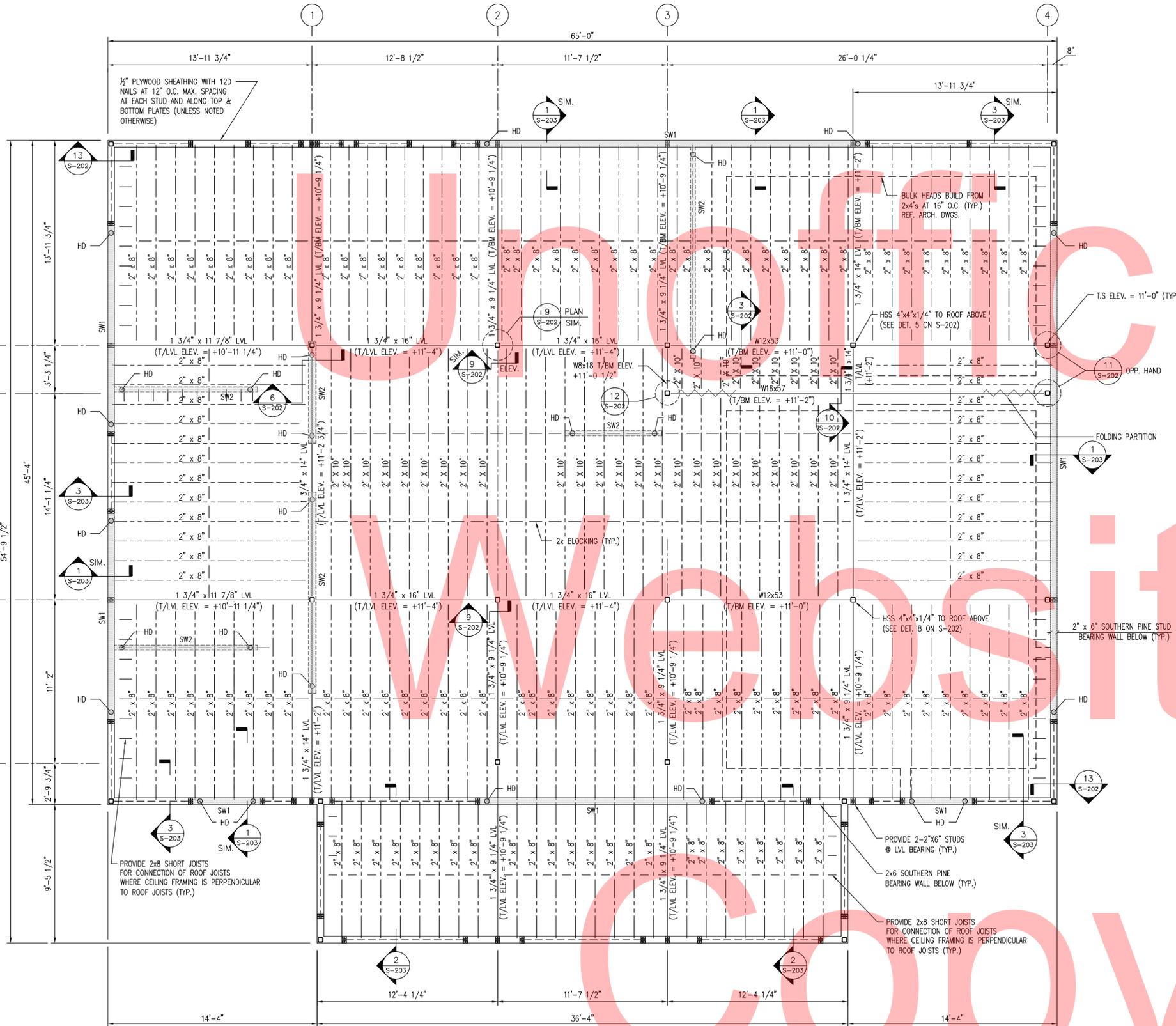


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**ATTIC FRAMING PLAN - WOOD FRAMING NOTES**

**I. DESIGN CODES AND SPECIFICATIONS**

- INTERNATIONAL BUILDING CODE (IBC 2009).
- NATIONAL DESIGN SPECIFICATIONS FOR WOOD (NDS 2012)

**II. FASTENERS**

- ALL NAILS ARE TO BE IN ACCORDANCE WITH TABLE 2304.9.1 "FASTENING SCHEDULE" OF IBC 2009.
- ALL MECHANICAL FASTENERS TO BE MINIMUM 12 GAUGE U.N.O. USE MANUFACTURER'S NAILS ONLY IN MECHANICAL FASTENERS.

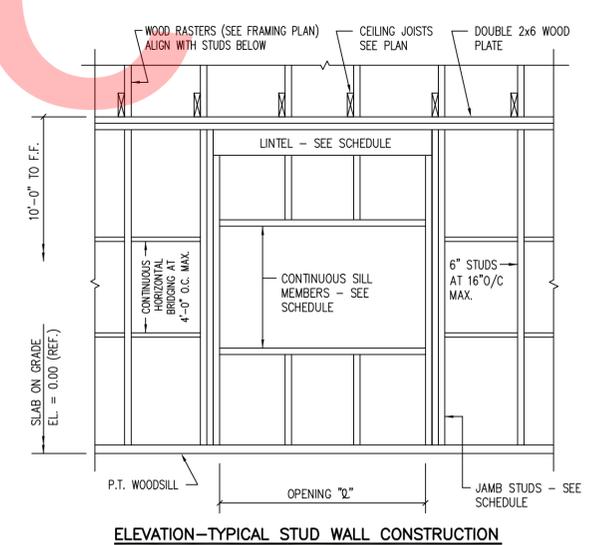
**III. WOOD**

- ALL WOOD/WOOD CONNECTIONS TO BE IN CONFORMANCE WITH THE NDS 2012 CODE BY THE AMERICAN FOREST AND PAPER ASSOCIATION AND IBC 2009.
- ALL NEW WOOD MEMBERS TO BE SOUTHERN PINE #1 OR BETTER.  
Fb = 1500 PSI, Fv = 175 PSI, E = 1.7x10<sup>6</sup> PSI WITH NO KNOTS OR CHECKS.
- ALL NEW LVL MATERIAL TO BE SOUTHERN YELLOW PINE.  
Fb = 3100 PSI, E = 2.0x10<sup>6</sup> PSI, Fv = 290 PSI, WITH NO KNOTS OR CHECKS.
- CONNECTIONS SHALL BE DESIGNED FOR MECHANICAL UNITS. FOR WEIGHTS AND LOCATIONS SEE ARCHITECTURAL / MECHANICAL DRAWINGS.
- SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS, AND WORKING POINTS. VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OF LVL MATERIAL.
- ALL CONNECTIONS INCLUDING THOSE NOT SPECIFICALLY SHOWN BUT IMPLIED SHALL BE DESIGNED, SPECIFIED, AND SUPPLIED BY THE CONTRACTOR.
- FRAMING SHALL BE COORDINATED WITH ALL OPENINGS, ETC. SEE ARCHITECTURAL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR LOCATIONS. CUTTING OF FRAMING FOR PENETRATIONS IS NOT PERMITTED.
- SHEAR WALLS ARE SHOWN ON PLAN THUS: REFERENCE S-101 FOR SHEAR WALL SCHEDULE. HOLD DOWNS SHOWN ON PLAN THUS: HD

**IV. LOADS**

- CONNECTIONS SHALL BE DESIGNED FOR THE FOLLOWING UNIFORM LOAD IN POUNDS PER SQUARE FOOT APPLIED OVER THE ENTIRE AREA OF THE ATTIC:  

DEAD LOAD-ATTIC	LIVE LOAD-ATTIC	SEISMIC LOAD
10 PSF	20 PSF	REFERENCE S-001
- FOLDING PARTITION WEIGHT:  
12 PSF x 10'-0" HIGH = 120 POUNDS PER FOOT.



**ELEVATION-TYPICAL STUD WALL CONSTRUCTION**

SCHEDULE				
DESCRIPTION SILL	SILL TYPE	DESCRIPTION JAMB	JAMB TYPE	MAX. SPAN "Q"
2x6 SILL		2-2x6 CONT. JAMB STUDS + 1-2x6 JACK STUD		7'-4"
(2) 2x6 SILL		3-2x6 CONT. JAMB STUDS + 2-2x6 JACK STUDS		10'-4"

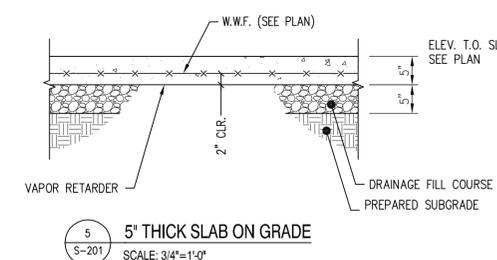
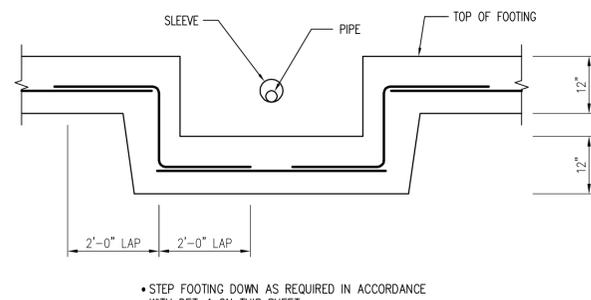
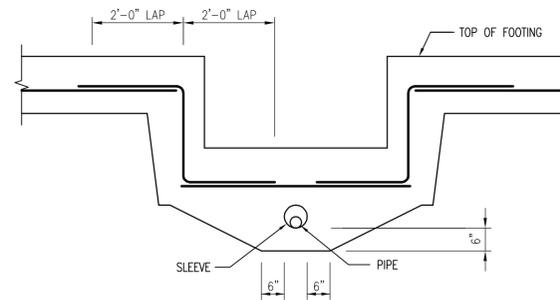
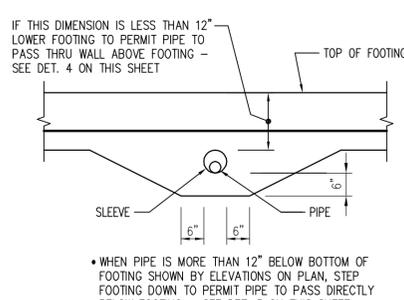
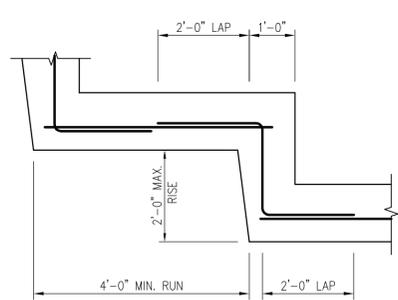
**1 ATTIC FRAMING PLAN**  
1/4" = 1'-0"



ADDENDUMS / REVISIONS

CONTRACT	BRIDGE NO.
T201280103	DESIGNED BY: TNB
COUNTY	CHECKED BY: JHB
NEW CASTLE	





1 TYP. STEP FOOTING  
SCALE: 3/4"=1'-0"

2 TYP. PIPE THRU FOOTING  
SCALE: 3/4"=1'-0"

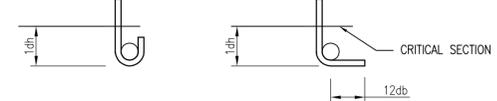
3 TYP. FOOTING STEPPED DOWN AT PIPE PENETRATION  
SCALE: 3/4"=1'-0"

4 TYP. FOOTING STEPPED DOWN AT PIPE  
SCALE: 3/4"=1'-0"

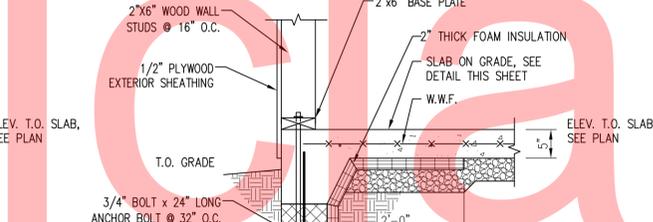
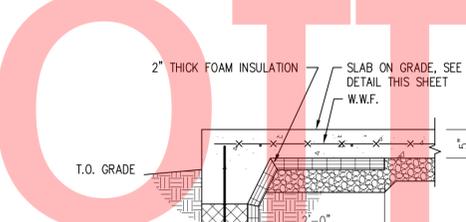
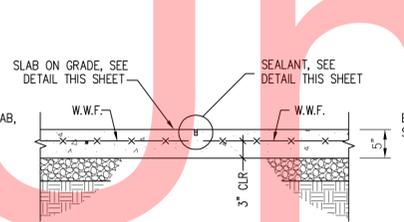
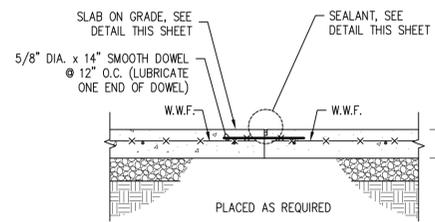
5 5' THICK SLAB ON GRADE  
SCALE: 3/4"=1'-0"

BAR SIZE	SLAB AND WALL		BEAM		STANDARD 90° HOOK		STANDARD 180° HOOK	
	OTHER BARS	TOP BARS	OTHER BARS	TOP BARS	1dh	12db	1dh	4db
#3	15"	22"	19"	28"	8"	5"	8"	2"
#4	19"	29"	25"	37"	10"	6"	10"	2"
#5	24"	38"	31"	47"	12"	8"	12"	3"
#6	29"	43"	37"	56"	15"	9"	15"	3"
#7	42"	63"	54"	81"	17"	11"	17"	4"
#8	48"	72"	62"	95"	19"	12"	19"	4"

NOTES:  
 SLAB AND WALL: 6" MINIMUM REBAR SPACING  
 BEAM: MINIMUM CLEAR SPACING BETWEEN BARS = db (BAR DIAMETER)  
 MINIMUM CONCRETE COVER = 2.0" CLEAR  
 TOP BAR: TOP BAR FOR SLAB AND BEAM SHALL BE DEFINED AS REINFORCED SO PLACED THAT MORE THAN 12" OF CONCRETE IS CAST BELOW THE SPLICE.  
 STANDARD HOOKS: SIDE COVER MORE THAN 2.5"  
 END COVER (90° HOOK) MORE THAN 2"  
 MINIMUM COVER TO TAIL = 2"



STANDARD 180° AND 90° END HOOKS  
STANDARD HOOK LENGTH

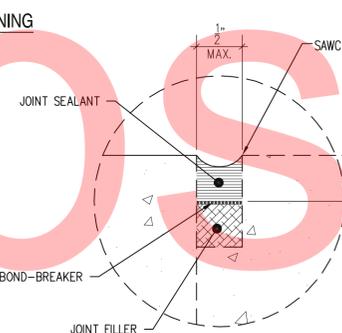
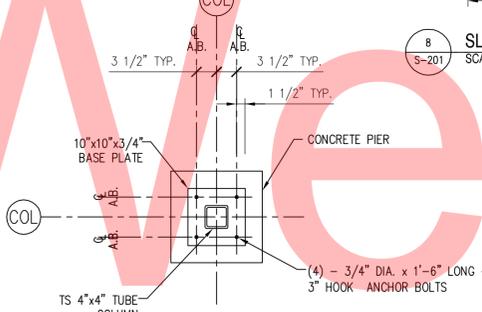
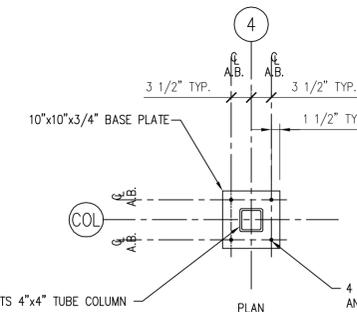


6 CONSTRUCTION JOINT SLAB ON GRADE  
SCALE: 3/4"=1'-0"

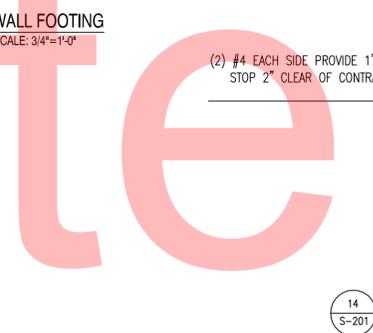
7 CONTROL JOINT SLAB ON GRADE  
SCALE: 3/4"=1'-0"

8 SLAB @ WALL OPENING  
SCALE: 3/4"=1'-0"

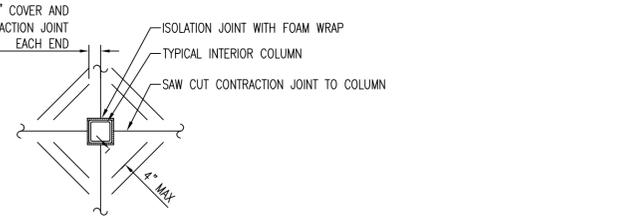
9 WALL FOOTING  
SCALE: 3/4"=1'-0"



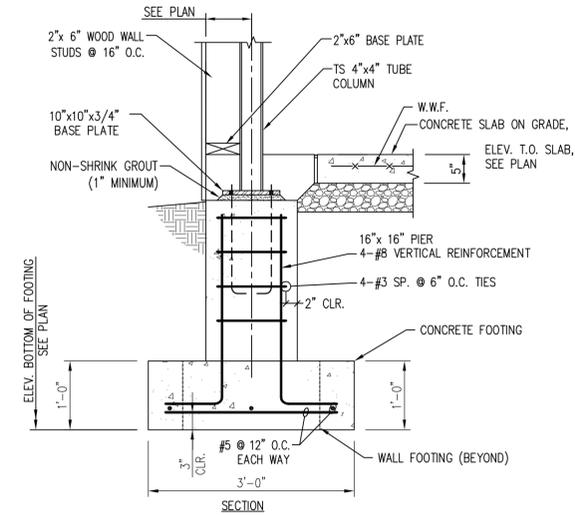
12 SEALANT @ SLAB JOINT  
SCALE: 1:1



13 SEALANT @ ISOLATION JOINT  
SCALE: 1:1

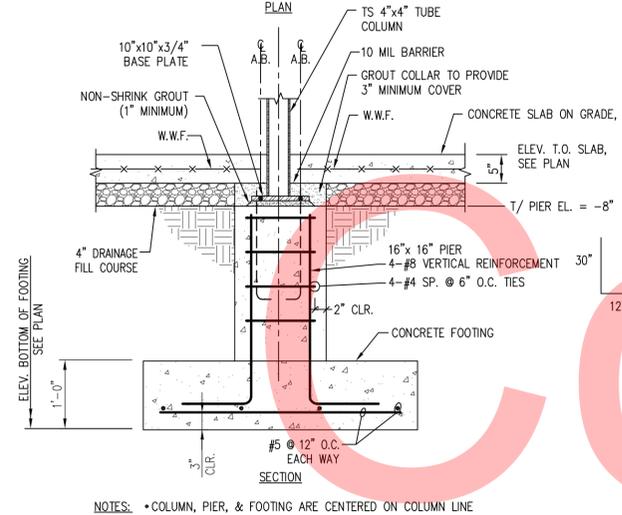


14 COLUMN ISOLATION DETAIL  
SCALE: 3/4"=1'-0"



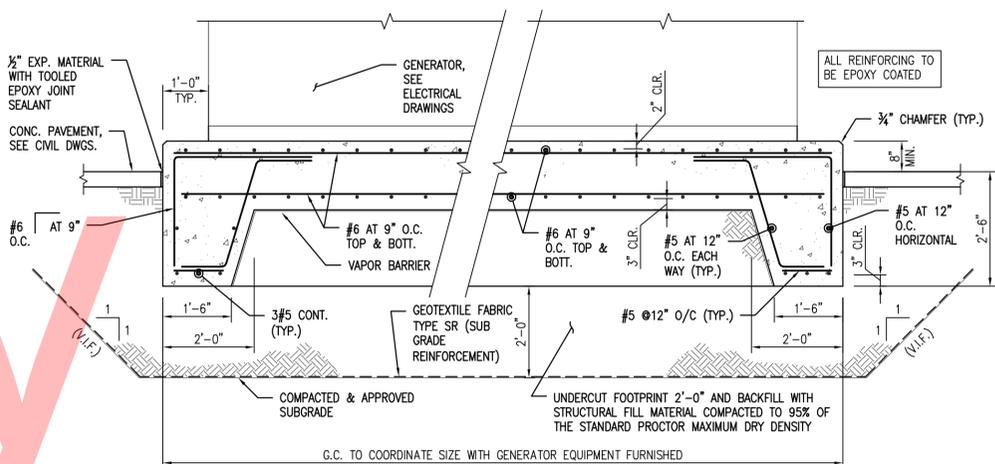
NOTES: COLUMN & FOOTING ARE CENTERED ON COLUMN LINE

10 EXTERIOR COLUMN FTG.  
SCALE: 3/4"=1'-0"



NOTES: COLUMN, PIER, & FOOTING ARE CENTERED ON COLUMN LINE

11 INTERIOR COLUMN FTG. (W/PIER)  
SCALE: 3/4"=1'-0"



15 GENERATOR CONCRETE PAD  
SCALE: 1/2"=1'-0"

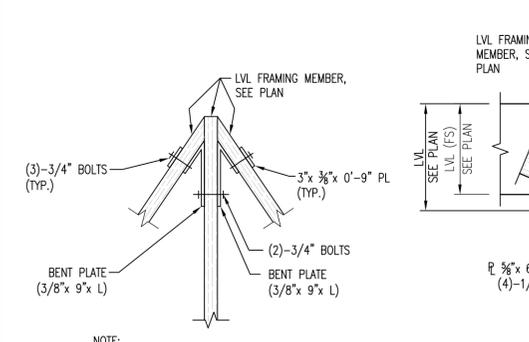
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Professional Engineer Seal  
 License No. 16466  
 Date: 11/9/12

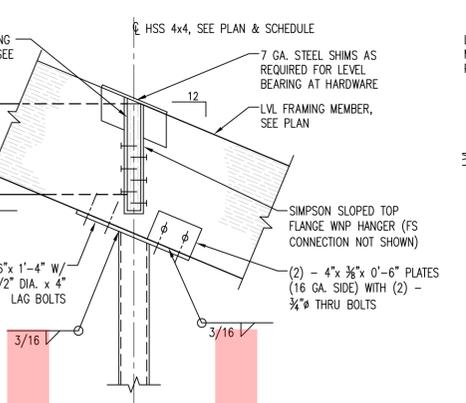
ADDENDUMS / REVISIONS	

CONTRACT	BRIDGE NO.	FOUNDATION DETAILS
T201280103	DESIGNED BY: TNB	
COUNTY	CHECKED BY: JHB	
NEW CASTLE		

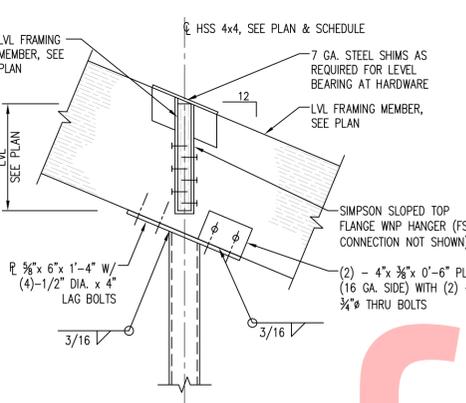
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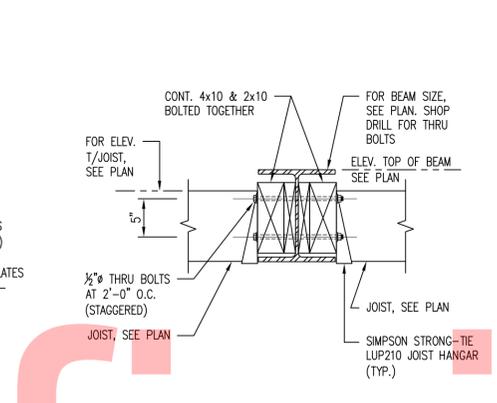
1 LVL CONNECTION  
SCALE: 1"=1'-0"



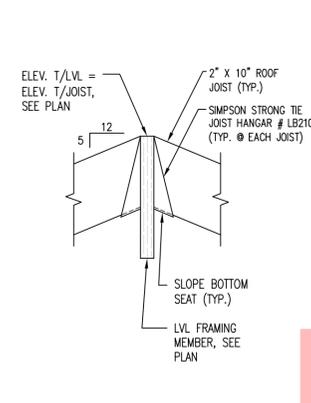
2 COLUMN ROOF CONNECTION  
SCALE: 1"=1'-0"



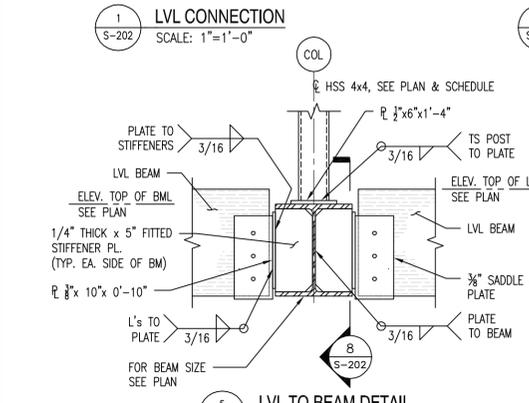
2A COLUMN ROOF CONNECTION  
SCALE: 1"=1'-0"



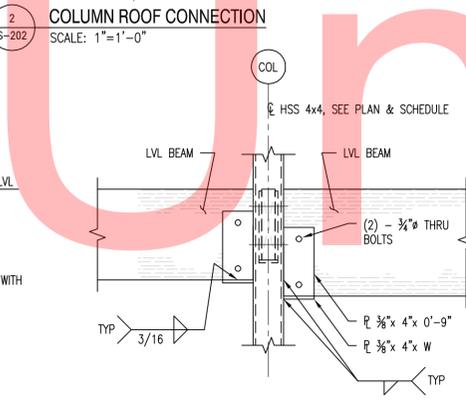
3 JOIST TO BEAM DETAIL  
SCALE: 1"=1'-0"



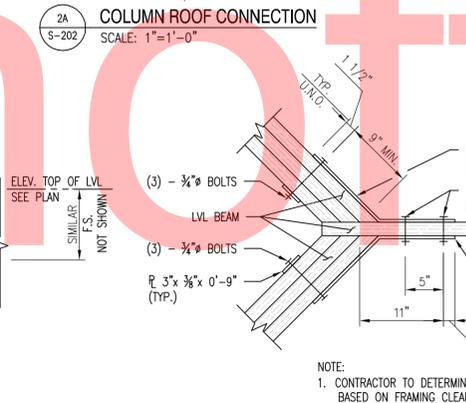
4 RAFTER CONNECTION  
SCALE: 1"=1'-0"



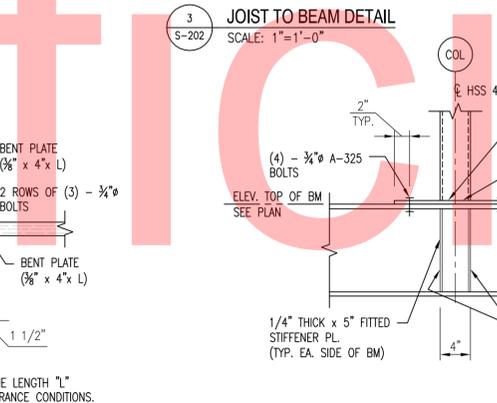
5 LVL TO BEAM DETAIL  
SCALE: 1"=1'-0"



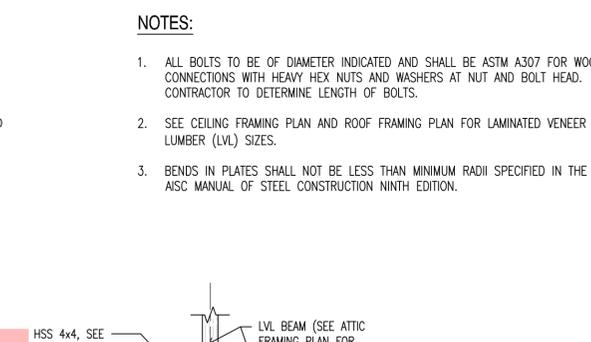
6 LVL & COLUMN CONNECTION  
SCALE: 1"=1'-0"



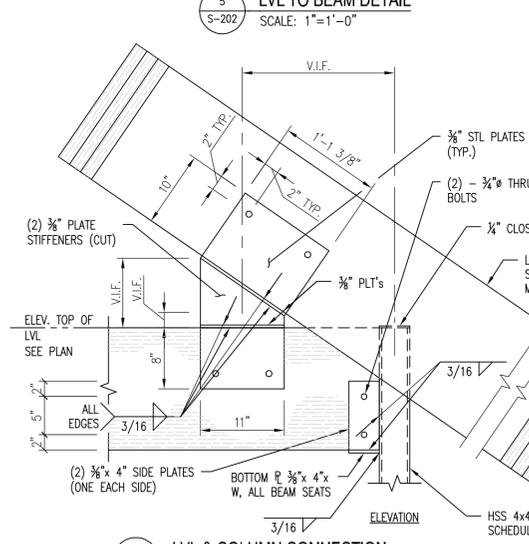
7 LVL CONNECTION - PLAN  
SCALE: 1"=1'-0"



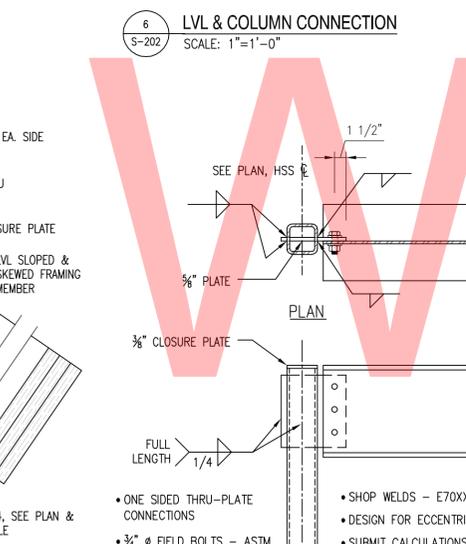
8 POST BASE CONNECTION  
SCALE: 1"=1'-0"



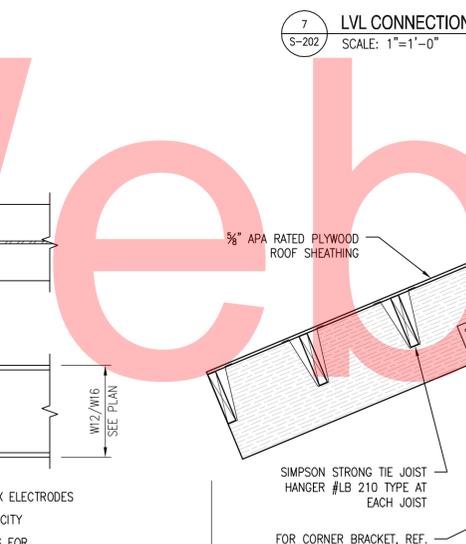
9 LVL & COLUMN CONNECTION  
SCALE: 1"=1'-0"



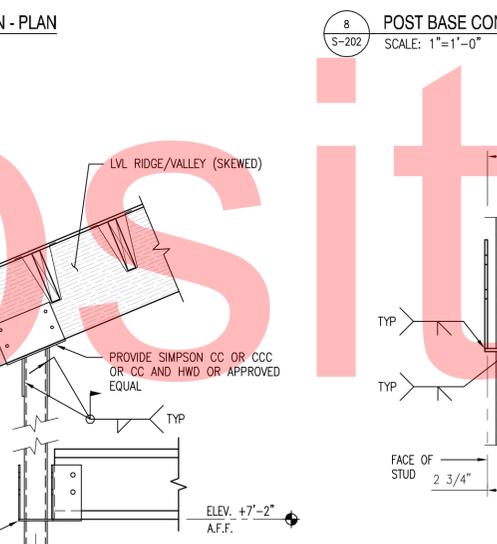
9A LVL & COLUMN CONNECTION  
SCALE: 1"=1'-0"



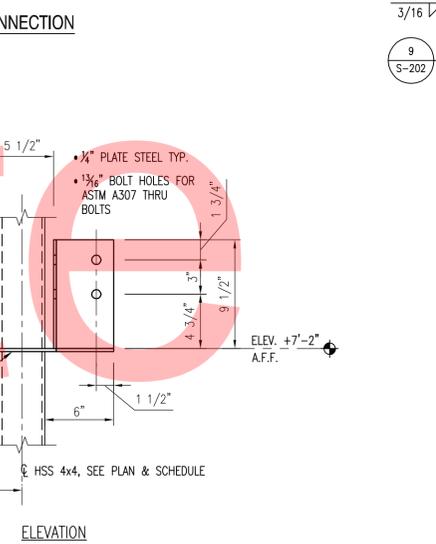
11 BEAM TO TUBE COLUMN CONNECTION  
SCALE: 1"=1'-0"



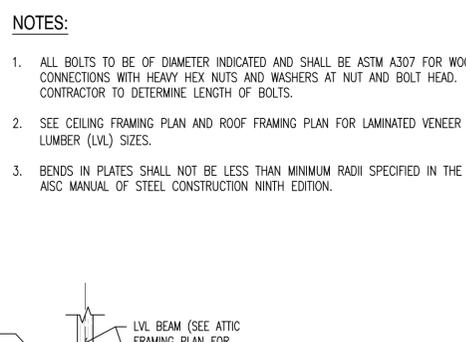
12 BEAM TO TUBE COLUMN 'T' CONNECTION  
SCALE: 1"=1'-0"



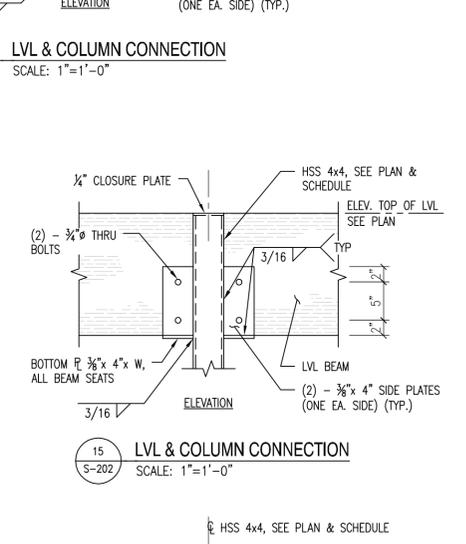
13 STEEL POST & TIMBER RAFTER CONNECTION  
SCALE: 3/4"=1'-0"



14 CORNER BRACKET DETAIL  
SCALE: 1 1/2"=1'-0"



15 LVL & COLUMN CONNECTION  
SCALE: 1"=1'-0"



16 COLUMN ROOF CONNECTION  
SCALE: 1"=1'-0"

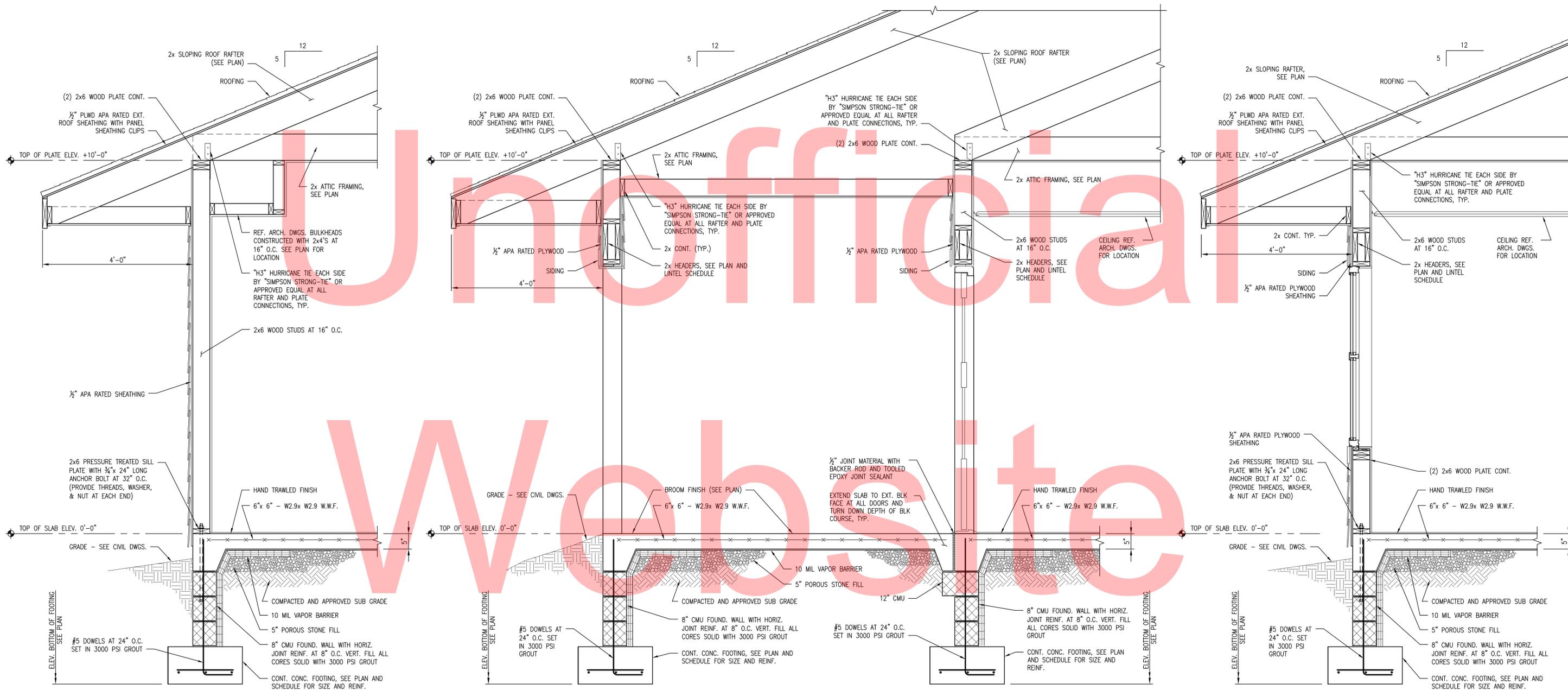
NOTES:  
1. ALL BOLTS TO BE OF DIAMETER INDICATED AND SHALL BE ASTM A307 FOR WOOD CONNECTIONS WITH HEAVY HEX NUTS AND WASHERS AT NUT AND BOLT HEAD. CONTRACTOR TO DETERMINE LENGTH OF BOLTS.  
2. SEE CEILING FRAMING PLAN AND ROOF FRAMING PLAN FOR LAMINATED VENEER LUMBER (LVL) SIZES.  
3. BENDS IN PLATES SHALL NOT BE LESS THAN MINIMUM RADII SPECIFIED IN THE AISC MANUAL OF STEEL CONSTRUCTION NINTH EDITION.

Unofficial Website Copy

Table with 2 columns: ADDENDUMS / REVISIONS, and empty rows for revisions.

Table with 2 columns: CONTRACT (T201280103), COUNTY (NEW CASTLE), BRIDGE NO., DESIGNED BY (TNB), CHECKED BY (JHB).

- NOTES:**
- ALL FASTENINGS SHALL BE MADE IN ACCORDANCE WITH IBC 2009 TABLE 2304. 9.1 "FASTENING SCHEDULE".
  - SEE ARCHITECTURAL DRAWINGS FOR INFORMATION NOT SHOWN.



1 WALL SECTION  
SCALE: 3/4"=1'-0"  
REF. 1/A-510

2 WALL SECTION  
SCALE: 3/4"=1'-0"  
REF. 2/A-510

3 WALL SECTION  
SCALE: 3/4"=1'-0"  
REF. 3/A-510

Official Website

Copy

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Professional Engineer  
No. 18488  
11/9/12

ADDENDUMS / REVISIONS	

CONTRACT	BRIDGE NO.
T201280103	
COUNTY	DESIGNED BY: TNB
NEW CASTLE	CHECKED BY: JHB

## MECHANICAL LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SOIL, WASTE, OR SANITARY PIPE		GAUGE COCK
	GREASE INTERCEPTOR PIPE		FLANGED PIPE CONNECTION
	STORM WATER PIPE		FLOW DIRECTION ARROW
	OIL INTERCEPTOR STORM WATER PIPE		VALVE IN VERTICAL PIPE
	FOUNDATION DRAIN TILE		WATER HAMMER ARRESTOR
	CONDENSATE DRAIN PIPE		UNDERCUT DOOR
	VENT PIPE		AIR FLOW
	DOMESTIC COLD WATER PIPE		DOOR LOUVER
	DOMESTIC HOT WATER PIPE		AUTOMATIC AIR VENT
	DOMESTIC HOT WATER RETURN PIPE		MANUAL AIR VENT
	SPRINKLER SUPPLY PIPE		PRESSURE GAUGE w/GAUGE COCK
	FIRE LINE PIPE		THERMOMETER
	NATURAL GAS PIPE		DUCT (FIRST FIGURE SIDE SHOWN)
	GROUND LOOP SUPPLY PIPE		DROP IN DIRECTION OF ARROW
	GROUND LOOP RETURN PIPE		RISE IN DIRECTION OF ARROW
	CLEANOUT (WALL/FLOOR)		SMOKE DETECTOR
	THERMOSTAT OR TEMPERATURE SENSOR		AIR MEASURING DEVICE
	PIPE CAP		SUPPLY AIR DIFFUSER
	BRANCH TAKE OFF		RETURN AIR GRILLE
	PIPE DROP TEE		EXHAUST AIR GRILLE
	PIPE RISE TEE		FIRE DAMPER
	AUTOMATIC CONTROL VALVE (2 WAY)		MANUAL VOLUME DAMPER
	AUTOMATIC CONTROL VALVE (3 WAY)		SQUARE TO ROUND DUCT TRANSITION
	SHUT-OFF VALVE		FLEXIBLE CONNECTION
	GLOBE VALVE		ACCESS DOOR
	UNION		MOTOR OPERATED DAMPER
	STRAINER W/BLOWDOWN VALVE		DUCT TRANSITION
	PIPE GUIDE		RECTANGULAR BRANCH TAKE-OFF
	PIPE ANCHORS		SUPPLY AIR DEVICE WITH 2'x2' LAY-IN PANEL
	SOLENOID VALVE		RETURN AIR DEVICE WITH 2'x2' LAY-IN PANEL
	PRESSURE REDUCING VALVE		SUPPLY/OUTSIDE AIR DUCT RISER
	ECCENTRIC REDUCER		RETURN AIR DUCT RISER
	CONCENTRIC REDUCER		EXHAUST/RELIEF AIR DUCT RISER
	PRESSURE RELIEF VALVE		ELBOW WITH DOUBLE THICKNESS TURNING VANES
	BALANCING VALVE (W/MEMORY STOP)		EMERGENCY FAN DISCONNECT SWITCH
	BACKWATER VALVE		DIAMETER
	BUTTERFLY VALVE		POINT OF CONNECTION, NEW TO EXISTING
	AUTOMATIC AIR VENT		POINT OF DISCONNECTION FROM EXISTING
	HOSE END DRAIN VALVE		SYMBOL FOR SPECIFIC NOTE. NOTE APPLIES TO DRAWING ON WHICH IT OCCURS.
	BACKFLOW PREVENTER		
	CHECK VALVE; (ARROW INDICATES DIRECTION OF FLOW)		
	FLOOR DRAIN		
	WALL HYDRANT		
	HOSE BIBB		
	FIRE DEPARTMENT CONNECTION (SIAMESE)		

## DESIGNATIONS

### EQUIPMENT DESIGNATIONS

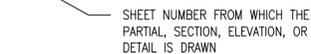
AS-	AIR SEPARATOR
DWH-	DOMESTIC WATER HEATER
EF-	EXHAUST FAN
ET-	EXPANSION TANK
P-	PUMP
UH-	UNIT HEATER
TMV-	THERMOSTATIC MIXING VALVE
V-	VALVE
WHP-	WATER TO AIR HEAT PUMP
P--	PLUMBING FIXTURE



SECTION REFERENCE:  
(SEE DATA BELOW FOR DETAILS)



DETAIL = LETTER / SECTION = NUMBER  
DRAWING TITLE  
SCALE



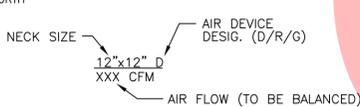
SHEET NUMBER FROM WHICH THE PARTIAL, SECTION, ELEVATION, OR DETAIL IS DRAWN



NORTH ARROW



TRUE NORTH



## ABBREVIATIONS

AV	AUTOMATIC AIR VENT	KW	KILOWATTS
ABV	ABOVE	L	LONG, LENGTH
ACV	AUTOMATIC CONTROL VALVE	LAT	LEAVING AIR TEMPERATURE
AD	ACCESS DOOR	LBS	POUNDS
AFF	ABOVE FINISHED FLOOR	LBS/HR	POUNDS PER HOUR
AHU	AIR HANDLING UNIT	LDB	LEAVING DRY BULB
AMD	AIR MONITORING DEVICE	LF	LINEAR FEET
APD	AIR PRESSURE DROP	LRA	LOCKED ROTOR AMPERES
APPROX	APPROXIMATELY	LSD	LINEAR SLOT DIFFUSER
ATC	AUTOMATIC TEMPERATURE CONTROL	LWB	LEAVING WET BULB
AWT	AVERAGE WATER TEMPERATURE	LWT	LEAVING WATER TEMPERATURE
BDD	BACKDRAFT DAMPER	MA	MIXED AIR
BFP	BACKFLOW PREVENTOR	MAV	MANUAL AIR VENT
BHP	BRAKE HORSEPOWER	MAX	MAXIMUM
BLDG	BUILDING	MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
BLW	BELOW	MECH	MECHANICAL
BP	BYPASS	MFD	MOTORIZED FIRE DAMPER
BTM	BOTTOM	MFR	MANUFACTURER
BTU/HR	BRITISH THERMAL UNITS PER HOUR	MIN	MINIMUM
BV	BALANCING VALVE	MOD	MOTOR OPERATED DAMPER
		MTD	MOUNTED
		MVD	MANUAL VOLUME DAMPER
COMMON	COMMON	NC	NOISE CRITERIA OR NORMALLY CLOSED
DEGREES CELSIUS	DEGREES CELSIUS	NIC	NOT IN CONTRACT
CONDITIONED OUTDOOR AIR	CONDITIONED OUTDOOR AIR	NOM	NOMINAL
COOLING COIL	COOLING COIL	NO	NORMALLY OPEN
COOLING COIL PUMP	COOLING COIL PUMP	NO	NUMBER
CONDENSATE DRAIN	CONDENSATE DRAIN	OA	OUTDOOR AIR
CUBIC FEET PER MINUTE	CUBIC FEET PER MINUTE	OAI	OUTDOOR AIR INTAKE
CAST IRON	CAST IRON	OAT	OUTDOOR AIR TEMPERATURE
CEILING	CEILING	OC	ON CENTER
CONC	CONCRETE	OED	OPEN END DUCT WITH 1/2" FRAMED WIRE MESH SCREEN
CONN	CONNECT, CONNECTION	OFD	OVERFLOW DRAIN
CONT'N	CONTINUATION	OI	OIL INTERCEPTOR
CV	CHECK VALVE	OS&Y	OUTSIDE STEM & YOKE VALVE
CW	DOMESTIC COLD WATER		
CX	CONNECT TO EXISTING		
		%	PERCENT
D	SUPPLY AIR DIFFUSER OR DEEP, DEPTH	PD	PRESSURE DROP OR PUMP DISCHARGE
DAM	DUCT AIR MONITOR	PH	PHASE
DB	DECIBEL OR DRY BULB	POD	POINT OF DISCONNECTION
DDC	DIRECT DIGITAL CONTROL	PR	PRESSURE RELIEF
DHC	DUCT HEATING COIL	PRG	PRESSURE RELIEF GRILLE
DIA, Ø	DIAMETER	PRV	PRESSURE REDUCING VALVE
DIFF	DIFFERENTIAL	PS	PRESSURE SENSOR
DL	DOOR LOUVER	PSI	POUNDS PER SQUARE INCH POUNDS
DN	DOWN	PSIG	PER SQUARE INCH GAUGE
DNR	DAMPER	PUH	PROPELLER UNIT HEATER
DPS	DIFFERENTIAL PRESSURE SENSOR		
DWG	DRAWING		
		R	RETURN/EXHAUST/SUPPLY AIR REGISTER
EA	EXHAUST AIR	RA	RETURN AIR
EAT	ENTERING AIR TEMPERATURE	REQ'D	REQUIRED
EDB	ENTERING DRY BULB	RF	RETURN FAN
EFF	EFFICIENCY	RH	RELATIVE HUMIDITY
EF	EXHAUST FAN	RL	REFRIGERANT LIQUID
EJ	EXPANSION JOINT	RLA	RUNNING LOAD AMPERES
ELEC	ELECTRIC	RM	ROOM
ELEV	ELEVATION OR ELEVATOR	RPM	REVOLUTIONS PER MINUTE
ESP	EXTERNAL STATIC PRESSURE	RS	REFRIGERANT SUCTION
EWB	ENTERING WET BULB	RV	RELIEF VENT
EWT	ENTERING WATER TEMPERATURE	RX	REMOVE EXISTING
EX	EXISTING		
EXH	EXHAUST	S	SPRINKLER SUPPLY PIPE
EXP	EXPANSION	SA	SUPPLY AIR
		SAN	SANITARY, SOIL, WASTE
F	FILTER	SD	SMOKE DAMPER
DEGREES FAHRENHEIT	DEGREES FAHRENHEIT	SF	SUPPLY FAN OR SQUARE FEET
FLOAT & THERMOSTATIC	FLOAT & THERMOSTATIC	SL	SOUND LINING, SOUND LINED
FLEXIBLE CONNECTION	FLEXIBLE CONNECTION	S/M	SHEET METAL
FIRE DAMPER OR FOUNDATION DRAINAGE	FIRE DAMPER OR FOUNDATION DRAINAGE	SP	STATIC PRESSURE
FIRE DEPARTMENT CONNECTION	FIRE DEPARTMENT CONNECTION	SPD	STATIC PRESSURE DROP
FLOOR DRAIN	FLOOR DRAIN	SPEC	SPECIFICATION
FIRE DEPARTMENT VALVE	FIRE DEPARTMENT VALVE	SQ	SQUARE
FLOOR	FLOOR	SQ, FT	DROP SQUARE FOOT
FLL	FULL LOAD AMPERES	SPR	SPRINKLER LINE
FPM	FEET PER MINUTE	SS	START/STOP
FPS	FEET PER SECOND	S/S	STAINLESS STEEL
FT, '	FOOT, FEET OR FLASH TANK	STL	STEEL
FT, HD	FEET OF HEAD	SW	STORM WATER
FZ	FREEZE STAT	ΔT	TEMPERATURE DROP
FU	FIXTURE UNITS	TEMP, T	TEMPERATURE
		TG	TRANSFER GRILLE
G	NATURAL GAS PIPE OR RETURN/EXHAUST GRILLE	TSP	TOTAL STATIC PRESSURE
GAL	GALLON, GALLONS	TYP	TYPICAL
GALV	GALVANIZED		
GEN	GENERATOR	UC	UNDERCUT DOOR
GLS	GROUND LOOP SUPPLY	UH	UNIT HEATER
GLR	GROUND LOOP RETURN	UON	UNLESS OTHERWISE NOTED
GPM	GALLONS PER MINUTE		
		V	VOLTS, VACUUM PIPE
H	HIGH, HEIGHT	VD	VOLUME DAMPER
H2O	WATER	VEL	VELOCITY
HB	HOSE BIBB	VENT	VENTILATION
HED	HOSE END DRAIN VALVE	VF	VENTILATION FAN
HP	HORSEPOWER	VFD	VARIABLE FREQUENCY DRIVE
HW	DOMESTIC HOT WATER	VIB	VIBRATION
HWC	DOMESTIC HOT WATER CIRCULATING	ISOL VLV	ISOLATION VALVE
		VP	SANITARY VENT PIPE
IGV	INLET GUIDE VANE	VTR	VENT THROUGH ROOF
IN, "	INCH, INCHES		
INV	INVERT	W	WIDTH
ISOL	ISOLATION	W/	WITH
		WB	WET BULB
		WC	WATER COLUMN
		WH	WALL HYDRANT
		ZN	ZONE
		W/O	WITHOUT

## GENERAL NOTES

- WORK SHALL CONFORM TO THE CONTRACT DRAWINGS, SPECIFICATIONS AND THE LATEST APPLICABLE INTERNATIONAL MECHANICAL AND PLUMBING CODE AND THE NATIONAL ELECTRIC CODE. WORK SHALL BE PERFORMED IN ACCORDANCE WITH NFPA 70, THE NATIONAL ELECTRICAL CODE, THE NATIONAL ELECTRICAL SAFETY CODE, OSHA AND NATIONAL SAFETY CODE REQUIREMENTS.
- THE SCOPE OF WORK INDICATED IN THESE DOCUMENTS SHALL INCLUDE MECHANICAL AND ELECTRICAL SYSTEMS, FULLY ADJUSTED, TESTED AND READY TO USE. PROVIDE ITEMS NECESSARY TO COMPLETE THE SYSTEMS. EXAMINE WORK INDICATED FOR TRADES IN ORDER TO DETERMINE THE EXTENT OF THE WORK REQUIRED TO BE COMPLETED.
- IT IS THE INTENTION OF THESE DRAWINGS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION. WHEREVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN "FURNISH AND INSTALL COMPLETE, TESTED AND READY FOR USE."
- THE DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW EVERY COMPONENT AND/OR ACCESSORY REQUIRED FOR A COMPLETE INSTALLATION. THE CONTRACTOR SHALL PROVIDE ITEMS NECESSARY FOR A PROPERLY WORKING SYSTEM IN COMPLIANCE WITH ACCEPTED INDUSTRY STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
- PRIOR TO BID, THE CONTRACTOR SHALL VISIT THE SITE AND IDENTIFY ITEMS THAT MAY AFFECT THEIR BID. PRIOR TO THE INSTALLATION, FABRICATION, REMOVAL, OR RELOCATION OF ANY WORK, THE CONTRACTORS SHALL REVIEW THE ACTUAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND SHALL COORDINATE WORK WITH THE PLANS, EXISTING EQUIPMENT AND SYSTEMS, BUILDING STRUCTURE AND WORK OF OTHER TRADES. WHERE CONFLICTS OCCUR, OR IF CONNECTIONS THERETO CAN NOT BE MADE, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER PRIOR TO MATERIAL FABRICATION OR INSTALLATION.
- WHERE THE WORK OF VARIOUS TRADES WILL BE INSTALLED IN CLOSE PROXIMITY TO ONE ANOTHER OR WHERE THERE IS EVIDENCE THAT THE WORK OF ONE TRADE WILL INTERFERE WITH WORK OF ANOTHER, THE CONTRACTOR SHALL WORK OUT SPACE CONDITIONS TO MAKE A SATISFACTORY ADJUSTMENT. IF THE CONTRACTOR ALLOWS ONE TRADE TO INSTALL HIS WORK BEFORE COORDINATING WITH WORK OF OTHER TRADES THE CONTRACTOR SHALL MAKE NECESSARY CHANGES TO CORRECT THE CONDITIONS IN A MANNER ACCEPTABLE TO THE OWNER AND THE CONTRACTOR SHALL BEAR THE COST OF SUCH CORRECTIONS.
- THE CONTRACTOR SHALL LOCATE EQUIPMENT WHICH MUST BE SERVICED, OPERATED, OR MAINTAINED IN FULLY ACCESSIBLE POSITION. EQUIPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO, VALVES, MOTORS, CONTROLLERS, DRAIN PANS, ETC. IF REQUIRED FOR ACCESSIBILITY, FURNISH ACCESS DOORS FOR THE PURPOSE. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ALLOW FOR BETTER ACCESSIBILITY.
- WORK IN OCCUPIED SPACE SHALL BE COORDINATED WITH THE OWNER. SHOULD ANY OUTAGES BE REQUIRED IN THE COURSE OF THIS PROJECT, THE CONTRACTOR SHALL COORDINATE SUCH OUTAGES WITH THE OWNER'S DESIGNATED REPRESENTATIVE, SCHEDULING ANY OUTAGES DURING THE NON WORKING HOURS, SO AS NOT TO EFFECT FACILITY OPERATIONS, 72 HOURS NOTICE WILL BE REQUIRED PRIOR TO ANY OUTAGE. NO OUTAGE MAY BE EXECUTED PRIOR TO APPROVAL OF THE OWNER'S DESIGNATED REPRESENTATIVE AND THE FACILITY MANAGER.
- THE CONTRACTOR SHALL LEAVE THE ENTIRE MECHANICAL SYSTEM INSTALLED UNDER THIS CONTRACT IN PROPER WORKING ORDER AND SHALL, WITHOUT CHARGE, REPLACE ANY WORK OR MATERIALS WHICH DEVELOP DEFECTS, EXCEPT FROM ORDINARY WEAR AND TEAR, WITHIN ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
- THE CONTRACTOR SHALL, DURING THE ONE YEAR WARRANTY PERIOD, BE RESPONSIBLE FOR PROPER REPAIR AND ADJUSTMENTS OF MECHANICAL SYSTEMS AND EQUIPMENT, APPARATUS, DEVICES ETC. INSTALLED BY HIM, AND DO WORK NECESSARY TO ENSURE EFFICIENT AND PROPER FUNCTIONING.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR, AND SHALL INCUR FINANCIAL RESPONSIBILITIES FOR, ANY DAMAGES CAUSED BY OR RESULTING FROM DEFECTS IN HIS WORK.
- WHEREVER PIPES, CONDUITS, OR OTHER ITEMS PASS THROUGH FIRE RATED WALLS AND FLOORS, THE SPACE BETWEEN THE ITEM AND THE MASONRY OR THE SPACE BETWEEN THE ITEM AND THE SLEEVE SHALL BE ADEQUATELY FIRE STOPPED WITH A NON COMBUSTIBLE, NON MELTING MATERIAL IN ACCORDANCE WITH NFPA STANDARDS.
- WALL OPENINGS RESULTING FROM DEMOLITION SHALL BE CLOSED AND FINISHED TO MATCH EXISTING.
- FINISHES DAMAGED DURING THE PROJECTS SHALL BE REPAIRED TO MATCH EXISTING.



M-001



DELAWARE  
DEPARTMENT OF TRANSPORTATION

### ADDENDUMS / REVISIONS

NO.	DATE	DESCRIPTION

MIDDLETOWN CREW QUARTERS  
AND MAINTENANCE SHOP

CONTRACT	BRIDGE NO.	
T201280103	DESIGNED BY:	CHB
COUNTY	CHECKED BY:	MAS
NEW CASTLE		

MECHANICAL SYMBOLS,  
ABBREVIATIONS AND  
GENERAL NOTES

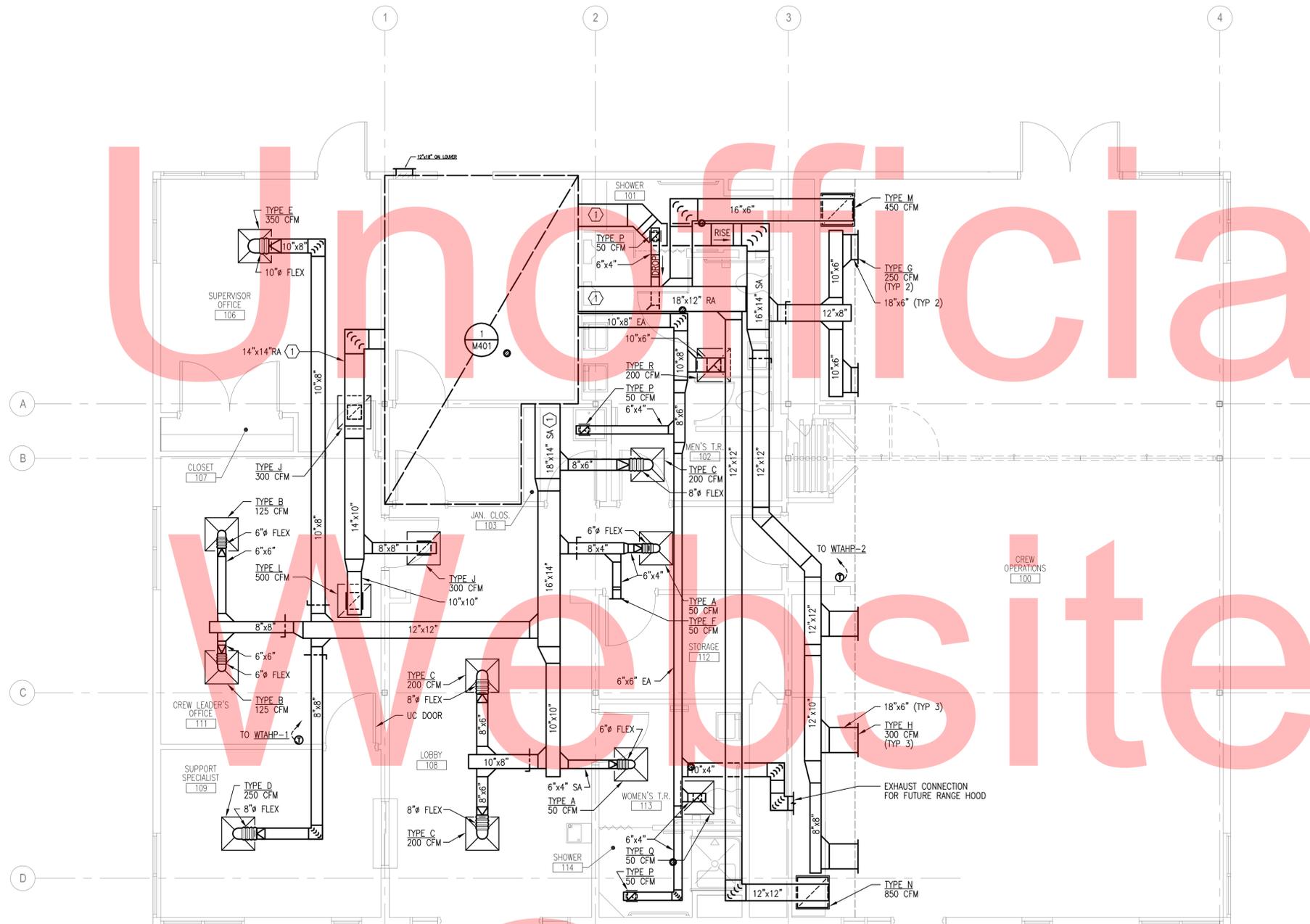
SHEET NO.	36
TOTAL SHTS.	54

**GENERAL SHEET NOTES:**

1. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
2. UNLESS OTHERWISE NOTED, MECHANICAL/PLUMBING ITEMS SHOWN HEAVY SOLID (——) SHALL BE NEW WORK AND MECHANICAL/PLUMBING ITEMS SHOWN LIGHT SOLID (---) SHALL BE EXISTING.
3. DO NOT LOCATE DUCTWORK OR PIPING ABOVE ELECTRICAL PANELS OR EQUIPMENT.

**SHEET KEYNOTES:**

- 1 PROVIDE ACOUSTIC DUCT LINING FOR FIRST 15'-0" ON SUPPLY AND RETURN DUCTWORK FROM UNITS. INNER DUCT DIMENSIONS SHALL MATCH DUCT SIZES AS SHOWN ON DRAWINGS M-101 AND M-401.



1 MECHANICAL FIRST FLOOR PLAN  
M101 SCALE: 1/4" = 1'-0"



M-101

ADDENDUMS / REVISIONS

CONTRACT T201280103	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: CHB
	CHECKED BY: MAS

SHEET NO. 37
TOTAL SHTS. 54

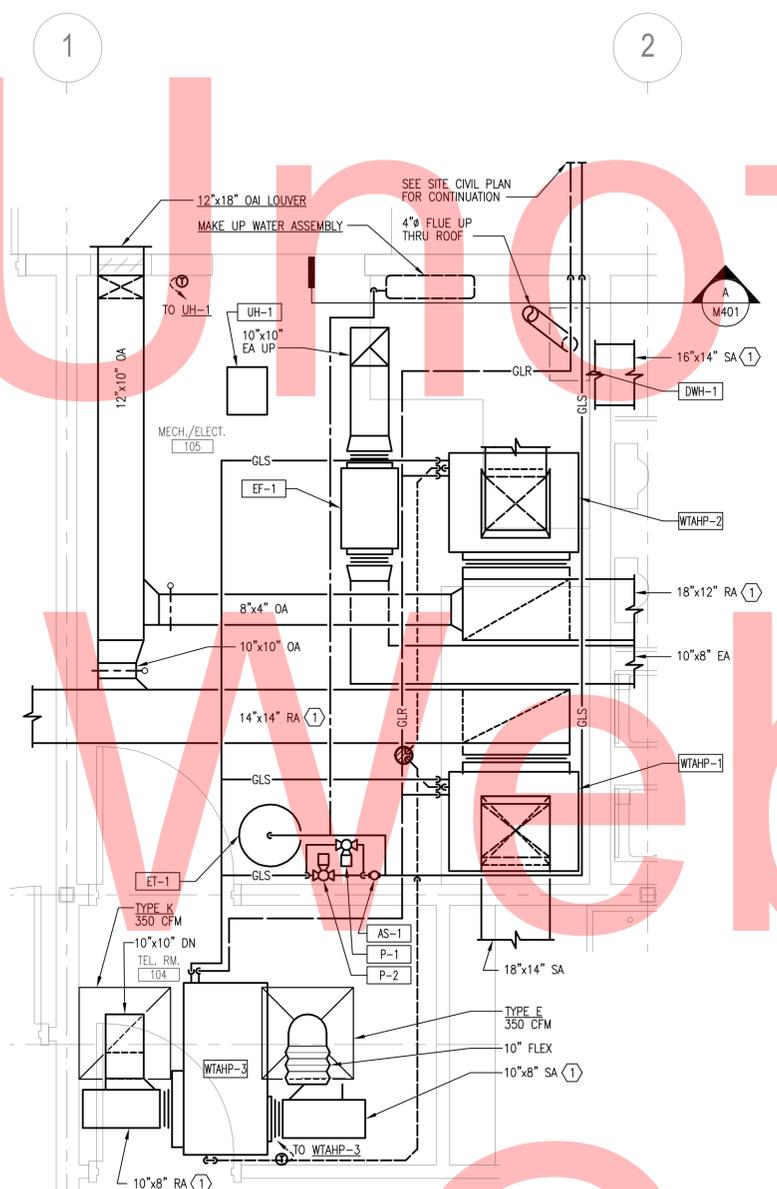
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**GENERAL SHEET NOTES:**

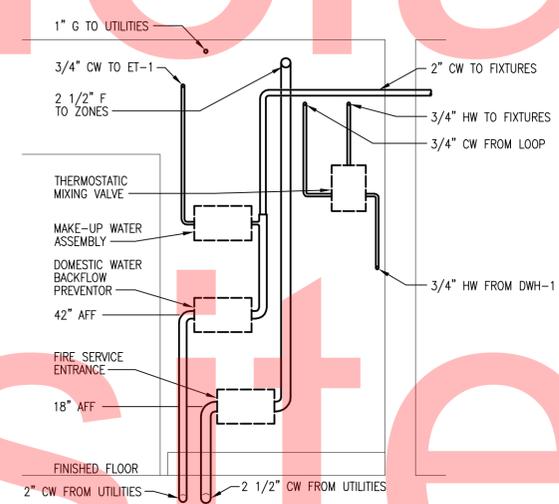
1. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
2. UNLESS OTHERWISE NOTED, MECHANICAL/PLUMBING ITEMS SHOWN HEAVY SOLID (——) SHALL BE NEW WORK AND MECHANICAL/PLUMBING ITEMS SHOWN LIGHT SOLID (—) SHALL BE EXISTING.
3. DO NOT LOCATE DUCTWORK OR PIPING ABOVE ELECTRICAL PANELS OR EQUIPMENT.

**SHEET KEYNOTES:**

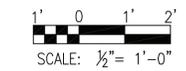
- 1 PROVIDE ACOUSTIC DUCT LINING FOR FIRST 15'-0" ON SUPPLY AND RETURN DUCTWORK FROM UNITS. INNER DUCT DIMENSIONS SHALL MATCH DUCT SIZES AS SHOWN ON DRAWINGS M-101 AND M-401.



1 MECHANICAL PART PLAN - MECHANICAL ROOM  
M401 SCALE: 1/2" = 1'-0"



A SECTION VIEW - MECHANICAL ROOM WALL MOUNTS  
M401 SCALE: NTS



M-401

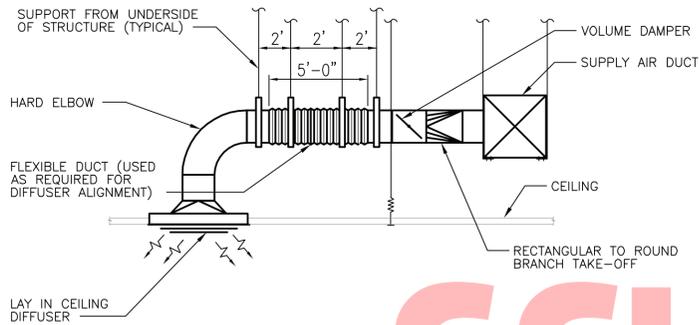
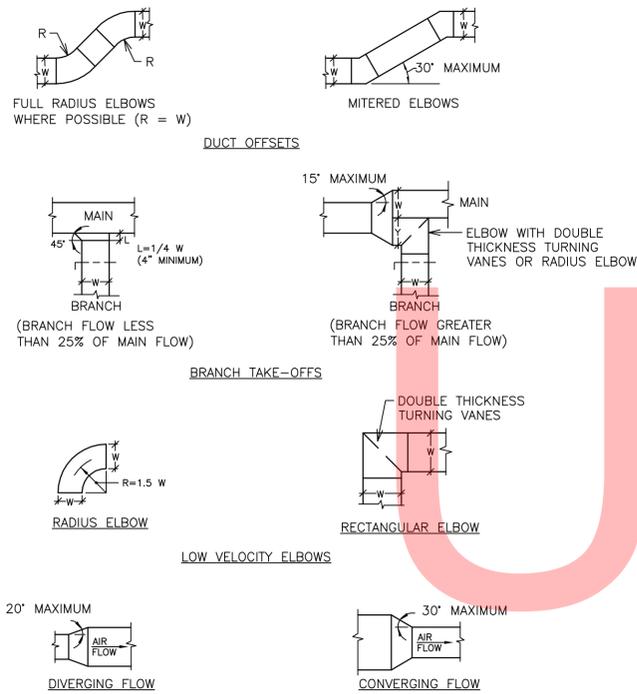
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ADDENDUMS / REVISIONS	

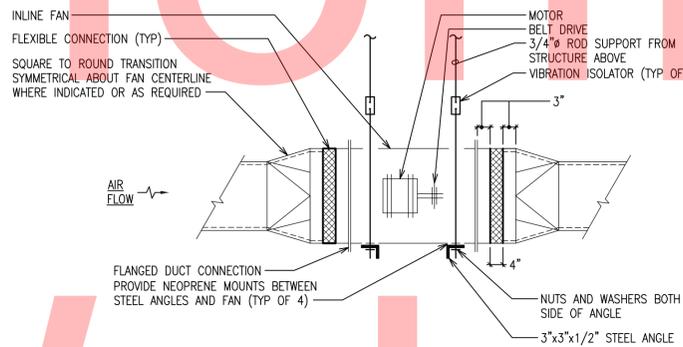
CONTRACT T201280103	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: CHB
	CHECKED BY: MAS

MECHANICAL PART PLAN MECHANICAL ROOM
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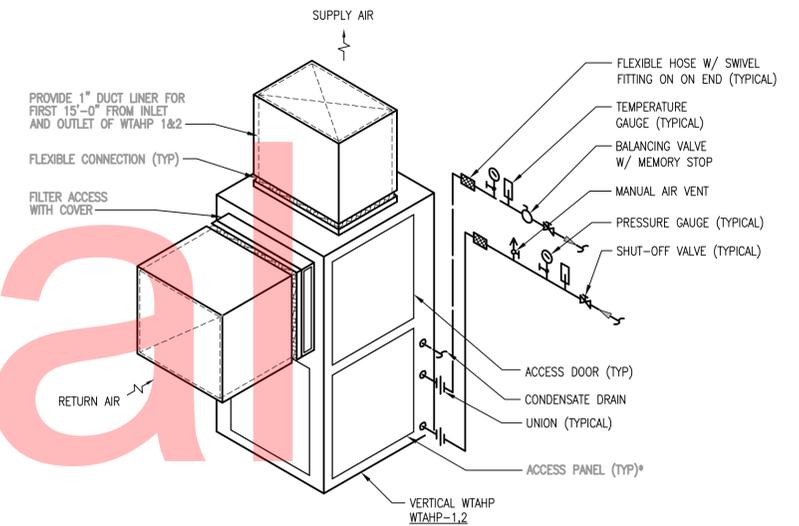
SHEET NO. 38
TOTAL SHTS. 54



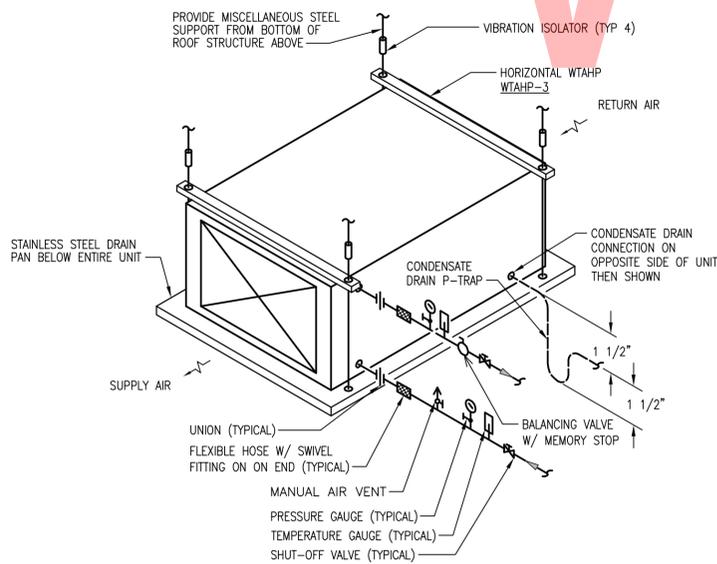
**2 BRANCH AND DIFFUSER INSTALLATION**  
M501 SCALE: NOT TO SCALE



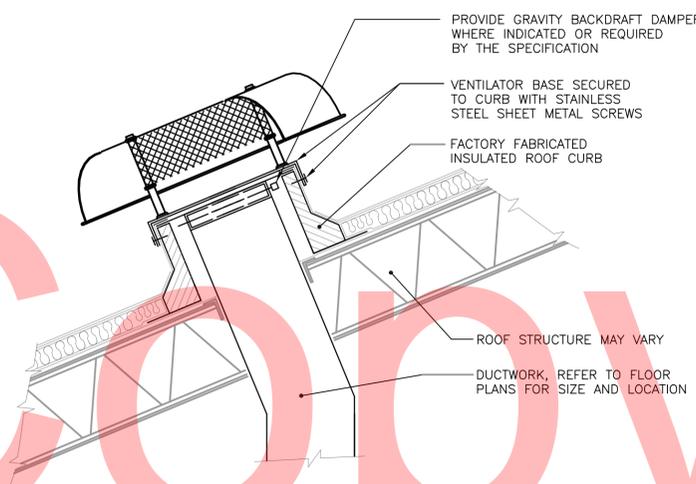
**3 INLINE FAN INSTALLATION**  
M503 SCALE: NTS



**4 VERTICAL WTAHP PIPING CONNECTION**  
M501 SCALE: NOT TO SCALE



**5 HORIZONTAL WTAHP PIPING CONNECTION**  
M501 SCALE: NOT TO SCALE



**6 RELIEF VENTILATOR INSTALLATION**  
M501 SCALE: NOT TO SCALE



ADDENDUMS / REVISIONS

NO.	DATE	DESCRIPTION

MIDDLETOWN CREW QUARTERS AND MAINTENANCE SHOP

CONTRACT	BRIDGE NO.
T201280103	DESIGNED BY: CHB
COUNTY	CHECKED BY: MAS
NEW CASTLE	

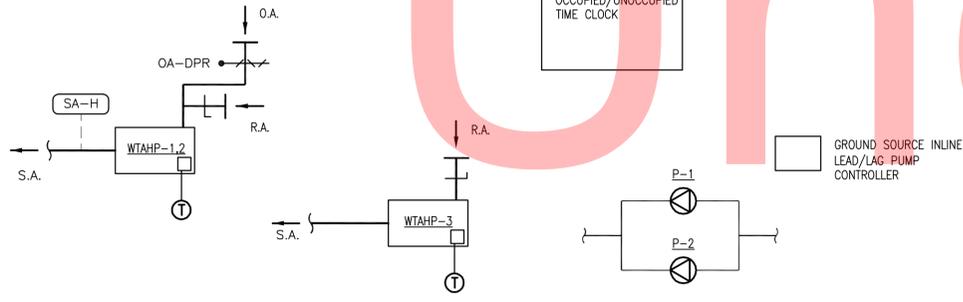
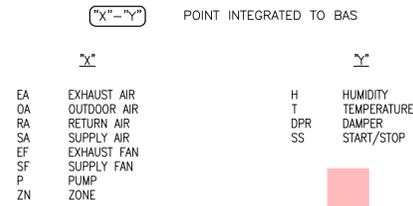
MECHANICAL DETAILS

M-501

SHEET NO.
39
TOTAL SHTS.
54



CONTROLS DESIGNATIONS



WATER TO AIR HEAT PUMPS

WATER TO AIR HEAT PUMP (WTAHP-1, 2, & 3) OPERATION

A. GENERAL

THE INTEGRAL WTAHP CONTROLLER SHALL PROVIDE OCCUPIED HEATING SETPOINT (ADJUSTABLE), OCCUPIED COOLING SETPOINT (ADJUSTABLE), UNOCCUPIED HEATING SETPOINT (ADJUSTABLE), UNOCCUPIED COOLING SETPOINT (ADJUSTABLE), AND OCCUPIED/UNOCCUPIED SCHEDULE (ADJUSTABLE). THE WTAHPS SHALL ONLY ENERGIZE IF FLOW FROM THE INLINE GROUND SOURCE PUMPS HAS BEEN VERIFIED.

B. OCCUPIED MODE

THE TIME CLOCK SHALL INDEX THE WTAHP INTO OCCUPIED MODE BASED UPON THE SEVEN DAY OCCUPIED/UNOCCUPIED SCHEDULE (ADJUSTABLE). THE WTAHP SHALL MODULATE INTERNAL CONTROLLERS THROUGH UNIT CONTROLLER TO MAINTAIN HEATING/COOLING SETPOINT (ADJUSTABLE) AND HUMIDITY SETPOINT DURING COOLING MODE (ADJUSTABLE). UNIT CONTROLLER SHALL ENABLE/DISABLE FAN AND COMPRESSOR OPERATION AND MONITOR ALL EQUIPMENT PROTECTION CONTROLS.

A ROOM TEMPERATURE SENSOR WITH AN LED DISPLAY SHALL BE PROVIDED WITH EACH UNIT. THE LED DISPLAY SHALL SHOW ROOM TEMPERATURE, TEMPERATURE SETPOINT AND HEATING/COOLING MODE AS WELL AS ANY FAULT OR ALARM GENERATED BY THE UNIT. THE UNIT DISPLAY SHALL GIVE THE OPERATOR FULL ABILITY TO CHANGE SETPOINTS AND OCCUPIED/UNOCCUPIED MODES IF NECESSARY.

WTAHP-1 & 2 SHALL BE EQUIPPED WITH A DUCT MOUNTED HUMIDITY SENSOR IN THE DISCHARGE AIR SUPPLY. IF HUMIDITY IS ABOVE SETPOINT (ADJUSTABLE), A SIGNAL FROM THE HUMIDITY SENSOR SHALL MODULATE THE HOT GAS VALVE FOR HOT GAS REHEAT TO MAINTAIN DISCHARGE AIR SETPOINT (ADJUSTABLE).

C. UNOCCUPIED MODE

WHILE IN UNOCCUPIED MODE THE WTAHP SHALL NORMALLY BE DE-ENERGIZED. IF THE WTAHP'S SPACE SENSOR SENSES A SPACE TEMPERATURE ABOVE OR BELOW THE UNOCCUPIED HEATING SETPOINT (ADJUSTABLE) OR UNOCCUPIED COOLING SETPOINT (ADJUSTABLE) THEN THE WTAHP WILL MODULATE INTERNAL CONTROLS TO MAINTAIN THE UNOCCUPIED HEATING/COOLING SETPOINTS (ADJUSTABLE).

D. SAFETIES

THE WTAHP SHALL NOT ENERGIZE THE COMPRESSOR UNTIL INTERNAL CONTROLS SENSE A PROOF OF FLOW THROUGH THE CONDENSER.

OUTDOOR AIR DAMPER (OA-DPR) OPERATION

A. GENERAL

THE OUTDOOR AIR DAMPER (OA-DPR) SHALL BE CONTROLLED BY THE OCCUPIED/UNOCCUPIED TIME CLOCK. THE TIME CLOCK SHALL OPEN THE DAMPER WHENEVER THE BUILDING IS IN OCCUPIED MODE OTHERWISE THE DAMPER WILL BE NORMALLY CLOSED.

GROUND SOURCE INLINE PUMPS (P-1 & 2) OPERATION

A. GENERAL

THE GROUND SOURCE INLINE PUMPS SHALL OPERATE IN A LEAD/LAG CONFIGURATION AND SHALL ENERGIZE WHENEVER ANY HEAT PUMP IS ENERGIZED. THE PUMPS SHALL SWITCH FROM LEAD TO LAG EVERY 168 HOURS OF RUN TIME. UPON A FAILURE OF THE LEAD PUMP, THE LAG SHALL ENERGIZE, AND AN AUDIBLE ALARM SHALL SOUND UNTIL MANUALLY CLEARED.

WATER-TO-AIR HEAT PUMP SCHEDULE

DESIG.	SERVICE	FAN		CONDENSER COIL				HEATING				COOLING				FILTER		DIMENSIONS			BASIS	NOTES													
		CFM	OA CFM	FAN SPEED	ESP (IN. W.G.)	FLUID GPM	MAX WPD (FT. W.G.)	GLYCOL	% GLYCOL	EWT (°F)	LWT (°F)	OAT (°F)	EAT (°F)	LAT (°F)	TOTAL CAPACITY (MBH)	COP	EWT (°F)	LWT (°F)	EAT (°F)	LAT (°F)			TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	EER	TYPE	NO.	THICKNESS (INCHES)	VOLTS/PHASE	MCA	LENGTH (INCHES)	WIDTH (INCHES)	HEIGHT (INCHES)		
WTAHP-1	LOBBY & OFFICES	1,600	500	MED	1.20	15.0	14	PROP.	20	37	31	11.0	51.5	85.0	58	4.4	77	87	80.1	67.0	56.0	55.5	57	42	16.6	MERV 8	2	1	208/3	28.8	26	34	67	FHP EP	1, 2, 3
WTAHP-2	CREW OPERATIONS	1,400	100	MED	1.20	15.0	14	PROP.	20	37	31	11.0	65.8	85.0	29	4.4	77	87	76.9	64.2	56.0	55.5	37	32	16.6	MERV 8	2	1	208/3	28.8	26	34	67	FHP EP	1, 2, 4
WTAHP-3	TEL. RM.	350	N/A	MED	0.50	2.0	3	PROP.	20	37	31	11.0	70.0	85.0	6	3.5	77	87	76.0	63.4	56.0	55.5	8	8	14.6	MERV 8	1	1	208/1	6.7	22	45	20	FHP EP	1, 5

NOTES:

- 1) PROVIDE UNIT WITH FACTORY INSTALLED DISCONNECT.
- 2) PROVIDE MODULATING HOT GAS REHEAT WITH DUCT MOUNTED HUMIDITY SENSOR.
- 3) PROVIDE VERTICAL UNIT WITH LEFT HAND RETURN AIR CONNECTION AS SHOWN ON DRAWING M-401.
- 4) PROVIDE VERTICAL UNIT WITH RIGHT HAND RETURN AIR CONNECTION AS SHOWN ON DRAWING M-401.
- 5) PROVIDE HORIZONTAL UNIT WITH RIGHT HAND RETURN STRAIGHT THROUGH CONFIGURATION AS SHOWN ON DRAWING M-401. UNIT SHALL BE SUSPENDED ABOVE THE DROP ACOUSTICAL CEILING AS SHOWN ON DRAWING M-401.

EXHAUST FAN SCHEDULE

DESIG.	SERVICE	LOCATION	TYPE	CFM	ESP (IN. W.G.)	MOTOR RPM	MOTOR HP	DRIVE	VOLTS/PHASE	APPROX WEIGHT (LBS)	BASIS	NOTES
EF-1	TOILET ROOMS & JAN. CLOS.	MECH/ELECT	IN-LINE	400	0.65	1,725	1/4	BELT	120/1	80	GREENHECK SQ	1

NOTES:

- 1) PROVIDE FACTORY INSTALLED DISCONNECT AND THERMAL OVERLOAD PROTECTOR.
- 2) PROVIDE GREENHECK RELIEF VENTILATION MODEL GRSR SIZE 10, OR APPROVED EQUAL. PERFORMANCE SHALL BE 400 CFM AT 0.10" W.G. PRESSURE DROP.

MISCELLANEOUS EQUIPMENT SCHEDULE

DESIG.	DESCRIPTION	BASIS
AIR SEPARATOR AS-1	1-1/2" THREADED CONNECTIONS, 150 PSIG MAX WORKING PRESSURE, OVERALL SIZE 2.6" DIA. X 9.1" TALL, 30 DESIGN GPM, ASME LABEL	SPIROTHERM VJR
EXPANSION TANK ET-1	HORIZONTAL DIAPHRAGM EXPANSION TANK, 125 PSI MAXIMUM WORKING PRESSURE, 240°F MAXIMUM OPERATING TEMPERATURE, 21.7 GALLON TANK VOLUME, 11.3 GALLON ACCEPTANCE VOLUME, ASME LABEL	BELL AND GOSSETT

UNIT HEATER SCHEDULE

DESIG.	SERVICE	TYPE	CFM	HEATING CAPACITY		ELECTRICAL		BASIS	NOTES
				KW	BTU/H	VOLTS/PHASE	TOTAL AMPS		
UH-1	MECH/ELECT.	CEILING	65	0.75	2,560	120/1	6.3	BERKO QCH	1

NOTES:

- 1) PROVIDE SURFACE MOUNTED HEATER WITH FACTORY INSTALLED DISCONNECT.

PUMP SCHEDULE

DESIG.	SERVICE	TYPE	GPM	FLUID PD (FT. W.G.)	MOTOR RPM	MOTOR HP	VOLTS/PHASE	BASIS	NOTES
P-1	WTAHP-1,2,3	IN-LINE	32	50	1750	1 1/2	208/3	BELL & GOSSETT 90	1
P-2	WTAHP-1,2,3	IN-LINE	32	50	1750	1 1/2	208/3	BELL & GOSSETT 90	1

NOTES:

- 1) PROVIDE FACTORY INSTALLED THERMAL OVERLOAD PROTECTOR.

AIR DEVICE SCHEDULE

DESIG.	DUTY	FACE SIZE	NECK SIZE	MAX. CFM	BLOW	BASIS	NOTES
A	SUPPLY	24" x 24"	6" DIA.	78	4-WAY	TITUS TMSA	1, 2
B	SUPPLY	24" x 24"	6" DIA.	137	4-WAY	TITUS TMSA	1
C	SUPPLY	24" x 24"	8" DIA.	209	4-WAY	TITUS TMSA	1, 2
D	SUPPLY	24" x 24"	8" DIA.	279	4-WAY	TITUS TMSA	1
E	SUPPLY	24" x 24"	10" DIA.	382	4-WAY	TITUS TMSA	1
F	SUPPLY	8" x 8"	6" x 6"	57	-	TITUS 111RL	1
G	SUPPLY	20" x 8"	18" x 6"	252	-	TITUS 111RL	1
H	SUPPLY	20" x 8"	18" x 6"	315	-	TITUS 111RL	1
J	RETURN	24" x 24"	10" x 10"	327	-	TITUS PAR	1
K	RETURN	24" x 24"	10" x 10"	417	-	TITUS PAR	1
L	RETURN	24" x 24"	12" x 12"	500	-	TITUS PAR	1
M	RETURN	24" x 24"	22" x 22"	471	-	TITUS 23RL	1
N	RETURN	24" x 24"	22" x 22"	942	-	TITUS 23RL	1
P	EXHAUST	8" x 8"	6" x 6"	57	-	TITUS 23RL	1, 2
Q	EXHAUST	24" x 24"	6" x 6"	75	-	TITUS PAR	1, 2
R	EXHAUST	24" x 24"	10" x 10"	208	-	TITUS PAR	1, 2

NOTES:

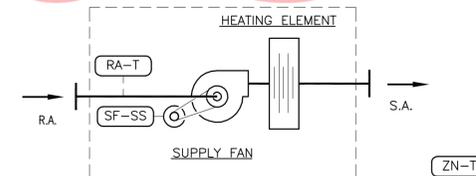
- 1) PROVIDE NECK MOUNTED OPPOSED BLADE DAMPER.
- 2) PROVIDE ALUMINUM CONSTRUCTION FOR AIR DEVICES IN MEN'S ROOM, WOMEN'S ROOM, & JAN. CLOS.



EXHAUST FAN EF-1

A. GENERAL

THE CONSTANT VOLUME EXHAUST FAN (EF-1) SHALL BE ENERGIZED WITH THE WATER TO AIR HEAT PUMPS (WTAHP) DURING OCCUPIED MODE ONLY.



CEILING MOUNTED UNIT HEATER UH-1

A. CEILING MOUNTED UNIT HEATERS

THE CONSTANT VOLUME CEILING MOUNTED UNIT HEATER (UH-1) HAS A CONSTANT VOLUME FAN AND AN ELECTRIC HEATING ELEMENT. WHEN THE HEATING SPACE TEMPERATURE IS BELOW 65°F (ADJUSTABLE), THE UNIT HEATER FAN SHALL RUN ONCE THE HEATING ELEMENT REACHES OPERATING TEMPERATURE. THE SPACE TEMPERATURE SHALL BE MONITORED BY A SPACE THERMOSTAT.

ADDENDUMS / REVISIONS

NO.	DESCRIPTION

MIDDLETOWN CREW QUARTERS AND MAINTENANCE SHOP

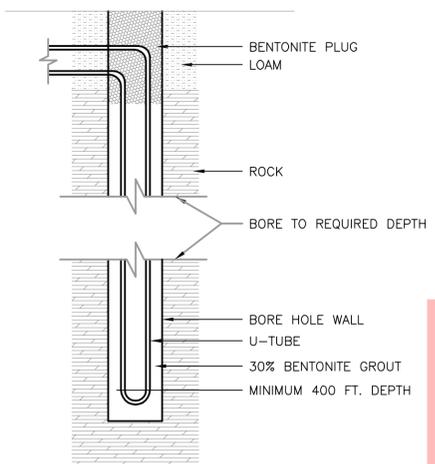
CONTRACT	BRIDGE NO.
T201280103	DESIGNED BY: CHB
COUNTY	CHECKED BY: MAS
NEW CASTLE	

MECHANICAL SCHEDULES AND CONTROLS

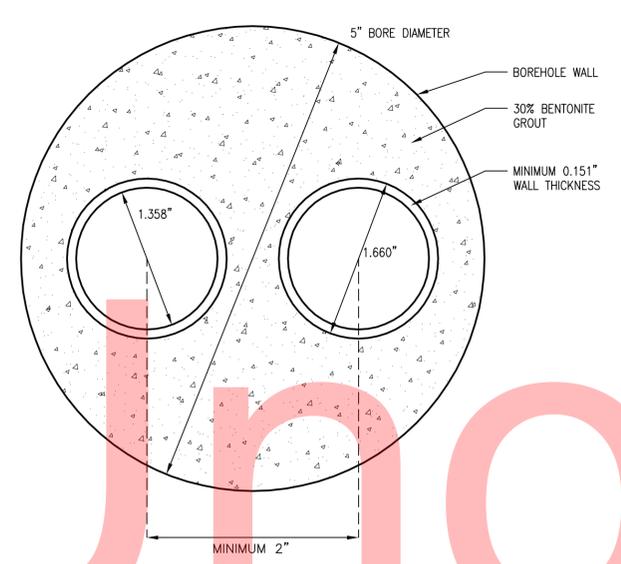
SHEET NO.	40
TOTAL SHTS.	54

M-601

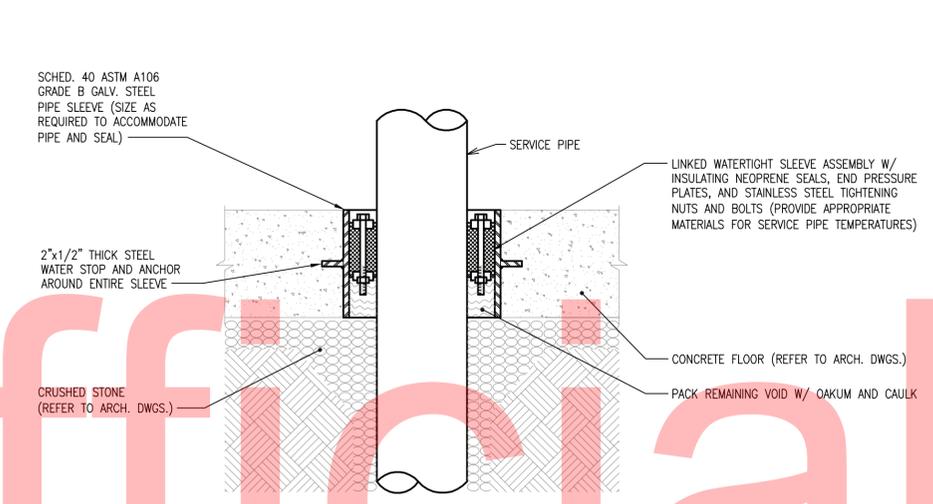
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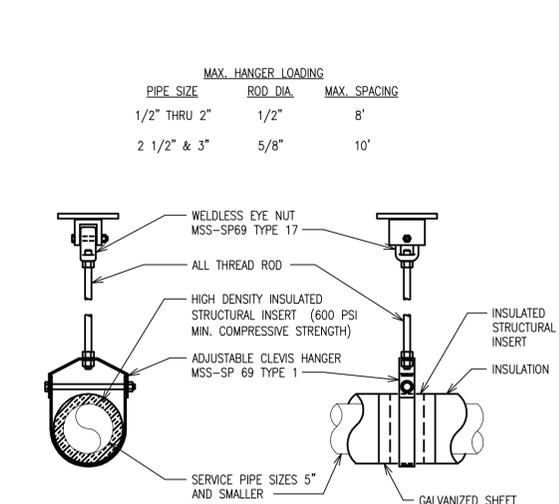
1 TYPICAL GEOTHERMAL WELL PIPING  
M701 SCALE: NOT TO SCALE



2 TYPICAL GEOTHERMAL WELL PIPING SECTION  
M701 SCALE: NOT TO SCALE

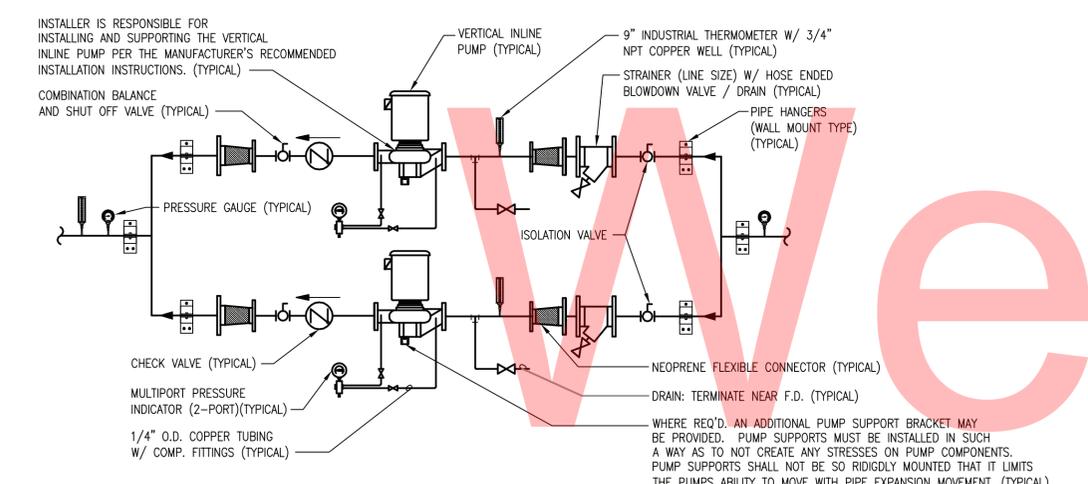


3 TYPICAL PIPE PENETRATION THROUGH GRADE FLOOR  
M701 SCALE: NOT TO SCALE

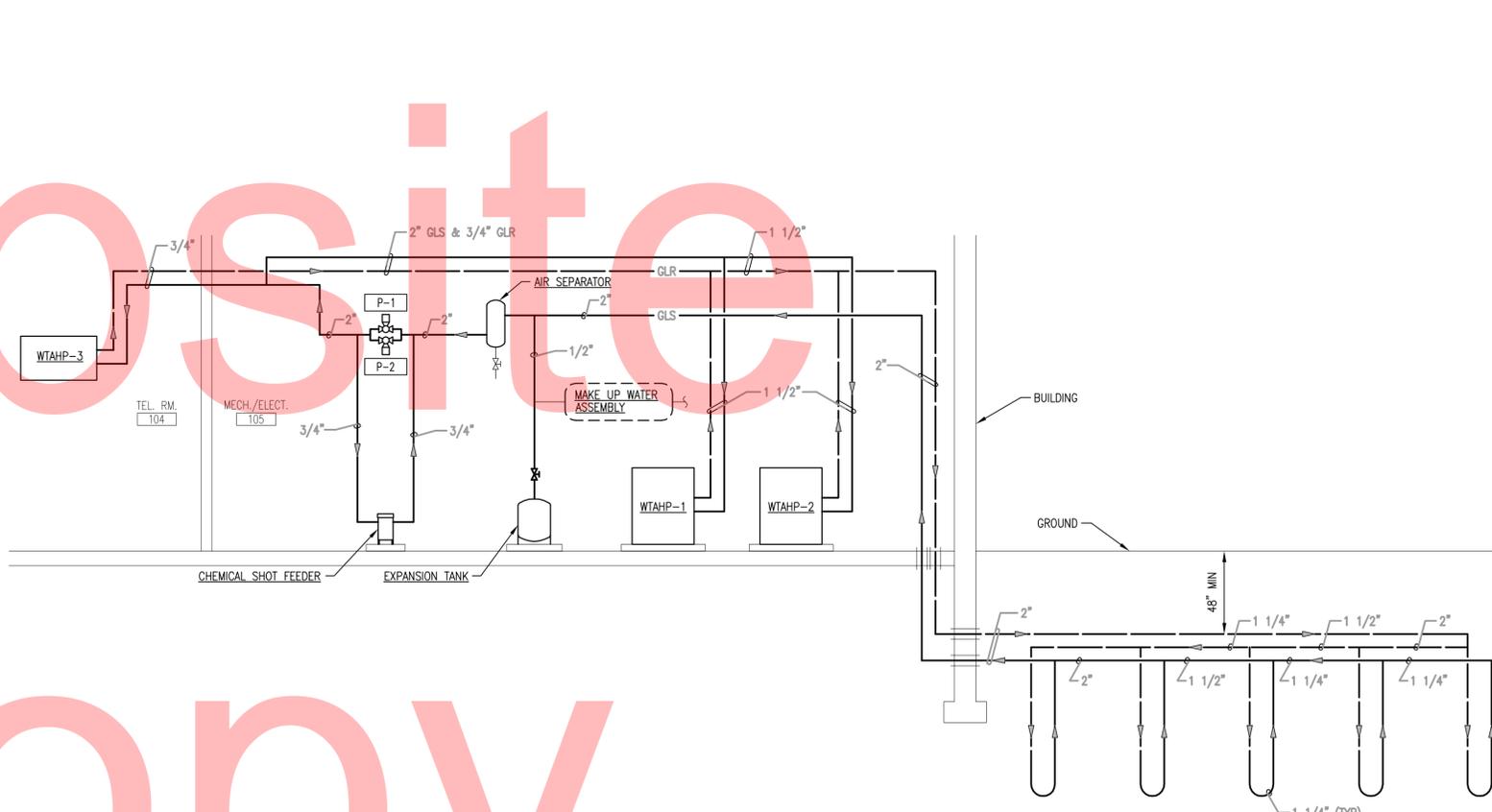


NOTES:  
1. THIS DETAIL SHALL BE USED AS A GUIDE. ALL HANGERS SHALL MEET THE REQUIREMENTS OF SPECIFICATIONS SECTION 15-145 - 'HANGERS AND SUPPORTS'.

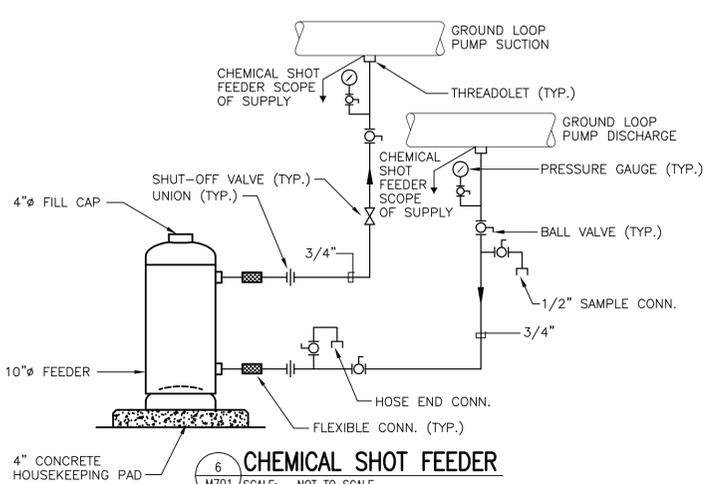
4 HANGER SUPPORT  
M701 SCALE: NOT TO SCALE



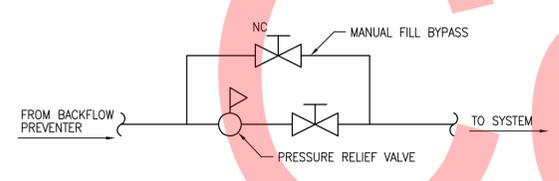
5 IN-LINE PUMP INSTALLATION  
M701 SCALE: NOT TO SCALE



6 MECHANICAL GROUND SOURCE PIPING SCHEMATIC  
M701 SCALE: NOT TO SCALE



7 CHEMICAL SHOT FEEDER  
M701 SCALE: NOT TO SCALE



8 SYSTEM MAKE-UP  
M701 SCALE: NONE



M-701

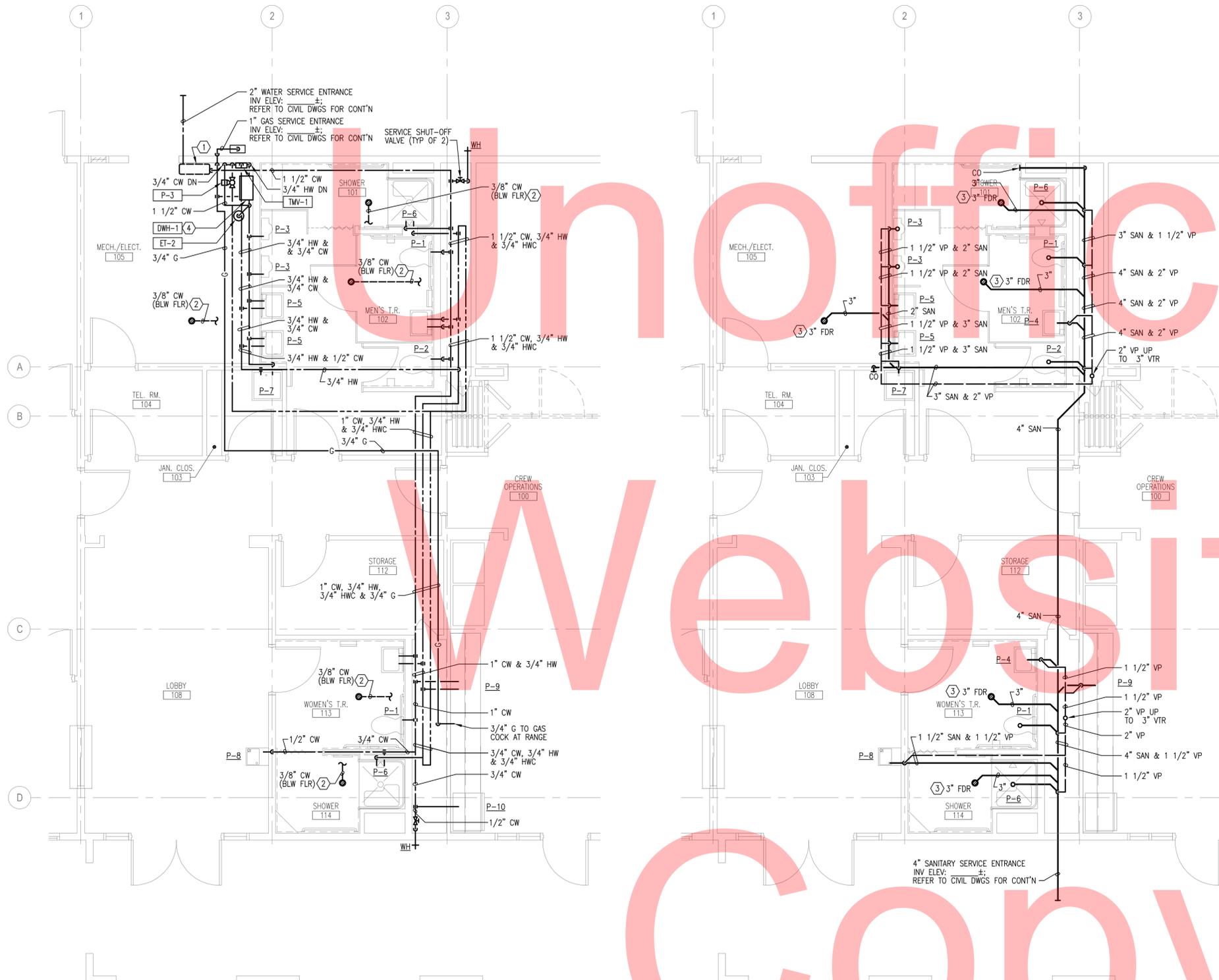
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**GENERAL SHEET NOTES:**

1. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
2. UNLESS OTHERWISE NOTED, MECHANICAL/PLUMBING ITEMS SHOWN HEAVY SOLID (——) SHALL BE NEW WORK AND MECHANICAL/PLUMBING ITEMS SHOWN LIGHT SOLID (——) SHALL BE EXISTING.
3. DO NOT LOCATE DUCTWORK OR PIPING ABOVE ELECTRICAL PANELS OR EQUIPMENT.

**SHEET KEYNOTES:**

- ① BACKFLOW PREVENTER ASSEMBLY. REFER TO SHEET P-501 FOR INSTALLATION DETAIL.
- ② 3/8" TRAP PRIMING LINE TO FLOOR DRAIN. REFER TO SHEET P-501 FOR TRAP PRIMING DETAIL.
- ③ REFER TO DOMESTIC PLUMBING FLOOR PLAN FOR TRAP PRIMING PIPING.
- ④ TANKLESS DOMESTIC WATER HEATER; ROUTE CONDENSATE DRAIN TO NEAREST FLOOR DRAIN. REFER TO MECHANICAL PLANS FOR FLUE ROUTING.



1 DOMESTIC PLUMBING FLOOR PLAN  
P101 SCALE: 1/4" = 1'-0"

2 SANITARY PLUMBING FLOOR PLAN  
P101 SCALE: 1/4" = 1'-0"



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ADDENDUMS / REVISIONS	

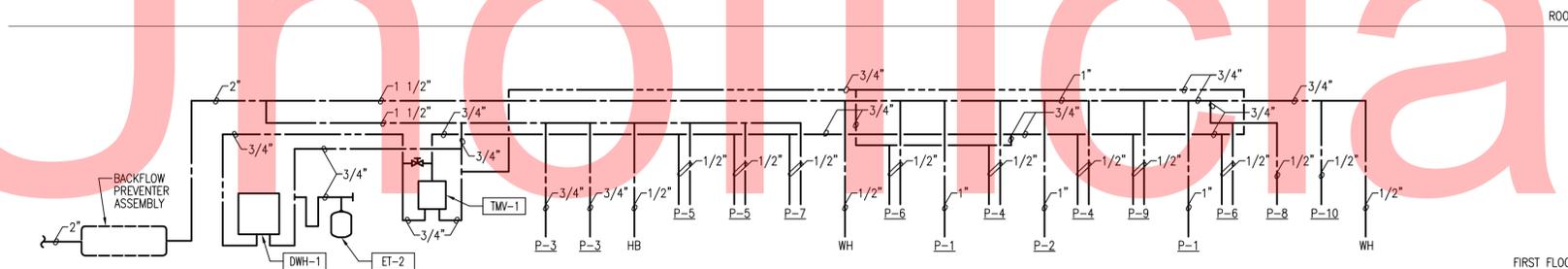
CONTRACT	BRIDGE NO.
T201280103	
COUNTY	DESIGNED BY: CHB
NEW CASTLE	CHECKED BY: MAS

**GENERAL SHEET NOTES:**

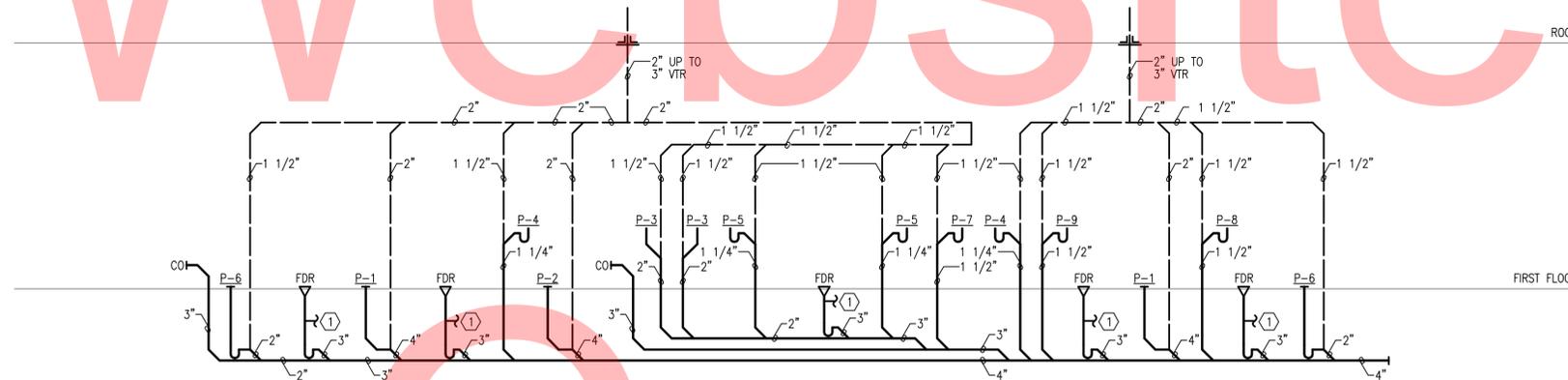
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2. UNLESS OTHERWISE NOTED, MECHANICAL/PLUMBING ITEMS SHOWN HEAVY SOLID (——) SHALL BE NEW WORK AND MECHANICAL/PLUMBING ITEMS SHOWN LIGHT SOLID (---) SHALL BE EXISTING.
3. DO NOT LOCATE DUCTWORK OR PIPING ABOVE ELECTRICAL PANELS OR EQUIPMENT.

**SHEET KEYNOTES:**

- ① 3/8" TRAP PRIMING LINE TO FLOOR DRAIN. REFER TO SHEET P-501 FOR TRAP PRIMING DETAIL.



**1 DOMESTIC WATER RISER DIAGRAM**  
P201 SCALE: NOT TO SCALE



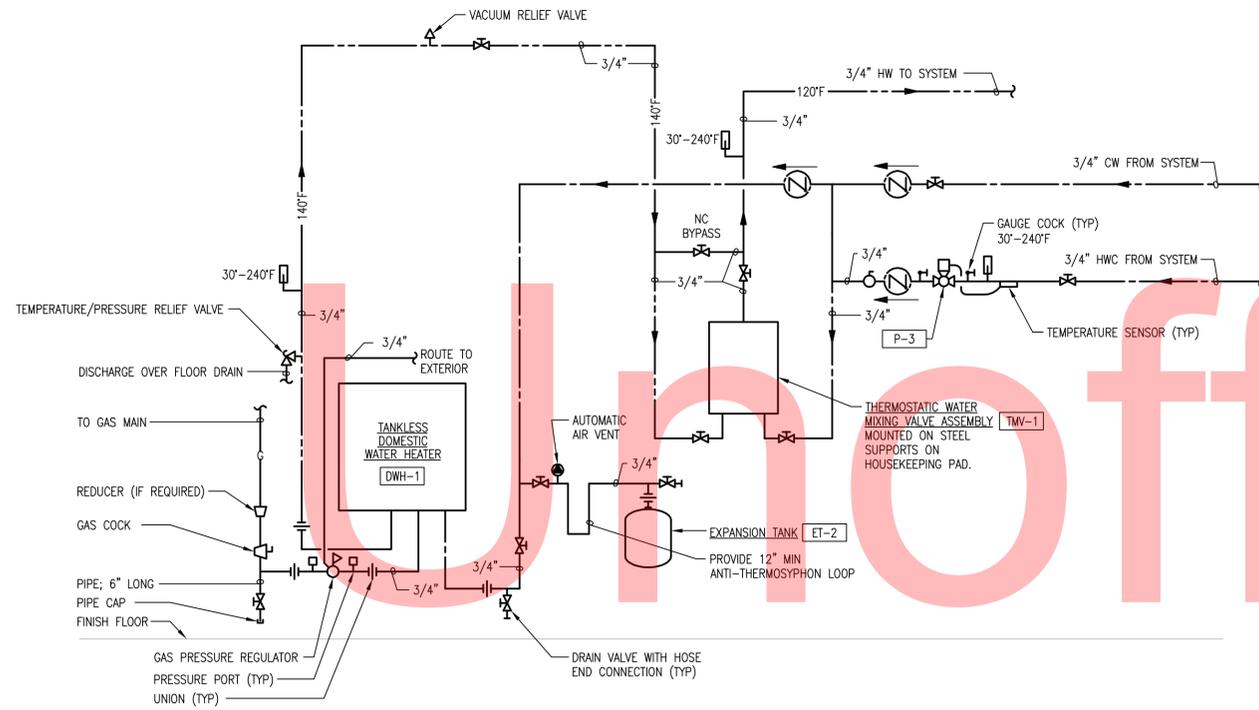
**2 SANITARY RISER DIAGRAM**  
P201 SCALE: NOT TO SCALE



P-201

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<p>DELAWARE DEPARTMENT OF TRANSPORTATION</p>	ADDENDUMS / REVISIONS		<p><b>MIDDLETOWN CREW QUARTERS AND MAINTENANCE SHOP</b></p>	CONTRACT	BRIDGE NO.	<p>PLUMBING RISER DIAGRAMS</p>	SHEET NO.
				T201280103	DESIGNED BY: CHB		43
				COUNTY	CHECKED BY: MAS		TOTAL SHTS.
				NEW CASTLE			54



1 DOMESTIC HOT WATER SYSTEM  
P501 SCALE: NOT TO SCALE

DOMESTIC WATER HEATER SCHEDULE												
DESIG.	LOCATION	BURNER		ELECTRIC		WATER			WEIGHT (LBS)	BASIS	NOTES	
		MIN INPUT (MBH)	MAX INPUT (MBH)	WATTS	VOLTS/PHASE	GPM (100°F RISE)	MIN ACTIVATION GPM	MIN GPM				MAX GPM
DHW-1	MECH./ELECT.	9.5	199.0	80	120/1	3.8	0.4	0.26	9.8	70.5	RINNAI	1

NOTES:  
1) PROVIDE TANKLESS, CONDENSING DOMESTIC WATER HEATER.

MISCELLANEOUS EQUIPMENT SCHEDULE		
DESIG.	DESCRIPTION	BASIS
EXPANSION TANK ET-2	VERTICAL POTABLE WATER DIAPHRAGM EXPANSION TANK, 150 PSI MAXIMUM WORKING PRESSURE, 200°F MAXIMUM OPERATING TEMPERATURE, 2 GALLON TANK VOLUME, 0.9 GALLON ACCEPTANCE VOLUME, ASME LABEL	BELL AND GOSSETT PTA
THERMOSTATIC MIXING VALVE TMV-1	MULTI-VALVE ASSEMBLY, 0.5 GPM MINIMUM FLOW, 20 GPM @ 10 PSI PD, BOTTOM INLETS AND TOP OUTLET	POWERS SERIES MM30

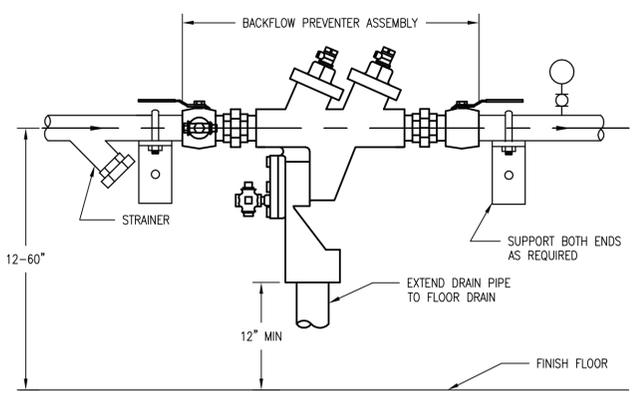
PUMP SCHEDULE									
DESIG.	SERVICE	TYPE	GPM	FLUID PD (FT. W.G.)	MOTOR RPM	MOTOR WATTS	VOLTS/PHASE	BASIS	NOTES
P-3	HW CIRCULATOR	IN-LINE	5	10	2800	39	120/1	BELL & GOSSETT NBF	1

NOTES:  
1) PROVIDE FACTORY INSTALLED THERMAL OVERLOAD PROTECTOR.

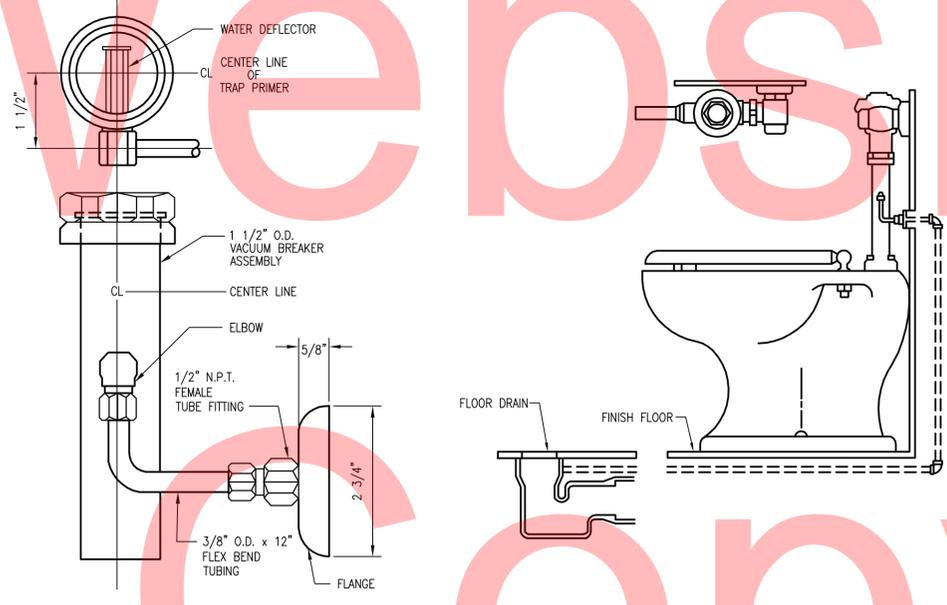
PLUMBING FIXTURE SCHEDULE						
DESIG.	TYPE OF FIXTURE	CW	HW	SAN	BASIS OF DESIGN	NOTES
P-1	WATER CLOSET (ADA)	1"	-	4"	AMERICAN STANDARD MADERA	1, 11
P-2	WATER CLOSET	1"	-	4"	AMERICAN STANDARD MADERA	2, 11
P-3	URINAL	3/4"	-	2"	AMERICAN STANDARD ALLBROOK	3, 11
P-4	LAVATORY (ADA)	1/2"	1/2"	1 1/4"	AMERICAN STANDARD LUCERNE	4, 11
P-5	LAVATORY	1/2"	1/2"	1 1/4"	AMERICAN STANDARD LUCERNE	5, 11
P-6	SHOWER (ADA)	1/2"	1/2"	2"	AQUA-BATH CARE SERIES	6, 11
P-7	SERVICE SINK	1/2"	1/2"	1 1/2"	KOHLER BANNON	7, 11
P-8	WATER DISPENSER	1/2"	-	1 1/2"	COOLERSMART	8, 11
P-9	COUNTERTOP SINK	1/2"	1/2"	1 1/2"	ELKAY LUSTERTONE	9, 11
P-10	ICE MACHINE	1/2"	-	-	MANITOWOC	10, 11

- NOTES:
- PROVIDE AMERICAN STANDARD MODEL 3043.001 MADERA, ADA, ELONGATED FLUSH VALVE TOILET WITH HEAVY DUTY SEAT MODEL 5905.100 AND SLOAN ROYAL FLUSH VALVE MODEL 111-1.28, OR APPROVED EQUAL.
  - PROVIDE AMERICAN STANDARD MODEL 2234.001 MADERA, ELONGATED FLUSH VALVE TOILET WITH HEAVY DUTY SEAT MODEL 5905.100 AND SLOAN ROYAL FLUSH VALVE MODEL 111-1.28, OR APPROVED EQUAL.
  - PROVIDE AMERICAN STANDARD MODEL 6550.005 ALLBROOK URINAL WITH SLOAN ROYAL FLUSH VALVE MODEL 188-0.5, OR APPROVED EQUAL.
  - PROVIDE AMERICAN STANDARD MODEL 0355.012 LUCERNE, ADA, WALL MOUNTED LAVATORY WITH SPEAKERMEN MODEL SC-3072-LD-80 COMMANDER, 4" CENTERSET, LEVER HANDLE FAUCET, OR APPROVED EQUAL. PROVIDE FLOOR MOUNTED CARRIER WITH CONCEALED ARMS.
  - PROVIDE AMERICAN STANDARD MODEL 0355.012 LUCERNE, ADA, WALL MOUNTED LAVATORY WITH SPEAKERMEN MODEL SC-3076-LD-80 COMMANDER, ADA, 4" CENTERSET, 6" WRIST BLADE HANDLE FAUCET, OR APPROVED EQUAL. PROVIDE FLOOR MOUNTED CARRIER WITH CONCEALED ARMS.
  - PROVIDE AQUA-BATH MODEL C4136BF-FUS 2"-R SHOWER MODULE, ADA, ONE PIECE MOLDED CONSTRUCTION, ACRYLIC WITH STAINLESS STEEL GRAB BAR, CURTAIN ROD, CURTAIN, AND HOOKS. PROVIDE SPEAKERMEN MODEL VS-1970-AF VERSATILE SHOWER COMBINATION MOUNTED TO ADA GUIDELINES.
  - PROVIDE KOHLER MODEL K-6714 BANNON SERVICE SINK WITH SPEAKERMEN MODEL SC-5811-RCP COMMANDER, 8" CENTERSET, FOUR-ARM HANDLE FAUCET, OR APPROVED EQUAL. PROVIDE HEAVY DUTY, FLOOR MOUNTED CARRIER WITH OFFSET ARMS.
  - PROVIDE COOLERSMART WATER PURIFICATION SYSTEM WITH HOT AND COLD FAUCETS.
  - PROVIDE ELKAY MODEL LR2219 LUSTERTONE COUNTERTOP SINK WITH SPEAKERMEN MODEL SC-5724-SW COMMANDER, ADA, 8" CENTERSET, DECK MOUNTED FAUCET WITH 4" WRIST BLADE HANDLES, OR APPROVED EQUAL. SINK SHALL BE MOUNTED ON COUNTER.
  - PROVIDE MANITOWOC MODEL QD-0212A AIR COOLED ICE CUBE MACHINE, PRODUCES 215 LBS./24 HOURS, 80 LBS. STORAGE CAPACITY, OR APPROVED EQUAL.
  - SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS INCLUDING DRAINS, DRAIN CONNECTIONS, SUPPLIES.

PLUMBING FIXTURES									
DESIG.	TYPE	SERVICE	QTY.	FIXTURE UNITS (WSFU)			TOTAL WSFU	DRAINAGE FIXTURE UNITS (DFU)	TOTAL DFU
				COLD	HOT	TOTAL			
P-1	WATER CLOSET (ADA)	TOILET ROOMS	2	10.0	-	10.0	20.0	4.0	8.0
P-2	WATER CLOSET	TOILET ROOMS	1	10.0	-	10.0	10.0	4.0	4.0
P-3	URINAL	TOILET ROOMS	2	5.0	-	5.0	10.0	2.0	4.0
P-4	LAVATORY (ADA)	TOILET ROOMS	2	1.5	1.5	2.0	4.0	1.0	2.0
P-5	LAVATORY	TOILET ROOMS	2	1.5	1.5	2.0	4.0	1.0	2.0
P-6	SHOWER (ADA)	SHOWER ROOMS	2	3.0	3.0	4.0	8.0	2.0	4.0
P-7	SERVICE SINK	JANITOR'S CLOSET	1	2.25	2.25	3.0	3.0	2.0	2.0
P-8	WATER DISPENSER	LOBBY	1	0.25	-	0.25	0.3	0.5	0.5
P-9	COUNTERTOP SINK	CREW OPERATIONS	1	1.0	1.0	1.4	1.4	2.0	2.0
P-10	ICE MACHINE	CREW OPERATIONS	1	0.5	-	0.5	0.5	-	-
HB	HOSE BIBB	MECH/ELECT	1	2.5	-	2.5	2.5	-	-
WH	WALL HYDRANT	EXTERIOR	2	2.5	-	2.5	5.0	-	-
FD	FLOOR DRAIN	TOILET RMS, MECH/ELECT	5	-	-	-	-	2.0	10.0
							TOTAL WSFU	68.7	
							TOTAL DEMAND (GPM)	57.5	
							TOTAL DFU		38.5



2 BACKFLOW PREVENTER  
P501 SCALE: NOT TO SCALE

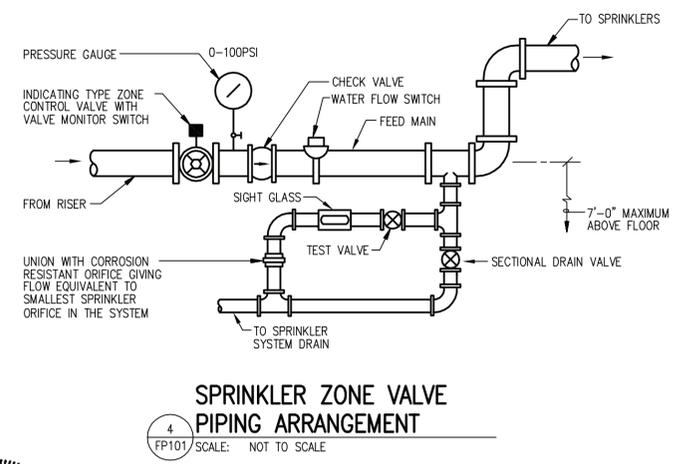
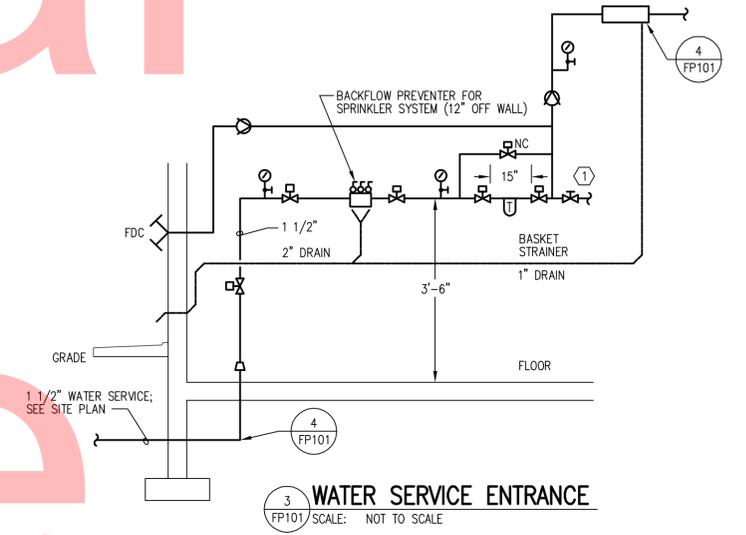
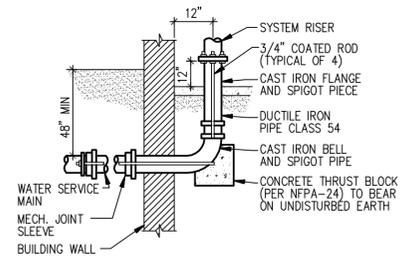
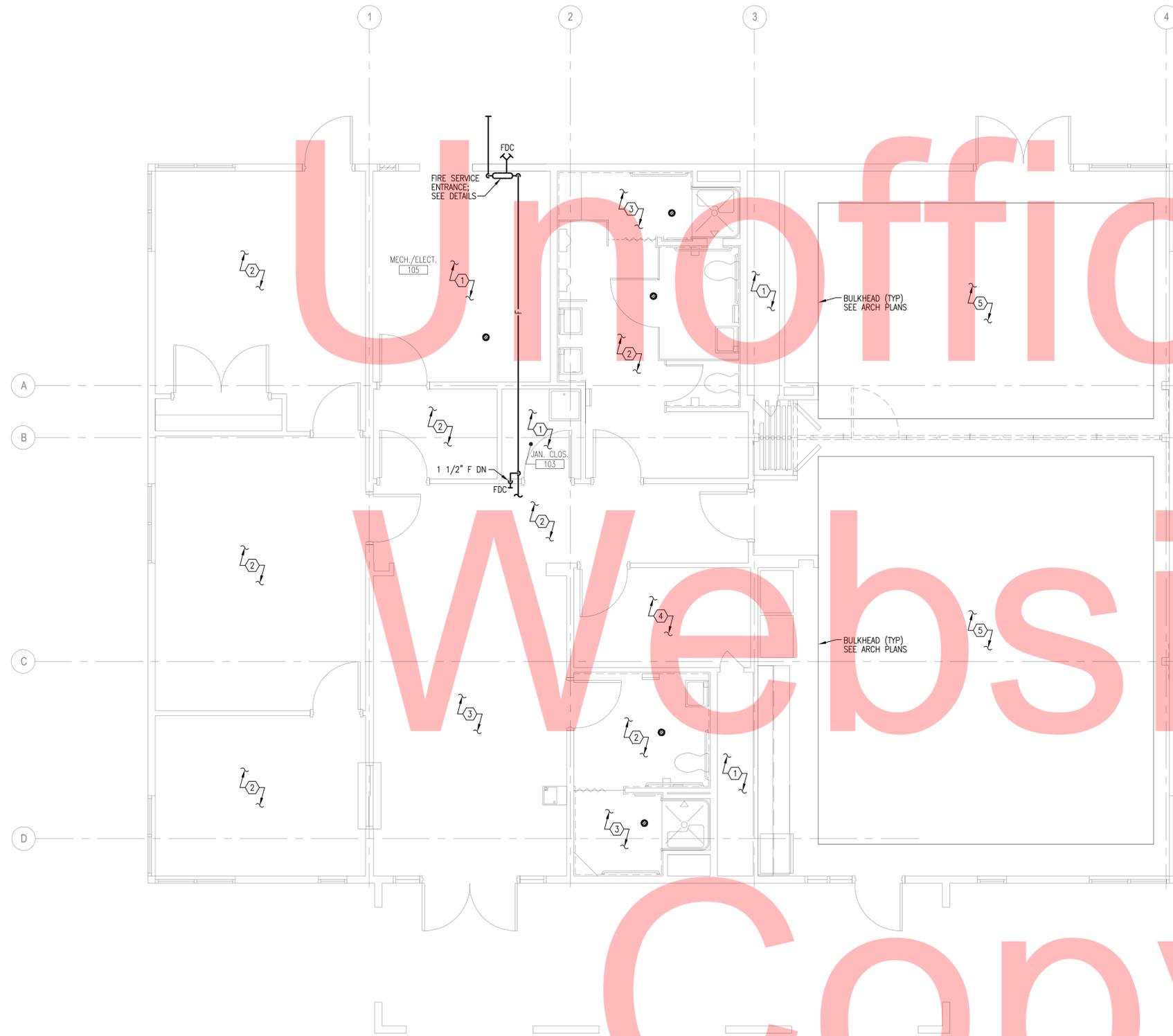


3 TRAP PRIMER  
P501 SCALE: NOT TO SCALE



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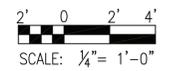
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  3. DO NOT LOCATE DUCTWORK OR PIPING ABOVE ELECTRICAL PANELS OR EQUIPMENT.

- SHEET KEYNOTES:**
1. PROVIDE UPRIGHT SPRINKLER HEADS WITHIN AREA. SPRINKLER PIPING MAY RUN WITHIN SPACE. SIZE, LOCATE AND INSTALL SYSTEM PER SITE AND NFPA 13.R REQUIREMENTS.
  2. PROVIDE SEMI-RECESSED SPRINKLER HEADS CENTERED IN ACOUSTICAL TILES WITHIN AREA AND ASSOCIATED SPACES. SIZE, LOCATE AND INSTALL SYSTEM PER SITE AND NFPA 13.R REQUIREMENTS.
  3. PROVIDE SEMI-RECESSED SPRINKLER HEADS IN GYPSUM BOARD CEILING WITHIN AREA. SIZE, LOCATE AND INSTALL SYSTEM PER SITE AND NFPA 13.R REQUIREMENTS.
  4. PROVIDE SIDE-WALL MOUNTED SPRINKLER HEADS IN WALLS WITHIN AREA. SIZE, LOCATE AND INSTALL SYSTEM PER SITE AND NFPA 13.R REQUIREMENTS.
  5. PROVIDE SIDE-WALL AND/OR SEMI-RECESSED SPRINKLER HEADS IN BULKHEAD WITHIN AREA AS REQUIRED TO COMPLY WITH NFPA 13.R. SPRINKLER PIPING SHALL BE INSTALLED IN BULKHEAD.

1 FIRE PROTECTION FIRST FLOOR PLAN  
 FP101 SCALE: 1/4" = 1'-0"



FP-101

<p>DELAWARE DEPARTMENT OF TRANSPORTATION</p>	ADDENDUMS / REVISIONS		<p>MIDDLETOWN CREW QUARTERS AND MAINTENANCE SHOP</p>	CONTRACT	BRIDGE NO.	<p>FIRE PROTECTION FIRST FLOOR PLAN AND DETAILS</p>	SHEET NO.
				T201280103	DESIGNED BY: AFR		45
				COUNTY	CHECKED BY: MAS		TOTAL SHTS.
				NEW CASTLE			54

**SYMBOL LEGEND**

SYMBOL	DESCRIPTION	MOUNTING HEIGHT
	208/120V PANELBOARD, SURFACE MOUNTED	78" TO TOP
	CONTROL PANEL/CABINET, SURFACE MOUNTED	78" TO TOP
	CONTROL PANEL/CABINET, FLUSH MOUNTED	78" TO TOP
	POWER TRANSFORMER, WITH GROUND	= =
	SYSTEM GROUND OR EQUIPMENT GROUND	= =
	NON-FUSED DISCONNECT SWITCH, SIZE AS INDICATED WHERE: "AF" - INDICATES AMPERE SWITCH SIZE "NF" - DENOTES NON-FUSED "P" - DENOTES POLE "3R" - DENOTES NEMA TYPE ENCLOSURE	60" TO TOP
	FUSED DISCONNECT SWITCH, SIZE AS INDICATED WHERE: "AF" - INDICATES AMPERE SWITCH SIZE "AT" - INDICATES AMPERE FUSE SIZE "P" - DENOTES POLE "3R" - DENOTES NEMA TYPE ENCLOSURE	60" TO TOP
	COMBINATION MOTOR STARTER AND DISCONNECT SWITCH. SEE SCHEDULE ON SHEET EE-302.	60" TO TOP
	CIRCUIT BREAKER ATTRIBUTES: AF = FRAME SIZE AT = TRIP SIZE 3P = QTY. OF POLES L2 = MISC. INFO. LSGI = LONG, SHORT TIME, INSTANTANEOUS, GROUND FAULT TRIP FUNCTIONS	= =
	MANUAL MOTOR STARTER WITH MOTOR OVERLOAD PROTECTION	= =
	MOTOR TERMINATION	= =
	125 VOLT, 2 POLE, 3 WIRE, 20 AMP DUPLEX RECEPTACLE. "2" DENOTES CIRCUIT NUMBER. "WP" DENOTES WEATHER PROOF.	18" AFF
	125 VOLT, 2 POLE, 3 WIRE, 20 AMP DUPLEX RECEPTACLE MOUNTED 6" ABOVE COUNTERTOP OR AS NOTED	6" ABOVE COUNTER
	125 VOLT, 2 POLE, 3 WIRE, 20 AMP DOUBLE DUPLEX RECEPTACLE	18" AFF
	125 VOLT, 2 POLE, 3 WIRE, 20 AMP DUPLEX RECEPTACLE EQUIPPED WITH INTEGRAL GROUND FAULT INTERRUPTER.	18" AFF
	SWITCH, TOGGLE "b" DENOTES SWITCH CONTROL "D" DENOTES DIMMABLE "3" DENOTES THREE POLE SWITCH "4" DENOTES FOUR POLE SWITCH "OS" DENOTES OCCUPANCY SENSOR	48" AFF
	DATA OUTLET	18" AFF
	COMBINATION PHONE/DATA OUTLET	18" AFF
	EMERGENCY LIGHT FIXTURE	= =
	SMOKE DETECTOR	= =
	FIRE ALARM PULL STATION	4' AFF TO TOP
	FIRE ALARM NOTIFICATION DEVICE, COMBINATION HORN/FLASHING LIGHT "15cd" DENOTES CANDELLA RATING	6'-8" AFF TO CENTER
	FIRE ALARM NOTIFICATION DEVICE, FLASHING LIGHT "15cd" DENOTES CANDELLA RATING	6'-8" AFF TO CENTER
	CATV SYSTEM OUTLET	84" AFF
	2x2 LAY IN FIXTURE	= =
	48" SURFACE MOUNT STRIP LIGHT	= =
	EMERGENCY LIGHTING UNIT	= =
	WALL-MOUNT FIXTURE	= =
	REMOTE EMERGENCY LIGHTING UNIT	= =
	SINGLE FACE WALL MOUNT EXIT SIGN	= =
	DOUBLE FACE CEILING MOUNT EXIT SIGN	= =
	FIRE ALARM BELL	7' AFG
	ALARM CHECK	= =
	WATER FLOW/PRESSURE SWITCH	= =
	VALVE TAMPER SUPERVISORY SWITCH	= =

**ELECTRICAL CONVENTIONS**

SYMBOL	DESCRIPTION
	HOMERUN TO PANEL "LP2A", CIRCUITS #1,3,5 (VIA 20A-1P C/B'S). PROVIDE INSULATED GROUND CONDUCTOR IN ACCORDANCE WITH SPECIFICATIONS. NUMBER OF CIRCUITS INDICATED BY QUANTITY OF ARROW HEADS.
	HASH MARKS INDICATE QUANTITY OF #12 AWG COPPER CONDUCTORS IN CONDUIT. WHEN NO HASH MARKS ARE INDICATED, CONDUIT SHALL CONTAIN (2) #12 WIRES AND #12 GROUND WIRE, UNO. ASSUME 3/4" DIAMETER CONDUIT, UNO. EXAMPLE SHOWN AT LEFT INDICATES 2 HOT, 2 NEUTRAL (LONG LINES), AND 1 GROUND WIRES.
	CONCEALED CONDUIT AND/OR WIRING.
	OVERHEAD TELECOMMUNICATION CONDUIT AND/OR WIRING
	UNDERGROUND TELECOMMUNICATION CONDUIT AND/OR WIRING
	OVERHEAD ELECTRICAL POWER CONDUIT AND/OR WIRING
	UNDERGROUND ELECTRICAL POWER CONDUIT AND/OR WIRING
	DETAIL REFERENCE "#" DENOTES DETAIL NUMBER "SHT" DENOTES SHEET NUMBER
	ELEVATION OR SECTION IDENTIFIER "X" DENOTES ELEVATION OR SECTION NUMBER "#" DENOTES SHEET NUMBER
	SHEET KEYNOTE NUMBER
	REVISION NUMBER
	<b>LIGHTING</b> CIRCUIT NUMBER LUMINAIRE TYPE - SEE LUMINAIRE SCHEDULE CONTROL POINT DESIGNATION

**ABBREVIATIONS**

A	AMPERES
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ARCH	ARCHITECT
ATS	AUTOMATIC TRANSFER SWITCH
ATC	AUTOMATIC TEMPERATURE CONTROL
AWG	AMERICAN WIRE GAUGE
BFG	BELOW FINISH GRADE
BLDG	BUILDING
C	CONDUIT
CAT	CATALOG
CB	CIRCUIT BREAKER
CBM	CERTIFIED BALLAST MANUFACTURERS
CKT	CIRCUIT
CL	CENTERLINE
CLF	CURRENT LIMITING FUSE
COL	COLUMN
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
DACT	DIGITAL ALARM COMMUNICATOR TRANSMITTER
DWG	DRAWING
DS	DISCONNECT SWITCH
DVIS	DOOR VIDEO INTERCOM SYSTEM
EBU	EMERGENCY BATTERY UNIT
EC	ELECTRICAL CONTRACTOR
ECB	ENCLOSED CIRCUIT BREAKER
EF	EXHAUST FAN
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF

**ABBREVIATIONS**

ETR	EXISTING TO REMAIN
EX	EXISTING
F	FUSE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FDC	FIRE DEPARTMENT CONNECTION
FLA	FULL LOAD AMPERES
FMC	FLEXIBLE METAL CONDUIT
GND,G	GROUND OR GROUNDING
GRMC	GALVANIZED RIGID METALLIC CONDUIT
HOA	HAND, OFF, AUTOMATIC SWITCH
HV	HEATING AND VENTILATION UNIT
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
IMC	INTERMEDIATE METAL CONDUIT
IWB	INTERACTIVE WHITE BOARD
INT	INTERLOCK
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERES
KW	KILOWATTS
LTG	LIGHTING
LFMC	LIQUID TIGHT FLEXIBLE METAL CONDUIT
MBU	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MMS	MANUAL MOTOR STARTER/SWITCH
MS	MOTOR STARTER
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURES ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN OR NUMBER
NTS	NOT TO SCALE
P	POLE
PB	PUSHBUTTON
PNL	PANEL
POS	PROVIDED UNDER OTHER SECTIONS
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
REL	RELOCATE
REC'D	REQUIRED
REX	REMOVE EXISTING
RMC	RIGID METAL CONDUIT
RMS	ROOT MEAN SQUARED
RNMC	RIGID NON-METALLIC CONDUIT
SP	SPARE
SMR	SURFACE METAL RACEWAY
SS	STAINLESS STEEL
SW	SWITCH
SYM	SYMMETRICAL
TMCB	THERMAL MAGNETIC CIRCUIT BREAKER
UG	UNDERGROUND OR UNDERGRADE
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VT	VOLTAGE TRANSFORMER
W	WIRE
WH	WATER HEATER
WP	WEATHER PROOF
XFMR	TRANSFORMER
Δ	DELTA
Y	WYE
∅	PHASE

**GENERAL NOTES**

- ALL WIRING SHALL BE RUN CONCEALED UNLESS SPECIFIED OTHERWISE.
- ALL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, RECTILINEAR TO BUILDING STRUCTURE.
- ALL COMPONENTS SHOWN ON THE RISER DIAGRAMS, BUT NOT ON THE PLAN OR VICE VERSA, SHALL BE INCLUDED AS IF SHOWN ON BOTH.
- EXACT LOCATION OF MECHANICAL EQUIPMENT THAT REQUIRE ELECTRICAL CONNECTIONS ARE SHOWN ON THE MECHANICAL DRAWINGS.
- ALL RACEWAYS RUNNING THROUGH BUILDING EXPANSION JOINTS SHALL BE EQUIPPED WITH EXPANSION FITTINGS.
- CONDUIT HOMERUNS SHOWN ON THE DRAWING WITH MORE THAN 3 CURRENT CARRYING CONDUCTORS ARE SHOWN DIAGMATICALLY. THIS CONTRACTOR SHALL NOT INSTALL MORE THAN 3 CURRENT CARRYING CONDUCTORS IN A RACEWAY UNLESS DONE SO STRICTLY BY THE NATIONAL ELECTRIC CODE.
- CONTRACTOR SHALL REVIEW ALL TRADES' CONTRACT DOCUMENTS TO DETERMINE SPECIFIC MOUNTING LOCATIONS FOR ELECTRICAL EQUIPMENT. COORDINATE EXACT MOUNTING LOCATIONS WITH THE ARCHITECT.
- REFER TO ARCHITECTURAL PLANS AND ELEVATIONS FOR MOUNTING HEIGHTS AND EXACT LOCATIONS OF ALL DEVICES.
- PRIOR TO SUBMITTING BID, VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE WORK. ANY DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL SITE CONDITIONS SHALL BE REPORTED TO THE ARCHITECT DURING THE BID PROCESS. NO COMPENSATION FOR WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED WILL BE GRANTED FOR ADDITIONAL WORK BY EXPERIENCED OBSERVERS. THE CONTRACTOR SHALL PARTICIPATE IN SURVEY OF THE EXISTING ELECTRICAL SYSTEMS. HE SHALL DISCONNECT AND CAP ALL SERVICE LINES TO BE DISCONNECTED FOR THOSE SERVICES WHICH NORMALLY ARE INCLUDED IN HIS FIELD OF WORK. PARTICULAR CARE SHALL BE TAKEN TO AVOID CREATING HAZARD OR CAUSING DISRUPTION OF SERVICES IN ADJOINING AREAS.
- IN ANY AREA REQUIRING THE PERFORMANCE OF ANY TRADE'S WORK, THE CONTRACTOR SHALL CAREFULLY REMOVE AND STORE ANY OR ALL ELECTRICAL ITEMS IN PATH OF WORK, REINSTALLING AND RECONNECTING SAME AS REQUIRED, IN ACCORDANCE WITH THE PLANS AND/OR AS DIRECTED AFTER COMPLETION OF OTHER TRADE'S WORK IN THAT AREA.
- AFTER RENOVATING EXISTING ELECTRICAL WORK, THE SUBCONTRACTOR SHALL INSURE THAT ALL REMAINING AND NEW EQUIPMENT WILL OPERATE PROPERLY.
- ALL ELECTRICAL WORK INDICATED TO REMAIN SHALL BE SUITABLY PROTECTED TO PREVENT ANY DAMAGE.
- REPAIR AND PATCH ANY DISTURBED AREAS TO MATCH EXISTING CONDITIONS.
- CONTRACTOR SHALL COORDINATE THE EXTENT OF ALL DEMOLITION WORK WITH THE SCOPE AND LIMITS OF THE NEW WORK.
- THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SHORING, BRACING, AND PROTECTION OF THE EXISTING CONSTRUCTION.
- CONTRACTOR SHALL COORDINATE DEMOLITION FOR STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING WORK IF REQUIRED.

**GENERAL COMMUNICATION NOTES**

- COMMUNICATIONS SYSTEM WIRING AND CONNECTIONS IN INTERIOR OF CREW OPERATIONS FACILITY ARE NOT INCLUDED IN THIS CONTRACT. PROVIDE AND INSTALL EMPTY CONDUITS WITH PULLSTRINGS AND BOXES ONLY, UNLESS NOTED OTHERWISE.
- PROVIDE 1-GANG BOX FOR TELEPHONE OUTLETS AND 2-GANG BOX FOR DATA/COMBINATION OUTLETS. PROVIDE 3/4" CONDUIT FOR TELEPHONE OUTLETS AND 1" CONDUIT FOR DATA/COMBINATION OUTLETS.
- DATA AND VOICE COMMUNICATIONS WITHIN THE EXISTING SHOP FACILITY SHALL BE RETAINED AFTER CONSTRUCTION. THE EXISTING DATA SWITCH LOCATED WITHIN THE EXISTING ELECTRICAL CLOSET WILL BE RELOCATED BY DELDOT OIT SECTION TO THE NEW FACILITY.
- THE CONTRACTOR SHALL COORDINATE WITH DELDOT OIT SECTION AND VERIZON FOR ACTIVATION VOICE AND DATA SYSTEMS IN THE NEW FACILITY.

**GENERAL SPECIFICATIONS**

- PROVIDE ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, COORDINATION, ADDITIONAL DESIGN AND ALL INCIDENTALS NECESSARY TO PROVIDE A COMPLETE AND OPERABLE SYSTEM AS DETAILED ON PLANS TO THE SATISFACTION OF THE ENGINEER AND THE OWNER. COORDINATE ALL WORK WITH THE ENGINEER BEFORE THE START OF WORK.
- ALL WORK SHALL BE PERFORMED BY A QUALIFIED ELECTRICAL CONTRACTOR LICENSED IN THE STATE OF DELAWARE THAT HAS PREVIOUSLY PERFORMED WORK OF THIS TYPE AND SIZE UNLESS NOTED OTHERWISE.
- ALL WORK SHOWN SHALL BE PERFORMED BY THE ELECTRICAL CONTRACTOR AS PART OF THIS PROJECT UNLESS NOTED OTHERWISE.
- PRIOR TO SUBMITTING BID, THE CONTRACTOR SHALL VISIT THE SITE AND BE THOROUGHLY FAMILIAR WITH THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION. CONTRACTOR SHALL INCLUDE IN THEIR BID ALL MATERIAL, LABOR AND ALL INCIDENTALS FOR A COMPLETE INSTALLATION WHETHER SPECIFICALLY CALLED FOR OR NOT. ANY ERRORS, DISCREPANCIES AND MISSED ITEMS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER DURING THE BIDDING PROCESS BY THE CONTRACTOR. THESE ITEMS SHALL BE INCLUDED IN THE BID PRICE. NO EXTRA COST WILL BE ALLOWED FOR ANY DISCREPANCY WHICH COULD HAVE BEEN NOTICED AT THE SITE VISIT BY THE CONTRACTOR.
- THE LOCATIONS SHOWN ON THESE PLANS ARE APPROXIMATE AND REQUIRE COORDINATION WITH ALL OTHER TRADES AND VERIFICATION OF EXISTING CONDITIONS. ROUTING OF CONDUIT IS DIAGRAMMATIC IN NATURE AND NOT INTENDED TO SHOW ALL REQUIRED OFFSETS AND DETAILS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING ASSOCIATED EQUIPMENT AND CONDITIONS. COORDINATE THE LOCATION OF ALL EQUIPMENT WITH THE ENGINEER AND THE OWNER.
- CONDITIONS OF THE CONTRACT AND DIVISION 1, GENERAL REQUIREMENTS APPLY TO WORK OF THIS SECTION. EXAMINE DRAWINGS AND OTHER SPECIFICATIONS FOR REQUIREMENTS THAT AFFECT WORK OF THIS SECTION.
- PROVIDE ITEMS REFERRED TO IN SINGULAR NUMBER IN CONTRACT DOCUMENTS IN QUANTITIES NECESSARY TO COMPLETE WORK.
- PERFORM WORK AND PROVIDE MATERIALS AND EQUIPMENT AS SHOWN ON DRAWINGS. COORDINATE ELECTRICAL WORK WITH WORK OF OTHER SECTIONS.
- GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES, AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.
- PERFORM WORK AS REQUIRED BY CODES, REGULATIONS AND LAWS OF LOCAL, STATE AND FEDERAL GOVERNMENTS AND OTHER AUTHORITIES WITH LAWFUL JURISDICTION.
- MATERIAL AND EQUIPMENT SHALL BE UL, NEMA, ANSI, IEEE, AND ADA APPROVED FOR INTENDED SERVICE. MATERIAL AND INSTALLATION SHALL MEET REQUIREMENTS OF NATIONAL AND STATE ELECTRICAL CODE.
- MAINTAIN RECORD DRAWINGS ON SITE. RECORD SET MUST BE COMPLETE AND CURRENT AND AVAILABLE FOR INSPECTION WHEN REQUISITIONS FOR PAYMENT ARE SUBMITTED.
- GUARANTEE WORK IN WRITING FOR TWO YEARS FROM DATE OF FINAL ACCEPTANCE. REPAIR OR REPLACE DEFECTIVE MATERIALS OR INSTALLATION AT NO COST TO OWNER. CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE AT NO COST TO OWNER.
- SUBMIT GUARANTEE TO ARCHITECT BEFORE FINAL PAYMENT.
- STATEMENT OF GUARANTEE REQUIREMENTS SHALL NOT BE INTERPRETED TO LIMIT OWNER'S RIGHTS UNDER LAW AND THIS CONTRACT.
- DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS. PROVIDE INFORMATION AND COMPONENTS SHOWN ON RISER DIAGRAMS BUT NOT SHOWN ON PLANS, AND VICE VERSA, AS IF EXPRESSLY REQUIRED ON BOTH.
- TEMPORARY LIGHT AND POWER SHALL BE PROVIDED ON SITE BY THE CONTRACTOR.
- ADDRESS QUESTIONS REGARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT INTERPRETATION OF MEANING AND INTENT OF DRAWINGS SHALL BE FINAL.
- DEVIATION FROM CONTRACT DOCUMENTS, OR PROPOSED SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED, SHALL BE REQUESTED IN SEPARATE LETTER, WHETHER DEVIATIONS ARE DUE TO FIELD CONDITIONS, STANDARD SHOP PRACTICE, OR OTHER CAUSE.
- SUBSTITUTIONS FOR SCHEDULED LIGHTING EQUIPMENT WILL BE REJECTED UNLESS SUBSTITUTION SUBMITTAL IS RECEIVED WITHIN TEN DAYS AFTER CONTRACT AWARD.
- BRANCH CIRCUIT WIRING MAY NOT BE SHOWN GRAPHICALLY ON DRAWINGS AND MAY BE INDICATED BY CIRCUIT NUMBERS BESIDE FIXTURES, DEVICES AND EQUIPMENT. PROVIDE COMPLETE WIRING SYSTEM WHETHER OR NOT INDICATED GRAPHICALLY. PHASE BALANCE ALL PANELBOARDS IN THE FIELD.
- MINIMUM BRANCH CIRCUIT WIRING SHALL BE #12 AWG SOLID COPPER. BRANCH CIRCUITS LONGER THAN 75 FEET FOR 120 VOLT OR 175 FEET FOR 277V SHALL BE AT LEAST #10 FROM PANEL TO FIRST OUTLET, UNO.
- INTERRUPTIONS TO EXISTING ELECTRIC SERVICES AND SYSTEMS SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE ARCHITECT OR OWNER. INCLUDE ALL PREMIUM TIME ASSOCIATED WITH INTERRUPTIONS.
- PROVIDE ALL BUILDING WORK AND AIDS FOR THIS CONTRACT AS DIRECTED BY THE GENERAL CONTRACTOR.
- ALL FIREPROOFING FOR ELECTRICAL PENETRATION SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
- SYSTEMS FEEDERS AND BRANCH CIRCUITS WHICH PASS THROUGH ALTERED AREAS AND SERVE OTHER AREAS SHALL BE MAINTAINED AS REQUIRED AND AS DIRECTED BY THE ARCHITECT.
- FURNISH AND INSTALL NAMEPLATES ON ALL ELECTRICAL EQUIPMENT (SCREW ON TYPE) AND TYPEWRITTEN SCHEDULES OF CIRCUITS IN ALL PANELBOARDS.
- ALL GROUNDING SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL AND STATE ELECTRICAL CODES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT ROUTING OF WIRING AND CONDUITS AND SHALL BE RESPONSIBLE FOR SIZING ALL BRANCH CIRCUIT WIRING TO LIMIT VOLTAGE DROP TO 3%. CONTRACTOR SHALL SIZE CONDUIT TO ACCOMMODATE WIRING PER NEC. CONTRACTOR SHALL PROVIDE SPLICE BLOCKS AND REDUCING PINS AS REQUIRED TO TERMINATE WIRING AND MAKE FINAL CONNECTIONS.



EG-001

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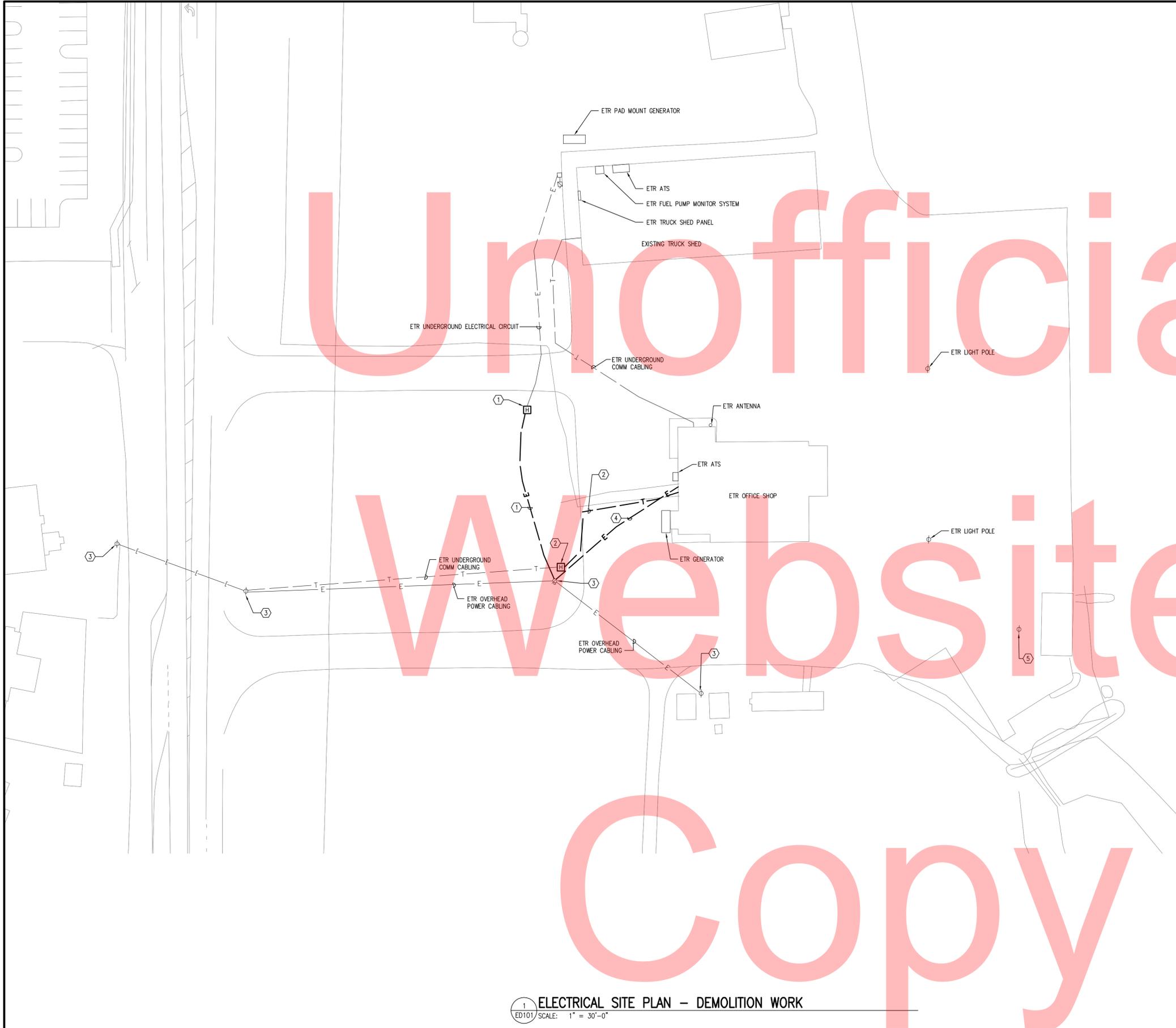
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**GENERAL SHEET NOTES:**

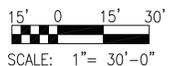
1. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
2. UNLESS OTHERWISE NOTED, ELECTRICAL ITEMS SHOWN HEAVY DASHED (---) SHALL BE REMOVED AND ELECTRICAL ITEMS SHOWN LIGHT SOLID (—) SHALL REMAIN.

**SHEET KEYNOTES:**

- ① PROVIDE POWER HANDHOLE TO INTERCEPT EXISTING FEEDER TO EXISTING TRUCK SHED. REMOVE CONDUIT AND WIRING BACK TO POLE MOUNT TRANSFORMER.
- ② PROVIDE COMMUNICATIONS HANDHOLE TO INTERCEPT EXISTING COMMUNICATION AND CATV CABLING. REMOVE COMMUNICATION CABLING BACK TO HANDHOLE.
- ③ EXISTING TO REMAIN POWER POLES.
- ④ REMOVE EXISTING UNDERGROUND ELECTRIC SERVICE SECONDARY CONDUCTORS.
- ⑤ EXISTING TO REMAIN EXTERIOR RECEPTACLE, 4-POLE LOAD CENTER AND STARTER MOUNTED TO WOOD POST.



1 ELECTRICAL SITE PLAN - DEMOLITION WORK  
ED101/SCALE: 1" = 30'-0"



ED-101



DELAWARE DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

NO.	DATE	DESCRIPTION

MIDDLETOWN CREW QUARTERS AND MAINTENANCE SHOP

CONTRACT	BRIDGE NO.
T201280103	
COUNTY	DESIGNED BY: NSP
NEW CASTLE	CHECKED BY: DJP

ELECTRICAL SITE PLAN  
DEMOLITION AND  
TEMPORARY WORK

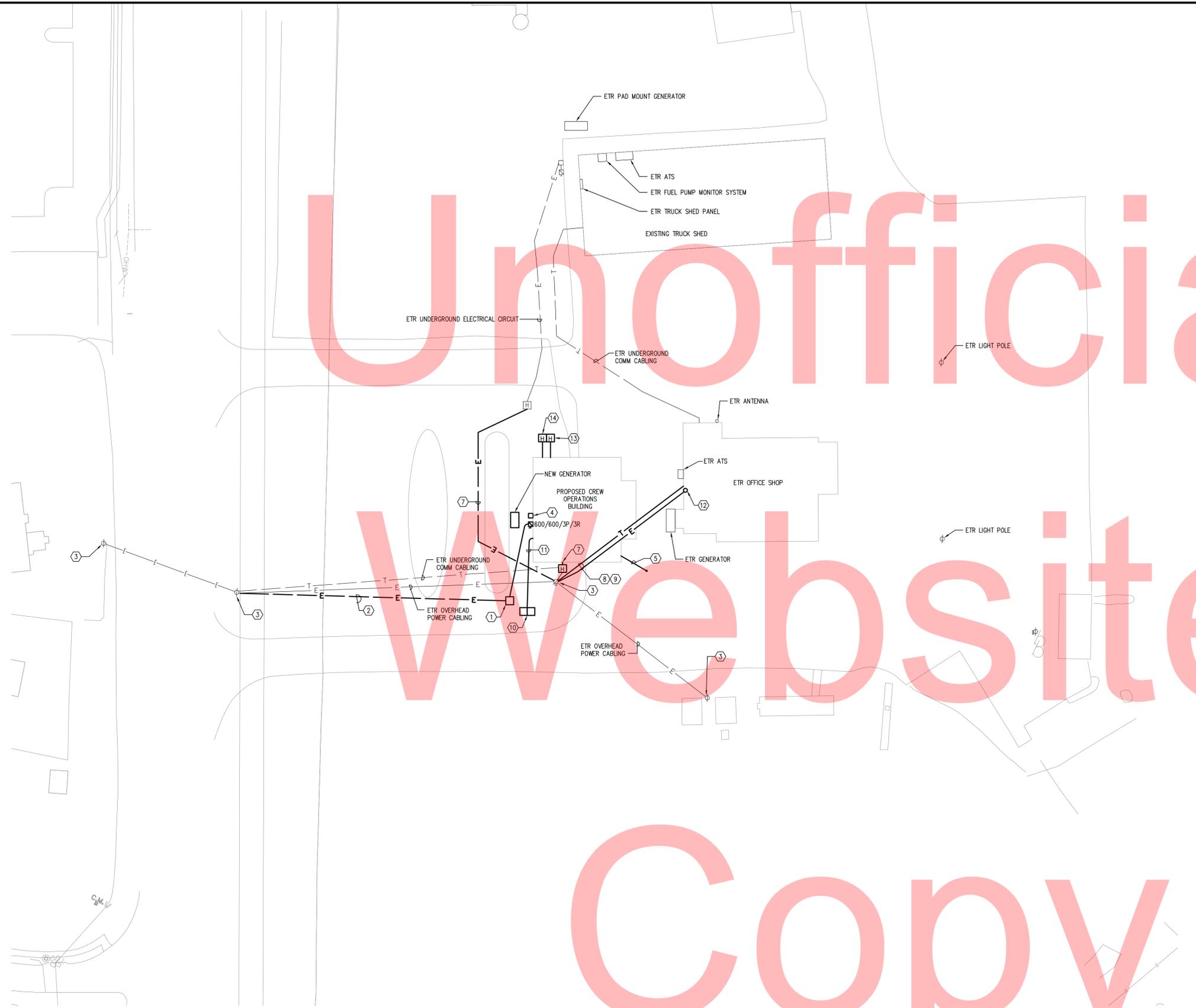
SHEET NO.
47
TOTAL SHTS.
54

**GENERAL SHEET NOTES:**

1. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
2. UNLESS OTHERWISE NOTED, ELECTRICAL ITEMS SHOWN HEAVY SOLID (————) SHALL BE NEW WORK AND ELECTRICAL ITEMS SHOWN LIGHT SOLID (-----) SHALL BE EXISTING.

**SHEET KEYNOTES:**

- 1 DELMARVA PROVIDED 208V, 3Ø, PAD MOUNT TRANSFORMER. DELMARVA SHALL PROVIDE TRANSFORMER AND CONTRACTOR SHALL PROVIDE TRANSFORMER PAD AND TRANSFORMER PAD GROUNDING. REFER TO DETAIL 1 ON EE-303. COORDINATE INSTALLATION WITH DELMARVA POWER AUTHORITY.
- 2 PROVIDE (2) 5" CONCRETE ENCASED, PVC SCHEDULE 40 CONDUITS (BURIED 36" BELOW FINAL GRADE) WITH PULL STRING FOR PRIMARY WIRING BY DELMARVA POWER AUTHORITY. PROVIDE CONDUIT TO WITHIN 2' OF EXISTING UTILITY POLE. DELMARVA WILL PROVIDE PRIMARY WIRING AND MAKE ALL REQUIRED CONNECTIONS. REFER TO DETAIL 6 ON DRAWING EE-303.
- 3 EXISTING TO REMAIN POWER POLE.
- 4 DELMARVA APPROVED, CONTRACTOR SUPPLIED NEW CURRENT TRANSFORMER CABINET WITH DELMARVA SUPPLIED METER. CONTRACTOR SHALL COORDINATE INSTALLATION WITH DELMARVA POWER AUTHORITY.
- 5 PROVIDE (2) 4" PVC SCHED-40 WITH PULL STRING TO LOCATION FOR FUTURE CONNECTION OF ANTENNA. INSTALLATION AND CONNECTION TO ANTENNA PROVIDED BY OTHERS. TURN CONDUIT UP, CAP AND SEAL.
- 6 PROVIDE NEW COMMUNICATIONS HANDHOLE AND 4" PVC SCHED-40 WITH PULL STRING FOR COMMUNICATION SERVICE.
- 7 PROVIDE NEW UNDERGROUND ELECTRICAL FEEDERS TO HANDHOLE. DETERMINE ROUTE OF FEEDERS IN FIELD TO AVOID CONSTRUCTION AREA. MATCH EXISTING CONDUIT AND WIRE.
- 8 PROVIDE NEW OVERHEAD ELECTRICAL LINES AND ROUTE OVERHEAD TO EXISTING TO REMAIN OFFICE SHOP BUILDING TO MAINTAIN ELECTRICAL UTILITY SERVICE. COORDINATE INSTALLATION AND TERMINATIONS WITH DELMARVA POWER AUTHORITY.
- 9 PROVIDE NEW OVERHEAD COMMUNICATION LINES AND ROUTE OVERHEAD TO EXISTING TO REMAIN OFFICE SHOP BUILDING TO MAINTAIN COMMUNICATION SERVICE. COORDINATE INSTALLATION AND TERMINATIONS WITH COMMUNICATION SERVICE PROVIDER.
- 10 PROVIDE (2) HANDHOLES FOR ELECTRICAL AND COMMUNICATION CONDUIT TERMINATION FOR FUTURE CONNECTION TO FUTURE MAINTENANCE BUILDING AND FUTURE EQUIPMENT SHED.
- 11 PROVIDE COMMON TRENCH FOR COMMUNICATION AND POWER CONDUIT FOR FUTURE CONNECTIONS. PROVIDE (1) 4" PVC-SCHED 40 WITH PULL STRING, (1) 3" PVC SCHED 40 WITH PULL STRING, AND (1) 2" PVC-SCHED 40 WITH PULL STRING FOR FUTURE POWER FEEDERS. PROVIDE (1) 4" PVC-SCHED 40 WITH PULL STRING FOR FUTURE COMMUNICATION CABLING.
- 12 PROVIDE NEW ROOF MOUNTED WEATHERHEAD TO INTERCEPT NEW OVERHEAD ELECTRICAL LINES. EXTEND ELECTRICAL WIRING AND PROVIDE TERMINATION TO RE-ESTABLISH ELECTRICAL UTILITY SERVICE. COORDINATE INSTALLATION AND TERMINATION WITH DELMARVA.
- 13 PROVIDE NEW COMMUNICATIONS HANDHOLE AND 4" PVC SCHED-40 WITH PULL STRING FOR FUTURE COMMUNICATIONS CONNECTION TO TRUCK SHED.
- 14 PROVIDE NEW POWER HANDHOLE AND 4" PVC SCHED-40 WITH PULL STRING FOR FUTURE COMMUNICATIONS CONNECTION TO TRUCK SHED.



1 ELECTRICAL SITE - NEW WORK PLAN  
 EP-101 SCALE: 1" = 30'-0"



15' 0" 15' 30"  
 SCALE: 1" = 30'-0"

EP-101

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DELAWARE  
 DEPARTMENT OF TRANSPORTATION

ADDENDUMS / REVISIONS

MIDDLETOWN CREW QUARTERS  
 AND MAINTENANCE SHOP

CONTRACT	BRIDGE NO.
T201280103	
COUNTY	DESIGNED BY: NSP
NEW CASTLE	CHECKED BY: DJP

ELECTRICAL SITE  
 NEW WORK PLAN

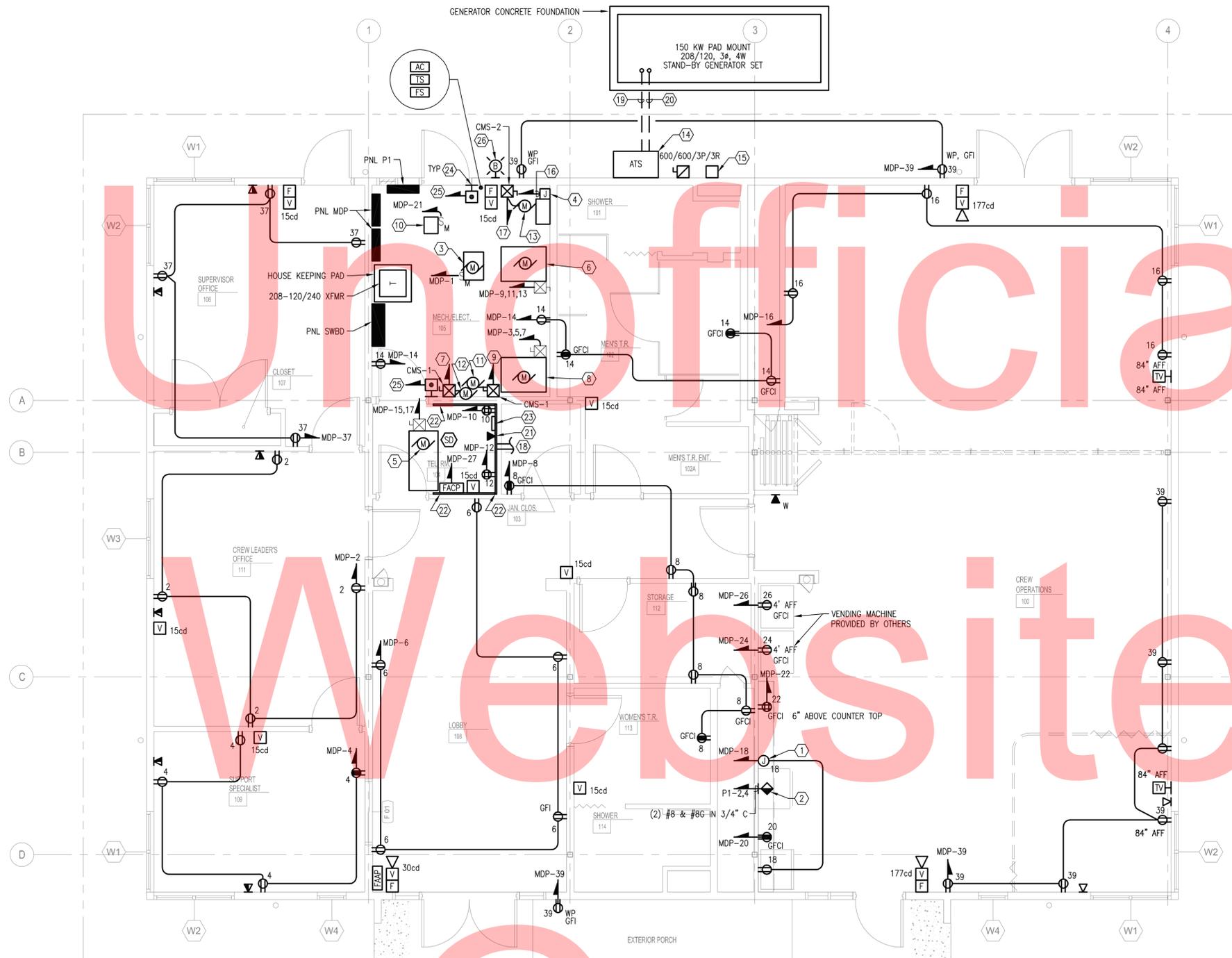
SHEET NO.
48
TOTAL SHTS.
54

**GENERAL SHEET NOTES:**

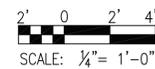
- INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
- UNLESS OTHERWISE NOTED, ELECTRICAL ITEMS SHOWN HEAVY SOLID (——) SHALL BE NEW WORK AND ELECTRICAL ITEMS SHOWN LIGHT SOLID (---) SHALL BE EXISTING.

**SHEET KEYNOTES:**

- PROVIDE JUNCTION BOX ABOVE CEILING SPACE FOR CONNECTION TO RANGE HOOD.
- PROVIDE RECESSED MOUNTED 50A SIMPLEX RECEPTACLE NEMA 6-50R FOR RANGE.
- PROVIDE CONNECTION TO ROOF MOUNTED EF-1, 120V, 1ø, 1/4 HP, AS INDICATED. DISCONNECT SWITCH PROVIDED UNDER DIVISION 23.
- PROVIDE CONNECTION TO 120V, 1ø, 80W, TANKLESS WATER HEATER AS INDICATED.
- PROVIDE CONNECTION TO 208V, 1ø, 6.1 FLA, 0.1 HP, WTAHP-3. INTEGRAL DISCONNECT SWITCH PROVIDED UNDER DIVISION 23.
- PROVIDE CONNECTION TO 208V, 3ø, 22.8 FLA, 1.0 HP, WTAHP-2. INTEGRAL DISCONNECT SWITCH PROVIDED UNDER DIVISION 23.
- ROUTE BRANCH CIRCUIT SERVING PUMP, P-1, TO PANEL MDP, CIRCUIT BREAKER 43.
- PROVIDE CONNECTION TO 208V, 3ø, 22.8 FLA, 1.0 HP, WTAHP-1. INTEGRAL DISCONNECT SWITCH PROVIDED UNDER DIVISION 23.
- ROUTE BRANCH CIRCUIT SERVING PUMP, P-2, TO PANEL MDP, CIRCUIT BREAKER 49.
- PROVIDE CONNECTION TO 120V, 1ø, 6.3 FLA, UH-1 AS INDICATED. DISCONNECT SWITCH PROVIDED UNDER DIVISION 23.
- PROVIDE CONNECTION TO 208V, 3ø, 1.5 HP, 6.6 FLA, P-1 VIA CMS-1 AS INDICATED.
- PROVIDE CONNECTION TO 208V, 3ø, 1.5 HP, 6.6 FLA, P-2 VIA CMS-1 AS INDICATED.
- PROVIDE CONNECTION TO 120V, 1ø, 0.38 FLA, P-3 VIA CMS AS INDICATED.
- PROVIDE 600 AMP ASCO ATS, MODEL 4A-TS-B-3-600-C-F OR EQUAL.
- DELMARVA APPROVED, CUSTOMER SUPPLIED METER SOCKET. CONTRACTOR TO COORDINATE WITH DELMARVA FOR METER INSTALLATION AND CONNECTION.
- PROVIDE (2)#12 AWG AND #12 G IN 3/4" C TO MDP-6.
- ROUTE BRANCH CIRCUIT SERVING PUMP, P-3, VIA CMS, TO PANEL MDP, CIRCUIT BREAKER 1 AS INDICATED.
- EXTEND (1) 4" PVC CONDUIT FOR TELEPHONE AND (1) 4" PVC CONDUIT FOR CCTV FROM TELEPHONE BACKBOARD TO COMMUNICATIONS SERVICE WITH PULL STRING. CONDUIT TO STUB UP 12" AFF IN FRONT OF TELEPHONE BACKBOARD. COORDINATE WITH TELEPHONE AND CCTV COMPANIES. PROVIDE 3/4" PLYWOOD BACKBOARD FOR EQUIPMENT MOUNTING.
- GENERATOR MAIN POWER SUPPLY CONDUCTORS.
- COORDINATE CONDUIT AND CIRCUITS WITH FINAL GENERATOR EQUIPMENT INSTALLED:  
(1) 1" CONDUCTOR FOR GENERATOR STARTING CIRCUIT  
(1) 1" CIRCUITS MDP-25,30,32,35
- TWO TELEPHONE JACKS FOR FIRE ALARM CONTROL PANEL DIALER.
- PROVIDE FIRE RATED 3/4" PLYWOOD BACKBOARD FOR EQUIPMENT MOUNTING.
- 2" X 10" COPPER GROUND BAR MOUNTED ON TELEPHONE BACKBOARD. BOND GROUND BAR TO GROUND BAR IN PANEL MDP WITH #2/0 BARE COPPER GROUND WIRE.
- PROVIDE WATER HEATER CONTROL SWITCH. PROVIDE NAMEPLATE TO READ "EMERGENCY WATER HEATER SHUT-OFF". MOUNTED ABOVE PUSH-BUTTON, REFER TO DETAIL 7 ON SHEET EE-303.
- PROVIDE 120V CONTROL POWER FOR SHUNT TRIP BREAKER FROM PANEL P1-6. ACTIVATION OF THE SAFETY CONTROL SWITCH MONITOR SHALL DISCONNECT ALL POWER TO THE WATER HEATER. FOR WIRING DIAGRAM REFER TO DETAIL 8 ON SHEET EE-303.
- INSTALL ELECTRIC SPRINKLER ALARM BELL DIRECTLY AND IN LINE WITH FDC. COORDINATE EXACT LOCATION WITH FIRE SPRINKLER CONTRACTOR AND ARCHITECT PRIOR TO ROUGH-IN.



**1 ELECTRICAL - POWER AND SPECIAL SYSTEMS FLOOR PLAN**  
EP-101 SCALE: 1/4" = 1'-0"



**EP-102**

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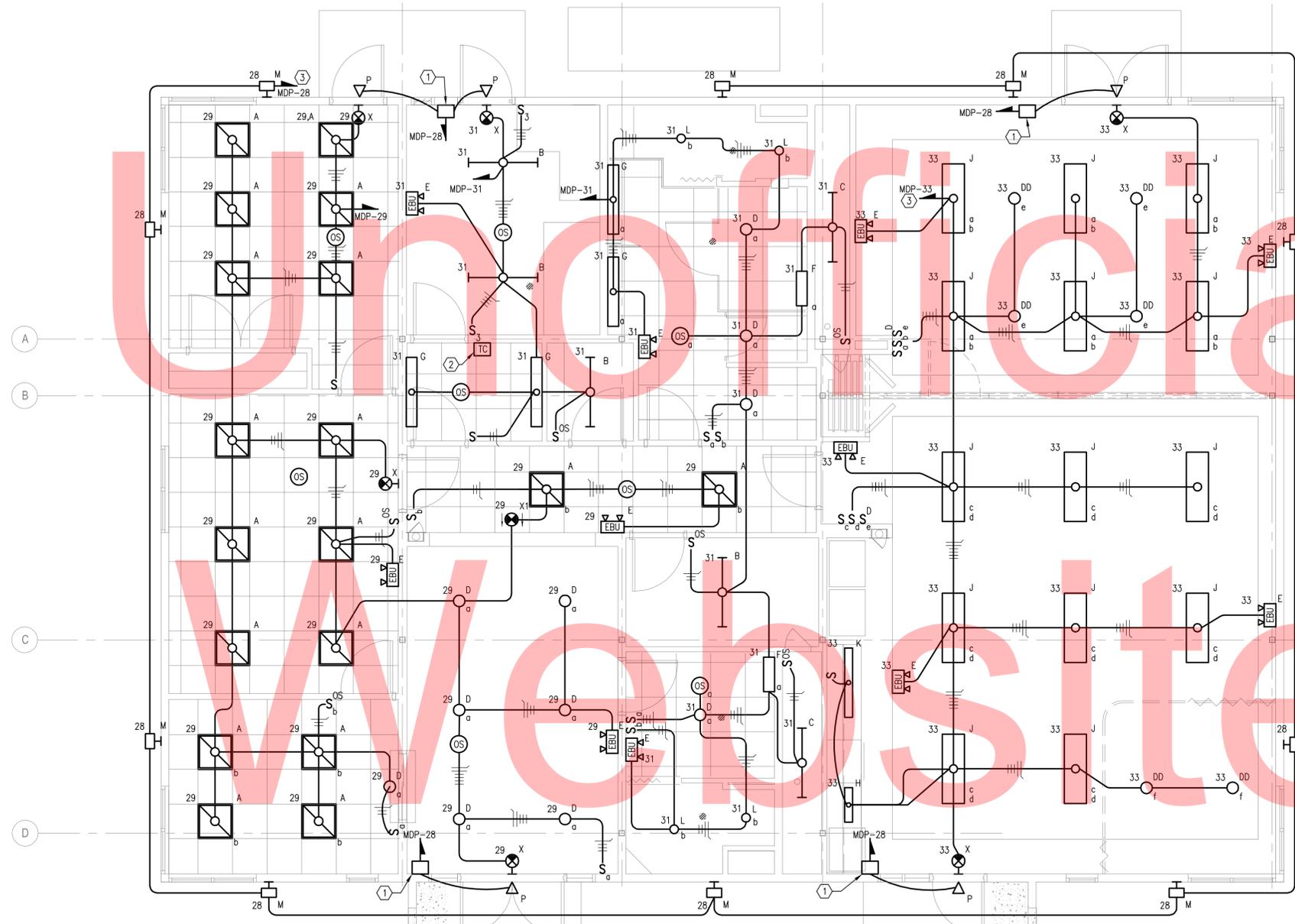
<p>DELAWARE DEPARTMENT OF TRANSPORTATION</p>	ADDENDUMS / REVISIONS		<p><b>MIDDLETOWN CREW QUARTERS AND MAINTENANCE SHOP</b></p>	CONTRACT	BRIDGE NO.	<p><b>ELECTRICAL POWER AND SPECIAL SYSTEMS PLAN</b></p>	SHEET NO.
				T201280103	DESIGNED BY: NSP		49
				COUNTY	CHECKED BY: DJP		TOTAL SHTS.
				NEW CASTLE			54

**GENERAL SHEET NOTES:**

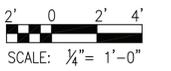
1. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
2. WHERE LIGHT SWITCHES ARE SHOWN GROUPED TOGETHER, THEY SHALL BE UNDER MULTIGANG PLATE.
3. PROVIDE A NON-SWITCHED HOT LEG OF LOCAL LIGHTING CIRCUIT TO ALL EMERGENCY LUMINAIRES, EXIT SIGNS, AND BATTERY UNITS FOR BATTERY CHARGING AND TO SENSE NORMAL POWER FAILURE.
4. COORDINATE EXACT LIGHT FIXTURE LOCATION WITH ARCHITECTURAL REFLECTED CEILING PLANS.

**SHEET KEYNOTES:**

- 1 12 VOLT BATTERY UNIT FOR EXTERIOR REMOTE EMERGENCY HEAD. UPON LOSS OF NORMAL POWER, BATTERY UNIT SHALL ACTIVATE EXTERIOR EMERGENCY FIXTURE.
- 2 LIGHTING TIME CLOCK FOR EXTERIOR LIGHTS. REFER TO DETAIL ON SHEET EE-302.
- 3 ROUTE LIGHTING CIRCUIT TO PANEL INDICATED VIA TIME CLOCK CONTROL DEVICE.



**1 ELECTRICAL LIGHTING FLOOR PLAN**  
E101 SCALE: 1/4" = 1'-0"



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ADDENDUMS / REVISIONS	

**MIDDLETOWN CREW QUARTERS AND MAINTENANCE SHOP**

CONTRACT	BRIDGE NO.
T201280103	
COUNTY	DESIGNED BY: NSP
NEW CASTLE	CHECKED BY: DJP

**ELECTRICAL LIGHTING PLAN**

**EL-101**  
SHEET NO. 50  
TOTAL SHTS. 54

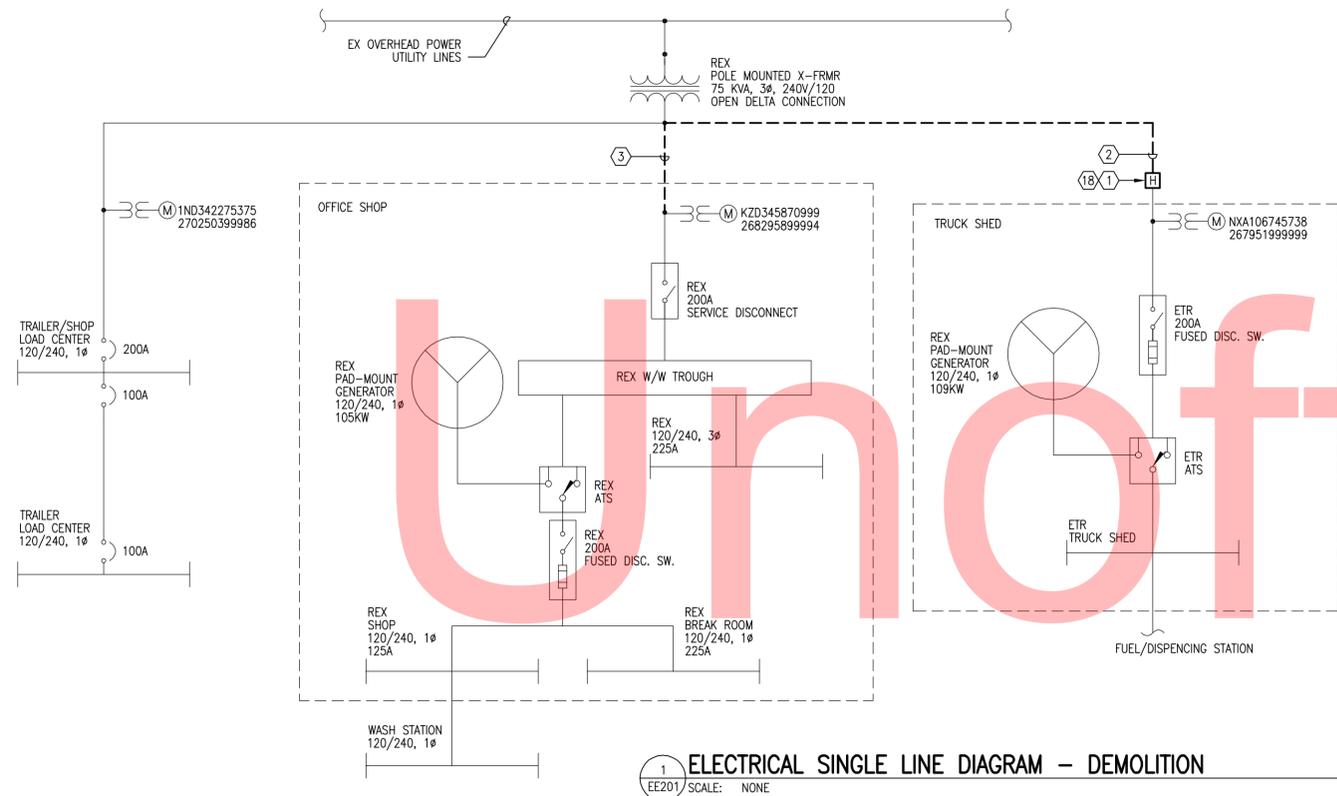
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**GENERAL SHEET NOTES:**

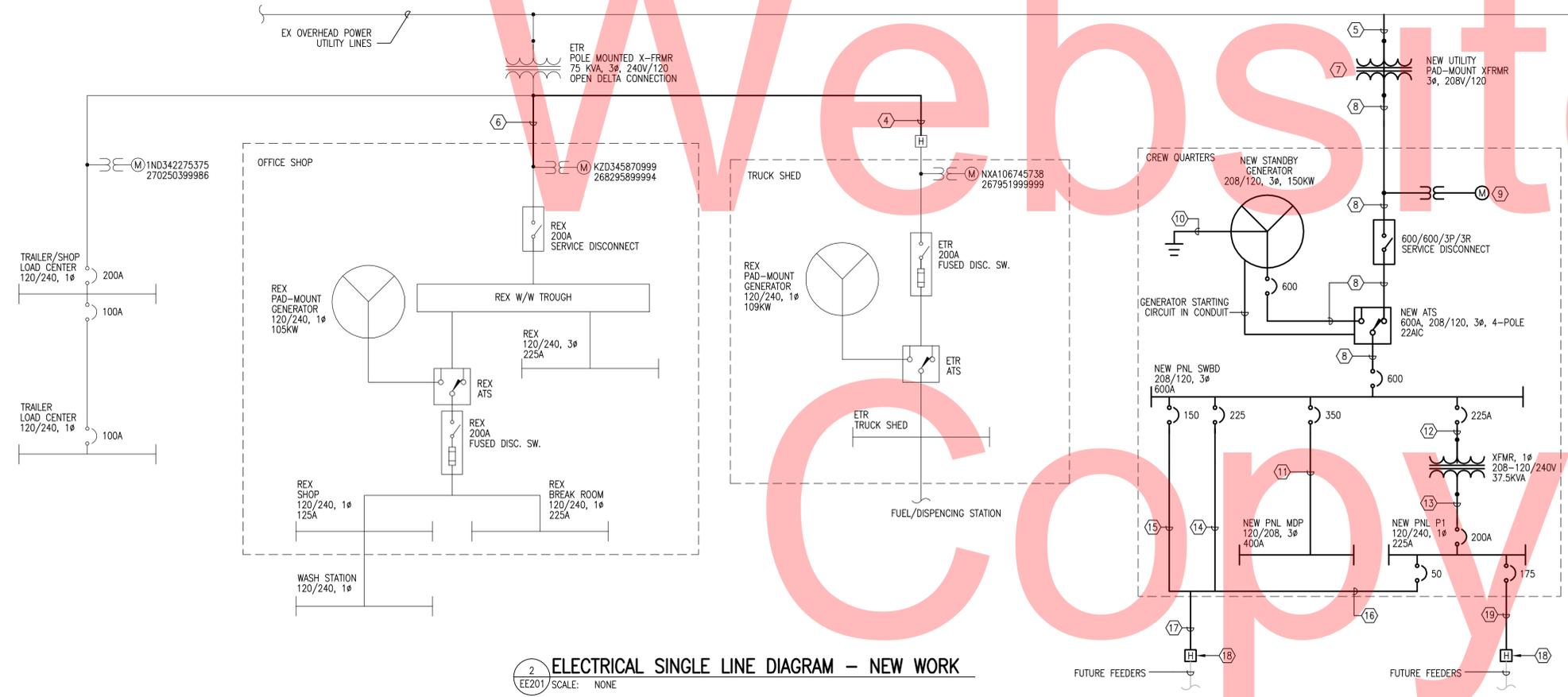
1. INFORMATION SHOWN ON THIS DRAWING PERTAINING TO EXISTING CONDITIONS HAS BEEN OBTAINED FROM AVAILABLE BUILDING DRAWINGS OR GENERAL FIELD OBSERVATIONS AND MAY NOT INDICATE ACTUAL EXISTING CONDITIONS IN DETAIL OR DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE ACTUAL EXISTING CONDITIONS PRIOR TO FABRICATION OR PERFORMANCE OF ANY WORK. SHOULD CONDITIONS BE DISCOVERED THAT PREVENT EXECUTION OF THE WORK AS INDICATED, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING AND AWAIT DIRECTION BEFORE PROCEEDING WITH THE WORK.
2. UNLESS OTHERWISE NOTED, ELECTRICAL ITEMS SHOWN DASHED SOLID (---) SHALL BE REMOVED AND ITEMS SHOWN LIGHT SOLID (—) SHALL BE EXISTING TO REMAIN AND ITEMS SHOWN HEAVY SOLID (—) SHALL BE NEW.

**SHEET KEYNOTES:**

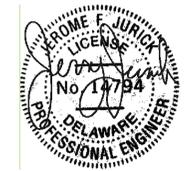
- 1 PROVIDE HANDHOLE TO INTERCEPT EXISTING UNDERGROUND FEEDERS.
- 2 REMOVE UNDERGROUND ELECTRICAL UTILITY LINES FROM POLE TO HANDHOLE.
- 3 REMOVE UNDERGROUND SECONDARY ELECTRICAL UTILITY LINES FROM POLE TO SERVICE DISCONNECT.
- 4 PROVIDE NEW UNDERGROUND FEEDERS TO HANDHOLE. MATCH EXISTING CONDUIT AND WIRE.
- 5 (2) 5" CONCRETE ENCASED PVC SCHEDULE 40 CONDUITS WITH PULL STRING. DELMARVA TO PROVIDE PRIMARY POWER WIRING.
- 6 PROVIDE NEW OVERHEAD SECONDARY POWER WIRING. COORDINATE INSTALLATION AND TERMINATIONS WITH DELMARVA. MATCH EXISTING WIRE.
- 7 DELMARVA PROVIDED PAD-MOUNT TRANSFORMER.
- 8 (2) SETS OF (4) #350KCMIL AND #3/0 G IN 4" C.
- 9 PROVIDE NEW DELMARVA POWER AUTHORITY APPROVED METER SOCKET. DELMARVA TO PROVIDE NEW ELECTRIC UTILITY METER AND TERMINATIONS.
- 10 (1) #2/0 GROUNDING ELECTRODE CONDUCTOR TO GROUND RODS.
- 11 (3) #500KCMIL AND #3 G IN 3-1/2" C.
- 12 (2) #4/0 AND #4 G IN 1-1/2" C.
- 13 (2) #3/0 AND #4 G IN 1-1/2" C.
- 14 (1) 4" EMPTY CONDUIT WITH PULL STRING TO EXTERIOR HANDHOLE FOR FUTURE FEEDER.
- 15 (1) 3" EMPTY CONDUIT WITH PULL STRING TO EXTERIOR HANDHOLE FOR FUTURE FEEDER.
- 16 (1) 2" EMPTY CONDUIT WITH PULL STRING TO EXTERIOR HANDHOLE FOR FUTURE FEEDER.
- 17 PROVIDE EMPTY CONDUITS IN COMMON TRENCH TO EXTERIOR HANDHOLE FOR FUTURE FEEDER.
- 18 SIZE EXTERIOR HANDHOLE IN FIELD PER NEC.
- 19 (1) 3" EMPTY CONDUIT WITH PULL STRING TO EXTERIOR HANDHOLE FOR FUTURE FEEDER.



**1 ELECTRICAL SINGLE LINE DIAGRAM - DEMOLITION**  
EE201 SCALE: NONE



**2 ELECTRICAL SINGLE LINE DIAGRAM - NEW WORK**  
EE201 SCALE: NONE



EE-201

ADDENDUMS / REVISIONS

CONTRACT T201280103	BRIDGE NO.
COUNTY NEW CASTLE	DESIGNED BY: NSP
	CHECKED BY: DJP

<b>ELECTRICAL SINGLE LINE DEMOLITION AND NEW WORK</b>	SHEET NO. 51
	TOTAL SHTS. 54

**SWBD**  
**120/208 VOLT, 3 PHASE, 4 WIRE & GROUND**  
**MAIN BUS AMPS: 600 MAIN DEVICE AMPS: 600 AIC: 22K**

Circuit Number	Load Description	Connected KVA Load	Overcurrent Device			Remarks
			Frame	Trip	Pole	
	MAIN BREAKER		600	600	3	
1	TRANSFORMER	34.00	225	225	2	
2	MDP	60.00	400	350	3	
3	FUTURE MAINTENANCE BLDG	39.00	225	225	3	FUTURE
4	FUTURE EQPT SHED	15.00	150	150	3	FUTURE
5	SPACE	0.00	-	-	3	
6	SPACE	0.00	-	-	3	
7		0.00				
8		0.00				
9		0.00				

MFG: \_\_\_\_\_  
 OPTIONS: \_\_\_\_\_

TOTAL CONNECTED LOAD	<b>148.00</b> kVA
TOTAL DEMAND LOAD	<b>148.00</b> kVA

**PANEL: MDP SECTION 1**      **AMP: 400 VOLT: 120/208**  
**MOUNTING: SURFACE**      **MAIN: MLO**      **PHASE: 3 4 WIRE + GND**  
**AIC: 22K AMPS RMS SYM**

Branch Circuit Load Description	KVA Load			Trip Poles	Circuit Wiring				Ckt. No.	Phase	Ckt. No.	Circuit Wiring				Trip Poles	KVA Load			Branch Circuit Load Description						
	A	B	C		NO	Size	GND	C				NO	Size	GND	C		A	B	C							
EF-1, P-3	0.65			20/1	2	#12	#12	3/4"	1	A	2	2	#12	#12	3/4"	20/1				RCPT 106, 111						
WTAHP-1		2.75		45/3	3	#8	#10	3/4"	3	B	4	2	#12	#12	3/4"	20/1	1.30			RCPT 109, 111						
"			2.75	"	"	"	"	"	5	G	6	2	#12	#12	3/4"	20/1		0.10		DWH						
"	2.75			"	"	"	"	"	7	A	8	2	#12	#12	3/4"	20/1	1.28			RCPT 103, CORR, 112, 113,						
WTAHP-2		2.75		45/3	3	#8	#10	3/4"	9	B	10	2	#12	#12	3/4"	20/1		1.00		RCPT TELCOM						
"			2.75	"	"	"	"	"	11	C	12	2	#12	#12	3/4"	20/1		1.00		RCPT TELCOM						
"	2.75			"	"	"	"	"	13	A	14	2	#12	#12	3/4"	20/1	1.28			RCPT 105, 102 EXTERIOR						
WTAHP-3		0.64		15/2	2	#12	#12	3/4"	15	B	16	2	#12	#12	3/4"	20/1		1.62		RCPT 100						
"			0.64	"	"	"	"	"	17	C	18	2	#12	#12	3/4"	20/1		1.30		RCPT FRIDGE, HOOD						
SPARE	0.00			20/1	2	#12	#12	3/4"	19	A	20	2	#12	#12	3/4"	20/1	0.80			RCPT KITCHN COUNTER						
UH-1	0.75			20/1	2	#12	#12	3/4"	21	B	22	2	#12	#12	3/4"	20/1	0.90			RCPT KITCHEN COUNTER						
SPARE		0.00		20/1	2	#12	#12	3/4"	23	C	24	2	#12	#12	3/4"	20/1		0.80		RCPT V. MACH						
GEN. ANTI-CONDENSATION HTR	0.50			20/1	2	#12	#12	3/4"	25	A	26	2	#12	#12	3/4"	20/1	0.80			RCPT V. MACH						
FACP		0.20		20/1	2	#12	#12	3/4"	27	B	28	2	#12	#12	3/4"	20/1		0.41		PORCH LIGHTS						
INTERIOR LIGHTING			1.50	20/1	2	#12	#12	3/4"	29	C	30	2	#10	#10	3/4"	25/2		2.00		GEN. JACKET WATER HEATER						
INTERIOR LIGHTING	1.00			20/1	2	#12	#12	3/4"	31	A	32	"	"	"	"	"		2.00		"						
INTERIOR LIGHTING			1.52	20/1	2	#12	#12	3/4"	33	B	34	"	"	"	"	"		0.00		SPARE						
GEN. BATTERY CHARGER			1.20	20/1	2	#12	#12	3/4"	35	C	36	"	"	"	"	"		0.00		SPARE						
SPARE	0.00			20/1	2	#12	#12	3/4"	37	A	38	"	"	"	"	"		0.00		SPARE						
SPARE		0.00		20/1	2	#12	#12	3/4"	39	B	40	0	0	0	0	0		0.00		SPARE						
SPARE			0.00	20/1	2	#12	#12	3/4"	41	C	42	0	0	0	0	0		0.00		SPARE						
<< PHASE SUB-TOTALS >>																7.65	8.61	8.84		7.46	5.23	5.20				MECH EQUIP. CIRCUIT BREAKERS SHALL BE HACR RATED.

PHASE A: **15.11** kVA  
 PHASE B: **13.84** kVA  
 PHASE C: **14.04** kVA

**42.99** kVA CONNECTED LOAD (SECTION 1)  
**3.20** kVA CONNECTED LOAD (SECTION 2)  
**46.19** kVA TOTAL CONNECTED LOAD  
**45.09** kVA TOTAL DEMAND LOAD

PROVIDE THE FOLLOWING:  
 FEED THRU LUGS

**PANEL: P1**      **AMP: 225 VOLT: 120/240**  
**MOUNTING: SURFACE**      **MAIN: MLO**      **PHASE: 1 3 WIRE + GND**  
**AIC: 10K AMPS RMS SYM**

Branch Circuit Load Description	KVA Load		Trip Poles	Ckt. No.	Phase	Ckt. No.	Trip Poles	KVA Load		Branch Circuit Load Description					
	A	B						A	B						
FUTURE TRUCK SHED	13.00		150/1	1	A	2	50/2	0.00		KITCHEN RANGE					
"		13.00	"	3	B	4	"	0.00	0.00	"					
FUTURE WASH STATION	4.00		50/1	5	A	6	20/1	0.00		EMER. CUTOFF					
"		4.00	"	7	B	8	0	0.00	0.00	SPACE					
SPACE	0.00			9	A	10		0.00		SPACE					
SPACE		0.00		11	B	12		0.00	0.00	SPACE					
SPACE	0.00			13	A	14		0.00		SPACE					
SPACE		0.00		15	B	16		0.00	0.00	SPACE					
SPACE	0.00			17	A	18		0.00		SPACE					
SPACE		0.00		19	B	20		0.00	0.00	SPACE					
<< PHASE SUB-TOTALS >>										17.00	17.00		0.00	0.00	

PHASE A: **17.00** kVA  
 PHASE B: **17.00** kVA

**34.00** kVA TOTAL CONNECTED LOAD  
**34.00** kVA TOTAL DEMAND LOAD

PROVIDE THE FOLLOWING:

**PANEL: MDP SECTION 2**      **AMP: 400 VOLT: 120/208**  
**MOUNTING: SURFACE**      **MAIN: MLO**      **PHASE: 3 4 WIRE + GND**  
**AIC: 22K AMPS RMS SYM**

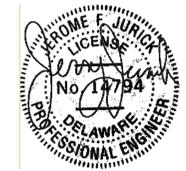
Branch Circuit Load Description	KVA Load			Trip Poles	Circuit Wiring				Ckt. No.	Phase	Ckt. No.	Circuit Wiring				Trip Poles	KVA Load			Branch Circuit Load Description						
	A	B	C		NO	Size	GND	C				NO	Size	GND	C		A	B	C							
PUMP P-1	0.80			20/3	3	#12	#12	3/4"	43	A	44	0	0	0	0	0	20/1	0.00			SPARE					
"		0.80		"	"	"	"	"	45	B	46	0	0	0	0	0	20/1		0.00		SPARE					
"			0.80	"	"	"	"	"	47	C	48	0	0	0	0	0	20/1		0.00		SPARE					
PUMP P-2	0.80			20/3	3	#12	#12	3/4"	49	A	50	0	0	0	0	0	20/1	0.00			SPARE					
"		0.80		"	"	"	"	"	51	B	52	0	0	0	0	0	20/1		0.00		SPARE					
"			0.80	"	"	"	"	"	53	C	54	0	0	0	0	0	20/1		0.00		SPARE					
SPACE	0.00			0	0	0	0	0	55	A	56	0	0	0	0	0		0.00			SPACE					
SPACE		0.00		0	0	0	0	0	57	B	58	0	0	0	0	0		0.00			SPACE					
SPACE			0.00	0	0	0	0	0	59	C	60	0	0	0	0	0		0.00			SPACE					
SPACE	0.00			0	0	0	0	0	61	A	62	0	0	0	0	0		0.00			SPACE					
<< PHASE SUB-TOTALS >>																1.60	1.60	1.60		0.00	0.00	0.00				MECH EQUIP. CIRCUIT BREAKERS SHALL BE HACR RATED.

PHASE A: **1.60** kVA  
 PHASE B: **1.60** kVA  
 PHASE C: **1.60** kVA

**4.80** kVA TOTAL CONNECTED LOAD  
**0.00** kVA TOTAL DEMAND LOAD

PROVIDE THE FOLLOWING:

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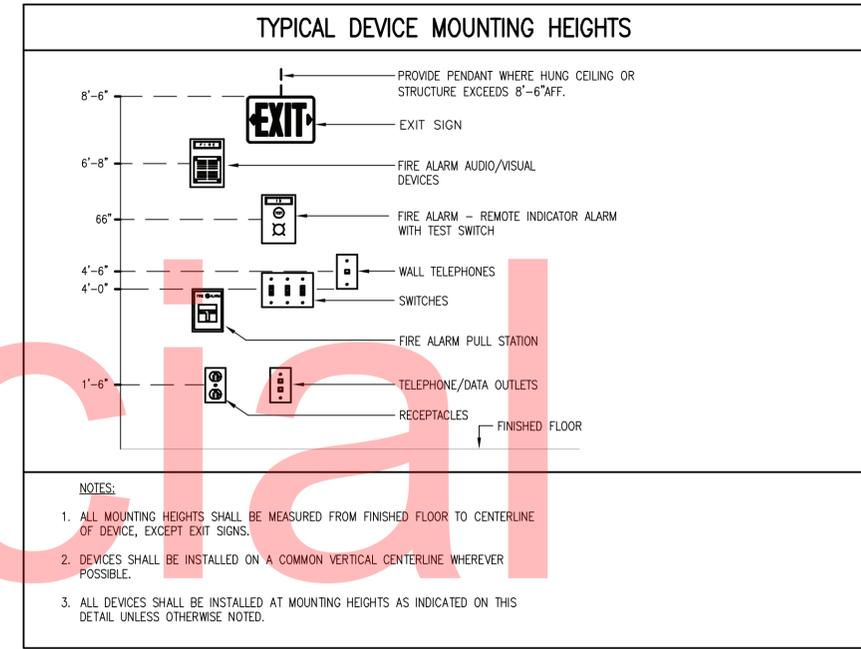


COMBINATION MOTOR STARTER DISCONNECT SCHEDULE																		
DESIGNATION (EQPT.)	VOLTS	POLES	NEMA ENCL.	MOTOR HP	DISCONNECT			MOTOR STARTER					CONTROLS				COMMENTS	
					CIRCUIT BREAKER	DISC. SWITCH	DUAL ELEMENT FUSE	TYPE	NEMA SIZE	COIL VOLTS	AUX. CONTACT	O.L. HTR.	XFMR	PUSH BUTTON	PILOT LIGHT	SEL. SWITCH		NOTES
CMS-1 (P1 AND P2)	208V	3	12	1.5 HP	N/A	30A	15A	FVNR	00	120V	2NO 2NC	NOTE 1	NOTE 2	NOTE 5	NOTE 3	NOTE 6	NOTE 4	NOTE 7
CMS-2 (P-3)	120V	1	12	-	N/A	30A	1A	FVNR	00	120V	2NO 2NC	NOTE 1	-	NOTE 5	NOTE 3	NOTE 6	NOTE 4	NOTE 7

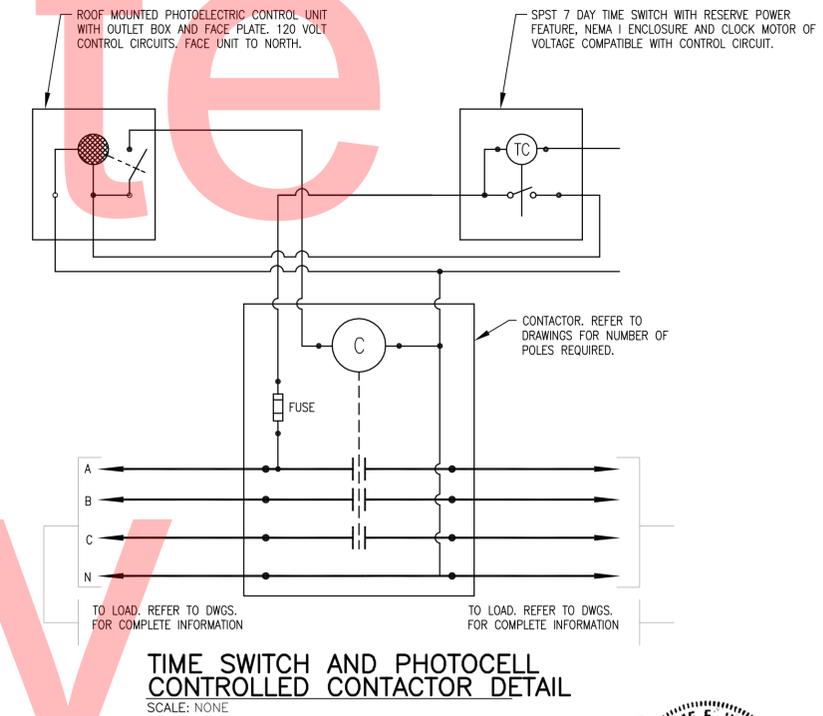
**NOTES:**  
1. E.C. SHALL SIZE OVERLOAD HEATERS IN FIELD PER ACTUAL MOTOR NAMEPLATE DATA.  
2. UNIT SHALL BE EQUIPPED WITH CONTROL TRANSFORMER WITH 208V PRIMARY AND 120V FUSED SECONDARY.  
3. UNIT SHALL BE EQUIPPED WITH RED "RUN" AND GREEN "OFF" PUSH TO TEST TYPE PILOT LIGHTS.  
4. COORDINATE WITH BUILDING MANAGEMENT SYSTEM.  
5. PUSHBUTTONS SHALL BE RED "RUN" AND GREEN "STOP".  
6. UNIT SHALL BE EQUIPPED WITH A "HAND-OFF-AUTO" SELECTOR SWITCH.  
7. PROVIDE SOLID-STATE OVERLOAD RELAY. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

LIGHTING FIXTURE SCHEDULE									
FIXTURE TYPE	DESCRIPTION	MANUFACTURER & CATALOG NUM.	LAMPS			VOLTAGE	OPTIONS	MOUNTING HEIGHT	
			NO.	TYPE	COLOR TEMPERATURE				
A	2 X 2, PARABOLIC TROFFER, 4" LVR, 2 LAMP, T8 U-SHAPE, 31 WATT, ONE 2-LAMP ELECTRONIC BALLAST, PROGRAM START	LITHONIA 2PM4-C-B-2-U316-9-LD-MVOLT-GEB10RS	2	2-31W-T8-U	3500K	MVOLT		IN CEILING	
B	GENERAL PURPOSE STRIP LIGHT, 4', 2 LAMP, T8, 32 WATT, LINEAR FLOURESCENT, ONE 2-LAMP ELECTRONIC BALLAST, PROGRAM START	LITHONIA C-2-32-MVOLT-GEB10IS	2	2-32W-T8	3500K	MVOLT		CEILING	
C	STANDARD STRIP LIGHT, 4', 1 LAMP, T8, 32 WATT, LINEAR FLOURESCENT, ONE 1-LAMP ELECTRONIC BALLAST, PROGRAM START	LITHONIA S-1-32-MVOLT-GEB10IS	1	1-32W-T8	3500K	MVOLT		CEILING	
D	OPEN DOWNLIGHT, 8" APERTURE, 1-LAMP, 18 WATT, TRIPLE TUBE COMPACT FLOURESCENT, VERTICAL BASE UP POSITION	GOTHAM AFV-18TRT-8-AR-MVOLT	1	1-18W-TRT	3500K	MVOLT		CEILING	
DD	SAME AS TYPE "D" EXCEPT WITH DIMMABLE LIGHTING BALLAST	GOTHAM AFV-18TRT-8-AR-MVOLT-S5	1	1-18W-TRT	3500K	MVOLT	DIMMING BALLAST	CEILING	
E	THERMOPLASTIC EMERGENCY LIGHT, TWO 5.4 WATT KRYPTON LAMPS, SURFACE MOUNT, LEAD-CALCIUM BATTERY	LITHONIA ELM	2	2-5.4W KRYPTON	3500K	MVOLT		8' AFF	
F	SURFACE WALL MOUNT, 24", 2 LAMP, T8, 17 WATT, LINEAR FLOURESCENT, ONE 2-LAMP ELECTRONIC BALLAST, PROGRAMMED RAPID START	LITHONIA WP-2-17-MVOLT-GEB10IS	2	2-17W-T8	3500K	MVOLT		8' AFF	
G	SURFACE WALL MOUNT, 48", 2 LAMP, T8, 32 WATT, LINEAR FLOURESCENT, ONE 2-LAMP ELECTRONIC BALLAST, PROGRAMMED RAPID START	LITHONIA WP-2-32-MVOLT-GEB10IS	2	2-32W-T8	3500K	MVOLT		8' AFF	
H	UNDER CABINET MOUNT, 24", 1 LAMP, T8, 17 WATT, LINEAR FLOURESCENT, ONE 1-LAMP ELECTRONIC BALLAST, PROGRAMMED RAPID START	LITHONIA N2S-17-MVOLT-GEB10IS	1	1-17W-T8	3500K	MVOLT		CABINET	
J	SURFACE MOUNT, ACRYLIC LENSE, LOW PROFILE, 48", 3 LAMP, T8, 32 WATT, LINEAR FLOURESCENT, WITH ONE 1-LAMP AND ONE 2-LAMP ELECTRONIC BALLAST, PROGRAMMED RAPID START BALLAST	LITHONIA N2S-32-MVOLT-GEB10IS	2	2-32W-T8	3500K	MVOLT		CEILING	
K	UNDER CABINET MOUNT, 48", 1 LAMP, T8, 32 WATT, LINEAR FLOURESCENT, ONE 1-LAMP ELECTRONIC BALLAST, INSTANT START	LITHONIA N2S-32-MVOLT-GEB10IS	1	1-32W-T8	3500K	MVOLT		CABINET	
L	SHOWER DOWNLIGHT, 6" APERTURE, 1-LAMP, 18 WATT, TRIPLE TUBE COMPACT FLOURESCENT, VERTICAL BASE UP POSITION, ACRYLIC LENSE, SHOWER TRIM	GOTHAM LGFLP-1/18TRT-MVOLT	1	1-18W-TRT	3500K	MVOLT	RATED FOR WET LOCATION	CEILING	
M	OUTDOOD LED WALLPACK, FULL CUT OFF, WALL MOUNT	LITHONIA OLW-31	1	1-31W-LED	5000K	MVOLT		8' AFF	
P	REMOTE EMERGENCY SINGLE LIGHT	LITHONIA ELA-W-NX	1	1-12W, 12V HALOGEN		12V		8' AFF	
X	SINGLE FACE WALL MOUNT EXIT SIGN, LED	EXITRONIX G602-WB-BL	1	1-4W-LED		120V		7.5' AFF	
X1	DOUBLE FACE WALL MOUNT EXIT SIGN, LED	EXITRONIX G603-WB-BL	1	1-4W-LED		120V		CEILING	

**LIGHTING SCHEDULE NOTES:**  
1. FIXTURE MANUFACTURER AND TYPE SHOWN AS LEVEL OF QUALITY AND MINIMUM STANDARD. ELECTRICAL CONTRACTOR MAY SUBSTITUTE WITH EQUAL BY LITHONIA, METALUX, OR COLUMBIA AS APPROVED BY OWNER.  
2. PROVIDE ALL LAMPS FOR FIXTURES, INCLUDE 25% (MINIMUM 2) SPARE OF EACH TYPE.  
3. FLOURESCENT FIXTURES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVED IN PLACE SHALL BE PROVIDED WITH A DISCONNECT MEANS EITHER INTERNAL OR EXTERNAL TO EACH LUMINAIRE, TO DISCONNECT SIMULTANEOUSLY FROM THE SOURCE OF SUPPLY ALL CONDUCTORS OF THE BALLAST, INCLUDING THE GROUNDED CONDUCTOR. THE LINE SIDE TERMINALS OF THE DISCONNECTING MEANS SHALL BE GUARDED. THE DISCONNECTING MEANS SHALL BE LOCATED SO AS TO BE ACCESSIBLE TO QUALIFIED PERSONS BEFORE SERVICING OR MAINTAINING THE BALLAST.



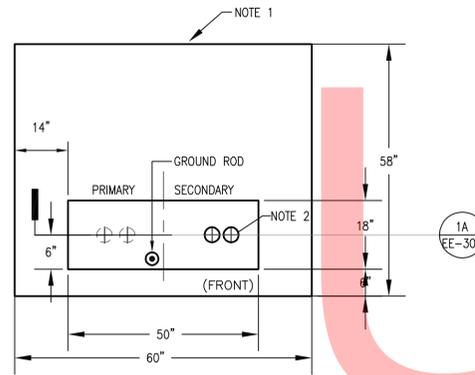
1 DEVICE MOUNTING HEIGHT DETAIL  
SCALE: NOT TO SCALE



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**DETAIL NOTES:**

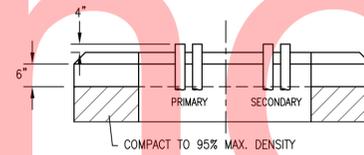
1. PROVIDE DELMARVA APPROVED PRE-MANUFACTURED TRANSFORMER PAD. INSTALL PER DELMARVA STANDARDS.
2. SECONDARY CONDUIT SHALL BE CENTERED SYMMETRICALLY WITHIN SECONDARY AREA.
3. LOCATE PAD A MINIMUM OF 8', BUT NOT TO EXCEED 20' FROM DRIVEWAY. ORIENT PAD SO THAT FRONT OF TRANSFORMER FACES DRIVEWAY.
4. COORDINATE ACTUAL DIMENSIONS WITH MANUFACTURER REQUIREMENTS.



**1 TRANSFORMER PAD DETAIL**  
EE-303 SCALE: NOT TO SCALE

**DETAIL NOTES:**

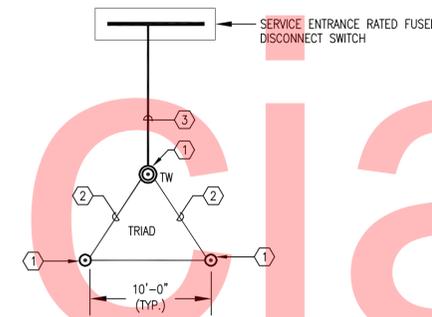
1. SECONDARY CONDUIT SHALL BE CENTERED SYMMETRICALLY WITHIN 18" X 18" AREA.
2. APPROXIMATE WEIGHT OF PRECAST PAD IS 2200 POUNDS FOR 500 KVA AND SMALLER TRANSFORMERS.
3. CUSTOMER TO INSTALL COPPER-COATED ROD AS REQUIRED, AVOIDING INCOMING CONDUITS.
4. INSTALL DELMARVA TRANSFORMER FOUNDATION IN ACCORDANCE WITH DELMARVA REQUIREMENTS. COORDINATE FINAL SIZE WITH DELMARVA FOR ACTUAL TRANSFORMER PROVIDED.
5. REFER TO DETAIL 5/EE-303 FOR CONDUITS TURNING UP INTO PAD.



**1A DELMARVA TRANSFORMER PAD SECTION A-A**  
EE-303 SCALE: NOT TO SCALE

**DETAIL KEYNOTES:**

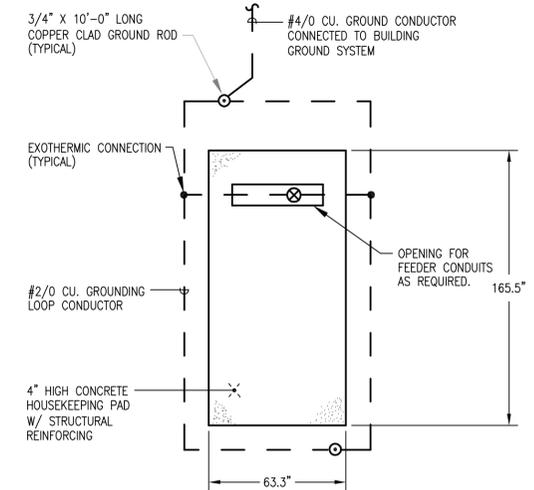
- 1 10'-0" LONG X 3/4" DIAMETER COPPER CLAD STEEL GROUND ROD DRIVEN WITH TOP 1'-0" BELOW GRADE.
- 2 #2/0 BARE COPPER GROUND CONDUCTOR IN 1-1/4"
- 3 #2/0 COPPER INSULATED CONDUCTOR IN 1-1/4" CONDUIT.



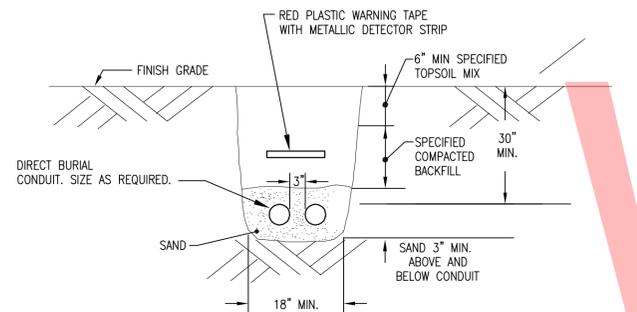
**2 ELECTRIC SERVICE GROUNDING ELECTRODE- DETAIL**  
EE-303 SCALE: NONE

**DETAIL NOTES:**

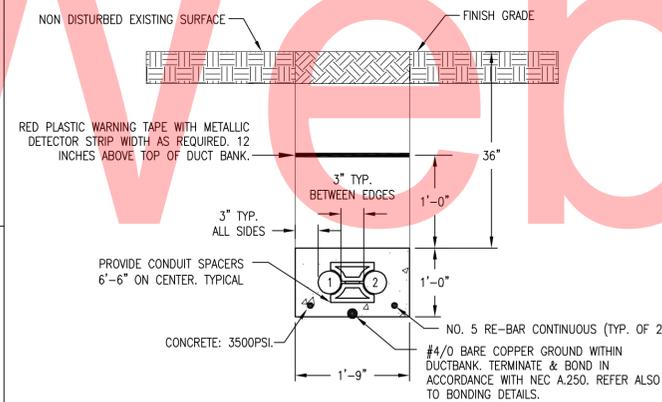
1. PAD SHALL BE EQUIPPED WITH CATCH BASIN CURB.
2. COORDINATE ACTUAL PAD DIMENSIONS WITH GENERATOR MANUFACTURER.



**3 TYPICAL GENERATOR PAD DETAIL**  
EE-303 SCALE: NONE



**4 DIRECT BURIED CONDUIT**  
EE-303 SCALE: NONE

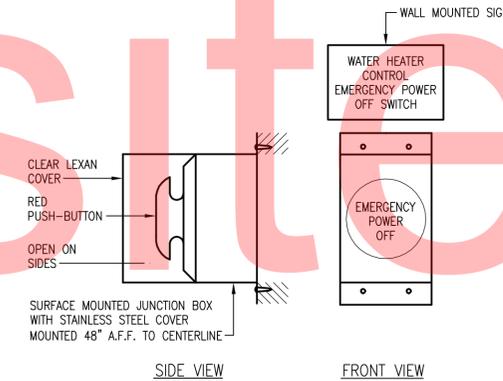


**6 DELMARVA PRIMARY FEEDER DUCT BANK**  
EE-303 SCALE: NOT TO SCALE

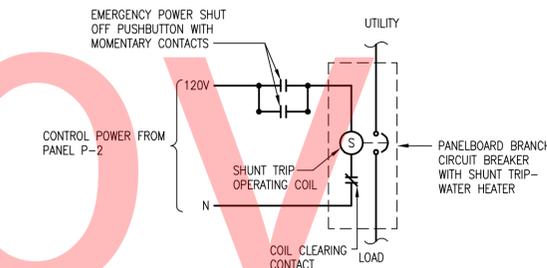
CONDUIT SIZE AND DESCRIPTION	
1	4" PVC SCH. 40 (DELMARVA PRIMARY FEEDER)
2	4" PVC SCH. 40 (DELMARVA PRIMARY FEEDER)

**DETAIL NOTES:**

1. PROVIDE RED MUSHROOM MOMENTARY CONTACT OPERATOR (SQUARE D #KR-25R OR APPROVED EQUAL) AND TWO CONTACT BLOCKS WITH NORMALLY OPEN CONTACTS (SQUARE D #KA-2 OR APPROVED EQUAL).
2. PUSHBUTTON SHALL BE INSTALLED IN STAINLESS STEEL COVER WITH ENGRAVED LABEL "EMERGENCY POWER OFF" AS SHOWN.



**7 PUSH-BUTTON DETAIL EMERGENCY POWER OFF**  
EE-303 SCALE: NONE



**8 PANELBOARD EMERGENCY POWER SHUT OFF DETAIL**  
EE-303 SCALE: NONE



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