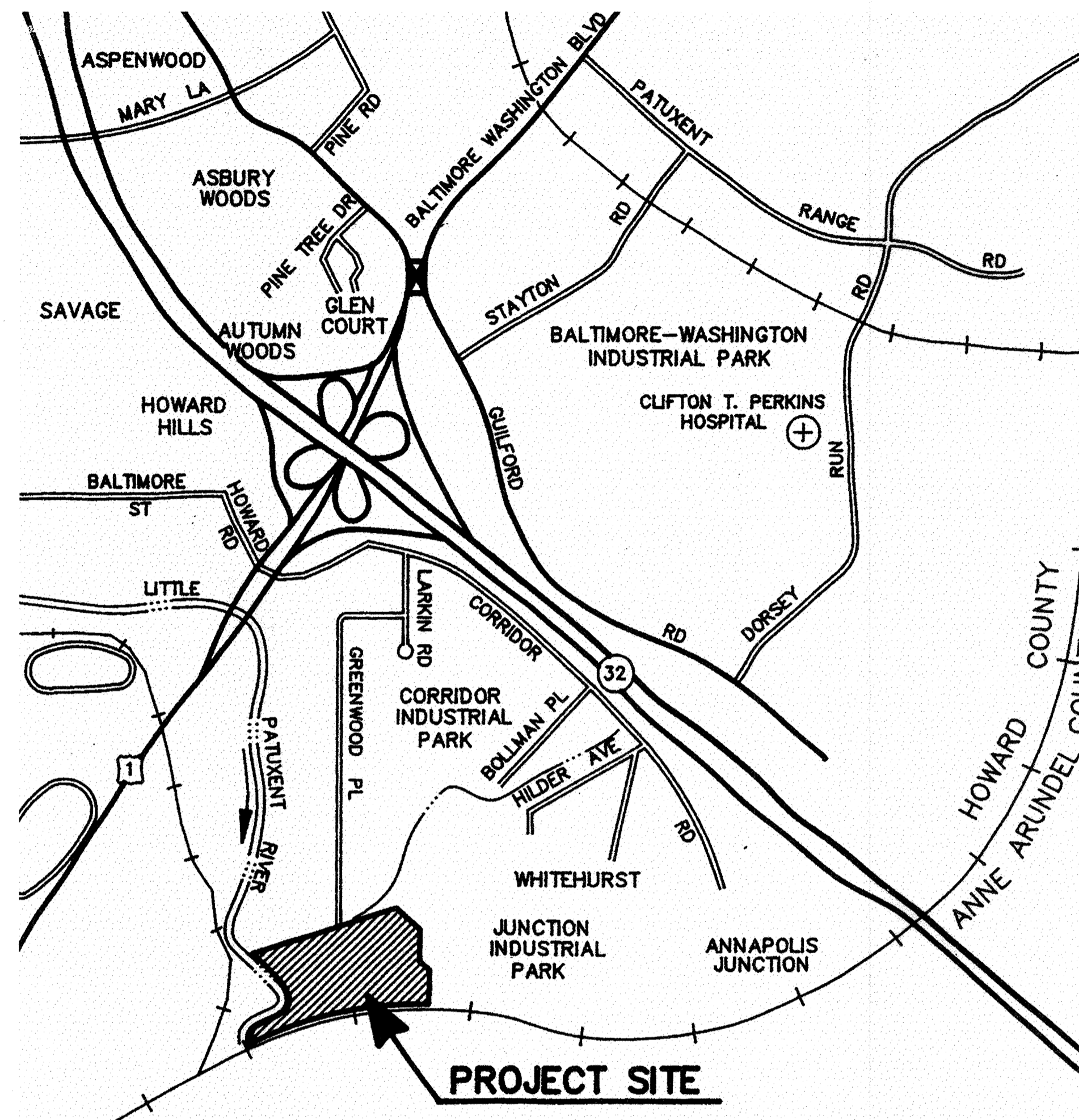


# HOWARD COUNTY, MARYLAND

## 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

LIST OF DRAWINGS

SHEET NO.    DRAWING NO.    DRAWING TITLE

LAYOUT/OVERVIEW

1    L1    COVER SHEET/LOCATION MAP  
2    L2    LIST OF DRAWINGS  
3    L3    LEGEND AND DESIGNATIONS  
4    L4    ABBREVIATIONS  
5    L5    OVERALL SITE PLAN  
6    L6    PROCESS DESIGN CRITERIA  
7    L7    PROCESS MASS BALANCE DIAGRAM  
8    L8    LIQUID SCHEMATIC  
9    L9    HYDRAULIC PROFILE

CIVIL/SITWORK

10    C1    SITE GRADING AND STAKING PLAN  
11    C2    ELECTRICAL YARD DEMOLITION PLAN  
12    C3    STORM SEWER PROFILES AND DETAILS  
13    C4    EROSION AND SEDIMENT CONTROL PLAN - SHEET 1 OF 2  
14    C5    EROSION AND SEDIMENT CONTROL PLAN - SHEET 2 OF 2  
15    C6    EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

YARDWORK

16    Y1    YARD PIPING PLAN - SHEET 1 OF 2  
17    Y2    YARD PIPING PLAN - SHEET 2 OF 2  
18    Y3    YARD PIPING PROFILES  
19    Y4    FEI METER VAULT - PLANS, SECTIONS, AND DETAILS  
20    Y5    GRIT BASIN PLAN AND MISCELLANEOUS DETAILS  
21    Y6    MISCELLANEOUS YARDWORK DETAILS

ARCHITECTURAL

22    A1    AUXILIARY PUMP STATION - ELEVATIONS  
23    A2    AUXILIARY PUMP STATION - GROUND LEVEL AND ROOF PLANS  
24    A3    AUXILIARY PUMP STATION - SECTIONS, WALL SECTIONS, AND DETAILS  
25    A4    AUXILIARY PUMP STATION - MISCELLANEOUS DETAILS  
26    A5    AUXILIARY PUMP STATION - SCHEDULES AND DOOR AND LOUVER DETAILS

SHEET NO.    DRAWING NO.    DRAWING TITLE

STRUCTURAL

27    S1    AUXILIARY PUMP STATION - PLAN, SECTION AND DETAILS  
28    S2    AUXILIARY PUMP STATION - GROUND FLOOR PLAN, SECTION AND DETAILS  
29    S3    AUXILIARY PUMP STATION - ROOF PLAN AND DETAILS  
30    S4    AUXILIARY PUMP STATION - SECTIONS  
31    S5    AUXILIARY PUMP STATION - SECTION  
32    S6    PRIMARY CLARIFIER NO. 5 - PLAN, SECTIONS, AND DETAILS  
33    S7    PRIMARY CLARIFIER NO. 5 - SECTIONS AND DETAILS  
34    S8    PRIMARY SCUM HANDLING BUILDING - PLAN AND SECTIONS  
35    S9    STRUCTURAL NOTES  
36    S10    STANDARD CONCRETE DETAILS  
37    S11    COLUMN AND BEAM SCHEDULES

MECHANICAL

38    M1    HEADWORKS BUILDING - DEMOLITION PLAN AND SECTION  
39    M2    HEADWORKS BUILDING - PLAN, SECTIONS, AND DETAILS  
40    M3    HEADWORKS BUILDING - BLOWER ROOM PLANS, SECTION AND DETAIL  
41    M4    HEADWORKS BUILDING - SCREEN HOPPER ROOM PLANS AND SECTIONS  
42    M5    AUXILIARY PUMP STATION - LOWER LEVEL AND SECTIONAL PLANS  
43    M6    AUXILIARY PUMP STATION - SECTIONS  
44    M7    GRIT HANDLING BUILDING - PLAN AND SECTIONS  
45    M8    PRIMARY SCUM HANDLING BUILDING - DEMOLITION PLAN AND SECTION  
46    M9    PRIMARY SCUM HANDLING BUILDING - PLAN AND SECTIONS  
47    M10    PRIMARY CLARIFIER NO. 5 - PLAN, SECTIONS, AND DETAILS  
48    M11    PRIMARY CLARIFIER NO. 5 - SECTIONS  
49    M12    NORTH & SOUTH PUMP STATIONS - BASEMENT PLANS AND SECTIONS  
50    M13    MISCELLANEOUS DETAILS  
51    M14    MISCELLANEOUS DETAILS  
52    M15    MISCELLANEOUS DETAILS  
53    M16    MISCELLANEOUS DETAILS

HVAC/PLUMBING

54    H1    HVAC/PLUMBING - LEGEND, ABBREVIATIONS AND GENERAL NOTES  
55    H2    HVAC - AUXILIARY PUMP STATION - PLANS  
56    H3    HVAC - PRIMARY SCUM HANDLING BUILDING - PLAN  
57    H4    HVAC - DETAILS AND SECTIONS  
58    H5    HVAC - SCHEDULES AND SEQUENCE OF OPERATION  
59    P1    PLUMBING - AUXILIARY PUMP STATION - PLANS  
60    P2    PLUMBING - PRIMARY SCUM HANDLING BUILDING - PLAN AND DETAIL  
61    P3    PLUMBING - FEI METER VAULT - SECTIONAL PLAN, DETAILS AND SCHEDULES

SHEET NO.    DRAWING NO.    DRAWING TITLE

ELECTRICAL

62    E1    ELECTRICAL LEGEND AND ABBREVIATIONS  
63    E2    SITE LAYOUT PLAN AND DUCT BANK DETAIL  
64    E3    POWER DISTRIBUTION FUNCTIONAL DIAGRAM  
65    E4    HEADWORKS BUILDING - POWER PLAN  
66    E5    HEADWORKS BUILDING - MCC2 ONE-LINE DIAGRAM  
67    E6    HEADWORKS BUILDING - SCHEMATIC DIAGRAMS  
68    E7    AUXILIARY PUMP STATION - MCC16 ONE-LINE DIAGRAM  
69    E8    AUXILIARY PUMP STATION - MCC16 ONE-LINE DIAGRAM CONTINUATION  
70    E9    AUXILIARY PUMP STATION - POWER AND GROUNDING PLANS  
71    E10    AUXILIARY PUMP STATION - LIGHTING PLANS  
72    E11    PRIMARY CLARIFIER NO. 5 - POWER AND LIGHTING PLAN  
73    E12    SOUTH PUMP STATION - MCC22 ONE-LINE DIAGRAM  
74    E13    SOUTH PUMP STATION - POWER PLAN  
75    E14    PRIMARY SCUM HANDLING BUILDING - MCC4 & MCC4A DEMOLITION AND NEW ONE-LINE DIAGRAMS  
76    E15    PRIMARY SCUM HANDLING BUILDING - POWER AND LIGHTING PLAN  
77    E16    LIGHTING FIXTURE AND PANELBOARD SCHEDULES  
78    E17    FEI METER VAULT- ONE-LINE DIAGRAMS AND POWER AND LIGHTING PLAN SCHEMATICS  
79    E18    SCHEMATICS  
80    E19    INSTRUMENTATION ONE-LINE DIAGRAMS  
81    E20    MISCELLANEOUS DETAILS

INSTRUMENTATION AND CONTROLS

82    I1    LEGEND AND ABBREVIATIONS  
83    I2    HEADWORKS AND INFLUENT PUMPING - P&ID  
84    I3    GRIT BASINS AND PRIMARY CLARIFIERS - P&ID  
85    I4    P&ID - SCUM HANDLING CONCENTRATOR  
86    I5    P&ID - CONTROL BLOCK DIAGRAM  
87    I6    P&ID - PANEL DETAILS  
88    I7    P&ID - INSTALLATION DETAILS

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND



**BLACK & VEATCH** LLP  
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: FKA

DRN: RLC

CHK: WLK

DATE: 2/19/01

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

LAYOUT/OVERVIEW  
CIVIL

LIST OF DRAWINGS

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  
2 OF 88

L2

GENERAL LEGEND

Table with 2 columns: Symbol and Description. Includes items like SURFACED STREET, ROAD OR DRIVE; BUILDINGS, STRUCTURES; 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; 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 items 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 items 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; D - DRAIN; F - 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.

PIPING ACCESSORIES LEGEND

Table with 2 columns: Symbol and Description. Includes items 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.

VALVE LEGEND

Table with 2 columns: Symbol and Description. Includes items 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.

ACTUATOR LEGEND

Table with 2 columns: Symbol and Description. Includes items like 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.

EQUIPMENT DESIGNATION

Table with 2 columns: Symbol and Description. Includes items like AIR, PNEUMATIC; AIR/OIL TANDEM; DIAPHRAGM; ELECTRIC, MOTORIZED; FLOAT; HYDRAULIC; SOLENOID; AREA DESIGNATION; UNIT NUMBER; EQUIPMENT OR VALVE ABBREVIATION (SEE SPECIFICATIONS SECTION); LOCATION; GRIT AND FLOW EQUALIZATION; PRIMARY TREATMENT AND WEST FINAL CLARIFICATION; EAST AND WEST PROCESS REACTORS; NORTH BASIN COMPLEX; EAST FINAL CLARIFICATION.


NOTE: SYMBOLS ON THIS SHEET WHICH ARE TO BE SHOWN AS EXISTING SHALL BE DELINEATED AS SCREENED... THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW SHALL BE DELINEATED AS SOLID (HEAVY)

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; SHEET 3 OF 88; SCALE AS SHOWN; L3; DATE: 2/19/01; DES: FKA; DRN: RLC; CHK: WLK; DATE: 02/06/04; CONFORMED TO CONSTRUCTION RECORDS; RHH/RJR/RJR; LEGEND AND DESIGNATIONS; CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840; HOWARD COUNTY, MARYLAND.



**ABBREVIATIONS**

<p>A AB ACID, AMBER INDICATING LIGHT, AMPERE AB ANCHOR BOLT ABS ACID BATH SINK AC ALTERNATING CURRENT A/C AIR CONDITIONER, (ING) ACP ASBESTOS CEMENT PIPE ACST ACOUSTIC, (AL) AD ACCESS DOOR, AREA DRAIN, AIR DAMPER, ANODE ADA AMERICAN DISABILITY ACT ADD ADDITIONAL ADH ADHESIVE ADJ ADJUSTABLE, ADJACENT ADMIN ADMINISTRATION AF AIR FLOW AFF ABOVE FINISH FLOOR AH AHEAD AHU AIR HANDLING UNIT AL ACTIVE LEAF ALT ALTERNATE, (IVE) ALUM ALUMINUM AM AMPERE AMP AMPERE AN ANAEROBIC ANOD ANODIZED AP ACCESS PANEL APPR APPROACH APPROX APPROXIMATE, (LY) AR ALARM RELAY ARCH ARCHITECTURAL AS AMMETER SWITCH ASSY ASSEMBLY AUTO AUTOMATIC AUX AUXILIARY AVS AUTOMATIC VALVE STATION AWG AMERICAN WIRE GAGE AX ANOXIC</p>	<p>CTR(S) CENTER(S) CU CUBIC CU YD CUBIC YARD CV CHECK VALVE CW COLD WATER CWR COLD WATER RETURN CWS COLD WATER SUPPLY</p> <p>D DOOR DBL DOUBLE DC DIRECT CURRENT DEG DEGREE DEPT DEPARTMENT DET DETAIL DF DRINKING FOUNTAIN DH DOOR HEIGHT DI DROP INLET, DUCTILE IRON DIA DIAMETER DIFF DIFFUSER DIM DIMENSION DIP DUCTILE IRON PIPE DISCH DISCHARGE DISP DISPENSER DIST DISTRIBUTION DIV DIVISION DL DEAD LOAD DM DAMPER MOTOR DMJ DOUBLE MECHANICAL JOINT DN DOWN DO DOOR OPENING, DISSOLVED OXYGEN DPDT DOUBLE POLE DOUBLE THROW DR DRAIN DS DOWNSPOUT DT DISTRIBUTION TRANSFORMER DV DRAIN VALVE DWG(S) DRAWING(S) DWL(S) DOWEL(S)</p> <p>E EAST, ELECTRICAL EA BEARING AREA EAT ENTERING AIR TEMPERATURE EC END CURVE ECC ECCENTRIC ECC RED ECCENTRIC REDUCER EEW EMERGENCY EYEWASH EF EACH FACE EFF EFFLUENT EJ EXPANSION JOINT EL ELEVATION ELB ELBOW ELEC ELECTRIC, (AL) ELEV ELEVATOR EMER EMERGENCY ENC ENCASEMENT ENCL ENCLOSURE ENT ENTRANCE EOL END OF LINE EPV ECCENTRIC PLUG VALVE EQ EQUAL EQUIP EQUIPMENT EW EACH WAY EW EMERGENCY EYEWASH EWEF EACH WAY EACH FACE EXCH EXCHANGER EXH EXHAUST EX, EXIST EXISTING EXP EXPANSION, EXPOSED EXP JT EXPANSION JOINT EXT EXTENSION, EXTERIOR, EXTERNAL</p> <p>F FAN, FIBERGLASS F TO F FACE TO FACE FB FACE BRICK, FILTER BASIN FCA FLEXIBLE CONNECTION, FLOW CONTROL, FINAL CLARIFIER FDA FLANGED COUPLING ADAPTER FD FLOOR DRAIN FDN FOUNDATION FDPR FIRE DAMPER FE FIRE EXTINGUISHER, FLOW ELEMENT FEC FIRE EXTINGUISHER CABINET FF FACTORY FINISH FH FLAT HEAD, FIRE HYDRANT FHMS FLAT HEAD MACHINE SCREW FIG FIGURE FIN FINISH FIN GR FINISH GRADE FL FLOOR, FLOW LINE FLEX FLEXIBLE FLG FLANGE, FLASHING FM FORCE MAIN FO FUEL OIL FOB FLAT ON BOTTOM FOM FACE OF MASONRY FOS FACE OF STUDS FOT FLAT ON TOP FPM FEET PER MINUTE FRP FIBERGLASS REINFORCED PLASTIC FS FAR SIDE, FLOOR SLEEVE, FLOAT SWITCH, FLOOR SEALER FT FOOT FTG FOOTING FURN FURNISH, FURNISHED FV FLAP VALVE, FLOW CONTROL VALVE, PINCH VALVE FWD FORWARD</p> <p>G GAS GA GAUGE GAL GALLON GALV GALVANIZED GB GRIT BASIN GC/MS GAS CHROMATOGRAPH/MASS SPECTROMETER GEN GENERAL, GENERATOR GLV GLOBE VALVE</p>	<p>GM GAS METER GPM GALLONS PER MINUTE GR GRADE GV GATE VALVE GNB GYPSUM WALLBOARD GYP GYPSUM</p> <p>H HIGH, HOUR, HYDROGEN HB HOSE BIBB HV HOLLOW CORE HDR HEADER HWR HARDWARE HE HEAT EXCHANGER HEX HEXAGONAL HF HOSE FAUCET HGT HEIGHT HH HANDHOLE HLS HIGH LEVEL SWITCH HMC HARNESSED MECHANICAL COUPLING HMD HOLLOW METAL DOOR HMJ HARNESSED MECHANICAL JOINT HORIZ HORIZONTAL HP HIGH POINT, HORSEPOWER HR HOUR, HANDRAIL HS HIGH STRENGTH HV HOSE VALVE HVAC HEATING, VENTILATING AND AIR CONDITIONING HW HOT WATER HWY HIGHWAY HYDRO HYDROPNEUMATIC</p> <p>I INDICATOR IO INSIDE DIAMETER IF INSIDE FACE I/I CURRENT TO CURRENT BOOSTER IN INCHES INC INCORPORATED INCL INCLUDING INCR INCREASE INST INSTRUMENT, (ATION) INSUL INSULATE, (ED), (ING) INT INTERIOR, INTERNAL INV INVERT IPS IRON PIPE SIZE IR INTERNAL RECYCLE</p> <p>JAN JANITOR JB JUNCTION BOX JF JOINT FILLER JT JOINT</p> <p>K KIPS KIT KITCHEN KO KNOCK OUT KS KITCHEN SINK KV KILOVOLT KVA KILOVOLT AMPERE KW KILOWATT KWH KILOWATT HOUR</p> <p>L LOUVER, ANGLE LAB LABORATORY LAM LAMINATE(D) LAT LEAVING AIR TEMPERATURE LAT LATERAL LAV LAVATORY LB(S) POUNDS LO LENGTH, LONG LH LEFT HAND LIN LINEAL, LINEAR LL LIVE LOAD LLH LONG LEG HORIZONTAL LLV LONG LEG VERTICAL LO LOUVER OPENING LS LABORATORY SINK, LEVEL SWITCH, LIMIT SWITCH LT LEFT, LAB TABLE</p> <p>MA MILLIAMPERE MACH MACHINE MAINT MAINTENANCE MAN MANUAL MAS MASONRY MATL MATERIAL MAX MAXIMUM MB MACHINE BOLT MC MECHANICAL COUPLING MCC MOTOR CONTROL CENTER MECH MECHANICAL MED MEDIUM MEZ MEZZANINE MFM MAGNETIC FLOWMETER MFR(S) MANUFACTURER(S) MG MILLION GALLONS MGD MILLION GALLONS PER DAY MG/L MILLIGRAMS PER LITER MH MANHOLE MIN MINIMUM, MINUTE MISC MISCELLANEOUS MJ MECHANICAL JOINT MJRC MECHANICAL JOINT RETAINER GLAND MJTR MECHANICAL JOINT WITH TIE ROD MO MASONRY OPENING, MOTOR OPERATED MOD MODIFIED MP METERING PUMP MRO METAL ROOF DECK MS MACHINE SCREW MSL MEAN SEA LEVEL MT CERAMIC MOSAIC FLOOR TILE MTD MOUNTED MTL METAL MTR MOTOR MV MUD VALVE</p>	<p>N NORTH N/A NOT APPLICABLE NBC NAIL IN BOTTLE CAP NC NORMALLY CLOSED NEUT NEUTRAL NF NEAR FACE NO NORMALLY OPEN NO. (S) NUMBER(S) NOM NOMINAL NPT NORMAL NPW NONPOTABLE PIPE THREAD NPW NONPOTABLE WATER NS NEAR SIDE NTS NOT TO SCALE</p> <p>OC ON CENTER, ODOR CONTROL OD OUTSIDE DIAMETER OF OUTSIDE FACE, OVERFLOW OH OVERHEAD OL OVERLOAD OP OPERATIONS OPER OPERATING OPNG OPENING OPP OPPOSITE OSL OUTSTANDING LEG OX OXIC OZ OUNCE</p> <p>PC POINT OF CURVE, PRIMARY CLARIFIER PCC POINT OF COMPOUND CURVATURE PCCP PRESTRESSED CONCRETE CYLINDER PIPE PCP PIER CUTOFF POINT PCV PINCH VALVE PD PLAN DIMENSION PE PLAIN END PG PRESSURE GAUGE PH PIPE HANGER, PENTHOUSE PI POINT OF INTERSECTION P/VC POINT OF INTERSECTION ON VERTICAL CURVE PL PLATE PLYWD PLYWOOD PNL(S) PANEL(S) POLY POLYMER POT POINT ON TANGENT PP POWER POLE PRI PRIMARY PR PROCESS REACTOR PROJ PROJECTION PRS PRESSURE REDUCING STATION PRV POWER ROOF VENTILATOR, PRESSURE REDUCING VALVE PS PIPE SUPPORT PSF POUNDS PER SQUARE FOOT PSI POUNDS PER SQUARE INCH PT POINT, POINT OF TANGENCY PTD PAINT PV PLUG VALVE PVC POLYVINYL CHLORIDE, POINT ON VERTICAL CURVE PVCP POLYVINYL CHLORIDE PIPE PVMT PAVEMENT PW POTABLE WATER</p> <p>R RADIUS, RISER RAS RETURN ACTIVATED SLUDGE RCP REINFORCED CONCRETE PIPE RCCP REINFORCED CONCRETE CYLINDER PIPE RCHRP REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE RD ROOF DRAIN, ROAD RDL ROOF DRAIN LEADER RECEP RECEPTION RECIRC RECIRCULATING RECP RECEPACLE RED REDUCER, REDUCING REG REGULATOR, REGULATING REF REFERENCE REFR REFRIGERATION, REFRIGERATOR REINF REINFORCING REM REMOVABLE REQD REQUIRED RET RETURN REV REVISION, REVISED, REVERSED RFG ROOFING RG RETAINER GLAND RH ROOF HOOD, RIGHT HAND, ROUND HEAD, RED HEAD RHS ROUND HEAD MACHINE SCREW RHWS ROUND HEAD WOOD SCREW RM ROOM RO ROUGH OPENING RPM REVOLUTIONS PER MINUTE RR RAILROAD RS RAW SLUDGE, RAW SEWAGE, ROLLED STEEL RT RIGHT RTG RATING RV REGULATING VALVE R/W RIGHT OF WAY</p> <p>S SOUTH, SPEAKER SAN SWR SANITARY SEWER SC SCUM SCFM STANDARD CUBIC FEET PER MINUTE SCHED SCHEDULE SD STORM DRAIN, SOAP DISH SEC SECOND, SECONDARY SECT SECTION SER SK SERVICE SINK SG SLUICE GATE, SUPPLY GRILLE SH SHEET SHR SHOWER SHD SHOWER DOOR SIM SIMILAR</p>	<p>SKL SKYLIGHT SLG SLIDE GATE SM SHEET METAL SP SUMP PUMP SPA SPACING, SPACES SPEC(S) SPECIFICATION(S) SPLY SUPPLY SQ SQUARE SR SUPPLY REGISTER SS STAINLESS STEEL SS SANITARY SEWER SSK SERVICE SINK SST EXC TAPPING ST SWR STORM SEWER STA STATION STD STANDARD STL STEEL STOR STORAGE STR STRUCTURAL SUP SUPPLY SUSP SUSPENDED SV SHUTOFF VALVE SW SWITCH SWBD SWITCHBOARD SWGR SWITCHGEAR SWS SEAL WATER SOLENOID SYM SYMMETRICAL SYS SYSTEM</p> <p>T THERMOSTAT, TREAD, TOTALIZER TRANSFORMER, TELEPHONE, TOP TAN TANGENT TB TERMINAL BOX T&amp;B TOP AND BOTTOM TBE THREAD BOTH ENDS TBM TEMPORARY BENCHMARK TC TOWEL CABINET, TOP OF CURB TC TERMINAL CABINET TEL TELESCOPING TEMP TEMPERATURE, TEMPORARY TERM TERMINAL T&amp;G TONGUE &amp; GROOVE TH TEST HOLE THK THICK, THICKNESS THR THRESHOLD TI TOTALIZING INDICATOR, TEMPERATURE INDICATOR TIR TOTALIZING INDICATING RECORDER TOP TOP OF FOOTING TOM TOP OF MASONRY TOS TOP OF STEEL TP TWISTED PAIR COUPLE, TOWEL PIN TPD TONS PER DAY TRANS TRANSFORMER, TRANSMITTER, TRANSFER TS TEMPERATURE SWITCH TV TELEVISION TYP TYPICAL TW TILTING WEIR</p> <p>UDM ULTRASONIC DENSITY METER UGND UNDERGROUND UH UNIT HEATER UNIF UNIFORM UNO UNLESS NOTED OTHERWISE UR URINAL USGS UNITED STATES GEOLOGICAL SURVEY</p> <p>V VALVE, VOLT, VENT VAC VACUUM VAT VINYL ASBESTOS TILE VB VACUUM BREAKER VC VERTICAL CURVE, VICTAULIC COUPLING VCD VERTICAL CONTROL DAMPER VCP VITRIFIED CLAY PIPE VCT VINYL COMPOSITION TILE VERT VERTICAL VD VACUUM FILTER VIB VIBRATION VM VOLT METER VNR VENEER VV VENT VALVE</p> <p>W WEST, WIDE, WIDTH, WINDOW, WATT, WATER W/ WITH WAS WASTE ACTIVATED SLUDGE WB WALLBOARD WC WATER CLOSET WD WOOD, WIDTH WF WALL FITTING, WALL FABRIC WH WALL HYDRANT WL WATER LEVEL WM WATER METER, WATTMETER WO WINDOW OPENING W/O WITHOUT WPM WATERPROOF, WORKING POINT WR WASTE RECEPTACLE WS WATERSTOP WT WEIGHT, CERAMIC WALL TILE WW WETWELL WWF WELDED WIRE FABRIC</p>
--	---	--	--	---

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	 <b>BLACK &amp; VEATCH</b> 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. 22327	DES: FKA DRN: RLC CHK: WLK DATE: 2/19/01	<b>LAYOUT/OVERVIEW</b> <b>CIVIL</b>	<b>ABBREVIATIONS</b>	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 4 OF 88  L4
CHIEF, BUREAU OF UTILITIES DATE	REG. PROF. ENGR. DATE	DATE REVISIONS AND RECORD OF ISSUE NO. BY CK APP	02/06/04 CONFORMED TO CONSTRUCTION RECORDS RHH/RJR/RJR				

058472-3  
F058472A



- 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 CLARIFIER.
18. SURFACED STREET AND PARKING AREAS SHALL BE MAINTAINED AT ALL TIMES. EXISTING PAVEMENT SHALL BE MAINTAINED AND REPAIRED AS NECESSARY TO ACCOMMODATE 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 SMOOTH 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 TO 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 ELEVATION OF ALL EXISTING STRUCTURES WHICH EXIST WITHIN THE BOUNDARY OF THIS CONTRACT.

**TRAVERSE STATIONS**

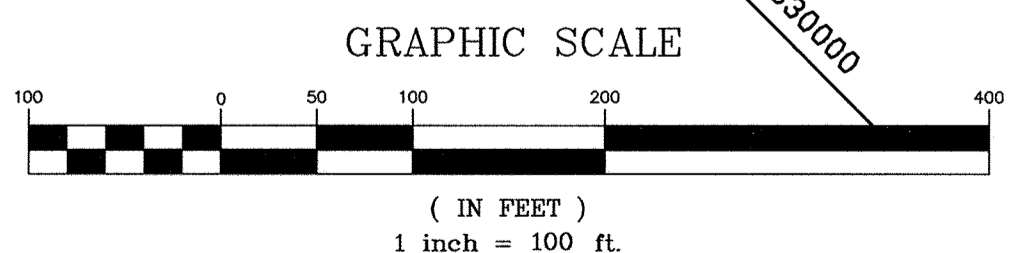
NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
TRAV #22	530410.03	1365394.67		
TRAV #1	530891.94	1365737.20	141.44	PK NAIL SET
TRAV #2	531189.86	1365480.86	140.70	PK NAIL SET
TRAV #3	530714.05	1365488.81	140.83	PK NAIL SET
TRAV #4	530635.03	1365378.47	140.71	PK NAIL SET
TRAV #5	530560.57	1365274.49	140.81	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	60D 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
47112	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

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) 881-9814  
E-MAIL JBYRNE@AMTENGINEERING.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	RHR/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**

D58472 F058472A T100 04/14/00



**DESIGN WASTEWATER CHARACTERISTICS**

Table with columns: RAW WASTEWATER, INTERNAL RECYCLE LOADS, TOTAL PLANT LOADS, PRIMARY EFFLUENT CHARACTERISTICS, EFFLUENT DISCHARGE LIMITATIONS. Rows include parameters like FLOW, MGD; BOD5, TSS, TKN, TP concentrations and loads.

**RAW WASTEWATER SCREENING**

Table with columns: NO. OF SCREENS (3), SCREEN WIDTH, FT/EA (6'-0"), TYPE OF SCREENS (CLIMBER), NOMINAL BAR SPACING, IN (0.25), CLEAN SCREEN CAPACITY, MGD (50), NO. OF NEW PUMPS (2), SCREENS IN SERVICE (52).

**RAW WASTEWATER PUMPING**

Table with columns: HEADWORKS PUMPS (NO. OF EXISTING PUMPS: 4, RATED CAPACITY, MGD/EA: 5.3), 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**

Table with columns: NO. OF BASINS (2), TYPE OF BASINS (DETRITOR), DIMENSIONS, FT (42 X 42 X 3 SWD), RATED CAPACITY, MGD/BASIN (25), 90% REMOVAL 100 MESH (50).

**FLOW EQUALIZATION**

Table with columns: NO. OF BASINS (3), TOTAL VOLUME, MIL. GAL (2.8).

**PRIMARY CLARIFIERS**

Table with columns: DIAMETER EXISTING BASINS, FT (PC NO. 1: 105, PC NOS. 2, 3 AND 4: 90), TOTAL SURFACE AREA, SQ FT (36,400), SURFACE OVERFLOW RATES, GPD/SQ FT (AVERAGE: 714, MAX MONTH: 857, MAX DAY: 1,143).

**PRIMARY SLUDGE PUMPING**

Table with columns: SOUTH PUMP STATION (PC'S 3, 4 AND 5) SLUDGE PUMPS (EXISTING PUMPS: 2, NEW PUMP: 1, SCUM PUMPS: 2), NORTH PUMP STATION (PC'S 1 AND 2) SLUDGE PUMPS (EXISTING PUMPS: 2, SCUM PUMPS: 2).

**BIOLOGICAL PROCESS REACTORS**

Table with columns: NORTH PROCESS REACTORS (NO. OF REACTOR BASINS: 3, NO. OF REACTOR CELL PER BASIN: 10), 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%).

Table with columns: PROCESS LOADING (FLOW, MGD: 7.5, BOD5, LBS/DAY: 8,259, TSS, LBS/DAY: 4,072, TKN, LBS/DAY: 1,625, TP, LBS/DAY: 321, TEMP, C: 20), RETENTION TIME BY ZONE, HRS (1ST ANOXIC: 0.7, ANAEROBIC: 0.8, 2ND ANOXIC: 2.5, OXIC: 4.1, TOTAL: 8.1), WASTE ACTIVATED SLUDGE, LBS/DAY (4,522), RETURN ACTIVATED SLUDGE (RAS FLOW, MGD: 3.7, SOLIDS CONCENTRATION, MG/L: 8,000), INTERNAL RECYCLE FLOW, MGD (23), OXYGEN TRANSFER REQ., LBS/HR (600), AIR REQUIRED, SCFM (4,722).

Table with columns: EXISTING PROCESS REACTORS (NO. OF REACTOR BASINS: 4, NO. OF REACTOR CELL PER BASIN: 10), CELL 1 (ANOXIC): 259,981 (16.7%), CELL 2 (ANAEROBIC): 199,267 (12.8%), CELL 3 (ANAEROBIC/ANOXIC): 104,304 (6.7%), CELLS 4 & 5 (ANOXIC): 221,062 (14.2%), CELLS 6 & 7 (ANOXIC/OXIC): 253,754 (16.3%), CELLS 8, 9 & 10 (OXIC): 518,406 (33.3%).

Table with columns: PROCESS LOADING (FLOW, MGD: 18.5, BOD5, LBS/DAY: 20,376, TSS, LBS/DAY: 10,047, TKN, LBS/DAY: 4,008, TP, LBS/DAY: 791, TEMP, C: 20), RETENTION TIME BY ZONE, HRS (1ST ANOXIC: 0.7, ANAEROBIC: 0.8, 2ND ANOXIC: 2.5, OXIC: 4.1, TOTAL: 8.1), WASTE ACTIVATED SLUDGE, LBS/DAY (11,200), RETURN ACTIVATED SLUDGE (RAS FLOW, MGD: 9.5, SOLIDS CONCENTRATION, MG/L: 8,000), INTERNAL RECYCLE FLOW, MGD (56), OXYGEN TRANSFER REQ., LBS/HR (1,546), AIR REQUIRED, SCFM (12,167).

**ANAEROBIC FERMENTER**

Table with columns: 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**

Table with columns: 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**

Table with columns: NO. OF FILTER BASINS (6), FILTER AREA, SQ FT/BASIN (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**

Table with columns: NO. OF PUMPS (5), RATED CAPACITY, MGD/EA (11.25), TOTAL CAPACITY, MGD (54), FIRM CAPACITY, MGD (45).

**CHLORINATION/DECHLORINATION/REAERATION**

Table with columns: FLOCCULATION/1ST STAGE CHLORINE CONTACT BASINS (BASIN VOLUME, GAL: 473,000, CONTACT TIME @ MAX FLOW, MIN: 17), POST CHLORINATION BASIN (BASIN VOLUME, GAL: 649,000, CONTACT TIME @ MAX FLOW, MIN: 23), DECHLORINATION BASIN (BASIN VOLUME, GAL: 51,000, CONTACT TIME @ MAX FLOW, MIN: 2), REAERATION BASIN (BASIN VOLUME, GAL: 153,000, CONTACT TIME @ MAX FLOW, MIN: 5).

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND



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: 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  
AS  
SHOWN

SHEET

6 OF 88

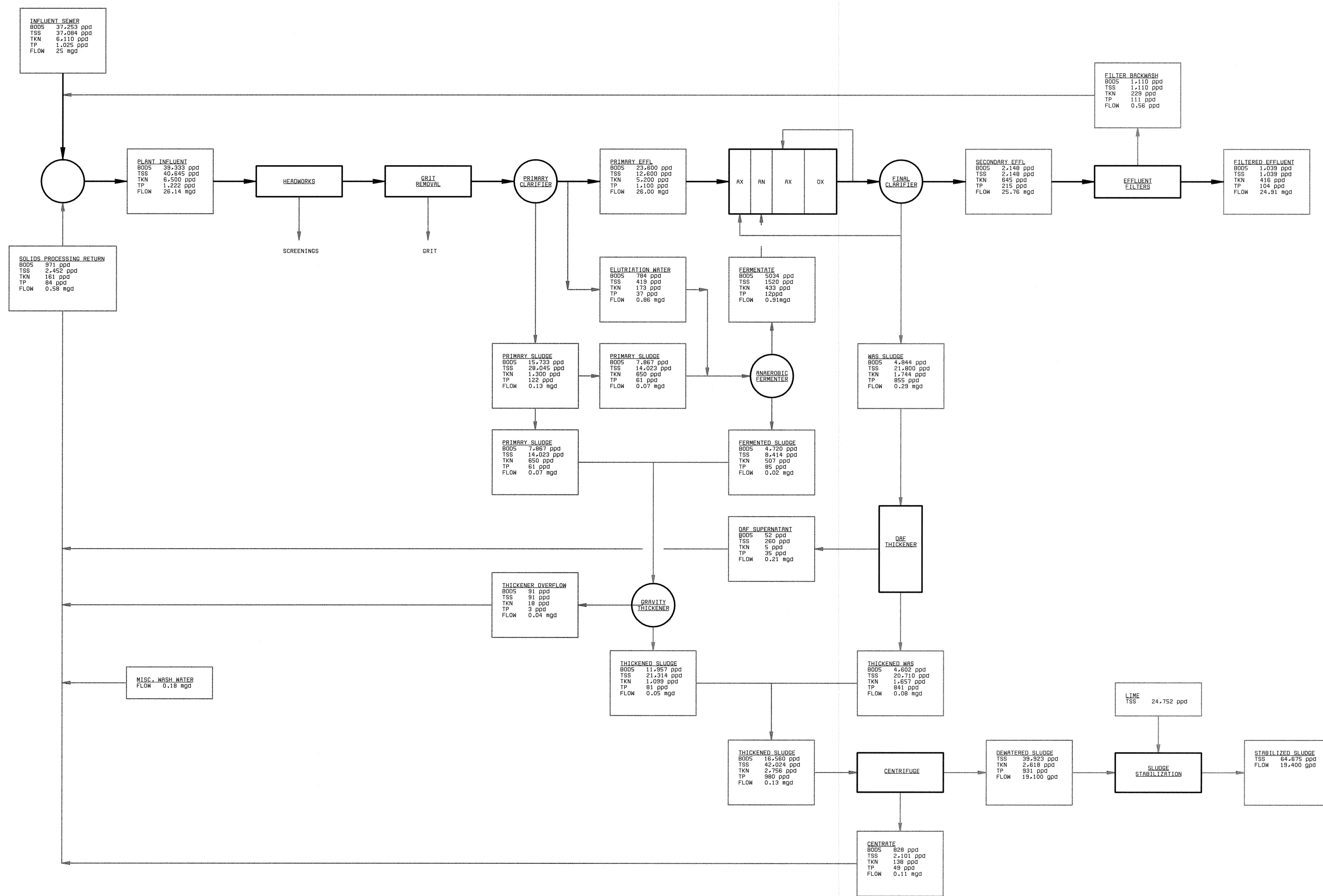
L6

056072.3  
F0559472R

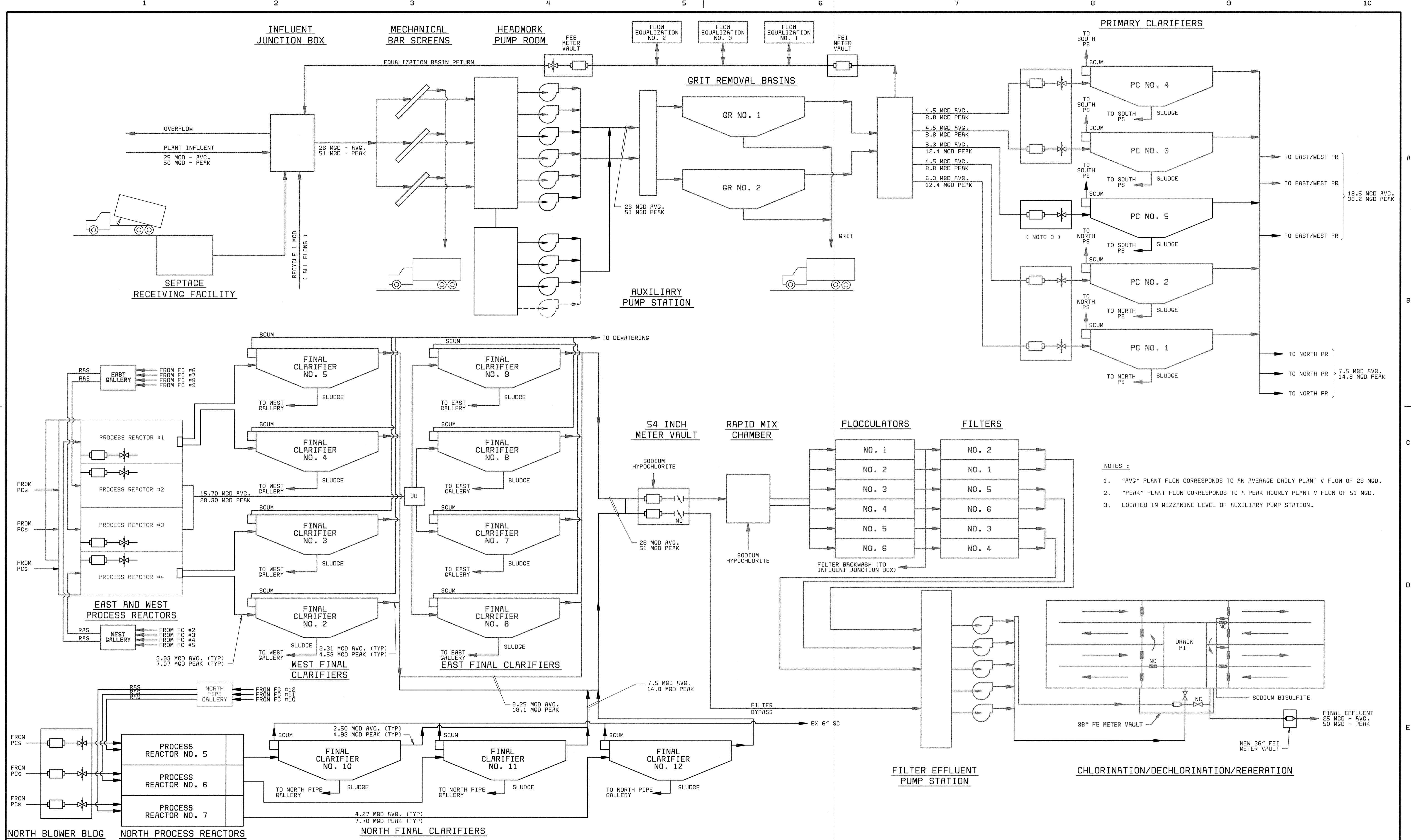


A  
B  
C  
D  
E

A  
B  
C  
D  
E



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> 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: RJR DRN: SLF CHK: WLK DATE: 2/19/01	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">02/06/04</td> <td style="width:40%;">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>NO.</td> <td>BY</td> <td>CK</td> <td>APP</td> <td></td> </tr> </table>	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR	NO.	BY	CK	APP		<b>LAYOUT/OVERVIEW</b> CIVIL  <b>PROCESS MASS BALANCE DIAGRAM</b>	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 7 OF 88  <b>L7</b>
02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR													
NO.	BY	CK	APP														

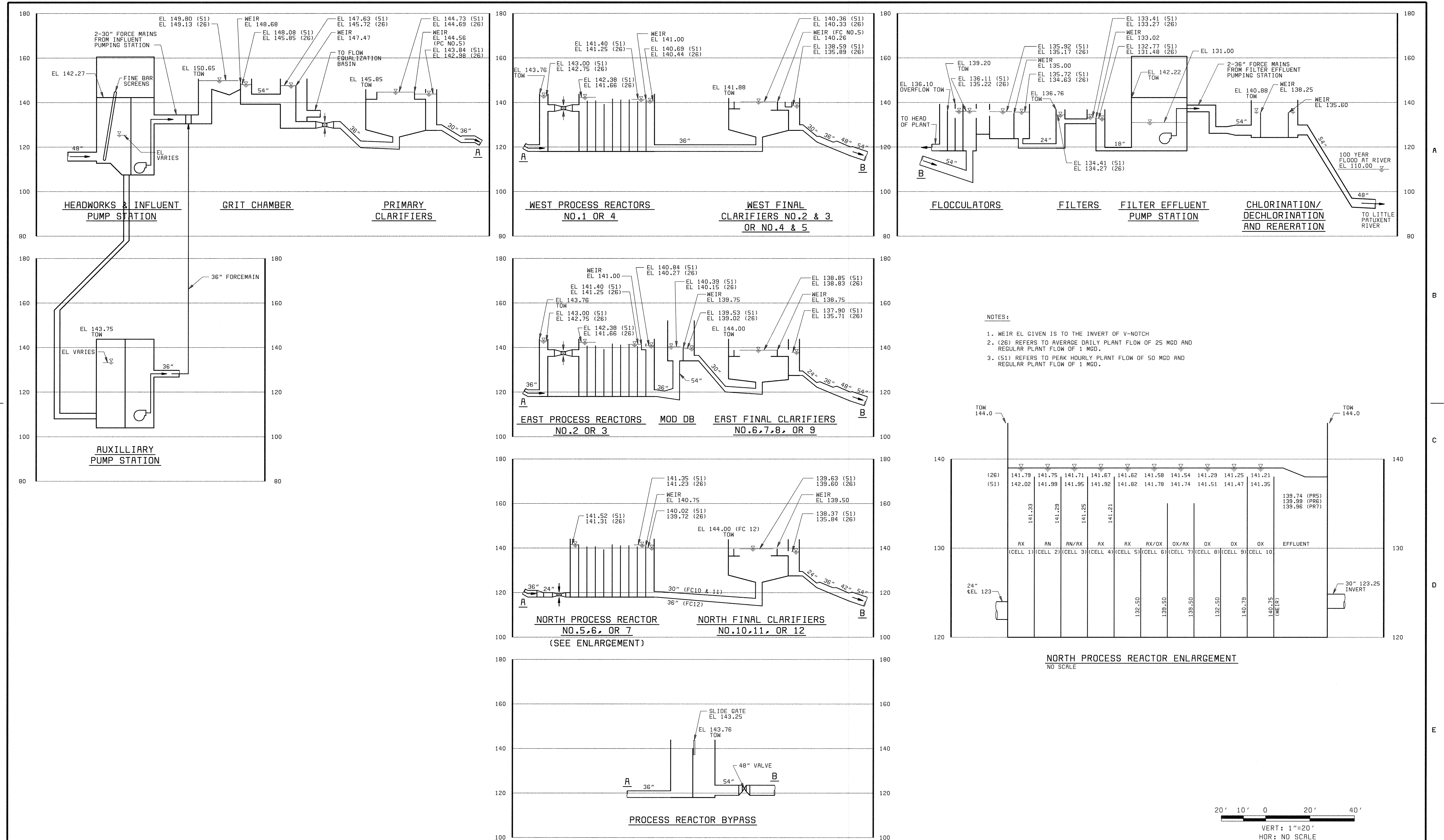


- NOTES :**
1. "AVG" PLANT FLOW CORRESPONDS TO AN AVERAGE DAILY PLANT V FLOW OF 26 MGD.
  2. "PEAK" PLANT FLOW CORRESPONDS TO A PEAK HOURLY PLANT V FLOW OF 51 MGD.
  3. LOCATED IN MEZZANINE LEVEL OF AUXILIARY PUMP STATION.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> 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: FKA			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
			DRN: GRH					SHEET 8 OF 88  L8
			CHK: WLK	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR		
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO. BY CK APP		

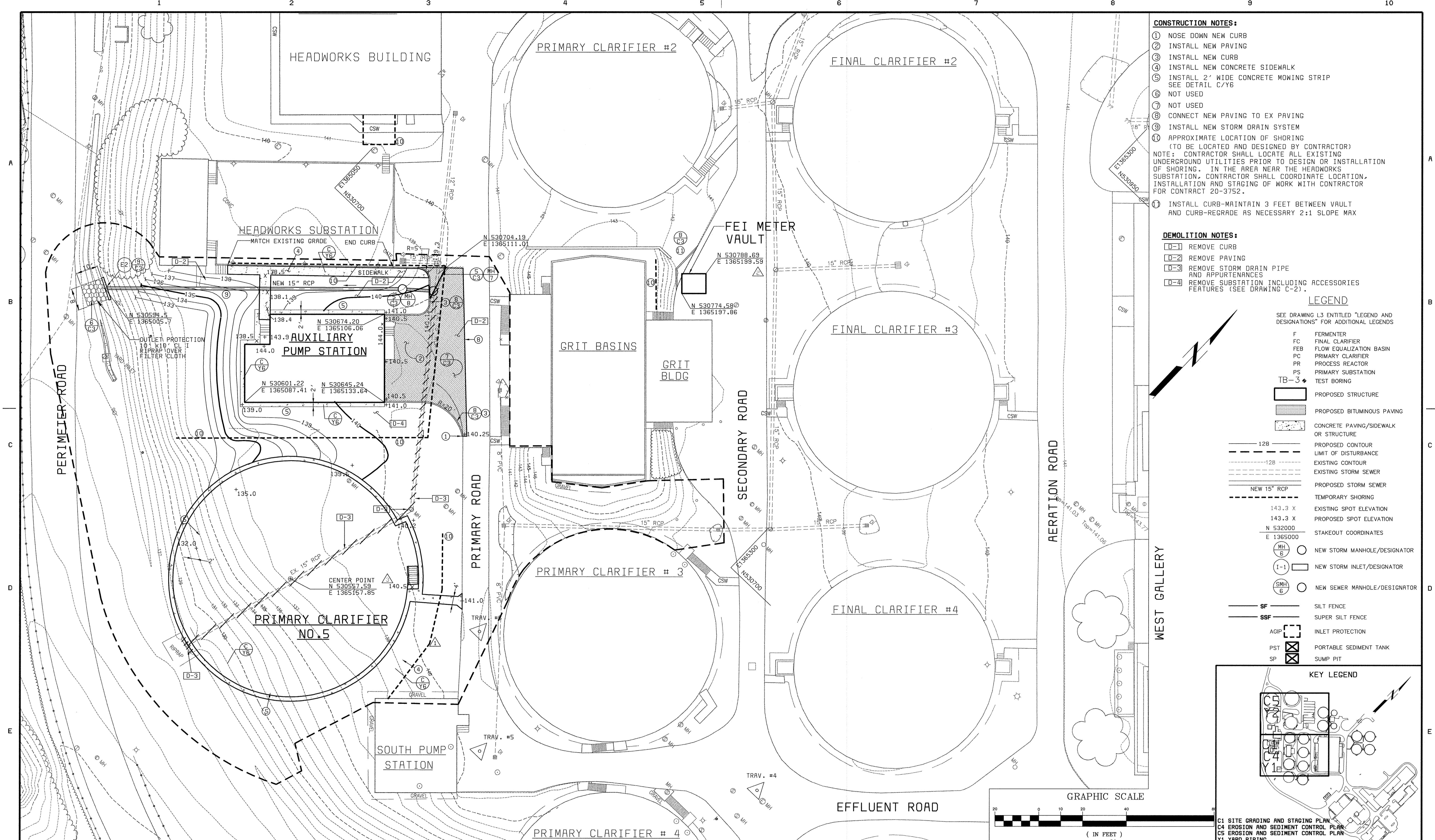
058472.3  
FD58472A





DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> <small>Gaithersburg, Maryland</small>	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: 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	<b>LAYOUT/OVERVIEW CIVIL</b>  <b>HYDRAULIC PROFILE</b>	<b>LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION</b>  CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840  HOWARD COUNTY, MARYLAND	SCALE AS SHOWN  SHEET 9 OF 88  <b>L9</b>
--	--	---	---	---	------------------------------	--	--	--





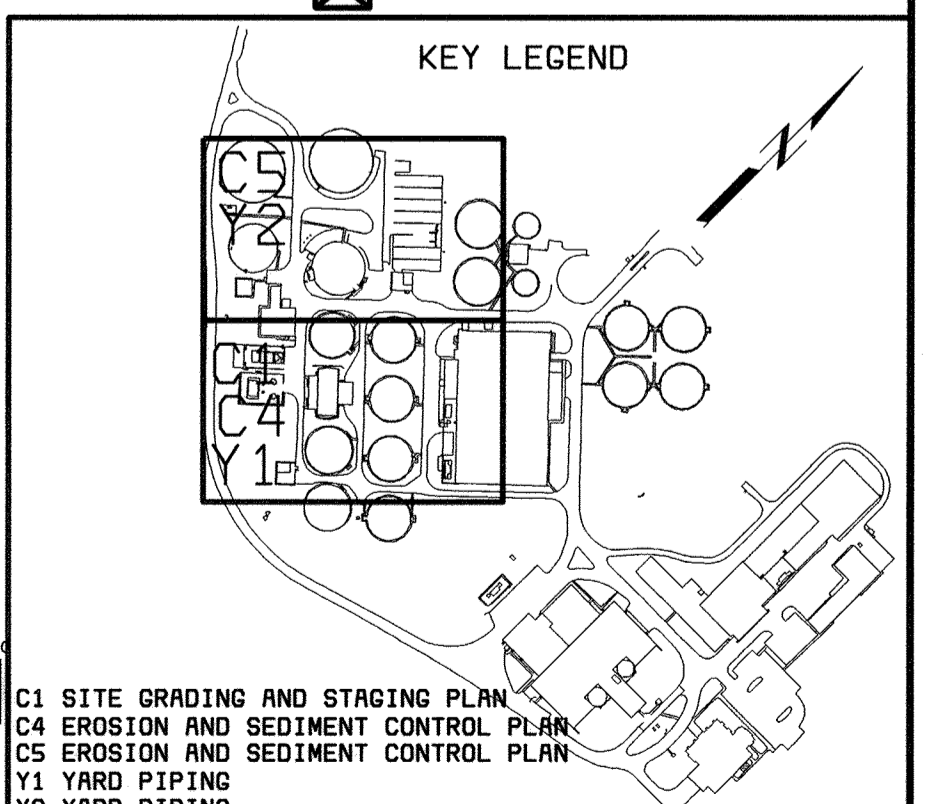
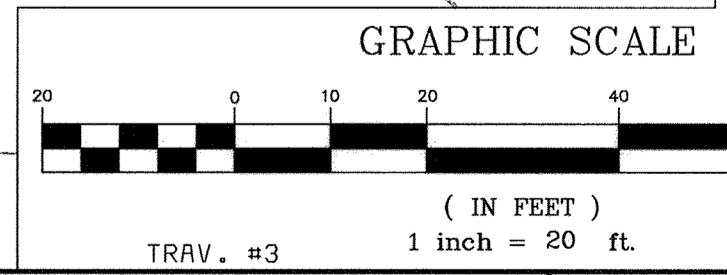
- CONSTRUCTION NOTES:**
- ① NOSE DOWN NEW CURB
  - ② INSTALL NEW PAVING
  - ③ INSTALL NEW CURB
  - ④ INSTALL NEW CONCRETE SIDEWALK
  - ⑤ INSTALL 2' WIDE CONCRETE MOWING STRIP  
SEE DETAIL C/Y6
  - ⑥ NOT USED
  - ⑦ NOT USED
  - ⑧ CONNECT NEW PAVING TO EX PAVING
  - ⑨ INSTALL NEW STORM DRAIN SYSTEM  
(TO 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

WEST GALLERY



C1 SITE GRADING AND STAGING PLAN  
C4 EROSION AND SEDIMENT CONTROL PLAN  
CS 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

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

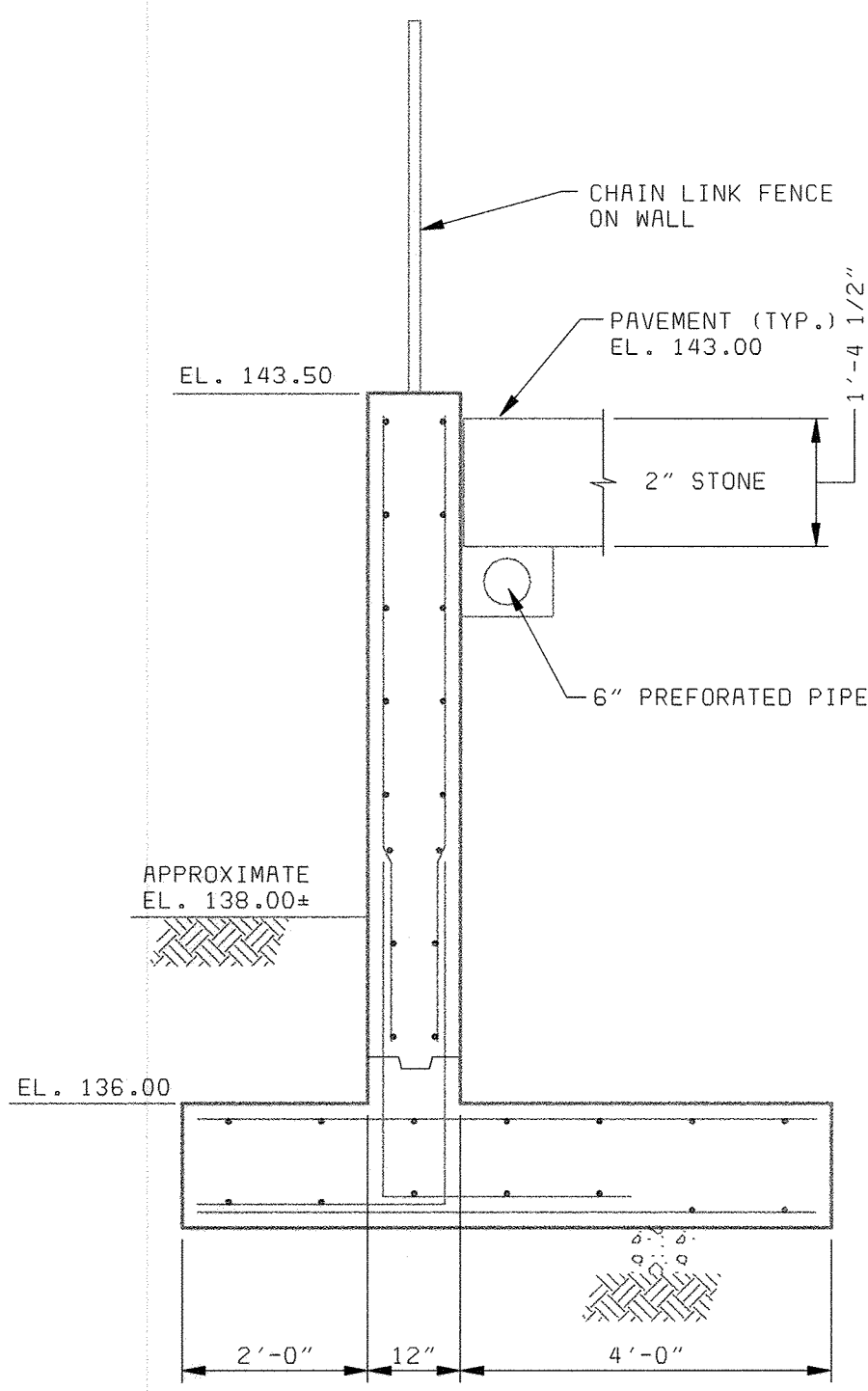
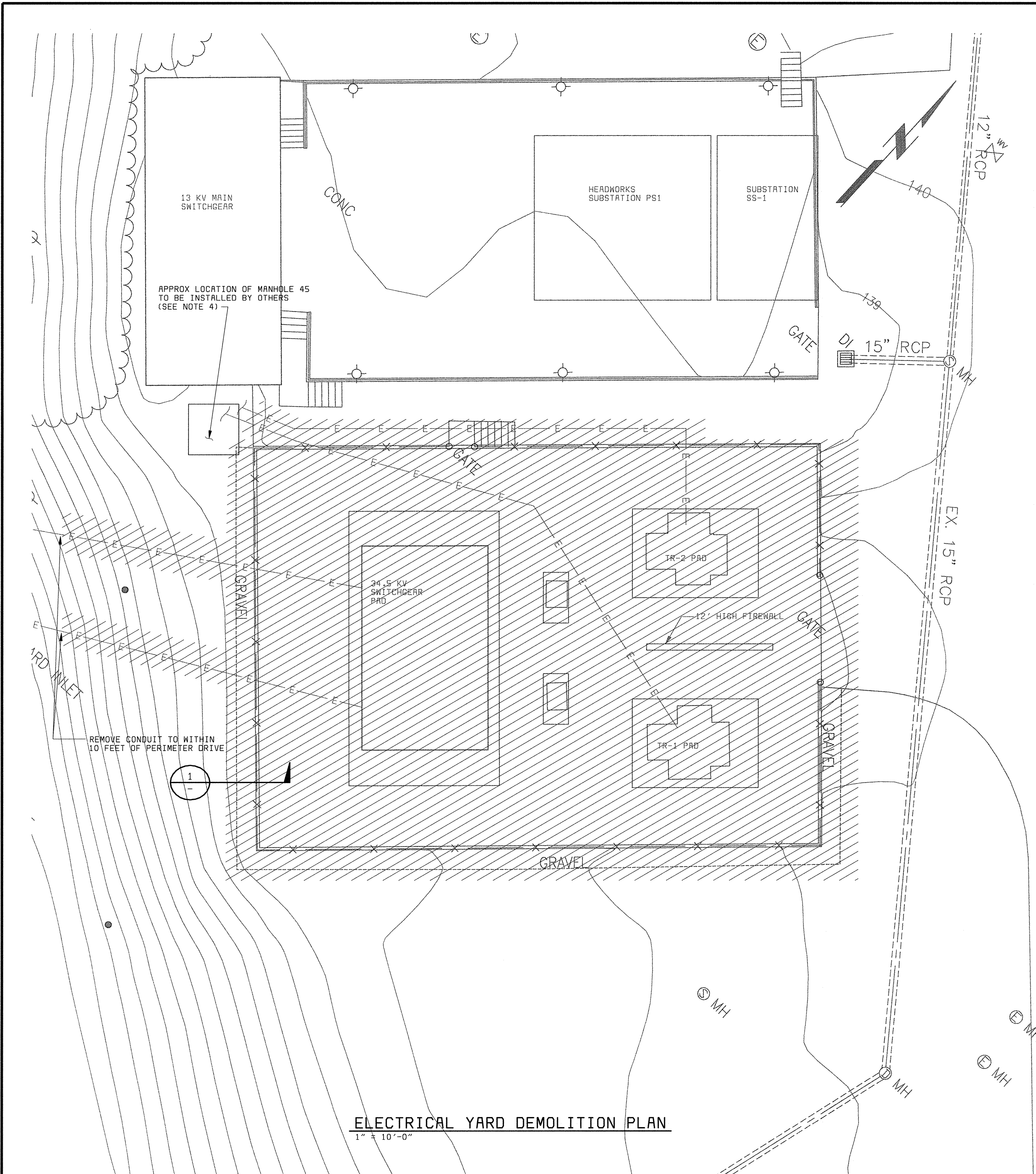
DES: A. REYES					
DRN: R. ANCHORS	05/05/05	CONFORMED TO CONSTRUCTION RECORDS			
CHK: A. REYES	6/12/01	ADDENDUM NO. 1			
DATE: 04/13/01	4/13/01	REVISED LOCATION OF SHORING			
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

SITE WORK  
CIVIL  
SITE GRADING AND STAGING PLAN

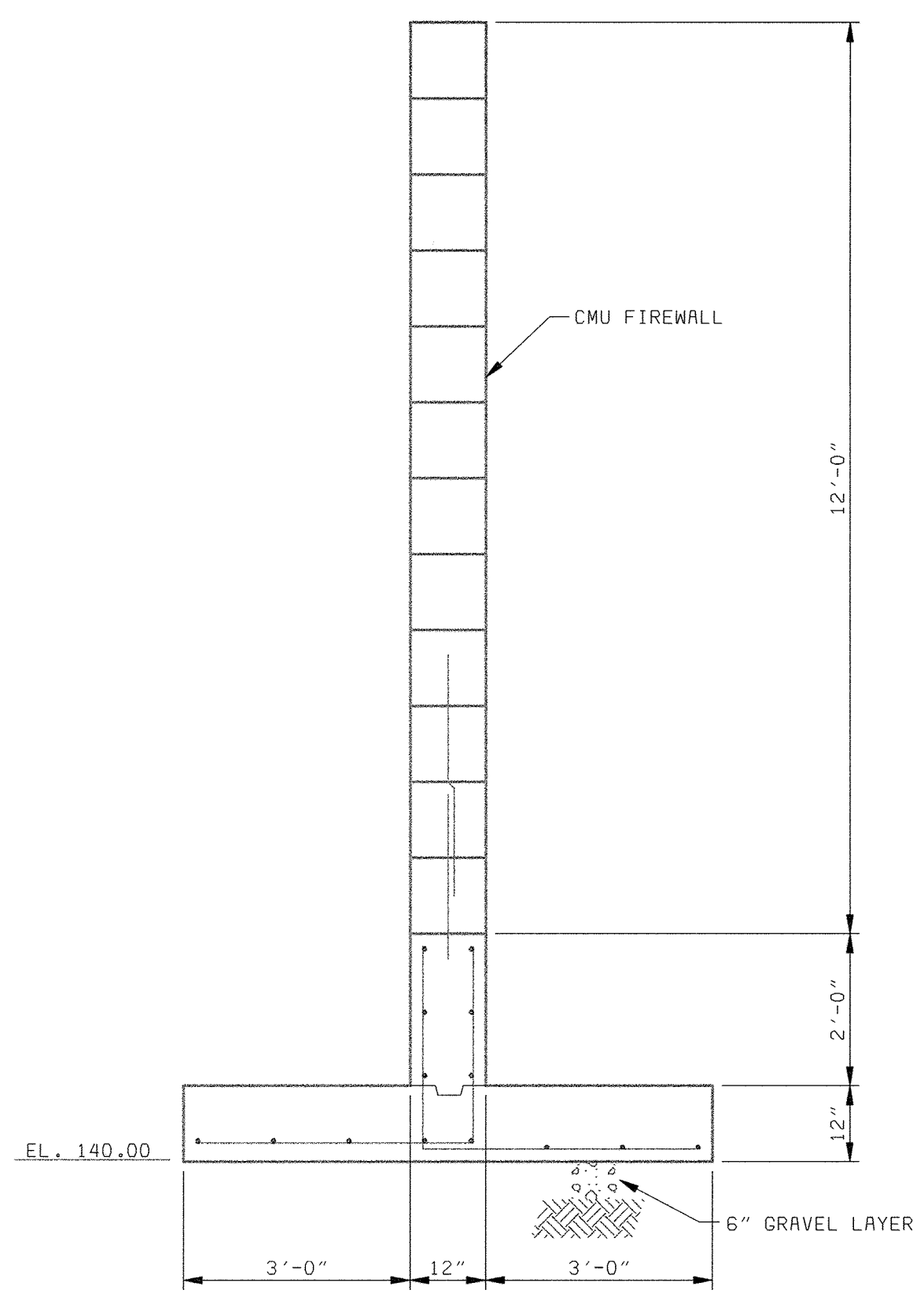
LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
PRELIMINARY AND PRIMARY TREATMENT EXPANSION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3840  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN  
SHEET  
10 OF 88  
**C1**



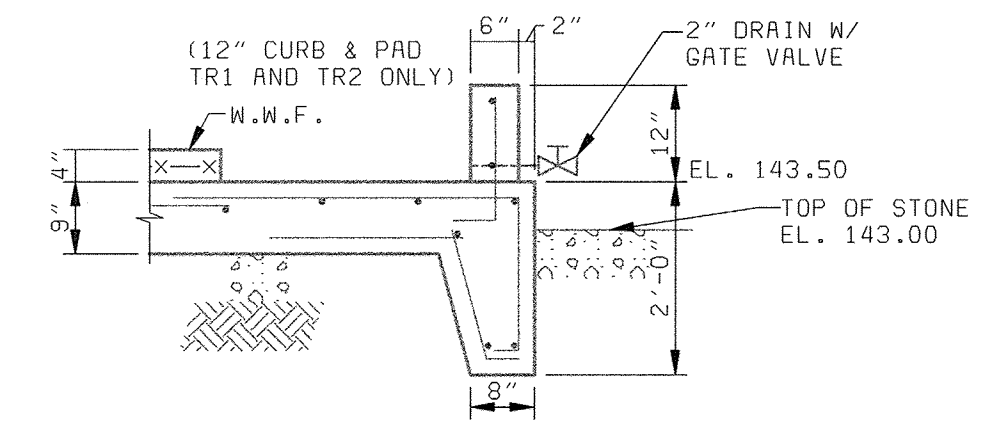


**SECTION (TO BE REMOVED)**  
1/2" = 1'-0"



**FIREWALL DETAIL (TO BE REMOVED)**  
1/2" = 1'-0"

- NOTES:**
- 7500 KVA 34.5KV - 13.2KV TRANSFORMERS, GROUNDING RESISTORS, AND 34.5 KV SWITCHGEAR TO BE REMOVED BY OTHERS. CONTRACTOR SHALL DEMOLISH FENCE, RETAINING WALLS, FOUNDATIONS, DRAINS, EQUIPMENT PADS, CONDUITS, GROUNDING AND UNDERGROUND DUCT BANKS TO THE LIMITS INDICATED ON THE ELECTRICAL DEMOLITION PLAN.
  - LOCATIONS OF UNDERGROUND CONDUITS INDICATED ON ELECTRICAL DEMOLITION PLAN ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ACTUAL LOCATIONS.
  - FOR DEMOLITION/RELOCATION OF PROCESS AND STORMWATER PIPING, SEE SHEETS Y1 AND C1, RESPECTIVELY.
  - MANHOLE 45 UNDER 20-3752. CONTRACTOR TO DEMOLISH ABANDONED CONDUITS AND DUCT BANK FROM MH 45 TO ELECTRICAL YARD. COORDINATE WITH INSTALLATION OF NEW DUCT BANK TO P65 & P66 UNDER 20-3752.

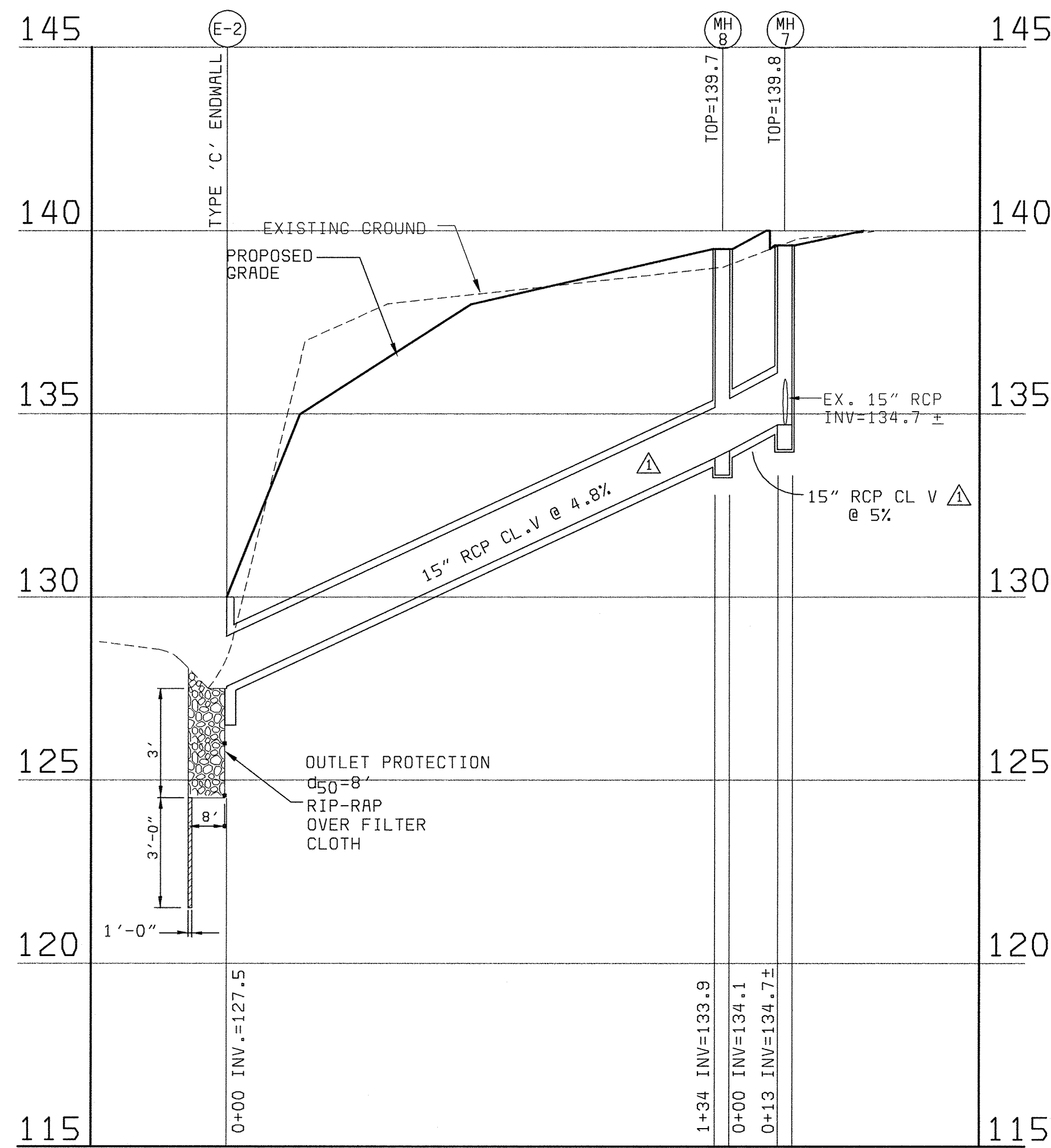


**TYPICAL PAD DETAIL (TO BE REMOVED)**  
1/2" = 1'-0"

**ELECTRICAL YARD DEMOLITION PLAN**  
1" = 10'-0"

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> 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,WEB								<b>SITWORK CIVIL</b>	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION	SCALE AS SHOWN
			DRN: RM										
			CHK: WLK								<b>ELECTRICAL YARD DEMOLITION PLAN</b>	CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840  HOWARD COUNTY, MARYLAND	C2
			DATE: 2/19/01										

058472\_3  
FD58472A

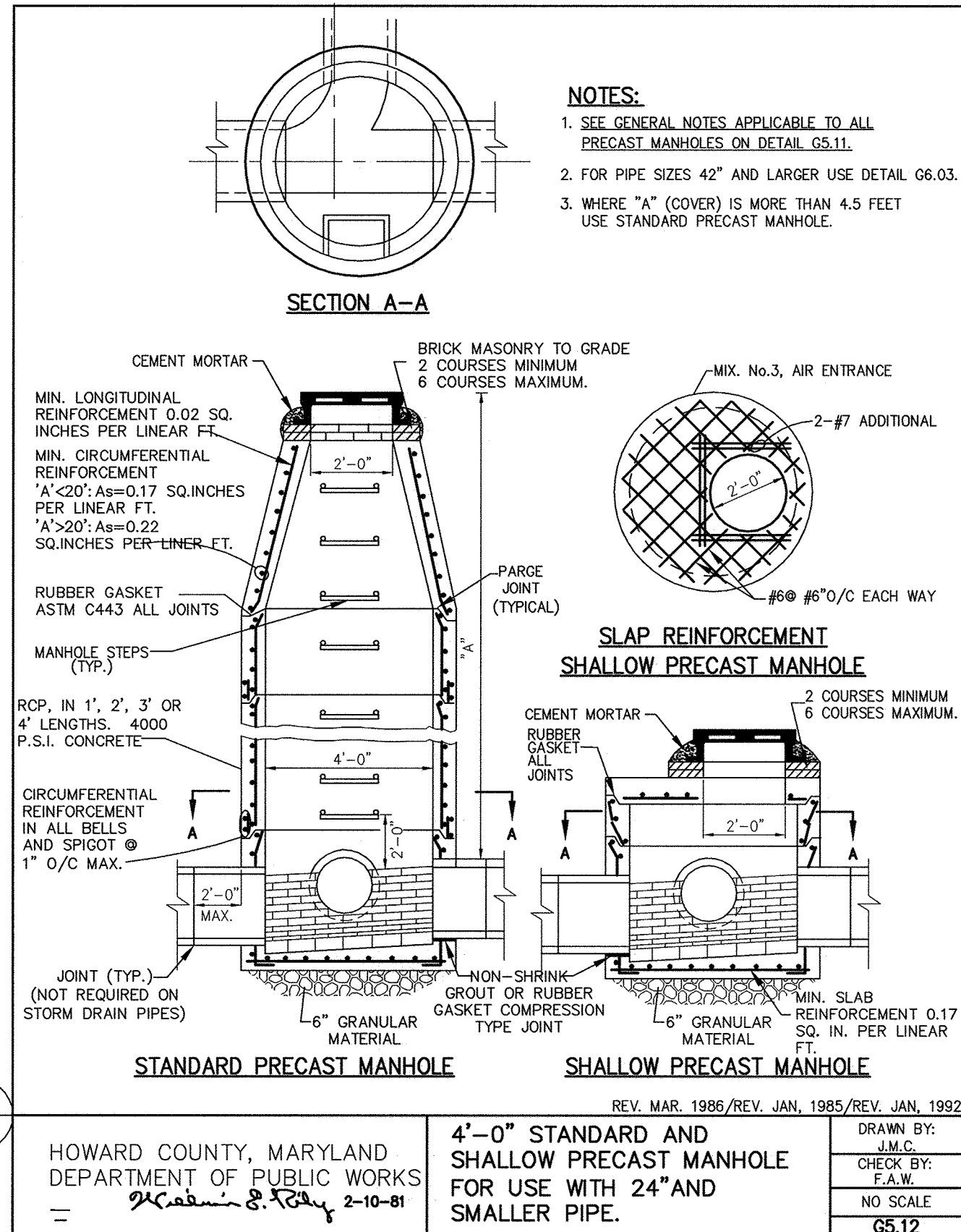


**STORM PROFILE**

SCALE: 1"=30' HORIZONTAL  
1"= 3' VERTICAL

STRUCTURE SCHEDULE					
No.	STRUCTURE	INVERT IN	INVERT OUT	TOP ELEV.	REMARKS
MH-7	MANHOLE	134.7 ±	134.7 ±	139.8	HO. Co. G5.12
MH-8	MANHOLE	134.1	133.8	139.7	HO. Co. G5.12
E-2	ENDWALL	-	127.5	-	HO. Co. SD-5.21

PIPE SCHEDULE	
△	15" RCP CL. V 147 LF

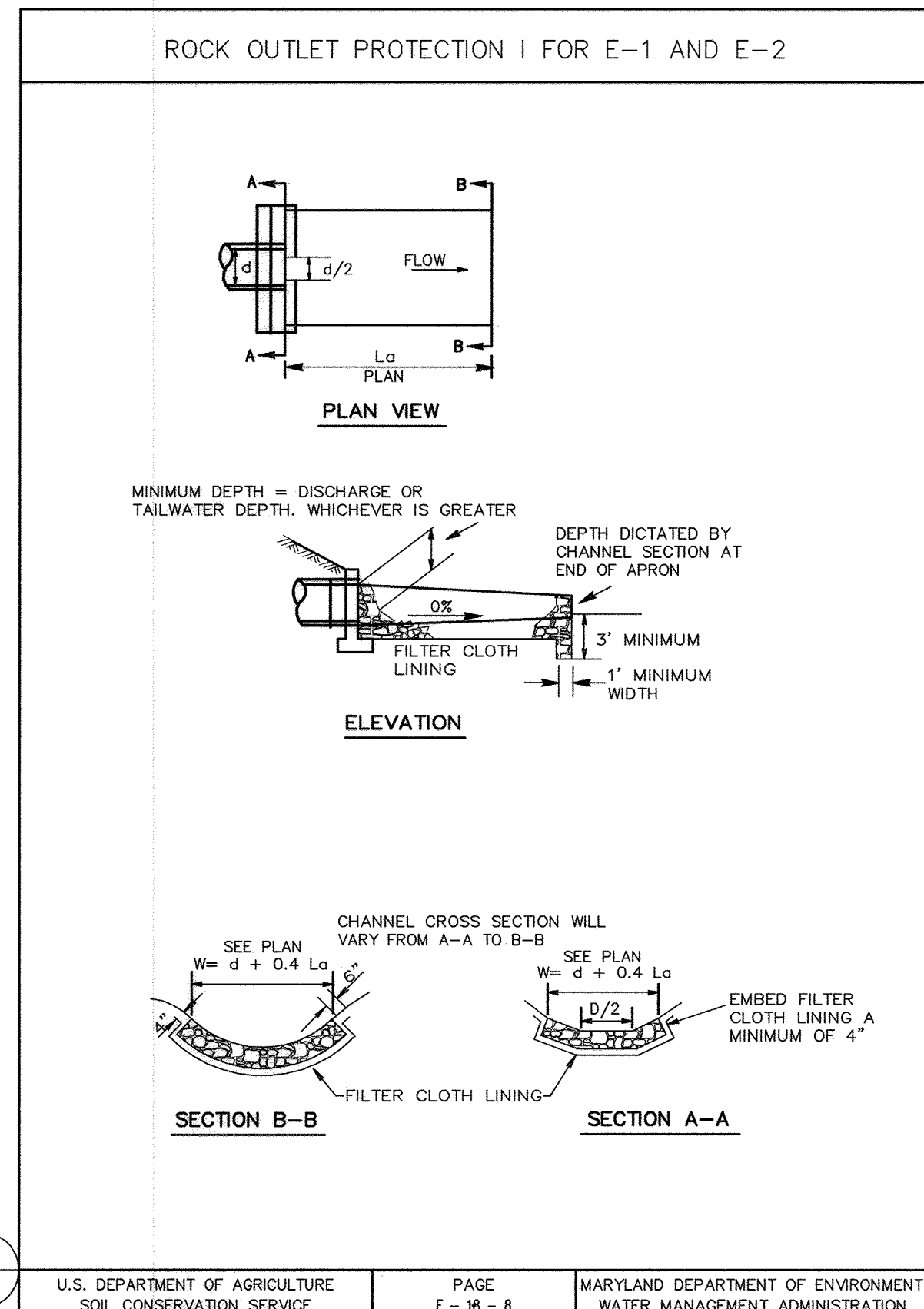


HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
2-10-81

4'-0" STANDARD AND SHALLOW PRECAST MANHOLE FOR USE WITH 24" AND SMALLER PIPE.

REV. MAR. 1986/REV. JAN. 1985/REV. JAN. 1992

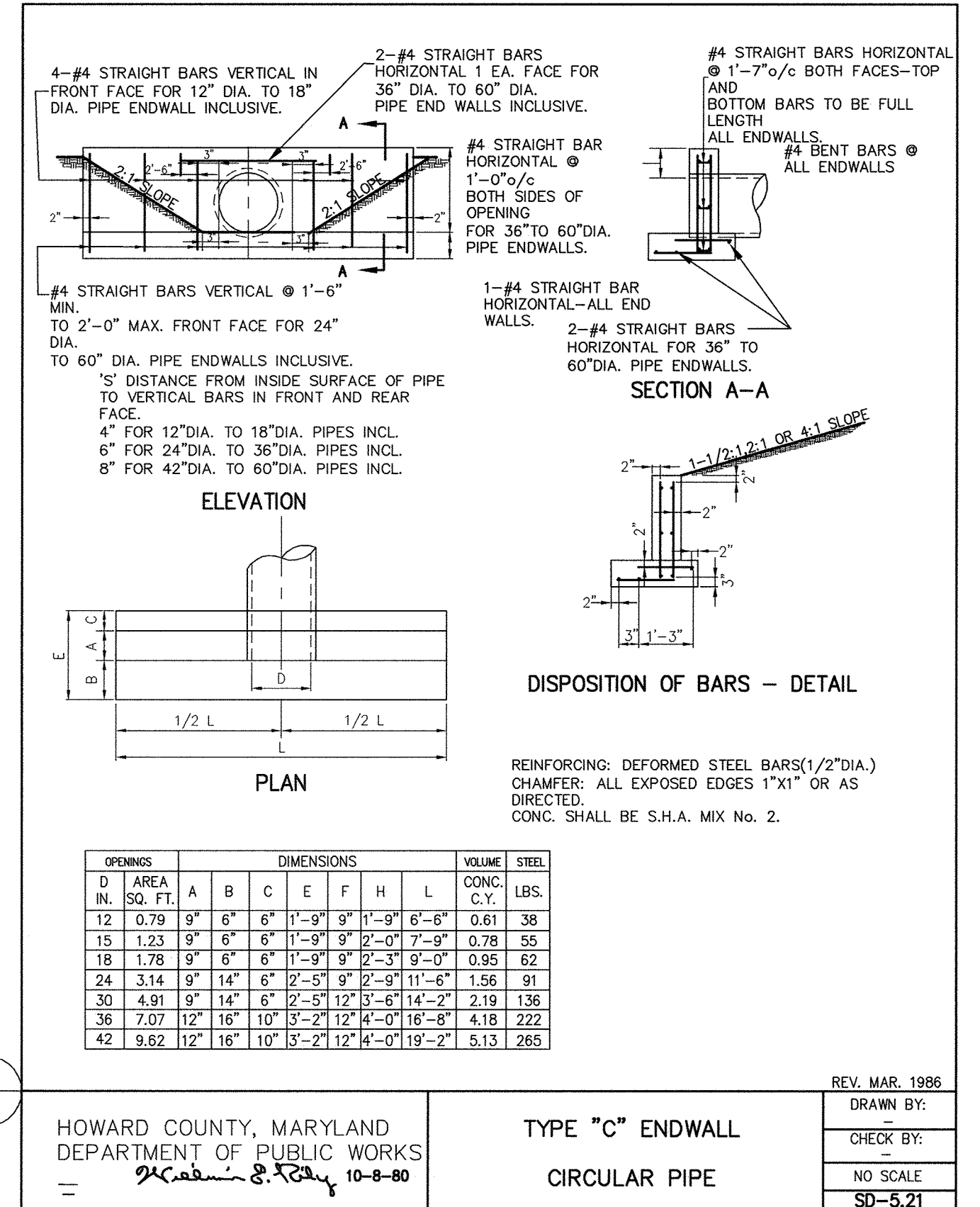
DRAWN BY: J.M.C.  
CHECK BY: F.A.W.  
NO SCALE  
G5.12



U.S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

PAGE F-16-8

MARYLAND DEPARTMENT OF ENVIRONMENT  
WATER MANAGEMENT ADMINISTRATION

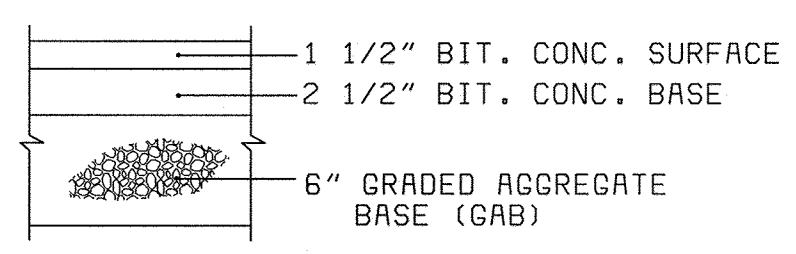


HOWARD COUNTY, MARYLAND  
DEPARTMENT OF PUBLIC WORKS  
10-8-80

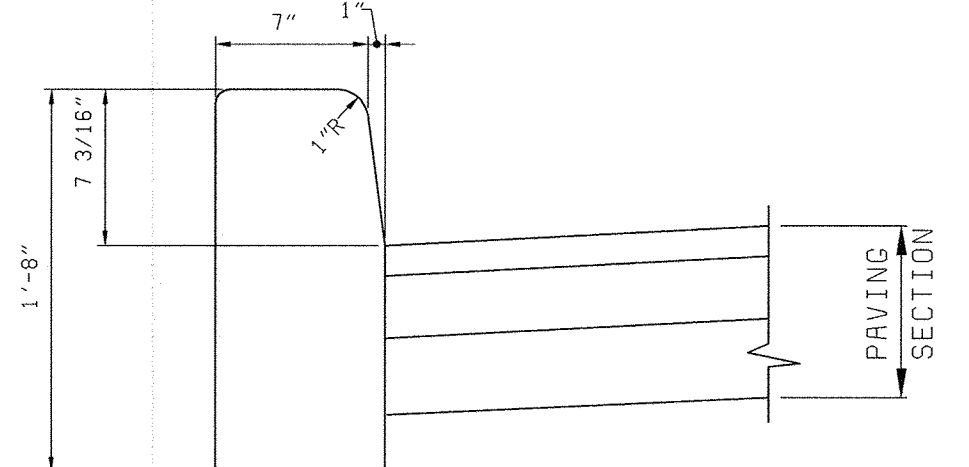
TYPE "C" ENDWALL  
CIRCULAR PIPE

REV. MAR. 1986

DRAWN BY: [Signature]  
CHECK BY: [Signature]  
NO SCALE  
SD-5.21



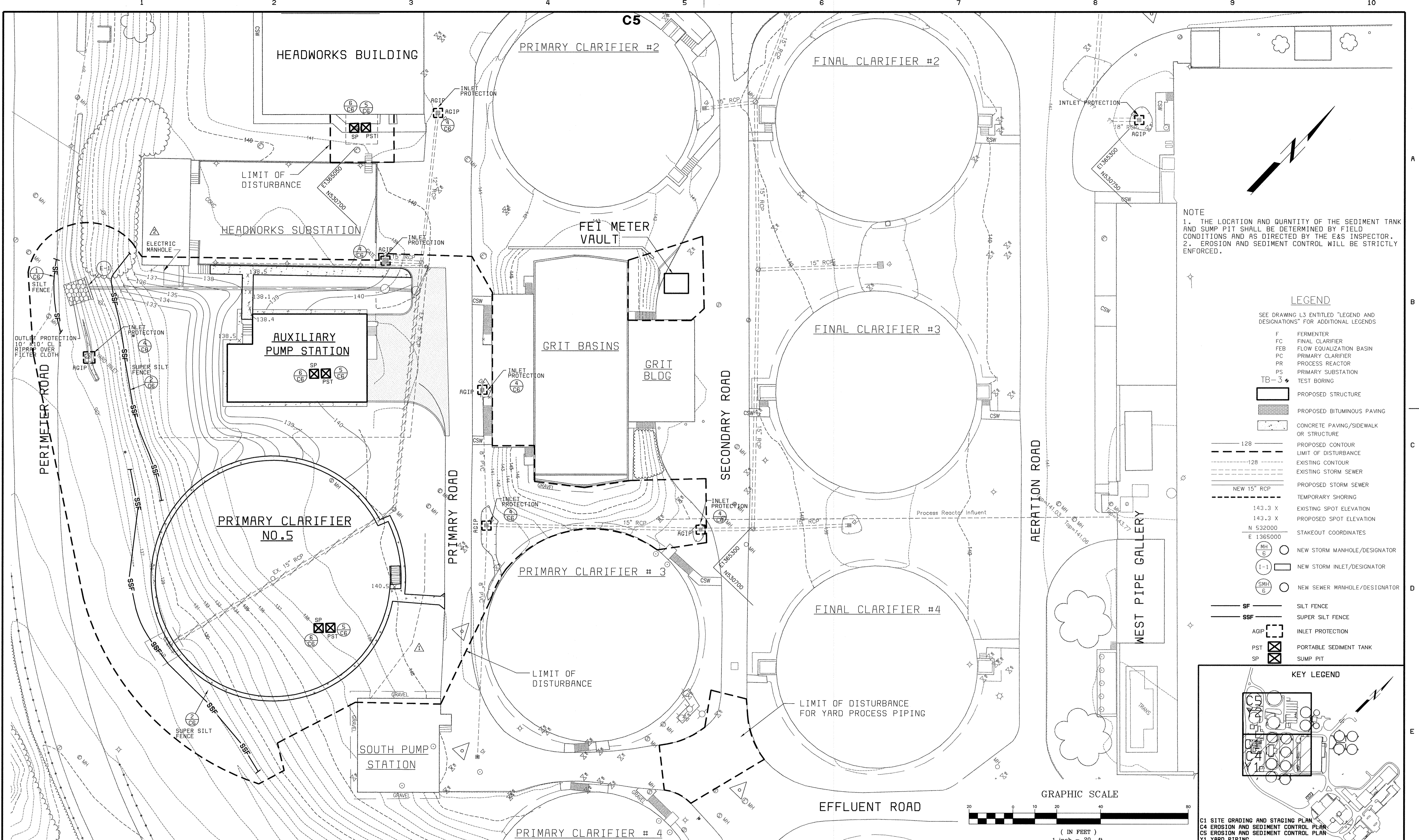
7 PAVING DETAIL



8 CURB DETAIL

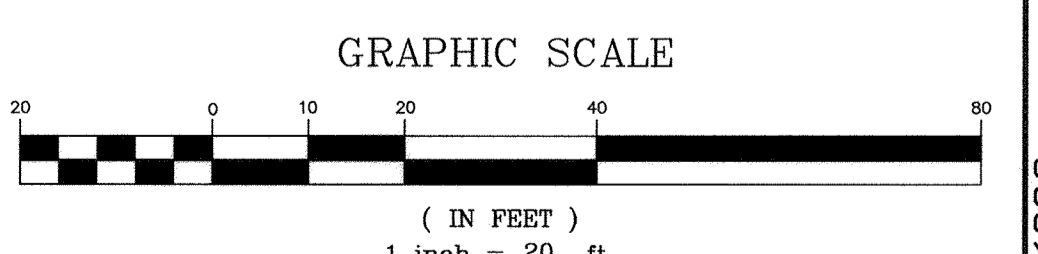
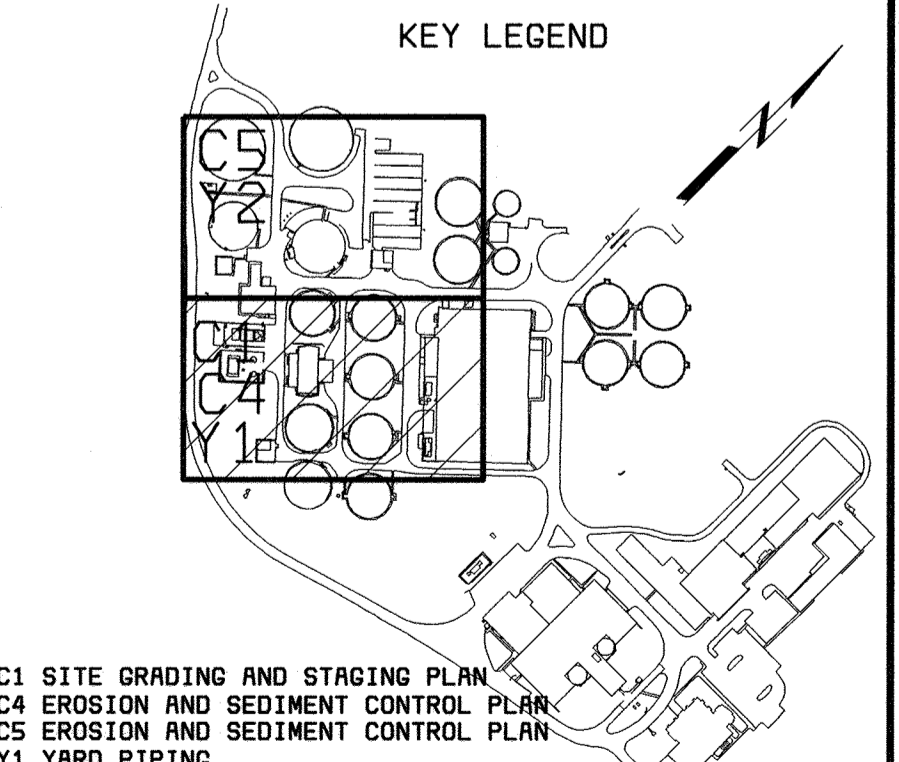
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  <b>AMT</b> A. MORTON THOMAS AND ASSOCIATES, INC. CONSULTING ENGINEERS 12750 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE MD 20852 TEL (301) 881-2545 FAX (301) 881-8814 E-MAIL JBYRNE@AMTENGINEERING.COM AMT FILE # 98-154	<b>BLACK &amp; VEATCH</b> L.P. Gaithersburg, Maryland  THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MICHAEL JOSEPH WIERCINSKI A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21816 REG. PROF. ENGR. DATE	DES: A. REYES DRN: R. ANCHORS CHK: A. REYES DATE: 04/13/01	CIVIL  STORM SEWER PROFILES AND DETAILS	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 12 OF 88 <b>C3</b>
		5/05/05 CONFORMED TO CONSTRUCTION RECORDS DATE REVISIONS AND RECORD OF ISSUE	△ RHH/RJR/RJR NO. BY CK APP	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 12 OF 88 <b>C3</b>





**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
  - 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
  - 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
  - SMH 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

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@AMTEngineering.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. 21616

DES: A. REYES					
DRN: R. ANCHORS					
CHK: A. REYES	5/05/05	CONFORMED TO CONSTRUCTION RECORDS			
	04/13/01	REVISED LOCATION OF SHORING			
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

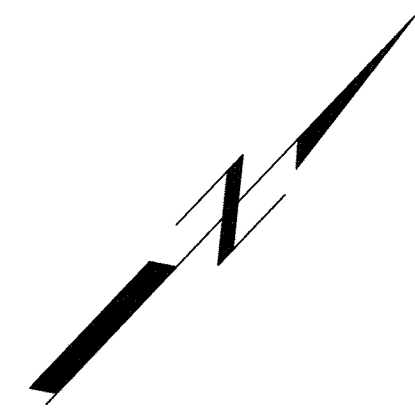
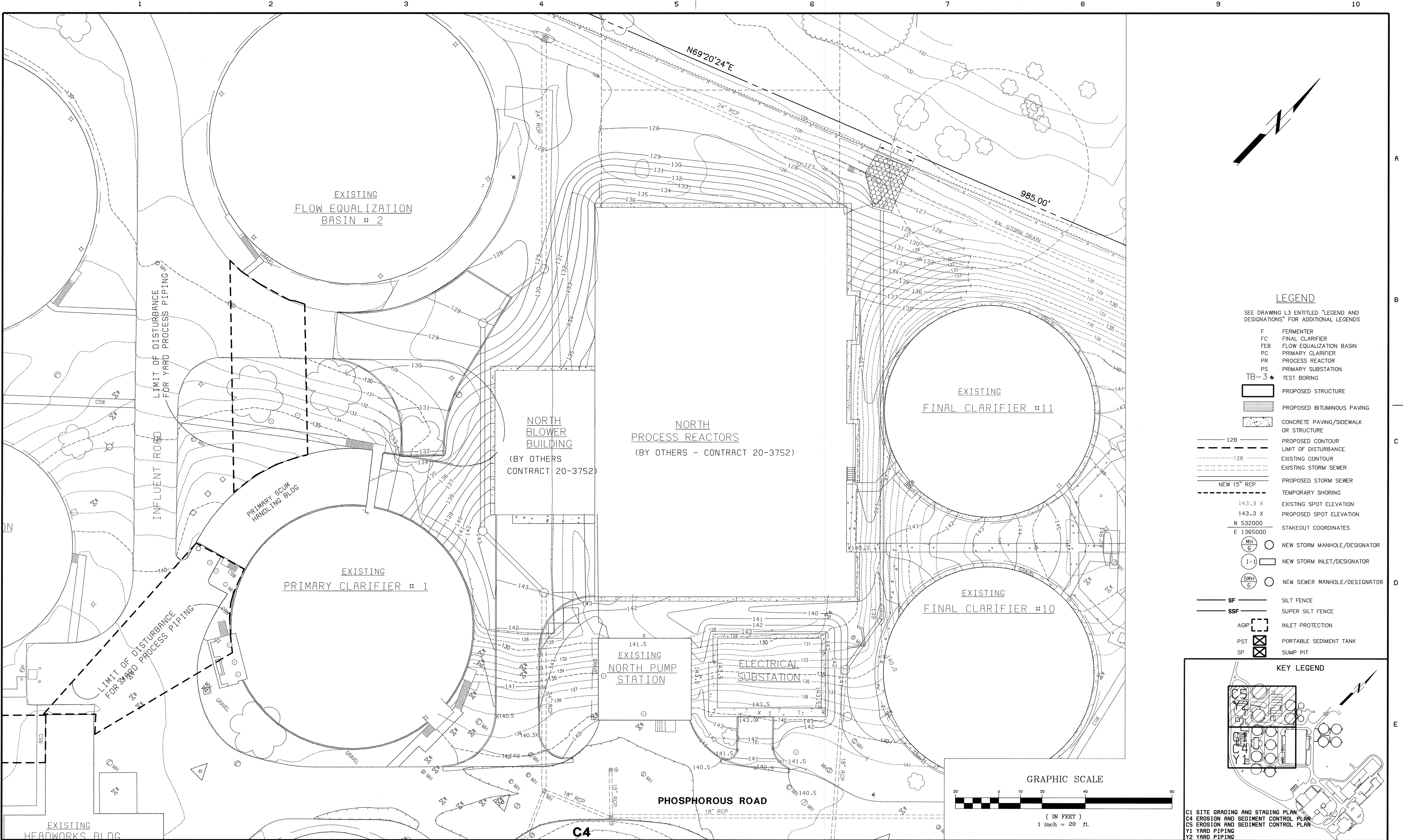
CAPITAL PROJECT S-6205  
 CONTRACT NO. 20-3840  
 ELECTION DISTRICT NO. 6  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

SHEET 13 OF 88

**C4**



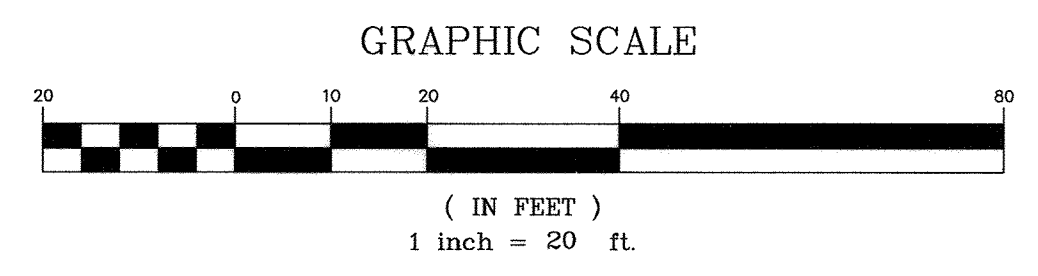
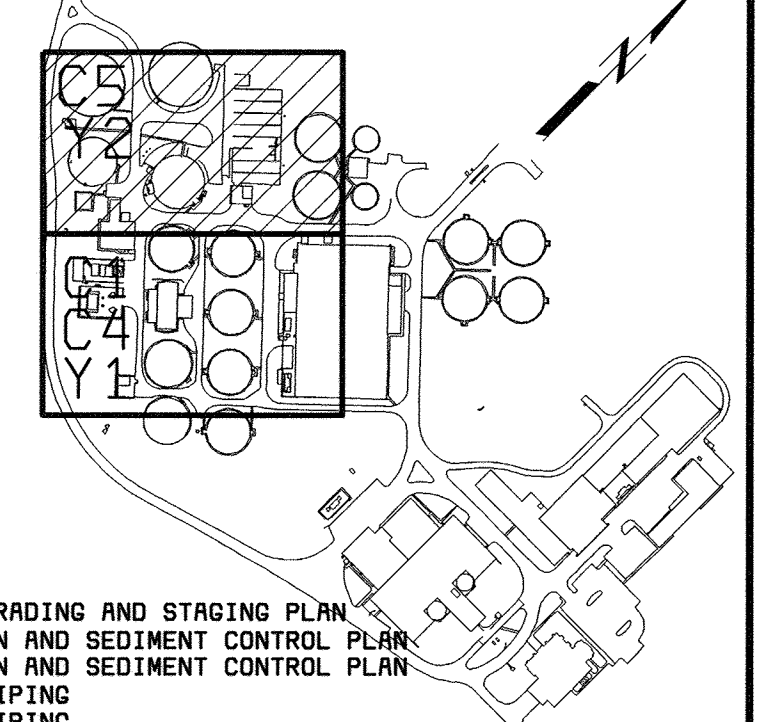


**LEGEND**

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

- F FERMENTER
- 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
- 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

**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@AMTENGINEERING.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. 21816

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

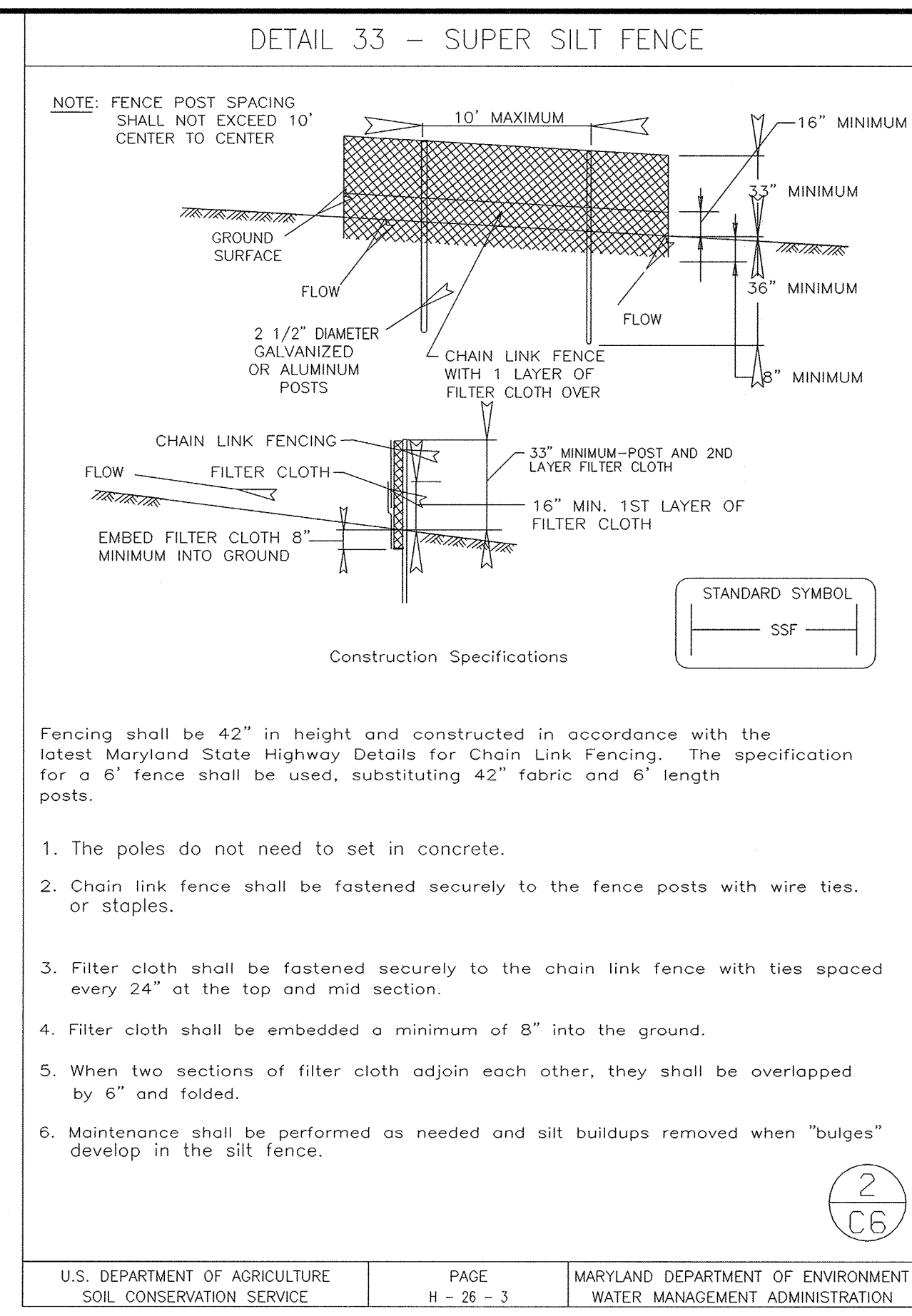
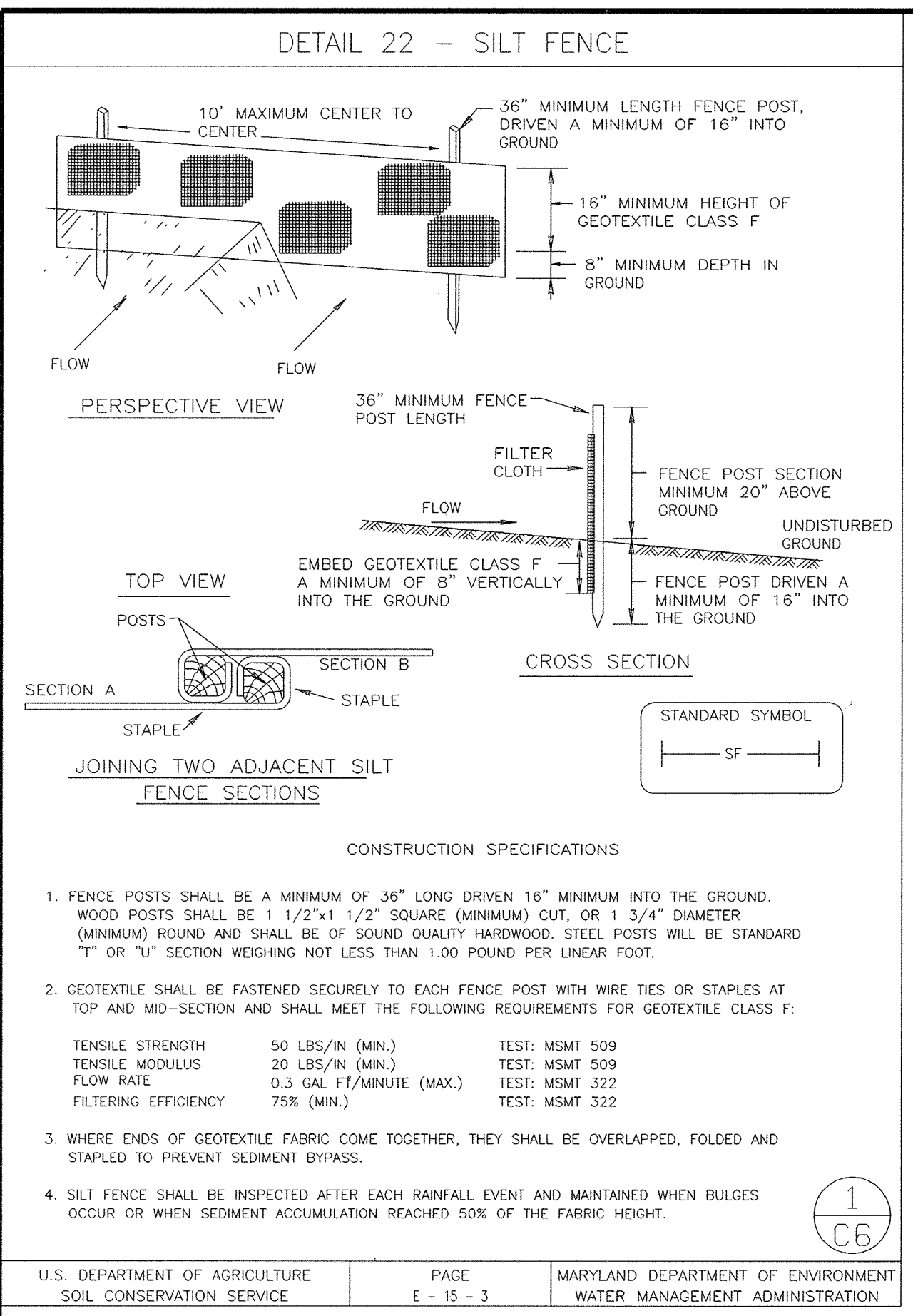
CIVIL  
**EROSION AND SEDIMENT CONTROL  
 PLAN - SHEET 2 OF 2**

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 SHOWN  
 SHEET 14 OF 88  
**C5**

056947Z  
 F059472A





### 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.

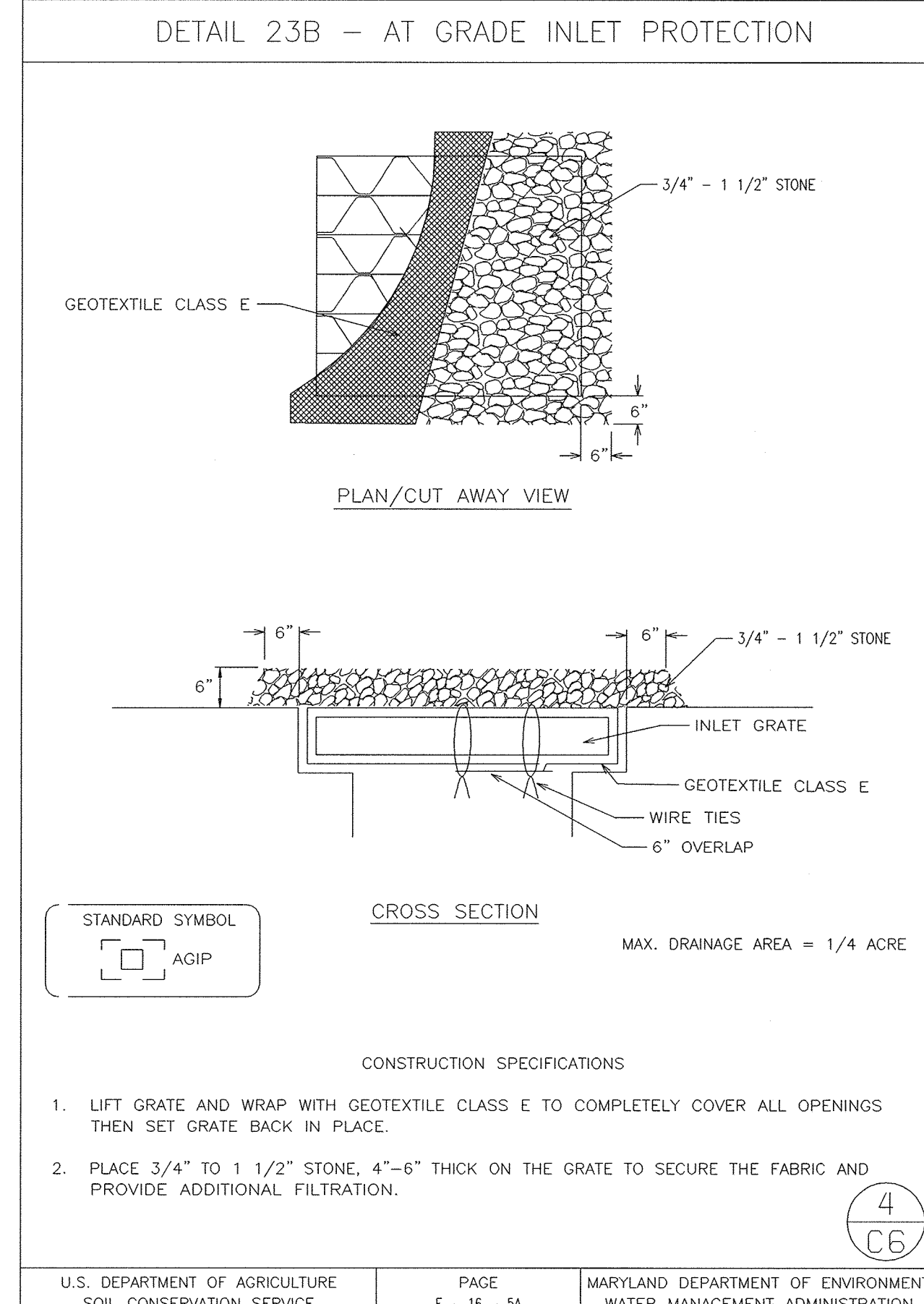
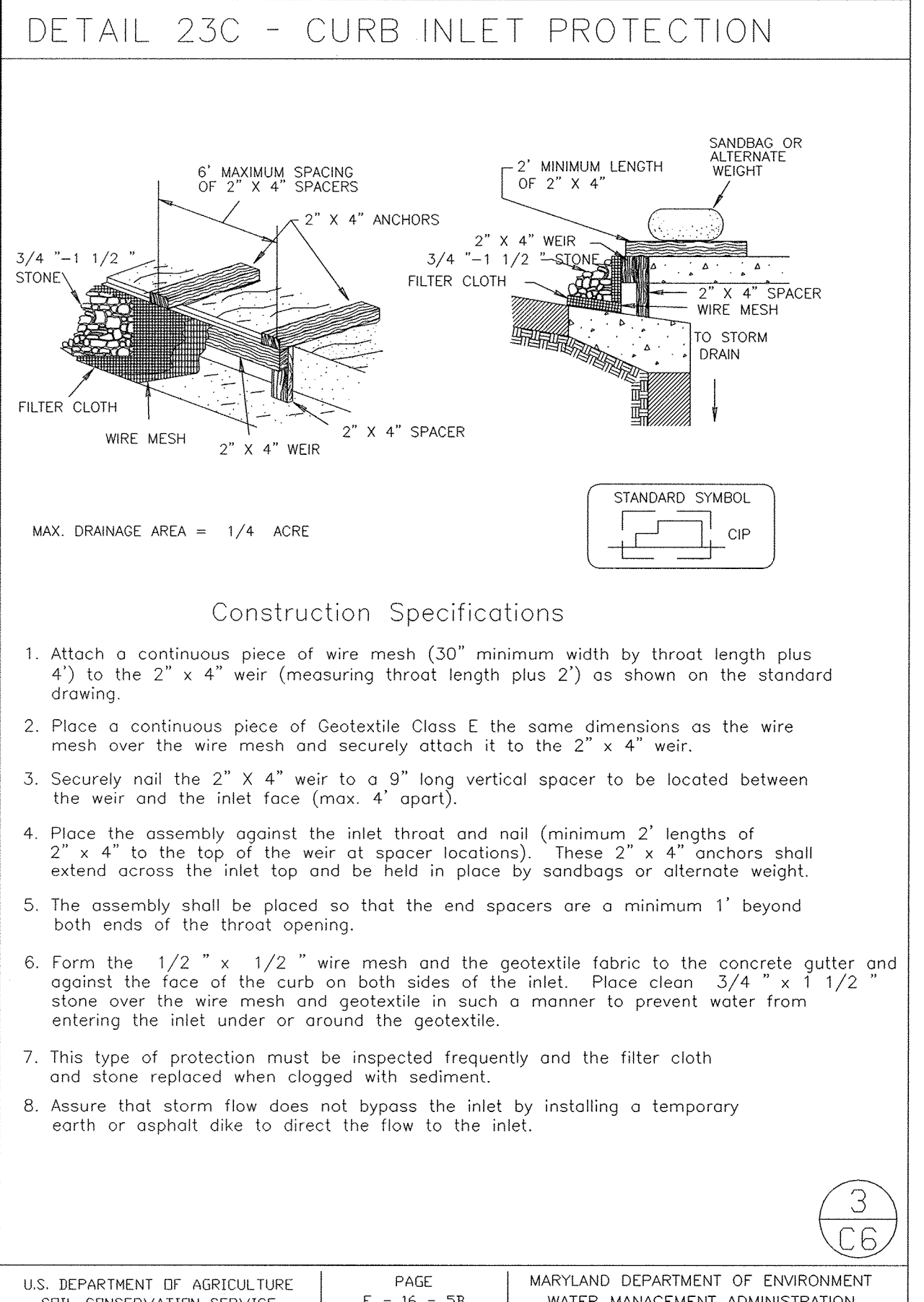
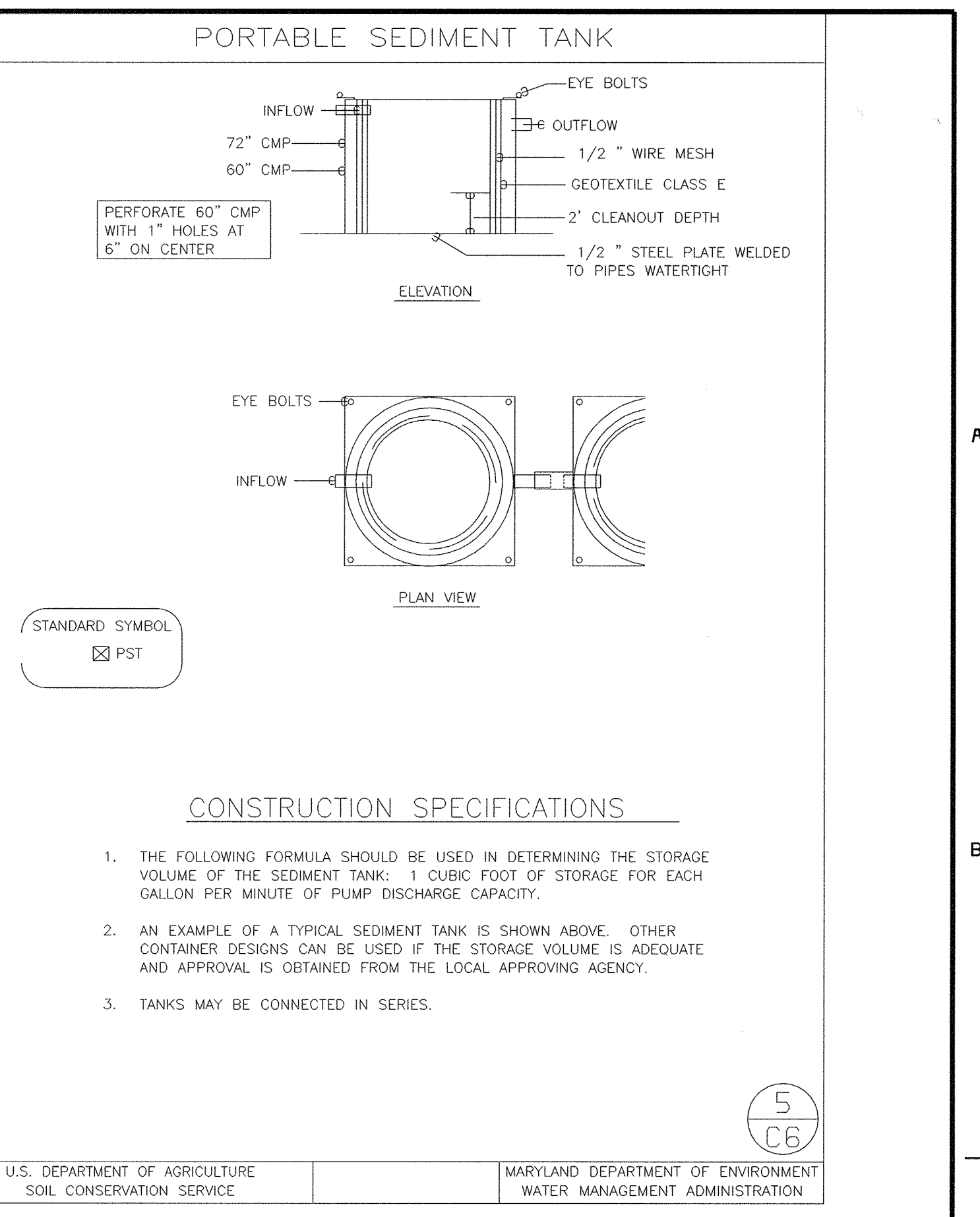
REFER TO THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR ADDITIONAL RATES AND METHODS NOT COVERED.

### 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:**

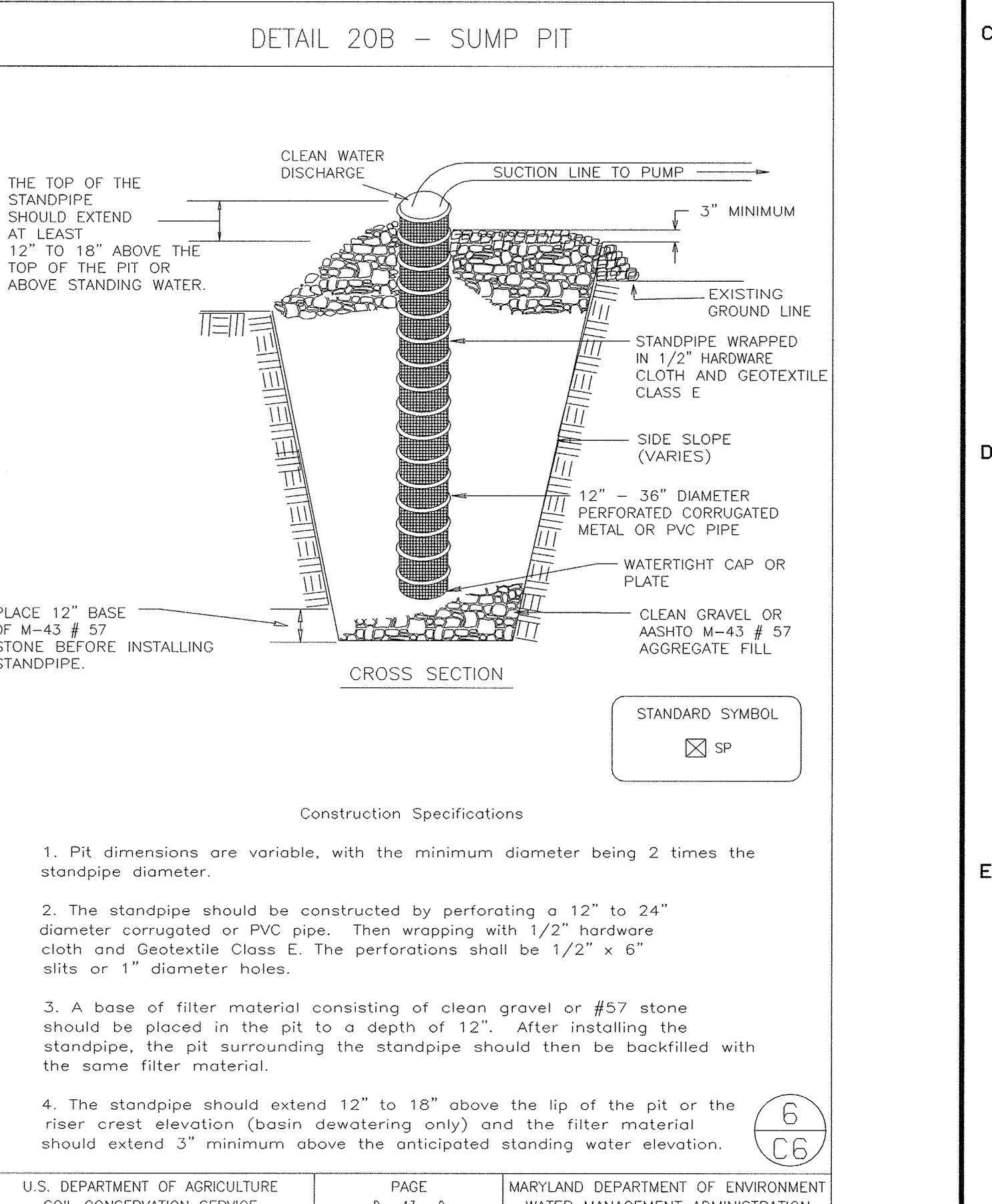
TOTAL AREA OF SITE	38.01 ACRES
AREA DISTURBED	0.75 ACRES
AREA TO BE ROOFED OR PAVED	0.33 ACRES
AREA TO BE VEGETATIVELY STABILIZED	0.42 ACRES
TOTAL CUT	3000 CU. YDS. **
TOTAL FILL	2000 CU. YDS. **
OFFSITE WASTE/BORROW AREA LOCATION	2500 CU. YDS. **

\*\* 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.

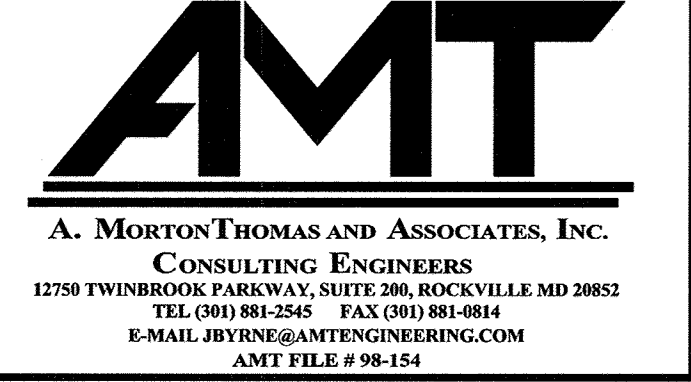


### SEQUENCE OF CONSTRUCTION ACTIVITIES

- 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.



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, 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

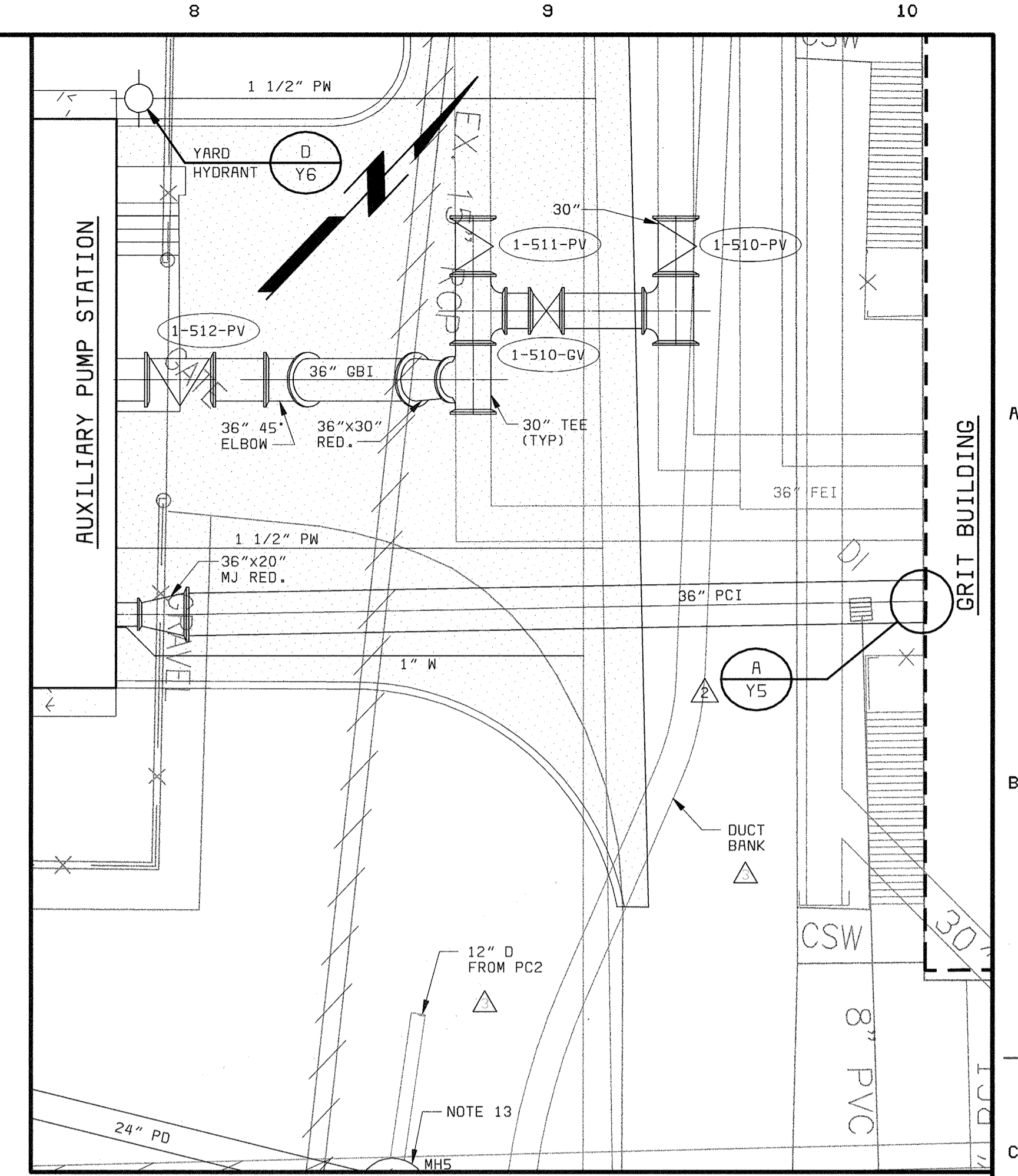
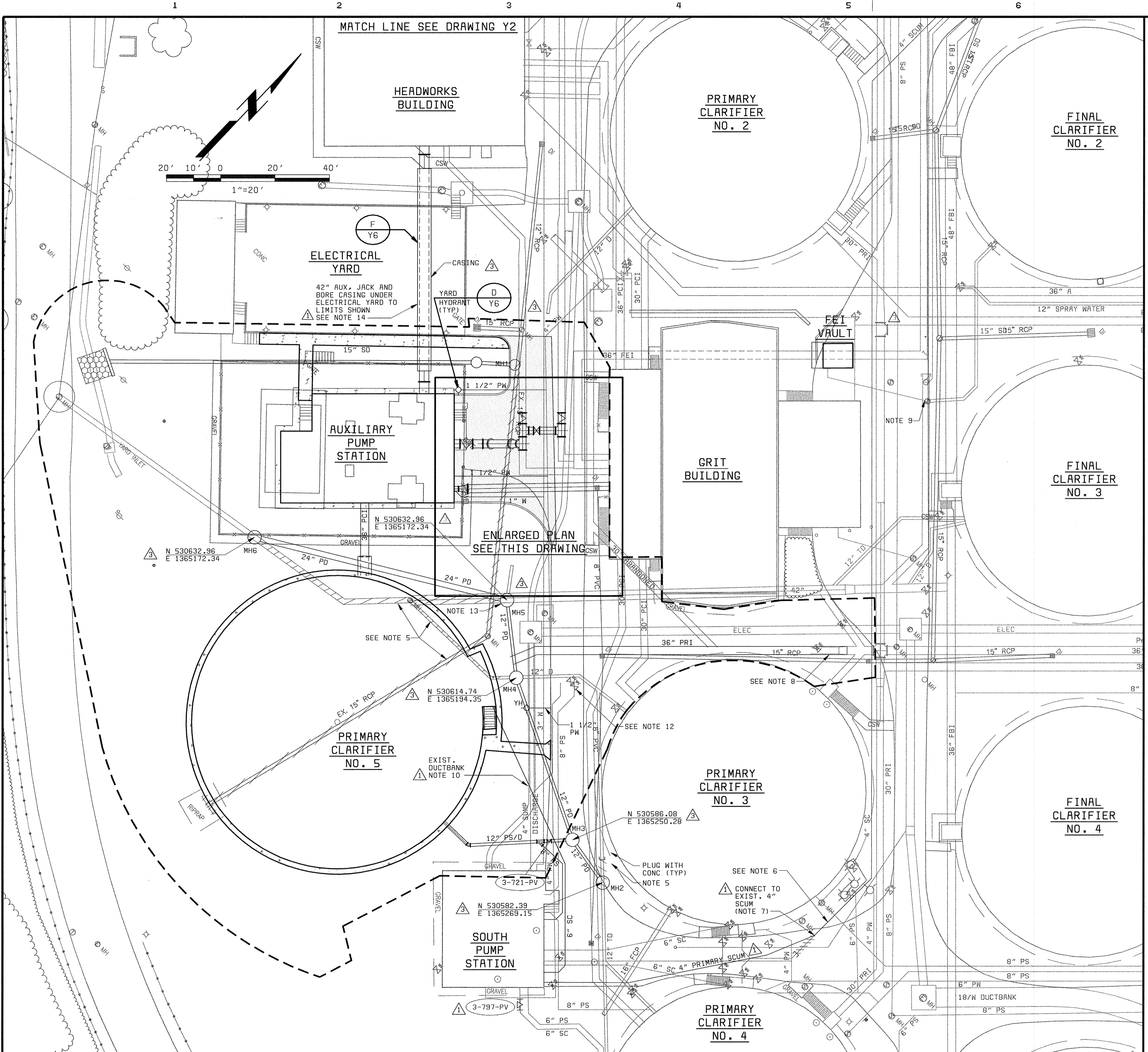
DES: R. REYES					
DRN: R. ANCHORS					
CHK: R. REYES					
DATE: 04/13/01					
DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP
05/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR	RJR

CIVIL  
EROSION AND SEDIMENT CONTROL  
NOTES AND DETAILS

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





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

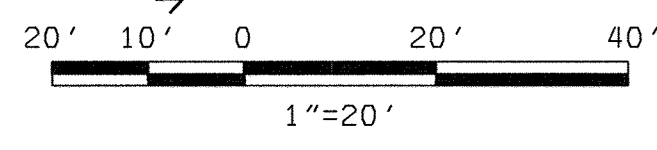
**NOTES:**

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-CCR3XRC01  
 58427-101-YARD-C-CCR30TA  
 058472-3  
 F058472A

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> <small>Gaithersburg, Maryland</small>	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.</td> <td>BY</td> <td>CK 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	<b>YARDWORK</b>  <b>YARD PIPING PLAN</b> <b>SHEET 1 OF 2</b>	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  <b>Y1</b>
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																							





REPLACE EXISTING 18" FLOW EQUALIZATION RETURN CONTROL VALVE

CONNECT 6" DRAIN TO EXIST. 12" DRAIN

WORK BY OTHERS (CONTRACT 20-3752)

PRIMARY SCUM HANDLING BUILDING

WORK BY OTHERS (CONTRACT 20-3752)

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 EXISTING PIPING.
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. EXISTING 4" SCUM TO BE MECHANICALLY CLEANED (PIGGED) AND PRESSURE TESTED. IF THE CONDITION OF THE PIPE IS ACCEPTABLE TO THE OWNER, CONNECT NEW 4" SCUM TO EXISTING 4" SCUM. IF CONDITION OF THE EXISTING 4" SCUM IS FOUND TO BE UNACCEPTABLE, REPLACE PIPE AND VALVING AS SHOWN. (BID ALTERNATIVE "d").
7. THE 8" DRAIN SHALL BE LAID FROM THE HEADWORKS BUILDING TO THE SEPTAGE RECEIVING FACILITY AT A MINIMUM 0.5% SLOPE AND SHALL ENTER THE SEPTAGE RECEIVING FACILITY AT INVERT 137.25 APPROXIMATELY 12" SOUTH OF THE EXISTING 8" DRAIN PIPE. THE INSTALLATION INTO THE SEPTAGE RECEIVING FACILITY SHALL BE THROUGH A NEW WALL SLEEVE (DETAIL B/M13, TYPE I); THE PIPE SHALL BE TERMINATED FLUSH WITH THE INTERIOR SURFACE OF THE WALL.

XAC01  
 58472-101-YARD-C-200000TB  
 58427-101-YARD-C-200000TB  
 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

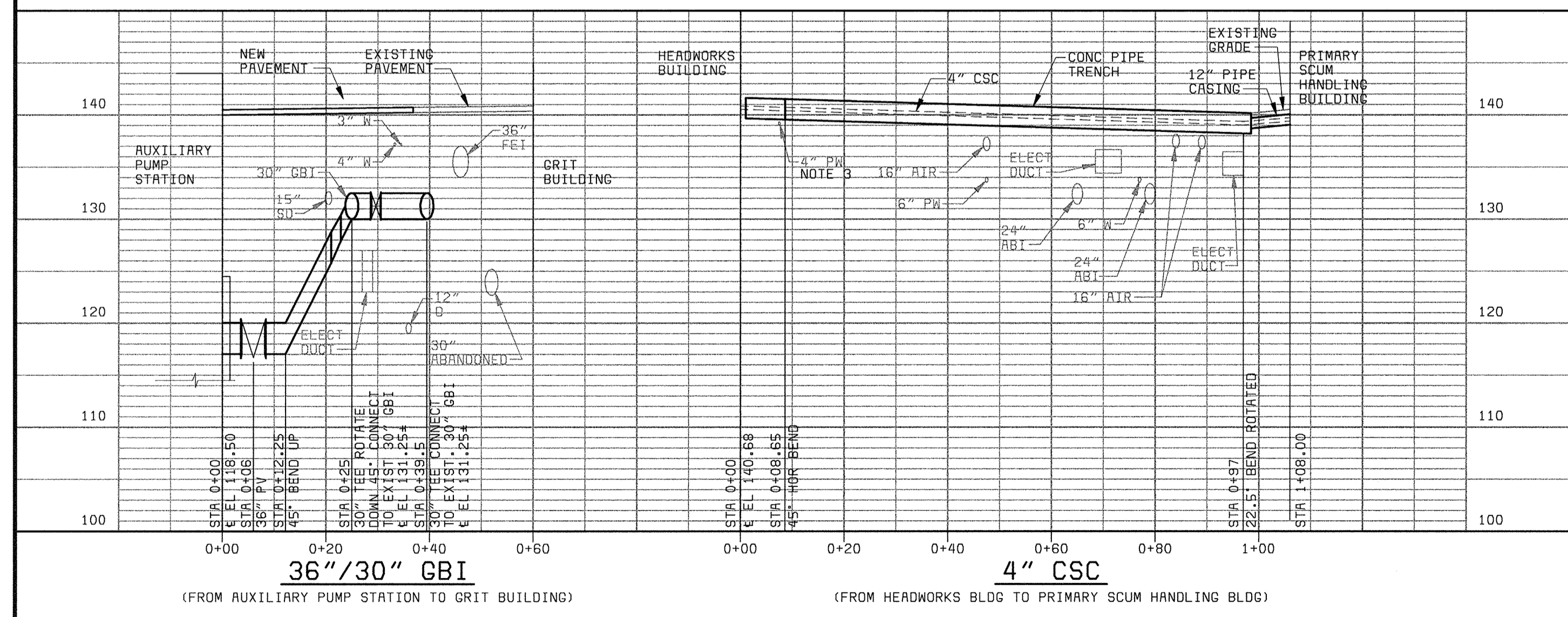
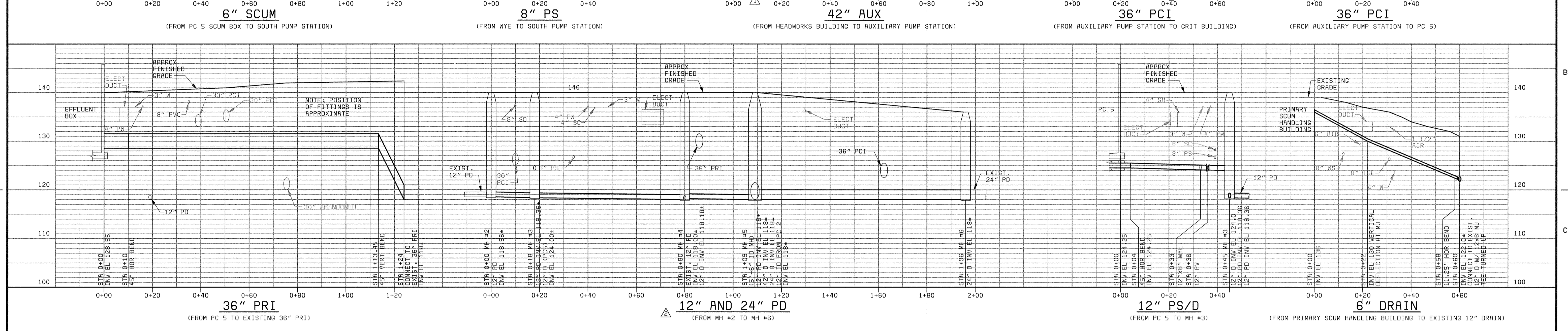
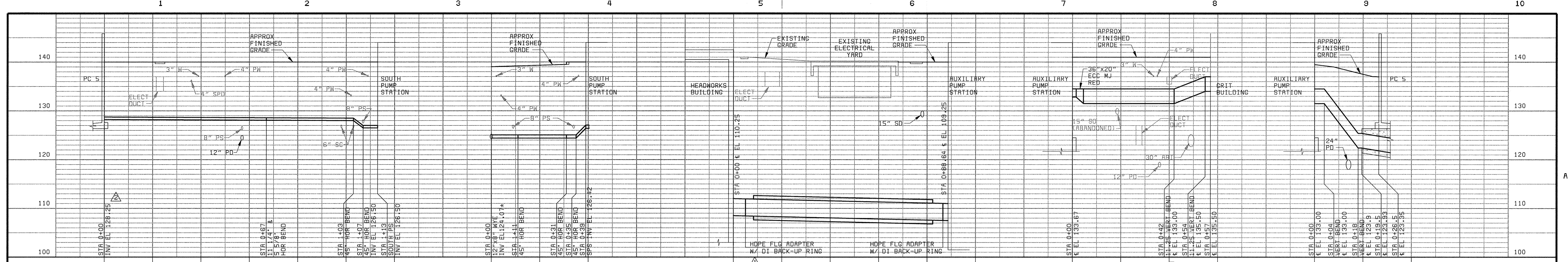
DES: ACM,KMH	DRN: RLC	CHK: WLK	DATE: 2/19/01
05/05/05	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR	
DATE REVISIONS AND RECORD OF ISSUE		NO. BY CK APP	

YARDWORK  
 YARD PIPING 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  
 HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
 SHEET 17 OF 88  
 Y2





- 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

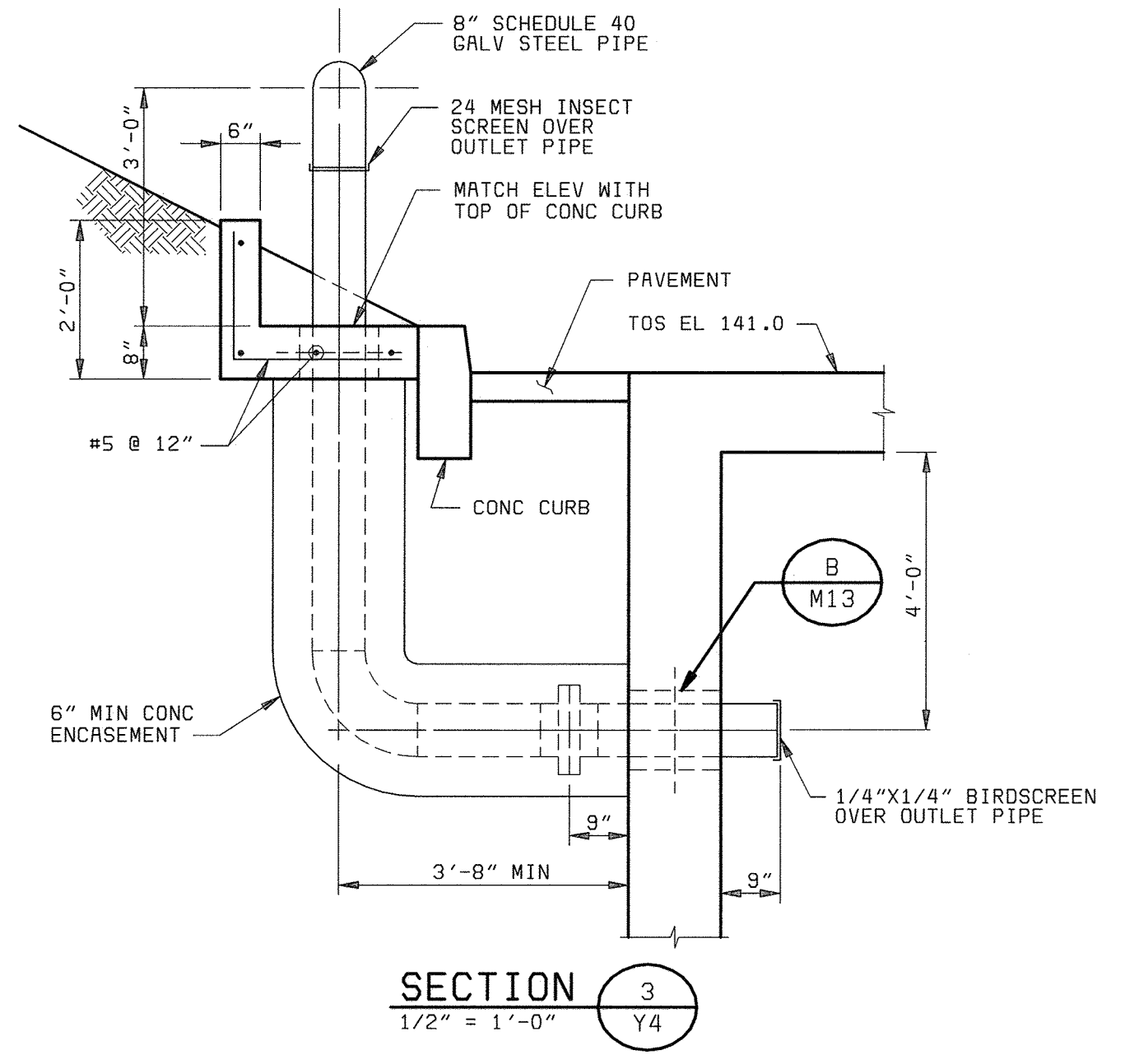
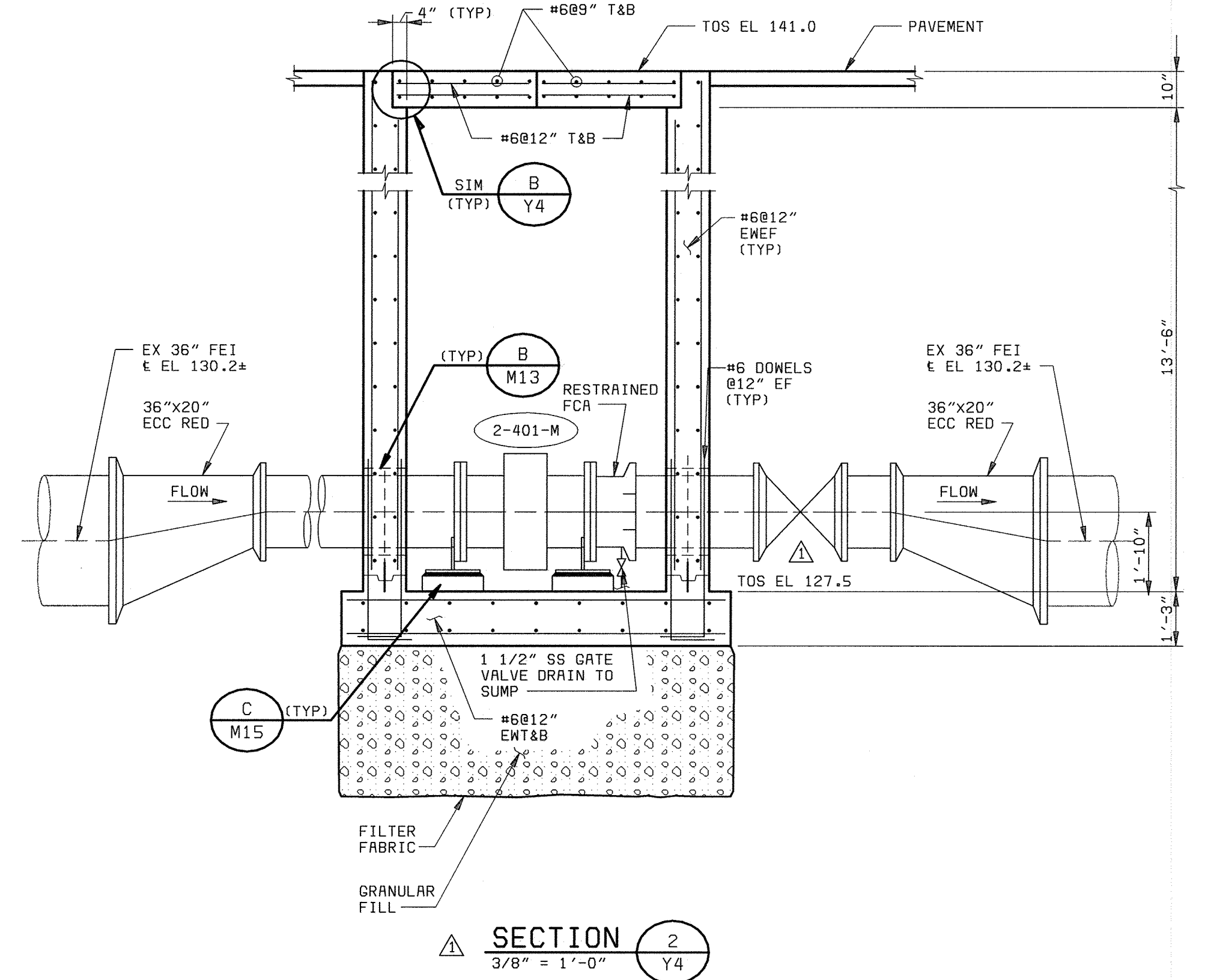
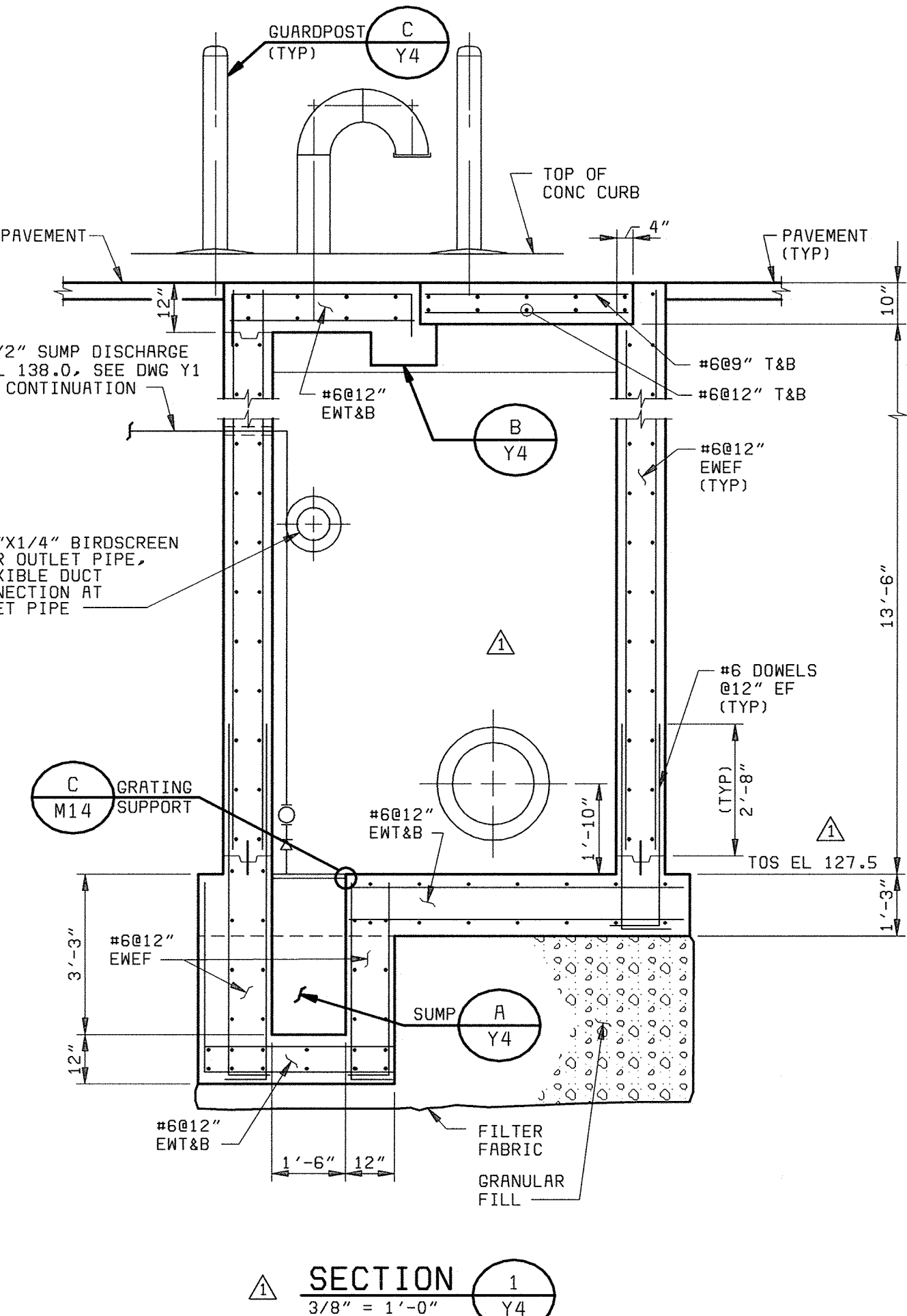
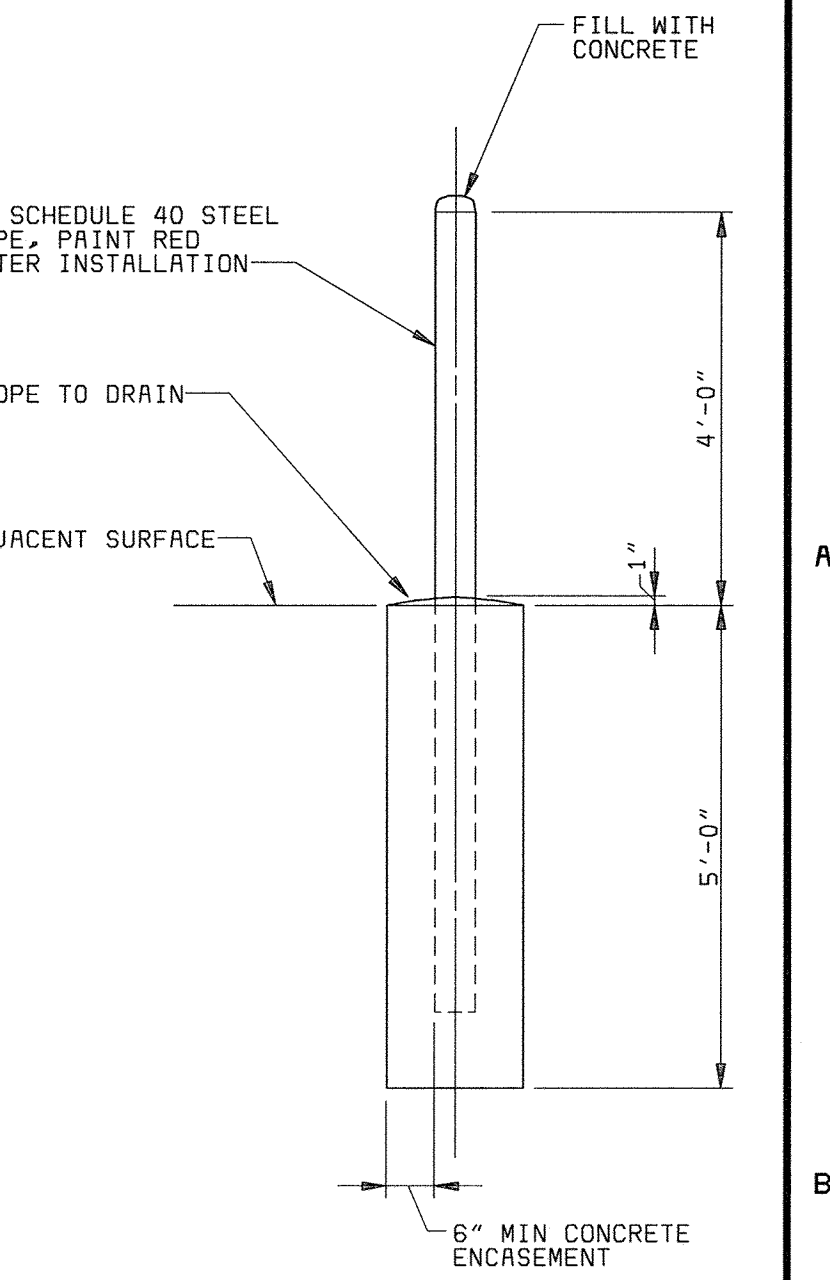
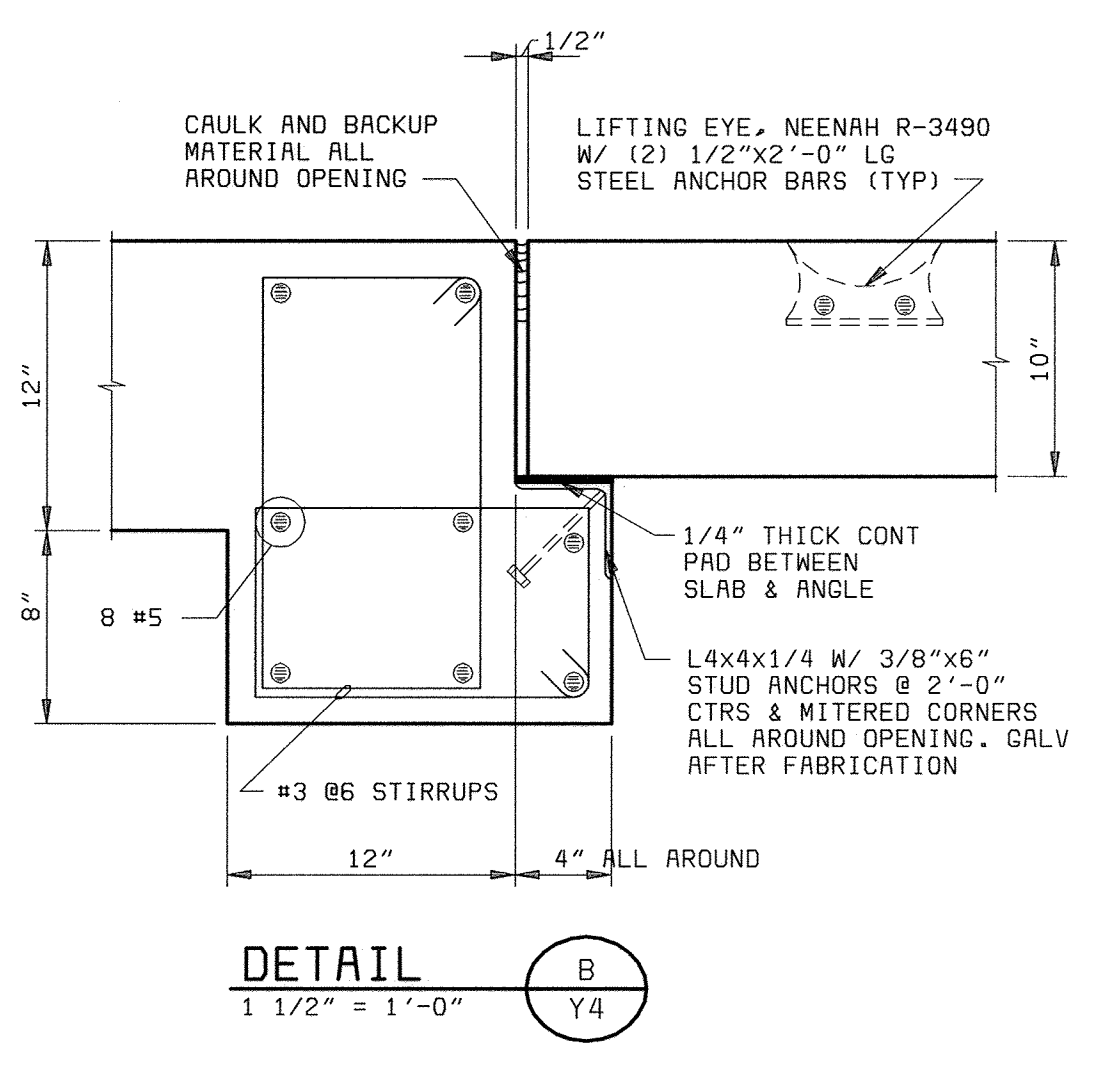
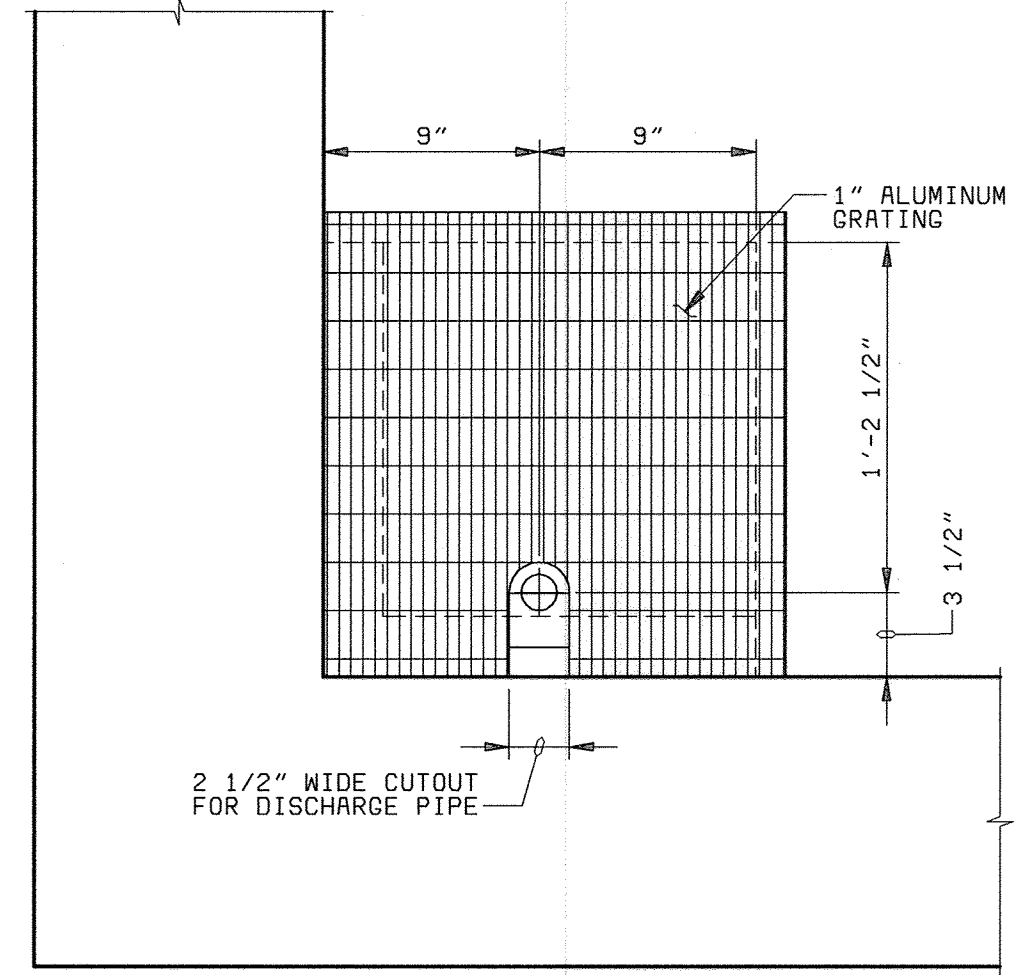
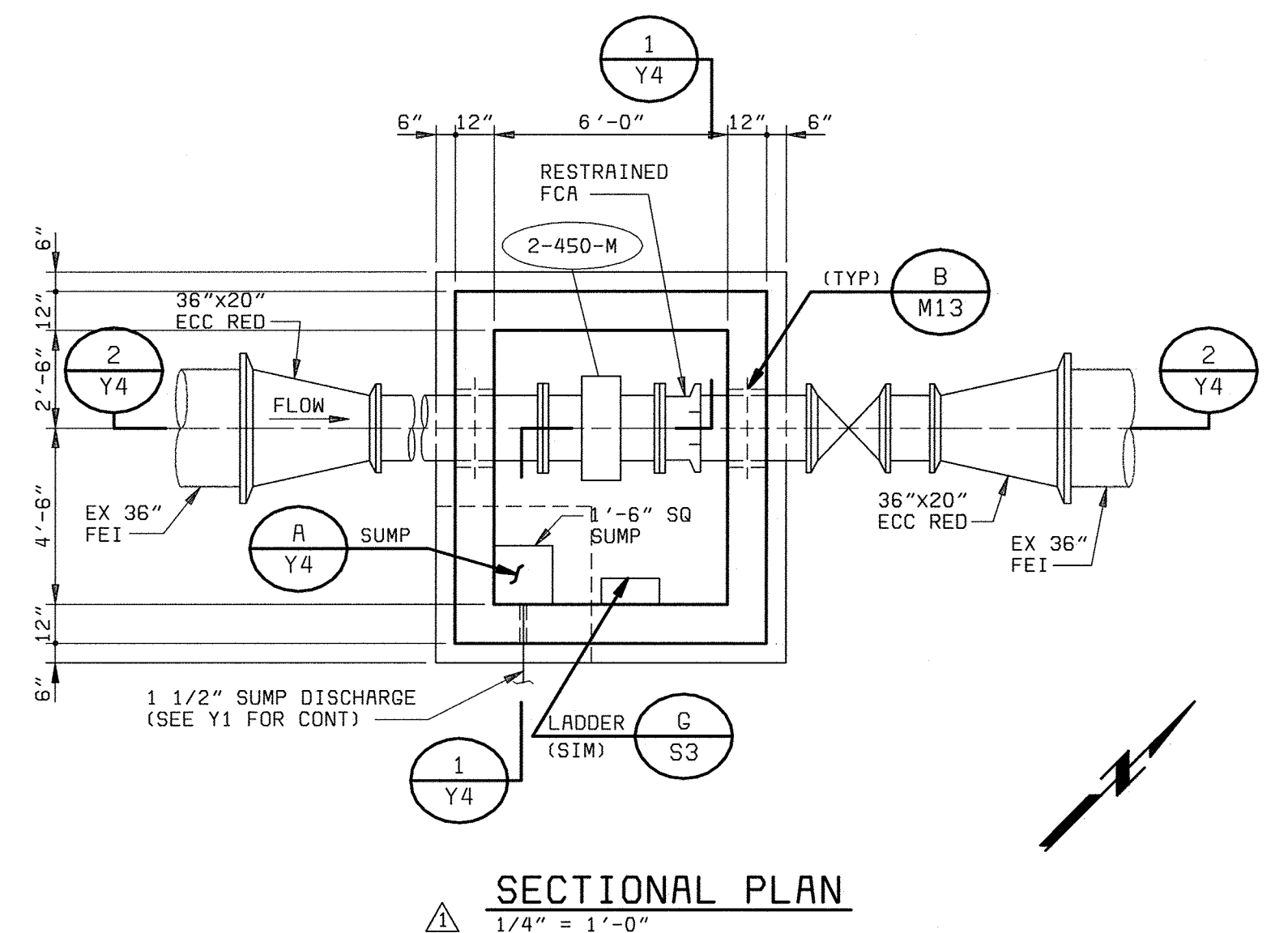
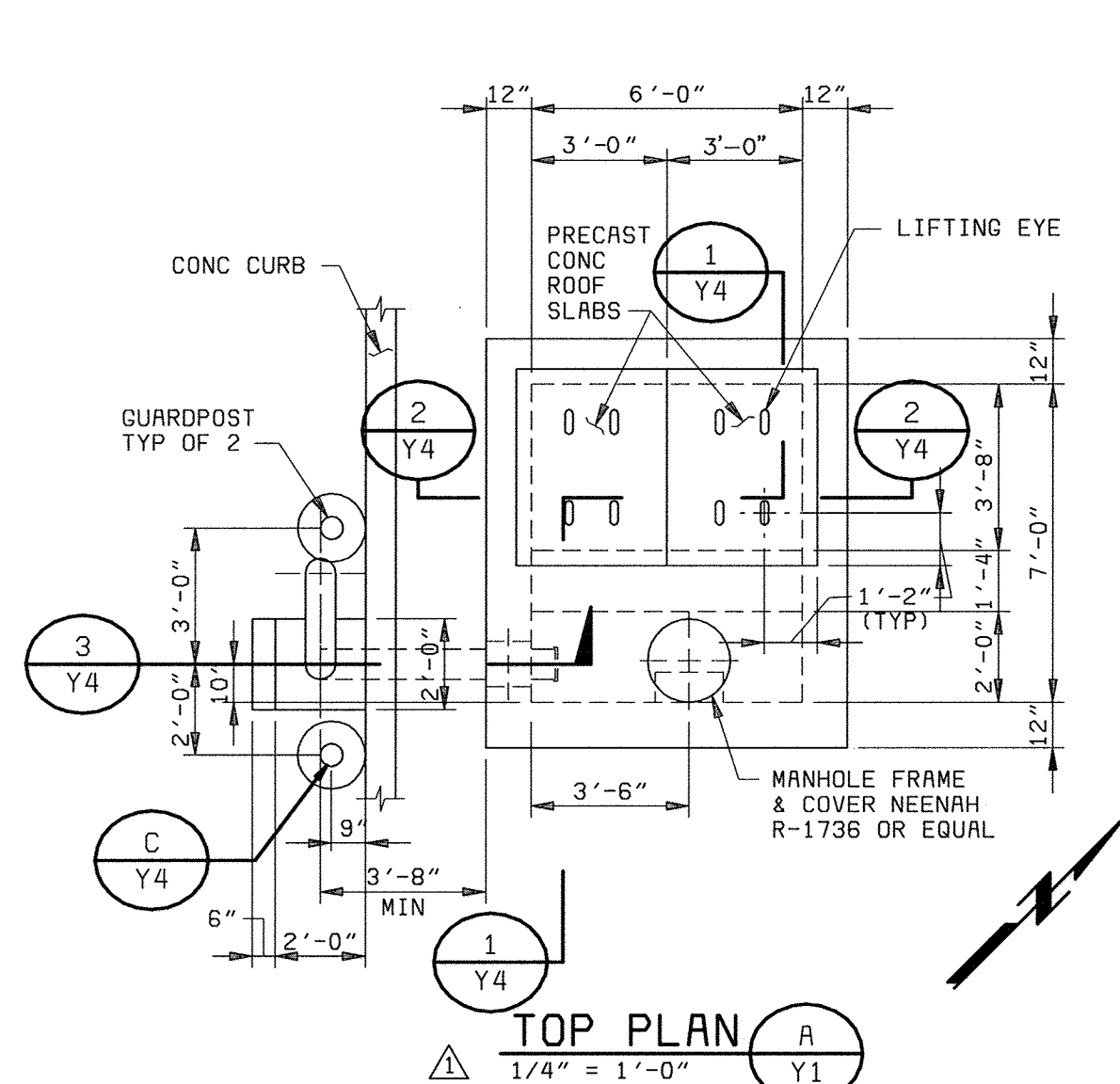
SCALE AS SHOWN

SHEET 18 OF 88

Y3

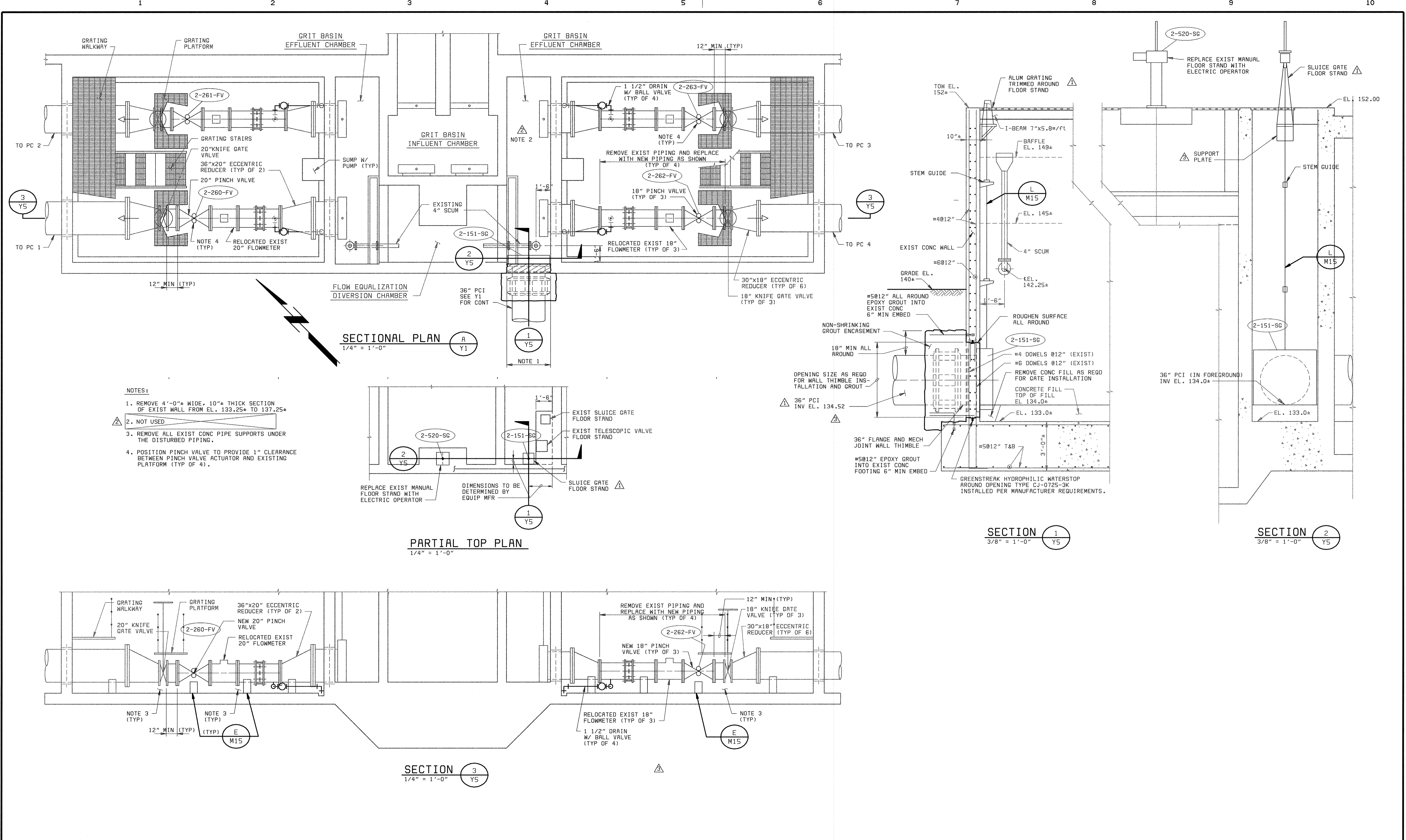
058472-3  
F058472A





DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> 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				<b>YARDWORK</b>  <b>FEI METER VAULT          PLANS, SECTIONS AND DETAILS</b>	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						SHEET 19 OF 88
			CHK: WLK	DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE			NO. BY CK APP

056472.3  
F056472A



- 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. RECTANUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927

DES: FKA,KMH					
DRN: RLC	05/05/05	CONFORMED TO CONSTRUCTION RECORDS			RHH/RJR/RJR
CHK: WLK	06/27/01	ADDENDUM NO. 3			
DATE: 2/19/01	06/12/01	ADDENDUM NO. 1			
DATE	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

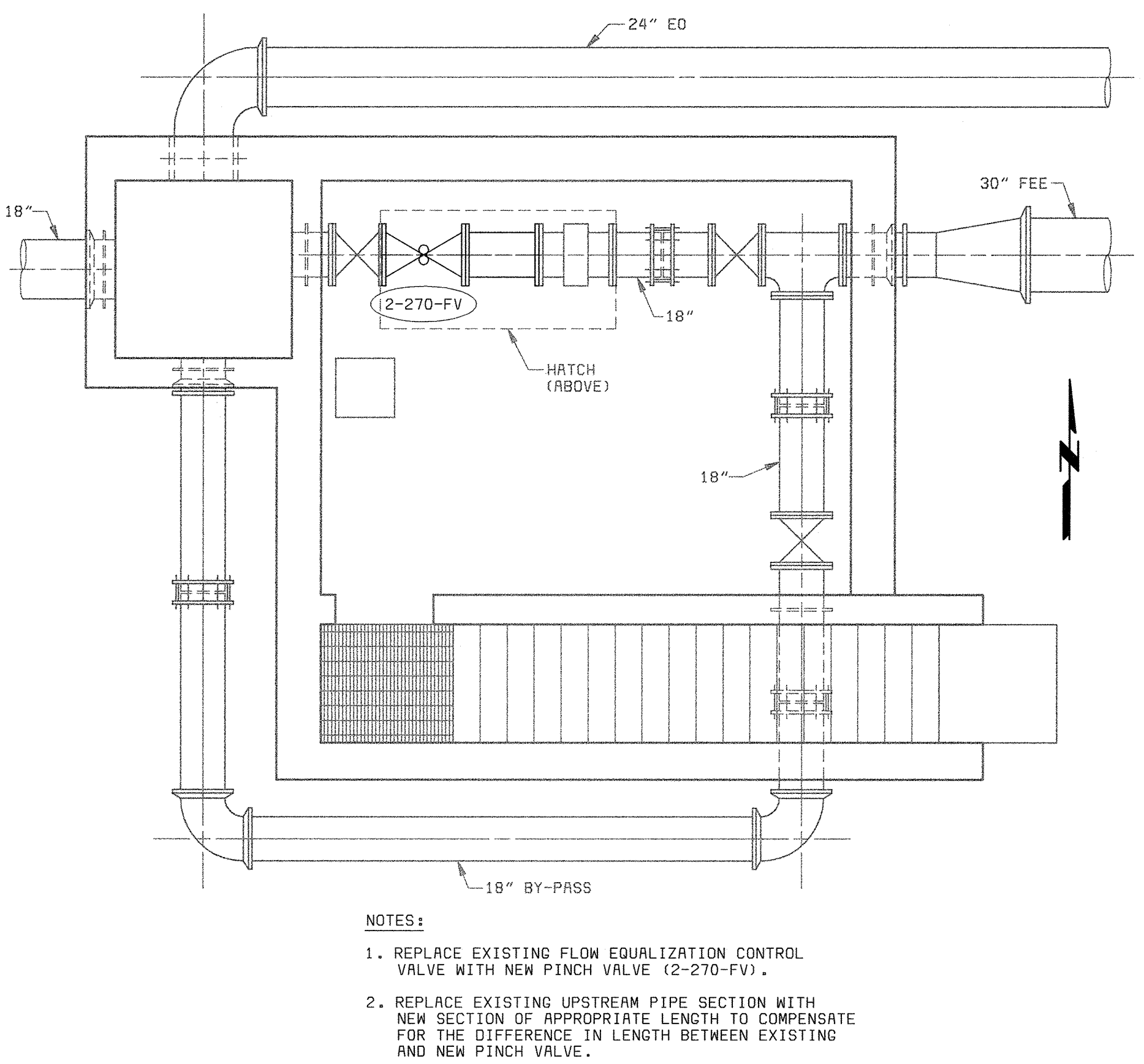
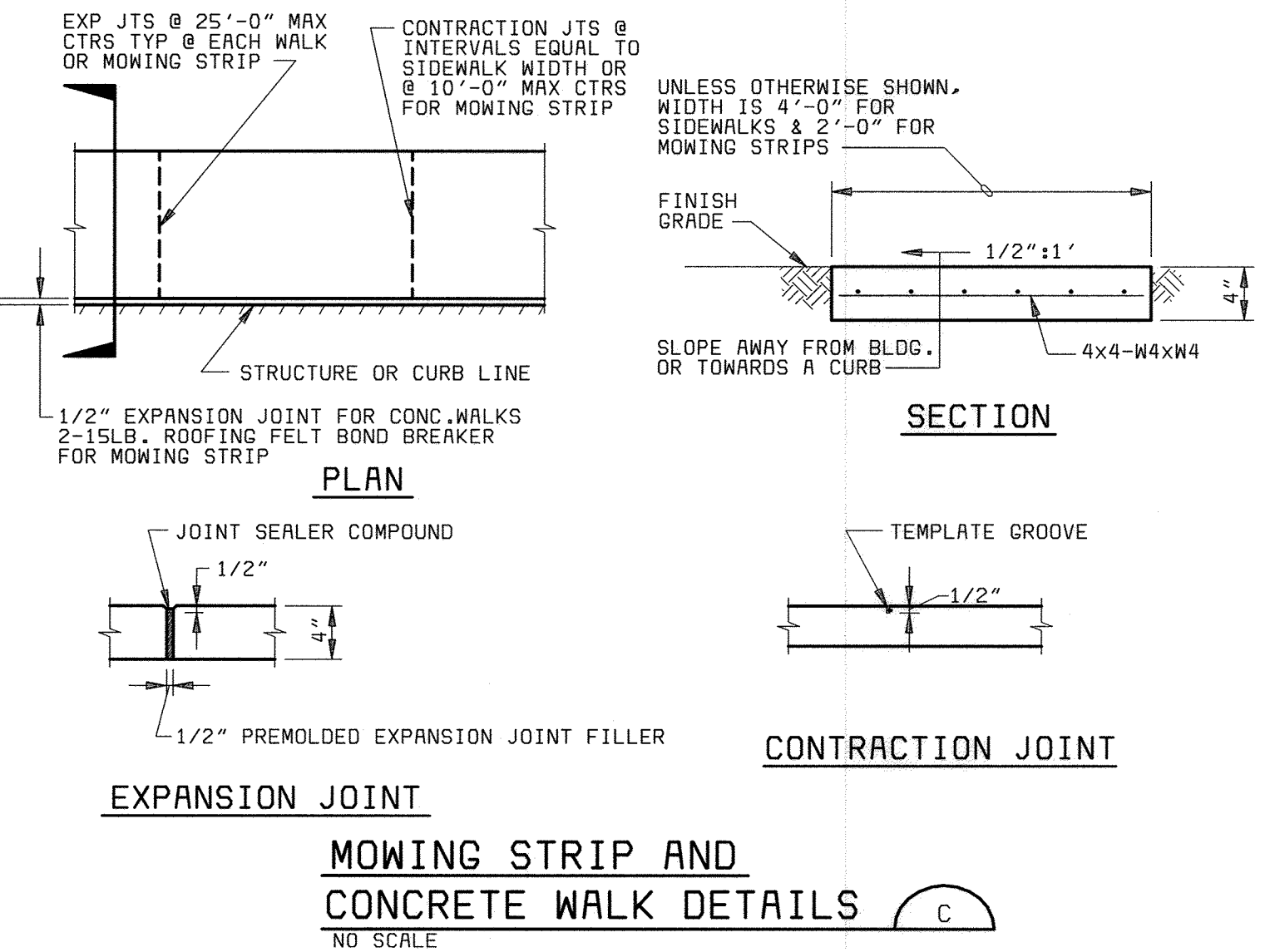
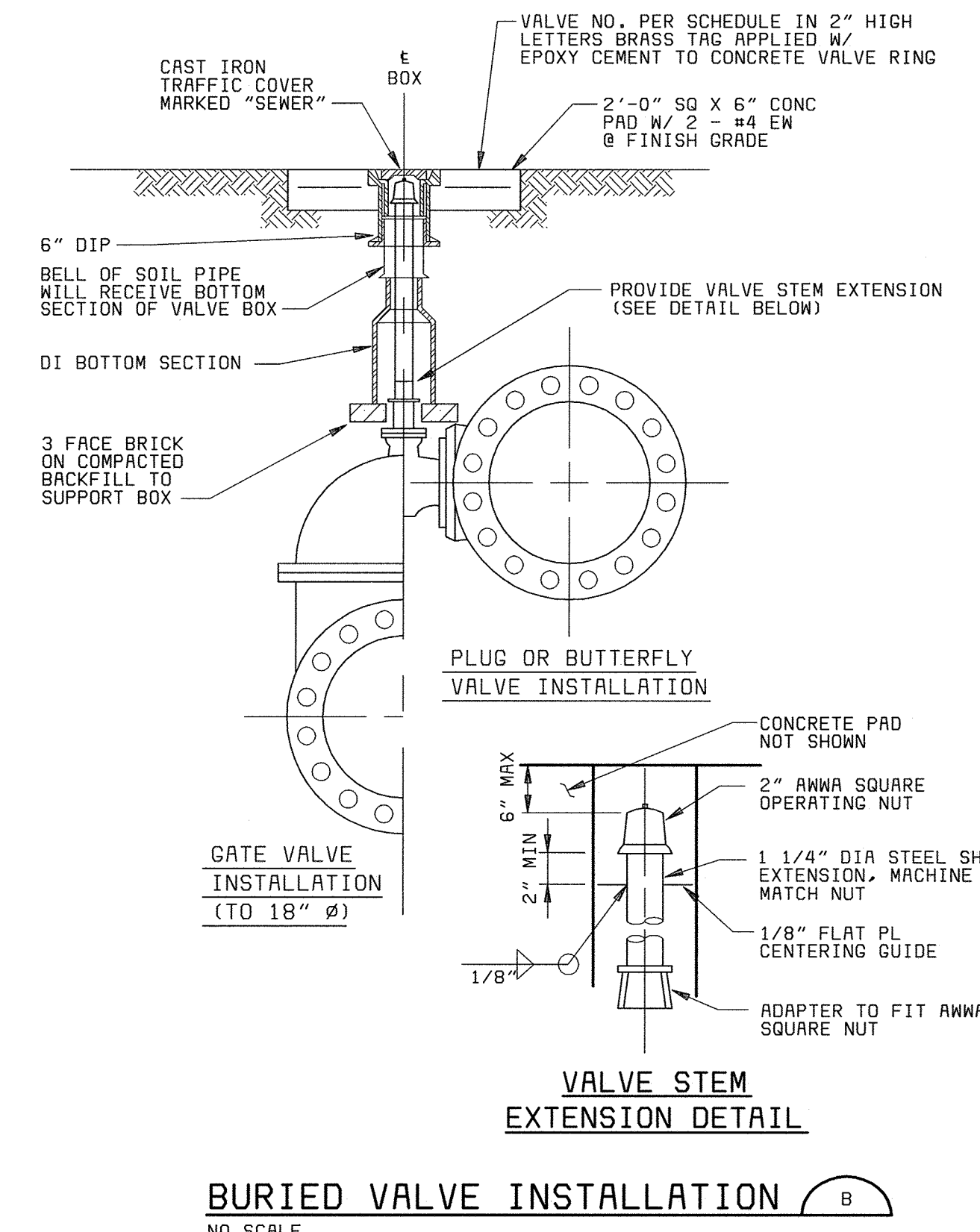
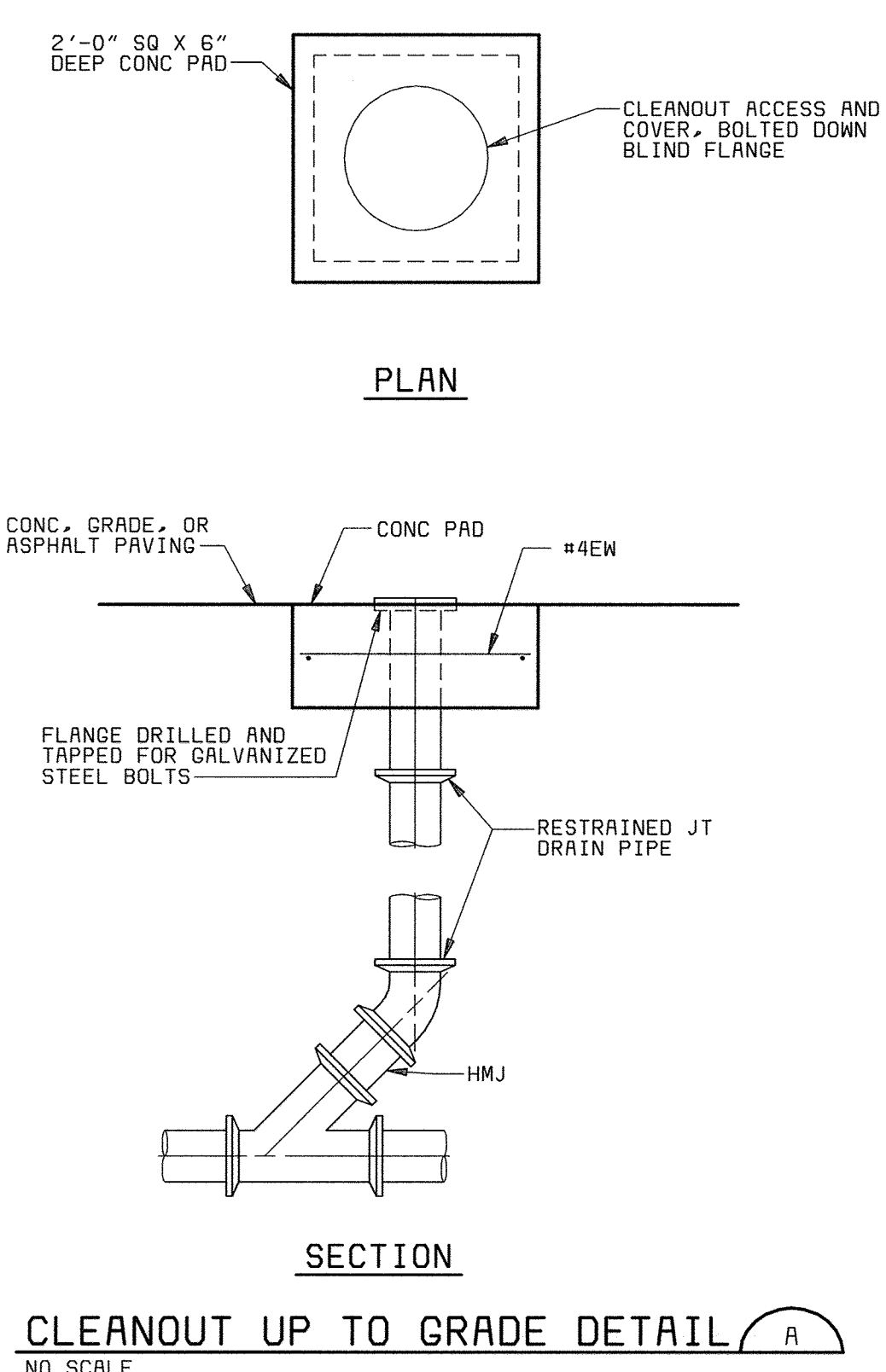
SCALE AS SHOWN

SHEET 20 OF 88

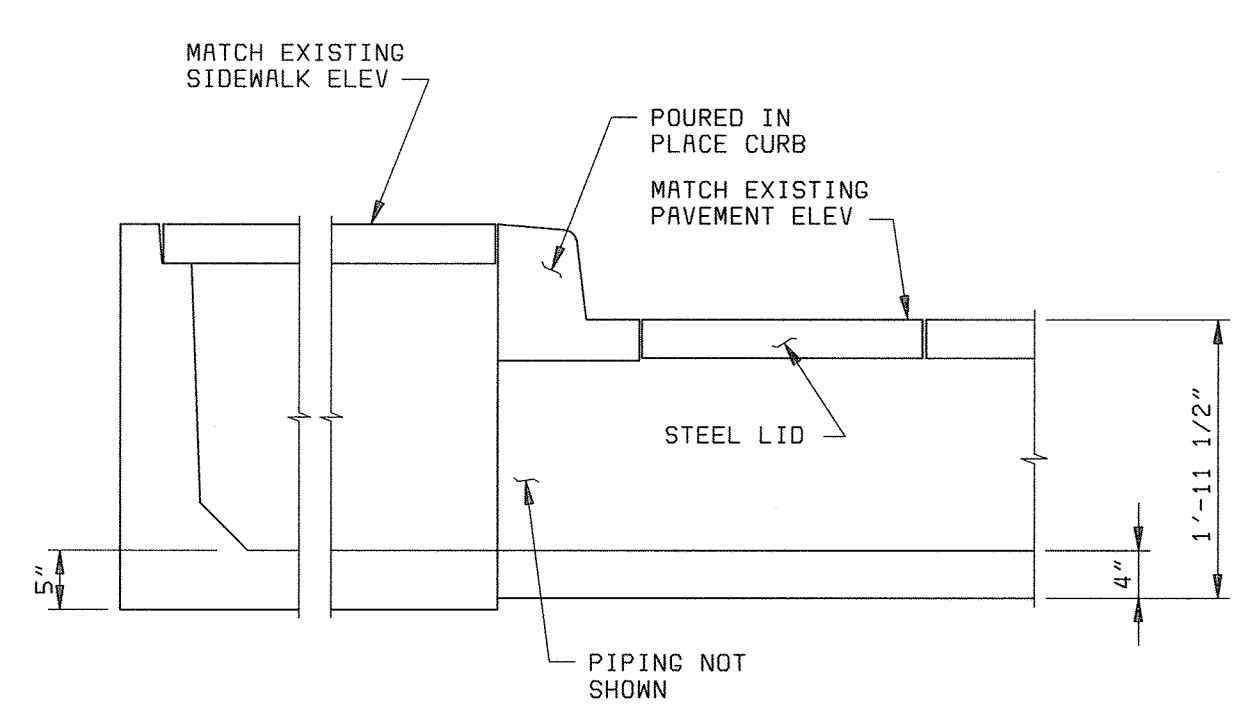
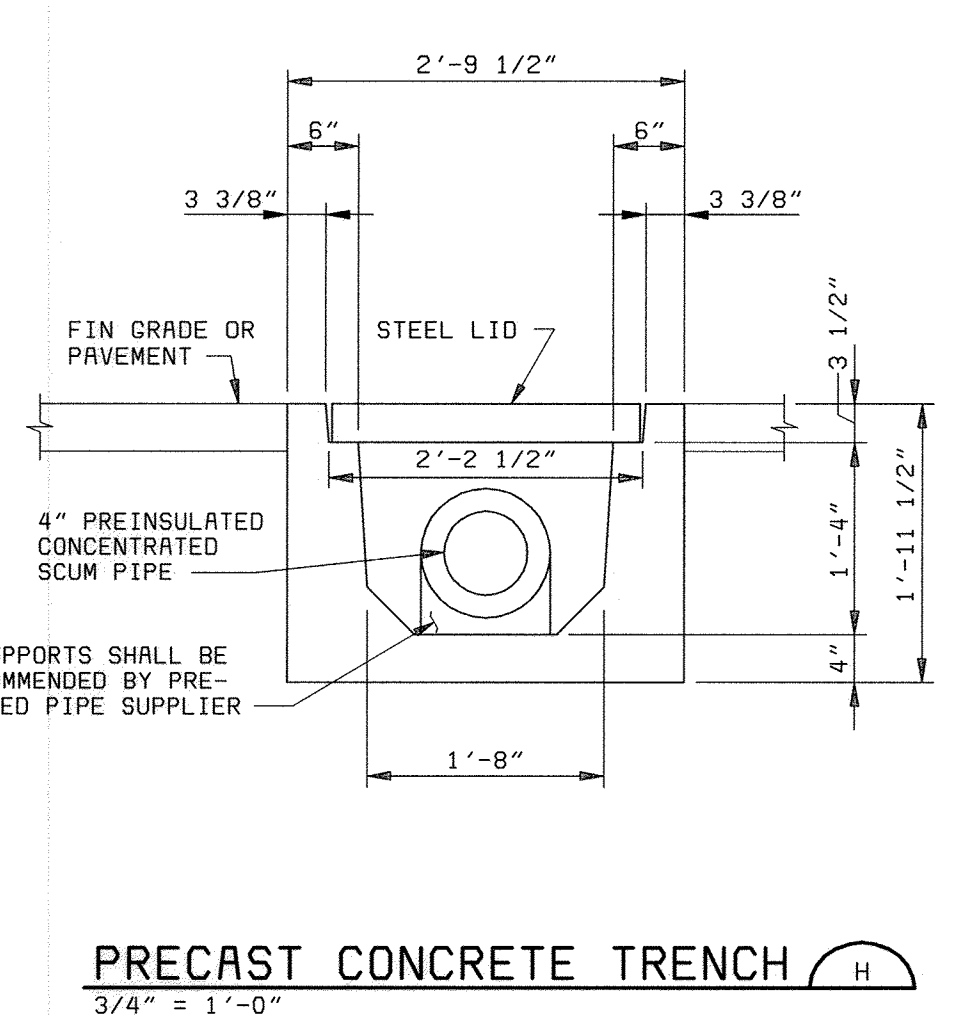
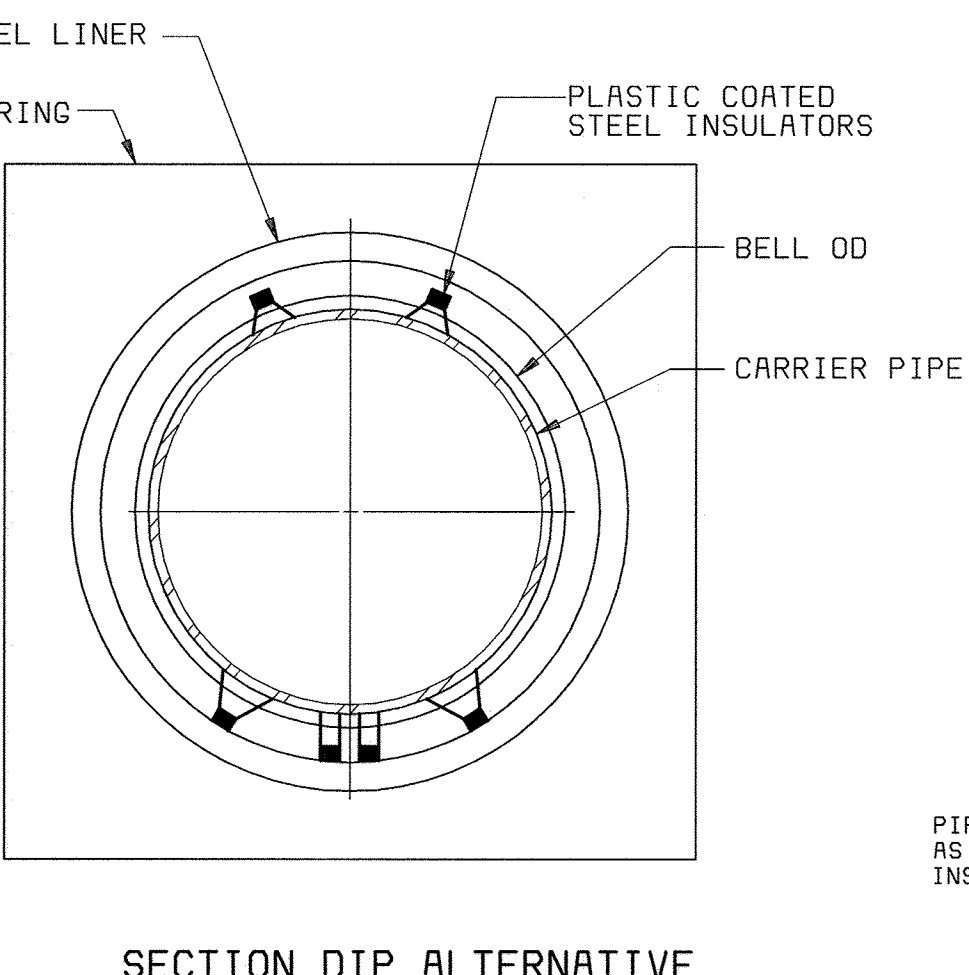
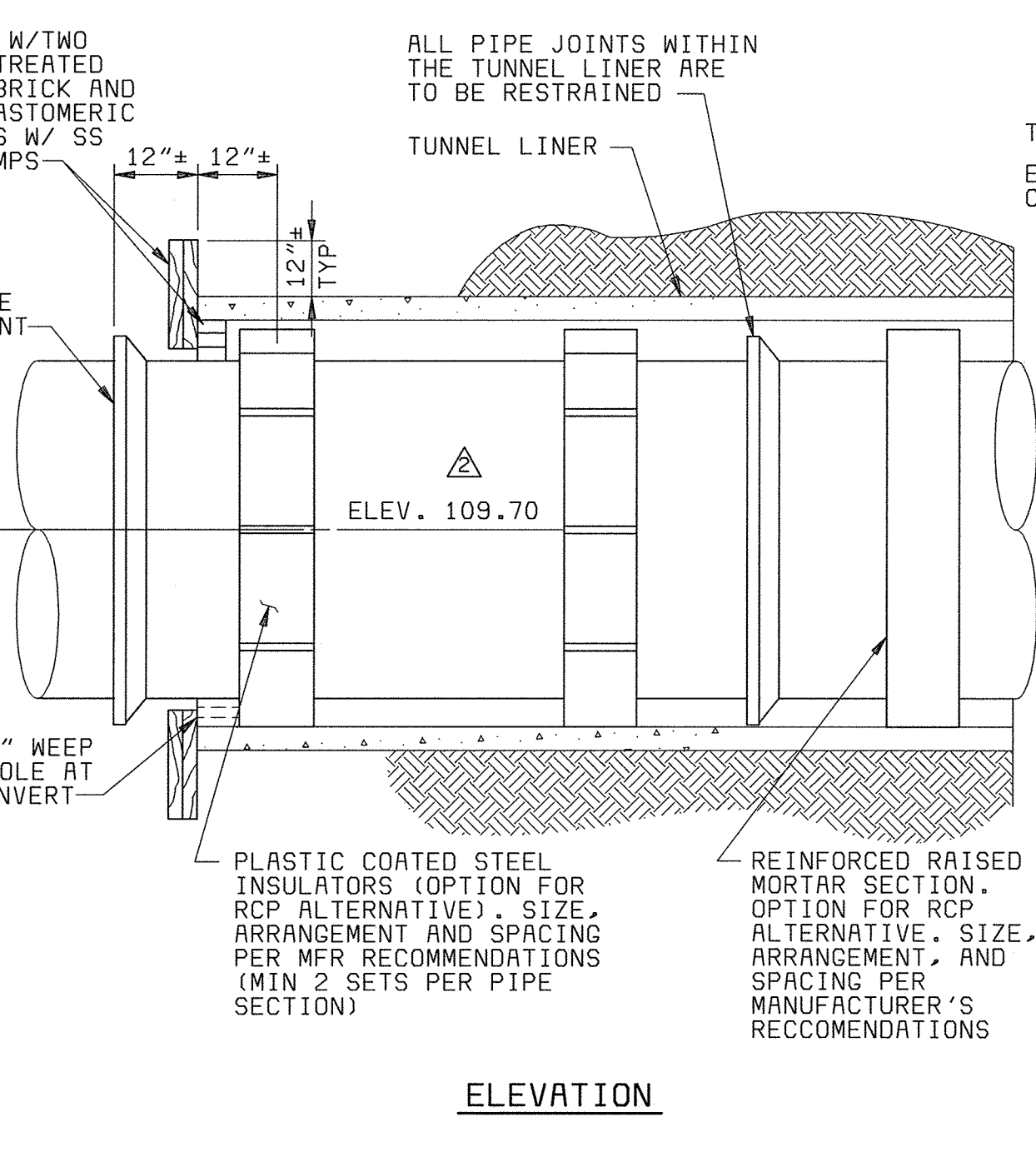
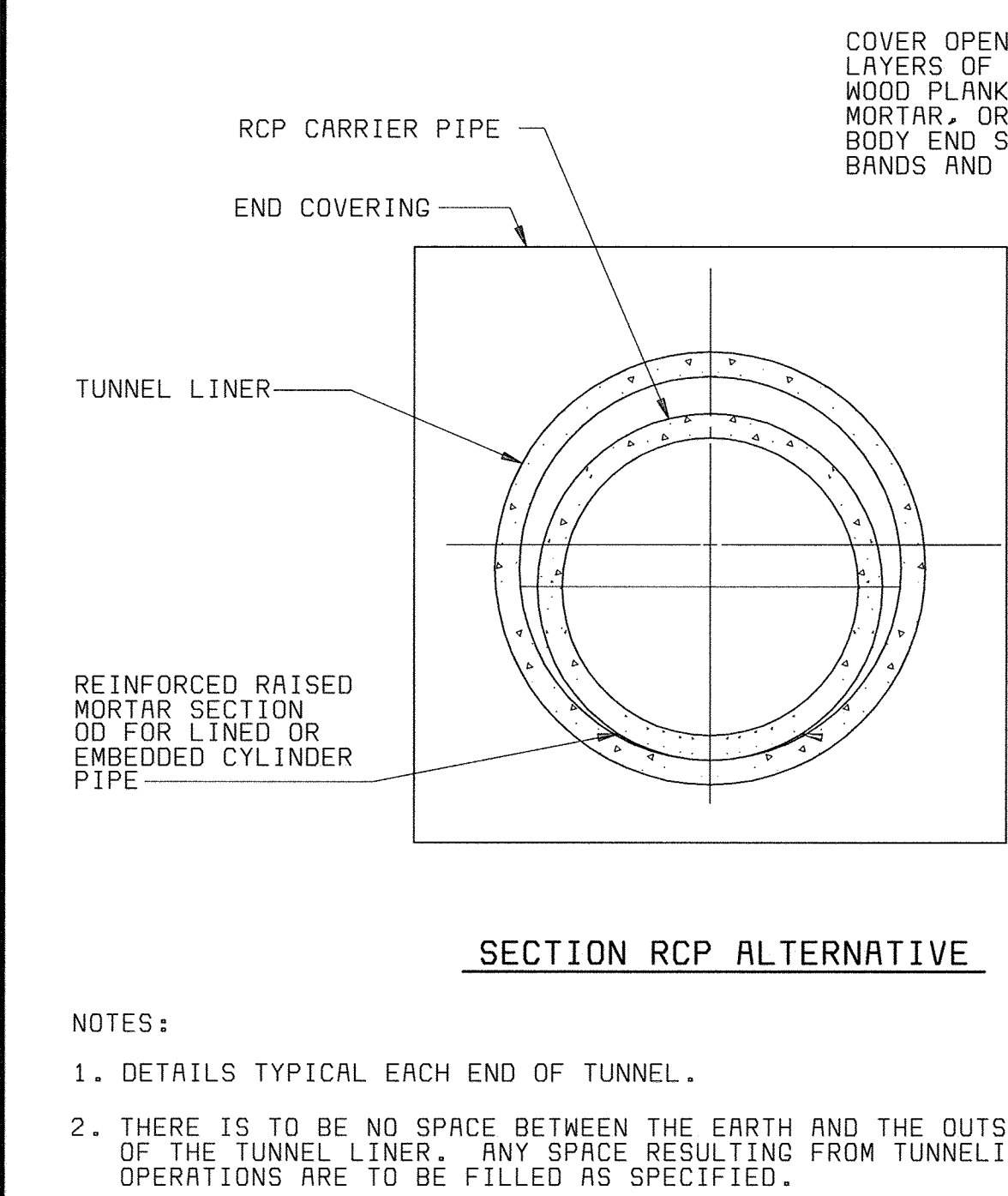
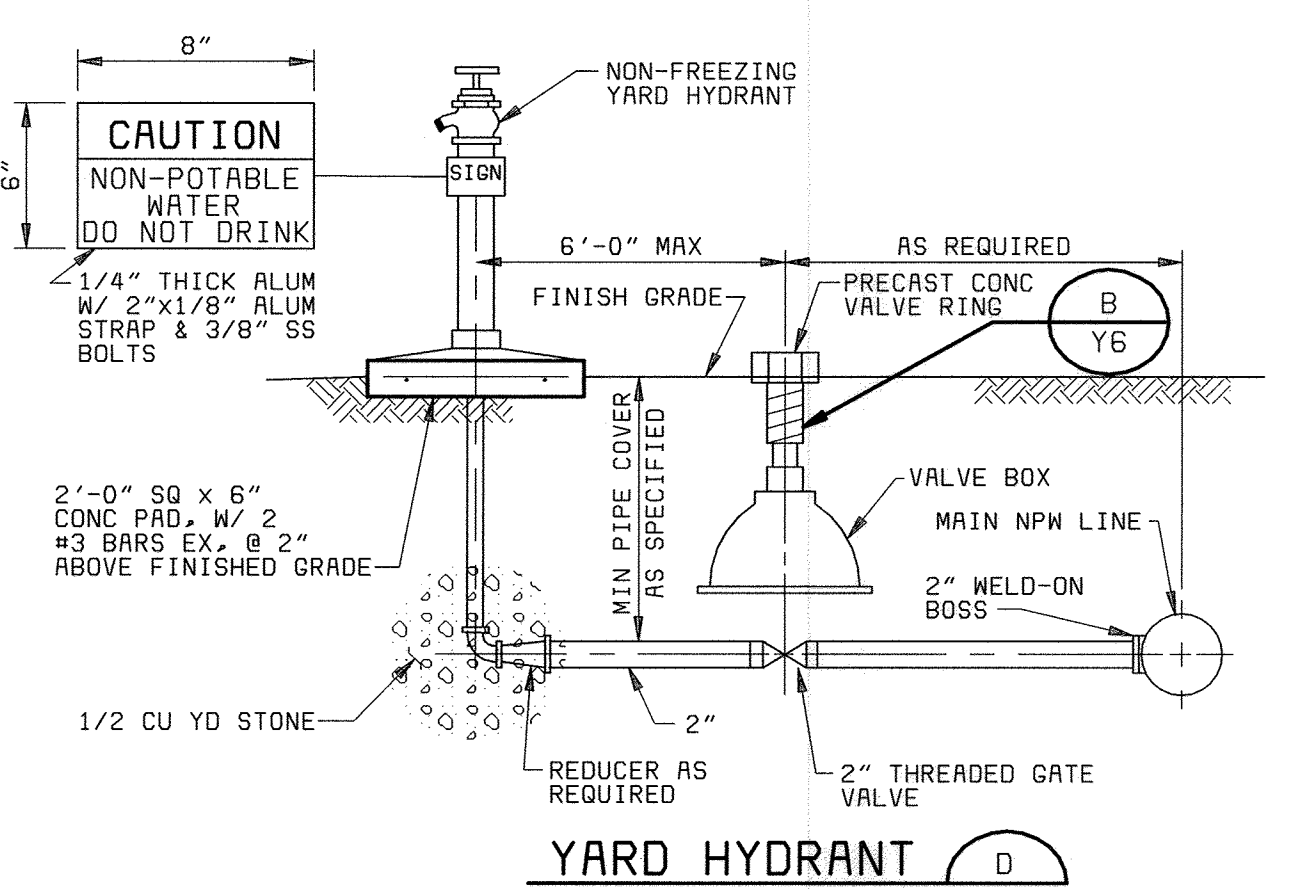
Y5

058472\_3  
F058472A

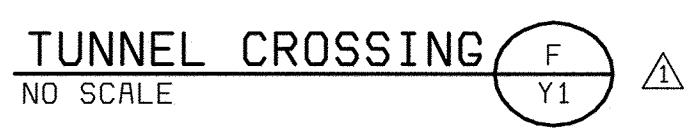




- NOTES:
1. REPLACE EXISTING FLOW EQUALIZATION CONTROL VALVE WITH NEW PINCH VALVE (2-270-FV).
  2. REPLACE EXISTING UPSTREAM PIPE SECTION WITH NEW SECTION OF APPROPRIATE LENGTH TO COMPENSATE FOR THE DIFFERENCE IN LENGTH BETWEEN EXISTING AND NEW PINCH VALVE.

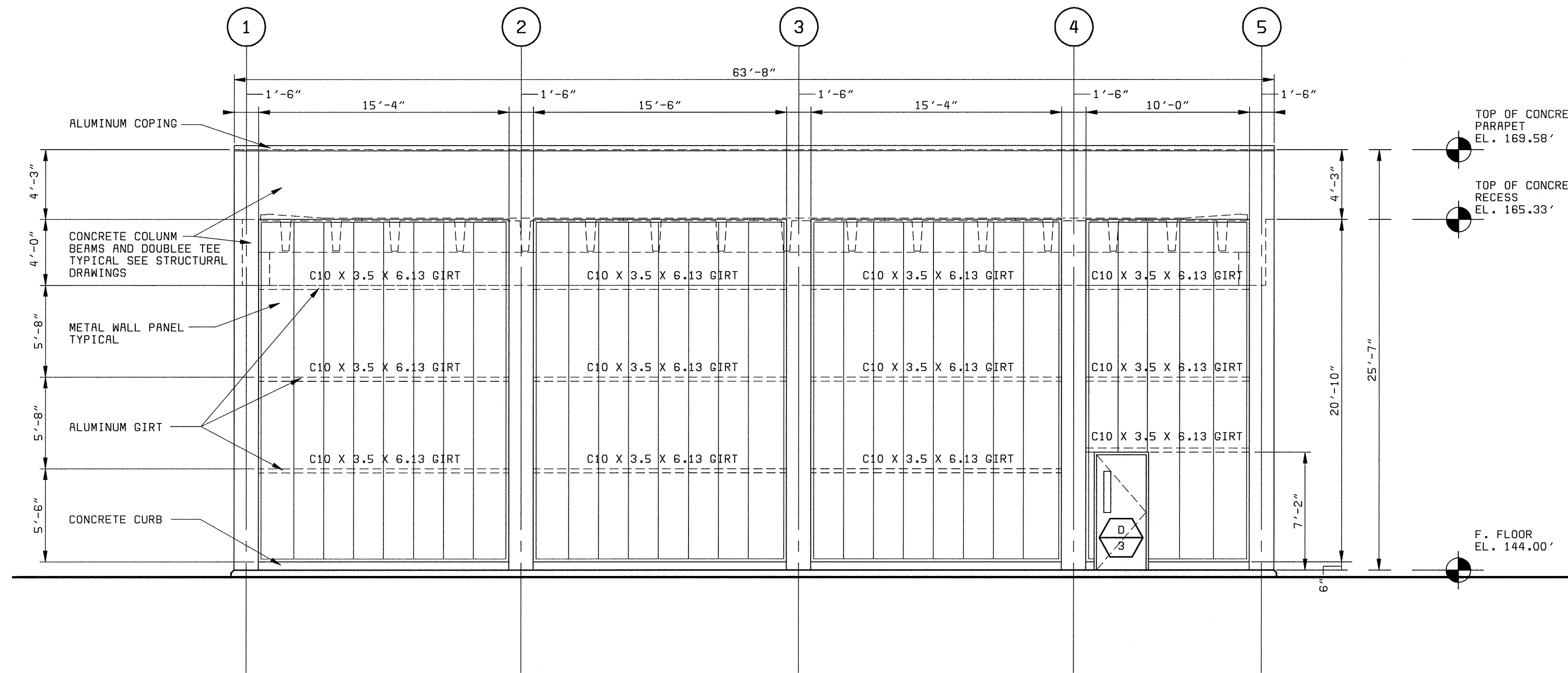


- NOTES:
1. DETAILS TYPICAL EACH END OF TUNNEL.
  2. THERE IS TO BE NO SPACE BETWEEN THE EARTH AND THE OUTSIDE OF THE TUNNEL LINER. ANY SPACE RESULTING FROM TUNNELING OPERATIONS ARE TO BE FILLED AS SPECIFIED.

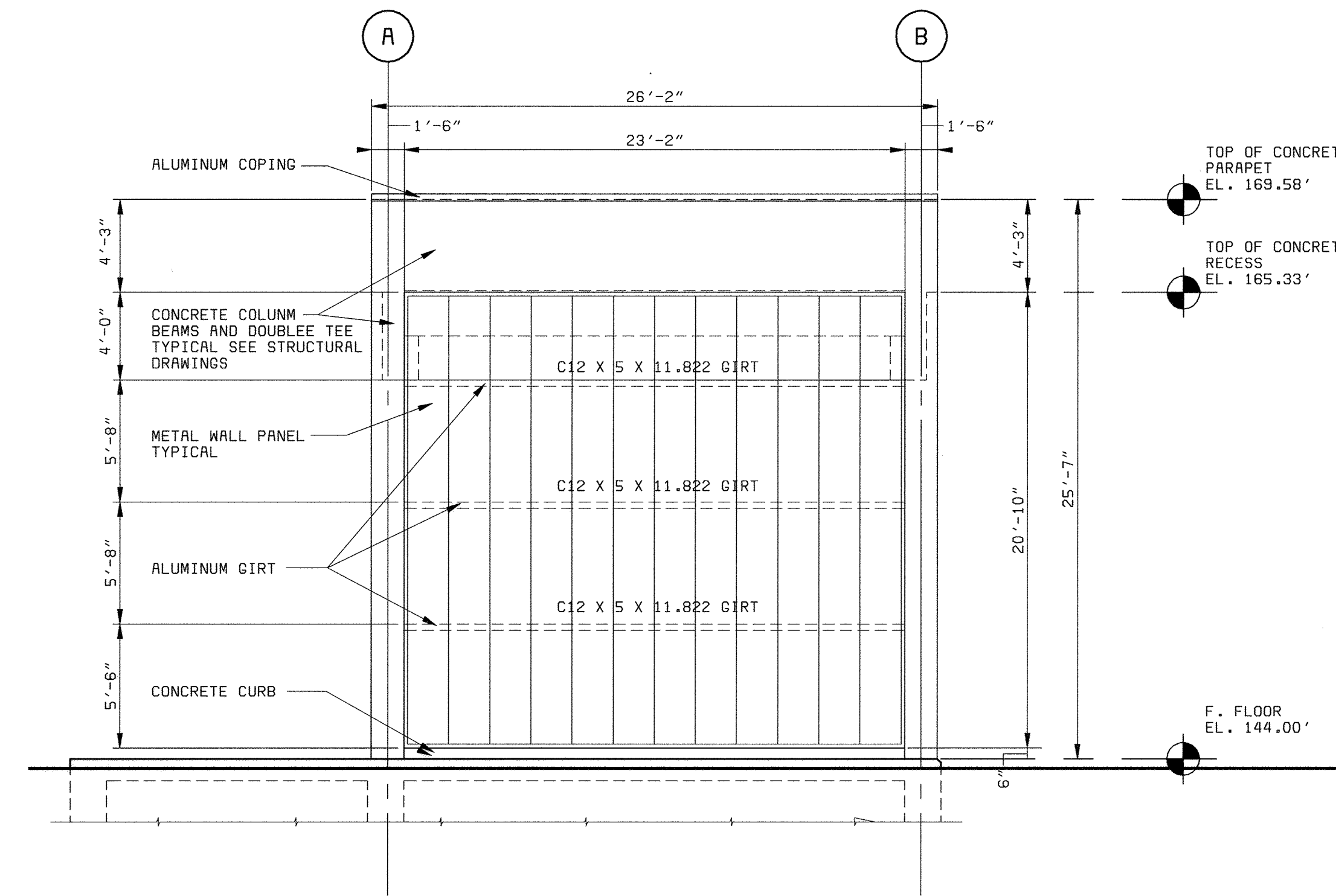


DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 BLACK & VEATCH Gaithersburg, Maryland  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECRANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: FKA								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
			DRN: RLC	05/05/05	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR							
			CHK: WLK	06/12/01	ADDENDUM NO. 1								Y6
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP				

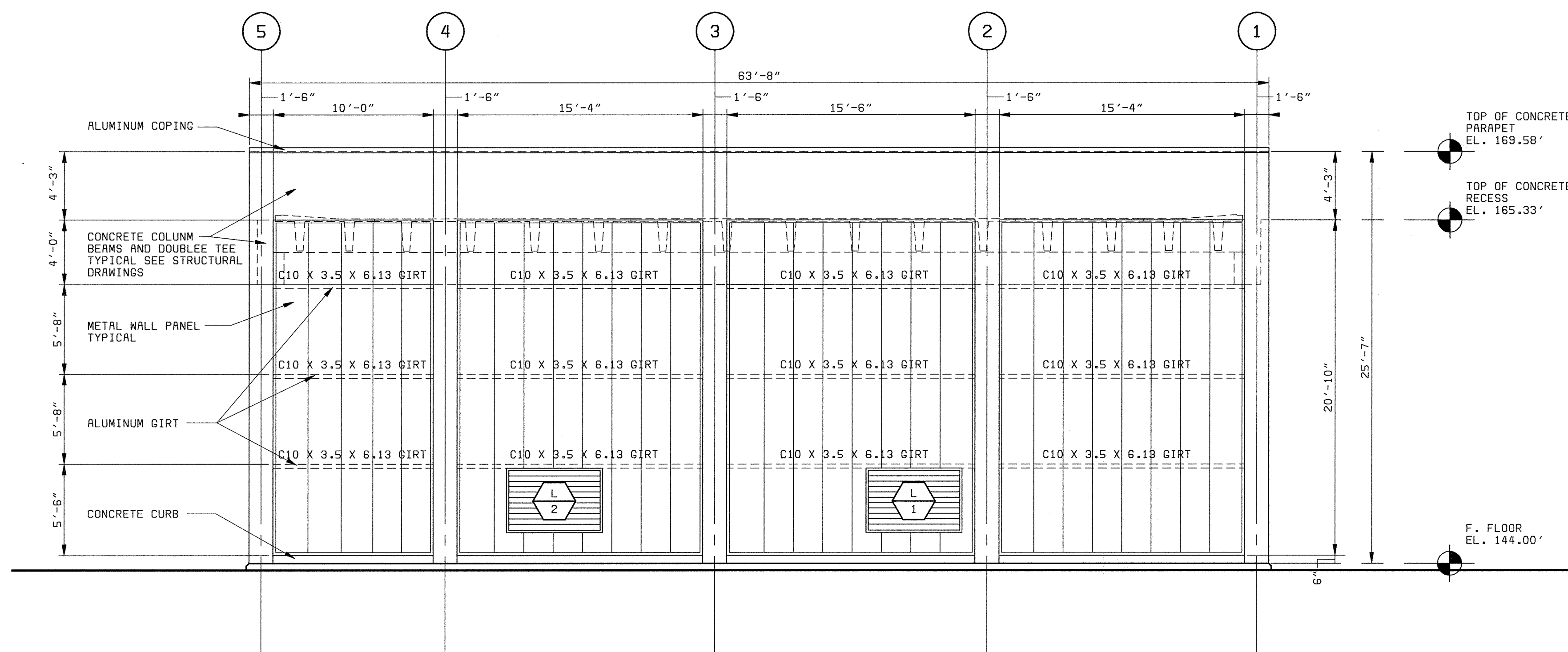




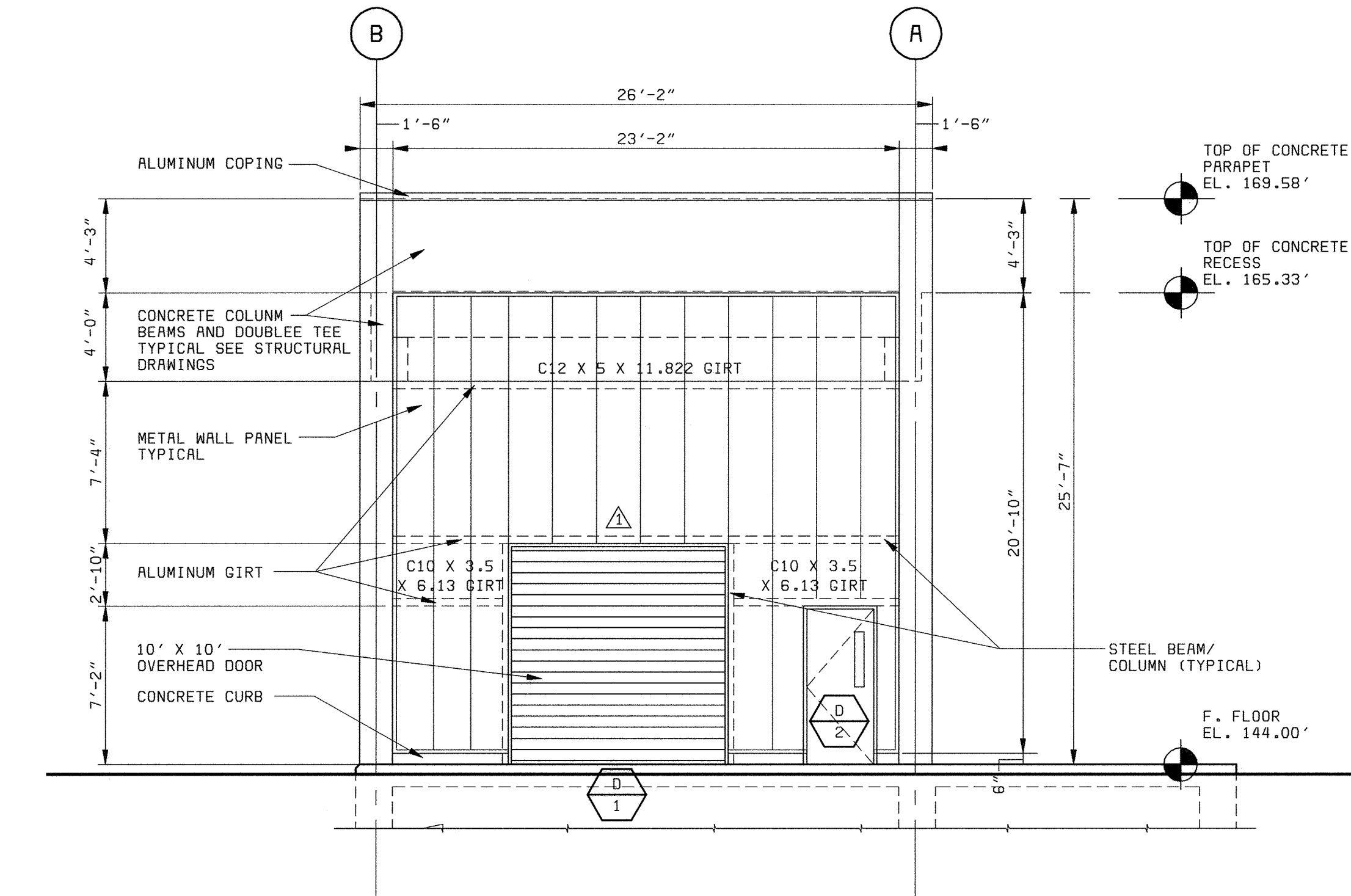
WEST ELEVATION 1  
3/16" = 1'-0" A1



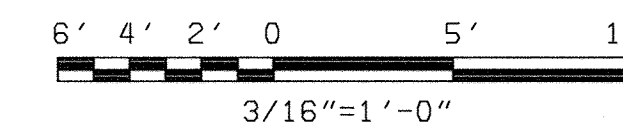
SOUTH ELEVATION 2  
3/16" = 1'-0" A1



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



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



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



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

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

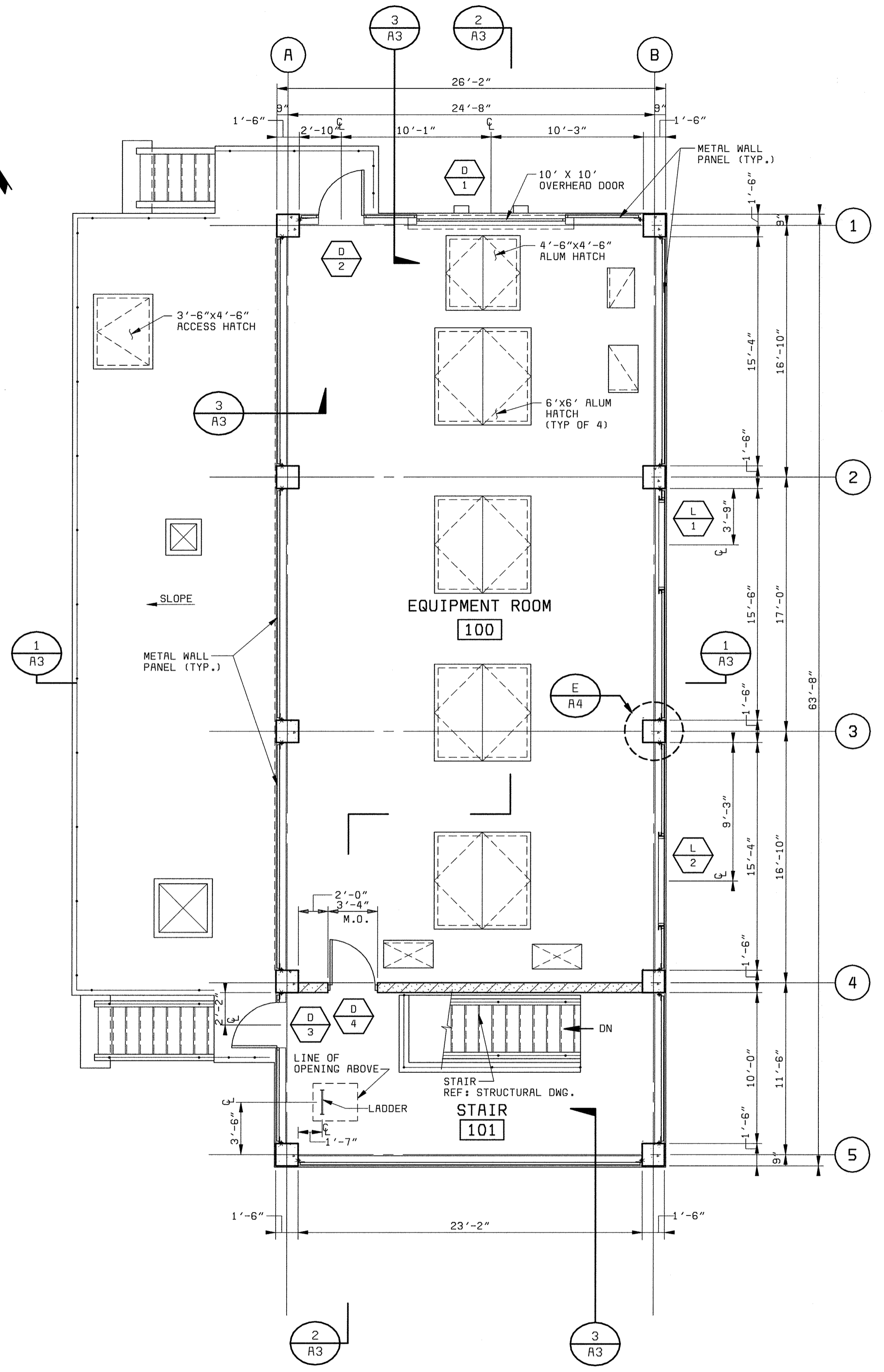
DES: CH/JS					
DRN: JS					
CHK: CH					
DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP
	5/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	

ARCHITECTURAL  
AUXILIARY PUMPING STATION  
ELEVATIONS

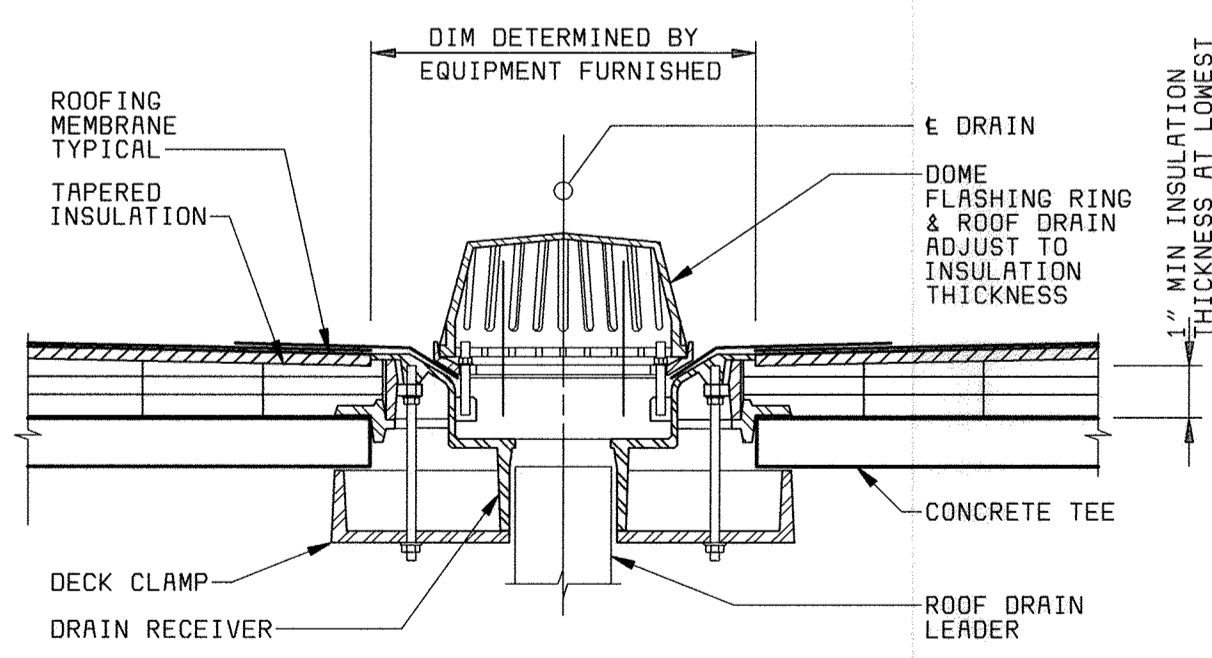
LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
PRELIMINARY AND PRIMARY TREATMENT EXPANSION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3840  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN  
SHEET  
22 OF 88  
A1

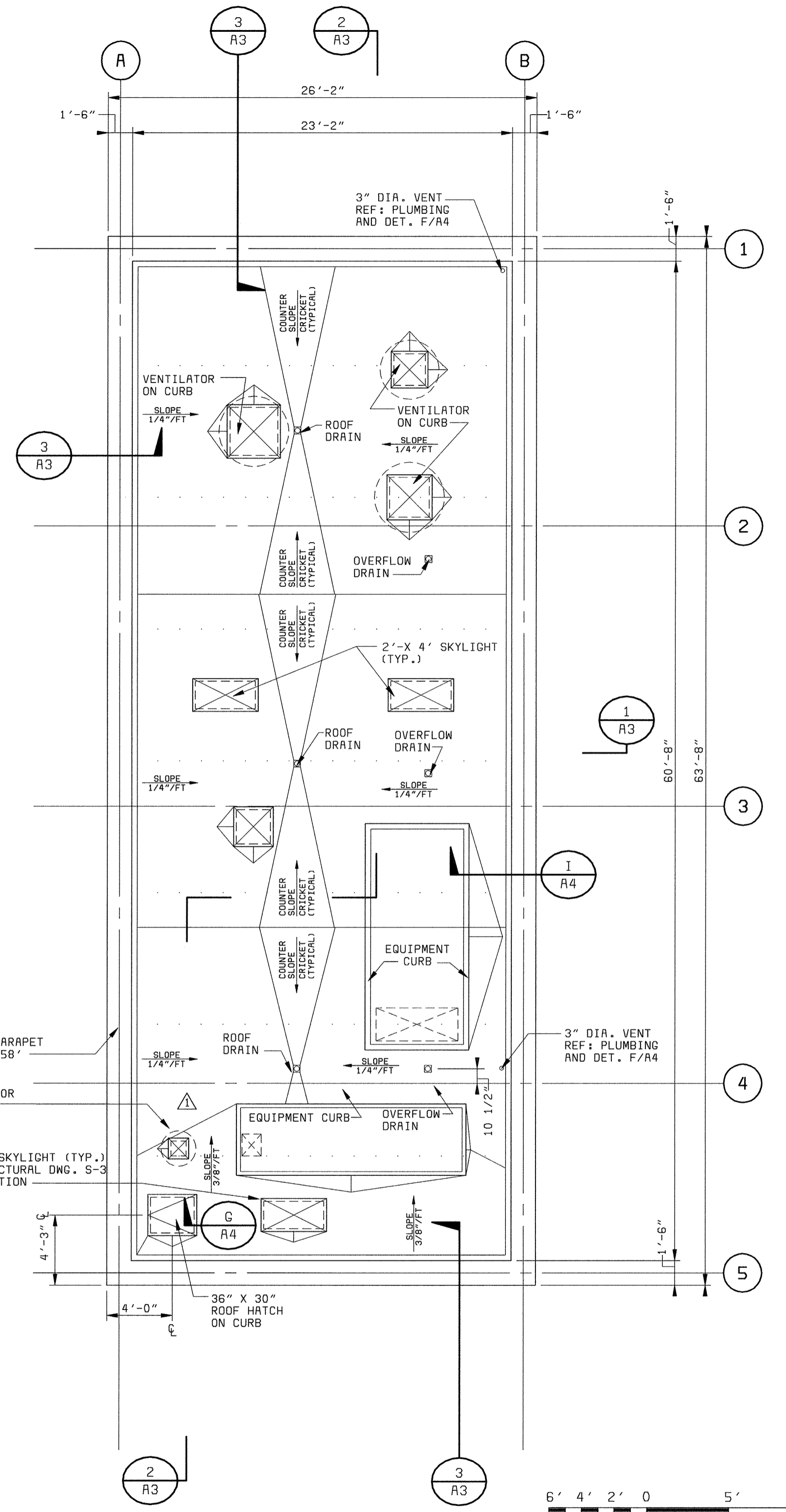




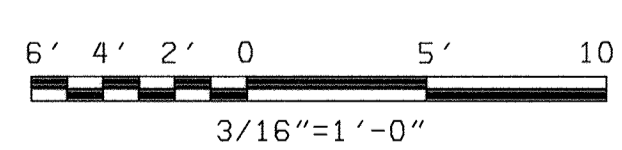
**GROUND LEVEL PLAN 1**  
3/16" = 1'-0"



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



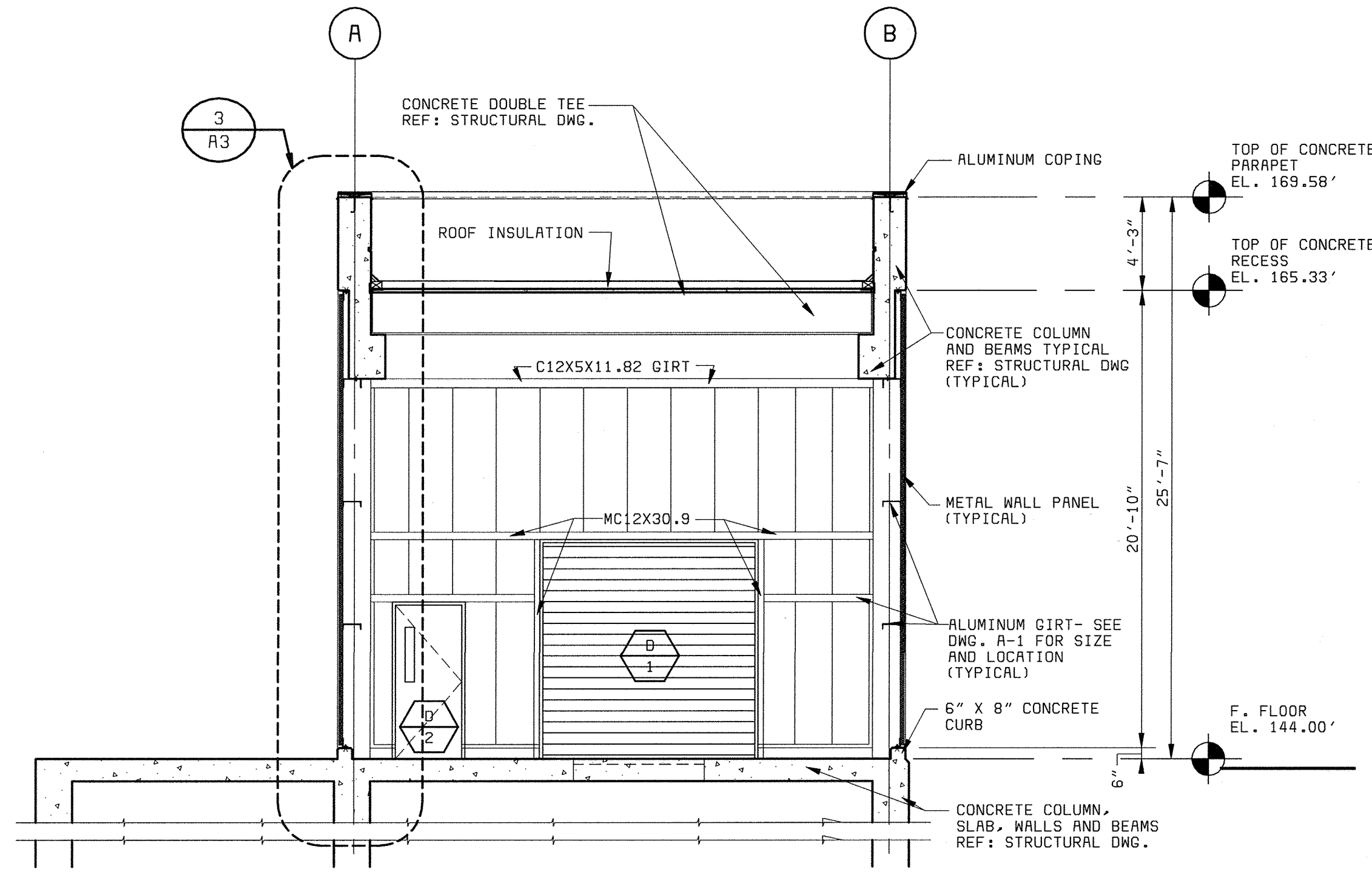
**ROOF PLAN 2**  
3/16" = 1'-0"



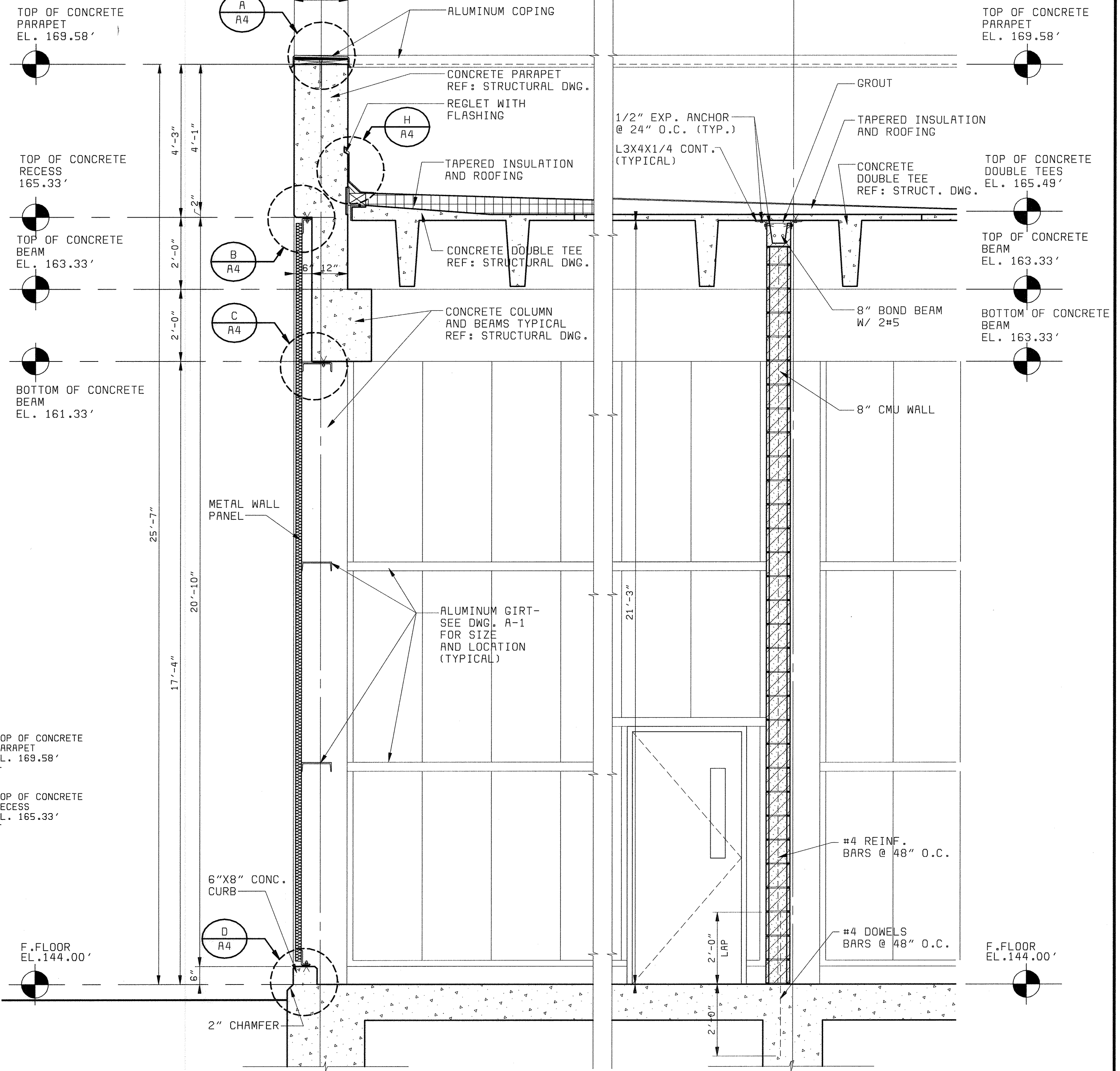
X:\LOGO XMPR100  
05/05/2005 12:32:07

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  <b>bbw</b> 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	<b>BLACK &amp; VEATCH</b> 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	SCALE AS SHOWN
		DRN: JS	OPERATING GROUND LEVEL AND ROOF PLAN			CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840 HOWARD COUNTY, MARYLAND	SHEET 23 OF 88  A2
CHIEF, BUREAU OF UTILITIES DATE	DATE	CHK: CH	5/05/05	CONFORMED TO CONSTRUCTION RECORDS	RHH RJR RJR		
		DATE: 2/19/01	7/10/01	CODE REVIEW COMMENT			
				REVISIONS AND RECORD OF ISSUE	NO. BY CK APP		



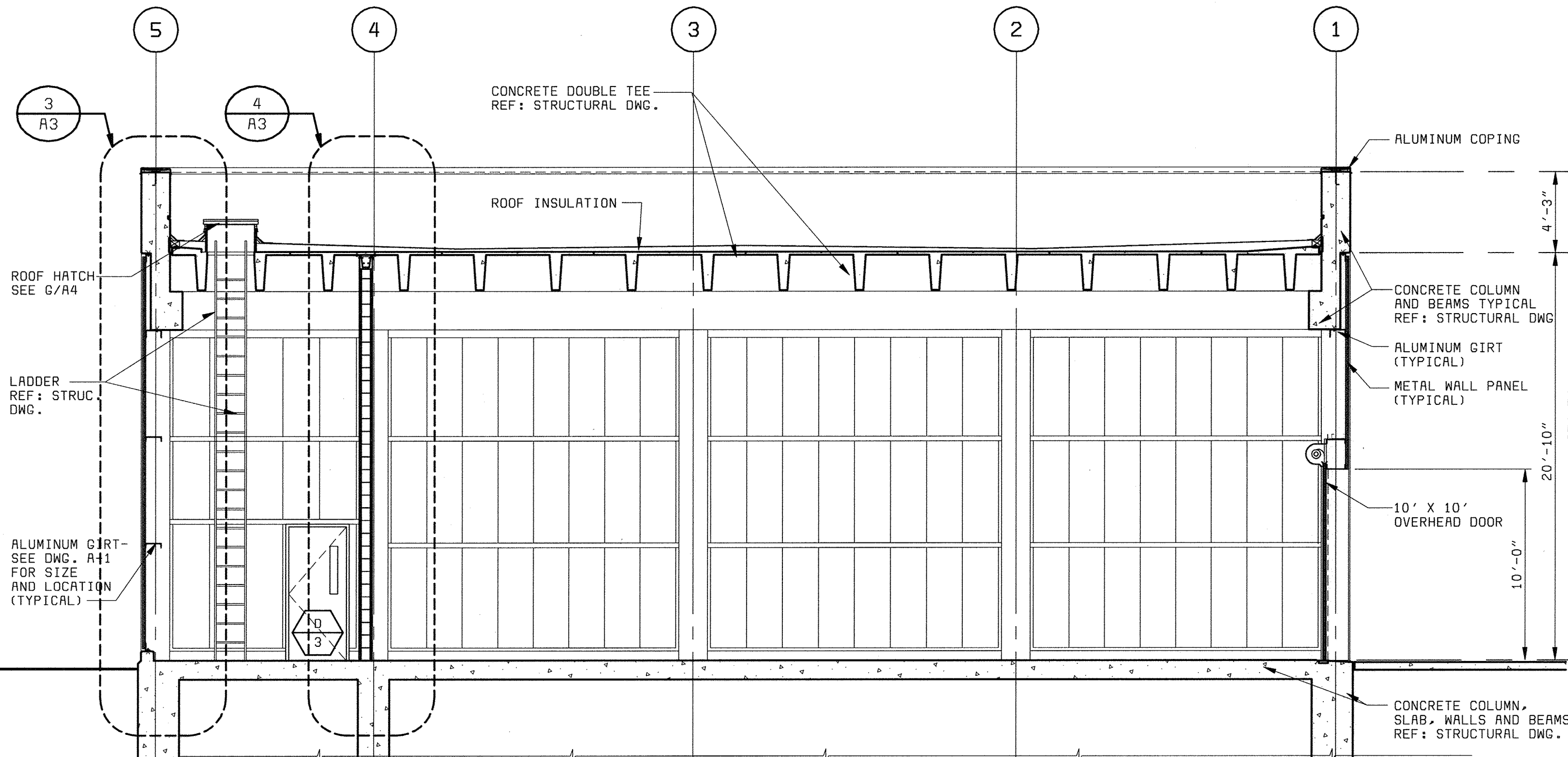


**BUILDING SECTION 1**  
3/16" = 1'-0"

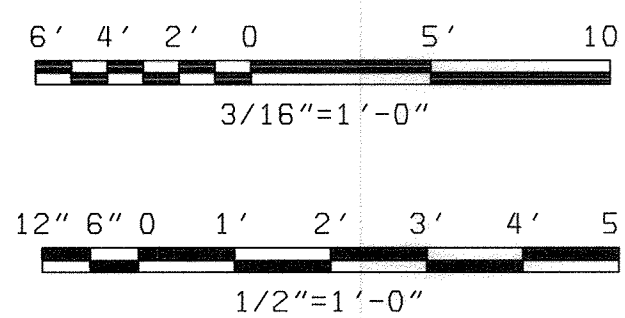


**WALL SECTION 3**  
1/2" = 1'-0"

**WALL SECTION 4**  
1/2" = 1'-0"



**BUILDING SECTION 2**  
3/16" = 1'-0"



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, 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

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

AUXILIARY PUMPING STATION  
ARCHITECTURAL

SECTIONS, WALL SECTIONS AND  
DETAILS

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

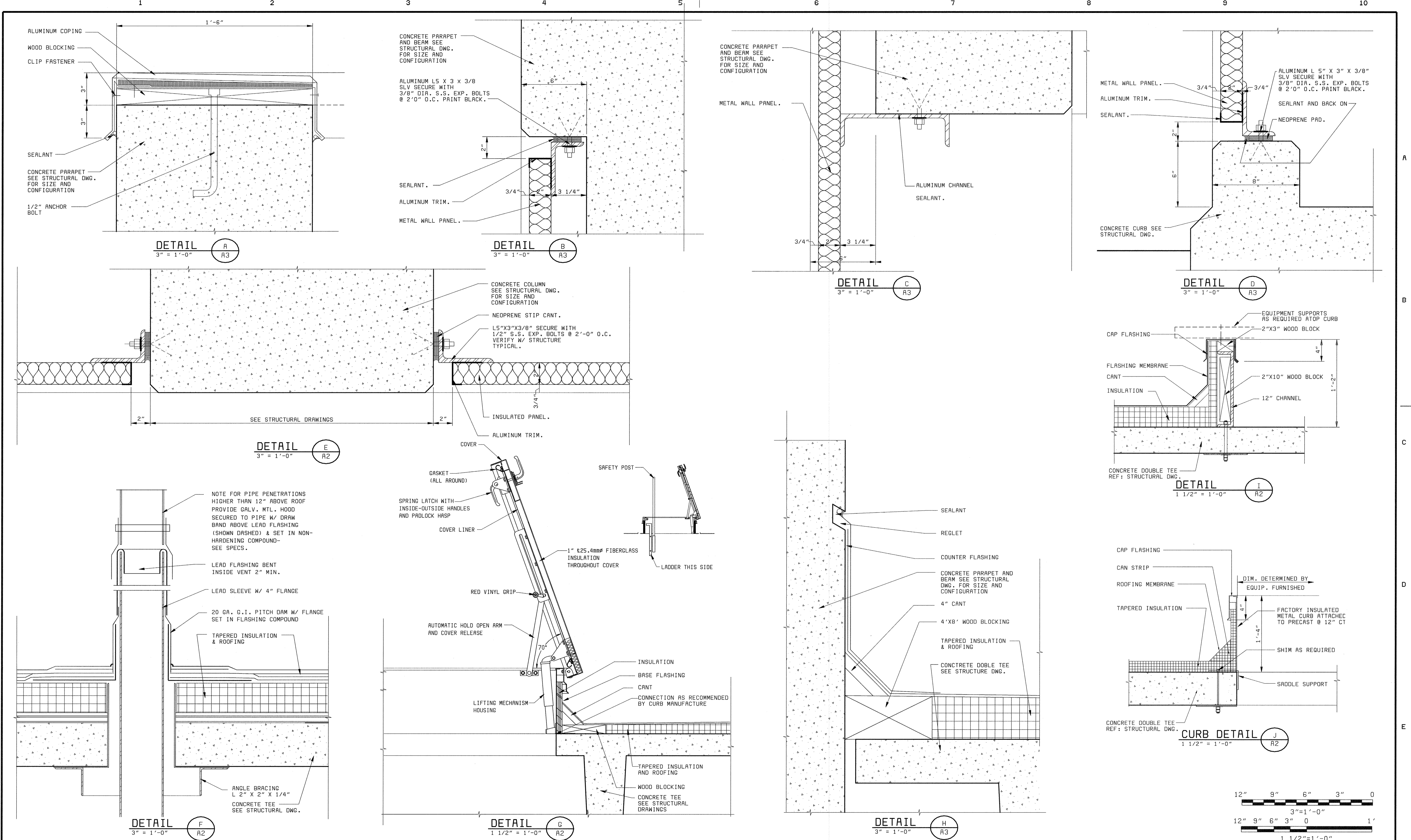
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3840  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

SHEET  
24 OF 88

A3





XWP101  
 XKL000  
 D58472-3  
 D58472-3  
 D58472-3

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



Bryant Bryant Williams, P.C.  
 4201 Connecticut Avenue N.W., Suite 500  
 Washington, D.C. 20008 (202) 244-2108



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

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: 5/26/00	5/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
DATE	REVISIONS AND RECORD OF ISSUE		NO.	BY	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**

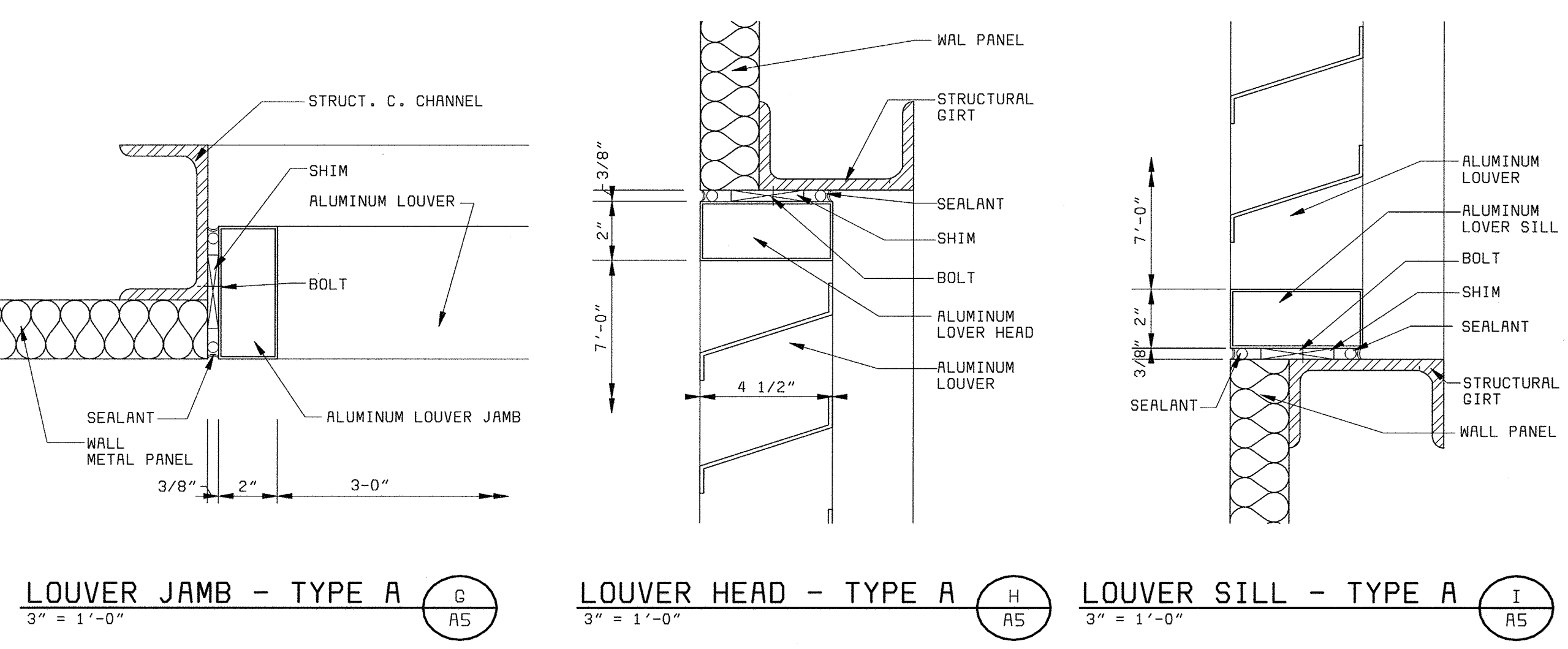
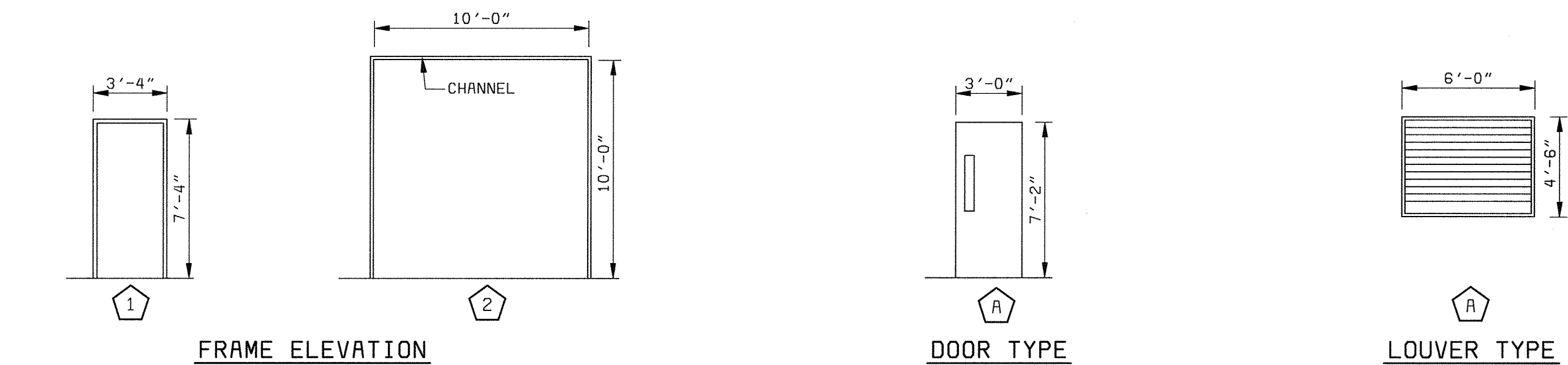
BUILDING	SPACE NUMBER	SPACE NAME	FLOOR	WALL	CEILING	REMARKS
AUXILIARY PUMPING STATION	100	EQUIPMENT ROOM	CONCRETE W/SEALER	MTL WALL PANEL/CMU/PTD	EXPOSED CONC	-
	101	STAIR	CONCRETE W/SEALER	MTL WALL PANEL/CMU/PTD	EXPOSED CONC	-
-	-	-	-	-	-	-

**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



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

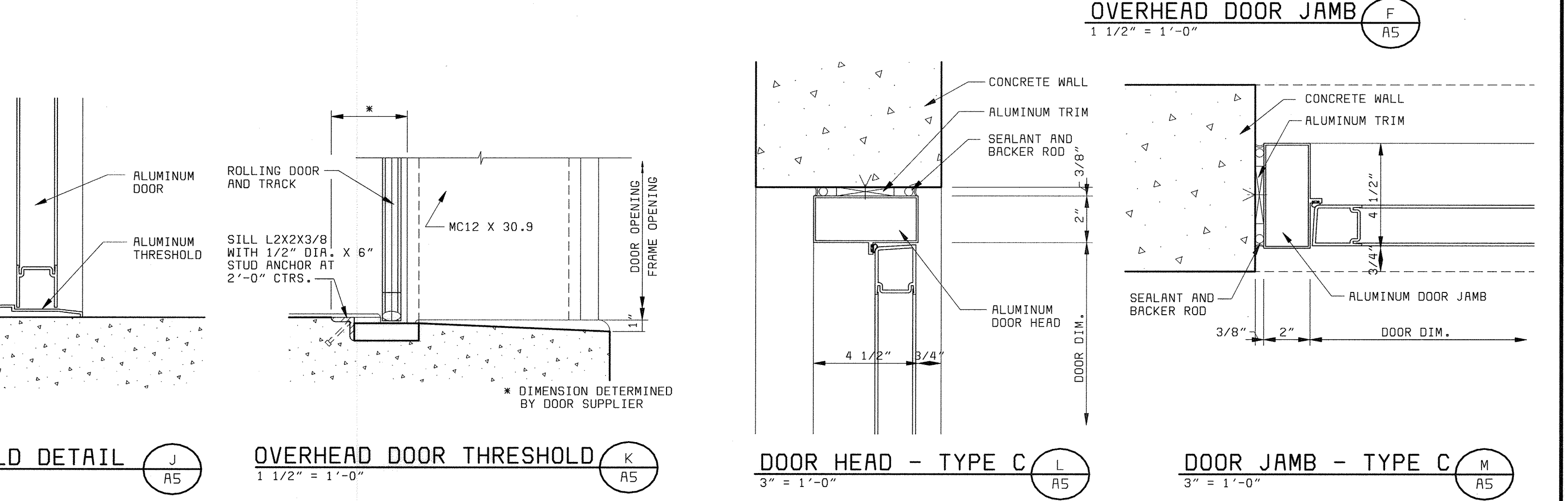
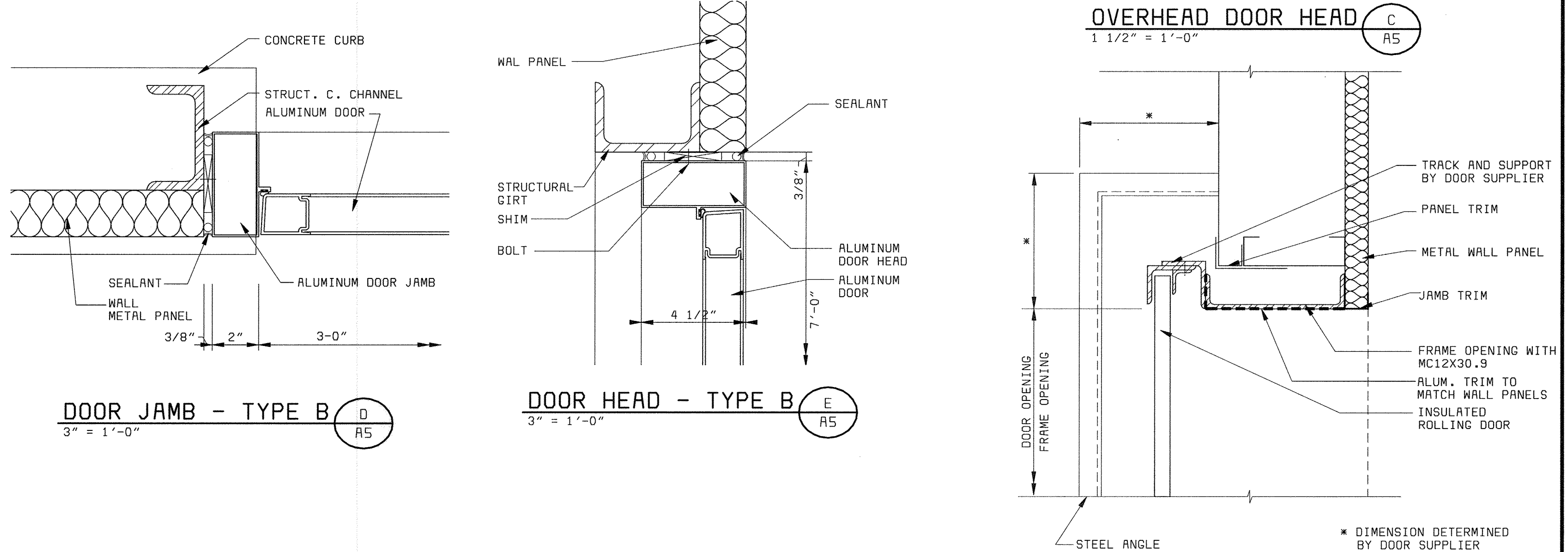
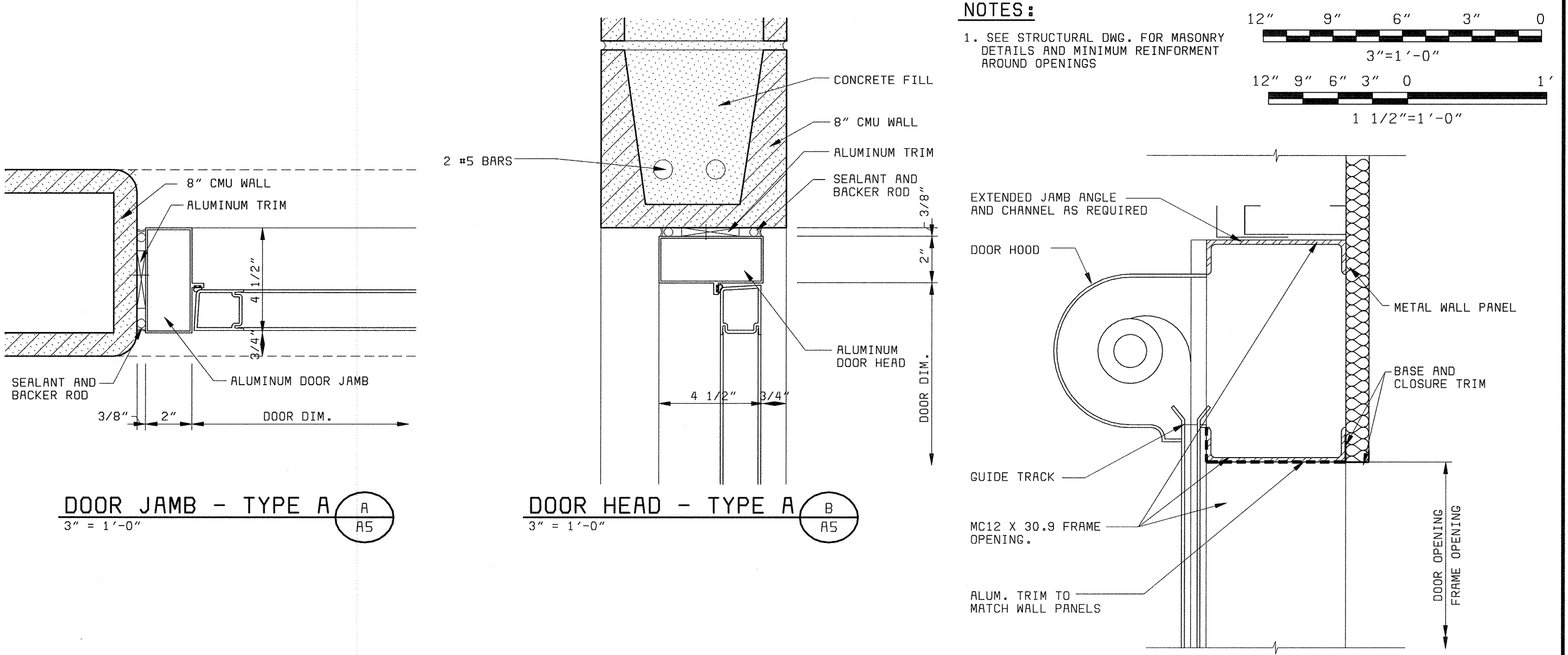
**BLACK & VEATCH**  
Gaithersburg, Maryland

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  
DRN: JS  
CHK: CH  
DATE: 5/26/00

5/05/05 CONFORMED TO CONSTRUCTION RECORDS  
7/10/01 CODE REVIEW COMMENT

REVISIONS AND RECORD OF ISSUE



AUXILIARY 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

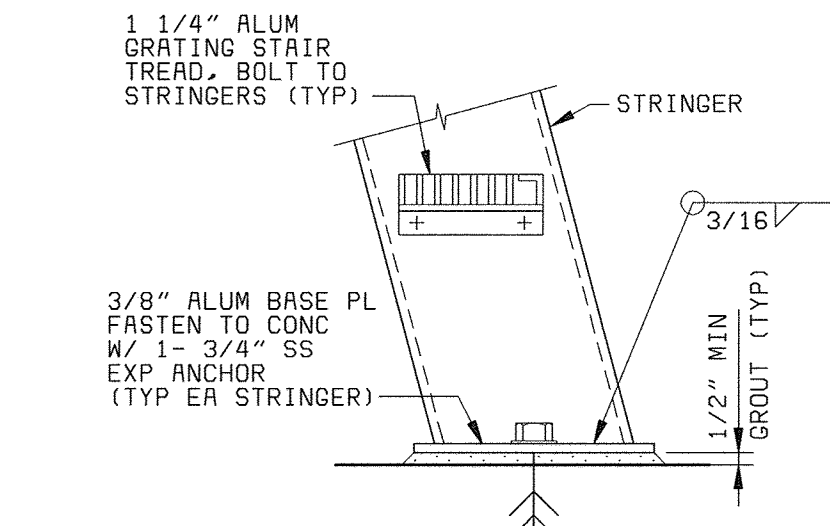
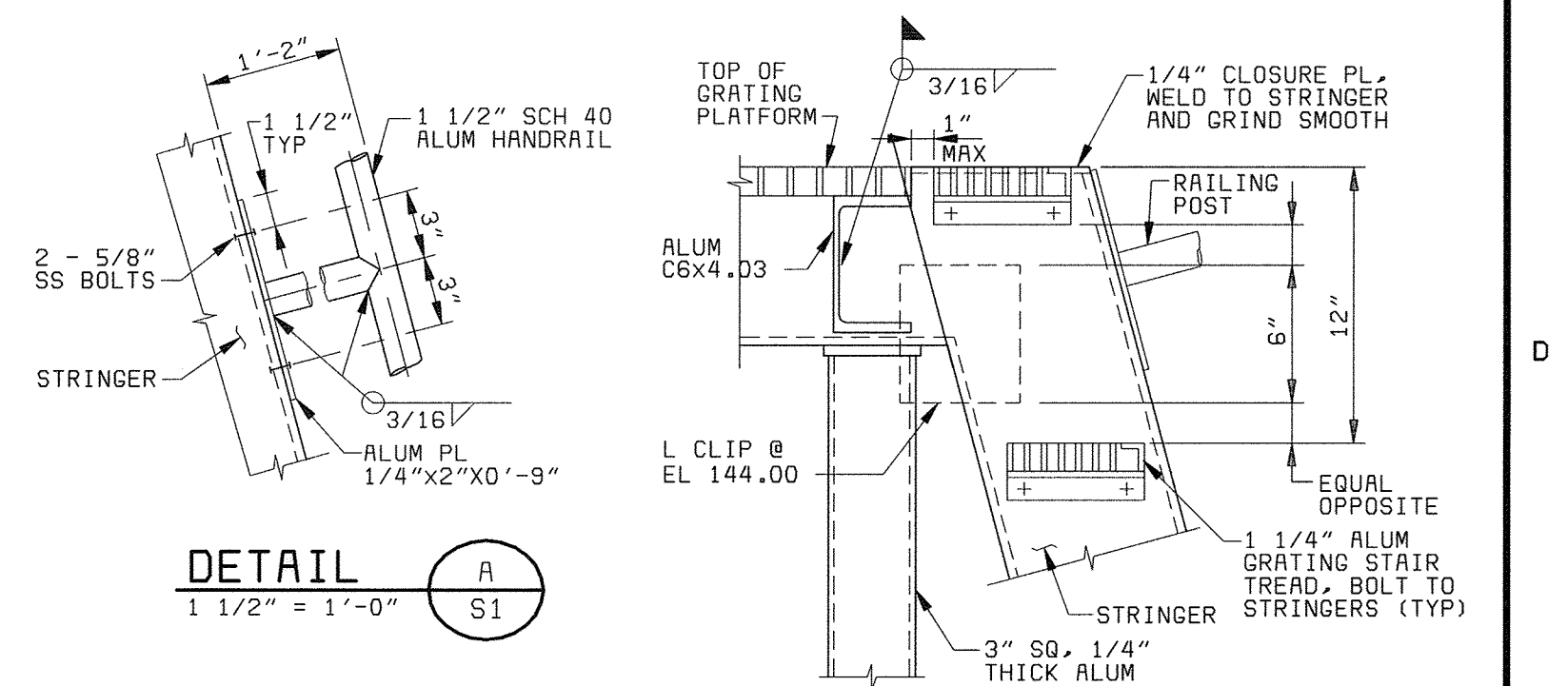
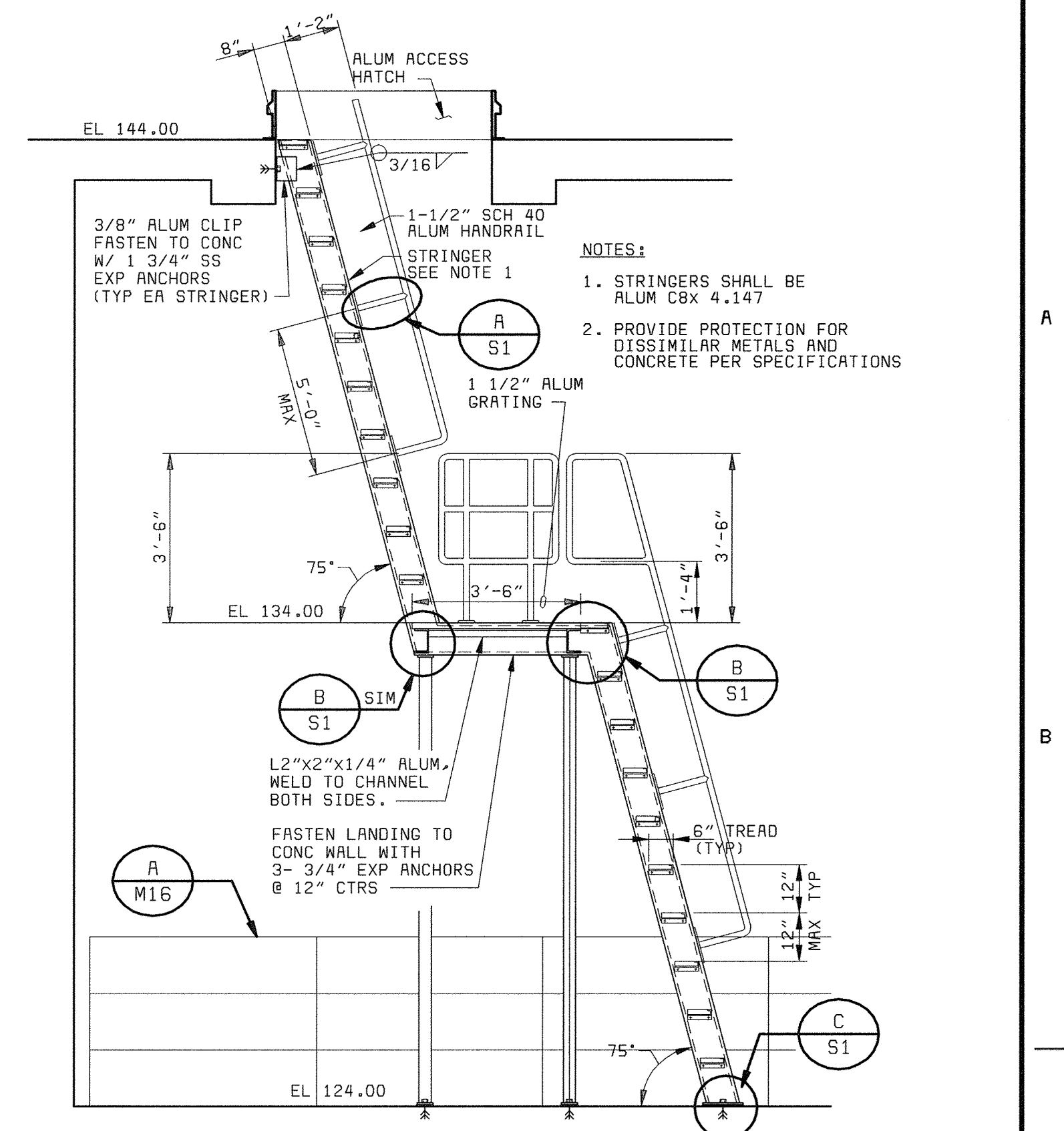
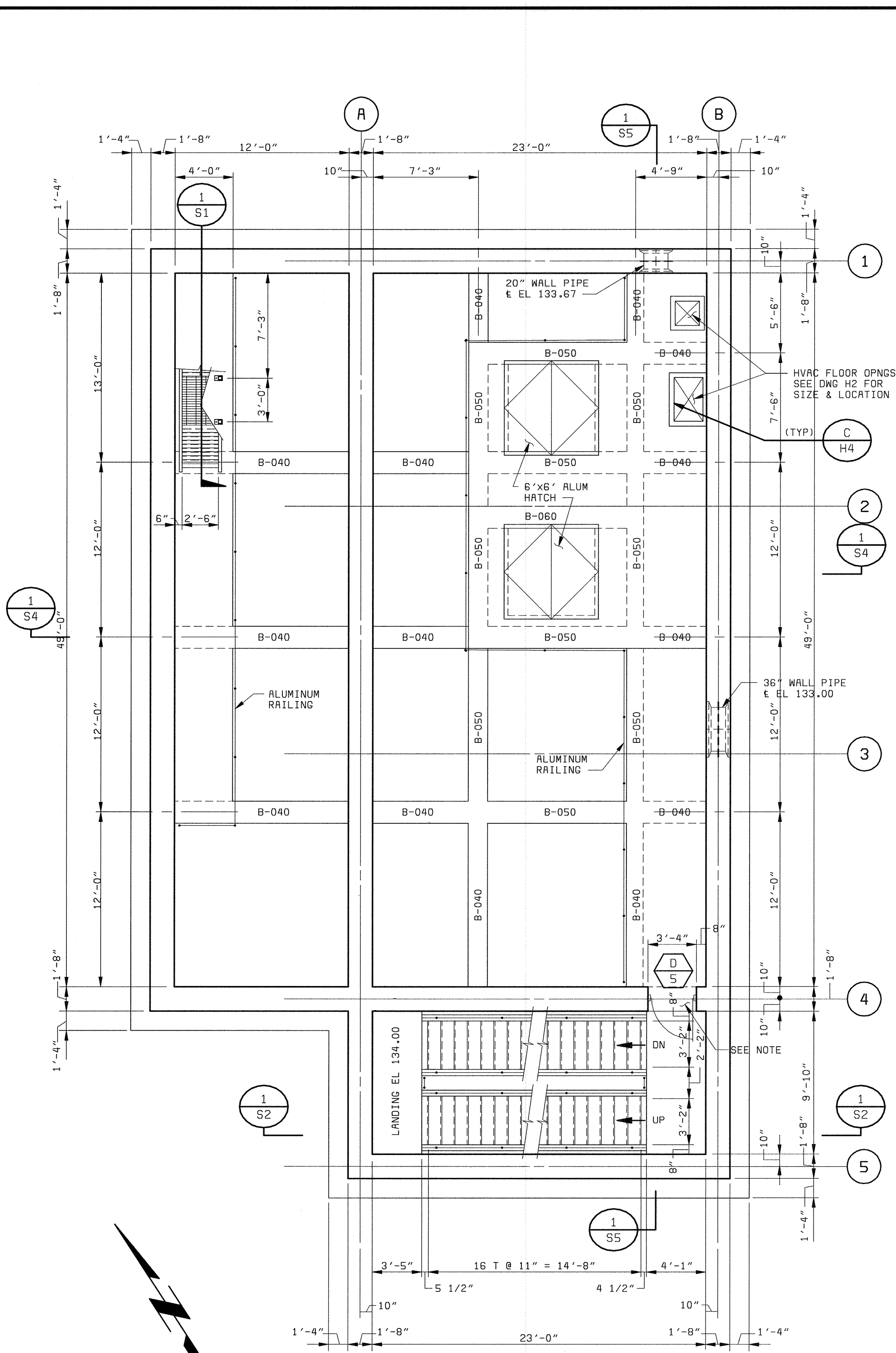
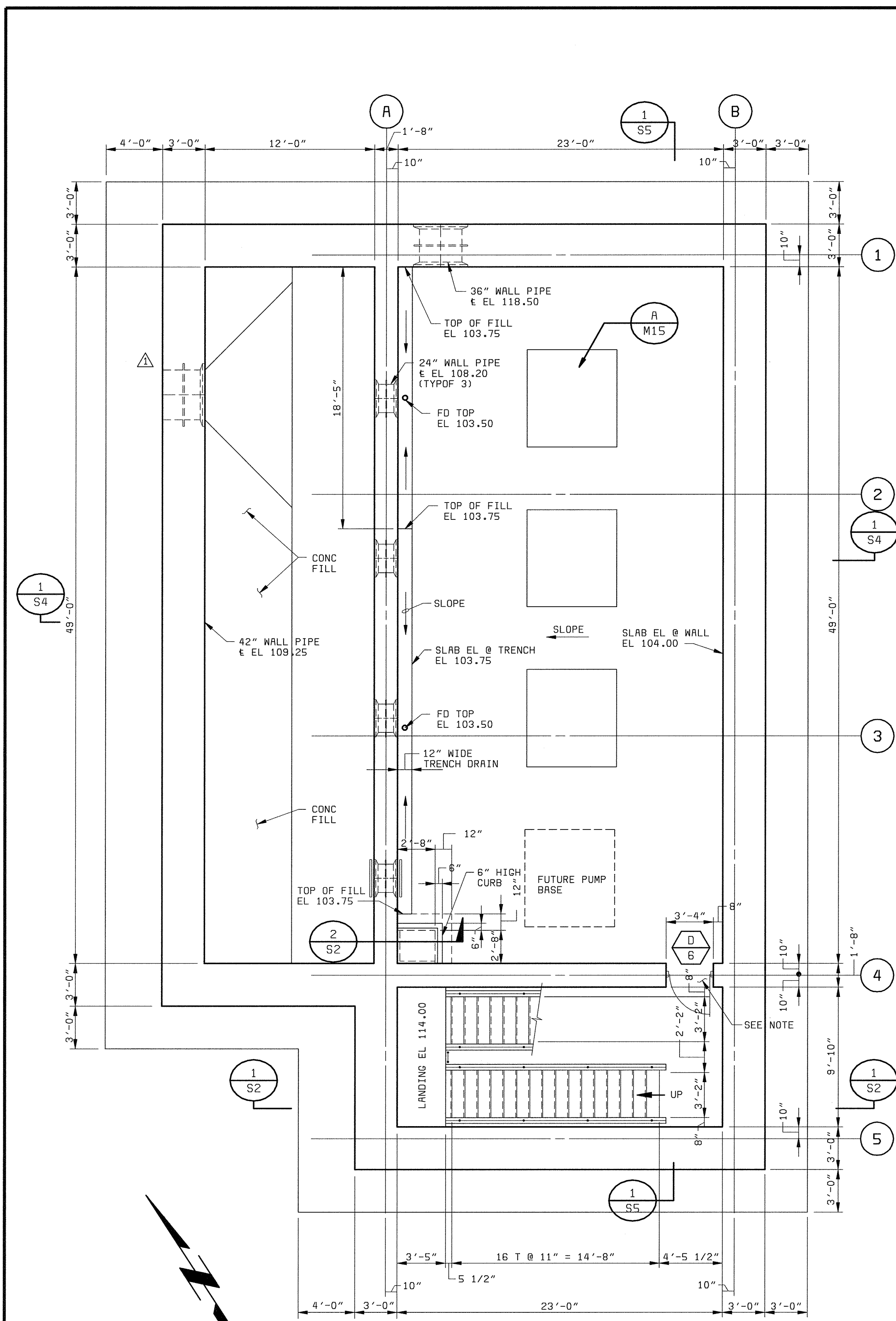
SCALE AS SHOWN  
SHEET 26 OF 88  
A5

**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"

XWP102  
XWL060  
D58472-3





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: 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

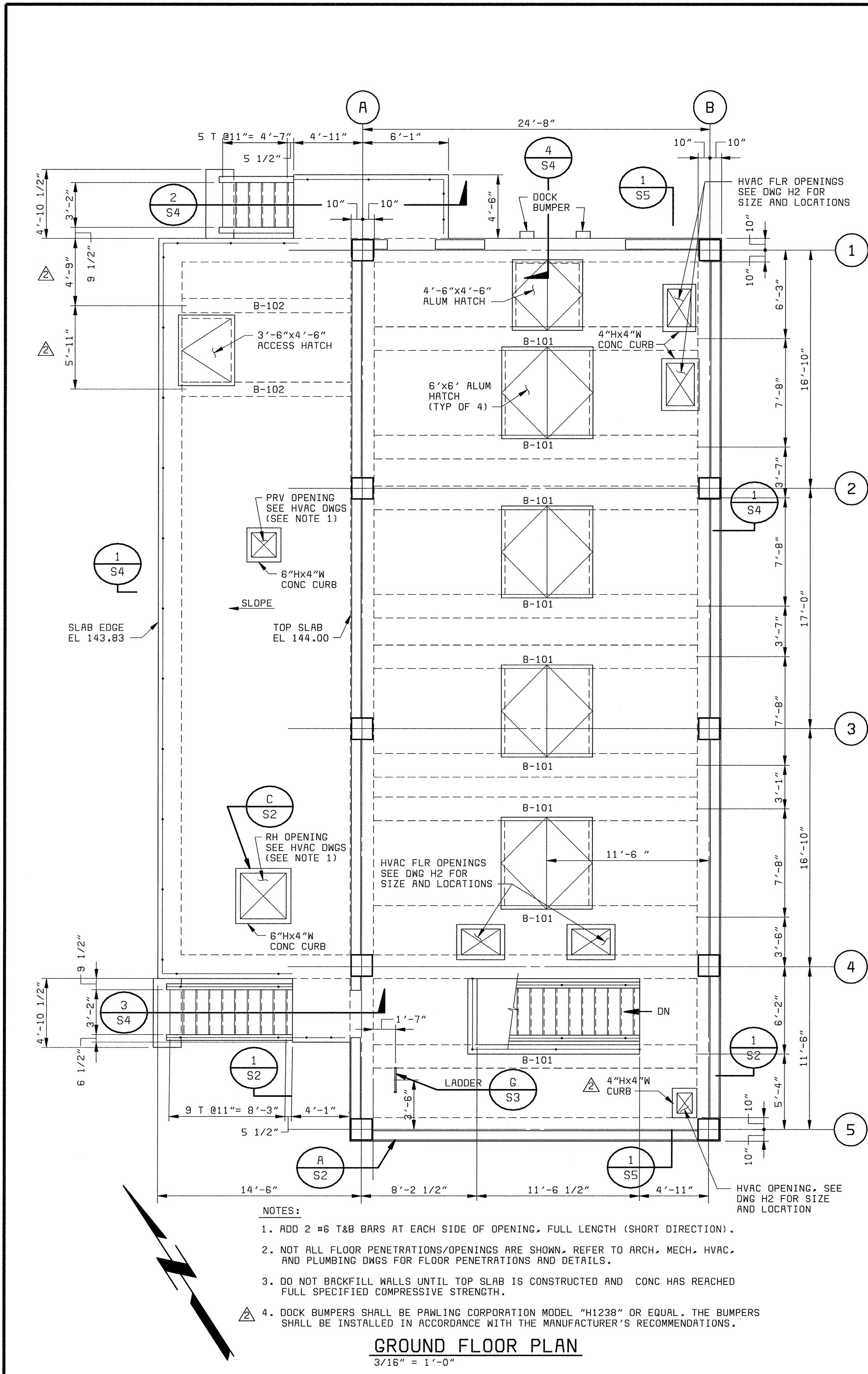
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

SCALE AS SHOWN

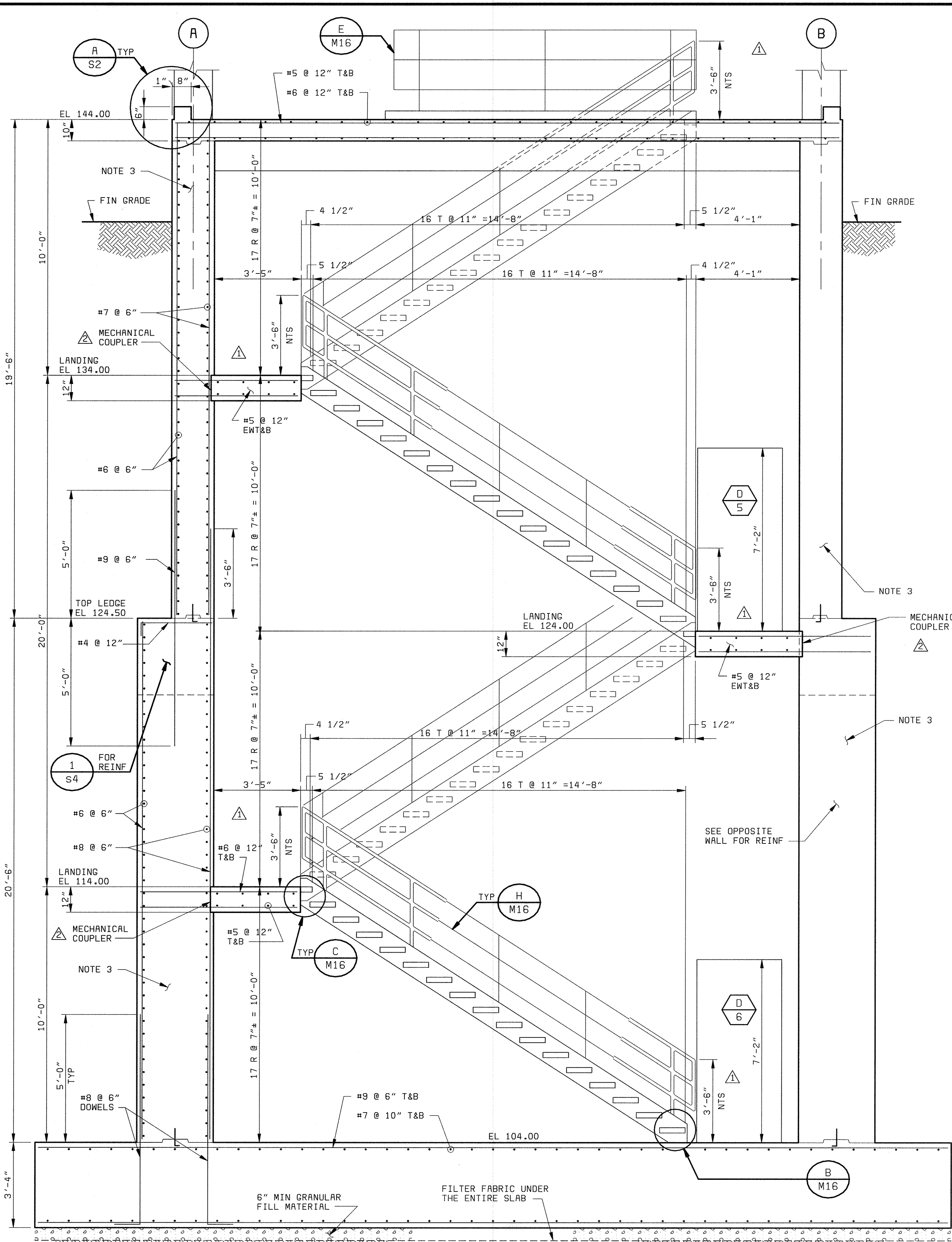
SHEET 27 OF 88

**S1**

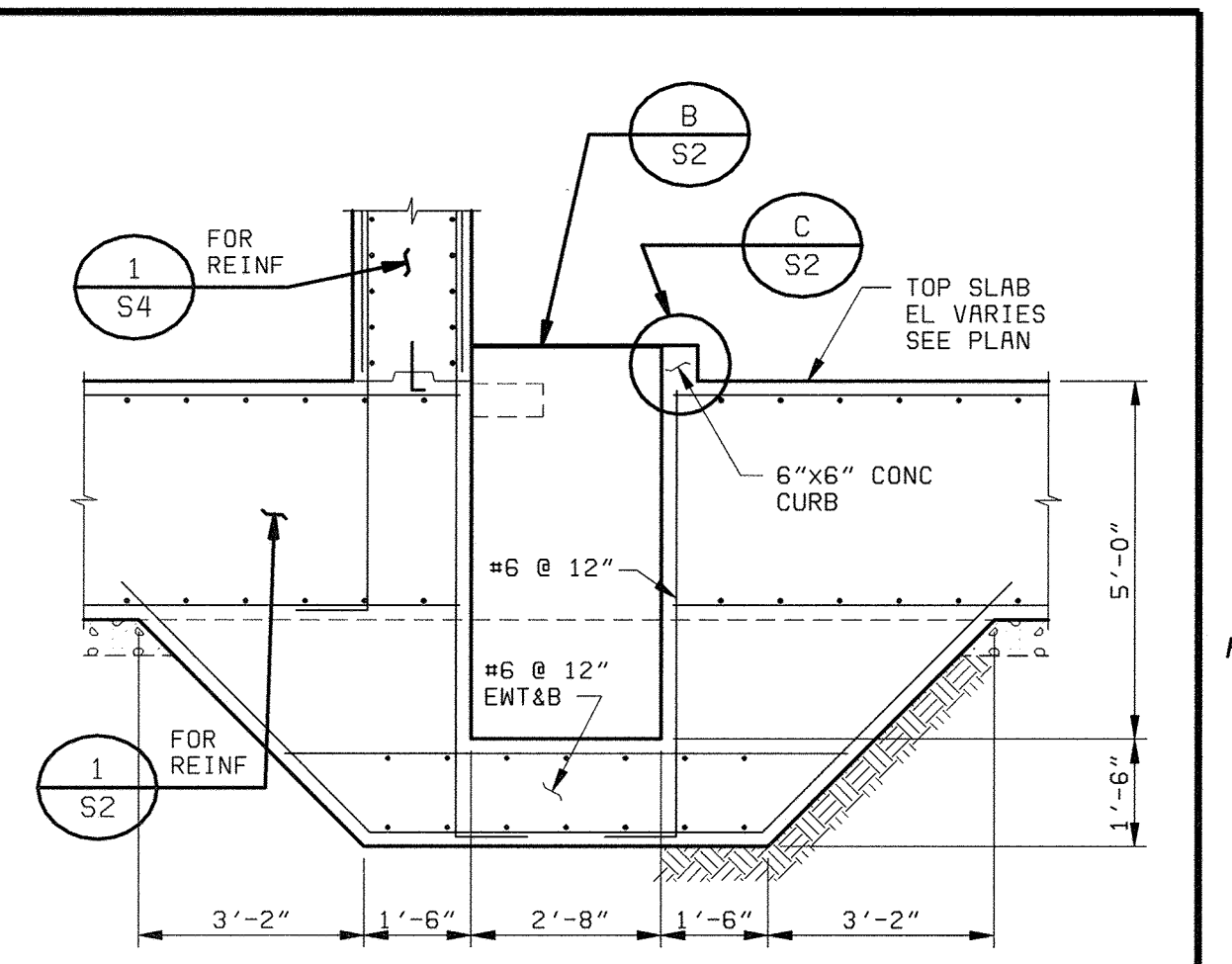


- NOTES:
- ADD 2 #6 T&B BARS AT EACH SIDE OF OPENING, FULL LENGTH (SHORT DIRECTION).
  - NOT ALL FLOOR PENETRATIONS/OPENINGS ARE SHOWN, REFER TO ARCH, MECH, HVAC, AND PLUMBING DWGS FOR FLOOR PENETRATIONS AND DETAILS.
  - DO NOT BACKFILL WALLS UNTIL TOP SLAB IS CONSTRUCTED AND CONC HAS REACHED FULL SPECIFIED COMPRESSIVE STRENGTH.
  - DOCK BUMPERS SHALL BE PAWLING CORPORATION MODEL "H1238" OR EQUAL. THE BUMPERS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

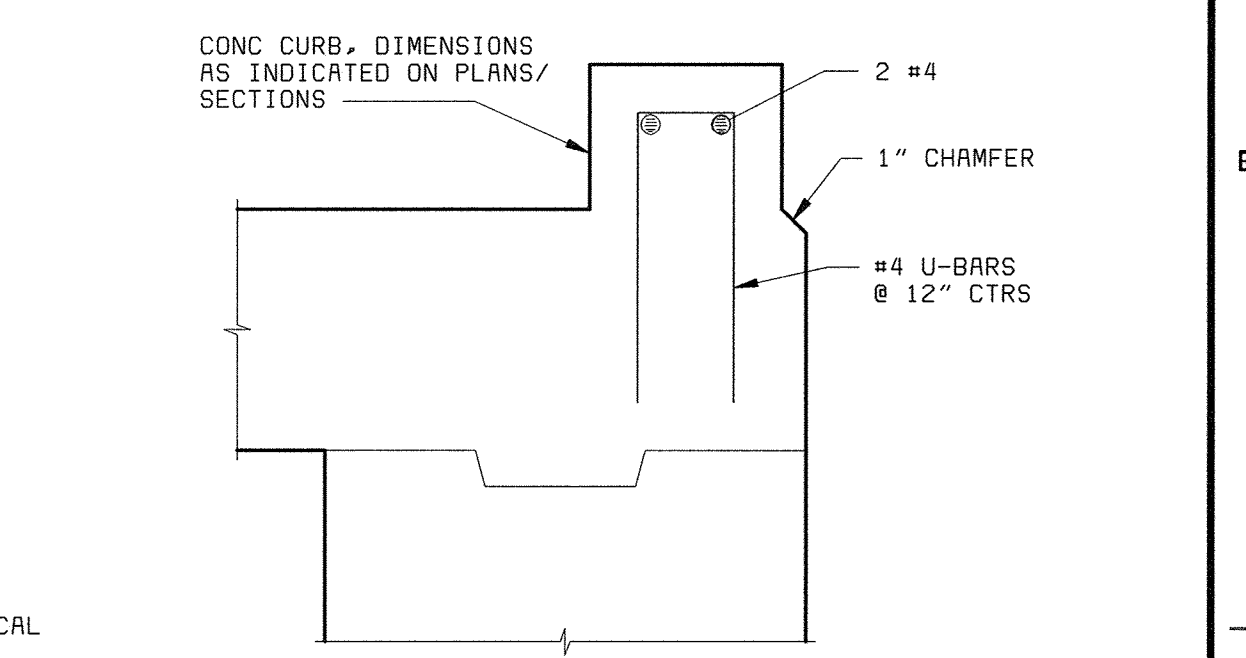
**GROUND FLOOR PLAN**  
3/16" = 1'-0"



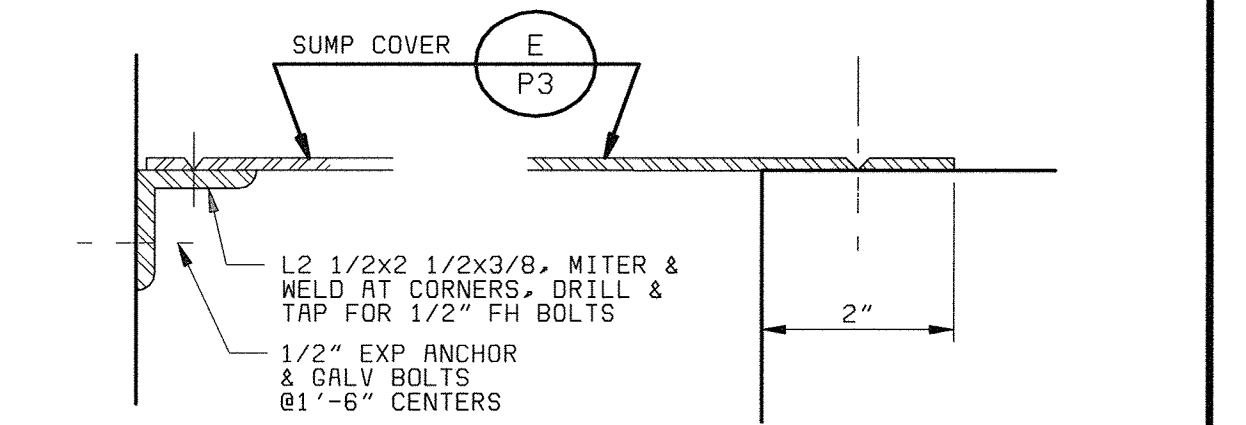
**SECTION 1**  
3/8" = 1'-0"



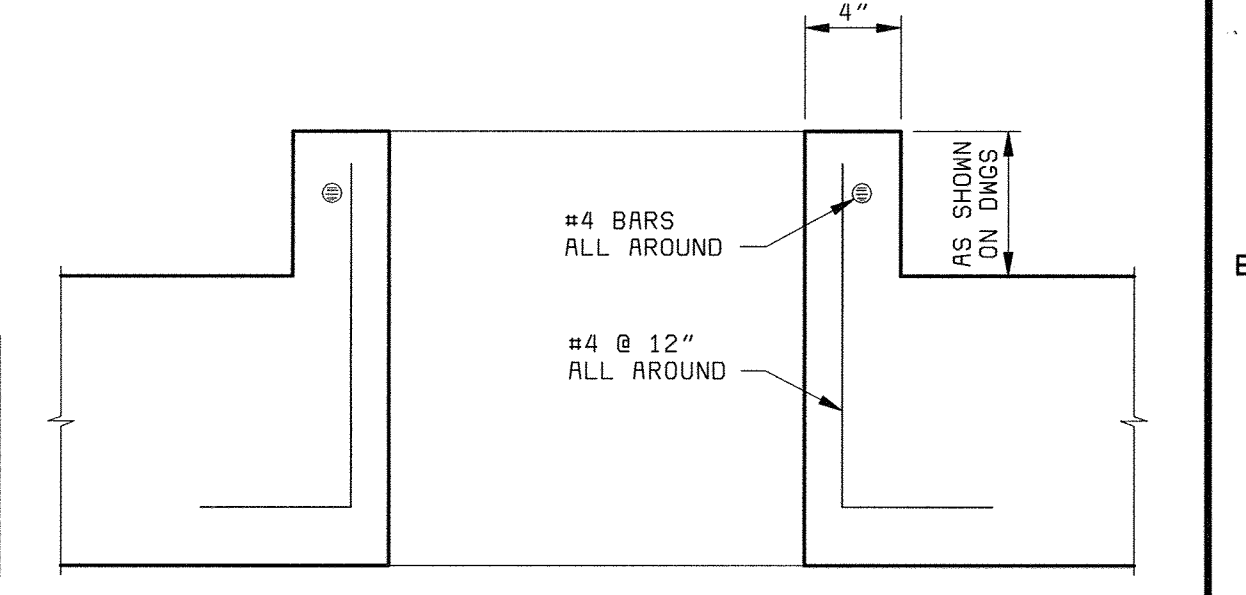
**SECTION 2**  
3/8" = 1'-0"



**DETAIL A**  
1 1/2" = 1'-0"



**SUMP COVER PLATE SUPPORT**  
NO SCALE



**DETAIL C**  
NO SCALE

58472-101-AP-S-20000000R

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

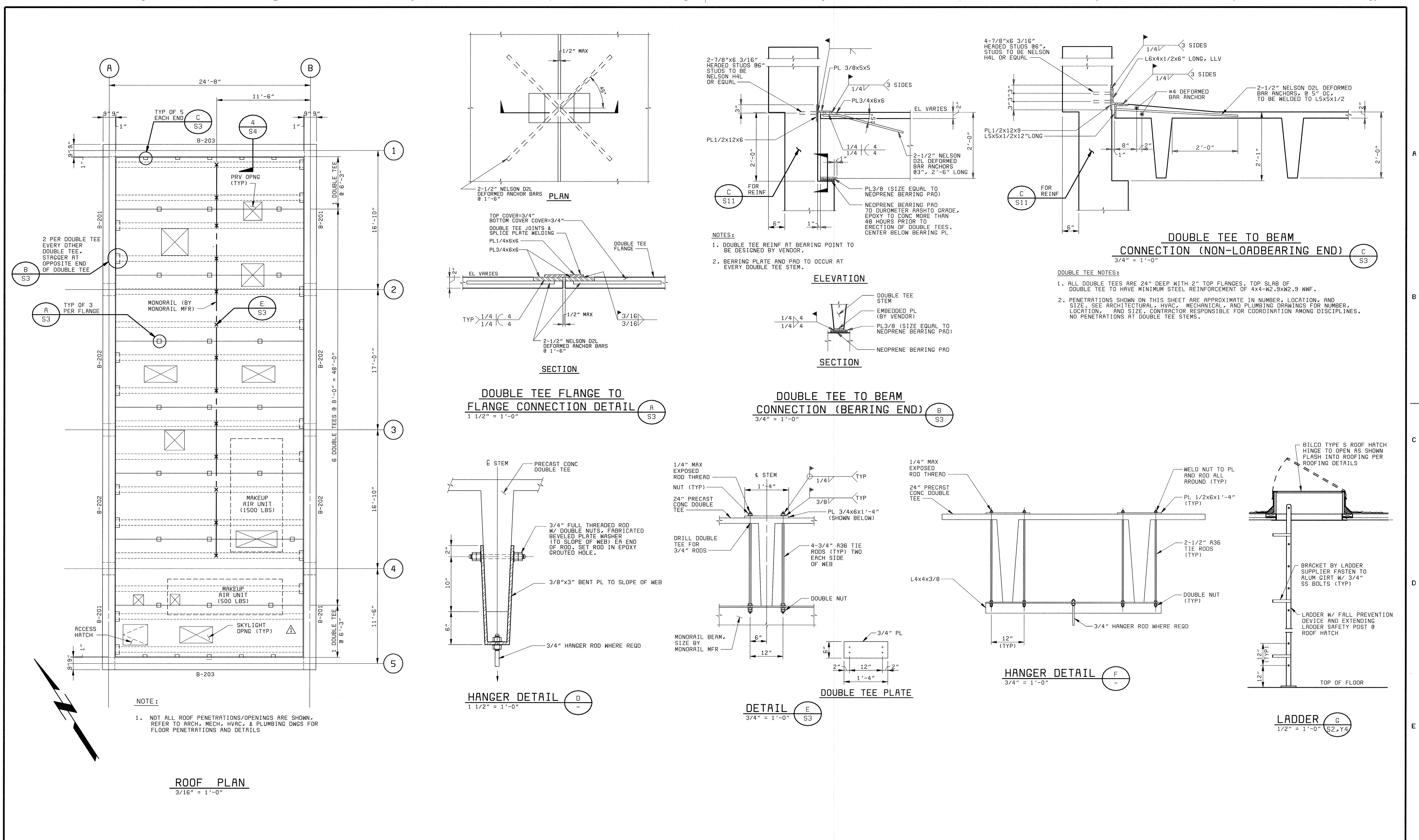
DES: IFH					
DRN: AAL					
CHK: WDB	05/05/05	CONFORMED TO CONSTRUCTION RECORDS	RHM/RJR/RJR		
DATE: 2/19/01	8/28/01	CODE REVIEW COMMENTS	IFH		
		REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

**AUXILIARY PUMP STATION  
STRUCTURAL**  
  
**GROUND FLOOR PLAN,  
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  
28 OF 88  
  
**S2**





**NOTE:**  
 1. NOT ALL ROOF PENETRATIONS/OPENINGS ARE SHOWN. REFER TO ARCH, MECH, HVAC, & PLUMBING DWGS FOR FLOOR PENETRATIONS AND DETAILS

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

**DOUBLE TEE FLANGE TO FLANGE CONNECTION DETAIL**  
 1 1/2" = 1'-0"

**DOUBLE TEE TO BEAM CONNECTION (BEARING END)**  
 3/4" = 1'-0"

**DOUBLE TEE TO BEAM CONNECTION (NON-LOADBEARING END)**  
 3/4" = 1'-0"

**HANGER DETAIL**  
 1 1/2" = 1'-0"

**DETAIL**  
 3/4" = 1'-0"

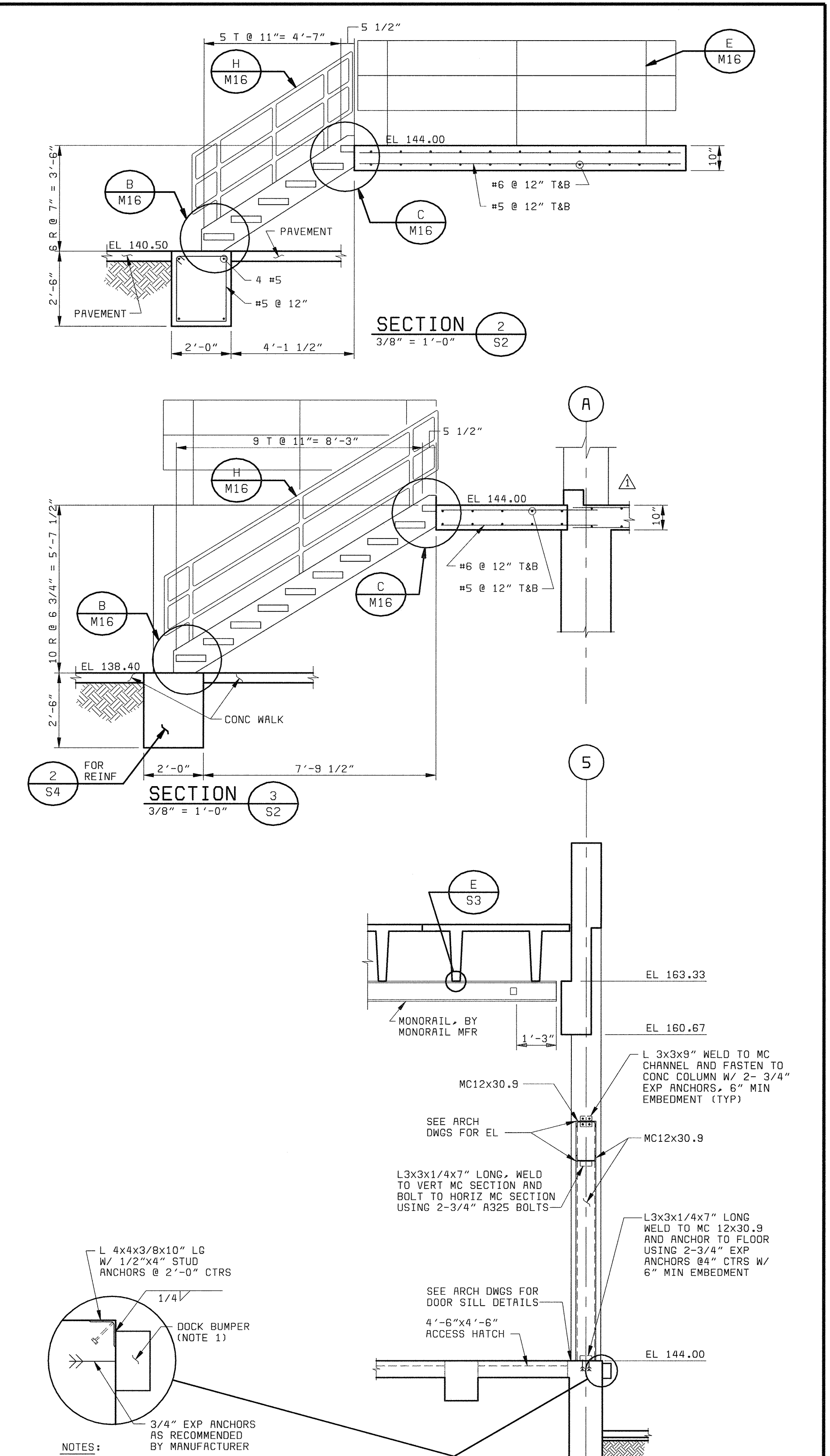
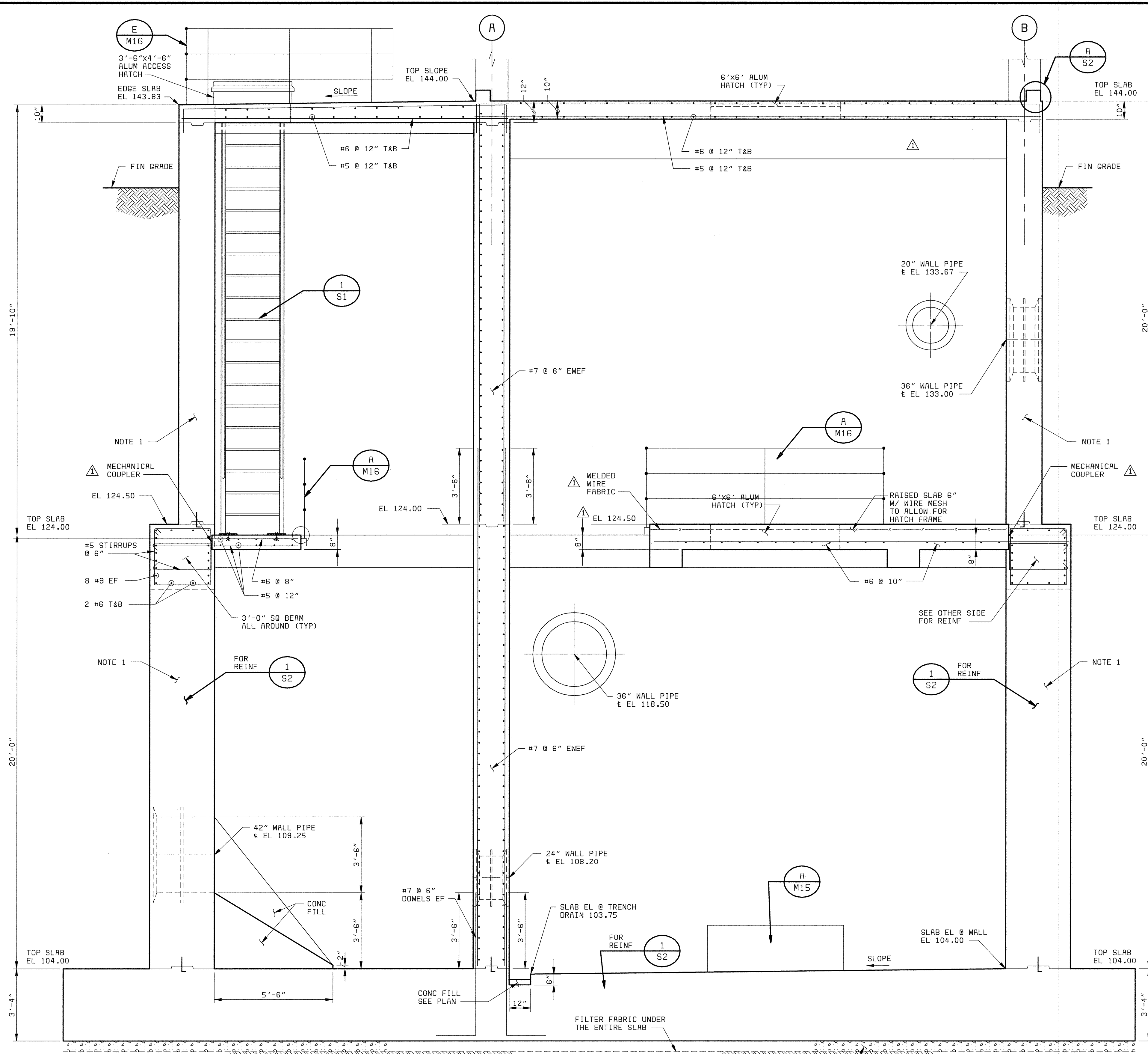
**HANGER DETAIL**  
 3/4" = 1'-0"

**LADDER**  
 1/2" = 1'-0"

58472-101-AP-S-00000885

05/17/2005 12:28:16

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland  REC. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTRANUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: IFH						<b>AUXILIARY PUMP STATION STRUCTURAL</b>  <b>ROOF PLAN AND DETAILS</b>	<b>LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION</b>  CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840  HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: SLF								SHEET 29 OF 88
			CHK: WDB	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR			S3
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP		



NOTE: 1. DO NOT BACKFILL WALLS UNTIL TOP SLAB IS CONSTRUCTED AND CONCRETE HAS REACHED FULL SPECIFIED COMPRESSIVE STRENGTH.

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

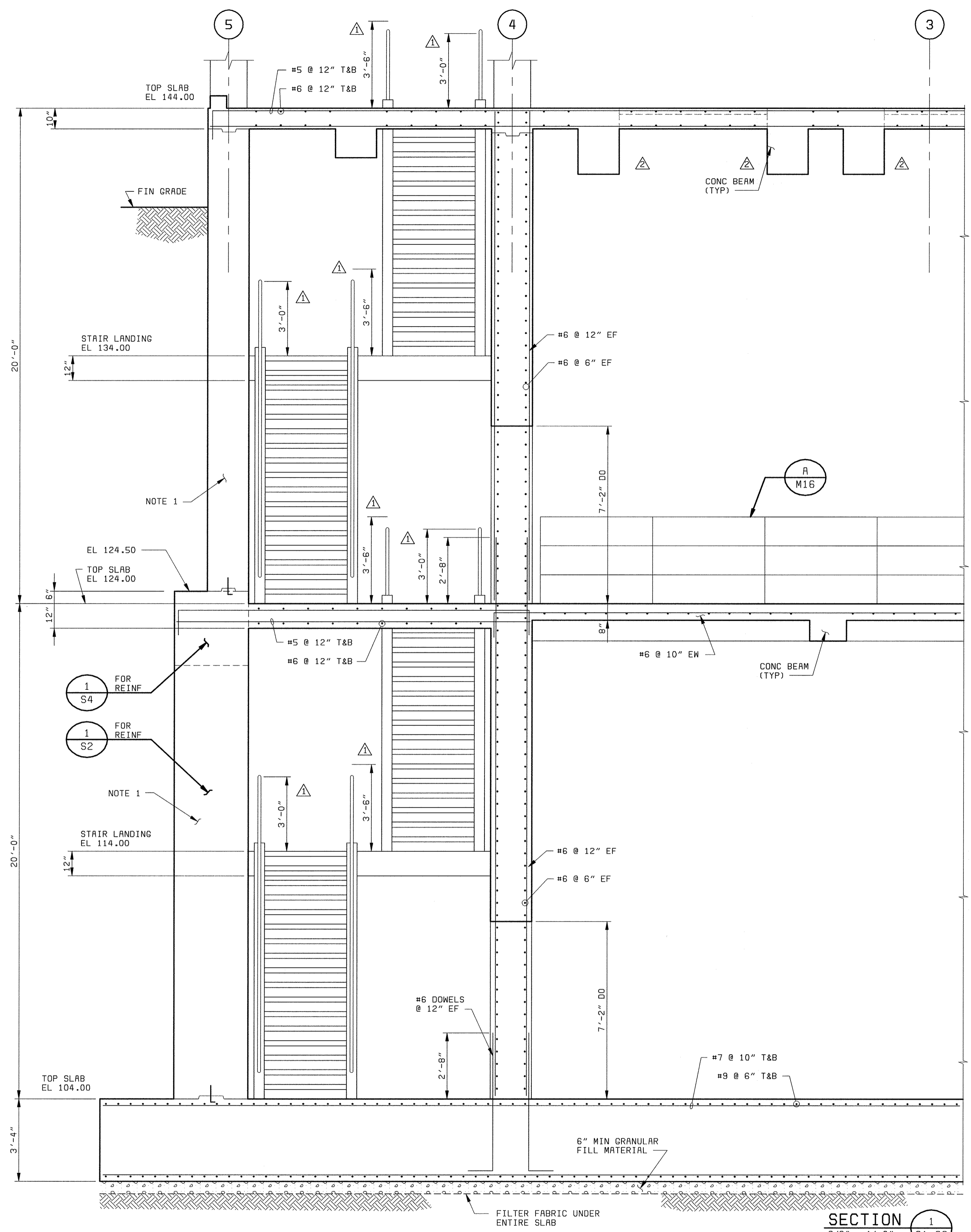
NOTES:  
1. DOCK BUMPERS SHALL BE AS MANUFACTURED BY THE PAWLING CORPORATION "MODEL H1238", KELLEY, KINNEAR, OR EQUAL.

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

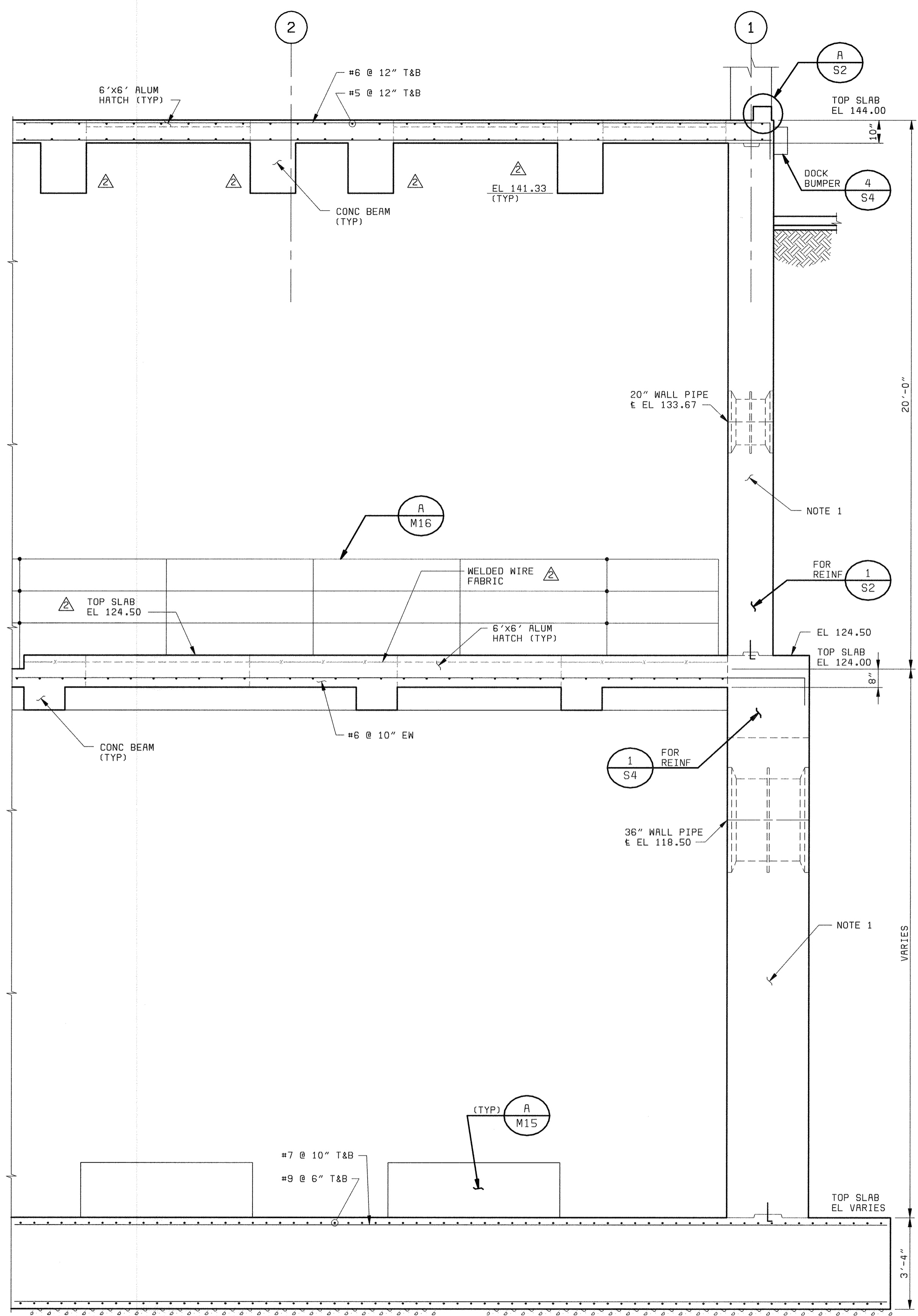
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: IFH			<b>AUXILIARY PUMP STATION          STRUCTURAL</b>	<b>LITTLE PATUXENT WATER RECLAMATION PLANT          ADDITION NO. 6          PRELIMINARY AND PRIMARY TREATMENT EXPANSION</b>	SCALE AS SHOWN  SHEET 30 OF 88  <b>S4</b>
			DRN: SLF	CHK: WDB	DATE: 2/19/01			

58472-101-AP-S-00000685





SECTION 1  
3/8" = 1'-0" S1, S2



SECTION 1  
3/8" = 1'-0" S1, S2

NOTES:  
1. DO NOT BACKFILL WALLS UNTIL TOP SLAB IS CONSTRUCTED AND CONCRETE HAS REACHED FULL SPECIFIED COMPRESSIVE STRENGTH.

58472-101-AP-S-00000685

05/17/2005 14:47:45

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

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

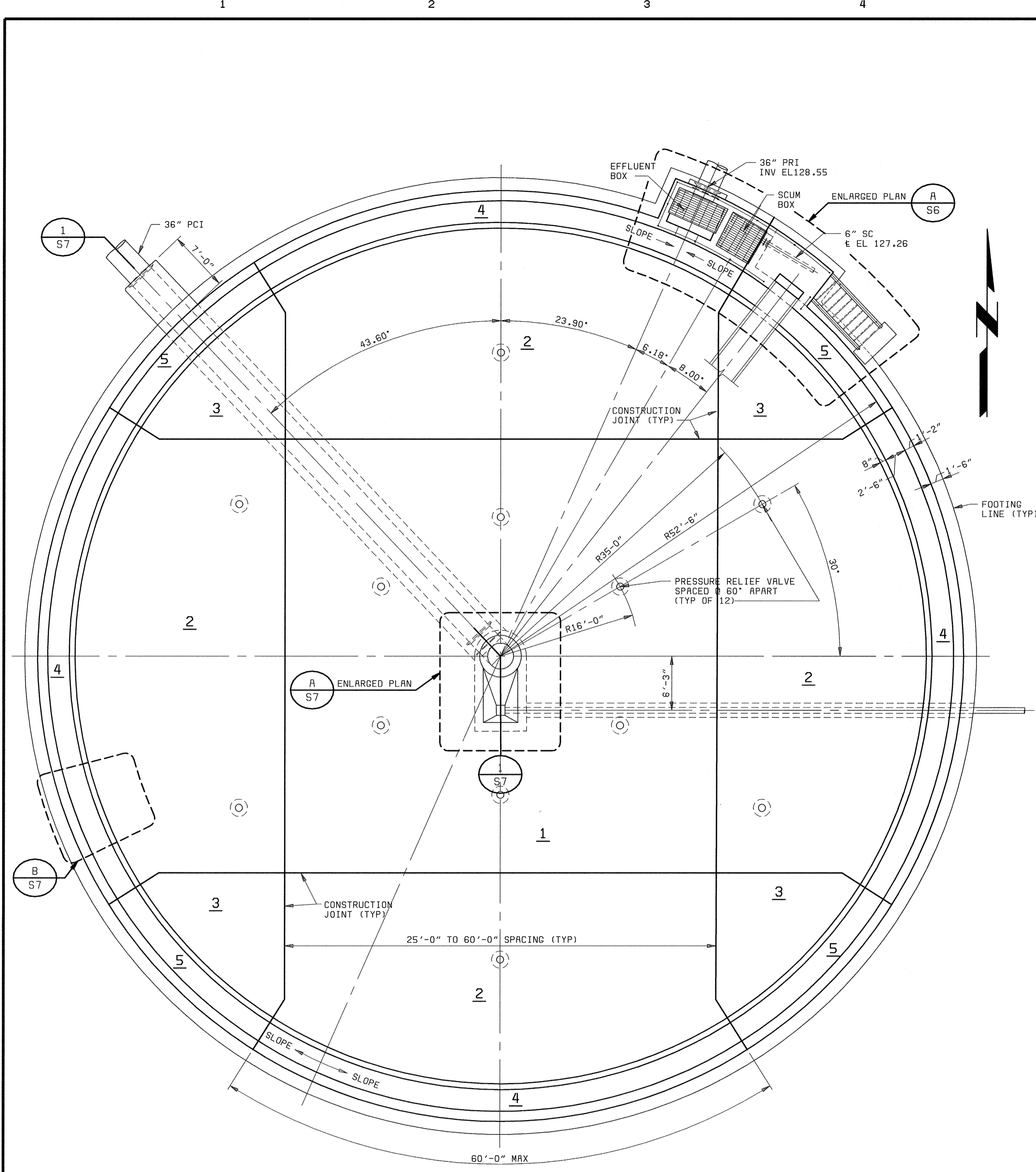
THIS DRAWING WAS  
ORIGINALLY APPROVED  
FOR CONSTRUCTION  
AND SEALED BY  
ROBERT J. RECTRUS, JR.  
A REGISTERED  
PROFESSIONAL ENGINEER  
IN THE  
STATE OF MARYLAND,  
NO. 22927

DES: IFH					
DRN: SLF					
CHK: WDB	05/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHM	RJR
DATE: 2/19/01	8/28/01	CODE REVIEW COMMENTS		IFH	
		REVISIONS AND RECORD OF ISSUE		NO.	BY

AUXILIARY PUMP STATION  
STRUCTURAL  
SECTION

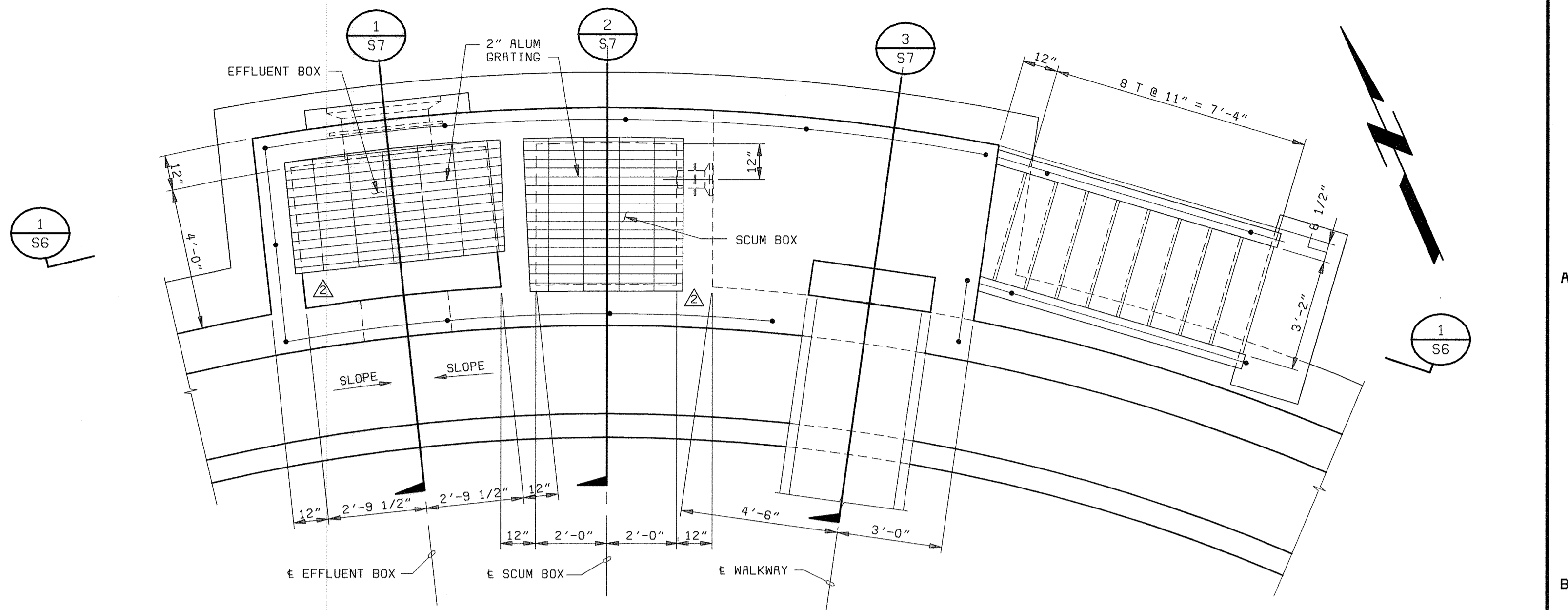
LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
PRELIMINARY AND PRIMARY TREATMENT EXPANSION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3840  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN  
SHEET  
31 of 88  
S5

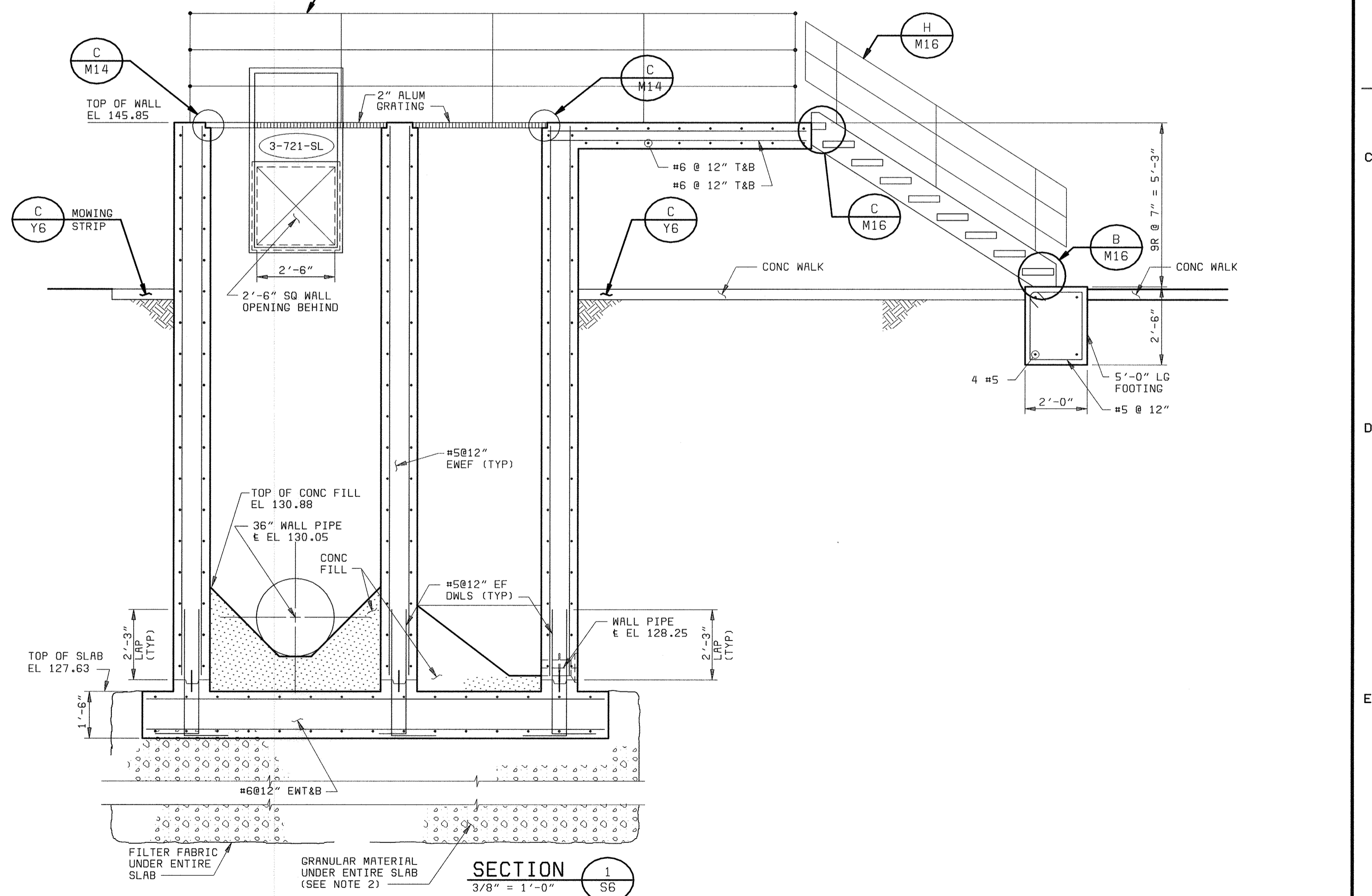


**PLAN**  
1/8" = 1'-0"

- 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"

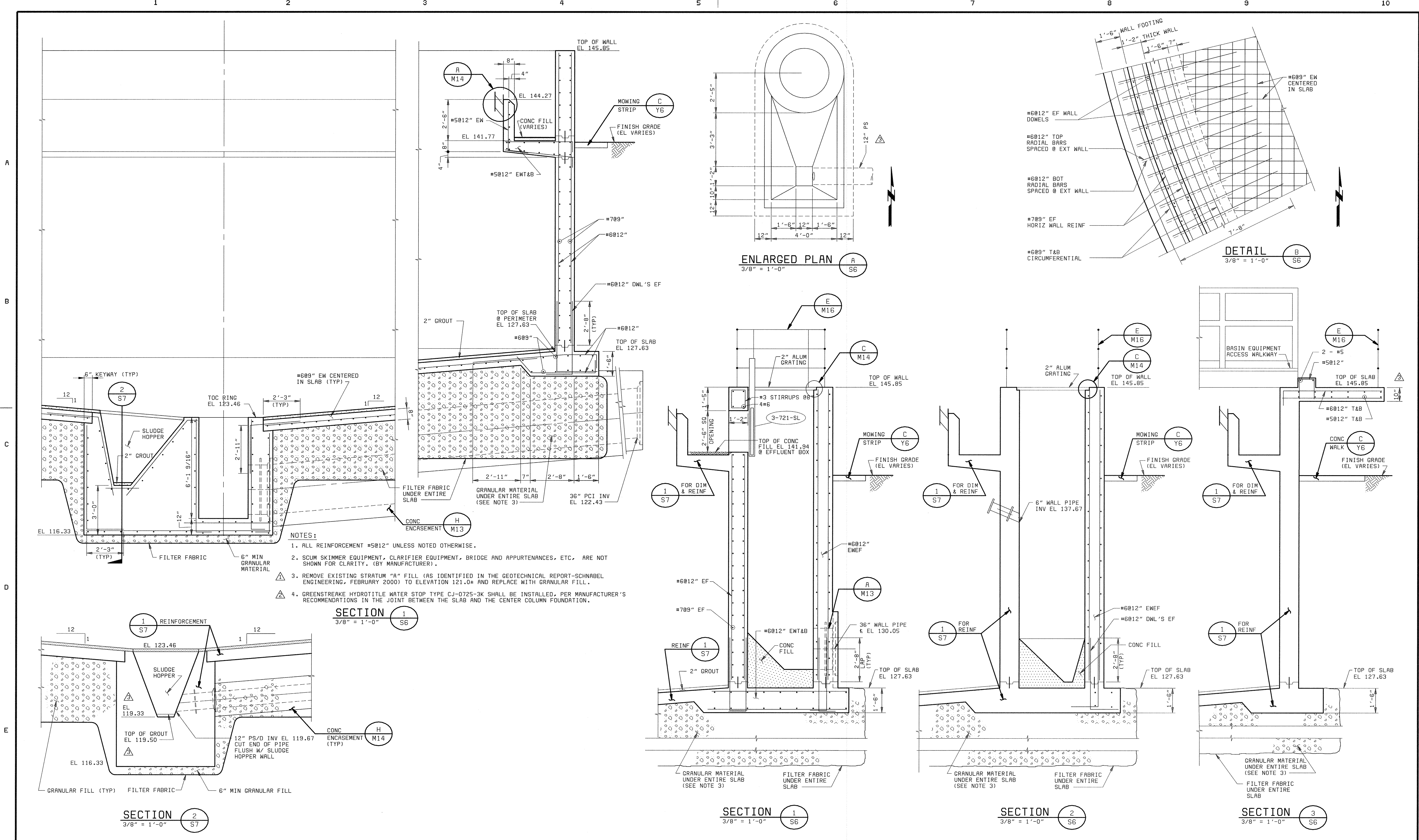


**SECTION 1-1**  
3/8" = 1'-0"

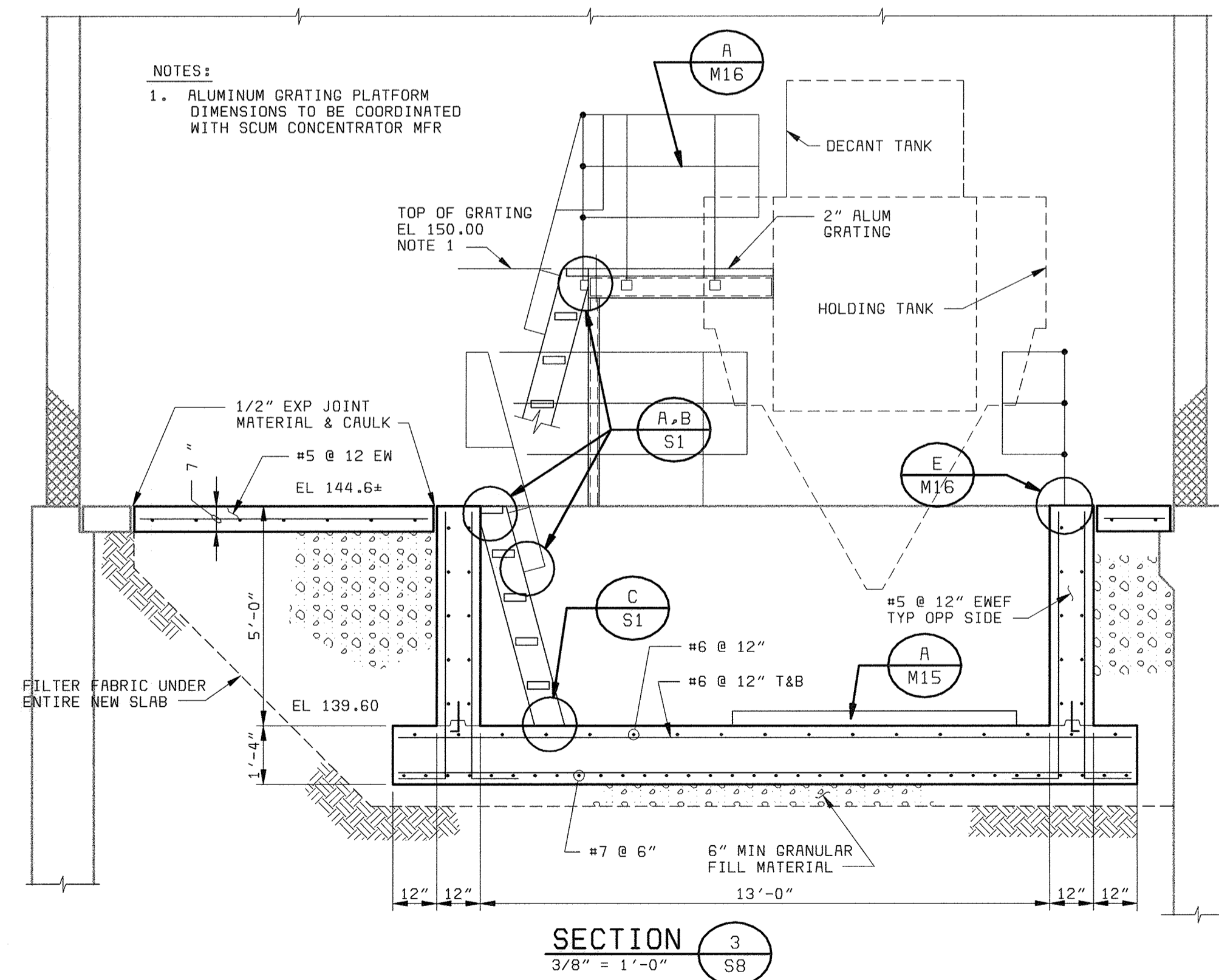
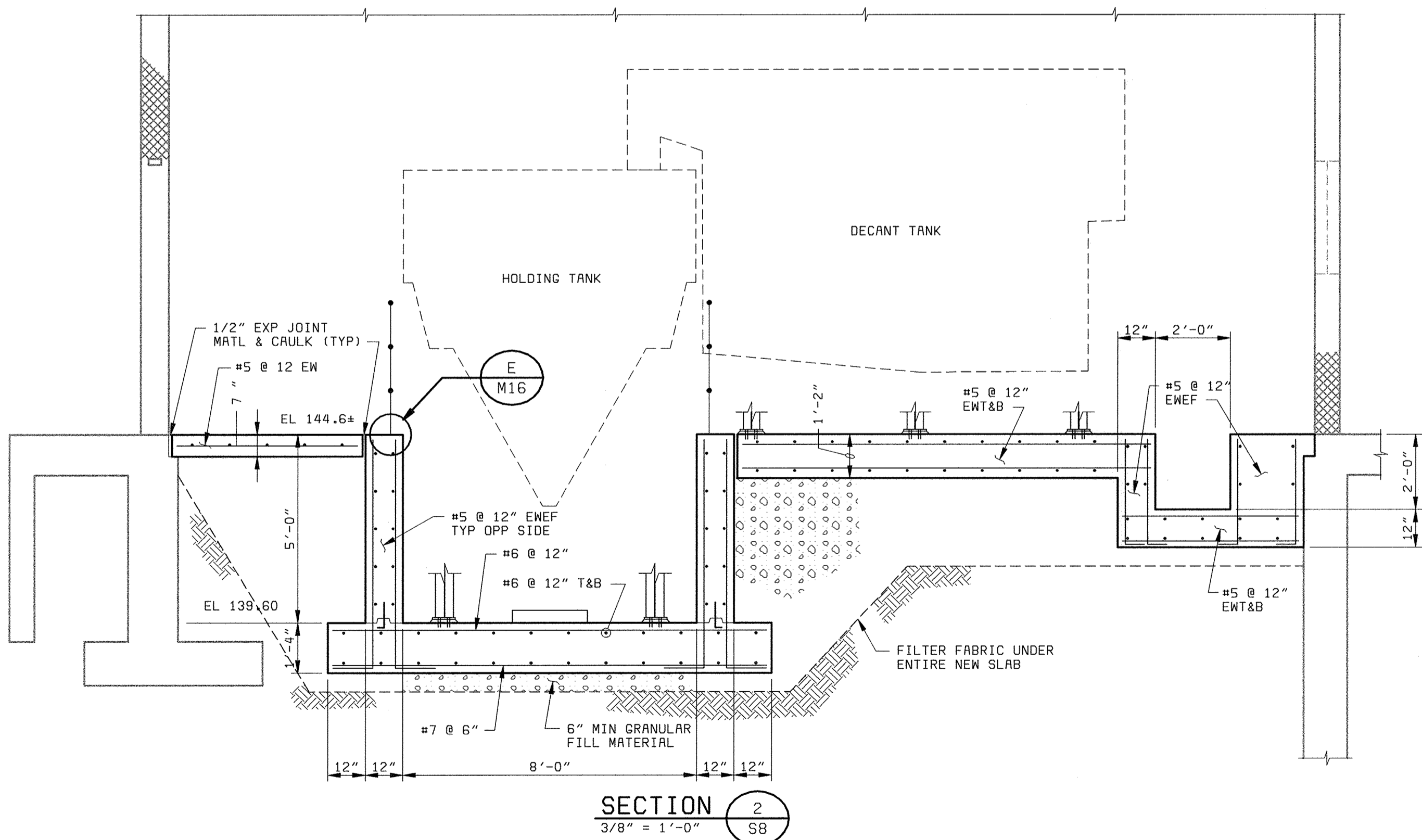
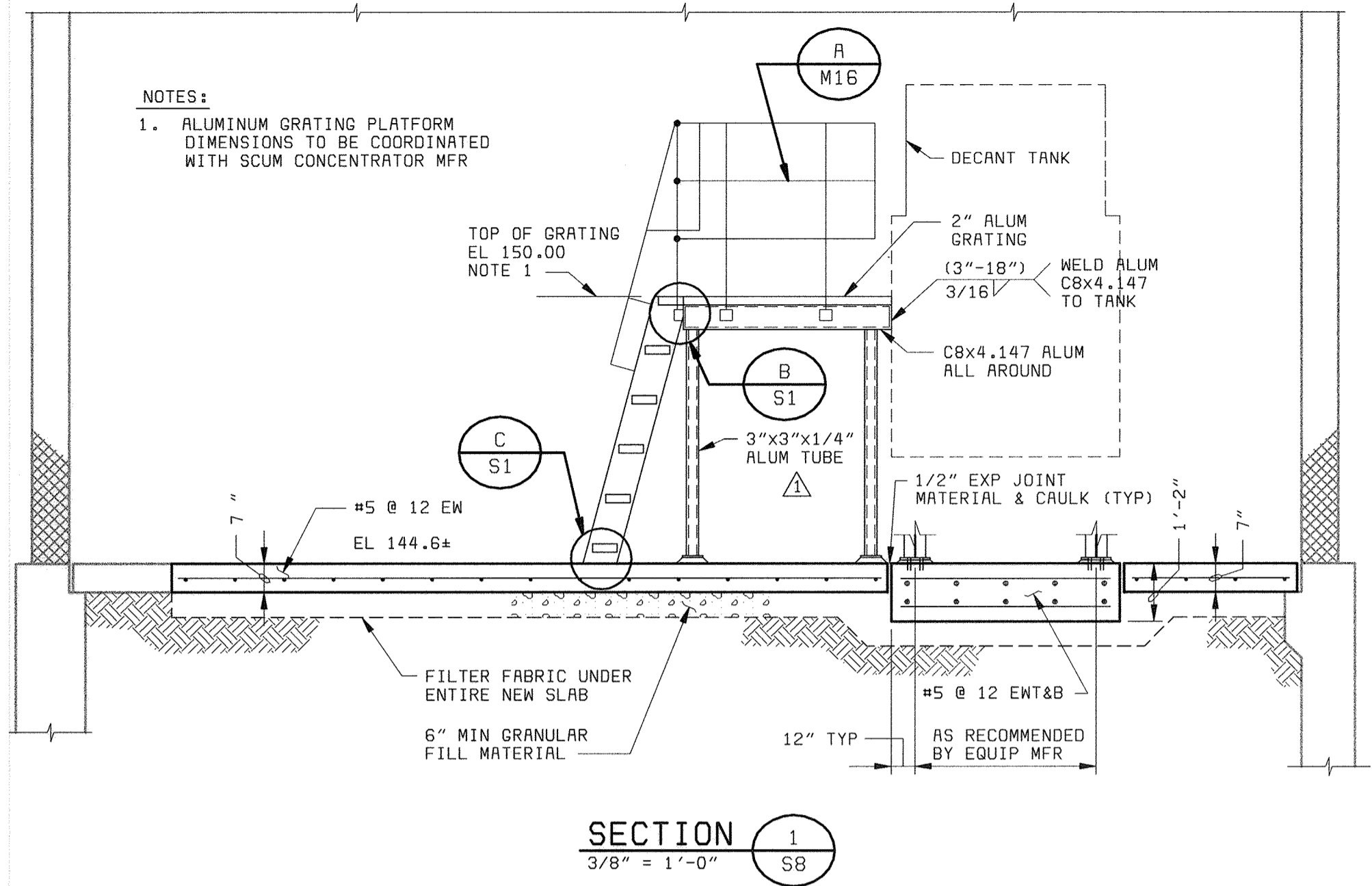
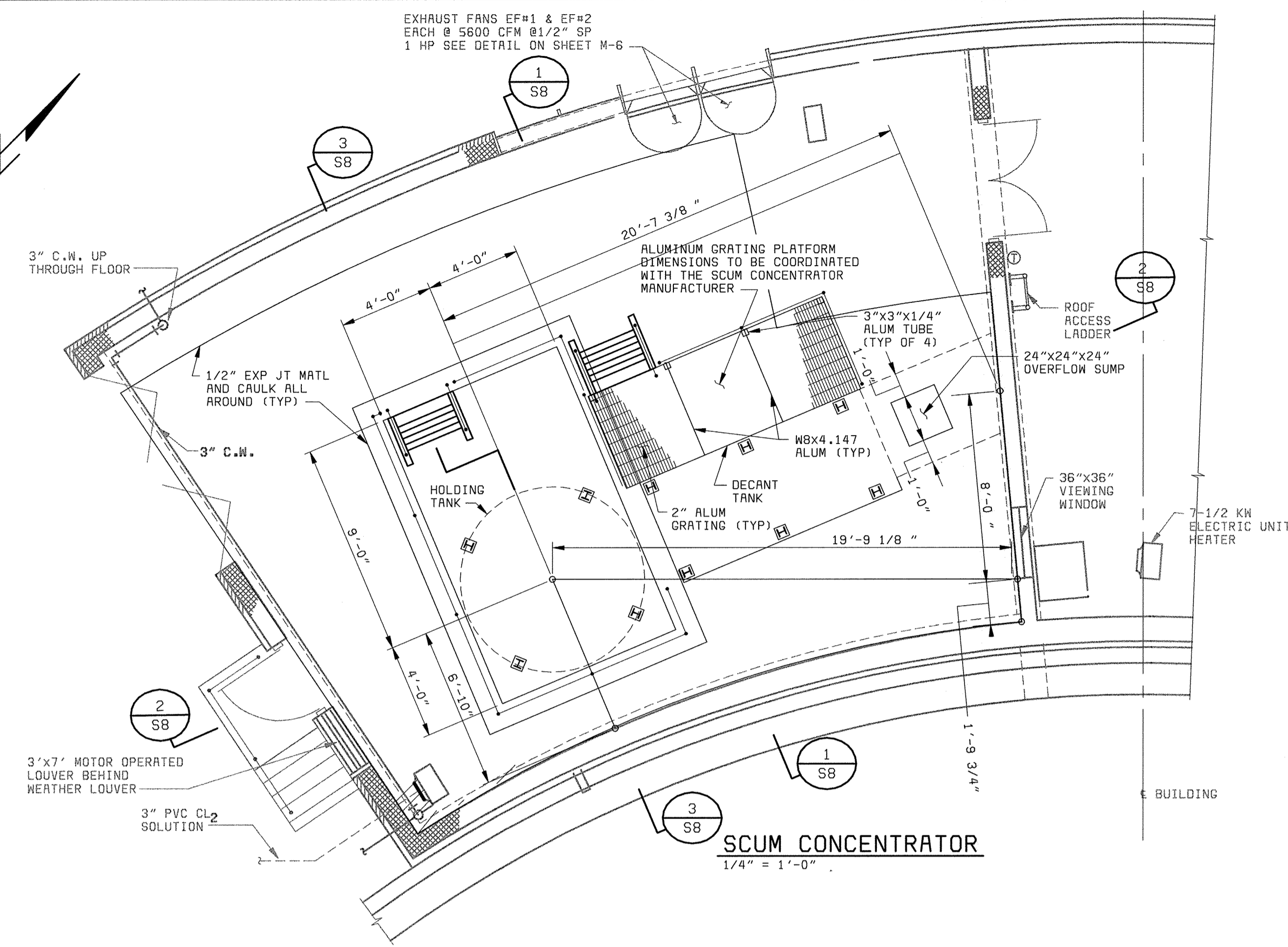
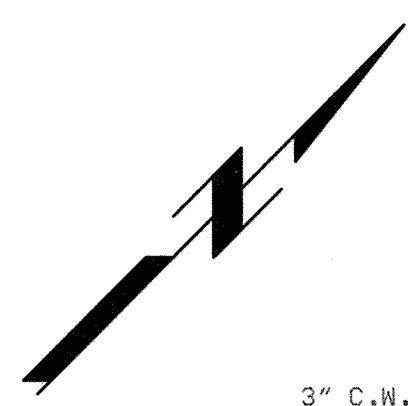
XREF: 58472-101-PC-M-R0000546  
058472\_3  
F058472R


DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> 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				<b>PRIMARY CLARIFIER NO. 5</b> <b>STRUCTURAL</b>  <b>PLANS, SECTIONS, AND DETAIL</b>	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			<b>S6</b>





DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> 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					<b>PRIMARY CLARIFIER NO. 5          STRUCTURAL</b>	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: ABW	05/05/05	CONFORMED TO CONSTRUCTION RECORDS					
			CHK: WDB	06/27/01	ADDENDUM NO. 3			<b>SECTIONS AND DETAILS</b>		
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE					



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> 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: KMH			PRIMARY SCUM HANDLING BUILDING STRUCTURAL	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION	SCALE AS SHOWN	
			DRN: SLF	CHK: WDB	DATE: 2/19/01				DATE
		REG. PROF. ENGR.	DATE	05/05/05	CONFORMED TO CONSTRUCTION RECORDS		PLAN AND SECTIONS	CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840  HOWARD COUNTY, MARYLAND	SHEET 34 OF 88



**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**

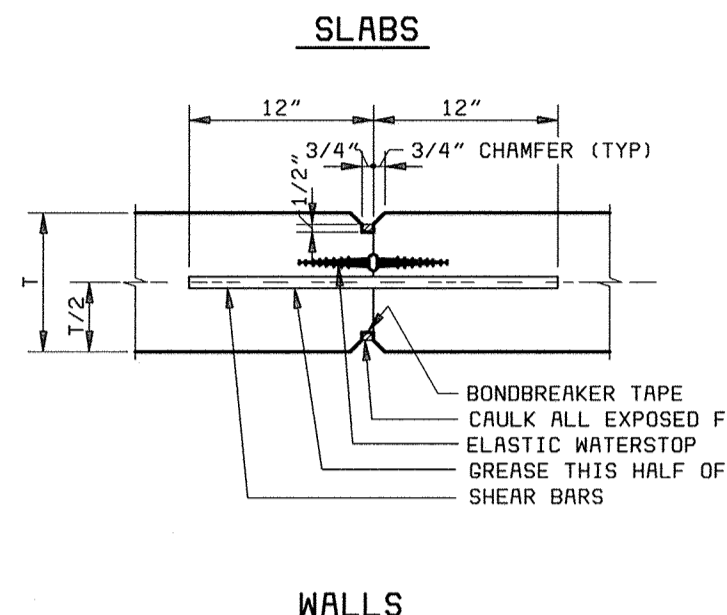
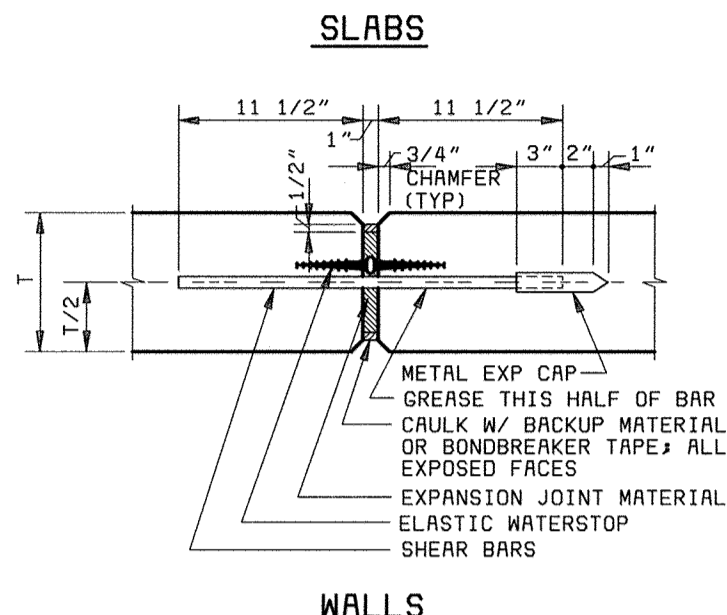
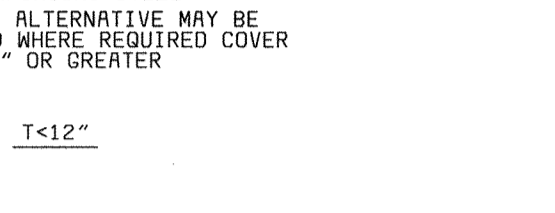
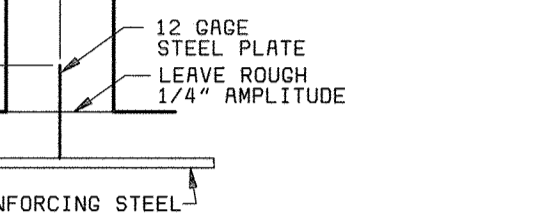
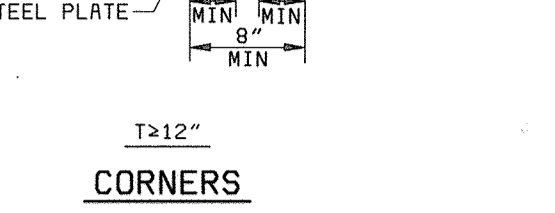
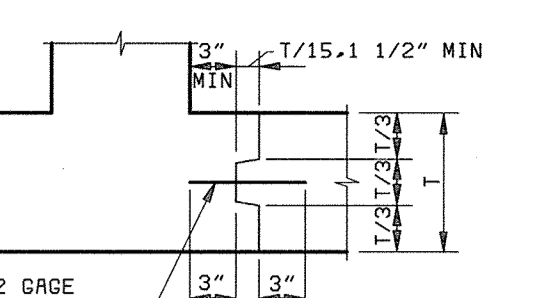
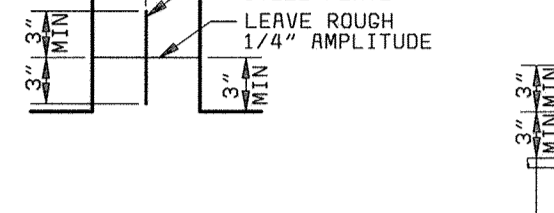
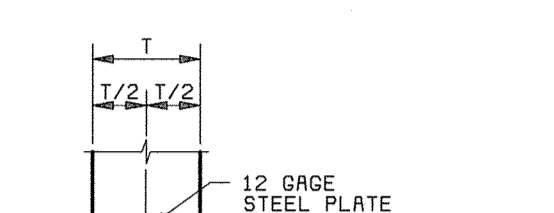
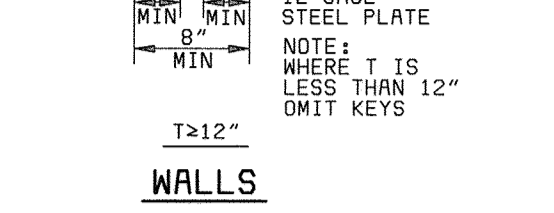
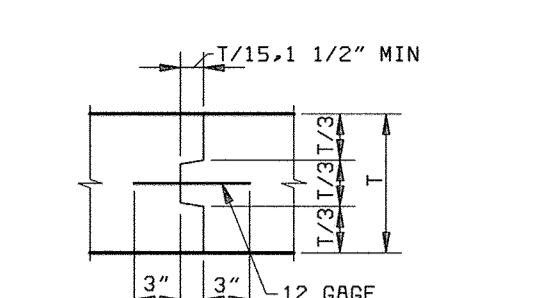
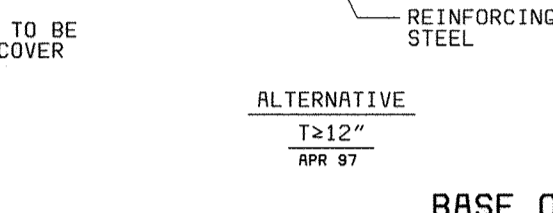
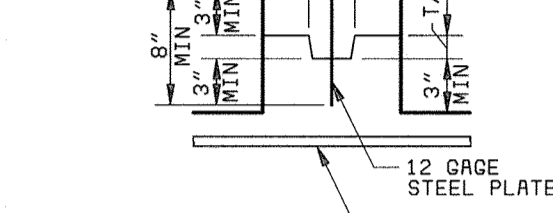
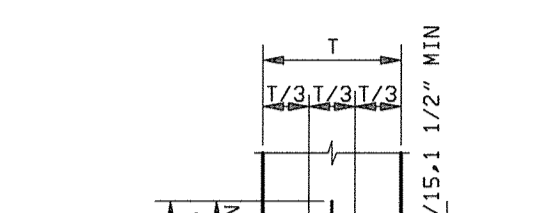
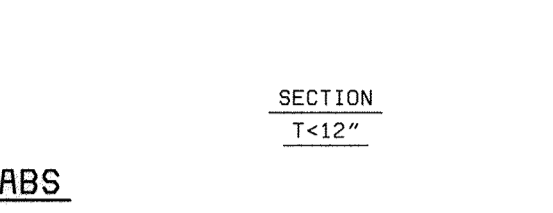
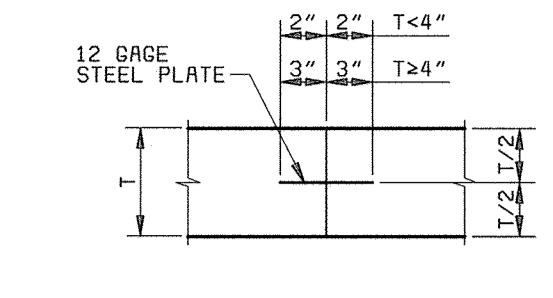
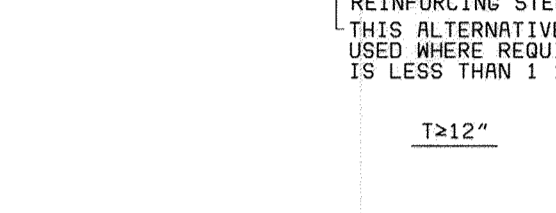
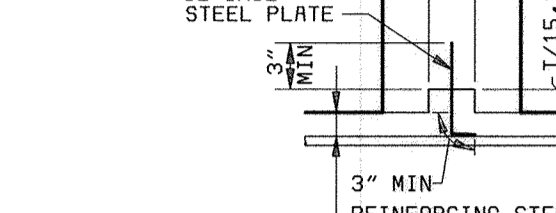
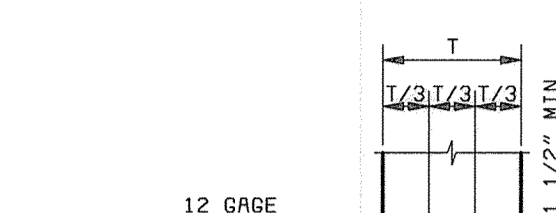
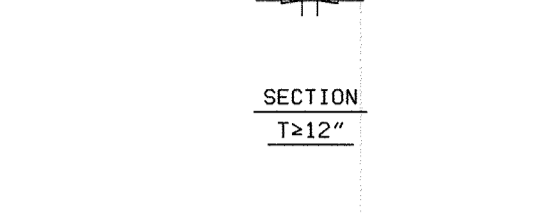
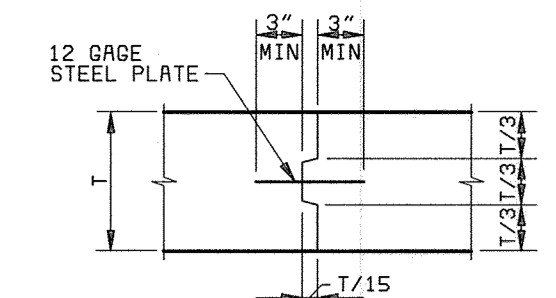
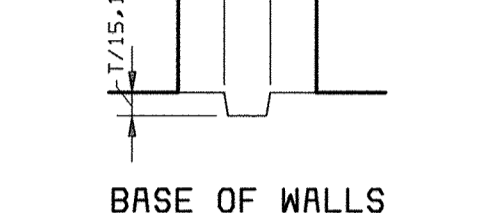
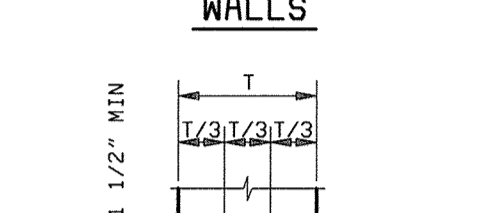
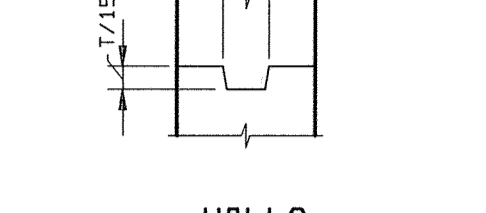
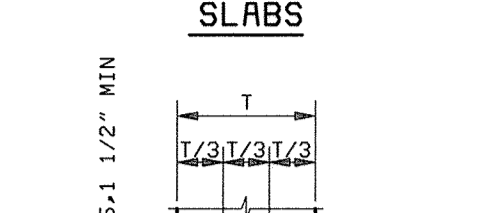
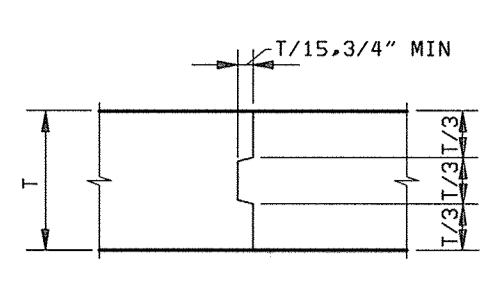
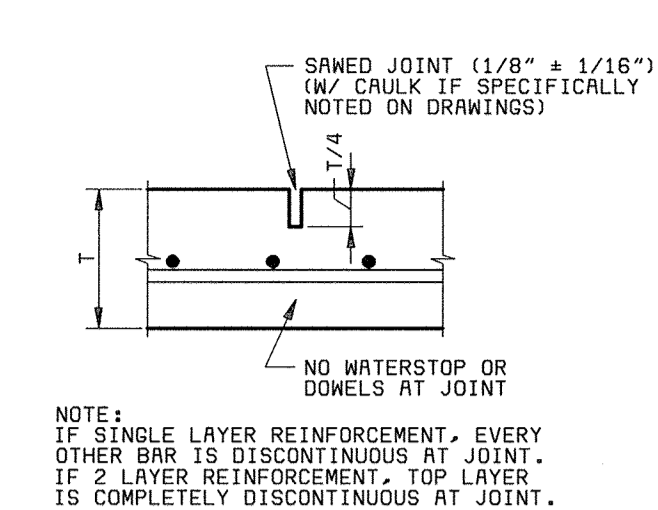
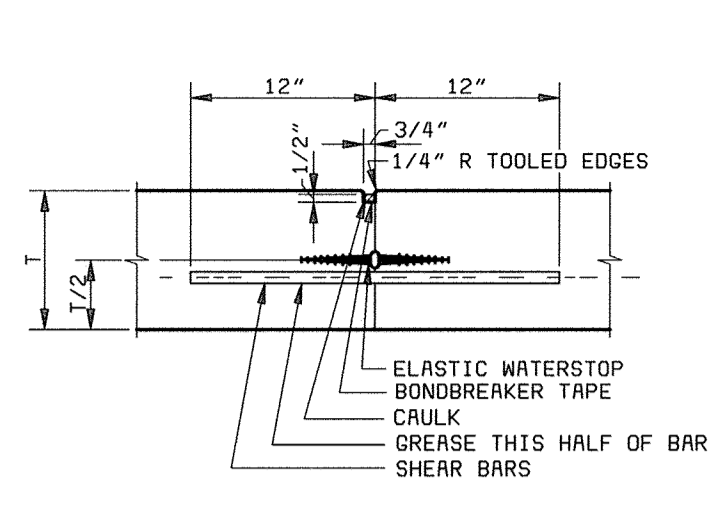
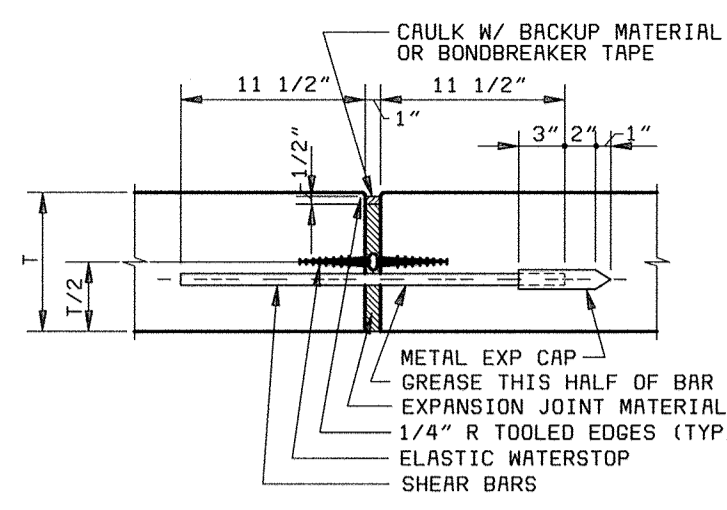
- DEAD LOAD .....CALCULATED
- LIVE LOADS: (NO LIVE LOAD REDUCTION IS CONSIDERED IN THE DESIGN)  $\Delta$ 
  - OPERATION AND PROCESS FLOORS..... 150 PSF
  - EQUIPMENT..... ACTUAL
  - STAIRS/SERVICE PLATFORMS..... 100 PSF
  - GRATING AREAS..... 100 PSF
  - ALL FLOORS NOT INDICATED..... 100 PSF
  - ROOF..... 30 PSF
  - CLEARWELL ROOF..... 100 PSF  $\Delta$
  - GROUND SNOW LOAD..... 30 PSF
  - IMPORTANCE FACTOR..... 1.0
  - SNOW EXPOSURE FACTOR..... 0.7  $\Delta$
- 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)  $\Delta$ 
  - Kz..... 0.93
  - Gf..... 1.27
  - Cd..... 0.80
  - Kd..... 0.93
  - Gcpl..... +0.75
  - 0.25
- SEISMIC LOAD:  
AV..... .05  
As..... .05  
HAZARD EXPOSURE GROUP..... 1  
PERFORMANCE CATEGORY..... B  
SEISMIC SITE COEFFICIENT (Ss)..... 1.0  
RESPONSE MODIFICATION FACTOR..... 1.0  
 $\Delta$  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	 <b>BLACK &amp; VEATCH</b> 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: JD								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
			DRN: ET										
			CHK: WDB	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR	RJR				S9
			DATE: 2/19/01	7/10/01	CODE REVIEW COMMENTS		$\Delta$	IFH					
					REVISIONS AND RECORD OF ISSUE		NO.	BY	CK	APP			

058472-3  
F058472A



**EXPANSION JOINTS**  
NOTE: "EJ" W/MS" - WITH ELASTIC WATERSTOP  
"EJ" - WITHOUT ELASTIC WATERSTOP

**CONTRACTION JOINTS**  
NOTE: "CJ" W/MS" - WITH ELASTIC WATERSTOP  
"CJ" - WITHOUT ELASTIC WATERSTOP

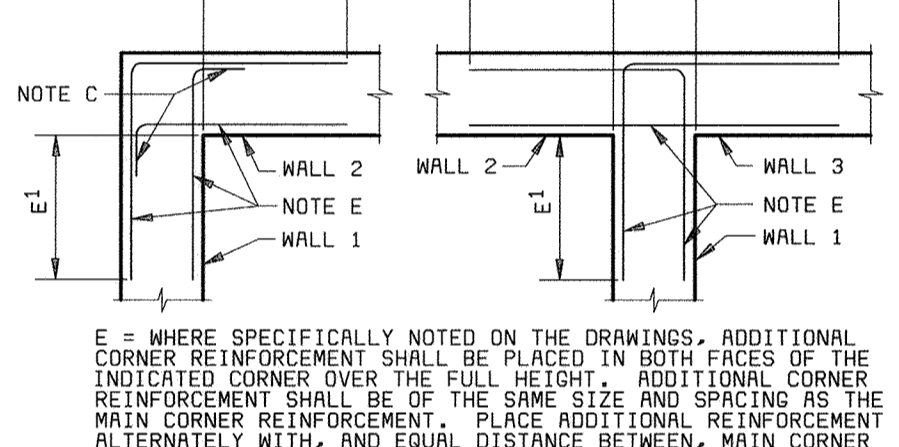
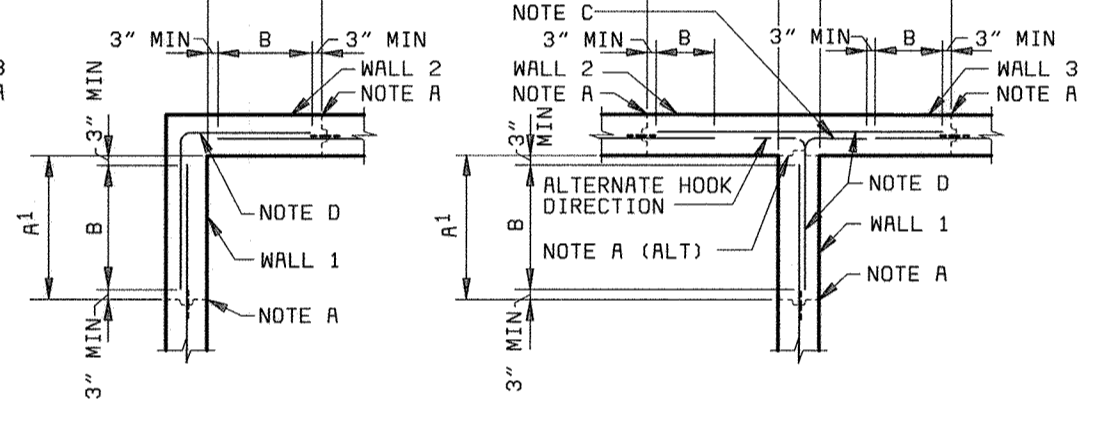
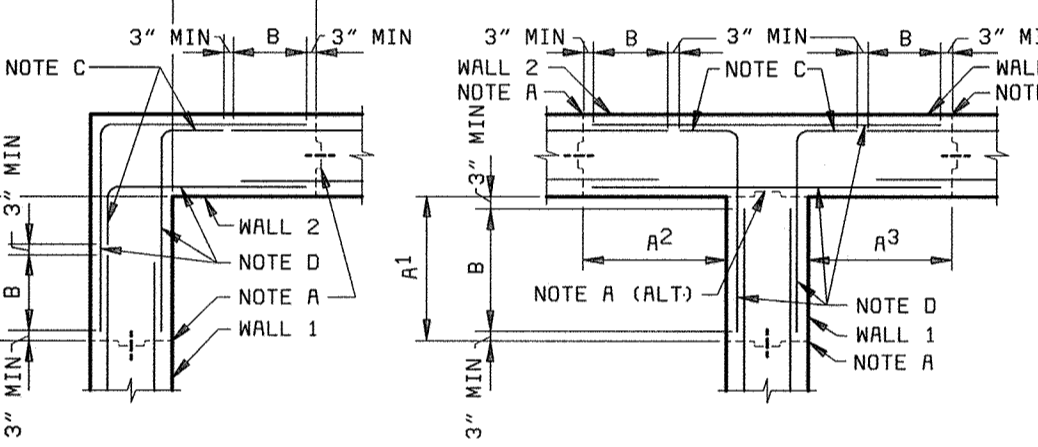
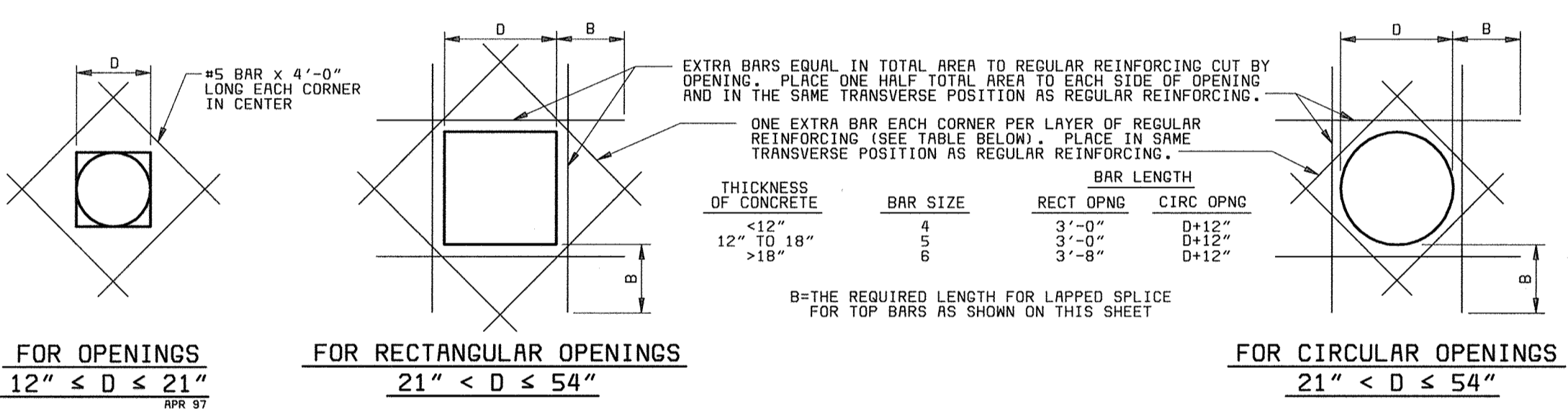
**SAWED CONTRACTION JOINT  
SLAB-ON-GRADE**  
NOTES:  
1. TYPICAL CONTROL JOINT NOTES  
1 THRU 3 NOT APPLICABLE  
2. "SJ" - NO WATERSTOP  
3. JOINT FORMED WITH TOOL OR INSERT STRIP MAY BE SUBSTITUTED FOR SAWED TYPE ONLY WITH PRIOR ACCEPTANCE BY THE ENGINEER.

**JOINTS WITHOUT WATERSTOPS**

**JOINTS WITH WATERSTOPS**

**TYPICAL CONTROL JOINTS**  
NOTES:  
1. PROVIDE 3/4" SHEAR BARS @ 1'-6" CTRS ACROSS JOINT UNLESS NOTED OTHERWISE  
2. REINFORCING STEEL SHALL NOT BE EXTENDED ACROSS JOINT UNLESS NOTED OTHERWISE  
3. SHEAR BARS SHALL BE SMOOTH, FREE FROM RUST OR SCALE, AND GREASED TO PREVENT BOND (ONE HALF OF BAR ONLY)

**TYPICAL CONSTRUCTION JOINTS**  
NOTES:  
1. REINFORCING STEEL IS CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS  
2. "CSJ" W/MS" - WITH WATERSTOP  
3. "CSJ" - WITHOUT WATERSTOP



A = VERTICAL CONSTRUCTION JOINT NEAREST TO WALL CORNER.  
A(ALT) = ALTERNATE VERTICAL CONSTRUCTION JOINT NEAREST TO WALL CORNER IN T WALL JOINT WHICH DOES NOT REQUIRE WATERSTOP.  
A2 = DISTANCE FROM INSIDE CORNER FACE TO NEAREST VERTICAL CONSTRUCTION JOINT IN SIMILARLY NUMBERED WALL. A2 SHALL NOT BE LESS THAN DIMENSIONS INDICATED BY THESE DETAILS, NOR GREATER THAN INDICATED ON PLAN DRAWINGS; BUT IN ANY CASE SHALL NOT EXCEED 30 FEET IN LIQUID CONTAINMENT STRUCTURES OR 40 FEET IN OTHER STRUCTURES. IN T WALL JOINTS WHICH DO NOT REQUIRE WATERSTOP, A2 MAY BE ZERO.

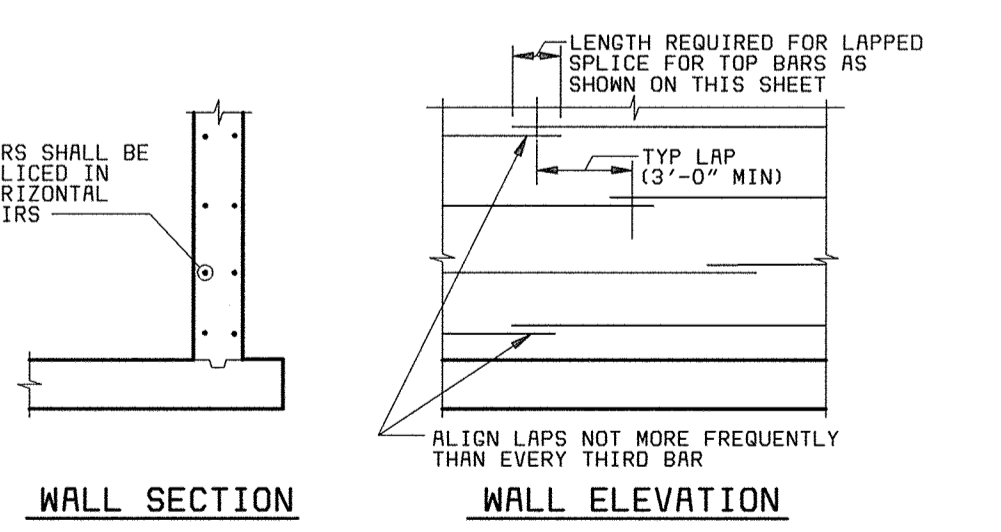
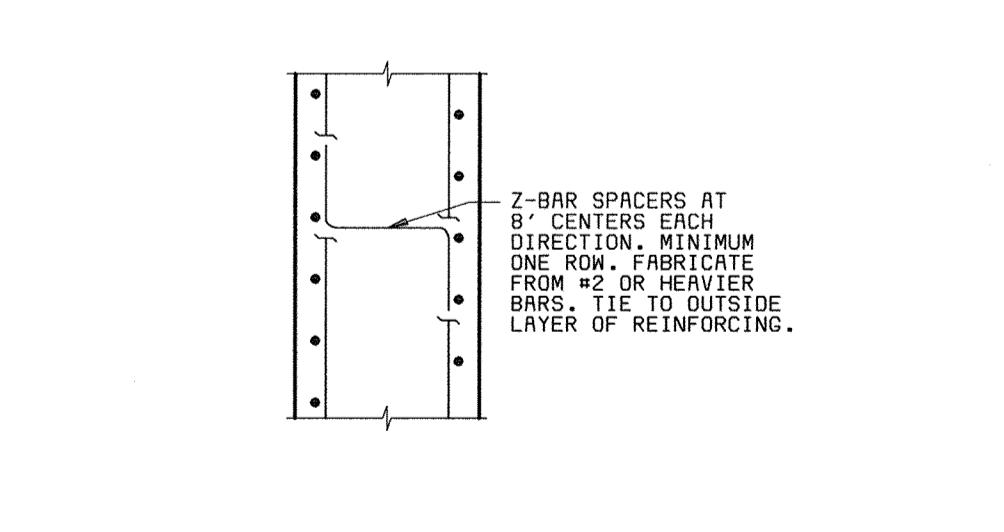
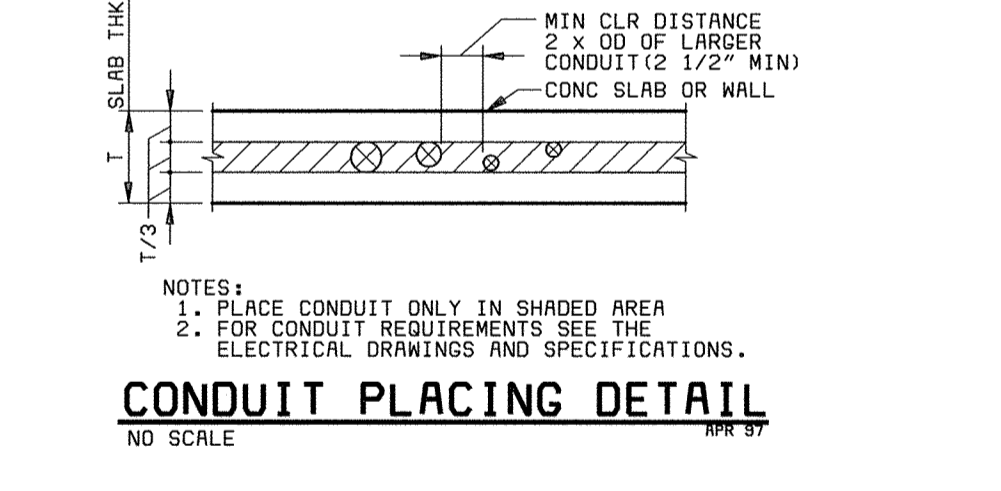
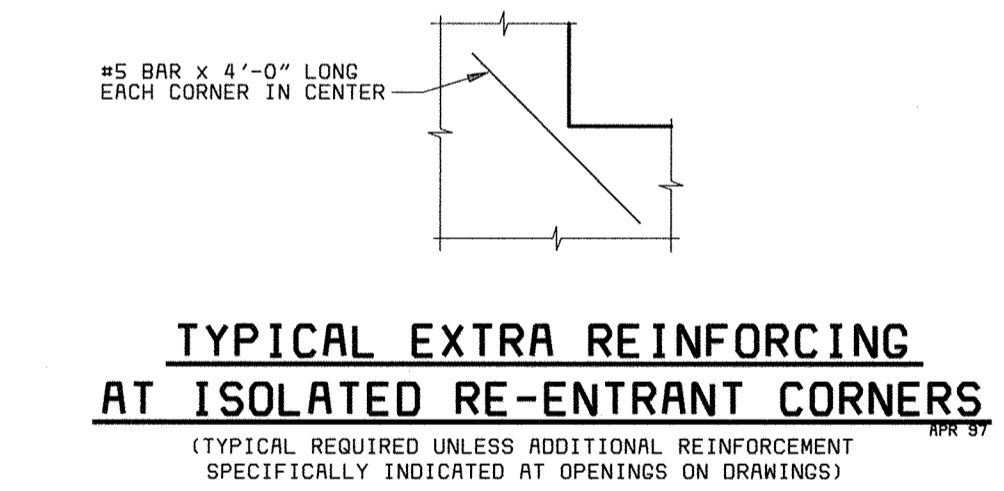
B = OPTIONAL SPLICE LOCATION UNLESS SPECIFICALLY NOTED ON PLAN DRAWINGS. SPLICE LENGTH SHALL NOT BE LESS THAN THAT REQUIRED FOR TOP BARS AS SHOWN IN TABLE ON THIS SHEET. USE SPLICE LENGTH FOR THE SMALLER OF THE TWO BARS BEING SPLICED.  
C = STANDARD HOOK  
D = TYPICAL CORNER REINFORCEMENT. SIZE SHALL MATCH LARGEST ADJACENT WALL HORIZONTAL REINFORCEMENT. SPACING SHALL MATCH MINIMUM ADJACENT WALL HORIZONTAL REINFORCEMENT SPACING.

E = WHERE SPECIFICALLY NOTED ON THE DRAWINGS, ADDITIONAL CORNER REINFORCEMENT SHALL BE PLACED IN BOTH FACES OF THE INDICATED CORNER OVER THE FULL HEIGHT. ADDITIONAL CORNER REINFORCEMENT SHALL BE OF THE SAME SIZE AND SPACING AS THE MAIN CORNER REINFORCEMENT. PLACE ADDITIONAL REINFORCEMENT ALTERNATELY WITH, AND EQUAL DISTANCE BETWEEN, MAIN CORNER REINFORCEMENT.  
E2 = DISTANCE FROM INSIDE CORNER FACE TO TERMINATION OF ADDITIONAL CORNER REINFORCEMENT IN SIMILARLY NUMBERED WALL. E2 SHALL NOT BE LESS THAN 0.20 THE CLEAR SPAN DISTANCE MEASURED HORIZONTALLY BETWEEN THIS CORNER AND THE NEXT OR 0.40 THE CLEAR SPAN DISTANCE OR CANTILEVERED DISTANCE MEASURED VERTICALLY, WHICHEVER IS SMALLER, BUT NOT LESS THAN 3'-0".

**TYPICAL EXTRA REINFORCING AT OPENINGS 12" TO ≤ 54"**  
(TYPICAL REQUIRED UNLESS ADDITIONAL REINFORCEMENT SPECIFICALLY INDICATED AT OPENINGS ON DRAWINGS) JAN 94

**TYPICAL HORIZONTAL CORNER REINFORCING DETAILS**  
NOTES: 1. VERTICAL REINFORCING NOT SHOWN  
2. THESE DETAILS SHALL BE APPLICABLE TO ALL WALL CORNERS UNLESS NOTED OTHERWISE ON THE DRAWINGS. JAN 94

**ADDITIONAL REINFORCING WHERE SPECIFICALLY NOTED ON THE DRAWINGS**  
DETAIL A  
NO SCALE



**SPACERS FOR WALL REINFORCEMENT**  
JAN 94

**TYPICAL RING WALL REINFORCING SPLICE DETAIL**  
JAN 94

(f'c=4000 PSI)

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)		HOOKED BARS	LENGTH OF LAPPED SPLICES FOR REIN (INCHES)		LENGTH OF END ANCHORAGE FOR DEVELOPMENT OF REINFORCEMENT (INCHES)		HOOKED BARS			
	*TOP BARS	OTHERS	*TOP BARS	OTHERS		*TOP BARS	OTHERS	*TOP BARS	OTHERS				
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	29	29	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	108	81	19	11		
14	---	---	105	81	33	---	---	210	162	33	14		
18	---	---	155	119	43	---	---	309	238	43	18		

**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	
#6 AND LARGER	1 1/2"
#5 AND SMALLER	3/4"

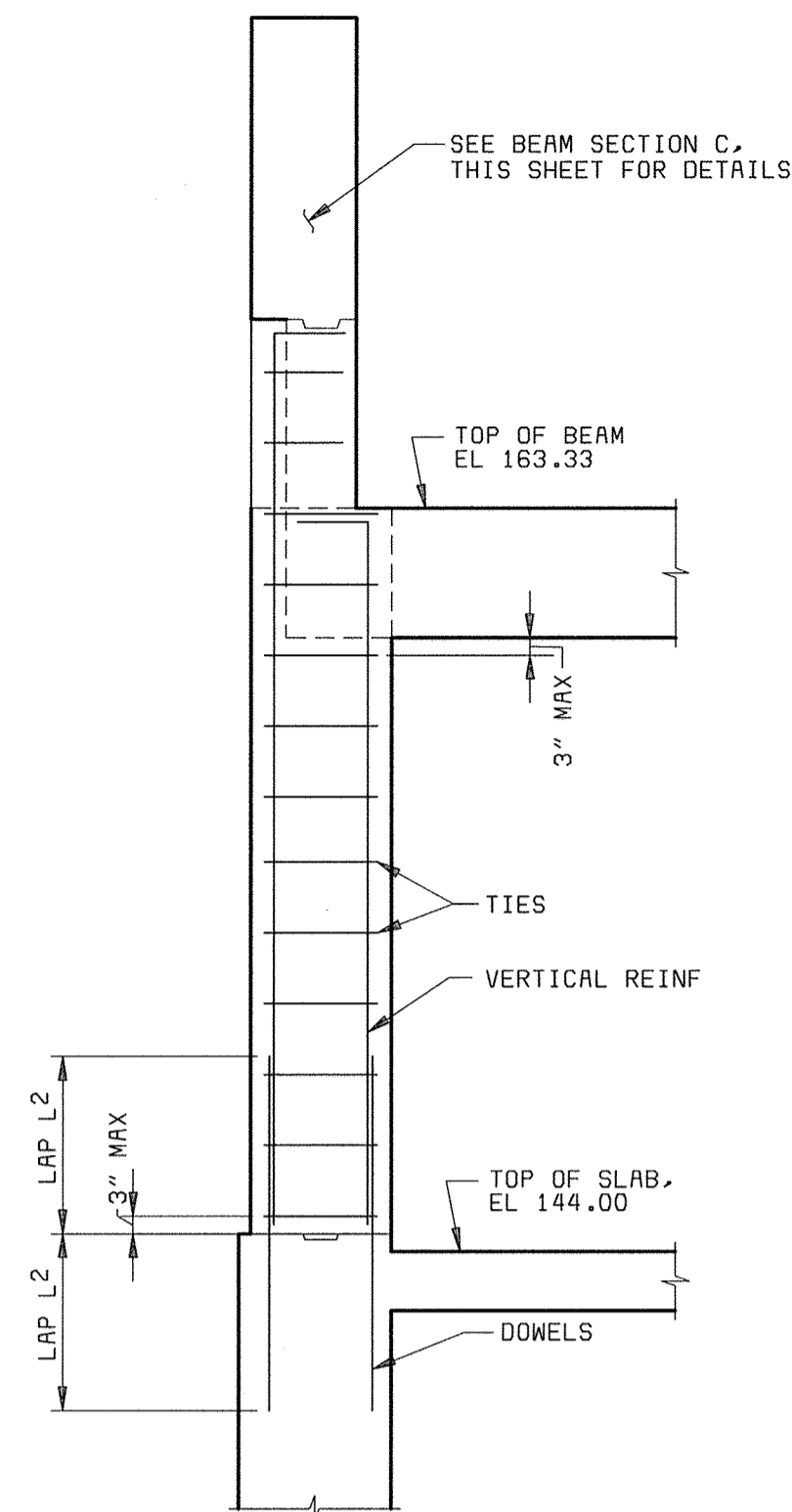
NOTE: TOLERANCES FOR CONCRETE COVER AND THE FABRICATION AND PLACING OF REINFORCEMENT SHALL CONFORM TO ACI 117.

\* 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 5 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

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> 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: STD								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	
			DRN: RLC											SHEET 36 OF 88
			CHK: WDB	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR						
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP					



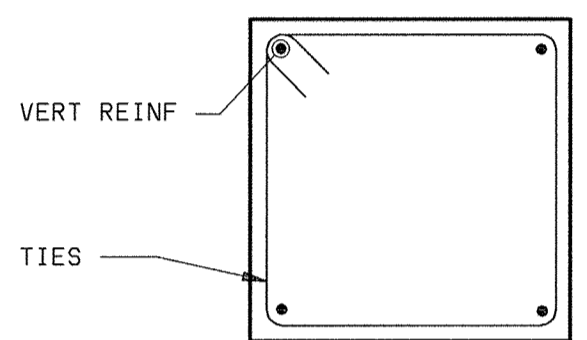


ELEVATION TYPE I

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 <sup>2</sup>	4'-8"
TOP OF SLAB EL	144.00

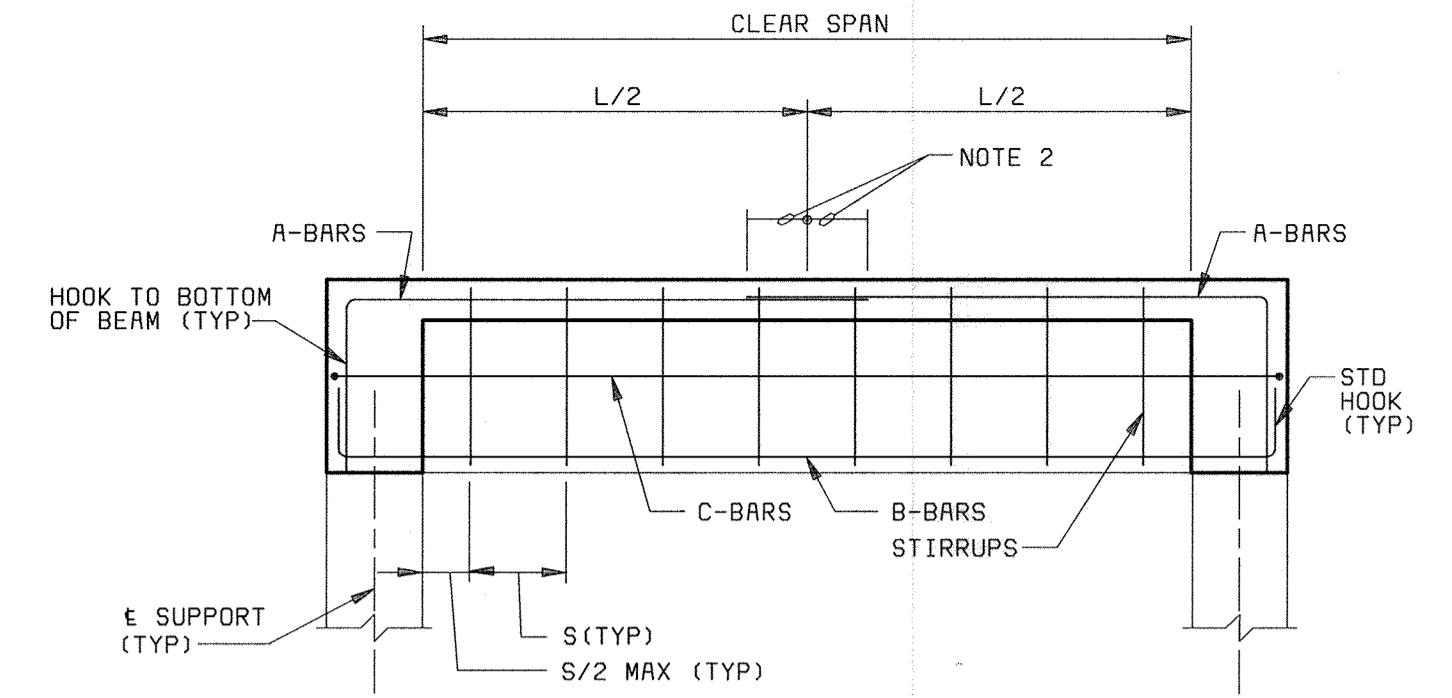
NOTE:  
1. FOR TOP OF FDN, SEE PLAN.

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

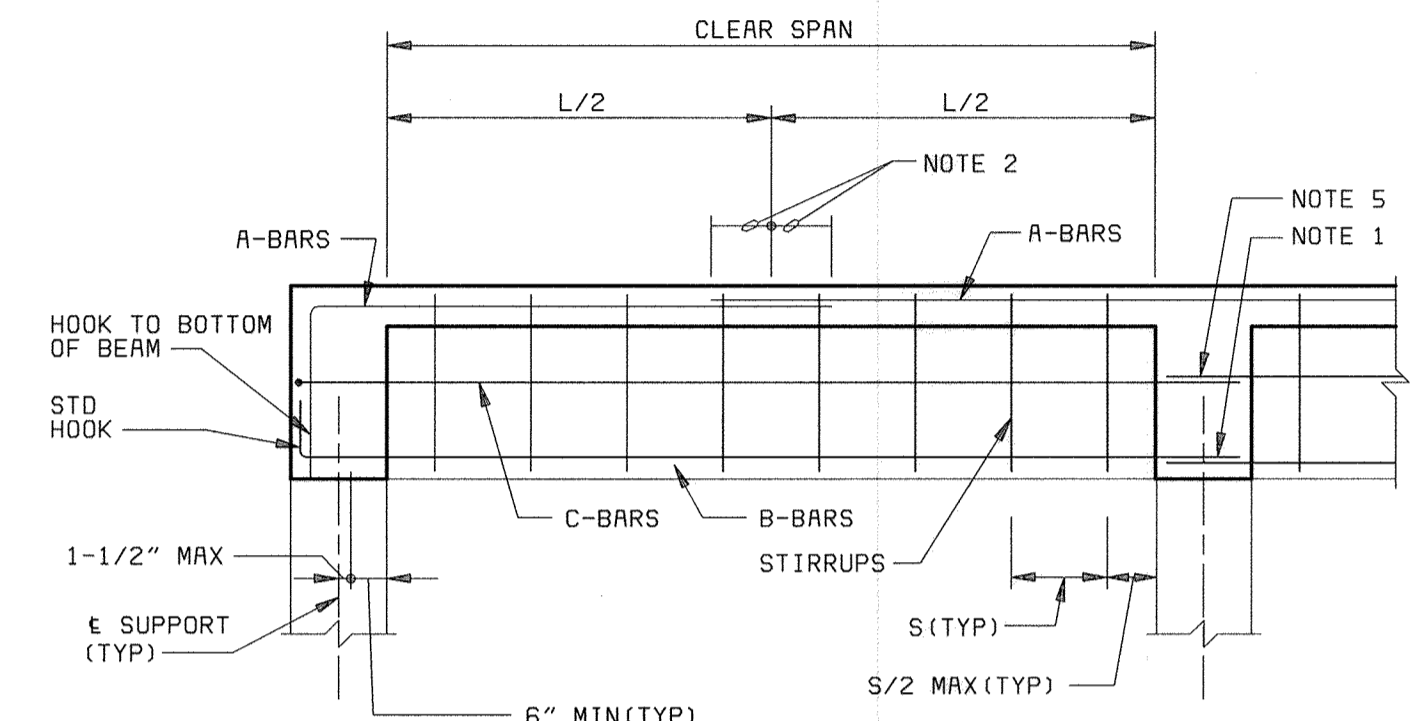


COLUMN SECTION

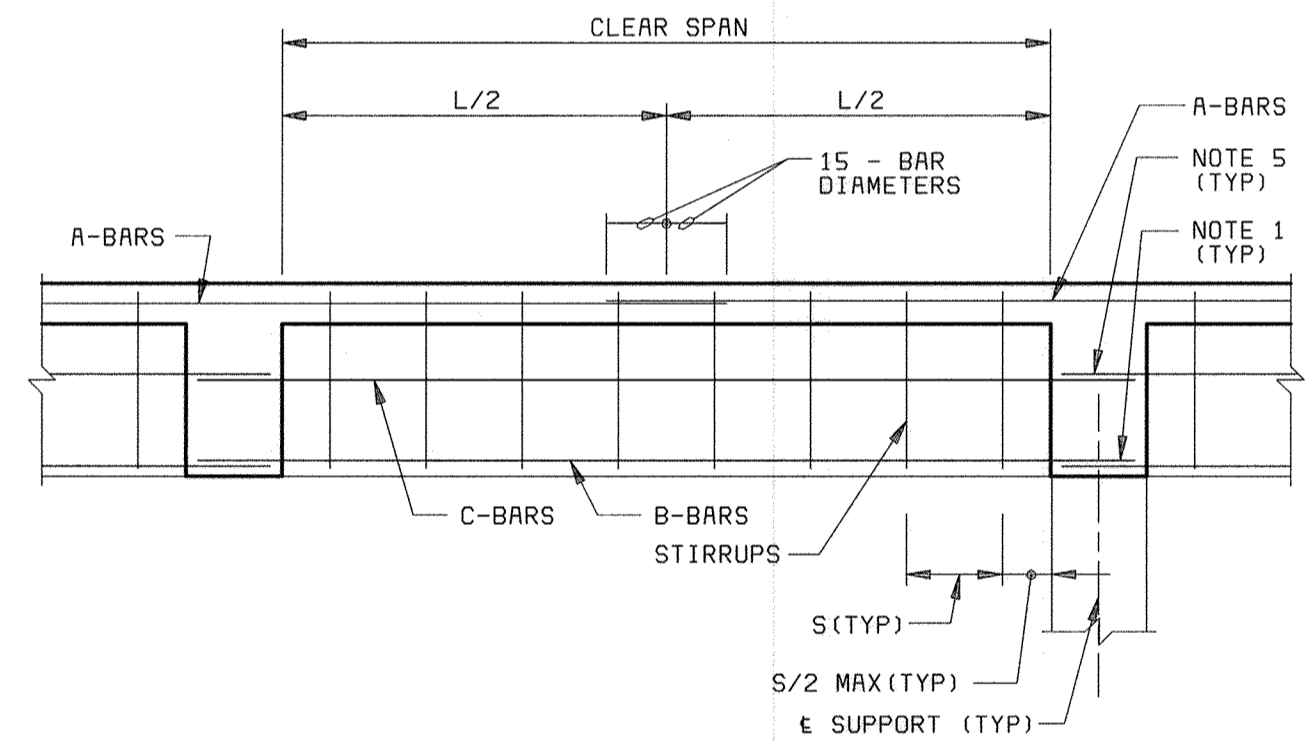
COLUMN REINFORCEMENT ELEVATIONS  
NO SCALE



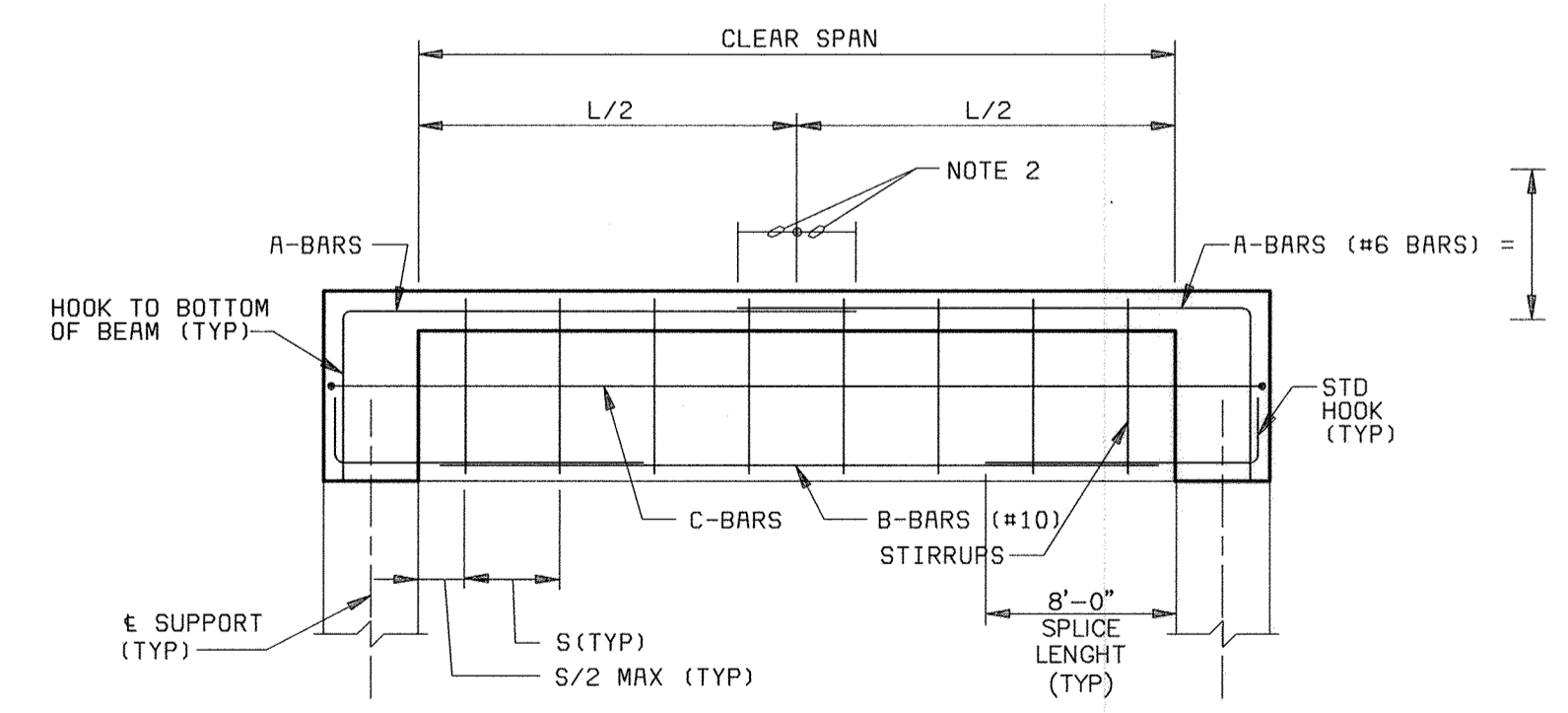
TYPE I



TYPE II

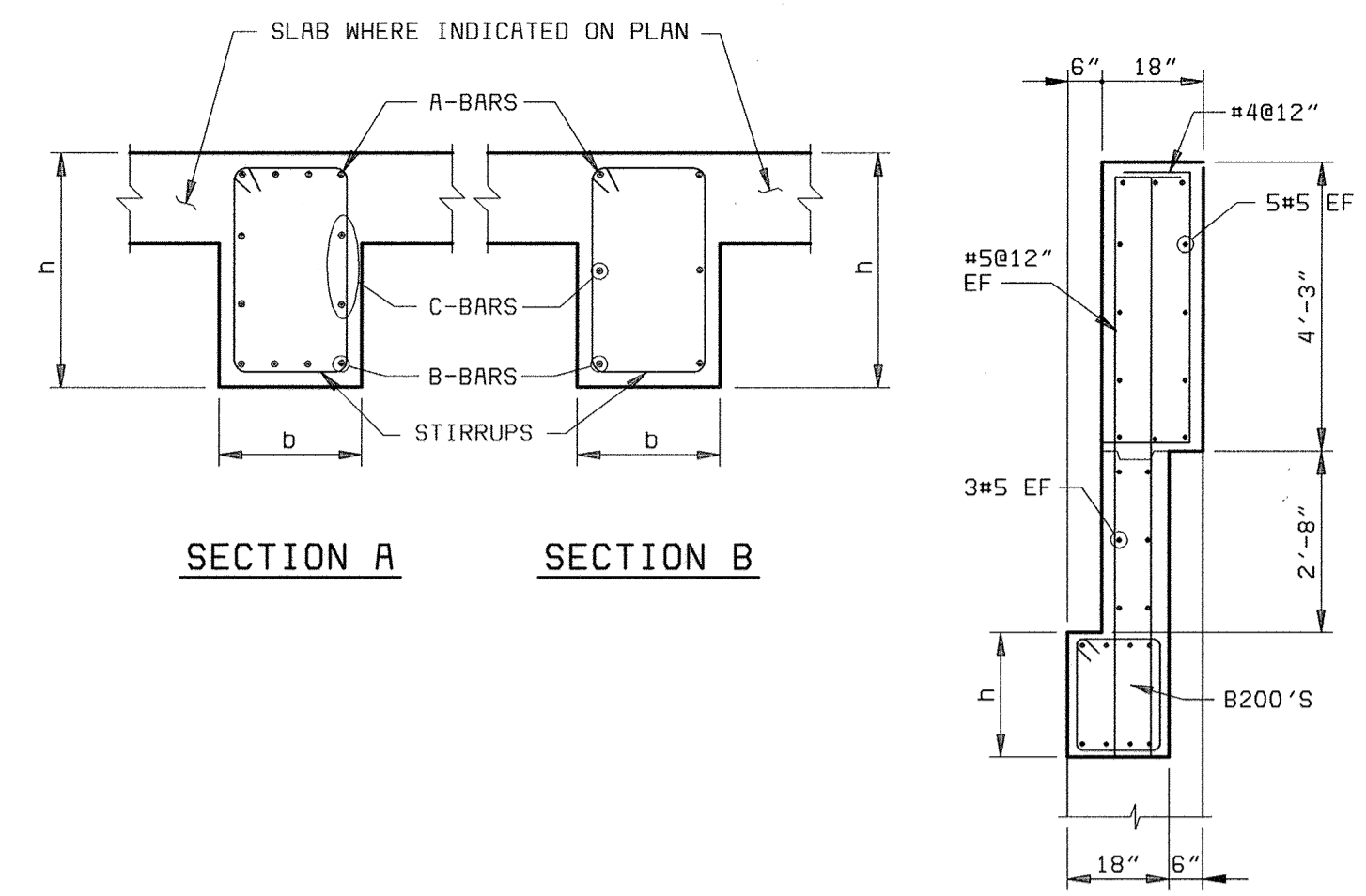


TYPE III



TYPE I

BEAM B-101 AND B-102  
NO SCALE



SECTION A

SECTION B

SECTION C

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  
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

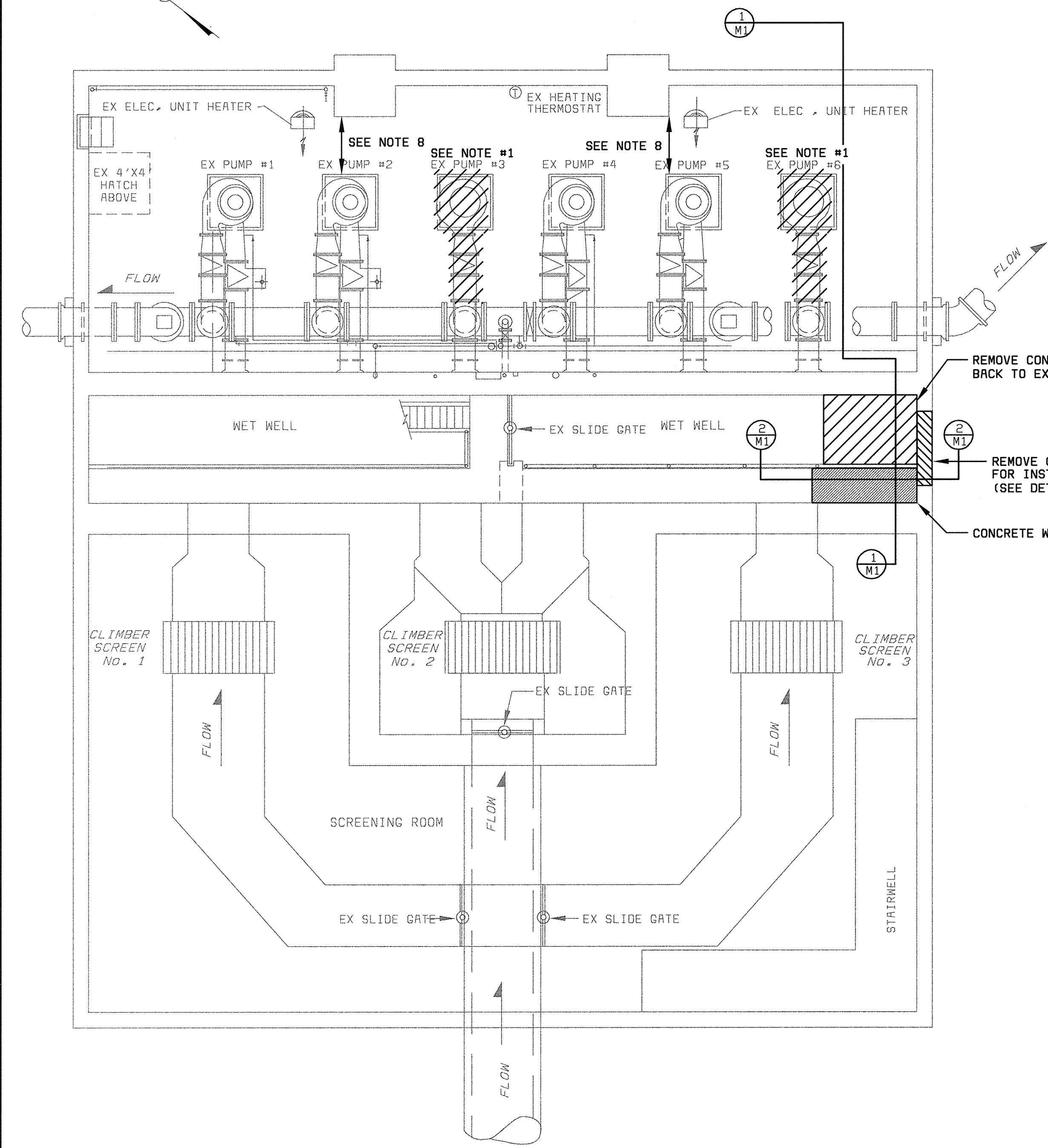
DES: IFH					
DRN: RLC					
CHK: WDB					
DATE: 2/19/01	05/05/05	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

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

058472-3  
F058472A



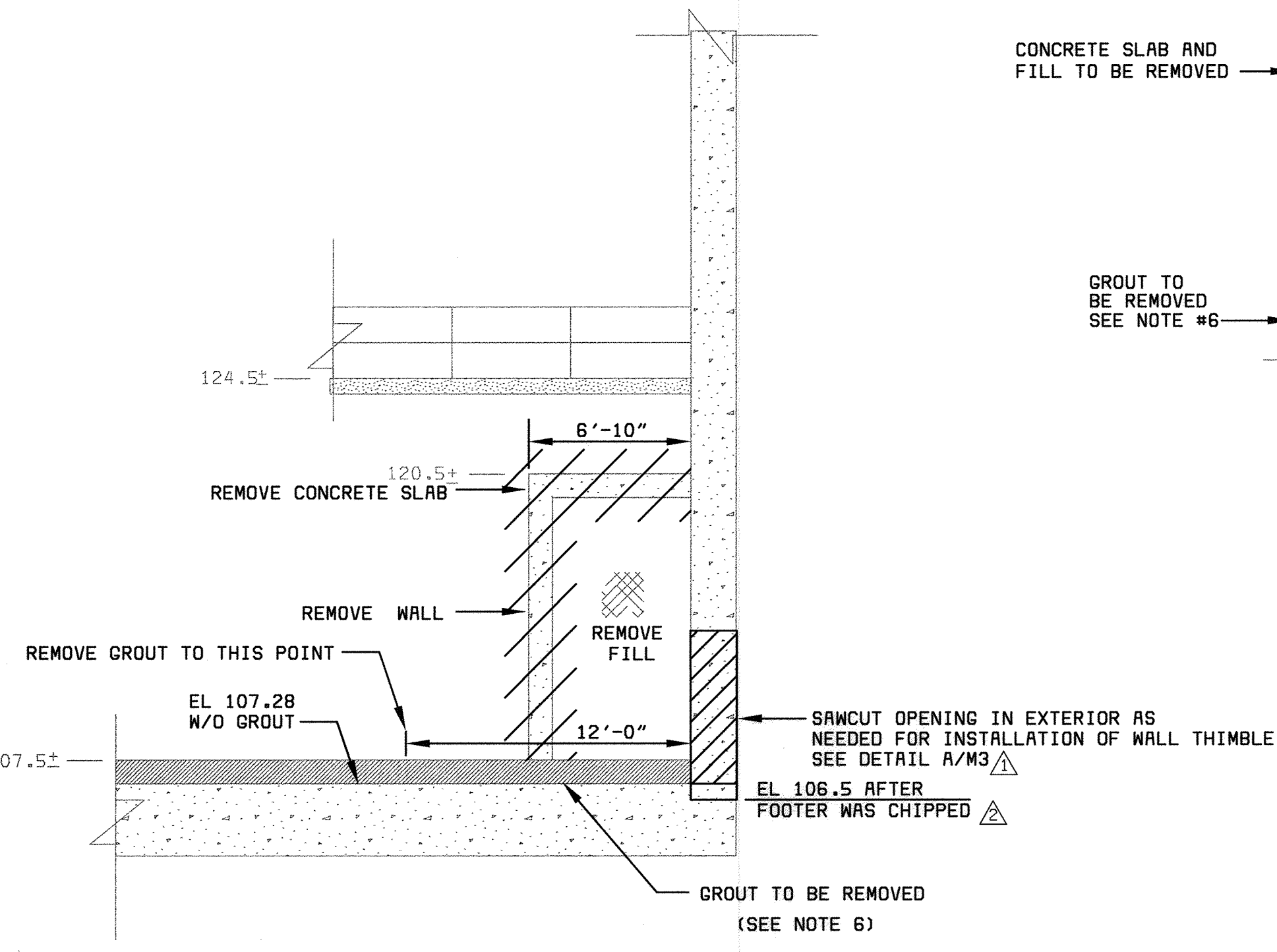
**DEMOLITION PLAN**  
SCALE 3/16" = 1'-0"

- DEMOLITION NOTES**
- REMOVE MAIN SEWAGE PUMPS #3 AND #6, PUMP STAND, CONCRETE BASE, EFFLUENT PIPING, VALVES, MOTORS, MOTOR DRIVE SHAFTS AND BEARINGS.
  - 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.
  - MAINTAIN EXISTING SUCTION PIPING, PNEUMATIC AIR PIPING, VALVE CONTROL WIRING, VALVES AND STEMS.
  - REMOVE ELECTRICAL WIRING FROM PUMPS #3 AND #6, BACK TO AND INCLUDING VFD'S. (SEE SHEETS E4 AND E5)
  - PNEUMATIC AIR SYSTEM MUST REMAIN IN SERVICE THROUGHOUT CONSTRUCTION.
  - 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.
  - 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.
  - 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.

REMOVE CONCRETE SLAB, WALL AND FILL BACK TO EXTERIOR WALL

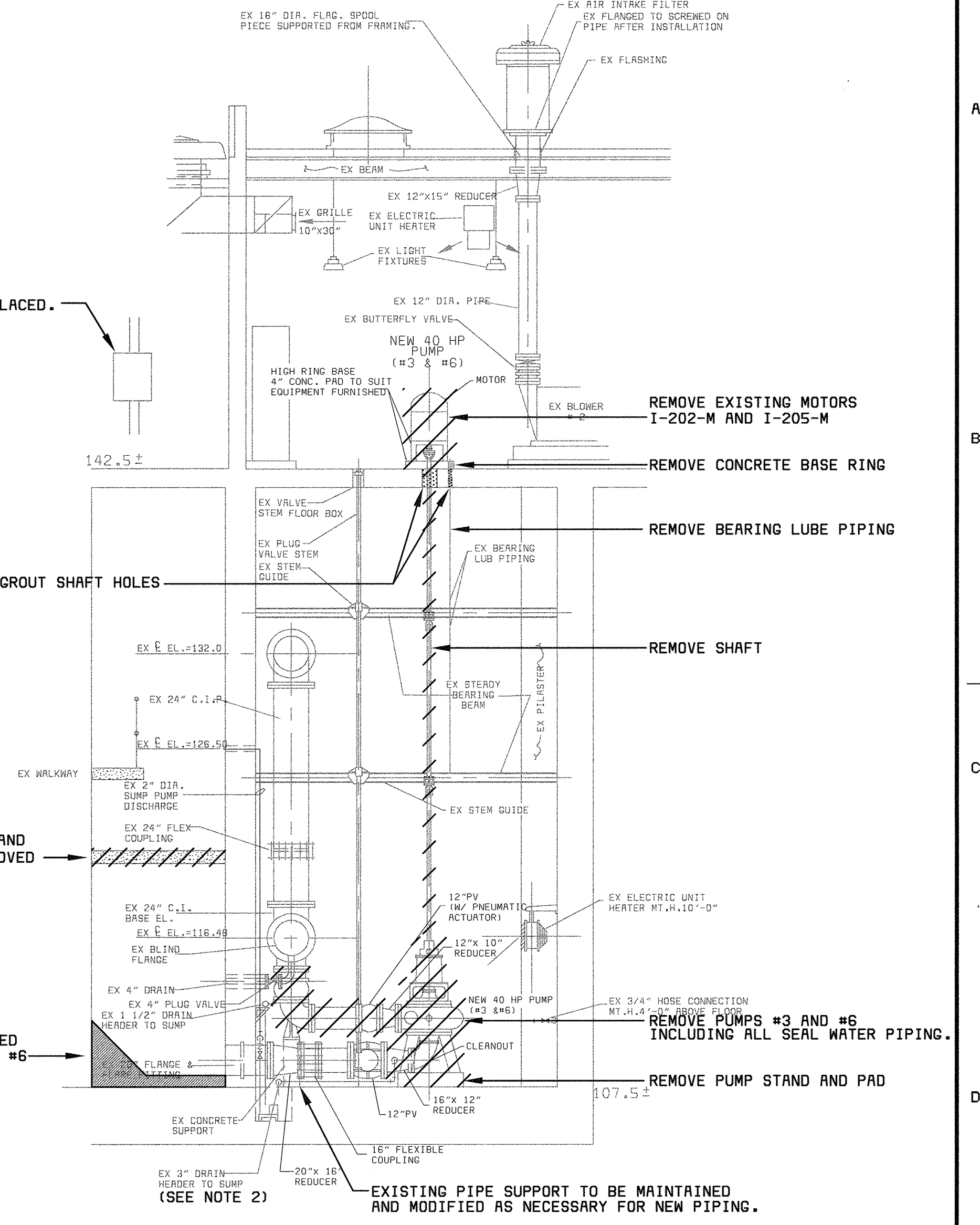
REMOVE CONCRETE WALL AS NECESSARY FOR INSTALLATION OF 42" WALL THIMBLE (SEE DETAIL A/M3)

CONCRETE WALKWAY TO REMAIN





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

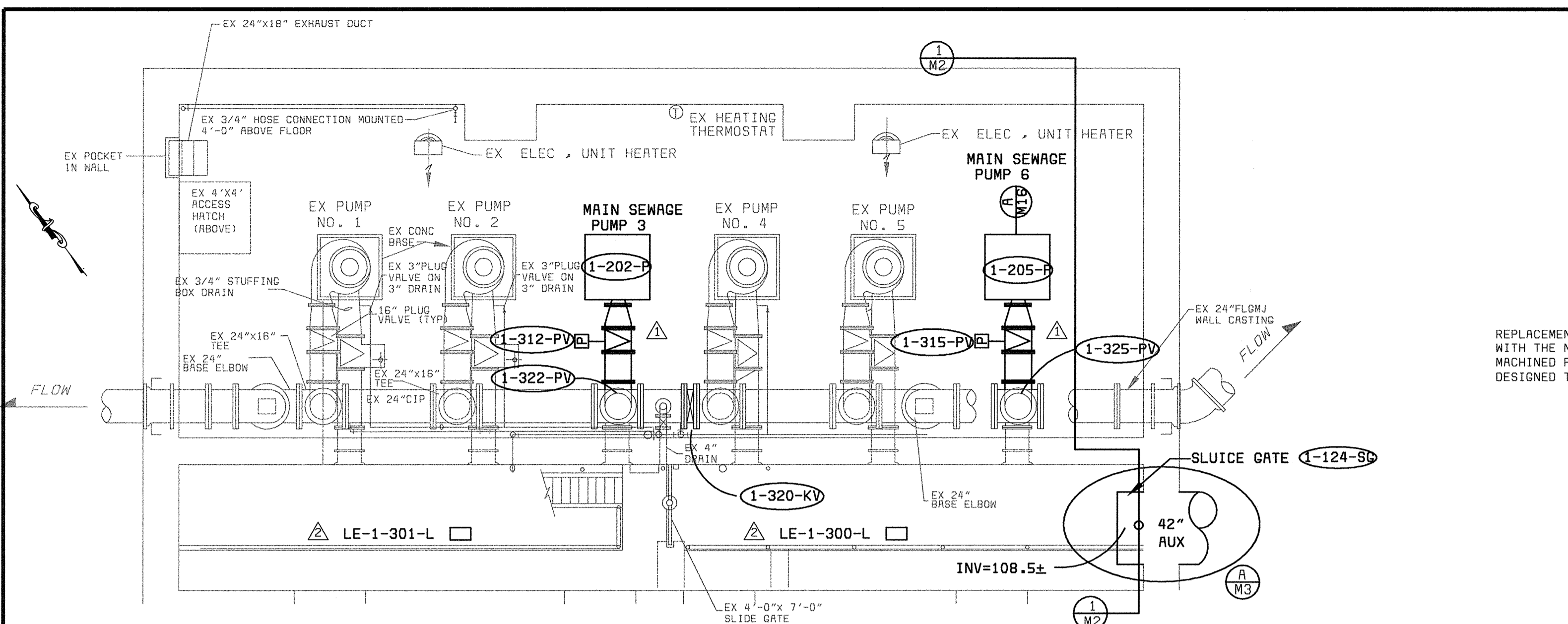
EXISTING ELECTRICAL BOX TO BE REPLACED. EXISTING CIRCUIT TO BE MAINTAINED (SEE ELECTRICAL DRAWINGS)



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

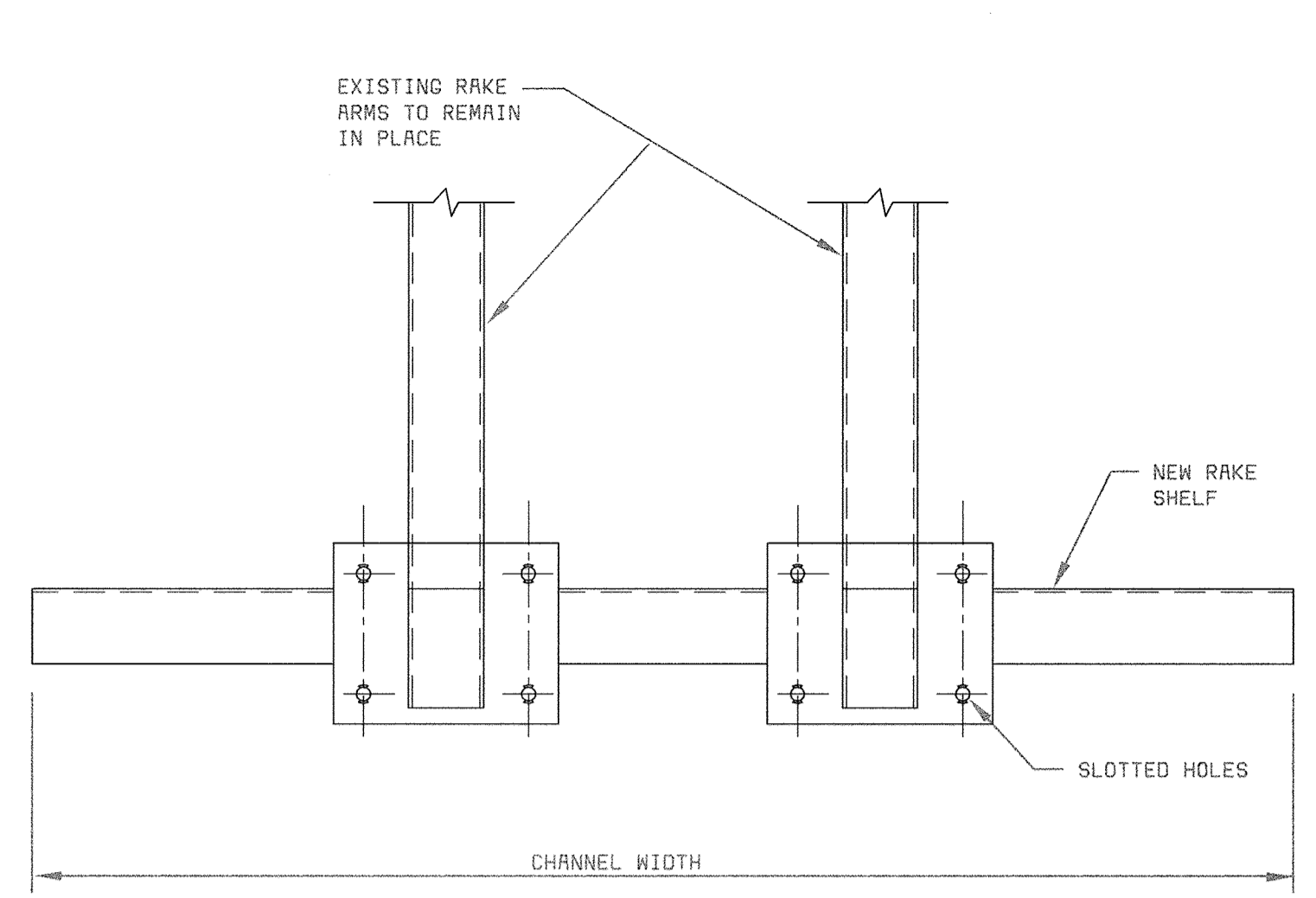
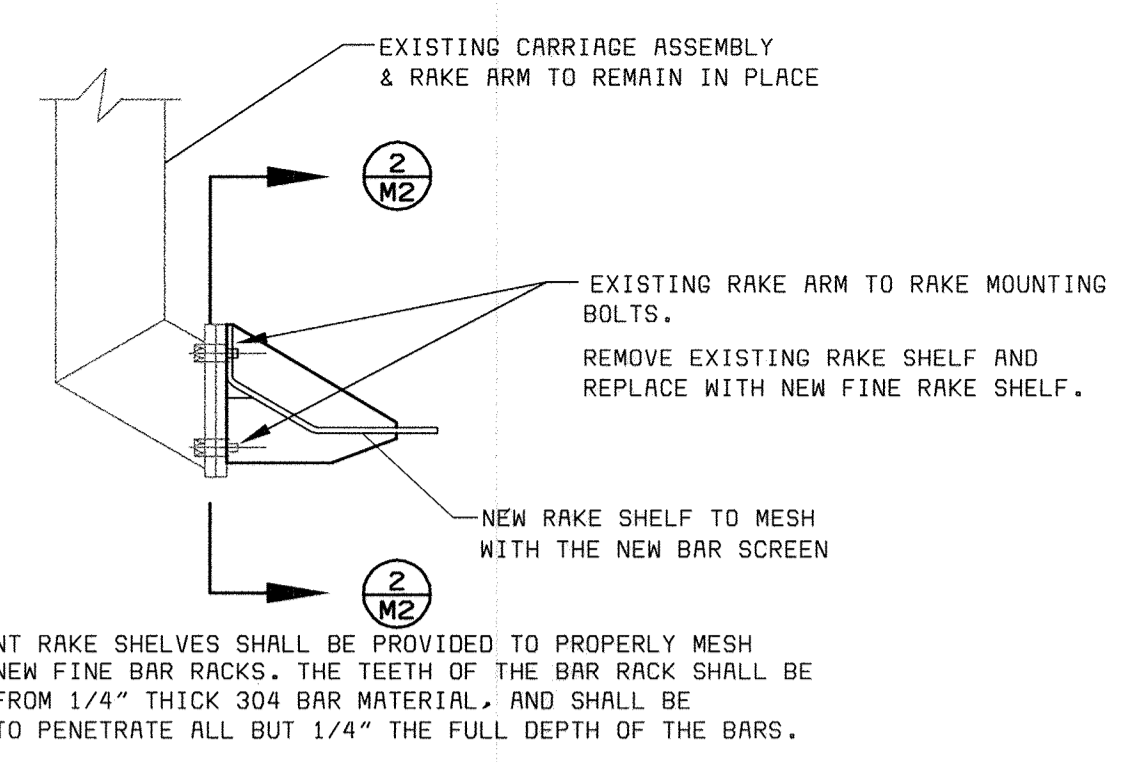
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND   <b>A. MORTON THOMAS AND ASSOCIATES, INC.</b> CONSULTING ENGINEERS 12750 TWINBROOK PARKWAY, SUITE 200, ROCKVILLE MD 20852 TEL (301) 881-2545 FAX (301) 881-0814 E-MAIL JBYRNE@AMTEngineering.com AMT FILE # 98-154	 <b>BLACK &amp; VEATCH</b> Gaithersburg, 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								CIVIL  <b>HEADWORKS BUILDING, LOWER LEVEL          DEMOLITION PLAN AND SECTION</b>	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	
			DRN: R. ANCHORS											SHEET 38 OF 88
			CHK: A. REYES	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR						
DATE: 04/13/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP								



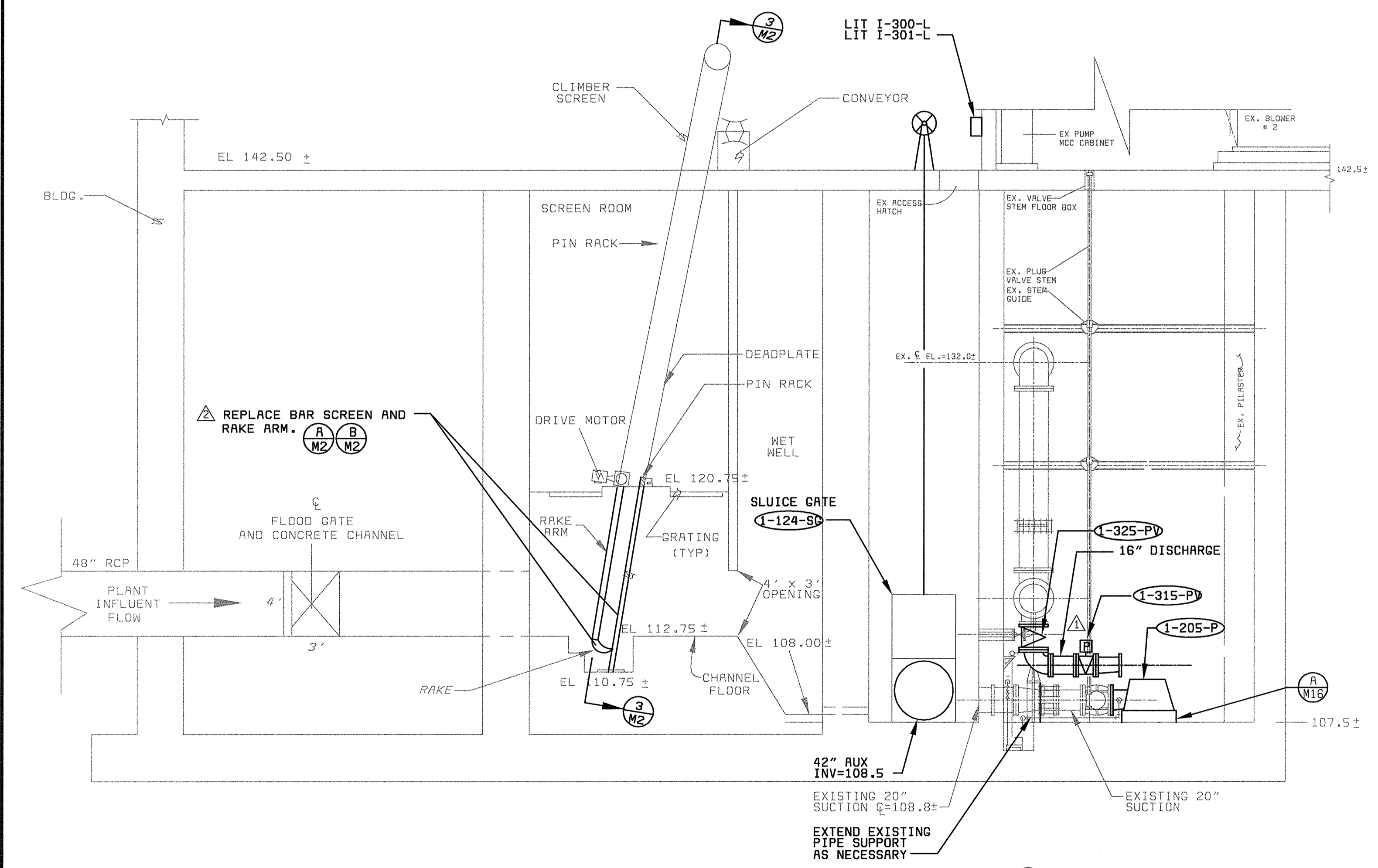


**PUMP NO 3 AND NO 6 REPLACEMENT**  
SCALE 3/16" = 1'-0"

**RAKE SHELF DETAIL**  
NOT TO SCALE

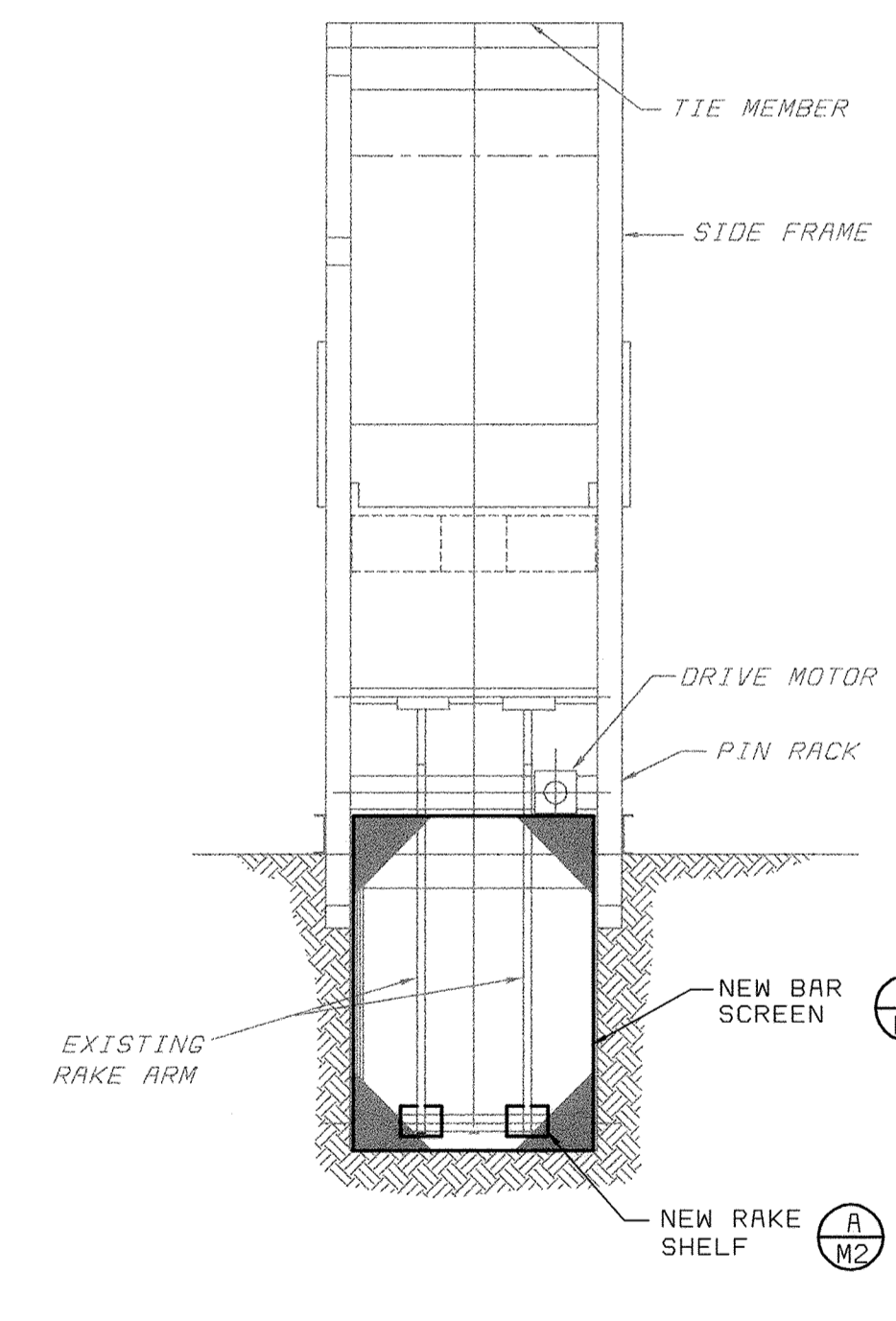


**SECTION 2**

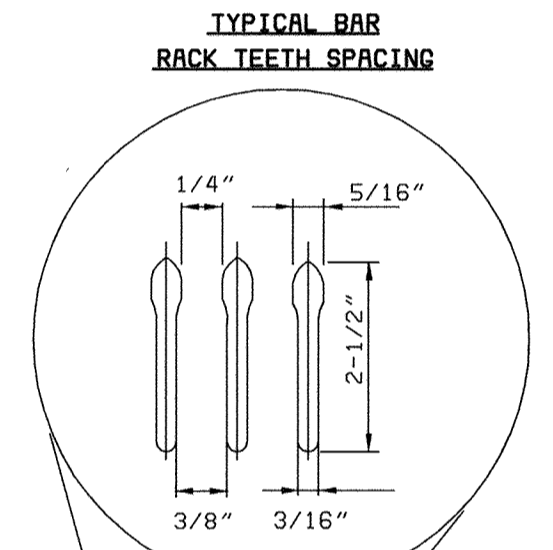


**CLIMBER SCREEN ELEVATION VIEW**  
SCALE 3/16" = 1'-0"

**PUMP SECTION**  
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

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

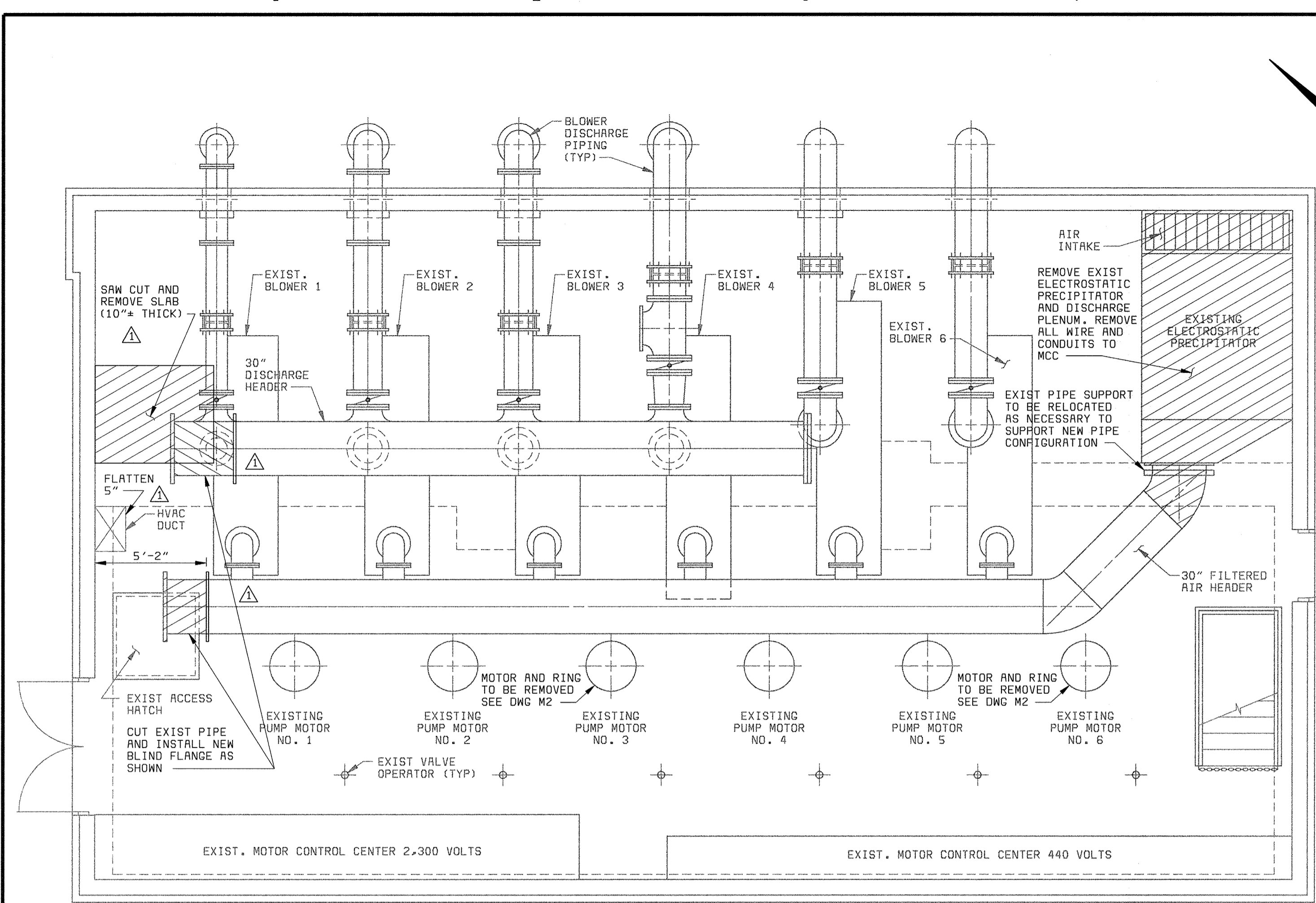
DES: A. REYES					
DRN: R. ANCHORS					
CHK: A. REYES	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR
DATE: 04/13/01	6/27/01	ADDENDUM NO. 3			
	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

CIVIL  
**HEADWORKS BUILDING PLAN AND SECTION**

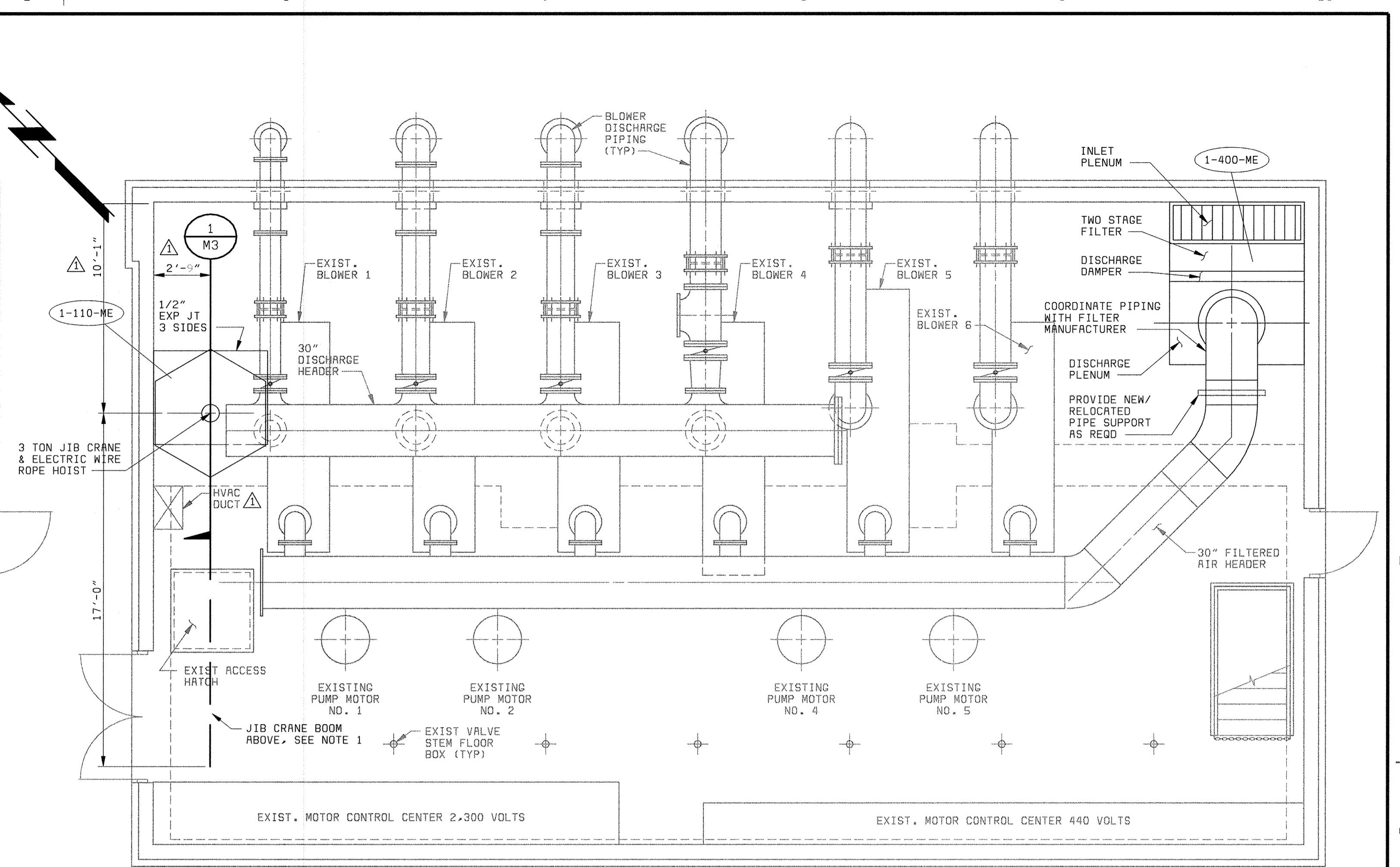
LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
PRELIMINARY AND PRIMARY TREATMENT EXPANSION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3840  
ELECTION DISTRICT NO. 6  
HOWARD COUNTY, MARYLAND

SCALE AS SHOWN  
SHEET 39 OF 88  
**M2**

0569472 F0569472A

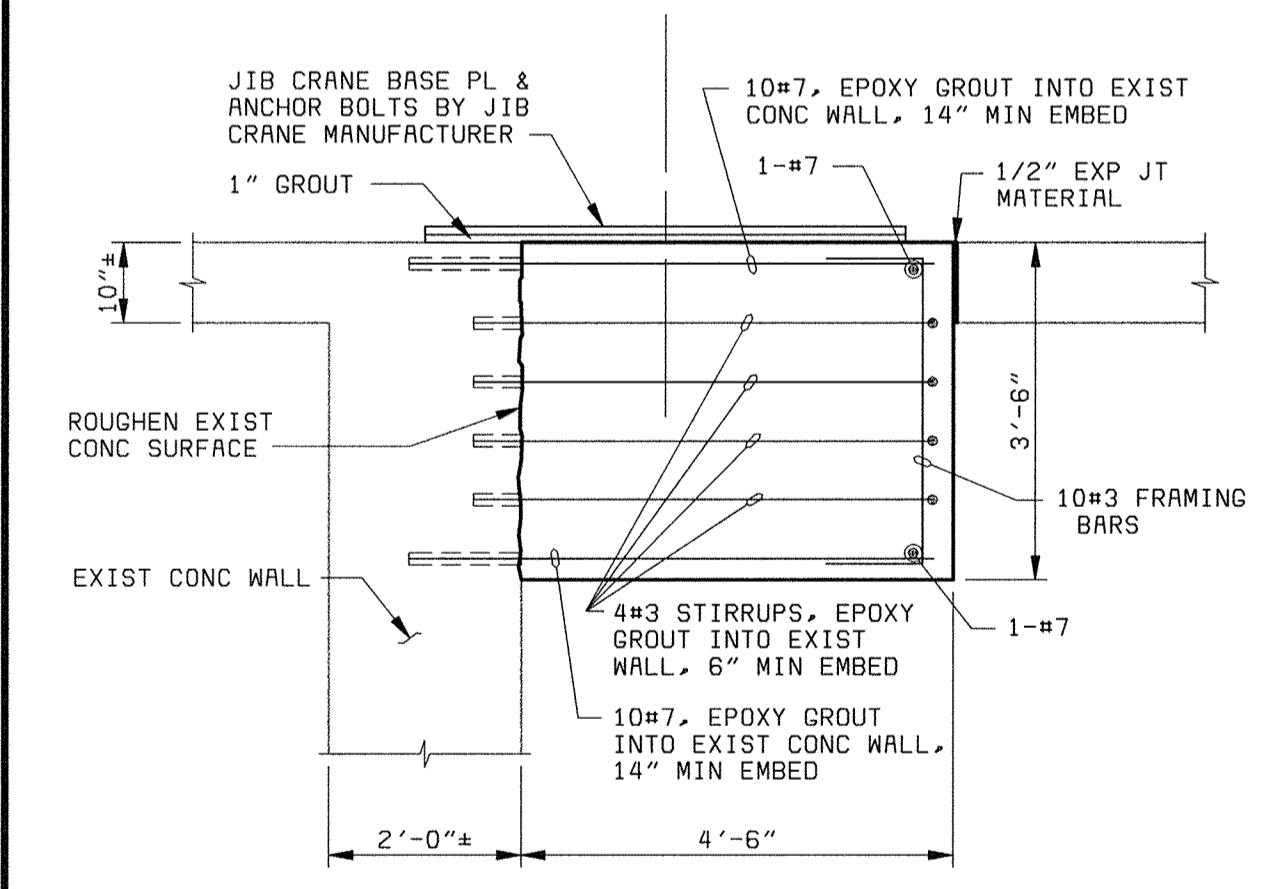


**BLOWER ROOM DEMOLITION PLAN**  
1/4" = 1'-0"

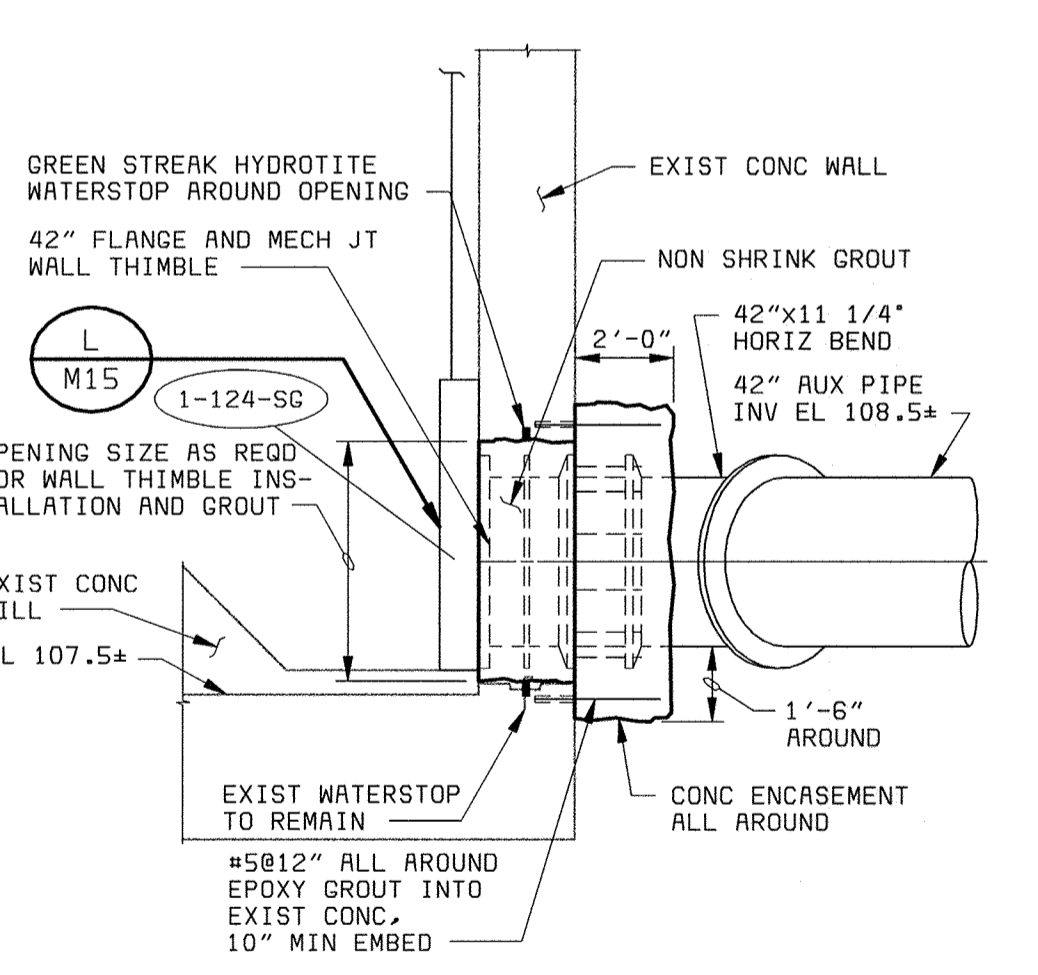


**BLOWER ROOM PLAN**  
1/4" = 1'-0"

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



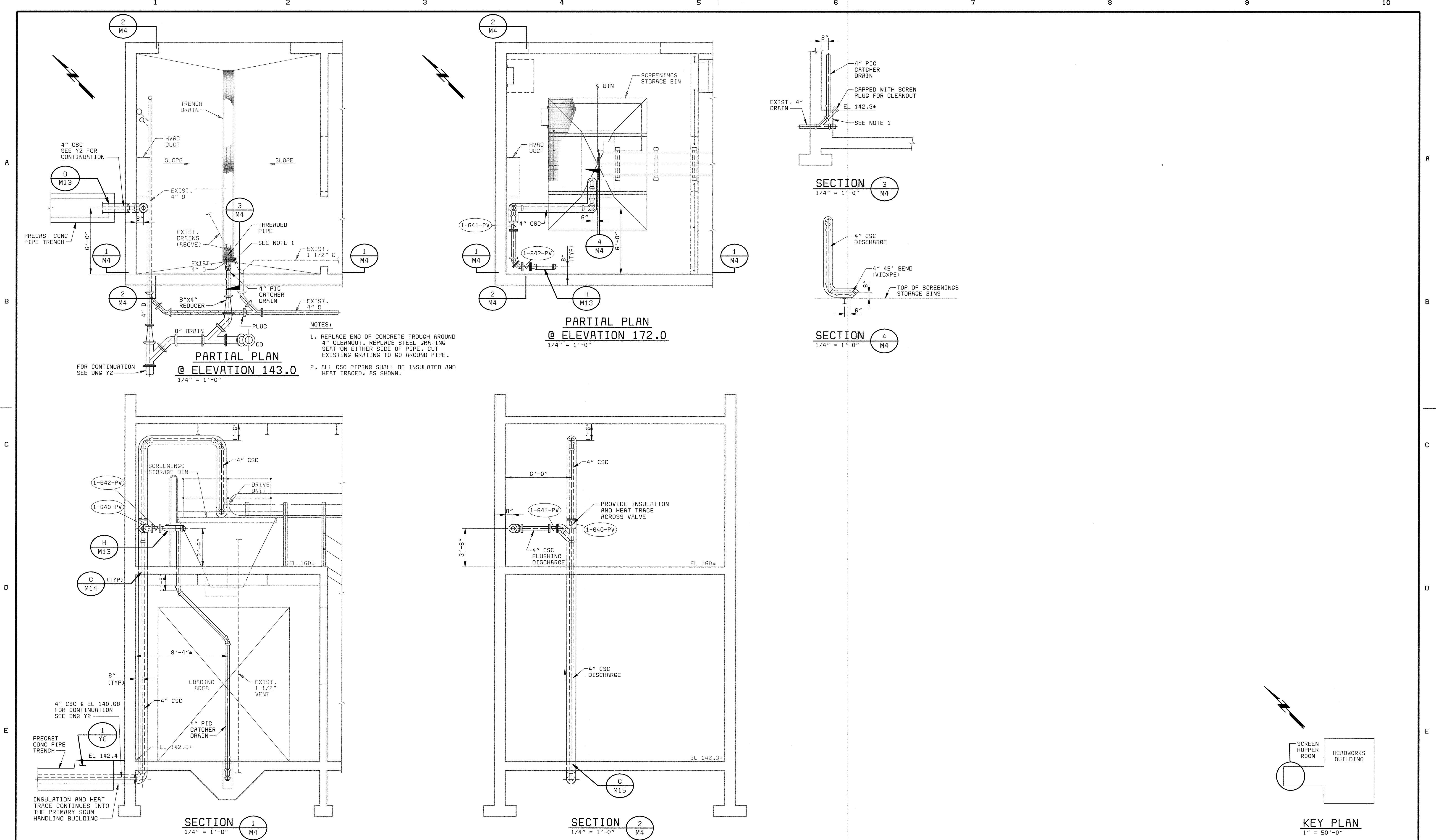
**SECTION 1**  
1/2" = 1'-0"



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

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. REGANUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: KMH									<b>HEADWORKS BUILDING          MECHANICAL</b>  <b>BLOWER ROOM PLANS,          SECTION AND DETAIL</b>	<b>LITTLE PATUXENT WATER RECLAMATION PLANT          ADDITION NO. 6          PRELIMINARY AND PRIMARY TREATMENT EXPANSION</b>  CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840  HOWARD COUNTY, MARYLAND	SCALE AS SHOWN
			DRN: RLC											
			CHK: WLK											
			DATE: 2/19/01		05/05/05	CONFORMED TO CONSTRUCTION RECORDS								





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

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

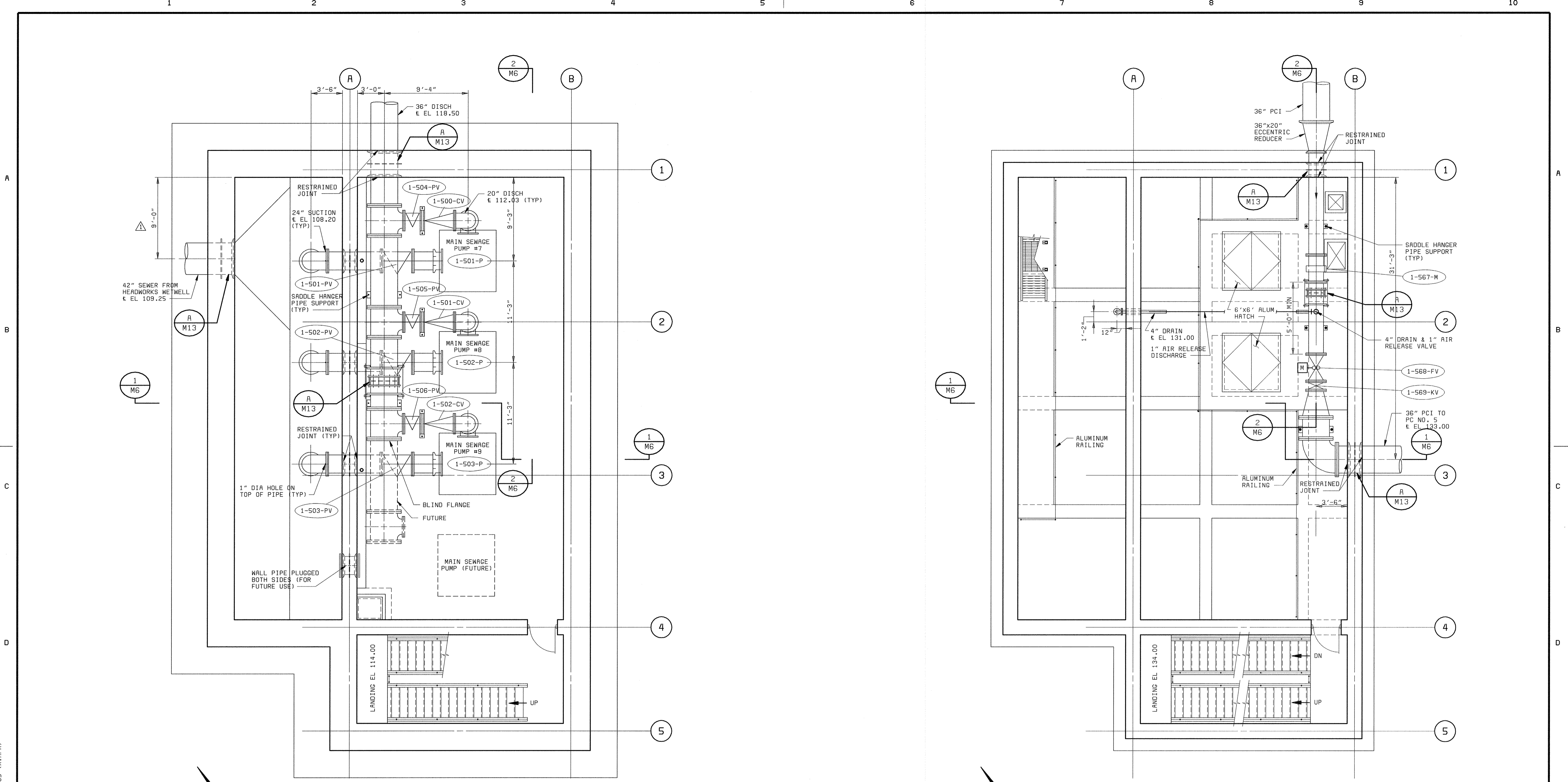
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

SHEET  
41 OF 88

**M4**

058472 2  
F058472A



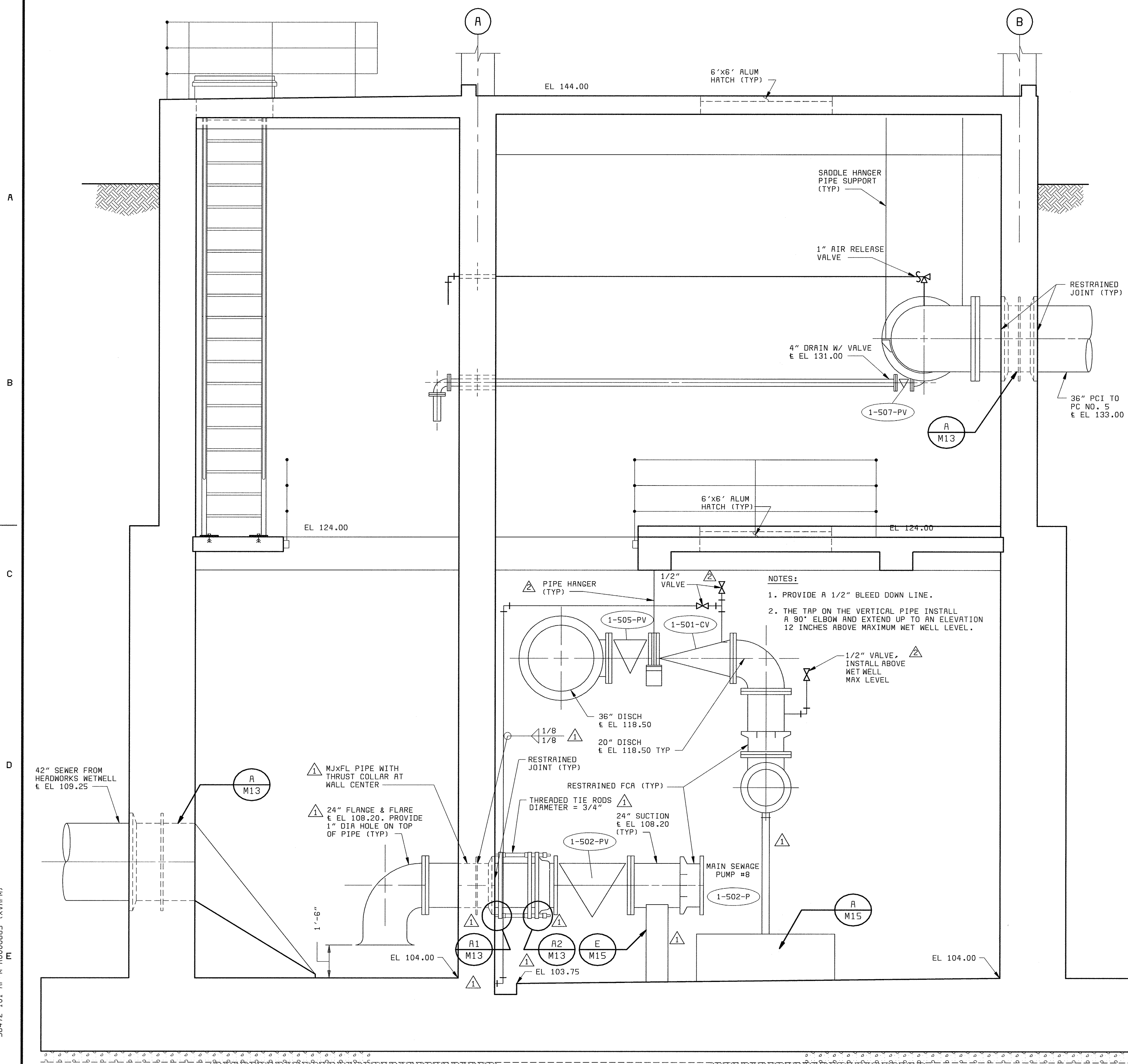
LOWER LEVEL PLAN (FINISHED FLOOR EL 104.00)  
3/16" = 1'-0"

SECTIONAL PLAN (FINISHED FLOOR EL 124.00)  
3/16" = 1'-0"

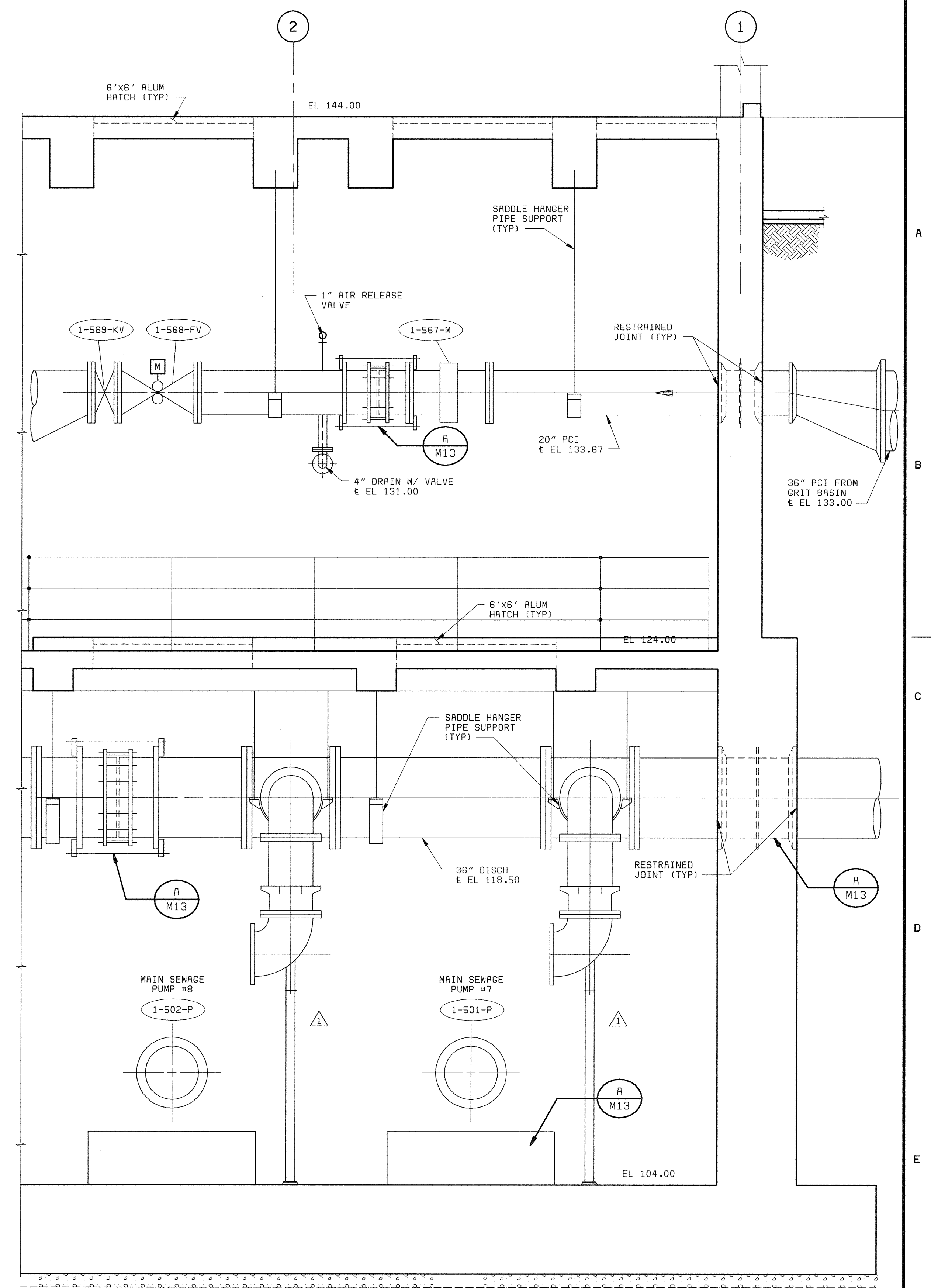
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND	<b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: KMH, SLF DRN: SLF CHK: WLK DATE: 2/19/01	05/05/05 CONFORMED TO CONSTRUCTION RECORDS RHH RJR/RJR	AUXILIARY PUMP STATION MECHANICAL	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 42 OF 88  M5
---	---	--	--	--	--------------------------------------	---	---

58472-101-AP-M-00000685 (X1/RPM)  
 058472 3  
 F058472A  
 CHIEF, BUREAU OF UTILITIES DATE  
 REG. PROF. ENGR. DATE





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

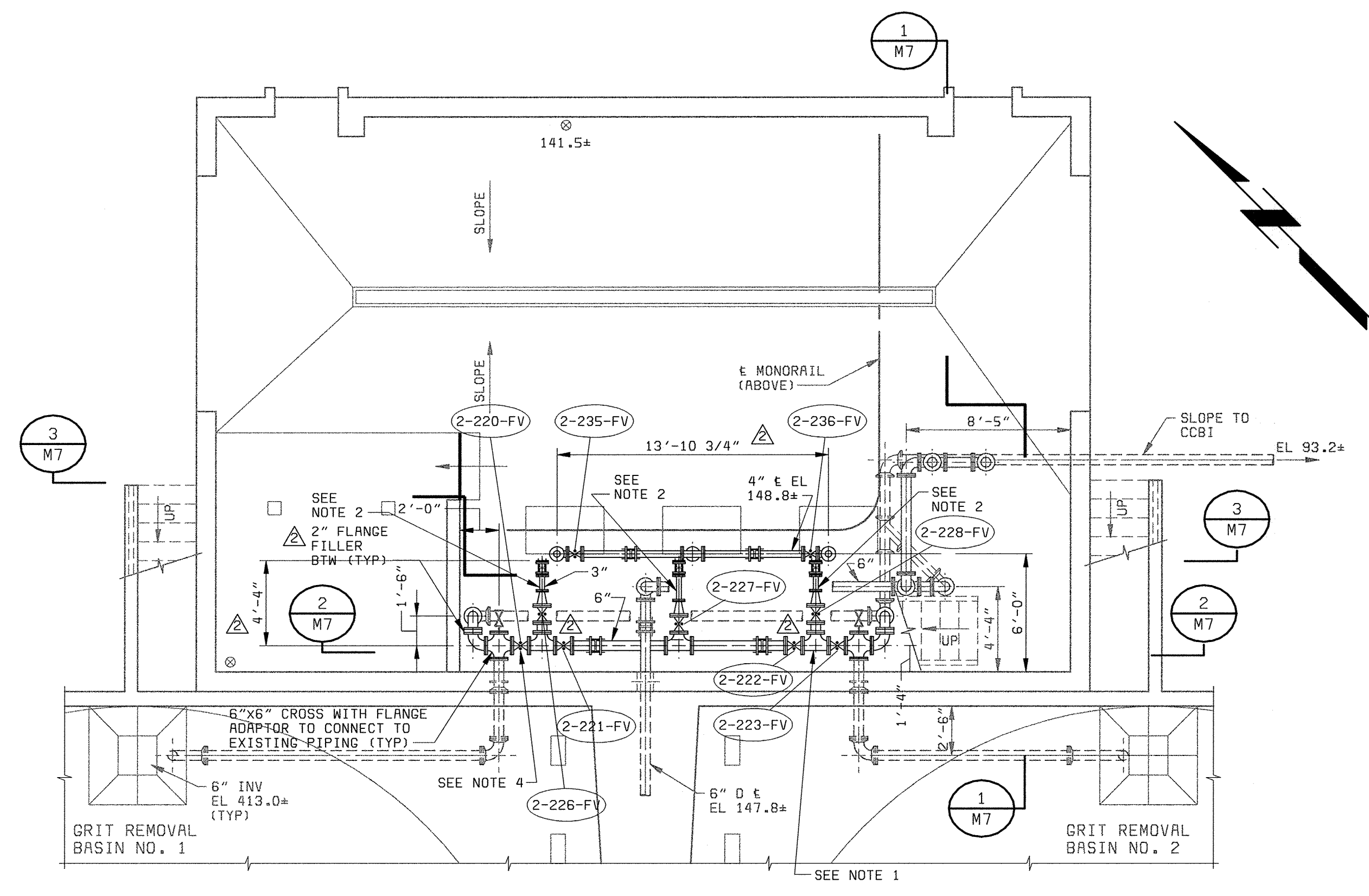


SECTION 2  
3/8" = 1'-0" M5

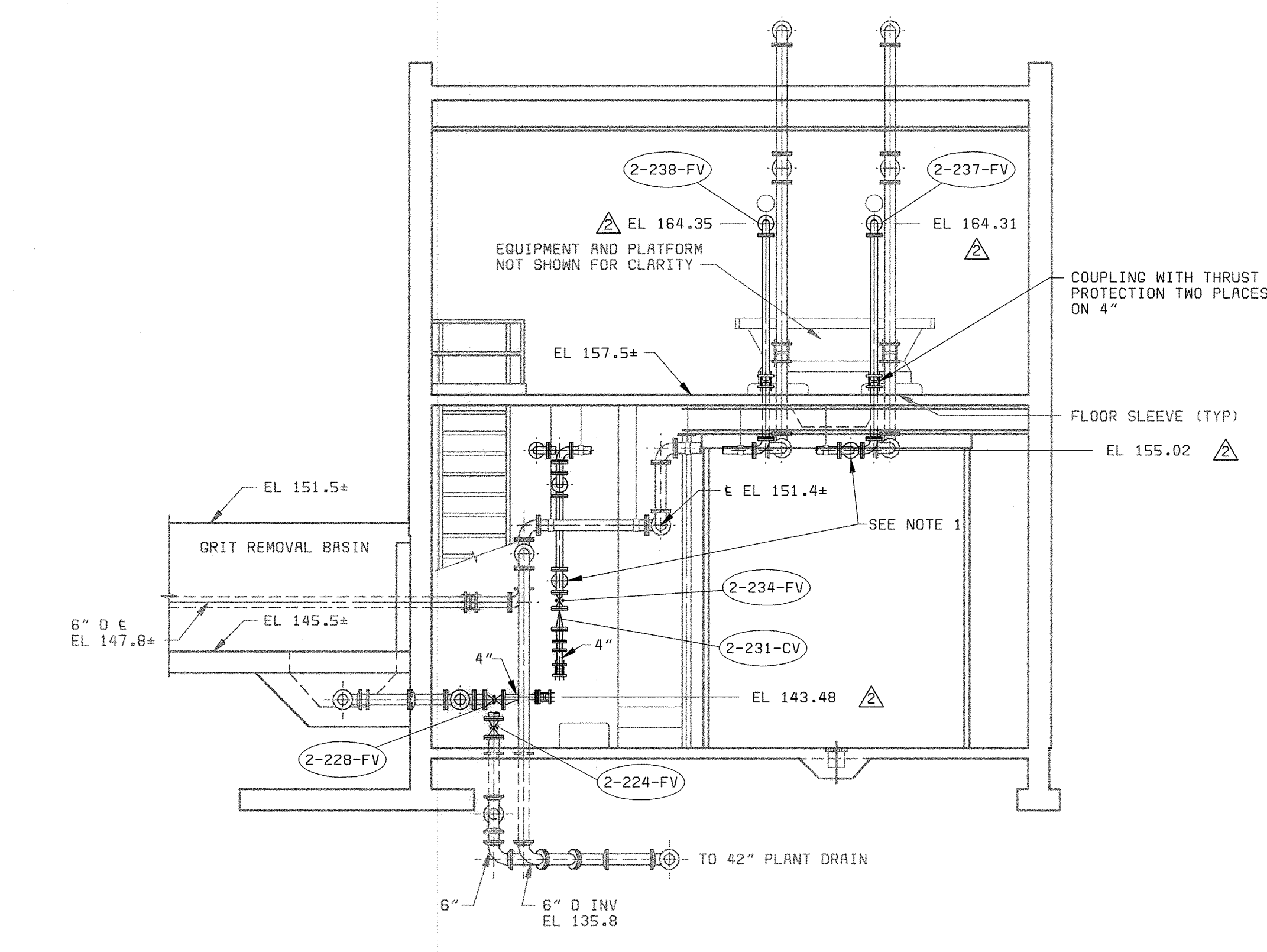
NOTES:  
1. PROVIDE A 1/2" BLEED DOWN LINE.  
2. THE TAP ON THE VERTICAL PIPE INSTALL A 90° ELBOW AND EXTEND UP TO AN ELEVATION 12 INCHES ABOVE MAXIMUM WET WELL LEVEL.

58472-101-AP-M-0000685 (XV/PM)

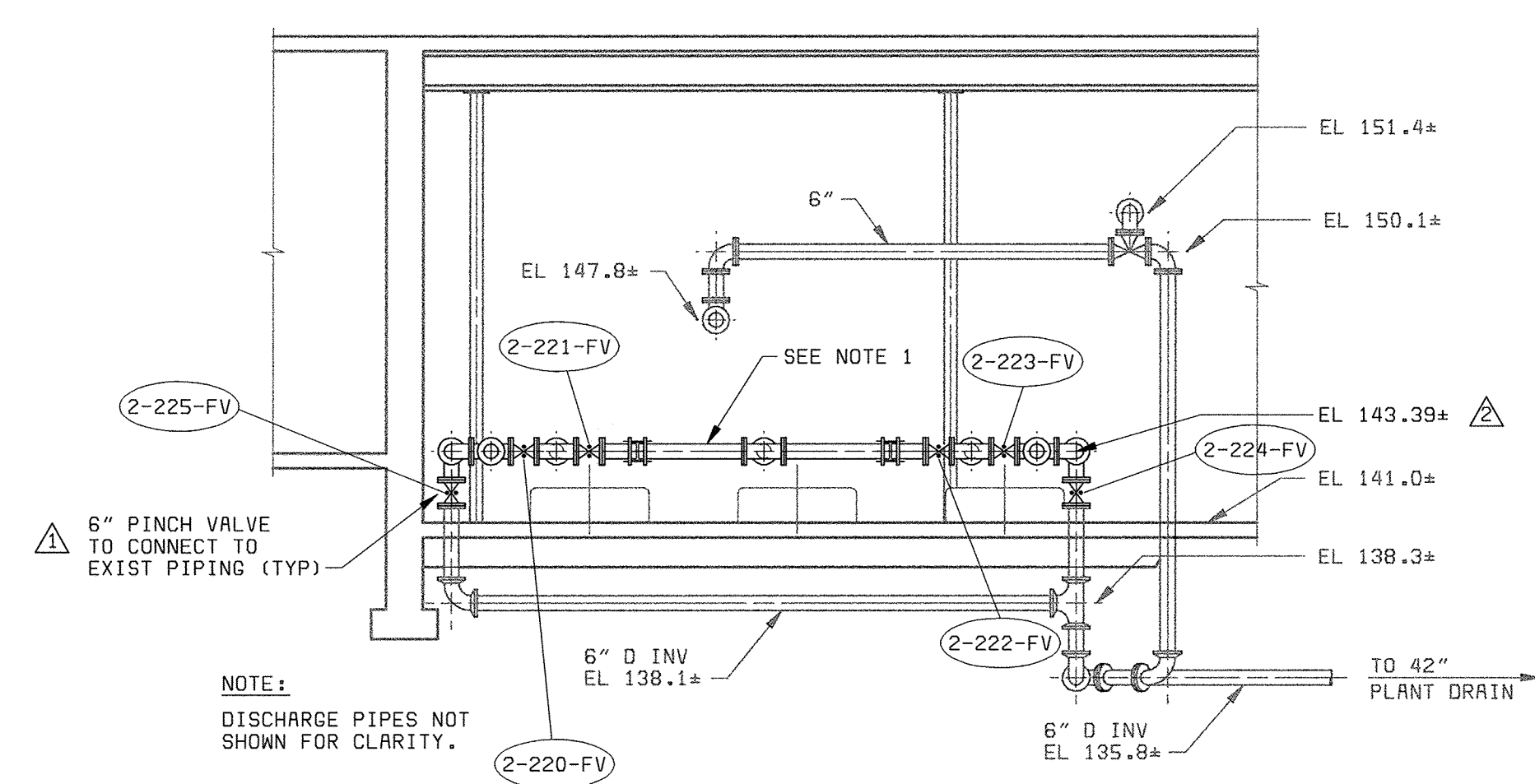
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	BLACK & VEATCH, L.P. Gaithersburg, Maryland  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTRUS, JR., A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 22927	DES: KMH, SLF							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
			DRN: SLF	CHK: WLK	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR					
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP			M6



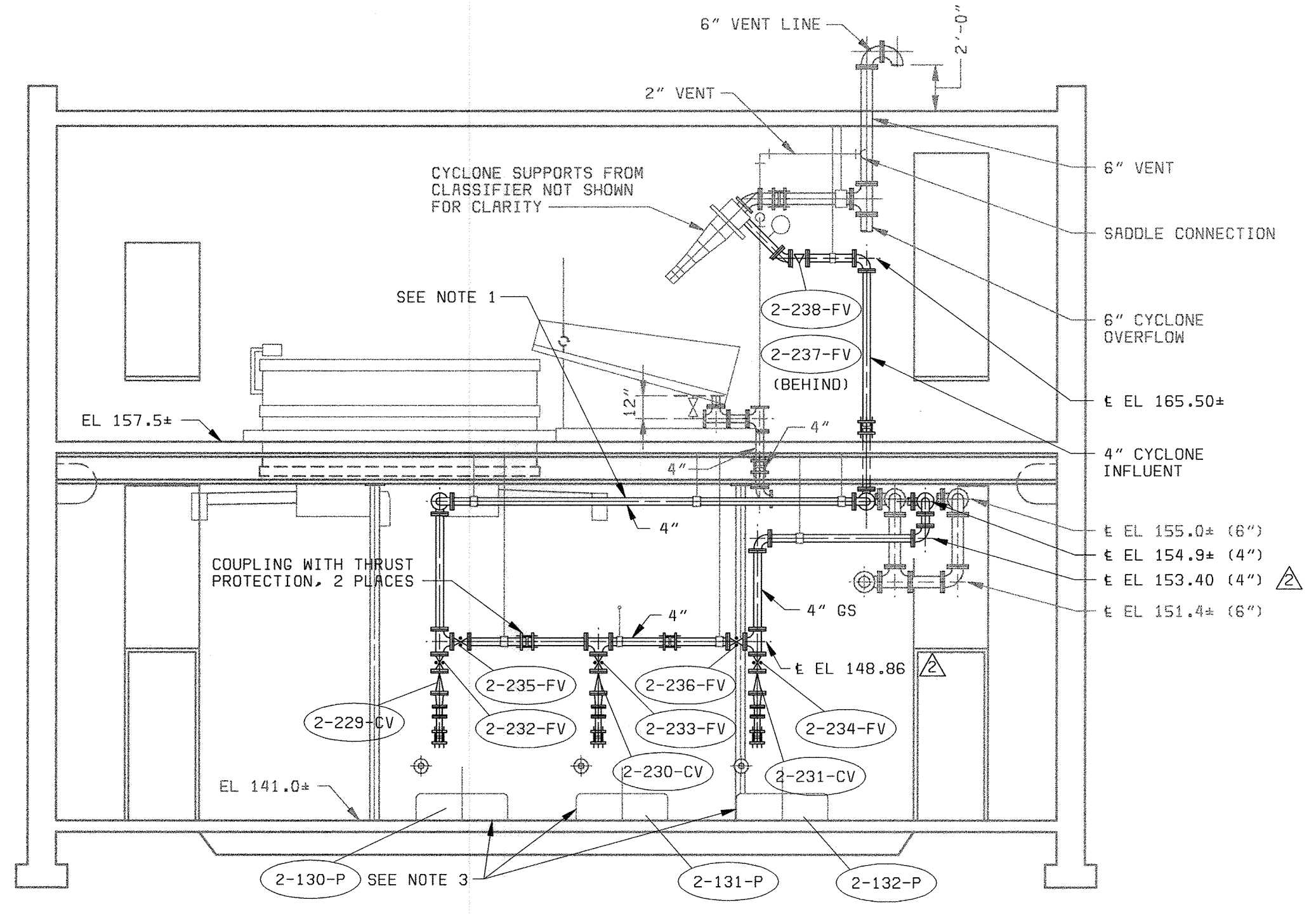
**LOWER FLOOR PLAN**  
3/16" = 1'-0"



**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  
FOR CONSTRUCTION  
AND SEALED BY  
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	

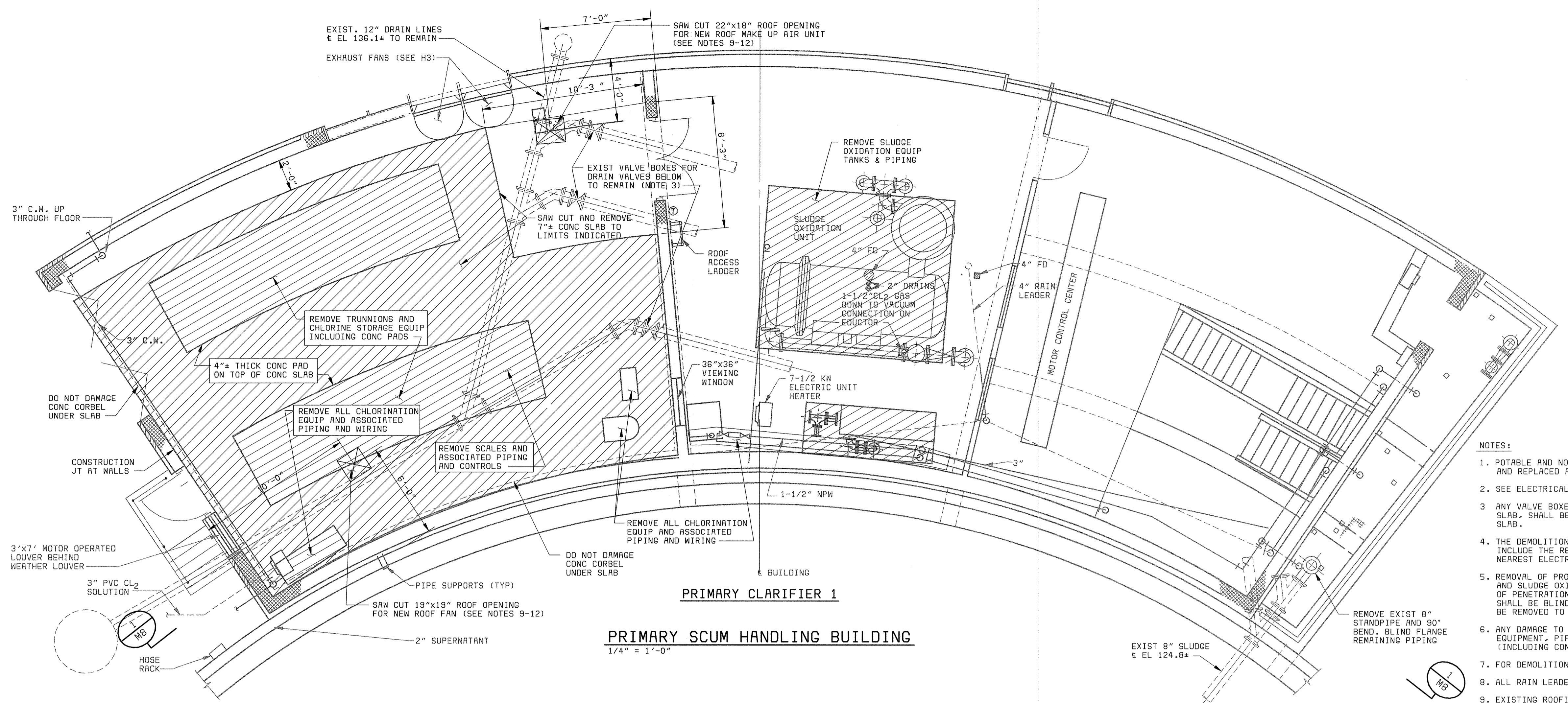
**GRIT HANDLING BUILDING  
MECHANICAL**  
  
**PLAN AND SECTIONS**

**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



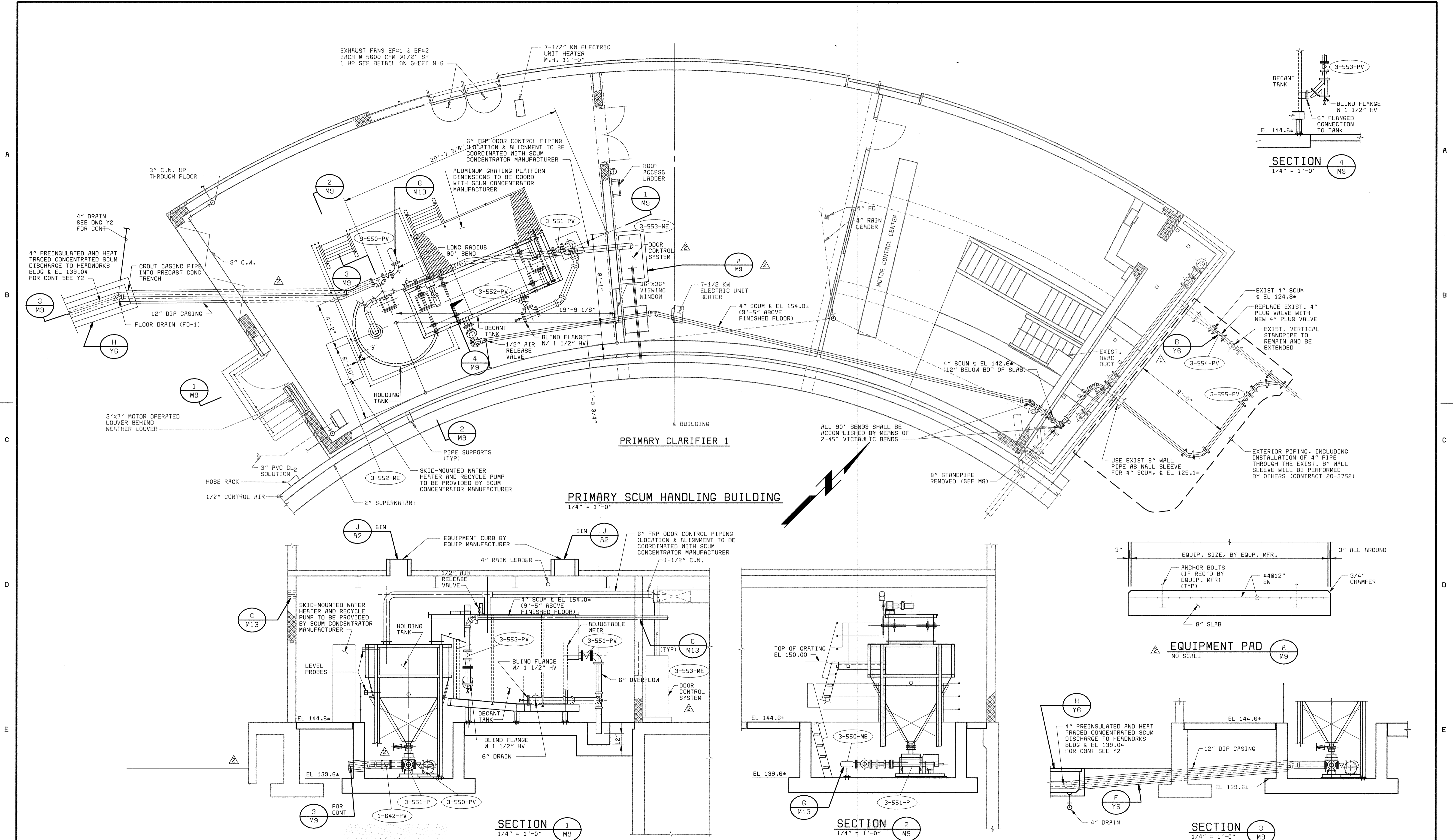
- NOTES:**
- POTABLE AND NON POTABLE WATER PIPING SHALL BE DEMOLISHED AND REPLACED AS INDICATED ON DWG P2.
  - SEE ELECTRICAL DWGS FOR ELECTRICAL DEMOLITION.
  - ANY VALVE BOXES AND STEMS DISTURBED BY DEMOLITION OF CONC SLAB, SHALL BE PROTECTED AND/OR REPLACED AND SET INTO NEW SLAB.
  - THE DEMOLITION 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.

**PRIMARY CLARIFIER 1**  
**PRIMARY SCUM HANDLING BUILDING**  
1/4" = 1'-0"

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

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> 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  <b>M8</b>
			DRN: CMM				
			CHK: WLK				
			DATE: 2/19/01				
				02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR	
					REVISIONS AND RECORD OF ISSUE	NO. BY CK APP	





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

**PRIMARY SCUM 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

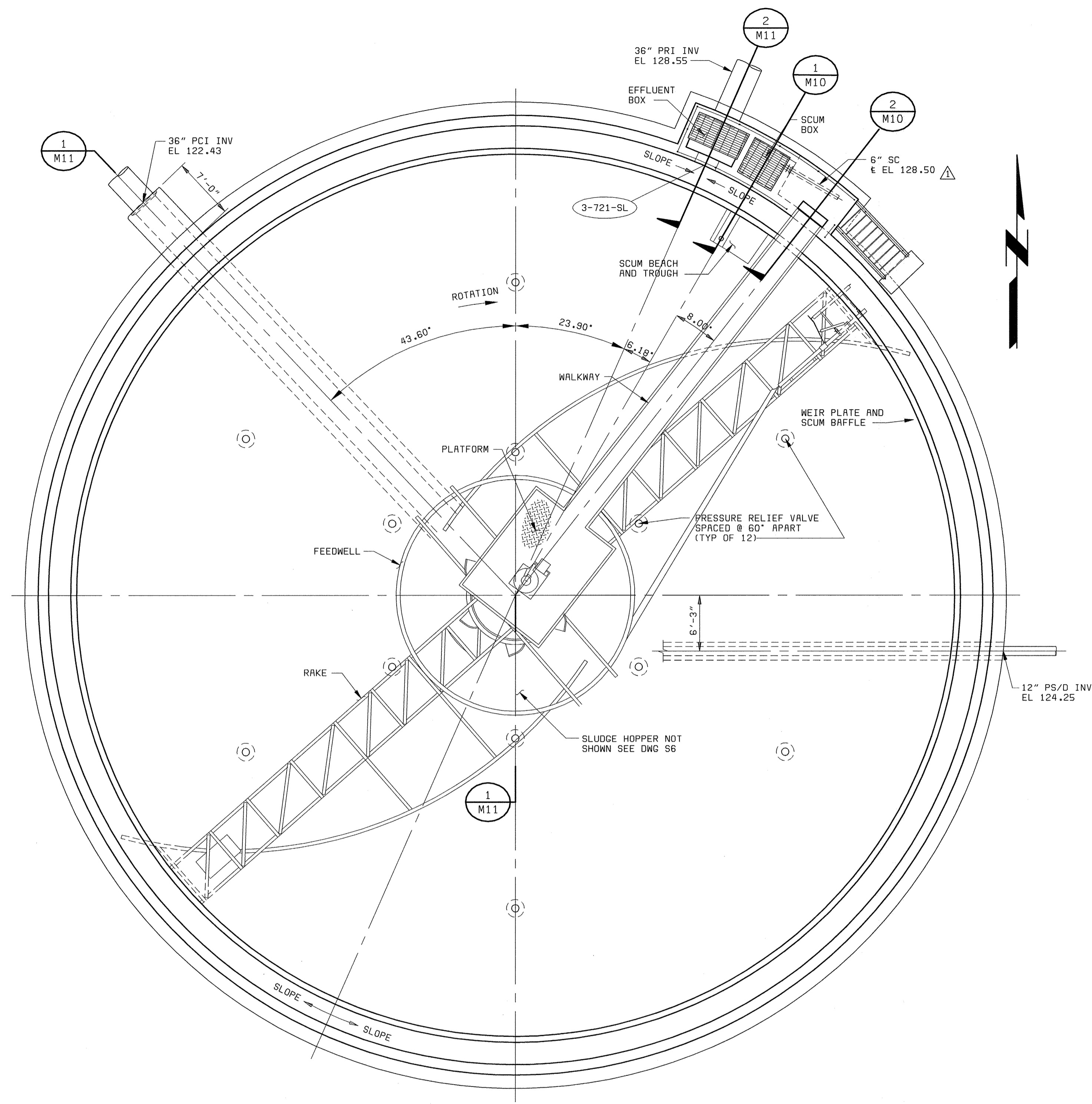
SCALE  
AS  
SHOWN

SHEET  
46 OF 88

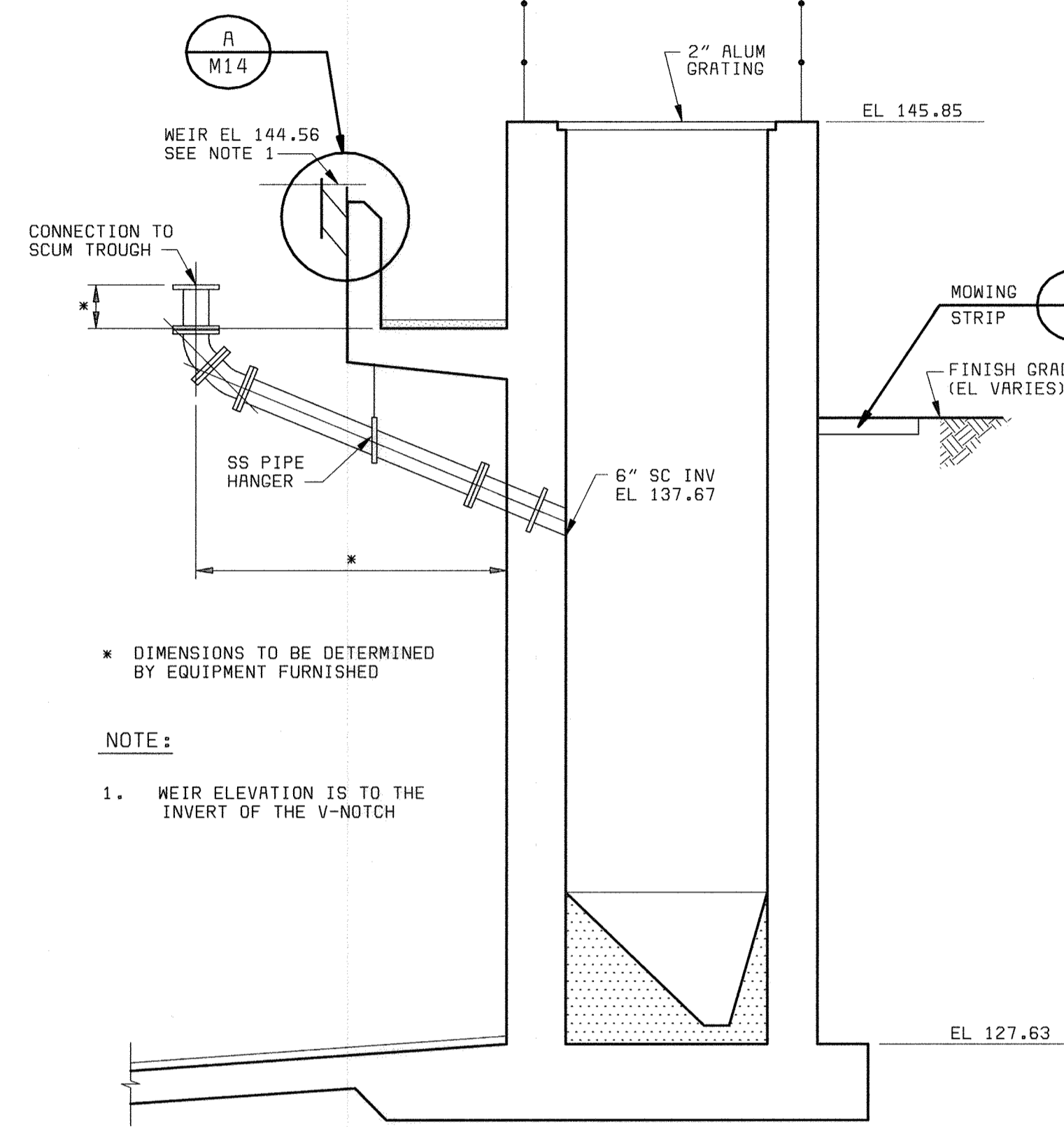
**M9**

056472.3  
F056472A



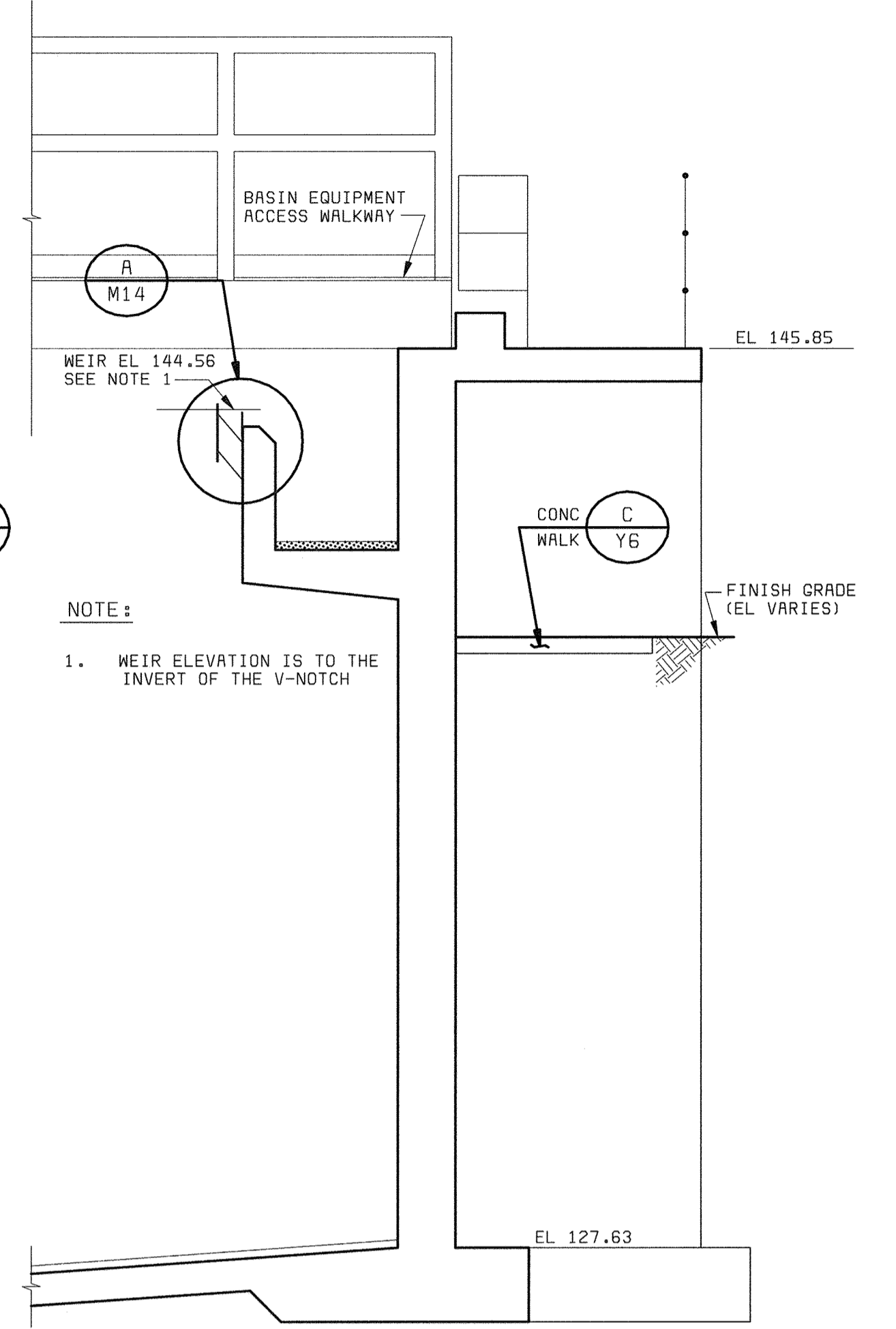


**PLAN**  
1/8" = 1'-0"



**SECTION 1**  
3/8" = 1'-0" M10

\* DIMENSIONS TO BE DETERMINED BY EQUIPMENT FURNISHED  
**NOTE:**  
1. WEIR ELEVATION IS TO THE INVERT OF THE V-NOTCH



**SECTION 2**  
3/8" = 1'-0" M10

**NOTE:**  
1. WEIR ELEVATION IS TO THE INVERT OF THE V-NOTCH

XREF: 58472-101-PC-M-ADD00546 (XVPCW)  
F058472A

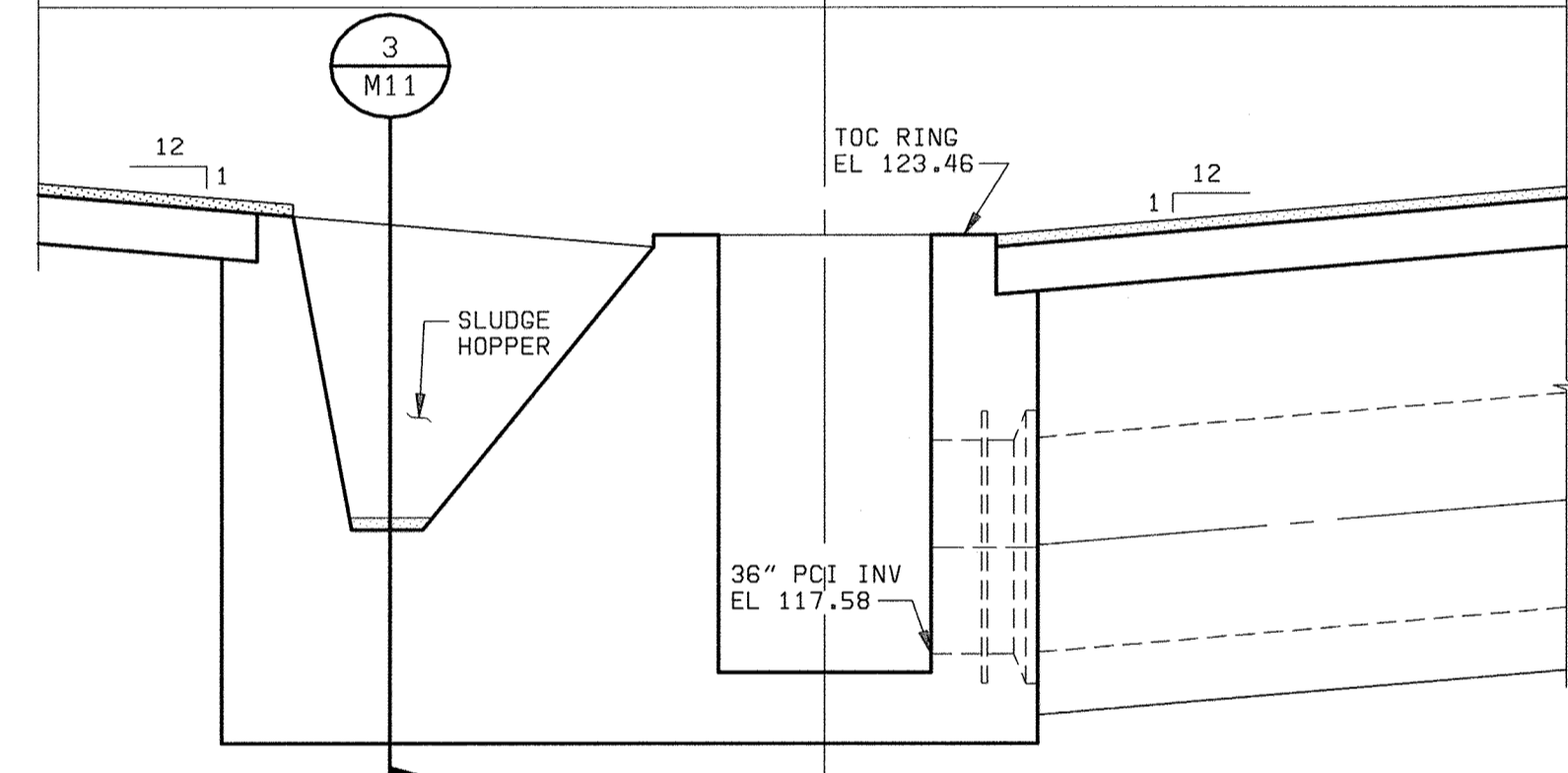
058472.3  
F058472A

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> 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 MECHANICAL  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
			DRN: SLF										
			CHK: WLK										
			DATE: 2/19/01		05/05/05	CONFORMED TO CONSTRUCTION RECORDS							

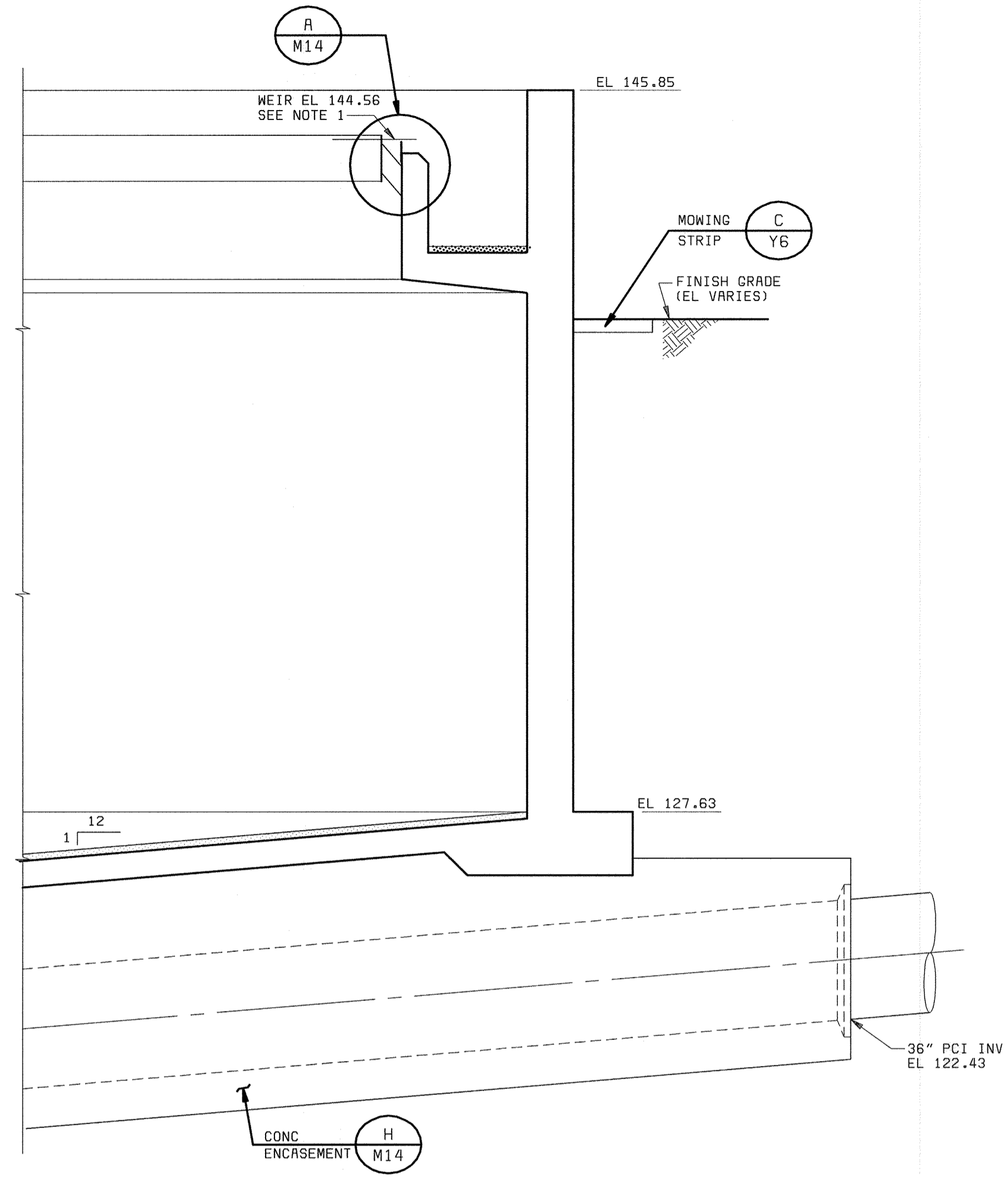
1 2 3 4 5 6 7 8 9 10

A  
B  
C  
D  
E

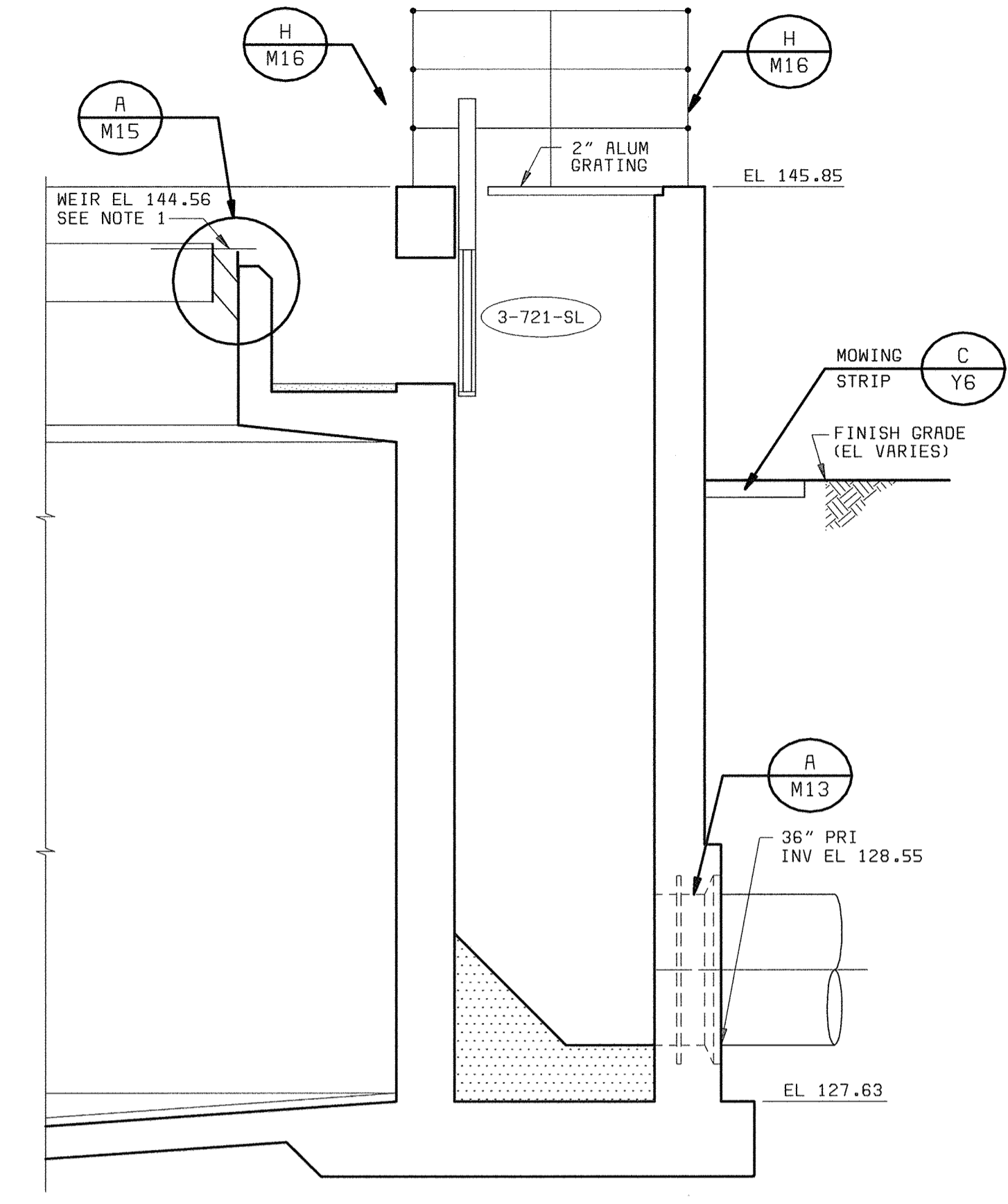
A  
B  
C  
D  
E



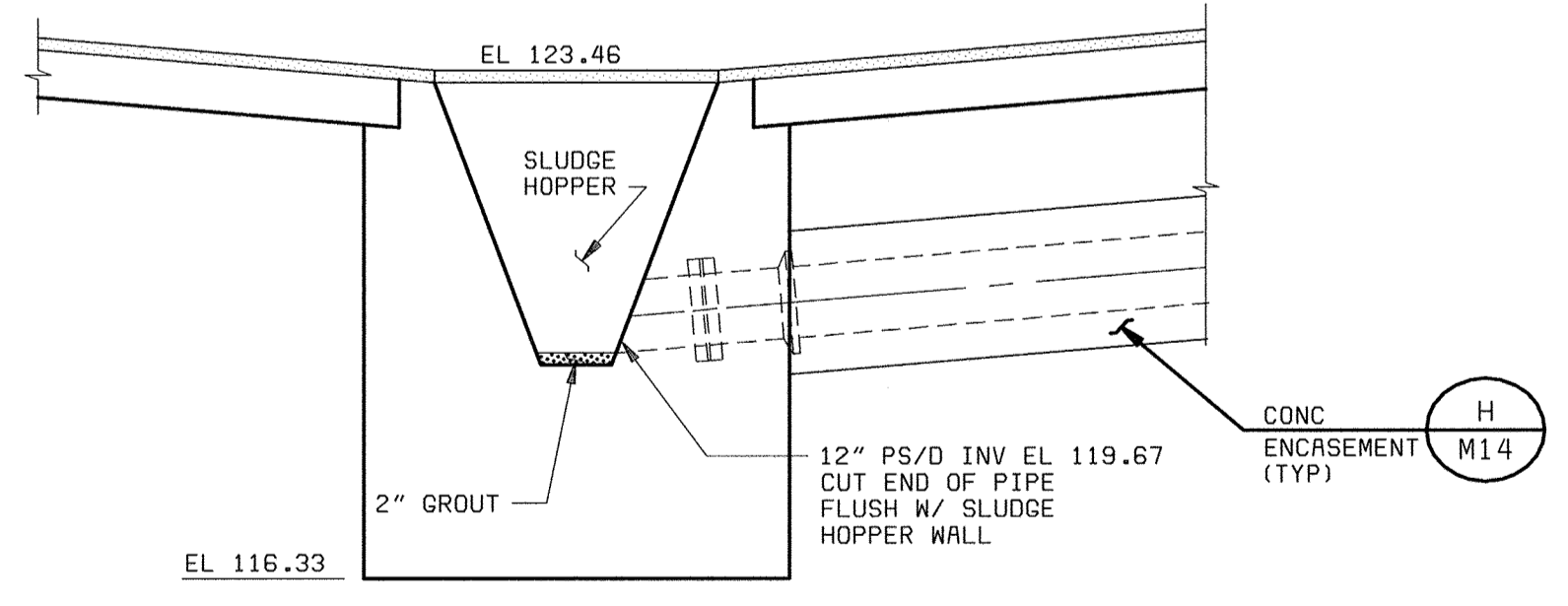
SECTION 1  
3/8" = 1'-0" M10



SECTION 2  
3/8" = 1'-0" M10



SECTION 3  
3/8" = 1'-0" M11

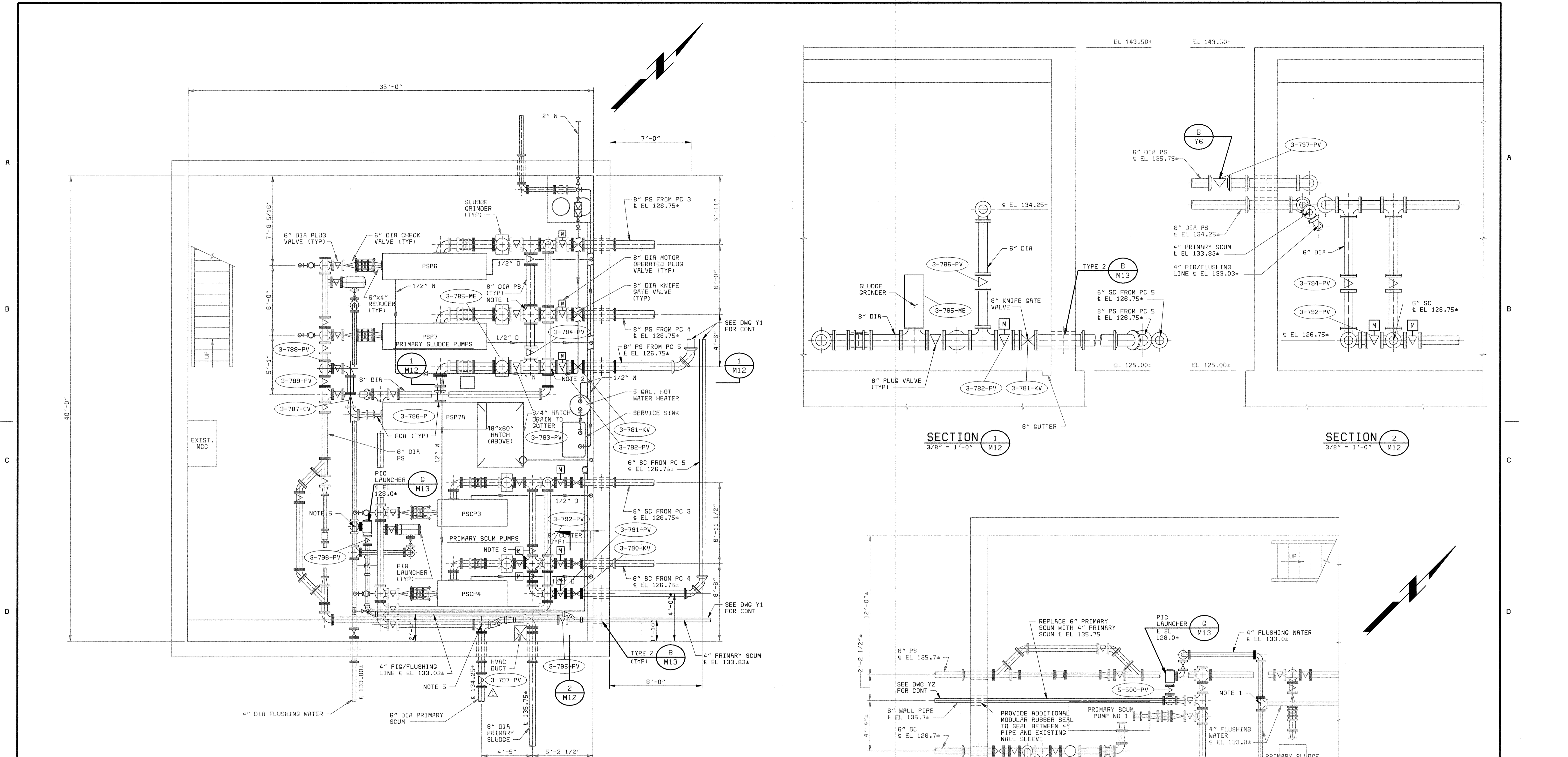


NOTE:  
1. WEIR EL IS TO INV OF V-NOTCH.

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 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
			DRN: SLF									
			CHK: WLK									M11
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP			

058472.3  
FD58472A





**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.

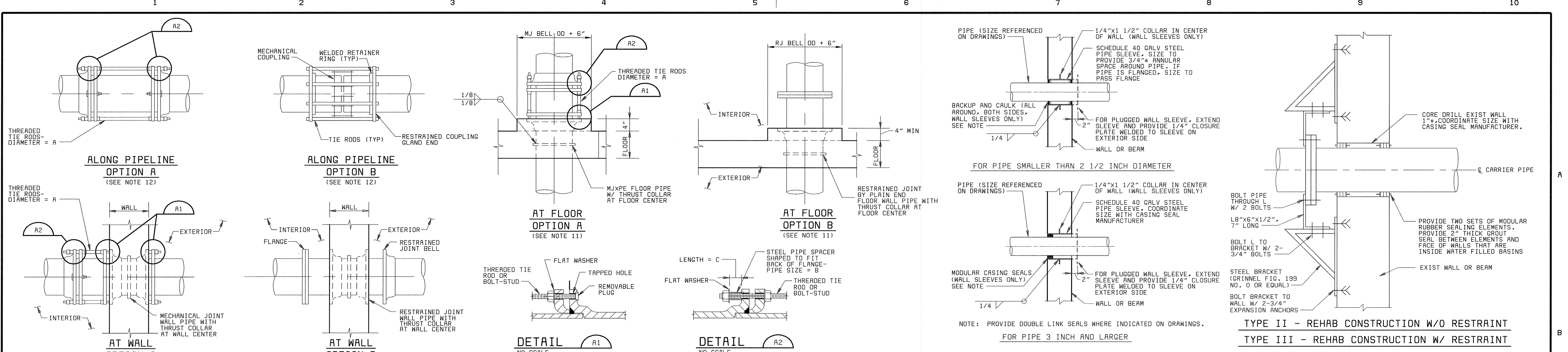
**NOTES:**

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"

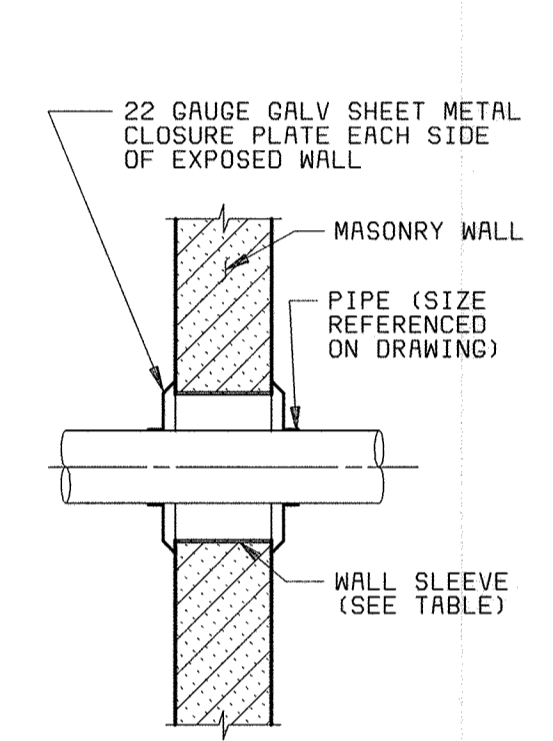
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> Galithersburg, Maryland  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY ROBERT J. RECTANUS, JR. A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND. 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	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP			M12





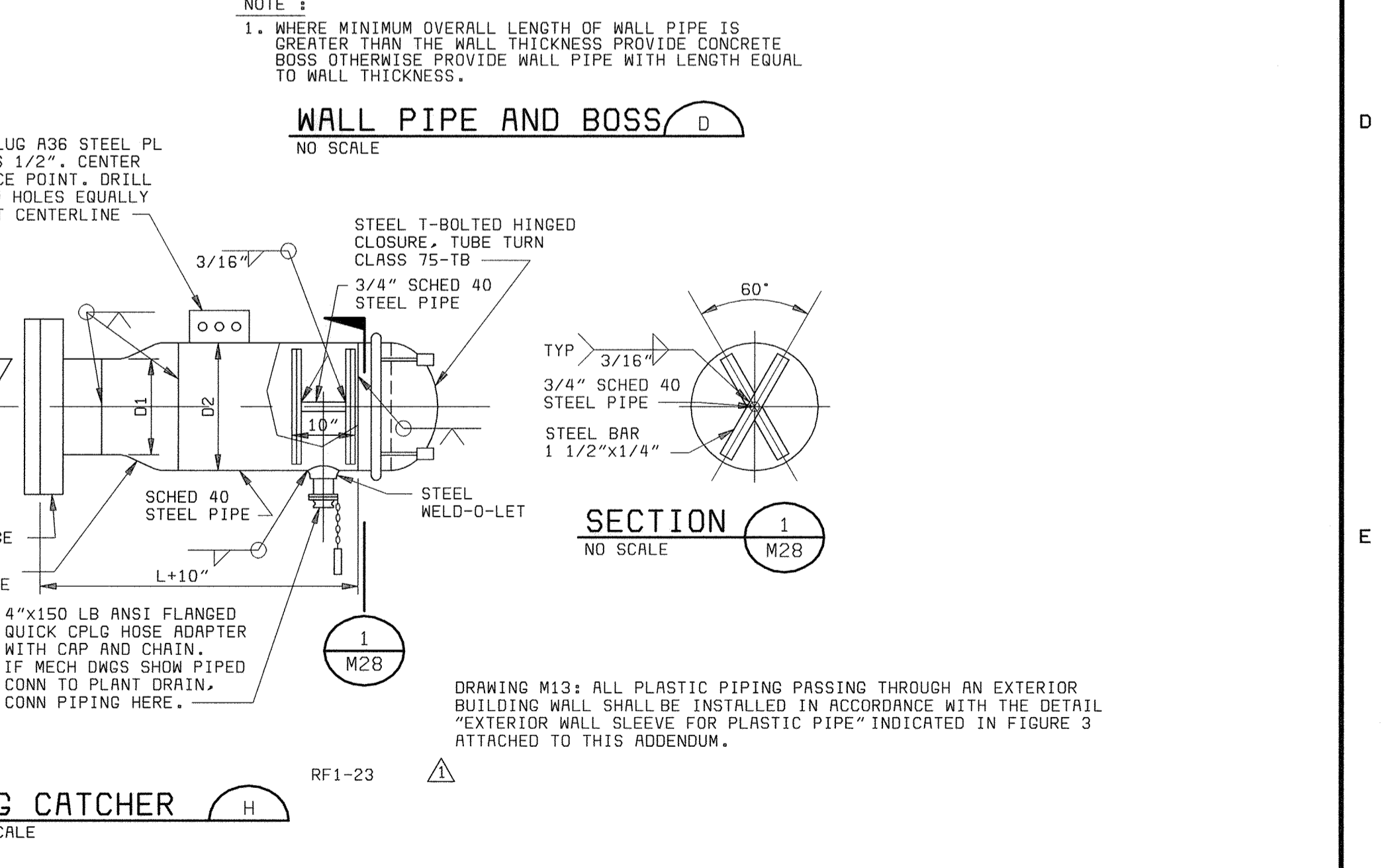
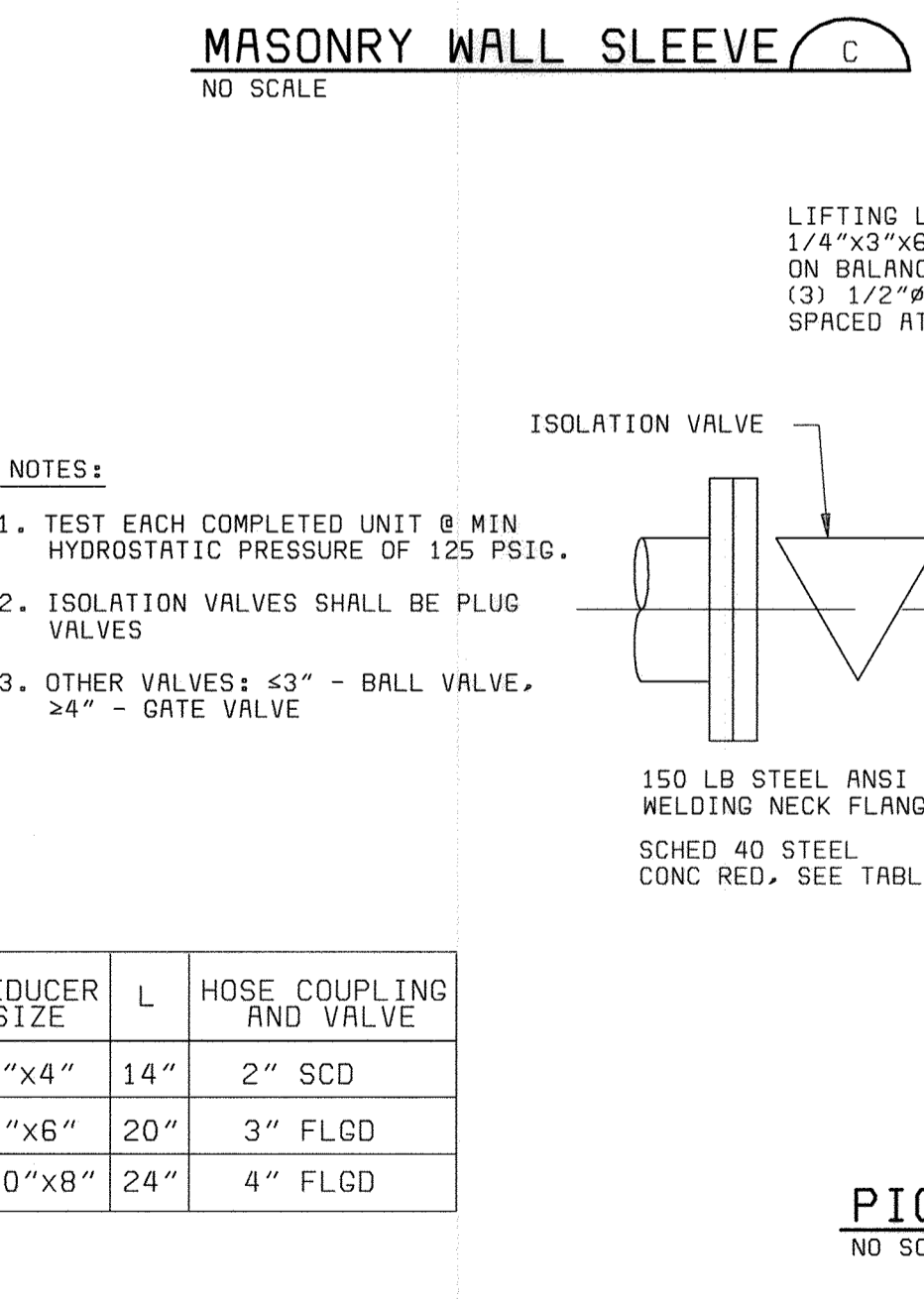
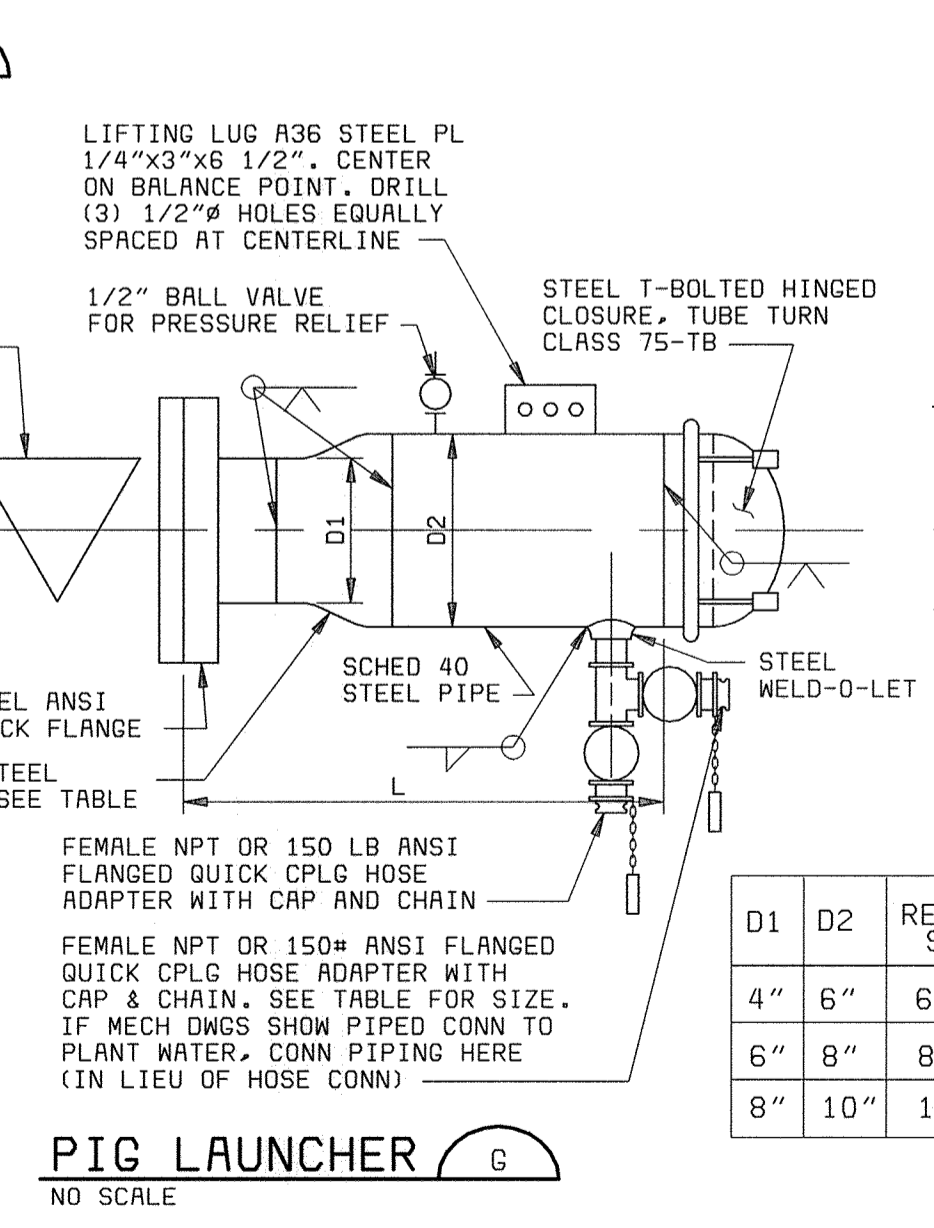
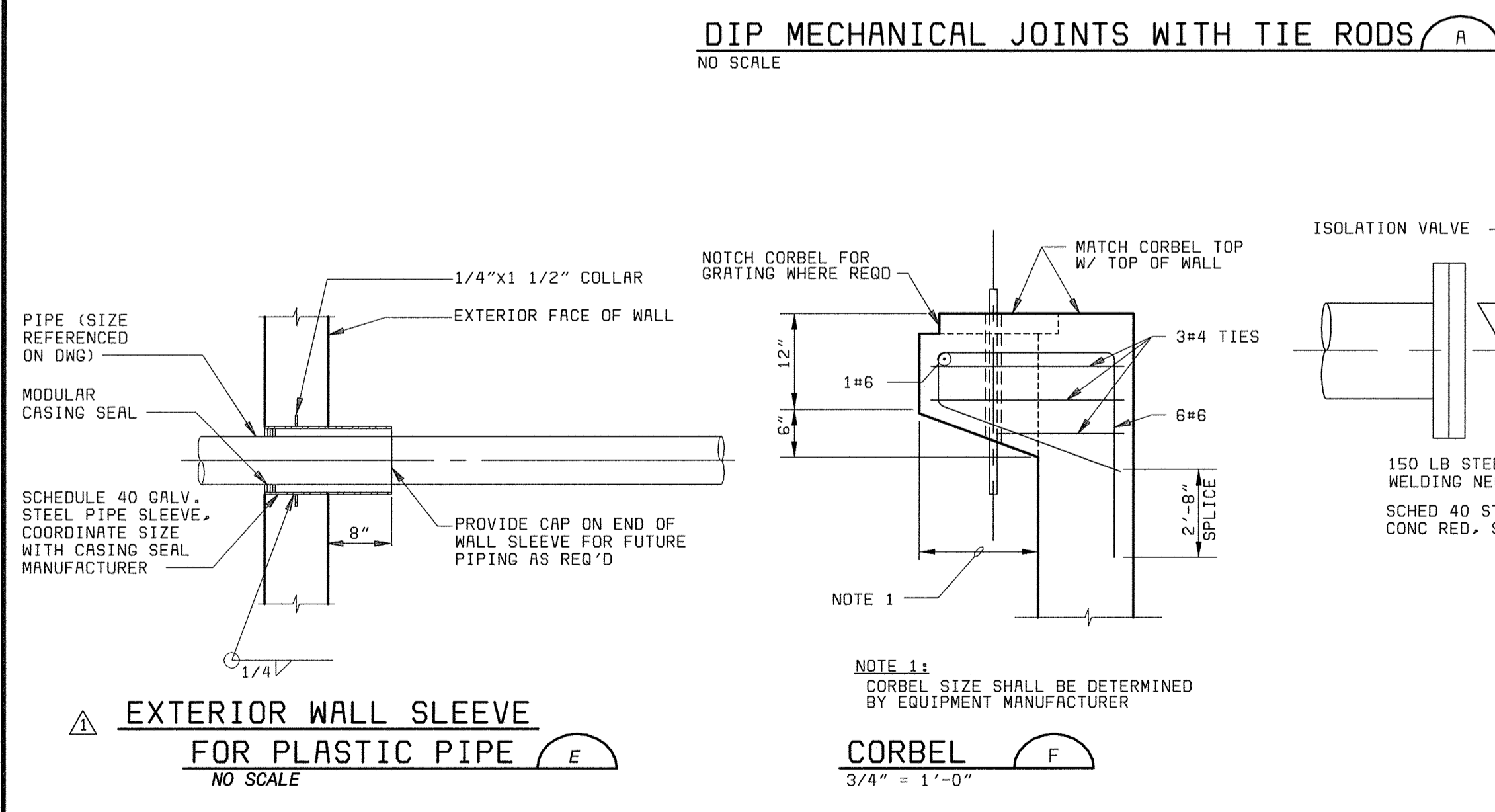
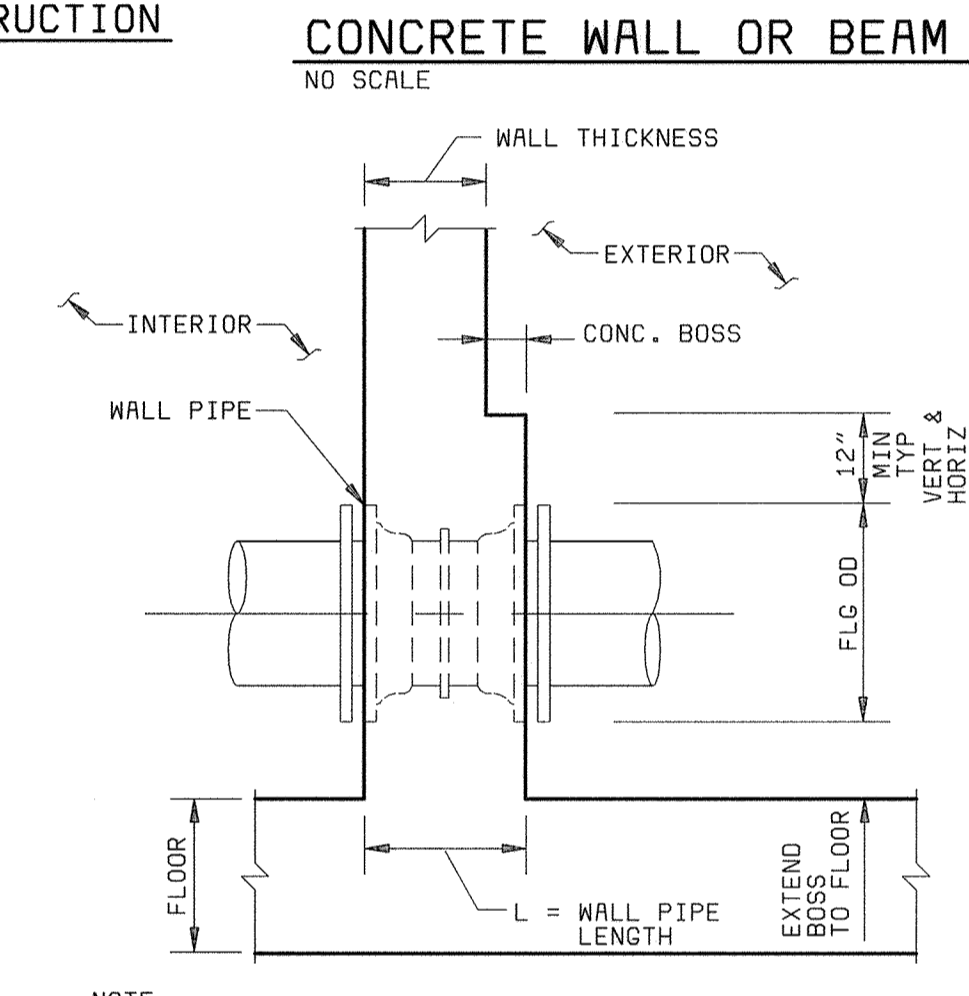
PIPE SIZE	A TIE ROD DIAMETER	B SPACER NOM. DIA	C SPACER LENGTH	NO. RODS
3" - 8"	3/4"	3/4"	2 1/2"	2
10" - 12"	3/4"	1"	2 1/2"	2
14"	3/4"	1"	3 1/2"	2
16" - 20"	3/4"	1"	3 1/2"	4
24"	3/4"	1"	3 1/2"	6
30"	1"	1 1/4"	4"	8
36"	1"	1 1/4"	4"	8
42"	1 1/4"	1 1/2"	4"	8
48"	1 1/4"	1 1/2"	4"	12

- 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**

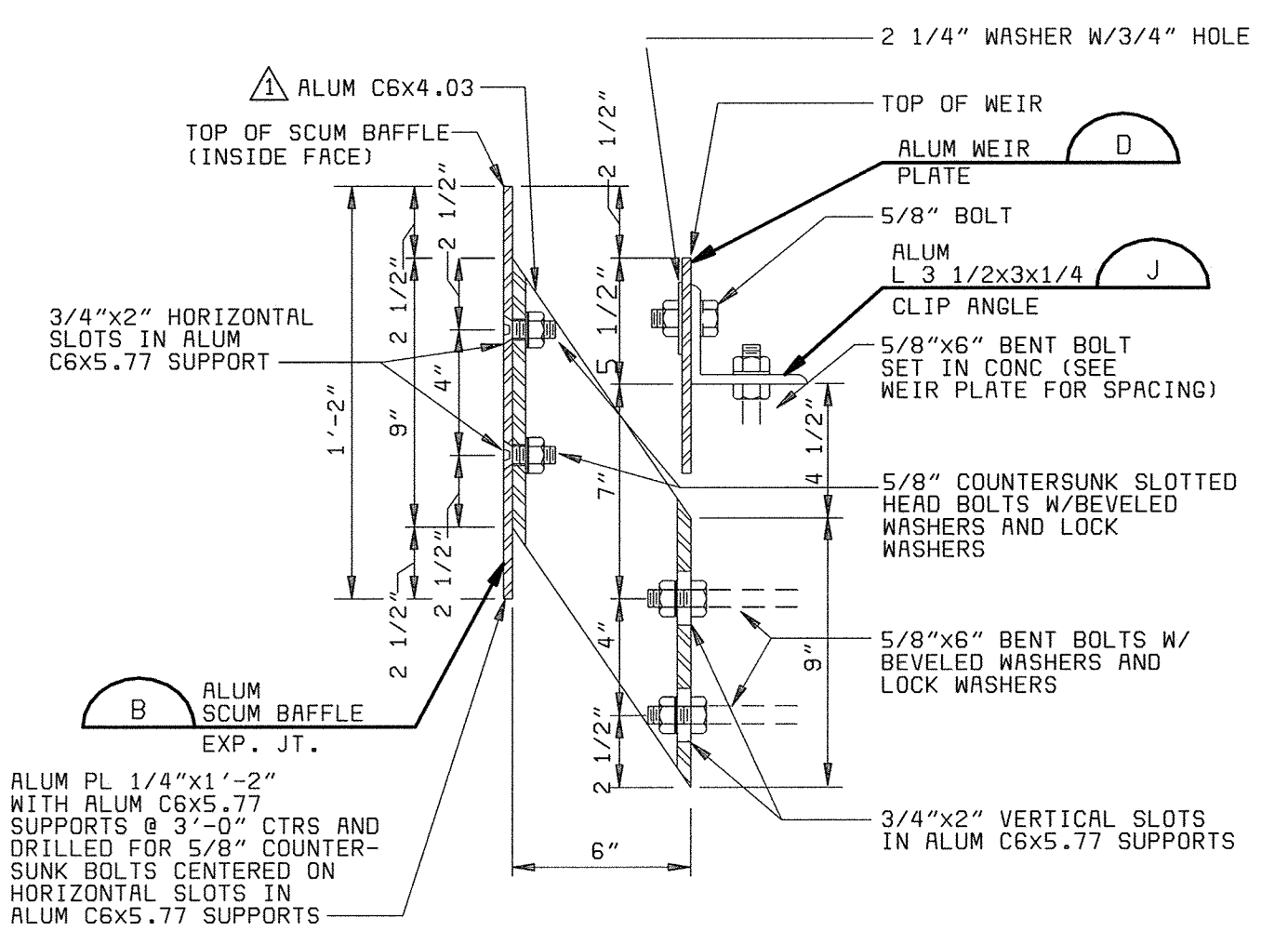
PIPE SIZE	SLEEVE SIZE (UNLESS OTHERWISE INDICATED)
1" & SMALLER	3" (1)
1 1/4" & 1 1/2"	3 1/2" (1)
2"	4" (1)
3"	6" (2) (4)
4"	6" (2) (4)
6"	8" (3) (4)
8" & LARGER	PIPE OD+2" (3) (4)



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> 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								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							
			DATE: 2/19/01										M13

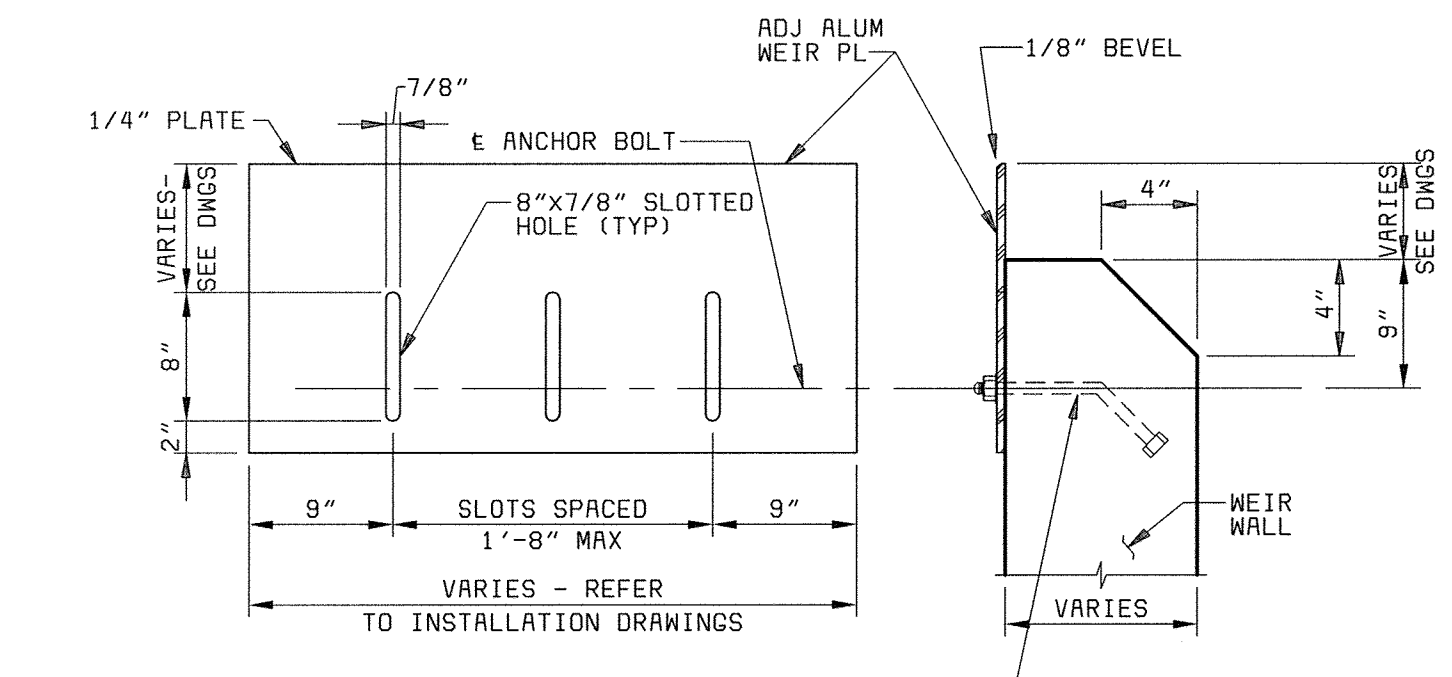
058472-3 F058472A



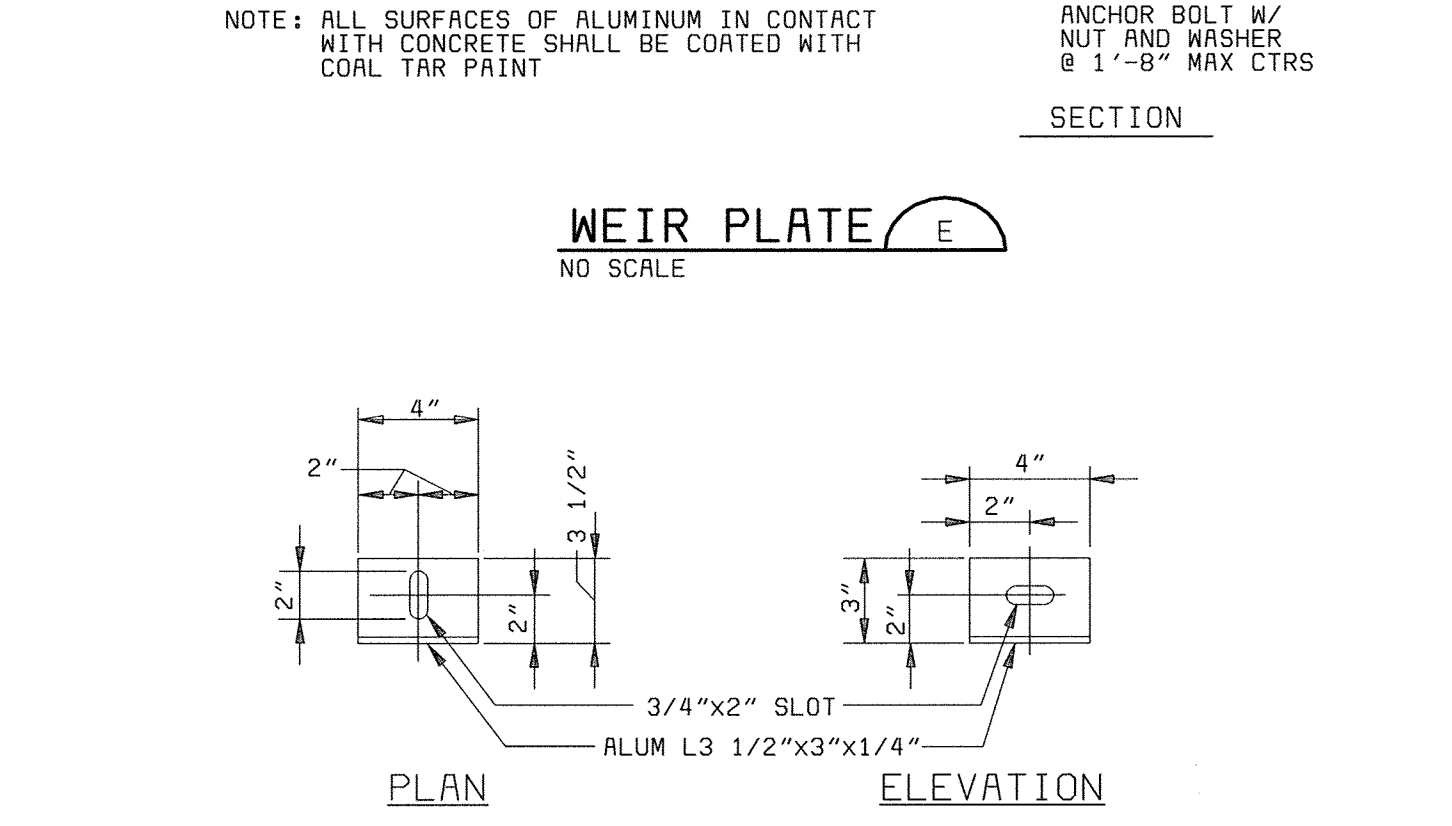


- NOTES:**
1. SURFACE OF CONCRETE AND ADJACENT SIDE OF WEIR PLATE TO BE COATED WITH A HEAVY LAYER OF SEALANT PRIOR TO PLACING WEIR PLATE.
  2. ALL BOLTS, NUTS, AND WASHERS TO BE STAINLESS STEEL.
  3. 5/8" EPOXY COATED THREADED ROD MAY BE USED IN LIEU OF ANCHOR BOLTS AT CONTRACTORS OPTION.
  4. ALL SURFACES 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.

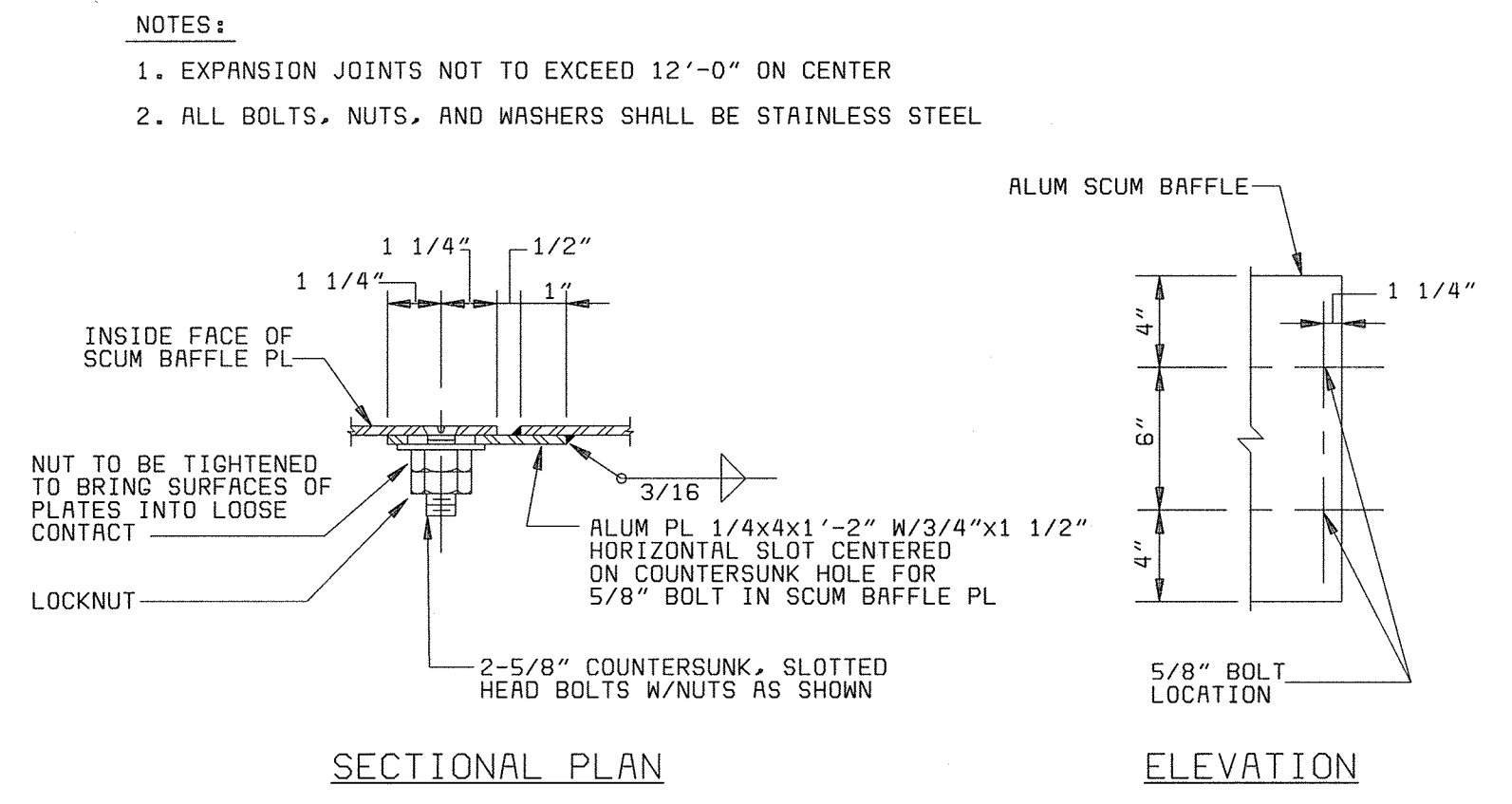
**SCUM BAFFLE & WEIR SUPPORT (A)**  
NO SCALE



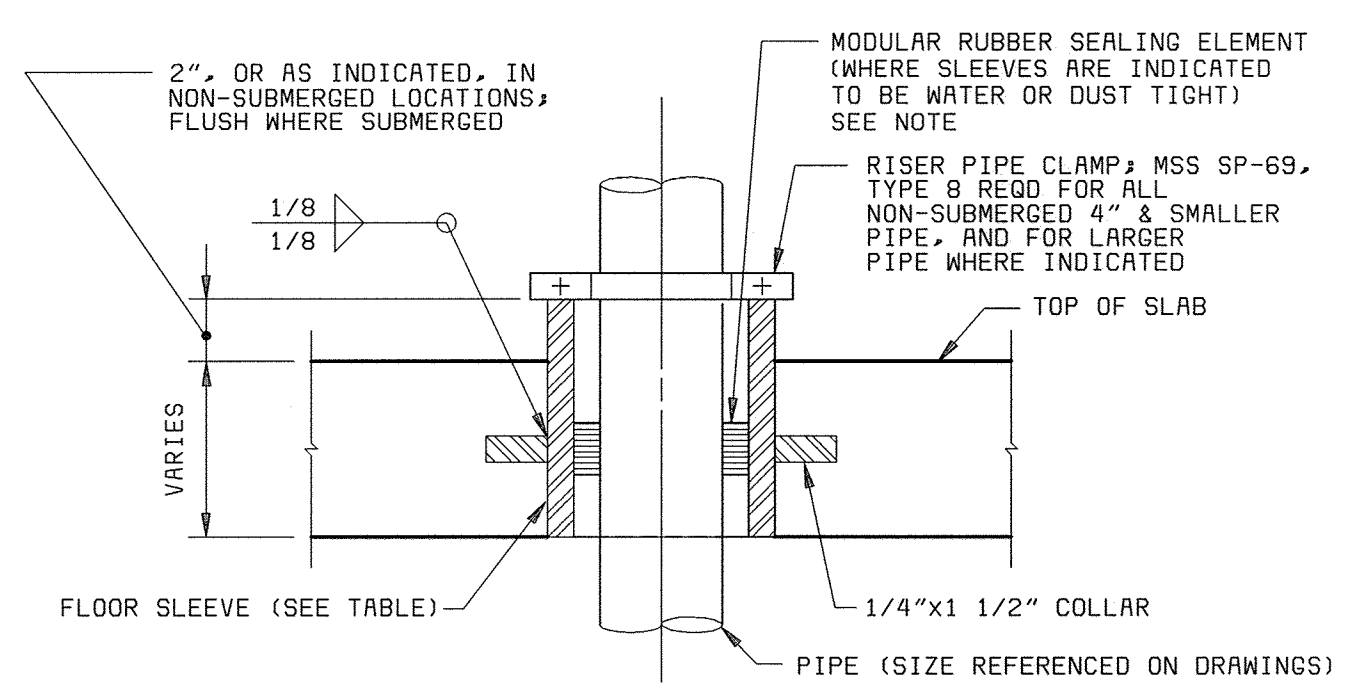
**WEIR PLATE (E)**  
NO SCALE



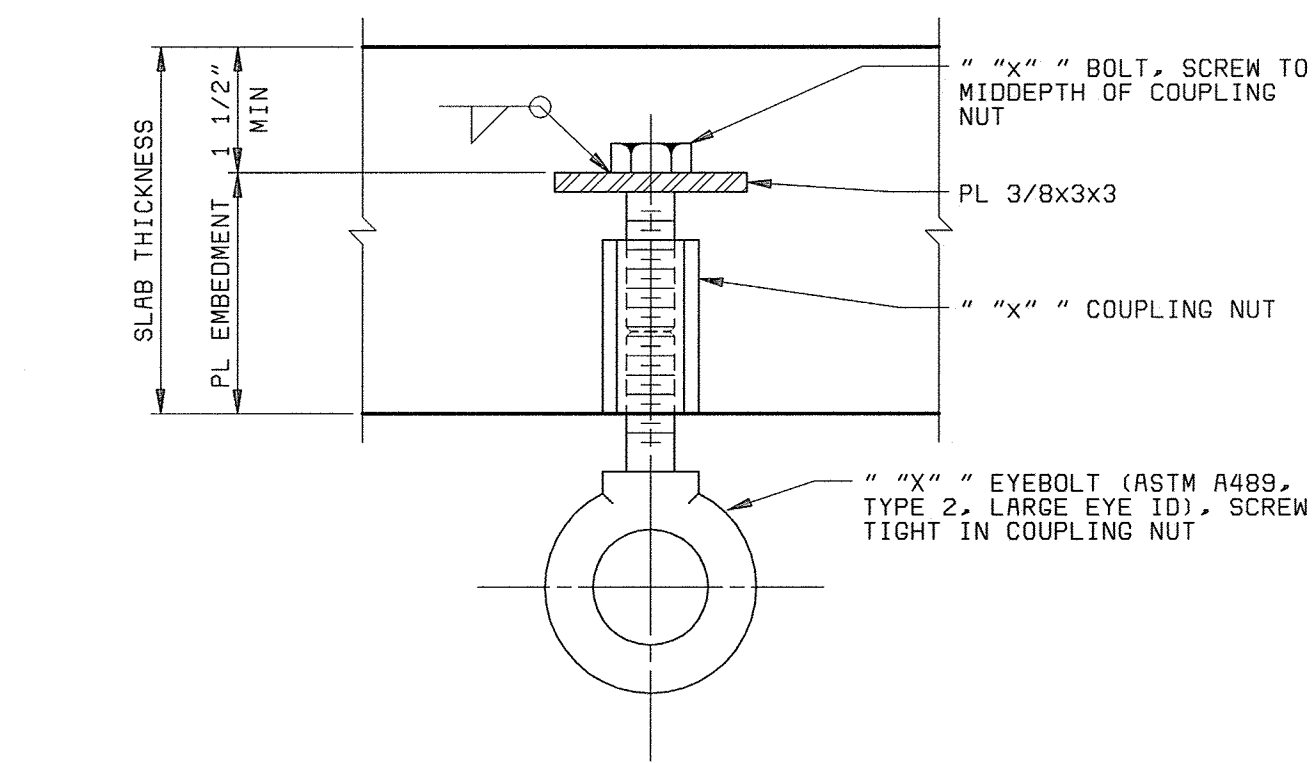
**WEIR CLIP ANGLE (J)**  
NO SCALE



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

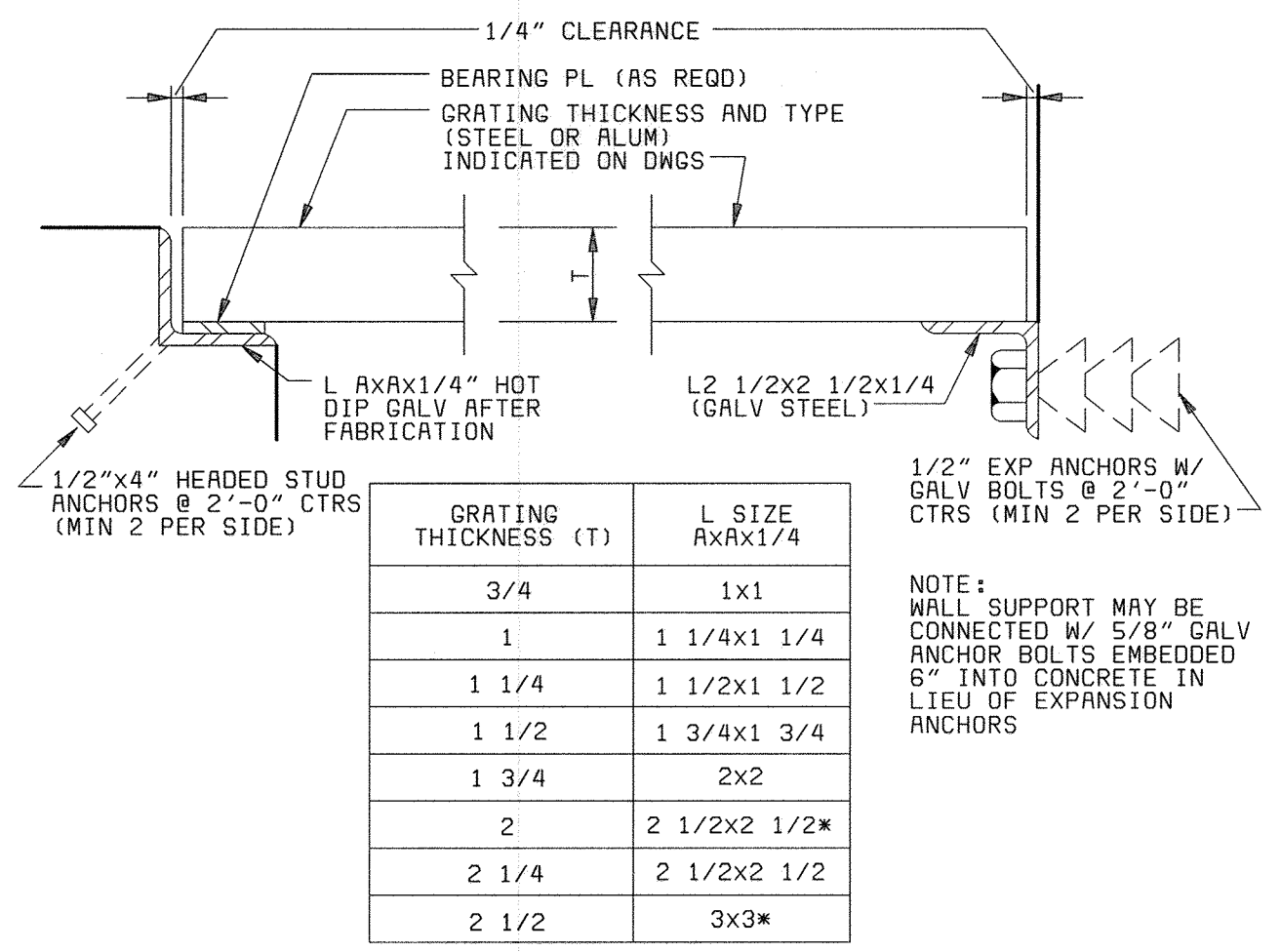


**FLOOR SLEEVE NEW CONSTRUCTION (F)**  
NO SCALE



**TYPICAL EYEBOLT (K)**  
NO SCALE

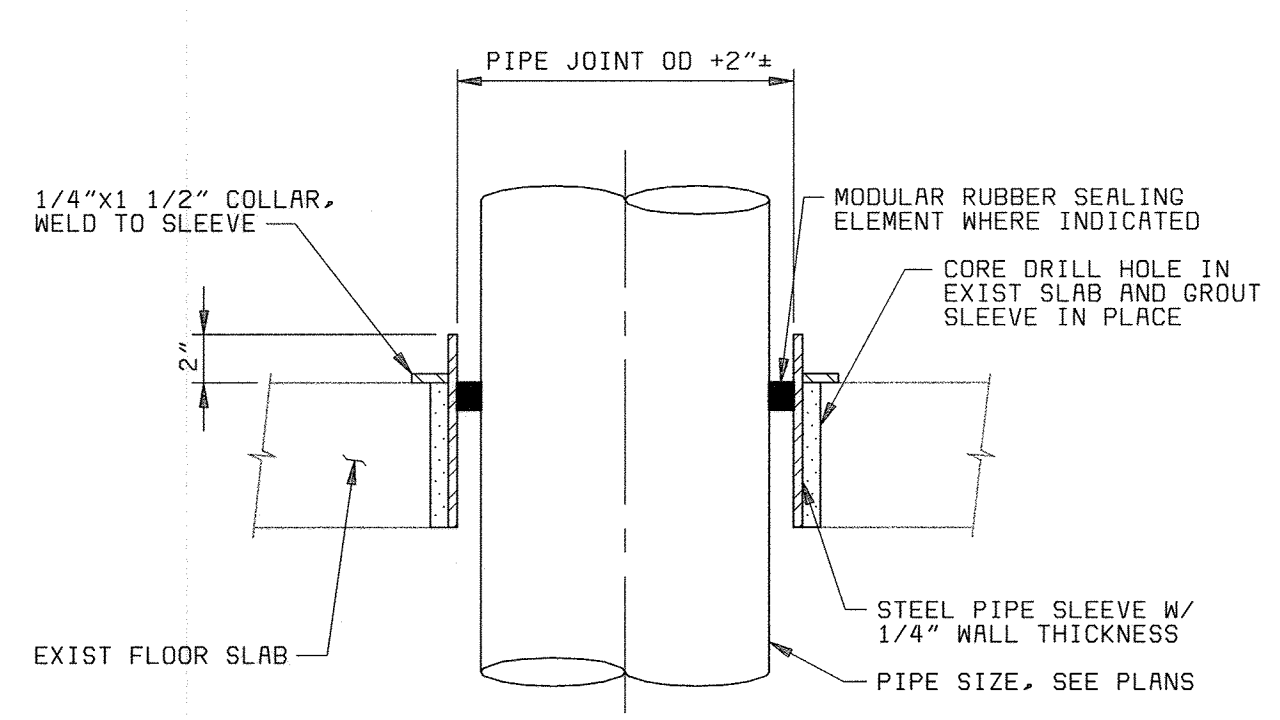
SAFE WORKING LOAD-POUNDS	BOLT SIZE DIA X LENGTH (IN)	SLAB THICKNESS (MINIMUM)	PL EMBED DEPTH (MINIMUM)	COUPLING NUT SIZE DIA X LENGTH IN	EYEBOLT SIZE IN
4000	3/4 x 3 1/4	6	4	3/4 x 2 1/4	3/4
6000	3/4 x 5 1/4	8	6	3/4 x 2 1/4	3/4
8000	1 x 5	8	6	1 x 3	1



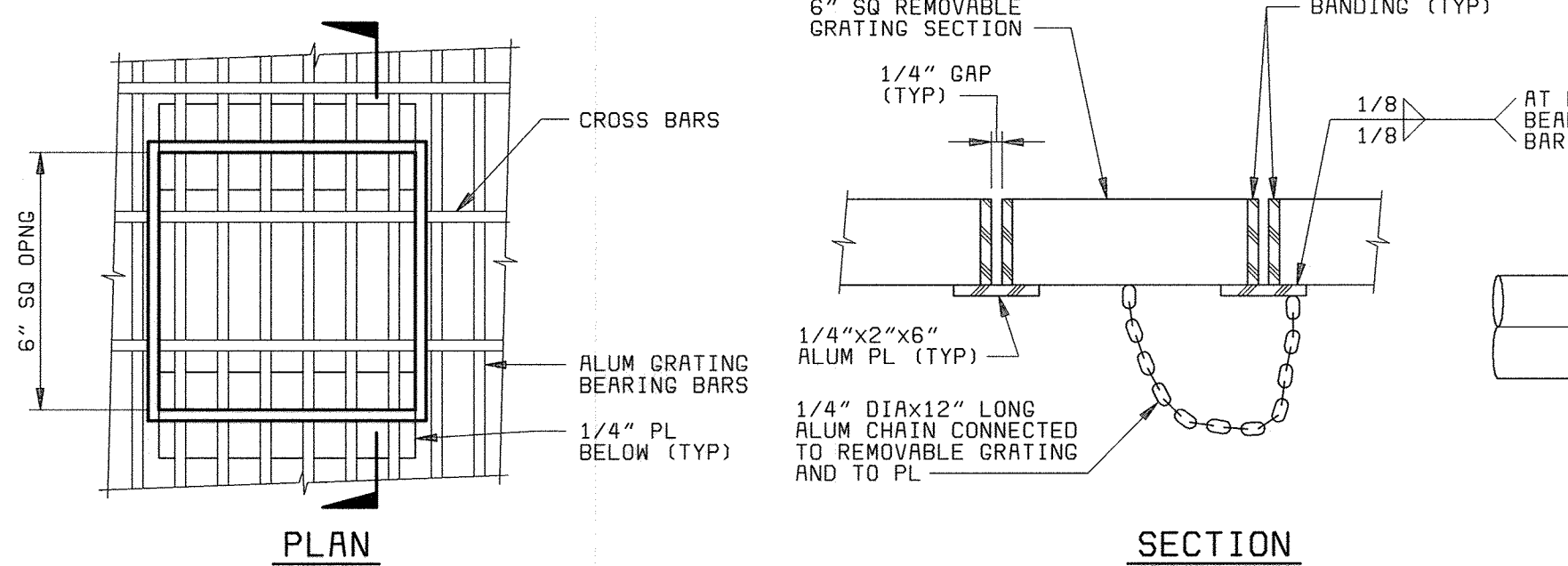
**GRATING SUPPORT (C)**  
NO SCALE

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*

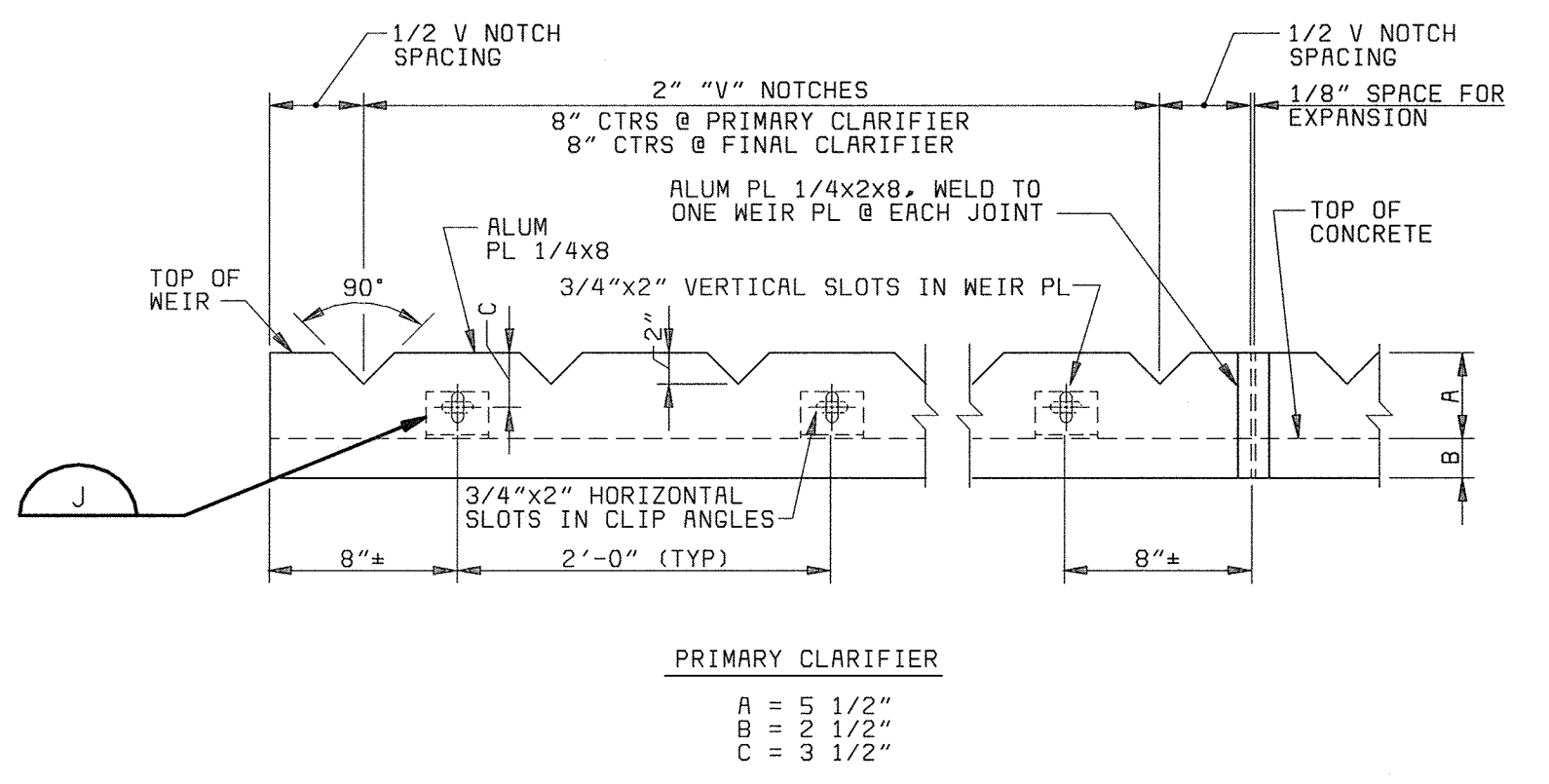
- \* 1/4" BEARING PL REQD. (WELD TO L)  
NOTE: WHERE NOTED ON PLANS, USE ALUMINUM ANGLES AND SS ANCHORS SAME SIZE AS CALLED OUT ABOVE FOR GALVANIZED.



**FLOOR SLEEVE REHAB CONSTRUCTION (G)**  
NO SCALE

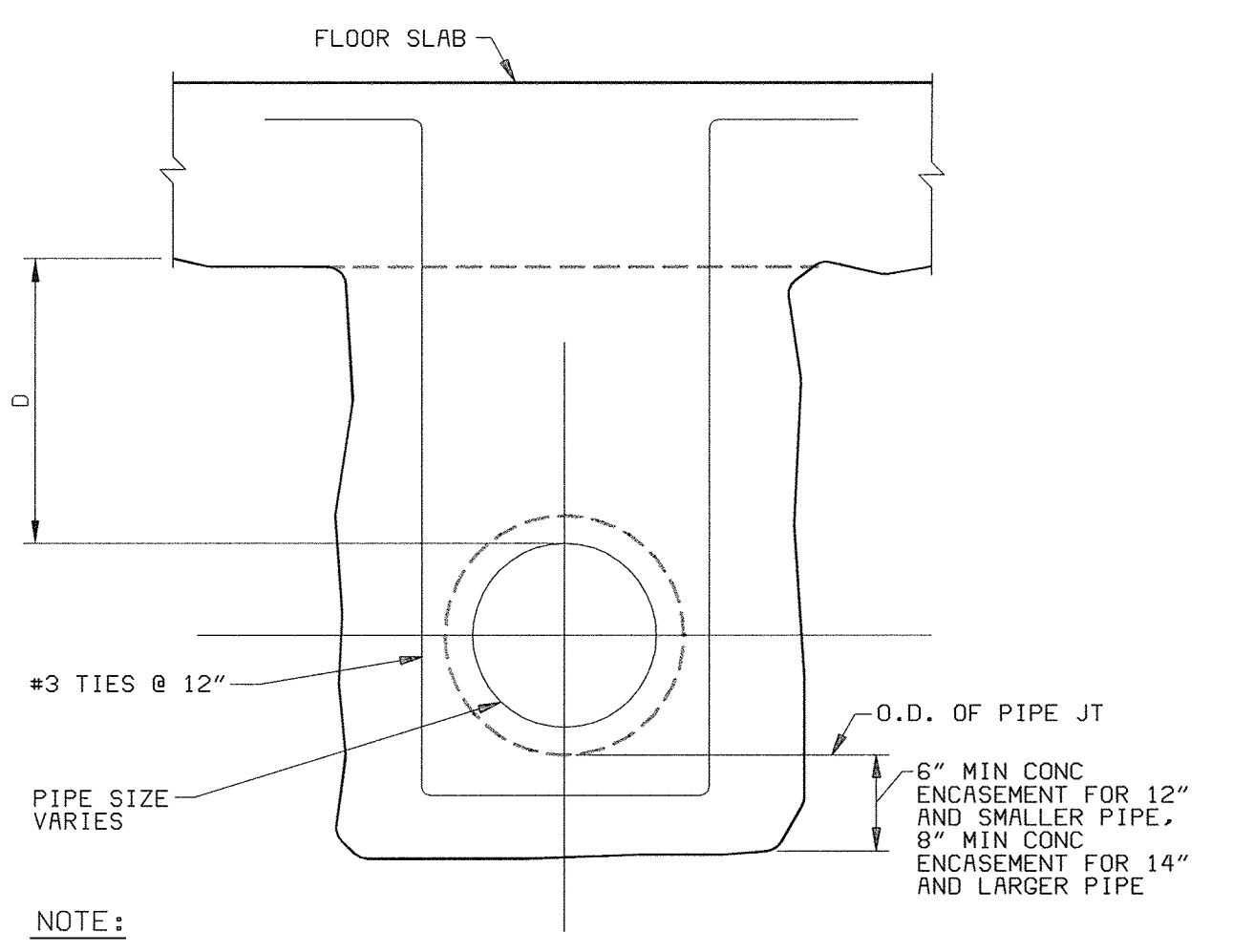


**REMOVABLE GRATING DETAIL (L)**  
NO SCALE



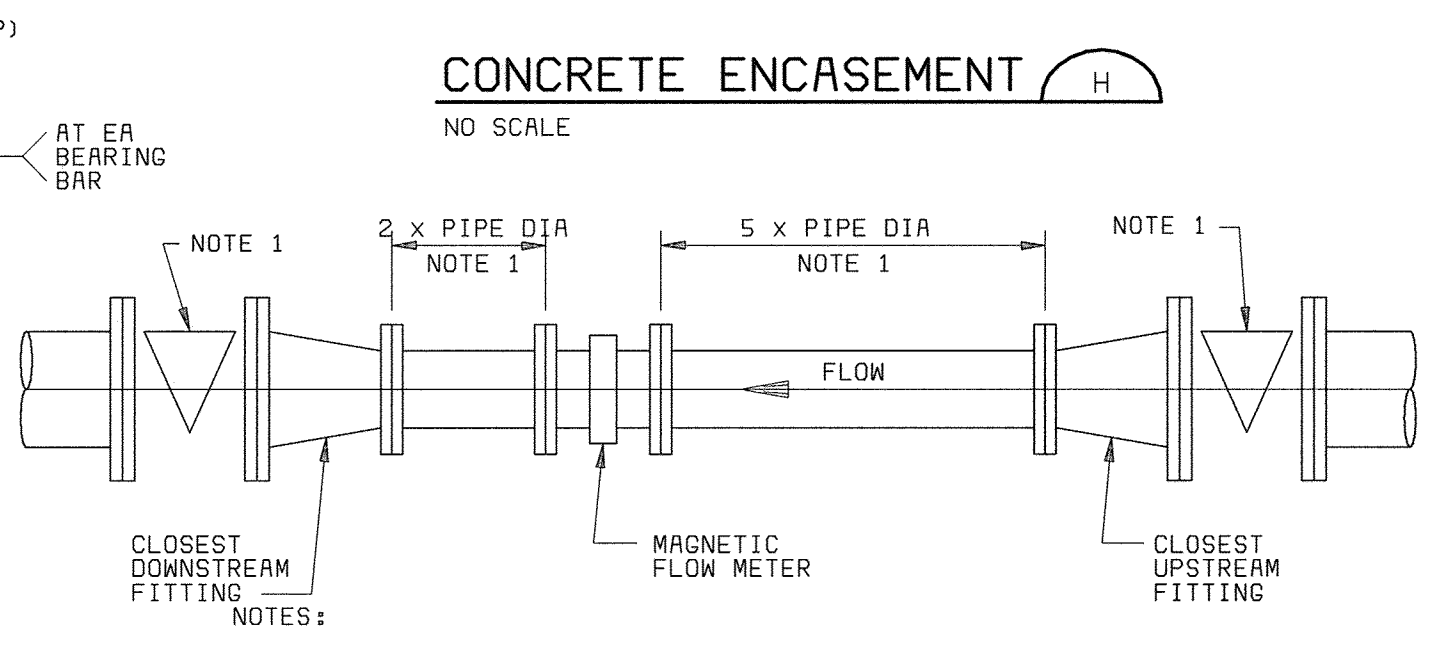
**V-NOTCH WEIR PLATE (D)**  
NO SCALE

- 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.



**CONCRETE ENCASEMENT (H)**  
NO SCALE

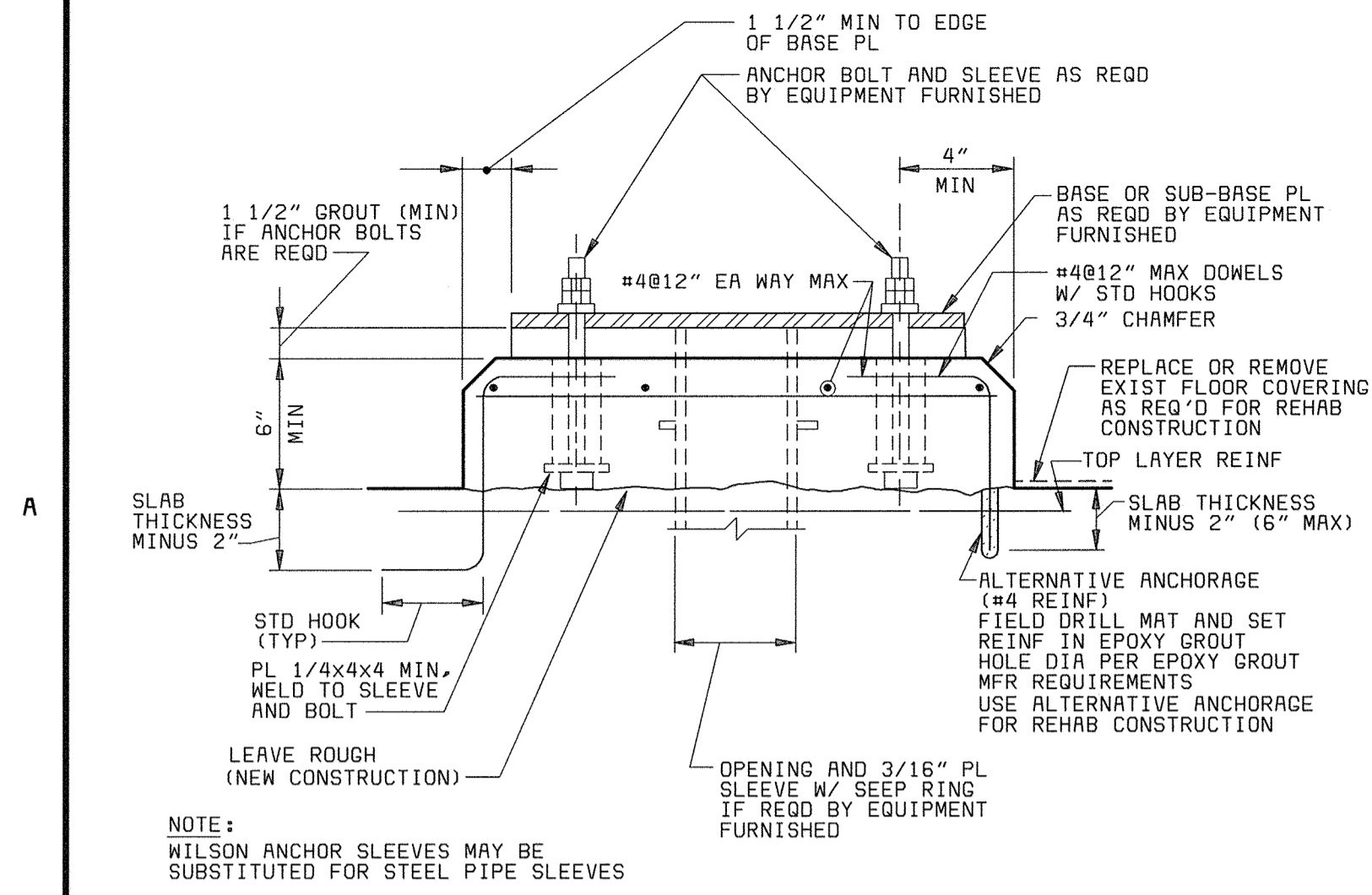
- NOTE:**
1. IF D IS LESS THAN 1'-6", PROVIDE ENCASEMENT CONTINUOUS TO SLAB. IF D IS GREATER THAN 1'-6", ENCASEMENT MAY BE SEPARATED FROM SLAB UNLESS OTHERWISE INDICATED ON DRAWINGS. FILL VOID BETWEEN TOP OF ENCASEMENT AND BOTTOM OF SLAB WITH COMPACTED GRANULAR MATERIAL.
  2. PROVIDE A BELL AT THE END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



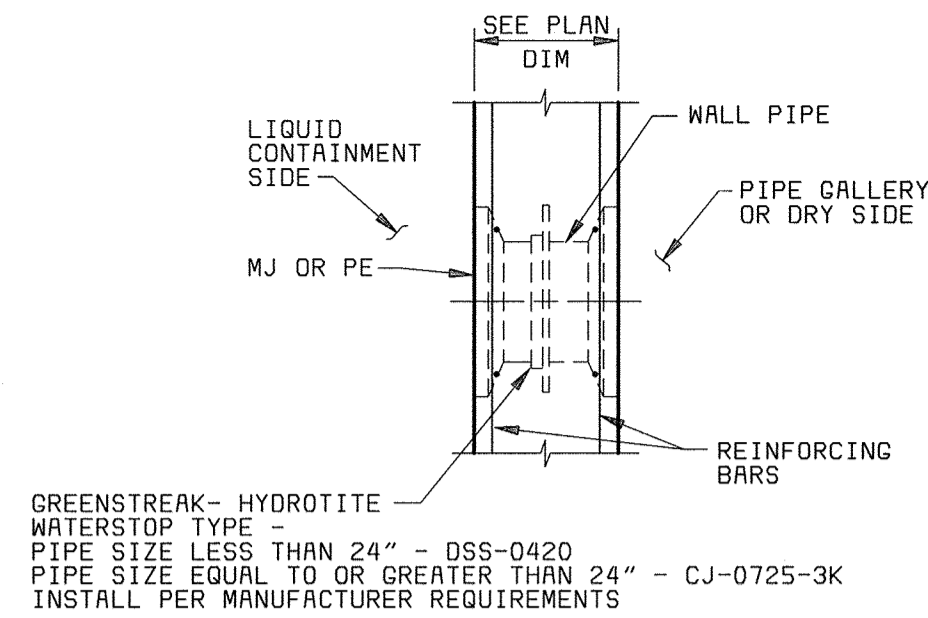
**MAGNETIC FLOW METER INSTALLATION (M)**  
NO SCALE

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> 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			SHEET 51 OF 88
			DATE: 2/19/01							M14

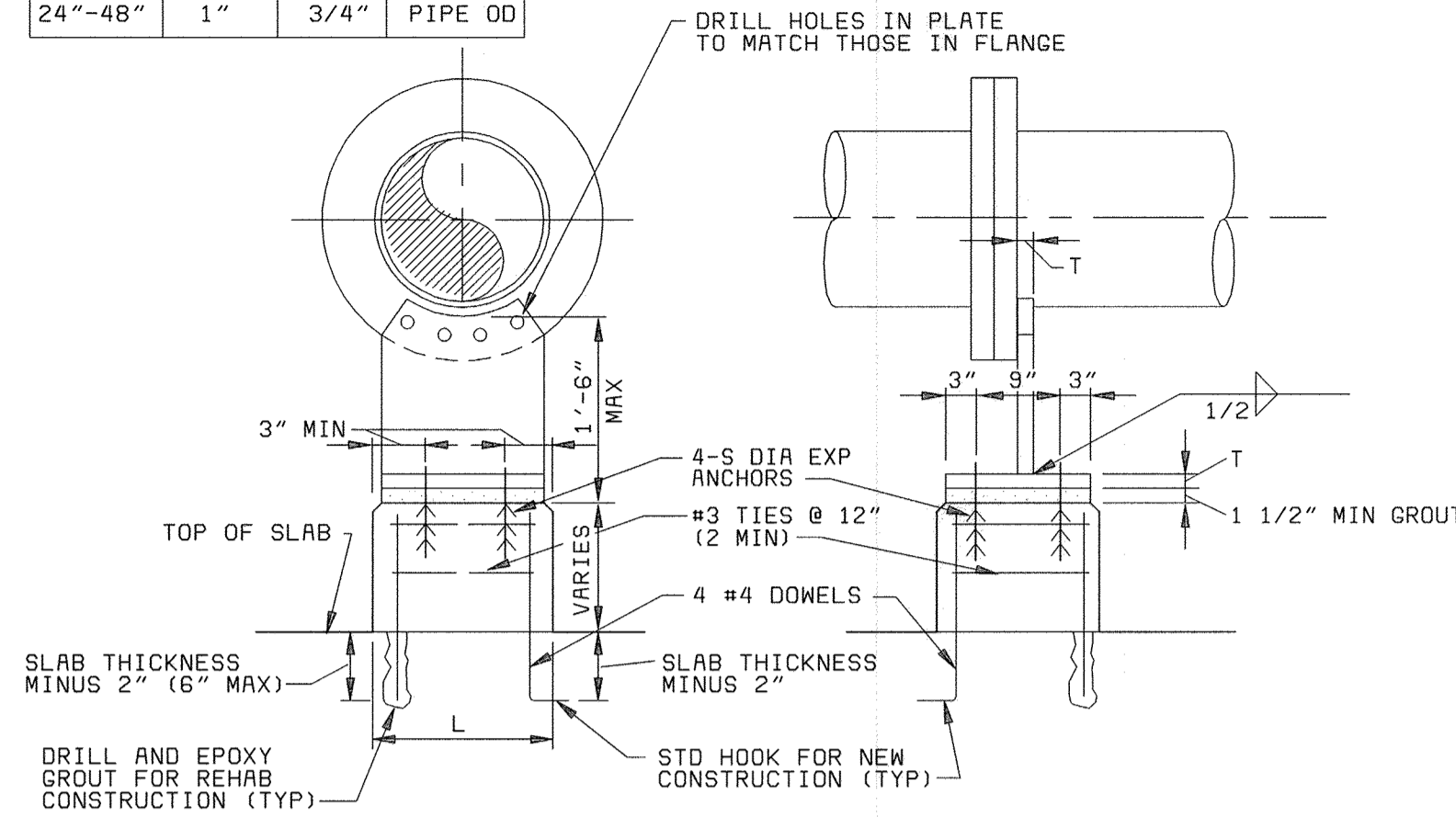
PIPE SIZE	T	S	L
<24"	3/4"	5/8"	PIPE OD
24"-48"	1"	3/4"	PIPE OD



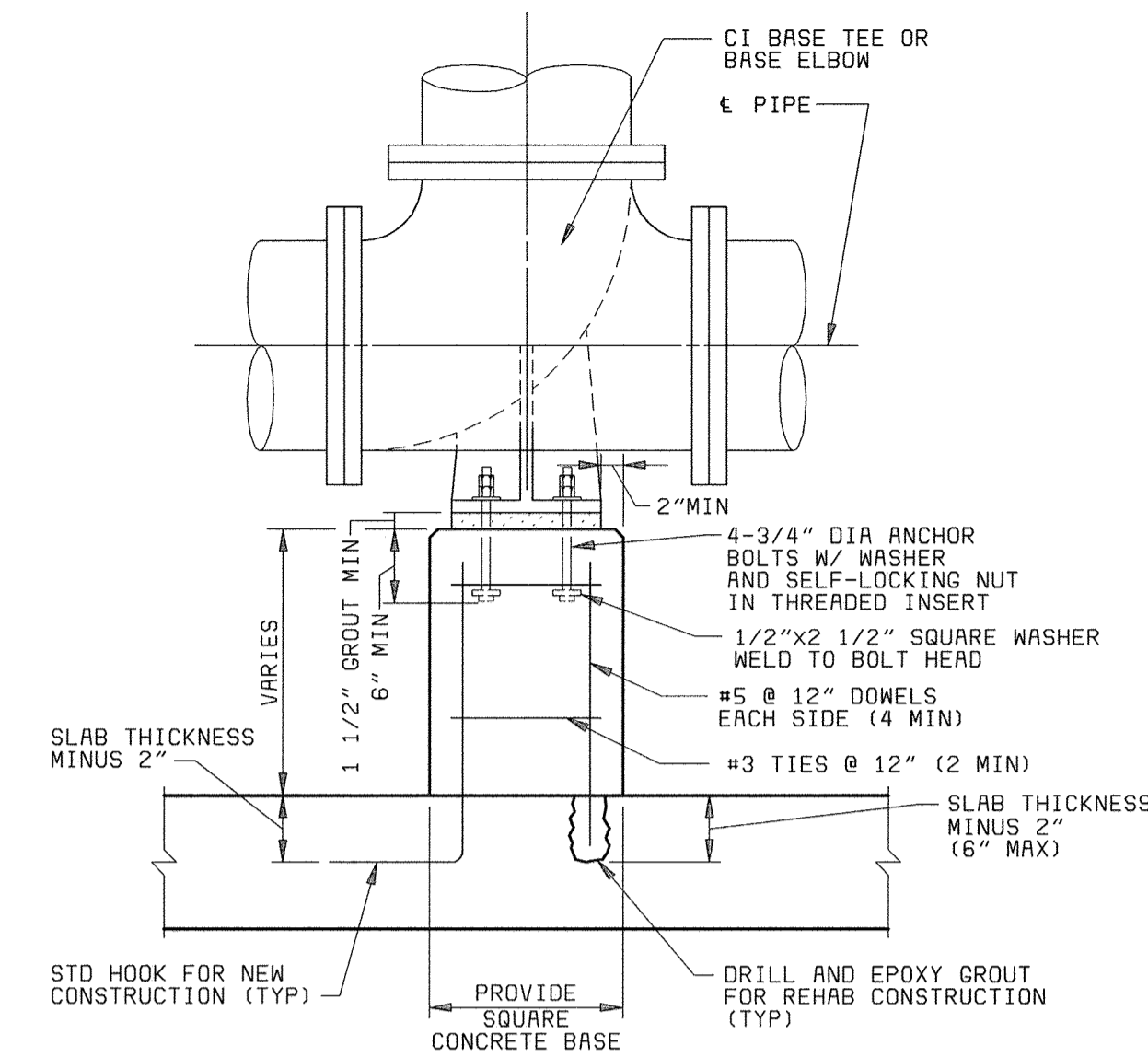
**EQUIPMENT BASE (A)**  
NO SCALE



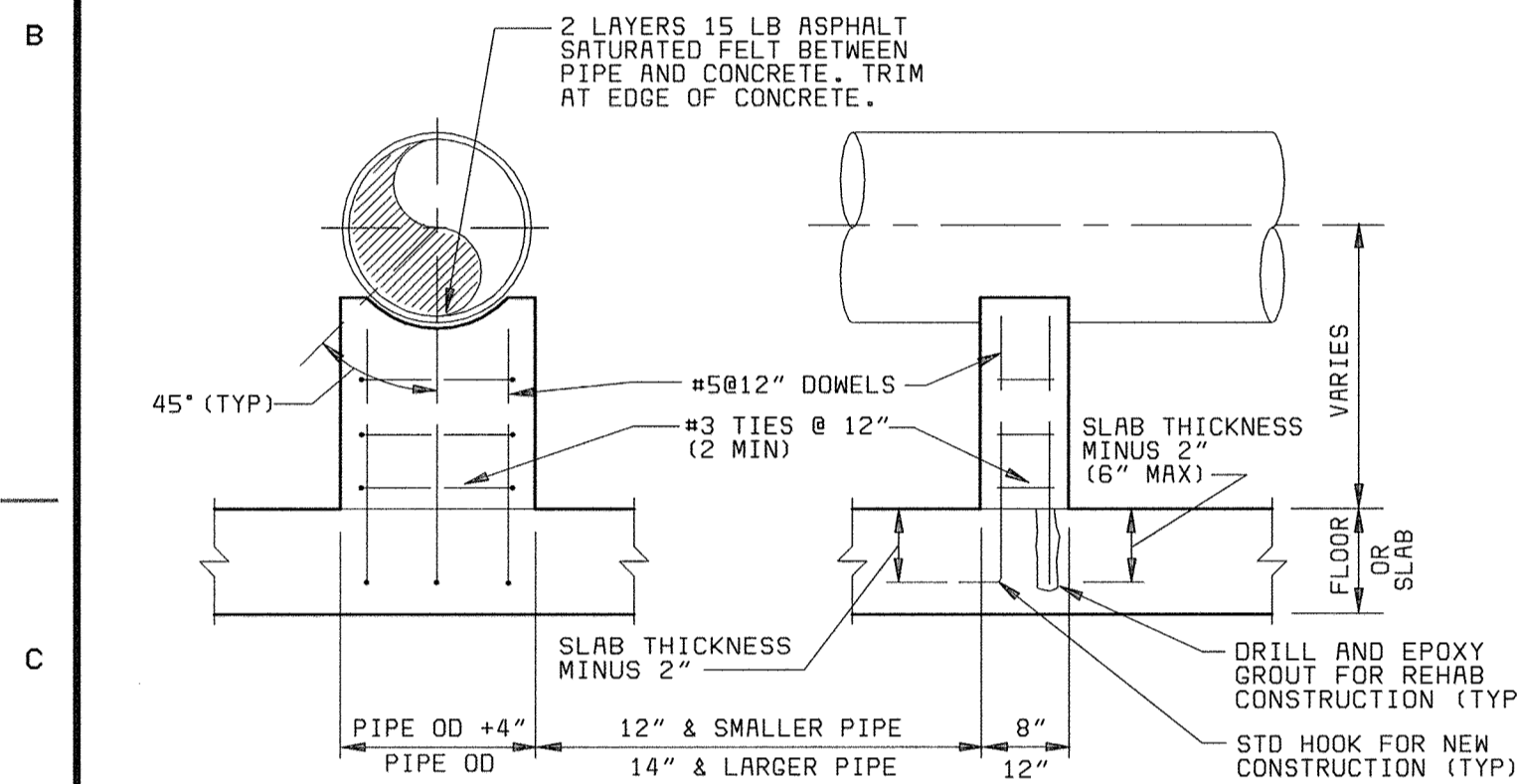
**EXPANDABLE WATERSTOP (B)**  
3/4" = 1'-0"



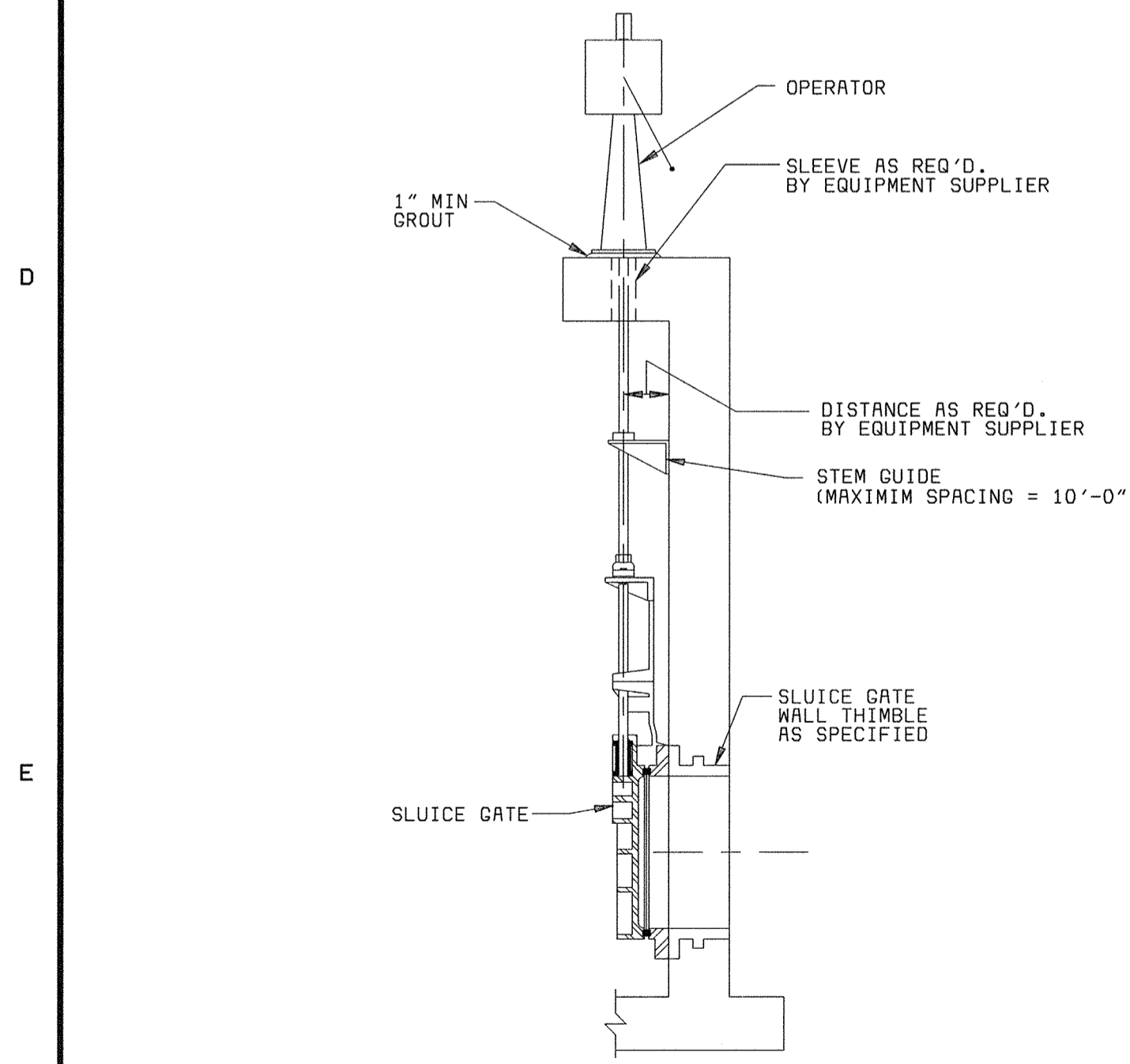
**FLANGE PIPE SUPPORT (C)**  
NO SCALE



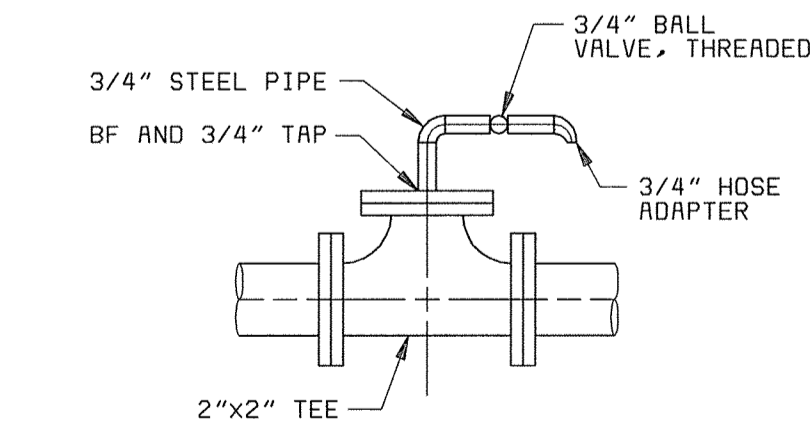
**DUCTILE IRON BASE TEE OR ELBOW (D)**  
NO SCALE



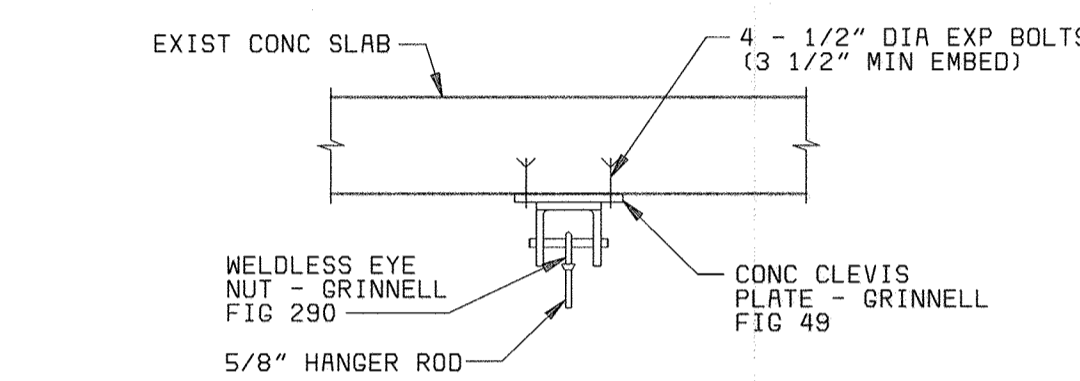
**CONCRETE PIPE SUPPORT (E)**  
NO SCALE



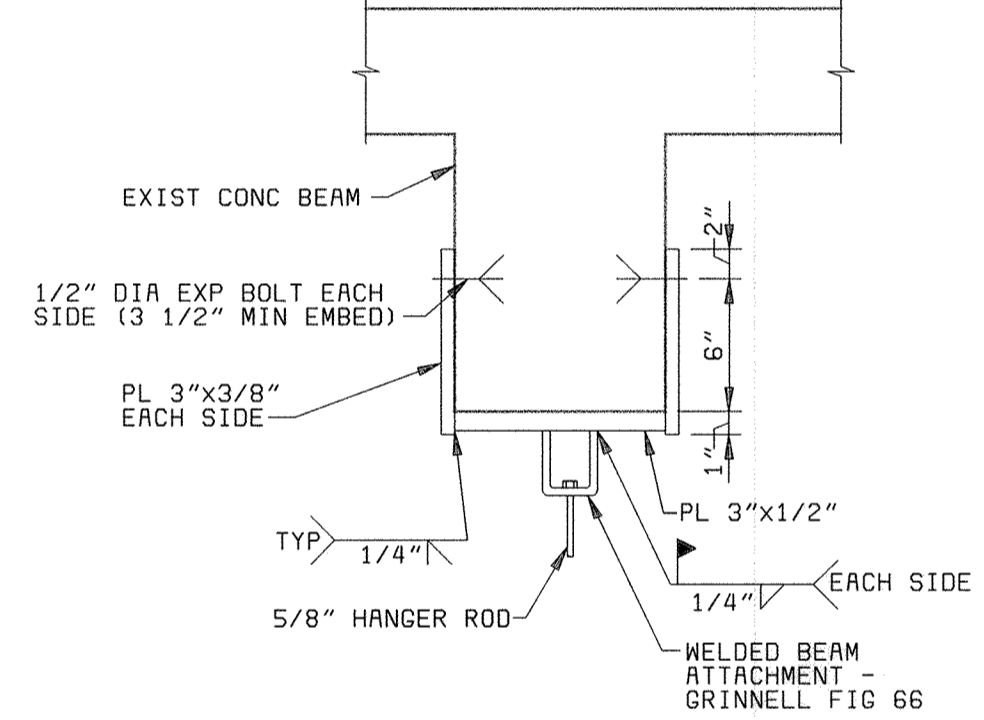
**SLUICE GATE (L)**  
NO SCALE



**AIR RELEASE VALVE DETAIL (M)**  
NO SCALE

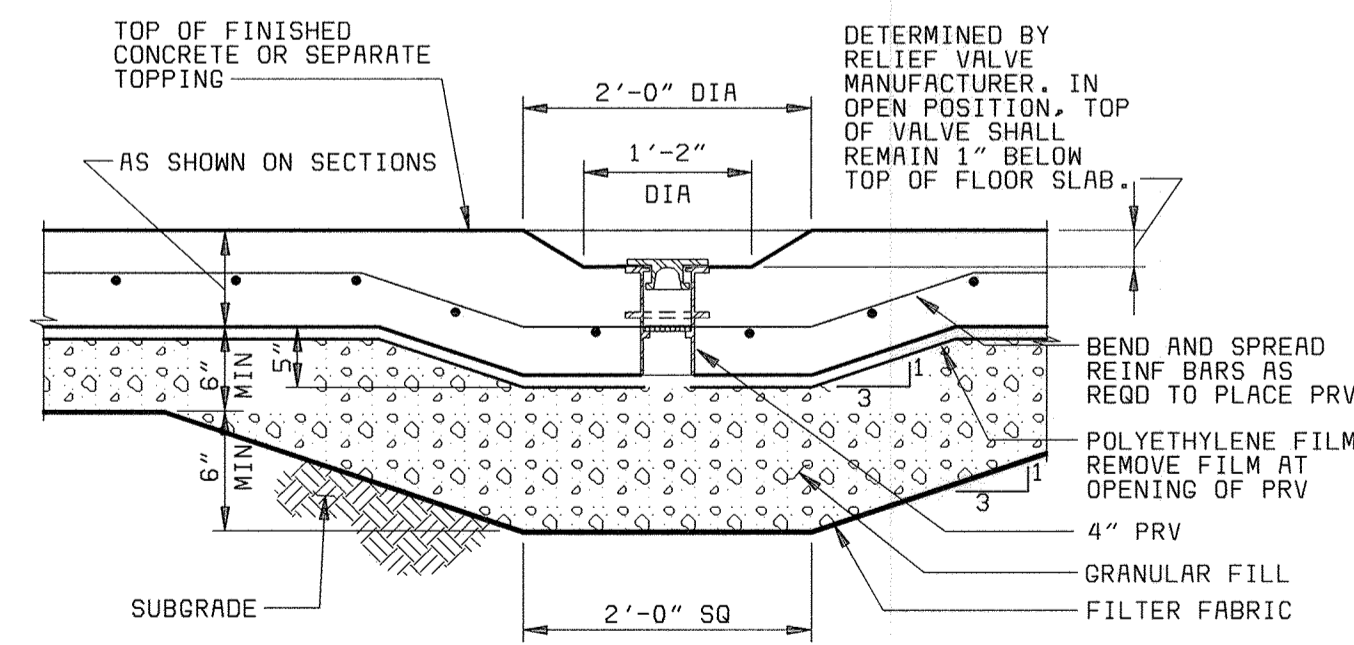


**CONNECTION TO SLAB**

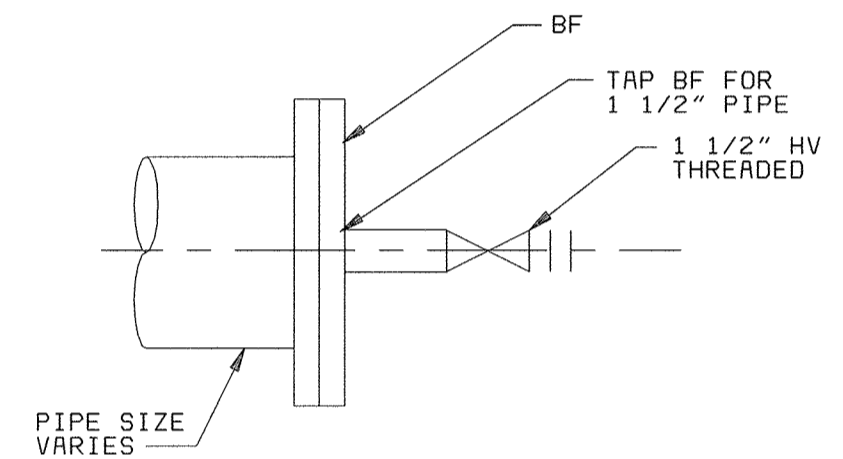


**CONNECTION TO BEAM**

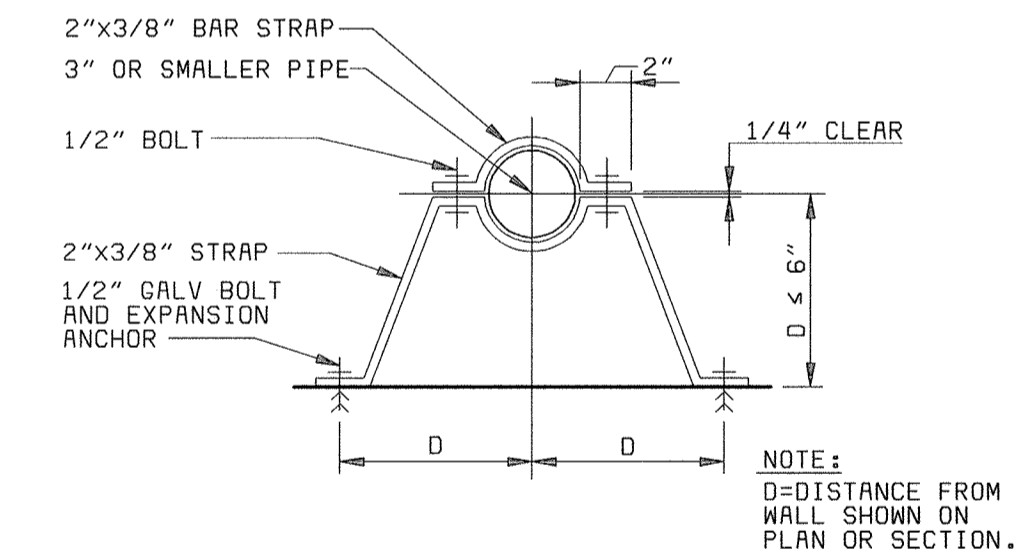
**PIPE HANGER ROD SUPPORT (G)**  
NO SCALE (EXISTING CONSTRUCTION)



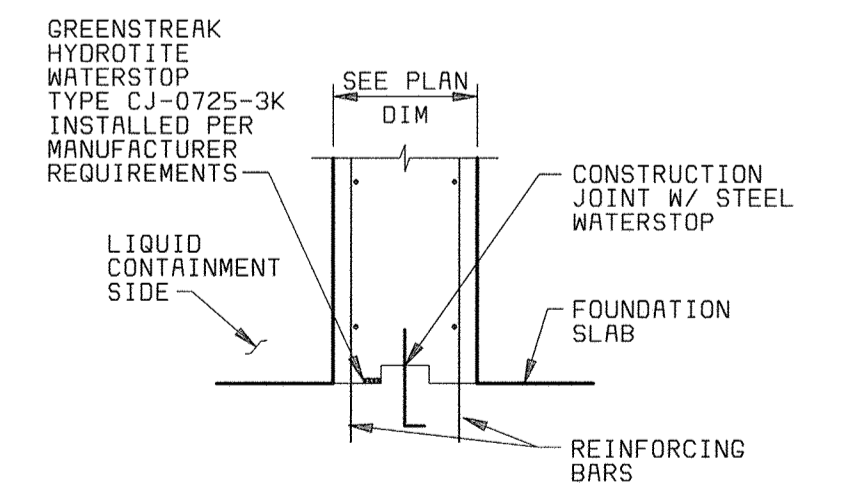
**PRESSURE RELIEF VALVE (N)**  
NO SCALE



**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

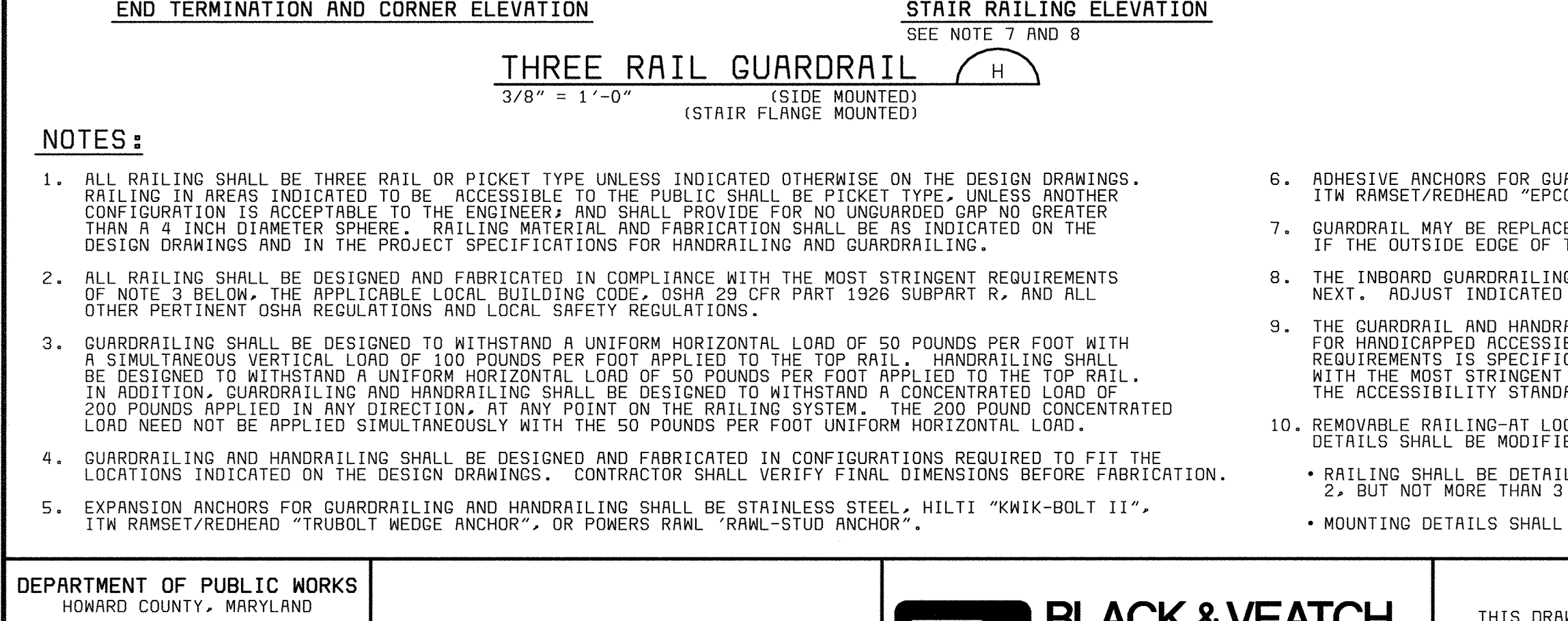
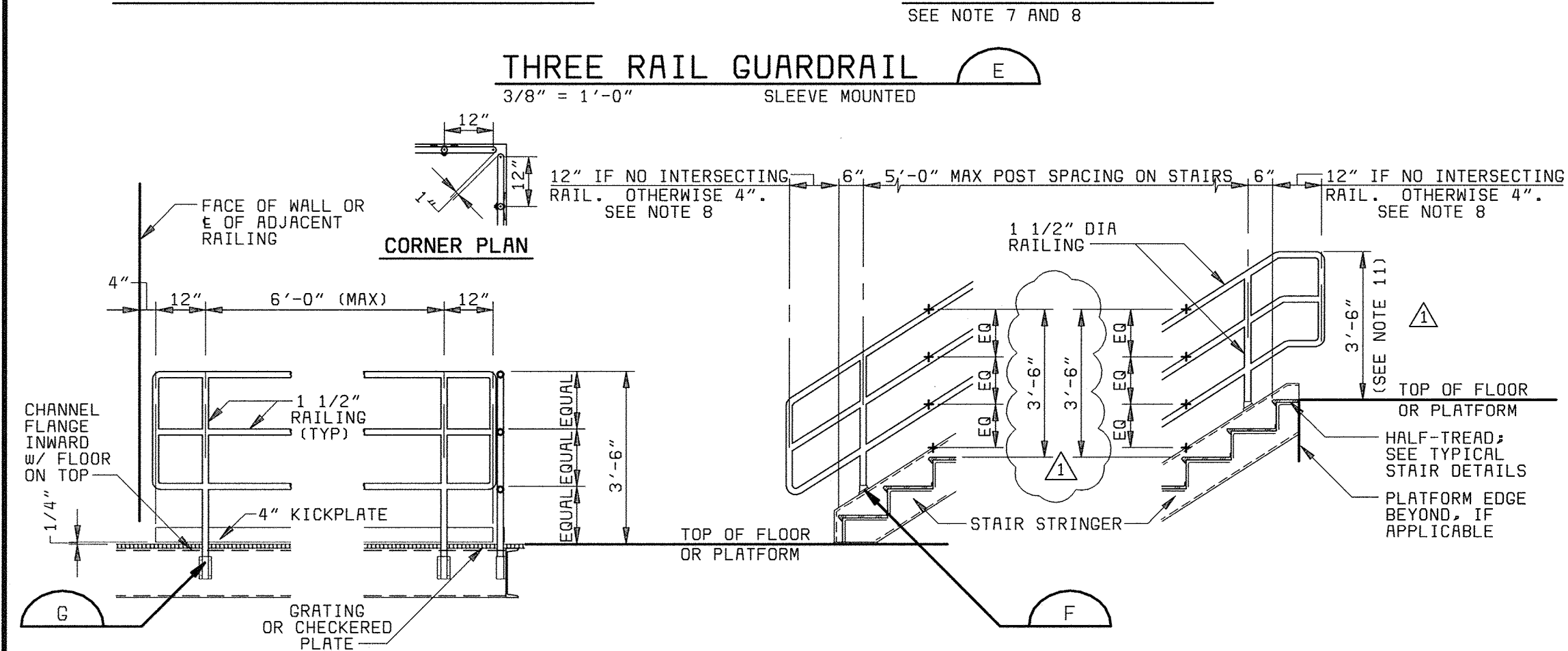
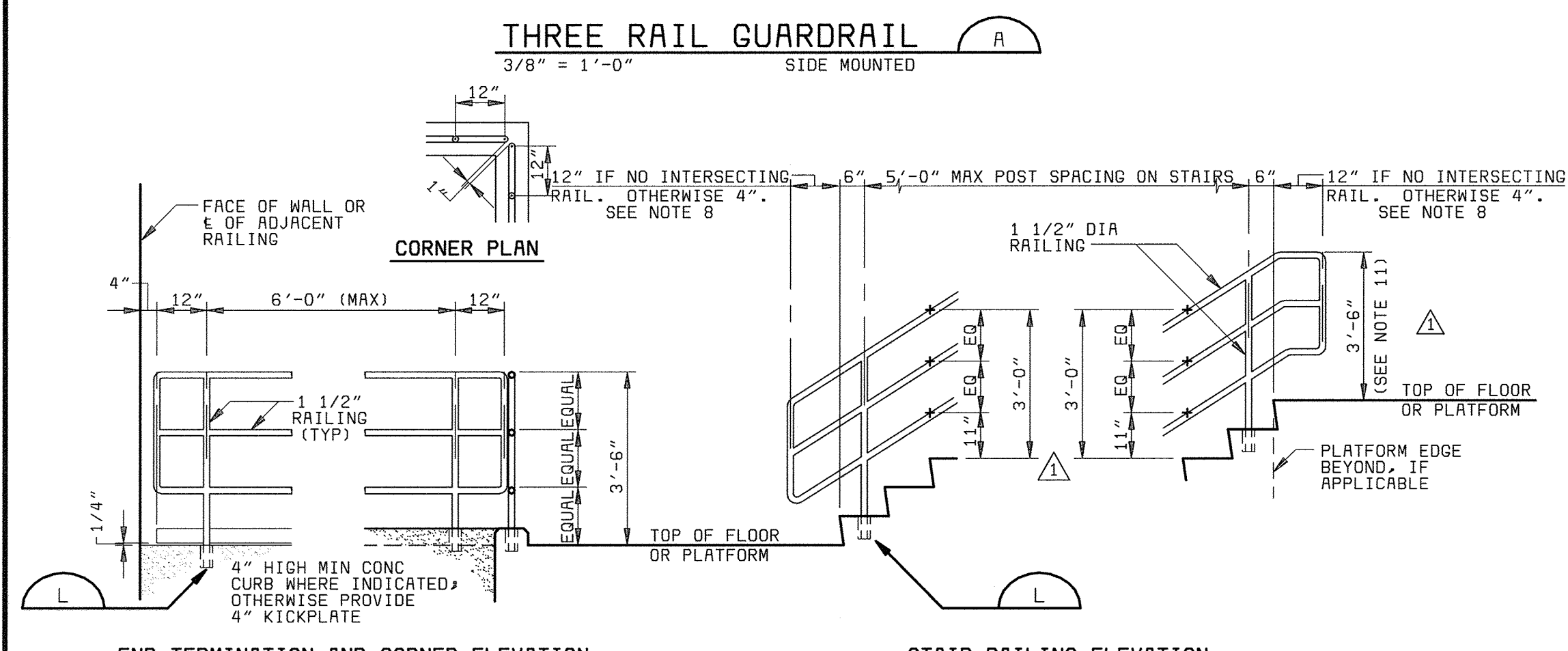
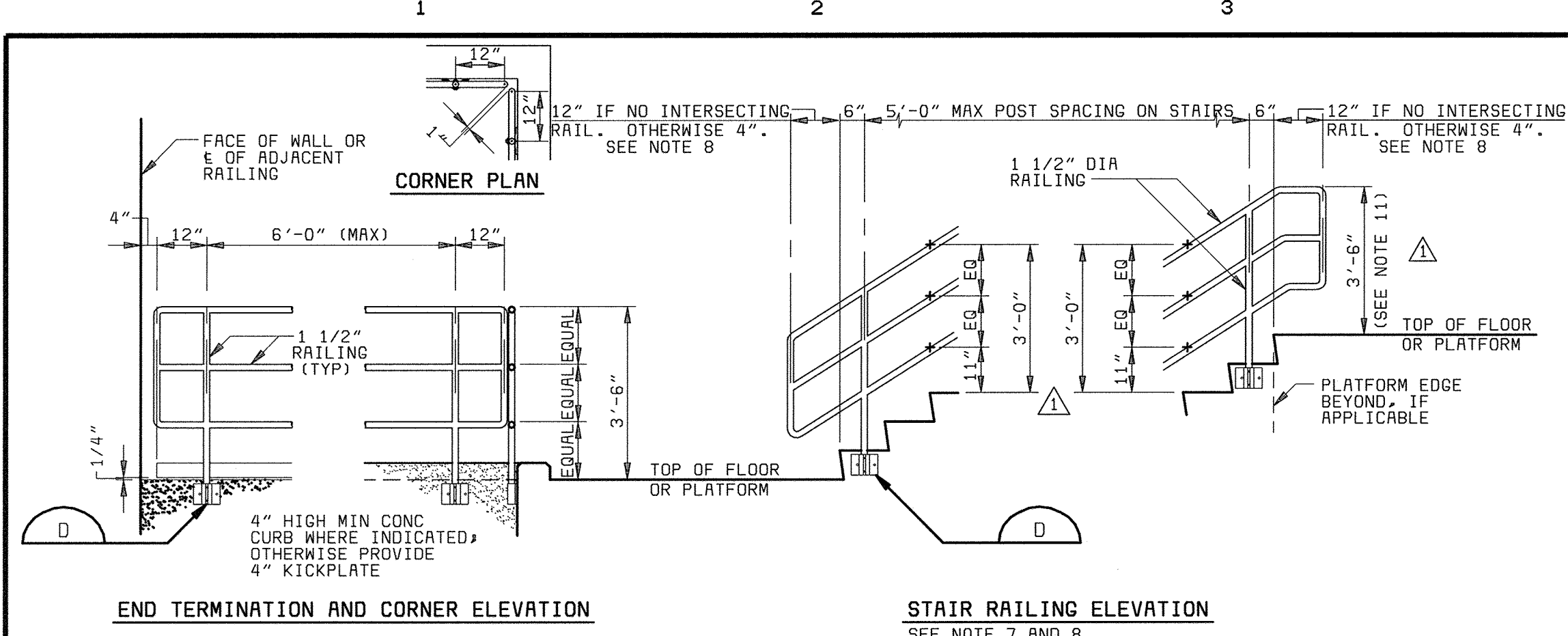
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

SHEET  
52 OF 88

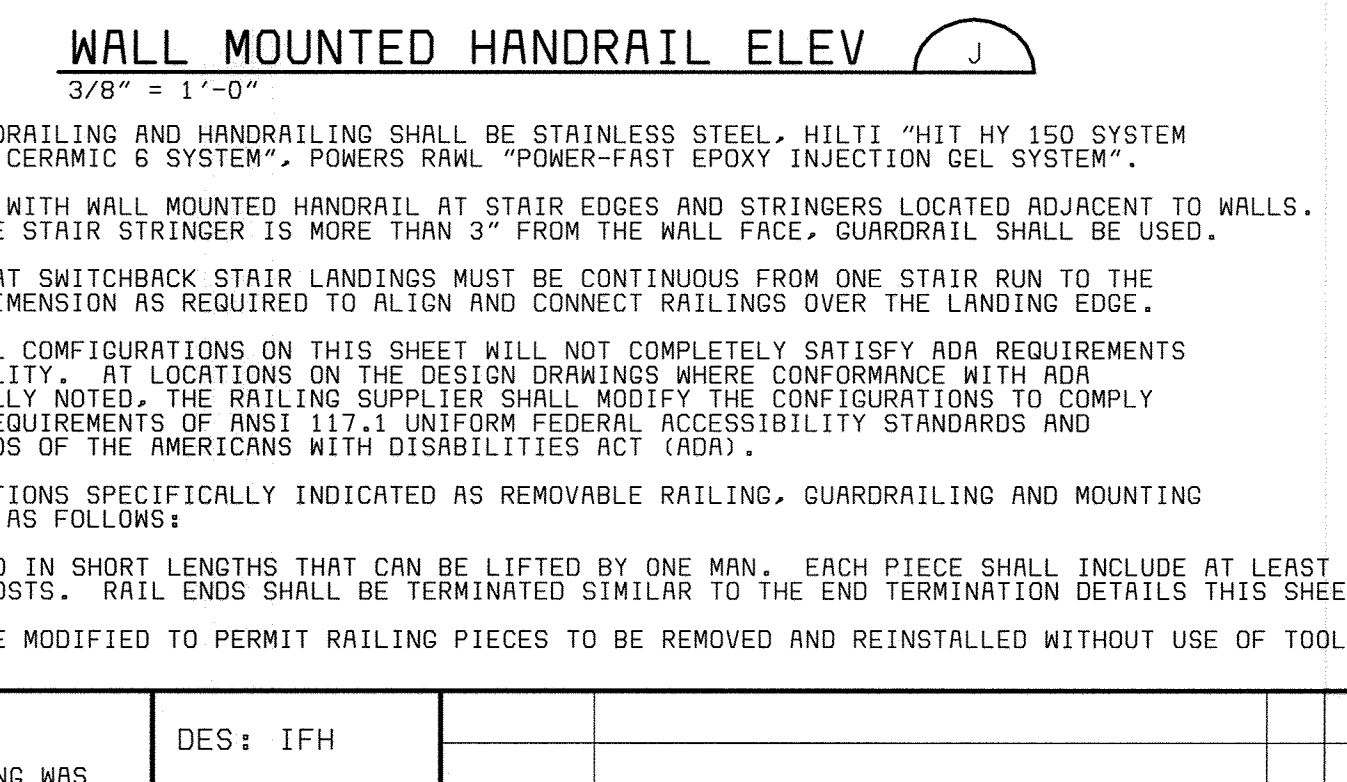
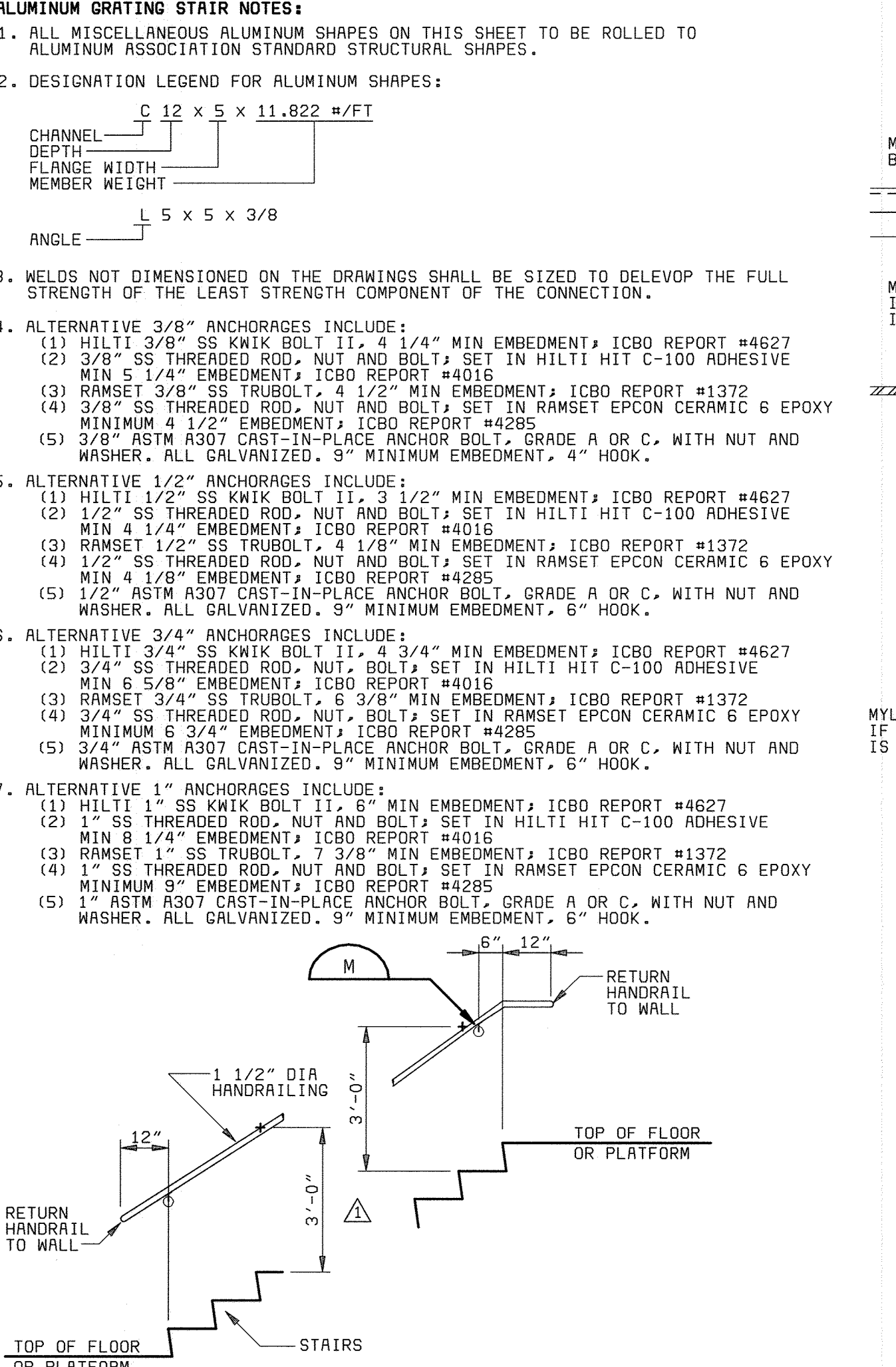
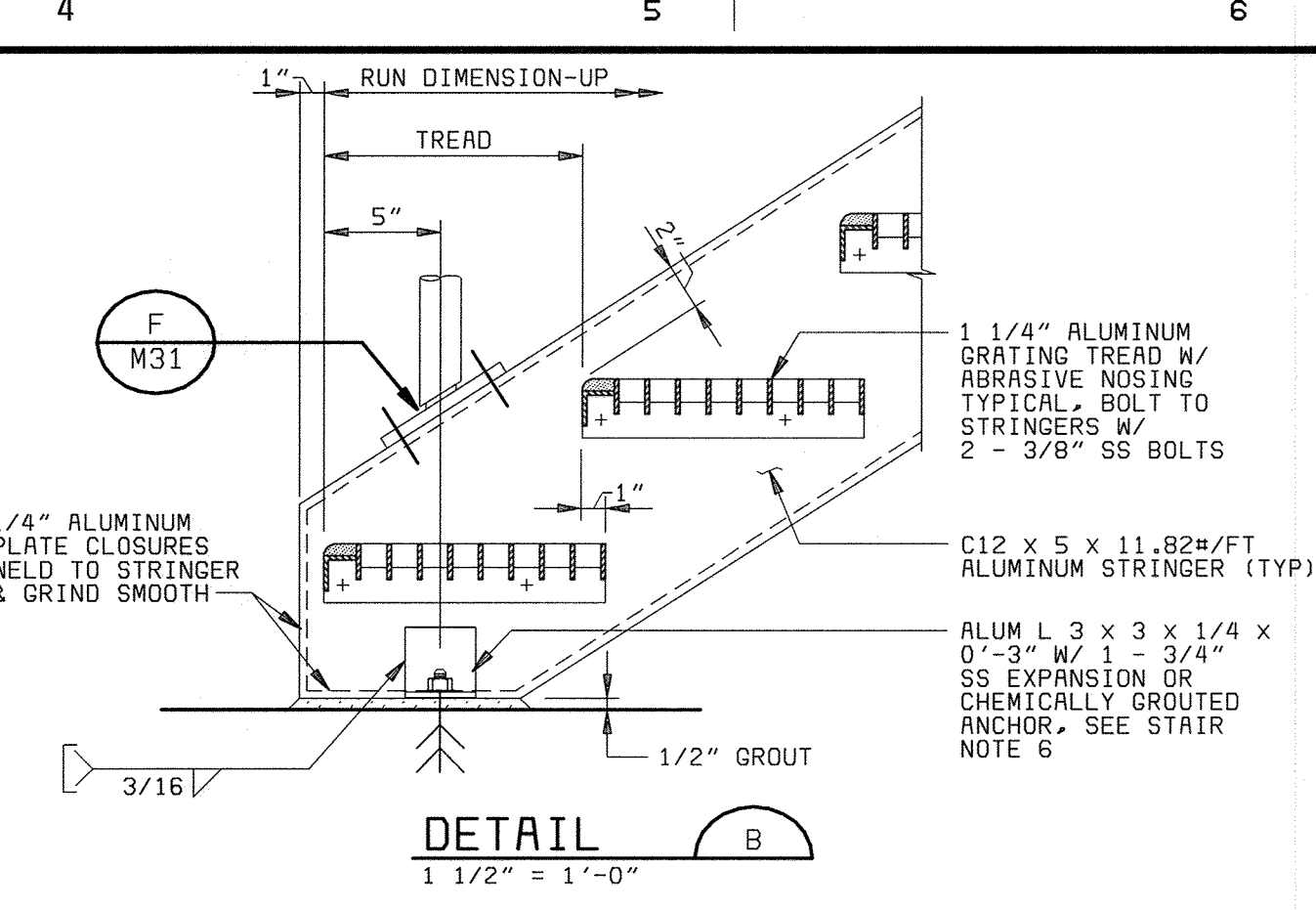
M15





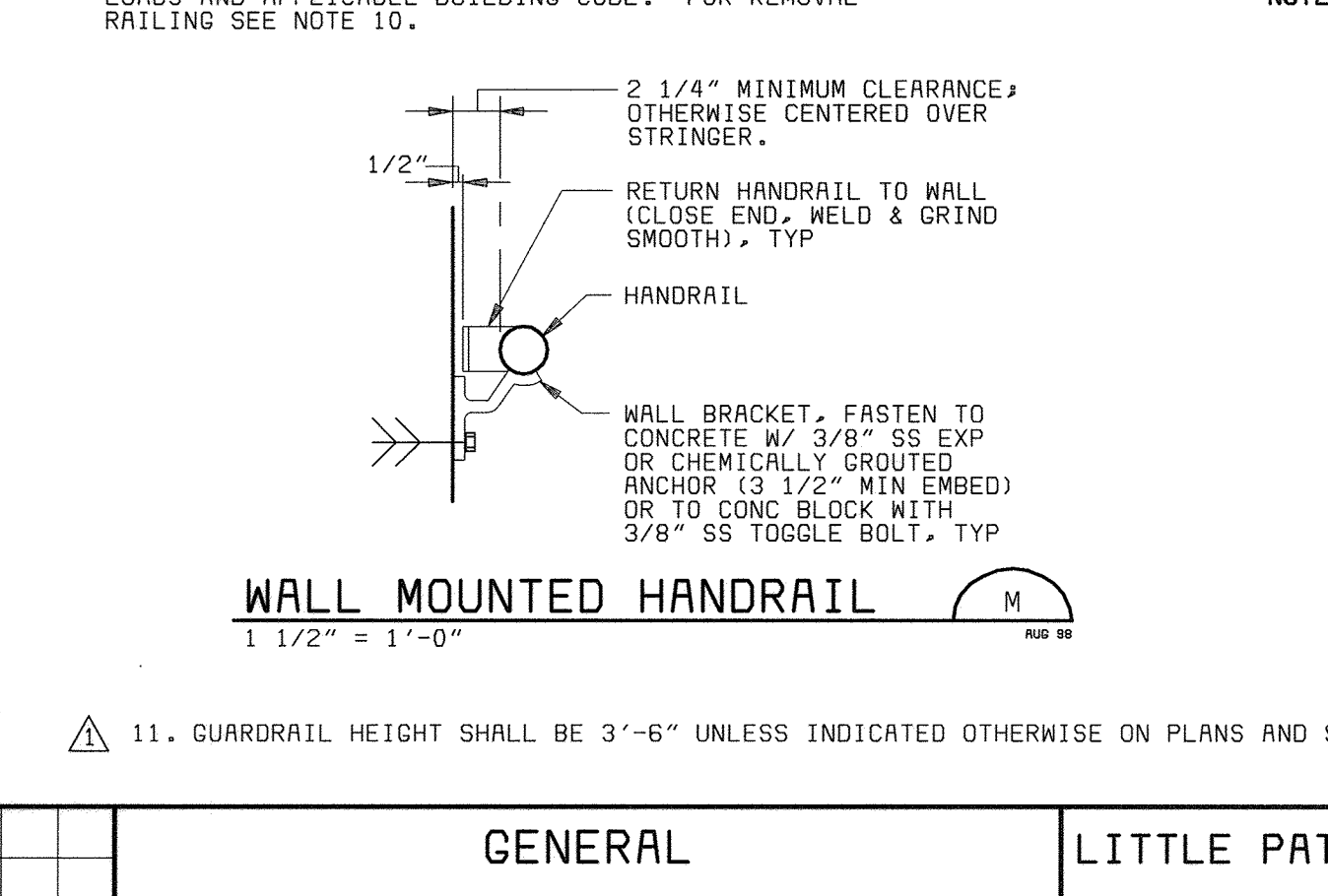
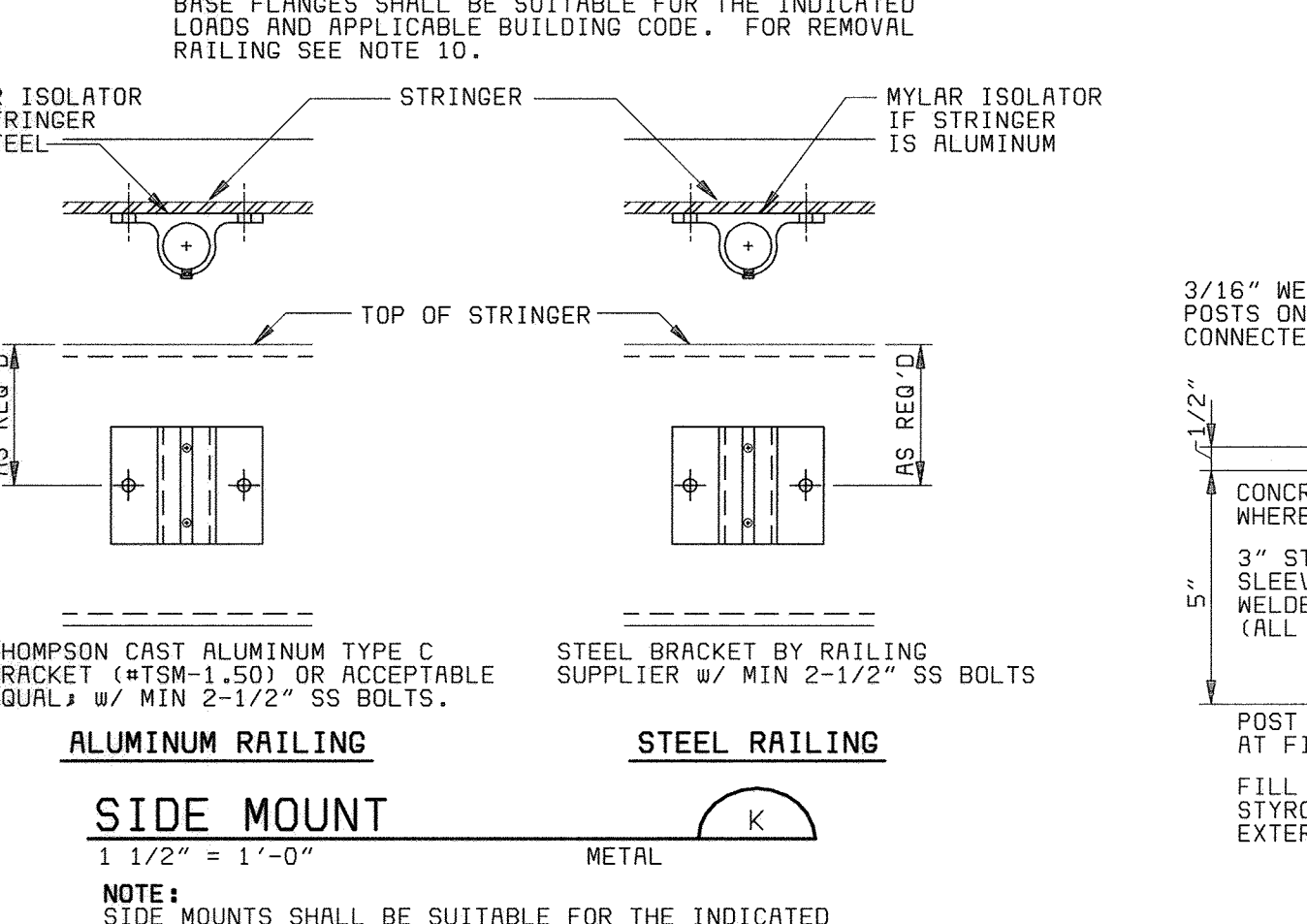
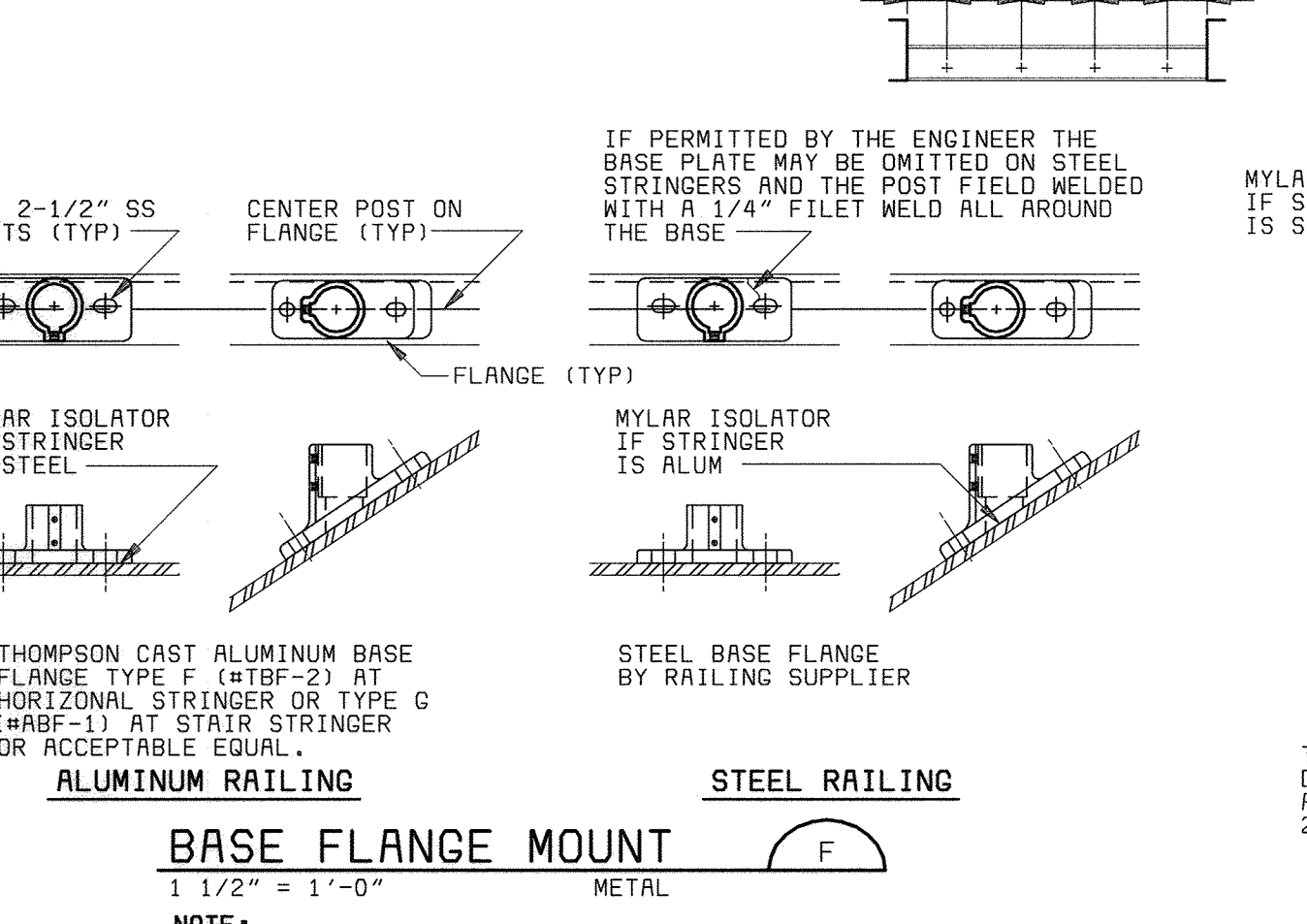
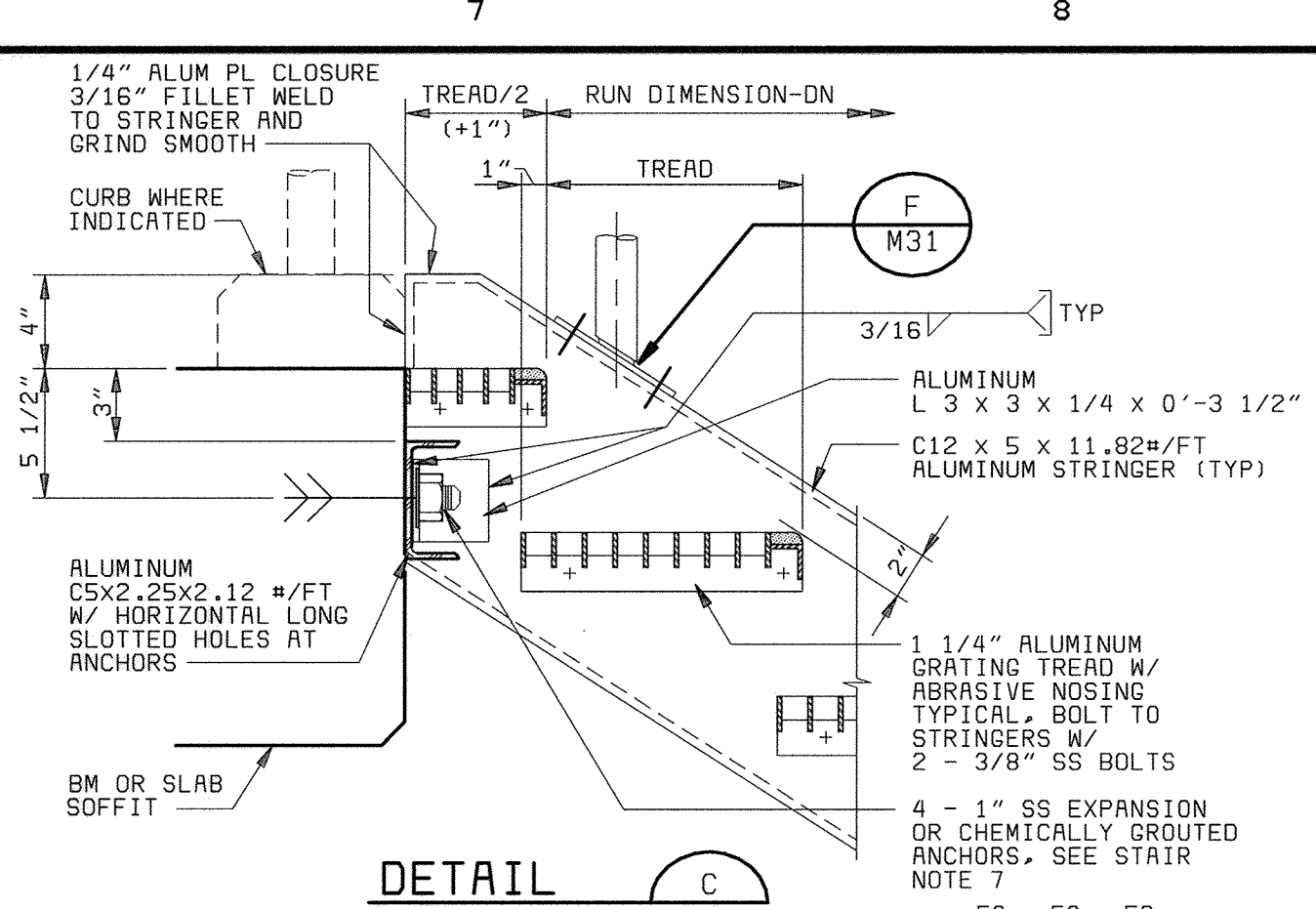
**NOTES:**

- 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".



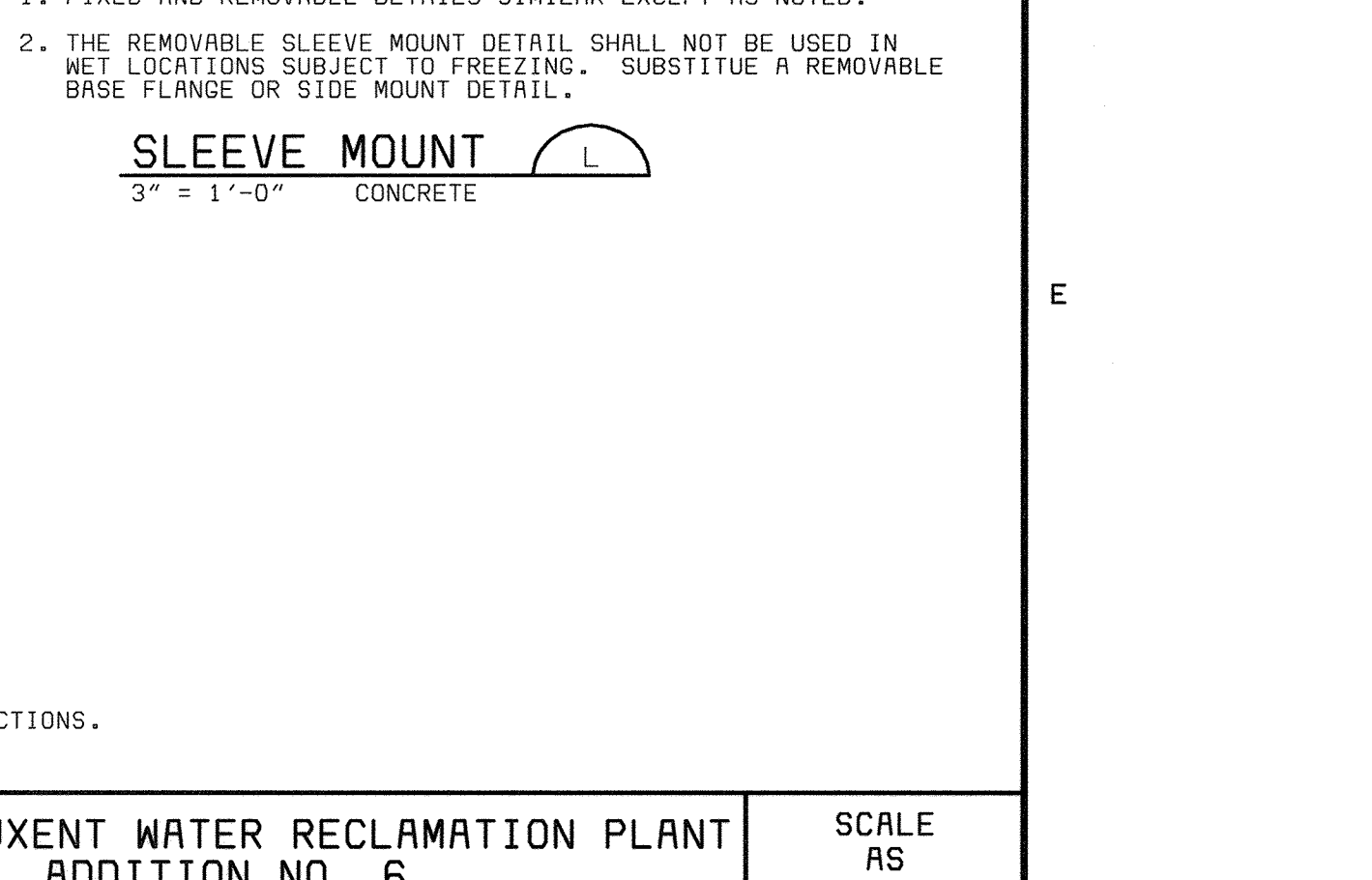
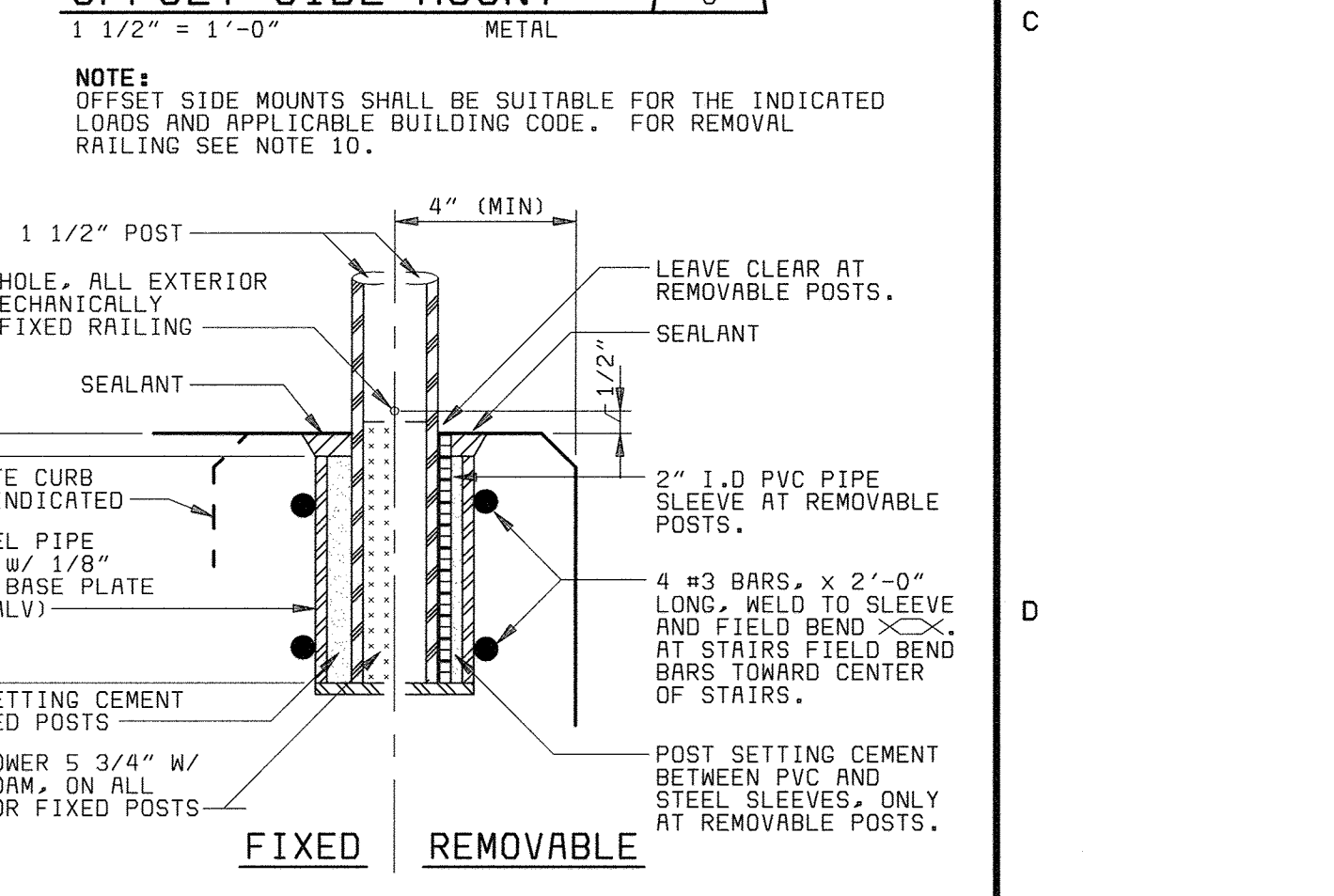
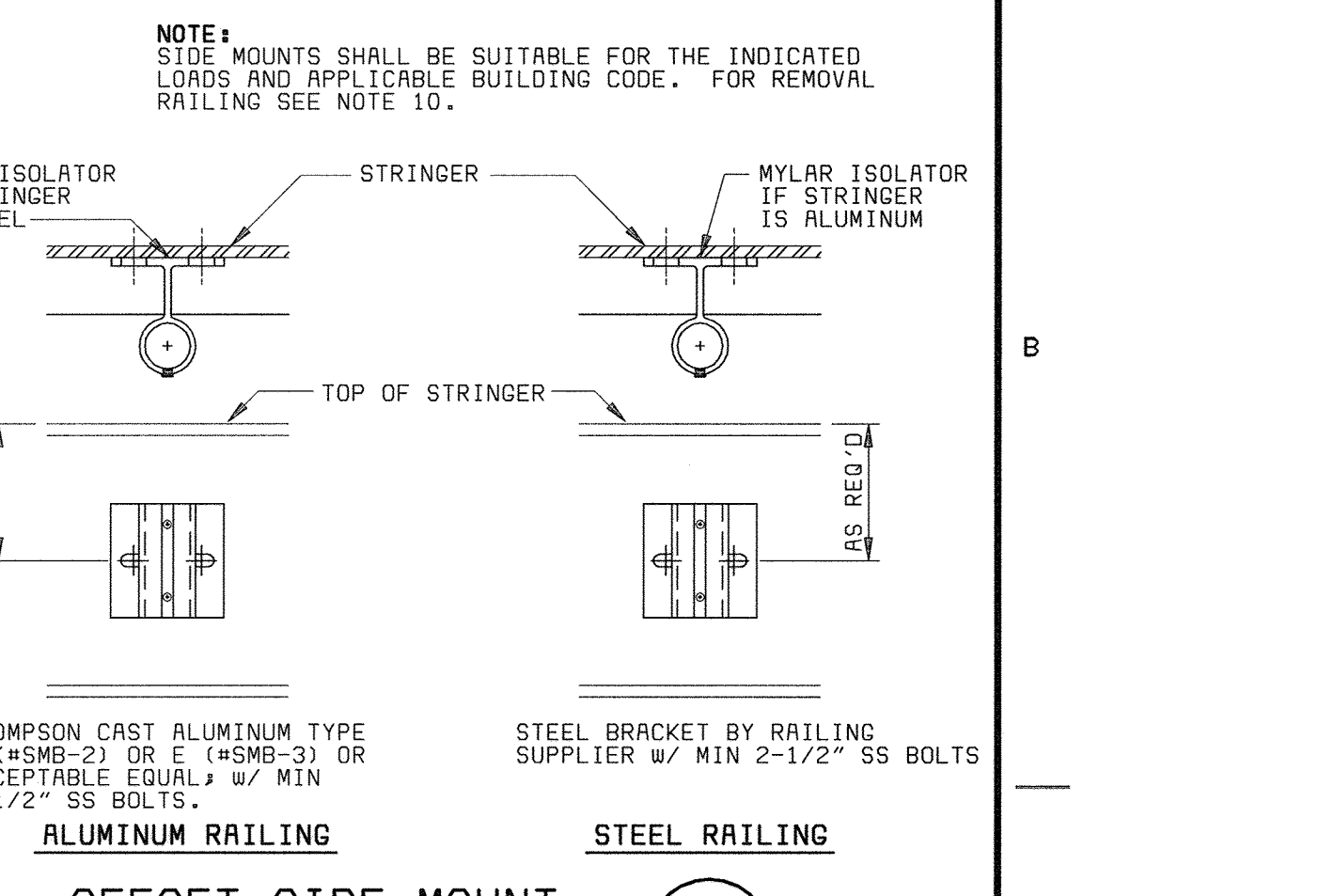
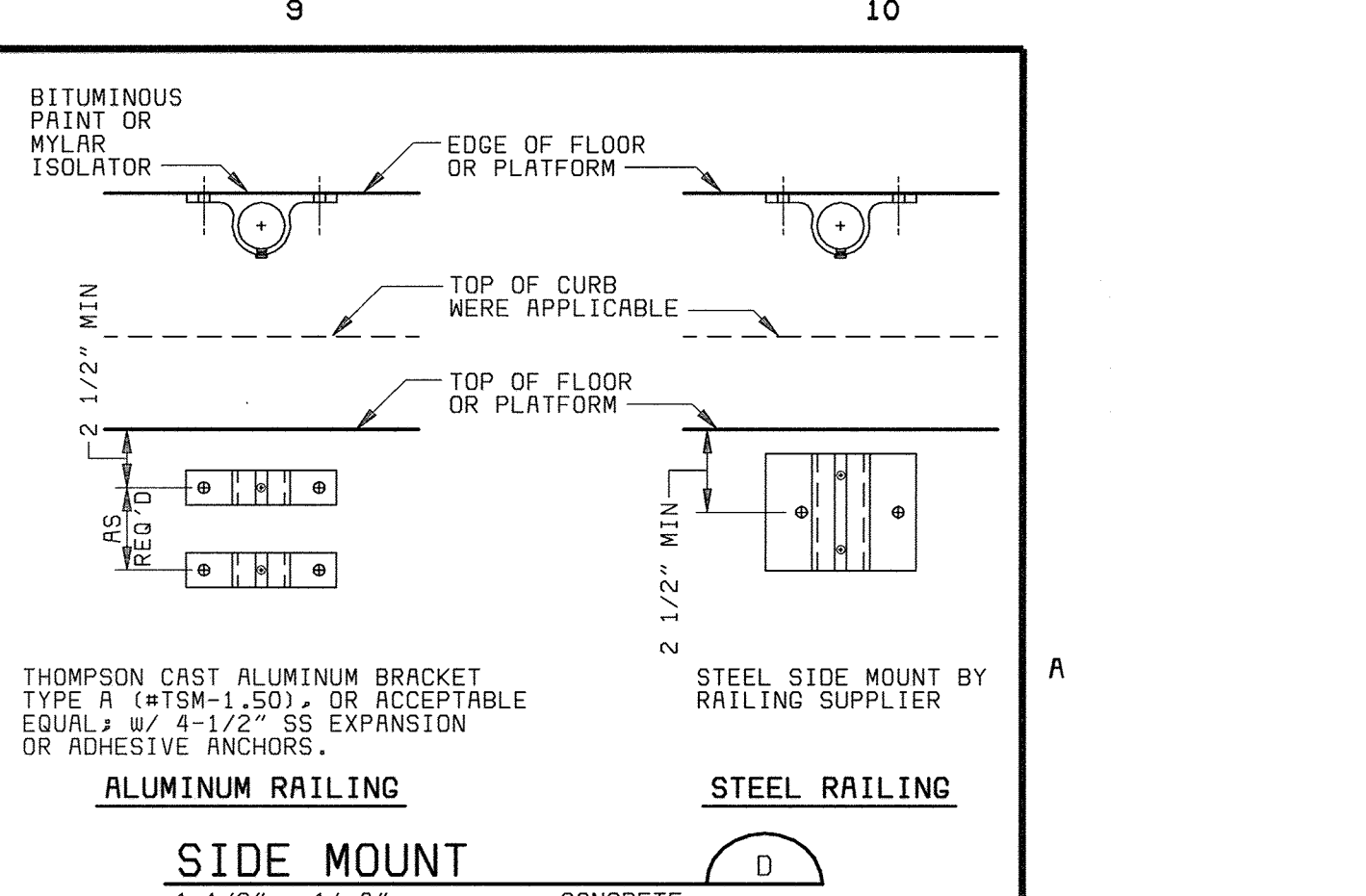
**NOTES:**

- ADHESIVE ANCHORS FOR GUARDRAILING AND HANDRAILING SHALL BE STAINLESS STEEL, HILTI "HIT BY 150 SYSTEM" ITW RAMSET/REDHEAD "EPCON CERAMIC 6 SYSTEM", POWERS RAWL "POWER-FAST EPOXY INJECTION GEL SYSTEM".
- GUARDRAILING MAY BE REPLACED WITH WALL MOUNTED HANDRAIL AT STAIR EDGES AND STRINGERS LOCATED ADJACENT TO WALLS. IF THE OUTSIDE EDGE OF THE STAIR STRINGER IS MORE THAN 3" FROM THE WALL FACE, GUARDRAILING SHALL BE USED.
- THE INBOARD GUARDRAILING AT SWITCHBACK STAIR LANDINGS MUST BE CONTINUOUS FROM ONE STAIR RUN TO THE NEXT. ADJUST INDICATED DIMENSION AS REQUIRED TO ALIGN AND CONNECT RAILINGS OVER THE LANDING EDGE.
- THE GUARDRAILING AND HANDRAIL CONFIGURATIONS ON THIS SHEET WILL NOT COMPLETELY SATISFY ADA REQUIREMENTS FOR HANDICAPPED ACCESSIBILITY. AT LOCATIONS ON THE DESIGN DRAWINGS WHERE CONFORMANCE WITH ADA REQUIREMENTS IS SPECIFICALLY NOTED, THE RAILING SUPPLIER SHALL MODIFY THE CONFIGURATIONS TO COMPLY WITH THE MOST STRINGENT REQUIREMENTS OF ANSI 117.1 UNIFORM FEDERAL ACCESSIBILITY STANDARDS AND THE ACCESSIBILITY STANDARDS OF THE AMERICANS WITH DISABILITIES ACT (ADA).
- REMOVABLE RAILING-AT LOCATIONS SPECIFICALLY INDICATED AS REMOVABLE RAILING, GUARDRAILING AND MOUNTING DETAILS SHALL BE MODIFIED AS FOLLOWS:
  - RAILING SHALL BE DETAILED IN SHORT LENGTHS THAT CAN BE LIFTED BY ONE MAN. EACH PIECE SHALL INCLUDE AT LEAST 2, BUT NOT MORE THAN 3 POSTS. RAIL ENDS SHALL BE TERMINATED SIMILAR TO THE END TERMINATION DETAILS THIS SHEET.
  - MOUNTING DETAILS SHALL BE MODIFIED TO PERMIT RAILING PIECES TO BE REMOVED AND REINSTALLED WITHOUT USE OF TOOLS.



**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.



**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

CHIEF, BUREAU OF UTILITIES DATE

**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	
DATE: 2/19/01	8/28/01	CODE REVIEW COMMENTS		IFH	
	DATE	REVISIONS AND RECORD OF ISSUE		NO.	BY CK APP

GENERAL  
MECHANICAL  
MISCELLANEOUS DETAILS

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

SCALE AS SHOWN  
SHEET 53 OF 88  
M16



ABBREVIATIONS

Table of abbreviations for various mechanical and electrical components, including terms like ALARM COMPRESSED AIR OUTLET, AIR COMPRESSOR, ACCESS DOOR, AIR DRYER, etc.

LEGEND

GENERAL MECHANICAL NOTES

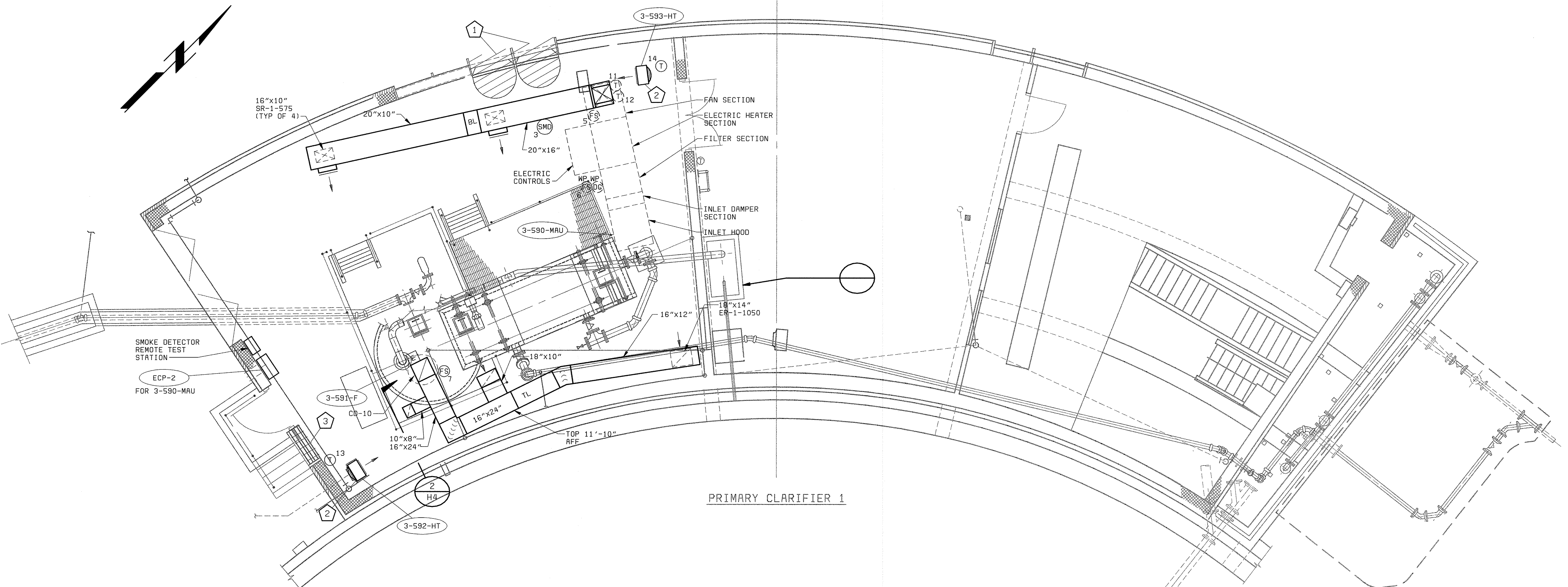
Main legend section containing symbols and descriptions for GENERAL, PIPE FITTINGS, VALVES, HVAC, PLUMBING, SPECIAL, WASTE, ODOR CONTROL, WATER, and FIRE PROTECTION. Includes a diagram for AIR INLET AND OUTLET IDENTIFICATION.

Project information block including DEPARTMENT OF PUBLIC WORKS, BLACK & VEATCH logo, project title (LITTLE PATUXENT WATER RECLAMATION PLANT), scale (AS SHOWN), sheet number (54 of 88), and H1 label.

058472-3  
PDS8472A







PRIMARY CLARIFIER 1


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

**GENERAL NOTES**

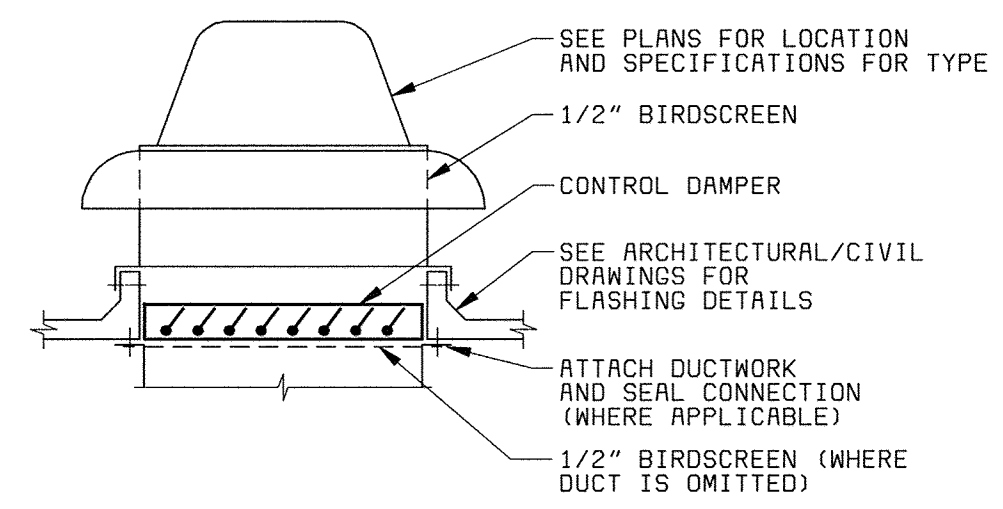
- 1. ALL DUCTWORK SHOWN ON THIS DRAWING SHALL BE ALUMINUM.

**PLAN NOTES:**

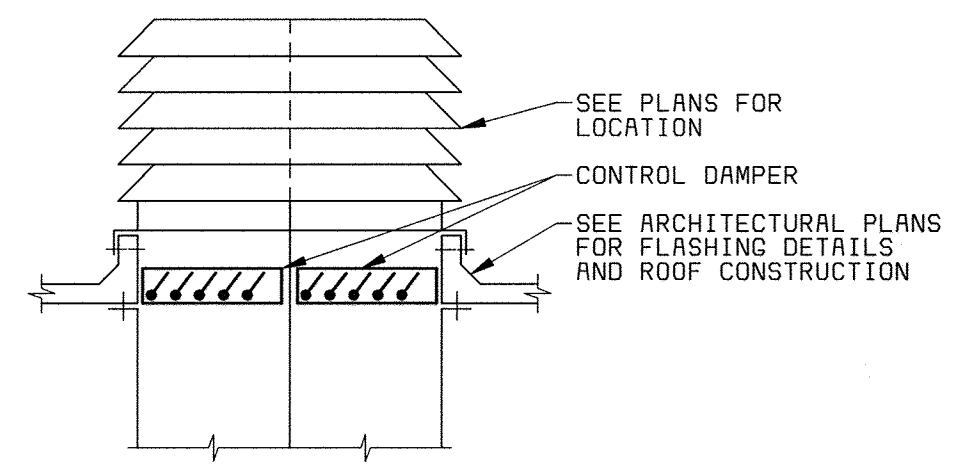
- 1 REMOVE EXISTING EXHAUST FANS. BLANK-OFF TWO 3'x4' LOUVERS.
- 2 REMOVE EXISTING ELECTRIC UNIT HEATER (7.5 KW) AND ASSOCIATED THERMOSTAT. INSTALL A NEW 7.5 KW ELECTRIC UNIT HEATER AND THERMOSTAT.
- 3 REMOVE EXISTING CONTROL DAMPER. BLANK-OFF EXISTING 3'x7' LOUVER.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> <small>Gaithersburg, Maryland</small>	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,LOW CHK: DWN DATE: 04/13/01	02/06/04 CONFORMED TO CONSTRUCTION RECORDS RHH/RJR/RJR	<b>PRIMARY SCUM HANDLING BUILDING</b> HVAC  <b>PRIMARY SCUM HANDLING BUILDING PLAN</b>	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 56 OF 88  <b>H3</b>
--	--	---	---	---	---	---	---

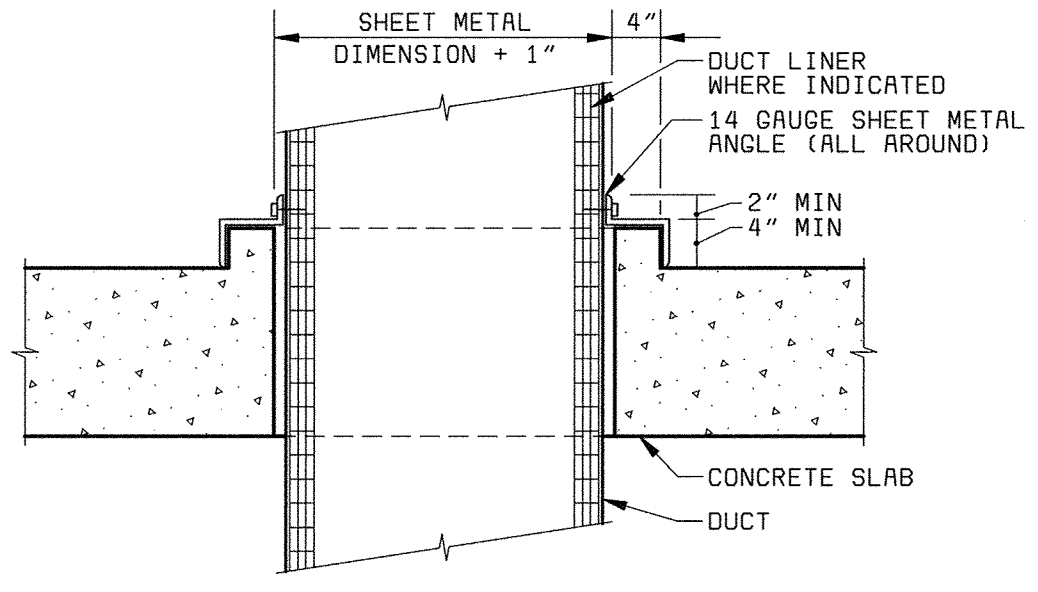




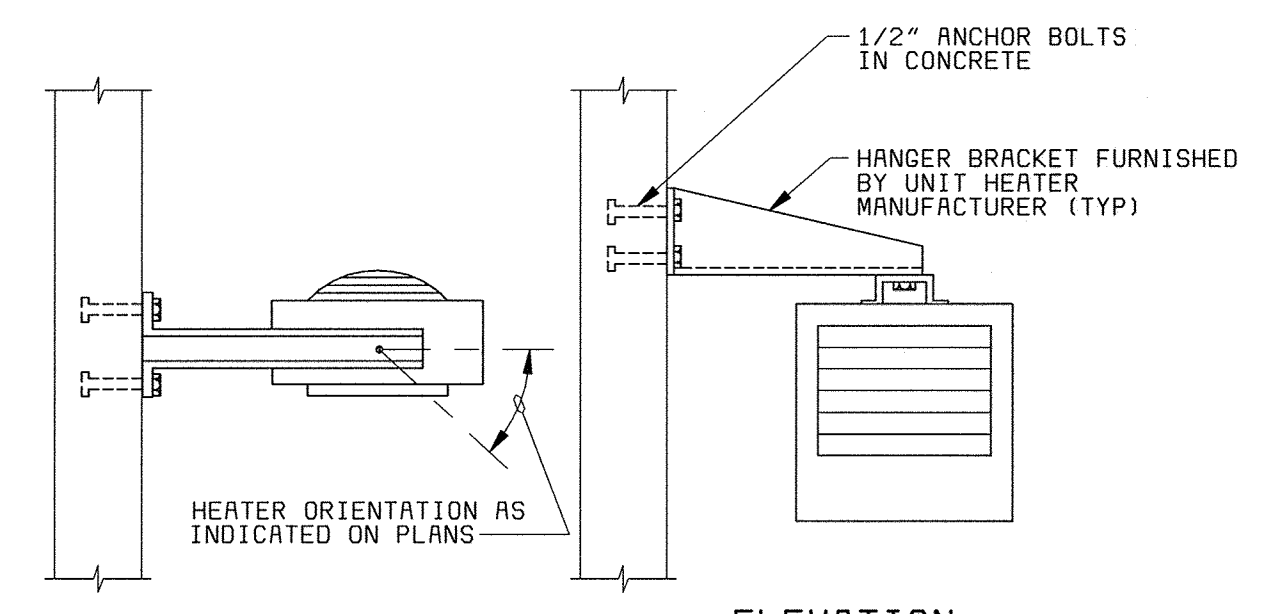
**POWER ROOF VENTILATOR** A  
NO SCALE



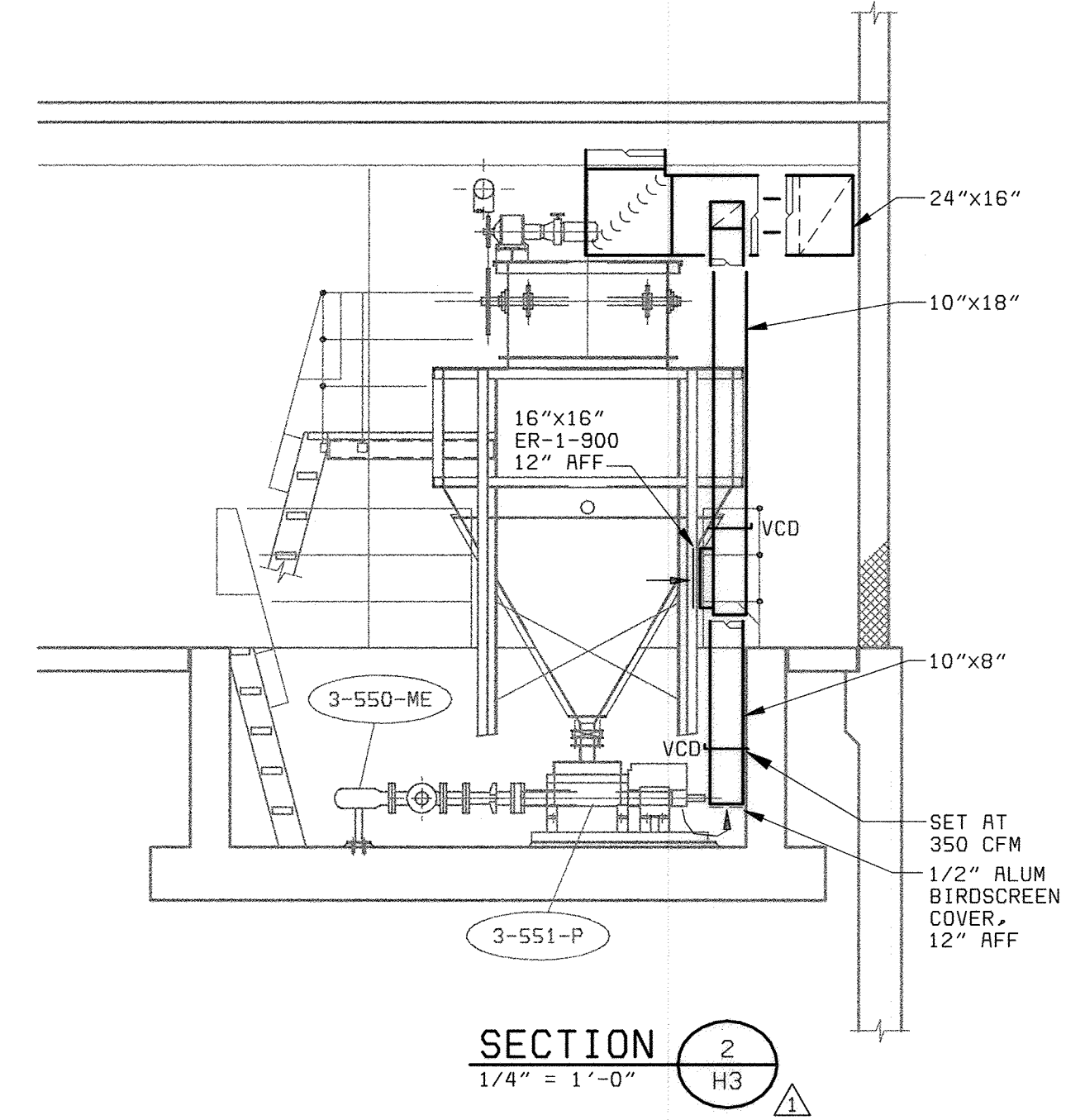
**SUPPLY FAN** B  
NO SCALE



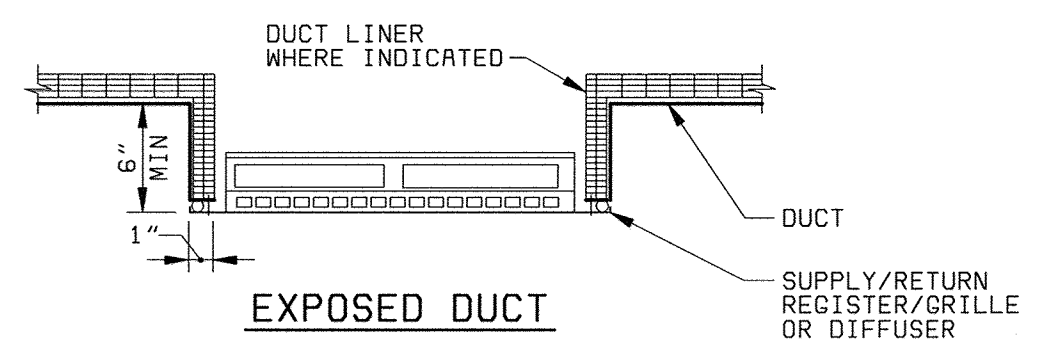
**DUCT FLOOR SLEEVE** C  
NO SCALE



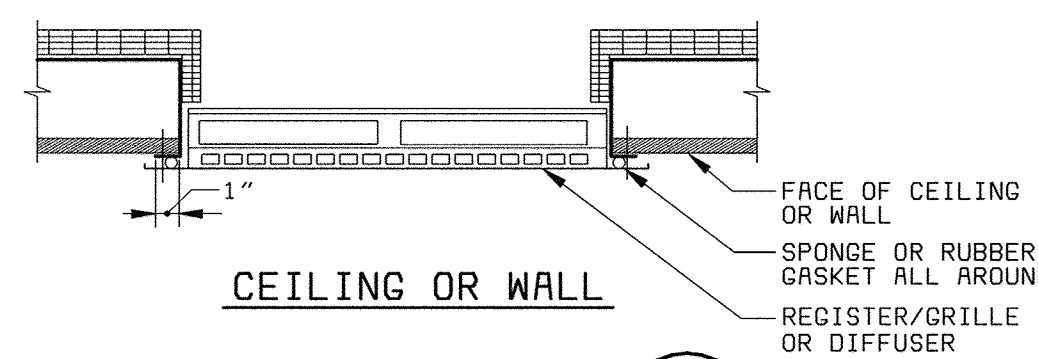
**ELECTRIC UNIT HEATER SUPPORT** D  
NO SCALE



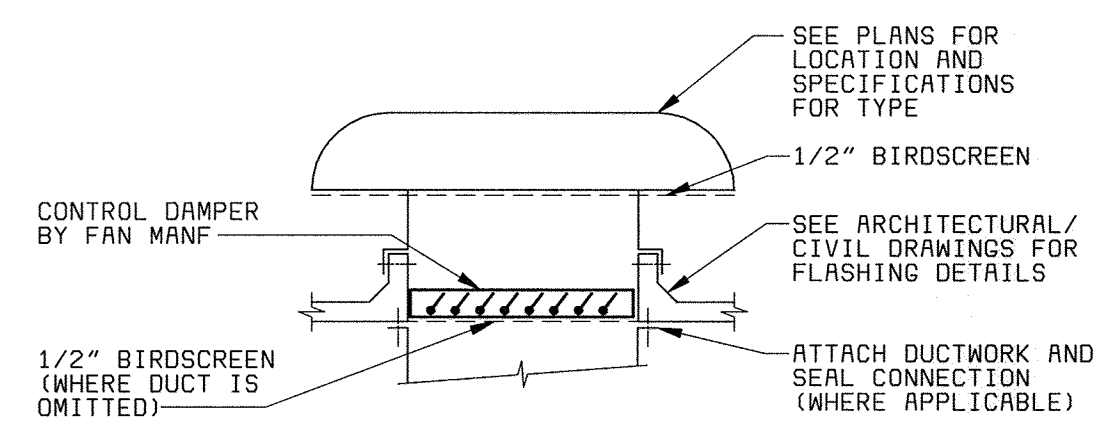
**SECTION 2**  
1/4" = 1'-0"



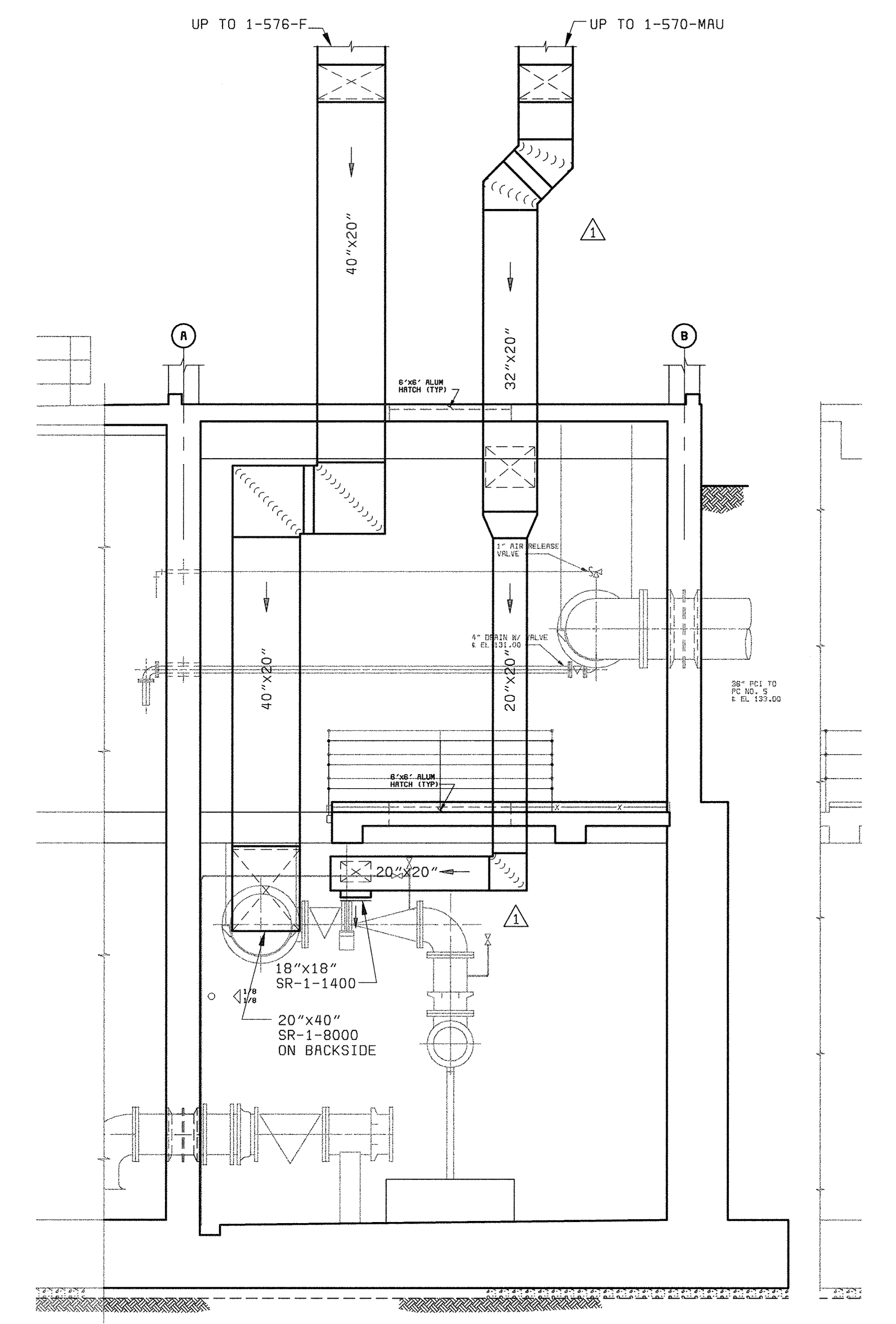
**EXPOSED DUCT**



**REGISTER/GRILLE** E  
NO SCALE



**ROOF HOOD** F  
NO SCALE



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

58472-101-M-T00001HRH  
58472-101-AP-M-20000000P  
58472-101-YARD-C-R0001324

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> 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						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
			DRN: BDL,LDW								
			CHK: DWN	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR			H4
			DATE: 04/13/01	08/28/01	GENERAL REVISIONS						
					REVISIONS AND RECORD OF ISSUE						

AIR DEVICE SCHEDULE

Table with 8 columns: SYMBOL, MODEL, FRAME/BORDER, MATERIAL, FINISH, DAMPER TYPE, ACCESSORIES, REMARKS. Rows include SR-1, ER-1.

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

FAN SCHEDULE

Table with 11 columns: 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. Rows include 1-571-F through 3-591-F.

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

HEATER SCHEDULE

Table with 12 columns: UNIT NO, LOCATION, UNIT ORIENTATION, AIRFLOW (CFM), AIR PD (IN WG), OUTPUT CAPACITY (BTUH, KW), WATER FLOW (GPM), WATER PD (FT), MOTOR HP, POWER SUPPLY VOLTS/PHASE, APPROX WT (LBS), REMARKS. Rows include 1-577-HT through 3-593-HT.

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

MAKEUP AIR UNIT SCHEDULE

Table with 11 columns: 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. Rows include 1-570-MAU through 1-585-MAU.

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.

ROOF HOOD SCHEDULE

Table with 6 columns: UNIT NO, LOCATION, AIRFLOW (CFM), AIR PD (IN WC), TYPE, THROAT SIZE (INXIN), REMARKS. Row includes RH-1.

TYPE NOTES: I - INTAKE

REMARKS: 1 ALUMINUM HOOD CONSTRUCTION

HVAC - SEQUENCE OF OPERATIONS

Table with 14 columns: 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 (ROOM, LOW TEMP, SUPPLY), HUMIDITY, REMARKS. Rows include 1-571-F through 3-593-HT.

HVAC SEQUENCE OF OPERATIONS NOTES:

1. 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

2. 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
MCC MOUNTED ON A TEMPERATURE CONTROL PANEL
TCP WALL MOUNTED INSIDE THE SPACE
WM EQUIPMENT CONTROL PANEL
ECP CONTROL STATION
CS

THE CONTROL CONTRACTOR AND THE SUPPLIER OF THE REMOTE CONTROL PANEL FOR THE MAKE UP AIR UNITS SHALL COORDINATE TO PROVIDE THE REQUIRED NUMBER OF EQUIPMENT INTERLOCKS TO SATISFY THE INDICATED SEQUENCE OF OPERATION.

3. 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.

4. 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.

5. NOT USED

6. NOT USED

7. 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.

8. 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.

9. 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.

10. THERMOSTATS - ROOM

THE ROOM THERMOSTAT SHALL ENERGIZE THE PIECE OF EQUIPMENT TO MAINTAIN THE ROOM TEMPERATURE SETPOINT.

11. 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.

12. THERMOSTATS - SUPPLY

THE SUPPLY AIR THERMOSTAT LOCATED IN THE UNITS CABINET SHALL MODULATE THE UNIT OUTPUT CAPACITY TO MAINTAIN THE SUPPLY AIR SETPOINT.

13. NOT USED

14. NOT USED

15. NOT USED

16. NOT USED

17. NOT USED

18. NOT USED

19. NOT USED

20. HEATERS

UNIT HEATERS SHALL BE CONTROLLED BY THEIR RESPECTIVE THERMOSTATS. WALL HEATERS SHALL BE CONTROLLED BY THEIR RESPECTIVE BUILT-IN THERMOSTATS.

21. 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.

22. THERMOSTAT SETPOINTS

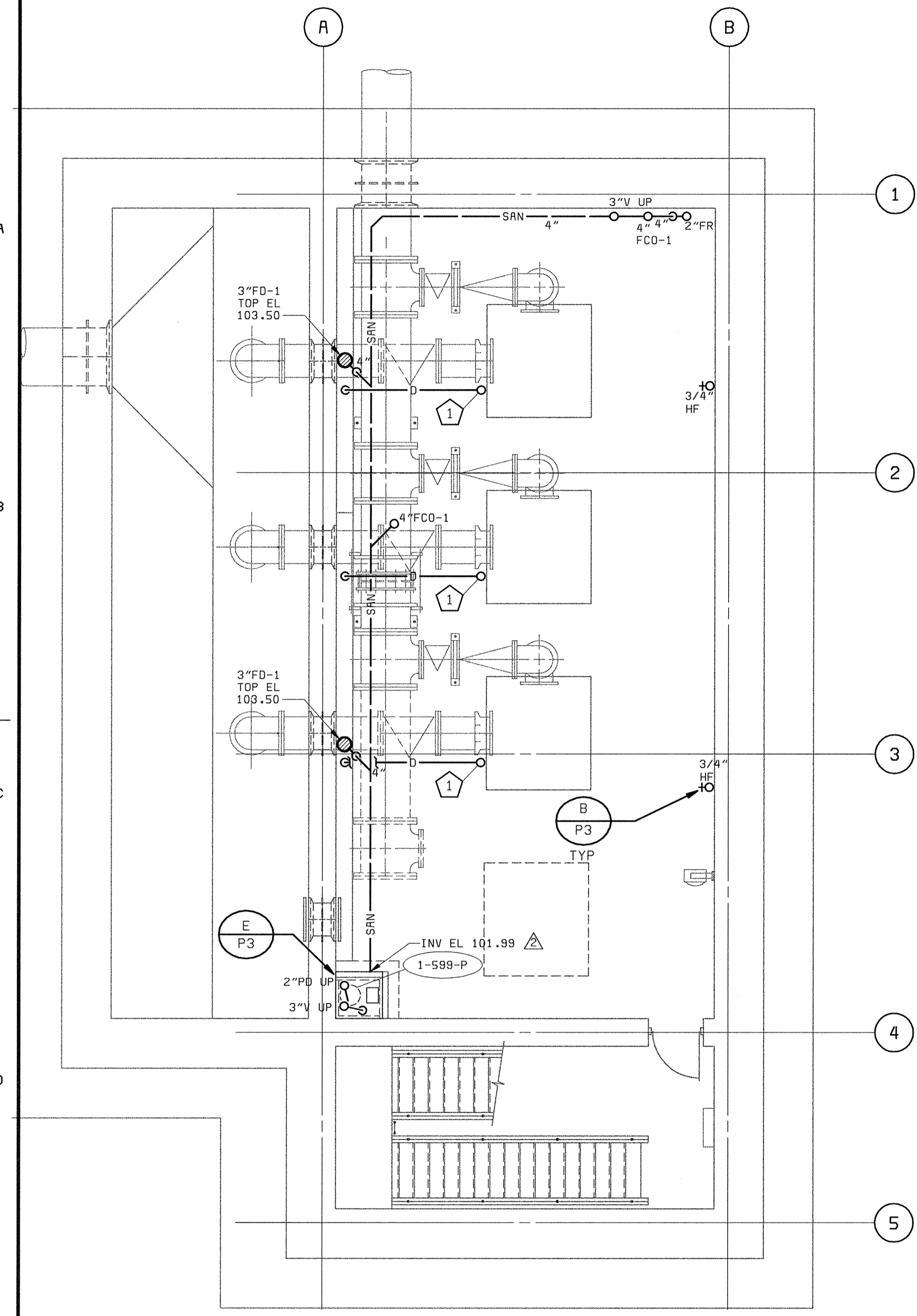
THERMOSTAT SETPOINTS SHALL BE AS FOLLOWS UNLESS INDICATED OTHERWISE.

LOW TEMPERATURE THERMOSTATS - 35°F
HEATERS - 40°F
MAKEUP AIR SUPPLY HEATING - 40°F
VENTILATING EQUIPMENT - 100°F

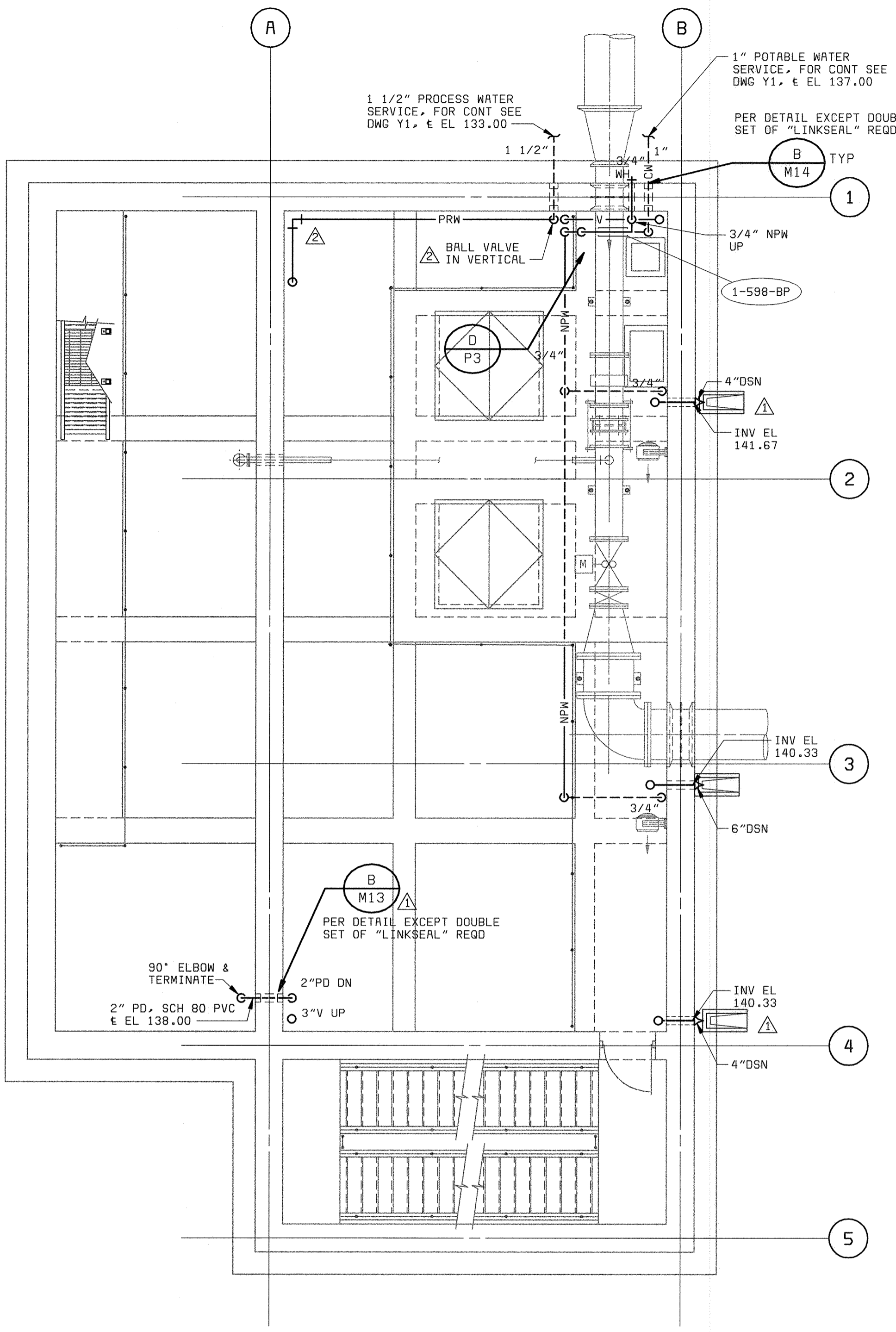
Project information block including: DEPARTMENT OF PUBLIC WORKS, BLACK & VEATCH logo, THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PAPE, A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992, DES: GWP, HX, DRN: BDL, LOW, CHK: DWN, DATE: 04/13/01, HVAC, SCHEDULES AND SEQUENCE OF OPERATION, 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.

058472-3 F058472A

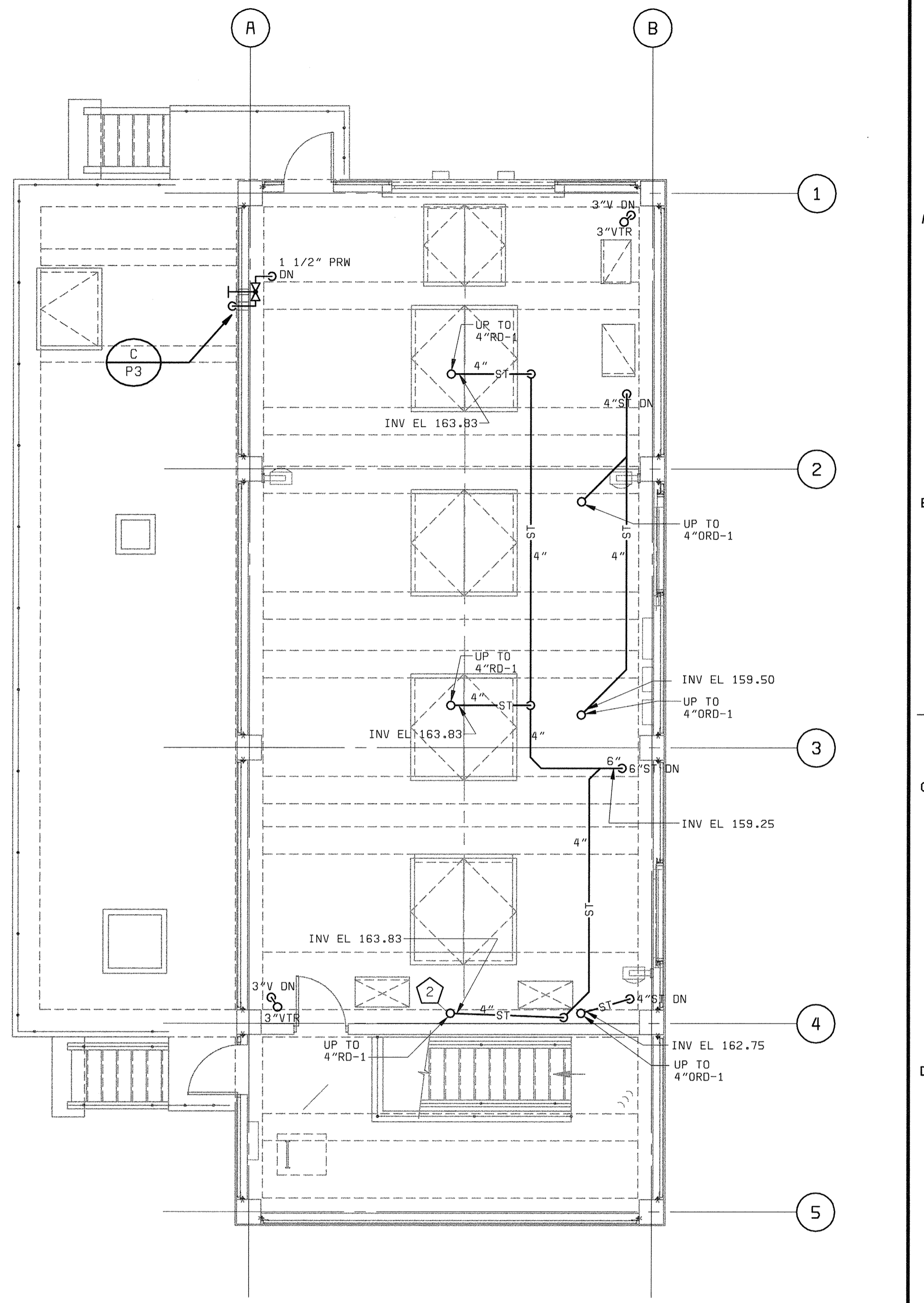




**LOWER LEVEL PLAN**  
3/16" = 1'-0"



**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: 58472-10-AP-PB-4-Z000000TP  
XREF: 58472-10-AP-PB-4-Z000000SN  
XREF: 58472-10-AP-PB-4-Z000000BP

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	05/05/05	CONFORMED TO CONSTRUCTION RECORDS					
DATE: 04/13/01	06/12/01	ADDENDUM #1					
		REVISIONS AND RECORD OF ISSUE					

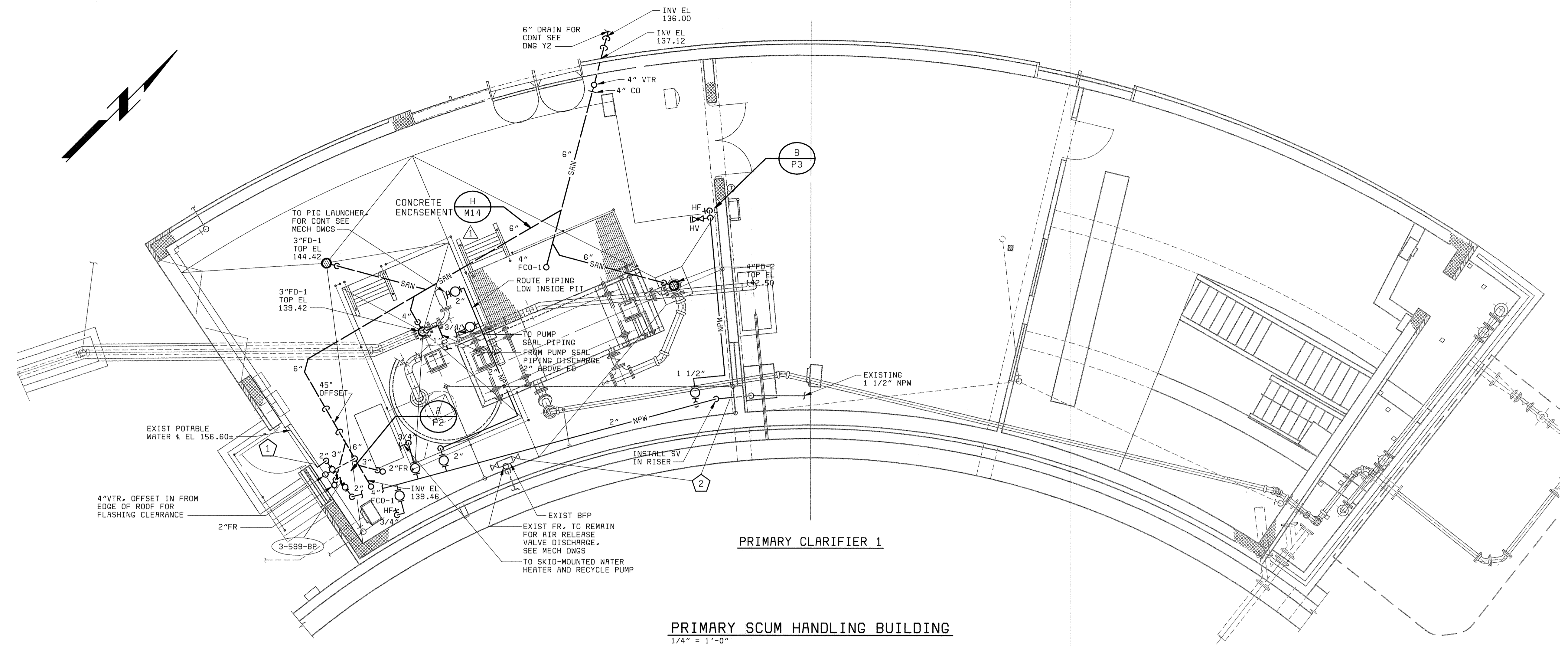
AUXILIARY PUMP STATION  
PLUMBING  
LOWER LEVEL, MEZZANINE LEVEL  
AND GROUND LEVEL FLOOR PLANS

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**

A  
B  
C  
D  
E  
F

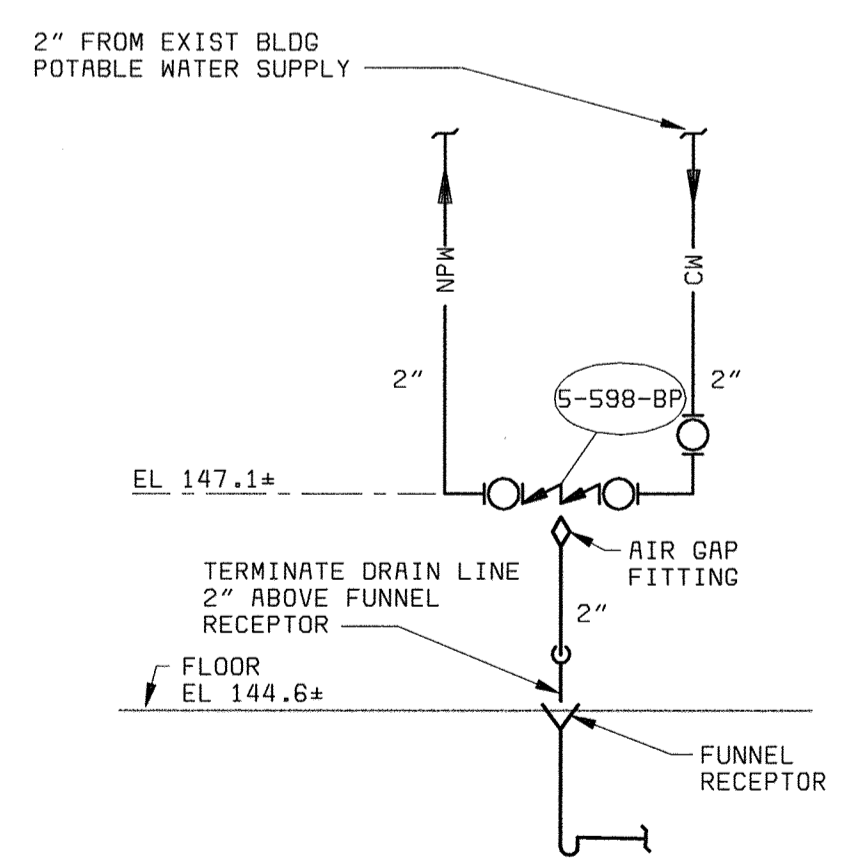
A  
B  
C  
D  
E  
F



PRIMARY CLARIFIER 1

PRIMARY SCUM HANDLING BUILDING

1/4" = 1'-0"



SCUM CONCENTRATOR WATER SUPPLY DETAIL (A)  
NO SCALE

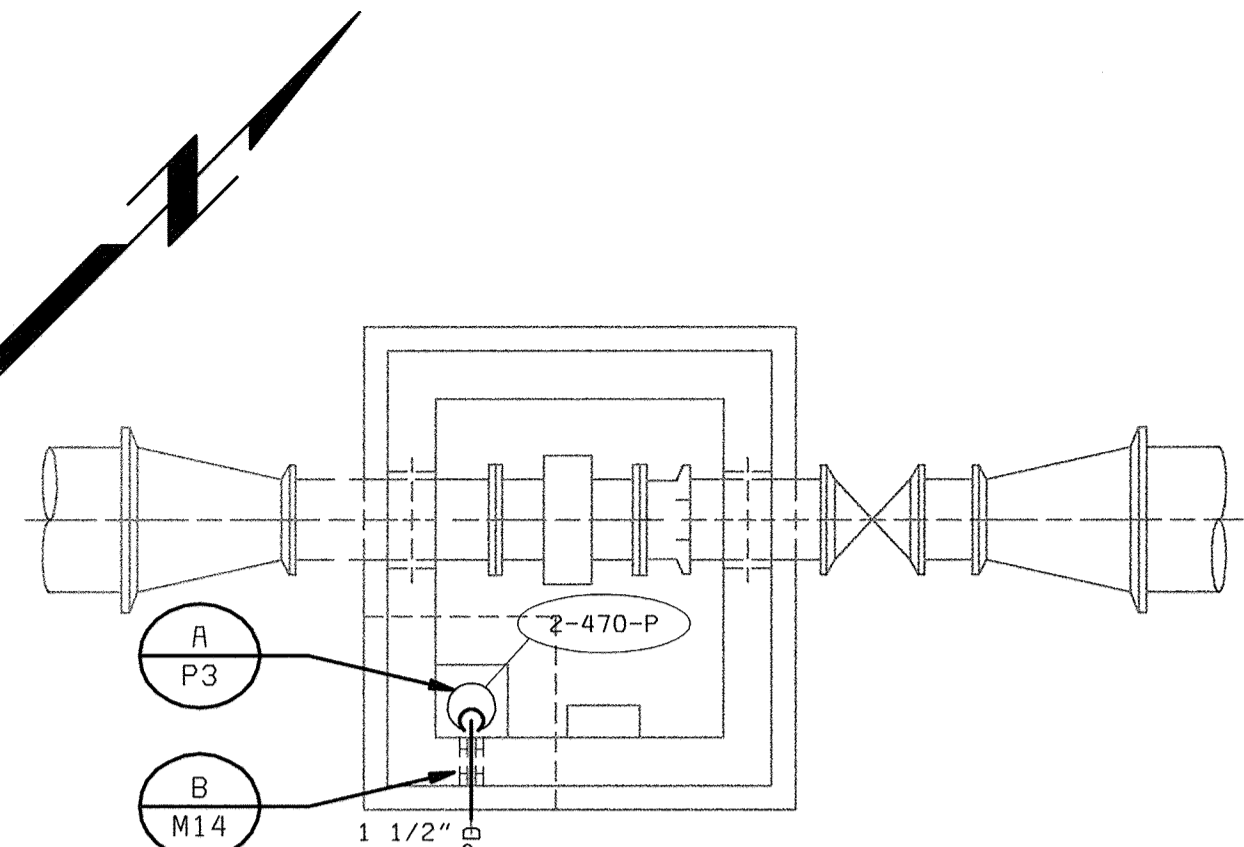
PLAN NOTES:

- 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.

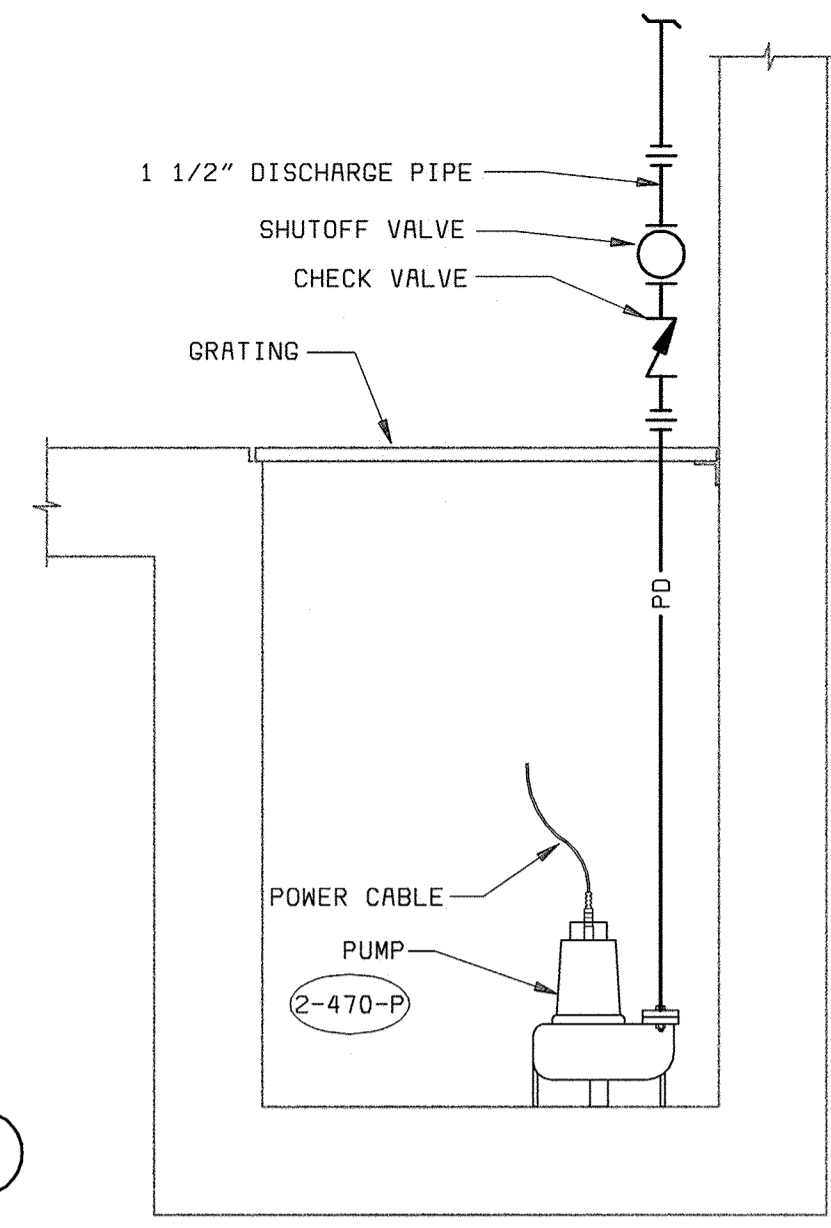
XREF 58472-104-PC-H-Z0000000TR  
XREF 58472-101-N-100001HRH  
058472\_3  
F058472R

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> 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	02/06/04 06/12/01	CONFORMED TO CONSTRUCTION RECORDS ADDENDUM #1	RHH RJR RJR [Symbol]	NO. BY CK APP	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  SHEET 60 OF 88  P2
		58472-104-PC-PB-Z00000009 05/19/2005 08:23:10											





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



**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:			

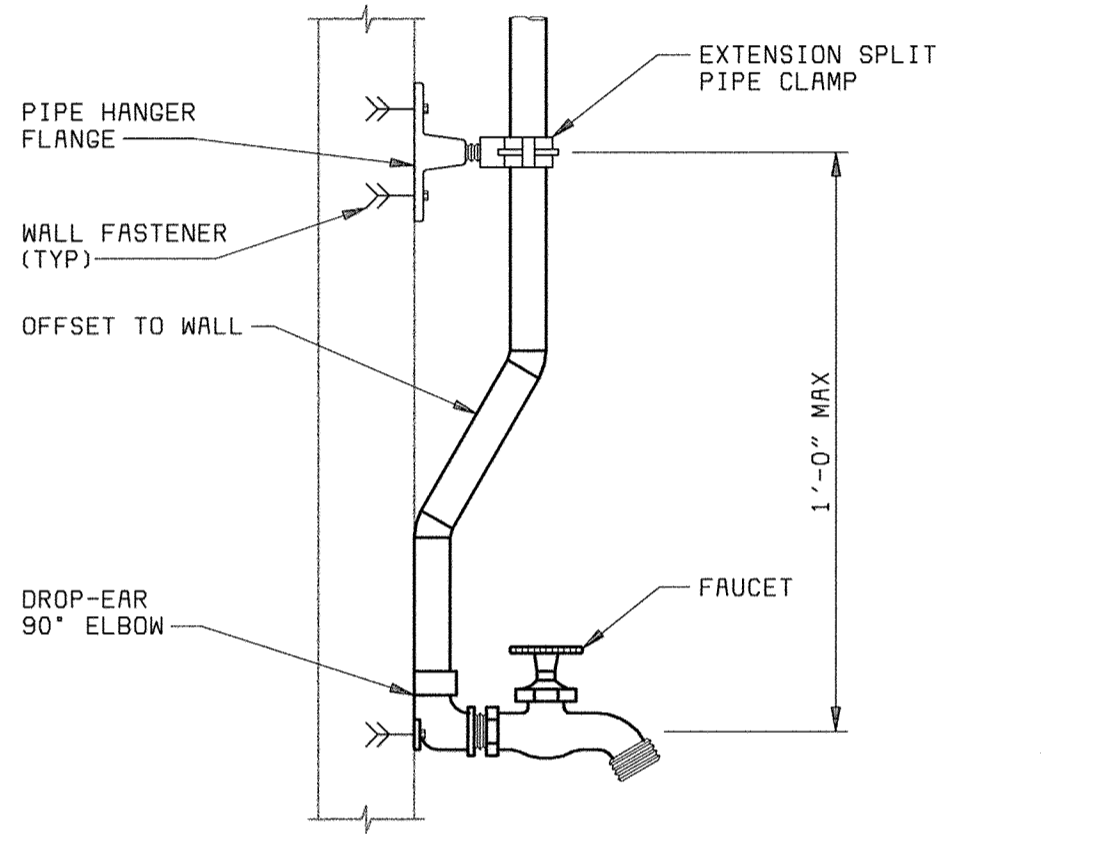
SUMP AND SEWAGE PUMP SCHEDULE															
UNIT NO	LOCATION	TYPE	CAPACITY (GPM)	TOTAL HEAD (FT)	MAX SPEED (RPM)	MOTOR HP	POWER SUPPLY VOLTS/PHASE	DISCHARGE SIZE (IN)	SUMP LEVELS (FT)*				MFR/MODEL	CONTROL TYPE	REMARKS
									OFF	LEAD	LAG	HWA			
1-599-P	AUXILIARY PUMP STATION	SUBMERSIBLE EFFLUENT 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.

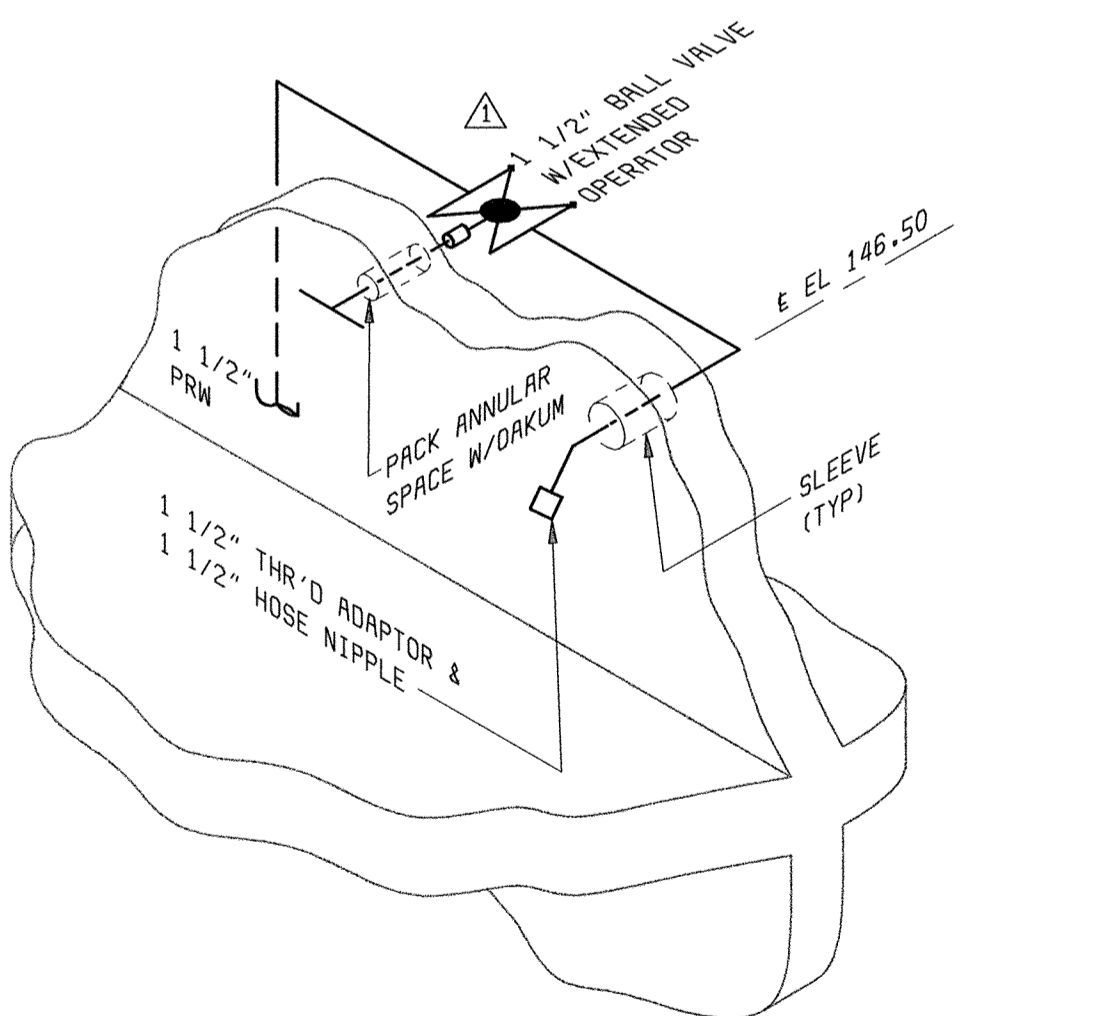
Control Types: 1S Submersible Simplex "Piggypack" Arrangement  
2S Submersible Medium Duty Simplex Arrangement with Control Panel

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

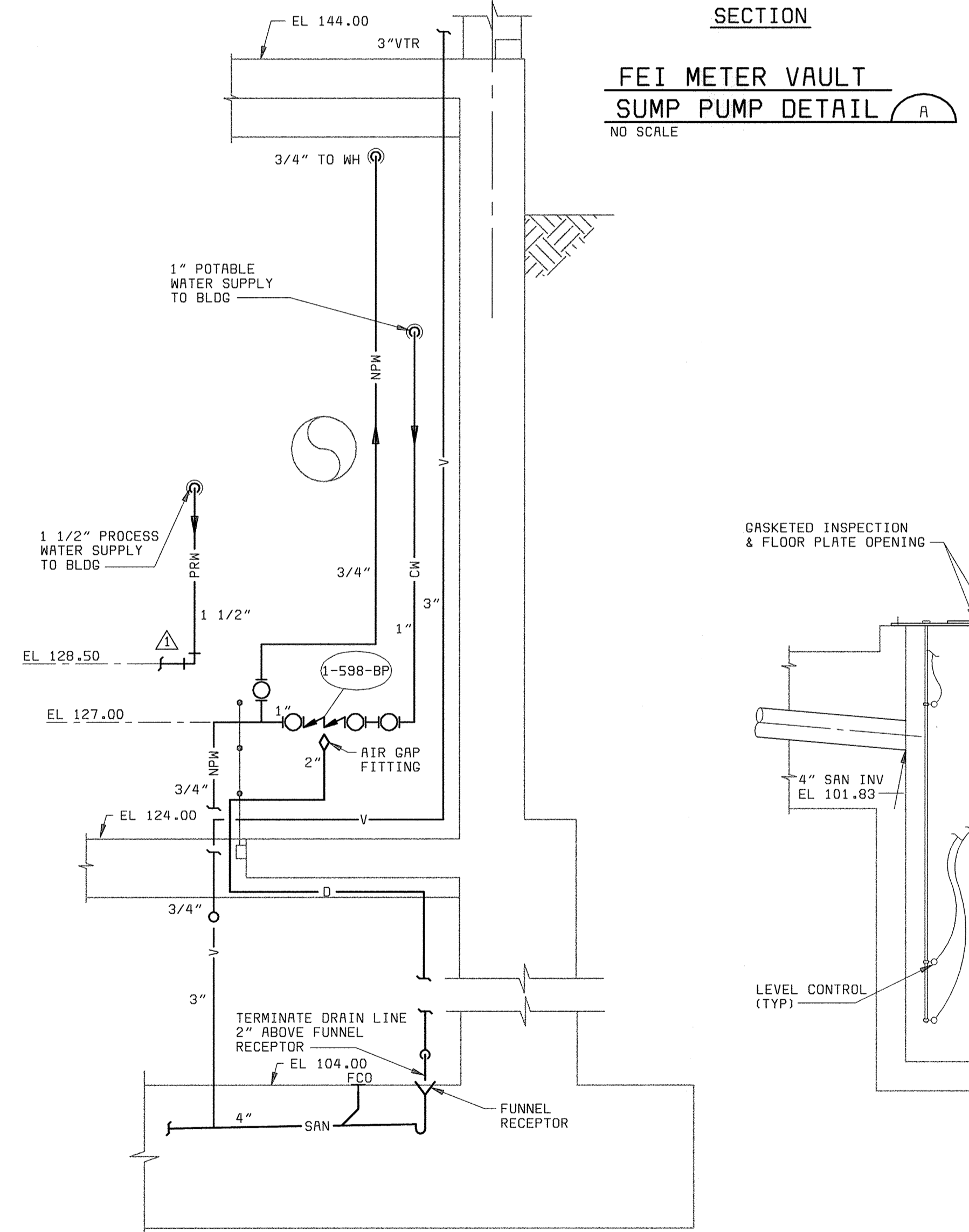
BACKFLOW PREVENTER SCHEDULE						
UNIT NO	SERVICE	BODY SIZE IN	MAXIMUM FLOW GPM	MAXIMUM DELTA P PSI	MANUFACTURER MODEL	REMARKS
1-598-BP	NONPOTABLE WATER SUPPLY (APS)	1	30	10	WATTS SERIES 909	REDUCED PRESSURE TYPE
3-599-BP	NONPOTABLE WATER SUPPLY (SO)	2	52	10	WATTS SERIES 909	REDUCED PRESSURE TYPE
REMARKS: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



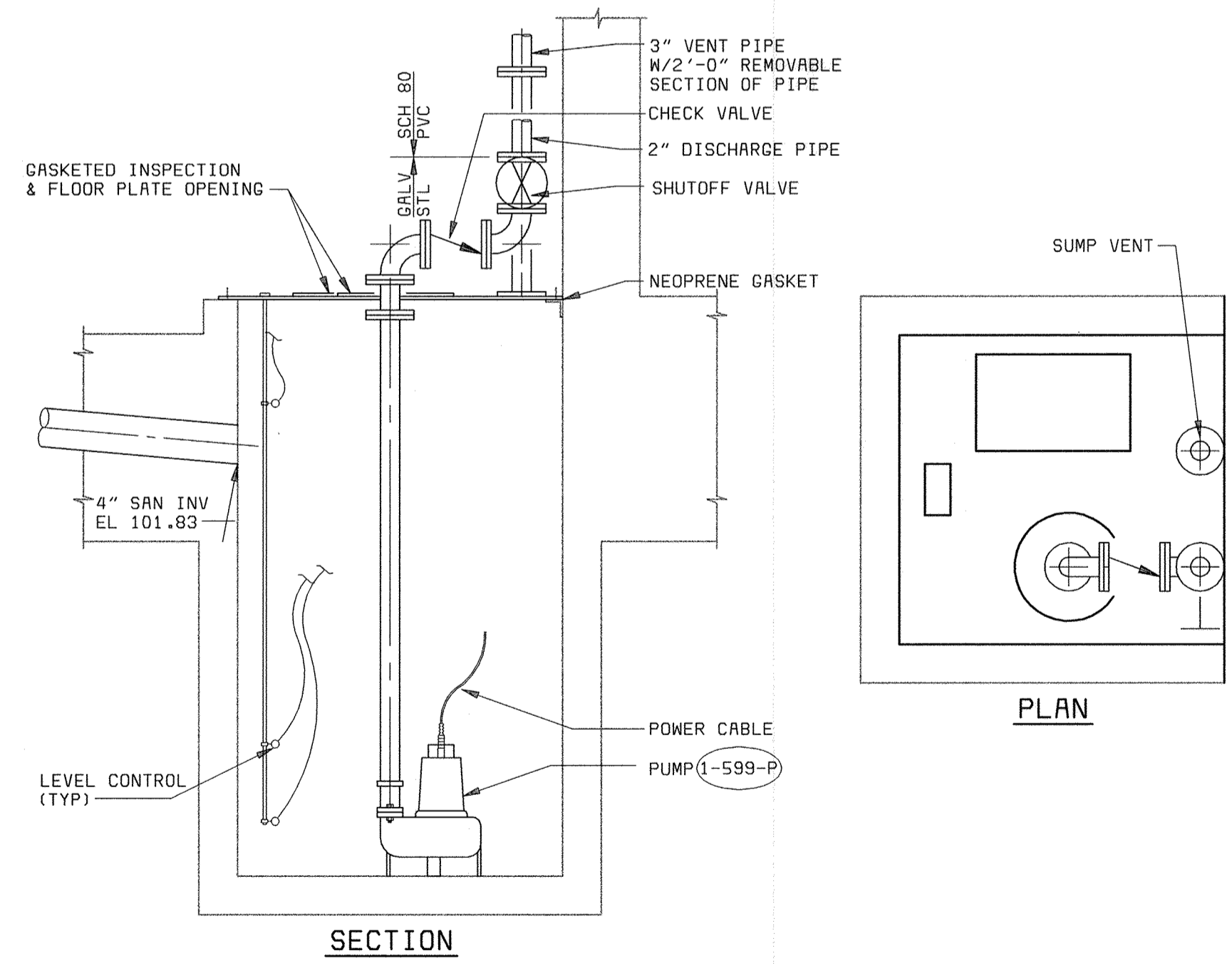
**HOSE FAUCET PIPE MOUNTING DETAIL**  
NO SCALE



**AUXILIARY PUMP STATION  
HOSE VALVE DETAIL**  
NO SCALE



**AUXILIARY PUMP STATION WATER SUPPLY DETAIL**  
NO SCALE

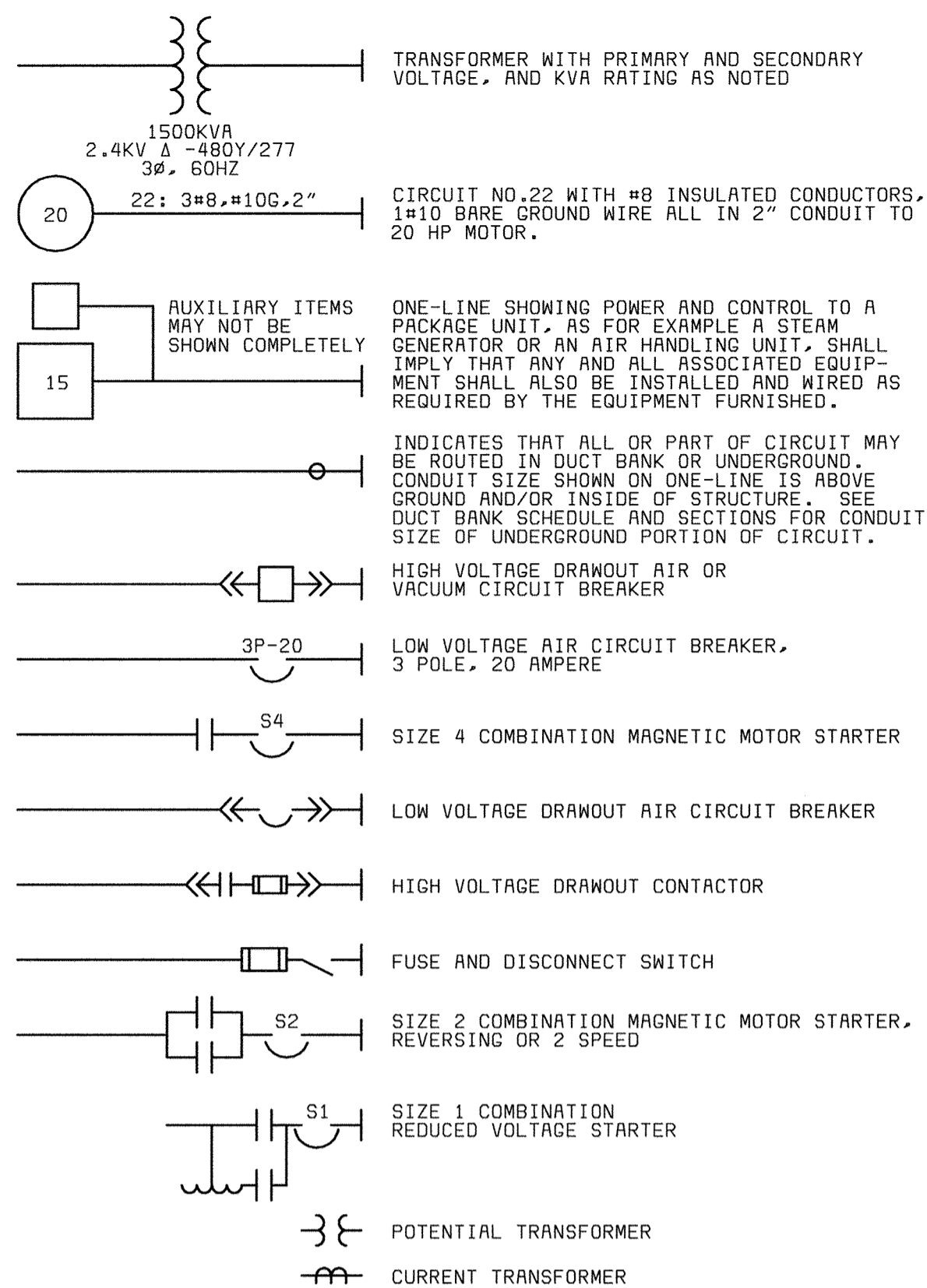


**AUXILIARY PUMP STATION  
SUMP PUMP DETAIL**  
NO SCALE

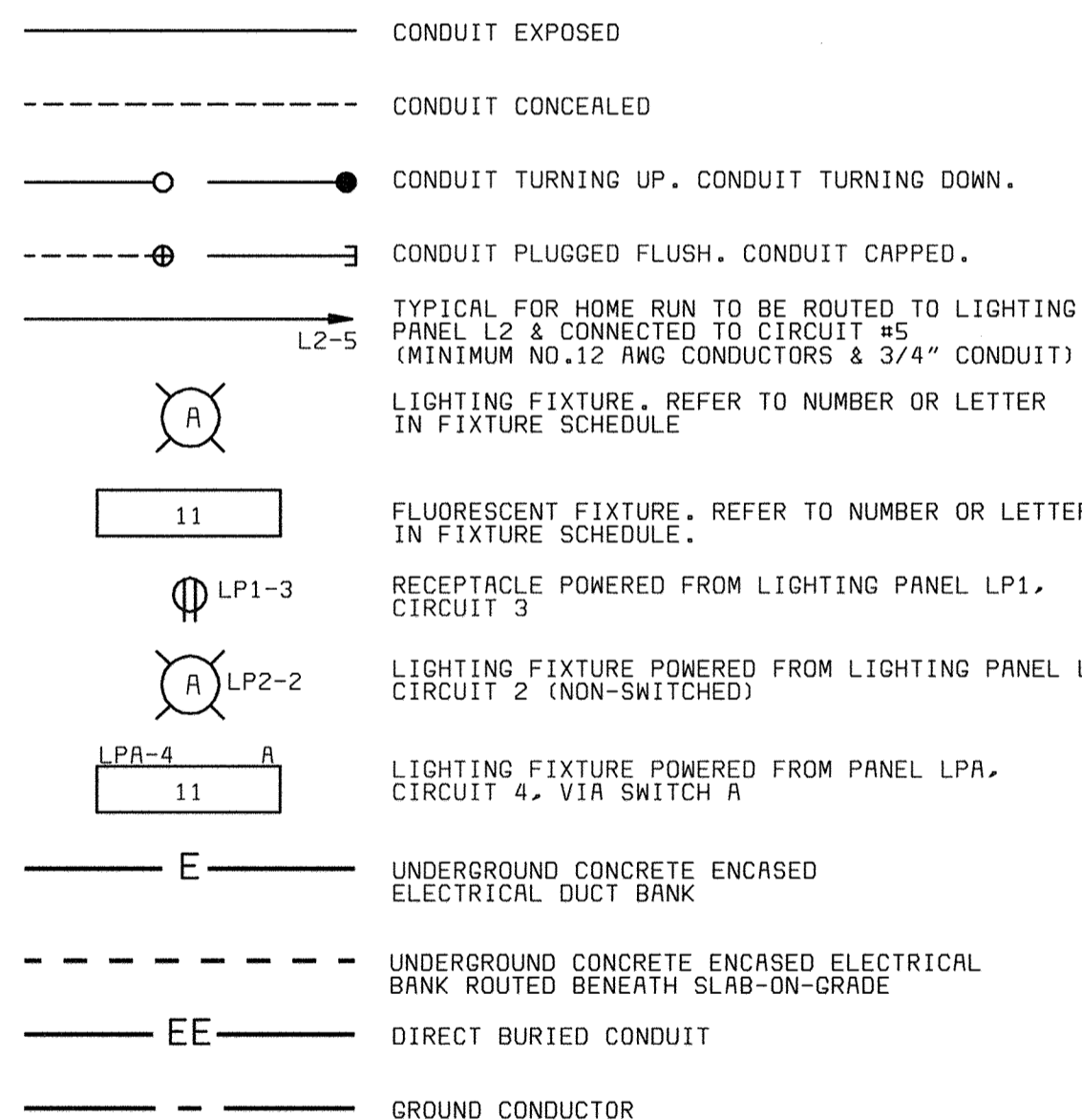
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY MARTIN L. PAPE A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21992	DES: JPC			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
			DRN: JPC	CHK: MLP	DATE: 04/13/01			05/05/05 CONFORMED TO CONSTRUCTION RECORDS REVISIONS AND RECORD OF ISSUE

XREF: 58472-101-YARD-C-2000000TM

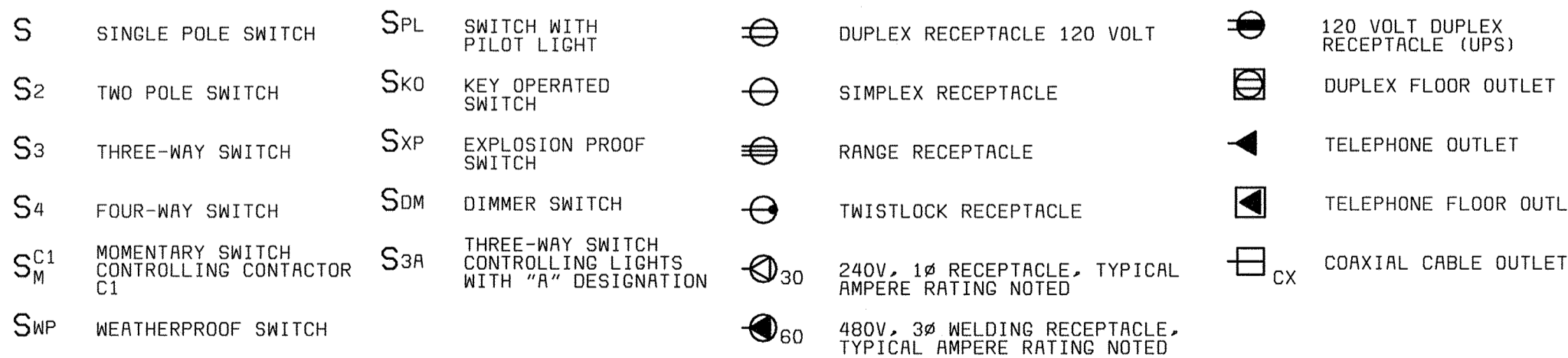
**ONE-LINE DIAGRAM LEGEND**



**CONDUIT & WIRING INSTALLATION LEGEND**



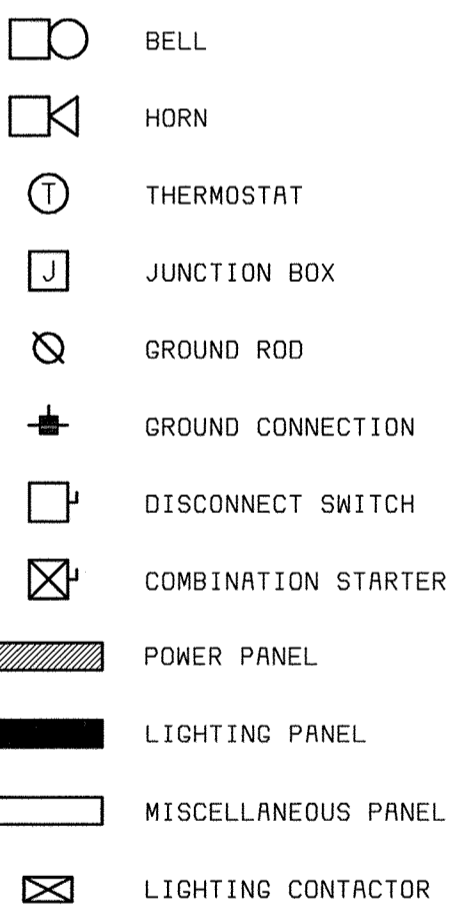
**SWITCH & OUTLET SYMBOLS**



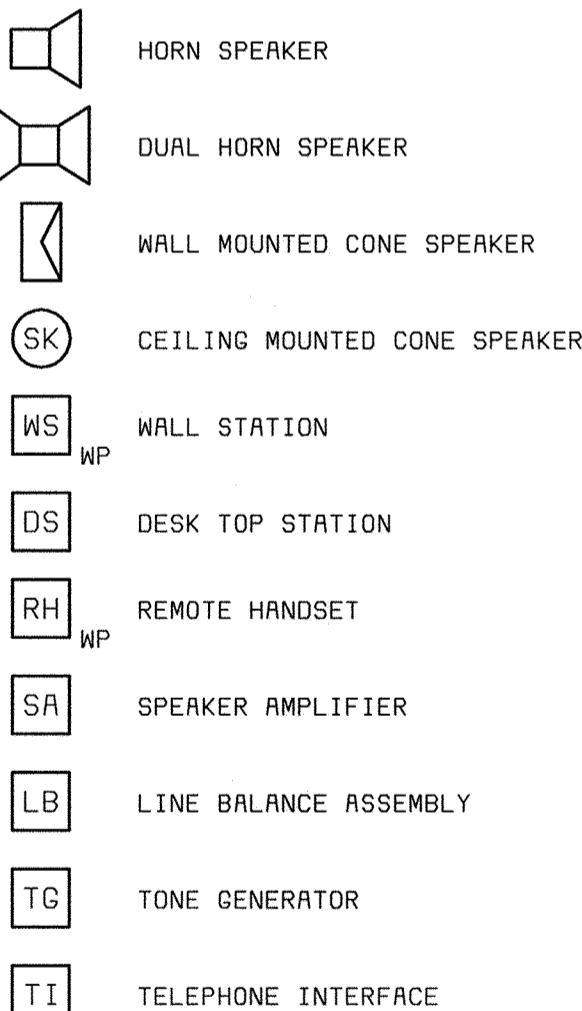
**SCHEMATIC SYMBOLS**



**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
		MPS	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	PRS	PROXIMITY SWITCH
CTM	CYCLE TIMER CLUTCH	PS	PRESSURE SWITCH
CTP	CYCLE TIMER MOTOR	PT	POTENTIAL TRANSFORMER, PROGRAM TIMER
CT/C	CONTROLS TERMINATION PANEL	2P	2 POLE
2/C	2 CONDUCTOR		
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	ELECTRICAL MANHOLE	SPST	SINGLE POLE SINGLE THROW
ES	ELECTRODE RELAY	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
		VS	VOLTMETER SWITCH
K	KEY INTERLOCK	W	WHITE OR WATTS
KV	KILOVOLT	WH	WATTHOUR METER
KVA	KILOVOLT AMPERE	WM	WATT METER
KVAR	KILOVARR	WP	WEATHERPROOF
KW	KILOWATT	X	AUXILIARY RELAY
KWH	KILOWATT HOUR	XFMR	TRANSFORMER
		XP	EXPLOSION PROOF
L	LOW, LEVEL	Y	YELLOW
LA	LIGHTNING ARRESTER	Z	AUXILIARY RELAY
LAN	LOCAL AREA NETWORK	ZS	POSITION SWITCH
LC	LIGHTING CONTACTOR	ZSS	ZERO SPEED SWITCH
LDA	LOCAL-ON-OFF		
LDR	LOCAL-OFF-REMOTE		
LP	LIGHTING PANEL		
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**

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

**ELECTRICAL**  
**LEGEND AND ABBREVIATIONS**

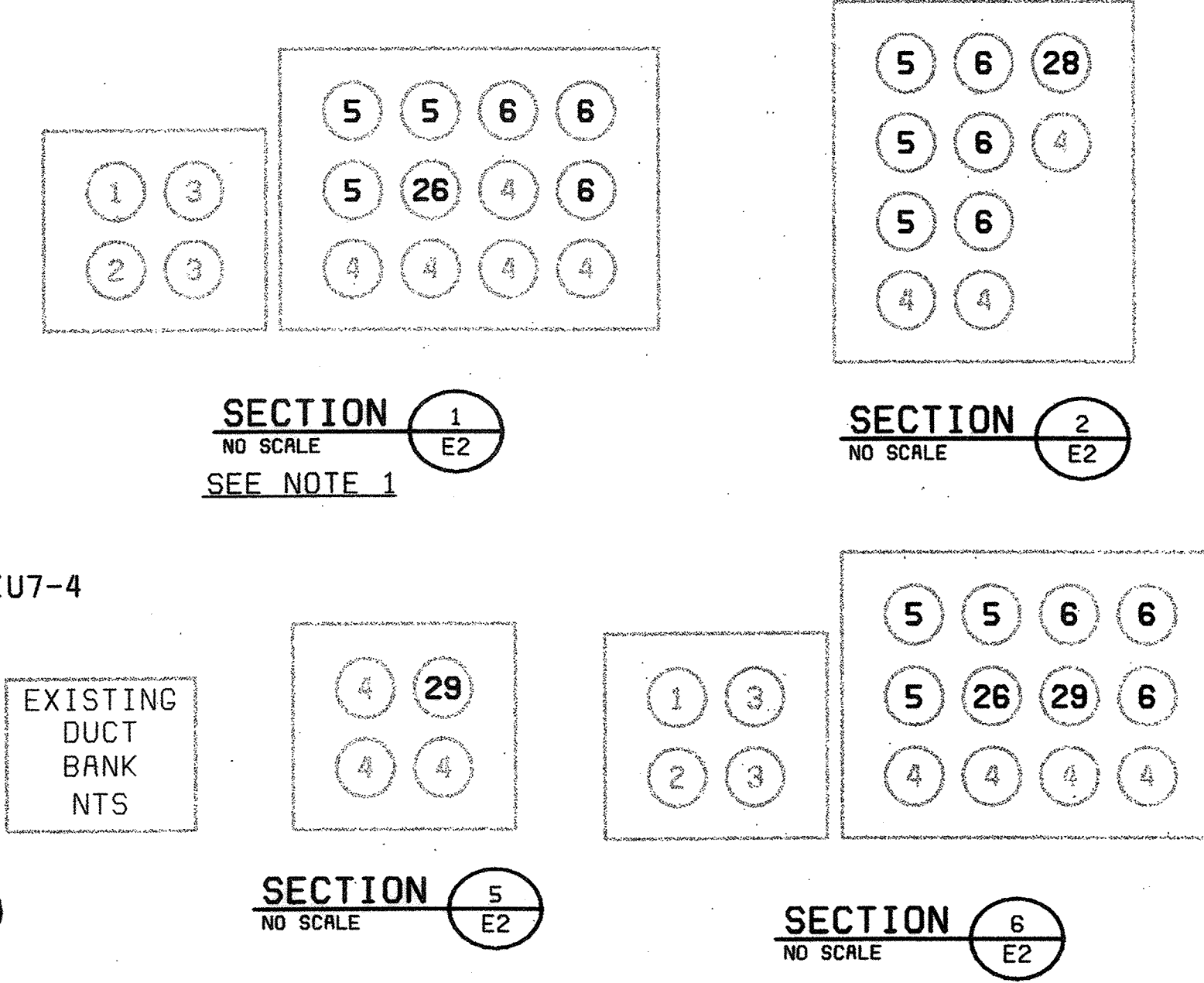
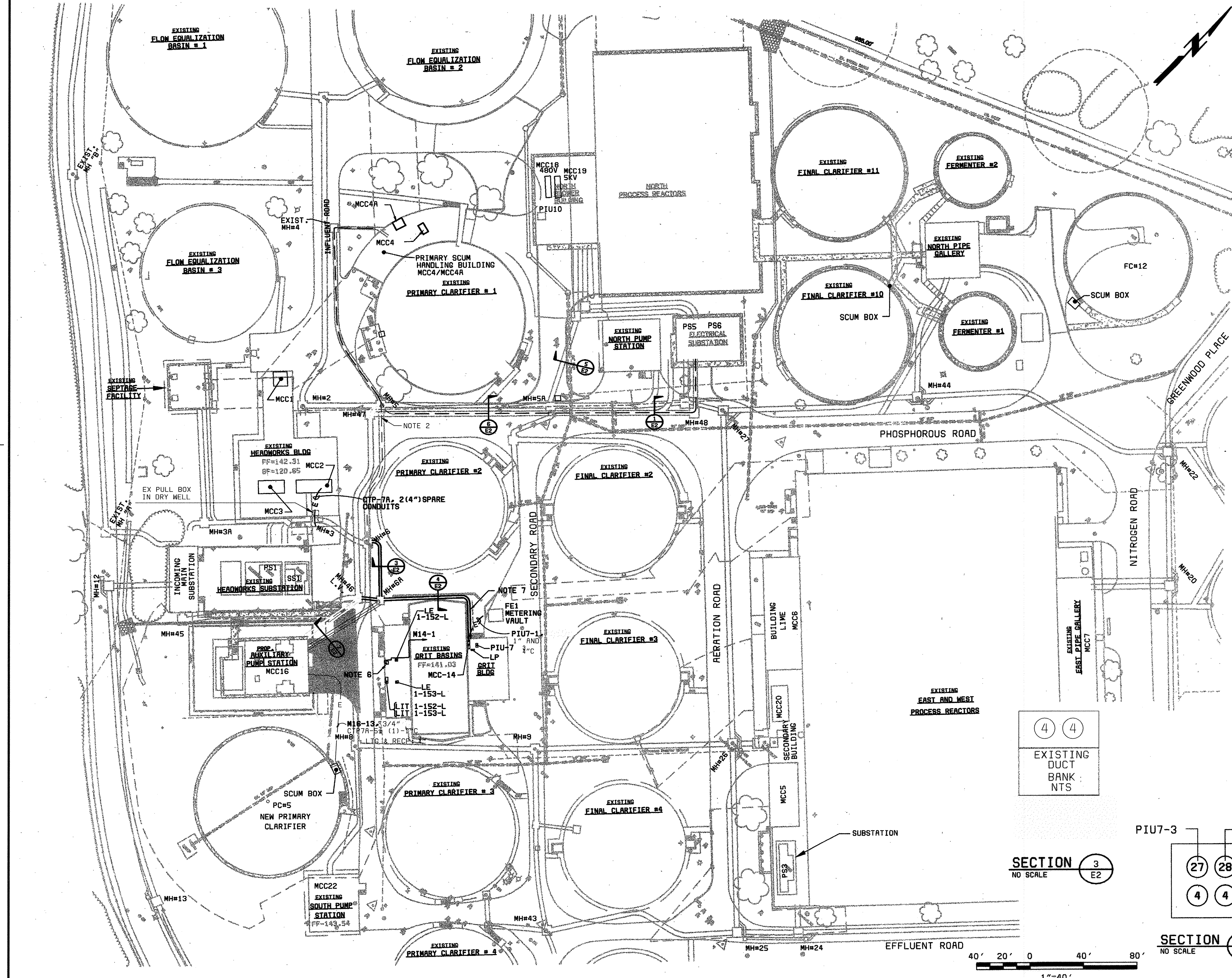
LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
PRELIMINARY AND PRIMARY TREATMENT EXPANSION  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3840  
HOWARD COUNTY, MARYLAND

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 S-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-SG IN PLANT PUMP STATION	EXTEND FROM NORTH BLOWER BUILDING
16	3"	M13-SG ODR CONTROL BLOWER	
17	3"	M13-SG 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"	M13-31	
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	

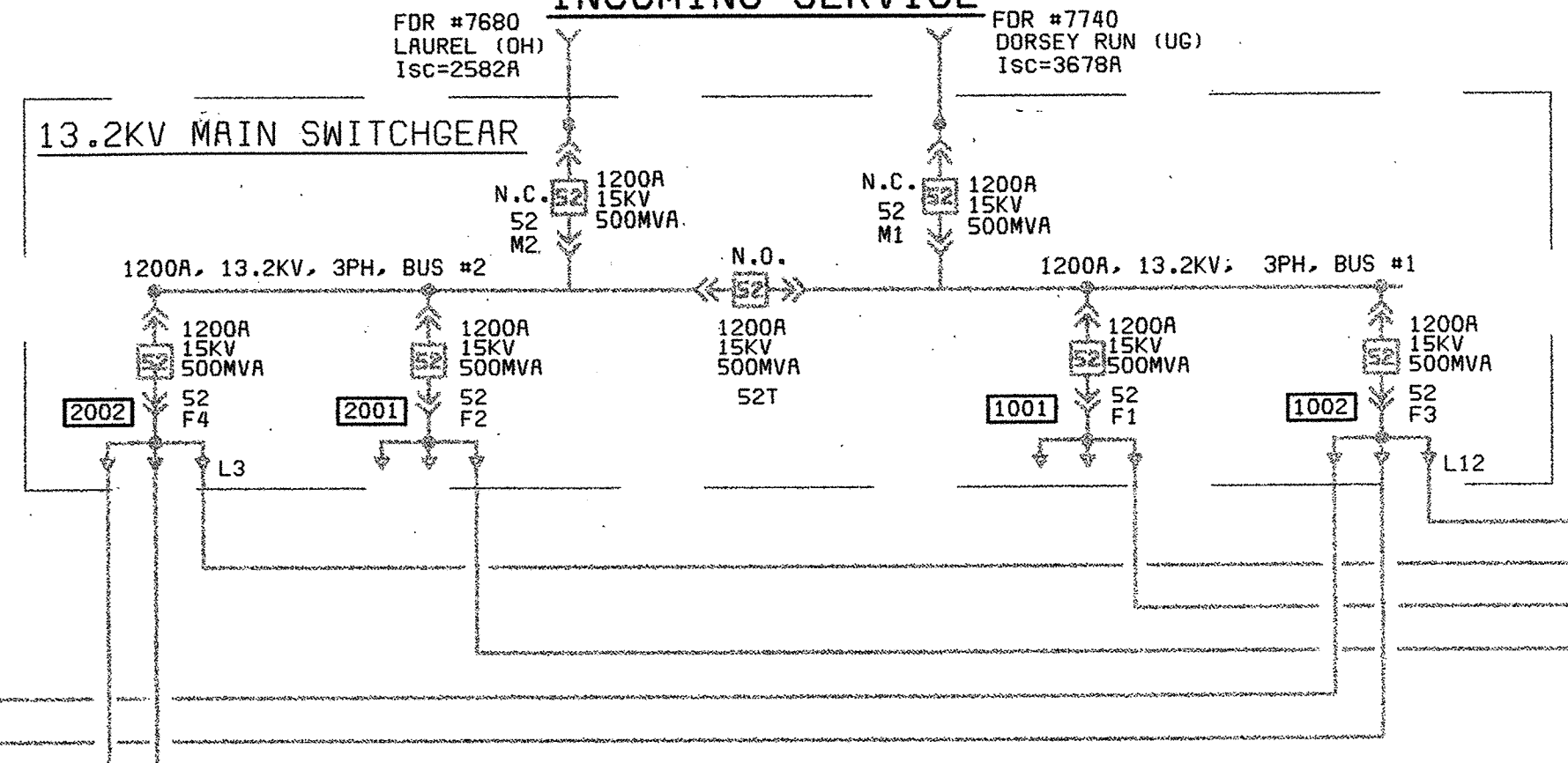


DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	LACH ELECTRIC CORPORATION Baltimore, Maryland	BLACK & VEATCH Gaithersburg, Maryland REG. PROF. ENGR. DATE	DES: L.K.	DRN: M.F.F.	CHK: WB	DATE: 2/19/01	02/06/04 CONFORMED TO CONSTRUCTION RECORDS RHH/RJR/RJR	NO. BY CK APP	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
			SHEET 63 OF 88	E2							

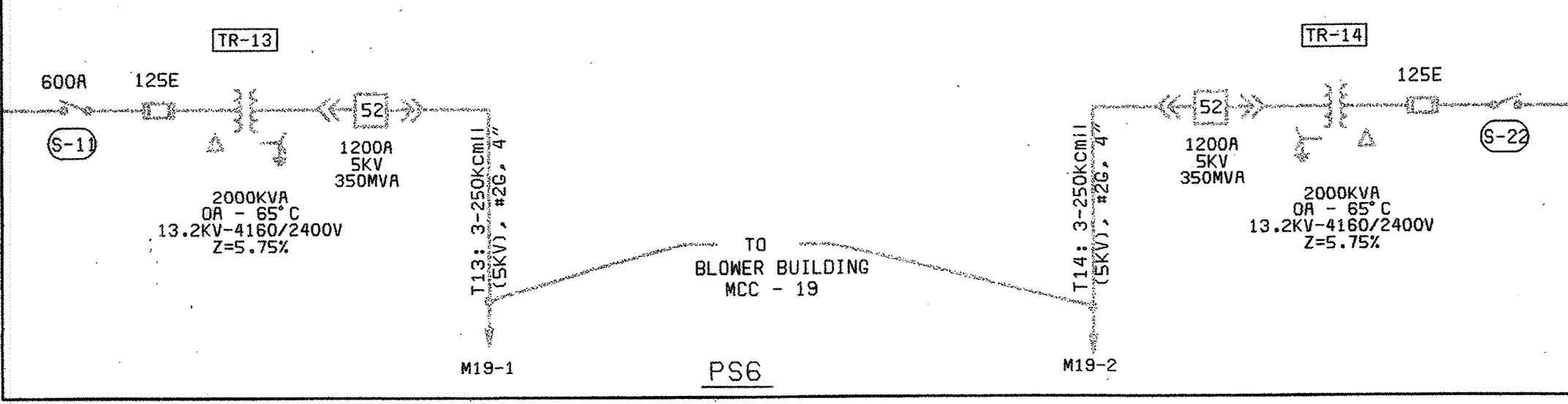
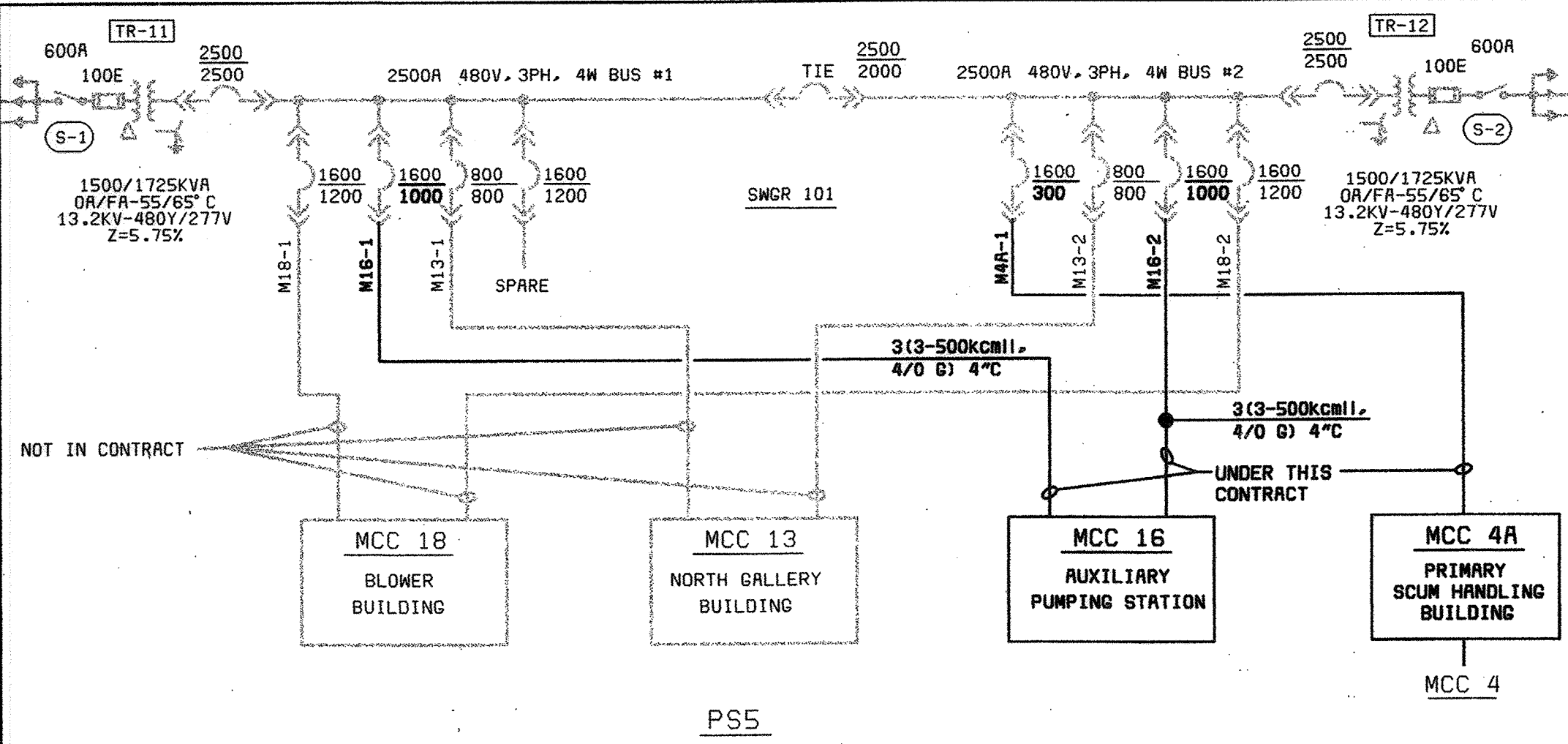
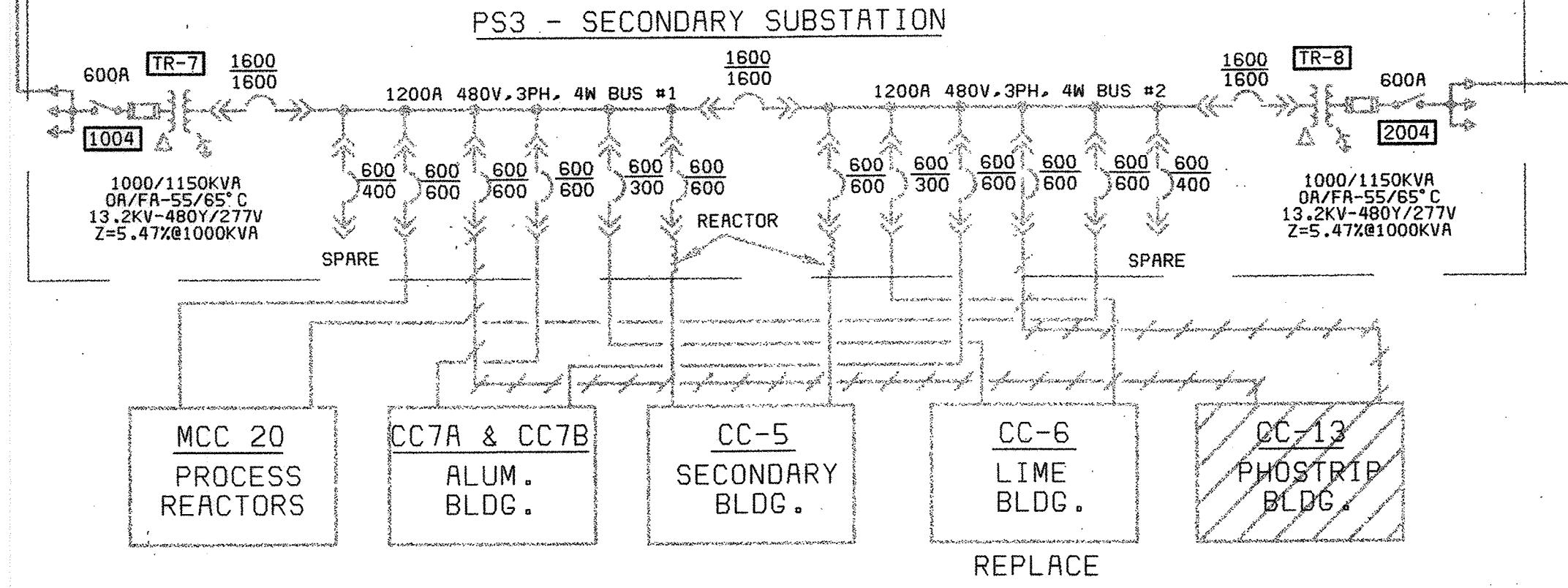
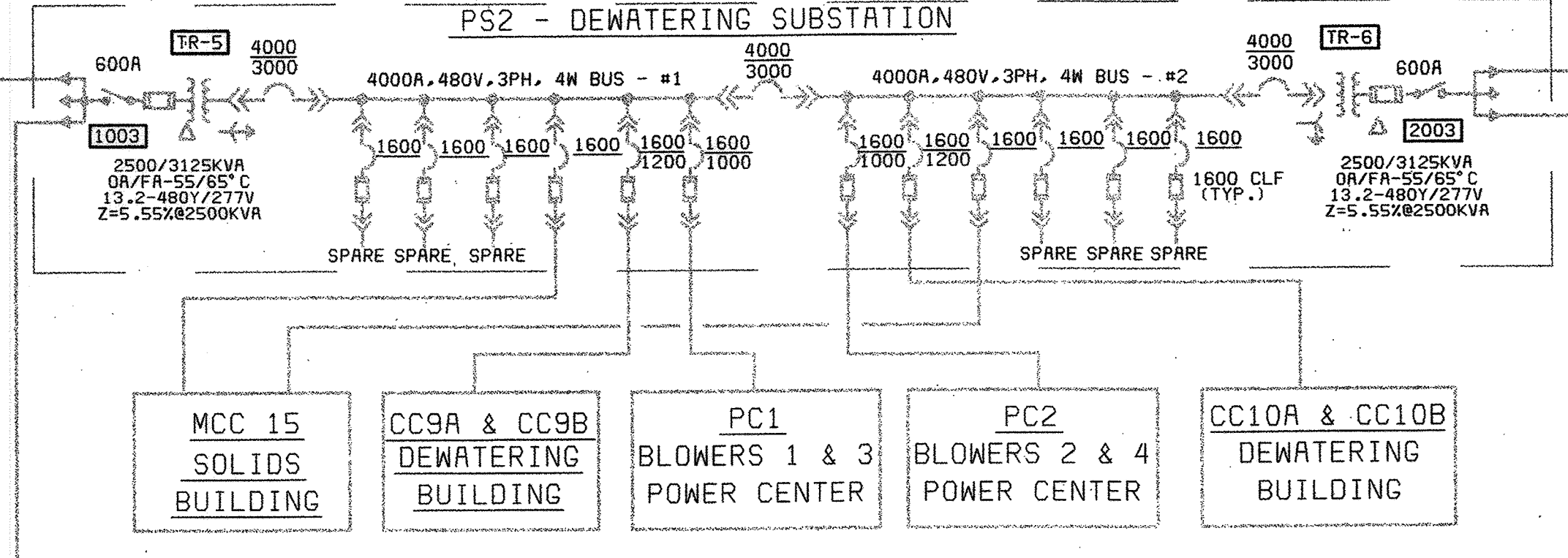
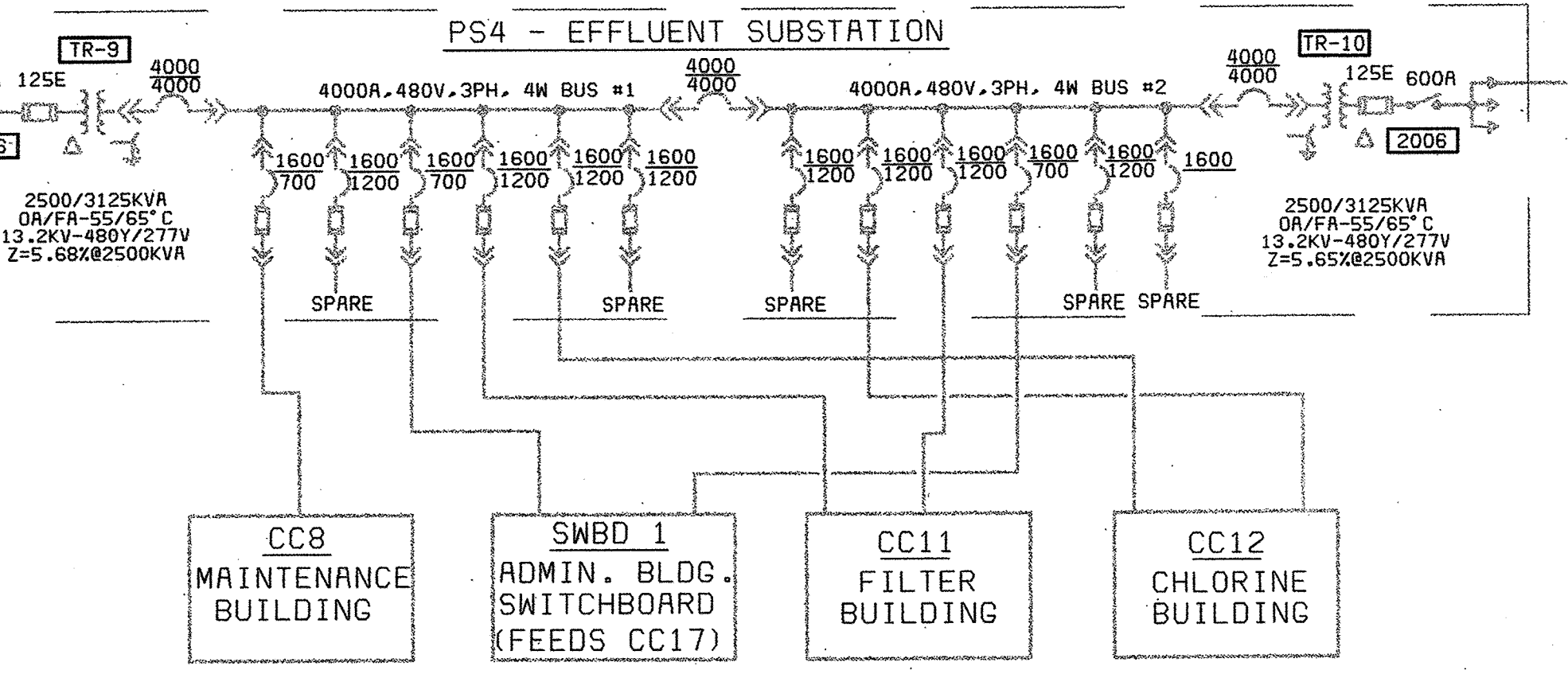
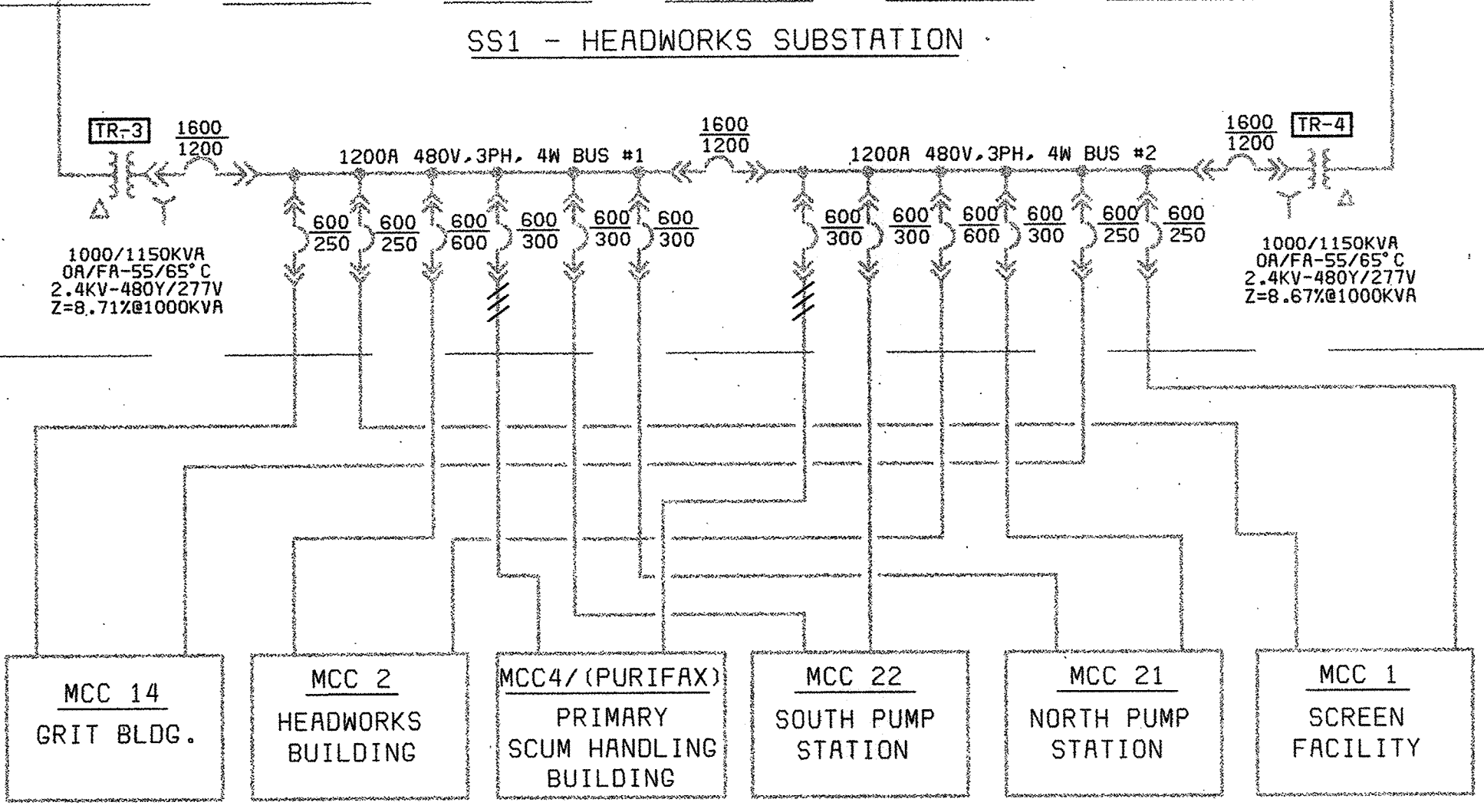
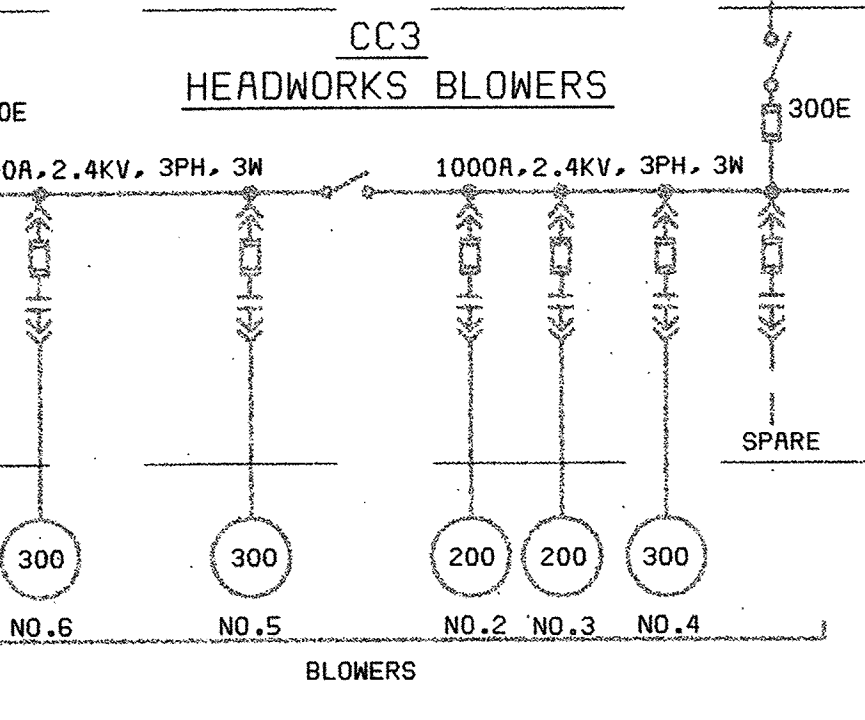
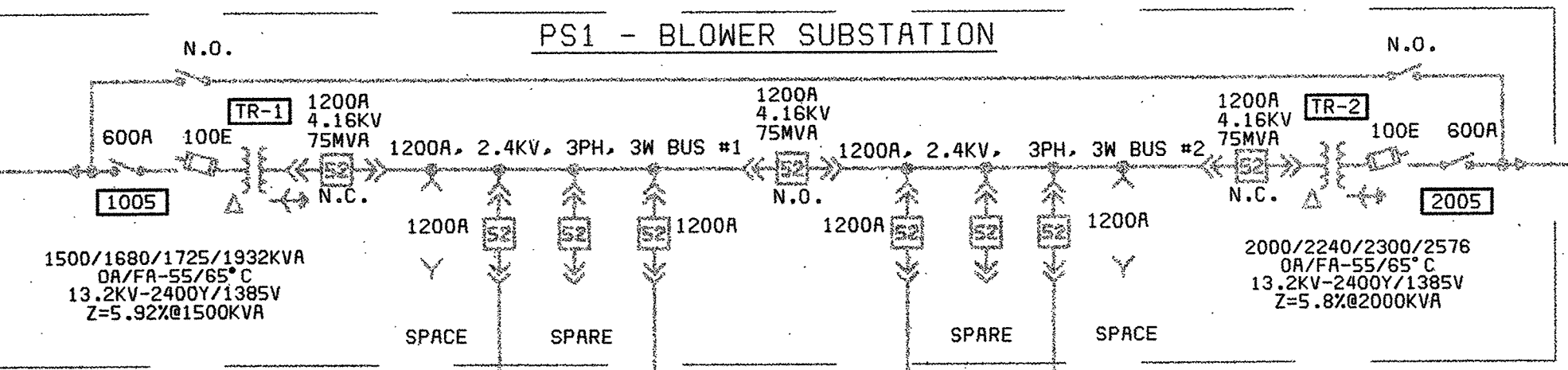
E2.TIF



BALTIMORE GAS & ELECTRIC 13.2 KV  
INCOMING SERVICE



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



DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND



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	
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

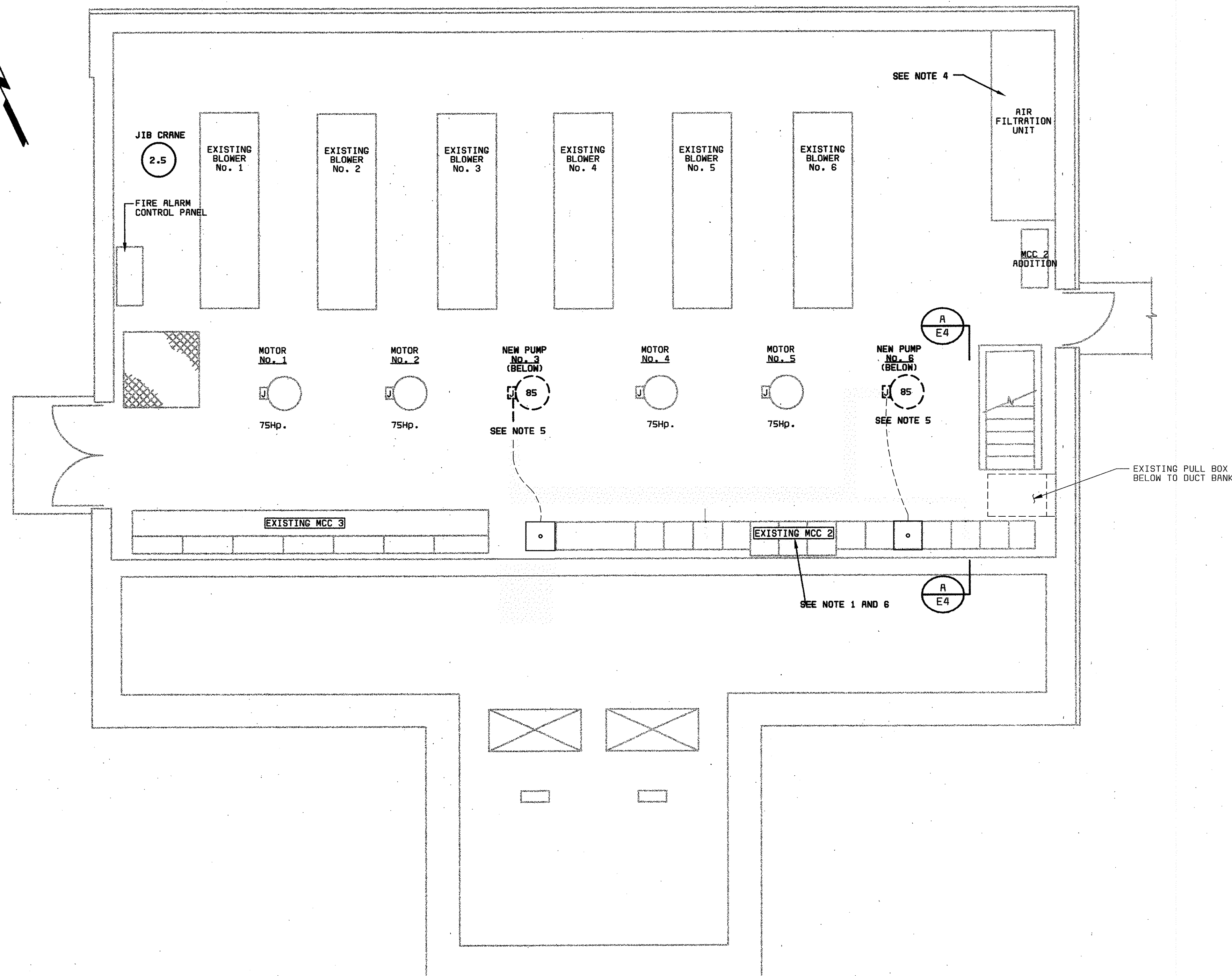
SCALE  
AS  
SHOWN  
SHEET  
64 OF 88  
E3

E3.TIF

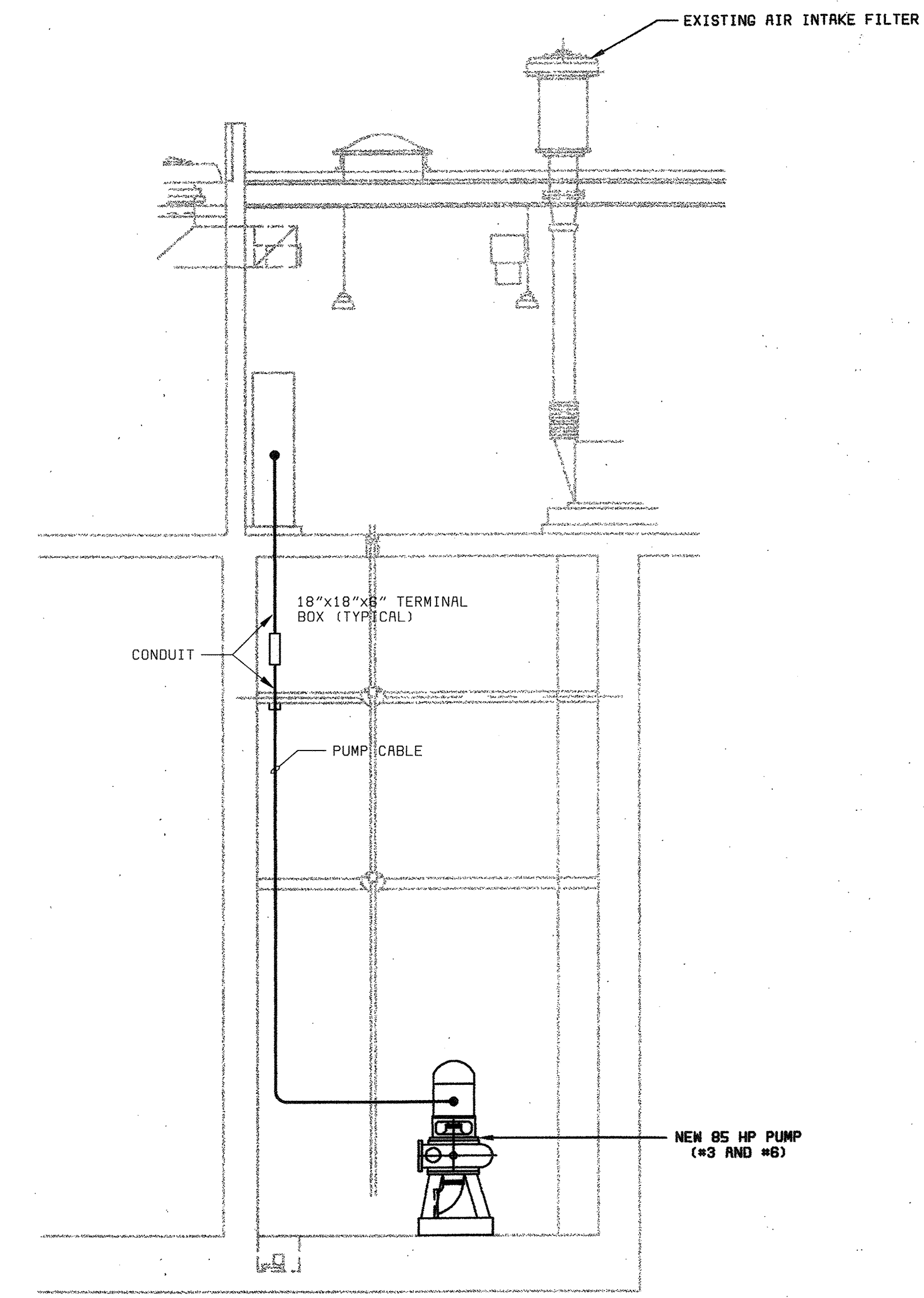
058472\_3  
F058472A



- 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"

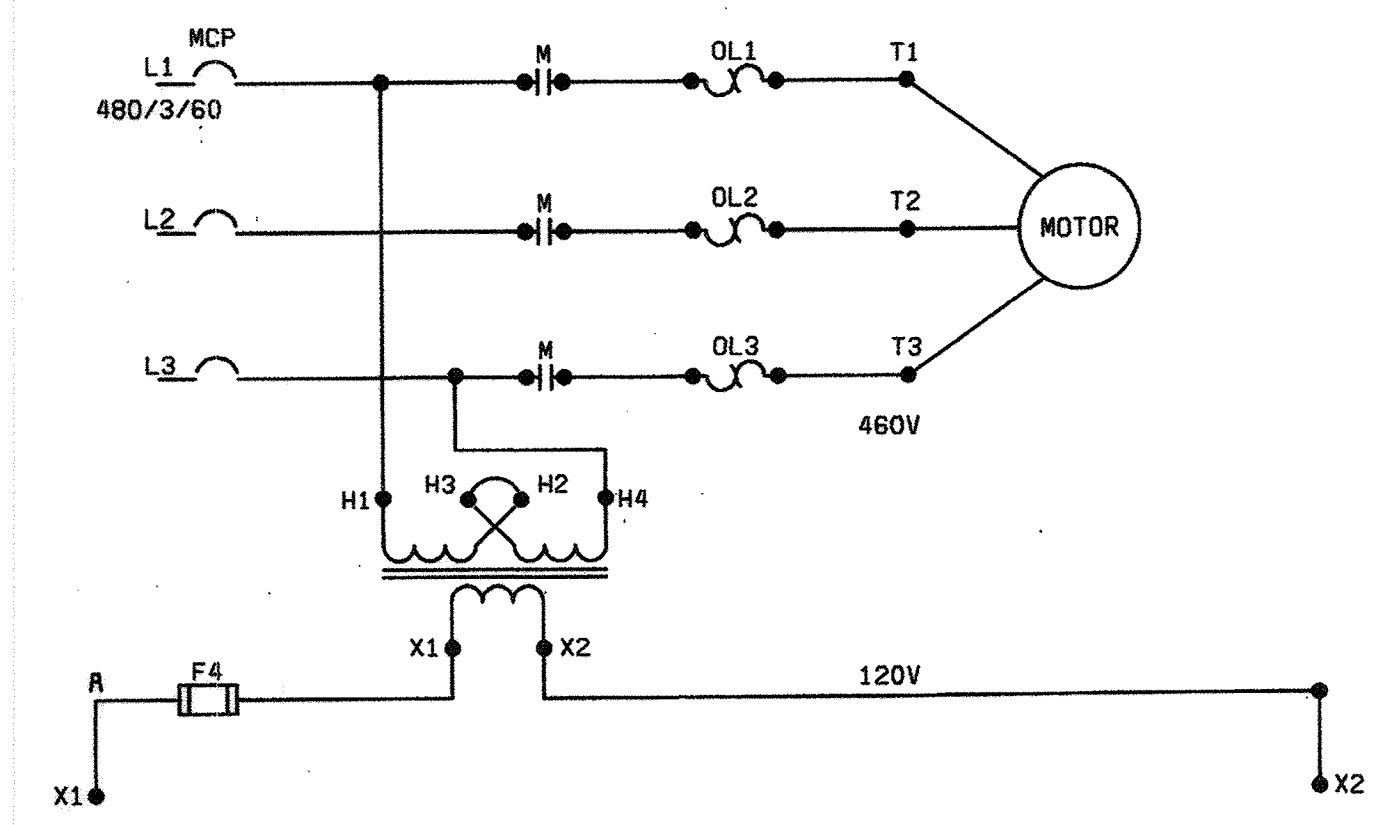
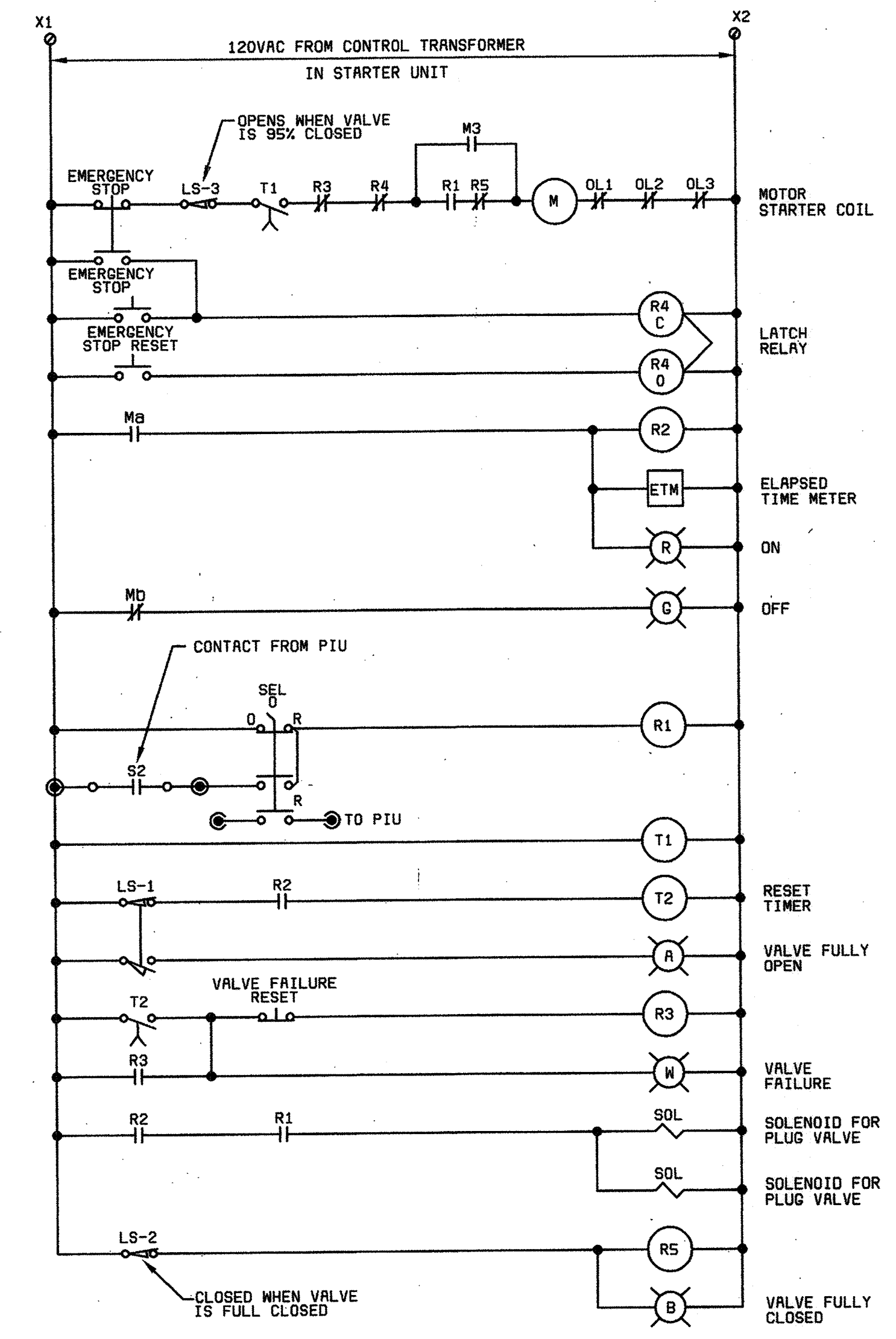
E4.TIF  
058472\_3  
FD58472A

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

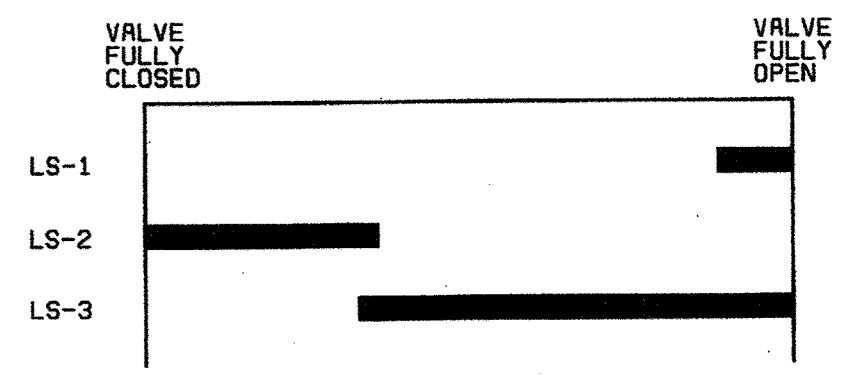




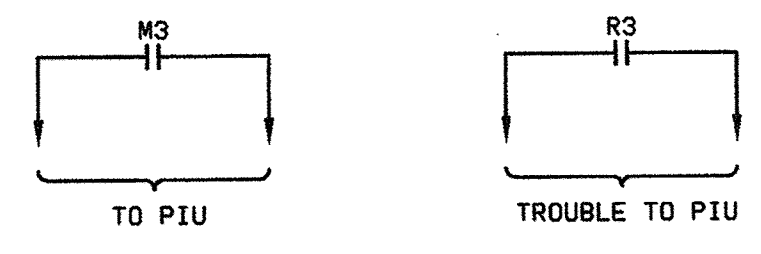
**NOTES:**  
 1. FOR PUMP 3 AND 6 PROVIDE AUXILIARY 24 VOLT CONTROL TRANSFORMER LEAK DETECTION RELAY AND HIGH TEMPERATURE ALARMS, EACH WITH SEPERATE WHITE ALARM LIGHTS, CONTROL RELAYS, RESET BUTTONS AND DRY CONTACTS WIRED TO TERMINAL BLOCKS IN THE MCC.



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



**CAM OPERATED  
 LIMIT SWITCHES**



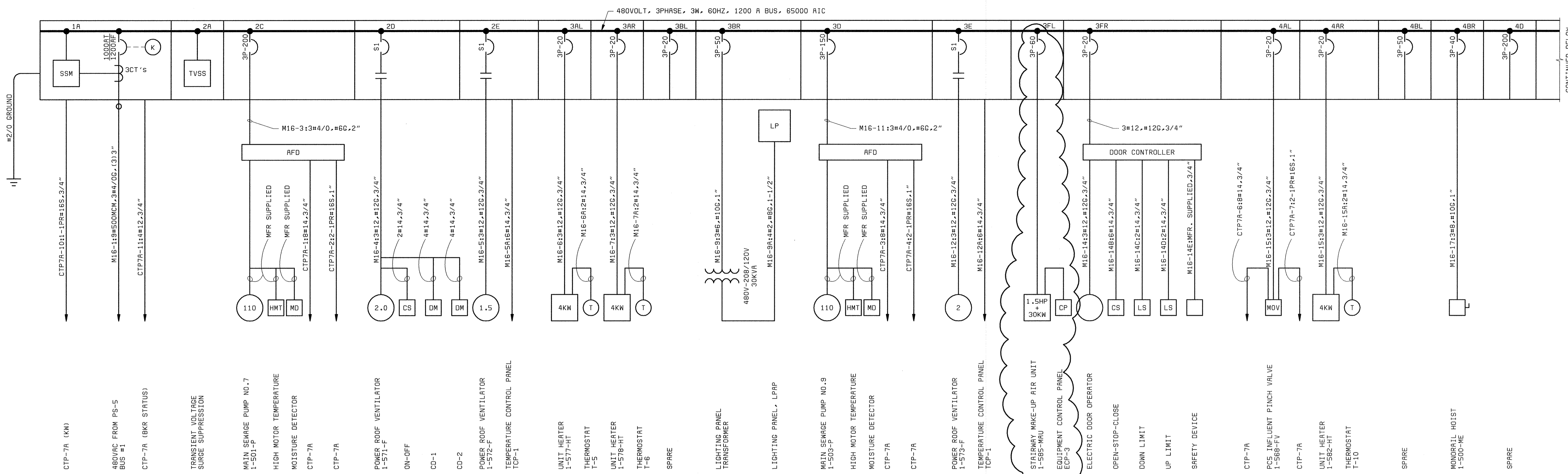
**TYPICAL CONSTANT SPEED  
 PUMPING UNIT NO. 3 & 6**

SEE NOTE 1

EG.TIF

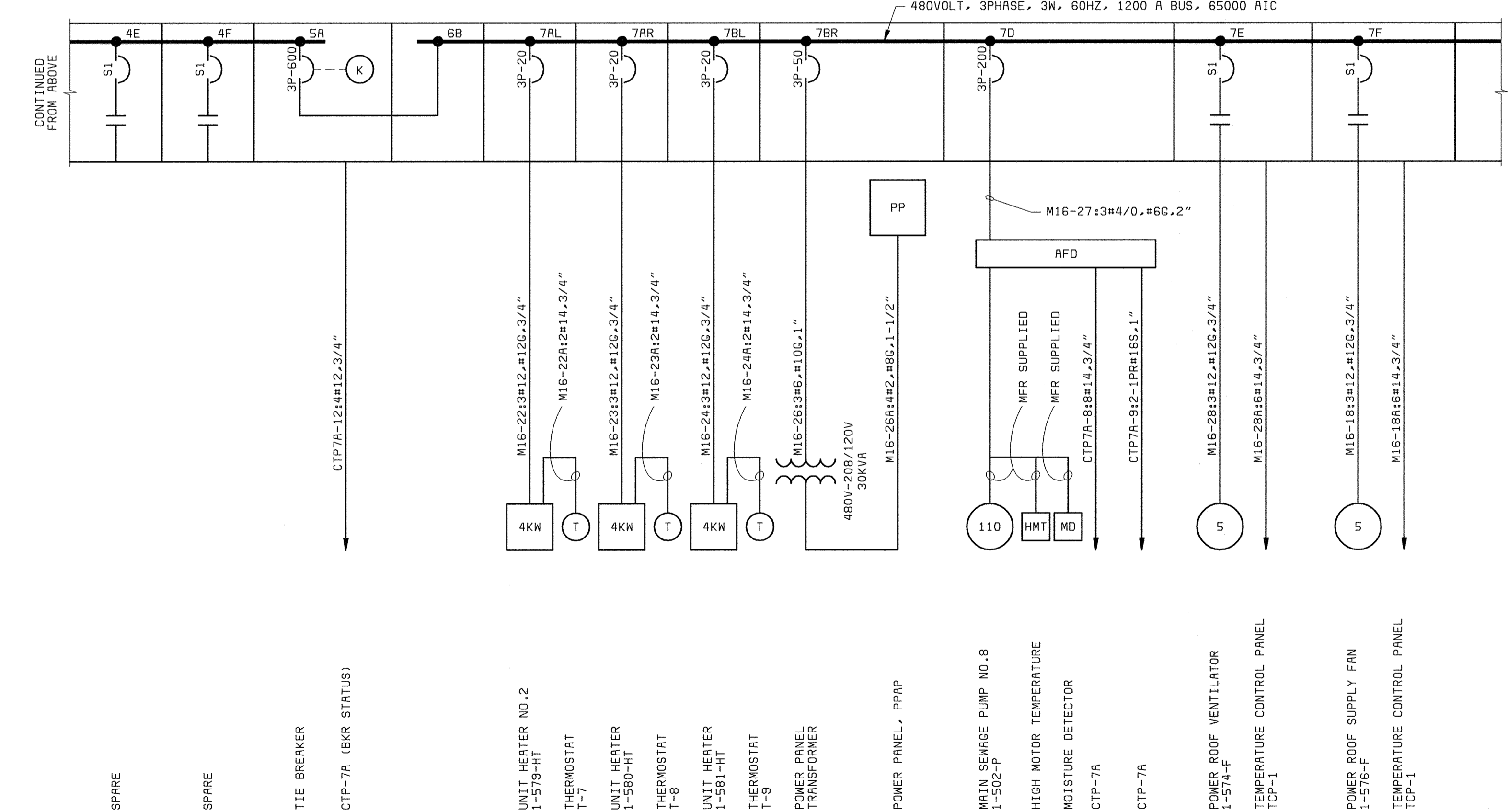
058472.3  
 F058472A

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES DATE	<b>LACH ELECTRIC CORPORATION</b> Baltimore, Maryland	<b>BLACK &amp; VEATCH</b> 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

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



MCC16 ONE-LINE DIAGRAM (CONTINUED)

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
DATE: 2/19/01	8/28/01	ADDED 1-585-MAU		TDH	GNS
	DATE	REVISIONS AND RECORD OF ISSUE		NO.	BY

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

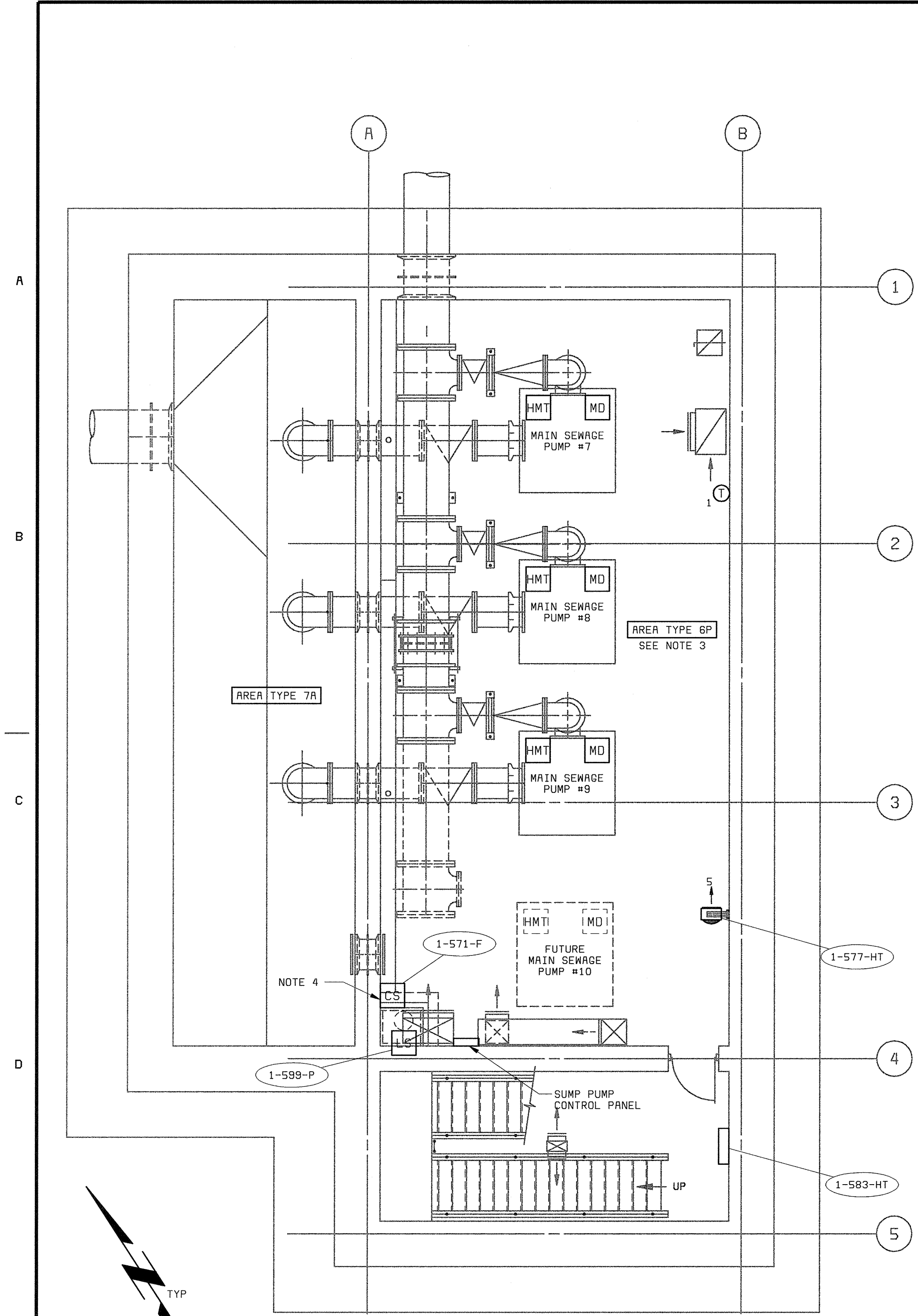
SCALE AS SHOWN

SHEET 68 OF 88

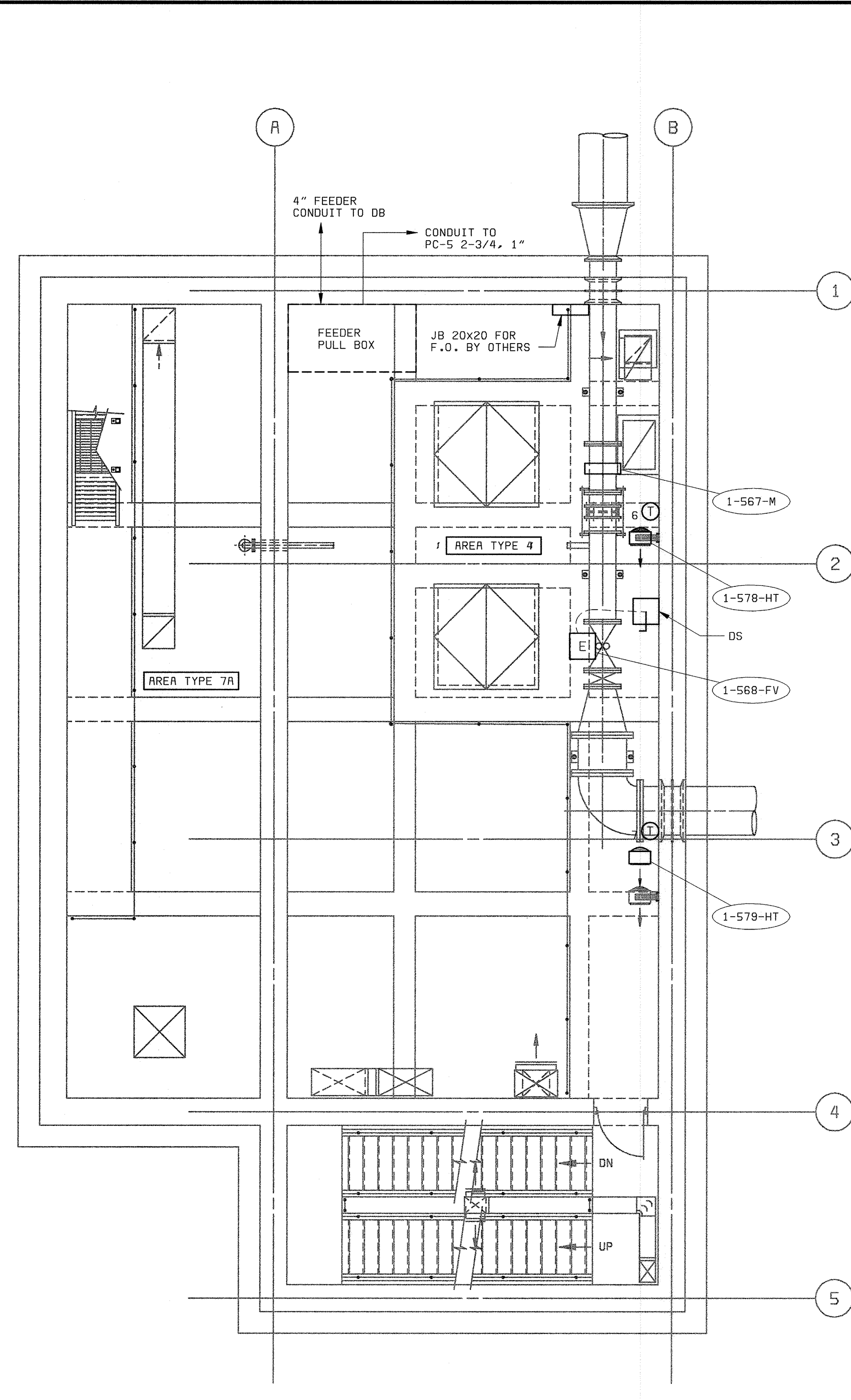
E7



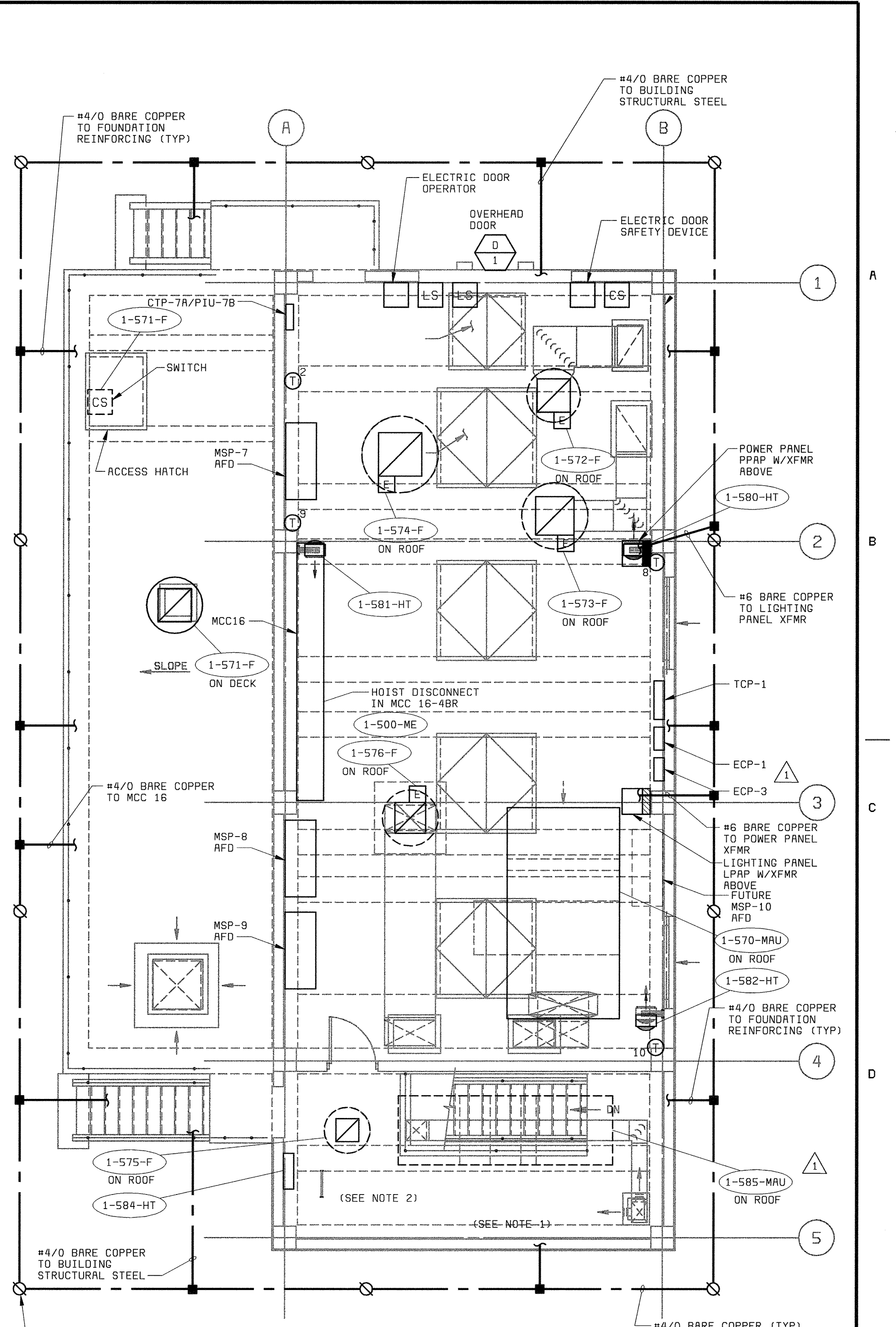




**LOWER LEVEL PLAN**  
3/16" = 1'-0"



**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

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

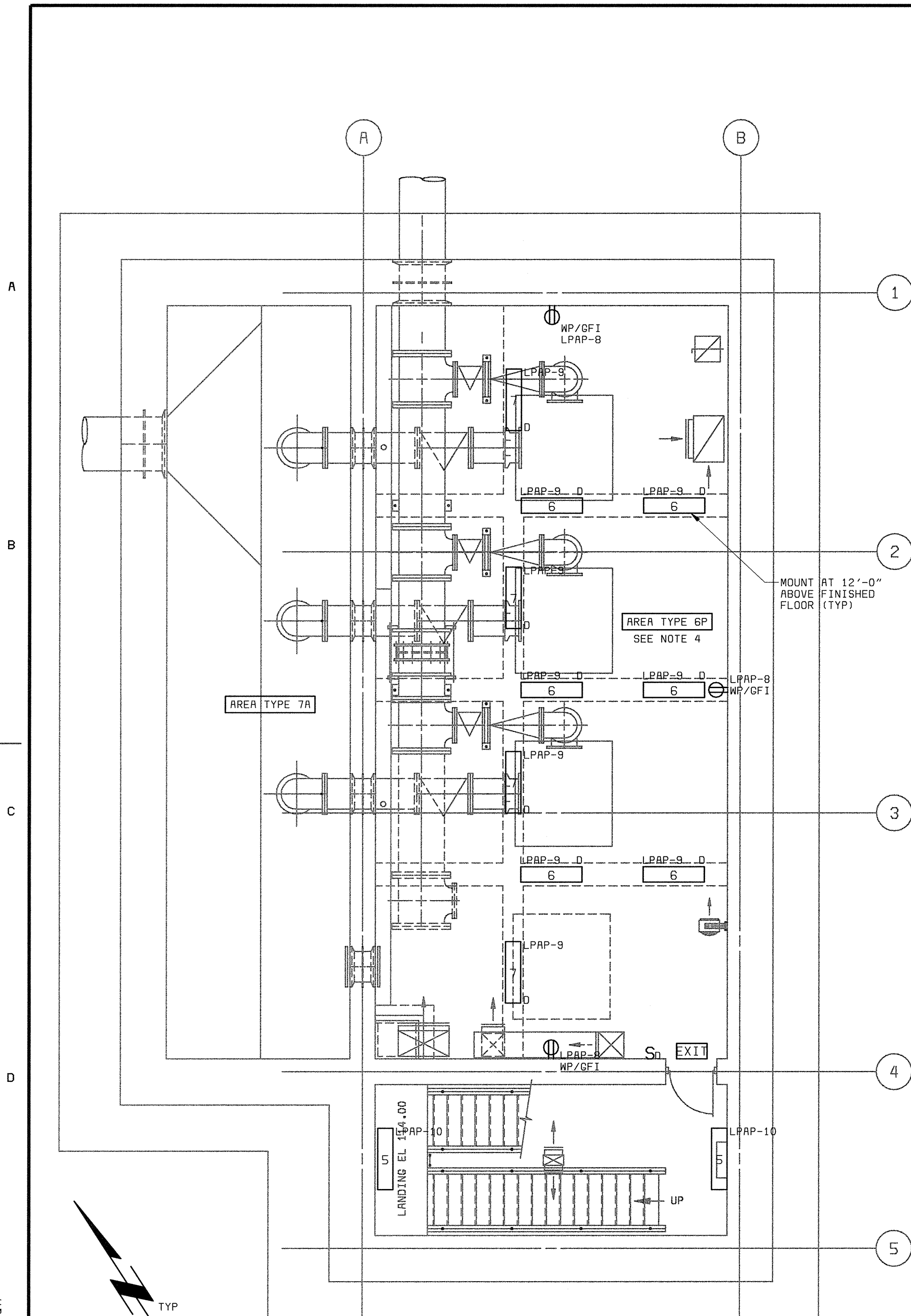
DES: MEP					
DRN: MEP					
CHK: JTF	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH/RJR/RJR	
	8/28/01	ADDED 1-585-MAU, MOVED 1-575-F.		TDH/GNS	
DATE: 4/13/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK APP

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

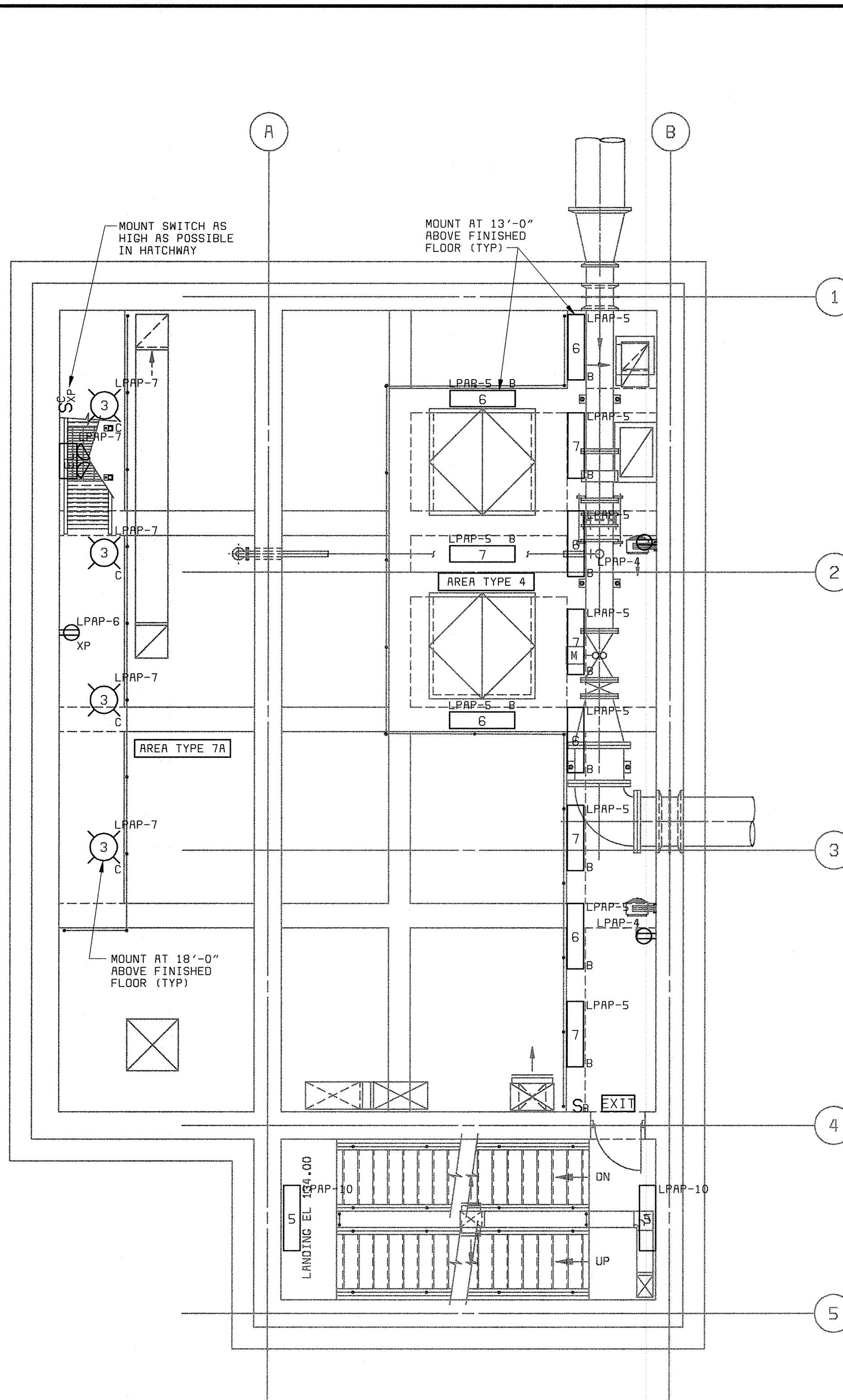
**LITTLE PATUXENT WATER RECLAMATION PLANT  
ADDITION NO. 6  
PRELIMINARY AND PRIMARY TREATMENT EXPANSION**  
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3840  
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN  
SHEET  
70 OF 88  
**E9**

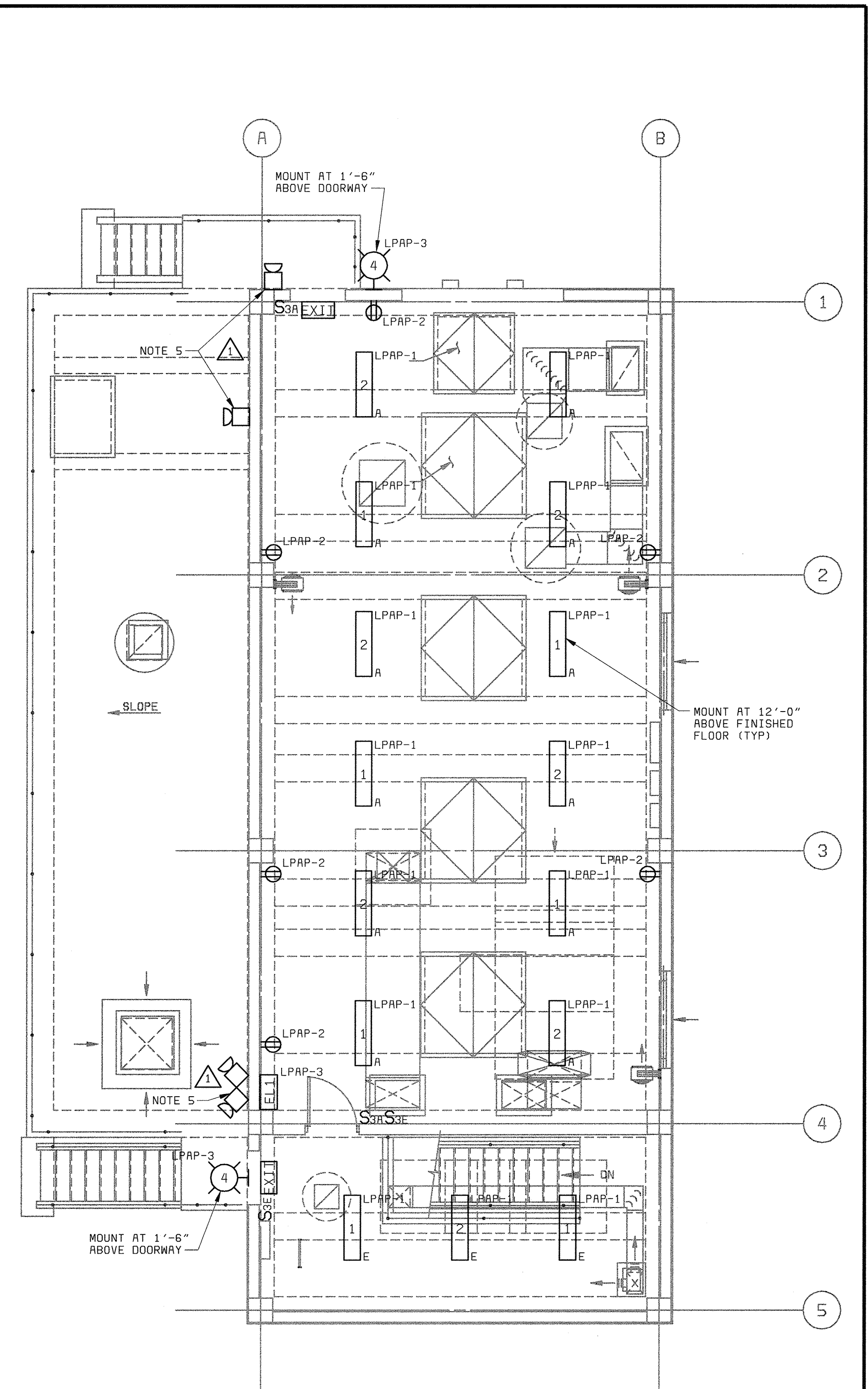




**LOWER LEVEL PLAN**  
3/16" = 1'-0"



**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

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					
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**

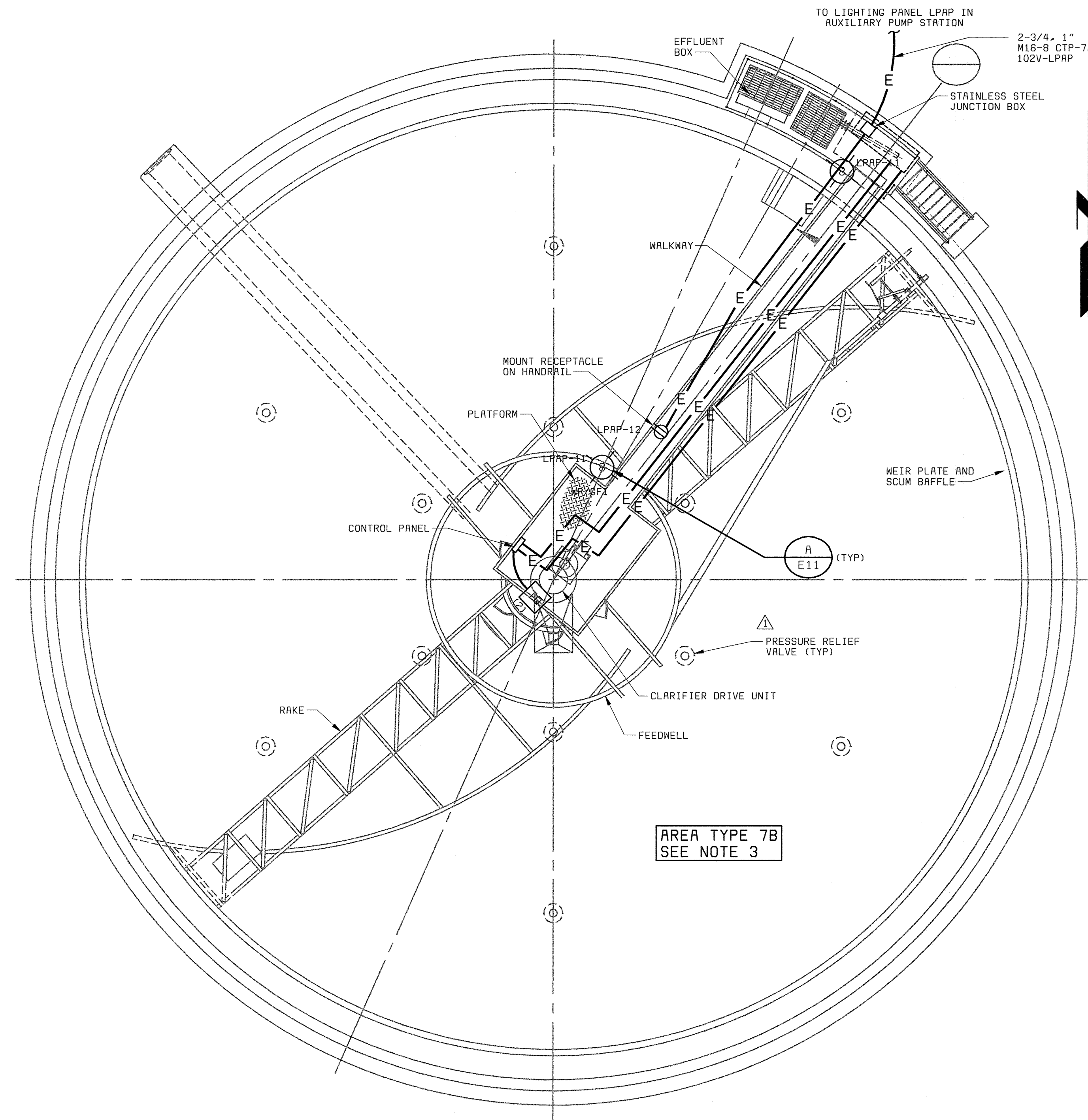
CAPITAL PROJECT S-6205  
CONTRACT NO. 20-3840

HOWARD COUNTY, MARYLAND

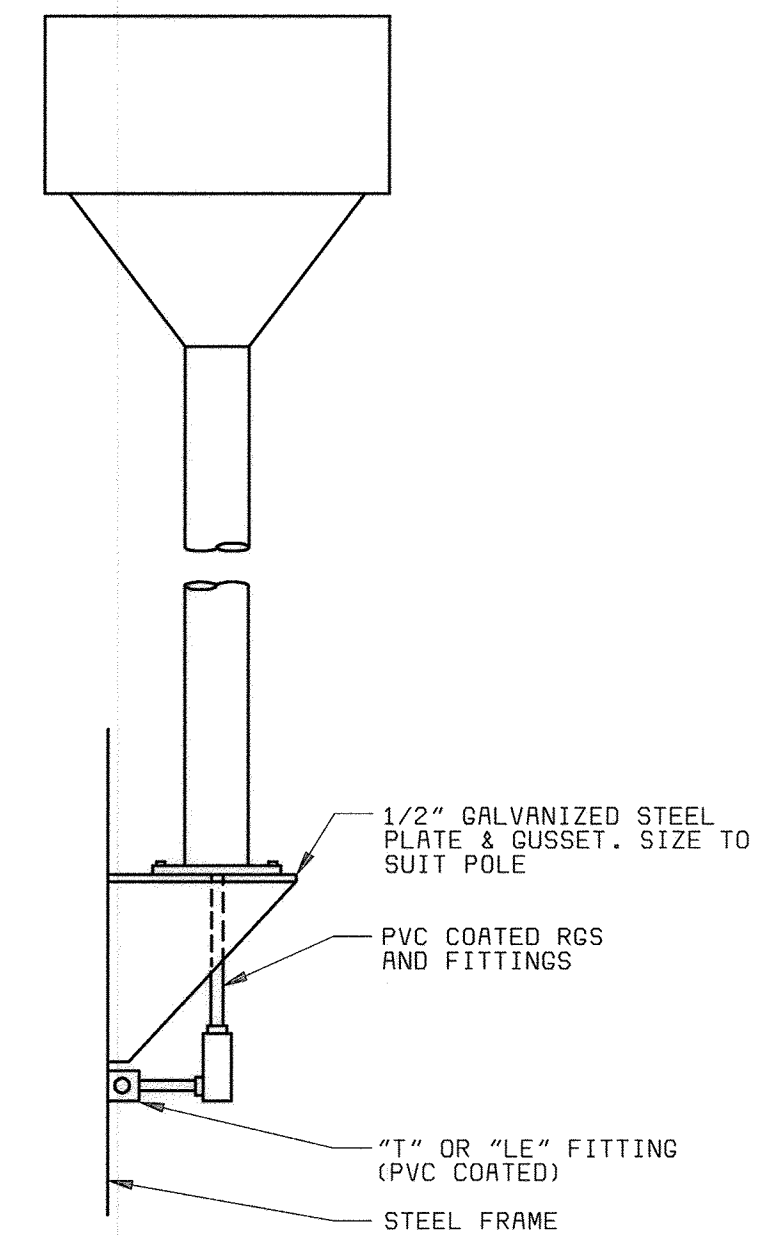
SCALE  
AS  
SHOWN

SHEET  
71 OF 88

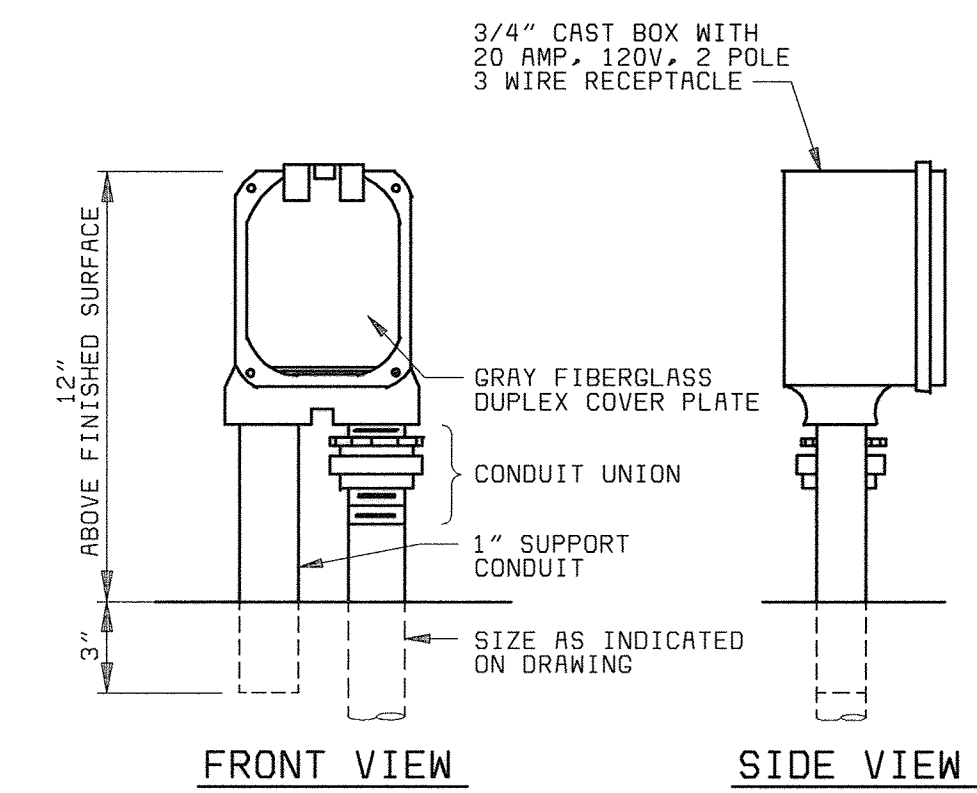
**E10**



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

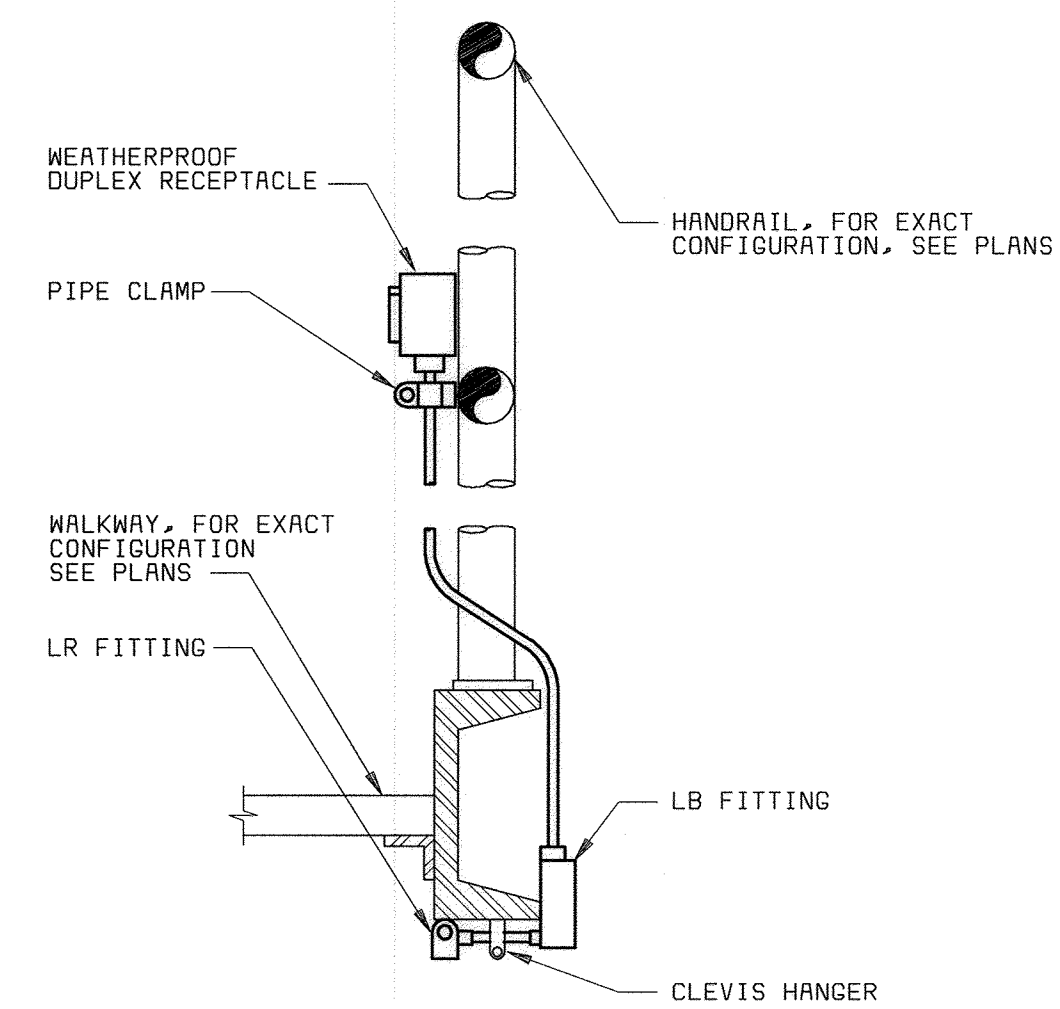


**STEEL WALKWAY POLE MOUNTING DETAIL**  
NO SCALE



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:**

1. SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
2. SEE LIGHTING FIXTURE AND PANELBOARD SCHEDULES ON DRAWING E16.
3. 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

**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					
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

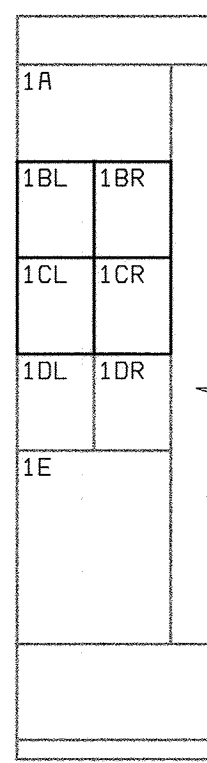
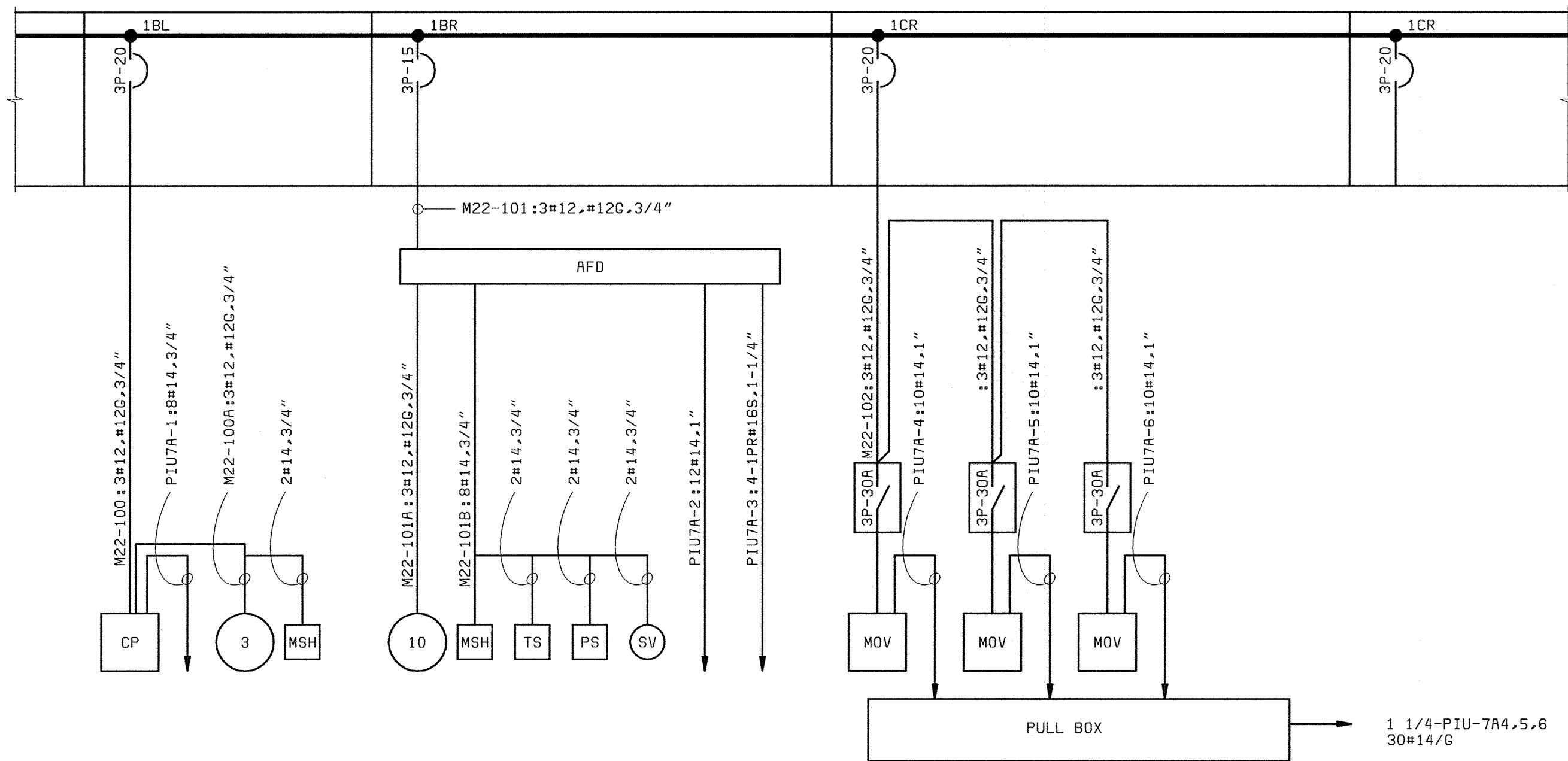
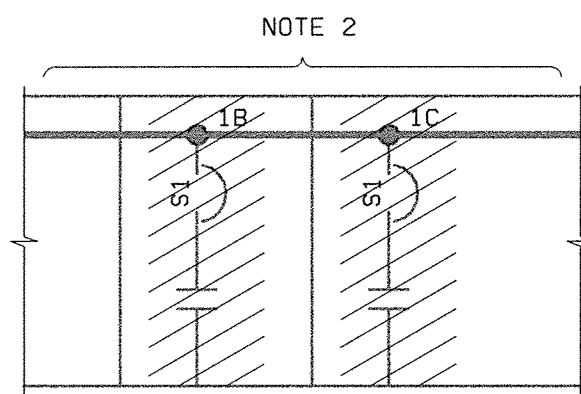
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

SHEET  
72 OF 88

E11





**PARTIAL MCC22 FRONT  
ELEVATION MODIFICATIONS**  
NO SCALE

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

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

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

**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

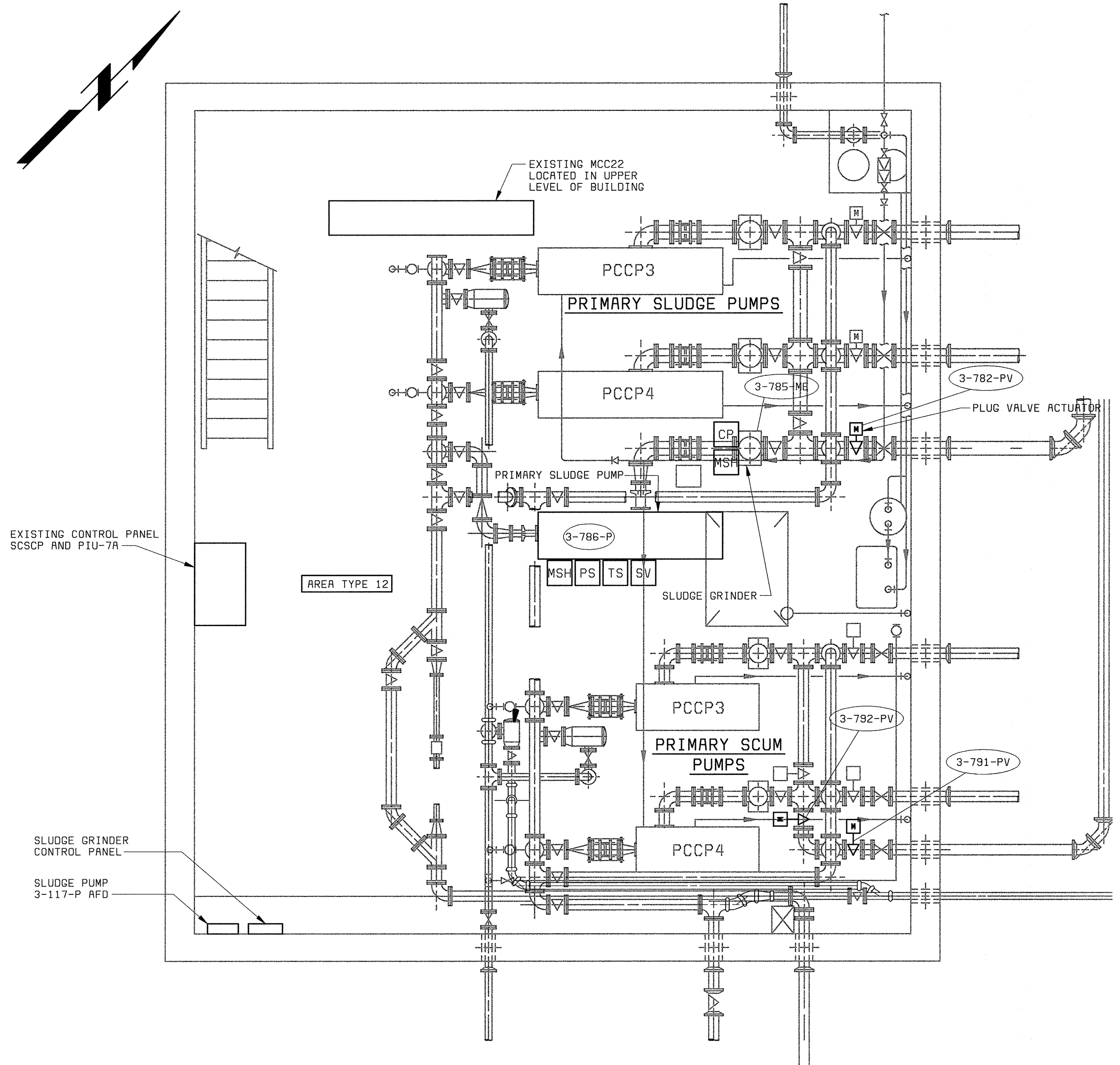
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

SHEET  
73 OF 88

**E12**

05/27/23  
R558723



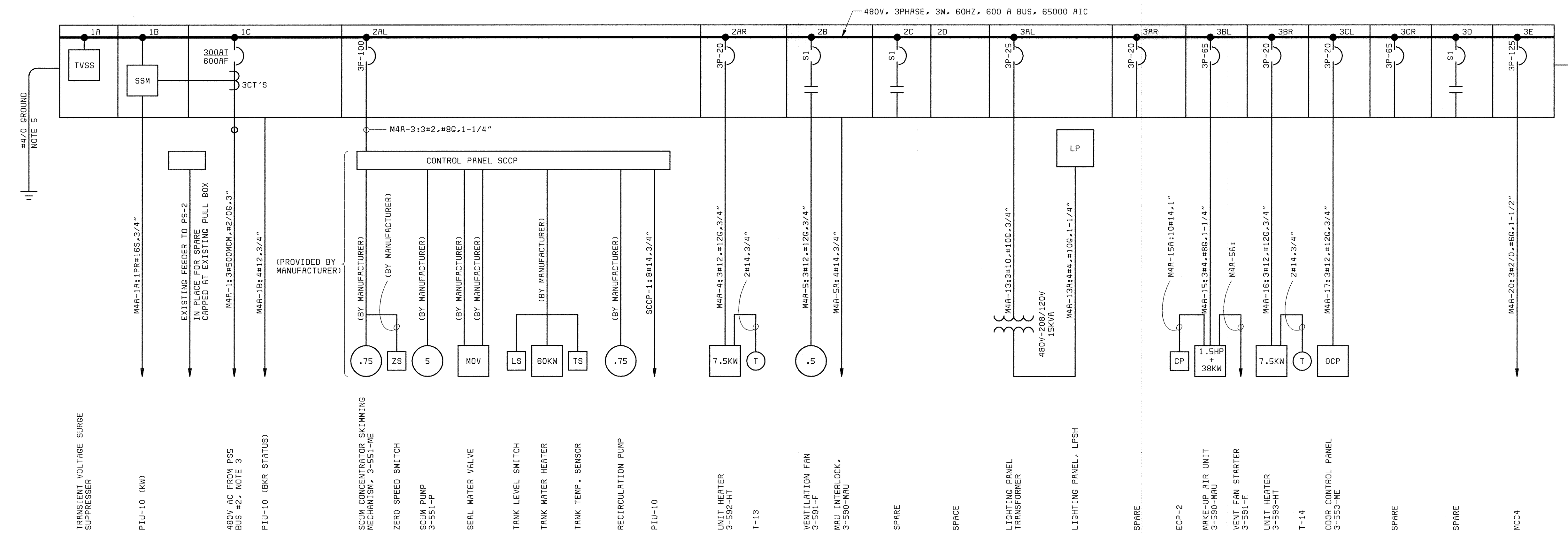
**BASEMENT PLAN**  
1/4" = 1'-0"

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

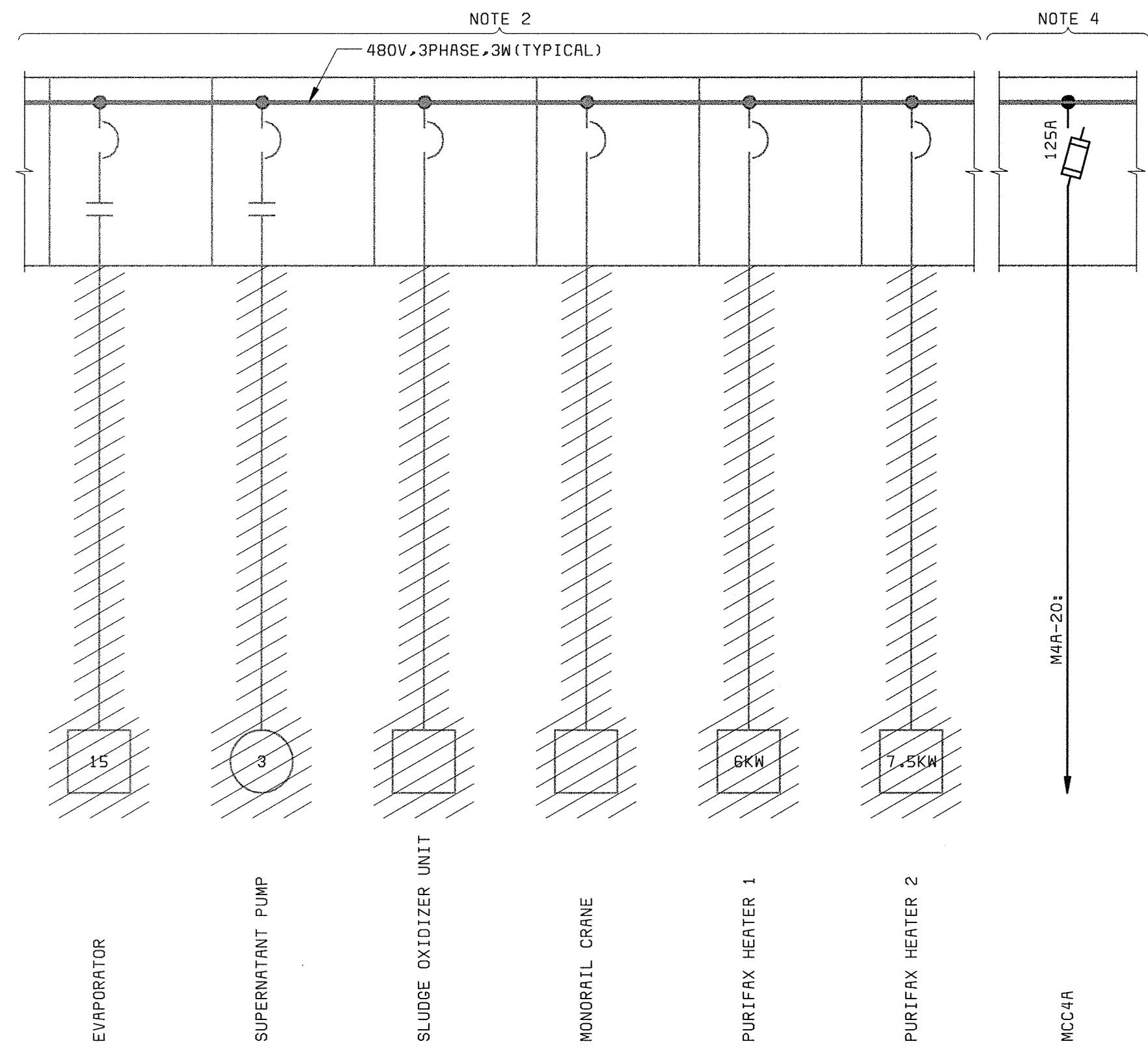
58472-101-PC-M-Z0000005F

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF UTILITIES    DATE	<b>BLACK &amp; VEATCH</b> LP 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 SHEET 74 OF 88 <b>E13</b>
			DRN: MEP	CHK: JTF	DATE: 2/19/01	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH	RJR	RJR			

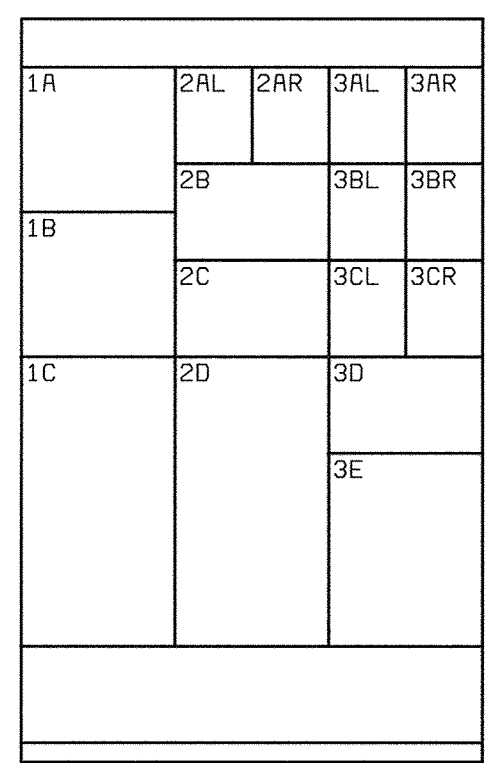




**MCC4A ONE-LINE DIAGRAM**  
(PRIMARY SCUM HANDLING BUILDING)



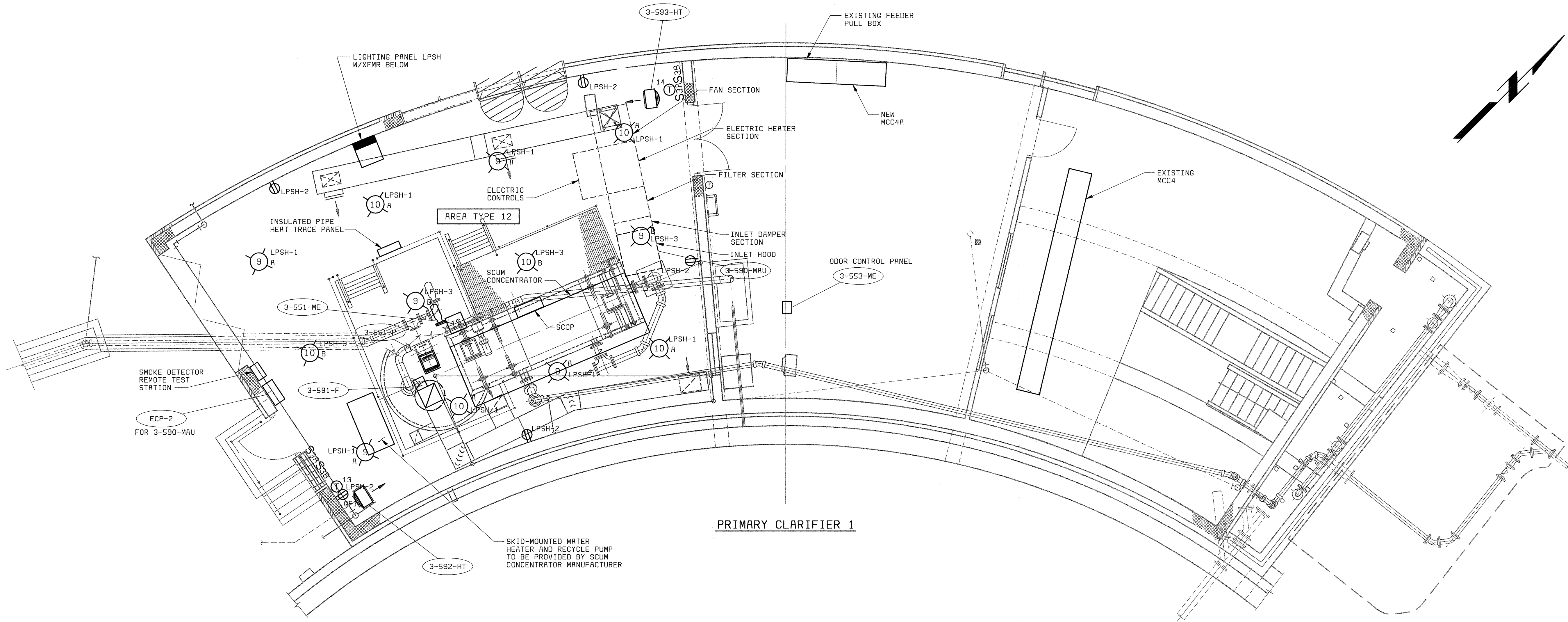
**EXISTING MCC4 PARTIAL DEMOLITION ONE-LINE**  
(PRIMARY SCUM HANDLING - OLD PURIFAX - BUILDING)



**MCC4A FRONT ELEVATION**  
NO SCALE

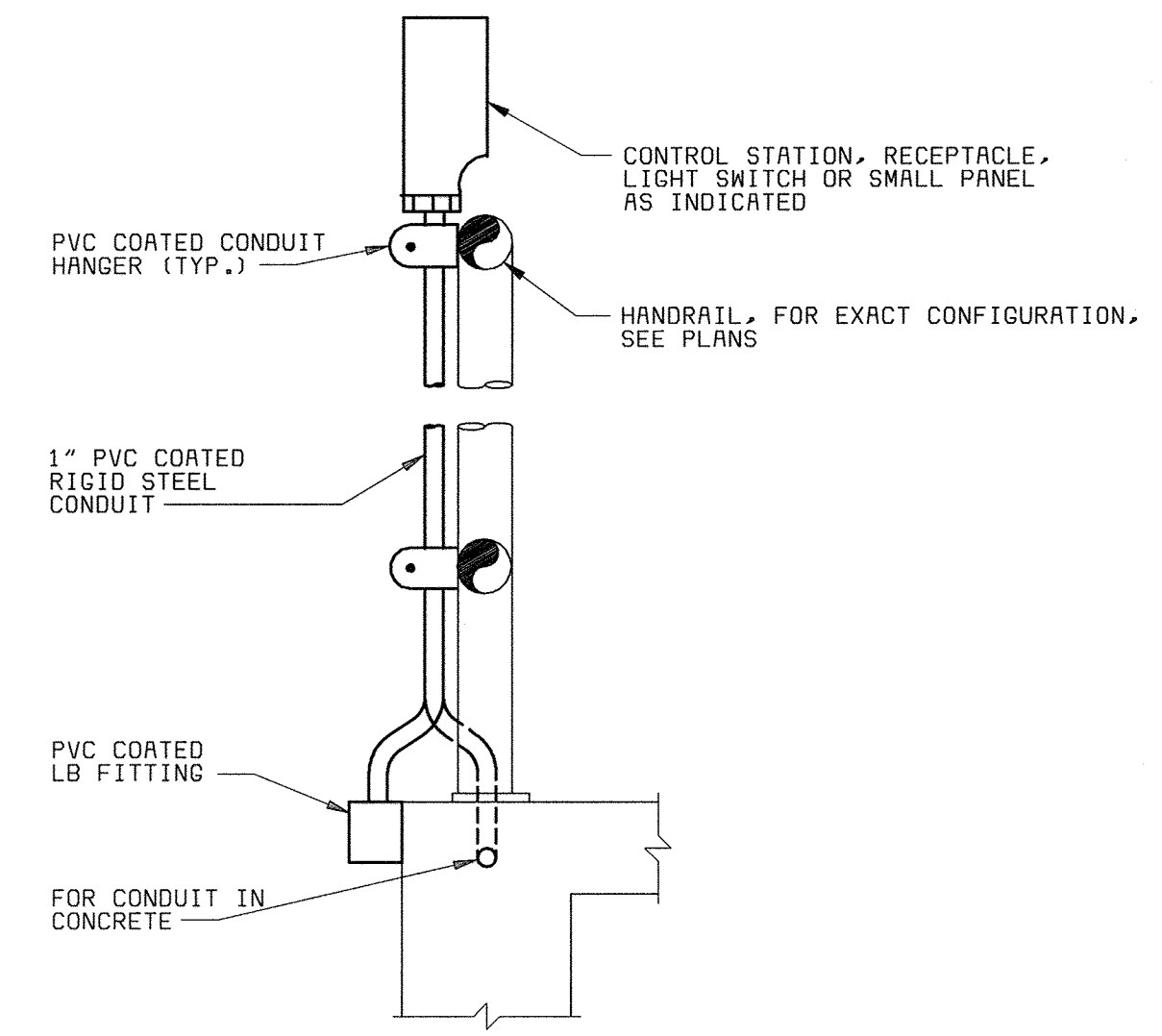
- NOTE:**
- SEE DRAWING E1 FOR ELECTRICAL LEGEND & ABBREVIATIONS AND GENERAL REQUIREMENTS.
  - EXISTING MCC4 LOADS SHOWN SHALL BE REMOVED, AND THE MCC LEFT ENERGIZED AND IN PLACE. IN ADDITION, THE TWO SETS OF MAGNETIC CLUTCH/CLUTCH CONTROLS SHALL BE REMOVED. UNITS ARE NOT SHOWN IN ORDER OF PHYSICAL LAYOUT.
  - 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	 <b>BLACK &amp; VEATCH</b> 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				PRIMARY SCUM HANDLING BUILDING ELECTRICAL	LITTLE PATUXENT WATER RECLAMATION PLANT ADDITION NO. 6 PRELIMINARY AND PRIMARY TREATMENT EXPANSION	SCALE AS SHOWN
			DRN: EEC						
			CHK: JTF				MCC4 & MCC4A DEMOLITION AND NEW ONE-LINE DIAGRAMS	CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840  HOWARD COUNTY, MARYLAND	E14
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.			



PRIMARY CLARIFIER 1

**PRIMARY SCUM HANDLING BUILDING - POWER AND LIGHTING PLAN**  
1/4" = 1'-0"



**TYPICAL HANDRAIL MOUNTING DETAIL**  
NO SCALE

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

58742-104-PC-H-20000000TR  
58742-101-PC-M-20000000S1  
058472-3  
F058472A

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> <sup>LLP</sup> 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											PRIMARY SCUM HANDLING BUILDING	LITTLE PATUXENT WATER RECLAMATION PLANT	SCALE AS SHOWN
			DRN: MEP													ELECTRICAL
			CHK: JTF											POWER AND LIGHTING PLAN	CAPITAL PROJECT S-6205 CONTRACT NO. 20-3840	E15
			DATE: 2/19/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP						HOWARD COUNTY, MARYLAND	



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
LIGHTS - GROUND FLOOR LEVEL	1	20	1 2	20	1
LIGHTS - EXTERIOR GROUND FLOOR LEVEL	1	20	3 4	20	1
LIGHTS - MEZZANINE LEVEL EAST	1	20	5 6	20	1
LIGHTS - MEZZANINE LEVEL WEST	1	20	7 8	20	1
LIGHTS - LOWER LEVEL	1	20	9 10	20	1
LIGHTS - PRIMARY CLARIFIER NO. 5	1	20	11 12	20	1
SPARE	1	20	13 14	20	1
SPARE	1	20	15 16	20	1
SPARE	1	20	17 18	20	1
SPARE	1	20	19 20	20	1
SPARE	1	20	21 22	20	1
SPARE	1	20	23 24	20	1
SPARE	1	20	25 26	20	1
SPARE	1	20	27 28	20	1
SPARE	1	20	29 30	20	1
SPARE	1	20	31 32	20	1
SPARE	1	20	33 34	20	1
SPARE	1	20	35 36	20	1
SPACE	1	--	37 38	--	1
SPACE	1	--	39 40	--	1
SPACE	1	--	41 42	--	1

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
POWER ROOF VENT FAN 1-575-F	1	20	1 2	20	1
MAGNETIC FLOW METER 1-567-M	1	20	3 4	20	3
WET PIT ROOF HOOD DAMPER MOTOR	1	20	5 6	20	1
FLOW METER 1-567-M	1	20	7 8	20	1
SPARE	1	20	9 10	20	3
SPARE	1	20	11 12	20	1
SPARE	1	20	13 14	20	1
SPARE	1	20	15 16	20	1
SPARE	1	20	17 18	20	1
SPARE	1	20	19 20	20	1
SPARE	1	20	21 22	20	1
SPARE	1	20	23 24	20	1
SPARE	1	20	25 26	20	1
SPARE	1	20	27 28	20	1
SPARE	1	20	29 30	20	1
SPARE	1	20	31 32	20	1
SPARE	1	20	33 34	20	1
SPARE	1	20	35 36	20	1
SPACE	1	--	37 38	--	1
SPACE	1	--	39 40	--	1
SPACE	1	--	41 42	--	1

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
LIGHTS - PRIMARY SCUM HANDLING BLDG	1	20	1 2	20	1
LIGHTS - PRIMARY SCUM HANDLING BLDG	1	20	3 4	20	1
SPARE	1	20	5 6	20	1
SPARE	1	20	7 8	20	1
SPARE	1	20	9 10	20	1
SPACE	1	--	11 12	--	1

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

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

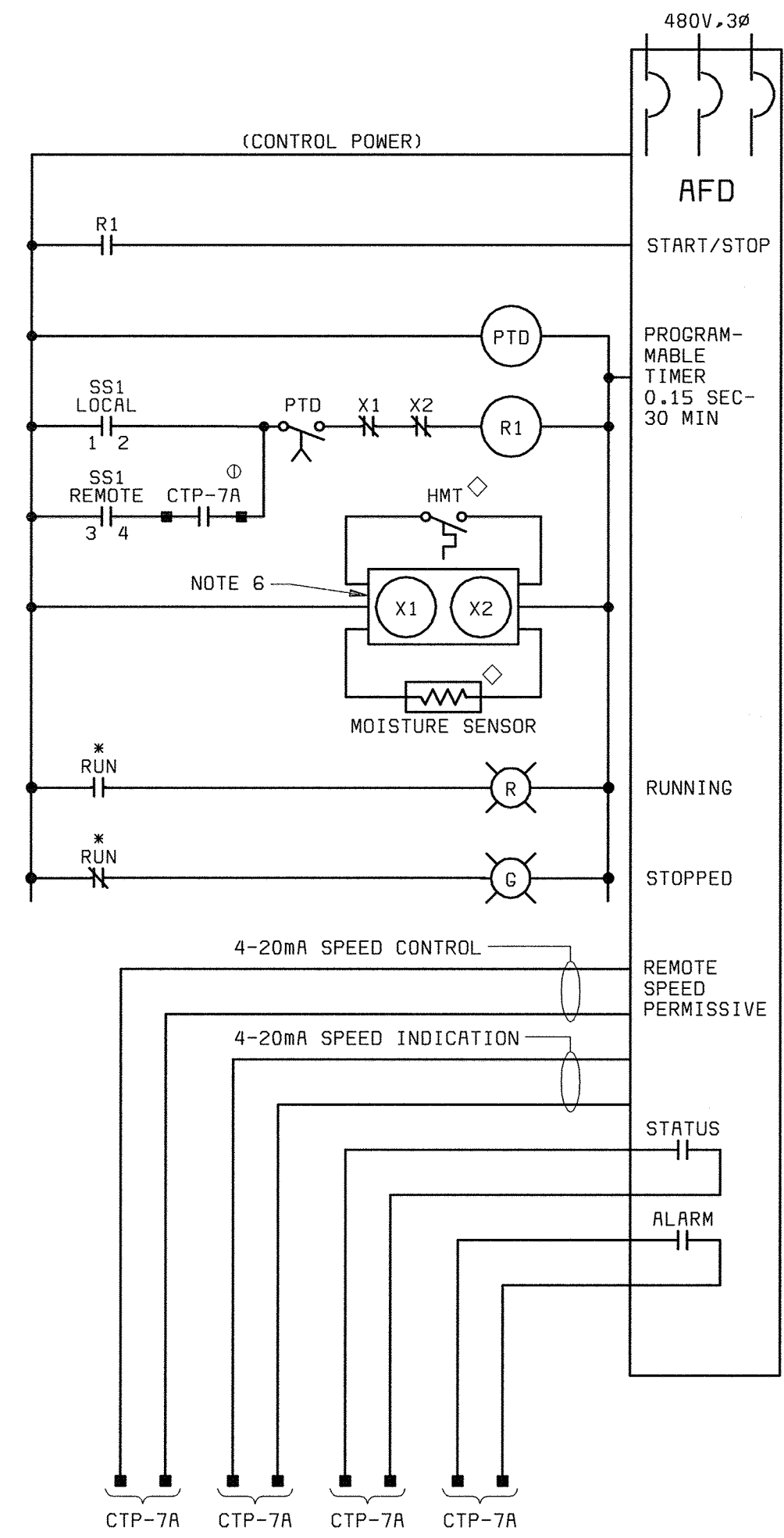
SCALE  
AS  
SHOWN

SHEET  
77 OF 88

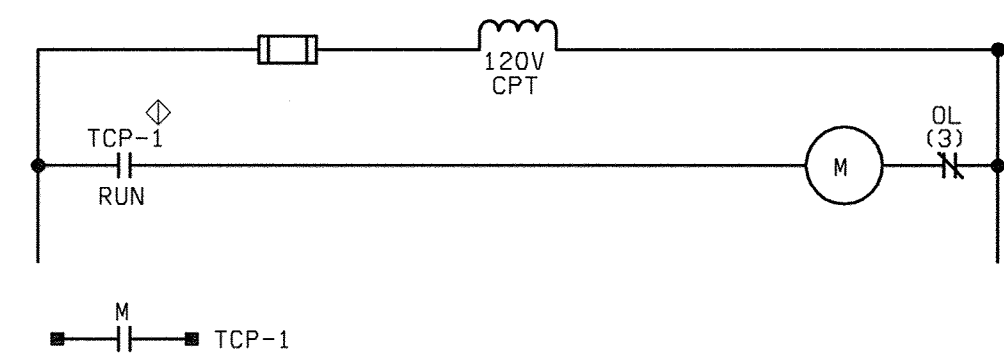
E16



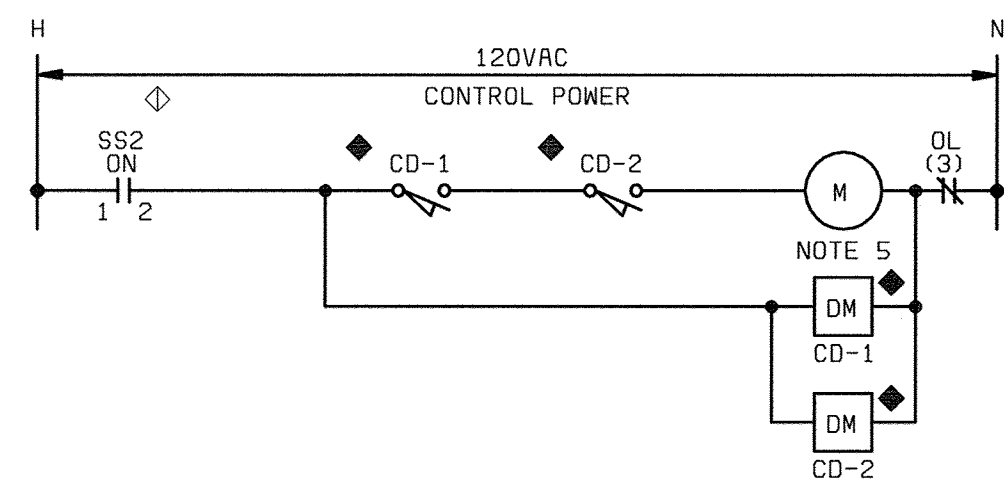




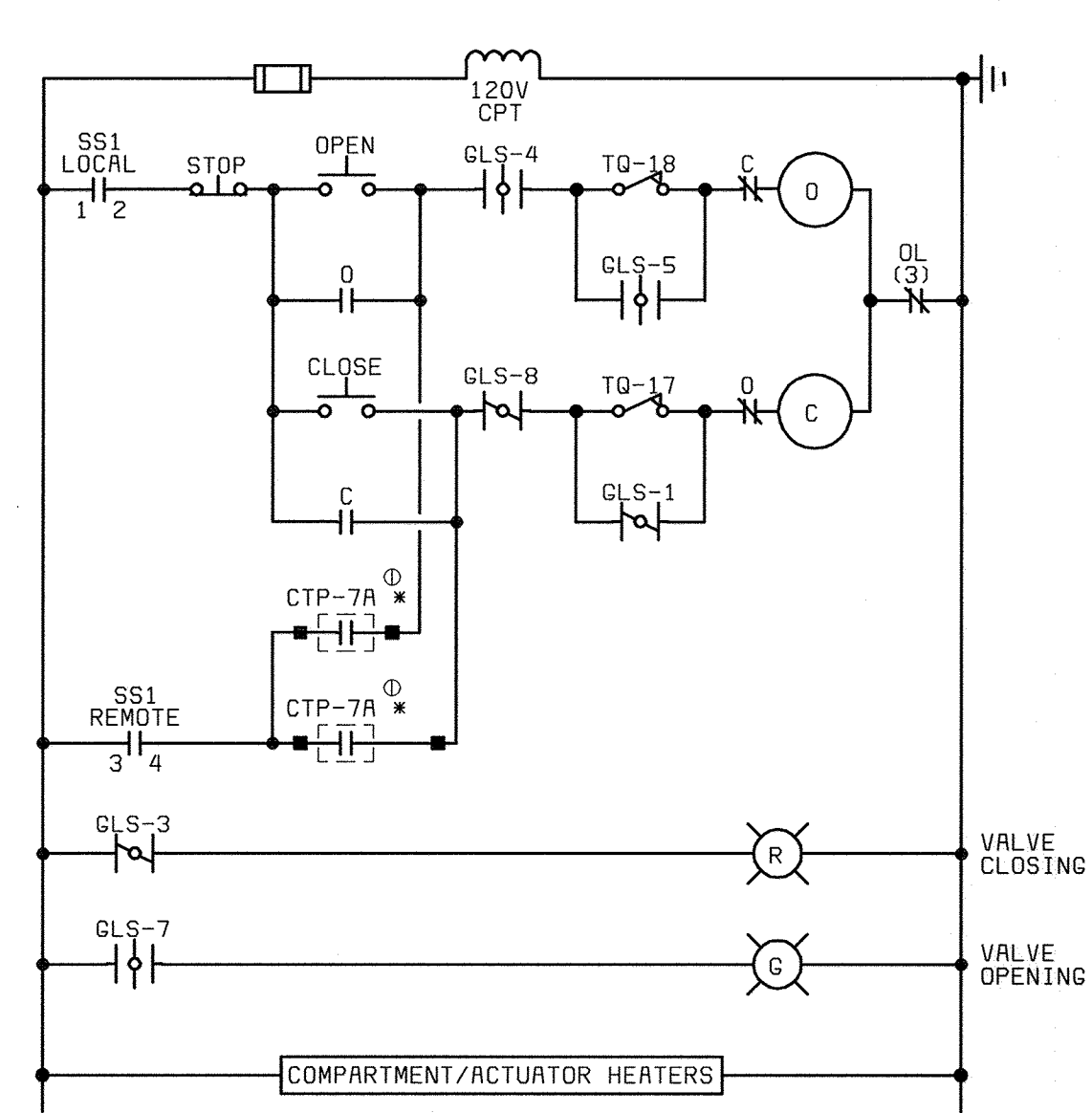
**MAIN SEWAGE PUMPS,  
1-501-P THRU 1-503-P**  
\* DENOTES INTERLOCKS PROVIDED BY AFD



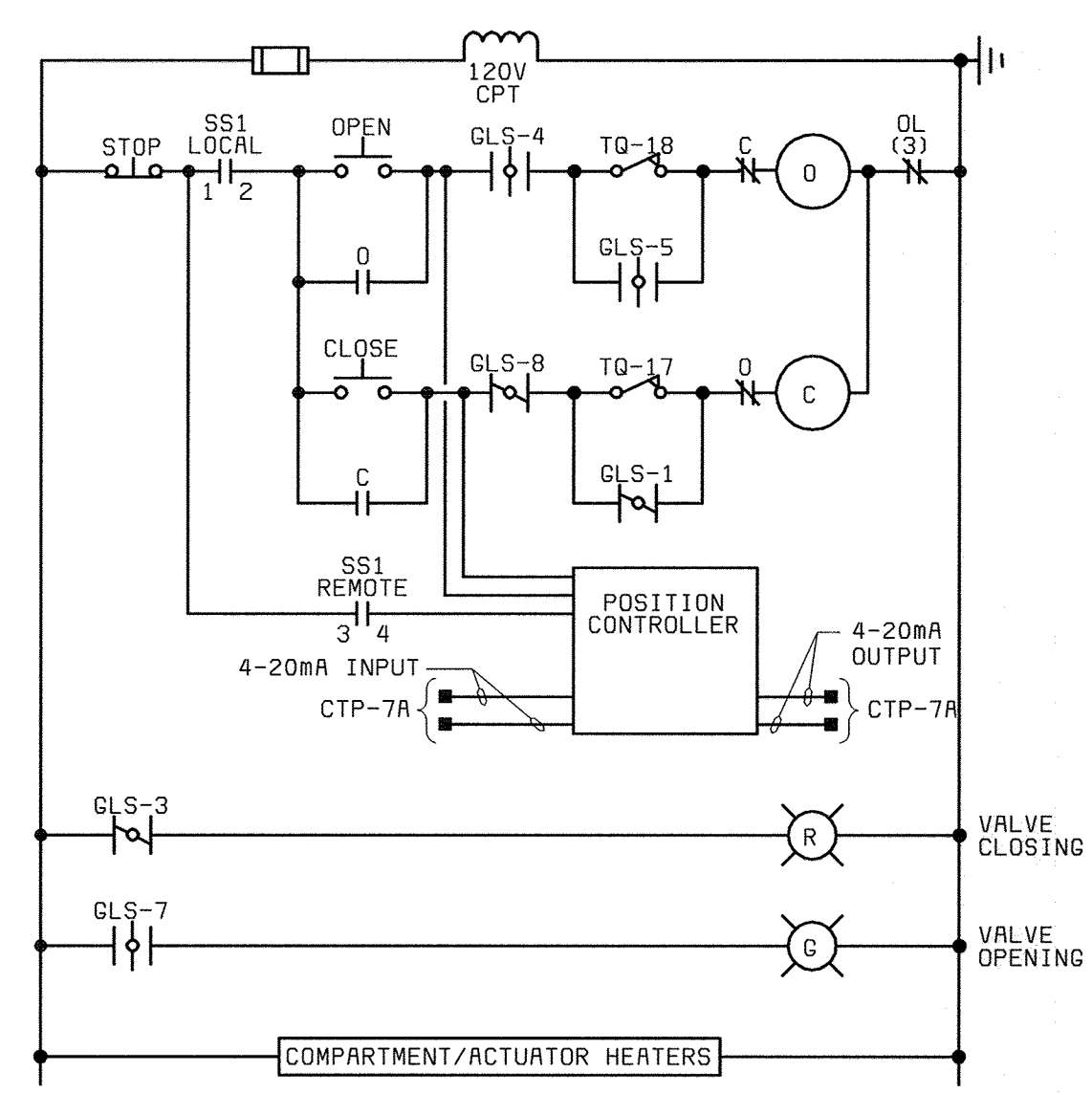
**PANEL CONTROLLED VENT FANS  
1-572-F THRU 1-576-F**  
NOTE 5



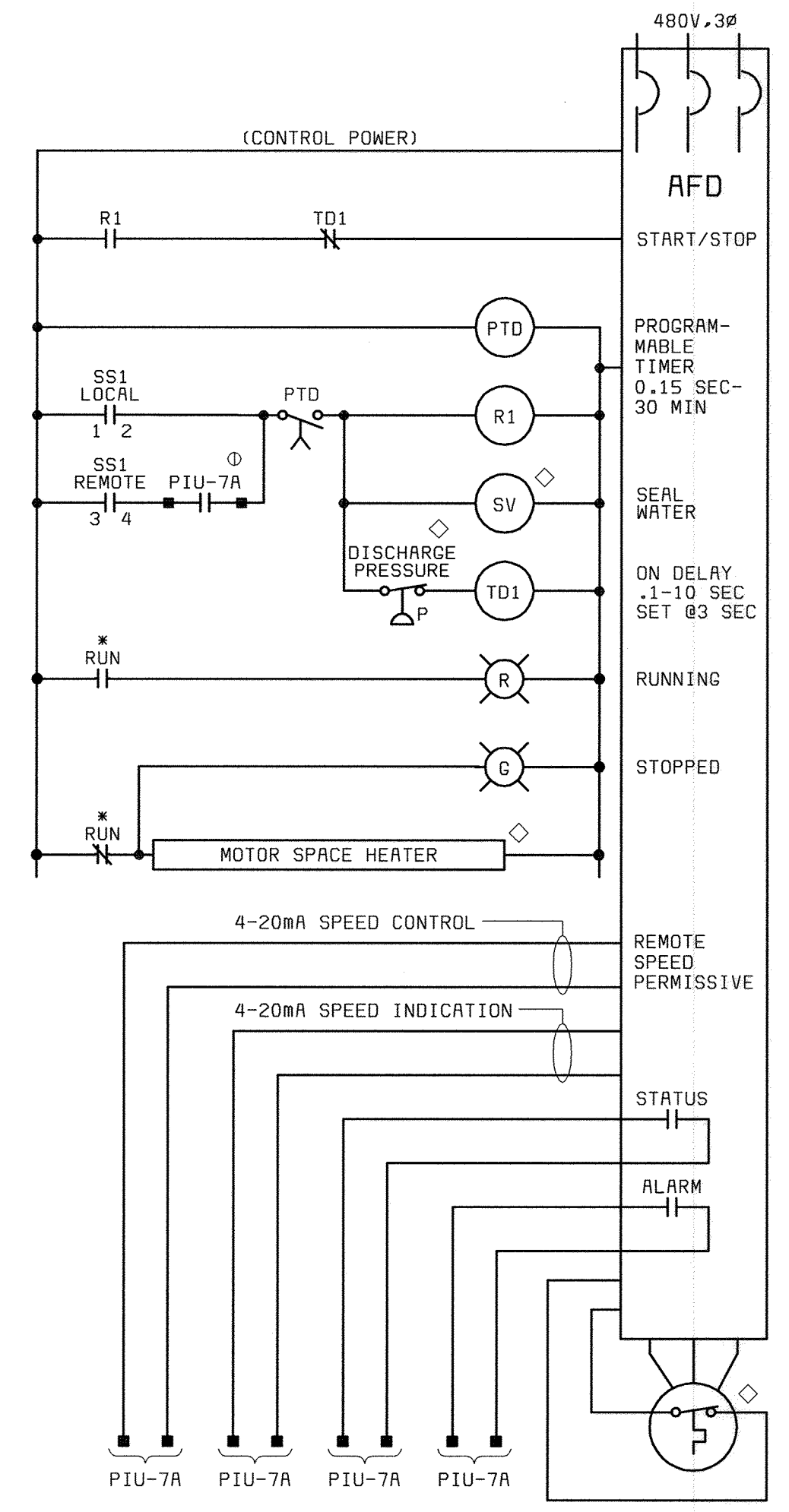
**VENTILATION FAN 1-571-F**  
NO SCALE



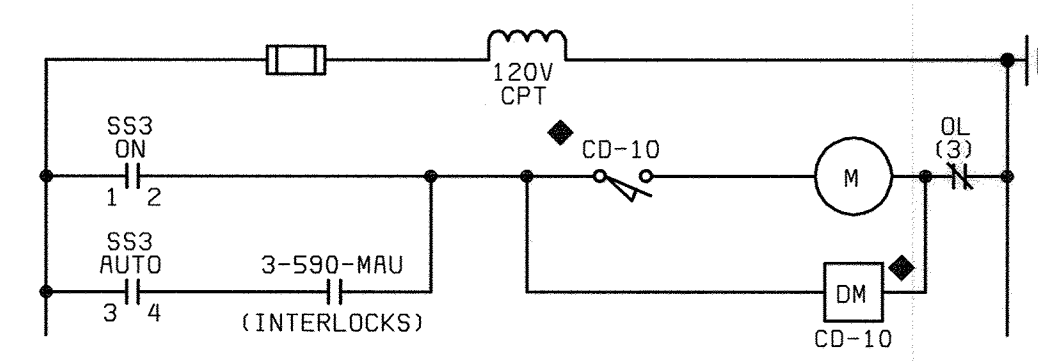
**TYPICAL VALVE OPEN/CLOSE (O/C)  
ELECTRIC ACTUATOR**  
(TYPICAL FOR: 3-782-PV, 3-791-PV,  
3-792-PV, 2-520-SG)  
\* DENOTES PIU-7 FOR 2-520-SG



**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				
3	11				
3	12				
3	13				
3	14				
3	15				
3	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:**

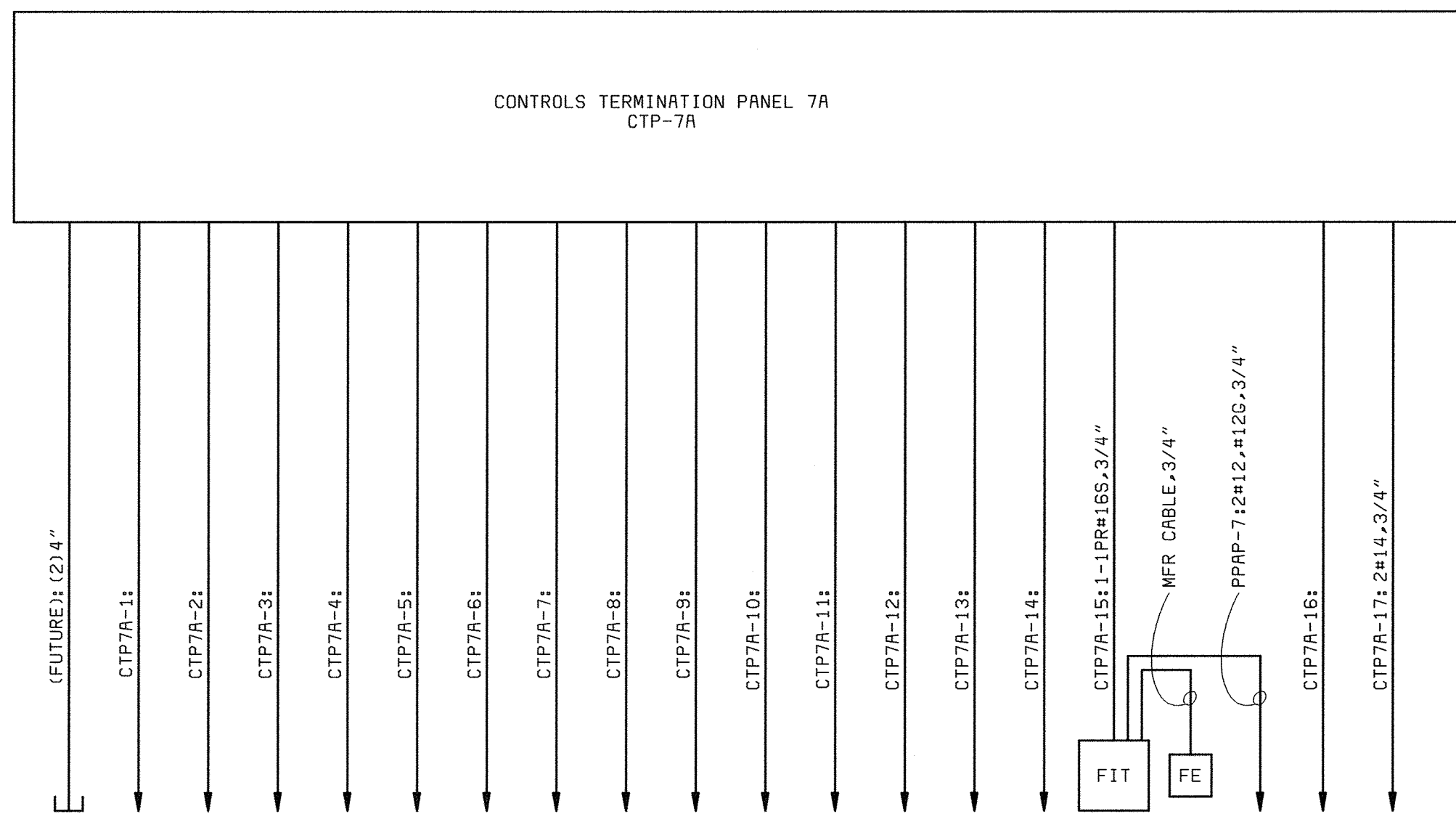
- ◇ AT DRIVEN EQUIPMENT
- ◇ AT LOCAL CONTROL PANEL OR STATION
- ◇ CONTROL TERMINATION PANEL CTP-7A
- ◆ REMOTE FROM STARTER AND DRIVEN EQUIPMENT

**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.

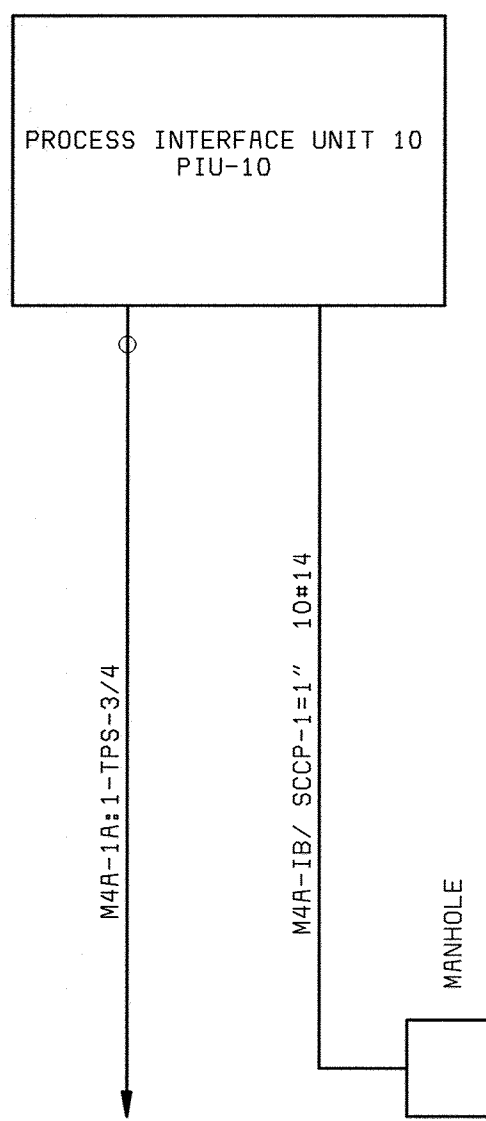
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland REG. PROF. ENGR. _____ DATE _____	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE 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 REVISIONS AND RECORD OF ISSUE NO. BY CK APP	<b>GENERAL ELECTRICAL</b>  <b>SCHEMATICS</b>	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  <b>E18</b>
--	--	--	---	--	--	---	---

058472-3  
F058472A



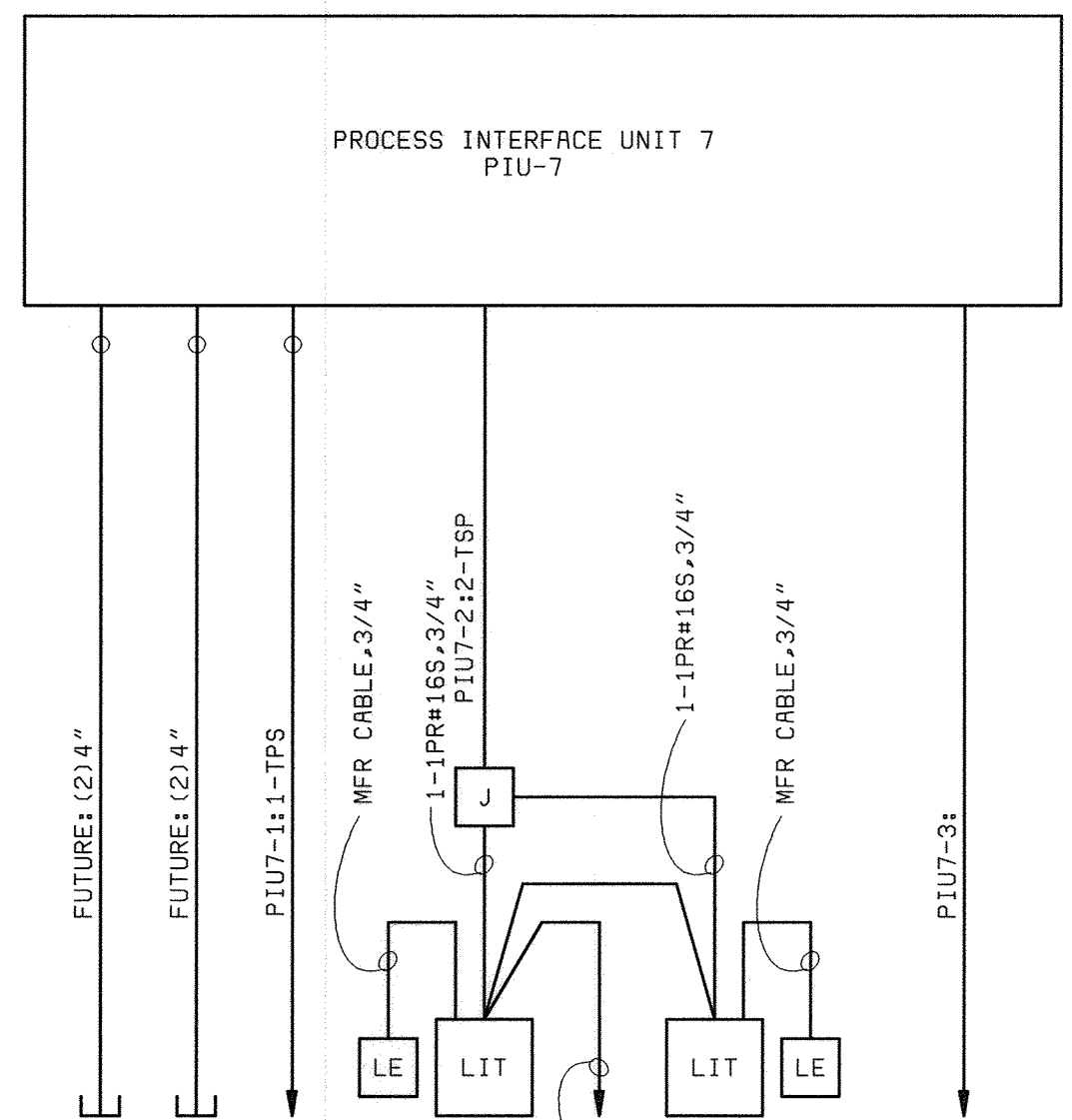
**CONTROLS TERMINATION PANEL 7A**  
(AUXILIARY PUMP STATION)

- 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
- FLOK ELEMENT
- 120VAC POWER
- SUMP PUMP 1-599-P  
CONTROL PANEL
- TEMPERATURE CONTROL PANEL  
1CP-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
- FEL FLOW METER  
2-450-W
- LEVEL ELEMENT
- GRIT BASIN LEVEL  
1-152-L
- 120VAC POWER FROM EXISTING  
GRIT BUILDING PANEL GBLP  
(NOTE 2)
- 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

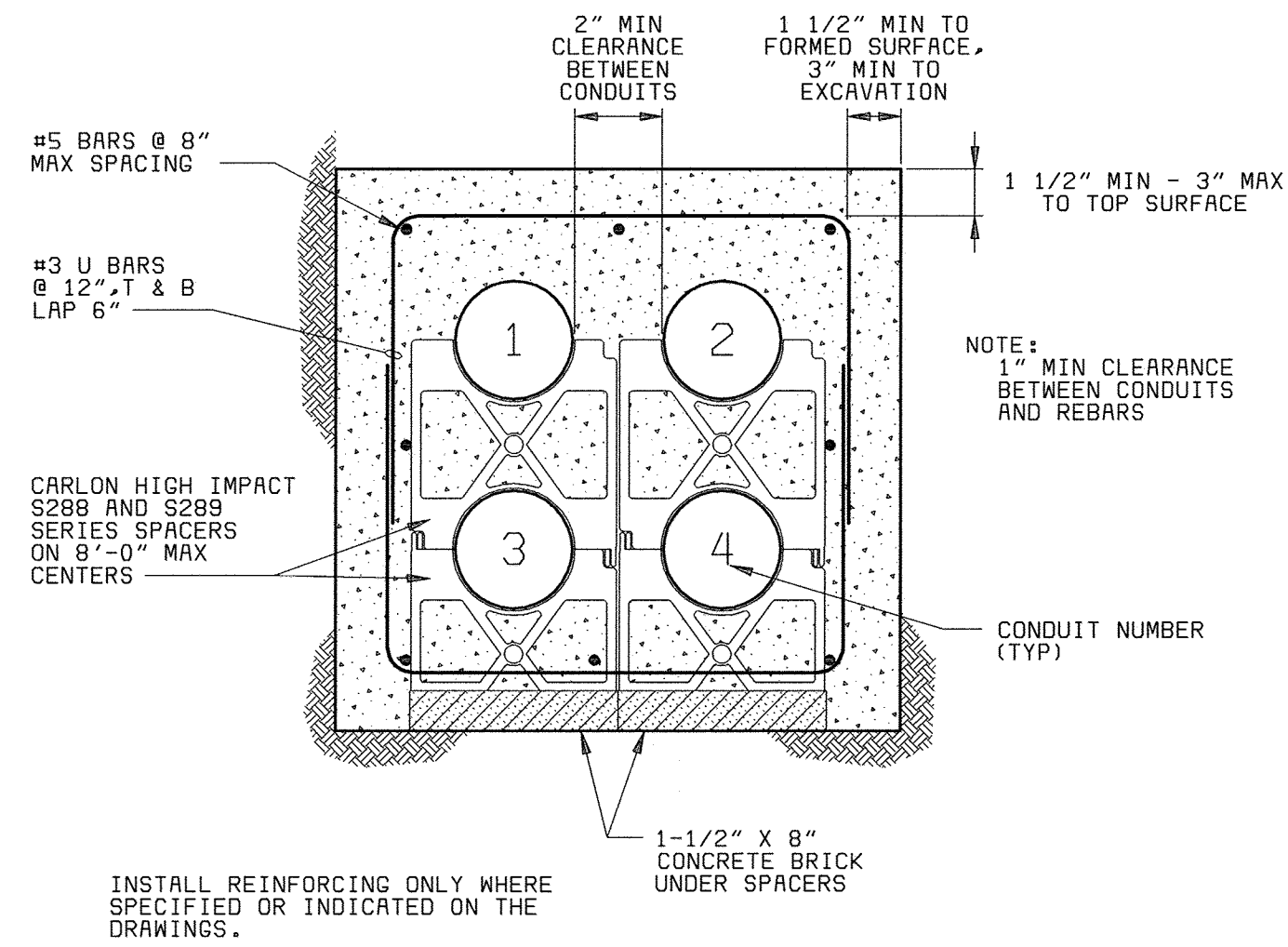
HOWARD COUNTY, MARYLAND

SCALE  
AS  
SHOWN

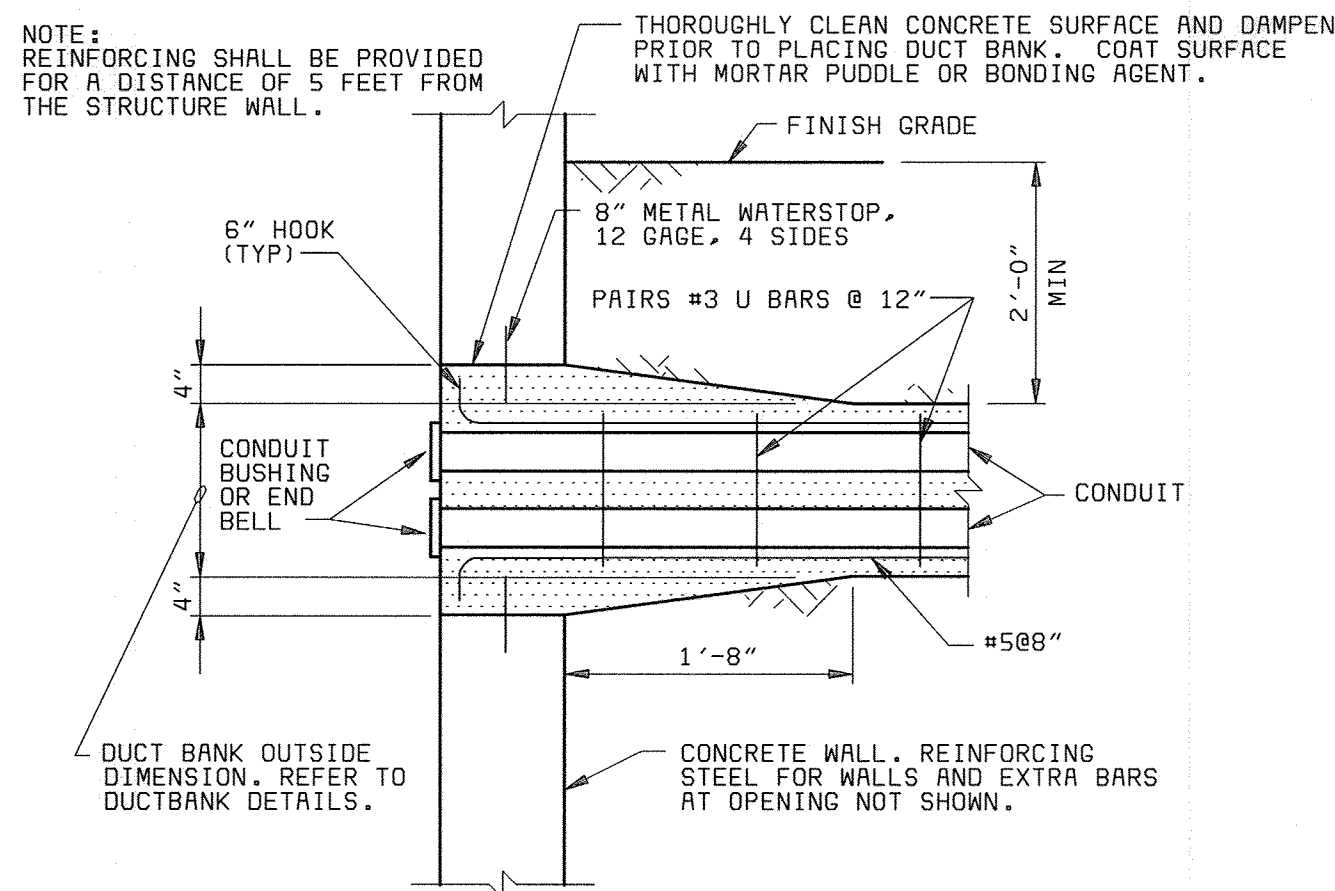
SHEET  
80 OF 88

E19

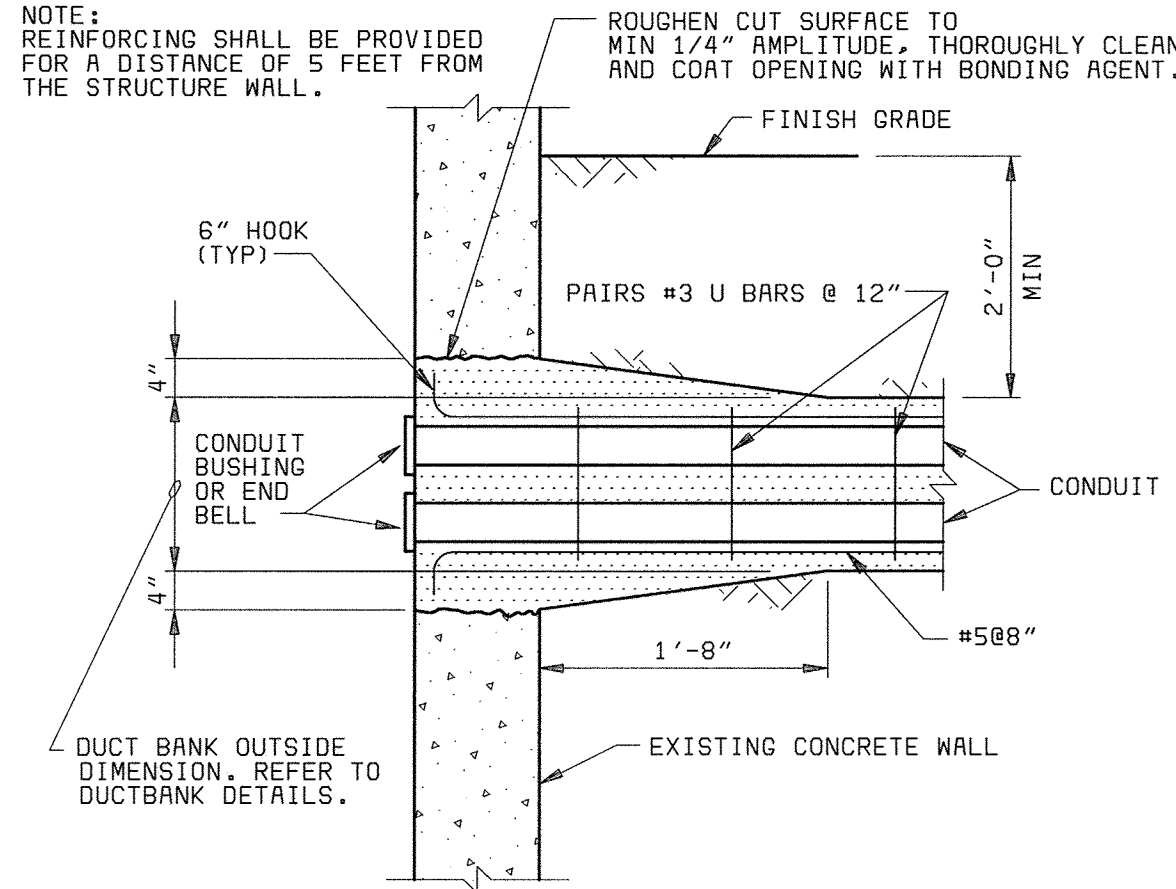




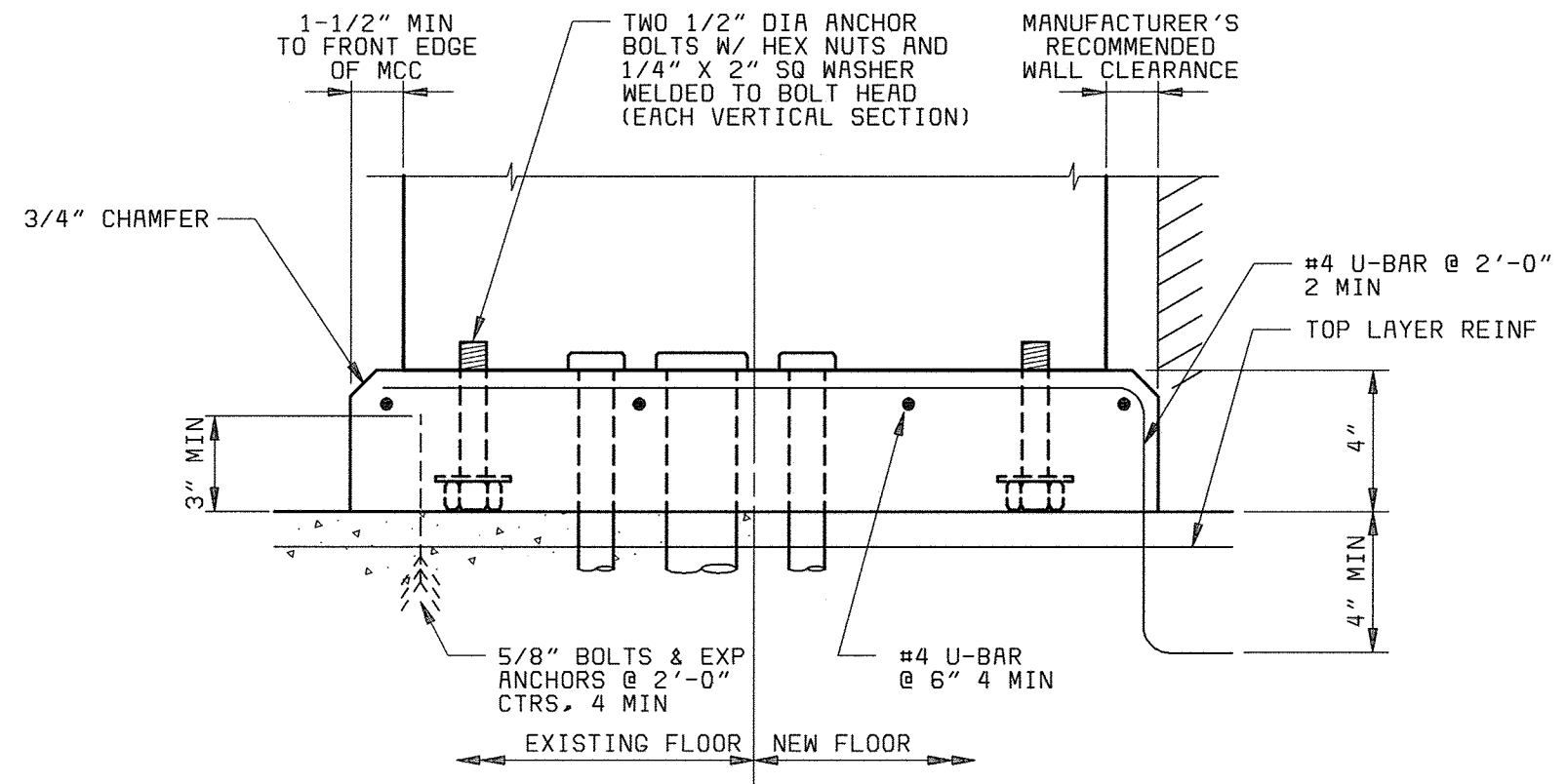
**TYPICAL DUCT BANK SECTION**  
NO SCALE



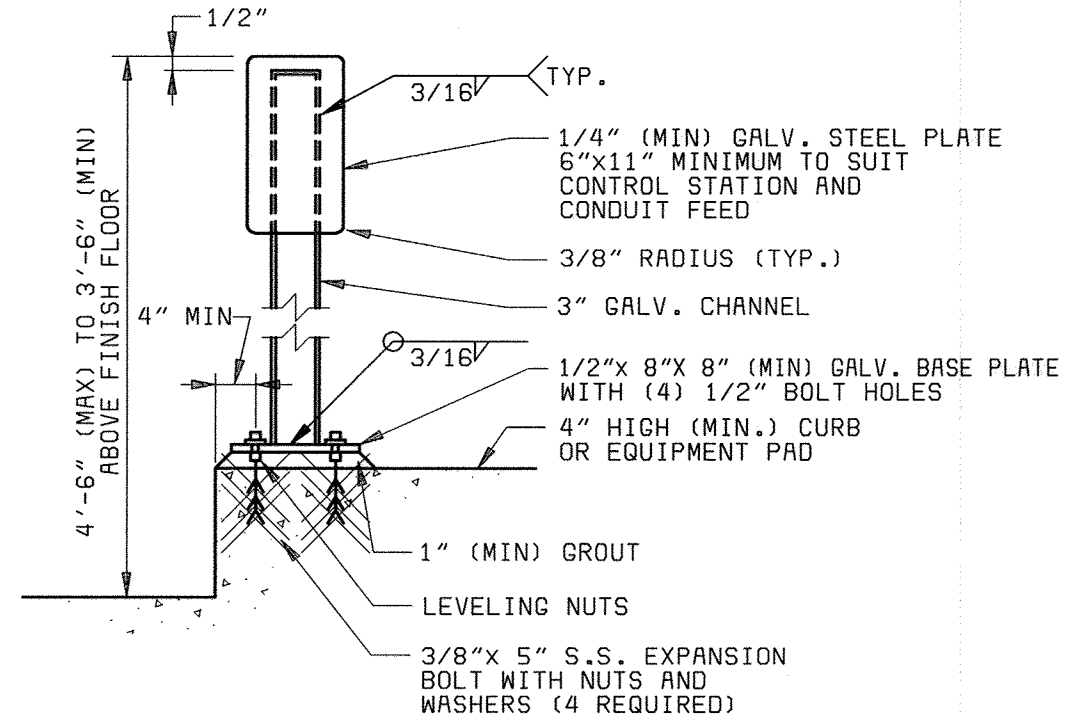
**TYPICAL UNDERGROUND DUCT BANK ENTRANCE DETAIL**  
NO SCALE



**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

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					
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

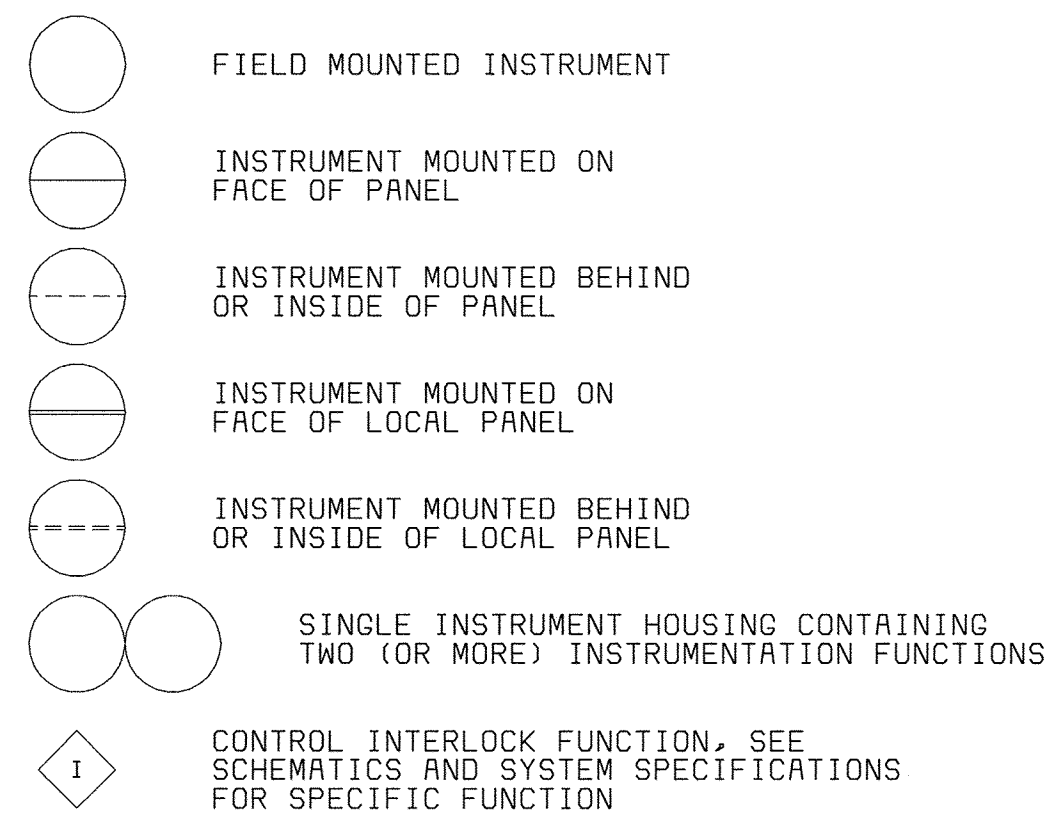
GENERAL  
ELECTRICAL  
  
MISCELLANEOUS DETAILS

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

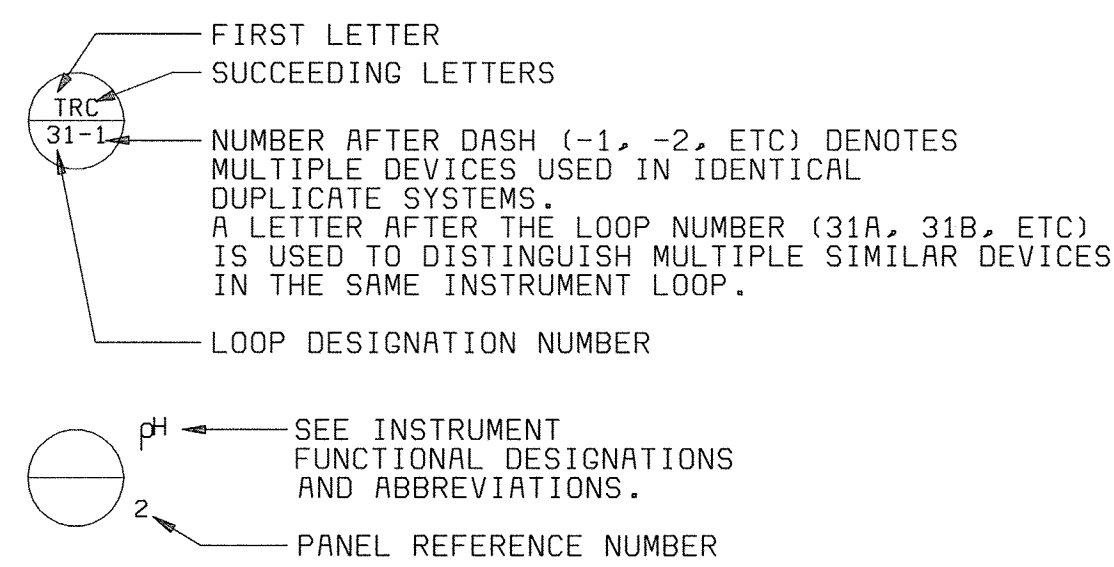
SCALE  
AS  
SHOWN  
  
SHEET  
81 of 88  
  
E20

058472.3  
FD58472R

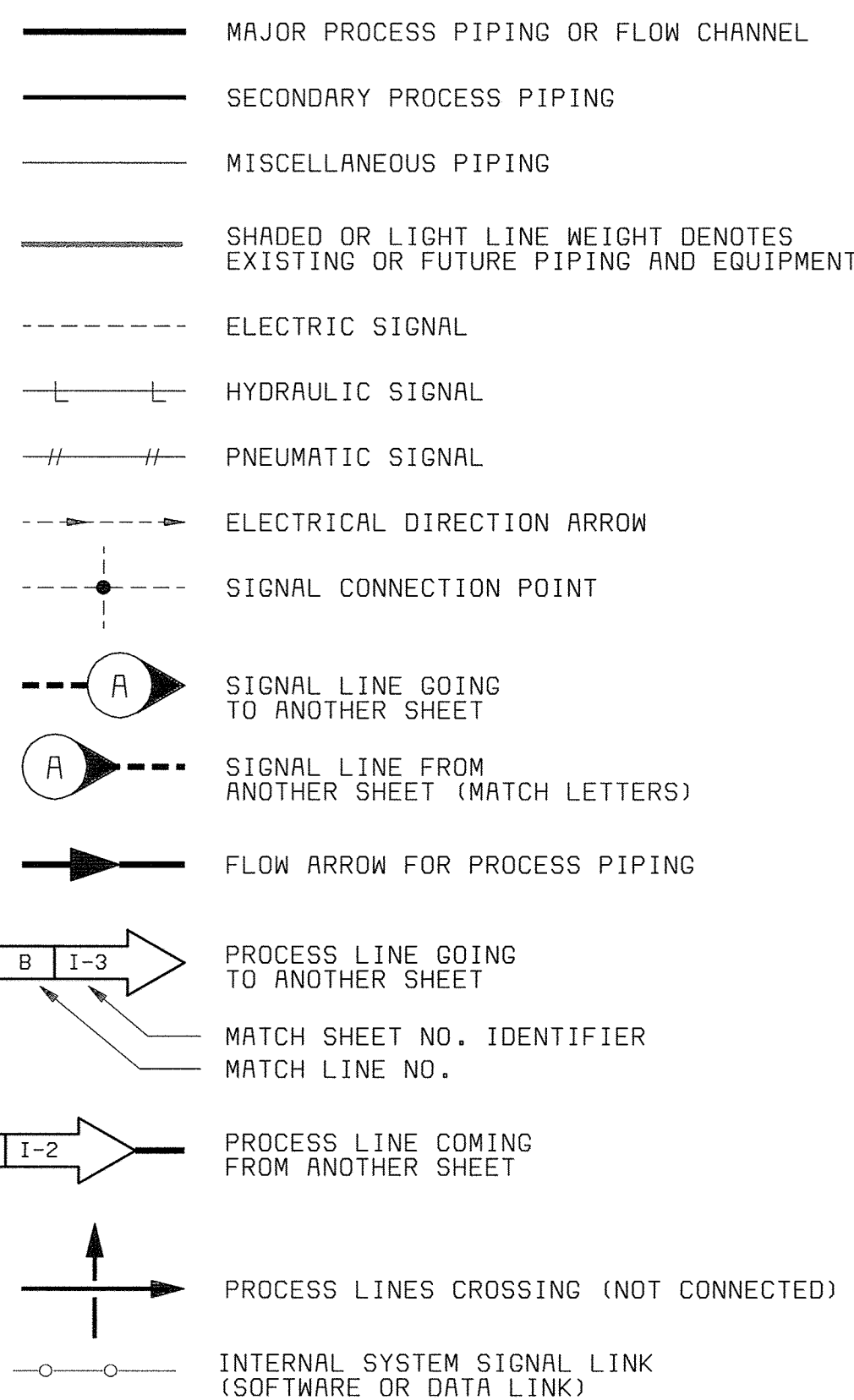
**GENERAL INSTRUMENT SYMBOLS**



**TAG NUMBERS AND ADDITIONAL DESIGNATIONS**



**LINE SYMBOLS**

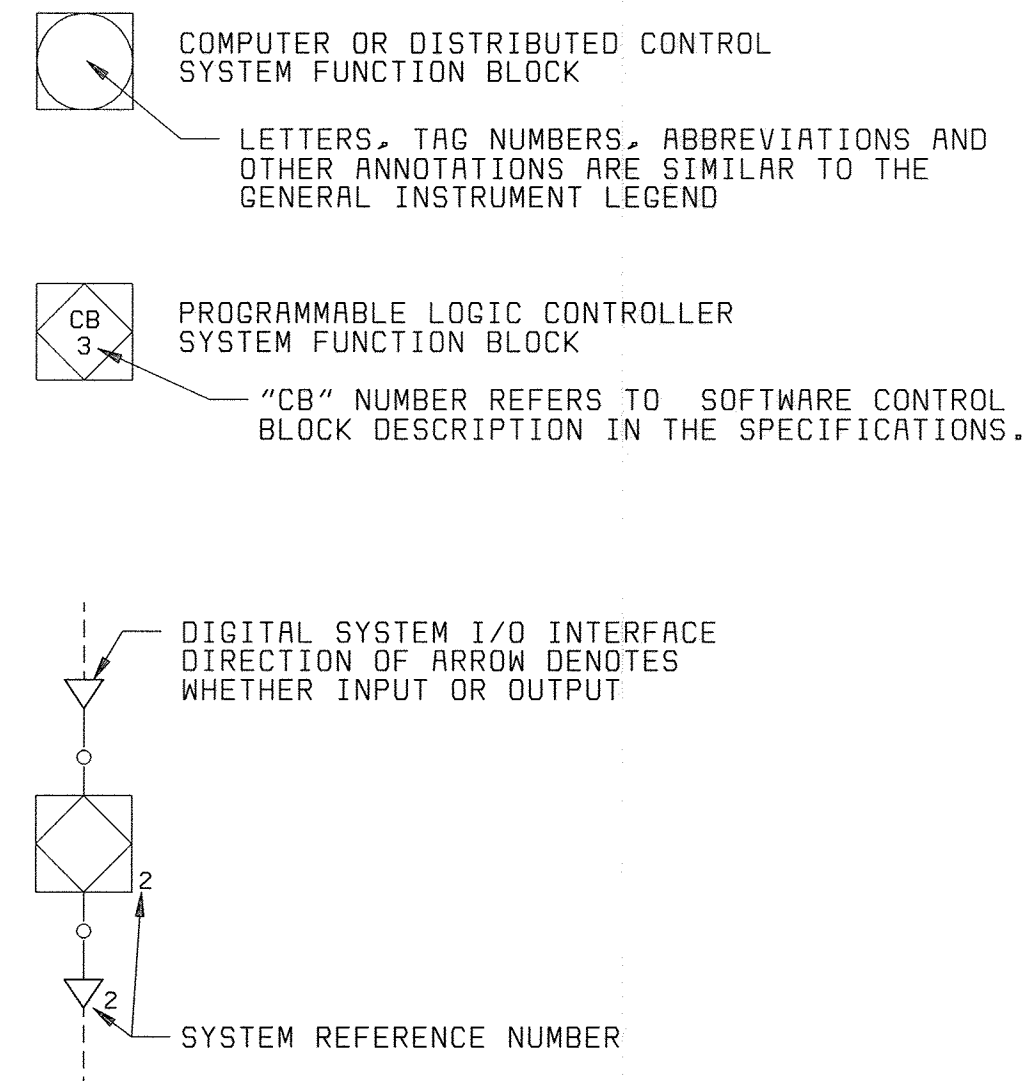


**MEANINGS OF IDENTIFICATION LETTERS**

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)
- CH<sub>4</sub> METHANE
- Cl<sub>2</sub> CHLORINE RESIDUAL
- CO<sub>2</sub> CARBON DIOXIDE
- DO DISSOLVED OXYGEN
- LEL LOWER EXPLOSIVE LIMIT
- MCC MOTOR CONTROL CENTER
- MLSS MIXED LIQUOR SUSPENDED SOLIDS
- O<sub>2</sub> 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**

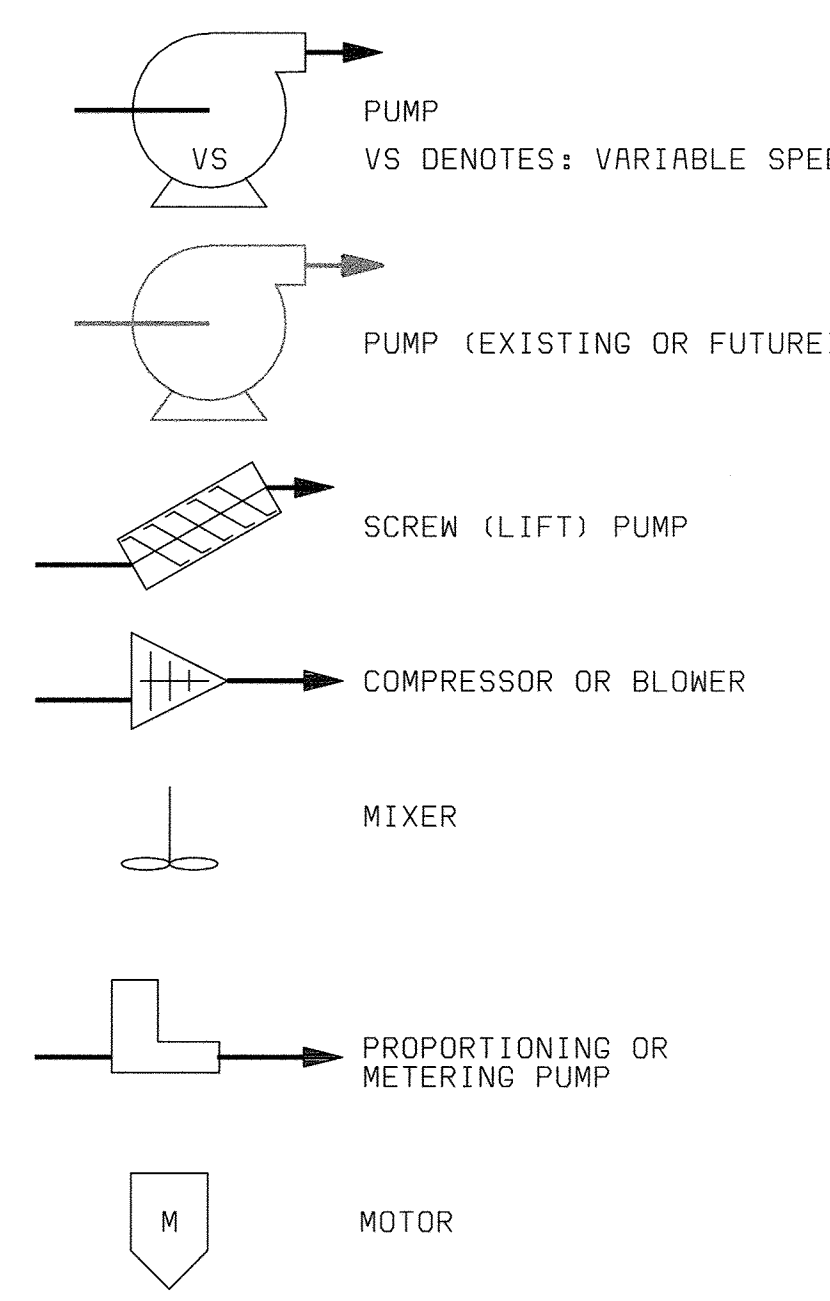
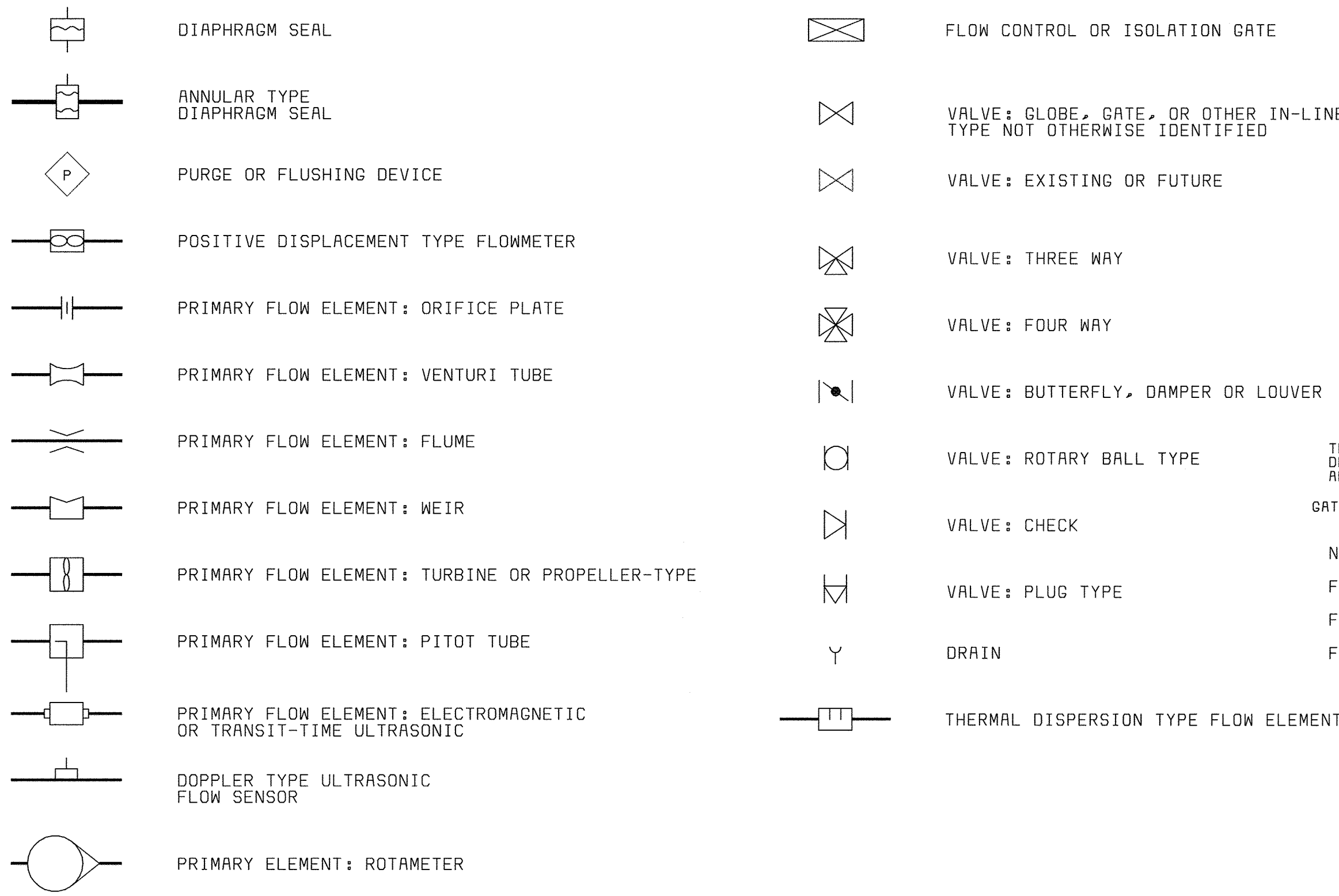
- AS AIR SUPPLY
- ES ELECTRIC SUPPLY
- GS GAS SUPPLY
- HS HYDRAULIC SUPPLY
- NS NITROGEN SUPPLY
- SS STEAM SUPPLY
- WS WATER SUPPLY

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

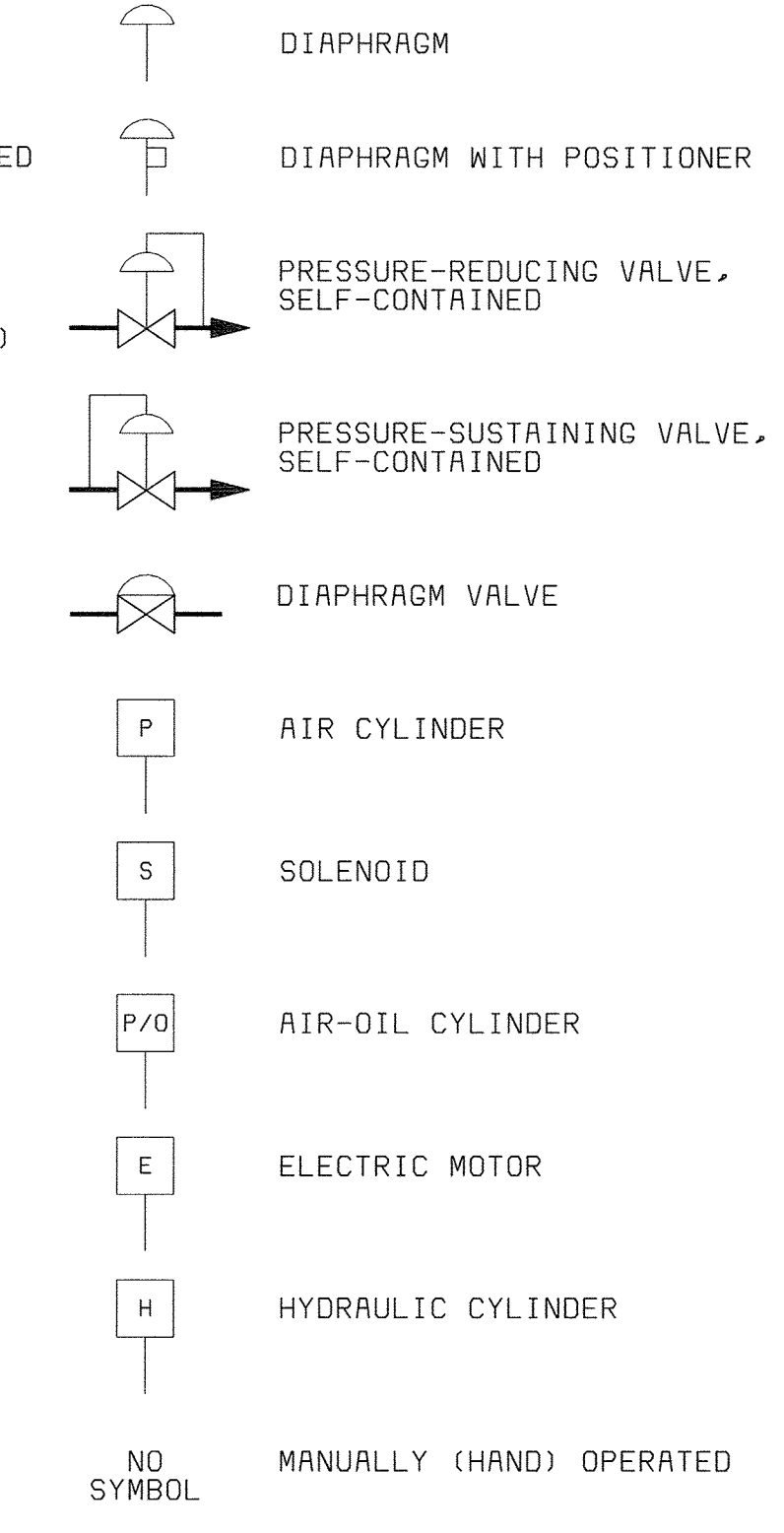
**GENERAL NOTES**

- 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**

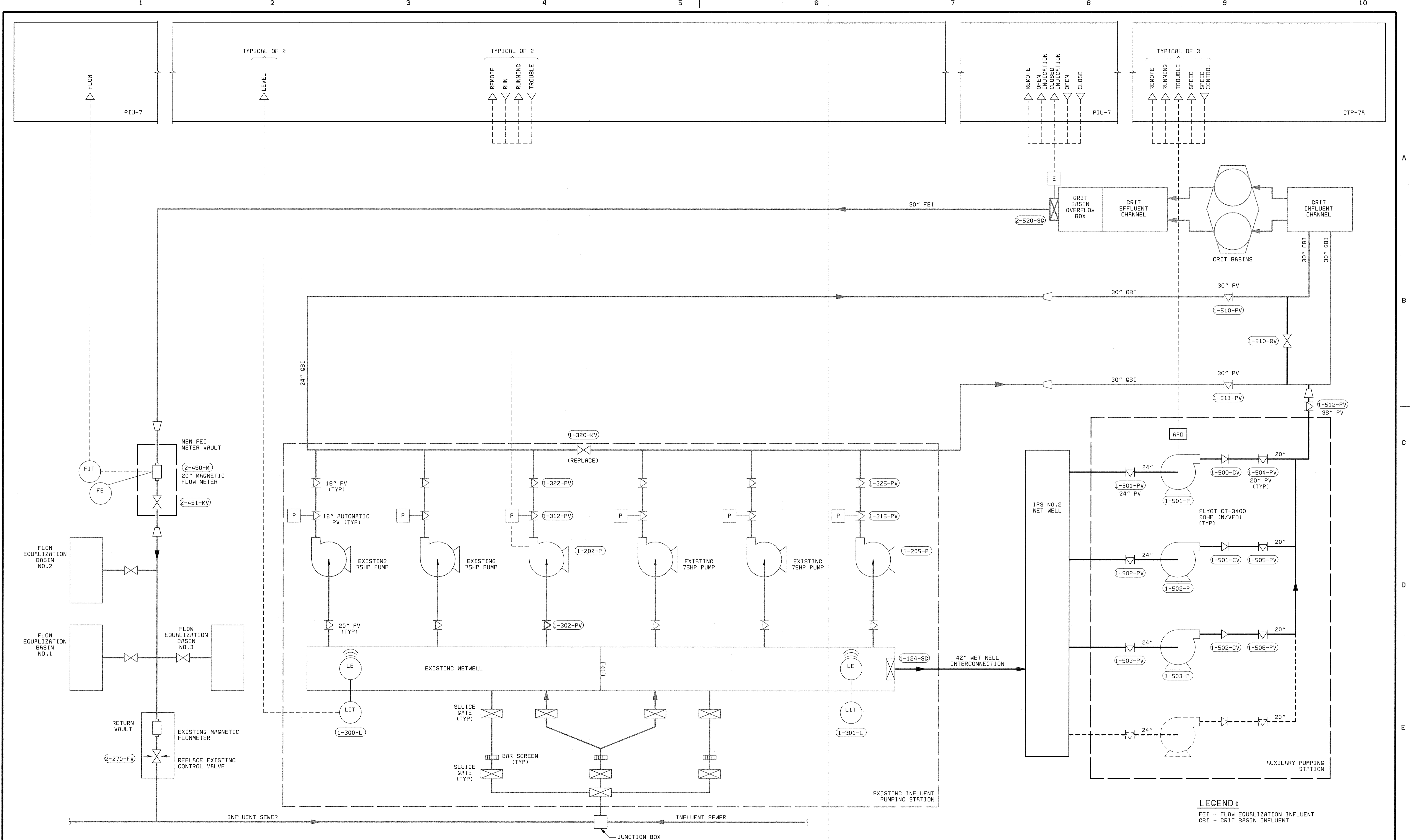


**VALVE AND GATE ACTUATOR SYMBOLS**



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	REVISIONS AND RECORD OF ISSUE	NO.			BY





**LEGEND:**  
 FEI - FLOW EQUALIZATION INFLUENT  
 GBI - GRIT BASIN INFLUENT

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

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

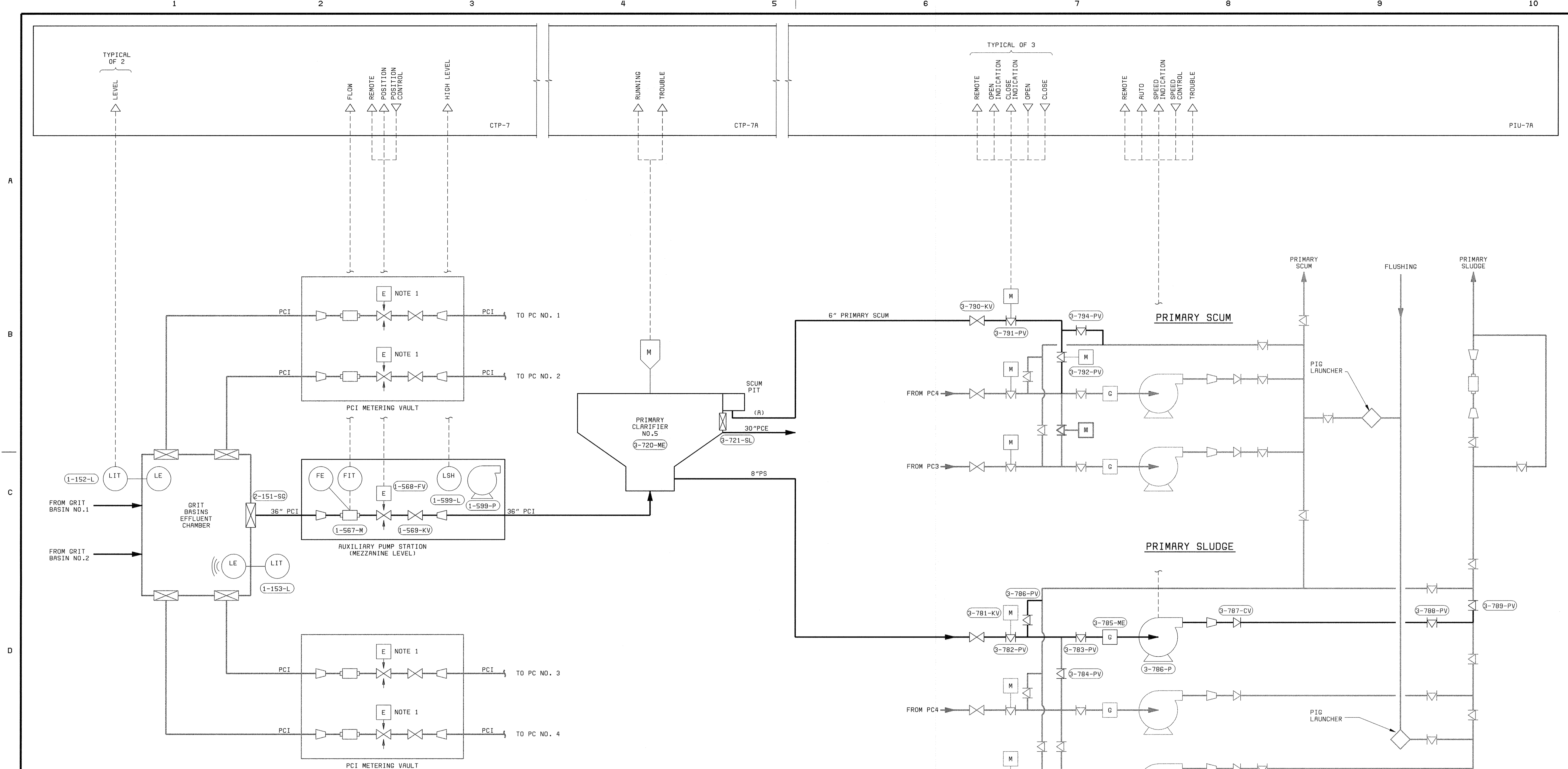
THIS DRAWING WAS  
 ORIGINALLY APPROVED  
 FOR CONSTRUCTION  
 AND SEALED BY  
 DONALD R. STEVENS  
 A REGISTERED  
 PROFESSIONAL ENGINEER  
 IN THE  
 STATE OF MARYLAND,  
 NO. 21876

DES: RSF					
DRN: DAH					
CHK: JER					
DATE: 04/13/01	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK 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**




**LEGEND:**

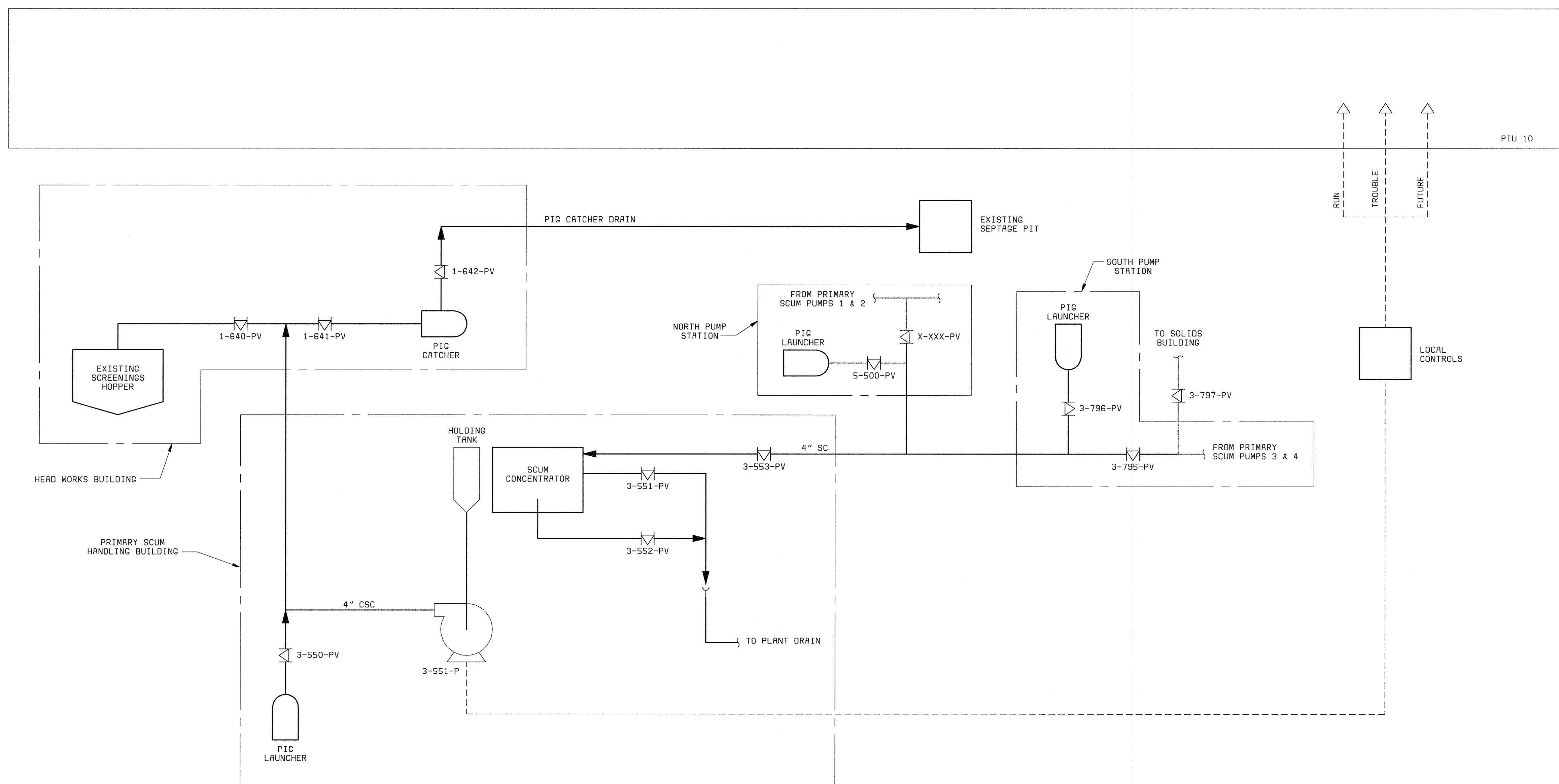
- PCI PRIMARY CLARIFIER INFLUENT
- PCE PRIMARY CLARIFIER EFFLUENT
- PS PRIMARY SLUDGE

**NOTE:**

1. REPLACE UNDER B10 ALTERNATIVE 1

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	 <b>BLACK &amp; VEATCH</b> 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	<b>INSTRUMENTATION</b>  <b>GRIT BASINS AND          PRIMARY CLARIFIERS          P &amp; ID</b>	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  <b>I3</b>
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.

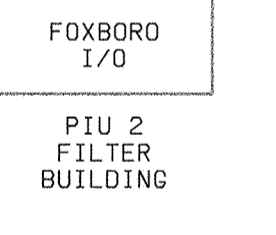
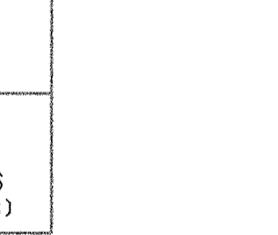
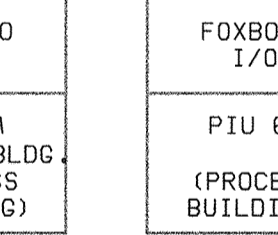
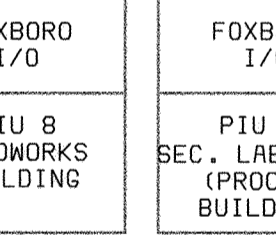
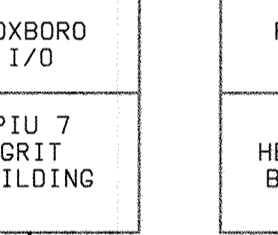
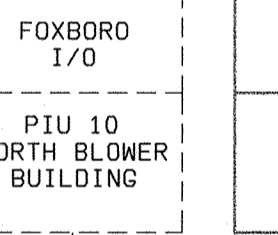
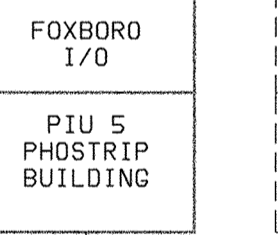
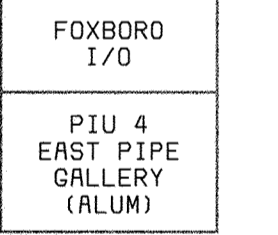
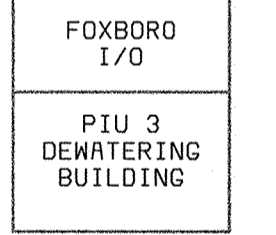
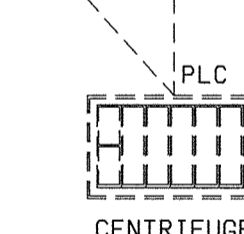
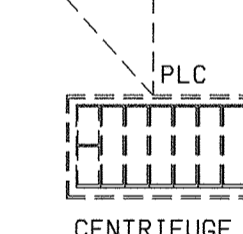
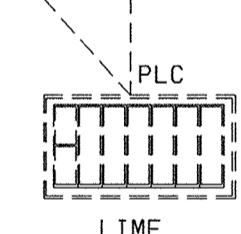
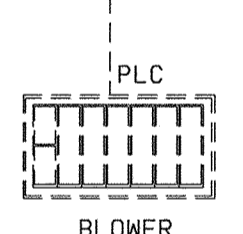
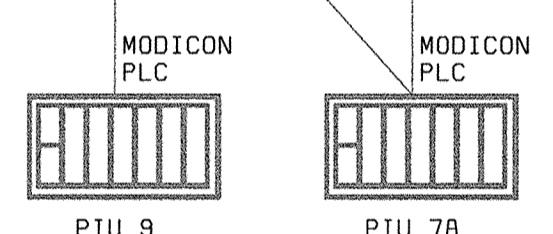
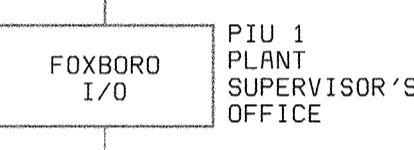
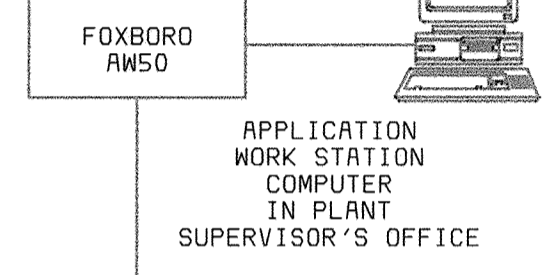
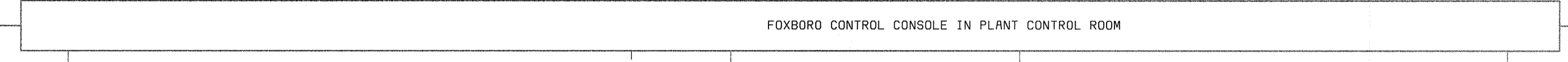
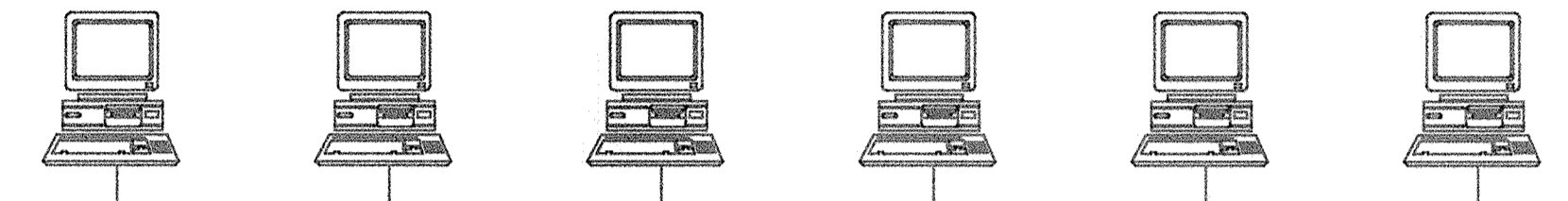
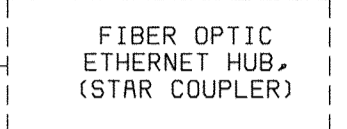
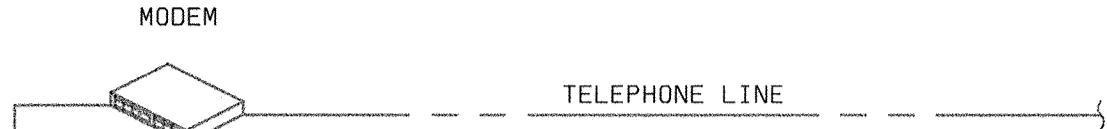
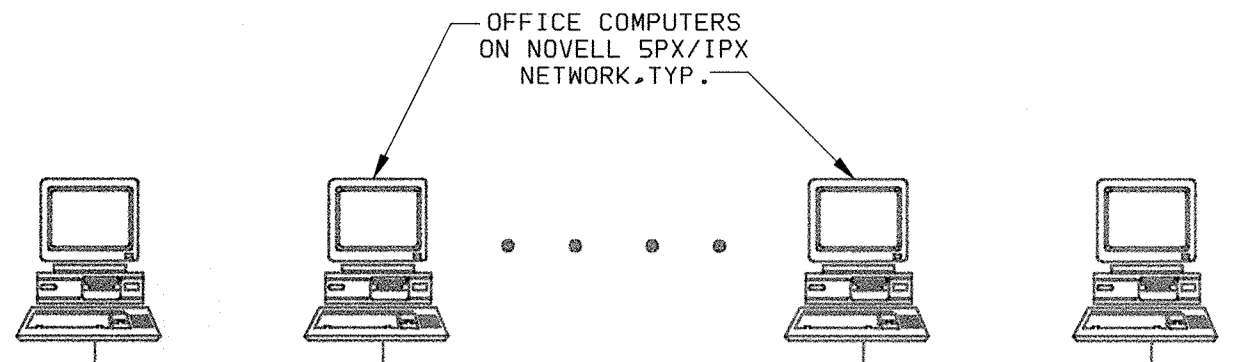
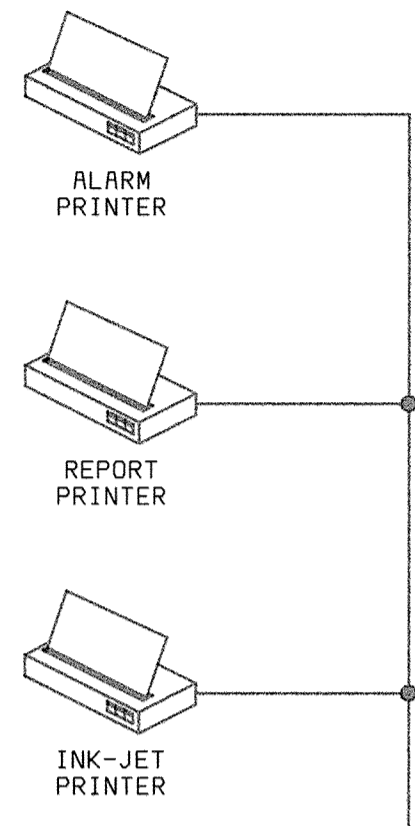
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> GAITHERSBURG, MARYLAND  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876	DES: RSF DRN: TDR CHK: JER DATE: 04/13/01	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DATE</td> <td>REVISIONS AND RECORD OF ISSUE</td> <td>NO.</td> <td>BY</td> <td>CK</td> <td>APP</td> </tr> <tr> <td>02/06/04</td> <td>CONFORMED TO CONSTRUCTION RECORDS</td> <td></td> <td>RHH</td> <td>RJR</td> <td>RJR</td> </tr> </table>	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP	02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR	RJR	<b>INSTRUMENTATION</b>  <b>P &amp; ID</b> <b>SCUM CONCENTRATOR</b>	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 85 OF 88  <b>I 4</b>
DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK	APP														
02/06/04	CONFORMED TO CONSTRUCTION RECORDS		RHH	RJR	RJR														

058472.3  
F058472A

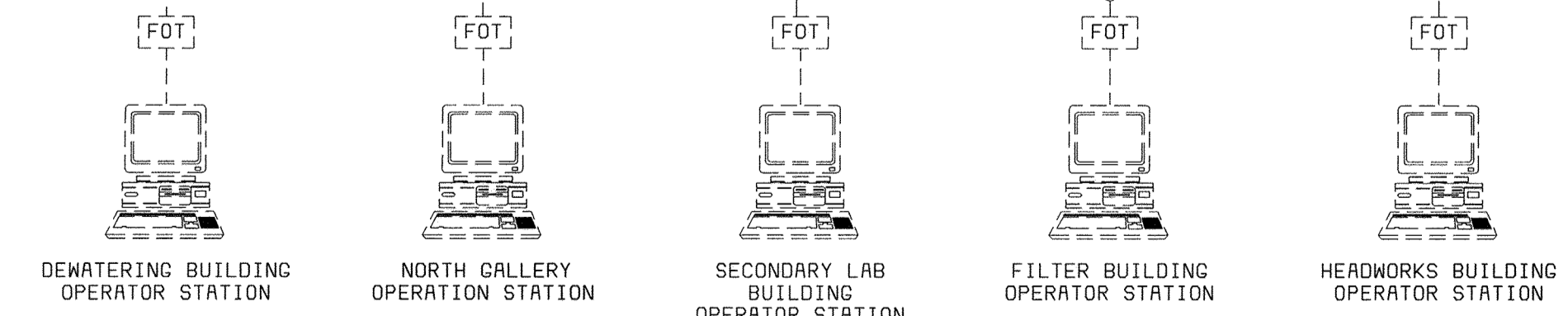
A  
B  
C  
D  
E  
F

ADMIN. BUILDING

OTHER PLANT AREAS



DASHED LINE FUTURE  
SCREENED LINE EXISTING



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: RSF  
DRN: TDR  
CHK: JER  
DATE: 02/19/01

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

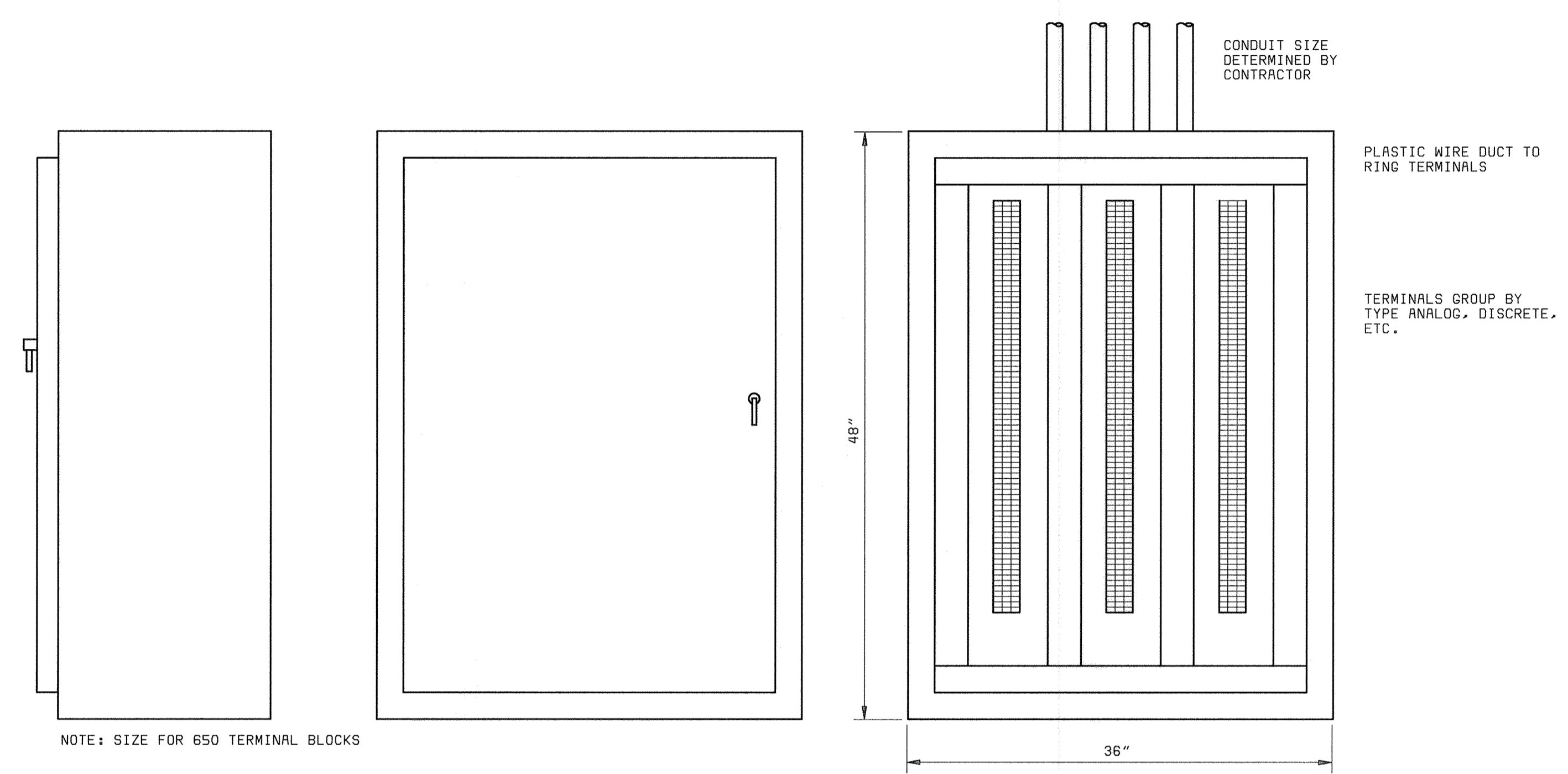
**INSTRUMENTATION**  
**P & ID**  
**CONTROL BLOCK DIAGRAM**

**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  
86 OF 88  
**15**

056472-3  
FD58472A

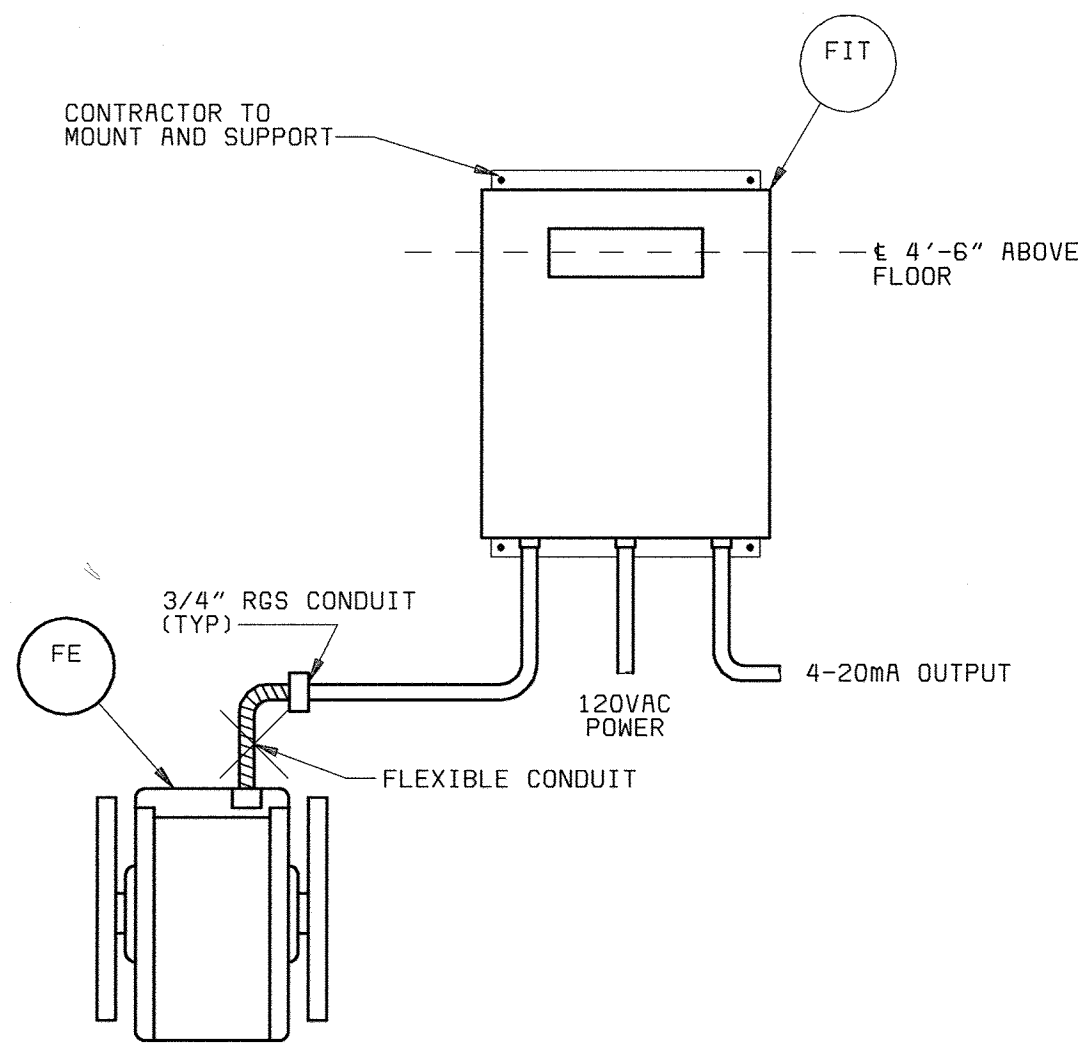




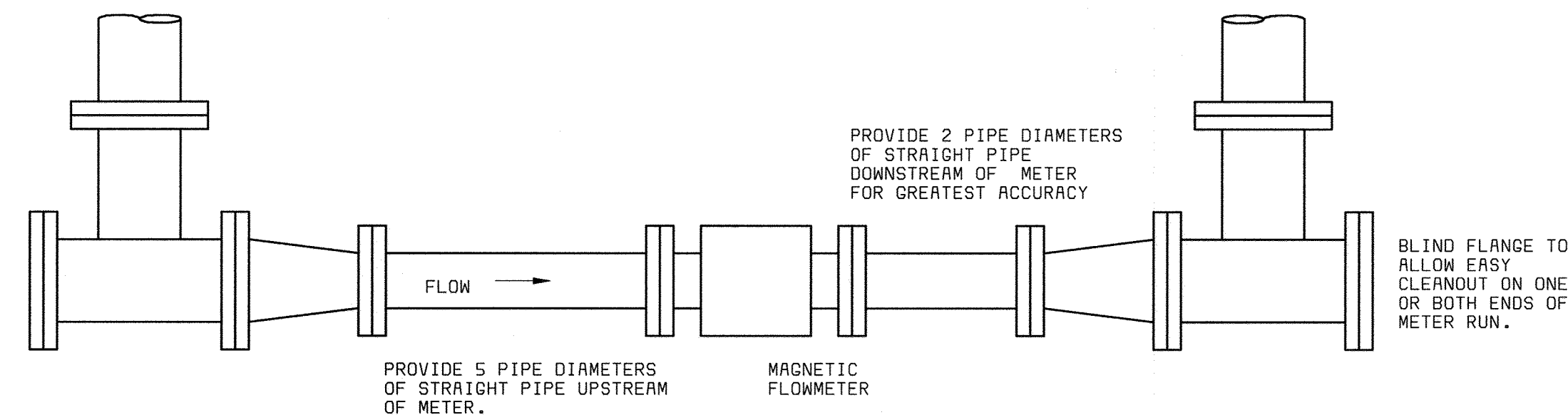
**NORTH BLOWER BUILDING & WEST GALLERY**  
**WALL MOUNT CONTROL SIGNAL JUNCTION BOX**  
 NO SCALE

- 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.

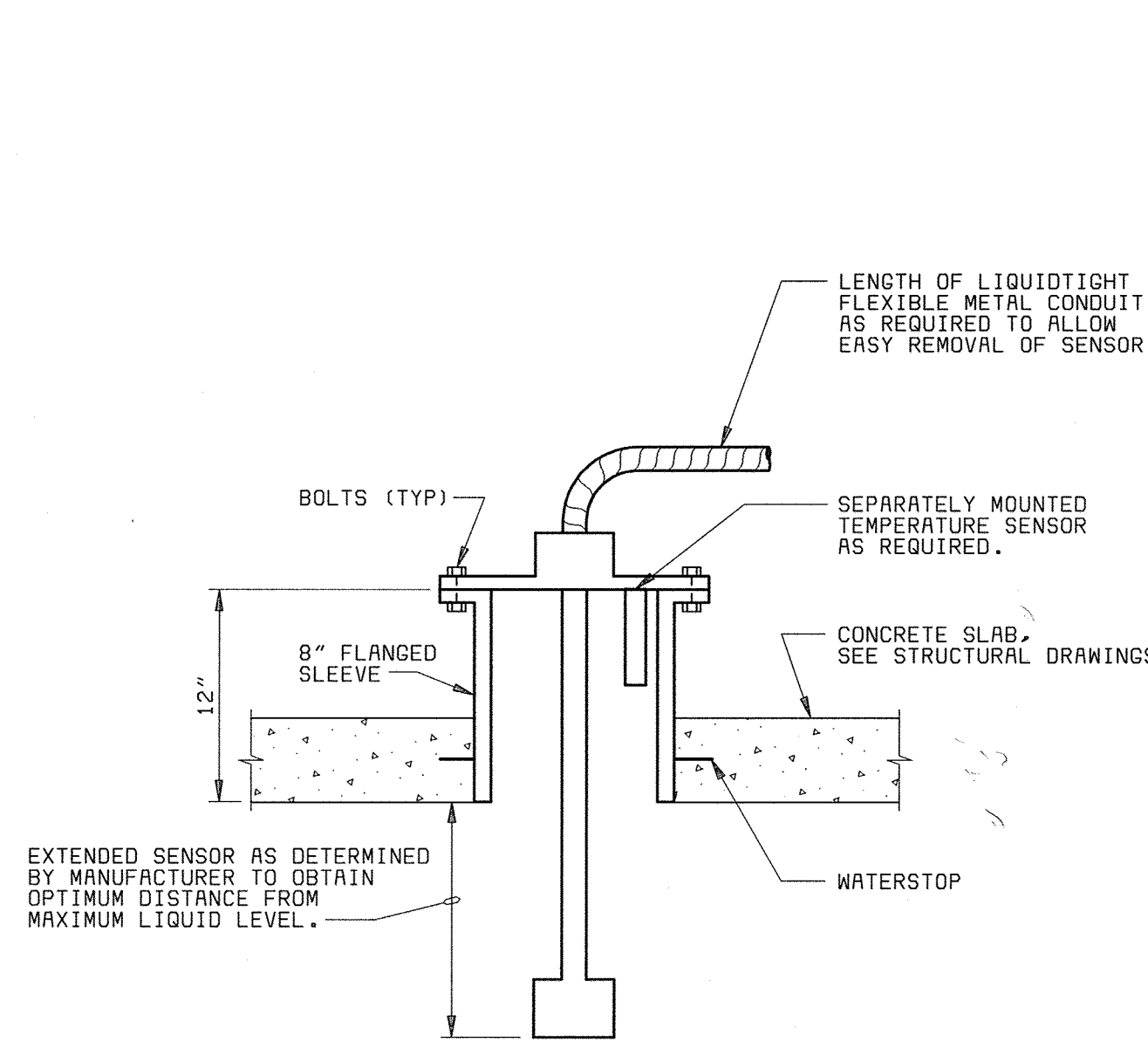
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND  CHIEF, BUREAU OF UTILITIES DATE	<b>BLACK &amp; VEATCH</b> Gaithersburg, Maryland  REG. PROF. ENGR. DATE	THIS DRAWING WAS ORIGINALLY APPROVED FOR CONSTRUCTION AND SEALED BY DONALD R. STEVENS A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MARYLAND, NO. 21876	DES: RSF DRN: TDR CHK: JER DATE: 02/19/01	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>02/06/04</td> <td>CONFORMED TO CONSTRUCTION RECORDS</td> <td>RHH/RJR/RJR</td> </tr> <tr> <td> </td> <td>REVISIONS AND RECORD OF ISSUE</td> <td>NO. BY CK APP</td> </tr> </table>	02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR		REVISIONS AND RECORD OF ISSUE	NO. BY CK APP	INSTRUMENTATION  P & ID PANEL 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 87 of 88  <b>16</b>
02/06/04	CONFORMED TO CONSTRUCTION RECORDS	RHH/RJR/RJR											
	REVISIONS AND RECORD OF ISSUE	NO. BY CK APP											



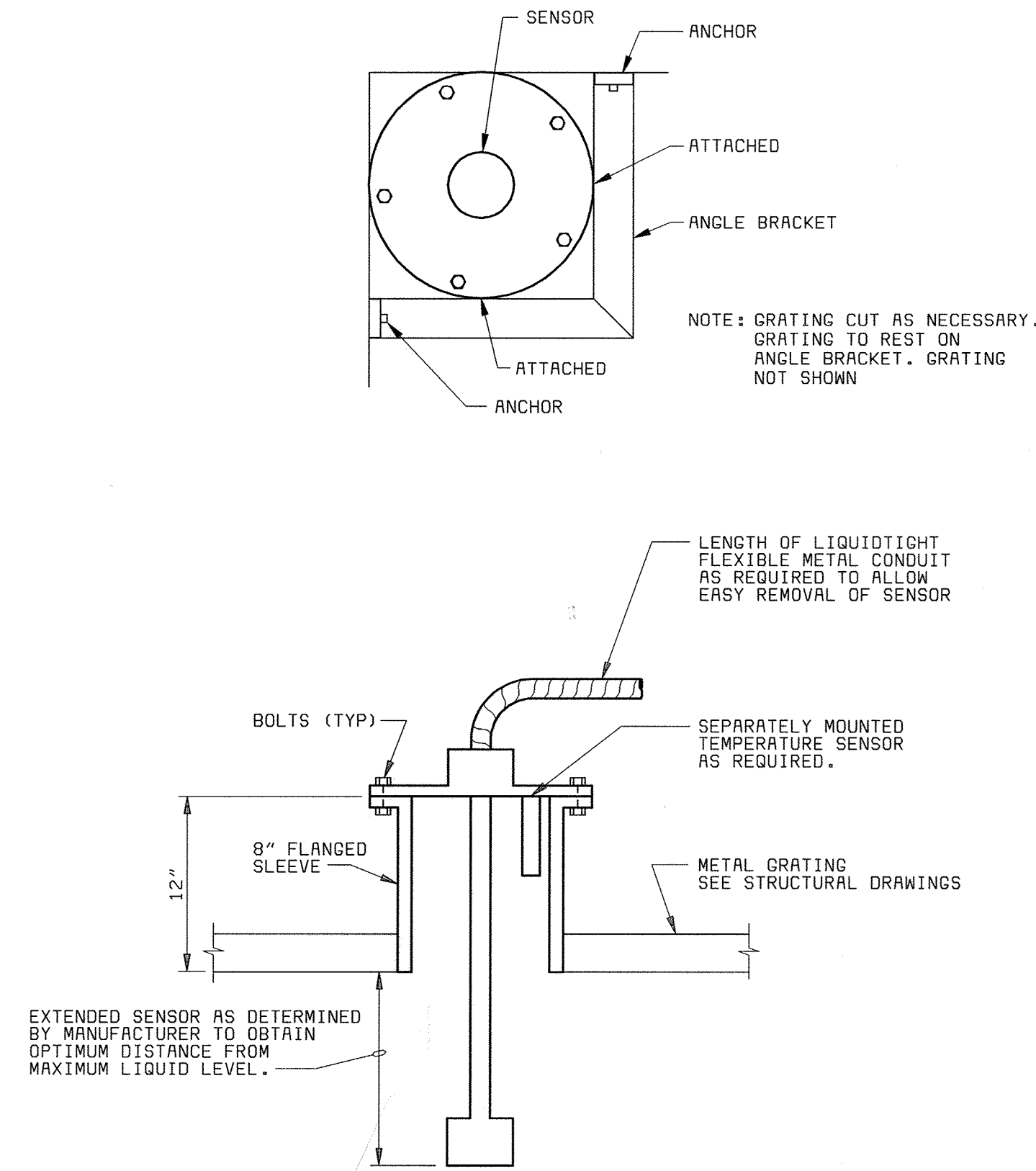
**MAGNETIC FLOWMETER INSTALLATION DETAIL**  
NO SCALE



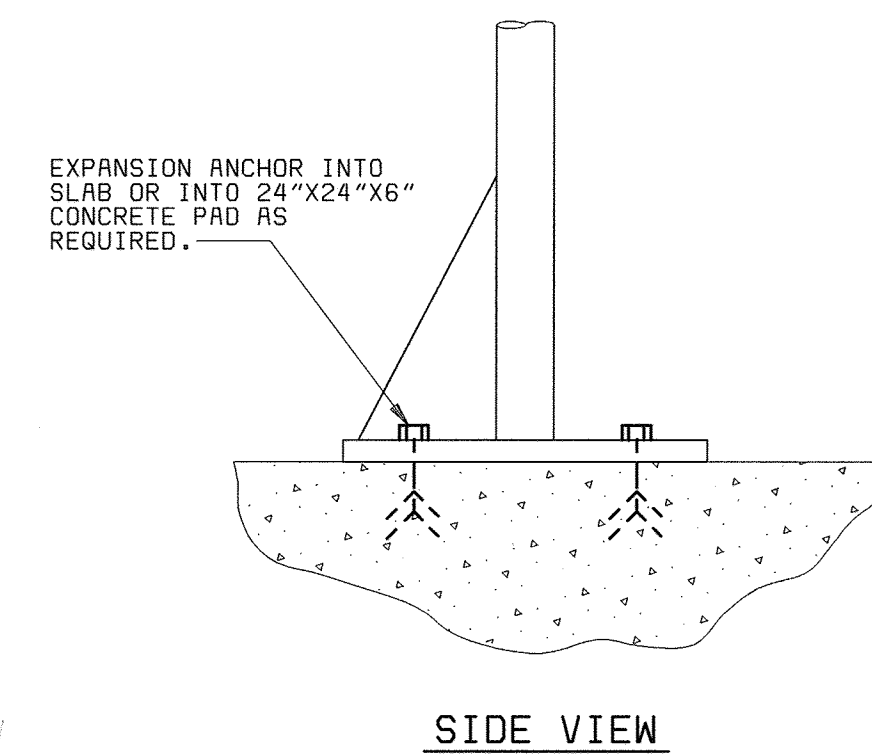
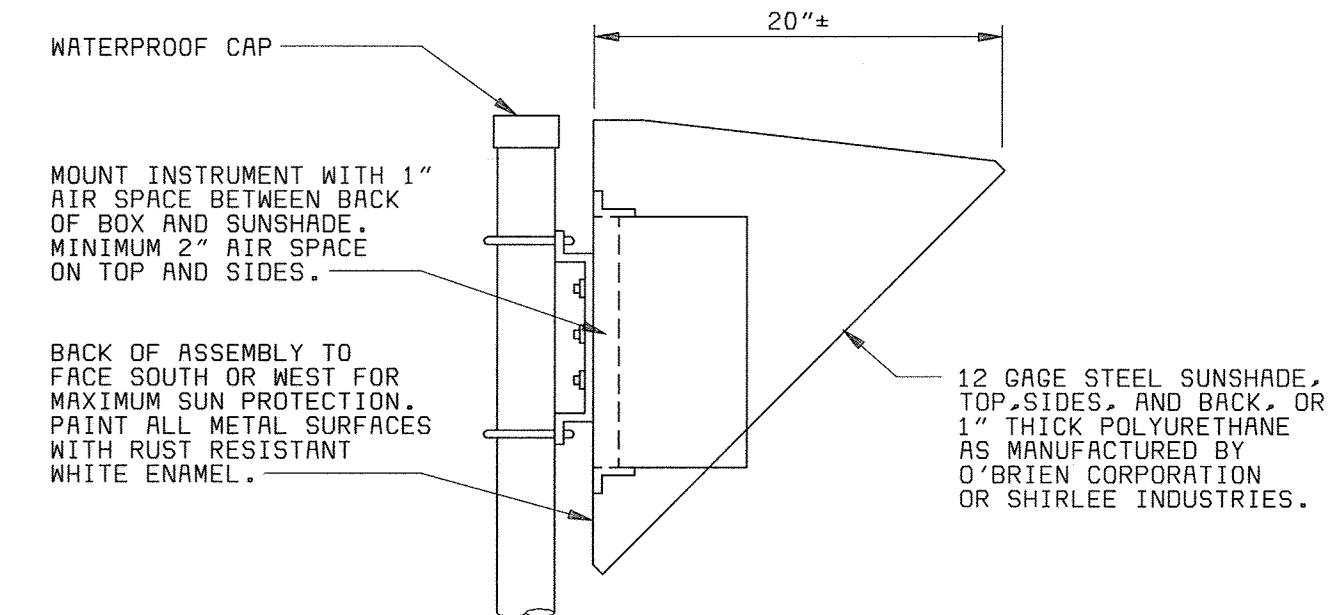
**TYPICAL MAGNETIC FLOWMETER INSTALLATION**  
NO SCALE



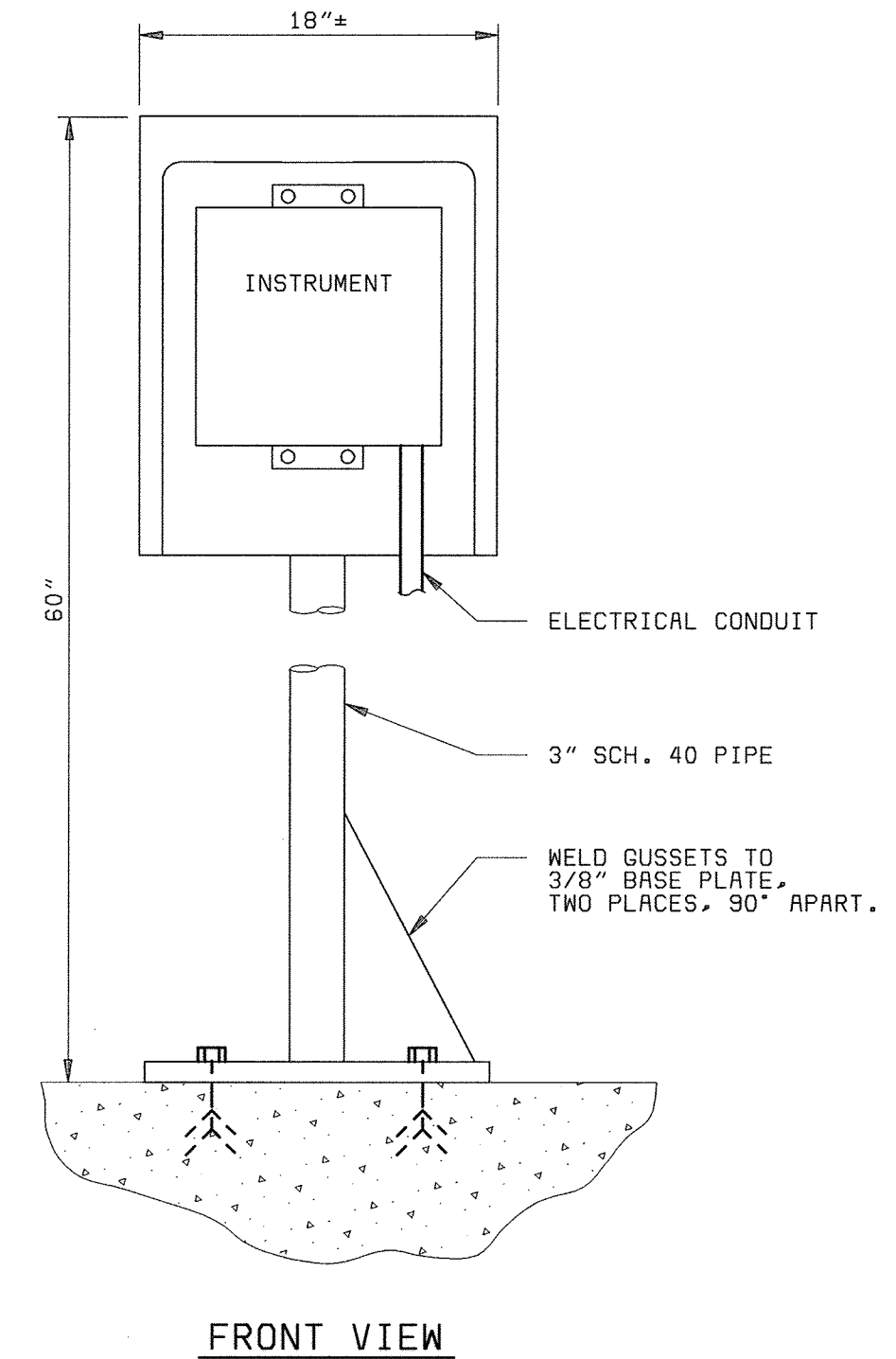
**ULTRASONIC LEVEL SENSOR INSTALLATION DETAIL**  
NO SCALE  
TYPICAL FOR: 1-300-L, 1-301-L



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



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



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

**INSTRUMENTATION**  
**P & ID**  
**INSTALLATION 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  
88 OF 88  
**I 7**