



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY  
GOVERNOR

ANTHONY J. TATA  
SECRETARY

August 14, 2014

CONTRACT: DB00199  
TIP NUMBER: K-5101  
WBS ELEMENT: 42229.3.FS1  
COUNTY: Craven  
ROUTE: US 70  
DESCRIPTION: Rest Area Renovation  
**ADDENDUM NUMBER 1**

TO: Prospective Bidders

Please note the following revision to the contract proposal for the above-referenced project.

The following corrections, clarifications, or supplemental information is to be incorporated into the Contractor(s) bid to perform the Work:

**CHANGES TO DRAWINGS:**

1. Attached Drawing Nos. P1.1, P1.2, P1.3, P1.4, M1.1, M1.2, E1.1, E1.2, E1.3, U1.1, U1.2, and U1.3 dated 7-31-2014, Revision 1, supercede all previously issued drawings.

Sincerely,

A handwritten signature in black ink, appearing to read "Sarah Lentine".

Sarah Lentine  
Division Contract Officer

Attachment

cc: Mr. Ed Eatmon, PE  
Mr. Brad McMannen, PE  
Ms. Betty Caldwell, PE

MAILING ADDRESS:  
DIVISION TWO - OPERATIONS  
P.O. BOX 1587  
GREENVILLE, NC 27835

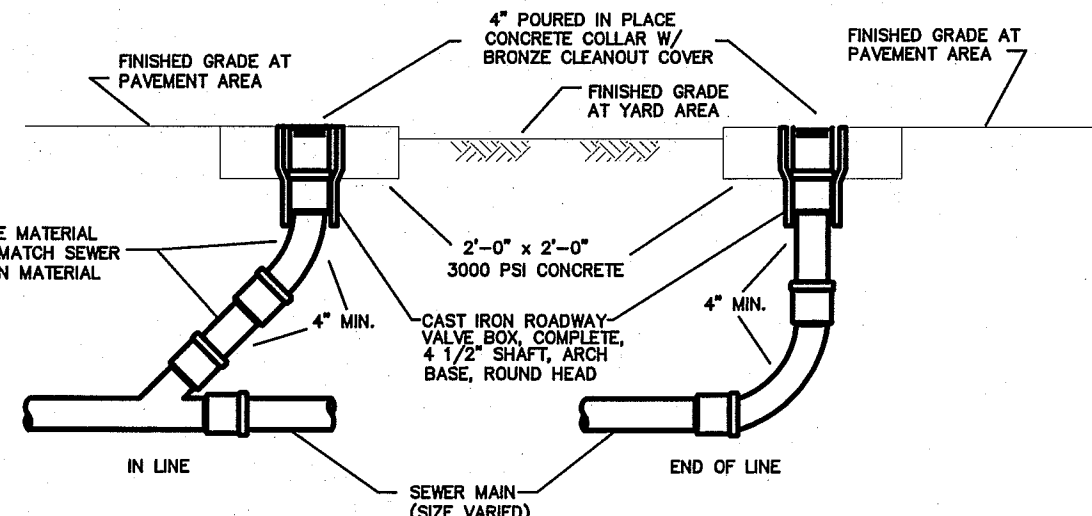
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LOCATION:  
1704 N GREENE ST  
GREENVILLE, NC

PLUMBING FIXTURE SCHEDULE \*

MARK	DESCRIPTION	ALTERNATE MANUFACTURER/MODEL	ALTERNATE MANUFACTURER/MODEL
WC/ WCHC	WATER CLOSET (WALL MOUNT BACK SPUD) AMERICAN STANDARD "AFWALL FLOWISE" #3353.001, ELONGATED BOWL, 1.28 GPF, VITREOUS CHINA, AND 1 1/2" TOP SPUD. WCHC TO BE ADA COMPLIANT. PROVIDE OPEN FRONT SEAT, AND SENSOR W/ MANUAL OVERRIDE FLUSH VALVE, EQUAL TO SLOAN OPTIMA MODEL 152-1.28-ES-S-TMO VALVE.	ZURN #Z5617 FIXTURE. ZURN #ZEM56140AV FLUSH VALVE.	KOHLER KINGSTON #K-4329 FIXTURE. HYDROTEK H-8000C-CB FLUSH VALVE.
WC-1	WATER CLOSET (FLOOR MOUNT TOP SPUD) AMERICAN STANDARD "MADERA FLOWISE" #3461.001, ELONGATED BOWL, 1.28 GPF, VITREOUS CHINA, AND 1 1/2" TOP SPUD. ADA COMPLIANT. PROVIDE OPEN FRONT SEAT, AND SENSOR W/ MANUAL OVERRIDE FLUSH VALVE, EQUAL TO SLOAN OPTIMA 111-1.28-ES-S-TMO (AC POWERED) FLUSH VALVE.	ZURN #Z5665 FIXTURE. ZURN #ZEM56000IS FLUSH VALVE.	KOHLER HIGHCREST #K-4302 FIXTURE. HYDROTEK HB-128 VALVE.
UR	URINAL AMERICAN STANDARD "WASHBROOK FLOWISE" #6515.001, 1.0 GPF, VITREOUS CHINA, 3/4" BACK SPUD, AND SENSOR W/ MANUAL OVERRIDE FLUSH VALVE SLOAN #195-1.0-ES-S-TMO (AC POWERED). ADA COMPLIANT.	ZURN #5760 WITH ZURN ZEM56195AV-OB FLUSH VALVE.	TOTO #UT104EV WITH TOTO #TEU2LN11 FLUSH VALVE.
L1	LAVATORY (ACCESSIBLE, WALL HUNG) AMERICAN STANDARD "LUCERNE" # 0356.421 WHITE WITH CONCEALED ARM CARRIER AND DRAIN ASSEMBLY (7723.018). ADA COMPLIANT. FURNISH WITH SLOAN ETF-610 AC POWERED SENSOR FAUCET. PROVIDE ACCESSORIES AS REQUIRED. COORDINATE TRIM AND SINK FAUCET DRILLING FOR SINGLE HOLE OR AS REQUIRED PER OWNER.	KOHLER GREENWICH #K-2032 WITH HYDROTEK H-1000C FAUCET.	ELIER MURRAY II #051-0244 WITH AMERICAN STANDARD INNSBROOK #6059.205.
L2	2- STATION LAVATORY (ACCESSIBLE) SLOAN SLOANSTONE TWO STATION LAVATORY # ELS-72275-MSD, ADA COMPLIANT. VERIFY COLOR W/ARCH. FURNISH WITH SLOAN OPTIMA EAF-275 SOLAR POWERED FAUCETS. PROVIDE BATTERY POWERED SOAP DISPENSER ESD-350.	BRADLEY MODEL EXD-2N WITH HYDROTEK 7000SLE SOLAR SENSOR FAUCETS.	WILCOUGHBY MODEL WAW-232-DMF WITH TOTO TEL5510 SOLAR SENSOR FAUCETS.
MS	MOP SINK ACORN SERIES TRH, TERRAZZO SERVICE BASIN WITH REDUCED HEIGHT AND STAINLESS STEEL GRID STRAINER WITH 3" PIPE CONNECTION. COORDINATE SIZE W/MBL AND SBL. VERIFY W/ARCH. FAUCET: ACORN MODEL KFC CHROME PLATED SERVICE FAUCET WITH VACUUM BREAKER. INTEGRAL STOPS, ADJUSTABLE WALL BRACE, PAUL HOOK AND 3/4" HOSE THREAD ON SPOUT. HOSE & HOSE BRACKET: ACORN MODEL KH5E LONG FLEXIBLE 5/8" RUBBER HOSE, CLOTH REINFORCED.	FLORESTONE SERIES 92 WITH SPEAKMAN #MR-371 FAUCET, HOSE AND MOP HANGER.	CRANE MOP SINK #TSB-3002 WITH #830-AA FAUCET, #632-AA HOSE, #1453-BB STRAINER, #R59-CC MOP HANGER, #E-77-AA BUMPER GUARD, AND STAINLESS STEEL SPLASH GUARD.
CP	CIRCULATING PUMP BELL & GOSSET, SERIES NBF-22 IN-LINE CIRCULATOR PUMP, 1/12 HP, 115 VAC, FLA=0.8 PH, 3/4" CONN., WITH A MAXIMUM OF 22 GPM AND 15' TDH. PUMP TO BE ALL BRONZE CONSTRUCTION, COORDINATE WITH ELEC. CONTRACTOR FOR POWER FEED. PROVIDE DISCONNECT SWITCH.	TACO MODEL #110.	ARMSTRONG MODEL #S-25.
EWC	HIGH/LOW ELECTRIC WATER COOLER OASIS DUAL LEVEL ELECTRIC WATER COOLER. MODEL # PBACSL, ADA COMPLIANT. PIPE TO SINGLE DRAIN AND SUPPLY LINE. VERIFY HIGH/LOW UNIT MOUNTING SIDES AND MODEL.	HALSEY TAYLOR #HACBBL-0.	ELKAY MODEL #EZSTL8LC.
TPV	TRAP PRIMER VALVE PPP INC. MODEL# PR-500, 1/2" INLET, 1/2" OUTLET	JOSAM #88300.	WATTS #A200.
WCS	WATER CLOSET SUPPORTS ZURN Z1203-N (FOR WC) 4" NO HUB. COORDINATE MODEL WITH LEFT/RIGHT FLOW DIRECTION. PROVIDE MODEL Z1203-N-X FOR WCHC.	JAY R. SMITH #210 SERIES.	JOSAM STD. 4" NO HUB, 2" VENT.
URS	URINAL SUPPORTS ZURN Z-1222 WITH ADJUSTABLE PLATES.	JAY R. SMITH #0637.	JOSAM #17550.
HB	HOSE BIBB ZURN Z-1330-C, 3/4" WALL HYDRANT WITH VANDAL RESISTANT VACUUM BREAKER. ENGAGED WITH KEY LOCK.	WATTS #HY-330.	JAY R. SMITH #55090QT.
△ EWH-1	ELECTRIC WATER HEATER #1 (LTHW) AO SMITH WATER HEATER MODEL #DEN-120, 119 GALLONS, 4500W, 3/4" INLET AND OUTLET, 208 VOLT, 1 PHASE, AO SMITH MODEL #PMC-10 EXPANSION TANK.	BRADFORD WHITE #LD-120R3-3. AMTROL ST-12-C EXPANSION TANK.	STATE #ESB-120-DORT. STATE ETC-2X EXPANSION TANK.
△ EWH-2	ELECTRIC WATER HEATER #2 (HTHW) A.O. SMITH MODEL EJC-10, 10 GALLON, 1650 WATT, 3/4" INLET AND OUTLET, 120V. MOUNT-ON-WALL. MODEL# PMC-2 EXPANSION TANK.	RHEEM #B1VP10S. AMTROL ST-5-C EXPANSION TANK.	BRADFORD WHITE #M-1-10U6SS. STATE ETC-2X EXPANSION TANK.
FD	FLOOR DRAIN ZURN ZN-415 WITH DEEP SEAL P-TRAP, 5" X 5" TYPE "S" SQUARE STRAINER AND 3" CONNECTION, VANDAL-PROOF TOP. PROVIDE MODEL WITH TRAP PRIMER CONNECTION ONLY FOR FLOOR DRAINS IN AREAS NOTED ON SHEET P300.	JOSAM #30000-S.	JAY R. SMITH #2005-B.
MTR	WATER METER NEPTUNE, 3" TURBINE METER INDICATION SHALL BE WITH BOTTOM OF GAUGE TOWARD FLOOR.	PARK ENVIRONMENTAL EQUIP. 3" TURBINE.	HERSEY HORIZON 3" TURBINE.
FPHB	FREEZE-PROOF HOSEBIBB ZURN Z-1320-C, 3/4" NON FREEZE WALL HYDRANT WITH VANDAL RESISTANT VACUUM BREAKER. ENGAGED WITH KEY LOCK.	JAY R. SMITH #55090QT.	WATTS HY-725.
RPZ	3" REDUCED PRESSURE BACKFLOW PREVENTER WATTS MODEL #0090T-3" REDUCED PRESSURE BACKFLOW PREVENTER, CAST IRON CONSTRUCTION.	ZURN #375-3"	FEBCO #B60-3"
US	UTILITY SINK FLORESTONE MODEL FM-1, FLOOR MOUNTED SINK TO COME WITH 4 HEAVY DUTY MOLDED LEGS, WITH 1 1/2" DRAIN OPENING, 20 GALLON CAPACITY. PROVIDE FAUCET, P-TRAP, AND SHUT-OFF VALVES.	---	---

\* OR APPROVED EQUAL



4 GRAVITY SEWER CLEAN-OUT  
P1.1 NTS

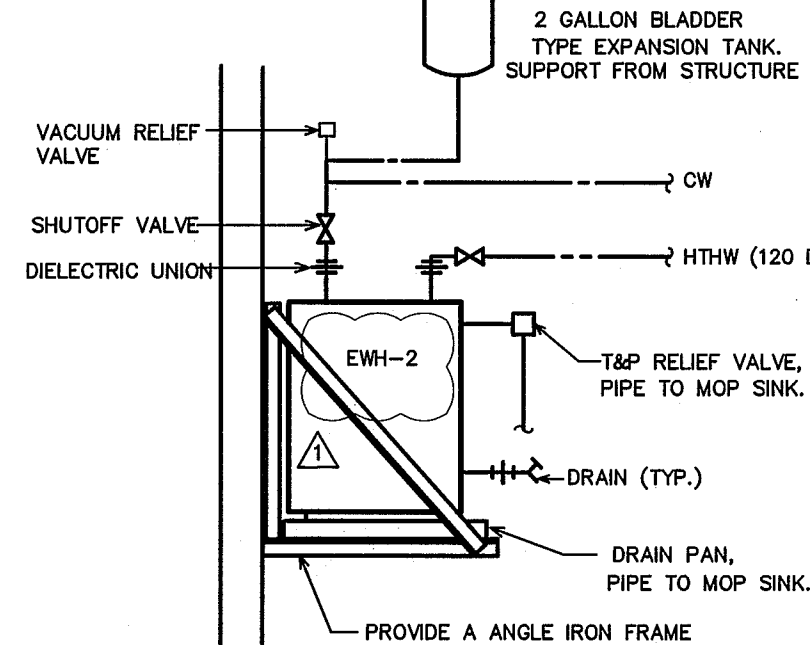
LOAD SUMMARY - PLUMBING

WASTE DEMAND (FU)	WATER DEMAND (FU)	WATER DEMAND (GPM)
127.0	172.0	58.3

GENERAL NOTES - PLUMBING

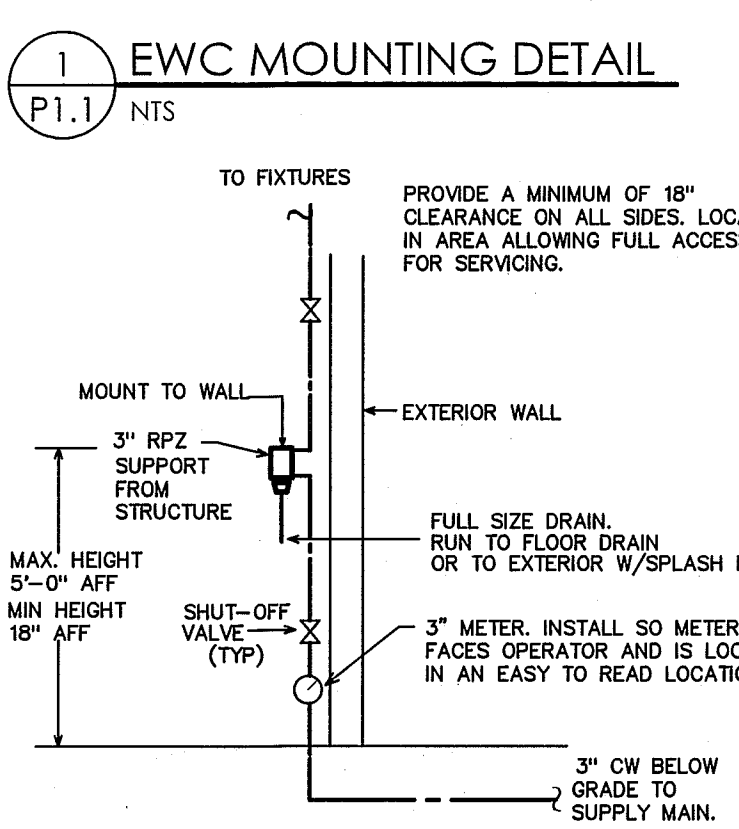
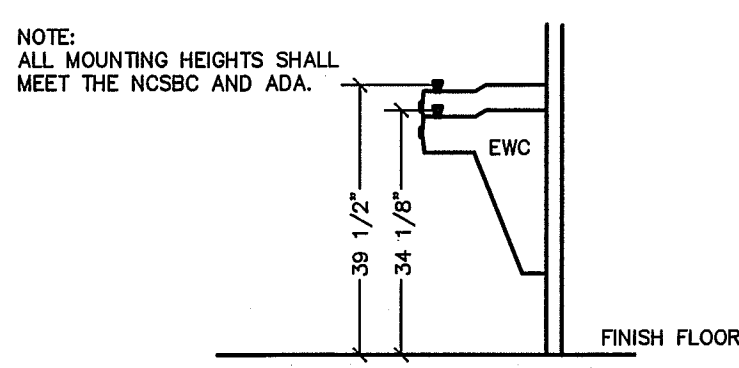
1. PREPLAN ALL WORK PRIOR TO ORDERING, PURCHASING, OR FABRICATING ANY PART OF THE WORK DESCRIBED BY THIS DRAWING.
2. IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS WITH EXISTING FIELD CONDITIONS OR THE WORK OF OTHER TRADES.
3. RESOLVE ALL CONFLICTS PRIOR TO INCURRING ANY MATERIAL OR LABOR EXPENSES.
4. COMPLY WITH THE MANUFACTURER'S TECHNICAL INSTRUCTIONS WHEN INSTALLING PLUMBING FIXTURES, MATERIALS, AND DEVICES.
5. LOCATE FIXTURES AND EQUIPMENT GENERALLY AS SHOWN ON THE PLANS; HOWEVER, COORDINATE LOCATIONS WITH ACTUAL FIELD CONDITIONS TO PRESERVE ALL CODE-REQUIRED AND MANUFACTURER - REQUESTED SERVICE CLEARANCES.
6. COORDINATE ROUTING OF ALL PIPING WITH BUILDING STRUCTURE AND WITH THE WORK OF OTHER TRADES. OFFSET VENT PIPING AROUND BEAMS AND JOISTS AS NECESSARY.
7. ALL HANDICAP FIXTURES AND INSTALLATION OF HANDICAP FIXTURES SHALL CONFORM TO ADA REQUIREMENTS.
8. AT EXTERIOR WALL, INSTALL WATER PIPING ON HEATED SIDE OF WALL INSULATION.
9. PROVIDE WATER HAMMER ARRESTORS AT THE END OF EACH COLD AND HOT WATER BRANCH RISER. SIZE ARRESTOR APPROPRIATELY.
10. PROVIDE CONCRETE RING FOR ALL EXTERIOR CLEAN-OUTS.
11. REVIEW SITE PLAN FOR UTILITIES AND ORIENTATION PRIOR TO START OF WORK.
12. G.C. TO PROVIDE ROOF PENETRATIONS.
13. PROVIDE HTHW AT 120 DEGREES (F) AND LTHW AT 90 DEGREES (F).

PROVIDE HEAT TRAPS ON THE SUPPLY AND DISCHARGE PIPING OF THE WATER HEATERS UNLESS PROVIDED BY WATER HEATER MANUFACTURER. PROVIDE "HUSH HEAT TRAP FITTINGS" BY PERFECTION CORPORATION OR APPROVED EQUAL. HEAT TRAPS ARE REQUIRED PER SECTION 804.4 OF THE ENERGY CODE.

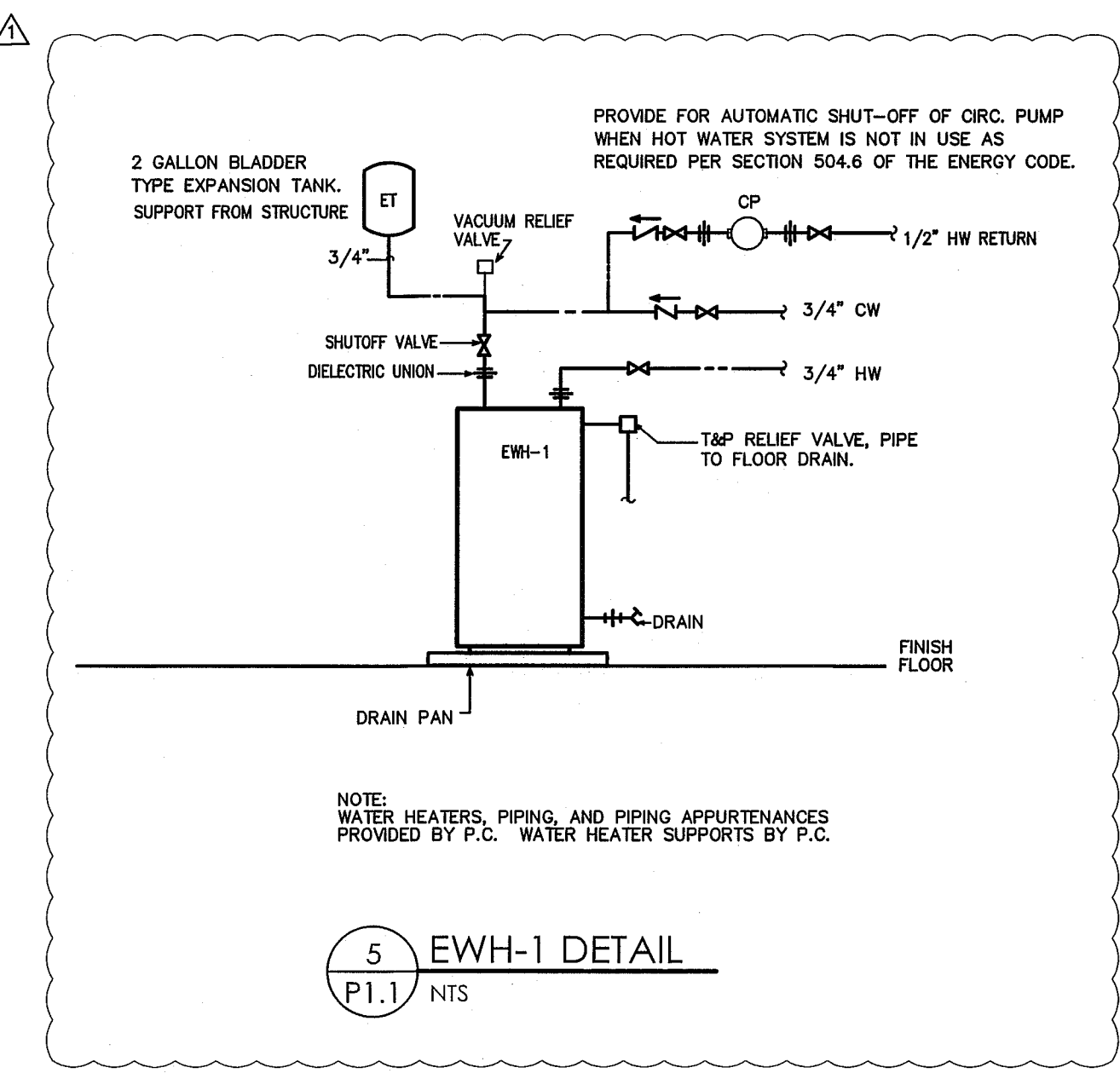


NOTE: WATER HEATERS, PIPING, AND PIPING APPURTENANCES PROVIDED BY P.C. WATER HEATER SUPPORTS BY P.C.

2 EWH-2 DETAIL  
P1.1 NTS



3 RPZ MOUNTING DETAIL  
P1.1 NTS



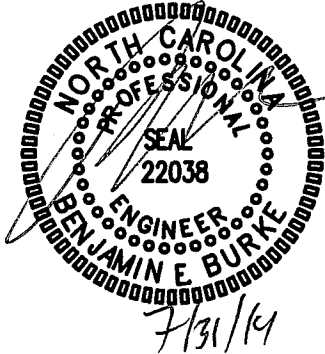
5 EWH-1 DETAIL  
P1.1 NTS

SYMBOL LEGEND - PLUMBING

SYMBOL	DESCRIPTION
---	WASTE PIPING (W)
---	VENT PIPING (V)
---	COLD WATER PIPING (CW)
---	HOT WATER PIPING (HW)
---	HOT WATER RETURN PIPING (HWR)
---	HIGH TEMPERATURE HW PIPING (HTHW) 120 DEG. F
---	LOW TEMPERATURE HW PIPING (LTHW) 90 DEG. F
○	CLEANOUT FINISH FLOOR
⊥	WALL/HORIZONTAL CLEANOUT
⊕	CLEANOUT FINISH GRADE - PROVIDE FLUSH CONCRETE COLLAR AND BRONZE COVER
---	DIELECTRIC UNION
---	SHUT-OFF VALVE
---	CHECK VALVE
---	BALANCING VALVE
---	CIRCULATION PUMP (CP)
---	WATER METER (MTR)
---	VENT THRU ROOF (VTR)

ENGINEER

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GENERAL NOTES

KEY PLAN

△	REVISE FOR RE-BID	7-28-2014
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NO	REVISION	DATE
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**JKF**  
ARCHITECTURE

P.O. BOX 20662 GREENVILLE, NC 27658 PHONE 252-355-1068

NC DOT PROJECT  
42229.1.1 (K-5101) US 70 REST  
AREA RENOVATIONS  
NEW BERN, CRAVEN COUNTY, NC

DRAWING TITLE  
PLUMBING SCHEDULE & NOTES

SCALE  
1/4" = 1'-0"

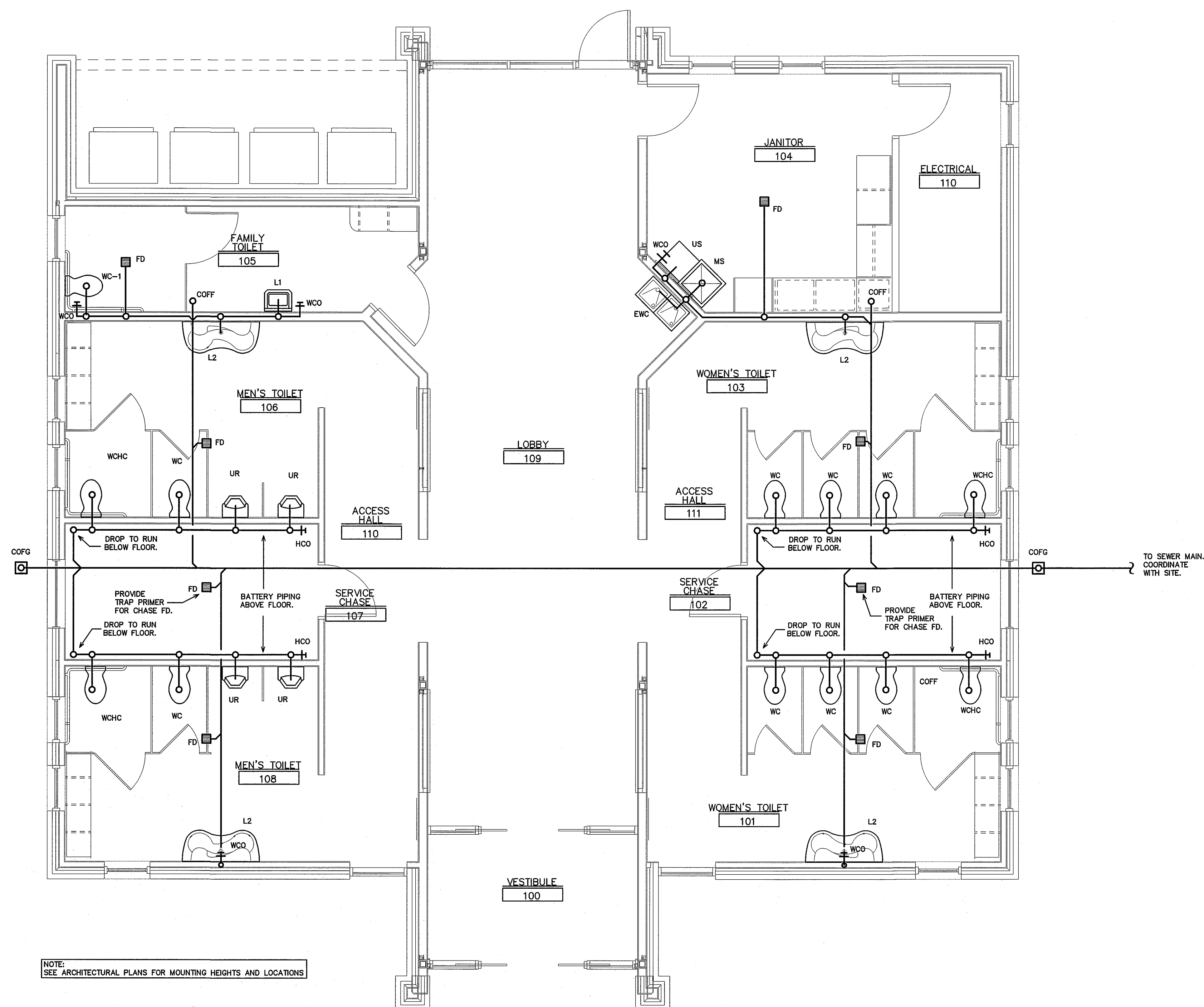
DRAWN  
JME

CHECKED  
BEB

DATE  
01-10-2014

PROJECT NO.  
2013-18

P1.1

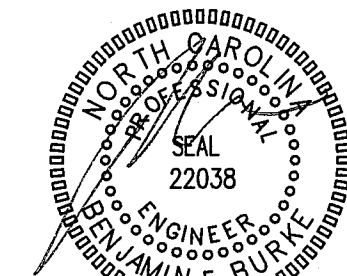


1 DWV PLAN  
P1.2 1/4" = 1'-0"

ENGINEER

ENGINEER

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GENERAL NOTES

KEY PLAN

Δ	REVISE FOR RE-BID	7-28-2014
NO	REVISION	DATE

**J K F**  
ARCHITECTURE

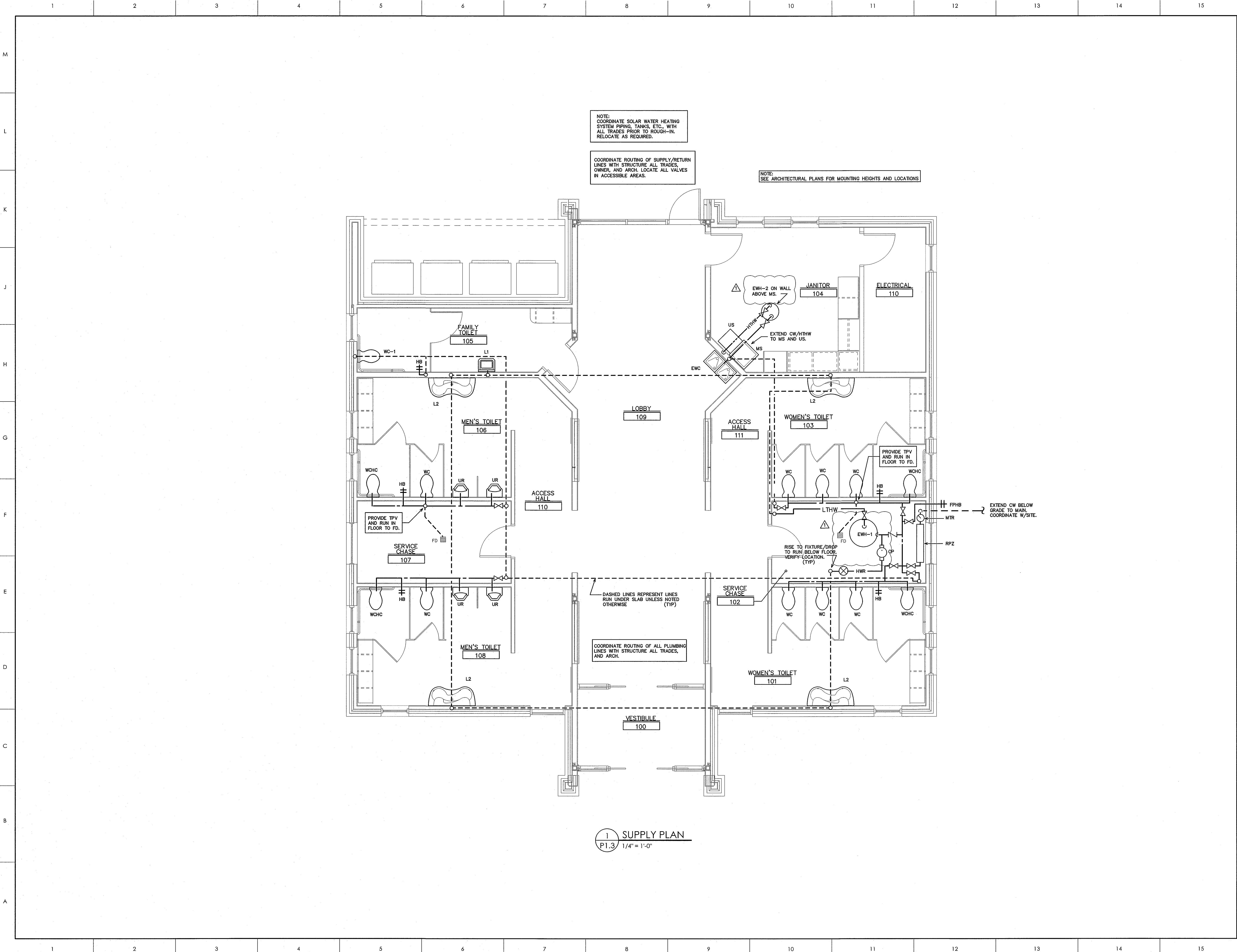
P.O. BOX 20662 GREENVILLE, NC 27688 PHONE 252-355-1068

NC DOT PROJECT  
42229.1.1 (K-5101) US 70 REST  
AREA RENOVATIONS  
NEW BERN, CRAVEN COUNTY, NC

DRAWING TITLE  
DWV PLAN

SCALE 1/4" = 1'-0"	DRAWING NO.
DRAWN JME	P1.2
CHECKED BEB	
DATE 01-10-2014	
PROJECT NO. 2013-18	

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**SEAL**  
NORTH CAROLINA  
REGISTERED PROFESSIONAL ENGINEER  
BENJAMIN E. BURKE  
22038  
12/31/14

GENERAL NOTES

KEY PLAN

NO	REVISION	DATE
1	REVISE FOR RF-BID REVISE FOR RF-BID	7-28-2014 7-28-2014

**J K F**  
ARCHITECTURE

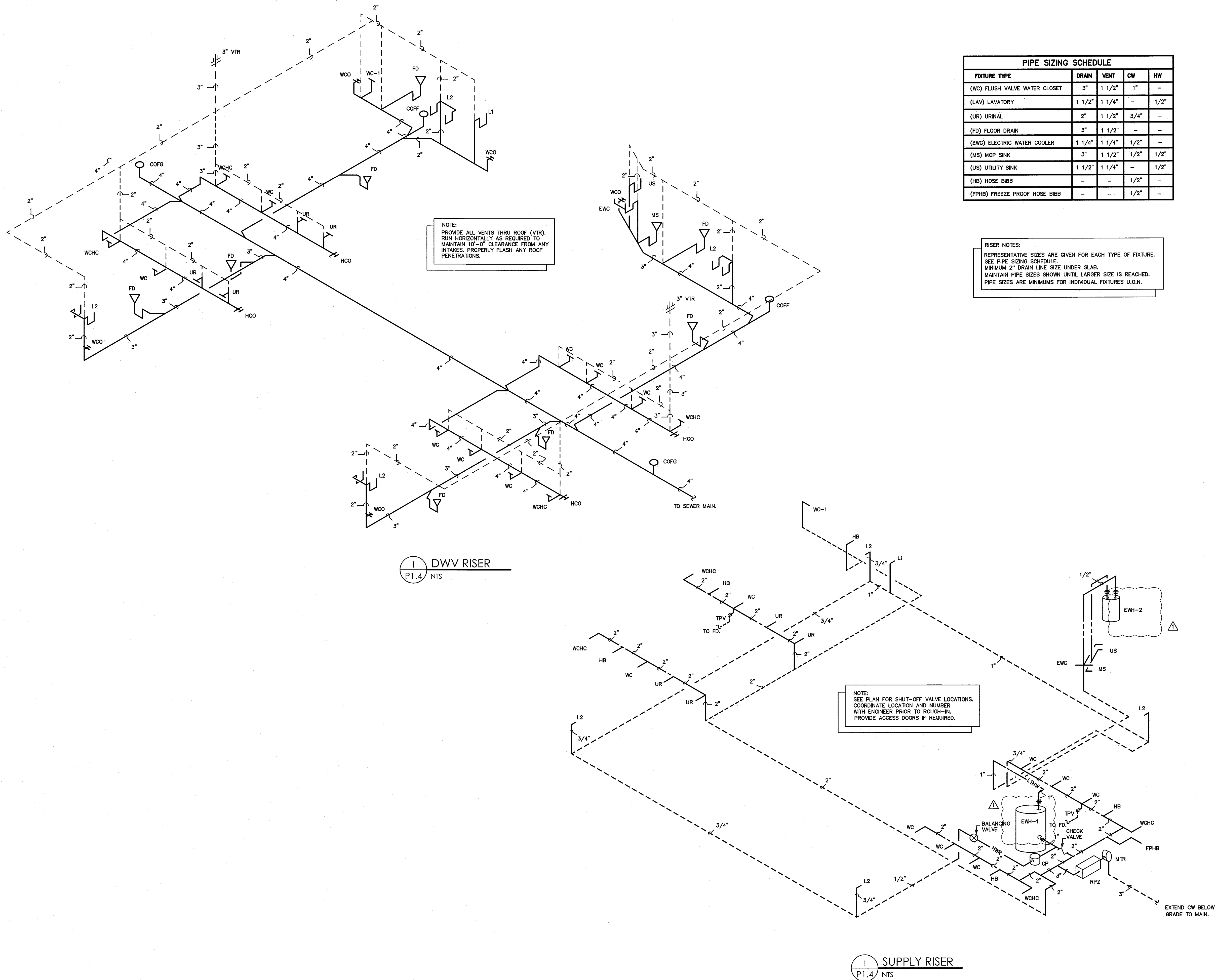
P.O. BOX 20642 GREENVILLE, NC 27658 PHONE 252-355-1048

NC DOT PROJECT  
42229.1:1 (K-5101) US 70 REST  
AREA RENOVATIONS  
NEW BERN, CRAVEN COUNTY, NC

DRAWING TITLE  
**SUPPLY PLAN**

SCALE	DRAWING NO
1/4" = 1'-0"	
DRAWN DS	<b>P1.3</b>
CHECKED BEB	
DATE 01-10-2014	
PROJECT NO. 2013-18	

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ENGINEER

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**PROFESSIONAL SEAL**  
NORTH CAROLINA  
PLUMBING ENGINEER  
BENJAMIN E. BURKE  
22038  
7/31/14

GENERAL NOTES

KEY PLAN

REVISION FOR RE-BID 7-28-2014

NO REVISION DATE

**JKF**  
ARCHITECTURE

P.O. BOX 20462 GREENVILLE, NC 27658 PHONE 252-355-1068

NC DOT PROJECT  
42229.1.1 (K-5101) US 70 REST  
AREA RENOVATIONS  
NEW BERN, CRAVEN COUNTY, NC

DRAWING TITLE  
RISERS

SCALE  
1/4" = 1'-0"

DRAWN  
DS

CHECKED  
BEB

DATE  
01-10-2014

PROJECT NO.  
2013-18

DRAWING NO.  
P1.4

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HVAC SCHEDULE																
EQUIP. NUMBER	MODEL NO.	INDOOR UNIT										OUTDOOR UNIT				
		FAN			COOLING CAPACITY		COIL HEATING CAPACITY	ELECTRICAL HEATING		VOLTAGE	MCA	FUSE/CB MAX	MODEL NO.	POWER	COMP. RLA	MCA
		CFM	HP	POWER	MIN TOTAL	MIN SENS.		MODEL #	CAPACITY							
AHU-1/HP-1	CARRIER FX4DNF49T00	16000/1/2"WC	3/4	208-1	45.8 MBH	34.9 MBH	24.7/46.5 MBH @ 17/47F	KFCEH0901N10	34 MBH (7.5 KW)	208-1	53.8	60 (TD)	CARRIER 25HBCS48A003	208-1	21.8	28.5
AHU-2/HP-2	CARRIER FX4DNF49T00	16000/1/2"WC	3/4	208-1	45.8 MBH	34.9 MBH	24.7/46.5 MBH @ 17/47F	KFCEH0901N10	34 MBH (7.5 KW)	208-1	53.8	60 (TD)	CARRIER 25HBCS48A003	208-1	21.8	28.5

- SCHEDULE NOTES:**
- PROVIDE WITH DISCONNECT SWITCH, ELECTRONIC PROGRAMMABLE THERMOSTAT WITH LOCKING COVER, TIME DELAY RELAY, FILTER RACK WITH FILTERS, AND HEAD PRESSURE CONTROLLER AND SINGLE POINT POWER CONNECTIONS.
  - PROVIDE MINIMUM OUTDOOR AIR FLOW SETTINGS AS PER PLAN.
  - AHU's ARE BASED ON 1/2" EXT. WATER COLUMN STATIC.
  - OR EQUAL BY TRANE OR YORK
  - PROVIDE SHUTDOWN RELAY SWITCH WITH A MAXIMUM OF 60 SECOND DELAY ON HEATING CYCLE, TO BE WIRED TO THE DUCT SMOKE DETECTORS AS PROVIDED BY THE ELECTRICAL CONTRACTOR.
  - SPECIFIED COOLING CAPACITIES ARE BASED ON STANDARD CONDITIONS: EAT= DB/MB = 80/67 F; AMBIENT = 95 F. COIL HEATING CAPACITIES ARE BASED ON 65 F EDB. ELECTRIC HEATER RATINGS ARE AT 240V.
  - PROVIDE NON-PROGRAMMABLE, AUTOMATIC CHANGEVER, DIGITAL THERMOSTATS FOR AHU-1/2. FAN SHALL BE SET IN "ON" POSITION.

ENERGY RECOVERY UNIT SCHEDULE																
		FANS / MOTORS						THERMAL PERFORMANCE								
		ENERGY RECOVERY (THERMAL) CAPACITY									INLET / OUTLET CONDITIONS					
EQUIP. NUMBER	MODEL NO.	FLOW	STATIC PRESSURE (EXTERNAL)	FAN MOTORS FAN MOTORS	PL (FOR UNIT SINGLE POINT)	VOLTS/ PHASE/ HZ	MCA	FUSE/CB MAX	COOLING CAPACITY (MBH / TON)	HEATING CAPACITY (MBH)	OUTSIDE AIR TEMP (°F) & HUMIDITY (DB) / (WB)		ROOM AIR TEMP (°F) & HUMIDITY (DB) / (WB OR RH)		NOTES:	
									TOTAL	TOTAL	SUMMER	WINTER	SUMMER	WINTER		
ERV-1 & 2	MICROMETL FWH1H16800HEF	750 CFM	0.5 IN H <sub>2</sub> O	(2) FOR FANS	14.78 A	208-230V 1 PH 60 HZ	18.45 A	25 A	23.55/1.96	36.04	94F / 72F	22F	75F / 50%	68F / 50%	ALL	

- NOTES:**
- FLOW & LOADS BASED ON ASH-1080 PERFORMANCE & CERTIFIED CORE.
  - SHUT DOWN ALL FANS ON DUCT SMOKE DETECTOR ALARM CONDITION.
  - VENTILATION TYPE: ERV WHEEL, HEAT & HUMIDITY TRANSFER.
  - INCLUDE INTEGRAL DISPOSABLE FILTERS (OUTSIDE AND ROOM AIR) WITH MERV8 OR BETTER RATING.
  - INCLUDE SINGLE POINT ELECTRICAL POWER CONNECTION.
  - HOUSING SHALL BE GALVANIZED, .20 GAUGE (OR THICKER) STEEL WITH LAPPED CORNERS.
  - OR EQUALS BY SEMCO, OR THYBAR.
  - SERVICE ACCESS DOORS SHALL BE GASKETED & PROVIDE ACCESS FOR MAINTENANCE OF ALL COMPONENTS.
  - INCLUDE INSULATION ON ALL CASE WALLS & DOORS.
  - INCLUDE THERMALLY PROTECTED MOTORS WITH STARTERS.
  - UL LISTED 1995
  - PROVIDE WITH FUSED DISCONNECT SWITCH.

AIR DISTRIBUTION SCHEDULE							
MARK	MANUFACTURER *	MODEL NO.	FACE SIZE	NECK SIZE	MATERIAL	SERVICE	NOTES
A	CARNES	RADAH	12" X 6"	12" X 6"	ALUMINUM	SUPPLY	COLOR BY ARCHITECT SIDEWALL MOUNT
B	CARNES	RADAH	16" X 6"	12" X 6"	ALUMINUM	SUPPLY	COLOR BY ARCHITECT SIDEWALL MOUNT
RA	CARNES	RAJAH	18" X 18"	18" X 18"	ALUMINUM	RETURN	COLOR BY ARCHITECT CEILING MOUNT
EA	CARNES	RAJAH	14" X 10"	14" X 10"	ALUMINUM	EXHAUST	COLOR BY ARCHITECT SIDEWALL MOUNT
EB	CARNES	SSEA	17" DIA.	8" DIA.	STEEL	EXHAUST	COLOR BY ARCHITECT DUCT MOUNTED

COORDINATE BORDER TYPE WITH THE CEILING/WALL TYPE. SEE ARCH SHEETS PROVIDE DUCT TRANSITIONS AS REQUIRED.  
\* OR APPROVED EQUAL BY TUTTLE & BAILEY, OR METALAIR

EXHAUST FAN SCHEDULE	
EF-1	
EXHAUST FAN #1	* CARNES MODEL# VEDK-06-F3 ROOF MOUNTED EXHAUST FAN, 120 CFM @ 1/4" SP, 700 RPM, 1/20 HP, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, AND FACTORY PREFAB ROOF CURB. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES. PROVIDE FACTORY SPEED CONTROLLER FOR BALANCING FAN ONLY.
EF-2	
EXHAUST FAN #2	* CARNES MODEL# VEDK-06-F3 ROOF MOUNTED EXHAUST FAN, 120 CFM @ 1/4" SP, 700 RPM, 1/20 HP, 120V. THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE SWITCH AND WIRE THE UNIT. THE HVAC CONTRACTOR SHALL PROVIDE UNIT, AND FACTORY PREFAB ROOF CURB. LOCATE EXHAUST TERMINATION A MINIMUM OF 10'-0" FROM ANY INTAKES. PROVIDE FACTORY SPEED CONTROLLER FOR BALANCING FAN ONLY.

\* OR APPROVED EQUAL

LEGEND - MECHANICAL

- 12 X 8

RECTANGULAR GALVANIZED STEEL DUCTWORK
- 12" DIA.

RIGID ROUND GALVANIZED STEEL DUCTWORK
- RIGID ROUND RUNOUT DUCT TO SUPPLY DIFFUSER
- ☒

SUPPLY DIFFUSER
- ☑

RETURN GRILLE
- ⊙

THERMOSTAT WITH LOCKING, VANDAL PROOF COVER
- ⊙S

REMOTE WALL MOUNTED TEMPERATURE SENSOR
- ⊙  
X  
XXX

GRILLE TYPE  
MIN. CFM
- D —

CONDENSATE DRAIN PIPING
- R —

REFRIGERANT PIPING

GENERAL NOTES - MECHANICAL

- ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE CODE AND ALL LOCAL AND OTHER APPLICABLE CODES.
- ANY PERMITS AND INSPECTION FEES SHALL BE SECURED AND PAID FOR BY THE MECHANICAL CONTRACTOR (MC).
- ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMEN. THE MC SHALL COORDINATE ALL OF HIS WORK WITH THE GENERAL CONTRACTOR (GC) AND OTHER TRADES.
- THE LOCATION OF ALL DUCT, PIPING AND EQUIPMENT SHALL BE ADJUSTED TO ACCOMMODATE ANTICIPATED OR ENCOUNTERED INTERFERENCES.
- THESE PLANS ARE DIAGRAMMATIC AND MAY NOT SHOW MINOR DETAILS AND LOCATIONS. FOR DIMENSIONS REFER TO THE ARCHITECTURAL PLANS.
- THE MC SHALL BE RESPONSIBLE FOR ALL ELECTRICAL STARTERS INTERLOCKS, CONTROL WIRING CONDUIT AND POWER WIRING FROM DISCONNECTS TO HIS EQUIPMENT, USING A LICENSED ELECTRICIAN.
- THE MC SHALL USE FIRE DAMPERS FOR PROTECTION OF THE OPENING IN ACCORDANCE WITH STATE AND LOCAL CODES IN ALL LOCATIONS WHERE PENETRATIONS OF RATED WALLS AND FLOORS OCCUR. SEE ARCHITECTURAL PLANS FOR RATED WALL AND FLOOR LOCATIONS. PROVIDE ACCESS DOORS AT ALL DAMPER LOCATIONS. LOCATE DOORS FOR EASY ACCESS. THERE ARE NO RATED WALLS PENETRATED IN THIS HVAC UPFIT.
- INSTALL FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCTWORK AHU. ALL MECHANICAL EQUIPMENT SHALL OPERATE FREE OF OBJECTIONAL NOISE AND VIBRATION.
- INSTALL TURNING VANES IN SUPPLY DUCTS AT ALL ELBOWS AND SPLITTER DAMPERS. PROVIDE BALANCING DAMPERS IN ALL DUCTS WHERE SHOWN OR REQUIRED FOR SYSTEM BALANCING. PROVIDE SPIN IN STARTING COLLARS WITH DAMPERS AT ALL SUPPLY TAKEOFFS.
- DUCT DIMENSIONS ARE SHOWN INSIDE CLEAR. COORDINATE EXACT SIZE WITH SPACE AVAILABLE DUCT INSULATION SHALL BE 2" FIBERGLASS EXTERIOR DUCT INSULATION WITH FOIL FACING.
- THERMOSTAT, WIRING AND CONDUIT ARE TO BE FURNISHED BY THE MC. MOUNT THERMOSTAT 48" ABOVE THE FINISHED FLOOR. COORDINATE LOCATION WITH OWNER. PROVIDE AUTO CHANGEOVER THERMOSTAT WITH UNIT OFF POSITION AS MINIMUM. PROVIDE AN EMERGENCY SHUT-OFF SWITCH ABOVE THE THERMOSTAT. PROPERLY LABEL SHUT-OFF SWITCH.
- THE MC SHALL KEEP THE PREMISES CLEAR OF DEBRIS FROM HIS WORK DURING CONSTRUCTION AND LEAVE THE AREA AND BUILDING CLEAN AT THE COMPLETION OF HIS WORK. HE SHALL ALSO LEAVE CLEAN ALL EXPOSED EQUIPMENT IN HIS CONTRACT.
- COORDINATE DIFFUSER AND CEILING EXHAUST GRILLE LOCATIONS WITH LIGHTS AND GRID. COORDINATE MOUNTING FRAME WITH CEILING TYPE.
- THE M.C. SHALL COORDINATE WITH AND PROVIDE EQUIPMENT SPEC. SHEETS TO THE GENERAL AND ELECTRICAL CONTRACTORS FOR REVIEW PRIOR TO ORDERING EQUIPMENT.
- SUPPORT AHU, EXHAUST FANS, HEAT WHEEL AND ALL DUCTWORK, ETC. FROM STRUCTURE. PIPE STRAPPING WILL NOT BE ALLOWED.
- ALL DUCT JOINTS SHALL BE SEALED AIRTIGHT WITH FIBER ENPREGNATED MASTIC OR HARDCAST AND TAPE.

MECHANICAL SYSTEMS AND EQUIPMENT

METHOD OF COMPLIANCE:

Prescriptive ☒ Energy Cost Budget ☐

- Thermal Zone 3A
- Exterior Design Conditions
- winter dry bulb 22 F  
summer dry bulb 94 F
- Interior Design Conditions
- winter dry bulb 72 F  
summer dry bulb 75 F  
relative humidity 50%
- Building Heating Load 109,600 BTU/hr  
-79,092 BTU/hr (heat wheel reduction)  
39,508 BTU/hr
- Building Cooling Load 117,400 BTU/hr  
-47,096 BTU/hr (heat wheel reduction)  
70,304 BTU/hr
- Mechanical Spacing Conditioning System
- Unitary - The building is served by (2) 4 ton split system heat pumps with an ennergy recovery ventilator.
- Boiler - Not applicable to this project.
- Chiller - Not applicable to this project.

Equipment efficiencies

Efficiencies and outputs are listed on equipment schedules - See drawings.

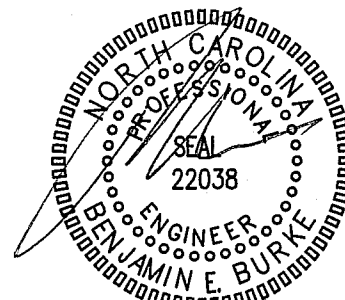
Equipment schedules with motors.

Motors used on this project are included in the efficiency rating of the unit. See drawings for efficiencies.

ENGINEER

BURKE

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GENERAL NOTES

KEY PLAN

NO

REVISION

DATE

J K F

ARCHITECTURE

P.O. BOX 20462 GREENVILLE, NC 27858 PHONE 252-355-1068

NC DOT PROJECT  
42229.1.1 (K-5101) US 70 REST  
AREA RENOVATIONS  
NEW BERN, CRAVEN COUNTY, NC

DRAWING TITLE

HVAC SCHEDULES/DETAILS

SCALE 1/4" = 1'-0"

DRAWN DJH/MCZ

CHECKED BEB

DATE 01-10-2014

PROJECT NO. 2013-18

DRAWING NO

M1.1

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DIVISION 16 – ELECTRICAL

PART 1 – GENERAL

1.1 DESCRIPTION OF THE WORK

- A. Work under this section includes, but is not necessarily limited to, furnishing and installing the following:
1. Lighting and power distribution system.
  2. Provide lighting fixtures selected by owner with lamps to match.
  3. Wiring devices, boxes, cover plates, etc.
  4. Source of power for all items of equipment.
  5. Grounding.
  6. Other requirements and/or systems where shown.
- B. All work shall be complete and items, equipment, etc., shall be electrically connected for proper and correct operation.
- C. All work under this contract shall be installed in accordance with the latest edition of the following codes and standards insofar as they apply:
1. The 2011 National Electrical Code.
  2. The National Electrical Safety Code.
  3. Underwriter's Laboratories, Inc., Standards and approved listings or other approved 3rd party listing agency.
  4. Electrical Testing Laboratories standards.
  5. 2012 North Carolina State Building Code.
  6. 2012 North Carolina State Energy Code.
- D. The Electrical Contractor shall be licensed in the State of North Carolina and have all local licenses required for the work.
- E. Local permits are not required. All work must be inspected by the Office of State Construction state electrical inspector and the Engineer of Record. Provide certificate of inspection and approval from the state electrical inspector prior to the final inspection. The electrical contractor is responsible for contacting the state electrical inspector for all required inspections.
- F. All work shall be done by skilled mechanics and shall present a neat, trim, workmanlike condition when complete.
- 1.2 INTENT
- A. The intent of these specifications and the accompanying drawings is to convey as reasonably as possible the requirements for a complete job ready for the building to operate. The Electrical Contractor shall take this into consideration and include in his base bid allowance for contingencies as will allow him to provide minor pieces of equipment and labor not specifically indicated but required for the job to operate properly, at no additional cost to the Owner.
- 1.3 COORDINATION
- A. Coordinate work with other contractors. Notify Architect of apparent conflicts early to expedite construction. If structural damage appears imminent, stop work and notify Architect for a decision before resuming operations.
- B. Locations shown are approximate. The drawings do not give exact details as to elevations and locations of various pipes, fittings, ducts, conduit, etc., and do not show all offsets and other installation details which may be required. Coordinate all locations with architect before any rough-in.
- 1.4 SHOP DRAWINGS
- A. Shop drawings shall be submitted for panels and service equipment, lighting, wiring devices, and cover plates. These may consist of the manufacturer's standard catalog or tear sheets and shall have the exact items being offered clearly identified.

PART 2 – PRODUCTS AND MATERIALS

2.1 GENERAL

- A. All material shall be new and shall bear the manufacturer's name, trade name, and be third party acceptable to NCCOI listed and labeled where such standard has been established for the particular material. Materials shall be the standard products of manufacturer's regularly engaged in the manufacture of the required type of equipment and the manufacturer's latest approved design.
1. Boxes installed in concealed locations shall be set flush with the finished surfaces.
  2. Provide rated boxes in all fire barriers & walls installed per code.

2.2 CONDUCTORS

- A. Conductors shall be color coded, sizes #4 and larger may be color taped on the job. Color coding shall comply with 2011 NEC 200.6.
- B. Conductors shall be manufactured by Dodge, Southwire or approved equal. Conductors shall meet the latest requirements of NEMA and IPCEA and shall be third party acceptable to NCCOI approved.
- C. Metallic sheathed "MC" cable should not be used for this project, without designer authorization. MC cable is allowed for light whips 6'-0" or less and where concealed with-in existing construction to minimize demolition work. If used, MC cable shall be 1/2" with minimum #12 AWG copper wire and green insulated copper ground.
- D. Conductors shall be spliced and taped as follows:
1. Size #10 and #12, use ideal "Wing Nuts" or T&B "Pluggy" connectors. Connectors shall be rated for 150 degrees C for use in recessed lighting fixtures.
  2. Size #8 and larger shall be solderless screw and screw-clamping type, smoothly covered and shaped with rubber gum type with final cover vinyl plastic electrical type. In lieu of rubber gum and vinyl plastic type, factory fabricated approved preformed insulating covers may be used. All connectors shall be UL approved.
  3. No split-bolt type connectors may be used.
- E. All branch wire and connections shall be copper and sized per National Electric Code.
- F. All conductors shall be continuous without splice between junction, outlet, device boxes, etc. No splicing will be permitted in panelboard cabinets, safety switches, etc.
- G. All wiring in mechanical spaces shall be plenum rated.
- H. Provide GFI protection within 6'-0" of any sink.
- I. All multi-wire branch circuits shall comply with 2011 NEC, 210.4(B).
- J. All wiring at medical facilities shall comply with 2011 NEC, 517.1.

2.3 PANELBOARDS, SAFETY SWITCHES

- A. Panelboards shall comply with NEMA Standard PB 1 – Latest Edition and as manufactured by Square D or ITE-Siemens. All panel boards must have copper buses.
- B. Safety switches shall be heavy duty type, size and rating as required for load service. Safety switches shall be fused or unfused as shown and/or as required. Safety switches serving motor loads shall be horsepower rated for load served.
- 2.4 WIRING DEVICES
- A. Wiring devices shall be commercial grade by Bryant, Leviton, or approved equal. With matching cover. Color by Architect.
- B. Wiring devices installed under a Kitchen Hood shall have stainless steel covers.
- C. Wiring devices installed over counters shall comply with ANSI A117.1.

2.7 CONDUIT

- A. PVC conduit will be allowed under slab. Provide rigid turn-ups.
- B. All exposed conduit shall be rigid where exposed to the elements, located less than 8'-0" above grade or where exposed to hazardous conditions.

PART 3 – EXECUTION

3.1 CIRCUIT GROUNDING

- A. All circuits shall contain an insulated, green, copper grounding conductor, sized in accordance with Table 250-122 of the NEC. Grounding conductors shall be connected to equipment grounding bus in panelboard and securely attached and grounded to the device or enclosure at the other end.

3.2 GROUNDING TYPE CONVENIENCE OUTLETS AND SWITCHES

- A. Outlets and switches shall be solidly grounded to equipment grounding system with a green colored insulated conductor. Electrical connections shall be continuous from equipment ground bus in panelboard to the hex nut on the convenience outlet or switch.

3.3 MOTORS

- A. All motors shall be connected to conduit system with short length (minimum length 24" and maximum length 38") of flexible liquidtight conduit.

3.4 EQUIPMENT LABELING

- A. Provide permanent penicil plastic name plates for all panelboards, safety switches, wiring troughs, etc., for identification of equipment controlled, services, etc. Nameplates shall be securely and permanently attached to equipment with stainless steel screws. Nameplates shall include the name of the equipment and where it is fed from.
- B. All switch plates, receptacle plates and outlet covers shall be labeled with machine printed vinyl labels identifying the circuit(s) within.
- C. All empty conduit runs shall be identified and indicated where they terminate.
- D. Provide typewritten directory in each panelboard to clearly identify each circuit, service, etc.

3.5 JUNCTION AND/OR PULL BOXES

- A. Boxes shall be installed where necessary to avoid excessive runs and/or too many bends between outlets.

3.6 PULL WIRE

- A. Leave pull wire in each empty conduit run.

3.7 GROUNDING

- A. All grounding shall be in accordance with Article 250 of the NEC. In addition, the following requirements shall be met:
1. Grounding conductors shall be installed as to permit the shortest and most direct path from equipment to ground. All connections to grounding conductors shall be accessible.
  2. Equipment ground continuity shall be maintained through flexible metal conduit.
  3. All wiring devices equipped with grounding connection shall be solidly grounded to ground system with grounding conductors.
  4. The frame of all lighting fixtures shall be securely grounded to the equipment ground system with grounding conductors.
  5. All equipment enclosures, and non-current-carrying metallic parts of electrical equipment, raceway systems, etc., shall be effectively and adequately bonded to ground.
  6. All equipment enclosures, and non-current-carrying metallic parts of electrical equipment, raceway systems, etc., shall be effectively and adequately bonded to ground.

3.8 ELECTRICAL WORK IN CONNECTION WITH OTHER WORK

- A. The trade(s) furnishing equipment will provide disconnect switches, motor starters, and make final equipment connections. ELECTRICAL CONTRACTOR will make line side connections to disconnect switches or motor starters.

3.9 CLEAN UP

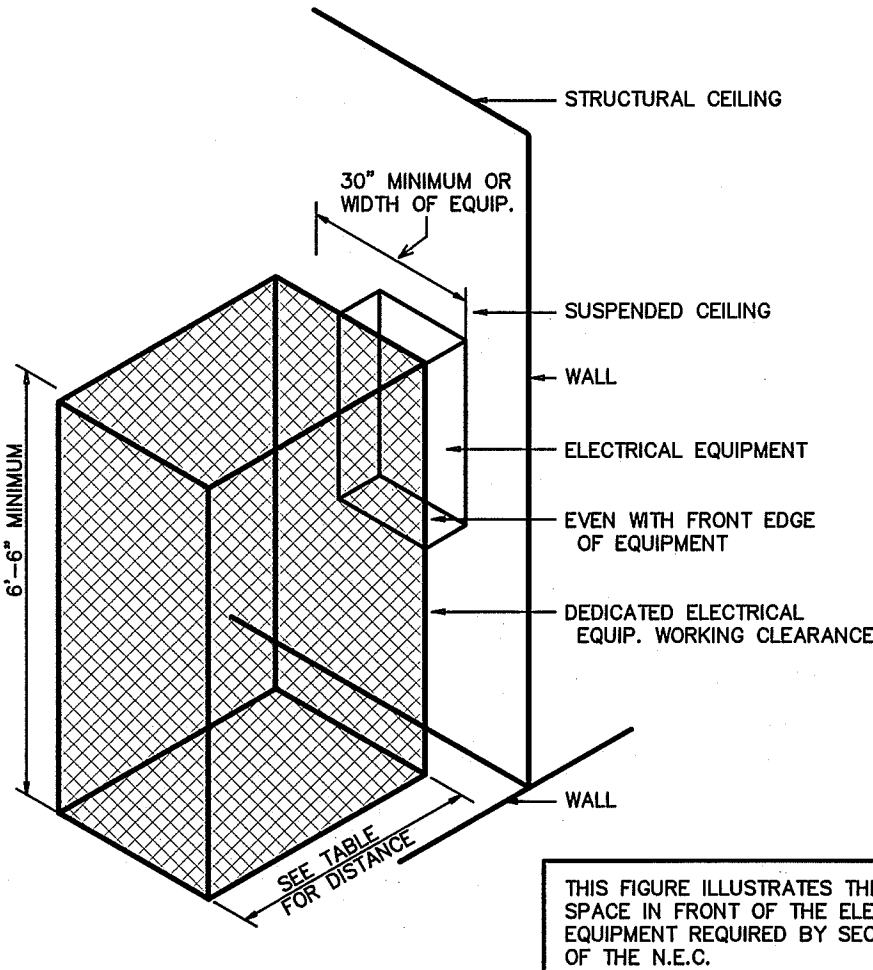
- A. During construction, keep the site clean of debris. Upon completion, and before final inspection, clean up the premises to remove all evidence of work. In addition upon completion of construction leave equipment clean.

3.10 GUARANTEE

- A. Guarantee all materials and labor included in the electrical work for a period of one year from date of final acceptance by the Owner. Any part or parts of the work or equipment which prove to be defective during the guarantee period shall be replaced at no additional cost to the Owner.

ELECTRICAL NOTES

1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL LOCAL CODES HAVING JURISDICTION.
2. ALL BRANCH CIRCUIT CONDUCTORS TO BE COPPER (SERVICE CONDUCTORS MAY BE ALUMINUM WITH SAME AMPACITY AS COPPER CONDUCTORS. RE-SIZE CONDUCTORS AND CONDUIT PER NEC.)
3. ALL CIRCUITS TO BE 2 #12, 1 #12 GND IN 1/2" EMT CONDUIT AS A MINIMUM. PROVIDE WIRING FOR LARGER CIRCUITS AS REQUIRED BY NEC. RIGID CONDUIT IS REQUIRED WHERE EXPOSED BELOW 8'-0" A.F.F.
4. ALL EMPTY CONDUIT RUNS IN EXCESS OF 10 FEET SHALL BE PROVIDED WITH A PULL WIRE OR FISH TAPE/CORD.
5. CONTRACTOR SHALL VERIFY THAT ALL DOOR SWINGS ARE CORRECT BEFORE INSTALLING LIGHT SWITCH OUTLETS.
6. ALL BRANCH CIRCUIT CONDUCTORS FROM THE PANEL TO THE FIRST OUTLET SHALL BE INCREASED TO THE NEXT LARGER SIZE WHERE THE LENGTH OF THE HOME RUN EXCEEDS 120 FEET ON 120V AND 208V CIRCUITS.
7. THE CORRECT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL CIRCUITS, ONLY THOSE WHERE CLARIFICATION IS NECESSARY. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL WIRES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON DRAWINGS OR NOT.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTLY PHASING THE CIRCUITS IN THE PANELBOARDS.
9. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE TYPE OF CEILING SYSTEM WITH THE GENERAL CONTRACTOR TO INSURE THAT ALL LIGHTING FIXTURES ARE COMPATIBLE WITH THE CEILING SYSTEM BEING INSTALLED. LIGHTING FIXTURES SHOULD NOT BE ORDERED UNTIL TYPE OF CEILING HAS BEEN VERIFIED.
10. ELECTRICAL REQUIREMENTS INDICATED ON DRAWINGS MAY DIFFER FROM ACTUAL EQUIPMENT FURNISHED. IF FURNISHED EQUIPMENT DIFFERS FROM RATINGS ON DRAWINGS CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER FOR APPROPRIATE ACTION TO BE TAKEN.
11. IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO COORDINATE EXACT BREAKER REQUIREMENTS FOR ALL EQUIPMENTS PRIOR TO ORDERING PANEL. ADJUST BREAKER AND WIRE SIZES AS REQUIRED.
12. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL DISCONNECTS FOR MECHANICAL AND PLUMBING EQUIPMENT. DISCONNECTS SHALL BE PER THE MANUFACTURER'S RECOMMENDATIONS AND FUSED PER NAME PLATE. PROVIDE NEMA 3R ENCLOSURES ON EXTERIOR. COORDINATE FUSE SIZES.
13. THE EC SHALL MEET WITH THE ARCHITECT AND TENANT PRIOR TO INSTALLING OUTLET BOXES TO VERIFY LOCATIONS AND MOUNTING HEIGHTS OF RECEPTACLES AND TELEPHONE OUTLETS.



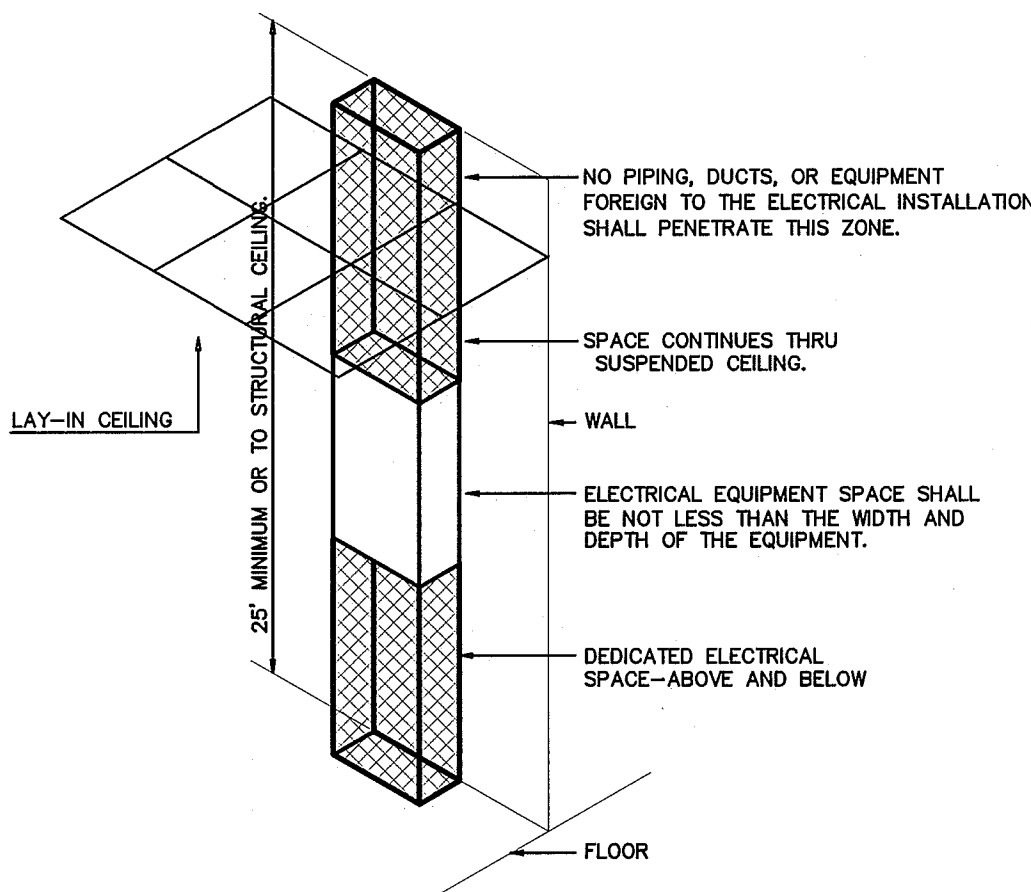
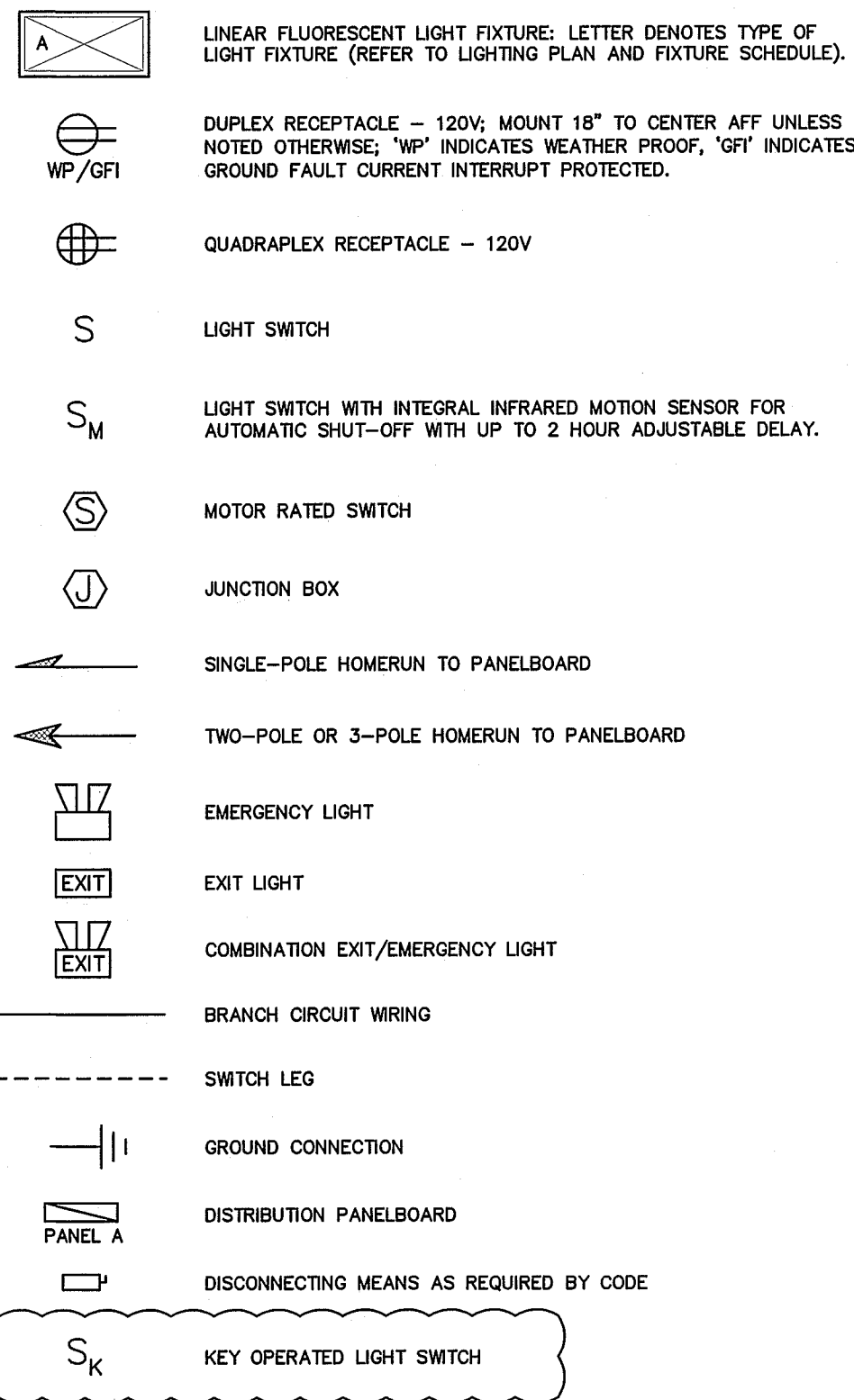
ELECTRICAL EQUIPMENT WORKING CLEARANCE PER ARTICLE 110.26 OF N.E.C.

WORKING CLEARANCES			
VOLTAGE TO GROUND NOMINAL	MIN. CLEAR DISTANCE IN FEET		
	CONDITION: 1	2	3
0-150	3	3	3
151-600	3	3-1/2	4

WHERE THE CONDITIONS ARE AS FOLLOWS:

1. EXPOSED LIVE PARTS ON ONE SIDE OF THE WORKING SPACE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORKING SPACE THAT ARE EFFECTIVELY GUARDED BY INSULATING MATERIALS.
2. EXPOSED LIVE PARTS ON ONE SIDE OF THE WORKING SPACE AND GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE. CONCRETE, BRICK OR TILE WALLS SHALL BE CONSIDERED AS GROUNDED.
3. EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORKING SPACE.

ELECTRICAL LEGEND



ELECTRICAL EQUIPMENT DEDICATED SPACE PER ARTICLE 110.26.F.1 OF N.E.C.

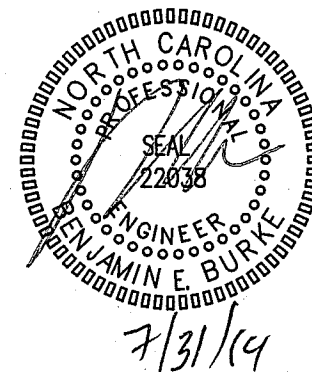
1 ELECTRICAL CLEARANCES  
E1.1 NTS

2 DEDICATED SPACE  
E1.1 NTS

ENGINEER

ENGINEER

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GENERAL NOTES

KEY PLAN

Δ	REVISE FOR RE-BID	7-28-2014
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NO	REVISION	DATE
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**J K F**  
ARCHITECTURE

P.O. BOX 20642 GREENVILLE, NC 27858 PHONE 252-355-1068

**NC DOT PROJECT**  
**42229.1.1 (K-5101) US 70 REST**  
**AREA RENOVATIONS**  
NEW BERN, CRAVEN COUNTY, NC

DRAWING TITLE

**ELECTRICAL DETAILS**

SCALE 1/4" = 1'-0"

DRAWN DJH/MCZ

CHECKED BEB

DATE 01-10-2014

PROJECT NO. 2013-18

**E1.1**



LIGHTING SCHEDULE *									
MARK	MANUFACTURER	CATALOG NO.	VOLT.	LAMPS NO.	LAMPS TYPE	BALLAST TYPE	W/FIXTURE	REMARKS	
A1	FINELITE	S17-LED-ACF-SF-B'-HO-4000K-SC-120V	120	-	LED	-	73.6	8' WALL MOUNT LINEAR LED LUMINAIRE	
A2	FINELITE	S17-LED-ACF-SF-4'-HO-4000K-SC-120V	120	-	LED	-	36.8	4' WALL MOUNT LINEAR LED LUMINAIRE	
A3	FINELITE	S16-LED-ID-DCO-B'-2E-HO-4000K-SC-120V-FA-FE-C4	120	-	LED	-	74.8	8' SUSPENDED LINEAR LED LUMINAIRE	
A4	FINELITE	S16-LED-ID-DCO-4'-2E-HO-4000K-SC-120V-FA-FE-C4	120	-	LED	-	37.4	4' SUSPENDED LINEAR LED LUMINAIRE	
B1	ARCHITECTURAL AREA	UCM-FLR-T2-32LED-4K-700-DBZ-COP-WMA12	120	-	LED	-	75	GOOSENECK WALL SCONCE	
C1	PRESCOLITE	LF4LED-4LFLED740K	120	-	LED	-	33	4" RECESSED CAN	
C1E	PRESCOLITE	LF4LEDEM-4LFLED740K	120	-	LED	-	33	4" RECESSED CAN, EMERGENCY BATTERY	
CCR	COMPASS	CCR	120	-	LED	-	-	COMBINATION EMERGENCY/EXIT LIGHT	
CU2	COMPASS	CU2	120	2	LED	1	-	EMERGENCY LIGHT	

\* OR APPROVED EQUAL. PROVIDE CUT SHEETS FOR OWNER APPROVAL PRIOR TO ORDERING FIXTURES. CATALOG NUMBERS ARE FOR REFERENCE ONLY. ACTUAL NUMBERS MAY VARY.

Craven E2

**ELECTRICAL SYSTEMS AND EQUIPMENT**

METHOD OF COMPLIANCE  
PRESCRIPTIVE ☒ PERFORMANCE ☐ ENERGY COST BUDGET ☐

Provide a standard riser diagram which indicates designated points for check metering  
Provide a standard panel schedule description which identifies different enduse loads.

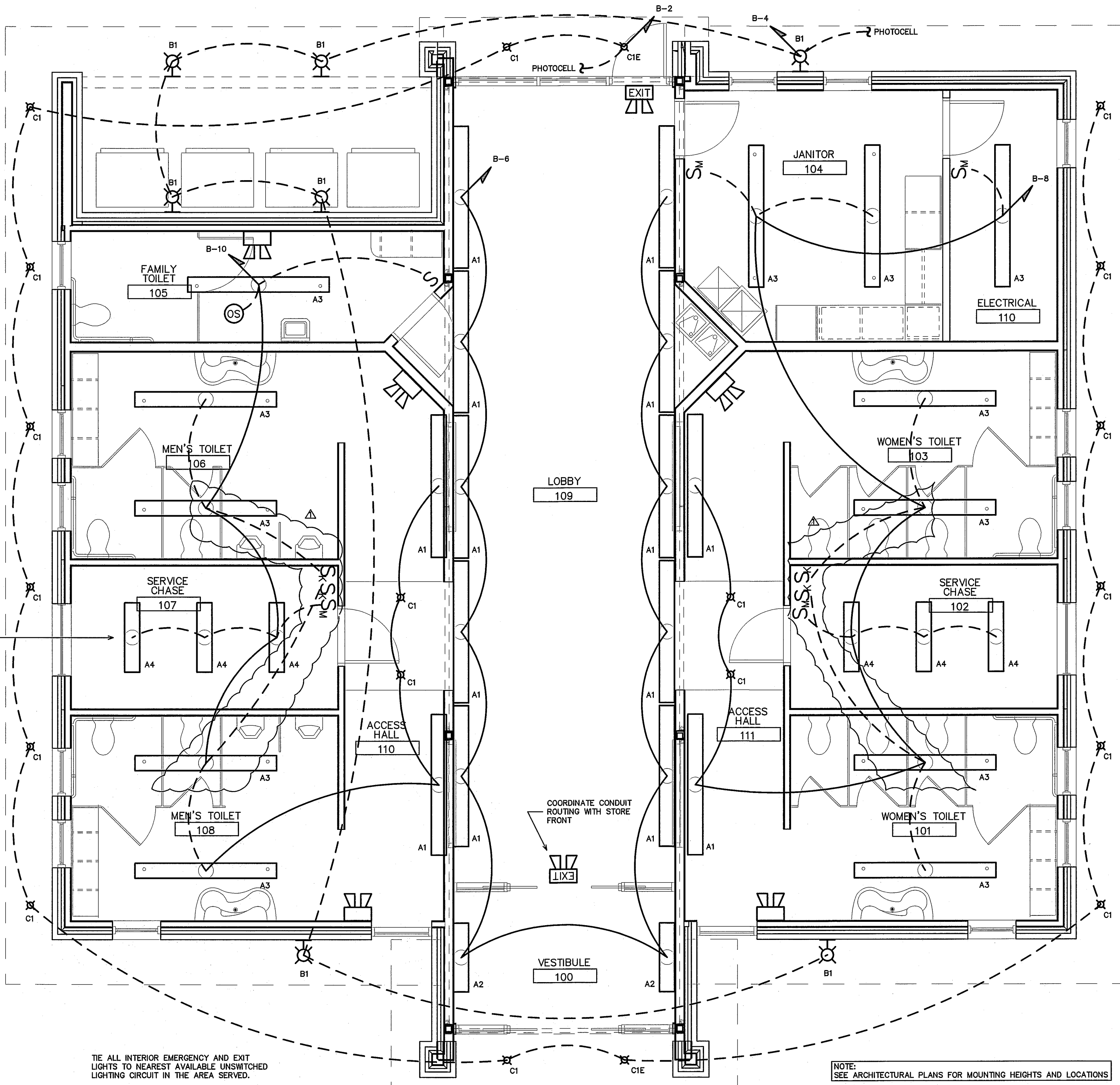
Lighting schedule:  
lamp type required in fixture  
number of lamps in fixture  
ballast type used in fixture  
number of ballasts in fixture  
total wattage in fixture  
total interior wattage specified vs. allowed 1892 VA / 2152 VA

Equipment schedules with motors ( not used for mechanical systems) NA  
motor horsepower NA  
number of phases NA  
minimum efficiency NA  
motor type NA  
# of poles NA

**DESIGNER STATEMENT**  
I hereby certify that the design of this building complies with the electrical systems, services systems, and equipment requirements of the 2012 North Carolina State Building Code, Energy Edition.

INTERIOR LIGHTING LOAD CALCULATIONS				
PROJECT	Craven County Rest Area			
AREA (sf)	1350 Restroom	660 Corridor/Transition	620 Electrical/Mechanical	2630 TOTAL
SPECIFIED	FIXTURE	WATTS PER	# INTERIOR FIXTURES	
	A1	73.6	14	1030.4
	A2	36.8	2	73.6
	A3	36	12	432
	A4	37.4	6	224.4
	C1	33	4	132
	TOTAL (w)			1892.2 SPECIFIED
ADDITIONAL (w)	0 EXPLAIN			
ALLOWED (w/sf)	0.84 Restroom 0.66 Corridor/Transition 0.95 Electrical/Mechanical			
	TOTAL (w)			2152 ALLOWED 260 REMAINING

COORDINATE LIGHT FIXTURES WITH EQUIPMENT IN SERVICE CHASE (TYP)



TIE ALL INTERIOR EMERGENCY AND EXIT LIGHTS TO NEAREST AVAILABLE UNSWITCHED LIGHTING CIRCUIT IN THE AREA SERVED.  
PROVIDE SWITCHED AND NORMAL POWER TO ALL EXTERIOR EMERGENCY LIGHTS FOR EMERGENCY MODE OPERATION.

1 LIGHTING PLAN  
E1.2 SCALE: 1/4" = 1'-0"

PROVIDE PHOTOCELL(S) AS REQUIRED TO SWITCH EXTERIOR LIGHTING. PROVIDE SHIELDING AS REQUIRED FOR PROPER OPERATION. COORDINATE LOCATION.

NOTE: SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHTS AND LOCATIONS

ENGINEER

ENGINEER

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GENERAL NOTES

KEY PLAN

JKF

ARCHITECTURE

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NC DOT PROJECT  
42229.1.1 (K-5101) US 70 REST  
AREA RENOVATIONS  
NEW BERN, CRAVEN COUNTY, NC

DRAWING TITLE

LIGHTING PLAN

SCALE  
1/4" = 1'-0"

DRAWING NO.  
E1.2

DRAWN  
DJH/MCZ

CHECKED  
BEB

DATE  
01-10-2014

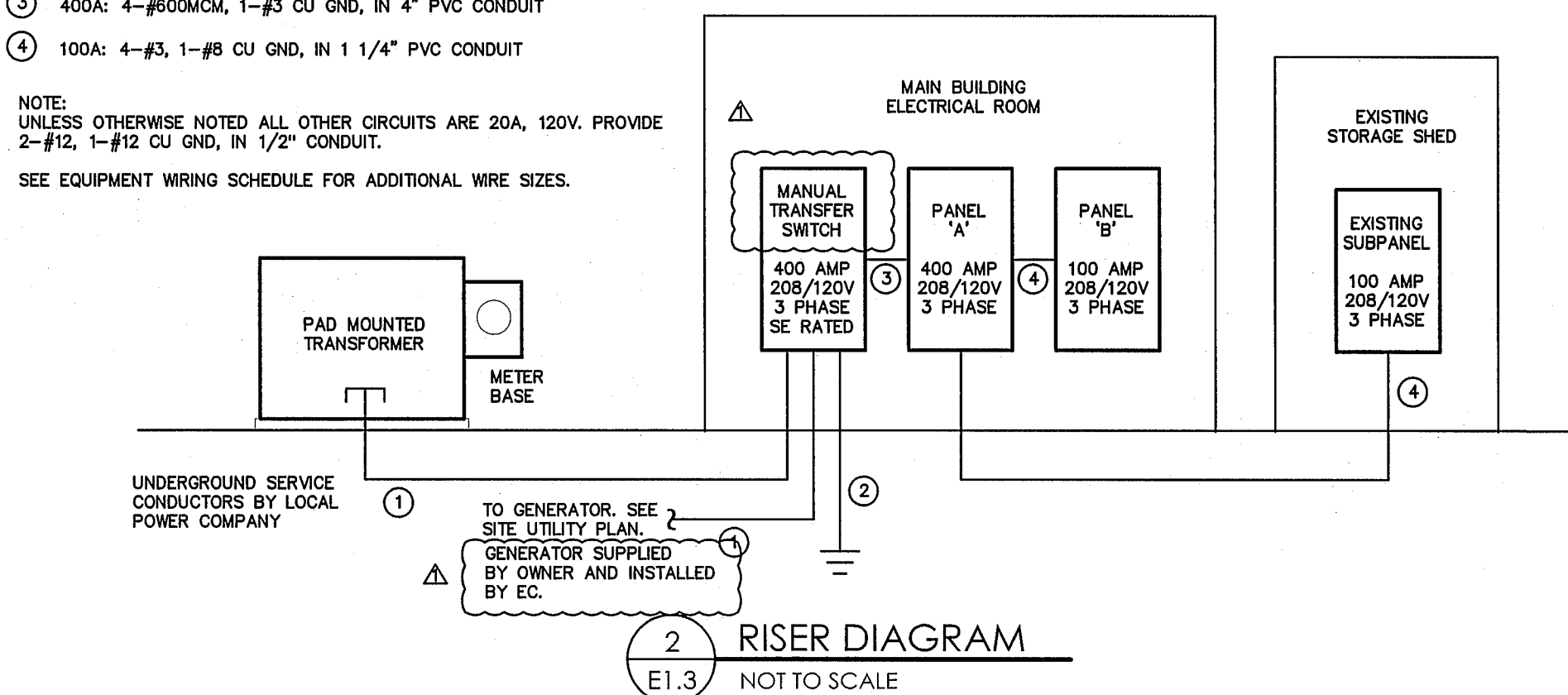
PROJECT NO.  
2013-18

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# RISER WIRING SCHEDULE

- 400A: 4-#600MCM IN 3 1/2" PVC CONDUIT
- #1/0 CU GND TO BUILDING STEEL, FOUNDATION STEEL AND METALLIC WATER MAIN AND #6 CU GND TO 10" X 5/8" DRIVEN GROUND ROD
- 400A: 4-#600MCM, 1-#3 CU GND, IN 4" PVC CONDUIT
- 100A: 4-#3, 1-#8 CU GND, IN 1 1/4" PVC CONDUIT

NOTE: UNLESS OTHERWISE NOTED ALL OTHER CIRCUITS ARE 20A, 120V. PROVIDE 2-#12, 1-#12 CU GND, IN 1/2" CONDUIT.  
SEE EQUIPMENT WIRING SCHEDULE FOR ADDITIONAL WIRE SIZES.



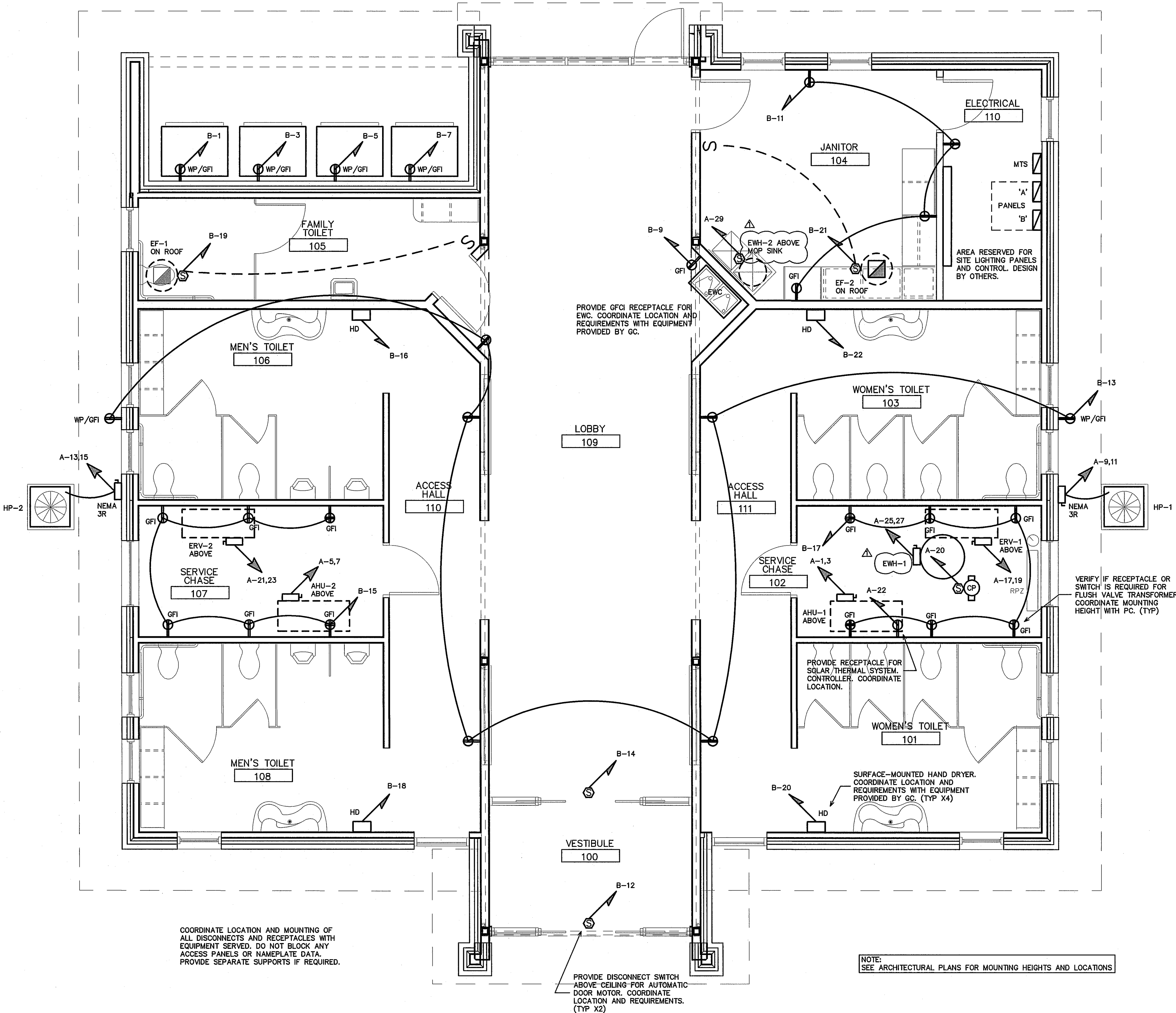
NEW PANEL- 'A'		MAKE: CUTLER HAMMER		RATING: 208/120V 3 PHASE 4 WIRE		400A MAIN CIRCUIT BREAKER	
FED FROM: ATS		TYPE: PRL1A		MOUNTING: FLUSH		EQUIPMENT GROUND BUS	
OR APPROVED EQUAL		MINIMUM AIC: VERIFY		SERVICE ENTRY RATED		YES <input type="checkbox"/> NO <input type="checkbox"/>	
LOAD SERVICE	CKT BRKR	WATTS PER PHASE	NEUTRAL	CKT NO	WATTS PER PHASE	CKT BRKR	LOAD SERVICE
AHU-1	60A	4468	1	2	7787	100A	PANEL 'B'
MOTOR 3/4 HP, HEAT 7.5 KW		4468	3	4	9403		
AHU-2	60A	4468	5	6	5000		SITE LIGHTING
MOTOR 3/4 HP, HEAT 7.5 KW		4468	7	8	5000		
HP-1	40A	2392	9	10	5000	100A	STORAGE SHED
COMP 21.6 RLA, FAN 1.2 FLA		2392	11	12	5000		
HP-2	40A	2392	13	14	2500		
COMP 21.6 RLA, FAN 1.2 FLA		2392	15	16	2500	100A	
ERV-1	25A	1535	17	18	2500		CIRC PUMP: 1/12 HP
14.76 FLA		1535	19	20	400	15A	SOLAR THERMAL PUMPS/CONTROLS
ERV-2	25A	1535	21	22	500		
14.76 FLA		1535	23	24	---		SPACE
EW-1	30A	2250	25	26	---		SPACE
4.5 KW		2250	27	28	---		SPACE
EW-2	20A	1650	29	30	---		SPACE
SUB-TOTALS 'A'		15113 13037 11580	400A BUS	15687 17403 14370	SUB-TOTALS 'A'		
			400A LUGS	15113 13037 11580	SUB-TOTALS 'B'		
			400A FEED	30800 30440 25950	GRAND TOTAL		
			#600MCM SIZE	257A 254A 216A	AMPS/PHASE		
NEC ALLOWABLE DEMAND FACTORS		DIVERSIFIED LOAD SUMMARY					
① DEMAND FACTORS PER NEC 220		LOAD TYPE		DEMAND FACTOR		TOTAL DIVERSIFIED LOAD	
② LARGEST OF: NEC TABLE 220.12 OR CONNECTED LOAD		GENERAL LIGHTING		125%		7975	
③ NEC TABLE 220.56		GENERAL USE		125%		1980	
④ NEC 220.51		RECEPTACLES		125%		8502	
⑤ NEC 220.43A, 200 VA/LINEAR FT		EQUIPMENT		100%		38847	
⑥ NON-COINCIDENT LOADS, LARGEST OF THE TWO LOADS IS COUNTED		WATER HEATERS		125%		7689	
		KITCHEN EQUIPMENT		100%		15000	
		FIX. ELEC. SPACE HEAT		100%		18750	
		SHOW WINDOW LIGHTS		125%		98743	
		SIGN		125%			
		MISC (SITE LIGHTING)		125%			
⑦ 3190 SQ.FT. X 2.0 W/SQ.FT. X 125% = 7975 VA		PHASE (TOTAL VA)		34462 34253 30028		TOTAL AMPS	
		TOTAL		287A 285A 250A		VOLT AMPS	
						VOLTS X 1.732 = 274A	
						TOTAL AMPS	

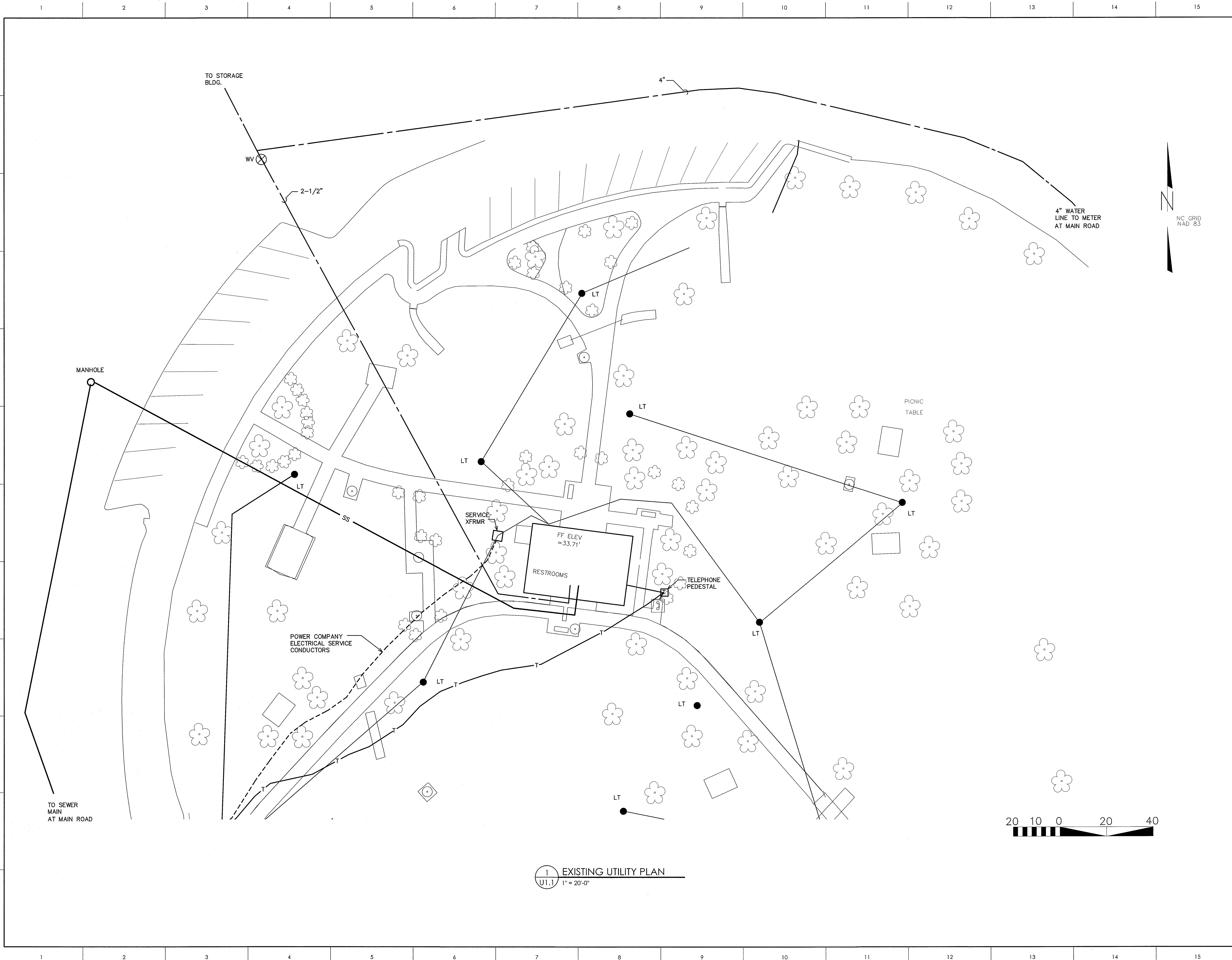
NEW PANEL- 'B'		MAKE: CUTLER HAMMER		RATING: 208/120V 3 PHASE 4 WIRE		100A MAIN CIRCUIT BREAKER	
FED FROM: PANEL 'A'		TYPE: PRL1A		MOUNTING: SURFACE		EQUIPMENT GROUND BUS	
OR APPROVED EQUAL		MINIMUM AIC: VERIFY		SERVICE ENTRY RATED		YES <input type="checkbox"/> NO <input type="checkbox"/>	
LOAD SERVICE	CKT BRKR	WATTS PER PHASE	NEUTRAL	CKT NO	WATTS PER PHASE	CKT BRKR	LOAD SERVICE
VENDING	20A	1000	1	2	528	20A	LTS: EXTERIOR
VENDING		1000	3	4	525		LTS: EXTERIOR
VENDING		1000	5	6	810		LTS: 100, 109
VENDING		1000	7	8	849		LTS: 101-104, 111
EW		888	9	10	700		LTS: 105-108, 110
RECEPTACLES			11	12	600		AUTOMATIC DOOR
RECEPTACLES		1260	13	14	600		AUTOMATIC DOOR
FLUSH VALVE CONTROLS		1440	15	16	2300		HAND DRYER
FLUSH VALVE CONTROLS		1440	17	18	2300		HAND DRYER
EF-1: 1/20 HP	15A	250	19	20	2300		HAND DRYER
EF-2: 1/20 HP	15A	250	21	22	2300		HAND DRYER
SPACE		---	23	24	---		SPACE
SPACE		---	25	26	---		SPACE
SPACE		---	27	28	---		SPACE
SPACE		---	29	30	---		SPACE
SUB-TOTALS 'B'		3510 3578 3160	100A BUS	4277 5825 3710	SUB-TOTALS 'A'		
			100A LUGS	3510 3578 3160	SUB-TOTALS 'B'		
			100A FEED	7787 9403 6870	GRAND TOTAL		
			#3 SIZE	65A 78A 57A	AMPS/PHASE		
NEC ALLOWABLE DEMAND FACTORS		DIVERSIFIED LOAD SUMMARY					
① DEMAND FACTORS PER NEC 220		LOAD TYPE		DEMAND FACTOR		TOTAL DIVERSIFIED LOAD	
② LARGEST OF: NEC TABLE 220.12 OR CONNECTED LOAD		GENERAL LIGHTING		125%		4287	
③ NEC TABLE 220.56		GENERAL USE		125%		1980	
④ NEC 220.51		RECEPTACLES		125%		3750	
⑤ NEC 220.43A, 200 VA/LINEAR FT		EQUIPMENT		100%		15668	
⑥ NON-COINCIDENT LOADS, LARGEST OF THE TWO LOADS IS COUNTED		WATER HEATERS		125%			
		KITCHEN EQUIPMENT		100%			
		FIX. ELEC. SPACE HEAT		100%			
		SHOW WINDOW LIGHTS		125%			
		SIGN		125%			
		MISC		100%			
		PHASE (TOTAL VA)		8382 9860 7323		TOTAL AMPS	
		TOTAL		70A 83A 61A		VOLT AMPS	
						VOLTS X 1.732 = 71A	
						TOTAL AMPS	

## EQUIPMENT WIRING SCHEDULE

EQUIPMENT	MCA	MOC	VOLTS	PH	WIRE SIZE
AHU-1 & -2	53.8A	60A	208V	1	2-#6, 1-#10 GND IN 3/4" CONDUIT
ERV-1 & -2	18.45A	25A	208V	1	2-#10, 1-#10 GND IN 1/2" CONDUIT
HP-1 & -2	28.5A	40A	208V	1	2-#8, 1-#10 GND IN 3/4" CONDUIT
SWH	---	30A	208V	1	2-#10, 1-#10 GND IN 1/2" CONDUIT

NOTE: THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EQUIPMENT ELECTRICAL REQUIREMENTS PRIOR TO ROUGH-IN AND RELEASING GEAR. ADJUST BREAKER, WIRE SIZES, ETC. AS REQUIRED.





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7/18/14

GENERAL NOTES

KEY PLAN

Δ	REVISE FOR RE-BID	7-28-2014
NO	REVISION	DATE

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NC DOT PROJECT

42229.1.1 (K-5101) US 70 REST

AREA RENOVATIONS

NEW BERN, CRAVEN COUNTY, NC

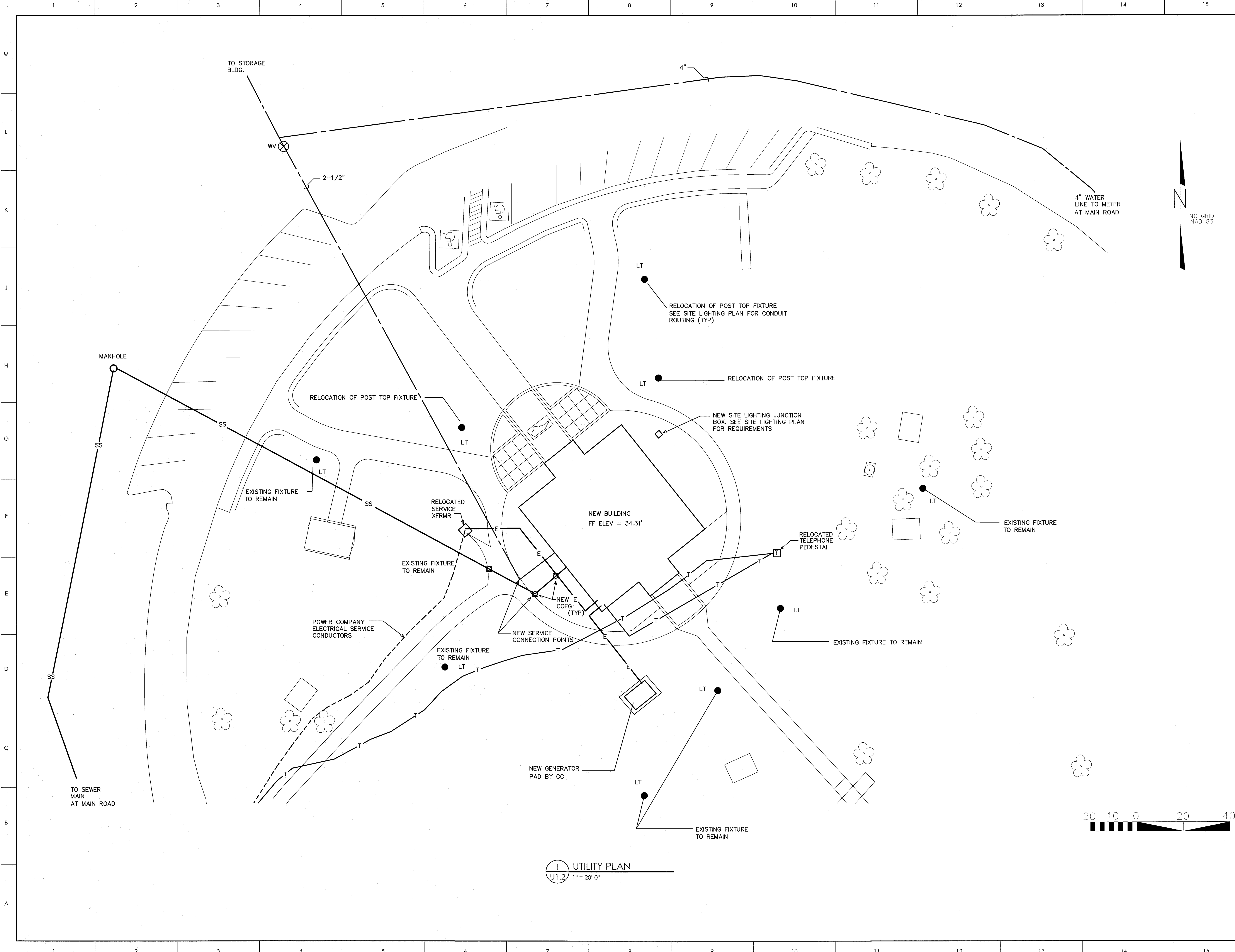
DRAWING TITLE

EXISTING UTILITIES

SCALE	NTS	DRAWING NO.
DRAWN	JME	U1.1
CHECKED	BEB	
DATE	03-22-2014	
PROJECT NO.	2013-18	

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GENERAL NOTES

KEY PLAN

Δ	REVISE FOR RE-BID	7-28-2014
NO	REVISION	DATE

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NC DOT PROJECT  
42229.1.1 (K-5101) US 70 REST  
AREA RENOVATIONS  
NEW BERN, CRAVEN COUNTY, NC

DRAWING TITLE  
UTILITY PLAN

SCALE  
1/4" = 1'-0"

DRAWN  
JME

CHECKED  
BEB

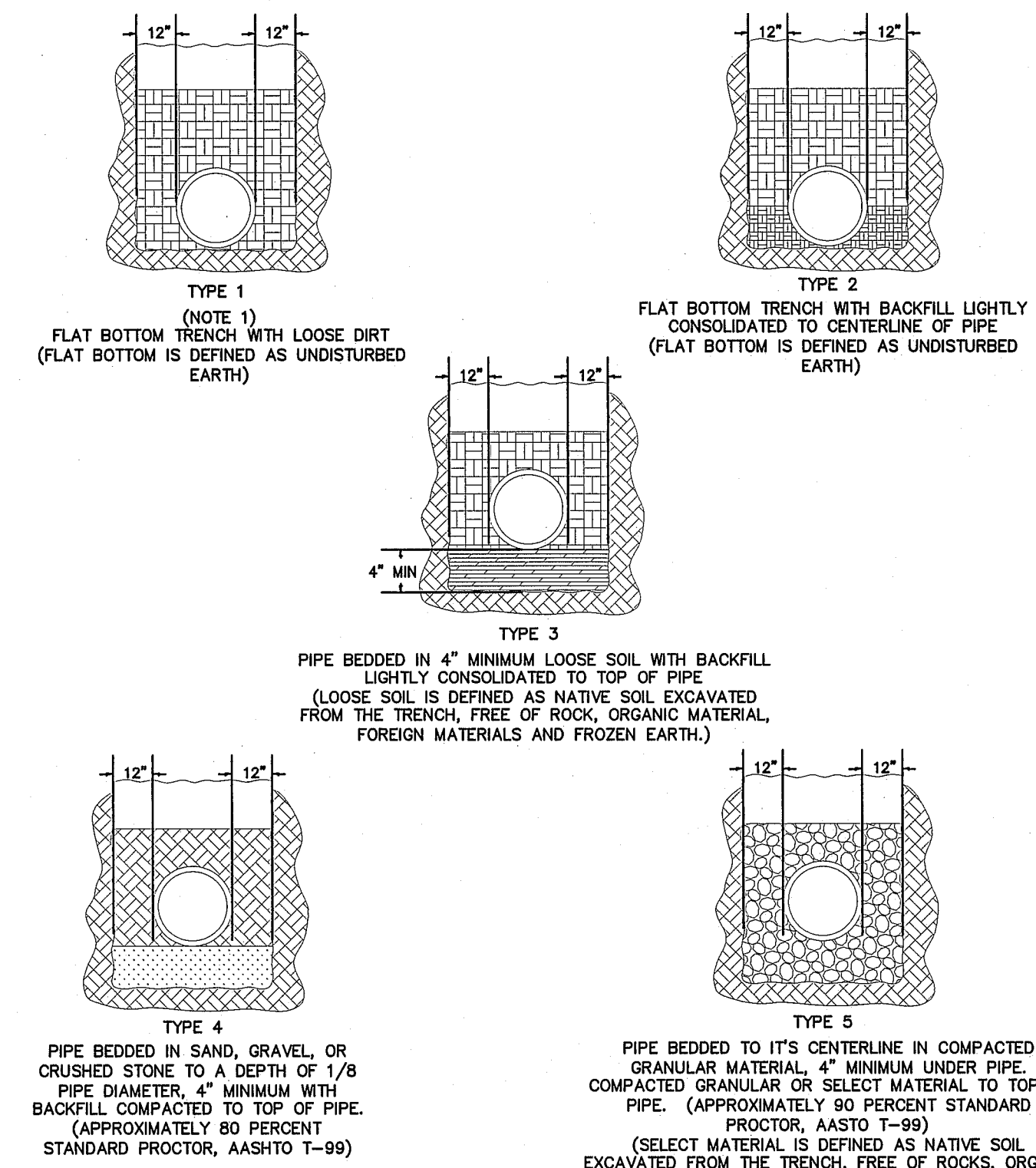
DATE  
01-10-2014

PROJECT NO.  
2013-18

DRAWING NO.  
U1.2

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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



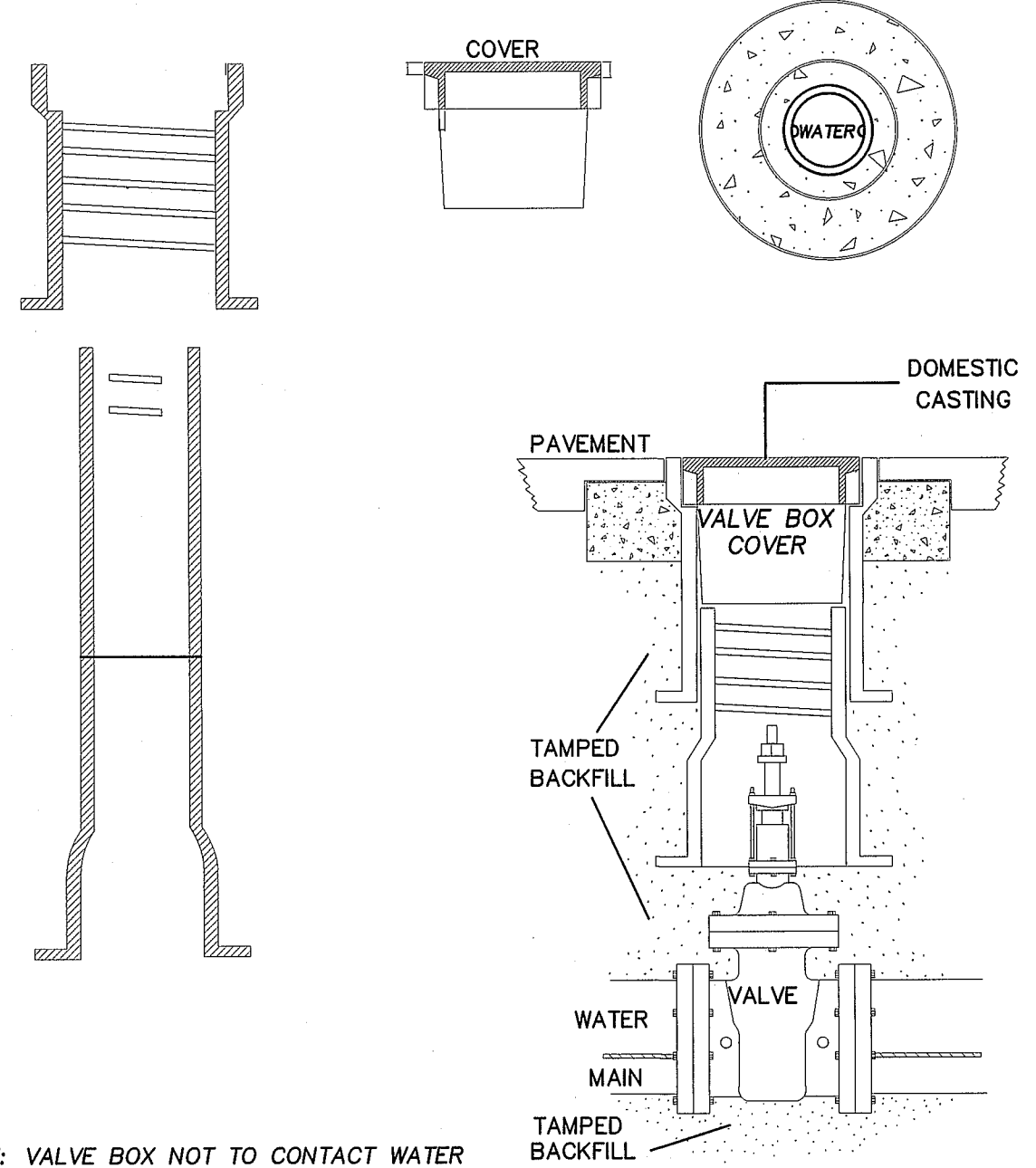
NOTES:  
1. FOR NORMAL PIPE SIZES 14 INCH AND LARGER, CONSIDERATION SHOULD BE GIVEN TO THE USE OF LAYING CONDITIONS OTHER THAN TYPE 1.  
2. CONSIDERATION OF THE PIPE-ZONE EMBEDMENT CONDITIONS INCLUDED IN THIS FIGURE MAY BE INFLUENCE BY FACTORS OTHER THAN PIPE STRENGTH. FOR ADDITIONAL INFORMATION ON PIPE BEDDING AND BACKFILL, SEE ANSI/AWWA C600.

UTILITY SEPARATION NOTES

- 1) LATERAL SEPARATION OF SEWERS OR WATER MAINS. WATER MAINS SHALL BE LAID AT LEAST TEN (10) FEET Laterally FROM EXISTING OR PROPOSED SEWERS, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT A TEN (10) FOOT LATERAL SEPARATION--IN WHICH CASE:  
A) THE WATER MAIN IS LAID IN A SEPARATE TRENCH, WITH THE ELEVATION ON THE BOTTOM OF THE WATER MAIN AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER; OR  
B) THE WATER MAIN IS LAID IN THE SAME TRENCH AS THE SEWER WITH THE WATER MAIN LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND WITH THE ELEVATION OF THE BOTTOM OF THE WATER MAIN AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF SEWER.
- 2) CROSSING A WATER MAIN OVER A SEWER. WHENEVER NECESSARY FOR A WATER MAIN TO CROSS OVER A SEWER, THE WATER MAIN SHALL BE LAID AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST EIGHTEEN (18) INCHES ABOVE THE TOP OF THE SEWER, UNLESS LOCAL CONDITIONS OR BARRIERS PREVENT AN EIGHTEEN (18) INCH SEPARATION--IN WHICH CASE, BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF TEN (10) FEET ON EACH SIDE OF THE CROSSING.
- 3) CROSSING A WATER MAIN UNDER A SEWER. WHENEVER IT IS NECESSARY FOR A WATER MAIN TO CROSS UNDER A SEWER, BOTH THE WATER MAIN AND THE SEWER SHALL BE CONSTRUCTED OF FERROUS MATERIALS AND WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A DISTANCE OF THE (10) FEET ON EACH SIDE OF THE POINT(S) OF CROSSING. A SECTION OF WATER MAIN PIPE SHALL BE CENTERED AT THE POINT OF CROSSING.
- 4) SEWER AND STORMWATER PIPES TO HAVE A MINIMUM OF 24" SEPARATION FROM BOTTOM OF STORMWATER PIPE AND TOP OF SEWER PIPE.

NOTE:  
ALL SITE UTILITY WORK ON SHEETS U-1.1 AND U-1.2 WILL BE PAID FOR UNDER THEIR RESPECTIVE LUMP SUM PAY ITEMS FOR PLUMBING INSTALLATION REST AREA SERVICE BUILDING, HVAC INSTALLATION REST AREA SERVICE BUILDING, AND ELECTRICAL INSTALLATION REST AREA SERVICE BUILDING. NO SEPARATE LINE ITEMS ARE INCLUDED IN THIS PROJECT FOR SITE UTILITY WORK. COORDINATE WORK WITH ALL TRADES.

APPROVED METHOD FOR EXTENSION OF VALVE BOX



NOTE: VALVE BOX NOT TO CONTACT WATER MAIN NOR VALVE. ALL TRAFFIC CASTINGS MUST BE CLASS 35 OR GREATER DOMESTICALLY CAST. VALVE BOX SHALL BE THREADED TYPE.

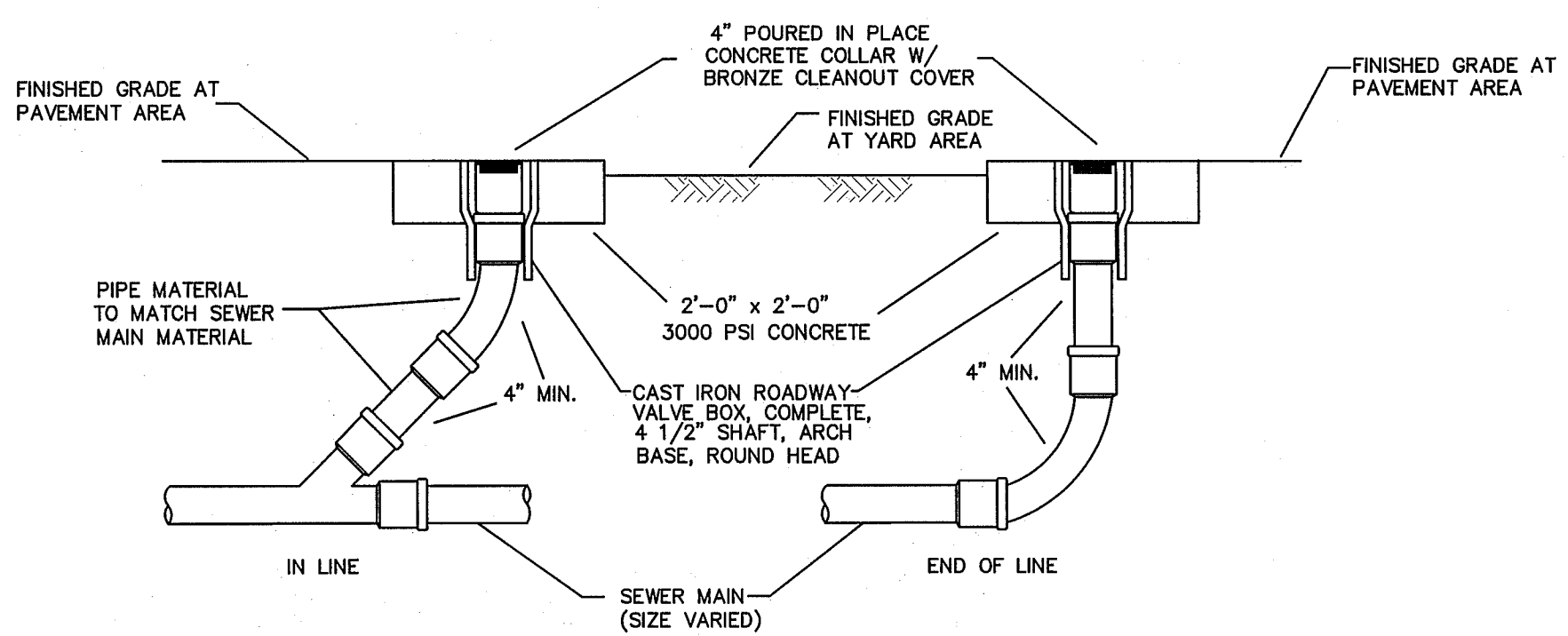
4 WATER VALVE DETAILS  
U1.3 SCALE: NOT TO SCALE

PROVIDED BY OWNER AND INSTALLED BY CONTRACTOR. GC TO PROVIDE CONCRETE PAD. VERIFY MAKE AND MODEL PRIOR TO START OF WORK.

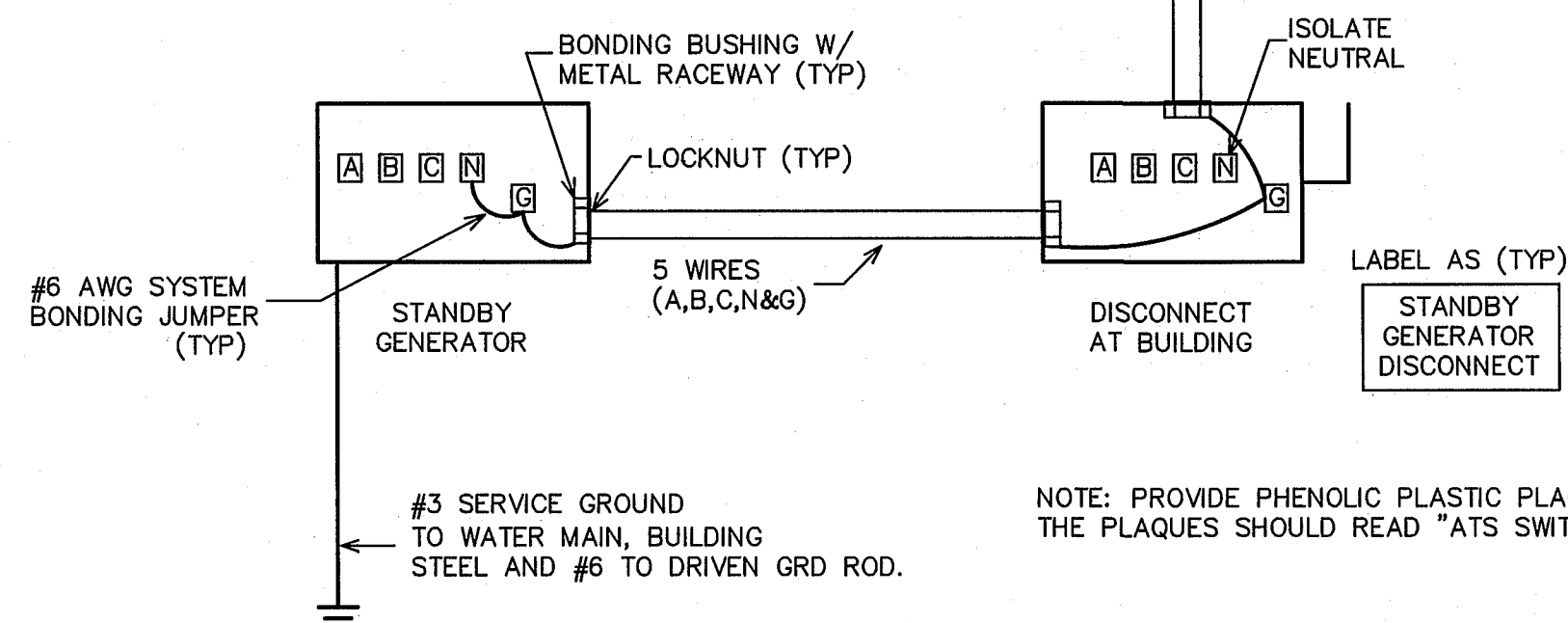
GENERATOR SCHEDULE (STAND-BY)

100 KW DIESEL FUELED STANDBY GENERATOR--  
PROVIDE A "KOHLER" MODEL 100RE0ZJB GENERATOR WITH SERVICE ENTRY RATED MANUAL TRANSFER SWITCH. THE GENERATOR SHALL BE CAPABLE OF RUNNING ON DIESEL FUEL WITH A 12 HOUR MIN RUN CAPACITY. PROVIDE ALL ACCESSORIES AS REQUIRED FOR A COMPLETE OPERATING SYSTEM. THE ENGINE SHALL HAVE A MINIMUM OF 125 HP AT 1800 RPM WITH AND ENCLOSED MUFFLER. THE DELIVERY VOLTAGE SHALL BE 208/120 VOLT, 3 PHASE. PROVIDE 10A DUAL RATE BATTERY CHARGER, AUTOMATIC VOLTAGE REGULATOR, AUTOMATIC LOW OIL PRESSURE AND HIGH TEMPERATURE SHUTDOWN. THE MANUAL TRANSFER SWITCH SHALL TRANSFER FROM THE UTILITY. PROVIDE A SERVICE RATED DISCONNECTING MEANS WITH OVERCURRENT PROTECTION AT THE GENERATOR LOCATION. PROPERLY GROUND THE GENERATOR AND SERVICE EQUIPMENT PER THE NEC. PROVIDE INITIAL START UP AND OWNER TRAINING. THE DIESEL FUEL TANK SHALL BE A MINIMUM OF 150 GALLONS. PROVIDE A DIGITAL CONTROL PANEL, UNIT VIBRATION ISOLATION, AND A WEATHER PROTECTIVE ENCLOSURE. PROVIDE A LOAD TEST, START-UP AND OWNER TRAINING BY THE GENERATOR MANUFACTURER'S FACTORY TRAINED REPRESENTATIVE.  
PROVIDE AN ADJUSTABLE 7-DAY/24-HOUR EXERCISE TIMER.  
PROVIDE A FULL TANK OF FUEL AT COMPLETION OF ALL REQUIRED TESTS.

1 PIPE BURIAL DETAILS  
U1.3 SCALE: NOT TO SCALE



2 GRAVITY SEWER CLEANOUT  
U1.3 SCALE: NOT TO SCALE



NOTE: PROVIDE PHENOLIC PLASTIC PLAQUES AT GENERATOR AND AT 800A MDP. THE PLAQUES SHOULD READ "ATS SWITCHES NEUTRAL. THE NEUTRAL IS GROUNDED AND BONDED AT GENERATOR."

3 GENERATOR BONDING DETAIL  
U1.3 SCALE: NOT TO SCALE

NOTES:  
1) GENERATOR NEUTRAL MUST BE BONDED AND GROUNDED.  
2) GENERATOR SHALL BE SUPPLIED WITH MAIN CIRCUIT BREAKER.  
3) ALL GROUNDING AND BONDING SHALL BE PER NEC SECTION 250.

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GENERAL NOTES

KEY PLAN

NO REVISION DATE

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NC DOT PROJECT  
42229.1.1 (K-5101) US 70 REST  
AREA RENOVATIONS  
NEW BERN, CRAVEN COUNTY, NC

DRAWING TITLE  
UTILITY DETAILS

SCALE  
1/4" = 1'-0"

DRAWN  
JME

CHECKED  
BEB

DATE  
03-22-2014

PROJECT NO.  
2013-18

U1.3

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