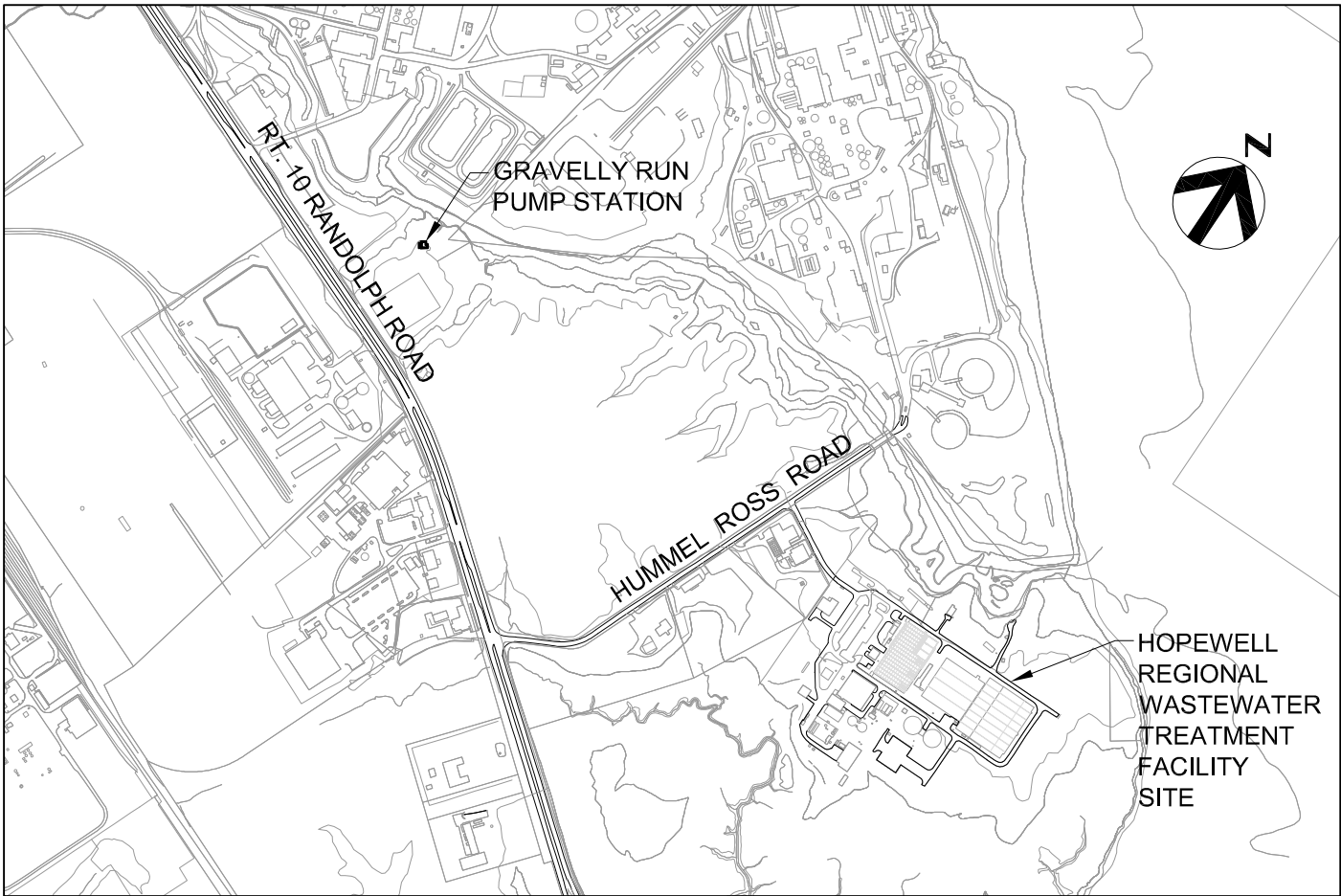


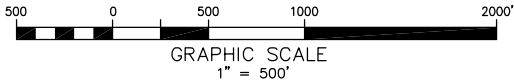
CITY OF HOPEWELL, VIRGINIA



HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT, PHASE 2 CONCEPTUAL DESIGN



LOCATION PLAN



MARCH 2014

VOLUME 2 OF 2
DRAWINGS

HDR

HDR Engineering, Inc.
5700 Lake Wright Drive
Twin Oaks 1 - Suite 300
Norfolk, VA 23502
Phone: (757) 222-1500



NOTES:

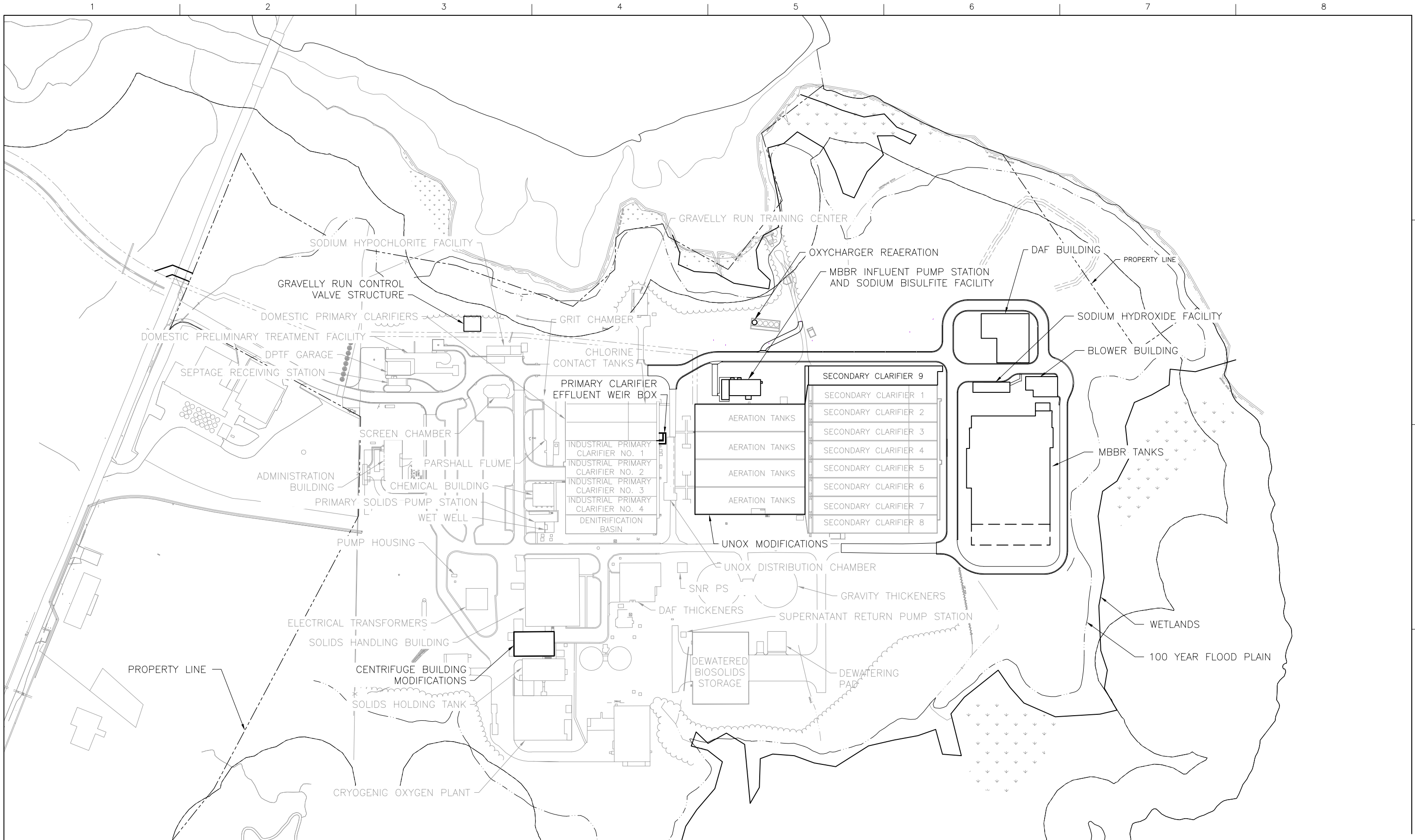
1. HORIZONTAL DATUM AS SHOWN HEREON IS BASED ON VIRGINIA STATE PLANE COORDINATE SYSTEM, SOUTH ZONE (NAD1983) U.S. SURVEY FEET.
2. ELEVATIONS AS SHOWN HEREON ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.

1		2		3		4		5		6		7		8	
A	ARCHITECTURAL (DWG DISCIPLINE), AMP, AMPERE, ALARM, AMBER	BOL	BOTTOM OF LOUVER	CVT	CULVERT	EQ	EQUAL	G	GRILLE, GROUND, GENERAL (DWG DISCIPLINE), GREEN	I	INSTRUMENTATION (DWG DISCIPLINE), INCLINOMETER				
A/C	AIR CONDITIONING	BOP	BOTTOM OF PIPE	CU	COPPER, CUBIC	EQUIP	EQUIPMENT	GA	GAGE (METAL THICKNESS)	I&C	INSTRUMENTATION & CONTROLS				
A/E	ARCHITECT/ENGINEER	BOR	BOTTOM OF REGISTER	CU FT	CUBIC FEET	EQUIV	EQUIVALENT	I/O	INPUT/OUTPUT						
AB	ANCHOR BOLT	BOT	BOTTOM	CW	CLOCKWISE, COLD WATER	ES	EACH SIDE, EQUAL SPACE, END SWITCH	GAL	GALLON	ID	INSIDE DIAMETER, INTERIOR DIMENSION				
ABAN	ABANDON	BOU	BOTTOM OF UNIT	CY	CUBIC YARD	ESEW	EMERGENCY SHOWER AND EYE WASH	GALV	GALVANIZED	IE	INVERT ELEVATION				
ABC	AGGREGATE BASE COURSE	BP	BASE PLATE			ESMT	EASEMENT	GAM	GAS ANALYSIS MODULE	IF	INSIDE FACE				
AC	ALTERNATING CURRENT, ACID CLEANING	BRG	BEARING	d	PENNY (NAIL MEASURE)	EST	ESTIMATE	GB	GRAB BAR, GRADE BREAK	IH	INTAKE HOOD				
AC/H	AIR CHANGES PER HOUR	BRGP	BEARING PLATE	D	DEEP, DEPTH	E--STOP	EMERGENCY STOP	GC	GROOVED COUPLING, GRIT CHANNEL	IMP	IMPACT				
ACCU	AIR--COOLED CONDENSING UNIT	BRKT	BRACKET	DB	DUCT BANK, DECIBEL, DRY BULB, DEED BOOK	ET	EXPANSION TANK	GD	GUARD, GROUND DETECTOR	IN	INCH				
ACK	ACKNOWLEDGE	BS	BOTH SIDES	DBA	DEFORMED BAR ANCHOR	EUH	ELECTRIC UNIT HEATER	GDR	GRADING	INC	INCLUDE				
ACP	ACOUSTIC CEILING PANEL, ASPHALTIC CONCRETE PAVEMENT	BTU	BRITISH THERMAL UNIT	DBL	DOUBLE	EW	EACH WAY	GEN	GENERAL, GENERATOR	INCAND	INCANDESCENT				
		BTUH	BRITISH THERMAL UNIT PER HOUR	DC	DIRECT CURRENT	E/W	EACH WAY	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	INF	INFLUENT				
		BTWLD	BUTT WELD	DCP	DIGITAL CONTROL PANEL	EW	ELECTRIC WATER COOLER	GFI	GROUND FAULT INTERRUPTER	INS WC	INCHES WATER COLUMN				
ACST	ACOUSTIC	BU	BELL UP, BUILT UP	DCS	DIGITAL CONTROL SYSTEM	EWEF	EACH WAY, EACH FACE	GFMU	GROUND FAULT MASONRY UNIT	INSTR	INSTRUMENTATION				
ACT	ACOUSTIC CEILING TILE	BUR	BUILT--UP ROOFING	DCU	DIGITAL CONTROL UNIT	EWB	ELECTRIC WATER HEATER	GFR	GROUND FAULT RELAY	INSUL	INSULATION				
AD	ADDENDUM, AREA DRAIN	BW	BOTH WAYS	DDC	DIGITAL DEMAND CONTROLLER	EWTB	EACH WAY, TOP AND BOTTOM	GG	GUTTER GRADE	INT	INTERIOR, INTERSECTION				
ADA	AMERICANS WITH DISABILITIES ACT	BYP	BYPASS	DEG	DEGREE	EXC	EXCAVATION	GJ	GROOVED JOINT	INTR	INTERMEDIATE, INTERIOR				
ADDL	ADDITIONAL			DEG C	DEGREE CENTIGRADE	EXH	EXHAUST	GL	GLASS	INV	INVERT				
ADH	ADHESIVE	C	CHANNEL SHAPE, CENTIGRADE, CLOSE, CONDUIT, CIVIL (DRAWING DISCIPLINE), COMMUNICATION, CONTRACTOR, COUNTER	DEG F	DEGREE FAHRENHEIT	EXIST	EXISTING	GLB	GLASS BLOCK	IP	INLET PROTECTION, INSTRUMENT PANEL				
ADJ	ADJUSTABLE, ADJACENT			DEMO	DEMOLITION	EXP	EXPANSION, EXPOSED	GND	GROUND	IPS	IRON PIPE SIZE				
AF	AMP FRAME, AMP FUSE	C--C	CENTER TO CENTER	DEP	DEPRESSED	EXT	EXTERIOR, EXTERNAL, EXTENSION	GP	GUY POLE	IPT	INTERNAL PIPE THREAD				
AFF	ABOVE FINISH FLOOR	C TO C	CENTER TO CENTER	DEPT	DEPARTMENT	EX	EXPLOSION PROOF	GPD	GALLONS PER DAY	IR	INSIDE RADIUS				
AFG	ABOVE FINISH GRADE	C&G	CURB & GUTTER	DET	DETAIL			GPM	GALLONS PER MINUTE	IRR	IRRIGATION				
AGGR	AGGREGATE	CAB	CABINET	DETC	DETECTOR	F	FIBER, DEGREES FAHRENHEIT, FACTORY	GR	GRADE	IS	INDUSTRIAL SCREENING				
AHU	AIR HANDLING UNIT	CAP	CAPACITY	DI	DROP INLET, DUCTILE IRON, DIGITAL (DISCREET) INPUT	F/FOR	FORWARD	GRIT	GRIT	ISO	ISOMETRIC				
AI	AREA INLET, AERATION INFLUENT, ANALOG INPUT	CAT	CATALOG	DIA	DIAMETER	F&B	FACE & BYPASS	GRTC	GRAVELLY RUN TRAINING CENTER	J/JB	JUNCTION BOX				
AIC	AMPS INTERRUPTING CAPACITY	CAV	CAVITY	DIAG	DIAGONAL, DIAGRAM	F TO F	FACE TO FACE	GRTG	GRATING	JCT	JUNCTION				
AIT	ANALYZER INDICATING TRANSMITTER	CB	CATCH BASIN	DIFF	DIFFERENTIAL, DIFFERENCE	FAB	FABRICATE	GSB	GYPSPUM SHEATHING BOARD	JF	JOINT FILLER				
ALIG	ALIGNMENT	CCB	CONCRETE BLOCK	DIM	DIMENSION	FAD	FOUL AIR DUCT	GSP	GALVANIZED STEEL PIPE	JST	JOIST				
ALUM	ALUMINUM	CCT	CHLORINE CONTACT TANK	DIP	DUCTILE IRON PIPE	FB	FLOOR BEAM	GT	GREASE TRAP, GRIT TANK	JT	JOINT				
ALT	ALTERNATE, ALTITUDE	CCW	COUNTER CLOCKWISE	DIP	DUCTILE IRON PIPE	FBD	FIBERBOARD	GTE	GRIT TANK EFFLUENT						
AM	ACOUSTICAL MATERIAL	CCF	CONTROLLED DENSITY FILL	DISCH	DISCHARGE	FBG	FIBERGLASS	GVL	GRAVEL						
AMB	AMBIENT	CCF	CONTROLLED DENSITY FILL	DIST	DISTANCE, DISTRIBUTION	FBM	BOARD FOOT MEASURE	GW	GUY WIRE	K	KIP, KEY INTERLOCK				
AMPS	AMPERES	CE	CONCRETE EDGE	DIV	DIVISION	FBO	FURNISHED BY OWNER	GWB	GYPSPUM WALLBOARD	K--CUFT	1,000 CUBIC FEET				
ANC	ANCHOR	CENT	CENTRIFUGAL, CENTRIFUGE	DL	DEAD LOAD	FC	FLUSHING CONNECTION, FAN COIL	GYP	GYPSPUM HARDBOARD	KB	KNEE BRACE				
AO	ANALOG OUTPUT	CERAMIC	CERAMIC	DMJ	DOUBLE MECHANICAL JOINT	FCA	FLANGED COUPLING ADAPTER			KCJ	KEYED CONSTRUCTION JOINT				
AP	ACCESS PANEL	CF	CUBIC FEET (FOOT)	DMP	DIGITAL METERING PACKAGE	FCU	FAN COIL UNIT	H	HIGH, HVAC (DWG DISCIPLINE), HAZARDOUS, HOT	KCML	THOUSAND CIRCULAR MILS				
APPROX	APPROXIMATELY	CFH	CUBIC FEET PER HOUR	DMPF	DAMP PROOFING	FD	FIRE DAMPER, FLOOR DRAIN	HAP	HAZARDOUS AIR POLLUTANTS	KD	KNOCK DOWN				
APRX	APPROXIMATE, APPROXIMATELY	CFL	COUNTER FLASHING	DN	DOWN	FDC	FLEXIBLE DUCT CONNECTION	HB	HOSE BIBB	KO	KNOCK OUT				
APVD	APPROVED	CFM	CUBIC FEET PER MINUTE	DO	DISSOLVED OXYGEN, DITTO, DIGITAL (DISCREET) OUTPUT	FDN	FOUNDATION	HBD	HARDBOARD	KSI	KIPS PER SQUARE INCH				
AR	ALARM RELAY	CHFR	CHAMFER	DP	DEPTH	FDTN	FOUNDATION	HC	HANDICAPPED, HOLLOW CORE, HORIZONTAL CURVE, HORIZONTAL CENTERLINE	KV	KILOVOLT				
ARCH	ARCHITECTURAL	CHBD	CHALKBOARD	DPDT	DOUBLE POLE, DOUBLE THROW	FDR	FEEDER	HCA	HEADED CONCRETE ANCHOR, HARNESSED COUPLING ADAPTER	KVA	KILOVOLT AMPERE				
AS	AIR SUPPLY (LOW PRESSURE PROCESS AIR), AIR SEPARATOR	CHD	CHORD	DPS	DRY POLYMER	FE	FLANGED END, FLOW ELEMENT			KW	KILOWATT (1000 WATTS)				
		CHH	COMMUNICATION HANDHOLE	DPS	DIFFERENTIAL PRESSURE SWITCH	FEC	FIRE EXTINGUISHER CABINET			KWH	KILOWATT HOUR				
ASSY	ASSEMBLY	CI	CURB INLET	DPS	DIFFERENTIAL PRESSURE SWITCH	FES	FLARED END SECTION	HD	HEAD, HOT DIP	L	ANGLE, LENGTH, LAVATORY, LINTEL, LOW LEVEL, LATCH				
AT	AMP TRIP, AERATION TANKS	CIP	CAST--IN--PLACE	DPSD	DRAINAGE PUMP STATION DISCHARGE	FEXT	FIRE EXTINGUISHER	HDR	HEADER	LAD	LADDER				
ATC	ACOUSTICAL TILE CEILING	CIPB	CONCRETE INTERLOCKING PAVER BALLAST	DPSS	DRAINAGE PUMP STATION SUCTION	FF	FAR FACE, FACTORY FINISH, FLAT FACE	HDW	HARDWARE	LAM	LAMINATE				
ATM	ATMOSPHERE	CIRC	CIRCULATION, CIRCULAR	DPST	DOUBLE POLE, SINGLE THROW	FG	FINISHED GRADE	HE	EXISTING PANEL DESIGNATION	LATL	LATERAL				
ATS	AUTOMATIC TRANSFER SWITCH	CJ	CONSTRUCTION JOINT	DPTF	DOMESTIC PRELIMINARY TREATMENT FACILITY	FI	FILTER	HEX	HEXAGONAL	LB	LAG BOLT, POUND				
AUTO	AUTOMATIC	CKT	CIRCUIT	DPTFPP	DOMESTIC PRELIMINARY TREATMENT FACILITY	FIG	FIGURE	HGR	HANGER	LB/D	POUNDS PER DAY				
AUX	AUXILIARY	CL	CENTERLINE, CLASS, CLOSE			FH	FIRE HYDRANT	HH	HANDHOLE	LB/HR/M	POUNDS PER HOUR PER MINUTE				
AVE	AVENUE	CLG	CEILING			FIN	FINISH	HID	HIGH INTENSITY DISCHARGE	LBVS	POUND OF VOLATILE SOLIDS				
AVG	AVERAGE	CLKG	CAULKING			FIT	FLOW INDICATING TRANSMITTER	HM	HOLLOW METAL	LCP	LOCAL CONTROL PANEL				
AWG	AMERICAN WIRE GAGE	CLR	CLEAR			FJT	FLUSH JOINT	HMI	HUMAN MACHINE INTERFACE	LCTB	LIQUID CHALK AND TACK BOARD				
AWT	ACOUSTICAL WALL TILE	CLS	CHLORINE SOLUTION			FL	FLOW, FLOW LINE	HMW	HIGH MOLECULAR WEIGHT	LDG	LANDING				
		CMH	COMMUNICATION MANHOLE			FLA	FULL LOAD AMPERES	HOA	HAND/OFF/AUTO	LDR	LEADER				
		CMU	CONCRETE MASONRY UNIT			FLEX	FLEXIBLE	HORIZ	HORIZONTAL	LE	LIFTING EYE, LEVEL ELEMENT, EXISTING PANEL DESIGNATION				
B/	BOTTOM OF	CO	CLEAN OUT, CONCRETE OPENING			FLG	FLANGE	HP	HIGH POINT, HORSEPOWER, HEAT PUMP	LEA	LEACHATE				
B/B	BACK TO BACK	COL	COLUMN			FLOR	FLUORESCENT	HPC	HORIZONTAL POINT OF CURVATURE	LF	LINEAR FOOT				
B/D	BOTTOM OF DITCH	COM	COMMON			FLR	FLOOR	HPO	HIGH PURITY OXYGEN	LG	LONG				
BAL	BALANCE	COMB	COMBINATION			FLS	FLASHING, FLUSH	HPS	HIGH PRESSURE SODIUM	LH	LEFT HAND				
BC	BASE CABINET, BOTTOM CHORD, BOLT CENTER BOLT CIRCLE	COMM	COMMUNICATION			FM	FLOW METER, FORCE MAIN	HPT	HORIZONTAL POINT OF TANGENCY	LIN	LINEAR				
		COMP	COMPOSITION, COMPRESSIBLE, COMPOSITE,			FN	FENCE	HR	HOSE REEL, HOUR	LIQ	LIQUID				
BD	BOARD	COMPR	COMPRESSOR			FNE	FINAL EFFLUENT	HRS	HOURS	LIT	LEVEL INDICATING TRANSMITTER				
BDD	BACKDRAFT DAMPER	CONC	CONCENTRIC, CONCRETE			FO	FINISHED OPENING	HRT	HYDRAULIC RETENTION TIME	LL	LIVE LOAD				
BDM	BOTTOM	COND	CONDENSATE			FOB	FLAT ON BOTTOM	HS	HEADED STUD, HIGH STRENGTH	LLH	LONG LEG HORIZONTAL				
BE	BOTH ENDS, BELL END	CONN	CONNECTION			FOC	FACE OF CONCRETE, FACE OF CURB, FUEL OIL COOLER	H2S	HYDROGEN SULFIDE	LLV	LONG LEG VERTICAL				
BF	BOTH FACES, BOTTOM FACE, BLIND FLANGE BOARD FEET	CONST	CONSTRUCTION					HSS	HOLLOW STRUCTURAL SHAPE	LNG	LONGITUDINAL				
		CONT	CONTINUED, CONTINUOUS					HT	HEIGHT	LOC	LOCATION				
BFP	BACKFLOW PREVENTER	COOR	COORDINATE					HTG	HEATING	LP	LOW POINT, LIGHTING PANEL, LIGHT POLE				
BFV	BUTTERFLY VALVE	CORR	CORROSIVE, CORRUGATED					HTR	HEATER	LPOLY	LIQUID POLYMER				
BITUM	BITUMINOUS	CP	CHECKER PLATE, CONTROL POINT, CONTROL PANEL					HV	HIGH VOLTAGE	LPS	LOW PRESSURE SODIUM				
BKG	BACKING	CPLG	COUPLING					HW	HEADWORKS	LR	LONG RADIUS, LATCH RELAY				
BL	BASE LINE	CPT	CONE PENETRATION TEST, CONTROL POWER TRANSFORMER					HWD	HARDWOOD	LS	LEVEL SWITCH, LIMIT SWITCH				
BLDG	BUILDING							HWL	HIGH WATER LEVEL	LSH	LEVEL SWITCH HIGH				
BLK	BLOCK	CR	CURRENT, CONTROL RELAY					HWP	HOT WATER PUMP	LSL	LEVEL SWITCH LOW				
BLKG	BLOCKING	CRL	CORROSION RESISTANT LINING					HWR	HOT WATER RETURN	LT	LEFT				
BLR	BOILER	CS	CONTROL STATION					HWS	HOT WATER SUPPLY	LTD	LIMITED				
BLWR	BLOWER	CSC	COMPRESSION SLEEVE COUPLING					HX	HEAT EXCHANGER	LTG	LIGHTING				
BM	BENCHMARK, BEAM	CSK	COUNTERSINK					HYD	HYDRAULIC, HYDRANT	LTL	LINTEL				
BO	BLOW--OFF, BOTTOM OF	CT	CERAMIC TILE, CYCLE TIMER, CURRENT TRANSFORMER					HZ	HERTZ, CYCLES PER SECOND	LTNG	LIGHTNING				
BOC	BACK OF CURB, BOTTOM OF CONCRETE	CTJ	CONTRACTION JOINT							LV	LOW VOLTAGE				
BOD	BIOLOGICAL OXYGEN DEMAND, BOTTOM OF DUCT	CTR	CENTER							LVL	LEVEL				
BOG	BOTTOM OF GRILLE	CTRD	CENTERED							LVR	LOUVER				
		CTRS	CENTERS							LW	LIGHTWEIGHT				
		CTRL	CONTROL							LWC	LIGHTWEIGHT CONCRETE				
										LWL	LOW WATER LEVEL				

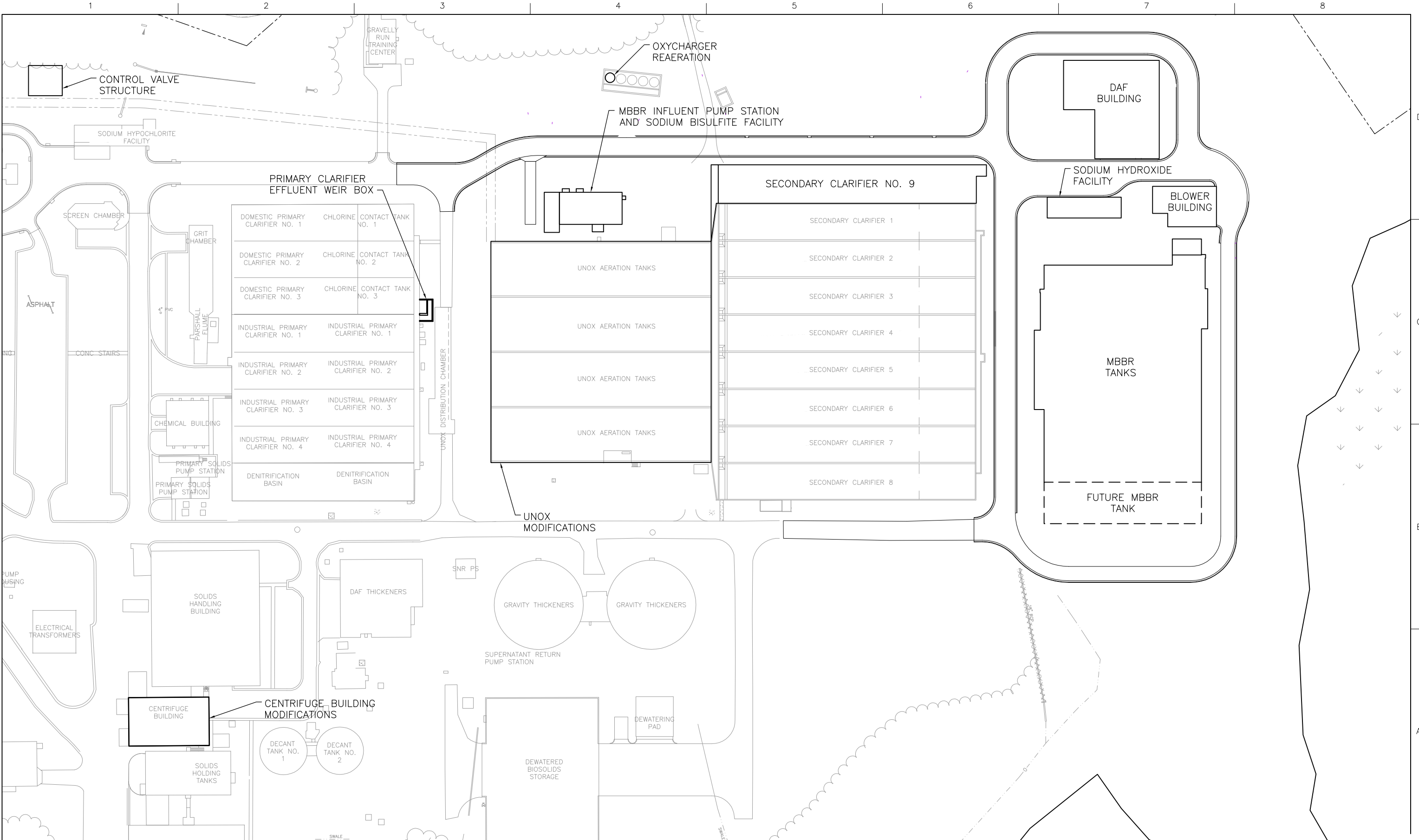
<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY	GENERAL ABBREVIATIONS 1			
				DESIGNED BY: D. ZIRKLE			<div><div>01"2"</div><div>FILENAME G-03.dwg</div><div>SCALE NONE</div></div>	DRAWING NUMBER G-03	SHEET OF -	
				DRAWN BY: T. LOKEY						
				CHECKED BY:						


1		2		3		4		5		6		7		8	
M	METER, MECHANICAL (DWG DISCIPLINE)	O ₂	OXYGEN	PRV	PRESSURE REDUCING VALVE	S	SOUTH, SINK, STRUCTURAL (DWG DISCIPLINE)	T	TELEPHONE, THERMOSTAT, THICKNESS, TILE,	VR	VENT RETURN	D			
mA	MAGNETIC MOTOR STARTER	O	OPEN	PS	PIPE SUPPORT, PRESSURE SWITCH, PUMP STATION,	SA	SUPPLY AIR, SERVICE AIR (HIGH PRESSURE)		TIMER, TRANSFORMER, TREAD,	VS	VERSES, VAPOR SEAL, VOLATILE SOLIDS,				
MA	MILLIAMPERE	O TO O	OUT–TO–OUT		PRIMARY SOLIDS	SAMP	SAMPLE	T/	TOP OF	VSC	VOLTMETER SWITCH	C			
MACH	MIXED AIR	OA	OUTDOOR AIR, OVERALL	PSF	POUNDS PER SQUARE FOOT	SAMU	SOUND ABSORBING MASONRY UNIT	T/SST	TOP OF STAINLESS STEEL	VSD	VARIABLE SPEED CONTROLLER				
MACP	MACHINED	OC	ON CENTER	PSH	PRESSURE SWITCH HIGH	SAN	SANITARY	T&B	TOP AND BOTTOM	VSS	VARIABLE SPEED DRIVE	B			
MACP	METAL ACOUSTICAL CEILING PANEL	OCPD	OVER CURRENT PROTECTION DEVICE	PSI	POUNDS PER SQUARE INCH	SB	SPLASH BLOCK	T&G	TONGUE AND GROOVE	VST	VOLATILE SUSPENDE SOLIDS				
MAINT	MAINTENANCE	OD	OUTSIDE DIAMETER	PSIA	POUNDS PER SQUARE INCH ABSOLUTE	SBD	SCRUBBER BLOWDOWN	TA	TOILET ACCESSORY, TEMPERED AIR	VT	VENT, PLUMBING VENT	A			
MAN	MANUAL	OED	OPEN–ENDED DUCT	PSIG	POUNDS PER SQUARE INCH GAGE	SC	SECONDARY CLARIFIER, SOIL CORE,	TAN	TANGENT	VTR	VENT THROUGH ROOF				
MATL	MATERIAL	OF	OUTSIDE FACE, OFFICE FURNISHING, OVERFLOW	PSL	PRESSURE SWITCH LOW	SCE	SCREEN CHANNEL	TBD	TO BE DETERMINED	VWC	VINYL WALL COVERING	D			
MAU	MAKE–UP AIR UNIT	OFCl	OWNER FURNISHED CONTRACTOR INSTALLED	PST	PRESTRESSED	SCFM	SECONDARY CLARIFIER EFFLUENT	TBM	TEMPORARY BENCHMARK	W	WATT, WEST, WIDE, WINDOW, WIRE, WATER,				
MAWP	METAL ACOUSTICAL WALL PANEL	OFR	OVERFLOW RATE	PT	POINT, POINT OF TANGENCY	SCH	STANDARD CUBIC FEET PER MINUTE	TC	TIME CLOCK, TIMER CLUTCH	W/O	WIDE FLANGE BEAM, WHITE	C			
MAX	MAXIMUM	OG	ORIGINAL GROUND		POTENTIAL TRANSFORMER, PROGRAM TIMER	SCHEM	SCHEDULE	TCE	TEMPORARY CONSTRUCTION EASEMENT	WAS	WASTE ACTIVATED SOLIDS				
MB	MACHINE BOLT	OH	OVERHEAD, OPPOSITE HAND	PTN	PARTITION	SCI	SCHEMATIC	TD	TIME DELAY RELAY	WB	WOOD BASE, WET–BULB	B			
MBH	THOUSAND BTU PER HOUR	OL	OVERLOAD	PVC	POLYVINYL CHLORIDE	SCN	SECONDARY CLARIFIER INFLUENT	TDH	THREAD	WC	WATER CLOSET, WATER COLUMN				
MBR	MEMBER	OPNG	OPENING	PVMT	PAVEMENT	SCUM	SCUM (PRIMARY)	TEF	TROWELED EPOXY FLOORING	WD	WOOD, WIDTH	C			
MBM	METAL BUILDING MANUFACTURER	OPP	OPPOSITE	PW	POTABLE WATER	SD	STORM DRAIN	TEK	SELF–SEALING ROOFING FASTENER	WF	WIDE FLANGE, WASH FOUNTAIN				
MC	MECHANICAL COUPLING, MOMENT CONNECTION	OPT	OPTIONAL	PWC	POTABLE WATER, COLD	SDFM	STORM DRAIN FORCE MAIN	TEMP	TEMPORARY, TEMPERATURE	WG	WIRE GLASS, WATER GAUGE	D			
MCA	MINIMUM CIRCUIT AMPS	OR	OUTSIDE RADIUS	PWD	PLYWOOD	SE	SCREENED EFFLUENT, STEEL/ALUMINUM EDGE	THD	THREAD	WH	WALL HYDRANT, WEEP HOLE, WATTHOUR METER				
MCB	METAL CORNER BEAD	ORD	OVERFLOW ROOF DRAIN	PWH	POTABLE WATER, HOT	SEC	SECONDARY, SECONDS, SECTION	THK	THICK	WI	WROUGHT IRON	C			
MCC	MOTOR CONTROL CENTER	ORIG	ORIGINAL	PWJ	PLYWOOD WEB JOIST	SECT	SECTION	THRESH	THRESHOLD	WL	WATER LEVEL, WIND LOAD				
MCJ	MASONRY CONTROL JOINT	ORP	OXIDATION REDUCTION POTENTIAL	PWR	POWER	SEIS	SEISMIC	THRU	THROUGH	WLD	WELDED	B			
MCLU	MOTOR CONTROLLER LINE–UP	OSHA	OCCUPATIONAL SAFETY AND HEALTH ACT	PZ	PIEZOMETER	SENS	SENSIBLE	TK	TANK	WM	WIRE MESH				
MCP	MOTOR CIRCUIT PROTECTOR	OVFL	OVERFLOW	Q	RATE OF FLOW	SEP	SEPARATE	TKBD	TACK BOARD	WP	WATERPROOF, WORKING POINT, WITNESS POST	C			
MD	MOISTURE DETECTOR	OVHG	OVERHANG	QT	QUARRY TILE	SEPT	SEPTAGE	TKN	TOTAL KJELDAHL NITROGEN	WTHP	WEATHERPROOF				
MDMJ	MODIFIED DOUBLE MECHANICAL JOINT	OZ	OUNCE	QTR	QUARTER	SEWER	PLANT SEWER	TM	TIMER MOTOR	WS	WATERSTOP, WATER SURFACE	D			
MECH	MECHANICAL	P	PAINT, PROCESS (DWG DISCIPLINE), PUMP, POLE	QTY	QUANTITY	SF	SILT FENCE, SQUARE FOOT, SUPPLY FAN	TO	TOP OF	WSE	WATER SURFACE ELEVATION				
MED	MEDIUM	PA	PUBLIC ADDRESS	QUAL	QUALITY	SFM	SANITARY FORCE MAIN	TOA	TOP OF ALUMINUM	WST	WASTE	C			
MFM	MAGNETIC FLOW METER	PAF	POWDER ACTUATED FASTENER	R	RADIUS, RAISE, RED, REGISTER, RELAY,	SFTD	SUBNATANT FLOTATION THICKENER DISCHARGE	TOB	TOP OF BOLT, TOP OF BANK, TOP OF BEAM	WT	WEIGHT, WATER TIGHT				
MFR	MANUFACTURER	PAR	PARALLEL, PARAPET	R&R	REMOVE AND REPLACE	SG	SLIDE GATE, SHEET GLASS, SEALANT GROOVE	TOC	TOP OF CURB, TOP OF CONCRETE	WWF	WELDED WIRE FABRIC	B			
MG	MILLION GALLONS	PB	PANIC BAR, PULL BOX, PUSH BUTTON, PLAT BOOK	R&S	REMOVE AND SALVAGE	SH	SHOWER, SPACE HEATER	TOD	TOP OF DUCT	Y	YELLOW				
mg/l	MILLIGRAMS PER LITER	PBD	PARTICLE BOARD	RA	RETURN AIR	SHC	SODIUM HYPOCHLORITE	TOF	TOP OF FOOTING	YH	YARD HYDRANT	C			
MGD	MILLION GALLONS PER DAY	PC	POINT OF CURVE, PIECE, PRECAST,	RAD	RADIUS	SHT	SODIUM HYPOCHLORITE TRANSFER	TOG	TOP OF GRATING	YS	YIELD STRENGTH				
MH	MANHOLE, METAL HALIDE, MOUNTING HEIGHT		PRIMARY CLARIFIER, PHOTO CONTROL	RAS	RETURN ACTIVATED SOLIDS	SHTG	SHEET	TOL	TOLERANCE, TOP OF LEDGER	ZS	POSITION SWITCH	D			
MIN	MINIMUM	PCA	PLANT COMPRESSED AIR	RB	RESILIENT BASE, ROCK BERM	SHT	SHEET	TOM	TOP OF MASONRY	ZSS	ZERO SPEED SWITCH				
MIR	MIRROR	PCC	POINT OF COMPOUND CURVATURE	RC	REINFORCED CONCRETE	SHT	SHEET	TOP	TOP OF PLATE	+	PHASE	C			
MISC	MISCELLANEOUS	PCCP	PRESTRESSED CONCRETE CYLINDER PIPE	RCPT	RECEIPT	SI	SOUTH INTERCEPTOR	TOPO	TOPOGRAPHY						
MJ	MECHANICAL JOINT	PCE	PRIMARY CLARIFIER EFFLUENT	RCS	RADIATOR COOLING RETURN	SID	SHUT–OFF ISOLATION DAMPER	TOS	TOP OF SLAB, TOP OF STEEL			B			
ML	MASONRY LINTEL	PCF	POUNDS PER CUBIC FOOT	RD	ROOF DRAIN	SIL	SILENCE	TOW	TOP OF WALL						
MLO	MAIN LUGS ONLY	PCI	PRIMARY CLARIFIER INFLUENT	REC	RECESS	SIM	SIMILAR	TP	TOILET PARTITION, TOE PLATE, TRAP PRIMER,			C			
MLSS	MIXED LIQUOR SUSPENDED SOLIDS	PCL	PRIMARY CLARIFIER SOLIDS	RECD	RECEIVED	SIT	SPEED INDICATING TRANSMITTER	TPD	TOILET PARTITION, TOE PLATE, TRAP PRIMER,						
mm	MILLIMETER	PCT	PERCENT	RECPT	RECEPTACLE	SJ	SAWED JOINT	TPG	TOILET PAPER DISPENSER			D			
MO	MASONRY OPENING, MONTH	PD	PROCESS DRAIN	RCR	RADIATOR COOLING RETURN	SL	SLOPE, STEEL LINTEL, SNOW LOAD	TQ/TQS	TORQUE						
MOCP	MAXIMUM OVERCURRENT CIRCUIT PROTECTION	PDS	DIFFERENTIAL PRESSURE SWITCH	RCS	RADIATOR COOLING SUPPLY	SLR	SOLIDS LOADING RATE	TR	TRANSOM, TIMER RELAY			C			
MOD	MODULAR, MODIFY, MOTOR OPERATED DAMPER	PDSH	DIFFERENTIAL PRESSURE SWITCH HIGH	RD	ROOF DRAIN	SLTD	SLOTTED	TRANS	TRANSITION						
MON	MONUMENT	PDSL	DIFFERENTIAL PRESSURE SWITCH LOW	REC	RECESS	SLV	SLEEVE	TRD	TRENCH DRAIN			B			
MOV	MOTOR OPERATED VALVE	PE	PLAIN END, POLYETHYLENE, PHOTOELECTRIC CELL	RECD	RECEIVED	SMLS	SEAMLESS	TS	THICKENED SOLIDS, TEMPERATURE SWITCH						
MPR	MOTOR PROTECTION RELAY	PED	PEDESTAL	RECP	RECEPTACLE	SNR	SUPERNATANT RETURN	TSH	TEMPERATURE SWITCH HIGH			C			
MPT	MALE PIPE THREAD	PEN	PENETRATION	RECT	RECTANGULAR	SOG	SLAB ON GRADE	TSL	TEMPERATURE SWITCH LOW						
MRGWB	MOISTURE RESISTANT GYPSUM WALLBOARD	PERF	PERFORATED	RED	REDUCER	SOTE	STANDARD OXYGEN TRANSFER EFFICIENCY	TSP	TWISTED SHIELDED PAIR			D			
MS	MOP SINK, MAGNETIC MOTOR STARTER	PERM	PERMANENT, PERIMETER	REF	REFERENCE	SP	SINGLE POLE, SOUNDPROOF, STATIC PRESSURE,	TSS	TOTAL SUSPENDED SOLIDS						
MSL	MEAN SEA LEVEL	PERP	PERPENDICULAR	REFRIG	REFRIGERANT	SPA	STANDPIPE, SUMP PUMP	TSTAT	THERMOSTAT			C			
MT	MOUNT	PF	POWER FACTOR	REG	REGISTER	SPG	SPACING	T–TREAD	TOP OF TREAD						
MTD	MOUNTED	PFMU	PREFACED MASONRY UNIT	REINF	REINFORCING	SPCS	SPACES	TYP	TYPICAL			B			
MTR	METER	PG	PAGE	REM	REMOVE	SPD	SUMP PUMP DISCHARGE, SURGE PROTECTIVE DEVICE	U	URINAL, UNLATCH						
MU	MASONRY UNIT	PH	PHASE	REQD	REQUIRED	SPEC	SPECIFICATION	UG	UNDERGROUND			C			
MULL	MULLION	PI	POINT OF INTERSECTION	RES	RESISTOR	SPLY	SUPPLY	UH	UNIT HEATER						
MV	MEDIUM VOLTAGE	PIT	PRESSURE INDICATING TRANSMITTER	RESIL	RESILIENT	SPRAY	SPRAY WATER	UL	UNDERWRITERS LABORATORIES			D			
MW	MONITORING WELL	PKG	PACKAGE	RET	RETAINING, RETURN	SPST	SINGLE POLE SINGLE THROW	ULT	ULTIMATE						
		PL	PLATE, PROPERTY LINE, PRECAST LINTEL	RF	RESILIENT FLOORING	SPT	SET POINT	UNFN	UNFINISHED			C			
		PLAS	PLASTIC	RFG	ROOFING	SQ	SQUARE	UNO	UNLESS NOTED OTHERWISE						
N	NORTH, NEUTRAL	PLAT	PLATFORM	RFL	REFLECTED, REFLECTOR	SR	SHORT RADIUS	UON	UNLESS OTHERWISE NOTED			B			
NA	NOT APPLICABLE	PLBG	PLUMBING	RGH	ROUGH	SS	SERVICE SINK, STAINLESS STEEL, SELECTOR SWITCH	UPS	UNINTERRUPTIBLE POWER SUPPLY						
NAT	NATURAL	PLC	PROGRAMMABLE LOGIC CONTROLLER	RGS	RIGID GALVANIZED STEEL	SSFM	SANITARY SEWER FORCE MAIN	UTIL	UTILITY			C			
NC	NORMALLY CLOSED, NOISE CRITERIA	PLF	POUNDS PER LINEAR FOOT	RGS–PVC	PVC COATED RGS	SSMR	STANDING SEAM METAL ROOF	UV	UTILITY VAULT						
NEC	NATIONAL ELECTRICAL CODE	PNEU	PNEUMATIC	RH	RELIEF HOOD, RIGHT HAND, RELATIVE HUMIDITY	SSRV	SCUM SUBNATANT RETURN	V	VENT, VELOCITY, VOLT, VALVE			D			
NEG	NEGATIVE	PNL	PANEL	RIO	REMOTE INPUT/OUTPUT	SST	SOFT START REDUCED VOLTAGE	VA	VOLT AMPERE						
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION	PNLBD	PANELBOARD	RL	REQUIRED LAP	ST	STAINLESS STEEL	VAC	VACUUM, VOLTS ALTERNATING CURRENT			C			
NF	NEAR FACE, NON–FUSED	POL	POLISH	RLA	ROTOR LOCKED AMPS	STA	STATION	VAR	VARNISH, VARIABLE, VOLT AMPERES REACTIVE						
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION	POLYS	POLYMER SOLUTION	RLF	RELIEF AIR	STD	STANDARD	VB	VAPOR BARRIER, VINYL BASE, VALVE BOX			B			
NG	NATURAL GAS	POS	POSITIVE, POSITION	RMS	ROOM	STIF	STIFFENER	VC	VERTICAL CURVE						
NGM	NATURAL GAS METER	PP	POLYPROPYLENE, POWER POLE	RND	ROUND	STIR	STIRRUP	VCT	VINYL COMPOSITION TILE, VERTICAL CENTERLINE			C			
NGVD	NATIONAL GEODETIC VERTICAL DATUM	PPM	PARTS PER MILLION	RNG	RUNNING	STL	STEEL	VD	VOLUME DAMPER						
NI	NORTH INTERCEPTOR	PPU	POSITIVE PRESSURIZATION UNIT	RO	ROUGH OPENING	STN	STAINLESS	VDC	VOLTS DIRECT CURRENT			D			
NIC	NOT IN CONTRACT	PPW	PROTECTED POTABLE WATER	ROW	RIGHT OF WAY	STOR	STORAGE	VDO	VIRGINIA DEPARTMENT OF TRANSPORTATION						
NO	NORMALLY OPEN, NUMBER	PRC	POINT OF REVERSE CURVATURE	STR	STRUCTURAL, STRAIGHT	SUB	SUBSTITUTE	VEL	VELOCITY			C			
NOM	NOMINAL	PREF	PREFINISHED	RT	RIGHT	SUC	SUCTION	VENT	VENTILATION						
NOMIN	NOMINAL	PREFAB	PREFABRICATED	RSP	ROCK SLOPE PROTECTION	SUSP	SUSPENDED	VERT	VERTICAL			B			
NOS	NUMBERS	PRELIM	PRELIMINARY	RTD	RESISTANCE TYPE THERMAL DETECTOR	SV	SOLENOID VALVE	VERTS	VERTICAL REINFORCING						
NPS	NOMINAL PIPE SIZE	PREP	PREPARED	RVT	RESISTANCE TYPE THERMAL DETECTOR	SW	SEAL WATER, SWITCH	VFD	VARIABLE FREQUENCY DRIVE			C			
NPT	NATIONAL PIPE THREAD	PRES	PRESSURE	RWI	RAW WASTEWATER INFLUENT	SWBD	SWITCHBOARD	VG	VERTICAL GRAIN						
NPW	NON–POTABLE WATER	PRESS	PRESSURE	RY	READY	SWGR	SWITCHGEAR	VIF	VERIFY IN FIELD			D			
NS	NEAR SIDE	PRGS	PVC–COATED RIGID GALVANIZED STEEL			SY	SQUARE YARD	VIN	VINYL						
N/S	NORTH/SOUTH; NON–SHRINK	PRI	PRIMARY			SYM	SYMMETRICAL	VLS	VALVE LIMIT SWITCH			C			
NTS	NOT TO SCALE	PROJ	PROJECTION			SYN	SYNTHETIC	VLTD	VAULT DOOR						
NWL	NORMAL WATER LEVEL	PROP	PROPERTY			SYS	SYSTEM	VLVS	VALVES			B			
								VM	VOLTMETER						
								VOL	VOLUME			C			
								VPC	VERTICAL POINT OF CURVATURE						

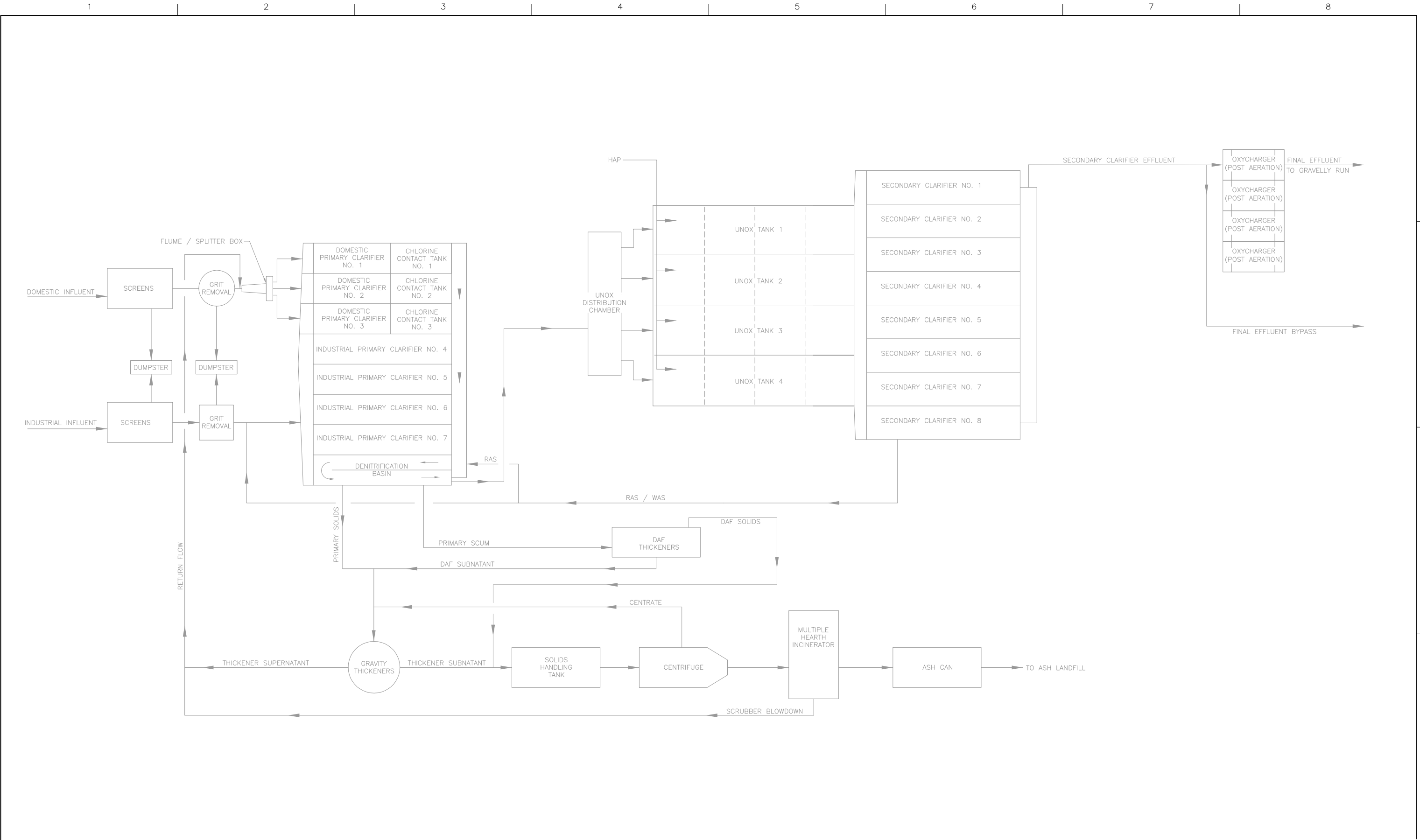
<div></div> <div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div>				PROJECT MANAGER: WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	<div>GENERAL LEGEND AND SYMBOLOGY 2</div>			
				DESIGNED BY: D. ZIRKLE						
				DRAWN BY: T. LOKEY						
				CHECKED BY:						
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL				<div></div>	FILENAME G-06.dwg	DRAWING NUMBER G-06	SHEET OF -
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER			SCALE NONE			

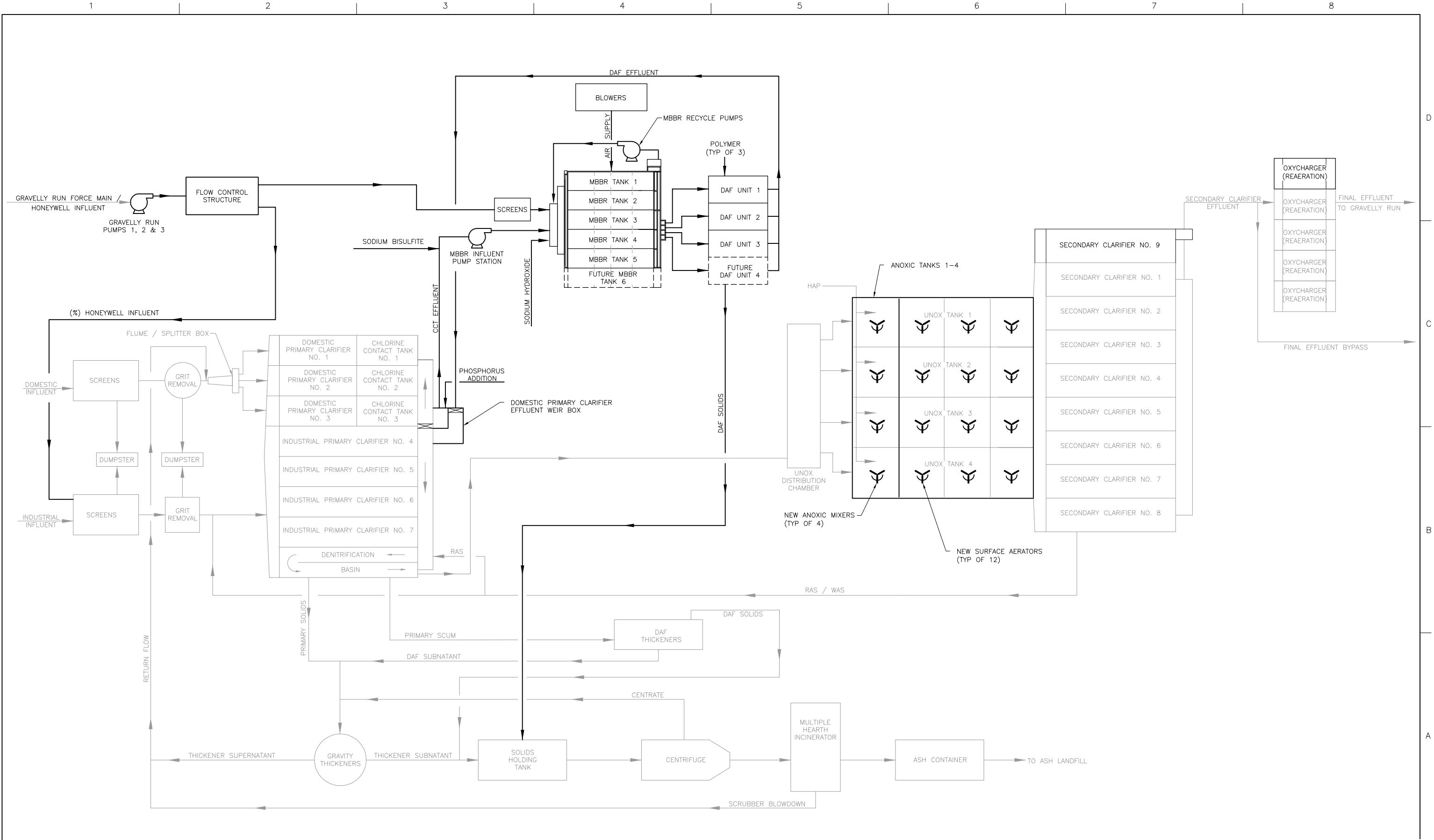


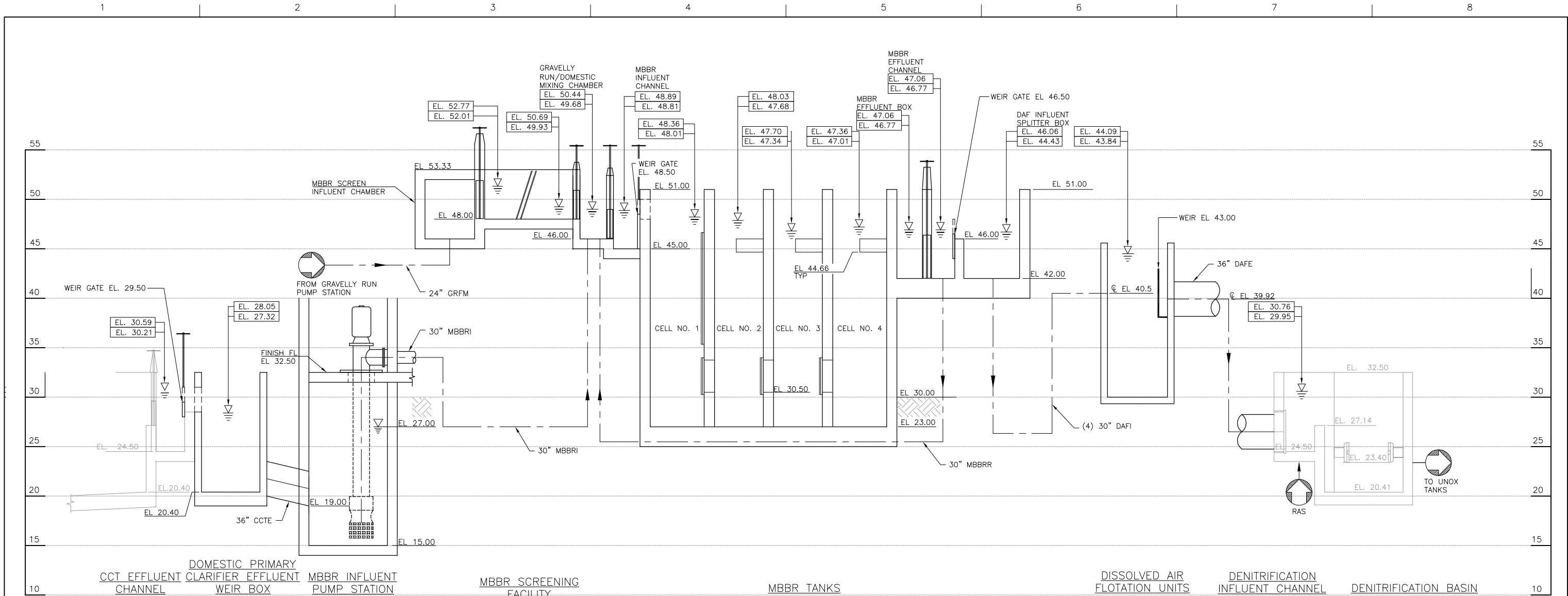
 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	OVERALL SITE PLAN			
				DESIGNED BY: D. ZIRKLE						
				DRAWN BY: T. LOKEY			0 1" 2"	FILENAME G-07.dwg	DRAWING NUMBER	SHEET OF -
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	CHECKED BY:			1"=100'	G-07		
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER						



<div> HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div>				PROJECT MANAGER: WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	<div>STRUCTURE LOCATION PLAN</div>			
				DESIGNED BY: D. ZIRKLE						
				DRAWN BY: T. LOKEY						
				CHECKED BY:						
							<div></div>	FILENAME: G-08.dwg	DRAWING NUMBER: G-08	SHEET OF -
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	PROJECT NUMBER:			SCALE: 1"=50'			
	ISSUE	DATE	DESCRIPTION							







CONDITION	FLOW TABLE		
	INFLUENT FLOW (MGD)		
	DOMESTIC (INCLUDES RECYCLES)	HONEYWELL TO MBBR (FROM GRPS)	COMBINED INFLUENT (INCLUDES RECYCLES)
HYDRAULIC PEAK	33.3	3.9-9.3*	37.2
DESIGN AVERAGE	16.0	3.7-9.3*	19.7

RETURN FLOW TABLE		
CONDITION	RAS	MBBR RECYCLE
HYDRAULIC PEAK	27.0	19.7
DESIGN AVERAGE	23.75	39.4

* HONEYWELL FLOWS TO BE REDUCED SO THAT COMBINED INFLUENT FLOW SHOWN IS NOT EXCEEDED.

LEGEND

EL. XX.XX HYDRAULIC PEAK FLOW
EL. XX.XX DESIGN AVERAGE FLOW

1	2	3	4	5	6	7	8
<div>GENERAL</div> <div><div><div>1. DESIGN PLANT FLOWS</div><div>DESIGN AVERAGE</div><div>PEAK HYDRAULIC</div></div><div>MGD</div><div>46</div><div>73</div></div> <div><div><div>2. MBBR DESIGN FLOWS (40% HONEYWELL)</div><div>DESIGN AVERAGE</div><div>PEAK HYDRAULIC</div></div><div>MGD</div><div>19.7</div><div>37.2</div></div> <div><div><div>3. MBBR DESIGN INFLUENT LOADS (DESIGN AVERAGE)</div><div>BOD</div><div>TSS</div><div>TP</div><div>TKN</div><div>NH3</div></div><div>mg/L</div><div>236</div><div>126</div><div>3.6</div><div>58</div><div>42</div></div>		<div><div><div>4. AEROBIC CELL SCREENS (CELLS 2–4)</div><div>TYPE</div><div>NUMBER (PER CELL)</div><div>OPENING SIZE</div></div><div>CYLINDRICAL</div><div>11</div><div>5 mm</div></div> <div><div><div>5. ANOXIC CELL MIXING</div><div>TYPE</div><div>NUMBER (PER CELL)</div><div>MOTOR (EACH)</div></div><div>SUBMERSIBLE</div><div>6</div><div>9 HP</div></div> <div><div><div>6. AERATION SYSTEM</div><div>TYPE</div><div>DO CONCENTRATION</div><div>SOTE</div><div>TOTAL AIR FLOW REQUIREMENTS</div><div>MINIMUM</div><div>DESIGN AVERAGE</div><div>MAXIMUM</div></div><div>COARSE BUBBLE</div><div>MIN 2.0 Mg/L</div><div>1.1</div><div>8,400 SCFM</div><div>22,350 SCFM</div><div>28,100 SCFM</div></div> <div><div><div>7. MBBR RECYCLE PUMPS</div><div>NUMBER OF PUMPS</div><div>CAPACITY (EACH)</div><div>MOTOR (EACH)</div><div>OPERATION</div></div><div>3</div><div>9,120 GPM</div><div>100 HP</div><div>100% RECYCLE (2 DUTY / 1 STANDBY)</div><div>200% RECYCLE (3 DUTY / 0 STANDBY)</div></div>		<div>CENTRIFUGE BUILDING MODIFICATIONS</div> <div><div><div>1. CENTRIFUGES</div><div>NUMBER</div><div>SOLIDS CAPACITY</div><div>HYDRAULIC CAPACITY</div><div>FEED SOLIDS CONCENTRATION</div></div><div>1</div><div>5,000 LB/HR</div><div>500 GPM</div><div>3%</div></div> <div><div><div>2. CENTRIFUGE FEED PUMP</div><div>NUMBER OF PUMPS</div><div>CAPACITY</div><div>MOTOR</div></div><div>1</div><div>500 GPM</div><div>25 HP</div></div> <div><div><div>3. MACERATOR</div><div>NUMBER</div><div>CAPACITY</div><div>MOTOR</div></div><div>1</div><div>600 GPM</div><div>5 HP</div></div> <div><div><div>4. INCLINED SCREW CONVEYOR</div><div>NUMBER OF UNITS</div><div>CAPACITY</div><div>SOLIDS CONCENTRATION</div><div>MOTOR</div></div><div>1</div><div>5,000 LB/HR</div><div>20%</div><div>7.5 HP</div></div> <div><div><div>5. CROSS SCREW CONVEYOR</div><div>NUMBER OF UNITS</div><div>CAPACITY</div><div>SOLIDS CONCENTRATION</div><div>MOTOR</div></div><div>1</div><div>5,000 LB/HR</div><div>20%</div><div>20 HP</div></div>			
<div>GRAVELLY RUN PUMP STATION</div> <div><div><div>NUMBER OF PUMPS</div><div>CAPACITY (EACH)</div><div>MOTOR (EACH)</div><div>OPERATION</div></div><div>3</div><div>3,750 GPM</div><div>125 HP</div><div>2 DUTY / 1 STANDBY</div></div>		<div>DAF TREATMENT FACILITY</div> <div><div><div>1. DAF UNITS</div><div>NUMBER</div><div>CAPACITY (EACH)</div><div>OPERATION</div></div><div>3</div><div>8,652 GPM (PEAK HYDRAULIC)</div><div>3 DUTY / 0 STANDBY (PEAK HYDRAULIC)</div></div> <div><div><div>2. POLYMER FEED SYSTEM</div><div>TYPE</div><div>CAPACITY</div></div><div></div><div>DRY POLYMER</div><div>42 LB/HR</div></div> <div><div><div>3. POLYMER FEED PUMPS</div><div>NUMBER OF PUMPS</div><div>CAPACITY (EACH)</div><div>MOTOR (EACH)</div><div>OPERATION</div></div><div>4</div><div>13 GPM</div><div>1.5 HP</div><div>3 DUTY / 1 STANDBY</div></div> <div><div><div>4. SOLIDS PUMPS</div><div>NUMBER OF PUMPS</div><div>CAPACITY (EACH)</div><div>OPERATION</div></div><div>5</div><div>335 GPM</div><div>1 DUTY PER DAF UNIT</div><div>1 STANDBY PER DAF PAIR / DAF UNIT</div></div>		<div>SUPPLEMENTAL PHOSPHORUS</div> <div><div><div>1. TO BE DETERMINED</div></div></div>			
<div>MBBR INFLUENT PUMP STATION AND SODIUM BISULFITE FACILITY</div> <div><div><div>1. MBBR INFLUENT PUMP STATION</div><div>NUMBER OF PUMPS</div><div>CAPACITY (EACH)</div><div>MOTOR (EACH)</div><div>OPERATION</div></div><div>4</div><div>7,700 GPM</div><div>150 HP</div><div>3 DUTY / 1 STANDBY</div></div> <div><div><div>2. SODIUM BISULFITE TANKS</div><div>NUMBER</div><div>CAPACITY (EACH)</div></div><div>3</div><div>5,400 GAL</div></div> <div><div><div>3. CHEMICAL METERING PUMPS</div><div>NUMBER OF PUMPS</div><div>CAPACITY (EACH)</div><div>OPERATION</div></div><div>4</div><div>(2) AT 13 GPH</div><div>(2) AT 72 GPH</div><div>2 DUTY / 2 STANDBY</div></div>		<div>UNOX MODIFICATIONS</div> <div><div><div>1. UNOX TANKS</div><div>NUMBER OF TANKS</div><div>NUMBER OF STAGES PER TANK</div><div>LENGTH (EACH STAGE)</div><div>WIDTH (EACH STAGE)</div><div>VOLUME (EACH STAGE)</div></div><div>4</div><div>4</div><div>60 FT</div><div>60 FT</div><div>370,260 GAL</div></div> <div><div><div>2. ANOXIC MIXING</div><div>NUMBER OF MIXERS PER TANK</div><div>STAGE</div><div>TYPE</div><div>MOTOR (EACH)</div></div><div>1</div><div>1</div><div>HYPERBOLIC</div><div>15 HP</div></div> <div><div><div>3. AEROBIC MIXING</div><div>NUMBER OF MIXERS PER TANK</div><div>STAGES</div><div>TYPE</div><div>MOTOR (EACH)</div><div>STAGE 2</div><div>STAGE 3</div><div>STAGE 4</div></div><div>3</div><div>2–4</div><div>VERTICAL TURBINE</div><div>125 HP</div><div>100 HP</div><div>75 HP</div></div>					
<div>MBBR SCREENING FACILITY</div> <div><div><div>1. SCREENS</div><div>NUMBER</div><div>TYPE</div><div>SIZE</div><div>CAPACITY (EACH)</div><div>MOTOR</div><div>OPERATION</div></div><div>2</div><div>PERFORATED PLATE</div><div>4 mm</div><div>10 MGD</div><div>1 HP</div><div>1 DUTY/1 STANDBY</div></div> <div><div><div>2. WASHER AND COMPACTOR</div><div>NUMBER</div><div>CAPACITY</div><div>DISCHARGE SIZE</div><div>MOTOR</div><div>OPERATION</div></div><div>2</div><div>53 FT³/HR</div><div>8 INCHES</div><div>3 HP</div><div>1 DUTY / 1 STANDBY</div></div>		<div>BLOWER BUILDING</div> <div><div><div>1. SINGLE STAGE BLOWERS</div><div>NUMBER</div><div>CAPACITY</div><div>MOTOR</div></div><div>1</div><div>20,000 SCFM</div><div>1,400 HP</div></div> <div><div><div>2. MULTI STAGE BLOWERS</div><div>NUMBER</div><div>CAPACITY (EACH)</div><div>MOTOR (EACH)</div></div><div>2</div><div>15,000 SCFM</div><div>1,250 HP</div></div> <div><div><div>TOTAL CAPACITY (LARGEST UNIT OUT OF SERVICE)</div></div><div>30,000 SCFM</div></div>		<div>RE–AERATION</div> <div><div><div>1. OXYCHARGER STATIC AERATOR</div><div>NUMBER</div></div><div>1 (MATCH EXISTING)</div></div>			
<div>MBBR TREATMENT</div> <div><div><div>1. MBBR TANKS</div><div>NUMBER</div><div>LENGTH (EACH)</div><div>ANOXIC CELL</div><div>BOD OXIDATION CELL</div><div>NITRIFICATION CELL</div><div>NITRIFICATION CELL</div><div>WIDTH (EACH)</div><div>SIDE WATER DEPTH (EACH)</div><div>VOLUME (TOTAL)</div></div><div>5</div><div>48.84 FT</div><div>35.17 FT</div><div>40.34 FT</div><div>23.98 FT</div><div>46 FT</div><div>25 FT</div><div>6.38 MGAL</div></div> <div><div><div>2. MEDIA</div><div>TYPE</div><div>EFFECTIVE SURFACE AREA</div><div>MEDIA VOLUME</div><div>MEDIA FILL BY VOLUME</div><div>CELL 1</div><div>CELLS 2–4</div></div><div>HDPE</div><div>650 M²/M³</div><div>14,872 M³</div><div>50%</div><div>67%</div></div> <div><div><div>3. ANOXIC CELL SCREENS (CELL 1)</div><div>TYPE</div><div>NUMBER (PER TANK)</div><div>OPENING SIZE</div><div>SIZE</div></div><div>FLAT PANEL</div><div>10</div><div>5 mm</div><div>4 FT x 4 FT</div></div>		<div>SODIUM HYDROXIDE FACILITY</div> <div><div><div>1. SODIUM HYDROXIDE TANKS</div><div>NUMBER</div><div>CAPACITY (EACH)</div></div><div>3</div><div>13,350 GAL</div></div> <div><div><div>2. CHEMICAL METERING PUMPS</div><div>NUMBER OF PUMPS</div><div>CAPACITY (EACH)</div><div>OPERATION</div></div><div>4</div><div>132 GPH</div><div>3 DUTY / 1 STANDBY</div></div> <div><div><div>NUMBER</div><div>LENGTH</div><div>WIDTH</div><div>SIDE WATER DEPTH</div><div>SURFACE AREA</div><div>SURFACE SETTLING RATE (DESIGN AVERAGE)</div><div>SOLIDS LOADING RATE (DESIGN AVERAGE)</div></div><div>1</div><div>285 FT</div><div>40 FT</div><div>13.5 FT</div><div>11,400 FT²</div><div>470 GPD/FT²</div><div>30 LB/D–FT²</div></div>		<div>NOTES:</div> <div><div>1. THIS IS A DESIGN CRITERIA SUMMARY SHEET. REFER TO SPECIFICATIONS FOR DETAILED REQUIREMENTS. IF THERE IS A DISCREPANCY BETWEEN THIS DRAWING AND THE SPECIFICATIONS, THE SPECIFICATIONS SHALL GOVERN.</div></div>			

GRAVELLY RUN PUMP STATION

NUMBER OF PUMPS

CAPACITY (EACH)

MOTOR (EACH)

OPERATION

3

3,750 GPM

125 HP

2 DUTY / 1 STANDBY

MBBR INFLUENT PUMP STATION AND SODIUM BISULFITE FACILITY

1. MBBR INFLUENT PUMP STATION

NUMBER OF PUMPS

CAPACITY (EACH)

MOTOR (EACH)

OPERATION

4

7,700 GPM

150 HP

3 DUTY / 1 STANDBY

2. SODIUM BISULFITE TANKS

NUMBER

CAPACITY (EACH)

3

5,400 GAL

3. CHEMICAL METERING PUMPS

NUMBER OF PUMPS

CAPACITY (EACH)

OPERATION

4

(2) AT 13 GPH

(2) AT 72 GPH

2 DUTY / 2 STANDBY

MBBR SCREENING FACILITY

1. SCREENS

NUMBER

TYPE

SIZE

CAPACITY (EACH)

MOTOR

OPERATION

2

PERFORATED PLATE

4 mm

10 MGD

1 HP

1 DUTY/1 STANDBY

2. WASHER AND COMPACTOR

NUMBER

CAPACITY

DISCHARGE SIZE

MOTOR

OPERATION

2

53 FT³/HR

8 INCHES

3 HP

1 DUTY / 1 STANDBY

MBBR TREATMENT

1. MBBR TANKS

NUMBER

LENGTH (EACH)

ANOXIC CELL

BOD OXIDATION CELL

NITRIFICATION CELL

NITRIFICATION CELL

WIDTH (EACH)

SIDE WATER DEPTH (EACH)

VOLUME (TOTAL)

5

48.84 FT

35.17 FT

40.34 FT

23.98 FT

46 FT

25 FT

6.38 MGAL

2. MEDIA

TYPE

EFFECTIVE SURFACE AREA

MEDIA VOLUME

MEDIA FILL BY VOLUME

CELL 1

CELLS 2–4

HDPE

650 M²/M³

14,872 M³

50%

67%

3. ANOXIC CELL SCREENS (CELL 1)

TYPE

NUMBER (PER TANK)

OPENING SIZE

SIZE

FLAT PANEL

10

5 mm

4 FT x 4 FT

4. AEROBIC CELL SCREENS (CELLS 2–4)

TYPE

NUMBER (PER CELL)

OPENING SIZE

CYLINDRICAL

11

5 mm

5. ANOXIC CELL MIXING

TYPE

NUMBER (PER CELL)

MOTOR (EACH)

SUBMERSIBLE

6

9 HP

6. AERATION SYSTEM

TYPE

DO CONCENTRATION

SOTE

TOTAL AIR FLOW REQUIREMENTS

MINIMUM

DESIGN AVERAGE

MAXIMUM

COARSE BUBBLE

MIN 2.0 Mg/L

1.1

8,400 SCFM

22,350 SCFM

28,100 SCFM

7. MBBR RECYCLE PUMPS

NUMBER OF PUMPS

CAPACITY (EACH)

MOTOR (EACH)

OPERATION

3

9,120 GPM

100 HP

100% RECYCLE (2 DUTY / 1 STANDBY)

200% RECYCLE (3 DUTY / 0 STANDBY)

DAF TREATMENT FACILITY

1. DAF UNITS

NUMBER

CAPACITY (EACH)

OPERATION

3

8,652 GPM (PEAK HYDRAULIC)

3 DUTY / 0 STANDBY (PEAK HYDRAULIC)

2. POLYMER FEED SYSTEM

TYPE

CAPACITY

DRY POLYMER

42 LB/HR

3. POLYMER FEED PUMPS

NUMBER OF PUMPS

CAPACITY (EACH)

MOTOR (EACH)

OPERATION

4

13 GPM

1.5 HP

3 DUTY / 1 STANDBY

4. SOLIDS PUMPS

NUMBER OF PUMPS

CAPACITY (EACH)

OPERATION

5

335 GPM

1 DUTY PER DAF UNIT

1 STANDBY PER DAF PAIR / DAF UNIT

BLOWER BUILDING

1. SINGLE STAGE BLOWERS

NUMBER

CAPACITY

MOTOR

1

20,000 SCFM

1,400 HP

2. MULTI STAGE BLOWERS

NUMBER

CAPACITY (EACH)

MOTOR (EACH)

2

15,000 SCFM

1,250 HP

TOTAL CAPACITY (LARGEST UNIT OUT OF SERVICE)

30,000 SCFM

SODIUM HYDROXIDE FACILITY

1. SODIUM HYDROXIDE TANKS

NUMBER

CAPACITY (EACH)

3

13,350 GAL

2. CHEMICAL METERING PUMPS

NUMBER OF PUMPS

CAPACITY (EACH)

OPERATION

4

132 GPH

3 DUTY / 1 STANDBY

SECONDARY CLARIFIER

NUMBER

LENGTH

WIDTH

SIDE WATER DEPTH

SURFACE AREA

SURFACE SETTLING RATE (DESIGN AVERAGE)

SOLIDS LOADING RATE (DESIGN AVERAGE)

1

285 FT

40 FT

13.5 FT

11,400 FT²

470 GPD/FT²

30 LB/D–FT²

CENTRIFUGE BUILDING MODIFICATIONS

1. CENTRIFUGES

NUMBER

SOLIDS CAPACITY

HYDRAULIC CAPACITY

FEED SOLIDS CONCENTRATION

1

5,000 LB/HR

500 GPM

3%

2. CENTRIFUGE FEED PUMP

NUMBER OF PUMPS

CAPACITY

MOTOR

1

500 GPM

25 HP

3. MACERATOR

NUMBER

CAPACITY

MOTOR

1

600 GPM

5 HP

4. INCLINED SCREW CONVEYOR

NUMBER OF UNITS

CAPACITY

SOLIDS CONCENTRATION

MOTOR

1

5,000 LB/HR

20%

7.5 HP

5. CROSS SCREW CONVEYOR

NUMBER OF UNITS

CAPACITY

SOLIDS CONCENTRATION

MOTOR

1

5,000 LB/HR

20%

20 HP

SUPPLEMENTAL PHOSPHORUS

1. TO BE DETERMINED

UNOX MODIFICATIONS

1. UNOX TANKS

NUMBER OF TANKS

NUMBER OF STAGES PER TANK

LENGTH (EACH STAGE)

WIDTH (EACH STAGE)

VOLUME (EACH STAGE)

4

4

60 FT

60 FT

370,260 GAL

2. ANOXIC MIXING

NUMBER OF MIXERS PER TANK

STAGE

TYPE

MOTOR (EACH)

1

1

HYPERBOLIC

15 HP

3. AEROBIC MIXING

NUMBER OF MIXERS PER TANK

STAGES

TYPE

MOTOR (EACH)

STAGE 2

STAGE 3

STAGE 4

3

2–4

VERTICAL TURBINE

125 HP

100 HP

75 HP

RE–AERATION

1. OXYCHARGER STATIC AERATOR

NUMBER

1 (MATCH EXISTING)



NORTHING	EASTING	NGVD29 ELEV	BORING	NAVD88 ELEV
3633675.12	11845251.13	27.09	CPT-3	26.02
3633550.51	11845195.35	33.37	D-5	32.30
3633656.09	11845256.49	24.89	D-6	23.82
3633875.75	11845104.66	38.40	DMT-3	37.33
3633741.42	11844992.83	36.44	F-7	35.37
3633884.86	11844944.96	28.03	F-8	29.10
3633725.87	11844945.80	36.98	F-9	35.91
3633893.62	11845274.92	39.71	F-10	38.64
3633388.23	11845142.91	33.80	M-1	32.73
3633401.25	11845287.82	26.87	M-2	25.80
3633397.02	11845323.19	26.73	M-3	25.66
3633264.80	11845335.40	14.32	M-4	13.25

HDR Engineering, Inc.

5700 Lake Wright Dr.

Suite 300

Norfolk, VA 23502

B	03/12/2014	ADDITIONAL BORING LOCATIONS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL DESIGN

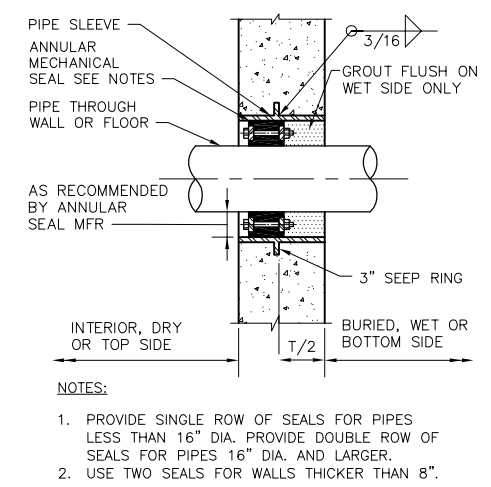
CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY
ALTERNATIVE 4A-1 LIGHT PHASE 2

01"2"

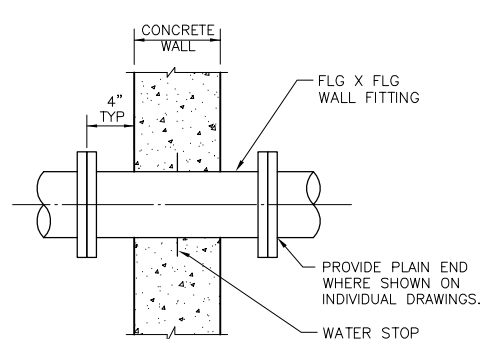
01"=100'

FILENAMEG-13.dwg
SCALE1"=100'

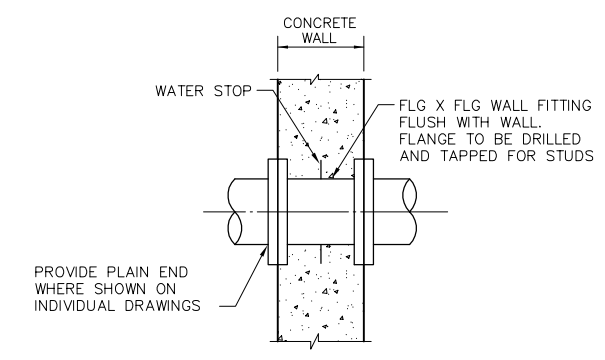
DRAWING NUMBER
G-13
SHEET OF -



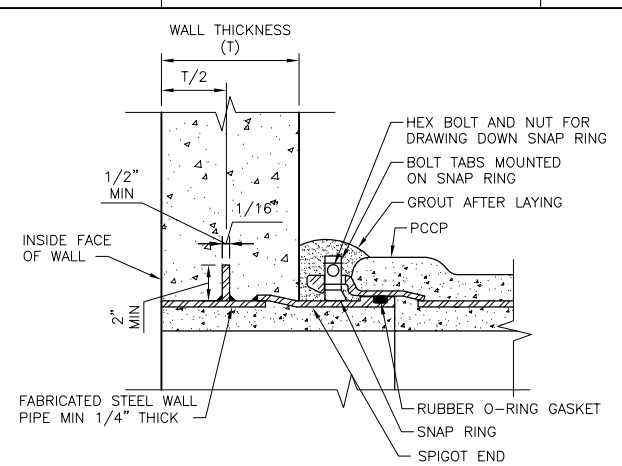
**PIPE SLEEVE WITH ANNULAR SEAL
DETAIL**



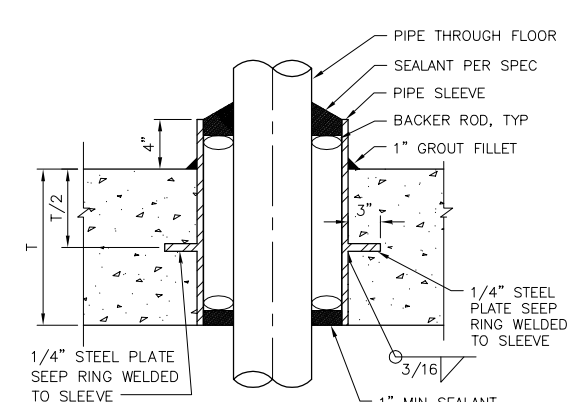
**FLANGED WALL FITTING
DETAIL**



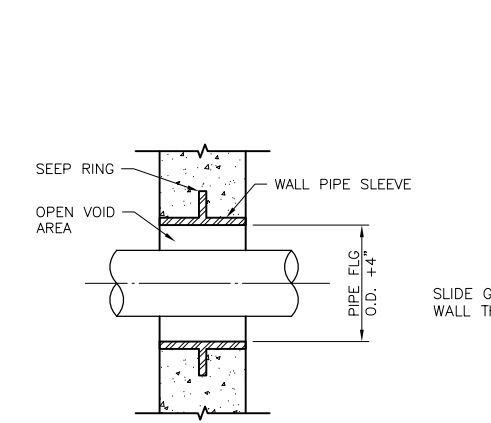
**FLANGED WALL FITTING
DETAIL**



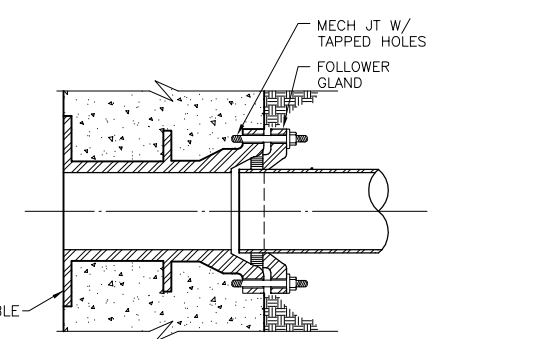
**PCCP/STEEL PIPE WALL THIMBLE
FITTING AND SNAP RING OR
HARNESS CLAMP JOINT
DETAIL**



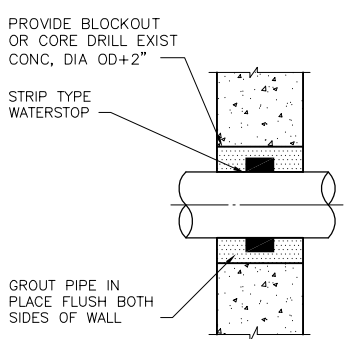
**FLOOR & WALL PENETRATION
DETAIL**



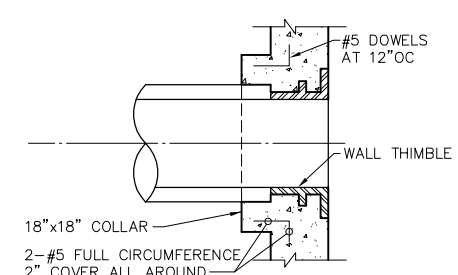
DETAIL



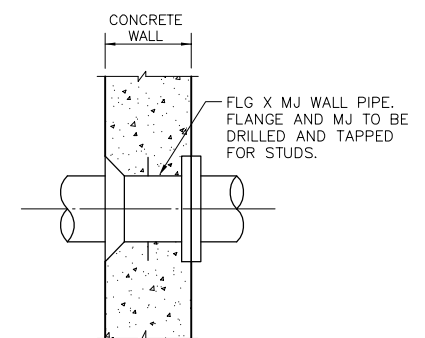
**BURIED DIP WALL CONNECTION
WITH SLIDE GATE WALL THIMBLE
DETAIL**



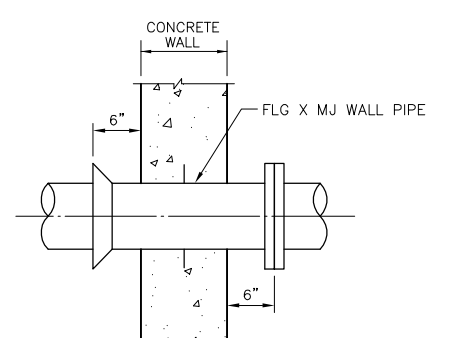
**PIPE PENETRATION
GROUT IN PLACE
DETAIL**



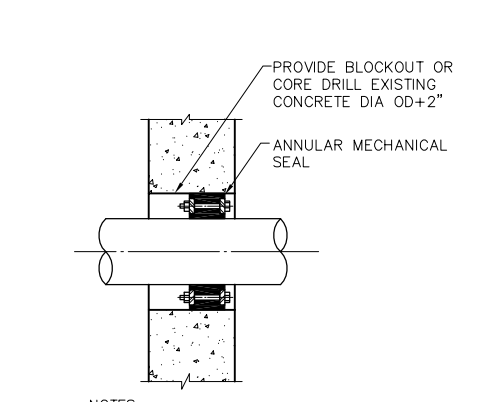
**TYPICAL ENTRANCE/
EXIT REINFORCEMENT
DETAIL**



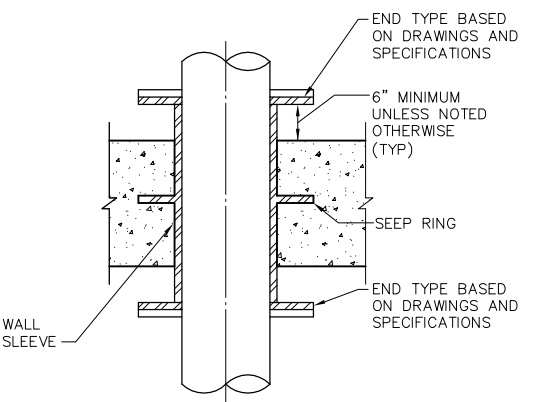
DETAIL



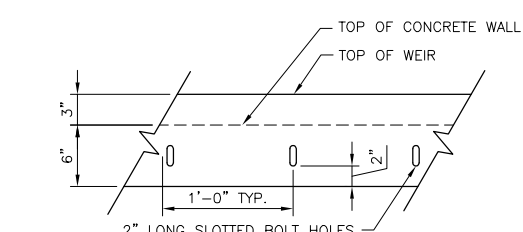
DETAIL



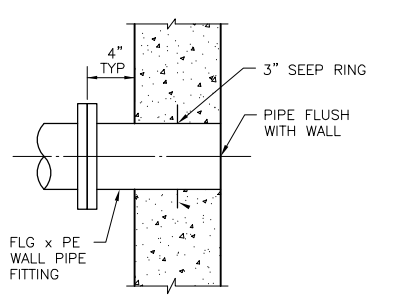
**PIPE PENETRATION
DETAIL**



**WALL SLEEVE CAST IN PLACE
DETAIL**

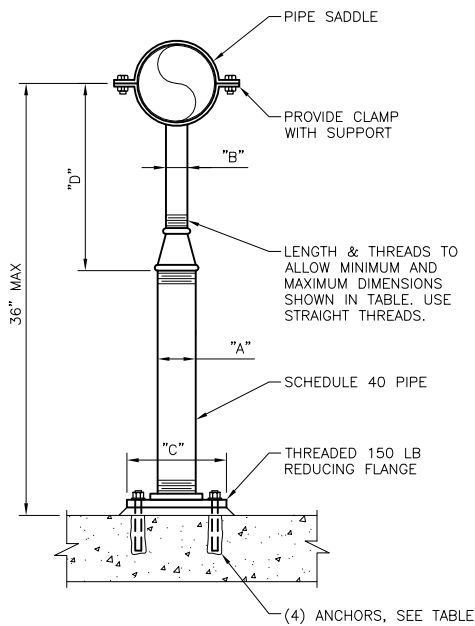


**WEIR PLATE
DETAIL**



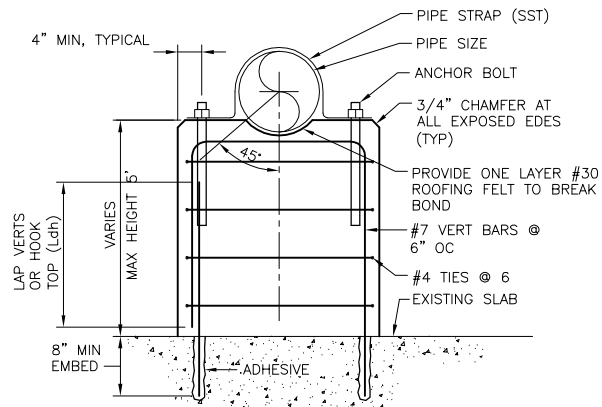
DETAIL

MISCELLANEOUS DETAIL NOTES:
1. THE MISCELLANEOUS DETAILS SHOWN ON THE GENERAL DRAWINGS APPLY TO THE GENERAL, CIVIL, MECHANICAL, HVAC AND PLUMBING DRAWINGS. SEE STRUCTURAL, ELECTRICAL AND INSTRUMENTATION DRAWINGS FOR MISCELLANEOUS DETAILS FOR THOSE DISCIPLINES.



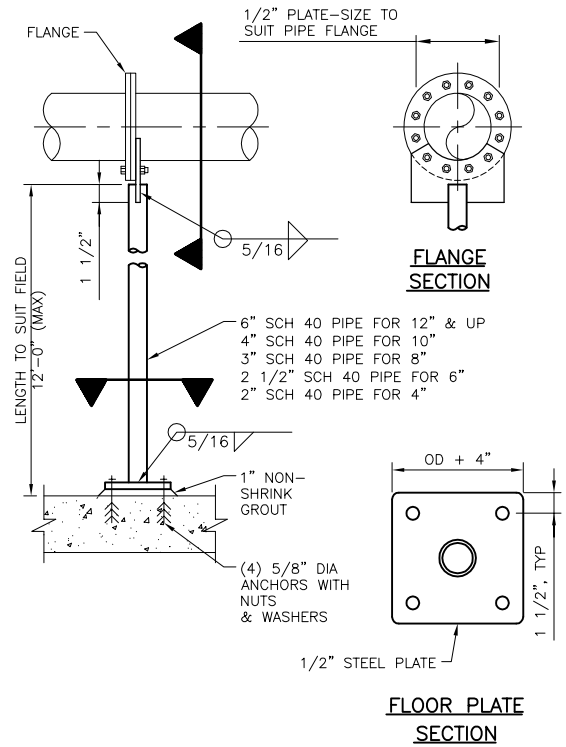
PIPE SUPPORT
NOT TO SCALE

FLOOR PIPE SUPPORT SCHEDULE DIMENSIONS IN INCHES							
PIPE SIZE	"A"	"B"	"C"	"D"		ANCHORS	
				MINIMUM	MAXIMUM	DIA	EMBED
≤ 2 1/2	2 1/2	1 1/2	9	8	13	5/8	5
3	2 1/2	1 1/2	9	8 1/2	13 1/2	5/8	5
3 1/2	2 1/2	1 1/2	9	8 1/2	13 1/2	5/8	5
4	3	2 1/2	9	9 1/2	14	5/8	5
6	3	2 1/2	9	10 1/2	15 1/2	5/8	5
8	3	2 1/2	9	11 1/2	16 1/2	5/8	5
10	3	2 1/2	9	13 1/2	18 1/2	5/8	5
12	3	2 1/2	9	15	19 1/2	5/8	5
14	4	3	11	16 1/2	20 1/2	3/4	6 5/8
16	4	3	11	17 1/2	22 1/2	3/4	6 5/8
18	6	3 1/2	13 1/2	19 1/2	24	3/4	6 5/8
20	6	3 1/2	13 1/2	21	25 1/2	3/4	6 5/8
24	6	4	13 1/2	23 1/2	28 1/2	3/4	6 5/8
30	6	4	13 1/2	27	31 1/2	3/4	6 5/8
32	6	4	13 1/2	28 1/2	32 1/2	3/4	6 5/8
36	6	4	13 1/2	30 1/2	34 1/2	3/4	6 5/8



PIPE SIZE, DIA	PIPE STRAP	ANCHOR BOLTS, DIA	PEDESTAL THICKNESS
6"-12"	1/4"x2"	1/2"	24"
14"-24"	3/8"x2 1/2"	5/8"	24"
30"-48"	1/2"x3"	3/4"	24"

CONCRETE PEDESTAL SUPPORT TYPE I
NOT TO SCALE



FLANGED PIPE SUPPORT
NOT TO SCALE

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

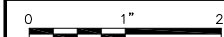
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY
ALTERNATIVE 4A-1 LIGHT
PHASE 2

PIPE SUPPORT DETAILS 1



FILENAME	G-19.dwg
SCALE	NONE

DRAWING NUMBER
G-19

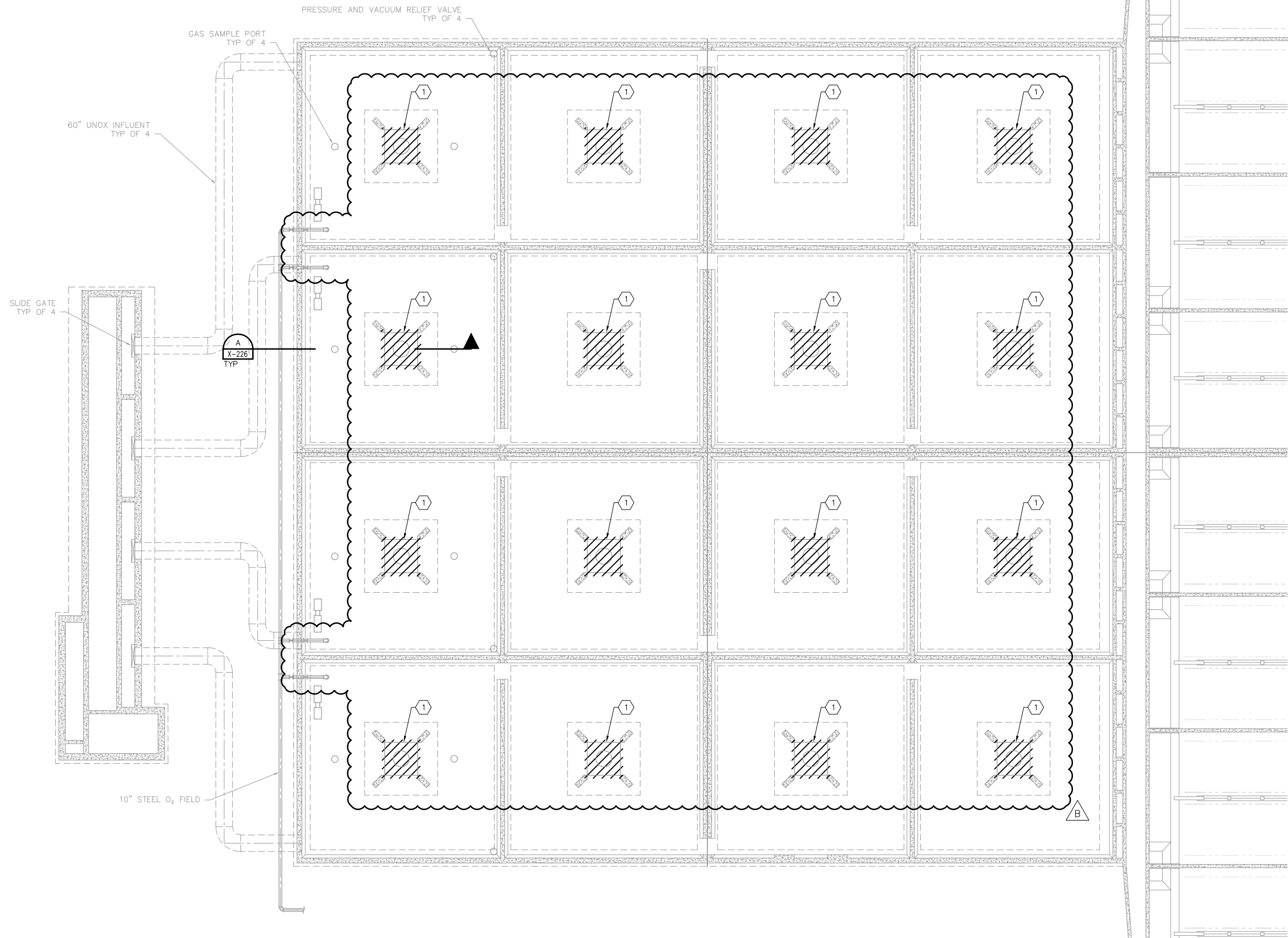
SHEET OF -



GENERAL NOTES:
1. -

KEY NOTES:

1 REMOVE EXISTING MIXER AND MOTOR.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	03/12/2014	MIXER AND O ₂ LINE REVISIONS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY
ALTERNATIVE 4A-1 LIGHT
PHASE 2

UNOX DEMOLITION PLAN			
0 1" 2"		FILENAME	X-225.dwg
		SCALE	1/16"=1'-0"
		DRAWING NUMBER	X-225
		SHEET	OF -

1

2

3

4

5

6

7

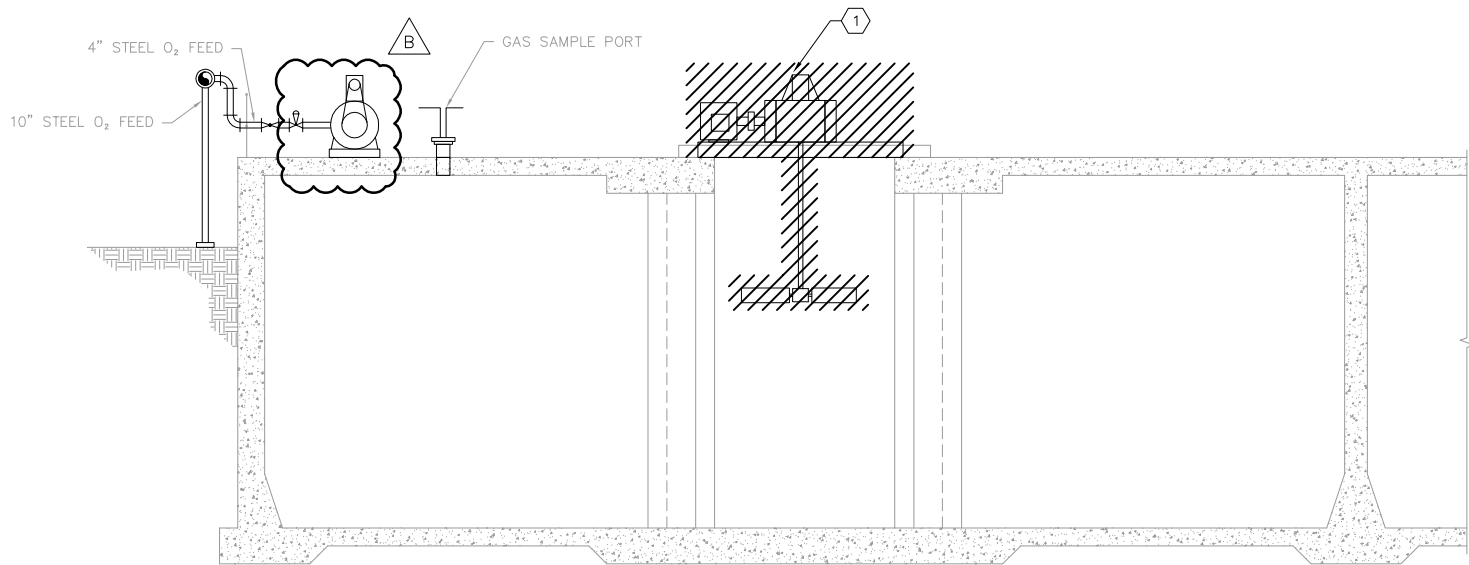
8

GENERAL NOTES:

1. -

KEY NOTES:

1 REMOVE EXISTING MIXER AND MOTOR.
TYPICAL OF ALL MIXERS SHOWN ON X-225.



SECTION

SCALE: 3/16"=1'-0"



HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	03/12/2014	O ₂ LINE DEMO REMOVED
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

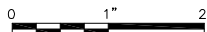
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

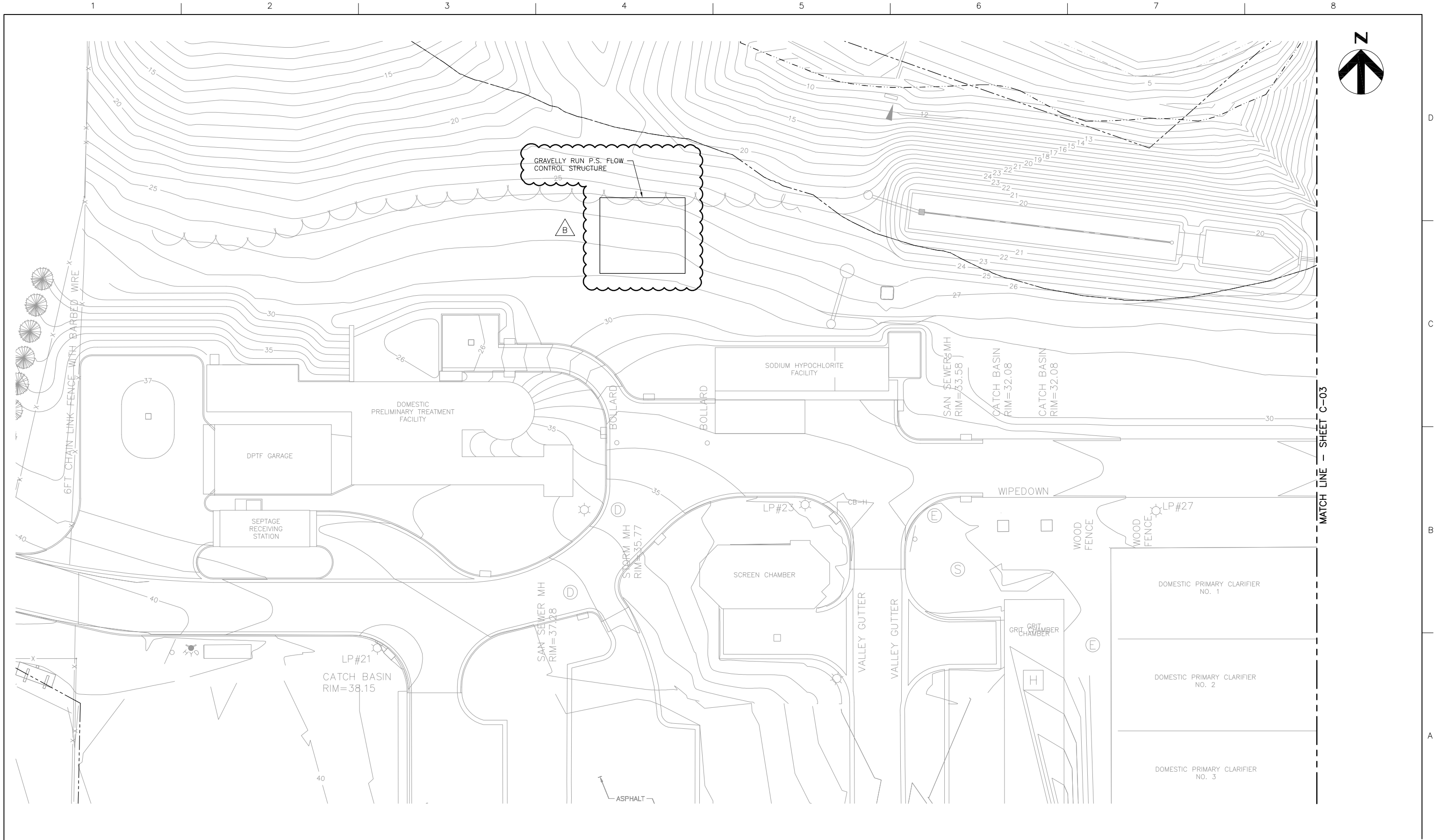
UNOX DEMOLITION
SECTION



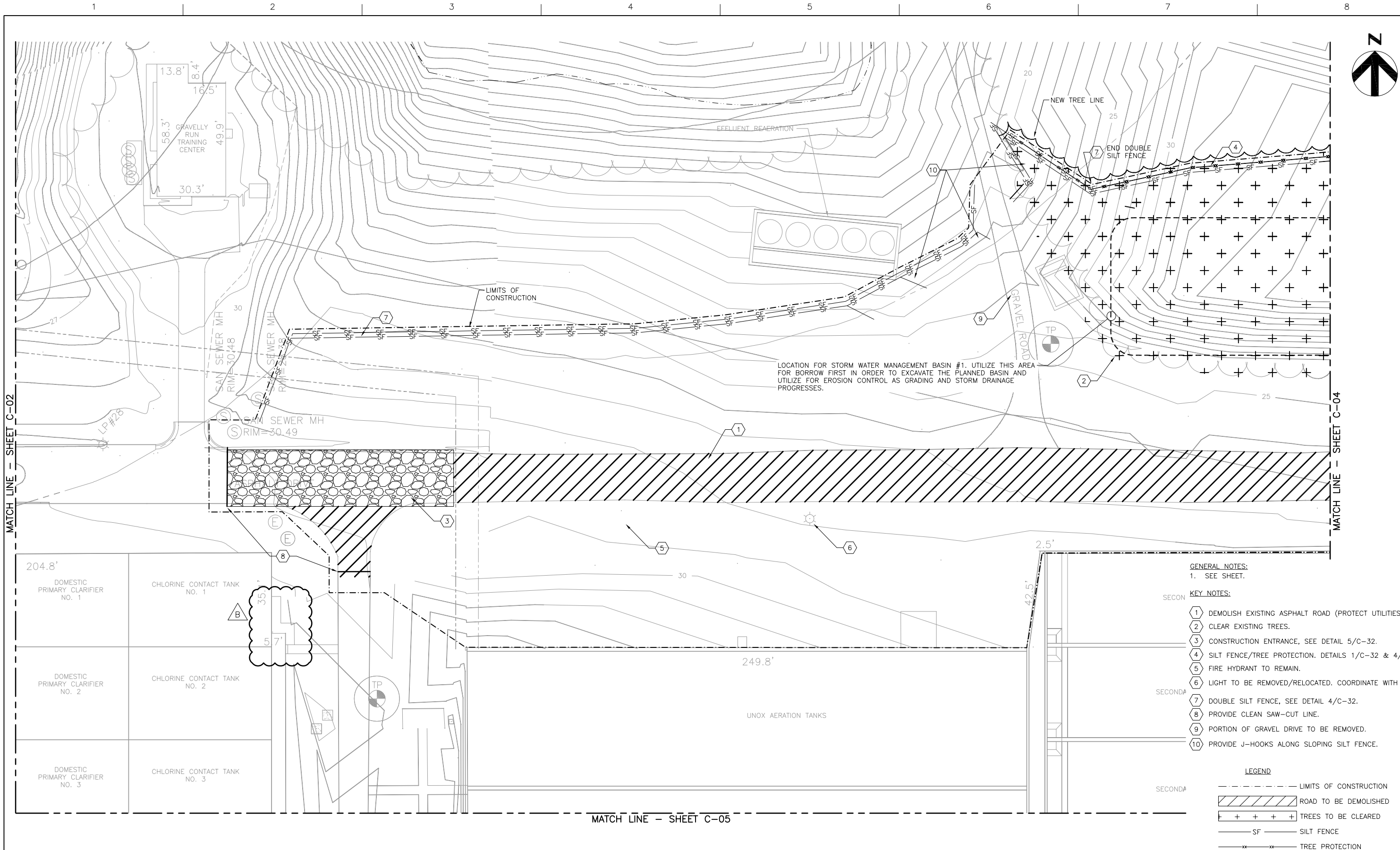
FILENAME	X-226.dwg
SCALE	AS NOTED

DRAWING NUMBER
X-226

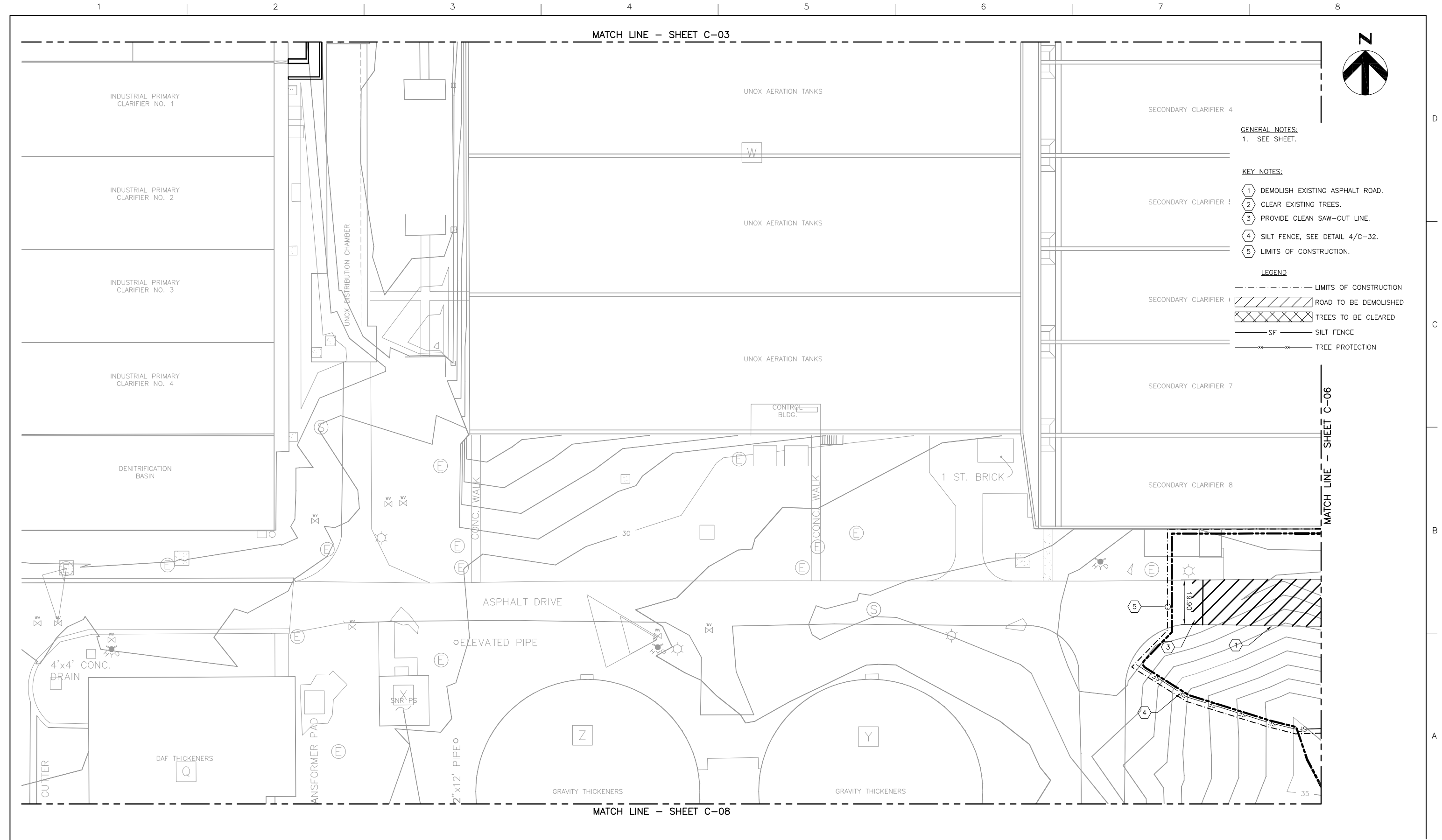
SHEET OF -



<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY	ALTERNATIVE 4A-1 LIGHT PHASE 2	ABOVE GRADE DEMOLITION AND EROSION AND SEDIMENTATION CONTROL PLAN 1				
				DESIGNED BY: R. BAYSDEN				<div><div>01"2"</div><div>01"=20'</div></div>	FILENAME	C-02.dwg	DRAWING NUMBER	
				DRAWN BY: G. HUNEYCUTT					SCALE	1"=20'	C-02	SHEET OF -
				CHECKED BY:								
	B	03/12/2014	FLOW CONTROL STRUCTURE ADDED									
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL									
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER								



 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	ABOVE GRADE DEMOLITION AND EROSION AND SEDIMENTATION CONTROL PLAN 2				
				DESIGNED BY: R. BAYSDEN							
				DRAWN BY: G. HUNEYCUTT			01"=20'	FILENAME: C-03.dwg	DRAWING NUMBER: C-03	SHEET OF -	
				CHECKED BY:			SCALE: 1"=20'				
	B	03/12/2014	SIDEWALK DEMO REMOVED	PROJECT NUMBER:							
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL								
	ISSUE	DATE	DESCRIPTION								



HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	R. BAYSDEN
DRAWN BY:	G. HUNEYCUTT
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2



 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	ABOVE GRADE DEMOLITION AND EROSION AND SEDIMENTATION CONTROL PLAN 5			
				DESIGNED BY: R. BAYSDEN			0 1" 2" 1"=20'	FILENAME C-06.dwg	DRAWING NUMBER C-06	SHEET OF -
				DRAWN BY: G. HUNEYCUTT						
				CHECKED BY:						
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	PROJECT NUMBER						
	ISSUE	DATE	DESCRIPTION							



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	R. BAYSDEN
DRAWN BY:	G. HUNEYCUTT
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL DESIGN

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

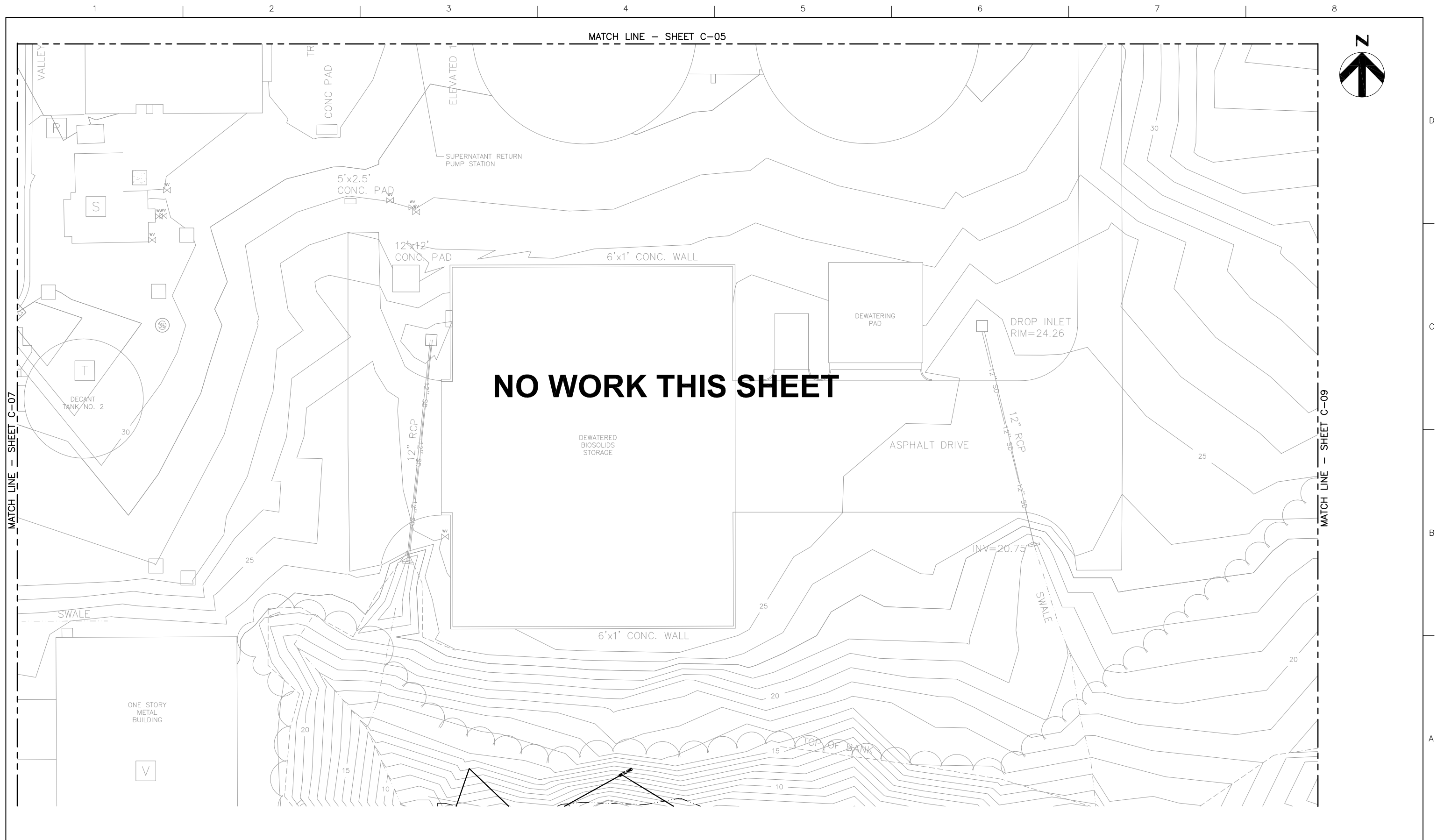
ALTERNATIVE 4A-1 LIGHT PHASE 2

**ABOVE GRADE DEMOLITION AND
EROSION AND SEDIMENTATIO CONTROL PLAN 6**



FILENAME	C-07.dwg
SCALE	1"=20'

DRAWING NUMBER	
C-07	SHEET OF -



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

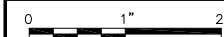
			PROJECT MANAGER:	WILLIAM S. M'COY
			DESIGNED BY:	R. BAYSDEN
			DRAWN BY:	G. HUNEYCUTT
			CHECKED BY:	
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL		
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER	

CONCEPTUAL DESIGN

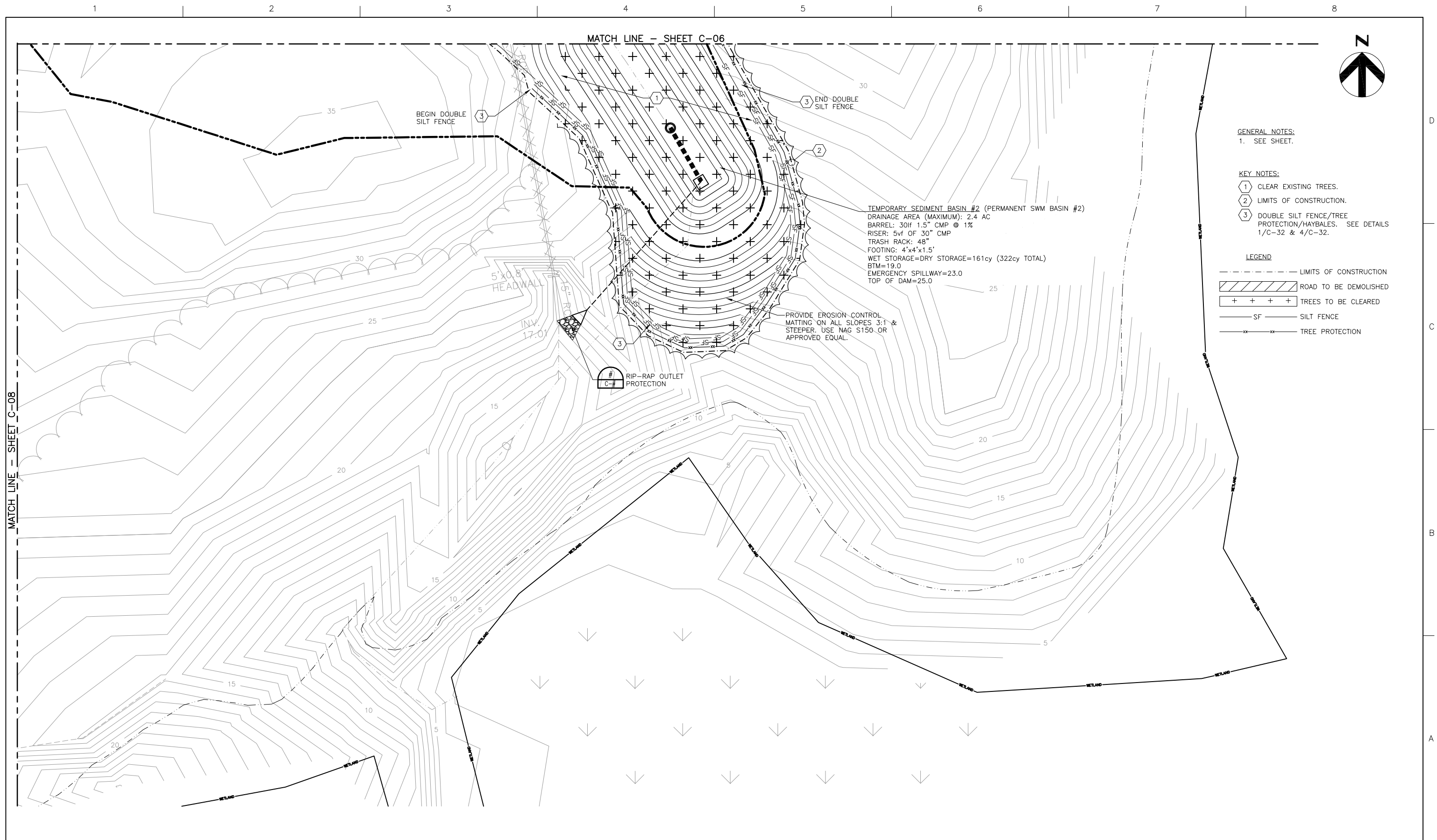
**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

ALTERNATIVE 4A-1 LIGHT PHASE 2

**ABOVE GRADE DEMOLITION AND
EROSION AND SEDIMENTATION CONTROL PLAN 7**



FILENAME	C-08.dwg	DRAWING NUMBER	
SCALE	1"=20'	C-08	SHEET OF -



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

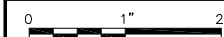
			PROJECT MANAGER:	WILLIAM S. M'COY
			DESIGNED BY:	R. BAYSDEN
			DRAWN BY:	G. HUNEYCUTT
			CHECKED BY:	
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL		
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER	

CONCEPTUAL DESIGN

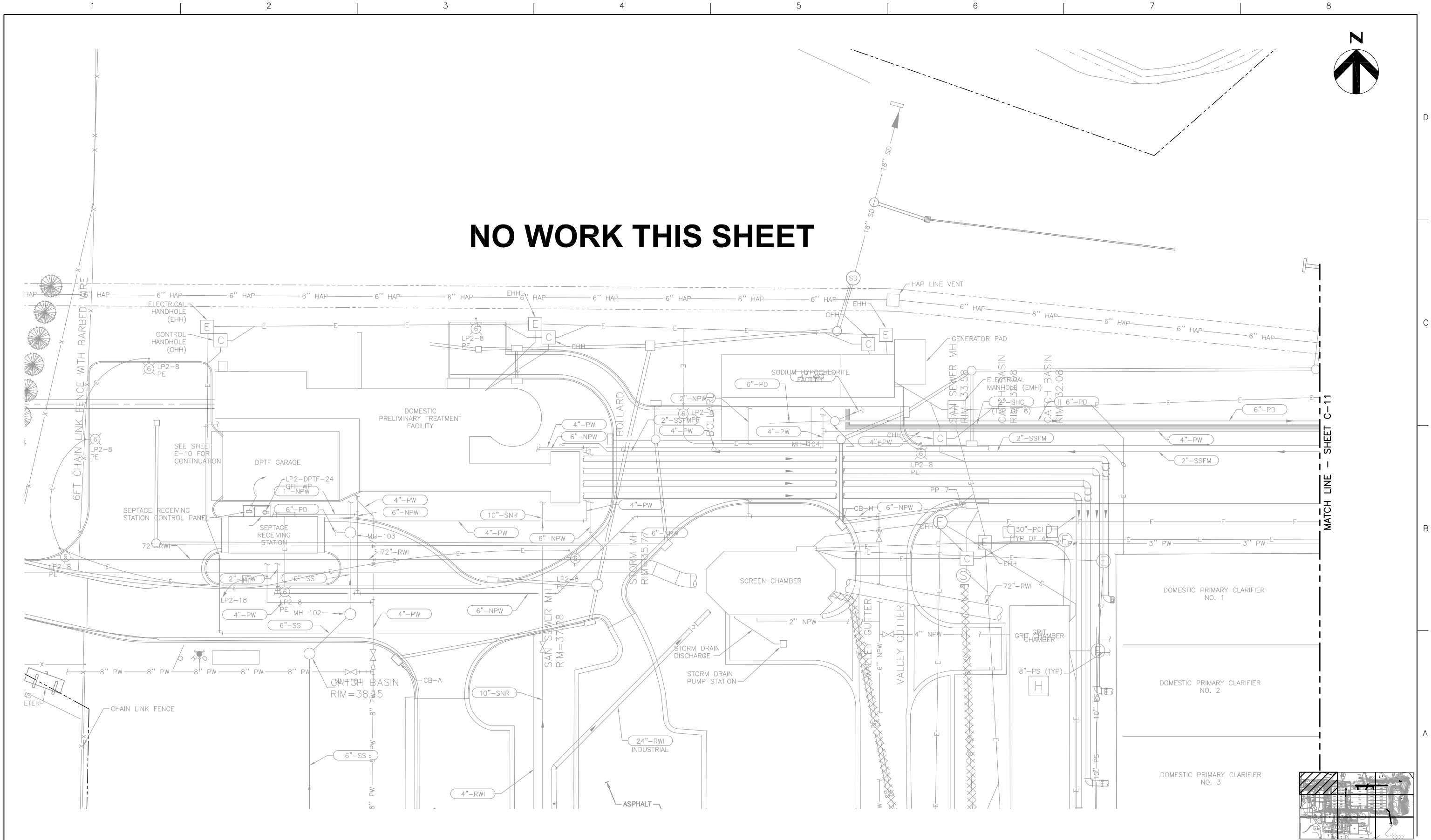
**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**



ALTERNATIVE 4A-1 LIGHT PHASE 2

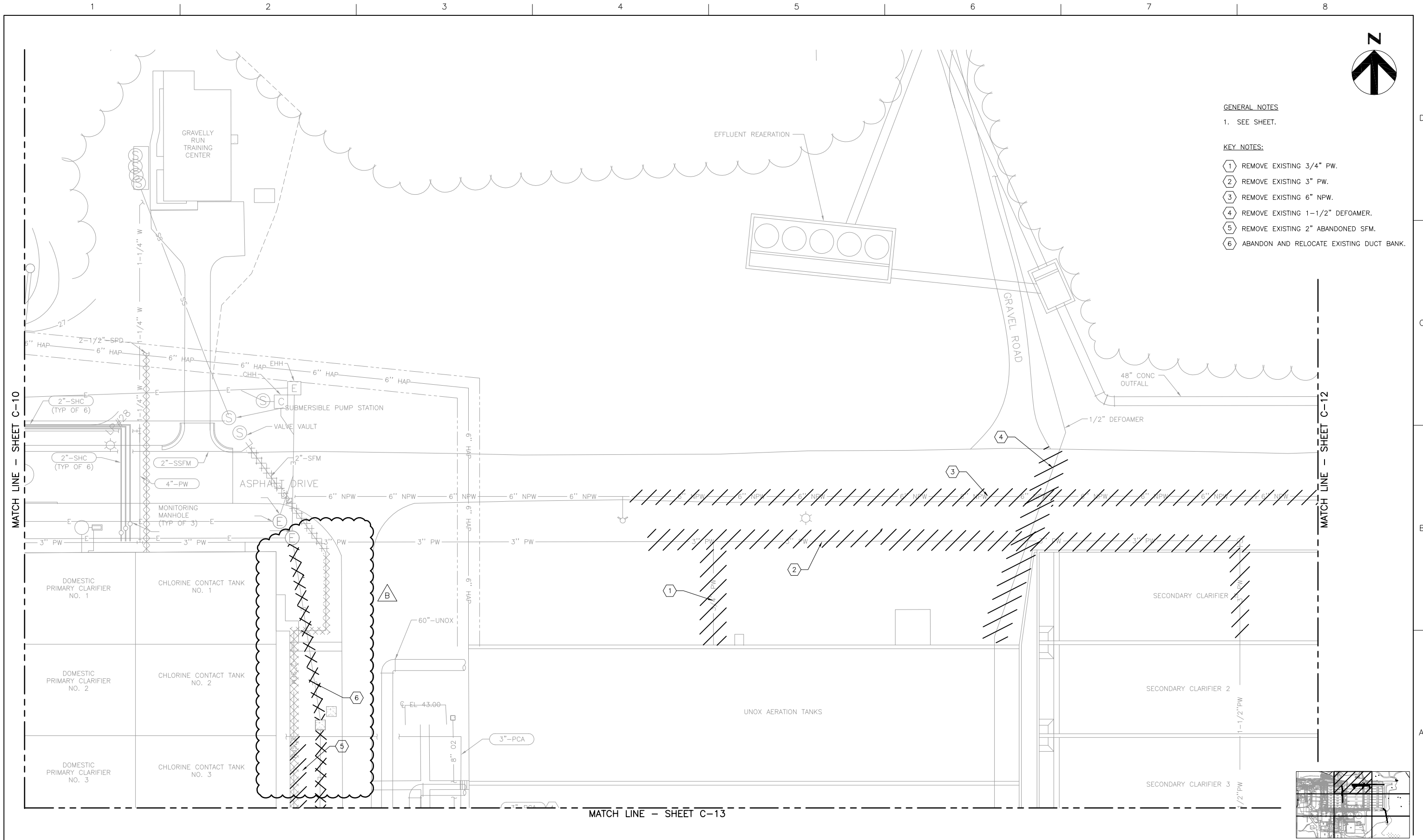
**ABOVE GRADE DEMOLITION AND
EROSION AND SEDIMENTATION CONTROL PLAN 8**



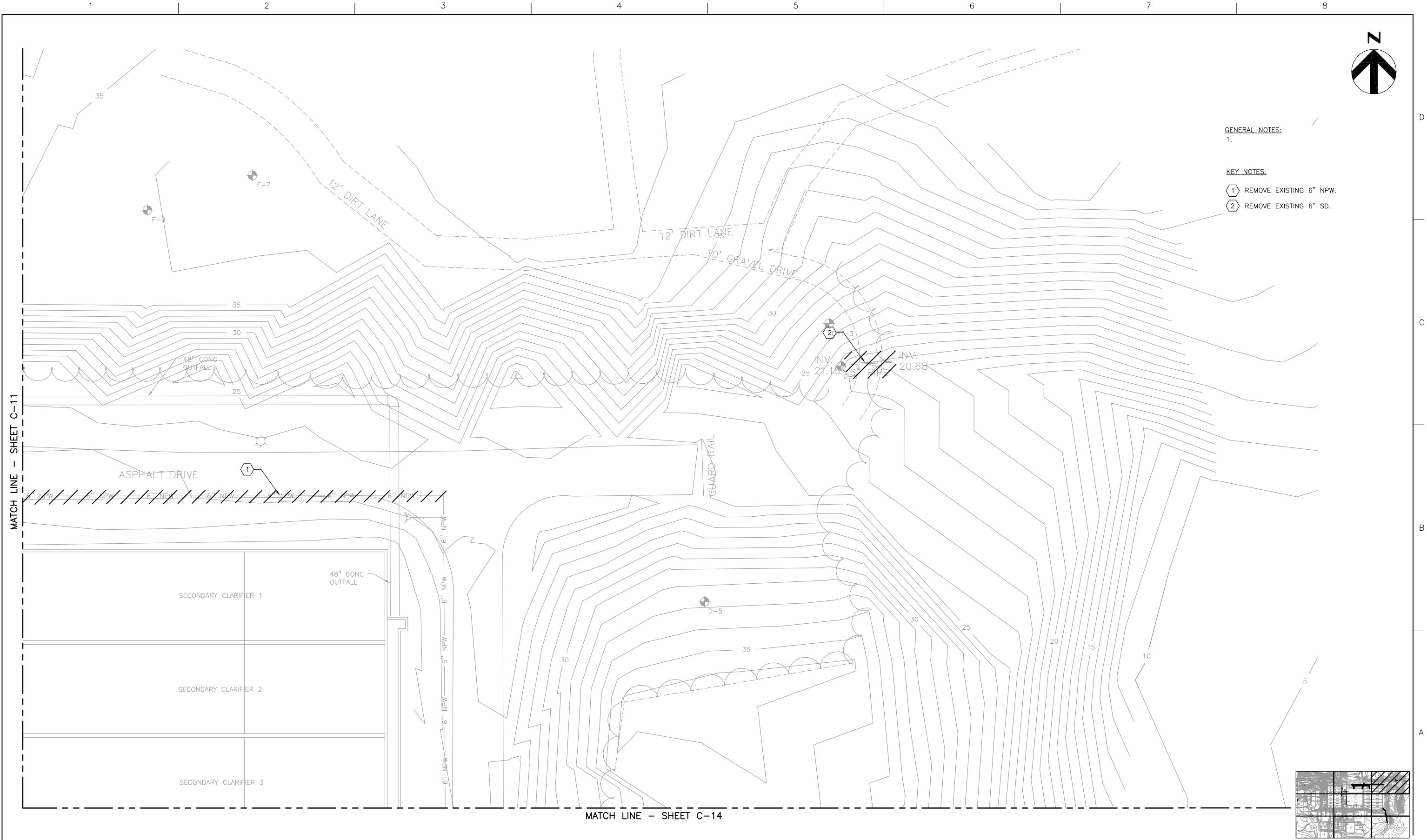
FILENAME	C-09.dwg	DRAWING NUMBER C-09	SHEET	OF	-
SCALE	1"=20'				




 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SUBSURFACE DEMOLITION PLAN 1		
				DESIGNED BY: D. ZIRKLE				FILENAME: C-10.dwg	DRAWING NUMBER: C-10
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	DRAWN BY: T. LOKEY				SCALE: 1"=20'	SHEET OF -
	ISSUE	DATE	DESCRIPTION	CHECKED BY:	PROJECT NUMBER				



 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SUBSURFACE DEMOLITION PLAN 2			
				DESIGNED BY: D. ZIRKLE						
				DRAWN BY: T. LOKEY			0 1" 2" 1"=20'	FILENAME C-11.dwg	DRAWING NUMBER	SHEET OF -
				CHECKED BY:				SCALE 1"=20'	C-11	
	B	03/12/2014	SUBSURFACE DEMO REVISED							
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL							
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER						



<div></div> <div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY	SUBSURFACE DEMOLITION PLAN 3				
				DESIGNED BY: D. ZIRKLE							
				DRAWN BY: T. LOKEY							
				CHECKED BY:							
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL								
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER							

</

MATCH LINE - SHEET C-12

MATCH LINE - SHEET C-13

MATCH LINE - SHEET C-17



GENERAL NOTES:

- 1 REMOVE EXISTING 18" SD AND DROP INLETS.
- 2 ABANDON 18" SD.

SECONDARY CLARIFIER 4

SECONDARY CLARIFIER 5

SECONDARY CLARIFIER 6

SECONDARY CLARIFIER 7

SECONDARY CLARIFIER 8

ASPHALT DRIVE

DROP INLET
RIM=24.41

ASPHALT DRIVE

~~DROP INLET~~
~~RIM=24.25~~

CONCEPTUAL DESIGN

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

ALTERNATIVE 4A-1 LIGHT PHASE 2

SUBSURFACE DEMOLITION PLAN 5



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

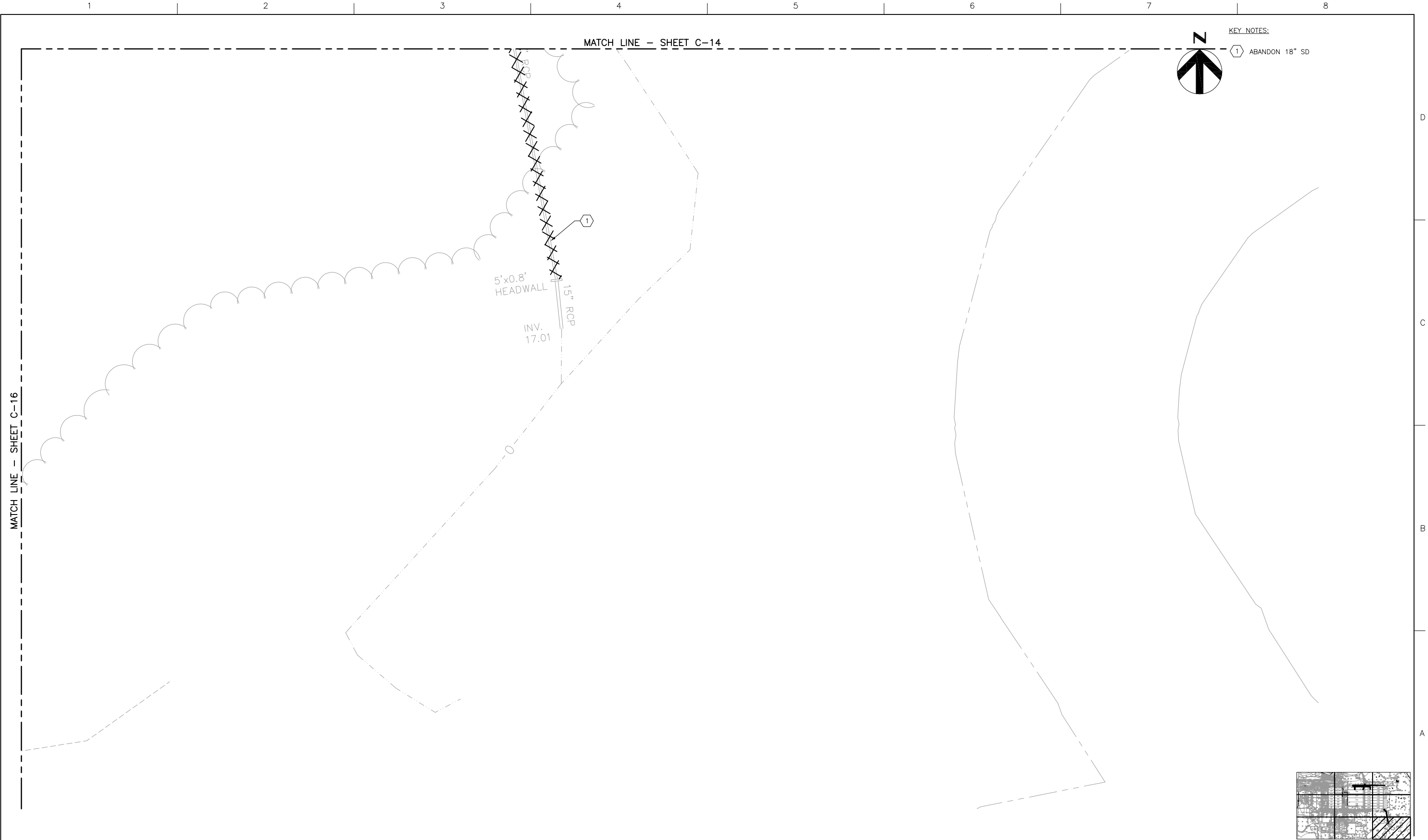
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	



FILENAME	C-14.dwg
SCALE	1"=20'

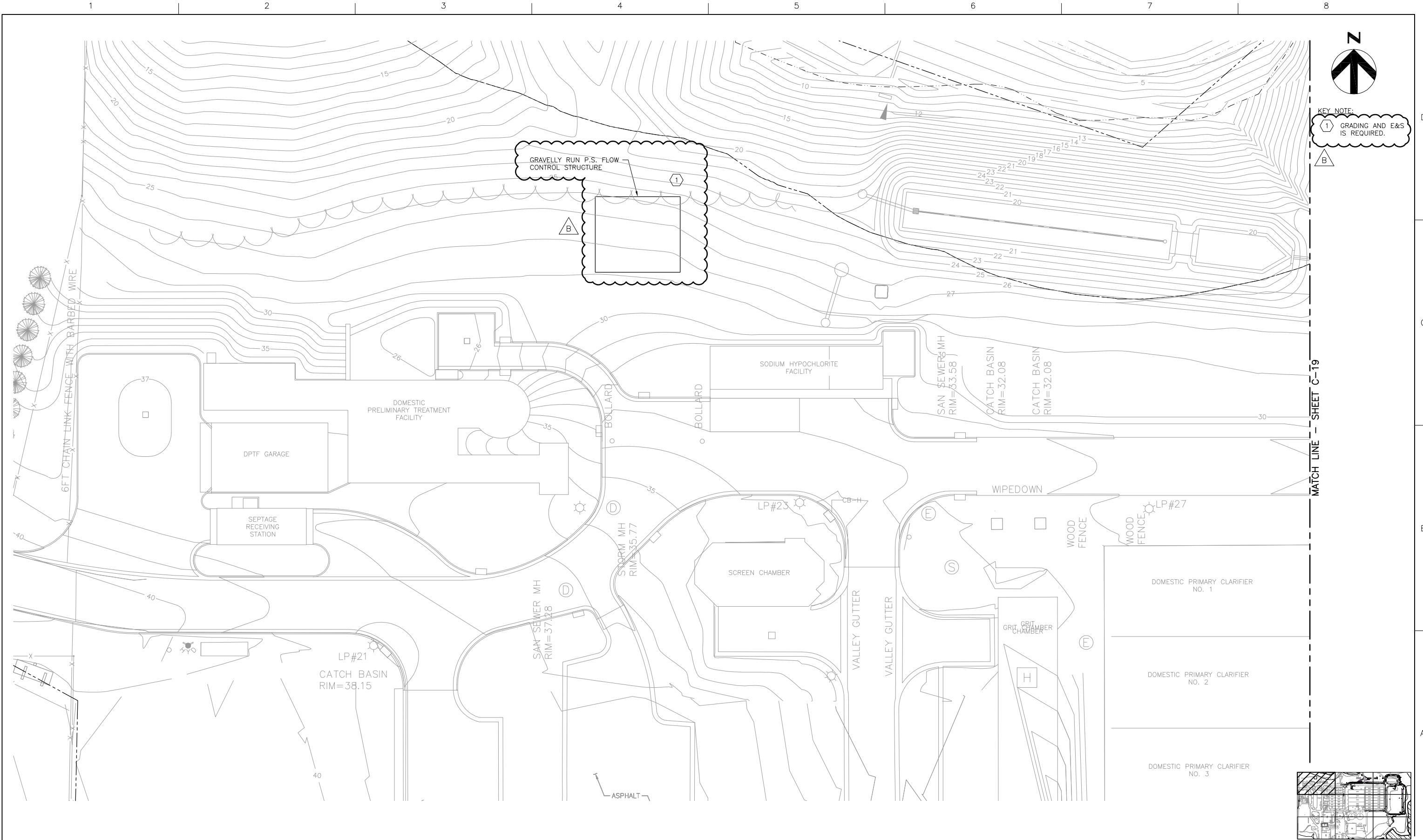
DRAWING NUMBER

C-14

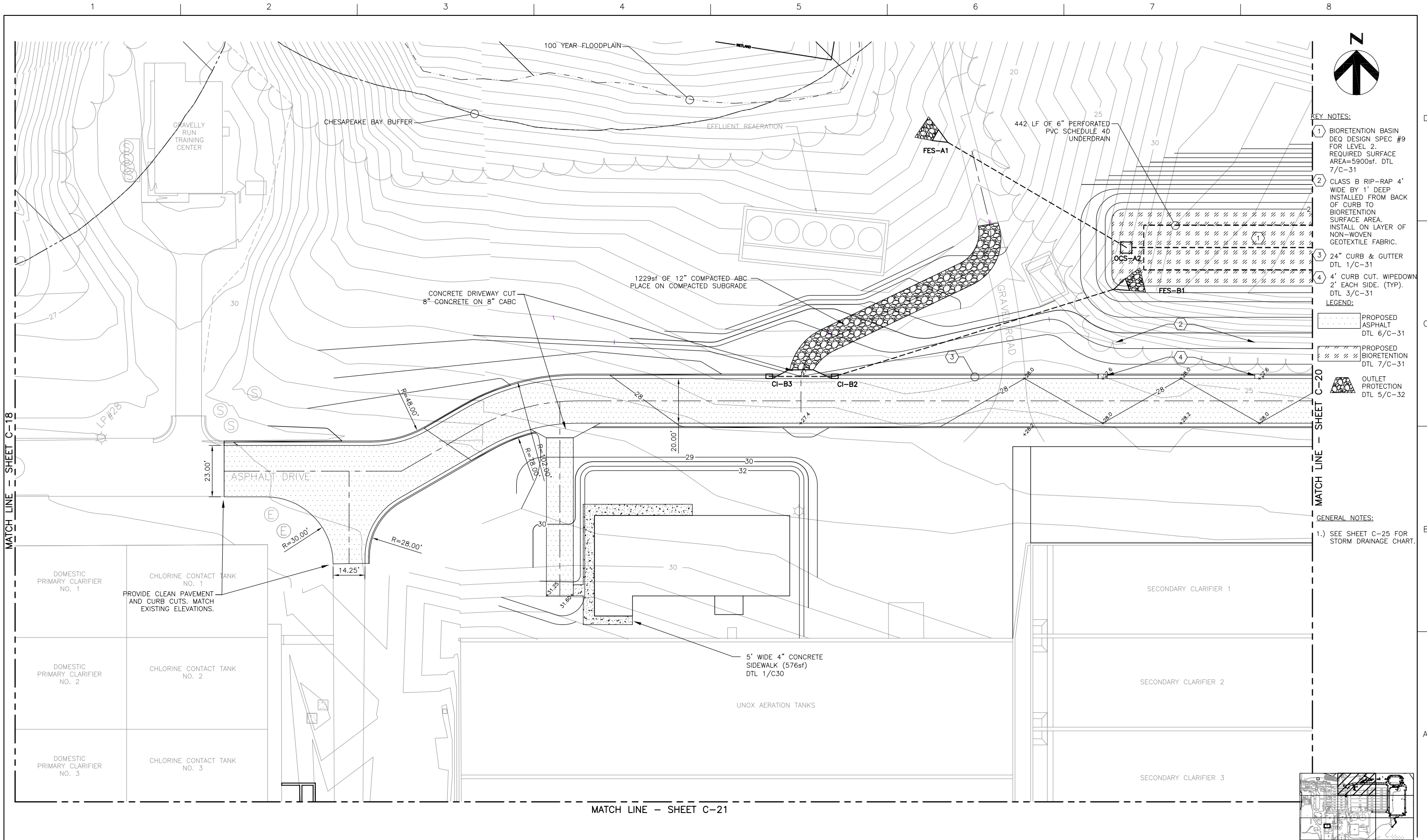
SHEET OF -



<div> HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div>				PROJECT MANAGER: WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	<div>SUBSURFACE DEMOLITION PLAN 8</div>				
				DESIGNED BY: D. ZIRKLE			<div></div>	FILENAME	C-17.Dwg	DRAWING NUMBER	
				DRAWN BY: T. LOKEY				SCALE	1"=20'	<div>C-17</div>	SHEET OF -
				CHECKED BY:							
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	PROJECT NUMBER							
ISSUE	DATE	DESCRIPTION									





 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SITE GRADING AND DRAINAGE PLAN 1			
				DESIGNED BY: R. BAYSDEN						
				DRAWN BY: G. HUNEYCUIT			0"1"2"	FILENAME C-18.dwg	DRAWING NUMBER	SHEET OF -
				CHECKED BY:			1"=20'	C-18		
	B	03/12/2014	FLOW CONTROL STRUCTURE ADDED							
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL							
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER						

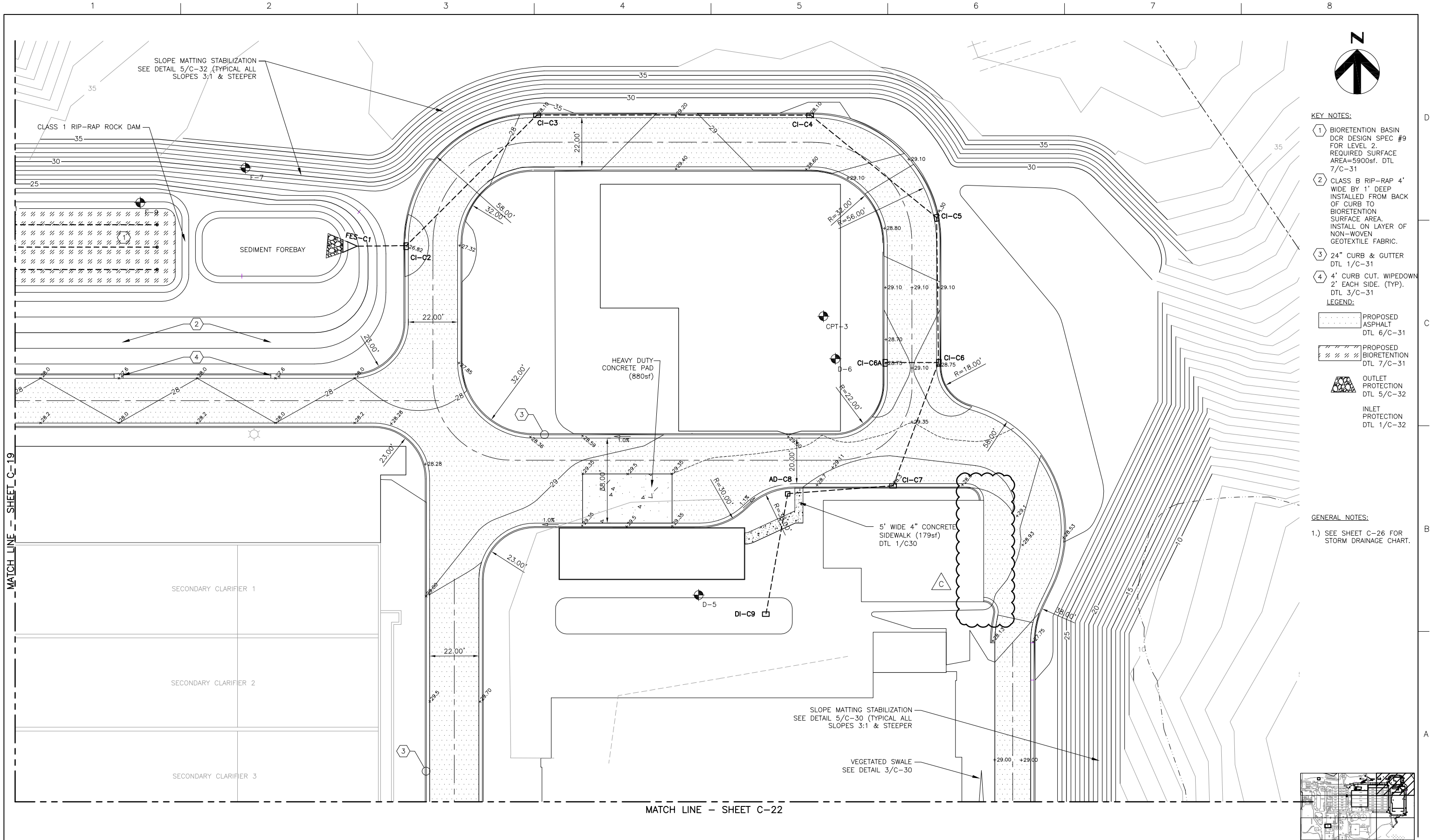


- KEY NOTES:
- BIORETENTION BASIN
DESIGN SPEC #9
FOR LEVEL 2.
REQUIRED SURFACE
AREA=5900sf. DTL
7/C-31
 - CLASS B RIP-RAP 4'
WIDE BY 1' DEEP
INSTALLED FROM BACK
OF CURB TO BACK
OF BIORETENTION
SURFACE AREA.
INSTALL ON LAYER OF
NON-WOVEN
GEOTEXTILE FABRIC.
 - 24" CURB & GUTTER
DTL 1/C-31
 - 4' CURB CUT. WIPEDOWN
2' EACH SIDE. (TYP).
DTL 3/C-31
- LEGEND:
- PROPOSED
ASPHALT
DTL 6/C-31
 - PROPOSED
BIORETENTION
DTL 7/C-31
 - OUTLET
PROTECTION
DTL 5/C-32

GENERAL NOTES:

- SEE SHEET C-25 FOR
STORM DRAINAGE CHART.


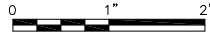
<div></div> <div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY	ALTERNATIVE 4A-1 LIGHT PHASE 2	SITE GRADING AND DRAINAGE PLAN 2					
				DESIGNED BY: R. BAYSDEN					FILENAME	C-19.dwg	DRAWING NUMBER	C-19	SHEET OF -
				DRAWN BY: G. HUNEYCUTT					SCALE	1"=20'			
				CHECKED BY:									
	B	09/06/2013	REVISION/UPDATES										
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL										
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									



- KEY NOTES:
1. BIORETENTION BASIN DCR DESIGN SPEC #9 FOR LEVEL 2. REQUIRED SURFACE AREA=5900sf. DTL 7/C-31
 2. CLASS B RIP-RAP 4' WIDE BY 1' DEEP INSTALLED FROM BACK OF CURB TO BIORETENTION SURFACE AREA. INSTALL ON LAYER OF NON-WOVEN GEOTEXTILE FABRIC.
 3. 24" CURB & GUTTER DTL 1/C-31
 4. 4' CURB CUT. WIPEDOWN 2' EACH SIDE. (TYP). DTL 3/C-31
- LEGEND:
- PROPOSED ASPHALT DTL 6/C-31
 - PROPOSED BIORETENTION DTL 7/C-31
 - OUTLET PROTECTION DTL 5/C-32
 - INLET PROTECTION DTL 1/C-32

GENERAL NOTES:

1.) SEE SHEET C-26 FOR STORM DRAINAGE CHART.

 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SITE GRADING AND DRAINAGE PLAN 3  FILENAME C-20.dwg SCALE 1"=20' DRAWING NUMBER C-20 SHEET OF -		
	C	03/12/2014	REVISED BLOWER ENTRANCE	DESIGNED BY: R. BAYSDEN					
	B	09/06/2013	REVISION/UPDATES	DRAWN BY: G. HUNEYCUIT					
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	CHECKED BY:					
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER					

MATCH LINE - SHEET C-19



LEGEND:

PROPOSED ASPHALT

D

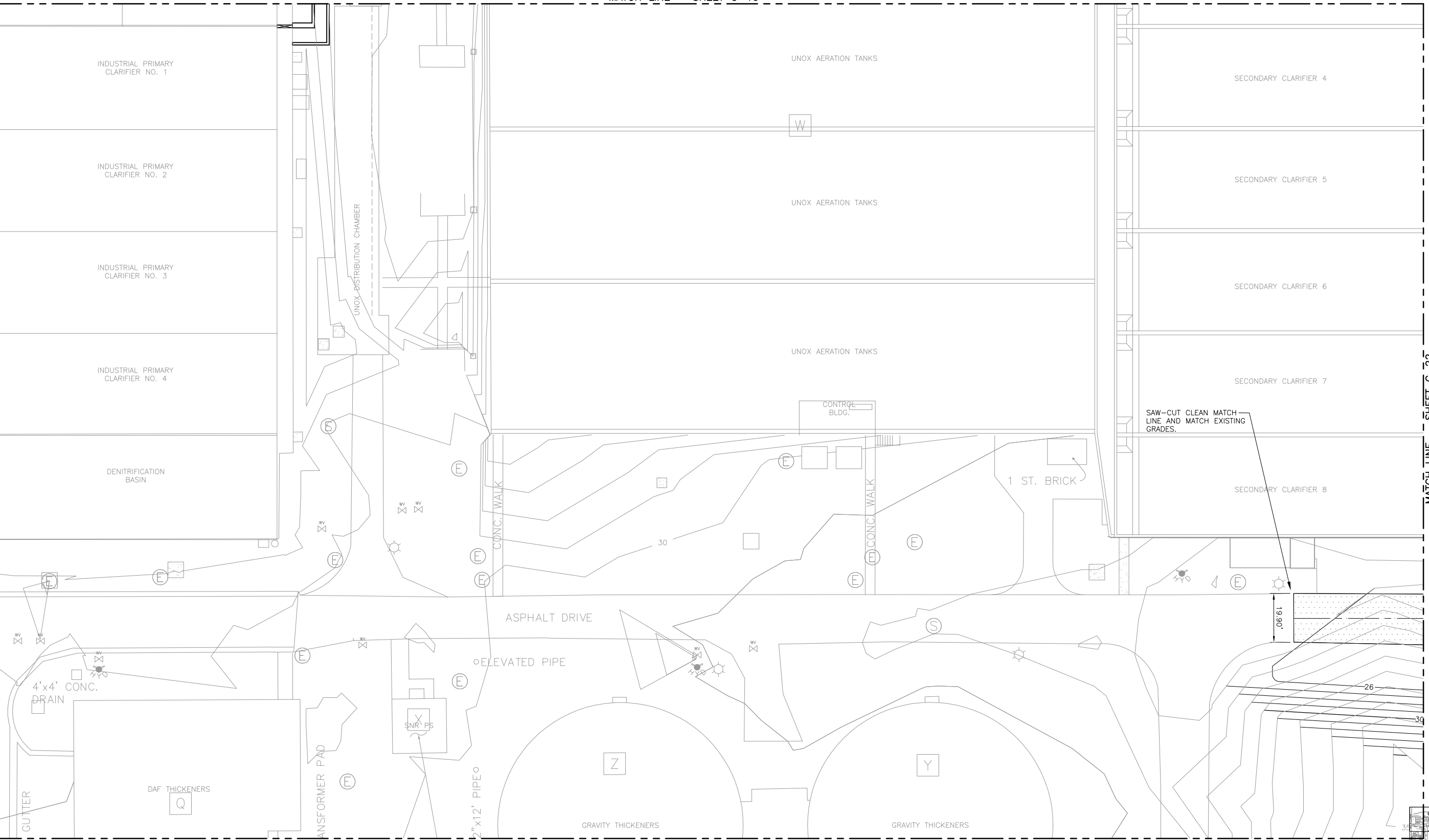
C

B

A

MATCH LINE - SHEET C-22

MATCH LINE - SHEET C-24



HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

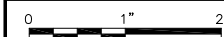
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	R. BAYSDEN
DRAWN BY:	G. HUNEYCUTT
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

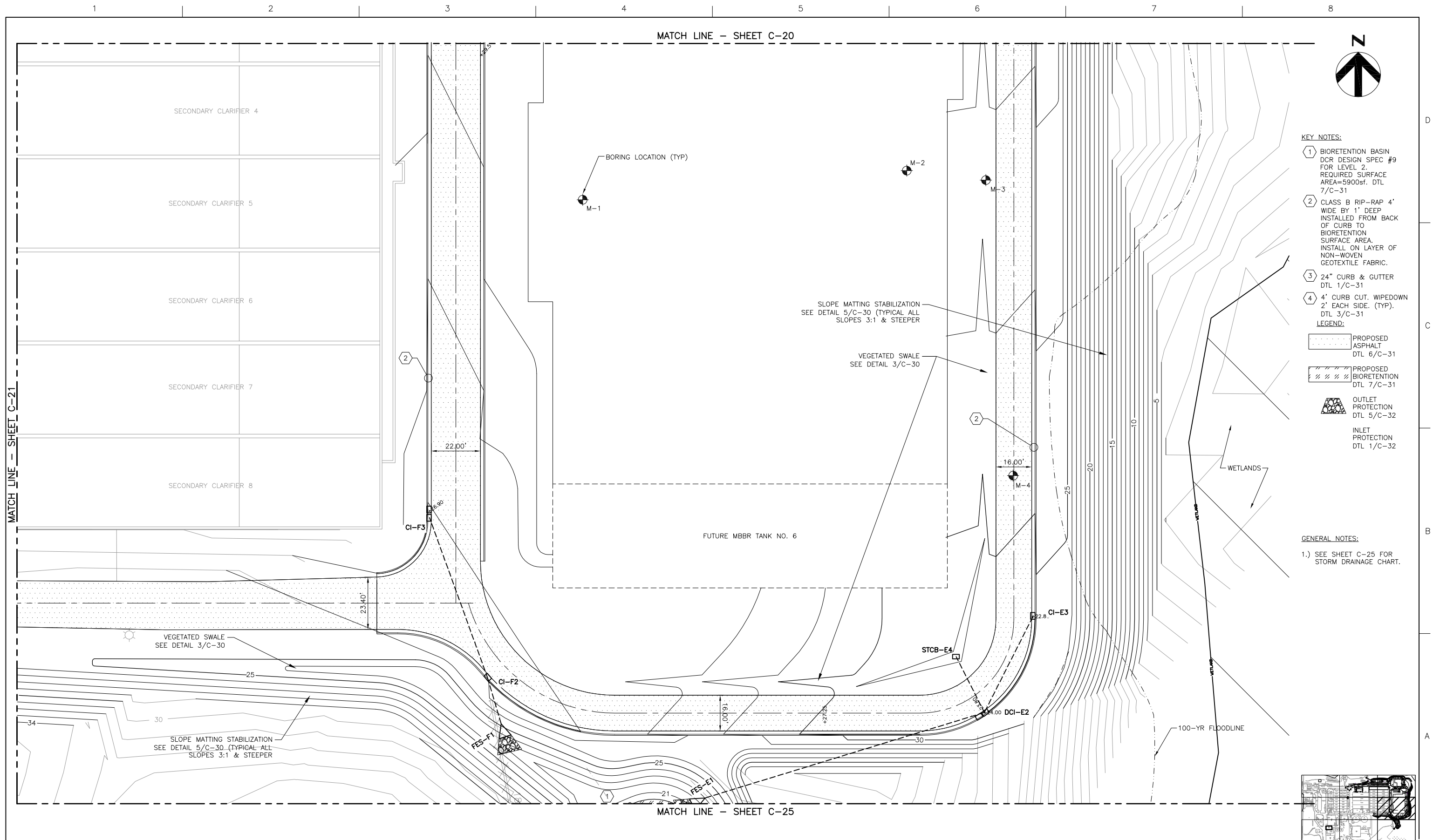
SITE GRADING AND DRAINAGE PLAN 4





FILENAME	C-21.dwg
SCALE	1"=20'

DRAWING NUMBER	C-21
----------------	-------------

SHEET OF -



				PROJECT MANAGER:	WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div>	<div>SITE GRADING AND DRAINAGE PLAN 5</div>			
				DESIGNED BY:	R. BAYSDEN						
			DRAWN BY:	G. HUNEYCUTT							
			CHECKED BY:								
HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502											
	B	09/06/2013	REVISION/UPDATES								
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL								
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER					FILENAME C-22.dwg	DRAWING NUMBER C-22	SHEET OF -

MATCH LINE - SHEET C-21



NO WORK THIS SHEET.

MATCH LINE - SHEET C-25

MATCH LINE - SHEET C-23



HDR Engineering, Inc.

5700 Lake Wright Dr.

Suite 300

Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	R. BAYSDEN
DRAWN BY:	G. HUNEYCUTT
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

0

1"

2"

SCALE

FILENAME

C-24.dwg

SCALE

1"=20'

DRAWING NUMBER

C-24

SHEET OF

-

SITE GRADING AND DRAINAGE PLAN 7

0 1" 2"

FILENAME C-24.dwg

SCALE 1"=20'

DRAWING NUMBER

C-24

SHEET

OF

-

EARTHWORK CALCULATIONS			
PROJECT NO.:		xxxx	
DATE:	08.26.13	BY:	RMB
REVISED:	xx.xx.xx	RVW:	XXX

Base Surface EXISTING TOPO ~~Comparison~~ PROPOSED GRADING

SITE DATA TABLE	CUT (CY) (+)	FILL (CY) (-)	NET (CY)
VOLUME FROM CIVIL 3D	40815.0	22655.0	18160.0

STRIPPINGS	SQUARE FEET (SF)	THICKNESS (IN)	CUBIC FEET (CF)	CUBIC YARDS (CY)
DISTURBED AREA IN CUT	152,035	0.5	76017.5	2815.6
25 % USABLE				703.9
75 % DISCARDED				2111.6
DISTURBED AREA IN FILL	161,840	0.6	80920.0	2997.0
25 % USABLE				749.3
75 % DISCARDED				2247.8
TOTAL DISTURBED AREA	313,875	TOTAL STRIPPINGS HAULED OFF =		4359.4

IMPORTED MATERIAL				
MATERIAL	SQUARE FEET (SF)	THICKNESS (IN)	CUBIC FEET (CF)	CUBIC YARDS (CY)
IMPORTED MATERIALS IN CUT				
PAVEMENT	11387.0	9.0	8540.3	316.3
PLATFORM LOWERING	0.0	0.0	0.0	0.0
CONCRETE SIDEWALK	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0
IMPORTED MATERIALS IN FILL				
PAVEMENT	46052.0	9.0	34539.0	1279.2
PLATFORM LOWERING	0.0	0.0	0.0	0.0
CONCRETE SIDEWALK	0.0	0.0	0.0	0.0
BUILDING PAD	0.0	0.0	0.0	0.0
TOTAL IMPORTED MATERIAL (CY)				1595.5

SITE DATA TABLE	CUT (CY) (+)	FILL (CY) (-)	NET (CY)
AFTER STRIPPINGS	40815.0	25652.0	15163.0
IMPORT MATERIAL IN CUT (+)	316.3		
IMPORT MATERIAL IN FILL (-)		1279.2	
15 % FILL FACTOR (-)			
ADJUSTED NUMBERS	41131.3	28028.7	13102.6

VOLUME TOTALS (Without Strippings)	
VOLUME TYPE	YARDS
ADJUSTED CUT (+)	41131.3
ADJUSTED FILL (-)	-28028.7
TOTAL (- = CUT, + = FILL)	13102.6

TOTAL IMPORT (CY)	
GOOD	0.0
TOTAL	0.0
w/ Strippings	-1453.1

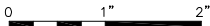
TOTAL EXPORT (CY)	
GOOD	13102.6
STRIPPINGS	4359.4
TOTAL	17461.9

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

EARTHWORK SCHEDULES



FILENAME	C-26.dwg
SCALE	AS NOTED

DRAWING NUMBER	C-26
----------------	------

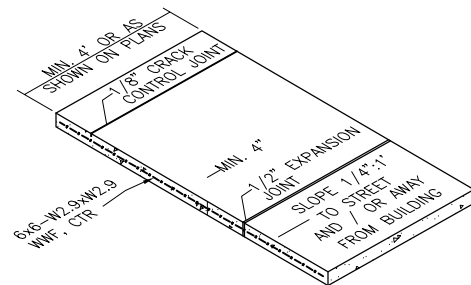
SHEET OF -



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	08/27/2013	STORM DRAINAGE SCHEDULE & EARTHWORK
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	R. BAYSDEN
DRAWN BY:	G. HUNEYCUTT
CHECKED BY:	
PROJECT NUMBER	

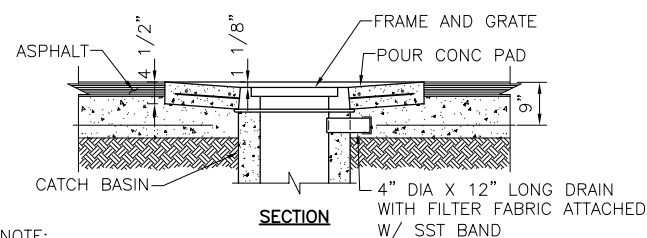
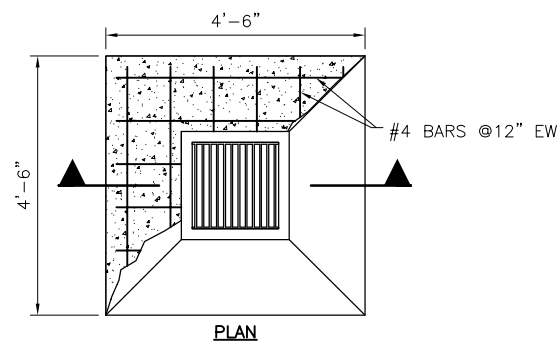


- NOTES:

1. CRACK CONTROL JOINTS TO BE PROVIDED AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK BY SAWING, SCORING, "LEAVE-IN" INSERTS, OR CUTTER PLATES AND SHALL EXTEND INTO THE CONCRETE TO 1/4 OF THE DEPTH.
2. EXPANSION JOINTS TO BE INSTALLED AT INTERVALS NOT EXCEEDING 50', AND AT JUNCTION POINTS OF CURBS AND ENTRANCES, AND ON BOTH SIDES OF ALL SIDEWALK SECTIONS CONTAINING UTILITIES. PREMOLDED, 1/2" JOINT FILLER IS TO BE USED EXTENDING FROM BOTTOM OF SLAB TO 1/4" OF ITS TOP SURFACE.
3. AS SOON AS CONCRETE WILL NOT SLUMP, FACE FORMS ARE TO BE REMOVED, IRREGULARITIES REMOVED, A LIGHT BROOM FINISH GIVEN, AND A LIQUID MEMBRANE SEAL OR OTHER APPROVED CURING MEDIUM APPLIED.
4. SIDEWALKS ACROSS ENTRANCES SHALL HAVE A DEPTH OF SEVEN INCHES (7") WITH A MAXIMUM SLOPE OF 1":12".
5. THE CONTRACTOR SHALL PREVENT THE TEMPERATURE AT THE SURFACE OF THE CONCRETE FROM FALLING BELOW 40°F DURING THE FIRST 72 HOURS IMMEDIATELY FOLLOWING CONCRETE PLACEMENT. PROTECTIVE MATERIAL SHALL BE LEFT IN PLACE FOR AN ADDITIONAL 48 HOURS IF FREEZING AIR TEMPERATURES ARE TO BE EXPECTED TO CONTINUE.

SIDEWALK DETAIL

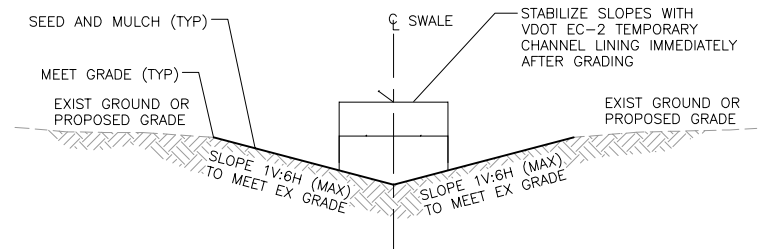
NOT TO SCALE



NOTE:

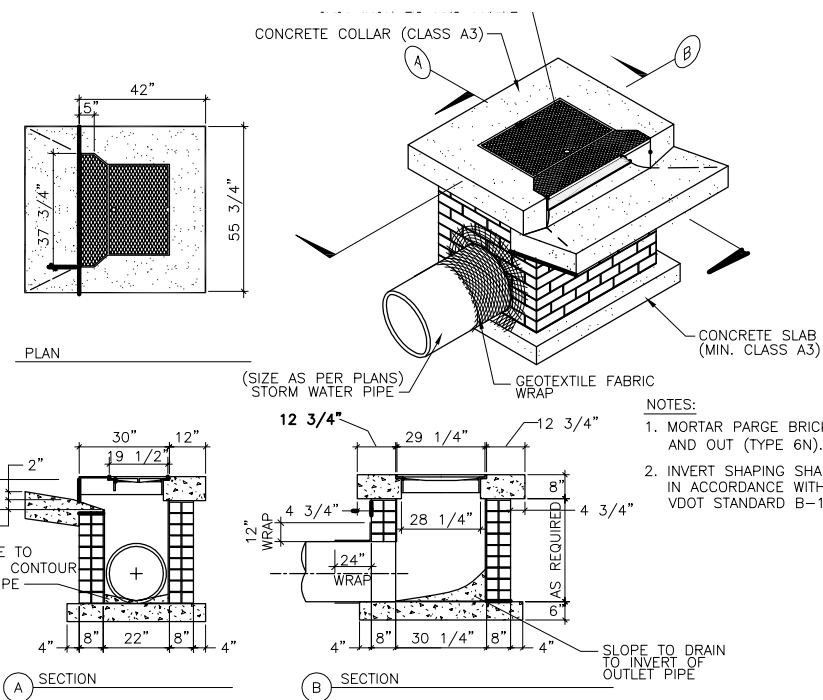
1. ALL BARS TO BE PLACED 2" CLEAR OF NEAREST FACE OF CONCRETE UNLESS SHOWN OR NOTED OTHERWISE.

DROP INLET TOP



VEGETATED SWALE DETAIL

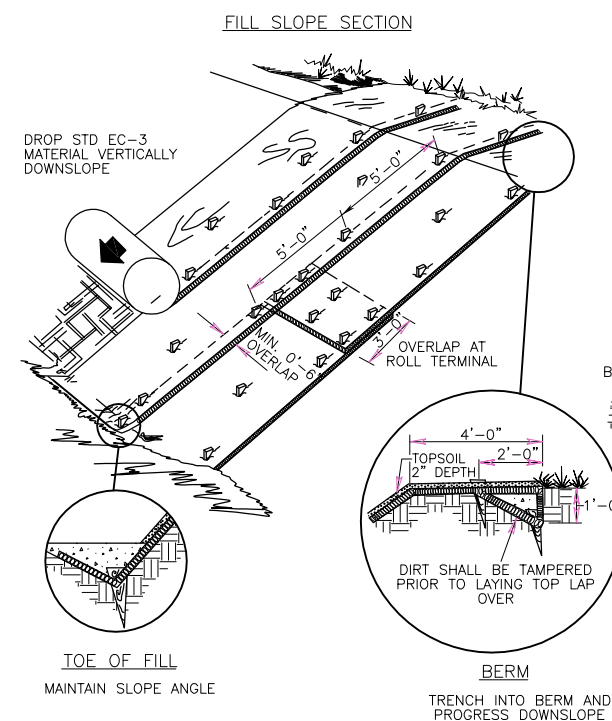
NOT TO SCALE



- NOTES:

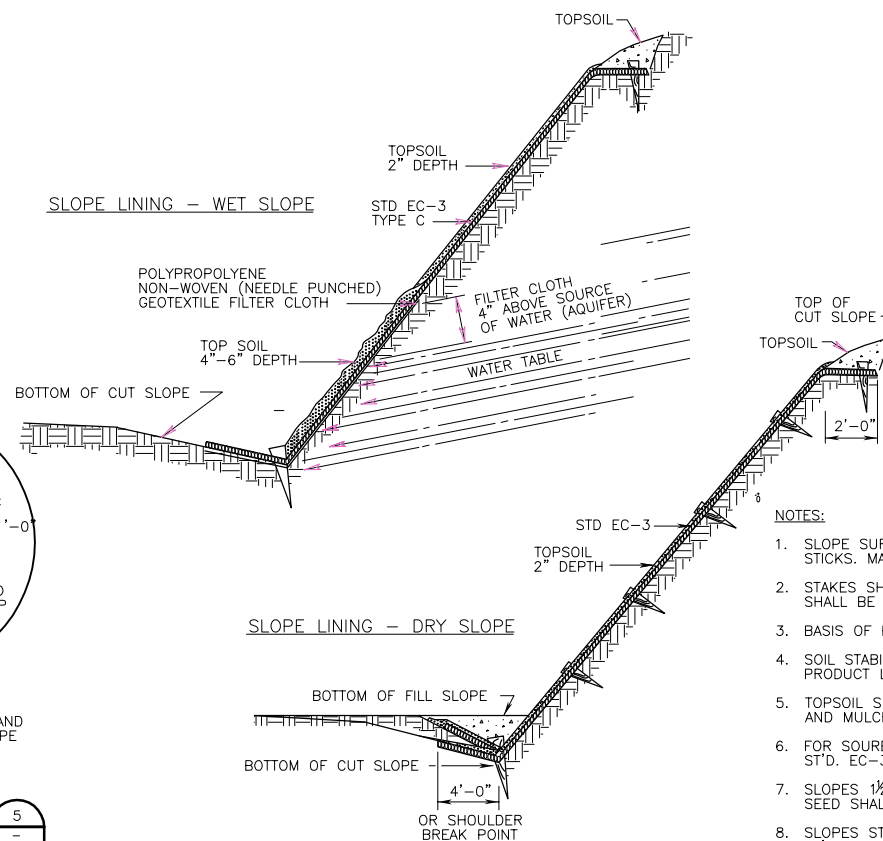
1. MORTAR PARGE BRICK INSIDE AND OUT (TYPE 6N).
2. INVERT SHAPING SHALL BE IN ACCORDANCE WITH VDOT STANDARD B-1.

STANDARD CURB INLET (HS-101)



EROSION CONTROL MATTING

NOT TO SCALE



- NOTES:

1. SLOPE SURFACE SHALL BE SMOOTH AND FREE OF ROCKS, LUMPS OF DIRT, GRASS, AND STICKS. MAT SHALL BE PLACED FLAT ON SURFACE FOR PROPER SOIL CONTACT.
2. STAKES SHALL BE WOOD OR METAL AS RECOMMENDED BY THE MANUFACTURER AND SHALL BE A MINIMUM OF 18 INCHES IN LENGTH.
3. BASIS OF PAYMENT SHALL BE SQUARE YARDS OF STANDARD EC-3 (TYPE C) IN PLACE.
4. SOIL STABILIZATION MAT TYPE C SHALL BE IN ACCORDANCE WITH THE APPROVED PRODUCT LIST.
5. TOPSOIL SHALL BE SPREAD TO A UNIFORM THICKNESS PRIOR TO APPLICATION OF SEED AND MULCH.
6. FOR SOURCES OF APPROVED MATERIALS SEE VDOT'S APPROVED PRODUCTS LIST FOR STD. EC-3, TYPE C MATERIALS.
7. SLOPES 1½ : 1 AND FLATTER SHALL BE BACKFILLED WITH TOPSOIL AT 2 INCH DEPTH. SEED SHALL BE APPLIED TO THE TOPSOIL AND MULCHED WITH TYPE 1 MULCH.
8. SLOPES STEEPER THAN 1½:1 SHALL BE SEEDED IMMEDIATELY PRIOR TO INSTALLATION OF STD. EC-3 TYPE C MATERIAL.

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

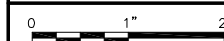
			PROJECT MANAGER:	WILLIAM S. M'COY
			DESIGNED BY:	R. BAYSDEN
			DRAWN BY:	G. HUNEYCUTT
			CHECKED BY:	
B	09/06/2013	REVISION/UPDATES		
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL		
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER	

CONCEPTUAL DESIGN

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

ALTERNATIVE 4A-1 LIGHT PHASE 2

CIVIL SITE DETAILS 1



FILENAME	C-30.dwg	DRAWING NUMBER	
SCALE	AS NOTED	C-30	SHEET OF

1

2

3

4

5

6

7

8

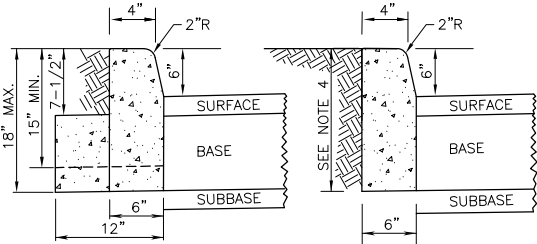
NOTES:

1. FOR USE WITH STABILIZED OPEN-GRADED DRAINAGE LAYER. THE BOTTOM OF THE CURB AND GUTTER SHALL BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSED AND TO THE DEPTH OF THE PAVEMENT.

FOR INVERTED CROWN OR PARKING AREAS THAT SLOPE AWAY FROM THE CURB, MAINTAIN A 1":1' SLOPE BUT SLOPE OUTWARD.

THE BOTTOM OF THE CURB AND GUTTER MAY BE CONSTRUCTED PARALLEL TO THE SLOPE OF SUBBASE COURSES PROVIDED A MINIMUM DEPTH OF 7" IS MAINTAINED.

COMBINATION 6" CURB & GUTTER
(VDOT CG-6)



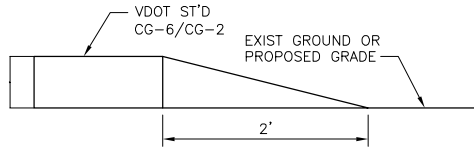
ACCEPTABLE ALTERNATIVE IF CURB IS EXTRUDED

STANDARD 6" CURB
(VDOT CG-2)

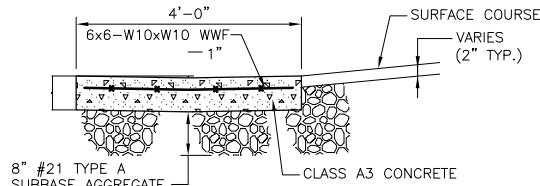


NOTES:

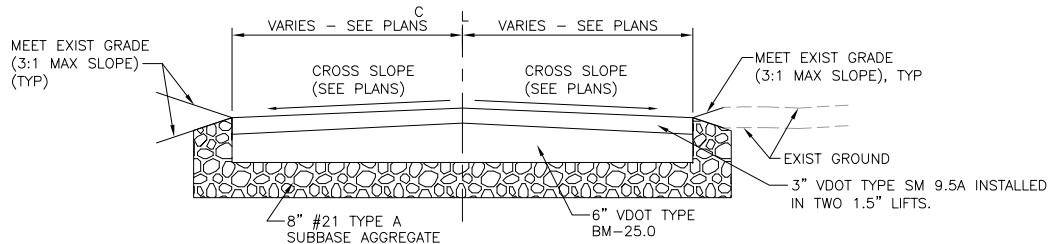
1. CONCRETE TO BE CLASS A3 IF CAST IN PLACE, 4000 PSI IF PRECAST.
2. THE DEPTH OF THE CURB MAY BE REDUCED AS MUCH AS 3" (15" DEPTH) OR INCREASED AS MUCH AS 3" (21" DEPTH) IN ORDER THAT THE BOTTOM OF THE CURB WILL COINCIDE WITH THE TOP OF A COURSE OF THE PAVEMENT SUBSTRUCTURE, OTHERWISE, THE DEPTH IS TO BE 18" AS SHOWN. NO ADJUSTMENT IN THE PRICE BID IS TO BE MADE FOR A DECREASE OR AN INCREASE IN DEPTH.



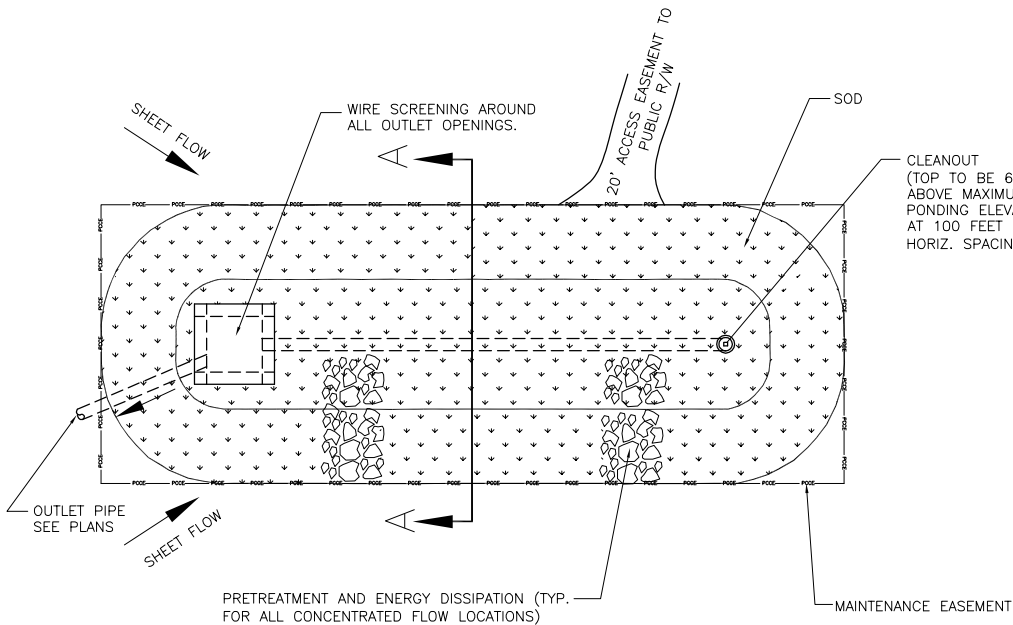
CURB WIPEDOWN
NOT TO SCALE



SECTION AT VALLEY GUTTER



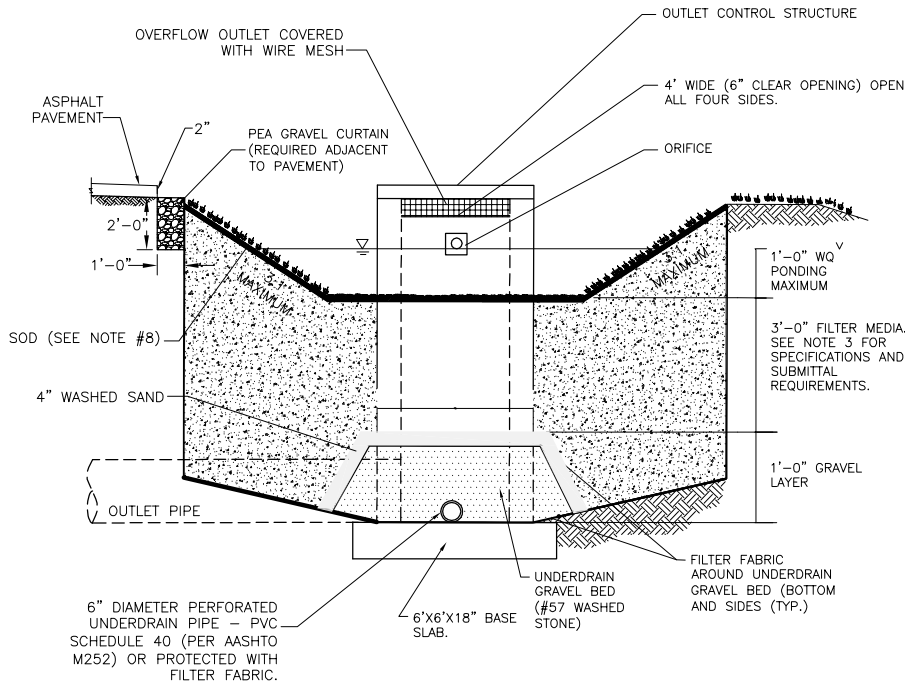
TYPICAL ROADWAY SECTION



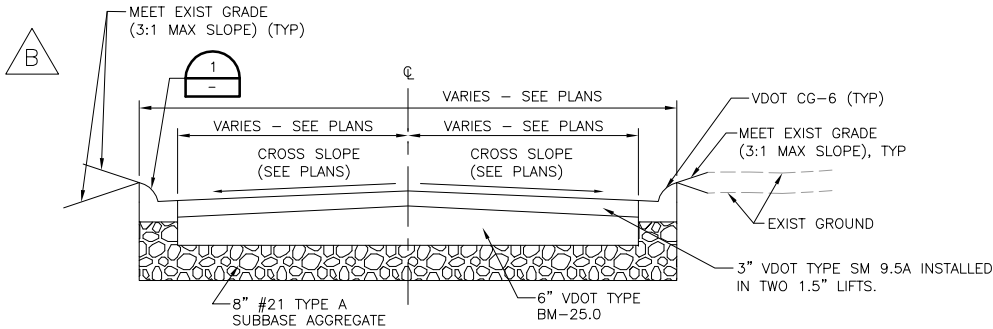
PLAN

BIORETENTION

NOT TO SCALE



SECTION A-A



TYPICAL ROADWAY SECTION
WITH CURB AND GUTTER



NOTES:

1. ALL BIORETENTION SHALL HAVE A MINIMUM 20 FOOT ACCESS EASEMENT CONNECTING TO A DEDICATED PUBLIC RIGHT OF WAY. ACCESS ROAD SHALL HAVE MIN. 12' STABILIZED WIDTH, MAX. LONG. GRADE OF 15%, MAX. CROSS-SLOPE 5%.
2. ALL DRAINAGE AREAS TO A BIORETENTION FACILITY ARE TO BE STABILIZED PRIOR TO INSTALLATION OF AMENDED SOILS, MULCH OR PLANTINGS.
3. AMENDED SOIL WILL ONLY BE PERMITTED WITH A VALID SOIL ANALYSIS REPORT. THE SOIL MIX SHOULD BE UNIFORM AND FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR MATERIAL GREATER THAN 2 INCHES. IT SHOULD BE A HOMOGENOUS SOIL MIX OF 85-88 PERCENT BY VOLUME SAND (USDA SOIL TEXTURAL CLASSIFICATION), 10 PERCENT FINES (SILT AND CLAY), AND 3 TO 5 PERCENT ORGANIC MATTER (SUCH AS PEAT MOSS) SHALL BE USED. THE PHOSPHORUS CONTENT OF THE SOIL MIX SHOULD BE LOW. THE P-INDEX FOR BIORETENTION SOIL MEDIA SHOULD ALWAYS RANGE BETWEEN 10 AND 30, REGARDLESS OF THE TARGET POLLUTANT.
- THE MEDIA SHOULD BE TESTED TO DETERMINE AN ACTUAL DRAINAGE RATE AFTER PLACEMENT. THE PERMEABILITY SHOULD FALL BETWEEN 1 AND 6 INCHES PER HOUR, AND 1-2 INCHES PER HOUR IS PREFERRED. AS A RULE OF THUMB, USING THE ABOVE-SPECIFIED MEDIA, THE INFILTRATION RATES SHOULD BE WITHIN THE PREFERRED RANGE FOR 10% FINES, RESPECTIVELY.
4. INSTALL WIRE SCREENING AROUND ALL OUTLET OPENINGS TO PREVENT LOSS OF MULCH.
5. WRAP PERFORATED UNDERDRAIN WITH FILTER FABRIC PRIOR TO BACKFILLING.
6. UNDERDRAIN PIPE SHOULD HAVE 3/8" PERFORATIONS SPACED AT 6" CENTERS, MIN. 4 HOLES PER ROW. MAX SPACING OF UNDERDRAIN PIPE IS 10 FEET ON CENTER. UNDERDRAIN SHALL SLOPE 0.5% TOWARDS OUTLET CONTROL STRUCTURE.
7. THE BIORETENTION BASIN SHALL BE INSTALLED AFTER SITE CONSTRUCTION ACTIVITIES ARE COMPLETED AND THE AREA STABILIZED. COORDINATE WITH THE NCDENR INSPECTOR.

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

1	09/06/2013	REVISION/UPDATES
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

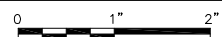
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	R. BAYSDEN
DRAWN BY:	G. HUNEYCUTT
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

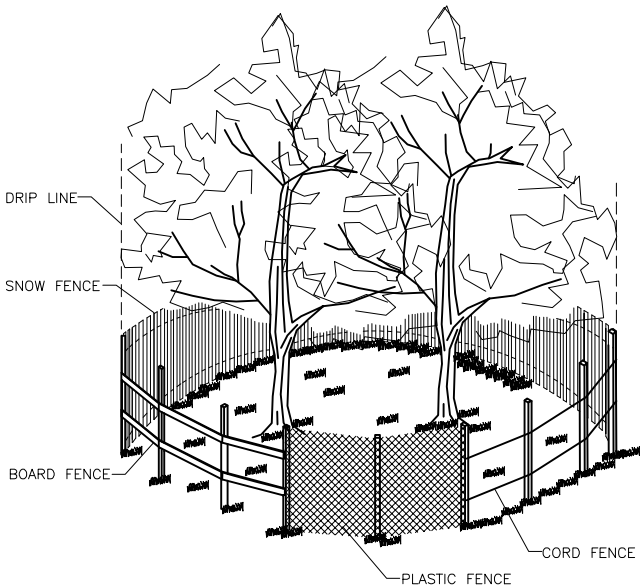
CIVIL
SITE DETAILS 2



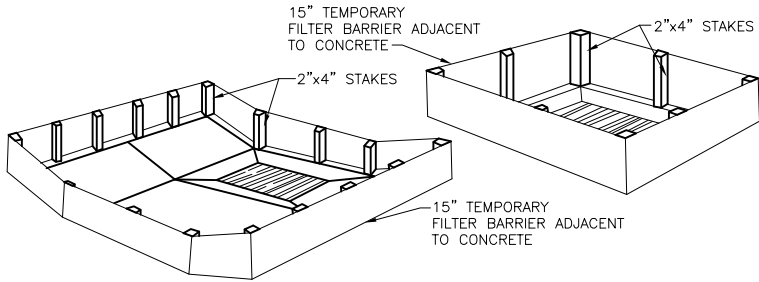
FILENAME	C-31.dwg
SCALE	AS NOTED

DRAWING NUMBER	C-31
----------------	------

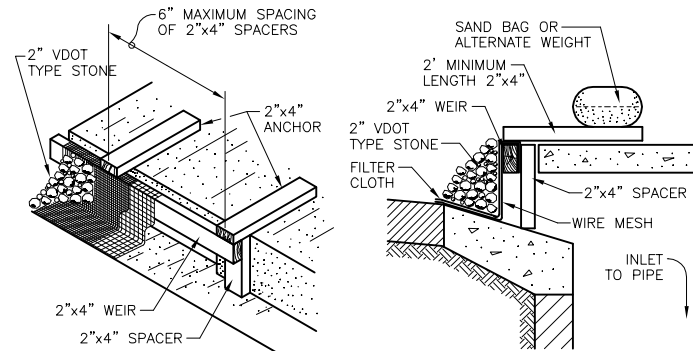
SHEET OF -



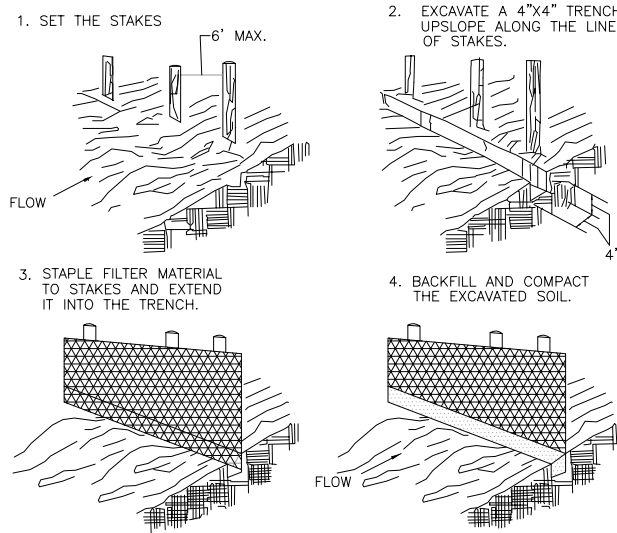
TREE PROTECTION



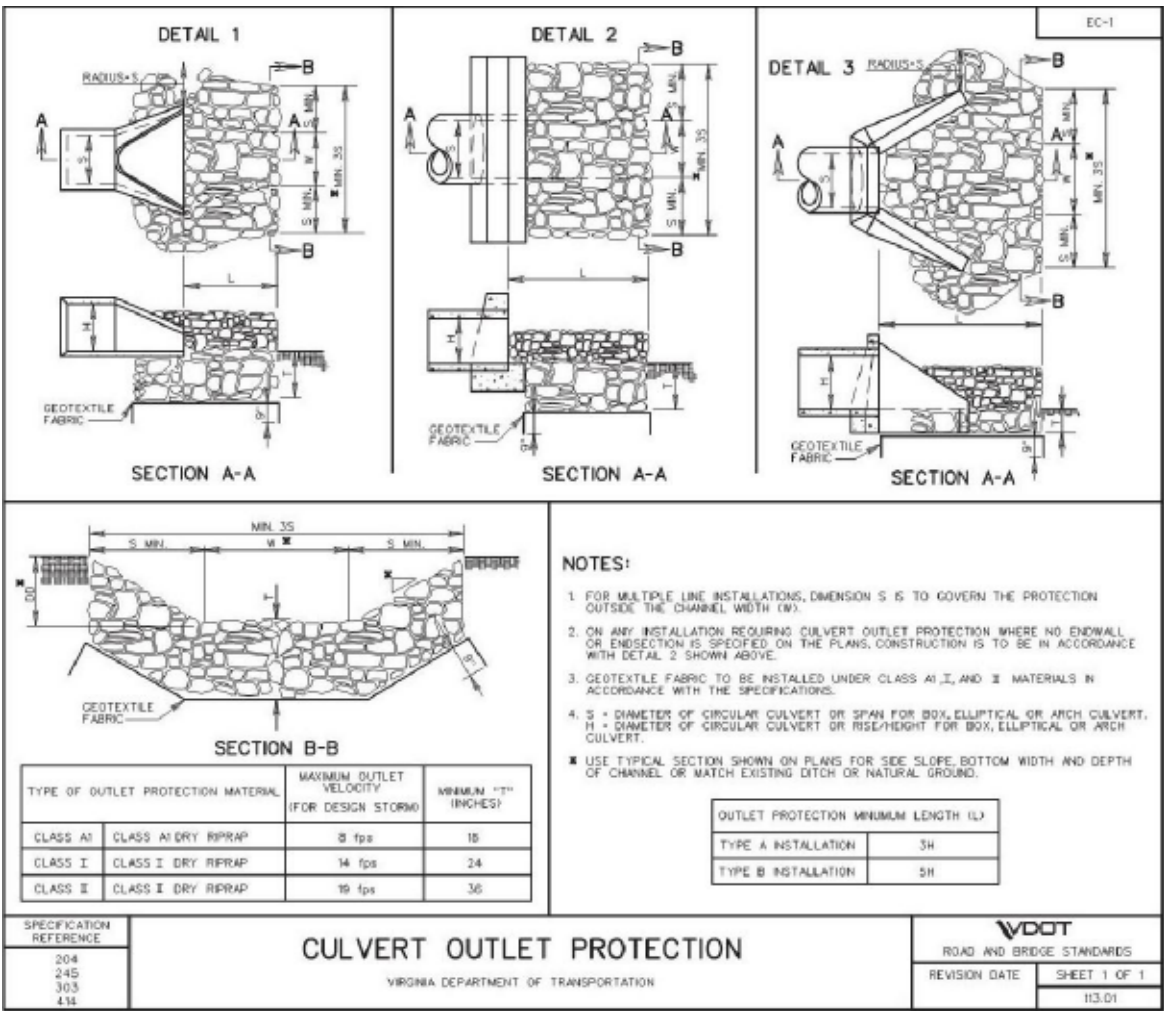
INLET PROTECTION



INLET PROTECTION



CONSTRUCTION OF A SILT FENCE (WITHOUT WIRE SUPPORT)



CULVERT OUTLET PROTECTION

PERMANENT SEEDING PLANT MIXTURES		
MINIMUM CARE LAWN:		
COMMERCIAL OR RESIDENTIAL		
KENTUCKY 31 OR TURF -TYPE TALL FESCUE	175-200	LBS.
OR		
COMMON BERMUDAGRASS	75	LBS.
GENERAL SLOPE 3:1 OR LESS:		
KENTUCKY 31 FESCUE	128	LBS.
RED TOP GRASS	2	LBS.
SEASONAL NURSE CROP*	20	LBS.
LOW MAINTENANCE SLOPE (STEEPER THAN 3:1):		
KENTUCKY 31 TALL FESCUE	93-108	LBS.
COMMON BERMUDAGRASS**	0-15	LBS.
RED TOP GRASS	2	LBS.
SEASONAL NURSE CROP*	20	LBS.
SERICEA LESPEDEZA**	20	LBS.
	150	LBS.
* USE SEASONAL NURSE CROP IN ACCORDANCE WITH SEEDING DATES AS STATED BELOW:		
FEBRUARY, MARCH THROUGH APRIL.....	ANNUAL RYE	
MAY 1ST THROUGH AUGUST.....	FOXTAIL, MILLET	
SEPTEMBER, OCTOBER THROUGH NOVEMBER 15TH.....	ANNUAL RYE	
NOVEMBER 16TH THROUGH JANUARY.....	WINTER RYE	
** MAY THROUGH OCTOBER, USE HULLED SEED, ALL OTHER SEEDING PERIODS, USE UNHULLED SEED. WEEPING LOVEGRASS MAY BE ADDED TO ANY SLOPE OR LOW MAINTENANCE MIX DURING WARMER SEEDING PERIODS; ADD 10-20 LBS/ACRE IN MIXES.		
LIMING:	2 TONS/ACRE PULVERIZED AGRICULTURAL GRADE LIMESTONE (90 LBS/1000 SQ. FT.)	
FERTILIZER:	SHALL BE APPLIED AS 1000 LBS/ACRE OF 10-20-10 (23 LBS PER 1000 SQ. FT.) OR EQUIVALENT NUTRIENTS.	
MULCHING:	ALL PERMANENT SEEDING SHALL BE MULCHED IMMEDIATELY UPON COMPLETION OF SEED APPLICATION AND SHALL BE MULCHED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.	

VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, THIRD EDITION 1992

TEMPORARY SEEDING PLANT MATERIALS		
PLANTING DATES	SPECIES	RATE: (LBS/ACRE)
SEPTEMBER 1 - FEBRUARY 15	50/50 MIX OF ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM) AND CEREAL (WINTER) RYE (SECALE CEREALE)	50 - 100
FEBRUARY 16 - APRIL 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)	60 - 100
MAY 1 - AUGUST 31	GERMAN MILLET (SETARIA ITALICA)	50
LIMING:	AN EVALUATION SHOULD BE CONDUCTED TO DETERMINE IF LIME IS NECESSARY FOR TEMPORARY SEEDING.	
	pH <4.2	3 TONS PER ACRE
	pH 4.2 - 5.2	2 TONS PER ACRE
	pH 5.2 - 5	1 TONS PER ACRE
FERTILIZER:	SHALL BE APPLIED AS 600 LBS/ACRE OF 10-20-10 (14 LBS PER 1000 SQ. FT.) OR EQUIVALENT NUTRIENTS.	
MULCHING:	SEEDLINGS MADE IN FALL FOR WINTER COVER AND DURING HOT AND DRY SUMMER MONTHS SHALL BE MULCHED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK. TEMPORARY SEEDING MADE UNDER FAVORABLE SOIL AND SITE CONDITIONS DURING OPTIMUM SPRING AND FALL SEEDING DATES MAY NOT REQUIRE MULCH.	

VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, THIRD EDITION 1992

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	R. BAYSDEN
DRAWN BY:	G. HUNEYCUTT
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

CIVIL
EROSION AND SEDIMENT CONTROL DETAILS

0 1" 2"

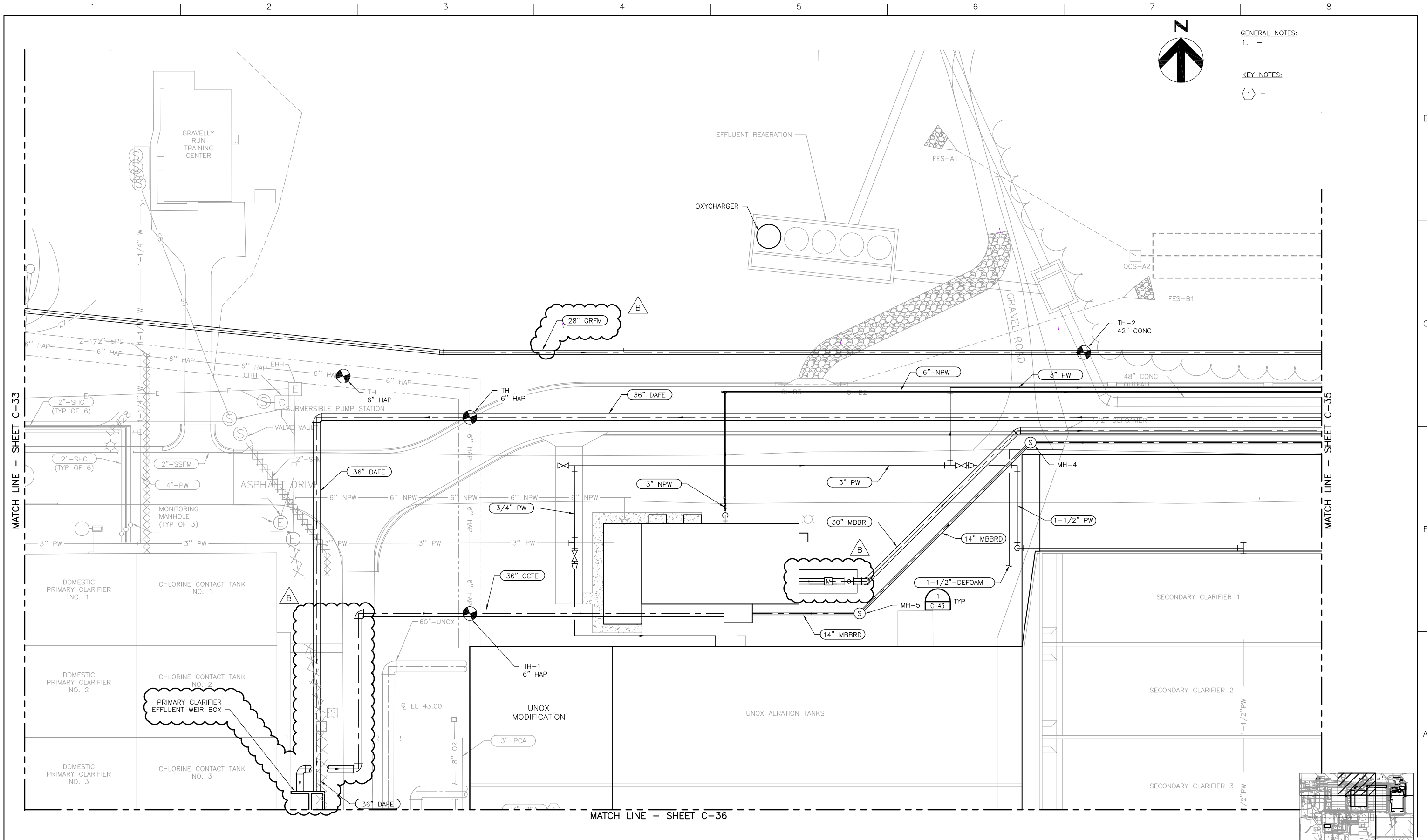
FILENAME C-32.dwg

SCALE AS NOTED

DRAWING NUMBER

C-32

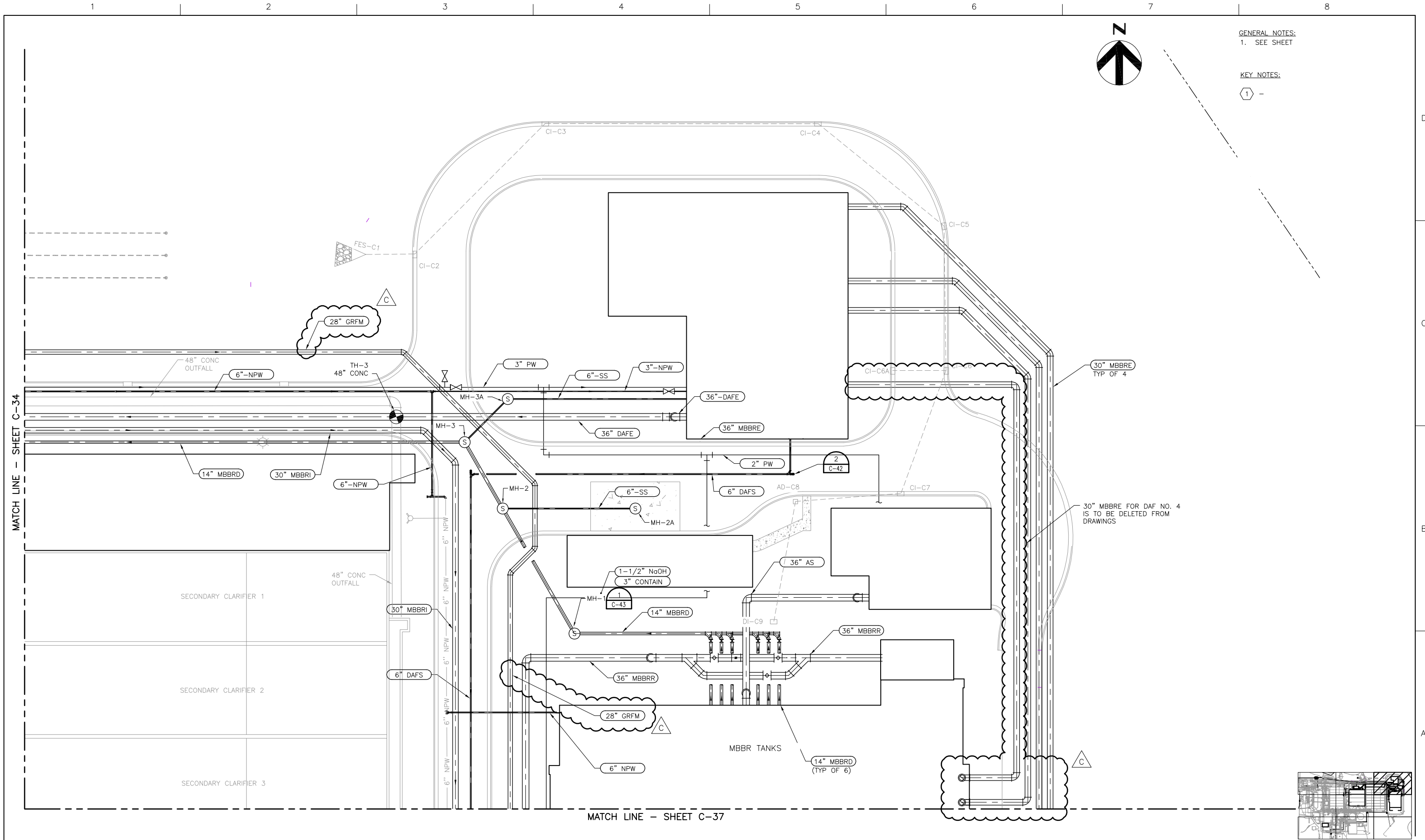
SHEET OF



GENERAL NOTES:
1. -

KEY NOTES:
① -

 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	YARD PIPING PLAN 2			
				DESIGNED BY: D. ZIRKLE						
				DRAWN BY: T. LOKEY			0 1" 2"	FILENAME: C-34.dwg	DRAWING NUMBER: C-34	SHEET OF -
				CHECKED BY:			SCALE: 1"=20'			
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER						
	B	03/12/2014	REVISED EFF. BOX & FM							
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL							



GENERAL NOTES:
1. SEE SHEET

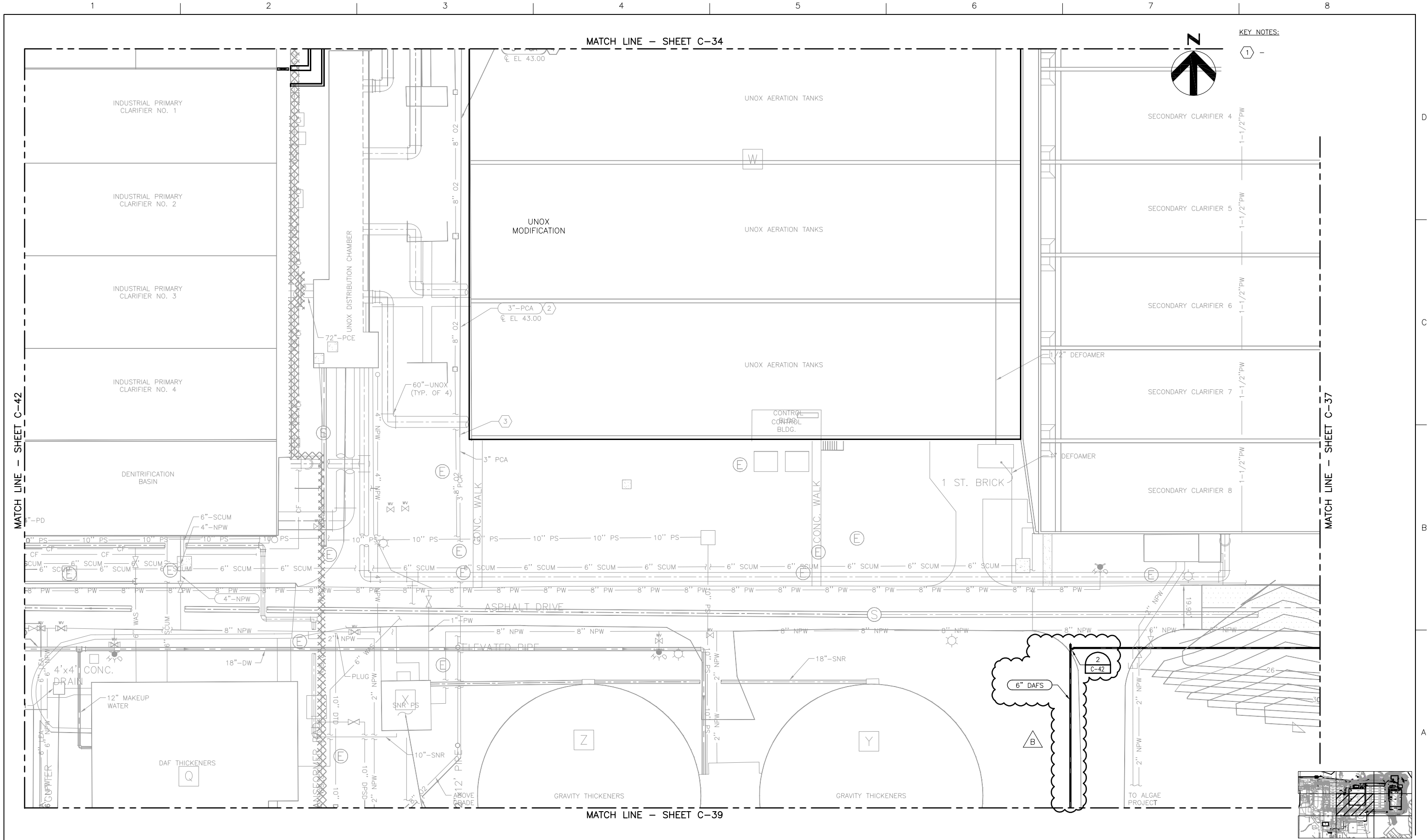
KEY NOTES:


① -

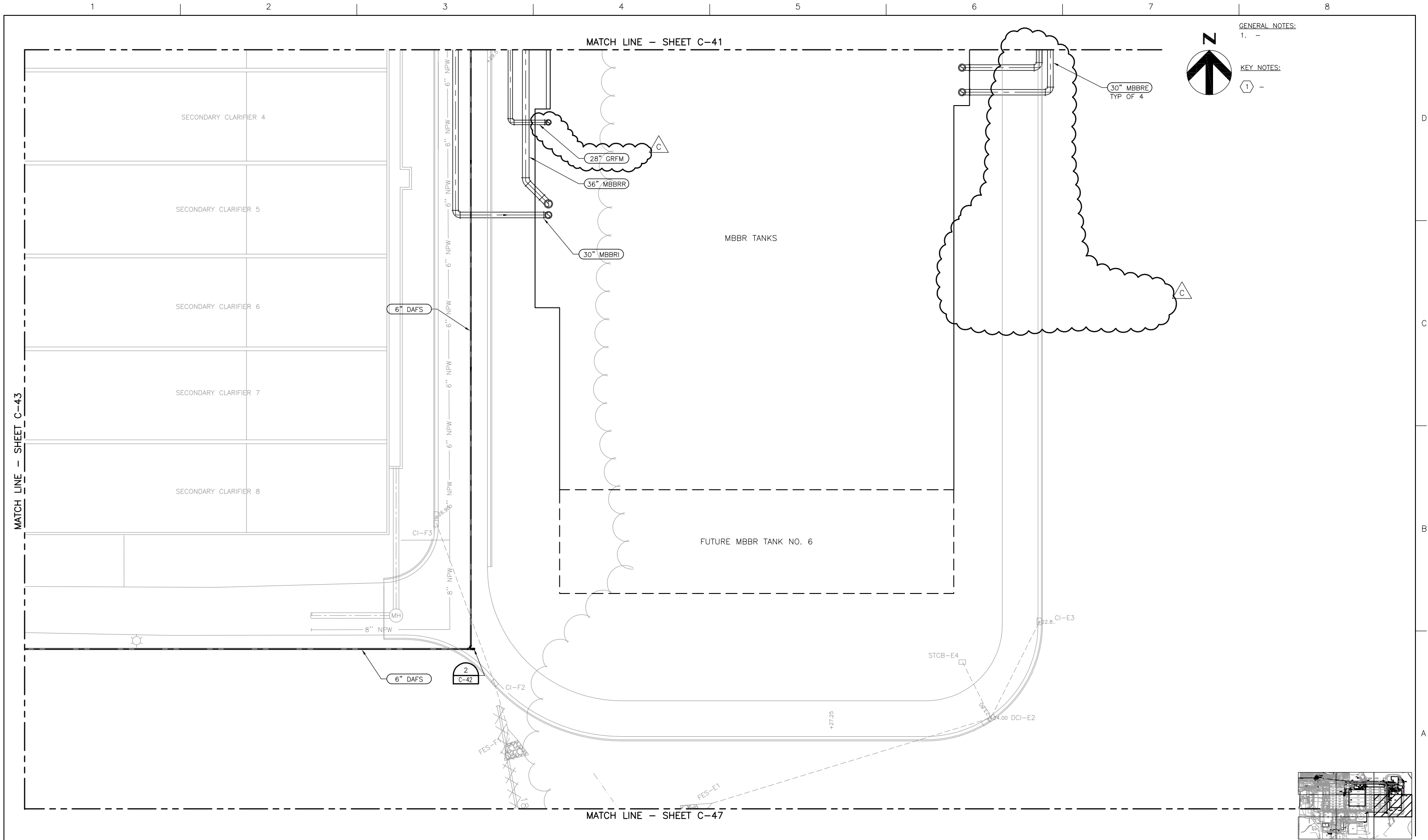
MATCH LINE - SHEET C-34



MATCH LINE - SHEET C-37

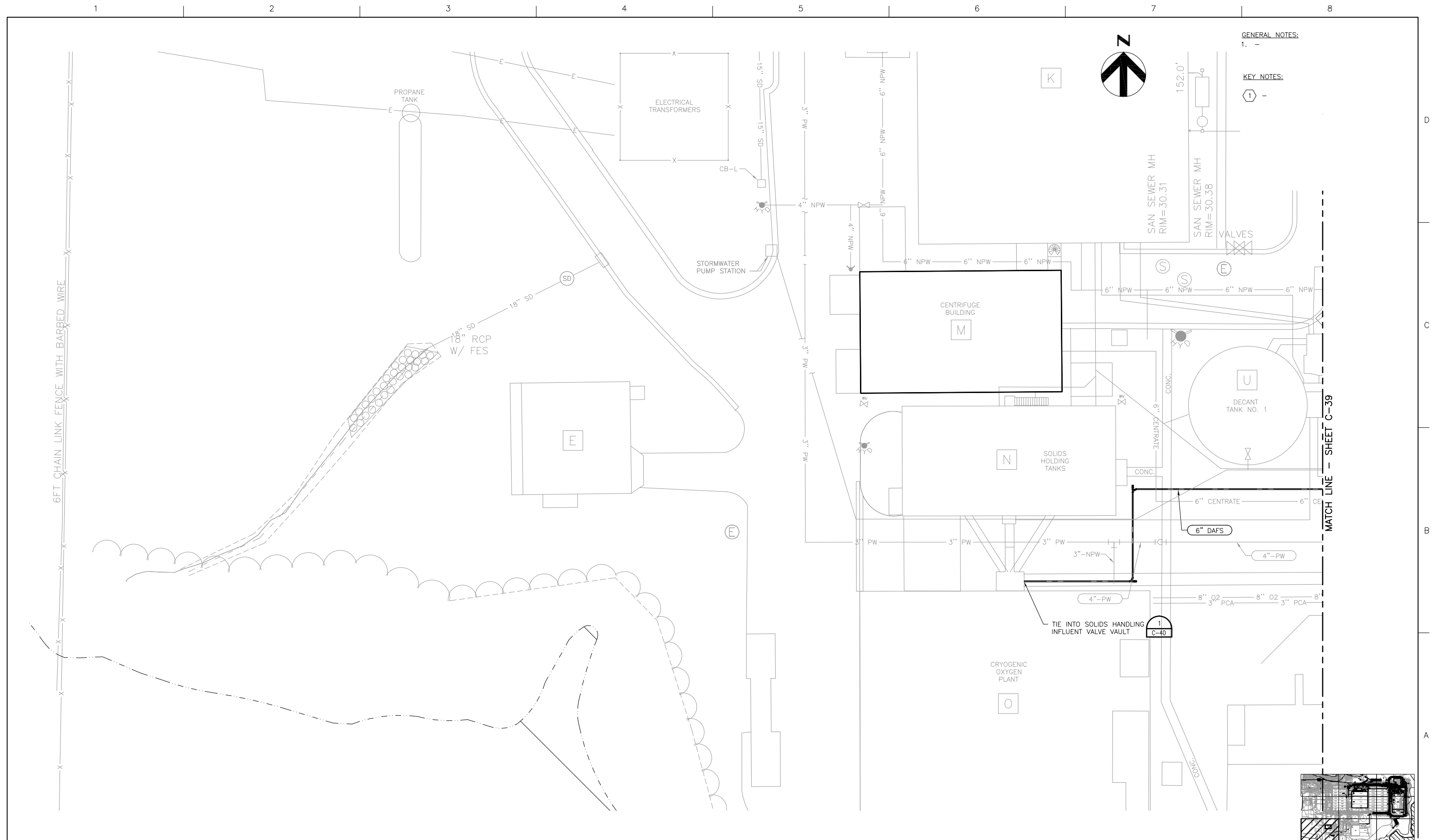
<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	YARD PIPING PLAN 3		
				DESIGNED BY: D. ZIRKLE			<div><div>01"2"</div></div>	FILENAME C-35.dwg	DRAWING NUMBER C-35
				DRAWN BY: T. LOKEY					
				CHECKED BY:					
				PROJECT NUMBER					
	C	03/12/2014	EFF. BOX, FM MATERIAL AND PIPING REVS.					SCALE 1"=20'	SHEET OF -
	B	09/17/2013	YARD PIPING REV.						
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL						
	ISSUE	DATE	DESCRIPTION						



<div></div> <div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div>				PROJECT MANAGER:	WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	YARD PIPING PLAN 4					
				DESIGNED BY:	D. ZIRKLE			<div><div>01"2"</div></div>	FILENAME	C-36.dwg	DRAWING NUMBER	C-36	SHEET OF -
				DRAWN BY:	T. LOKEY				SCALE	1"=20'			
				CHECKED BY:									
	B	03/12/2014	REVISED 6" DAFS ROUTING										
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL										
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									



<div> HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div>				PROJECT MANAGER: WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	YARD PIPING PLAN 5			
				DESIGNED BY: D. ZIRKLE			<div><div>01"2'</div></div>	FILENAMEC-37.dwg	DRAWING NUMBER	SHEET OF -
				DRAWN BY: T. LOKEY				SCALE1"=20'	C-37	
				CHECKED BY:						
	C	03/12/2014	EFFLUENT BOX & FM MATERIAL REVISIONS							
B	09/17/2013	YARD PIPING REV.								
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL								
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER							



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

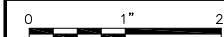
			PROJECT MANAGER:	WILLIAM S. M'COY
			DESIGNED BY:	D. ZIRKLE
			DRAWN BY:	T. LOKEY
			CHECKED BY:	
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL		
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER	

CONCEPTUAL DESIGN

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

ALTERNATIVE 4A-1 LIGHT PHASE 2

YARD PIPING PLAN 6



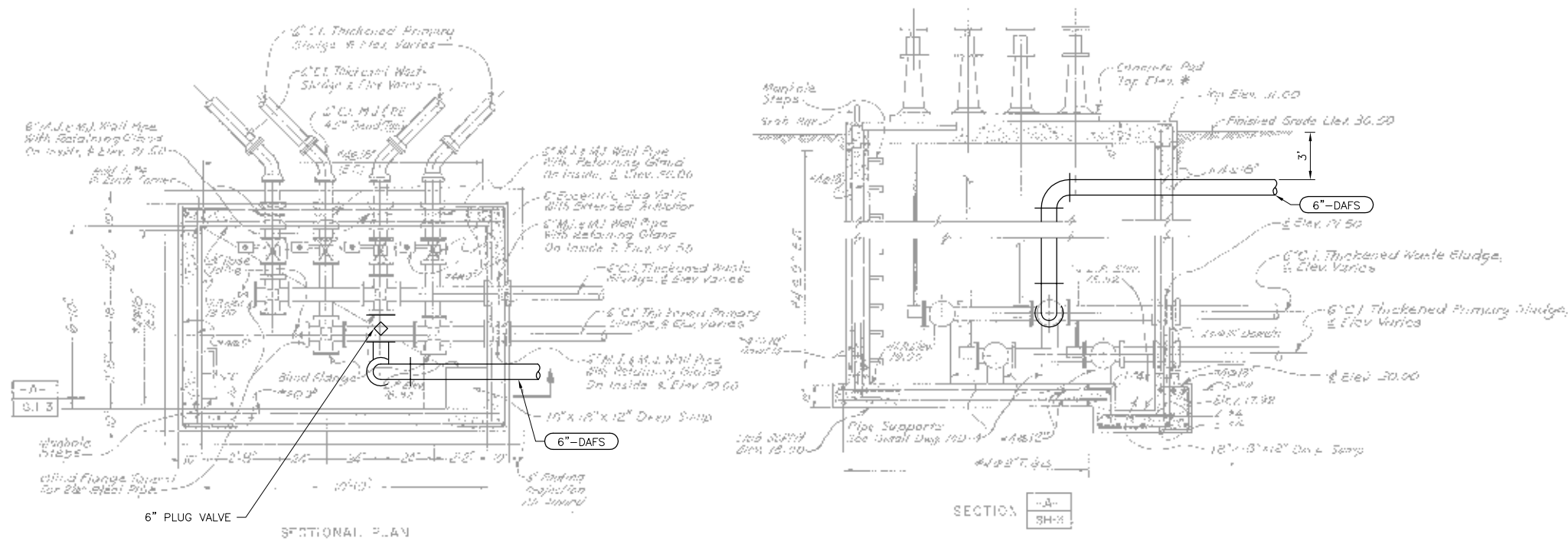
FILENAME	C-38.dwg
----------	----------

SCALE	1"=20'
-------	--------

DRAWING NUMBER

C-38

SHEET OF -



SLUDGE HOLDING TANK
INFLUENT VALVE VAULT PLAN

1
C-38

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**YARD PIPING
STANDARD DETAILS 1**

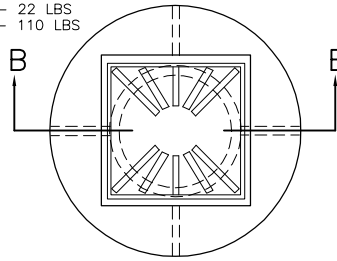
0 1" 2"

FILENAME C-40.dwg
SCALE NONE

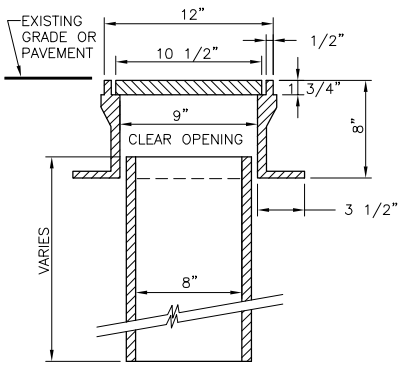
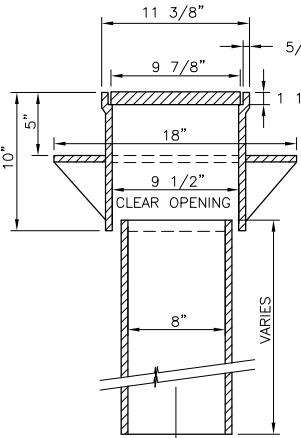
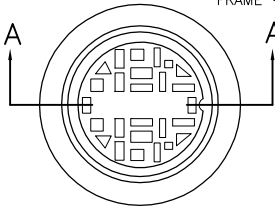
DRAWING NUMBER
C-40

SHEET OF -

MINIMUM WEIGHTS:
COVER - 22 LBS
FRAME - 110 LBS



MINIMUM WEIGHTS:
COVER - 25 LBS
FRAME - 75 LBS



SECTION A-A
FOR USE ON BYPASS VALVES

SECTION B-B
FOR USE ON MAINLINE
OR CONNECTION VALVES

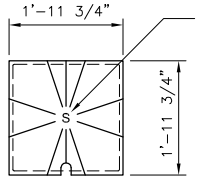
- NOTES:
1. RISER TO BE 8" D.I. OR 8" SCH. 80 PVC. (ONE PIECE)
 2. TOLERANCE TO BE +/- .125 FOR ALL DIMENSIONS.
 3. CASTING TO BE SHOT BLASTED.
 4. CASTING TO BE ASTM A-48 CLASS 30.
 5. JACK UP RINGS NOT ACCEPTABLE.

VALVE BOX AND RISER DETAIL

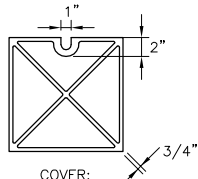
NOT TO SCALE



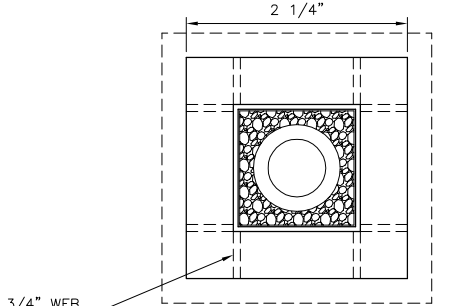
COVER



COVER: TOP VIEW



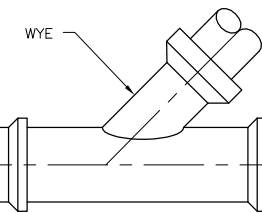
COVER: BOTTOM VIEW



3/4" WEB

CLASS A-3 CONCRETE
6" MIN
COMPACTED
CRUSHED
STONE

WYE

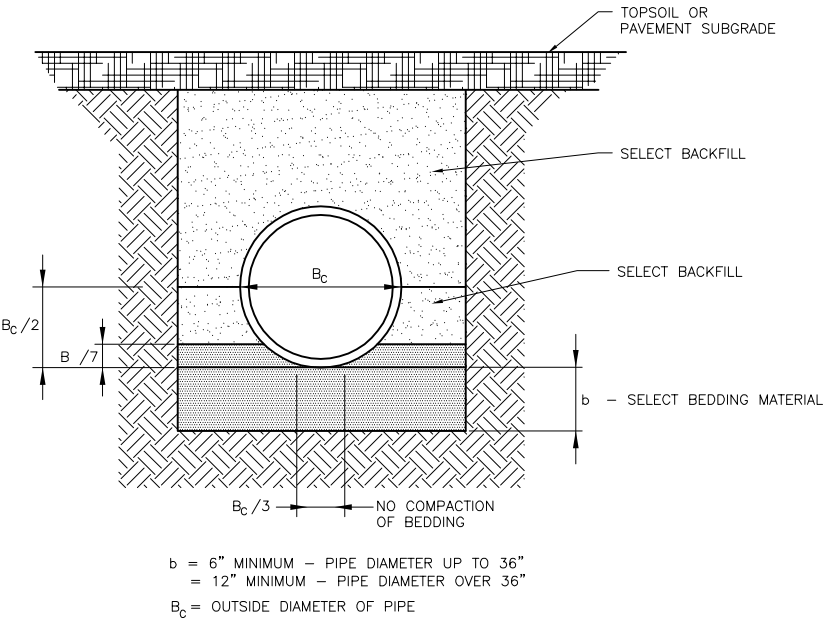


NOTES:

1. THE ENTIRE LENGTH OF THE CLEANOUT SHALL BE RESTRAINED.
2. CLEANOUT PIPE MUST BE FREE OF ANY WEIGHT TRANSMITTED BY THE INSPECTION BOX.
3. CLEANOUT BOX TO BE SUPPLIED BY CAPITAL FOUNDRY OF VIRGINIA, INC., OR APPROVED EQUAL.
4. ALL GRAY IRON CASTINGS SHALL CONFORM TO LATEST EDITION OF ASTM A-48, CLASS 30, AND SHALL BE OF UNIFORM QUALITY.
5. ALL CASTING DIMENSIONS SHALL HAVE A TOLERANCE OF 1/8"±.
6. ALL CASTINGS SHALL BE CLEANED BY SHOT BLASTING AND HAND CHIPPING UTILIZING STANDARD INDUSTRY PRACTICES PRIOR TO SHOP APPLICATION OF ASPHALTIC COATING, BY DIPPING.

CLEANOUT DETAIL

NOT TO SCALE



b = 6" MINIMUM - PIPE DIAMETER UP TO 36"
= 12" MINIMUM - PIPE DIAMETER OVER 36"
B_c = OUTSIDE DIAMETER OF PIPE

NOTES:

1. WHEN TWO PIPELINES ARE PLACED VERTICALLY, ONE ON TOP OF THE OTHER, THE LOWER LINE SHALL BE BEDDED ENTIRELY WITHIN COMPACTED SELECT BEDDING MATERIAL. THE UPPER LINE SHALL BE BEDDED AS SHOWN IN THIS DETAIL.

PIPE BEDDING TYPE 1 DETAIL



HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

YARD PIPING
STANDARD DETAILS 3



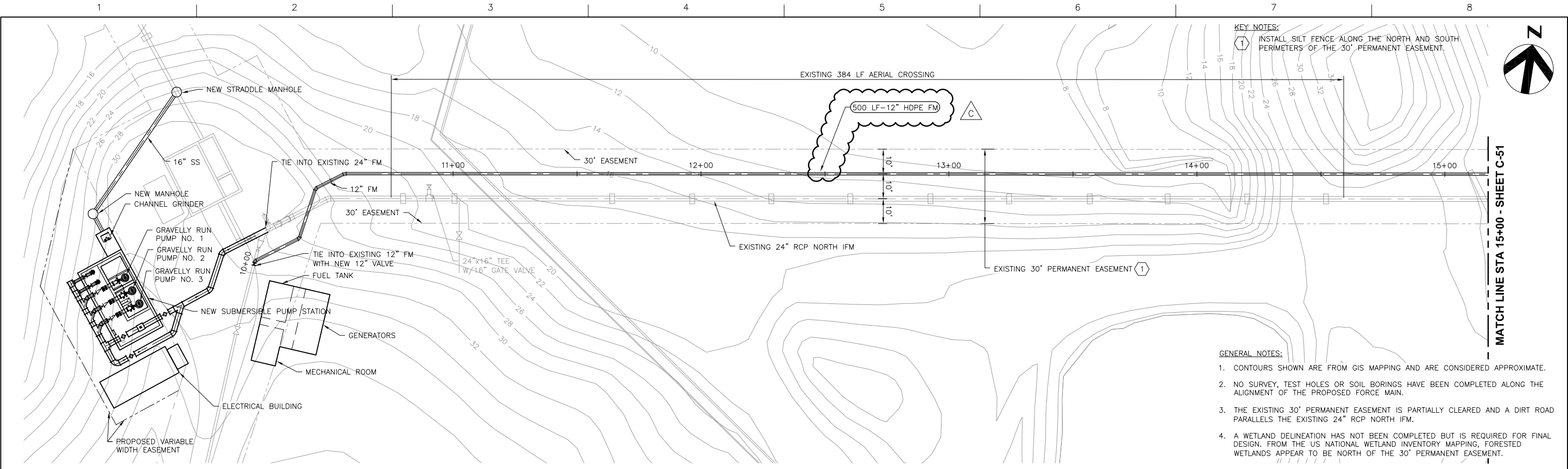
FILENAME	C-42.dwg
SCALE	AS NOTED

DRAWING NUMBER
C-42

SHEET OF -



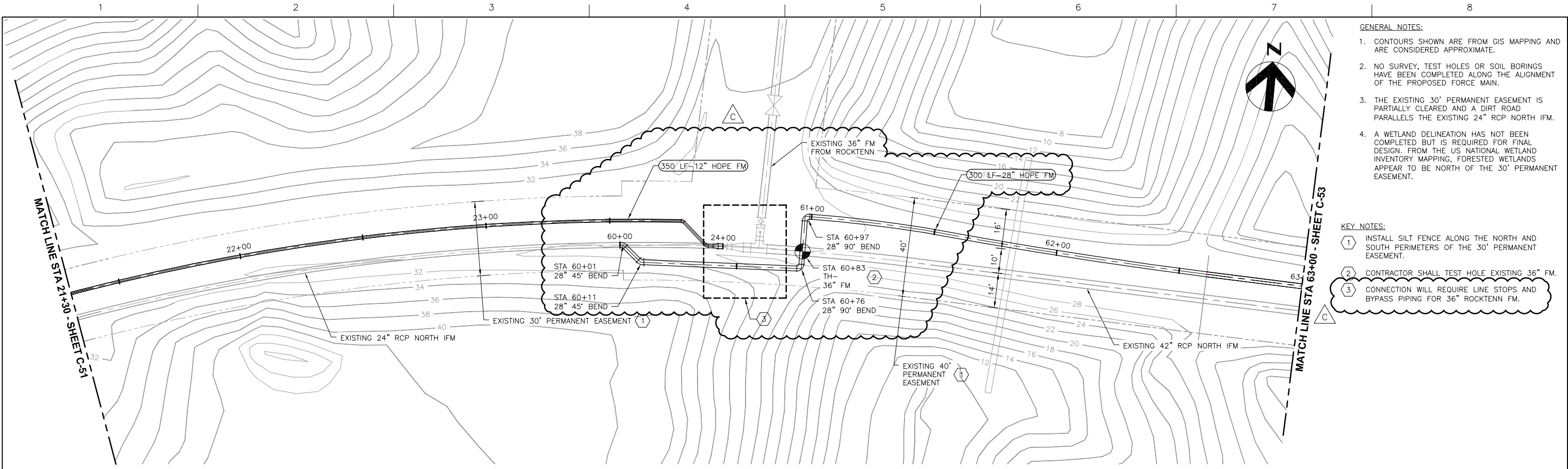
<div> HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div>				PROJECT MANAGER: WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	<div>GRAVELLY RUN KEY PLAN</div>						
				DESIGNED BY: D. ZIRKLE									
				DRAWN BY: T. LOKEY						01"02"	FILENAME C-49.dwg	DRAWING NUMBER	SHEET 0 OF -
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	CHECKED BY:						SCALE NOT TO SCALE	C-49		
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									



- KEY NOTES:**
1. INSTALL SILT FENCE ALONG THE NORTH AND SOUTH PERIMETERS OF THE 30' PERMANENT EASEMENT.
- GENERAL NOTES:**
1. CONTOURS SHOWN ARE FROM GIS MAPPING AND ARE CONSIDERED APPROXIMATE.
 2. NO SURVEY, TEST HOLES OR SOIL BORINGS HAVE BEEN COMPLETED ALONG THE ALIGNMENT OF THE PROPOSED FORCE MAIN.
 3. THE EXISTING 30' PERMANENT EASEMENT IS PARTIALLY CLEARED AND A DIRT ROAD PARALLELS THE EXISTING 24" RCP NORTH IFM.
 4. A WETLAND DELINEATION HAS NOT BEEN COMPLETED BUT IS REQUIRED FOR FINAL DESIGN. FROM THE US NATIONAL WETLAND INVENTORY MAPPING, FORESTED WETLANDS APPEAR TO BE NORTH OF THE 30' PERMANENT EASEMENT.



 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502	C	03/12/2014	REVISED 12" FM TO HDPE	PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	GRAVELLY RUN FORCE MAIN PLAN AND PROFILE STA 10+00 TO 15+00			 FILENAME: C-50.dwg SCALE: 1"=20'		DRAWING NUMBER: C-50 SHEET OF -	
	B	09/13/2013	GRAVELLY RUN PS & PIPING	DESIGNED BY: D. ZIRKLE									
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	DRAWN BY: T. LOKEY									
	ISSUE	DATE	DESCRIPTION	CHECKED BY:									
				PROJECT NUMBER									



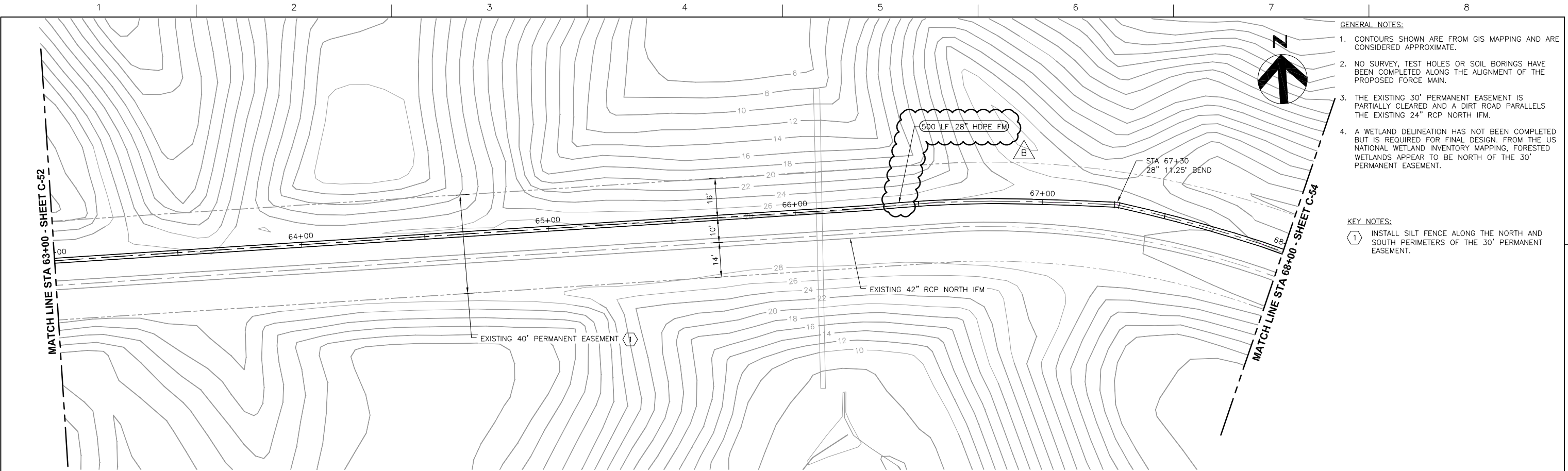
- GENERAL NOTES:
1. CONTOURS SHOWN ARE FROM GIS MAPPING AND ARE CONSIDERED APPROXIMATE.
 2. NO SURVEY, TEST HOLES OR SOIL BORINGS HAVE BEEN COMPLETED ALONG THE ALIGNMENT OF THE PROPOSED FORCE MAIN.
 3. THE EXISTING 30' PERMANENT EASEMENT IS PARTIALLY CLEARED AND A DIRT ROAD PARALLELS THE EXISTING 24" RCP NORTH IFM.
 4. A WETLAND DELINEATION HAS NOT BEEN COMPLETED BUT IS REQUIRED FOR FINAL DESIGN. FROM THE US NATIONAL WETLAND INVENTORY MAPPING, FORESTED WETLANDS APPEAR TO BE NORTH OF THE 30' PERMANENT EASEMENT.

- KEY NOTES:
- 1 INSTALL SILT FENCE ALONG THE NORTH AND SOUTH PERIMETERS OF THE 30' PERMANENT EASEMENT.
 - 2 CONTRACTOR SHALL TEST HOLE EXISTING 36" FM.
 - 3 CONNECTION WILL REQUIRE LINE STOPS AND BYPASS PIPING FOR 36" ROCKTENN FM.



SCALE: HORIZ: 1"=20'
VERT: 1"=5'

 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	GRAVELLY RUN FORCE MAIN PLAN AND PROFILE STA 21+30 TO 24+00 & STA 60+00 TO 63+00					
				DESIGNED BY: D. ZIRKLE								
				DRAWN BY: T. LOKEY								
				CHECKED BY:								
	C	03/12/2014	FM MATERIAL AND PIPING REVISION					FILENAME	C-52.dwg	DRAWING NUMBER	C-52	SHEET OF -
	B	09/13/2013	12" & 24" FM REVISION				SCALE	1"=20'				
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL									
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER								

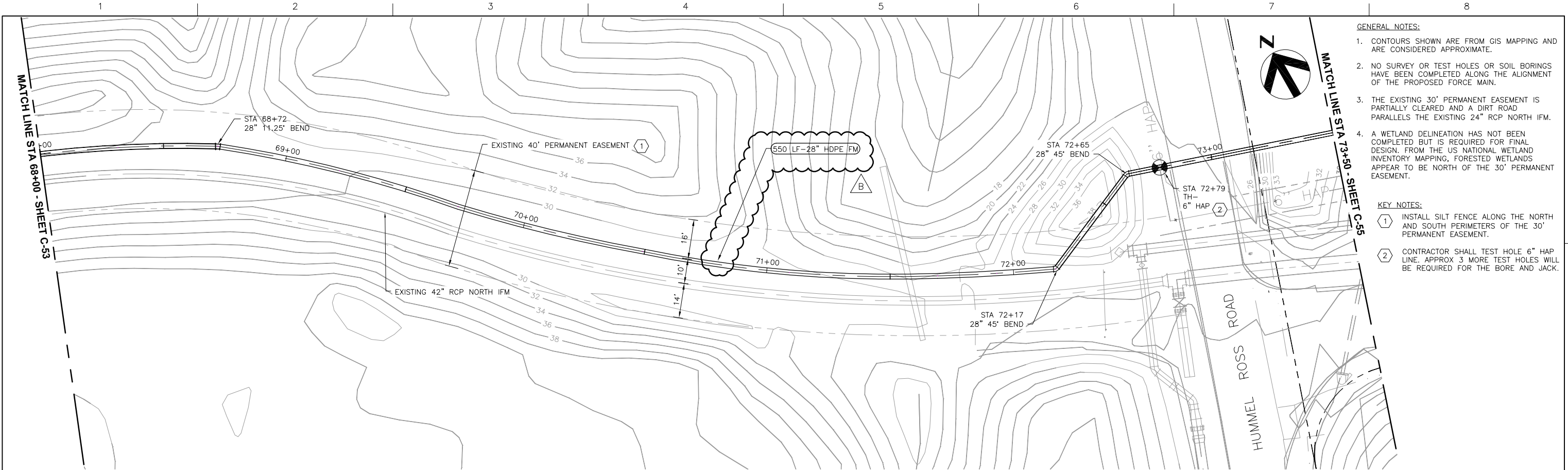


- GENERAL NOTES:
1. CONTOURS SHOWN ARE FROM GIS MAPPING AND ARE CONSIDERED APPROXIMATE.
 2. NO SURVEY, TEST HOLES OR SOIL BORINGS HAVE BEEN COMPLETED ALONG THE ALIGNMENT OF THE PROPOSED FORCE MAIN.
 3. THE EXISTING 30' PERMANENT EASEMENT IS PARTIALLY CLEARED AND A DIRT ROAD PARALLELS THE EXISTING 24" RCP NORTH IFM.
 4. A WETLAND DELINEATION HAS NOT BEEN COMPLETED BUT IS REQUIRED FOR FINAL DESIGN. FROM THE US NATIONAL WETLAND INVENTORY MAPPING, FORESTED WETLANDS APPEAR TO BE NORTH OF THE 30' PERMANENT EASEMENT.

- KEY NOTES:
1. INSTALL SILT FENCE ALONG THE NORTH AND SOUTH PERIMETERS OF THE 30' PERMANENT EASEMENT.



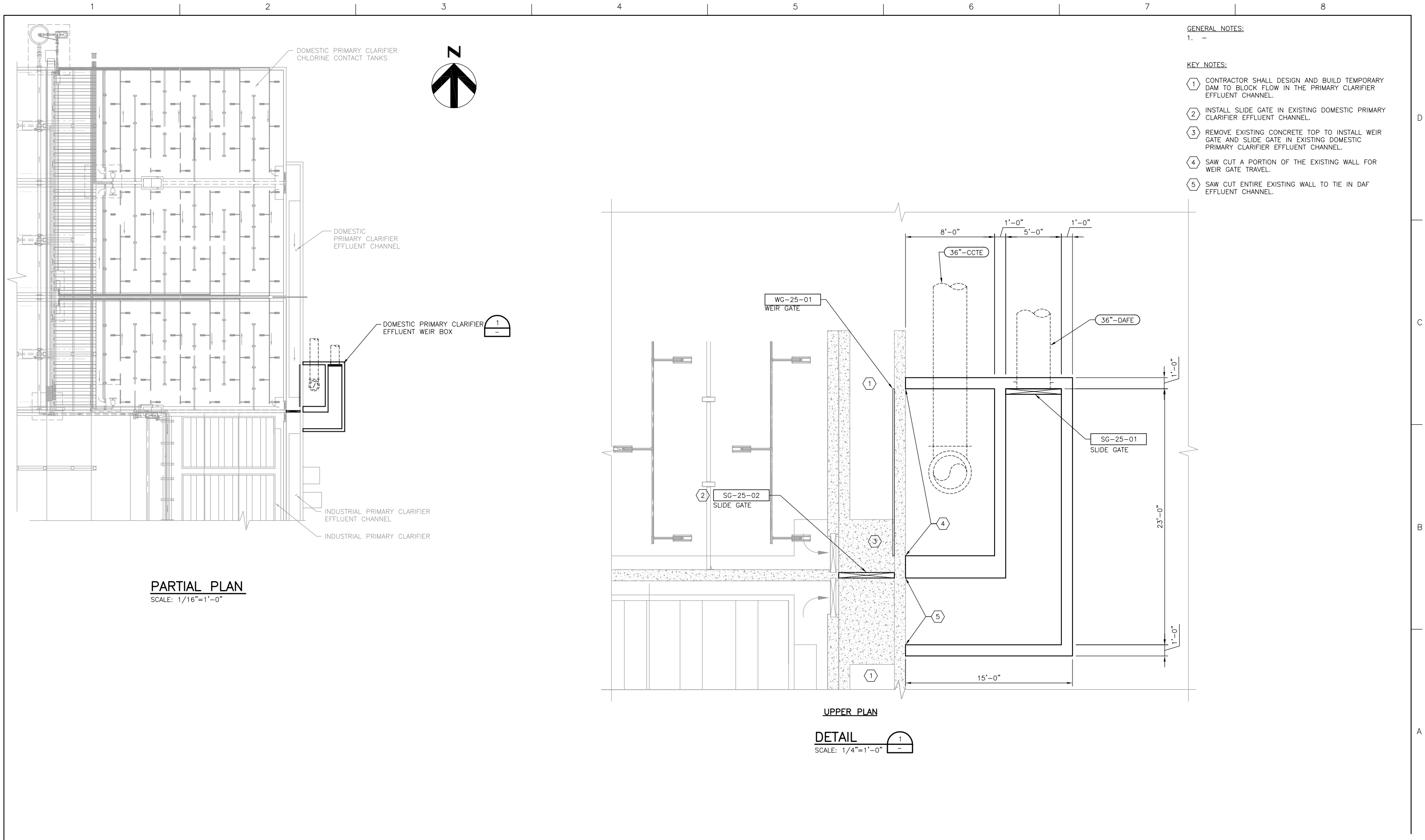
 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502			PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	GRAVELLY RUN FORCE MAIN PLAN AND PROFILE STA 63+00 TO 68+00				
			DESIGNED BY: D. ZIRKLE			 0 1" 2" SCALE 1"=20'		FILENAME C-53.dwg	DRAWING NUMBER	SHEET OF -
			DRAWN BY: T. LOKEY					C-53		
			CHECKED BY:			ISSUE DATE DESCRIPTION	PROJECT NUMBER	1"=20'		
	B	03/12/2014	FM MATERIAL AND PIPING REVISION							
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL							



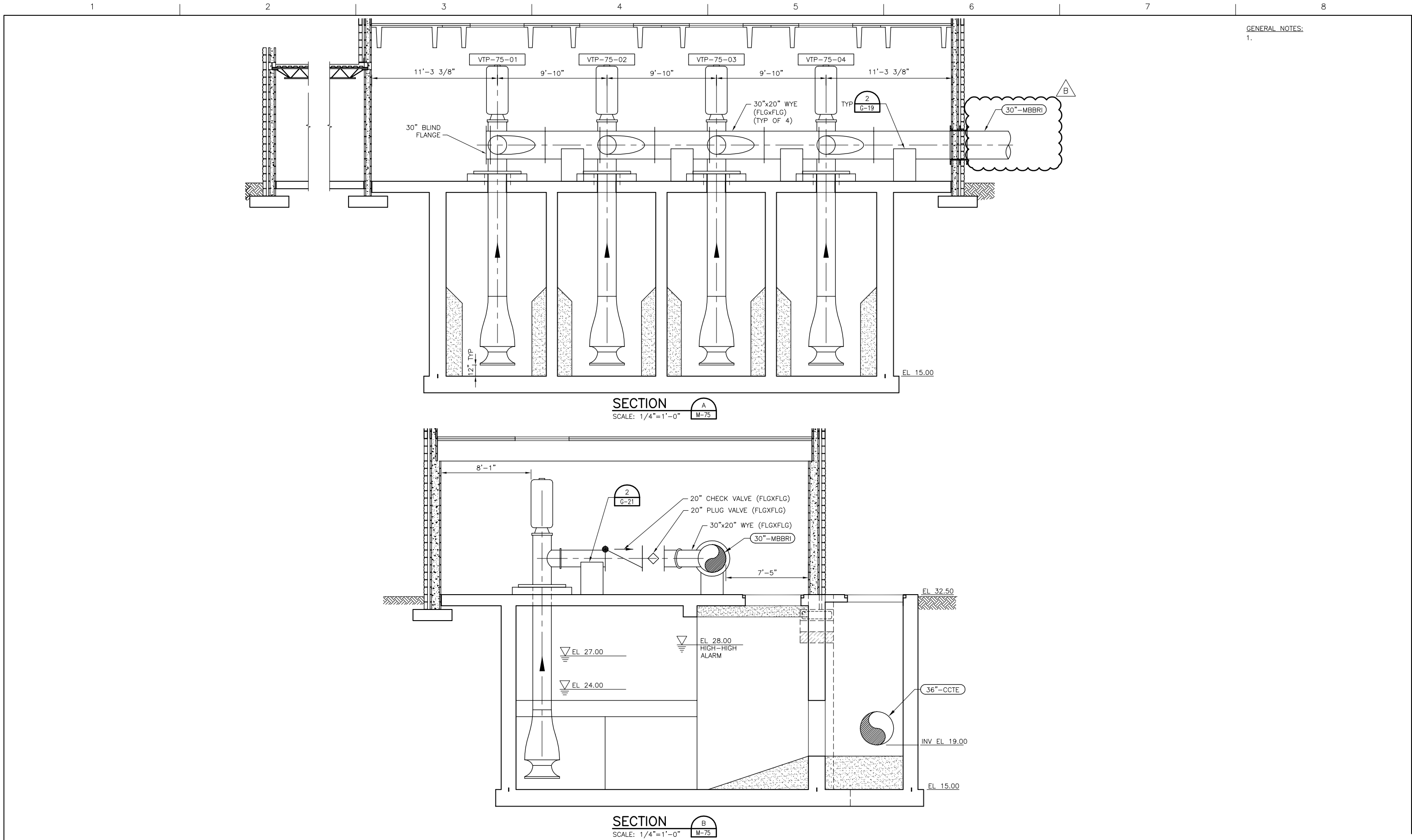
- GENERAL NOTES:
1. CONTOURS SHOWN ARE FROM GIS MAPPING AND ARE CONSIDERED APPROXIMATE.
 2. NO SURVEY OR TEST HOLES OR SOIL BORINGS HAVE BEEN COMPLETED ALONG THE ALIGNMENT OF THE PROPOSED FORCE MAIN.
 3. THE EXISTING 30' PERMANENT EASEMENT IS PARTIALLY CLEARED AND A DIRT ROAD PARALLELS THE EXISTING 24" RCP NORTH IFM.
 4. A WETLAND DELINEATION HAS NOT BEEN COMPLETED BUT IS REQUIRED FOR FINAL DESIGN. FROM THE US NATIONAL WETLAND INVENTORY MAPPING, FORESTED WETLANDS APPEAR TO BE NORTH OF THE 30' PERMANENT EASEMENT.
- KEY NOTES:
1. INSTALL SILT FENCE ALONG THE NORTH AND SOUTH PERIMETERS OF THE 30' PERMANENT EASEMENT.
 2. CONTRACTOR SHALL TEST HOLE 6" HAP LINE. APPROX 3 MORE TEST HOLES WILL BE REQUIRED FOR THE BORE AND JACK.



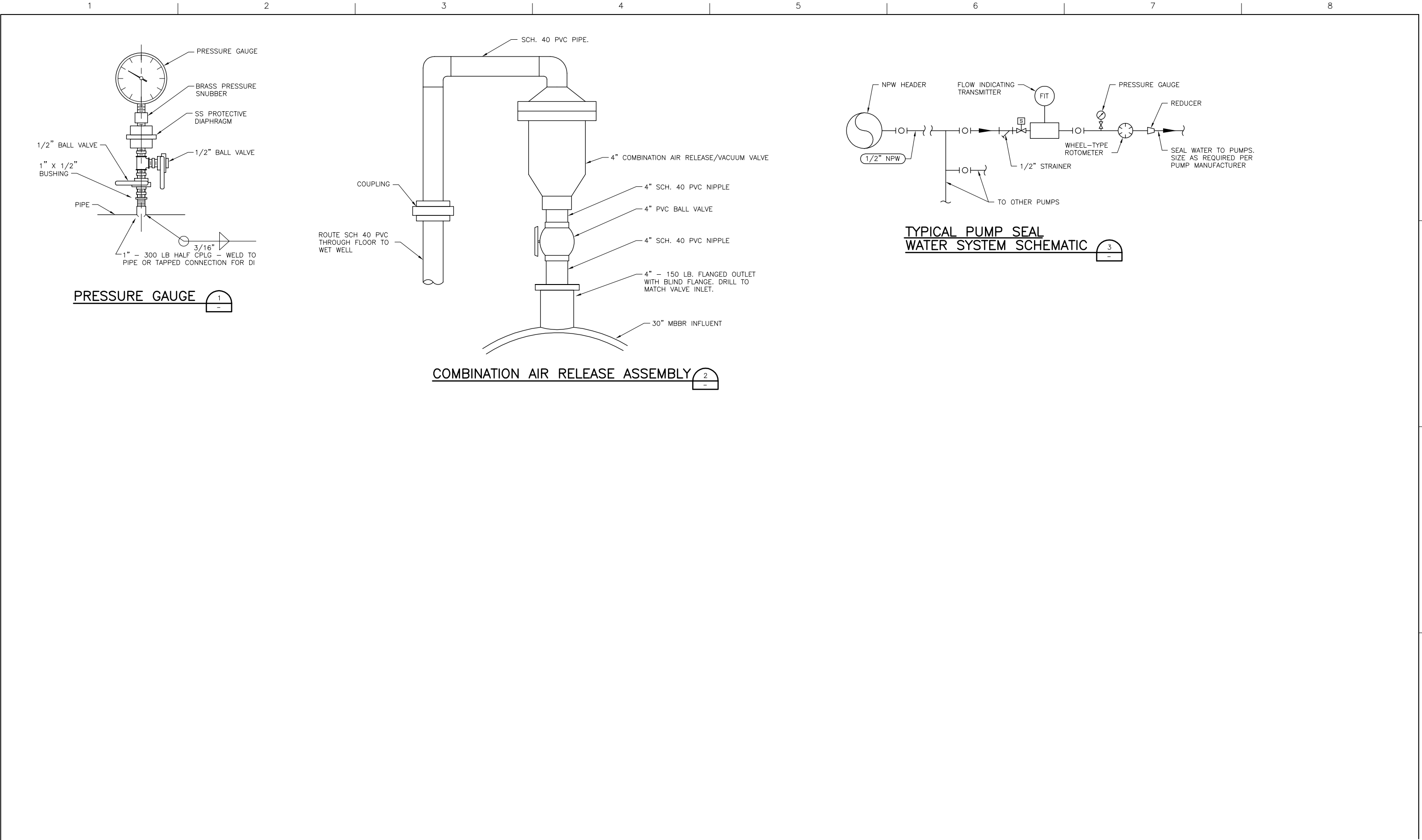
 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	GRAVELLY RUN FORCE MAIN PLAN AND PROFILE STA 68+00 TO 73+50			
				DESIGNED BY: D. ZIRKLE						
				DRAWN BY: T. LOKEY						
				CHECKED BY:						
	B	03/12/2014	FM MATERIAL AND PIPING REVISION					FILENAME: C-54.dwg	DRAWING NUMBER: C-54	SHEET OF -
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL				SCALE: 1"=20'			
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER						

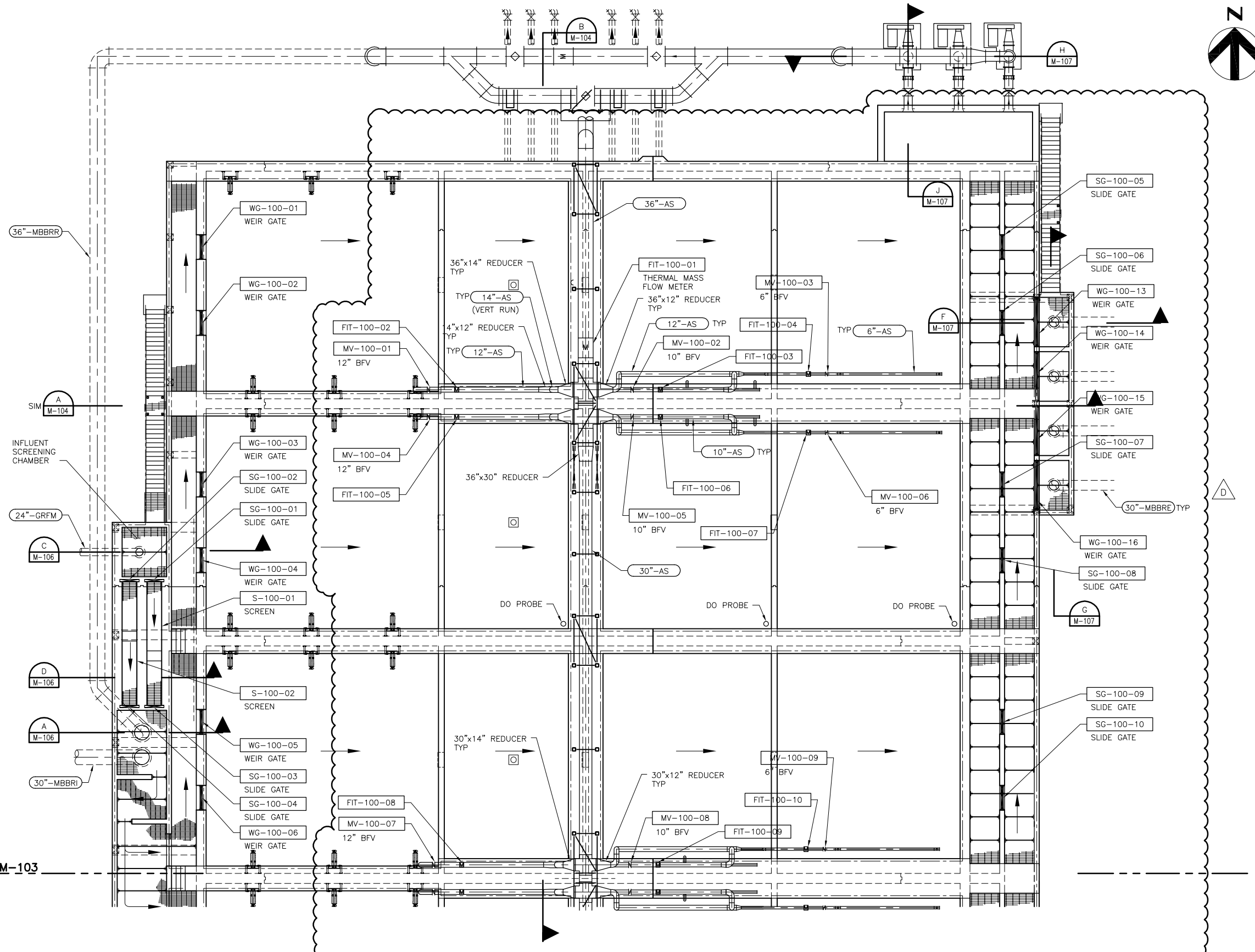


<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	DOMESTIC PRIMARY CLARIFIER MODIFICATIONS PARTIAL PLAN & DETAIL			<div><div>01"2"</div><div>01"2"</div></div>	FILENAME M-25.dwg	DRAWING NUMBER M-25	SHEET OF -
				DESIGNED BY: D. ZIRKLE									
				DRAWN BY: T. LOKEY									
				CHECKED BY:									
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL				SCALE AS NOTED						
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									



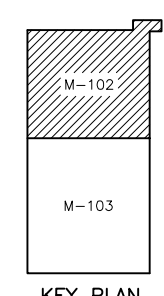
 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	MBBR INFLUENT PUMP STATION AND SODIUM BISULFITE FACILITY SECTIONS				
				DESIGNED BY: D. ZIRKLE							
							DRAWN BY: T. LOKEY	0 1" 2"	FILENAME: M-76.dwg	DRAWING NUMBER	SHEET OF -
							CHECKED BY:	SCALE: AS NOTED	M-76		
	B	03/12/2014	REVISED 30" MBBR								
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL								
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER							





GENERAL NOTES:
1. -

KEY NOTES:
①



 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502			PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SEGREGATED MBBR SYSTEM UPPER PLAN 1 OF 2		
			DESIGNED BY: D. ZIRKLE					
			DRAWN BY: T. LOKEY					
			CHECKED BY:					
			PROJECT NUMBER:					
	D	03/12/2014	AIR SUPPLY PIPING & EFF CHAN. REVISION					
	C	09/18/2013	MBBR TANK REVISION					
	B	09/13/2013	MBBR TANK					
	ISSUE	DATE	DESCRIPTION					

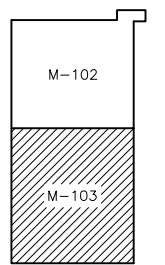
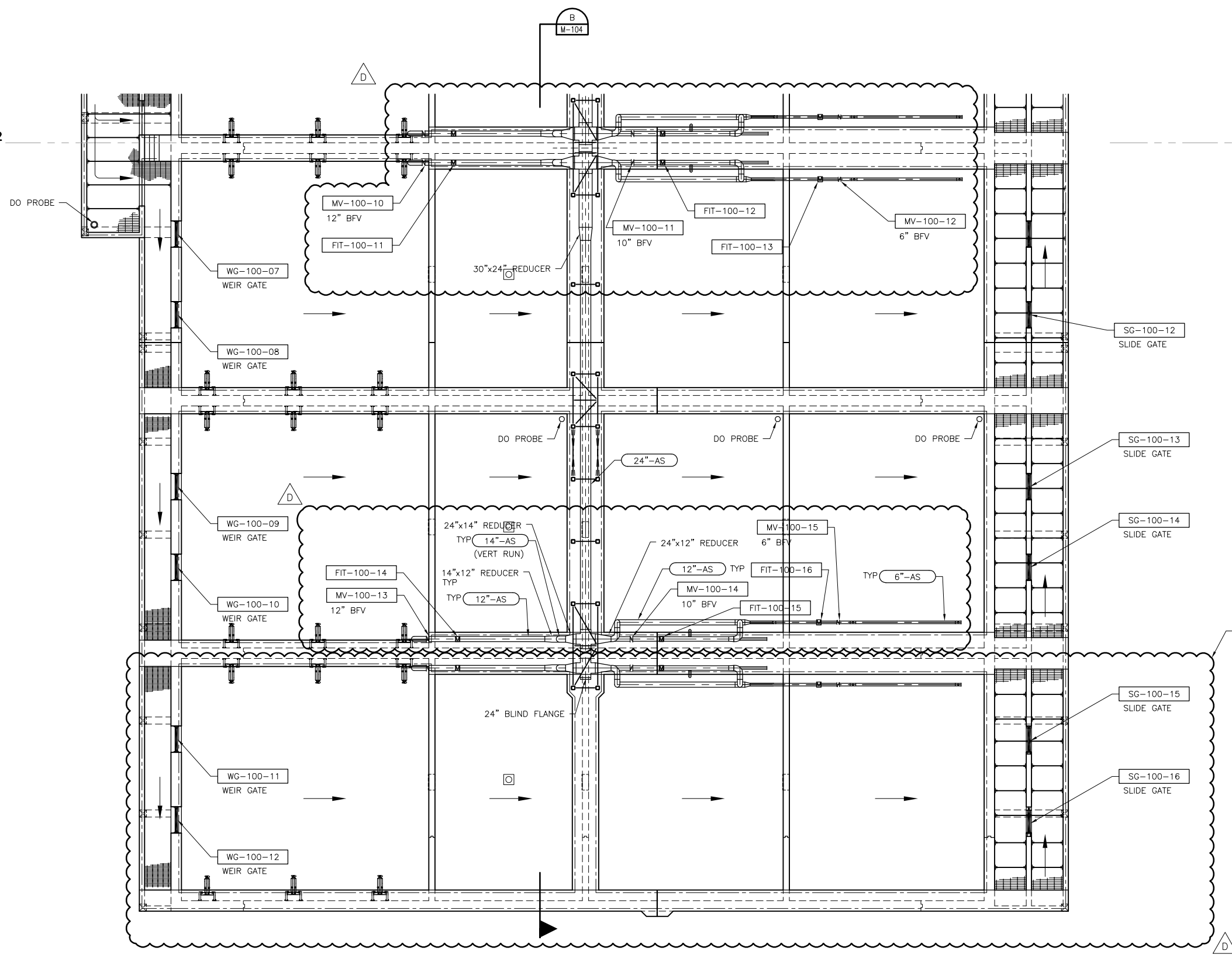
0 1" 2"	FILENAME: M-102.dwg	DRAWING NUMBER: M-102	SHEET OF: -
	SCALE: 3/32"=1'-0"		



GENERAL NOTES:
1. -

KEY NOTES:
①

MATCHLINE SEE M-102



KEY PLAN



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

D	03/12/2014	AIR SUPPLY PIPING REVISION AND MBBR TANK NO. 6 TO BE DELETED
C	09/18/2013	MBBR TANK REVISION
B	09/13/2013	MBBR TANK
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

SEGREGATED MBBR SYSTEM
UPPER PLAN 2 OF 2



FILENAME	M-103.dwg
SCALE	3/32"=1'-0"

DRAWING NUMBER	M-103
----------------	-------

SHEET	OF	-
-------	----	---

1

2

3

4

5

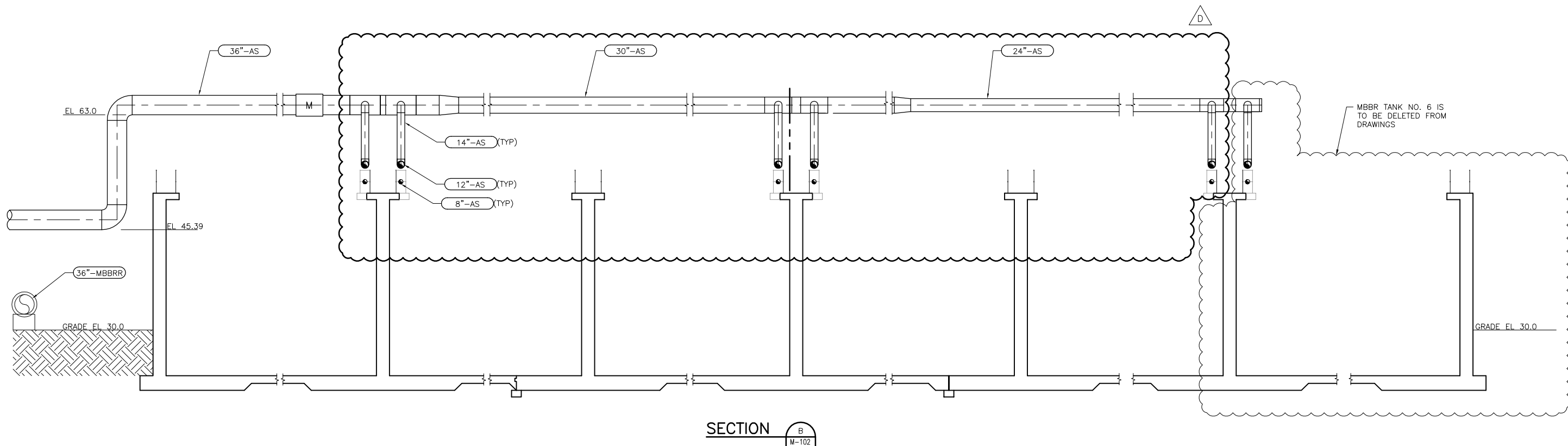
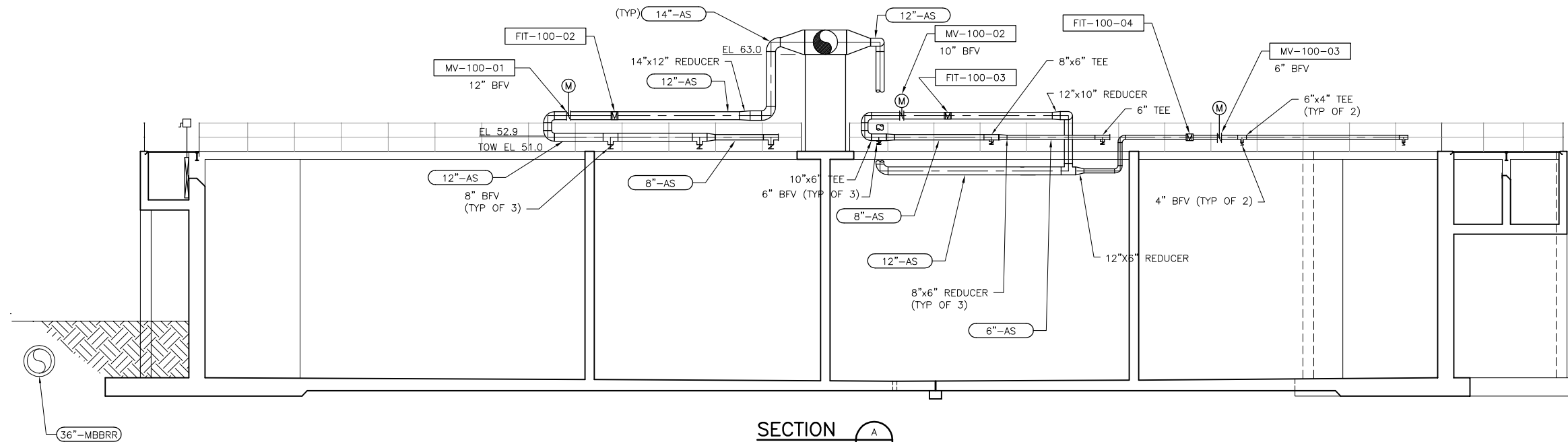
6

7

8

KEY NOTES:

1

**HDR**HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

D	03/12/2014	AIR SUPPLY PIPING REVISION
C	09/18/2013	MBBR TANKS REVISION
B	09/13/2013	MBBR TANKS
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY
ALTERNATIVE 4A-1 LIGHT
PHASE 2****SEGREGATED MBBR SYSTEM
SECTIONS**

0 1" 2"

FILENAME M-104.dwg

SCALE 1/8" = 1'-0"

DRAWING NUMBER

M-104

SHEET

OF

-

1

2

3

4

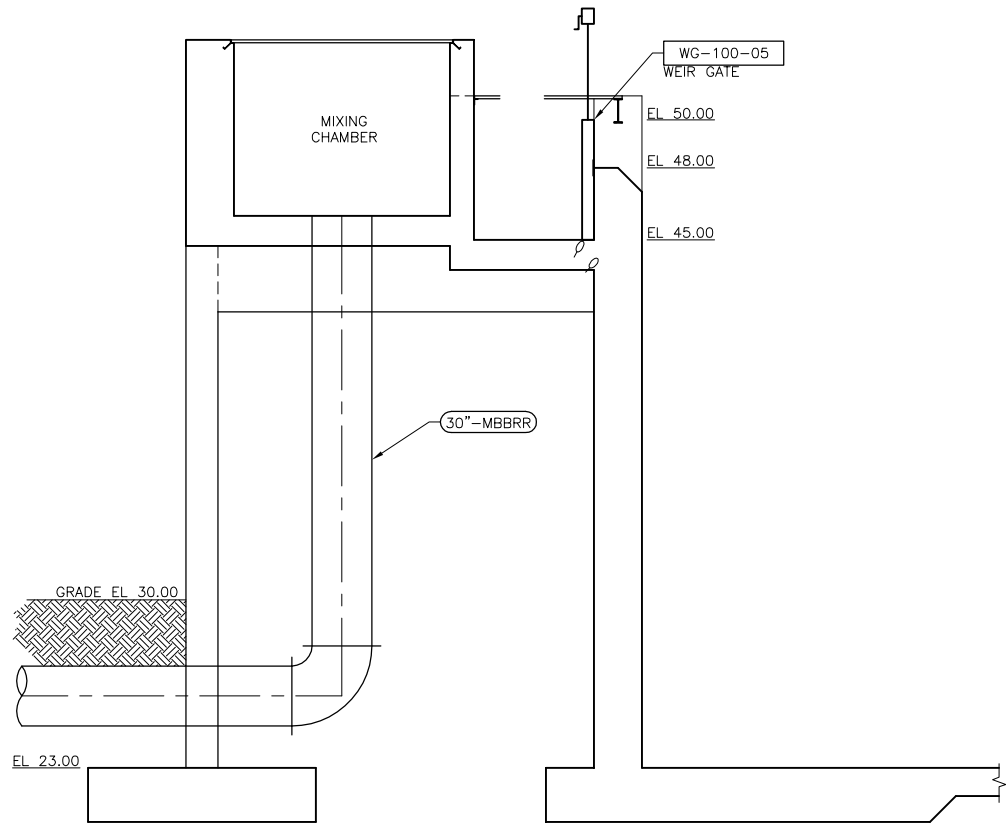
5

6

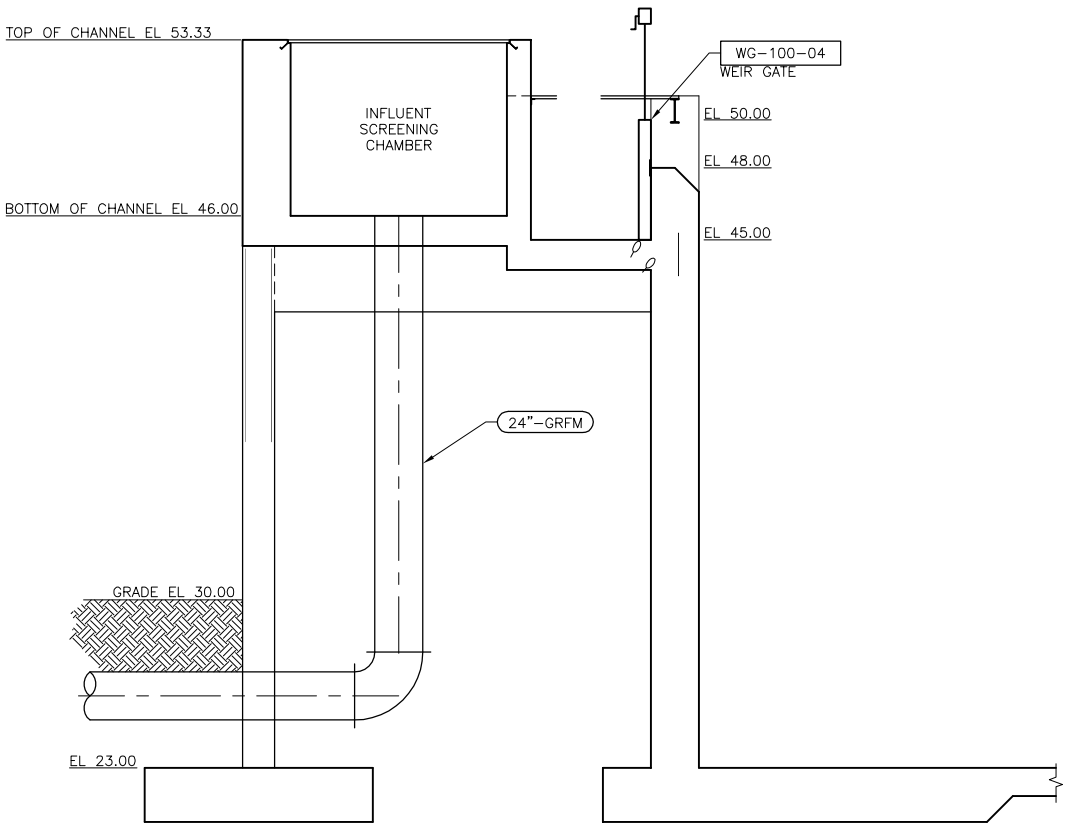
7

8

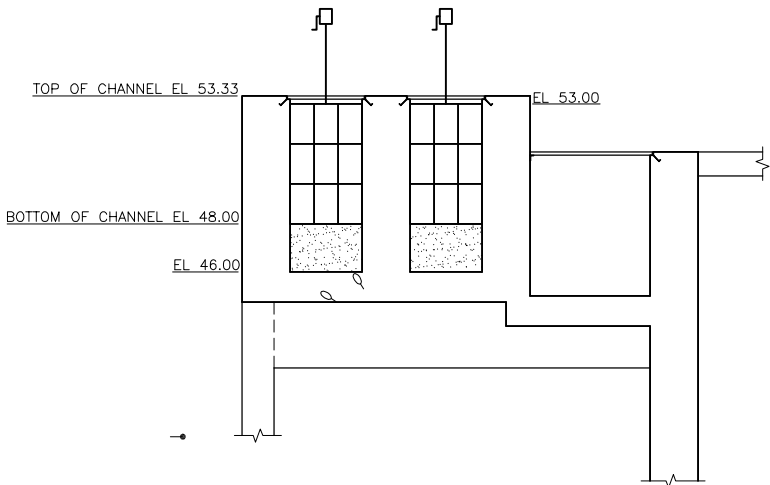
GENERAL NOTES:
1. -



MIXING CHAMBER-SECTION A
SCALE: 1/4"=1'-0"



INFLUENT SCREENING CHAMBER-SECTION C
SCALE: 1/4"=1'-0"



SCREENING CHAMBER-SECTION D
SCALE: 1/4"=1'-0"

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	09/18/2013	MBBR TANKS
ISSUE	DATE	DESCRIPTION

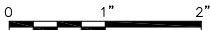
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

SEGREGATED MBBR SYSTEM
SECTIONS AND DETAILS

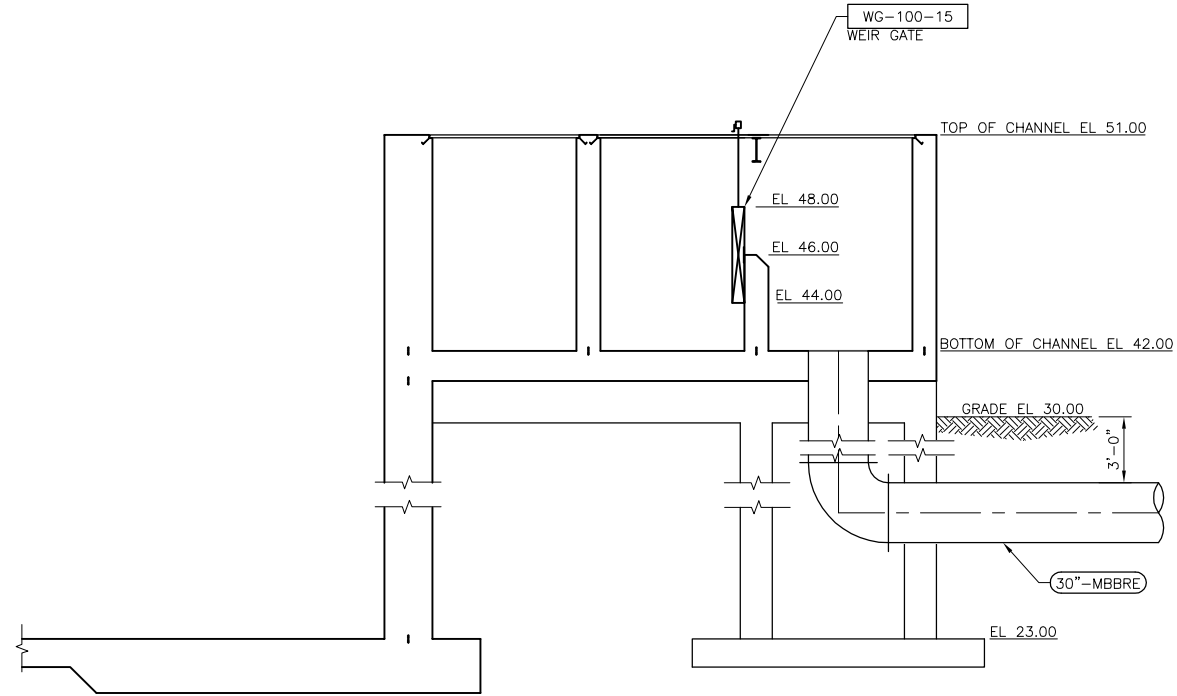


FILENAME	M-106.dwg
SCALE	AS NOTED

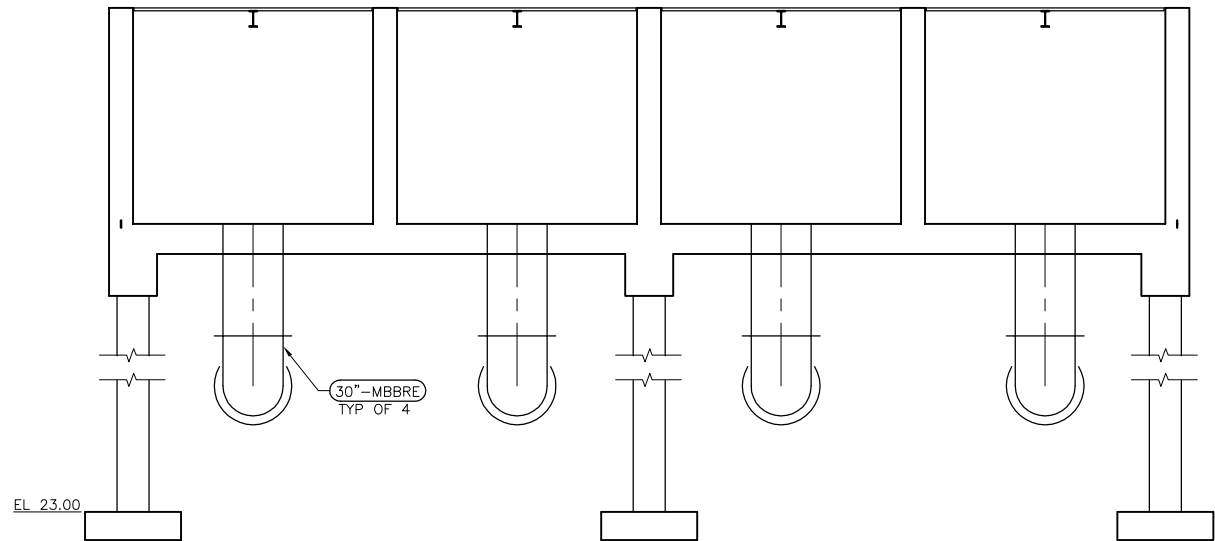
DRAWING NUMBER
M-106

SHEET OF -

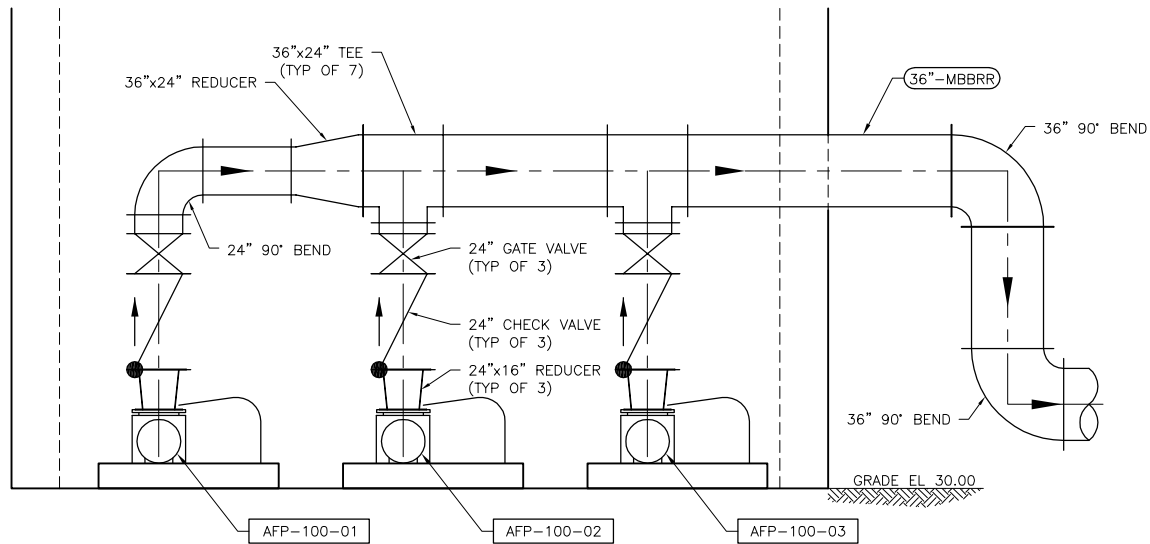
GENERAL NOTES:
1. -



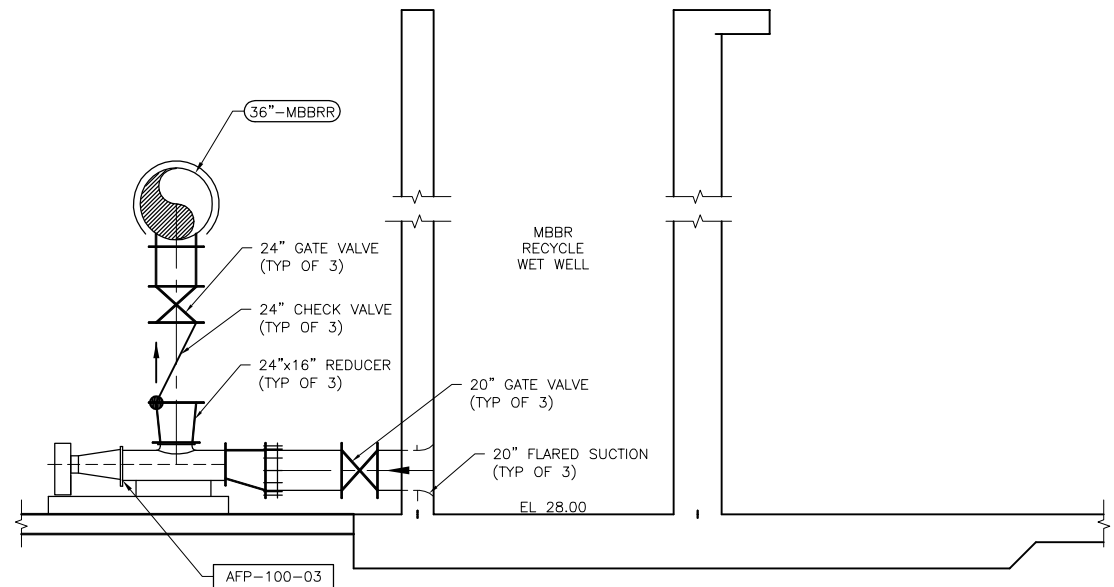
SECTION F
SCALE: 1/4"=1'-0" M-102



SECTION G
SCALE: 1/4"=1'-0" M-102



SECTION H
SCALE: 1/4"=1'-0" M-102



SECTION J
SCALE: 1/4"=1'-0" M-102

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	09/18/2013	MBBR TANK REVISION
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**SEGREGATED MBBR SYSTEM
SECTIONS**

0 1" 2"

FILENAME M-107.dwg
SCALE AS NOTED

DRAWING NUMBER
M-107

SHEET OF -

1

2

3

4

5

6

7

8

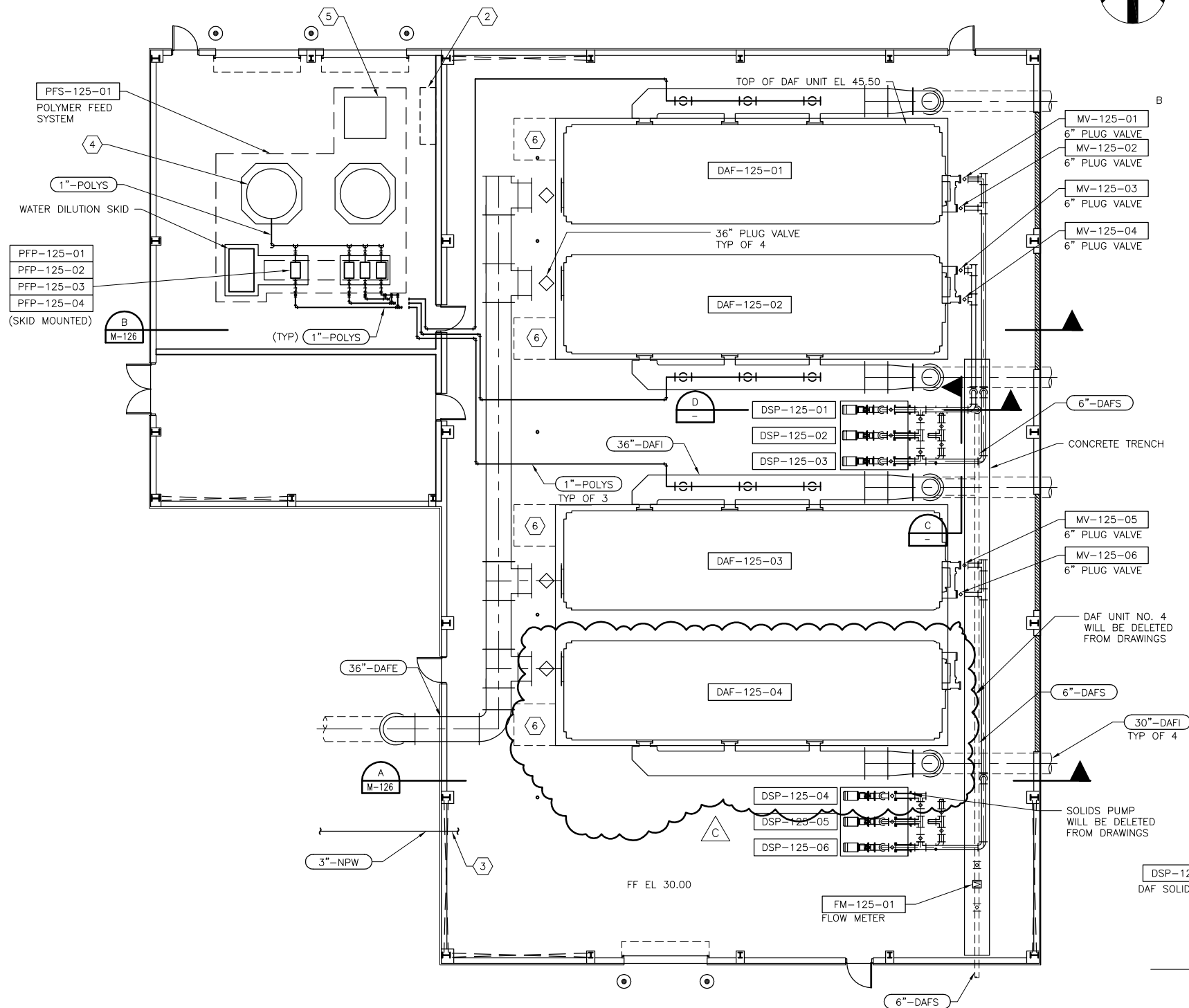


GENERAL NOTES:

1. -

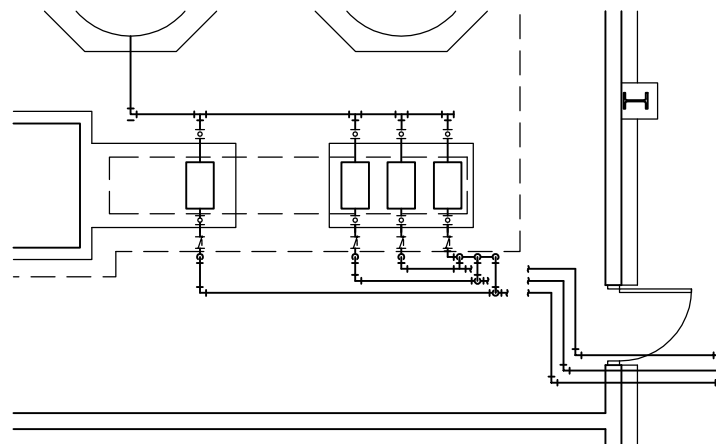
KEY NOTES:

- 1 CONNECT TO 36" PVC SCH 80 FLG WITH 36" DI FLG CONNECTION.
- 2 AIR COMPRESSOR SYSTEM SEE PLUMBING DRAWINGS.
- 3 SEE PLUMBING DRAWINGS FOR CONTINUATION.
- 4 POLYMER FEED TANKS TYP OF 2.
- 5 POLYMER FEED HEAVY BAG HOIST.
- 6 NIKUNI AIR PUMP SKID.

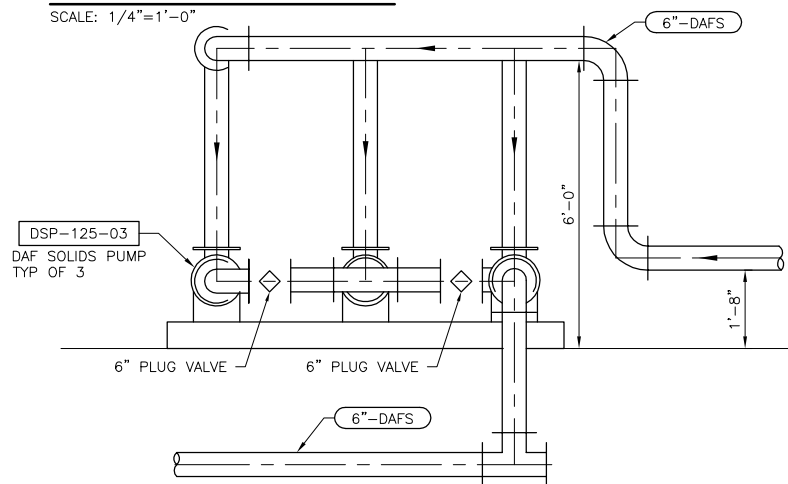


PLAN

SCALE: 1/8"=1'-0"

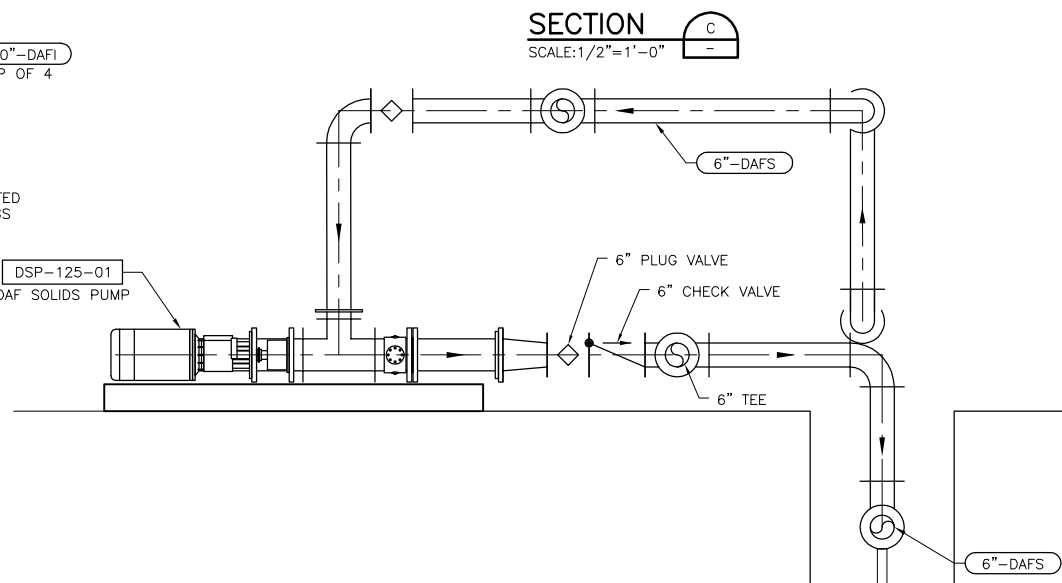
POLYMER FEED PUMPS
PARTIAL PLAN

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



SECTION C

SCALE: 1/2"=1'-0"



SECTION D

SCALE: 1/2"=1'-0"

HDRHDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	03/12/2014	DAF UNIT & PUMP TO BE DELETED
B	09/17/2013	DAF INFLUENT REVISION
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****DISSOLVED AIR FLOTATION BUILDING
PLAN AND SECTIONS**

0 1" 2"

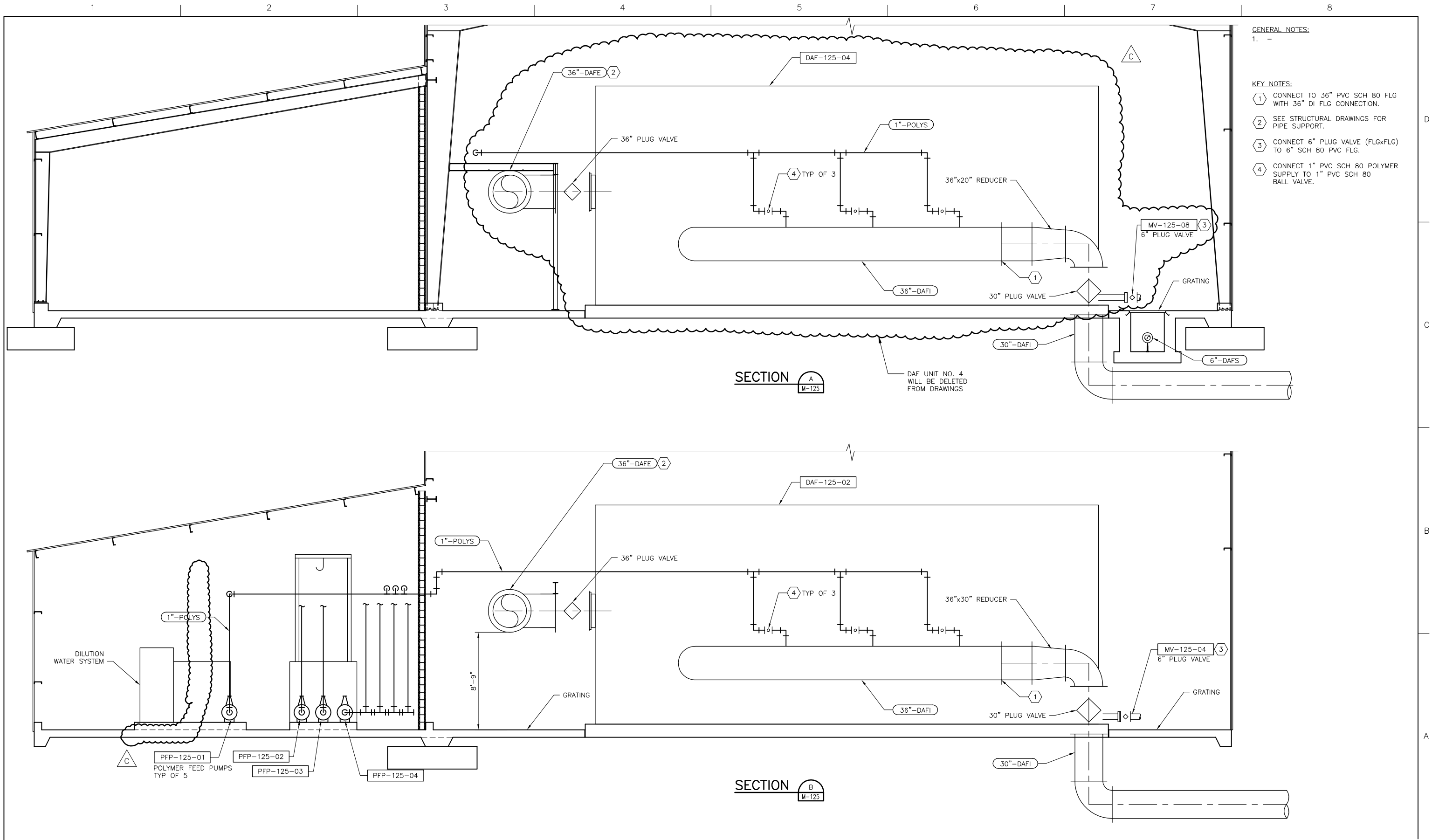
FILENAME M-125.dwg

SCALE 1/8"=1'-0"

DRAWING NUMBER

M-125

SHEET OF -



HDR HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	DISSOLVED AIR FLotation BUILDING SECTIONS			0 1" 2" SCALE 1/4"=1'-0"	DRAWING NUMBER M-126	SHEET OF -
				DESIGNED BY: D. ZIRKLE								
				DRAWN BY: T. LOKEY								
				CHECKED BY:								
	C	03/12/2014	DAF UNIT TO BE DEL. & POLY. PUMP DEL.									
	B	09/17/2013	DAF INFLUENT REVISION									
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL									
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER								

1

2

3

4

5

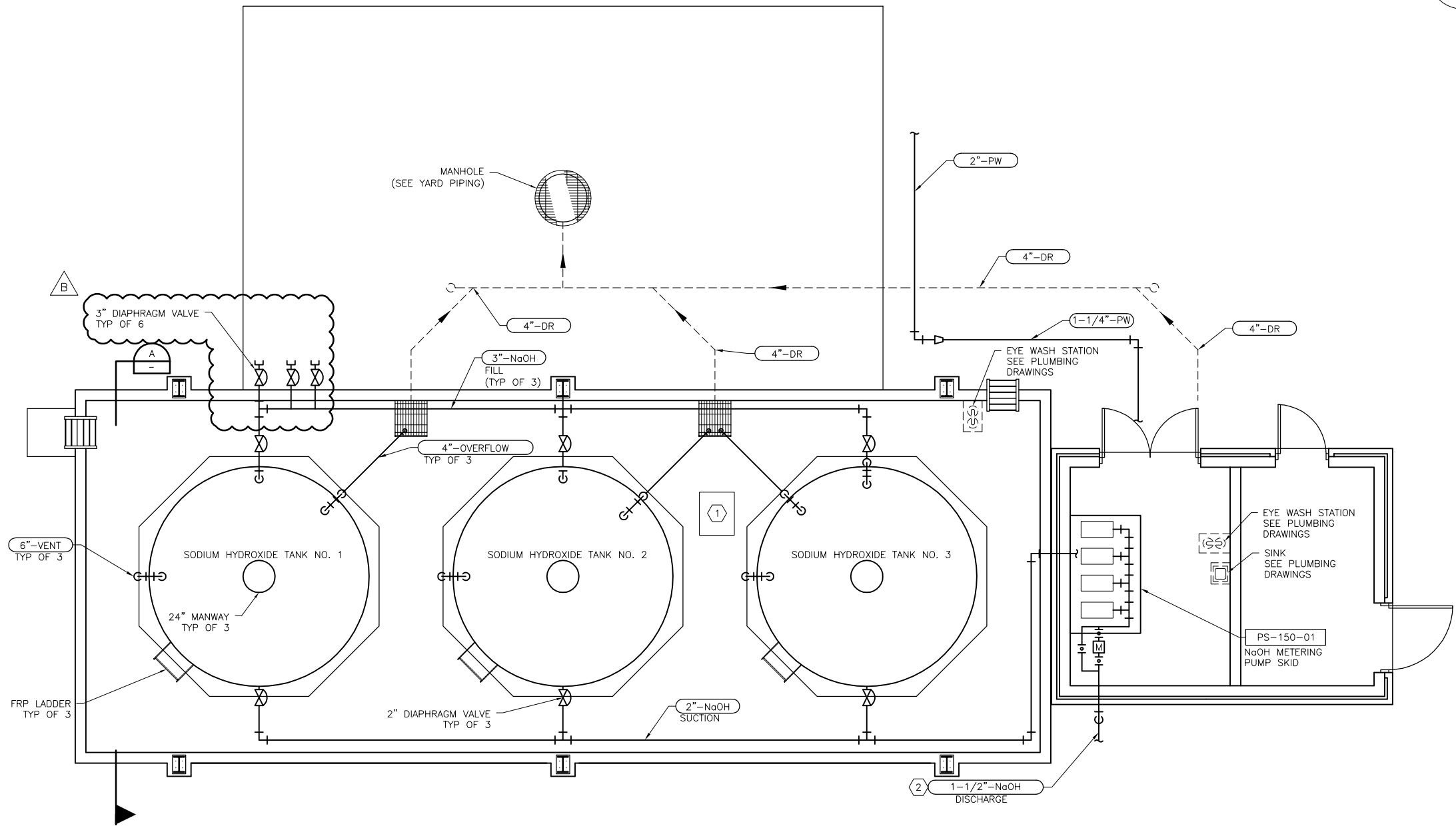
6

7

8



- GENERAL NOTES:**
1. HEAT TRACE AND INSULATE 3" NaOH FILL, 3" NaOH SUCTION AND 3" TRANSFER PIPING.
- KEY NOTES:**
1. TRANSFER PUMP AND PIPING NOT SHOWN. PUMP WILL BE ABLE TO TRANSFER NaOH FROM TANK NOS. 2 AND 3 TO TANK NO. 1. ASSUME 3" TRANSFER PIPING.
2. 1-1/2" NaOH SHALL BE INSTALLED IN 3" CONTAINMENT PIPE.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	03/12/2014	DEDICATED 3" FILL PER TANK REVISION
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

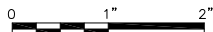
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

SODIUM HYDROXIDE FACILITY
PLAN



FILENAME	M-150.dwg
SCALE	1/4"=1'-0"

DRAWING NUMBER		SHEET	OF
M-150			-

1

2

3

4

5

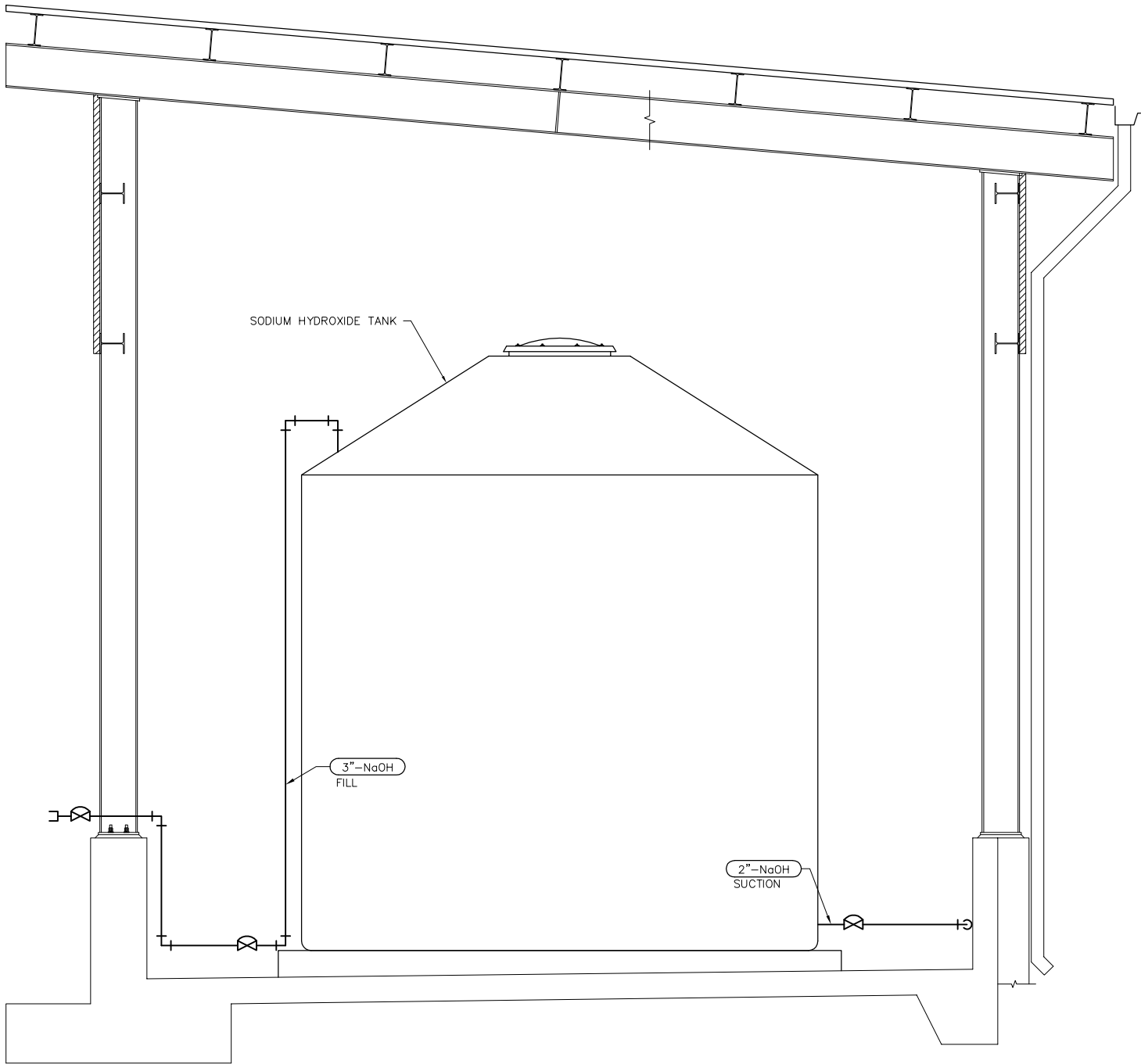
6

7

8



- GENERAL NOTES:
1. HEAT TRACE AND INSULATE 3" NaOH FILL, 3" NaOH SUCTION, 3" TRANSFER PIPING AND TANK.



D

C

B

A

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

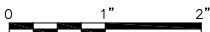
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**SODIUM HYDROXIDE FACILITY
SECTION**



FILENAME	M-151.dwg
SCALE	1/2"=1'-0"

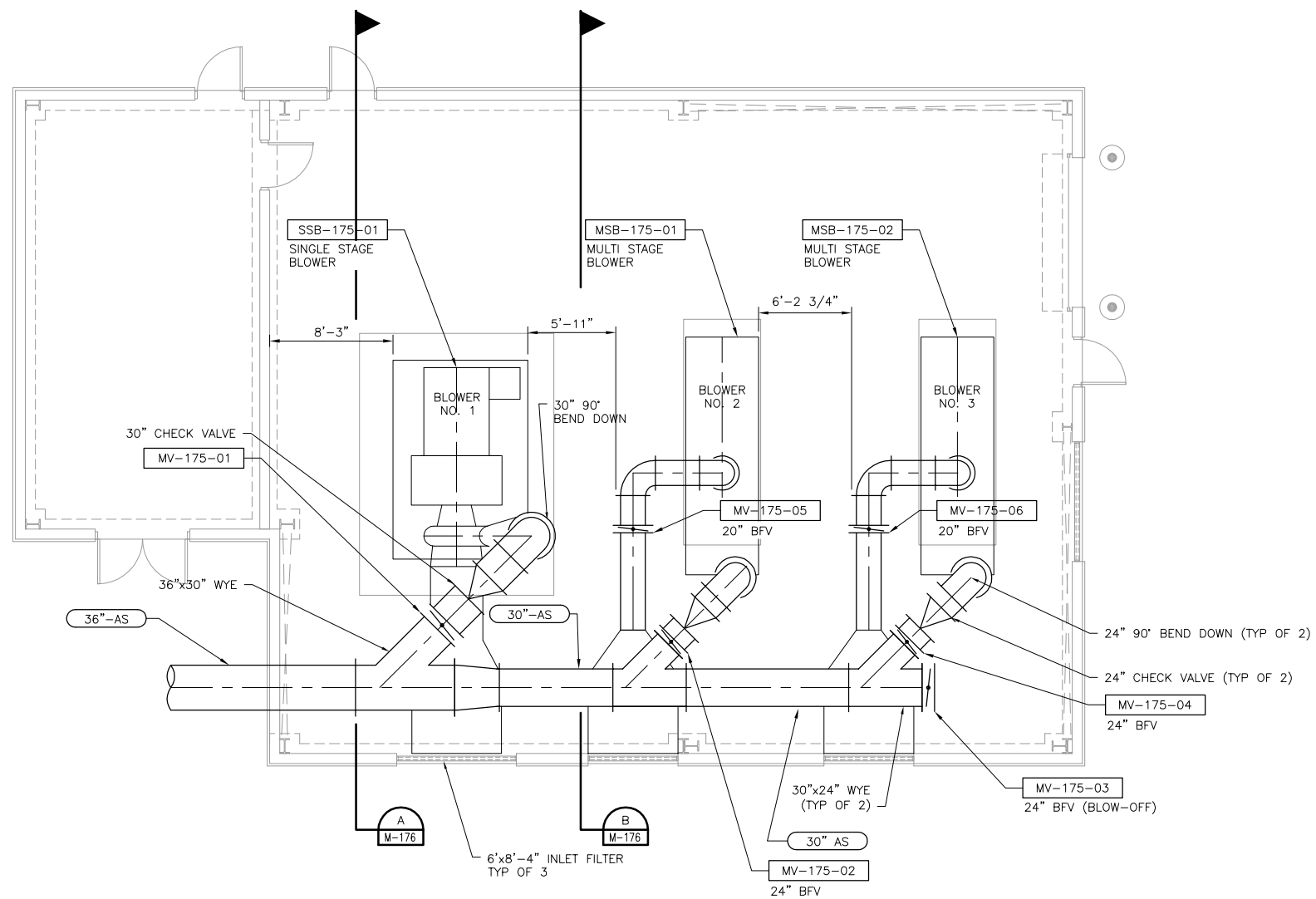
DRAWING NUMBER
M-151

SHEET OF -



GENERAL NOTES:

1. -



PLAN

HDRHDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	9/16/2013	BLOWER REVISION
B	9/13/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****BLOWER BUILDING
PLAN**

FILENAME	M-175.dwg
SCALE	3/16"=1'-0"

DRAWING NUMBER
M-175

SHEET OF -

1

2

3

4

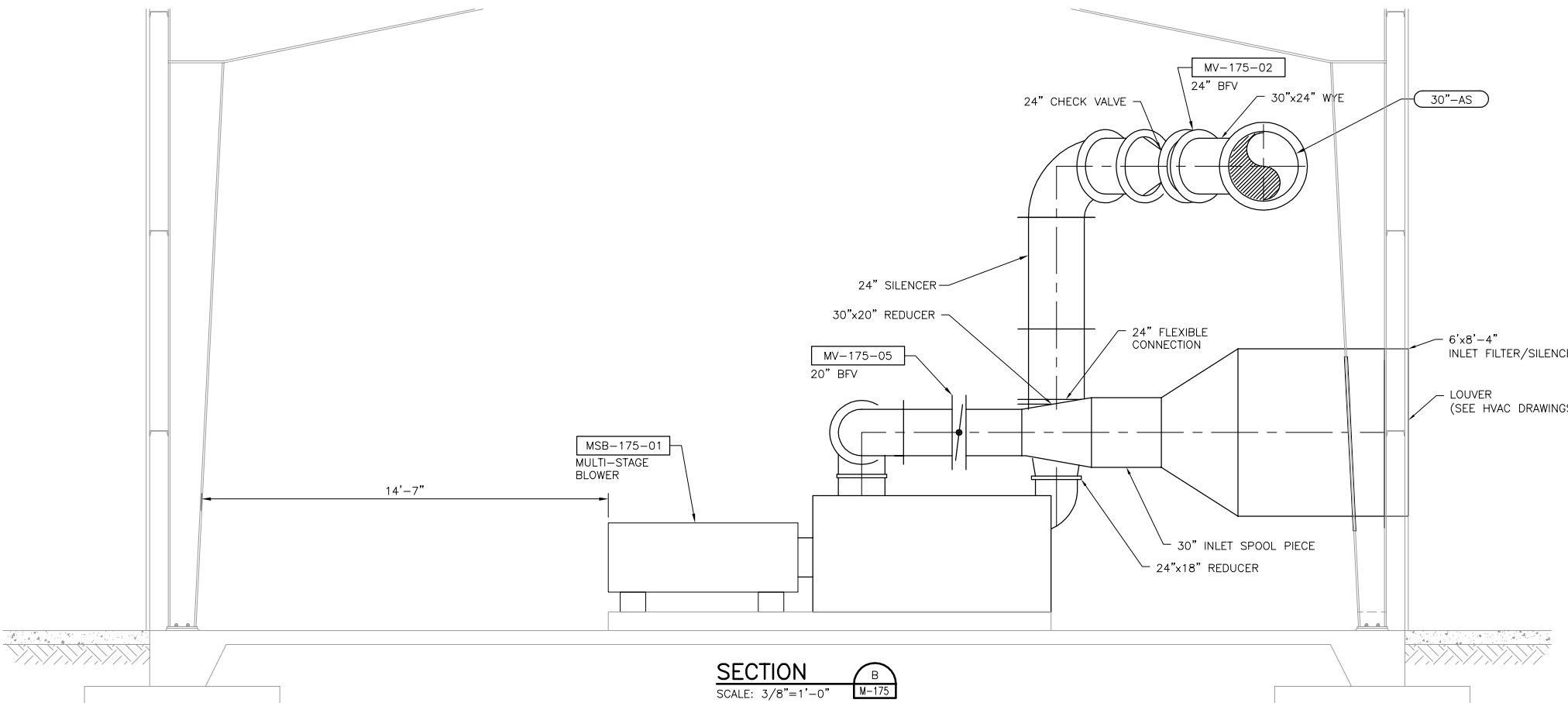
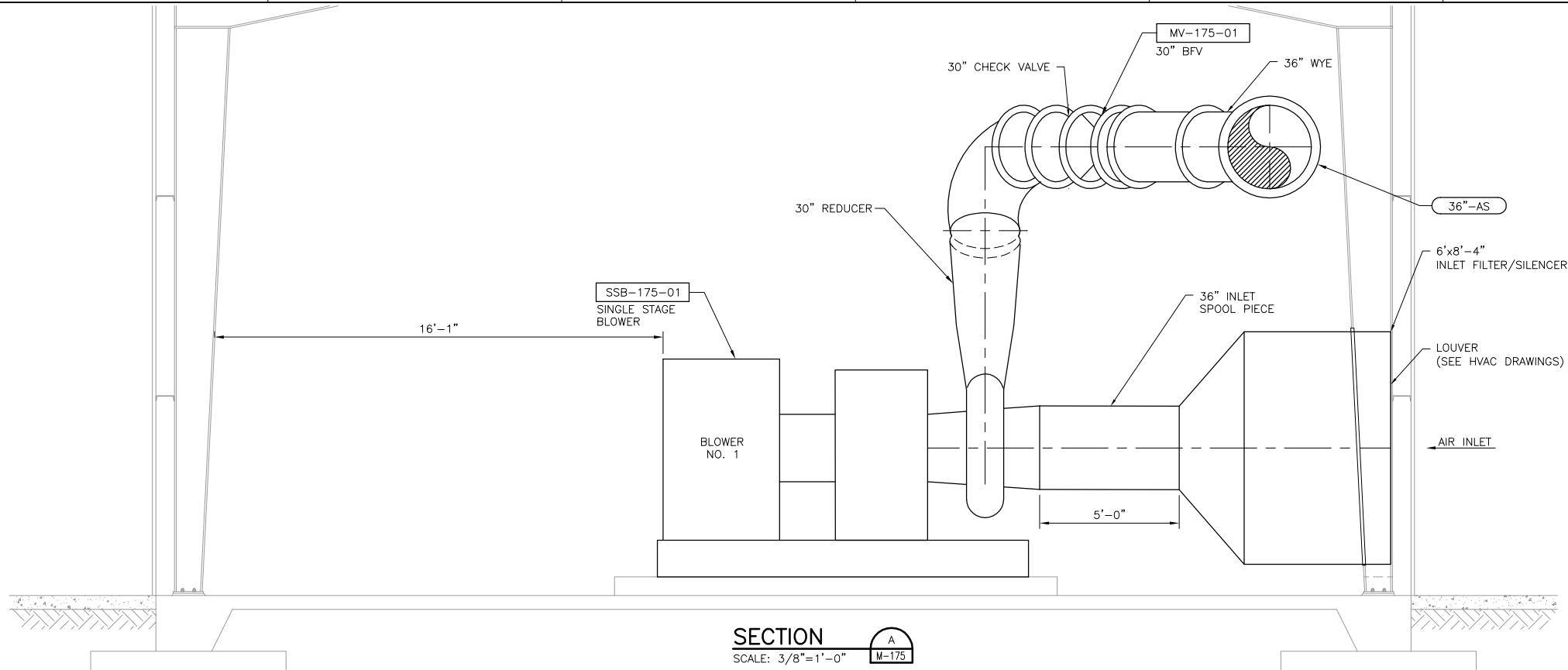
5

6

7

8

GENERAL NOTES:
1. SEE SHEET S-900 FOR ADDITIONAL NOTES.

**HDR**

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

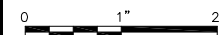
C	9/16/2013	BLOWER REVISION	
B	9/13/2013	CONCEPTUAL DESIGN SUBMITTAL	
ISSUE	DATE	DESCRIPTION	

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY
ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**BLOWER BUILDING
SECTIONS**



FILENAME M-176.dwg

SCALE 3/8"=1'-0"

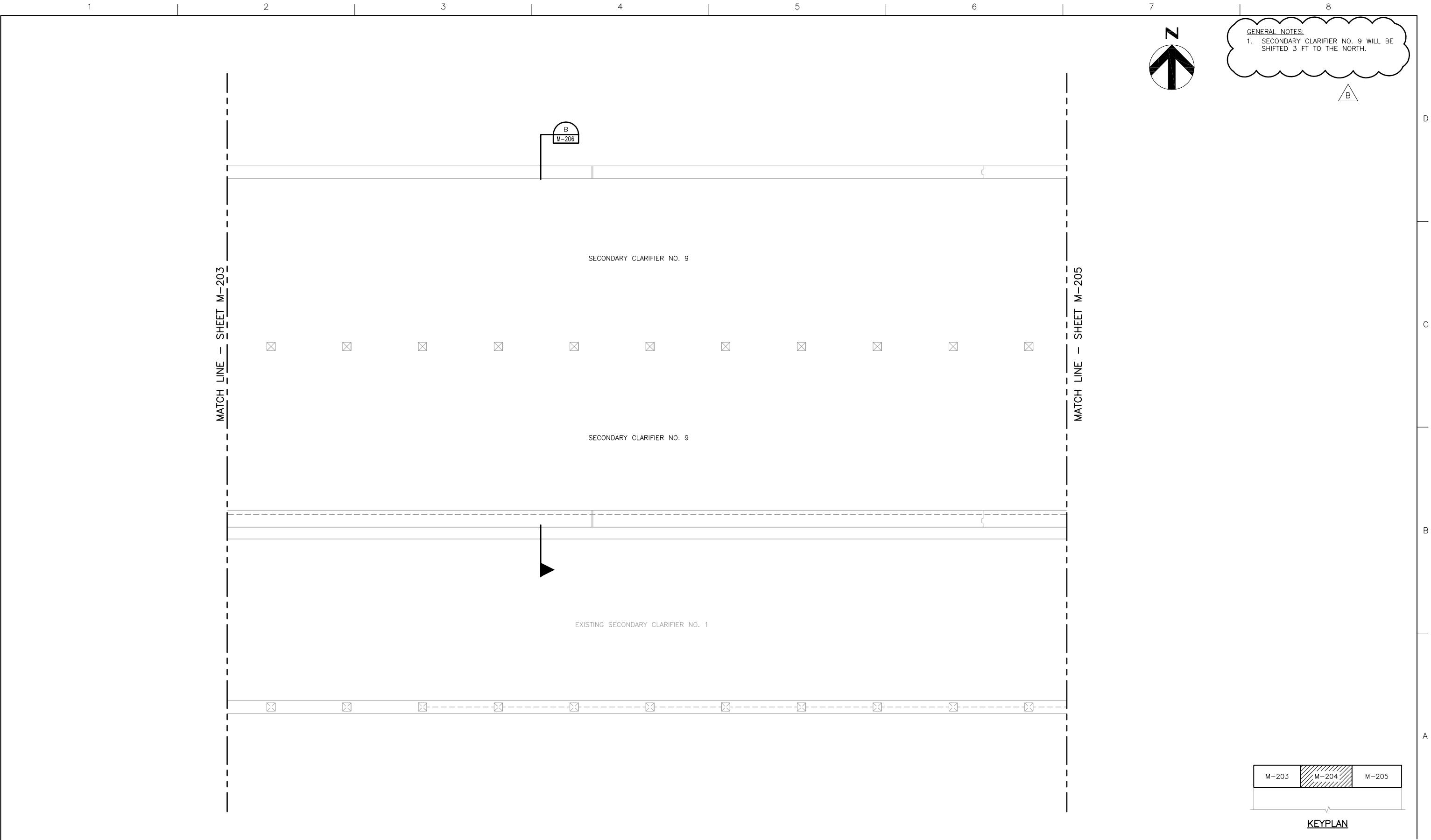
DRAWING NUMBER

M-176

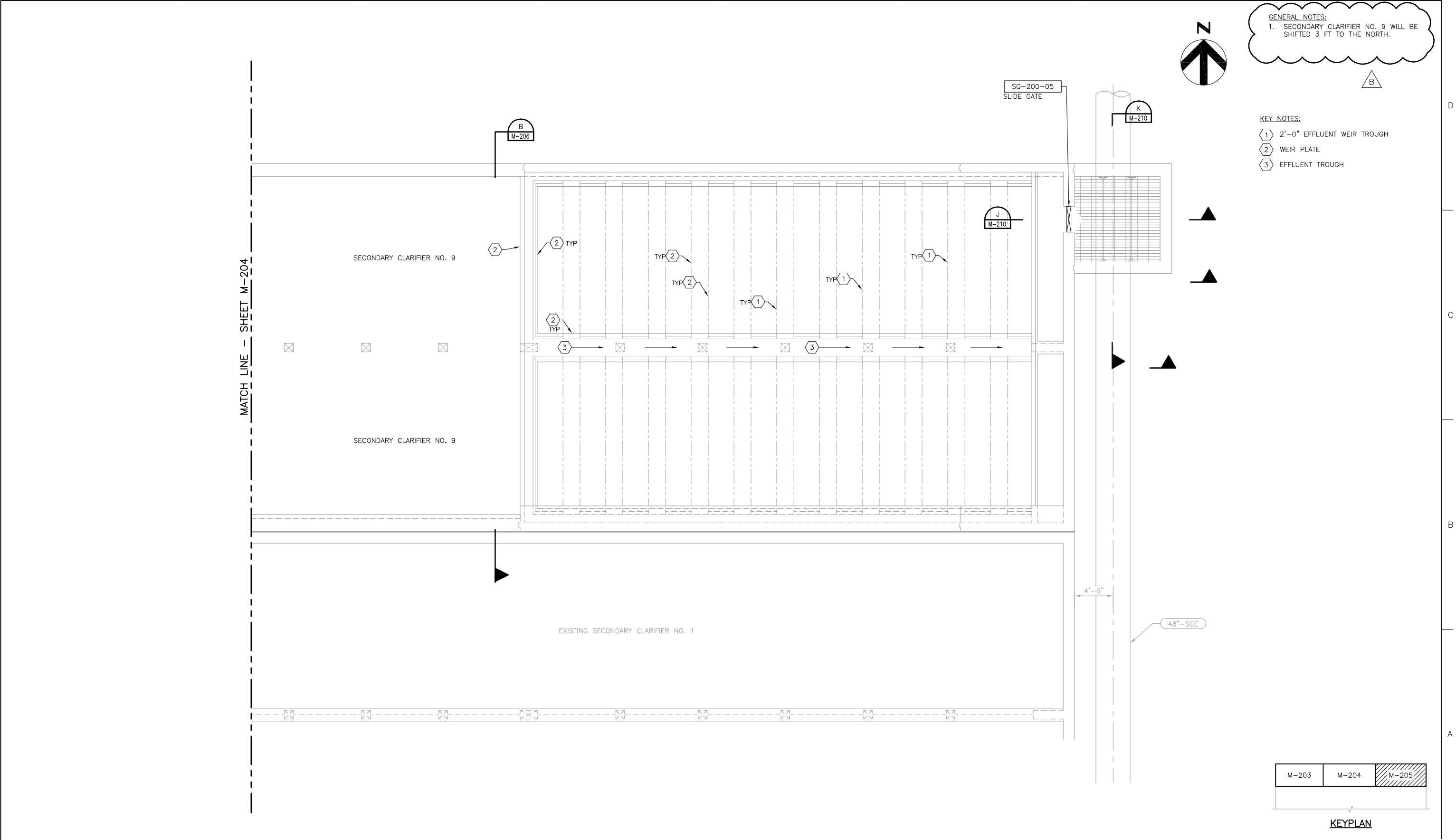
SHEET

OF

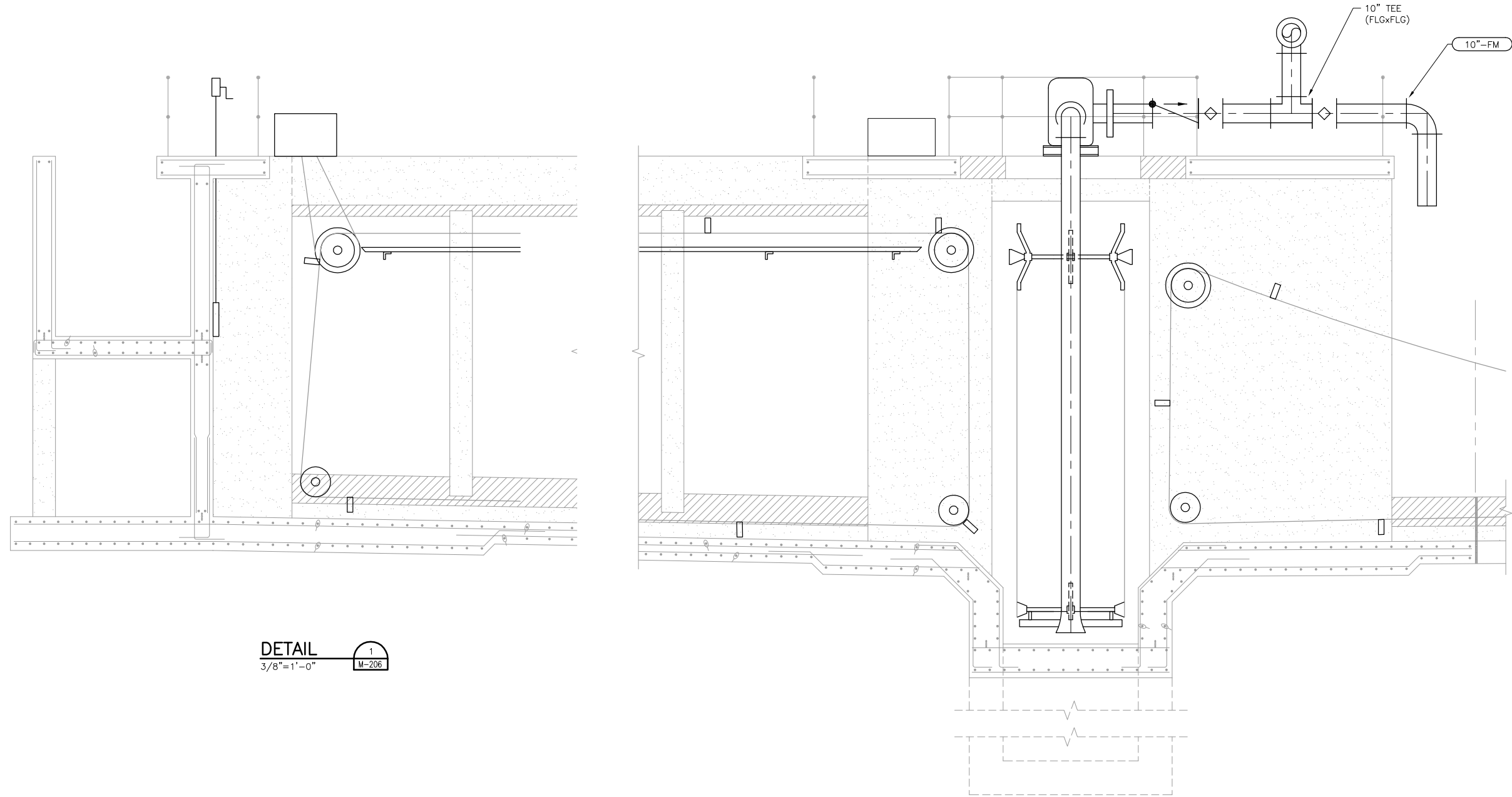
-



<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY	SECONDARY CLARIFIER NO. 9 UPPER PLAN 2 OF 3				
				DESIGNED BY: D. ZIRKLE			<div><div>012</div><div>0'1'2'</div></div>	FILENAME	M-204.dwg	DRAWING NUMBER	SHEET OF -
				DRAWN BY: T. LOKEY				SCALE	3/16"=1'-0"	M-204	
				CHECKED BY:							
	B	03/12/2014	SEC. CLAR. TO BE MOVED TO THE NORTH								
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL				ALTERNATIVE 4A-1 LIGHT PHASE 2					
			</								



GENERAL NOTES:
1. -



DETAIL
3/8"=1'-0"

1
M-206

DETAIL
3/8"=1'-0"

2
M-206



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

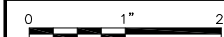
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

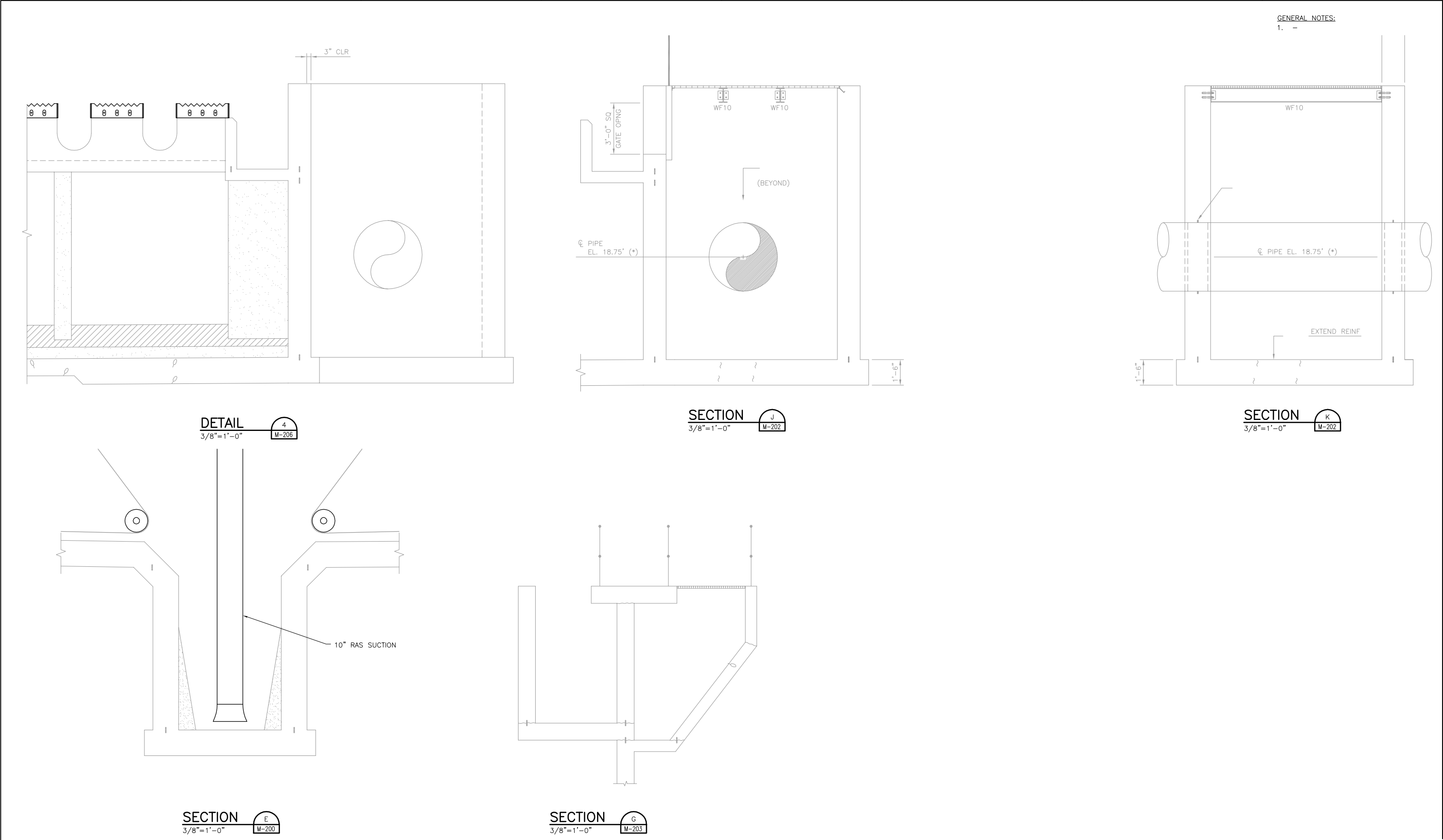
ALTERNATIVE 4A-1 LIGHT
PHASE 2

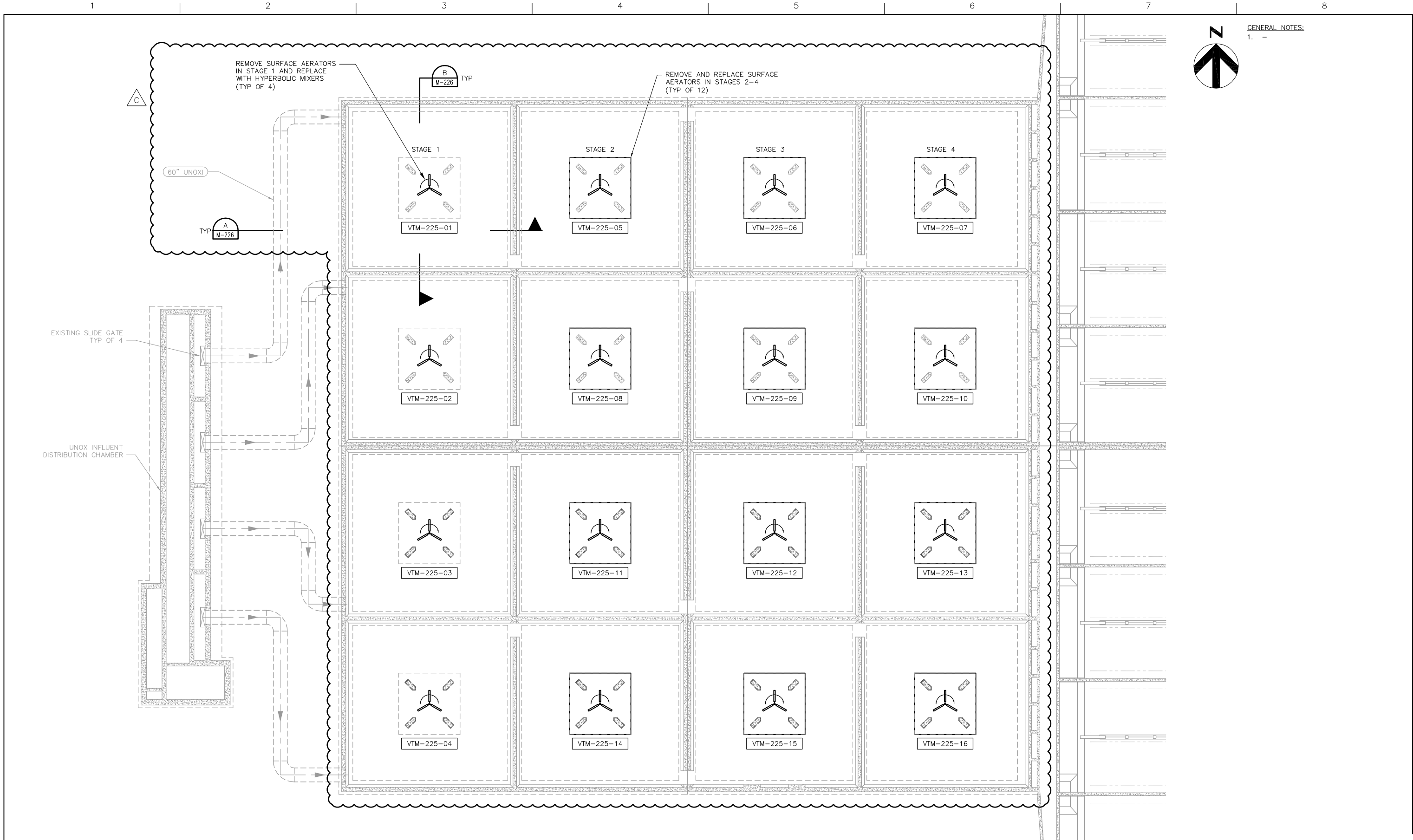
SECONDARY CLARIFIER NO. 9
DETAILS



FILENAME	M-207.dwg
SCALE	AS NOTED

DRAWING NUMBER		SHEET	OF
M-207			-





<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER:	WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	UNOX MODIFICATIONS PLAN			
				DESIGNED BY:	D. ZIRKLE			<div><div>01"2"</div><div>01/16"=1'-0"</div></div>	FILENAME M-225.dwg	DRAWING NUMBER M-225	SHEET OF -
				DRAWN BY:	T. LOKEY						
				CHECKED BY:							

1

2

3

4

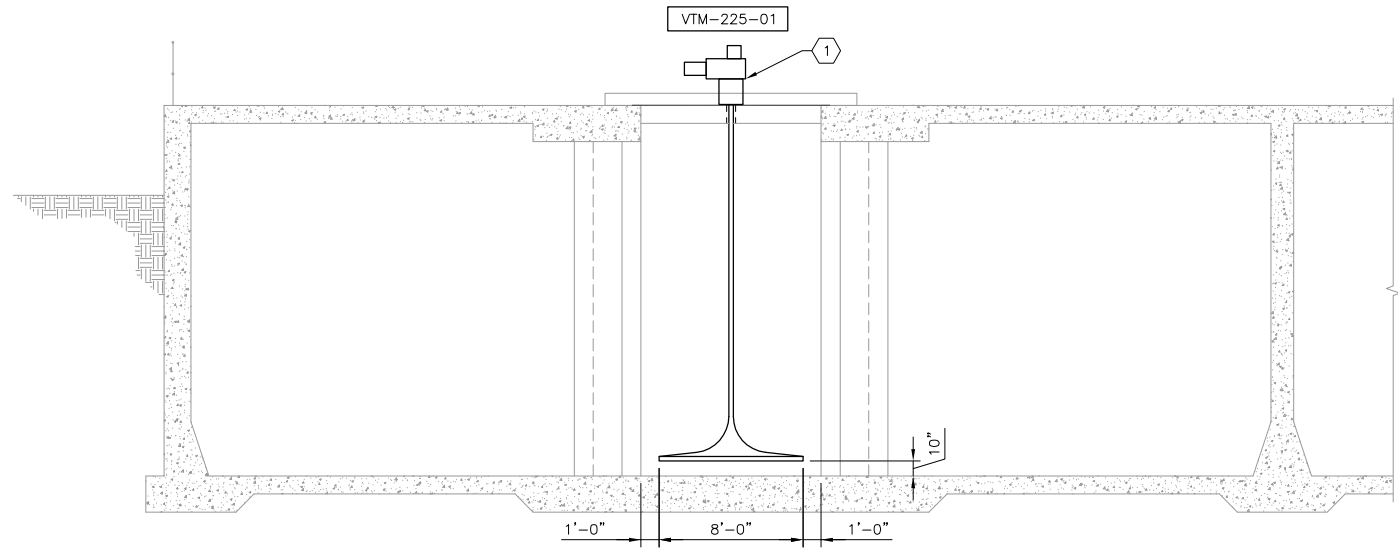
5

6

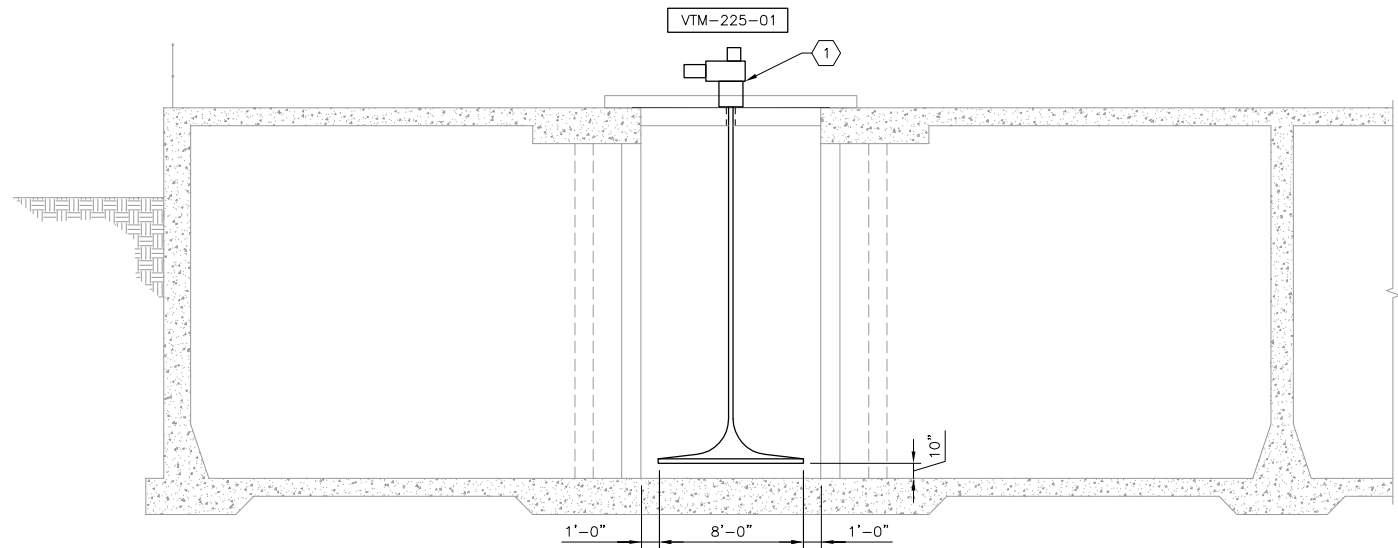
7

8

KEY NOTES:
1 MIXER SHOWN BEYOND.



SECTION A
SCALE: 3/16"=1'-0"



SECTION B
SCALE: 3/16"=1'-0"

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

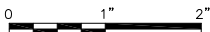
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**UNOX MODIFICATIONS
SECTIONS**

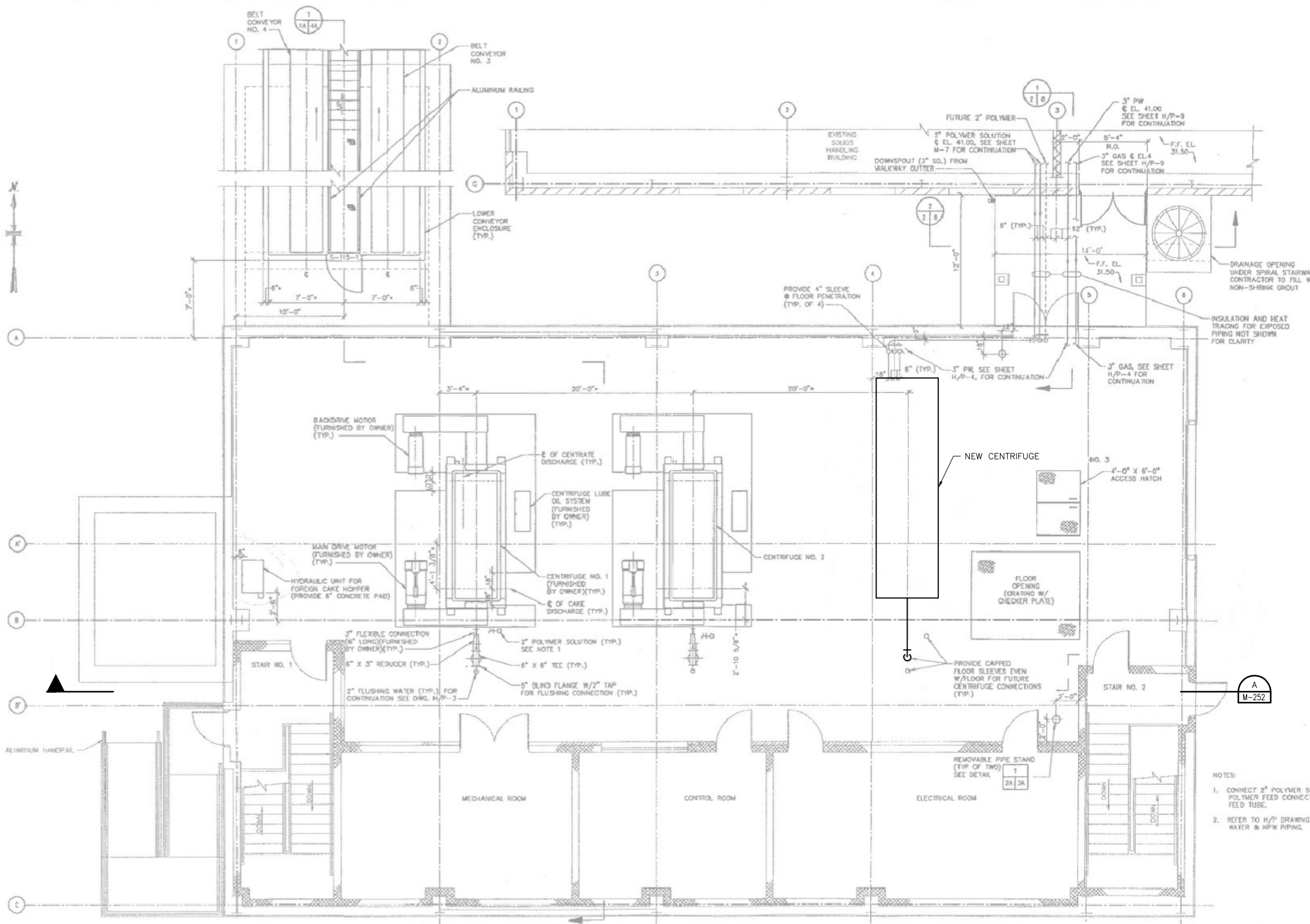


FILENAME	M-226.dwg
SCALE	AS NOTED

DRAWING NUMBER
M-226

SHEET OF -

GENERAL NOTES:
1. -



UPPER PLAN AT EL 31.50

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

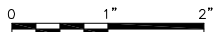
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**
**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**CENTRIFUGE BUILDING
UPPER PLAN**



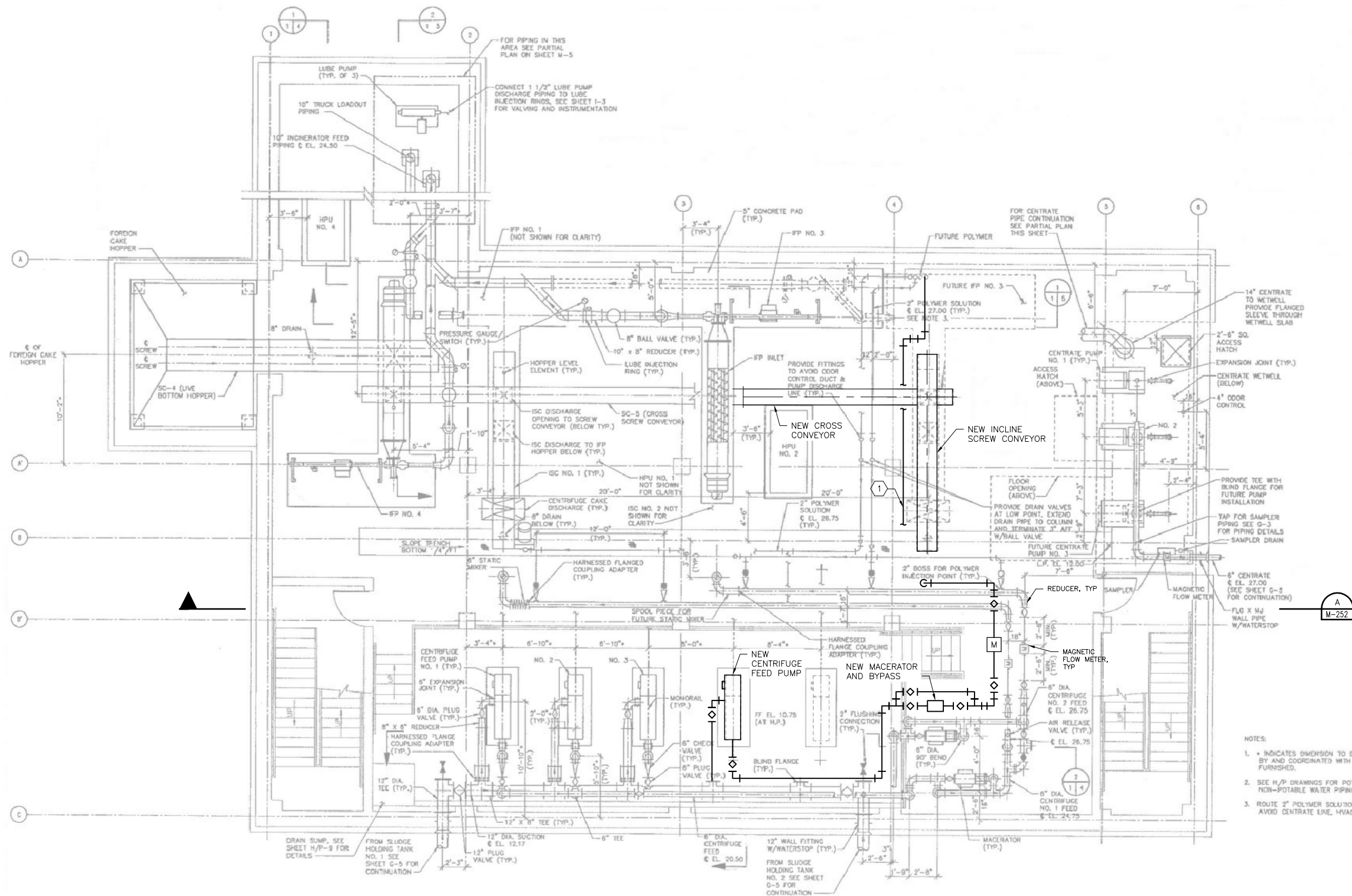
FILENAME	M-250.dwg
SCALE	3/16"=1'-0"

DRAWING NUMBER	M-250
----------------	-------

SHEET OF -

KEY NOTE:

- ① ROUTE POLYMER FEED TO CENTRIFUGE FEED PIPE AND CENTRIFUGE INLET.



- NOTES:
- * INDICATES DIMENSION TO BE DETERMINED BY AND COORDINATED WITH EQUIPMENT FURNISHED.
 - SEE H/P DRAWINGS FOR POTABLE AND NON-POTABLE WATER PIPING.
 - ROUTE 2\"/>

LOWER PLAN AT EL 14.58

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT PHASE 2

CENTRIFUGE BUILDING LOWER PLAN

0 1" 2"

FILENAME M-251.dwg

SCALE 3/16"=1'-0"

DRAWING NUMBER

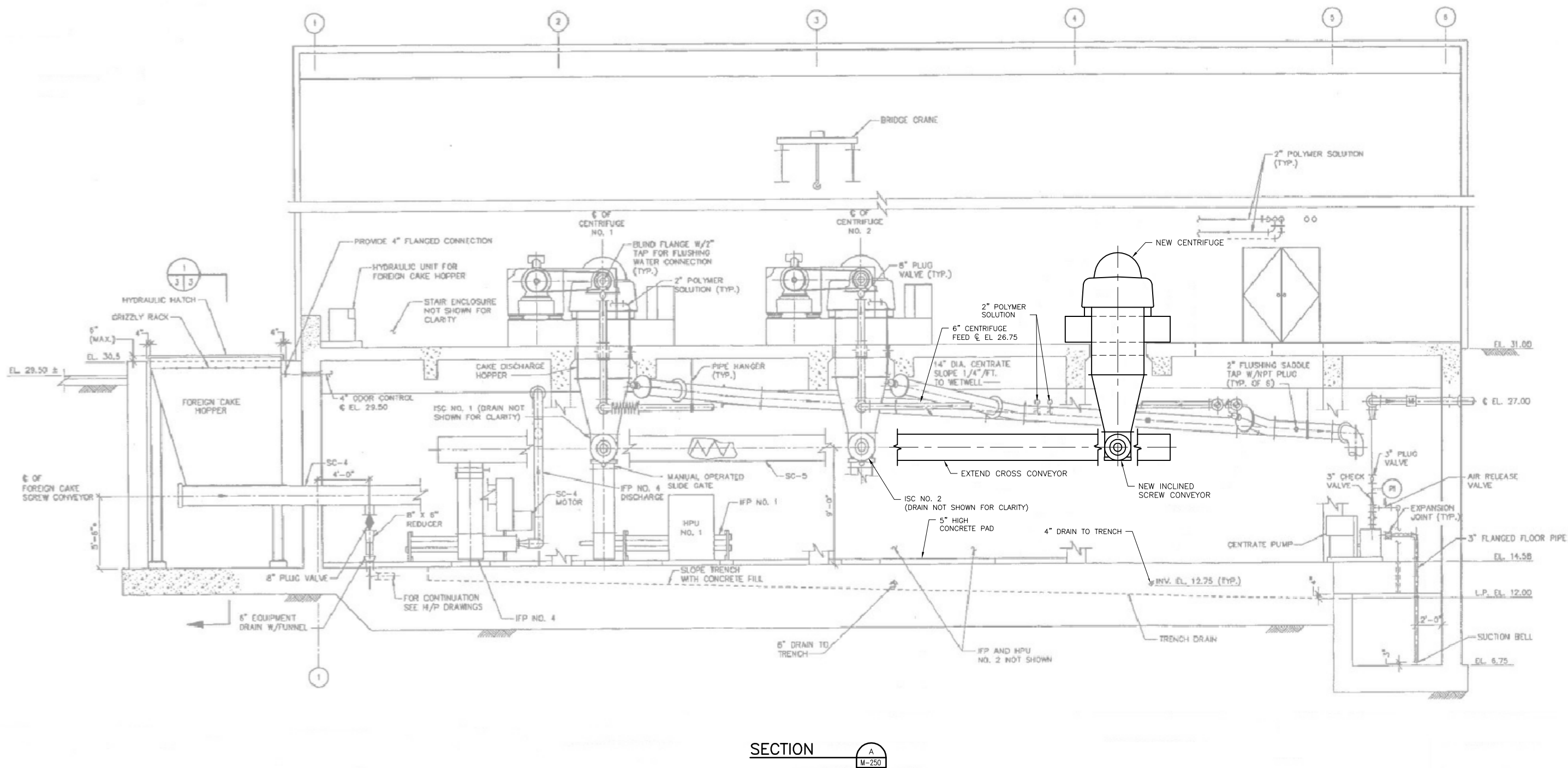
M-251

SHEET OF

-

GENERAL NOTES:

1. -



SECTION

A
M-250**HDR**HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****CENTRIFUGE BUILDING
SECTION**

0 1" 2"

FILENAME M-252.dwg

SCALE 1/4"=1'-0"

DRAWING NUMBER

M-252

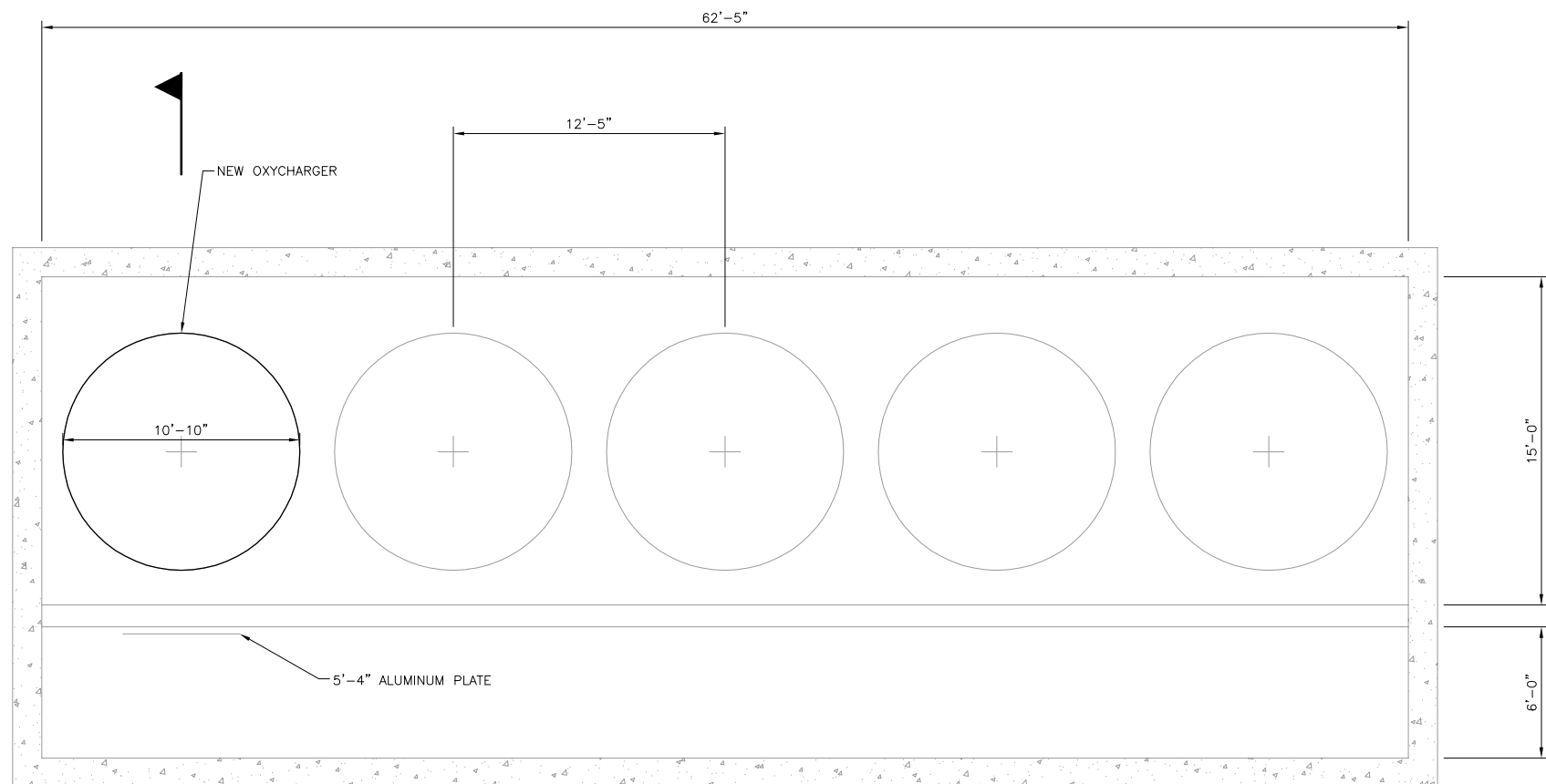
SHEET

OF

-

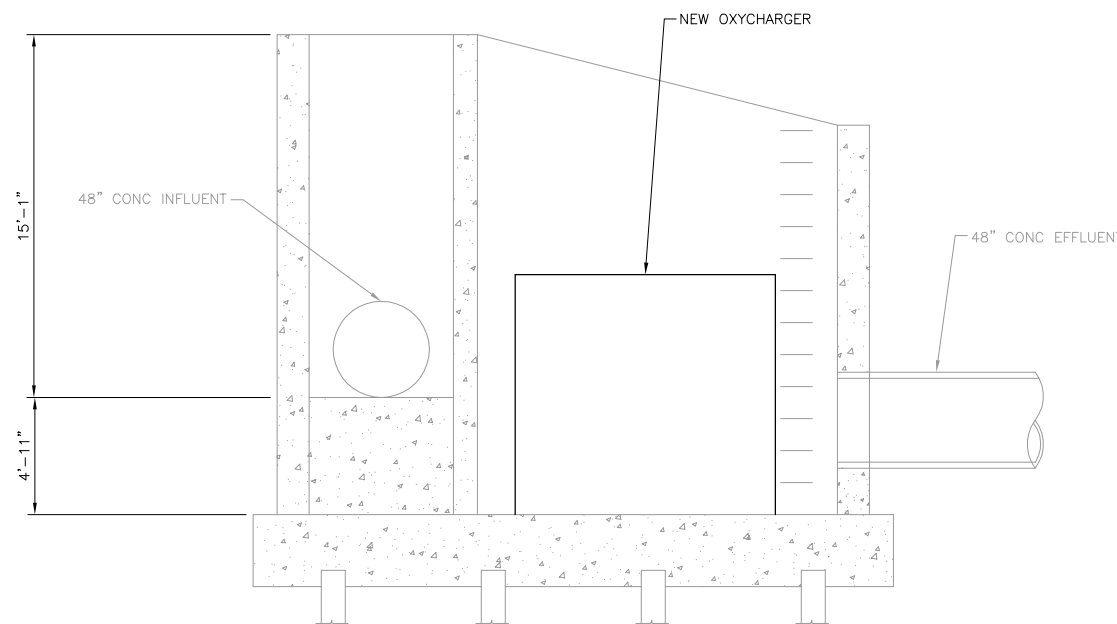
GENERAL NOTES:

1. —



PLAN

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



SECTION

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



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

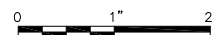
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	D. ZIRKLE
DRAWN BY:	T. LOKEY
CHECKED BY:	
PROJECT NUMBER	

CONCEPTUAL DESIGN

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

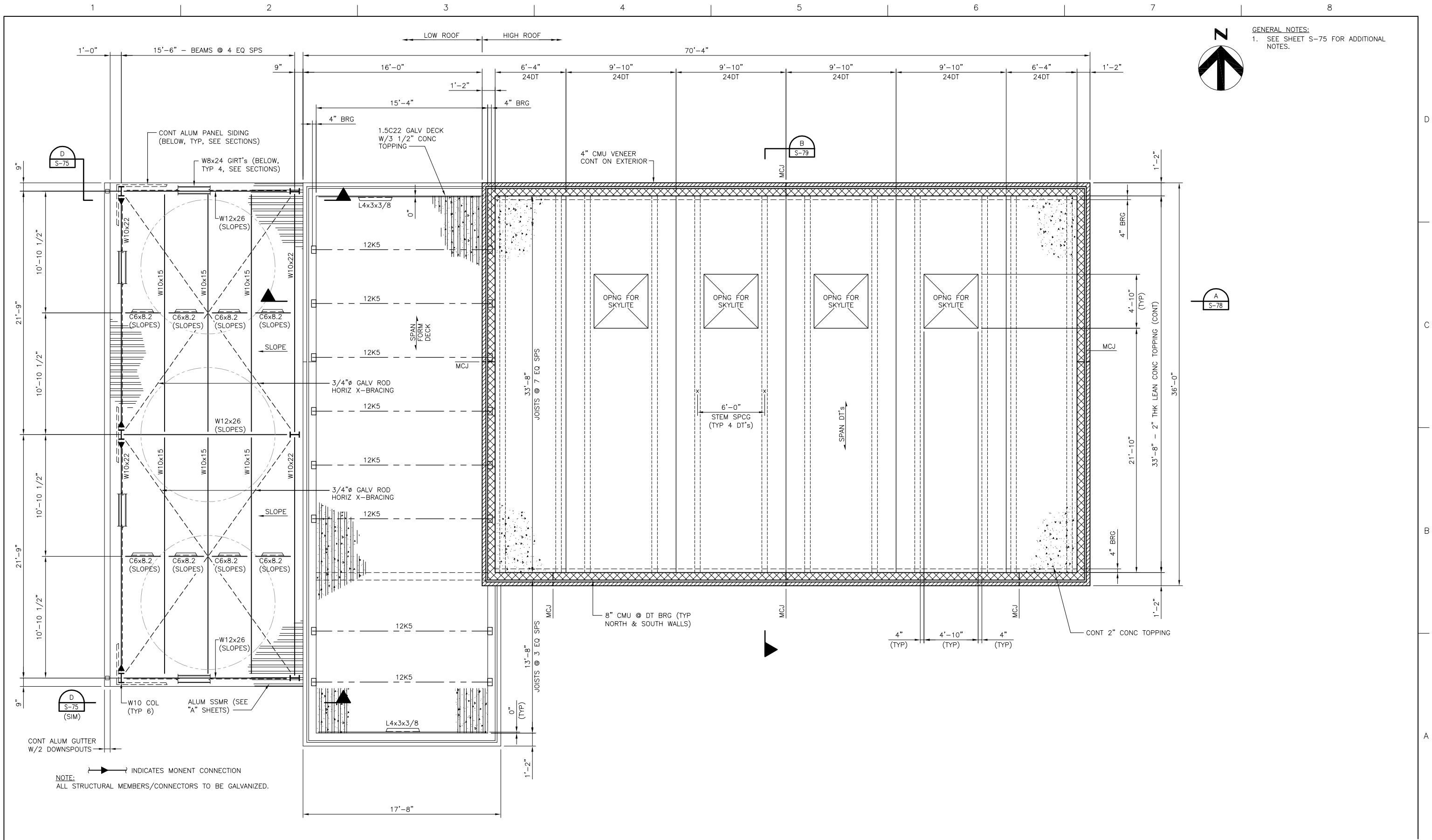
ALTERNATIVE 4A-1 LIGHT PHASE 2

REAERATION SYSTEM PLAN AND SECTION



FILENAME	M-275.dwg
SCALE	1/4" = 1'-0"

DRAWING NUMBER	SHEET OF -		
M-275			



GENERAL NOTES:
1. SEE SHEET S-75 FOR ADDITIONAL NOTES.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	09/09/2103	REVISED SIZE OF CANOPY
B	09/05/2013	ADDED ROOM ADDITION AND LEAN-TO ROOF
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

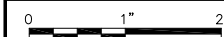
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. COOKSEY
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT PHASE 2

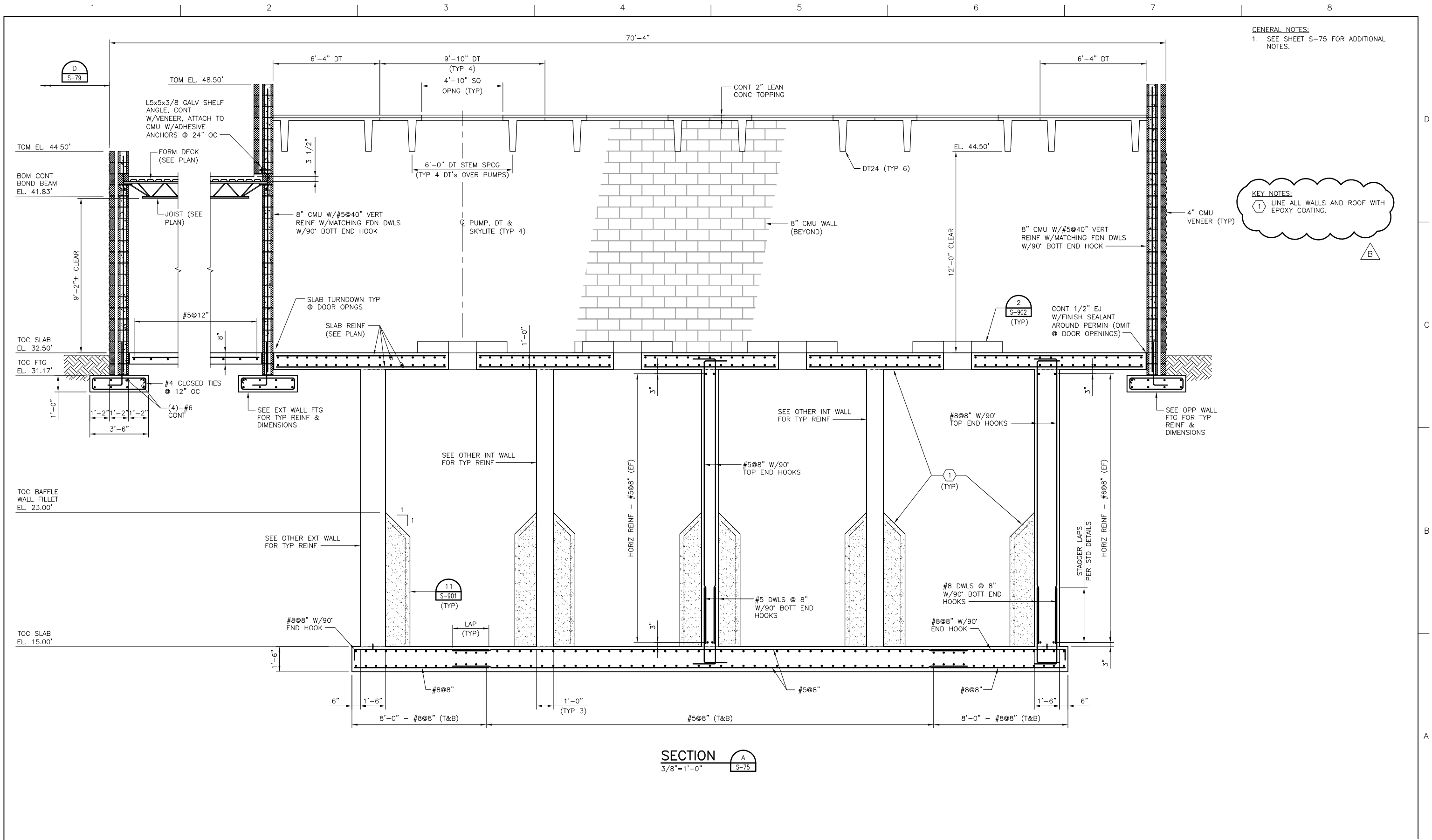
MBBR INFLUENT PUMP STATION AND SODIUM BISULFITE FACILITY ROOF PLAN



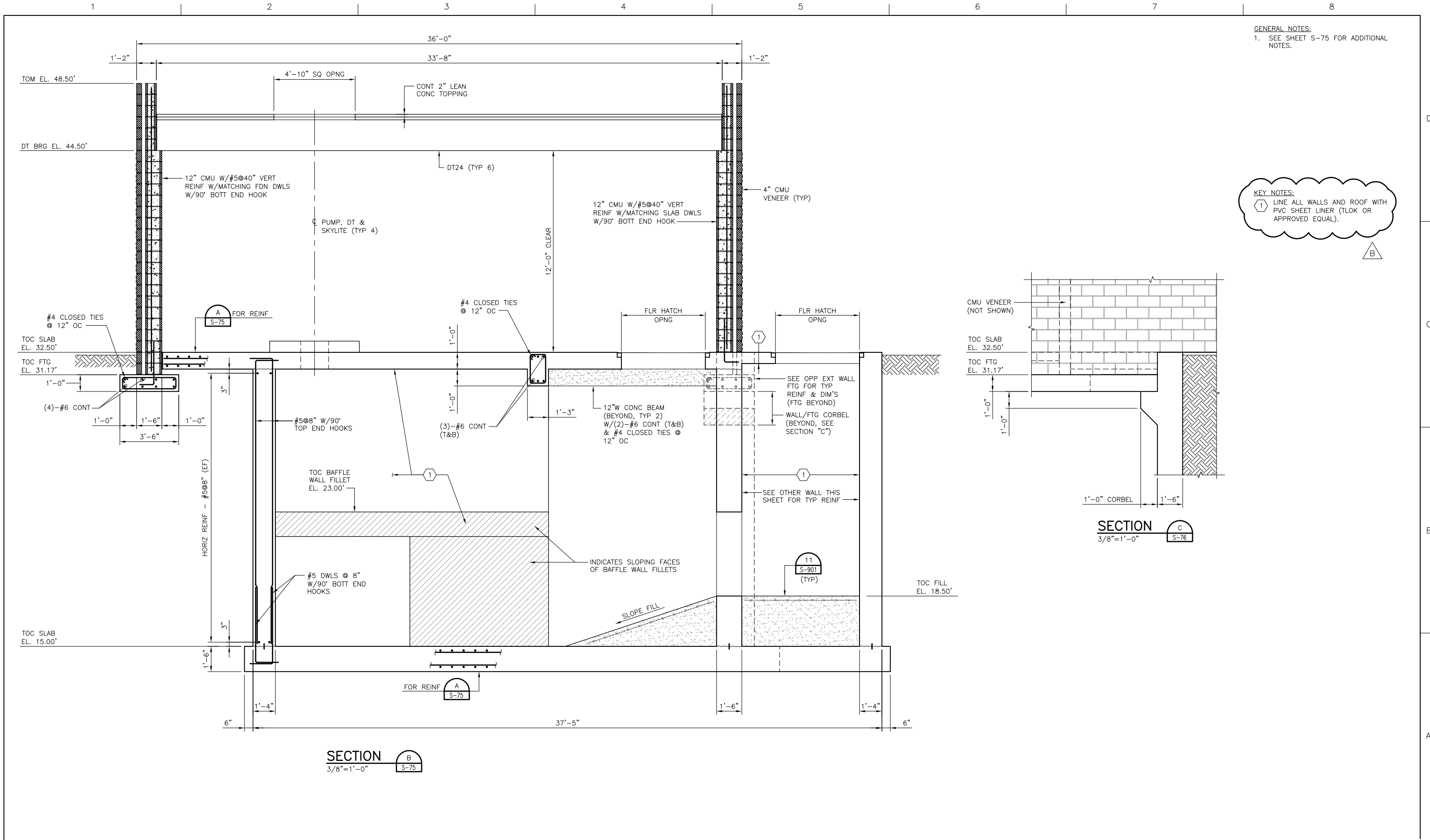
FILENAME S-77.dwg
SCALE 1/4"=1'-0"

DRAWING NUMBER
S-77

SHEET OF -

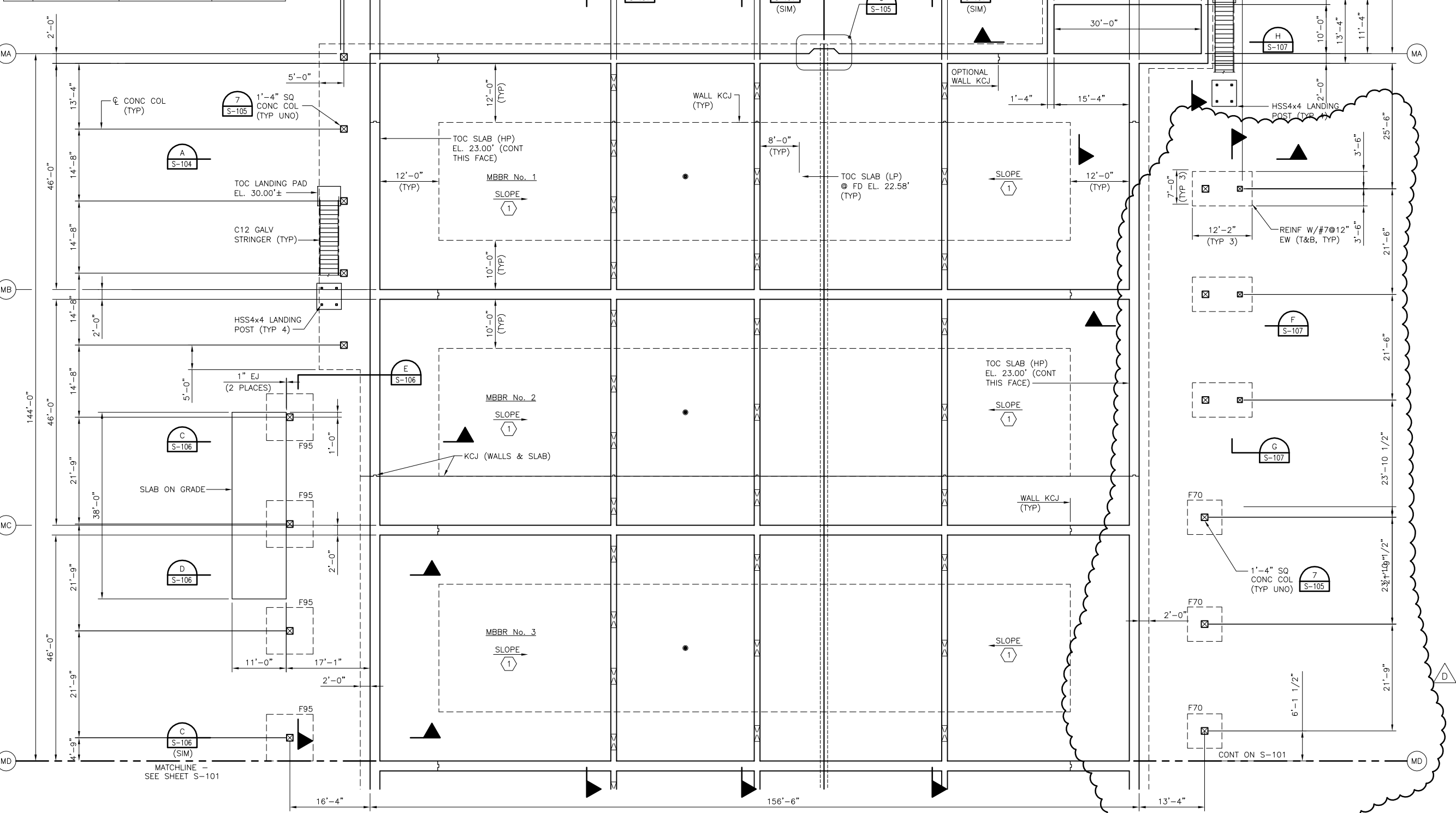


<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>			PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	MBBR INFLUENT PUMP STATION AND SODIUM BISULFITE FACILITY SECTION 1		
			DESIGNED BY: J. COOKSEY			<div><div>01"2"</div><div>0 1 2</div></div>	FILENAME S-78.dwg	DRAWING NUMBER
			DRAWN BY: W. MALACHIN				SCALE AS NOTED	S-78
			CHECKED BY: H. ANTSEL					SHEET OF -
	B	03/12/2014	PVC LINER DELETED					
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL					
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER				



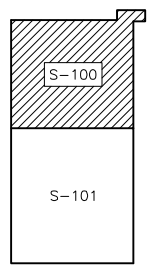
<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	MBBR INFLUENT PUMP STATION AND SODIUM BISULFITE FACILITY SECTIONS 2		
				DESIGNED BY: J. COOKSEY			<div><div>01"2"</div><div>0 1 2</div></div>	FILENAME S-79.dwg	DRAWING NUMBER S-79
				DRAWN BY: W. MALACHIN					
				CHECKED BY: H. ANTSEL					
	B	03/12/2014	PVC LINER DELETED				SCALE AS NOTED		SHEET OF -
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL						
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER					

FOOTING SCHEDULE			
MARK	SIZE	REINFORCING	TOC ELEVATION (UNO ON PLAN)
F70	7'-0"x7'-0"x24"	#5@12" EW (T&B)	(-)1'-6"
F95	9'-6"x9'-6"x24"	#5@12" EW (T&B)	(-)1'-6"



GENERAL NOTES:
1. SEE SHEET S-900 FOR GENERAL AND MATERIAL NOTES.

KEY NOTES:
1. SLOPE SLAB FOR DRAINAGE @ 0.5% SLOPE. MAINTAIN BOTTOM OF FOUNDATION SLAB AND BOTTOM OF REBAR CONSTANT (LEVEL). SLOPE TOP OF SLAB AND TOP REBAR MAT AS REQUIRED.



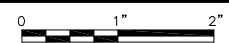
ISSUE	DATE	DESCRIPTION
D	03/12/2014	RELOCATED EFF BOX, RESPACED COL's AND MBBR TANK SIZE TO BE REVISED
C	09/19/2013	RELOCATED EFF BOX, RESPACED COL's
B	08/29/2013	REVISED TANK WALL THICKNESS, FDN SLAB ELEVATION & THICKNESS, ADDED STAIRS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M.E. MARTIN
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2

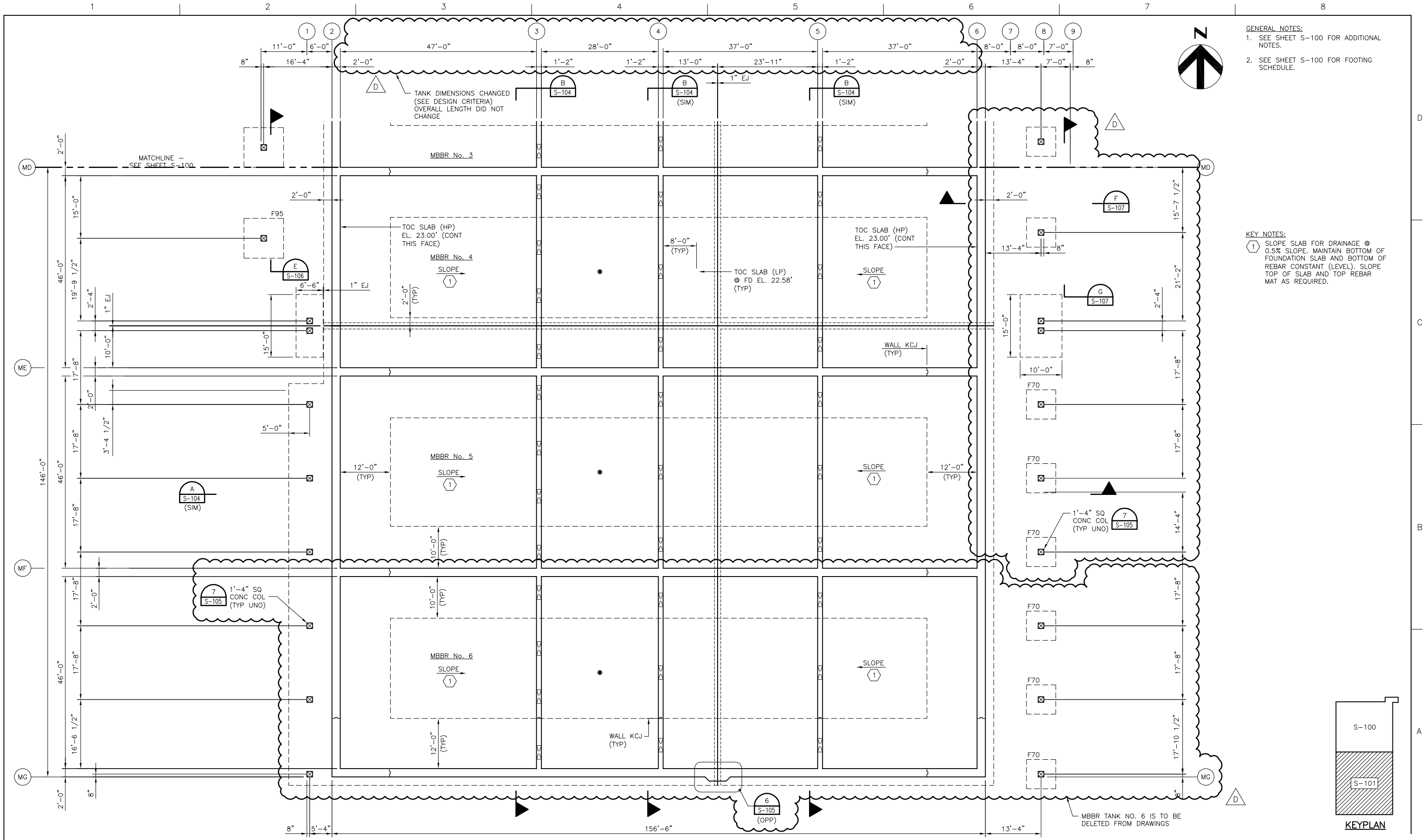
SEGREGATED MBBR SYSTEM FOUNDATION PLAN 1 OF 2



FILENAME	S-100.dwg
SCALE	3/32"=1'-0"

DRAWING NUMBER	S-100
----------------	-------

SHEET	OF	-
-------	----	---



GENERAL NOTES:
1. SEE SHEET S-100 FOR ADDITIONAL NOTES.
2. SEE SHEET S-100 FOR FOOTING SCHEDULE.

KEY NOTES:
1. SLOPE SLAB FOR DRAINAGE @ 0.5% SLOPE. MAINTAIN BOTTOM OF FOUNDATION SLAB AND BOTTOM OF REBAR CONSTANT (LEVEL). SLOPE TOP OF SLAB AND TOP REBAR MAT AS REQUIRED.

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

D	03/12/2014	RELOCATED EFF BOX, RESPACED COL'S. AND MBBR TANK SIZE TO BE REVISED
C	09/19/2013	RELOCATED EFF BOX, RESPACED COL'S
B	08/29/2013	REVISED TANK WALL THICKNESS, FDN SLAB ELEVATION & THICKNESS, ADDED STAIRS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

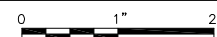
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M.E. MARTIN
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT PHASE 2

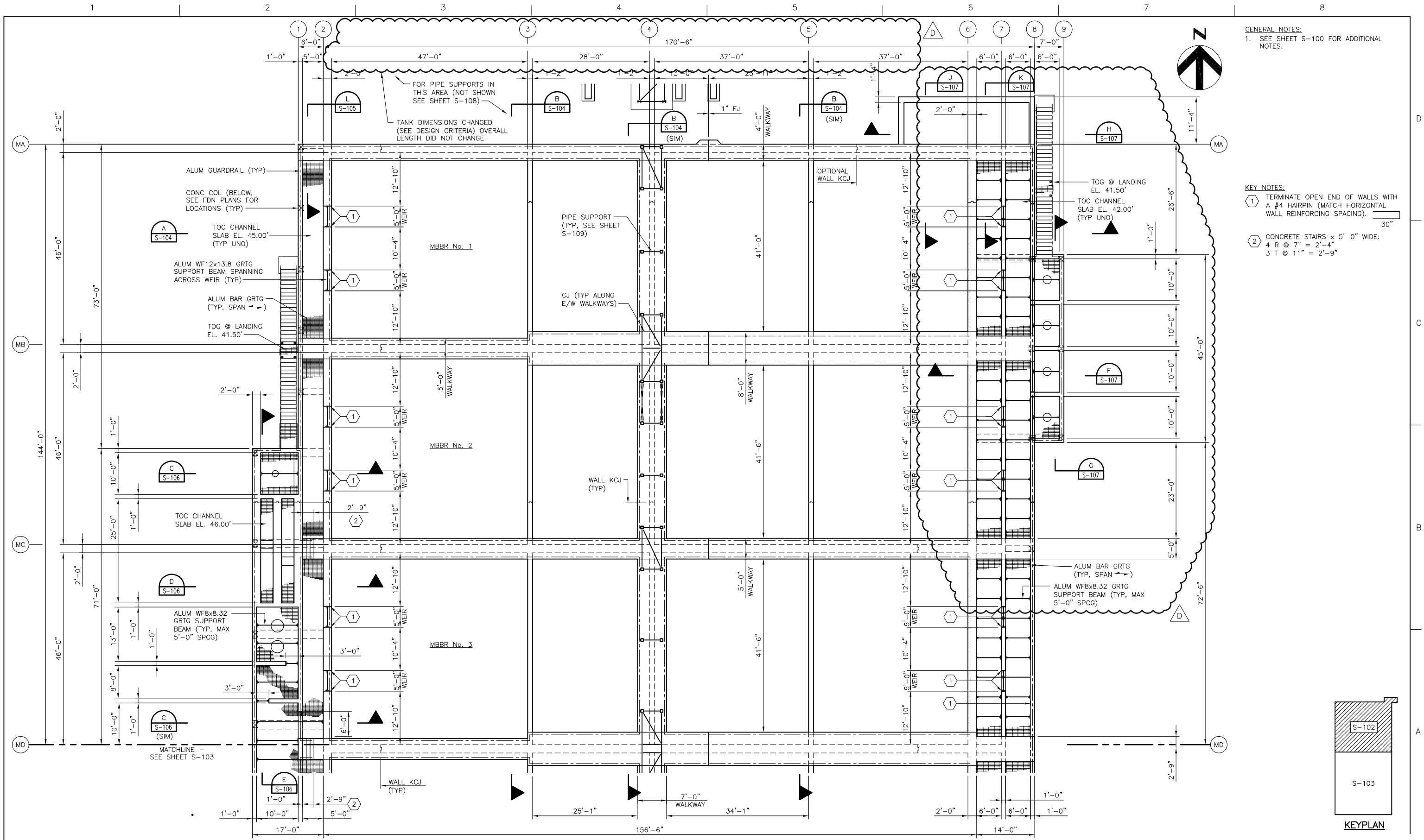
SEGREGATED MBBR SYSTEM FOUNDATION PLAN 2 OF 2



FILENAME S-101.dwg
SCALE 3/32"=1'-0"

DRAWING NUMBER
S-101

SHEET OF -



GENERAL NOTES:
1. SEE SHEET S-100 FOR ADDITIONAL NOTES.

KEY NOTES:
1. TERMINATE OPEN END OF WALLS WITH A #4 HAIRPIN (MATCH HORIZONTAL WALL REINFORCING SPACING). 30"
2. CONCRETE STAIRS x 5'-0" WIDE:
4 R @ 7" = 2'-4"
3 T @ 11" = 2'-9"

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

D	03/12/2014	RELOCATED EFF BOX, RESPACED COL'S. AND MBBR TANK SIZE TO BE REVISED
C	09/19/2013	RELOCATED EFF BOX, REVISED WALKWAY WIDTHS & WEIRS, ADDED PIPE SUPPORTS
B	08/29/2013	REVISED TANK WALL THICKNESS, ADDED STAIRS & GRG SUPPORT BEAMS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M.E. MARTIN
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY
ALTERNATIVE 4A-1 LIGHT
PHASE 2**

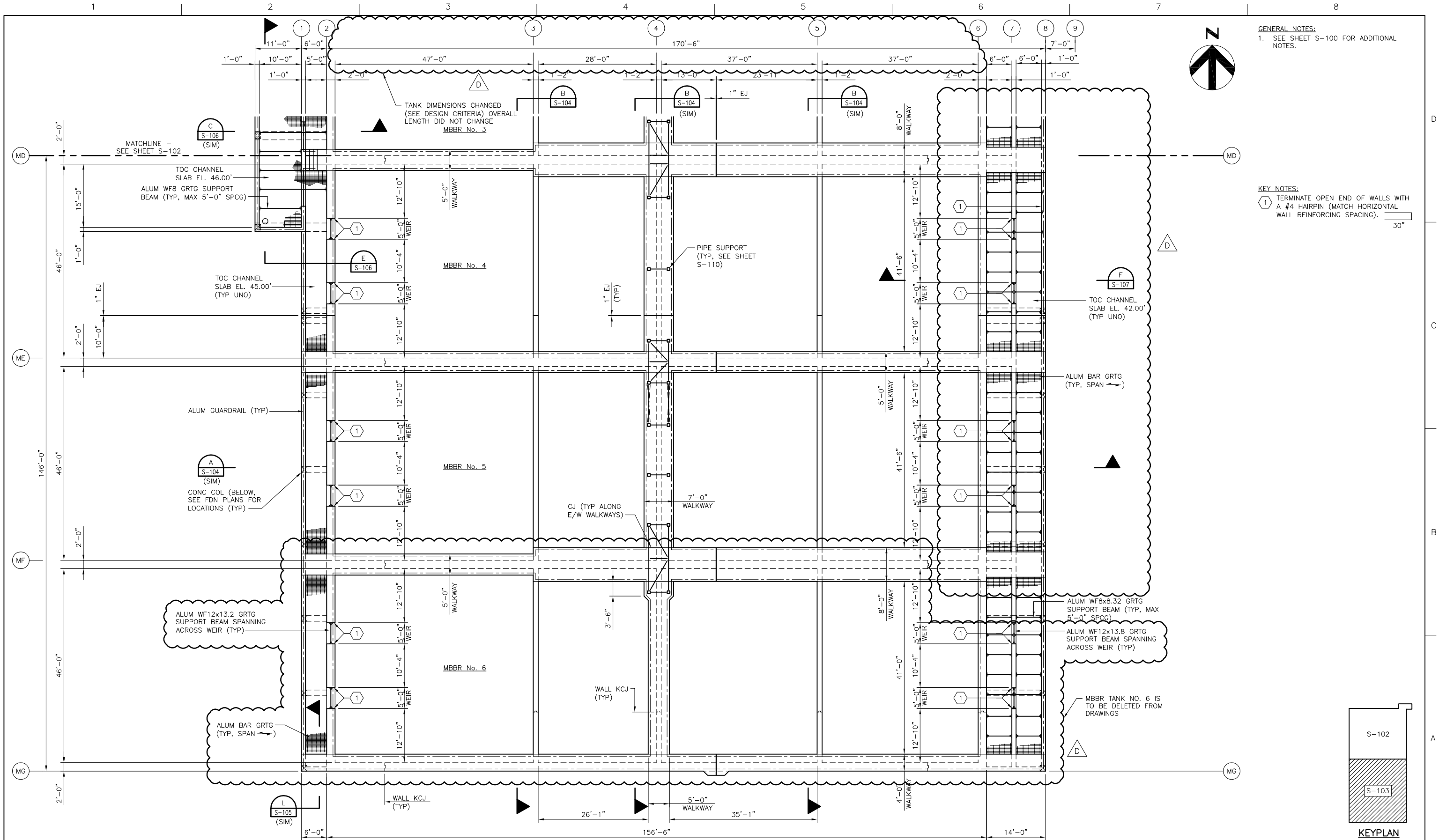
**SEGREGATED MBBR SYSTEM
UPPER PLAN 1 OF 2**



FILENAME S-102.dwg
SCALE 3/32"=1'-0"

DRAWING NUMBER
S-102

SHEET OF -



GENERAL NOTES:
1. SEE SHEET S-100 FOR ADDITIONAL NOTES.

KEY NOTES:
1. TERMINATE OPEN END OF WALLS WITH A #4 HAIRPIN (MATCH HORIZONTAL WALL REINFORCING SPACING).



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

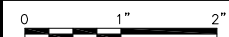
D	03/12/2014	RELOCATED EFF BOX, RESPACED COL'S. AND MBBR TANK SIZE TO BE REVISED
C	09/19/2013	RELOCATED EFF BOX, REVISED WALKWAY WIDTHS & WEIRS, ADDED PIPE SUPPORTS
B	08/29/2013	REVISED TANK WALL THICKNESS, ADDED STAIRS & GRG SUPPORT BEAMS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M.E. MARTIN
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2

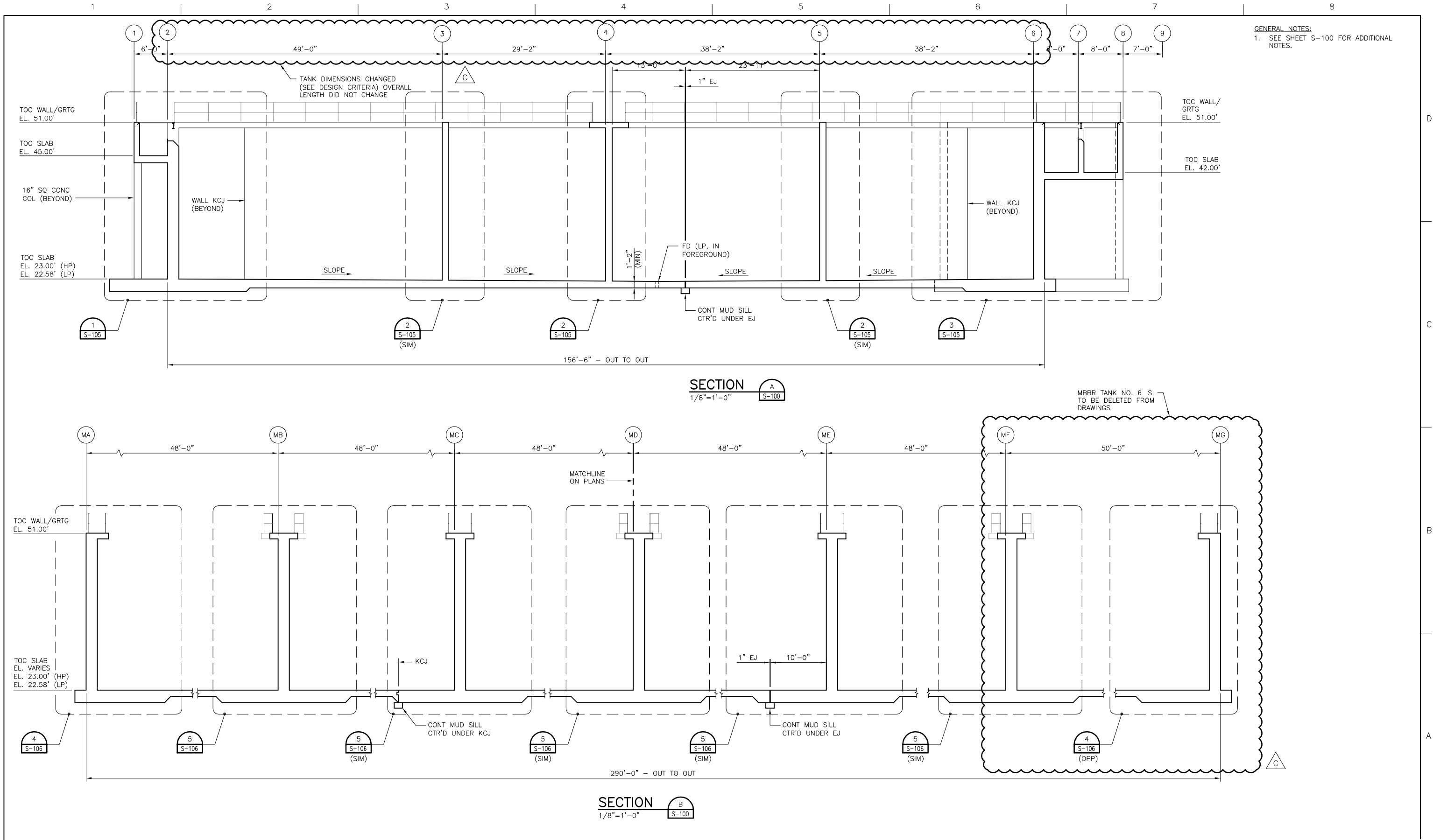
SEGREGATED MBBR SYSTEM UPPER PLAN 2 OF 2



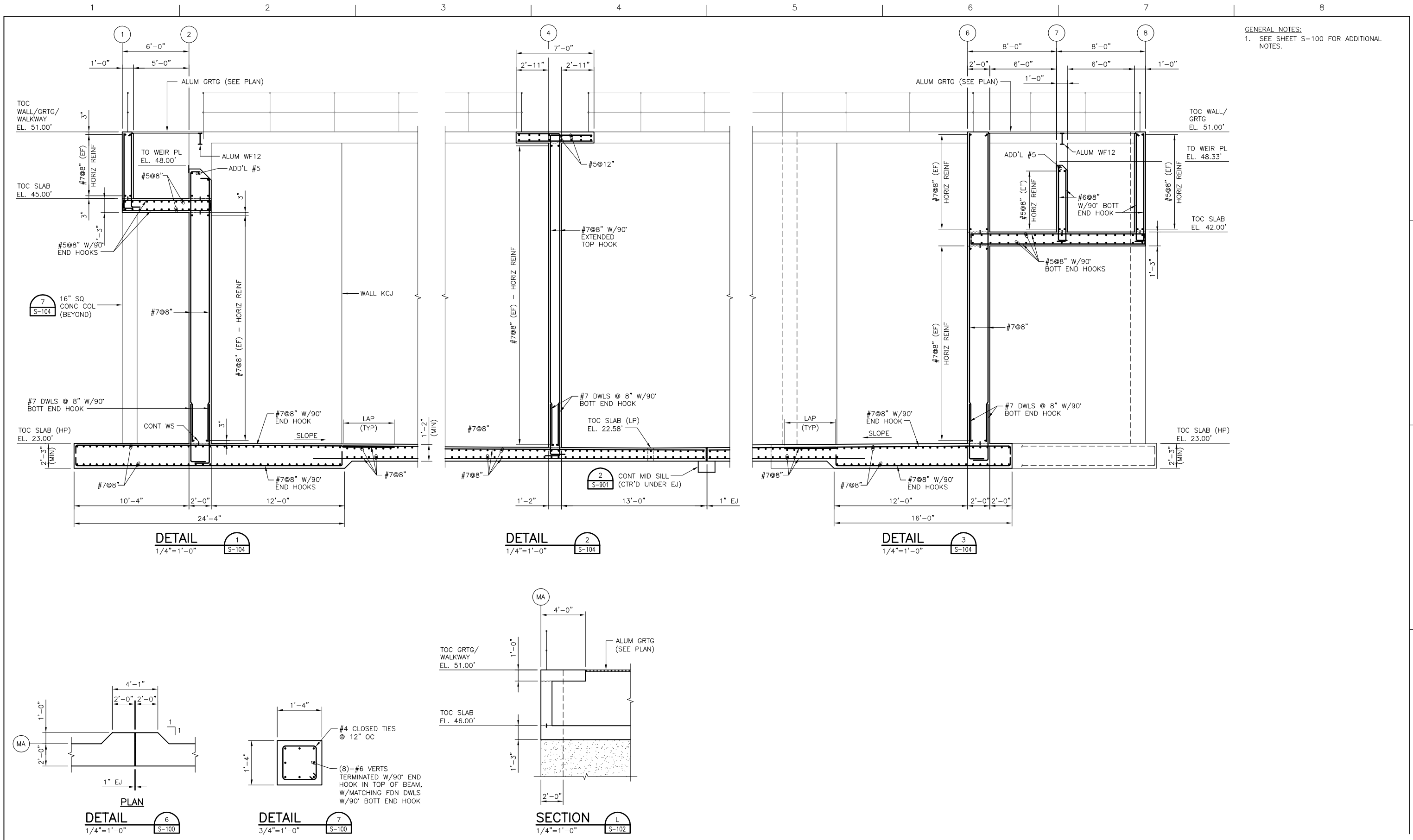
FILENAME	S-103.dwg
SCALE	3/32"=1'-0"

DRAWING NUMBER	S-103
----------------	-------

SHEET	OF	-
-------	----	---



 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SEGREGATED MBBR SYSTEM SECTIONS				FILENAME S-104.dwg	DRAWING NUMBER S-104	SHEET OF -
				DESIGNED BY: M.E. MARTIN									
				DRAWN BY: W. MALACHIN									
				CHECKED BY: H. ANTSEL									
	C	03/12/2014	MBBR TNK SIZE REV. & TANK TO BE DEL.										
	B	08/29/2013	REVISED ENTIRE SHEET TO MATCH PLANS										
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL										
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									



GENERAL NOTES:
1. SEE SHEET S-100 FOR ADDITIONAL NOTES.

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	08/29/2013	REVISED ENTIRE SHEET TO MATCH PLANS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M.E. MARTIN
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**
**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

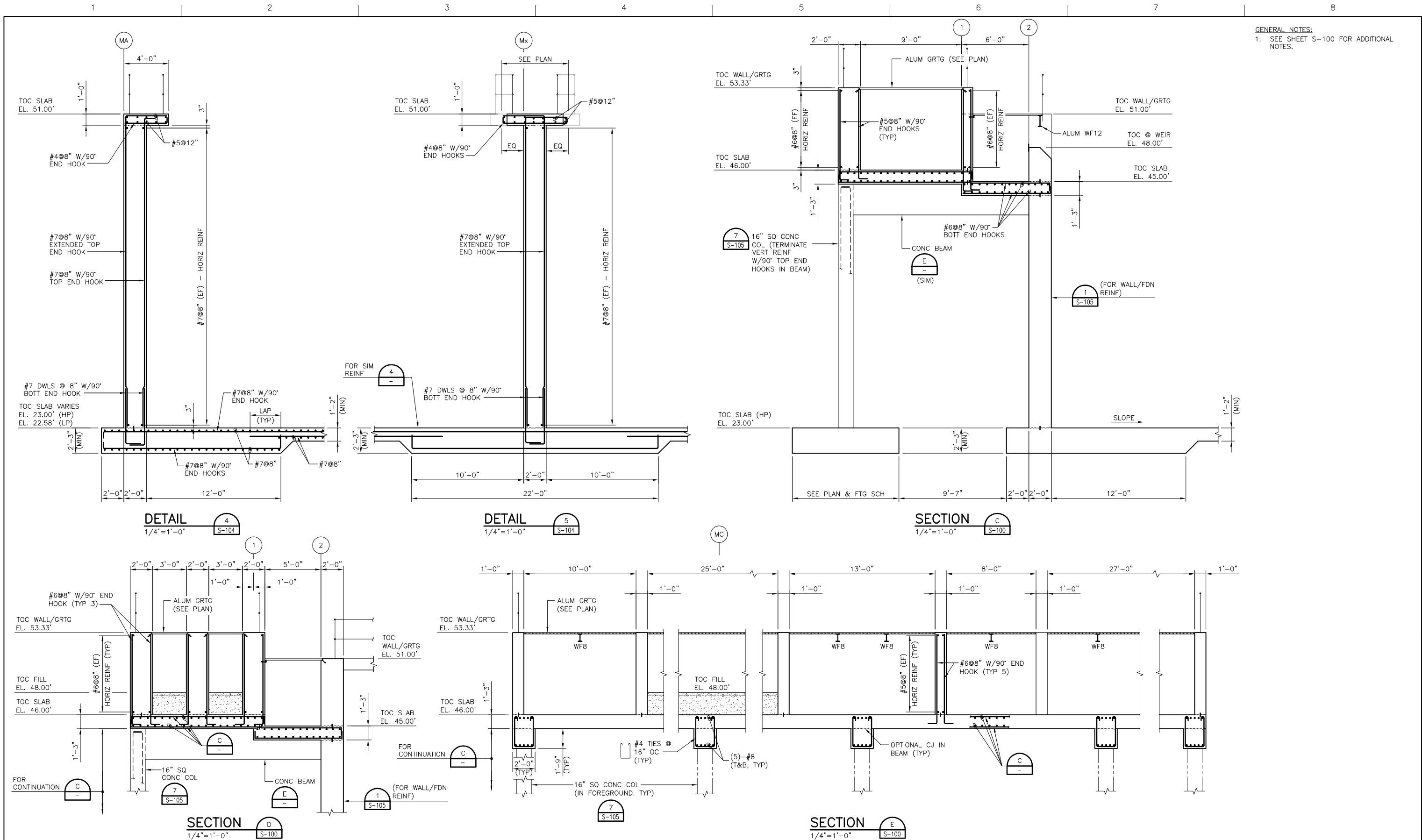
**SEGREGATED MBBR SYSTEM
DETAILS**

0 1" 2"

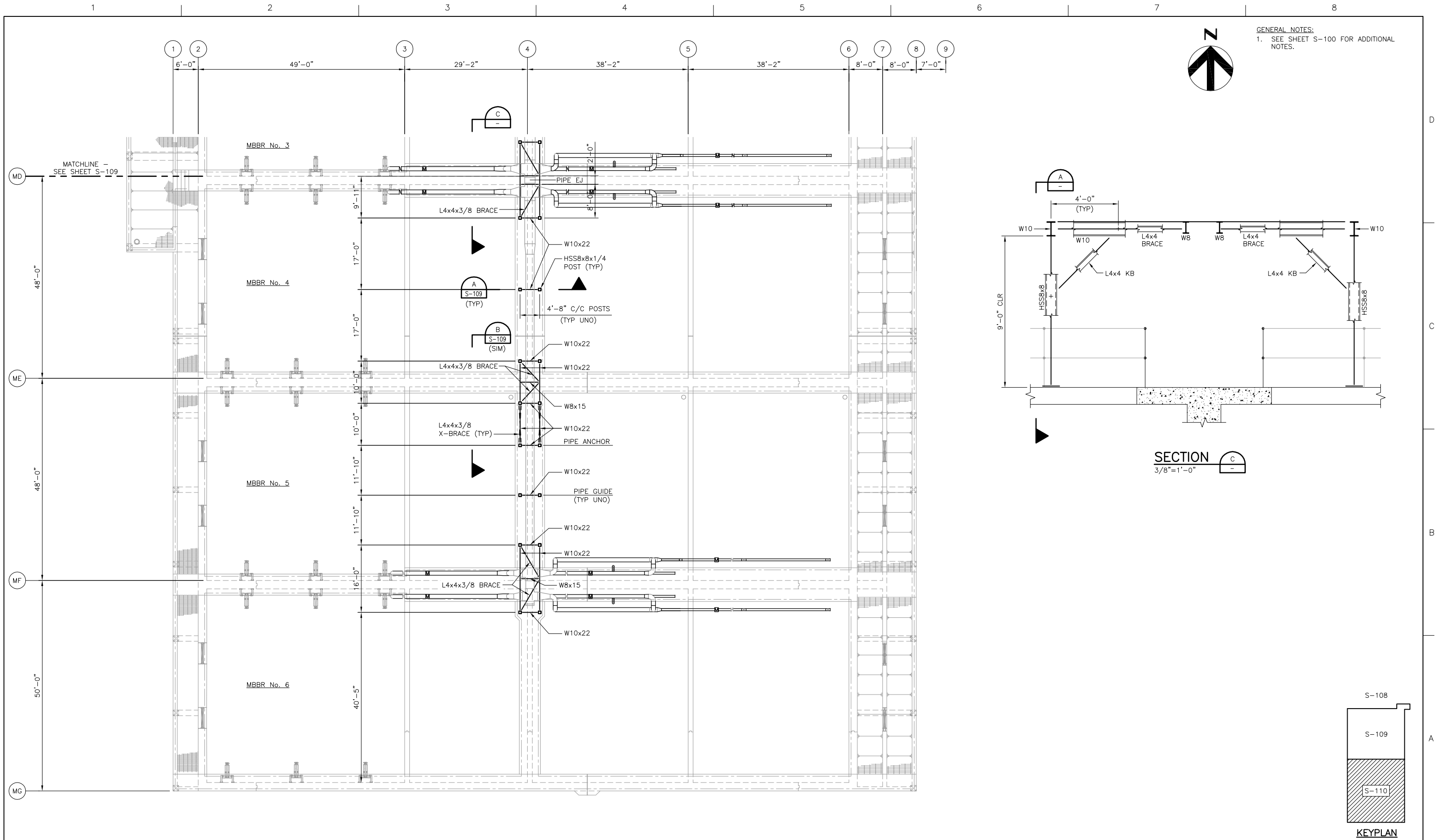
FILENAME S-105.dwg
SCALE AS NOTED



DRAWING NUMBER
S-105

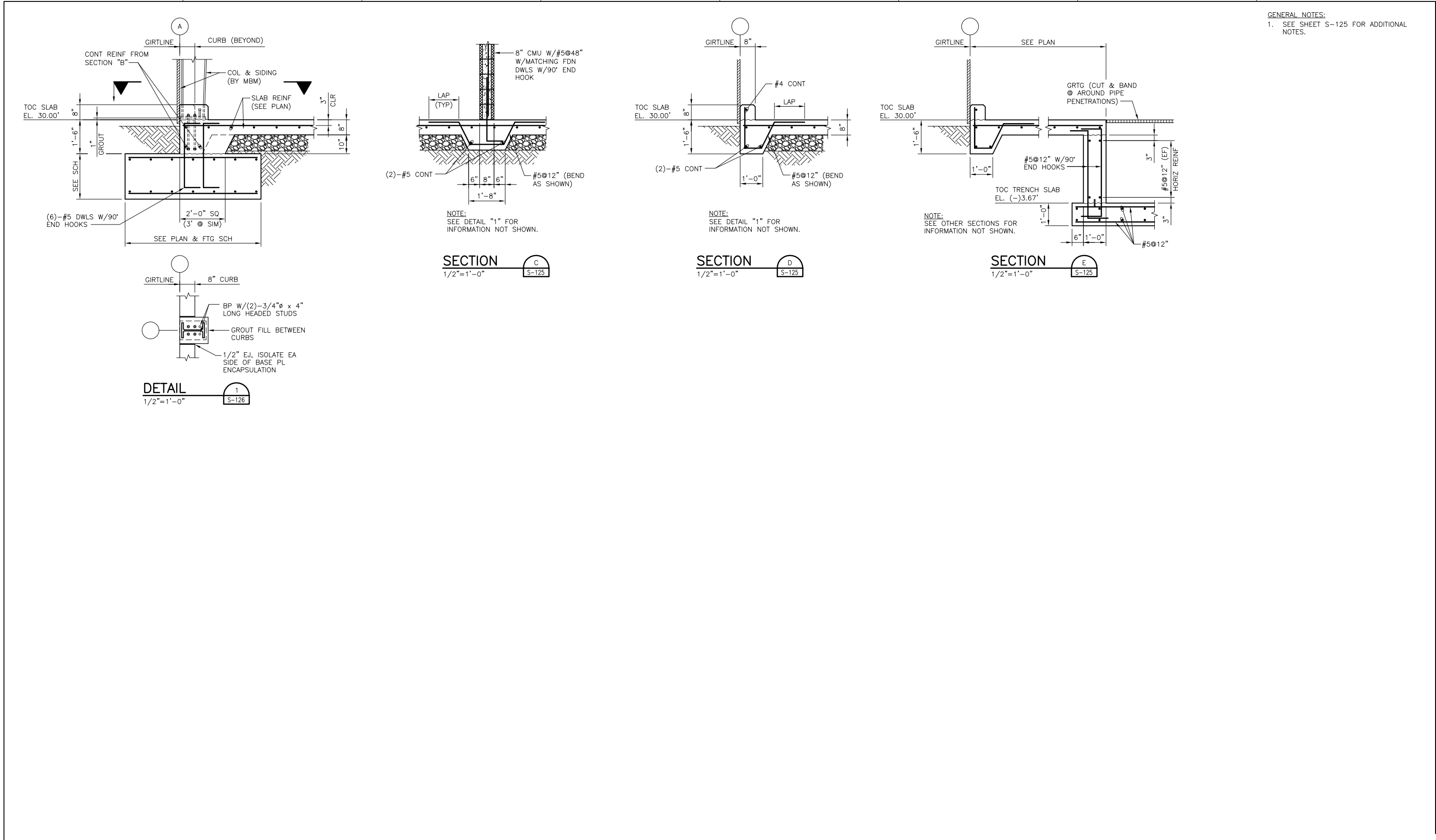
SHEET OF -



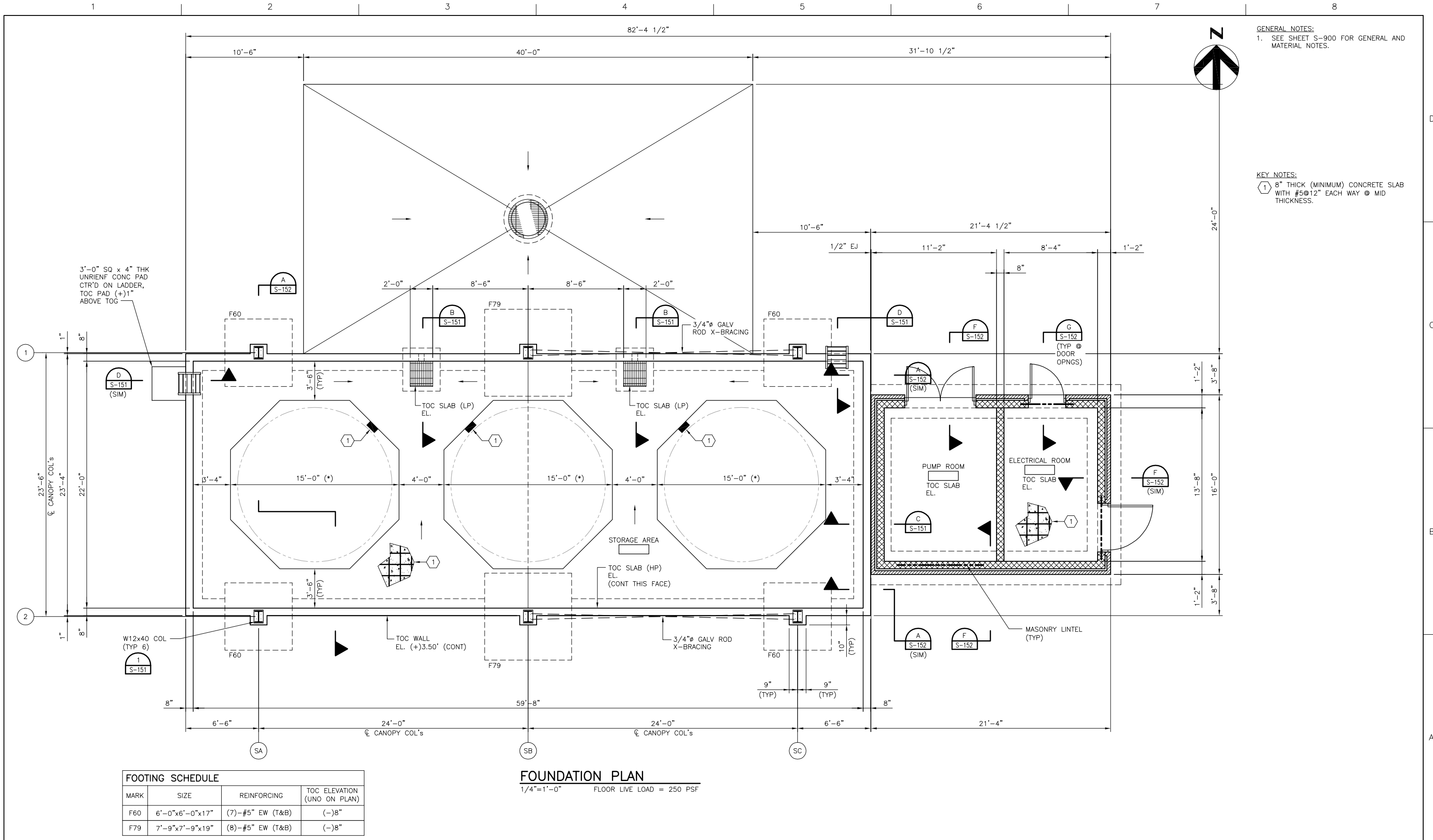
<div><div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div></div>				PROJECT MANAGER:	WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	<div>SEGREGATED MBBR SYSTEM SECTIONS & DETAILS</div>				
				DESIGNED BY:	M.E. MARTIN							
				DRAWN BY:	W. MALACHIN							
				CHECKED BY:	H. ANTSEL							
	C	09/19/2013	REVISED ELEVATION					<div><div><div>0</div><div>1"</div><div>2"</div></div><div></div></div>	FILENAME	S-106.dwg	DRAWING NUMBER	
	B	08/29/2013	REVISED ENTIRE SHEET TO MATCH PLANS						SCALE	AS NOTED	S-106	SHEET OF -
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL									
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER								



 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SEGREGATED MBBR SYSTEM PIPE SUPPORT PLAN 3 OF 3			
				DESIGNED BY: M.E. MARTIN				FILENAME: S-110.dwg	DRAWING NUMBER	SHEET OF -
				DRAWN BY: W. MALACHIN				SCALE: 3/32"=1'-0"	S-110	
				CHECKED BY: H. ANTSEL						
	B	09/2013	NEW SHEET							
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL							
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER						



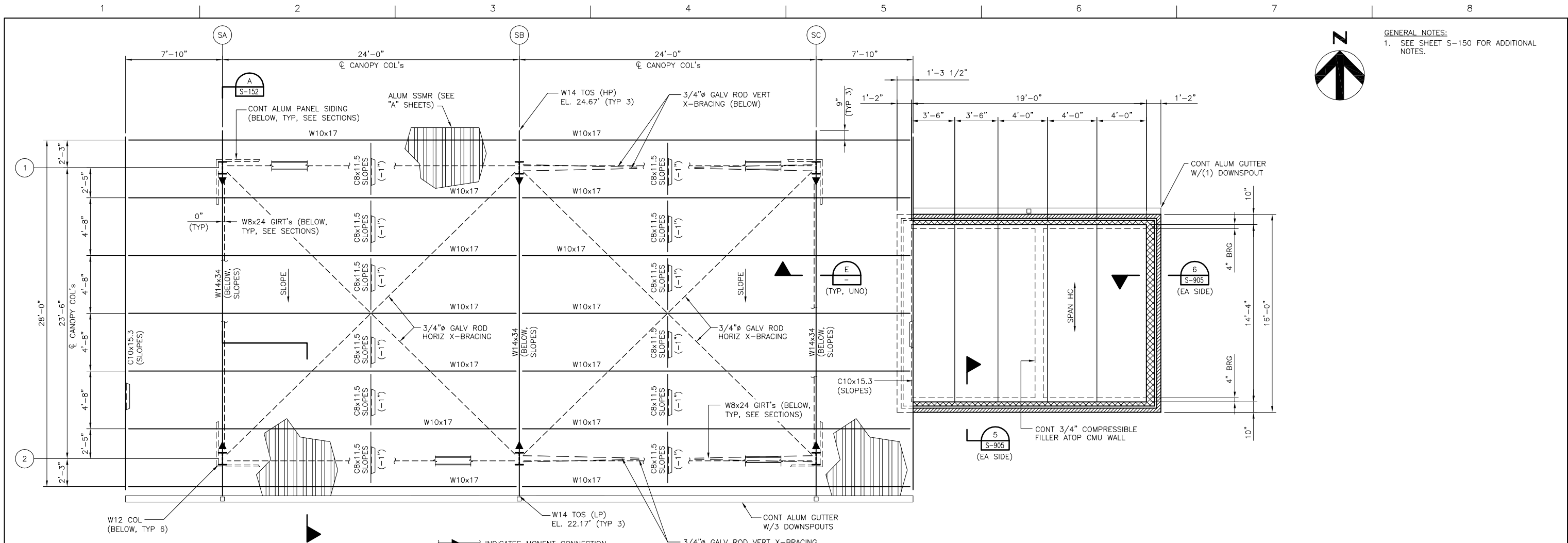
<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	DISSOLVED AIR FLOTATION BUILDING SECTIONS AND DETAILS			<div><div>012</div></div>	FILENAME S-127.dwg	DRAWING NUMBER S-127	SHEET OF -
				DESIGNED BY: M. TEPEDINO									
				DRAWN BY: W. MALACHIN									
				CHECKED BY: H. ANTSEL									
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL				SCALE AS NOTED						
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									



GENERAL NOTES:
1. SEE SHEET S-900 FOR GENERAL AND MATERIAL NOTES.

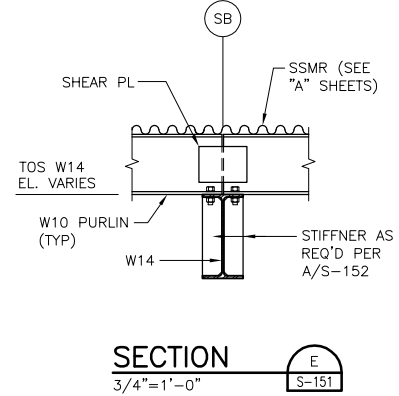
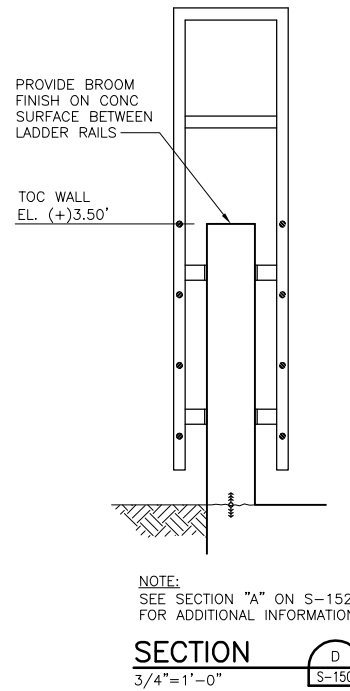
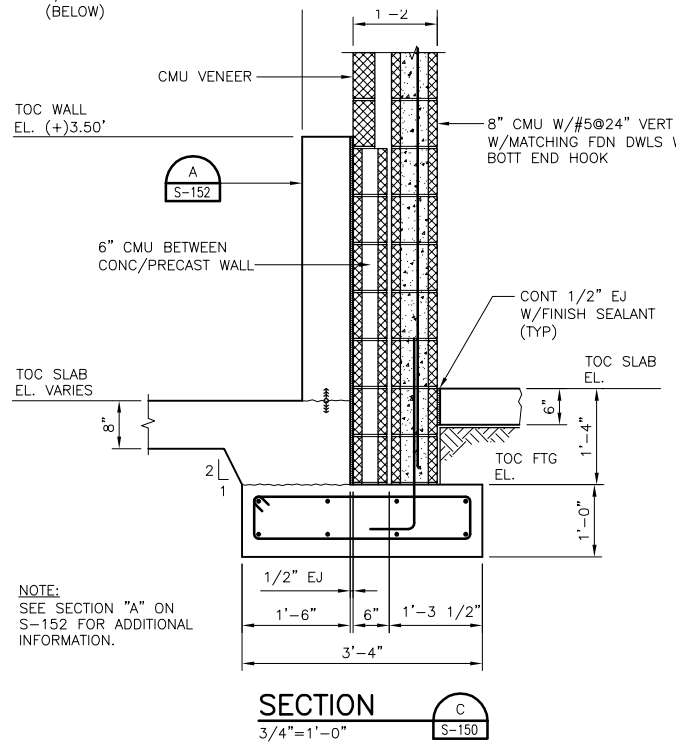
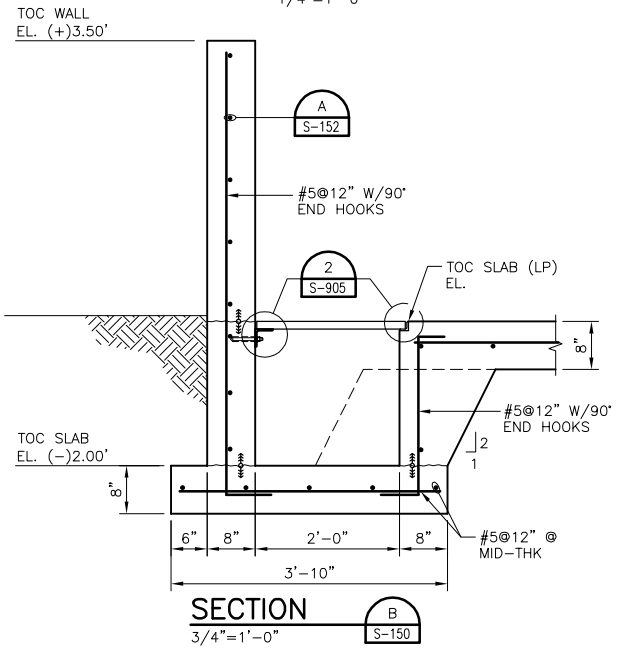
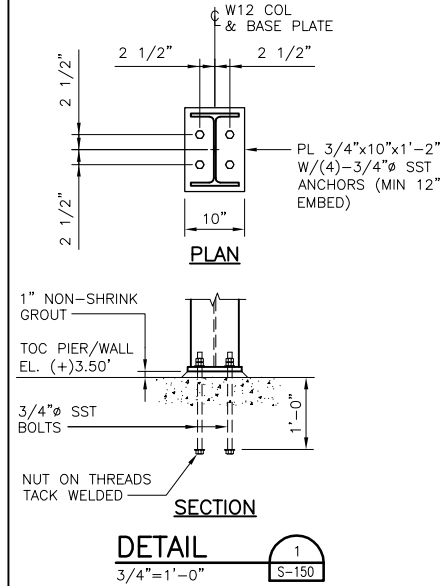
KEY NOTES:
1. 8" THICK (MINIMUM) CONCRETE SLAB WITH #5@12" EACH WAY @ MID THICKNESS.

 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SODIUM HYDROXIDE FACILITY FOUNDATION PLAN		
				DESIGNED BY: M.E. MARTIN					
				DRAWN BY: W. MALACHIN			FILENAME: S-150.dwg	DRAWING NUMBER: S-150	SHEET OF -
				CHECKED BY: H. ANTSEL			SCALE: AS NOTED		
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	PROJECT NUMBER:					
	ISSUE	DATE	DESCRIPTION						

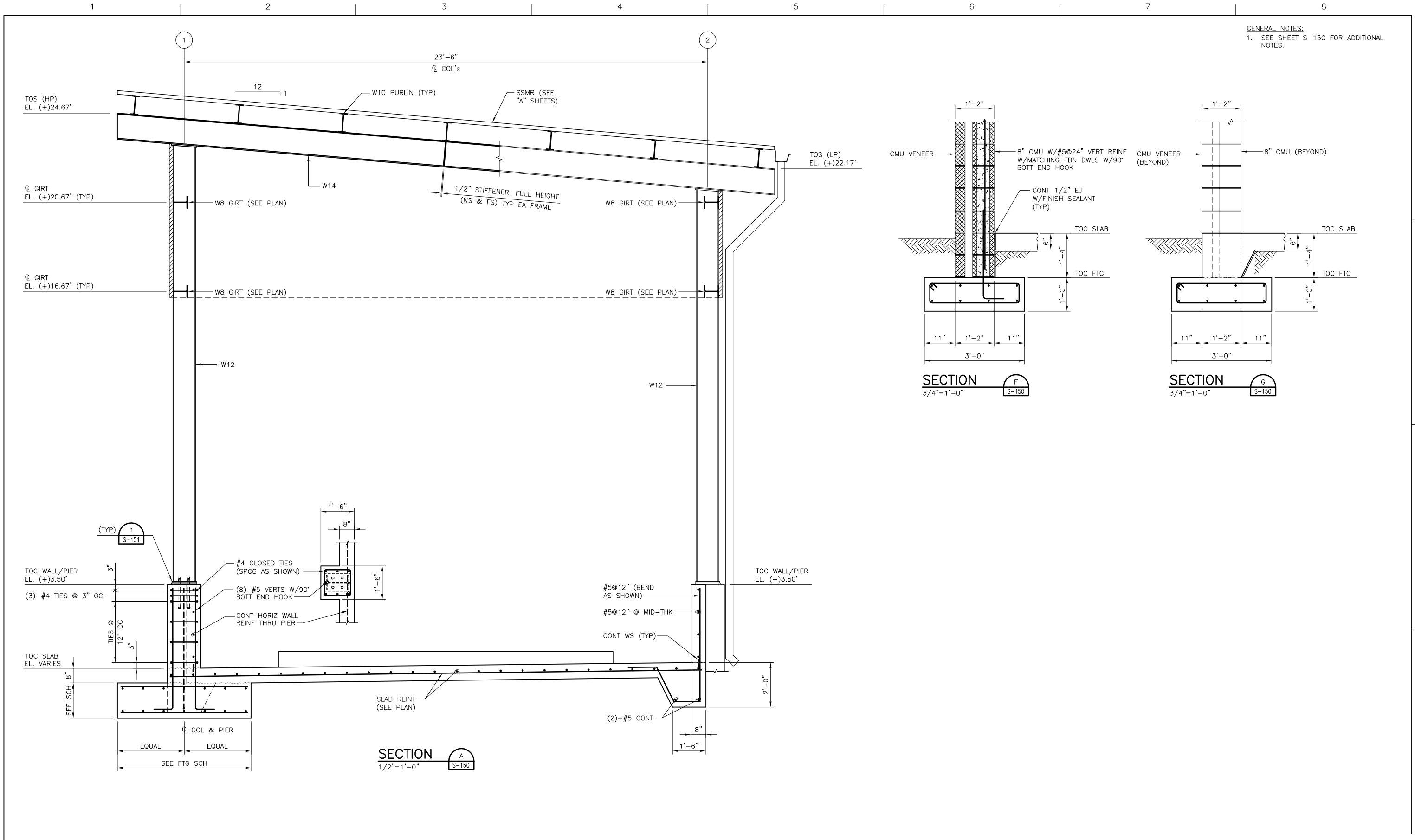


GENERAL NOTES:
1. SEE SHEET S-150 FOR ADDITIONAL NOTES.

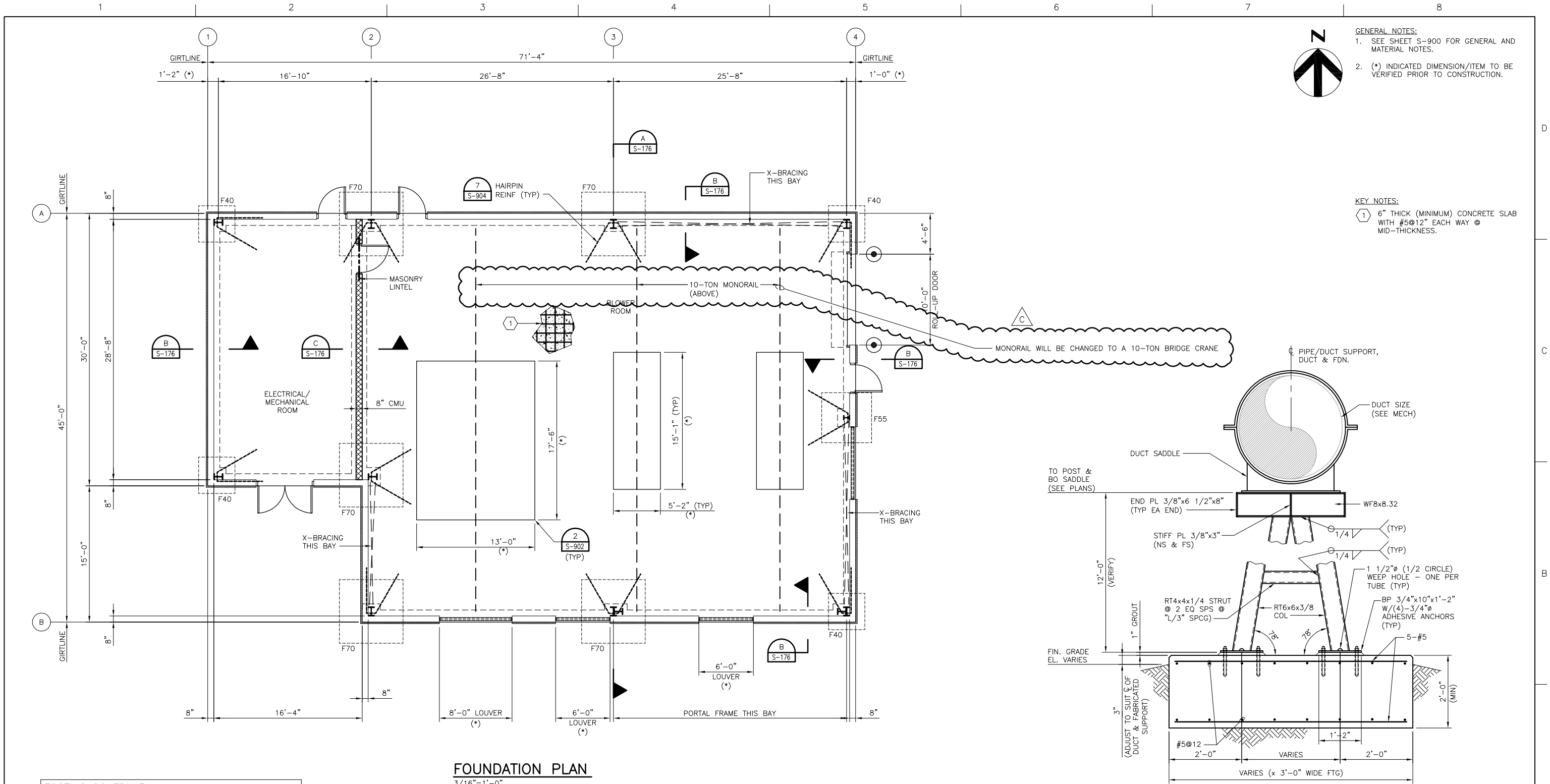
INDICATES MOMENT CONNECTION
ALL STRUCTURAL MEMBERS/CONNECTORS TO BE GALVANIZED.
CANOPY & ROOF FRAMING PLAN
1/4"=1'-0"

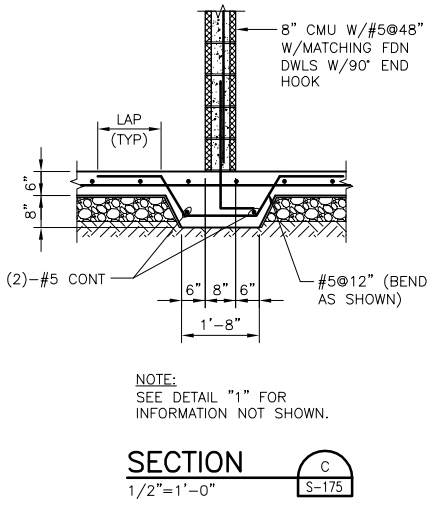
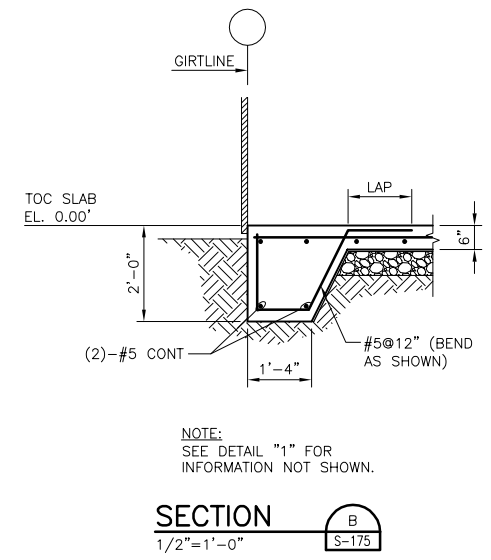
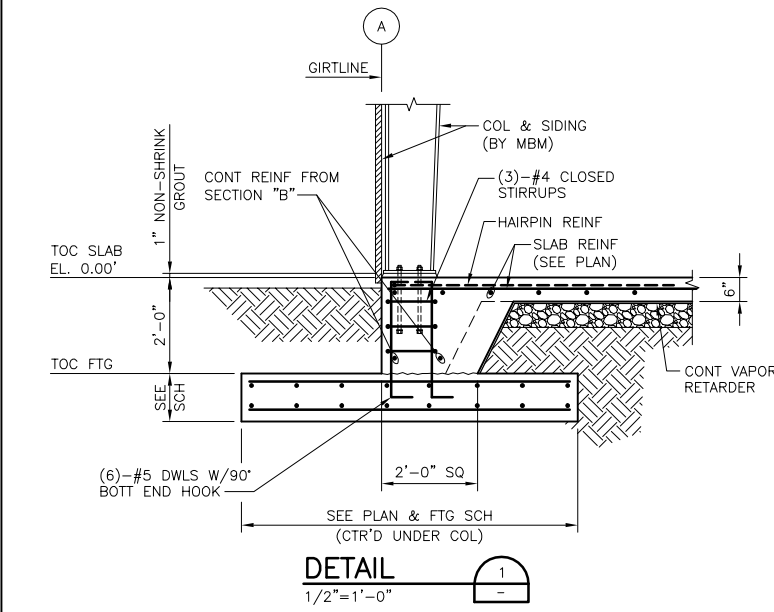
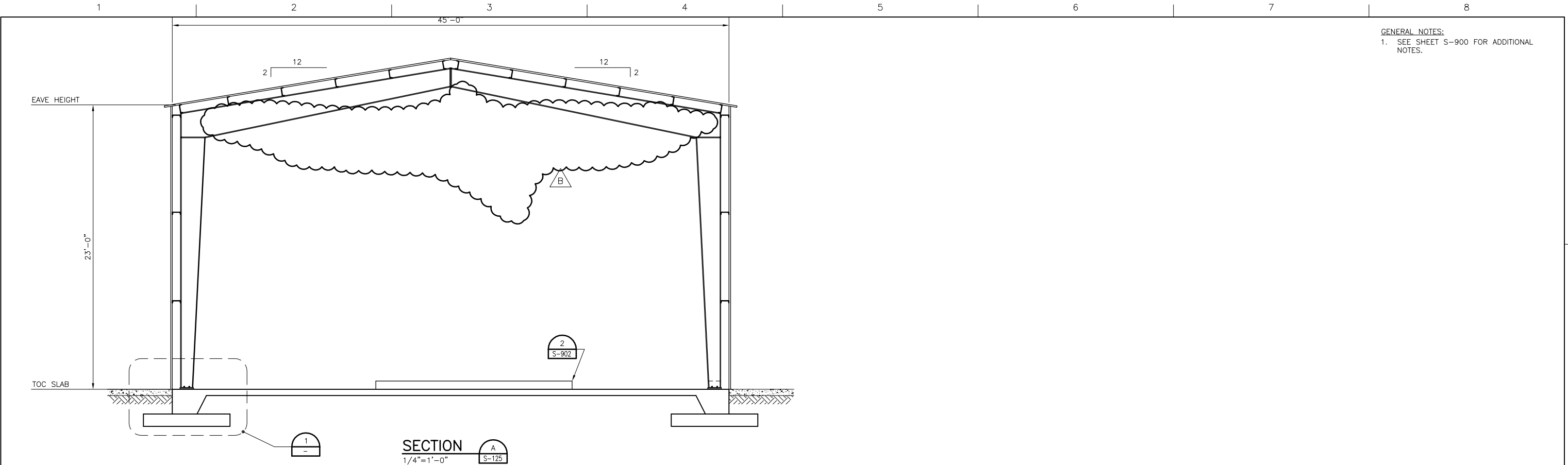



<div><div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div></div>				PROJECT MANAGER:	WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	<div>SODIUM HYDROXIDE FACILITY CANOPY PLAN, SECTIONS & DETAILS</div>			
				DESIGNED BY:	M.E. MARTIN						
				DRAWN BY:	W. MALACHIN						
				CHECKED BY:	H. ANTSEL						
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL						<div><div><div>012</div></div><div>FILENAME S-151.dwg</div></div> <div><div>DRAWING NUMBER</div><div>S-151</div></div> <div>SHEET OF -</div>			
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER								

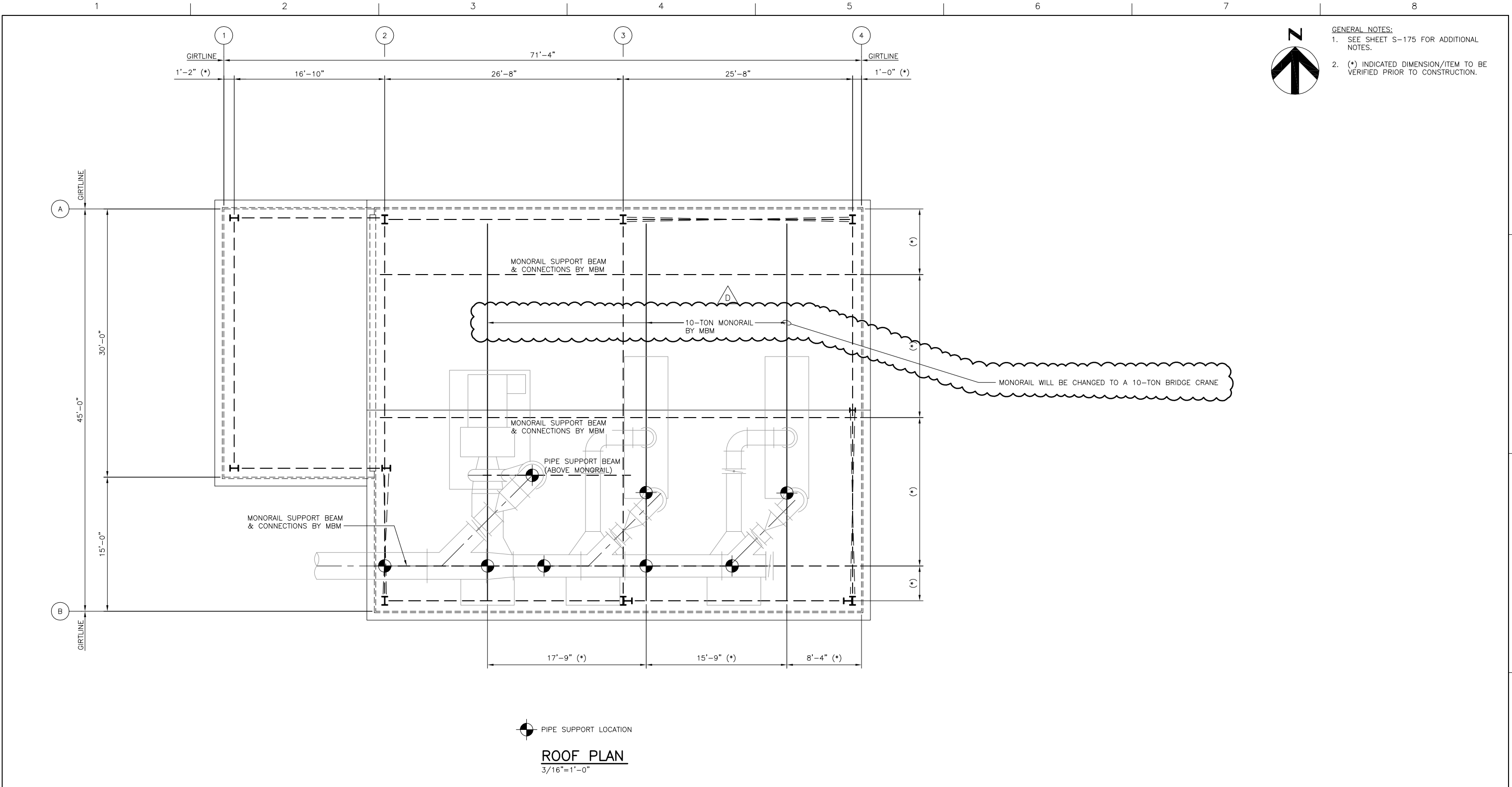


<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY	SODIUM HYDROXIDE FACILITY SECTIONS							
				DESIGNED BY: M.E. MARTIN										
				DRAWN BY: W. MALACHIN										
				CHECKED BY: H. ANTSEL										
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL			ALTERNATIVE 4A-1 LIGHT PHASE 2	<div><div>0</div><div>1"</div><div>2"</div></div>	FILENAME	S-152.dwg	DRAWING NUMBER		SHEET	OF	-
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER					SCALE	AS NOTED	S-152				

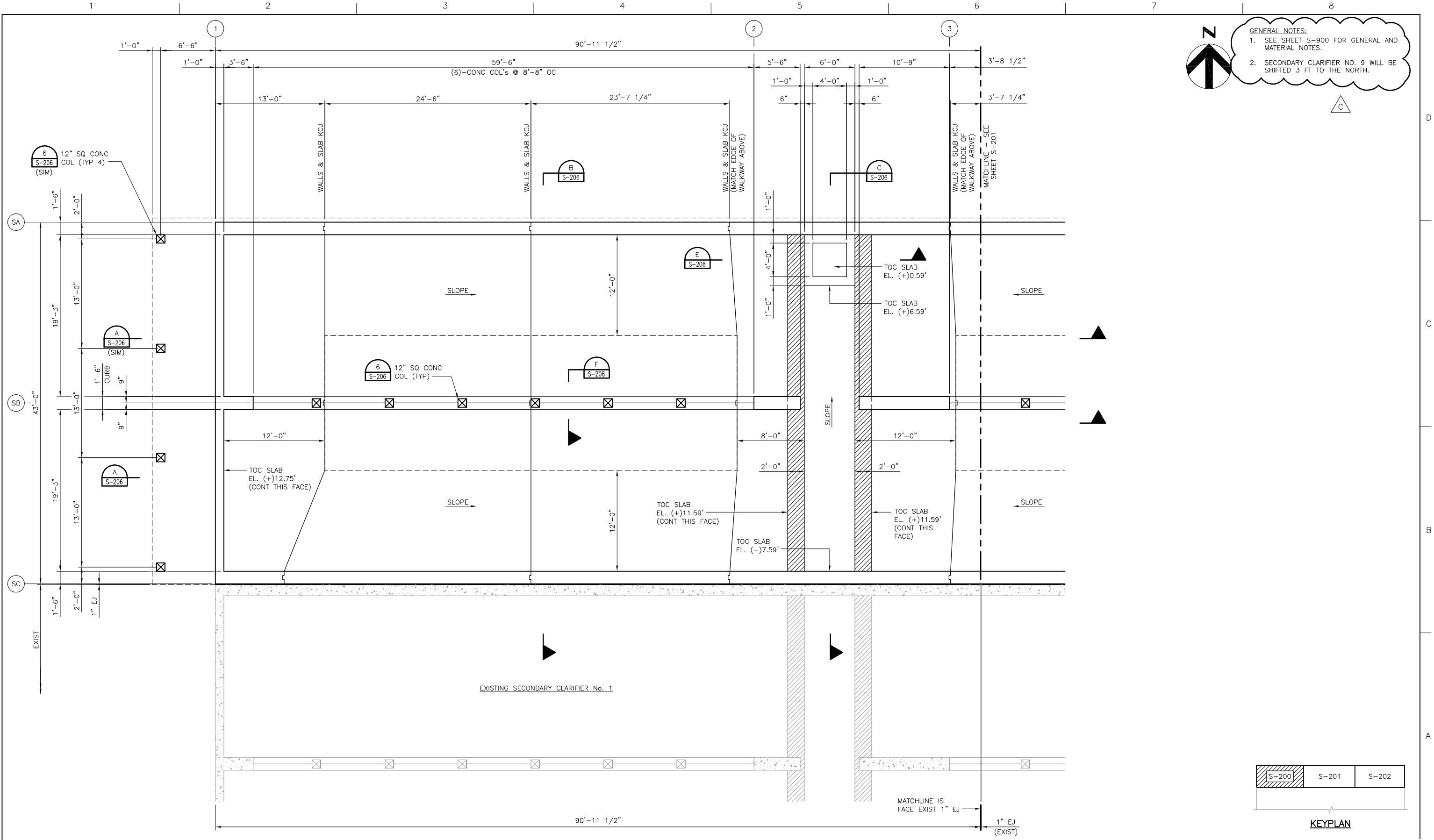




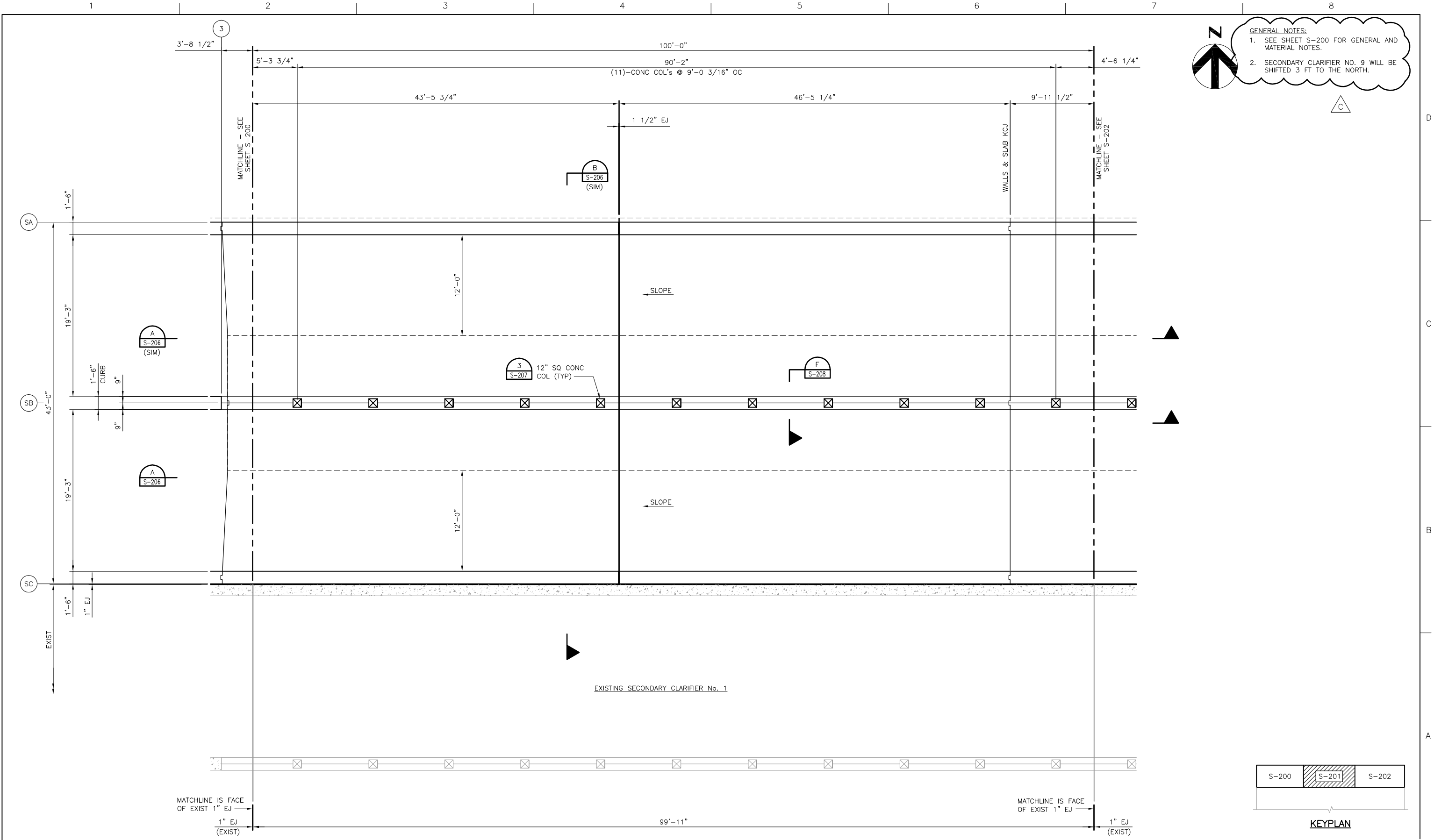
<div></div> <div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div>				PROJECT MANAGER: WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	<div>BLOWER BUILDING SECTIONS & DETAILS</div> <div><div><div><div>0</div><div>1"</div><div>2"</div></div></div><div><div>FILENAME</div><div>S-176.dwg</div></div><div><div>SCALE</div><div>AS NOTED</div></div><div><div>DRAWING NUMBER</div><div>S-176</div></div><div><div>SHEET</div><div>OF</div><div>-</div></div></div>			
				DESIGNED BY: J. COOKSEY						
				DRAWN BY: W. MALACHIN						
				CHECKED BY: H. ANTSEL						
										</



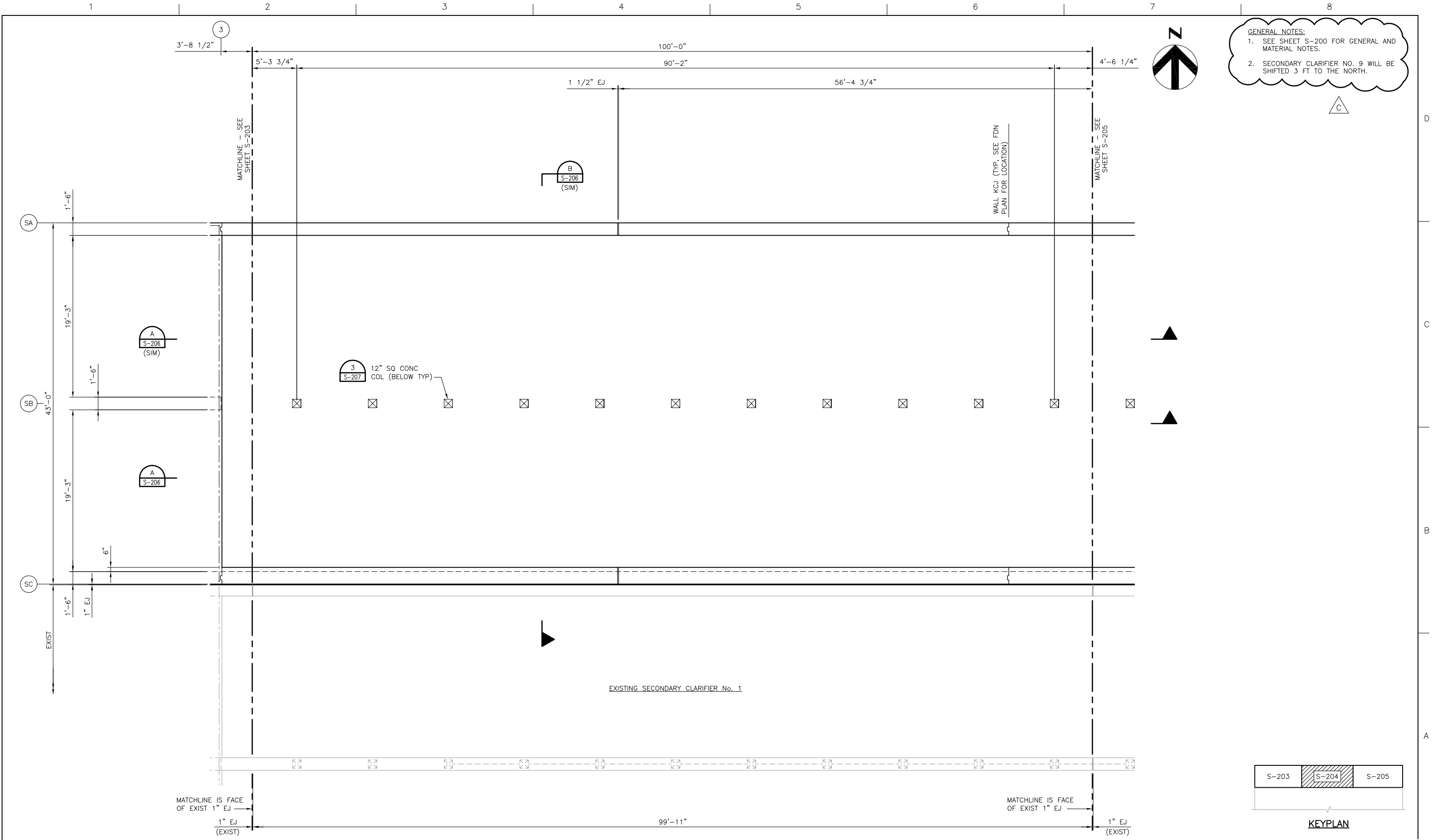
<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	BLOWER BUILDING ROOF PLAN			<div><div>012</div></div>	FILENAME S-177.dwg	DRAWING NUMBER S-177	SHEET OF -
				DESIGNED BY: J. COOKSEY									
				DRAWN BY: W. MALACHIN									
				CHECKED BY: H. ANTSEL									
	D	03/12/2014	MONORAIL DELETED										
	C	09/17/2013	BLOWER BUILDING PIPE SUPPORT										
	B	09/13/2013	BLOWER BUILDING REVISED										
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									



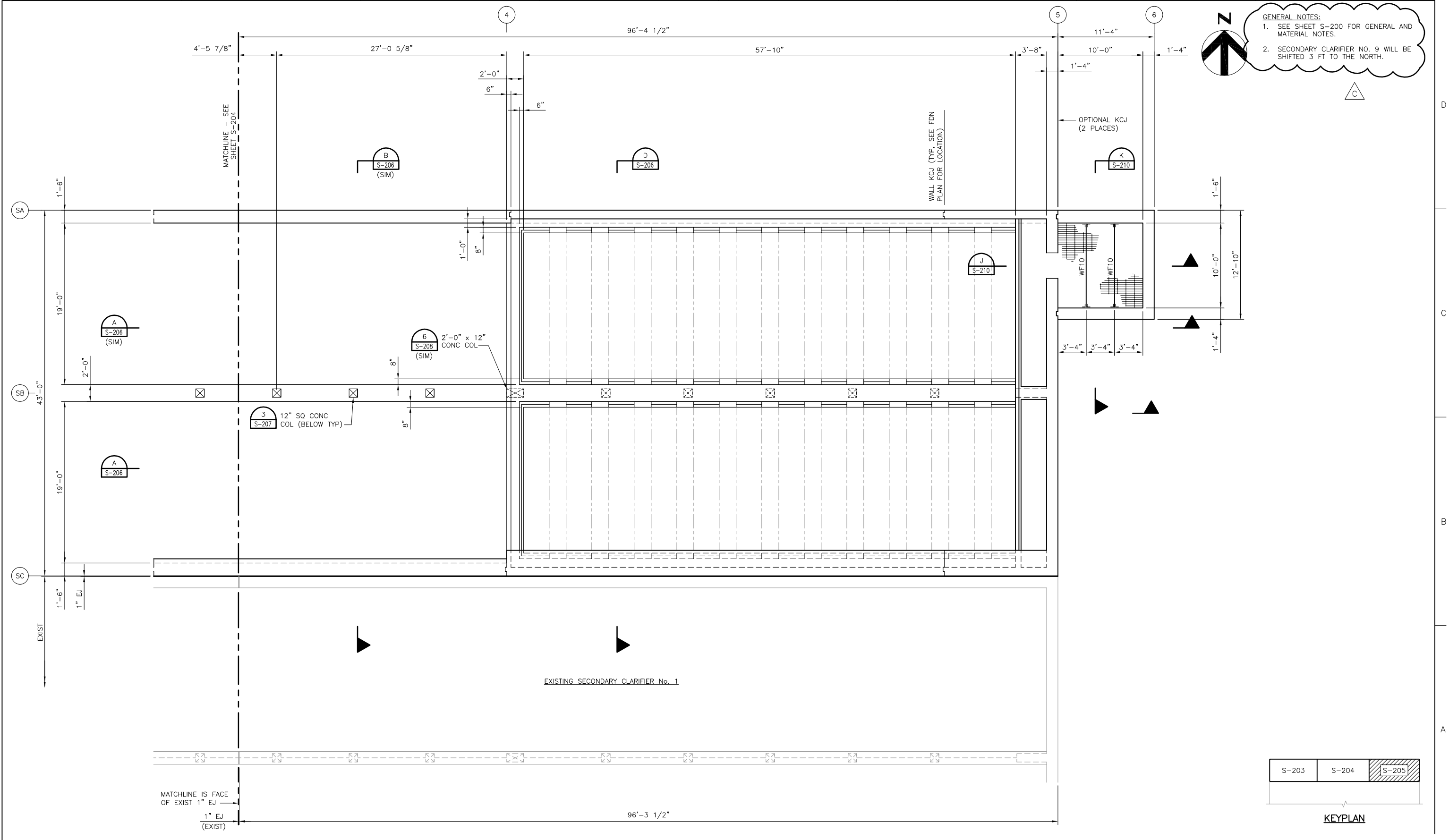
<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	<div>SECONDARY CLARIFIER No. 9 FOUNDATION PLAN 1 OF 3</div> <div><div>01"2"</div><div>FILENAME S-200.dwg</div><div>SCALE 3/16"=1'-0"</div><div>DRAWING NUMBER S-200</div><div>SHEET OF -</div></div>
	C	03/12/2014	SEC. CLAR. TO BE MOVED TO THE NORTH	DESIGNED BY: M.E. MARTIN			
	B	08/30/2103	REVISED/ADDED JOINTS	DRAWN BY: W. MALACHIN			
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	CHECKED BY: H. ANTSEL			
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER			



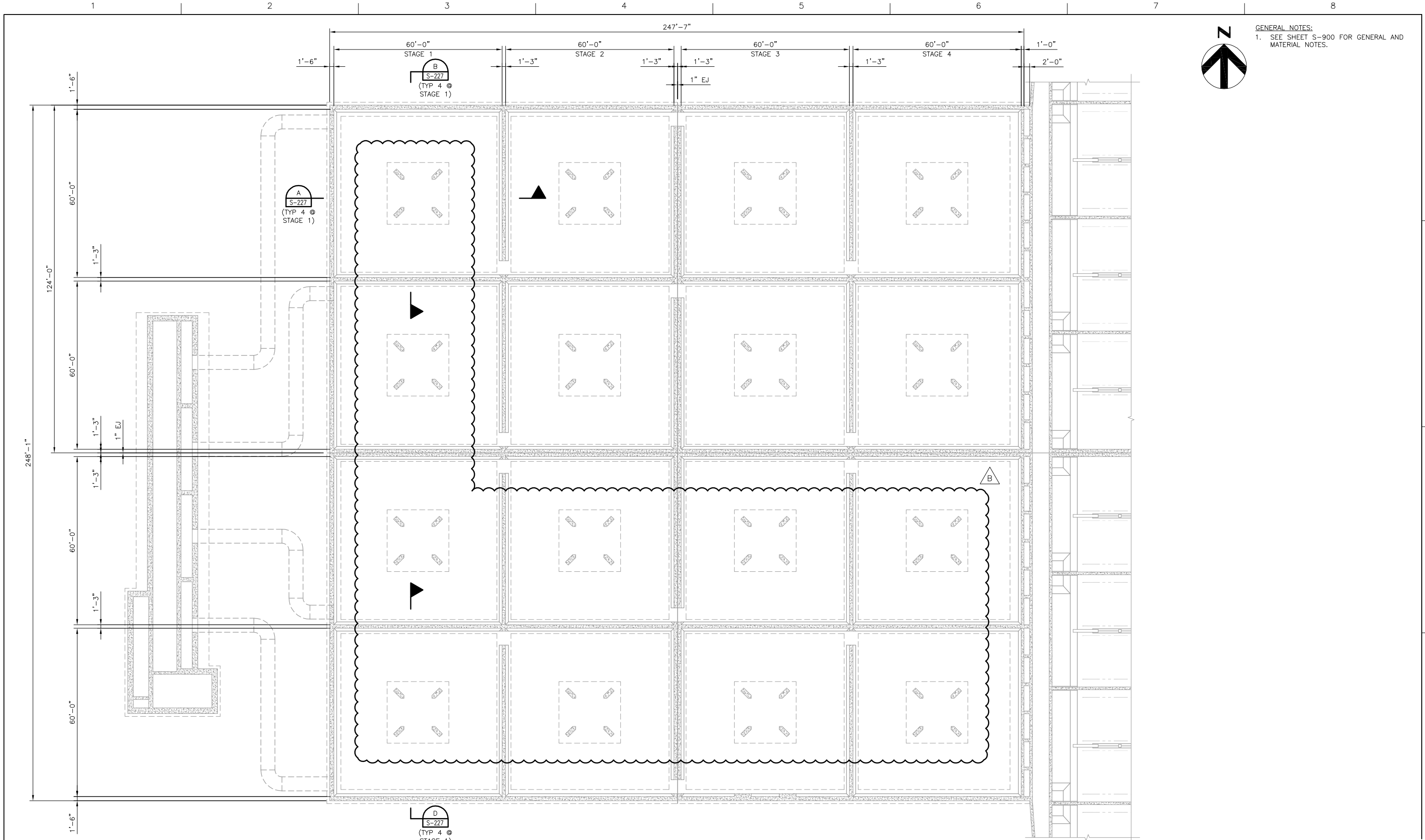
<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SECONDARY CLARIFIER No. 9 FOUNDATION PLAN 2 OF 3			<div><div>012</div></div>	FILENAME S-201.dwg	DRAWING NUMBER	SHEET OF
				DESIGNED BY: M.E. MARTIN									
				DRAWN BY: W. MALACHIN									
				CHECKED BY: H. ANTSEL									
	C	03/12/2014	SEC. CLAR. TO BE MOVED TO THE NORTH				SCALE 3/16"=1'-0"						
	B	08/30/2013	REVISED/ADDED JOINTS										
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL										
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									



 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SECONDARY CLARIFIER No. 9 UPPER PLAN 2 OF 3			
				DESIGNED BY: M.E. MARTIN						
				DRAWN BY: W. MALACHIN			 0 1 2	FILENAME S-204.dwg SCALE 3/16"=1'-0"	DRAWING NUMBER S-204	SHEET OF -
				CHECKED BY: H. ANTSEL						
	C	03/12/2014	SEC. CLAR. TO BE MOVED TO THE NORTH							
	B	08/30/2013	REVISED/ADDED JOINTS							
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL							
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER						

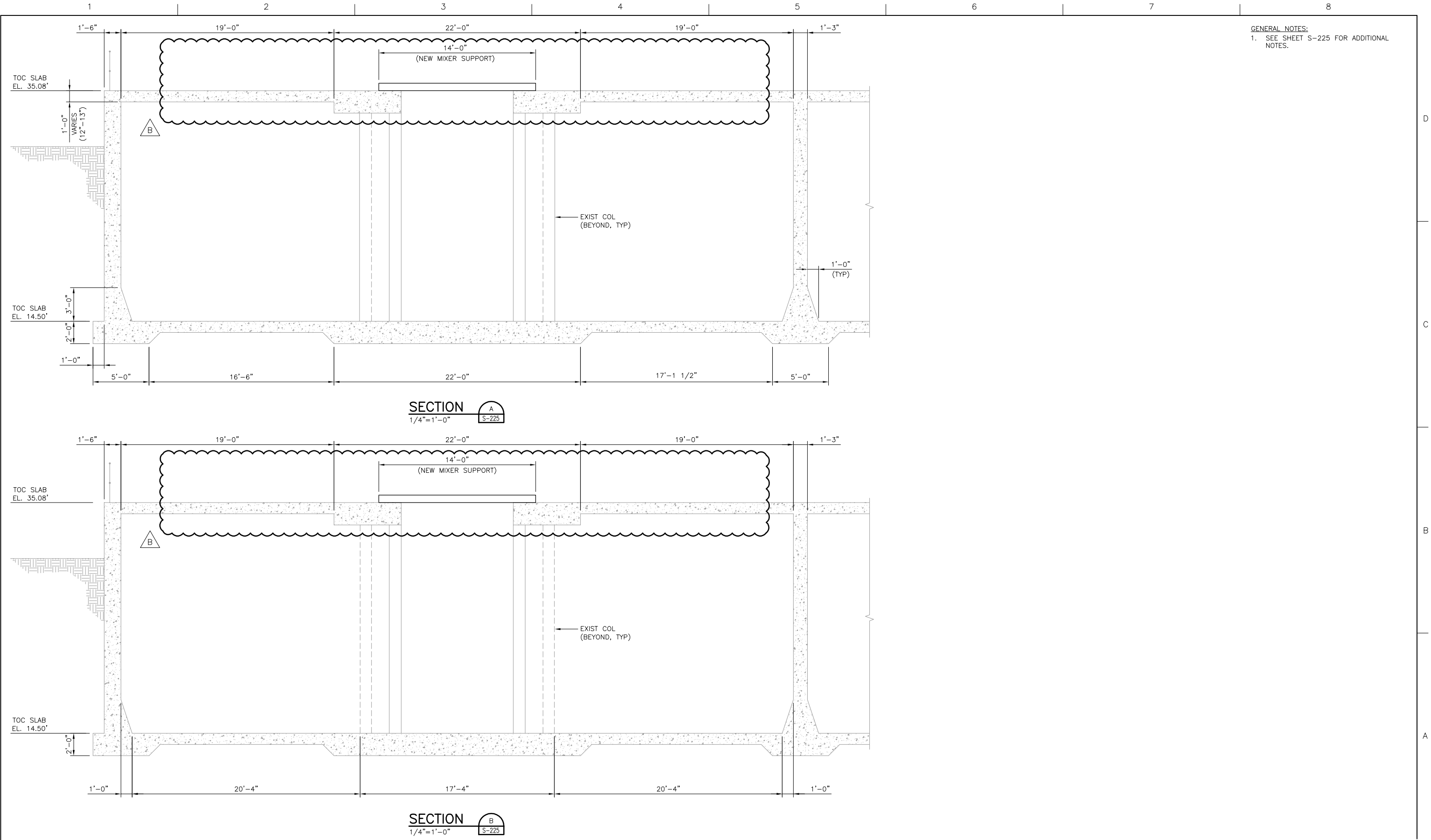


<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SECONDARY CLARIFIER No. 9 UPPER PLAN 3 OF 3		
				DESIGNED BY: M.E. MARTIN			<div><div>01"2"</div><div>03/16"=1'-0"</div></div>	DRAWING NUMBER S-205	SHEET OF -
				DRAWN BY: W. MALACHIN					
				CHECKED BY: H. ANTSEL					
	C	03/12/2014	SEC. CLAR. TO BE MOVED TO THE NORTH				FILENAME	S-205.dwg	
	B	08/30/2013	REVISED/ADDED JOINTS				SCALE	3/16"=1'-0"	
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL						
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER					



GENERAL NOTES:
1. SEE SHEET S-900 FOR GENERAL AND MATERIAL NOTES.

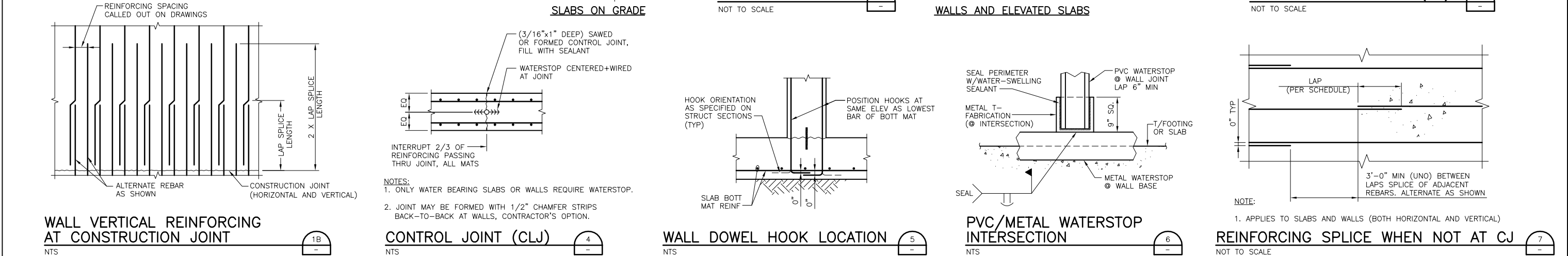
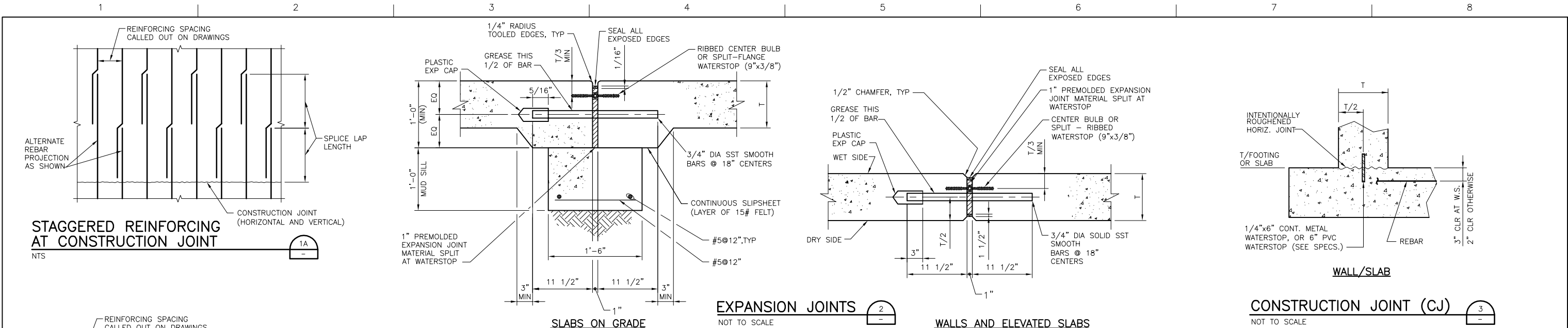
<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	UNOX MODIFICATIONS FOUNDATION PLAN			<div><div>01"2"</div><div>01/16"=1'-0"</div></div>	DRAWING NUMBER S-225	SHEET OF -
	B	03/12/2014	MIXER SUPPORT REVISION	DESIGNED BY: M.E. MARTIN								
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	DRAWN BY: W. MALACHIN								
	ISSUE	DATE	DESCRIPTION	CHECKED BY: H. ANTSEL								
				PROJECT NUMBER								



 HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	UNOX MODIFICATIONS SECTIONS & DETAILS			
				DESIGNED BY: M.E. MARTIN						
				DRAWN BY: W. MALACHIN				FILENAME: S-227.dwg	DRAWING NUMBER	SHEET OF -
				CHECKED BY: H. ANTSEL				SCALE: AS NOTED	S-227	
	B	03/12/2014	MIXER SUPPORT REVISION	PROJECT NUMBER						
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL							
	ISSUE	DATE	DESCRIPTION							

1	2	3	4	5	6	7	8
STRUCTURAL GENERAL NOTES:		CONCRETE		POST-INSTALLED ANCHORS		MASONRY	
G1	SCOPE	C1	DESIGN PROPERTIES: fc' = 4,500 PSI (UNO) Fy = 60,000 PSI	PA1	POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER-OF-RECORD (EOR) PRIOR TO INSTALLING POST-INSTALLED ANCHORS FOR MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.	M1	DESIGN PROPERTIES: F'm = 1,500 PSI Fy = 60,000 PSI
G2	APPLICABLE SPECIFICATIONS AND CODES	C2	CONCRETE COVER: UNLESS OTHERWISE NOTED, PROVIDE CONCRETE COVER FOR REINFORCING AS FOLLOWS: CONCRETE DEPOSITED AGAINST EARTH: 3" UNDER WATERSTOPS (WALL TO SLAB): 3" ALL OTHER: 2" SEE DRAWINGS FOR EXCEPTIONS.	PA2	CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REBAR. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.	M2	GROUT TO BE COARSE GROUT UNLESS NOTED OTHERWISE, MAXIMUM AGGREGATE SIZE IS 3/8 INCH.
	1. VIRGINIA UNIFORM STATEWIDE BUILDING CODE, 2009 EDITION, INCLUDING LOCAL JURISDICTION AMENDMENTS			PA3	SPECIAL INSPECTION SHALL BE PROVIDED FOR ALL ADHESIVE AND MECHANICAL ANCHOR INSTALLATIONS AS REQUIRED BY THE BUILDING CODE AND APPLICABLE ICC EVALUATION REPORTS LISTED BELOW. INDEPENDENT ON-SITE PROOF LOAD TESTING MAY BE REQUIRED BY THE EOR. CONTACT THE EOR FOR DETAILS.	M3	GROUT POURS SHALL NOT EXCEED 4 FEET IN HEIGHT UNLESS CLEANOUTS ARE PROVIDED IN THE BOTTOM COURSE OF THE CELL(S) TO BE GROUTED.
	2. ACI 318-08			PA4		M4	RESTRICTED BAR ANCHORAGE: IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS FAR AS REQUIRED, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOK. IDENTIFY THIS SITUATION ON SHOP DRAWINGS AND CLOUD TO BRING TO ENGINEER'S ATTENTION.
	3. ACI 350-06						
	4. ASCE 7-05						
	5. AISC STEEL CONSTRUCTION MANUAL, 13th EDITION; 360-05						
	6. ALUMINUM DESIGN MANUAL, 2005 EDITION						
G3	DESIGN CRITERIA	C3	SEE SPECIFICATIONS FOR REINFORCING PLACEMENT REQUIREMENTS.				
	1. MINIMUM VERTICAL LIVE LOADS: SEE INDIVIDUAL PLANS.	C4	PROVIDE 3/4" CHAMFERS AT ALL EXPOSED EDGES AND 1/2" CHAMFERS AT JOINTS AS SHOWN. NOT ALL CHAMFERS MAY BE SHOWN ON DRAWINGS.				
		C5	FIELD ADJUST REINFORCING AT OPENINGS AND EMBEDDED ITEMS AS SPECIFIED OR AS REQUIRED BY STANDARD DETAILS.				
	A. UNIFORM LIVE LOAD INCLUDES ALLOWANCE FOR: * UNIFORM SNOW LOAD. * UNIFORM PIPING LOAD (ONLY FOR PIPES SMALLER THAN 12" DIA). * LIGHTING AND MECHANICAL DUCTWORK.	C6	ANCHOR BOLTS NOT SPECIFIED BY ENGINEER SHALL BE DESIGNED BY CONTRACTOR IN ACCORDANCE WITH APPLICABLE PROJECT CODE REQUIREMENTS. COORDINATE LOCATION, SIZE AND EMBEDMENT PRIOR TO CASTING CONCRETE.	PA5	SUBSTITUTION REQUESTS, FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW, SHALL BE SUBMITTED BY THE CONTRACTOR TO THE EOR ALONG WITH CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERTINENT EQUIVALENT PERFORMANCE VALUES (MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE BUILDING CODE. PRODUCT ICC-ES CODE REPORTS SHALL BE INCLUDED WITH THE SUBMITTAL PACKAGE.	M5	IF BOND BEAMS AT INTERSECTING WALLS ARE SHOWN ON THE DRAWINGS TO MEET AT DIFFERENT ELEVATIONS, EXTEND BOTH BOND BEAMS AROUND INTERSECTING CORNER NOT LESS THAN 4- FEET IN EACH DIRECTION FOR OVERLAP CONDITION.
	B. FOR ROOF LOADS OTHER THAN LIVE LOAD; REFER TO SPECIFICATIONS AND OTHER DISCIPLINE'S REQUIREMENTS.	C7	ABSOLUTELY NO WELDING OF REINFORCING BARS OR TORCHING TO BEND REINFORCING BARS SHALL BE ALLOWED WITHOUT WRITTEN SPECIFIC APPROVAL FROM THE STRUCTURAL ENGINEER.		UNLESS NOTED OTHERWISE ON PLANS, ACCEPTABLE PRODUCTS SHALL BE:		
	ADDITIONAL LOADS FROM OTHER DISCIPLINE DRAWINGS INCLUDE: * UNIFORM DEAD LOADS PER ARCH DRAWINGS * CONCENTRATED EQUIPMENT LOADS * PIPING LOADS * ELECTRICAL LOADS				1. CONCRETE ANCHORS		
2.	WIND LOADS:				A. MECHANICAL ANCHORS FOR USE IN CRACKED AND UNCRACKED CONCRETE SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:		
	A. BASIC WIND SPEED: 90 MPH		WIDE FLANGE AND TEES: Fy=50 KSI		(1) SIMPSON STRONG-TIE "STRONG-BOLT" (ICC-ES ESR-1771)		
	B. WIND EXPOSURE: C		PIPES: Fy=35 KSI		(2) SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-2713)		
	C. WIND IMPORTANCE FACTOR (IW): 1.15		HSS SECTIONS: Fy=42 KSI		(3) HILTI "HSL-3" (ICC-ES ESR-1545)		
	D. ENCLOSED STRUCTURES		ALL OTHER PLATES AND SHAPES: Fy=36 KSI		(4) HILTI "KWIK BOLT TZ" (ICC-ES ESR-1917)		
	E. OCCUPANCY CATEGORY: III				B. ADHESIVE ANCHORS FOR USE IN CRACKED AND UNCRACKED CONCRETE SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC308. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:		
3.	SEISMIC:	S2	DIMENSIONS:		(1) SIMPSON STRONG-TIE "SET-XP" (ICC-ES ESR-2508)		
	A. OCCUPANCY CATEGORY: III		TO CENTERLINES OF COLUMNS AND BEAMS, TOP SURFACES OF BEAMS AND TUBES AND BACKS OF CHANNELS AND ANGLES UNLESS NOTED OTHERWISE.		(2) HILTI "HIT-RE 500-SD" (ICC-ES ESR-2322)		
	B. SEISMIC IMPORTANCE FACTOR (IE): 1.25	S3	ELEVATIONS:				
	C. SPECTRAL RESPONSE ACCELERATIONS: SS=0.184, S1=0.057		REFER TO TOP SURFACE OF MEMBER OR FLANGE UNLESS NOTED OTHERWISE.				
	D. SITE CLASS: D	S4	UNLESS OTHERWISE NOTED, BOLTED BEAM CONNECTIONS SHALL BE SIMPLE FRAMED SHEAR CONNECTIONS. BOLTED STEEL CONNECTIONS SHALL BE IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION LATEST EDITION USING ASTM A325 GALVANIZED BOLTS. USE ASTM A593 FOR STAINLESS STEEL CONNECTIONS WHERE REQUIRED. ALL BOLTED STRUCTURAL CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS UNLESS OTHERWISE INDICATED TO BE SLIP-CRITICAL.				
	E. SPECTRAL RESPONSE COEFF: SDS=0.196, SD1=0.091	S5	UNLESS OTHERWISE SHOWN ON THE DRAWINGS, CONNECTIONS SHALL BE DESIGNED FOR THE REACTIONS, AXIAL LOADS, AND MOMENTS AS PER THE FOLLOWING CRITERIA:				
	F. SEISMIC DESIGN CATEGORY: B						
4.	SNOW LOAD:						
	A. FLAT ROOF SNOW (PF): 20 PSF						
	B. SNOW EXPOSURE FACTOR (CE): 0.9						
	C. SNOW IMPORTANCE FACTOR (IS): 1.1						
	D. THERMAL FACTOR (CT): 1.1						
	E. DRIFTING LOADS ALONG PERIMETER REFER TO BUILDING CODE.						
6.	FLOOD LOADS:						
	FLOOD ELEVATION 9.0' (NGVD-29)(100 YEAR, FEMA COMMUNITY PANEL No. 510080-0005-B SEPTEMBER, 1979).						
6.	FUTURE LOADS:						
	UNLESS SPECIFICALLY NOTED, THERE ARE NO PROVISIONS MADE FOR FUTURE FLOOR, ROOF, OR OTHER LOADS.						
G4	SITework/EXCAVATION						
	1. IF OPEN CUT EXCAVATIONS ARE PERFORMED, THEY SHALL BE SLOPED NO STEEPER THAN 1V:2H. IF DOING THIS BRINGS THE TOP OF THE EXCAVATION SLOPE WITHIN 5- FEET OF AN ADJACENT STRUCTURE OR UTILITY SUPPORTED ON SHALLOW FOUNDATIONS, THEN AN EXCAVATION SUPPORT SYSTEM WILL BE REQUIRED TO SAFEGUARD THE ADJACENT STRUCTURE.						
	2. FOR EXCAVATION REQUIREMENTS SEE SPECIFICATIONS 02220 AND 02272. GEOTECHNICAL REPORT BY GEOTECHNOLOGIES, INC, RALEIGH, NC DATED 30 JULY, 2012 "REPORT OF PRELIMINARY SUBSURFACE INVESTIGATION."						
G5	SAFETY						
	SAFETY AND STRUCTURE STABILITY DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. STRUCTURES HAVE BEEN DESIGNED TO RESIST THE DESIGN LIVE LOADS ONLY AS A COMPLETED STRUCTURE.						
G6	STANDARD DETAILS						
	THE STANDARD DETAILS DEPICT TYPICAL DETAILING TO BE USED ON THIS PROJECT. IF CONDITIONS ARE NOT EXPLICITLY SHOWN ON THE DRAWINGS THEY SHALL BE MADE SIMILAR TO THE STANDARD DETAILS. OBTAIN ENGINEER APPROVAL IN WRITING FOR SIMILAR CONDITIONS PRIOR TO CONSTRUCTION.						
G7	CONFLICTS						
	IF THERE ARE CONFLICTS BETWEEN CONTRACT DRAWINGS AND SPECIFICATIONS, THE MORE STRINGENT INTERPRETATION SHALL CONTROL.						
		STEEL					
		S1	STRUCTURAL STEEL DESIGN PROPERTIES (UNO):				
			</				

<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	<div>CONCEPTUAL DESIGN</div>	<div>CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY</div> <div>ALTERNATIVE 4A-1 LIGHT PHASE 2</div>	GENERAL AND MATERIAL NOTES			
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL							
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER						

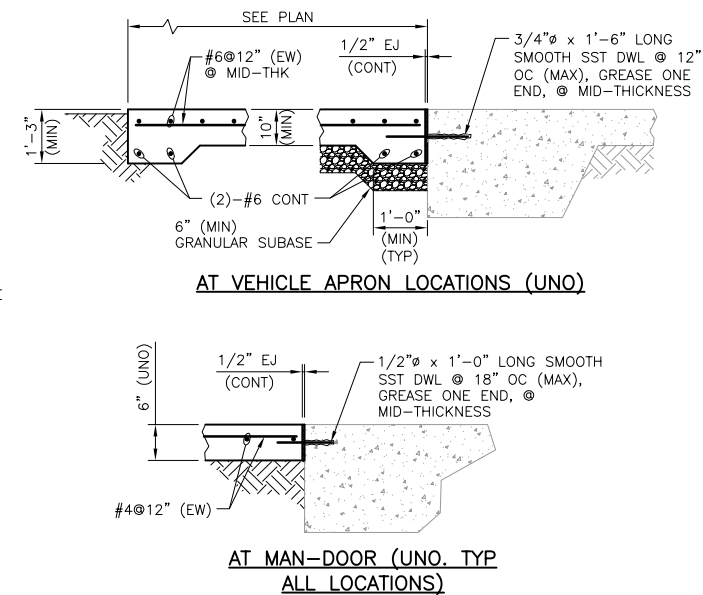
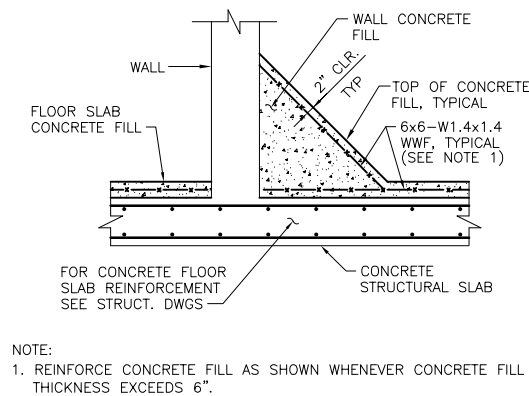
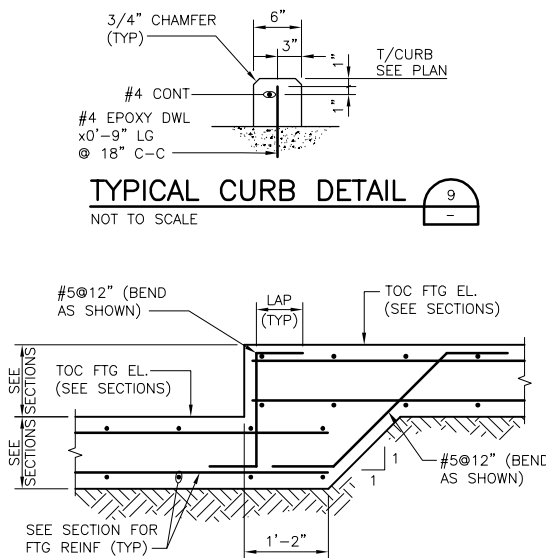


LAP SPLICE AND EMBEDMENT LENGTHS f'c = 4.0 ksi fy = 60 ksi		
BAR	BAR SPACED GREATER THAN 4"	BAR SPACED LESS THAN OR EQUAL TO 4"
#3	14"	14"
#4	19"	19"
#5	24"	30"
#6	29"	43"
#7	46"	74"
#8	60"	96"
#9	76"	122"
#10	97"	155"
#11	120"	191"

- NOTES:
1. PROVIDE MINIMUM LAP SPLICE LENGTHS AND EMBEDMENTS PER TABLE UNLESS NOTED OTHERWISE. EMBEDMENT LENGTH EQUALS THE LAP SPLICE LENGTH UNLESS OTHERWISE NOTED.
 2. BAR SPACING AT LAP SPLICE IS THE MINIMUM CLEAR DISTANCE BETWEEN LAPPED BARS PLUS ONE BAR DIAMETER.
 3. ALL SPLICES TO BE CONTACT SPLICES AND WIRED TOGETHER UNLESS OTHERWISE APPROVED BY ENGINEER.
 4. REQUIREMENTS FOR SPACINGS 4 INCHES OR LESS SHALL NOT APPLY TO "ADD" BARS AROUND OPENINGS.

REINFORCING LAP AND EMBEDMENT SCHEDULE

NTS



ANCHOR BOLT SCHEDULE		
MK	DIA (IN)	EMBED (IN)
1	3/4	1'-0"
2	3/4	1'-3"
3	1	1'-3"
4	1	1'-3"
5	1 1/2	2'-1"

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M.E. MARTIN
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

CONCEPTUAL DESIGN

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY**

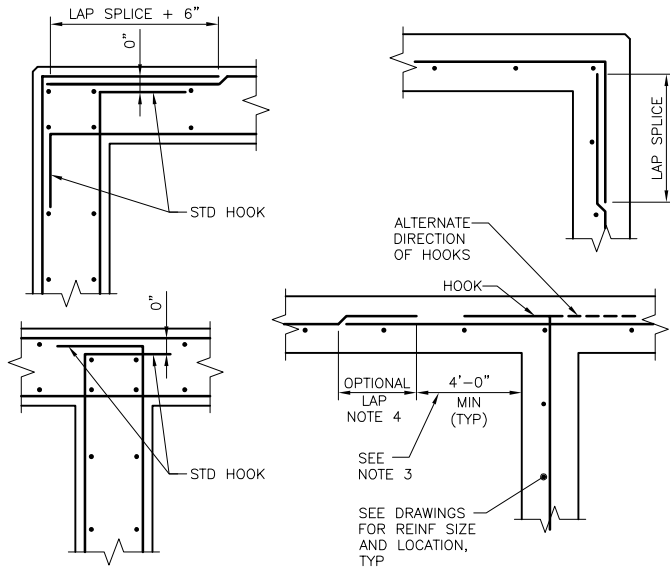
ALTERNATIVE 4A-1 LIGHT PHASE 2

STRUCTURAL STANDARD DETAILS 1

0 1" 2"

FILENAME: S-901.dwg
SCALE: NONE

DRAWING NUMBER: **S-901**
SHEET OF -

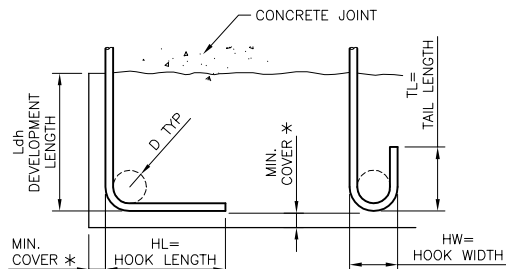


NOTES:

- ALL HOOKS SHALL BE STD 90 DEGREE HOOKS.
- SEE DRAWINGS FOR ADDITIONAL HORIZONTAL BARS. STAGGER BETWEEN TYPICAL REINF SPACING, EXTEND TO 1/5 OF DISTANCE TO NEAREST ADJACENT WALL IN EACH DIRECTION, UNO.
- OPTIONAL LAP LOCATION APPLIES TO BOTH DOUBLE AND SINGLE LAYER CONDITIONS TYP.
- BAR MAY BE ONE PIECE CONTINUOUS, THUS TWO PIECE REBAR NOT REQUIRED WITH LAP.

TYPICAL WALL REINFORCEMENT AT CORNERS & INTERSECTIONS

NTS



90° STD HOOK

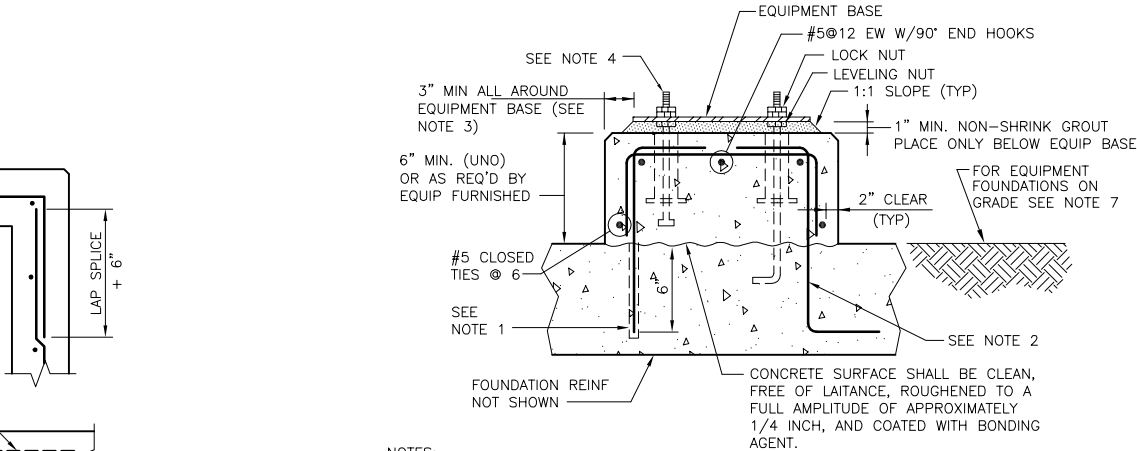
180° STD HOOK

BAR SIZE	HL	HW	TL	D	f'c=4000 psi OR GREATER Ldh *
#3	6"	3"	3"	2 1/4"	6"
#4	8"	4"	4 1/2"	3"	7"
#5	10"	5"	5"	3 3/4"	9"
#6	1'-0"	6"	6"	4 1/2"	10"
#7	1'-2"	7"	7"	5 1/4"	12"
#8	1'-4"	8"	8"	6"	14"
#9	1'-7"	11 3/4"	10 1/2"	9 1/2"	15"
#10	1'-10"	1'-1 1/4"	11 1/2"	10 3/4"	17"
#11	2'-0"	1'-2 3/4"	1'-1"	12"	19"

* COMPLYING WITH MINIMUM COVER REQUIREMENTS OF ACI 318, 12.5.3. OTHERWISE Ldh MUST BE RE-CALCULATED.

REINFORCING HOOK SCHEDULE

NTS

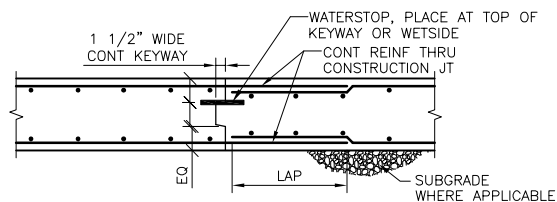


NOTES:

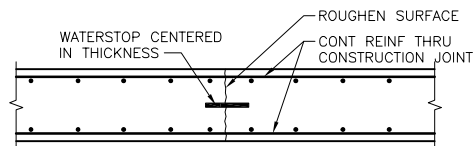
- FOR NEW EQUIPMENT BASES ON EXISTING SLABS, DRILL INTO EXISTING SLAB TO INDICATED DEPTH AT 12" CENTERS AROUND PERIMETER OF EQUIPMENT BASE AND SET #5 DOWEL HOOKED AS SHOWN IN ADHESIVE ANCHOR SYSTEM.
- FOR EQUIPMENT BASES ON NEW SLABS, PROVIDE #5 DOWELS HAVING TWO HOOKED ENDS AT 12" CENTERS AROUND PERIMETER.
- EQUIPMENT BASE DIMENSIONS SHALL BE AS INDICATED ON THE DRAWINGS OR AS DETERMINED BY THE EQUIPMENT MANUFACTURER AND APPROVED BY THE ENGINEER.
- THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE AS DETERMINED BY THE EQUIPMENT MANUFACTURER AND SHALL BE AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE WHILE EQUIPMENT BASE IS BEING CAST. ALL ANCHOR BOLTS SHALL BE STAINLESS STEEL.
- PIPE SLEEVES SHALL BE USED TO PROVIDE THE ANCHOR BOLT A MINIMUM MOVEMENT OF 1/2" IN ALL DIRECTIONS. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER. PIPE SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER OF 3" GREATER THAN BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT AFTER INSTALLATION OF GROUT.
- EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS SPECIFIED OTHERWISE, TOLERANCE IS 1/16".
- FOR EQUIPMENT PLACED ON GRADE; EXTEND FOUNDATION MINIMUM OF 18" UNO BELOW GRADE; USE #5 @ 12" T&B EW.

EQUIPMENT BASE

NOT TO SCALE



KEYED CONSTRUCTION JOINT (KCJ)



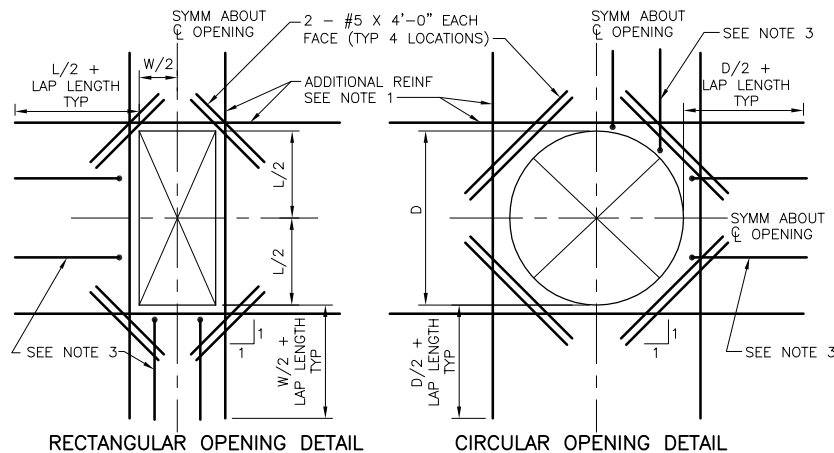
ROUGHEN CONSTRUCTION JOINT

NOTES:

- FURNISH CONSTRUCTION JOINTS SHOWN HERE AT ALL WALL VERTICAL AND SLAB CONSTRUCTION JOINTS.
- ALL FORMED CJ MUST BE KCJ TYPE.
- SEE SPECIFICATION FOR REQUIREMENT TO TIE WATERSTOPS IN PLACE TO PREVENT MOVEMENT OR FOLDING OVER.

CONSTRUCTION JOINT (CJ)

NOT TO SCALE



RECTANGULAR OPENING DETAIL

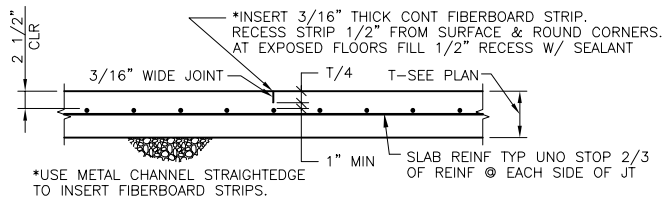
CIRCULAR OPENING DETAIL

NOTES:

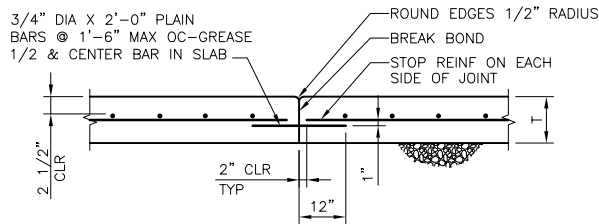
- PROVIDE ADDITIONAL REINFORCING THE SAME SIZE AS DISCONTINUOUS REINFORCEMENT AT OPENING. QUANTITY OF REINFORCING IN EACH DIRECTION SHALL BE EQUAL TO OR ONE GREATER THAN THE NUMBER OF DISCONTINUOUS BARS. PLACE 1/2 OF ADDITIONAL REINFORCING BARS EACH SIDE OF OPENING. PLACE ADDITIONAL REINFORCEMENT AT 3" OC (TYPICAL BOTH DIRECTIONS AND ALL LAYERS OF REINFORCEMENT). START FIRST BAR 2" CLEAR TO OPENING.
- EXTEND ADDITIONAL REINFORCING BEYOND EDGE OF OPENING AS SHOWN ABOVE. ADDITIONAL BARS MAY TERMINATE AT THE END OF THE WALL WITH A STANDARD HOOK WHERE THE LENGTH OF THE WALL WILL NOT PERMIT BARS TO EXTEND AS SHOWN ABOVE.
- TYPICAL WALL OR SLAB REINFORCING NOT COMPLETELY SHOWN FOR CLARITY. TERMINATE TYPICAL REINFORCING 2" CLEAR TO OPENING WITH STANDARD 90° HOOKS.
- OPENINGS 12" OR LESS IN SLABS AND OPENINGS 18" OR LESS IN WALLS, NO EXTRA REBARS ARE REQUIRED UNLESS SHOWN OTHERWISE. TYPICAL REINFORCING SHALL BE RESPACED (NOT CUT) TO ALLOW FOR OPENINGS TO BE MADE.
- UNLESS SHOWN OTHERWISE ON DRAWINGS, PROVIDE EXTRA REINFORCING AROUND OPENINGS AS SHOWN AND INDICATED ABOVE.
- PROVIDE ADDITIONAL DOWELS PER NOTE 1 ABOVE FOR ALL OPENINGS NEAR THE FLOOR SLAB, BASE SLAB, OR CORNERS

REINFORCING AROUND OPENINGS

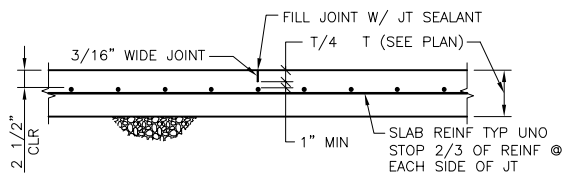
NOT TO SCALE



FORMED CONTROL JOINT



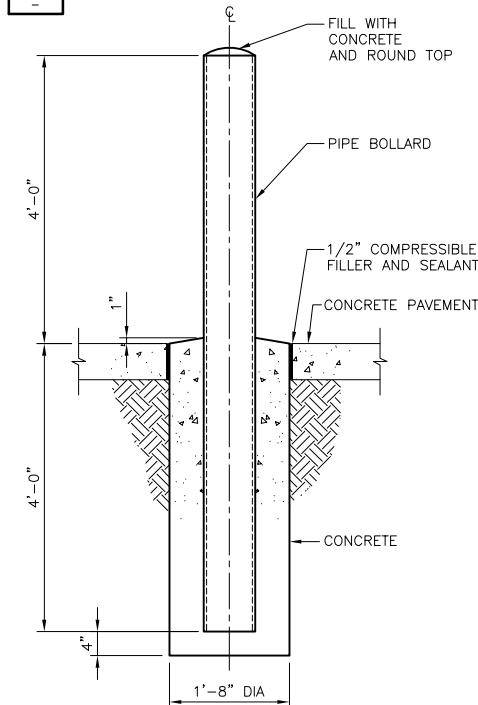
DOWELLED CONSTRUCTION JOINT



SAWED CONTROL JOINT

NOTES:

- ANY ONE OF THE DETAILS ABOVE MAY BE USED AT LOCATIONS INDICATED ON DRAWINGS AS "SJ," AT CONTRACTOR'S OPTION.
- ONLY FOR USE ON NON-PILE SUPPORTED SLABS.



NOTE:

- REINFORCING FOR CONCRETE SLAB NOT SHOWN.

BOLLARD

NTS

**HDR**

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M.E. MARTIN
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

CONCEPTUAL DESIGN**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****STRUCTURAL STANDARD DETAILS 2**

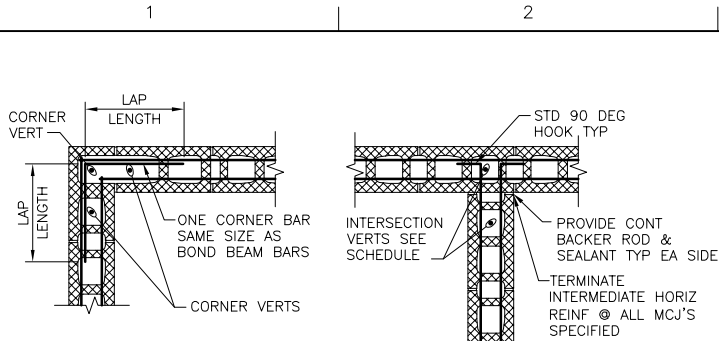
FILENAME S-902.dwg

SCALE NONE

DRAWING NUMBER

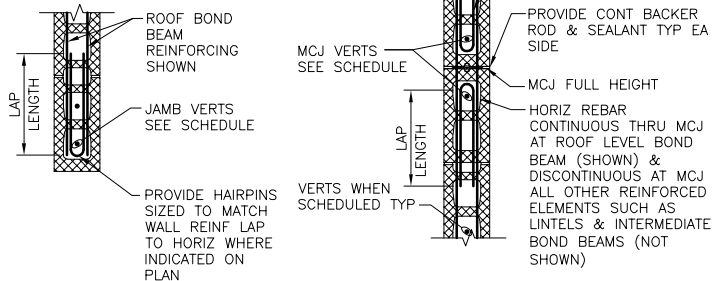
S-902

SHEET OF -



CORNER

INTERSECTION



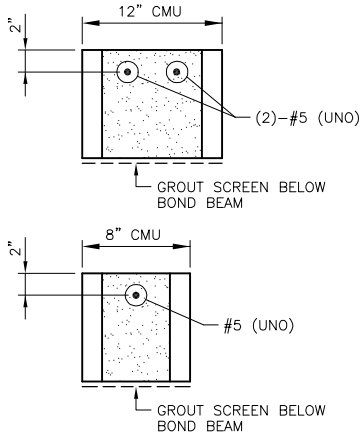
JAMB OR END OF WALL

MASONRY CONTROL JOINT (MCJ)

- NOTES:
- FOR REINFORCING SEE "CMU REINFORCING SCHEDULE" AND "DETAIL".
 - INDICATES LOCATION OF VERT BARS @ CENTERLINE OF WALL, UNO IN SCHEDULE.
 - EXTEND MCJ FULL HEIGHT OF MASONRY BOND BEAM.
 - LIMIT DISTANCE BETWEEN MCJ TO MAX 24'-0". SEE DRAWINGS FOR LOCATIONS.
 - HORIZONTAL JOINT REINFORCING NOT SHOWN.
 - MODIFY BAR CONFIGURATION SHOWN AS REQUIRED WHERE TWO VERTICAL REINFORCING BARS ARE SHOWN ON THE SCHEDULE.

CMU WALL REINFORCING

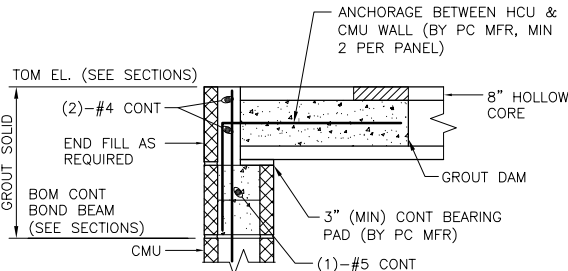
NTS



- NOTE:
- USE 8" BOTTOMLESS (KNOCK-OUT) BLOCK BEAM UNITS WHERE BOND BEAM IS CALLED OUT ON PLAN OR SECTIONS. "U" BLOCKS SHALL ONLY BE USED AT LINTELS.

BOND BEAM

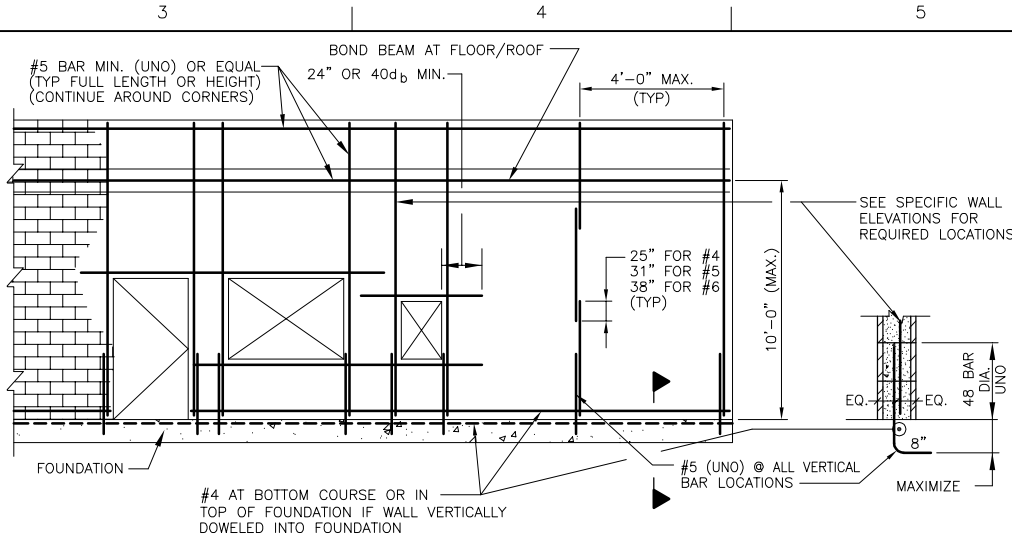
NOT TO SCALE



- NOTES:
- PRECASTER TO DESIGN CONNECTION FROM HCU TO SUPPORTING ELEMENT AS REQUIRED TO TRANSFER LATERAL FORCES INDICATED ON DRAWINGS.
 - BRICK VENEER NOT SHOWN FOR CLARITY.

HOLLOW CORE END BEARING

NOT TO SCALE



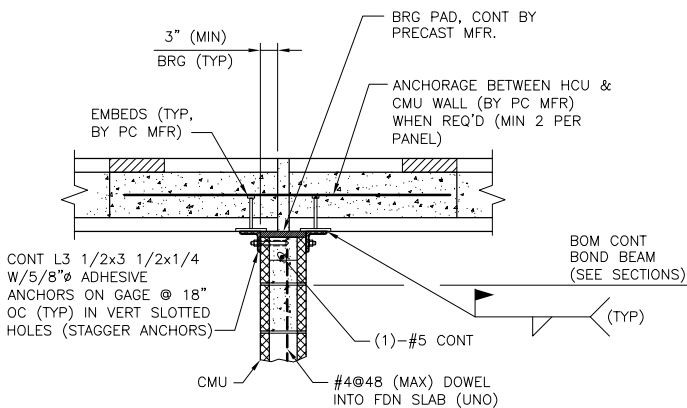
NOTES:

- THIS STANDARD FOLLOWS REQUIREMENTS OF IBC-2009 FOR SEISMIC DESIGN CATEGORY "B" AND RUNNING BOND CONSTRUCTION.
- ALL HORIZONTAL BAR REINFORCING SHALL BE SET IN LINTELS OR BOND BEAMS, NOT IN JOINTS.
- PROVIDE CONTINUOUS GALVANIZED "LADDER" MASONRY JOINT REINFORCING @ 16" O/C VERTICALLY. CONTINUE JOINT REINFORCING INTO INTERSECTING WALL. USE PREFABRICATED CORNER AND TEE SECTIONS.
- FIRE RATED MASONRY WALLS SHALL COMPLY WITH UL #U908.

CMU WALL REINFORCING

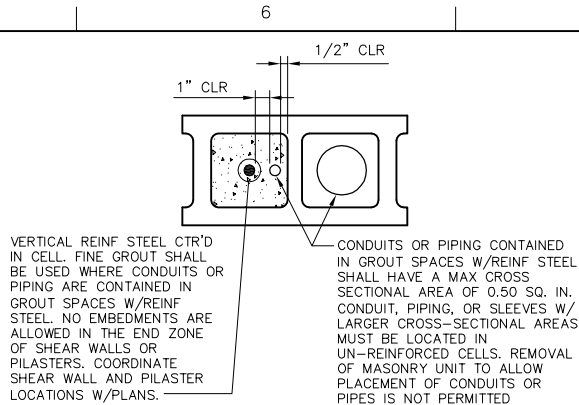
NOT TO SCALE

BAR SIZE	COVER			LAP (PER WALL THICKNESS)			LAP		NOTES:
	6"	8"	12"	6"	8"	12"	BAR	12"	
#4	2.5625"	3.563"	5.563"	20"	20"	20"	#4	22"	1. SINGLE BAR PER CELL. 2. BAR LOCATED @ CENTER CELL. 3. f'm = 1500 PSI 4. Fy = 60 KSI
#5	2.500"	3.500"	5.500"	32"	25"	25"	#5	35"	
#6	2.4375"	3.438"	5.438"	60"	43"	39"	#6	66"	
#7	2.375"	3.375"	5.375"	84"	59"	46"	#7	89"	



TYP HOLLOW CORE INTERMEDIATE BEARING

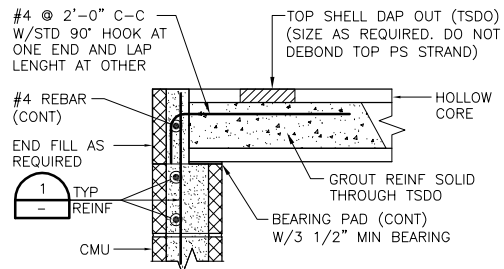
NTS



- PIPES SHALL NOT BE EMBEDDED IN MASONRY IF THEY ARE:
- CONTAINING LIQUID, GAS, OR VAPORS HIGHER THEN 150° F (66° C)
 - UNDER PRESSURE IN EXCESS OF 55 PSI (379 kPa)
 - CONTAINING WATER OR OTHER LIQUIDS SUBJECT TO FREEZING

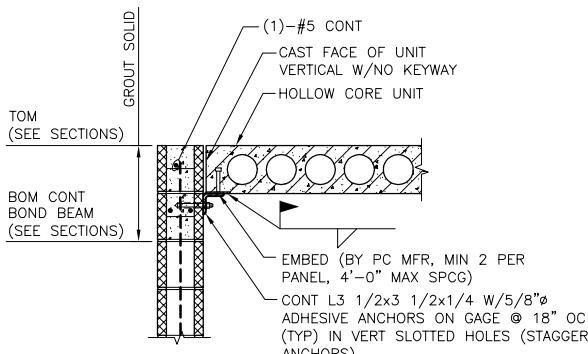
EMBEDDED CONDUITS, PIPES AND SLEEVES IN CMU

NTS



HOLLOW CORE END BEARING

NOT TO SCALE

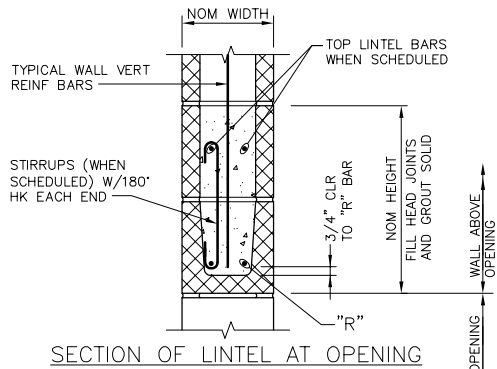


- NOTES:
- PRECASTER TO DESIGN CONNECTION FROM HCU TO SUPPORTING ELEMENT AS REQUIRED TO TRANSFER LATERAL FORCES INDICATED ON DRAWINGS.
 - BRICK VENEER NOT SHOWN FOR CLARITY.

TYPICAL HOLLOW CORE SIDEWALL CONNECTION

3/4"=1'-0"

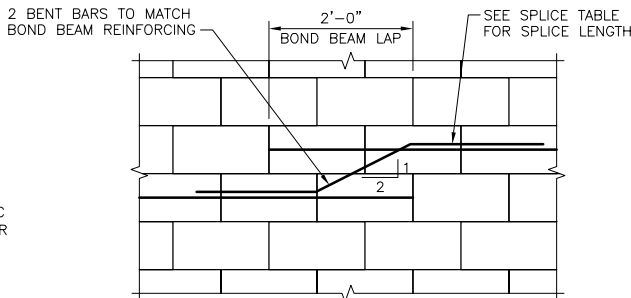
LINTEL REINFORCEMENT SCHEDULE					
MARK	NOM WIDTH	NOM HEIGHT	"R"	STIRRUPS	REMARKS
L1	8"	8"	(1)-#5	-	
L2	8"	16"	(2)-#4	-	"R" - TOP AND BOTTOM
L3	8"	8"	(1)-#5	-	
L4	12"	24"	(2)-#6	-	
L5	8"	8"	(2)-#4	-	"R" - TOP AND BOTTOM
L6	8"	16"	(1)-#5	-	
L7	8"	16"	(1)-#5	#3@6"	
L8	12"	16"	(1)-#5	-	"R" - TOP AND BOTTOM



- NOTES:
- OPENINGS 8" OR LESS WIDE MAY OCCUR WITHOUT LINTEL REINFORCING AS LONG AS NO REINFORCING IS INTERRUPTED..
 - SEE DRAWINGS FOR LINTEL TYPES.

LINTEL SCHEDULE

NOT TO SCALE



TYPICAL STEPPED BOND BEAM

3/4"=1'-0"

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M.E. MARTIN
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

STRUCTURAL STANDARD DETAILS 3

0 1" 2"

FILENAME S-903.dwg

SCALE NONE

DRAWING NUMBER

S-903

SHEET OF -



NOTES:

- NTS



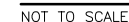
- NTS

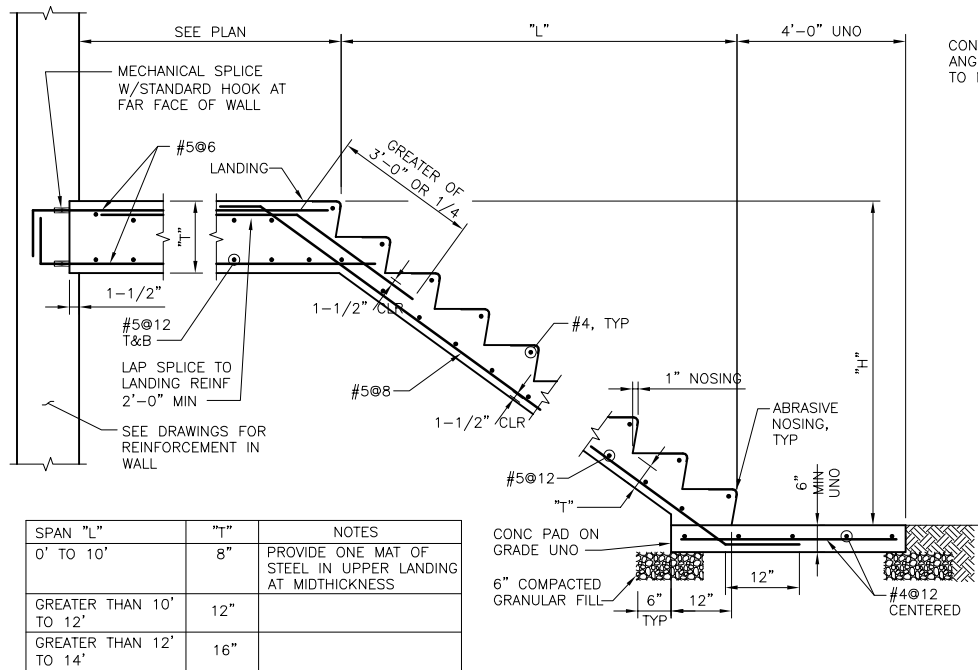


- NTS



- NTS

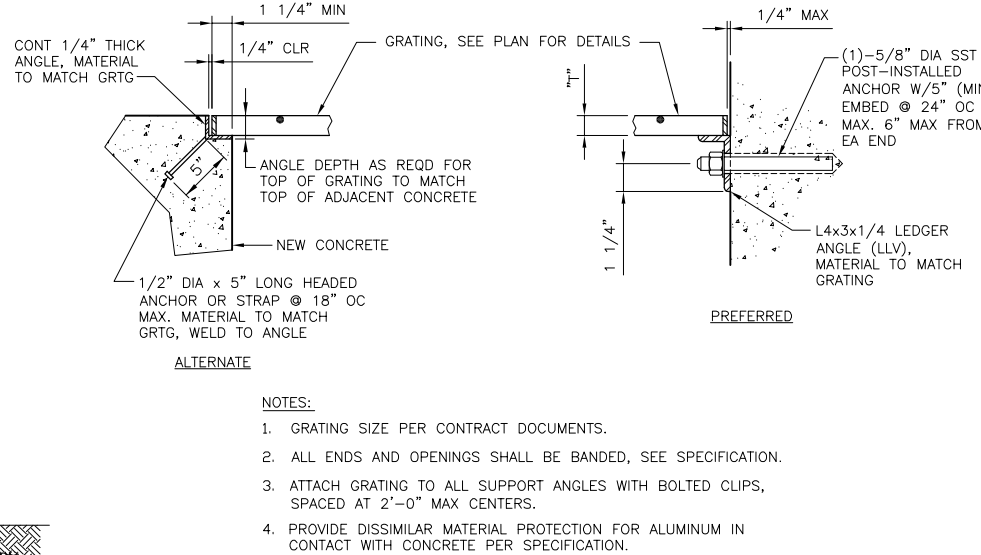




- NOTES:
- SEE DRAWINGS FOR DIMENSIONS "H", "L", AND STAIR WIDTH "W".
 - "W" SHALL BE 4'-0" UNLESS NOTED OTHERWISE ON PLAN.
 - ALL STAIRS SHALL HAVE HANDRAILS ON EACH SIDE.

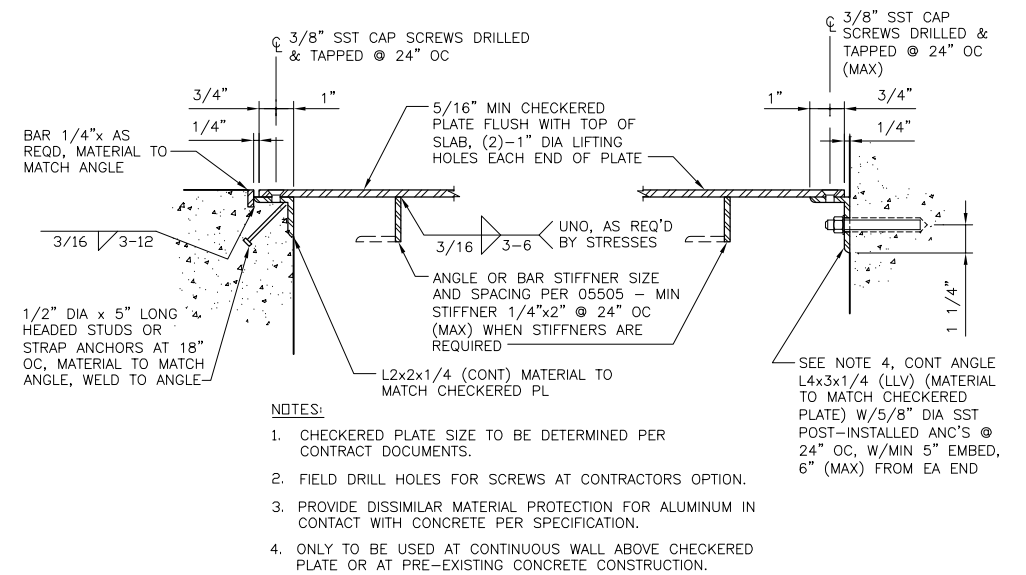
CONCRETE STAIRS -LANDING SUPPORTED

NTS



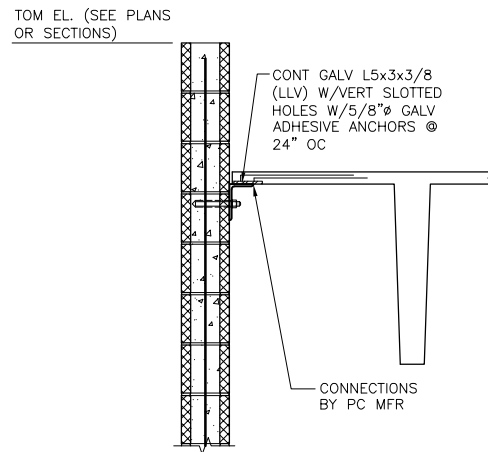
GRATING AND SUPPORT DETAIL

NTS



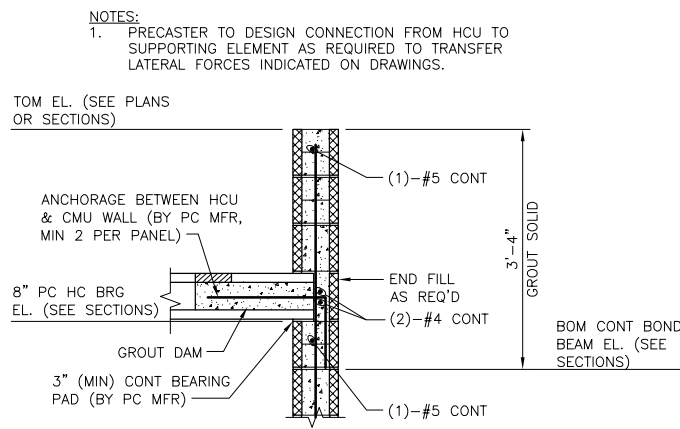
CHECKERED PLATE SUPPORT

NTS



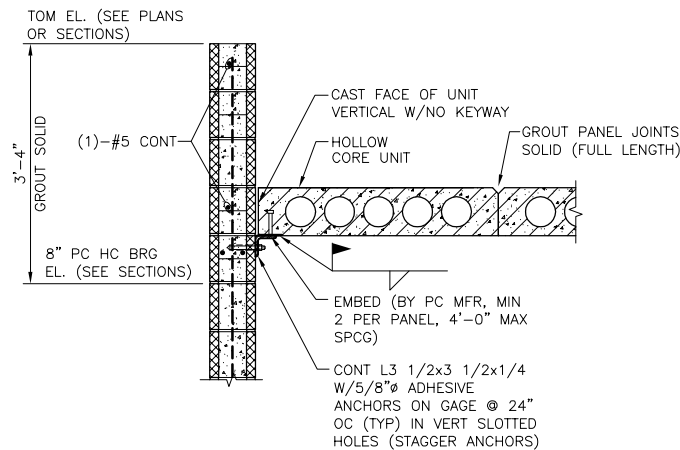
DT CONNECTION TO CMU

NTS



HOLLOW CORE BEARING @ CMU

NTS



HOLLOW CORE CONNECTION @ CMU

NTS

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

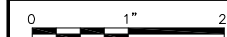
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M.E. MARTIN
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT PHASE 2

STRUCTURAL STANDARD DETAILS 5



FILENAME	S-905.dwg
SCALE	NONE

DRAWING NUMBER	S-905
----------------	-------

SHEET OF -



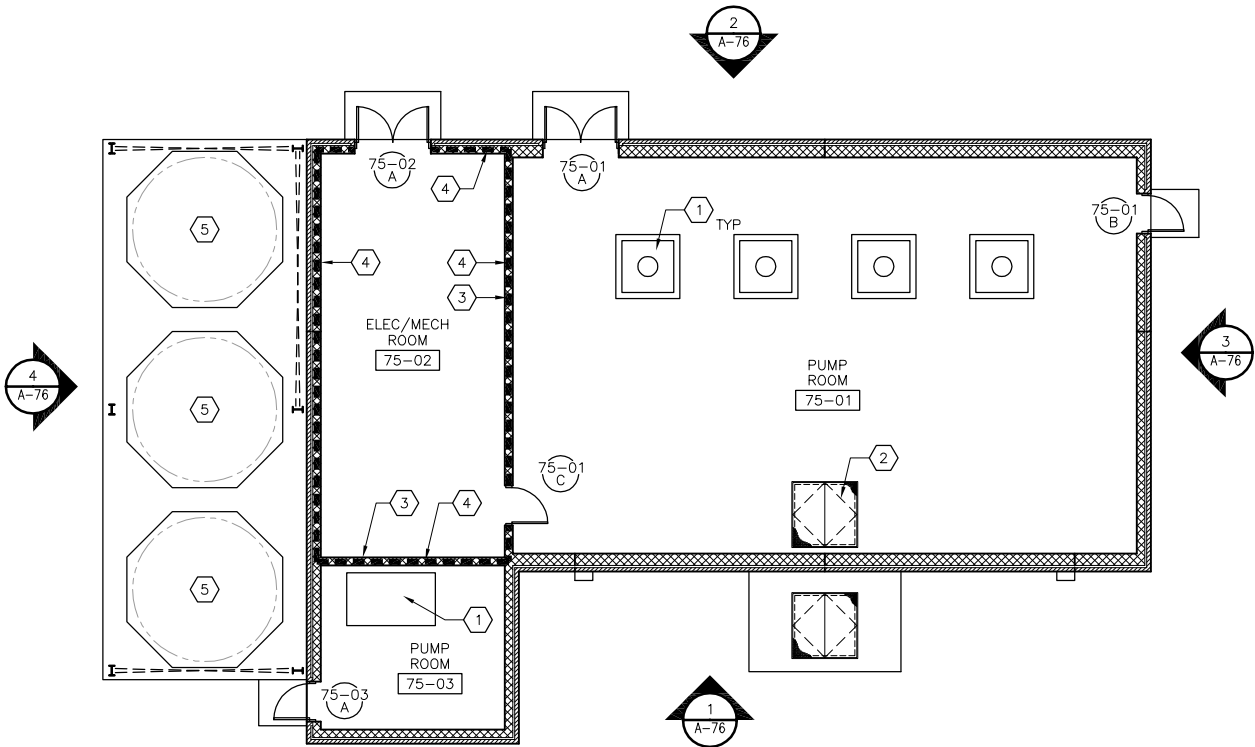
- GENERAL NOTES:
- SEE SHEET S-76 FOR ADDITIONAL INFORMATION.
 - SEE SHEET A-900 FOR DOOR AND FINISH SCHEDULES.

FLOOR PLAN KEY NOTES:

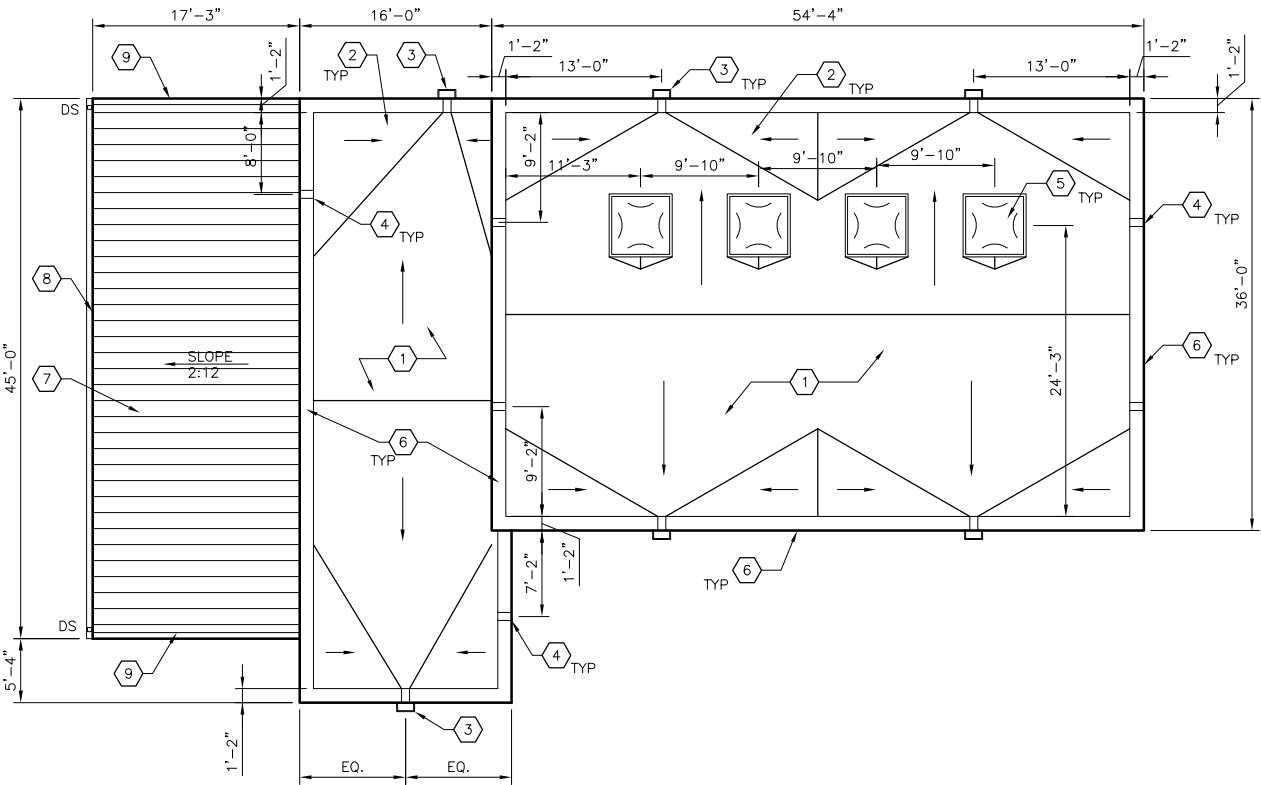
- PUMP EQUIPMENT- SEE MECH. DWGS.
- FLOOR HATCH- SEE MECH. DWGS.
- 8" INTERIOR CMU WALL - SEE STRUC. DWGS. FOR REINFORCEMENT.
- PROVIDE CORE-FILL INSULATION FOR ALL NON-GROUTED CELL IN CMU WALLS AROUND ELECTRICAL/MECHANICAL ROOM 75-02. ■■■■■■
- SODIUM BISULFITE TANKS - SEE MECHANICAL DRAWINGS.

ROOF PLAN KEY NOTES:

- 2 PLY SBS MODIFIED BUILTUP ROOFING SYSTEM W/ TAPERED INSULATION SLOPE TO ROOF SCUPPERS. MIN SLOPE 1/4" PER FT.
- PROVIDE ROOF CRICKETS W/ 1/2" PER FT. SLOPE.
- 8"x4" SCUPPER W/ PRE-FINISHED AL CONDUCTOR HEAD AND DOWNSPOUT W/ CAST CONCRETE SPLASH BLOCK.
- 8"x4" SECONDARY SCUPPER.
- 58"x58" PREFABRICATED DOME SKYLIGHT MOUNTED ON PREFABRICATED INSULATED ROOF CURB.
- CONT. PRE-FINISHED AL COPING.
- STANDING SEAM METAL ROOF SYSTEM
- METAL GUTTER AND DOWNSPOUTS
- METAL ROOF EDGE TRIM



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



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



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	09/13/2013	TANK REVISION
B	08/13/2013	ADDED ROOM ADDITION AND TANK SLAB
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

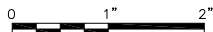
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. COOKSEY
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

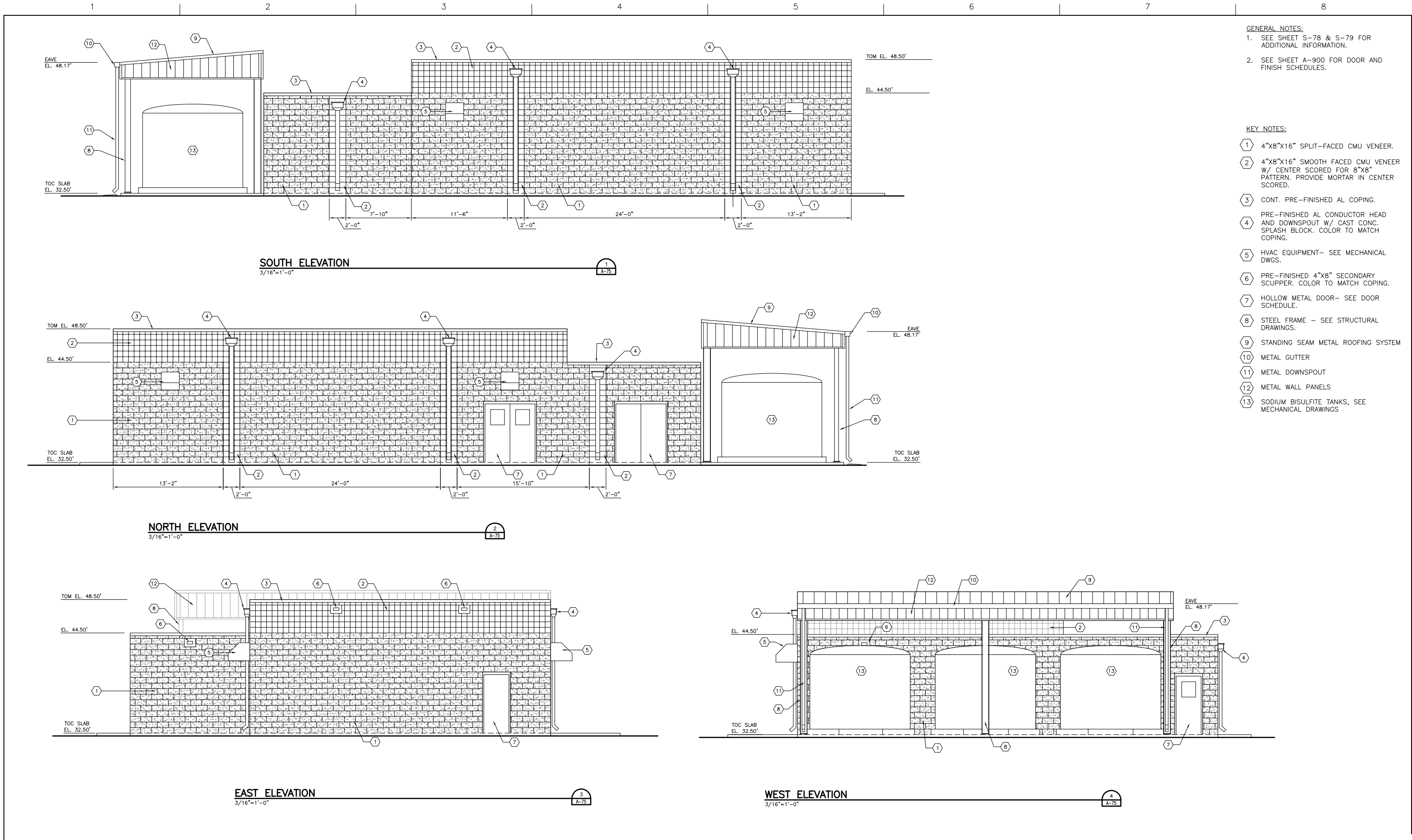
MBBR INFLUENT PUMP STATION
AND SODIUM BISULFITE FACILITY
FLOOR AND ROOF PLAN



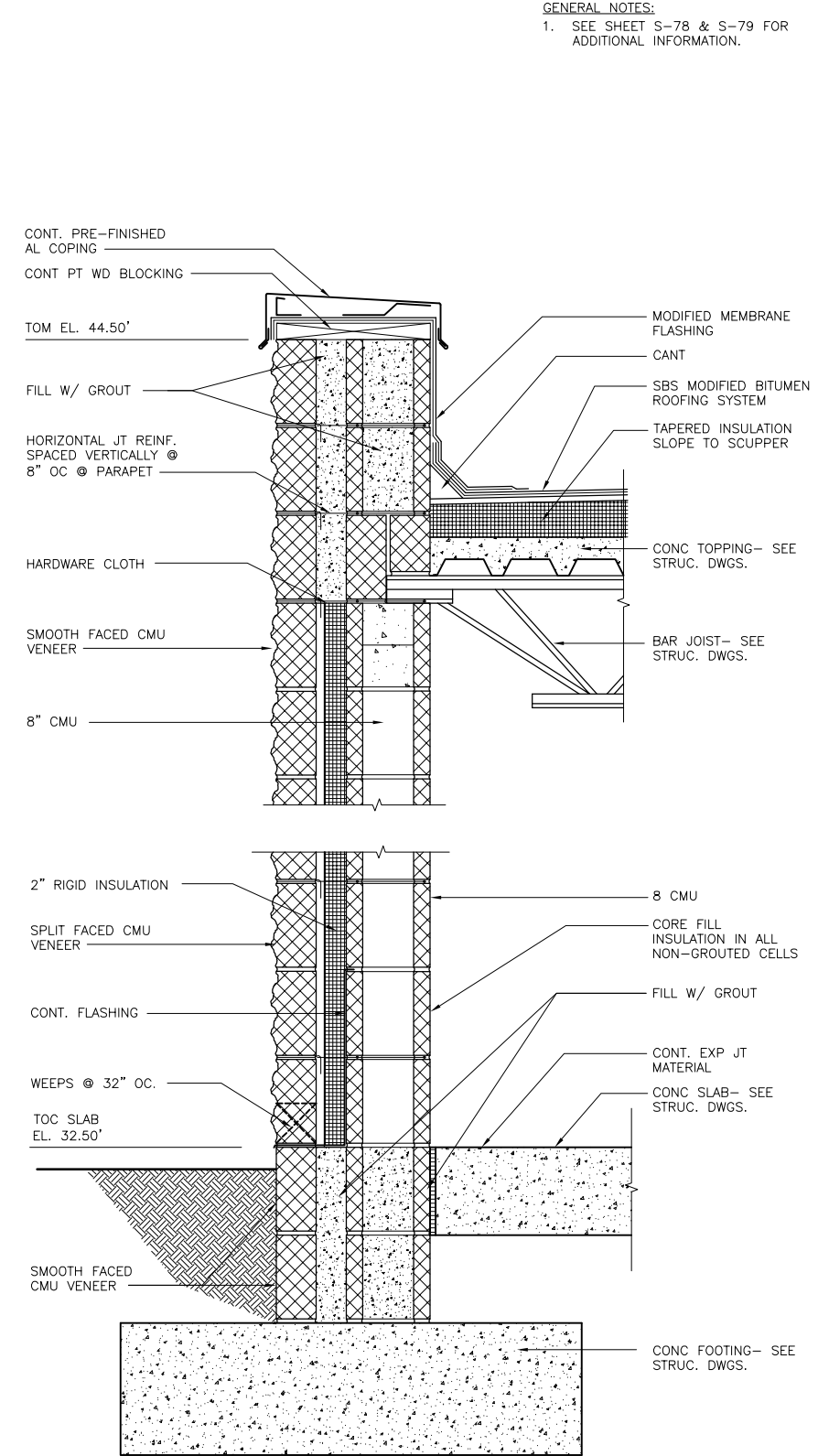
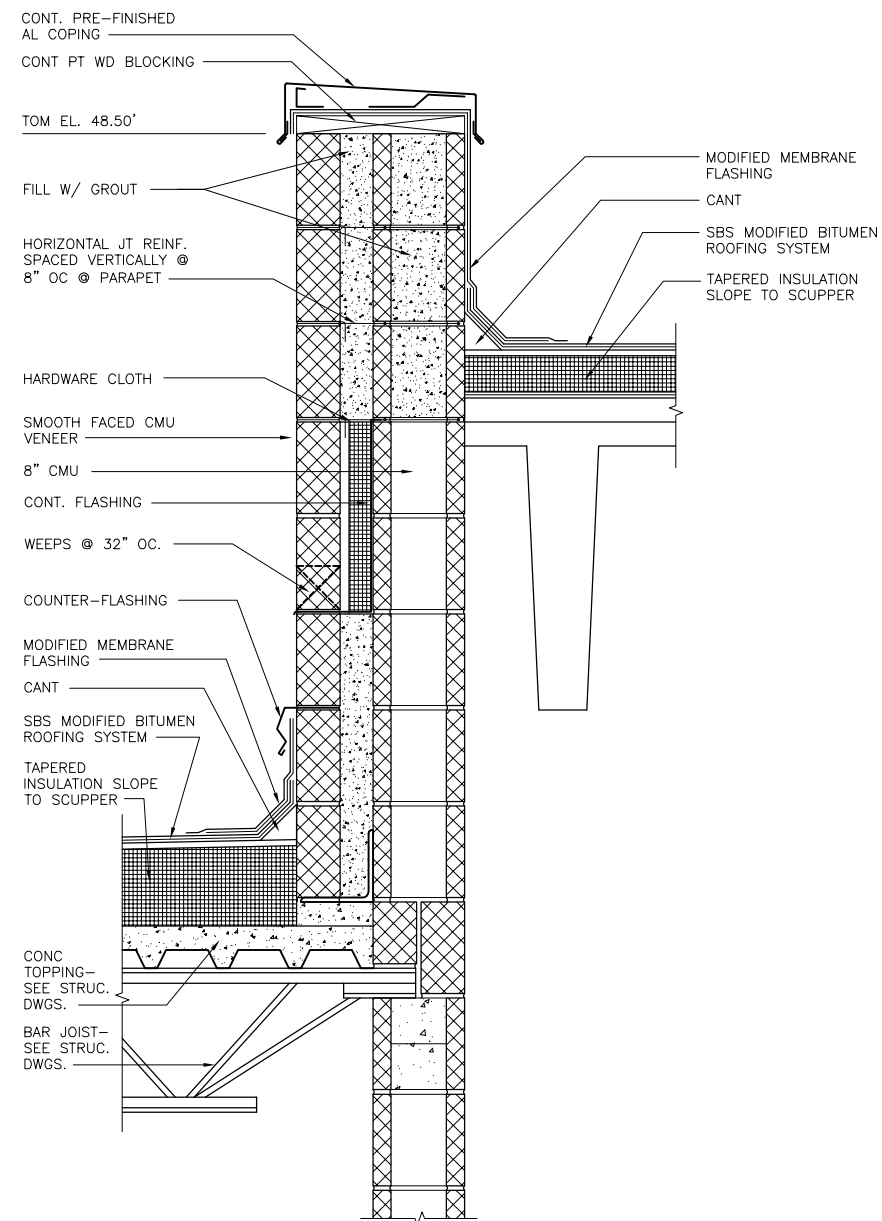
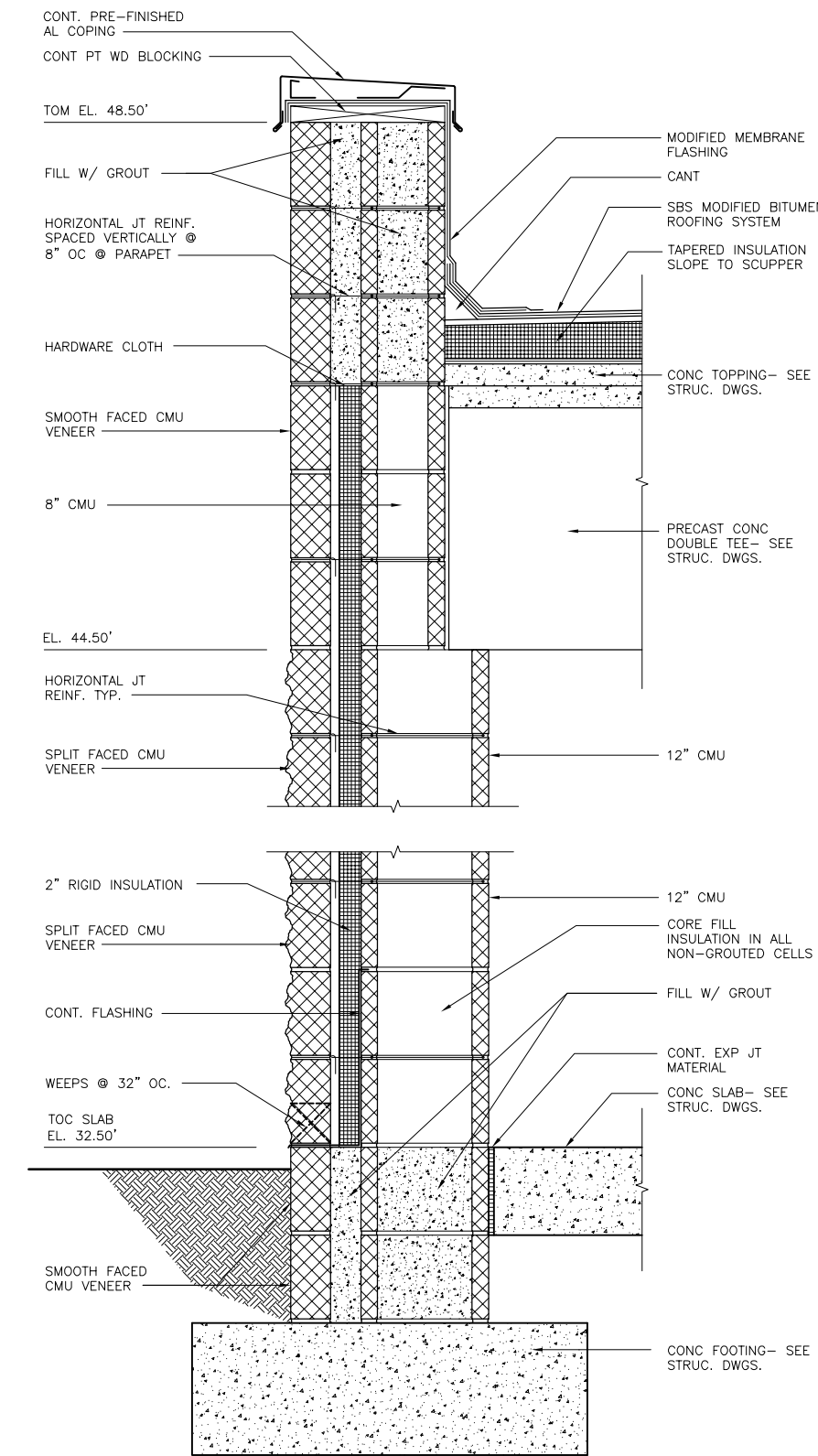
FILENAME	A-75.dwg
SCALE	1/8"=1'-0"

DRAWING NUMBER
A-75

SHEET OF -



<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER:	WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY	MBBR INFLUENT PUMP STATION AND SODIUM BISULFITE FACILITY EXTERIOR ELEVATIONS							
				DESIGNED BY:	B. ELLINGTON										
				DRAWN BY:	W. MALACHIN										
				CHECKED BY:	B. ELLINGTON										
	C	09/13/2013	TANK REVISION				<div><div>01"2"</div><div>0 1 2</div></div>	FILENAME	A-76.dwg	DRAWING NUMBER	A-76		SHEET	OF	-
	B	08/13/2013	ADDED ROOM ADDITION AND TANK SLAB					SCALE	3/16"=1'-0"						
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL												
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER											



GENERAL NOTES:
1. SEE SHEET S-78 & S-79 FOR
ADDITIONAL INFORMATION.

TYPICAL WALL SECTION

1 1/2"=1'-0"



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

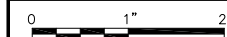
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

MBBR INFLUENT PUMP STATION
AND SODIUM BISULFITE FACILITY
TYPICAL SECTIONS



FILENAME A-77.dwg
SCALE 1 1/2"=1'-0"

DRAWING NUMBER
A-77

SHEET OF -

1

2

3

4

5

6

7

8

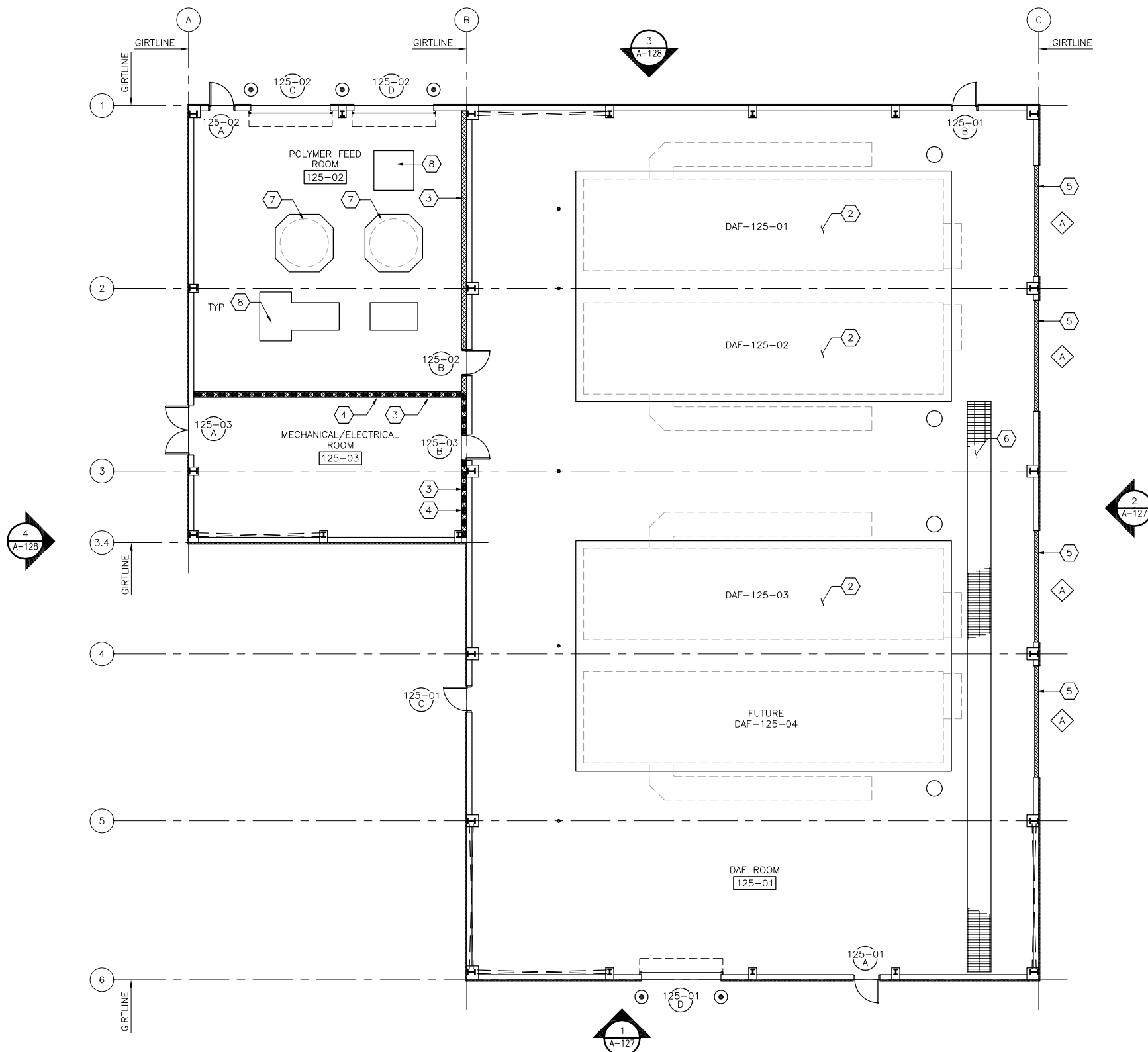


GENERAL NOTES:

1. SEE SHEET S-125 FOR ADDITIONAL INFORMATION.
2. SEE SHEET A-900 FOR DOOR AND FINISH SCHEDULES.

FLOOR PLAN KEY NOTES:

- 1 NOT USED.
- 2 DISSOLVED AIR FLOTATION EQUIPMENT- SEE MECH. DWGS.
- 3 8" INTERIOR CMU WALL - SEE STRUC. DWGS. FOR REINFORCEMENT.
- 4 PROVIDE CORE-FILL INSULATION FOR ALL NON-GROUTED CELL IN CMU WALLS AROUND ELECTRICAL/MECHANICAL ROOM 125-03. ■■■■■■
- 5 REMOVABLE INSULATED WALL PANELS.
- 6 METAL GRATING- SEE STRUC. DWGS.
- 7 POLYMER TANKS- SEE MECH. DWGS.
- 8 POLYMER FEED SYSTEM- SEE MECH. DWGS.



FLOOR PLAN

1/8"=1'-0"

HDRHDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	09/13/2013	PLAN REVISION
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	B. ELLINGTON
DRAWN BY:	W. MALACHIN
CHECKED BY:	B. ELLINGTON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****DISSOLVED AIR FLOTATION BUILDING
FLOOR PLAN**

0 1" 2"

FILENAME A-125.dwg

SCALE 1/8"=1'-0"

DRAWING NUMBER

A-125

SHEET OF -

1

2

3

4

5

6

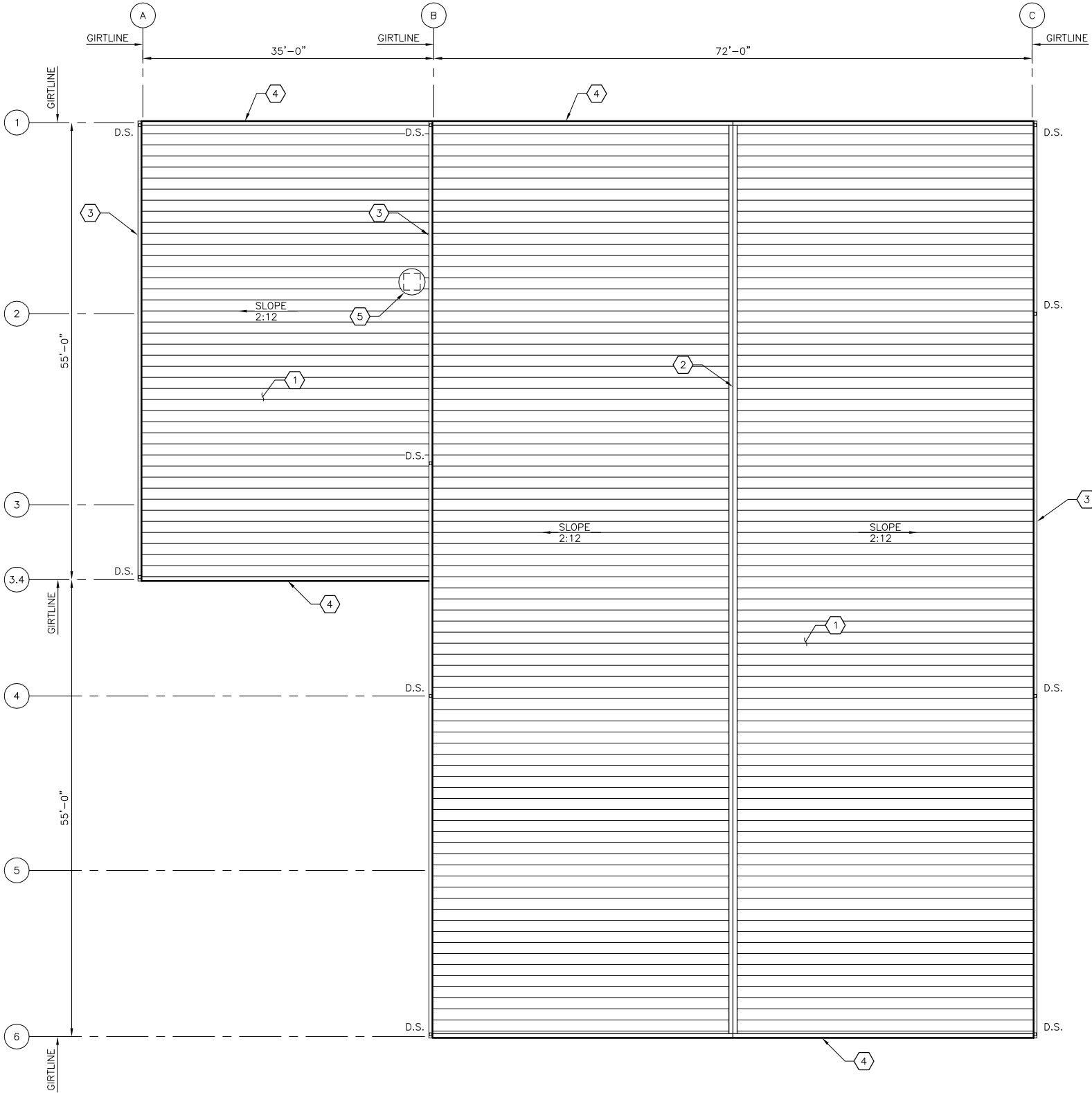
7

8



- GENERAL NOTES:**
- SEE SHEET S-125 FOR ADDITIONAL INFORMATION.
 - SEE SHEET A-900 FOR DOOR AND FINISH SCHEDULES.
 - D.S. = DOWNSPOUT LOCATIONS. COORDINATE WITH SHEET A-127 & A-128

- ROOF PLAN KEY NOTES:**
- 1 METAL ROOF PANEL BY M.B.M.
 - 2 RIDGE FLASHING
 - 3 METAL GUTTER
 - 4 METAL ROOF EDGE TRIM
 - 5 EXHAUST FAN, SEE SHEET H-125



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

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

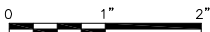
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	P. DAUGHTON
CHECKED BY:	
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**DISSOLVED AIR FLOTATION BUILDING
ROOF PLAN**



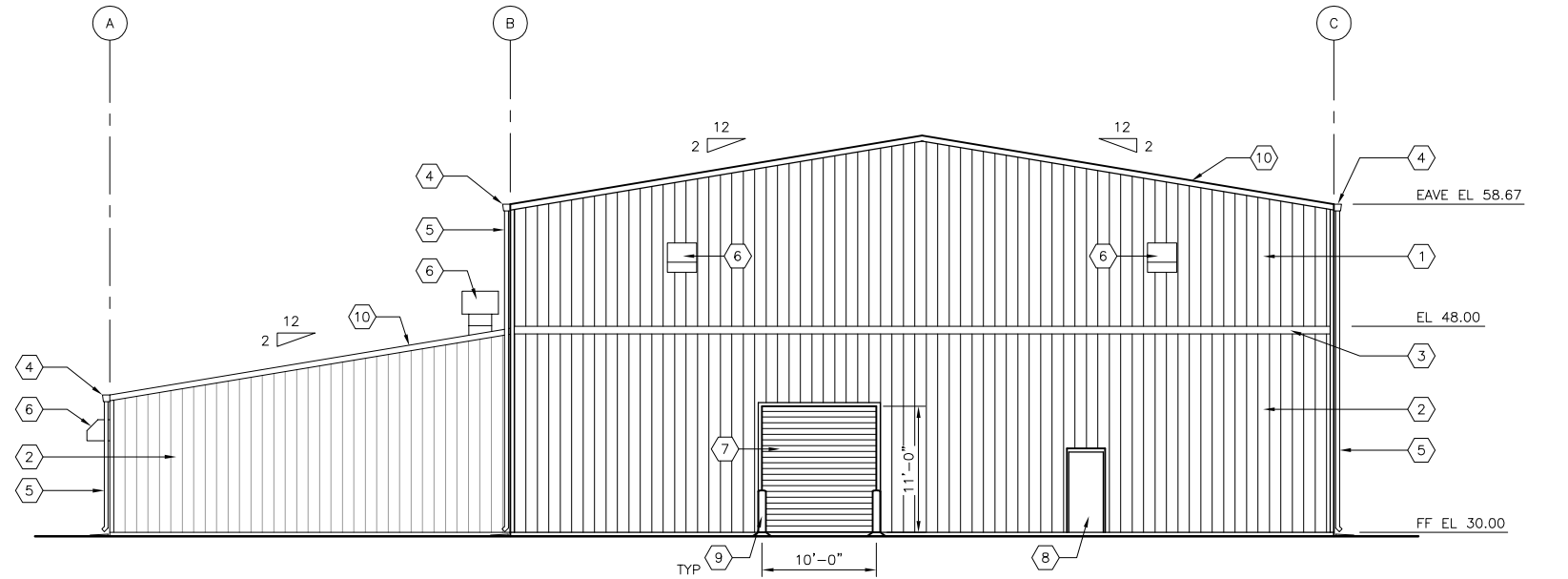
FILENAME	A-126.dwg
SCALE	1/8"=1'-0"

DRAWING NUMBER
A-126

SHEET OF -

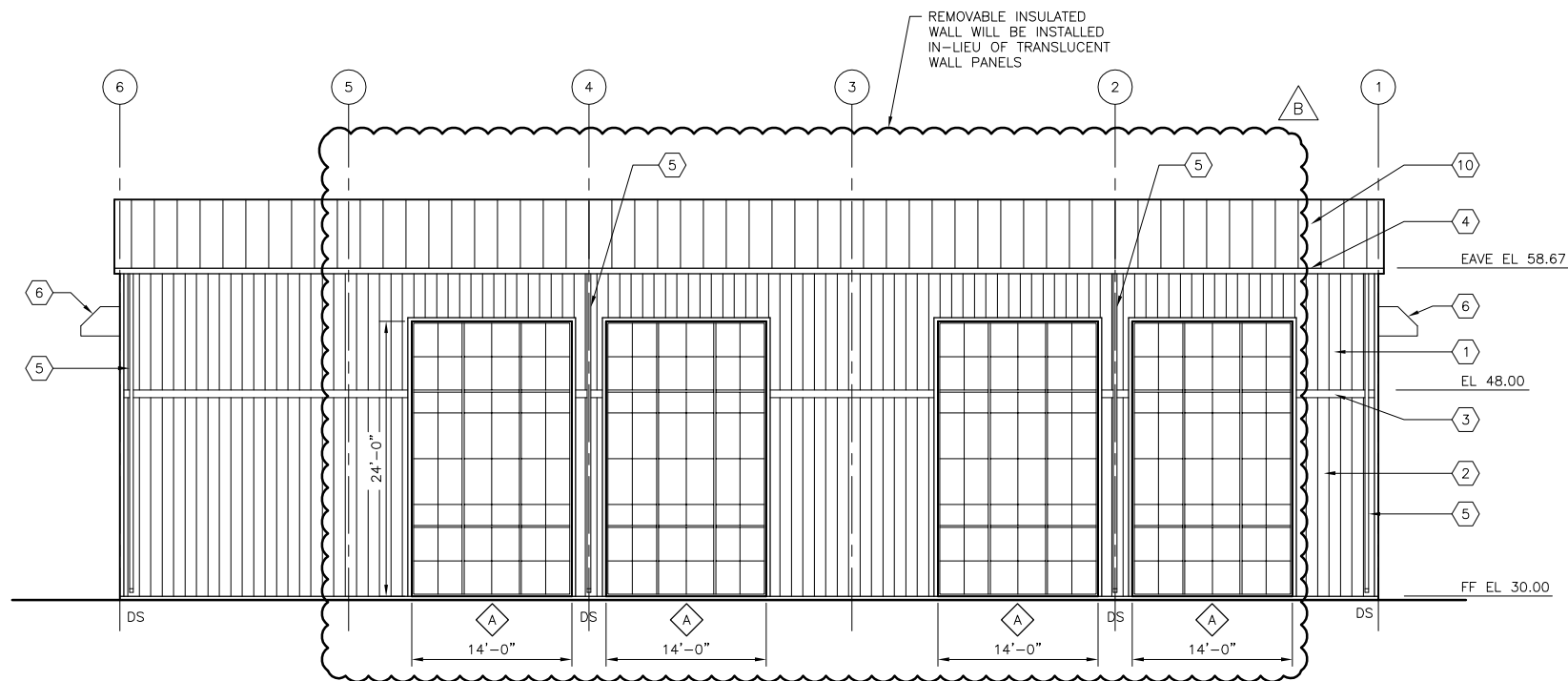
GENERAL NOTES:
1. SEE SHEET S-126 & S-127 FOR ADDITIONAL INFORMATION.
2. SEE SHEET A-900 FOR DOOR AND FINISH SCHEDULES.

- KEY NOTES:
- 1 METAL WALL PANEL (TYPE-1).
 - 2 METAL WALL PANEL (TYPE-2)
 - 3 CONT. 8" METAL ACCENT BAND.
 - 4 CONT. 6"x6" METAL GUTTER.
 - 5 4"x4" METAL DOWNSPOUT W/ CAST CONC. SPLASH BLOCK. COLOR TO MATCH GUTTER.
 - 6 HVAC EQUIPMENT- SEE MECHANICAL DWGS.
 - 7 STEEL ROLLING OVERHEAD DOOR- SEE DOOR SCHEDULE.
 - 8 HOLLOW METAL DOOR- SEE DOOR SCHEDULE.
 - 9 STEEL BOLLARD 4'-0" HT.
 - 10 METAL STANDING SEAM ROOF PANELS.



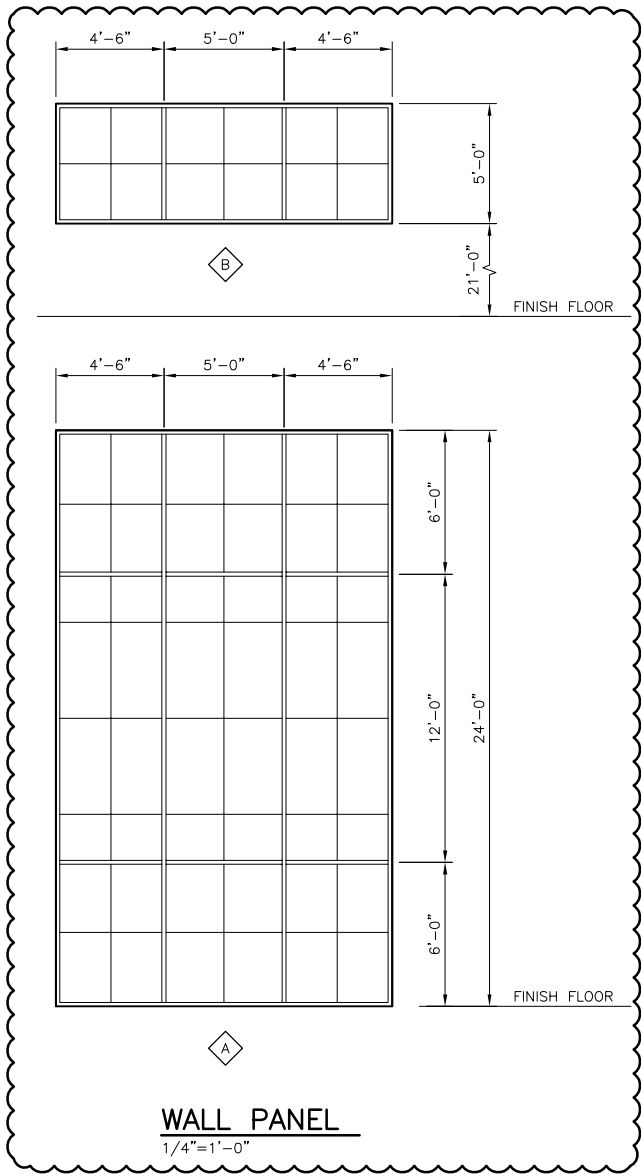
SOUTH ELEVATION
1/8" = 1'-0"

1
A-125



EAST ELEVATION
1/8" = 1'-0"

2
A-125



WALL PANEL
1/4" = 1'-0"

TO BE CHANGED TO
METAL INSULATED
WALL PANEL

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	03/12/2014	TRANSLUCENT PANELS TO BE REMOVED
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

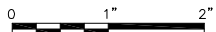
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M. TEPEDINO
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**DISSOLVED AIR FLOTATION BUILDING
EXTERIOR ELEVATIONS**



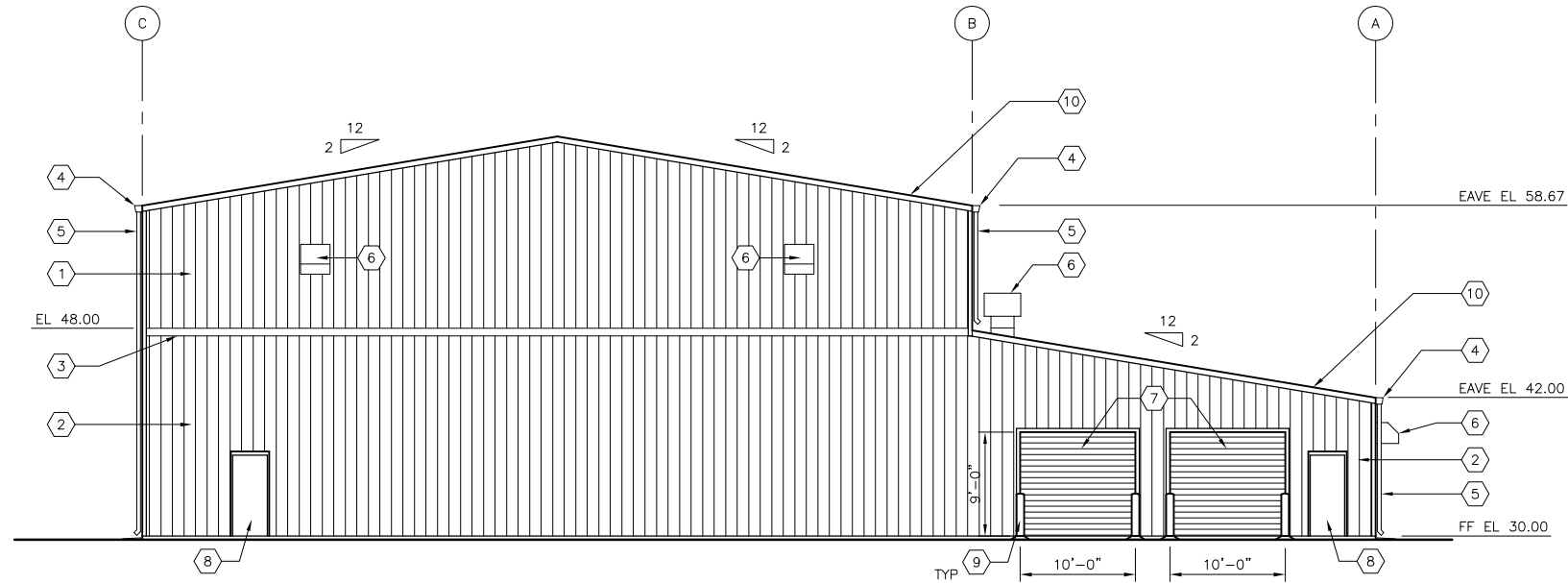
FILENAME A-127.dwg
SCALE AS NOTED

DRAWING NUMBER
A-127

SHEET OF -

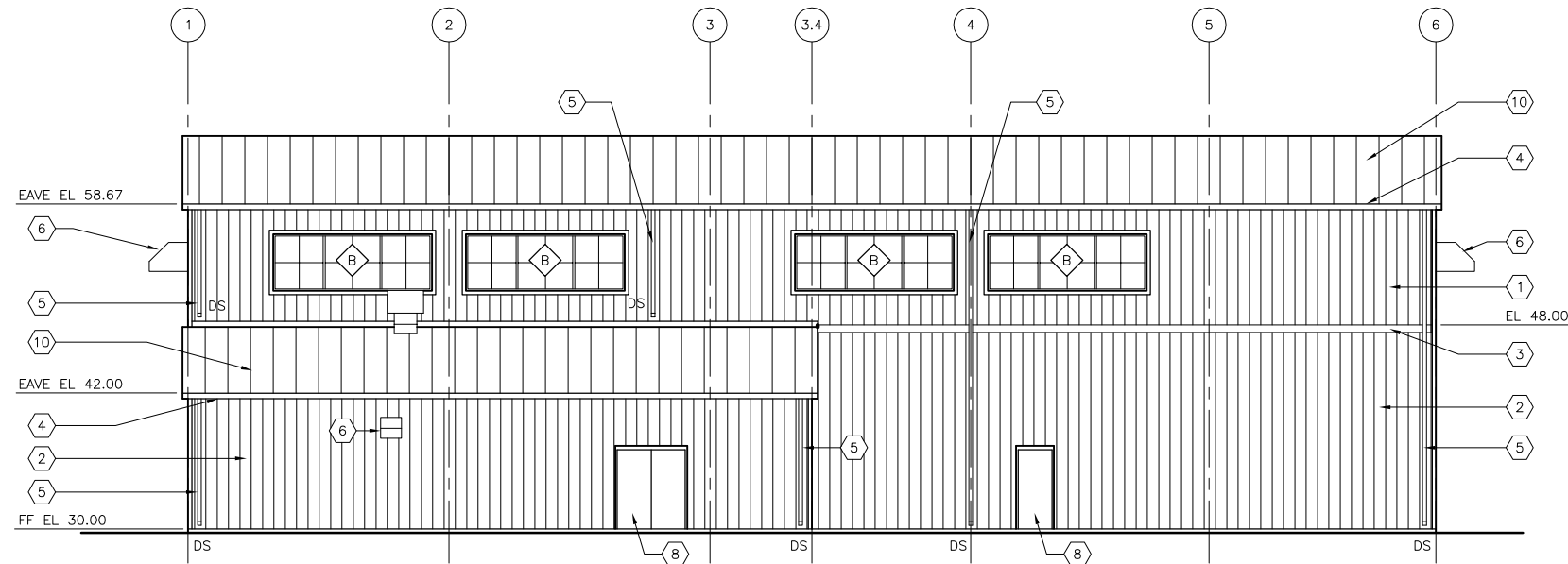
GENERAL NOTES:
1. SEE SHEET S-126 & S-127 FOR ADDITIONAL INFORMATION.
2. SEE SHEET A-900 FOR DOOR AND FINISH SCHEDULES.

KEY NOTES:
1 METAL WALL PANEL (TYPE-1).
2 METAL WALL PANEL (TYPE-2).
3 CONT. 8" METAL ACCENT BAND.
4 CONT. 6"x6" METAL GUTTER.
5 4"x4" METAL DOWNSPOUT W/ CAST CONC. SPLASH BLOCK. COLOR TO MATCH GUTTER.
6 HVAC EQUIPMENT- SEE MECHANICAL DWGS.
7 STEEL ROLLING OVERHEAD DOOR- SEE DOOR SCHEDULE.
8 HOLLOW METAL DOOR- SEE DOOR SCHEDULE.
9 STEEL BOLLARD 4'-0" HT.
10 METAL STANDING SEAM ROOF PANELS.



NORTH ELEVATION
1/8" = 1'-0"

3
A-125



WEST ELEVATION
1/8" = 1'-0"

4
A-125

HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

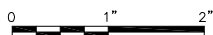
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	M. TEPEDINO
DRAWN BY:	W. MALACHIN
CHECKED BY:	H. ANTSEL
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

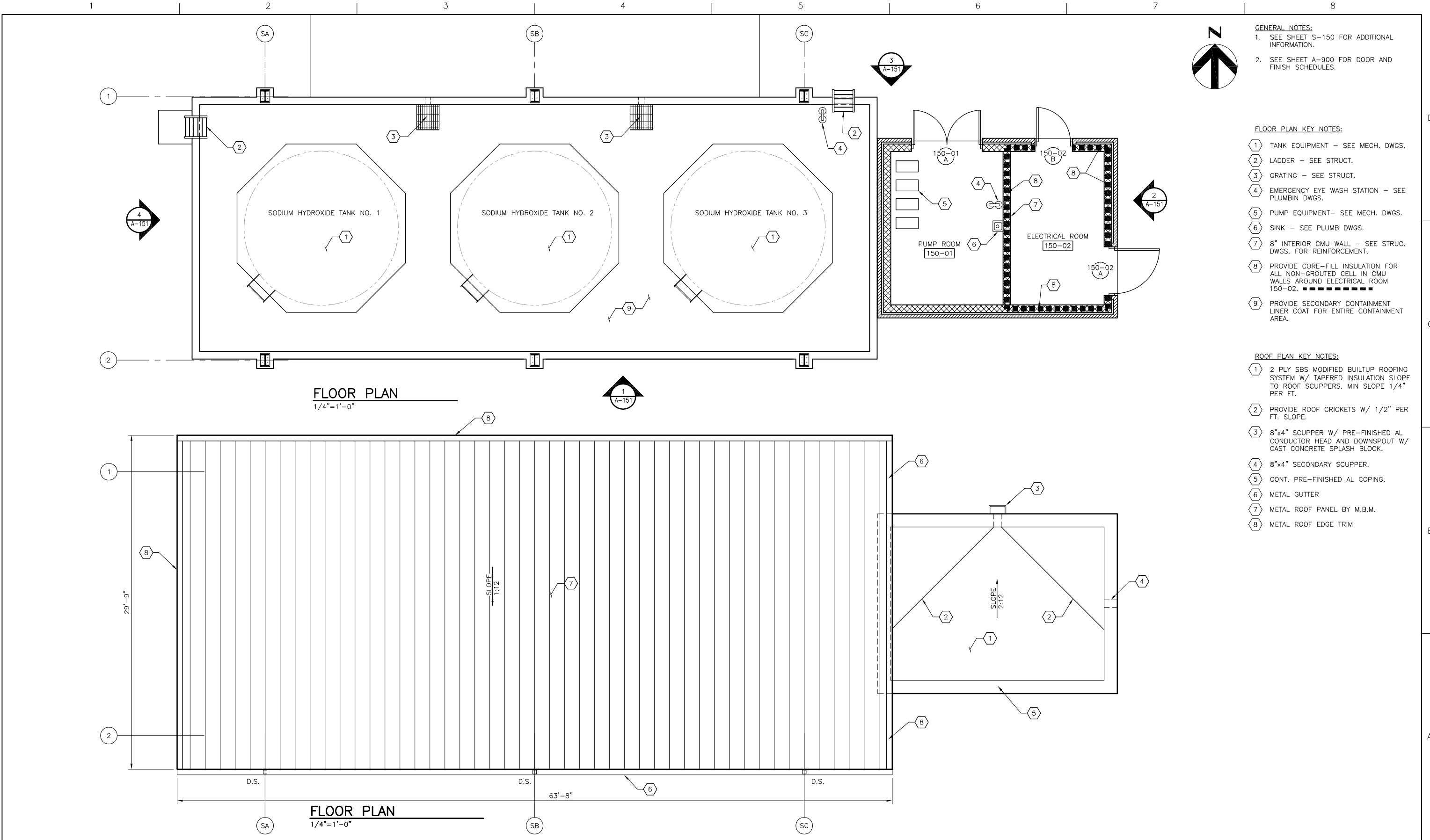
**DISSOLVED AIR FLOTATION BUILDING
EXTERIOR ELEVATIONS**



FILENAME A-128.dwg
SCALE 1/8"=1'-0"

DRAWING NUMBER
A-128

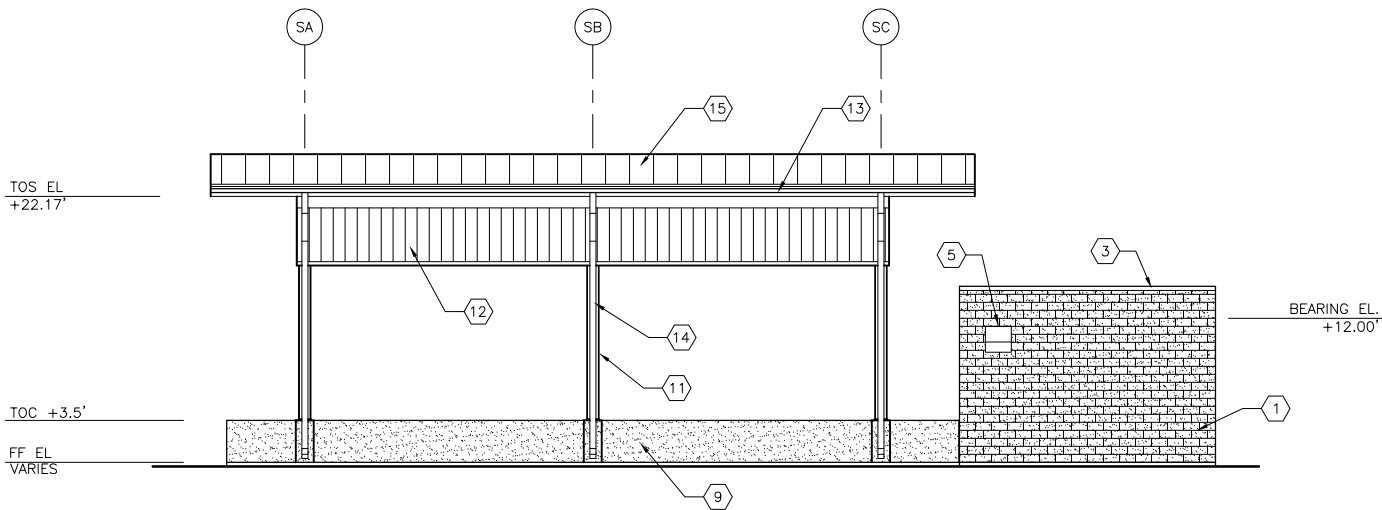
SHEET OF -



<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SODIUM HYDROXIDE FACILITY FLOOR AND ROOF PLAN			<div><div>01"2"</div><div>01"2"</div></div>	FILENAMEA-150.dwg	DRAWING NUMBER A-150	SHEET OF -
				DESIGNED BY: B. ELLINGTON									
				DRAWN BY: P. DAUGHTON									
				CHECKED BY: B. ELLINGTON									
	B	09/13/2013	PLAN REVISION										
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL										
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									

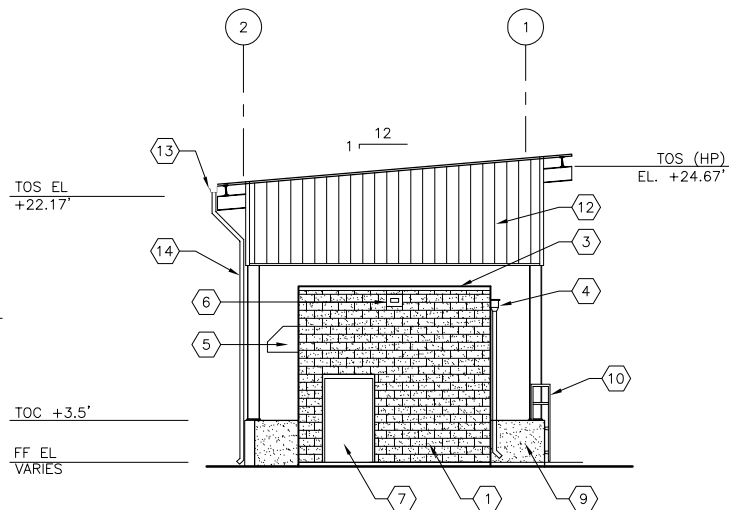
GENERAL NOTES:
1. SEE SHEET S-150 - S-152 FOR ADDITIONAL INFORMATION.
2. SEE SHEET A-900 FOR DOOR AND FINISH SCHEDULES.

- KEY NOTES:
- 1 4"x8"x16" SPLIT-FACED CMU VENEER.
 - 2 4"x8"x16" SMOOTH FACED CMU VENEER W/ CENTER SCORED FOR 8"x8" PATTERN. PROVIDE MORTAR IN CENTER SCORED.
 - 3 CONT. PRE-FINISHED AL COPING.
 - 4 PRE-FINISHED AL CONDUCTOR HEAD AND DOWNSPOUT W/ CAST CONC. SPLASH BLOCK. COLOR TO MATCH COPING.
 - 5 HVAC EQUIPMENT- SEE MECHANICAL DWGS.
 - 6 PRE-FINISHED 4"x8" SECONDARY SCUPPER. COLOR TO MATCH COPING.
 - 7 HOLLOW METAL DOOR- SEE DOOR SCHEDULE.
 - 8 LOUVER / DOOR TRANSOM - SEE DOOR SCHEDULE
 - 9 CONCRETE WALL - SEE STRUCT. DWGS.
 - 10 STEEL LADDER - SEE STRUCT. DWGS.
 - 11 STEEL FRAME - SEE STRUCT. DWGS.
 - 12 METAL WALL PANEL
 - 13 METAL GUTTER
 - 14 METAL DOWNSPOUT
 - 15 METAL ROOF PANELS



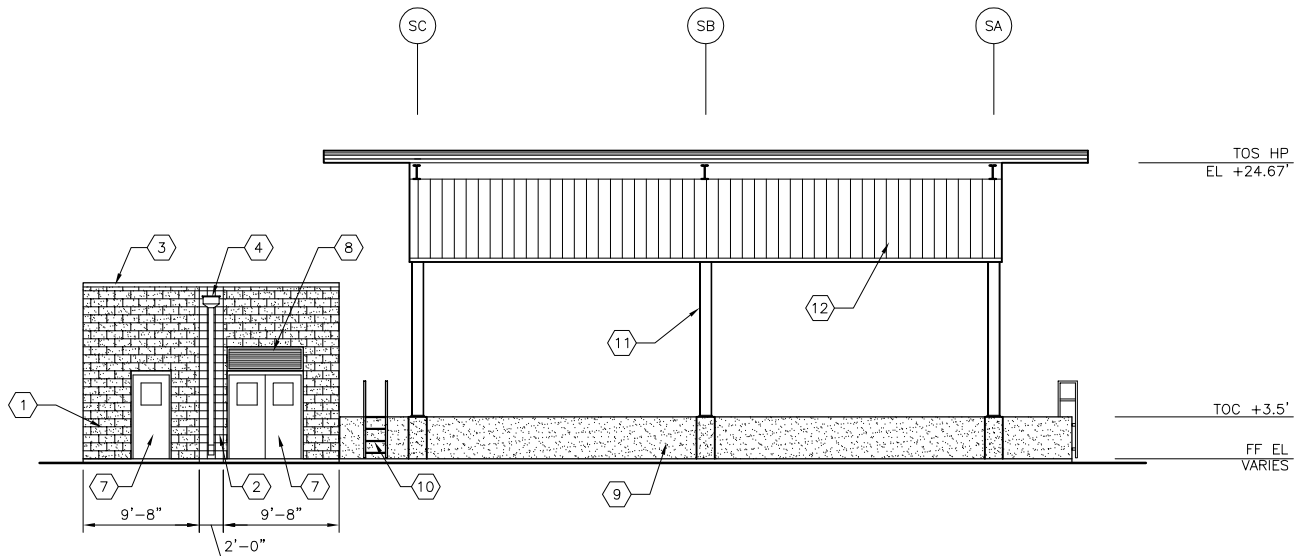
SOUTH ELEVATION
1/8"=1'-0"

1
A-150



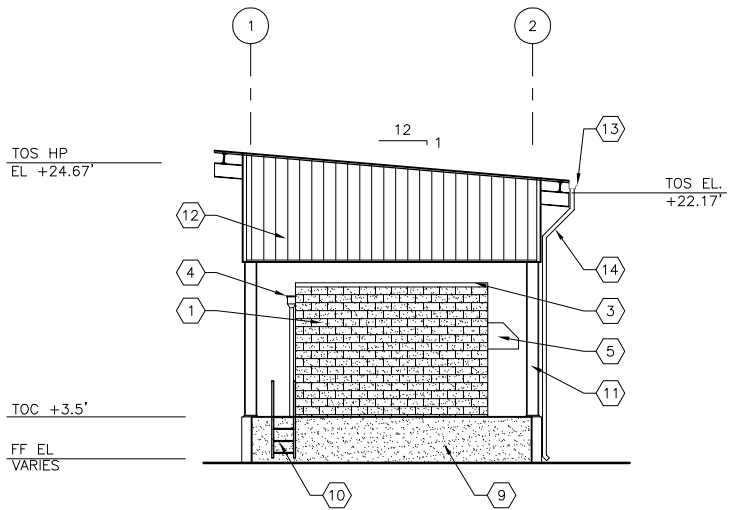
EAST ELEVATION
1/8"=1'-0"

2
A-150



NORTH ELEVATION
1/8"=1'-0"

3
A-150



WEST ELEVATION
1/8"=1'-0"

4
A-150



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	09/13/2013	PLAN REVISION
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

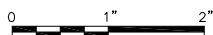
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	B. ELLINGTON
DRAWN BY:	P. DAUGHTON
CHECKED BY:	B. ELLINGTON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

SODIUM HYDROXIDE
EXTERIOR ELEVATIONS

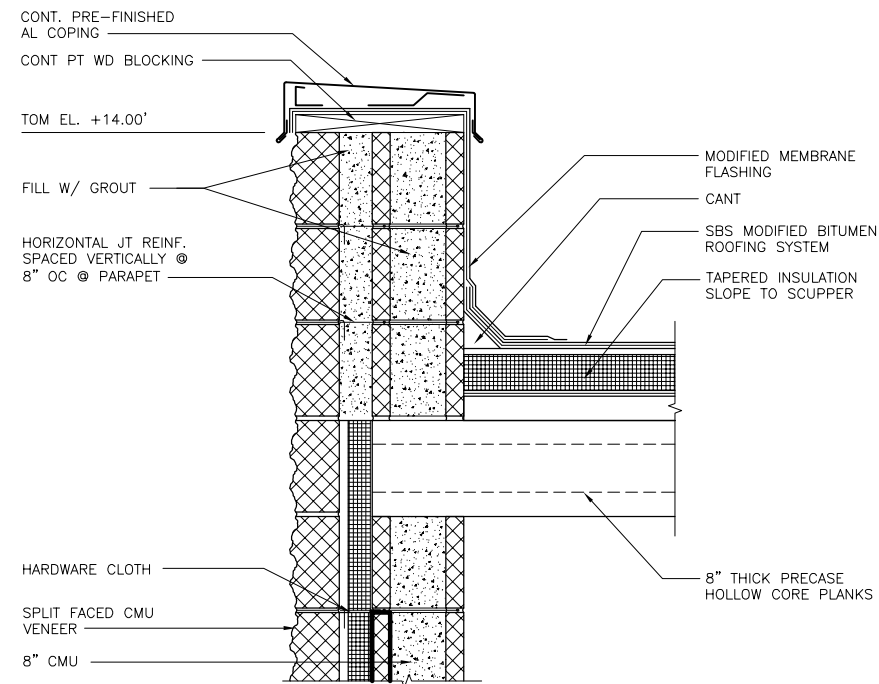
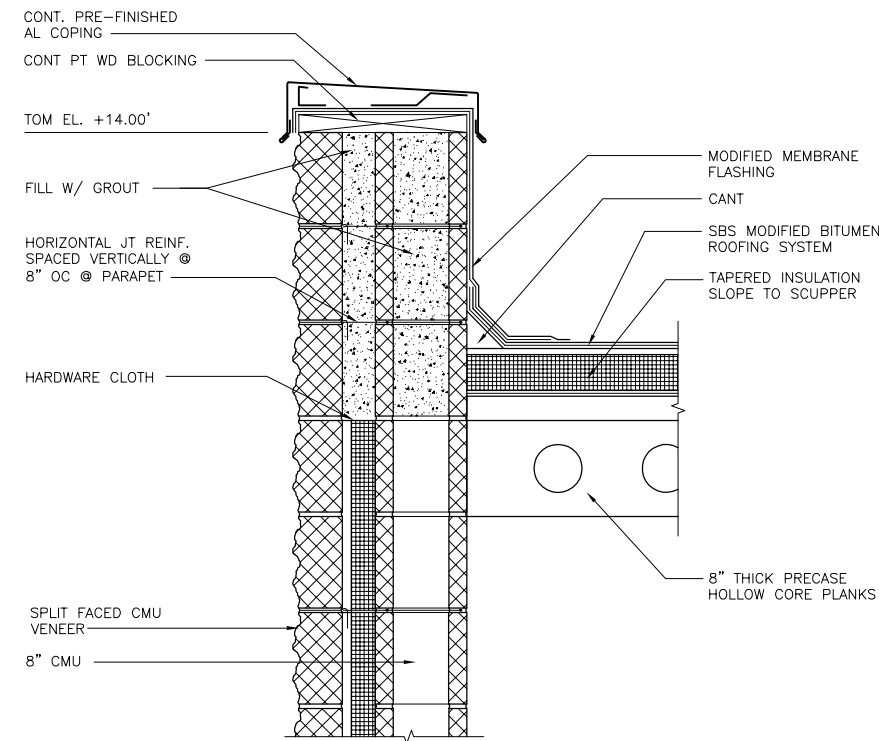


FILENAME	A-151.dwg
SCALE	1/8"=1'-0"

DRAWING NUMBER
A-151

SHEET OF -

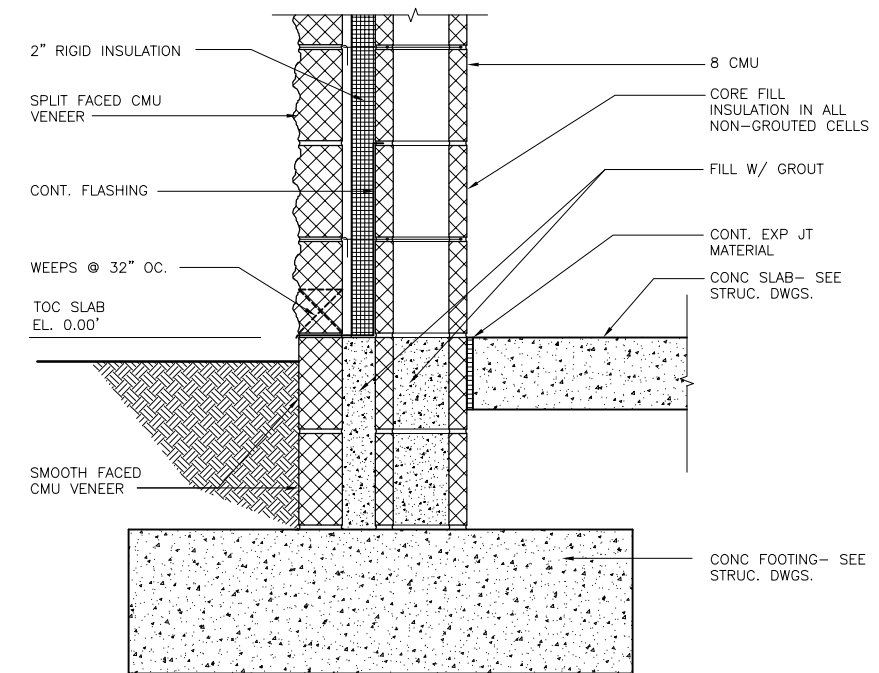
GENERAL NOTES:
1. SEE SHEET S-150 & S-152 FOR
ADDITIONAL INFORMATION.



TYPICAL WALL SECTION

1 1/2"=1'-0"

B
A-150



TYPICAL WALL SECTION

1 1/2"=1'-0"

A
A-150



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	09/13/2013	PLAN REVISION
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	B. ELLINGTON
DRAWN BY:	P. DAUGHTON
CHECKED BY:	B. ELLINGTON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

SODIUM HYDROXIDE
TYPICAL SECTIONS



FILENAME	A-152.dwg
SCALE	1 1/2"=1'-0"

DRAWING NUMBER	A-152
----------------	-------

SHEET OF -

1

2

3

4

5

6

7

8

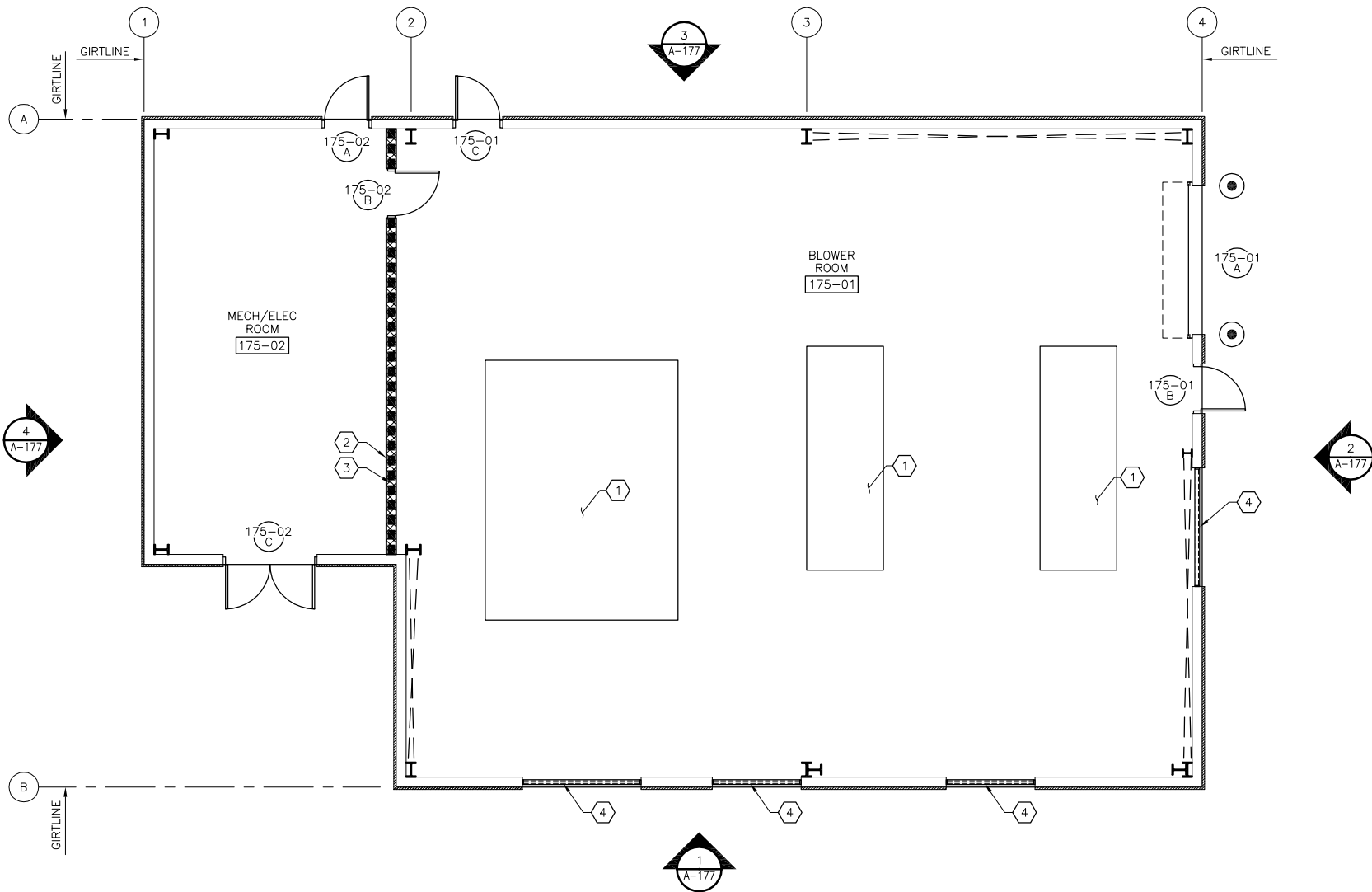


GENERAL NOTES:

1. SEE SHEET S-175 FOR ADDITIONAL INFORMATION.
2. SEE SHEET A-900 FOR DOOR AND FINISH SCHEDULES.

FLOOR PLAN KEY NOTES:

- 1 CONCRETE PAD FOR MECHANICAL BLOWERS - SEE STRUCT. AND MECH. DWGS.
- 2 8" INTERIOR CMU WALL - SEE STRUCT. DWGS. FOR REINFORCEMENT.
- 3 PROVIDE CORE-FILL INSULATION FOR ALL NON-GROUTED CELL IN CMU WALLS AROUND ELECTRICAL/MECHANICAL ROOMS. ■■■■■■
- 4 LOUVERS - SEE HVAC AND MECH. DWGS.



FLOOR PLAN

3/16"=1'-0"



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	09/13/2013	BLOWER BUILDING DESIGN
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

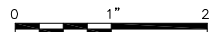
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	B. ELLINGTON
DRAWN BY:	P. DAUGHTON
CHECKED BY:	B. ELLINGTON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

BLOWER BUILDING
FLOOR PLAN



FILENAME	A-175.dwg
SCALE	3/16"=1'-0"

DRAWING NUMBER
A-175

SHEET OF -

1

2

3

4

5

6

7

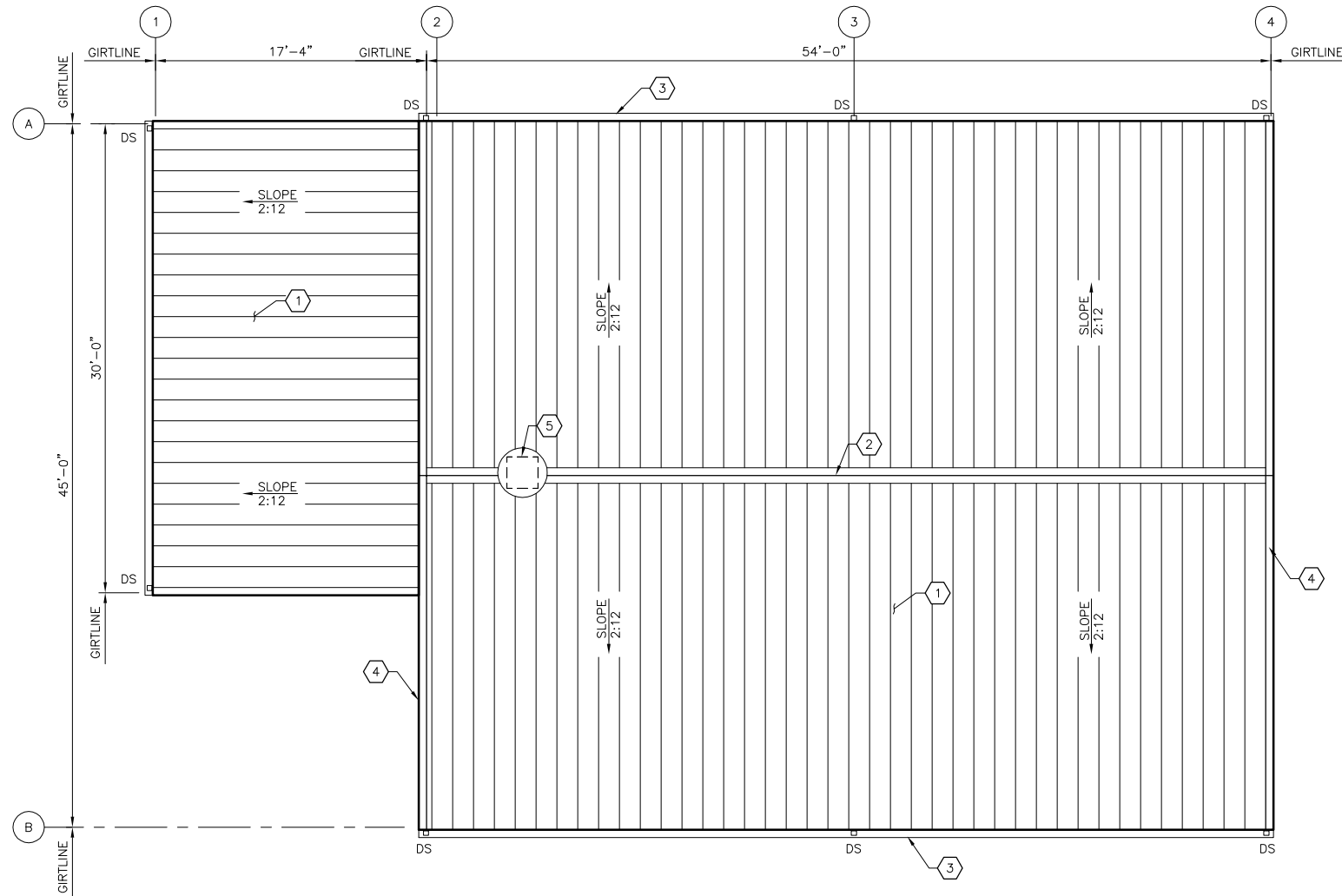
8

**GENERAL NOTES:**

1. SEE SHEET S-175 FOR ADDITIONAL INFORMATION.
2. SEE SHEET A-900 FOR DOOR AND FINISH SCHEDULES.

ROOF PLAN KEY NOTES:

- 1 METAL ROOF PANEL BY M.B.M.
- 2 RIDGE FLASHING
- 3 METAL GUTTER
- 4 METAL ROOF EDGE TRIM
- 5 EXHAUST FAN, SEE SHEET H-175

**ROOF PLAN**

3/16"=1'-0"

HDRHDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	09/13/2013	BLOWER BUILDING DESIGN
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	B. ELLINGTON
DRAWN BY:	P. DAUGHTON
CHECKED BY:	B. ELLINGTON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****BLOWER BUILDING
ROOF PLAN**

0 1" 2"

FILENAME A-176.dwg

SCALE 3/16"=1'-0"

DRAWING NUMBER

A-176

SHEET

OF

-

1

2

3

4

5

6

7

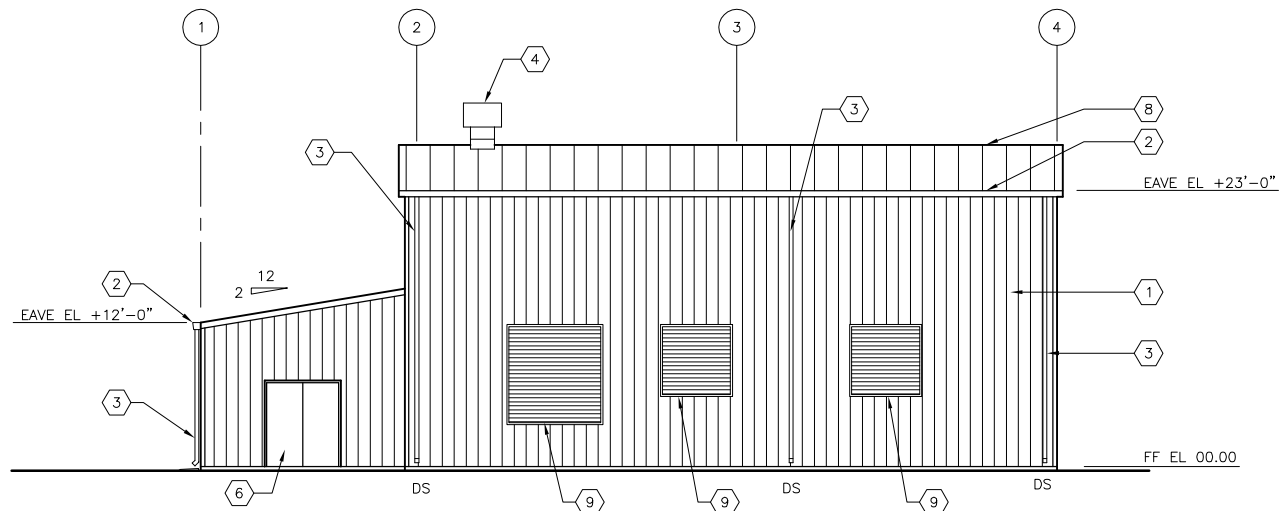
8

GENERAL NOTES:

1. SEE SHEET S-175 FOR ADDITIONAL INFORMATION.
2. SEE SHEET A-900 FOR DOOR AND FINISH SCHEDULES.

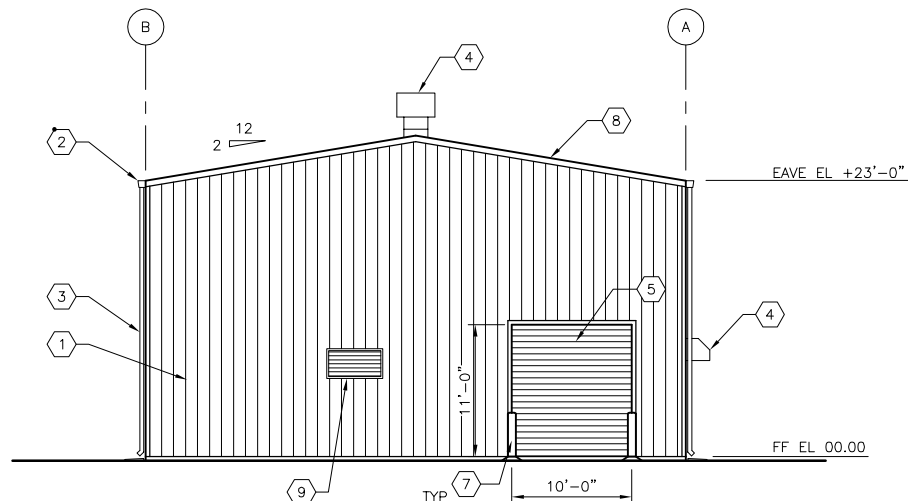
FLOOR PLAN KEY NOTES:

- 1 METAL WALL PANEL.
- 2 CONT. 6"x6" METAL GUTTER.
- 3 4"x4" METAL DOWNSPOUT W/ CAST CONC. SPLASH BLOCK. COLOR TO MATCH GUTTER.
- 4 HVAC EQUIPMENT - SEE MECHANICAL DWGS.
- 5 STEEL ROLLING OVERHEAD DOOR - SEE DOOR SCHEDULE.
- 6 HOLLOW METAL DOOR - SEE DOOR SCHEDULE.
- 7 STEEL BOLLARD 4'-0" HT.
- 8 METAL STANDING SEAM ROOF PANELS.
- 9 LOUVERS - SEE MECH AND HVAC DWGS.
- 10 AIR PIPE - SEE MECH DWGS.



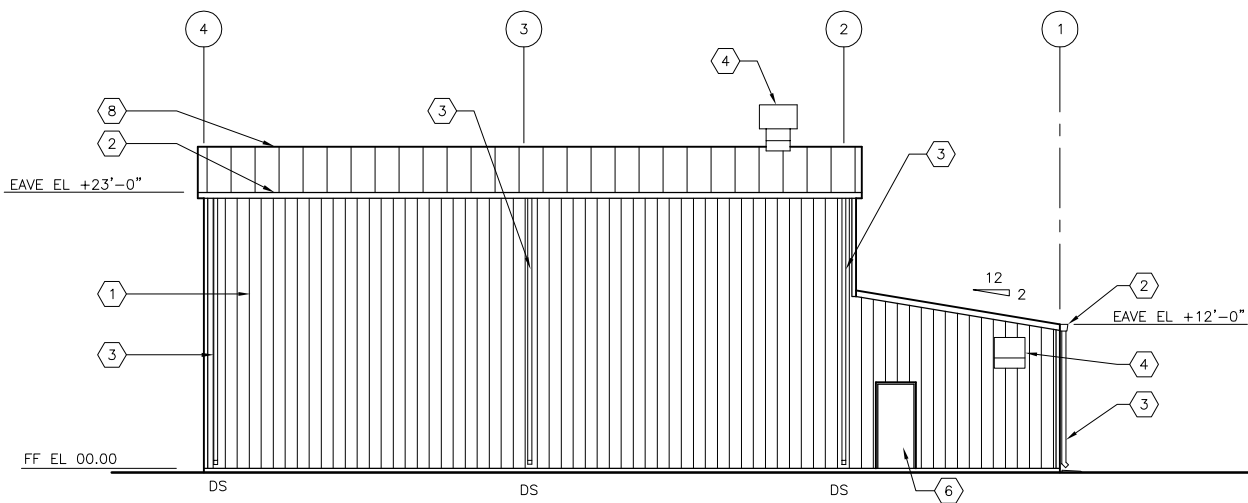
SOUTH ELEVATION

1/8" = 1'-0"

1
A-175

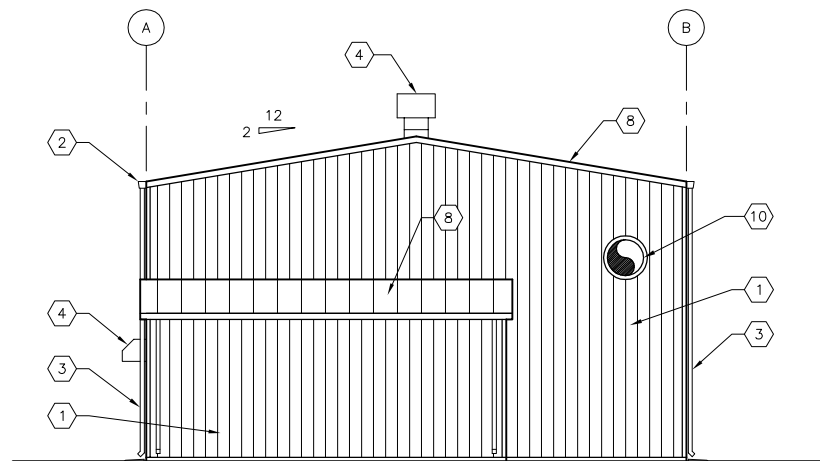
EAST ELEVATION

1/8" = 1'-0"

2
A-175

NORTH ELEVATION

1/8" = 1'-0"

3
A-175

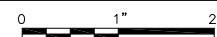
WEST ELEVATION

1/8" = 1'-0"

4
A-175**HDR**HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	09/13/2013	BLOWER BUILDING DESIGN
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	B. ELLINGTON
DRAWN BY:	P. DAUGHTON
CHECKED BY:	B. ELLINGTON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****BLOWER BUILDING
EXTERIOR ELEVATIONS**

FILENAME A-177.dwg

SCALE 1/8" = 1'-0"

DRAWING NUMBER

A-177

SHEET

OF

-

ROOM FINISH SCHEDULE										
ROOM NUMBER	ROOM NAME	FLOOR	BASE	WALLS				CEILING		REMARKS
				NORTH	EAST	SOUTH	WEST	HEIGHT	FINISH	
MBBR INFLUENT PUMP STATION # 75										
75-01	PUMP ROOM	C	N	CMU	CMU	CMU	CMU	14'-0"	ESP	NOTE 1
75-02	ELECTRICAL / MECHANICAL ROOM	C	N	CMU	CMU	CMU	CMU	10'-0"	ESP	NOTE 1
75-03	PUMP ROOM	FC	FC	CMU	CMU	CMU	CMU	10'-0"	ESP	NOTE 1
DISSOLVED AIR FLOTATION BUILDING # 125										
125-01	DAF ROOM	C	N	MLP	MLP	MLP	MLP	VARIES	MLP	NOTE 2
125-02	POLYMER FEED ROOM	C	N	MLP	CMU	CMU	MLP	VARIES	MLP	NOTE 2
125-03	MECHANICAL / ELECTRICAL ROOM	C	N	CMU	CMU	MLP	MLP	VARIES	MLP	NOTE 2
SODIUM HYDROXIDE # 150										
150-01	PUMP ROOM	FC	FC	CMU	CMU	CMU	CMU	12'-0"	ESP	NOTE 1
150-02	ELECTRICAL ROOM	C	N	CMU	CMU	CMU	CMU	12'-0"	ESP	NOTE 1
BLOWER BUILDING # 175										
175-01	BLOWER ROOM	C	N	MLP	MLP	MLP	CMU/MLP	VARIES	MLP	NOTE 2
175-02	MECHANICAL/ELECTRICAL ROOM	C	N	MLP	CMU	MLP	MLP	VARIES	MLP	NOTE 2
FLOOR		BASE			WALLS				CEILING	
C	SEALED CONCRETE	N	NONE		C	CONCRETE			ES	EXPOSED STRUCTURE
FC	EPOXY FLOOR COATING	FC	EPOXY FLOOR COATING		CMU	CONCRETE MASONRY -- PAINTED			ESP	EXPOSED STRUCTURE, PAINTED
					MTL	PRE-ENGINEER BLDG-- METAL WALL PANEL			MLP	PRE-ENGINEER BLDG-- METAL LINER PANEL
									C	CONCRETE

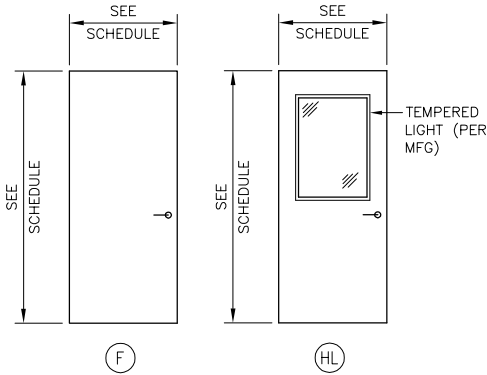
ROOM FINISH SCHEDULE NOTES:

1. PAINT WALLS AND EXPOSED STRUCTURE ABOVE.
2. PAINT EXPOSED PRE-ENGINEERED METAL BUILDING STRUCTURE.

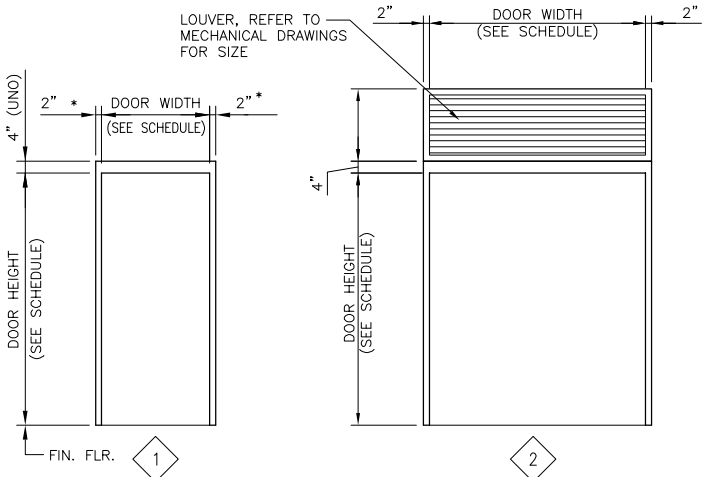
DOOR SCHEDULE											
DOOR NUMBER	SIZE (W x H)	DOOR			FRAME			HARDWARE SET	FIRE RATING	DETAIL	REMARKS
		TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH				
MBBR INFLUENT PUMP STATION # 75											
75-01A	(2) 3'-0"x7'-0"	F	B	E	1	B	E	HW-1		--	NOTE 1
75-01B	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
75-01C	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
75-02A	(2) 3'-0"x7'-0"	F	B	E	1	B	E	HW-1		--	NOTE 1
75-03A	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
DISSOLVED AIR FLOTATION BUILDING # 125											
125-01A	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
125-01B	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
125-01C	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
125-01D	10'-0"x11'-0"	RO	C	G	--	C	E	--		--	NOTE 1
125-02A	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
125-02B	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	
125-02C	10'-0"x9'-0"	RO	C	G	--	C	E	--		--	NOTE 1
125-02D	10'-0"x9'-0"	RO	C	G	--	C	E	--		--	NOTE 1
125-03A	(2) 3'-0"x7'-0"	F	B	E	1	B	E	HW-1		--	NOTE 1
125-03B	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
SODIUM HYDROXIDE BUILDING # 150											
150-01A	(2) 3'-0"x7'-0"	F	B	E	2	B	E	HW-1		--	NOTE 1
150-02A	4'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
150-02B	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
BLOWER BUILDING # 175											
175-01A	10'-0"x11'-0"	RO	C	G	--	C	E	--		--	NOTE 1
175-01B	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
175-01C	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
175-02A	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
175-02B	3'-0"x7'-0"	F	B	E	1	B	E	HW-2		--	NOTE 1
175-02C	(2) 3'-0"x7'-0"	F	B	E	1	B	E	HW-1		--	NOTE 1
MATERIAL							FINISH				
A	ALUMINUM						E	EPOXY PAINT			
B	HOLLOW METAL -- GALVANIZED						F	FACTORY FINISHED-- MATCH EXISTING			
C	STEEL -- GALVANIZED						G	FACTORY FINISHED PVDF COATING			

DOOR SCHEDULE NOTES:

1. ALL EXTERIOR DOORS AND INTERIOR DOOR BETWEEN CONDITIONED AND NON-CONDITIONED SPACES SHALL BE INSULATED.

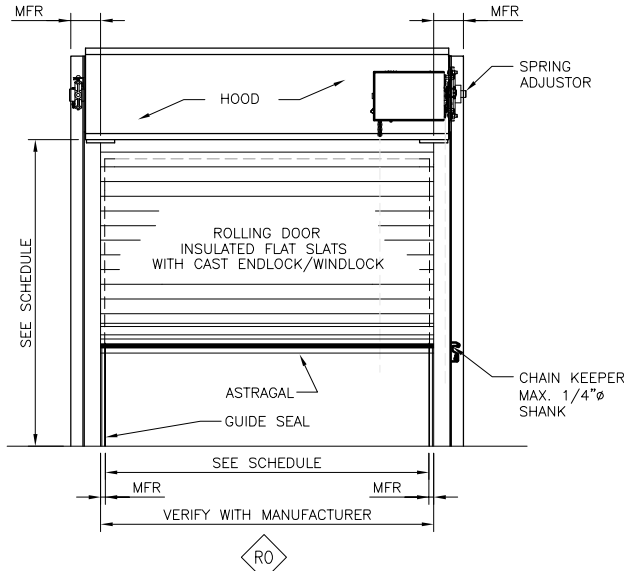


DOOR TYPES



FRAME TYPES

(*) INDICATES DIMENSION TO BE VERIFIED PRIOR TO CONSTRUCTION.



OVERHEAD ROLLING DOOR



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	09/09/2013	PLAN REVISIONS	
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	
ISSUE	DATE	DESCRIPTION	

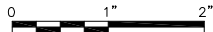
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	B. ELLINGTON
DRAWN BY:	W. MALACHIN
CHECKED BY:	B. ELLINGTON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

ROOM FINISH AND DOOR SCHEDULE



FILENAME	A-900.dwg
SCALE	NONE

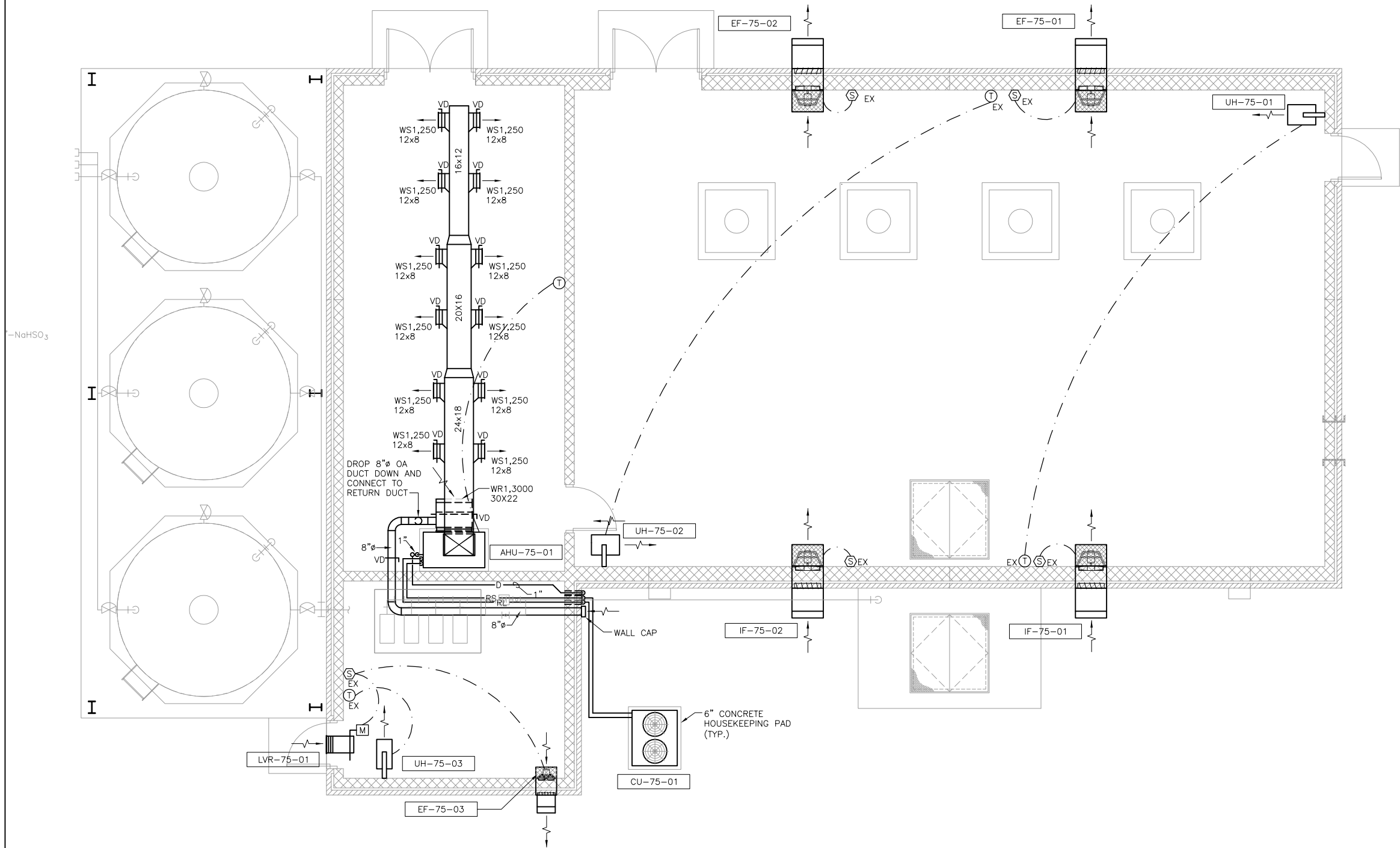
DRAWING NUMBER
A-900

SHEET OF -



GENERAL NOTES:

1. SEE SHEETS G-03, G-04, G-05 & G-06 FOR SYMBOLS AND ABBREVIATIONS.
2. UNLESS OTHERWISE NOTED ALL ROUTING AND INSTALLATION OF DUCT AND EQUIPMENT SHALL BE COORDINATED ON SITE WITH ALL OTHER TRADES TO ENSURE PROPER OPERATION OF THE HVAC SYSTEMS.
3. SIZE REFRIGERANT PIPING AS PER MANUFACTURER'S RECOMMENDATIONS.



HDR

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

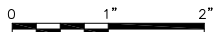
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	S. GAETA
CHECKED BY:	J. JOHNSON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**MBBR INFLUENT PUMP STATION
AND SODIUM BISULFITE FACILITY
UPPER HVAC PLAN**



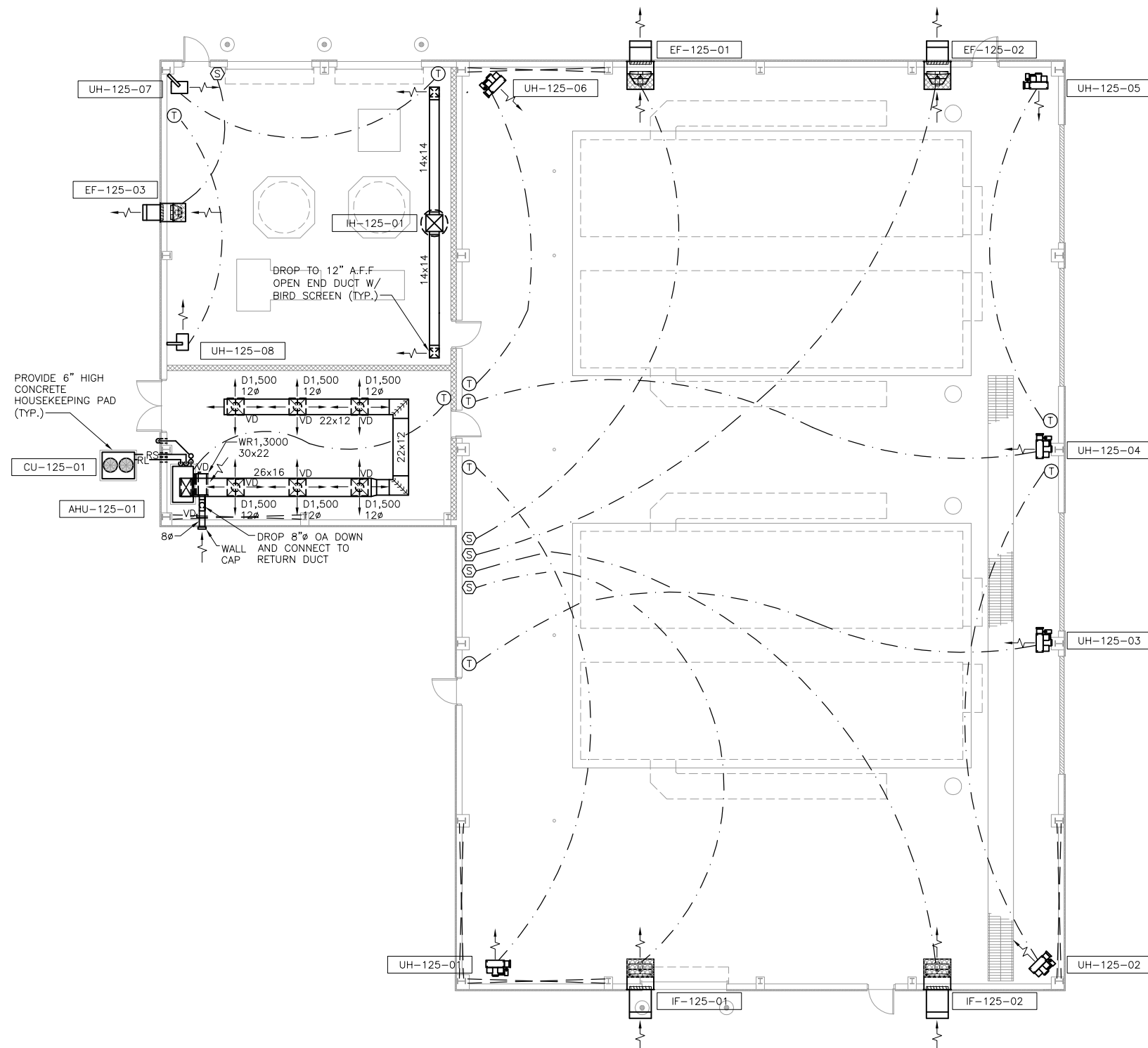
FILENAME	H-75.dwg
SCALE	1/4"=1'-0"

DRAWING NUMBER	
H-75	

SHEET OF -

**GENERAL NOTES:**

1. SEE SHEETS G-03, G-04, G-05 & G-06 FOR SYMBOLS AND ABBREVIATIONS.
2. UNLESS OTHERWISE NOTED ALL ROUTING AND INSTALLATION OF DUCT AND EQUIPMENT SHALL BE COORDINATED ON SITE WITH ALL OTHER TRADES TO ENSURE PROPER OPERATION OF THE HVAC SYSTEMS.
3. SIZE REFRIGERANT PIPING AS PER MANUFACTURER'S RECOMMENDATIONS.

**HDR**HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	S. GAETA
CHECKED BY:	J. JOHNSON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****DISSOLVED AIR FLOATATION BUILDING
HVAC PLAN**

0 1" 2"

FILENAME H-125.dwg

SCALE 1/8"=1'-0"

DRAWING NUMBER

H-125

SHEET OF -

1

2

3

4

5

6

7

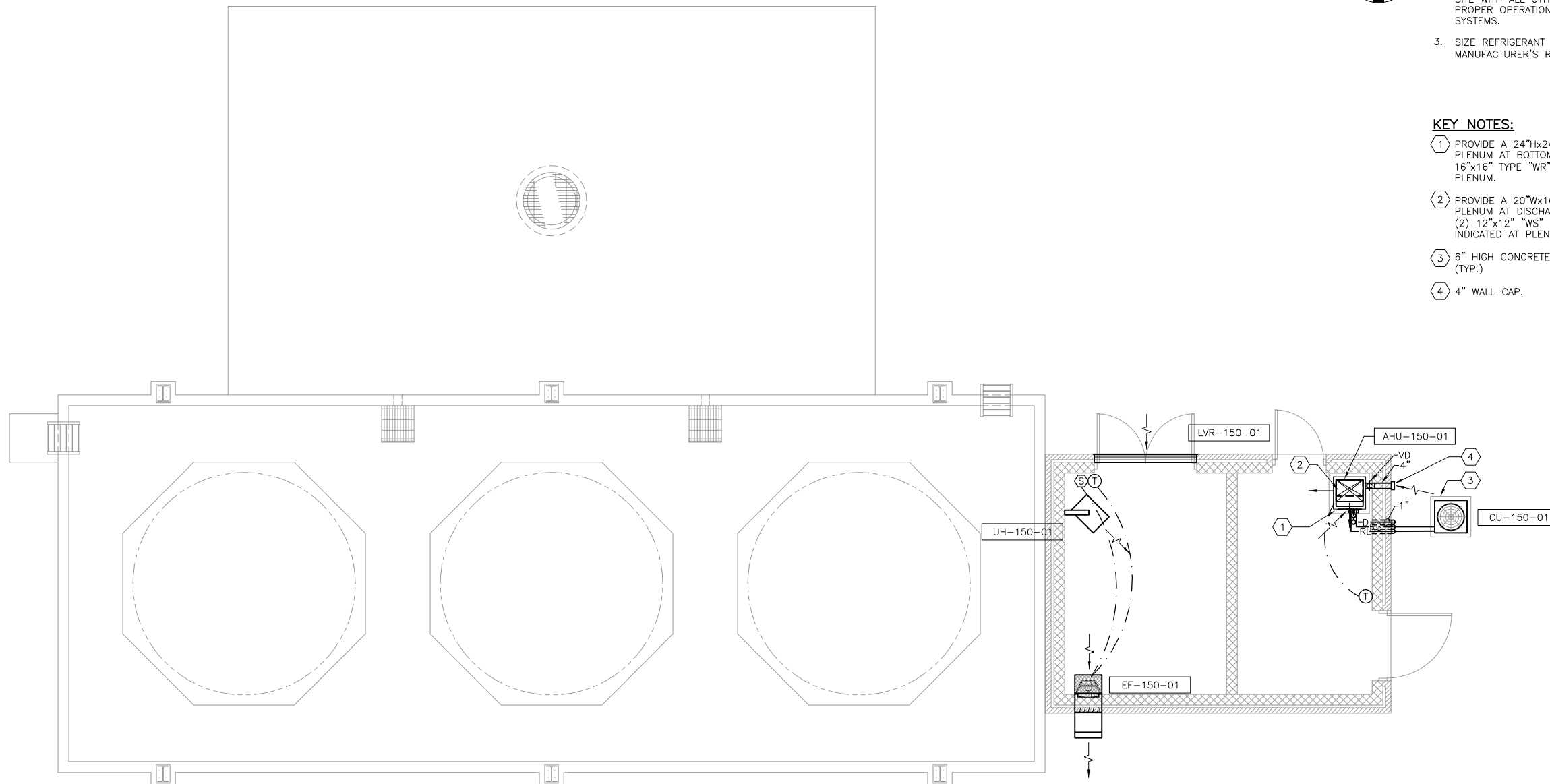
8

**GENERAL NOTES:**

1. SEE SHEETS G-03, G-04, G-05 & G-06 FOR SYMBOLS AND ABBREVIATIONS.
2. UNLESS OTHERWISE NOTED ALL ROUTING AND INSTALLATION OF DUCT AND EQUIPMENT SHALL BE COORDINATED ON SITE WITH ALL OTHER TRADES TO ENSURE PROPER OPERATION OF THE HVAC SYSTEMS.
3. SIZE REFRIGERANT PIPING AS PER MANUFACTURER'S RECOMMENDATIONS.

KEY NOTES:

- 1 PROVIDE A 24"Hx24"Dx24W RETURN PLENUM AT BOTTOM OF UNIT. PROVIDE A 16"x16" TYPE "WR" RETURN DEVICE AT PLENUM.
- 2 PROVIDE A 20"Wx16"Dx16"H SUPPLY PLENUM AT DISCHARGE OF UNIT. PROVIDE (2) 12"x12" "WS" SUPPLY DEVICES AS INDICATED AT PLENUM.
- 3 6" HIGH CONCRETE HOUSEKEEPING PAD. (TYP.)
- 4 4" WALL CAP.

**HDR**

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

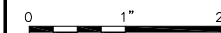
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	S. GAETA
CHECKED BY:	J. JOHNSON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**SODIUM HYDROXIDE FACILITY
HVAC PLAN**



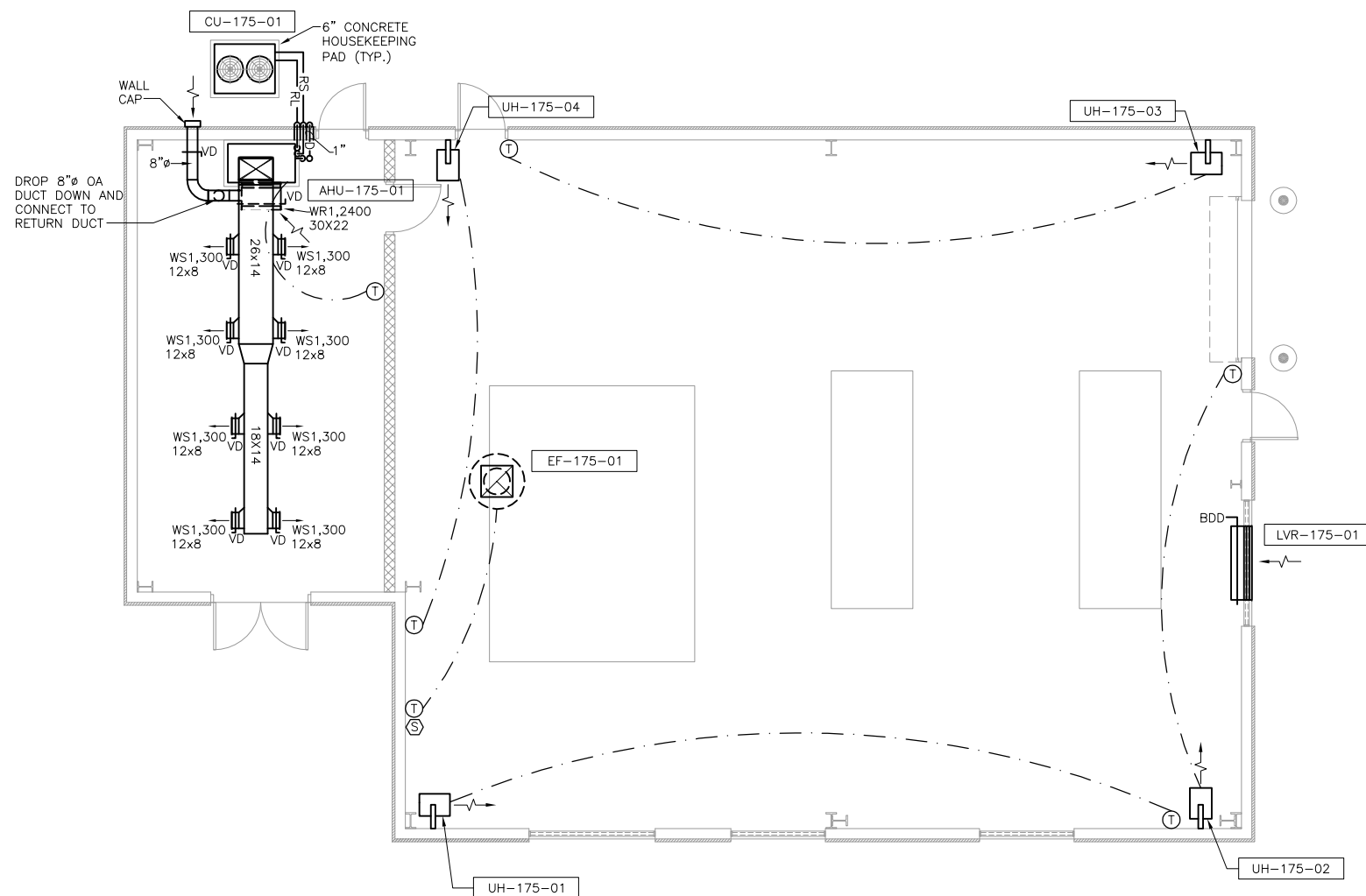
FILENAME	H-150.dwg
SCALE	1/4"=1'-0"

DRAWING NUMBER
H-150

SHEET OF -

**GENERAL NOTES:**

1. SEE SHEETS G-03, G-04, G-05 & G-06 FOR SYMBOLS AND ABBREVIATIONS.
2. UNLESS OTHERWISE NOTED ALL ROUTING AND INSTALLATION OF DUCT AND EQUIPMENT SHALL BE COORDINATED ON SITE WITH ALL OTHER TRADES TO ENSURE PROPER OPERATION OF THE HVAC SYSTEMS.
3. SIZE REFRIGERANT PIPING AS PER MANUFACTURER'S RECOMMENDATIONS.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	S. GAETA
CHECKED BY:	J. JOHNSON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**BLOWER BUILDING
HVAC PLAN**



FILENAME	H-175.dwg
SCALE	3/16"=1'-0"

DRAWING NUMBER
H-175

SHEET OF -

AIR HANDLING UNIT SCHEDULE

MARK NO.	LOCATION	SERVES	TYPE	MATCHING COND. UNIT	SUPPLY AIR FLOW (CFM)	OUTSIDE AIR FLOW (CFM)	FAN MOTOR HP	E. S. P. I.W.C.	COOLING COIL					TOTAL HEATING MBH	ELECTRIC HEAT KW	ELECTRICAL DATA					UNIT WEIGHT LBS	FILTERS		BASIS OF DESIGN	MODEL NO.	NOTES
									TYPE	TOTAL MBH	SEN MBH	E. A. T. °F	L. A. T. °F			MCA	MOCP	VOLTS/ PHASE	DISC SW	STARTER		MERV	THK (IN)			
AHU-10-01	GRAVELLY RUN BLDG	PUMP STATION	CONSTANT VOL.	CU-10-01	2,400	120	1 1/2	0.7	DX	74.1	53.4	80/67	55/54	NA	10	19	20	480/3	DN/ 15	DN/15	350	10	5	LENNOX	TAA072S4D-1G	1,2,3
AHU-75-01	MBRR PS	ELECTRICAL RM	CONSTANT VOL.	CU-75-01	3,000	150	2	0.7	DX	93.3	70	80/67	55/54	NA	10	20	25	480/3	DN/ 15	DN/15	350	10	5	LENNOX	TAA090S4D-1G	1,2,3
AHU-125-01	DAF BLDG	ELECTRICAL RM	CONSTANT VOL.	CU-125-01	3,000	150	2	0.7	DX	93.3	70	80/67	55/54	NA	10	20	25	480/3	DN/ 15	DN/15	350	10	5	LENNOX	TAA090S4D-1G	1,2,3
AHU-150-01	SODIUM HYDROX. BLDG	ELECTRICAL RM	CONSTANT VOL.	CU-150-01	610	50	1/2	0.3	DX	19	14.4	80/67	55/54	NA	2.5	16	20	208/1	DN/ 15	DN/15	140	8	1	LENNOX	CBX27UH-018-208-6-01	1,2,3
AHU-175-01	BLOWER BLDG	ELECTRICAL RM	CONSTANT VOL.	CU-175-01	2,400	120	2	0.7	DX	74.1	53.4	80/67	55/54	NA	10	19	20	480/3	DN/ 15	DN/ 15	350	10	5	LENNOX	TAA072S4D-1G	1,2,3

NOTES:

1. PROVIDE EPOXY PROTECTION COATING ON COILS AND ALL CABINET SURFACES.
2. PROVIDE SEPARATE DISCONNECTS FOR AIR HANDLER FAN AND ELECTRIC HEATER, ELECTRICAL DATA SHOWN FOR FAN AND ELECTRIC HEATER.
3. FACTORY INSTALLED CONTROLS WITH TOUCH SCREEN OPERATOR INTERFACE FOR SET POINT ADJUSTMENT AND SCHEDULING

CONDENSER SCHEDULE

MARK NO.	LOCATION	WEIGHT (LBS)	MATCHING AIR HANDLER	TOTAL CAP. (MBH)	COMPRESSOR DATA						AIR COOLED CONDENSER DATA				ELECTRICAL DATA			BASIS OF DESIGN	MODEL NO.	NOTES
					TYPE	REFRIG.	NO. OF COMP.	REFRIG. CIRCUITS	RLA (EA)	IEER @ ARI COND.	SOUND PRESS. (dba)	AMB. TEMP (F) db/wh	NO. OF FANS	FAN HP (EA)	MCA	MOCP	VOLTS PHASE			
CU-10-01	GRAVELLY RUN BLDG	305	AHU-10-01	74.1	SCROLL	R-410A	1	2	9.7	11.2	81	95/75	1	1/3	14	20	480/3	LENNOX	TSA072S4DN1G	1,2,3
CU-75-01	MBBR PS - ELECT RM	355	AHU-75-01	93.4	SCROLL	R-410A	1	2	12.2	11.3	81	95/75	1	1/2	17	25	480/3	LENNOX	TSA090S4DN1G	1,2,3
CU-125-01	DAF BLDG - ELECT RM	355	AHU-125-01	93.4	SCROLL	R-410A	1	2	12.2	11.3	81	95/75	1	1/2	17	25	480/3	LENNOX	TSA090S4DN1G	1,2,3
CU-150-01	SOD. HYDR. BLDG - ELECT RM	135	AHU-150-01	19	SCROLL	R-410A	1	1	9	16.2	76	95/75	1	1/2	12	20	208/1	LENNOX	14ACX-018-230-2	1,2,3
CU-175-01	BLOWER BLDG - ELECT RM	305	AHU-175-01	74.1	SCROLL	R-410A	1	2	9.7	11.2	81	95/75	1	1/3	14	20	480/3	LENNOX	TSA072S4DN1G	1,2,3

NOTES

1. ACTUAL COOLING CAPACITY OF UNIT SHALL MATCH FAN AND COIL UNIT SCHEDULED.
2. PROVIDE EPOXY PROTECTION COATING ON COILS AND ALL CABINET SURFACES.
3. PROVIDE LOW AMBIENT CONTROLS, UNIT CONTROLLER, SPACE TEMP SENSORS, SUPPLY AIR TEMP SENSOR AND RETURN AIR TEMP SENSORS.

UNIT HEATER SCHEDULE

MARK NO.	SERVICE	TYPE	AIR FLOW CFM	DRIVE TYPE	FAN SPEED RPM	FAN MOTOR HP	KW	FLA	VOLTS/ PHASE	DISC SW	CAPACITY MBH	E.A.T. °F	L.A.T. °F	UNIT WEIGHT (LBS)	BASIS OF DESIGN	MODEL	NOTES
UH-75-01	MBBR PS	WALL MTD	2,973	DIRECT	-	1/2	20	24.1	480/3	DIV.15	66.2	45	81	180	RUFFNECK	FXS-480360-200	1,3
UH-75-02	MBBR PS	WALL MTD	2,973	DIRECT	-	1/2	20	24.1	480/3	DIV.15	66.2	45	81	180	RUFFNECK	FXS-480360-200	1,3
UH-75-03	MBBR PS MECH RM	WALL MTD	700	DIRECT	-	1/2	5	7.5	480/3	DIV.15	17.0	45	67.5	75	RUFFNECK	CR1-480-360-05-T	2,3
UH-125-01	DAF BLDG	WALL MTD	2,100	DIRECT	-	1/2	25	30.1	480/3	DIV.15	85.3	45	82.6	201	RUFFNECK	CR1-480-360-25-T	2,3
UH-125-02	DAF BLDG	WALL MTD	2,100	DIRECT	-	1/2	25	30.1	480/3	DIV.15	85.3	45	82.6	201	RUFFNECK	CR1-480-360-25-T	2,3
UH-125-03	DAF BLDG	WALL MTD	2,100	DIRECT	-	1/2	25	30.1	480/3	DIV.15	85.3	45	82.6	201	RUFFNECK	CR1-480-360-25-T	2,3
UH-125-04	DAF BLDG	WALL MTD	2,100	DIRECT	-	1/2	25	30.1	480/3	DIV.15	85.3	45	82.6	201	RUFFNECK	CR1-480-360-25-T	2,3
UH-125-05	DAF BLDG	WALL MTD	2,100	DIRECT	-	1/2	25	30.1	480/3	DIV.15	85.3	45	82.6	201	RUFFNECK	CR1-480-360-25-T	2,3
UH-125-06	DAF BLDG	WALL MTD	2,100	DIRECT	-	1/2	25	30.1	480/3	DIV.15	85.3	45	82.6	201	RUFFNECK	CR1-480-360-25-T	2,3
UH-125-07	DAF BLDG - POLY TANK RM	WALL MTD	1,450	DIRECT	-	1/2	15	19.5	480/3	DIV.15	51.2	45	78	90	RUFFNECK	CR1-480-360-15-T	2,3
UH-125-08	DAF BLDG - POLY TANK RM	WALL MTD	1,450	DIRECT	-	1/2	15	19.5	480/3	DIV.15	51.2	45	78	90	RUFFNECK	CR1-480-360-15-T	2,3
UH-175-01	BLOWER BLDG	WALL MTD	700	DIRECT	-	1/2	7.5	10.5	480/3	DIV.15	85.3	45	78.9	75	RUFFNECK	CR1-480-360-7.5-T	2,3
UH-175-02	BLOWER BLDG	WALL MTD	700	DIRECT	-	1/2	7.5	10.5	480/3	DIV.15	85.3	45	78.9	75	RUFFNECK	CR1-480-360-7.5-T	2,3
UH-175-03	BLOWER BLDG	WALL MTD	700	DIRECT	-	1/2	7.5	10.5	480/3	DIV.15	85.3	45	78.9	75	RUFFNECK	CR1-480-360-7.5-T	2,3
UH-175-04	BLOWER BLDG	WALL MTD	700	DIRECT	-	1/2	7.5	10.5	480/3	DIV.15	85.3	45	78.9	75	RUFFNECK	CR1-480-360-7.5-T	2,3

NOTES:

1. PROVIDE UL LISTED, EXPLOSION PROOF, CORROSION RESISTANT UNIT WITH ALL EXPLOSION PROOF ELECTRICAL CONTACTORS, TRANSFORMERS AND DEVICES NECESSARY FOR COMPLETE OPERATION.
2. PROVIDE UL OR CSA LISTED, CORROSION RESISTANT WASHDOWN UNIT WITH ALL ELECTRICAL CONTACTORS, TRANSFORMERS AND DEVICES NECESSARY FOR COMPLETE OPERATION.
3. PROVIDE REMOTE CORROSION RESISTANT THERMOSTAT AND WALL MOUNTING KIT.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	
ISSUE	DATE	DESCRIPTION	

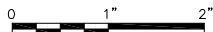
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	S. GAETA
CHECKED BY:	J. JOHNSON
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

HVAC EQUIPMENT SCHEDULES



FILENAME	H-900.dwg
SCALE	NOT TO SCALE

DRAWING NUMBER	
H-900	

SHEET OF -

FAN SCHEDULE

MARK NO.	SERVES	TYPE	BASIS OF DESIGN	MODEL	CFM	ESP	FRPM	DRIVE	ELECTRICAL					NOTES
									VOLTS	HP	FLA	DISC. SW	STARTER	
EF-10-01	GRAVELY PS	SIDEWALL PROPELLER	GREENHECK	SCE3-20-312-A5	1,800	0.38	1,750	DIRECT	115	1/2	9.8	DIV. 16	DIV. 16	1,2,3,4
EF-75-01	MBBR PS - PUMP RM	SIDEWALL PROPELLER	GREENHECK	SCE3-20-320-A7	2,500	0.42	1,750	DIRECT	115	1/2	9.8	DIV. 16	DIV. 16	2,3,4,6
EF-75-02	MBBR PS - PUMP RM	SIDEWALL PROPELLER	GREENHECK	SCE3-20-320-A7	2,500	0.42	1,750	DIRECT	115	1/2	9.8	DIV. 16	DIV. 16	2,3,4,6
EF-75-03	MBBR PS - MECH RM	SIDEWALL PROPELLER	GREENHECK	SE1-10-428-P	210	0.37	1,641	DIRECT	115	1/30	N/A	DIV. 16	DIV. 16	1,2,3,4,5
EF-125-01	DAF BLDG - DAF RM	SIDEWALL PROPELLER	GREENHECK	SCE3-30-620-B20	10,000	0.42	1,160	DIRECT	480	2	3.4	DIV. 16	DIV. 16	2,3,4
EF-125-02	DAF BLDG - DAF RM	SIDEWALL PROPELLER	GREENHECK	SCE3-30-620-B20	10,000	0.42	1,160	DIRECT	480	2	3.4	DIV. 16	DIV. 16	1,2,3,4
EF-125-03	DAF BLDG - POLY TANK RM	SIDEWALL PROPELLER	GREENHECK	SCE3-20-312-A5	1,850	0.42	1,750	DIRECT	115	1/2	9.8	DIV. 16	DIV. 16	1,2,3,4
EF-150-01	SOD. HYDROX. BLDG - ELECT RM	SIDEWALL PROPELLER	GREENHECK	SE1-14-440-B6	675	0.38	1,154	DIRECT	115	1/6	4.4	DIV. 16	DIV. 16	1,2,3,4
EF-175-01	BLOWER BLDG	CENT. ROOF EXHAUST FAN	GREENHECK	GB-220-20	6,200	0.63	926	DIRECT	480	2	3.4	DIV. 16	DIV. 16	2,3,4
EF-175-02	BLOWER BLDG - MECH. RM	SIDEWALL PROPELLER	GREENHECK	SE1-12-432-VG	350	0.25	1,031	DIRECT	115	1/4	3.9	DIV. 15	DIV. 15	1,2,3,4,5
F-10-01	GRAVELY PS	SIDEWALL PROPELLER	GREENHECK	SCE3-20-312-A5	1,800	0.38	1,750	DIRECT	115	1/2	9.8	DIV. 16	DIV. 16	1,2,3,4
F-75-01	MBBR PS - PUMP RM	SIDEWALL PROPELLER	GREENHECK	SCE3-20-320-A7	2,500	0.42	1,750	DIRECT	115	1/2	9.8	DIV. 16	DIV. 16	2,3,4,6
F-75-02	MBBR PS - PUMP RM	SIDEWALL PROPELLER	GREENHECK	SCE3-20-320-A7	2,500	0.42	1,750	DIRECT	115	1/2	9.8	DIV. 16	DIV. 16	2,3,4,6
F-125-01	DAF BLDG - DAF RM	SIDEWALL PROPELLER	GREENHECK	SCE3-30-620-B20	10,000	0.42	1,160	DIRECT	480	2	3.4	DIV. 16	DIV. 16	2,3,4
F-125-02	DAF BLDG - DAF RM	SIDEWALL PROPELLER	GREENHECK	SCE3-30-620-B20	10,000	0.42	1,160	DIRECT	480	2	3.4	DIV. 16	DIV. 16	2,3,4

- NOTES:
1. LOCAL NEMA 4 START/STOP SWITCH.
 2. TWO COAT PROCESS WITH ZINC-RICH (70% ZINC) BASECOAT AND EPOXY POWDER TOP COAT FOR ALL STEEL COMPONENTS.
 3. MOTOR SIDE GUARD AND WALL COLLAR.
 4. BACKDRAFT DAMPER, DAMPER GUARD ON DISCHARGE AND OSHA MOTOR GUARD
 5. BACKDRAFT DAMPER AND SPEED CONTROL
 6. PROVIDE EXPLOSION PROOF FAN SYSTEM

DIFFUSER, REGISTER, AND GRILLE SCHEDULE

MARK NUMBER	MAX AIRFLOW CFM	FACE SIZE IN (WxH)	CONNECTION SIZE, IN (WxH OR DIA)	MAX STATIC PRESS DROP IN WG	MAX NC	MOUNTING LOCATION	FRAME TYPE	MATERIAL	FINISH	BASIS OF DESIGN	NOTE
D1	140	24X24	6 DIA	0.05	30	CEILING	SURFACE	ALUMINUM	WHITE	PRICE ASCD	
	250	24X24	8 DIA	0.05	30	CEILING	SURFACE	ALUMINUM	WHITE	PRICE ASCD	
	380	24X24	10 DIA	0.05	30	CEILING	SURFACE	ALUMINUM	WHITE	PRICE ASCD	
	550	24X24	12 DIA	0.05	30	CEILING	SURFACE	ALUMINUM	WHITE	PRICE ASCD	
	750	24X24	14 DIA	0.05	30	CEILING	SURFACE	ALUMINUM	WHITE	PRICE ASCD	
WS1	140	6X6	6X6	0.06	30	SIDEWALL	SURFACE	ALUMINUM	WHITE	PRICE 620D	2
	240	10X6	10X6	0.06	30	SIDEWALL	SURFACE	ALUMINUM	WHITE	PRICE 620D	2
	400	12X6	12X6	0.06	30	SIDEWALL	SURFACE	ALUMINUM	WHITE	PRICE 620D	2
WR1, WE1	140	6X6	6X6	0.06	30	SIDEWALL	SURFACE	ALUMINUM	WHITE	PRICE 635D AL	3
	240	10X6	10X6	0.06	30	SIDEWALL	SURFACE	ALUMINUM	WHITE	PRICE 635D AL	3
	400	12X6	12X6	0.06	30	SIDEWALL	SURFACE	ALUMINUM	WHITE	PRICE 635D AL	3
	3000	54X16	54X16	0.06	30	SIDEWALL	SURFACE	ALUMINUM	WHITE	PRICE 635D AL	

- SPECIFIC AND GENERAL NOTES:
- SEE PLANS FOR ACTUAL AIRFLOW.
1. PROVIDE RAPID MOUNT FRAME FOR ALL GYPBOARD AND HARD SURFACE CEILINGS.
 2. ADJUSTABLE DOUBLE DEFLECTION GRILLE WITH 3/4 IN BLADE SPACING AND FRONT BLADES PARALLEL TO THE HEIGHT (H) DIMENSION.
 3. SINGLE DEFLECTION GRILLE WITH 3/4 IN BLADE SPACING AND FIXED BLADES SET AT 35 DEG AND PARALLEL TO THE WIDTH (W) DIMENSION.

ROOF HOOD SCHEDULE

MARK NO.	SERVES	SERVICE	AIR FLOW CFM	MAX AIR PD IN WG	HOOD SIZE DIAMETER IN	THROAT DIA. IN	SCREEN TYPE	ACCESS.	CURB HEIGHT IN	BASIS OF DESIGN	MODEL NO.	NOTE
IH-125-01	POLY TANK RM & MECH RM	INTAKE	1,200	0.05	20	20.25	INSECT	-	-	GREENHECK	GRSI-20	1,2

- NOTES:
1. PROVIDE STAINLESS STEEL INSECT SCREEN (0.09 IN. MESH) AND ALUMINUM HOUSING.
 2. COORDINATE EXACT LOCATION OF ROOF HOOD WITH ROOF CONTRACTOR.

WALL LOUVER SCHEDULE

MARK NO.	LOCATION	SERVICE	BASIS OF DESIGN	MODEL NO.	CFM	PRESS LOSS L/W.C.	MAX. FPM	MIN. OPEN AREA	HEIGHT X WIDTH	NOTES:
LVR-175-01	BLOWER BLDG	INTAKE AIR	GREENHECK	EDJ-4C1	6,200	0.050	548	51.9%	56 X 56	1,2
LVR-150-01	SOD. HYDR. BLDG	INTAKE AIR	GREENHECK	EDJ-4C1	675	0.050	305	37%	12 X 72	1,2
LVR-75-01	MBBR PUMP STATION	INTAKE AIR	GREENHECK	EDJ-4C1	210	0.039	491	31.4%	14X14	1,2

- NOTES:
1. PROVIDE REMOVABLE STAINLESS STEEL BIRD SCREEN.
 2. FINISH SHALL BE 2-COAT 70% KYNAR/HYLAR 5000 AAMA 2605 - DRY FILM THICKNESS 1.2 MIL. COLOR SHALL MATCH BUILDING EXTERIOR.
 3. MOUNT LOUVER, MOTORIZED DAMPER AND BIRD SCREEN IN COMMON SLEEVE.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	
ISSUE	DATE	DESCRIPTION	

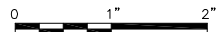
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	S. GAETA
CHECKED BY:	J. JOHNSON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

HVAC EQUIPMENT SCHEDULES



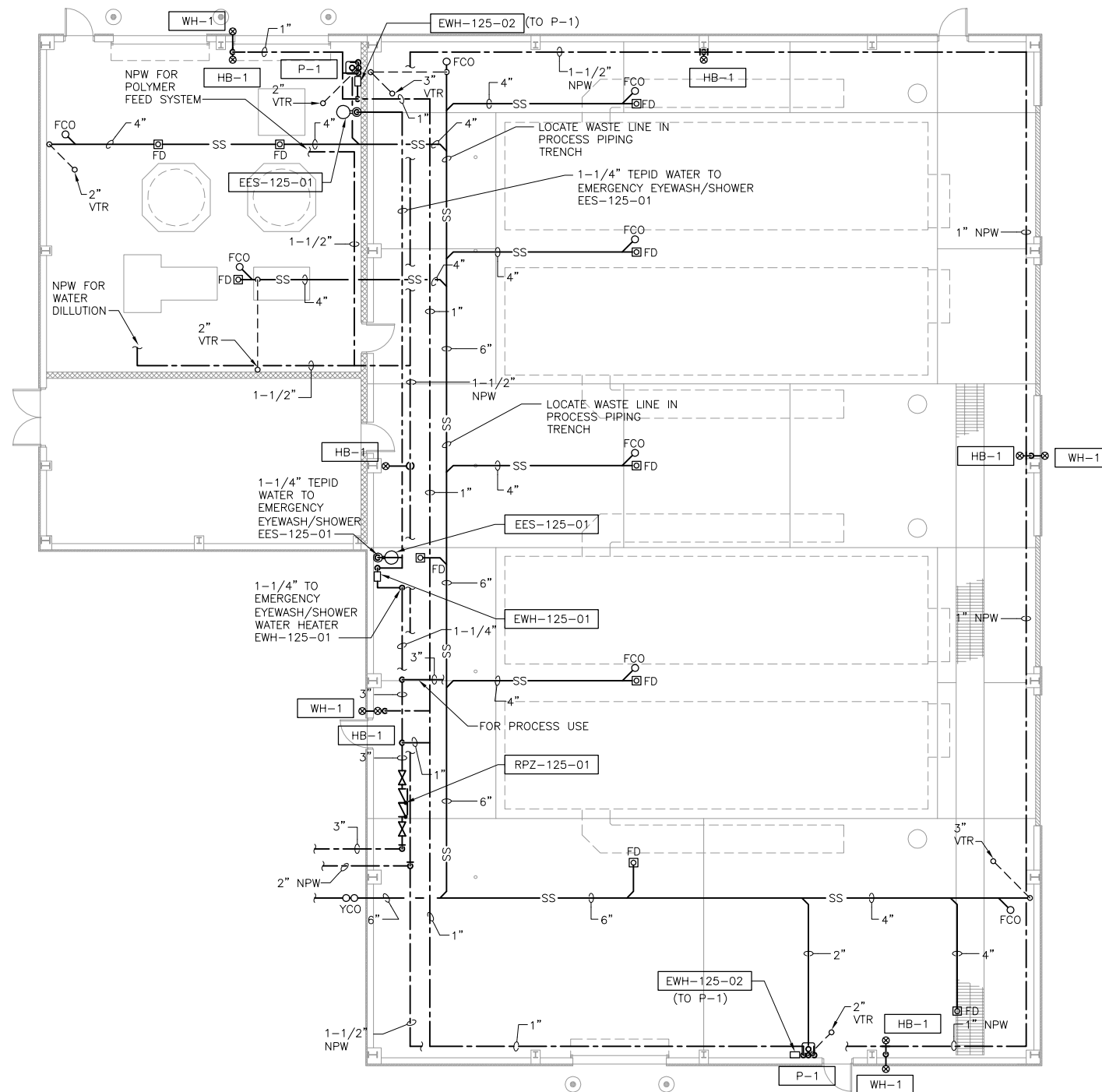
FILENAME	H-901.dwg
SCALE	NOT TO SCALE

DRAWING NUMBER	
H-901	

SHEET OF -

**GENERAL NOTES:**

1. SEE SHEETS G-03, G-04, G-05 & G-06 FOR SYMBOLS AND ABBREVIATIONS.
2. UNLESS OTHERWISE NOTED ALL ROUTING AND INSTALLATION OF DUCT AND EQUIPMENT SHALL BE COORDINATED ON SITE WITH ALL OTHER TRADES TO ENSURE PROPER OPERATION OF THE PLUMBING SYSTEMS.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	S. GAETA
CHECKED BY:	J. JOHNSON
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT PHASE 2

DISSOLVED AIR FLOATATION BUILDING PLUMBING PLAN



FILENAME	P-125.dwg
SCALE	1/8"=1'-0"

DRAWING NUMBER	
P-125	

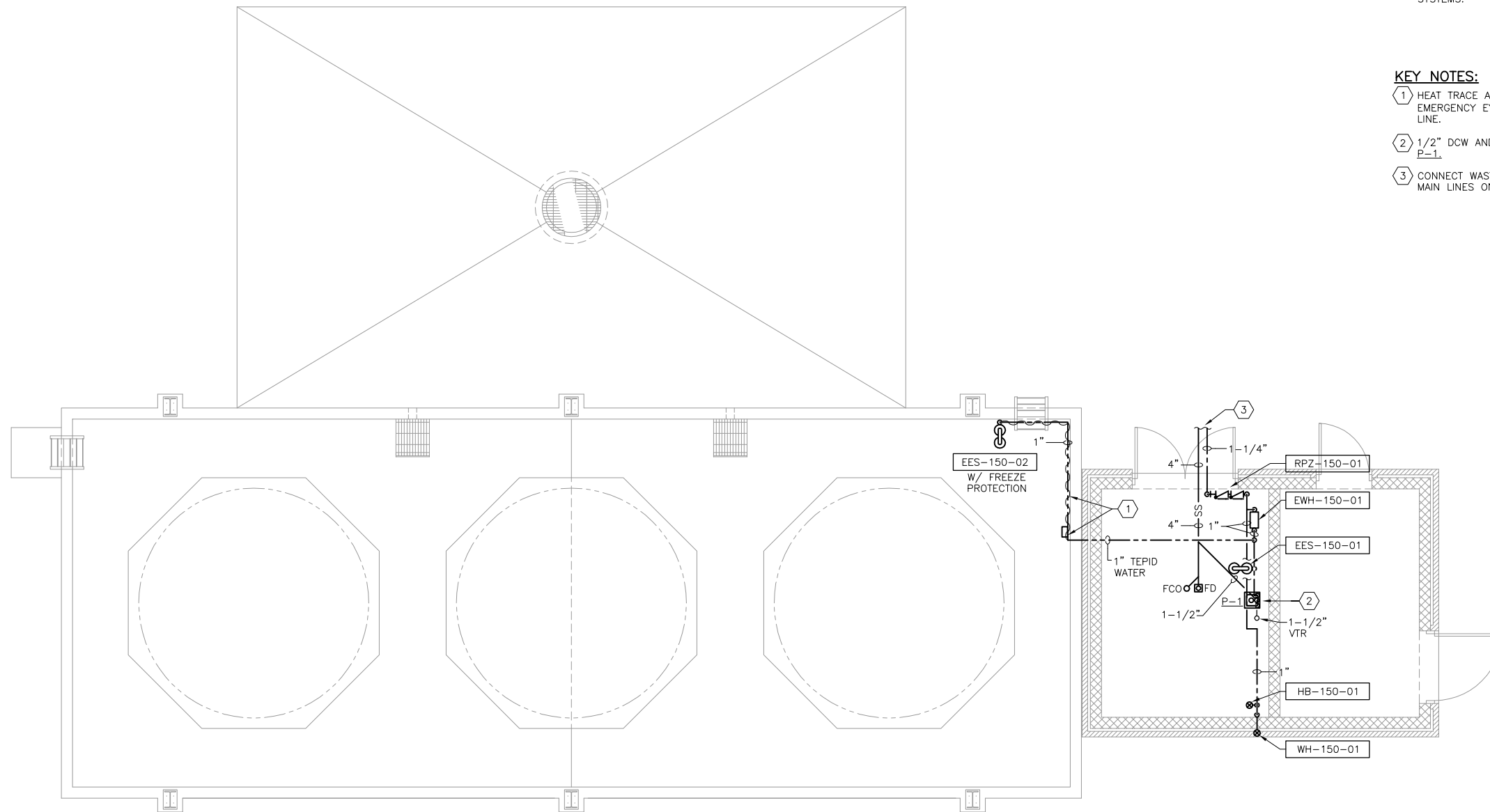
SHEET OF -

**GENERAL NOTES:**

1. SEE SHEETS G-03, G-04, G-05 & G-06 FOR SYMBOLS AND ABBREVIATIONS.
2. UNLESS OTHERWISE NOTED ALL ROUTING AND INSTALLATION OF DUCT AND EQUIPMENT SHALL BE COORDINATED ON SITE WITH ALL OTHER TRADES TO ENSURE PROPER OPERATION OF THE PLUMBING SYSTEMS.

KEY NOTES:

- 1 HEAT TRACE AND INSULATE EXPOSED EMERGENCY EYE/FACE WASH SHOWER LINE.
- 2 1/2" DCW AND DHW TO UTILITY SINK
P-1.
- 3 CONNECT WASTE AND DOMESTIC WATER TO MAIN LINES ON SITE.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	S. GAETA
CHECKED BY:	J. JOHNSON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN**

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

**ALTERNATIVE 4A-1 LIGHT
PHASE 2**

**SODIUM HYDROXIDE FACILITY
PLUMBING PLAN**



FILENAME	P-150.dwg
SCALE	1/4"=1'-0"

DRAWING NUMBER
P-150

SHEET OF -

BACKFLOW PREVENTER SCHEDULE

[illegible]

NOTES

1. RPZ = REDUCED PRESSURE ZONE BACKFLOW PREVENTION ASSEMBLIES

PLUMBING FIXTURE CONNECTION SCHEDULE

[illegible]

NOTES

1. WHEN FLOOR MOUNTED, TO SHALL BE FLUSH WITH THE FLOOR. WHEN MOUNTED VERTICALLY, MOUNT AT 30 INCHES AFF.
 2. PROVIDE APPROVED FLEXIBLE MEMBRANE TRAP GUARDS FOR ALL FLOOR DRAINS.
 3. PROVIDE 1.5 GPM AERATORS ON ALL UTILITY SINK FIXTURES.
 4. MEASURE MOUNTING HEIGHT ON OUTLET SIDE OF HYDRANT.
- PLANS: SEE PLANS FOR INFORMATION
- SPECS: SEE INDICATED SPECIFICATION SECTION FOR INFORMATION
- INST: REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS
5. TEMID WATER 20 GPM SHOWER AND 3 GPM EYE/FACE WASH. SYSTEM INSTALLED PER ANSI Z358.1-2009.
 6. PROVIDE FREEZE PROTECTION MODEL EMERGENCY EYE/FACE WASH SHOWER AS NOTED ON PLANS.

ELECTRIC TANKLESS WATER HEATER SCHEDULE

[illegible]

NOTES

1. HEATING STAGES SHALL INCREMENTALLY INCREASE BASED ON FLOW RATE.
2. USE 240V/1PHASE UNIT AND RUN AT 208V.

AIR COMPRESSOR SCHEDULE

[illegible]

NOTES:

1. DUPLEX AIR COMPRESSOR SYSTEM SHALL BE PROVIDED WITH NEMA 4 CONTROL PANEL, ALTERNATING CONTROL, LOW OIL GUARD, TANK ISOLATOR PADS, MAGNETIC MOTOR STARTER, AIR-COOLED AFTER COOLER, AUTO DRAIN AND 1" ONE (1) MICRON AIR LINE PARTICULATE FILTER.

REFRIGERATED AIR DRYER SYSTEM

[illegible]

NOTES:

1. PROVIDE UL LISTED UNIT REFRIGERANT 134A WITH AUTOMATIC CONTROL AND 1" ONE MICRON AIR LINE PARTICULATE FILTER AT DISCHARGE.
2. PROVIDE AUTOMATIC DRAIN AT DISCHARGE.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	
DRAWN BY:	S. GAETA
CHECKED BY:	J. JOHNSON
PROJECT NUMBER	

CONCEPTUAL DESIGN

**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

ALTERNATIVE 4A-1 LIGHT PHASE 2

PLUMBING SCHEDULES



FILENAME	P-900.dwg
----------	-----------

SCALE | NOT TO SCALE

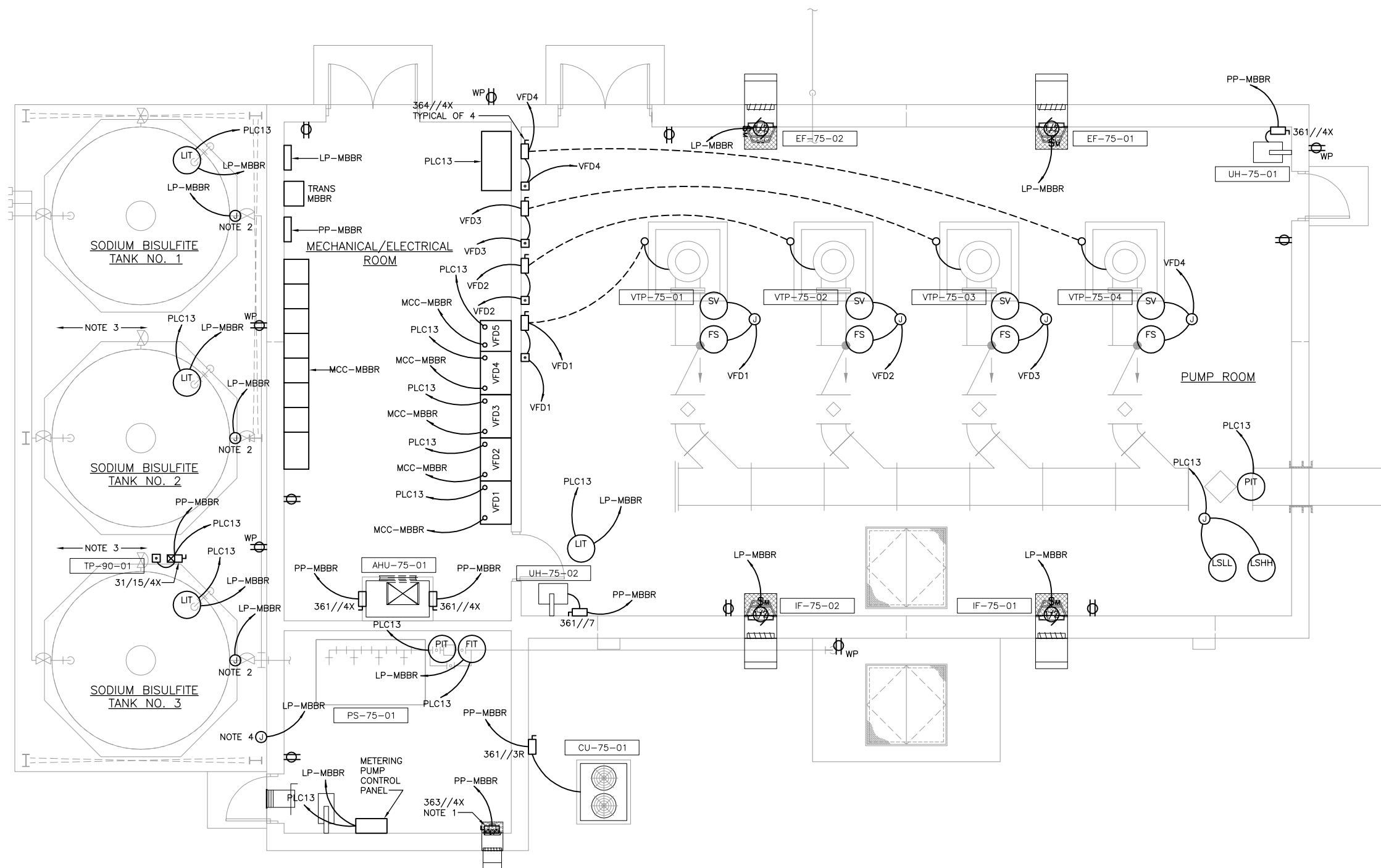
DRAWING NUMBER

P-900

SHEET OF

**SHEET NOTES:**

1. WATER HEATER DISCONNECT. COORDINATE LOCATION AND VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.
2. J-BOX FOR CONNECTION TO TANK HEAT TRACING. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.
3. STORAGE TANK AREA SHALL BE CONSIDERED A WET AREA. ALL ELECTRICAL EQUIPMENT, CONDUIT, ETC. AND ITS INSTALLATION SHALL MEET THIS AREA CLASSIFICATION.
4. J-BOX FOR CONNECTION TO EMERGENCY SHOWER/EYEWASH HEAT TRACING. COORDINATE LOCATION AND VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.

**HDR**

HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	09/20/2013	ADDED SODIUM BISULFITE PROCESS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

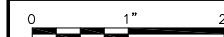
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT PHASE 2

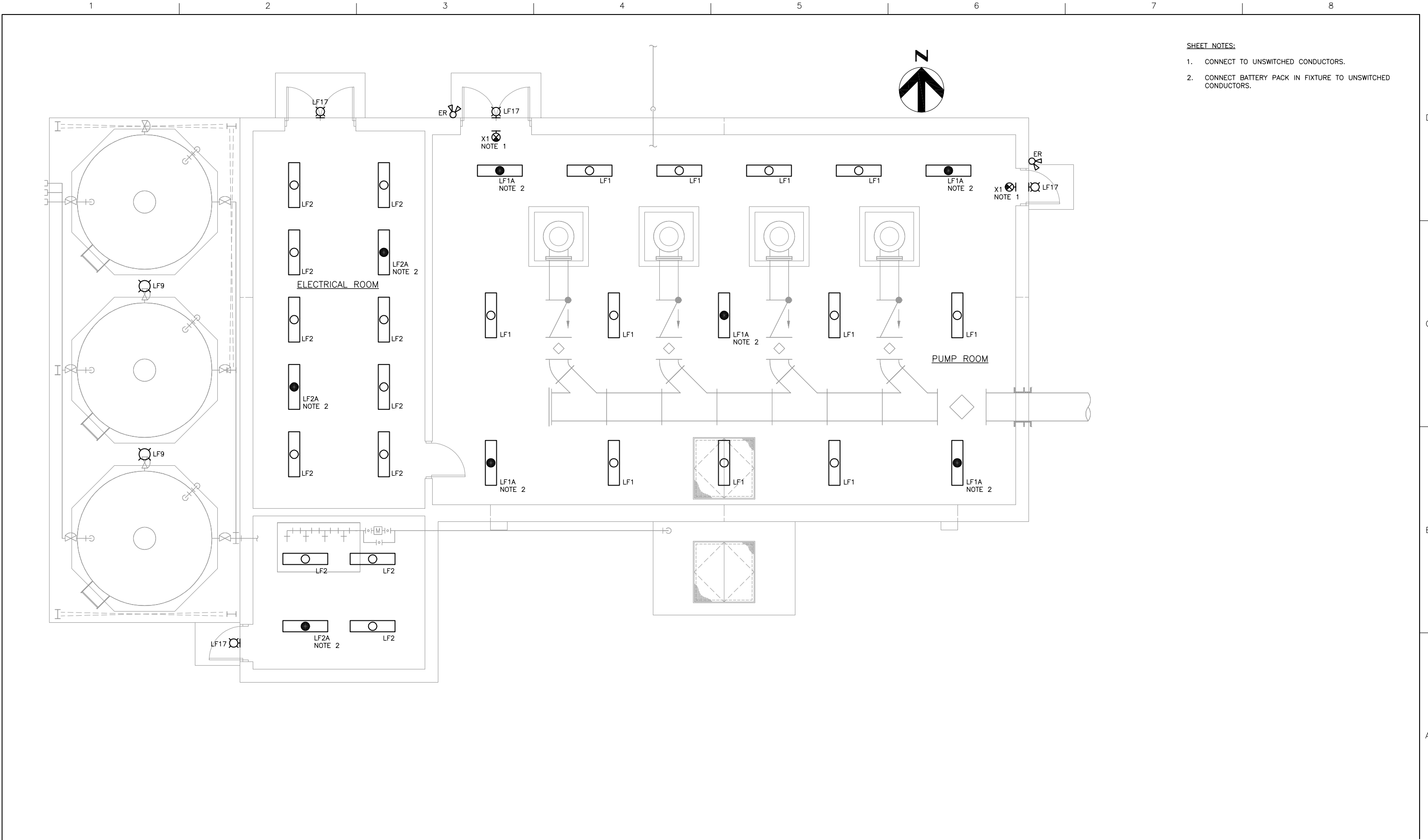
MBBR INFLUENT PUMP STATION AND SODIUM BISULFITE FACILITY ELECTRICAL POWER PLAN



FILENAME	E-075.dwg
SCALE	1/4"=1'-0"

DRAWING NUMBER	E-75
----------------	------

SHEET OF -

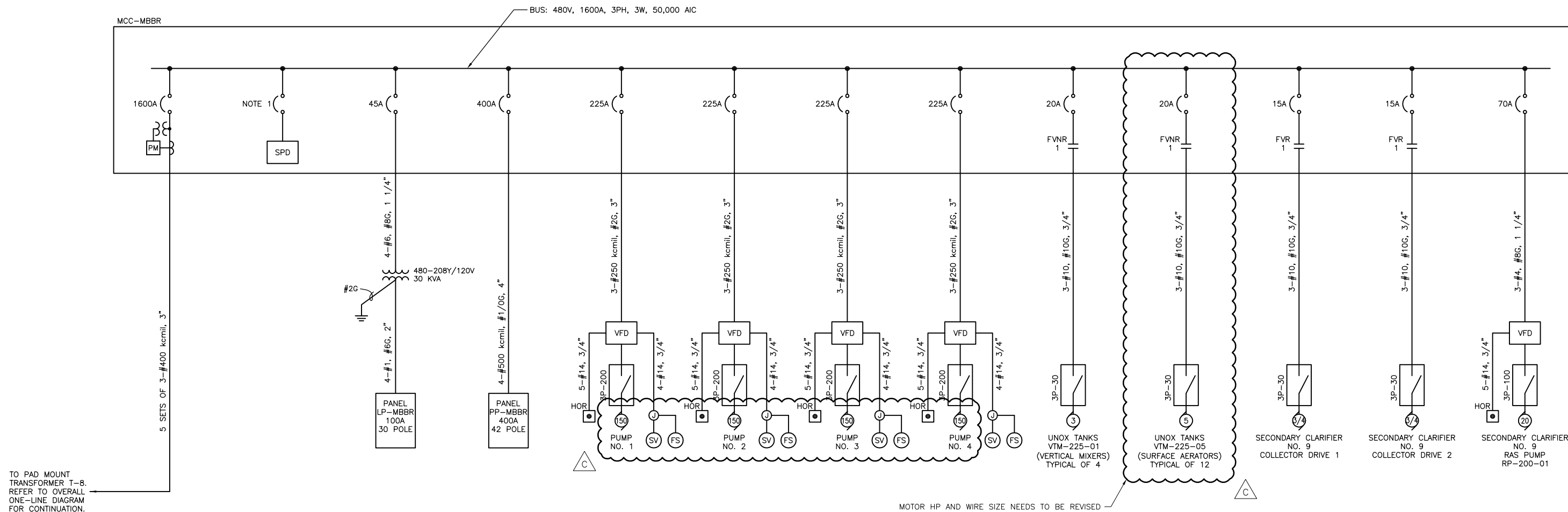


- SHEET NOTES:**
1. CONNECT TO UNSWITCHED CONDUCTORS.
 2. CONNECT BATTERY PACK IN FIXTURE TO UNSWITCHED CONDUCTORS.

<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	MBBR INFLUENT PUMP STATION AND SODIUM BISULFITE FACILITY ELECTRICAL LIGHTING PLAN			<div><div>012</div><div>0 1" 2"</div></div>	FILENAME E--076.dwg	DRAWING NUMBER	SHEET OF -
	B	09/20/2013	ADDED SODIUM BISULFITE PROCESS	DESIGNED BY: J. VAN TASSEL							SCALE 1/4"=1'-0"	E-76	
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	DRAWN BY: J. VAN TASSEL									
				CHECKED BY: L. ANDERSON									
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									

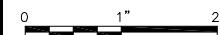
SHEET NOTES:

1. SIZE OF CIRCUIT BREAKER TO BE DETERMINED BY MANUFACTURER.

**HDR**HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	03/12/2014	MIXER REVISION & VTP HP REVISION
B	09/20/2013	ADDED SODIUM BISULFITE PROCESS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

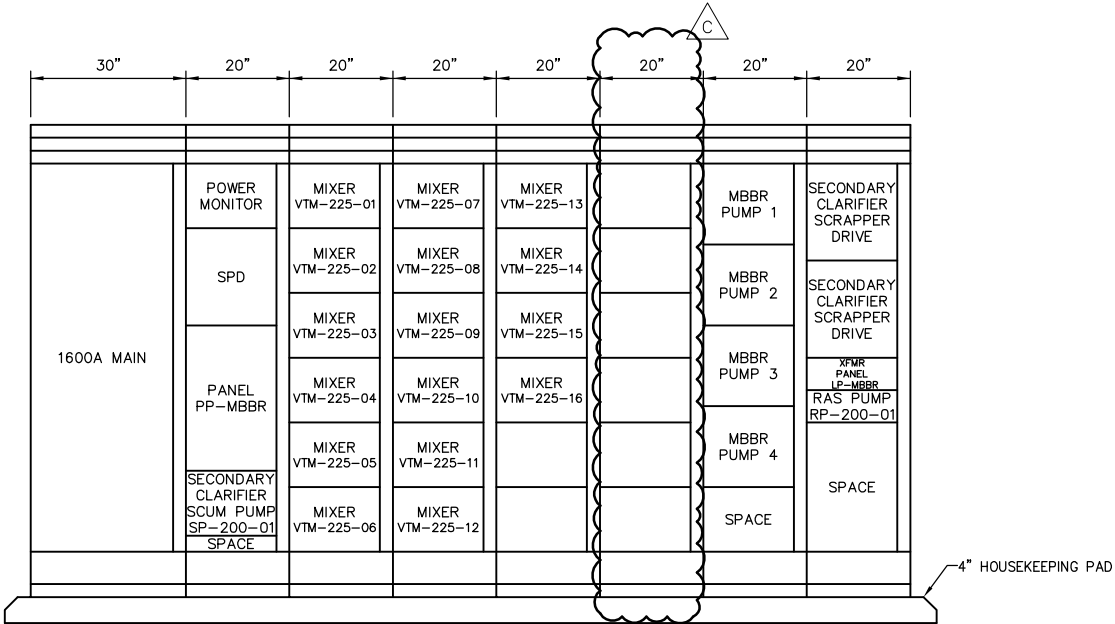
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****MBBR INFLUENT PUMP STATION
ELECTRICAL ONE-LINE DIAGRAM**

FILENAME	E-077.dwg
SCALE	NONE

DRAWING NUMBER	E-77
----------------	------

SHEET OF -



MCC-MBBR ELEVATION
NO SCALE



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	03/12/2014	MIXER REVISION
B	09/20/2013	ADDED SODIUM BISULFITE PROCESS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

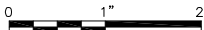
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

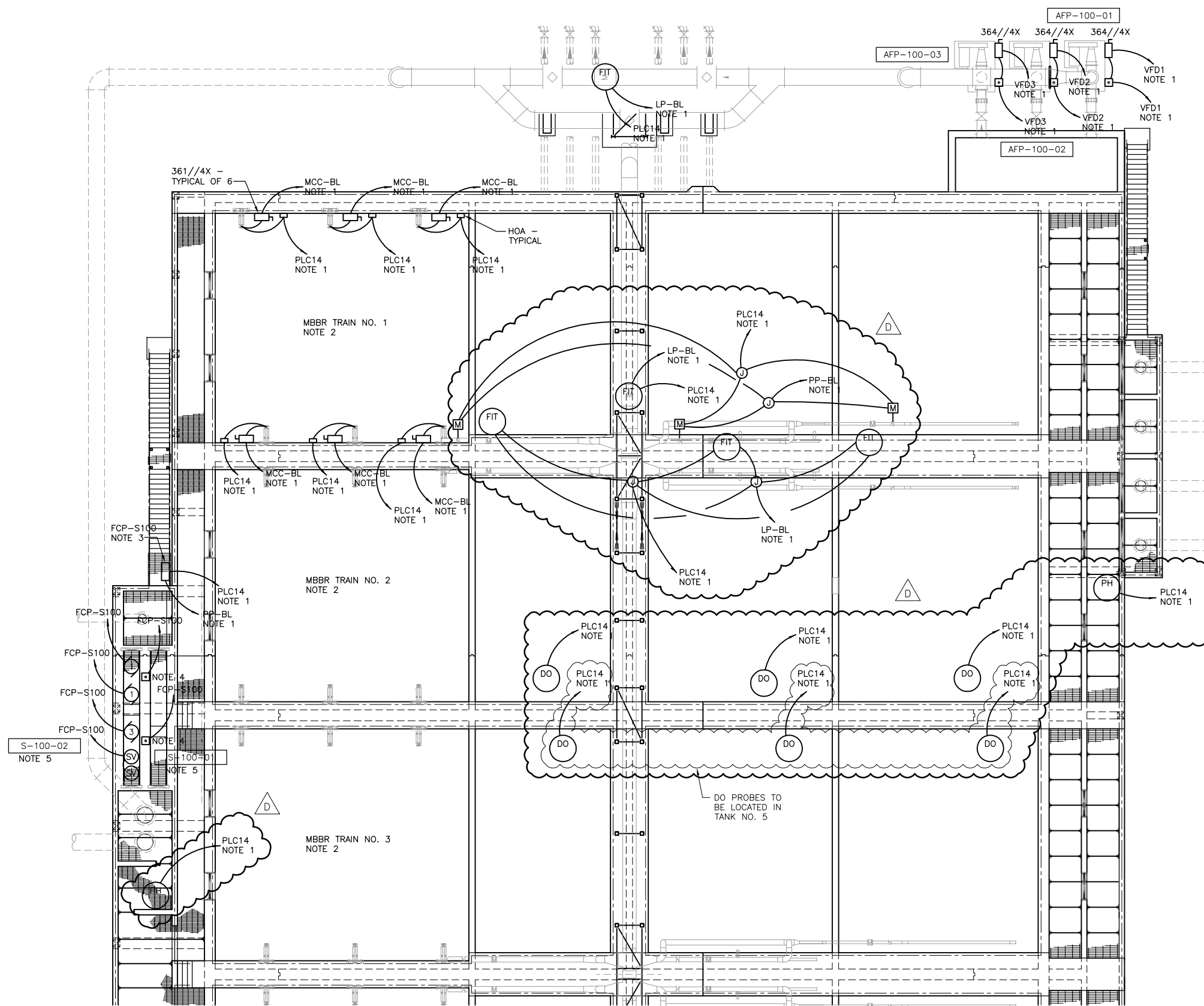
MBBR INFLUENT PUMP STATION
MCC-MBBR ELEVATION



FILENAME	E-078.dwg
SCALE	NONE

DRAWING NUMBER
E-78

SHEET OF -

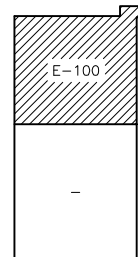


SHEET NOTES:

1. MCC-BL, PLC14, PANEL PP-BL, PANEL LP-BL, AND VFD'S ARE LOCATED IN BLOWER BUILDING. SEE SHEET E-175.
2. ELECTRICAL CONNECTIONS SHOWN FOR MBBR TRAIN NO. 1 ARE TYPICAL FOR MBBR TRAIN NOS. 2, 3, 4, 5, AND 6. MBBR TRAIN NOS. 4, 5, AND 6 ARE NOT SHOWN ON THIS PLAN.
3. SCREEN CONTROL PANEL, PROVIDED WITH EQUIPMENT, INSTALLED BY ELECTRICAL CONTRACTOR. COORDINATE EXACT LOCATION.
4. EMERGENCY STOP PUSHBUTTON.
5. ELECTRICAL CONNECTIONS SHOWN FOR SCREEN S-100-02 ARE TYPICAL FOR SCREEN S-100-01.

GENERAL NOTES:

1. FOR CONVENIENCE RECEPTACLE LOCATIONS, SEE SHEETS E-101 AND E-102.
2. ELECTRICAL FOR MBBR TRAIN NOS. 4, 5, AND 6 ARE NOT SHOWN ON THIS PLAN.



KEY PLAN

HDRHDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

D	03/12/2014	INSTRUMENTATION LOCATION REVISION
C	10/08/2013	ADDED MBBR SCREENS/COMPACTORS
B	09/20/2013	30% DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER: WILLIAM S. M'COY
DESIGNED BY: J. VAN TASSEL
DRAWN BY: J. VAN TASSEL
CHECKED BY: L. ANDERSON

PROJECT NUMBER

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****SEGREGATED MBBR SYSTEM
POWER PLAN**

0 1" 2"

FILENAME E-100.dwg

SCALE 3/32"=1'-0"

DRAWING NUMBER

E-100

SHEET OF -

1

2

3

4

5

6

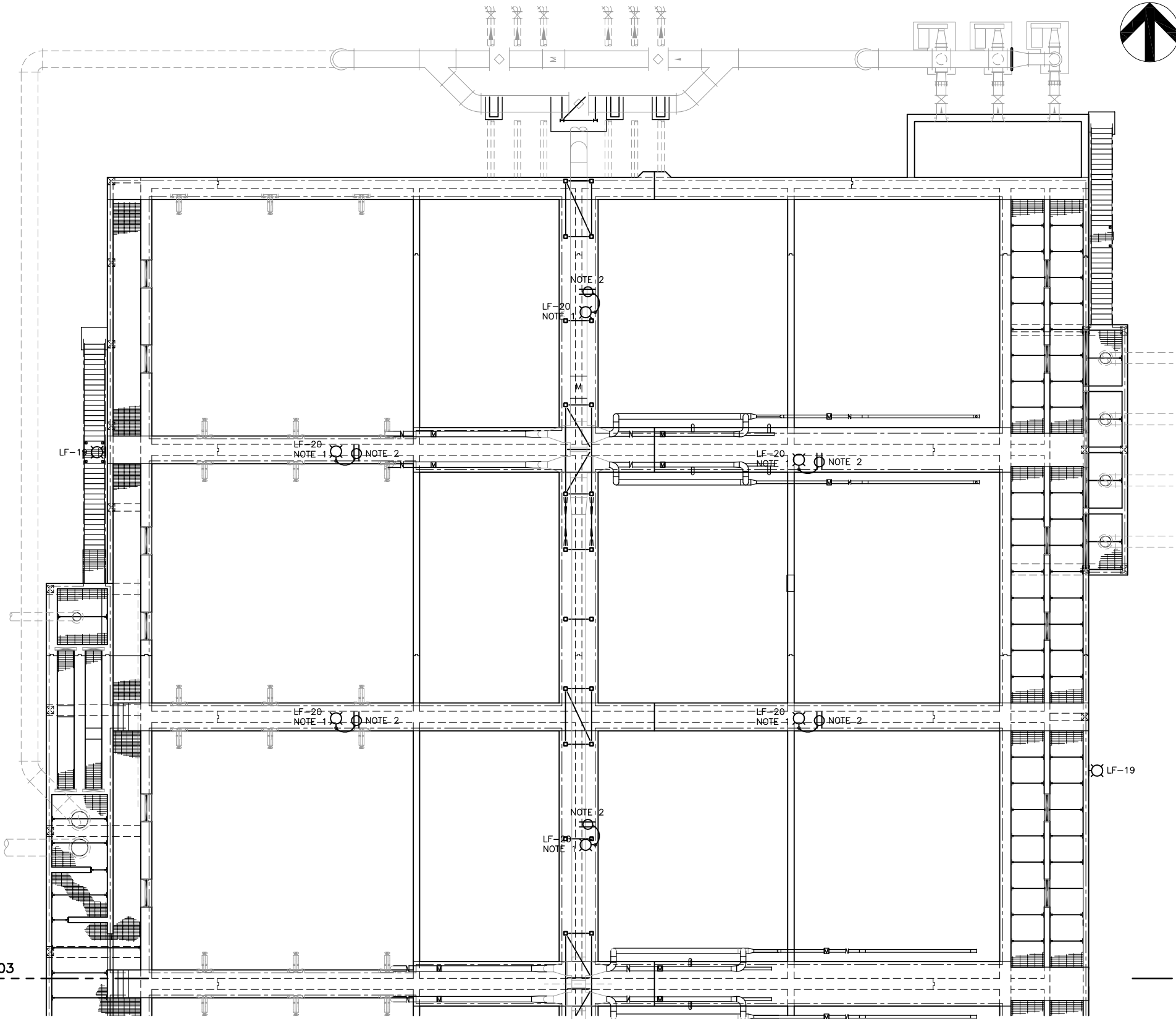
7

8

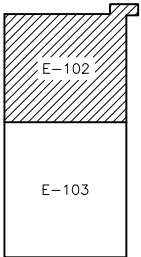


SHEET NOTES:

1. STANCHION MOUNTED LIGHT FIXTURE. ANCHOR BASE TO WALKWAY AND POST TO HANDRAIL. MOUNT AS CLOSELY AS POSSIBLE TO A HANDRAIL POST.
2. RECEPTACLE TO BE CONNECTED TO UNSWITCHED CONDUCTORS.



MATCHLINE SEE SHEET E-103



KEY PLAN



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

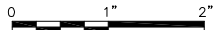
B	09/20/2013	30% DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY
ALTERNATIVE 4A-1 LIGHT
PHASE 2

SEGREGATED MBBR SYSTEM
LIGHTING PLAN 1 OF 2



FILENAME	E-102.dwg
SCALE	3/32"=1'-0"

DRAWING NUMBER	E-102
----------------	-------

SHEET OF -

1

2

3

4

5

6

7

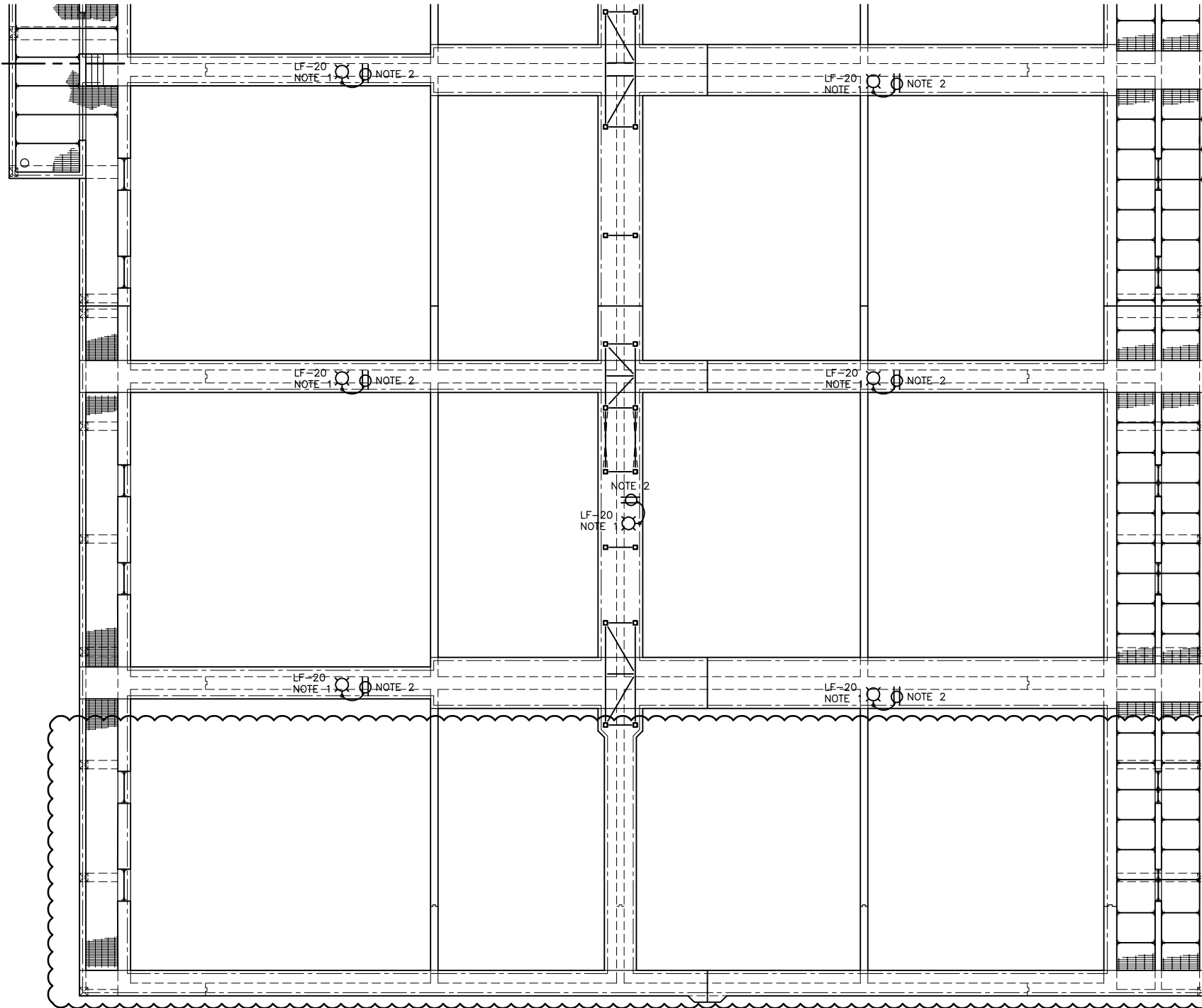
8



SHEET NOTES:

1. STANCHION MOUNTED LIGHT FIXTURE. ANCHOR BASE TO WALKWAY AND POST TO HANDRAIL. MOUNT AS CLOSELY AS POSSIBLE TO A HANDRAIL POST.
2. RECEPTACLE TO BE CONNECTED TO UNSWITCHED CONDUCTORS.

MATCHLINE SEE SHEET E-102

MBBR TANK NO. 6
IS TO BE DELETED
FROM DRAWINGS

E-102

E-103

KEY PLAN

HDRHDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	03/12/2014	MBBR TANK NO. 6 TO BE DELETED
B	09/20/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****SEGREGATED MBBR SYSTEM
LIGHTING PLAN 2 OF 2**

FILENAME E-103.dwg

SCALE 3/32"=1'-0"

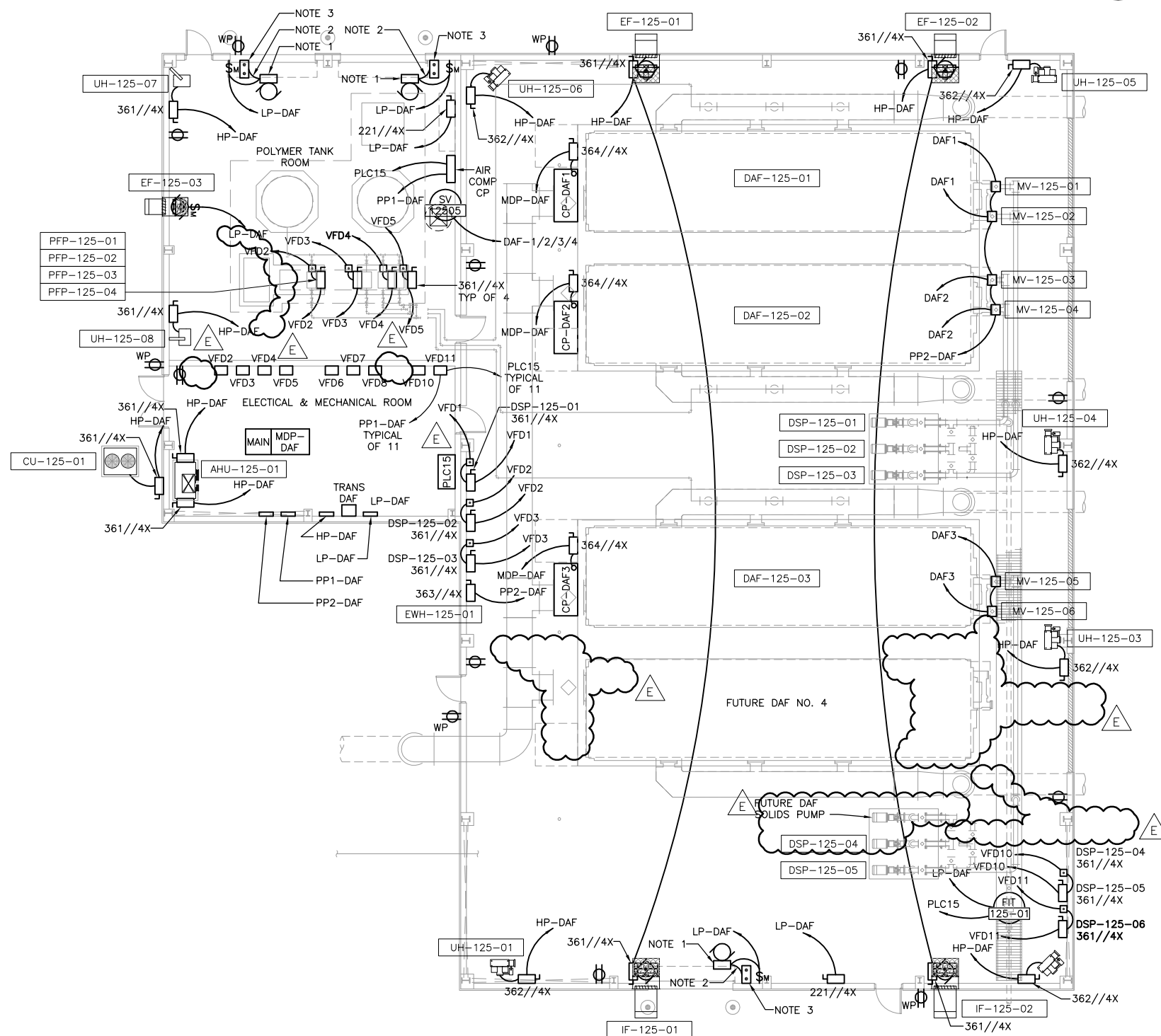
DRAWING NUMBER

E-103

SHEET

OF

-



SHEET NOTES:

1. OVERHEAD GARAGE DOOR OPERATOR PROVIDED WITH EQUIPMENT, INSTALLED BY DOOR INSTALLER. ALL CONDUIT AND WIRING BY ELECTRICAL CONTRACTOR.
2. PROVIDE CONDUIT AND CONTROL WIRING AS REQUIRED BY MANUFACTURER.
3. OPEN/CLOSE/STOP SWITCH PROVIDED WITH EQUIPMENT, INSTALLED BY ELECTRICAL CONTRACTOR. PROVIDE CONDUIT AND CONTROL WIRING AS REQUIRED.

HDRHDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

ISSUE	DATE	DESCRIPTION
E	03/12/2014	DAF NO.4 AND SH PUMP NO. 6 DELETED
D	09/20/2013	ADDED SECOND AHU DISCONNECT
C	09/06/2013	RENAMED RTU-DAF TO PLC15
B	08/26/2013	ADDED MOTORIZED VALVES
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****DISSOLVED AIR FLOTATION BUILDING
ELECTRICAL POWER PLAN**

FILENAME E-125.dwg

SCALE 1/8"=1'-0"

DRAWING NUMBER

E-125

SHEET OF

D

C

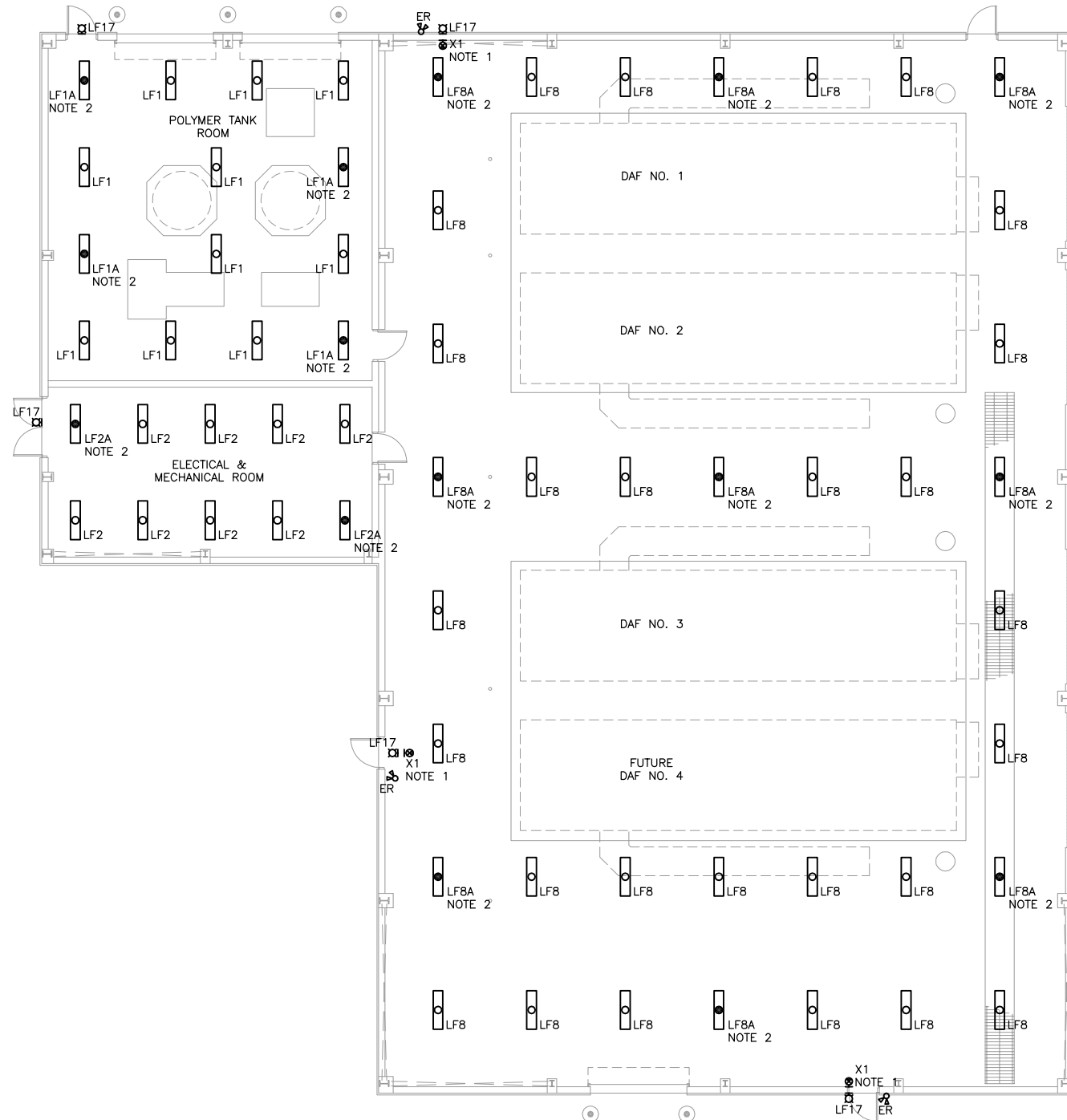
B

A



SHEET NOTES:

1. CONNECT TO UNSWITCHED CONDUCTORS.
2. CONNECT BATTERY PACK IN FIXTURE TO UNSWITCHED CONDUCTORS.

**HDR**HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****DISSOLVED AIR FLOTATION BUILDING
ELECTRICAL LIGHTING PLAN**

FILENAME	E-127.dwg
SCALE	1/8"=1'-0"

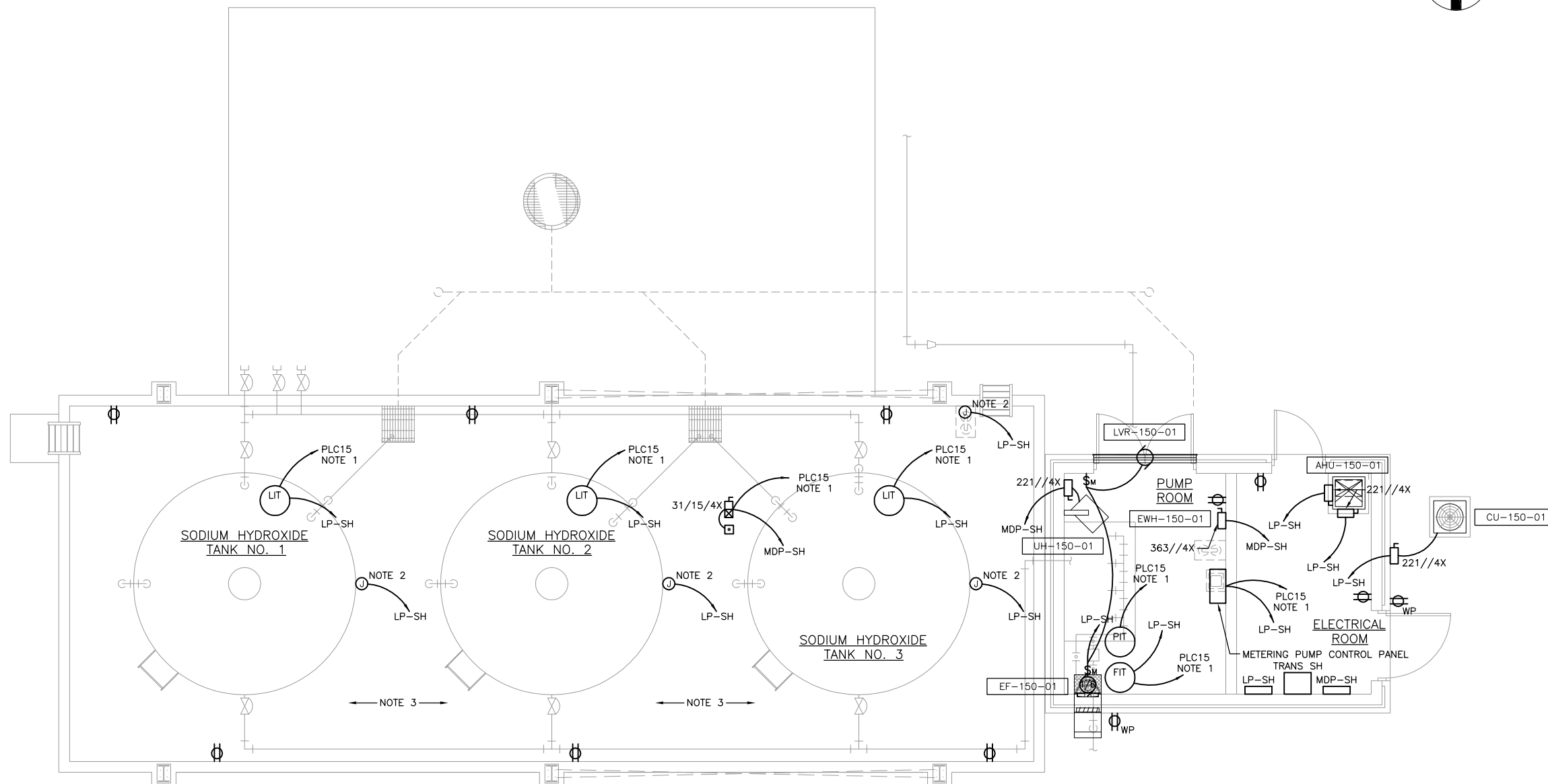
DRAWING NUMBER
E-127

SHEET OF -



SHEET NOTES:

1. PLC15 IS LOCATED IN THE DAF BUILDING. SEE SHEET E-125.
2. J-BOX FOR CONNECTION TO TANK HEAT TRACING. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.
3. STORAGE TANK AREA SHALL BE CONSIDERED A WET AREA. ALL ELECTRICAL EQUIPMENT, CONDUIT, ETC. AND ITS INSTALLATION SHALL MEET THIS AREA CLASSIFICATION.
4. J-BOX FOR CONNECTION TO EMERGENCY SHOWER/EYEWASH HEAT TRACING. VERIFY ELECTRICAL REQUIREMENTS WITH MANUFACTURER.

**HDR**HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	09/20/2013	HVAC REVISIONS
B	09/06/2013	RENAMED RTU-DAF TO PLC15/ADDED HEAT TRACING
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER: WILLIAM S. M'COY
DESIGNED BY: J. VAN TASSEL
DRAWN BY: J. VAN TASSEL
CHECKED BY: L. ANDERSON

PROJECT NUMBER

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****SODIUM HYDROXIDE FACILITY
ELECTRICAL POWER PLAN**

0 1" 2"

FILENAME E-150.dwg

SCALE 1/4"=1'-0"

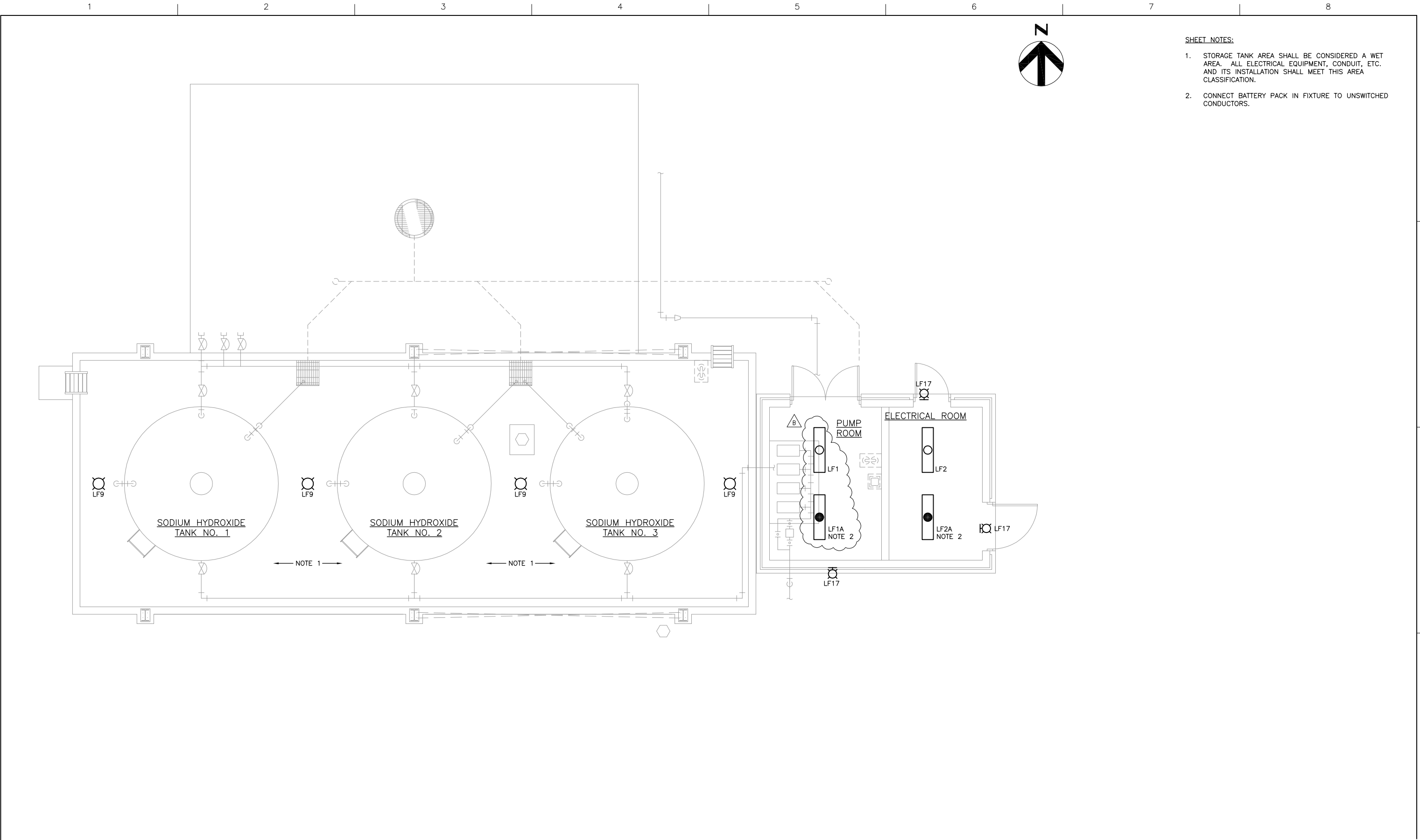
DRAWING NUMBER

E-150

SHEET

OF

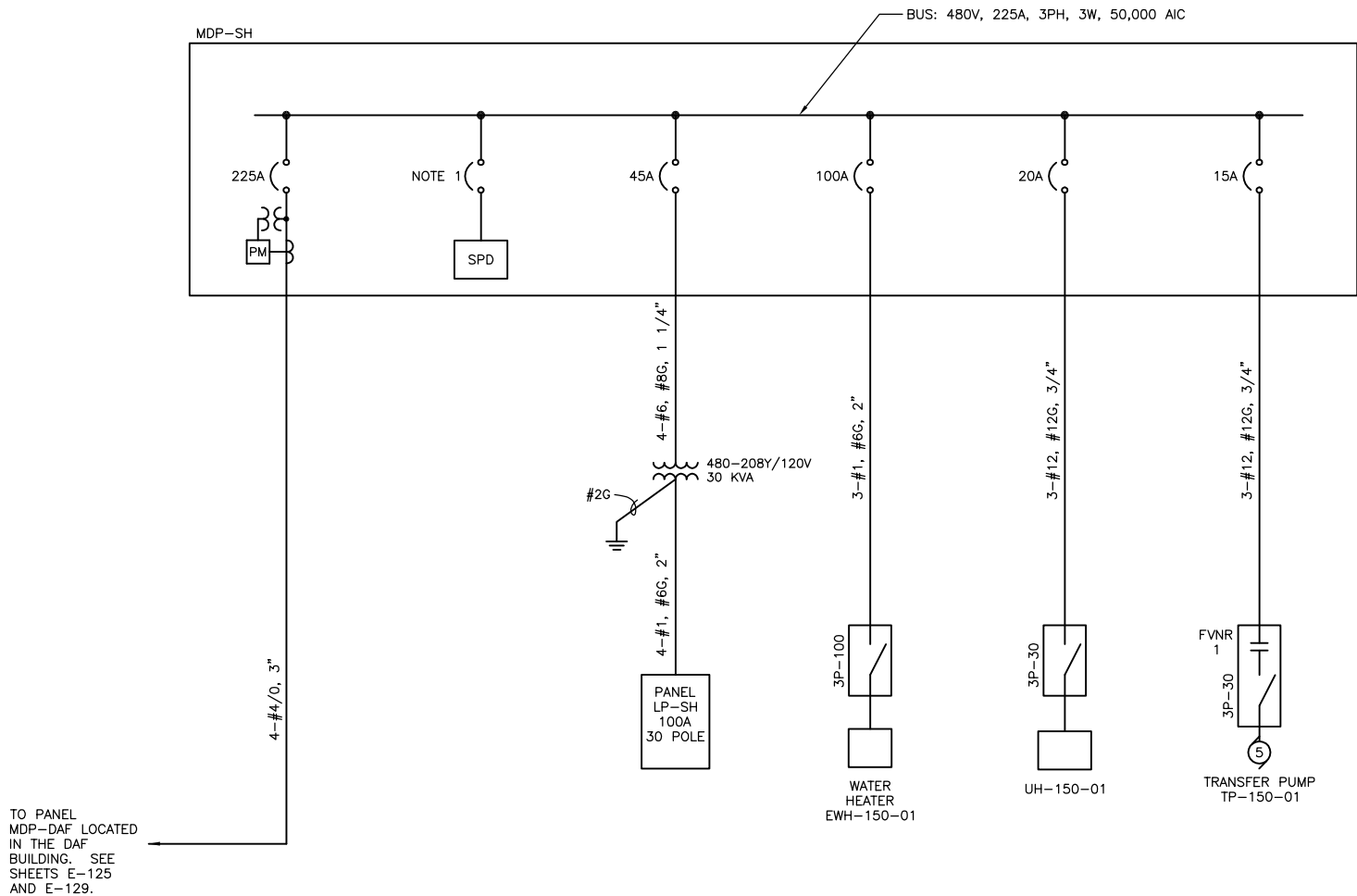
-



- SHEET NOTES:**
1. STORAGE TANK AREA SHALL BE CONSIDERED A WET AREA. ALL ELECTRICAL EQUIPMENT, CONDUIT, ETC. AND ITS INSTALLATION SHALL MEET THIS AREA CLASSIFICATION.
 2. CONNECT BATTERY PACK IN FIXTURE TO UNSWITCHED CONDUCTORS.

<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SODIUM HYDROXIDE FACILITY ELECTRICAL LIGHTING PLAN			<div><div>012</div><div>01"2"</div></div>	FILENAME E-151.dwg	DRAWING NUMBER	SHEET OF -
	B	09/20/2013	REVISED LIGHT FIXTURE TYPE	DESIGNED BY: J. VAN TASSEL							SCALE 1/4"=1'-0"	E-151	
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL	DRAWN BY: J. VAN TASSEL									
				CHECKED BY: L. ANDERSON									
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER									

- SHEET NOTES:
1. SIZE OF CIRCUIT BREAKER TO BE DETERMINED BY MANUFACTURER.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

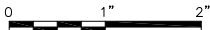
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

SODIUM HYDROXIDE FACILITY
ELECTRICAL ONE-LINE DIAGRAM



FILENAME	E-152.dwg
SCALE	NONE

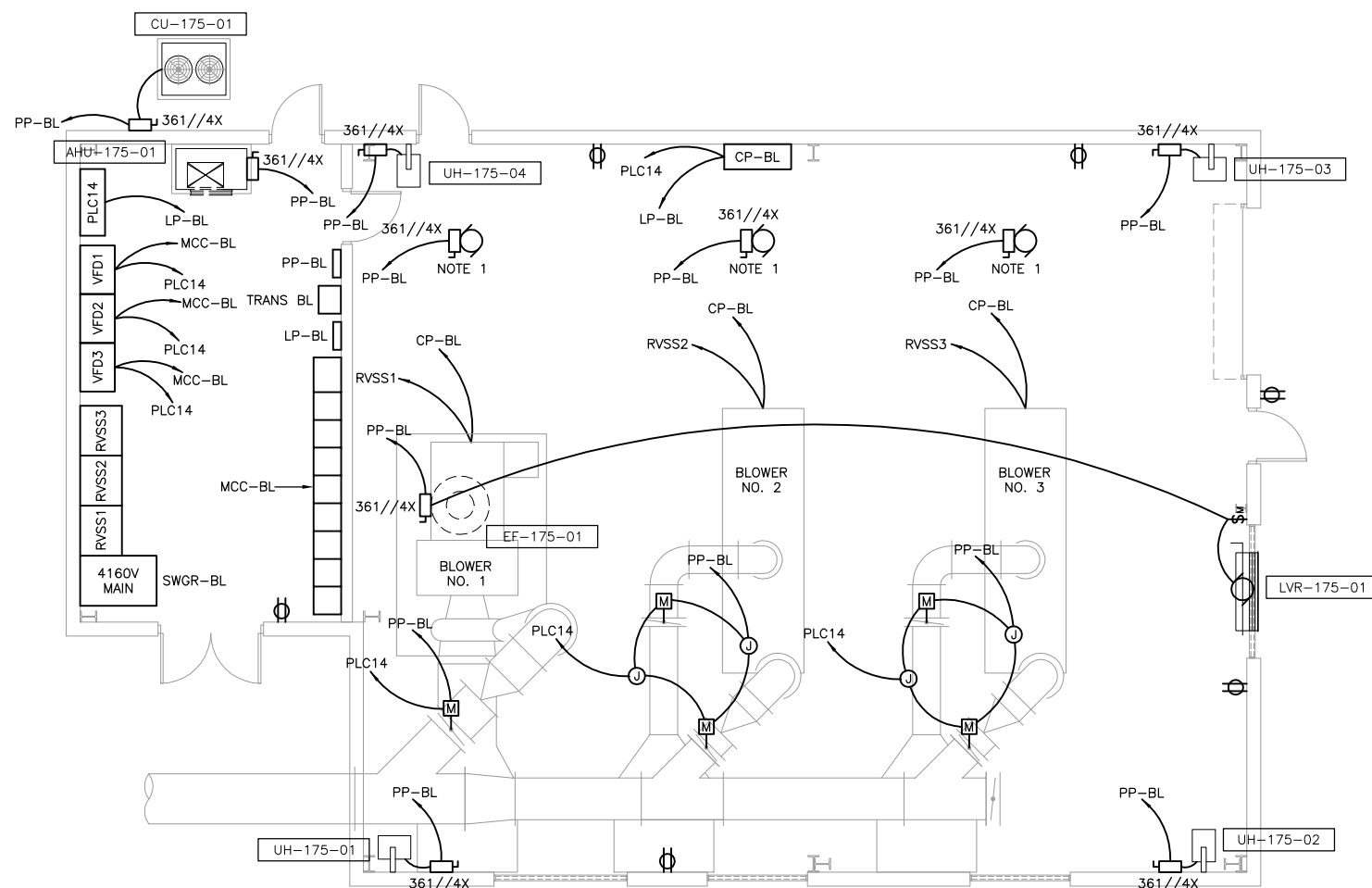
DRAWING NUMBER
E-152

SHEET OF -



SHEET NOTES:

- COORDINATE LOCATION AND ELECTRICAL REQUIREMENTS FOR MONORAIL, TYPICAL OF THREE.



PLAN

HDRHDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	09/20/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

**CONCEPTUAL
DESIGN****CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY****ALTERNATIVE 4A-1 LIGHT
PHASE 2****BLOWER BUILDING
ELECTRICAL POWER PLAN**

0 1" 2"

FILENAME E-175.dwg

SCALE 3/16" = 1'-0"

DRAWING NUMBER

E-175

SHEET

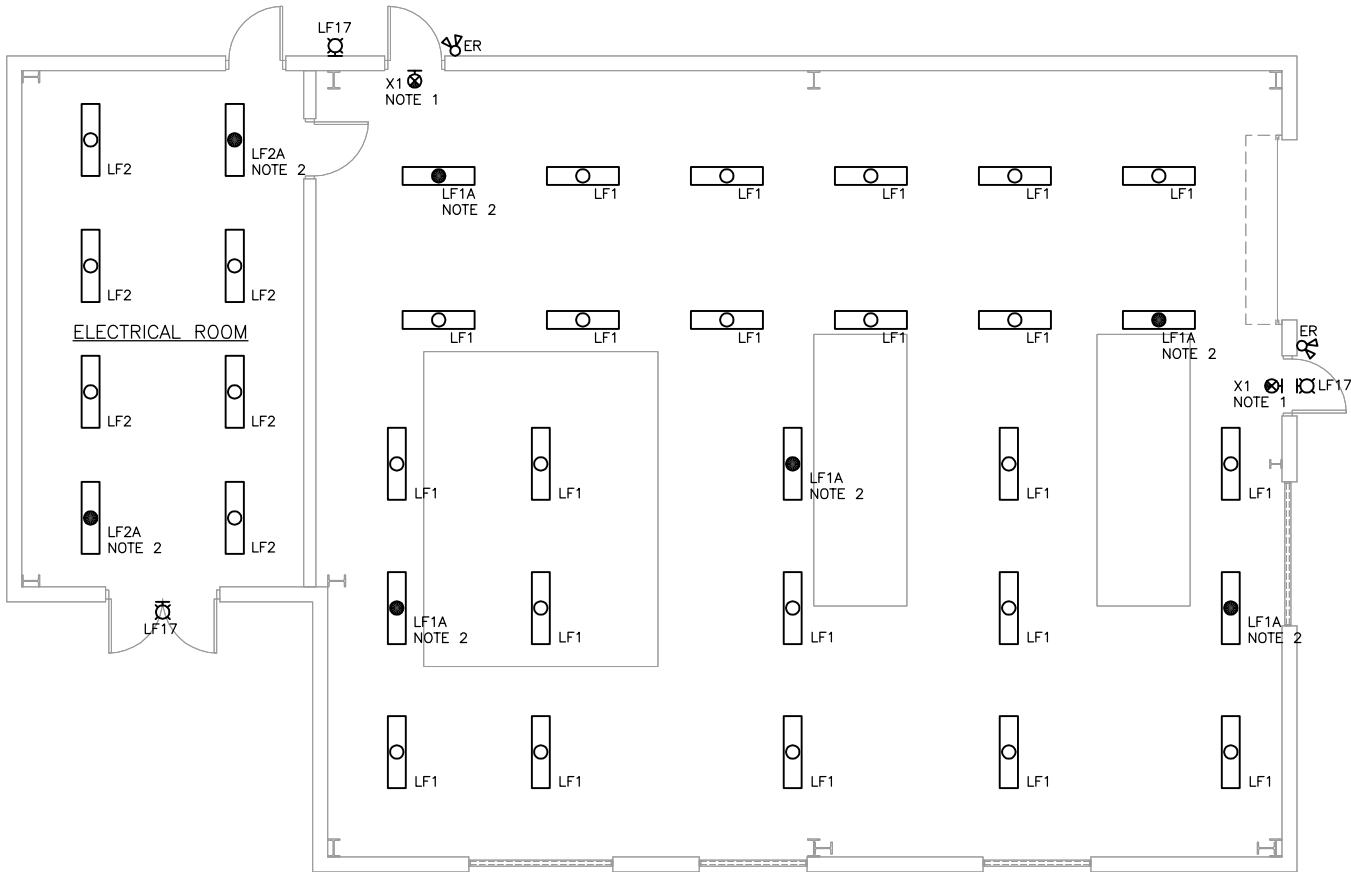
OF

-



SHEET NOTES:

- 1. CONNECT TO UNSWITCHED CONDUCTORS.
- 2. CONNECT BATTERY PACK IN FIXTURE TO UNSWITCHED CONDUCTORS.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	09/20/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

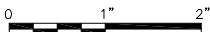
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

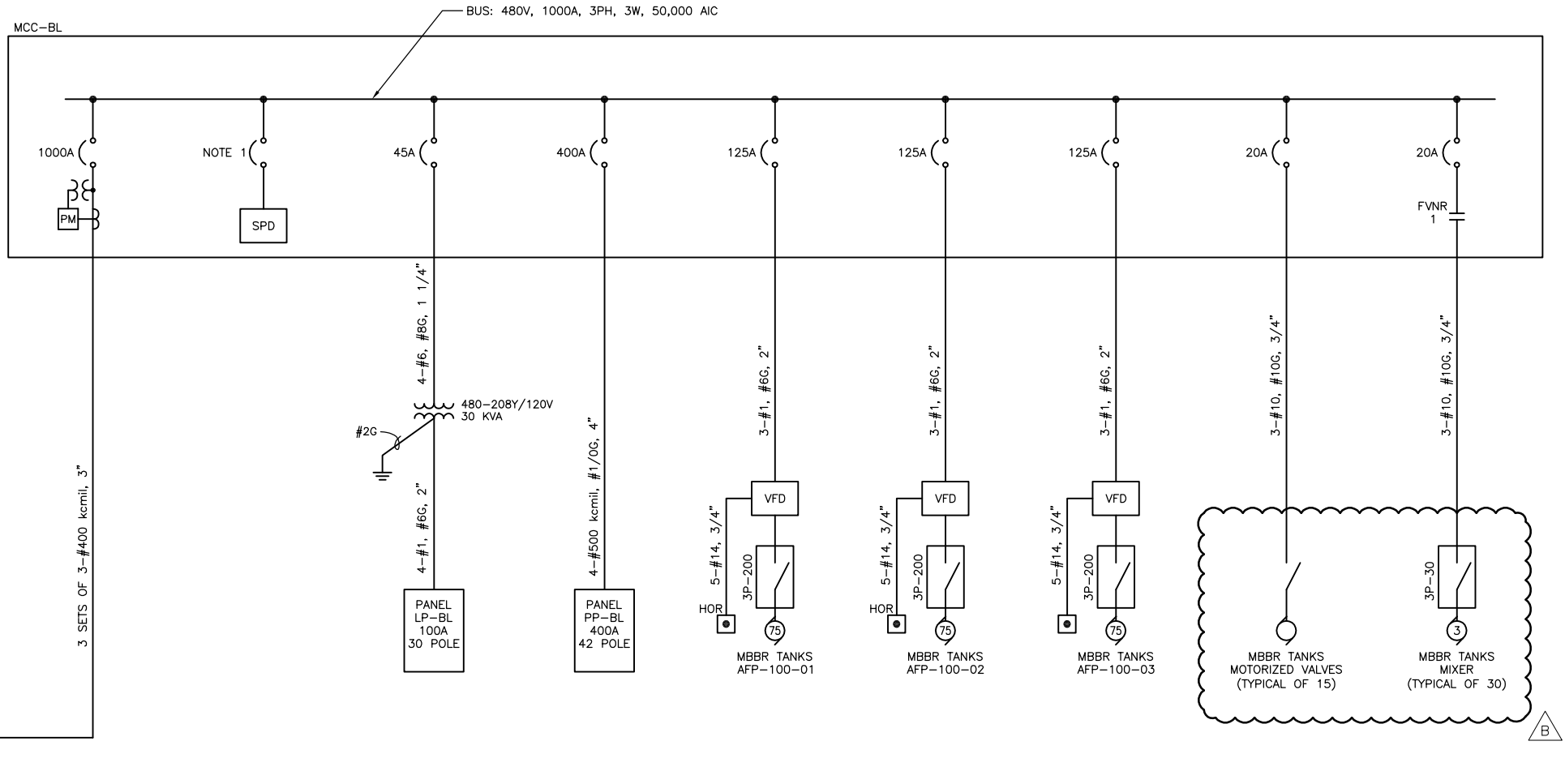
BLOWER BUILDING
ELECTRICAL LIGHTING PLAN



FILENAME	E-177.dwg
SCALE	3/16" = 1'-0"

DRAWING NUMBER
E-177

SHEET OF -



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	03/12/2014	VALVE AND MIXER REVISION FOR 5 TANKS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

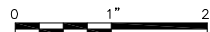
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT PHASE 2

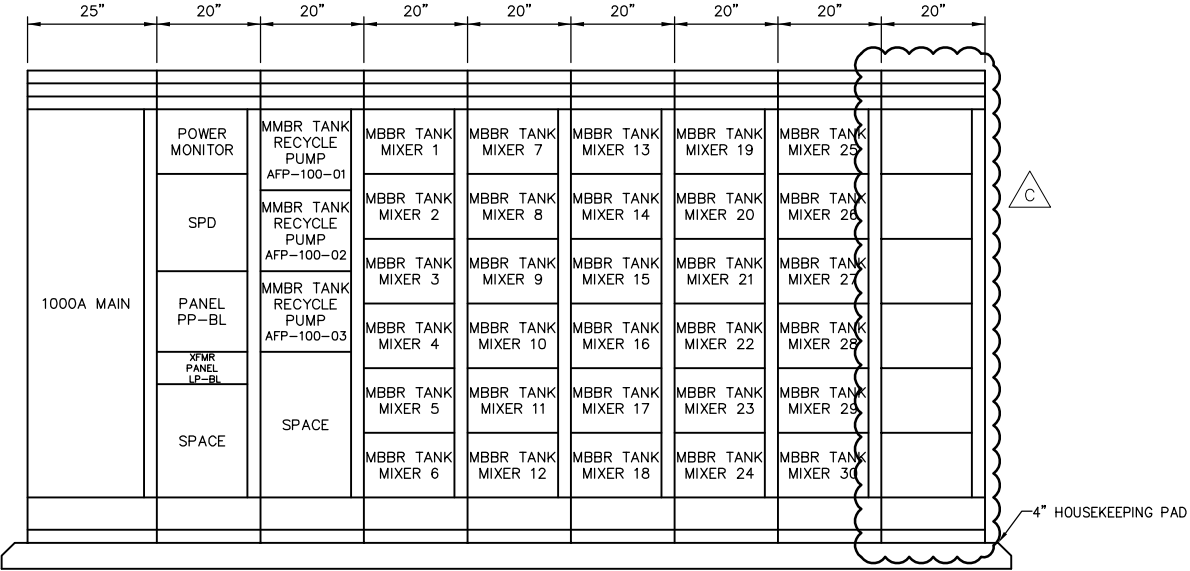
BLOWER BUILDING ELECTRICAL ONE-LINE DIAGRAM



FILENAME	E-178.dwg
SCALE	NONE

DRAWING NUMBER
E-178

SHEET OF -



MCC-BL ELEVATION

NO SCALE



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	03/12/2014	MIXER REVISION FOR 5 TANKS
B	09/20/2013	ADDED DRAWING
ISSUE	DATE	DESCRIPTION

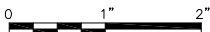
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

BLOWER BUILDING
MCC-BL ELEVATION



FILENAME	E-179.dwg
SCALE	NONE

DRAWING NUMBER
E-179

SHEET OF -

1

2

3

4

5

6

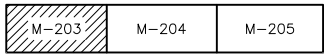
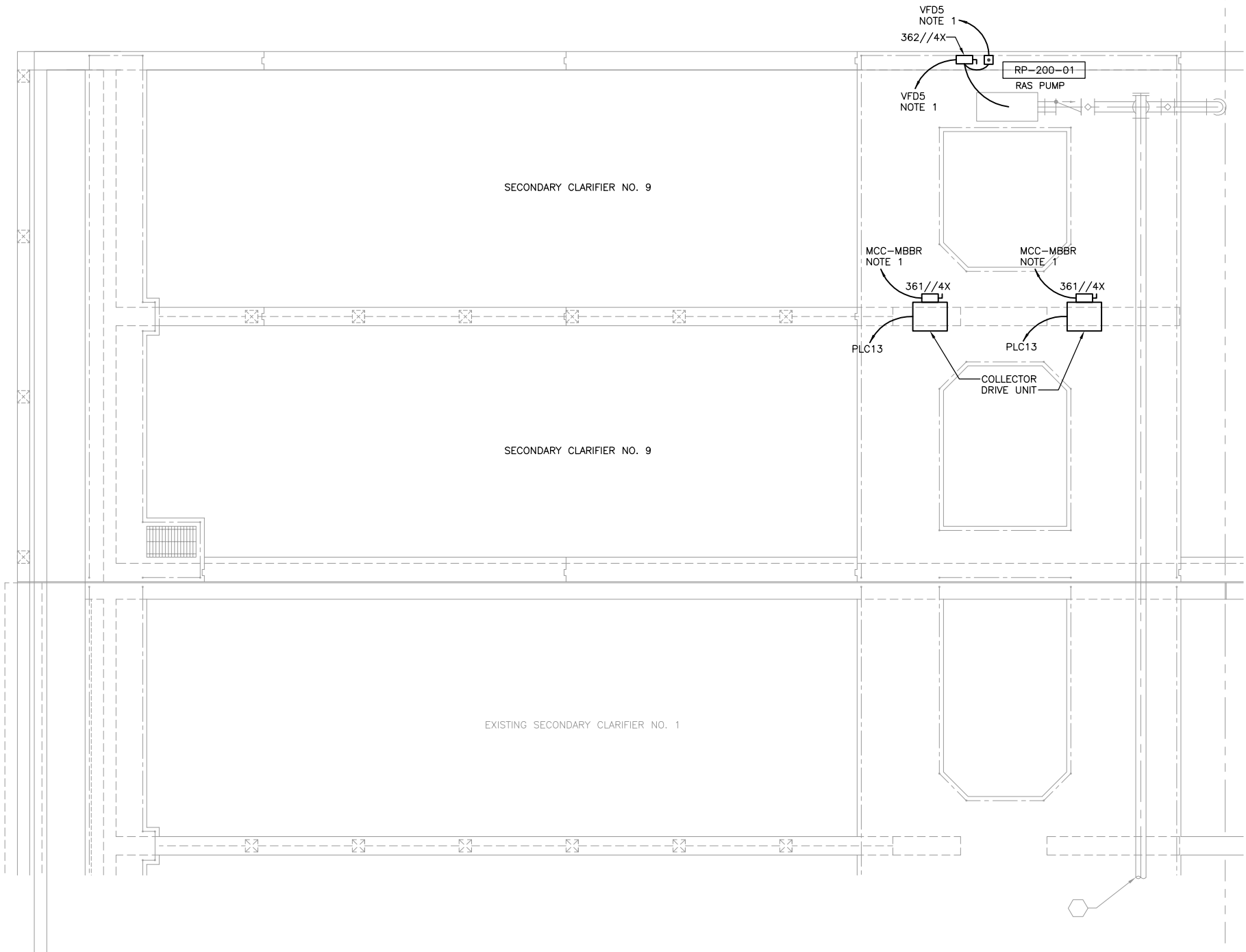
7

8



SHEET NOTES:

1. MCC-MBBR, PLC13, AND VFD5 ARE LOCATED IN THE MBBR INFLUENT PUMP STATION. SEE SHEET E-75.



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	09/20/2013	REVISED FOR PLC13
B	09/06/2013	REVISED FOR EXISTING PLC4
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

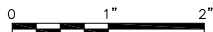
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

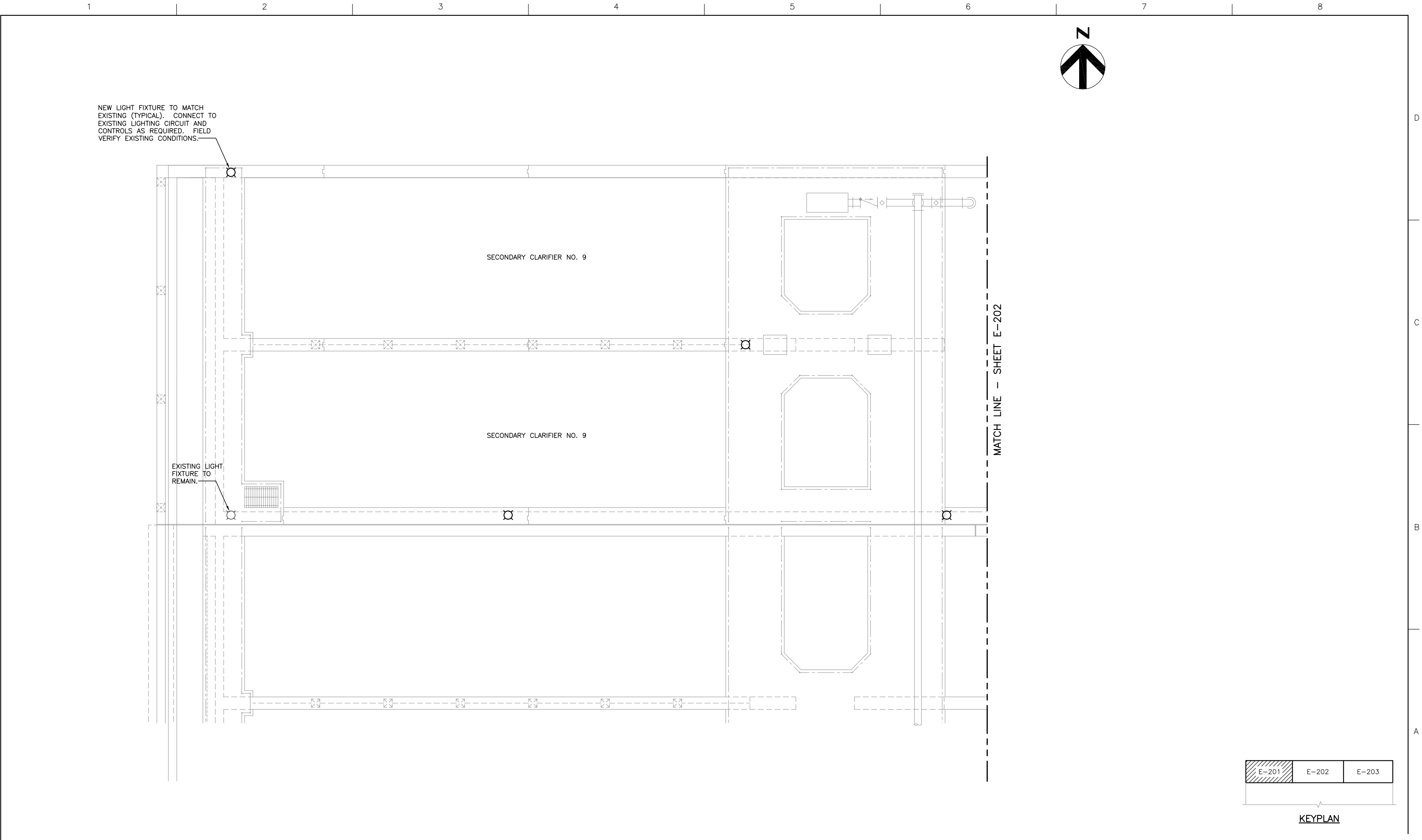
SECONDARY CLARIFIER No. 9
ELECTRICAL PLAN



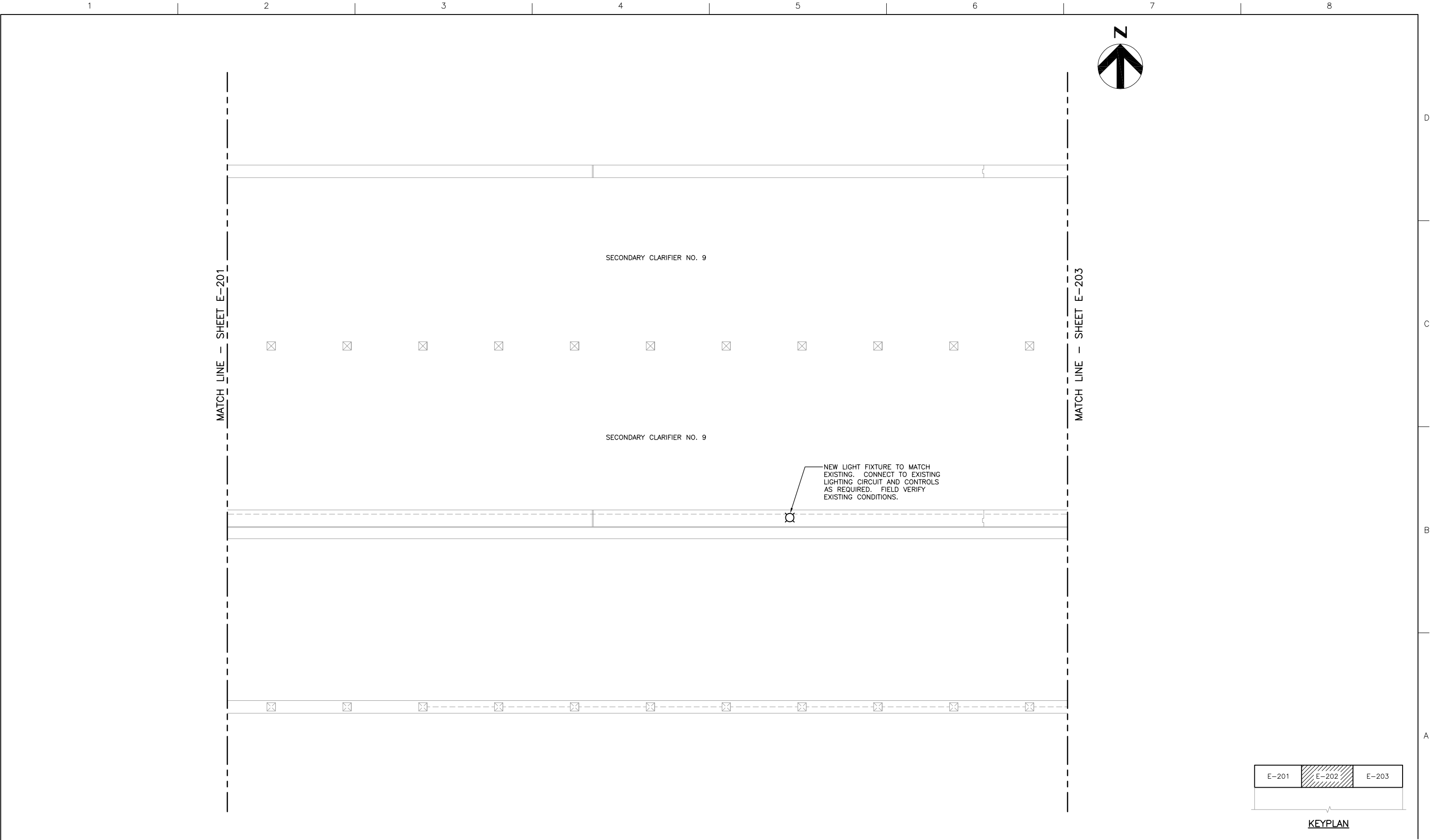
FILENAME	E-200.dwg
SCALE	3/16"=1'-0"

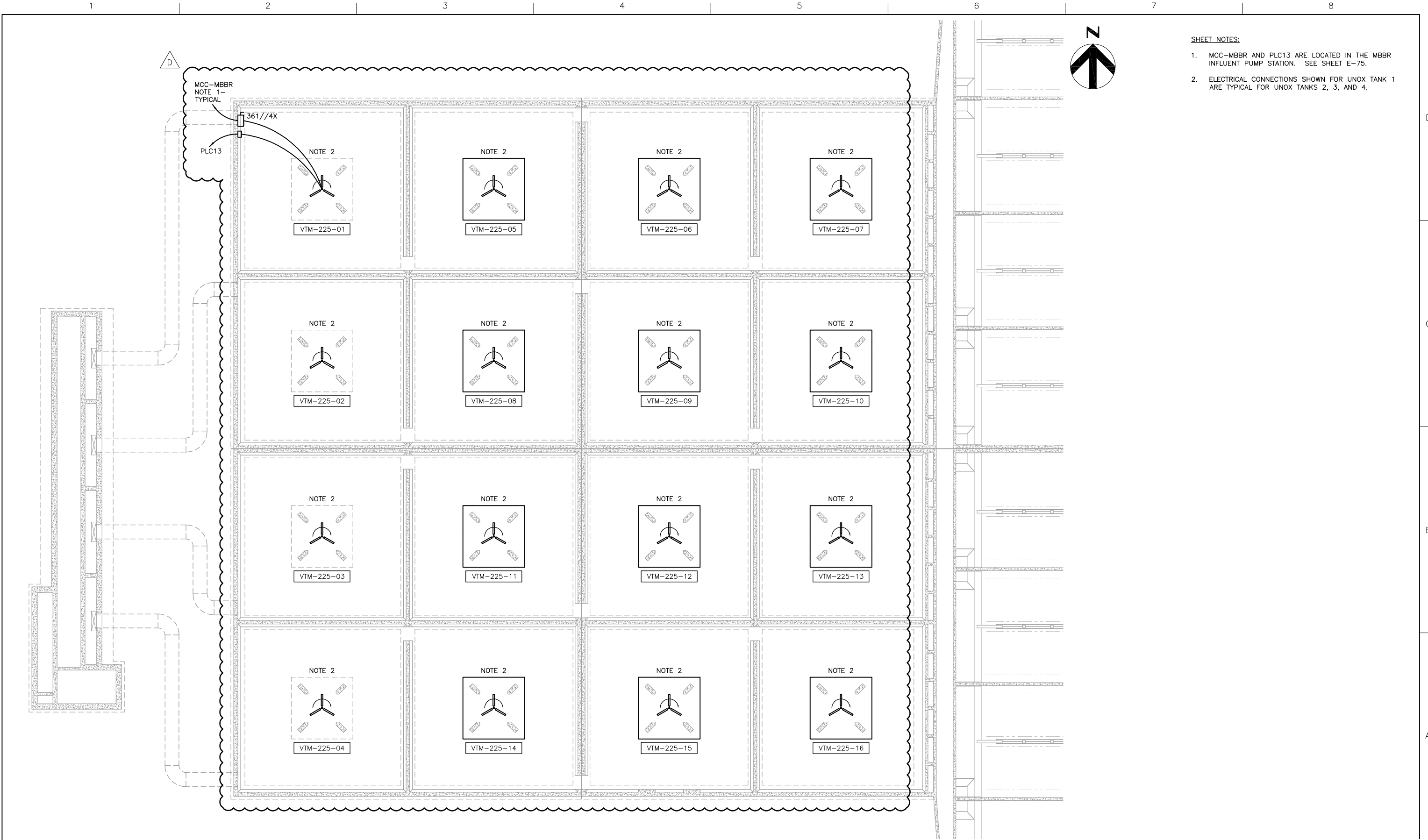
DRAWING NUMBER
E-200

SHEET OF -



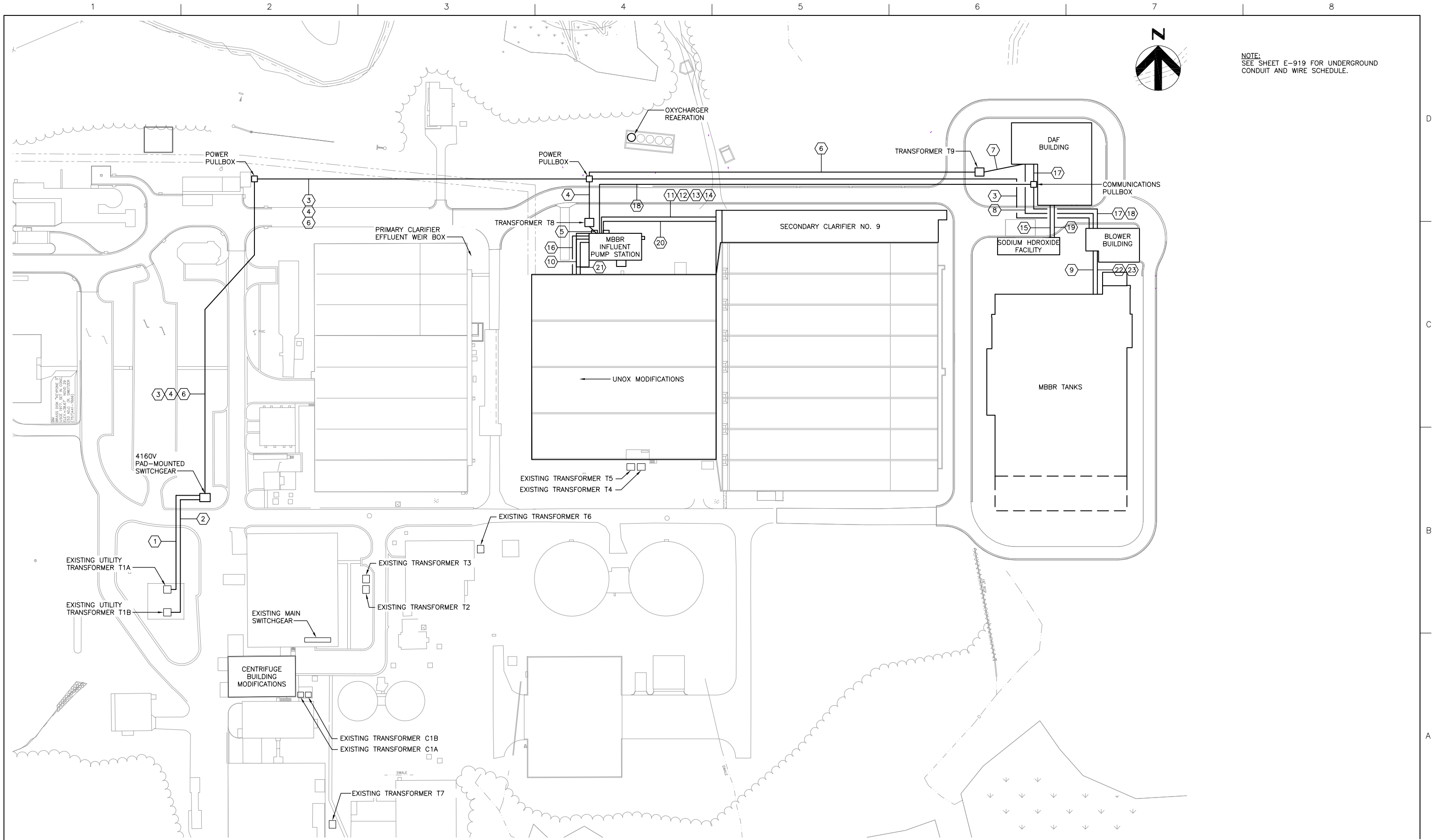
<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY	SECONDARY CLARIFIER No. 9 LIGHTING PLAN 1 OF 3				
				DESIGNED BY: J. VAN TASSEL							
				DRAWN BY: J. VAN TASSEL							
				CHECKED BY: L. ANDERSON							
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL				<div><div>01"2"</div><div>FILENAME E-201.dwg</div><div>SCALE 3/16"=1'-0"</div></div>	DRAWING NUMBER	SHEET OF -		
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER			E-201					



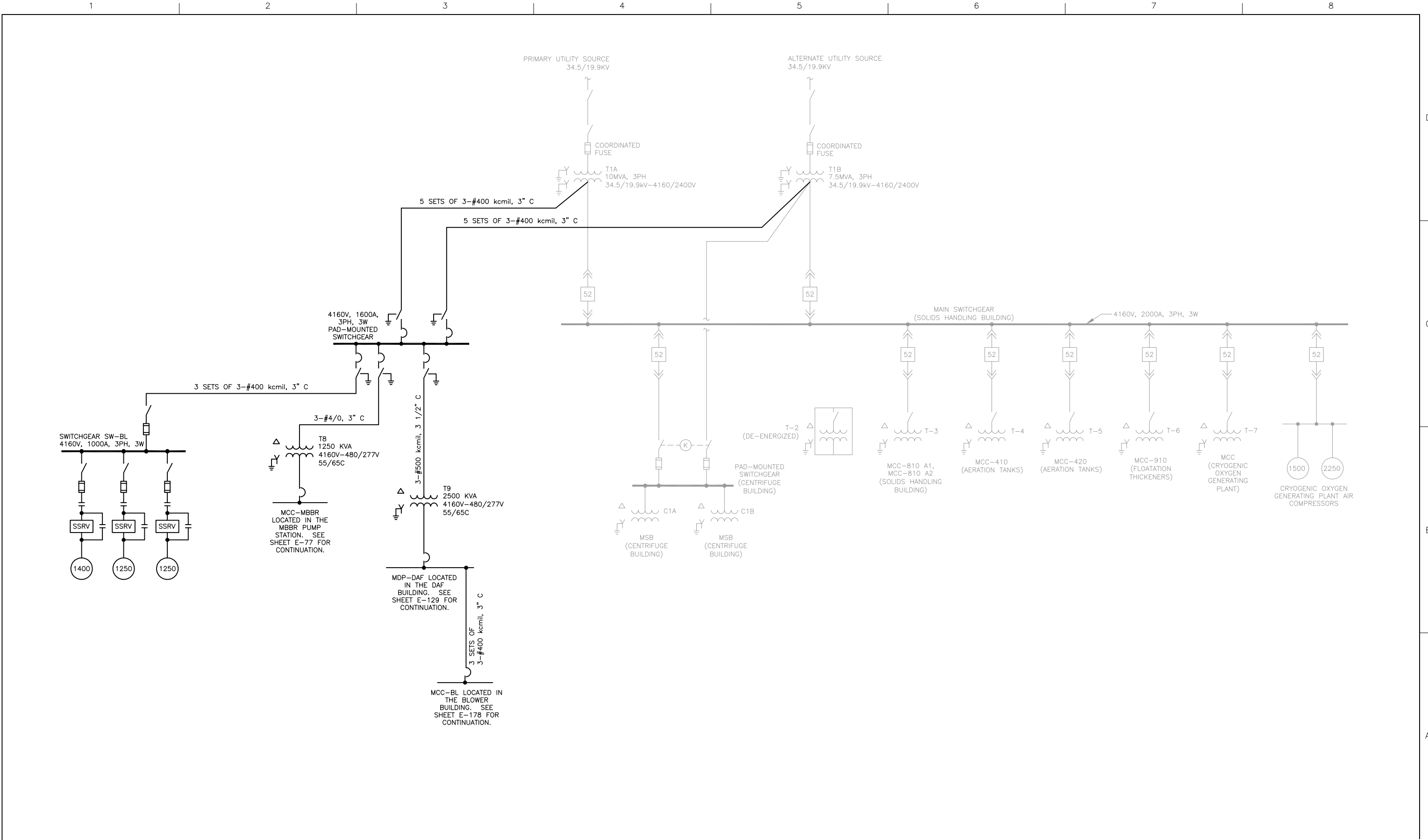


- SHEET NOTES:**
1. MCC-MBBR AND PLC13 ARE LOCATED IN THE MBBR INFLUENT PUMP STATION. SEE SHEET E-75.
 2. ELECTRICAL CONNECTIONS SHOWN FOR UNOX TANK 1 ARE TYPICAL FOR UNOX TANKS 2, 3, AND 4.

<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	UNOX POWER PLAN		
				DESIGNED BY: J. VAN TASSEL			<div><div>01"2"</div><div>01/16"=1'-0"</div></div>	DRAWING NUMBER E-225	SHEET OF -
	D	03/12/2014	MIXER REVISIONS	DRAWN BY: J. VAN TASSEL					
	C	09/20/2013	REVISED FOR PLC13	CHECKED BY: L. ANDERSON					
	B	09/06/2013	REVISED FOR EXISTING PLC3						
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL						
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER					



<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER:	WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY	ELECTRICAL SITE PLAN				
				DESIGNED BY:	J. VAN TASSEL							
				DRAWN BY:	J. VAN TASSEL							
				CHECKED BY:	L. ANDERSON							
	D	10/08/2013	ADDED MBBR SCREENS/COMPACTORS				<div><div>01"2"</div><div>01"=60'</div></div>	FILENAME	E-905.dwg	DRAWING NUMBER		
	C	09/20/2013	REVISED FOR PLC13/ADDED MBBR TANKS					SCALE	1"=60'	E-905	SHEET OF -	
	B	09/06/2013	CONCEPTUAL DESIGN SUBMITTAL									
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER								



<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	PROPOSED OVERALL ELECTRICAL ONE-LINE DIAGRAM							
				DESIGNED BY: G. USELDINGER			<div><div>0</div><div>1"</div><div>2"</div></div>	FILENAME	E-915.dwg	DRAWING NUMBER	E-915	SHEET	OF	-
				DRAWN BY: N. WIESZEK				SCALE	NONE					
				CHECKED BY: L. ANDERSON										
	B	09/20/2013	REVISED FOR BLOWER BUILDING											
	A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL											
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER										

Light Fixture Schedule					
Fixture Type	Description	Lamps	Manufacturer	Catalog Number	Remarks
LF1	4-3-LAMP FLUORESCENT FIXTURE, ALUMINUM HOUSING, CORROSION RESISTANT FINISH, ENCLOSED AND GASKETED WITH INJECTION MOLDED ACRYLIC PRISMATIC LENS	2-F32T8	HOLOPHANE	7300-4-AL-Q42-EP-U-T8LP841	
LF1A	SAME AS TYPE LF-2 EXCEPT WITH EMERGENCY BATTERY PACK FOR 90 MINUTE OPERATION UPON LOSS OF POWER	3-F32T8	HOLOPHANE	7300-4-AL-Q42-EP-U-B600-T8LP841	
LF2	4-2-LAMP FLUORESCENT FIXTURE, FIBERGLASS HOUSING, MICRO 4 SPECULAR ALUMINUM REFLECTOR, ENCLOSED AND GASKETED WITH HIGH IMPACT ACRYLIC LENS SUITABLE FOR WET LOCATIONS	2-F32T8	HOLOPHANE	HES4-232-S1-X20-120	
LF2A	SAME AS TYPE LF-1 EXCEPT WITH EMERGENCY BATTERY PACK FOR 90 MINUTE OPERATION UPON LOSS OF POWER	2-F32T8	HOLOPHANE	HES4-232-S1-X20-120-EL14DW	
LF8	PENDANT MOUNTED FLUORESCENT HIGH BAY FIXTURE WITH WIDE DISTRIBUTION AND 9% UPLIGHT	3-54WATT T5HO	LITHONIA	IBC 354L BPMP	
LF8A	SAME AS TYPE LF8 EXCEPT WITH EMERGENCY BATTERY PACK FOR 90 MINUTE OPERATION UPON LOSS OF POWER	3-54WATT T5HO	LITHONIA	IBC 354L BPMP EL14	
LF9	PENDANT MOUNTED HID FIXTURE, ENCLOSED AND GASKETED, 3/4" HUB, TYPE V GLASS REFRACTOR	175W CLEAR MH	HOLOPHANE PETROLUX II	PETL-175MH-545-P-P8	
LF17	EXTERIOR WALL MOUNTED COMPACT FLUORESCENT FIXTURE WITH DIE-CAST ALUMINUM HOUSING AND DOOR FRAME, FULLY GASKETED WITH TEMPERED GLASS LENS, INTERNAL PHOTOCELL CONTROLLED	2-32TRT	LITHONIA	WST-232TRT-MD-120-PE-LP1	
LF19	WALL MOUNTED LED FIXTURE, 30 CHIPS, 4000K, PRISMATIC GLASS REFRACTOR, DIE-CAST ALUMINUM HOUSING, BLACK FINISH, WET LOCATION LISTED WITH INTERNAL PHOTOCELL CONTROL	LED	HOLOPHANE	W4G-LED-30C-1000-40K-T3M-120-PE-SF-BK	
LF20	LED INDUSTRIAL LIGHT FIXTURE, 5000 LUMENS, WITH PRISMATIC GLASS REFRACTOR FOR LONG AND NARROW DISTRIBUTION WITH INTERNAL PHOTOCELL CONTROL, STANCHION MOUNTED	LED	HOLOPHANE	PLED2-05L-5K-12-4UN-NA-W-L1-F1-BP-P3J5WH	
X1	UNIVERSAL MOUNT POLYCARBONATE EXT SIGN WITH REMOTE CAPACITY	LED	LITHONIA	LHQM-S-W-3-R-120/277.RD	
ER	REMOTE TWIN-HEAD EMERGENCY FIXTURE POWERED FROM FIXTURE X1	1-8W	LITHONIA	ELA-W-T-NX-NC806	

UNDERGROUND CONDUIT AND WIRE SCHEDULE					
TAG NO.	FROM	TO	CONDUIT	WIRES	REMARKS
①	EXISTING TRANSFORMER T-1A	4160V PAD MOUNTED SWITCHGEAR	6-4"	5 SETS OF 3-#400 kcmil, 5KV PULL WIRE	PRIMARY POWER SOURCE
②	EXISTING TRANSFORMER T-1B	4160V PAD MOUNTED SWITCHGEAR	6-4"	5 SETS OF 3-#400 kcmil, 5KV PULL WIRE	ALTERNATE POWER SOURCE
③	4160V PAD MOUNTED SWITCHGEAR	BLOWER BUILDING	3-3"	3 SETS OF 3-#400 kcmil, 5KV	BLOWER POWER
④	4160V PAD MOUNTED SWITCHGEAR	TRANSFORMER T8	3"	3-#4/0, 5KV	MBBR INFLUENT PUMP STATION POWER
⑤	TRANSFORMER T8	MBBR INFLUENT PUMP STATION MCC-MBBR	5-3"	5 SETS OF 3-#400 kcmil	MBBR INFLUENT PUMP STATION POWER
⑥	4160V PAD MOUNTED SWITCHGEAR	TRANSFORMER T9	2-4"	3-#500 kcmil, 5KV PULL WIRE	DAF BUILDING POWER
⑦	TRANSFORMER T9	DAF BUILDING MDP-DAF	8-3 1/2"	8 SETS OF 3-#500 kcmil	DAF BUILDING POWER
⑧	DAF BUILDING MDP-DAF	BLOWER BUILDING MCC-BL	3-3"	3 SETS OF 3-#400 kcmil	BLOWER BUILDING POWER
⑨	BLOWER BUILDING MCC-BL, PANEL PP-BL, PANEL LP-BL	MBBR TANKS	3-2" 7-1" 36-1" 2-1"	3 SETS OF 3-#1, #6G 7 SETS OF 3-#10, #10G 36 SETS OF 3-#10, #10G 2 SETS OF 2-#10, #10G	MBBR TANKS PUMP POWER VALVE/SCRN CTRL PNL PWR MBBR TANK MIXER POWER MBBR TANK LTG/RECPTS
⑩	MBBR INFLUENT PUMP STATION MCC-MBBR	UNOX TANK MIXERS	24-1"	24 SETS OF 3-#10, #10G	UNOX TANK MIXER POWER
⑪	MBBR INFLUENT PUMP STATION MCC-MBBR	SECONDARY CLARIFIER NO. 9 SCUM PUMP SP-200-01	1"	3-#10, #10G	SECONDARY CLARIFIER NO. 9 SP-200-01 POWER
⑫	MBBR INFLUENT PUMP STATION MCC-MBBR	SECONDARY CLARIFIER NO. 9 SCRAPPER DRIVE 1	1"	3-#10, #10G	SECONDARY CLARIFIER NO. 9 SCRAPPER DRIVE 1 POWER
⑬	MBBR INFLUENT PUMP STATION MCC-MBBR	SECONDARY CLARIFIER NO. 9 SCRAPPER DRIVE 2	1"	3-#10, #10G	SECONDARY CLARIFIER NO. 9 SCRAPPER DRIVE 2 POWER
⑭	MBBR INFLUENT PUMP STATION MCC-MBBR	SECONDARY CLARIFIER NO. 9 RAS PUMP RP-200-01	1 1/4"	3-#4, #8G	SECONDARY CLARIFIER NO. 9 RP-200-01 POWER
⑮	DAF BUILDING MDP-DAF	SODIUM HYDROXIDE FACILITY MDP-SH	3"	4-#4/0, #2G	SODIUM HYDROXIDE FACILITY POWER
⑯	UNOX TANKS EXISTING PLC-3	MBBR INFLUENT PUMP STATION PLC-13	2"	12-FIBER	STATUS AND CONTROLS
⑰	BLOWER BUILDING PLC-14	DAF BUILDING PLC-15	2"	12-FIBER	STATUS AND CONTROLS
⑱	MBBR INFLUENT PUMP STATION PLC-13	BLOWER BUILDING PLC-14	2"	12-FIBER	STATUS AND CONTROLS
⑲	DAF BUILDING PLC-15	SODIUM HYDROXIDE FACILITY	2" 1 1/2"	8-2/C SHIELDED CABLE 32-#14	STATUS AND CONTROLS
⑳	MBBR INFLUENT PUMP STATION PLC-13	SECONDARY CLARIFIER NO. 9	2" 2"	7-2/C SHIELDED CABLE 42-#14	STATUS AND CONTROLS
㉑	MBBR INFLUENT PUMP STATION PLC-13	UNOX TANK MIXERS	2"	60-#14	STATUS AND CONTROLS
㉒	BLOWER BUILDING PLC-14	MBBR TANKS	2-1 1/2" 2-2" (PER TRAIN)	14-2/C SHIELDED CABLE 90-#14 (PER MBBR TRAIN)	STATUS AND CONTROLS
㉓	BLOWER BUILDING PLC-14	MBBR SCREENS/COMPACTORS	2-1"	16-#14	STATUS AND ALARMS



HDR Engineering, Inc.

5700 Lake Wright Dr.

Suite 300

Norfolk, VA 23502

D	10/08/2013	ADDED MBBR SCREENS/COMPACTORS
C	09/20/2013	REVISED LFS/WIRE & CONDUIT SIZES
B	09/06/2013	ADDED CONDUIT AND WIRE SCHEDULE
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	J. VAN TASSEL
DRAWN BY:	J. VAN TASSEL
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY
ALTERNATIVE 4A-1 LIGHT PHASE 2

LIGHTING FIXTURE SCHEDULE AND DETAILS

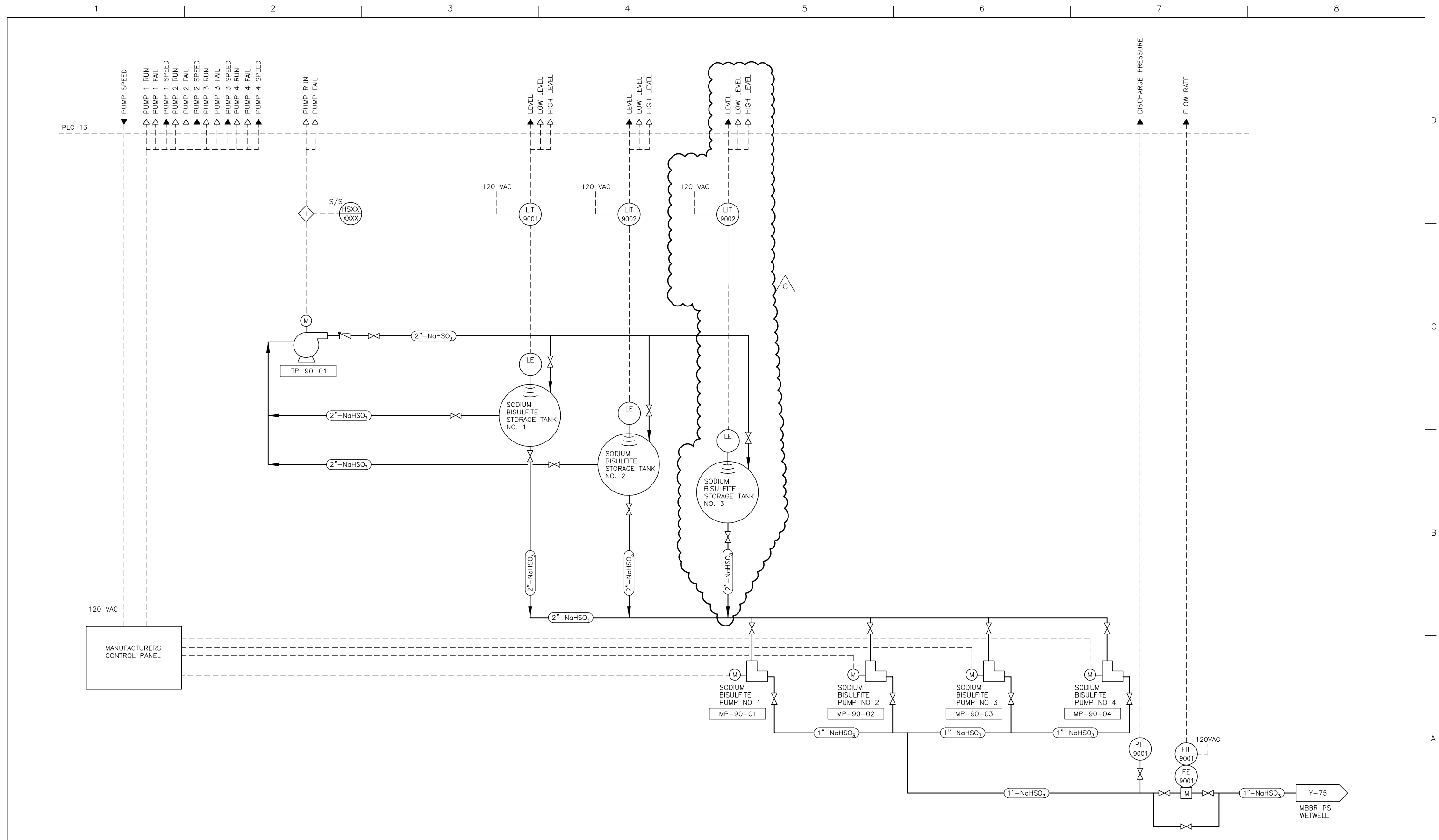
01"2"

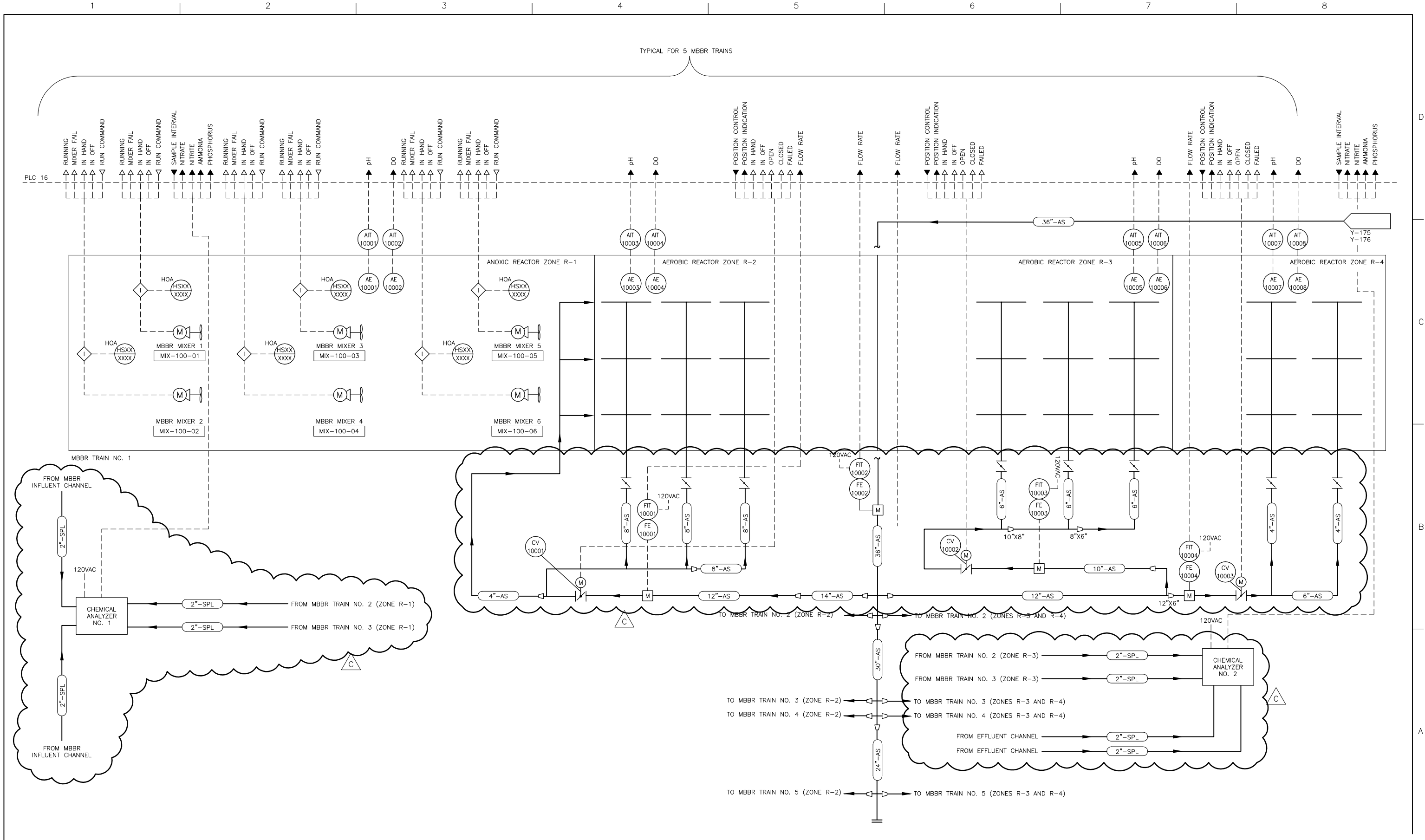
FILENAMEE-919.dwg

DRAWING NUMBERE-919

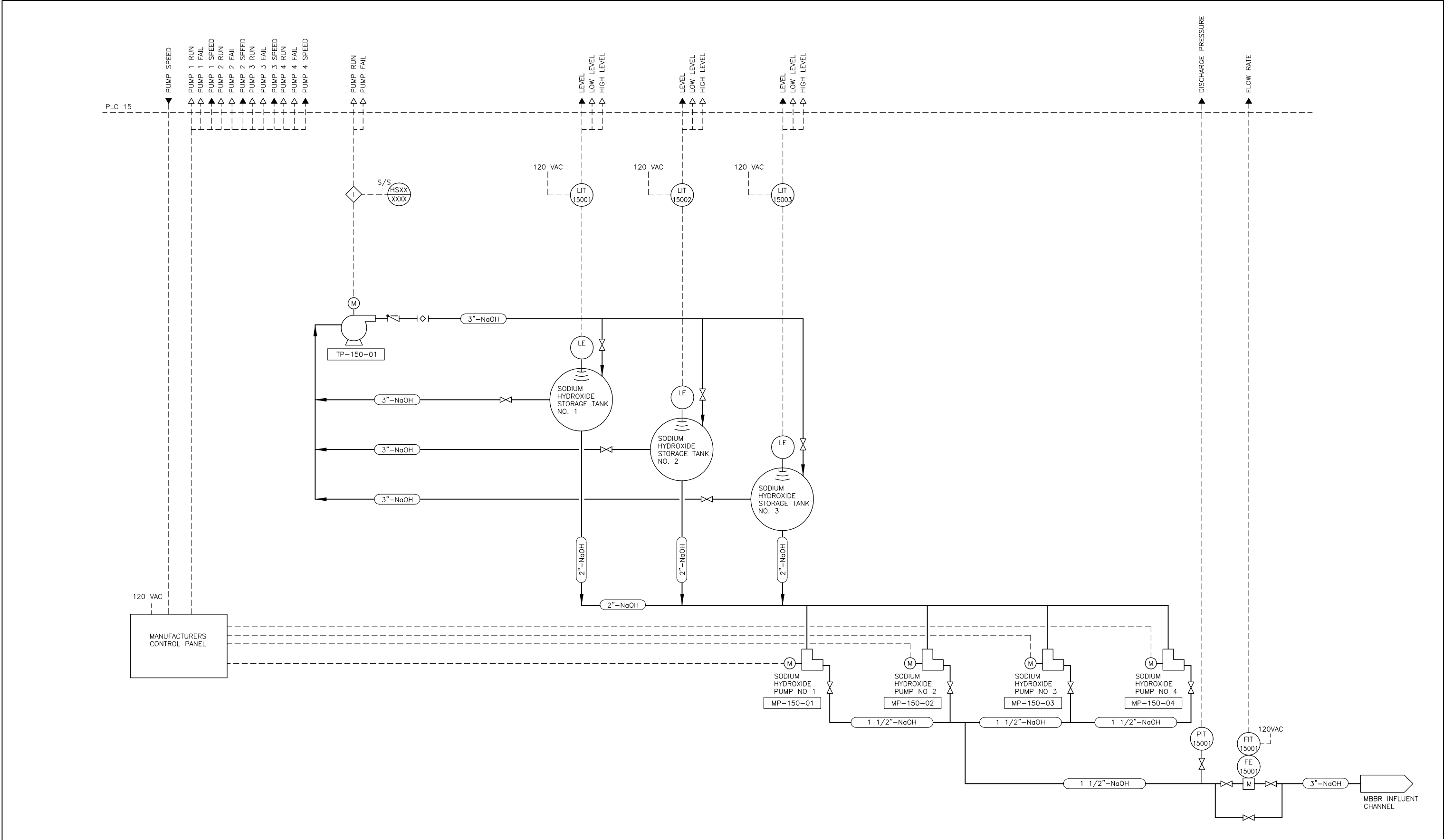
SCALENONE

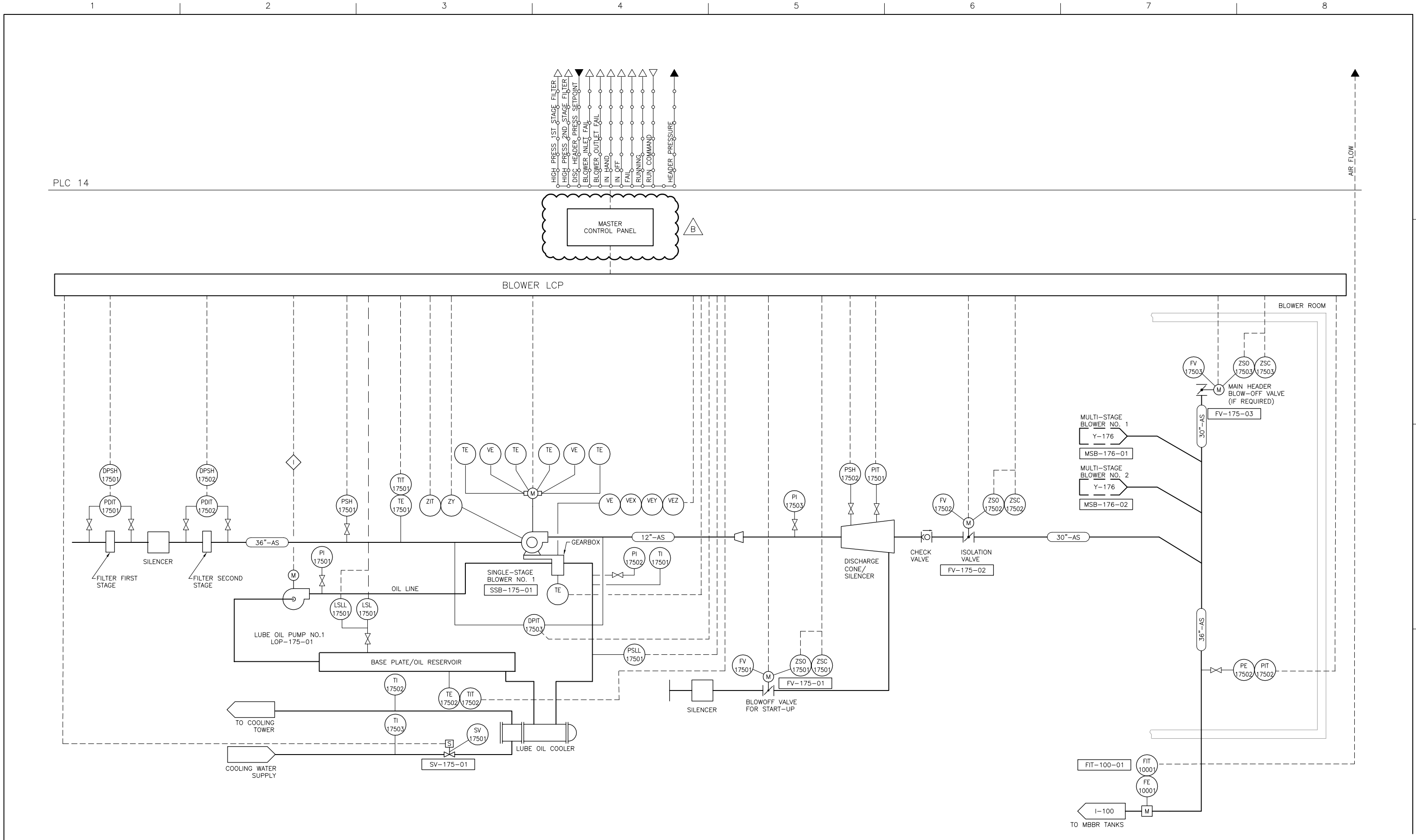
SHEETOF-





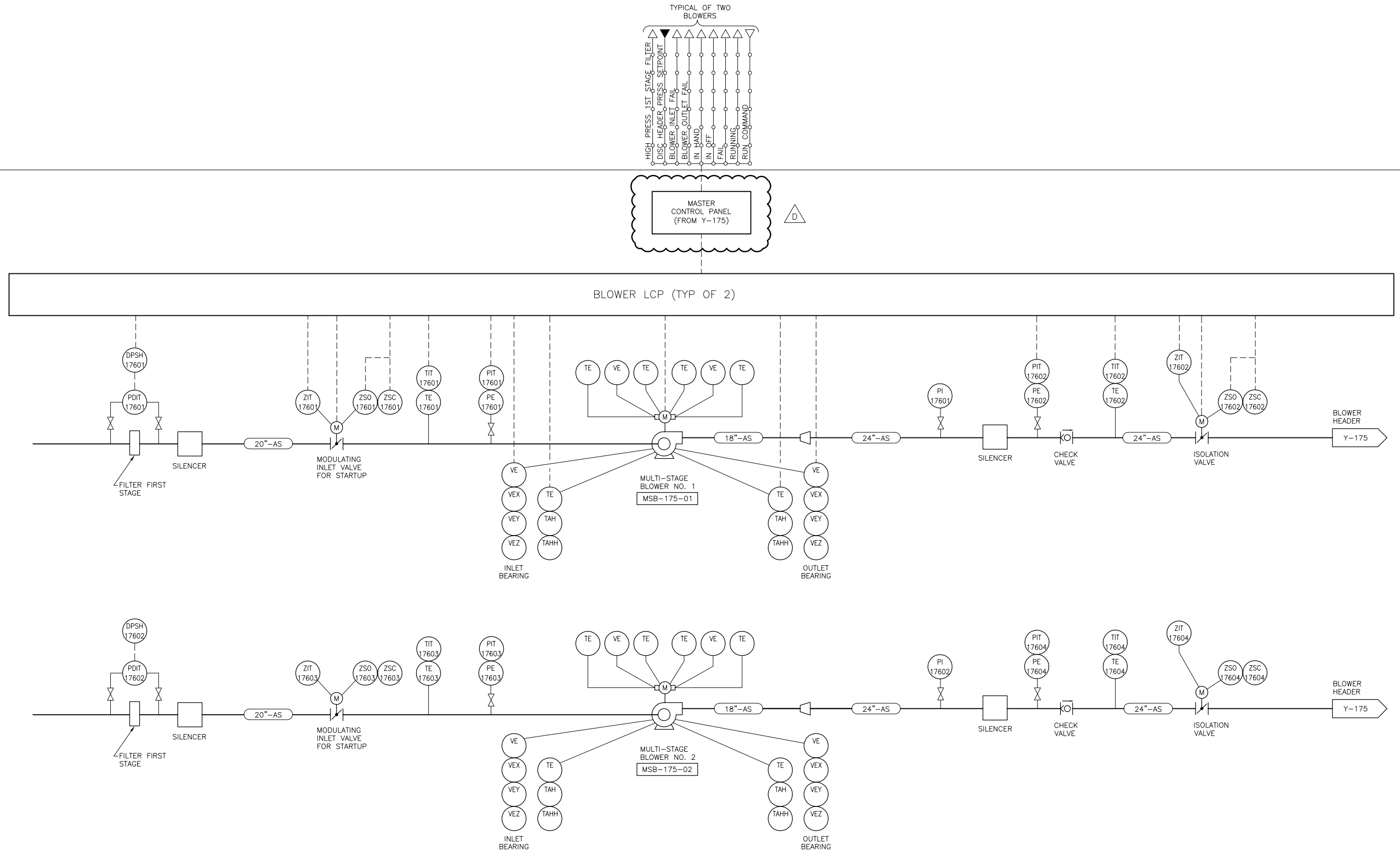
<div><div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	SEGREGATED MBBR SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM (UNIT PROCESS XX)			<div><div>012</div><div>FILENAME Y-100.dwg</div><div>SCALE NONE</div></div>	DRAWING NUMBER Y-100	SHEET OF -
				DESIGNED BY: C. ALCORN								
				DRAWN BY: C. ALCORN								
				CHECKED BY: L. ANDERSON								
	C	03/12/2014	CHEM ANAL. ADDED & AS PIPING REVISION	PROJECT NUMBER								
	B	09/20/2013	MBBR TANK P&ID									
	ISSUE	DATE	DESCRIPTION									





<div><div>HDR</div><div>HDR Engineering, Inc. 5700 Lake Wright Dr. Suite 300 Norfolk, VA 23502</div></div>				PROJECT MANAGER: WILLIAM S. M'COY	CONCEPTUAL DESIGN	CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY ALTERNATIVE 4A-1 LIGHT PHASE 2	BLOWER BUILDING PROCESS AND INSTRUMENTATION DIAGRAM (UNIT PROCESS XX)			01"2" 01"2" 01"2"	FILENAME Y-175.dwg	DRAWING NUMBER	Y-175	SHEET OF -
	D	03/12/2014	REVISED CONTROL PANEL	DESIGNED BY: C. ALCORN							SCALE NONE			
	C	9/16/2013	PIPE SIZE REVISION	DRAWN BY: S. HANCOCK										
	B	9/13/2013	30% DESIGN -- BLOWER P&ID	CHECKED BY: L. ANDERSON										
	ISSUE	DATE	DESCRIPTION	PROJECT NUMBER										

PLC 14



			PROJECT MANAGER:	WILLIAM S. M'COY
			DESIGNED BY:	C. ALCORN
			DRAWN BY:	S. HANCOCK
			CHECKED BY:	L. ANDERSON
D	03/12/2014	REVISED CONTROL PANEL		
C	9/16/2013	PIPE SIZE REVISION		
B	9/13/2013	30% DESIGN - BLOWER P&ID		
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER	

CONCEPTUAL DESIGN

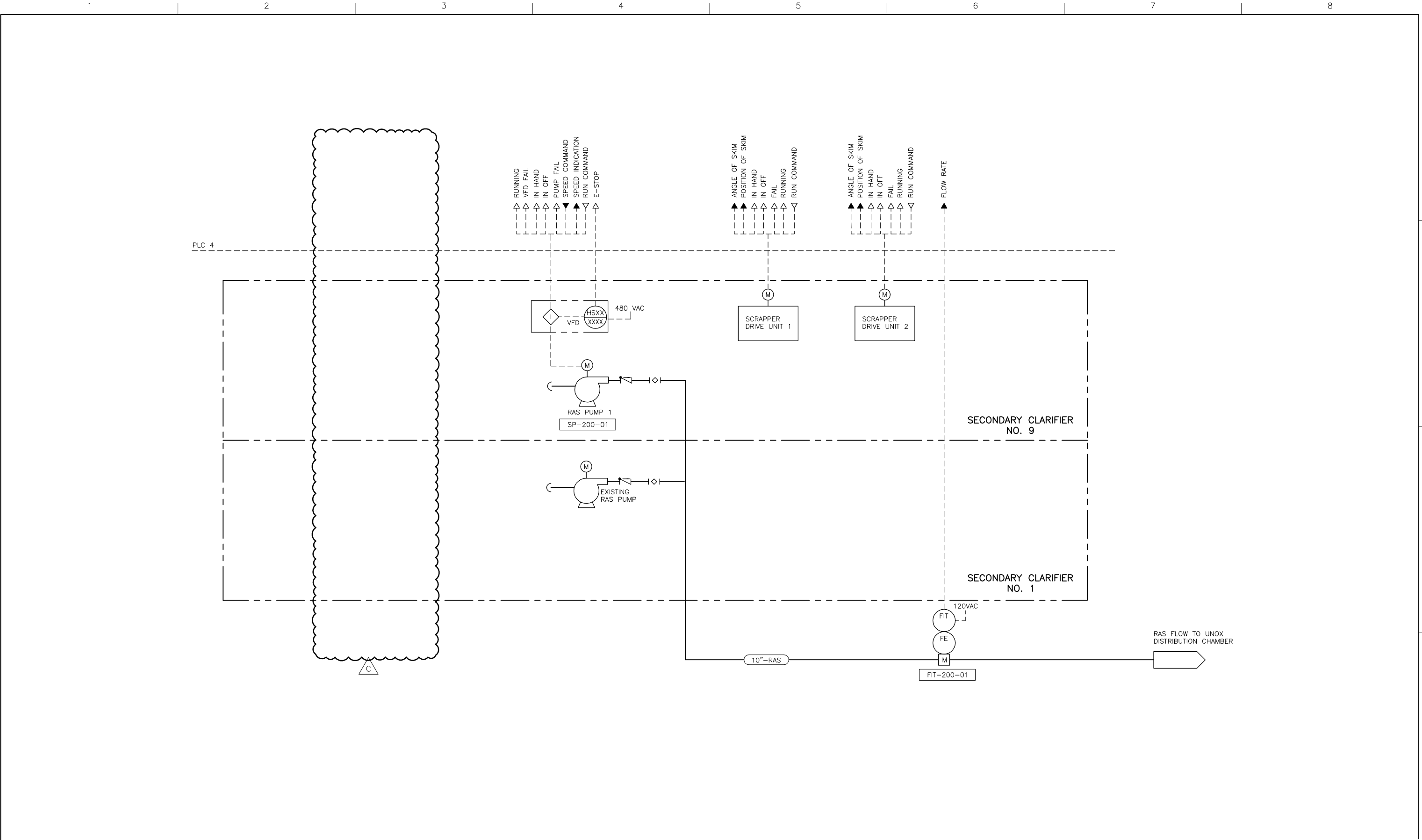
**CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY**

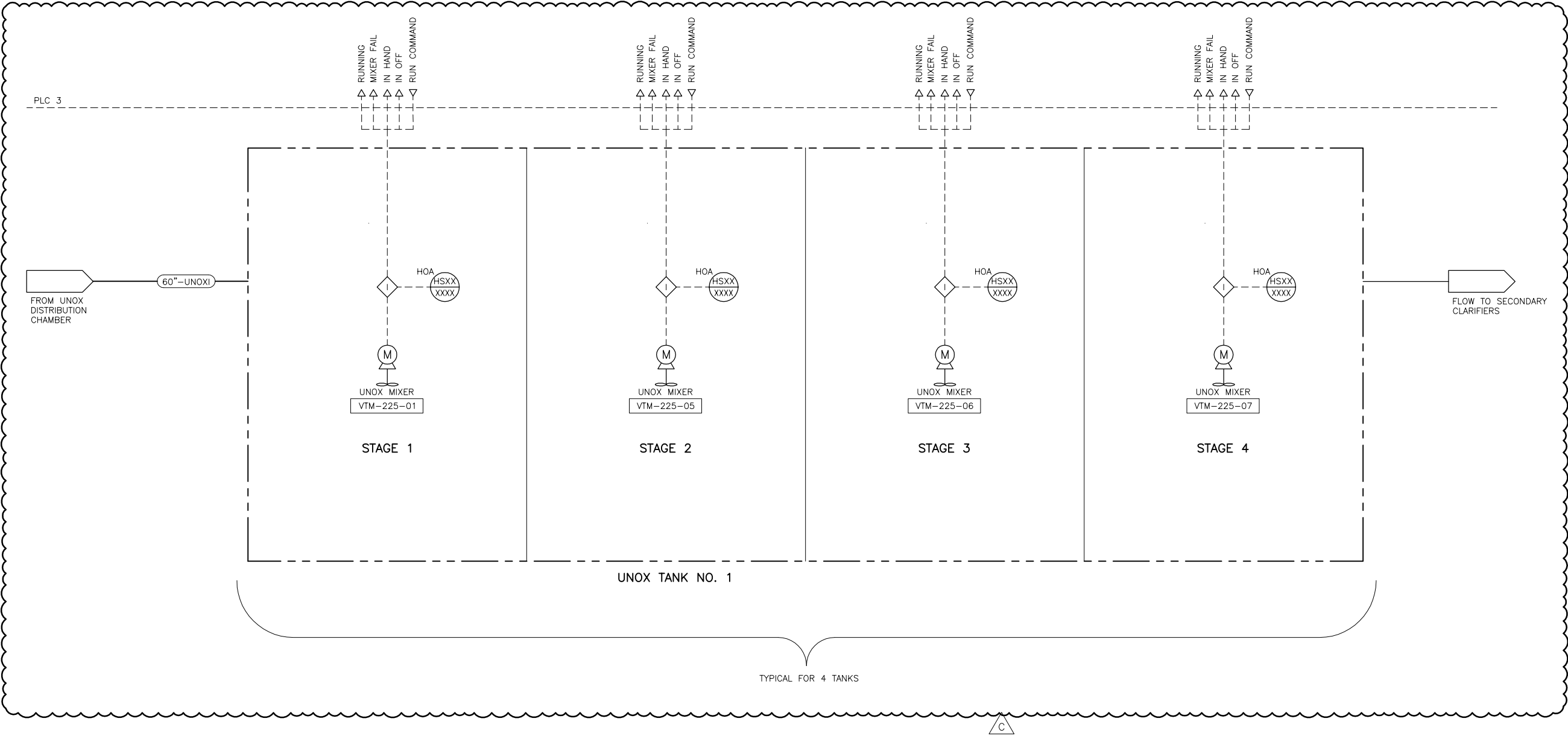
ALTERNATIVE 4A-1 LIGHT PHASE 2

**BLOWER BUILDING
PROCESS AND INSTRUMENTATION DIAGRAM
(UNIT PROCESS XX)**



FILENAME	Y-176.dwg	DRAWING NUMBER Y-176	SHEET OF -
SCALE	NONE		





HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

C	03/12/2014	NUMBER OF MIXERS REVISED
B	08/28/2013	LINE SIZE REVISIONS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

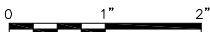
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	C. ALCORN
DRAWN BY:	S. HANCOCK
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL DESIGN

CITY OF HOPEWELL HOPEWELL REGIONAL WASTEWATER TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT PHASE 2

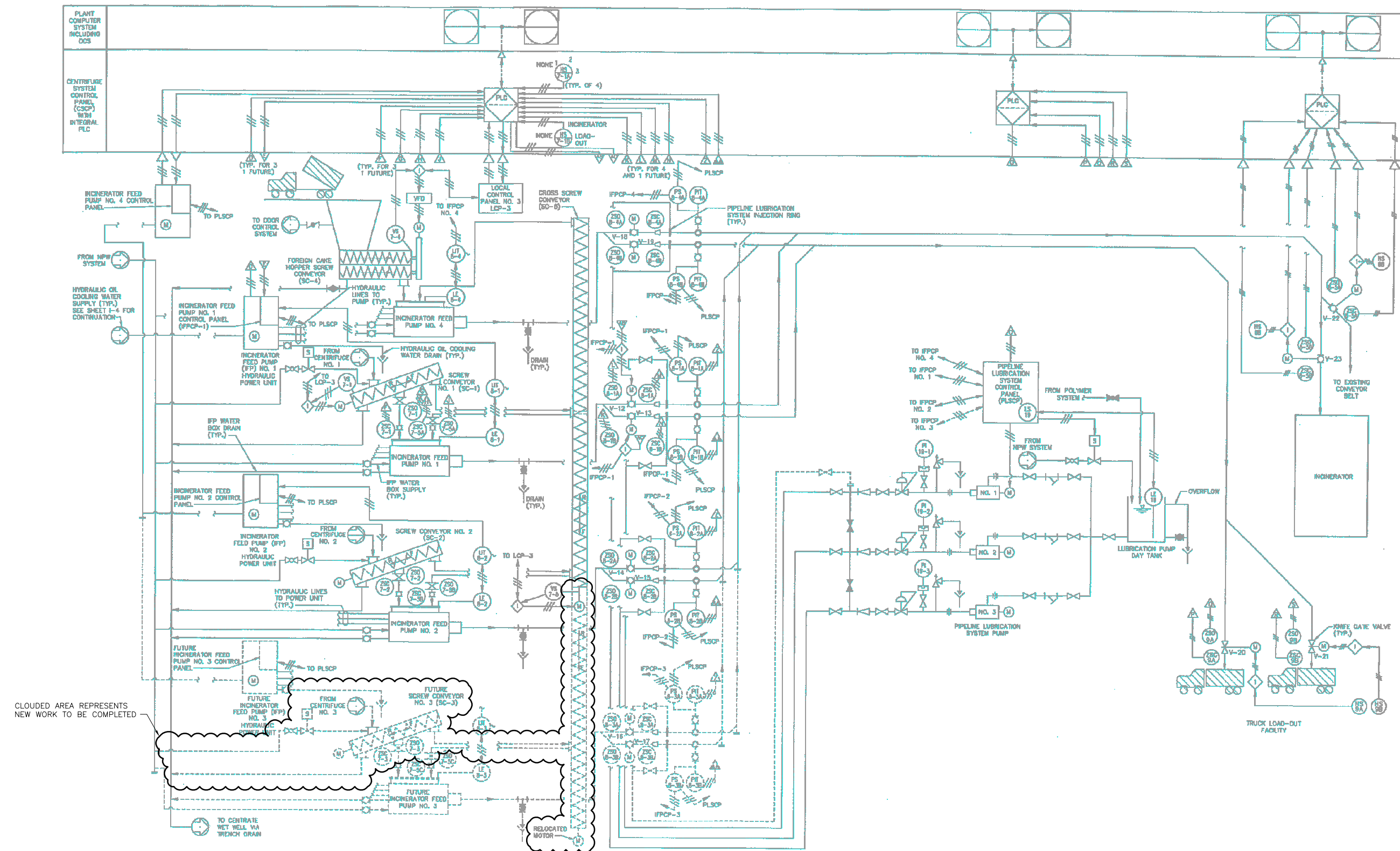
UNOX TANK MODIFICATIONS PROCESS AND INSTRUMENTATION DIAGRAM (UNIT PROCESS XX)

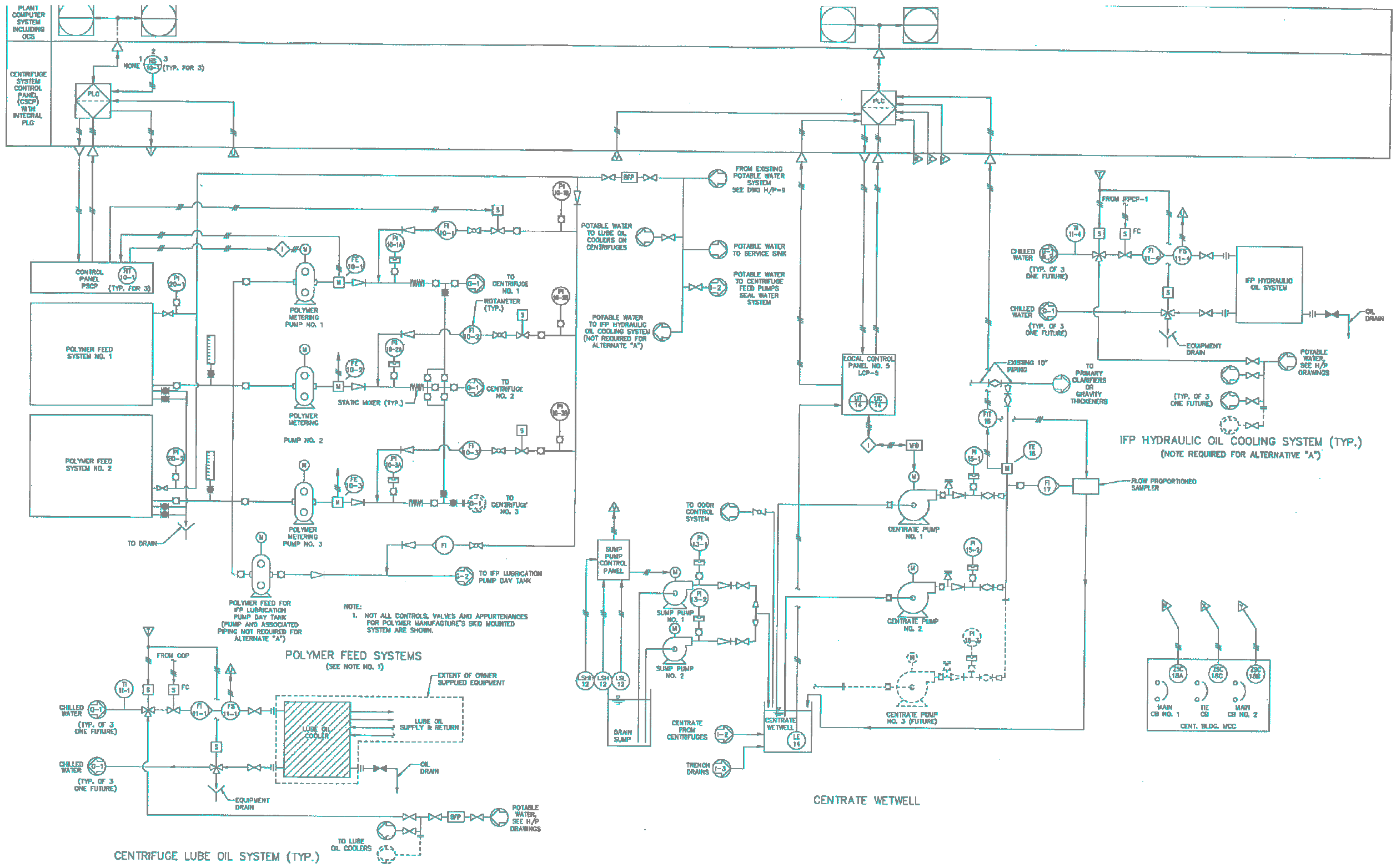


FILENAME	Y-225.dwg
SCALE	NONE

DRAWING NUMBER	Y-225
----------------	-------

SHEET OF -





HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

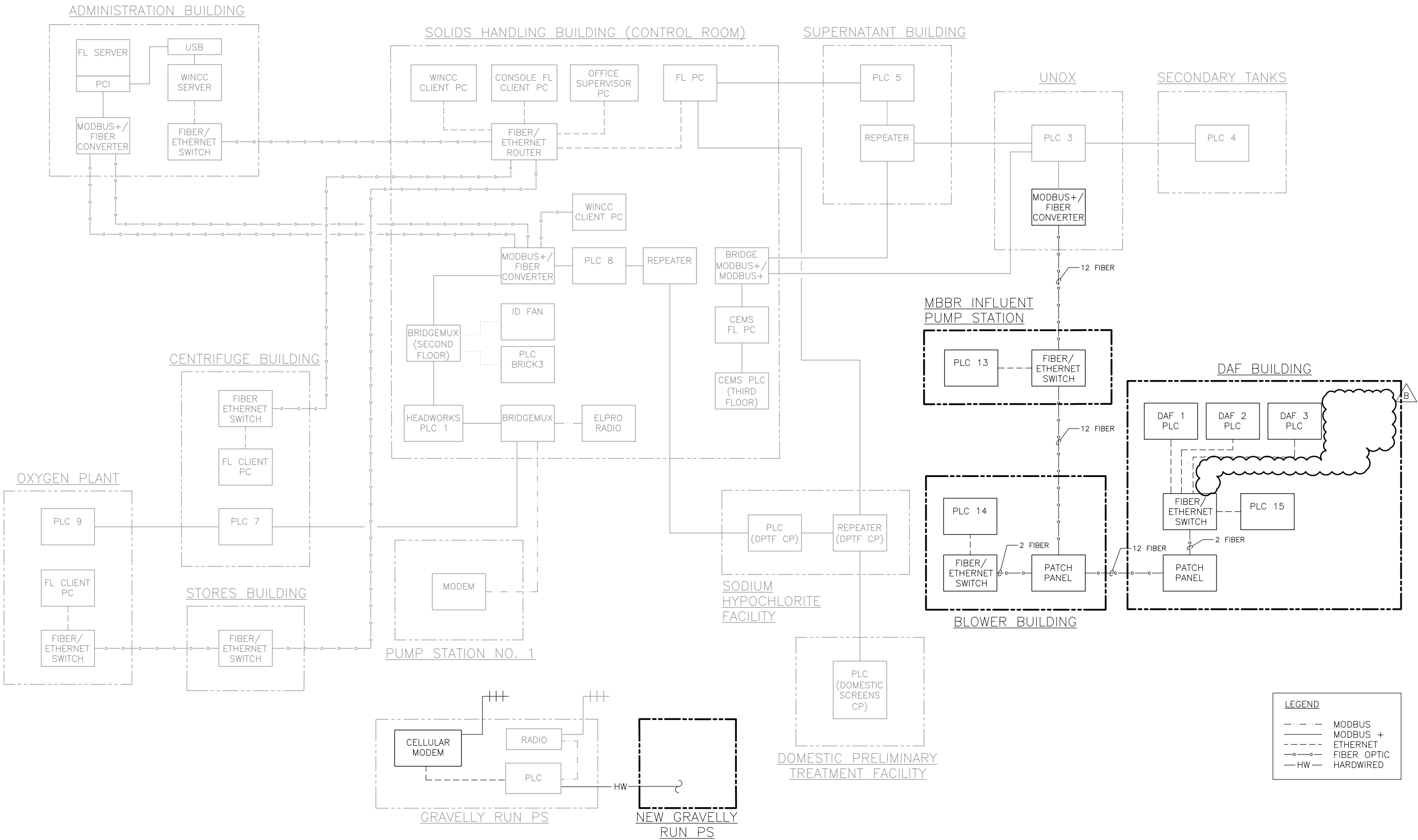
B	08/28/2013	LINE SIZE REVISIONS
A	08/26/2013	CONCEPTUAL DESIGN SUBMITTAL
ISSUE	DATE	DESCRIPTION

PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	C. ALCORN
DRAWN BY:	S. HANCOCK
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY
ALTERNATIVE 4A-1 LIGHT
PHASE 2

CENTRIFUGE MODIFICATIONS PROCESS AND INSTRUMENTATION DIAGRAM (UNIT PROCESS XX)		
0 1" 2"	FILENAME Y-252.dwg	DRAWING NUMBER
SCALE NONE	Y-252	SHEET OF -



HDR Engineering, Inc.
5700 Lake Wright Dr.
Suite 300
Norfolk, VA 23502

B	03/12/2014	DAF NO. 4 PLC DELETED
A	09/09/2013	OVERALL PLANT CONTROL SYSTEM
ISSUE	DATE	DESCRIPTION

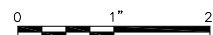
PROJECT MANAGER:	WILLIAM S. M'COY
DESIGNED BY:	C. ALCORN
DRAWN BY:	S. HANCOCK
CHECKED BY:	L. ANDERSON
PROJECT NUMBER	

CONCEPTUAL
DESIGN

CITY OF HOPEWELL
HOPEWELL REGIONAL WASTEWATER
TREATMENT FACILITY

ALTERNATIVE 4A-1 LIGHT
PHASE 2

PLANT CONTROL SYSTEM
BLOCK DIAGRAM



FILENAME Y-300.dwg

SCALE NONE

DRAWING NUMBER

Y-300

SHEET OF -