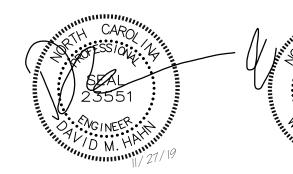
New Hanover County Schools Closed Circuit Cooler Addition

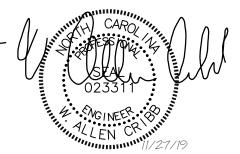
FOR

Emsley A. Laney High School

2700 North College Road Wilmington, NC 28405







DRAWING INDEX

COVER SHEET

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PLAN & SECTION (ADD ALT. #1)

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SECTIONS AND DETAILS

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MECHANICAL NOTES, LEGEND, ABBREVIATIONS AND SCHEDULES MECHANICAL FLOOR PLAN

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PARTIAL FLOOR PLAN POWER PARTIAL FLOOR PLAN LIGHTING

	1	2 3	4	5		11.27.19
	NAME OF PROJECT: LANEY HS CLOSED CIRCUIT COOLER ADDITION		DI LIMBING EIVTUDE DEGLIDEMENTS (TARI E 2002 1)	MECHANICAL SUMMARY SEE MECHANICAL DRAWINGS		
	ADDRESS: 2700 N COLLEGE ROAD, WILMINGTON, NC 28405 OWNER OR AUTHORIZED AGENT: CBHF ENGINEERS PHONE #: (910) 791-4000 E-Mail: dhahn@cbhfengineers.com	FIRE PROTECTION REQUIREMENTS: RATING DETAIL # DESIGN # DESIGN # FOR DESIGN	PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1) USE WATERCLOSETS URINALS LAVATORIES SHOWERS DRINKING FOUNTAINS	MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT		
	OWNED BY: City State Private	SEPARATION REQ'D PROVIDED* AND FOR RATED #FOR	MALE FEMALE UNISEX MALE FEMALE UNISEX / TUBS REGULAR ACCESSIBLE	THERMAL ZONE		
	CODE ENFORCEMENT JURISDICTION: City County State	(FEET) ASSEMBLY JOINTS	ш EXIST'G	SUMMER DRY BULB	-	
	CONTACT:	Structural Frame including columns, girders, trusses	Special Approval. (Local Jurisdiction Department of Insurance OSC DPI DHHS etc. describe below)	INTERIOR DESIGN CONDITIONS		
	DESIGNER FIRM NAME LICENSE # TELEPHONE # EMAIL ADDRESS	Bearing Walls	Special Approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)	WINTER DRY BULB SUMMER DRY BULB	- _	NOIL
D	ARCHITECTURAL CIVIL	North	•	BUILDING HEATING LOAD	- D	RUC
	ELECTRICAL CBHF ENGINEERS, PLLC W. ALLEN CRIBB 023311 (910) 791-4000 acribb@cbhfengineers.com FIRE ALARM	East		BUILDING COOLING LOAD	-	LSNO
* * * * * * * * * * * * * * * * * * *	PLUMBING	South		MECHANICAL SPACING CONDITIONING SYSTEM		
	SPRINKLER-STANDPIPE	Nonbearing Walls and Partitions	ENERGY SUMMARY ENERGY REQUIREMENTS:	UNITARY		ED FG
	STRUCTURAL ARDURRA GROUP JEFFREY R. TROUTMAN 022657 (910) 397-2929 jtroutman@ardurra.com RETAINING WALL >5' HIGH	Exterior	THE FOLLOWING DATA SHALL BE CONSIDERED MINIMUM AND ANY SPECIAL ATTRIBUTE REQUIRED TO MEET THE	DESCRIPTION OF UNIT HEATING EFFICIENCY	_	nss.
	OTHER	East	ENERGY CODE SHALL ALSO BE PROVIDED. EACH DESIGNER SHALL FURNISH THE REQUIRED PORTIONS OF THE PROJECT INFORMATION FOR THE PLAN DATA SHEET. IF PERFORMANCE METHOD, STATE THE ANNUAL ENERGY	COOLING EFFICIENCY SIZE CATEGORY OF UNIT	<u></u> ,	
	2018 NC BUILDING CODE:	West	COST FOR THE STANDARD REFERENCE DESIGN VS ANNUAL ENERGY COST FOR THE PROPOSED DESIGN.	BOILER SIZE CATEGORY, IF OVERSIZED, STATE REASON		0
	New Building Addition 1st Time Interior Completion Phased Construction - Shell/Core - Contact the local inspection Shell/Core - Contact the local inspection	Interior walls and partitions	EXISTING BUILDING ENVELOPE COMPLIES WITH CODE: YES (the remiander of this section is not applicable)	CHILLER		
	jurisdiction for possible additional precedures and requirements for possible additional precedures and requirements	supporting beams and joists Floor Ceiling Assembly	EXEMPT BUILDING: YES Provide code or statutory reference:	SIZE CATEGORY, IF OVERSIZED, STATE REASONLIST EQUIPMENT EFFICIENCIES:		000
	2018 NC EXISTING BUILDING CODE: N/A Chapter 14 Alteration Level I N/A N/A	Columns Supporting Floors	NO		_	1.4000 1.7966
	Prescriptive Historic Property Alteration Level II Repair Change of Use	Roof Construction, including supporting beams and joists	CLIMATE ZONE:	ELECTRICAL SUMMARY SEE ELECTRICAL DRAWINGS ELECTRICAL SYSTEM AND EQUIPMENT		62.
	Repair Change of Use Alteration Level III Historic Property	Roof Ceiling Assembly Columns Supporting Roof	METHOD OF COMPLIANCE:	METHOD OF COMPLIANCE:		910
	CONSTRUCTED: CURRENT OCCUPANCY(S) (Ch. 3) RENOVATED: PROPOSED OCCUPANCY(S) (Ch. 3)	Shaft Enclosures - Exit	PRESCRIPTIVE (ENERGY CODE) PERFORMANCE (ENERGY CODE)	ENERGY CODE: PRESCRIPTIVE PERFORMANCE		ine:
	OCCUPANCY CATEGORY (Table 1604.5): CURRENT N/A I III III IV	Shaft Enclosures - Other	PRESCRIPTIVE (ASHRAE 90.1)	ASHRAE 90.1: PRESCRIPTIVE PERFORMANCE		[] 전 [전] H
	PROPOSED N/A I III III IV	Occupancy / Fire Barrier Separation	PERFORMANCE (ASHRAE 90.1) PERFORMANCE (OTHER)	LIGHTING SCHEDULE • LAMP TYPE REQUIRED IN FIXTURE		S,
	BASIC BUILDING DATA:	Smoke Barrier Separation	If 'Other' specify source here:	NUMBER OF LAMPS IN FIXTURE BALLAST TYPE USED IN THE FIXTURE		l e l
		Incidental Use Separation	THERMAL ENVELOPE (Prescriptive method only)	TOTAL WATTAGE PER FIXTURE TOTAL INTERIOR WATTAGE SPECIFIED VS ALLOWED (whole building or space by space)		3 9 2
C	CONSTRUCTION TYPE:	* Indicate section number permitting reduction	ROOF/CEILING ASSEMBLY (each assembly)	TOTAL EXTERIOR WATTAGE SPECIFIED VS ALLOWED		
	STANDPIPES: NO YES CLASS I CLASS II CLASS III WET DRY	PERCENTAGE OF WALL OPENING CALCULATIONS:	U-VALUE OF TOTAL ASSEMBLY	ADDITIONAL PRESCRIPTIVE COMPLIANCE (When using the 2018 NCECC; not required for ASHRAE 90.1)		C D D D
	PRIMARY FIRE DISTRICT: NO YES	FIRE SEPARATION DISTANCE DEGREE OF OPENINGS ALLOWABLE AREA (FEET) FROM PROPERTY LINES PROTECTION (%) (%)	R-VALUE OF INSULATION	C406.2 MORE EFFICIENT HVAC EQUIPMENT		— Ш
	FLOOD HAZARD AREA: NO YES	(FEET) FROM PROPERTY LINES PROTECTION (%) (%) (TABLE 705.8)	U-VALUE OF SKYLIGHT TOTAL SQUARE FOOTAGE OF SKYLIGHTS IN EACH ASSEMBLY	PERFORMANCE C406.3 REDUCED LIGHTING POWER DENSITY		6 Y ₈
	SPECIAL INSPECTIONS: NO YES (Contact the local inspection jurisdiction for additional procedures and requirements)		EXTERIOR WALLS (each assembly)	 C406.4 ENHANCED DIGITAL LIGHTING CONTROLS C406.5 ON-SITE RENEWABLE ENERGY 		224 224
	GROSS BUILDING AREA TABLE: FLOOR EXISTING (SQ. FT.) NEW (SQ. FT.) SUB-TOTAL		U-VALUE OF TOTAL ASSEMBLY	 C406.6 DEDICATED OUTDOOR AIR SYSTEM C406.7 REDUCED ENERGY USE IN SERVICE WATER 		
	6TH FLOOR .		R-VALUE OF INSULATION OPENINGS (windows or doors with glazing) U-VALUE OF ASSEMBLY	HEATING		July SARO
	5TH FLOOR	LIFE SAFETY SYSTEM REQUIREMENTS:	SOLAR HEAT GAIN COEFFICIENT PROJECTION FACTOR			No Donath
	3RD FLOOR .	EMERGENCY LIGHTING: NO YES EXIT SIGNS: NO YES	DOOR R-VALUES			23551
	MEZZANINE	FIRE ALARM: NO YES	WALLS BELOW GRADE (each assembly) DESCRIPTION OF ASSEMBLY			O NO NEER IN
	BASEMENT	SMOKE DETECTION SYSTEMS: NO YES PARTIAL CARBON MONOXIDE DETECTION: NO YES	U-VALUE OF TOTAL ASSEMBLY R-VALUE OF INSULATION			M. H. H.
	TOTAL 19,426	LIFE SAFETY PLAN REQUIREMENTS:	FLOORS OVER UNCONDITIONED SPACE (each assembly)			
	ALLOWABLE AREA:	LIFE SAFETY PLAN SHEET#	DESCRIPTION OF ASSEMBLY U-VALUE OF TOTAL ASSEMBLY			
	PRIMARY OCCUPANCY CLASSIFICATION(S):	FIRE AND/OR SMOKE RATED WALL LOCATIONS (Chapter 7)	R-VALUE OF INSULATION			
	ACCESSORY OCCUPANCY CLASSIFICATION(S):	 ASSUMED AND REAL PROPERTY LINE LOCATIONS (if not on the site plan) EXTERIOR WALL OPENING AREA WITH RESPECT TO DISTANCE TO ASSUMED PROPERTY LINES (705.8) 	FLOORS SLAB ON GRADE (each assembly) DESCRIPTION OF ASSEMBLY			
	SPECIAL USES (Chapter 4 - List Code Sections):	 OCCUPANCY TYPES FOR EACH AREA AS IT RELATES TO OCCUPANT LOAD CALCULATION (TABLE 1004.1.2) OCCUPANT LOADS FOR EACH AREA 	U-VALUE OF TOTAL ASSEMBLY R-VALUE OF INSULATION			_\ <u>\</u> \
	SPECIAL Provisions (Chapter 5 - List Code Sections):	 EXIT ACCESS TRAVEL DISTANCES (1017) COMMON PATH OF TRAVEL DISTANCES (1006.2.1 & 1006.3.2(1)) 	HORIZONTAL / VERTICAL REQUIREMENT SLAB HEATED		В	ION AROL
В	MIXED OCCUPANCY: NO YES SEPARATION: HR. EXCEPTION:	DEAD END LENGTHS (1020.4) CLEAR EXIT WIDTHS FOR EACH EXIT DOOR				
	Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be such that the	MAXIMUM CALCULATED OCCUPANT LOAD CAPACITY EACH EXIT DOOR CAN ACCOMMODATE BASED ON EGRESS WIDTH (1005.3)	STRUCTURAL DESIGN			
	sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1	ACTUAL OCCUPANT LOAD FOR EACH EXIT DOOR	DESIGN LOADS: IMPORTANCE FACTORS: WIND (lw)			Schools School R ADDIT
	ACTUAL AREA OF OCCUPANCY A + ACTUAL AREA OF OCCUPANCY B ALLOWABLE AREA OF OCCUPANCY A ALLOWABLE AREA OF OCCUPANCY B	A SEPARATE SCHEMATIC PLAN INDICATING WHERE FIRE RATED FLOOR / CEILING AND/OR ROOF STRUCTURE IS PROVIDED FOR PURPOSES OF OCCUPANCY SEPARATION	IMPORTANCE FACTORS: WIND (lw) SNOW (ls) SEISMIC (le)			NS RES
		 LOCATION OF DOORS WITH PANIC HARDWARE (1008.1.10.) LOCATION OF DOORS WITH DELAYED EGRESS LOCKS AND THE AMOUNT OF DELAY (1010.1.9.7) 				ounty Sy High SOOLE SOOLE SILMINGTO
	(A) (B) (C) (D) STORY DESCRIPTION BLDG AREA TABLE 506.24 AREA NO. AND USE PER STORY FRONTAGE PER STORY OR	 LOCATION OF DOORS WITH ELECTROMAGNETIC EGRESS LOCKS (1010.1.9.9) LOCATION OF DOORS EQUIPPED WITH HOLD-OPEN DEVICES 	LIVE LOADS: ROOFPSF MEZZANINEPSF FLOOR PSF			
	NO. AND USE PER STORY (ACTUAL) UNSPRINKLERED SPRINKLERED FRONTAGE INCREASE 1,5 UNLIMITED	 LOCATION OF EMERGENCY ESCAPE WINDOWS (1030) THE SQUARE FOOTAGE OF EACH FIRE AREA (202) 	GROUND SNOW LOAD:PSF			
		THE SQUARE FOOTAGE OF EACH SMOKE COMPARTMENT FOR OCCUPANCY CLASSIFICATION I-2 (407.5) NOTE ANY CODE EXCEPTIONS OR TABLE NOTES THAT MAY HAVE BEEN UTILIZED REGARDING THE	WIND LOAD: BASIC WIND SPEED			
		ITEMS ABOVE	EXPOSURE CATEGORY			
		ACCESSIDI E DIMELLING LINITS (CECTICAL ACCES	SEISMIC DESIGN CATEGORY:			
	FRONTAGE AREA INCREASES FROM SECTION 506.2 ARE COMPUTED THUS: A. PERIMETER WHICH FRONTS A PUBLIC WAY OR OPEN SPACE HAVING 20 FT MINIMUM WIDTH (F) TOTAL BUILDING PERIMETER = (P) TOTAL BUILDING PERIMETER = (P) TOTAL BUILDING PERIMETER = (P)	ACCESSIBLE DWELLING UNITS (SECTION 1107)	PROVIDE THE FOLLOWING SEISMIC DESIGN PARAMETERS: OCCUPANCY CATEGORY (TABLE 1604.5)			šૣ૾ૢ૿૿૿ઌ <u>ૢ</u>
	B. TOTAL BUILDING PERIMETER =(P) C. RATIO (F/P) =(F/P) D. W = MINIMUM WIDTH OF PUBLIC WAY =(W) (do not exceed 30)	TOTAL ACCESSIBLE ACCESSIBLE TYPE A TYPE B TYPE B TOTAL UNITS	SPECTRAL RESPONSE ACCELERATION S _s			SE SE SE SE SE SE SE SE
	D. W = MINIMUM WIDTH OF PUBLIC WAY =(W) (do not exceed 30) E. PERCENT OF FRONTAGE INCREASE I f = 100 [F/P - 0.25] x W/30 =(%) 2. UNLIMITED AREA APPLICABLE UNDER CONDITIONS OF SECTION 507.	REQUIRED PROVIDED REQUIRED PROVIDED REQUIRED PROVIDED UNITS PROVIDED	SITE CLASSIFICATION (ASCE 7) DATA SOURCE:			
	3. MAXIMUM BUILDING AREA = TOTAL NUMBER OF STORIES IN THE BUILDING x D (MAXIMUM 3 STORIES) (506.2) 4. THE MAXIMUM AREA OF OPEN PARKING GARAGES MUST COMPLY WITH 406.5.4. THE MAXIMUM AREA OF		BASIC STRUCTURAL SYSTEM			
	AIR TRAFFIC CONTROL TOWERS MUST COMPLY WITH 412.3.1 5. FRONTAGE INCREASE IS BASED ON THE UNSPRINKLERED AREA VALUE IN TABLE 506.2	ACCESSIBLE PARKING (SECTION 1106)	ANALYSIS PROCEDURE: N/A SIMPLIFIED EQUIVALENT LATERAL FORCE DYNAMIC			
		LOT OR TOTAL # OF PARKING SPACES # OF ACCESSIBLE SPACES PROVIDED TOTAL #	ARCHITECTURAL, MECHANICAL, COMPONENTS ANCHORED? YES NO			
Δ	ALLOWABLE HEIGHT:	PARKING AREA REQUIRED PROVIDED REGULAR WITH VAN SPACES WITH PROVIDED	LATERAL DESIGN CONTROL: N/A EARTHQUAKE WIND SOIL BEARING CAPACITIES:		A	
1	ALLOWABLE SHOWN ON PLANS CODE REFERENCE (TABLES 504.3 & 504.4)	5' ACCESS 132" ACCESS 8' ACCESS AISLE AISLE	□ N/A			
	BUILDING HEIGHT IN FEET		FIELD TEST (PROVIDE COPY OF TEST REPORT) PSF PRESUMPTIVE BEARING CAPACITY PSF		:	JOB NO.:
	BUILDING HEIGHT IN STORIES Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.	TOTAL	PILE SIZE, TYPE AND CAPACITYPSF			DRAWN: DESIGNED:
						CHECKED:
						DRAWING NO:
						C 00
						G-00

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REVISION:

NHCS PROJECT NUMBER 20-92

FLOOR SLABS, FOOTINGS AND 10'-0" BEYOND BUILDING WALLS. BACKFILL AS REQUIRED WITH CLEAN SELECTED FILL COMPACTED IN 8-INCH LAYERS TO A MINIMUM OF 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT IN ALL LAYERS UP TO THE UPPER ONE FOOT. FILL TO BE PLACED WITHIN 12 INCHES OF THE DESIGN SUBGRADE ELEVATION IS TO BE COMPACTED TO 98 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT. COMPACT UPPER 12" OF EXISTING SUBGRADE TO 95%.

3. AFTER STRIPPING, DENSIFY EXPOSED SANDS BY PROOFROLLING WITH A 10-TON VIBRATORY STEEL-WHEELED ROLLER & ANY SOFT, OR UNSUITABLE SURFACE CONDITIONS, WHICH PUMPS OR RUTS EXCESSIVELY, SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION. THESE UNSUITABLE SURFACES SHALL BE UNDERCUT & REPLACED WITH GRANULAR BACKFILL SUCH AS #57 STONE.

4. CLEAN SELECT SAND FILL SHALL MEET UNIFIED SOIL CLASSIFICATION OF SP, SP-SM OR SP-SC AND SHALL HAVE A MINIMUM STANDARD PROCTOR DRY DENSITY OF 110 PCF. 5. CONTRACTOR SHALL NOTIFY ENGINEER FOR INSPECTION OF SUBGRADE PRIOR TO POURING

ANY CONCRETE. 5. BEARING CAPACITY SHALL BE VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE. WRITTEN REPORTS OF FINDINGS SHALL BE SUBMITTED TO THE

7. CONTRACTOR SHALL DEWATER AS NECESSARY PRIOR TO EXCAVATING.

8. CONTRACTOR SHALL PROTECT ALL FOUNDATION EXCAVATIONS FROM DETERIORATION DUE TO EXPOSURE TO MOISTURE UNTIL FOUNDATIONS AND BACK FILLING HAVE BEEN COMPLETED.

DIAMETERS. 8. PROVIDE AIR ENTRAINMENT OF 4 TO 6 PERCENT PER ASTM A260. 9. MAXIMUM SLUMP: 4 INCHES (ITL TEST PER ASTM C143).

10. THE CONTRACTOR SHALL WORK WITH THE OWNER'S CERTIFIED ITL FOR TESTING THE CONCRETE IN ACCORDANCE WITH ACI C172, C31 & C39. FOR EACH DAY'S PLACEMENT AS FOLLOWS: 1 SET OF 4 STANDARD CYLINDERS FOR EACH SET OF CYLINDERS, TEST 1 SPECIMEN AT 7 DAYS AND 2 SPECIMENS AT 28 DAYS. THE FOURTH SPECIMEN SHALL REMAIN IN CASE ADDITIONAL TESTS ARE REQUIRED.

11. ADDITIONAL TESTING FOR CONCRETE NOT UP TO STRENGTH SHALL BE PAID FOR BY THE CONTRACTOR. WET CURE ALL CONCRETE CONTINUOUSLY FOR 7 DAYS. 12. CONCRETE FINISH: STEEL TROWEL. 13. CURING COMPOUND: ASTM C309, TYPE I, CLASS B, DISSIPATING.

14. HEADED ANCHOR RODS: ASTM F1554, GRADE 55, STRAIGHT, WELDABLE, H.D. GALV. PER ASTM A153 CLASS C WITH HEAVY HEX CARBON STEEL NUTS ASTM A563 AND WASHERS ASTM F436 TYPE 1 HARDENED CARBON STEEL. 15. BONDING AGENT: ASTM C1059, TYPE II, NON-REDISPERSIBLE, ACRYLIC EMULSION OR

16. POST INSTALLED ADHESIVE ANCHORS INTO CONCRETE SHALL BE THE HILTI HIT HY-150/ HIT-ICE OR HIT-RE 500 INJECTION SYSTEM. ALL ADHESIVE ANCHORS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MINIMUM EMBEDMENT INTO CONCRETE AS SHOWN.

ARDURRA GROUP NORTH CAROLINA

3809 Peachtree Avenue, Suite 102 Wilmington, North Carolina 28403 Phone: (910) 397-2929 www.Ardurra.com NC FIRM LICENSE NUMBER F-0113 PROJECT 2019-5078-00

DRAWING NO: **S0.1**

DESIGNED: CHECKED:

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School School

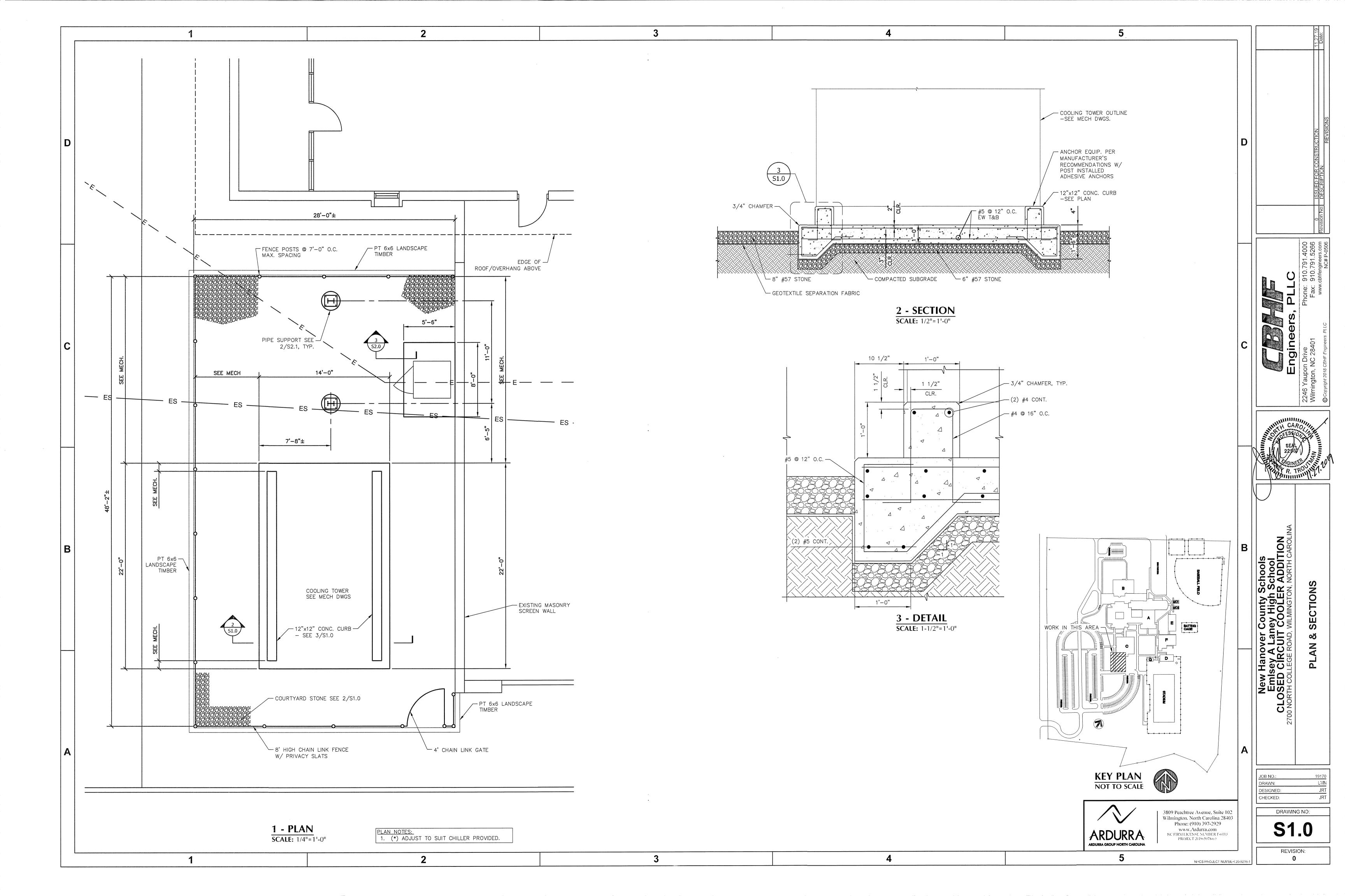
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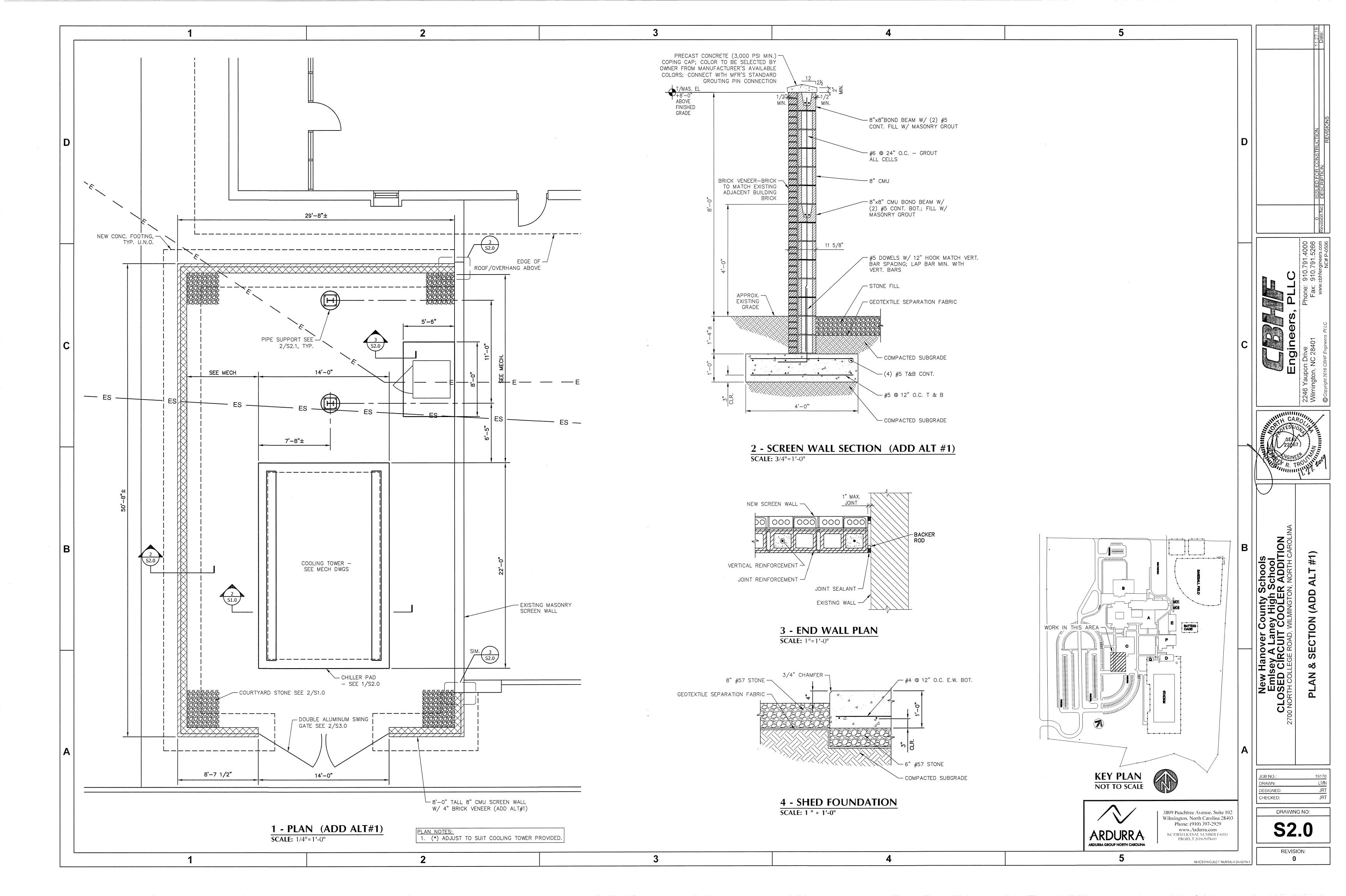
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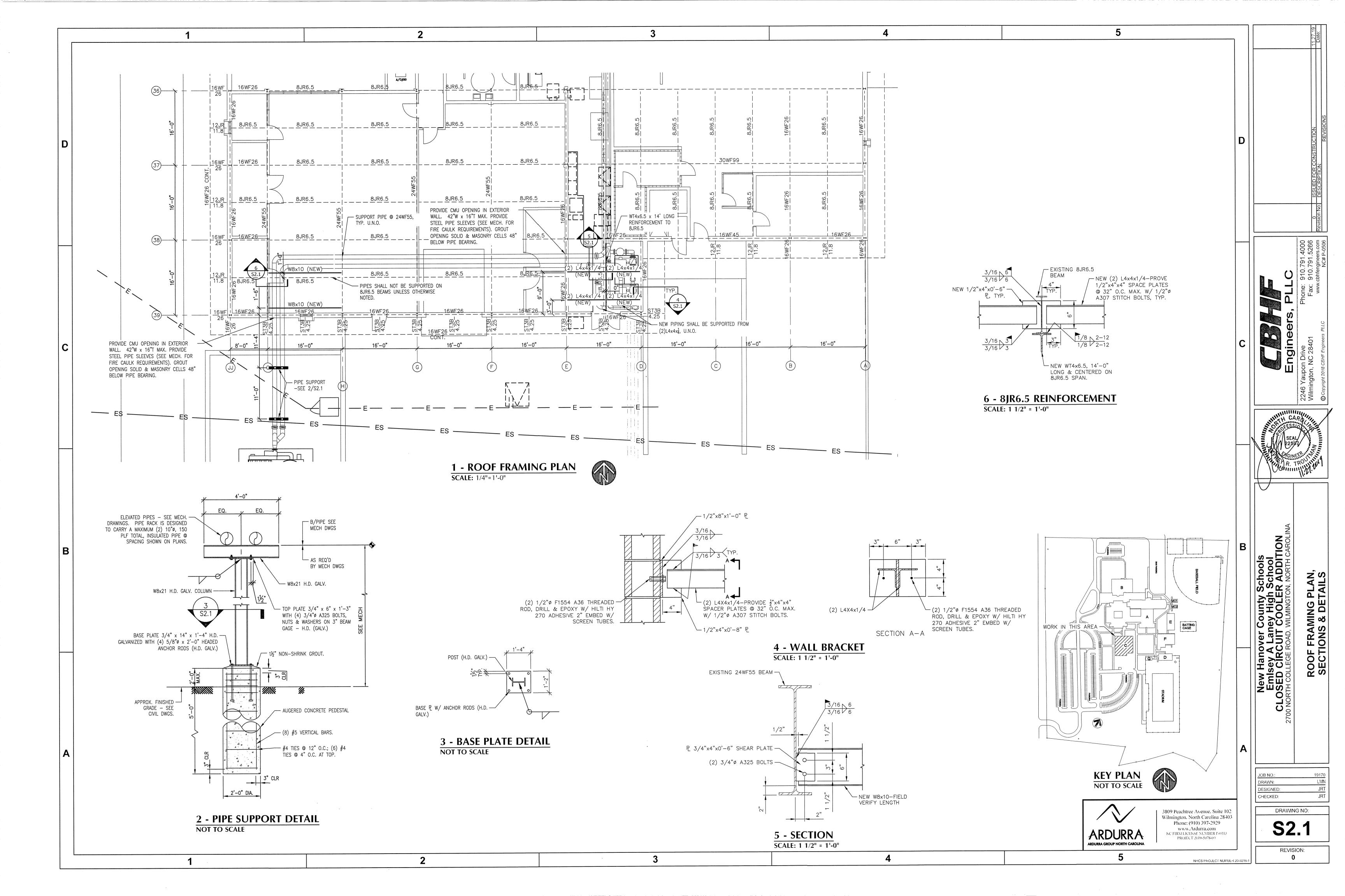
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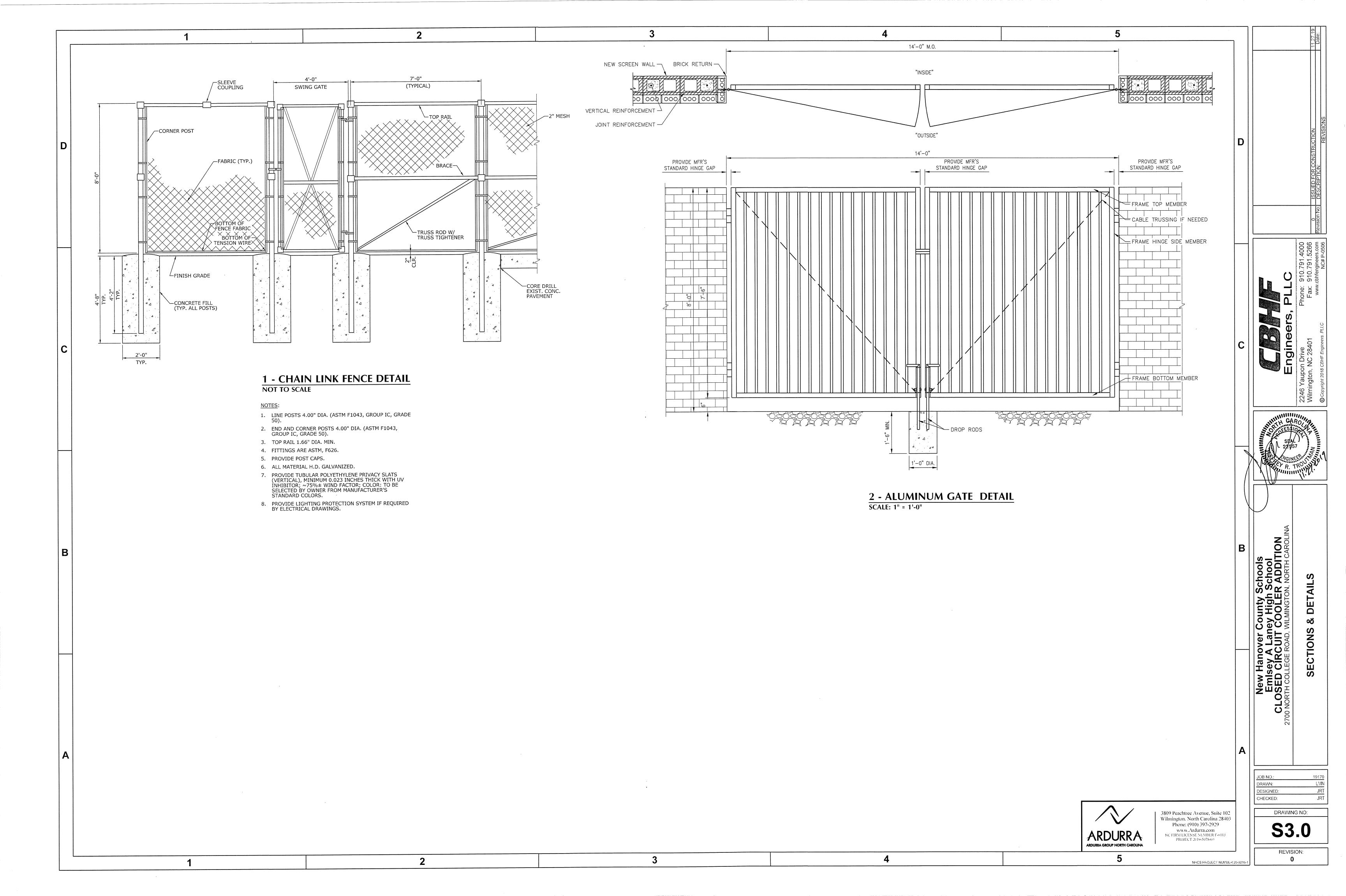
REVISION:

NHCS PROJECT NUMBER 20-92









NOTE: ALL ITEMS MAY NOT BE USED IN PROJECT.

FLOW MEASURING ORIFICE

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MECHANICAL LEGEND INDICATES TO DEMOLISH EXTENT OF DEMOLITION POINT OF CONNECTION

NOTE: ALL ITEMS MAY NOT BE USED IN PROJECT.

MECHANICAL	PIPE LEGEND
cws	CONDENSER WATER SUPPLY
CWR	CONDENSER WATER RETURN
	COOLING TOWER MAKE-UP WATER
(X)CWS	EXISTING CONDENSER WATER SUPPLY
(X)CWR	EXISTING CONDENSER WATER RETURN
distributionistics user communicationistics are established to establish out encounted and	EXISTING COLD WATER

MECHANICAL GENERAL NOTES:

- ALL MECHANICAL WORK SHALL BE IN STRICT COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS.
- ALL DIMENSIONS AND ELEVATIONS FOR NEW EQUIPMENT, PIPING AND APPARATUS ARE APPROXIMATE AND ARE ONLY FOR CONTRACTOR'S GUIDANCE. CONTRACTOR SHALL SUBMIT DIMENSIONS AND ELEVATIONS VERIFIED IN THE FIELD. PIPING INDICATED ON THE DRAWINGS, SECTIONS AND PROSPECTIVE VIEWS ARE SHOWN DIAGRAMMATICALLY. DUCT AND PIPE ELEVATIONS IN EXACT LOCATIONS SHALL BE DETERMINED BY THE INSTALLING CONTRACTOR AND DETAILED ON THE SHOP
- CONTRACTOR MUST ACCOUNT FOR THE THICKNESS OF EXTERIOR INSULATION WHEN DETERMINING INSTALLATION CLEARANCES.
- THE CONTRACTOR SHALL TEMPORARILY COVER ALL EXPOSED PIPE OPENINGS WITH A NON-COMBUSTIBLE MATERIAL, AND SEAL THEM AIR TIGHT TO PREVENT CONTAMINATION OF THE RESPECTIVE SYSTEMS DURING CONSTRUCTION.
- CONTRACTOR SHALL REMOVE AND DISPOSE OF OFFSITE ALL DEMOLISHED WORK IN ACCEPTABLE AND SAFE MANNER AND SHALL KEEP ALL NON-WORK AREAS CLEAN AND SAFE.
- ALL EXISTING EQUIPMENT AND CONNECTIONS THAT NEED TO BE TEMPORARILY DEMOLISHED FOR RIGGING AND / OR INSTALLATION SHALL BE REINSTALLED AND BROUGHT BACK TO ORIGINAL CONDITIONS PRIOR TO TEMPORARY REMOVAL.
- INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

MECHANICAL ABBREVIATIONS ABBREVIATION TERM **ADJUSTABLE** AIR MOVEMENT AND CONTROL ASSOCIATION AMPERE (AMP, AMPS) **ASTM** AMERICAN SOCIETY OF TESTING AND MATERIALS **CUBIC FEET PER MINUTE** CAST IN PLACE CONCRETE MASONRY UNIT COEFFICIENT OF PERFORMANCE DRY BULB DEG OR ° DEGREE EXHAUST AIR EXHAUST GRILLE ENTERING AIR TEMPERATURE ELECTRONICALLY COMMUTATED MOTOR **ENERGY EFFICIENCY RATIO** EXTERNAL STATIC PRESSURE **FAHRENHEIT** FULL LOAD AMPS FEET HOT WATER COIL HGT OR H HEIGHT HORSEPOWER HOUR(S) INCHES WATER GAUGE KILOWATT LEAVING AIR TEMPERATURE POUNDS LOUVER MAXIMUM 1000 BTUH MINIMUM CIRCUIT AMPACITY MEAN COINCIDENT WET BULB MINIMUM MOCP MAXIMUM OVER CURRENT PROTECTION NATIONAL ELECTRICAL MANUFACTURERS ASSOC. OUNCE OUTSIDE AIR PERCENT RETURN AIR RETURN GRILLE REVOLUTIONS PER MINUTE ROOF TOP UNIT SUPPLY AIR SQUARE-FEET SUPPLY GRILLE SQUARE TRANSFER GRILLE TYPICAL UNIT HEATER VOLT/PHASE/HERTZ VENT THROUGH ROOF WET BULB NOTE: ALL ABBREVIATIONS MAY NOT BE USED IN PROJECT.

MECHANICAL DEMOLITION NOTES

- THE CONTRACTOR SHALL REVIEW THE DRAWINGS AND SPECIFICATIONS FOR DEMOLITION REQUIREMENTS AND LAYOUT HIS WORK IN A COMPATIBLE AND COMPLEMENTARY MANNER. REMOVE ALL EQUIPMENT, SUPPORTS, CONTROLS. ACCESSORIES, ETC..., AND MECHANICAL ITEMS MADE OBSOLETE BY THESE ALTERATIONS AS SHOWN IN THE MECHANICAL DRAWINGS. ALL ITEMS TO BE REMOVED OR MODIFIED MAY NOT BE SHOWN, HOWEVER, THIS CONTRACTOR SHALL REMOVE ANY MECHANICAL WORK AS REQUIRED BY THE CONSTRUCTION OR AS DIRECTED BY THE OPERATIONS AND MAINTENANCE DEPARTMENT OF THE SCHOOL SYSTEM. SURVEY THE AFFECTED AREAS BEFORE SUBMITTING A BID.
- SCHEDULING OF DEMOLITION COORDINATE SCHEDULING OF MECHANICAL DEMOLITION WORK WITH THE SCHOOL SCHEDULE AND SCHOOL SYSTEM SO AS TO MINIMIZE DISRUPTION OF THE SCHOOL'S USE OF THE FACILITIES AND MAINTAIN THE CONSTRUCTION SEQUENCE. SEE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INSTRUCTIONS CONCERNING PHASING AND SEQUENCE OF WORK.
- DEMOLISHED MATERIALS UNLESS SPECIFICALLY REQUESTED BY THE OPERATIONS AND MAINTENANCE DEPARTMENT OF THE SCHOOL SYSTEM, ALL DEMOLISHED MECHANICAL MATERIALS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.
- CUTTING AND PATCHING PERFORM CUTTING AND PATCHING FOR MECHANICAL WORK SO AS TO MINIMIZE DAMAGE TO CEILINGS, FLOORS AND WALLS.
- THESE DRAWINGS ARE COMPILED BY THE ENGINEER FROM THE OPERATIONS AND MAINTENANCE DEPARTMENT OF THE SCHOOL SYSTEM'S AS-BUILT RECORD DRAWINGS AND LIMITED FIELD VERIFICATION OF EXISTING CONDITIONS FOR THE PURPOSE OF INDICATING THE WORK REQUIRED AND ARE BELIEVED TO BE CORRECT. NOTWITHSTANDING, THE CONTRACTOR SHALL VERIFY ALL PIPING, EQUIPMENT LOCATIONS, DIMENSIONS AND ALL FIELD CONDITIONS AFFECTING HIS WORK.
- WHERE MECHANICAL SYSTEMS PASS THROUGH THE DEMOLITION AREAS TO SERVE OTHER PORTIONS OF THE PREMISES, THEY SHALL REMAIN OR BE SUITABLY RELOCATED AND THE SYSTEM RESTORED TO NORMAL OPERATION. ADVISE THE OPERATIONS AND MAINTENANCE DEPARTMENT OF THE SCHOOL SYSTEM IMMEDIATELY IF SUCH CONDITIONS ARE UNCOVERED BEFORE PROCEEDING WITH ADDITIONAL WORK.
- PROTECT ALL EXISTING LIFE SAFETY SYSTEMS, FIRE ALARM AND PUBLIC ADDRESS SYSTEMS AND MAINTAIN THEM IN OPERATION THROUGHOUT THE PROGRESS OF THE WORK. NOTIFY THE OPERATIONS AND MAINTENANCE DEPARTMENT OF THE SCHOOL SYSTEM IN WRITING OF SHUTDOWNS ARE REQUIRED PRIOR TO ANY OUTAGE OF SERVICE. WHERE THE DURATION OF A PROPOSED OUTAGE CANNOT BE TOLERATED BY THE SCHOOL, PROVIDE TEMPORARY CONNECTIONS AS REQUIRED MAINTAINING SERVICE.
- SURVEY THE AFFECTED AREAS BEFORE STARTING DEMOLITION AS ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DEPICTED ON THE DRAWINGS AND SOME UNUSUAL CONDITIONS EXIST.
- IF ANY UNUSUAL STRUCTURAL OR ARCHITECTURAL CONDITIONS ARE ENCOUNTERED DURING DEMOLITION, CONTACT THE OPERATIONS AND MAINTENANCE DEPARTMENT OF THE SCHOOL SYSTEM FOR ASSISTANCE.

DDC SYSTEM INTEGRATION NOTE:

THE ENERGY MANAGEMENT AND CONTROL SYSTEM INCLUDES ALL CONTROL POINTS, SEQUENCES, PROGRAMMING, AND GRAPHIC UPDATES FOR NEW AND EXISTING HVAC EQUIPMENT MODIFIED UNDER THIS PROJECT TO MATCH THE BUILDING STANDARD FOR A COMPLETE AND OPERABLE

CLOSED CIRCUIT COOLING TOWER SCHEDULE

DRAWING	DESIGN	MODEL	ALTERNATE	CAPACITY	AIR SIDE	-		1	WATER SI	Ε			ELECTR	CAL		-				-1				-		SOUNE	DATA									OPERATING	NOTES	ACCESSORIE
CODE	BASIS MFF	₹ .	APPROVED	(MBH)									FAN				PUMF	•			BASIN	N HEATE	R(S)			S.P.L. o	B(A) AT 5'				S.P.L.	dB(A) AT	50'		-	WEIGHT		
			MIFRS		MOTOR(S)	AIRFLOW	HP #1	HP #2	LOW	WT LW	EAT	PRES. DF	OP VOLTAG	E FLA #1	FLA #2	MCA MOCP	HP	VOLTAGE FL	A MO	CA MOCF	QUAN	N.kW	VOLTAGE	MCA	МОСР	END	MOTOR	OPP	OPP MTR	TOP	END	мото	R OPP	OPP MTR	TOP	(LBS)		
,					(QUAN.)	(CFM)	EA.	EA. (GPM)	°F) (°F)	(°Fwb)	(FT. H2O)	(V/PH/HZ	(AMPS)	(AMPS)	(AMPS) (AMPS	6)	(V/PH/HZ) (Al	MPS) (Al	MPS) (AMPS	3)	EA.	(V/PH/HZ)	(AMPS	(AMPS)		SIDE	END	SIDE	and the second s	AND THE PERSON OF THE PERSON O	SIDE	END	SIDE				
(X) CCCT01	BAC	FVX - LQ661	N/A	7,01	5	2	- 10.0	20.0	1,220	104.0 9	2.5	30 1	7.3 460/3/6	0 14.0	27.0	-	- 7.	5 460/3/60	11.0	-	- 1	1 16.0	460/3/60	0 19	9.4	-	-	-	-	-		-	-	-	- -		6	
CCCT02	BAC	FXV-1218C-36H-	L BAC, MARLEY	8,418	8	124,300	7.5	15.0	1,440	104.0 9	2.5	30 1	2.0 460/3/6	0 9.0	18.0	-	- 10.	.0 460/3/60	12.0		-	1 16.0	460/3/60	0 19	9.4	- 69.0	71.0	69.0	80	.0 87	.0 63.	0 64	4.0 63.	0 67.0	74.0	43,100	1,2,3,4,5	A THRU

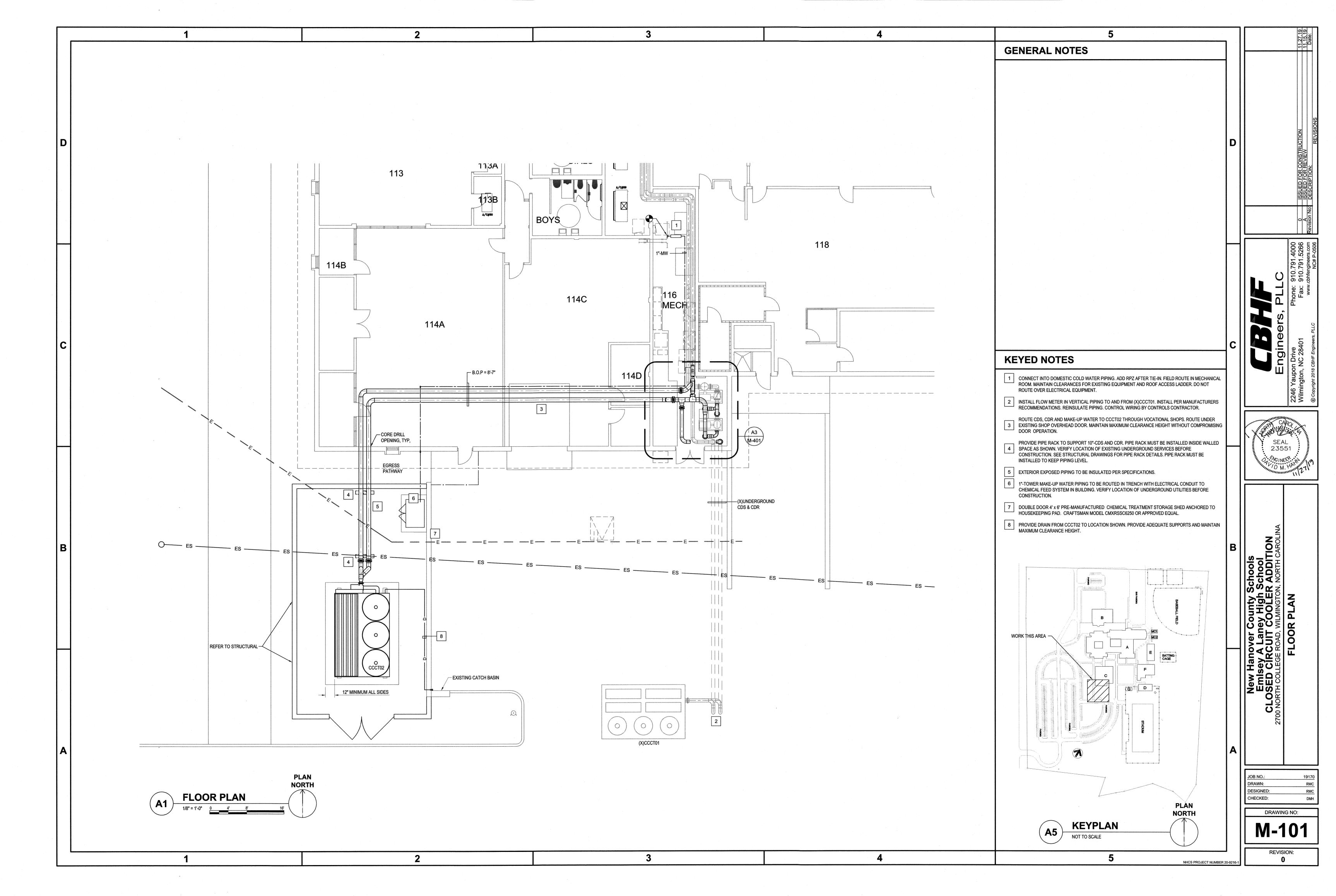
- 1. REFER SPECIFICATION SECTION 236500 CLOSED CIRCUIT COOLING TOWERS FOR FURTHER INFORMATION.
- 2. PROVIDE AUTOMATIC DRAIN VALVES AND AIR VENTS IN THE PIPING TO AND FROM THE COOLER TO ALLOW EMERGENCY DRAINING DURING FREEZE CONDITIONS IN THE EVENT OF POWER OR CONTROLS FAILURE. 3. THE MAKE-UP WATER SUPPLY, OVERFLOW AND DRAIN LINES, AS WELL AS THE PUMP AND PUMP PIPING UP TO THE OVERFLOW LEVEL MUST BE HEAT TRACED AND INSULATED. OTHER CONNECTIONS OR ACCESSORIES AT OR BELOW THE WATER LEVEL MUST BE HEAT TRACED AND INSULATED.
- 4. CHEMICAL TREATMENT PROVIDED FROM CHEMICAL TREATMENT STORAGE SHED ADJACENT TO TOWER...
- 5. CLOSED CIRCUIT COOLING TOWER CCCT02 SIZED/SCHEDULED FOR FUTURE CAPACITY.
- 6. EXISTING CLOSED CIRCUIT COOLING TOWER TO REMAIN.
- ACCESSORIES: A. PROVIDE PREMIUM EFFICIENCY INVERTER DUTY MOTORS FOR VFD. B. STAINLESS STEEL UNIT CONSTRUCTION.
 - C. ULTRA LOW NOISE FAN (MANUFACTURERS OFFERING FOR LOWEST NOISE).
 - D. GALVANIZED STEEL FAN GUARD.
 - E. PVC FILL AND DRIFT ELIMINATORS.
 - F. GALVANIZED STEEL, FULL CIRCUIT COIL.
 - G. INTEGRAL PUMPS WITH END MAKE-UP DRAIN AND OVERFLOW CONNECTIONS.
 - H. ELECTRIC WATER LEVEL CONTROL. STANDPIPE ASSEMBLY, MAKE UP PIPING AND SOLENOID VALVE MUST BE HEAT TRACED AND INSULATED.
 - I. ELECTRICAL IMMERSION HEATERS SIZED TO MAINTAIN +40F WATER AT A 0F AMBIENT WITH ELECTRICAL.
 - J. COPPER HEATER ELEMENTS.
 - K. HEATER CONTROL PANEL WITH CONNECTOR AND DISCONNECT.
 - L. MECHANICAL VIBRATION CUTOUT SWITCH.
 - M. INTERNAL WALKWAY AND LADDER.
 - N. MOUNT ON STRUCTURAL CONCRETE CURBS, LENGTH AND WIDTH DISTANCES PER MANUFACTURER. PROVIDE 3/4" VIBRATION ISOLATION PADS BETWEEN TOWER CONCRETE CURBS.
 - O. DISCHARGE HOOD WITH POSITIVE CLOSURE DAMPERS.

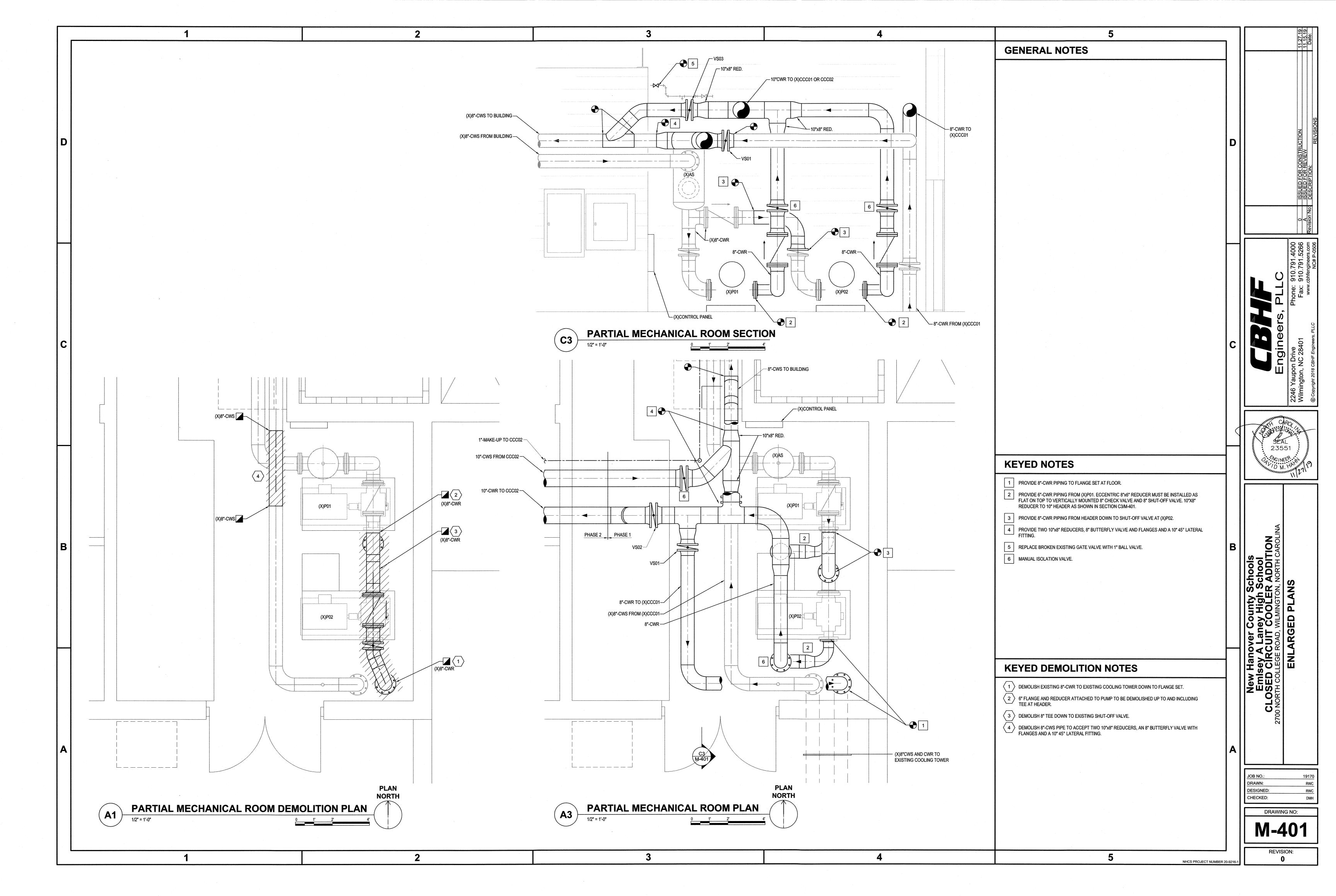
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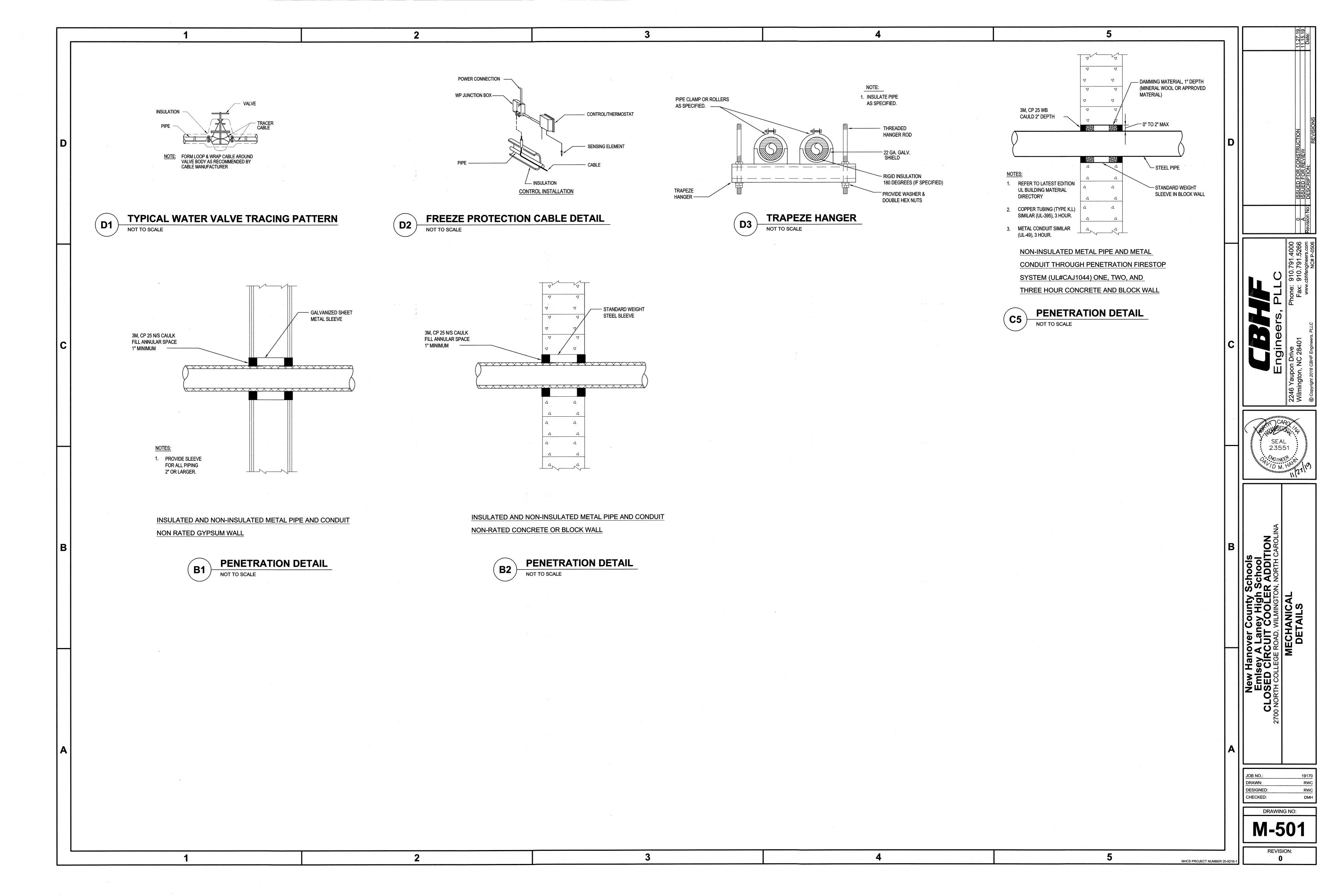
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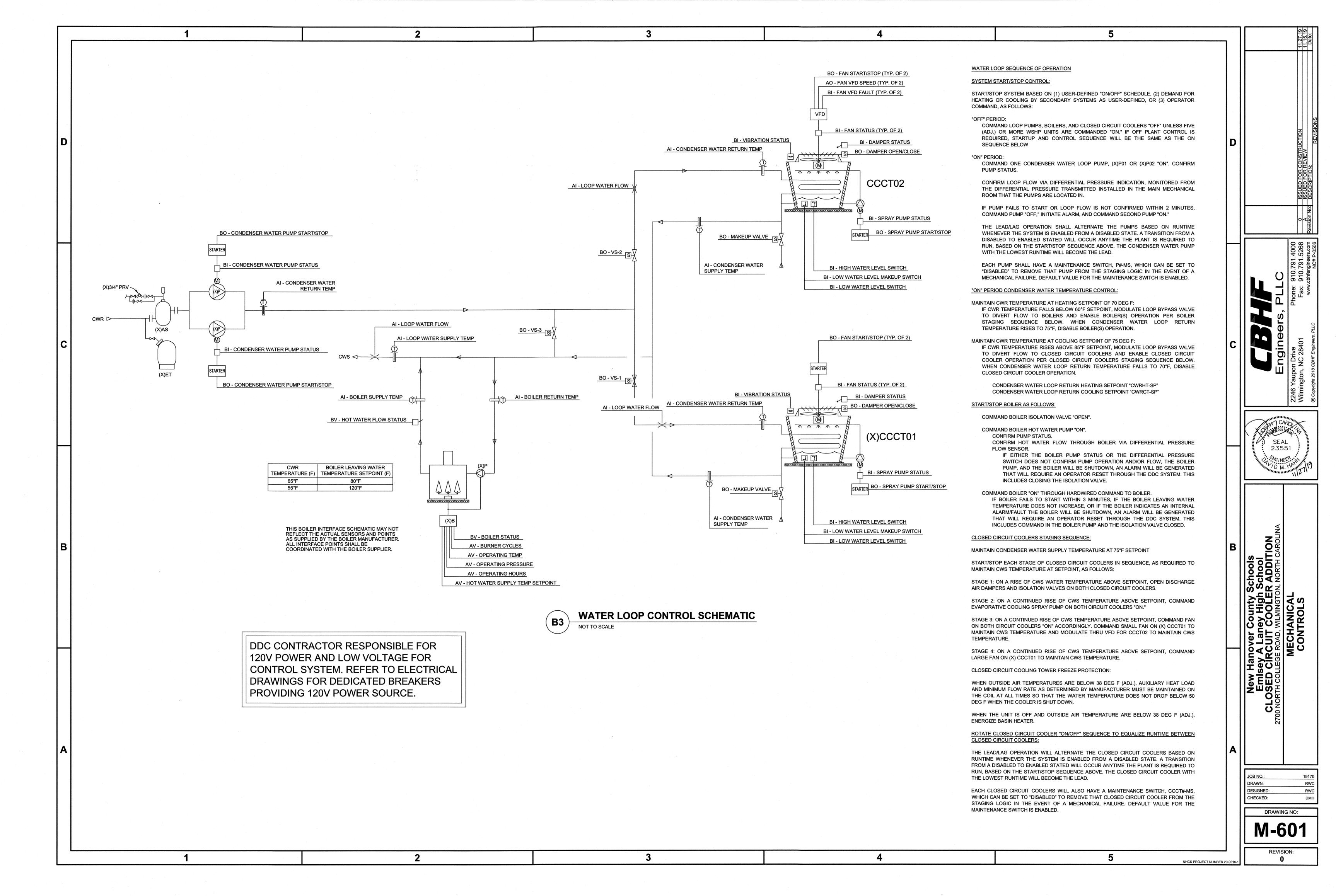
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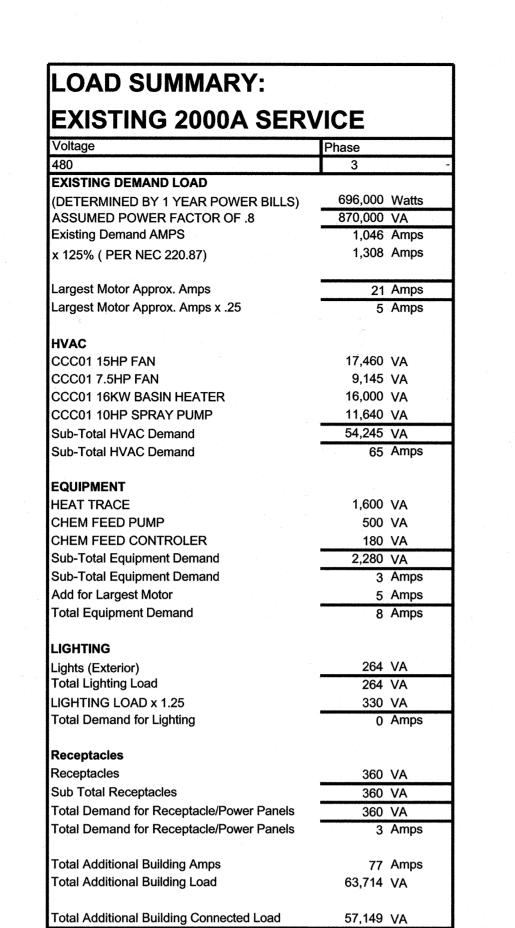
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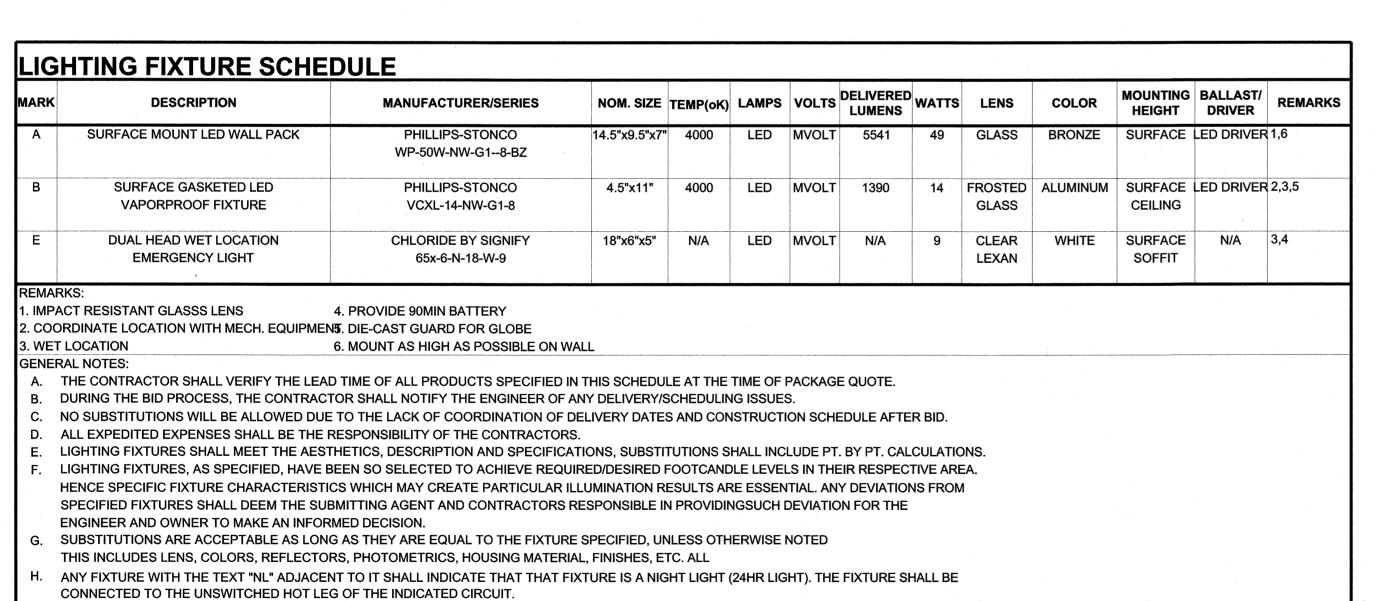




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	CAL LEGEND
SYMBOL	DESCRIPTION
Ď	WALL MOUNTED LED WALL PACK EXTERIOR LIGHT FIXTURE SEE PLAN E-201 FOR FIXTURE TYPE
₩P WP	EMERGENCY LIGHTING UNIT, 2-HEAD WITH BATTERY BACK-UP, WALL MOUNTED, "NOT SWITCHED", LETTER INDICATES WET LOCATION, SEE PLAN E-201 FOR FIXTURE TYPE
4	(X)EXIT SIGN W/EMERGENCY LIGHTING UNIT, WALL/END MOUNTED
30A/3/3R, W/ 30AF □	DISCONNECT SWITCH, FUSED, HEAVY DUTY, SIZE AS INDICATED ON DRAWINGS ##A = DISCONNECT SIZE / # = NUMBER OF POLES / # = NEMA RATING, /##AF = FUSE SIZE
"Equip" #AMP	COMBINATION STARTER WITH CIRCUIT BREAKER DISCONNECT, FULL VOLTAGE, NON-REVERSING, 600V, 3P, NEMA 3R, SIZE AS INDICATED ON DRAWINGS
Φ	RECEPTACLE, DUPLEX, 120VAC, 20A, MOUNTED 24" AFF, UNLESS OTHERWISE NOTED. WP - LISTED WEATHER-RESISTANT TYPE DEVICE WITH WEATHERPROOF IN USE COVER GFI - GROUND FAULT CIRCUIT INTERRUPTER TYPE, 120VAC, 20A, MOUNTED 24" AFF LOCATE GFI TEST SWITCH IN A READILY ACCESSIBLE LOCATION
\$WP	WEATHERPROOF SWITCH, SINGLE POLE 120/277 VAC, 20A, MOUNTED AT 46" AFF UNLESS OTHERWISE NOTED
里	JUNCTION BOX - WALL MOUNTED +##" - INDICATES MOUNTING HEIGHT OF DEVICE IN INCHES AFF (if given)
	POWER & SWITCH LEG
	UNSWITCHED LEG
	CONDUIT, HOME RUN TO PANEL BOARD
208/120V 480/277V	(X)PANELBOARD, SURFACE OR RECESSED MOUNTED AS SHOWN. SIZE, RATINGS, AND MOUNTING AS INDICATED ON PANEL SCHEDULE. CONTRACTOR IS RESPONSIBLE FOR REQUIRED CLEARANCE IN FRONT OF ELECTRICAL PANEL. SEE NEC TABLE 110.26 WORKING SPACES FOR ADDITIONAL CLEARANCE CONDITIONS.
\	(X)TRANSFORMER, SIZE AS INDICATED ON DRAWING
	DETAIL, SECTION OR PLAN NUMBER DRAWING SHEET PLAN, DETAIL OR SECTION APPEARS ON

A, AMP	AMPERE	LP	LIGHTING PANEL, LIGHT POLE
AFF	ABOVE FINISHED FLOOR	LTG	LIGHTING
AFG		MCB	MAIN CIRCUIT BREAKER
AHU	ABOVE FINISHED GRADE	MCC	
	AIR HANDLING UNIT		MOTOR CONTROL CENTER
AIC	AMPERE INTERRUPTING CAPACITY	MCP	MOTOR CIRCUIT PROTECTOR
ATS	AUTOMATIC TRANSFER SWITCH	MDP	MAIN DISTRIBUTION PANEL
AWG	AMERICAN WIRE GAUGE	MFR	MANUFACTURER
BOF	BOTTOM OF FIXTURE	MH	MANHOLE
BRKR	BREAKER	MLO	MAIN LUGS ONLY
C, CND	CONDUIT	MTD	MOUNTED
CAB		MTG	MOUNTING
CAT	CABINET	MTS	MANUAL TRANSFER SWITCH
CL	CATALOG	MV	
	CHLORINE		MEDIUM VOLTAGE
СВ	CIRCUIT BREAKER	N, NEUT	NEUTRAL
CCTV	CLOSED CIRCUIT TELEVISION	NA	NOT APPLICABLE
CKT	CIRCUIT	NC	NORMALLY CLOSED
CLG	CEILING	NEC	NATIONAL ELECTRIC CODE
CP	CONTROL PANEL	NIC	NOT IN CONTRACT
CR	•	NL	NIGHT LIGHT
CS	CONTROL RELAY, CORROSION RESISTANT	NO	
CV	CONTROL SWITCH	NTS	NORMALLY OPEN
	CONTROL VALVE		NOT TO SCALE
CT	CURRENT TRANSFORMER	P	POLE
CU	COPPER	PA	PUBLIC ADDRESS
EF	EXHAUST FAN	PB	PULL BOX, PUSH-BUTTON
EMER	EMERGENCY	PF	POWER FACTOR
EMT	ELECTRICAL METALLIC TUBING	РΗ, φ	PHASE
ENCL		PLC	PROGRAMMABLE LOGIC CONTROLLER
EQUIP	ENCLOSURE	PNL	
	EQUIPMENT	PP	PANEL
EWC	ELECTRIC WATER COOLER		POWER PANEL, POWER POLE
EWH	ELECTRIC WATER HEATER	PT	POTENTIAL TRANSFORMER
EPRF	EXPLOSION PROOF	PWR	POWER
FA	FIRE ALARM	RECPT, RCP	RECEPTACLE
FAAP	FIRE ALARM ANNUNCIATOR PANEL	REQ'D	REQUIRED
FACP	FIRE ALARM CONTROL PANEL	RGS	RIGID GALVANIZED STEEL CONDUIT
FBO	1	RM	ROOM
FLA	FURNISHED BY OTHERS	RTU	
	FULL LOAD AMPS	SCR	REMOTE TELEMETRY UNIT
FLUOR	FLUORESCENT		DC MOTOR DRIVE
FLR	FLOOR	SH	SHEET
FWE	FURNISHED WITH EQUIPMENT	SM	SURFACE MOUNTED
GEN	GENERATOR	SPEC	SPECIFICATION
G, GND	GROUND	SS	SELECTOR SWITCH
GFCI		SST	STAINLESS STEEL
HH	GROUND FAULT CIRCUIT INTERRUPTER	SW	
HID	HANDHOLE	SWBD	SWITCH
	HIGH INTENSITY DISCHARGE		SWITCHBOARD
HOA	HAND-OFF-AUTO	SWGR	SWITCH GEAR
HP	HORSE POWER	TEL	TELEPHONE
HPF .	HIGH POWER FACTOR	TPS	TWISTED PAIR SHIELDED
HPS	HIGH PRESSURE SODIUM	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSE
HTR	1	TYP	TYPICAL
HV	HEATER	UGND	UNDERGROUND
Hz	HIGH VOLTAGE	UH	
IMC	HERTZ	UON	UNIT HEATER
	INTERMEDIATE METALLIC CONDUIT		UNLESS OTHERWISE NOTED
INCAND	INCANDESCENT	UTIL	UTILITY
JB	JUNCTION BOX	V	VOLTS
K	THOUSAND	VFD	VARIABLE FREQUENCY DRIVE
KCMIL	1	W	WIRE, WATT
KVA	THOUSAND CIRCULAR MILLS	WH	•
KW .	KILOVOLT AMPERE	WP	WATT-HOUR
	KILOWATTS	XFMR	WEATHERPROOF
KWH	KILOWATT-HOURS		TRANSFORMER
		(X)	EXISTING



ACRYLIC PRISMATIC LENSES SHALL BE 0.156" NOMINAL MINIMUM THICKNESS.

LED MODULES SHALL BE REPLACEABLE.

O. THE ABOVE FIXTURE TYPES ARE LISTED AS THE DESIGN BASIS.

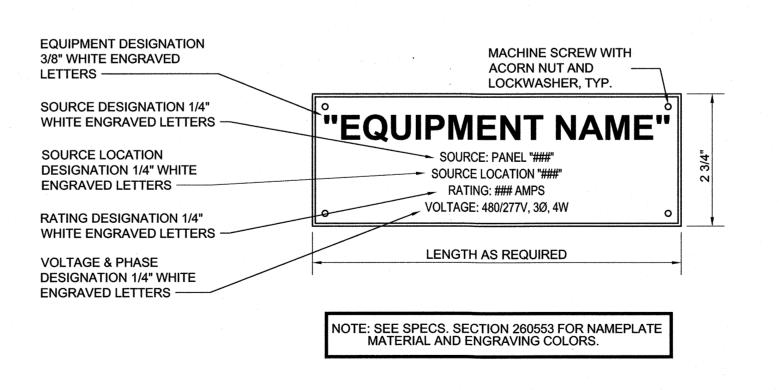
ALL EXIT AND EMERGENCY FIXTURES SHALL COMPLY WITH NCSBC STANDARDS AND HAVE AUTOMATIC TESTING DEVICES.

M. ELECTRICAL CONTRACTOR SHALL RECEIVE APPROVAL FOR ALL LIGHTING FIXTURES FROM OWNER PRIOR TO PURCHASE AND ROUGH-IN.

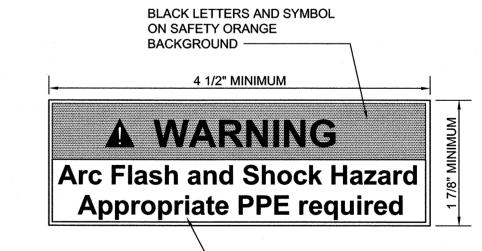
PROVIDE MANUFACTURER INSTALLED NEC 2014 ARTICLE 410.130 (G) COMPLIANT DISCONNECTING MEANS FOR ALL APPLICABLE FIXTURES.

N. ALL LIGHTING FIXTURES PENETRATING RATED FLOOR/CEILING ASSEMBLY SHALL BE PROVIDED WITH ACCESSORIES TO MAINTAIN ASSEMBLY FIRE RATING.

K. LED EMERGENCY BATTERY SHALL PROVIDE 1400 MINIMUM LUMENS OUTPUT FROM 1 LAMP FOR 90 MINUTES MINIMUM.



TYPICAL EQUIPMENT NAMEPLATE DETAIL NOT TO SCALE



BLACK LETTERS ON WHITE BACKGROUND

1. LABEL SHOWN CAN BE SOURCED FROM SAFETYSIGN.COM, OTHER SUPPLIERS ARE COMPLIANTSIGNS.COM & SETON.COM

2. THIS WARNING LABEL MINIMALLY COMPLIES WITH NEC, HOWEVER IF ELECTRICAL EQUIPMENT IS LIKELY TO REQUIRE EXAMINATION OR MAINTENANCE WHILE ENERGIZED A DETAILED SHORT CIRCUIT AND ARC FLASH HAZARD ANALYSIS IS RECOMMENDED.

ELECTRICAL EQUIPMENT WARNING LABEL DETAIL A4

NOT TO SCALE

CHECKED:

DRAWING NO:

REVISION:

NHCS PROJECT NUMBER 20-921

ELEC LEGEND, ABBRE FIXTURE SCHEDULE New Hanov Emisey A I CLOSED CIRCL

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