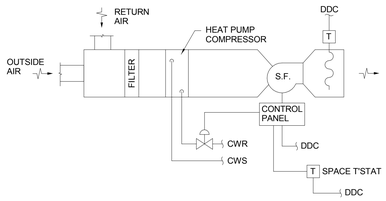


LOCAL CONTROL: THE HEAT PUMP UNITS CAN BE STARTED AT THE BMS CONTROL PANEL BY INDEXING THE H-O-A SWITCH TO THE HAND POSITION.

REMOTE CONTROL: THE HEAT PUMPS SHALL BE PROGRAMMED TO BE STARTED OR STOPPED FROM EITHER THE BMS CONTROL PANEL OR THE CENTRAL DDC CONTROL PANEL WHEN THE H-O-A SWITCH IS IN THE AUTOMATIC POSITION. THE UNIT SHALL ENERGIZE AND SHALL BE PLACED UNDER CONTROL OF THE BMS CONTROL PANEL. IF THE SUPPLY FAN FAILS TO START AFTER 20 SECONDS, A SOFTWARE INITIATED ALARM WILL BE SENT TO THE BMS CONTROL PANEL AND THE CENTRAL DDC CONTROL PANEL.

COOLING MODE: ONCE ENABLED, THE HEAT PUMP FAN SHALL RUN CONTINUOUSLY. THE UNIT'S INTEGRAL CONTROLLER SHALL CYCLE THE COMPRESSOR AND CONTROL THE HEAT PUMP OPERATION. THE REVERSING VALVE SHALL MODULATE TO CONTROL THE SUPPLY AIR TEMPERATURE OF 55 DEGREES F (ADJUSTABLE).

HEATING MODE: ONCE ENABLED, THE HEAT PUMP FAN SHALL RUN CONTINUOUSLY. THE UNIT'S INTEGRAL CONTROLLER SHALL CYCLE THE COMPRESSOR AND CONTROL THE HEAT PUMP OPERATION. THE REVERSING VALVE SHALL MODULATE TO CONTROL THE SUPPLY AIR TEMPERATURE OF 90 DEGREES F (ADJUSTABLE).

THE INTERNAL CONTROLLER SHALL MODULATE THE CWR CONTROL VALVE AS NEEDED FOR COMPRESSOR OPERATION.

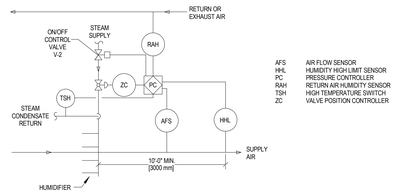
SUPPLEMENTAL EMERGENCY ELECTRIC HEAT SHALL BE PROVIDED INTERNAL TO THE HEAT PUMP UNIT. HEATING COIL SHALL ENERGIZE WHEN THE SUPPLY WATER TEMPERATURE IS BELOW 45 DEG F. DURING OPERATION THE COMPRESSOR SHALL BE LOCKED OUT OF OPERATION. ALL RELAYS AND WIRING SHALL BE PROVIDED WITH THE UNIT FOR A SINGLE POINT ELECTRICAL CONNECTION.

THE FOLLOWING POINTS SHALL BE SENT TO THE BMS:

- UNIT STATUS
- UNIT START / STOP
- UNIT ALARM
- SUPPLY AIR TEMPERATURE
- SPACE TEMPERATURE
- REVERSING VALVE POSITION
- CWR CONTROL VALVE PERCENT OPEN

1 HEAT PUMP CONTROLS SEQUENCE

NTS



STEAM HUMIDIFIER:
RETURN (OR EXHAUST) AIR HUMIDITY SHALL BE MONITORED. ON A CALL FOR HUMIDIFICATION,HUMIDIFIER VALVE V-1 SHALL MODULATE TO MAINTAIN THE RETURN (OR EXHAUST) AIR HUMIDITY SET POINT TO 30% (ADJUSTABLE). PRIOR TO ACTIVATION OF V-1, THE ON/OFF CONTROL VALVE V-2 SHALL BE ENABLED THROUGH ECC AND JACKET TEMPERATURE SENSED BY TSH SHALL BE WARM ENOUGH TO PREVENT CONDENSATION. THE HIGH LIMIT HUMIDITY SENSOR, LOCATED IN THE SUPPLY AIR DUCT 10 FEET AWAY FROM THE HUMIDIFIER SHALL DISABLE THE HUMIDIFIER AND GIVE AN ALARM SIGNAL TO THE ECC, IF THE SUPPLY AIR HUMIDITY EXCEEDS 90% RH (ADJUSTABLE). THE AIRFLOW SWITCH SHALL PROVE AIRFLOW BEFORE HUMIDITY CONTROLS ARE ACTIVATED.

3 STEAM HUMIDIFIER CONTROL DIAGRAM

NTS

WATER SOURCE HEAT PUMP SYSTEM

A. CONTROL SEQUENCE - WATER SOURCE HEAT PUMP SYSTEM IS AN INTEGRATED SYSTEM CONSISTING OF THE FOLLOWING COMPONENTS:
   1. INDIVIDUAL HEAT PUMP UNITS. THESE HP'S SHALL HAVE INTEGRAL MICROPROCESSOR CONTROLS, AND SHALL BE ABLE TO COMMUNICATE WITH A CENTRAL SYSTEM THROUGH A TWISTED PAIR.
   2. LOOP PUMPS. THE MAIN LOOP PUMPS CIRCULATE WATER THROUGH ALL THE EQUIPMENT WHENEVER THERE IS A CALL FOR A HP COMPRESSOR TO BE ON, OR WHEN THE OUTDOOR TEMPERATURE IS LOW AND AT RISK FOR FREEZING.
   3. HEAT ADDERS: HEAT CAN BE ADDED TO THE LOOP WATER THROUGH GROUND LOOPS.
   4. HEAT REJECTORS: HEAT CAN BE REMOVED FROM THE LOOP WATER THROUGH GROUND LOOPS.
   5. LOOP CONTROLLER. THERE SHALL BE A CENTRAL CONTROLLER WHICH HOSTS THE OVERALL COMMUNICATIONS NETWORK CONNECTING ALL HP'S, PUMPS, HEAT ADDERS, HEAT REJECTORS, TEMPERATURE SENSORS, AND A CENTRAL OPERATORS TERMINAL.
B. INTEGRATE THE VARIOUS SYSTEM COMPONENTS WITH THE LOOP CONTROLLER AND NETWORK FOR A COMPLETE WORKING SYSTEM.
C. LOOP CONTROLLER. THE LOOP CONTROLLER SHALL BE LOCATED IN THE MECHANICAL ROOM. PROVIDE CAPABILITIES TO MONITOR AND CONTROL THE LOOP CONTROLLER AND THE OVERALL HEAT PUMP SYSTEM FROM THE CENTRAL ECC. PROVIDE STANDARD LOOP GRAPHICS WITH EQUIPMENT STATUS POINTS, AND PROVIDE ACCESS TO EACH INDIVIDUAL PIECE OF EQUIPMENT'S OPERATING STATUS POINTS.
D. INDIVIDUAL HEAT PUMPS (HP)
   1. INSTALL REMOTE SENSORS AND VALVES FOR INDIVIDUAL HPS. COORDINATE WITH THE HP MANUFACTURER FOR TYPES OF CONTROL DEVICES AND NECESSARY WIRING FOR STAND-ALONE OPERATION.
   2. CONNECT NETWORK WIRING TO ALL HP'S.
E. LOOP PUMP SEQUENCE - VARIABLE FLOW
   1. THE MAIN LOOP PUMPS SHALL HAVE A VARIABLE SPEED MOTOR WITH VFD CONTROL.
   2. PUMP SPEED SIGNALS SHALL BE INDEPENDENTLY WIRED TO THE PUMP CONTROLLER. DAISY-CHAINING FROM ONE VFD TO ANOTHER VFD IS NOT PERMITTED BECAUSE TURNING OFF THE FIRST VFD WILL RESULT IN A LOSS OF SPEED SIGNAL TO THE DOWNSTREAM DRIVES.
   3. THIS SYSTEM OPERATES WITH A SINGLE PUMP HANDLING NORMAL FLOW, AND A BACKUP PUMP, UTILIZING LEAD/LAG FAILURE AND WEEKLY ROTATION. (ALSO CALLED DUTY AND BACKUP). LOSS OF BOTH DUTY AND STANDBY SECONDARY PUMPING UNITS SHALL INITIATE AN ALARM. PROVIDE A SPECIAL PUMP ROTATION SEQUENCE WHICH DOES NOT INTERFERE WITH NORMAL SYSTEM EQUIPMENT OPERATION - BASICALLY TURN ON THE BACKUP PUMP, SLOWLY RAMP UP THE SPEED, SLOWLY RAMP DOWN THE DUTY PUMP BEFORE TURNING IT OFF.
   4. UPON INDICATION OF A LOSS OF FLOW THROUGH A PUMP FOR A CONTINUOUS DURATION OF 15 SECONDS (ADJUSTABLE), AN ALARM SIGNAL SHALL BE RECEIVED AT THE LOOP CONTROLLER. UPON CONTINUED LOSS OF FLOW FOR AN ADDITIONAL 30 SECONDS (ADJUSTABLE) TURN ON THE LAG PUMP. THE INITIATION AND PROOF OF FLOW OF THE LAG PUMP SHALL INITIATE AN ORDERLY SHUTDOWN OF THE FAILED PUMP.
   5. DIFFERENTIAL PRESSURE CONTROL AND RESET STRATEGY: THERE MAY BE ONE OR MORE REMOTE LOOP DIFFERENTIAL PRESSURE SENSORS (USUALLY LOCATED FAR FROM THE PUMPS). EACH REMOTE SENSOR SHALL HAVE ITS OWN ADJUSTABLE SET POINT. THE INITIAL REMOTE DP SETPOINT SHALL BE 5 PSI, AND SHALL BE CONFIRMED/ADJUSTED BY TAB DURING COIL FLOW VERIFICATION. THE LOOP PUMP DIFFERENTIAL PRESSURE SET POINT VALUE SHALL BE RESET TO MAINTAIN THE WORST CASE REMOTE DP SENSOR AT SET POINT. THE LOOP PUMP SPEED SHALL BE MODULATED TO MAINTAIN THE PLANT DP SENSOR AT SET POINT. IF COMMUNICATION IS LOST WITH THE REMOTE DP SENSORS, THE PLANT DP SET POINT SHALL REMAIN AT ITS LAST VALUE.
F. HEAT REJECTION
   1. THE FIRST STAGE OF COOLING SHALL BE TO TURN ON THE INTERNAL WATER RECIRCULATION PUMP.
   2. THE LOOP CONTROLLER SHALL DEFINE THE MULTIPLE STAGES OF HEAT REJECTION BASED UPON TEMPERATURE SETPOINTS. THESE TEMPERATURE SETPOINTS SHALL BE ADJUSTED AND OPTIMIZED DURING SYSTEM PERFORMANCE TESTING. THE MANUFACTURER'S INTERNAL CONTROL LOGIC MAY BE SUBSTITUTED FOR THESE STAGES IF APPROVED BY THE ENGINEER.
G. GROUND LOOP HEAT ADDITION AND REJECTION
   1. THE GROUND LOOP SHALL BE THE SOURCE FOR BOTH HEAT ADDITION AND REJECTION FROM THE LOOP.
   2. PROVIDE CONTROL OF MODULATING VALVES SO THAT THE LOOP WATER SUPPLY WATER TEMPERATURES ARE MAINTAINED BETWEEN THE FOLLOWING TEMPERATURES.
      a. CIRCULATE WATER THROUGH THE GROUND LOOP TO KEEP SUPPLY TEMPERATURES BELOW 85F AND ABOVE 55F.
      b. LOOP WATER CAN BE BYPASSED FROM THE GROUND LOOP WHEN MAIN LOOP SUPPLY TEMPERATURES ARE BETWEEN THE UPPER AND LOWER LIMITS OF 85F AND 55F.
   3. THE GROUND LOOP CIRCUIT MAY BE SUPPLEMENTED WITH ADDITIONAL HEAT REJECTION OR HEAT ADDITION.

2 GEOTHERMAL HEAT PUMP SYSTEM CONTROL SEQUENCE

NTS

STEAM TRAP MONITORING SYSTEM:

PROVIDE MONITORING OF ALL STEAM TRAPS WITH HARD WIRED CONNECTION BACK TO A RECEIVER LOCATED IN THE MECHANICAL ROOM.

THE TRAP MONITORING RECEIVER SHALL COMMUNICATE WITH THE CENTRAL BAS WITH ALARMING AND TRENDING CAPABILITIES.

FULLY SPRINKLERED
CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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AE Works Project Number: 13025

Drawing Title: HVAC CONTROL SEQUENCES

Approved: Project Director

Project Title: NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 | Checked: JKG | Drawn: SPL

Project Number: # 613-116

Building Number: #519

Drawing Number: H802

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

JOB: 613-116 / MARTINSBURG VA
BUILDING: WAREHOUSE
SYSTEM: HEATING AND VENTILATING UNIT

SYSTEM COMPONENT:	POINT ID	ABBREVIATION	PRIORITY/ADD-ALTERNATE NO.	ELECTRIC DEVICE	STATIC DEVICE	OPEN/CLOSE	SPEED COMMAND	VALVE POSITION	DAMPER POSITION	STATUS	ALARM	PRESSURE	HIGH HUMIDITY	LOW TEMPERATURE	TEMPERATURE (T)	PRESSURE	POSITION	FLOW	FREQUENCY	STATIC PRESSURE	CARBON MONOXIDE	HUMIDITY	Local Alarm Panel	Remote Alarm Panel	Meter Pulse	HIGH LIMIT	LOW LIMIT	SCHEDULE START/STOP	FUNCTION	DUTY CYCLE	ENTHALPY ECONOMIZER	EMPIRICAL ECONOMIZER	DEMAND LIMIT	DEMAND WITH NO	TEMPERATURE OVERRIDE	STATIC PRESSURE RESET	PRESSURE/VOLUME CONTROL	FAILURE MODE CONTROL	STATE CODE	FULL COMMUNICATION	TRENDING	REMARKS
RETURN AIR TEMPERATURE	AI-1	RAT							●						●																										●	
RETURN AIR HUMIDITY	AI-2	RAH							●											●																					●	
MIXED AIR TEMPERATURE	AI-3	MAT							●						●																										●	
DISCHARGE AIR TEMPERATURE	AI-4	DAT							●						●																		●								●	
DISCHARGE STATIC PRESSURE	AI-5	DASP							●									●						●												●					●	
DISCHARGE AIR HUMIDITY	AI-6	DAH							●											●																					●	
OUTSIDE AIR TEMPERATURE	AI-7	OAT													●																										●	
RETURN LOW PRESSURE	BI-1	RLP								●																															●	
RETURN FAN STATUS	BI-2	RF-STS						●																																	●	
SUPPLY FAN STATUS	BI-3	SF-STS						●																																	●	
MIXED AIR LOW LIMIT	BI-4	TSL-1										●													●																●	
STATIC PRESSURE HIGH LIMIT	BI-5	SPS-2									●													●																	●	
HUMIDITY HIGH LIMIT	BI-6	HHL											●											●																	●	
SUPPLY FAN VSMC ALARM	BI-7	SF-ALA							●																																●	
SUPPLY FAN VSMC	AO-1	SF-SPD					●																																	●	●	FULL COMMUNICATION
OUTSIDE AIR DAMPER	AO-2	OAD						●														●																			●	
RETURN AIR DAMPER	AO-3	RAD						●														●																			●	
MINIMUM OUTSIDE AIR DAMPER	AO-4	MIN-OAD						●																																	●	
STEAM HUMIDIFIER VALVE	AO-5	HUM-V4					●																																		●	
SUPPLY FAN START/STOP	BO-1	SF-SST			●																						●														●	
STEAM ISOLATION VALVE	BO-2	HUM-ISO-V3				●															●																				●	

1 HVAC HEATING AND VENTILATING UNIT POINTS LIST
NTS

JOB: 613-116 / MARTINSBURG VA
BUILDING: WAREHOUSE
SYSTEM: ENERGY RECOVERY UNIT OUTSIDE / SUPPLY AIR SIDE

SYSTEM COMPONENT:	POINT ID	ABBREVIATION	PRIORITY/ADD-ALTERNATE NO.	ELECTRIC DEVICE	STATIC DEVICE	OPEN/CLOSE	SPEED COMMAND	VALVE POSITION	DAMPER POSITION	STATUS	ALARM	PRESSURE	HIGH HUMIDITY	LOW TEMPERATURE	TEMPERATURE (T)	PRESSURE	POSITION	FLOW	FREQUENCY	STATIC PRESSURE	CARBON MONOXIDE	HUMIDITY	Local Alarm Panel	Remote Alarm Panel	Meter Pulse	HIGH LIMIT	LOW LIMIT	SCHEDULE START/STOP	FUNCTION	DUTY CYCLE	ENTHALPY ECONOMIZER	EMPIRICAL ECONOMIZER	DEMAND LIMIT	DEMAND WITH NO	TEMPERATURE OVERRIDE	STATIC PRESSURE RESET	PRESSURE/VOLUME CONTROL	FAILURE MODE CONTROL	STATE CODE	FULL COMMUNICATION	TRENDING	REMARKS
OUTSIDE / SUPPLY AIR SIDE:																																										
COOLING COIL TEMPERATURE	AI-1	CCT							●						●																					●					●	
DISCHARGE AIR TEMPERATURE	AI-2	DAT							●						●																	●									●	
DISCHARGE STATIC PRESSURE	AI-3	DASP							●											●															●						●	
DISCHARGE AIR HUMIDITY	AI-4	DAH							●												●																				●	
OUTSIDE AIR TEMPERATURE	AI-5	OAT													●																										●	
SUPPLY FAN STATUS	BI-1	SF-STS						●																																	●	
STATIC PRESSURE HIGH LIMIT	BI-2	SPS-2									●																									●					●	
HUMIDITY HIGH LIMIT	BI-3	HHL										●																								●					●	
SUPPLY FAN VSMC ALARM	BI-4	SF-ALA									●																														●	
SUPPLY FAN VSMC	AO-1	SF-SPD						●																																	●	FULL COMMUNICATION
OUTSIDE AIR DAMPER	AO-2	OAD							●																									●							●	
MINIMUM OUTSIDE AIR DAMPER	AO-3	MIN-OAD							●																																●	
CONDENSER WATER VALVE	AO-4	CON-V1								●																															●	
STEAM HUMIDIFIER VALVE V-4	AO-5	HUM-V4								●																															●	
SUPPLY FAN START/STOP	BO-1	SF-SST			●																										●										●	
RETURN / EXHAUST AIR SIDE:																																										
RETURN AIR TEMPERATURE	AI-6	RAT							●						●																										●	
RETURN AIR HUMIDITY	AI-7	RAH							●													●																			●	
DISCHARGE AIR TEMPERATURE	AI-8	DAT							●						●																	●									●	
EXHAUST AIR FLOW (CFM)	AI-9	EAF							●											●															●						●	
EXHAUST LOW PRESSURE	BI-5	RLP										●																													●	
EXHAUST FAN STATUS	BI-6	RF-STS									●																														●	
STATIC PRESSURE HIGH LIMIT	BI-7	SPS-2																			●															●					●	
HUMIDITY HIGH LIMIT	BI-8	HHL											●																							●					●	
EXHAUST FAN VSMC ALARM	BI-9	EF-ALA									●																														●	
EXHAUST AIR DAMPER	AO-6	EAD						●																								●									●	
EXHAUST FAN START/STOP	BO-2	EF-SST			●																										●										●	

2 HVAC ENERGY RECOVERY UNIT POINTS LIST
NTS

JOB: 613-116 / MARTINSBURG VA
BUILDING: WAREHOUSE
SYSTEM: HEAT PUMP UNITS

SYSTEM COMPONENT:	POINT ID	ABBREVIATION	PRIORITY/ADD-ALTERNATE NO.	ELECTRIC DEVICE	STATIC DEVICE	OPEN/CLOSE	SPEED COMMAND	VALVE POSITION	DAMPER POSITION	STATUS	ALARM	PRESSURE	HIGH HUMIDITY	LOW TEMPERATURE	TEMPERATURE (T)	PRESSURE	POSITION	FLOW	FREQUENCY	STATIC PRESSURE	CARBON MONOXIDE	HUMIDITY	Local Alarm Panel	Remote Alarm Panel	Meter Pulse	HIGH LIMIT	LOW LIMIT	SCHEDULE START/STOP	FUNCTION	DUTY CYCLE	ENTHALPY ECONOMIZER	EMPIRICAL ECONOMIZER	DEMAND LIMIT	DEMAND WITH NO	TEMPERATURE OVERRIDE	STATIC PRESSURE RESET	PRESSURE/VOLUME CONTROL	FAILURE MODE CONTROL	STATE CODE	FULL COMMUNICATION	TRENDING	REMARKS
HEAT PUMP UNITS:																																										
COOLING COIL TEMPERATURE	AI-1	CCT							●						●										●																●	
DISCHARGE AIR TEMPERATURE	AI-2	DAT							●						●																		●								●	
DISCHARGE STATIC PRESSURE	AI-3	DASP							●									●							●										●						●	
OUTSIDE AIR TEMPERATURE	AI-4	OAT													●																										●	
RETURN AIR TEMPERATURE	AI-5	RAT							●						●																										●	
SUPPLY FAN STATUS	BI-1	SF-STS									●																														●	
STATIC PRESSURE HIGH LIMIT	BI-2	SPS-2									●																														●	
CONDENSER WATER VALVE	AO-1	CON-V1						●																																	●	
SUPPLY FAN START/STOP	BO-1	SF-SST			●																						●														●	

3 HVAC HEAT PUMP UNIT POINTS LIST
NTS

JOB: 613-116 / MARTINSBURG VA
BUILDING: WAREHOUSE
SYSTEM: CONDENSER WATER LOOP

SYSTEM COMPONENT:	POINT ID	ABBREVIATION	PRIORITY/ADD-ALTERNATE NO.	ELECTRIC DEVICE	STATIC DEVICE	OPEN/CLOSE	SPEED COMMAND	VALVE POSITION	DAMPER POSITION	STATUS	ALARM	PRESSURE	HIGH HUMIDITY	LOW TEMPERATURE	TEMPERATURE (T)	PRESSURE	POSITION	FLOW	FREQUENCY	STATIC PRESSURE	CARBON MONOXIDE	HUMIDITY	Local Alarm Panel	Remote Alarm Panel	Meter Pulse	HIGH LIMIT	LOW LIMIT	SCHEDULE START/STOP	FUNCTION	DUTY CYCLE	ENTHALPY ECONOMIZER	EMPIRICAL ECONOMIZER	DEMAND LIMIT	DEMAND WITH NO	TEMPERATURE OVERRIDE	STATIC PRESSURE RESET	PRESSURE/VOLUME CONTROL	FAILURE MODE CONTROL	STATE CODE	FULL COMMUNICATION	TRENDING	REMARKS
																														○												
BYPASS VALVE STATUS	AI-1	BV-STS				○		○		●						○														○											○	
RETURN WATER VALVE STATUS	AI-2	RW-STS				○		○								○														○											○	
SUPPLY WATER TEMPERATURE	AI-3	SWT													○																										○	
SUPPLY WATER PRESSURE	AI-4	SWP														○																									○	
RETURN WATER TEMPERATURE	AI-5	RWT												○		○														○											○	
RETURN WATER PRESSURE	AI-6	RWP																																							○	
DIFFERENTIAL PRESSURE 1	AI-7	DP1														○																									○	
DIFFERENTIAL PRESSURE 2	AI-8	DP2														○																									○	
SUPPLY HEADER TEMPERATURE	AI-9	SHT												○		○									○					○											○	
SUPPLY HEADER PRESSURE	AI-10	SHP																																							○	
RETURN HEADER TEMPERATURE	AI-11	RHT												○		○									○					○											○	
RETURN HEADER PRESSURE	AI-12	RHP														○																									○	
VFD STATUS	AI-13	VD-STS																																							○	
PUMP STATUS	BI-1	P-STS									○														○			○													○	
STATIC PRESSURE HIGH LIMIT	BI-2	SPHL									○			○																											○	
BYPASS VALVE	AO-1	BV				○		○								○																									○	
RETURN WATER VALVE	AO-2	RWV				○		○								○																									○	
PUMP START/STOP	BO-1	P-SST			○						○														○			○													○	

4 HVAC CONDENSER WATER LOOP POINTS LIST
NTS

FULLY SPRINKLERED
CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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AE Works Project Number: 13025

Drawing Title: HVAC CONTROLS POINT LISTS

Approved: Project Director

Project Title: NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 | Checked: JKG | Drawn: SPL

Project Number: # 613-116

Building Number: #519

Drawing Number: H803

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

ELECTRICAL SYMBOLS LEGEND

THIS IS A STANDARD SYMBOL LIST. ALL SYMBOLS MAY NOT APPEAR ON THIS PROJECT.

LIGHTING SYMBOLS

- FX — RECESSED MOUNTED TROFFER, (1X4, 2X2, 2X4) FX = FIXTURE TYPE (REFER TO LIGHTING FIXTURE SCHEDULE FOR DETAILS)
- FX — RECESSED DOWNLIGHT, SURFACE MOUNTED, OR DECORATIVE PENDANT MOUNT FX = FIXTURE TYPE (REFER TO LIGHTING FIXTURE SCHEDULE FOR DETAILS)
- FX-Y — PENDANT MOUNTED LINEAR DIRECT/INDIRECT FX = FIXTURE TYPE, Y = FIXTURE LENGTH (REFER TO LIGHTING FIXTURE SCHEDULE FOR DETAILS)
- EXTERIOR WALL MOUNTED LIGHT FIXTURE
- POLE MOUNTED LIGHT FIXTURE
- EX — LED EXIT SIGN, AND BATTERY BACKUP.
- EX — LED EXIT SIGN, WITH EMERGENCY HEADS, AND BATTERY BACKUP.
- BATTERY PACK EMERGENCY LIGHT
- DENOTES FIXTURE IS CONNECTED TO EMERGENCY POWER
- DENOTES AIMING DIRECTION OF LIGHT FIXTURE
- DENOTES WALL MOUNT ARM OF LIGHT FIXTURE

LIGHTING CONTROL SYMBOLS

- OCM X, OCS X — CEILING MOUNTED OR WALL MOUNTED OCCUPANCY SENSOR. X INDICATES: D=DUAL TECHNOLOGY, P=PASSIVE INFRARED, U=ULTRA SONIC
- DS — DAYLIGHT SENSOR OR ON/OFF PHOTOCELL
- PP — OCCUPANCY SENSOR POWER PACK, INSTALL IN A JUNCTION BOX ABOVE WALL SWITCH
- S X — WALL SWITCH, CONTROL. X= 3: 3 WAY 4: 4 WAY P: PILOT LIGHT M: MOTOR SWITCH T: TIMER. LV: LOW VOLTAGE (REFER TO LIGHTING DETAILS FOR BUTTON TYPES) 01=SINGLE BUTTON DUAL TECH 02=DOUBLE BUTTON DUAL TECH V1=SINGLE BUTTON VACANCY V2=DOUBLE BUTTON VACANCY
- PC — OUTDOOR PHOTOCELL, INSTALL FACING NORTH
- OTD — UL924 EMERGENCY TRANSFER DEVICE

POWER SYMBOLS

- XX — DUPLEX RECEPTACLE IN A 4" SQUARE BOX WITH PLASTER RING (IN DRYWALL) SINGLE GANG BOX IN MASONRY. XX: WP=WEATHERPROOF, SS=SURGE SUPPRESSOR, GFI= GROUND FAULT INTERRUPTER, TR=TAMPER RESISTANT
- XX — DOUBLE DUPLEX RECEPTACLE IN A 4" SQUARE BOX XX: WP=WEATHERPROOF, SS=SURGE SUPPRESSOR, GFI= GROUND FAULT INTERRUPTER, TR=TAMPER RESISTANT
- SINGLE RECEPTACLE IN A 4" SQUARE BOX WITH PLASTER RING (IN DRYWALL) SINGLE GANG. BOX IN MASONRY.
- 50A — SPECIAL RECEPTACLE IN A 4" SQUARE BOX WITH NEMA CONFIGURATION INDICATED.
- COMBINATION POKE THRU DEVICE W/ (2) DUPLEX RECEPTACLES (REFER TO ET SERIES DRAWINGS FOR # OF DATA OUTLETS)
- MULTI-SERVICE FLOOR BOX W/ (2) DUPLEX RECEPTACLES (REFER TO ET SERIES DRAWINGS FOR # OF DATA OUTLETS)
- DOUBLE GANG BACKBOX W/ SINGLE GANG DEVICE RING. 1 1/4" EMT CONDUIT W/ PULL STRING TO ABOVE ACCESSIBLE CEILING
- NON-FUSED DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- COMBINATION MOTOR STARTER
- VFD — VARIABLE FREQUENCY DRIVE
- XX — SINGLE PHASE MOTOR CONNECTION XX=HORSE POWER
- XX — THREE PHASE MOTOR CONNECTION XX=HORSE POWER
- X — PUSHBUTTON X=EMERGENCY STOP; A=AUTO DOOR PUSH BUTTON
- EXISTING / NEW — SURFACE MOUNTED ELECTRICAL PANELBOARD
- EXISTING / NEW — RECESSED MOUNTED ELECTRICAL PANELBOARD
- JUNCTION BOX - WALL MOUNTED
- JUNCTION BOX - CEILING OR EQUIPMENT MOUNTED
- GROUND PER NATIONAL ELECTRIC CODE
- WALL MOUNTED GROUND BUS BAR (COPPER)

ANNOTATION SYMBOLS

- 2 — DRAWING KEYNOTE
- 2 — EQUIPMENT TAG
- 2 — REVISION TRIANGLE WITH REVISION CLOUD
- INDICATED MOUNTED ABOVE COUNTERTOP (REFER TO STANDARD MOUNTING HEIGHTS DETAIL ON THIS SHEET)
- EXISTING TO REMAIN
- NEW WORK
- DEMOLITION
- X - Y — RECEPTACLE TAG: X= PANEL NAME Y= CIRCUIT NUMBER
- X / Y — ELECTRICAL EQUIPMENT TAG: X= DEVICE TYPE (PANELBOARD,TRANSFORMER,SWITCHBOARD) Y= DEVICE NAME

RISER DIAGRAM/SINGLE LINE SYMBOLS

- PANEL VOLTAGE AMPACITY MCB OR MLO — ELECTRICAL PANELBOARD REFER TO DRAWINGS FOR VOLTAGE, AMPACITY, CIRCUIT QUANTITY, RATINGS, AND SPECIAL FEATURES
- STEP-DOWN TRANSFORMER REFER TO DRAWINGS FOR VOLTAGE, SIZE, TYPE AND SPECIAL REQUIREMENTS
- TAG AMPACITY FSS NEMA — FUSED SAFETY SWITCH
- TAG AMPACITY NFSS NEMA — NON-FUSED SAFETY SWITCH
- TAG AMPACITY CB NEMA — ENCLOSED CIRCUIT BREAKER
- ENCLOSED WIREWAY WITH TAPPED CONDUCTORS
- M — MOTOR REFER TO DRAWINGS FOR VOLTAGE, SIZE, TYPE AND SPECIAL REQUIREMENTS
- UTILITY METER, CT CABINET, M — UTILITY METER REFER TO DRAWINGS FOR VOLTAGE, SIZE, TYPE AND SPECIAL REQUIREMENTS
- XXXA — FUSED SWITCH
- XXXA — NON-FUSED SWITCH
- XXXA — FUSED SWITCH W/ AUXILIARY CONTACTS
- NON-FUSED SWITCH W/ AUXILIARY CONTACTS
- XXXA/3P — MOLDED CASE CIRCUIT BREAKER
- XXXA/3P, ST — MOLDED CASE CIRCUIT BREAKER W/ SHUNT TRIP
- XXXA/3P, ST — MOLDED CASE CIRCUIT BREAKER W/ SHUNT TRIP & AUXILIARY CONTACT
- XXXA, XXXA — FUSED DOUBLE THROW SWITCH
- XXXA, 52 — DRAW-OUT MEDIUM VOLTAGE CIRCUIT BREAKER
- XXXA/3P, XXXAF, LSIG — DRAW-OUT LOW VOLTAGE CIRCUIT BREAKER
- A, SIZE 1 FVNR — COMBINATION MOTOR STARTER

LIGHTNING PROTECTION SYMBOLS

- LP — COPPER LIGHTNING PROTECTION CONDUCTORS
- AIR TERMINAL
- GROUND ROD AND DOWN CONDUCTOR
- BOND TO LIGHTNING PROTECTION CONDUCTOR

ABBREVIATIONS

ABOVE FINISHED FLOOR	AFF
ABOVE FINISHED GRADE	AFG
AMPERE	A/AMP
APPROXIMATE (LY)	APPROX
ASYMMETRIC	ASY
AUTOMATIC TRANSFER SWITCH	ATS
BATTERY	BATT
BELOW FINISHED CEILING	BFC
BREAKER	BKR
CABLE TELEVISION	CATV
CEILING	CLG
CIRCUIT	CIR/CKT
CIRCUIT BREAKER	CB
CLOSED CIRCUIT TELEVISION	CCTV
COMMUNICATION	COMM
CONDUIT	C
COPPER	CU
DECIBEL	DB
DIAMETER	DIA
DISCONNECT	DISC
DISTRIBUTION PANEL	DP
DOWNLIGHT	DNLT
DRAWING	DWG
EACH	EA
ELECTRIC WATER COOLER	EWC
ELECTRICAL	ELEC
ELEVATOR	ELEV
EMERGENCY	E / EMER
EQUIPMENT	EQUIP
EXHAUST FAN	EF
EXPLOSION PROOF	XP
FIRE ALARM	FA
FIRE ALARM ANNUNCIATOR PANEL	FAAP
FIRE ALARM CONTROL PANEL	FACP
FIXTURE	FIXT
FLOOR	FL
FLUORESCENT	FLUOR
FOOTCANDLES	FT
FULL LOAD AMPERES	FLA
GENERAL CONTRACTOR	GC
GENERATOR	GEN
GROUND	GND / G
GROUND FAULT INTERRUPTER	GFI
HEATING VENTILATING AIR CONDITIONING	HVAC
HERTZ	HZ
HIGH INTENSITY DISCHARGE	HID
HIGH POWER FACTOR	HPF
HORSEPOWER	HP
INCANDESCENT	INCAN
ISOLATED GROUND	IG
JUNCTION BOX	JB
KILOVAR (REACTANCE)	KVAR
KILOVOLT AMPERE	KVA
KILOWATT	KW
KILOWATT HOUR METER	KWH
LIGHT	LT
LIGHTING	LTG
LOW VOLTAGE	LV
LIGHT EMITTING DIODE	LED
MAIN CIRCUIT BREAKER	MCB
MAIN DISTRIBUTION PANEL	MDP
MAIN LUGS ONLY	MLO
MANHOLE	MH
MANUAL TRANSFER SWITCH	MTS
MANUFACTURER	MFR
MEDIUM VOLTAGE	MV
METAL HALIDE	MH
METAL-CLAD CABLE	MC
MISCELLANEOUS	MISC
MOTOR CONTROL CENTER	MCC
MOUNTED	MTD
MOUNTING HEIGHT	MTG HT
NATIONAL ELECTRIC MANUFACTURER ASSOCIATION	NEMA
NATIONAL ELECTRIC CODE	NEC
NIGHT LIGHT	NL
NORMALLY OPENED	NO
NOT AVAILABLE/NOT APPLICABLE	N/A
NOT IN CONTRACT	NIC
NOT TO SCALE	NTS
ON CENTER	OC
PANEL	PNL
PULL BOX	PB
RAPID START	RS
RECEPTACLE	REC / RECPT
REFLECTOR	REFL
REQUIRED	REQD
RIGID GALVANIZED STEEL CONDUIT	RGS
ROOM	RM
SCHEDULE	SCHED / SCH
SWITCH	SW
SWITCHBOARD	SWBD
SWITCHGEAR	SWGR
TELEPHONE	TELE
TRANSFORMER	XFMR
TYPICAL	TYP
UNDERWRITER'S LABORATORIES	UL
UNINTERRUPTIBLE POWER SUPPLY	UPS
UNLESS OTHERWISE NOTED	UON
VOLT	V
WATT	W
WEATHERPROOF	WP

WIRING CONVENTION

1. THE COMPLETE BRANCH WIRING SYSTEM IS NOT SHOWN ON THE DRAWINGS. AN ABBREVIATED FORMAT IS USED TO INDICATE WHICH FIXTURES/DEVICES ARE CONNECTED TO A COMMON CIRCUIT OR SWITCH. THIS IS PROVIDED AS A GUIDE TO THE CONTRACTOR TO ILLUSTRATE CIRCUITS AND CONTROL INTENT. ACTUAL WIRING MAY BE DIFFERENT DUE TO FIELD CONDITIONS.
2. ALL CIRCUITS SHALL CONTAIN AN INDIVIDUAL NEUTRAL WIRE. SHARING OF NEUTRALS IS PROHIBITED. ALL CIRCUITS SHALL CONTAIN AN INDIVIDUAL GROUND WIRE. USE OF THE CONDUIT SYSTEM FOR THE GROUND PATH IS PROHIBITED.
3. IF THE CONTRACTOR CHOOSES TO RUN MULTIPLE CURRENT CARRYING CONDUCTORS IN A COMMON CONDUIT, THE NEC DERATING RULES SHALL BE FOLLOWED, AND CONDUCTORS/CONDUIT SHALL BE UPSIZED ACCORDINGLY, INCLUDING THE GROUND WIRE.
4. CONDUCTORS INSTALLED ON ROOFTOPS SHALL HAVE THEIR SIZES INCREASED PER NEC SECTION 310.15 DERATING FACTORS. UPSIZE CONDUCTORS AND CONDUIT ACCORDINGLY, INCLUDING THE GROUND WIRE.
5. CONDUCTOR SIZES ARE BASED ON NEC SECTION 310.16, 75 DEGREE C TEMPERATURE RATING, AND 90 DEGREE C LUGS.
6. COLOR CODING OF CONDUCTORS SHALL BE AS FOLLOWS (AS APPLICABLE):

120/208 VOLT SYSTEM	277/480 VOLT SYSTEM
PHASE A = BLACK	PHASE A = BROWN
PHASE B = RED	PHASE B = ORANGE
PHASE C = BLUE	PHASE C = YELLOW
NEUTRAL = WHITE	NEUTRAL = GREY
GROUND = GREEN	GROUND = GREEN

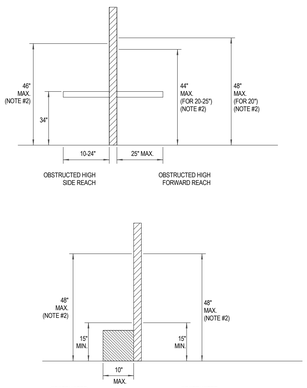
WIRING SYMBOLOGY

- SINGLE PHASE HOMERUN TO PANELBOARD
- THREE PHASE HOMERUN TO PANELBOARD
- BRANCH CIRCUIT WIRING - INDICATES #12 CONDUCTORS UNLESS NOTED OTHERWISE
- 3, 4 — BRANCH CIRCUIT WIRING - INDICATES #10 CONDUCTORS
- 3, 4 — BRANCH CIRCUIT WIRING - INDICATES #8 CONDUCTORS
- LV — BRANCH CIRCUIT WIRING - INDICATES LV CONDUCTORS IN CONDUIT
- NE — BRANCH CIRCUIT WIRING - INDICATES NORMAL/EMERGENCY CONDUCTORS IN CONDUIT
- BRANCH CIRCUIT WIRING - INDICATES UNDERGROUND WIRING
- BRANCH CIRCUIT WIRING - 24 VOLT WIRING

STANDARD MOUNTING HEIGHTS

- CEILING — RECESSED LIGHTING FIXTURES, CEILING MOUNTED RECEPTACLES, INDICATING LIGHTS, ETC.
- 7'-0" A.F.F. — WALL MOUNTED LIGHTS IN STAIRS, MECH ROOMS, ETC.
- 6'-6" A.F.F. — TOP MOST PORTION OF OPERATING HANDLE OF DISCONNECT SWITCHES / CIRCUIT BREAKERS
- 6'-0" A.F.F. — TOP OF PANELBOARDS (<6'-0" TALL)
- 4'-0" A.F.F. — WALL SWITCHES, THERMOSTATS, CONTROL DEVICES, TO CENTER OF BOX
- 3'-6" A.F.F. — ABOVE COUNTER DEVICES, GFI RECEPTACLES IN RESTROOMS.
- 1'-5" A.F.F. — RECEPTACLES, FURNITURE FEEDS
- 0'-0" — IN FLOOR JUNCTION BOXES FLUSH TO FINISHED FLOOR (FF)

1. IN MASONRY CONSTRUCTION THE MOUNTING HEIGHTS SHALL BE USED FOR REFERENCE TO THE NEAREST BLOCK OR BRICK COURSING.
2. THE ABOVE MOUNTING ELEVATIONS ARE TO CENTER OF DEVICE AND SHALL BE ADHERED TO UNLESS SPECIFICALLY NOTED OR DETAILED OTHERWISE ON THE DRAWINGS AND/OR SPECIFICATIONS.
3. COORDINATE THE INSTALLATION AND MOUNTING ELEVATIONS OF ALL EQUIPMENT, DEVICES, CONTROLS AND APPURTENANCES WITH ARCHITECT AND ALL AFFECTED TRADES PRIOR TO INSTALLATION. DOCUMENT ALL MOUNTING ELEVATIONS FOR ALL EQUIPMENT, DEVICES, CONTROLS AND APPURTENANCES AT THE TIME OF SHOP DRAWING SUBMITTAL.



NOTES:
1. THESE GUIDELINES SHALL BE USED FOR THE INSTALLATION OF THE FOLLOWING DEVICES:
   - WALL SWITCHES
   - CONTROL SWITCHES
   - RECEPTACLES
   - VISUAL DISPLAY TOUCH PANELS
2. NOTE THAT THIS HEIGHT IS TO THE TOP-MOST PART OF THE DEVICE THAT AN OCCUPANT REQUIRES ACCESS TO.

ADA INSTALLATION GUIDELINES

GENERAL ELECTRICAL INSTALLATION NOTES:

1. THE FOLLOWING GENERAL NOTES AS LISTED BELOW SHALL APPLY TO ALL ELECTRICAL REQUIREMENTS AS INDICATED ON ALL E SERIES CONTRACT DRAWINGS.
2. DRAWINGS FOR THIS WORK ARE DIAGRAMMATIC AND INTENDED TO CONVEY THE EXTENT, GENERAL ARRANGEMENT AND LOCATIONS OF THE WORK. BECAUSE OF THE SCALE OF THE DRAWINGS, CERTAIN BASIC ITEMS SUCH AS ACCESS PANELS, CONDUITS, CABINET SIZES, PENETRATION SLEEVES, PULL BOXES, BACKBOXES AND JUNCTION BOXES MAY NOT BE SHOWN. INCLUDE ALL ITEMS WHERE REQUIRED BY CODE, MANUFACTURER AND RELATED SPECIFICATION SECTIONS FOR THE PROPER INSTALLATION OF ALL WORK.
3. DUE TO SCALE OF THE DRAWINGS, ALL ELECTRICAL DEVICE SYMBOLS ARE SHOWN ON DRAWINGS AS CLOSE AS POSSIBLE TO THEIR INTENDED LOCATION. CONTRACTOR SHALL COORDINATE IN THE FIELD THE PROPER INSTALLATION OF ALL EQUIPMENT, DEVICES, CONTROLS AND CONDUITS. REFER TO RELATED SPECIFICATION SECTIONS FOR ADDITIONAL REQUIREMENTS.
4. COORDINATE WITH ALL TRADES AND SYSTEM INTEGRATORS ANY CONDITIONS RELATED TO THE INSTALLATION OF ALL SYSTEMS. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE TRADE ALL INSTALLATION REQUIREMENTS IMPACTING THE PLACEMENT OF ALL SYSTEM COMPONENTS TO THE SATISFACTION OF ALL CONCERNED TRADES.
5. COORDINATE EXACT LOCATION OF ALL DESK OR COUNTER MOUNTED EQUIPMENT WITH OWNER AND ARCHITECT AND ALL AFFECTED TRADES PRIOR TO THE INSTALLATION OF ANY EQUIPMENT AND/OR BOXES.
6. COORDINATE EXACT LOCATION(S) OF ALL DATA AND TELEPHONE OUTLETS, ELECTRICAL RECEPTACLES WITH THE ARCHITECTURAL PLANS, FURNITURE PLANS AND ALL AFFECTED TRADES PRIOR TO INSTALLATION.
7. ALL CONDUITS SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH NFPA 70 AND PROJECT SPECIFICATIONS. ALL CONDUITS SHALL BE A MINIMUM OF 3/4" UNLESS OTHERWISE NOTED.
8. PROVIDE ALL EQUIPMENT CLEARANCES IN ACCORDANCE WITH NEC REQUIREMENTS. ARRANGE EQUIPMENT TO FACILITATE UNRESTRICTED ACCESS FOR MAINTENANCE AND SERVICE AROUND ALL EQUIPMENT, COMPONENTS AND/OR CABLE TERMINATIONS.
9. WHERE EQUIPMENT AND/OR JUNCTION BOXES ARE INSTALLED ABOVE FINISHED CEILINGS, THE CONTRACTOR SHALL PROVIDE ACCESS HATCHES LISTED FOR THE INTENDED APPLICATION. ACCESS HATCHES SHALL BE LOCATED SO THAT SERVICE ACCESS TO THE EQUIPMENT AND/OR JUNCTION BOXES IS UNIMPEDED.
10. ALL PENETRATIONS OF RATED WALLS AND/OR RATED FLOORS SHALL BE FIRE STOPPED IN ACCORDANCE WITH THE ASTM AND NFPA REQUIREMENTS. REFER TO RELATED SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION. INSTALLATION OF FIRE-STOPS SHALL BE PERFORMED BY AN APPLICATOR/INSTALLER QUALIFIED AND TRAINED BY THE MANUFACTURER. INSTALLATION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH MANUFACTURER'S DETAILED INSTALLATION PROCEDURES.
11. THE CONTRACTOR SHALL GENERATE A DETAILED METHOD OF PROCEDURE (MOP) DOCUMENT INDICATING HOW HE/SHE INTENDS TO PERFORM EACH STEP IN THE PROJECT. THIS MOP SHALL BE PRESENTED TO THE OWNER AND ENGINEER PRIOR TO STARTING THE PROJECT. FOR SIGN OFF. THE MOP MAY BE REVISED BASED ON CHANGES IN THE PROJECT CONSTRUCTION, ETC. AT ALL POINTS IN THE PROJECT THE OWNER SHALL BE MADE AWARE OF CHANGES TO THE MOP, AND A REVISED MOP SHALL BE PRESENTED TO THE OWNER AND ENGINEER FOR SIGN OFF.
12. ALL DEVICES, COMPONENTS OR EQUIPMENT INSTALLED ON THE EXTERIOR OF THE FACILITY SHALL BE PROVIDED IN ACCORDANCE WITH ALL MANUFACTURERS' REQUIREMENTS TO ENSURE THE PROPER OPERATION WHEN EXPOSED TO THE ENVIRONMENTAL CONDITIONS AND/OR AVERAGE ANNUAL LOWEST TEMPERATURE THAT CAN BE ANTICIPATED FOR THE GEOGRAPHIC REGION OF THE FACILITY.
13. ALL INTERIOR AND/OR EXTERIOR COMPONENTS, DEVICES OR SYSTEMS EQUIPMENT EXPOSED TO THE GENERAL POPULATION SHALL BE INSTALLED IN SECURED EQUIPMENT ENCLOSURES WITH TAMPER SWITCHES AND INSTALLED IN SUCH A MANNER THAT RESISTS TAMPERING AND/OR REMOVAL WITHOUT THE USE OF SPECIALIZED TOOLS.
14. FOR EQUIPMENT INSTALLATIONS REQUIRING COORDINATION WITH OTHER TRADES THE CONTRACTOR SHALL PROVIDE ALL TEMPLATES, BACKBOXES AND EQUIPMENT ANCHOR BOLTS FOR MOUNTING OR FLUSH MOUNTING PREPARATION, (E.G. PEDESTALS OR OTHER DEVICES REQUIRING MOUNTING ON WALLS, CONCRETE PADS OR OTHER MATERIALS). COORDINATE DELIVERY OF TEMPLATES AND EQUIPMENT WITH ALL AFFECTED CONTRACTORS.
15. THE CONTRACTOR IS RESPONSIBLE FOR THE ENTIRE DOCUMENT SET, I.E. IF WORK IS SHOWN ON OTHER TRADE DRAWINGS AS "BY CONTRACTOR", THE CONTRACTOR IS RESPONSIBLE FOR THAT WORK.
16. ALL ELECTRICAL WORK SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (LATEST VERSION BEING ENFORCED), AND ALL OTHER APPLICABLE CODES AND STANDARDS BEING ENFORCED BY THE AUTHORITY HAVING JURISDICTION.
17. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS OR INSTRUCTIONS FOR CONSTRUCTION SAFETY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR ANY WORKMAN'S OR TRANSIENT'S SAFETY, OR FOR THE ADEQUACY OF EQUIPMENT, BUILDING COMPONENTS, WORK AIDS, OR ANY NECESSITY TO WORK ON ENERGIZED ELECTRICAL COMPONENTS. FURTHER, NO SUPERINTENDENCE IS INCLUDED OR IMPLIED.
18. ALL SYSTEMS AND EQUIPMENT SHALL BE INSTALLED AND WIRED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
19. ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE TESTED AND LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY.
20. THE CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL, FLAGMEN, SIGNAGE, ETC. WHEN DOING WORK THAT INTERFERES WITH THE PUBLIC RIGHT-OF-WAY.
21. THE VERBIAGE ON THE DRAWINGS INDICATING TYPES OF MATERIALS TO BE ENCOUNTERED IS INTENDED TO AID THE CONTRACTOR IN UNDERSTANDING THE VARIOUS CONDITIONS LIKELY TO BE ENCOUNTERED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING QUANTITIES OF MATERIALS REQUIRED TO COMPLETE THE PROJECT.
22. THE LOCATIONS OF EXISTING UTILITIES, STRUCTURE AND OTHER CONDITIONS SHOWN ON THE PLANS ARE APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO BEGINNING ANY WORK.
23. THE CONTRACTOR SHALL COORDINATE CONDUIT ROUTING (PLAN AND ELEVATION) WITH THE LIGHTING (NEW AND EXISTING), CEILING ELEVATION, STRUCTURE, DUCTWORK, PIPING, ETC. REQUIRED FOR THE COMPLETION OF THE PROJECT. PRIOR TO INSTALLATION.
24. THE CONTRACTOR SHALL PROVIDE ALL NEW OPENINGS IN EXISTING PARTITIONS, EXTERIOR WALLS, FLOORS, AND ROOFS FOR THE INSTALLATION OF ANY NEW ELECTRICAL WORK. FURNISH AND INSTALL ALL REQUIRED LINTELS AND SLEEVES FOR THIS NEW WORK. ALL CONDUITS SHALL HAVE SLEEVES INSTALLED. ALL SLEEVES INSTALLED THROUGH EXTERIOR WALLS SHALL HAVE LINK SEALS INSTALLED.
25. THE CONTRACTOR SHALL PROTECT ALL EXISTING MATERIALS THAT ARE TO REMAIN IN PLACE FROM DAMAGE. ANY DAMAGE TO EXISTING FINISHES, MATERIALS, ETC., SHALL BE REPLACED BY THE CONTRACTOR TO MATCH THE ADJACENT FINISH.
26. THE CONTRACTOR SHALL MAINTAIN THE BUILDING IN WEATHERTIGHT AND WATERPROOF CONDITION THROUGHOUT THE DURATION OF THEIR WORK. DO NOT LEAVE HOLES THROUGH WALLS AND/OR ROOFS OPEN TO THE ELEMENTS WHEN NO WORK IS OCCURRING IN THOSE AREAS.
27. THE CONTRACTOR SHALL SECURE AND PROTECT THE BUILDING AND/OR WORK AREA WITH FIRE RETARDANT TEMPORARY PLYWOOD PARTITIONS (WITH LOCKING DOORS), ETC. CLOSE ALL EXISTING OPENINGS AS REQUIRED. COORDINATE THIS WORK WITH THE OWNERS REPRESENTATIVE PRIOR TO STARTING. IF TEMPORARY PARTITIONS IMPEDE THE FLOW OF EGRESS TO REQUIRED EGRESS DOORS AND STAIRS, THE CONTRACTOR SHALL PROVIDE EXIT SIGNS, AND SIGNAGE INDICATING SUCH.
28. THE CONTRACTOR SHALL CAULK ALL JOINTS BETWEEN METAL FRAMES AND EXISTING CONDITIONS. THIS APPLIES TO BOTH INTERIOR AND EXTERIOR INSTALLATIONS.
29. THE DIMENSIONS SHOWN ON THE DRAWINGS ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO PERFORMING ANY WORK.
30. THE CONTRACTOR SHALL INSTALL ALL CONDUITS CONCEALED UNLESS NOTED OTHERWISE. EXPOSED CONDUIT SHALL ONLY BE INSTALLED IN CHASES, EXPOSED CEILING AREAS, JANITOR CLOSETS, AND MECHANICAL/ELECTRICAL ROOMS.
31. ALL ELECTRICAL EQUIPMENT SHALL BE GROUNDED AND/OR BONDED PER THE REQUIREMENTS OF THE NATIONAL ELECTRIC CODE. PROVIDE ALL GROUNDING AND/OR BONDING COMPONENTS NOT EXPLICITLY SHOWN ON THE DOCUMENTS.
32. THE CONTRACTOR SHALL PROVIDE TYPEWRITTEN PANELBOARD DIRECTORIES, INDICATING THE LOADS SERVED BY THE RESPECTIVE PANELS. AMEND AS REQUIRED FOR AS-BUILT CONDITIONS. PROVIDE ELECTRONIC VERSIONS OF THE PANELBOARD SCHEDULES FOR FUTURE USE BY THE OWNER.
33. THE CONTRACTOR SHALL CONTACT THE NATIONAL "811-CALL BEFORE YOU DIG". SYSTEM PRIOR TO PERFORMING ANY UNDERGROUND INSTALLATION WORK. THE CONTRACTOR SHALL HAVE ALL UTILITIES VERIFIED IN AND AROUND THE EXCAVATION AREA.
34. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER PRIOR TO STARTING ALL PHASES OF THE PROJECT. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER WHAT WORK, IF ANY, HAS TO BE COMPLETED DURING SECOND OR THIRD SHIFT.
35. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY POWER CONNECTIONS TO KEEP AREAS UP AND OPERATIONAL DURING THE CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE THESE REQUIREMENTS WITH THE OWNER.

ELECTRICAL DEMOLITION ABBREVIATIONS

ETR	EXISTING TO REMAIN - DEVICE SHALL REMAIN IN WORKING ORDER.
RN	REMOVE AND REPLACE WITH NEW - EXISTING BACKBOX AND WIRING SHALL REMAIN. RECONNECT NEW DEVICE TO EXISTING CIRCUIT.
RR	REMOVE AND RELOCATE - DISCONNECT DEVICE, MODIFY AND EXTEND FEED TO NEW LOCATION.
RC	REMOVE COMPLETELY - REMOVE DEVICE, CONDUIT, AND WIRING BACK TO SOURCE.

FULLY SPRINKLERED
CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

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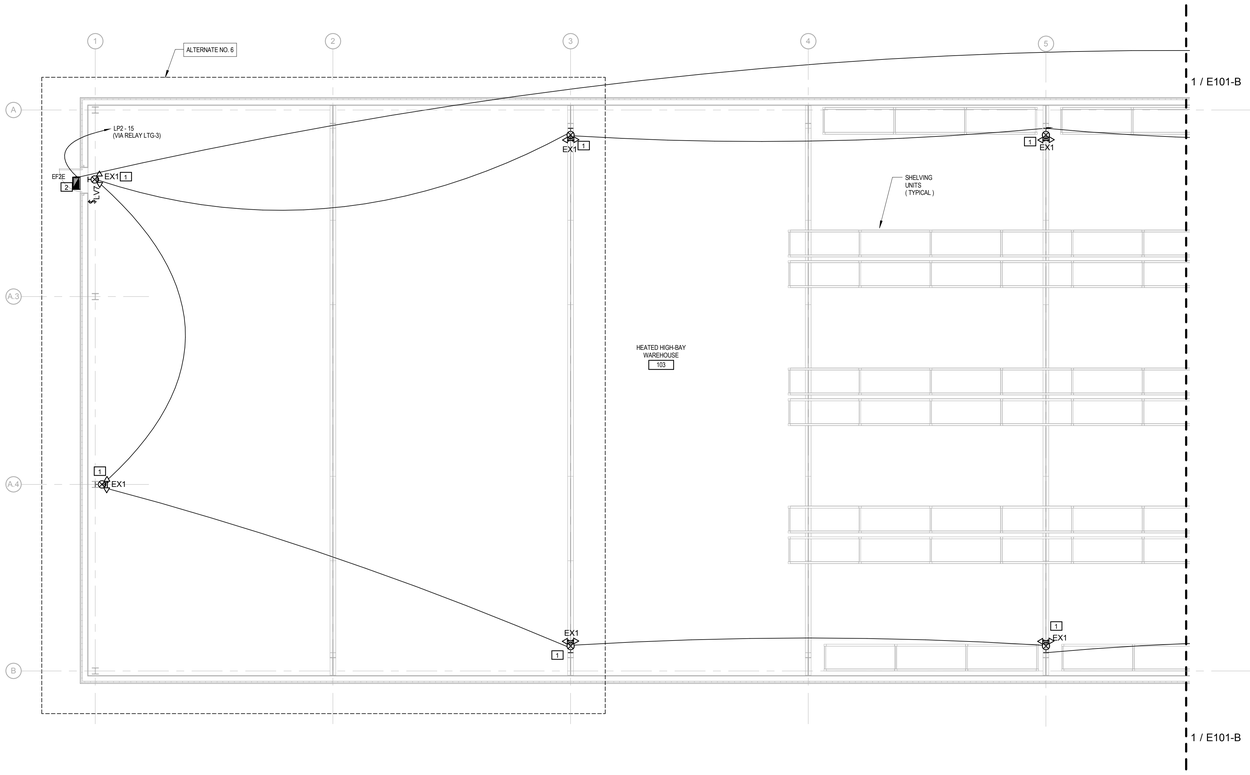
AE Works Project Number: 13025

Drawing Title: SCHEDULES, SYMBOLS AND NOTES	Project Title: NEW WAREHOUSE		Project Number: # 613-116
			Building Number: #519
Approved: Project Director	Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405		Drawing Number: E001
	Date: 06/24/2015	Checked: JJD	Drawn: JMZ

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



1 FIRST FLOOR LIGHTING PLAN - SIDE A
1/8" = 1'-0"

OCCUPANCY SENSOR INSTALLATION GUIDELINES

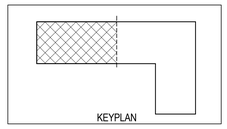
1. THE OCCUPANCY SENSORS INDICATED ON THE DRAWINGS ARE SHOWN FOR DESIGN INTENT ONLY. THE EXACT QUANTITY OF SENSORS SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO INSTALLING SENSORS BASED ON THE MANUFACTURER'S RECOMMENDATION.
2. PROVIDE 100% COVERAGE OF EACH INDIVIDUAL ROOM/SPACE SHOWN ON THE DRAWINGS.
3. DO NOT INSTALL SENSORS PRIOR TO SUBMITTING COVERAGE LAYOUTS FOR EACH INDIVIDUAL ROOM/SPACE TO THE ENGINEER FOR APPROVAL.
4. DO NOT INSTALL SENSORS SUCH THAT THEY CAN POTENTIALLY "SEE" THROUGH OPEN DOORWAYS.
5. INSTALL ALL LOW VOLTAGE POWER PACKS DIRECTLY ABOVE LOCAL WALL SWITCHES IN THE AREA.
6. SENSOR OPERATION SHALL BE AS FOLLOWS:
   1. OCCUPANT ENTERS ROOM AND THEY MUST MANUALLY TURN ON LIGHTS.
   2. SENSOR TURNS OFF LIGHTS AFTER 10 MINUTES OF INACTIVITY.
   3. UPON SENSING ACTIVITY LIGHTS TURN BACK ON.
7. DO NOT INSTALL ULTRASONIC OR DUAL TECHNOLOGY SENSORS WITHIN 24" OF SUPPLY DIFFUSERS.

LIGHTING GENERAL NOTES (THIS DRAWING)

1. ALL EXIT SIGNS SHALL BE POWERED FROM THE CIRCUIT INDICATED AND UNSWITCHED.
2. COORDINATE FINAL LOCATIONS OF FIXTURES WITH THE REFLECTED CEILING PLAN. ANY CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER.
3. COORDINATE ALL MOUNTING HEIGHTS WITH THE ARCHITECT AND ENGINEER PRIOR TO ROUGH-IN.
4. WHERE MORE THAN ONE SWITCH OCCURS IN THE SAME LOCATION, THEY SHALL BE INSTALLED IN GANG TYPE BOX UNDER ON COVERPLATE. MINIMUM CONDUIT SIZE IS 3/4". MINIMUM WIRE SIZE SHALL BE #12 AWG. ALL WIRE TO BE STRANDED COPPER.

KEYNOTES (APPLIES TO E101-A & E101-B)

1. INSTALL EXIT SIGNS 8'-0" A.F.F. TO CENTER OF FIXTURE.
2. INSTALL FIXTURE CENTERED OVER THE DOOR. COORDINATE WITH ARCHITECTURAL ELEVATIONS.
3. REFER TO CONDITIONED AREA CONTROL DETAIL ON SHEET ES02 FOR ADDITIONAL INFORMATION.
4. REFER TO DELIVERY AREA CONTROL DETAIL ON SHEET ES02 FOR ADDITIONAL INFORMATION.
5. INSTALL EXIT SIGN ON BEAM.
6. INSTALL DAYLIGHT SENSOR ON SIDEWALL OF SKYLIGHT AND ORIENT TO THE NORTHERN SKY.
7. INSTALL FIXTURES CENTERED BETWEEN SKYLIGHTS. PROVIDE UNISTRUT MOUNTING FROM STRUCTURAL MEMBERS ABOVE. SEE DETAIL ON SHEET ES02. TYPICAL FOR ALL "F7" FIXTURES.



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AE Works Project Number: 13025

Drawing Title: FIRST FLOOR LIGHTING PLAN - SIDE A

Approved: Project Director

Project Title: NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 | Checked: JJD | Drawn: JMZ

Project Number: # 613-116

Building Number: #519

Drawing Number: E101-A

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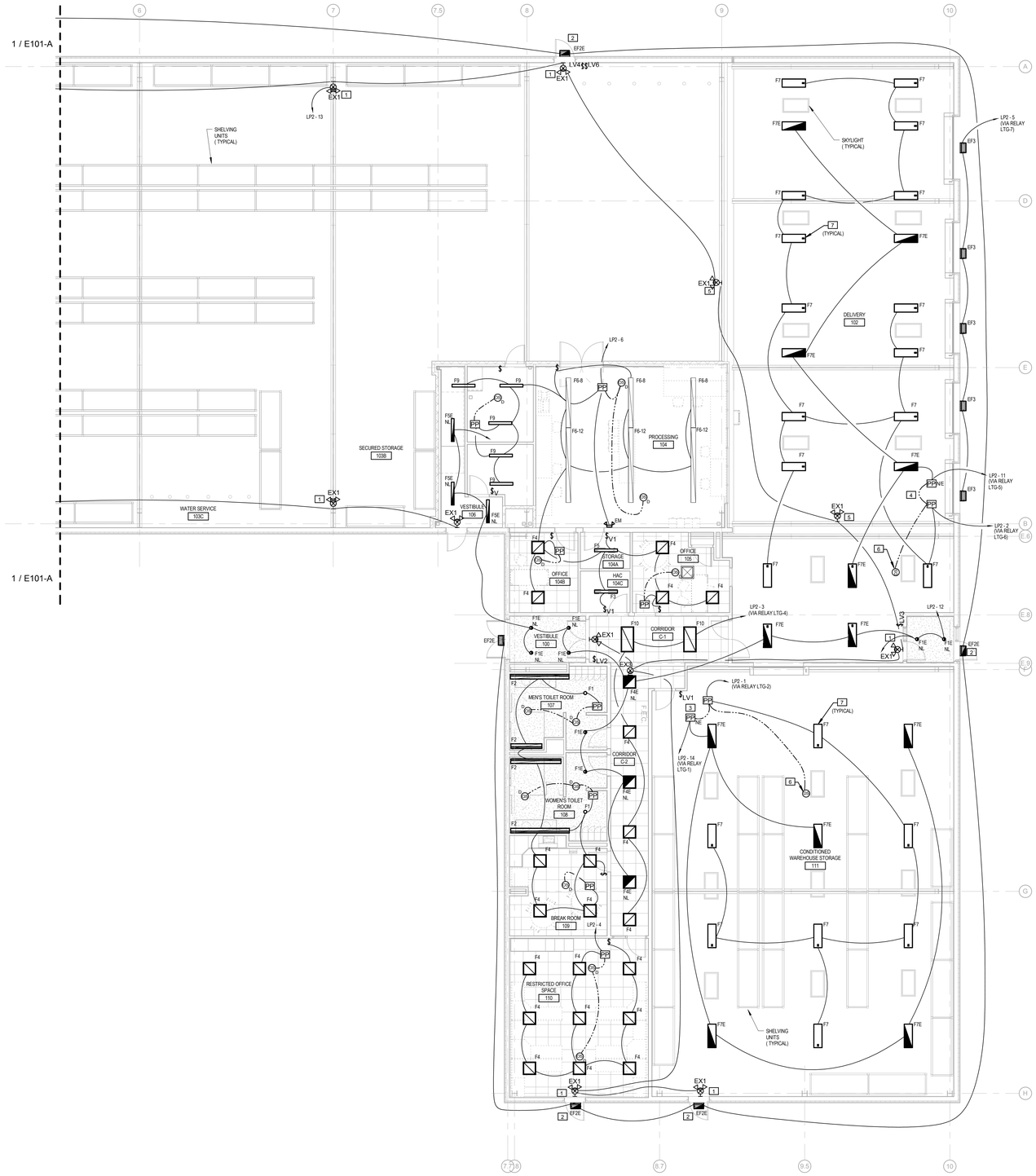
VA FORM 08-6231



1 FIRST FLOOR LIGHTING PLAN - SIDE B
1/8" = 1'-0"

OCCUPANCY SENSOR INSTALLATION GUIDELINES

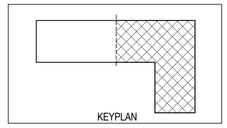
1. THE OCCUPANCY SENSORS INDICATED ON THE DRAWINGS ARE SHOWN FOR DESIGN INTENT ONLY. THE EXACT QUANTITY OF SENSORS SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO INSTALLING SENSORS BASED ON THE MANUFACTURER'S RECOMMENDATION.
2. PROVIDE 100% COVERAGE OF EACH INDIVIDUAL ROOM/SPACE SHOWN ON THE DRAWINGS.
3. DO NOT INSTALL SENSORS PRIOR TO SUBMITTING COVERAGE LAYOUTS FOR EACH INDIVIDUAL ROOM/SPACE TO THE ENGINEER FOR APPROVAL.
4. DO NOT INSTALL SENSORS SUCH THAT THEY CAN POTENTIALLY "SEE" THROUGH OPEN DOORWAYS.
5. INSTALL ALL LOW VOLTAGE POWER PACKS DIRECTLY ABOVE LOCAL WALL SWITCHES IN THE AREA.
6. SENSOR OPERATION SHALL BE AS FOLLOWS:
   1. OCCUPANT ENTERS ROOM AND THEY MUST MANUALLY TURN ON LIGHTS.
   2. SENSOR TURNS OFF LIGHTS AFTER 10 MINUTES OF INACTIVITY.
   3. UPON SENSING ACTIVITY LIGHTS TURN BACK ON.
7. DO NOT INSTALL ULTRASONIC OR DUAL TECHNOLOGY SENSORS WITHIN 24" OF SUPPLY DIFFUSERS.

LIGHTING GENERAL NOTES (THIS DRAWING)

1. ALL EXIT SIGNS SHALL BE POWERED FROM THE CIRCUIT INDICATED AND UNSWITCHED.
2. COORDINATE FINAL LOCATIONS OF FIXTURES WITH THE REFLECTED CEILING PLAN. ANY CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER.
3. COORDINATE ALL MOUNTING HEIGHTS WITH THE ARCHITECT AND ENGINEER PRIOR TO ROUGH-IN.
4. WHERE MORE THAN ONE SWITCH OCCURS IN THE SAME LOCATION, THEY SHALL BE INSTALLED IN GANG TYPE BOX UNDER ON COVERPLATE. MINIMUM CONDUIT SIZE IS 3/4". MINIMUM WIRE SIZE SHALL BE #12 AWG. ALL WIRE TO BE STRANDED COPPER.

KEYNOTES (APPLIES TO E101-A & E101-B)

1. INSTALL EXIT SIGNS 8'-0" A.F.F. TO CENTER OF FIXTURE.
2. INSTALL FIXTURE CENTERED OVER THE DOOR. COORDINATE WITH ARCHITECTURAL ELEVATIONS.
3. REFER TO CONDITIONED AREA CONTROL DETAIL ON SHEET E502 FOR ADDITIONAL INFORMATION.
4. REFER TO DELIVERY AREA CONTROL DETAIL ON SHEET E502 FOR ADDITIONAL INFORMATION.
5. INSTALL EXIT SIGN ON BEAM.
6. INSTALL DAYLIGHT SENSOR ON SIDEWALL OF SKYLIGHT AND ORIENT TO THE NORTHERN SKY.
7. INSTALL FIXTURES CENTERED BETWEEN SKYLIGHTS. PROVIDE UNISTRUT MOUNTING FROM STRUCTURAL MEMBERS ABOVE. SEE DETAIL ON SHEET E502. TYPICAL FOR ALL "F7" FIXTURES.



FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

MOORE DESIGN ASSOCIATES
LANDSCAPE ARCHITECTURE

SEAL

JASON J. J. DECHECK REGISTERED 17636 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

ARCHITECTS/ENGINEERS:

AE WORKS

6587 Hamilton Avenue
Pittsburgh, Pennsylvania 15206
Ph: 412.287.7333 Fax: 412.287.7334
www.ae-works.com

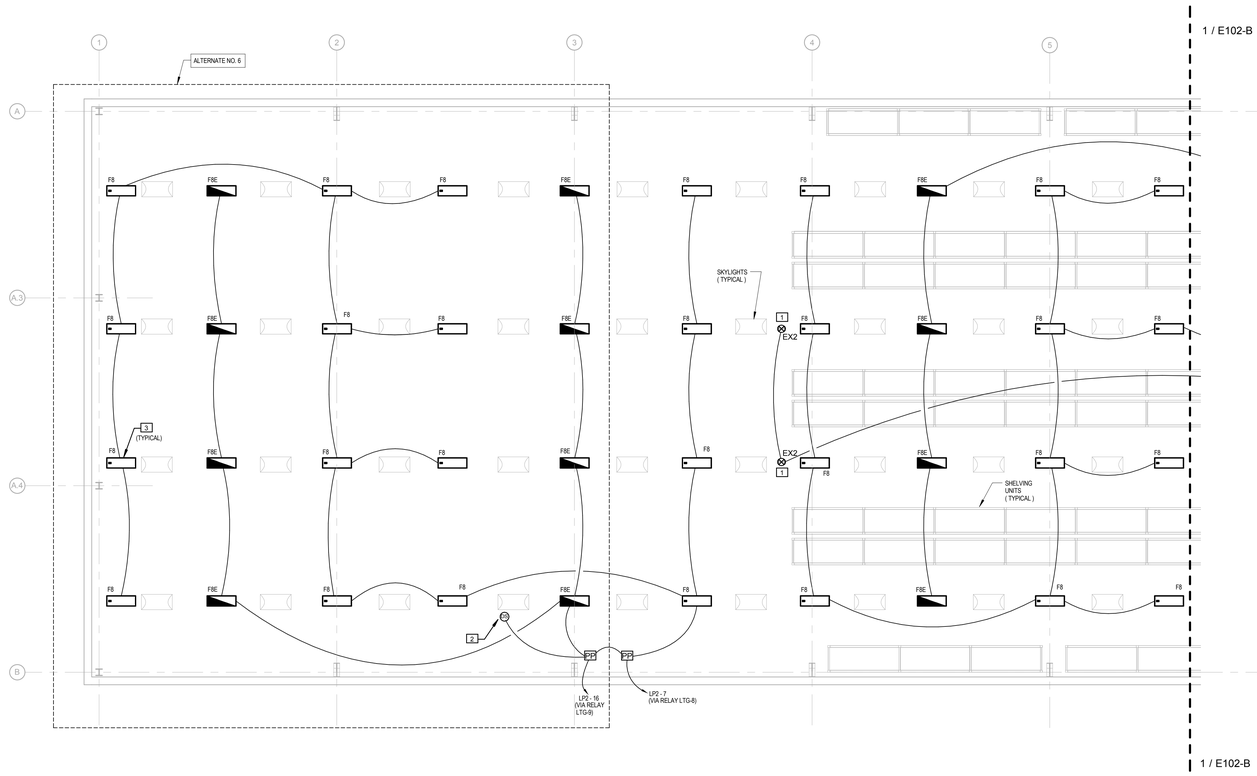
AE Works Project Number: 13025

Drawing Title	FIRST FLOOR LIGHTING PLAN - SIDE B
Approved: Project Director	
Project Title:	NEW WAREHOUSE
Location:	510 BUTLER AVENUE MARTINSBURG, WV 25405
Date:	06/24/2015
Checked:	JJD
Drawn:	JMZ
Project Number	# 613-116
Building Number	#519
Drawing Number	E101-B

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



1 HIGH BAY LIGHTING PLAN - SIDE A
1/8" = 1'-0"

OCCUPANCY SENSOR INSTALLATION GUIDELINES

1. THE OCCUPANCY SENSORS INDICATED ON THE DRAWINGS ARE SHOWN FOR DESIGN INTENT ONLY. THE EXACT QUANTITY OF SENSORS SHALL BE DETERMINED BY THE CONTRACTOR PRIOR TO INSTALLING SENSORS BASED ON THE MANUFACTURER'S RECOMMENDATION.
2. PROVIDE 100% COVERAGE OF EACH INDIVIDUAL ROOM/SPACE SHOWN ON THE DRAWINGS.
3. DO NOT INSTALL SENSORS PRIOR TO SUBMITTING COVERAGE LAYOUTS FOR EACH INDIVIDUAL ROOM/SPACE TO THE ENGINEER FOR APPROVAL.
4. DO NOT INSTALL SENSORS SUCH THAT THEY CAN POTENTIALLY "SEE" THROUGH OPEN DOORWAYS.
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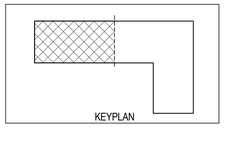
   1. OCCUPANT ENTERS ROOM AND THEY MUST MANUALLY TURN ON LIGHTS.
   2. SENSOR TURNS OFF LIGHTS AFTER 10 MINUTES OF INACTIVITY.
   3. UPON SENSING ACTIVITY LIGHTS TURN BACK ON.
7. DO NOT INSTALL ULTRASONIC OR DUAL TECHNOLOGY SENSORS WITHIN 24" OF SUPPLY DIFFUSERS.

LIGHTING GENERAL NOTES (THIS DRAWING)

1. ALL EXIT SIGNS SHALL BE POWERED FROM THE CIRCUIT INDICATED AND UNSWITCHED.
2. COORDINATE FINAL LOCATIONS OF FIXTURES WITH THE REFLECTED CEILING PLAN. ANY CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER.
3. COORDINATE ALL MOUNTING HEIGHTS WITH THE ARCHITECT AND ENGINEER PRIOR TO ROUGHIN.
4. WHERE MORE THAN ONE SWITCH OCCURS IN THE SAME LOCATION, THEY SHALL BE INSTALLED IN GANG TYPE BOX UNDER ON COVERPLATE. MINIMUM CONDUIT SIZE IS 3/4". MINIMUM WIRE SIZE SHALL BE #12 AWG. ALL WIRE TO BE STRANDED COPPER.

KEYNOTES (APPLIES TO E102-A & E102-B)

1. SUSPEND EXIT SIGN 20'-0" A.F.F., VIA RIGID CONDUIT.
2. INSTALL DAYLIGHT SENSOR ON SIDEWALL OF SKYLIGHT AND ORIENT TO THE NORTHERN SKY.
3. INSTALL FIXTURES CENTERED BETWEEN SKYLIGHTS. PROVIDE UNISTRUT MOUNTING FROM STRUCTURAL MEMBERS ABOVE. SEE DETAIL ON SHEET E502. TYPICAL FOR ALL "F8" FIXTURES.
4. COORDINATE LIGHTING FIXTURE LOCATIONS WITH MECHANICAL EQUIPMENT, DUCTWORK, PIPING, ETC. PROVIDE UNISTRUT, THREADED ROD, ETC. TO SUSPEND FIXTURES BELOW OBSTRUCTIONS.
5. LIGHTING CONTROL SYSTEM PHOTOCELL. INSTALL 8'-0" ABOVE ROOF, FACING NORTH.



FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

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LANDSCAPE ARCHITECTURE

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ARCHITECTS/ENGINEERS:

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Ph: 412.287.7333 Fax: 412.287.7334
www.ae-works.com

AE Works Project Number: 13025

Drawing Title
HIGH BAY LIGHTING PLAN – SIDE A

Approved: Project Director

Project Title:
NEW WAREHOUSE

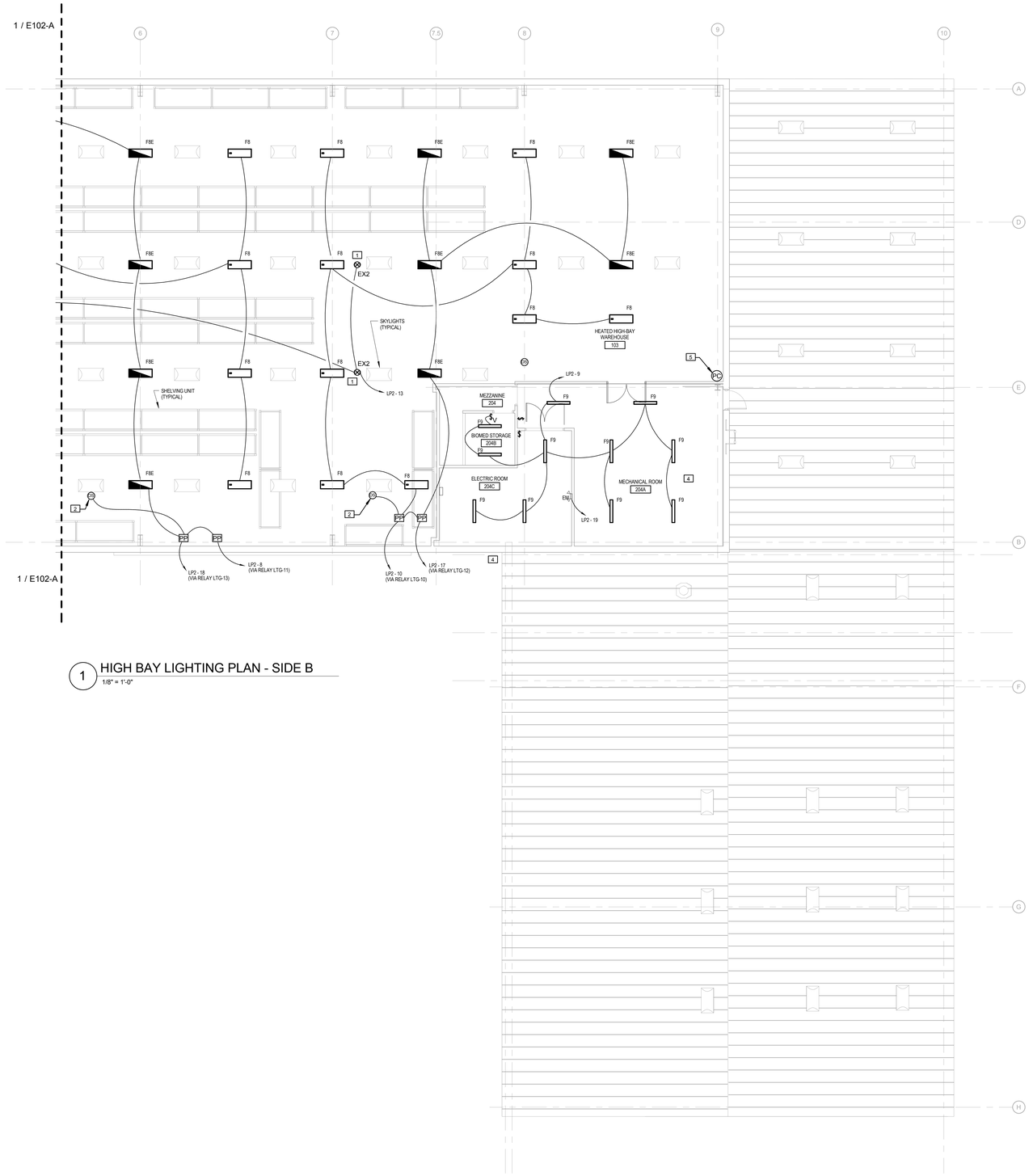
Location: 510 BUTLER AVENUE
MARTINSBURG, WV 25405

Date: 06/24/2015
Checked: JJD
Drawn: JMZ

Project Number # 613-116
Building Number #519
Drawing Number E102-A

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



1 HIGH BAY LIGHTING PLAN - SIDE B

1/8" = 1'-0"

OCCUPANCY SENSOR INSTALLATION GUIDELINES

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LIGHTING GENERAL NOTES

(THIS DRAWING)

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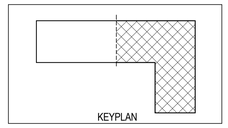
3. COORDINATE ALL MOUNTING HEIGHTS WITH THE ARCHITECT AND ENGINEER PRIOR TO ROUGH-IN.
4. WHERE MORE THAN ONE SWITCH OCCURS IN THE SAME LOCATION, THEY SHALL BE INSTALLED IN GANG TYPE BOX UNDER ON COVERPLATE. MINIMUM CONDUIT SIZE IS 3/4". MINIMUM WIRE SIZE SHALL BE #12 AWG. ALL WIRE TO BE STRANDED COPPER.

KEYNOTES

(APPLIES TO E102-A & E102-B)

1. SUSPEND EXIT SIGN 20'-0" A.F.F., VIA RIGID CONDUIT.
2. INSTALL DAYLIGHT SENSOR ON SIDEWALL OF SKYLIGHT AND ORIENT TO THE NORTHERN SKY.
3. INSTALL FIXTURES CENTERED BETWEEN SKYLIGHTS. PROVIDE UNISTRUT MOUNTING FROM STRUCTURAL MEMBERS ABOVE. SEE DETAIL ON SHEET E502. TYPICAL FOR ALL "F8" FIXTURES.
4. COORDINATE LIGHTING FIXTURE LOCATIONS WITH MECHANICAL EQUIPMENT, DUCTWORK, PIPING, ETC. PROVIDE UNISTRUT, THREADED ROD, ETC. TO SUSPEND FIXTURES BELOW OBSTRUCTIONS.
5. LIGHTING CONTROL SYSTEM PHOTOCELL. INSTALL 8'-0" ABOVE ROOF, FACING NORTH.



FULLY SPRINKLERED
CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
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ARCHITECTS/ENGINEERS:

AE WORKS

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Pittsburgh, Pennsylvania 15206
Ph: 412.287.7333 Fax: 412.287.7334
www.ae-works.com

AE Works Project Number: 13025

Drawing Title: HIGH BAY LIGHTING PLAN - SIDE B

Approved: Project Director

Project Title: NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 | Checked: JJD | Drawn: JMZ

Project Number: # 613-116

Building Number: #519

Drawing Number: E102-B

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

ELECTRICAL GENERAL NOTES (THIS DRAWING)

1. FINAL LOCATION OF ALL EQUIPMENT SHALL BE DETERMINED IN THE FIELD AND SHALL BE INSTALLED AS DIRECTED BY THE ARCHITECT OR OWNER'S REPRESENTATIVE. WHERE STRUCTURAL OPENINGS ARE NOT AVAILABLE, THE CONTRACTOR SHALL CORE DRILL WALLS AND FLOORS AS REQUIRED TO PERMIT PASSAGE OF CONDUITS. THE CONTRACTOR SHALL PROVIDE A MARKED-UP PLAN WITH LOCATIONS PENETRATIONS FOR REVIEW AND APPROVAL OF THE STRUCTURAL ENGINEER BEFORE ROUGH-IN BEGINS.

2. RECEPTACLES FOR ALL EQUIPMENT SHALL BE COMPLETE WITH PLUGS FOR THIS EQUIPMENT. THE CONTRACTOR SHALL VERIFY NEMA CONFIGURATIONS OF PLUGS AND RECEPTACLES FOR EQUIPMENT IN THE SPACE.

3. DURING THE BIDDING PROCESS, THE ELECTRICAL CONTRACTOR SHALL REVIEW DRAWINGS AND SPECIFICATIONS OF ALL OTHER TRADES (ARCHITECTURAL, SITE/ LANDSCAPING, HVAC,PLUMBING, AND SPECIALTY TRADES). ALL ITEMS REQUIRING POWER INDICATED ON THESE DRAWINGS BUT NOT INDICATED ON THE ELECTRICAL DRAWINGS SHALL BE CONSIDERED A PART OF THE THIS CONTRACTOR'S WORK. THIS WORK SHALL BE INSTALLED AS PER NEC REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.

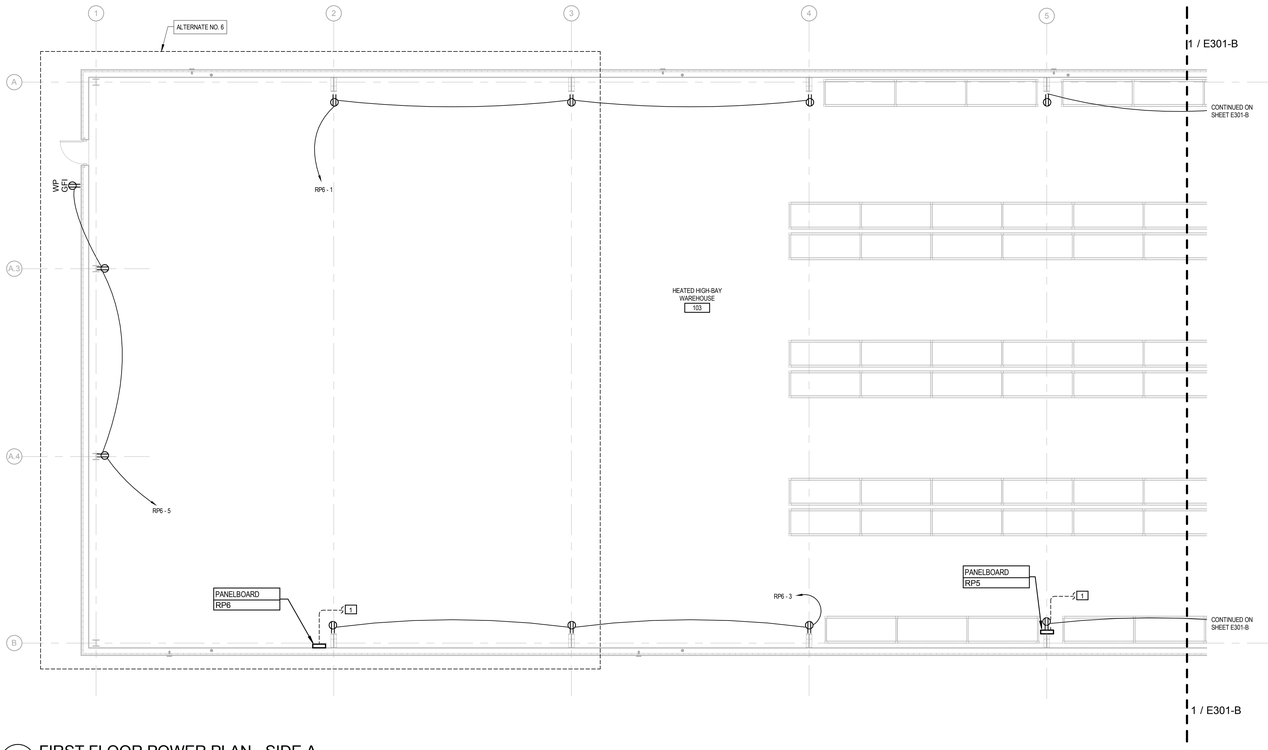
4. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MAKE ALL FEEDER RUNS CONTINUOUS (NO CABLE BREAKS). IF SPLICING OF CABLES IN BOXES BECOMES NECESSARY, USE O.Z.G. TYPE "XW" CABLE TAPS, OR APPROVED EQUAL, AND TAPE EACH TAP IN APPROVED MANNER.

5. THE MECHANICAL CONTRACTOR SHALL PROVIDE DISCONNECT SWITCHES AND STARTERS FOR ALL OF HIS UNITS. THIS CONTRACTOR SHALL RECEIVE THESE ITEMS FROM THE MECHANICAL CONTRACTOR FOR INSTALLATION BY THIS CONTRACTOR.

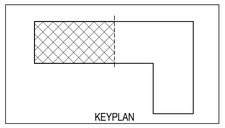
6. THIS CONTRACTOR SHALL COORDINATE HIS CONDUIT PENETRATIONS FOR ROOFTOP EQUIPMENT WITH MECHANICAL CONTRACTOR AND ROOFING CONTRACTOR. IF PROVISIONS ARE NOT IN PLACE FOR THESE PENETRATIONS THIS CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING HIS OWN PENETRATIONS AND CONTRACTING THE ROOF CONTRACTOR FOR SEALING THE ROOF PENETRATIONS.

KEYNOTES (APPLIES TO E301-A)

1. INSTALL FEEDER UNDER SLAB. PROVIDE RIGID CONDUIT TRANSITION FROM UNDER SLAB PVC TO PANELBOARD.



1 FIRST FLOOR POWER PLAN - SIDE A
1/8" = 1'-0"



PROJECT NORTH
TRUE NORTH

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

MOORE DESIGN ASSOCIATES
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ARCHITECTS/ENGINEERS:

AE WORKS

6587 Hamilton Avenue
Pittsburgh, Pennsylvania 15206
Ph: 412.287.7333 Fax: 412.287.7334
www.ae-works.com

AE Works Project Number: 13025

Drawing Title
FIRST FLOOR POWER PLAN – SIDE A

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date:	Checked:	Drawn:
06/24/2015	JJD	JMZ

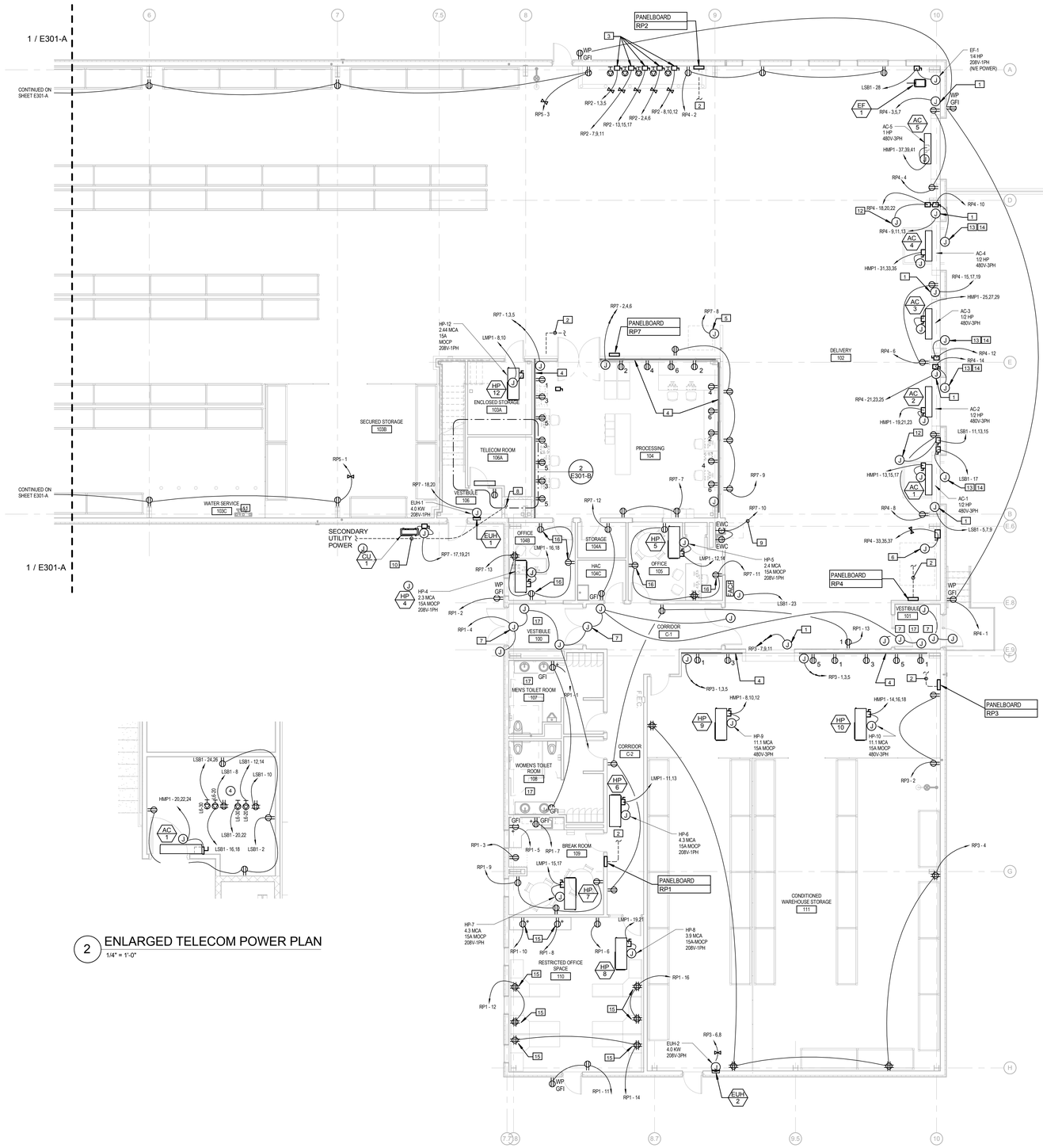
Project Number
613-116

Building Number
#519

Drawing Number
E301-A

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



1 FIRST FLOOR POWER PLAN - B
1/8" = 1'-0"

2 ENLARGED TELECOM POWER PLAN
1/4" = 1'-0"

ELECTRICAL GENERAL NOTES

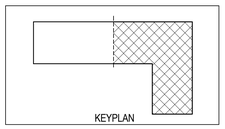
(THIS DRAWING)

1. FINAL LOCATION OF ALL EQUIPMENT SHALL BE DETERMINED IN THE FIELD AND SHALL BE INSTALLED AS DIRECTED BY THE ARCHITECT OR OWNER'S REPRESENTATIVE. WHERE STRUCTURAL OPENINGS ARE NOT AVAILABLE, THE CONTRACTOR SHALL CORE DRILL WALLS AND FLOORS AS REQUIRED TO PERMIT PASSAGE OF CONDUITS. THE CONTRACTOR SHALL PROVIDE A MARKED-UP PLAN WITH LOCATIONS PENETRATIONS FOR REVIEW AND APPROVAL OF THE STRUCTURAL ENGINEER BEFORE ROUGH-IN BEGINS.
2. RECEPTACLES FOR ALL EQUIPMENT SHALL BE COMPLETE WITH PLUGS FOR THIS EQUIPMENT. THE CONTRACTOR SHALL VERIFY NEMA CONFIGURATIONS OF PLUGS AND RECEPTACLES FOR EQUIPMENT IN THE SPACE.
3. DURING THE BIDDING PROCESS, THE CONTRACTOR SHALL REVIEW DRAWINGS AND SPECIFICATIONS OF ALL OTHER TRADES (ARCHITECTURAL, SITE/ LANDSCAPING, HVAC,PLUMBING, AND SPECIAL TY TRADES). ALL ITEMS REQUIRING POWER INDICATED ON THESE DRAWINGS BUT NOT INDICATED ON THE ELECTRICAL DRAWINGS SHALL BE CONSIDERED A PART OF THIS CONTRACTOR'S WORK. THIS WORK SHALL BE INSTALLED AS PER NEC REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.
4. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MAKE ALL FEEDER RUNS CONTINUOUS (NO CABLE BREAKS). IF SPLICING OF CABLES IN BOXES BECOMES NECESSARY, USE O.Z.G. TYPE "XW" CABLE TAPS, OR APPROVED EQUAL, AND TAPE EACH TAP IN APPROVED MANNER.
5. THE MECHANICAL CONTRACTOR SHALL PROVIDE DISCONNECT SWITCHES AND STARTERS FOR ALL OF HIS UNITS. THIS CONTRACTOR SHALL RECEIVE THESE ITEMS FROM THE MECHANICAL CONTRACTOR FOR INSTALLATION BY THIS CONTRACTOR.
6. THIS SHALL COORDINATE HIS CONDUIT PENETRATIONS FOR ROOFTOP EQUIPMENT WITH MECHANICAL CONTRACTOR AND ROOFING CONTRACTOR. IF PROVISIONS ARE NOT IN PLACE FOR THESE PENETRATIONS THIS CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING HIS OWN PENETRATIONS AND CONTRACTING THE ROOF CONTRACTOR FOR SEALING THE ROOF PENETRATIONS.

KEYNOTES

(APPLIES TO E-301B)

1	PROVIDE POWER AND CONTROL WIRING FOR THE MOTORIZED OVERHEAD DOOR, 1 HP, 208V-3Ø.
2	INSTALL FEEDER UNDER SLAB. PROVIDE RIGID CONDUIT TRANSITION FROM UNDER SLAB PVC TO PANELBOARD.
3	PROVIDE POWER TO BATTERY CHARGERS. PROVIDE A NON-FUSED DISCONNECT SWITCH WITH NEMA RECEPTACLE TO MATCH CHARGERS REQUIREMENTS. VERIFY WITH VA PERSONNEL EXACT REQUIREMENTS PRIOR TO INSTALLING
4	WIREMOLD 4000, TWO CHANNEL RACEWAY WITH RECEPTACLES MOUNTED 24" ON CENTER. COORDINATE MOUNTING HEIGHT WITH COR. ALL CIRCUITS SHALL BE INDIVIDUAL BRANCH CIRCUITS, MULTIWIRE CIRCUITS ARE NOT PERMITTED.
5	PROVIDE JUNCTION BOX IN CONCRETE BLOCK WING WALL FOR RECESSED SCALE POWER. PROVIDE CONDUIT TO UNDER SLAB AREA PER MANUFACTURER REQUIREMENTS.
6	POWER FOR CARDBOARD BAILER, 10HP, 208V-3Ø
7	PROVIDE CONDUIT AND BACK BOXES FOR AUTOMATIC DOOR OPERATORS AND PUSH BUTTONS. SEE DETAIL ON SHEET ET601
8	TURN SECONDARY CONDUITS UP SHAFT TO SWITCHBOARD ABOVE.
9	CIRCUIT SHALL BE TO A GFI BREAKER INSTALLED IN PANEL.
10	SECONDARY CONDUITS INSTALLED UNDER THE FLOOR SLAB AND TRANSITIONED TO THE MEZZANINE LEVEL. ABOVE SLAB CONDUITS SHALL BE RIGID GALVANIZED STEEL. CONDUITS SHALL BE INSTALLED INSIDE CONCRETE BLOCK WALL CHASE. COORDINATE INSTALLATION WITH THE GENERAL CONSTRUCTION TRADES.
11	LOCATION OF WATER SERVICE.
12	PROVIDE CONNECTION TO THE DOCK LEVELER UNDER THE SLAB.
13	PROVIDE POWER TO THE DOCK LOCK SYSTEM. PROVIDE ALL CONDUIT AND WIRING UNDER SLAB FROM CONTROLLER TO THE DOCK LOCK MECHANISM.
14	REFER TO DOCK DOOR DETAILS ON SHEET A601 FOR ADDITIONAL INFORMATION.
15	ONE DUPLEX RECEPTACLE AT THE DOUBLE DUPLEX LOCATION SHALL BE CONTROLLED VIA THE LIGHTING OCCUPANCY SENSOR. DESIGNATE THIS RECEPTACLE AS GREY AND LABELED AS " CONTROLLED VIA OCCUPANCY SENSOR" ON FACEPLATE.
16	DUPLEX RECEPTACLE SHALL BE CONTROLLED VIA THE LIGHTING OCCUPANCY SENSOR. DESIGNATE THIS RECEPTACLE AS GREY AND LABELED AS " CONTROLLED VIA OCCUPANCY SENSOR" ON FACEPLATE.
17	PROVIDE ACCESS PANEL IN CEILING IF ANY JUNCTION BOX(ES) ARE LOCATED ABOVE THE CEILING.



FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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AE Works Project Number: 13025

Drawing Title: FIRST FLOOR POWER PLAN – SIDE B

Approved: Project Director

Project Title: NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 | Checked: JJD | Drawn: JMZ

Project Number: # 613-116

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Office of Construction and Facilities Management

Department of Veterans Affairs

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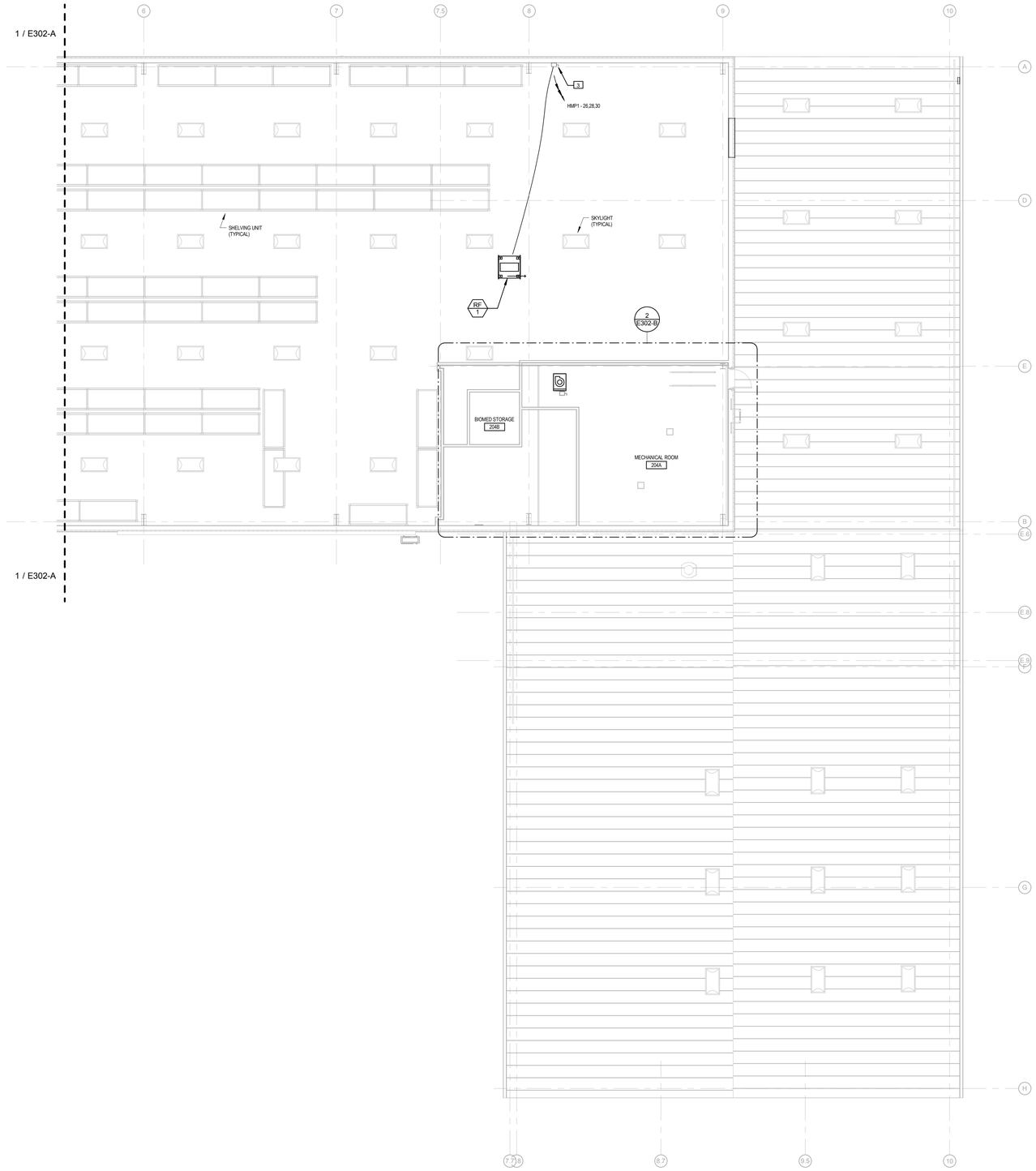

1 HIGH BAY POWER PLAN – SIDE B
1/8" = 1'-0"

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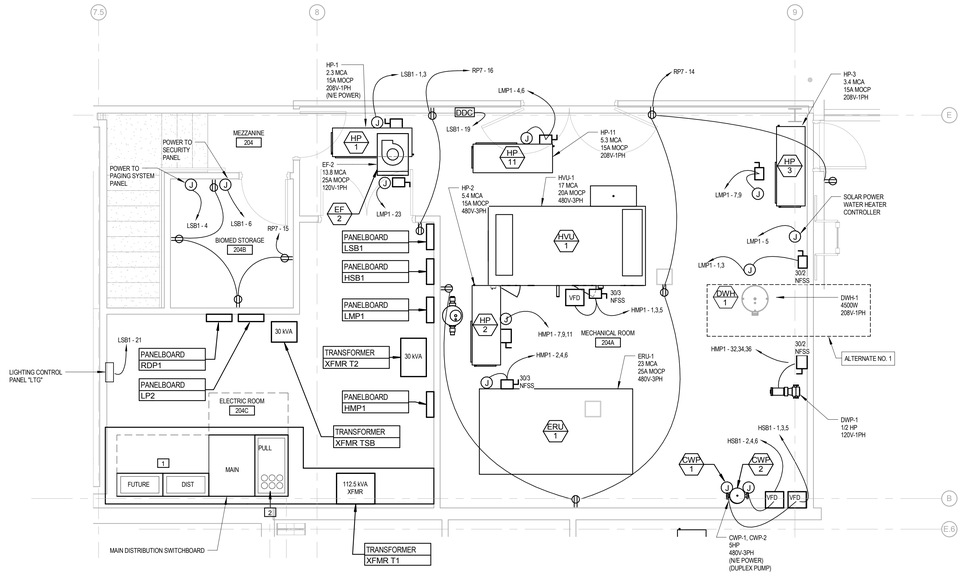
(THIS DRAWING)

1. FINAL LOCATION OF ALL EQUIPMENT SHALL BE DETERMINED IN THE FIELD AND SHALL BE INSTALLED AS DIRECTED BY THE ARCHITECT OR OWNER'S REPRESENTATIVE. WHERE STRUCTURAL OPENINGS ARE NOT AVAILABLE, THE CONTRACTOR SHALL CORE DRILL WALLS AND FLOORS AS REQUIRED TO PERMIT PASSAGE OF CONDUITS. THE CONTRACTOR SHALL PROVIDE A MARKED-UP PLAN WITH LOCATIONS PENETRATIONS FOR REVIEW AND APPROVAL OF THE STRUCTURAL ENGINEER BEFORE ROUGH-IN BEGINS.
2. RECEPTACLES FOR ALL EQUIPMENT SHALL BE COMPLETE WITH PLUGS FOR THIS EQUIPMENT. THE CONTRACTOR SHALL VERIFY NEMA CONFIGURATIONS OF PLUGS AND RECEPTACLES FOR EQUIPMENT IN THE SPACE.
3. DURING THE BIDDING PROCESS, THE CONTRACTOR SHALL REVIEW DRAWINGS AND SPECIFICATIONS OF ALL OTHER TRADES (ARCHITECTURAL, SITE/ LANDSCAPING, HVAC,PLUMBING, AND SPECIALTY TRADES). ALL ITEMS REQUIRING POWER INDICATED ON THESE DRAWINGS BUT NOT INDICATED ON THE ELECTRICAL DRAWINGS SHALL BE CONSIDERED A PART OF THIS CONTRACTOR'S WORK. THIS WORK SHALL BE INSTALLED AS PER NEC REQUIREMENTS AT NO ADDITIONAL COST TO THE OWNER.
4. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MAKE ALL FEEDER RUNS CONTINUOUS (NO CABLE BREAKS). IF SPLICING OF CABLES IN BOXES BECOMES NECESSARY, USE O.Z.G. TYPE "XW" CABLE TAPS, OR APPROVED EQUAL, AND TAPE EACH TAP IN APPROVED MANNER.
5. THE MECHANICAL CONTRACTOR SHALL PROVIDE DISCONNECT SWITCHES AND STARTERS FOR ALL OF HIS UNITS. THIS CONTRACTOR SHALL RECEIVE THESE ITEMS FROM THE MECHANICAL CONTRACTOR FOR INSTALLATION BY THIS CONTRACTOR.
6. THIS SHALL COORDINATE HIS CONDUIT PENETRATIONS FOR ROOFTOP EQUIPMENT WITH MECHANICAL CONTRACTOR AND ROOFING CONTRACTOR. IF PROVISIONS ARE NOT IN PLACE FOR THESE PENETRATIONS THIS CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING HIS OWN PENETRATIONS AND CONTRACTING THE ROOF CONTRACTOR FOR SEALING THE ROOF PENETRATIONS.

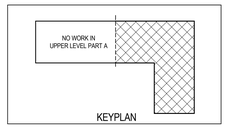
KEYNOTES

(APPLIES TO E302-A & E-302-B)

1. PROVIDE A 6" CONCRETE HOUSE KEEPING PAD UNDER EQUIPMENT AS SHOWN.
2. MAIN SERVICE CONDUITS FROM CHASE BELOW.
3. INSTALL DISCONNECT SWITCH AT LOWER LEVEL ON COLUMN.



2 ENLARGED MECHANICAL, ELECTRICAL AND TELECOM MEZZANINE
1/4" = 1'-0"



PROJECT NORTH
TRUE NORTH

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

MOORE DESIGN ASSOCIATES
LANDSCAPE ARCHITECTURE

SEAL

JASON J. J. DECHECK REGISTERED 17636 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

ARCHITECTS/ENGINEERS:

AE WORKS

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AE Works Project Number: 13025

Drawing Title
HIGH BAY POWER PLAN – SIDE B

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 **Checked:** JJD **Drawn:** JMZ

Project Number # 613-116

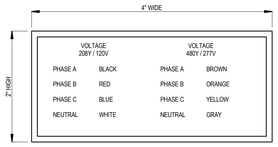
Building Number #519

Drawing Number E302-B

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

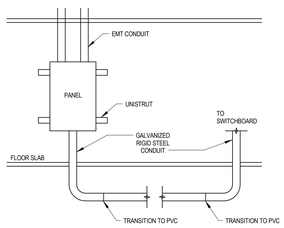


NOTES:
1. LABEL SHALL BE DISPLAYED ON ALL SWITCHBOARDS, PANELBOARDS, TRANSFER SWITCHES AND PULLBOXES (MULTIPLE VOLTAGES)

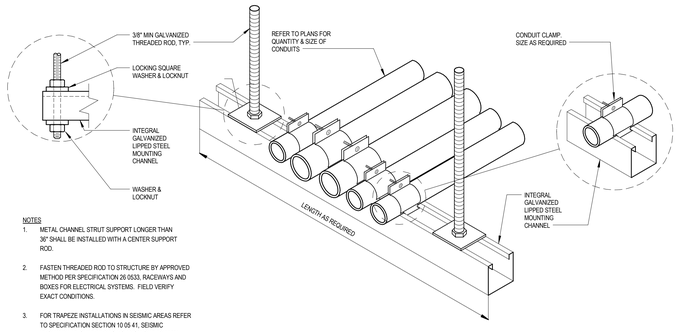
2. NAMEPLATE SHALL BE WHITE LETTERING ON BLACK MICARTA

3. IF ONLY ONE VOLTAGE IS PRESENT, LABEL SHALL INDICATE ONLY THAT RESPECTIVE VOLTAGE

1 BRANCH WIRING IDENTIFICATION
NOT TO SCALE



2 WAREHOUSE PANEL INSTALLATION
NOT TO SCALE

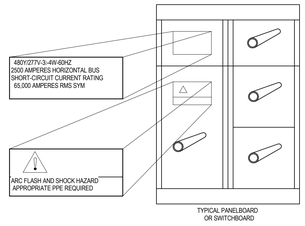


NOTES
1. METAL CHANNEL STRUT SUPPORT LONGER THAN 36" SHALL BE INSTALLED WITH A CENTER SUPPORT ROD.

2. FASTEN THREADED ROD TO STRUCTURE BY APPROVED METHOD PER SPECIFICATION 26 0533, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS. FIELD VERIFY EXACT CONDITIONS.

3. FOR TRAPEZE INSTALLATIONS IN SEISMIC AREAS REFER TO SPECIFICATION SECTION 10 05 41, SEISMIC RESTRAINT REQUIREMENTS FOR NON-STRUCTURAL COMPONENTS.

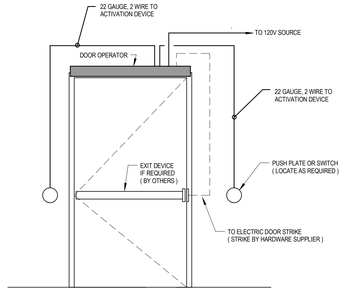
3 CONDUIT TRAPEZE MOUNTING DETAIL
NOT TO SCALE



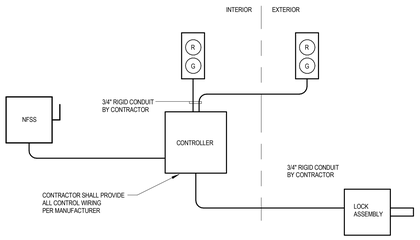
NOTE:

THE PROSPECTIVE SYMMETRICAL FAULT CURRENT AT A NOMINAL VOLTAGE TO WHICH AN APPARATUS OR SYSTEM IS ABLE TO BE CONNECTED WITHOUT SUSTAINING DAMAGE EXCEEDING ACCEPTANCE CRITERIA, SHALL BE DISPLAYED ON THE EXTERIOR OF THE STRUCTURE, OR ON THE INSIDE COVER OF A PANELBOARD.

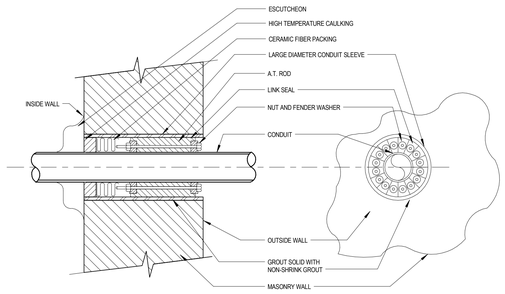
4 EQUIPMENT LABELING REQUIREMENTS
NOT TO SCALE



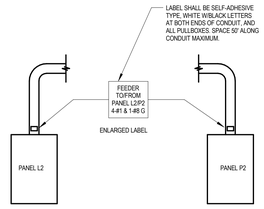
5 DOOR OPERATOR DETAIL
NOT TO SCALE



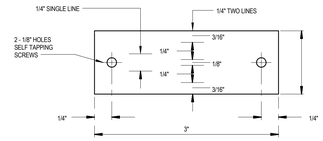
6 DOCK LOCK SYSTEM
NOT TO SCALE



7 EXTERIOR WALL PENETRATION
NOT TO SCALE



8 FEEDER LABELING DETAIL
NOT TO SCALE



NOTES:

1. BLACK MICARTA WITH WHITE ENGRAVED LETTERS, 3/8" HIGH

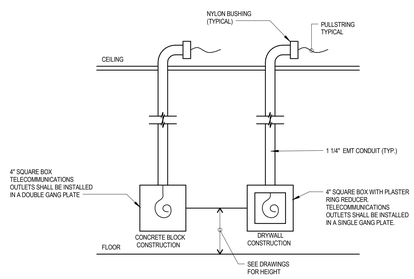
2. FASTEN TO EQUIPMENT WITH SELF TAPPING SCREWS.

3. PROVIDE NAMEPLATES FOR THE FOLLOWING:

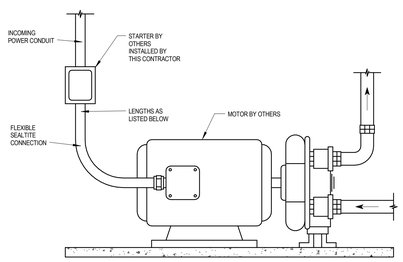
A. PANELS, MDP POSITIONS, OVENS, COOLERS
B. FUSED SAFETY SWITCHES, STARTERS, CONTROL PANELS
C. CONTROL DEVICES OUT OF SIGHT OF CONTROLLED EQUIPMENT
D. ALL CONTROL DEVICES, SWITCH AND PILOT LIGHTS, REMOTE SWITCHES, ETC.

4. SUBMIT LISTING OF NAMEPLATES FOR APPROVAL.

9 NAME PLATE DETAIL
NOT TO SCALE



10 TELECOMMUNICATION OUTLET ROUGH-IN DETAIL
NOT TO SCALE



NOTE:

AT TERMINALS WHERE FLEXIBILITY IS REQUIRED, LENGTHS SHALL NOT EXCEED:

1) 3 FEET FOR TRADE SIZES 1/2" THROUGH 1 1/4"
2) 4 FEET FOR TRADE SIZES 1 1/2" THROUGH 2"
3) 5 FEET FOR TRADE SIZES 2 1/2" AND LARGER

11 MOTOR CONNECTIONS
NOT TO SCALE

FULLY SPRINKLERED
CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

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ARCHITECTS/ENGINEERS:

AE WORKS

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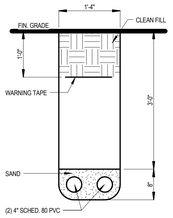
Ph: 412.287.7333 Fax: 412.287.7334
www.ae-works.com

AE Works Project Number: 13025

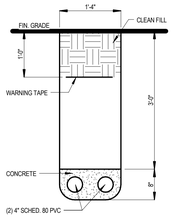
Drawing Title: ELECTRICAL DETAILS	Project Title: NEW WAREHOUSE		Project Number: # 613-116
			Building Number: #519
Approved: Project Director	Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405		Drawing Number: E500
	Date: 06/24/2015	Checked: JJD	Drawn: JMZ

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

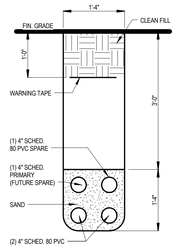


1 ELECTRICAL DUCT DETAIL #1
NOT TO SCALE

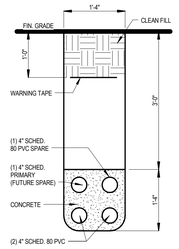


ALL DUCTS UNDER ROADWAYS SHALL BE CONCRETE ENCASED.

2 ELECTRICAL DUCT DETAIL #2 - CONCRETE ENCASED
NOT TO SCALE

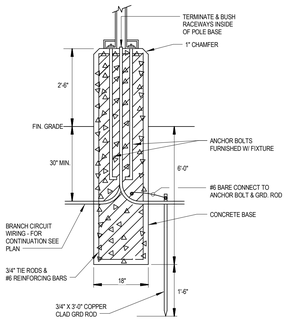


3 ELECTRICAL DUCT DETAIL #3
NOT TO SCALE

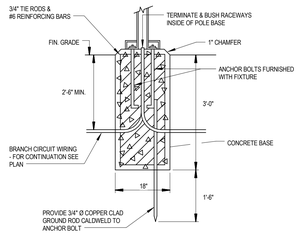


ALL DUCTS UNDER ROADWAYS SHALL BE CONCRETE ENCASED.

4 ELECTRICAL DUCT DETAIL #4 - CONCRETE ENCASED
NOT TO SCALE



5 BASE MOUNTING DETAIL TYPE "SL3" , "SL4" , "SL5"
NOT TO SCALE



6 BASE MOUNTING DETAIL TYPE "SL1" , "SL2"
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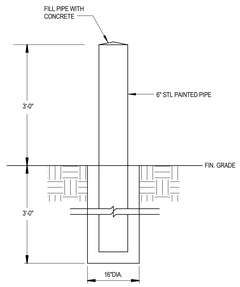


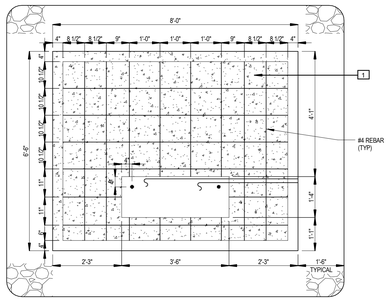
7 CONCRETE BOLLARD DETAIL
NOT TO SCALE

UNDERGROUND ENCLOSURE SPECIFICATIONS

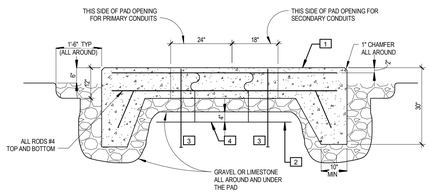
TYPE	APPLICATION	RATING	NOTES
A	PEDESTRIAN TRAFFIC	LIGHT DUTY	SIZED AS NEEDED
B	SIDEWALK APPLICATIONS WITH OCCASIONAL NON-DELIBERATE VEHICULAR TRAFFIC	TIER 5	SIZED AS NEEDED
C	SIDEWALK APPLICATIONS WITH NON-DELIBERATE VEHICULAR TRAFFIC	TIER 8	SIZED AS NEEDED
D	DRIVEWAYS, PARKING LOT & OFF-ROADWAY APPLICATIONS SUBJECT TO NON-DELIBERATE HEAVY VEHICULAR TRAFFIC	TIER 15	SIZED AS NEEDED
E	DELIBERATE VEHICULAR TRAFFIC APPLICATIONS	AASHTO H-20	

NOTES:

1. PROVIDE ENCLOSURES SIZED AS PER THE NEC.
2. ALL ENCLOSURES SHALL HAVE THE SYSTEM TYPE EMBOSSED ON THE LID.
3. ENCLOSURES SHALL BE INSTALLED FLUSH TO THE FINISHED SURFACE (GRADE) ELEVATION.



PLAN VIEW 5



SECTION VIEW 5

8 TRANSFORMER PAD DETAIL
1/2" = 1'-0"

KEYNOTES (THIS DRAWING)

1. CONCRETE TRANSFORMER PAD WITH REINFORCING.
2. INSTALL A #4 SOFT DRAWN SOLID COPPER WIRE GROUND GRID CONTINUOUSLY AROUND PAD. CONNECT GROUND GRID TO EACH END OF THE GROUND BUS BY USING A DOUBLE EYEBOLT TYPE CONNECTOR. BACKFILL WITH A MINIMUM COVER OF 4" OF TAMPED EARTH.
3. INSTALL TWO 3/4" x 10'-0" COPPERWELD GROUND RODS DRIVEN TO A MINIMUM DEPTH OF 9'-0".
4. GROUND GRID TO BE CONTINUOUS AROUND PAD. COVER GROUND GRID COMPLETELY WITH A MINIMUM OF 4" OF TAMPERED EARTH. ALL CONNECTIONS MADE BELOW GRADE MUST BE THERMAL WELDED.
5. EXACT SIZE OF PAD AND CONDUIT OPENINGS SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND SUPPLIER OF THE TRANSFORMER. MINIMUM PAD SIZE SHALL BE FOUR (4) INCHES LARGER THAN THE TRANSFORMER ON ALL SIDES.

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

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AE Works Project Number: 13025

Drawing Title: ELECTRICAL DETAILS – SITE

Approved: Project Director

Project Title: NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 | Checked: JJD | Drawn: JMZ

Project Number: # 613-116

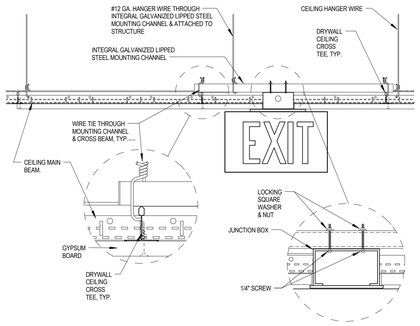
Building Number: #519

Drawing Number: E501

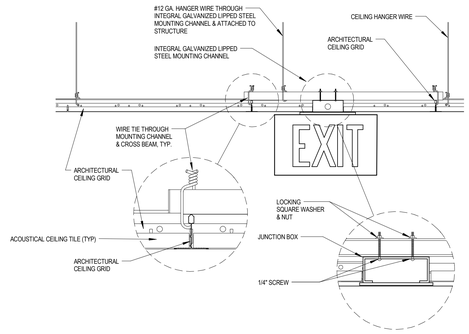
Office of Construction and Facilities Management

Department of Veterans Affairs

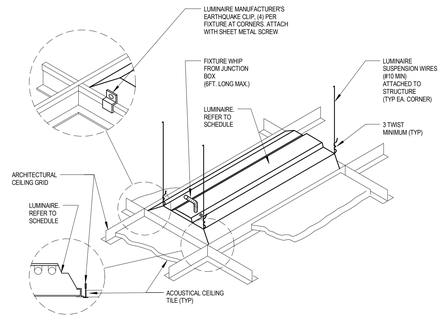
VA FORM 08-6231



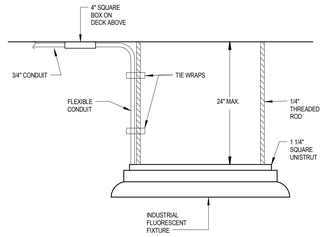
1 EXIT SIGN MOUNTING - GYP. BD. CEILING
NTS



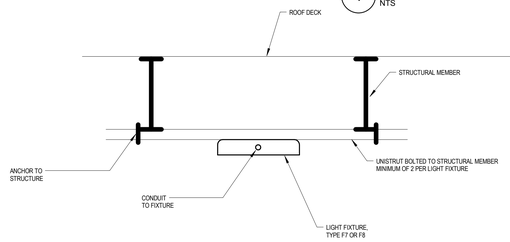
2 EXIT SIGN MOUNTING - LAY-IN CEILING
NTS



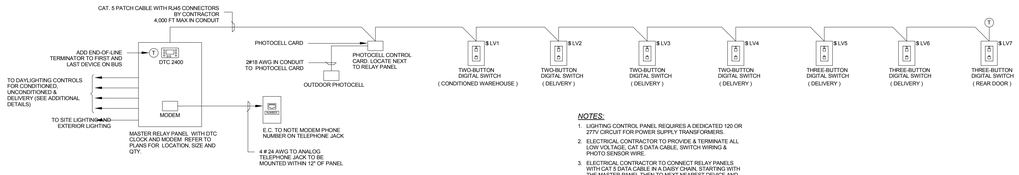
3 LUMINAIRE MOUNTING - LAY-IN CEILING
NTS



4 INDUSTRIAL LIGHT FIXTURE MOUNTING
NTS



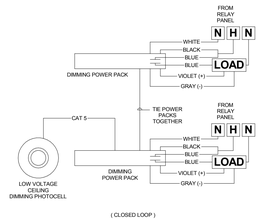
5 WAREHOUSE FIXTURE MOUNTING
NTS



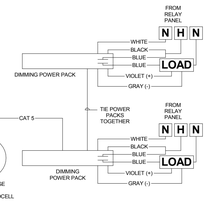
NOTES:

1. LIGHTING CONTROL PANEL REQUIRES A DEDICATED 120 OR 277V CIRCUIT FOR POWER SUPPLY TRANSFORMERS.
2. ELECTRICAL CONTRACTOR TO PROVIDE & TERMINATE ALL LOW VOLTAGE, CAT 5 DATA CABLE, SWITCH WIRING & PHOTO SENSOR WIRE.
3. ELECTRICAL CONTRACTOR TO CONNECT RELAY PANELS WITH CAT 5 DATA CABLE IN A DAISY CHAIN, STARTING WITH THE MASTER PANEL THEN TO NEXT NEAREST DEVICE AND SO ON.
4. ALL CAT 5 CABLE RUNS NEED TO BE CHECKED WITH A CAT 5 METER FOR PROPER TERMINATION OF RJ45 CONNECTORS.

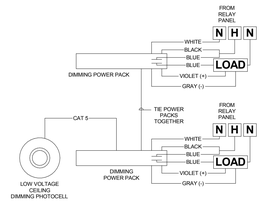
CONDITIONED, UNCONDITIONED, PROCESSING AND EXTERIOR LIGHTING CONTROL WIRING DIAGRAM



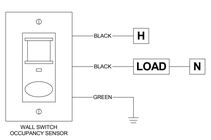
CONDITIONED AREA DAYLIGHTING DETAIL



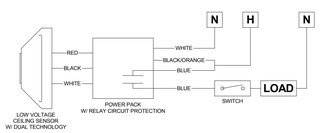
DELIVERY AREA DAYLIGHTING DETAIL



UNCONDITIONED AREA DAYLIGHTING DETAIL



WALL SWITCH DETAIL



LOW VOLTAGE CEILING SENSOR DETAIL

LIGHTING CONTROL - SEQUENCE OF OPERATION

UNCONDITIONED WAREHOUSE SPACE

LIGHTING IN THIS AREA IS TO BE CONTROLLED THROUGH RELAY / DIMMING PANEL AND BE ACTIVATED ON AND OFF VIA TIMECLOCK. LED LIGHTING THROUGHOUT THE NORMAL WORK DAY WILL BE DIMMED VIA DAYLIGHT SENSORS BASED ON AMBIENT LIGHT PENETRATION. ONE DAYLIGHT SENSOR WILL ADJUST LIGHTING LEVELS OVER THE FLOOR AREA, AND ONE SENSOR WILL CONTROL LIGHTING LEVELS OVER THE HIGH STACK AREAS. DAYLIGHT SENSOR REACTIONARY FADE RATE IS AN ADJUSTABLE PROGRAMMING FEATURE SET TO DESIRED SENSITIVITY. LOCAL OVERRIDE FOR ON / OFF CONTROL WILL BE PROVIDED AT APPROPRIATE ENTRANCES.

CONDITIONED WAREHOUSE SPACE

LIGHTING IN THIS AREA IS TO BE CONTROLLED THROUGH RELAY / DIMMING PANEL AND BE ACTIVATED ON AND OFF VIA TIMECLOCK. LED LIGHTING THROUGHOUT THE NORMAL WORK DAY WILL BE DIMMED VIA DAYLIGHT SENSOR BASED ON AMBIENT LIGHT PENETRATION. ONE DAYLIGHT SENSOR WILL ADJUST LIGHTING LEVELS THROUGHOUT THE SPACE. DAYLIGHT SENSOR REACTIONARY FADE RATE IS AN ADJUSTABLE PROGRAMMING FEATURE SET TO DESIRED SENSITIVITY. LOCAL OVERRIDE FOR ON / OFF CONTROL WILL BE PROVIDED AT APPROPRIATE ENTRANCES.

DELIVERY SPACE

LIGHTING IN THIS AREA IS TO BE CONTROLLED THROUGH RELAY / DIMMING PANEL AND BE ACTIVATED ON AND OFF VIA TIMECLOCK. LED LIGHTING THROUGHOUT THE NORMAL WORK DAY WILL BE DIMMED VIA DAYLIGHT SENSOR BASED ON AMBIENT LIGHT PENETRATION. ONE DAYLIGHT SENSOR WILL ADJUST LIGHTING LEVELS THROUGHOUT THE SPACE. DAYLIGHT SENSOR REACTIONARY FADE RATE IS AN ADJUSTABLE PROGRAMMING FEATURE SET TO DESIRED SENSITIVITY. LOCAL OVERRIDE FOR ON / OFF CONTROL WILL BE PROVIDED AT APPROPRIATE ENTRANCES.

6 LIGHTING CONTROL DETAILS
NOT TO SCALE

ALTERNATE NO. 4

INTERIOR LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MOUNTING	BASIS OF DESIGN		LAMP		DRIVER/BALLAST		WATTAGE	VOLTAGE	COMMENTS	ALTERNATE FIXTURES	
			MANUFACTURER	SERIES	TYPE	LUMENS	TYPE	BF				MANUFACTURER	SERIES
EX1	THERMOPLASTIC EXIT SIGN, WITH LED REMOTE HEADS - SINGLE FACE	WALL	EXITRONIX	VLED SERIES	RED LED	N/A	---	---	5W	120/277V	COORDINATE CHEVRONS W/ FLOOR PLANS PROVIDE WITH BATTERY BACKUP.		
EX2	DOUBLE FACE-THEMROPLASTIC EXIT SIGN	CEILING	EXITRONIX	ILX SERIES	RED LED	N/A	---	---	5W	120/277V	COORDINATE CHEVRONS W/ FLOOR PLANS PROVIDE WITH BATTERY BACKUP.		
EX3	SINGLE FACE-THEMROPLASTIC EXIT SIGN	CEILING	EXITRONIX	ILX SERIES	RED LED	N/A	---	---	5W	120/277V	COORDINATE CHEVRONS W/ FLOOR PLANS PROVIDE WITH BATTERY BACKUP.		
F1	4" OPEN DOWNLIGHT, CLEAR MATTE DIFFUSE REFLECTOR	RECESSED	GOTHAM LIGHTING	EVO SERIES	LED 4100K	1800	0-10V DIM	---	29W	120/277V		GOTHAM LIGHTING	LGFLP SERIES
F2	4" WIDE SLOT FIXTURE, FROSTED ACRYLIC LENS	RECESSED	FOCAL POINT	SEEM 4 SERIES	LED 4100K	2221	0-10V DIM	---	39W PER 4'	120/277V	COORDINATE W/ FLOOR PLANS FOR LENGTHS	FOCAL POINT	FOCUS 3 SERIES
F3	4' LENS STRIP FIXTURE	SURFACE	LITHONIA LIGHTING	WL SERIES	LED 4100K	1800	0-10V DIM	---	20W	120/277V		LITHONIA LIGHTING	WT SERIES
F4	2X2 HIGH EFFICIENT TROFFER, FLAT CENTER LENS, ANGLED SIDES	RECESSED	FINELITE	HPR SERIES	LED 4100K	3721	0-10V DIM	---	36W	120/277V		FINELITE	HPR FLUORESCENT SERIES
F5	1X4 VANDAL PROOF, OPAL POLYCARBONATE LENS	SURFACE	LUMINAIRE LIGHTING	VPF84 SERIES	LED 4100K	2401	0-10V DIM	---	28W	120/277V		LUMINAIRE LIGHTING	VPF84 FL SERIES
F6	DIRECT/INDIRECT LINEAR PENDANT, MICROPRISMATIC LENS	PENDANT	CORELITE	JAYLUM SERIES	LED 4100K	2999	0-10V DIM	---	30W PER 4'	120/277V	COORDINATE W/ FLOOR PLANS FOR LENGTHS	CORELITE	JAYLUM T8 SERIES
F7	HIGH BAY LUMINAIRE	PENDANT	LITHONIA	IBL SERIES	LED 4100K	9000	0-10V DIM	---	95W	120/277V		LITHONIA	IBL FLUORESCENT SERIES
F8	HIGH BAY LUMINAIRE	PENDANT	LITHONIA	IBL SERIES	LED 4100K	12000	0-10V DIM	---	122W	120/277V		LITHONIA	IBL FLUORESCENT SERIES
F9	INDUSTRIAL WITH REFLECTOR	SURFACE	LITHONIA	AF SERIES	LED 4100K		0-10V DIM	---		120/277V		LITHONIA	AF FLUORESCENT SERIES
F10	2 X 4 HIGH EFFICIENT TROFFER, FLAT CENTER LENS, ANGLED SIDES	RECESSED	FINELITE	HPR SERIES	LED 4100K		0-10V DIM	---		120/277V		FINELITE	HPR FLUORESCENT SERIES
EM	EMERGENCY BATTERY PACK	SURFACE	LITHONIA	ELM2-LED SERIES						120/277V			
F1E	4" OPEN DOWNLIGHT, CLEAR MATTE DIFFUSE REFLECTOR	RECESSED	GOTHAM LIGHTING	EVO SERIES	LED 4100K	1800	0-10V DIM	---	29W	120/277V	ADD BATTERY BALLAST	GOTHAM LIGHTING	LGFLP SERIES
F7E	HIGH BAY LUMINAIRE	PENDANT	LITHONIA	IBL SERIES	LED 4100K	9000	0-10V DIM	---	95W	120/277V	ADD BATTERY BALLAST	LITHONIA	IBL FLUORESCENT SERIES
F8E	HIGH BAY LUMINAIRE	PENDANT	LITHONIA	IBL SERIES	LED 4100K	12000	0-10V DIM	---	122W	120/277V	ADD BATTERY BALLAST	LITHONIA	IBL FLUORESCENT SERIES
F4E	2X2 HIGH EFFICIENT TROFFER, FLAT CENTER LENS, ANGLED SIDES	RECESSED	FINELITE	HPR SERIES	LED 4100K	3721	0-10V DIM	---	36W	120/277V	ADD BATTERY BALLAST	FINELITE	HPR FLUORESCENT SERIES

EXTERIOR LIGHTING FIXTURE SCHEDULE

EF2E	DECORATIVE OVER DOOR LIGHT, 36" LONG, CUTOFF, w/ REMOTE EMERGENCY BATTERY PACK	WALL	LUMINAIRE LIGHTING	AEL36 SERIES	LED 4100K	1255	0-10V DIM	---	22W	120/277V	MOUNT BATTERY PACK ABOVE NEAREST ACCESSIBLE CEILING	LUMINAIRE LIGHTING	AEL FL SERIES
EF4	6" DOWNLIGHT, IP66 GASKET RING W/ REMOTE EMERGENCY BATTERY PACK	RECESSED	PORTFOLIO	LD6A SERIES	LED 4100K	1500	0-10V DIM	---	23W	120/277V	MOUNT BATTERY PACK ABOVE NEAREST ACCESSIBLE CEILING		
SL1	LED SITE LIGHT FIXTURE SINGLE HEAD	25 FOOT POLE	LITHONIA	CSX2 LED SERIES	LED 4100K	27,000	700mA	---	268W	277V	TYPE 3 DISTRIBUTION WITH 25' SQUARE ALUMINUM POLE		
SL2	LED SITE LIGHT FIXTURE 180 DEGREE DOUBLE HEAD	25 FOOT POLE	LITHONIA	CSX2 LED SERIES	LED 4100K	27,000	700mA	---	536W	277V	TYPE 3 DISTRIBUTION WITH 25' SQUARE ALUMINUM POLE		
SL3	LED SITE LIGHT FIXTURE SINGLE HEAD	25 FOOT POLE	LITHONIA	CSX2 LED SERIES	LED 4100K	27,000	700mA	---	268W	277V	TYPE 4 DISTRIBUTION WITH 25' SQUARE ALUMINUM POLE		
SL4	LED SITE LIGHT FIXTURE 90 DEGREE DOUBLE HEAD	25 FOOT POLE	LITHONIA	CSX2 LED SERIES	LED 4100K	27,000	700mA	---	536W	277V	TYPE 3 DISTRIBUTION WITH 25' SQUARE ALUMINUM POLE		
SL5	LED SITE LIGHT FIXTURE 270 DEGREE TRIPLE HEAD	25 FOOT POLE	LITHONIA	CSX2 LED SERIES	LED 4100K	27,000	700mA	---	804W	277V	TYPE 3 DISTRIBUTION WITH 25' SQUARE ALUMINUM POLE		

NOTES:
PRS = PROGRAMMED RAPID START
STEP DIM = DIMMABLE FROM 100% TO 50%
AN "E" AT THE END OF FIXTURE TYPE INDICATES " NORMAL EMERGENCY FIXTURE"
ALL DOWNLIGHTS SHALL BE ENERGY STAR RATED.

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

MOORE DESIGN ASSOCIATES
LANDSCAPE ARCHITECTURE

SEAL

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AE Works Project Number: 13025

Drawing Title
ELECTRICAL DETAILS – LIGHTING

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 **Checked:** JJD **Drawn:** JMZ

Project Number # 613-116

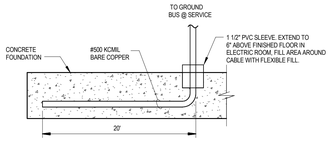
Building Number #519

Drawing Number E502

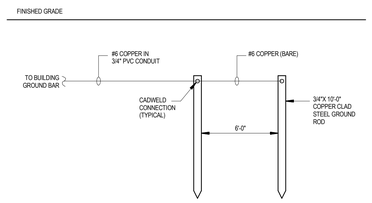
Office of Construction and Facilities Management

Department of Veterans Affairs

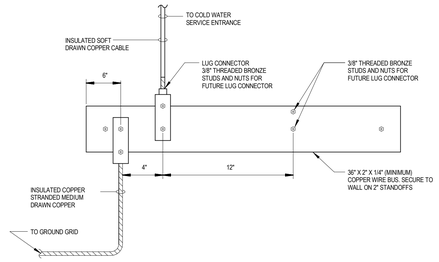
VA FORM 08-6231



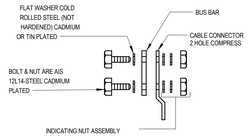
1 FOUNDATION GROUND DETAIL
NOT TO SCALE



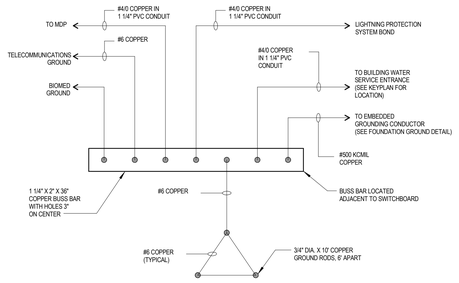
2 GROUND ROD DETAIL
NOT TO SCALE



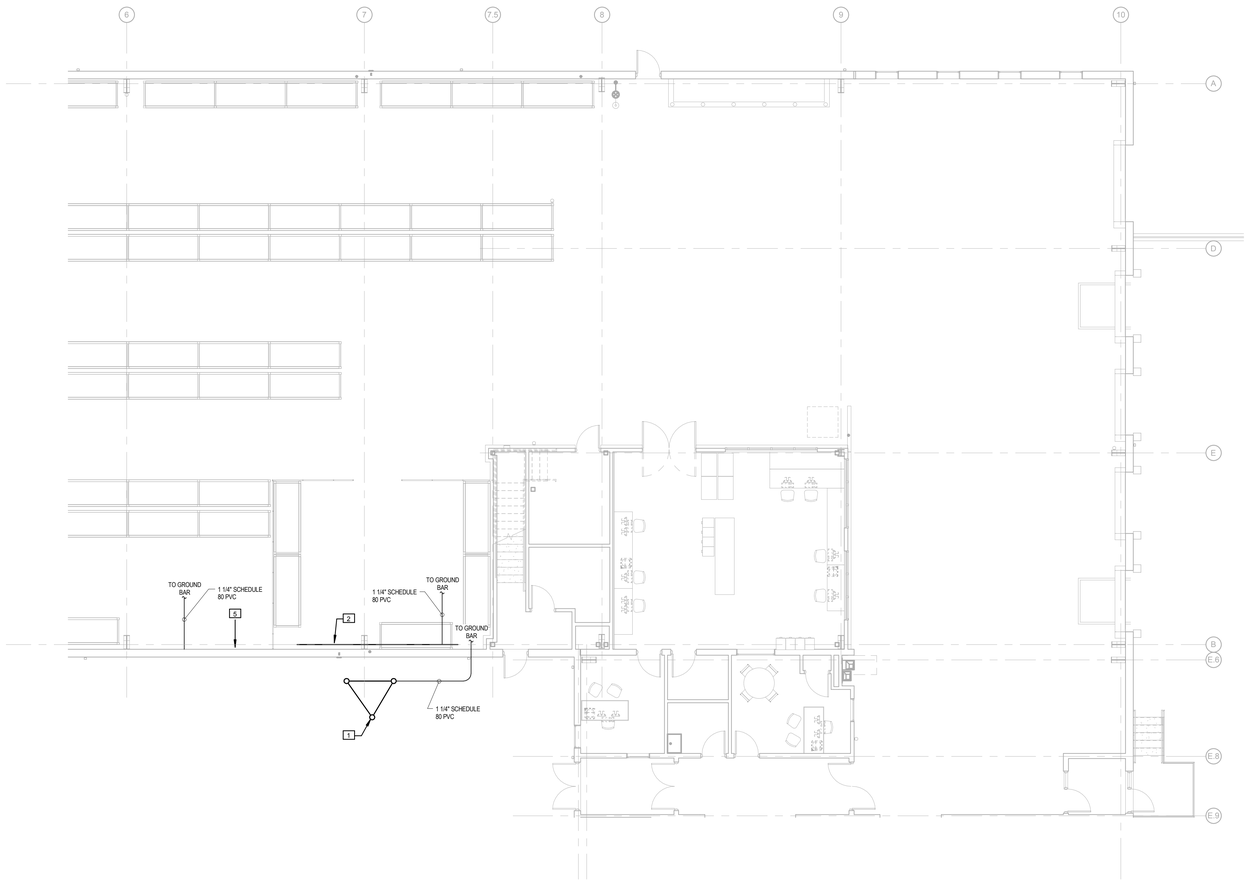
3 WALL MOUNTED EQUIPMENT GROUND BUS
NOT TO SCALE



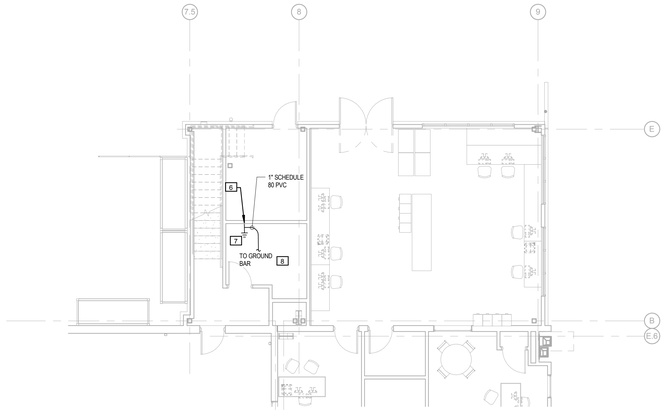
4 GROUND WIRE CONNECTION
NOT TO SCALE



5 GROUND SYSTEM DETAIL
NOT TO SCALE



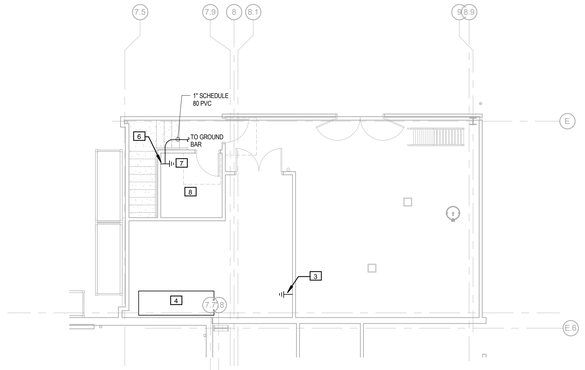
6 GROUNDING PLAN - FIRST FLOOR
1/8" = 1'-0"



7 FIRST FLOOR GROUNDING PLAN
1/8" = 1'-0"

KEYNOTES (THIS DETAIL)

1. LOCATION OF GROUND ROD TRIAD.
2. LOCATION OF FOUNDATION GROUND.
3. LOCATION OF MAIN SERVICE GROUND BUS ADJACENT TO MDP.
4. LOCATION OF MAIN DISTRIBUTION SWITCHBOARD ON MEZZANINE LEVEL.
5. LOCATION OF WATER SERVICE ENTRANCE.
6. LOCATION OF TELECOMMUNICATIONS SYSTEM GROUND BAR IN TELECOM ROOM.
7. BOND ALL SLEEVES THROUGH FLOOR TO THE GROUND BAR IN THIS ROOM.
8. BOND ALL RACKS, TRAY, AND EQUIPMENT TO THE GROUND BAR IN THIS ROOM.



8 GROUNDING PLAN - MEZZANINE
1/8" = 1'-0"

PROJECT NORTH
TRUE NORTH

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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AE Works Project Number: 13025

Drawing Title
ELECTRICAL DETAILS – GROUNDING

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 **Checked:** JJD **Drawn:** JMZ

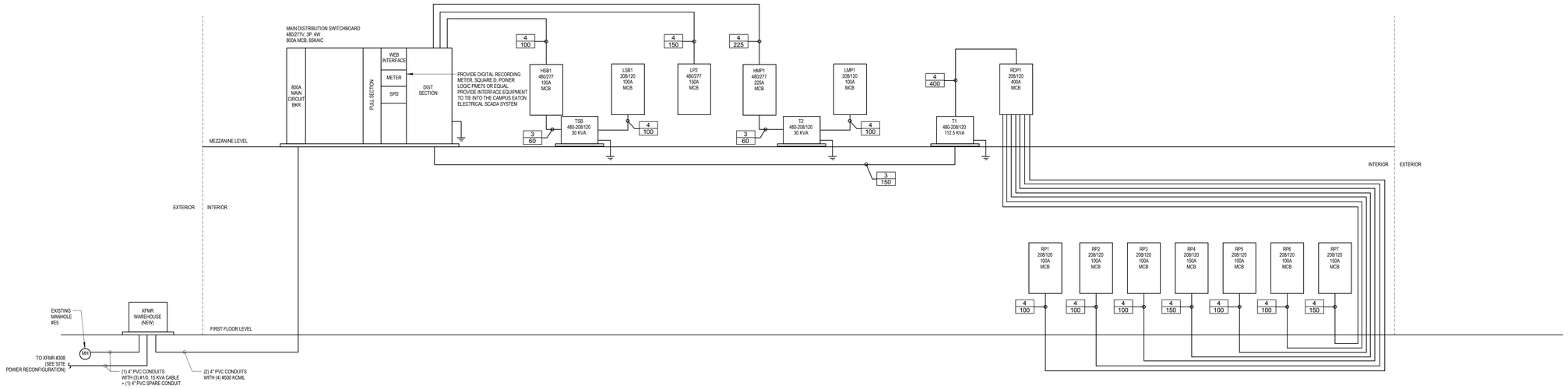
Project Number # 613-116

Building Number #519

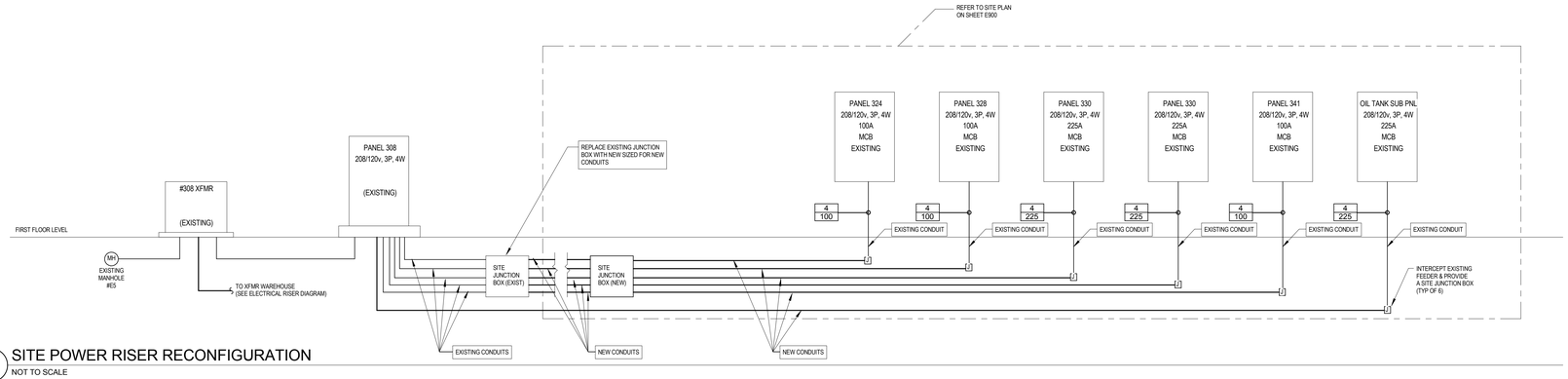
Drawing Number E503

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



1 ELECTRICAL RISER DIAGRAM
NOT TO SCALE



2 SITE POWER RISER RECONFIGURATION
NOT TO SCALE

ELECTRICAL FEEDER SCHEDULE

COLUMN NUMBER 3		COLUMN NUMBER 4	
AMPS	3PH, 3W, & GROUND	AMPS	3PH, 4W, & GROUND
15	(3) #12 & 1#12 G IN 3/4" C	15	(4) #12 & 1#12 G IN 3/4" C
20	(3) #12 & 1#12 G IN 3/4" C	20	(4) #12 & 1#12 G IN 3/4" C
25	(3) #10 & 1#10 G IN 3/4" C	25	(4) #10 & 1#10 G IN 3/4" C
30	(3) #10 & 1#10 G IN 3/4" C	30	(4) #10 & 1#10 G IN 3/4" C
35	(3) #8 & 1#10 G IN 3/4" C	35	(4) #8 & 1#10 G IN 3/4" C
40	(3) #8 & 1#10 G IN 3/4" C	40	(4) #8 & 1#10 G IN 3/4" C
45	(3) #6 & 1#10 G IN 3/4" C	45	(4) #6 & 1#10 G IN 1" C
50	(3) #6 & 1#10 G IN 3/4" C	50	(4) #6 & 1#10 G IN 1" C
60	(3) #4 & 1#10 G IN 1" C	60	(4) #4 & 1#10 G IN 1 1/4" C
70	(3) #4 & 1#8 G IN 1 1/4" C	70	(4) #4 & 1#8 G IN 1 1/4" C
80	(3) #3 & 1#8 G IN 1 1/4" C	80	(4) #3 & 1#8 G IN 1 1/4" C
90	(3) #2 & 1#8 G IN 1 1/4" C	90	(4) #2 & 1#8 G IN 1 1/4" C
100	(3) #1 & 1#8 G IN 1 1/2" C	100	(4) #1 & 1#8 G IN 1 1/2" C
125	(3) #1 & 1#6 G IN 1 1/2" C	125	(4) #1 & 1#6 G IN 1 1/2" C
150	(3) #1/0 & 1#6 G IN 1 1/2" C	150	(4) #1/0 & 1#6 G IN 1 1/2" C
175	(3) #2/0 & 1#6 G IN 2" C	175	(4) #2/0 & 1#6 G IN 2" C
200	(3) #3/0 & 1#6 G IN 2" C	200	(4) #3/0 & 1#6 G IN 2" C
225	(3) #4/0 & 1#4 G IN 2" C	225	(4) #4/0 & 1#4 G IN 2" C
250	(3) #250 KCMIL & 1#4 G IN 2 1/2" C	250	(4) #250 KCMIL & 1#4 G IN 2 1/2" C
300	(3) #350 KCMIL & 1#4 G IN 2 1/2" C	300	(4) #350 KCMIL & 1#4 G IN 2 1/2" C
350	(3) #500 KCMIL & 1#3 G IN 3" C	350	(4) #500 KCMIL & 1#3 G IN 3" C
400	(3) #500 KCMIL & 1#3 G IN 3" C	400	(4) #500 KCMIL & 1#3 G IN 3" C
450	2 SETS OF (3) #4/0 & 1#2 G IN 2" C	450	2 SETS OF (4) #4/0 & 1#2 G IN 2 1/2" C
500	2 SETS OF (3) #250 KCMIL 1#2 G IN 2 1/2" C	500	2 SETS OF (4) #250 KCMIL 1#2 G IN 3" C
600	2 SETS OF (3) #350 KCMIL & 1#1 G IN 3" C	600	2 SETS OF (4) #350 KCMIL & 1#1 G IN 3" C
800	2 SETS OF (3) #500 KCMIL & 1#1/0 G IN 3" C	800	2 SETS OF (4) #500 KCMIL & 1#1/0 G IN 3 1/2" C
900	3 SETS OF (3) #350 KCMIL & 1#2/0 G IN 3" C	900	3 SETS OF (4) #350 KCMIL & 1#2/0 G IN 3" C
1000	3 SETS OF (3) #500 KCMIL & 1#2/0 G IN 3" C	1000	3 SETS OF (4) #500 KCMIL & 1#2/0 G IN 3 1/2" C
1200	4 SETS OF (3) #350 KCMIL & 1#3/0 G IN 3" C	1200	4 SETS OF (4) #350 KCMIL & 1#3/0 G IN 3" C
1600	5 SETS OF (3) #500 KCMIL & 1#4/0 G IN 3" C	1600	5 SETS OF (4) #500 KCMIL & 1#4/0 G IN 3 1/2" C
2000	6 SETS OF (3) #500 KCMIL & 1#500 KCMIL G IN 3 1/2" C	2000	6 SETS OF (4) #500 KCMIL & 1#500 KCMIL G IN 3 1/2" C
2500	7 SETS OF (3) #500 KCMIL & 1#350 KCMIL G IN 3 1/2" C	2500	7 SETS OF (4) #500 KCMIL & 1#350 KCMIL G IN 3 1/2" C
3000	8 SETS OF (3) #500 KCMIL & 1#500 KCMIL G IN 3 1/2" C	3000	8 SETS OF (4) #500 KCMIL & 1#500 KCMIL G IN 3 1/2" C
3500	10 SETS OF (3) #500 KCMIL & 1#500 KCMIL G IN 3 1/2" C	3500	10 SETS OF (4) #500 KCMIL & 1#500 KCMIL G IN 3 1/2" C
4000	11 SETS OF (3) #500 KCMIL & 1#500 KCMIL G IN 3 1/2" C	4000	11 SETS OF (4) #500 KCMIL & 1#500 KCMIL G IN 3 1/2" C

NOTES:
1. CONDUIT SIZES FOR THHN/THWN COPPER CONDUCTORS ONLY. OTHER CONDUCTOR TYPES MAY REQUIRE INCREASED CONDUIT SIZE.
2. GROUND CONDUCTORS SPECIFIED IS FOR EQUIPMENT GROUND PER N.E.C. UNLESS NOTED OTHERWISE.

1 TOP NUMBER REFERS TO COLUMN NUMBER IN ELECTRICAL FEEDER SCHEDULE
800 BOTTOM NUMBER REFERS TO ROWS (AMPS)

FULLY SPRINKLERED
CONSTRUCTION DOCUMENTS

Revisions: | Date

CONSULTANTS:
HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING
CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING
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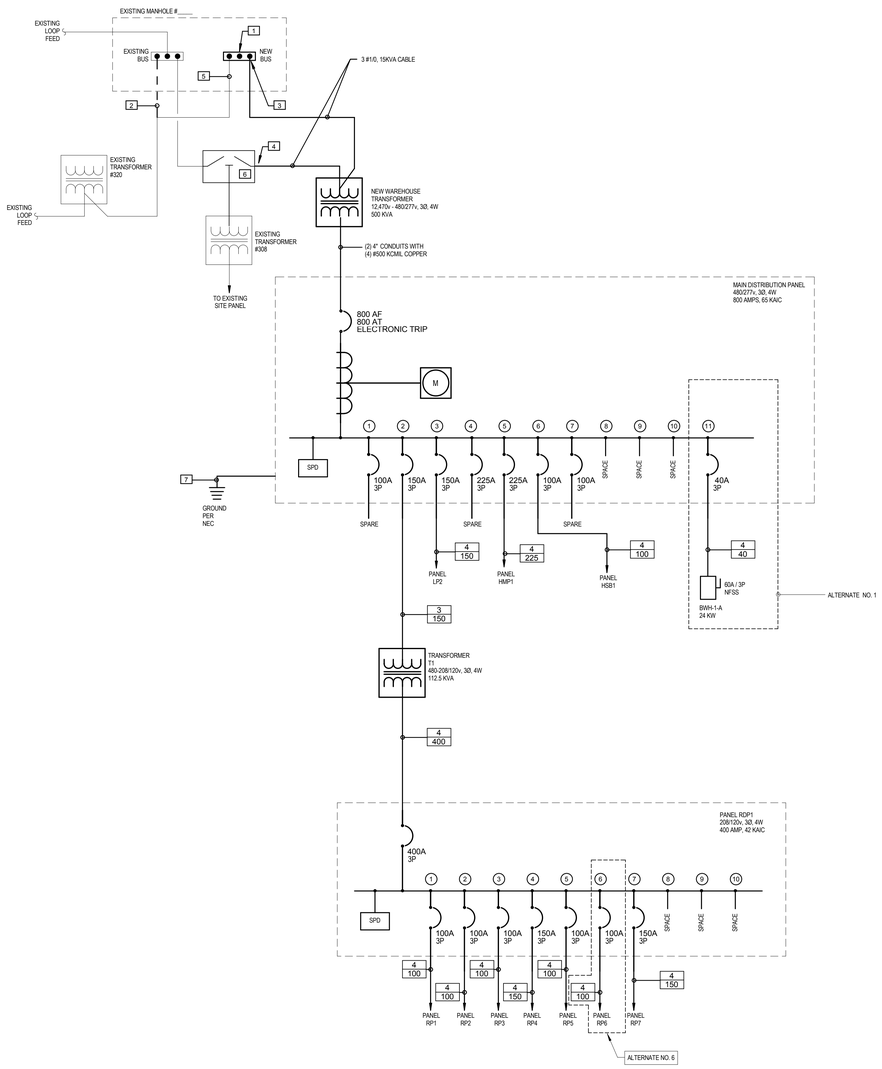
Ph: 412.287.7333 Fax: 412.287.7334
www.ae-works.com
AE Works Project Number: 13025

Drawing Title: ELECTRICAL RISER DIAGRAM
Approved: Project Director
Project Title: NEW WAREHOUSE
Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405
Date: 06/24/2015 | Checked: JJD | Drawn: JMZ
Project Number: # 613-116
Building Number: #519
Drawing Number: E600

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



1 ELECTRICAL SINGLE-LINE DIAGRAM
NTS

KEYNOTES (SINGLE-LINE DIAGRAM)

1. PROVIDE A NEW 3-POINT LOAD BREAK JUNCTION POINT FOR EACH PHASE OF THE MEDIUM VOLTAGE LOOP. INSTALL WITHIN MANHOLE SHOWN. MATCH EXISTING.
2. DISCONNECT AND RELOCATE FEEDS TO NEW JUNCTION POINTS.
3. CONNECT NEW LOADBREAK ELBOWS TO NEW JUNCTION POINTS.
4. PROVIDE NEW FEED FROM EXISTING TRANSFORMER SELECTOR SWITCH. PRESENTLY UNUSED ON TRANSFORMER #308. PROVIDE LOAD BREAK ELBOWS AT TERMINATIONS.
5. RELOCATED EXISTING CABLE AND LOAD BREAK TO NEW BUS.
6. VERIFY AND COORDINATE SWITCH POSITION WITH VA
7. REFER TO GROUNDING DETAILS ON E503.

PROJECT NORTH
TRUE NORTH

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
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AE Works Project Number: 13025

Drawing Title: ELECTRICAL SINGLE-LINE DIAGRAM

Approved: Project Director

Project Title: NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 | Checked: JJD | Drawn: JJD

Project Number: # 613-116

Building Number: #519

Drawing Number: E601

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

Branch Panel: RP1

Location: CORRIDOR C-2
Supply From: RDP1
Mounting: Recessed
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	Receptacles - Restrooms	20 A	1	0.36 kW	0.20 kW					1	20 A	Receptacle - Exterior	2
3	Receptacle - Refrigerator	20 A	1			1.00 kW	0.50 kW			1	20 A	Door Operator	4
5	Receptacle - Microwave	20 A	1					1.50 kW	1.50 kW	1	20 A	Receptacle - Copier	6
7	Receptacle - Coffee Maker	20 A	1	1.50 kW	1.00 kW					1	20 A	Receptacle - Office	8
9	Receptacles - Break Room	20 A	1			0.54 kW	1.00 kW			1	20 A	Receptacle - Office	10
11	Receptacles - Office	20 A	1					0.36 kW	1.00 kW	1	20 A	Receptacle - Office	12
13	Receptacles - Corridor	20 A	1	0.72 kW	1.00 kW					1	20 A	Receptacles - Office	14
15	Spare	0 A	1			0.00 kW	1.00 kW			1	20 A	Receptacles - Office	16
17	Spare	0 A	1					0.00 kW	0.00 kW	1	0 A	Spare	18
19	Spare	0 A	1	0.00 kW	0.00 kW					1	0 A	Spare	20
21	Space	--	--			0.00 kW	0.00 kW			--	--	Space	22
23	Space	--	--					0.00 kW	0.00 kW	--	--	Space	24
25	Space	--	--	0.00 kW	0.00 kW					--	--	Space	26
27	Space	--	--			0.00 kW	0.00 kW			--	--	Space	28
29	Space	--	--					0.00 kW	0.00 kW	--	--	Space	30
31	Space	--	--	0.00 kW	0.00 kW					--	--	Space	32
33	Space	--	--			0.00 kW	0.00 kW			--	--	Space	34
35	Space	--	--					0.00 kW	0.00 kW	--	--	Space	36
37	Space	--	--	0.00 kW	0.00 kW					--	--	Space	38
39	Space	--	--			0.00 kW	0.00 kW			--	--	Space	40
41	Space	--	--					0.00 kW	0.00 kW	--	--	Space	42
			Total Load:	4.78 kW		4.04 kW		4.36 kW					
			Total Amps:	40 A		34 A		37 A					

Legend:

Notes:

Branch Panel: RP2

Location: HEATED HIGH-BAY...
Supply From: RDP1
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				1.00 kW	0.00 kW								2
3	Battery Chargers	20 A	3			1.00 kW	0.00 kW			3	20 A	Battery Chargers	4
5								1.00 kW	0.00 kW				6
7				1.00 kW	0.00 kW								8
9	Battery Chargers	20 A	3			1.00 kW	0.00 kW			3	20 A	Battery Chargers	10
11								1.00 kW	0.00 kW				12
13				1.00 kW	0.00 kW					1	0 A	Spare	14
15	Battery Chargers	20 A	3			1.00 kW	0.00 kW			1	0 A	Spare	16
17								1.00 kW	0.00 kW	1	0 A	Spare	18
19	Spare	0 A	1	0.00 kW	0.00 kW					1	0 A	Spare	20
21	Space	--	--			0.00 kW	0.00 kW			--	--	Space	22
23	Space	--	--					0.00 kW	0.00 kW	--	--	Space	24
25	Space	--	--	0.00 kW	0.00 kW					--	--	Space	26
27	Space	--	--			0.00 kW	0.00 kW			--	--	Space	28
29	Space	--	--					0.00 kW	0.00 kW	--	--	Space	30
31	Space	--	--	0.00 kW	0.00 kW					--	--	Space	32
33	Space	--	--			0.00 kW	0.00 kW			--	--	Space	34
35	Space	--	--					0.00 kW	0.00 kW	--	--	Space	36
37	Space	--	--	0.00 kW	0.00 kW					--	--	Space	38
39	Space	--	--			0.00 kW	0.00 kW			--	--	Space	40
41	Space	--	--					0.00 kW	0.00 kW	--	--	Space	42
			Total Load:	3.00 kW		3.00 kW		3.00 kW					
			Total Amps:	25 A		25 A		25 A					

Legend:

Notes:

Branch Panel: RP5

Location: HEATED HIGH-BAY...
Supply From: RDP1
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	Receptacle	20 A	1	0.54 kW	0.00 kW					1	20 A	Spare	2
3	Receptacle	20 A	1			0.72 kW	0.00 kW			1	20 A	Spare	4
5									0.00 kW	1	20 A	Spare	6
7	Spare	20 A	1	0.00 kW	0.00 kW					1	20 A	Spare	8
9	Spare	20 A	1			0.00 kW	0.00 kW			1	20 A	Spare	10
11	Spare	20 A	1					0.00 kW	0.00 kW	1	20 A	Spare	12
13	Spare	20 A	1	0.00 kW	0.00 kW					1	20 A	Spare	14
15	Spare	20 A	1			0.00 kW	0.00 kW			1	20 A	Spare	16
17	Spare	20 A	1					0.00 kW	0.00 kW	1	20 A	Spare	18
19	Spare	20 A	1	0.00 kW	0.00 kW					1	20 A	Spare	20
21	Space	--	--			0.00 kW	0.00 kW			1	20 A	Spare	22
23	Space	--	--					0.00 kW	0.00 kW	--	--	Space	24
25	Space	--	--	0.00 kW	0.00 kW					--	--	Space	26
27	Space	--	--			0.00 kW	0.00 kW			--	--	Space	28
29	Space	--	--					0.00 kW	0.00 kW	--	--	Space	30
31	Space	--	--	0.00 kW	0.00 kW					--	--	Space	32
33	Space	--	--			0.00 kW	0.00 kW			--	--	Space	34
35	Space	--	--					0.00 kW	0.00 kW	--	--	Space	36
37	Space	--	--	0.00 kW	0.00 kW					--	--	Space	38
39	Space	--	--			0.00 kW	0.00 kW			--	--	Space	40
41	Space	--	--					0.00 kW	0.00 kW	--	--	Space	42
			Total Load:	0.54 kW		0.72 kW		0.00 kW					
			Total Amps:	5 A		7 A		0 A					

Legend:

Notes:

Branch Panel: RP3

Location: CONDITIONED WAREHOUSE...
Supply From: RDP1
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	Receptacles - Wiremold	20 A	1	1.50 kW	0.36 kW					1	20 A	Receptacle	2
3	Receptacles - Wiremold	20 A	1			1.00 kW	2.00 kW			1	20 A	Receptacle	4
5	Receptacles - Wiremold	20 A	1					1.00 kW	2.00 kW	2	20 A	EUH-2	6
7				0.60 kW	2.00 kW								8
9	Overhead Door	20 A	3			0.60 kW	0.00 kW			1	0 A	Spare	10
11								0.60 kW	0.00 kW	1	0 A	Spare	12
13	Spare	0 A	1	0.00 kW	0.00 kW					1	0 A	Spare	14
15	Spare	0 A	1			0.00 kW	0.00 kW			1	0 A	Spare	16
17	Spare	0 A	1					0.00 kW	0.00 kW	1	0 A	Spare	18
19	Spare	0 A	1	0.00 kW	0.00 kW					1	0 A	Spare	20
21	Space	--	--			0.00 kW	0.00 kW			1	0 A	Spare	22
23	Space	--	--					0.00 kW	0.00 kW	--	--	Space	24
25	Space	--	--	0.00 kW	0.00 kW					--	--	Space	26
27	Space	--	--			0.00 kW	0.00 kW			--	--	Space	28
29	Space	--	--					0.00 kW	0.00 kW	--	--	Space	30
31	Space	--	--	0.00 kW	0.00 kW					--	--	Space	32
33	Space	--	--			0.00 kW	0.00 kW			--	--	Space	34
35	Space	--	--					0.00 kW	0.00 kW	--	--	Space	36
37	Space	--	--	0.00 kW	0.00 kW					--	--	Space	38
39	Space	--	--			0.00 kW	0.00 kW			--	--	Space	40
41	Space	--	--					0.00 kW	0.00 kW	--	--	Space	42
			Total Load:	4.46 kW		3.60 kW		3.60 kW					
			Total Amps:	37 A		30 A		30 A					

Legend:

Notes:

Branch Panel: RP4

Location: DELIVERY 102
Supply From: RDP1
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MCB
Mains Rating: 150 A
MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	Receptacles - Exterior	20 A	1	0.54 kW	0.54 kW					1	20 A	Receptacle	2
3						0.60 kW	0.36 kW			1	20 A	Receptacle	4
5	Overhead Door	20 A	3					0.60 kW	0.36 kW	1	20 A	Receptacle	6
7				0.60 kW	0.36 kW					1	20 A	Receptacle	8
9						0.60 kW	1.50 kW			1	20 A	Dock Lock	10
11	Overhead Door	20 A	3					0.60 kW	1.50 kW	1	20 A	Dock Lock	12
13				0.60 kW	1.50 kW					1	20 A	Dock Lock	14
15						0.60 kW	0.00 kW			1	0 A	Spare	16
17	Overhead Door	20 A	3					0.60 kW	0.50 kW				18
19				0.60 kW	0.50 kW					3	20 A	Dock Leveler	20
21						0.60 kW	0.50 kW						22
23	Overhead Door	20 A	3					0.60 kW					24
25				0.60 kW									26
27	Spare	0 A	1			0.00 kW							28
29	Spare	0 A	1					0.00 kW					30
31	Spare	0 A	1	0.00 kW									32
33						3.90 kW							34
35	Power	60 A	3					3.90 kW	0.00 kW	1	0 A	Spare	36
37				3.90 kW	0.00 kW					1	0 A	Spare	38
39	Spare	0 A	1			0.00 kW	0.00 kW			1	0 A	Spare	40
41	Spare	0 A	1					0.00 kW	0.00 kW	1	0 A	Spare	42
			Total Load:	9.74 kW		8.66 kW		8.66 kW					
			Total Amps:	81 A		72 A		72 A					

Legend:

Notes:

Branch Panel: RP6

Location: HEATED HIGH-BAY...
Supply From:
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

ALTERNATE NO. 6

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	Receptacle	20 A	1	0.54 kW	0.00 kW					1	20 A	Spare	2
3	Receptacle	20 A	1			0.54 kW	0.00 kW			1	20 A	Spare	4
5	Receptacle	20 A	1					0.54 kW	0.00 kW	1	20 A	Spare	6
7	Spare	20 A	1	0.00 kW	0.00 kW					1	20 A	Spare	8
9	Spare	20 A	1			0.00 kW	0.00 kW			1	20 A	Spare	10
11	Spare	20 A	1					0.00 kW	0.00 kW	1	20 A	Spare	12
13	Spare	20 A	1	0.00 kW	0.00 kW					1	20 A	Spare	14
15	Spare	20 A	1			0.00 kW	0.00 kW			1	20 A	Spare	16
17	Spare	20 A	1					0.00 kW	0.00 kW	1	20 A	Spare	18
19	Spare	20 A	1	0.00 kW	0.00 kW					1	20 A	Spare	20
21	Space	--	--			0.00 kW	0.00 kW			--	--	Space	22
23	Space	--	--					0.00 kW	0.00 kW	--	--	Space	24
25	Space	--	--	0.00 kW	0.00 kW					--	--	Space	26
27	Space	--	--			0.00 kW	0.00 kW			--	--	Space	28
29	Space	--	--					0.00 kW	0.00 kW	--	--	Space	30
31	Space	--	--	0.00 kW	0.00 kW					--	--	Space	32
33	Space	--	--			0.00 kW	0.00 kW			--	--	Space	34
35	Space	--	--					0.00 kW	0.00 kW	--	--	Space	36
37	Space	--	--	0.00 kW	0.00 kW					--	--	Space	38
39	Space	--	--			0.00 kW	0.00 kW			--	--	Space	40
41	Space	--	--					0.00 kW	0.00 kW	--	--	Space	42
			Total Load:	0.54 kW		0.54 kW		0.54 kW					
			Total Amps:	5 A		5 A		5 A					

Legend:

Notes:

Branch Panel: RP7

Location: HEATED HIGH-BAY...
Supply From: RDP1
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MCB
Mains Rating: 150 A
MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	Copier - Wiremold	20 A	1	1.50 kW	1.50 kW					1	20 A	Receptacles - Wiremold	2
3	Receptacles - Wiremold	20 A	1			1.50 kW	1.50 kW			1	20 A	Receptacles - Wiremold	4
5	Receptacles - Wiremold	20 A	1					1.50 kW	1.50 kW	1	20 A	Receptacles - Wiremold	6
7	Receptacles	20 A	1	1.00 kW	1.00 kW					1	20 A	Scale	8
9	Receptacles	20 A	1			0.90 kW	1.50 kW			1	20 A	Water Coolers (GFI)	10
11	Receptacles	20 A	1					1.04 kW	0.38 kW	1	20 A	Receptacle	12
13	Receptacle	20 A	1	1.04 kW	0.92 kW					1	20 A	Receptacle - Mezzanine	14
15	Receptacle	20 A	1			0.72 kW	0.36 kW			1	20 A	Receptacle - Mezzanine	16
17								0.17 kW	2.00 kW	2	30 A	EUH-1	18
19	CU-1	20 A	3	0.17 kW	2.00 kW								20
21						0.17 kW	0.00 kW			1	0 A	Spare	22
23	Spare	0 A	1					0.00 kW	0.00 kW	1	0 A	Spare	24
25	Spare	0 A	1	0.00 kW	0.00 kW					1	0 A	Spare	26
27	Spare	0 A	1			0.00 kW	0.00 kW			1	0 A	Spare	28
29	Spare	0 A	1					0.00 kW	0.00 kW	1	0 A	Spare	30
31	Spare	0 A	1	0.00 kW	0.00 kW					1	0 A	Spare	32
33	Spare	0 A	1			0.00 kW	0.00 kW			1	0 A	Spare	34
35	Spare	0 A	1					0.00 kW	0.00 kW	1	0 A	Spare	36
37	Spare	0 A	1	0.00 kW	0.00 kW					1	0 A	Spare	38
39	Spare	0 A	1			0.00 kW	0.00 kW			1	0 A	Spare	40
41	Spare	0 A	1					0.00 kW	0.00 kW	1	0 A	Spare	42
			Total Load:	9.13 kW		6.65 kW		6.59 kW					
			Total Amps:	76 A		55 A		55 A					

Legend:

Notes:

AIC RATING NOTE:
ALL AIC RATINGS SHALL BE DETERMINED BY THE RESULTS OF THE SHORT CIRCUIT/COORDINATION/ ARCH FLASH STUDY. SEE SPECIFICATIONS FOR DETAILS.

FULLY SPRINKLERED
CONSTRUCTION DOCUMENTS

Revisions: | **Date**

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AE Works Project Number: 13025

Drawing Title
ELECTRICAL SCHEDULES

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE
MARTINSBURG, WV 25405

Date: 06/24/2015
Checked: JJD
Drawn: JMZ

Project Number
#613-116

Building Number
#519

Drawing Number
E700

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

Branch Panel: LMP1

Location: ELECTRIC ROOM 204C
Supply From: XFMR T2
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	DWH-1	15 A	2	2.25 kW	0.00 kW					1	20 A	SPARE	2
3						2.25 kW	0.60 kW			2	15 A	HP-11	4
5	SOLAR POWER WATER...	20 A	1					0.60 kW	0.60 kW				6
7	HP-3	15 A	2	0.35 kW	0.30 kW					2	15 A	HP-12	8
9						0.35 kW	0.30 kW						10
11	HP-6	15 A	2					0.40 kW	0.30 kW	2	15 A	HP-5	12
13				0.40 kW	0.30 kW								14
15	HP-7	15 A	2			0.40 kW	0.30 kW			2	15 A	HP-4	16
17								0.40 kW	0.30 kW				18
19	HP-8	15 A	2	0.40 kW	0.90 kW					3	20 A	GRINDER PUMP	20
21						0.40 kW	0.90 kW						22
23	EF-2	20 A	1					1.60 kW	0.90 kW				24
25	Spare	20 A	1	0.00 kW	0.00 kW					--	--	Space	26
27	Spare	20 A	1			0.00 kW	0.00 kW			--	--	Space	28
29	Spare	20 A	1					0.00 kW	0.00 kW	--	--	Space	30
31	Spare	20 A	1	0.00 kW	0.00 kW					--	--	Space	32
33	Spare	20 A	1			0.00 kW	0.00 kW			--	--	Space	34
35	Spare	20 A	1					0.00 kW	0.00 kW	--	--	Space	36
37	Spare	20 A	1	0.00 kW	0.00 kW					--	--	Space	38
39	Spare	20 A	1			0.00 kW	0.00 kW			--	--	Space	40
41	Spare	20 A	1					0.00 kW	0.00 kW	--	--	Space	42
			Total Load:	4.90 kW		5.50 kW		5.10 kW					
			Total Amps:	41 A		46 A		43 A					

Legend:

Notes:

Branch Panel: LSB1

Location: ELECTRIC ROOM 204C
Supply From: XFMR TSB
Mounting: Surface
Enclosure: Type 1

Volts: 120/208 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	HP-1	15 A	2	0.24 kW	0.90 kW					1	20 A	REC - TELECOM RM	2
3						0.24 kW	0.50 kW			1	20 A	Power	4
5								0.60 kW	0.50 kW	1	20 A	Power	6
7	OVERHEAD DOOR	20 A	3	0.60 kW	0.18 kW					1	20 A	REC - DATA RACK	8
9						0.60 kW	0.18 kW			1	20 A	REC - DATA RACK	10
11	DOCK LEVELER	20 A	3					0.50 kW	0.09 kW	2	20 A	REC - DATA RACK	12
13				0.50 kW	0.09 kW								14
15						0.50 kW	0.09 kW			2	20 A	REC - DATA RACK	16
17	DOCK LOCK	20 A	1					1.50 kW	0.09 kW				18
19	DDC	20 A	1	0.20 kW	0.09 kW					2	30 A	REC - DATA RACK	20
21	LTG CONTROL PANEL "LTG"	20 A	1			0.50 kW	0.09 kW						22
23	FIRE ALARM CONTROL PANEL	20 A	1					1.50 kW	0.09 kW	2	30 A	REC - DATA RACK	24
25	Spare	0 A	1	0.00 kW	0.09 kW								26
27	Spare	0 A	1			0.00 kW	0.90 kW			1	20 A	EF-1	28
29	Space	--	--					0.00 kW	0.00 kW	--	--	Space	30
31	Space	--	--	0.00 kW	0.00 kW					--	--	Space	32
33	Space	--	--			0.00 kW	0.00 kW			--	--	Space	34
35	Space	--	--					0.00 kW	0.00 kW	--	--	Space	36
37	Space	--	--	0.00 kW	0.00 kW					--	--	Space	38
39	Space	--	--			0.00 kW	0.00 kW			--	--	Space	40
41	Space	--	--					0.00 kW	0.00 kW	--	--	Space	42
			Total Load:	2.89 kW		3.60 kW		4.87 kW					
			Total Amps:	24 A		31 A		41 A					

Legend:

Notes:

PANEL NAME: XXX	RELAY PANEL SCHEDULE					
LOAD INFORMATION				CONTROL TYPE		
RELAY #	DESCRIPTION	NORMAL	EMERGENCY	PHOTOCELL	LV SWITCH	TIMECLOCK
1	CONDITIONED LIGHTING		X		X	X
2	CONDITIONED LIGHTING	X			X	X
3	EXTERIOR LIGHTS		X	X	X	X
4	CORRIDOR LIGHTING	X			X	X
5	DELIVERY LIGHTING		X		X	X
6	DELIVERY LIGHTING	X			X	X
7	DOCK FLOOD LIGHTS	X		X		X
8	WAREHOUSE LIGHTS	X			X	X
9	WAREHOUSE LIGHTS		X		X	X
10	WAREHOUSE LIGHTS		X		X	X
11	WAREHOUSE LIGHTS	X			X	X
12	WAREHOUSE LIGHTS		X		X	X
13	WAREHOUSE LIGHTS	X			X	X

NOTES:
1. PANEL SHALL BE UL924 LISTED.
2. PROVIDE A DIVIDER BETWEEN THE NORMAL AND EMERGENCY SECTIONS.

* ALL EMERGENCY CIRCUITS SHALL FAIL ON WHEN POWER IS LOST.

Branch Panel: HMP1

Location: ELECTRIC ROOM 204C
Supply From: MDP
Mounting: Surface
Enclosure: Type 1

Volts: 480/277 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MLO
Mains Rating: 225 A
MCB Rating:

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				0.00 kW	6.37 kW								2
3	HVU-1	20 A	3			0.00 kW	6.37 kW			3	25 A	ERU-1	4
5								0.00 kW	6.37 kW				6
7				1.50 kW	3.10 kW								8
9	HP-2	15 A	3			1.50 kW	3.10 kW			3	15 A	HP-9	10
11								1.50 kW	3.10 kW				12
13				0.80 kW	3.10 kW								14
15	AC-1	15 A	3			0.80 kW	3.10 kW			3	15 A	HP-10	16
17								0.80 kW	3.10 kW				18
19				0.80 kW	0.17 kW								20
21	AC-2	15 A	3			0.80 kW	0.17 kW			3	20 A	Power	22
23								0.80 kW	0.17 kW				24
25				0.80 kW	1.27 kW								26
27	AC-3	15 A	3			0.80 kW	1.27 kW			3	20 A	RF-1	28
29								0.80 kW	1.27 kW				30
31				0.80 kW	3.00 kW								32
33	AC-4	15 A	3			0.80 kW	3.00 kW			3	20 A	DWP-1	34
35								0.80 kW	3.00 kW				36
37				1.80 kW	29.90 kW								38
39	AC-5	15 A	3			1.80 kW	30.50 kW			3	150 A	75 kVA	40
41								1.80 kW	30.10 kW				42
			Total Load:	53.40 kW		54.00 kW		53.60 kW					
			Total Amps:	193 A		195 A		194 A					

Legend:

Notes:

Branch Panel: HSB1

Location: ELECTRIC ROOM 204C
Supply From:
Mounting: Surface
Enclosure: Type 1

Volts: 480/277 Wye
Phases: 3
Wires: 4

A.I.C. Rating:
Mains Type: MCB
Mains Rating: 100 A
MCB Rating: 100 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1				2.11 kW	2.11 kW								2
3	CWP-1	20 A	3			2.11 kW	2.11 kW			3	20 A	CWP-2	4
5								2.11 kW	2.11 kW				6
7	Spare	20 A	1	0.00 kW	0.00 kW					1	20 A	Spare	8
9	Spare	20 A	1			0.00 kW	0.00 kW			1	20 A	Spare	10
11	Spare	20 A	1					0.00 kW	0.00 kW	1	20 A	Spare	12
13	Spare	20 A	1	0.00 kW	0.00 kW					1	20 A	Spare	14
15	Spare	20 A	1			0.00 kW	0.00 kW			1	20 A	Spare	16
17	Spare	20 A	1					0.00 kW	0.00 kW	1	20 A	Spare	18
19	Spare	20 A	1	0.00 kW	0.00 kW					1	20 A	Spare	20
21	Space	--	--			0.00 kW	0.00 kW			--	--	Space	22
23	Space	--	--					0.00 kW	0.00 kW	--	--	Space	24
25	Space	--	--	0.00 kW	0.00 kW					--	--	Space	26
27	Space	--	--			0.00 kW	0.00 kW			--	--	Space	28
29	Space	--	--					0.00 kW	0.00 kW	--	--	Space	30
31	Space	--	--	0.00 kW	0.00 kW					--	--	Space	32
33	Space	--	--			0.00 kW	0.00 kW			--	--	Space	34
35	Space	--	--					0.00 kW	0.00 kW	--	--	Space	36
37	Space	--	--	0.00 kW	0.00 kW								38
39	Space	--	--			0.00 kW	0.00 kW			3	60 A	30 Kva Transformer	40
41	Space	--	--					0.00 kW	0.00 kW				42
			Total Load:	4.21 kW		4.21 kW		4.21 kW					
			Total Amps:	15 A		15 A		15 A					

Legend:

Notes:

Branch Panel: LP2

Location: ELECTRIC ROOM 204C
Supply From: MDP
Mounting: Surface
Enclosure: Type 1

Volts: 480/277 Wye
Phases: 3
Wires: 4

A.I.C. Rating: See AIC note on this drawing
Mains Type: MCB
Mains Rating: 150 A
MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A		B		C		Poles	Trip	Circuit Description	CKT
1	LTG - STORAGE 110	20 A	1	1.67 kW	3.06 kW					1	20 A	LTG - DELIVERY 100	2
3	LTG - CORRIDOR C-1	20 A	1			0.22 kW	1.66 kW			1	20 A	LTG - OFFICES	4
5	LTG - EXT LOADING DOCK	20 A	1					0.34 kW	1.48 kW	1	20 A	LTG - PROCESS 104	6
7	LTG - WAREHOUSE	20 A	1	4.41 kW	4.41 kW					1	20 A	LTG - WAREHOUSE	8
9	LTG - MEZZANNINE	20 A	1			0.31 kW	2.60 kW			1	20 A	LTG - WAREHOUSE	10
11	LTG - DELIVERY 100	20 A	1					1.27 kW	0.83 kW	1	20 A	LTG - CORR C1,C2	12
13	EXIT SIGNS - LOWER LEVEL	20 A	1	0.10 kW	1.27 kW					1	20 A	LTG - STORAGE 110	14
15	LTG - EXTERIOR EGRESS	20 A	1			0.13 kW	2.34 kW			1	20 A	LTG - WAREHOUSE	16
17	LTG - WAREHOUSE	20 A	1					1.57 kW	2.34 kW	1	20 A	LTG - WAREHOUSE	18
19	EM LTG - TELECOM/ELEC RM	20 A	1	0.01 kW									20
21													22
23													24
25													26
27	Spare	20 A	1			0.00 kW	0.00 kW			1	20 A	Spare	28
29	Spare	20 A	1					0.00 kW	0.00 kW	1	20 A	Spare	30
31	Spare	20 A	1	0.00 kW	0.00 kW					1	20 A	Spare	32
33	Spare	20 A	1			0.00 kW	0.00 kW			1	20 A	Spare	34
35	Spare	20 A	1					0.00 kW	0.00 kW	1	20 A	Spare	36
37	Space	--	--	0.00 kW	0.00 kW					--	--	Space	38
39	Space	--	--			0.00 kW	0.00 kW			--	--	Space	40
41	Space	--	--					0.00 kW	0.00 kW	--	--	Space	42
			Total Load:	14.92 kW		7.27 kW		7.82 kW					
			Total Amps:	54 A		26 A		29 A					

Legend:

Notes:

AIC RATING NOTE:

ALL AIC RATINGS SHALL BE DETERMINED BY THE RESULTS OF THE SHORT CIRCUIT/COORDINATION/ ARCH FLASH STUDY. SEE SPECIFICATIONS FOR DETAILS.

FULLY SPRINKLERED
CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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AE Works Project Number: 13025

Drawing Title
ELECTRICAL SCHEDULES

Approved: Project Director

Project Title:
NEW WAREHOUSE

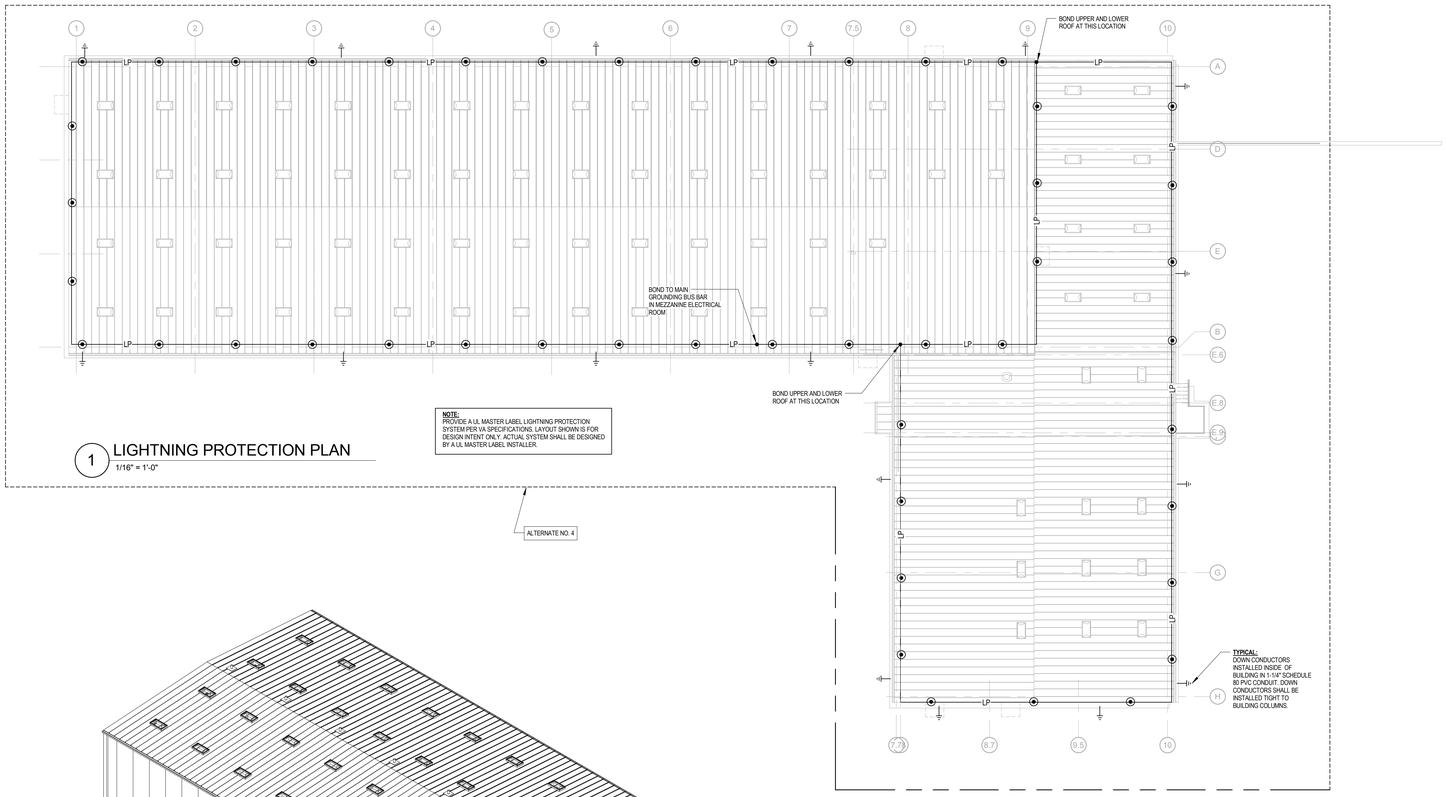
Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015
Checked: JJD
Drawn: JMZ

Project Number # 613-116
Building Number #519
Drawing Number E701

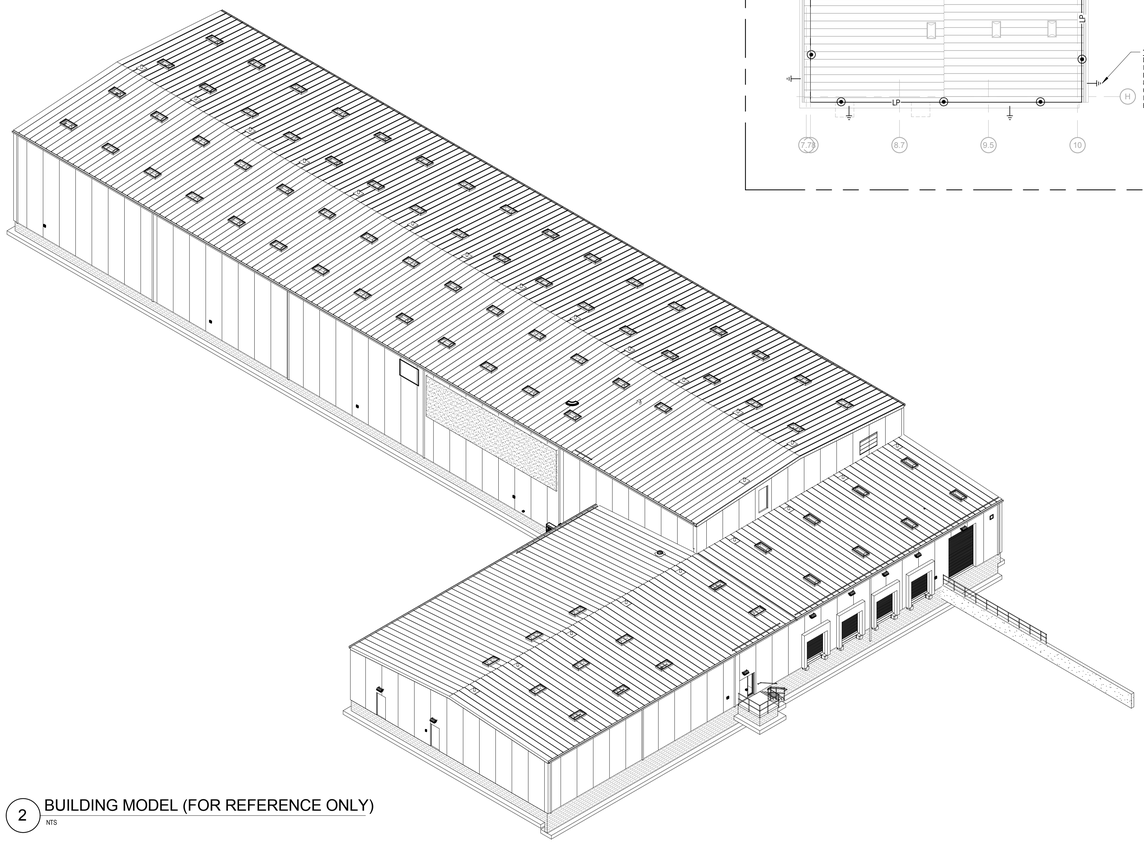
Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

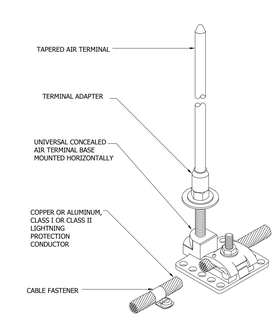


NOTE: PROVIDE A UL MASTER LABEL LIGHTNING PROTECTION SYSTEM PER VA SPECIFICATIONS. LAYOUT SHOWN IS FOR DESIGN INTENT ONLY. ACTUAL SYSTEM SHALL BE DESIGNED BY A UL MASTER LABEL INSTALLER.

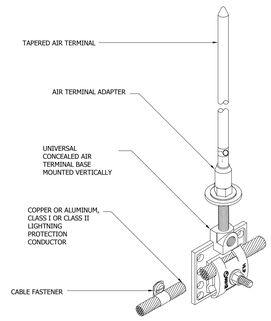
1 LIGHTNING PROTECTION PLAN
1/16" = 1'-0"



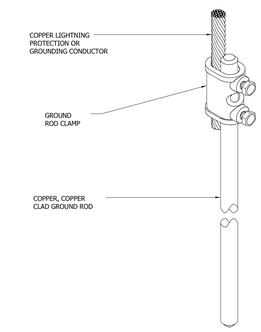
2 BUILDING MODEL (FOR REFERENCE ONLY)
NTS



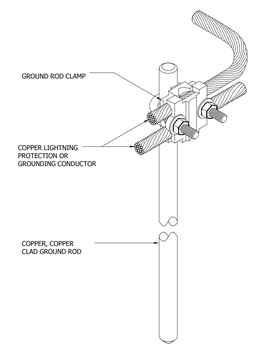
STYLE HORIZONTAL AIR TERMINAL BASE



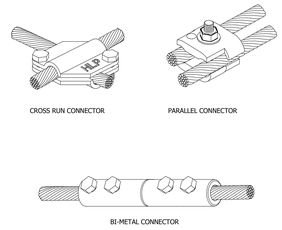
STYLE VERTICAL AIR TERMINAL BASE



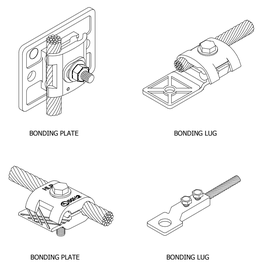
STYLE GROUND ROD DETAIL



STYLE GROUND ROD DETAIL



TYPICAL CABLE CONNECTORS



TYPICAL BONDING LUGS & PLATES

3 LIGHTNING PROTECTION DETAILS
NTS

PROJECT NORTH
TRUE NORTH

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions: | Date

CONSULTANTS:

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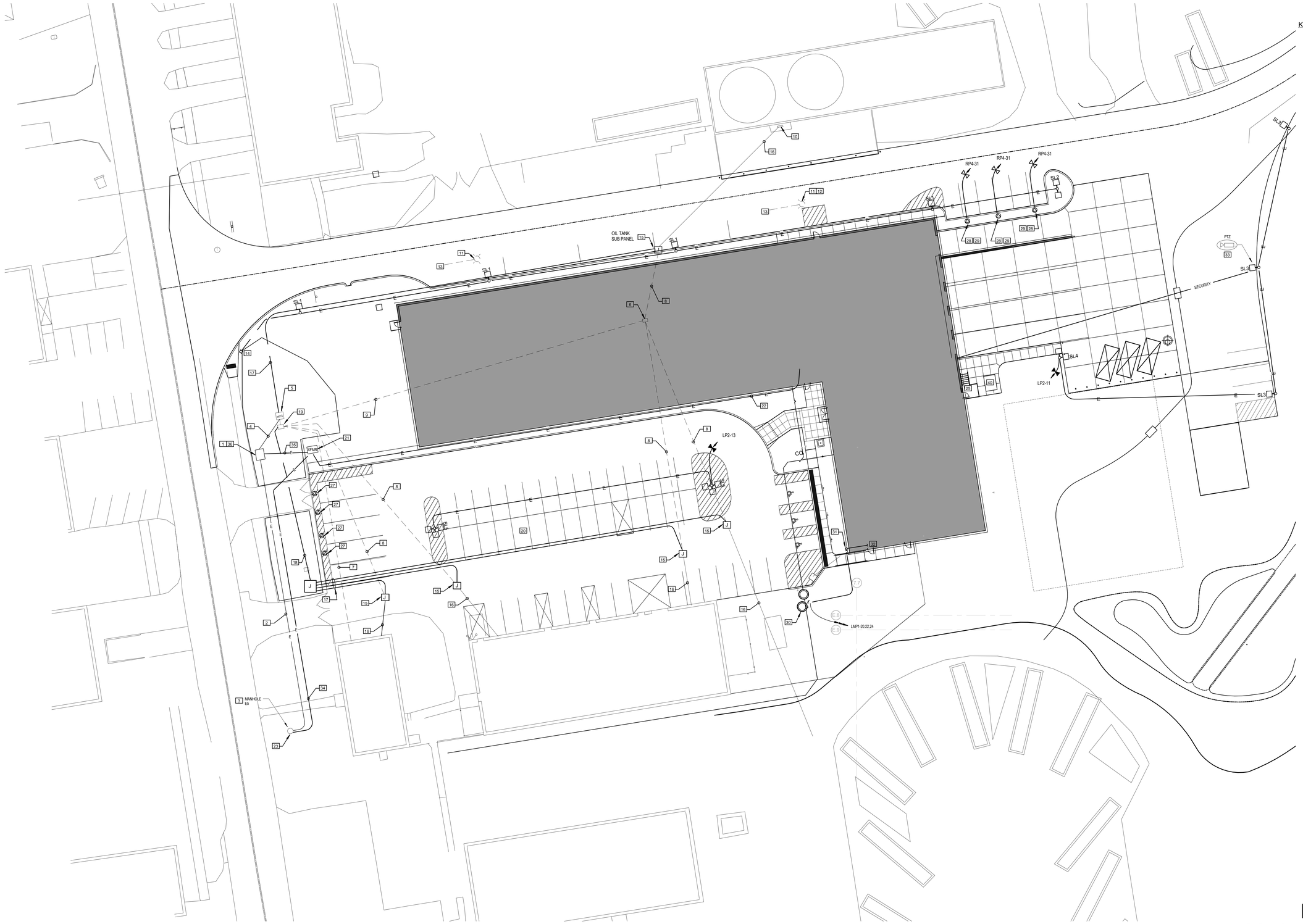
AE Works Project Number: 13025

Drawing Title	LIGHTNING PROTECTION PLAN
Approved: Project Director	
Project Title:	NEW WAREHOUSE
Location:	510 BUTLER AVENUE MARTINSBURG, WV 25405
Date:	06/24/2015
Checked:	JJD
Drawn:	JMZ
Project Number	#613-116
Building Number	#519
Drawing Number	E800

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



KEYNOTES (THIS DRAWING)

1. EXISTING DISTRIBUTION TRANSFORMER SHALL REMAIN.
2. EXISTING PRIMARY CONDUIT AND CABLE SHALL REMAIN.
3. EXISTING MANHOLE E-5 SHALL BE USED FOR NEW PRIMARY FEEDER SPLICE.
4. SECONDARY FEEDER TO POWER ENTER SHALL REMAIN.
5. EXISTING POWER CENTER SHALL REMAIN TO FEED EXISTING STRUCTURE.
6. EXISTING JUNCTION BOX SHALL BE REMOVED.
7. REMOVE EXISTING FEEDERS, INCLUDING CONDUIT AND CONDUCTORS TO THE EXTERIOR WALL OF BUILDINGS SERVED.
8. REMOVE THE EXISTING CONDUIT AND CONDUCTORS TO THE LOCATION OF NEW SPLICE BOX.
9. REMOVE EXISTING CONDUIT AND CONDUCTORS.
10. EXISTING PANELBOARD SHALL REMAIN.
11. REMOVE THE EXISTING ROADWAY LIGHTING INCLUDING POLES AND FOUNDATIONS.
12. REMOVE THE EXISTING CAMERA INCLUDING ALL POWER AND COMMUNICATIONS CONDUIT AND CONDUCTORS. RETURN CAMERAS TO THE OWNER.
13. REMOVE ALL BRANCH WIRING INCLUDING CONDUIT AND CONDUCTORS BACK TO THE CORNER OF NORTH SIXTH STREET. BRANCH FEEDER SHALL BE INTERCEPTED AT THIS POINT FOR NEW STREET LIGHTING.
14. INTERCEPT THE EXISTING SITE LIGHTING BRANCH CIRCUIT. PROVIDE A NEW JUNCTION BOX LABELED "LIGHTING". EXTEND NEW BRANCH CONDUIT TO THE NEW SITE LIGHTING LOCATIONS.
15. PROVIDE A NEW JUNCTION BOX AT THE POINT OF INTERCEPTING THE EXISTING CONDUITS AND FEEDERS. PROVIDE WATERPROOF SPLICES AND SPLICE BLOCKS IN THE JUNCTION BOX. LABEL FEEDERS AS TO WHAT THE STARTING AND ENDING POINT ARE IN EACH JUNCTION BOX. SEE UNDERGROUND ENCLOSURE SCHEDULE FOR BOX REQUIREMENTS.
16. EXISTING FEEDER TO REMAIN.
17. NEW FEEDERS TO JUNCTION BOXES. REFER TO RISER DIAGRAM FOR ADDITIONAL INFORMATION.
18. PROVIDE (5) NEW FEEDER CONDUITS AND CONDUCTORS FROM THE JUNCTION BOX TO THE EXISTING JUNCTION BOX AHEAD OF THE POWER CENTER.
19. EXISTING JUNCTION BOX SHALL BE REPLACED WITH NEW JUNCTION BOX SIZED TO ACCOMMODATE THE NEW FEEDERS.
20. SAWCUT THE EXISTING PAVEMENT FOR INSTALLATION OF THE NEW CONDUITS, BACKFILL, COMPACT, AND PATCH PAVEMENT TO MATCH ONCE COMPLETE. REFER TO PAVEMENT SPECIFICATIONS FOR MORE INFORMATION.
21. LOCATION OF NEW TRANSFORMER. PROVIDE PRECAST PAD.
22. NEW PRIMARY FEEDER CONDUITS. INSTALL IN LANDSCAPED ARE ALONG BUILDING.
23. INTERCEPT EXISTING MANHOLE AT THIS LOCATION.
24. NOT USED.
25. PROVIDE A 4" CONDUIT SLEEVE THRU EXTERIOR WALL AT THE LOADING DOCK. CAP SLEEVE 12" AFF AND 12" PAST EXTERIOR FOUNDATION WALL.
26. NOT USED.
27. REMOVE AND RE-INSTALL CONDUIT, CONDUCTORS, AND DEVICES ON EXISTING FENCE TO FACILITATE FENCE REMOVAL AND RE-INSTALLATION DURING CONSTRUCTION.
28. 30A RECEPTACLES WITH WEATHERPROOF COVERS ON STANCHIONS FOR ELECTRIC VEHICLE CHARGING. 3 #10 - VERIFY PLUG CONFIGURATION WITH OWNER
29. RECEPTACLE SHALL BE INSTALLED IN PEDOC MANUFACTURING OUTLET BOX MOUNT #254-C-B OR APPROVED EQUAL. DIRECT BURY MOUNT PER MANUFACTURERS INSTALLATION REQUIREMENTS. INSTALL IN GRASS AREA IN FRONT OF PARKING SPACES.
30. 2 HP, 480V, 3 PHASE, GRINDER PUMP. PROVIDE 2" PVC CONDUIT FROM MANHOLE TO DISCONNECT SWITCH. PROVIDE ALL POWER WIRING AND CONTROL WIRING FOR A COMPLETE SYSTEM. REFER TO DETAIL 10 ON SHEET C542 FOR ADDITIONAL INFORMATION.
31. PROVIDE A 30A/3P/NFSS IN A STAINLESS STEEL ENCLOSURE ON WALL. PROVIDE PADLOCK AND LOCK DISCONNECT IN THE OPEN POSITION. PROVIDE A NAMEPLATE INDICATING "GRINDER PUMP DISCONNECTING MEANS".
32. PROVIDE A 1" CONDUIT TO BUILDING FOR DDC CONNECTION TO PUMP.
33. INSTALL A PAN, TILT, ZOOM (PTZ) CAMERA ON TOP OF POLE. PROVIDE 2" EMT WITH CAT 6 CABLE TO TELECOM ROOM ON MEZZANINE.
34. PROVIDE (2) 4" CONDUITS, CONCRETE ENCASED FROM NEW TRANSFORMER TO MANHOLE.
35. PROVIDE (2) 4" CONDUITS, CONCRETE ENCASED FROM NEW TRANSFORMER TO EXISTING TRANSFORMER.
36. REMOVE TRANSFORMER FROM PAD TO COMPLETE WORK ON LOOP FEED. RE-INSTALL TRANSFORMER ONCE COMPLETE.
37. NOT USED.
38. NOT USED.
39. NOT USED.
40. LOCATION OF FUTURE / TEMPORARY EMERGENCY GENERATOR.

PROJECT NORTH
TRUE NORTH

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

1 ELECTRICAL SITE PLAN
1" = 20'-0"

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

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AE Works Project Number: 13025

Drawing Title	ELECTRICAL SITE PLAN
Approved: Project Director	
Project Title:	NEW WAREHOUSE
Location:	510 BUTLER AVENUE MARTINSBURG, WV 25405
Date:	06/24/2015
Checked:	JJD
Drawn:	JMZ
Project Number	#613-116
Building Number	#519
Drawing Number	E900

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

FIRE ALARM SYMBOLS LEGEND

THIS IS A STANDARD SYMBOL LIST. ALL SYMBOLS MAY NOT APPEAR ON THIS PROJECT.

NOTIFICATION SYMBOLS

XX-CD	STROBE UNIT SYNCHRONIZED - CEILING MOUNT (XX-CD = CANDELA RATING); WP = WEATHERPROOF, WG = WIREGUARD
XX-CD	STROBE UNIT SYNCHRONIZED - WALL MOUNT (XX-CD = CANDELA RATING); WP = WEATHERPROOF, WG = WIREGUARD
H XX-CD	COMBO SYNCHRONIZED HORN/STROBE UNIT - WALL MOUNTED (XX-CD = CANDELA RATING); WP = WEATHERPROOF, WG = WIREGUARD
H XX-CD	COMBO SYNCHRONIZED HORN/STROBE UNIT - CEILING MOUNTED (XX-CD = CANDELA RATING); WP = WEATHERPROOF, WG = WIREGUARD
FS	FIRE SPEAKER UNIT - CEILING MOUNTED
FS	FIRE SPEAKER UNIT - WALL MOUNTED
FS XX-CD	FIRE SPEAKER/STROBE UNIT - CEILING MOUNTED (XX-CD = CANDELA RATING); WP = WEATHERPROOF, WG = WIREGUARD
FS XX-CD	FIRE SPEAKER/STROBE UNIT - WALL MOUNTED (XX-CD = CANDELA RATING); WP = WEATHERPROOF, WG = WIREGUARD

INITIATING SYMBOLS

HD	HEAT DETECTOR
PD	SMOKE DETECTOR
DD	DUCT DETECTOR
P	MANUAL PULL STATION
TS	CONNECTION TO SPRINKLER TAMPER AND/OR LOW AIR SWITCH
FS	CONNECTION TO SPRINKLER WATER, FLOW SWITCH
M	ADDRESSABLE MONITOR MODULE
C	ADDRESSABLE CONTROL MODULE
R	RELAY
DH	MAGNETIC DOOR HOLD OPEN DEVICE - FLOOR MOUNTED
DH	MAGNETIC DOOR HOLD OPEN DEVICE - WALL MOUNTED

FIRE ALARM HEAD END SYMBOLS

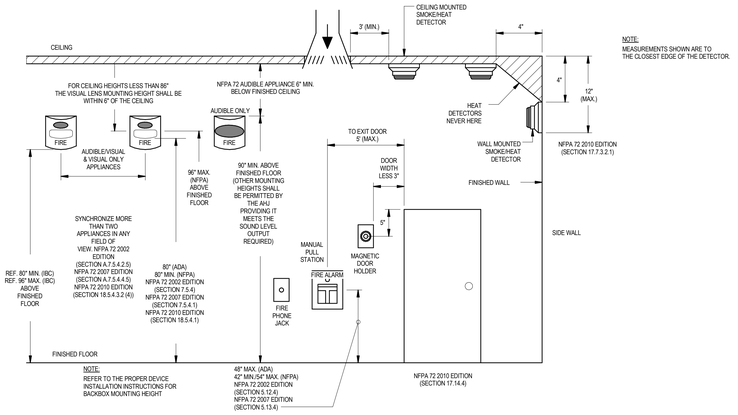
FACP	ADDRESSABLE FIRE ALARM CONTROL PANEL
FAAP	REMOTE LCD ANNUNCIATOR PANEL
FAC	FIRE ALARM COMMUNICATOR (DACT)
MFACP	MASTER FIRE ALARM CONTROL PANEL
FFCS	FIRE FIGHTERS COMMAND STATION
FATC	FIRE ALARM TERMINAL CABINET
FCPS	FIELD CHARGING POWER SUPPLY
EOL	END OF LINE SUPERVISORY DEVICE

ABBREVIATIONS

ABOVE FINISHED FLOOR	AFF
ABOVE FINISHED GRADE	AFG
AMPERE	A / AMP
APPROXIMATE (LY)	APPROX
ASYMMETRIC	ASY
AUTOMATIC TRANSFER SWITCH	ATS
BATTERY	BATT
BELOW FINISHED CEILING	BFC
BREAKER	BKR
CABLE TELEVISION	CATV
CEILING	CLG
CIRCUIT	CIR / CKT
CIRCUIT BREAKER	CB
CLOSED CIRCUIT TELEVISION	CCTV
COMMUNICATION	COMM
CONDUIT	C
COPPER	CU
DECIBEL	DB
DIAMETER	DIA
DISCONNECT	DISC
DISTRIBUTION PANEL	DP
DOWNLIGHT	DNLT
DRAWING	DWG
EACH	EA
ELECTRIC WATER COOLER	EWC
ELECTRICAL	ELEC
ELEVATOR	ELEV
EMERGENCY	E/EMER
EQUIPMENT	EQUIP
EXHAUST FAN	EF
EXPLOSION PROOF	XP
FIRE ALARM	FA
FIRE ALARM ANNUNCIATOR PANEL	FAAP
FIRE ALARM CONTROL PANEL	FACP
FIXTURE	F/XT
FLOOR	FL
FLUORESCENT	FLUOR
FOOTCANDLES	FT
FULL LOAD AMPERES	FLA
GENERAL CONTRACTOR	GC
GENERATOR	GEN
GROUND	GND / G
GROUND FAULT INTERRUPTER	GFI
HEATING VENTILATING AIR CONDITIONING	HVAC
HERTZ	HZ
HIGH INTENSITY DISCHARGE	HID
HIGH POWER FACTOR	HPF
HORSEPOWER	HP
INCANDESCENT	INCAN
ISOLATED GROUND	IG
JUNCTION BOX	JB
KILOVAR (REACTANCE)	KVAR
KILOVOLT AMPERE	KVA
KILOWATT	KW
KILOWATT HOUR METER	KWH
LIGHT	LT
LIGHTING	LTG
LOW VOLTAGE	LV
LIGHT EMITTING DIODE	LED
MAIN CIRCUIT BREAKER	MCB
MAIN DISTRIBUTION PANEL	MDP
MAIN LUGS ONLY	MLO
MANHOLE	MH
MANUAL TRANSFER SWITCH	MTS
MANUFACTURER	MFR
MEDIUM VOLTAGE	MV
METAL HALIDE	MH
METAL-CLAD CABLE	MC
MISCELLANEOUS	MISC
MOTOR CONTROL CENTER	MCC
MOUNTED	MTD
MOUNTING HEIGHT	MTG HT
NATIONAL ELECTRIC	NEMA
MANUFACTURER ASSOCIATION	
NATIONAL ELECTRIC CODE	NEC
NIGHT LIGHT	NL
NORMALLY OPENED	NO
NOT AVAILABLE/NOT APPLICABLE	N/A
NOT IN CONTRACT	NIC
NOT TO SCALE	NTS
ON CENTER	OC
PANEL	PNL
PULL BOX	PB
RAPID START	RS
RECEPTACLE	REC / RECPT
REFLECTOR	REFL
REQUIRED	REQ'D
RIGID GALVANIZED STEEL CONDUIT	RGS
ROOM	RM
SCHEDULE	SCHED / SCH
SWITCH	SW
SWITCHBOARD	SWBD
SWITCHGEAR	SWGR
TELEPHONE	TELE
TRANSFORMER	XFMR
TYPICAL	TYP
UNDERWRITER'S LABORATORIES	UL
UNINTERRUPTIBLE POWER SUPPLY	UPS
UNLESS OTHERWISE NOTED	UON
VOLT	V
WATT	W
WEATHERPROOF	WP

FIRE ALARM DEMOLITION ABBREVIATIONS

ETR	EXISTING TO REMAIN - DEVICE SHALL REMAIN IN WORKING ORDER.
RN	REMOVE AND REPLACE WITH NEW - EXISTING BACKBOX AND WIRING SHALL REMAIN, RECONNECT NEW DEVICE TO EXISTING CIRCUIT.
RR	REMOVE AND RELOCATE - DISCONNECT DEVICE, MODIFY AND EXTEND FEED TO NEW LOCATION.
RC	REMOVE COMPLETELY - REMOVE DEVICE, CONDUIT, AND WIRING BACK TO SOURCE.



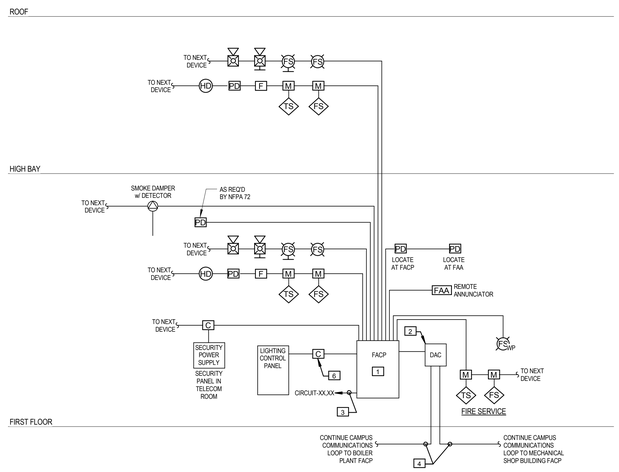
FIRE ALARM DEVICE MOUNTING DETAIL

GENERAL FIRE ALARM SYSTEM NOTES:

1. THE FOLLOWING GENERAL NOTES AS LISTED BELOW SHALL APPLY TO ALL FIRE ALARM SYSTEM SCOPES OF WORK AS INDICATED ON THE EF SERIES DRAWINGS.
2. ALL EQUIPMENT SYMBOLS ARE SHOWN ON DRAWINGS AS CLOSE AS POSSIBLE TO THEIR INTENDED LOCATION. CONTRACTOR SHALL COORDINATE IN THE FIELD THE PROPER INSTALLATION OF ALL EQUIPMENT, DEVICES, CONTROLS AND CABLING. REFER TO RELATED SPECIFICATION SECTIONS FOR ADDITIONAL REQUIREMENTS.
3. DRAWINGS FOR THIS WORK ARE DIAGRAMMATIC AND INTENDED TO CONVEY THE EXTENT, GENERAL ARRANGEMENT AND LOCATIONS OF THE WORK, BECAUSE OF THE SCALE OF THE DRAWINGS, CERTAIN BASIC ITEMS SUCH AS ACCESS PANELS, CONDUITS, CABINET SIZES, PENETRATION SLEEVES, PULL BOXES, BACKBOXES AND JUNCTION BOXES MAY NOT BE SHOWN. INCLUDE ALL ITEMS WHERE REQUIRED BY CODE, MANUFACTURER AND RELATED SPECIFICATION SECTIONS FOR THE PROPER INSTALLATION OF ALL WORK.
4. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH ARTICLE 760 OF THE 2008 NATIONAL ELECTRIC CODE. ALL FIRE ALARM CABLE MUST BE MARKED TYPE FPL (NON PLENUM) OR FPLP (PLENUM) AND PROVIDED IN ACCORDANCE WITH THE CABLING REQUIREMENTS SPECIFIED BY THE CONTRACT DOCUMENTS.
5. COORDINATE WITH ALL TRADES ALL CONDITIONS RELATED TO THE INSTALLATION OF ALL DEVICES. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE TRADE ALL INSTALLATION REQUIREMENTS IMPACTING THE PLACEMENT OF ALL SYSTEM COMPONENTS TO THE SATISFACTION OF ALL CONCERNED TRADES.
6. PROVIDE ALL EQUIPMENT CLEARANCES IN ACCORDANCE WITH NFPA 70 REQUIREMENTS. ARRANGE EQUIPMENT TO FACILITATE UNRESTRICTED ACCESS FOR MAINTENANCE AND SERVICE AROUND ALL EQUIPMENT, COMPONENTS AND/OR CABLE TERMINATIONS.
7. COORDINATE EXACT LOCATION(S) OF ALL CEILING MOUNTED CABLE, CONDUITS, EQUIPMENT AND/OR DEVICES WITH ALL ARCHITECTURAL PLANS, REFLECTED CEILING PLANS AND AFFECTED TRADES PRIOR TO INSTALLATION.
8. ALL SMOKE AND HEAT DETECTORS SHALL BE MOUNTED TO FINISHED CEILING AND/OR DECKING, UNLESS NOTED OTHERWISE. DETECTORS SHALL NOT BE INSTALLED ON BOTTOM OF OPEN WEB JOISTS OR ON BEAMS EXCEEDING 12 INCHES DEPTH FROM FINISHED CEILING OR DECK. REFER TO NFPA 72 FOR ALL INITIATING DEVICE INSTALLATION REQUIREMENTS. PROVIDE DETECTORS IN SUFFICIENT QUANTITY TO COMPLY WITH ALL NFPA 72 REQUIREMENTS BASED ON CEILING CONDITIONS AND PROTECTED SPACE REQUIREMENTS
9. PROTECTIVE ANTI-DUST COVERS SHALL BE INSTALLED AND MAINTAINED ON ALL SYSTEM SMOKE DETECTORS UNTIL FINAL ACCEPTANCE BY THE AUTHORITIES HAVING JURISDICTION.
10. SMOKE DETECTORS SHALL NOT BE INSTALLED LESS THAN 3 FEET FROM ANY HVAC SUPPLY OR RETURN AIR REGISTER AND A MINIMUM OF 1 FOOT AWAY FROM ALL LIGHTING FIXTURES.
11. WHERE EQUIPMENT AND/OR JUNCTION BOXES ARE INSTALLED ABOVE FINISHED CEILINGS, THE CONTRACTOR SHALL PROVIDE ACCESS HATCHES LISTED FOR THE INTENDED APPLICATION. ACCESS HATCHES SHALL BE LOCATED SO THAT SERVICE ACCESS TO THE EQUIPMENT AND/OR JUNCTION BOXES IS UNIMPEDED.
12. THE FIRE ALARM SYSTEM CABLING SHALL BE INSTALLED IN DEDICATED CONDUITS. ALL CONDUITS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 70 AND THE CONTRACT DOCUMENTS. ALL CONDUITS SHALL BE SIZED IN ACCORDANCE WITH NFPA 70 AND SHALL BE A MINIMUM OF 3/4" UNLESS OTHERWISE NOTED. REFER TO RELATED SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION.
13. ALL CONDUITS/RACEWAYS SHALL BE INSTALLED IN A MANNER THAT PREVENTS TAMPERING OR REMOVAL WHEN INSTALLED IN AREAS EXPOSED TO THE GENERAL POPULATION. PROVIDE TAMPER-RESISTANT INSTALLATION UTILIZING "TORX WITH PROS" SECURITY-FASTENING DEVICES FOR ALL CONDUITS/RACEWAYS, EQUIPMENT, DEVICES AND APPURTENANCES IN ALL AREAS ACCESSIBLE TO THE GENERAL POPULATION AND/OR AREAS SUBJECTED TO TAMPERING OR VANDALISM. REFER TO RELATED SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION.
14. PROVIDE APPROVED EARTH GROUND AT FIRE ALARM CONTROL PANEL, CHASSIS, A CONDUIT GROUNDING TO BUILDING STEEL SHALL NOT BE CONSIDERED A ACCEPTABLE METHODOLOGY FOR GROUNDING OF FIRE ALARM CONTROL PANEL.
15. ALL SYSTEM WIRING AND EQUIPMENT INSTALLATIONS SHALL BE IN ACCORDANCE WITH GOOD ENGINEERING PRACTICES AND BY ALL IEEE, EIA, NEC AND MANUFACTURER'S REQUIREMENTS. WIRING SHALL COMPLY WITH ALL STATE AND LOCAL ELECTRICAL CODES. ALL WIRING SHALL TEST FREE FROM ALL GROUNDS, SHORTS AND EMI.
16. NO A.C. CARRYING CONDUCTORS ARE PERMITTED TO SHARE RACEWAYS WITH ANY FIRE ALARM INITIATING AND/OR NOTIFICATION CIRCUITS
17. ALL AC ELECTRICAL CIRCUITS FEEDING THE FIRE ALARM CONTROL EQUIPMENT SHALL BE EQUIPPED WITH DEDICATED CIRCUIT BREAKER LOCKOUT DEVICE IN ACCORDANCE WITH NFPA 72.
18. THE CONTRACTOR SHALL METER ALL WIRES AND CIRCUITS TO ENSURE THEY ARE FREE OF ANY GROUNDS AND SHORTS PRIOR TO COMMISSIONING OF THE SYSTEM.
19. ALL AUXILIARY ALARM RELAYS MUST BE INSTALLED WITHIN 3 FEET OF THE EQUIPMENT TO BE CONTROLLED IN ACCORDANCE WITH ALL NFPA 72 REQUIREMENTS.
20. ALL FIRE ALARM DEVICES AND EQUIPMENT SHALL BE LABELED UNIQUE IDENTIFICATION NUMBER. ALL NUMBERS SHALL CORRESPOND WITH NUMBERING SEQUENCE AS SUBMITTED ON THE PROJECT SHOP DRAWINGS. LABELS TO BE SIMILAR TO "BROTHER P-TOUCH" BLACK LETTERING ON WHITE BACKGROUND, SELF-ADHESIVE TAPE. ALL DEVICE LABELS SHALL BE INSTALLED PRIOR TO SYSTEM CHECKOUT.
21. ALL PENETRATIONS OF WALLS AND FLOORS SHALL BE FIRE STOPPED IN ACCORDANCE WITH THE ASTM AND NFPA. REFER TO RELATED SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION. INSTALLATION OF FIRE-STOPS SHALL BE PERFORMED BY AN APPLICATOR/INSTALLER QUALIFIED AND TRAINED BY THE MANUFACTURER. INSTALLATION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH MANUFACTURER'S DETAILED INSTALLATION PROCEDURES.
22. REFER TO ALL RELATED SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION.
23. ALL EQUIPMENT ENCLOSURES LOCATED OUTSIDE OR IN ALL AREAS WITH HIGH MOISTURE OR A RELATIVE HUMIDITY OF 75% OR GREATER SHALL BE NEMA 4X ENCLOSURES AND RATED FOR THAT APPLICATION.
24. ALL EQUIPMENT EXPOSED TO THE ENVIRONMENT OR INSTALLED IN PROXIMITY TO AREAS WITH HIGH MOISTURE, OR A RELATIVE HUMIDITY OF 75% OR GREATER SHALL PROVIDED WITH ENCLOSURES AND OR BACKBOXES RATED FOR THE ENVIRONMENTAL CONDITIONS.
25. THE STROBE INTENSITY OF ALL VISUAL NOTIFICATION APPLIANCES SHALL BE IN ACCORDANCE WITH NFPA 72 AND UL 1971. STROBE CANDELA RATINGS SHALL BE PROVIDED IN ACCORDANCE WITH DEVICE LOCATIONS AND SHALL CONFORM TO ALL ICC/ANSI 117 AND NFPA 72 INSTALLATION REQUIREMENTS. CONTRACTOR SHALL PROVIDE THE REQUIRED CANDELA POWER AND LOCATE ALL VISUAL NOTIFICATION APPLIANCES AS REQUIRED TO MEET THE REQUIREMENTS OF ALL REFERENCED CODES AND STANDARDS.

FIRE ALARM SYSTEM INPUT/OUTPUT MATRIX

SYSTEM INPUTS	SYSTEM OUTPUTS: ACTUATE COMMON ALARM SIGNAL INDICATOR	ACTUATE AUDIBLE ALARM SIGNAL	ACTUATE COMMON SUPERVISORY SIGNAL INDICATOR	ACTUATE AUDIBLE SUPERVISORY SIGNAL INDICATOR	ACTUATE COMMON TROUBLE SIGNAL INDICATOR	ACTUATE AUDIBLE TROUBLE SIGNAL	ACTUATE ZONE OR DEVICE ADDRESS ALARM INDICATOR	ACTUATE GENERAL EVACUATION SIGNAL	DISPLAY CHANGE OF STATUS	TRANSMIT FIRE ALARM SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	TRANSMIT SUPERVISORY SIGNAL TO CENTRAL STATION	TRANSMIT TROUBLE SIGNAL TO CENTRAL STATION	CLOSE ALL SMOKE DAMPERS	UNLOCK EXITS AND CONTROL DOORS	SHUT DOWN RESPECTIVE AIR HANDLING UNIT
FIRE ALARM SYSTEM AC POWER FAILURE			X	X							X					
FIRE ALARM SYSTEM LOW BATTERY					X	X						X				
OPEN CIRCUIT					X	X						X				
GROUND FAULT					X	X						X				
NOTIFICATION APPLIANCE CIRCUIT SHORT					X	X						X				
BUILDING MANUAL PULL STATIONS	X	X					X	X	X	X			X		X	
DETECTORS	X						X	X	X	X			X	X	X	
AREA SMOKE DETECTORS	X						X	X	X	X			X	X	X	
HVAC AIR SMOKE DETECTORS	X		X	X			X				X					X
AREA HEAT DETECTORS	X						X	X	X	X			X	X	X	
SWITCH	X		X	X			X	X	X	X						
SPRINKLER WATER FLOW IN BUILDING	X						X	X	X	X			X	X	X	



1 TYPICAL FIRE ALARM RISER DIAGRAM

NOT TO SCALE

FIRE ALARM RISER KEYNOTES

(THIS DRAWING)

1. ADDRESSABLE FIRE ALARM CONTROL PANEL.
2. FIRE ALARM COMMUNICATOR. TIE TO CAMPUS FIRE ALARM LOOP OR OUTSIDE TELEPHONE LINE AS APPLICABLE.
3. POWER TO FIRE ALARM SYSTEM SHALL BE FROM DEDICATED LIFE-SAFETY CIRCUIT. PROVIDE LOCK-ON DEVICE ON BREAKER HANDLE.
4. PROVIDE 62.5/125 MICRON MULTIMODE FIBER OPTIC CABLE FOR FIRE ALARM LOOP. CABLE SHALL BE INDOOR/OUTDOOR RATED, INSTALL IN INNERDUCT AND 4" PVC CONDUIT.
5. PROVIDE DUCT DETECTORS ON SUPPLY AND RETURN FOR ALL UNITS OVER 2000 CFM. PROVIDE A REMOTE INDICATOR LIGHT IN THE CEILING OR ON THE WALL NEAR DETECTOR.
6. PROVIDE A CONTROL MODULE FOR OVERRIDING LIGHTING CONTROLS DURING AN ALARM CONDITION.
7. PROVIDE A MINIMUM OF 20% SPARE CAPACITY IN ALL PANELS AND POWER SUPPLIES.
8. PROVIDE CONNECTION TO DETECTORS AT SMOKE DAMPER LOCATIONS. PROVIDE A REMOTE INDICATOR LIGHT IN THE CEILING OR ON THE WALL NEAR DETECTOR LOCATION.
9. PROVIDE A CONTROL MODULE TO INDICATE PRESSURIZATION FAN, AND A MONITOR MODULE TO MONITOR FAN STATUS.

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions: | Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

MOORE DESIGN ASSOCIATES
LANDSCAPE ARCHITECTURE

SEAL

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AE WORKS

6587 Hamilton Avenue
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Ph: 412.287.7333 Fax: 412.287.7334
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AE Works Project Number: 13025

Drawing Title: FIRE ALARM SYMBOLS AND NOTES

Approved: Project Director

Project Title: NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 | Checked: JJD | Drawn: JMZ

Project Number: #613-116

Building Number: #519

Drawing Number: EF001

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

three inches = one foot

one and one half inch = one foot

one inch = one foot

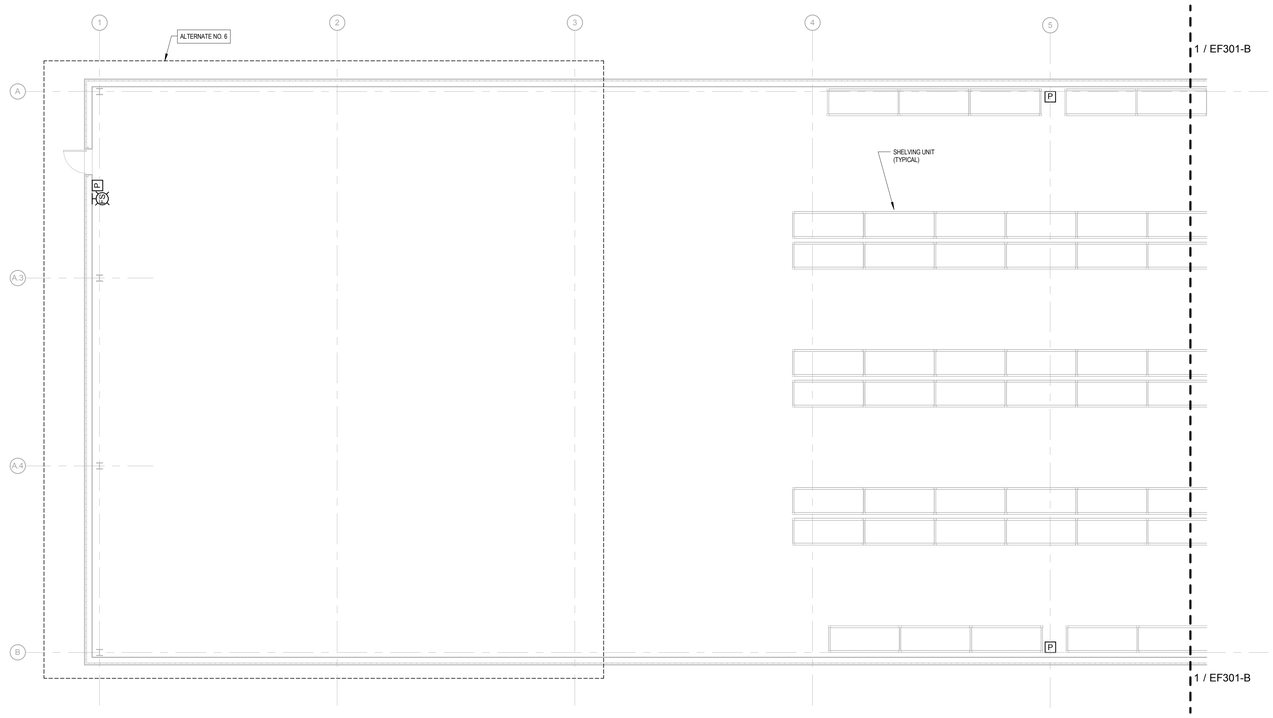
three quarters inch = one foot

one half inch = one foot

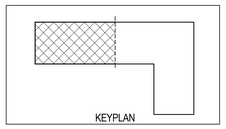
three eighths inch = one foot

one quarter inch = one foot

one eighth inch = one foot



1 FIRST FLOOR FIRE ALARM PLAN - SIDE A
1/8" = 1'-0"



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CONSULTANTS:

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AE Works Project Number: 13025

Drawing Title
FIRST FLOOR FIRE ALARM PLAN – SIDE A

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE
MARTINSBURG, WV 25405

Date: 06/24/2015
Checked: JJD
Drawn: JMZ

Project Number # 613-116

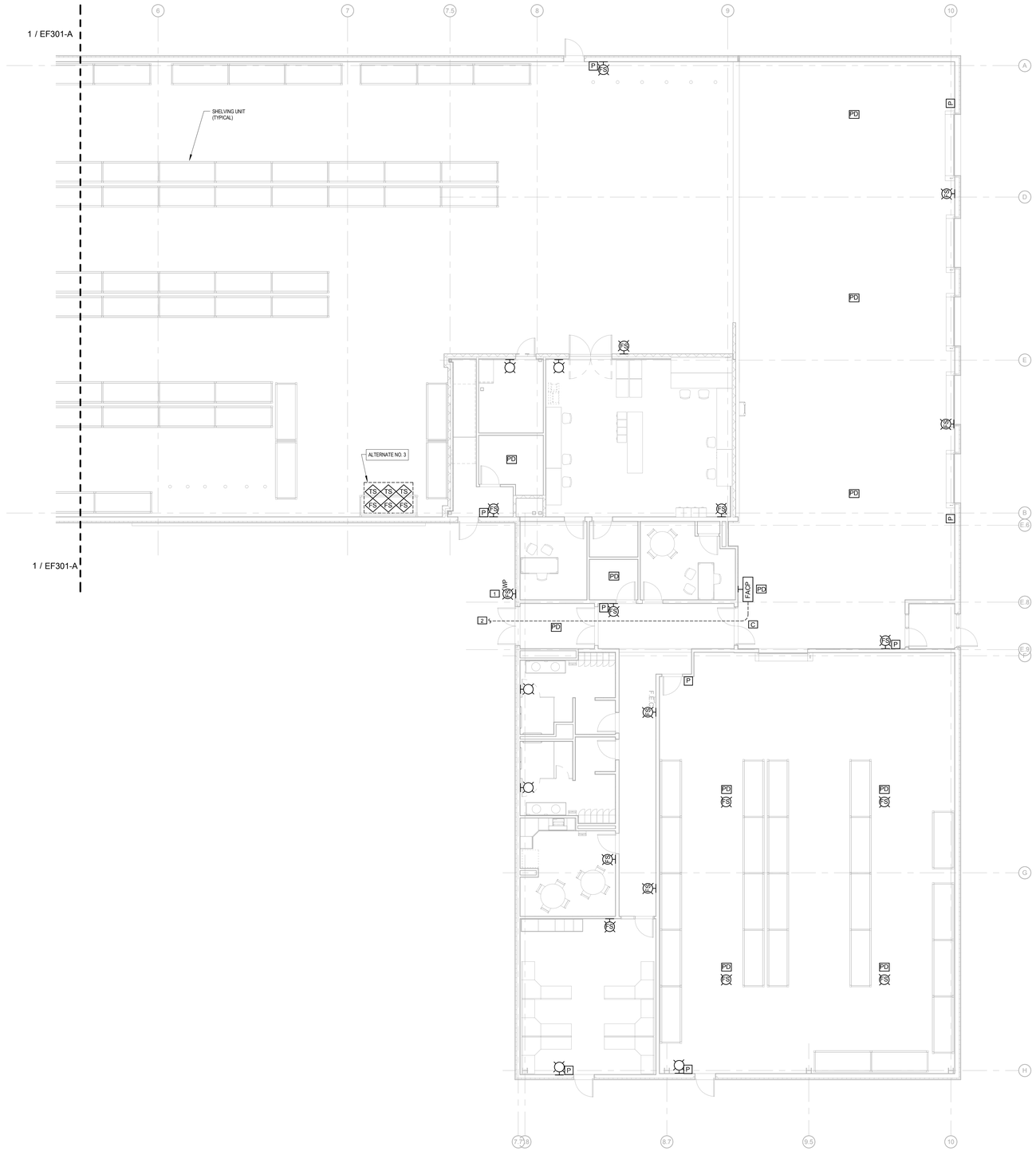
Building Number #519

Drawing Number EF301-A

Office of Construction and Facilities Management

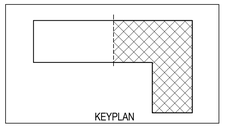
Department of Veterans Affairs

VA FORM 08-6231



KEYNOTES (THIS DRAWING)

1. LOCATE AT FIRE DEPARTMENT CONNECTION.
2. FIBER CONNECTION UNDER SLAB FOR CONNECTION TO THE CAMPUS FIRE LOOP.



PROJECT NORTH
TRUE NORTH

1 FIRST FLOOR FIRE ALARM PLAN - SIDE B
1/8" = 1'-0"

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Drawing Title
FIRST FLOOR FIRE ALARM PLAN – SIDE B

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE
MARTINSBURG, WV 25405

Date:	Checked:	Drawn:
06/24/2015	JJD	JMZ

Project Number
613-116

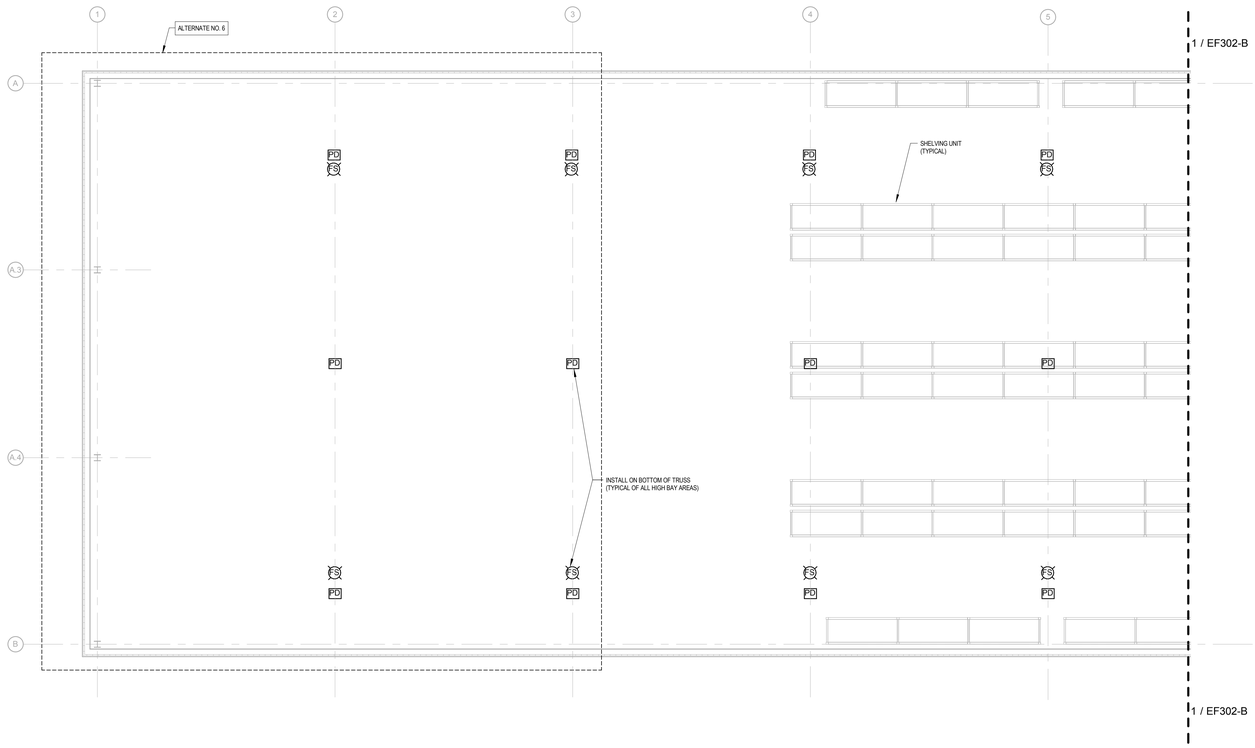
Building Number
#519

Drawing Number
EF301-B

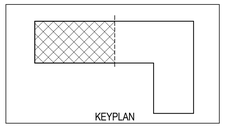
Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



1 HIGH BAY FIRE ALARM PLAN - SIDE A
1/8" = 1'-0"



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Drawing Title
HIGH BAY FIRE ALARM PLAN - SIDE A

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE
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Date:	Checked:	Drawn:
06/24/2015	JJD	JMZ

Project Number
613-116

Building Number
#519

Drawing Number
EF302-A

Office of Construction and Facilities Management

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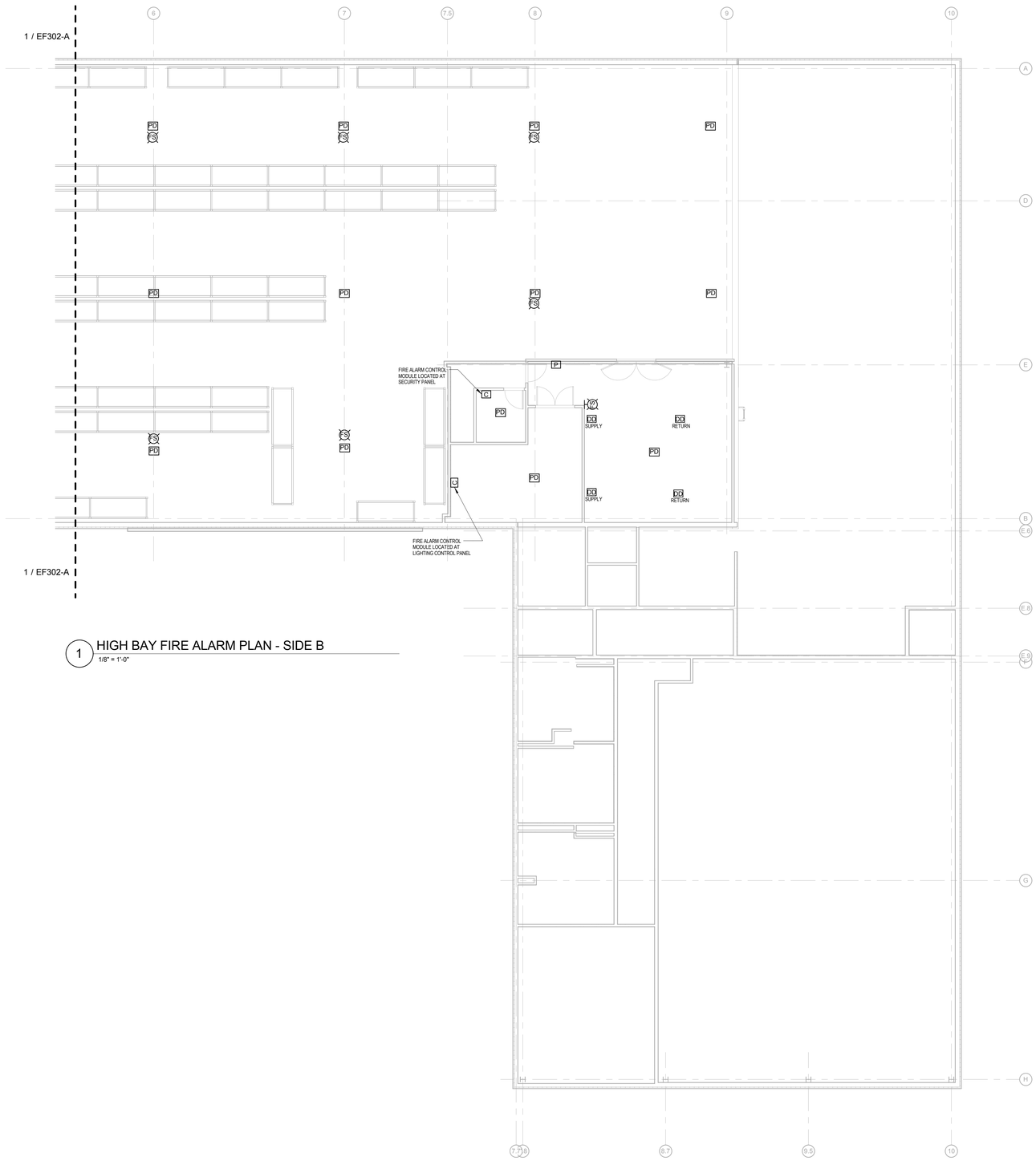
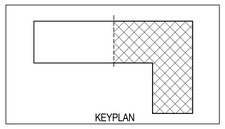


1 HIGH BAY FIRE ALARM PLAN - SIDE B
1/8" = 1'-0"



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Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

SECURITY SYMBOLS LEGEND

THIS IS A STANDARD SYMBOL LIST. ALL SYMBOLS MAY NOT APPEAR ON THIS PROJECT.

VOICE/DATA SYMBOLS

- XX — WALL MOUNTED VOICE OUTLET
  XX = CABLING CONFIGURATIONS (REFER TO COMMUNICATIONS DETAIL SHEET)
- CLG XX — CEILING MOUNTED VOICE OUTLET
  XX = CABLING CONFIGURATIONS (REFER TO COMMUNICATIONS DETAIL SHEET)
- XX — FLOORBOX MOUNTED VOICE OUTLET
  XX = CABLING CONFIGURATIONS (REFER TO COMMUNICATIONS DETAIL SHEET)
- XX — COMBINATION POKE-THRU MOUNTED VOICE OUTLET
  XX = CABLING CONFIGURATIONS (REFER TO COMMUNICATIONS DETAIL SHEET)
- XX — WALL MOUNTED VOICE/DATA OUTLET
  XX = CABLING CONFIGURATIONS (REFER TO COMMUNICATIONS DETAIL SHEET)
- CLG XX — CEILING MOUNTED VOICE/DATA OUTLET
  XX = CABLING CONFIGURATIONS (REFER TO COMMUNICATIONS DETAIL SHEET)
- XX — FLOORBOX MOUNTED VOICE/DATA OUTLET
  XX = CABLING CONFIGURATIONS (REFER TO COMMUNICATIONS DETAIL SHEET)
- XX — COMBINATION POKE-THRU MOUNTED VOICE/DATA OUTLET
  XX = CABLING CONFIGURATIONS (REFER TO COMMUNICATIONS DETAIL SHEET)
- XX — DOUBLE GANG BACKBOX W/ SINGLE GANG DEVICE RING, 1 1/4" EMT CONDUIT W/ PULLSTRING TO ABOVE ACCESSIBLE CEILING
- WAP-B — WIRELESS ACCESS POINT INCLUDE ALL THE FOLLOWING: CISCO PART NUMBERS: AIR-CAP3502E-A-K9, CON-SNT-CAPCAP3502A, SWAP3500-RCOVRY-K9, AIR-AP-BRACKET-1, AIR-AP-T-RAIL-R, AIR OPTIO-DHCP. ALONG WITH OBERON PART # 1013-00. CONTRACTOR IS REQUIRED TO PROVIDE A TECHNOLOGY REFRESH 3 MONTHS PRIOR TO INSTALLING THIS DEVICE. CONTRACTOR IS REQUIRED TO PROVIDE THE LATEST UPGRADED TECHNOLOGY AVAILABLE AT THE TIME OF INSTALLATION., THAT WOULD MEET WITH THE IT DEPARTMENTS SPECIFIC REQUIREMENTS.
- WAP-I — WIRELESS ACCESS POINT INCLUDE ALL THE FOLLOWING: CISCO PART NUMBERS: AIR-CAP3502I-A-K9, CON-SNT-CAPCAP3502IA, SWAP3500-RCOVRY-K9, AIR-AP-BRACKET-1, AIR-AP-T-RAIL-R, AIR OPTIO-DHCP. CONTRACTOR IS REQUIRED TO PROVIDE A TECHNOLOGY REFRESH 3 MONTHS PRIOR TO INSTALLING THIS DEVICE. CONTRACTOR IS REQUIRED TO PROVIDE THE LATEST UPGRADED TECHNOLOGY AVAILABLE AT THE TIME OF THE INSTALLATION, THAT WOULD MEET WITH THE IT DEPARTMENTS SPECIFIC REQUIREMENTS.
- WAP-A — WIRELESS TERRAWAVE ANTENNA PART# 376841. CONTRACTOR IS REQUIRED TO PROVIDE A TECHNOLOGY REFRESH 3 MONTHS PRIOR TO INSTALLING THIS DEVICE. CONTRACTOR IS REQUIRED TO PROVIDE THE LATEST UPGRADED TECHNOLOGY AVAILABLE AT THE TIME OF THE INSTALLATION, THAT WOULD MEET WITH THE IT DEPARTMENTS SPECIFIC REQUIREMENTS.

COMMUNICATION SYMBOLS

- TV — CATV OUTLET
  WIRELESS TERRAWAVE ANTENNA PART # 376841

PAGING SYSTEM / INTERCOM SYSTEM

- TRUMPET STYLE SPEAKER
- S — CEILING MOUNTED SPEAKER
- S XX — WALL MOUNTED SPEAKER
  XX = WP: WEATHERPROOF W/ ENCLOSURE
- VC — SPEAKER VOLUME CONTROL DEVICE
- IM — INTERCOM MASTER STATION
- IS — INTERCOM SLAVE STATION
- A — PATIENT WANDERING/EMERGENCY DURESS SYSTEM ANTENNA

TELECOMMUNICATION / SECURITY EQUIPMENT SYMBOLS

- THROUGH-WALL CONDUIT PENETRATION SLEEVE
- TMGB — TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
- TGB — TELECOMMUNICATIONS GROUNDING BUSBAR
- P XX — POWER POLE - DATA SIDE
  XX = # OF DROPS
- CR — CARD READER
- ES — ELECTRIC STRIKE
- DC — DOOR CONTACT
- DC ID — DOOR CONTACT - INTRUSION DETECTION
- GB — GLASS BREAK - INTRUSION DETECTION
- MD — MOTION DETECTOR - INTRUSION DETECTION
- PTZ — SECURITY CAMERA - PAN / TILT / ZOOM
- SECURITY CAMERA

ANNOTATION SYMBOLS

- 2 — DRAWING KEYNOTE
- 2 — EQUIPMENT TAG
- ABOVE GRADE/SLAB HOMERUN (MIN #12AWG WIRE)
- INDICATED MOUNTED ABOVE COUNTERTOP (REFER TO STANDARD MOUNTING HEIGHTS DETAIL ON THIS SHEET)
- EXISTING TO REMAIN
  NEW WORK
  DEMOLITION
- EQUIPMENT CABINET, RACK OR PANEL GROUND

ABBREVIATIONS

ABOVE FINISHED FLOOR	AFF
ABOVE FINISHED GRADE	AFG
AMPERE	A / AMP
APPROXIMATE (LY)	APPROX
ASYMMETRIC	ASY
AUTOMATIC TRANSFER SWITCH	ATS
BATTERY	BATT
BELOW FINISHED CEILING	BFC
BREAKER	BKR
CABLE TELEVISION	CATV
CEILING	CLG
CIRCUIT	CIR / CKT
CIRCUIT BREAKER	CB
CLOSED CIRCUIT TELEVISION	CCTV
COMMUNICATION	COMM
CONDUIT	C
COPPER	CU
DECIBEL	DB
DIAMETER	DIA
DISCONNECT	DISC
DISTRIBUTION PANEL	DP
DOWNLIGHT	DNLT
DRAWING	DWG
EACH	EA
ELECTRIC WATER COOLER	EWC
ELECTRICAL	ELEC
ELEVATOR	ELEV
EMERGENCY	E / EMER
EQUIPMENT	EQUIP
EXHAUST FAN	EF
EXPLOSION PROOF	XP
FIRE ALARM	FA
FIRE ALARM ANNUNCIATOR PANEL	FAAP
FIRE ALARM CONTROL PANEL	FACP
FIXTURE	FIXT
FLOOR	FL
FLUORESCENT	FLUOR
FOOTCANDLES	FT
FULL LOAD AMPERES	FLA
GENERAL CONTRACTOR	GC
GENERATOR	GEN
GROUND	GND / G
GROUND FAULT INTERRUPTER	GFI
HEATING VENTILATING AIR CONDITIONING	HVAC
HERTZ	HZ
HIGH INTENSITY DISCHARGE	HID
HIGH POWER FACTOR	HPF
HORSEPOWER	HP
INCANDESCENT	INCAN
ISOLATED GROUND	IG
JUNCTION BOX	JB
KILOVAR (REACTANCE)	KVAR
KILOVOLT AMPERE	KVA
KILOWATT	KW
KILOWATT HOUR METER	KWH
LIGHT	LT
LIGHTING	LTG
LOW VOLTAGE	LV
LIGHT EMITTING DIODE	LED
MAIN CIRCUIT BREAKER	MCB
MAIN DISTRIBUTION PANEL	MDP
MAIN LUGS ONLY	MLO
MANHOLE	MH
MANUAL TRANSFER SWITCH	MTS
MANUFACTURER	MFR
MEDIUM VOLTAGE	MV
METAL HALIDE	MH
METAL-CLAD CABLE	MC
MISCELLANEOUS	MISC
MOTOR CONTROL CENTER	MCC
MOUNTED	MTD
MOUNTING HEIGHT	MTG HT
NATIONAL ELECTRIC	NEMA
MANUFACTURER ASSOCIATION	
NATIONAL ELECTRIC CODE	NEC
NIGHT LIGHT	NL
NORMALLY OPENED	NO
NOT AVAILABLE/NOT APPLICABLE	N/A
NOT IN CONTRACT	NIC
NOT TO SCALE	NTS
ON CENTER	OC
PANEL	PNL
PULL BOX	PB
RAPID START	RS
RECEPTACLE	REC/RECPT
REFLECTOR	REFL
REQUIRED	REQ'D
RIGID GALVANIZED STEEL CONDUIT	RGS
ROOM	RM
SCHEDULE	SCHED/SCH
SWITCH	SW
SWITCHBOARD	SWBD
SWITCHGEAR	SWGR
TELEPHONE	TELE
TRANSFORMER	XFMR
TYPICAL	TYP
UNDERWRITER'S LABORATORIES	UL
UNINTERRUPTIBLE POWER SUPPLY	UPS
UNLESS OTHERWISE NOTED	UON
VOLT	V
WATT	W
WEATHERPROOF	WP

ELECTRICAL DEMOLITION ABBREVIATIONS

ETR	EXISTING TO REMAIN - DEVICE SHALL REMAIN IN WORKING ORDER.
RN	REMOVE AND REPLACE WITH NEW - EXISTING BACKBOX AND WIRING SHALL REMAIN. RECONNECT NEW DEVICE TO EXISTING CIRCUIT.
RR	REMOVE AND RELOCATE - DISCONNECT DEVICE, MODIFY AND EXTEND FEED TO NEW LOCATION.
RC	REMOVE COMPLETELY - REMOVE DEVICE, CONDUIT, AND WIRING BACK TO SOURCE.

STANDARD MOUNTING HEIGHTS

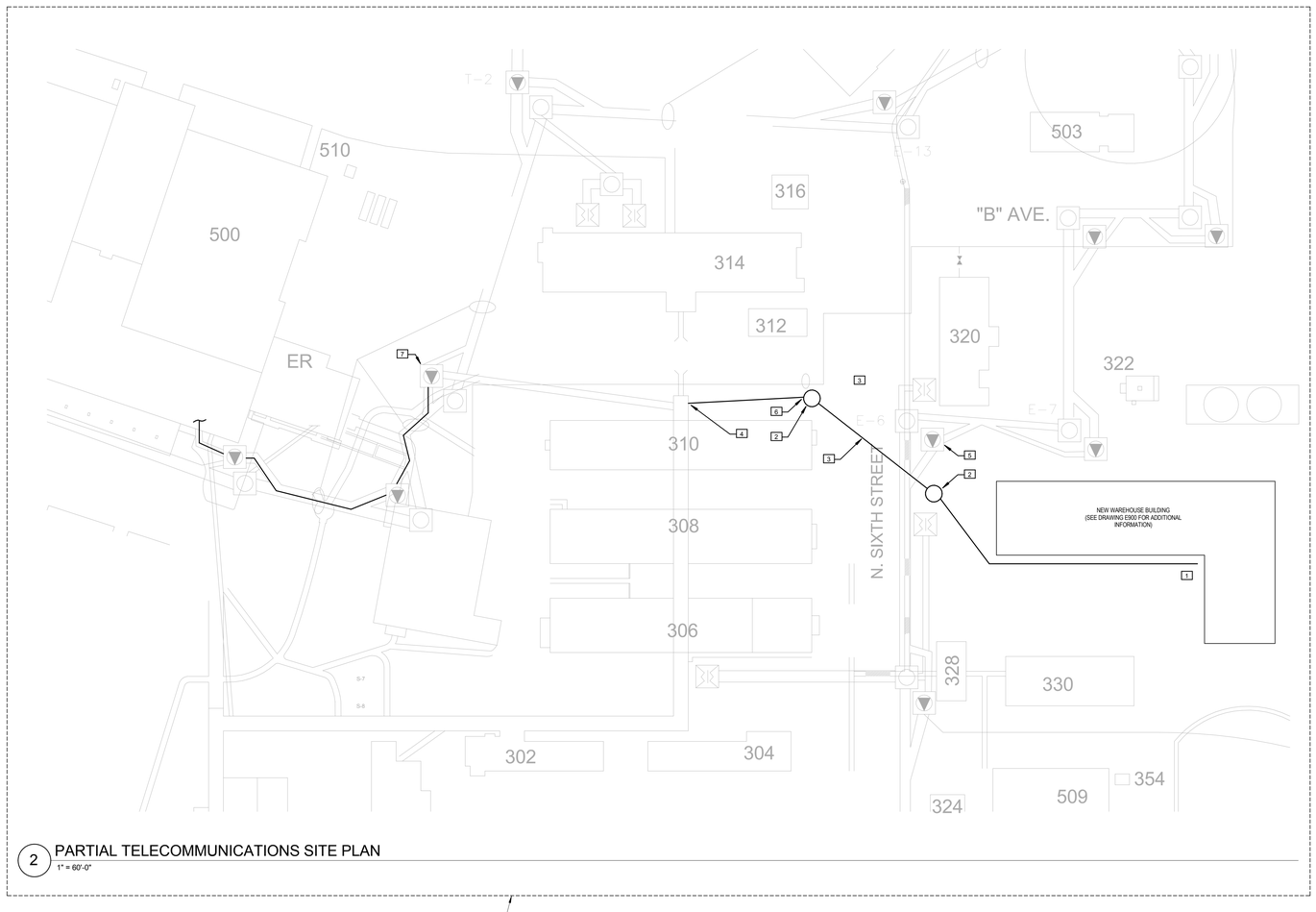
CEILING	SPEAKERS, WIRELESS ACCESS POINTS, TV AND LCD PROJECTOR CONNECTIONS
8' A.F.G.	EXTERIOR SPEAKERS,
7'-5" A.F.F.	CLOCKS, COMBINATION CLOCKS/SPEAKERS, TRUMPET SPEAKERS
7'-0" A.F.F.	VISUAL NOTIFICATION DEVICES (CENTER OF DEVICE)
5'-6" A.F.F	TOP OF PLYWOOD TELEPHONE BACKBOARD
5'-4" A.F.F.	ANNUNCIATOR PANELS, CONTROL PANELS AND DISPLAYS, TACTILE DISPLAYS
4'-8" A.F.G. MAX.	PEDESTAL MOUNT INTERCOM
4'-0" A.F.F.	"PS" TELEPHONE OUTLETS (TOP OF COIN SLOT) WALL MOUNTED TELEPHONE OUTLETS, INTERCOM STATIONS, CALL STATIONS, RESCUE ASSISTANCE PANELS (CENTER OF DEVICE)
1'-5" A.F.F.	DATA/TELEPHONE JACKS, LOW TELEVISION JACKS, MICROPHONE JACKS
0'-0"	IN FLOOR JUNCTION BOXES FLUSH TO FINISHED FLOOR (FF) (DATA, TELEPHONE, MICROPHONE, MEDIA)

1. IN MASONRY CONSTRUCTION THE MOUNTING HEIGHTS SHALL BE USED FOR REFERENCE TO THE NEAREST BLOCK OR BRICK COURSING.
2. THE ABOVE MOUNTING ELEVATIONS ARE TO CENTER OF DEVICE AND SHALL BE ADHERED TO UNLESS SPECIFICALLY NOTED OR DETAILED OTHERWISE ON THE DRAWINGS AND/OR SPECIFICATIONS.
3. COORDINATE THE INSTALLATION AND MOUNTING ELEVATIONS OF ALL EQUIPMENT, DEVICES, CONTROLS AND APPURTENANCES WITH ARCHITECT AND ALL AFFECTED TRADES PRIOR TO INSTALLATION. DOCUMENT ALL MOUNTING ELEVATIONS FOR ALL EQUIPMENT, DEVICES, CONTROLS AND APPURTENANCES AT THE TIME OF SHOP DRAWING SUBMITTAL.

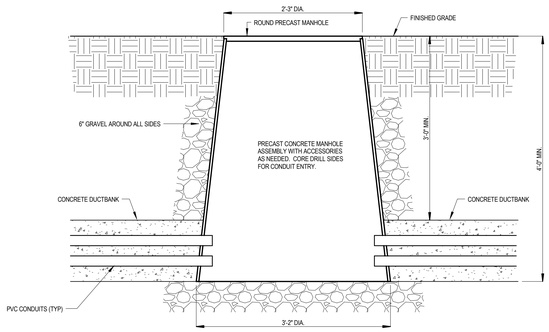
GENERAL COMMUNICATIONS SYSTEM NOTES:

1. THE FOLLOWING GENERAL NOTES AS LISTED BELOW SHALL APPLY TO ALL COMMUNICATIONS SYSTEM REQUIREMENTS AS INDICATED ON ALL ET SERIES CONTRACT DRAWINGS.
2. DRAWINGS FOR THIS WORK ARE DIAGRAMMATIC AND INTENDED TO CONVEY THE EXTENT, GENERAL ARRANGEMENT AND LOCATIONS OF THE WORK. BECAUSE OF THE SCALE OF THE DRAWINGS, CERTAIN BASIC ITEMS SUCH AS ACCESS PANELS, CONDUITS, CABINET SIZES, PENETRATION SLEEVES, PULL BOXES, BACKBONES AND JUNCTION BOXES MAY NOT BE SHOWN. INCLUDE ALL ITEMS WHERE REQUIRED BY CODE, MANUFACTURER AND RELATED SPECIFICATION SECTIONS FOR THE PROPER INSTALLATION OF ALL WORK.
3. DUE TO SCALE OF THE DRAWINGS, ALL COMMUNICATIONS DEVICE SYMBOLS ARE SHOWN ON DRAWINGS AS CLOSE AS POSSIBLE TO THEIR INTENDED LOCATION. CONTRACTOR SHALL COORDINATE IN THE FIELD THE PROPER INSTALLATION OF ALL EQUIPMENT, DEVICES, CONTROLS AND CABLING. REFER TO RELATED SPECIFICATION SECTIONS FOR ADDITIONAL REQUIREMENTS.
4. COORDINATE WITH ALL TRADES AND SYSTEM INTEGRATORS ANY CONDITIONS RELATED TO THE INSTALLATION OF ALL SYSTEMS. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE TRADE ALL INSTALLATION REQUIREMENTS IMPACTING THE PLACEMENT OF ALL SYSTEM COMPONENTS TO THE SATISFACTION OF ALL CONCERNED TRADES.
5. COORDINATE EXACT LOCATION OF ALL DESK OR COUNTER MOUNTED EQUIPMENT WITH OWNER AND ARCHITECT AND ALL AFFECTED TRADES PRIOR TO THE INSTALLATION OF ANY EQUIPMENT AND/OR CABLING.
6. COORDINATE EXACT LOCATION(S) OF ALL CEILING MOUNTED CABLE, CONDUITS, EQUIPMENT AND/OR DEVICES WITH ALL ARCHITECTURAL PLANS, REFLECTED CEILING PLANS AND ALL AFFECTED TRADES PRIOR TO INSTALLATION.
7. COORDINATE EXACT LOCATION(S) OF ALL DATA AND TELEPHONE OUTLETS, ELECTRICAL RECEPTACLES WITH THE ARCHITECTURAL PLANS, FURNITURE PLANS AND ALL AFFECTED TRADES PRIOR TO INSTALLATION.
8. ALL HORIZONTAL CATEGORY 6 UTP CABLE SHALL BE PLENUM RATED CABLE AND SHALL BE BUNDLED AND ROUTED THROUGH THE FACILITY AND SHALL TERMINATE AT THE NEAREST MDF/IDF EQUIPMENT RACKS. ALL HORIZONTAL CABLE BUNDLES SHALL NOT CONTAIN ANY AC CONDUCTING CABLING. ALL HORIZONTAL CABLE DROPS SHALL NOT EXCEED 294' FROM PATCH PANEL TO OUTLET TERMINATION AND SHALL BE TESTED AND CERTIFIED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. REFER TO RELATED SPECIFICATIONS SECTIONS FOR ADDITIONAL INFORMATION.
9. ALL FIBER OPTIC BACKBONE CABLING SHALL BE ROUTED THROUGH THE FACILITY VIA DEDICATED CONDUITS AND VERTICAL PIPES CHASES INSTALLED IN PROTECTIVE INNERDUCT CONDUIT SYSTEM AND SHALL TERMINATE AT ALL APPROPRIATE MDF/IDF EQUIPMENT RACKS. THE CONTRACTOR SHALL COORDINATE ALL EQUIPMENT, RACK SPACE REQUIREMENTS, WITH THE APPROPRIATE SYSTEM INTEGRATORS AND ARCHITECT. ALL FIBER OPTIC CABLING SHALL BE TESTED AND CERTIFIED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. REFER TO RELATED SPECIFICATIONS SECTIONS FOR ADDITIONAL INFORMATION.
10. ALL CONDUITS SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH NFPA 70 AND PROJECT SPECIFICATIONS. ALL CONDUITS SHALL BE A MINIMUM OF 3/4" UNLESS OTHERWISE NOTED.
11. ALL SYSTEM WIRING, CONDUITS AND EQUIPMENT INSTALLATION SHALL BE IN ACCORDANCE WITH GOOD ENGINEERING PRACTICES AND BY ALL IEEE, EIA, NEIV, AND MANUFACTURER'S REQUIREMENTS. ALL WIRING SHALL COMPLY WITH ALL STATE AND LOCAL ELECTRICAL CODES AND SHALL TEST FREE FROM 20. ALL GROUNDS, SHORTS, STRAY VOLTAGES, AND EMI.
12. PROVIDE ALL EQUIPMENT CLEARANCES IN ACCORDANCE WITH NEC REQUIREMENTS. ARRANGE EQUIPMENT TO FACILITATE UNRESTRICTED ACCESS FOR MAINTENANCE AND SERVICE AROUND ALL EQUIPMENT, COMPONENTS AND/OR CABLE TERMINATIONS.
13. PROPERLY GROUND ALL EQUIPMENT, RACKS, CABINET'S, CONDUITS AND CABLE SHIELDS IN ACCORDANCE WITH ALL REQUIREMENTS OF THE NFPA 70 AND EQUIPMENT MANUFACTURER. ALL EQUIPMENT AND COMMUNICATIONS CIRCUITS SHALL BE PROPERLY SURGE PROTECTED AND GROUNDED TO MINIMIZE DAMAGE DUE TO LIGHTENING STRIKES, SNEAK CURRENTS AND OTHER TRANSIENT VOLTAGE SPIKES. ALL SURGE PROTECTION AND GROUNDING SHALL BE IN ACCORDANCE WITH ALL REQUIREMENTS OF THE EQUIPMENT MANUFACTURER, NEC, IEEE AND TIA/EIA.
14. WHERE EQUIPMENT AND/OR JUNCTION BOXES ARE INSTALLED ABOVE FINISHED CEILINGS, THE CONTRACTOR SHALL PROVIDE ACCESS HATCHES LISTED FOR THE INTENDED APPLICATION. ACCESS HATCHES SHALL BE LOCATED SO THAT SERVICE ACCESS TO THE EQUIPMENT AND/OR JUNCTION BOXES IS UNIMPEDED.
15. ALL PENETRATIONS OF WALLS AND/OR FLOORS SHALL BE FIRE STOPPED IN ACCORDANCE WITH THE ASTM AND NFPA REQUIREMENTS. REFER TO RELATED SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION. INSTALLATION OF FIRE-STOPS SHALL BE PERFORMED BY AN APPLICATOR/INSTALLER QUALIFIED AND TRAINED BY THE MANUFACTURER. INSTALLATION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH MANUFACTURER'S DETAILED INSTALLATION PROCEDURES.
16. PROVIDE THE PROPER INTERFACES TO BUILDING FIRE ALARM, INTRUSION ALARM AND BUILDING AUTOMATION SYSTEMS IN ACCORDANCE WITH ALL APPLICABLE LIFE SAFETY CODES AND MANUFACTURER IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. COORDINATE WITH THE FIRE ALARM SYSTEM PROVIDER FOR ALL REQUIRED SYSTEM INTEGRATION REQUIREMENTS.
17. ALL EQUIPMENT ENCLOSURES LOCATED OUTSIDE OR IN ALL AREAS WITH HIGH MOISTURE OR A RELATIVE HUMIDITY OF 75% OR GREATER SHALL BE NEMA 4X STAINLESS STEEL AND RATED FOR THAT APPLICATION.
18. ALL DEVICES, COMPONENTS OR EQUIPMENT INSTALLED ON THE EXTERIOR OF THE FACILITY SHALL BE PROVIDED IN ACCORDANCE WITH ALL MANUFACTURERS' REQUIREMENTS TO ENSURE THE PROPER OPERATION WHEN EXPOSED TO THE ENVIRONMENTAL CONDITIONS AND/OR AVERAGE ANNUAL LOWEST TEMPERATURE THAT CAN BE ANTICIPATED FOR THE GEOGRAPHIC REGION OF THE FACILITY.
19. ALL INTERIOR AND/OR EXTERIOR COMPONENTS, DEVICES OR SYSTEMS EQUIPMENT EXPOSED TO THE GENERAL POPULATION SHALL BE INSTALLED IN SECURED EQUIPMENT ENCLOSURES WITH TAMPER SWITCHES AND INSTALLED IN SUCH A MANNER THAT RESISTS TAMPERING AND/OR REMOVAL WITHOUT THE USE OF SPECIALIZED TOOLS.

   FOR EQUIPMENT INSTALLATIONS REQUIRING COORDINATION WITH OTHER TRADES THE CONTRACTOR SHALL PROVIDE ALL TEMPLATES, BACKBOXES AND EQUIPMENT ANCHOR BOLTS FOR MOUNTING OR FLUSH MOUNTING PREPARATION, (E.G. PEDESTALS OR OTHER DEVICES REQUIRING MOUNTING ON WALLS, CONCRETE PADS OR OTHER MATERIALS). COORDINATE DELIVERY OF TEMPLATES AND EQUIPMENT WITH ALL AFFECTED CONTRACTORS.
20. ALL COMMUNICATIONS EQUIPMENT MUST HAVE TRANSIENT SURGE PROTECTION TO COMPLY WITH UL AND NFPA 70 REQUIREMENTS. WHERE ANY CIRCUITS LEAVE THE BUILDING, ADDITIONAL TRANSIENT PROTECTION MUST BE PROVIDED FOR EACH CIRCUIT. ALL TRANSIENT PROTECTION DEVICES MUST BE UL LISTED UNDER STANDARD #497B (ISOLATED LOOP PROTECTORS).
21. REFER TO ALL RELATED CONTRACT DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND/OR REQUIREMENTS RELATED TO THE INSTALLATION, PROGRAMMING, TESTING, COMMISSIONING AND CERTIFICATION OF ALL COMMUNICATIONS SYSTEMS.



2 PARTIAL TELECOMMUNICATIONS SITE PLAN
1" = 60'-0"



1 MANHOLE DETAIL
NOT TO SCALE

KEYNOTES

1. LOCATION OF TELECOMMUNICATIONS, FIRE ALARM AND SECURITY DUCTBANK ENTRANCE INTO THE BUILDING.
2. LOCATION OF NEW TELECOMMUNICATIONS MANHOLE. MANHOLE SHALL BE 27" DIAMETER, FLARED ENCLOSURE, 48" DEPP MINIMUM. ENCLOSURE SHALL BE POLYMER CONCRETE WITH A TIER 22 RATING.
3. SAWCUT ROAD AS NEEDED TO INSTALL TELECOMMUNICATIONS DUCTBANK. CONCRETE ENCASE CONDUITS UNDER THE ROADWAY. COMPACT SOIL AND REPLACE ROADWAY TO MATCH EXISTING.
4. CORE DRILL THE EXISTING STEAM TUNNEL, FOR NEW TELECOMMUNICATIONS CONDUITS. PROVIDE LINK SEALS AT TUNNEL WALLS.
5. CORE DRILL THE EXISTING MANHOLE WALL, ADJACENT TO THE EXISTING CONDUIT ENTRIES, FOR NEW TELECOMMUNICATIONS CONDUITS. PROVIDE LINK SEALS AT THE FOUNDATION WALLS.
6. PROVIDE NEW CONDUITS ADJACENT TO THE EXISTING DUCTBANK. CONCRETE ENCASE CONDUITS. CONDUITS SHALL TERMINATE INSIDE THE EXISTING MANHOLE.
7. ROUTE TELECOMMUNICATIONS AND SECURITY CABLING THROUGH THE EXISTING SPARE CONDUITS FROM THIS MANHOLE TO THE BASEMENT INTERSTITIAL SPACE OF BUILDING 500. VERIFY THE AVAILABILITY OF SPARES PRIOR TO INSTALLING CABLING.

NOTE:
REFER TO TELECOMMUNICATIONS RISER DIAGRAM ON SHEET ET600 FOR ADDITIONAL INFORMATION ON ROUTING.

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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Drawing Title	TELECOMMUNICATIONS AND SECURITY SYMBOLS AND NOTES
Approved: Project Director	
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Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

TELECOMMUNICATIONS SYSTEM DESIGN SPECIFICATION

ALL CABLE INSTALLERS MUST BE TRAINED AND CERTIFIED MEETING CERTIFICATION STANDARDS, I.E., EIA, TIA, ANSI, BICSI, TDM, ITU-T, NFPA, NEC AND NCS. NO PERSONS SHALL CONDUCT ANY INSTALLATIONS THAT HAVE NOT MET THESE CERTIFICATION STANDARDS OF TRAINING AND INSTALLATION.

I. CABLE DESCRIPTION FOR STATION CABLES:

A. ALL CABLES WILL BE UNSHIELDED TWISTED 4-PAIR, RATED CAT 6 OR HIGHER.
B. DATA CABLE SHEATH SHALL BE "DARK BLUE" IN COLOR.
C. VOICE CABLE SHEATH SHALL BE "GRAY" IN COLOR
D. WIRELESS NETWORK SHEATH SHALL BE "BRIGHT GREEN" IN COLOR.
E. NURSE CALL SYSTEM SHEATH SHALL BE "LIGHT GREEN" IN COLOR
F. GET WELL NETWORK SHEATH SHALL BE "BRIGHT ORANGE" IN COLOR
G. BIOMEDICAL SYSTEMS AND BADGE ACCESS SYSTEM SHEATH SHALL BE "PURPLE" IN COLOR
H. ALL CABLES MUST BE ONE CONTINUOUS RUN BETWEEN WORK STATION AND COMMUNICATIONS CLOSET – NO SPLICES.
I. ALL CABLES WILL BE INSTALLED IN CONDUIT FROM WALL JACK TO CEILING AND STUBBED OUT ABOVE FALSE CEILING AND RUN IN CABLE TRAYS OR OTHER DESIGNATED CABLE SUPPORT TO TELECOM CLOSETS
J. CABLES FOR PAGING SYSTEM SHALL BE RUN IN CONDUIT, HOME RUNS FROM DEVICE TO BIOMED CLOSET CONTINUOUSLY.
K. CONDUIT FOR EACH SYSTEM SHALL MATCH CABLE COLOR FOR THAT SYSTEM.
L. SECURITY CAMERA SHEATH SHALL BE YELLOW IN COLOR.

II. TERMINATING COPPER CABLE – IN COMMUNICATION ROOMI. CABLE DESCRIPTION FOR STATION CABLES:

A. ALL DATA CABLES WILL BE TERMINATED ONTO CAT-6 RATED PATCH PANELS., RJ45 DATA CABLES WILL BE TERMINATED USING EIA/TIA-568B WIRING CONFIGURATION. DATA CABLES WILL BE TERMINATED INTO PATCH PANELS MOUNTED ON A STANDARD 19" DATA RACK
B. ALL VOICE CABLES WILL BE TERMINATED INTO CAT-5E 110 BLOCKS AND WALL MOUNTED ONTO RATED PLYWOOD
C. ALL CABLES WILL BE NUMERICALLY LABELED AT BOTH ENDS OF TERMINATIONS.(REFERENCE SECTION V BELOW)

III. TERMINATING COPPER CABLE - AT WORK STATION

A. ALL DATA CABLES WILL BE TERMINATED ON CAT-6 RATED RJ-45 JACK INSERTS, USING EIA/TIA-568B WIRING CONFIGURATION.
B. ALL DATA JACK INSERTS WILL BE BLACK IN COLOR.
C. ALL VOICE CABLES WILL BE TERMINATED ONTO RJ-11 JACK INSERTS USING STANDARD USOC WIRING CONFIGURATION.
D. ALL VOICE JACK INSERTS WILL BE OFFICE WHITE IN COLOR.
E. ALL JACK INSERTS WILL BE INSTALLED UNTO FLUSH WALL MOUNTED FACE PLATES. FACE PLATES SHALL BE OFFICE WHITE IN COLOR. EACH FACE PLATE WILL BE A 4-PORT CONFIGURATION.
F. EACH WORK STATION WILL BE WIRED WITH 2-DATA CABLES AND 1-VOICE CABLE.
G. A COMMUNICATIONS OUTLET WILL BE INSTALLED ON ALL WALLS DESIGNATED AS ADMINISTRATIVE FLOOR SPACE.

*NOTE: IN AREAS DESIGNATED FOR SYSTEMS FURNITURE, COMMUNICATIONS CABLING WILL BE INSTALLED INTO THE FURNITURE ONTO FACEPLATES MOUNTED ONTO THE PREFABRICATED CUTOUTS ON SYSTEM FURNITURE BASEBOARDS. CABLES WILL BE PULLED DOWN INSIDE WALLS IN AREAS BEST DETERMINED SUITABLE TO FEED ENTIRE SECTIONS WITH MINIMAL WALL PENETRATIONS OR ENTRY POINTS INTO FURNITURE. CABLES IN MOST OF THESE CASES WILL NEED TO BE PULLED AND SET ASIDE FOR LATER INSTALLATION INTO FURNITURE ONCE FURNITURE HAS BEEN INSTALLED.

IV. TERMINATION OF FIBER OPTIC CABLE

A. FIBER TERMINATIONS MUST BE IN COMPLIANCE WITH BICSI STANDARDS OF INSTALLATION. MUST BE INSTALLED IN BRIGHT COLORED ORANGE INNER DUCT APPROPRIATE FOR SIZE OF FIBER BEING PULLED.
B. FIBER MUST BE TERMINATED IN AN ENCLOSED FIBER BOX WITH SERVICE LOOP MOUNTED INTO A 19" DATA RACK THAT FOR SERVICE TO NETWORK SWITCH EQUIPMENT (SWITCH PROVIDED BY GOVERNMENT) TERMINATIONS MUST BE ST TYPE CONNECTIONS IN FIBER TERMINATION BOX.
C. UNLESS OTHERWISE DESIGNATED. FIBER CABLE WILL BE MULTIMODE 62.5 MICRON. TESTING OF EACH FIBER MUST BE CONDUCTED WITH NO FAILURES -100% PASS FOR ALL FIBERS. TEST RESULTS MUST BE FURNISHED TO GOVERNMENT IN EITHER PAPER OR ELECTRONIC FORMAT.

V. CABLE LABELING (NUMBERS ONLY)

A. ALL CABLES WILL BE NUMBERED SEQUENTIALLY AND MECHANICALLY STENCILED WITH BLACK INK – NOT HAND WRITTEN. CABLE NUMBER LABELS WILL BE PLACED AT BOTH ENDS OF EACH CABLE. ON PATCH PANELS, AND WALL MOUNTED FACE PLATES.
B. IF CABLE NUMBERS ALREADY EXIST IN COMMUNICATIONS ROOMS, NUMBER LABELING SEQUENCE WILL BE A CONTINUATION OF EXISTING CABLE NUMBERS ALREADY IN PLACE ON DATA PATCH PANELS AND VOICE CABLES.

VI. CABLE MANAGEMENT

A. ALL CABLES WILL BE HOME RUN FROM EACH WORK-STATION AREA TO THE DESIGNATED COMMUNICATIONS ROOM.
B. ALL CABLES WILL BE SUSPENDED IN CEILING USING J-TYPE HOOKS OR PLACED IN CABLE TRAYS.
C. IN OFFICE AREAS ALL CABLES WILL BE INSTALLED INSIDE CONDUIT. CONDUIT WILL BE RUN FROM WALL JACK TO EXTEND ABOVE FALSE CEILING WHERE CONDUIT MAYBE STUBBED OUT. (UNLESS SECURITY SPECIFICATIONS REQUIRE ENCLOSED CONDUIT FOR ENTIRE CABLE RUN)
D. ALL WALL PENETRATIONS MADE ABOVE CEILINGS THROUGH FIRE RATED WALLS MUST BE SEALED WITH FIRE RATED MATERIALS. IF EXISTING CONDUITS ARE USED AND FIRE STOPPER MATERIAL IS REMOVED FROM CONDUITS, CONDUITS WILL BE RESEALED WITH RATED MATERIALS ONCE CABLES ARE INSTALLED. ALL PENETRATIONS WILL BE SLEEVED IAW, VA OFFICE OF CONSTRUCTION & FACILITIES MANAGEMENT ELECTRICAL DESIGN MANUAL (EDM)* TABLE 7.1 AND OFFICE OF INFORMATION TECHNOLOGY(OIT) DESIGN GUIDE.**
E. CABLES IN COMMUNICATION ROOMS WILL BE NEATLY RUN INTO RACK COMPATIBLE CABLE MANAGEMENT SYSTEMS RACEWAYS.

*LINK FOR EDM: HTTP://WWW.CFM.VA.GOV/ITL/DMANUAL/DMELHOSP.PDF
** LINK FOR OIT DESIGN GUIDE: HTTP://WWW.CFM.VA.GOV/ITL/DGUIDE/DGOIT.PDF

VII. SELECTION OF MATERIAL

A. ALL MATERIALS SELECTED FOR USE BY INSTALLATION CONTRACTOR MUST BE APPROVED BY VA TELECOMMUNICATIONS PERSONNEL PRIOR TO INSTALLATION.

VIII. TESTING CABLE

A. ALL CABLES INSTALLED MUST BE TESTED AND VERIFIED FOR FULL 100MB/1GB TRANSMISSION SPEED AND CONTINUITY TO VERIFY THAT ALL PAIRS ARE FUNCTIONAL TO SUPPORT VOICE AND DATA SYSTEMS. TEST RESULTS MUST BE PRINTED OR EMAILED AND PROVIDED TO VA OIT FIELD OPERATIONS PERSONNEL PRIOR TO ACCEPTANCE OF THE WORK THAT WAS PERFORMED.

IX. ENVIRONMENTAL CONTROLS

A. COMMUNICATIONS ROOMS CONTAINING ELECTRONIC NETWORK EQUIPMENT MUST BE ADEQUATELY CAPABLE TO MAINTAIN AIR FLOW TO COOL EQUIPMENT TO AVOID OVERHEATING. OPTIMUM ROOM TEMPERATURE SHOULDN'T EXCEED 75 DEGREES FAHRENHEIT PER OIT DESIGN GUIDE*.

* HTTP://WWW.CFM.VA.GOV/ITL/DGUIDE/DGOIT.PDF PG. 4-89

X. SECURITY CONTROLS

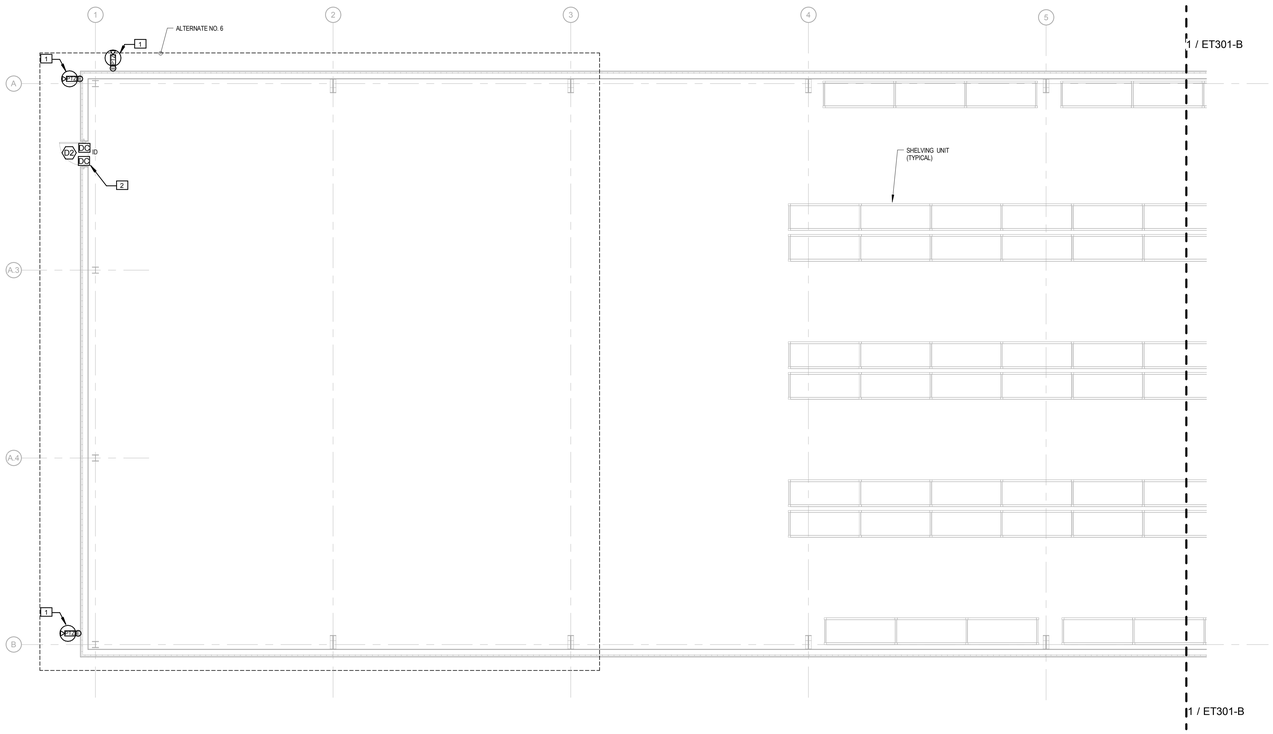
A. COMMUNICATIONS CLOSET MUST BE DESIGNATED FOR THE SOLE PURPOSE OF SUPPORTING INFORMATION TECHNOLOGY SYSTEM EQUIPMENT. I.E., LOCAL AREA NETWORK SWITCHES AND SERVERS AND TELEPHONE SYSTEMS EQUIPMENT AND ITS RELATED CABLE. NO OTHER SYSTEMS OR EQUIPMENT IS ALLOWED THAT WOULD COMPROMISE SECURITY OF THE INSTALLED IT SYSTEMS AND ACCESS CONTROL BY OIT PERSONNEL.

XI. MAIN TELCO FIBER OPTIC OR COPPER CABLE

A. ALL TELCO, FIBER, OR COPPER CABLE MUST BE PULLED INTO THE BUILDING FROM THE NEAREST DISTRIBUTION POINT AS DETERMINED BY CONSTRUCTION SITE DESIGN AND OIT.
B. CAPACITY OF BOTH FIBER OPTIC AND COPPER CABLE PAIRS WILL BE DETERMINED BY THE GOVERNMENT TELECOM/OIT REPRESENTATIVE.

XIII. NEW NETWORK OR TELECOM CLOSET CONSTRUCTION

A. ROOM DIMENSIONS, AT A MINIMUM, SHALL BE 4' X 6'
B. ROOM SHALL HAVE PROPER HVAC TO MAINTAIN SPECIFIED TEMPERATURE (SECTION IX, ENVIRONMENTAL CONTROLS)
C. ROOM SHALL HAVE SLIGHTLY POSITIVE PRESSURE TO ADJACENT AREA(S)
D. ROOM SHALL HAVE ADEQUATE SECURITY CONTROLS, TO INCLUDE BADGE ACCESS (SECTION X, SECURITY CONTROLS)
E. ROOM SHALL HAVE TWO (2) SEPARATE 220VAC CIRCUITS ON EMERGENCY POWER. PLUG TYPE AND AMPERAGE WILL BE DETERMINED BY OIT DESIGNATED STAFF BASED ON THE INFRASTRUCTURE NEEDED TO SUPPORT THE PROJECT.
F. ROOM SHALL HAVE A FIRE RATING OF AT MINIMUM 1 HOUR.

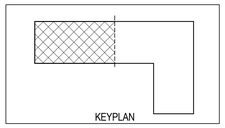


1 FIRST FLOOR TELECOMMUNICATIONS AND SECURITY PLAN - SIDE A
1/8" = 1'-0"

KEYNOTES

(APPLIES TO ET301-A & ET301-B)

1. INSTALL CAMERA AT 15'-0" A.F.G. PROVIDE EMT CONDUIT INSIDE BUILDING TO THE CABLE TRAY SYSTEM. PROVIDE CAT 6 CABLE TO IT CLOSET. CAMERA IS PROVIDED AND INSTALLED BY VAMC.
2. SEE DOOR DETAILS FOR ADDITIONAL INFORMATION. INSTALL CONDUITS FROM DOOR TO THE CABLE TRAY SYSTEM.
3. INSTALL CAMERA AT 12'-0" A.F.G. PROVIDE EMT CONDUIT INSIDE BUILDING TO THE CABLE TRAY SYSTEM. PROVIDE CAT 6 CABLE TO IT CLOSET. CAMERA IS PROVIDED AND INSTALLED BY VAMC.
4. COORDINATE FINAL LOCATION OF INTERCOM SYSTEM WITH THE VA STAFF PRIOR TO INSTALLATION.
5. INSTALL TELECOMMUNICATIONS OUTLETS TO DUAL CHANNEL SURFACE RACEWAY. SEE POWER DRAWINGS FOR ADDITIONAL INFORMATION.
6. TELECOMMUNICATIONS GROUND BAR. BOND ALL RACKS, CABLE TRAY, EQUIPMENT, AND CONDUIT SLEEVES TO THIS GROUND BAR.
7. PROVIDE FLOOR MOUNTED DATA RACK, WITH VERTICAL CABLE MANAGEMENT.
8. PROVIDE (4) 4" PVC CONDUITS UNDER SLAB TO THIS AREA. TWO CONDUITS SHALL BE CAPPED. THE REMAINING TWO SHALL CONTINUE TO THE MANHOLE ON THE SITE.
9. PROVIDE 3/4" EMT CONDUIT TO THE CABLE TRAY SYSTEM.
10. PROVIDE EMT CONDUIT FROM THE SECURITY CAMERA TO THE CABLE TRAY SYSTEM.
11. PROVIDE (4) 4" EMT SLEEVES ABOVE DOOR FOR CONNECTION TO THE CABLE TRAY SYSTEM.
12. PROVIDE PLYWOOD ON ALL WALLS FROM 6" AFF TO 8'-6" AFF.
13. PROVIDE 12" WIDE LADDER TRAY, SUSPENDED FROM STRUCTURE ABOVE, AROUND PERIMETER OF ROOM. LOCATE 6" AWAY FROM WALLS.
14. LOCATE TELEPHONE PUNCH DOWN BLOCKS ON THIS WALL.
15. (4) 4" CONDUITS FROM CABLE TRAY ABOVE DOWN WALL TO SLEEVES IN WALL FOR PATHWAY TO DATA ROOM.
16. PROVIDE (4) 4" EMT SLEEVES ABOVE DOOR FOR CONNECTION TO THE CABLE TRAY SYSTEM.
17. COORDINATION FINAL PLACEMENT WITH IT DEPARTMENT PRIOR TO INSTALL.



FULLY SPRINKLERED
CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

HOPE FURRER ASSOCIATES
STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

MOORE DESIGN ASSOCIATES
LANDSCAPE ARCHITECTURE

SEAL

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AE Works Project Number: 13025

Drawing Title: FIRST FLOOR TELECOMMUNICATIONS AND SECURITY PLAN – SIDE A

Approved: Project Director

Project Title: NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 | Checked: JJD | Drawn: JMZ

Project Number: # 613-116

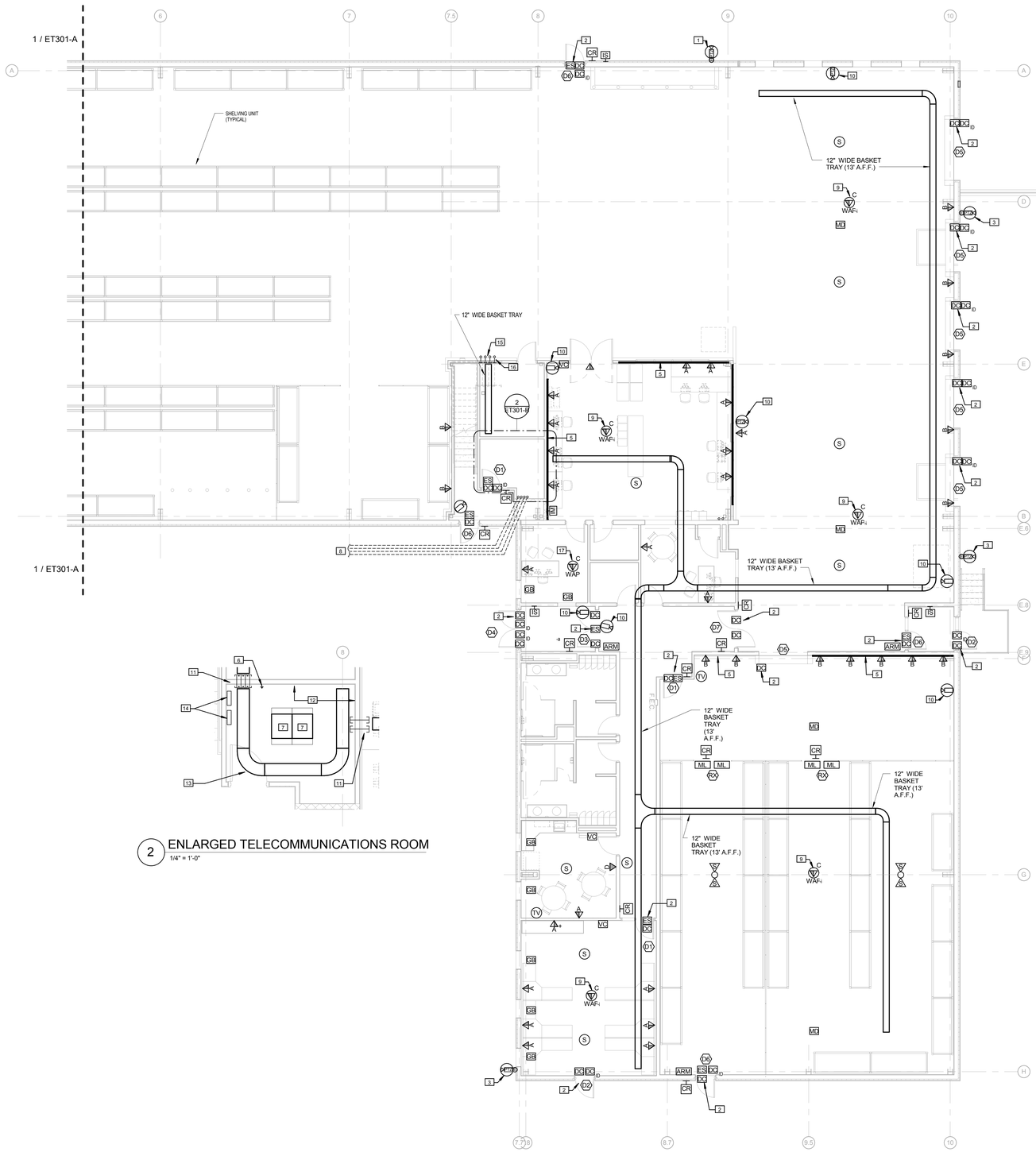
Building Number: #519

Drawing Number: ET301-A

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



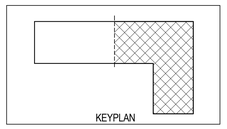
1 FIRST FLOOR TELECOMMUNICATIONS AND SECURITY PLAN - SIDE B
1/8" = 1'-0"

2 ENLARGED TELECOMMUNICATIONS ROOM
1/4" = 1'-0"

KEYNOTES

(APPLIES TO ET301-A & ET301-B)

1. INSTALL CAMERA AT 15'-0" A.F.G. PROVIDE EMT CONDUIT INSIDE BUILDING TO THE CABLE TRAY SYSTEM. PROVIDE CAT 6 CABLE TO IT CLOSET. CAMERA IS PROVIDED AND INSTALLED BY VAMC.
2. SEE DOOR DETAILS FOR ADDITIONAL INFORMATION. INSTALL CONDUITS FROM DOOR TO THE CABLE TRAY SYSTEM.
3. INSTALL CAMERA AT 12'-0" A.F.G. PROVIDE EMT CONDUIT INSIDE BUILDING TO THE CABLE TRAY SYSTEM. PROVIDE CAT 6 CABLE TO IT CLOSET. CAMERA IS PROVIDED AND INSTALLED BY VAMC.
4. COORDINATE FINAL LOCATION OF INTERCOM SYSTEM WITH THE VA STAFF PRIOR TO INSTALLATION.
5. INSTALL TELECOMMUNICATIONS OUTLETS TO DUAL CHANNEL SURFACE RACEWAY. SEE POWER DRAWINGS FOR ADDITIONAL INFORMATION.
6. TELECOMMUNICATIONS GROUND BAR. BOND ALL RACKS, CABLE TRAY, EQUIPMENT, AND CONDUIT SLEEVES TO THIS GROUND BAR.
7. PROVIDE FLOOR MOUNTED DATA RACK, WITH VERTICAL CABLE MANAGEMENT.
8. PROVIDE (4) 4" PVC CONDUITS UNDER SLAB TO THIS AREA. TWO CONDUITS SHALL BE CAPPED. THE REMAINING TWO SHALL CONTINUE TO THE MANHOLE ON THE SITE.
9. PROVIDE 3/4" EMT CONDUIT TO THE CABLE TRAY SYSTEM.
10. PROVIDE EMT CONDUIT FROM THE SECURITY CAMERA TO THE CABLE TRAY SYSTEM.
11. PROVIDE (4) 4" EMT SLEEVES ABOVE DOOR FOR CONNECTION TO THE CABLE TRAY SYSTEM.
12. PROVIDE PLYWOOD ON ALL WALLS FROM 8" AFF TO 8'-6" AFF.
13. PROVIDE 12" WIDE LADDER TRAY, SUSPENDED FROM STRUCTURE ABOVE, AROUND PERIMETER OF ROOM. LOCATE 6" AWAY FROM WALLS.
14. LOCATE TELEPHONE PUNCH DOWN BLOCKS ON THIS WALL.
15. (4) 4" CONDUITS FROM CABLE TRAY ABOVE DOWN WALL TO SLEEVES IN WALL FOR PATHWAY TO DATA ROOM.
16. PROVIDE (4) 4" EMT SLEEVES ABOVE DOOR FOR CONNECTION TO THE CABLE TRAY SYSTEM.
17. COORDINATION FINAL PLACEMENT WITH IT DEPARTMENT PRIOR TO INSTALL.



FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

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www.ae-works.com

AE Works Project Number: 13025

Drawing Title
FIRST FLOOR TELECOMMUNICATIONS AND SECURITY PLAN – SIDE B

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 **Checked:** JJD **Drawn:** JMZ

Project Number # 613-116

Building Number #519

Drawing Number ET301-B

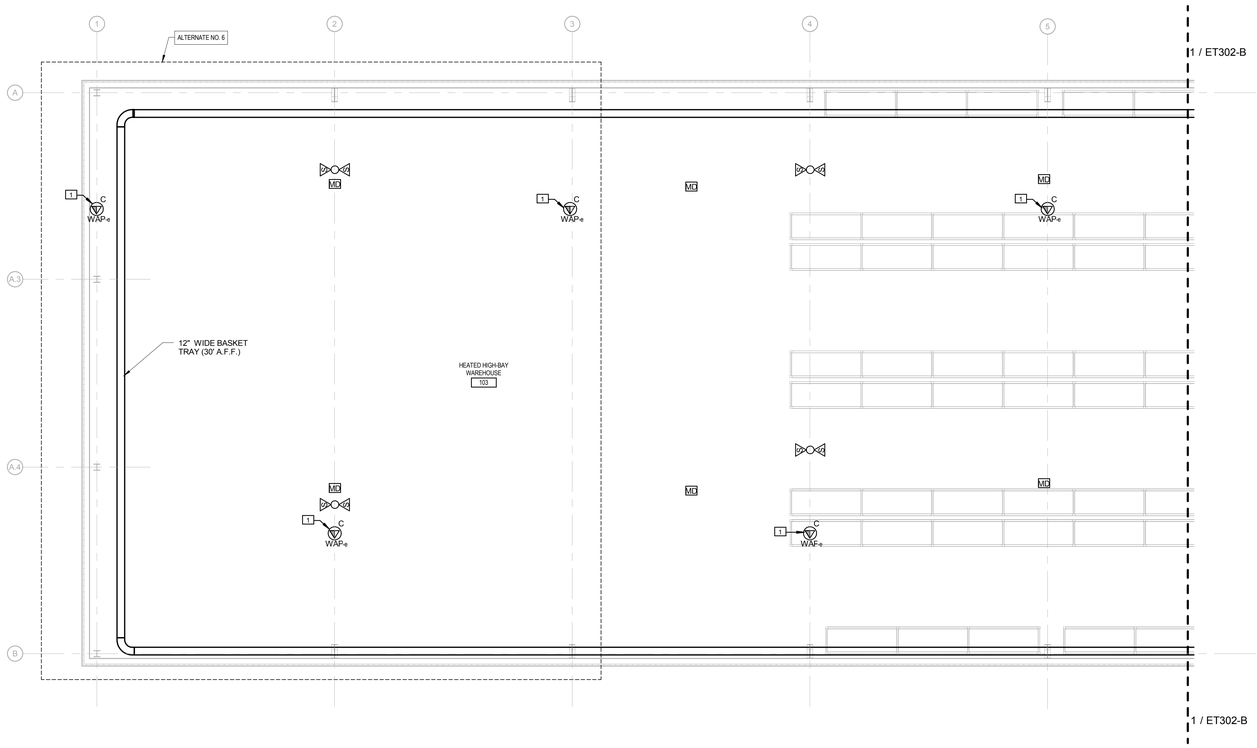
Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

KEYNOTES (THIS DRAWING)

1. PROVIDE 3/4" EMT CONDUIT TO THE CABLE TRAY SYSTEM.
2. LOCATE PHONE JACK AT LIGHTING CONTROL PANEL.
3. (4) 4" CONDUITS FROM CABLE TRAY ABOVE DOWN WALL TO SLEEVES IN WALL FOR PATHWAY TO DATA ROOM.
4. PAGING SYSTEM AMPLIFIER.
5. LOCATION OF SECURITY PANELS.
6. PROVIDE 3/4" PLYWOOD ON ALL WALLS. PAINT PLYWOOD WHITE. INSTALL PLYWOOD FROM 8" AFF TO 8'-6" AFF.



1 HIGH BAY TELECOMMUNICATIONS AND SECURITY PLAN - SIDE A
1/8" = 1'-0"

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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AE Works Project Number: 13025

Drawing Title
HIGH BAY TELECOMMUNICATIONS AND SECURITY PLAN – SIDE A

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date:	Checked:	Drawn:
06/24/2015	JJD	JMZ

Project Number # 613-116

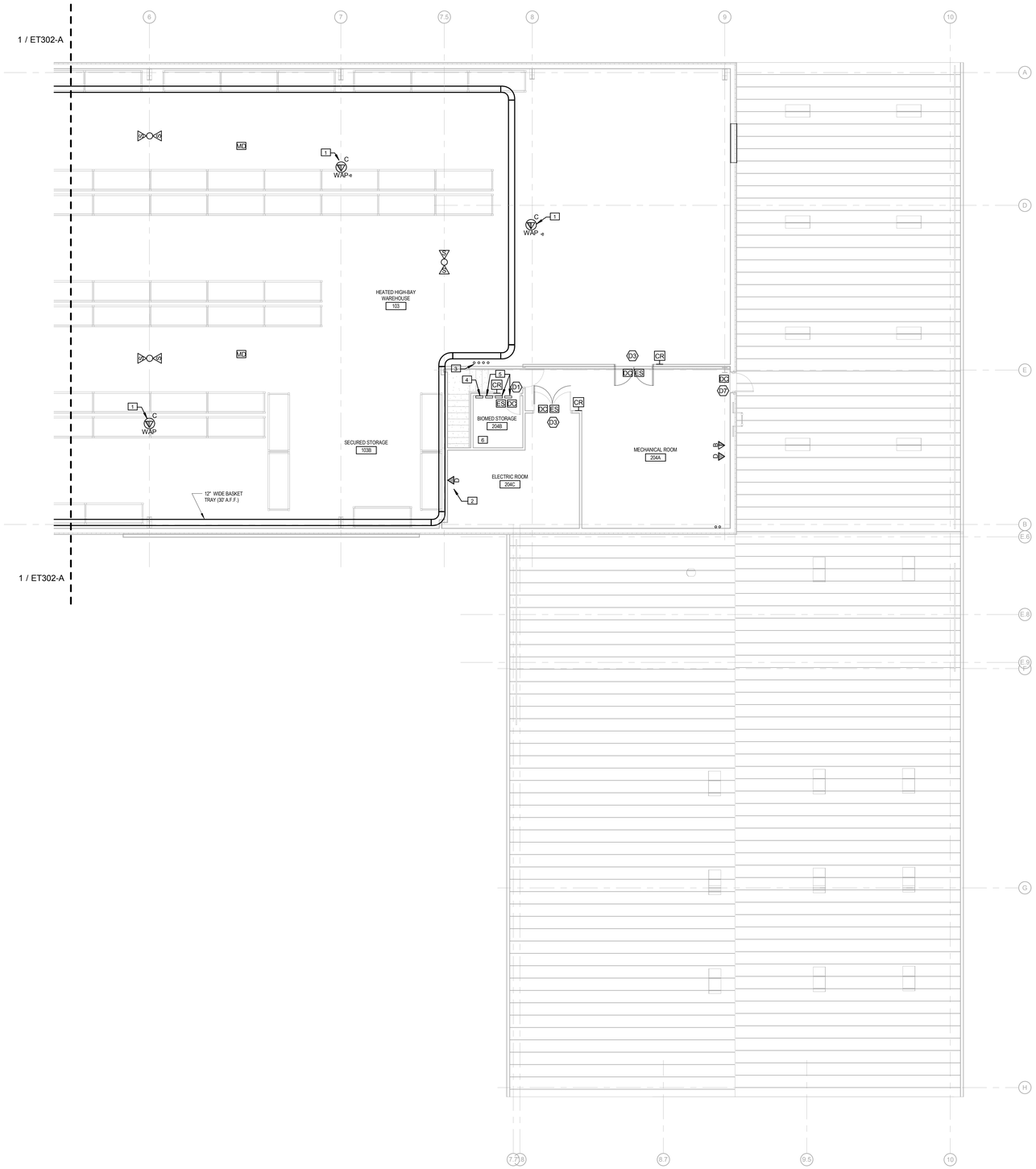
Building Number #519

Drawing Number ET302-A

Office of Construction and Facilities Management

Department of Veterans Affairs

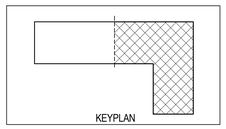
VA FORM 08-6231



1 HIGH BAY TELECOMMUNICATIONS AND SECURITY PLAN – SIDE B
1/8" = 1'-0"

KEYNOTES (THIS DRAWING)

1. PROVIDE 3/4" EMT CONDUIT TO THE CABLE TRAY SYSTEM.
2. LOCATE PHONE JACK AT LIGHTING CONTROL PANEL.
3. (4) 4" CONDUITS FROM CABLE TRAY ABOVE DOWN WALL TO SLEEVES IN WALL FOR PATHWAY TO DATA ROOM.
4. PAGING SYSTEM AMPLIFIER.
5. LOCATION OF SECURITY PANELS.
6. PROVIDE 3/4" PLYWOOD ON ALL WALLS. PAINT PLYWOOD WHITE. INSTALL PLYWOOD FROM 6" AFF TO 8'-0" AFF.



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Revisions:	Date

CONSULTANTS:

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AE Works Project Number: 13025

Drawing Title: HIGH BAY TELECOMMUNICATIONS AND SECURITY PLAN – SIDE B

Approved: Project Director

Project Title: NEW WAREHOUSE

Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405

Date: 06/24/2015 | Checked: JJD | Drawn: JMZ

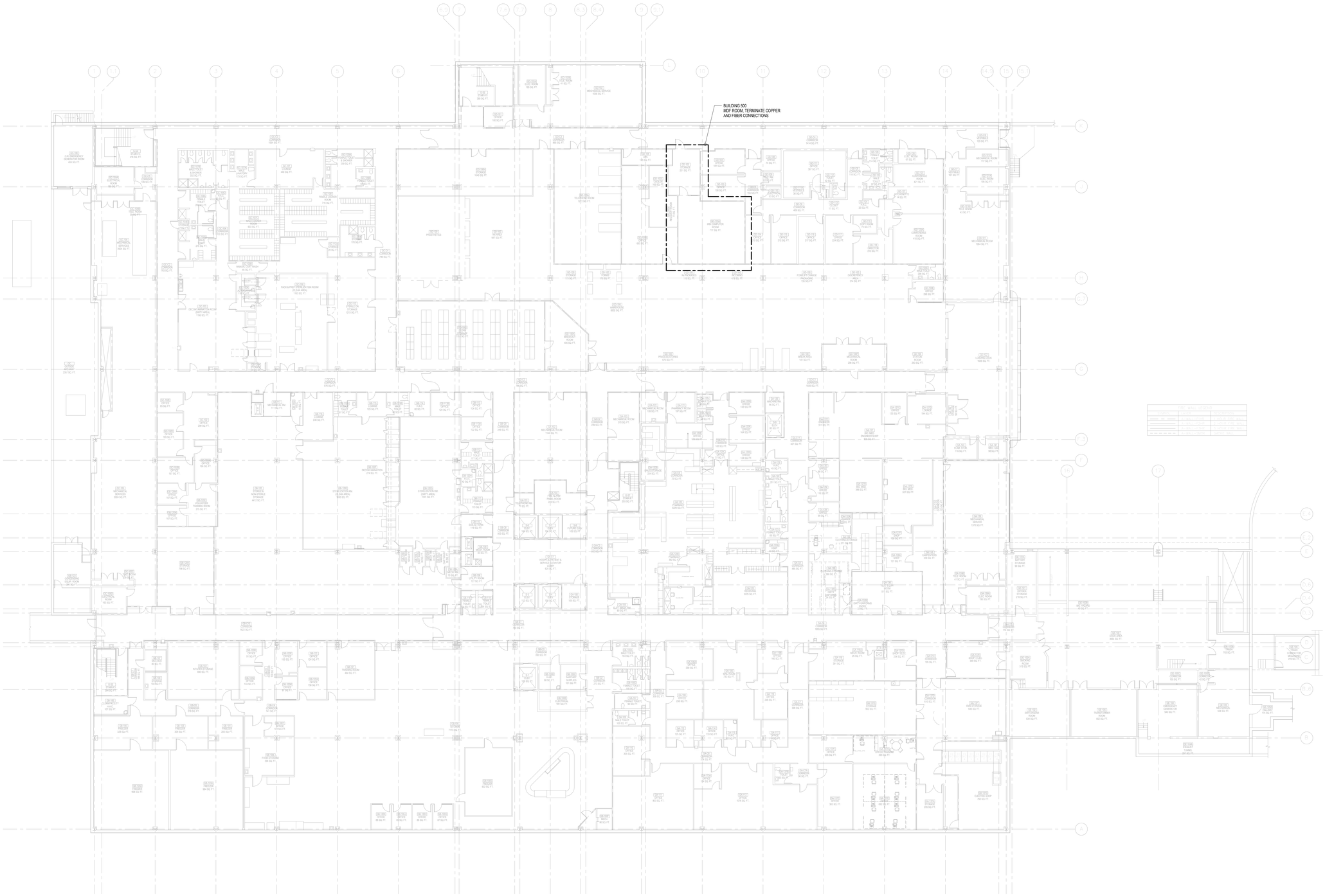
Project Number: # 613-116

Building Number: #519

Drawing Number: ET302-B

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231



1 BUILDING 500 - BASEMENT
1/16" = 1'-0"

PROJECT NORTH
TRUE NORTH

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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STRUCTURAL ENGINEERING

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CIVIL ENGINEERING

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AE Works Project Number: 13025

Drawing Title
BUILDING 500 -BASEMENT PLAN

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE
MARTINSBURG, WV 25405

Date:	Checked:	Drawn:
06/24/2015	JJD	JMZ

Project Number
#613-116

Building Number
#519

Drawing Number
ET500

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

1 BUILDING 500 - INTERSTITIAL SPACE
1/16" = 1'-0"

PROJECT NORTH
TRUE NORTH

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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AE Works Project Number: 13025

Drawing Title
BUILDING 500 - INTERSTITIAL SPACE

Approved: Project Director

Project Title:
NEW WAREHOUSE

Location: 510 BUTLER AVENUE
MARTINSBURG, WV 25405

Date: 06/24/2015
Checked: JJD
Drawn: JMZ

Project Number # 613-116

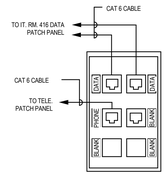
Building Number #519

Drawing Number ET501

Office of Construction and Facilities Management

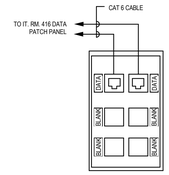
Department of Veterans Affairs

VA FORM 08-6231



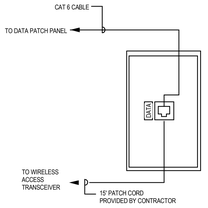
NOTES
1. MOUNT JACK AT 18" A.F.F. (UNLESS NOTED OTHERWISE)
2. DATA JACK INSERTS SHALL BE BLACK
3. VOICE JACK INSERTS SHALL BE WHITE

1 STATION OUTLET TYPE "A"
NTS



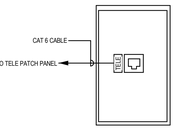
NOTES
1. MOUNT JACK AT 18" A.F.F. (UNLESS NOTED OTHERWISE)
2. DATA JACK INSERTS SHALL BE BLACK
3. VOICE JACK INSERTS SHALL BE WHITE

2 STATION OUTLET TYPE "B"
NTS

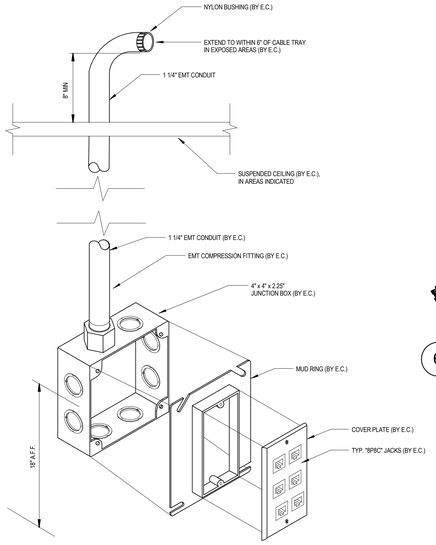


NOTES
1. INSTALL JACK ABOVE ACCESSIBLE CEILING SPACE
2. COORDINATE WITH THE VA IT DEPARTMENT EXACT LOCATION OF ALL OWNER PROVIDED WIRELESS ACCESS POINTS.

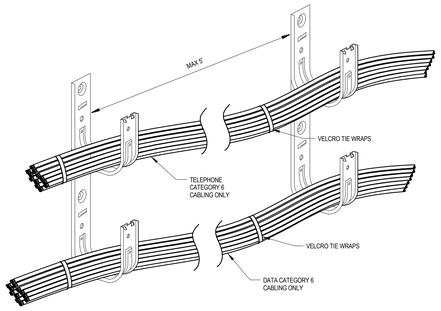
3 STATION OUTLET TYPE "C"
NTS



4 STATION OUTLET TYPE "D"
NTS



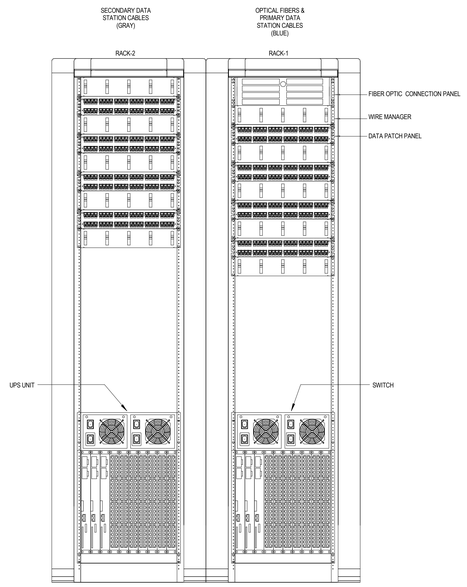
5 ROUGH-IN DETAIL
NTS



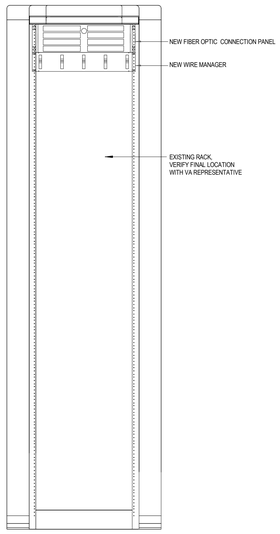
6 CABLE SUPPORT DETAIL (ABOVE LAY-IN CEILINGS ONLY)
NTS

GENERAL NOTES:

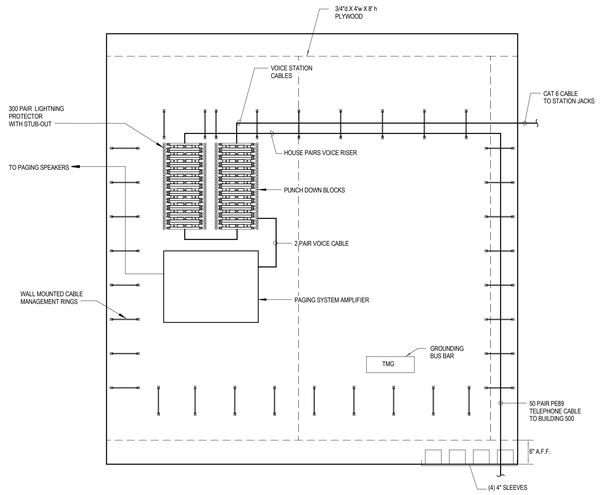
1. THE ELEVATION DETAILS ARE DIAGRAMMATIC ONLY AND HAVE BEEN PROVIDED TO DEPICT THE GENERAL ARRANGEMENT AND INSTALLATION REQUIREMENTS OF ALL EQUIPMENT RACKS. THE CONTRACTOR SHALL PROVIDE EQUIPMENT RACKS IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND SHALL BE CONFIGURED TO SUPPORT ALL EQUIPMENT, COMPONENTS AND CABLING NECESSARY TO MEET THE PERFORMANCE REQUIREMENTS OF ALL SYSTEMS SPECIFIED. THE CONTRACTOR SHALL PROVIDE ALL ELECTRICAL POWER, GROUNDING, SYSTEM COMPONENTS, EQUIPMENT AND ALL APPURTENANCES AS REQUIRED TO PROVIDE FULLY OPERATING SYSTEMS IN ACCORDANCE WITH ALL PROJECT REQUIREMENTS.
2. PROVIDE IDENTIFICATION OF ALL EQUIPMENT RACKS, SECURITY EQUIPMENT PANELS, SYSTEM INTERFACE CABINETS, AND SIMILAR EQUIPMENT WITH 1-1/2 INCH WHITE LETTERING. ENGRAVED LAMINATED PLASTIC SIGNS SHALL BE USED FOR IDENTIFICATION AND SECURELY FASTENED IN ACCORDANCE WITH THE PROJECT REQUIREMENTS.
3. WORK SHALL BE NEAT IN APPEARANCE, FREE OF ROUGH EDGES, SCRATCHES, BLEMISHES, CRACKS AND EXPOSED CAPS. ALL EQUIPMENT SHALL BE SECURED TO THE MOUNTING SURFACE, AND FASTENED WITH HARDWARE APPROVED BY THE MANUFACTURER AND CAPABLE OF SUPPORTING THE RATED LOAD. ALL CABLES WITHIN ENCLOSURES SHALL BE NEATLY ROUTED AND BUNDLE WRAPPED AT 6 INCHES ON CENTER.
4. ALL WIRING SHALL TERMINATE ON PUNCH BLOCKS OR PATCH PANELS IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. NO SPLICES SHALL BE PERMITTED.
5. PROVIDE ALL EQUIPMENT CLEARANCES IN ACCORDANCE WITH NEC REQUIREMENTS. ARRANGE EQUIPMENT TO FACILITATE UNRESTRICTED ACCESS FOR MAINTENANCE AND SERVICE AROUND ALL EQUIPMENT, COMPONENTS AND/OR CABLE TERMINATIONS.
6. ALL PENETRATIONS OF WALLS AND FLOORS SHALL BE FIRE STOPPED IN ACCORDANCE WITH THE ASTM AND NFPA. REFER TO RELATED SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION. INSTALLATION OF FIRE-STOPS SHALL BE PERFORMED BY AN APPLICATOR/INSTALLER QUALIFIED AND TRAINED BY THE MANUFACTURER. INSTALLATION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH MANUFACTURER'S DETAILED INSTALLATION PROCEDURES.
7. ALL CONDUITS/RACEWAYS SHALL BE INSTALLED IN A MANNER THAT PREVENTS TAMPERING OR REMOVAL WHEN INSTALLED IN AREAS EXPOSED TO THE GENERAL POPULATION.
8. REFER TO ALL RELATED SPECIFICATION SECTIONS FOR ADDITIONAL INFORMATION.



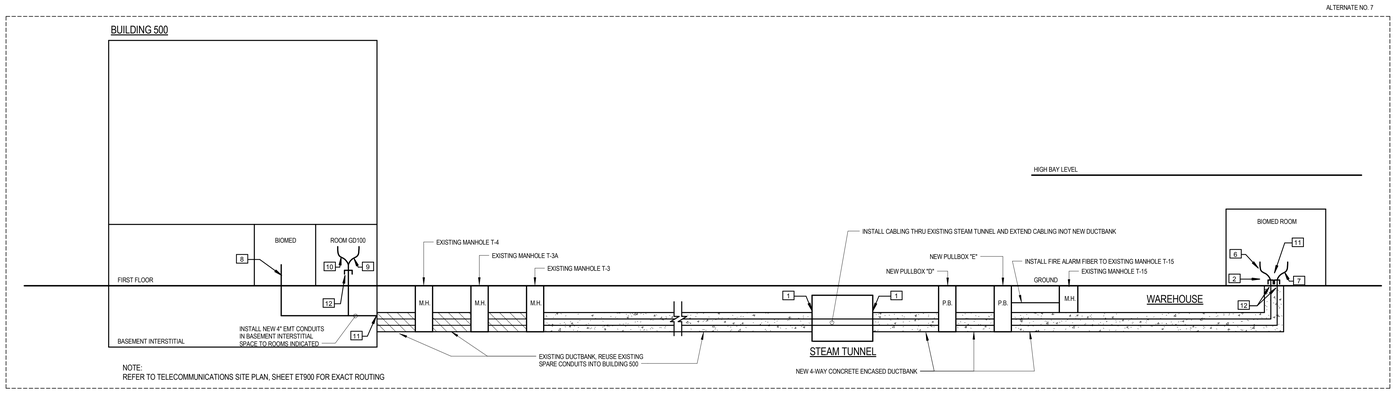
7 DATA RACK DETAILS - WAREHOUSE
NTS



8 BUILDING 500 FIBER CONNECTION
NTS



9 TELEPHONE TERMINATION WALL
NOT TO SCALE



10 TELECOMMUNICATIONS, SECURITY, CATV BUILDING INTERCONNECTION RISER
NTS

KEYNOTES

(THIS DETAIL)

1. PROVIDE LINK SEALS AT TUNNEL ENTRY POINTS FOR ALL CONDUITS.
2. MAXIMUM RUN LENGTH INSIDE BUILDING SHALL BE LIMITED TO 50'-0" LOCATE CONDUIT ENTRY POINT ACCORDINGLY.
3. RG 11 COAX CABLE TO BUILDING 328 CATV TERMINATION POINT. TERMINATE ON WALL IN TELECOMMUNICATIONS CLOSET.
4. TWO STRANDS 62.5/125MM FIBER OPTIC CONNECTION TO FIRE ALARM SYSTEM LOOP. COORDINATE REQUIREMENTS WITH VAMC STAFF.
5. PROVIDE (1) RG-11 FLOODED TYPE COAX CABLE. TERMINATE IN BUILDING 328.
6. 12 STRANDS OM3 MM AND 12 STRANDS SM FIBER OPTIC CABLE FOR TELECOMMUNICATIONS. TERMINATE ON RACK.
7. 50 PAIR PE-89 COPPER CABLE FOR TELEPHONE. TERMINATE ON LIGHTNING PROTECTION.
8. TERMINATE FIBER FOR SECURITY AND CATV/OVERHEAD PAGING ON DESIGNATED RACK IN BIOMED EQUIPMENT ROOM. VA PERSONNEL SHALL FINAL LOCATION FOR FIBER TERMINATIONS.
9. TERMINATE TELECOMMUNICATIONS FIBER ON RACK IN MDF ROOM AS DESIGNATED BY VA PERSONNEL.
10. TERMINATE COPPER CABLE IN MDF ROOM AS DESIGNATED BY VA PERSONNEL.
11. TRANSITION TO EMT CONDUIT ONCE INSIDE THE BUILDING.
12. BOND ALL CONDUITS WITH A COPPER CONDUCTOR AND GROUNDING BUSHING TO THE TELECOMMUNICATIONS GROUND BAR.

PROJECT NORTH
TRUE NORTH

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

CONSULTANTS:

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STRUCTURAL ENGINEERING

CLARK SURVEYING + ENGINEERING
CIVIL ENGINEERING

MOORE DESIGN ASSOCIATES
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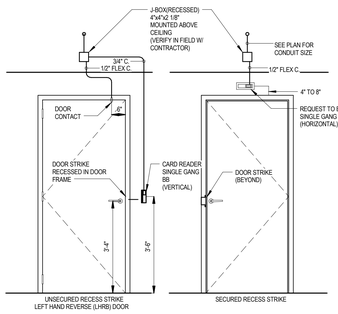
AE Works Project Number: 13025

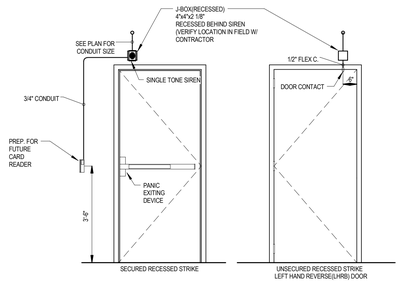
Drawing Title: TELECOMMUNICATION DETAILS	Project Title: NEW WAREHOUSE		Project Number: # 613-116
			Building Number: #519
Approved: Project Director	Location: 510 BUTLER AVENUE MARTINSBURG, WV 25405		Drawing Number: ET600
	Date: 06/24/2015	Checked: JJD	Drawn: JMZ

Office of Construction and Facilities Management
Department of Veterans Affairs

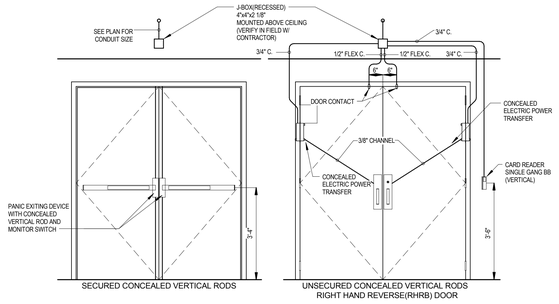
VA FORM 08-6231



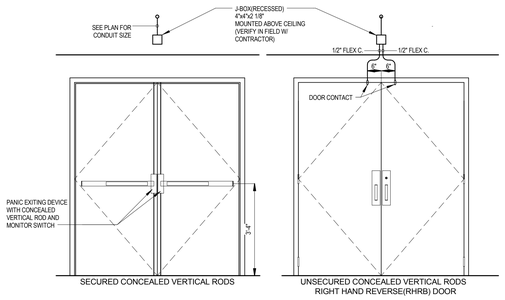
D1 SECURITY DOOR ASSEMBLY - RESTRICTED ACCESS



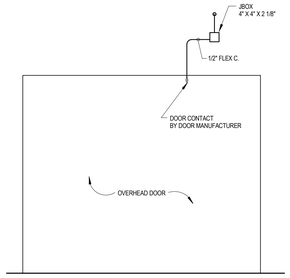
D2 EGRESS DOOR ASSEMBLY - NO RE-ENTRY



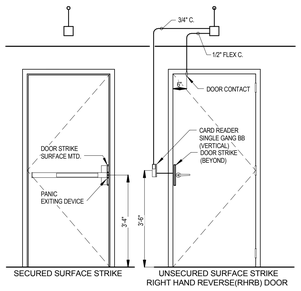
D3 EGRESS DOOR ASSEMBLY - CONCEALED VERTICAL RODS



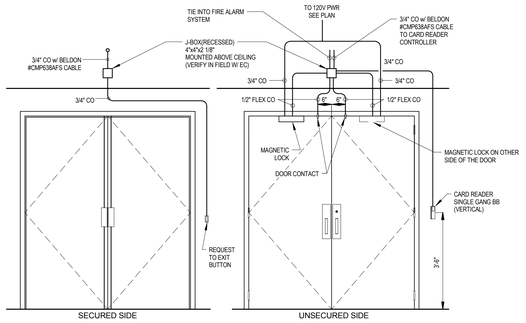
D4 EGRESS DOOR ASSEMBLY - DOUBLE DOOR CONTACTS



D5 OVERHEAD DOOR



D6 EGRESS DOOR ASSEMBLY

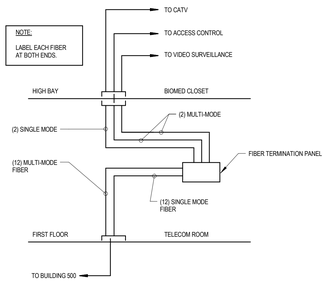


D7 EGRESS DOOR ASSEMBLY - DOUBLE DOORS

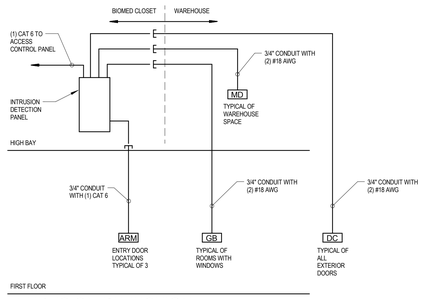
NOTE:

1. COORDINATE REQUIREMENTS FOR INTEGRATING REMOTE RELEASE WITH VESTIBULE DOORS.
2. COORDINATE REQUIREMENTS FOR INTEGRATING MOTORIZED DOOR OPERATIONS WITH VESTIBULE DOUBLE DOORS.
3. REFER TO HARDWARE SPEC SECTION 081710.

1 DOOR DETAILS
NTS



2 FIBER OPTIC RISER
NTS



3 INTRUSION DETECTION
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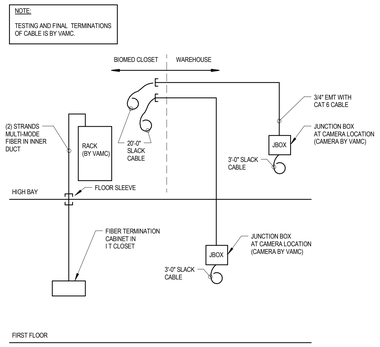
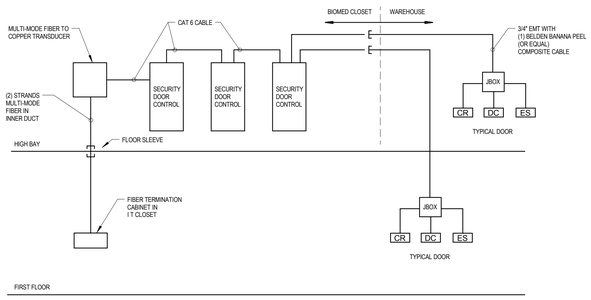


4 VIDEO SURVEILLANCE RISER DIAGRAM
NTS



5 ACCESS CONTROL RISER DIAGRAM
NTS

FULLY SPRINKLERED CONSTRUCTION DOCUMENTS

Revisions:	Date

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Drawing Title
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Approved: Project Director

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Drawn: Author

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