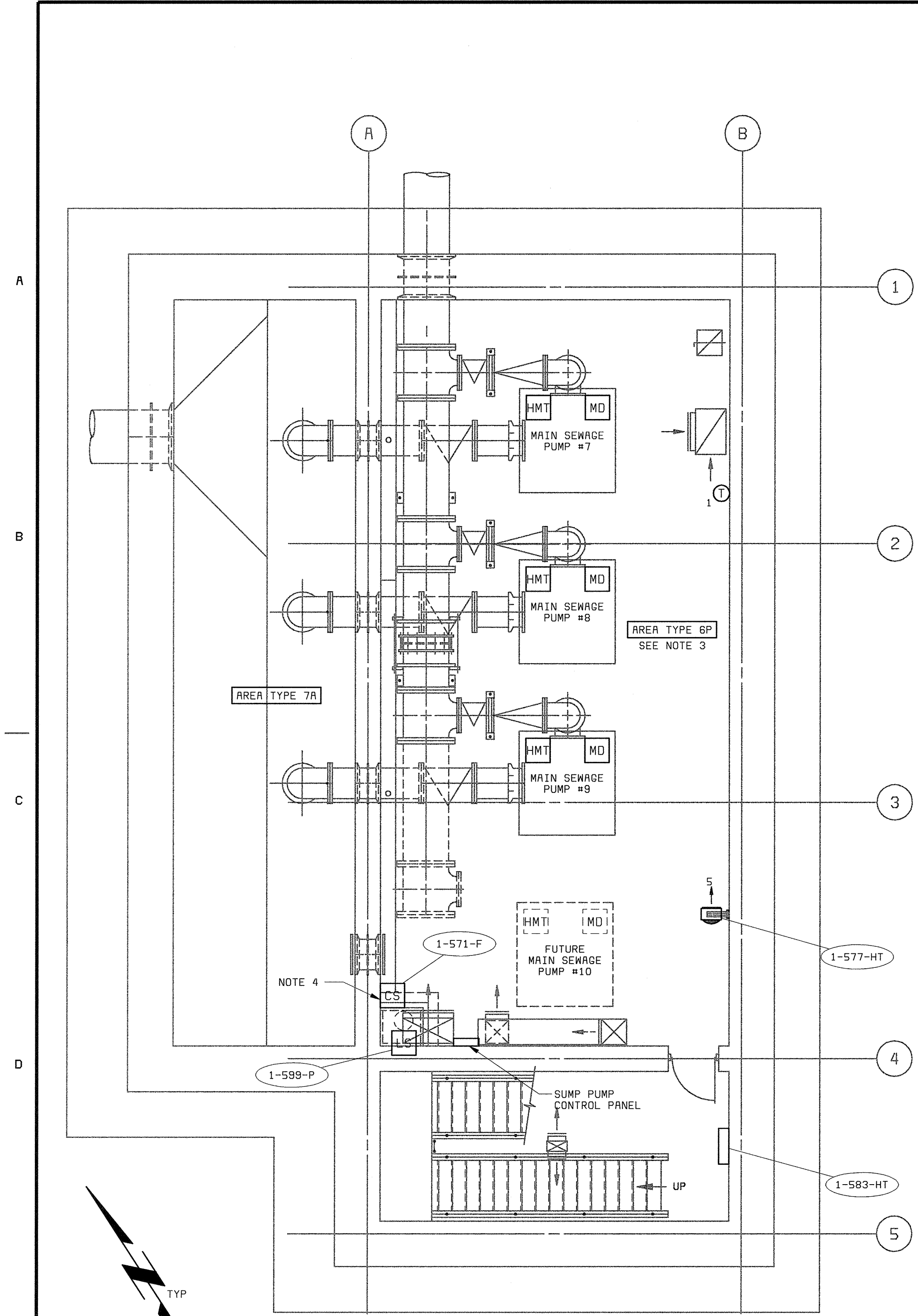


MCC16 FRONT ELEVATION
NO SCALE

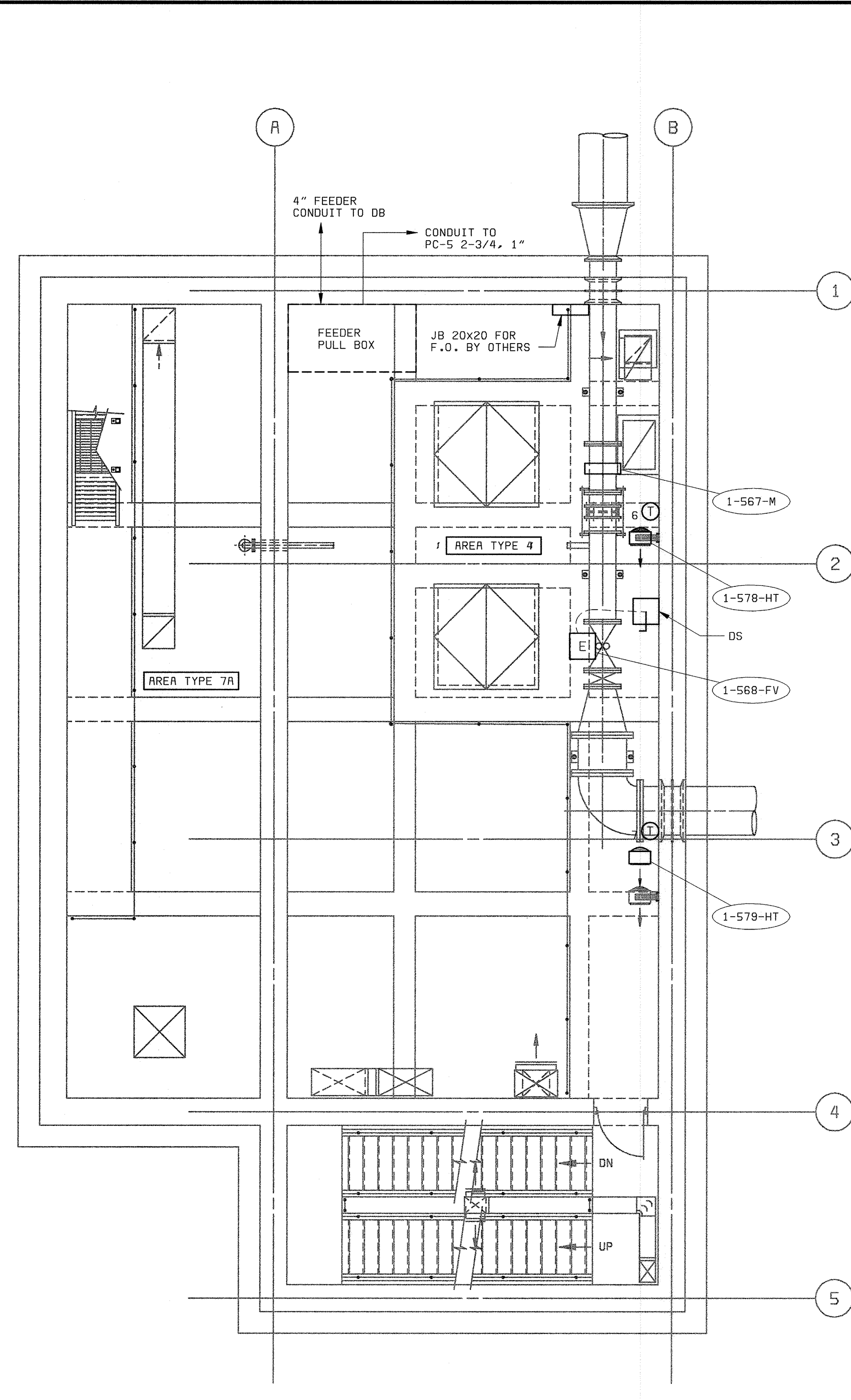
NOTES:
1. SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876	DES: GNS						AUXILIARY PUMP STATION ELECTRICAL MCC16 ONE-LINE DIAGRAM CONTINUATION	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: MDR	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR			
			CHK: JTF	8/28/01	REDUCED SIZE OF 1-570-MAU & BKR						E8
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP		

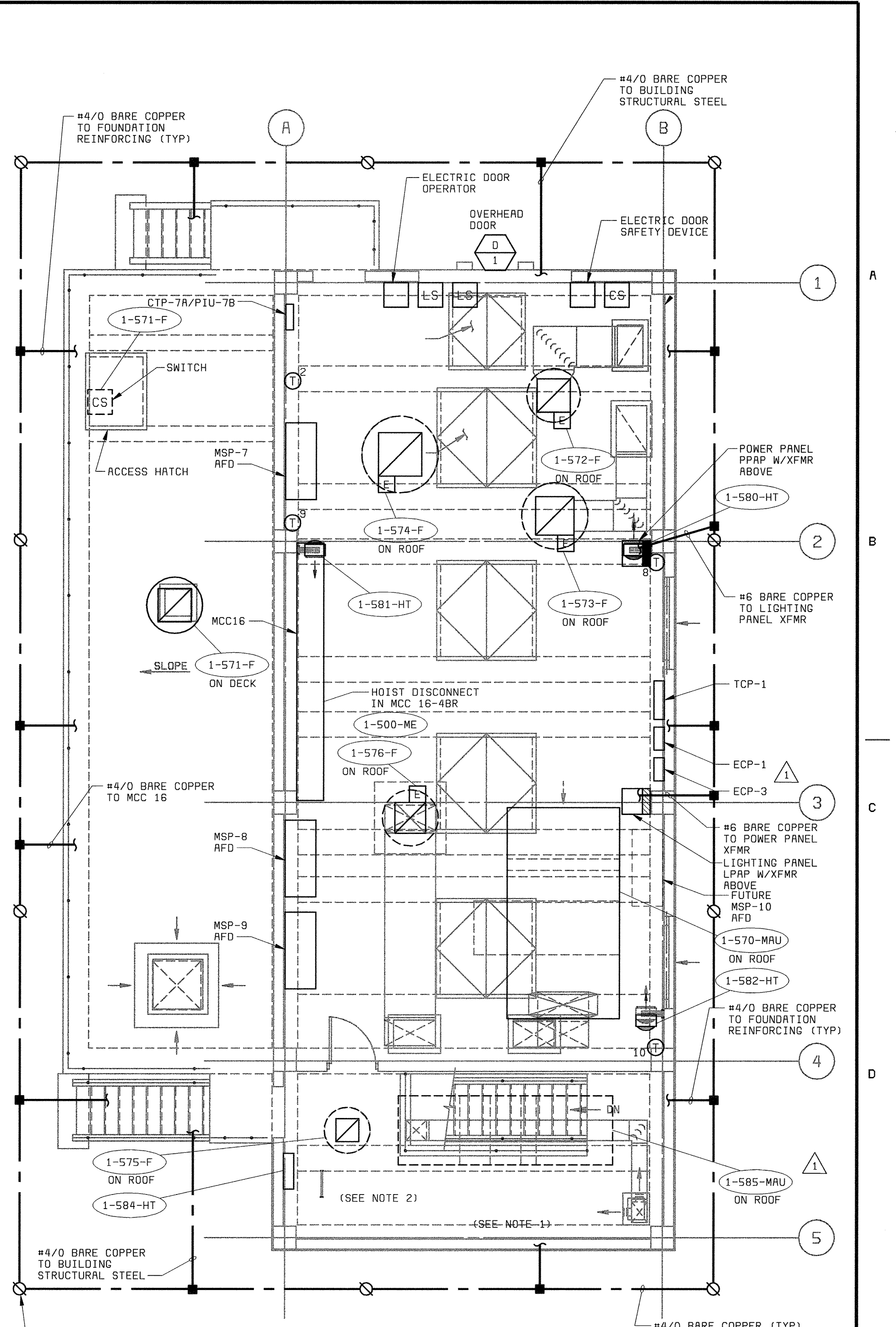
058472-3
F058472A



LOWER LEVEL PLAN
3/16" = 1'-0"



MEZZANINE LEVEL PLAN
3/16" = 1'-0"



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

- NOTES:**
- 1. SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
 - 2. SEE PANELBOARD SCHEDULES ON DRAWING E16.
 - 3. LOWER LEVEL IS SUBJECT TO POSSIBLE FLOODING. ELECTRICAL INSTALLATION SHALL MEET NEMA 6P OR HIGHER WITH APPROPRIATE CABLE SEALS AT ALL EQUIPMENT CONNECTIONS.
 - 4. CS INSIDE SUMP PUMP CONTROL PANEL.

Z0000001P.dwg
 Z0000000P.dwg
 Z0000000N.dwg
 D58472-3
 F058472A

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH LP
Gaithersburg, Maryland
REG. PROF. ENGR. DATE

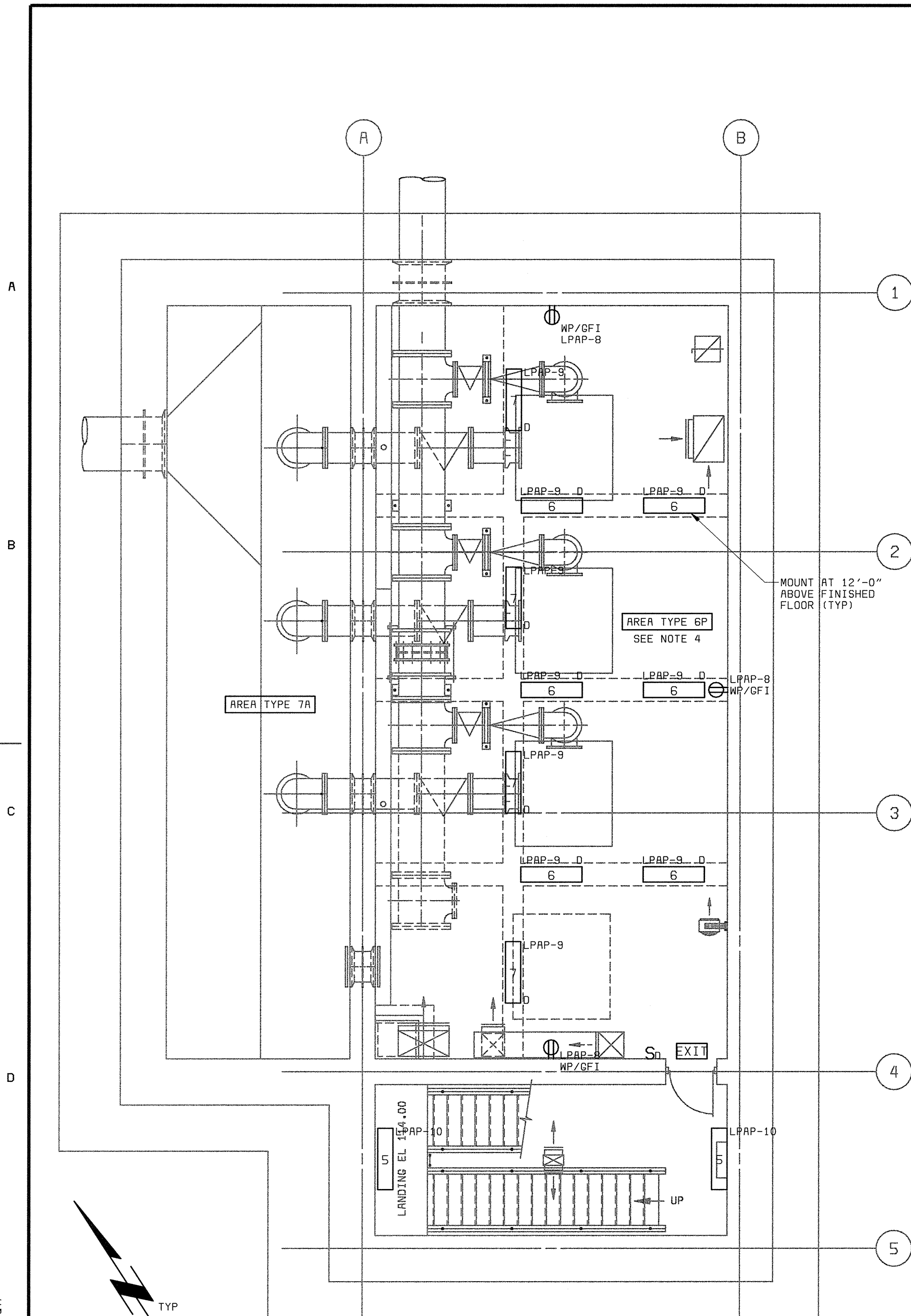
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DES: MEP					
DRN: MEP					
CHK: JTF	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
	8/28/01	ADDED 1-585-MAU, MOVED 1-575-F.		TDH/GNS	
DATE: 4/13/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

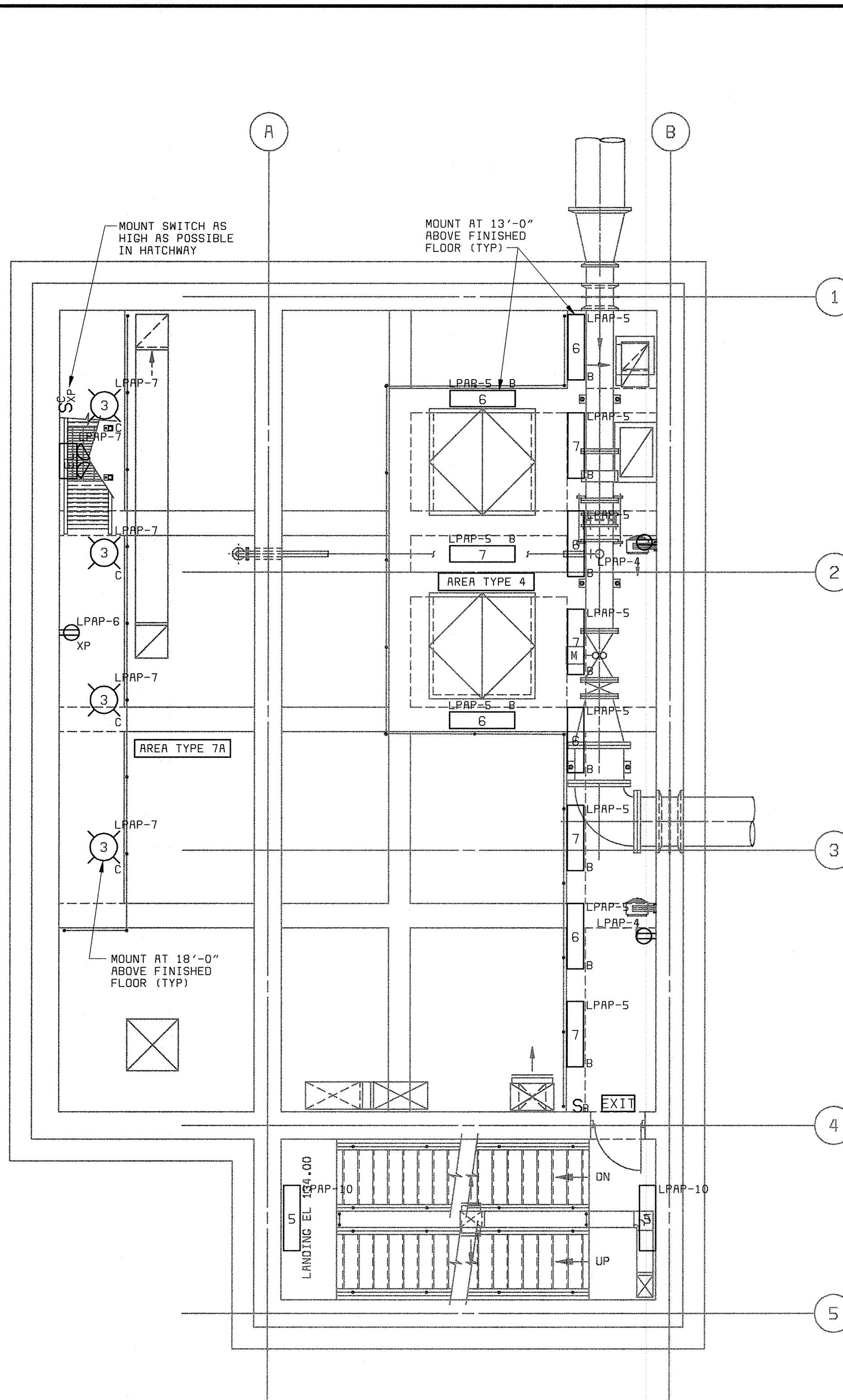
**AUXILIARY PUMP STATION
ELECTRICAL
POWER AND GROUNDING PLANS**

**LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION**
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
HOWARD COUNTY, MARYLAND

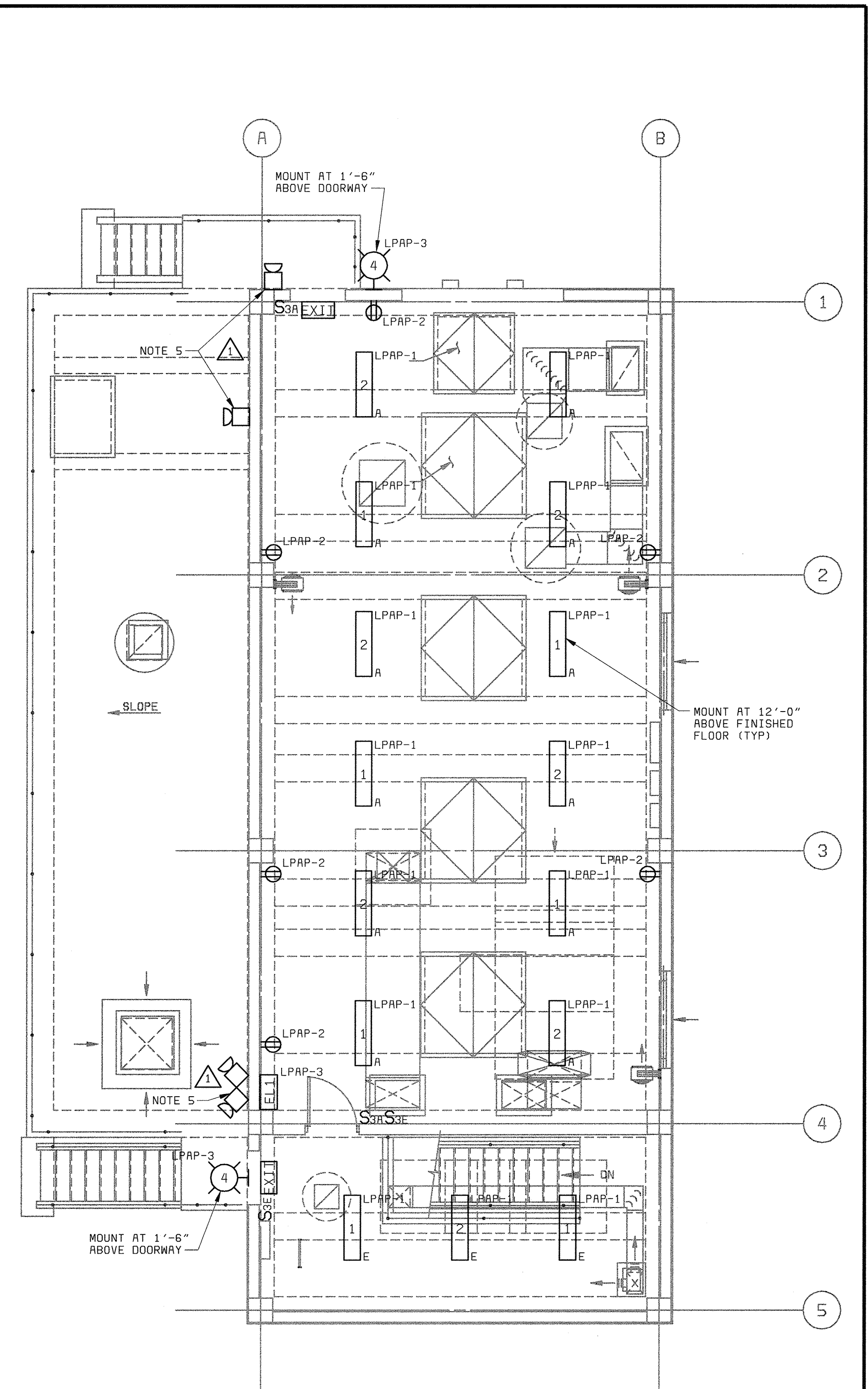
SCALE AS SHOWN
SHEET 70 OF 88
E9



LOWER LEVEL PLAN
3/16" = 1'-0"



MEZZANINE LEVEL PLAN
3/16" = 1'-0"



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

- NOTES:**
- SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
 - SEE LIGHTING FIXTURE AND PANELBOARD SCHEDULES ON DRAWING E16.
 - ALL RECEPTACLES SHALL BE GFI TYPE.
 - LOWER LEVEL IS SUBJECT TO POSSIBLE FLOODING. ELECTRICAL INSTALLATION SHALL MEET NEMA 6P OR HIGHER WITH APPROPRIATE CABLE SEALS AT ALL EQUIPMENT CONNECTIONS BELOW LIGHTING. NEMA 4 ABOVE LIGHTING.
 - EMERGENCY LIGHTING UNIT (EL1) REMOTE HEAD MOUNTED NEXT TO FIXTURE OR 8'-8" ABOVE FLOOR.

58472-101-RP-N-20000000N
58472-101-RP-N-20000000P
58472-104-RP-N-20000000T

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH
Gaithersburg, Maryland

REG. PROF. ENGR. DATE

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IN THE
STATE OF MARYLAND,
NO. 21876

DES: MEP					
DRN: MEP					
CHK: JTF	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
DATE: 2/19/01	07/10/01	EMERG. EGRESS LIGHTING AT EXTERIOR DOORS		MEP/GNS	
	DATE	REVISIONS AND RECORD OF ISSUE		NO. BY CK APP	

**AUXILIARY PUMP STATION
ELECTRICAL**

LIGHTING PLANS

**LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION**

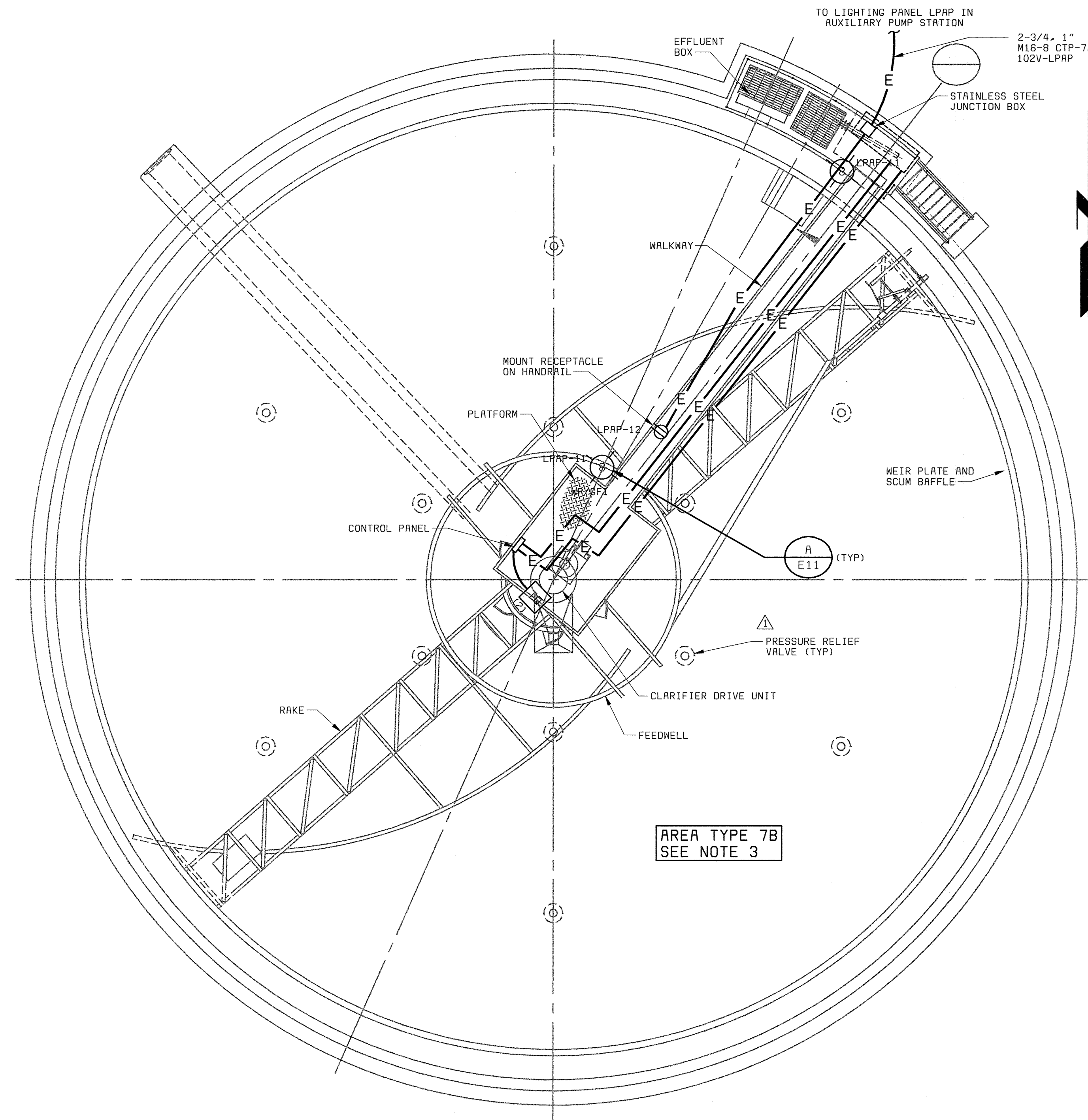
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

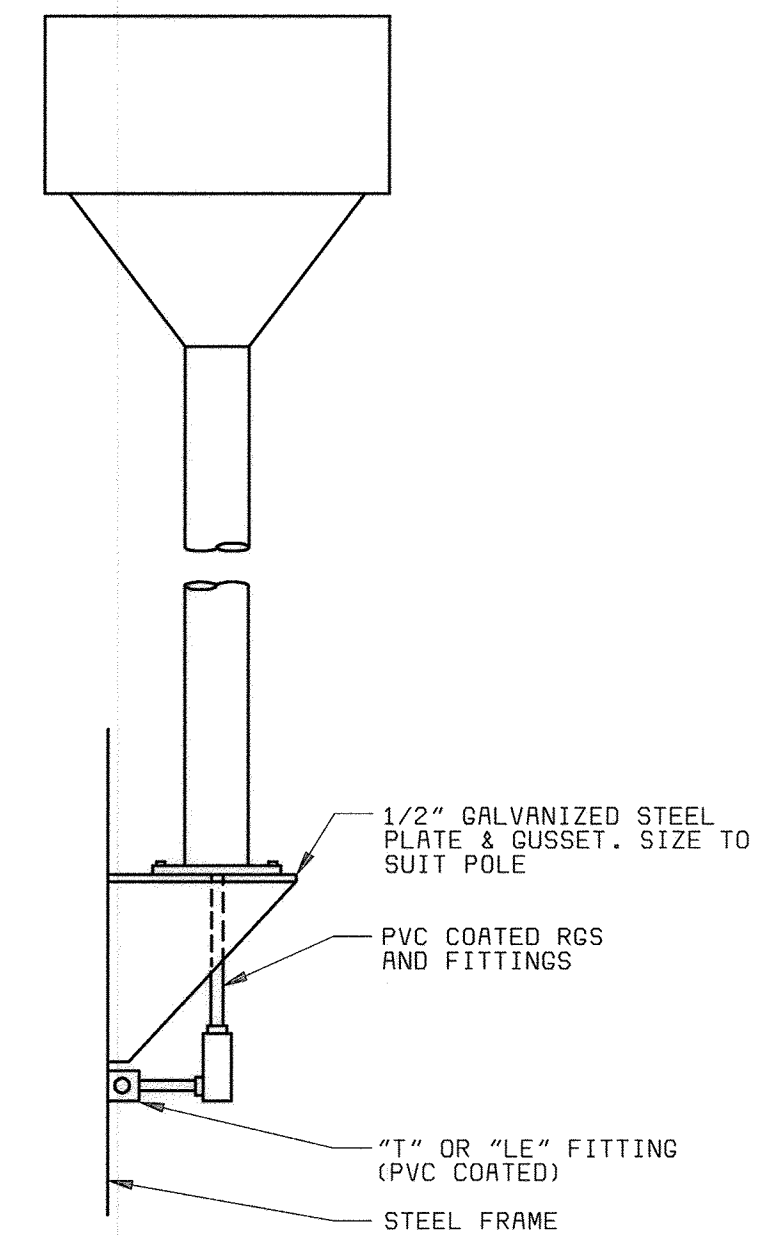
SCALE
AS
SHOWN

SHEET
71 OF 88

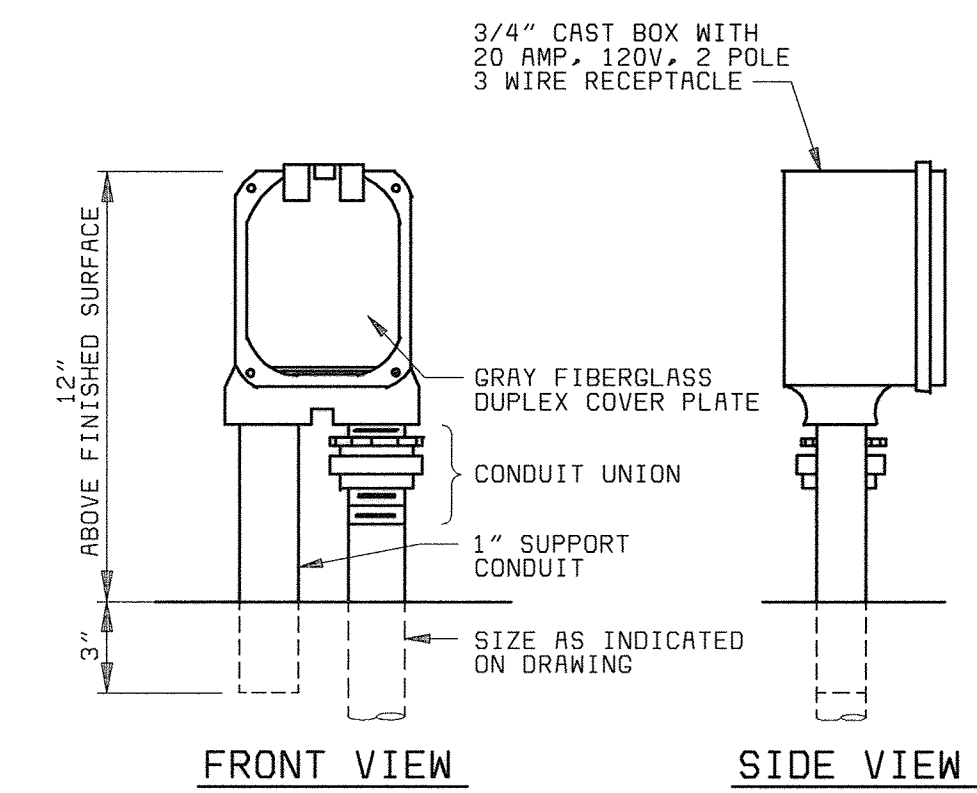
E10



TOP/SECTIONAL PLAN
1/8" = 1'-0"

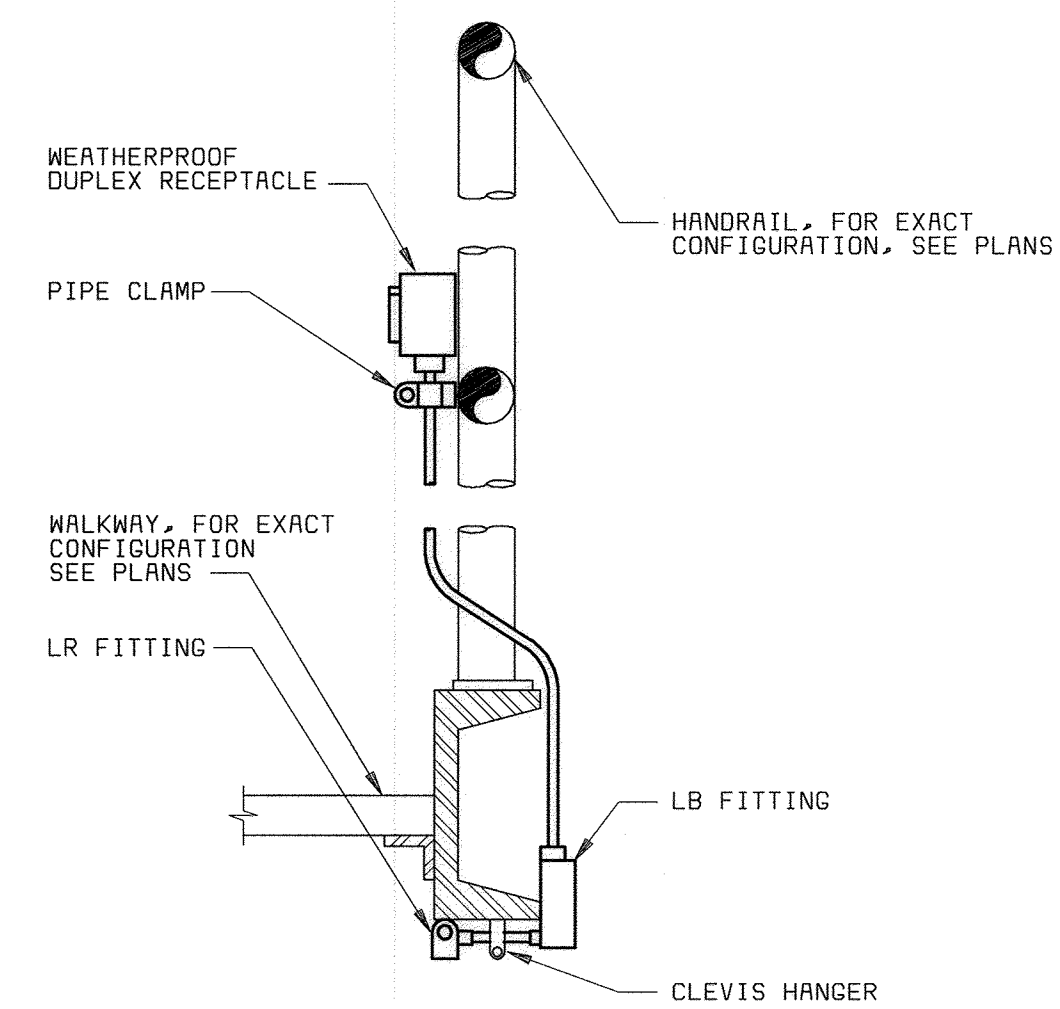


STEEL WALKWAY POLE MOUNTING DETAIL
NO SCALE



NOTE: ALL EXPOSED CONDUIT SHALL BE PVC COATED RIGID STEEL.

TYPICAL WEATHERPROOF RECEPTACLE MOUNTING DETAIL
NO SCALE



TYPICAL RECEPTACLE MOUNTING AT METAL WALKWAY DETAIL
NO SCALE

NOTES:

- SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
- SEE LIGHTING FIXTURE AND PANELBOARD SCHEDULES ON DRAWING E16.
- AREA CLASSIFICATION IS INSIDE TANK FROM THE MINIMUM WATER SURFACE TO TOP OF TANK WALL WITH ENVELOPE 18 INCHES ABOVE TOP OF TANK, EXTENDING 18 INCHES BEYOND EXTERIOR WALL. ENVELOPE 18 INCHES ABOVE GRADE EXTENDING 10 FEET OUT FROM TANK WALLS.

58742-101-PC-S-20000006/J
58742-101-PC-M-20000006SD
58742-101-PC-N-20000006SC

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES DATE

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Gaithersburg, Maryland
REC. PROF. ENGR. DATE

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IN THE
STATE OF MARYLAND,
NO. 21876

DES: MEP					
DRN: MEP					
CHK: JTF	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH RJR RJR	
DATE: 2/19/01	06/12/01	ADDENDUM NO. 1			
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	APP

PRIMARY CLARIFIER 5
ELECTRICAL

POWER & LIGHTING PLAN

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

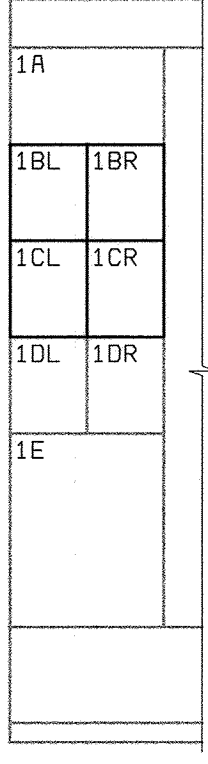
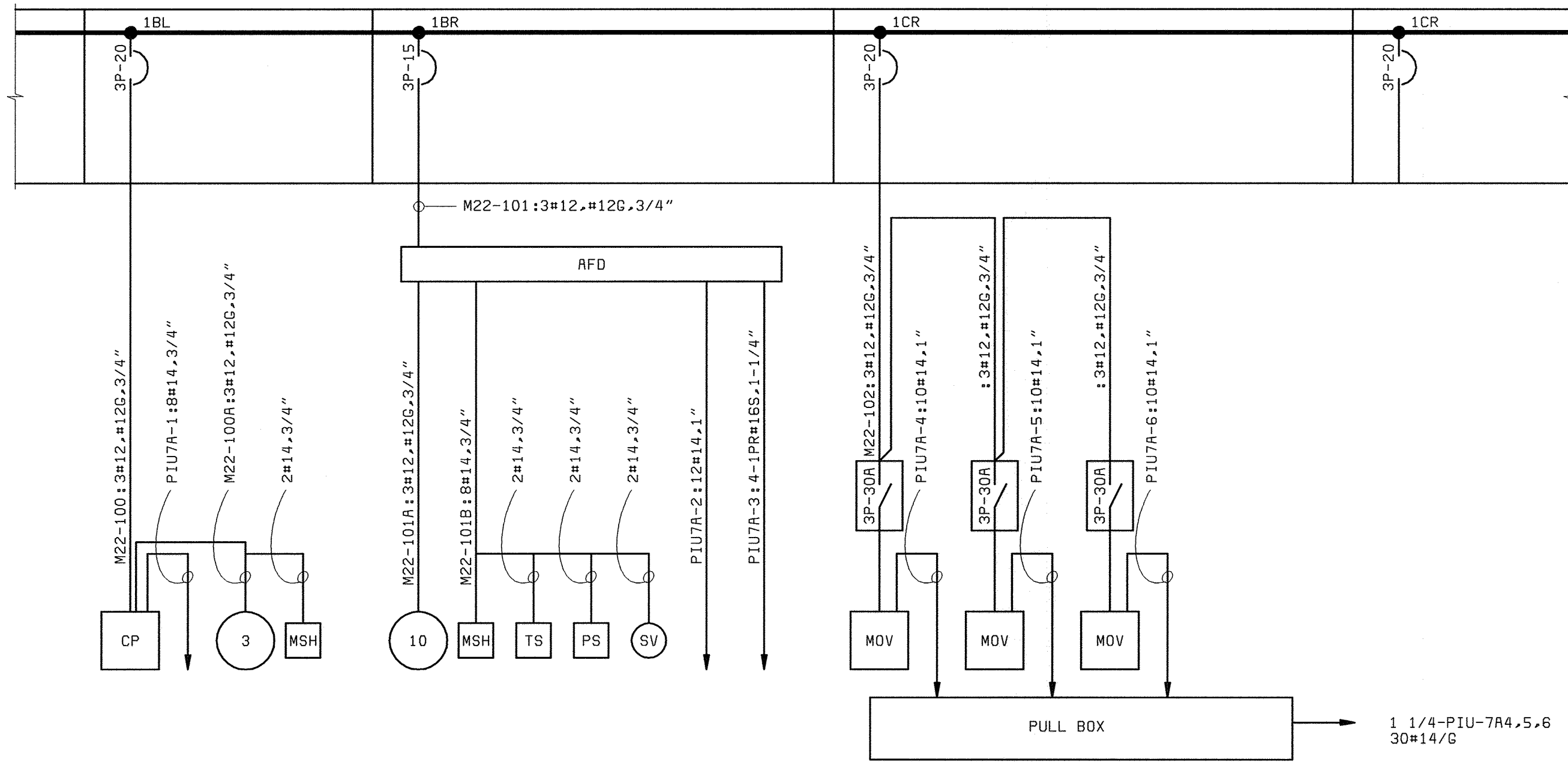
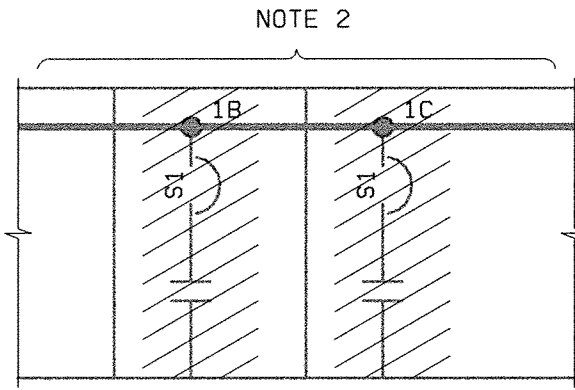
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

SHEET
72 OF 88

E11



PARTIAL MCC22 ONE-LINE - DEMOLITION
(SOUTH PUMPING STATION)

PARTIAL MCC22 ONE-LINE - MODIFICATIONS
(SOUTH PUMPING STATION)

PARTIAL MCC22 FRONT ELEVATION MODIFICATIONS
NO SCALE

- NOTE:**
- SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
 - REPLACE EXISTING SPARE SIZE 1 STARTERS WITH 100AF DUAL FEED BREAKERS AS SHOWN.
 - PIU-7A IS EXISTING IN SOUTH PUMPING STATION.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

BLACK & VEATCH
Gaithersburg, Maryland

REG. PROF. ENGR. _____ DATE _____

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AND SEALED BY
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IN THE
STATE OF MARYLAND,
NO. 21876

DES: GNS					
DRN: EEC					
CHK: JTF					
DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	APP
				RHH/RJR/RJR	

**SOUTH PUMP STATION
ELECTRICAL**

**MCC22 ONE-LINE
DIAGRAM**

**LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION**

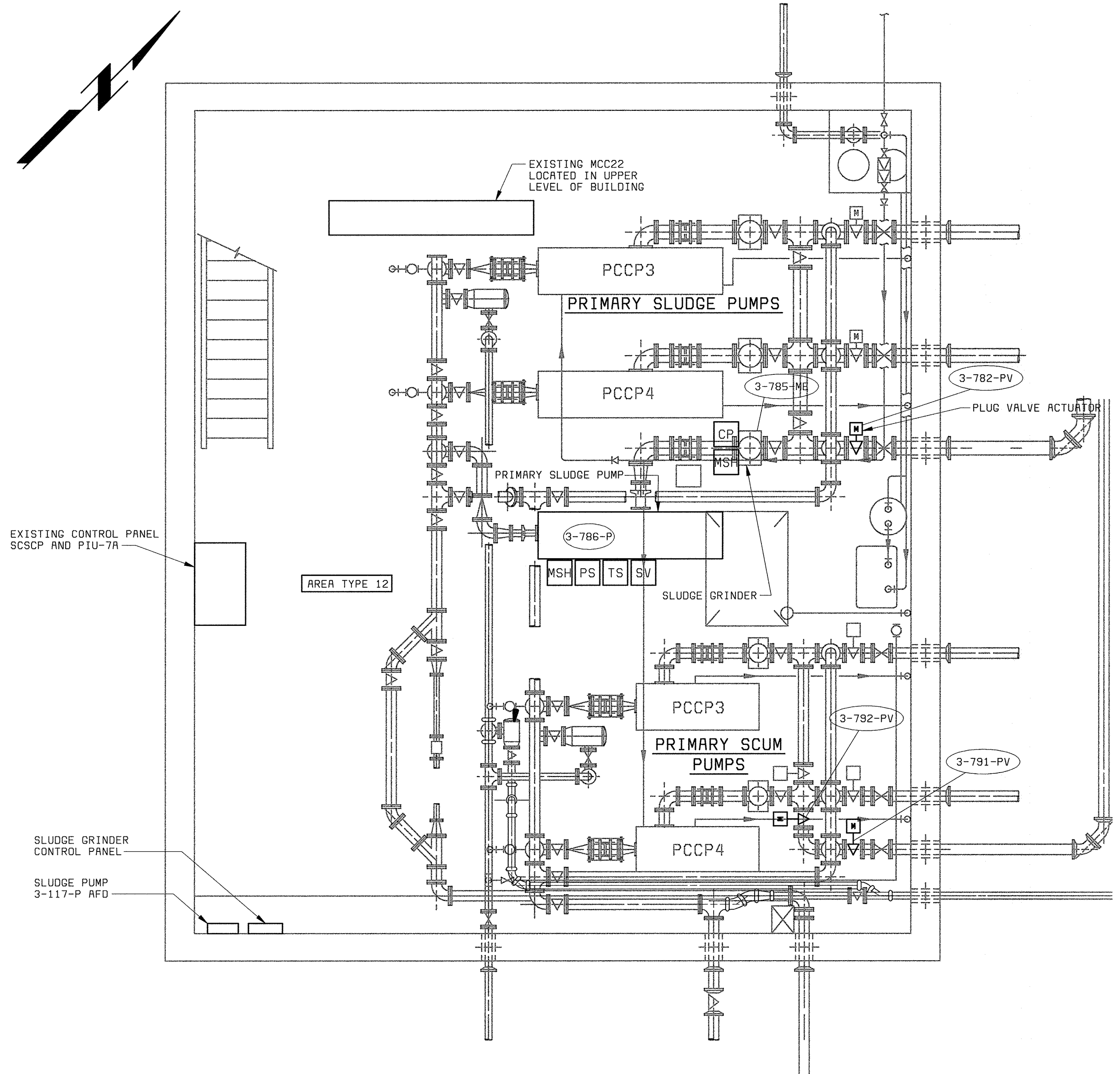
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

SHEET
73 of 88

E12



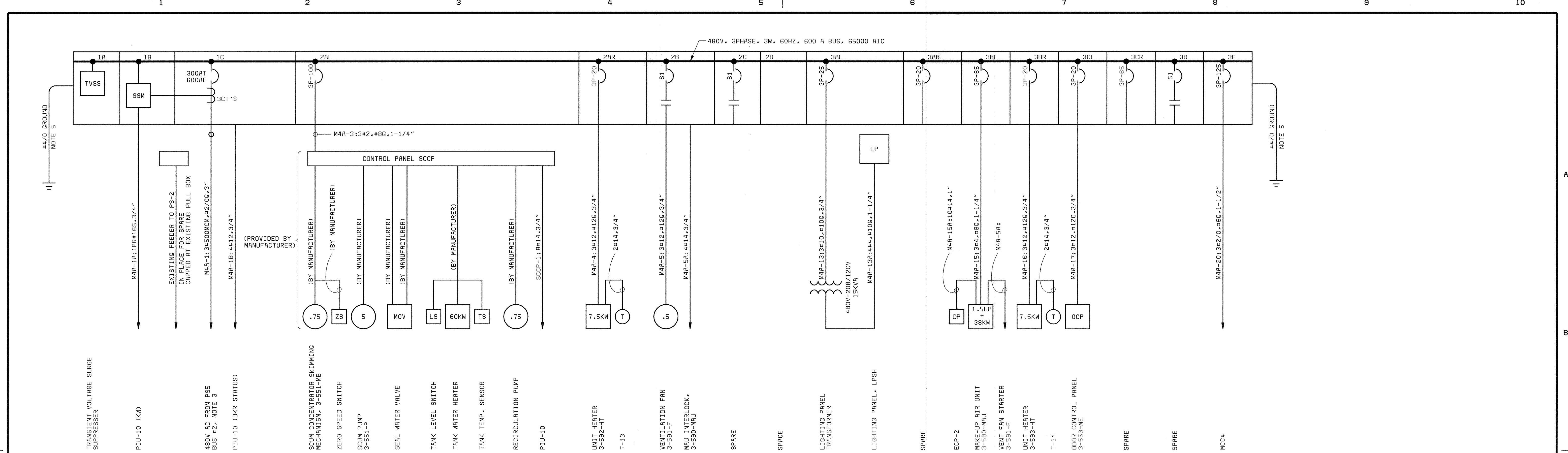
BASEMENT PLAN
1/4" = 1'-0"

NOTES:

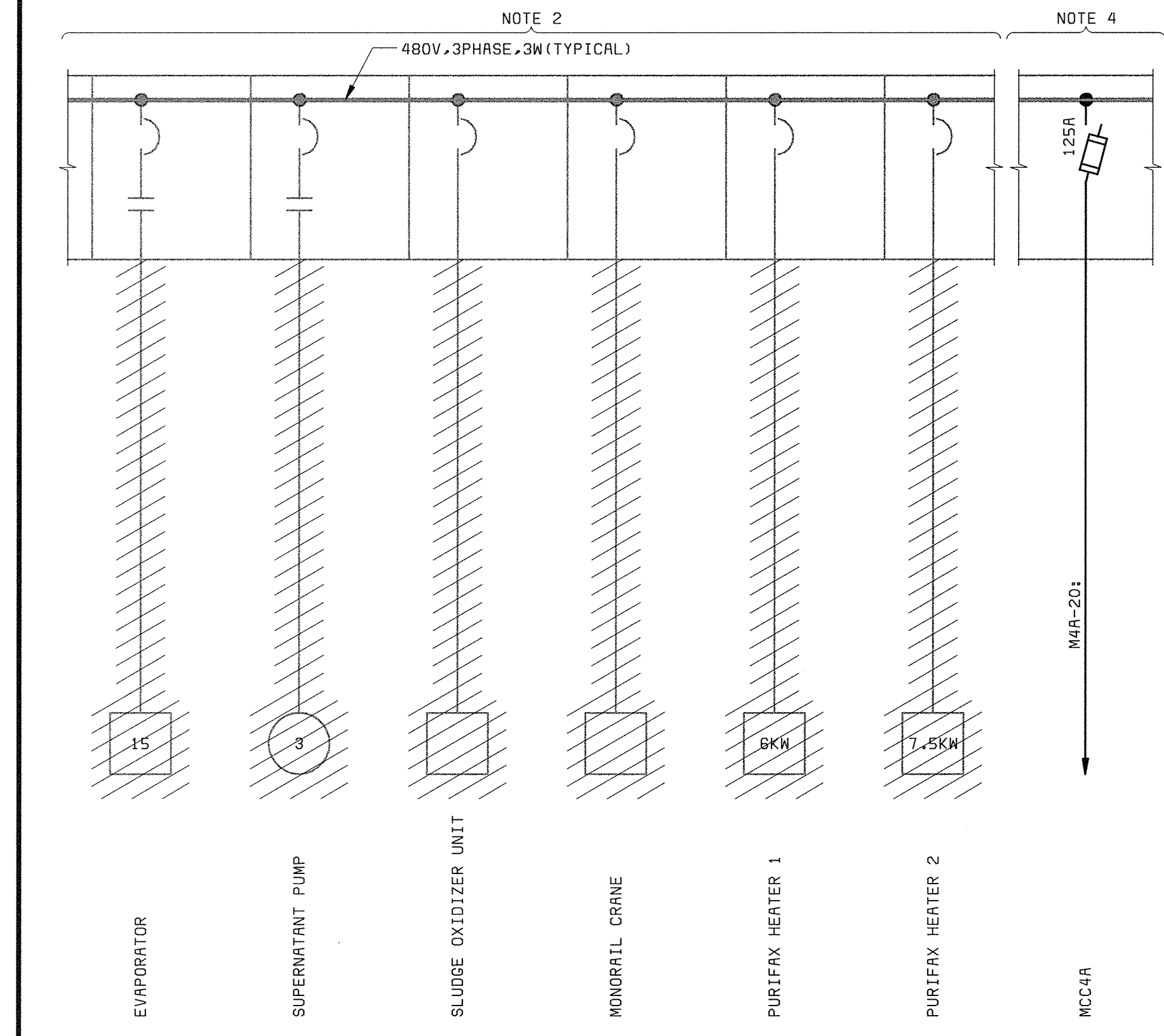
1. SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
2. SEE LIGHTING FIXTURE AND PANELBOARD SCHEDULES ON DRAWING E16.

58472-101-PC-M-Z000000SF
058472-3
F058472A

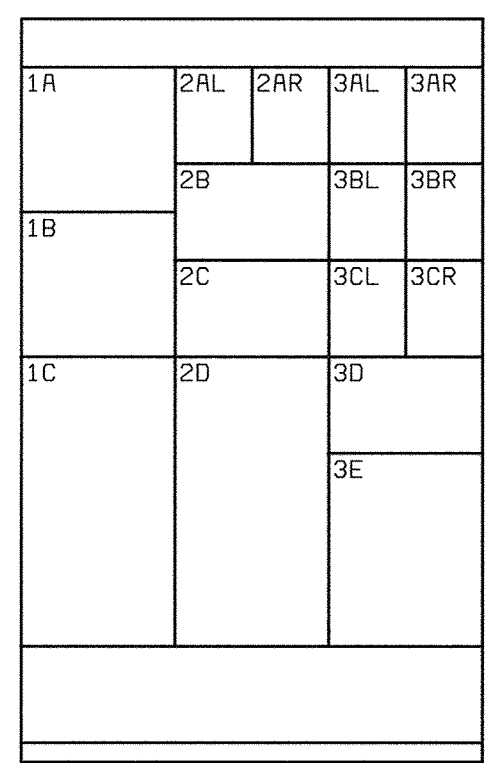
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	BLACK & VEATCH ^{LLP} Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876	DES: MEP					SOUTH PUMP STATION ELECTRICAL POWER PLAN	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: MEP							SHEET 74 OF 88
			CHK: JTF	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHHRJR/RJR				E13
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY			CK



MCC4A ONE-LINE DIAGRAM
(PRIMARY SCUM HANDLING BUILDING)



EXISTING MCC4 PARTIAL DEMOLITION ONE-LINE
(PRIMARY SCUM HANDLING - OLD PURIFIX - BUILDING)



MCC4A FRONT ELEVATION
NO SCALE

NOTE:

- SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
- EXISTING MCC4 LOADS SHOWN SHALL BE REMOVED, AND THE MCC LEFT ENERGIZED AND IN PLACE. IN ADDITION, THE TWO SETS OF MAGNETIC CLUTCH/CLUTCH CONTROLS SHALL BE REMOVED. UNITS ARE NOT SHOWN IN ORDER OF PHYSICAL LAYOUT.
- MCC4A TO BE FED FROM EXISTING PSS BUS NO. 2 BREAKER. PSS BREAKER TRIP SETTING SHALL BE ADJUSTED TO 300A.
- EXISTING MCC4 MAIN AND TIE BREAKERS SHALL BE REMOVED. ONE MAIN BREAKER SHALL BE REPLACED WITH CURRENT LIMITING FUSED SWITCH AS SHOWN. THE TIE BREAKER SHALL BE REPLACED WITH BUS JUMPERS.
- EXISTING GROUND GRID LOCATED AROUND BUILDING EXTERIOR. CONTRACTOR SHALL VERIFY AND CONNECT AS REQUIRED.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH
Gaithersburg, Maryland
REG. PROF. ENGR. DATE

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A REGISTERED
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IN THE
STATE OF MARYLAND,
NO. 21876

DES: GNS					
DRN: EEC					
CHK: JTF					
DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	APP
	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	

**PRIMARY SCUM HANDLING BUILDING
ELECTRICAL**

**MCC4 & MCC4A DEMOLITION
AND NEW ONE-LINE DIAGRAMS**

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

SCALE
AS
SHOWN

SHEET
75 OF 88

E14

056472.3
FD59472A

PANELBOARD: LPAP		BUS: COPPER		MAINS: 3P-100A MAIN BREAKER			
SERVICE: 120/208V, 3Ø, 4W, S/N		RATING: 225A		LOCATION: AUXILIARY PUMP STATION			
MOUNTING: SURFACE				GROUND FLOOR ROOM			
LOAD		P	BKR	CKT#	BKR	P	LOAD
LIGHTS - GROUND FLOOR LEVEL	1	20	1	2	20	1	RECP - GROUND FLOOR LEVEL
LIGHTS - EXTERIOR GROUND FLOOR LEVEL	1	20	3	4	20	1	RECP - MEZZANINE LEVEL EAST
LIGHTS - MEZZANINE LEVEL EAST	1	20	5	6	20	1	RECP - MEZZANINE LEVEL WEST
LIGHTS - MEZZANINE LEVEL WEST	1	20	7	8	20	1	RECP - LOWER LEVEL
LIGHTS - LOWER LEVEL	1	20	9	10	20	1	LIGHTS - STAIR WELLS
LIGHTS - PRIMARY CLARIFIER NO. 5	1	20	11	12	20	1	RECP - PRIMARY CLARIFIER NO. 5
SPARE	1	20	13	14	20	1	SPARE
SPARE	1	20	15	16	20	1	SPARE
SPARE	1	20	17	18	20	1	SPARE
SPARE	1	20	19	20	20	1	SPARE
SPARE	1	20	21	22	20	1	SPARE
SPARE	1	20	23	24	20	1	SPARE
SPARE	1	20	25	26	20	1	SPARE
SPARE	1	20	27	28	20	1	SPARE
SPARE	1	20	29	30	20	1	SPARE
SPARE	1	20	31	32	20	1	SPARE
SPARE	1	20	33	34	20	1	SPARE
SPARE	1	20	35	36	20	1	SPARE
SPACE	1	--	37	38	--	1	SPACE
SPACE	1	--	39	40	--	1	SPACE
SPACE	1	--	41	42	--	1	SPACE


PANELBOARD: PPAP		BUS: COPPER		MAINS: 3P-100A MAIN BREAKER			
SERVICE: 120/208V, 3Ø, 4W, S/N		RATING: 225A		LOCATION: AUXILIARY PUMP STATION			
MOUNTING: SURFACE				GROUND FLOOR ROOM			
LOAD		P	BKR	CKT#	BKR	P	LOAD
POWER ROOF VENT FAN 1-575-F	1	20	1	2			HEATER 1-583-HT - PHASE A
MAGNETIC FLOW METER 1-567-M	1	20	3	4	20	3	HEATER 1-583-HT - PHASE B
WET PIT ROOF HOOD DAMPER MOTOR	1	20	5	6			HEATER 1-583-HT - PHASE C
FLOW METER 1-567-M	1	20	7	8			HEATER 1-584-HT - PHASE A
SPARE	1	20	9	10	20	3	HEATER 1-584-HT - PHASE B
SPARE	1	20	11	12			HEATER 1-584-HT - PHASE C
SPARE	1	20	13	14	20	1	SPARE
SPARE	1	20	15	16	20	1	SPARE
SPARE	1	20	17	18	20	1	SPARE
SPARE	1	20	19	20	20	1	SPARE
SPARE	1	20	21	22	20	1	SPARE
SPARE	1	20	23	24	20	1	SPARE
SPARE	1	20	25	26	20	1	SPARE
SPARE	1	20	27	28	20	1	SPARE
SPARE	1	20	29	30	20	1	SPARE
SPARE	1	20	31	32	20	1	SPARE
SPARE	1	20	33	34	20	1	SPARE
SPARE	1	20	35	36	20	1	SPARE
SPACE	1	--	37	38	--	1	SPACE
SPACE	1	--	39	40	--	1	SPACE
SPACE	1	--	41	42	--	1	SPACE

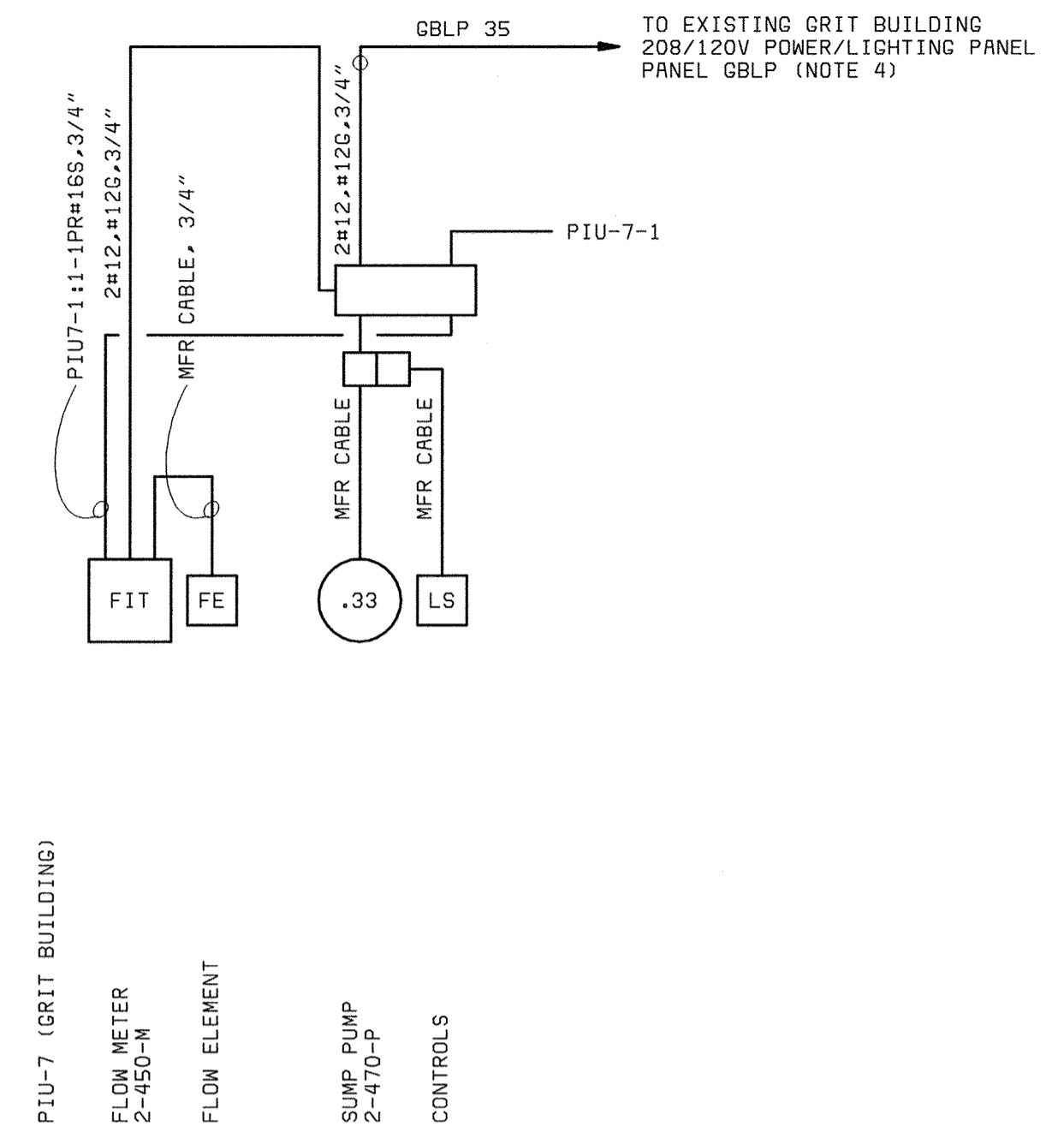
PANELBOARD: LPSPH		BUS: COPPER		MAINS: 3P-50A MAIN BREAKER			
SERVICE: 120/208V, 3Ø, 4W, S/N		RATING: 100A		LOCATION: PRIMARY SCUM HANDLING BUILDING			
MOUNTING: SURFACE							
LOAD		P	BKR	CKT#	BKR	P	LOAD
LIGHTS - PRIMARY SCUM HANDLING BLDG	1	20	1	2	20	1	RECP - PRIMARY SCUM HANDLING BLDG
LIGHTS - PRIMARY SCUM HANDLING BLDG	1	20	3	4	20	1	INSULATED PIPE HEAT TRACE PANEL
SPARE	1	20	5	6	20	1	SPARE
SPARE	1	20	7	8	20	1	SPARE
SPARE	1	20	9	10	20	1	SPARE
SPACE	1	--	11	12	--	1	SPACE

LIGHTING FIXTURE SCHEDULE				
SYMBOL	LAMP	MTG HGT	DESCRIPTION	MANUFACTURER
1	F32T8/SP35/RS 2850 LUMENS	AS NOTED ON PLANS	2-LAMP OPEN INDUSTRIAL FLUORESCENT FIXTURE, 10% UP- LIGHT, WHITE PORCELAIN RE- FLECTOR, ELECTRONIC BALLAST, 120V	LITHONIA #AF10232120GEBPO
2	F32T8/SP35/RS 2850 LUMENS	AS NOTED ON PLANS	SAME AS FIXTURE NO.1, EXCEPT WITH LITHONIA EMERGENCY BATTERY PACK PS1400-120V 50HZ, 120V	LITHONIA #AF10232120GEBPO- EL14
3	MVR175 14,000 LUMENS	AS NOTED ON PLANS	175 WATT METAL HALIDE FIXTURE, EXPLOSION-PROOF H.I.D. PENDANT MOUNT LIGHTING FIXTURE WITH GLOBE AND DOME REFLECTOR FOR WIDE DISTRIBUTION, 120V	O-Z/GEDNEY #LMP175MAGGMTB
4	LU100 9500 LUMENS	AS NOTED ON PLANS	100 WATT HIGH PRESSURE SODIUM, WALL MOUNTED FIXTURE, DARK BRONZE FINISH, PHOTO-ELECTRIC CELL CONTROL, HIGH POWER FACTOR BALLAST, 120V	HUBBELL #PVL-100S-128- PBT-1
5	F32T8/SP35/RS 2850 LUMENS	7'-6" ABOVE FLOOR	2-LAMP ALL PURPOSE WALL MOUNTED FLUORESCENT FIXTURE, MATTE WHITE OPAL ACRYLIC DIFFUSER, ELECTRONIC BALLAST, LITHONIA EMERGENCY BATTERY PACK PS1400- 120V 50HZ, 120V	LITHONIA #WC232A120GEBEL14
6	F32T8/SP35/RS 2850 LUMENS	AS NOTED ON PLANS	2-LAMP ENCLOSED AND GASKETED FLUORESCENT FIXTURE, HIGH IMPACT ACRYLIC DIFFUSER, ELECTRONIC BALLAST, 120V	HOLOPHANE #ESS04XBBN042EP11
7	F32T8/SP35/RS 2850 LUMENS	AS NOTED ON PLANS	SAME AS FIXTURE NO.6, EXCEPT WITH BODINE B50 EMERGENCY LIGHTING BATTERY PACK, 120V	HOLOPHANE #ESS04XBBN042EP11- BPAL50
8	LU100 9500 LUMENS	10'-0" ALUMINUM ROUND TAPERED POLE	100 WATT POST-TOP HIGH PRESSURE SODIUM FIXTURE, TYPE 5 SQUARE DISTRIBUTION, GRAY FINISH, PHOTO-ELECTRIC CELL CONTROL, POLE FURNISHED WITH TRANSFORMER BASE, 120V	GENERAL ELECTRIC #P17M10S1A2AMN5GRF WITH #ART103S4.0- ASNT POLE
9	MVR175 14,000 LUMENS	AS NOTED ON PLANS	175 WATT METAL HALIDE LOW BAY FIXTURE, ENCLOSED & GASKETED ALUMINUM HOUSING, DARK BRONZE FINISH, CORROSION-RESISTANT, HIGH POWER FACTOR BALLAST, 120V	LITHONIA #TXL175MA20120SF- CR-LCPP-PPH-DBB
10	MVR175 14,000 LUMENS & 150W QUARTZ	AS NOTED ON PLANS	SAME AS FIXTURE NO. 9 EXCEPT WITH HOT/COLD QUARTZ START OPTION & 150 WATT QUARTZ LAMP, FINISH, CORROSION-RESISTANT, 120V	LITHONIA #TXL175MA20120SF- CR-LCPP-PPH-DBB- GRSTD
11	F26DBX/SP35/RS 1800 LUMENS	AS NOTED ON PLANS	26W COMPACT FLUORESCENT FIXTURE ENCLOSED AND GASKETED, GLOBE & GUARD, SUITABLE FOR CLASS I, DIV 2 AREA, ELECTRONIC BALLAST, GREY FINISH, 120V	CANLET #GFWF26H1G-GHC
EXIT	SELF- LUMINOUS	UNIVERSAL MOUNT	SELF-LUMINOUS UNIVERSAL MOUNTED EXIT SIGN, WHITE HOUSING, SINGLE FACE, RED FACEPLATE, 20 YEAR LUMINOUS LIFE	LITHONIA #DSW1R20AA
EL	2 HEADS FURNISHED W/ UNIT	7'-6" ABOVE FLOOR	EMERGENCY LIGHTING UNIT, WALL MOUNTED, SEALED & GASKETED, SUITABLE FOR CLASS I DIV I AREAS, TIME DELAY, TWO 12W TUNGSTEN-HALOGEN LAMPS, 120V	CROUSE-HINDS #ELPS502
EL1	3 REMOTE HEADS FURNISHED W/ UNIT	AS NOTED ON PLANS	EMERGENCY LIGHTING UNIT, WALL MOUNTED, SEALED & GASKETED, SUITABLE FOR CLASS I DIV I AREAS, TIME DELAY, TWO 12W TUNGSTEN-HALOGEN LAMPS, 120V	LITHONIA #ELU4XN-TD-RO WITH (3) #ELANX- H1212 REMOTE HEAD

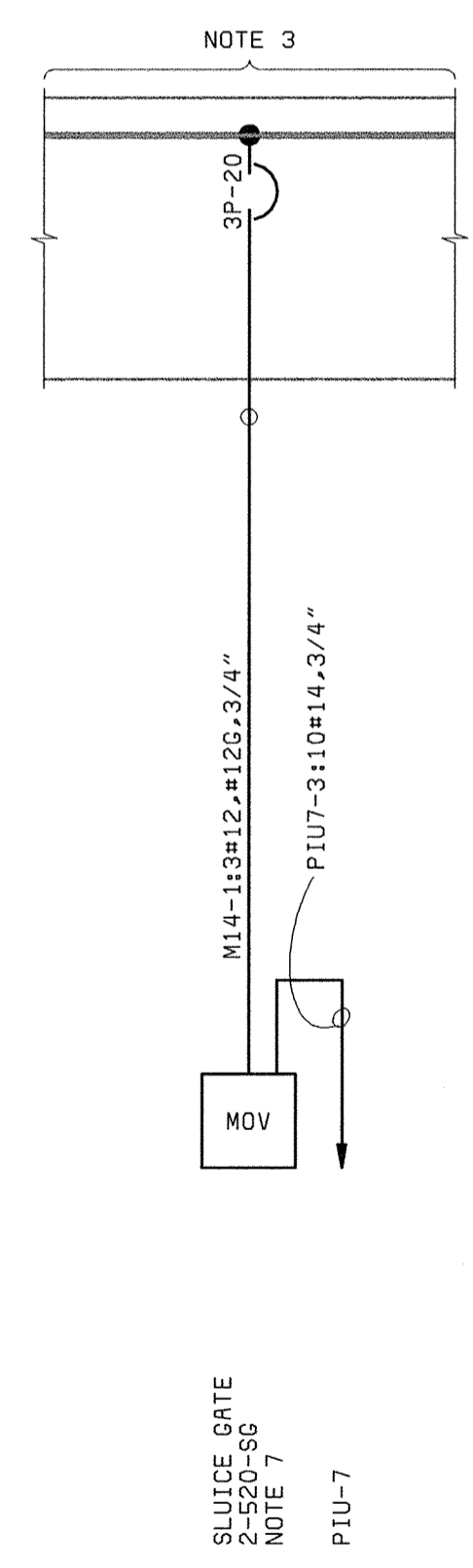
NOTES:

- SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.

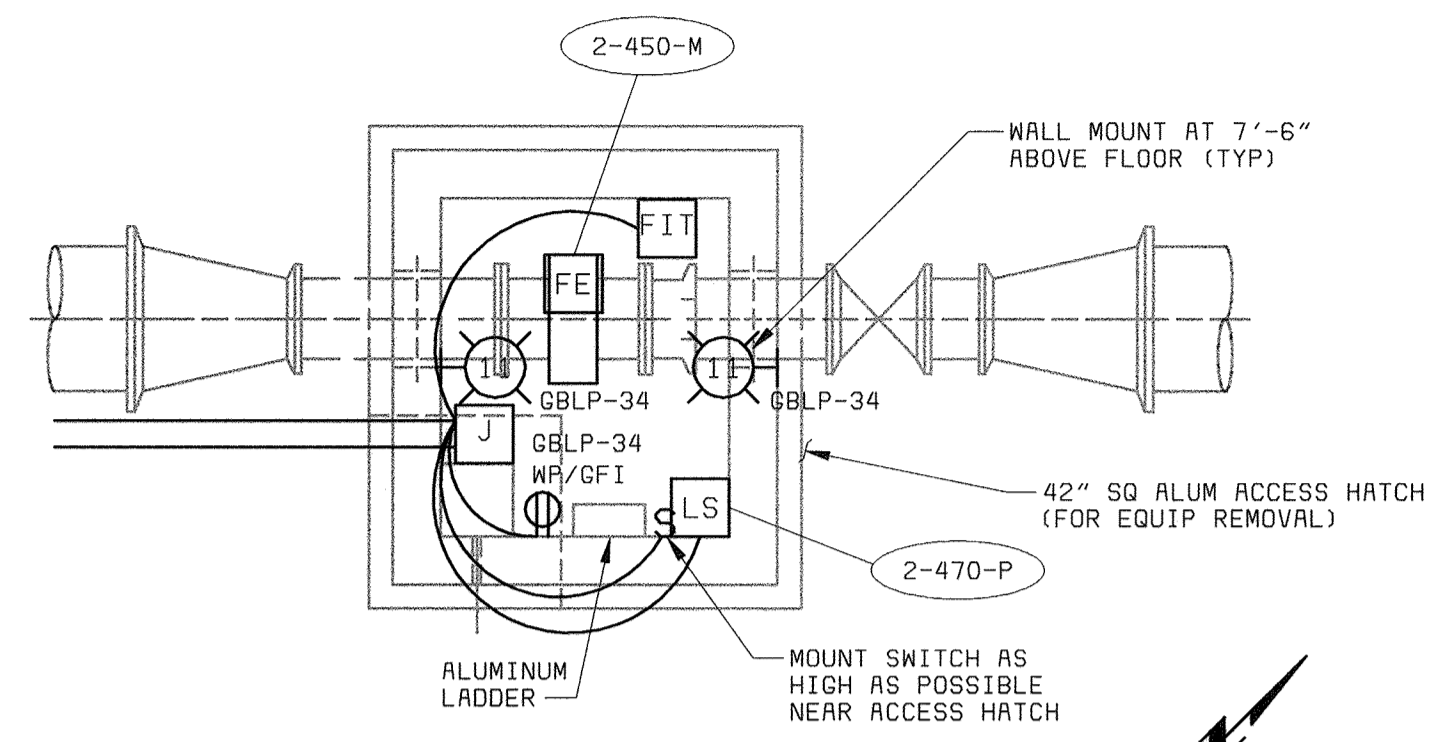
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876	DES: MEP								GENERAL ELECTRICAL LIGHTING FIXTURE AND PANELBOARD SCHEDULES	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: MEP										
			CHK: JTF	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR	RJR				E16
			DATE: 2/19/01	DATE	EMERG. EGRESS LIGHTING AT EXTERIOR DOORS		MEP	GNS					
					REVISIONS AND RECORD OF ISSUE								



FEI METER VAULT ONE-LINE DIAGRAM
(FEI METER VAULT)



EXISTING MCC14 PARTIAL ONE-LINE
(GRIT BUILDING)



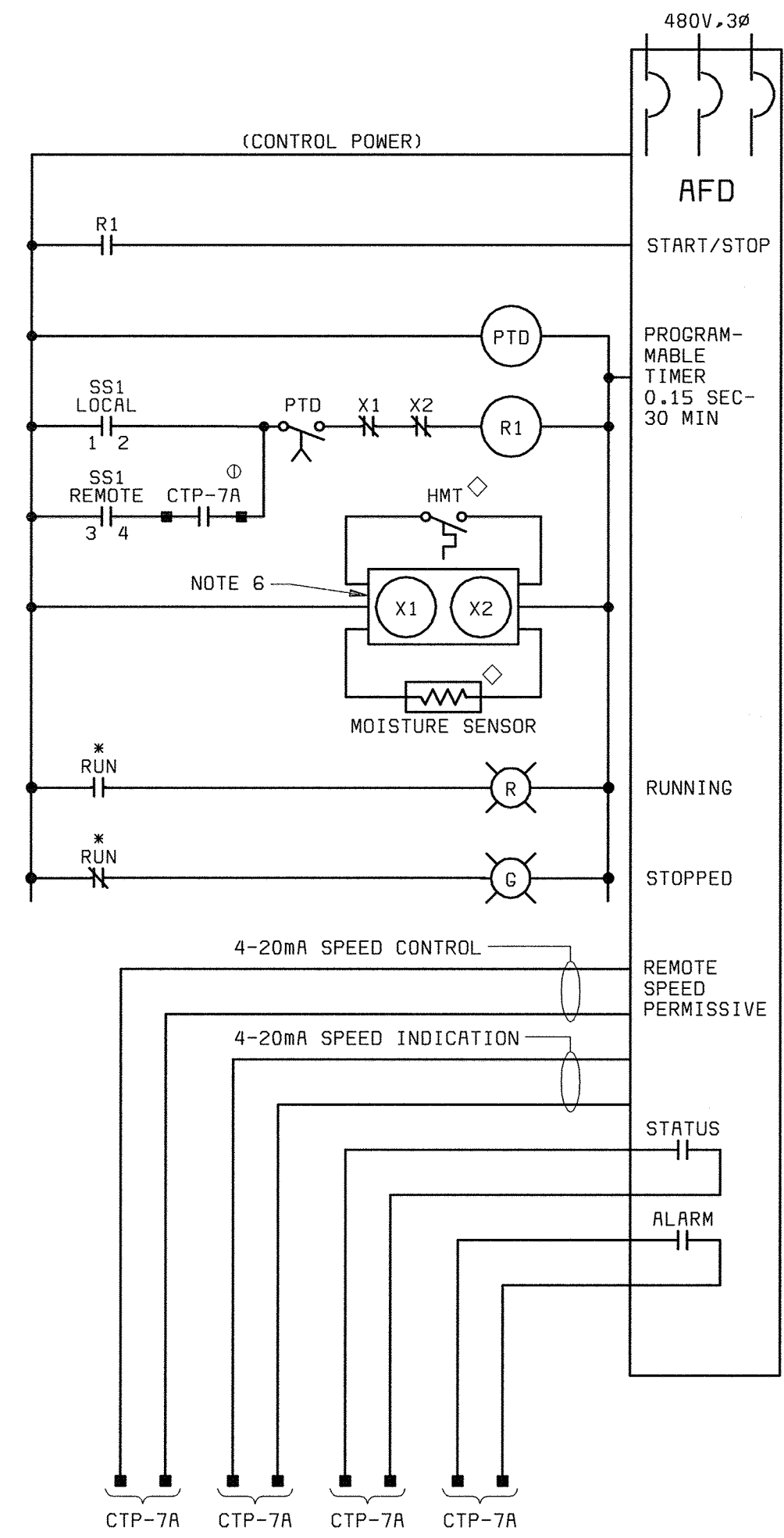
FEI SECTIONAL PLAN
1/4" = 1'-0"

NOTE:

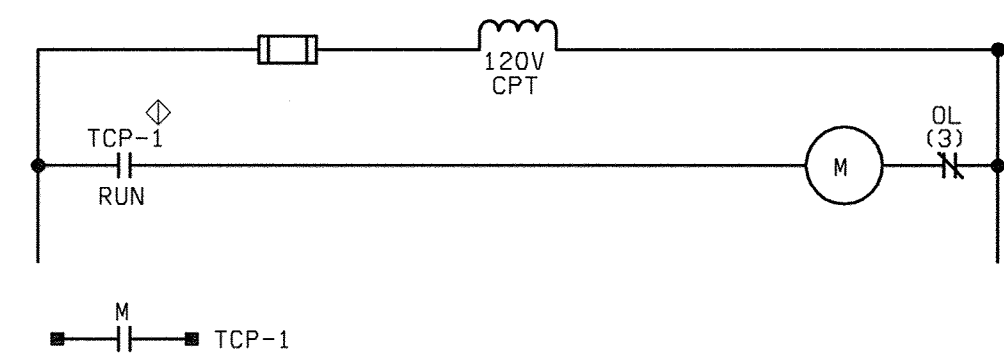
1. SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
2. SEE LIGHTING FIXTURE AND PANELBOARD SCHEDULE ON DRAWING E16.
3. REPLACE EXISTING STARTER (UNIT NUMBER TO BE IDENTIFIED BY OWNER) WITH NEW CIRCUIT BREAKER AS SHOWN.
4. CONTRACTOR TO CONFIRM PANELBOARD DESIGNATION. NEW BREAKERS TO BE INSTALLED IN EXISTING SPACE.
5. THERE ARE THREE EXISTING GRIT PUMPS IN THE GRIT BUILDING TO BE REPLACED. CONTRACTOR SHALL DISCONNECT AND RECONNECT EXISTING POWER AND CONTROL WIRING. REFER TO DRAWING M7 FOR LOCATIONS.
6. EXISTING PINCH VALVE 2-220-FV IN FEB RETURN VALVE TO BE REPLACED. CONTRACTOR SHALL DISCONNECT AND RECONNECT EXISTING POWER AND CONTROL WIRING. REFER TO DRAWING Y6 FOR LOCATION.
7. EXISTING GATE TO HAVE NEW MOTOR OPERATED ACTUATOR ADDED.

58472-104-RP-H-20000000TS
 58472-101-YARD-C-20000000TM
 058472-3
 F058472A

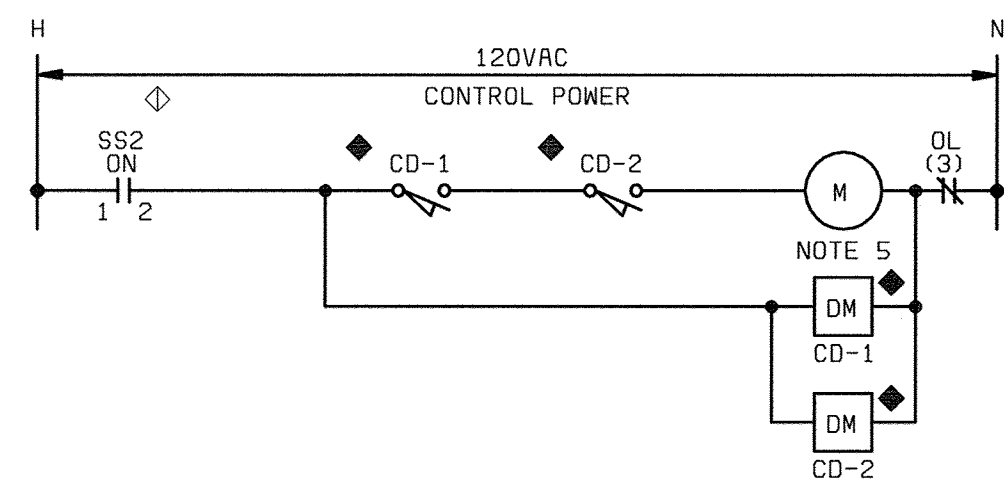
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876	DES: GNS DRN: TDR/MEP CHK: JTF DATE: 2/19/01	02/06/04 CONFORMED TO CONSTRUCTION RECORDS REVISIONS AND RECORD OF ISSUE	NO. BY CK APP RHH/RJR/RJR	FEI METER VAULT ELECTRICAL ONE-LINE DIAGRAMS AND POWER & LIGHTING PLAN	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 78 OF 88 E17
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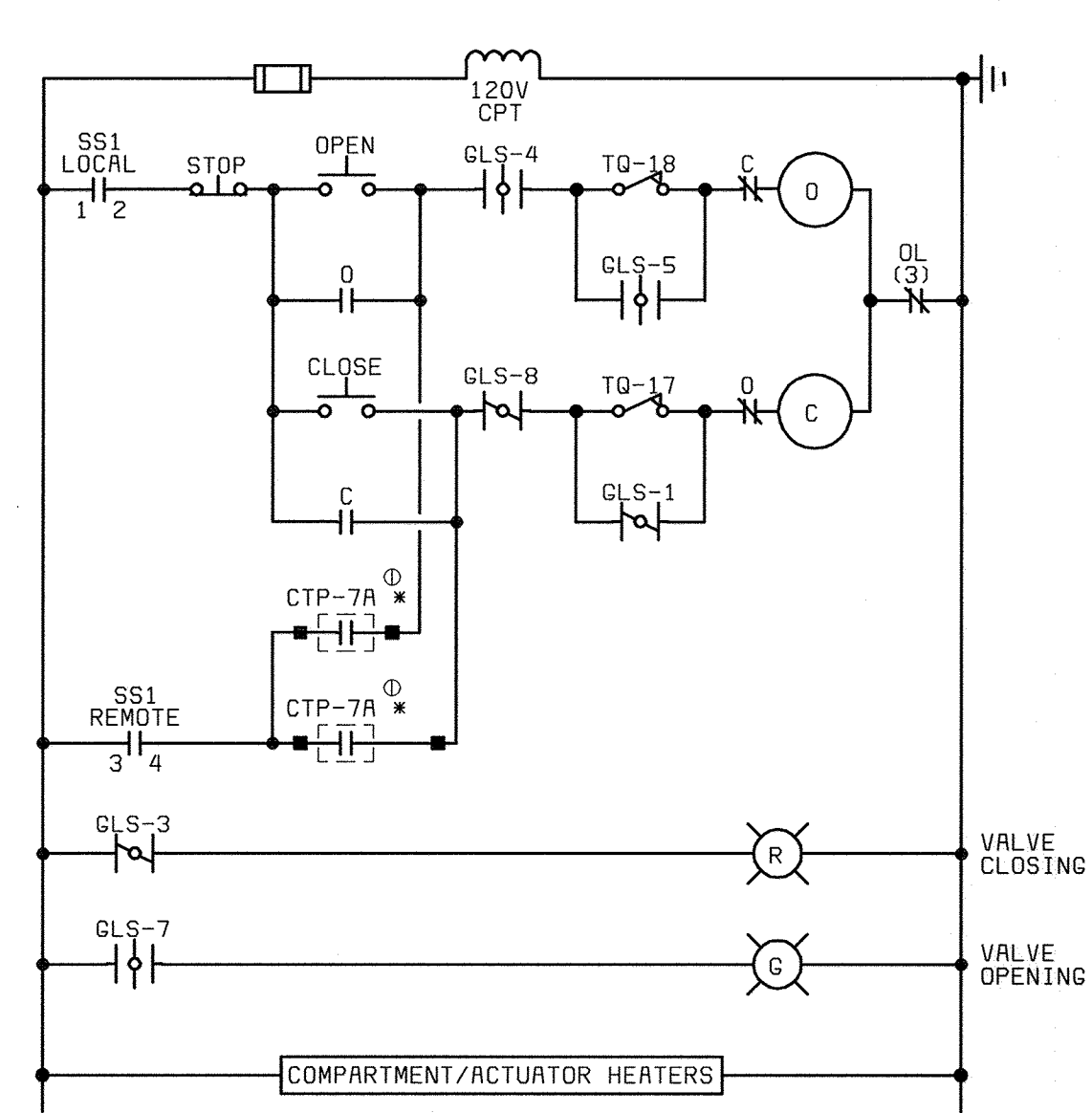
**MAIN SEWAGE PUMPS,
1-501-P THRU 1-503-P**
* DENOTES INTERLOCKS PROVIDED BY AFD



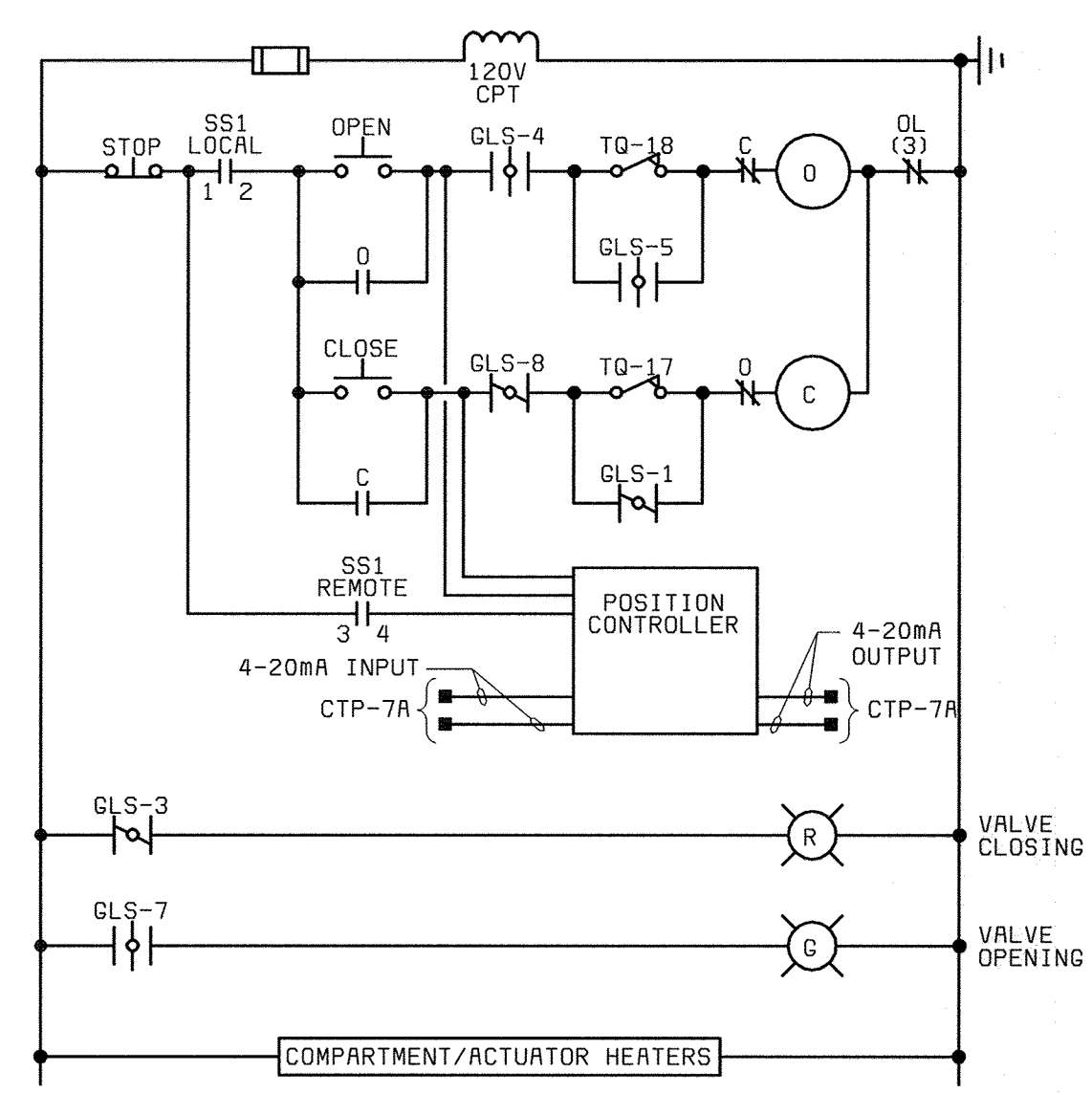
**PANEL CONTROLLED VENT FANS
1-572-F THRU 1-576-F**
NOTE 5



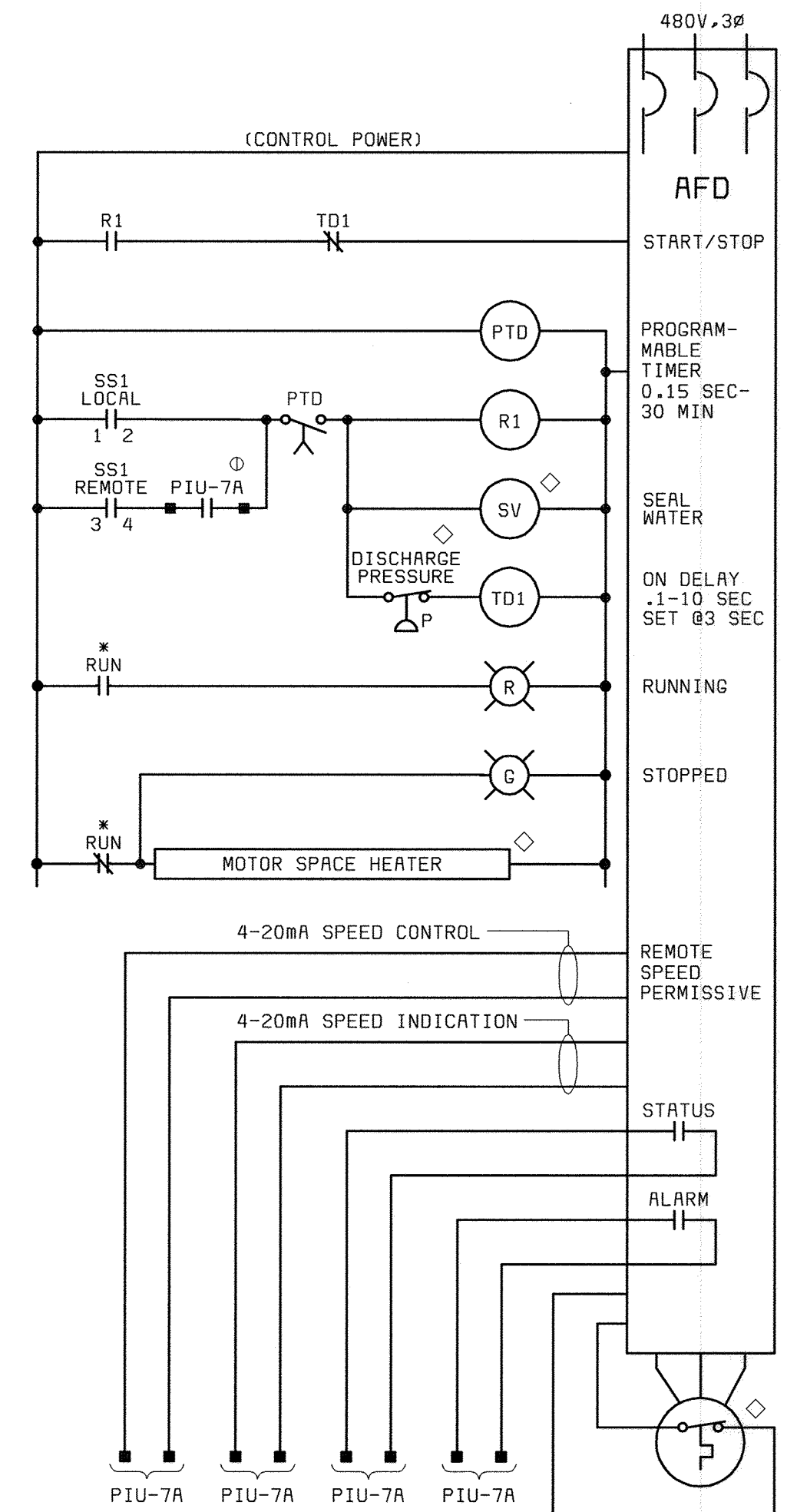
VENTILATION FAN 1-571-F
NO SCALE



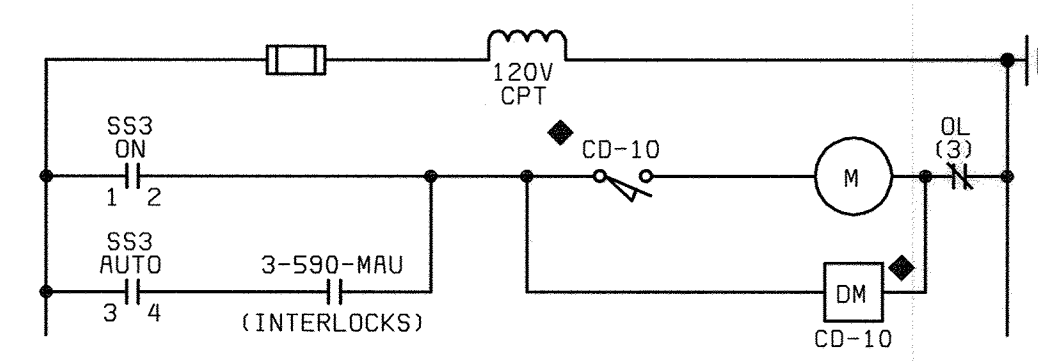
**TYPICAL VALVE OPEN/CLOSE (O/C)
ELECTRIC ACTUATOR**
(TYPICAL FOR: 3-782-PV, 3-791-PV,
3-792-PV, 2-520-SG)
* DENOTES PIU-7 FOR 2-520-SG



**MODULATING VALVE
ELECTRIC OPERATOR, 1-568-FV**



PRIMARY SLUDGE PUMP 3-786-P
* DENOTES INTERLOCKS PROVIDED BY AFD



VENTILATION FAN 3-591-F
NOTE 5

GEARED LIMIT SWITCH DEVELOPMENT:

POINT OR	GLS CONTACT	ACTUATOR POSITION			
		FULL OPEN 0%	INTERMEDIATE POSITION (90%)	FULL CLOSED 100%	FULL OPEN 100%
1	1				
1	2				
1	3				
1	4				
2	5				
2	6				
2	7				
2	8				
2	9				
2	10				
2	11				
2	12				
2	13				
2	14				
2	15				
2	16				

TQ/17 OPENS ON HIGH CLOSING TORQUE
TQ/16 OPENS ON HIGH OPENING TORQUE
=CONTACT CLOSED

SWITCH DEVELOPMENTS:

SS1

CONTACTS	POSITION		
	LOCAL	OFF	REMOTE
1-2	X		X
3-4			X
5-6			X

SS2

CONTACTS	POSITION		
	ON	OFF	
1-2	X		

SS3

CONTACTS	POSITION		
	ON	OFF	AUTO
1-2	X		
3-4			X

DEVICE LEGEND:

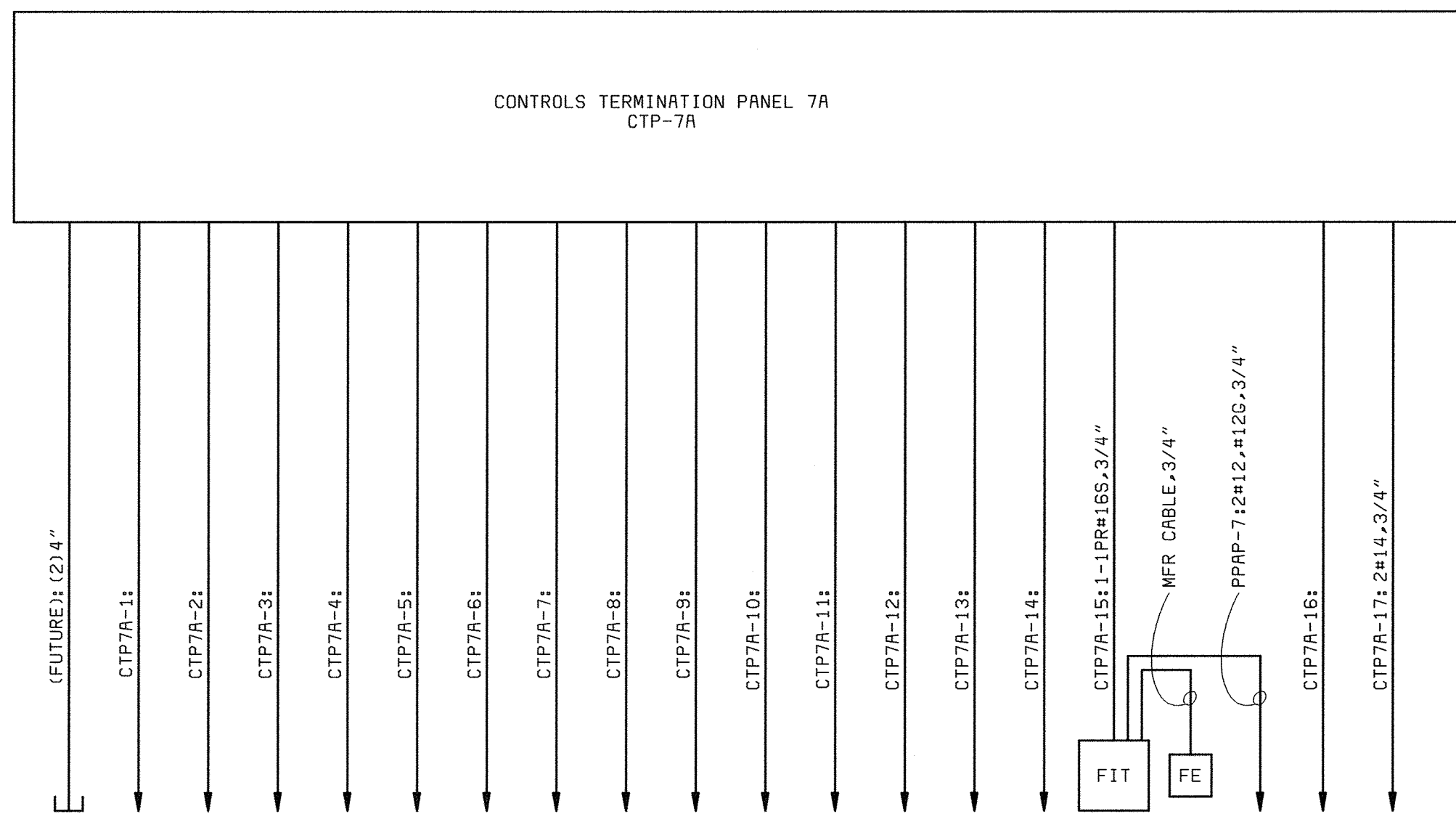
- ◇ AT DRIVEN EQUIPMENT
- ◇ AT LOCAL CONTROL PANEL OR STATION
- ◇ CONTROL TERMINATION PANEL CTP-7A
- ◆ REMOTE FROM STARTER AND DRIVEN EQUIPMENT

NOTES:

1. SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
2. SPARE CONTACTS SHALL BE PROVIDED FOR EACH STARTER AS DESCRIBED IN THE SPECIFICATIONS.
3. UNLESS OTHERWISE NOTED, DEVICES SHOWN ON THE 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.
4. RELAY AND TIMER DESIGNATIONS APPLY TO INDIVIDUAL SCHEMATIC ONLY.
5. SEE HVAC DRAWINGS FOR CONTROL DETAILS.
6. MOISTURE AND MOTOR TEMPERATURE CONTROLS FURNISHED BY MOTOR SUPPLIER FOR INSTALLATION IN AFD. COORDINATE WITH MOTOR SUPPLIER PRIOR TO SHOP DRAWING SUBMITTALS. IF 24V POWER IS REQUIRED FOR RELAYING, A 120/24V CPT SHALL BE PROVIDED FOR INSTALLATION IN AFD.

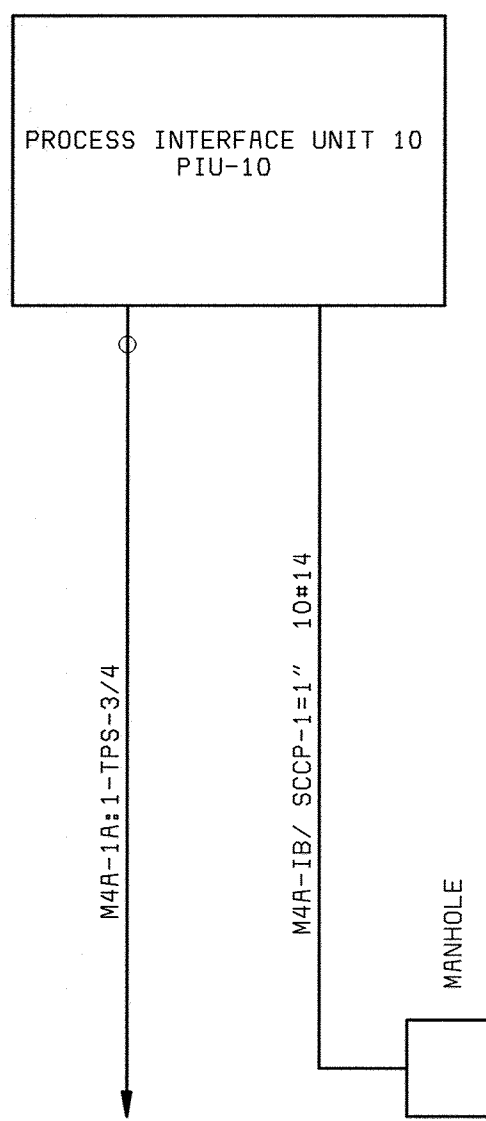
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. _____ DATE _____	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876 DATE: 2/19/01	DES: GNS DRN: TDR CHK: JTF DATE: 2/19/01 02/06/04 CONFORMED TO CONSTRUCTION RECORDS RHH/RJR/RJR DATE REVISIONS AND RECORD OF ISSUE NO. BY CK APP	GENERAL ELECTRICAL SCHEMATICS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 79 OF 88 E18
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F058472A



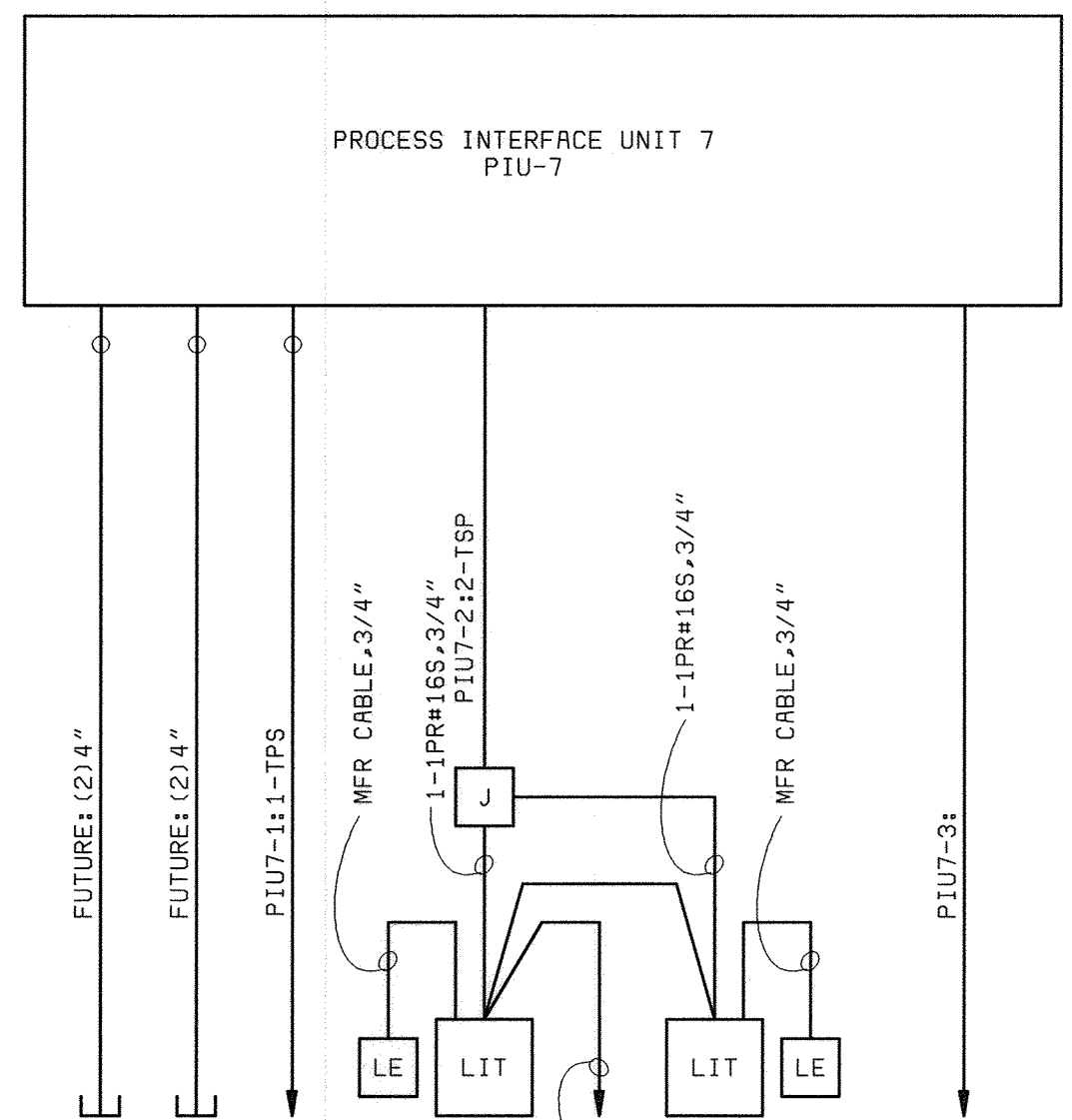
CONTROLS TERMINATION PANEL 7A
(AUXILIARY PUMP STATION)

- TO GRIT BUILDING
- MAIN SEWAGE PUMP NO.7
1-501-P AFD
- MAIN SEWAGE PUMP NO.7
1-501-P AFD
- MAIN SEWAGE PUMP NO.9
1-503-P AFD
- MAIN SEWAGE PUMP NO.9
1-503-P AFD
- PCS CLARIFIER DRIVE
CONTROL PANEL
- INFLUENT PINCH VALVE
1-568-FV
- INFLUENT PINCH VALVE
1-568-FV
- MAIN SEWAGE PUMP NO.8
1-502-P AFD
- MAIN SEWAGE PUMP NO.8
1-502-P AFD
- 480V MCC16 MAIN, UNIT 1A
(KX SIGNAL)
- 480V MCC16 MAIN, UNIT 1A
(BREAKER STATUS)
- 480V MCC16 TIE, UNIT 5A
(BREAKER STATUS)
- 480V MCC16 MAIN, UNIT 10A
(KW SIGNAL)
- 480V MCC16 MAIN, UNIT 10A
(BREAKER STATUS)
- PCS FLOW METER
1-567-M
- FLOW ELEMENT
- 120VAC POWER
- SUMP PUMP
1-599-P
CONTROL PANEL
- TEMPERATURE CONTROL PANEL
10P-1



PROCESS INTERFACE UNIT 10
(NORTH BLOWER BUILDING)

- 480V MCCB UNIT 1B
(KX SIGNAL)



PROCESS INTERFACE UNIT 7
(GRIT BUILDING)

- TO AUX PUMPING STATION
- TO HEADWORKS BUILDING
- FEM FLOW METER
2-450-M
- LEVEL ELEMENT
- GRIT BASIN LEVEL
1-152-L
- 120VAC POWER FROM EXISTING
BUILDING PANEL GBLP
(WHITE C)
- GRIT BASIN LEVEL
1-153-L
- LEVEL ELEMENT
- SLUICE GATE
2-520-SG

NOTES:

1. SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
2. CONTRACTOR TO CONFIRM PANELBOARD DESIGNATION. NEW BREAKER TO BE INSTALLED IN EXISTING SPACE.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE



THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
DONALD R. STEVENS
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 21876

DES: GNS									
DRN: TDR									
CHK: JTF									
DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP			

GENERAL
ELECTRICAL

INSTRUMENTATION ONE-LINE
DIAGRAMS

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

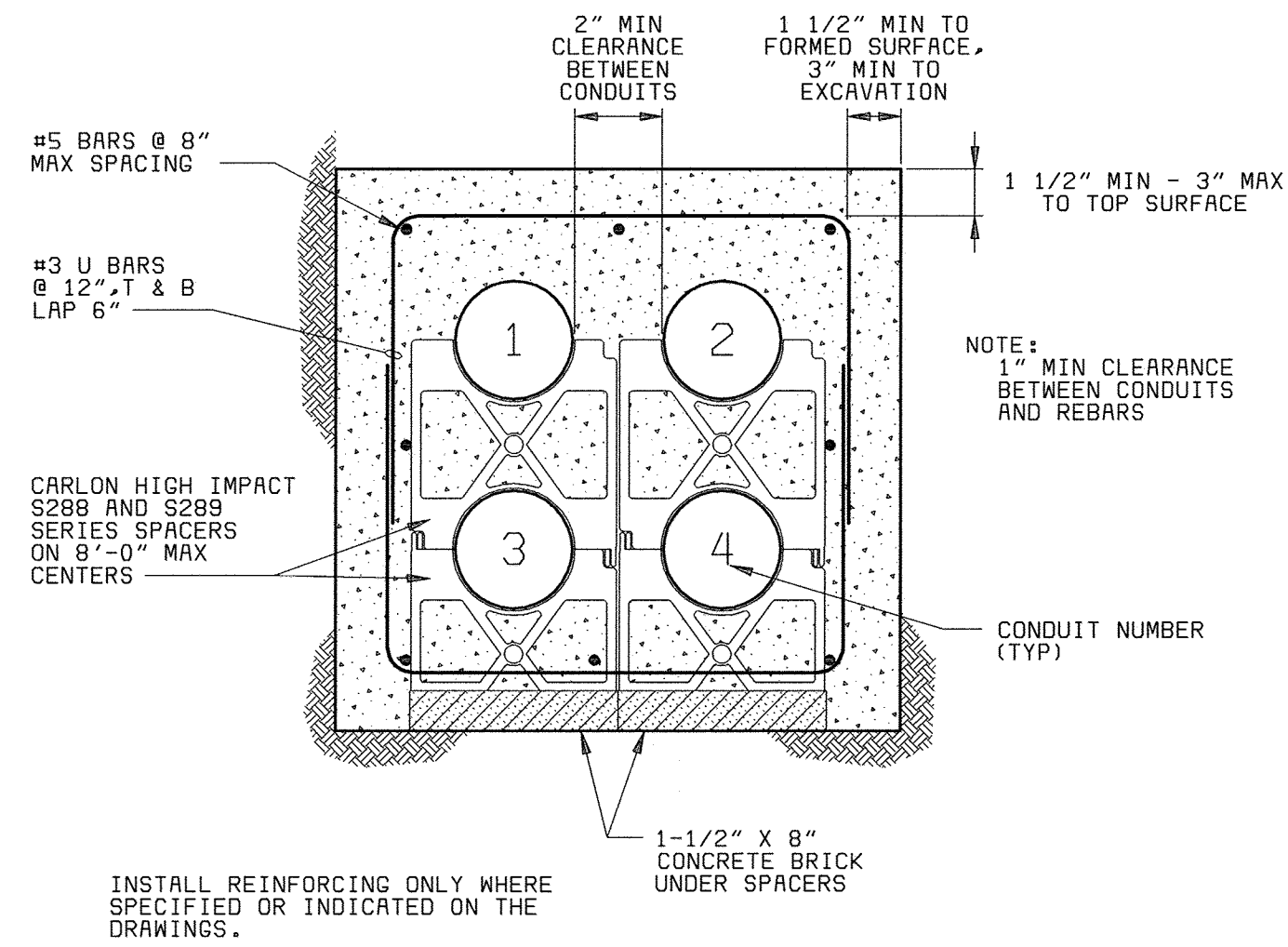
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

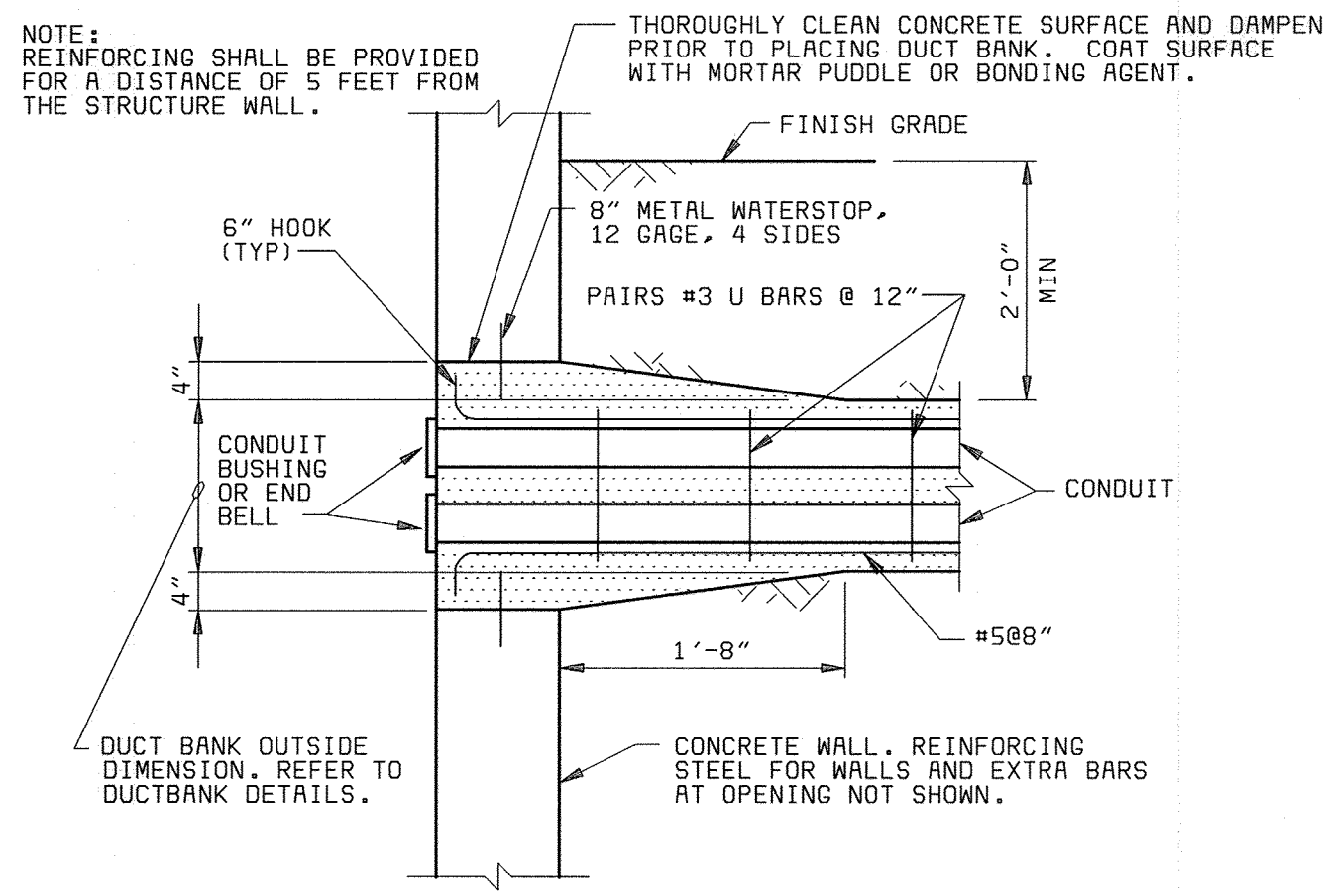
SCALE
AS
SHOWN

SHEET
80 OF 88

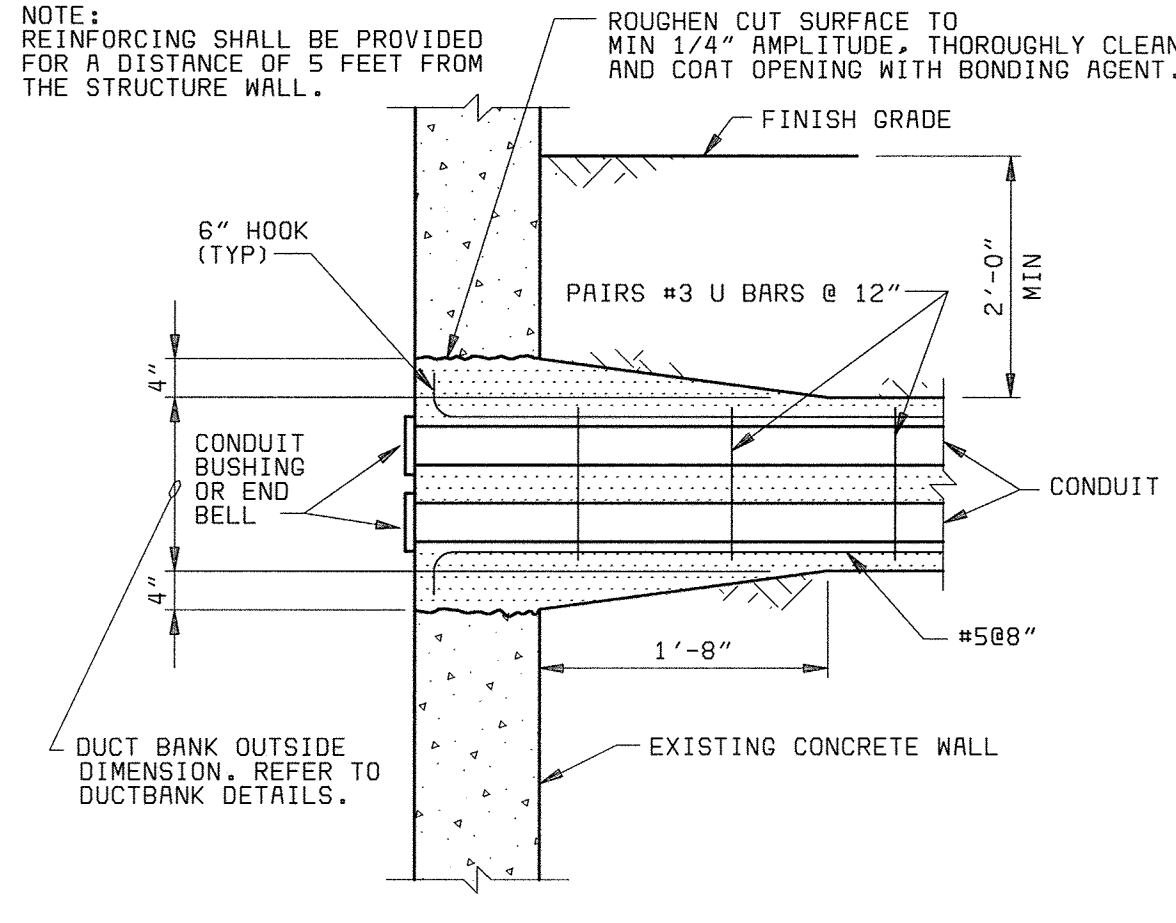
E19



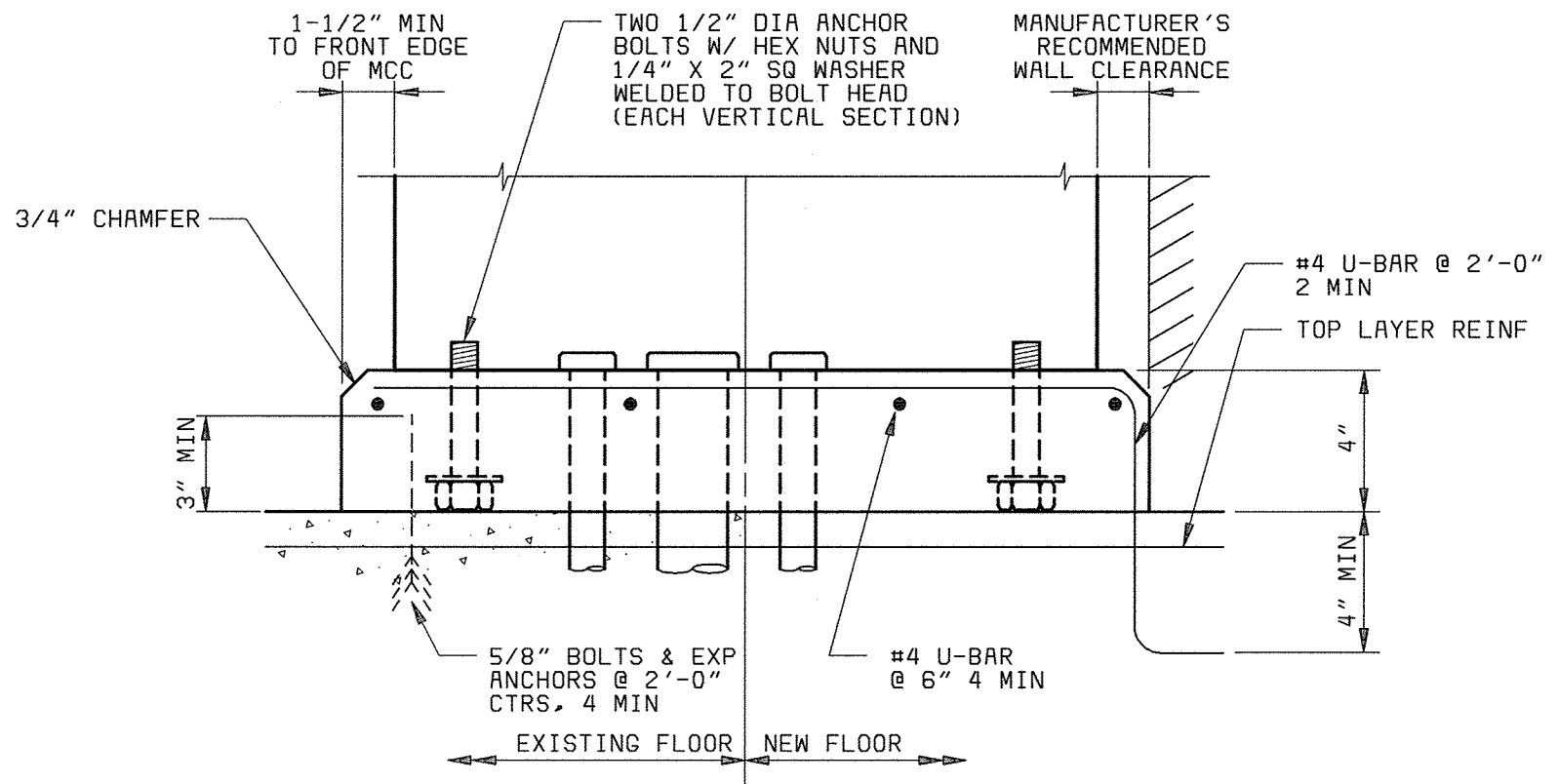
TYPICAL DUCT BANK SECTION
NO SCALE



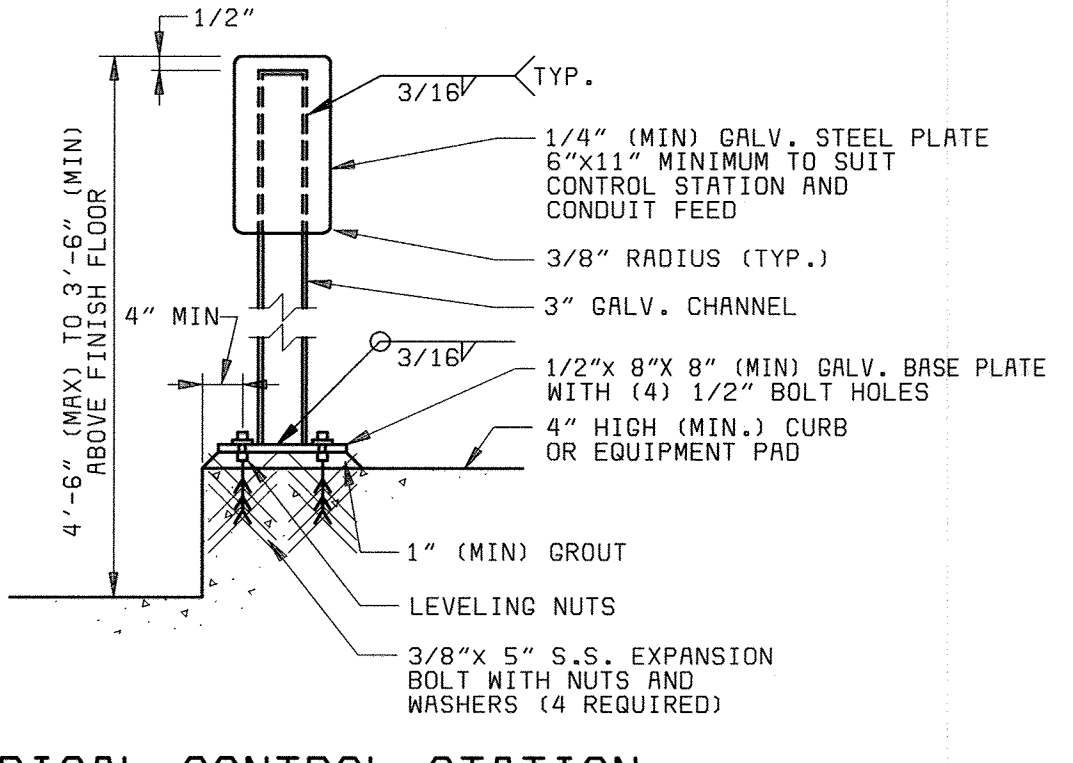
TYPICAL UNDERGROUND DUCT BANK ENTRANCE DETAIL
NO SCALE



TYPICAL UNDERGROUND DUCT BANK ENTRANCE DETAIL
NO SCALE
NOTE: FOR EXISTING WALL



MOTOR CONTROL CENTER BASE
NO SCALE



TYPICAL CONTROL STATION MOUNTING DETAIL
NO SCALE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH LLP
Gathersburg, Maryland
REG. PROF. ENGR. DATE

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ORIGINALLY APPROVED
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DONALD R. STEVENS
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 21876

DES: MEP					
DRN: MEP					
CHK: JTF					
DATE: 2/19/01	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR
DATE		REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

GENERAL
ELECTRICAL

MISCELLANEOUS DETAILS

LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
HOWARD COUNTY, MARYLAND

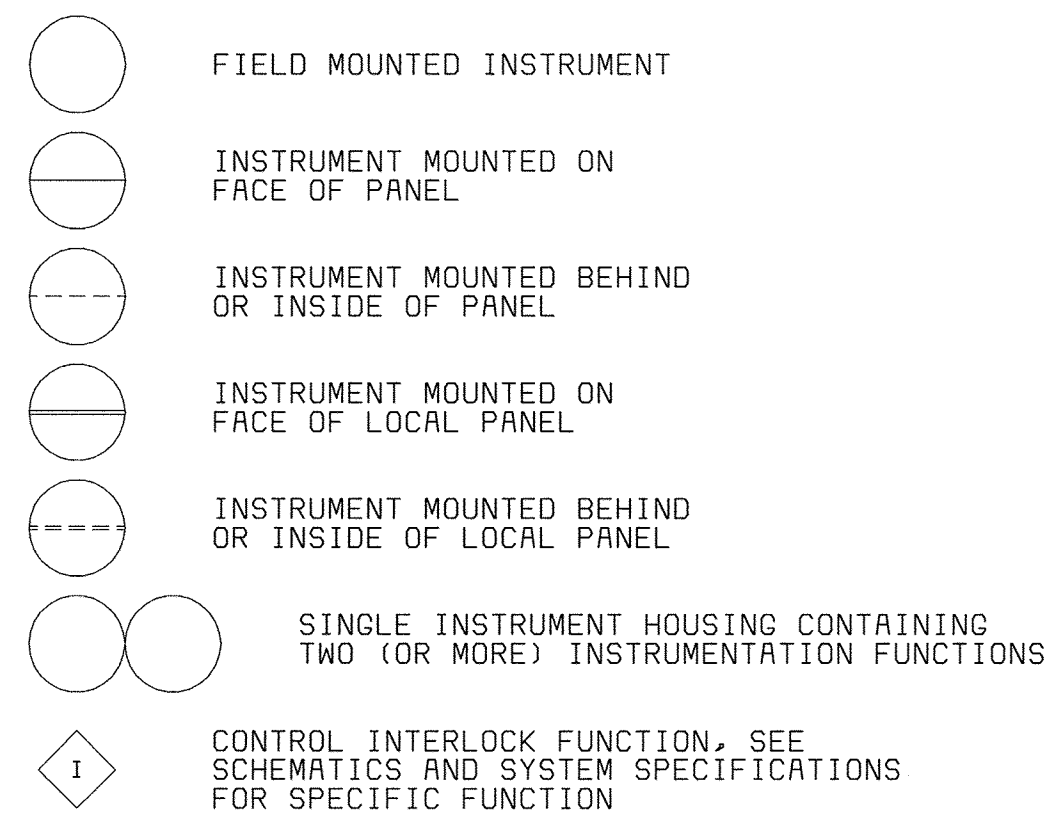
SCALE
AS
SHOWN

SHEET
81 OF 88

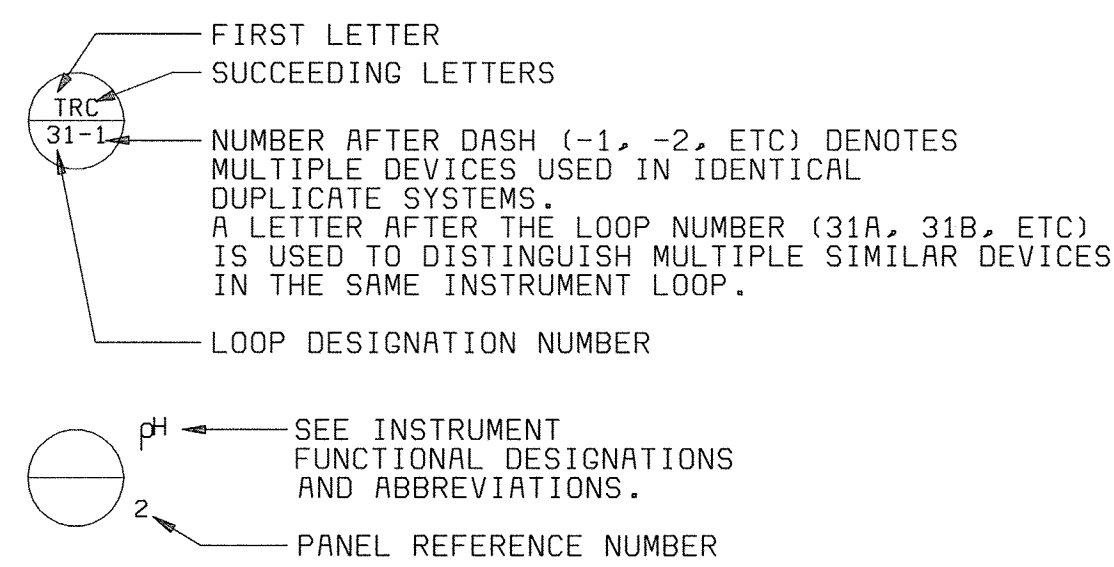
E20

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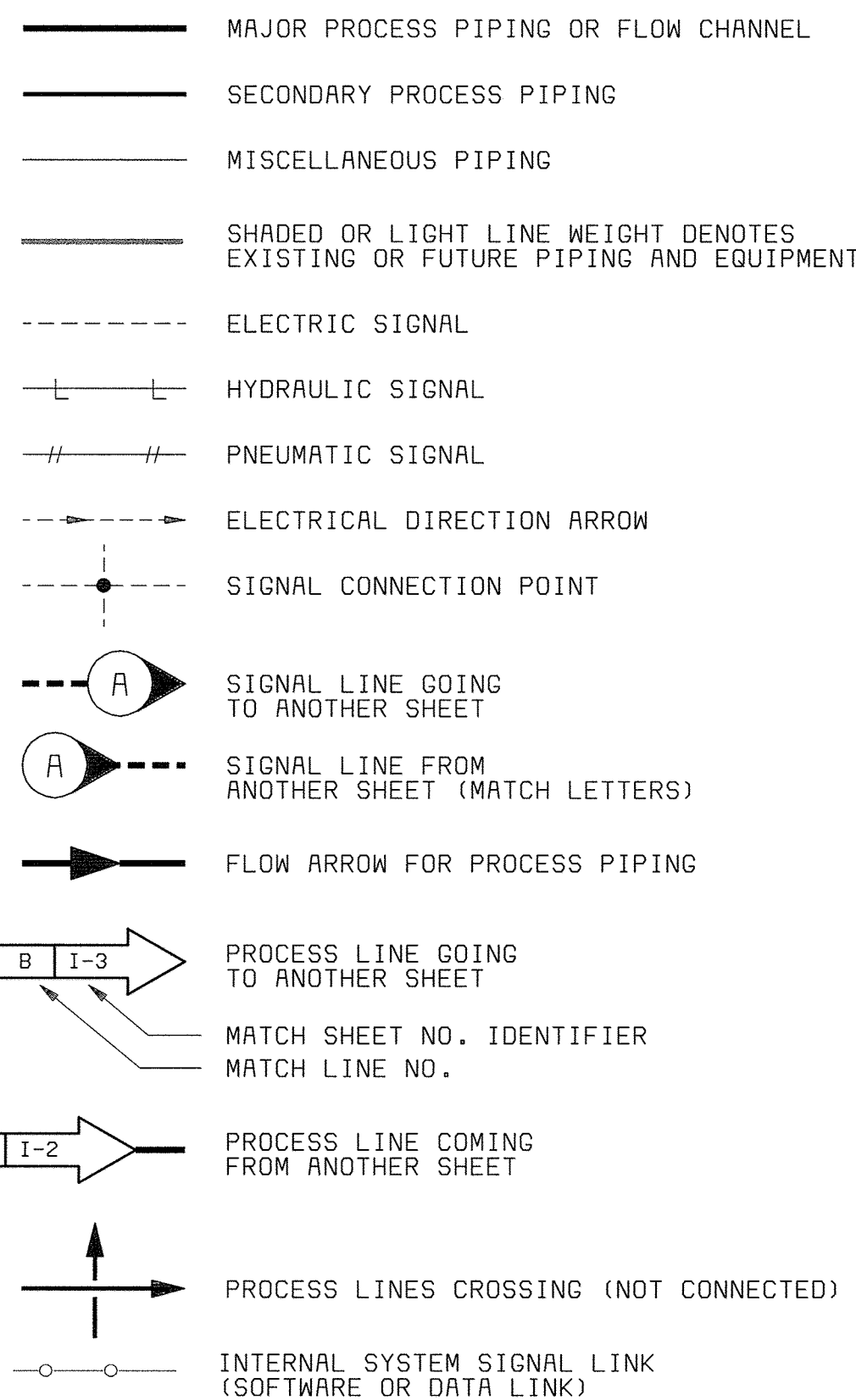
GENERAL INSTRUMENT SYMBOLS



TAG NUMBERS AND ADDITIONAL DESIGNATIONS



LINE SYMBOLS

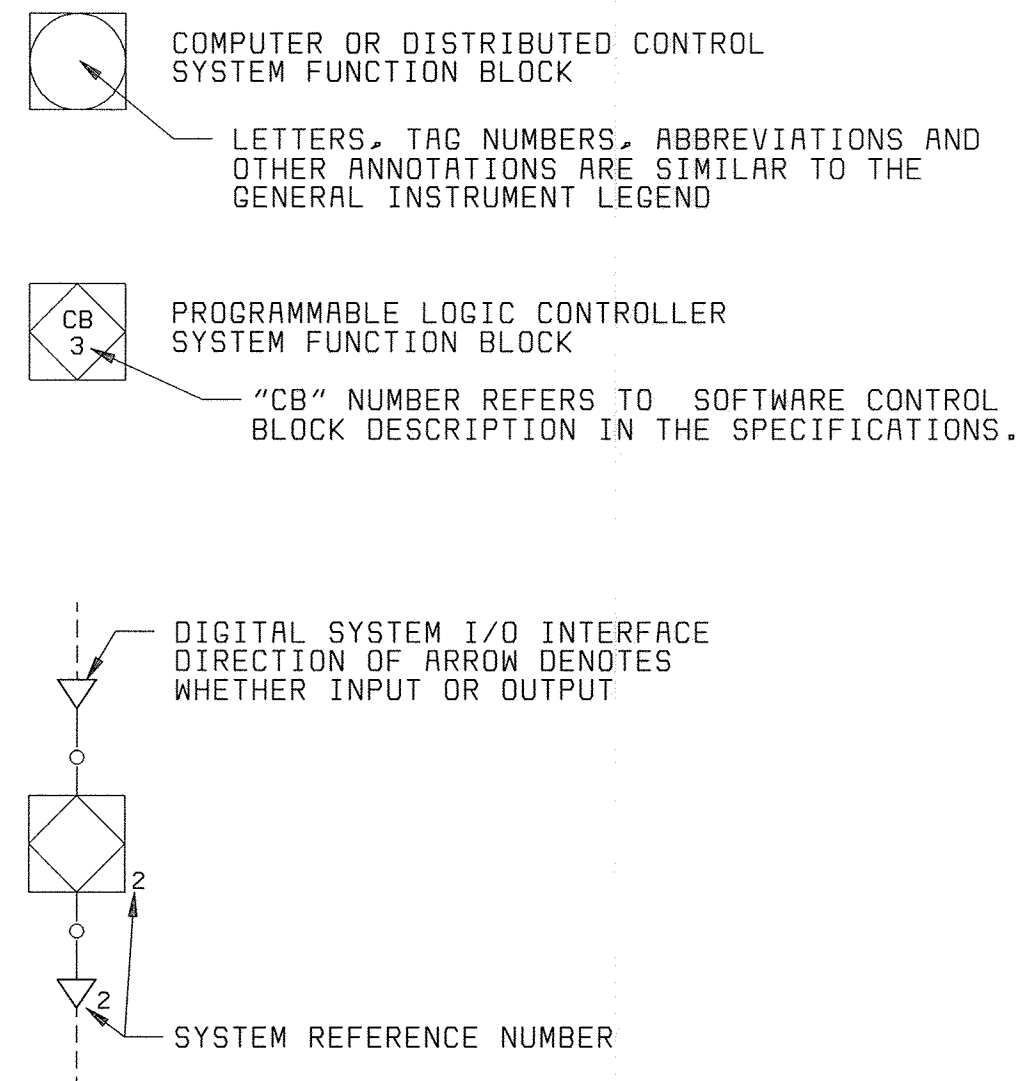


MEANINGS OF IDENTIFICATION LETTERS

LETTER	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME-SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY	MOMENTARY			MIDDLE OR INTER-MEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE OR TOTALIZE	INTEGRATE OR TOTALIZE		
R	RADIATION		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, DAMPER, OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE			RELAY OR COMPUTE	
Z	POSITION, DIMENSION			DRIVE, ACTUATOR OR UNCLASSIFIED FINAL CONTROL ELEMENT	

DIGITAL SYSTEMS INTERFACE SYMBOLS

NOTE: REFER TO DETAILED SYSTEM SPECIFICATIONS FOR FUNCTIONAL DESCRIPTION. ALSO SEE I/O SCHEDULES FOR COMPLETE INPUT AND OUTPUT LISTINGS.



FUNCTION DESIGNATIONS AND ABBREVIATIONS

INSTRUMENT DESIGNATIONS

- K GAIN OR ATTENUATE (INPUT:OUTPUT)
- K GAIN AND REVERSE
- Σ ADD OR SUM (ADD AND SUBTRACT)
- Δ SUBTRACT (DIFFERENCE)
- √ EXTRACT SQUARE ROOT
- ÷ DIVIDE
- F(X) CHARACTERIZE SIGNAL
- > HIGH-SELECT
- < LOW-SELECT
- X MULTIPLY
- I INTEGRATE (TIME INTEGRAL)
- CH₄ METHANE
- Cl₂ CHLORINE RESIDUAL
- CO₂ CARBON DIOXIDE
- DO DISSOLVED OXYGEN
- LEL LOWER EXPLOSIVE LIMIT
- MCC MOTOR CONTROL CENTER
- MLSS MIXED LIQUOR SUSPENDED SOLIDS
- O₂ OXYGEN (PURITY)
- pH pH CELL
- TURB TURBIDITY

HAND SWITCH DESIGNATIONS

- HOA HAND-OFF-AUTO
- LR LOCAL REMOTE
- OC OPEN-CLOSE
- OD ON-OFF
- LOR LOCAL-OFF-REMOTE
- OOA ON-OFF-AUTO
- OCR OPEN-CLOSE-REMOTE
- OOR ON-OFF-REMOTE

TRANSDUCER & CONVERTER DESIGNATION

- E VOLTAGE
- FSK FREQUENCY SHIFT KEYING
- H HYDRAULIC
- I CURRENT
- P PNEUMATIC
- PD PULSE DURATION
- PF PULSE FREQUENCY
- R RESISTANCE (ELECTRICAL)

EXAMPLE: I/P = CURRENT TO PNEUMATIC TRANSDUCER

POWER SUPPLY ABBREVIATIONS

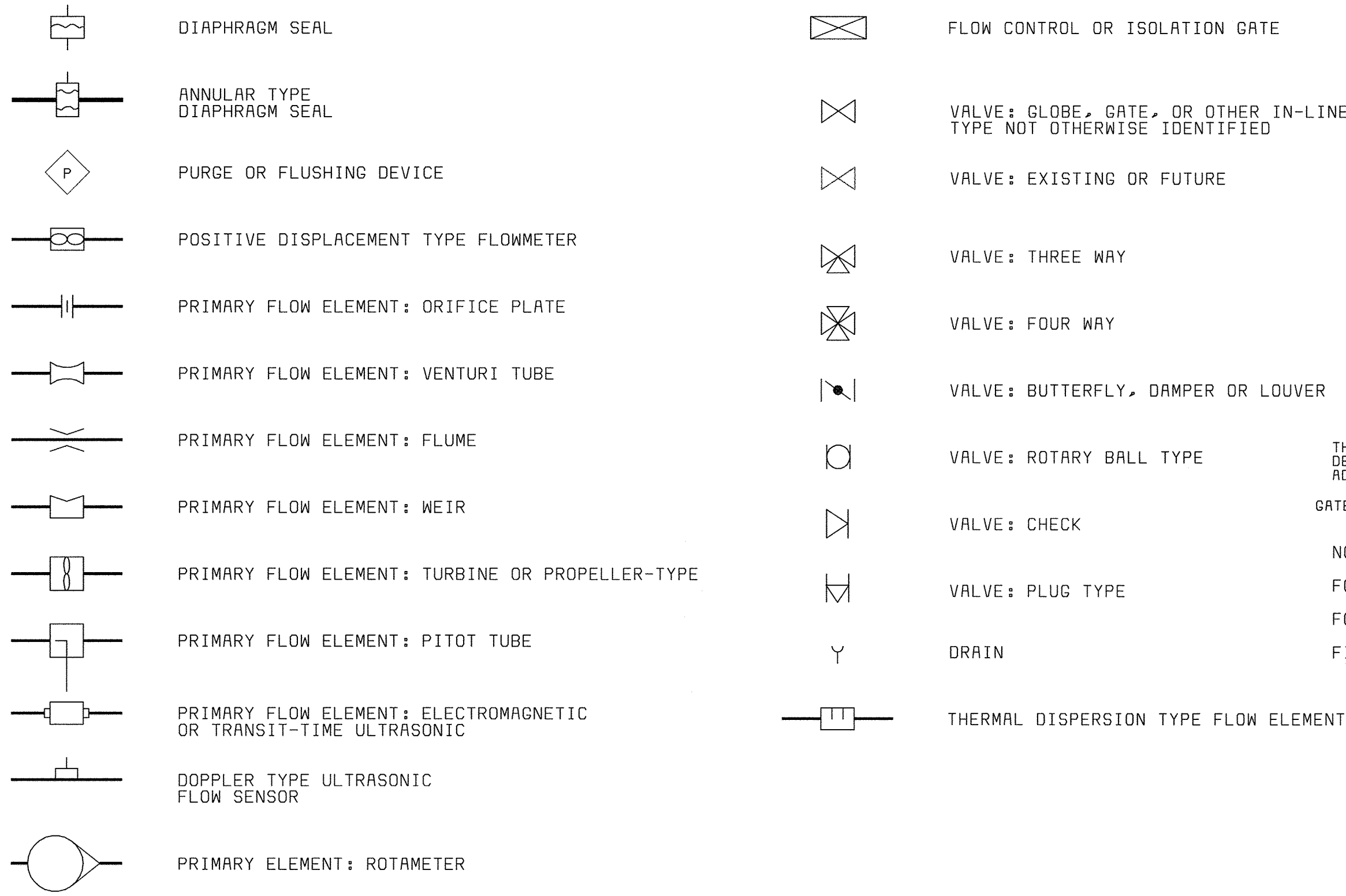
- AS AIR SUPPLY
- ES ELECTRIC SUPPLY
- GS GAS SUPPLY
- HS HYDRAULIC SUPPLY
- NS NITROGEN SUPPLY
- SS STEAM SUPPLY
- WS WATER SUPPLY

AS POWER SUPPLY SOURCE LABEL. USED ONLY WHERE NECESSARY TO HELP CLARIFY AN INSTRUMENT OR SYSTEM FUNCTION.

GENERAL NOTES

- IN GENERAL, THE P & ID SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INSTRUMENT SOCIETY OF AMERICA, STANDARD PRACTICE ISA-SS-1 (1988). SOME MODIFICATIONS, ADDITIONS, AND ALTERATIONS HAVE BEEN MADE AS NEEDED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
- ADDITIONAL CONTROL AND INTERLOCK REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATIC DRAWINGS HAVE BEEN OMITTED FROM THE P & ID DRAWINGS. SOME PROCESS ITEMS, SUCH AS EQUIPMENT ISOLATION VALVES, BYPASS LINES, ETC., WHICH ARE NOT CRITICAL FOR AN UNDERSTANDING OF THE INSTRUMENTATION FUNCTIONS HAVE ALSO BEEN OMITTED.
- THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
- PIPING AND EQUIPMENT LEGEND APPLIES TO P & ID SHEETS ONLY AND MAY DIFFER FROM LEGENDS FOR OTHER SHEETS.

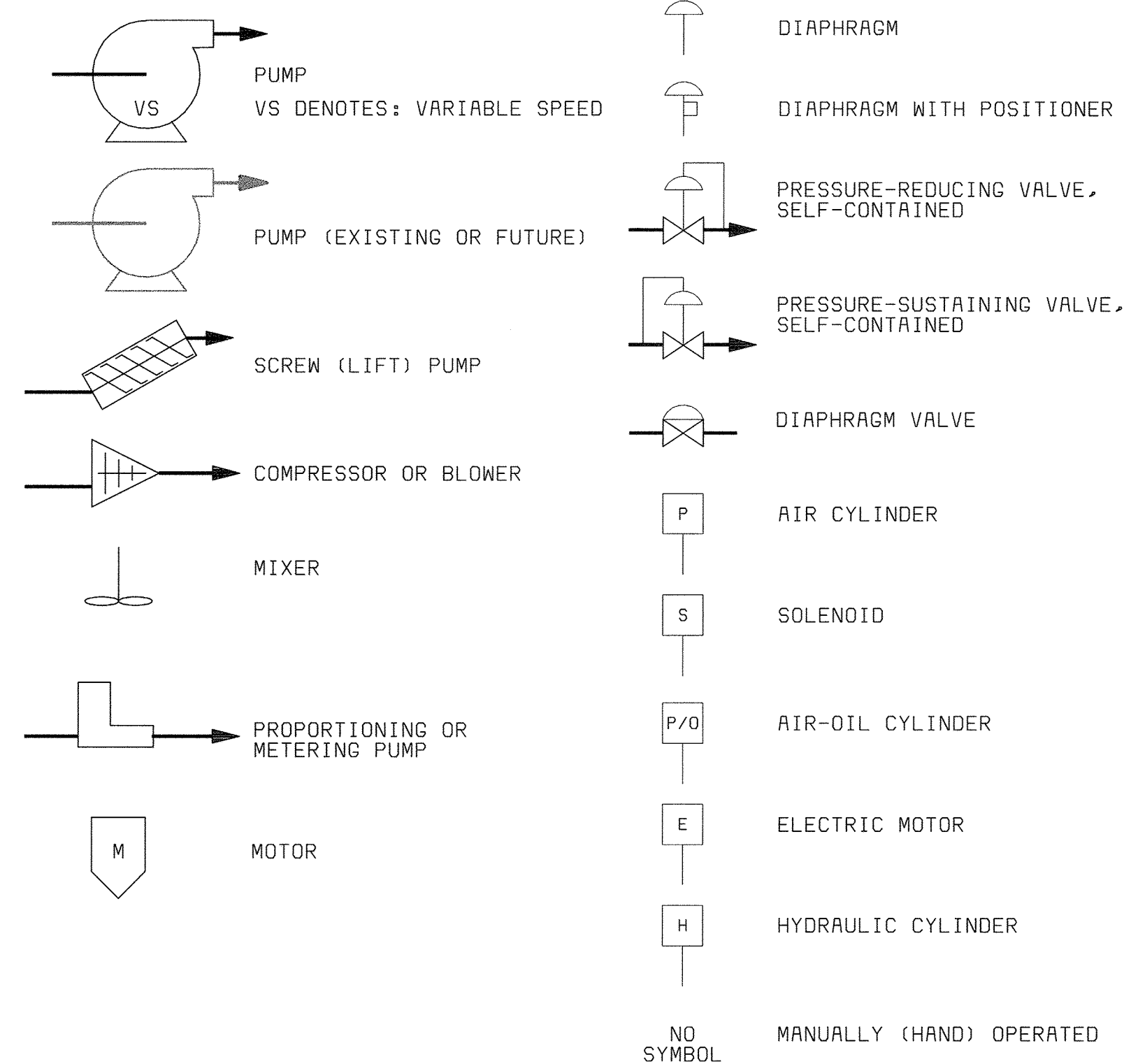
PROCESS DEVICE SYMBOLS



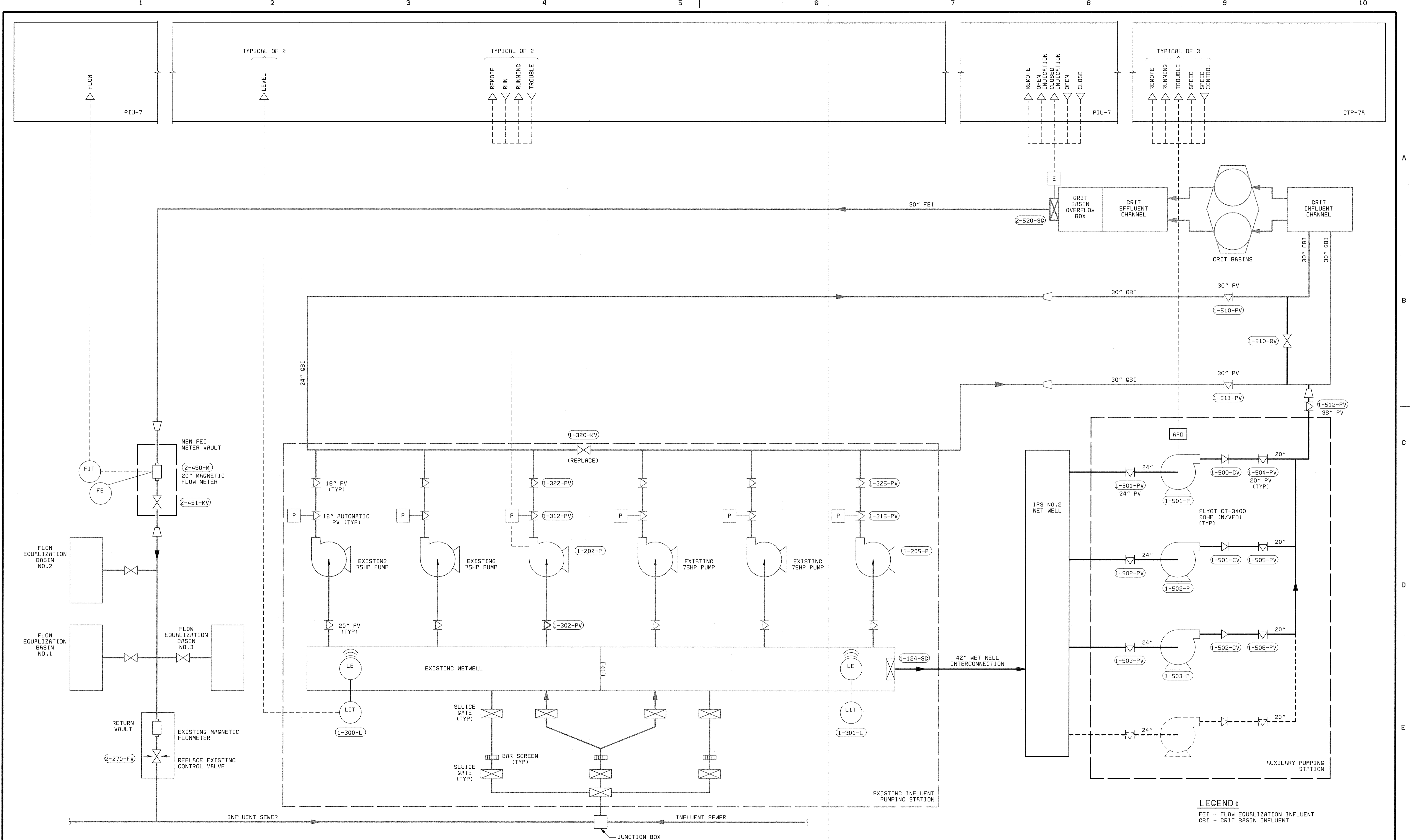
THE FOLLOWING ADDITIONAL DESIGNATIONS MAY BE UTILIZED ADJACENT TO SOME VALVE OR GATE SYMBOLS.

- NC NORMALLY CLOSED
- FC FAILS CLOSED
- FO FAILS OPEN
- FIP FAILS IN LAST POSITION

VALVE AND GATE ACTUATOR SYMBOLS



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	DES: RSF				INSTRUMENTATION LEGEND & ABBREVIATIONS	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
		DRN: TOR						SHEET 82 OF 88
		CHK: JER						
		DATE: 02/19/01	DATE	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR		I 1



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF UTILITIES DATE

BLACK & VEATCH
Gaithersburg, Maryland

REG. PROF. ENGR. DATE

THIS DRAWING WAS
ORIGINALLY APPROVED
FOR CONSTRUCTION
AND SEALED BY
DONALD R. STEVENS
A REGISTERED
PROFESSIONAL ENGINEER
IN THE
STATE OF MARYLAND,
NO. 21876

DES: RSF					
DRN: DAH					
CHK: JER					
DATE: 04/13/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	APP
	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	

INSTRUMENTATION

HEADWORKS & INFLUENT PUMPING P & ID

**LITTLE PATUXENT WATER RECLAMATION PLANT
ADDITION NO. 6
BNR TREATMENT CAPACITY EXPANSION**

CAPITAL PROJECT S-6205
CONTRACT NO. 20-3752

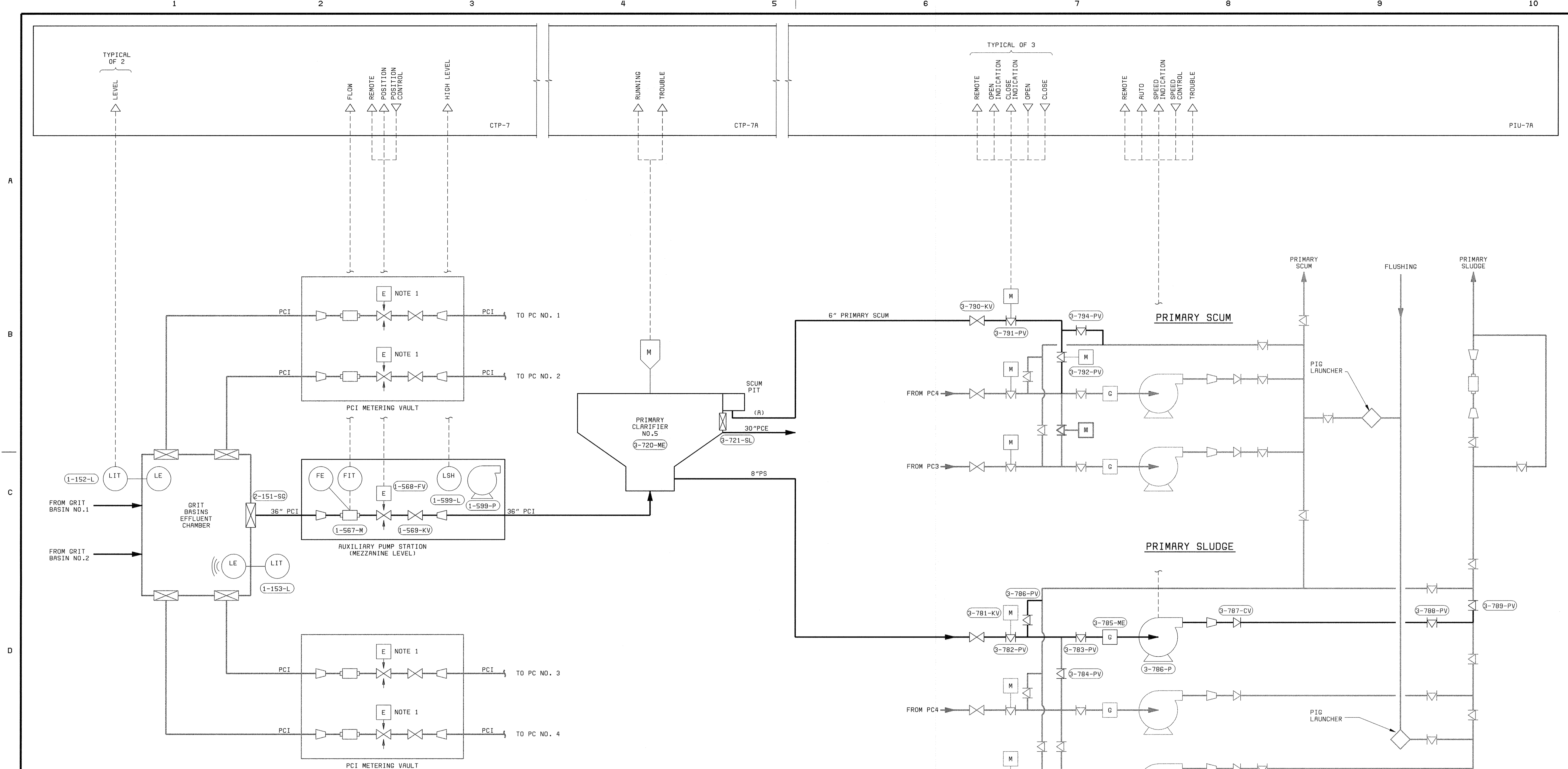
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 83 OF 88

12

058472
FD58472R




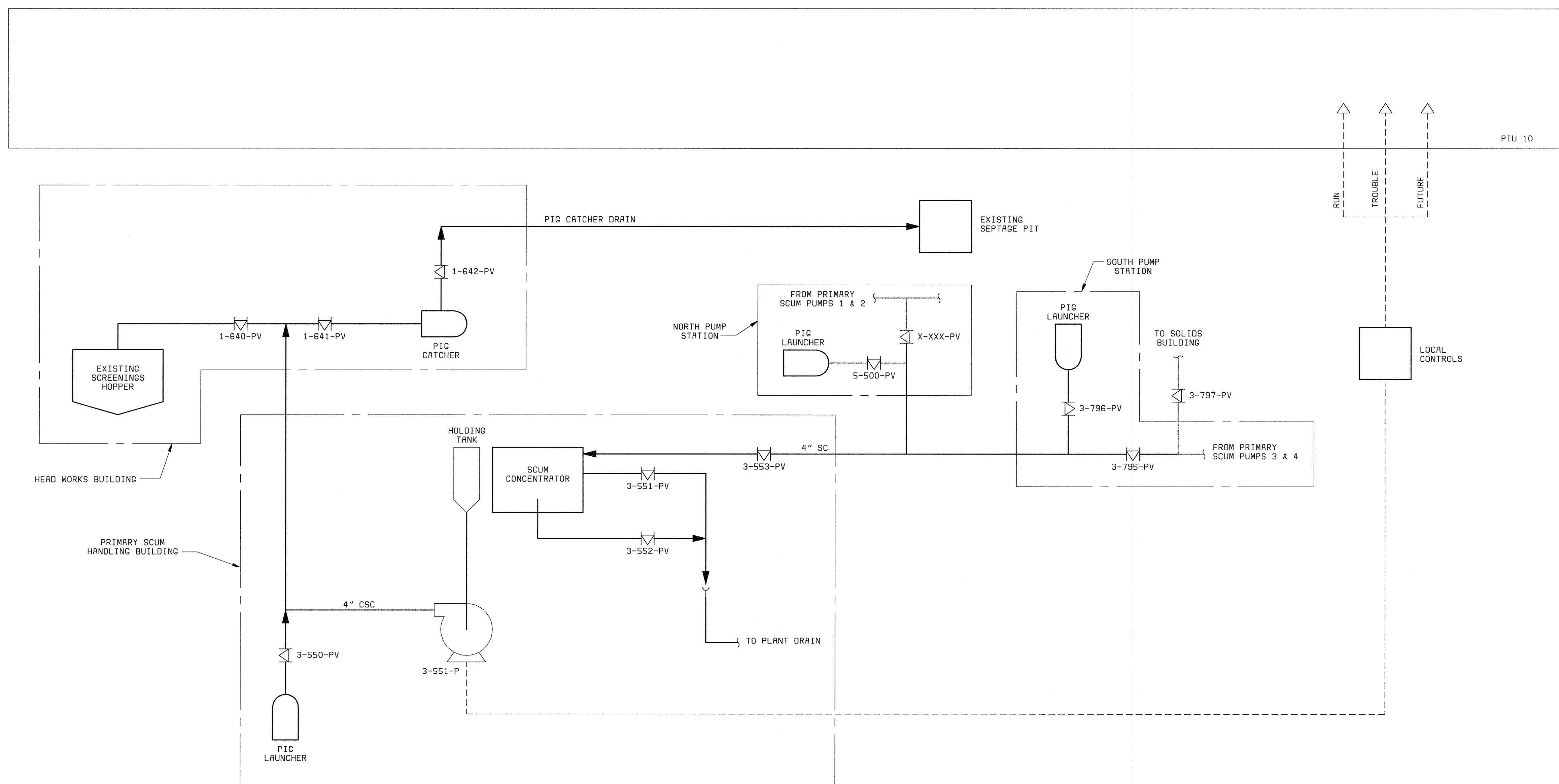
LEGEND:

- PCI PRIMARY CLARIFIER INFLUENT
- PCE PRIMARY CLARIFIER EFFLUENT
- PS PRIMARY SLUDGE

NOTE:

1. REPLACE UNDER B10 ALTERNATIVE 1

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876	DES: RSF DRN: DAH CHK: JER DATE: 04/13/01	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">02/06/04</td> <td style="width: 50%;">CONFORMED TO CONSTRUCTION RECORDS</td> <td style="width: 10%;">RHH</td> <td style="width: 10%;">RJR</td> <td style="width: 10%;">RJR</td> </tr> <tr> <td>DATE</td> <td>REVISIONS AND RECORD OF ISSUE</td> <td>NO.</td> <td>BY</td> <td>CK APP</td> </tr> </table>	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP	INSTRUMENTATION GRIT BASINS AND PRIMARY CLARIFIERS P & ID	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SCALE AS SHOWN SHEET 84 OF 88 I3
02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR													
DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP													

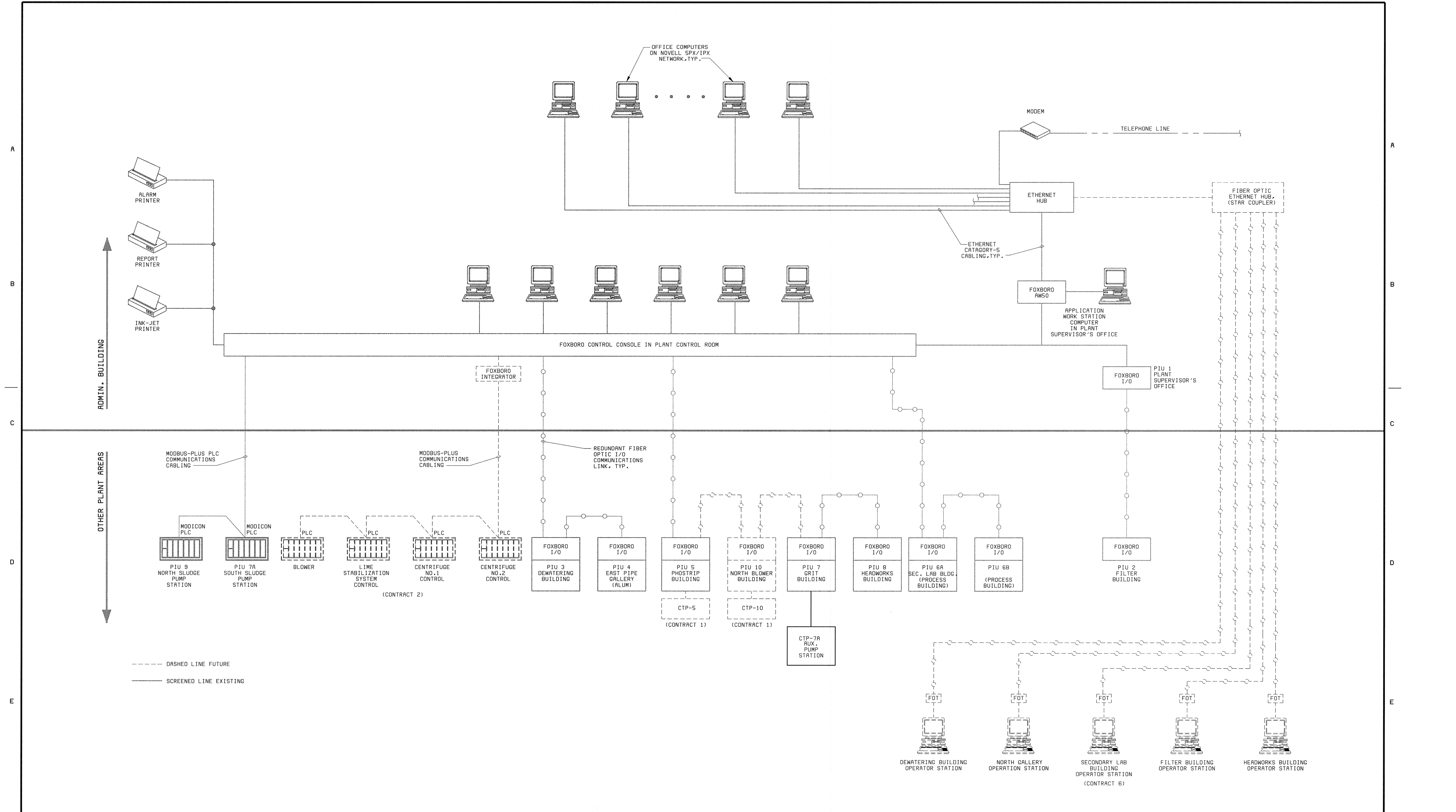


NOTES:

1. SEE P&ID LEGEND ON DRAWING I1.
2. LOCAL CONTROL DEVICES SUCH AS LIGHTS AND SWITCHES, LOCATED ON MCCS OR ON EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. ALL REQUIRED VALVES AND PIPING MAY NOT BE SHOWN ON THIS P&ID.
4. REFER TO ELECTRICAL SCHEMATICS FOR ADDITIONAL DETAILS.

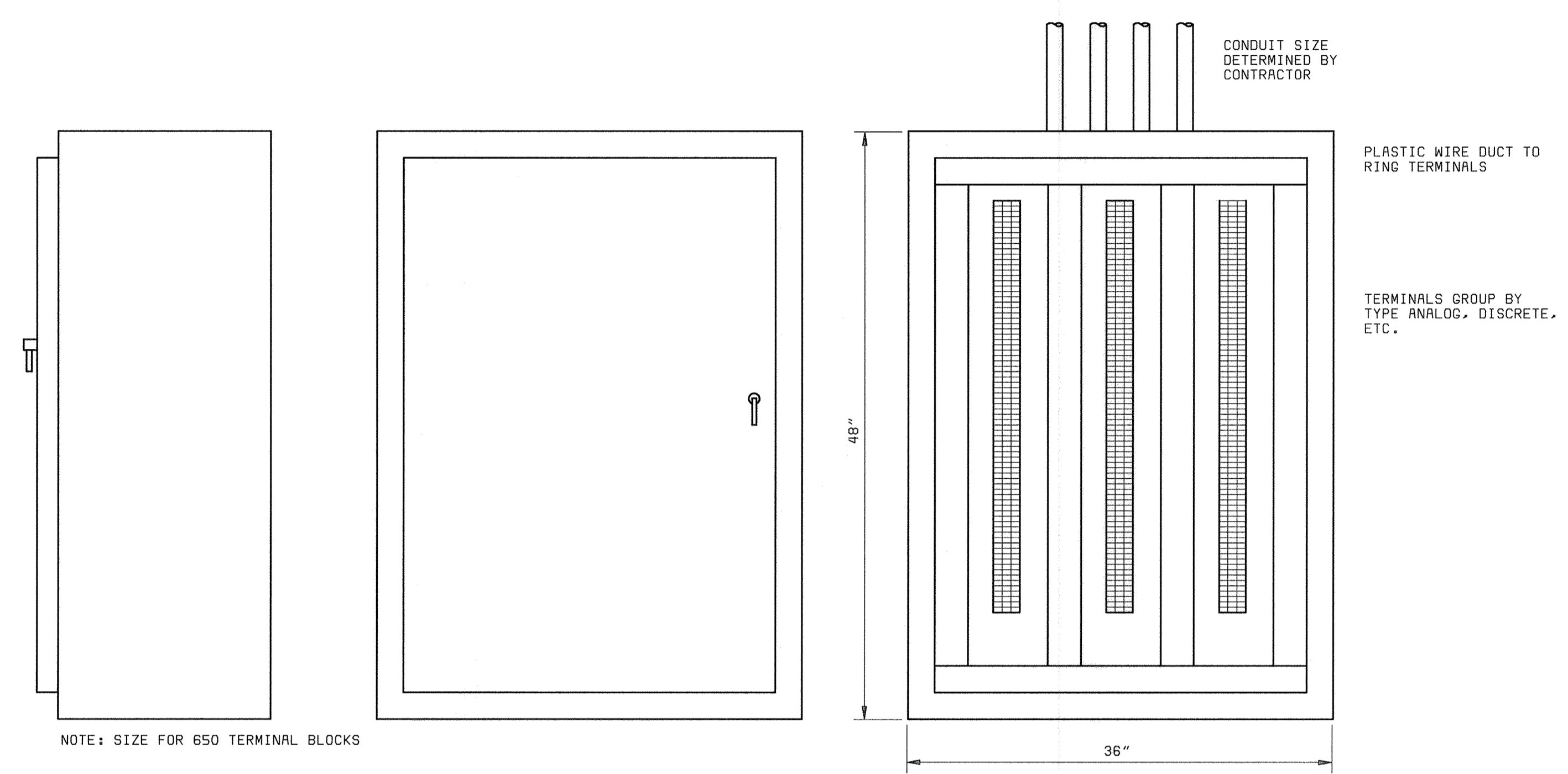
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02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR	RJR														

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			DRN: TOR											
			CHK: JER											
			DATE: 02/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP					15

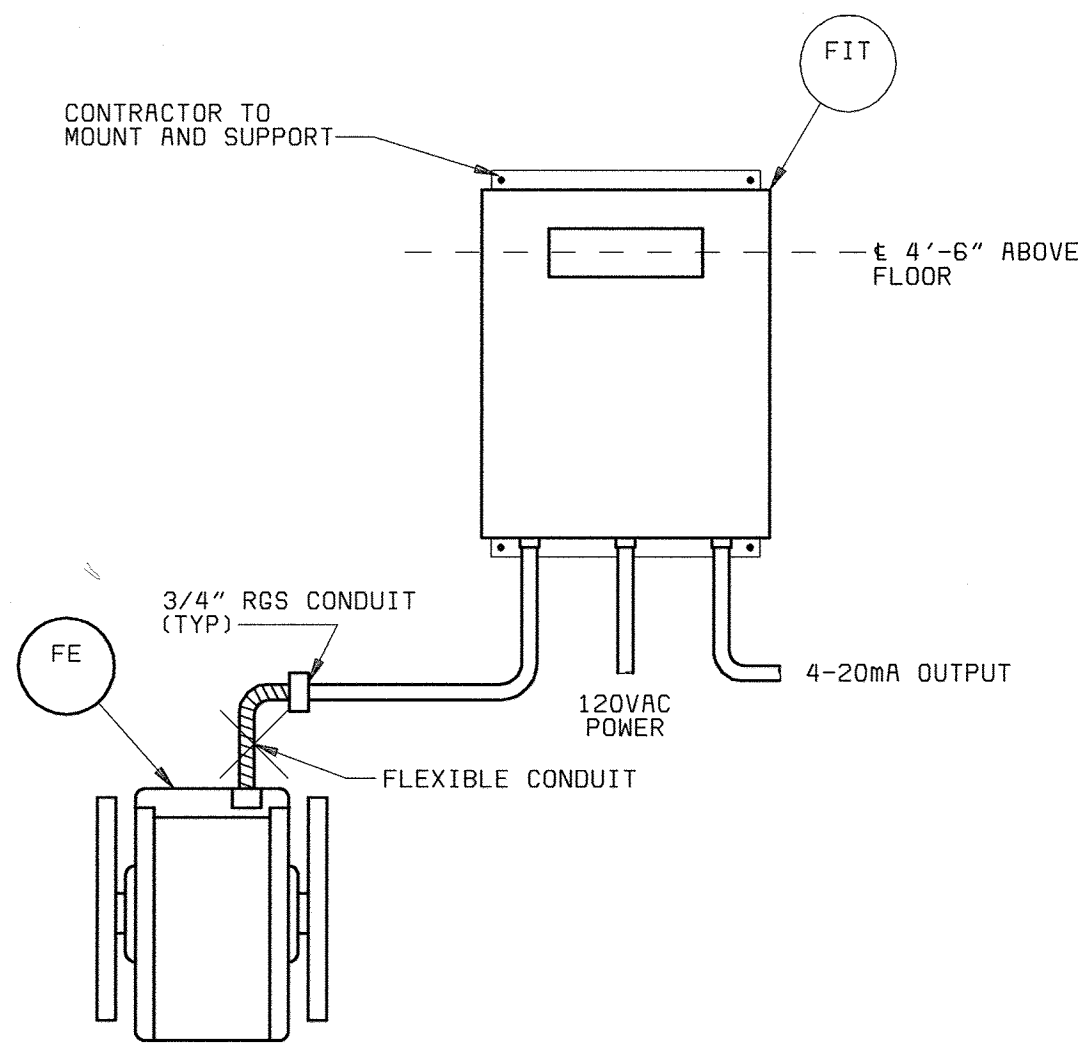
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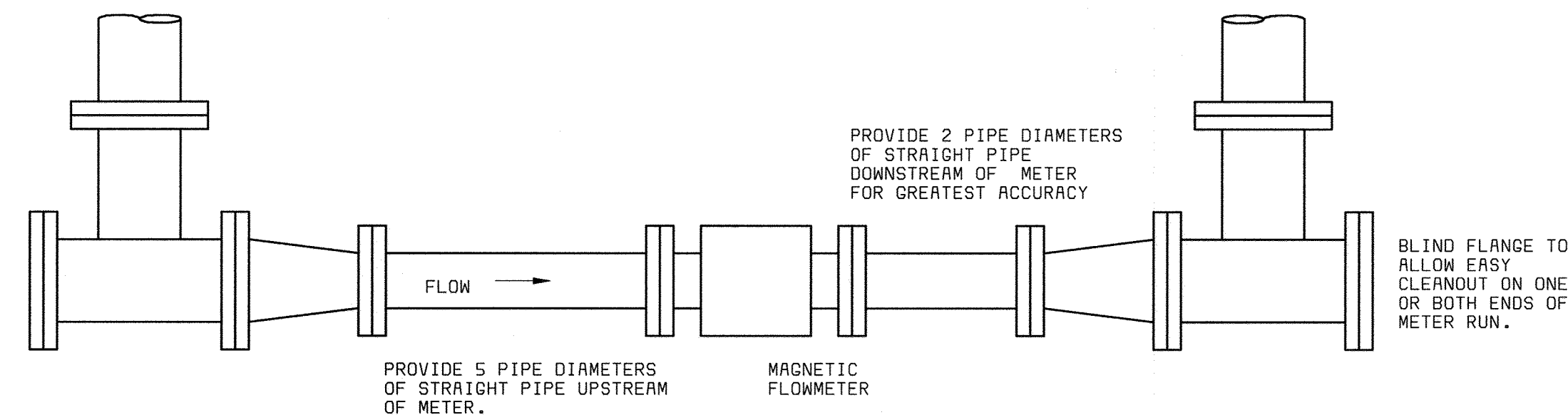
**NORTH BLOWER BUILDING & WEST GALLERY
WALL MOUNT CONTROL SIGNAL JUNCTION BOX**
NO SCALE

- NOTES:**
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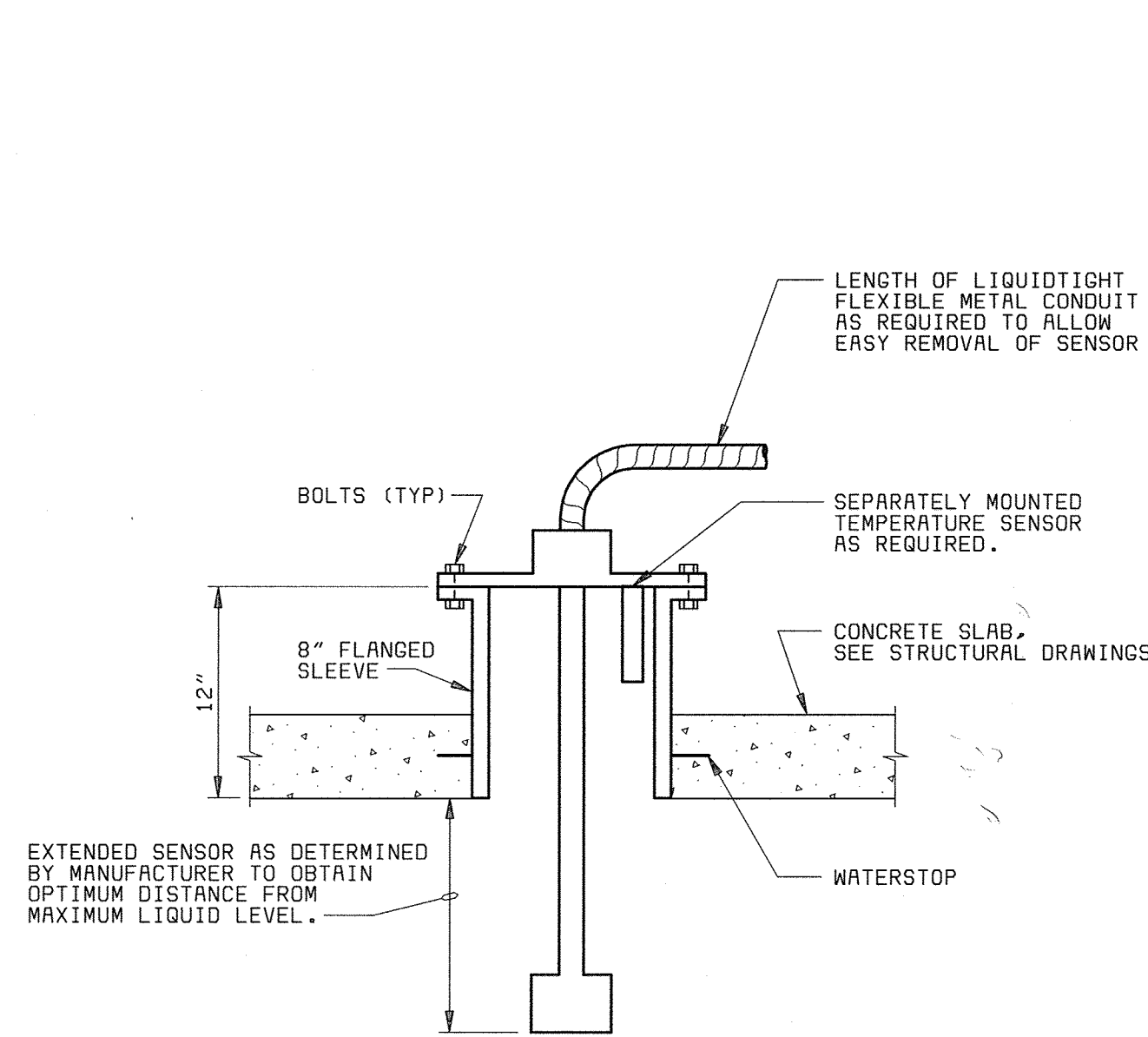
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			CHK: JER								SHEET 16
			DATE: 02/19/01	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR				
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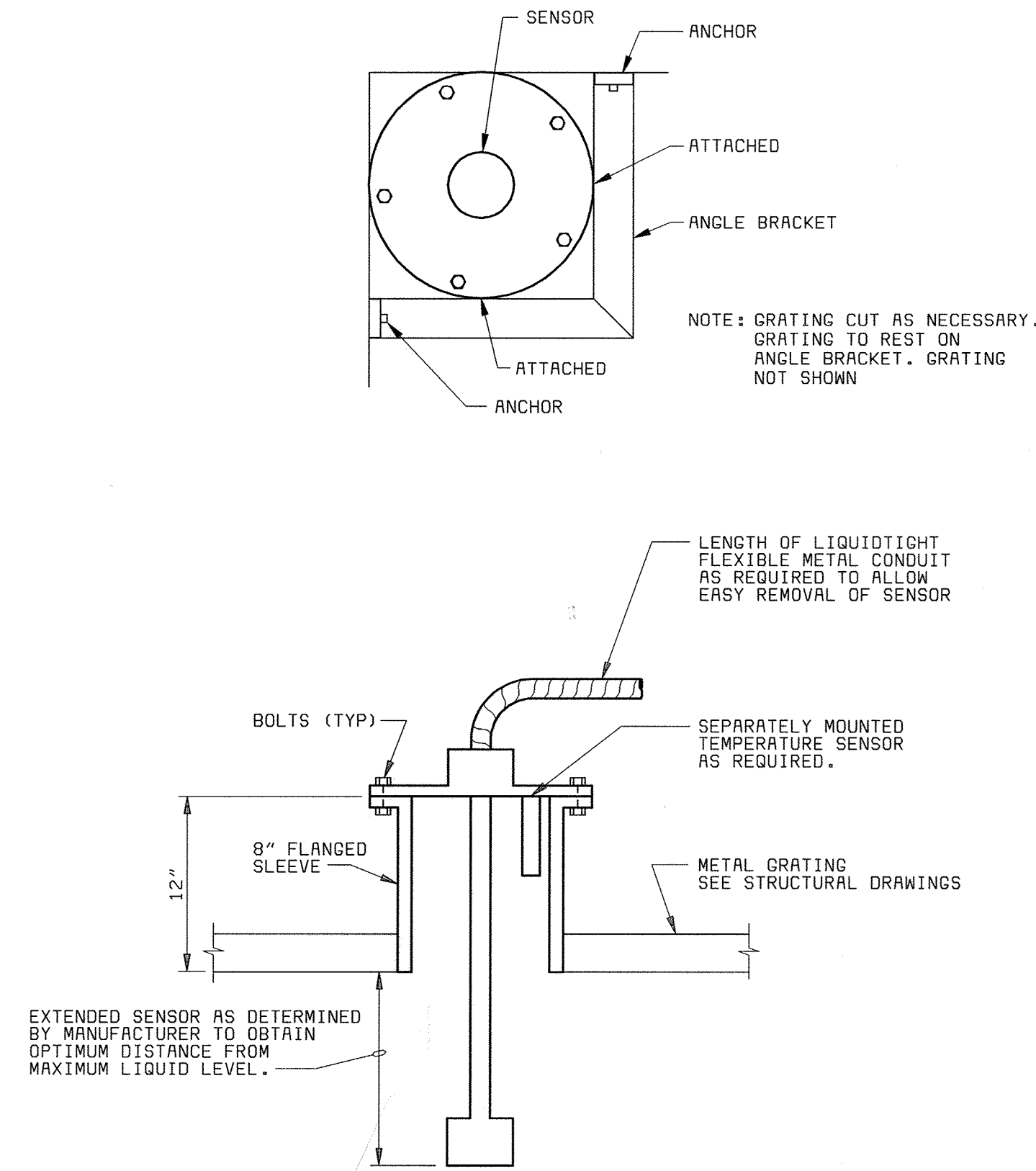
MAGNETIC FLOWMETER INSTALLATION DETAIL
NO SCALE



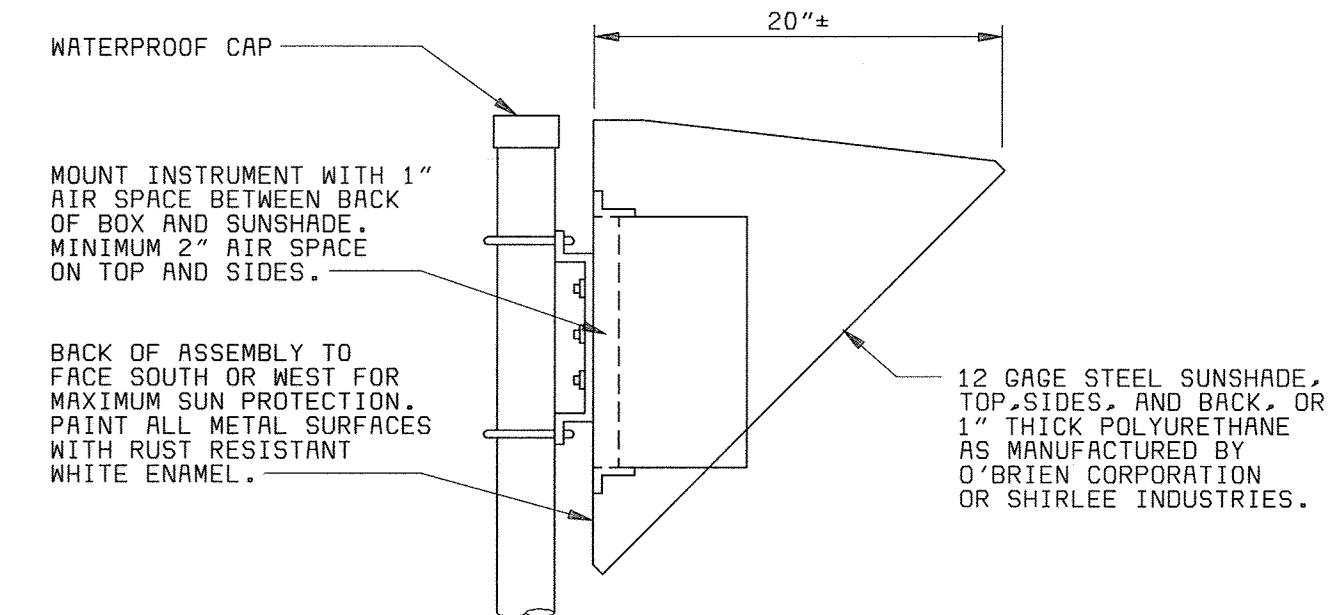
TYPICAL MAGNETIC FLOWMETER INSTALLATION
NO SCALE



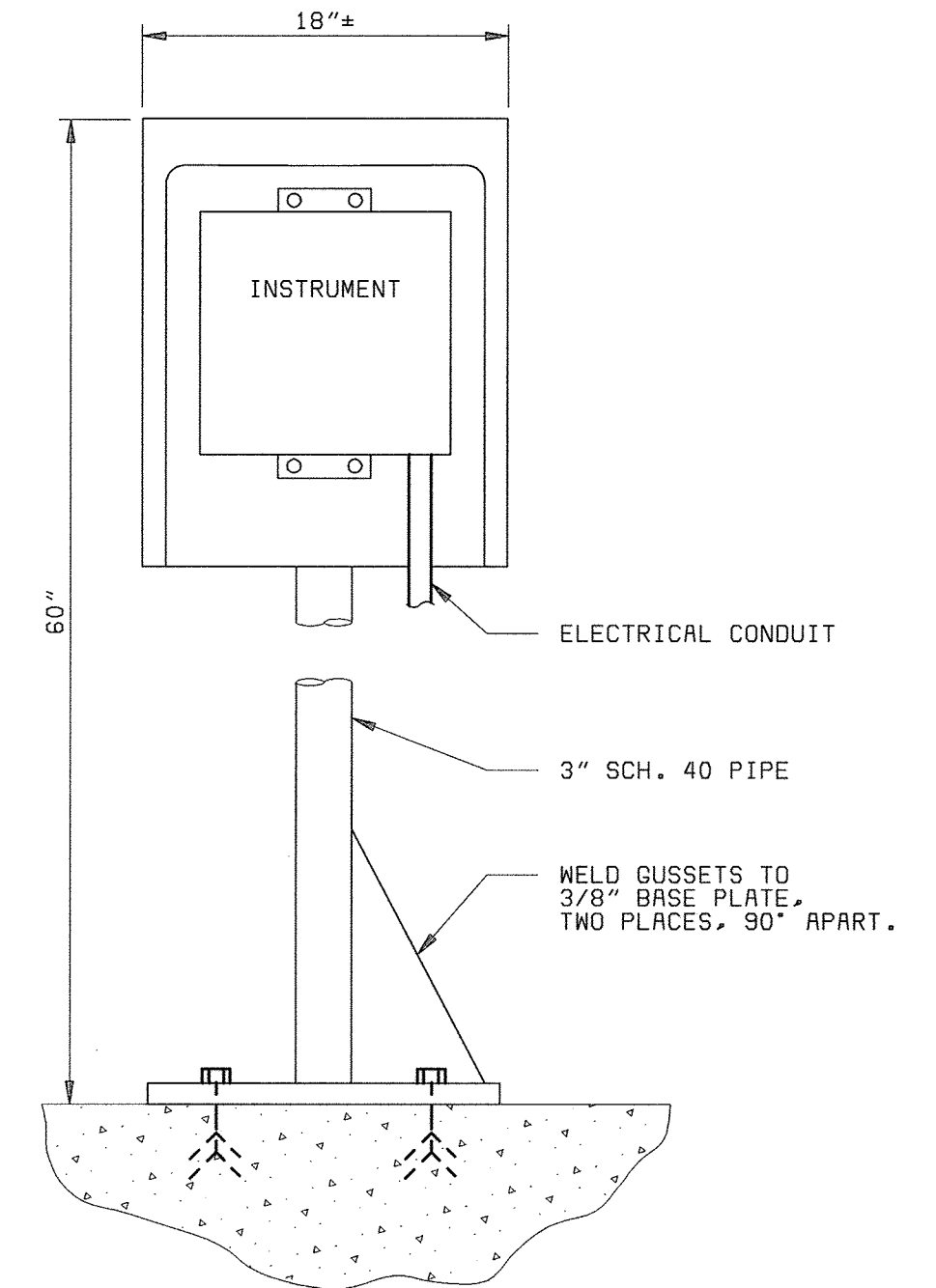
ULTRASONIC LEVEL SENSOR INSTALLATION DETAIL
NO SCALE
TYPICAL FOR: 1-300-L, 1-301-L



ULTRASONIC LEVEL SENSOR INSTALLATION DETAIL
NO SCALE
TYPICAL FOR: 1-152-L, 1-153-L



SIDE VIEW



FRONT VIEW

ULTRASONIC LEVEL TRANSMITTER INSTALLATION DETAIL
NO SCALE
TYPICAL FOR: 1-152-G, 1-153-G

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INSTRUMENTATION
P & ID
INSTALLATION DETAILS

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ADDITION NO. 6
PRELIMINARY AND PRIMARY TREATMENT EXPANSION
CAPITAL PROJECT S-6205
CONTRACT NO. 20-3840
HOWARD COUNTY, MARYLAND

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SHOWN
SHEET
88 OF 88
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