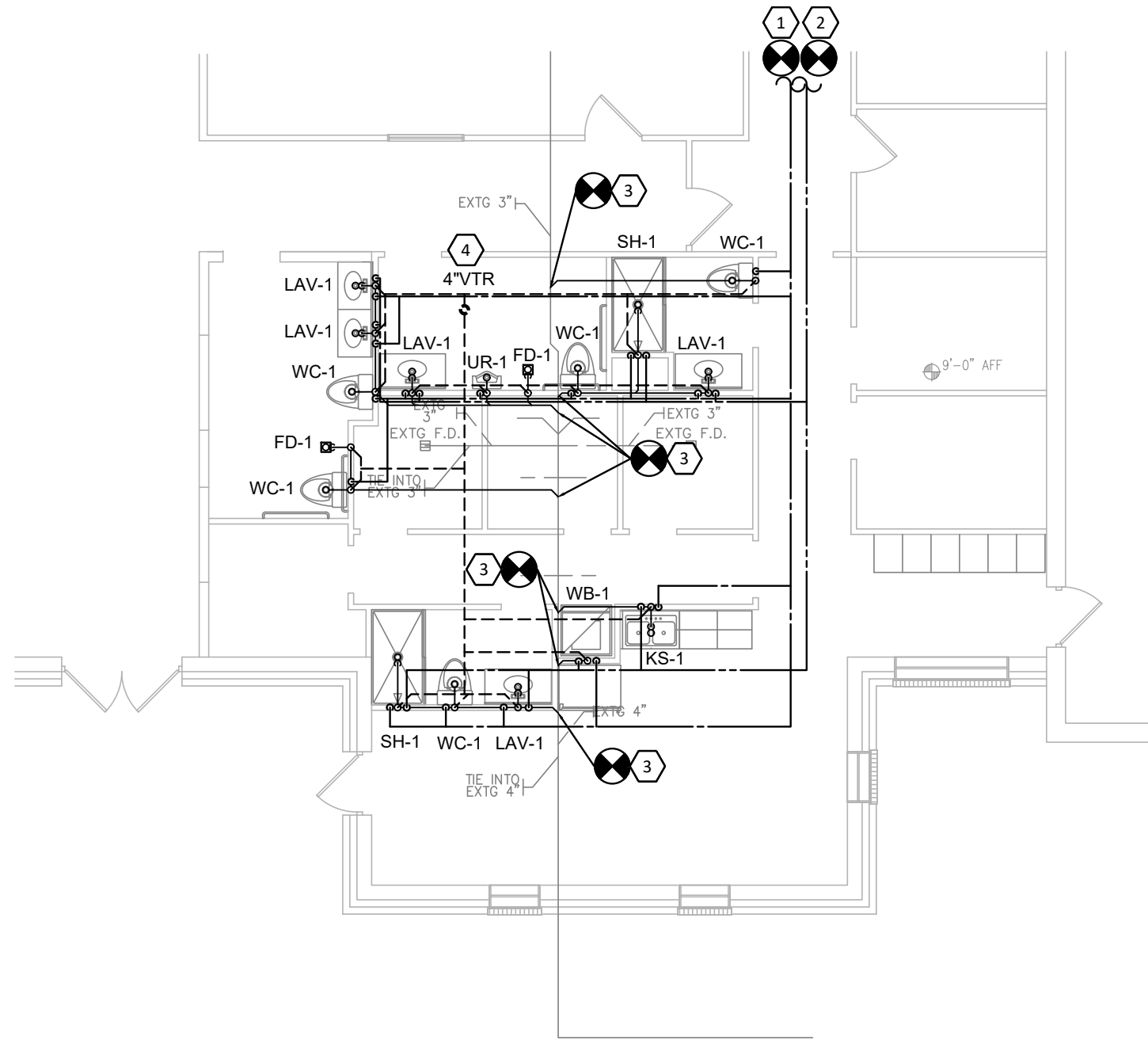


g:\projects\13478 - harlan township fire station - pleasant plain, oh\p1.0 - Plumbing Plan.dwg Tuesday, January 27, 2026 3:59:55 PM



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

KEYED NOTES

1. EXTEND AND CONNECT NEW COLD WATER PIPING TO EXISTING COLD WATER PIPING. FIELD VERIFY EXACT SIZE, LOCATION, AND POINT OF CONNECTION.
2. EXTEND AND CONNECT NEW HOT WATER PIPING TO EXISTING HOT WATER PIPING. FIELD VERIFY EXACT SIZE, LOCATION, AND POINT OF CONNECTION.
3. EXTEND AND CONNECT NEW SANITARY PIPING TO EXISTING SANITARY MAIN. FIELD VERIFY EXACT SIZE, LOCATION, AND POINT OF CONNECTION.
4. NEW 3" VENT THRU ROOF LOCATION TO BE A MINIMUM 10' AWAY FROM NEAREST BUILDING OR EQUIPMENT'S FRESH AIR INTAKE, V.I.F. PROVIDE ONE PIECE SPUN ALUMINUM BASE WITH GRADUATED STEPPED PVC BOOT AND ADJUSTABLE STAINLESS STEEL CLAMPS. SEAL BASE TO ROOF WATER TIGHT. VERIFY FLASHING AND COUNTER FLASHING REQUIREMENTS WITH ROOFING CONTRACTOR TO ASSURE ROOF WARRANTY IS NOT VOIDED.

GENERAL NOTES

- A. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. VERIFY ALL DIMENSIONS. DRAWINGS ARE ILLUSTRATIVE AND MAY NOT REFLECT EXACT CONDITIONS OR DIMENSIONS.
- B. DO NOT SCALE THE DRAWINGS. DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT OF EQUIPMENT AND SYSTEMS. THEY ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING AND COMPONENT. DO NOT USE THE PLANS FOR EXACT LOCATION OF EQUIPMENT, FIXTURES OR ARCHITECTURAL ITEMS SUCH AS WALLS, WINDOWS, SOFFITS, AND PLASTERS. SPECIFIC LOCATIONS, MOUNTING HEIGHTS AND OVERALL DIMENSIONS OF DEVICES AND FIXTURES ARE TO BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS AND DETAILS WHEN AVAILABLE.
- C. DRAWINGS SPECIFIC TO THIS TRADE DO NOT LIMIT THE RESPONSIBILITY OR WORK REQUIRED BY THE CONTRACT DOCUMENTS REFER TO DRAWINGS AND SPECIFICATIONS OF OTHER TRADES FOR COMPLETE INFORMATION PRIOR TO BID.
- D. WHERE CONFLICTS EXIST AMONG DRAWINGS, SPECIFICATIONS AND EQUIPMENT SCHEDULES, THE MORE STRINGENT SHALL APPLY. NOTIFY THE ENGINEER OF ALL CONFLICTS FOR RESOLUTION OR INTERPRETATION.
- E. NOTIFY THE OWNER IN WRITING AND FIELD VERIFY CONDITIONS BEFORE PERFORMING ANY SAWCUTTING, TRENCHING, CORING OR ANY OTHER STRUCTURAL MODIFICATIONS. ENSURE THAT NO ADVERSE EFFECT TO THE BUILDING'S STRUCTURAL INTEGRITY WILL OCCUR.
- F. ANY EXISTING CONDITION DISCOVERED DURING THE DEMOLITION OR CONSTRUCTION PROCESS WHICH, BY GENERALLY ACCEPTED CONSTRUCTION PRACTICES, SHOULD BE REMEDIATED, SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER/ARCHITECT IMMEDIATELY, IN WRITING.
- G. OBTAIN WRITTEN APPROVAL FROM THE ENGINEER BEFORE REUSING ANY EXISTING EQUIPMENT, COMPONENTS OR OPENINGS.
- H. INSULATE PLUMBING LINES IN EXTERIOR WALLS TO PREVENT FREEZING.
- I. COORDINATE ROOF WORK WITH ROOFING CONTRACTOR TO ASSURE THAT THE ROOF WARRANTY IS NOT VOIDED.

PLUMBING PENETRATIONS

COORDINATE ROOF WORK WITH BUILDING OWNER'S ROOFING CONTRACTOR TO ASSURE THAT THE ROOF WARRANTY IS NOT VOIDED.

PLUMBING LEGEND

— SAN —	SANITARY PIPING
- - - V - - -	SANITARY VENT PIPING
— CW —	DOMESTIC COLD WATER
— HW —	DOMESTIC HOT WATER PIPING
CO ○	CLEAN OUT
WCO ↑	WALL CLEAN OUT
FD □	FLOOR DRAIN
VTR ◊	VENT THROUGH ROOF
①	DRAWING NOTE SYMBOL
↵	ELBOW DOWN
WH ○	WATER HEATER
RPZ	REDUCED PRESSURE BACKFLOW PREVENTER
⊙	CONNECT TO EXISTING

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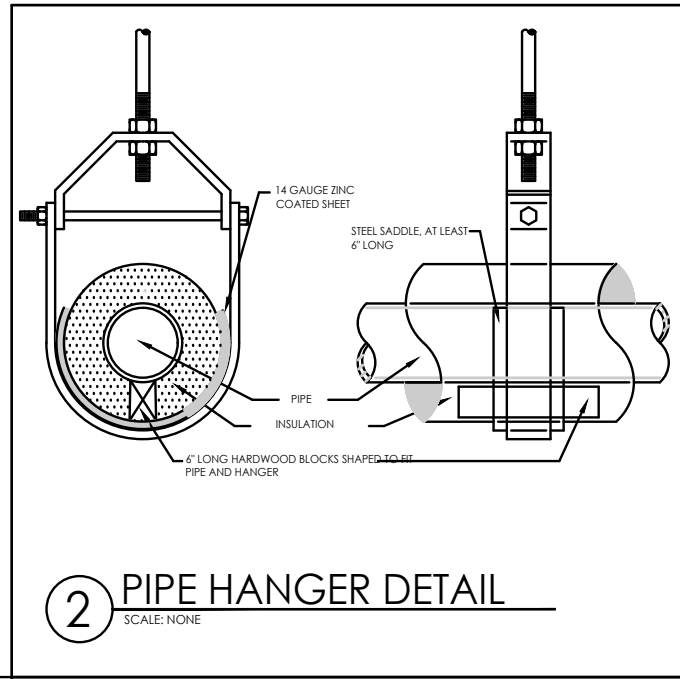
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STATE OF OHIO
John W. Quillen Jr.
REGISTERED PROFESSIONAL ENGINEER
79076
01/27/2026

PROPOSED PROJECT:
HARLAN TWP. FIRE STATION ALTERATIONS
9120 MORROW ROSSBURG
PLEASANT RIDGE, OH
WARREN COUNTY

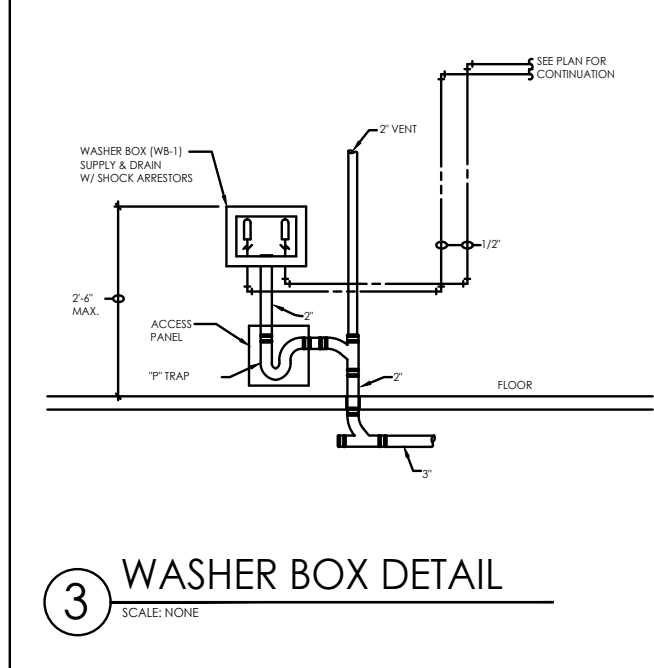
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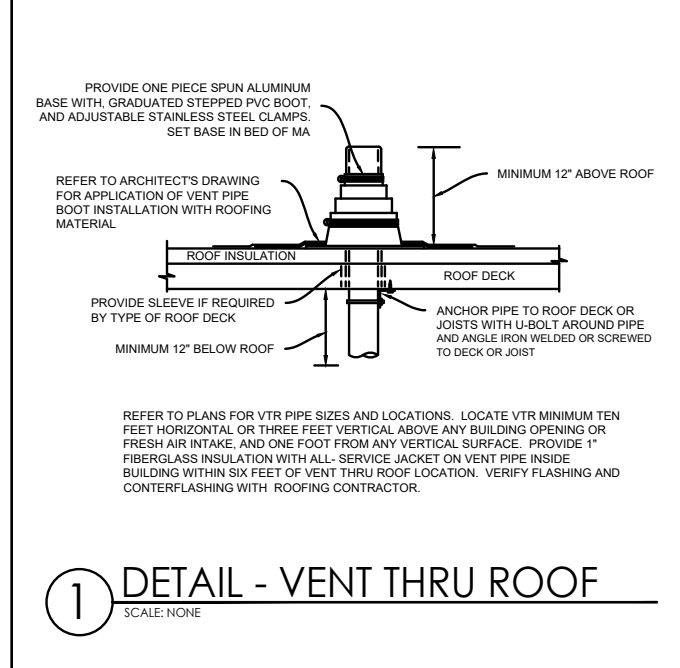


2 PIPE HANGER DETAIL
SCALE: NONE

PLUMBING FIXTURE SCHEDULE					
MARK	DESCRIPTION	SAN	VENT	CW	HW
LAV-1	LAVATORY: AMERICAN STANDARD "AQUALYN" COUNTERTOP SINK 0476.028, WHITE VITREOUS CHINA WITH FRONT OVERFLOW, 16"x10" BOWL, WITH SLOAN OPTIMA PLUS EBF-85 BATTERY POWERED, SENSOR ACTIVATED FAUCET WITH GRID DRAIN, SUPPLIES, STOPS AND 1-1/4" "P" TRAP. INSULATE PIPING BELOW LAVATORY USING TRUEBRO "LAVGUARD2" ASSE 1070 TEMPERING ANTI-SCALD VALVE - SET TO 110", EQUAL TO POWERS HYDROGUARD LFe480. MEETS ADA GUIDELINES.	1-1/2"	1-1/2"	1/2"	1/2"
WC-1	WATER CLOSET: AMERICAN STANDARD CADET TWO-PIECE PREFERENCE ASSIST 1.1 GPF ELONGATED EVERCLEAN BOWL, MODEL #2487100.020. FLOOR MOUNTED, VITREOUS CHINA, CLOSE-COUPLED FLUSHMETER TANK, METAL CHROME TRIP LEVER, 12" ROUGH-IN, 16-1/2" TALL PLUS SEAT THICKNESS. PROVIDE WATER SUPPLY AND SEAT. CONFIRM SELECTION WITH ARCHITECT. COORDINATE MODEL WITH TRIP LEVER ON APPROACH SIDE, ADA COMPLIANT.	4"	2"	1/2"	-
UR-1	URINAL: WHITE VITREOUS CHINA, SIPHON JET FLUSH ACTION, SUPPLIED WITH WALL HANGER, 1-1/2" TUBING TAILPIECE, 3/4" INLET SPUD, LOW CONSUMPTION 0.5 GPF, AMERICAN STANDARD "ALLBROOK" 6550.001 TOP SPUD, WITH SLOAN OPTIMA PLUS 8186-1.0 BATTERY POWERED, SENSOR ACTIVATED FLUSH VALVE.	1-1/2"	1-1/2"	3/4"	-
FD-1	FLOOR DRAIN: SIOUX CHIEF FINISH LINE 832-2PNQV, 2" CONNECTION SIZE, PVC BASE ADAPTER, 7" SQUARE NICKEL-BRONZE STRAINER, VANDAL RESISTANT STRAINER SCREWS. PROVIDE TRAP PRIMER AS REQUIRED BY LOCAL CODE.	2"	1-1/2"	-	-
SH-1	SHOWER: 2.5 GPM MAX SHOWER HEAD, TRIM, DOORS, PAN, ETC. BY ARCHITECT.	2"	1-1/2"	1/2"	1/2"
KS-1	KITCHEN SINK: ELKAY DOUBLE BOWL STAINLESS STEEL SINK, LR3319, 33"x19-1/2", ELKAY LKD2423BH GOOSENECK FAUCET WITH BLADE HANDLES, WITH LK-99 CRUMB CUP STRAINER AND DRAIN. PROVIDE 1-1/2" "P" TRAP AND SUPPLIES WITH STOPS.	1-1/2"	1-1/2"	1/2"	1/2"
WB-1	WASHER BOX RECEPTOR: SIOUX CHIEF CLASSIC BOX MODEL 688-G11, NO-LEAD BRASS 1/4-TURN VALVES, WITH ARRESTORS, CONFIRM SUPPLY CONNECTION IN FIELD, UNIT SHALL ALLOW FOR MOUNTING WITH SUPPLY LINES FROM TOP OR BOTTOM.	2"	1-1/2"	1/2"	1/2"



3 WASHER BOX DETAIL
SCALE: NONE



1 DETAIL - VENT THRU ROOF
SCALE: NONE

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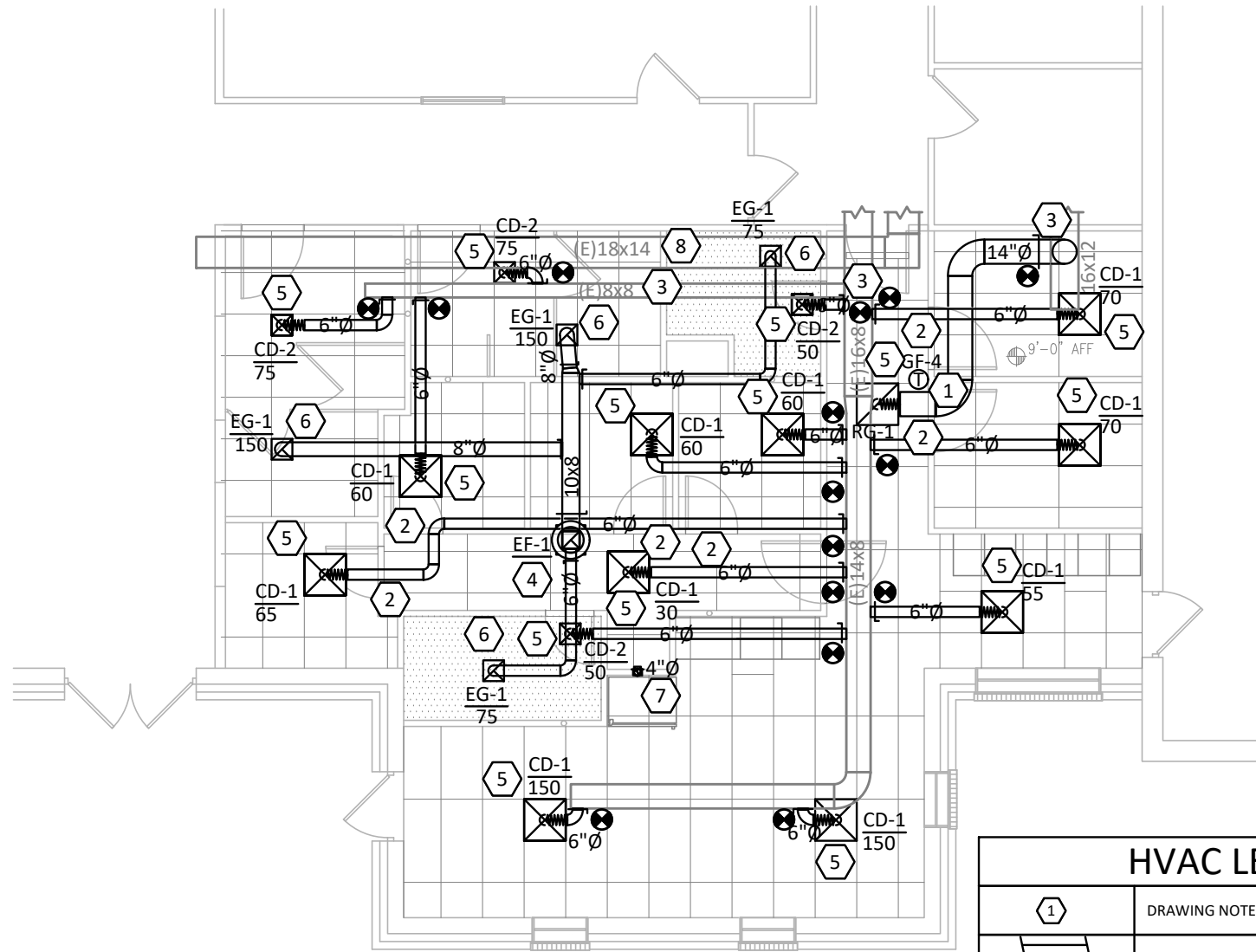
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 PLEASANT RIDGE, OH
 WARREN COUNTY

PROJECT NO. 13478	DRAWN BY: TG/ZF/MD
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HVAC PLAN
SCALE: 1/8" = 1'-0"

HVAC LEGEND	
①	DRAWING NOTE SYMBOL
	NEW RECTANGULAR DUCTWORK AND SIZE
	NEW ROUND DUCTWORK AND SIZE
	BALANCING/VOLUME DAMPER
	FLEX DUCT
⊙	THERMOSTAT
	NEW SUPPLY AIR DIFFUSER AND CFM
	NEW RETURN GRILLE
	CONNECT TO EXISTING

KEYED NOTES

1. RELOCATE EXISTING THERMOSTAT TO NEW LOCATION INDICATED AND MOUNT ON WALL 4 FEET A.F.F. EXTEND AND RECONNECT CONTROL WIRING AS REQUIRED. FIELD VERIFY EXACT THERMOSTAT LOCATION PRIOR TO BEGINNING WORK.
2. UNDERCUT DOOR 1" TO ALLOW FOR AIR TRANSFER INTO/OUT OF ROOM.
3. EXISTING DUCTWORK TO REMAIN, AS INDICATED. FIELD VERIFY EXACT SIZE AND LOCATION. CAP ANY UNUSED OPENINGS WITH SHEET METAL, SAME GAUGE AS EXISTING, AND SEAL PER SMACNA GUIDELINES. INSULATE ANY EXISTING DUCTWORK LOCATED ABOVE CEILING.
4. REMOVE EXISTING EXHAUST FAN. PROVIDE NEW EXHAUST FAN AND INSTALL ON ROOF CURB ADAPTER, ON EXISTING CURB AS REQUIRED. MAINTAIN MINIMUM 10' CLEARANCE FROM ANY OUTDOOR AIR INTAKES.
5. PROVIDE NEW AIR DEVICE AS SCHEDULED AND INSTALL IN LOCATION INDICATED. ROUTE NEW BRANCH DUCTWORK BACK TO EXISTING MAIN DUCTWORK AS INDICATED. BALANCE AIR DEVICE TO CFM INDICATED, IF APPLICABLE.
6. PROVIDE NEW EXHAUST GRILLE AS SCHEDULED AND INSTALL IN LOCATION INDICATED. BALANCE TO CFM INDICATED.
7. 4 INCH SMOOTH DUCT TO ROOF. DRYER VENT PIPE TO BE 28 GAUGE GALVANIZED STEEL. ALL CONNECTIONS TO BE ALUMINUM POP RIVETS, NO SHEET METAL SCREWS ALLOWED, SEAMS TAPED W/ DUCT TAPE. PROVIDE A MEANS OF CLEANOUT IN EACH VERTICAL RISER. FIRE DAMPER THAT WILL OBSTRUCT THE EXHAUST FLOW SHALL BE PROHIBITED IN CLOTHES DRYER EXHAUST DUCTS. ALL CLOTHES DRYER EXHAUST RUNS SHALL BE LIMITED TO 35', INCLUDING ELBOWS, FROM THE DRYER CONNECTION TO THE OUTLET. THIS LENGTH MAY BE INCREASED BASED ON THE DRYER MANUFACTURER'S INSTALLATION INSTRUCTIONS SHOWING A LENGTH EXCEEDING 35'. AS AN OPTION, A DRYER EXHAUST POWER VENTILATOR MAY BE USED WHERE DRYER DUCT RUNS EXCEED 35'. TERMINATE WITH DRYER JACK MODEL DJK466 WITH INTEGRAL FLANGE, OR EQUIVALENT AND LOCATE ON 12" HIGH INSULATED ROOF CURB. PAINT DRYER ROOF HOOD TO MATCH THE COLOR OF SHINGLES. ROUTE EXHAUST DUCT TO IN WALL DRYER BOX, IN-O-VATE TECHNOLOGIES INC MODEL #350. COORDINATE VENT BOX LOCATION WITH DRYER MANUFACTURER'S RECOMMENDATIONS.
8. EXISTING DUCTWORK SERVING ADJACENT SPACE TO REMAIN. PROTECT DURING CONSTRUCTION.

GENERAL NOTES

- A. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. EXACT LOCATIONS OF DEVICES AND ROUTING OF DUCTWORK SHALL BE DETERMINED BY CONTRACTOR AFTER COORDINATION WITH ALL OTHER TRADES AND FIELD DETERMINATION OF FINAL CONSTRUCTION DETAILS. MINOR ADJUSTMENTS TO DUCT ROUTING AND CONFIGURATION TO AVOID CONFLICT WITH BUILDING STRUCTURE OR OTHER TRADES SHALL BE INCLUDED IN CONTRACTOR'S PRICE. CONTRACTOR SHALL OBTAIN ENGINEERS APPROVAL IN WRITING FOR ANY MODIFICATIONS TO SYSTEM DESIGN PRIOR TO INSTALLATION.
- B. ALL EXPOSED MATERIALS AND EQUIPMENT SHALL BE INSTALLED AND SUPPORTED IN A FIRST-CLASS AND WORKMANLIKE FASHION. DUCTWORK SHALL RUN PARALLEL AND/OR PERPENDICULAR TO MAIN BUILDING STRUCTURE. ANY WORK THAT IS NOT DONE IN A FIRST-CLASS OR WORKMANLIKE FASHION, IN THE ARCHITECTS OPINION, SHALL BE REDONE AT THE CONTRACTORS EXPENSE.
- C. ALL DUCT JOINTS, SEAMS AND CONNECTIONS SHALL BE SECURELY FASTENED AND SEALED. DUCTS SHALL BE SUPPORTED WITH APPROVED HANGERS AT INTERVALS NOT EXCEEDING TEN FEET. DUCT COVERINGS AND LININGS SHALL HAVE A FLAME-SPREAD INDEX NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX NOT MORE THAN 50.
- D. PROVIDE VOLUME DAMPERS AT ALL ROUND BRANCH DUCT TAKE-OFFS THAT ARE ACCESSIBLE. PROVIDE TURNING VANES AT ALL 90 DEGREE SQUARE ELBOWS IN SUPPLY AIR DUCTS. PROVIDE 45 DEGREE HEEL AT ALL RECTANGULAR SUPPLY AND RETURN BRANCH DUCT TAKE-OFFS.
- E. OUTDOOR AIR INTAKES SHALL BE 10'-0" MINIMUM AWAY FROM ANY EXHAUST AND PLUMBING VENT OUTLET.
- F. WIRE UP ALL LOW VOLTAGE (24V) THERMOSTATS.
- G. CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL PIPES, DUCTWORK, UNITS, ETC. WITH ALL OTHER TRADES AND SHIFT LOCATION OR OFFSET WHERE NECESSARY. PROVIDE TRANSITIONS IN DUCTWORK TO AVOID CONFLICT WITH EXISTING DUCTWORK AND OTHER STRUCTURES.
- H. CONTRACTOR SHALL COORDINATE ALL AIR DEVICES WITH ELECTRICAL AND ARCHITECTURAL REFLECTED CEILING PLANS.
- I. COORDINATE LOCATION OF ALL EXTERIOR LOUVER OR OUTLET WITH ARCHITECTURAL ELEVATION PLAN.
- J. COORDINATE ROOF WORK WITH BUILDING OWNER'S ROOFING CONTRACTOR TO ASSURE THAT THE ROOF WARRANTY IS NOT VOIDED.
- K. INSTALL DUCTWORK AS HIGH AS POSSIBLE.
- L. EXHAUST AIR DUCTS SHALL BE EQUIPPED WITH BACKDRAFT DAMPERS.
- M. ALL DUCT OPENINGS AND OTHER AIR DISTRIBUTION OPENINGS SHALL BE COVERED DURING CONSTRUCTION EXCEPT FOR TESTING AND INSPECTION.
- N. PROVIDE BUILDING OWNER OR REPRESENTATIVE WITH DETAILED OPERATING AND MAINTENANCE INSTRUCTIONS AND WARRANTIES /WRITTEN GUARANTEE FOR EACH SYSTEM. O&M INSTRUCTIONS SHALL BE CONSISTENT WITH OSHA REQUIREMENTS IN CCR TITLE 8, SECTION 5142 AND OTHER RELATED REGULATIONS.
- O. ALL DUCT ELBOWS SHALL BE LONG RADIUS OR MITERED.

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01/27/2026

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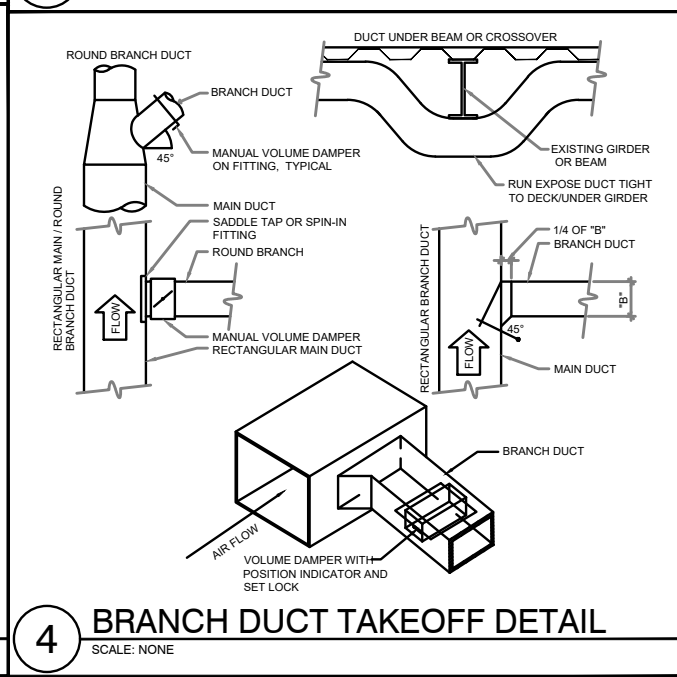
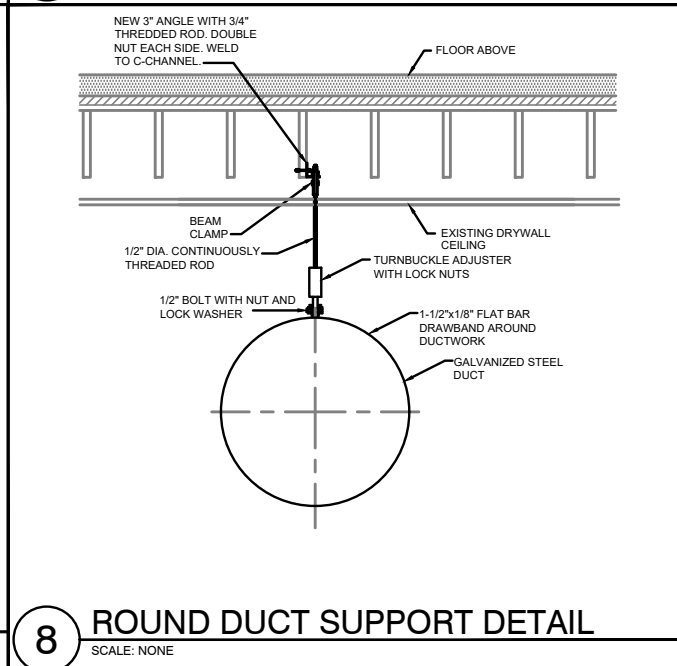
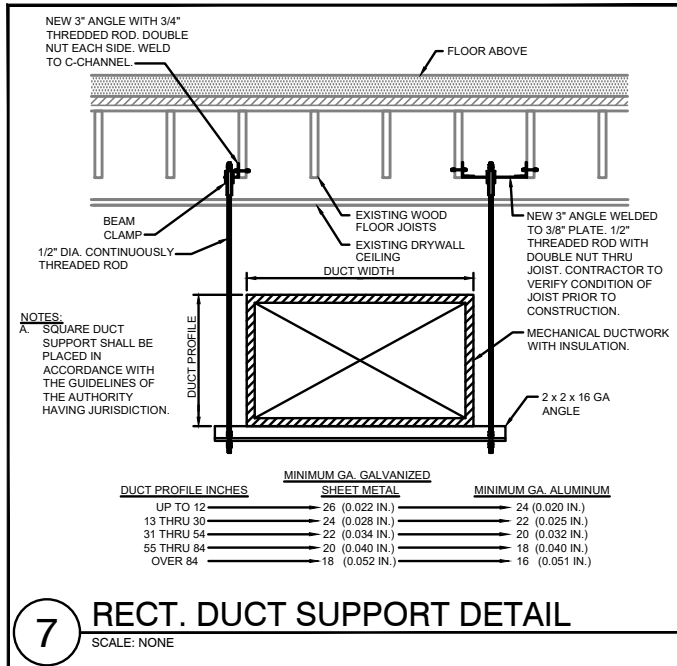
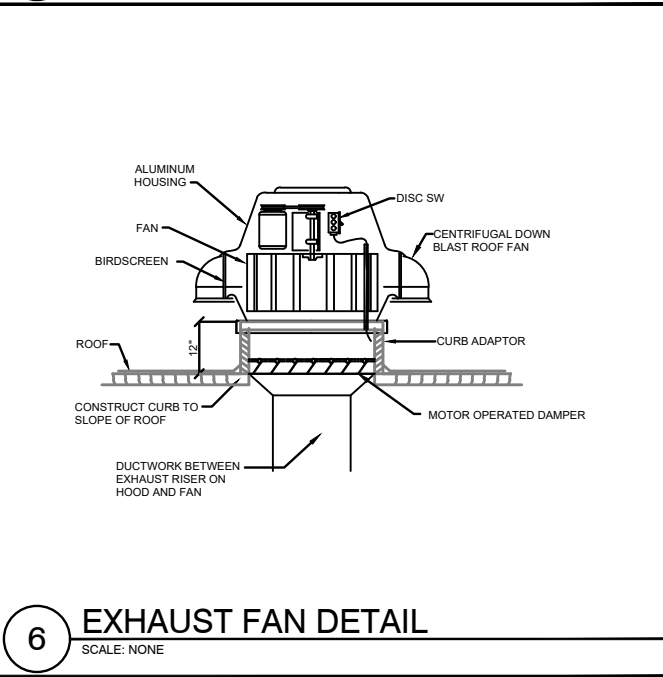
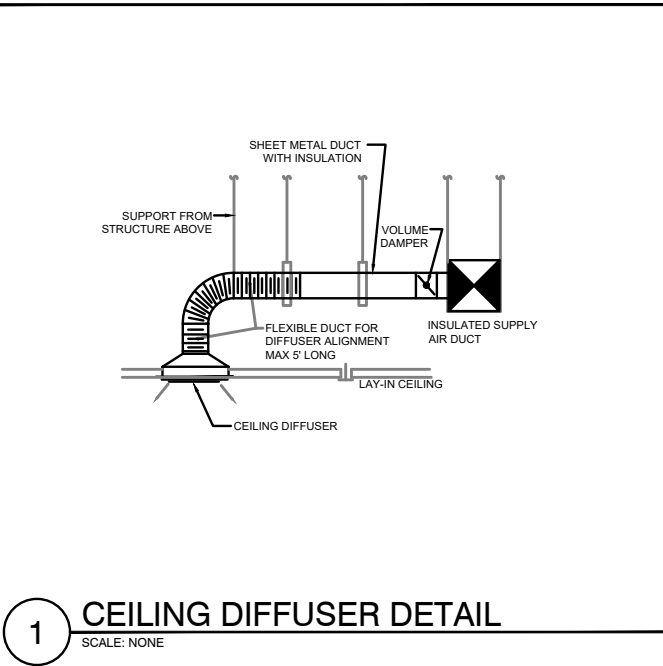
VENTILATION SCHEDULE																
Harlan Township Fire Station - Pleasant Plain, OH																
ROOM #	ROOM NAME	Az	Table 403.3.1.1				Vbz = Az x Ra + Rp x Pz				SA		Zp =		Vot =	
			OCCUPANCY CATEGORY	Rp	Ra	Pz	PEOPLE Rp x Pz	AREA Az x Ra	OA	AIR Eff	Voz =	CFM	OA	Voz /		Ev
		SQFT		CFM/P	CFM/SQFT	people	CFM	CFM	Vbz	Ez	Vbz/Ez	Vpz	23%	Vpz	Ev	Ev
B1	70	Bedroom	5	0.06	1	5	4	9	0.8	12	70	16	0.16	0.90	13	
B2	70	Bedroom	5	0.06	1	5	4	9	0.8	12	70	16	0.16	0.90	13	
B3	48	Bedroom	5	0.06	1	5	3	8	0.8	10	60	14	0.16	0.90	11	
B4	48	Bedroom	5	0.06	1	5	3	8	0.8	10	60	14	0.16	0.90	11	
B5	46	Bedroom	5	0.06	1	5	3	8	0.8	10	60	14	0.16	0.90	11	
B6	54	Bedroom	5	0.06	1	5	3	8	0.8	10	65	15	0.16	0.90	11	
M. Bath	84	Restroom	0	0	0	0	0	0	0.8	0	75	17	0.00	0.90	0	
W. Bath	113	Restroom	0	0	0	0	0	0	0.8	0	75	17	0.00	0.90	0	
Bath 1	46	Restroom	0	0	0	0	0	0	0.8	0	50	12	0.00	0.90	0	
Bath 2	48	Restroom	0	0	0	0	0	0	0.8	0	50	12	0.00	0.90	0	
Entry	157	Comdor	0	0.06	0	0	9	9	0.8	12	55	13	0.21	0.90	13	
Hall	77	Comdor	0	0.06	0	0	5	5	0.8	6	30	7	0.19	0.90	6	
Kitchen	173	Day Room	5	0.06	2	10	10	20	0.8	25	150	35	0.17	0.90	28	
Living	129	Day Room	5	0.06	2	10	8	18	0.8	22	130	35	0.15	0.90	25	
RTU-3	1163					10				128	1020	235			142	

AIR DEVICE SCHEDULE									
TAG	MANUFACTURER	MODEL	FUNCTION	FACE SIZE	DUCT SIZE	BORDER TYPE	MATERIAL	FINISH	REMARKS
CD-1	PRICE	SPD	SUPPLY	24x24	-	LAY-IN	STEEL	WHITE	A,B,C
CD-2	PRICE	SPD	SUPPLY	12x12	-	LAY-IN	STEEL	WHITE	A,B,C
RG-1	PRICE	80	RETURN	24x24	-	LAY-IN	ALUMINUM	WHITE	B
ER-1	PRICE	80	EXHAUST	12x12	-	LAY-IN	ALUMINUM	WHITE	B

REMARKS:
A. PROVIDE VOLUME DAMPERS IN TAKEOFFS WHERE ACCESSIBLE. WHERE DAMPERS ARE NOT ACCESSIBLE, PROVIDE OPPOSED BLADE DAMPER AT DIFFUSER
B. COORDINATE FRAME TYPE WITH ARCHITECTURAL REFLECTED CEILING PLAN
C. PLAQUE DIFFUSER

EXHAUST FAN SCHEDULE											
TAG	MANUFACTURER	MODEL	CFM	ESP	RPM	WATTS	VOLTAGE	PHASE	WEIGHT LBS	SONES	REMARKS
EF-1	GREENHECK	G-090-VG	450	0.625	1662	1/10 HP	120	1	41	8.3	A,B,C,D,E

REMARKS:
A. WEATHERPROOF DISCONNECT
B. CURB ADAPTOR
C. BIRD SCREEN
D. BACK-DRAFT DAMPER
E. FAN TO BE INTERLOCKED WITH OCCUPANCY SENSOR(S)



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DIVISION 23 MECHANICAL SPECIFICATIONS

23 05 01 COMMON REQUIREMENTS FOR HVAC

ALL MECHANICAL WORK AND TESTS SHALL BE DONE IN STRICT ACCORDANCE WITH THE LATEST STATE, COUNTY, AND LOCAL REGULATIONS, LAWS, AND ORDINANCES WHICH MAY BE APPLICABLE.

BEFORE SUBMITTING A BID, EXAMINE DOCUMENTS OF ALL OTHER TRADES, VISIT THE SITE AND GET ACQUAINTED WITH ALL CONDITIONS THAT MAY IN ANY WAY AFFECT THE EXECUTION OF THIS CONTRACT. TAKE MEASUREMENTS AND BE RESPONSIBLE FOR EXACT SIZE AND LOCATIONS OF ALL OPENINGS REQUIRED. VERIFY INSTALLATION MAY BE MADE IN COMPLETE ACCORDANCE WITH ALL PERTINENT CODES AND REGULATIONS. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE PROFESSIONAL ENGINEER OF RECORD. DO NOT PROCEED WITH THE INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.

IT IS NOT THE INTENT OF THE DRAWINGS THAT EXISTING CONDITIONS BE ACCURATELY SHOWN. EXISTING MECHANICAL WORK IS SHOWN TO THE LIMITED EXTENT ON DRAWINGS AND IS SHOWN FOR GENERAL REFERENCE ONLY. LOCATIONS AND INFORMATION WERE DERIVED FROM CURSORY SITE VISUAL OBSERVATIONS OR FROM DOCUMENTS THAT WERE PREPARED FOR PREVIOUSLY INSTALLED WORK WHEN AVAILABLE.

THE WORK COVERED BY THESE SPECIFICATIONS SHALL CONSIST OF PROVIDING ALL NEW MATERIAL, LABOR, EQUIPMENT, AND SERVICES NECESSARY FOR A COMPLETE MECHANICAL INSTALLATION AS SPECIFIED HEREIN. WORK IN THIS SECTION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING ITEMS:

- TOILET EXHAUST FANS
- DUCT
- DAMPERS
- DIFFUSERS, REGISTERS, AND LOUVERS

WHENEVER THE WORDS "CONTRACTOR" APPEAR ON MECHANICAL DRAWINGS OR IN THESE SPECIFICATIONS, IT SHALL REFER TO THE MECHANICAL SUB-CONTRACTOR. WHENEVER THE WORD "PROVIDE" APPEARS IN THESE DOCUMENTS, IT SHALL BE INTERPRETED TO MEAN "FURNISH AND INSTALL".

COORDINATE ALL WORK WITH THE OWNER TO MINIMIZE INTERRUPTION OF BUILDING OPERATION.

COORDINATE THE INSTALLATION OF MECHANICAL ITEMS WITH THE SCHEDULES FOR WORK OF ALL OTHER TRADES TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

THIS CONTRACTOR SHALL VERIFY AND SATISFY HIMSELF THAT ALL EQUIPMENT FURNISHED WILL PROPERLY FIT IN THE SPACE PROVIDED, THAT IT WILL FUNCTION PROPERLY, AND THAT ALL PARTS OF EQUIPMENT REQUIRING SERVICE ARE READILY ACCESSIBLE.

ALL PIPING SHALL BE RUN PARALLEL OR PERPENDICULAR TO BUILDING WALLS AND FRAMING SYSTEM. ALL VERTICAL RUNS SHALL BE HELD AGAINST WALLS, COLUMNS, ETC., AS POSSIBLE TO PERMIT MAKING OF PIPE JOINTS.

CONTRACTOR SHALL PROVIDE A GUARANTEE IN WRITTEN FORM STATING THAT ALL WORK SHALL BE FREE OF DEFECTS OR ERRORS, AND ALL EQUIPMENT, MATERIALS, OR PARTS FOR A PERIOD OF ONE YEAR FROM THE DATE OF OWNER'S FINAL ACCEPTANCE AND SHALL REPAIR, REVISE OR REPLACE AT NO COST TO THE OWNER ANY SUCH DEFECTS OCCURRING WITHIN THE GUARANTEE PERIOD.

CONTRACTOR SHALL ALSO STATE IN WRITTEN FORM THAT ANY ITEMS OR OCCURRENCES ARISING DURING THE GUARANTEE PERIOD WILL BE ATTENDED TO IN A TIMELY MANNER AND WILL IN NO CASE EXCEED THREE (3) WORKING DAYS FROM DATE OF NOTIFICATION BY OWNER.

PROVIDE A COMPLETE INSTALLATION IN CONFORMANCE WITH THE FOLLOWING STANDARDS.
 AGA: AMERICAN GAS ASSOCIATION
 ASHRAE: AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS
 NFPA: NATIONAL FIRE PROTECTION ASSOCIATION
 SMACNA: SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION.
 STATEWIDE BUILDING CODE
 INTERNATIONAL MECHANICAL CODE

CONTRACTOR SHALL DO ALL CUTTING AND PATCHING REQUIRED FOR INSTALLATION OF THIS WORK. ALL OPENINGS IN WALLS, FLOORS OR CEILINGS SHALL BE PROPERLY SEALED AND RESTORED IN KIND. FLASH AND COUNTERFLASH AT ROOF OPENINGS.

ALL EQUIPMENT SHALL BE LISTED AND LABELED, UNLESS OTHERWISE APPROVED.

ALL WIRING SHALL MEET THE REQUIREMENTS LISTED IN THE ELECTRICAL SPECIFICATIONS. ALL CONTROL AND INTERLOCK WIRING AND CONDUIT (120V OR 24V) SHALL BE BY THE MECHANICAL CONTRACTOR.

EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF LISTING AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THIS CODE.

CLEANING: THIS CONTRACTOR SHALL REMOVE FROM THE PREMISES ALL ACCUMULATION OF DIRT, DEBRIS, WASTE MATERIALS AND RUBBISH CAUSED BY HIS EMPLOYEES OR WORK, AT LEAST ONCE A WEEK, EXCEPT THAT COMBUSTIBLE MATERIALS SHALL BE REMOVED DAILY.

DURING PROGRESS OF THE WORK, MAINTAIN ON DRAWINGS AT THE SITE, AN ACCURATE RECORD OF THE INSTALLATION OF THE MECHANICAL SYSTEM, INDICATING ALL ITEMS WHICH HAVE BEEN CHANGED OR ADDED.

APPLY FOR AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY LOCAL AUTHORITY, FOR THE APPROVAL OF WORK.

A CERTIFICATE OF FINAL INSPECTION AND APPROVAL SHALL BE SUBMITTED WITH THE CONTRACTOR'S REQUEST FOR FINAL PAYMENT. NO FINAL PAYMENT WILL BE APPROVED WITHOUT THIS CERTIFICATE.

GUARANTEE ALL WORKMANSHIP, MATERIAL, AND EQUIPMENT AND REPLACE ANY FOUND DEFECTIVE WORK WITHOUT COST TO THE OWNER, FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE.

EXISTING CONDITIONS

DO NOT REUSE REMOVED MECHANICAL MATERIALS UNLESS SPECIFICALLY INDICATED ON DRAWINGS. EXISTING SYSTEMS MAY BE UTILIZED ONLY TO THE EXTENT INDICATED ON DRAWINGS.

IF REQUIRED TO ACCOMMODATE CONSTRUCTION RELATED ACTIVITIES TEMPORARILY REMOVE, STORE IN PROTECTED LOCATION ON SITE, AND REINSTALL CONFLICTING MECHANICAL EQUIPMENT, OR DEVICES THAT ARE TO REMAIN OR TO BE RELOCATED.

WHERE THE TERM "DEMOLITION" IS USED HEREIN, INTERPRET IT TO MEAN "DEMOLITION" OR "SELECTIVE DEMOLITION" WHERE APPLICABLE.

PROVIDE MECHANICAL DEMOLITION WORK AS REQUIRED TO ACCOMMODATE PROJECT DEMOLITION AND AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION. DISCONNECT AND REMOVE WORK TO BE ABANDONED, AND AS REQUIRED TO ACCOMMODATE WORK OF OTHER TRADES, IN AREAS AFFECTED BY THIS PROJECT.

LEGALLY DISPOSE OF MATERIALS TO SALVAGED OR RETAINED.

23 05 03 SUBMITTALS FOR MECHANICAL SYSTEMS

DESIGN BASIS MANUFACTURERS OF MATERIAL AND EQUIPMENT ARE SPECIFIED AND PLANS ARE DETAILED ACCORDING TO THIS MATERIAL. CONTRACTOR SHALL BASE HIS BID ON FURNISHING AND INSTALLING THIS MAKE OF MATERIAL AND EQUIPMENT.

AN ACCEPTABLE MANUFACTURER'S NAME AND MODEL NUMBER OF A PRODUCT MAY BE PROVIDED IN THESE DOCUMENTS. THIS IS THE EQUIPMENT INCLUDED DURING THE DESIGN PROCESS AND FORMS THE BASIS OF A STANDARD OF QUALITY. WHERE MORE THAN ONE MAKE OF MATERIAL OR EQUIPMENT IS SPECIFIED, THE CONTRACTOR SHALL STATE IN HIS BID WHICH MAKE HE PROPOSES TO FURNISH AND INSTALL. SHOP DRAWING APPROVAL SHALL BE OBTAINED PRIOR TO SHIPMENT OF EQUIPMENT.

VERIFY THE MODEL NUMBER OR PRODUCT IS STILL ACCURATE AND MEETS ALL REQUIREMENTS SHOWN ON THE DRAWINGS. IF THERE IS A DISCREPANCY BETWEEN THE REQUIREMENTS AND THE PRODUCT OR MODEL NUMBER, THE STRICTER OF THE TWO SHALL GOVERN.

SUBMIT SHOP DRAWINGS AND/OR PRODUCT DATA (ELECTRONIC COPIES) ON THE FOLLOWING ITEMS FOR REVIEW BEFORE FABRICATION OR SHIPMENT:

- TOILET EXHAUST FANS
- DUCT
- DAMPERS
- DIFFUSERS, REGISTERS, AND LOUVERS

MAINTENANCE MANUALS: THE MANUALS SHALL INCLUDE WIRING DIAGRAMS, MAINTENANCE AND OPERATING INSTRUCTIONS, PARTS LISTINGS, AND COPIES OF OTHER SUBMITTALS INDICATED FOR INCLUSION.

REVIEW AND CORRECTIONS OR COMMENTS MADE ON SHOP DRAWINGS, PRODUCT DATA: CATALOGS, CUT SHEETS, CHARTS, AND OTHER ITEMS DURING CONSTRUCTION PHASE SUBMITTAL REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS, FOR PROVIDING A COMPLETE AND FUNCTIONING PROJECT, NOR SHALL THEY RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS OR ERRORS OF ANY SORT. THIS REVIEW IS FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH INFORMATION GIVEN AND THE DESIGN CONCEPT EXPRESSED IN THE CONTRACT DOCUMENTS. CONTRACTOR REMAINS RESPONSIBLE FOR DETERMINING

THE ACCURACY AND COMPLETENESS OF OTHER DETAILS SUCH AS DIMENSIONS AND QUANTITIES. FOR SUBSTANTIATING INSTRUCTIONS FOR INSTALLATIONS, VERIFYING MATERIALS REQUIRED, OBTAINING FIELD MEASUREMENTS AND RELATED CRITERIA, COORDINATING WORK WITH OTHER DISCIPLINES AND PERFORMING WORK IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

ANY CHANGES TO ITEMS SPECIFIED MUST BE SUBMITTED IN WRITING AS A SUBSTITUTION, WITH COMPLETE DOCUMENTATION OF PRICE DIFFERENTIAL AND EQUIPMENT DETAILS. ANY SUBSTITUTIONS PROVIDED SHALL BE REVIEWED AT MARQUE ENGINEERING'S HOURLY RATES. REVIEW SHALL BE PAID FOR BY THE CONTRACTOR TO MARQUE ENGINEERING AT NO COST TO THE OWNER. BY USING PRE-APPROVED SUBSTITUTIONS, THE CONTRACTOR ACCEPTS ALL RESPONSIBILITY AND ASSOCIATED COSTS FOR ALL REQUIRED MODIFICATIONS TO THE CONTRACT DOCUMENTS TO INCLUDE BUT NOT LIMITED TO MATERIAL OR EQUIPMENT COSTS FOR THEIR OR OTHER TRADES, AND ENSURING THAT SUBSTITUTED MATERIALS AND EQUIPMENT TO BE FURNISHED FIT INTO SPACE AVAILABLE.

EXTENSIVE REVISIONS NECESSITATED TO THE CONTRACT DOCUMENTS, OR SUBSTITUTION ACTIONS RELATED TO ANY SPECIFIED PRODUCT NOT ABLE TO BE PROVIDED DUE TO A FAILURE TO COMMENCE WORK, RELEASE PRODUCT OR COORDINATE CONSTRUCTION ACTIVITIES SHALL BE PROVIDED AT MARQUE ENGINEERING'S HOURLY RATES. COSTS SHALL BE BORN BY THE CONTRACTOR AT NO COST TO THE OWNER.

23 05 29 HANGERS AND SUPPORTS

SUPPORT ALL PIPING, DUCTWORK AND EQUIPMENT BY HANGERS OR BRACKETS. FURNISH STRUCTURAL STEEL MEMBERS WHERE REQUIRED TO SUPPORT PIPING AND EQUIPMENT. NO PORTION OF PIPING OR VALVES SHALL BE SUPPORTED BY EQUIPMENT.

DUCTWORK - SUPPORT BY MEANS OF HANGERS AS FOLLOWS:

DUCT WIDTH 30 OR LESS
 HANGER SIZE (16 GAUGE)

TYPE MAX. SPACING 8

A PAIR OF HANGERS SHALL BE LOCATED AT EVERY TRANSVERSE JOINT AND ELSEWHERE ACCORDING TO THE TABLE.

23 05 93 HVAC SYSTEM TESTING, ADJUSTING AND BALANCING FOR HVAC

ALL SYSTEMS AND EQUIPMENT SHALL BE CAREFULLY ADJUSTED TO PROVIDE COMFORTABLE AND UNIFORM CONDITIONS IN EACH AND EVERY SPACE TO THE OWNER'S SATISFACTION. PROVIDE ANY REQUIRED DRIVES TO SATISFY QUANTITIES INDICATED. PROVIDE A CERTIFIED AIR BALANCE OF THE DIFFUSERS AND AIR HANDLERS.

AIR SYSTEM:

AIR BALANCE AND TESTING SHALL NOT BEGIN UNTIL THE SYSTEM HAS BEEN COMPLETED AND IS IN FULL WORKING ORDER. CONTRACTOR SHALL PUT ALL HEATING, VENTILATING AND AIR CONDITIONING SYSTEM AND EQUIPMENT INTO FULL OPERATION AND SHALL CONTINUE THE OPERATION OF SAME DURING EACH WORKING DAY OF TESTING AND BALANCING. CONTRACTOR SHALL SUBMIT WITHIN 30 DAYS AFTER RECEIPT OF CONTRACT, COPIES OF SUBMITTAL DATA FOR THE TESTING AND BALANCING OF THE AIR CONDITIONING, HEATING, AND VENTILATING SYSTEMS. THE AIR BALANCE AND TESTING AGENCY SHALL PROVIDE PROOF OF HAVING SUCCESSFULLY COMPLETED AT LAST FIVE PROJECTS OF SIMILAR SIZE AND SCOPE.

CONTRACTOR SHALL PROCURE THE SERVICES OF AN INDEPENDENT AIR BALANCE AND TESTING AGENCY, APPROVED BY THE ENGINEER, AND A MEMBER OF AABC OR NEBB, WHICH SPECIALIZES IN THE BALANCING AND TESTING OF HEATING VENTILATION AND AIR CONDITIONING SYSTEMS, TO BALANCE, ADJUST AND TEST AIR MOVING EQUIPMENT AND AIR DISTRIBUTION OR EXHAUST SYSTEMS AS HEREIN SPECIFIED.

ALL WORK BY THIS AGENCY SHALL BE DONE UNDER THE DIRECT SUPERVISION OF A QUALIFIED HEATING AND VENTILATING ENGINEER EMPLOYED BY THIS AGENCY. ALL INSTRUMENTS USED BY THIS AGENCY SHALL BE ACCURATELY CALIBRATED AND MAINTAINED IN GOOD WORKING ORDER.

23 07 13 DUCT INSTALLATION

INSULATE ALL SUPPLY, DIFFUSER PLENUMS, AND OUTSIDE AIR DUCTWORK OF ALL UNITS WITH OWENS CORNING "ALL SERVICE DUCT WRAP" TYPE 150 GLASS FIBER INSULATION UNLESS OTHERWISE NOTED. INSULATION SHALL BE 1-1/2" THICK (2" THICK FOR SUPPLY AND RETURN IN TRUSS SPACE), 1.5 PCF. DENSITY WITH FRK JACKET. 002 THICK REINFORCED ALUMINUM FOIL VAPOR BARRIER. INSULATION SHALL CONFORM TO NFPA 90A AND 90B PER ASTM E-84 FOR FLAME SPREAD AND SMOKE DEVELOPED RATING.

INSULATE ALL EXTERIOR SUPPLY AND RETURN DUCTWORK WITH RIGID FIBERGLASS BOARD INSULATION WITH OUTDOOR JACKET. INSULATION SHALL BE 2" THICK WITH A "K" VALUE OF 0.23 AT 75 F. INSTALL ON DUCTWORK USING IMPALE ANCHORS AND WIRES. SEAL VAPOR BARRIER WITH VAPOR BARRIER ADHESIVE.

PROVIDE INSULATION ON ALL CONCEALED SUPPLY, RETURN DUCTWORK. ALL LINERS, INSULATION AND ADHESIVES SHALL HAVE A FLAME SPREAD INDEX NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

RIGID FIBERGLASS DUCTWORK INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 612, TYPE IB, WITHOUT FACING AND WITH VAPOR BARRIER ALL-SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL, AND VINYL FILM. INSULATION SHALL HAVE A MINIMUM R VALUE AS REQUIRED BY CODE.

FLEXIBLE FIBERGLASS DUCTWORK INSULATION: GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C 553, TYPE II, WITHOUT FACING AND WITH VAPOR BARRIER ALL-SERVICE JACKET MANUFACTURED FROM KRAFT PAPER, REINFORCING SCRIM, ALUMINUM FOIL, AND VINYL FILM. INSULATION SHALL HAVE A MINIMUM R VALUE AS REQUIRED BY CODE.

VAPOR BARRIER MATERIAL FOR DUCTWORK: PAPER-BACKED ALUMINUM FOIL, EXCEPT AS OTHERWISE INDICATED; STRENGTH AND PERMEABILITY RATING EQUIVALENT TO FACTORY-APPLIED VAPOR BARRIERS ON ADJOINING DUCTWORK INSULATION, WHERE AVAILABLE; WITH FOLLOWING ADDITIONAL CONSTRUCTION CHARACTERISTICS:

HIGH PUNCTURE RESISTANCE: LOW VAPOR TRANSMISSION (FOR DUCTS IN EXPOSED AREAS: MECH. ROOMS, ETC.)
 MODERATE PUNCTURE RESISTANCE: MEDIUM VAPOR TRANSMISSION (FOR DUCTS IN CONCEALED AREAS).

INSTALLATION IS NOT PERMITTED ABOVE DRYWALL CEILINGS AND INACCESSIBLE CEILINGS.

23 30 00 AIR DISTRIBUTION SYSTEM

CEILING AIR DIFFUSERS:

SQUARE: SQUARE HOUSING, CORE OF SQUARE CONCENTRIC LOUVERS, SQUARE OR ROUND DUCT CONNECTION.
 LINEAR: EXTRUDED ALUMINUM CONTINUOUS SLOT, SINGLE OR MULTIPLE.

DIFFUSER MOUNTINGS:

SURFACE MOUNT: DIFFUSER SHALL HAVE ROLLED EDGE BELOW FINISHED CEILING FOR SURFACE MOUNTING OR DIFFUSER SHALL BE FURNISHED WITH ACCESSORY PLASTER FRAME.

LAY-IN: DIFFUSER HOUSING SIZED TO FIT BETWEEN CEILING EXPOSED SUSPENSION TEE BARS AND REST ON TOP SURFACE OF TEE BAR.

DIFFUSER ACOUSTIC PERFORMANCE: NC LESS THAN OR EQUAL TO 30

DIFFUSER ACCESSORIES: PLASTER RING: PERIMETER RING DESIGNED TO ACT AS PLASTER STOP AND DIFFUSER ANCHOR.

DIFFUSER FINISHES: WHITE ENAMEL: SEMI-GLOSS WHITE ENAMEL PRIME FINISH.

CEILING AND WALL REGISTERS & GRILLES:

STEEL CONSTRUCTION: MANUFACTURER'S STANDARD STAMPED SHEET STEEL FRAME AND ADJUSTABLE BLADES.

REGISTER AND GRILLE FINISHES: WHITE ENAMEL: SEMI-GLOSS WHITE ENAMEL PRIME FINISH.

REGISTER AND GRILLE ACOUSTIC PERFORMANCE: NC LESS THAN OR EQUAL TO 30

23 31 13 METAL DUCTS

CONSTRUCTION, INSTALLATION AND SUPPORT OF ALL DUCTWORK SHALL CONFORM TO THE LATEST EDITION OF SMACNA "HVAC DUCT CONSTRUCTION STANDARD - METAL AND FLEXIBLE".

ASSEMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ACHIEVE AIR-TIGHT (5% LEAKAGE FOR SYSTEMS RATED 3" AND UNDER; 1% FOR SYSTEMS RATED OVER 3") AND NOISELESS (NO OBJECTIONABLE NOISE) SYSTEMS. INSTALL EACH RUN WITH MINIMUM NUMBER OF JOINTS. ALIGN DUCTWORK ACCURATELY AT CONNECTIONS, WITHIN 1/8" MISALIGNMENT TOLERANCE AND WITH INTERNAL SURFACES SMOOTH.

SUPPORT VERTICAL DUCTS AT EVERY FLOOR. SUPPORT DUCT WITH APPROVED HANGERS AT INTERVALS NOT EXCEEDING 10 FEET.

DUCTS SHALL BE GALVANIZED SHEET METAL OF STANDARD GAUGES. DUCTWORK SHALL HAVE A MINIMUM THICKNESS OF 24 GAUGE. ALL DUCT ELBOWS SHALL BE EITHER FULL RADIUS OR WITH TURNING VANES.

WHERE DUCTWORK IS INDICATED TO BE EXPOSED IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL IMPERFECTIONS INCLUDING PITTING, SEAM MARKS, ROLLER MARKS, STAINS AND DISCOLORATIONS, AND OTHER IMPERFECTIONS, INCLUDING THOSE WHICH WOULD IMPAIR PAINTING.

EXPOSED DUCTWORK WHICH IS TO BE PAINTED SHALL HAVE PAINT GRIP APPLIED.

PROVIDE VOLUME DAMPERS IN ALL BRANCH DUCTS OR AS REQUIRED FOR BALANCING TO REQUIRED AIR FLOWS.

PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15 DEG. CHANGE OF DIRECTION PER SECTION. UNLESS DETAILED OTHERWISE, USE 45 DEG. LATERALS AND 45 DEG. ELBOWS FOR BRANCH TAKEOFF CONNECTIONS. WHERE 90 DEG. BRANCHES ARE INDICATED, PROVIDE CONICAL TYPE TEES.

PROVIDE DUCT SEALANT AND/OR CEMENT WHICH IS NON-HARDENING, NON-MIGRATING MASTIC OR OF LIQUID ELASTIC ALUMINUM, TYPE APPLICABLE FOR FABRICATION/INSTALLATION DETAIL, AS COMPOUNDED AND RECOMMENDED BY MANUFACTURER SPECIFICALLY FOR SEALING JOINTS AND SEAMS IN DUCTWORK.

FLEXIBLE DUCTS SHALL EITHER BE SPIRAL-WOUND SPRING STEEL WITH FLAMEPROOF VINYL SHEATHING OR CORRUGATED ALUMINUM. THE MAXIMUM LENGTH OF FLEX DUCT ON THE SUPPLY EQUALS 5 FEET. FLEX IS NOT ALLOWED FOR RETURN, RELIEF OR EXHAUST APPLICATIONS.

FLEXIBLE DUCTS SHALL CONFORM TO THE REQUIREMENTS OF UL 181 FOR CLASS 0 OR CLASS 1 FLEXIBLE AIR DUCTS AND SHALL BE SO IDENTIFIED.

WHERE INSTALLED IN UNCONDITIONED SPACES OTHER THAN RETURN AIR PLENUMS, PROVIDE 1" THICK 1-1/2 LB. CONTINUOUS FLEXIBLE FIBERGLASS SHEATH WITH VINYL VAPOR BARRIER JACKET.

SHOP FABRICATE DUCTWORK IN 4, 8, 10 OR 12-FT LENGTHS, OR REQUIRED TO COMPLETE RUNS.

FABRICATE DUCTWORK WITH DUCT LINER IN EACH SECTION OF DUCT WHERE INDICATED. LAMINATE LINER TO INTERNAL SURFACES OF DUCT IN ACCORDANCE WITH INSTRUCTIONS BY MANUFACTURERS OF LINING AND ADHESIVE, AND FASTEN WITH MECHANICAL FASTENERS. DUCT LINER TO BE 3-LB DENSITY FOR ACOUSTIC REQUIREMENTS 1" THICK OR AS NOTED. SIZE OF DUCTWORK SHOWN ON THE DRAWINGS IS FREE NET AREA, OUTSIDE DIMENSION OF DUCTS WILL NEED TO BE INCREASED IF LINED DUCT IS USED.

DUCT LINER SHALL BE OF FIBROUS GLASS OF THICKNESS INDICATED. 3-LB DENSITY. ALL LINERS, INSULATION AND ADHESIVES SHALL HAVE A FLAME SPREAD INDEX NOT MORE THAN 25 AND A SMOKE DEVELOPED INDEX OF NOT MORE THAN 50.

23 33 13 DAMPERS

DAMPERS WITH LOCKING DEVICE, WHERE ACCESSIBLE, SHALL BE RUSKIN MD-35. OPPOSED BLADE FOR RECTANGULAR DUCTS 12 INCHES AND ABOVE, AND MODEL MD-25 PARALLEL BLADE FOR DUCTS 10 INCHES AND BELOW, AND MODEL MDRS-25 FOR ROUND DUCTS. INSTALL PER MANUFACTURER'S INSTRUCTIONS. SINGLE BLADE ROUND DAMPERS WITH LOCKING DEVICE SHALL BE IN SPIN-IN COLLARS.

FIRE DAMPERS SHALL BE RUSKIN MODEL IBD, STYLE B WITH BLADE PACKAGE OUT OF AIR STREAM. HORIZONTAL, INSTALL WHERE INDICATED ON DRAWINGS AND AS REQUIRED BY AUTHORITY HAVING LOCAL JURISDICTION.

ELECTRIC MOTORIZED DAMPER SHALL BE SIZED TO OPERATE WITH SUFFICIENT RESERVE POWER TO PROVIDE SMOOTH MODULATING ACTION OR TWO-POSITION ACTION. INSTALL PER MANUFACTURER'S INSTRUCTIONS.

REVISIONS	No	Date	Description	Checked By	
				Permit	Set
		01/27/26			



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01/27/2026

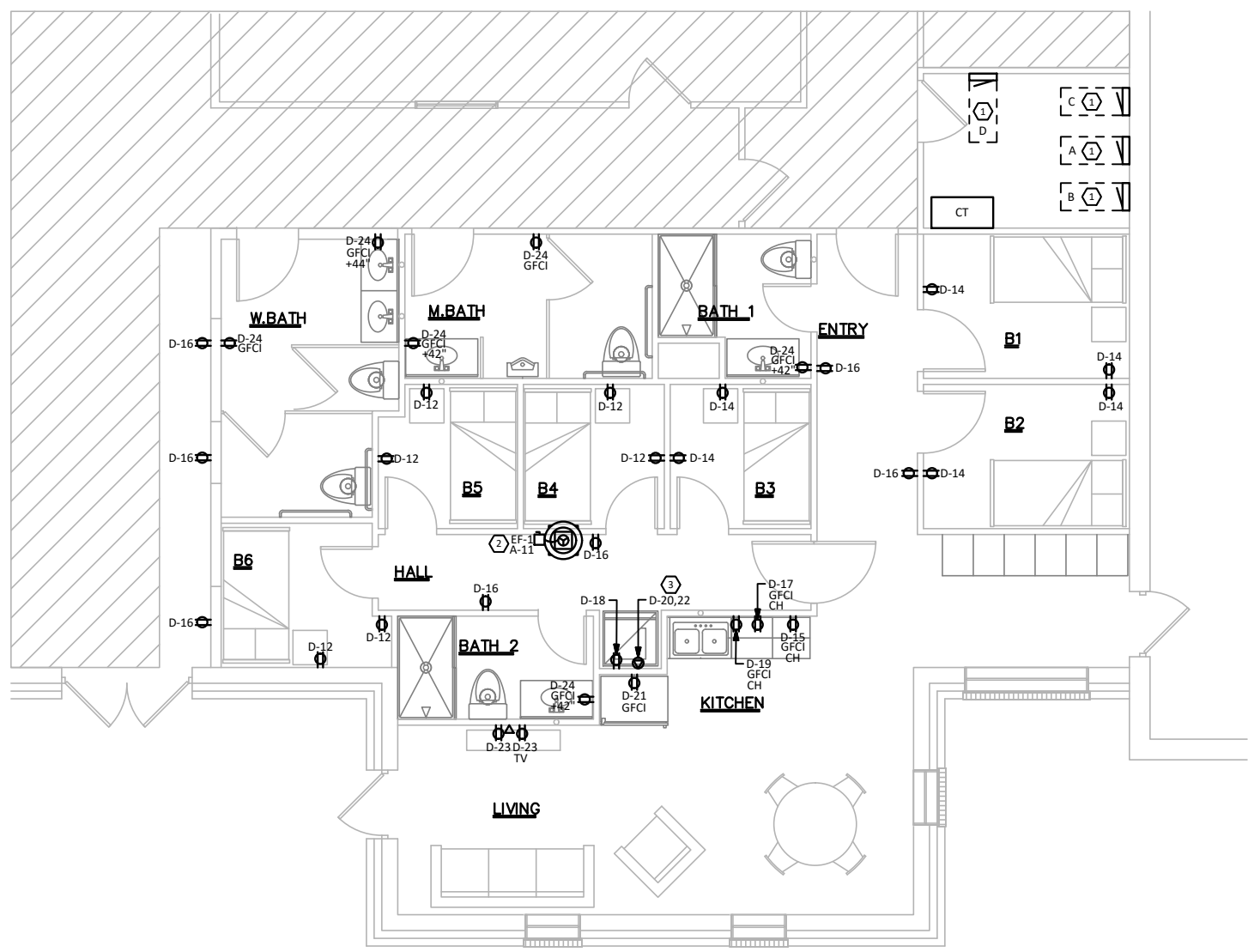
PROPOSED PROJECT:
HARLAN TWP. FIRE STATION ALTERATIONS
 9120 MORROW ROSSBURG
 PLEASANT RIDGE, OH
 WARREN COUNTY

PROJECT NO. 13478	DRAWN BY: TG/ZF/MD
DATE: 01/23/26	CHECKED BY: JG/SC
SCALE: AS NOTED	APPROVED BY: JQ
SHEET NO.	

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M3.0

g:\projects\13478 - harlan township fire station - pleasant plain, oh\E1.0 - Power Plan.dwg Tuesday, January 27, 2026 3:43:23 PM



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

KEYED NOTES	
1.	EXISTING PANELS TO REMAIN. PROTECT DURING RENOVATION. REFER TO SINGLE LINE.
2.	PROVIDE FINAL CONNECTION AND TOGGLE TYPE DISCONNECT FOR EXHAUST FAN. WIRE SUCH THAT IF ANY RESTROOM IS OCCUPIED, EXHAUST FAN RUNS.
3.	PROVIDE DEDICATED DUPLEX RECEPTACLE FOR WASHER AND NEMA 14-30R RECEPTACLE FOR ELECTRIC DRYER.

GENERAL NOTES	
A.	ALL RECEPTACLES IN KITCHENS/BARS AND/OR WITHIN 6'-0" OF A WATER SOURCE MUST BE GFCI PROTECTED PER NEC. PROVIDE GFCI RECEPTACLES OR GFCI BREAKERS AS REQUIRED, REGARDLESS OF WHETHER OR NOT IT IS INDICATED ON PLANS.
B.	IT IS THE RESPONSIBILITY OF THE E.C. TO REVIEW ALL ARCHITECTURAL DRAWINGS, ELECTRICAL DRAWINGS AND NOTES TO INSURE THAT ALL ELECTRICAL REQUIREMENTS ARE MET.
C.	COORDINATE LOCATIONS AND HEIGHTS OF ALL ELECTRICAL DEVICES WITH KITCHEN EQUIPMENT CONTRACTOR DRAWINGS PRIOR TO ROUGH-IN.
D.	PROVIDE ALL SAW CUTTING AND PATCHING OF EXISTING FLOORS AND WALLS AS REQUIRED FOR INSTALLATION OF THIS WORK.
E.	UNLESS SPECIFICALLY NOTED OTHERWISE, ALL BRANCH CIRCUITS SHALL BE PROVIDED WITH (2)#12 (CU) THHN AND (1)#12 (CU) THHN GND IN 3/4" EMT CONDUIT FOR EACH 20 AMP CIRCUIT.
F.	PROVIDE ALL ELECTRICAL ROUGH-INS, OUTLETS, SWITCHES, DISCONNECTS, CORDS AND PLUGS, AND OTHER SIMILAR ITEMS NECESSARY TO MAKE FOOD SERVICE EQUIPMENT OPERATIONAL.
G.	ALL WORK SHOWN IS NEW, UNLESS OTHERWISE NOTED.
H.	ANY PENETRATIONS THROUGH FIRE-RESISTANT/RATED WALLS, PARTITIONS, FLOORS, AND CEILINGS SHALL BE FIRESTOPPED USING APPROVED METHODS TO MAINTAIN THE FIRE RESISTANCE RATING.
I.	REFER TO ELECTRICAL SPECIFICATIONS FOR ELECTRICAL DEVICE TYPES AND RATINGS.
J.	ALL CONDUITS SHALL BE CONCEALED IN WALLS AND OUTLET BOXES SHALL BE FLUSH WITH FINISHED WALL UNLESS OTHERWISE NOTED.
K.	RECEPTACLES TO BE MOUNTED AT 1'-6" ABOVE FINISHED FLOOR TO CENTER OF RECEPTACLE UNLESS NOTED OTHERWISE.
L.	PROVIDE JUNCTION BOX AND RACEWAY FOR THERMOSTATS AND HVAC LOW VOLTAGE CONTROLS AT 48" A.F.F. THERMOSTATS AND HVAC LOW VOLTAGE CONTROLS INSTALLED AND WIRED BY M.C.. COORDINATE EXACT LOCATIONS WITH M.C.. TYPICAL OF ALL.
M.	REFER TO ARCHITECTURAL DRAWINGS FOR DEVICE COLORS AND PART NUMBERS. IN THE CASE OF A CONFLICT BETWEEN LOCATIONS ON THE ELECTRICAL DRAWINGS AND LOCATIONS ON THE ARCHITECTURAL DRAWINGS, THE ARCHITECTURAL DRAWINGS SHALL TAKE PRIORITY.
N.	ALL RECEPTACLES MOUNTED ON EXPOSED BRICK/MASONRY WALLS SHALL HAVE SURFACE MOUNT CONDUIT RUN FROM BELOW.
O.	REFER TO SPECIFICATIONS FOR WIRE SIZING.
P.	TELEPHONE AND DATA CABLING SHALL BE CAT6 CABLE AND SHALL BE BY THE G.C.
Q.	UNLESS SPECIFICALLY NOTED OTHERWISE, ALL DATA AND TELEPHONE LOCATIONS SHALL RECEIVE 2 DATA DROPS AND 2 TELEPHONE DROPS - COORDINATE WITH OWNER PRIOR TO BID AND ROUGH-IN. PROVIDE EMPTY 1" CONDUIT TO ABOVE ACCESSIBLE CEILING WITH BUSHING TO ROUTE CABLES UP WALL. ALL CABLES SHALL BE ROUTED BACK TO DEMARCATION POINT.
R.	UNLESS NOTED OTHERWISE, ALL RECEPTACLES SHALL BE WHITE WITH WHITE COVERPLATES.

REVISIONS	No.	Description	Date	Chkd By
	1	PERMIT SET	01/27/26	

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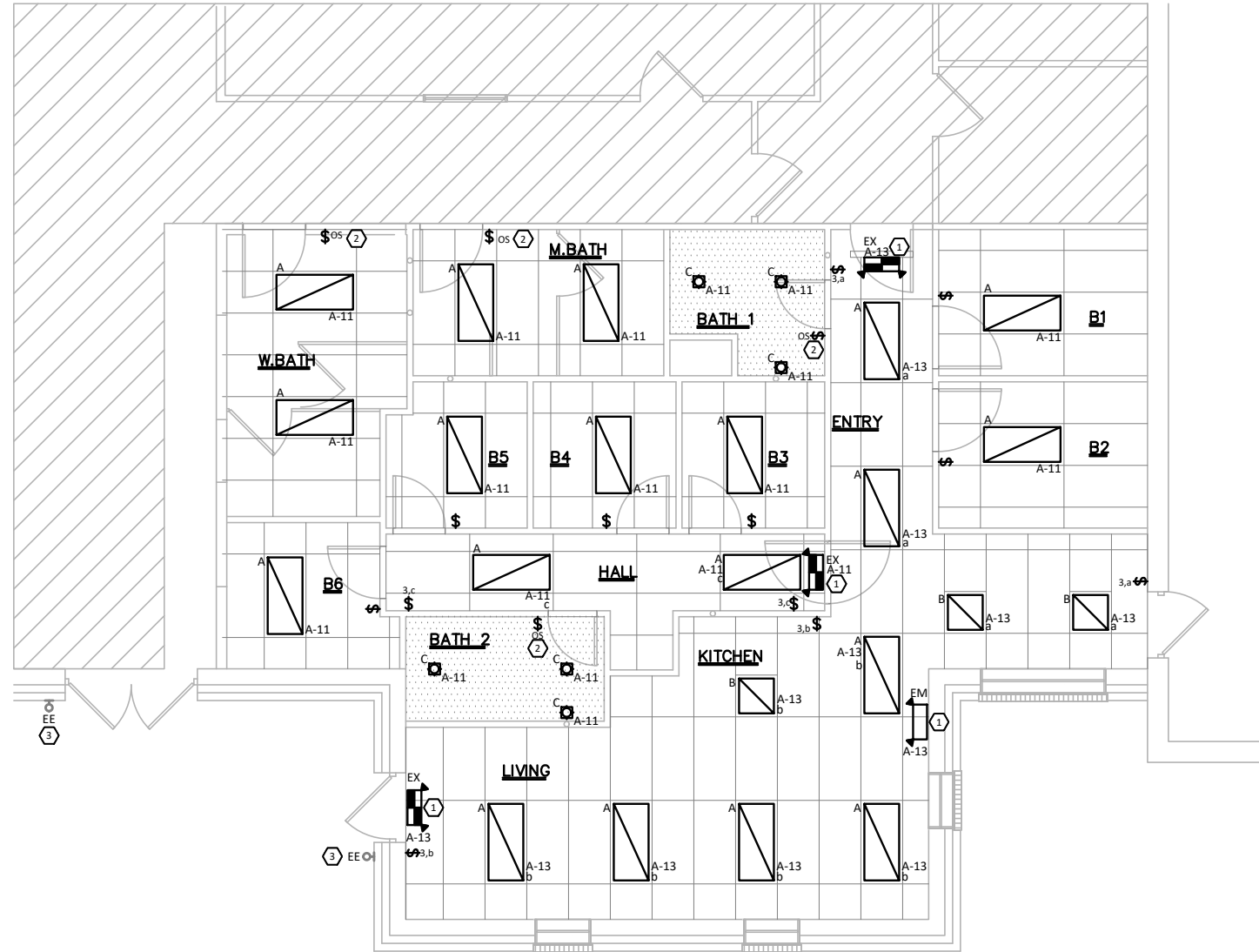
STATE OF OHIO
John W. Quillen, Jr.
REGISTERED PROFESSIONAL ENGINEER
79076
01/27/2026

PROPOSED PROJECT:
HARLAN TWP. FIRE STATION ALTERATIONS
9120 MORROW ROSSBURG
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SCALE: AS NOTED	APPROVED BY: JQ

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E1.0



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

KEYED NOTES	
1.	CONNECT ALL EMERGENCY LIGHTING TO LOCAL BRANCH CIRCUIT AHEAD OF ALL CONTROLS.
2.	PROVIDE DUAL-POLE OCCUPANCY SENSOR SWITCH FOR CONTROL OF RESTROOM LIGHTING AND COMMON EXHAUST FAN. WIRE SUCH THAT IF ANY RESTROOM IS OCCUPIED, EXHAUST FAN RUNS.
3.	EXISTING EGRESS LIGHTING TO REMAIN. E.C. SHALL VERIFY ALL EXISTING EMERGENCY EGRESS LIGHTING MEETS OBC 1006.3.

GENERAL NOTES	
A.	EMERGENCY AND EXIT FIXTURES SHALL BE INSTALLED AND CIRCUITED PER LOCAL AND LATEST NATIONAL ELECTRICAL CODES.
B.	EMERGENCY DEVICES SHALL BE PROVIDED WITH AN UNSWITCHED "HOT" TO PROVIDE CONTINUOUS POWER TO DEVICE EVEN WHEN FIXTURE IS OFF.
C.	PROVIDE EMERGENCY LIGHTS TO PROVIDE A MINIMUM OF 1 FOOT CANDLE FOR 90 MINUTES AT FLOOR LEVEL FOR EMERGENCY EGRESS.
D.	COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO ROUGH-IN. VERIFY EXACT LOCATIONS AND MOUNTING HEIGHTS FOR ALL DEVICES PRIOR TO ROUGH-IN.
E.	PROVIDE DIMMABLE CIRCUITS WITH A DEDICATED NEUTRAL - NO SHARED NEUTRALS.
F.	ALL NIGHT LIGHTS (SHOWN WITH "NL" DESIGNATION) SHALL BE WIRED AHEAD OF SWITCHING.
G.	LABEL JUNCTION BOXES WITH THE PANEL AND CIRCUIT USED TO FEED THE LUMINAIRES. AS BUILTS SHALL REFLECT AND SHOW THE CIRCUIT USED BY EACH FIXTURE.
H.	ALL LUMINAIRES, LIGHT SWITCH COVERPLATES, EXIT SIGNS SHALL MATCH ARCHITECTURAL DECOR. PROVIDE PRODUCT SUBMITTAL FOR ARCHITECT AND OWNER APPROVAL.
I.	LUMINAIRES IN CONTACT WITH INSULATION SHALL BE U.L. LISTED FOR THERMAL BARRIER OR BE PROVIDED WITH 3" MINIMUM CLEARANCE.
J.	LIGHTS AND PANELS SHALL NOT BE RECESSED IN FIRE RATED ASSEMBLIES UNLESS BOXED WITH EQUIVALENT CONSTRUCTION AS UTILIZED TO MAINTAINED INTEGRITY OF FIRE RATINGS.
K.	ALL WIRING AND LAMPS INSTALLED IN HIGH TEMPERATURE HOOD OR IN OTHER AREAS SUBJECT TO HIGH TEMPERATURES SHALL BE RATED FOR THAT USAGE.
L.	LIGHTING SHALL BE CIRCUITED AS SHOWN ON PLANS. CIRCUITING SHALL BE THRU-WIRING WHEREVER POSSIBLE. MULTIPLE CONNECTIONS TO A SINGLE LIGHT FIXTURE FOR VOLTAGE DROP CONDITIONS OR AS A RESULT OF A FIELD CONDITION ARE ACCEPTABLE. LUMINAIRES SHALL BE MANUFACTURED TO ACCOMMODATE THRU-WIRING, ANY RELATED COSTS FOR MULTIPLE CONNECTIONS SHALL BE INCLUDED IN BID.
M.	PROVIDE LIFTING MEANS TO ACCESS ALL LUMINAIRES DURING FINAL AIMING. AIM DIRECTIONAL LUMINAIRES AFTER INSTALLATION PER DIRECTION FROM OWNER.
N.	COORDINATE ALL SIGNAGE REQUIREMENTS WITH SIGNAGE VENDOR AS IT RELATES TO POWER, PLACEMENT, AND ANY OTHER PERTINENT INFORMATION.
O.	PROVIDE UPDATED PANEL SCHEDULES UPON COMPLETION OF WORK.
P.	ALL CONDUITS RUN IN AREAS WITHOUT SUSPENDED CEILINGS SHALL BE RUN INCONSPICUOUSLY AS POSSIBLE, HIDDEN BEHIND BEAMS, TIGHT TO DECK, ETC. PAINT ALL CONDUIT TO MATCH FINISH OF EACH SPECIFIC AREA.
Q.	CONDUIT SHALL NOT BE INSTALLED WITHIN FIRE PROOFING. PROVIDE ALL REQUIRED DROP HANGERS.
R.	ALL WIRING SHALL BE COPPER, MINIMUM SIZE SHALL BE #12, UNLESS OTHERWISE NOTED.
S.	BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED FOR A MAXIMUM OF 3% VOLTAGE DROP.
T.	LOCATIONS OF LUMINAIRES WITHIN MECHANICAL EQUIPMENT ROOMS SHALL BE COORDINATED IN FIELD WITH INSTALLED EQUIPMENT. LUMINAIRES SHALL BE LOCATED OVER ACCESS PATHWAYS AROUND EQUIPMENT AND NOT OVER TOP OF DUCTWORK WHERE INACCESSIBLE. DO NOT SUSPEND LUMINAIRES FROM PIPING OR DUCTWORK. PROVIDE APPROPRIATE MOUNTING HARDWARE, UNISTRUT, ALL THREAD, ETC., AS REQUIRED TO SUPPORT FIXTURES.
U.	ALL LUMINAIRES WITHIN A ROOM OR AREA SHALL BE CONTROLLED BY SWITCHES/OCCUPANCY SENSORS SHOWN IN THAT ROOM OR AREA UNLESS OTHERWISE NOTED.
V.	POWER PACKS AND SATELLITE PACKS FOR OCCUPANCY SENSORS ARE NOT SHOWN. AS PRODUCTS REQUIRE. PROVIDE POWER AND SATELLITE PACKS WITHIN EACH ROOM ABOVE CEILING ADJACENT TO ENTRY DOOR.
W.	LOWER CASE LETTER DENOTES LIGHTING CONTROL (I.E. (A)). REFER TO DETAIL THIS SHEET.
X.	OCCUPANCY SENSOR LOCATIONS SHOWN FOR SCHEMATIC INTENT AND COVERAGE PURPOSES ONLY. VERIFY EXACT SPACING WITH SELECTED OCCUPANCY SENSOR'S MANUFACTURER RECOMMENDATIONS TO PROVIDE ADEQUATE COVERAGE IN CORRIDORS.

REVISIONS	No.	Description	Date	Chkd By
	1	PERMIT SET	01/27/26	

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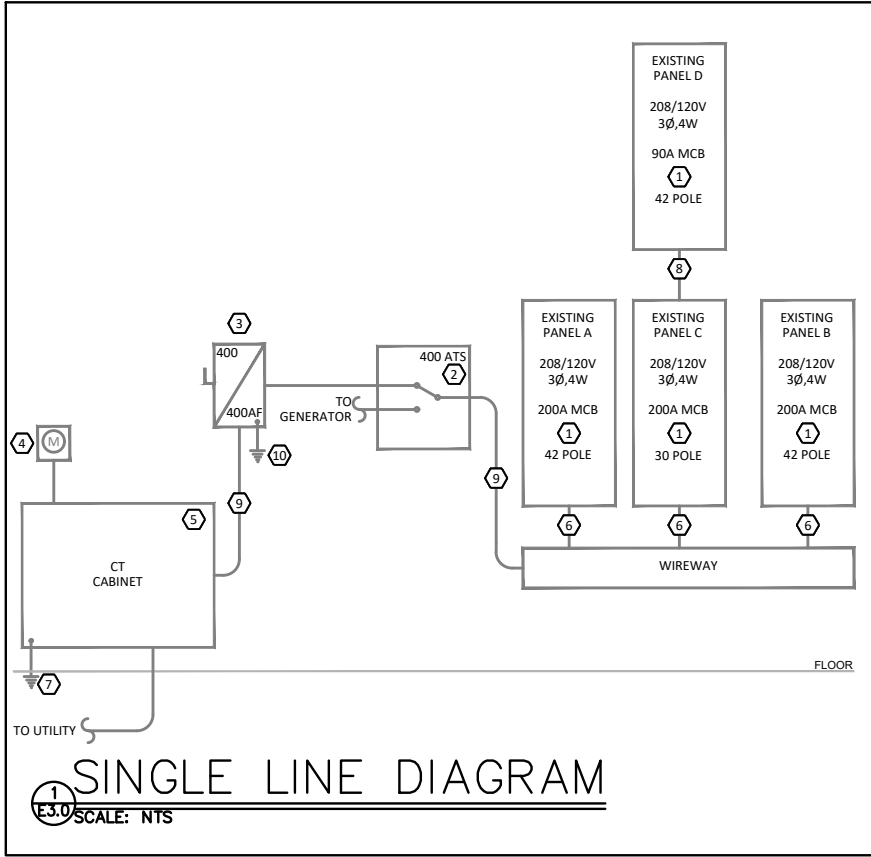
01/27/2026

PROPOSED PROJECT:
HARLAN TWP. FIRE STATION ALTERATIONS
9120 MORROW ROSSBURG
PLEASANT RIDGE, OH
WARREN COUNTY

PROJECT NO: 13478	DRAWN BY: TG/ZF/MD
DATE: 01/23/26	CHECKED BY: JG/SC
SCALE: AS NOTED	APPROVED BY: JQ

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E2.0



SINGLE LINE DIAGRAM
SCALE: NTS

- ### KEYED NOTES
- EXISTING PANEL TO REMAIN. REFER TO PANEL SCHEDULE FOR ADDITIONAL INFORMATION.
 - EXISTING AUTOMATIC TRANSFER SWITCH TO REMAIN.
 - EXISTING 400AS/3P/400AF FUSED DISCONNECT SWITCH TO REMAIN.
 - EXISTING METER TO REMAIN.
 - EXISTING CT CABINET TO REMAIN.
 - EXISTING (4) #3/0 CU AWG & (1) #2 CU AWG GND. IN 3" CONDUIT TO REMAIN.
 - EXISTING GROUNDING ELECTRODE CONDUCTOR AND GROUNDING ELECTRODE SYSTEM PER NEC 250.66 TO REMAIN.
 - EXISTING (4) #2 CU AWG & (1) #8 CU AWG GND. IN 1-1/4" CONDUIT TO REMAIN.
 - EXISTING (2) SETS OF (4) #600 KCMIL CU AWG & (1) #1/0 CU AWG GND. IN 3-1/2" CONDUIT EACH TO REMAIN.
 - EXISTING GROUNDING ELECTRODE CONDUCTOR AND GROUNDING ELECTRODE SYSTEM PER NEC 250.66 TO REMAIN.

- ### GENERAL NOTES
- PARALLEL FEEDER CONDUCTORS SHALL BE CUT TO EXACTLY THE SAME LENGTHS AND SHALL BE FROM THE SAME FACTORY RUN. ALL CONNECTIONS FOR SAME SHALL BE TORQUED TO IDENTICAL VALUES.
 - EXTERIOR ELECTRICAL WORK SHALL NOT ONLY BE WEATHERPROOF AND WATER-TIGHT, BUT SHALL ALSO BE RUST-RESISTANT.
 - CONDUCTORS BELOW GRADE OR SUBJECT TO MOISTURE SHALL BE "XHHW-2".
 - EQUIPMENT GROUNDING CONDUCTORS SHALL BE PROVIDED IN STRICT COMPLIANCE WITH N.E.C., INCLUDING N.E.C. ARTICLE 250 AND TABLE 250-122. THESE CONDUCTORS MAY NOT BE INDICATED ON RISERS OR SINGLE-LINES, BUT SHALL BE PROVIDED UNDER BASE BID NEVERTHELESS.
 - WORKING CLEARANCES SHALL BE PROVIDED FOR ALL ELECTRICAL EQUIPMENT (SWITCHBOARDS, PANELBOARDS, TRANSFORMERS, STARTERS, DISCONNECTS, ETC. AS APPLICABLE) IN STRICT COMPLIANCE WITH N.E.C. CHAPTER 1, PART B, SECTION 110-26(a). LOCATIONS SHOWN ON FLOOR PLANS ARE SCHEMATIC AND DIAGRAMMATIC IN NATURE. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING COMPLIANCE WITH THE ABOVE N.E.C. REFERENCE. THIS REQUIREMENT APPLIES TO EQUIPMENT ON FLOOR PLANS AS WELL AS TO EQUIPMENT SHOWN ON RISER.
 - HOLD ALL NEW OVERHEAD ELECTRICAL WORK AS TIGHT AS POSSIBLE TO THE BOTTOM OF THE OVERHEAD STRUCTURE. LOCATE ANY RELATED PULLBOXES SO THAT THEY WILL BE FULLY ACCESSIBLE AFTER ALL CONSTRUCTION WORK IS COMPLETE. AS WITH ALL WORK, COORDINATE IN ADVANCE WITH ALL OTHER TRADES.
 - ALL PANELS HAVE NEMA 1 ENCLOSURES UNLESS NOTED OTHERWISE.
 - BALANCE ALL PANEL LOADS SO PHASES ARE WITHIN 10% OF EACH OTHERS.
 - PROVIDE HACR CIRCUIT BREAKER FOR ALL MOTOR LOADS.

ALL EXISTING CONDITIONS WERE TAKEN FROM AS-BUILT DRAWINGS AND LIMITED VISUAL OBSERVATION. IF ANYTHING IS NOT INSTALLED AS SHOWN, NOTIFY THE ARCHITECT AND ENGINEER IMMEDIATELY.

MOUNTING HEIGHTS

ALL MOUNTING HEIGHTS ARE BASED ON NECA-1, NATIONAL ELECTRICAL CONTRACTOR'S ASSOCIATION STANDARD PRACTICE OF GOOD WORKMANSHIP IN ELECTRICAL CONSTRUCTION, UNLESS OTHERWISE NOTED. ALL HEIGHTS ARE MEASURED FROM FINISHED FLOOR TO CENTERLINE OF DEVICE.

WALL SWITCHES	48" (120 cm)
RECEPTACLE OUTLETS (GENERAL)	18" (45 cm)
RECEPTACLE OUTLETS (COUNTER HEIGHT)	42" (105 cm) OR 6" (15 cm) ABOVE COUNTERTOP. INSTALL ABOVE BACKSPLASH, IF APPLICABLE
SPECIAL PURPOSE OUTLET	WITHIN 72" (180 cm) OF INTENDED USE
TELEPHONE OUTLETS	18" (45 cm)
WALL INTERCOM STATIONS	48" (120 cm)
NIGHT LIGHTS	18" (45 cm)
WALL LIGHTING OUTLETS	84" (210 cm)
THERMOSTATS	48" (120 cm)
PUSH BUTTONS	48" (120 cm)
BELLS, BUZZERS, CHIMES	96" (240 cm) PREFERRED, OR 6" (15 cm) BELOW CEILING
FIRE ALARM PULL STATIONS	48" (120 cm)
FIRE ALARM (GONGS, BELLS, HORNS, LIGHTS)	80" (200 cm) AFF PREFERRED, OR 6" (15 cm) BELOW CEILING

ELECTRIC ABBREVIATIONS

1Ø	SINGLE-PHASE	MC	METAL-CLAD
3Ø	SINGLE POLE	MCA	MINIMUM CIRCUIT AMPS
4W	THREE-PHASE	MCB	MAIN CIRCUIT BREAKER
AF	FOUR-WIRE	MDP	MAIN DISTRIBUTION PANEL
AF	AMPERE FRAME OR AMP FUSE	MOC	MAXIMUM OVERCURRENT PROTECTION
AFF	ABOVE FINISHED FLOOR	MLO	MAIN LUGS ONLY
AHJ	AUTHORITY HAVING JURISDICTION	MTD	MOUNTED
AIC	AMPERE INTERRUPTING CAPACITY	MTG	MOUNTING
ALT	ALTERNATE	NA	NOT APPLICABLE
A	AMPERE	NEC	NATIONAL ELECTRICAL CODE
AT	AMPERE TRIP	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
AV	AUDIO VISUAL	NEUT	NEUTRAL
C	CONDUIT	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
cd	CANDELA	NIC	NOT IN CONTRACT
CD	CONSTRUCTION DOCUMENTS	NL	NIGHT LIGHT
CLG	CEILING	NM	NON-METALLIC
COMM	COMMUNICATION	NTS	NOT TO SCALE
CR	COLOR RENDERING INDEX	OC	ON CENTER
CT	CURRENT TRANSFORMER	OD	OUTSIDE DIAMETER
CU	COPPER	PC	PHOTOCELL
DISC	DISCONNECT	PNL	PANEL
EC	ELECTRICAL CONTRACTOR	PWR	POWER
EG	EQUIPMENT GROUND	RC	REFLECTED CEILING PLAN
EMT	ELECTRICAL METALLIC TUBING	RMC	RIGID METAL CONDUIT
EPO	EMERGENCY POWER OFF	RMS	ROOT MEAN SQUARE
ETR	EXISTING TO REMAIN	SE	SERVICE ENTRANCE
FA	FIRE ALARM	SF	SERVICE ENTRANCE RATED
FAAP	FIRE ALARM ANNUNCIATOR PANEL	SW	SWITCH
FACP	FIRE ALARM CONTROL PANEL	SWBD	SWITCHBOARD
FC	FOOTCANDLE	SWGR	SWITCHGEAR
FLA	FULL LOAD AMPS	TC	TIME CLOCK
FMC	FLEXIBLE METALLIC CONDUIT	TV	TELEVISION AND/OR MONITOR
GND	GROUND	TYP	TYPICAL
GF/GFCI	GROUND FAULT CIRCUIT INTERRUPTER	UL	UNDERWRITERS LABORATORY
HP	HORSEPOWER	V	VOLT
IMC	INTERMEDIATE METAL CONDUIT	VA	VOLT AMPERE
IR	INFRARED	V	VOLTAGE
JBOX	JUNCTION BOX	W	WATT
KV	KILOVOLT	WH	WATER HEATER
KVA	KILOVOLT AMPERE	WP	WEATHERPROOF
KW	KILOWATT	XFMR	TRANSFORMER
KWH	KILOWATT HOUR		
LV	LOW VOLTAGE		

- ### GENERAL PROJECT NOTES
- ALL DEVICES SHOWN ON THE EXTERIOR OF THE BUILDING SHALL BE WEATHER PROOF TYPE.
 - REFER TO ALL OTHER CONSTRUCTION TRADES' DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL ELECTRICAL WORK THAT IS INCLUDED IN DIVISION 26'S SCOPE.
 - ALL CONDUITS RUN IN AREAS WITHOUT SUSPENDED CEILINGS SHALL BE RUN INCONSPICUOUSLY AS POSSIBLE, HIDDEN BEHIND BEAMS, TIGHT TO DECK, ETC. PAINT ALL CONDUIT TO MATCH FINISH OF EACH SPECIFIC AREA.
 - CONDUIT SHALL NOT TO BE INSTALLED WITHIN FIRE PROOFING. PROVIDE ALL REQUIRED DROP HANGERS.
 - BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED FOR A MAXIMUM OF 3% VOLTAGE DROP.
 - PROVIDE ALL RACEWAY FOR HVAC THERMOSTATS AND SENSORS. THERMOSTAT AND SENSORS ARE FURNISHED AND INSTALLED UNDER MECHANICAL DIVISION 23 SCOPE.
 - PROVIDE ALL TELECOMMUNICATION, FIRE ALARM, SECURITY AND ACCESS CONTROL RACEWAYS. FIRE ALARM, SECURITY, ACCESS CONTROL AND/OR TELECOMMUNICATION SYSTEMS ARE UNDER DEFERRED SUBMITTAL UNLESS OTHERWISE NOTED.

- ### LUMINAIRE SCHEDULE NOTES
- REFER TO ARCHITECTURAL RCP(S), ELEVATIONS, AND DETAILS. FULLY COORDINATE WITH ALL MATERIAL.
 - COORDINATE WITH ALL TRADES PRIOR TO INSTALLATION TO AVOID CONFLICTS AND ENSURE SUFFICIENT SPACE ABOVE CEILINGS.
 - ALL LUMINAIRES WITHIN A ROOM OR AREA SHALL BE CONTROLLED BY SWITCHES/OCCUPANCY SENSORS SHOWN IN THAT ROOM OR AREA U.N.O.
 - LUMINAIRES IDENTIFIED AS NIGHT LIGHT (NL) SHALL BE CONNECTED AHEAD OF ANY SWITCHING FOR CONTINUOUS OPERATION.
 - LOCATIONS OF LUMINAIRES WITHIN MECHANICAL EQUIPMENT ROOMS SHALL BE COORDINATED IN FIELD WITH INSTALLED EQUIPMENT. LUMINAIRES SHALL BE LOCATED OVER ACCESS PATHWAYS AROUND EQUIPMENT AND NOT OVER TOP OF DUCTWORK WHERE INACCESSIBLE.
 - DO NOT SUSPEND LUMINAIRES FROM PIPING OR DUCTWORK.
 - PROVIDE APPROPRIATE MOUNTING HARDWARE, UNISTRUT, ALL THREAD, ETC., AS REQUIRED TO SUPPORT ALL LUMINAIRES.
 - ALL LUMINAIRES SHALL BE U.L. LISTED.
 - INSTALL LUMINAIRES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 - PROVIDE ALL EXIT SIGNAGE WITH APPROPRIATE MOUNTING HARDWARE AND DIRECTIONAL CHEVRONS.
 - PROVIDE ALL HANGING/MOUNTING HARDWARE AS REQUIRED TO INSTALL FIXTURES IN LOCATIONS SHOWN, EVEN IF NOT SPECIFICALLY LISTED IN SCHEDULE.
 - UNLESS OTHERWISE NOTED, ALL LED DRIVERS AND LAMPS SHALL BE 3500K COLOR TEMPERATURE. IF FIXTURE LISTED IS NOT AVAILABLE IN SPECIFIED COLOR TEMPERATURE, CONTACT ENGINEER FOR RECOMMENDATIONS.
 - CONTRACTOR IS ALLOWED TO USE COMBINATION EXIT SIGN AND UNITARY BATTERY POWERED EGRESS EMERGENCY LIGHTING UNITS. NOTE: IN INSTANCES WHERE THERE IS A "HIGH CAPABLE" DEVICE FEEDING AN EXTERIOR EGRESS LUMINAIRE, THE CONTRACTOR SHALL MAINTAIN THE HIGH CAPABLE FUNCTION OR FEED WITH ANOTHER UNITARY BATTERY DEVICE.

LUMINAIRE SCHEDULE

CALLOUT	SYMBOL	DESCRIPTION	MODEL	LAMP	VOLTS	INPUT WATTS	NOTES
A		2X4 TROFFER	LITHONIA LIGHTING CPX 2X4 4000LMHE 80CRI 35K SWL MIN10 ZT MVOLT	INTEGRAL LED	120V 1P 2W	34.8	
B		2X2 TROFFER	LITHONIA LIGHTING CPX 2X2 3200LMHE 80CRI 35K SWL MIN10 ZT MVOLT	INTEGRAL LED	120V 1P 2W	27.9	
C		ROUND DOWNLIGHT	LITHONIA LIGHTING LDN6 35/10 L06 AR LSS TRW MVOLT GZ1	INTEGRAL LED	120V 1P 2W	10.4	
EM		EMERGENCY LIGHT	LITHONIA LIGHTING ELM4L	INTEGRAL LED	120V 1P 2W	10	PROVIDED WITH 90 MINUTE BATTERY BACKUP
EX		EXIT SIGN / EMERGENCY LIGHT COMBO	LITHONIA LIGHTING LHQM S W RG MVOLT HO	INTEGRAL LED	120V 1P 2W	10	PROVIDED WITH 90 MINUTE BATTERY BACKUP

RECEPTACLE SCHEDULE

CALLOUT	SYMBOL
DUPLEX	
FLOOR BOX	
J-BOX	
QUAD	
SPECIAL RECEPTACLE	

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REVISIONS	CHK'd By	Date	Description
		01/27/26	PERMIT SET



OH COA #4715



01/27/2026

PROPOSED PROJECT:
HARLAN TWP. FIRE STATION ALTERATIONS
9120 MORROW ROSSBURG
PLEASANT RIDGE, OH
WARREN COUNTY

PROJECT NO: 13478	DRAWN BY: TG/ZF/MD
DATE: 01/23/26	CHECKED BY: JG/SC
SCALE: AS NOTED	APPROVED BY: JQ

SHEET NO.
E3.0

ROOM		VOLTS			AIC						
MOUNTING SURFACE		208Y/120V 3P 4W			EXISTING						
FED FROM WIREWAY 400A		BUS AMPS 200			MAIN BKR 200						
NOTE		NEUTRAL 100%			LUGS STANDARD						
CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA			CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA		
			A	B	C				A	B	C
1	20/1	(EX) FLUORESCENT LTS.	0			2	20/1	SPARE	0		
3	20/1	(EX) FLUORESCENT LTS.		0		4	20/1	SPARE		0	
5	20/1	(EX) KITCHEN SINK			0	6	20/1	(EX) RECEPTACLE			0
7	20/1	(EX) FLUORESCENT LTS.	0			8	20/1	(EX) RECEPTACLE			0
9	20/1	(EX) FLUORESCENT LTS.		0		10	20/1	(EX) RECEPTACLE			0
11	20/1	NEW LIGHTING			0.91	12	20/1	(EX) RECEPTACLE			0
13	20/1	NEW LIGHTING	0.357			14	20/1	(EX) RECEPTACLE			0
15	20/1	(EX) FLUORESCENT LTS.		0		16	20/1	(EX) RECEPTACLE			0
17	20/1	(EX) APP. BAY FLUOR. STRIPS			0	18	20/1	(EX) RECEPTACLE			0
19	20/1	(EX) APP. BAY FLUOR. STRIPS		0		20	20/1	(EX) RECEPTACLE			0
21	20/1	(EX) APP. BAY FLUOR. STRIPS		0		22	20/1	(EX) WASHER			0
23	20/1	(EX) PHOTO CELL			0	24	30/2	(EX) DRYER			0
25	20/1	(EX) EXTERIOR LTS.	0			26			0		0
27	20/1	(EX) SPARE		0		28	20/1	(EX) WP EXTERIOR RECP.			0
29	20/1	(EX) SPARE			0	30	20/1	(EX) SPARE			0
31	20/2	(EX) EXTRA TEAM STABLE OUTLET	0			32	20/1	(EX) NIGHT LIGHT			0
33				0		34	20/2	(EX) COMPRESSOR			0
35	20/1	(EX) ICE			0	36					0
37	20/1	(EX) STOREAGE CLOSET OF MEETING RM	0			38	20/2	(EX) EJECTOR PUMP			0
39	20/1	(EX) MEETING ROOM SIGN			0	40					0
41	20/1	(EX) EXTERIOR LIGHTS			0	42	20/1	(EX) SPARE			0
TOTAL CONNECTED KVA BY PHASE									0.357	0	0.91
CONN KVA			CALC KVA			CONN KVA			CALC KVA		
LIGHTING			0.847			1.06			(125%)		
LARGEST MOTOR			0.42			0.105			(25%)		
MOTORS			0.42			0.42			(100%)		
TOTAL LOAD						1.58					
BALANCED 3-PHASE LOAD						4.4 A					

ROOM		VOLTS			AIC						
MOUNTING SURFACE		208Y/120V 3P 4W			EXISTING						
FED FROM WIREWAY 400A		BUS AMPS 200			MAIN BKR 200						
NOTE		NEUTRAL 100%			LUGS STANDARD						
CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA			CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA		
			A	B	C				A	B	C
1	20/1	(EX) LTS. APP. BAY	0			2	90/3	PANEL D	2.83		
3	20/1	(EX) LTS. APP. BAY		0		4				3.19	
5	20/1	(EX) LTS. APP. BAY			0	6					4.2
7	20/1	(EX) LTS. APP. BAY	0			8	20/1	(EX) CLG. RECP.	0		
9	20/1	(EX) LTS. APP. BAY		0		10	20/1	(EX) CLG. RECP.			0
11	20/1	(EX) OVERHEAD DOOR RECP.			0	12	20/1	(EX) CLG. RECP. BAY 4			0
13	20/1	(EX) OVERHEAD DOOR RECP.	0			14	20/1	(EX) RECP.	0		
15	20/2	(EX) HOOD FANS		0		16	20/1	(EX) RECP.			0
17					0	18	20/1	(EX) RECPT.			0
19	20/1	(EX) OVERHEAD DOOR RECP.	0			20	20/1	(EX) GUH 3,4	0		
21	20/1	(EX) OVERHEAD DOOR RECP.		0		22	20/1	(EX) GUH 1,2			0
23	20/1	(EX) OVERHEAD DOOR RECP.			0	24	20/3	(EX) EF-3			0
25	20/1	(EX) OVERHEAD DOOR RECP.	0			26			0		
27	20/1	(EX) CEILING REC, AMBILANCE		0		28					0
29	20/1	(EX) WATER HEATER			0	30	20/1	(EX) CEILING FANS			0
TOTAL CONNECTED KVA BY PHASE									2.83	3.19	4.2
CONN KVA			CALC KVA			CONN KVA			CALC KVA		
RECEPTACLES			5.22			5.22			(50%>10)		
KITCHEN EQUIPMENT			2			2			(100%)		
NONCONTINUOUS			1.5			1.5			(100%)		
TOTAL LOAD						10.2					
BALANCED 3-PHASE LOAD						28.4 A					

ROOM		VOLTS			FRAME SIZE		
FED FROM UTILITY		208Y/120V 3P 4W			400		
NOTE		AIC EXISTING			TRIP SIZE 400		
CKT #	BREAKER TRIP/POLES	CIRCUIT DESCRIPTION	LOAD KVA			FEEDER RACEWAY AND CONDUCTORS	
			A	B	C		
1	400/3	TRANSFER SWITCH ATS	3.19	3.19	5.11	3-1/2" C, 3#600kcmil, #600kcmil N, #2G	
TOTAL CONNECTED KVA BY PHASE			3.19	3.19	5.11		
CONN KVA			CALC KVA			CONN KVA	CALC KVA
LIGHTING			0.847			5.22	5.22
LARGEST MOTOR			0.42			2	2
MOTORS			0.42			1.5	1.5
TOTAL LOAD						11.8	
BALANCED 3-PHASE LOAD						32.8 A	

ROOM		VOLTS			FRAME SIZE		
MOUNTING FLUSH		208Y/120V 3P 4W			400		
FED FROM ATS		AIC EXISTING			TRIP SIZE 400		
CKT #	BREAKER TRIP/POLES	CIRCUIT DESCRIPTION	LOAD KVA			FEEDER RACEWAY AND CONDUCTORS	
			A	B	C		
1	200/3	PANEL A	0.357	0	0.91	2" C, 3#3/0, #3/0N, #6G	
2	200/3	PANEL C	2.83	3.19	4.2	2" C, 3#3/0, #3/0N, #6G	
3	200/3	PANEL B	0	0	0	2" C, 3#3/0, #3/0N, #6G	
TOTAL CONNECTED KVA BY PHASE			3.19	3.19	5.11		
CONN KVA			CALC KVA			CONN KVA	CALC KVA
LIGHTING			0.847			5.22	5.22
LARGEST MOTOR			0.42			2	2
MOTORS			0.42			1.5	1.5
TOTAL LOAD						11.8	
BALANCED 3-PHASE LOAD						32.8 A	

ROOM		VOLTS			AIC						
MOUNTING SURFACE		208Y/120V 3P 4W			EXISTING						
FED FROM WIREWAY 400A		BUS AMPS 200			MAIN BKR 200						
NOTE		NEUTRAL 100%			LUGS STANDARD						
CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA			CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA		
			A	B	C				A	B	C
1	60/2	(EX) ACCU-1	0			2	20/1	(EX) FREEZER	0		
3				0		4	20/1	(EX) RANGE		0	
5	60/2	(EX) ACCU-3			0	6	-/1	(EX) SHUNT TRIP			0
7				0		8	20/1	(EX) OVEN			0
9	30/2	(EX) ACCU-3			0	10	-/1	(EX) SHUNT TRIP			0
11				0		12	20/1	(EX) DISHWASHER			0
13	25/2	(EX) ACCU-3	0			14	20/1	(EX) FRYER	0		
15				0		16	20/1	(EX) DIMMER LTS.			0
17	20/1	(EX) EF-1,2			0	18	20/1	(EX) KITCHEN REC			0
19	60/2	(EX) RANGE	0			20	20/1	(EX) KITCHEN REC	0		
21				0		22	20/1	(EX) HOOD LTS./ANSLSYS.			0
23	30/1	(EX) D/W			0	24	60/2	(EX) SPARE			0
25	20/1	(EX) SPARE	0			26			0		0
27	20/1	(EX) EWH-1			0	28	20/2	(EX) EXTERIOR LTS.			0
29	20/1	(EX) EWH-2			0	30					0
31	20/1	(EX) SPARE	0			32	20/2	(EX) EXTERIOR LTS.	0		
33	20/1	(EX) STEAM TABLE			0	34					0
35	20/1	(EX) STEAM TABLE			0	36	20/1	(EX) EJECTOR STATION			0
37	20/1	(EX) OUTLET ON POLE - DRIVEWAY	0			38	20/1	(EX) DIMMER LIGHTS	0		
39	20/1	(EX) POLE LTS.			0	40	20/1	(EX) KITCHEN REC			0
41	20/1	(EX) SIGN			0	42	20/1	(EX) KITCHEN REC			0
TOTAL CONNECTED KVA BY PHASE									0	0	0
CONN KVA			CALC KVA			TOTAL LOAD			0		
BALANCED 3-PHASE LOAD						BALANCED 3-PHASE LOAD			0 A		

ROOM		VOLTS			AIC						
MOUNTING SURFACE		208Y/120V 3P 4W			EXISTING						
FED FROM C		BUS AMPS 90			MAIN BKR 90						
NOTE		NEUTRAL 100%			LUGS STANDARD						
CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA			CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA		
			A	B	C				A	B	C
1	20/1	(EX) LIGHTING	0			2	20/1	(EX) LIGHTING	0		
3	20/1	(EX) LIGHTING		0		4	20/1	(EX) RECEPTACLE		0	
5	20/1	(EX) RECEPTACLE			0	6	20/1	(EX) CEILING FAN			0
7	15/1	(EX) UH-2	0			8	20/1	(EX) SHORELINE DROP CORD	0		
9	15/1	(EX) UH-1			0	10	20/1	(EX) SHORELINE DROP CORD			1.08
11	20/2	(EX) EF-5			0	12	20/1	# DORM RECEPTACLE			1.08
13					0	14	20/1	# DORM RECEPTACLE	1.08		
15	20/1	# KITCHEN RECEPTACLE			0.18	16	20/1	# HALL RECEPTACLE		1.26	
17	20/1	# KITCHEN RECEPTACLE			0.18	18	20/1	# WASHING MACHINE			1.5
19	20/1	# MICROWAVE	1			20	30/2	DRYER	0.75		
21	20/1	# REFRIGERATOR		1		22				0.75	
23	20/1	# TV RECEPTACLE			0.36	24	20/1	# RESTROOM RECEPTACLE			1.08
25	20/1	#	0			26	20/1	(EX) SPARE	0		
27	20/1	(EX) SPARE			0	28	20/1	(EX) SPARE		0	
29	20/1	(EX) SPARE			0	30	20/1	(EX) SPARE			0
31	20/1	(EX) SPARE	0			32	20/1	(EX) SPARE	0		
33	20/1	(EX) SPARE			0	34	20/1	(EX) SPARE			0
35	20/1	(EX) SPARE			0	36	20/1	(EX) SPARE			0
37	20/1	(EX) SPARE	0			38	20/1	(EX) SPARE	0		
39	20/1	(EX) SPARE			0	40	20/1	(EX) SPARE			0
41	20/1	(EX) SPARE			0	42	20/1	(EX) SPARE			0
TOTAL CONNECTED KVA BY PHASE									2.83	3.19	4.2
CONN KVA			CALC KVA			CONN KVA			CALC KVA		
RECEPTACLES			5.22			5.22			(50%>10)		
KITCHEN EQUIPMENT			2			2			(100%)		
NONCONTINUOUS			1.5			1.5			(100%)		
TOTAL LOAD						10.2					
BALANCED 3-PHASE LOAD						28.4 A					

ROOM		VOLTS			FRAME SIZE		
MOUNTING FLUSH							

DIVISION 26 ELECTRICAL SPECIFICATIONS

26 05 01 COMMON REQUIREMENTS FOR ELECTRIC

ALL ELECTRICAL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LATEST EDITION OF NFPA 70 AND ALL REGULATIONS, LAWS, AND ORDINANCES WHICH MAY BE APPLICABLE AND BY TRAINED AND LICENSED ELECTRICIANS.

BEFORE SUBMITTING A BID, EXAMINE DOCUMENTS OF ALL OTHER TRADES, VISIT THE SITE AND GET ACQUAINTED WITH ALL CONDITIONS THAT MAY IN ANY WAY AFFECT THE EXECUTION OF THIS CONTRACT. TAKE MEASUREMENTS AND BE RESPONSIBLE FOR EXACT SIZE AND LOCATIONS OF ALL OPENINGS REQUIRED. VERIFY INSTALLATION MAY BE MADE IN COMPLETE ACCORDANCE WITH ALL PERTINENT CODES AND REGULATIONS. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE PROFESSIONAL ENGINEER OF RECORD. DO NOT PROCEED WITH THE INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.

IT IS NOT THE INTENT OF THE DRAWINGS THAT EXISTING CONDITIONS BE ACCURATELY SHOWN. EXISTING ELECTRICAL WORK IS SHOWN TO LIMITED EXTENT ON DRAWINGS AND IS SHOWN FOR GENERAL REFERENCE ONLY. LOCATIONS AND INFORMATION WERE DERIVED FROM CURSORY SITE VISUAL OBSERVATIONS OR FROM DOCUMENTS THAT WERE PREPARED FOR PREVIOUSLY INSTALLED WORK WHEN AVAILABLE.

LIST OF EQUIPMENT, TABULATIONS OF DATA, SCHEDULES, ETC. APPEARING IN THE SPECIFICATIONS OR ON THE DRAWINGS ARE INCLUDED FOR REFERENCE BY THE CONTRACTOR IN ARRIVING AT A MORE COMPLETE UNDERSTANDING OF THE INTENDED INSTALLATION. THEY ARE NOT INTENDED OR TO BE CONSTRUED AS RELIEVING THE RESPONSIBILITY OF THE CONTRACTOR IN MAKING HIS/HER OWN TAKE-OFF AND PROVIDING ALL REQUIRED WORK.

THE WORK COVERED BY THESE SPECIFICATIONS SHALL CONSIST OF PROVIDING ALL NEW MATERIAL, LABOR, EQUIPMENT, AND SERVICES NECESSARY FOR A COMPLETE ELECTRICAL INSTALLATION AS SPECIFIED HEREIN. WORK IN THIS SECTION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING ITEMS:

- TELEPHONE CONDUIT SYSTEM
• DATA COMMUNICATIONS CONDUIT SYSTEM
• WIRING DEVICES
• BRANCH CIRCUITING
• GROUNDING
• CONNECTION OF HVAC EQUIPMENT
• TEMPORARY ELECTRICAL WIRING
• LIGHTING

WHENEVER THE WORDS "CONTRACTOR" APPEAR ON ELECTRICAL DRAWINGS OR IN THESE SPECIFICATIONS, IT SHALL REFER TO THE ELECTRICAL SUB-CONTRACTOR. WHENEVER THE WORD "PROVIDE" APPEARS IN THESE DOCUMENTS, IT SHALL BE INTERPRETED TO MEAN "FURNISH AND INSTALL".

COORDINATE ALL WORK WITH THE OWNER TO MINIMIZE INTERRUPTION OF BUILDING OPERATION. SCHEDULE OF ALL POWER OUTAGES MUST BE APPROVED BY THE OWNER PRIOR TO THE BEGINNING OF ANY WORK.

PRIOR TO ALL WORK, CAREFULLY INSPECT THE INSTALLED WORK OF ALL OTHER TRADES AND VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE. COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE SCHEDULES FOR WORK OF ALL OTHER TRADES TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

COORDINATE EXACT ELECTRICAL REQUIREMENTS (VOLTAGE, PHASE, AMPS, WIRING, CONNECTIONS, AND ETC.) OF EQUIPMENT FURNISHED BY OTHERS PRIOR TO PERFORMING WORK. COORDINATE MANUFACTURER'S ELECTRICAL WIRING AND CONNECTION REQUIREMENTS WITH PROJECT DATA AND/OR SUBMITTAL DRAWINGS PRIOR TO ROUGH-IN AND FURNISHING EQUIPMENT'S OVER-CURRENT PROTECTIVE DEVICES. ALL WIRING REQUIREMENTS SHOWN ARE SCHEMATIC IN NATURE.
• COORDINATE SPECIALTY RECEPTACLE AND/OR OUTLET TYPES WITH EQUIPMENT REQUIREMENTS.
• WHEN LOOSE DISCONNECT SWITCHES ARE FURNISHED UNDER MECHANICAL CONTRACT, RECEIVE AND INSTALL AND PROVIDE ALL FINAL TERMINATIONS NECESSARY.

VERIFY ALL EQUIPMENT LOCATIONS, SWITCHES, RECEPTACLES, LIGHTING FIXTURES, ETC., IN FIELD. THE OWNER RESERVES THE RIGHT TO CHANGE LOCATION OF ANY OUTLET OR FIXTURE FOR A DISTANCE OF 15 FT. IN ANY DIRECTION FROM DRAWING LOCATION, BEFORE THE WORK IS ACTUALLY ROUGHED IN, AT NO EXTRA CHARGE.

WHERE LIGHT FIXTURE AND OTHER ELECTRICAL ITEMS ARE SHOWN IN CONFLICT WITH LOCATIONS OF STRUCTURAL MEMBERS AND MECHANICAL OR OTHER EQUIPMENT, PROVIDE ALL REQUIRED SUPPORTS AND WIRING TO CLEAR THE ENCROACHMENT.

PROVIDE ALL MISCELLANEOUS HARDWARE AND MATERIAL NOT SPECIFIED BUT NECESSARY TO PROVIDE A COMPLETE AND WORKING ELECTRICAL SYSTEM. THIS HARDWARE SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL MISCELLANEOUS CONDUIT FITTINGS AND MOUNTING HARDWARE, LUMINAIRE MOUNTING HARDWARE, BRACKETS, CONNECTORS, CORDS AND PLUGS.

PROVIDE ACCESS DOORS TO PROVIDE ACCESS TO ALL J-BOXES, PULL BOXES, AND OTHER EQUIPMENT AS REQUIRED. ACCESS DOORS FOR INSTALLATION IN FIRE RATED CONSTRUCTION SHALL HAVE APPROPRIATE FIRE RATING.

DURING PROGRESS OF THE WORK, MAINTAIN ON DRAWINGS AT THE SITE, AN ACCURATE RECORD OF THE INSTALLATION OF THE ELECTRICAL SYSTEM, INDICATING ALL ITEMS WHICH HAVE BEEN CHANGED OR ADDED.

APPLY FOR AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED BY LOCAL AUTHORITY, FOR THE APPROVAL OF WORK.

A CERTIFICATE OF FINAL INSPECTION AND APPROVAL SHALL BE SUBMITTED WITH THE CONTRACTOR'S REQUEST FOR FINAL PAYMENT. NO FINAL PAYMENT WILL BE APPROVED WITHOUT THIS CERTIFICATE.

GUARANTEE ALL WORKMANSHIP, MATERIAL, AND EQUIPMENT AND REPLACE ANY FOUND DEFECTIVE WORK WITHOUT COST TO THE OWNER, FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE.

ALL MATERIALS, APPARATUS AND EQUIPMENT SHALL BEAR THE SEAL OF UNDERWRITERS LABORATORIES INC. (UL) OR A SIMILAR CREDIBLE TESTING AGENCY. DESIGN BASIS MANUFACTURERS OF MATERIAL AND EQUIPMENT ARE SPECIFIED AND PLANS ARE DETAILED ACCORDING TO THIS MATERIAL. CONTRACTOR SHALL BASE HIS BID ON FURNISHING AND INSTALLING THIS MAKE OF MATERIAL AND EQUIPMENT.

AN ACCEPTABLE MANUFACTURER'S NAME AND MODEL NUMBER OF A PRODUCT MAY BE PROVIDED IN THESE DOCUMENTS. THIS IS THE EQUIPMENT INCLUDED DURING THE DESIGN PROCESS AND FORMS THE BASIS OF A STANDARD OF QUALITY. WHERE MORE THAN ONE MAKE OF MATERIAL OR EQUIPMENT IS SPECIFIED, THE CONTRACTOR SHALL STATE IN HIS BID WHICH MAKE HE PROPOSES TO FURNISH AND INSTALL. SHOP DRAWING APPROVAL SHALL BE OBTAINED PRIOR TO SHIPMENT OF EQUIPMENT.

VERIFY THE MODEL NUMBER OR PRODUCT IS STILL ACCURATE AND MEETS ALL REQUIREMENTS SHOWN ON THE DRAWINGS. IF THERE IS A DISCREPANCY BETWEEN THE REQUIREMENTS AND THE PRODUCT OR MODEL NUMBER, THE STRICTER OF THE TWO SHALL GOVERN.

IF ANY EXISTING CODE OR SAFETY VIOLATIONS ARE DISCOVERED BY THE ELECTRICAL CONTRACTOR, THEY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION (DETAILED IN WRITING) OF THE OWNER'S REPRESENTATIVE ALONG WITH THE CONTRACTOR'S PROPOSED COST FOR CORRECTIONS.

26 05 03 SUBMITTALS FOR ELECTRICAL SYSTEMS

SUBMIT SHOP DRAWINGS AND/OR PRODUCT DATA (ELECTRONIC COPIES) ON THE FOLLOWING ITEMS FOR REVIEW BEFORE FABRICATION OR SHIPMENT:

- LOW VOLTAGE TRANSFORMERS
• CIRCUIT BREAKERS
• DISCONNECT SWITCHES
• WIRING DEVICES
• LIGHTING
• LIGHTING CONTROLS (SWITCHES - TOGGLE, DIMMER, OCCUPANT SENSORS, ETC.)

MAINTENANCE MANUALS: THE MANUALS SHALL INCLUDE WIRING DIAGRAMS, MAINTENANCE AND OPERATING INSTRUCTIONS, PARTS LISTINGS, AND COPIES OF OTHER SUBMITTALS INDICATED FOR INCLUSION.

REVIEW AND CORRECTIONS OR COMMENTS MADE ON SHOP DRAWINGS, PRODUCT DATA: CATALOGS, CUT SHEETS, CHARTS, AND OTHER ITEMS DURING CONSTRUCTION PHASE SUBMITTAL REVIEW DO NOT RELIEVE CONTRACTOR FROM COMPLIANCE WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS. FOR PROVIDING A COMPLETE AND FUNCTIONING PROJECT, NOR SHALL THEY RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS OR ERRORS OF ANY SORT. THIS REVIEW IS FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH INFORMATION GIVEN AND THE DESIGN CONCEPT EXPRESSED IN THE CONTRACT DOCUMENTS. CONTRACTOR REMAINS RESPONSIBLE FOR DETERMINING THE ACCURACY AND COMPLETENESS OF OTHER DETAILS SUCH AS DIMENSIONS AND QUANTITIES, FOR SUBSTANTIATING INSTRUCTIONS FOR INSTALLATIONS, VERIFYING MATERIALS REQUIRED, OBTAINING FIELD MEASUREMENTS AND RELATED CRITERIA, COORDINATING WORK WITH OTHER DISCIPLINES AND PERFORMING WORK IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

ANY CHANGES TO ITEMS SPECIFIED MUST BE SUBMITTED IN WRITING AS A SUBSTITUTION, WITH COMPLETE DOCUMENTATION OF PRICE DIFFERENTIAL AND EQUIPMENT DETAILS. SUBSTITUTIONS PROVIDED SHALL BE REVIEWED AT MARQUE ENGINEERING'S HOURLY RATES. REVIEW SHALL BE PAID FOR BY THE CONTRACTOR TO MARQUE ENGINEERING AT NO COST TO THE OWNER. BY USING PRE-APPROVED SUBSTITUTIONS, THE CONTRACTOR ACCEPTS ALL RESPONSIBILITY AND ASSOCIATED COSTS FOR ALL REQUIRED MODIFICATIONS TO THE CONTRACT DOCUMENTS TO INCLUDE BUT NOT LIMITED TO MATERIAL OR EQUIPMENT COSTS FOR THEIR OR OTHER TRADES, AND ENSURING THAT SUBSTITUTED MATERIALS AND EQUIPMENT TO BE FURNISHED FIT INTO SPACE AVAILABLE.

EXTENSIVE REVISIONS NECESSITATED TO THE CONTRACT DOCUMENTS, OR SUBSTITUTION ACTIONS RELATED TO ANY SPECIFIED PRODUCT NOT ABLE TO BE PROVIDED DUE TO A FAILURE TO COMMENCE WORK, PROCURE PRODUCT OR COORDINATE CONSTRUCTION ACTIVITIES SHALL BE PROVIDED AT MARQUE ENGINEERING'S HOURLY RATES. COSTS SHALL BE BORNE BY THE CONTRACTOR AT NO COST TO THE OWNER.

26 05 05 - EXISTING CONDITIONS & DEMOLITION

DO NOT REUSE REMOVED ELECTRICAL MATERIALS UNLESS SPECIFICALLY INDICATED ON DRAWINGS. EXISTING WIRING SYSTEMS MAY BE UTILIZED ONLY TO THE EXTENT INDICATED ON DRAWINGS.

IF REQUIRED TO ACCOMMODATE CONSTRUCTION RELATED ACTIVITIES TEMPORARILY REMOVE, STORE IN PROTECTED LOCATION ON SITE, AND REINSTALL CONFLICTING ELECTRICAL EQUIPMENT, LUMINAIRES, OR DEVICES THAT ARE TO REMAIN OR TO BE RELOCATED.

WHERE THE TERM "DEMOLITION" IS USED HEREIN, INTERPRET IT TO MEAN "DEMOLITION" OR "SELECTIVE DEMOLITION" WHERE APPLICABLE.

PROVIDE ELECTRICAL DEMOLITION WORK AS REQUIRED TO ACCOMMODATE PROJECT DEMOLITION AND AS REQUIRED TO ACCOMMODATE NEW CONSTRUCTION. DISCONNECT AND REMOVE WORK TO BE ABANDONED, AND AS REQUIRED TO ACCOMMODATE WORK OF OTHER TRADES, IN AREAS AFFECTED BY THIS PROJECT.

MAINTAIN EXISTING ELECTRICAL SERVICE AND FEEDERS TO OCCUPIED AREAS AND OPERATIONAL FACILITIES, UNLESS OTHERWISE INDICATED, OR WHEN AUTHORIZED OTHERWISE IN WRITING BY OWNER'S REPRESENTATIVE. PROVIDE TEMPORARY SERVICE DURING INTERRUPTIONS TO EXISTING FACILITIES. SCHEDULE MOMENTARY OUTAGES WHEN NECESSARY FOR REPLACING EXISTING WIRING SYSTEMS WITH NEW WIRING SYSTEMS. WHEN THAT "CUTTING-OVER" HAS BEEN SUCCESSFULLY ACCOMPLISHED, REMOVE RELATED WIRING THAT HAS BEEN ABANDONED.

CAREFULLY COORDINATE WORK AND SYSTEM SHUTDOWNS IN ADVANCE WITH OWNER'S REPRESENTATIVE, AND WITH AFFECTED TRADES SO THAT NORMAL BUILDING ACTIVITIES AND OTHER CONSTRUCTION TRADES ARE MINIMALLY AFFECTED. PERFORM ELECTRICALLY RELATED CONSTRUCTION WORK, WHICH WILL AFFECT AN OCCUPIED AREA (INCLUDING THOSE WHICH ARE LOCATED OUTSIDE THE IMMEDIATE AREA OF PROJECT WORK) AT SPECIAL TIMES AS DIRECTED BY OWNER'S REPRESENTATIVE IN FIELD.

PROVIDE WORK IN A MANNER THAT ENSURES EXISTING SYSTEMS AND COMPONENTS REMAIN FULLY OPERATIONAL IN OCCUPIED SPACES DURING OCCUPANCY PERIODS.

PROVIDE AND MAINTAIN TEMPORARY PARTITIONS AND DUST BARRIERS ADEQUATE TO PREVENT THE SPREAD OF DUST AND DIRT TO ADJACENT FINISHED AREAS AND OTHER SYSTEM COMPONENTS. PROTECT ADJACENT INSTALLATIONS DURING CUTTING AND PATCHING OPERATIONS. REMOVE PROTECTION AND BARRIERS AFTER DEMOLITION OPERATIONS ARE COMPLETE.

INSPECT EXISTING ELECTRICAL WORK IN AREAS ACCESSED UNDER THIS PROJECT AND BRING INTO COMPLIANCE WITH CURRENT NFPA 70. THIS APPLIES ONLY TO THE EXTENT THAT SUCH WORK IS UNCOVERED IN THE IMMEDIATE PROJECT AREAS AFFECTED BY CONSTRUCTION ACTIVITIES, AND ONLY TO THE LIMITED EXTENT THAT IT APPLIES TO PRE-EXISTING GENERAL INSTALLATION METHODS SUCH AS MISSING JUNCTION BOX PLATE, OPEN JUNCTION BOX KNOCKOUT, MINOR CONDUIT RE-ANCHORING AND MINOR EXPOSED WIRING/CONNECTIONS. IF MORE EXTENSIVE CODE OR SAFETY VIOLATIONS ARE DISCOVERED, IMMEDIATELY BRING THEM TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE (DETAILED IN WRITING) ALONG WITH PROPOSED COST FOR CORRECTIONS AND IMPACT (IF ANY) ON THE CONSTRUCTION SCHEDULE.

THE FOLLOWING APPLIES TO ELECTRICAL MATERIALS THAT WILL REMAIN OR BE REUSED UNDER THIS PROJECT: PROTECT DURING CONSTRUCTION ACTIVITIES:

- DETERMINE WHICH EXISTING BRANCH CIRCUITS MUST REMAIN ACTIVE. RECONNECT (OR MAINTAIN IN OPERATION WHERE APPLICABLE) AND SCHEDULE THEM IN THE PANELBOARD(S).
• EXISTING BRANCH CIRCUIT AND SYSTEMS CONDUIT, NOT CONFLICTING WITH NEW CONSTRUCTION AND NOT CONFLICTING WITH OVERHEAD OR CEILING CAVITY REQUIREMENTS, MAY BE RE-USED AT THE DISCRETION OF THE ELECTRICAL INSTALLER (AFTER ALL ABANDONED CONDUCTORS AND CABLES HAVE BEEN REMOVED FROM THEM). DO NOT EXCEED NFPA 70 REQUIRED CONDUIT FILL AND DO NOT INSTALL WIRING FED FROM DIFFERENT SOURCES IN COMMON CONDUIT.
• COMPLETELY RE-TYPE PANELBOARD DIRECTORIES FOR PANELBOARD(S) AFFECTED BY THIS PROJECT USING ACCURATE "AS-BUILT" INFORMATION.
• WHERE APPLICABLE ENSURE THAT RECONNECTED SHARED NEUTRALS ARE PROPERLY BALANCED WITH THE CORRECT PHASE CONDUCTORS.
• WHERE APPLICABLE, PROVIDE CORRECT COLOR-CODING FOR INSULATION OF RECONNECTED CONDUCTORS IN A MANNER COMPLIANT WITH NFPA 70.
• FOR ALL EXISTING LUMINAIRES SCHEDULED FOR REMOVE, REMOVE FROM EXISTING CEILINGS DURING DEMOLITION; PROTECT DURING CONSTRUCTION; CLEAN, SERVICE (IF REQUIRED), RE-LAMP (WITH LAMPS TO MATCH BUILDING STANDARD OR PER THIS SECTION AS NOTED) AND REINSTALL AT LOCATIONS INDICATED. RE-LAMP LUMINAIRES IMMEDIATELY PRIOR TO OCCUPANCY OF THE FINISHED CONSTRUCTION AREA.
• CLEAN COMPONENTS TO BE REUSED INSIDE AND OUT, AND REINSTALL WHERE INDICATED ON DRAWINGS. MODIFY AND EXTEND RELATED EXISTING BRANCH WIRING AND/OR CONTROL WIRINGS ACCORDINGLY TO INCLUDE CONDUIT, CABLEING, ETC.

DEMOLITION

DISCONNECT AND REMOVE WORK TO BE ABANDONED, AND AS REQUIRED TO ACCOMMODATE WORK OF OTHER TRADES, IN AREAS AFFECTED BY THIS PROJECT UNLESS SPECIFICALLY NOTED OTHERWISE ON PLANS OR DETERMINED OTHERWISE DURING PRE-DEMOLITION SURVEY.

REMOVE ACCESSIBLE ABANDONED, INACTIVE AND OBSOLETE RACEWAY SYSTEMS. REMOVE ABANDONED, INACTIVE AND OBSOLETE WIRING AND CONTROLS. REMOVE ABANDONED, INACTIVE AND OBSOLETE EQUIPMENT, LUMINAIRES AND DEVICES. ABANDONED RACEWAYS EMBEDDED IN FLOORS, WALLS, AND CEILINGS MAY REMAIN IF SUCH MATERIALS DO NOT INTERFERE WITH NEW INSTALLATIONS. REMOVE ABANDONED ELECTRICAL MATERIALS ABOVE ACCESSIBLE CEILINGS.

REMOVE RELATED ABANDONED UNUSED RACEWAY BACK TO THE NEAREST RESPECTIVE "UPSTREAM" JUNCTION BOX THAT REMAINS ACTIVE EVEN IF OUTSIDE OF THE CONFINES OF THE PROJECT AREA.

REMOVE ABANDONED UNUSED WIRING BACK TO ITS SOURCE EVEN IF SOURCES ARE OUTSIDE THE CONFINES OF THE PROJECT AREA.

EXTEND RACEWAY AND WIRING AS REQUIRED TO ACCOMMODATE NEW OR RELOCATED ELECTRICAL WORK.

LOCATE, IDENTIFY, AND PROTECT ELECTRICAL SERVICES PASSING THROUGH DEMOLITION AREAS AND SURVIVING OTHER AREAS OUTSIDE THE DEMOLITION LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE DEMOLITION LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR AFFECTED AREAS.

IT IS RECOGNIZED THAT THERE MAY BE SOME CONDUIT SYSTEMS RENDERED INACTIVE BY DEMOLITION, CAUSING DISCONNECTION OF "DOWNSTREAM" OUTLETS, ETC. INVESTIGATE THESE TYPES OF CONDITIONS (FOR ALL SYSTEMS) PRIOR TO DEMOLITION. PROVIDE NECESSARY CORRECTIVE ELECTRICAL WORK PRIOR TO DEMOLITION TO ENSURE THAT SUCH "DOWNSTREAM" DEVICES REMAIN PERMANENTLY ACTIVE THROUGHOUT DEMOLITION, DURING NEW CONSTRUCTION, AND AFTER PROJECT COMPLETION.

PERFORM CUTTING AND PATCHING REQUIRED FOR DEMOLITION.

COORDINATE WORK CAREFULLY WITH OWNER PRIOR TO BEGINNING ELECTRICAL DEMOLITION WORK.

MAINTAIN (OR RECONNECT IF APPLICABLE) REMAINING WIRING.

REMOVE AND RELOCATE WIRING, DEVICES, CONDUIT, ETC. THAT CONFLICT WITH CONSTRUCTION RELATED WORK OF OTHER TRADES AS NECESSARY TO ACCOMMODATE NEW WORK OF RESPECTIVE TRADE.

PROVIDE ELECTRICAL DISCONNECTIONS, AND RECONNECTIONS WHERE APPLICABLE, FOR EQUIPMENT TO BE REMOVED (OR RELOCATED) BY OTHER TRADES.

REFER TO OWNER'S REPRESENTATIVE FOR DISPOSAL INSTRUCTIONS FOR ABANDONED ELECTRICAL MATERIALS REMOVED DURING DEMOLITION AND THEREAFTER. NEATLY STORE ELECTRICAL MATERIALS THAT THE OWNER ELECTS TO RETAIN AT THE SITE AS DESIGNATED BY THE OWNER'S REPRESENTATIVE. LEGALLY DISPOSE OF MATERIALS THAT THE OWNER ELECTS NOT TO RETAIN.

DISCONNECT AND REMOVE ELECTRICAL MATERIALS DESIGNATED FOR SALVAGE (REMOVAL AND REUSE, OR FOR TURNING OVER TO OWNER) UNDAMAGED. DISCONNECT AND REMOVE WIRING AND "WHIPS" FROM EQUIPMENT TERMINAL POINTS.

CAREFULLY TRANSPORT SALVAGED ELECTRICAL MATERIALS TO A PROTECTED ON-SITE STORAGE LOCATION AS DIRECTED IN FIELD AND NEATLY STORE THEM GROUPED BY SYSTEM TYPE.

LEGALLY DISPOSE OF MATERIALS TO BE DEMOLISHED.

26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

FURNISH AND INSTALL ALL NECESSARY CABLE OF THE SIZE AND TYPE INDICATED ON THE DRAWINGS. ALL WIRE SHALL BE COPPER UNLESS OTHERWISE SPECIFIED.

NO CONDUCTOR SMALLER THAN NO. 12 AWG SHALL BE USED UNLESS OTHERWISE INDICATED. IN GENERAL, CONDUCTORS SMALLER THAN NO. 12 WILL BE PERMITTED ONLY FOR COMMUNICATION, SIGNAL, OR CONTROL CIRCUITS.

PROVIDE THE FOLLOWING MINIMUM AWG CONDUCTOR SIZES FOR GENERAL BRANCH CIRCUITING AND GROUNDS THAT ARE NOT INDICATED ON DRAWINGS. ALL WIRING IS BASED ON USING COPPER CONDUCTORS UNLESS OTHERWISE INDICATED. WHERE APPLICABLE INCREASE AS REQUIRED TO ACCOMMODATE VOLTAGE DROP AND TO ACCOMMODATE SPECIAL CONDITIONS. DO NOT DERATE ANY GROUNDED (NEUTRAL) CONDUCTORS. TEMPERATURE RATINGS LISTED BELOW PERTAIN TO BOTH WIRE AND TERMINATIONS.

Table with 3 columns: SOURCE BREAKER/FUSE, 60 DEG. C RATING AWG WIRE SIZE, EQUIPMENT GROUNDING AWG WIRE SIZE. Rows include 15 AMPERE (#12), 20 AMPERE (#12), 25 AMPERE (#10), 30 AMPERE (#10), 35 AMPERE (#8), 40 AMPERE (#8), 45 AMPERE (#6), 50 AMPERE (#6), 60 AMPERE (#4), 70 AMPERE (#4), 80 AMPERE (#3), 90 AMPERE (#2), 100 AMPERE (#1).

CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET, NO SPLICES SHALL BE PERMITTED EXCEPT AT OUTLETS. ALL ELECTRICAL CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC.

COLOR CODING IS REQUIRED FOR ALL SERVICE, FEEDER, BRANCH, CONTROL, AND SIGNALING CIRCUIT CONDUCTORS. INSULATION COLOR FOR NEUTRALS SHALL BE WHITE FOR 120 VOLT CIRCUITS. EQUIPMENT GROUNDING CONDUCTORS SHALL BE GREEN. THE COLOR OF THE INSULATION OF THE UNGROUNDED CONDUCTORS SHALL BE AS FOLLOWS:

208Y/120Y SYSTEM: BLACK, RED, BLUE AND WHITE (NEUTRAL)
480Y/277Y SYSTEM: BROWN, ORANGE, YELLOW AND GRAY (NEUTRAL)
EQUIPMENT GROUNDING: GREEN

ALL UNGROUNDED CONDUCTORS OF THE SAME COLOR SHALL BE CONNECTED TO THE SAME UNGROUNDED FEEDER CONDUCTOR.

USE NO WIRE SMALLER THAN NO. 12 AWG, RATED AT 600 VOLTS, FOR POWER AND LIGHTING CIRCUITS AND NO SMALLER THAN NO. 14 FOR CONTROL WIRING. BRANCH CIRCUIT CONDUCTORS FOR 20 AMPERE, 120 VOLT CIRCUITS SHALL BE NO. 12 AWG, WITH CONDUCTOR FROM PANEL BOARD TO THE FIRST OUTLET AS FOLLOWS:

0 - 75 FEET-----#12 AWG
75 -150 FEET-----#10 AWG
150-250 FEET-----# 8 AWG
250-350 FEET-----# 6 AWG

ALL JOINTS AND SPLICES SHALL BE MADE MECHANICALLY AND ELECTRICALLY SECURE. ALL SPLICES AND JOINTS SHALL BE MADE WITH APPROVED SOLDERLESS CONNECTORS, PROPERLY INSTALLED.

TYPE MC CABLE MAY BE USED FOR SHORT (LESS THAN 6 FEET) FINAL CONNECTIONS ONLY.

TYPE MC CABLE MUST BE LISTED AND LABELED AS DEFINED IN NFPA 70, BE MARKED FOR INTENDED LOCATION AND USE, AND COMPLY WITH UL 1569. MC CABLE SHALL BE UTILIZED FOR SINGLE CIRCUITS AND MULTICIRCUITS WITH COLOR-CODED CONDUCTORS.

MC CABLE CONDUCTORS SHALL BE COPPER, COMPLYING WITH ASTM B3 FOR BARE ANNEALED COPPER AND WITH ASTM B8 FOR STRANDED CONDUCTORS. GROUNDING CONDUCTORS SHALL BE INSULATED. CONDUCTOR INSULATION SHALL BE OF EITHER TYPE TFFN/THHN/THWN-2 AND COMPLY WITH UL 83, OR TYPE XHHW-2 AND COMPLY WITH UL44.

MC CABLE INSTALLED IN WET LOCATIONS PER NEC 330.10 SHALL HAVE A SUNLIGHT RESISTANT PVC JACKET APPLIED OVER ARMOR.

ALL MC CABLE INSTALLATIONS SHALL COMPLY WITH NEC ARTICLE 330.

26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

ALL WIRE FOR GROUNDING PURPOSE SHALL BE STRANDED COPPER, OR COPPER CLAD STEEL AS REQUIRED FOR TYPE AND SIZES INDICATED ON DRAWINGS.

METAL RACEWAYS MAY NOT BE USED FOR EQUIPMENT GROUNDING CONDUCTOR.

PROPERLY GROUND ALL MOTORS, TRANSFORMERS, EQUIPMENT, CONDUITS, SWITCH GEAR, ETC.

GROUND ALL LUMINAIRES BY INSTALLING A SEPARATE GREEN GROUND WIRE IN ANY FLEXIBLE CONDUIT BETWEEN OUTLET BOX AND FIXTURE.

26 05 29 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

CONDUIT SHALL BE SUPPORTED BY APPROVED STRAPS, FASTENERS AND HANGERS. HANGERS SHALL BE SUSPENDED FROM ROOFS. PERFORATED STRAPS WILL NOT BE ACCEPTABLE. FASTENERS SHALL BE LEAD EXPANSION SHIELDS IN BLOCK OR CONCRETE, TOGGLE BOLTS IN HOLLOW WALLS, MACHINE SCREWS ON METAL SURFACES AND WOOD SCREWS ON WOOD CONSTRUCTION.

ALL CONDUIT SHALL BE SUPPORTED INDEPENDENTLY FROM ALL OTHER BUILDING SYSTEMS AND SHALL BE SUPPORTED DIRECTLY FROM STRUCTURAL COMPONENTS. AT BUILDING EXPANSION JOINTS AND WHERE DEFLECTION IS EXPECTED, CONDUITS SHALL BE PROVIDED WITH EXPANSION FITTINGS WITH BONDING JUMPERS. CONDUITS PASSING THROUGH STRUCTURAL MEMBERS SHALL BE PROVIDED WITH STUB AND COUPLING OR SLEEVE IN THE MEMBER. WHERE MOISTURE CONDITIONS ARE ENCOUNTERED, A HOLE SHALL BE DRILLED AT THE LOWEST POINT IN THE CONDUIT RUN.

26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

CONCEAL CONDUIT AND EMT WITHIN FURNISHED WALLS, CEILINGS, AND FLOORS UNLESS OTHERWISE INDICATED. INSTALL CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING LINES.

INTERIOR CONDUIT SHALL BE OF SUFFICIENT SIZE AND INSTALLED SO THE REQUIRED NUMBER OR CONDUCTORS CAN BE INSERTED OR REMOVED WITHOUT INJURY TO, OR EXCESSIVE STRAIN UPON, THE INSULATION. THE MINIMUM CONDUIT SIZE SHALL BE 3/4" UNLESS OTHERWISE NOTED.

CONDUITS SHALL BE RUN CONTINUOUS FROM OUTLET TO OUTLET AND SHALL BE FASTENED TO ALL BOXES AND CABINETS WITH DOUBLE LOCKOUTS, TO PROVIDE CONTINUITY OF GROUND, AND A BUSHING. THE FULL NUMBER OF THREADS MUST PROJECT BEYOND LOCKOUT IN BOXES AND CABINETS TO ALLOW THE BUSHING TO BUTT UP TIGHT AGAINST THE END OF THE CONDUIT.

CONDUIT RUN EXPOSED SHALL RUN PARALLEL, OR PERPENDICULAR TO WALLS, CEILINGS, OR PRINCIPAL FRAMING MEMBERS. IT IS REQUIRED THAT ALL CONDUIT BE INSTALLED TO REFLECT HEAT, CAREFUL WORKMANSHIP THROUGHOUT THE JOB. CONDUIT WHICH HAS BEEN CRUSHED, DAMAGED, OR DEFORMED IN ANY WAY SHALL NOT BE INSTALLED IN THE JOB. CONDUIT SHALL BE INSTALLED IN SUCH A MANNER AS TO INSURE AGAINST TROUBLE FROM COLLECTION OF TRAPPED CONDENSATE, AND ALL RUNS OF CONDUIT SHALL BE FREE OF SUCH TRAPS WHEREVER POSSIBLE.

ALL CONDUIT HANGERS AND SUPPORTS SHALL BE RIGIDLY FASTENED TO THE BUILDING STRUCTURE. NO CONDUIT SHALL BE SUPPORTED FROM DUCTWORK, PIPING, OR CEILING GRID SYSTEMS.

PROVIDE FIRE SEALS WHEREVER CONDUIT PENETRATES FIRE WALLS, CEILING OR RATED FLOOR SLABS.

RIGID STEEL CONDUIT SHALL BE USED FOR ALL CONDUIT RUNS INSTALLED IN CONCRETE SLABS, IN ALL POURED CONCRETE CONSTRUCTION AND ALL APPLICATIONS INSIDE BUILDING REQUIRING 2" OR LARGER IN SIZE. CONDUIT SHALL BE SUPPORTED AT INTERVALS NOT-TO-EXCEED 7 FEET FOR 3/4" CONDUIT, 8 FEET INTERVALS FOR CONDUIT ON 1" TO AND INCLUDING 2", AND 10 FEET FOR CONDUITS 2-1/2" OR LARGER.

RIGID CONDUIT (ALUMINUM) SHALL NOT BE INSTALLED IN POURED CONCRETE. ALUMINUM CONDUIT MAY BE USED FOR SWITCH LEGS AND BRANCH CIRCUITS IN PARTITIONS, ABOVE CEILING, AND WHERE CONDUIT RUN IS EXPOSED. CONDUIT SHALL BE SUPPORTED AT INTERVALS NOT-TO-EXCEED 7 FEET FOR 3/4" CONDUIT, 8 FEET INTERVALS FOR CONDUIT 1" TO AND INCLUDING 2".

ELECTRICAL METALLIC TUBING (THIN WALL) MAY BE USED FOR SWITCH LEGS (EXCEPT IN POURED CONCRETE WALLS) AND BRANCH CIRCUITS IN PARTITIONS, ABOVE CEILINGS, AND WHERE CONDUIT RUN IS EXPOSED. CONDUIT SHALL BE SUPPORTED AT INTERVALS NOT-TO-EXCEED 7 FEET FOR 3/4" CONDUIT, 8 FEET INTERVALS FOR CONDUIT 1" TO AND INCLUDING 1-1/2". EMT LARGER THAN 1-1/2" WILL NOT BE PERMITTED.

PLASTIC CONDUIT (PVC): PLASTIC CONDUIT MAY BE USED FOR UNDERGROUND CONDUIT RUNS OUTSIDE BUILDING AND BELOW FLOOR SLAB. UNDERGROUND CONDUIT RUNS OUTSIDE BUILDING SHALL BE A MINIMUM OF 2'-6" BELOW GRADE. CONDUIT RUN BELOW FLOOR SLAB SHALL BE A MINIMUM OF 12" BELOW FLOOR SLAB.

FLEXIBLE CONDUIT SHALL BE USED BETWEEN OUTLET BOXES IN HUNG OR FURRED CEILINGS AND RECESSED LIGHTING FIXTURES. FLEXIBLE CONDUIT SHALL NOT EXCEED 6 FEET IN LENGTH.

LIQUID TIGHT FLEXIBLE CONDUIT SHALL BE USED FOR FINAL CONNECTIONS TO ALL MOTORS. LIQUID TIGHT FLEXIBLE CONDUIT SHALL BE USED FOR FINAL CONNECTIONS TO ALL MOTORS OR DEVICES WHICH DO OR MAY VIBRATE. LIQUID TIGHT FLEXIBLE CONDUIT SHALL NOT EXCEED 3 FEET IN LENGTH.

PROVIDE SEALING BUSHINGS IN ALL UNDERGROUND CONDUITS AS REQUIRED TO PREVENT THE ENTRY OF MOISTURE INTO ELECTRICAL EQUIPMENT.

PROVIDE CONDUIT EXPANSION FITTINGS WHERE CONDUIT CROSSES A BUILDING EXPANSION JOINT, AND IN ALL STRAIGHT CONDUIT RUNS 200 FEET OR LONGER.

ALL OUTLET, SWITCH, JUNCTION AND PULL BOXES SHALL BE MADE OF CODE GALVANIZED STEEL COMPLETE WITH RINGS AND SCREW COVER PLATES AND LOCATED WHERE SHOWN AND NOTED ON DRAWINGS. WHERE CONDUIT IS CONCEALED, BOXES SHALL NOT BE LESS THAN 4" SQUARE X 1-1/2" DEEP. ALL BOXES SHALL BE EQUIPPED WITH PROPER COVERS TO BRING FLUSH WITH FINISHED WALL SURFACE.

USE GANG BOXES WHERE MORE THAN ONE DEVICE IS TO BE INSTALLED AT THE SAME LOCATION.

ALL BOXES FOR CONCRETE WORK SHALL BE OF TYPE ESPECIALLY DESIGNED FOR INSTALLATION IN CONCRETE.

PROVIDE OUTLET BOX ACCESSORIES AS REQUIRED FOR EACH INSTALLATION, INCLUDING MOUNTING BRACKETS, WALLBOARD HANGERS, EXTENSION RINGS, FIXTURE STUDS, CABLE CLAMPS, AND METAL STRAPS FOR SUPPORTING OUTLET BOXES, COMPATIBLE WITH OUTLET BOXES BEING USED AND MEETING REQUIREMENTS OF INDIVIDUAL WIRING SITUATIONS.

PULL BOXES (NOT SHOWN ON THE CONTRACT DRAWINGS) SHALL BE INSTALLED AS REQUIRED TO FACILITATE PULLING OF CONDUCTORS ON LONG RUNS. PULL BOXES LOCATED IN FLOORS SHALL BE FLUSH WITH FINISHED FLOOR, AND OR CAST WROUGHT IRON, ALUMINUM, OR BRONZE WITH SEALED WATERPROOF COVER. CONDUIT ENTRANCES SHALL BE THREADED.

PROVIDE CORROSION RESISTANT CAST METAL WEATHERPROOF OUTLET WIRING BOXES, OF THE TYPE, SHAPE, AND SIZE REQUIRED FOR EACH APPLICATION, WITH THREADED CONDUIT ENDS, CAST METAL FACE PLATE WITH SPRING-HINGE WATERPROOF CAP, SUITABLE CONFIGURED FOR EACH APPLICATION, INCLUDING FACE PLATE GASKET AND CORROSION PROOF FASTENERS.

PROVIDE WATERPROOF OUTLETS FOR INTERIOR AND EXTERIOR LOCATIONS EXPOSED TO WEATHER OR SUBJECT TO FREQUENT WASHING.

SECURE BOXES RIGIDLY TO THE SUBSTRATE UPON WHICH THEY ARE BEING MOUNTED, OR SOLIDLY EMBED BOXES IN CONCRETE OR MASONRY.

26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

PROVIDE MANUFACTURERS STANDARD SELF-ADHESIVE VINYL TAPE NOT LESS THAN 3 MILS THICK BY 1-1/2" WIDE. INSTALL ON ALL CONCEALED RACEWAYS AT CONNECTION TO ALL JUNCTION BOXES, PULL BOXES, EQUIPMENT, WALL/FLOOR/ROOF PENETRATIONS, ETC.

PROVIDE CIRCUIT IDENTIFICATION BANDS FOR ALL CABLES AND CONDUCTORS. PROVIDE ON ALL CONDUCTORS OF ALL SYSTEMS.

INSTALL ENGRAVED PLASTIC-LAMINATE SIGN ON ELECTRICAL EQUIPMENT, INCLUDING PANELBOARDS, DISCONNECTS, STARTERS, CONTROL PANELS, ETC. PROVIDE SINGLE LINE OF TEXT, 1/2" HIGH LETTERING, ON 1-1/2" HIGH SIGN (2" HIGH WHERE 2 LINES ARE REQUIRED), WHITE LETTERING IN BLACK FIELD.

26 05 84 MECHANICAL EQUIPMENT

PROVIDE ALL NECESSARY ELECTRICALLY RELATED WORK AS REQUIRED TO RENDER ALL MECHANICAL EQUIPMENT (INCLUDING PLUMBING, HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT) FULLY OPERATIONAL AND FULLY COMPLIANT WITH ALL LOCAL AND NATIONAL CODES. THIS INCLUDES, PRIOR TO ORDERING MATERIALS OR COMMENCING WITH ROUGH-IN, REVIEWING EQUIPMENT SUBMITTAL DATA AND COORDINATING WITH INSTALLING CONTRACTORS TO ENSURE THE CORRECT SIZE, RATING AND QUANTITY OF CONDUCTORS ARE PROVIDED.

26 27 26 WIRING DEVICES

ALL WIRING DEVICES SHALL BE UL LISTED, COMMERCIAL SPECIFICATION GRADE.

SWITCHES IN THE SAME LOCATION SHALL BE GANGED BEHIND A SINGLE PLATE.

DEVICE PLATES IN THE COMMERCIAL FOOD SERVICE AND/OR KITCHEN AREA SHALL BE METAL, ALUMINUM OR STAINLESS.

DEVICES IN RESTAURANT DINING AREA(S) SHALL BE TAMPER RESISTANT, AND THERMOPLASTIC (NYLON) OR METAL, COLOR AS APPROVED BY BRAND, OR ARCHITECT OF RECORD. APPROVED MANUFACTURER OF SWITCHES AND RECEPTACLES ARE HUBBELL, ARROW HART, BRYANT, LEVITON, PASS & SEYMOUR, GE BY ABB, SLATER OR EQUAL.

DUPLEX RECEPTACLES SHALL BE 20 AMP., 125 VOLT, 3 WIRE GROUNDING TYPE. PROVIDE SMOOTH THERMOPLASTIC COVER PLATE AND MATCHING SCREWS. DEVICES AND COVER PLATES SHALL MATCH ADJACENT ARCHITECTURAL FINISHES UNLESS SPECIFICALLY NOTED OTHERWISE. APPROVED PRODUCTS: HUBBELL, LEVITON, BRYANT OR EQUAL.

WEATHERPROOF RECEPTACLES SHALL BE DUPLEX, 20 AMP., 125 VOLT, GROUND FAULT 3 WIRE GROUNDING TYPE WITH WEATHERPROOF COVER. APPROVED PRODUCTS: HUBBELL, LEVITON, BRYANT OR EQUAL.

USB RECEPTACLES SHALL BE DUPLEX, 20 AMP., 125 VOLT, GROUND FAULT 3 WIRE GROUNDING TYPE WITH TWO VERTICAL USB PORTS WITH A MINIMUM OF 3.6A CHARGING CAPACITY AND TWO 20A RATED OUTLETS. APPROVED PRODUCTS: HUBBELL, LEVITON, BRYANT OR EQUAL.

WALL SWITCHES SHALL BE 20 AMP., 120-277 VOLT, QUIET, HIGH CAPACITY, TOGGLE TYPE. SINGLE POLE SWITCHES - APPROVED PRODUCTS ARE HUBBELL, LEVITON, BRYANT OR EQUAL. THREE-WAY SWITCHES - APPROVED PRODUCTS HUBBELL, LEVITON, BRYANT OR EQUAL.

DIMMER SWITCHES SHALL BE COMPATIBLE WITH LIGHTING TO BE CONTROLLED (I.E. - 120V LINE OR 0-10V LOW VOLTAGE) AND SHALL BE RATED FOR THE LIGHTING LOAD INDICATED. APPROVED PRODUCTS ARE LEVITON, LUTRON, HUBBELL, OR EQUAL.

WALL PLATES FOR SWITCHES, TELEPHONE OUTLETS AND OTHER SPECIAL OUTLETS SHALL MATCH THE WALL PLATES PREVIOUSLY SPECIFIED WITH

