

2000 - ENTIRE FLAT ROOF BUILDING COVERED WITH SUPERIMPOSED

METAL ROOF SYSTEM.

CONSTRUCTION & ADDITIONS KEY

REVISIONS

SYM. DATE APPROVED

PUT CORRECT NAVFAC NUMBER ON SHEET. 07/30/12

ASBESTOS CONTAINING MATERIALS (ACM)

NOTES INDICATED ON PLAN

THE FOLLOWING MATERIALS HAVE BEEN DETERMINED TO CONTAIN ASBESTOS OR ARE ASSUMED TO CONTAIN ASBESTOS PER THE AVAILABLE DATA AND IN ACCORDANCE WITH APPLICABLE REGULATIONS. SEE TESTING REPORTS INCLUDED IN PROJECT SPECIFICATIONS.

MASTIC ASSOCIATED WITH VCT FLOOR TILE
APPROXIMATE QUANTITY = 1,400 SQUARE FEET

2 CAULK AROUND EXTERIOR DOORS AS INDICATED
APPROXIMATE QUANTITY = 400 LINEAR FEET

CAULK ON EXTERIOR WINDOWS
CAULK ON EXTERIOR LOUVER AS INDICATED
APPROXIMATE QUANTITY = 270 LINEAR FEET

ATTIC - ROOF FLASHING/SEALER

PATCHING AT PARAPETS AND VENTS ON OLD ROOF

OLD ROOF FLASHING

APPROXIMATE QUANTITY = 800 LINEAR FEET

ATTIC — PITCH POCKETS ON OLD ROOF

APPROXIMATE QUANTITY = 25 SQUARE FEET

ATTIC — LOOSE DEBRIS ON OLD ROOF

APPROXIMATE QUANTITY = 5 SQUARE FEET

ATTIC - OLD ROOF FLASHING AT PARAPET

APPROXIMATE QUANTITY = 175 SQUARE FEET

NOTE: ATTIC AND OLD ROOF AREAS ARE NOT ANTICIPATED TO BE DISTURBED.

NOT IN CONTRACT TO REMOVE ACM IN ATTIC AREAS. TAKE PRECAUTIONS AS NECESSARY.

LEAD BASED PAINT SURFACES (LBP) NOTES

TEST RESULTS FOR SURFACES SAMPLED FOR THIS PROJECT DID NOT INDICATE LEAD BASED PAINT. SOME SURFACES DID TEST POSITIVE FOR LEAD, BUT THE CONCENTRATIONS DID NOT MEET THE LEVEL REQUIRED TO CLASSIFY AS A LEAD BASED PAINT. SEE TESTING REPORTS INCLUDED IN PROJECT SPECIFICATIONS.

LEAD DETECTED — BUT NOT CONCENTRATED ENOUGH TO BE LBP

SOME PAINTED SURFACES TESTED POSITEVE FOR LEAD BUT WAS NOT IN CONCENTRATIONS GREAT ENOUGH TO BE CONSIDERED LBP. WHERE THESE SURFACES WILL BE DISTURBED BY RENOVATION ACTIVITIES, TAKE THE NECESSARY PRECAUTIONS IN ACCORDANCE WITH OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS AND OTHER APPLICABLE REGULATIONS.

LEAD (NOT LBP) WAS MOST COMMONLY FOUND ON THE FOLLOWING SURFACES:

INTERIOR/EXTERIOR - PAINT ON METAL DOORS AND DOOR AND WINDOW FRAMES

INTERIOR - PAINT ON SOME CMU WALLS

SEE ACM & LBP REPORT FOR MORE INFORMATION ON LOCATIONS

DUE TO THE AGE OF THE BUILDING, PAINTED SURFACES IN THE ORIGINAL 1976 CONSTRUCTION SHOULD BE PRESUMED TO HAVE LBP. TAKE PRECAUTIONS WHEN WORKING WITH PAINTED SURFACES AND WHENEVER WORK ACTIVITIES WILL CREATE A PAINT DUST.

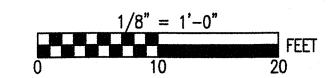
ACM ABATEMENT AND LBP REMOVAL

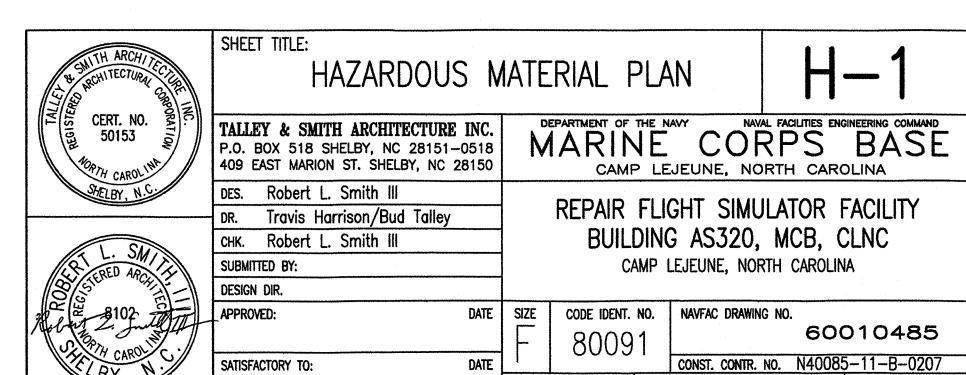
ACM: REMOVE/ABATE ALL ACM INDICATED WITHIN THE SCOPE OF WORK. ASBESTOS CONTAINING MATERIALS ALTERED BY WORK IN PROJECT SHALL BE ABATED. ACM IN LOCATIONS THAT WILL NOT BE DISTURBED BY WORK IN THIS PROJECT MAY REMAIN.

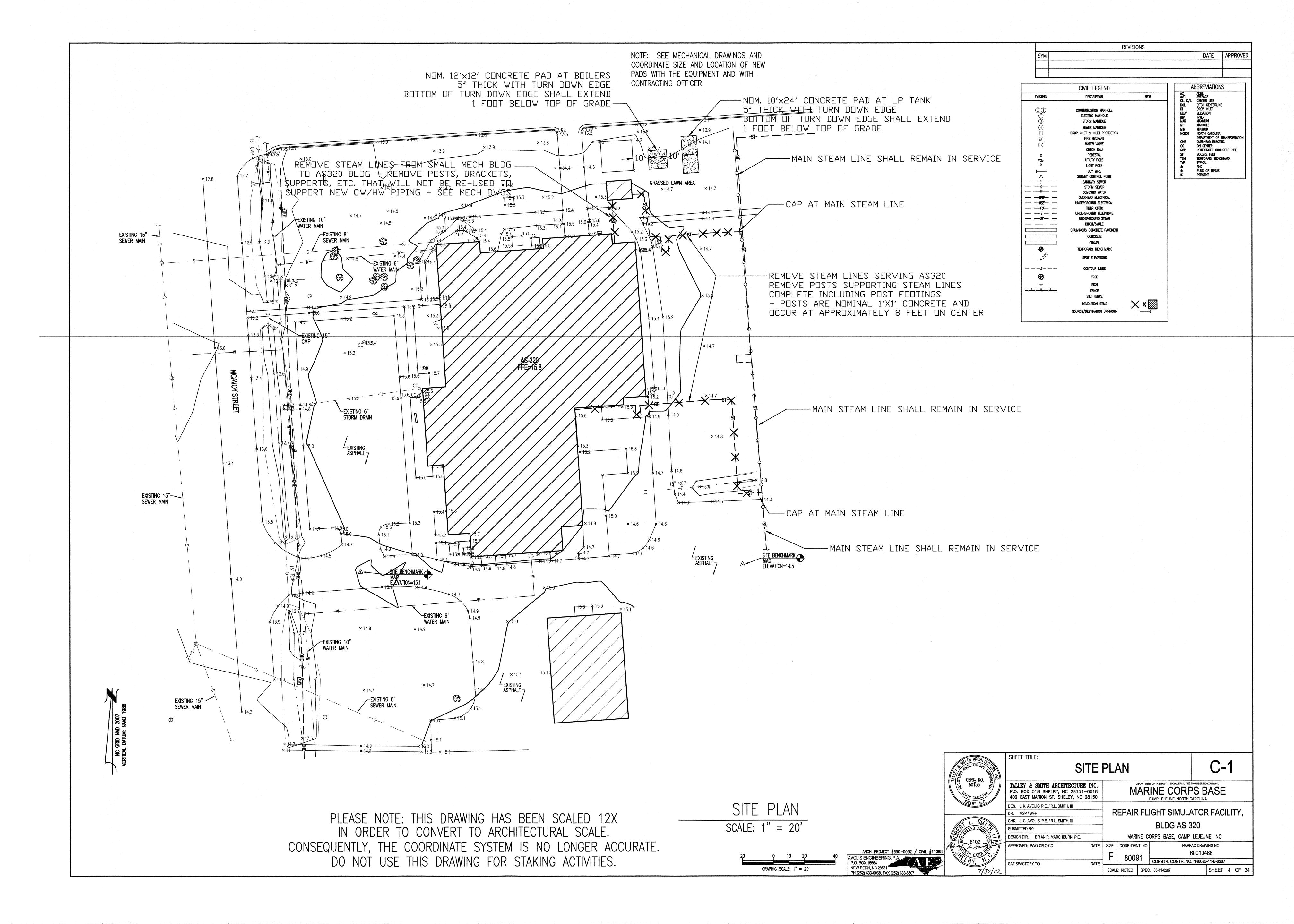
LBP: WHERE WORK IN PROJECT DISTURBS SURFACES WITH LBP OR WHERE ITEMS WITH LBP ARE TO BE REMOVED, TAKE PRECAUTIONS AS SPECIFIED, AS REQUIRED FOR WORKER AND OCCUPANT SAFETY, AND AS REQUIRED BY AGENCIES HAVING JURISDICTION. ITEMS AND MATERIALS TO BE REMOVED THAT ARE IDENTIFIED TO HAVE LBP SHALL BE REMOVED INTACT OR AS UNITS AND PROPERLY DISPOSED. LBP ON SURFACES THAT ARE NOT DISTURBED OR REMOVED MAY REMAIN.

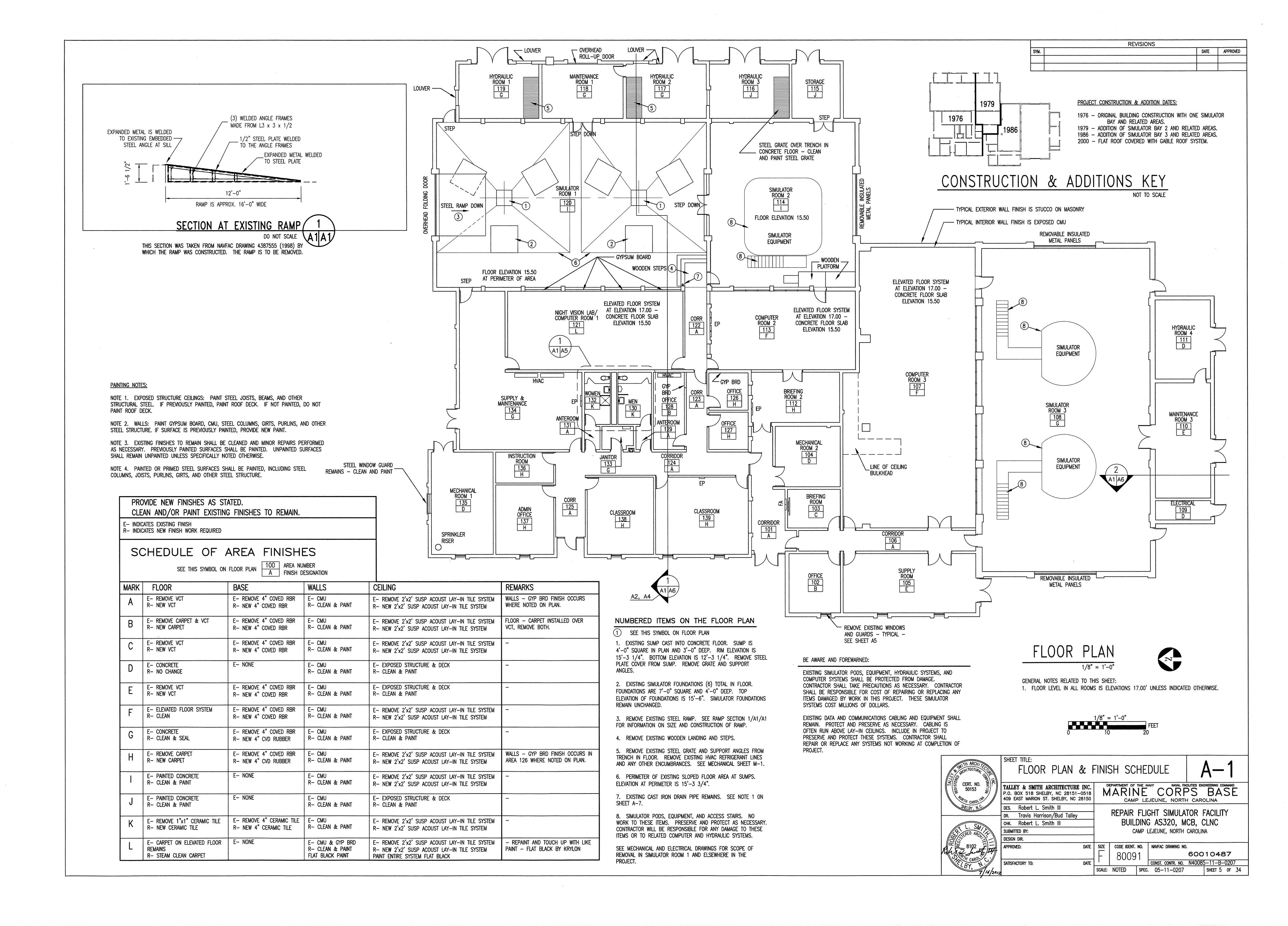
PCB & MERCURY REMOVAL

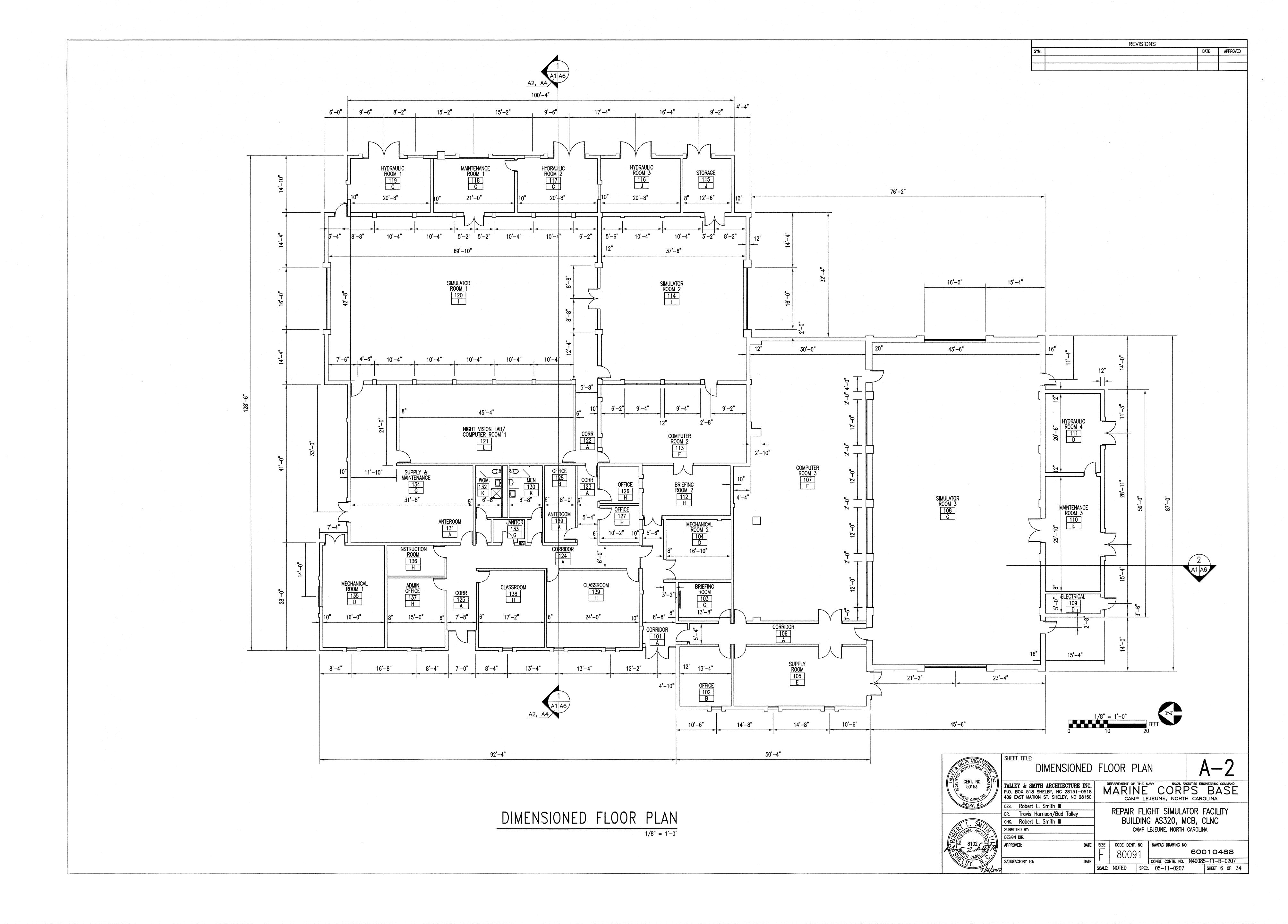
REFERENCE ELECTRICAL AND MECHANICAL SHEETS INDICATING REMOVAL OF FLUORESCENT LIGHT FIXTURES AND HEATING THERMOSTATS. THE BALLASTS SHALL BE TREATED AS CONTAINING PCB AND THE LAMPS AS CONTAINING MERCURY. THERMOSTATS SHALL BE TREATED AS CONTAINING MERCURY. BALLASTS, LAMPS, AND THERMOSTATS SHALL BE DISPOSED OF ACCORDING TO SPECIFICATIONS.

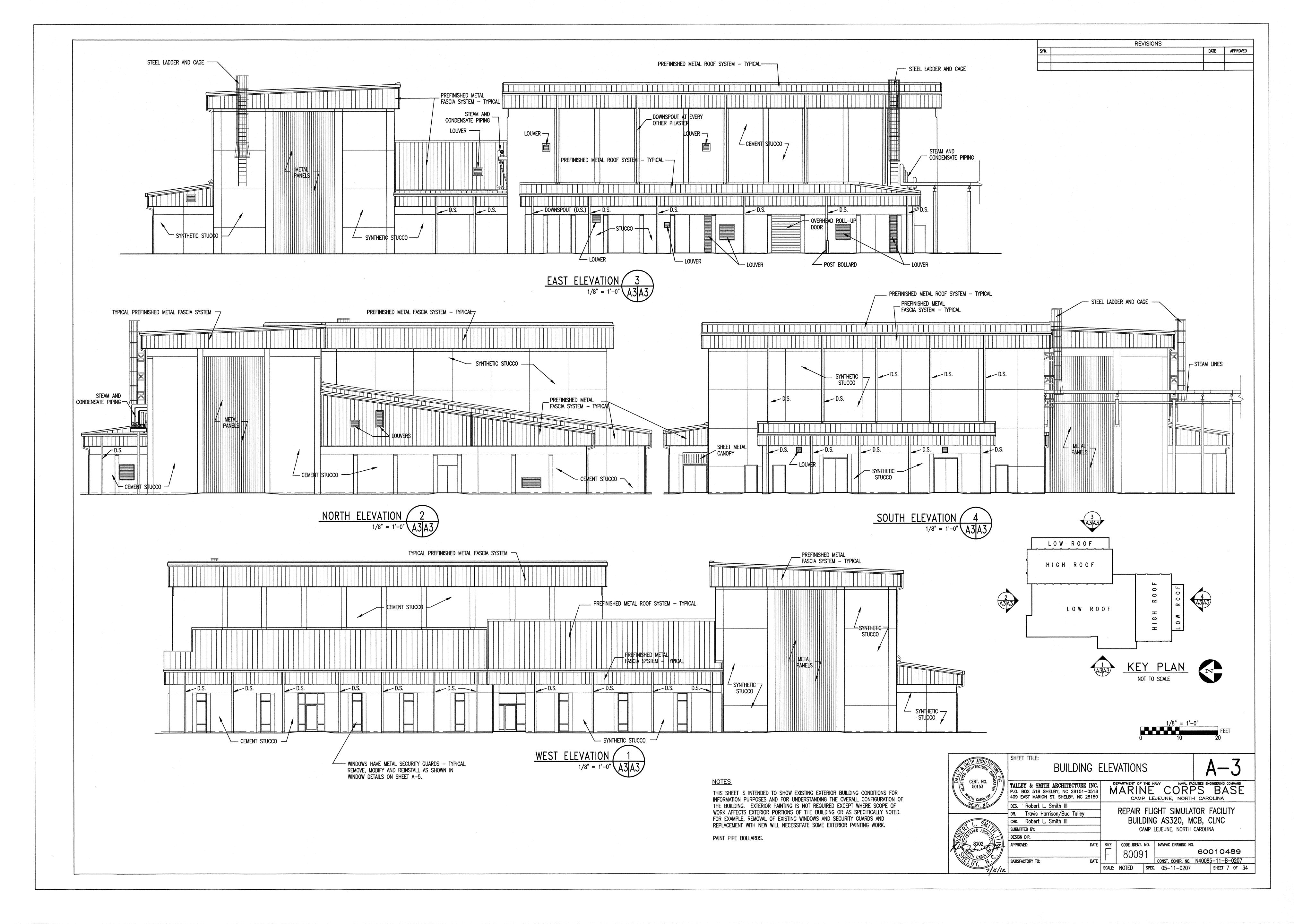




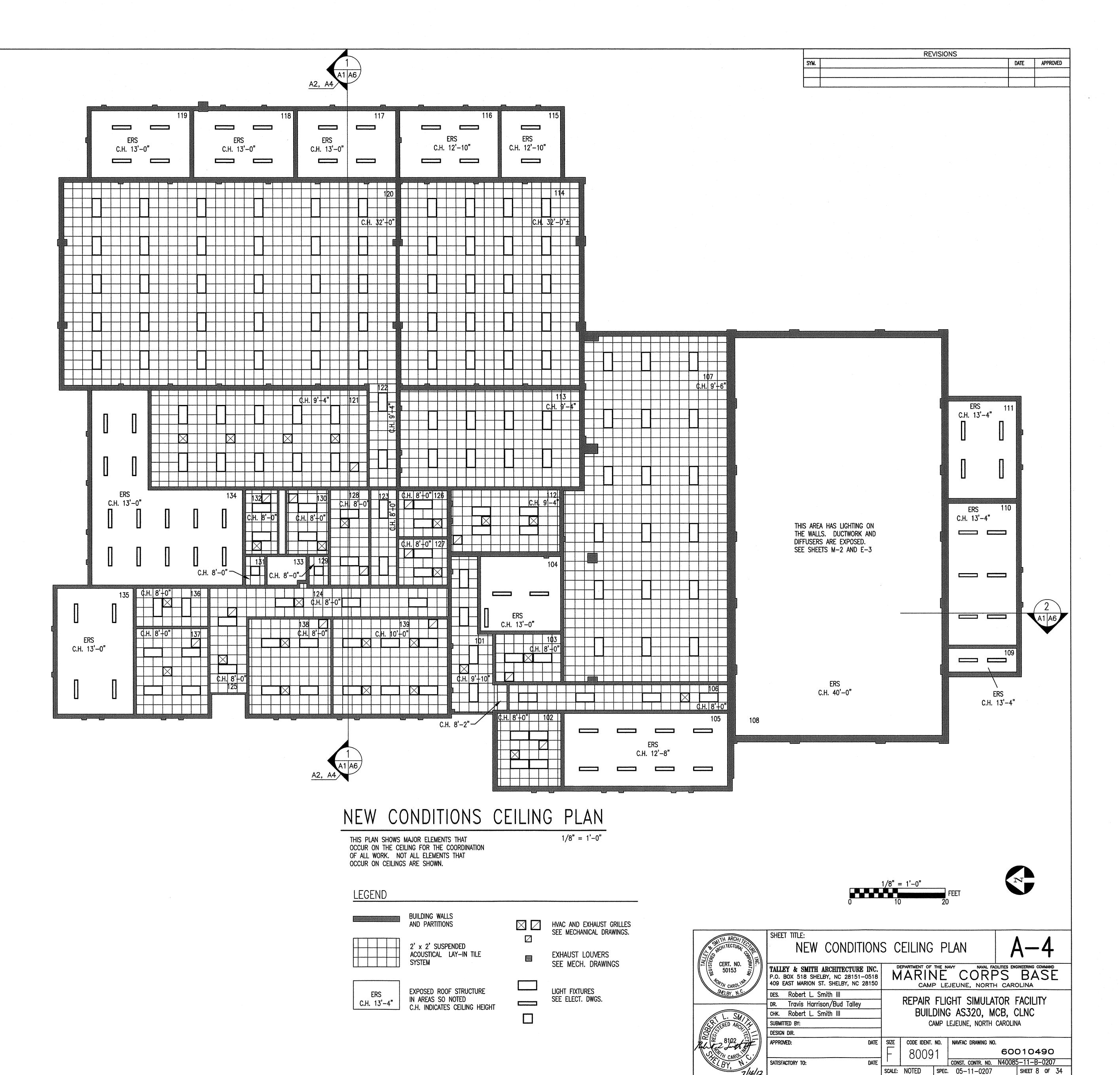


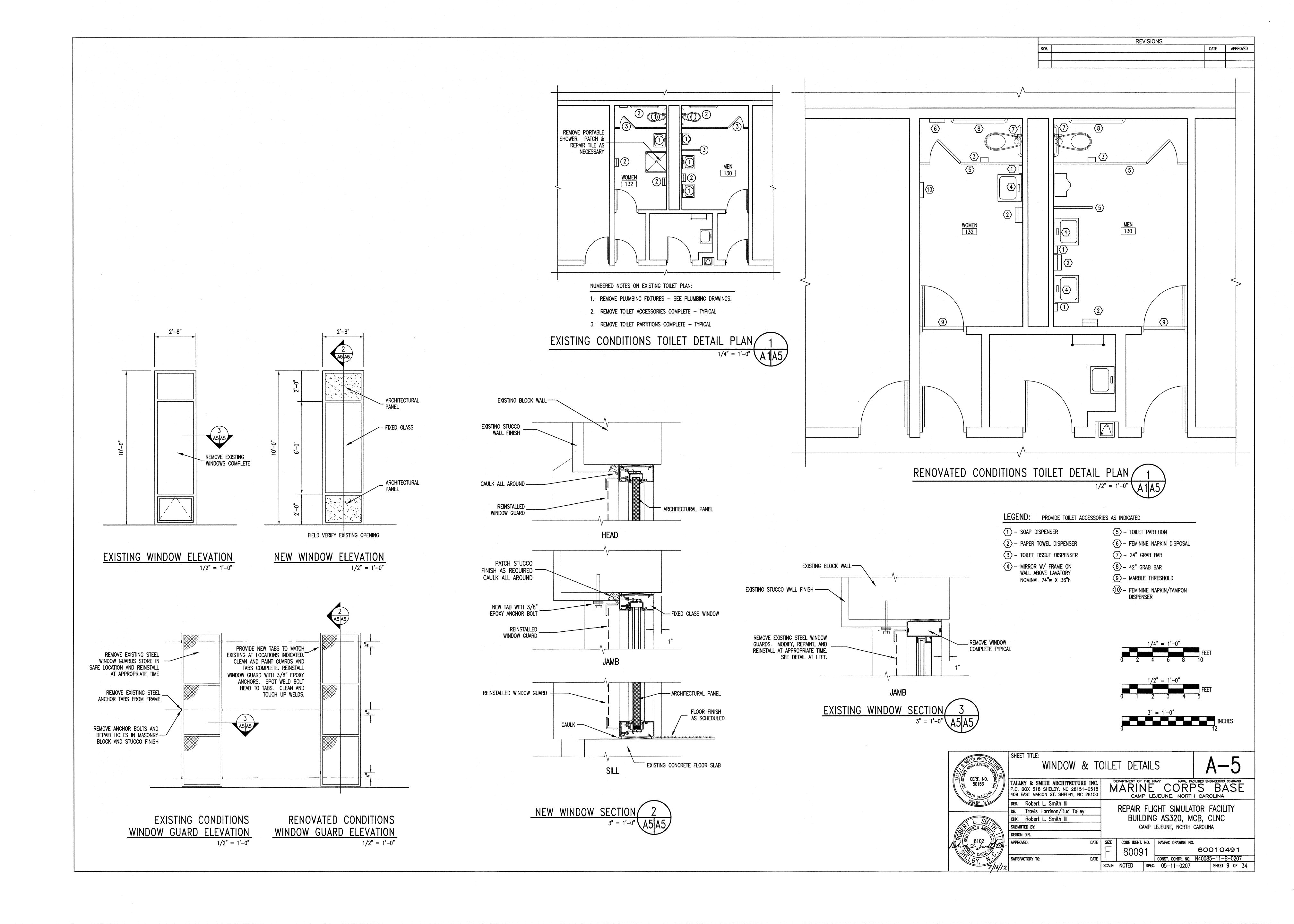


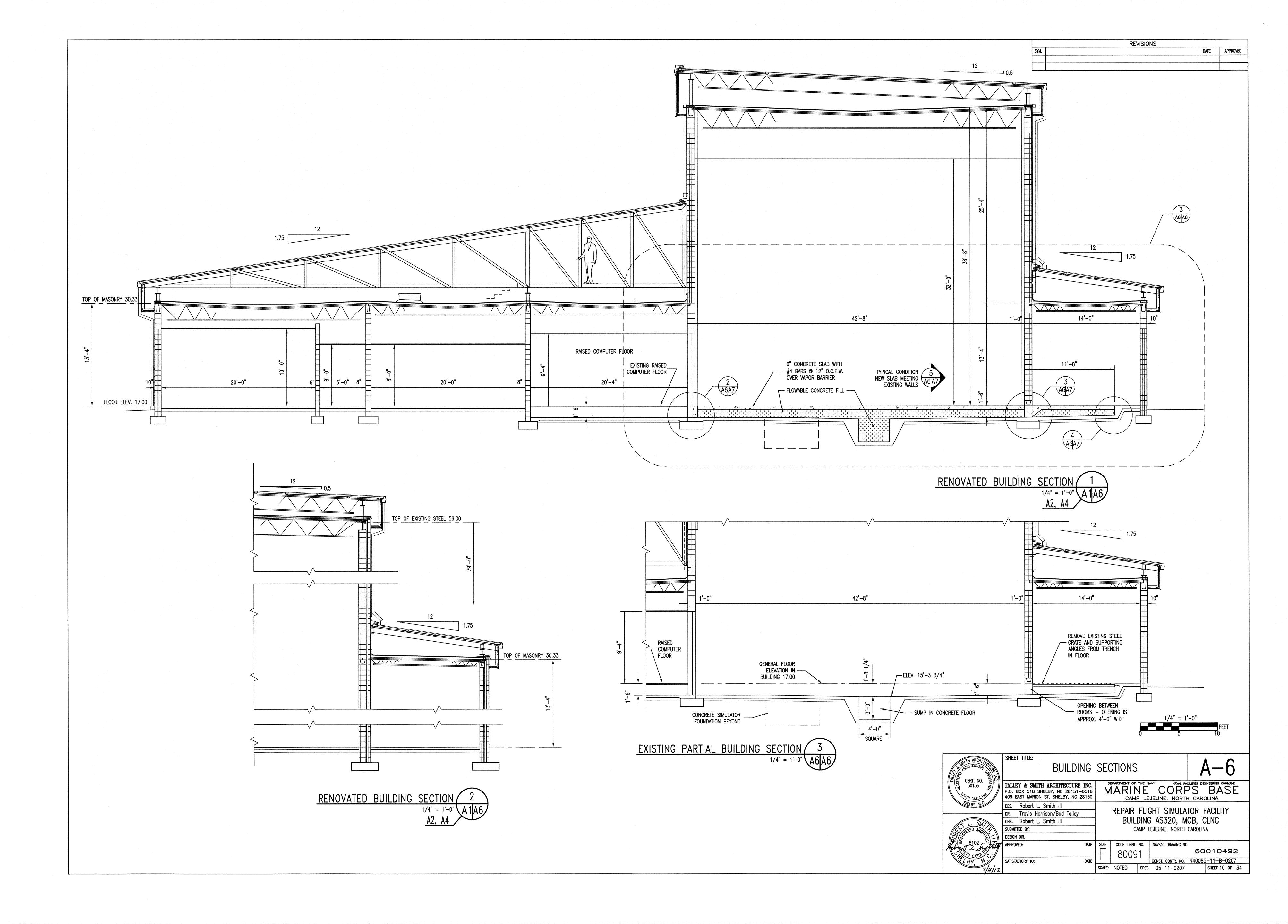


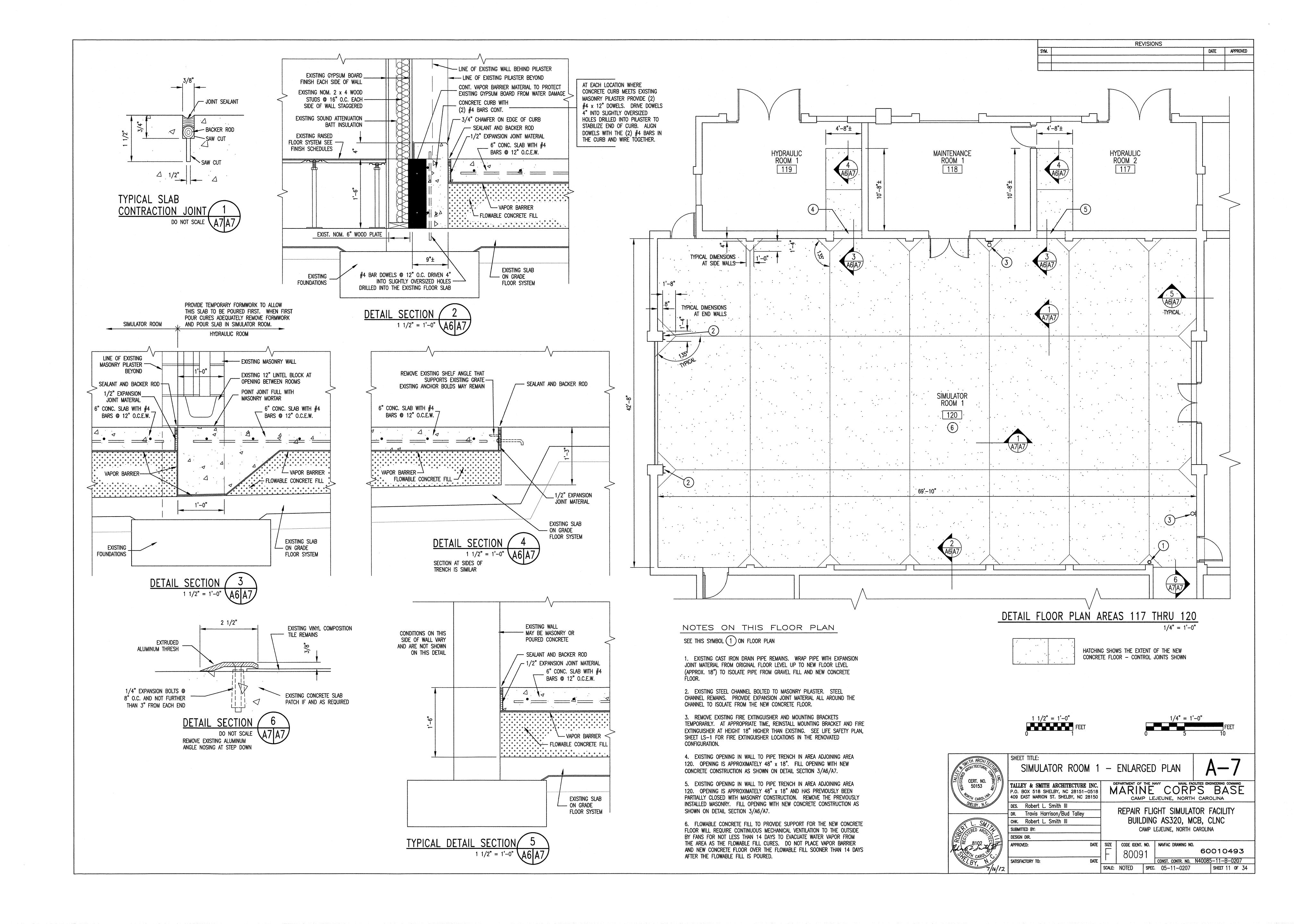


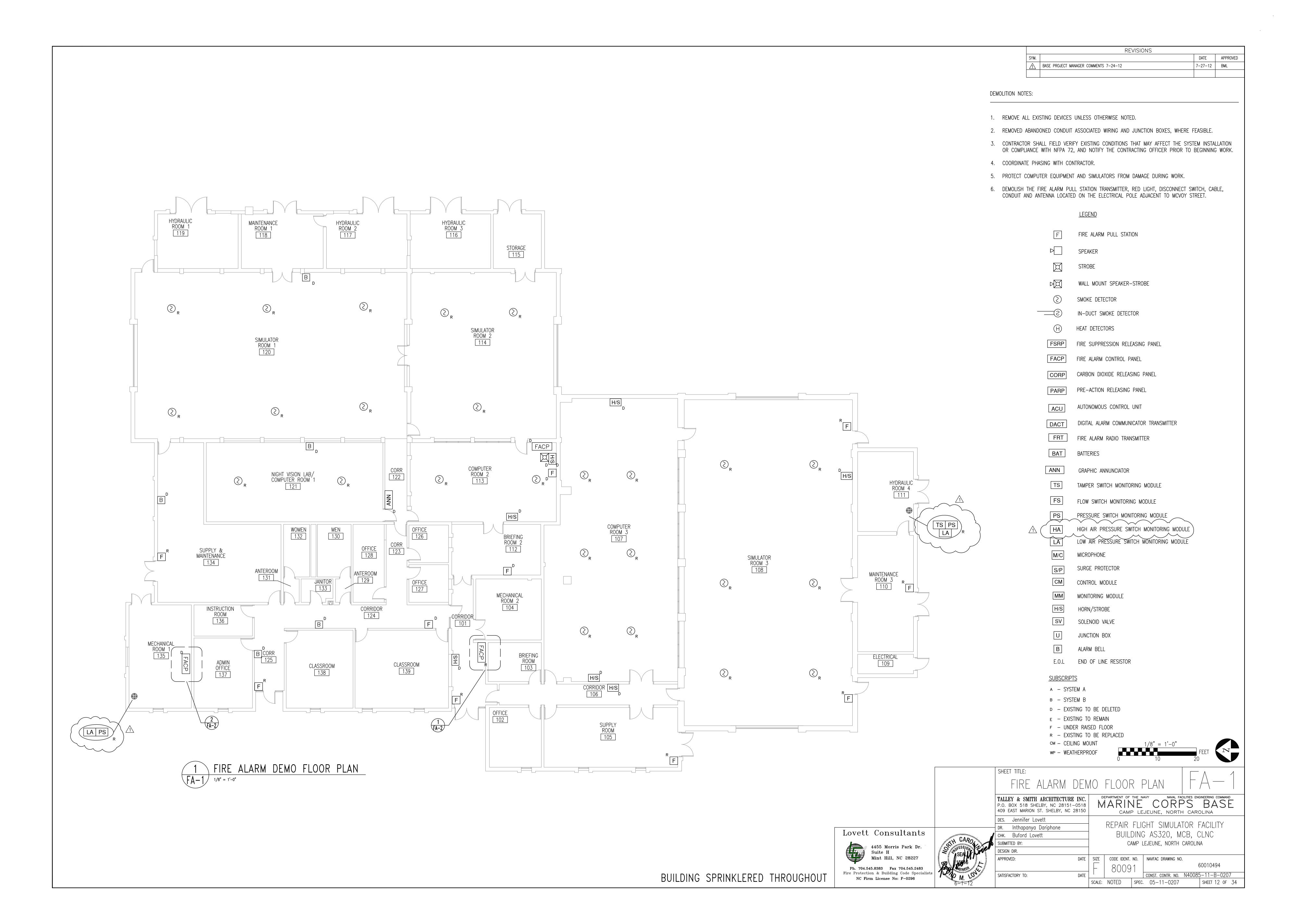
- 1. DIMENSIONS ON PLANS ARE APPROXIMATE. VERIFY DIMENSIONS ON JOB.
- 2. NOTING CONVENTION ON PLANS AND DETAILS: WHERE PLANS AND DETAILS ARE TITLED AS "EXISTING CONDITIONS," ITEMS SHOWN AND NOTED ARE EXISTING UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. WHERE PLANS AND DETAILS ARE TITLED AS "NEW" OR "RENOVATED CONDITIONS," ITEMS SHOWN AND NOTED ARE NEW OR ALTERED UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. TO DETERMINE FULL EXTENT OF WORK REQUIRED, COMPARE EXISTING CONDITIONS PLANS AND DETAILS TO NEW OR RENOVATED CONDITIONS PLANS AND DETAILS.
- 3. THE WORDS "PAINT", "PAINTING", "REPAINT", OR "REFINISH" CARRY WITH THEM THE CONNOTATION THAT SURFACE PREPARATION, PRIMING (OR STAINING) AND NUMBER OF COATS OF PAINT (OR CLEAR FINISH) DESCRIBED IN THE SPECIFICATIONS ARE REQUIRED.
- 4. PAINT AND PRODUCT COLORS ARE INTENDED TO BE SAME AS EXISTING UNLESS INDICATED OR SPECIFIED OTHERWISE. CONTRACTING OFFICER SHALL MAKE FINAL SELECTION OF COLORS.
- 5. CAULKING/SEALANT IS REQUIRED AT ALL LOCATIONS PRESENTLY HAVING OR NORMALLY REQUIRING CAULKING/SEALANT, INCLUDING, BUT NOT NECESSARILY LIMITED TO: DOORS, WINDOWS, LOUVERS, VENTS, MASONRY CONTROL AND EXPANSION JOINTS.
- 6. WHERE NEW WORK IS REQUIRED THAT WILL REPLACE EXISTING MATERIALS THE NEW WORK SHALL MATCH THE EXISTING AS CLOSELY AS POSSIBLE.
- 7. PLANS, CONDITIONS, DETAILS, AND AREAS OF WORK SHOWN ON DRAWINGS ARE BASED ON FIELD INVESTIGATIONS AND RECORD DRAWINGS AND SHOULD REPRESENT CURRENT CONDITIONS. IF CONDITIONS ARE ENCOUNTERED THAT DIFFER SIGNIFICANTLY FROM THOSE SHOWN, IMMEDIATELY NOTIFY CONTRACTING OFFICER OF SUCH CONDITIONS PRIOR TO PROCEEDING WITH WORK IN THE AREA IN QUESTION. MINOR VARIATIONS WITH LITTLE IMPACT ON THE SCOPE OF WORK SHALL NOT BE CONSIDERED SIGNIFICANT.
- 8. WHERE AN ITEM OR FEATURE IS SHOWN ON DRAWINGS THAT DEPICT EXISTING CONDITIONS, AND SUCH ITEM OR FEATURE IS NOT SHOWN ON DRAWINGS THAT DEPICT NEW OR ALTERED CONDITIONS, IT IS INFERRED THAT THE ITEM OR FEATURE IS TO BE REMOVED AS PART OF THIS WORK AND ALL SURFACES DISTURBED ARE TO BE NEATLY REPAIRED AND PATCHED TO MATCH EXISTING UNLESS INDICATED OTHERWISE. INCLUDE SUCH WORK IN BID PRICE.
- 9. IF AN ITEM OR FEATURE IS TO BE REMOVED, THE REQUIREMENT FOR REMOVAL INCLUDES THAT ALL RELATED APPURTENANCES ALSO BE REMOVED UNLESS INDICATED OTHERWISE. FOR EXAMPLE, WHERE AN EXISTING WINDOW IS TO BE REMOVED, THE ANCHORS, SILL, ETC. SHALL ALSO BE REMOVED.
- 10. FOR EACH ACTIVITY THAT INVOLVES DISTURBANCE TO AN EXISTING SURFACE OR SURFACES, THE ACTIVITY CARRIES WITH IT THE STIPULATION THAT ALL DISTURBED SURFACES BE NEATLY REPAIRED AND PATCHED TO MATCH EXISTING. FOR EXAMPLE, WHERE INTERIOR FINISHES ARE REMOVED IT IS REQUIRED THAT ANY DISTURBED WALL, FLOOR, CEILING, TRIMS, BASE, ETC. THAT REMAIN BE NEATLY REPAIRED AND PATCHED TO MATCH EXISTING.
- 11. IF EXISTING MATERIALS CANNOT BE REPAIRED AND PATCHED, NEW MATERIALS SHALL BE PROVIDED. WHERE NEW MATERIALS ARE REQUIRED TO BE BUILT INTO THE EXISTING STRUCTURE OR MATERIALS, OR BUILT ADJOINING EXISTING STRUCTURE OR MATERIALS, THE TEXTURE AND FINISH OF THE NEW MATERIAL SHALL MATCH THE EXISTING AND SHALL BE NEATLY BLENDED INTO THE EXISTING. ALIGN NEW MASONRY JOINTING, VERTICAL OR HORIZONTAL LINES, METAL WALL PANELS, ETC. WITH EXISTING.
- 12. HOLES AND OTHER DAMAGE CAUSED BY TEMPORARY INSTALLATIONS, BARRIERS, ETC. SHALL BE REPAIRED IN A MANNER COMPATIBLE WITH AND EQUAL TO EXISTING CONDITIONS.
- 13. WHERE NEW WORK IS REQUIRED AND DRAWINGS AND SPECIFICATIONS ARE NOT SPECIFIC AS TO TYPE AND QUALITY OF WORK, PROVIDE TYPE AND QUALITY EQUAL TO OR BETTER THAN CORRESPONDING WORK ON EXISTING BUILDING. IN THE ABSENCE OF ANY CORRESPONDING WORK ON EXISTING BUILDING, PROVIDE FIRST QUALITY INDUSTRY STANDARD COMPATIBLE WITH EXISTING BUILDING. CONTRACTING OFFICER SHALL MAKE FINAL DETERMINATION OF WHETHER OR NOT CONTRACTOR'S PROPOSED WORK COMPLIES.
- 14. FOR ASBESTOS CONTAINING MATERIALS AND SURFACES COATED WITH LEAD BASED PAINT, SEE HAZARDOUS MATERIALS SHEET AND SEE ASBESTOS AND LEAD BASED PAINT REPORT.
- 15. AREA NAMES/DESCRIPTIONS SHOWN ON THE FLOOR PLAN ARE INTENDED TO INDICATE THE CURRENT USES OF THE SPACES.

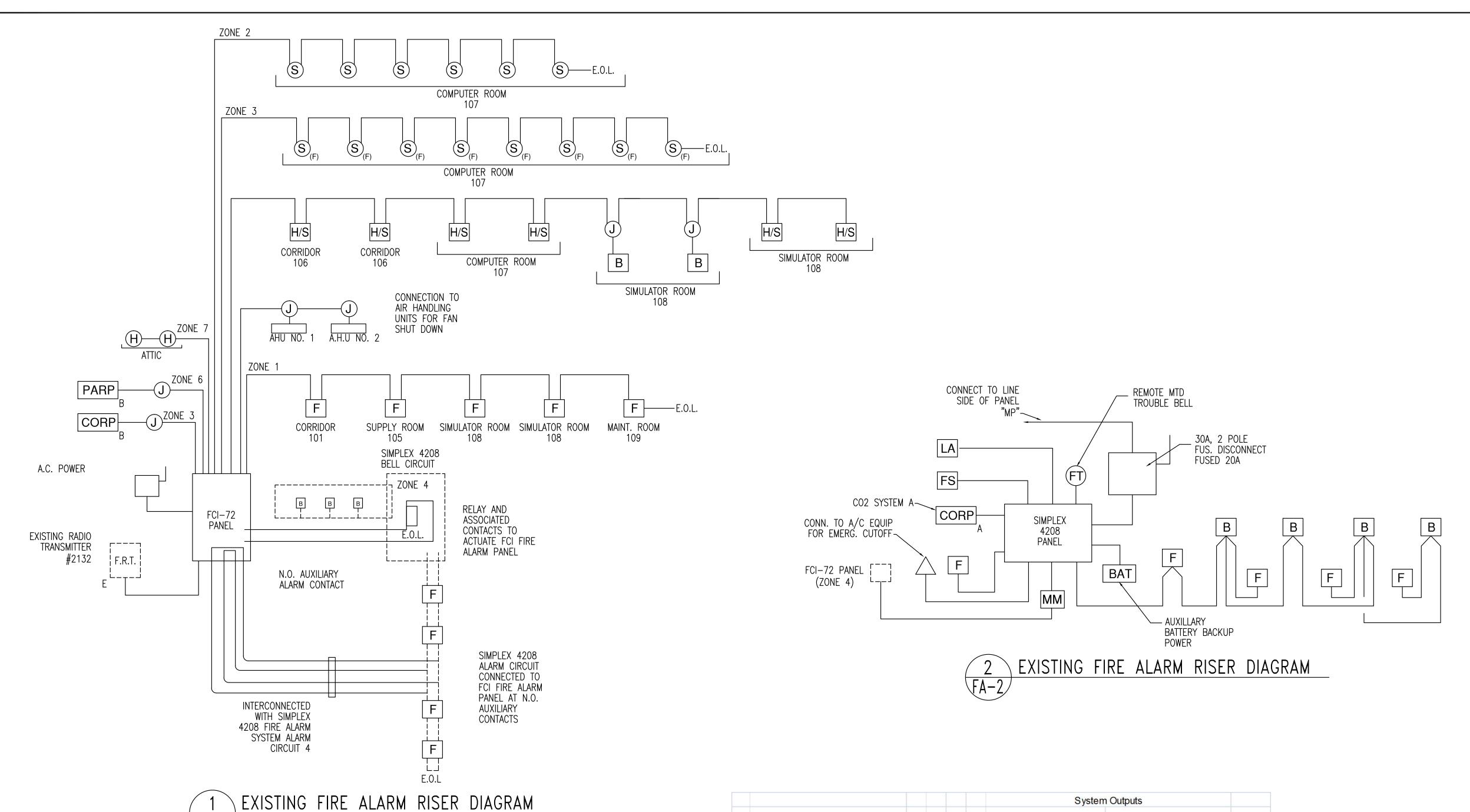












FS TS

FACP

ACU

BATTERIES

NEW FIRE ALARM RISER DIAGRAM

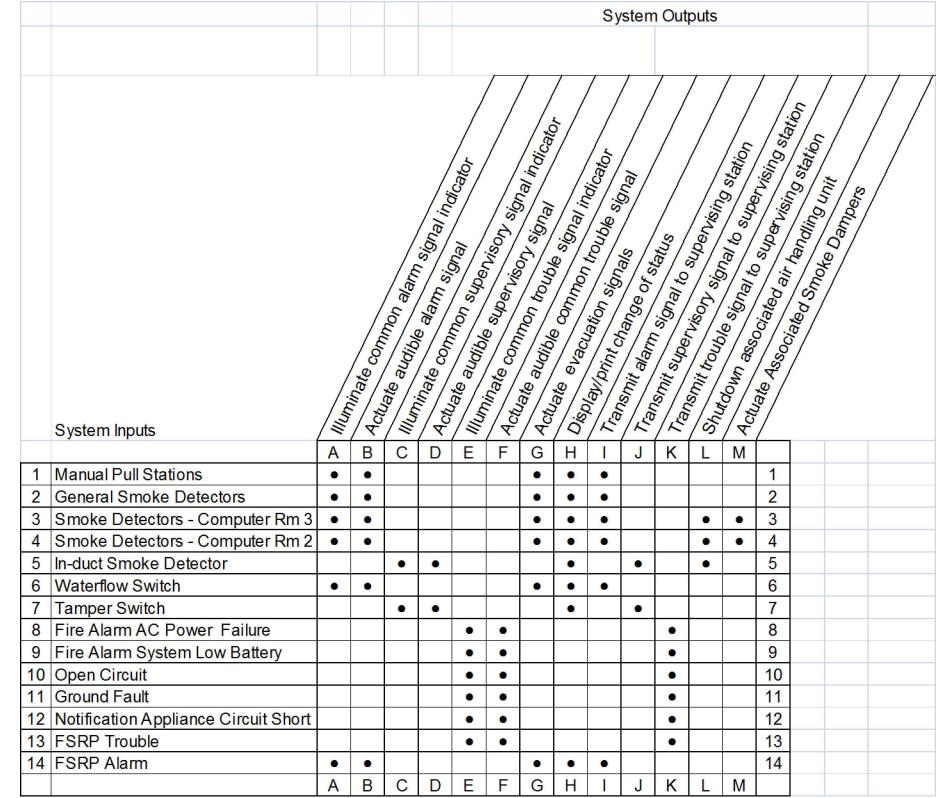
(1) COORDINATE THE NUMBER & LOCATION OF DEVICE WITH FIRE ALARM DRAWINGS

(2) COORDINATE THE NUMBER & LOCATION OF DEVICE WITH MECHANICAL DRAWINGS

(4) MONITOR FOR TROUBLE AND ALARM.

S/P → 120 VAC

M/C



4 OPERATIONAL MATRIX

SHEET 13 OF 34

SHEET TITLE: FIRE ALARM EXISTING DETAILS DEPARTMENT OF THE NAVY

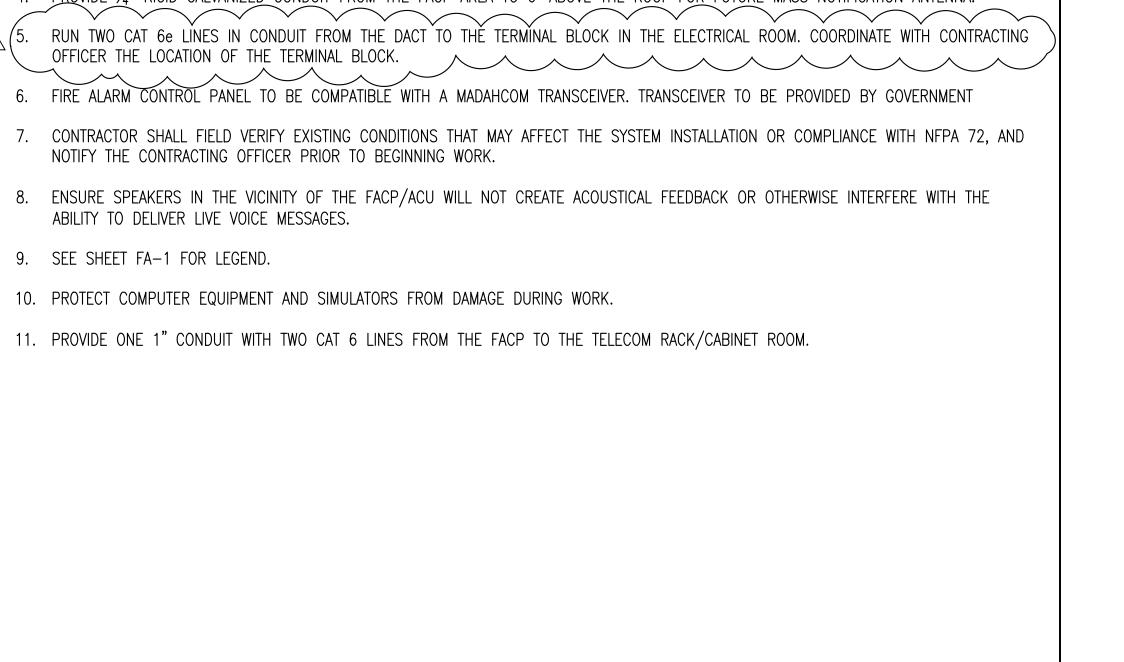
NAVAL FACILITIES ENGINEERING COMMAND

MARINE CORPS BASE

CAMP LEJEUNE, NORTH CAROLINA TALLEY & SMITH ARCHITECTURE INC.
P.O. BOX 518 SHELBY, NC 28151-0518
409 EAST MARION ST. SHELBY, NC 28150 DES. Jennifer Lovett REPAIR FLIGHT SIMULATOR FACILITY DR. Inthapanya Dariphone BUILDING AS320, MCB, CLNC CHK. Buford Lovett CAMP LEJEUNE, NORTH CAROLINA DESIGN DIR.

APPROVED: DATE SIZE CODE IDENT. NO. NAVFAC DRAWING NO. 60010495 CONST. CONTR. NO. N40085-11-B-0207

BUILDING SPRINKLERED THROUGHOUT



REVISIONS

BASE PROJECT MANAGER COMMENTS 7-24-12

3. ALL NEW CONDUIT SHALL BE CONCEALED IN WALLS, CEILING SPACES, ELECTRICAL SHAFTS OR CLOSETS. NEW CONDUIT MAY BE EXPOSED IN

UNFINISHED AREA. PAINTED SURFACE WIRE MOLD MAY BE USED IN FINISHED AREAS WHERE IT IS NOT FEASIBLE TO CONCEAL CONDUIT AND

1. ADDRESSABLE FIRE ALARM SYSTEM SHALL COMPLY WITH NFPA 72-2010 EDITION AND NFPA 70-2011 EDITION.

2. STROBE CANDELA RATING IS TO BE IN ACCORDANCE WITH NFPA 72.

WIRING. RUN ALL WIRE IN RIGID METAL CONDUIT OR EMT.

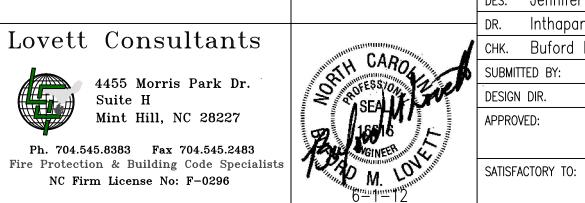
GENERAL NOTES

9. SEE SHEET FA-1 FOR LEGEND.

DATE APPROVED

7-27-12 BML

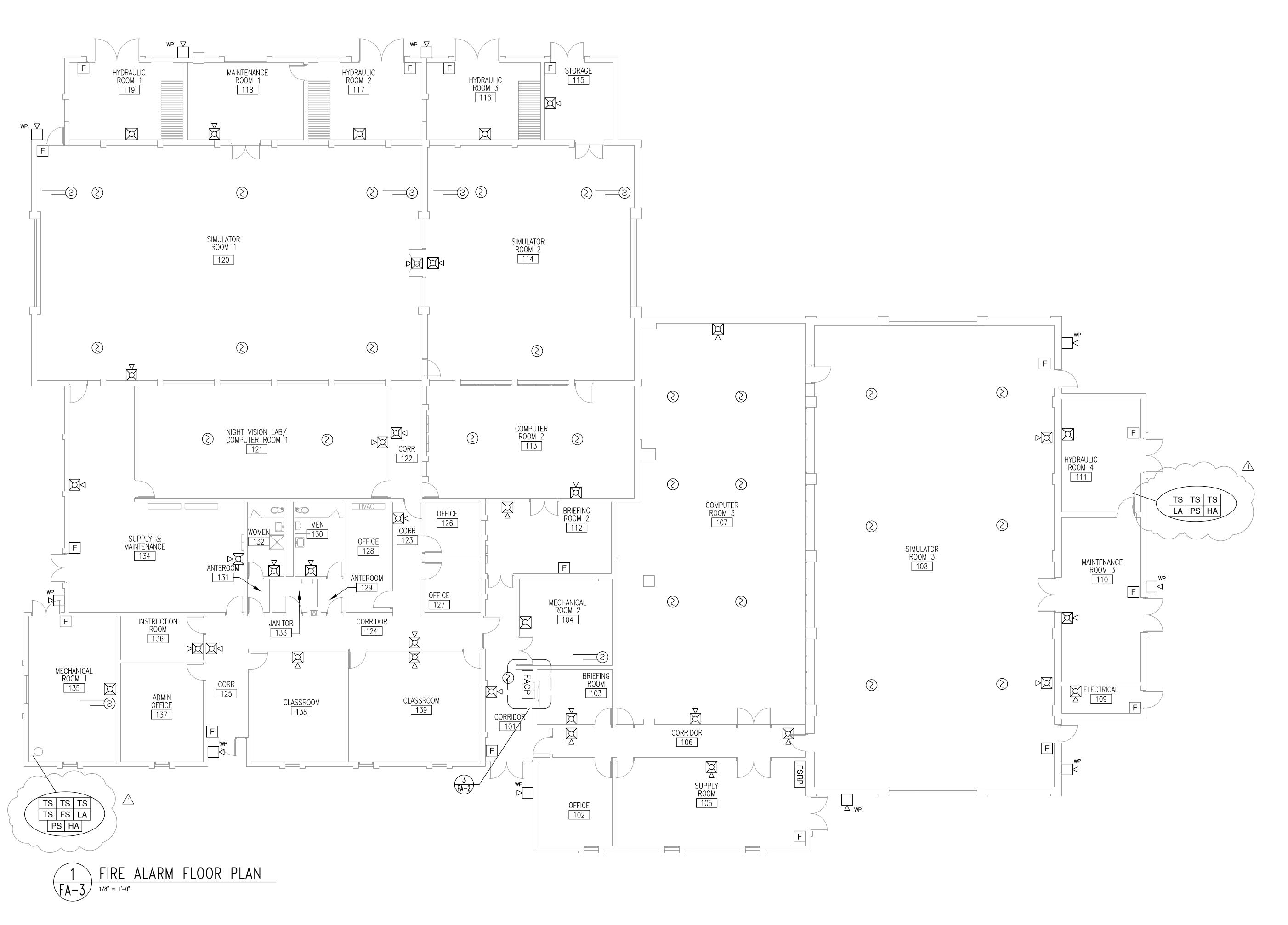
SCALE: NOTED | SPEC. 05-11-0207



Lovett Consultants

4455 Morris Park Dr.
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NC Firm License No: F-0296



REVISIONS DATE APPROVED 7-27-12 BML BASE PROJECT MANAGER COMMENTS 7-24-12

GENERAL NOTES

- 1. ALL DEVICES ARE NEW UNLESS OTHERWISE NOTED.
- 2. NUMBER AND PLACEMENT OF SPEAKERS TO BE SUFFICIENT TO PROVIDE .70 (CSI SCORE) AUDIBILITY RATING WITHIN AREA.
- 3. SEE SHEET FA-1 FOR LEGEND.



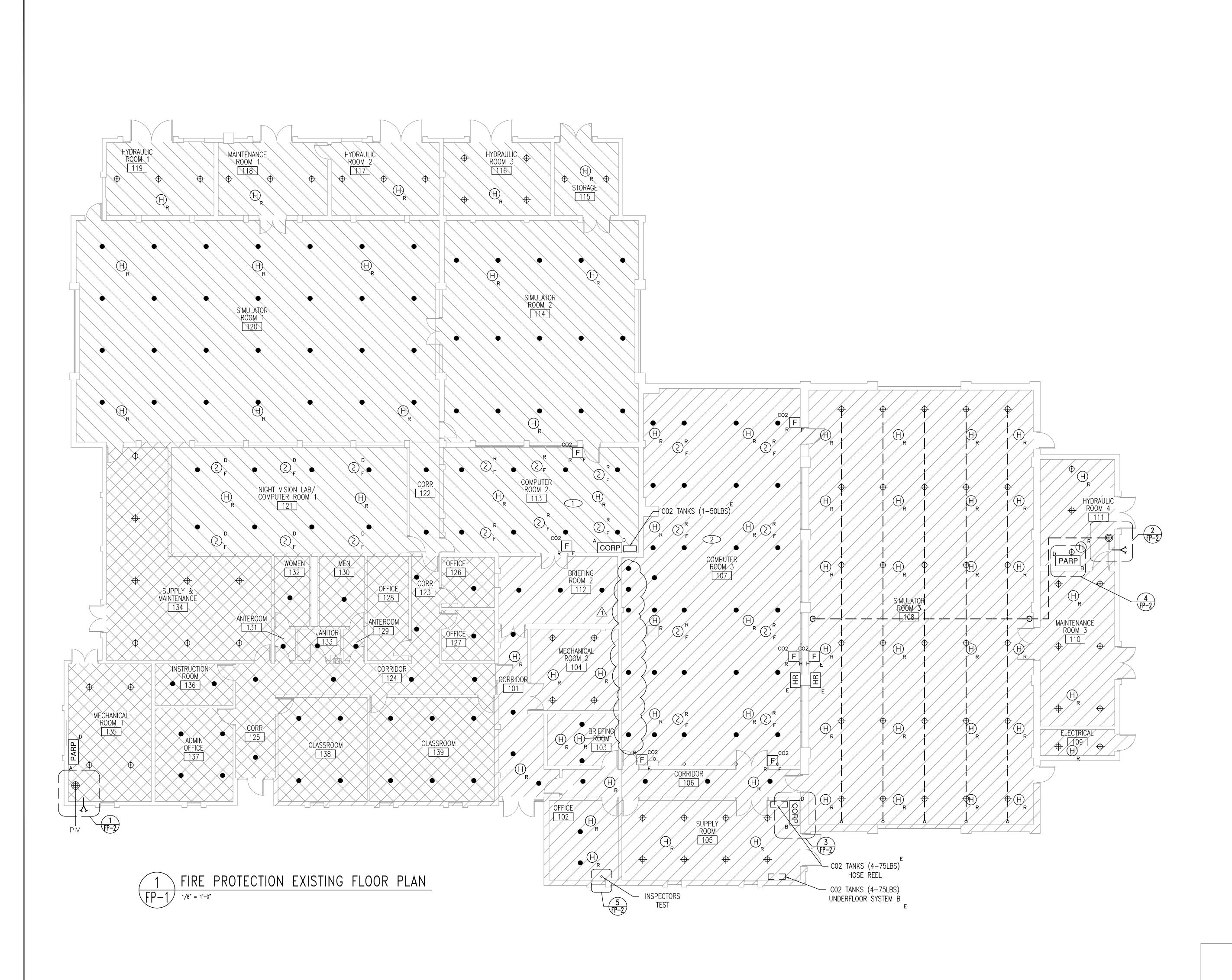
SCALE: NOTED SPEC. 05-11-0207

SATISFACTORY TO:

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Ph. 704.545.8383 Fax 704.545.2483
Fire Protection & Building Code Specialists
NC Firm License No: F-0296



REVISIONS DATE APPROVED 7-27-12 BML BASE PROJECT MANAGER COMMENTS 7-24-12

DEMOLITION NOTES:

- 1. REMOVE EXISTING PENDANTS TO FACILITATE REMOVAL AND INSTALLATION OF CEILING THROUGHOUT FACILITY.
- 2. DEMO RISERS TO EXTENT NECESSARY TO INSTALL NEW RPZ BACKFLOW PREVENTOR AND LOCATE FDC CONNECTION BETWEEN BACKFLOW PREVENTOR AND PRE-ACTION VALVE.
- 3. LOCATION OF HEADS ARE APPROXIMATE CONTRACTOR TO VERIFY SYSTEM LAYOUT PRIOR TO BEGINNING WORK.

KEYNOTES:

- 1 UNDERFLOOR CO2 SYSTEM A
- 2 UNDERFLOOR CO2 SYSTEM B

<u>LEGEND</u>

- SPRINKLER RISER ASSEMBLY
- SPRINKLER DROP
- SPRINKLER RISE
- 2-1/2" SIAMESE FIRE DEPARTMENT CONNECTION

—— UF—— UNDERGROUND FIRE WATER MAINS

POST INDICATOR VALVE ———— NEW SPRINKLER PIPING

— — EXISTING SPRINKLER PIPING

SPRINKLER PIPING CONTINUES

HYDRAULIC NODES

ORDINARY HAZARD GROUP 1

HEAT DETECTORS

FIRE ALARM PULL STATION

KEY SWITCH

CO2 HOSE REEL

SOLENOID VALVE

WALL MOUNT SPEAKER-STROBE

FIRE SUPPRESSION RELEASING PANEL

CARBON DIOXIDE RELEASING PANEL

PRE-ACTION RELEASING PANEL

CHECK VALVE

EXISTING PENDANT SPRINKLER

EXISTING UPRIGHT SPRINKLER

NEW UPRIGHT SPRINKLER

NEW PENDANT SPRINKLER AUXILIARY DRAIN

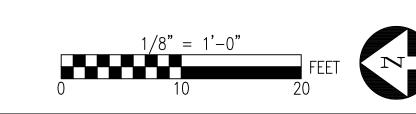
PRE-ACTION SYSTEM A

PRE-ACTION SYSTEM B

WET PIPE SYSTEM

<u>SUBSCRIPTS</u>

- A SYSTEM A
- в SYSTEM В
- D EXISTING TO BE REMOVED
- E EXISTING TO REMAIN
- F UNDER RAISED FLOOR SYSTEM
- н CO2 HOSE REEL SYSTEM R — EXISTING TO BE REPLACED
- CO2 CARBON DIOXIDE



CAMP LEJEUNE, NORTH CAROLINA

60010497

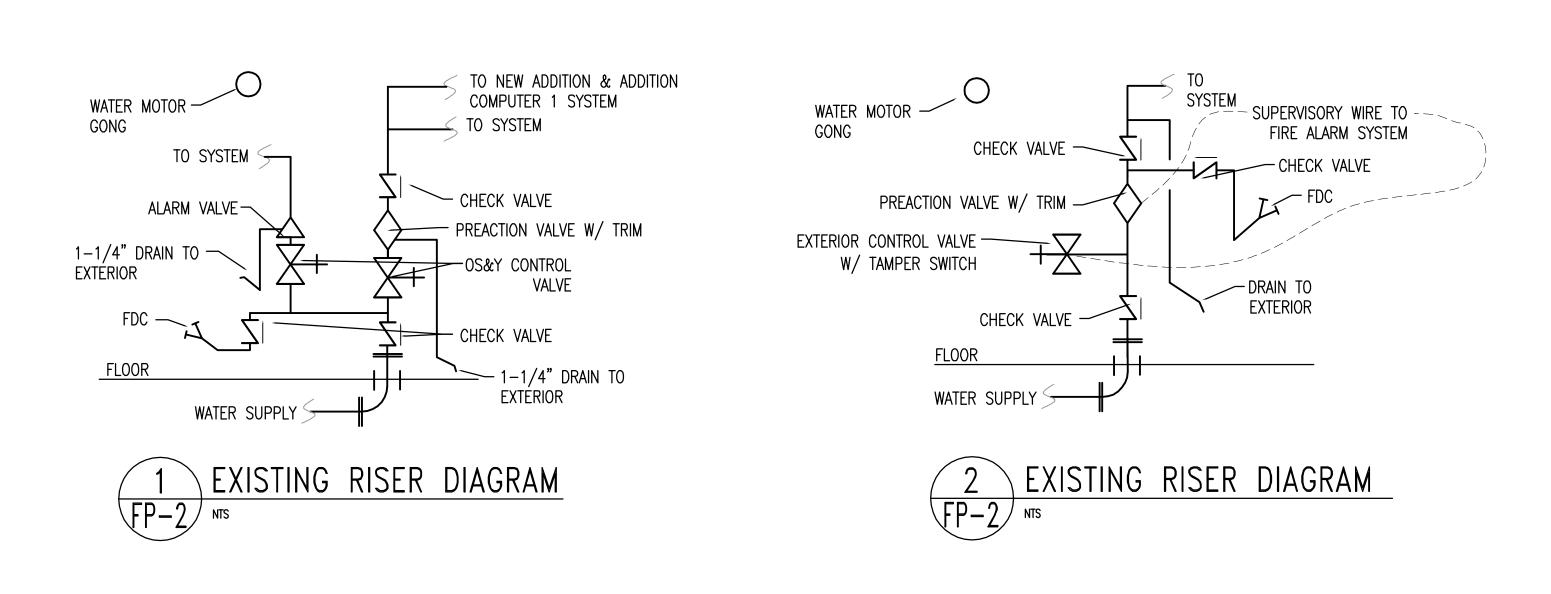
CONST. CONTR. NO. N40085-11-B-0207
C. 05-11-0207 SHEET 15 OF 34

MARINE CORPS BASE

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CHK. Buford Lovett Lovett Consultants BUILDING AS320, MCB, CLNC 4455 Morris Park Dr. Suite H Mint Hill, NC 28227 DESIGN DIR.

APPROVED: DATE SIZE CODE IDENT. NO. NAVFAC DRAWING NO. Ph. 704.545.8383 Fax 704.545.2483 Fire Protection & Building Code Specialist SATISFACTORY TO: NC Firm License No: F-0296 SCALE: NOTED SPEC. 05-11-0207

SHEET TITLE:



EXISTING RADIO

TO PREACTION VALVE RELEASE

 $H \rightarrow H$ HEAT ACTIVATED DETECTORS

TO PREACTION SYSTEM PRESSURE

TO ZONE NO. 6 IN FCI-72 FIRE ALARM

DISCONNECT

SWITCH AT RISER -

CONTROL PANEL -

PREACTION CONTROL PANEL

4 EXISTING PREACTION SPRINKLER CONTROL PANEL (SYSTEM B)
FP-2 NTS

TRANSMITTER #2132

AUX. ALARM OPERATED CONTACTS TO POWER DISCONNECT CIRCUIT. SEE SHEET E-2

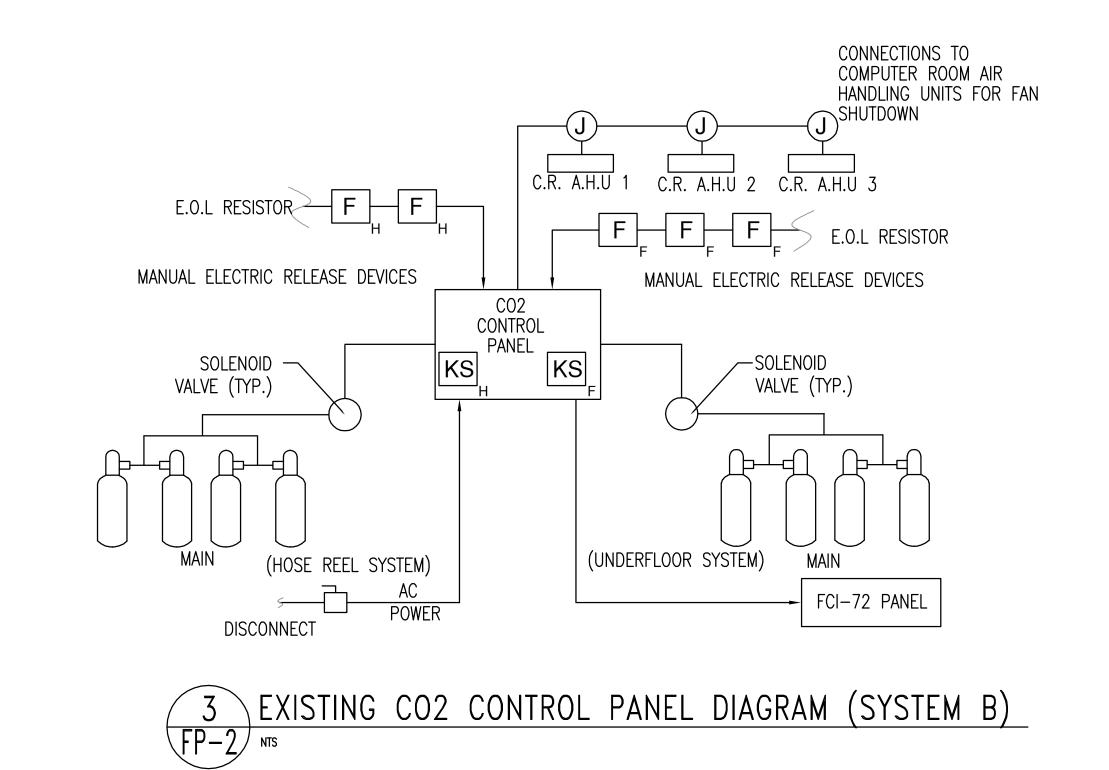
- SPRINKLER RISER

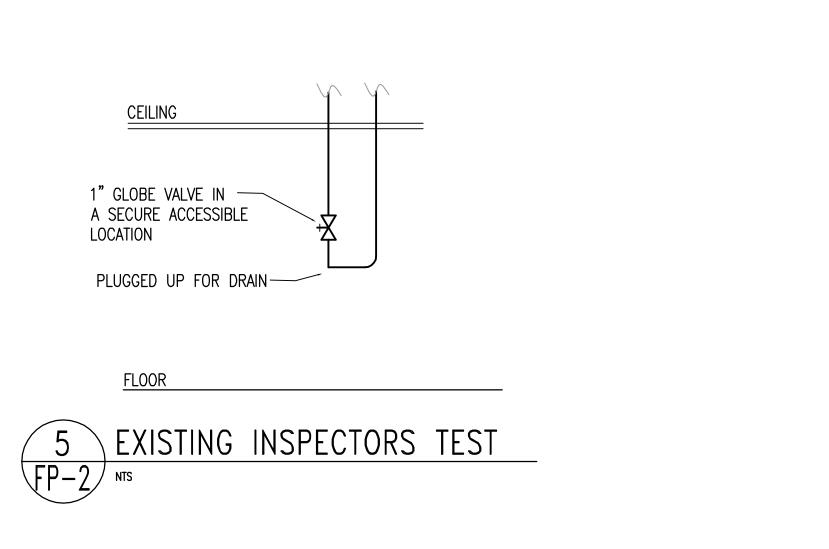
COMPRESSOR

COMPRESSED AIR LINE

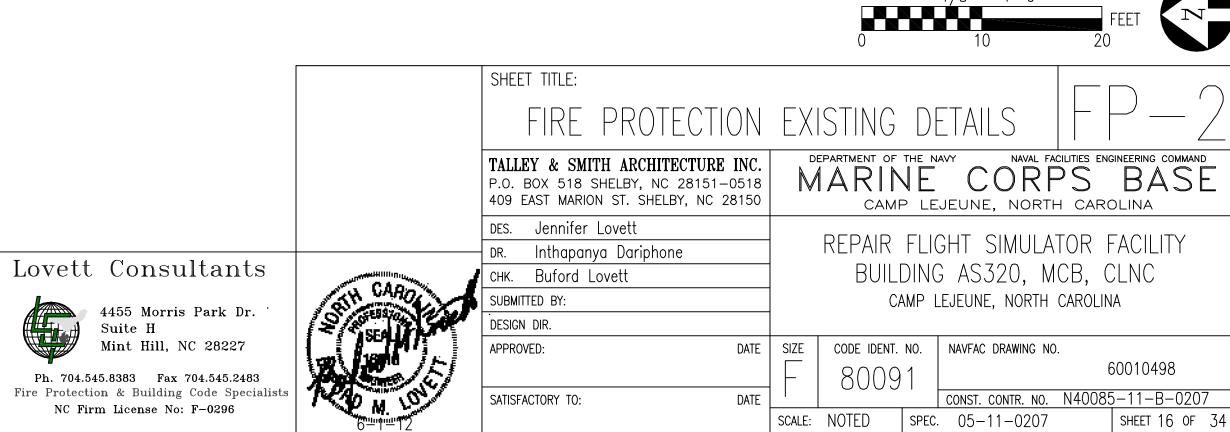
TUBBER FACED CHECK VALVE

- SUPERVISORY AIR PANEL AND









REVISIONS

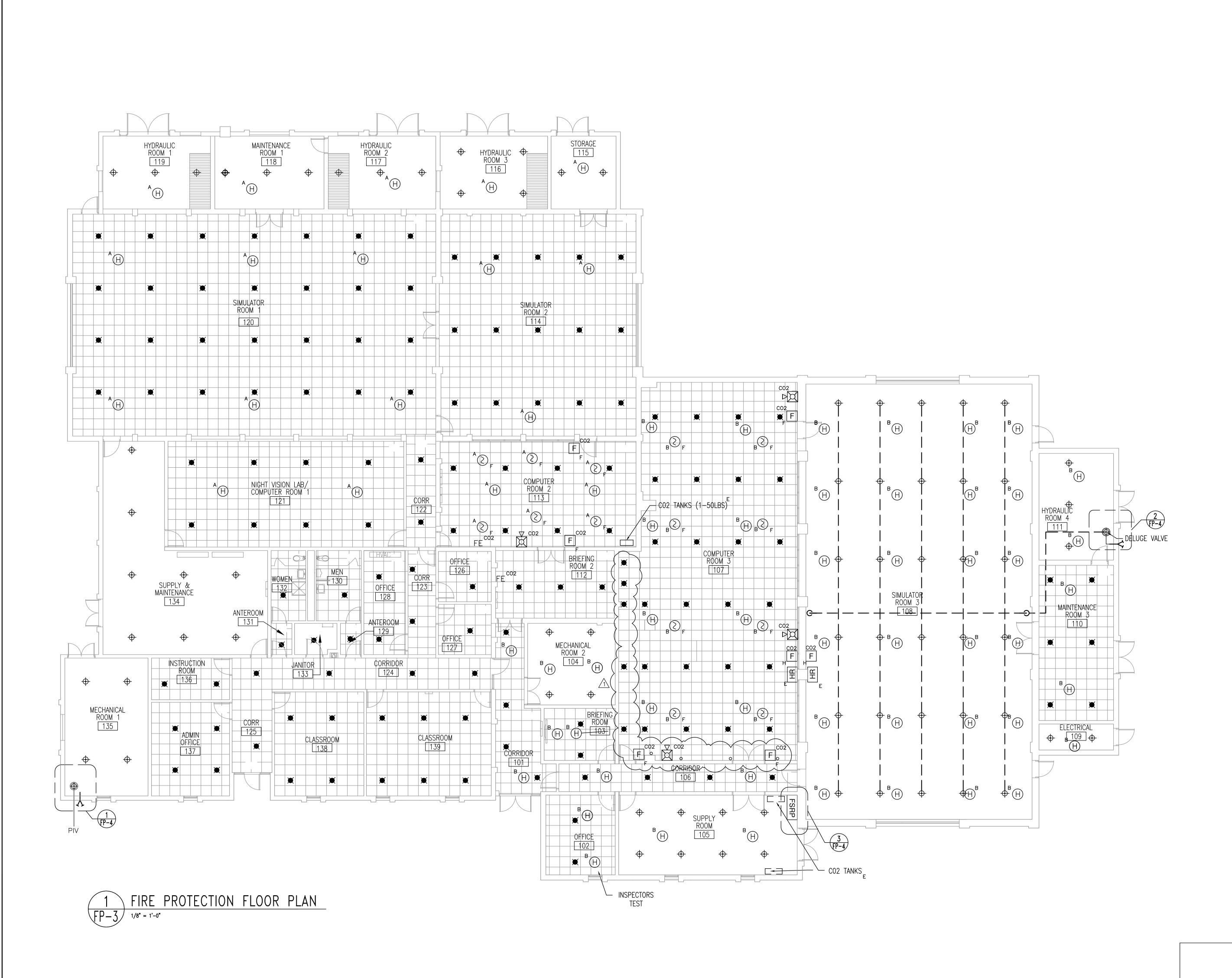
GENERAL NOTES:

1. REFER TO FP-1 FOR LEGEND.

DATE APPROVED

SHEET 16 OF 34





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BUILDING SPRINKLERED THROUGHOUT

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REVISIONS

SYM. DATE APPROVED

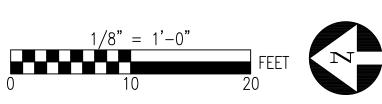
BASE PROJECT MANAGER COMMENTS 7-24-12 7-27-12 BML

GENERAL NOTES:

- 1. FINAL SPRINKLER PLACEMENT SHALL BE COORDINATED BETWEEN SPRINKLER CONTRACTOR AND GENERAL CONTRACTOR.
- 2. ALL VALVES SHALL BE READILY ACCESSIBLE FOR OPERATION.
- 3. WATER FLOW TEST; STATIC 62 PSI; RESIDUAL 58 PSI; FLOW— 1,210 GPM. CONTRACTOR SHALL PERFORM AN INDEPENDENT WATER FLOW TEST ON WHICH TO BASE THE FINAL DESIGN. WATER FLOW TEST PERFORMED ON MARCH 8, 2012.
- 4. SPRINKLER HEADS TO BE INSTALLED THROUGHOUT THE BUILDING IN ACCORDANCE WITH NFPA 13.
- 5. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS THAT MAY AFFECT THE SYSTEM INSTALLATION OR COMPLIANCE WITH NFPA 13, AND NOTIFY THE CONTRACTING OFFICER PRIOR TO BEGINNING WORK.
- 6. NEW PIPE IN PRE-ACTION SYSTEM TO BE GALVANIZED FOR ALL PIPE SIZES SCHEDULE
- 7. PIPE TO BE RUN CONCEALED ABOVE FINISHED CEILINGS, PIPE MAY BE RUN EXPOSED IN THE AREAS WITHOUT SUSPENDED CEILINGS.
- 8. PENDANT SPRINKLERS IN FINISHED ROOMS SHALL BE 155° F, K=5.6, WITH A WHITE
- 9. PROVIDE LOCK FOR POST INDICATOR VALVE (COORDINATE WITH BASE FIRE DEPARTMENT).
- 10. REFER TO FP-1 FOR LEGEND.
- 11. A NEW 2'X2' CEILING GRID AND TILES ARE TO BE INSTALLED AS INDICATED. THE EXISTING BUILDING HAS TWO PRE—ACTION (SINGLE INTERLOCK) SPRINKLER SYSTEMS AND ONE WET PIPE SPRINKLER SYSTEM. THE EXISTING SPRINKLER LOCATIONS ARE TO BE RELOCATED TO THE CENTER OF THE NEW 2'X2' CEILING TILES USING NEW SPRINKLERS AND PIPE. REPLACE EXISTING HEAT DETECTORS AND RELOCATE TO NEW CEILING TILES.
- 12. THE EXISTING SINGLE CHECK VALVES ON THE INCOMING FIRE WATER LINES ARE TO BE REPLACED WITH RPZ BACKFLOW ASSEMBLIES.
- 13. PROVIDE WARNING SIGNS IN ACCORDANCE WITH NFPA 12 IN AND OUTSIDE COMPUTER ROOMS 113 AND 107 AND SUPPLY ROOM 105.
- 14. PROVIDE PRE-DISCHARGE ALARM NOTIFICATION DEVICES IN ACCORDANCE WITH NFPA 12.
- 15. PROVIDE A SINGLE UL LISTED RELEASING PANEL TO REPLACE TWO EXISTING CO2

 RELEASING PANELS AND TWO PRE—ACTION RELEASING PANELS. NEW RELEASING PANEL

 RE COMPATIBLE WITH THE EXISTING KIDDE CO2 SYSTEM AND ELECTRIC CONTROL HEADS



SHEET TITLE: FIRE PROTECTION RENOVATED PLAN | F | - 5 DEPARTMENT OF THE NAVY

NAVAL FACILITIES ENGINEERING COMMAND

MARINE CORPS BASE

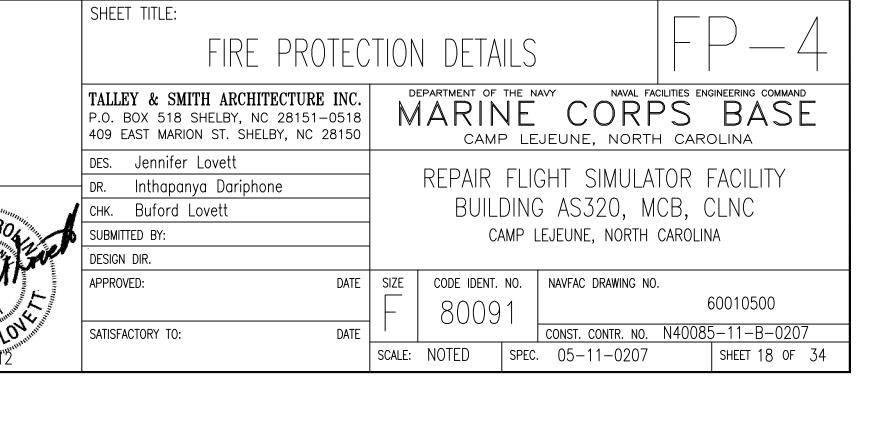
CAMP LEJEUNE, NORTH CAROLINA TALLEY & SMITH ARCHITECTURE INC.
P.O. BOX 518 SHELBY, NC 28151-0518
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CONST. CONTR. NO. N40085-11-B-0207

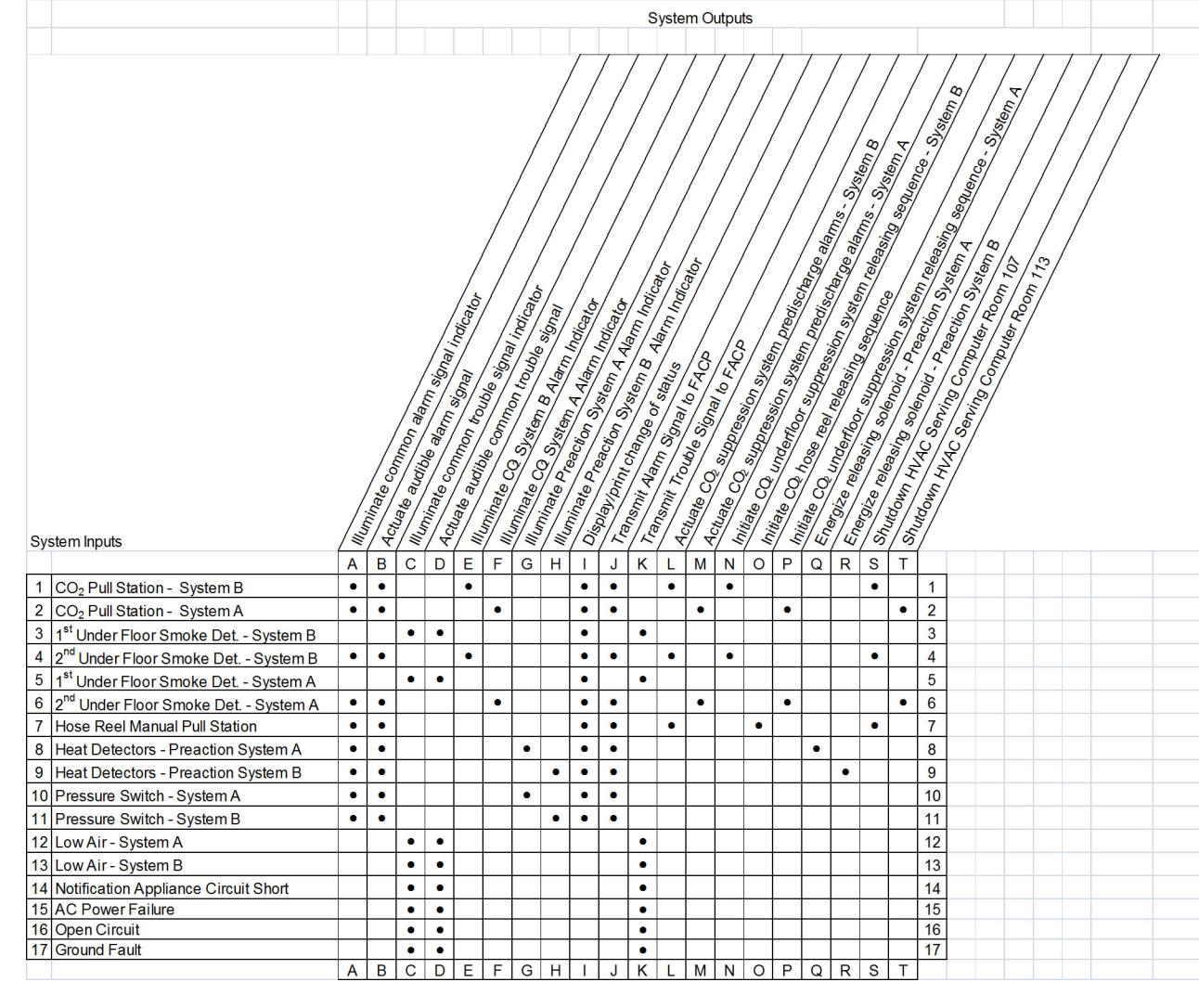
SHEET 17 OF 34 SATISFACTORY TO: SCALE: NOTED SPEC. 05-11-0207

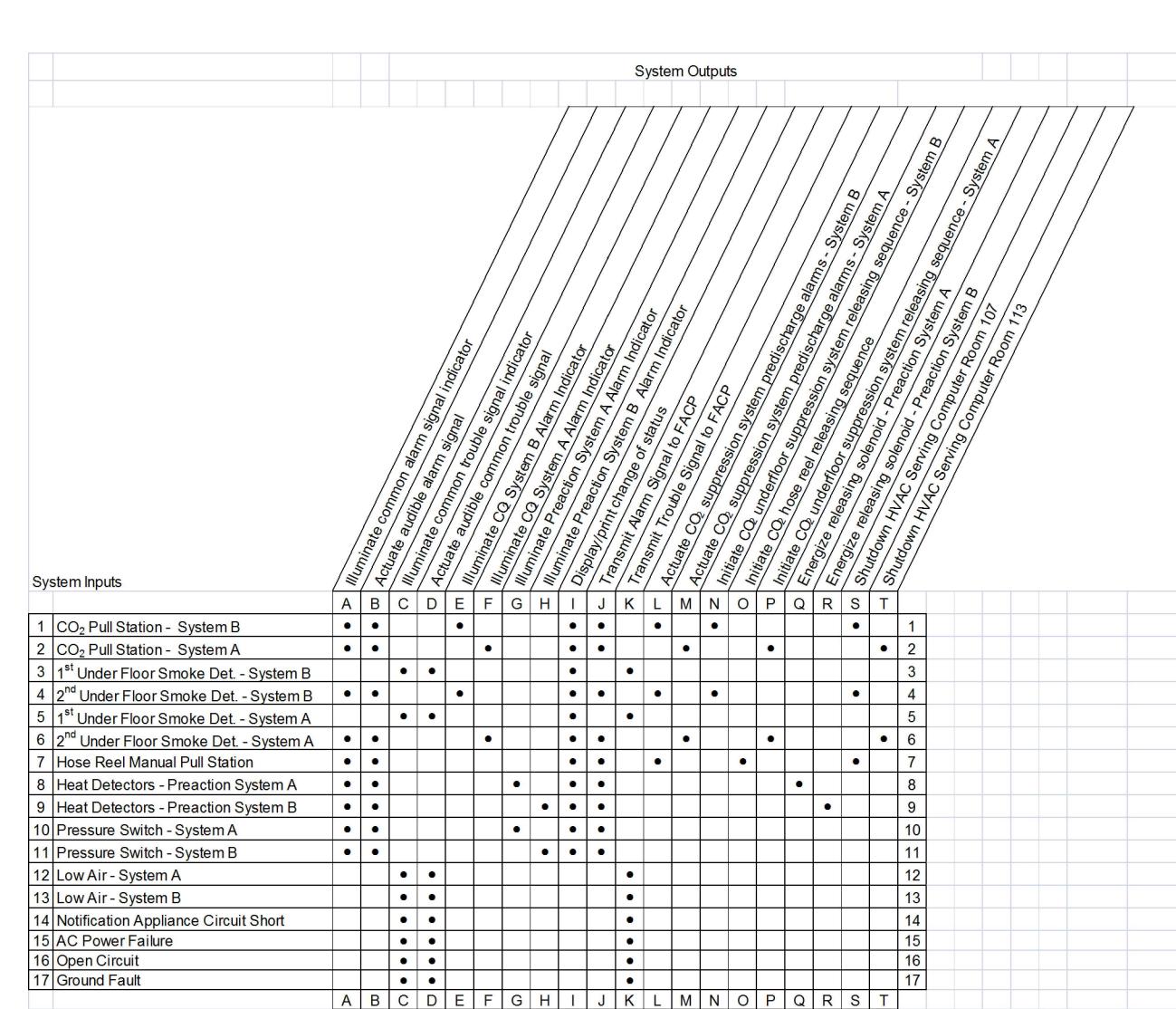
BUILDING SPRINKLERED THROUGHOUT



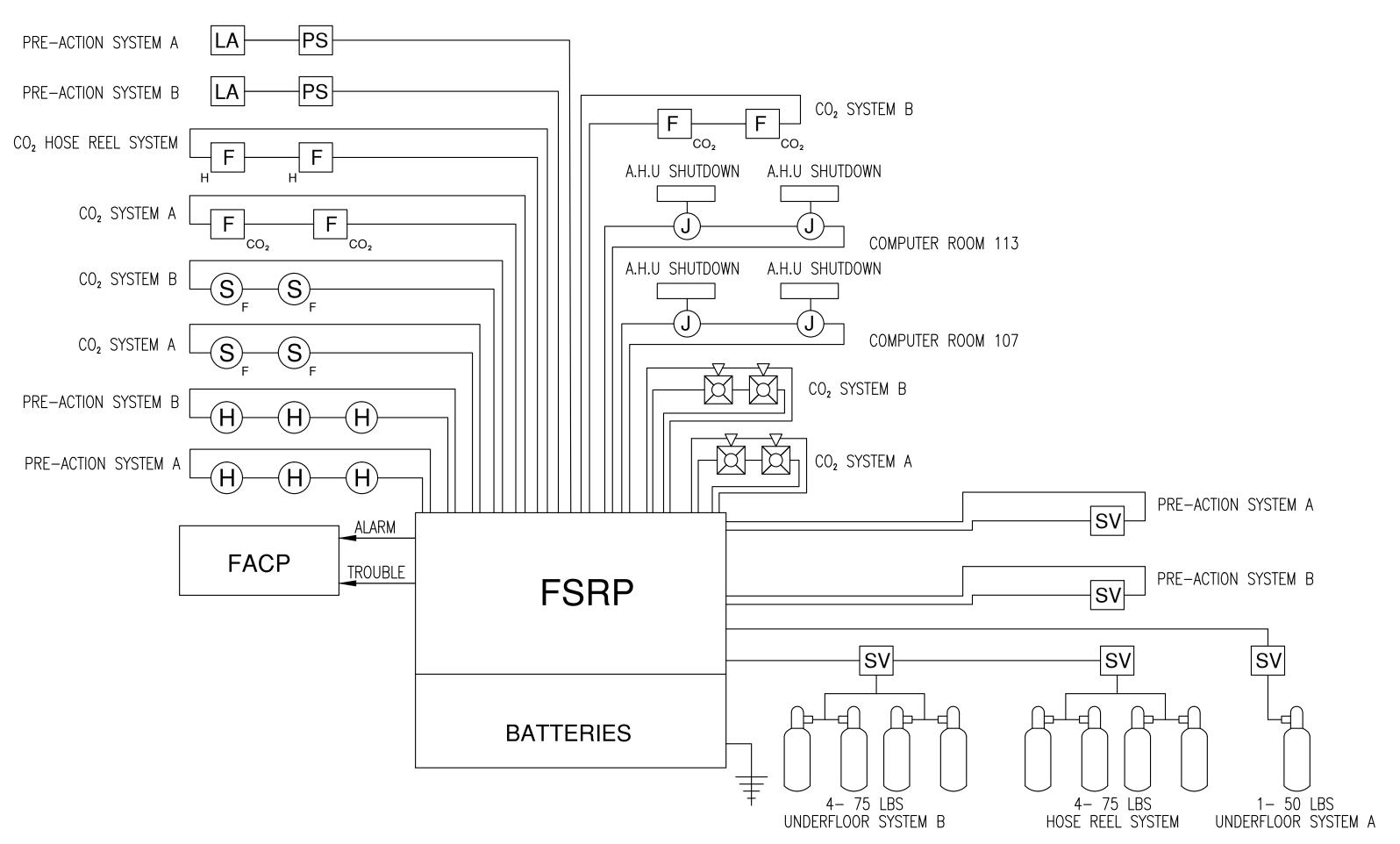


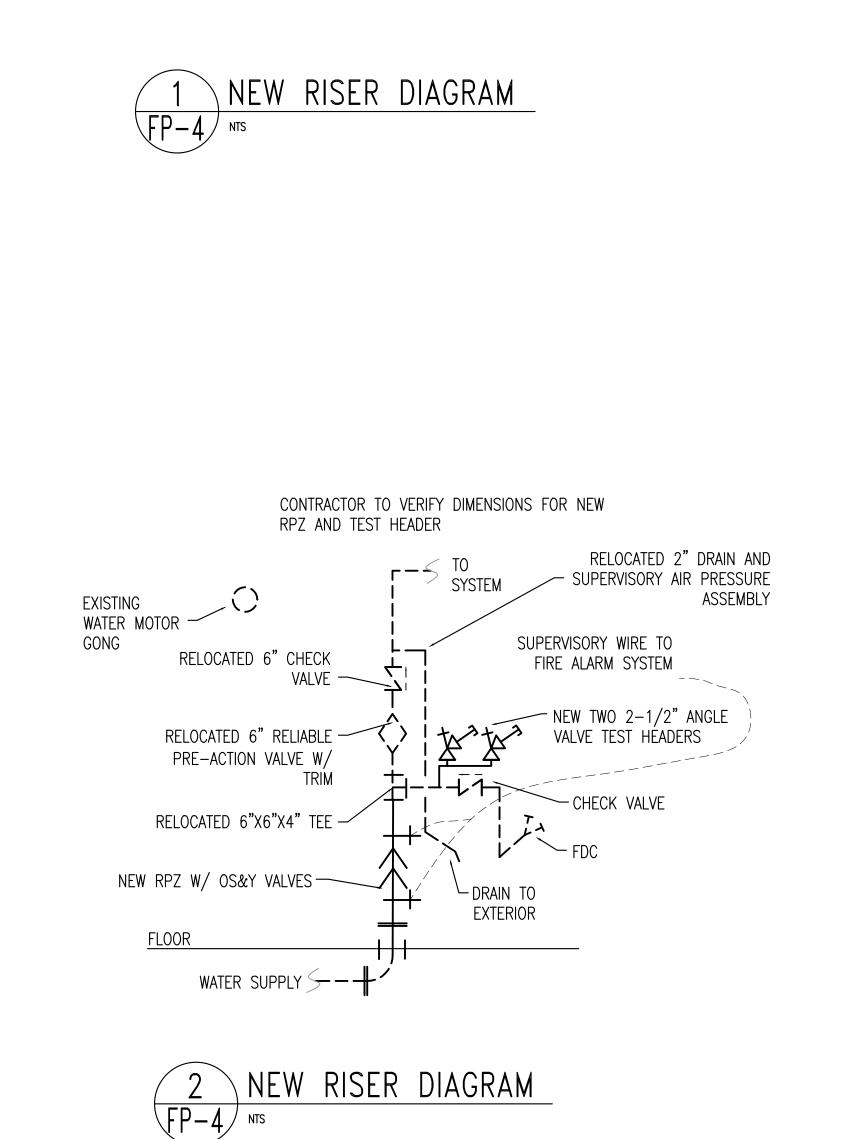
4 \ FIRE SUPPRESSION RELEASING PANEL OPERATIONAL MATRIX











REVISIONS

TO NEW ADDITION & ADDITION COMPUTER 1 SYSTEM

NEW TWO 2-1/2" ANGLE VALVE TEST HEADERS

--- 1-1/4" DRAIN TO

EXTÉRIOR

BASE PROJECT MANAGER COMMENTS 7-24-12

CONTRACTOR TO VERIFY DIMENSIONS FOR NEW RPZ AND TEST HEADER

WATER SUPPLY 5--

TO WET 🗲 🗖

EXISTING WATER MOTOR -GONG

EXISTING ALARM VALVE

1-1/4" DRAIN TO — EXTERIOR

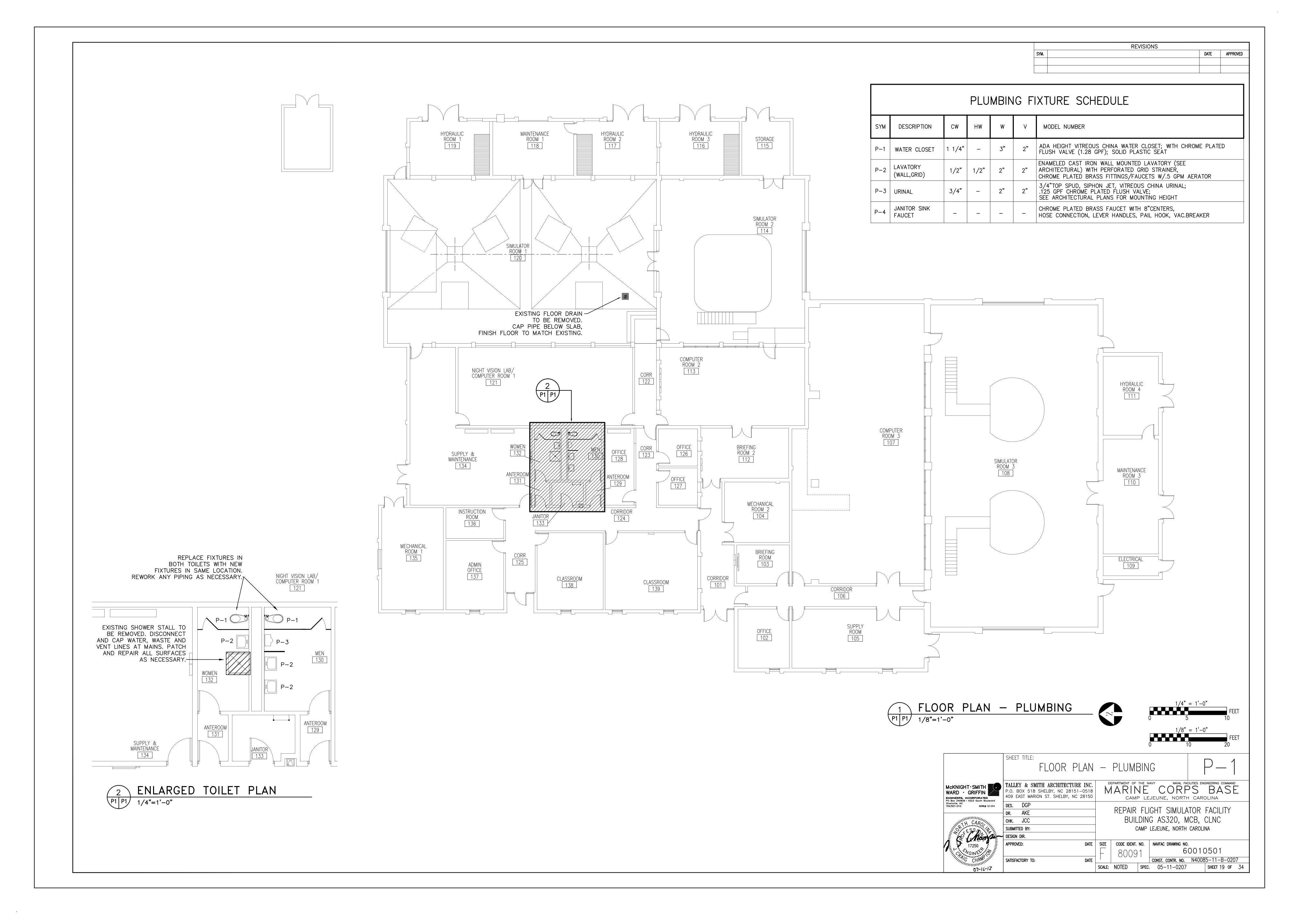
NEW RPZ W/ OS&Y — VALVES

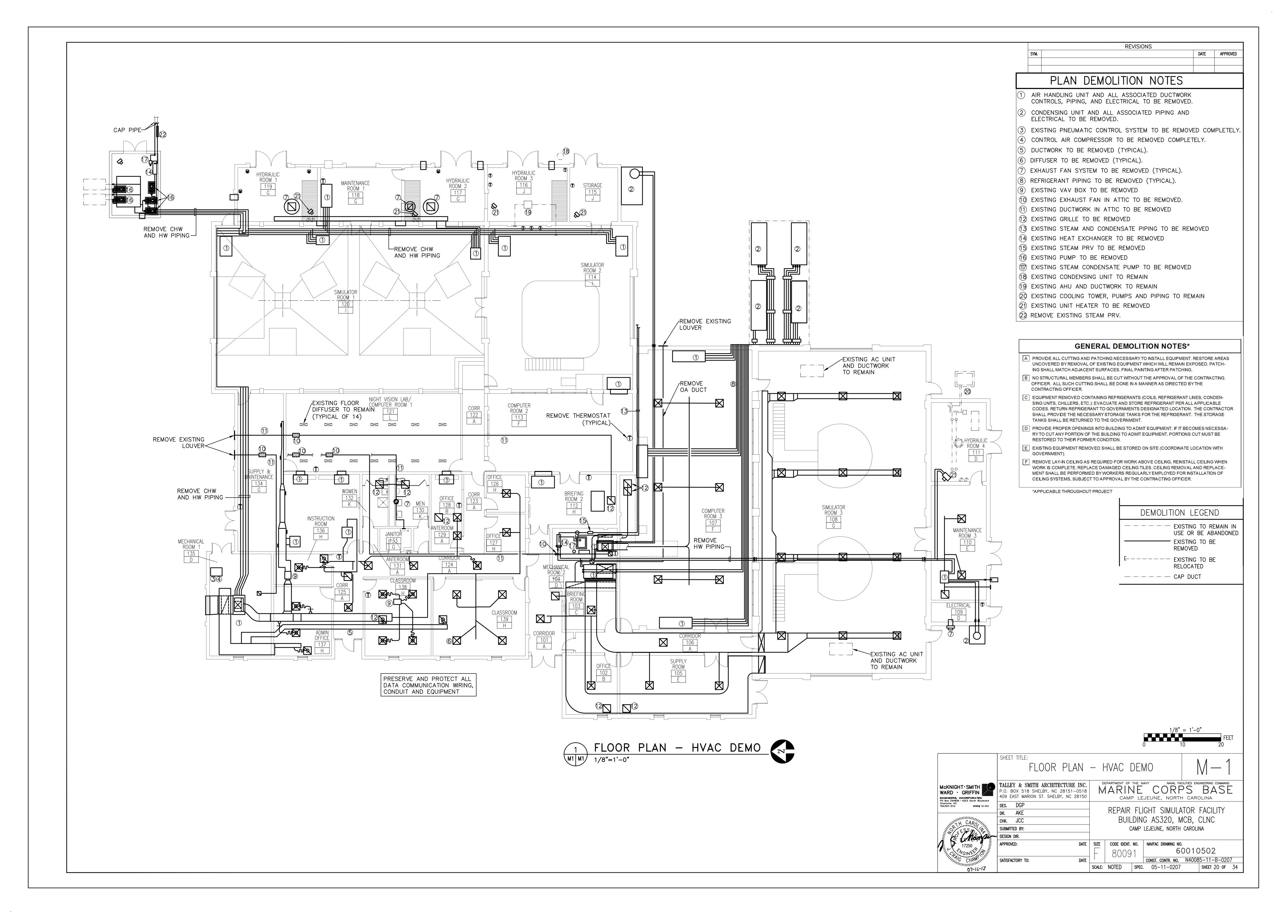
VALVE

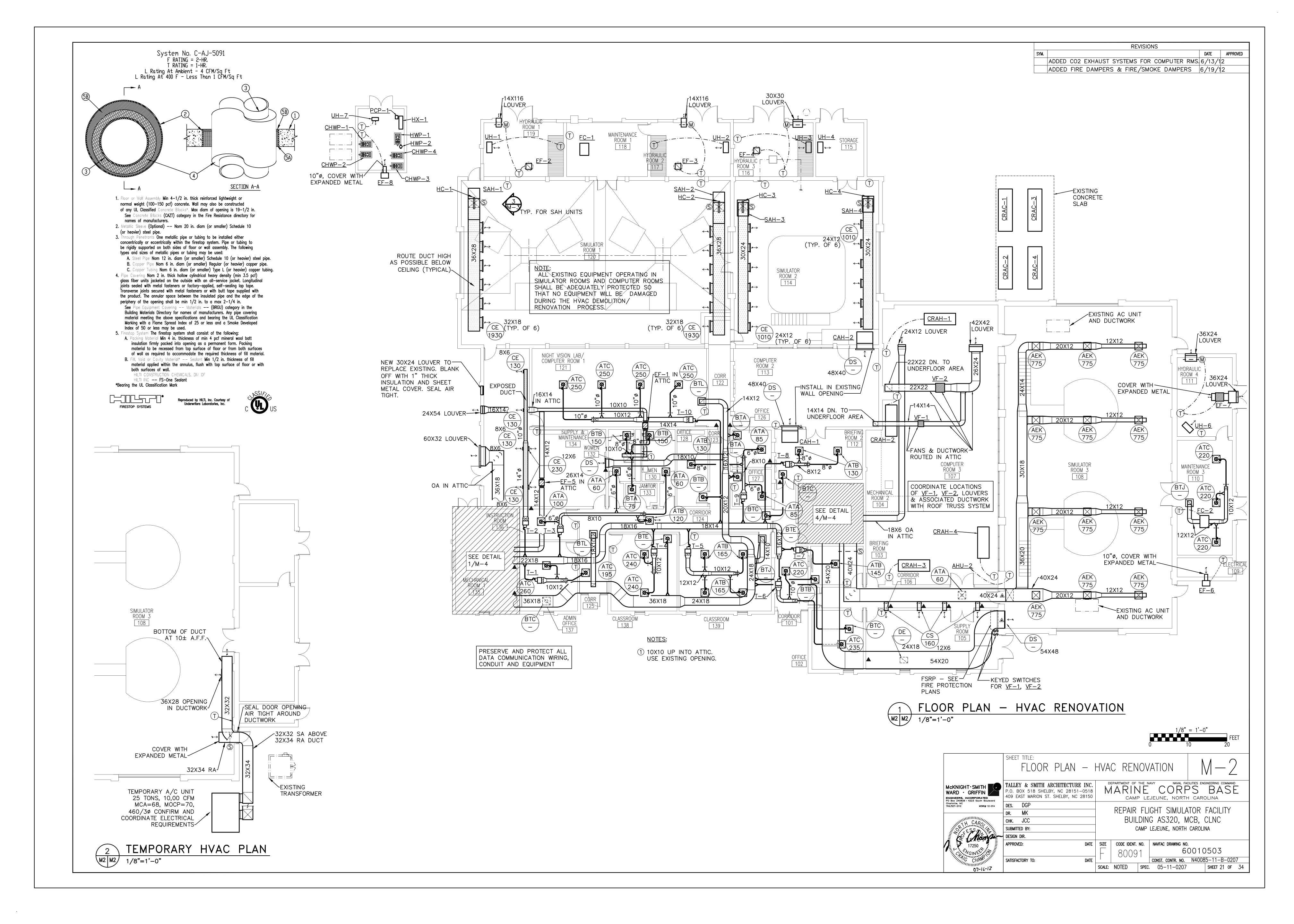
EXISTING CHECK VALVE

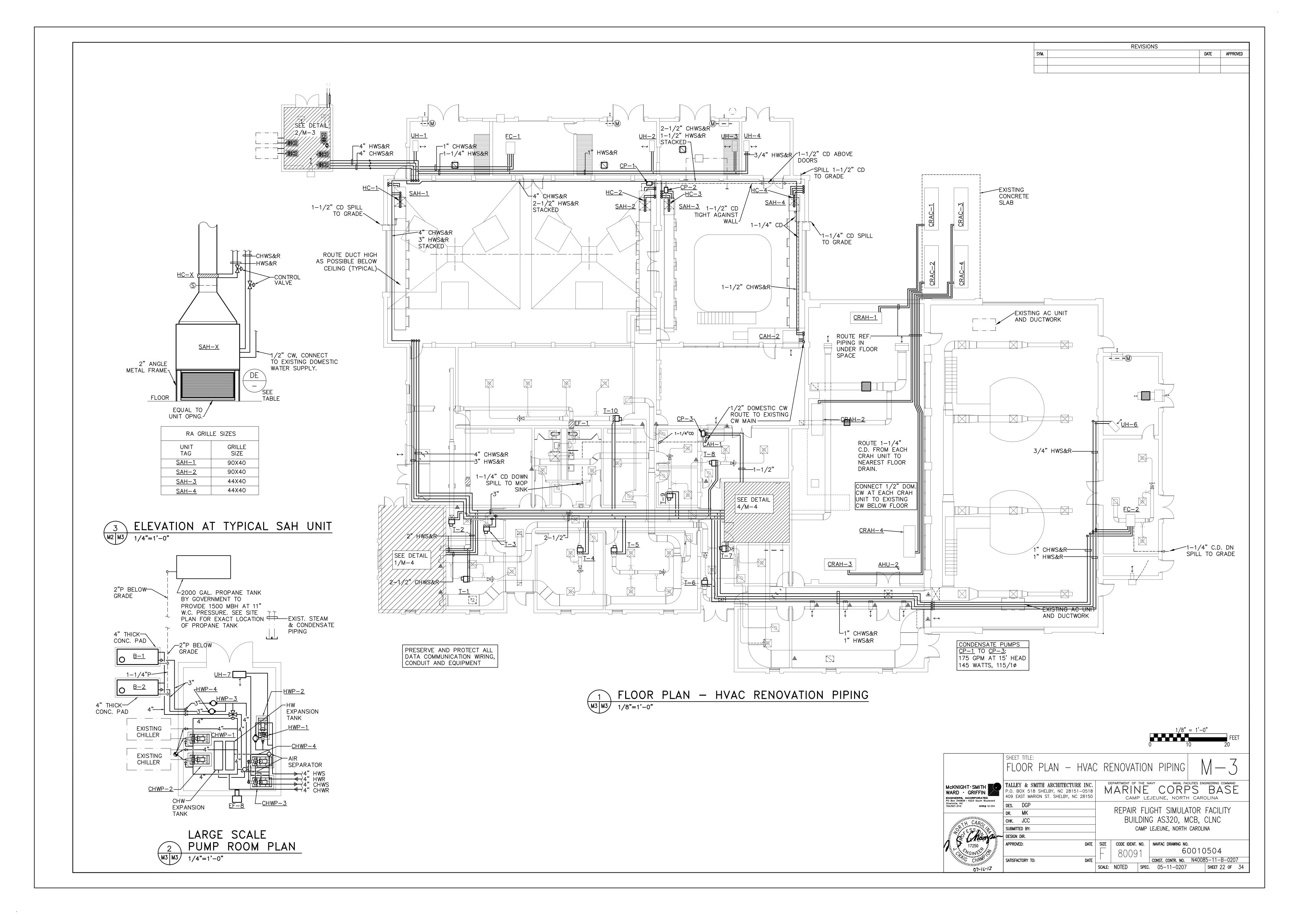
SUPERVISORY WIRE TO FIRE ALARM SYSTEM

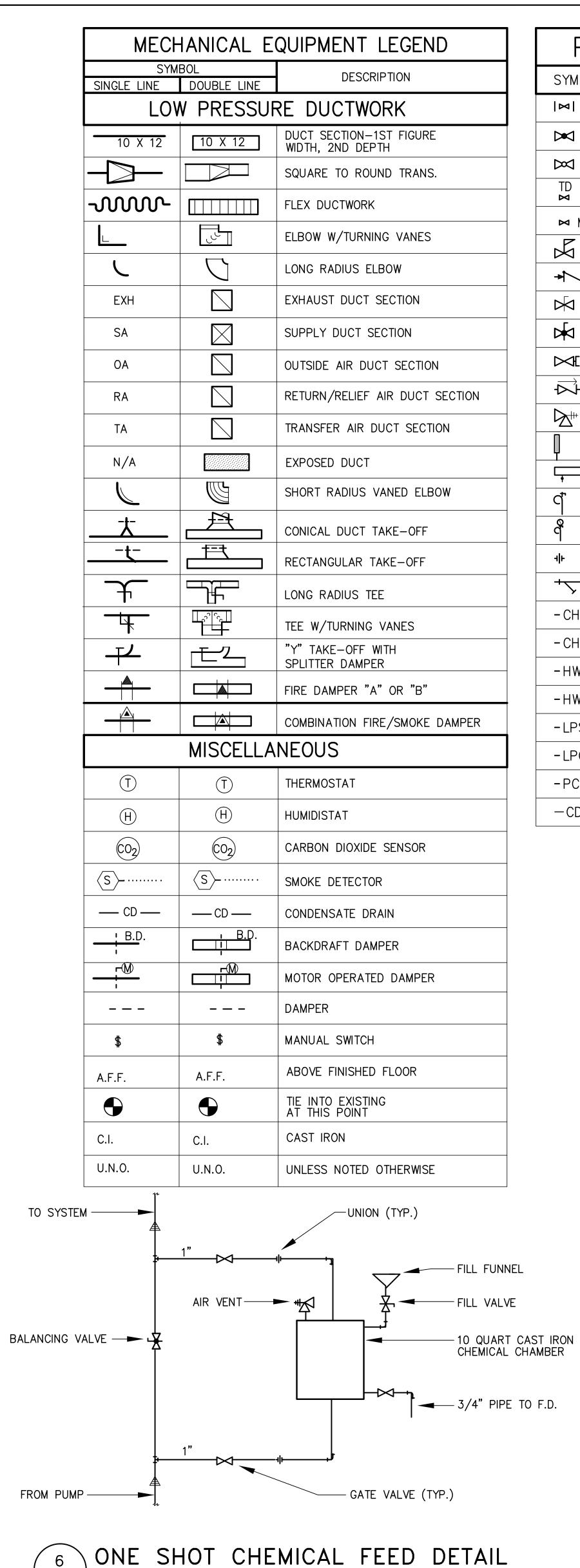
DATE APPROVED
7-27-12 BML

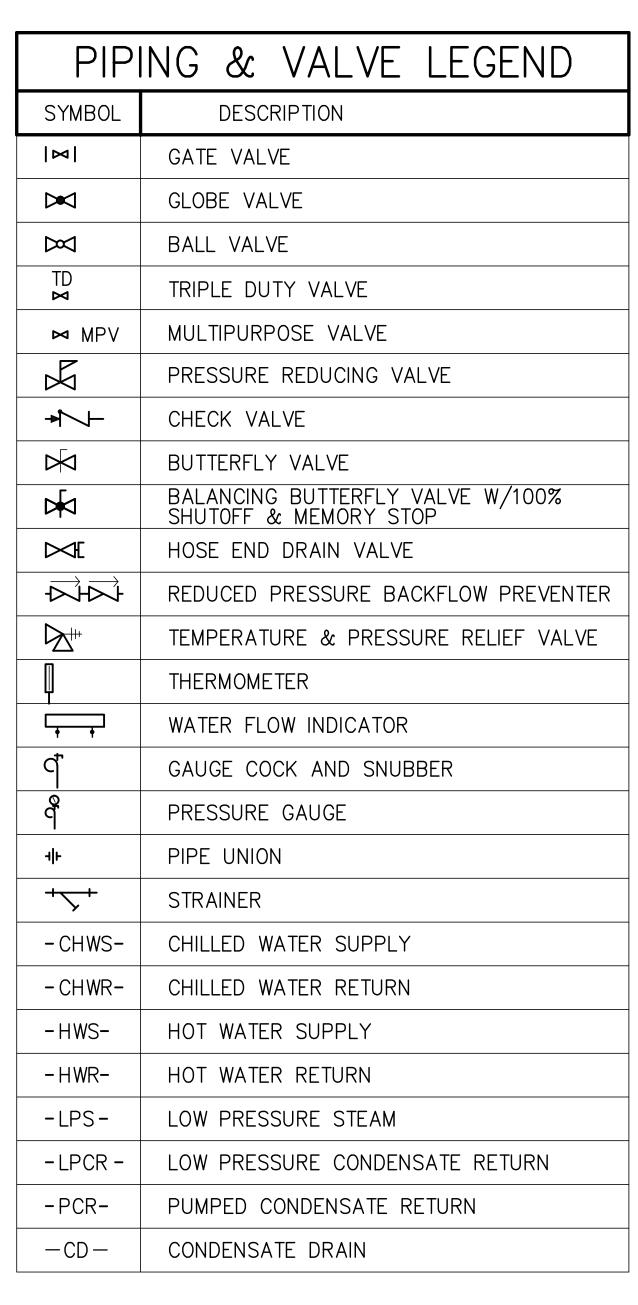


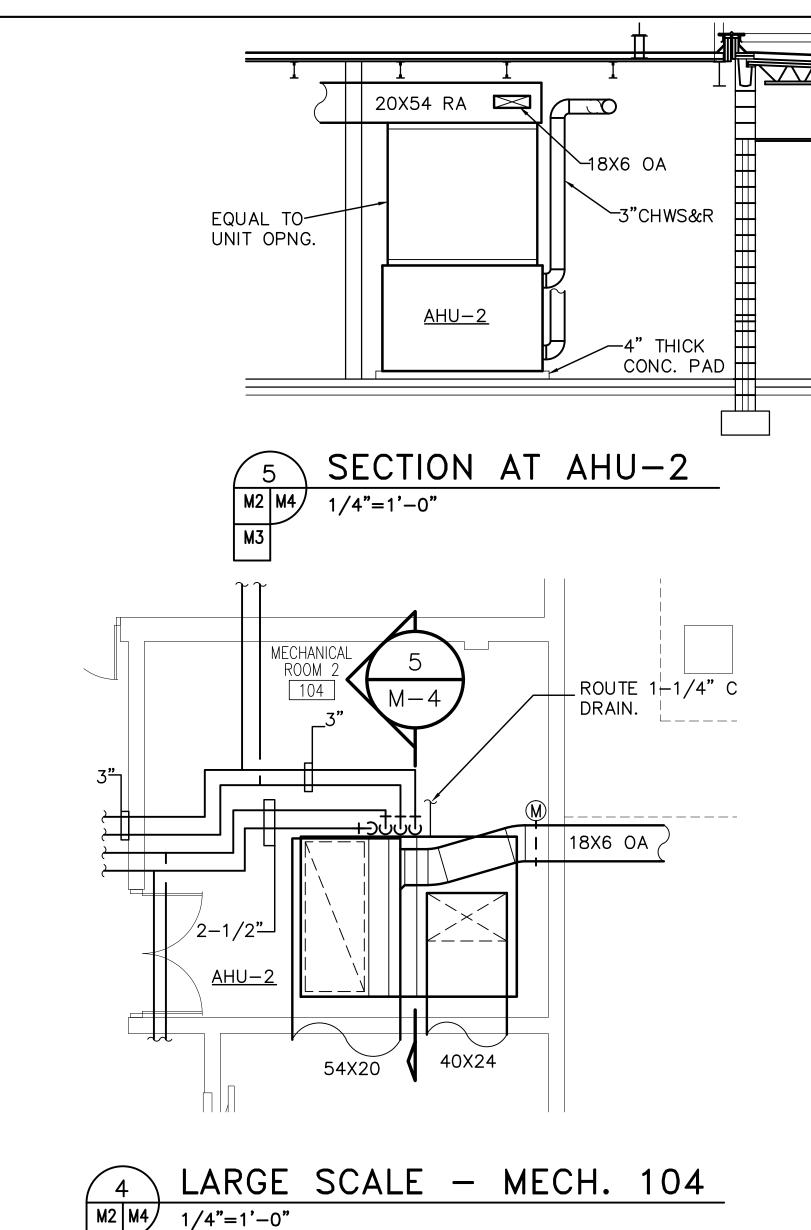


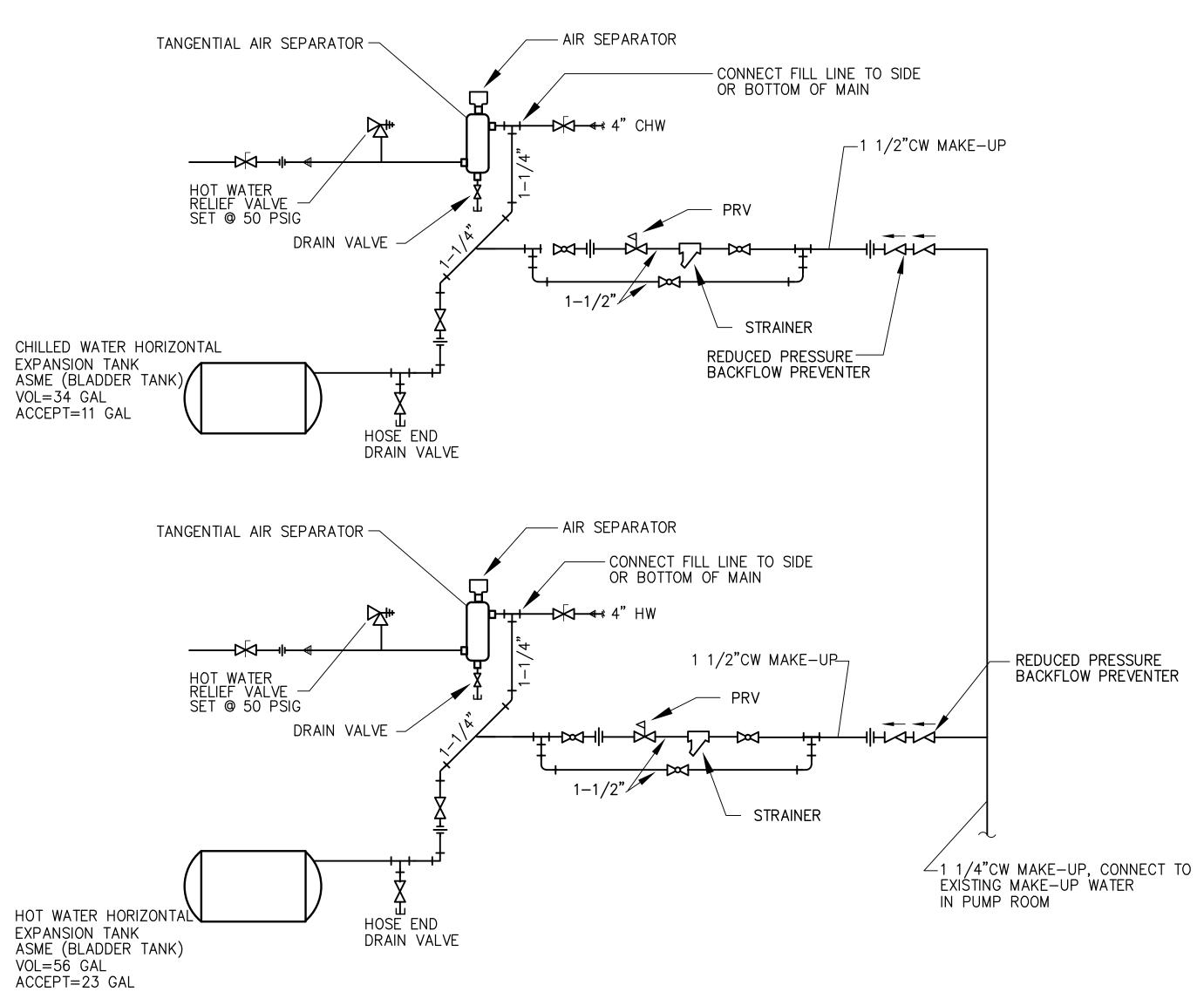


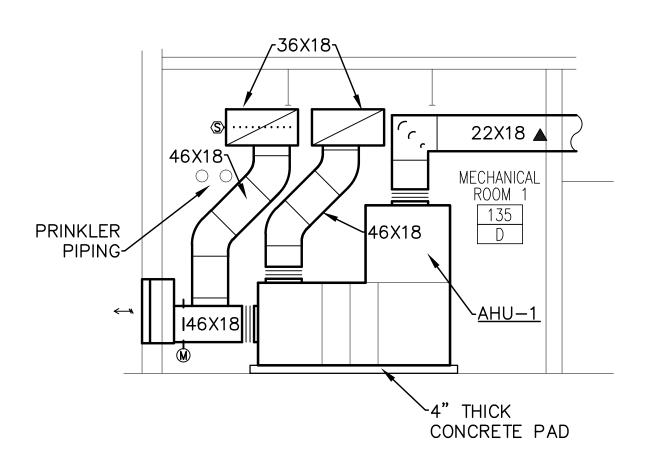








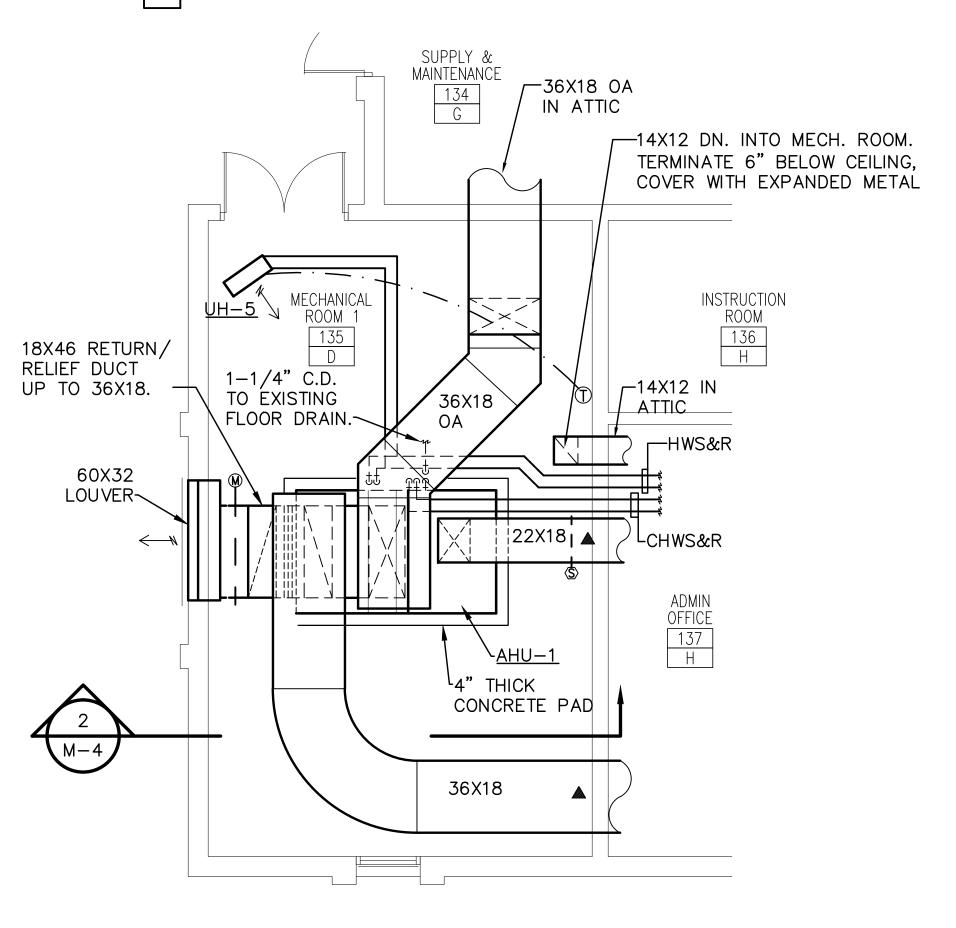


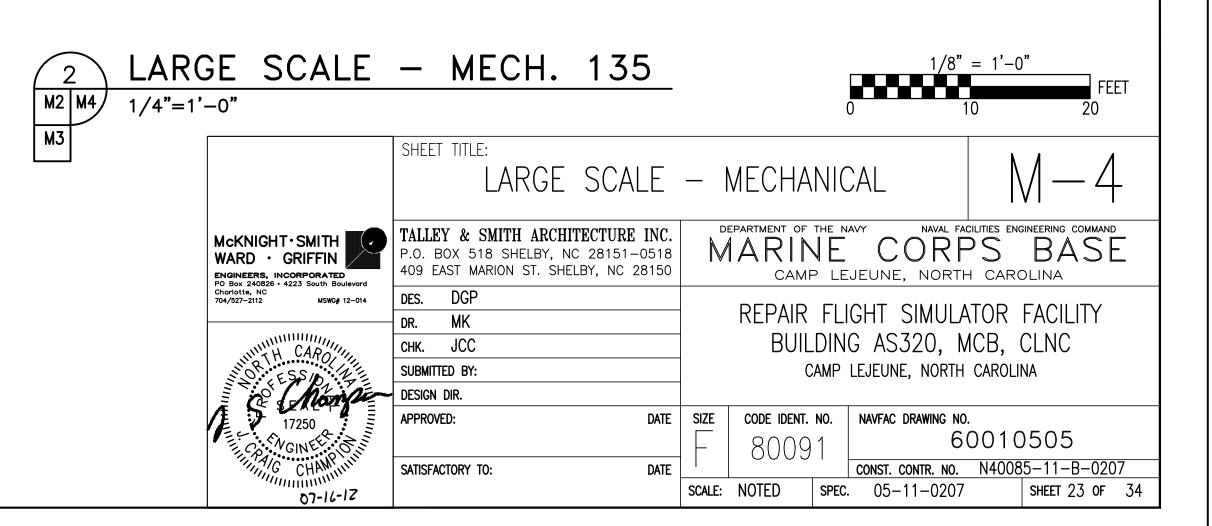


REVISIONS

DATE APPROVED









NOTE: PRV SET POINT = 12 PSIG

	REVISIONS		
d.		DATE	APPROVED
	ADDED CO2 EXHAUST SYSTEMS FOR COMPUTER RMS.	6/13/1	2
	ADDED FIRE DAMPERS & FIRE/SMOKE DAMPERS	6/19/1	2

GENERAL NOTES*

- A DUCTWORK: 1) DUCT SIZES ARE METAL DIMENSIONS. 2) NOTE NOT USED, 3) NOTE NOT USED. 4) LOW PRESS. DUCT: BALANCING DAMPERS REQ'D FOR SA, RA, & EXH BRANCH DUCTS. 5) ALL RECTANGULAR SA & RA DUCT SHALL BE LINED INSIDE MECH. ROOMS OR FIRST 8' FROM UNIT (GREATER OF TWO, OR TO POINT INDICATED). 7) EXPOSED DUCTWORK TO BE MILL PHOSPHATIZED, CLEAN AND READY FOR PAINTING BY CONTRACTOR. SEE SPECS FOR INSULATION NOTE APPLIES WHERE INDICATED ON PLANS. 8) DUCTWORK EXPOSED TO WEATHER: INSULATE DUCTWORK AT ALL POINTS EXPOSED TO WEATHER W/1" TK STYREFOAM. CO-VER W/2 LAYERS OF MASTIC & GLASSFAB*. 9) EXPOSED ROUND OR FLAT OVAL SA: 1" LI-NER (SEE SPECS). 10) MEDIUM PRESSURE SA: INSULATION = WRAP. LINE FIRST 20' FROM AHU (OR AS SHOWN ON PLANS) IN ADDITION TO WRAP. 11) DUCT RUNOUT SIZES TO VAV TERMINAL UNITS PER SCHEDULES. 2.5 INLET DIAMETERS (MIN) STRAIGHT INTO UNIT.
- B | EQUIPMENT (IF REQ'D) PROVIDED BY: 1) LOUVERS TO BE PROVIDED AND INSTALLED BY CONTRACTOR (UNO), 2) SMOKE DETECTORS PROVIDED BY DIV. 26 & INSTALLED BY DIV. 23, 3) AHU'S: MOTORIZED DAMPERS SHOWN INSIDE FILTER/MIXING BOXES (SEE AHU SCHEMATICS) PROVIDED BY MFR. THESE DAMPERS ARE NOT NECESSARILY SHOWN ON FLOOR PLANS. 4) 4" TK (UNO) CONCRETE EQUIPMENT PADS & 4 X 4 CONC. ALL 1ST FLOOR (EXCEPT MEZZANINE LEVEL) & GRADE MOUNTED EQUIPMENT (U.N.O.) SHALL BE MOUNTED ON 4" TK. CONCRETE PADS. ATTACH EQUIPMENT TO PADS, AND PADS TO FLOOR. FLOOR MOUNTED EQUIPMENT INCLUDES (BUT IS NOT LIMITED TO): AHU(S), BOILER(S), CHILLER(S), CONDENSING UNIT(S), HEAT PUMP(S), WATER HEATER(S), FURNACE(S), AND AIR COM-PRESSOR(S). 1" GAP (MIN.) BETWEEN CONCRETE PAD AND ADJACENT WALLS.
- C COORDINATION W/OTHER TRADES: 1) CONTRACTOR TO COORDINATE EQUIPMENT LOCATIONS W/ALL OTHER CONTRACTORS IN AREAS WHERE MORE THAN ONE CONTRACTOR HAS WORK. 2) COORDINATE ALL T'STAT & SWITCH LOCATIONS WITH OTHER EQUIP-MENT ON AND INSIDE THE WALL & W/ALL OTHER CONTRACTORS. 3) DO NOT RUN DUCT OR PIPING DIRECTLY ABOVE ELECTRICAL PANELS.4) DUCT & PIPING TO RUN 8" (MIN. TO METAL) ABV. CABLETRAY.
- LOCATIONS & HEIGHTS (IF EQUIPMENT USED): 1) CEILING MOUNTED GRILLES & DIF-FUSERS - SEE REFLECTED CEILING PLANS, 2) SIDEWALL GRILLES & DIFFUSERS IN THE SAME VICINITY SHALL BE MOUNTED AT THE SAME ELEVATION, 3) ROOF OPENINGS AND LOUVERS - SEE ARCHITECTURAL & STRUCTURAL PLANS, 4) 7'(MIN.) IF POSSIBLE, TO BOTTOM OF DUCTS OR PIPES IN MECH. ROOMS UNLESS OTHERWISE SHOWN, OR NOTED.
- E WALL & ROOF MOUNTED EQUIPMENT (FANS & HOODS) FINISH: 1) FACTORY BAKED ENAMEL FINISH, COLOR SELECTED BY CONTRACTING OFFICER.
- SIZES (IF EQUIPMENT USED): 1) DUCT SIZES NOT SHOWN SHALL BE EQUAL TO GRILLE OR DIFFUSER NECK SIZE, 2) VERIFY INLET/OUTLET SIZES FOR ALL AIR MOVING DEVICES BE-FORE FABRICATING DUCT CONNECTIONS. TRANSITION TO DUCT SIZE ON PLANS, 3) REFRIGERANT PIPE SIZES AND REQUIRED SPECIALTIES AS RECOMMENDED BY MFR., 4) DUCT RUNOUT TO VAV BOX SHALL BE EQUAL TO BOX INLET SIZE (U.N.O.).
- G MATERIALS & PERFORMANCE (IF SHOWN OR CALLED FOR): 1) CONTROLS WIRING SHALL CONFORM TO DIVISION 26 SPECIFICATIONS, 2) CONTROL DAMPERS SHALL BE ARROW "PIN-LOCK" (OR APPROVED EQUAL) WITH OPPOSED ACTION BLADES, PD = .038" @ 1000 FPM, LEAKAGE = .5% @ 2" SP, 3) CONTRACTOR SHALL VERIFY EQUIPMENT QUANTITIES. QUANTITIES SHOWN ON PLANS OVERRIDE QUANTITIES LISTED IN SCHEDULES, 4) MAXI-MUM CONTROL VALVE PRESSURE DROP = 12'. CONTROL VALVES TO SEAT AGAINST MAX. SYSTEM PRESSURE PLUS 5'.
- H DEFINITIONS: 1) UNCONDITIONED SPACE ANY PART OF THE BUILDING OUTSIDE THE BUILDING THERMAL INSULATION ENVELOPE PLUS MECHANICAL, BOILER AND ELECTRICAL ROOMS. IN ADDITION TO MECHANICAL, BOILER AND ELECTRICAL ROOMS, UNCONDITION-ED SPACES WOULD INCLUDE (BUT ARE NOT LIMITED TO) VENTILATED ATTICS (INSULA-TION LOCATED AT ATTIC FLOOR) AND CRAWL SPACES BELOW AN INSULATED FLOOR. 2) MEDIUM PRESSURE DUCT = DUCT CONNECTING VAV AHU & VAV BOXES. 3) LOW PRES-SURE DUCT = ALL DUCT THAT IS NOT MEDIUM PRESSURE.
- MISCELLANEOUS: 1) THE PLENUM SPACE ABOVE THE CEILING IS BEING USED AS A RETURN AIR PLENUM.
- PIPING NOTES: 1) MIN. CONDENSATE (CD) PIPE SIZE = 1-1/4", 2) SLOPE HORIZONTAL CD'S 1"/10' (MIN) DOWN IN DIRECTION OF FLOW. IF SLOPE CAN'T BE MAINTAINED, USE NEXT LARGER PIPE SIZE. SLOPE NOT REQ'D FOR PUMPED CONDENSATE (PCD). 3) PIP-ING EXPOSED TO VIEW BY PUBLIC: PROVIDE CANVAS JACKET. CONTRACTOR TO PAINT PIPE JACKET.
- K ACCESS: 1) PROVIDE ACCESS PANELS FOR SERVICE & INSPECTION AT EACH DUCT MOUNTED FIRE DAMPER, SMOKE DETECTOR, SMOKE DAMPER OR OTHER CONTROL DEVICE, PANELS SHALL BE LABELED IN ACCORDANCE WITH NCMC SEC. 607.4. PANELS SHALL BE 12X12 (MIN), DUCT SIZE PERMITTING. ALL SUCH DEVICES SHALL BE LOCATED ABOVE ACCESSIBLE CEILINGS OR WITHIN REACH FROM ACCESS PANELS IN THE CEIL-ING, 2) BRANCH DUCT BALANCING DAMPERS SHALL BE LOCATED ABOVE ACCESSIBLE CEILINGS OR WITHIN REACH FROM ACCESS PANELS IN THE CEILING, 3) CONTRACTOR SHALL VERIFY SERVICE CLEARANCES & REMOVAL SPACE FOR ALL EQUIPMENT.
- L UNITS ABOVE FINISHED CEILINGS: SECONDARY DRAIN PAN BENEATH ENTIRE UNIT: FLOAT LEVEL MICROSWITCH TO STOP UNIT IF CONDENSATE ACCUMULATES.
- M EMERGENCY POWER: THE FOLLOWING SYSTEMS SHALL BE SERVED BY THE EMERGENCY POWER SOURCE: HEAT TAPE, LIFE SAFETY DEVICES, IE, SMOKE DAMPER, FP FLOW SWTCH(ES) & TAMPERSWITCH(ES).

*APPLICABLE THROUGHOUT PROJECT

	;	SINGL	E INL	ET TE	RMINAL UN	IT W/HW	/ REH	EAT	SCH	EDULE					
	CFM INLET TOTAL DISCHARGE HEATING PERFORMANCE														
UNIT TAG	MAX	MIN.	DIA. (IN.) SIZE	MAX APD (IN.)	SOUND POWER LEVEL (DB) AT 1" SP	CFM (MAX.)	MIN. MBH	LAT (F)	GPM	MAX. AIR PD (IN.) HWC	DETAIL	REMARKS			
T-1	455	145	8	.52	51	320.00	15	98	1.5	.51	11/M-6	1 - 6			
T-2	980	235	10	.62	48	690.00	30	95	3	.61	11/M-6	1 - 6			
T-3	340	100	6	.26	54	240.00	10	93	1	.26	11/M-6	1 - 6			
T-4	480	145	8	.52	51	340.00	15	95	1.5	.51	11/M-6	1 - 6			
T-5	660	145	8	.52	51	465.00	20	94	2	.51	11/M-6	1 - 6			
T-6	460	145	8	.52	51	325.00	15	97	1.5	.51	11/M-6	1 - 6			
T-7	145	75	5	.08	54	105.00	5	98	.5	.07	11/M-6	1 - 6			
T-8	260	100	6	.26	54	210.00	10	98	1	.26	11/M-6	1 - 6			
T-9	300	100	6	.26	54	210.00	10	98	1	.26	11/M-6	1 - 6			
T-10	1000	235	10	.62	48	700.00	30	94	3	.61	11/M-6	1 - 6			

- 1. MAX AIR PRESSURE DROP AT MAX COOLING CFM.
- 2. NC @ MAX CFM, 3RD OCTAVE BAND, PLUS ASSUMPTIONS BY ENVIRO-TEC.
- 3. INLET FLEXIBLE CONNECTION: 3' (MIN) STRAIGHT INTO UNIT.
- 4. EAT = 55 DEG. F.
- 5. EWT = 180 DEG. F. 6. MAX WATER PRESSURE DROP = 5 FT.

AIR HANDLING UNIT SCHEDULE

														,		יורוו	DEIN	3 014	11 0	CHLD	OLL														
			CFM				FAN				C	OOLING	PERFO	RMANC	E						HEATING PE	RFORMAN	CE		FILT	TERS		0144		UN	IT MOE	ULES			
UNIT	CONTROL		0	4	ESP		MOTOR	7	MINI EACE	EAT (E)	LAT (E)	MBH (G	ROSS)		СΜ/Т	МТР	MAX	. PD	E\A/T	MAX.		PREHEAT	COIL				ENTRY	SMK. DET.	ы∧и	CLIVA	/ LNA/		DACE	DTI	REMARKS
TAG	NOTE TO	SA	MIN,.	MAX.	(IN.)	HP	VOLTS	PHS	MIN. FACE AREA (SF)		DB/WB	TOTAL	SENS.		(F)	WTR (F)	WATER (FT.)	AIR (IN.)			MIN. FACE AREA (SF)	EAT/LAT (F)	GPM	MX. AIR PD (IN.)	TYPE	AREA (SF)	PD (IN.)	RMK 4	F/	COIL		FMB	BASE RAIL	DIL.	KEWAKKS
AHU-1	VAV	5,000	1000	1000	3.00	7.5	208	3	9.98	80/67	55/54	193	137	39.0	44	10.0	12	0.60	180	2	9.19	45/78	18.0	0.15	RMK. 5	13.9	0.29	1	V 2	X	X	X	X	7/M-7	1 - 10
AHU-2	CV	10,000	450	450	0.75	7.5	460	3	20.81	77/60	47.9/47.8	326.30	318.40	65.3	44	10.0	12	0.75	180	2	20.81	45/95	36.0	0.15	RMK. 5	33.33	0.15	1	Н	X	X		X	14/M-7	1-6, 9

1. A) SEE DETAILS FOR UNIT ARRANGEMENTS. COILS SELECTED

VARIABLE FREQUENCY DRIVE.

- ON A 0.0 FOULING FACTOR. VIB. ISOL. TO BE SEISMIC RATED IF CALL-ED FOR ELSEWHERE IN PLANS. CONTROL VA. MAX. PD = 12'. CNTRL. VA. SHALL SEAT AGAINST MAX. SYSTEM PRESS. MC SHALL VERIFY SERVICE CLEARANCES FOR SUBSTITUTIONS, B) OA MIN. = BLDG. PRESSURIZATION MIN., OA MAX = CODE, C) CV = CONSTANT VOLUME, VAV = VARI- 4. NUMBER OF DUCT MOUNTED SMOKE DETECTORS ABLE AIR VOLUME, SZVAV = SINGLE ZONE VARIABLE AIR VOLUME, CVVFD = CONSTANT VOLUME, ASSOCIATED W/THIS UNIT
- 2. WALL MTD. T'STAT(S). ABBREVIATIONS: AFB = ANGLE FLTR. BOX, FMB = FLTR. MXNG. BOX.
- 3. MFR'S FAN DATA INCLUDES FAN CASING. ESP IN SCHEDULE INCLUDES ALL PRESSURE DROPS EXTERNAL TO UNIT. UNIT PD INCLUDES ALL ITEMS INTERNAL TO UNIT: CLEAN FILTERS (VAV = DIRTY), COILS, ETC. TSP = ESP+UNIT PD.
- FILTER CASING PRESSURE DROP INCLUDED IN FILTER PRESSURE DROP.
- 5. FILTERS: 2" TK. PLTD.

		GR	ILLE & D	IFFU	SER S	CHEC	ULE		
SYM	TYPE	USE	CFM RANGE	NECK SIZE	OVER- ALL SIZE	DMPR	FINISH	FRAME	REMARKS
A	LOUVER FACE	SUPPLY 4-WAY	SEE PLANS & RMK 5	RMK 5	RMK 4	OBD	OFF WHITE	RMK 3	1-6
BT-	PERF.	RETURN/ EXHAUST	SEE PLANS & RMK 6	RMK 7	RMK 4	RMK 9	OFF WHITE	RMK 3	1-4, 7-10
BS-	PERF.	RETURN/ EXHAUST	SEE PLANS & RMK 6	RMK 7	RMK 4	RMK 9	OFF WHITE	RMK 3	1-4, 7-10
C-	SIDEWALL	SUPPLY	SEE PLANS	SEE PLANS	RMK 4	OBD	RMK 12	SEE PLANS	1-4, 11-13
D-	SIDEWALL	RETURN/ EXHAUST	SEE PLANS	SEE PLANS	RMK 4	RMK 9	RMK 12	SEE PLANS	1-4, 9, 12, 13
E	EGGCRATE	EXH, RA, OA	SEE PLANS	SEE PLANS	RMK 4	RMK 9	OFF WHITE	S	1-4, 7, 14
G	DRUM	SUPPLY	SEE PLANS	SEE PLANS	W+2.75" H+2.5"+/-	OBD	RMK 16	DUCT MTD	1, 11, 15, 16
J	LOUVER FACE	SUPPLY 1-WAY	SEE PLANS & RMK 5	RMK 5	RMK 4	OBD	OFF WHITE	RMK 3	1-6
K	LOUVER FACE	SUPPLY 2-WAY	SEE PLANS & RMK 5	RMK 5	RMK 4	OBD	OFF WHITE	RMK 3	1-6
L	LOUVER FACE	SUPPLY 2-CRN	SEE PLANS & RMK 5	RMK 5	RMK 4	OBD	OFF WHITE	RMK 3	1-6
M	LOUVER FACE	SUPPLY 3-WAY	SEE PLANS & RMK 5	RMK 5	RMK 4	OBD	OFF WHITE	RMK 3	1-6
PS	HEAVY SIDEWALL	RETURN	SEE PLANS	SEE PLANS	RMK 4	NO	OFF WHITE	S	1-4, 12, 17
R	ROUND STEEL	SUPPLY	SEE PLANS	RMK 5	-	OBD	RMK 16	RMK 3	1 - 3, 6

REMARKS

- 1. SCHEDULE IS GENERAL, SOME MAY NOT BE USED. PAINT ALL INSIDE VISIBLE SURFACES FLAT BLACK.
- 2. SYMBOL EXPLANATION:
- XXX/CFM = SYMBOL, FRAME (RMK 3), NECK (RMK 5,7)/CFM FRAME TYPES: T = T-BAR
- S = FLUSH SURF. MTD.. E = DUCT MOUNTED: V-BEVELED PLASTER FRAME FOR DROP SURF. (TYPE "A" DIFFUSER) D = DROPPED FRAME CEILING MOUNTING.
- NOTE: VERIFY FRAME/CEILING COMPATIBILITY. 4 OVERALL SIZE: LAY-IN = 2'x2'. OTHER GRILLES = NECK + 2"+/-

4. UVL	IVALL SIZE.		2 X2 , OTHER	GRILLES - NECK	Z 1/
5. LOU	VER FACE	SUPPLY N	ECK SIZES		
NO.	ROUND	CFM	NO.	SQUARE	CF
	NK SIZE			NK SIZE	
Α	6"	100	Н	6x6	12
В	8"	175	1	9x9	28
C	10"	275	J	12x12	50
D	12"	400	K	15x15	78
E	14"	535	L	18x18	11
F	16"	700	M	21x21	15
G	18"	885	N	24x24	20
NOTE:	VERIFY CF	M / NECK	SIZE.		

6 ADJUSTABLE: HORIZONTAL/VERTICAL - "PIANO HINGE" DEVICE

U. ADU	OOTABLE. I	ONZON	AL VENTIONE	- ITANO I IINOL I	DEVICE
7. "B" 8	<u>% "E" EXH/R</u>	ETURN N	ECK SIZES ("E	" = SQ. NK. ONLY)	
NO.	ROUND	CFM	NO.	SQUARE	C
	NK SIZE			NK SIZE	
Α	6"	100	G	8x8	22
В	8"	175	Н	10x10	34
C	10"	275	1	12x12	50
D	12"	400	J	14x14	68
Е	14"	535	K	16x16	88
F	16"	700	L	18x18	11
NOTE:	VERIFY		M	22x22	16
CFM /	NECK SIZE.		N	22x46	26

UNIT TAG

EF-1

EF-6

EF-8

ELECTRICAL 109

PUMP ROOM

VF-1 COMPUTER ROOM 2 KEYED SWITCH IN SUPPLY ROOM 105

VF-2 COMPUTER ROOM 3 KEYED SWITCH IN SUPPLY ROOM 105

EF-7 HYDRAULIC ROOM 4

- 8. NO NECK SIZE INDICATES NON-
- DUCTED, LAY-IN PANEL.
- OBD IF USED AS EXHAUST. 10. ALL ALUM. CONSTRUCTION (INCLUDING
- BACKPAN) IF SHOWN ON PLANS. 11. VOLUME EXTRACTOR WHERE
- SHOWN ON PLANS. 12. PAINT TO MATCH WALL.
- 13. VERTICAL FRONT BLADES. 14. IF LAY-IN CEILING: EXACT GRILLE SIZE
- BY MFGR., OMIT SCREW HOLES. 15. VERTICAL FRONT BLADES.
- 16. FINISH SUITABLE FOR PAINTING 17. 16 GAGE FRAME, 14 GAGE BLADES, 38
- DEGREE HORIZ. BLADE ANGLE. SUPPORT BARS 6" O.C. (MAX).

NA

WA

NΑ

NA

NA

NO

NO

NO

FAN CONTROLS SCHEDULE DAMPER AREA SERVED CONTROLS REMARKS INTERLOCK(S) TOILETS BUILDING MANAGEMENT SYSTEM NO NA EF-2 HYDRAULIC ROOM 1 NA HYDRAULIC ROOM 2 WA EF-4 HYDRAULIC ROOM 3 NA EF-5 MECHANICAL 135

TSTAT

				F	AN SO	CHEDU	LE					
UNIT TAG	AREA SERVED	CFM	ESP (IN.)	FAN RPM	SONES	DRIVE	HP (W)	VOLTS	PHASE	TYPE	DETAIL	REMARKS
EF-1	TOILETS	375	0.25	1641	7.9	DIRECT	1/6	115	1	IL	2/M6	1 - 5
EF-2	HYDRAULIC ROOM 1	2000	.15	1146	11.1	BELT	1/3	115	1	RE	3/M6	1, 3-5
EF-3	HYDRAULIC ROOM 2	2000	.15	1146	11.1	BELT	1/3	115	1	RE	3/M6	1, 3-5
EF-4	HYDRAULIC ROOM 3	2800	.15	770	9.0	BELT	1/3	115	1	RE	3/M6	1, 3-5
EF-5	MECHANICAL 135	890	.25	1242	7.0	DIRECT	1/4	115	1	IL	2/M6	1 - 5
EF-6	ELECTRICAL 109	375	.15	1421	6.3	DIRECT	1/20	115	1	SE	1/M6	1 - 5
EF-7	HYDRAULIC ROOM 4	2500	.2	942	9.4	BELT	1/3	115	1	IL	2/M6	1, 3-5
EF-8	PUMP ROOM	375	.15	1421	6.3	DIRECT	1/20	115	1	SE	1/M6	1 - 5
VF-1	COMPUTER ROOM 2	1300	.25	1294	10	BELT	1/4	115	1	IL	2/M6	1, 3-5
VF-2	COMPUTER ROOM 3	3950	.25	1036	14.4	BELT	3/4	460	3	IL	2/M6	1, 3-5

- 1. TYPES: RE = CENTRIFUGAL ROOF EXHAUSTER, IL = INLINE CENTRIFUGAL, SE = SIDEWALL EXHAUSTER 2. SOLID STATE SPEED CONTROL SWITCH ON FAN OR NEARBY FOR ALL DIRECT DRIVE SINGLE PHS MOTORS.
- 3. VERIFY FAN INLET/OUTLET SIZE, TRANSITION TO FIRST DUCT SIZE IF NECESSARY.

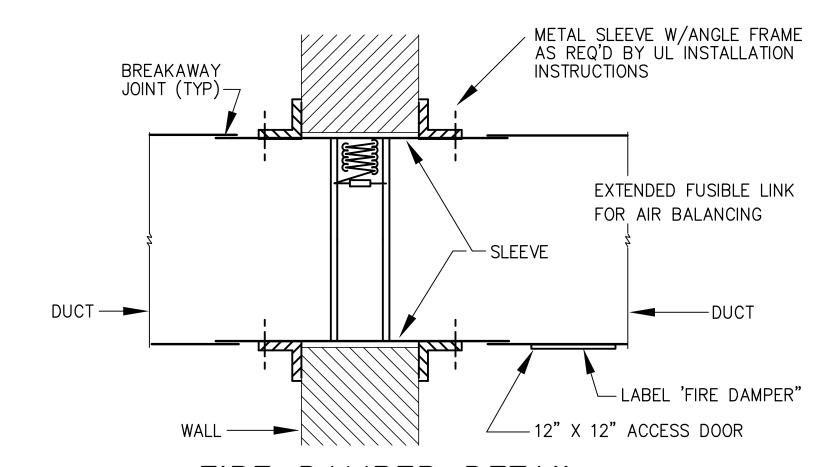
IAQ DRAIN PAN.ECONOMIZER CYCLE.

8. 2-WAY CONTROL VALVES, SEE DETAIL

9. 3-WAY CONTROL VALVES, SEE DETAIL

10. VARIABLE FREQUENCY DRIVE.

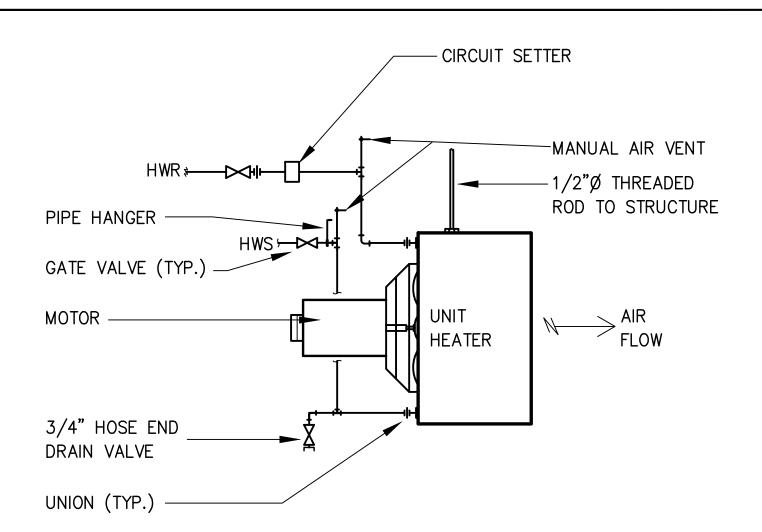
- 4. DISCONNECT SWITCH (NEMA TYPE 3R OR PLUG) BY MFGR. FOR ALL SINGLE PHASE MOTORS (U.N.O.). 5. LISTED SONES IS MAX ALLOWED. FANS MUST BE AMCA CERTIFIED FOR AIR AND SOUND. CERTIFICATION
- MUST BE PROVIDED WITH SUBMITTAL.



FIRE DAMPER DETAIL (IN AIR STREAM) TYPE "A" M2 M5

NOTES: 1. FD"A" IS USED FOR LOW PRESSURE DUCT PENETRATIONS THRU FIRE-RATED WALLS (SEE SPECS FOR "LOW PRESSURE DUCT" DEFINITION). 2. FIRE-RATED WALLS ARE SHOWN ON PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE NUMBER AND SIZE OF ALL DUCT PENETRATIONS THRU FIRE-RATED WALLS. 3. PLAN SYMBOL = 4. THIS TYPICAL FIRE DAMPER DETAIL IS GENERIC GUIDANCE ONLY. INSTALL FIRE DAMPER IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS. DO NOT VARY FROM THOSE INSTRUCTIONS IN ANY WAY. DO NOT FIRE STOP THE GAP BETWEEN THE FIRE DAMPER SLEEVE AND THE PENETRATION UNLESS SPECIFICALLY REQUIRED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

	SHEET TITLE: MECHANICAL	SC	CHEDUL	LES	M-5
McKNIGHT · SMITH WARD · GRIFFIN ENGINEERS, INCORPORATED PO Box 240826 · 4223 South Boulevard	TALLEY & SMITH ARCHITECTURE INC. P.O. BOX 518 SHELBY, NC 28151-0518 409 EAST MARION ST. SHELBY, NC 28150	N	EPARTMENT OF A RING CAME	١E	NAVAL FACILITIES ENGINEERING COMMAND CORPS BASE JEUNE, NORTH CAROLINA
Charlotte, NC 704/527-2112 MSWG# 12-014	DES. DAC DR. MHK CHK. JCC SUBMITTED BY: DESIGN DIR.		BUIL	.DIN	GHT SIMULATOR FACILITY G AS320, MCB, CLNC LEJEUNE, NORTH CAROLINA
17250 IIII CO CHAMPILITI	APPROVED: DATE SATISFACTORY TO: DATE	SIZE	code ident.	.	NAVFAC DRAWING NO. 60010506 CONST. CONTR. NO. N40085-11-B-0207
07-16-17		SCALE:	NOTED	SPEC.	05-11-0207 SHEET 24 OF 34



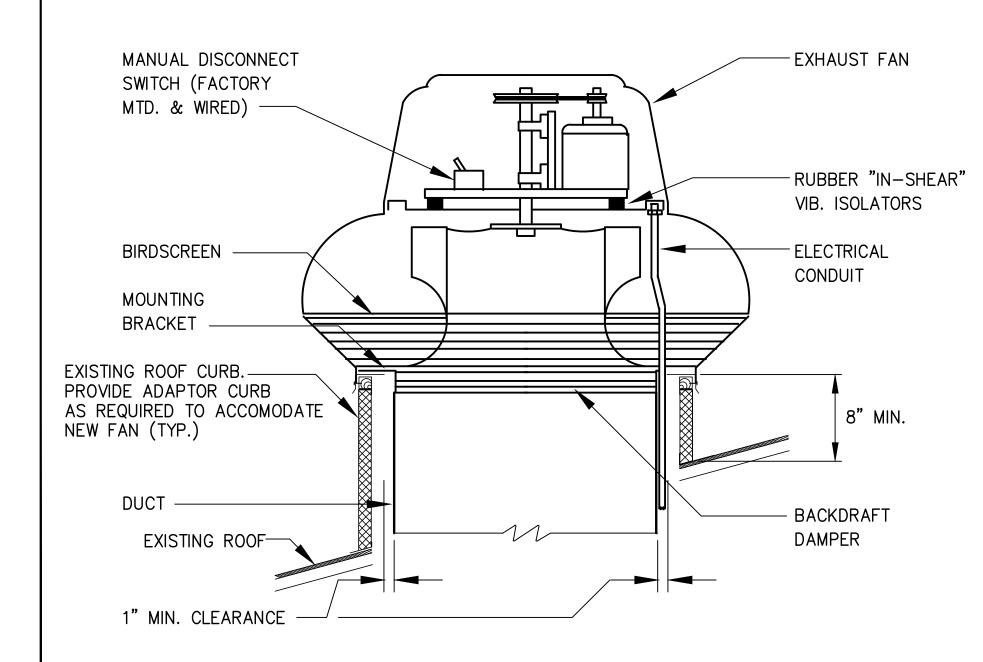


AUXILIARY OPERATING JACK SHAFT 120V AC OPERATOR/ ACTUATOR FUSIBLE LINK W/LOCK	SLEEVE	DUCT	SEAL OR CAULK @ ALL JOINTS & CRACKS AIRTIGHT FUSIBLE ROD DAMPER FRAME NEGATOR SPRING DUCT/SLEEVE CONNECTION, NOTE 2
INSULATION (SEE S	SPECS.)		MOUNTING ANGLES

NOTES:

- 1. OPENINGS IN FLOOR OR WALL SHALL BE 1/8"/FT LARGER THAN OVERALL SIZE OF FIRE DAMPER AND SLEEVE ASSEMBLY.
- MINIMUM = DIAMETER + 1/4"; MAXIMUM = 1/8"/FT +1" 2. SLEEVE GAUGE SHALL BE AT LEAST EQUAL TO THE GAGE OF THE DUCT AS DEFINED BY THE APPROPRIATE SMACNA DUCT CONSTRUCTION STANDARD, AS DESCRIBED IN NFPA90A, WHEN ONE OR MORE OF THE FOLLOWING DUCT SLEEVE CONNECTIONS ARE USED (PLAIN S SLIP,
- HEMMED S SLIP, STANDING S SLIP, REINFORCED S SLIP, INSIDE SLIP JOINT, DOUBLE S SLIP, (BREAKAWAY CONNECTIONS)) 3. IF ANY OTHER DUCT SLEEVE CONNECTIONS ARE USED, THE SLEEVE SHALL BE MINIMUM 16 GAGE FOR DAMPERS UP TO 36"W X 24"H AND
- 14 GAUGE IF WIDTH EXCEEDS 36" OR HEIGHT EXCEEDS 24". 4. MOUNTING ANGLES SHALL BE MINIMUM OF 1 1/2" X 1 1/2" X 14 GAUGE AND BOLTED, TACK WELDED, RIVETED OR SCREWED TO SLEEVE AT MAXIMUM SPACING OF 12" AND WITH MINIMUM OF TWO CONNECTIONS IN EACH SIDE, TOP AND BOTTOM. MOUNTING ANGLES SHALL OVERLAP WALL A MINIMUM OF ONE INCH ON ALL FOUR SIDES.
- 5. DAMPER SHALL BE BOLTED, TACK WELDED, RIVETED OR SCREWED TO SLEEVE ON SAME SPACING AS ANGLES.
- 6. INSTALLATION AND MANUFACTURER RECOMMENDATIONS COMPLY WITH UNDERWRITER LABORATORIES SAFETY STANDARDS 555. 7. PROVIDE ACCESS DOOR IN DUCT FOR INSPECTION (FIELD INSTALLED BY MECHANICAL CONTRACTOR).
- 8. FUSIBLE LINK SHALL MELT @ 165°F, CAUSING DAMPER TO CLOSE AND LOCK. 9. LOCATE DAMPER & DAMPER OPERATOR ABOVE ACCESSIBLE CEILING IF POSSIBLE; IF NOT, PROVIDE ACCESS PANELS AT
- INACCESSIBLE CEILING, COORDINATE LOCATIONS.
- 10. DETAIL IS APPLICABLE FOR VERTICAL OR HORIZONTAL INSTALLATION.
- 11. DAMPER SHALL BE CLASS II.

COMBINATION FIRE/SMOKE DAMPER DETAIL M2 M6 NTS





BOI Burner Data Unit Tag | Capacity (MBH) Oil Gas Amp Vo Gross GPH MBH - 750 8.8 B-2 | 750 | 638 | - | 750 | 8.8 | 1°

- 2. PROVIDE CONDENSING PROTECTION VALVE TO BE INSTALLED BETWEEN THE BOILER LOOP AND THE SYSTEM LOOP 3. PROVIDE PROPANE TO NATURAL GAS CONVERSION KIT FOR FUTURE CHANGEOVER. KIT IS TO BE INSTALLED BY FACTORY

ILE	R SCI	HEDULE					
7		Working			Туре	Remarks	
/olt	Phase	Pressure	GPM	LWT			
		PSI		(F)			
15	1	160	55	180	COPPER FIN TUBE	1-3	
15	1	160	55	180	COPPER FIN TUBE	1-3	

1. OUTDOOR VENT CAP TO BE PROVIDED BY BOILER MANUFACTURER

AUTHORIZED SERVICE REPRESENTATIVE.

COMPUTER ROOM 3 UNIT SCHEDULE Electric Reheat Coil Cooling Performance Humidifier Indoor Unit Electrical Unit Tag Area Served HP Volt Phase EAT MBH MBH Amb. KW Steps Volts Phase Volt Phase #/HR Volt Phs FLA WSA OPD Volt DB/RH Total Sens.

CRAH/CRAC-1 THRU CRAH/CRAC-4 | COMPUTER ROOM 3 | 9600 | 0.5" | 5 | 460 | 3 | 75/45 | 219.2 | 199.4 | 95 | 25 | 3 | 460 | 3 | 460 | 3 | 22 | 460 | 3 | 59.5 | 72.5 | 80 | 460

1. "AHU ELECTRICAL" IS ENTIRE UNIT

3. PROVIDE UNIT TO UNIT COMMUNICATIONS TO ALLOW FOR LEAD/LAG OPERATION - 2 UNITS ON, 2 UNITS OFF.

2. LOW AMBIENT CONTROL 4. UNITS INSTALLED IN DOWNFLOW CONFIGURATION.

REVISIONS

ADDED FIRE DAMPERS & FIRE/SMOKE DAMPERS 6/19/12

														FAN	COIL SC	HEDUL	E														
Unit	Area Served	CFM	ESP		Moto	or				Со	oling Pe	erformanc	e					Heatin	g Perfori	mance		Fi	lters	Vib.	(Construct	ion	P	ipe Sizes	(in)	Remarks
Tag			(in.)	Qnty	FLA	Volts	Phs	Min. Face	EAT	MBH	MBH	GPM I	EWT	WTR	Max. Water	Min. Face	EAT	LAT	GPM	EWT	Max. Water	Туре	Face	Isol.	Arr.	In-	Out-	CHWS/	HWS/	CD w/]
					(ea)			Area (sf)	DB/WB	Total	Sens.		(F)	(F)	PD (ft.)	Area (sf)	(F)	(F)		(F)	PD (ft.)		Area (sf)			let	let	CHR	HWR	Trap	
FC-1	MAINTENANCE 118	510	.02	1	1.2	115	1	1.6	80/67	13.4	9.9	2.7	44	10	12	1.6	60	104	2.8	180	12	RMK 7	2.07	NONE	HE	BSL	FQC	3/4"	3/4"	1.25"	1-4
FC-2	MAINTENANCE 110	660	.35	1	3.4	115	1	1.6	80/67	18.3	13.9	3.9	44	10	12	1.6	60	95.6	1.7	180	12	RMK 7	2.07	NONE	HC	BDC	FDC	1"	3/4"	1.25"	1-4

- 1. UNIT MTD. DISC. SWITCH BY MFGR.
- ABRV.: HE = HORIZ. EXPOSED (CABINET), VE = VERT. EXPOSED (CAB.), HC = HORIZONTAL CONCEALED, HR = HORIZONTAL RECESSED. FDC = FRONT DUCT COLLAR, FQG = FRONT QUAD GRILLE, BSL = BOTTOM STAMPED LOUVER, BDC = BACK DUCT COLLAR.
- 2. FIBROUS MEDIA FILTERS (TA) MOUNTED INSIDE UNIT. 3. 2-WAY HW & 2- CHW CONTROL VALVES.
- 4. UNIT MTD. 4-POSITION SWTCH: 3 SPEEDS + OFF
- WALL MTD. T'STAT W/TAMPER-PROOF GUARD.

	PUMP SCHEDULE														
UNIT TAG	SERVICE	GPM	HEAD (FT.)	RPM	EFF. %	HP	VOLTS	PHASE	TYPE	REMARKS					
HWP-1	BLDG HW	63	45	1750	61.4	2	460	3	END SUCTION	1 - 2					
HWP-2	BLDG HW	63	45	1750	56.2	2	460	3	INLINE	1 - 2					
HWP-3	BOILER B-1	63	25	1750	55.6	1	460	3	INLINE	1, 3					
HWP-4	BOILER B-2	63	25	1750	55.6	1	460	3	INLINE	1, 3					
CHWP-1	CHILLER	224	30	1750	72.3	3	460	3	END SUCTION	1 - 2					
CHWP-2	CHILLER	224	30	1750	72.3	3	460	3	END SUCTION	1 - 2					
CHWP-3	BLDG CHW	112	60	1750	64.3	5	460	3	END SUCTION	1 - 2					
CHWP-4	BLDG CHW	112	60	1750	64.3	5	460	3	END SUCTION	1 - 2					

 SUCTION DIFFUSER. 3. VARIABLE SPEED DRIVE FOR BALANCING PURPOSES. 2. VARIABLE SPEED DRIVE.

- HOT WATER UNIT HEATER SCHEDULE Horiz./ Height Detail Remarks Heating Performance Area Served HP | Volts | Phs | EAT | LAT | MBH | GPM | EWT | Max. Water | Vert. | To Top RMK 3 5/M6 MECHANICAL 135 | 543 | 1/20 | 115 | 1 | 60 | 84.4 | 14.3 | 1.5 | 180 HYDRAULIC ROOM 4 | 543 | 1/20 | 115 | 1 | 60 | 84.4 | 14.3 | 1.5 | 180 543 1/20 115 1 60 84.4 14.3 1.5 180 5 H
- 1. UNIT MTD. DISCONNECT.
- 2. TOP OF UNIT 6" +/- BELOW STRUCTURE.

COMPUTER ROOM UNIT SCHEDULE

Unit Tag	Area Served	CFM	ESP		Cooling Performance					Humidifi	er	Electric Reheat Coil			Pipe Connections			Unit Electrical					Remarks		
				EAT	MBH	MBH	GPM	P.D.	Amb.	Volt	Phase	#/HR	kW/	Steps	Volts	Phase	Cond.	CHW	Dom.	Volt	Phs	FLA	WSA	OPD	
				DB/RH	Total	Sens.		(Max)	Тетр.				Step						Water						
SAH-1, SAH-2	SIMULATOR ROOM 1	11600	0.3"	75/45	381	305	66.4	12	95	208	3	22.1		-		-	1.25	3"	1/2"	208	3	45	56.3	50	1, 3
SAH-3, SAH-4	SIMULATOR ROOM 2	6060	0.3"	75/45	114.6	105.5	20.5	12	95	208	3	11.0	-	-	-	-	1.25	2"	1/2"	208	3	22.5	28.2	30	1, 3
CAH-1, -2	COMPUTER ROOM 2	5250	0.3"	75/45	82.3	82.3	14.8	12	95	460	3	11.0	10	1	460	3	1.25	1.5"	1/2"	460	3	23	28.8	30	1 - 3
1 LINIT IC AVAIL	UNIT IS AVAILABLE MITH OR MITHOUT DISCONNECT. 3. DROVIDE UNIT TO UNIT COMMUNICATIONS TO ALLOW FOR LEADUAC OPERATION.																								

1. UNIT IS AVAILABLE WITH, OR WITHOUT DISCONNECT. 3. PROVIDE UNIT TO UNIT COMMUNICATIONS TO ALLOW FOR LEAD/LAG OPERATION.

2. UNIT INSTALLED IN DOWNFLOW CONFIGURATION.

SEAL LEAK

DISCHARGE CLASS CLASS PRESSURE TYPE

- BACKDRAFT DAMPER

— GRILLE (IF SHOWN ON PLANS)

NOTE 1 NOTE 2

DUCT CONSTRUCTION AND LEAK TEST SCHEDULE

DUCT PRESSURE CLASS

FAN WHEEL

FACTORY MTD.

HOUSING-

M2 M6 NTS

DISCONNECT SWITCH -

MOTOR-

EST SCH	EDULE					
DUCT						
LEAK	TEST	REMARKS		Unit	CFM	
PRESSURE	TYPE			Tag		Min.
NOTE 1	NOTE 2			-		Area
NOTE 1	NOTE 2		,			re Ante-Cate
NOTE 1	NOTE 2			HC-1	11600	8.3
NOTE 1	NOTE 2			HC-2	11600	8.3
NOTE 1	NOTE 2			HC-3	6060	6.2
NOTE 1	NOTE 2			по-3	0000	0.2
NOTE 1	NOTE 2			HC-4	6060	6.2
NOTE 1	NOTE 2			1. SLIP	AND DRIVE	CON
NOTE 1	NOTE 2					
NOTE 1	NOTE 2					

 DUCT TEST PRESSURE SHALL BE 90% OF DUCT PRESSURE CLASS 2. TEST PER SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL, FIRST EDITION.

WALL EXHAUST DETAIL

NOTE: MOUNT AS HIGH AS POSSIBLE UNLESS OTHERWISE NOTED

- 1 IN. WG. | + 1 IN. WG. | A | 6 | NOTE 1 | NOTE 2

HW COIL SCHEDULE Size Remarks Heating Performance . Face EAT LAT MBH GPM EWT Max. Water Max. Air Sizes WxHxD a (sf) (F) PD (ft.) PD (in.) 60 95 438.4 29.2 180 .3 2.0 40X30 1 29.2 180 .3 2.0 40X30 229 1.5 32X28 60 95 229 15.2 180 1.5 32X28

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND **EQUIPMENT METHOD OF COMPLIANCE**

ENERGY COST BUDGET

THERMAL ZONE: 3 ONSLOW COUNTY, NORTH CAROLINA OUTDOOR DESIGN CONDITIONS (F) - WINTER: 22.6, SUMMER: 91.5/77.4 (DB/WB)

INDOOR DESIGN CONDITIONS (F) - WINTER: 70, SUMMER: 75

BUILDING HEATING LOAD - CALCULATED: 485 MBH, INSTALLED: 1276 MBH

BUILDING COOLING LOAD - CALCULATED: 84 TONS, INSTALLED: 80 TONS

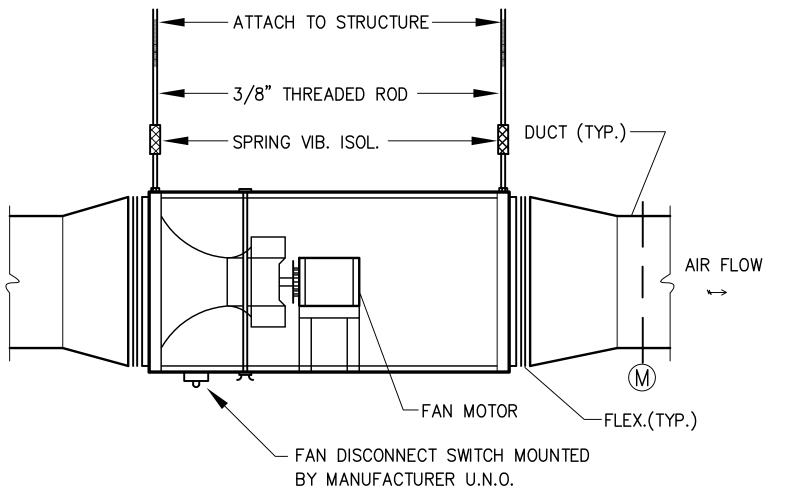
MECHANICAL SPACE CONDITIONING SYSTEM

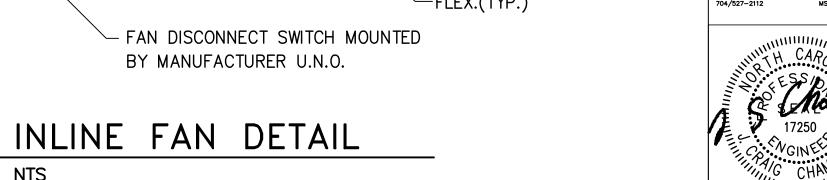
DESCRIPTION OF UNITS: REDUNDANT AIR-COOLED CHILLERS COOLING EFFICIENCY (ACTUAL/MIN. REQ'D): EER = 10.2/9.5, IPLV = 13.2/9.7 HEATING EFFICIENCY (ACTUAL/MIN. REQ'D): 82%/80%

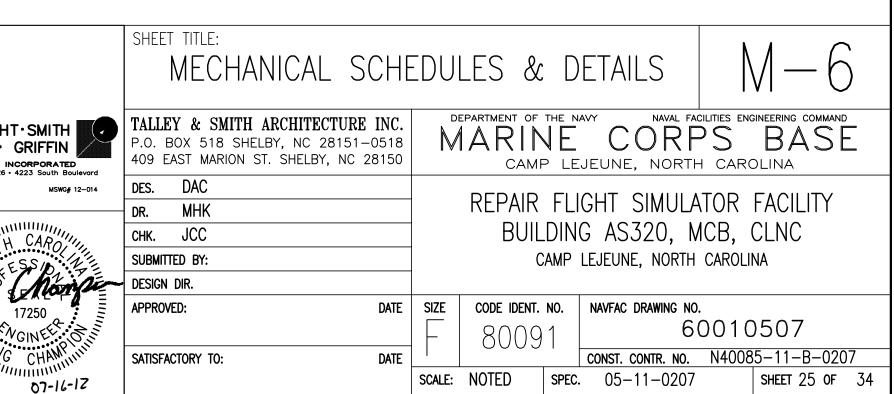
EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS) MOTOR HP: SPECS REQUIRE COMPLIANCE W/N.C. ENERGY CODE NUMBER OF PHASES: SPECS REQUIRE COMPLIANCE W/N.C. ENERGY CODE MIN. EFFICIENCY: SPECS REQUIRE COMPLIANCE W/N.C. ENERGY CODE MOTOR TYPE: SPECS REQUIRE COMPLIANCE W/N.C. ENERGY CODE NUMBER OF POLES: SPECS REQUIRE COMPLIANCE W/N.C. ENERGY CODE

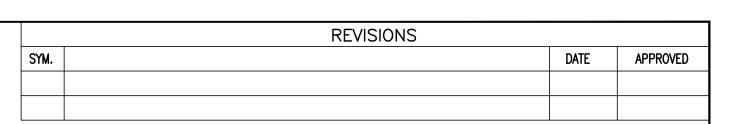
DESIGNER STATEMENT:

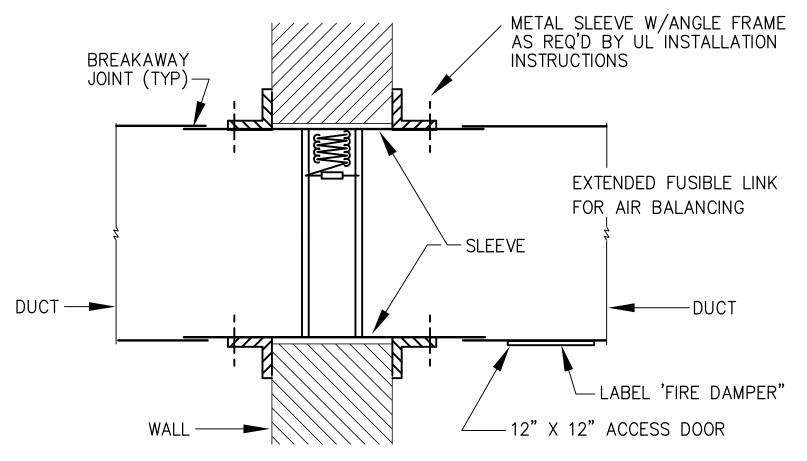
TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT REQUIREMENTS OF THE N.C. ENERGY CODE.





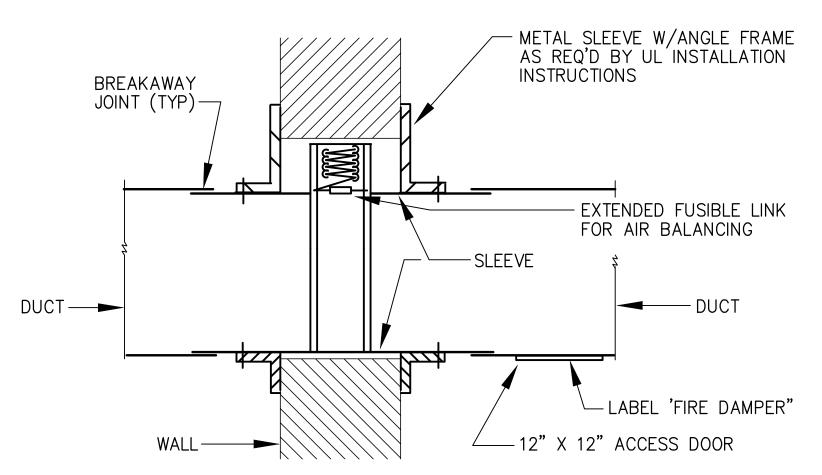






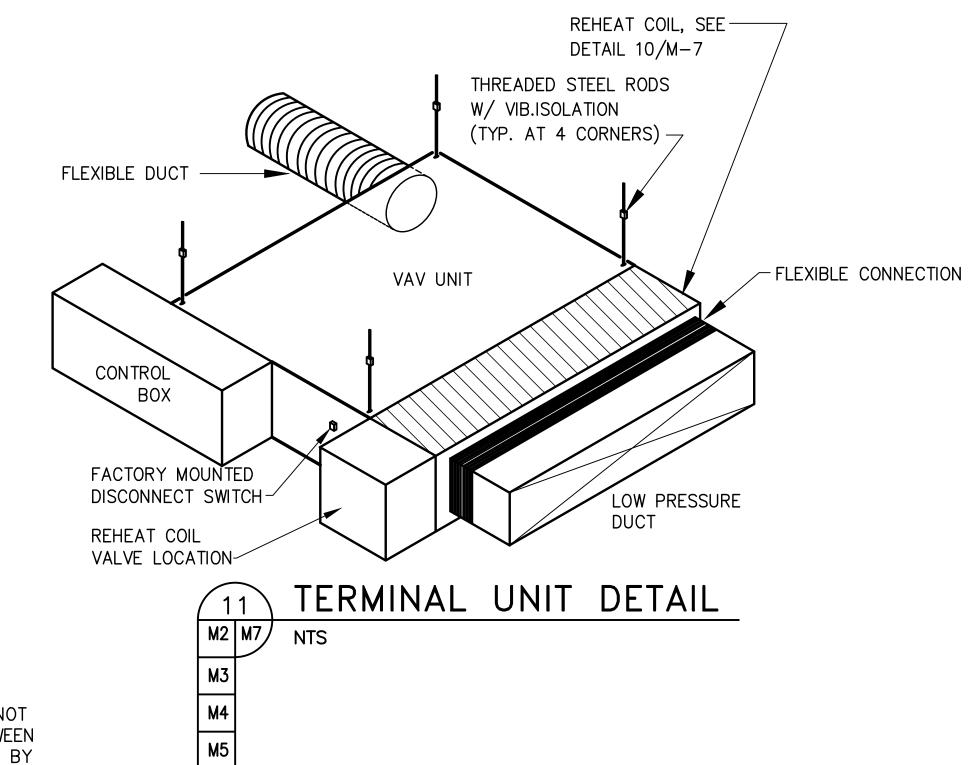
FIRE DAMPER DETAIL (IN AIR STREAM) TYPE "A"

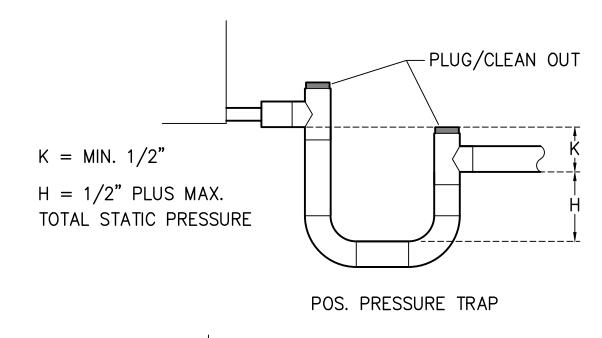
M2 M7 NTS NOTES: 1. FD"A" IS USED FOR LOW PRESSURE DUCT PENETRATIONS THRU FIRE-RATED WALLS (SEE SPECS FOR "LOW PRESSURE DUCT" DEFINITION). 2. FIRE-RATED WALLS ARE SHOWN ON PLANS. IT IS THE RESPONSIBILIT' OF THE CONTRACTOR TO DETERMINE THE NUMBER AND SIZE OF ALL DUCT PENETRATIONS THRU FIRE-RATED WALLS. 3. PLAN SYMBOL = 4. THIS TYPICAL FIRE DAMPER DETAIL IS GENERIC GUIDANCE ONLY. INSTALL FIRE DAMPER IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS. DO NOT VARY FROM THOSE INSTRUCTIONS IN ANY WAY. DO NOT FIRE STOP THE GAP BETWEEN THE FIRE DAMPER SLEEVE AND THE PENETRATION UNLESS SPECIFICALLY REQUIRED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

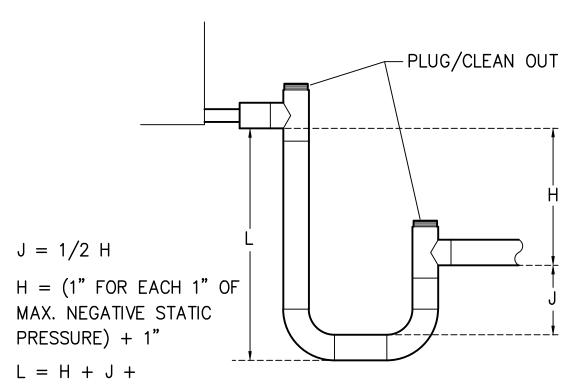


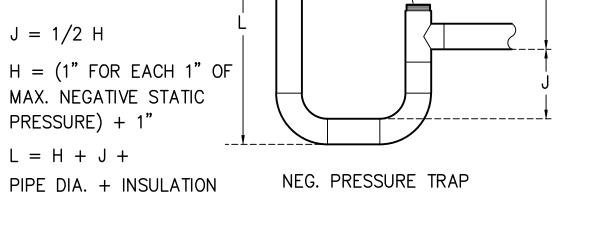
FIRE DAMPER DETAIL (OUT OF AIR STREAM) TYPE "B"

M2 M7 NTS NOTES: 1. FD"B" IS USED FOR MEDIUM PRESSURE DUCT PENETRATIONS THRU FIRE-RATED WALLS (SEE SPECS FOR "MEDIUM PRESSURE DUCT" DEFINITION). 2. FIRE-RATED WALLS ARE SHOWN ON PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE NUMBER AND SIZE OF ALL DUCT PENETRATIONS THRU FIRE-RATED WALLS. 3. PLAN SYMBOL = 4. THIS TYPICAL FIRE DAMPER DETAIL IS GENERIC GUIDANCE ONLY. INSTALL FIRE DAMPER IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION DETAILS. DO NOT VARY FROM THOSE INSTRUCTIONS IN ANY WAY. DO NOT FIRE STOP THE GAP BETWEEN THE FIRE DAMPER SLEEVE AND THE PENETRATION UNLESS SPECIFICALLY REQUIRED BY THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

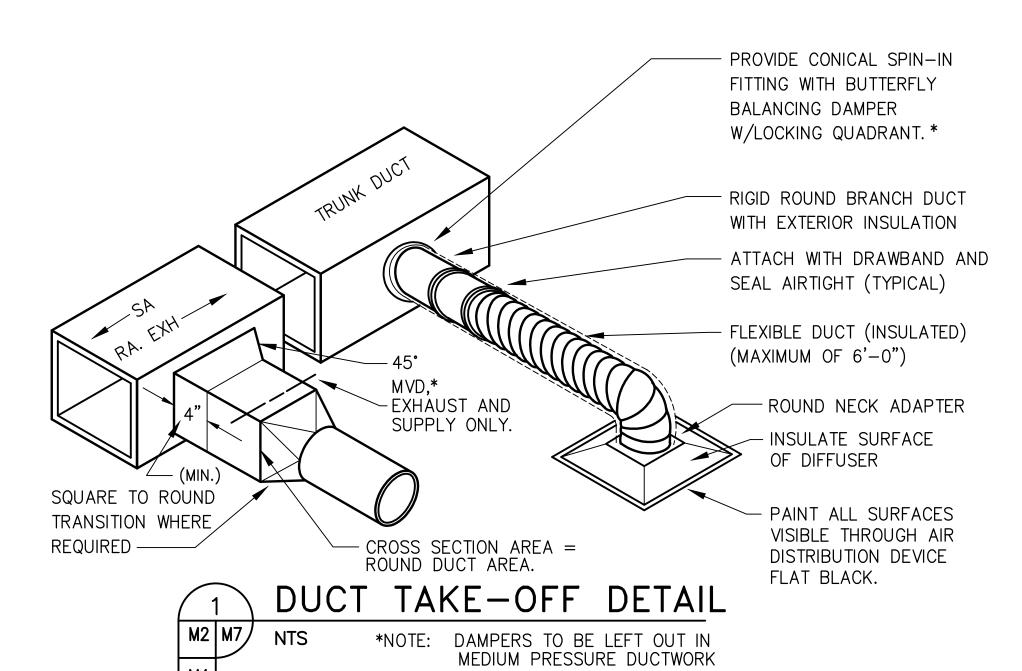


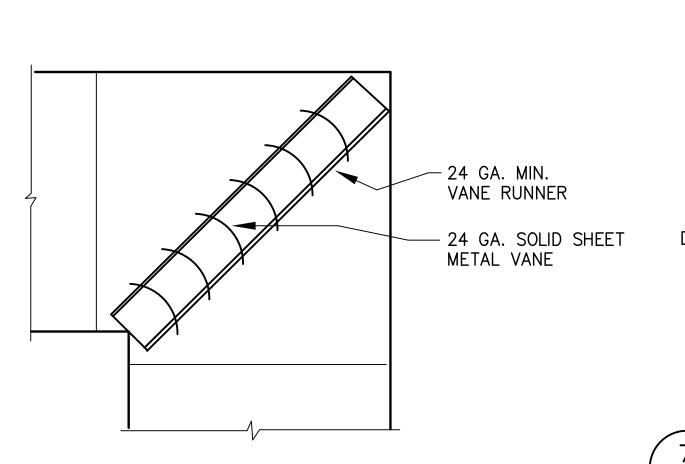




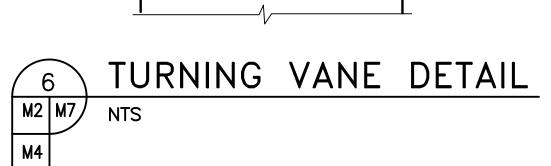








-TO ANGLES (TYP.)



1"STRAP —

SCREW (TYP.)

TO ANGLES (TYP.)

FLAT-OVAL DUCT -

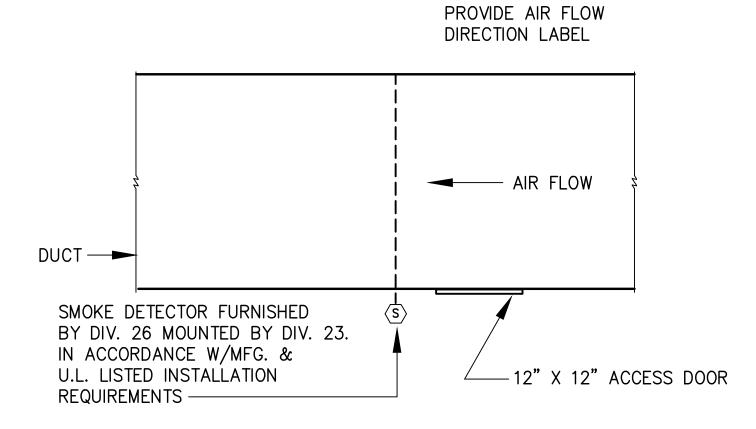
RECTANGULAR OR

DUCTS UP TO

- GALV. ALL—THREADED

ROD (TYP)

<u> 24" WIDTH</u>



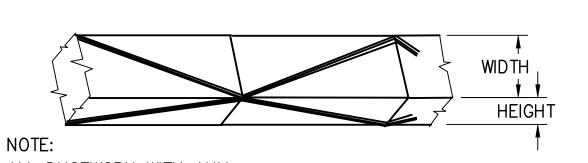


1" STRAP

(MAX)

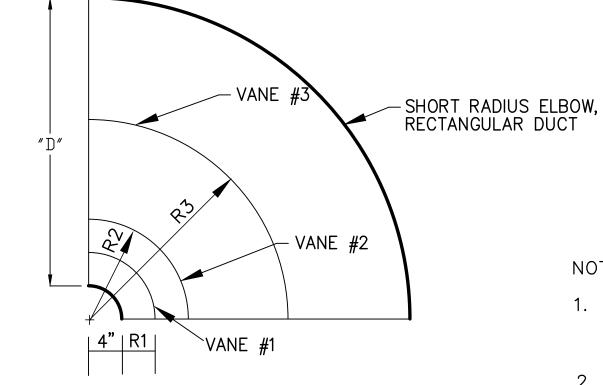
— GALV. ALL—THREADED ROD (TYP)

<u>ROUND</u>

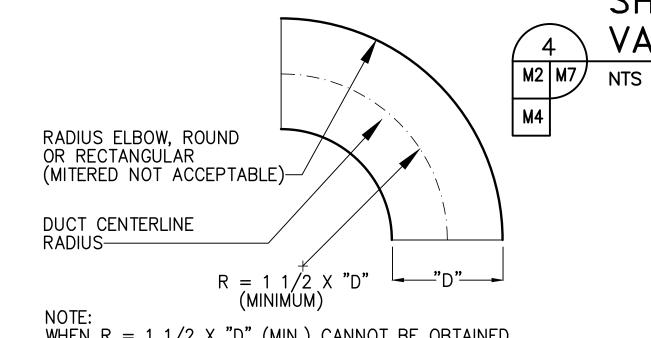


ALL DUCTWORK WITH ANY DIMENSION(WIDTH OR HEIGHT) OVER 24" SHALL HAVE ANGLE REINFORCING DIAGONAL ACROSS FACETHAT EXCEEDS 24". ANGLE SHALL BE 2" X 2" X 1/4" GALVANIZED SECURED TO DUCTWORK WITH SHEET METAL SCREWS 6" O.C.

DUCTWORK REINFORCING DETAIL M2 M7 NTS



SHORT RADIUS VANED ELBOW DETAIL



MEDIUM PRESSURE DUCTWORK

GALV .ANGLE —

DUCT

— GALV. ANGLE

__1" STRAP

1" HANGER

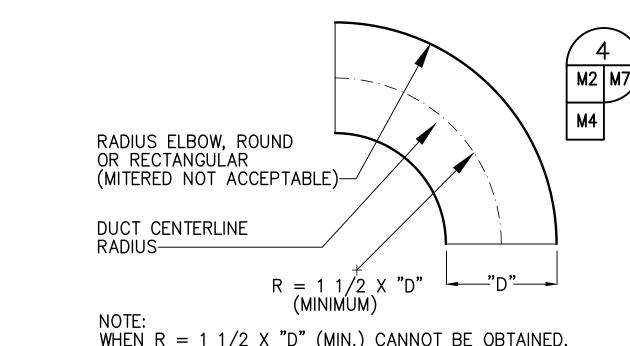
STRAP

DUCTS ABOVE

LOW PRESSURE DUCTWORK

25" WIDTH





WHEN $R = 1 \frac{1}{2} \times "D"$ (MIN.) CANNOT BE OBTAINED, CONSTRUCT ELBOW ACCORDING TO APPROPRIATE DETAIL.

RADIUS ELBOW DETAIL M2 M7 NTS

	CO	NSTR	UCTIC	N								
DUCT	NO.	VAI	VANE RADIUS (IN.)									
DEPTH "D" (IN.)	VANES REQ'D	R1	R2	R3	RADIUS "RT" (IN.)							
6-7	1	6 1/2	_	_	4							
8-12	1	7 1/2	_	_	4							
13-17	1	8 3/4	_	_	4							
18-24	2	7 1/2	13 1/2	_	4							
25-31	2	8	16	_	4							
32-40	2	8 1/2	18 1/2	_	4							
41-53	3	7 1/2	14	27	4							
54-66	3	8	16	32	4							
67-79	3	8 1/2	17 1/2	37	4							
80-92	3	8 3/4	19	41	4							

20

const. contr. no. N40085-11-B-0207

SHEET 26 OF 34

SHORT RADIUS ELBOW

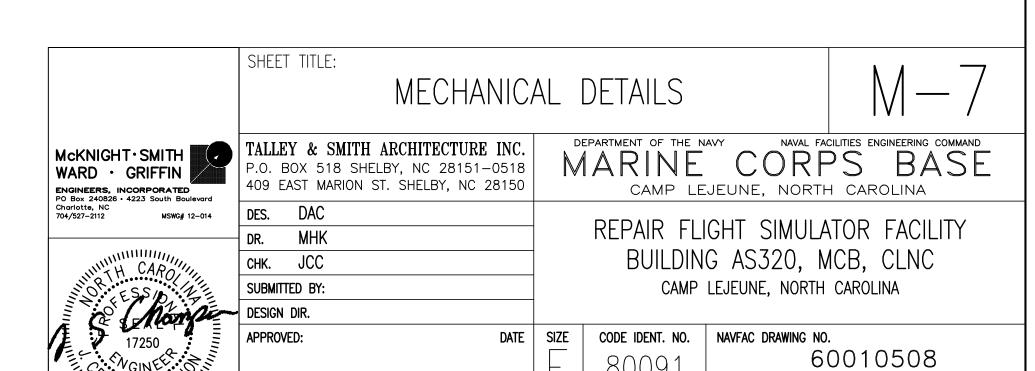
NOTES:

SATISFACTORY TO:

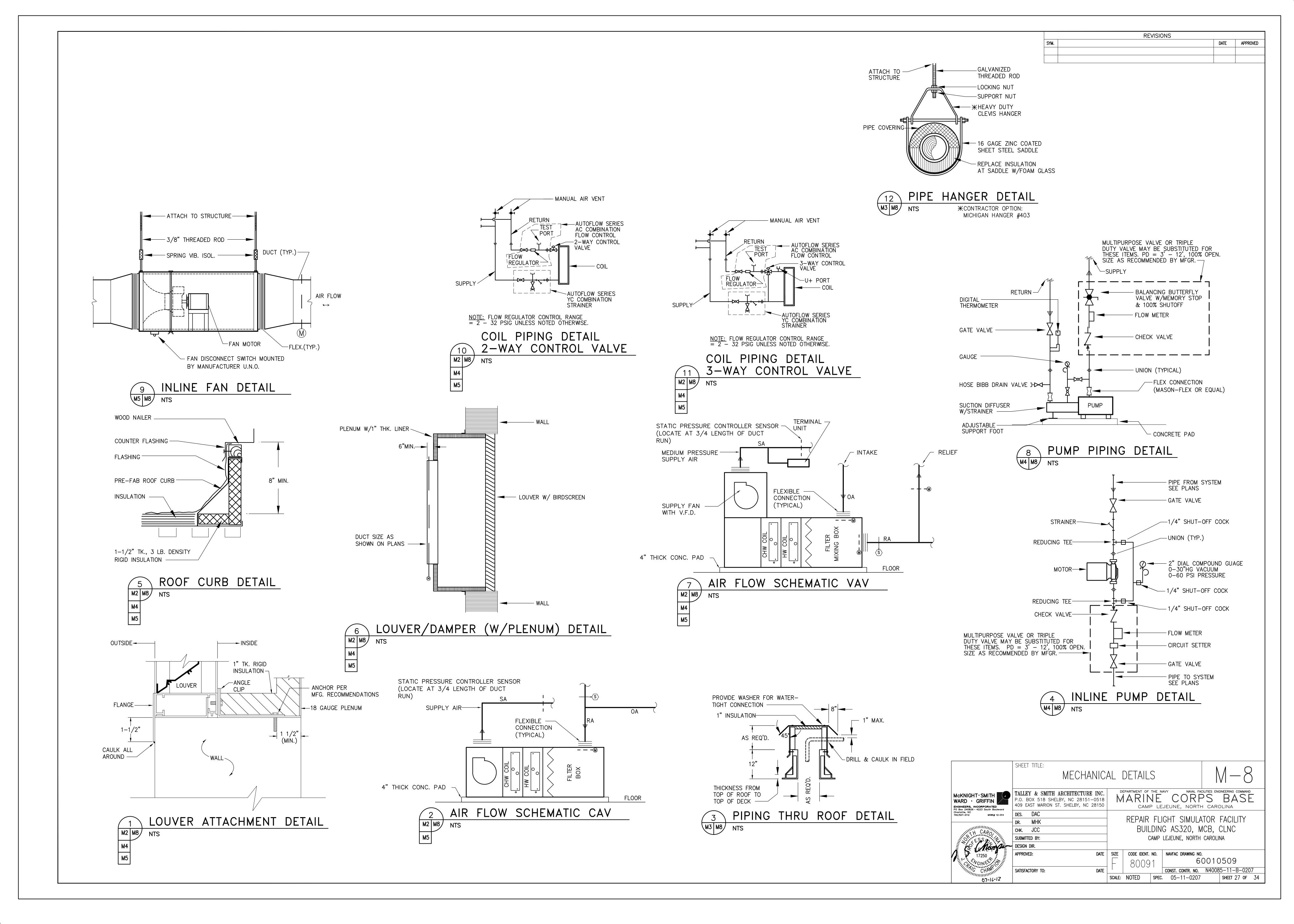
- 1. THIS CONSTRUCTION IS REQUIRED FOR MEDIUM PRESSURE DUCT AND MAY BE USED FOR LOW PRESSURE DUCT IF R/D = 1.5 (MIN) CANNOT BE OBTAINED.
- 2. FOR THROAT RADIUS "RT" OTHER THAN 4" CONSTRUCT ELBOW PER LATEST SMACNA STANDARD WITH R/D=1.2 (MIN) PER AIR SEGMENT.

| SCALE: NOTED | SPEC. 05-11-0207

3. DETAIL MAY BE USED FOR LINED DUCT IF "RT" = 4" -LINER THICKNESS AND "D" = INSIDE DUCT DIMENSION.



93-100 3 9



HOT WATER SYSTEM

- 1. A UNIT MOUNTED CONTROLLER (CAPABLE OF STANDALONE OPERATION) WILL CONTROL THE HOT WATER SYSTEM.
- 2. GENERAL: THIS SYSTEM CONSISTS OF TWO BOILERS, TWO BOILER PUMPS AND TWO LOOP PUMPS.
- HW SYSTEM ENABLE: PRIMARY HOT WATER SYSTEM WILL BE ENABLED WHEN THE OUTSIDE AIR TEMPERATURE FALLS BELOW 55°F (ADJ.) FOR 15 MIN. (ADJ.). OR, WHEN ANY HOT WATER VALVE OPENS TO MORE THAN 50% CONTINUOUSLY FOR 15 MIN. (ADJ.). OR, WHENEVER IT IS MANUALLY ENABLED BY THE OPERATOR FROM THE OPERATOR WORKSTATION. THE HOT WATER SYSTEM WILL SEQUENCE THE PRIMARY PUMPS AND THE BOILERS WILL BE CYCLED TO MAINTAIN A CONSTANT SUPPLY WATER TEMPERATURE OF 180°F (ADJ.).
- 4. THE HOT WATER SYSTEM WILL BE DISABLED WHEN THE OUTSIDE AIR TEMPERATURE RISES ABOVE 57°F. (ADJ.) FOR 15 MIN. (ADJ.). OR, WHEN ALL THE HOT WATER VALVES CLOSE TO LESS THAN 10% CONTINUOUSLY FOR 30 MIN. (ADJ.). OR, WHENEVER IT IS MANUALLY DISABLED BY THE OPERATOR FROM THE OPERATOR WORKSTATION.
- 5. HOT WATER PUMPS: THE PUMPS WILL RUN IN A LEAD/LAG FASHION WHERE THE LEAD PUMP ASSIGNMENT WILL BE REASSIGNED BASED ON THE LOWEST RUNTIME WHEN BOTH PUMPS ARE ON AND WHEN BOTH PUMPS ARE OFF. THE LEAD PUMP WILL BE ENABLED AND RUN CONTINUOUSLY WHEN THE HOT WATER SYSTEM IS ENABLED AND WILL BE STOPPED WHEN THE HOT WATER SYSTEM DISABLE.
- 6. THE LAG PUMP WILL ENABLE IF THE PUMP SPEED SIGNAL REMAINS ABOVE 95% (ADJ.) CONTINUOUSLY FOR 5 MIN. (ADJ.). THE LAG PUP WILL DISABLE WHEN THE PUMP SPEED SIGNAL DROPS BELOW 50% (ADJ.) FOR 5 MIN. (ADJ.).
- 7. IF THE LEAD PUMP IS COMMANDED TO RUN AND STATUS IS NOT PROVEN, AN ALARM WILL GENERATE, AND THE LAG PUMP WILL ENERGIZE.
- 8. HOT WATER PUMP SPEED: ONCE THE PUMP IS ENABLED, THE VFD SPEED WILL BE A MINIMUM OF 30% (ADJ.). WHEN PUMP STATUS IS PROVEN, THE PUMP VFD SPEED WILL MODULATE TO MAINTAIN THE REMOTE LOOP DIFFERENTIAL PRESSURE (RDP) SETPOINT.
- 9. THE (RDP) SETPOINT WILL RESET BETWEEN MINIMUM (5 PSI, ADJ.) AND MAXIMUM (13 PSIG, ADJ.) LIMITS TO MAINTAIN THE "WORST CASE" (MOST OPEN) AHU PREHEAT VALVE AND VAV VALVE. THE SETPOINT WILL RESET ONCE EVERY 5 MIN. (ADJ.) BY AN INCREMENT OF 0.5 PSI (ADJ.) AS FOLLOWS:
 - THE PRESSURE SETPOINT WILL RESET UP WHEN THE MOST OPEN VALVE COMMAND IS ABOVE 95%.
 - THE PRESSURE SETPOINT WILL REMAIN THE SAME WHEN THE MOST OPEN VALVE COMMAND IS BETWEEN 90 AND 95%.
 - THE PRESSURE SETPOINT WILL RESET DOWN WHEN THE MOST OPEN VALVE COMMAND IS BELOW 90%.
 - UPON COMMUNICATION FAILURE BETWEEN THE BAS CONTROLLER AND THE DIFFERENTIAL PRESSURE SENSOR, THE SETPOINT WILL BE THE MAXIMUM LIMIT.
 - HOT WATER SUPPLY TEMPERATURE SETPOINT: ONCE PUMP STATUS IS PROVEN, THE 1/3, 2/3'S STEAM VALVES WILL MODULATE IN SEQUENCE TO MAINTAIN THE HOT WATER SUPPLY SETPOINT. THE SETPOINT WILL RESET BASED ON OUTSIDE AIR TEMPERATURE. AS OUTSIDE AIR TEMPERATURE RISES FROM 10°F. (ADJ.) TO 50°F. (ADJ.), THE HW SUPPLY SETPOINT WILL DECREASE FROM 180°F. (ADJ.) TO 120°F. (ADJ.).

CHILLED WATER SYSTEM

- 1. PRIMARY PUMPS SHALL BE ENERGIZED THROUGH THE BAS UPON A CALL FOR COOLING. WHEN ENABLED, THE LEAD PUMP WILL START AND RUN CONTINUOUSLY. WHILE RUNNING THE PUMP SPEED WILL VARY TO MAINTAIN THE LOOP PRESSURE IN RESPONSE TO THE DIFFERENTIAL PRESSURE SENSOR FURTHEST FROM SETPOINT. IF FOR ANY REASON THE PUMP'S STATUS DOES NOT MATCH ITS COMMANDED VALUE AN ALARM WILL BE GENERATED. THE LAG PUMP WILL START IF THE LEAD PUMPS IS IN ALARM. THE PUMPS SHALL ALTERNATE ON A WEEKLY BASIS.
- 2. CHILLED WATER IS PROVIDED TO THE BUILDING BY EXISTING CHILLERS AND HAS A DEDICATED SECONDARY CIRCULATION PUMPING SYSTEM. UPON A DEMAND FOR COOLING AS DETERMINED BY TWO OR MORE CHILLED WATER VALVES OPEN GREATER THAN 40%, THE LEAD CHILLER SHALL BE ENERGIZED. THE LAG SYSTEM WILL BE ENERGIZED AFTER 30 MINUTES (ADJUSTABLE) IF THE LEAD CHILLER CANNOT MAINTAIN 42 DEG. F DISCHARGE WATER TEMPERATURE. THE LAG CHILLER SHALL GO OFFLINE WHENEVER THE SUPPLY AND RETURN WATER TEMPERATURE DIFFERENCE IS LESS THAN 10 DEGREES FOR 30 MINUTES.

VAV AIR HANDLING UNIT

- 1. SUPPLY FAN START/STOP: THE SUPPLY FAN WILL BE STARTED ACCORDING TO THE SCHEDULE. IF THE SUPPLY FAN STATUS DOES NOT MATCH THE COMMANDED VALUE, AN ALARM WILL BE GENERATED. WHEN THE SUPPLY FAN STATUS INDICATES THE FAN STARTED, THE CONTROL SEQUENCE WILL BE ENABLED.
- 2. STATIC PRESSURE CONTROL: THE SUPPLY FAN WILL MODULATE AS REQUIRED TO MAINTAIN THE DISCHARGE STATIC PRESSURE SETPOINT.
- DISCHARGE AIR CONTROL: ON UNITS WITH ECONOMIZER CYCLES, THE OUTSIDE AIR, RETURN AIR AND RELIEF AIR DAMPERS SHALL MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT. WHENEVER FREE COOLING IS NOT AVAILABLE, THE COOLING VALVE WILL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT SETPOINT. DISCHARGE AIR TEMPERATURE SHALL BE RESET BASED ON THE LOAD OF THE SPACE FURTHEST FROM COOLING SETPOINT. IF RETURN AIR HUMIDISTAT SENSES A CONDITION GREATER THAN SETPOINT, DISCHARGE AIR TEMPERATURE SHALL BE MAINTAINED AT 55 DEG. F.
- 4. OUTSIDE AIR CONTROL: THE OUTSIDE AIR DAMPER SHALL MODULATE TO A CLOSED POSITION IN UNOCCUPIED MODE. THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN TO MINIMUM OA CFM VALUE LISTED IN OCCUPIED MODE TO MAINTAIN BUILDING PRESSURIZATION AND MINIMUM VENTILATION REQUIREMENTS.
- 5. PREHEAT COIL CONTROL: THE HOT WATER CONTROL VALVE WILL MODULATE TO MAINTAIN 55F AT COIL DISCHARGE.
- 6. NIGHT SETBACK/NIGHT SETUP: WHEN IN "UNOCCUPIED" MODE, THE UNIT OPERATES AS A CONSTANT VOLUME UNIT AND WILL CYCLE AS NECESSARY TO MAINTAIN THE SHARED NIGHT SETBACK ZONE TEMPERATURE AT SETPOINT.
- 7. A DIFFERENTIAL PRESSURE SENSOR ACROSS THE FILTER SHALL MONITOR STATUS AND ALARM THE BAS WHENEVER SERVICE IS REQUIRED.
- 8. SAFETY:
 - A. ALL OF THE SAFETY DEVICES ARE MANUAL RESET; THE DEVICE THAT HAS TRIPPED MUST BE MANUALLY RESET BEFORE RESTARTING THE AIR HANDLING UNIT.
 - B. IF A TEMPERATURE LOW LIMIT SWITCH SENSES A TEMPERATURE BELOW SETPOINT THE SUPPLY FAN WILL BE SHUTDOWN.
 - C. IF A FIRE ALARM SHUTDOWN CONTACT/SMOKE DETECTOR INTERLOCK IS SHOWN, THE SUPPLY FAN WILL BE SHUTDOWN WHEN TRIGGERED.
 - D. IF A HIGH STATIC PRESSURE SWITCH LOCATED AFTER THE SUPPLY FAN SENSES A DISCHARGE PRESSURE THAT IS GREATER THAN SETPOINT, THE SUPPLY FAN WILL BE SHUTDOWN.

9. SHUTDOWN:

A. WHEN THE UNIT IS SHUTDOWN BY EITHER A STOP COMMAND OR SYSTEM SAFETY THE UNIT WILL BE SET AS FOLLOWS:

SUPPLY FAN WILL BE OFF
SUPPLY FAN VFD WILL BE COMMANDED TO 0%
RETURN AIR DAMPER WILL OPEN
OUTSIDE AIR DAMPER WILL CLOSE
COOLING VALVE WILL CLOSE
HEATING VALVE WILL OPEN

CONSTANT VOLUME AIR HANDLING UNITS

- 1. SUPPLY FAN START/STOP: THE SUPPLY FAN WILL BE STARTED ACCORDING TO THE SCHEDULE. IF THE SUPPLY FAN STATUS DOES NOT MATCH THE COMMANDED VALUE, AN ALARM WILL BE GENERATED. WHEN THE SUPPLY FAN STATUS INDICATES THE FAN STARTED, THE CONTROL SEQUENCE WILL BE ENABLED.
- 2. DISCHARGE AIR CONTROL: THE COOLING VALVE AND HEATING VALVES WILL MODULATE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. FAN SPEED SHALL BE CONSTANT AT DESIGN CFM.
- 3. OUTSIDE AIR CONTROL: THE OUTSIDE AIR DAMPER SHALL MODULATE TO A CLOSED POSITION IN UNOCCUPIED MODE. THE OUTSIDE AIR DAMPER SHALL MODULATE OPEN TO MINIMUM OA CFM VALUE LISTED IN OCCUPIED MODE TO MAINTAIN BUILDING PRESSURIZATION AND MINIMUM VENTILATION REQUIREMENTS.
- I. NIGHT SETBACK/NIGHT SETUP: WHEN IN "UNOCCUPIED" MODE, THE UNIT WILL CYCLE AS NECESSARY
 TO MAINTAIN THE SHARED NIGHT SETBACK ZONE TEMPERATURE AT SETPOINT.
- 5. A DIFFERENTIAL PRESSURE SENSOR ACROSS THE FILTER SHALL MONITOR STATUS AND ALARM THE BAS WHENEVER SERVICE IS REQUIRED.
- 6. SAFETY:
 - A. ALL OF THE SAFETY DEVICES ARE MANUAL RESET; THE DEVICE THAT HAS TRIPPED MUST BE MANUALLY RESET BEFORE RESTARTING THE AIR HANDLING UNIT.
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 - C. IF A FIRE ALARM SHUTDOWN CONTACT/SMOKE DETECTOR INTERLOCK IS SHOWN, THE SUPPLY FAN WILL BE SHUTDOWN WHEN TRIGGERED.
 - D. IF A HIGH STATIC PRESSURE SWITCH LOCATED AFTER THE SUPPLY FAN SENSES A DISCHARGE PRESSURE THAT IS GREATER THAN SETPOINT, THE SUPPLY FAN WILL BE SHUTDOWN.

8. SHUTDOWN:

A. WHEN THE UNIT IS SHUTDOWN BY EITHER A STOP COMMAND OR SYSTEM SAFETY THE UNIT WILL BE SET AS FOLLOWS:

SUPPLY FAN WILL BE OFF
SUPPLY FAN VFD WILL BE COMMANDED TO 0%
RETURN AIR DAMPER WILL OPEN
OUTSIDE AIR DAMPER WILL CLOSE
COOLING VALVE WILL CLOSE
HEATING VALVE WILL OPEN

TERMINAL UNITS WITH HW HEAT

DISCHARGE AIR TEMP SENSOR: A DISCHARGE AIR TEMP SENSOR IS PROVIDED ON EACH BOX FOR MONITORING PURPOSES.

2. OCCUPIED MODE:

- A. WHEN THE ZONE TEMPERATURE IS BETWEEN THE OCCUPIED HEATING AND COOLING SETPOINTS (INSIDE OF THE BIAS), THE PRIMARY AIR DAMPER WILL BE AT THE MINIMUM CFM AND THE HEATING VALVE WILL BE FULLY CLOSED. ON A RISE IN ZONE TEMPERATURE ABOVE THE COOLING SETPOINT, THE PRIMARY AIR DAMPER WILL INCREASE THE CFM AND THE VALVE REMAINS FULLY CLOSED. ON A DROP IN ZONE TEMPERATURE BELOW THE HEATING SETPOINT, THE VALVE MODULATES OPEN AND THE DAMPER IS CONTROLLED TO PROVIDE A MINIMUM HEATING CFM.
- B. IN HEATING MODE, VAV TERMINAL UNIT DAMPER POSITION SHALL NOT EXCEED MINIMUM AIRFLOW SETTING. UPON A CALL FOR ADDITIONAL HEATING BY TWO OR MORE ZONES, THE ASSOCIATED AHU UNIT DISCHARGE TEMPERATURE SHALL RESET TO ALLOW FOR HEATING AT TERMINAL UNIT. UNIT DAMPERS MAY THEN ADJUST TO HEATING DESIGN CFM.
- 3. UNOCCUPIED (NIGHT SETBACK) MODE: WHEN THE AIR HANDLING UNIT SHUTS DOWN, ALL BOX CONTROLLERS ARE INDEXED TO UNOCCUPIED MODE. WHEN THE ZONE TEMPERATURE IS BETWEEN THE UNOCCUPIED HEATING AND COOLING SETPOINTS (INSIDE OF THE BIAS), THE PRIMARY AIR DAMPER WILL BE AT THE MINIMUM CFM, AND THE VALVE WILL BE FULLY CLOSED. ON A RISE IN ZONE TEMPERATURE ABOVE THE UNOCCUPIED COOLING SETPOINT, THE PRIMARY AIR DAMPER WILL INCREASE THE CFM (IF AVAILABLE), AND THE VALVE REMAINS FULLY CLOSED. ON A DROP IN ZONE TEMPERATURE BELOW THE UNOCCUPIED HEATING SETPOINT, THE VALVE MODULATES OPEN, AND THE DAMPER IS CONTROLLED TO PROVIDE A MINIMUM CFM.

FAN COIL UNITS

- 1. A PROGRAMMABLE CONTROLLER CAPABLE OF STANDALONE OPERATION WILL CONTROL THE UNIT. THE UNIT WILL BE STARTED VIA PRE—DETERMINED OPTIMUM START THROUGH THE BUILDING AUTOMATION SYSTEM (BAS). THE UNIT WILL BE DE—ENERGIZED IN ACCORDANCE WITH TIME SCHEDULES THROUGH THE BAS.
- OCCUPIED MODE: IN OCCUPIED MODE, THE SUPPLY FAN WILL BE INDEXED ON AND WILL RUN CONTINUOUSLY.
- TEMPERATURE CONTROL: ON A RISE IN SPACE TEMPERATURE ABOVE THE SETPOINT, THE CONTROLLER WILL MODULATE THE CHILLED WATER VALVE OPEN TO THE COIL. ON A DROP IN SPACE TEMPERATURE, THE CHILLED WATER VALVE CLOSED TO THE COIL. ON A FURTHER DROP IN SPACE TEMPERATURE BELOW THE HEATING SETPOINT, THE CONTROLLER WILL MODULATE HOT WATER VALVE OPEN TO THE COIL. ON A RISE IN SPACE TEMPERATURE, THE REVERSE WILL OCCUR.
- 4. SENSORS: CURRENT SWITCHES WILL MONITOR THE STATUS OF THE SUPPLY FAN. AN ALARM WILL BE INITIATED WHENEVER THE RESPECTIVE FAN COMMAND AND STATUS DO NOT MATCH. A SPACE TEMPERATURE SENSOR WILL MONITOR SPACE TEMPERATURE.

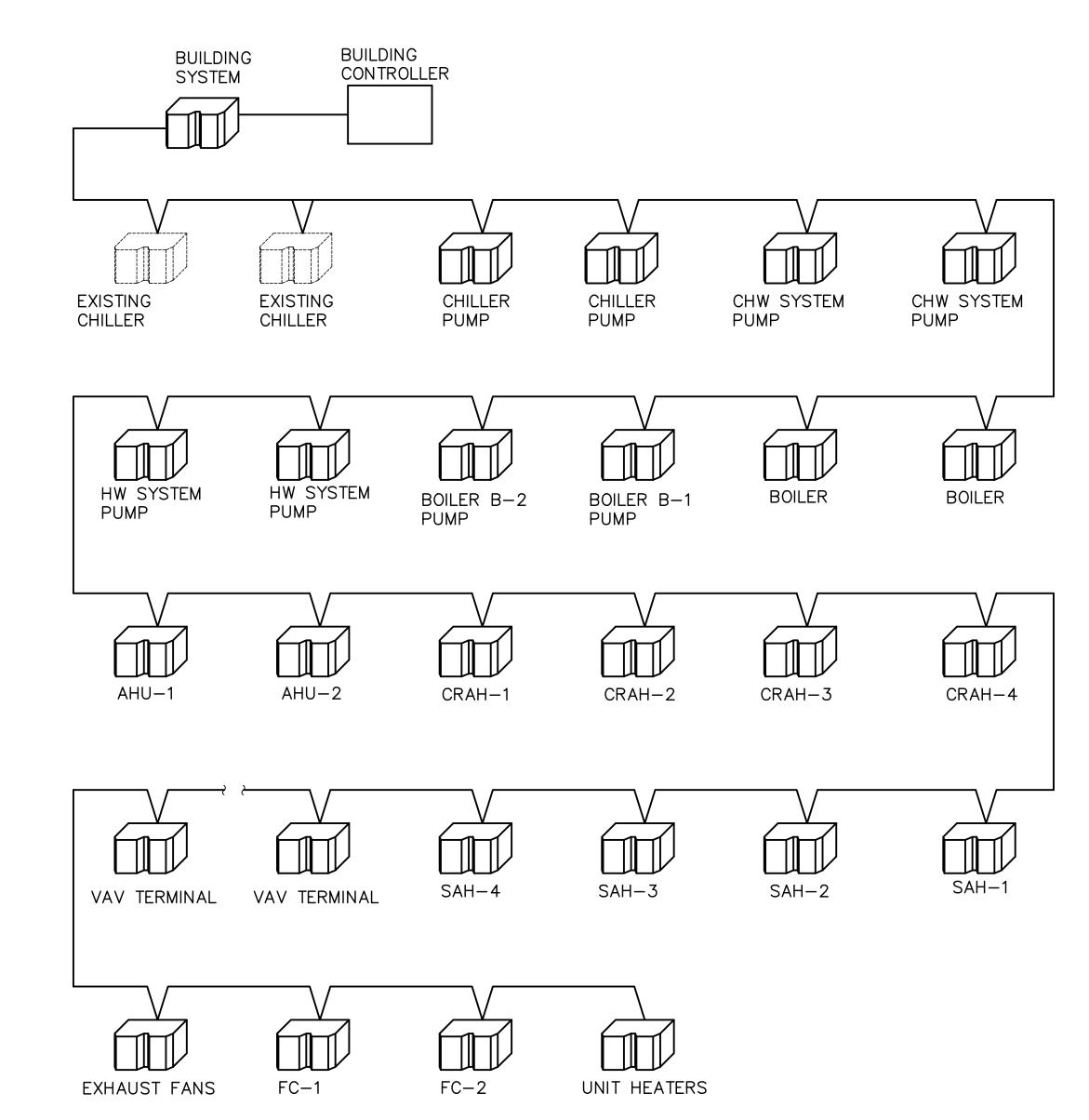
EXHAUST FANS

- 1. FAN START/STOP: SEE SCHEDULE ON PLANS
- 2. FAN STATUS: FAN STATUS SHALL BE PROVEN BY A CURRENT RING.
- 3. FAN/DAMPER INTERLOCK. SEE FAN CONTROL SCHEDULE

MISCELLANEOUS

1. PROVIDE TEMPERATURE SENSOR IN ALL SPACES WITH COMPUTER ROOM AIR CONDITIONERS. MONITOR TEMPERATURE THROUGH THE BAS.

BAS SYSTEM ARCHITECTURE NTS

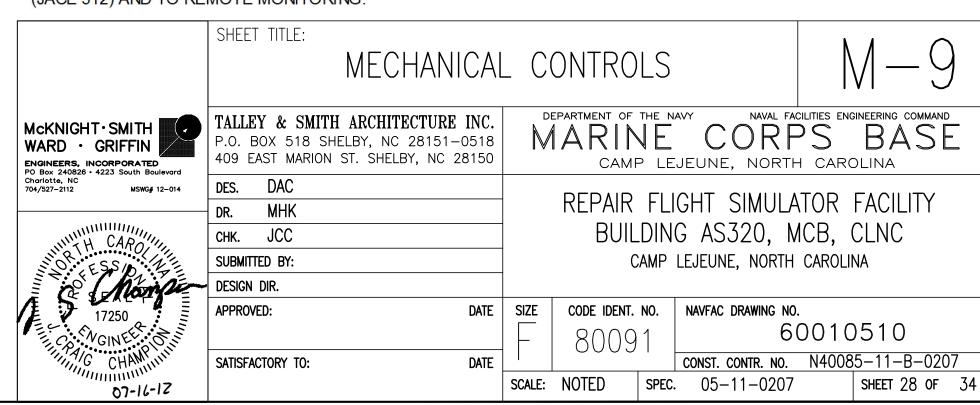


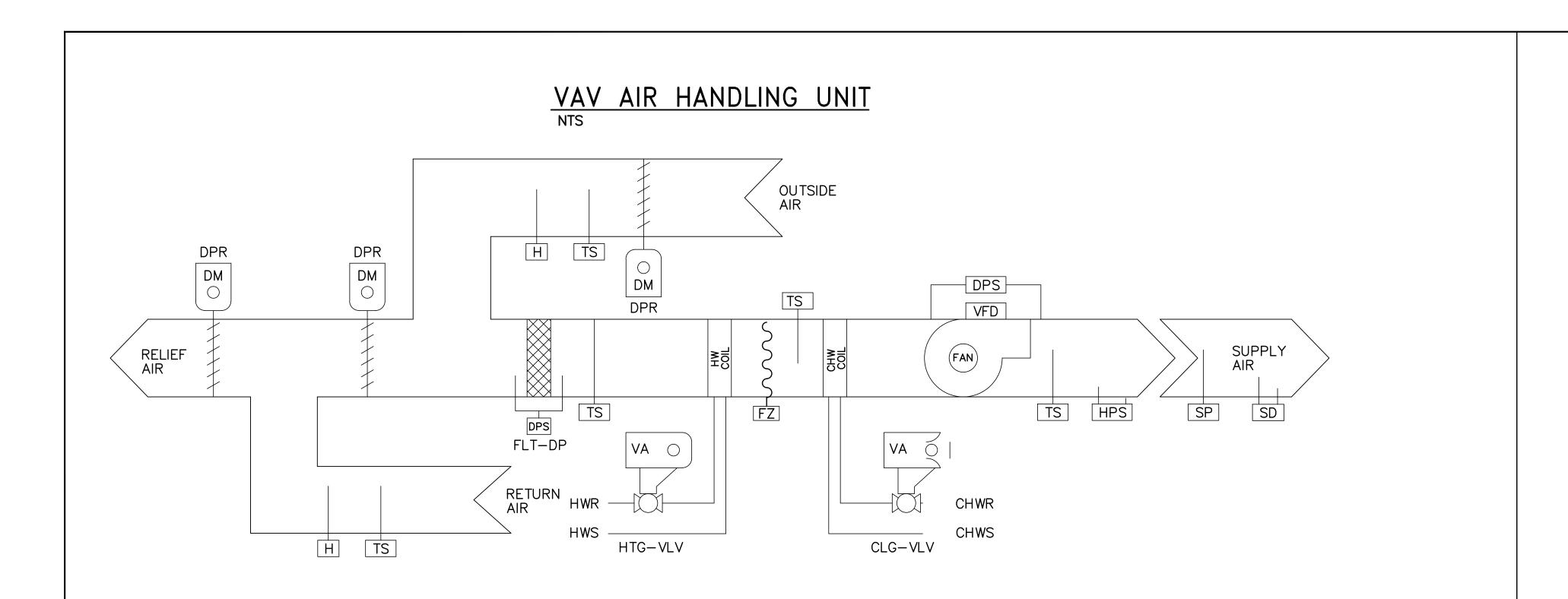
						CC)N	TR	OL	F	UN	C	ГІС	N												
EQUIPMENT LIST	START STOP STATUS	OUTSIDE AIR TEMPERATURE (OA-T)	OUTSIDE AIR HUMIDITY (OA-H)	TEMPERATURE SENSOR (TS)	HUMIDITY SENSOR (H)	SPACE TEMPERATURE SENSOR	VALVE POSITION (VA)	CURRENT SENSOR (CS)	DIFFERENTIAL PRESSURE SENSOR (DPS)	VARIABLE SPEED DRIVE (VFD)	OW LIMIT THERMOSTAT (FZ)	DUCT MOUNTED SMOKE DETECTOR (SD)	HIGH PRESSURE SENSOR (HPS)	STATIC PRESSURE SENSOR (SPS)	DAMPER STATUS (DM)	COMPRESSOR STATUS (Y1)	DISCHARGE AIR SETPOINT/RESET	RETURN AIR TEMPERATURE	SUPPLY AIR FLOW RATE	OUTSIDE AIR FLOW RATE	DISCHARGE WATER TEMPERATURE	WATER FLOW RATE	KW DRAW	BUILDING PRESSURIZATION CONTROL	DISCHARGE PRESSURE RESET	
EXISTING CHILLERS	X	X	X	_	I	(O)	^	X		>			<u></u>	(O)		X		œ	(O)	O	X	<u>></u>	X	m		—
AHU-1	X	^	^	X			X	X	X	X	X	X	X	X	X	^	X	X		X	^	^	^	X		—
AHU-2	X			X			X	X	X	^	X	X	X	X	X		X	X		X				X		—
CRAH-1	X				X	X	X				^	/\				X	X						X			
CRAH-2	X				X	X	X									X	X						X			
CRAH-3	X				X	X	X									X	X						X			_
CRAH-4	X				X	X	X									X	X						X			_
SAH-1	X				X	X	X									X	X				X		X			_
SAH-2	X					X											X				X		X			_
SAH-3	X				X	X										X	X				X		X			
SAH-4	X				X	X										X	X				X	_	X			
CHILLER PUMPS	X					,,	,	X	X	X						, ,	, ,				X	Х	,		X	
BOILER PUMPS	X							X	X	X											X	X			X	
HW PUMPS	X							X	X	X											X	X			X	
HW SYSTEM PUMPS	X							X	X	X											X	X			X	_
CHWS SYSTEM PUMPS	X							X	X	X											X	X			X	_
TERMINAL UNITS	X					X	X		-						X		X		Х					X	-	_
FANS	X					X		X																		_
FAN COILS	X					X	X	X																		_
UNIT HEATERS	X					X	Χ																			_
BOILERS	X	Х	X																		Х	X				_

REVISIONS

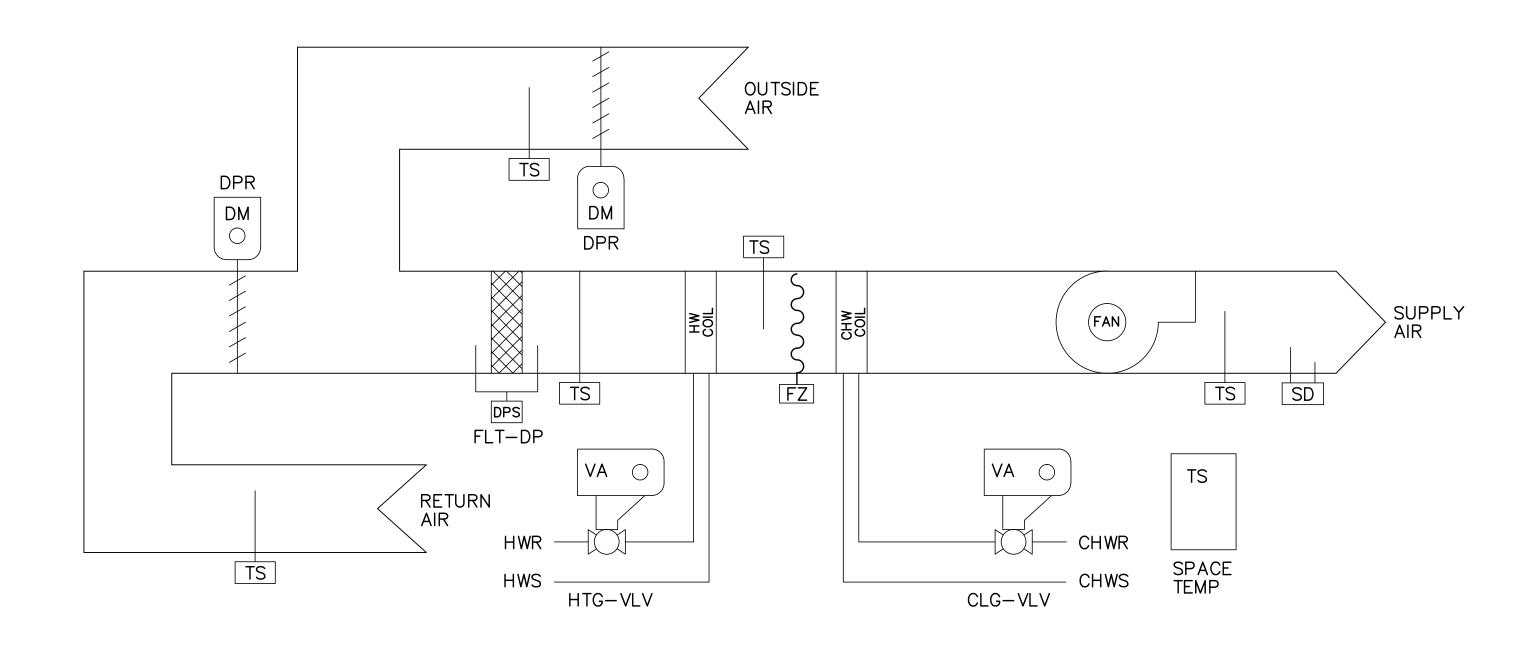
DATE APPROVED

 ALL POINTS NOTED ON THIS CHART WILL BE MADE AVAILABLE TO SITE NET. ENSURE PROPER COMMUNICATIONS BETWEEN THE DDC SYSTEM INSTALLED AND THE SITE BUILDING CONTROLLER (JACE 512) AND TO REMOTE MONITORING.

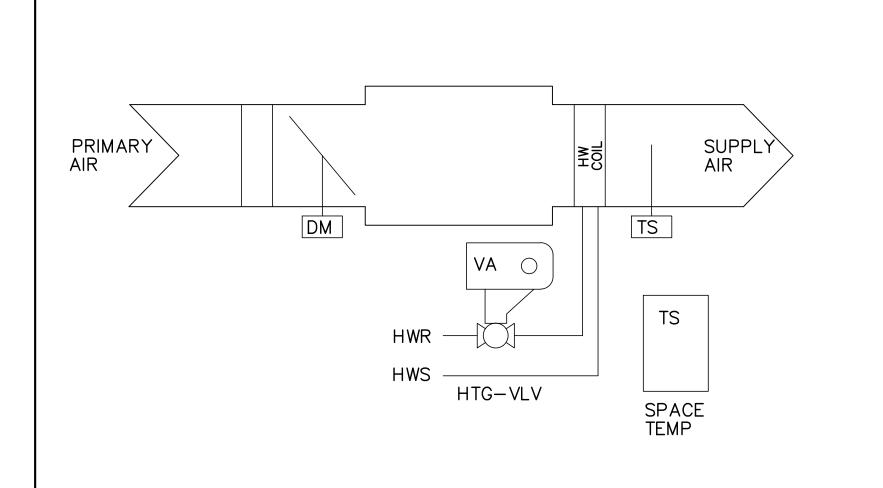




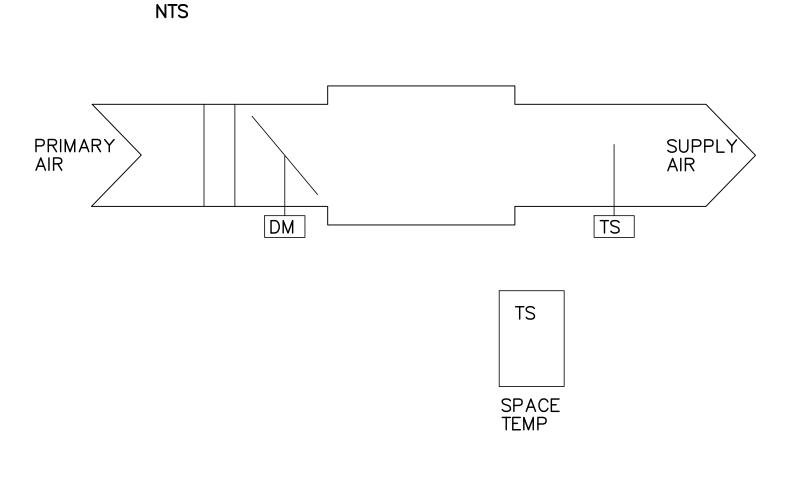
SINGLE ZONE - CV AIR HANDLING UNIT



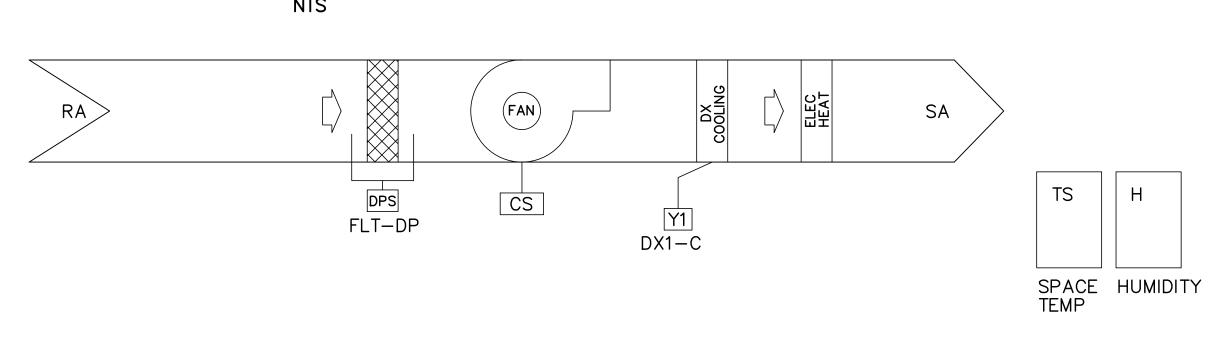
SINGLE INLET TERMINAL UNITS W/HW REHEAT



SINGLE INLET TERMINAL UNITS



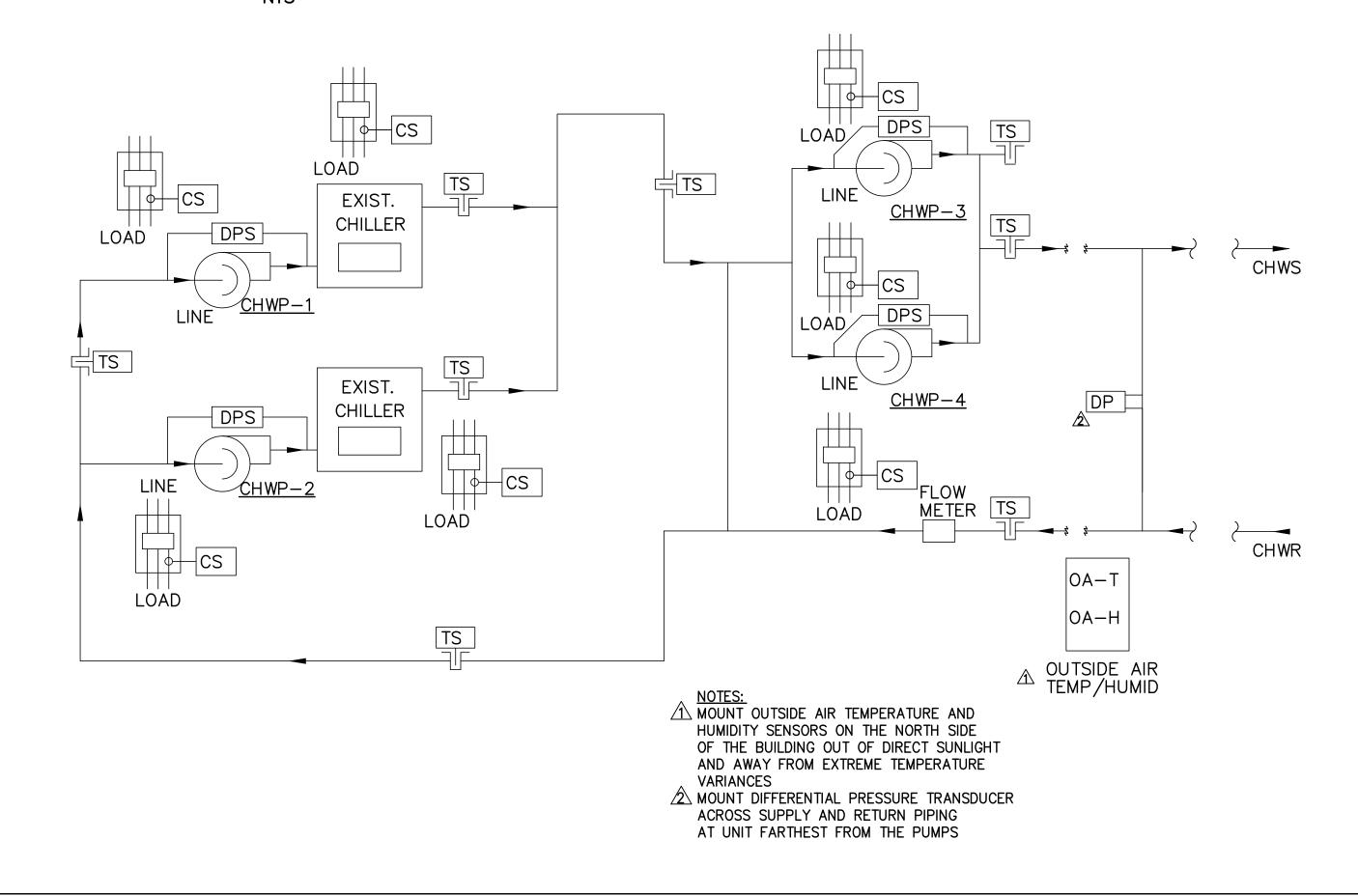
COMPUTER ROOM UNIT



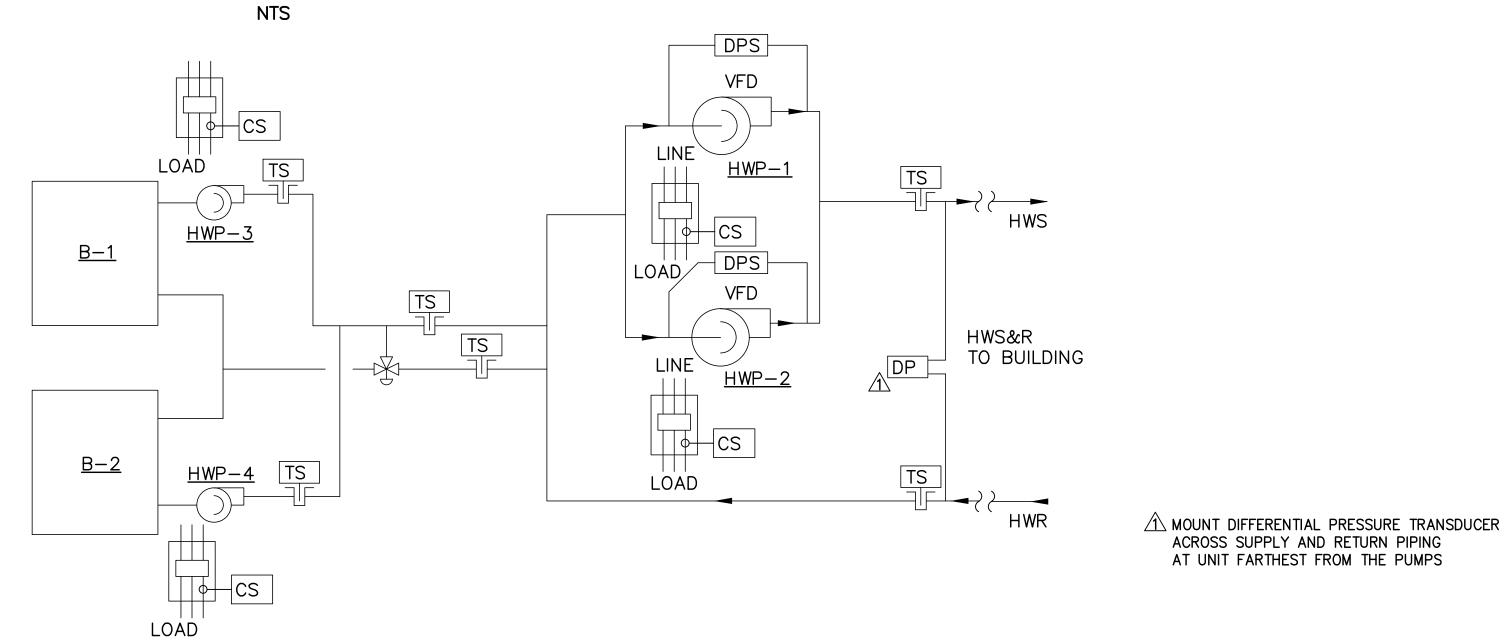
REVISIONS

RELOCATED DUCT SMOKE DETECTORS 6/19/12

CHILLED WATER SYSTEM - CONTROL SCHEMATIC

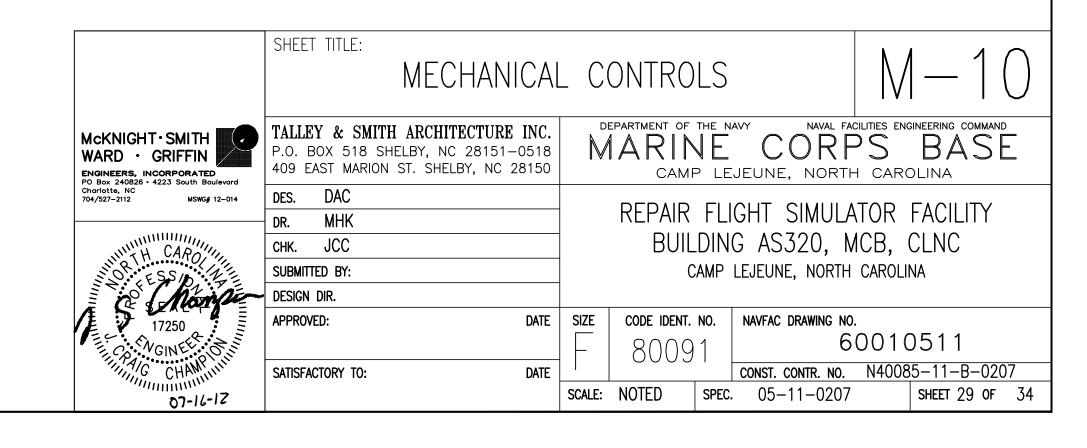


HOT WATER SYSTEM - CONTROL SCHEMATIC



3-PHASE MONITORING REQUIREMENTS

- A PROVIDE PHASE MONITORING ON ALL 3-PHASE EQUIPMENT.
- B FOR CONDENSING UNIT, PROVIDE PHASE UNBALANCE PROTECTION, OVER/UNDER VOLTAGE PROTECTION, PHASE LOSS PROTECTION, DELAY OF BREAK TIMER TO DELAY AUTOMATIC RESTARTS, NON-CRITICAL FAULT DELAY, PROGRAMMABLE AUTO/MANUAL RESTART, LOAD AND LINE SIDE MONITORING.
- C FOR ALL OTHER EQUIPMENT ONLY PHASE LOSS, PHASE REVERSAL, AND PHASE UNBALANCE NEED TO BE MONITORED. RESET SHALL BE AUTOMATIC UPON CORRECTION OF THE FAULT.



	SYMBOL	SCHEDUL	
GENERAL	SYMBOLS	WIRING D	EVICES
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CONDUIT RUN CONCEALED ABOVE CEILINGS OR IN WALLS.	+	DUPLEX RECEPTACLE, 125V, 3—WIRE GROUNDING TYPE.
	CONDUIT RUN CONCEALED IN OR BELOW FLOORS OR UNDERGROUND. CONDUIT RUN EXPOSED.	€ _{EWC}	DUPLEX RECEPTACLE, 125V, GROUND FAULT CIRCUIT INTERRUPTING, 3—WIRE GROUNDING TYPE. LOCATE WITHIN OR BEHIND AN ELECTRIC WATER COOLER. COORDINATE WITH PLUMBER FOR EXACT LOCATION.
•	CONDUIT TURNING UP	→ _{GFI}	DUPLEX RECEPTACLE, GROUND FAULT CIRCUIT INTERRUPTING.
•	CONDUIT TURNING DOWN	⇒ _{wP}	DUPLEX GFCI RECEPTACLE. PROVIDE WITH OPERABLE, IN-USE WEATHERPROOF COVER.
	SQUARE ON CONDUIT SYMBOL INDICATES THAT CIRCUIT CONTINUES BUT NOT SWITCHLEG.	→ wp	DUPLEX RECEPTACLE, 125V, 3—WIRE GROUNDING TYPE. CEILING MOUNTED.
***	HOMERUN TO PANEL AND CIRCUIT(S) DESIGNATED. ARROW(S) INDICATE QUANTITY OF CIRCUITS.	₩	TWO DUPLEX RECEPTACLES, 125V, 3—WIRE GROUNDING TYPE, IN A TWO—GANG BOX WITH TWO—GANG FACEPLATE.
()	JUNCTION BOX PER N.E.C.	₩	SPECIAL PURPOSE RECEPTACLE, WITH SPECIAL NEMA CONFIGURATION AS NOTED.
①	SPECIAL NOTE, NUMERALS IDENTIFY, SEE SCHEDULE. SPECIAL CONNECTION TO A SPECIFIC ITEM OF EQUIPMENT. SEE CONNECTION SCHEDULE.	•	WALL OUTLET FOR TELECOMMUNICATIONS. SEE SPECIFICATIONS AND/OR DRAWINGS FOR CONDUIT AND CABLING REQUIREMENTS.
Ø	MOTOR CONNECTION. RATING AS NOTED.	Å ♣	DOT ABOVE OUTLETS INDICATES THAT THE DEVICE IS TO BE INSTALLED ABOVE CASEWORK OR OTHER OBSTACLE. COORDINATE.
		S	LIGHT SWITCH, SINGLE-POLE,
LIGHTING		S ₃	LIGHT SWITCH, 3-WAY,
SYMBOL	DESCRIPTION	S4	LIGHT SWITCH, 4-WAY,
0	FLUORESCENT LIGHTING FIXTURE, DRAWN TO SCALE.	SS	WHERE TWO SWITCHES ARE SHOWN CONTROLLING A SINGLE OR COMMON GROUP OF FLUORESCENT LIGHTING FIXTURES, EACH WITH 3 OR MORE LAMPS, THE SWITCH CLOSEST TO
•	FLUORESCENT LIGHTING FIXTURE, CONNECTED TO AN EMERGENCY CIRCUIT (SWITCHED)		THE DOOR SHALL CONTROL THE INNER LAMP(S) IN EACH FIXTURE, AND THE OTHER SWITCH SHALL CONTROL THE OUTER LAMPS IN EACH FIXTURE. WHERE INDICATED, MASTER—SLAVE BALLAST WIRING SHALL BE UTILIZED TO ACHIEVE THIS CONTROL.
	FLUORESCENT LIGHTING FIXTURE, UTILIZED AS A NIGHT—LIGHT. CONNECT TO THE UNSWITCHED LEG OF THE CIRCUIT.	St	PROGRAMMABLE LIGHT SWITCH, WALL MOUNTED.
	FLUORESCENT LIGHTING FIXTURE, CONNECTED TO AN EMERGENCY CIRCUIT, CONNECT TO THE UNSWITCHED LEG OF THE CIRCUIT.	<u>(S)</u>	OCCUPANCY SENSOR, CEILING MOUNTED. PROVIDE WITH 10 FEET WHIP TO ALLOW FIELD ADJUSTMENT OF LOCATION. COORDINATE EXACT LOCATION WITH
	BARE FLUORESCENT STRIP FIXTURE.		MANUFACTURERS RECOMMENDATION.
	BARE FLUORESCENT STRIP FIXTURE CONNECTED TO AN EMERGENCY CIRCUIT. CONNECT TO THE UNSWITCHED LEG OF THE CIRCUIT.		
0	INCANDESCENT, HID OR COMPACT FLUORESCENT LIGHTING FIXTURE, CEILING MOUNTED.		
•	INCANDESCENT, HID OR COMPACT FLUORESCENT LIGHTING FIXTURE, CONNECTED TO AN EMERGENCY CIRCUIT OR EMERGENCY BALLAST.		
Ю	INCANDESCENT, HID OR COMPACT FLUORESCENT LIGHTING FIXTURE, WALL MOUNTED.		PANELBOARD: PBB GROUND BUS SC RATING: 25 KAMPS RMS SYMM. SERVICE: 480V 3PH 3W MOUNTING: SURFACE
₩	INCANDESCENT, HID OR COMPACT FLUORESCENT LIGHTING FIXTURE, WALL MOUNTED. CONNECTED TO AN EMERGENCY CIRCUIT OR EMERGENCY BALLAST.		MAINS: 100 AMP MLO TYPE: BRANCH ENCLOSURE: NEMA 1 LOAD DESCRIPTION WIRE BKR CONNECTED LOAD (KVA) BKR WIRE LOAD DESCRIPTION
⊗ - ⊗	EXIT SIGN, CEILING MOUNTED. SHADING INDICATES FACE ORIENTATION. CONNECT TO THE UNSWITCHED LEG OF THE CIRCUIT. PROVIDE ARROWS AS SHOWN ON PLAN		CKT NEUT A B C CKT
~ ~	EXIT SIGN, WALL MOUNTED. SHADING INDICATES FACE ORIENTATION. BESIDE SYMBOL		12 / 5C 0.4 0.9 6C / 12 HWP-4 12 15/3 7A 0.4

CONNECT TO THE UNSWITCHED LEG OF THE CIRCUIT.

ELECTRICAL PANELBOARD, FLUSH MOUNTED.

ELECTRICAL PANELBOARD, SURFACE MOUNTED.

CONTROL CABINET, FLUSH OR SURFACE MOUNTED.

DISCONNECT SWITCH PROVIDED WITH EQUIPMENT.

COMBINATION MOTOR STARTER AND CIRCUIT BREAKER.

COMBINATION MOTOR STARTER AND NON-FUSIBLE DISCONNECT SWITCH.

DRY-TYPE TRANSFORMER, 480-120/208V 3-PHASE OR 208-120/208V 3-PHASE.

COMBINATION MOTOR STARTER AND FUSIBLE DISCONNECT SWITCH.

DISTRIBUTION

____I·

<u>A</u>-Y

THE CIRCUIT.

MOTOR STARTER

ENCLOSED CIRCUIT BREAKER

DISCONNECT SWITCH, FUSIBLE.

GROUND CONNECTION.

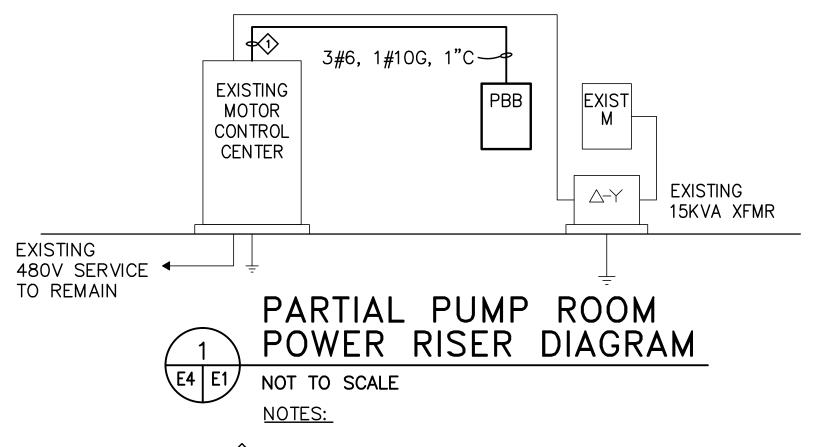
DISCONNECT SWITCH, NON-FUSIBLE.

SYMBOL DESCRIPTION

| EMERGENCY BATTERY PACK FIXTURE, CEILING MOUNTED. CONNECT TO UNSWITCHED LEG OF

EMERGENCY BATTERY PACK FIXTURE, WALL MOUNTED. CONNECT TO UNSWITCHED LEG OF THE

PANELBOARD:	PBB				GROUNI	D BUS			SC RAT	ING:	25 KAMPS RMS SYMM.
SERVICE:	480V 3	3PH 3W							MOUNTI	NG:	SURFACE
MAINS:	100	AMP	MLO		TYPE:	BRANCH			ENCLOS	URE:	NEMA 1
LOAD DESCRIPTION	WIRE	BKR	СКТ	NEUT	CONNECT	TED LOAD	(KVA) C	СКТ	BKR	WIRE	LOAD DESCRIPTION
HWP-3	12	15/3	1A		0.4 0.9			2A	15/3	12	HWP-2
	12	/	3B			0.4 0.9		4B	/	12	
	12	/	5C				0.4 0.9	6C	/	12	
HWP-4	12	15/3	7A		0.4 0.9			8A	15/3	12	HWP-1
	12	/	9B			0.4 0.9		10B	/	12	
	12	/	11C				0.4 0.9	12C	/	12	
CHWP-1	12	15/3	13A		1.3 2.1			14A	15/3	12	CHWP-4
	12	/	15B			1.3 2.1		16B	/	12	
21017	12	/	17C				1.3 2.1	18C	/	12	
CHWP-2	12	15/3	19A		1.3 2.1			20A	15/3	12	CHWP-3
	12	/	21B			1.3 2.1	4 =	22B		12	
	12	/	23C				1.3 2.1	24C	/	12	
SPACE ONLY		/3	25A		0.0 0.0			26A	/3		SPACE ONLY
		/	27B			0.0 0.0	0.0	28B			
CDAOE ONLY		/7	29C				0.0 0.0	30C			
SPACE ONLY		/3	31A		0.0 0.0			32A	/3		SPACE ONLY
		/	33B			0.0 0.0	0.0	34B			
SDACE ONLY		/3	35C				0.0 0.0	36C	/		
SPACE ONLY		/3	37A 39B		0.0 0.0	0.0		38A	/3		SPACE ONLY
		/	41C			0.0	0.0	40B	/		
		/	1	0.0	9.6	9.6	0.0 0.0 9.6	42C			
OTES:				0.0	3.0	, 5.01	3.0	LIGHT RECE MOTO HEAT KITCH CMPT OTHEI	PTS RS IEN R R	0.0 0.0 28.8 0.0 0.0 0.0 0.0 28.8	KVA KVA KVA KVA KVA KVA KVA



◆ CONNECT TO NEW 60/3 CIRCUIT BREAKER IN SPACE AVAILABLE OF EXISTING MOTOR CONTROL CENTER, FEDERAL PACIFIC CLASS 5320.

REVISIONS

DATE APPROVED ADDED CO2 EXHAUST SYSTEMS FOR COMPUTER RMS. 6/13/12

ABBREVIATIONS

46" AFF. (UNLESS OTHERWISE NOTED)

MOUNTING HEIGHTS

(DISTANCE FROM FINISHED FLOOR TO CENTER OF DEVICE UNLESS OTHERWISE NOTED)

<u>RECEPTACLE</u>

<u>LIGHT SWITCH</u>

18" AFF. (UNLESS OTHERWISE NOTED) GENERAL 46" AFF. (UNLESS OTHERWISE NOTED) ABOVE COUNTER TOP

TELECOMMUNICATIONS

GENERAL 18" AFF. (UNLESS OTHERWISE NOTED) 46" AFF. (UNLESS OTHERWISE NOTED) ABOVE COUNTER TOP

46" AFF. `

TELEVISION 18" AFF. (UNLESS OTHERWISE NOTED)

EQUIPMENT CONNECTION SCHEDULE													
SYM.	EQUIPMENT	LOAD	LOAD VOLT/ DISCONNECT CONDUCTORS TYPE RATING POLES TRIP/FUSE ENCLO.										
1	AHU-1	7.5HP	208/3		BUILT INTO) VFD BY	DIVISION 15		3#12, 1#12G	FMC	1/2"		
2	AHU-2	7.5HP	480/3	NFDS	30A	3		1	3#10, 1#10G	FMC	1/2"		
3	CRAC-1,2,3,4	5.2FLA	480/3	FDS	30A	3	15A	3R	3#12, 1#12G	LFMC	1/2"		
4	CRAH-1,2,3,4	3.0HP, 25.0KW	480/3	NFDS	100A	3		1	3#4, 1#8G	FMC	1-1/4"		
5	SAH-1,2	7.5HP	208/3	NFDS	60A	3		1	3#8, 1#10G	FMC	3/4"		
6	SAH-3,4	5.0HP	208/3	NFDS	30A	3		1	3#12, 1#12G	FMC	1/2"		
7	CAH-1,2	5.0HP, 10KW	480/3	NFDS	30A	3		1	3#12, 1#12G	FMC	1/2"		
8	TEMPORARY A/C UNIT	2@18.6RLA, 2@2.5FLA, 36KW	480/3	NFDS	100A	3	70A	3R	3#4, 1#8G	LFMC	1-1/4"		
9	VF-2	0.75HP	480/3	NFDS	30A	3		1	3#12, 1#12G	FMC	1/2"		
10	HWP-1,2	2.0HP	480/3	BUIL	T INTO VA	RIABLE FI	REQUENCY DRI	VE	3#12, 1#12G	FMC	1/2"		
11)	HWP-3,4	1.05HP	480/3	BUIL	_T INTO VA	RIABLE FI	REQUENCY DRI	VE	3#12, 1#12G	FMC	1/2"		
12	CHWP-1,2	3.0HP	480/3	BUIL	_T INTO VA	RIABLE FI	REQUENCY DRI	VE	3#12, 1#12G	FMC	1/2"		
13	CHWP-3,4	5.0HP	480/3	BUIL	_T INTO VA	RIABLE FI	REQUENCY DRI	VE	3#12, 1#12G	FMC	1/2"		
LEGEND DISCONNECT TYPES DISCONNECT TYPES ETCB = ELECTRONIC-TRIP CIRCUIT BREAKER DISCONNECT ENCLOSURE TYPES EMT = ELECTRIC METALLIC TUBING EMT = ELECTRIC METALLIC TUBING CONTROL DEVICES													

FDS = FUSIBLE DISCONNECT SWITCH MCP = MOTOR CIRCUIT PROTECTOR4 = NEMA 4 ENCLOSURENFDS = NON-FUSIBLE DISCONNECT SWITCH 4X = NEMA 4X ENCLOSUREST/DS = COMBINATION STARTER/DISCONNECT SWITCH TMCB = THERMAL-MAGNETIC CIRCUIT BREAKER FPN = FUSE PER NAMEPLATE TOG = HP RATED TOGGLE SWITCH

3R = NEMA 3R ENCLOSUREFMC = FLEXIBLE METAL CONDUITIMC = INTERMEDIATE METAL CONDUIT LFMC = LIQUID-TIGHT FLEXIBLE METAL CONDUIT PVC = NON-METALLIC PVC CONDUIT RMC = RIGID METAL CONDUIT

HOA = HAND-OFF-AUTORPL = RED PILOT LIGHTAUX = AUXILLARY CONTACTS (2 N.O., 1 N.C.)CT50 = 50 VA CONTROL TRANSFORMER

ALL ELECTRICAL CHARACTERISTICS SCHEDULED ABOVE ARE BASED ON INFORMATION AVAILABLE AT THE TIME OF DESIGN. ELECTRICAL CONTRACTOR SHALL VERIFY ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT WITH EQUIPMENT SUPPLIER(S) PRIOR TO ROUGHING, AND SHALL VERIFY EXACT LOCATION AND EXACT TYPE OFCONNECTION. ALL EQUIPMENT SHALL BE PROPERLY AND SECURELY GROUNDED. ANY SIGNIFICANT CHANGES IN LOCATION, ELECTRICAL REQUIREMENTS, OR TYPE OF CONNECTION REQUIRED FOR ANY EQUIPMENT SCHEDULED ABOVE SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IN WRITING PRIOR TO PROCEEDING. CONDUCTORS AND RACEWAY SPECIFIED IN THE ABOVE SCHEDULE ARE FOR FINAL CONNECTION TO UNIT AND SHALL BE EXTENDED FROM THE DISCONNECT SHOWN ON THE FLOOR PLANS TO THE

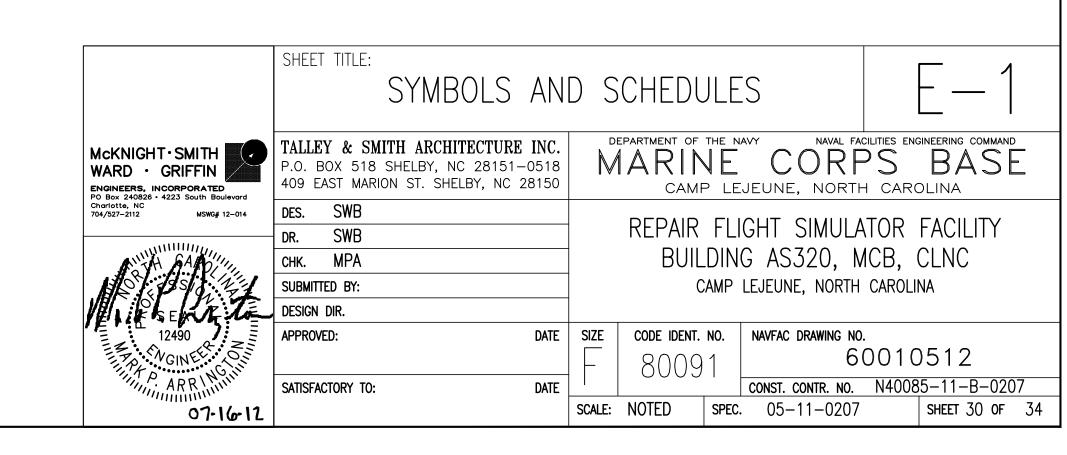
EQUIPMENT TERMINATION BOX.

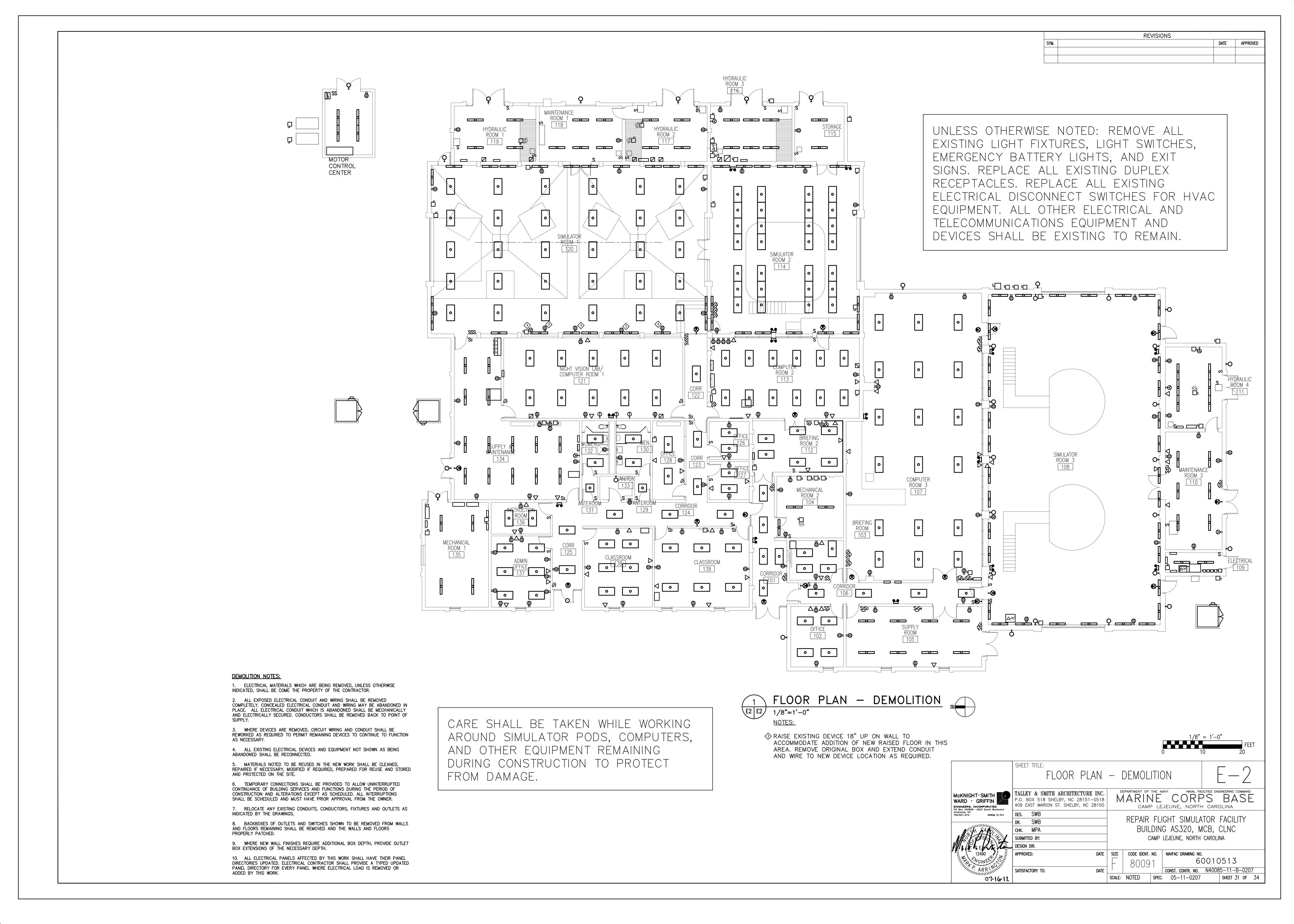
CONDUIT AND BOXES REQUIRED FOR EQUIPMENT CONNECTIONS SHALL BE INSTALLED IN SUCH A WAY AS TO NOT COVER UP EQUIPMENT NAMEPLATES, SERVICE AREAS, AIR FLOW AREAS, ETC.

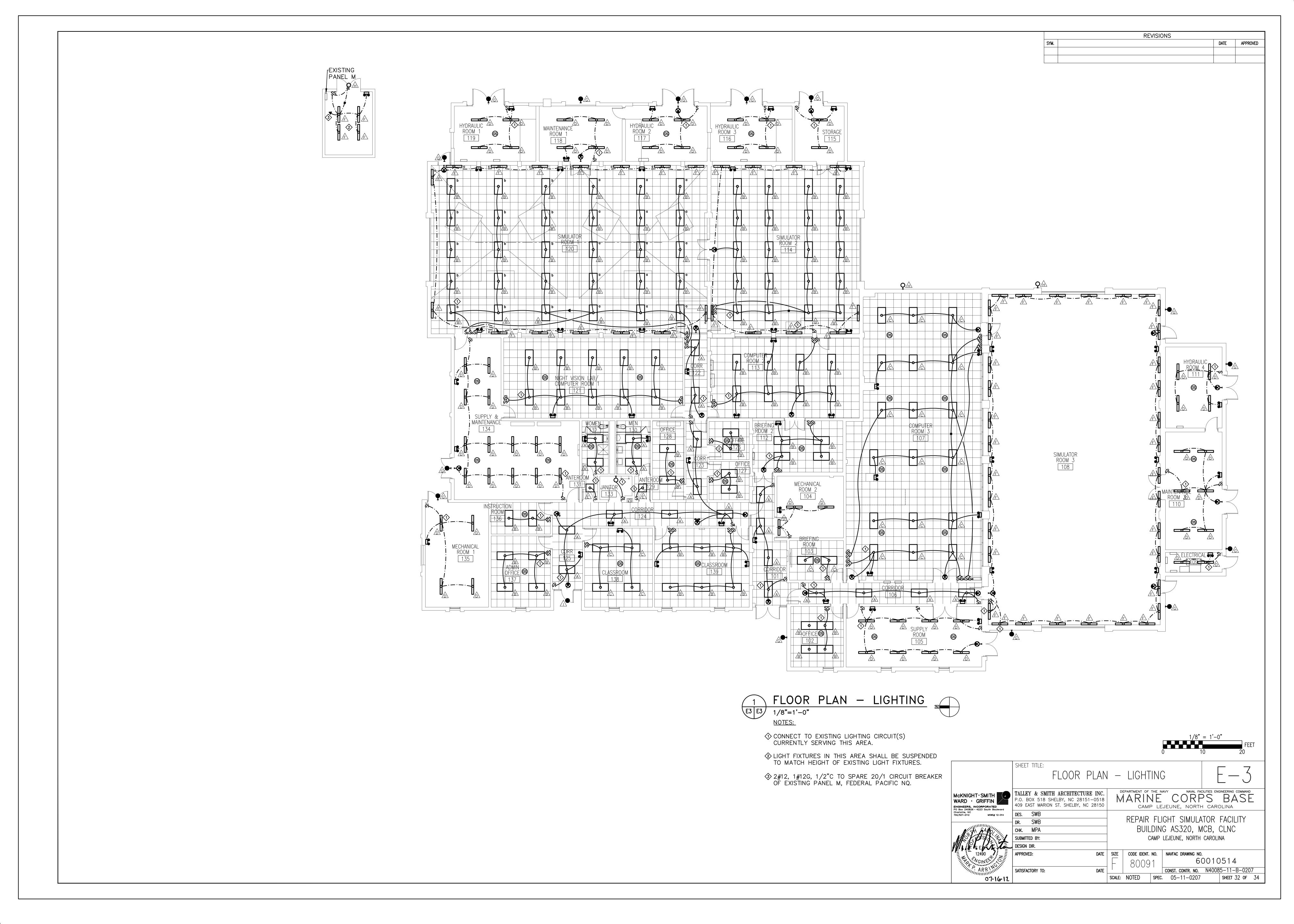
1) UTILIZE ONLY ONE POLE OF TWO POLE DISCONNECT SWITCH FOR CIRCUIT DISCONNECTION. DO NOT SWITCH CIRCUIT NUETRAL.

FUSE PER MANUFACTURER'S RECOMMENDATION.

3 PROVIDE ELEVATOR DISCONNECT SWITCH WITH FORM C AUXILIARY CONTACTS FOR DISCONNECTING THE ELEVATOR CONTROLLER INTERNAL BATTERY FROM POWER SUPPLY WHEN THE ELEVATOR DISCONNECT SWITCH IS OPENED.

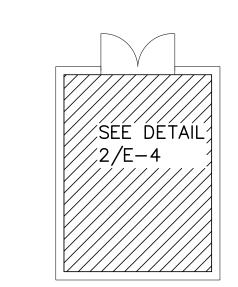


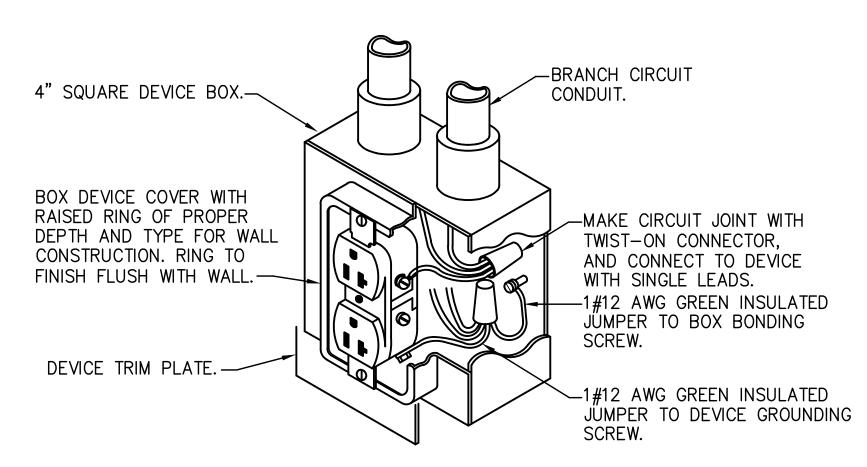




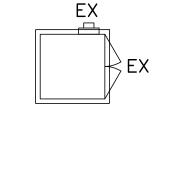


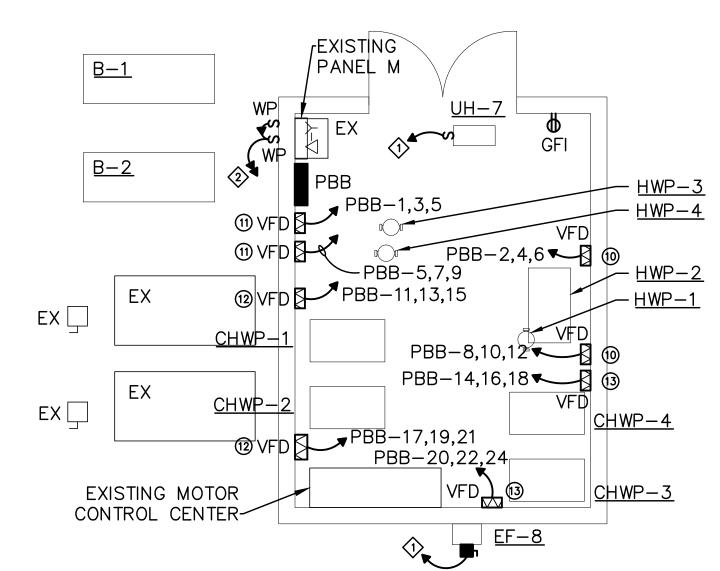
DATE APPROVED ADDED CO2 EXHAUST SYSTEMS FOR COMPUTER RMS 6/13/12





DETAIL-TYPICAL DUPLEX RECEPTACLE INSTALLATION E4 E4 NOT TO SCALE





PUMP ROOM PLAN - POWER _ E4 E4 1/4"=1'-0"

- EXISTING PANEL M, FEDERAL PACIFIC NQ.
- ② 3#12, 1#12G, 1/2"C TO NEW 20/1 CIRCUIT BREAKERS IN SPACE AVAILABLE OF EXISTING PANEL M, FEDERAL PACIFIC NQ.

ALL RECEPTACLES SHOWN NEW ARE TO REPLACE EXISTING RECEPTACLES. ASSOCIATED WIRING SYSTEM SHALL REMAIN. REFER TO DEMOLITION PLANS FOR ADDITIONAL INFORMATION.

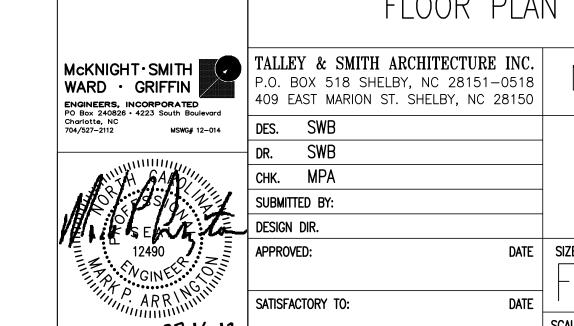
AFTER COMPLETION OF CONSTRUCTION, ALL EXISTING ELECTRICAL PANELS SHALL BE RELABELED AND PANEL DIRECTORIES SHALL BE UPDATED/CORRECTED.

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

> ♦ REPLACE EXISTING DISCONNECT SWITCH AS INDICATED. CONNECT TO EXISTING CIRCUIT CURRENTLY SERVING UNIT BEING REPLACED

PROVIDE 3#12, 1#12G, 1/2"C TO EXISTING BUCKET OF MOTOR CONTROL CENTER CURRENTLY SERVING PUMP. REPLACE EXISTING FULL VOLTAGE, NON-REVERSING NEMA "O" STARTER. FIELD

- ♦ 3#3, 1#8G, 1-1/4"C TO EXISTING CIRCUIT BREAKER CURRENTLY SERVING DISCONNECT SWITCH IN EXISTING PANEL CP-1. RUN CONDUIT UNDER EXISTING RAISED FLOOR IN COMPUTER ROOM.
- \$ 2#12, 1#12G, 1/2"C TO NEW 20/1 CIRCUIT BREAKER IN SPACE AVAILABLE OF EXISTING PANEL A.
- ♦ 3#12, 1#12G, 1/2"C TO NEW 15/3 CIRCUIT BREAKER IN SPACE
 AVAILABLE OF EXISTING PANEL L.



07-16-12

SHEET TITLE:

FLOOR PLAN - POWER DEPARTMENT OF THE NAVY

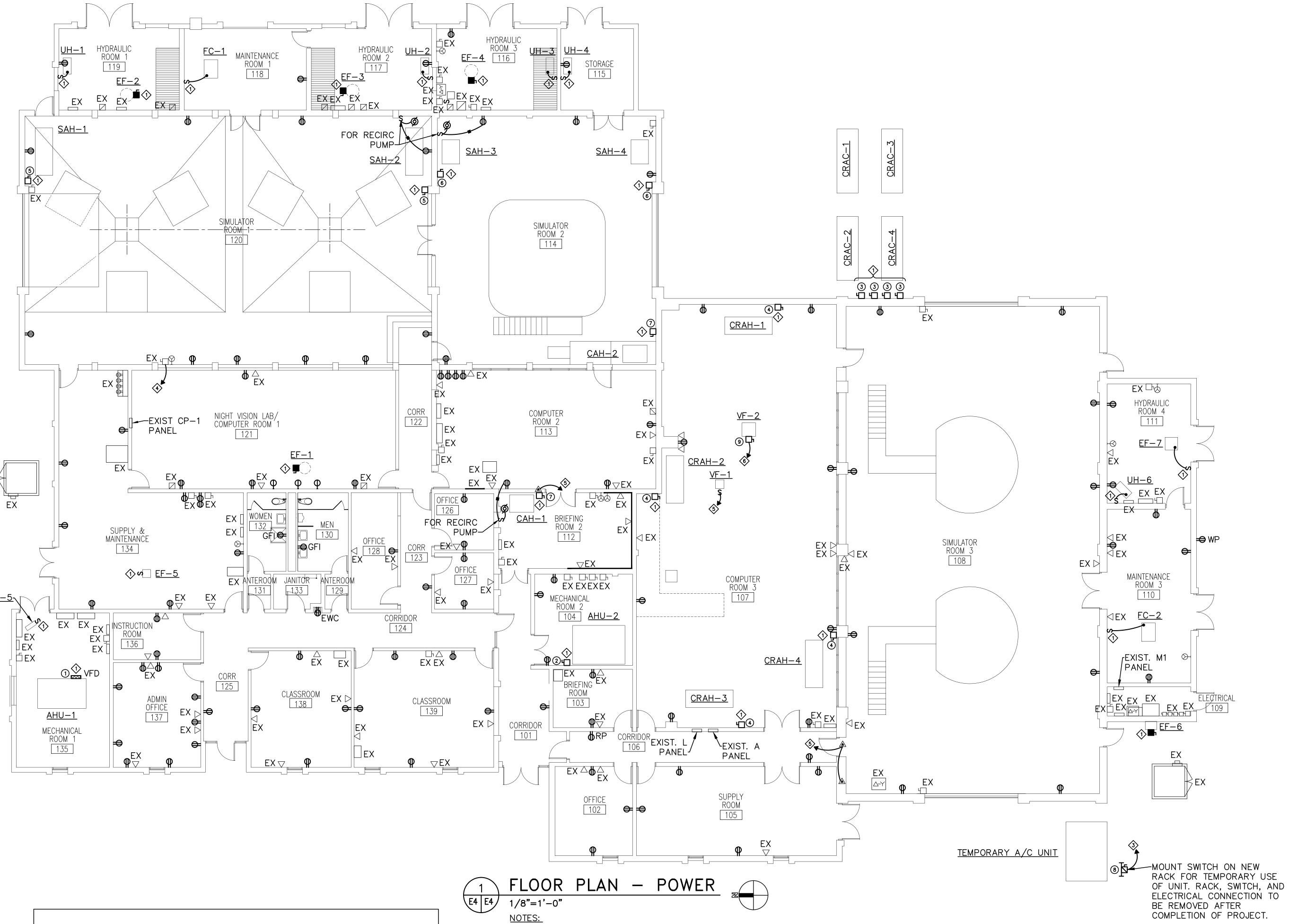
NAVAL FACILITIES ENGINEERING COMMAND

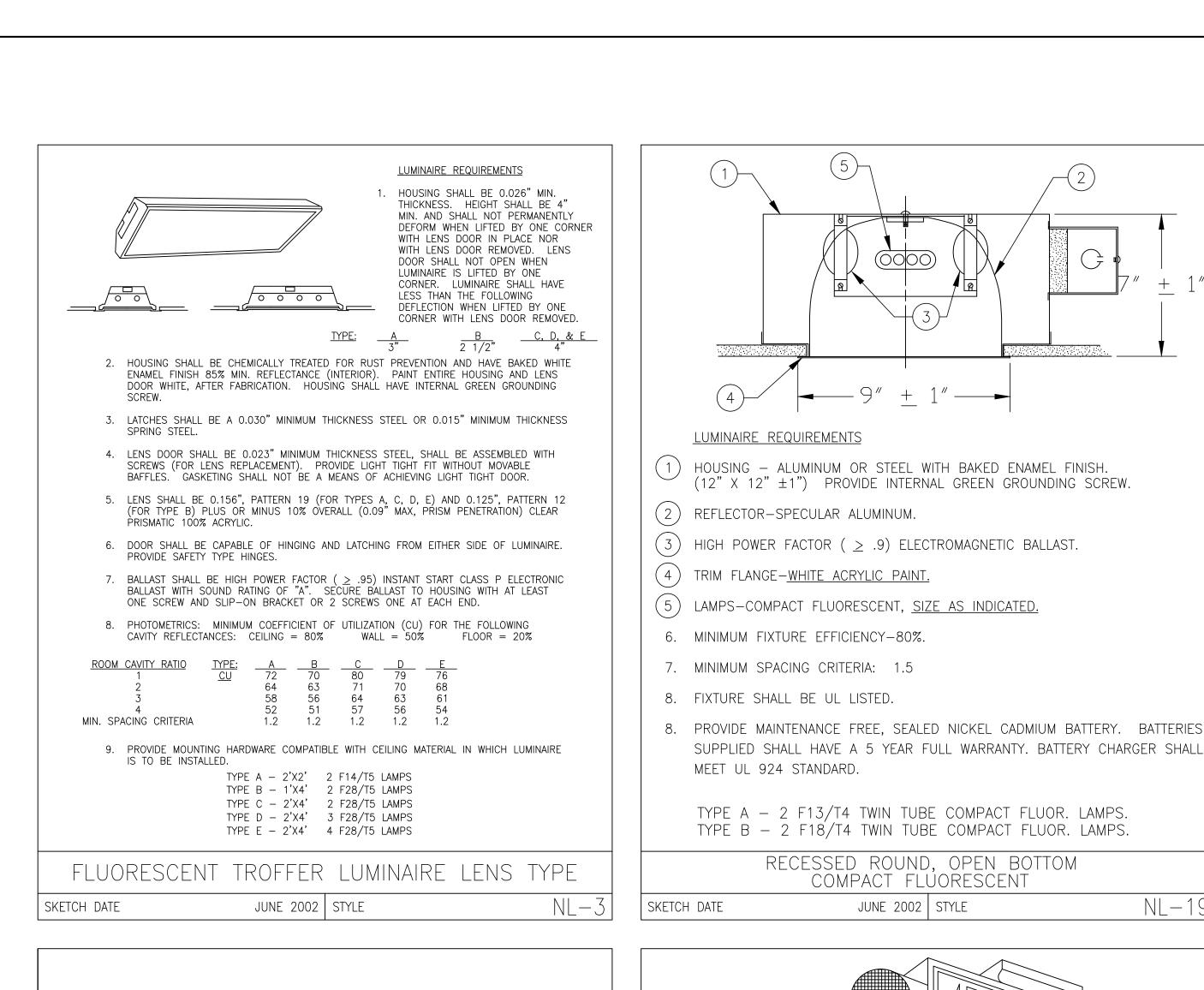
MARINE CORPS BASE

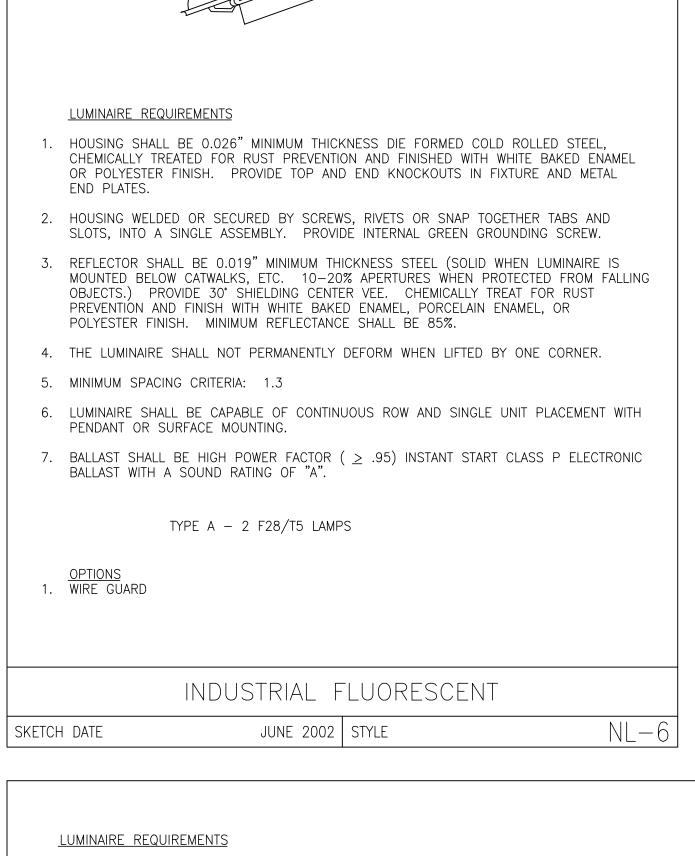
CAMP LEJEUNE, NORTH CAROLINA

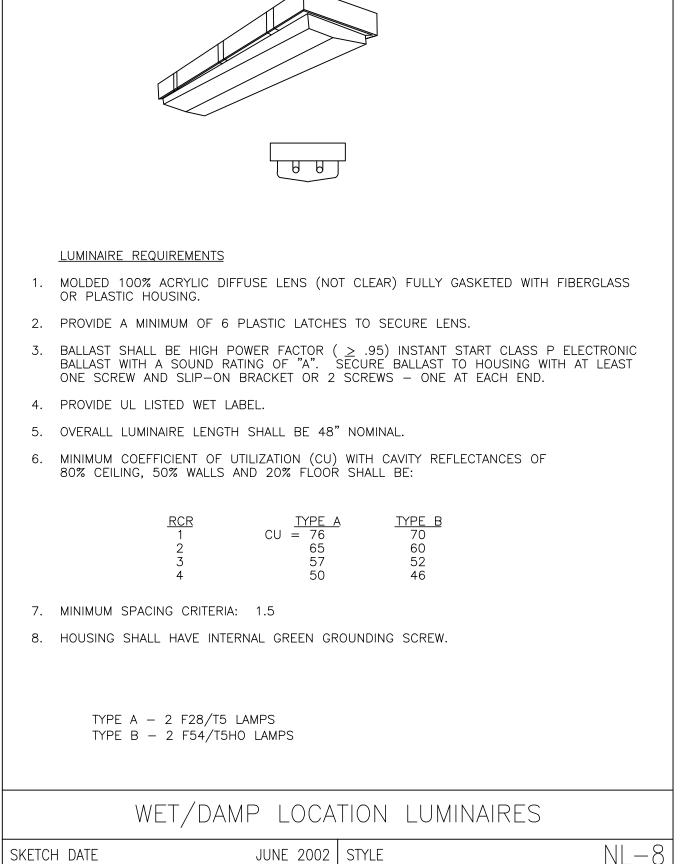
REPAIR FLIGHT SIMULATOR FACILITY BUILDING AS320, MCB, CLNC CAMP LEJEUNE, NORTH CAROLINA

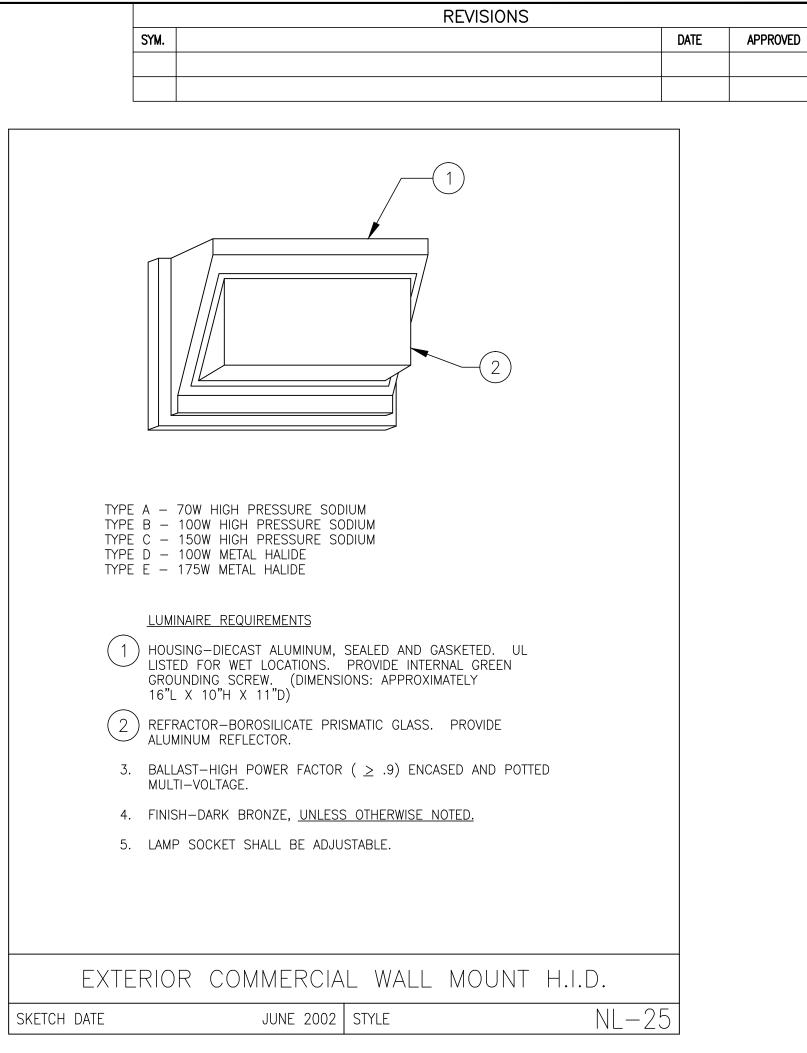
DATE | SIZE | CODE IDENT. NO. | NAVFAC DRAWING NO. 60010515 CONST. CONTR. NO. N40085-11-B-0207 SCALE: NOTED | SPEC. 05-11-0207 SHEET 33 OF 34

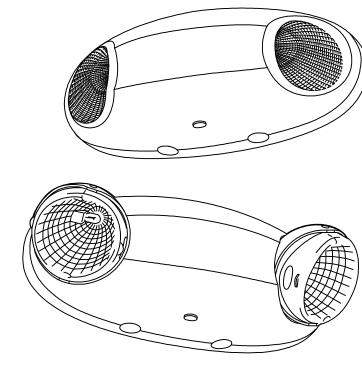












LUMINAIRE REQUIREMENTS

1. SEALED BATTERY,
SPECIFICALLY DESIGN
FOR EMERGENCY
LIGHTING, SOLID STATE
FULLY AUTOMATIC —
THREE RATE CHARGER
FOR NICKEL CADMIUM
BATTERY AND TWO RATE
HIGH/LOW CHARGER FOR
LEAD CALCIUM OR LEAD

2. MINIMUM 0.032" THICK THERMOPLASTIC HOUSING

ACID SEALED BATTERIES.

 TEST SWITCH
 "AC ON" PILOT LIGHT.
 AUTOMATIC OVERLOAD PROTECTION — FUSE OR CIRCUIT BREAKER.

6. HEADS SHALL BE FULLY ADJUSTABLE VERTICALLY AND HORIZONTALLY.

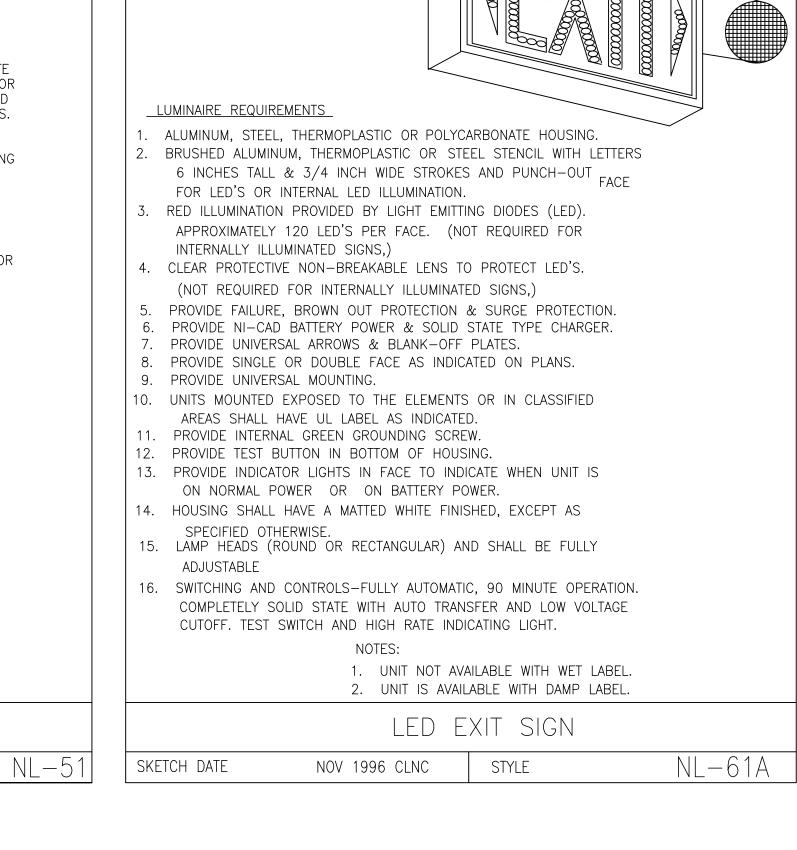
EMERGENCY LIGHTING UNIT

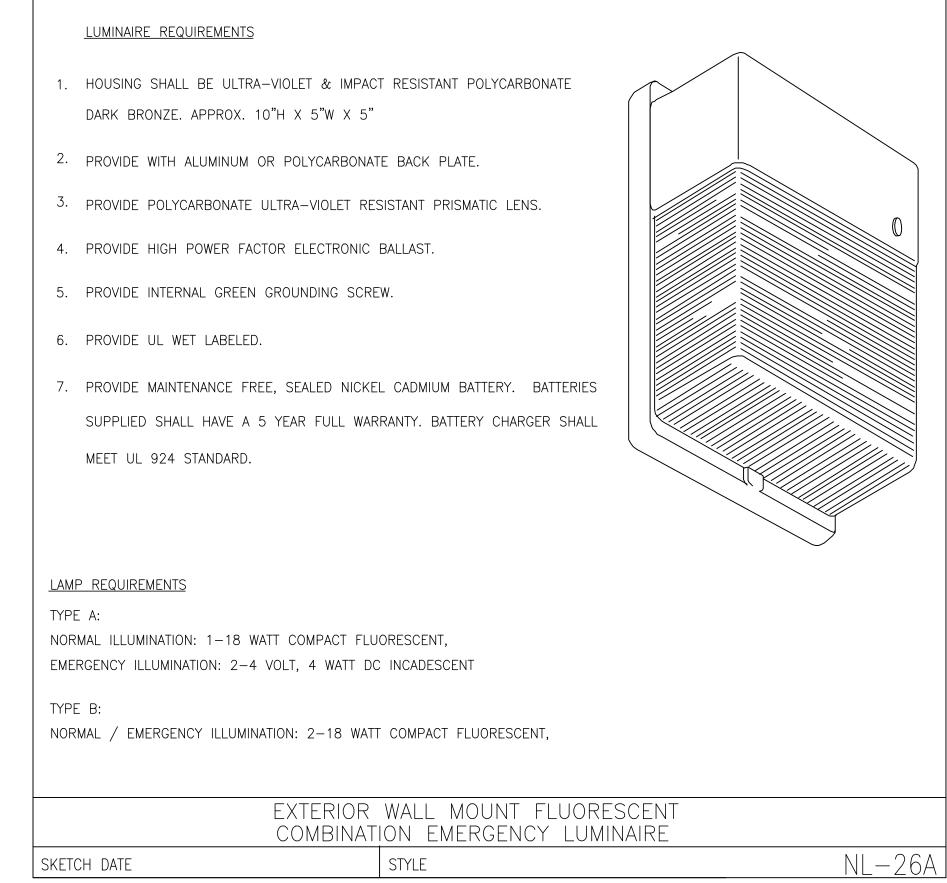
JUNE 2002 STYLE

- 7. SEALED BEAM HALOGEN PAR-36 LAMPS, MINIMUM 12 WATT.
- 8. INPUT VOLTAGE <u>AS INDICATED.</u>

SKETCH DATE

- 9. LOW VOLTAGE, DEEP DISCHARGE DISCONNECT.
- 10. PROVIDE INTERNAL GREEN GROUNDING SCREW.



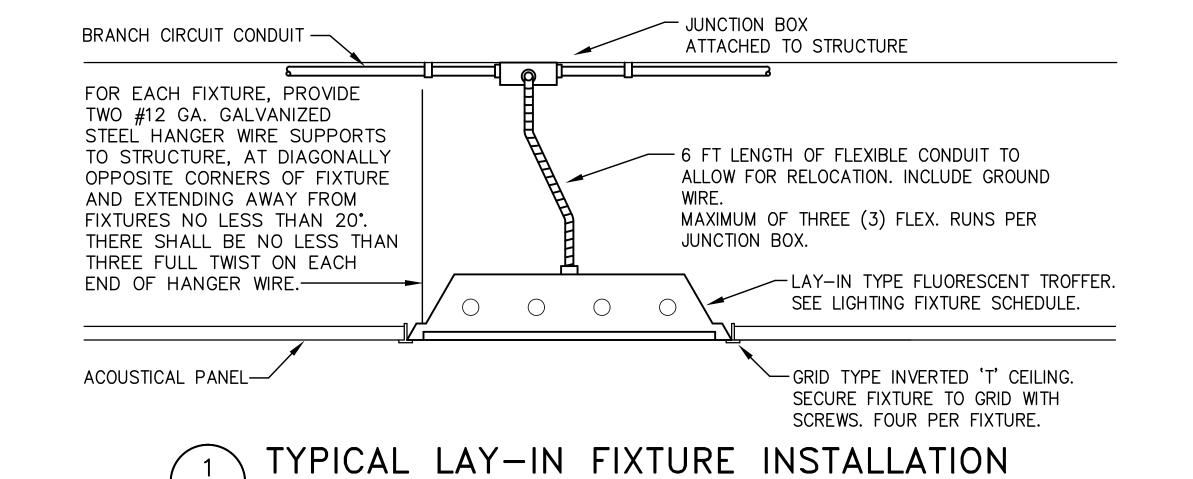




NOTES:

- ♠ MOUNT 12" BELOW CEILING TO TOP OF FIXTURE FOR WALL MOUNTING.
- VOLTAGE SHALL BE EITHER 120 OR 277 DEPENDING ON AREA OF BUILDING. VERIFY VOLTAGE BEFORE CONNECTING.

McKNIGHT · SMITH



E3 35 NOT TO SCALE

WARD • GRIFFIN

ENGINEERS, INCORPORATED
PO Box 240826 • 4223 South Boulevard
Charlotte, NC
704/527-2112

MSWG# 12-014

	SHEET TITLE: LIGHT FIXTUR	E S	CHEDU	JLE	iS .	[5)
	TALLEY & SMITH ARCHITECTURE INC. P.O. BOX 518 SHELBY, NC 28151-0518 409 EAST MARION ST. SHELBY, NC 28150	DE M		1E	CORF JEUNE, NORTH	2	BASI DLINA	D E
	DES. SWB DR. SWB CHK. MPA SUBMITTED BY:		BUIL	GHT SIMULA G AS320, M LEJEUNE, NORTH	•			
	DESIGN DIR.							
111111	APPROVED: DATE	SIZE	code ident.	NO. 1	NAVFAC DRAWING NO.)516	
1	SATISFACTORY TO: DATE	SCALE:	NOTED	SPEC.	CONST. CONTR. NO. 05-11-0207		5-11-B-020 SHEET 34 OF	07 34
L							1 20022	