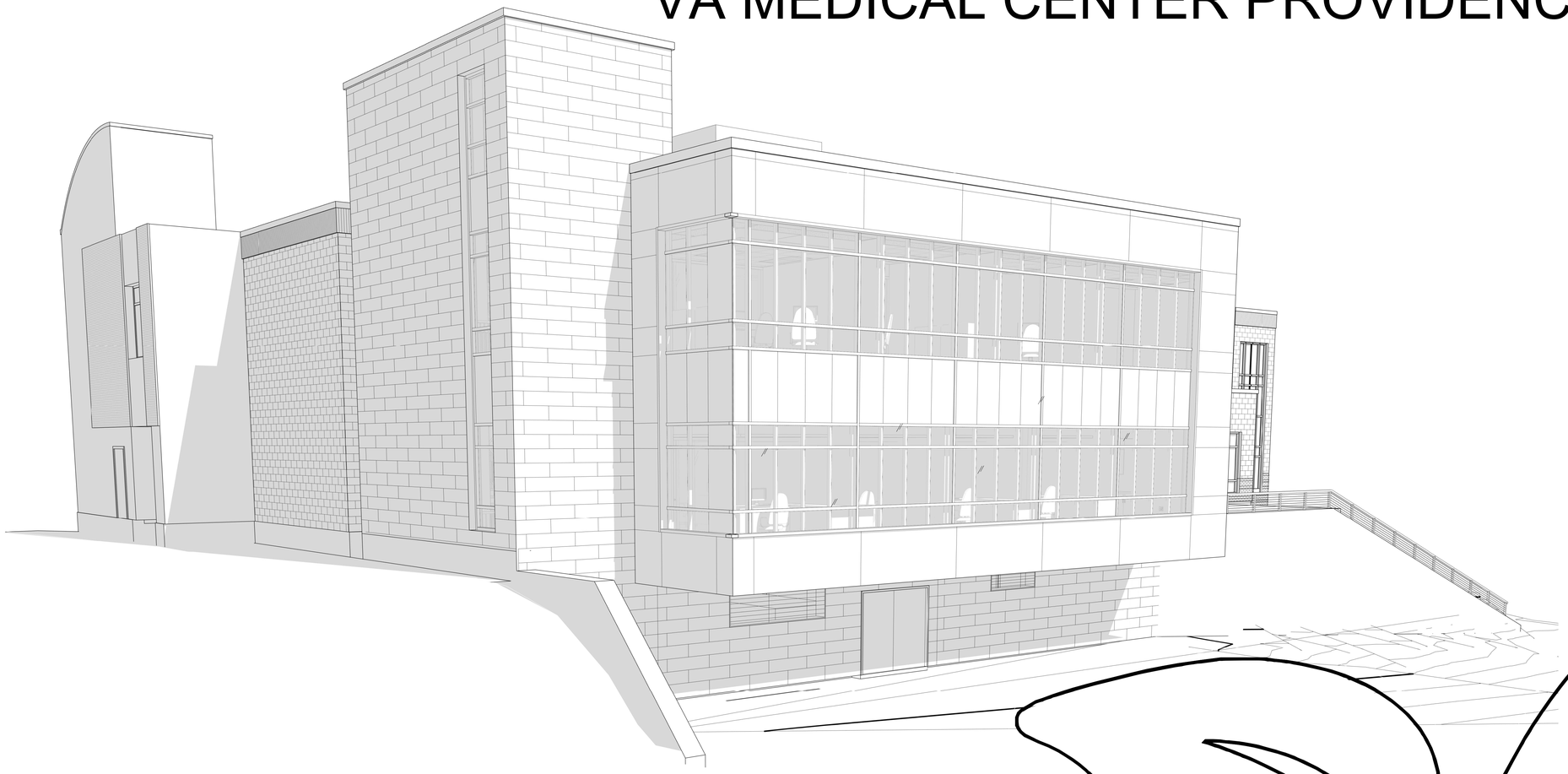
DEPARTMENT OF VETERANS AFFAIRS
VA MEDICAL CENTER PROVIDENCE



BUILDING 35 ADDITION FOR RESEARCH

830 CHALKSTONE AVE
PROVIDENCE, RI 02908-4799

ISSUED FOR FINAL DESIGN DOCUMENTS JUNE 30, 2015

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

CONSULTANTS

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3 Baldwin Green Common
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11 Drydock Ave, Suite 2060
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T: 617.772.0260
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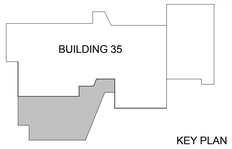


KEY PLAN

N

Drawing Title
COVER SHEET

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #

Scale
1 1/2" = 1'-0"

Location

Date
6/30/2015

VA Project No.
650-338

Drawing No.
--.--

Office of Facilities

Department of Veterans Affairs

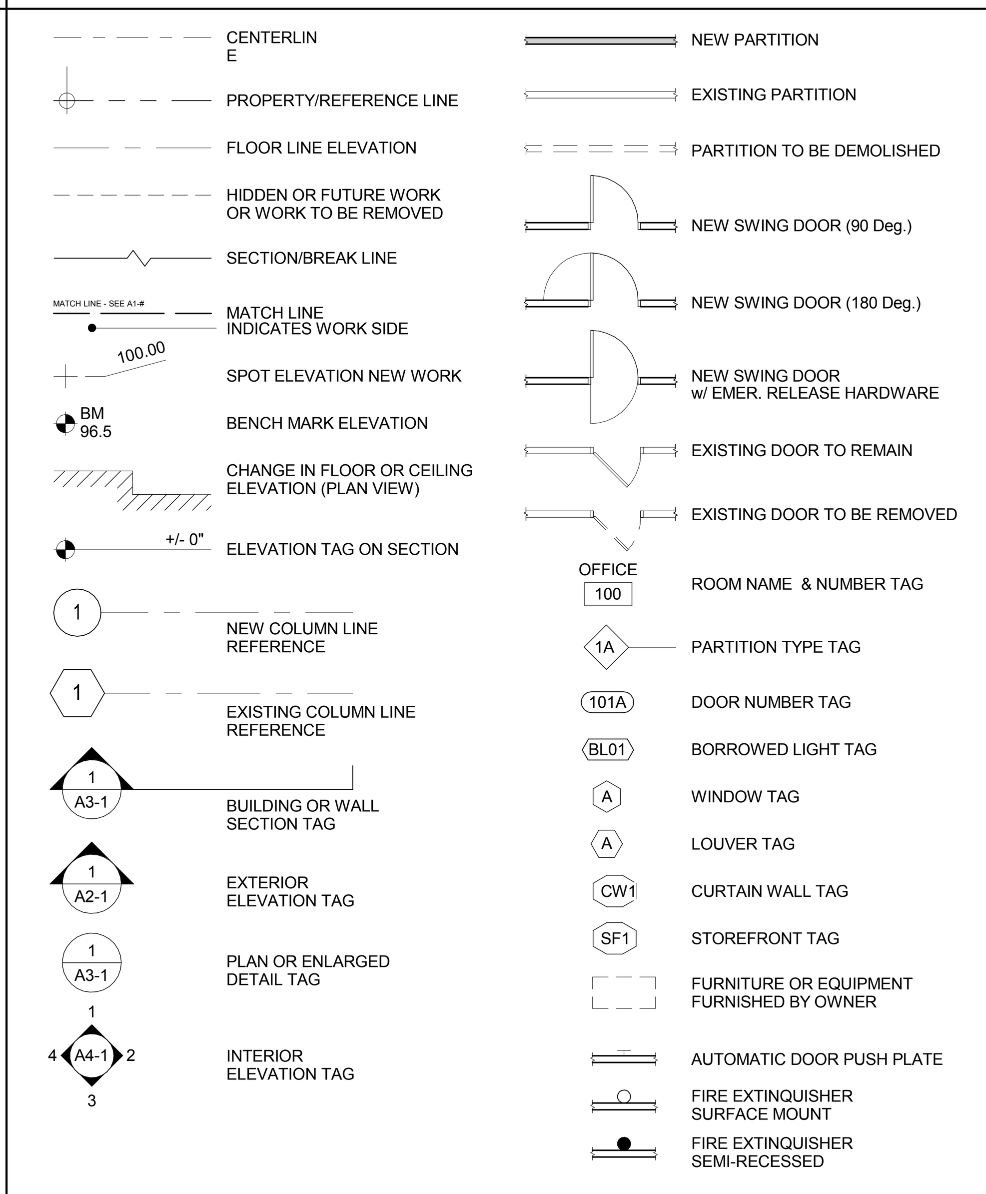
VA FORM 08-6231

DATE & TIME PRINTED: 6/30/2015 11:56:37 AM C:\Users\administrator\Documents\VAE - Research Lab_Administrator.rvt

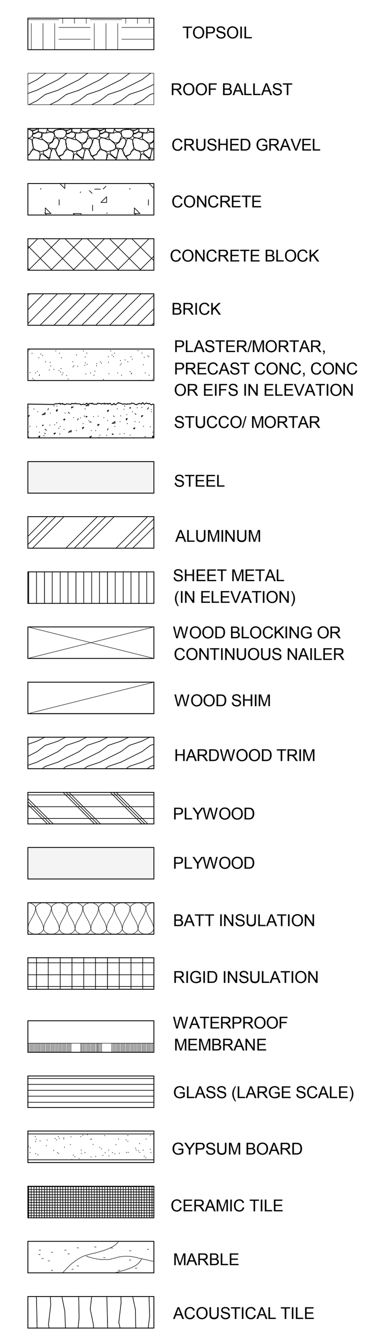
ARCHITECTURAL ABBREVIATIONS

A/C	AIR CONDITIONING	JAN	JANITOR
AB	ANCHOR BOLT	JST	JOIST
ACC	ACCESS	JT	JOINT
ACT	ACOUSTICAL CEILING TILE	KIT	KITCHEN
AD	AREA DRAIN	KO	KNOCKOUT
ADHES	ADHESIVE	KPL	KICK PLATE
ADJ	ADJUSTABLE	KR	KICK RAIL
AFF	ABOVE FINISHED FLOOR	L	LENGTH
AGGR	AGGREGATE	LAB	LABORATORY
AHU	AIR HANDLING UNIT	LAM	LAMINATE (D)
ALT	ALTERNATE	LAV	LAVATORY
ALUM	ALUMINUM	LBL	LABEL
ANOD	ANODIZED	LF	LINEAR FOOT (FEET)
ARCH	ARCHITECTURAL	LH	LEFT HAND
ASB	ASBESTOS	LHR	LEFT HAND REVERSE
ASPH	ASPHALT	LL	LIVE LOAD
AUTO	AUTOMATIC	LP	LOW POINT
BD	BOARD	MATL	MATERIAL
BITUM	BITUMINOUS	MAX	MAXIMUM
BLDG	BUILDING	MBR	MEMBER
BLK	BLOCK	MECH	MECHANICAL
BLKG	BLOCKING	MEMB	MEMBRANE
BM	BENCH MARK	MFR	MANUFACTURER
BOT	BOTTOM	MH	MAN HOLE
BR	BUMPER RAIL	MIN	MINIMUM
BRG	BEARING	MISC	MISCELLANEOUS
BRK	BRICK	MO	MASONRY OPENING
BRZ	BRONZE	MOD	MODULAR
BSMT	BASEMENT	MON	MONITOR
BTU	BRITISH THERMAL UNIT	MR	MOISTURE RESISTANT
BUR	BUILT-UP ROOFING	MTD	MOUNTED
BV	BEVELED	MTL	METAL
CAB	CABINET	MULL	MULLION
CB	CATCH BASIN	N	NORTH
CCT	CUBICAL CURTAIN TRACK	N/A	NOT APPLICABLE
CCU	CORONARY CARE UNIT	NIC	NOT IN CONTRACT
CEM	CEMENT	NO, #	NUMBER
CFCI	CONTRATOR FURNISHED CONTRACTOR INSTALLED	NOM	NOMINAL
		NRC	NOISE REDUCTION COEFFICIENT
CFOI	CONTRACTOR FURNISHED OWNER INSTALLED	NTS	NOT TO SCALE
		OA	OVERALL
CG	CORNER GUARD	OBS	OBSCURE
CI	CAST IRON	OC	ON CENTER
CIR	CIRCLE	OD	OUTSIDE DIAMETER
CJ	CONSTRUCTION JOINT	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
CL	CENTER LINE		
CLG	CEILING	OFF	OFFICE
CLKG	CAULKING	OFOI	OWNER FURNISHED OWNER INSTALLED
CLO	CLOSET		
CLOS	CLOSURE	OH	OVERHEAD
CLR	CLEAR	OPQ	OPAQUE
CMU	CONCRETE MASONRY UNIT	OPNG	OPENING
CO	CLEAN OUT	OPP	OPPOSITE
COL	COLUMN	PACU	POST ANESTHESIA CARE UNIT
CONC	CONCRETE	PAR	PARALLEL
CONF	CONFERENCE	PARTN	PARTITION
CONN	CONNECT (ION)	PBD	PARTICLE BOARD
CONT	CONTINUOUS	PC	PERSONAL COMPUTER
CONTR	CONTRACTOR	PERF	PERFORATED
CORR	CORRIDOR	PERIM	PERIMETER
CPT	CARPET	P	PLATE
CR	CHAIR RAIL	PLAM	PLASTIC LAMINATE

ARCHITECTURAL SYMBOLS



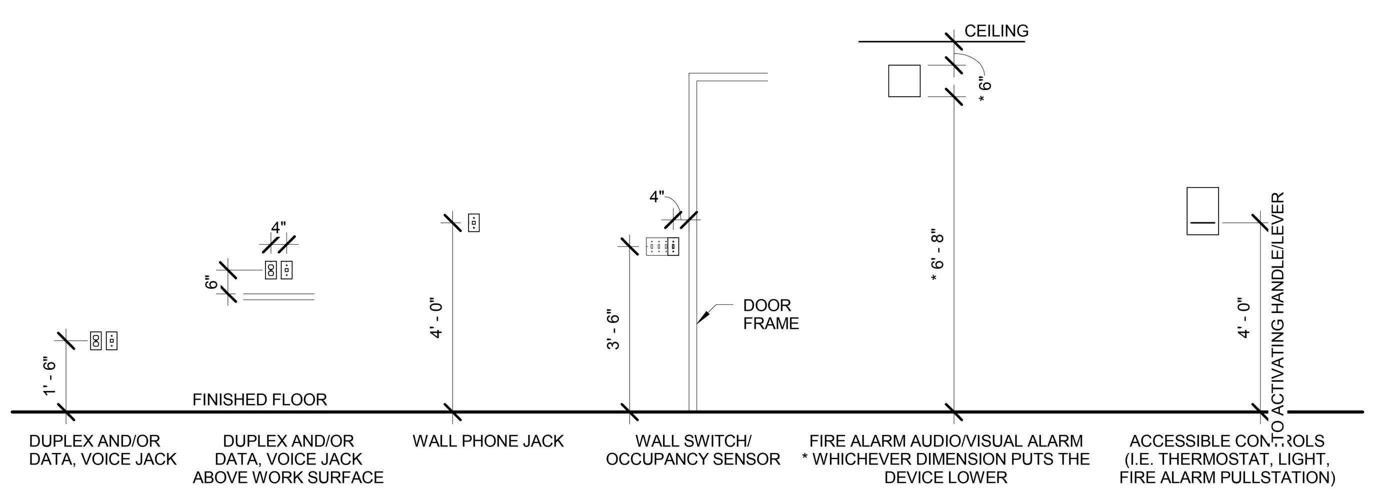
MATERIAL LEGEND



SHEET LIST		
SHEET NUMBER	SHEET NAME	ISSUE DATE
TITLE		
--.--	COVER SHEET	06/30/15
AG-1.1	DRAWING LIST, ARCHITECTURAL STANDARD GRAPHICS	06/30/15
CIVIL		
C-1.1	NOTES AND LEGENDS	06/30/15
C-2.1	DEMOLITION PLAN	06/30/15
C-3.1	GENERAL SITE, GRADING, AND DRAINAGE	06/30/15
C-4.1	DETAILS I	06/30/15
C-4.2	DETAILS II	06/30/15
C-4.3	DETAILS III	06/30/15
STRUCTURAL		
S0-0.0	STRUCTURAL AXON AND SHEET LIST	06/30/15
S0-0.1	GENERAL NOTES	06/30/15
S0-1.0	TYPICAL CONCRETE DETAILS	06/30/15
S0-1.1	TYPICAL CONCRETE DETAILS	06/30/15
S0-1.2	TYPICAL CONCRETE DETAILS	06/30/15
S0-2.0	TYPICAL STEEL DETAILS	06/30/15
S0-2.1	TYPICAL STEEL DETAILS	06/30/15
S0-2.2	TYPICAL STEEL DETAILS	06/30/15
S0-2.3	TYPICAL STEEL DETAILS	06/30/15
S1-2.B	BASEMENT FLOOR PLAN	06/30/15
S1-2.1	FIRST FLOOR PLAN	06/30/15
S1-2.2	SECOND FLOOR PLAN	06/30/15
S1-2.R	ROOF PLAN	06/30/15
S2-1.0	BUILDING ELEVATIONS	06/30/15
S2-2.0	BRACE ELEVATIONS	06/30/15
S2-2.1	BRACE ELEVATIONS	06/30/15
S3-1.0	COLUMN SCHEDULE	06/30/15
S3-1.1	BASEPLATE DETAILS	06/30/15
S3-1.2	PIERS AND PILASTERS	06/30/15
S4-1.0	CONCRETE SECTIONS AND DETAILS	06/30/15
S4-1.1	CONCRETE SECTIONS AND DETAILS	06/30/15
S4-1.2	CONCRETE SECTIONS AND DETAILS	06/30/15
S5-1.0	STEEL SECTIONS AND DETAILS	06/30/15
S5-1.1	STEEL SECTIONS AND DETAILS	06/30/15
S5-1.2	STEEL SECTIONS AND DETAILS	06/30/15
S5-2.0	ROOF DUNNAGE PLAN	06/30/15
ARCHITECTURAL		
AD-1.1	BASEMENT AND FIRST FLOOR DEMO PLANS	06/30/15
AD-1.2	SECOND FLOOR DEMO PLAN DEMO ELEVATIONS	06/30/15
A1-1.B	BASEMENT OVERALL / LIFE SAFETY PLAN	06/30/15
A1-1.1	FIRST FLOOR OVERALL / LIFE SAFETY PLAN	06/30/15
A1-1.2	SECOND FLOOR OVERALL / LIFE SAFETY PLAN	06/30/15
A1-2.B	BASEMENT FLOOR PLAN	06/30/15
A1-2.1	FIRST FLOOR PLAN	06/30/15
A1-2.2	SECOND FLOOR PLAN	06/30/15
A1-2.R	ROOF PLAN	06/30/15
A1-3.1	REFLECTED CEILING PLANS	06/30/15
A1-4.0	SIGNAGE PLAN	06/30/15
A2-1.1	BUILDING ELEVATIONS	06/30/15
A2-2.1	CURTAIN WALL SCHEDULE AND DETAILS	06/30/15
A3-1.1	WALL SECTIONS	06/30/15
A3-1.2	WALL SECTIONS	06/30/15
A3-1.3	WALL SECTIONS	06/30/15
A3-2.1	EXTERIOR DETAILS	06/30/15
A3-2.2	EXTERIOR DETAILS	06/30/15
A3-4.1	ROOF DETAILS	06/30/15
A4-1.1	INTERIOR ELEVATIONS	06/30/15
A5-1.1	INTERIOR PARTITION TYPES	06/30/15
A5-2.1	DOOR & VIEW WINDOW SCHEDULE & DETAILS	06/30/15
A6-1.1	INTERIOR MISC. DETAILS	06/30/15
A7-1.1	STAIR DETAILS	06/30/15

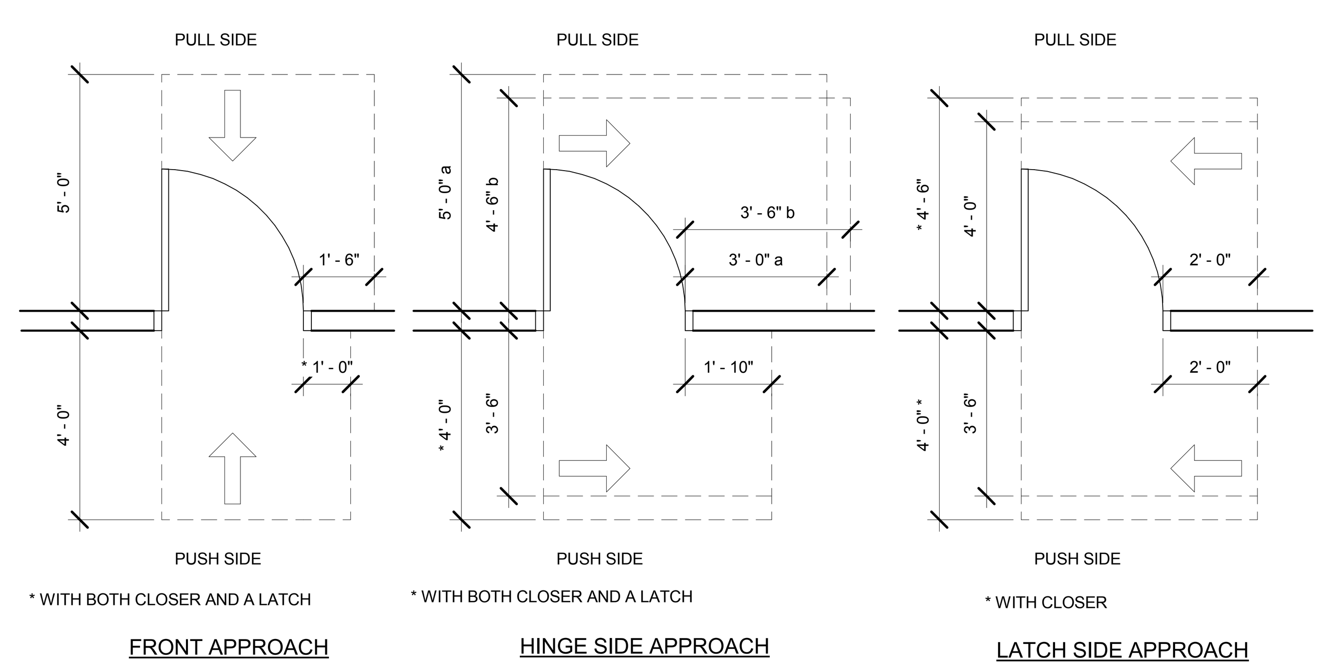
SHEET LIST		
SHEET NUMBER	SHEET NAME	ISSUE DATE
INTERIORS		
I1-1.0	FINISH SCHEDULE	06/30/15
I1-1.1	BASEMENT - FLOOR FINISH	06/30/15
I1-1.2	FIRST FLOOR - FLOOR FINISH	06/30/15
I1-1.3	SECOND FLOOR - FLOOR FINISH	06/30/15
FIRE PROTECTION		
FA0.0	FIRE PROTECTION SCHD., LEGEND, DETAILS	06/30/15
FA2.0	FIRE PROTECTION NEW WORK PLAN	06/30/15
PLUMBING		
PL0.0	PLUMBING LEGEND	06/30/15
PL1.0	PLUMBING BASEMENT DEMOLITION PLAN	06/30/15
PL1.1	PLUMBING FIRST FLOOR DEMOLITION PLAN	06/30/15
PL2.0	PLUMBING BASEMENT PLAN	06/30/15
PL2.1	PLUMBING FIRST FLOOR PLAN	06/30/15
PL2.2	PLUMBING SECOND FLOOR PLAN	06/30/15
PL2.3	PLUMBING LOW ROOF PLAN	06/30/15
PL3.0	PLUMBING SCHEDULES AND DETAILS	06/30/15
PL3.1	PLUMBING RISER DIAGRAMS	06/30/15
MECHANICAL		
MH0.0	MECHANICAL LEGEND	06/30/15
MH1.0	MECHANICAL PIPING DEMOLITION PLAN	06/30/15
MH2.0	MECHANICAL BASEMENT DUCTWORK PLAN	06/30/15
MH2.1	MECHANICAL FIRST FLOOR DUCTWORK PLAN	06/30/15
MH2.2	MECHANICAL SECOND FLOOR DUCTWORK PLAN	06/30/15
MH3.0	MECHANICAL BASEMENT PIIPING PLAN	06/30/15
MH3.1	MECHANICAL FIRST FLOOR PIIPING PLAN	06/30/15
MH3.2	MECHANICAL SECOND FLOOR PIIPING PLAN	06/30/15
MH3.3	MECHANICAL ROOF DUCT & PIPING PLAN	06/30/15
MH4.0	MECHANICAL SCHEDULES & SCHEMATICS	06/30/15
MH5.0	MECHANICAL DETAILS	06/30/15
MH5.1	MECHANICAL DETAILS AND SCHEMATICS	06/30/15
MH6.0	MECHANICAL CONTROLS SCHEMATICS AND SEQUENCES	06/30/15
MH6.1	MECHANICAL CONTROLS SCHEMATICS AND SEQUENCES	06/30/15
MH6.2	MECHANICAL CONTROL POINT LISTS	06/30/15
ELECTRICAL		
ES0.0	ELECTRICAL LEGEND	06/30/15
ES1.0	ELECTRICAL BASEMENT DEMO PLAN	06/30/15
ES1.1	ELECTRICAL FIRST & SECOND FLOOR DEMO PLANS	06/30/15
ES2.0	ELECTRICAL BASEMENT LIGHTING PLAN	06/30/15
ES2.1	ELECTRICAL FIRST FLOOR LIGHTING PLANS	06/30/15
ES2.2	ELECTRICAL SECOND FLOOR LIGHTING PLAN	06/30/15
ES3.0	ELECTRICAL BASEMENT POWER AND SIGNAL PLAN	06/30/15
ES3.1	ELECTRICAL FIRST FLOOR POWER AND SIGNAL PLAN	06/30/15
ES3.2	ELECTRICAL SECOND FLOOR POWER AND SIGNAL PLAN	06/30/15
ES3.3	ELECTRICAL ROOF POWER AND SIGNAL PLAN	06/30/15
ES4.0	ELECTRICAL POWER RISER DIAGRAMS	06/30/15
ES4.1	ELECTRICAL RISERS AND SCHEDULES	06/30/15
ES5.0	ELECTRICAL DETAILS	06/30/15
ES5.1	ELECTRICAL DETAILS	06/30/15
EFA1.0	ELECTRICAL BASEMENT FIRE ALARM PLAN	06/30/15
EFA1.1	ELECTRICAL FIRST FLOOR FIRE ALARM PLAN	06/30/15
EFA1.2	ELECTRICAL SECOND FLOOR FIRE ALARM PLAN	06/30/15
EFA1.3	ELECTRICAL ROOF FIRE ALARM PLAN	06/30/15
EFA2.0	FIRE ALARM RISER DIAGRAM	06/30/15

MOUNTING HEIGHTS



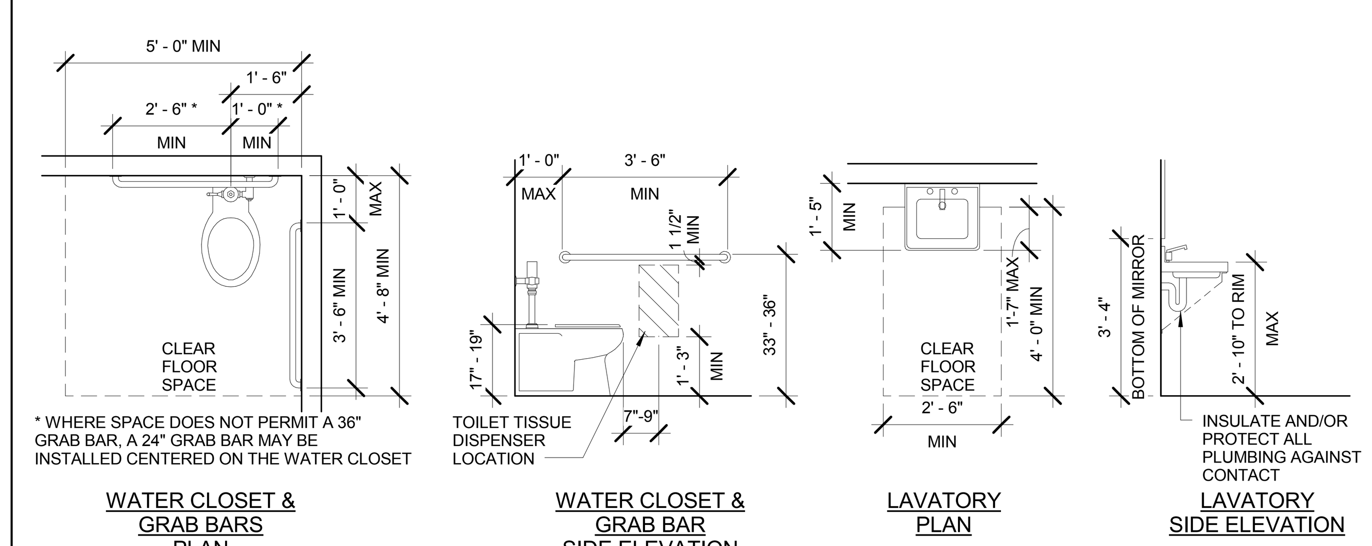
NOTES:
DIMENSIONS SHOWN HERE ARE TYPICAL, UNLESS NOTED OTHERWISE WITHIN DOCUMENTS

MANEUVERING CLEARANCES - DOORS

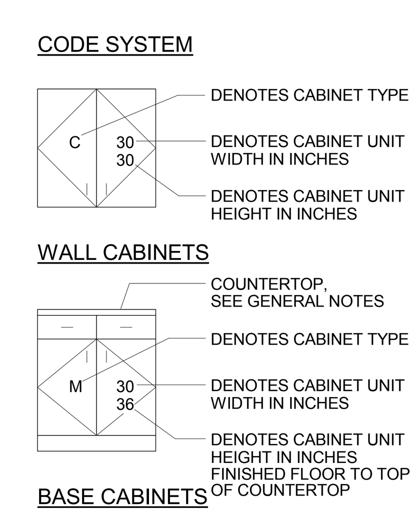


NOTES:
1. INFORMATION TAKEN FROM 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN, CHAPTER 4, SECTION 404 DOORS, DOORWAYS, AND GATES.
2. ALL DIMENSIONS PROVIDED ARE MINUMUM DIMENSIONS.

FIXTURES - MOUNTING HEIGHTS AND CLEARANCES

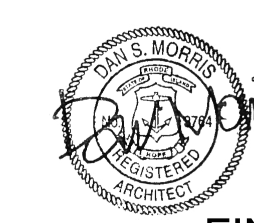


MODULAR CASEWORK



GENERAL NOTES:

1. PENCIL DRAWERS WHERE SHOWN SHALL BE 3" IN HEIGHT AND A MAXIMUM WIDTH OF 24". ALL PENCIL DRAWERS TO BE REMOVABLE.
2. CABINET UNIT DEPTHS TO BE AS FOLLOWS, UON ON DETAILS: (EXCLUDING DOORS)
WALL CABINETS: 1'-0" , BASE CABINETS: 2'-0" , TALL STORAGE CABINETS: 2'-0"
3. TYPICAL TOE SPACE AT FLOOR MOUNTED CABINETS: DEPTH: 3" HEIGHT: 4"
4. END PANELS AT KNEE SPACES, END RUNS OR UNDER-COUNTER EQUIPMENT TO BE 3"W. CONSTRUCTED OF 2X2 W/ 3/4 PLASTIC LAMINATE EACH SIDE.
5. CABINETS TO BE PROVIDED WITH ADJUSTABLE SHELVES AS FOLLOWS, UON:
BASE CABINETS: 1 SHELF , TALL STORAGE: 5 SHELVES , SINK BASE: NO SHELVES
WALL CABINETS: 2 SHELVES (24"-36" H) , WALL CABINETS: 1 SHELF (LESS THAN 24" H)
6. TYPICAL COUNTERTOP TO BE PLASTIC LAMINATE FINISH, UON. DEPTH TO BE 25" WITH A 4" HIGH BACKSPLASH, UON. PROVIDE A BACKSPLASH AT ENDS OF COUNTERTOP WHERE ADJACENT TO A WALL OR PARTIAL BACKSPLASH AT PARTIAL WALL WHERE APPLICABLE.
7. ALL DRAWERS IN BASE CABINETS TO BE 6" IN HEIGHT UNLESS OTHERWISE NOTED.
8. AT KNEE SPACES, THE COUNTERTOP SHALL BE PROVIDED WITH A PLASTIC LAMINATE APRON WHEREVER PENCIL DRAWERS DO NOT OCCUR. HEIGHT OF APRON TO COORDINATE WITH PENCIL DRAWER HEIGHT OR DRAWER IN ADJACENT CABINET AS SHOWN ON MILLWORK ELEVATION. ALL APRONS TO BE REMOVABLE.
9. TOP OF WALL CABINETS TO BE MOUNTED AT +7'-2" AFF UNLESS OTHERWISE SHOWN. TALL STORAGE UNITS TO BE 7'-2" TALL UNLESS OTHERWISE NOTED.
10. WALL CABINET BULKHEADS TO BE OF GWB/STUD CONSTRUCTION UNLESS OTHERWISE NOTED.
11. CUSTOM MILLWORK TO BE AS DIMENSIONED AND INDICATED ON SPECIFIC ELEVATIONS.
12. PROVIDE A WALL STOP WHEREVER A TALL STORAGE UNIT DOOR PULL IMPACTS AN ADJACENT GWB FINISH WHEN OPENED.



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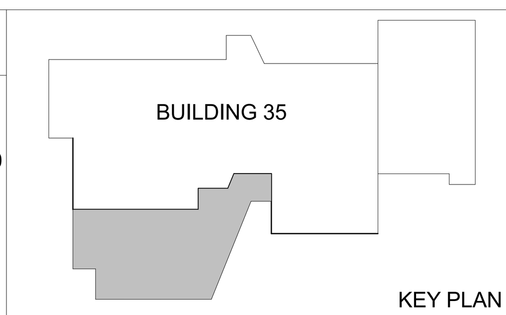
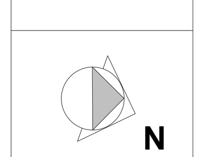


KEY PLAN



Drawing Title
DRAWING LIST, ARCHITECTURAL STANDARD GRAPHICS
Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH
Building #
Scale
As indicated
Location

Date
6/30/2015
VA Project No.
650-338
Drawing No.
AG-1.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

REFERENCE

1. PROJECT LOCATION: 830 CHALKSTONE AVE, PROVIDENCE, RI 02908
2. EXISTING CONDITIONS INFORMATION TAKEN FROM:

   • EXISTING CONDITIONS, CLASS III SURVEY OF VA MEDICAL CENTER ON CHALK STONE AVENUE PROVIDED BY MLC SURVEYING, INC. OF LINCOLN, RHODE ISLAND, PLAN DATED JULY 28, 2014.

3. ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. UNDERGROUND UTILITIES WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND PUBLIC AGENCIES AND ARE APPROXIMATE AND ASSUMED. BEFORE COMMENCING SITE WORK IN ANY AREA , CONTACT "DIG SAFE" AT 1-888-DIG-SAFE AND VETERANS AFFAIRS GENERAL ENGINEER/PROJECT MANAGER TO ACCURATELY LOCATE UNDERGROUND UTILITIES.
5. THE SITE IS LOCATED IN A "ZONE C" ACCORDING TO FIRM COMMUNITY PANEL NO. 445406 0004 E DATED APRIL 15, 1986.

GENERAL NOTES

1. THE DEPARTMENT OF VETERAN AFFAIRS STANDARD SPECIFICATIONS, CONSTRUCTION SAFETY AND SECURITY REQUIREMENTS ARE MADE A PART HERE OF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO.
2. THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION OR LATEST REVISION, AND THE RHODE ISLAND STANDARD DETAILS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO. THE 2004 EDITION OF THE STANDARD SPECIFICATIONS MAY BE OBTAINED AT THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION.
3. THE CONTRACTOR SHALL MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS, PAY ALL FEES AND POST ALL BONDS ASSOCIATED WITH THE SAME, AND COORDINATE WITH THE ENGINEER AND OWNER'S REPRESENTATIVE AS REQUIRED.
4. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR SHALL PROVIDE TEMPORARY FENCING AND/OR BARRIERS AROUND ALL OPEN EXCAVATED AREAS IN ACCORDANCE WITH OSHA STANDARDS AND THE VA MEDICAL CENTER REQUIREMENTS.
5. IF ANY DEVIATION OR ALTERATION OF THE WORK PROPOSED ON THESE DRAWINGS IS REQUIRED, THE CONTRACTOR IS TO IMMEDIATELY CONTACT AND COORDINATE WITH THE ENGINEER AND OWNER'S REPRESENTATIVE AS REQUIRED.
6. ANY AREA OUTSIDE OF THE LIMIT OF WORK THAT IS DISTURBED SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT NO COST TO THE OWNER.
7. ALL SITE WORK SHALL MEET OR EXCEED THE SITE WORK SPECIFICATIONS PREPARED FOR THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLATION OF ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
8. UNDERGROUND UTILITIES WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND PUBLIC AGENCIES AND ARE APPROXIMATE AND ASSUMED. BEFORE COMMENCING SITE WORK IN ANY AREA , CONTACT "DIG SAFE" AT 1-888-DIG-SAFE AND VETERANS AFFAIRS GENERAL ENGINEER/PROJECT MANAGER TO ACCURATELY LOCATE UNDERGROUND UTILITIES. ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES AS SHOWN ON THE PLANS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. COSTS OF SUCH DAMAGE SHALL BE THE CONTRACTOR'S RESPONSIBILITY. NO EXCAVATION SHALL BE DONE UNTIL UTILITY COMPANIES ARE PROPERLY NOTIFIED.
9. NO EXCAVATION SHALL BE DONE UNTIL THE VETERAN'S AFFAIRS GENERAL ENGINEER/PROJECT MANAGER AND ENGINEER ARE PROPERLY NOTIFIED IN ADVANCE. NOTE THAT NOT ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT ALL RESPECTIVE UTILITY COMPANIES TO VERIFY AND LOCATE EXISTING UTILITIES.
10. ALL ROADWAY WORK SHALL CONFORM TO THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION (RIDOT) REQUIREMENTS AND RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION 2004 EDITION OR LATEST REVISION.

LAYOUT NOTES

1. ALL LINES ARE PERPENDICULAR OR PARALLEL TO THE LINES FROM WHICH THEY ARE MEASURED UNLESS OTHERWISE INDICATED.
2. ACCESSIBLE RAMPS SHALL BE IN ACCORDANCE WITH THE ARCHITECTURAL BARRIERS ACT ACCESSIBILITY STANDARD (ABAAS) FOR FEDERAL FACILITIES AND WITH THE BARRIER FREE DESIGN GUIDE (PG-18-13).
3. CONTRACTOR TO PERFORM BENCHMARK FIELD LEVEL VERIFICATION AND COORDINATE LAYOUT CHECK PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CONTACT PARE CORPORATION IF ANY DISCREPANCIES ARE FOUND.
4. CENTER WALKWAYS ON DOORWAYS THEY SERVE.

DEMOLITION NOTES

1. THE CONTRACTOR SHALL COORDINATE ALL DEMOLITION OF STRUCTURES, PAVEMENT AND CONCRETE MATERIALS, AND UTILITIES WITH APPROPRIATE PROPOSED GENERAL SITE, GRADING & UTILITY DRAWINGS.
2. ALL NOTED UTILITIES TO BE REMOVED AND DISPOSED OF, RELOCATED OR CAPPED REPRESENT ALL KNOWN SITE CONDITIONS TO BE DEMOLISHED. CONTRACTOR TO COORDINATE ALL UNFORESEEN CONDITIONS WITH THE PROJECT ENGINEER, OWNER AND/OR RESPECTIVE UTILITY COMPANIES PRIOR TO PROCEEDING WITH WORK.
3. WATER, SEWER, DRAINAGE AND OTHER SITE UTILITIES SERVICING THE EXISTING FACILITIES ARE TO REMAIN ACTIVE THROUGHOUT CONSTRUCTION.

GRADING AND UTILITY NOTES

1. UNDERGROUND UTILITIES WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND PUBLIC AGENCIES AND ARE APPROXIMATE AND ASSUMED. BEFORE COMMENCING SITE WORK IN ANY AREA , CONTACT "DIG SAFE" AT 1-888-DIG-SAFE TO ACCURATELY LOCATE UNDERGROUND UTILITIES. ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES AS SHOWN ON THE PLANS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. COSTS OF SUCH DAMAGE SHALL BE THE CONTRACTOR'S RESPONSIBILITY. NO EXCAVATION SHALL BE DONE UNTIL UTILITY COMPANIES ARE PROPERLY NOTIFIED.
2. ALL WORK PERFORMED AND ALL MATERIALS FURNISHED SHALL CONFORM WITH THE LINES AND GRADES ON THE PLANS AND SITE WORK SPECIFICATIONS.
3. AT ALL LOCATIONS WHERE EXISTING CURBING OR PAVEMENT ABUT NEW CONSTRUCTION, THE EDGE OF THE EXISTING CURB OR PAVEMENT SHALL BE SAW CUT TO A CLEAN, SMOOTH EDGE. BLEND NEW PAVEMENT AND CURBS SMOOTHLY INTO EXISTING BY MATCHING LINES, GRADES AND JOINTS.
4. ALL UTILITY COVERS, GRATES, ETC. SHALL BE ADJUSTED TO BE FLUSH WITH THE SURROUNDING SURFACE OR PAVEMENT FINISH GRADE. RIM ELEVATIONS OF STRUCTURES AND MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH AND CONSISTENT WITH THE GRADING PLANS.
5. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION OF PRIVATE UTILITIES BY THE UTILITY COMPANIES, AS REQUIRED.
6. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION.
7. THE CONTRACTOR SHALL PROTECT ALL UNDERGROUND DRAINAGE, SEWER AND UTILITY FACILITIES FROM EXCESSIVE VEHICULAR LOADS DURING CONSTRUCTION. ANY DAMAGE TO THESE FACILITIES RESULTING FROM CONSTRUCTION LOADS WILL BE RESTORED TO ORIGINAL CONDITION.
8. GAS, ELECTRIC, AND COMMUNICATIONS ROUTING ARE SUBJECT TO REVIEW AND APPROVAL BY APPROPRIATE UTILITY COMPANIES.
9. DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES BY PROVIDING TEMPORARY SUPPORTS OR SHEETING AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
10. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES SHALL BE DONE BY HAND. CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.
11. PITCH EVENLY BETWEEN SPOT GRADES. ALL PAVED AREAS MUST PITCH TO DRAIN AT A MIN. OF 1/8" PER FOOT UNLESS SPECIFIED.
13. THE PROPOSED WALKWAYS SHALL HAVE A MAXIMUM CROSS SLOPE OF 2%, WITH A VARIABLE RUNNING SLOPE AS SHOWN ON CONSTRUCTION DETAILS AND GRADING PLAN.

EROSION AND SEDIMENTATION CONTROL NOTES

1. SOIL EROSION AND SEDIMENTATION CONTROLS SHALL BE PROVIDED IN ACCORDANCE WITH THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK", THE RIPDES GENERAL PERMIT FOR STORM WATER DISCHARGE FROM CONSTRUCTION ACTIVITY, AND THE PROJECT STORM WATER POLLUTION PREVENTION PLAN.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING OR INSTALLING ALL TEMPORARY SEDIMENT AND EROSION CONTROLS AS SHOWN ON THESE PLANS AND SHALL MAINTAIN ALL EROSION CONTROL MEASURES AS NECESSARY DURING THE ENTIRE CONSTRUCTION PERIOD.
3. ANTI-TRACKING PADS (R.I. STD. DETAIL 9.9.0) SHALL BE PROVIDED AT ALL POINTS OF EGRESS OR INGRESS AND SHALL BE MAINTAINED TO LIMIT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADS.
4. EROSION CONTROL BARRIERS SHALL BE INSTALLED AS SHOWN ON THE EROSION CONTROL PLAN PRIOR TO COMMENCEMENT OF CONSTRUCTION OPERATIONS.
5. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED ON A WEEKLY BASIS AND AFTER EACH STORM EVENT OF 0.25 INCH OR GREATER DURING CONSTRUCTION TO INSURE THAT CHANNELS, DITCHES AND PIPES ARE CLEAR OF DEBRIS AND THAT THE EROSION CONTROL BARRIERS ARE INTACT. IDENTIFIED DEFICIENCIES SHALL BE CORRECTED IMMEDIATELY.
6. DUST SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
7. THE CONTRACTOR SHALL CLEAN AND MAINTAIN EROSION CONTROL BARRIER WHEN SEDIMENT ACCUMULATES TO ONE HALF THE HEIGHT OF THE HAY BALES OR ONE THIRD THE HEIGHT OF SILT FENCE. MATERIAL COLLECTED FROM THE SILTATION BARRIERS SHALL BE REMOVED AS NECESSARY AND DISPOSED IN AN UPLAND AREA.
8. THE CONTRACTOR SHALL SCHEDULE HIS WORK TO ALLOW THE FINISHED SUB GRADE ELEVATIONS TO DRAIN PROPERLY WITHOUT PONDING. SPECIFICALLY, ALLOW WATER TO ESCAPE WHERE PROPOSED CURB MAY RETAIN RUNOFF PRIOR TO APPLICATION OF SURFACE PAVING. PROVIDE TEMPORARY POSITIVE DRAINAGE, AS REQUIRED, TO STABILIZED DISCHARGE POINTS.
9. INSTALLATION OF THE EROSION CONTROL BARRIERS AS ILLUSTRATED IS INTENDED TO REPRESENT THE MINIMUM SEDIMENTATION CONTROL FACILITIES NECESSARY TO MEET ANTICIPATED SITE CONDITIONS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED AS CONDITIONS WARRANT OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
10. REQUIRED SEDIMENTATION CONTROL FACILITIES MUST BE PROPERLY ESTABLISHED, CLEARLY VISIBLE AND IN OPERATION PRIOR TO INITIATING ANY LAND CLEARING ACTIVITY AND/OR OTHER CONSTRUCTION RELATED WORK. SUCH FACILITIES SHALL REPRESENT THE LIMIT OF WORK. WORKERS SHALL BE INFORMED THAT NO CONSTRUCTION ACTIVITY IS TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGHOUT THE CONSTRUCTION PERIOD.
11. THE CONTRACTOR SHALL MAINTAIN A SUFFICIENT RESERVE OF VARIOUS EROSION CONTROL MATERIALS ONSITE AT ALL TIMES FOR EMERGENCY PURPOSES OR ROUTINE MAINTENANCE.
12. CATCH BASINS AND STORM DRAIN INLETS SHALL BE PROTECTED WITH FILTER FABRIC OR SEDIMENT BAGS IN PAVED AREAS.
13. THE CONTRACTOR SHALL NOT REMOVE ANY HAY BALES, SILT FENCE OR OTHER EROSION CONTROLS UNTIL THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED.
14. CONSTRUCTION SITE WASTE MATERIALS WILL BE PROPERLY CONTAINED ONSITE AND DISPOSED OFF SITE AT A LOCATION IN ACCORDANCE WITH THE LOCAL AND STATE REGULATIONS.
15. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 14 DAYS UPON COMPLETION OF WORK IN THAT AREA.
16. ALL DRAINAGE STRUCTURES SHALL BE CLEARED OF ACCUMULATED SEDIMENT PRIOR TO ACCEPTANCE OF FINAL PROJECT.

STORM WATER MANAGEMENT SYSTEM INSPECTION AND MAINTENANCE NOTES

DURING CONSTRUCTION

1. THE CONTRACTOR SHALL REMOVE SEDIMENT AND DEBRIS FROM ALL CATCH BASINS, MANHOLES, AND THE DRAINAGE SYSTEM ON A ROUTINE BASIS, IMMEDIATELY FOLLOWING SITE STABILIZATION, AND PRIOR TO PROJECT COMPLETION AND ACCEPTANCE.
2. THE CLOSED DRAINAGE SYSTEM AND ASSOCIATED STRUCTURES SHALL BE CLEANED AND FLUSHED BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION, AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTION AND MAINTENANCE OF THE DRAINAGE SYSTEM UNTIL ACCEPTANCE OF THE SYSTEM BY THE ENGINEER AND THE OWNER. FOLLOWING ACCEPTANCE OF THE PROPOSED DRAINAGE SYSTEM PROPOSED FOR THIS SITE, THE OWNER OF THE SITE SHALL BE RESPONSIBLE FOR THE LONG-TERM INSPECTION AND MAINTENANCE OF THE DRAINAGE SYSTEM.
3. ANY ACCUMULATION OF PONDING WATER IN AREAS WITHIN THE LIMITS OF DISTURBANCE, OTHER THAN DESIGNATED AREAS, SHALL BE REMOVED ACCORDINGLY AND PREVENTED IN THE FUTURE.
4. GRASSES MUST BE PLANTED AROUND THE SITE IMMEDIATELY FOLLOWING CONSTRUCTION TO STABILIZE THE SLOPES AND PREVENT EROSION.

POST CONSTRUCTION

1. TRASH, LITTER, SEDIMENT AND OTHER DEBRIS SHALL BE REMOVED FROM ANY STORM WATER FACILITY (INCLUDING CATCH BASINS, MANHOLES, DETENTION SYSTEM, INLET AND OUTLET STRUCTURES, AND THE STORMWATER TREATMENT SYSTEM) AT LEAST TWICE A YEAR, PREFERABLY SPRING AND FALL, AT THE COST OF THE OWNER.

LEGEND

EXISTING		PROPOSED
255	CONTOUR	262
× 407.5	SPOT ELEVATION	× 281.5
D D	DRAINAGE LINE	D D
W W	WATER LINE	
S S	SANITARY SEWER LINE	
G G	GAS LINE (BY OTHERS)	
E E	ELECTRIC (BY OTHERS)	
T T	TELEPHONE	
T T	STEAM	
FA FA	FIRE ALARM	
	HAYBALES	
	SILT FENCE	S.F. S.F. S.F.
	LIMIT OF DISTURBANCE	LOD
	CATCH BASIN	
	HYDRANT	
	DRAINAGE MANHOLE	
	SEWER MANHOLE	
	TELEPHONE MANHOLE	
	ELECTRIC MANHOLE	
	UTILITY POLE	
	WATER VALVE	
	TREE LINE	
	STONE WALL	
	CURBING	
	EDGE OF PAVEMENT	
	SAWCUT LINE	
	SIGN	

SYMBOL LEGEND

- BC = BITUMINOUS CONCRETE PAVEMENT - REFER TO DETAIL
- ATG = ADJUST TO GRADE
- CM = SAWCUT AND MATCH
- DFP = REMOVE AND DISPOSE FLEXIBLE PAVEMENT
- LS = LOAM AND SEED
- R&D = REMOVE AND DISPOSE
- R&R = REMOVE AND RESET
- R&S = REMOVE AND STOCKPILE
- 2.3.0 = PRECAST CONCRETE FLARED END SECTION - R.I. STD. 2.3.0
- 6.3.0 = SQUARE FRAME AND GRATE - R.I. STD. 6.3.0
- 7.3.0 = GRANITE CURB - R.I. STD. 7.3.0
- 9.2.0 = SILT FENCE DETAIL - R.I. STD. 9.2.0
- 9.3.0 = BALED HAY EROSION CHECK AND SILT FENCE COMBINED - R.I. STD. 9.3.0
- 9.8.0 = BALED HAY CATCH BASIN INLET PROTECTION - R.I. STD. 9.8.0
- 9.9.0 = CONSTRUCTION ACCESS - R.I. STD. 9.9.0
- 43.1.0M = CEMENT CONCRETE SIDEWALK (MODIFIED) - R.I. STD. 43.1.0M

ABBREVIATION LEGEND

AD = AREA DRAIN
BIT. = BITUMINOUS
BM = BENCHMARK
BS = BOTTOM OF STAIR
CB = 4' DIA. CATCH BASIN UNLESS OTHERWISE NOTED
CI = CAST IRON
CL. = CLASS
CLDI = CEMENT-LINED DUCTILE IRON
C.O. = CLEANOUT
CONC. = CONCRETE
CONT. = CONTINUOUS
DMH = DRAIN MANHOLE
E.F. = EACH FACE
EG = EXISTING GROUND
ELEV.EL = ELEVATION
EOC = EDGE OF CONCRETE
EOS = EDGE OF STONE PAVERS
EW = EACH WAY
EXIST. = EXISTING
EXCB = EXISTING CATCH BASIN
EXDMH = EXISTING DRAIN MANHOLE
FFE = FINISH FLOOR ELEVATION
FG = FINISH GRADE
FND. = FOUND
GALV = GALVANIZED
GB = GRADE BREAK
GRAN. = GRANITE
GTD = GRADE TO DRAIN
HDPE = HIGH DENSITY POLYETHYLENE PIPE
HYD = HYDRANT
INV. = INVERT
LOD = LIMIT OF DISTURBANCE
LF = LINEAR FOOT
LP = LIGHT POLE
MAX. = MAXIMUM
MIN. = MINIMUM
MON. = MONITORING
PE = POLYETHYLENE
PERF. = PERFORATED
PVC = POLYVINYL CHLORIDE
RCP = REINFORCED CONCRETE PIPE
RIDEM = RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
R.I.D.O.T. = RHODE ISLAND DEPARTMENT OF TRANSPORTATION
R.I. STD. = RHODE ISLAND STANDARD
SDR = STANDARD DIMENSIONAL RATIO
SMH = SEWER MANHOLE
TC = TOP OF CURB
TP = TEST PIT
TS = TOP OF STAIR
(TYP.) = TYPICAL
UNO = UNLESS NOTED OTHERWISE
UP = UTILITY POLE
VCC = VERTICAL CONCRETE CURB
VGC = VERTICAL GRANITE CURB
W/ = WITH
YD = YARD DRAIN

SCOTT D. LINDGREN
No. 8036
REGISTERED PROFESSIONAL ENGINEER CIVIL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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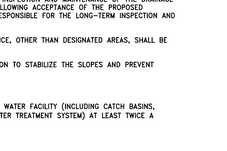


KEY PLAN

N

Drawing Title
NOTES & LEGEND

Designed By: JDG
Checked By: SDL
Approved By: SDL

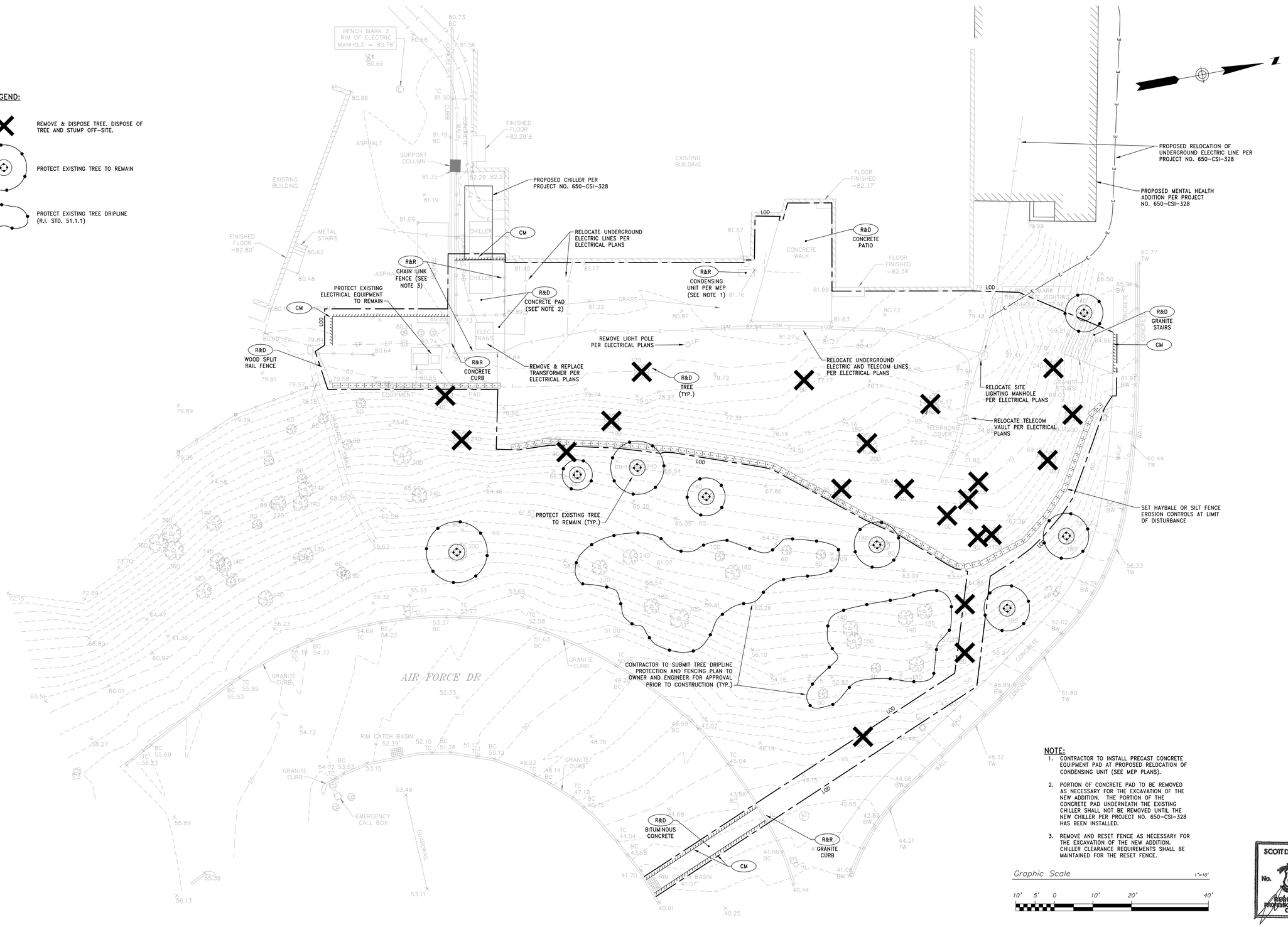
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale NOT TO SCALE
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No. C-1.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



NOTE:

1. CONTRACTOR TO INSTALL PRECAST CONCRETE EQUIPMENT PAD AT PROPOSED RELOCATION OF CONDENSING UNIT (SEE MEP PLANS).
2. PORTION OF CONCRETE PAD TO BE REMOVED AS NECESSARY FOR THE EXCAVATION OF THE NEW ADDITION. THE PORTION OF THE CONCRETE PAD UNDERNEATH THE EXISTING CHILLER SHALL NOT BE REMOVED UNTIL THE NEW CHILLER PER PROJECT NO. 650-CSI-328 HAS BEEN INSTALLED.
3. REMOVE AND RESET FENCE AS NECESSARY FOR THE EXCAVATION OF THE NEW ADDITION. CHILLER CLEARANCE REQUIREMENTS SHALL BE MAINTAINED FOR THE RESET FENCE.

Graphic Scale 1"=10'

10' 5' 0 10' 20' 40'

SCOTT D. LINDGREN No. 8036 REGISTERED PROFESSIONAL ENGINEER CIVIL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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BUILDING 35
KEY PLAN
N

Drawing Title: SITE DEMOLITION PLAN

Designed By: JDG
Checked By: SDL
Approved By: SDL

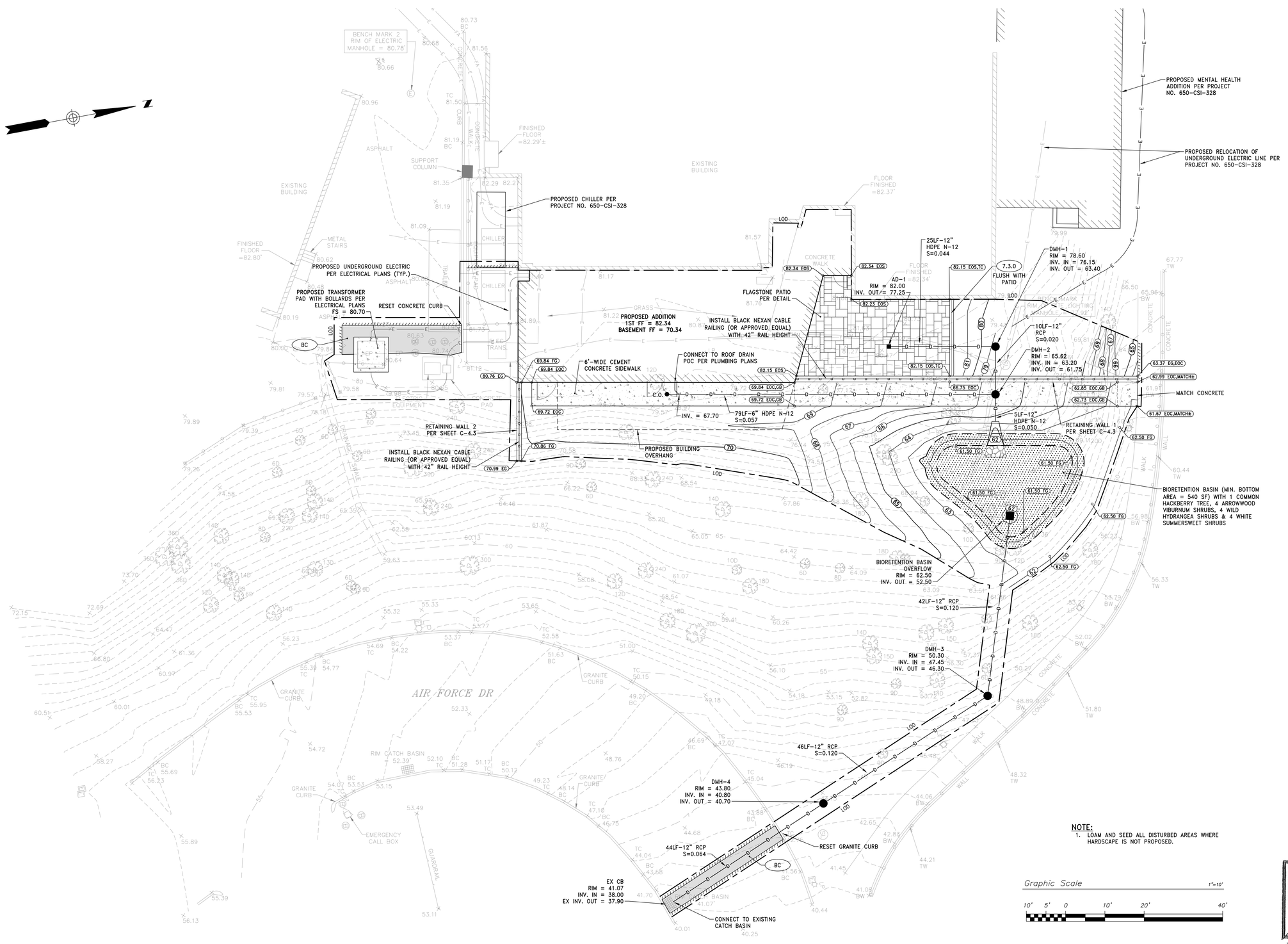
Project Title: BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale: 1" = 10'
Location

Date: 6/30/2015
VA Project No. 650-338
Drawing No. C-2.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



NOTE:
1. LOAM AND SEED ALL DISTURBED AREAS WHERE HARDSCAPE IS NOT PROPOSED.

SCOTT D. LINDGREN No. 8036 REGISTERED PROFESSIONAL ENGINEER CIVIL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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BUILDING 35
KEY PLAN
N

Drawing Title
GENERAL SITE, GRADING & DRAINAGE PLAN

Designed By: JDG
Checked By: SDL
Approved By: SDL

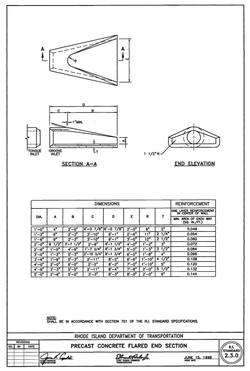
Project Title
BUILDING 35 ADDITION FOR RESEARCH

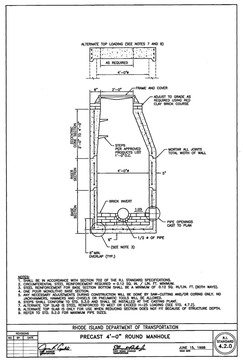
Building #
Scale 1" = 10'
Location

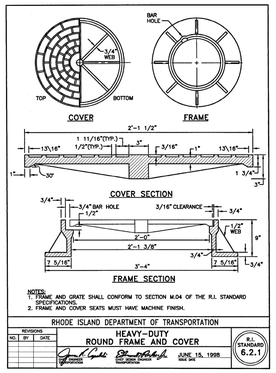
Date 6/30/2015
VA Project No. 650-338
Drawing No. C-3.1

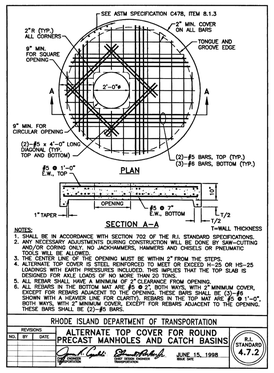
Office of Facilities
Department of Veterans Affairs

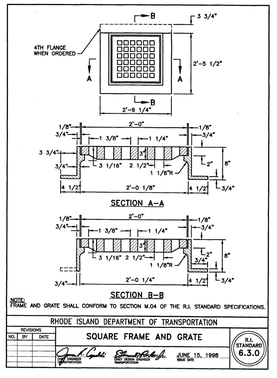
VA FORM 08-6231

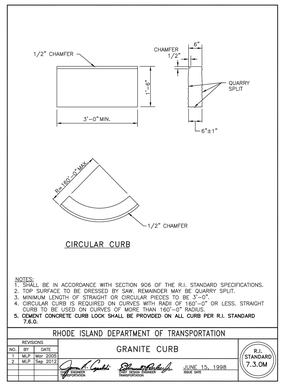


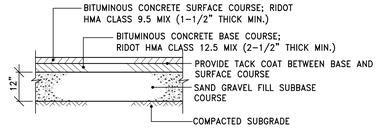








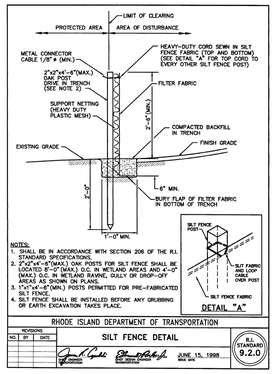


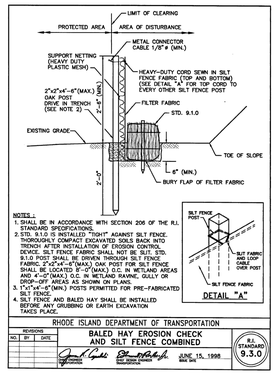


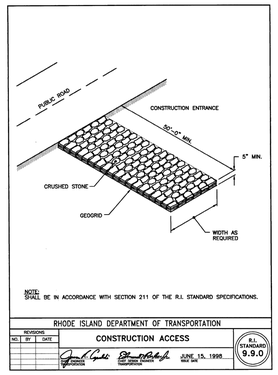
NOTES:
1. THE THICKNESS OF THE PROPOSED PAVEMENT COURSE SHALL MATCH THE EXISTING PAVEMENT. PROVIDE THE MINIMUM THICKNESS SHOWN.
2. SUBMIT JOB MIX FORMULAS TO ENGINEER FOR APPROVAL PRIOR TO PLACEMENT

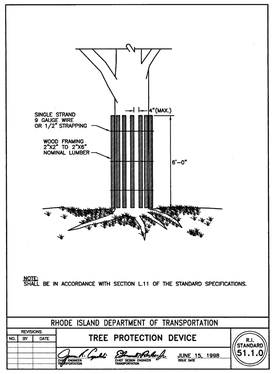
TYPICAL PAVEMENT DETAIL

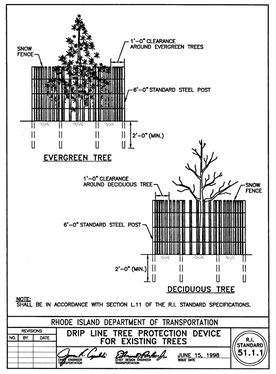
NOT TO SCALE

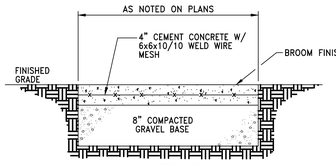








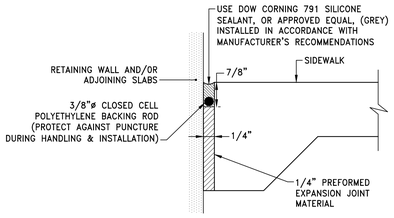




NOTES:
1. CONCRETE SIDEWALK SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 905 OF THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS.
2. WIRE MESH SHALL BE IN ACCORDANCE WITH SECTION M.05.02 OF THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS.

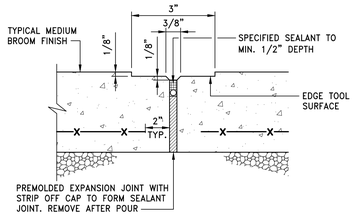
TYPICAL CEMENT CONCRETE SIDEWALK

NOT TO SCALE



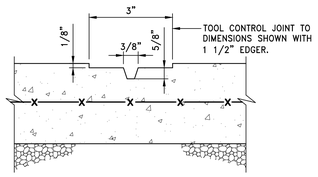
SEALED ISOLATION JOINT

NOT TO SCALE



EXPANSION JOINT AT 20' O.C. (TYP)

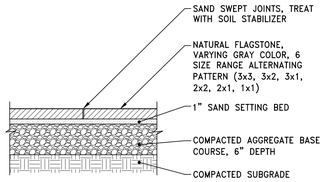
NOTES:
1. EXPANSION JOINTS (E.J.) 20 FEET O.C. UNLESS OTHERWISE NOTED.
2. CONTROL JOINTS (C.J.) 5 FEET O.C. UNLESS OTHERWISE NOTED.
3. WHERE EXISTING AND NEW CONCRETE SIDEWALKS MEET, SAWCUT EXISTING WALK AND INSTALL EXPANSION JOINT AND DOWELS AS SHOWN. DRILL EXISTING CONCRETE WALK EDGE TO RECEIVE STEEL DOWELS AT EXPANSION JOINT.



CONTROL JOINT AT 5' O.C. (TYP)

EXPANSION AND CONTROL JOINTS FOR SIDEWALK PAVING

NOT TO SCALE



TYPICAL FLAGSTONE PAVING DETAIL

NOT TO SCALE

SCOTT D. LINDGREN No. 8036 REGISTERED PROFESSIONAL ENGINEER CIVIL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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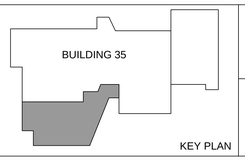


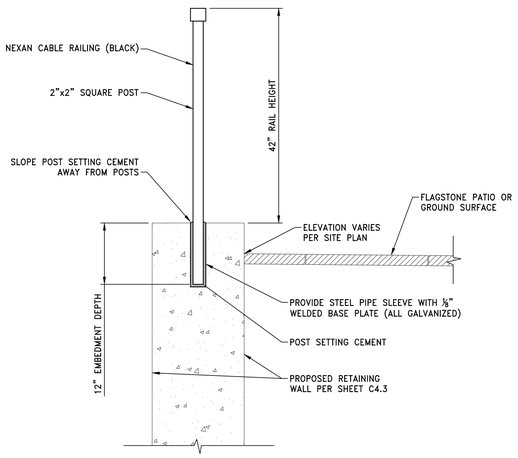
Drawing Title: DETAILS I
Designed By: JDG
Checked By: SDL
Approved By: SDL

Project Title: BUILDING 35 ADDITION FOR RESEARCH
Building #
Scale: NOT TO SCALE
Location

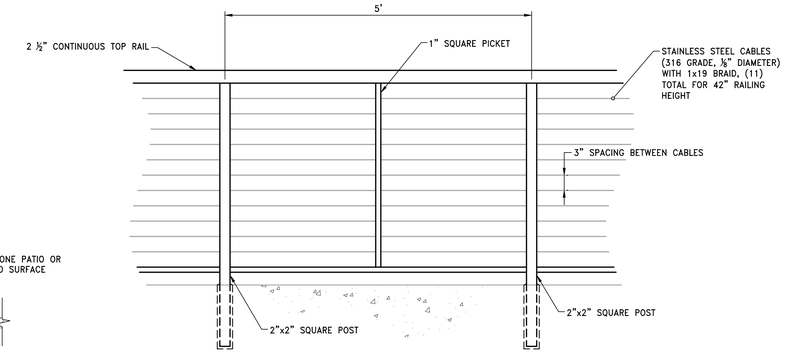
Date: 6/30/2015
VA Project No. 650-338
Drawing No. C-4.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



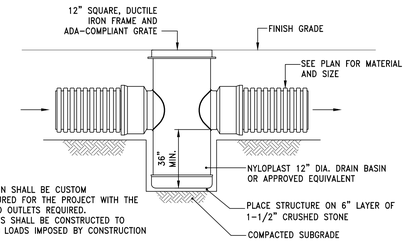
SECTION



ELEVATION

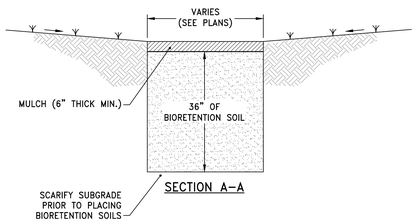
NOTES:
1. CONTRACTOR TO VERIFY FIELD DIMENSIONS OF ALL POST AND PIPE SLEEVE LOCATION AND DIMENSIONS PRIOR TO ORDERING RAILING AND CONSTRUCTION OF RETAINING WALL.
2. CONTRACTOR TO SUBMIT WORKING DRAWING SUBMITTAL TO ENGINEER PRIOR TO CONSTRUCTION.
3. ALL FASTENERS ARE TO BE STAINLESS STEEL.
4. ALL RAILINGS TO BE 6005A-T65 ALUMINUM WITH HIGH DENSITY POWDER COAT FINISH (BLACK) MEETING 2604 STANDARDS.

CABLE RAILING DETAIL
NOT TO SCALE

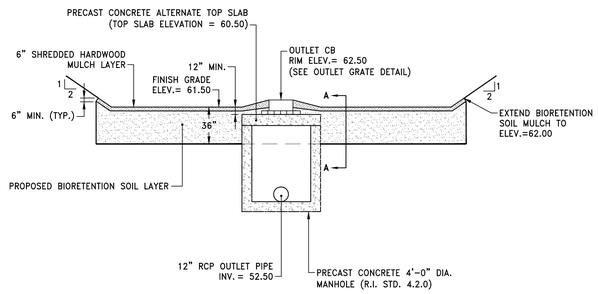


NOTES:
1. DRAIN BASIN SHALL BE CUSTOM MANUFACTURED FOR THE PROJECT WITH THE INLETS AND OUTLETS REQUIRED.
2. STRUCTURES SHALL BE CONSTRUCTED TO WITHSTAND LOADS IMPOSED BY CONSTRUCTION VEHICLES.
3. DRAIN BASIN SHALL BE CONSTRUCTED OF HIGH DENSITY POLYETHYLENE.

AREA DRAIN DETAIL
NOT TO SCALE



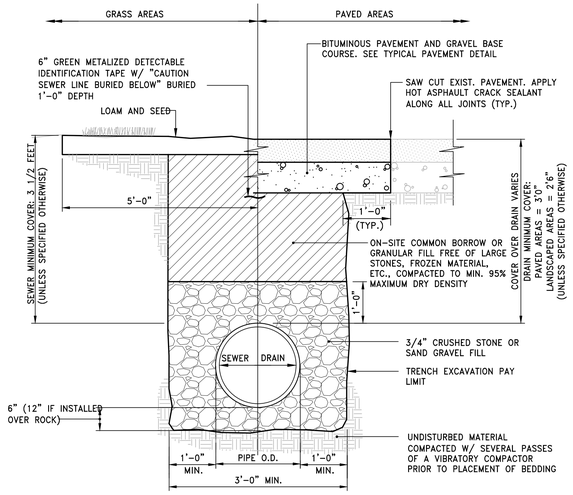
SECTION A–A



BIORETENTION SOIL: 85–88% SAND, 8–12% SILT, 0–2% CLAY, 3–5% ORGANIC MATTER (USDA LOAMY SAND OR SANDY LOAM)

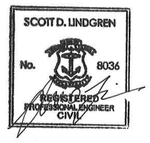
MULCH: SHREDDED HARDWOOD (AGED 6–MONTHS)

BIORETENTION DETAIL
NOT TO SCALE



NOTES:
1. WHERE THE DISTANCE BETWEEN THE SAWCUT AND EDGE OF PAVEMENT IS 3' OR LESS, THE CONTRACTOR SHALL REPLACE THE PAVEMENT FROM THE TRENCH EDGE TO THE EXISTING EDGE OF PAVEMENT.
2. 3/4" DIA. CRUSHED STONE SHALL BE USED AS BEDDING WHERE TRENCH IS BELOW THE GROUND WATER TABLE.

DRAIN/SEWER TRENCH DETAIL
NOT TO SCALE



FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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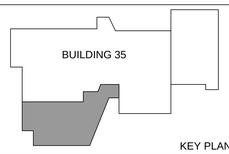


KEY PLAN

N

Drawing Title
DETAILS II

Designed By: JDG
Checked By: SDL
Approved By: SDL

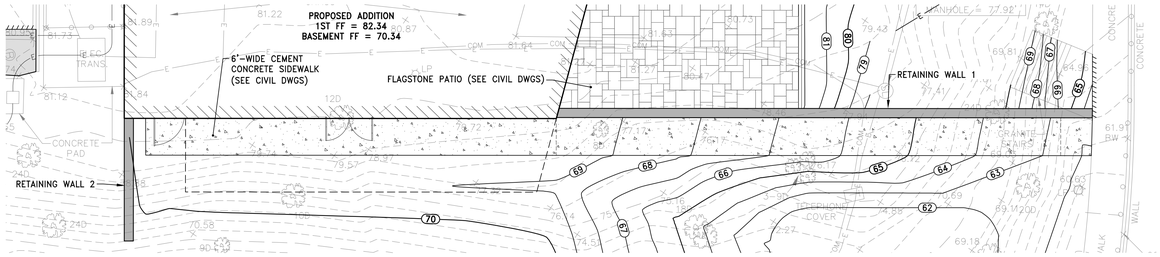
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale NOT TO SCALE
Location

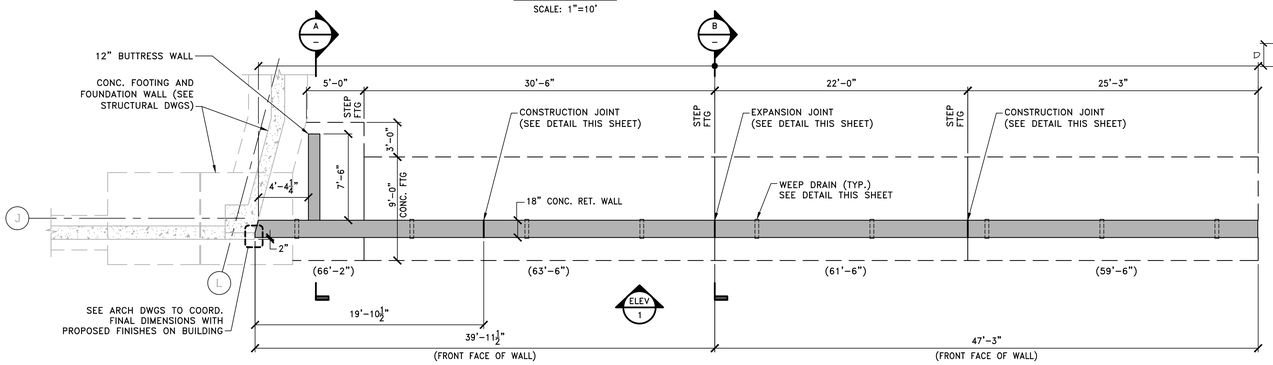
Date 6/30/2015
VA Project No. 650-338
Drawing No. C-4.2

Office of Facilities
Department of Veterans Affairs

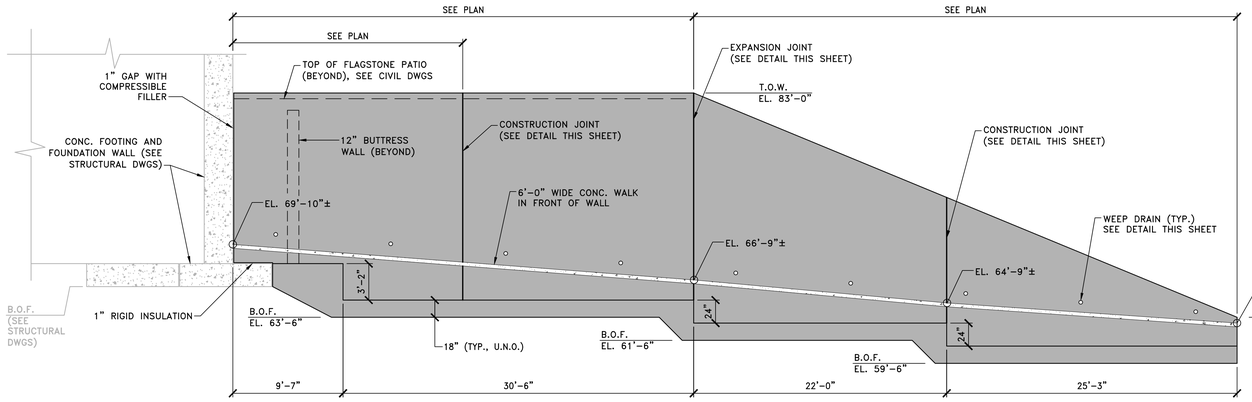
VA FORM 08-6231



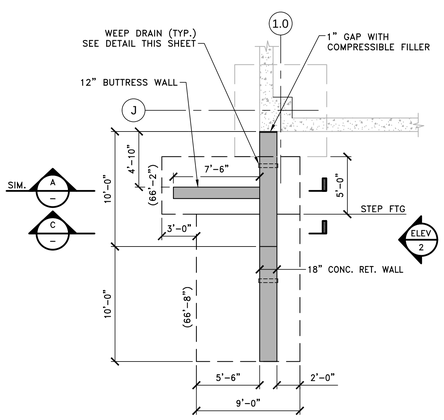
PARTIAL PLAN
SCALE: 1"=10'



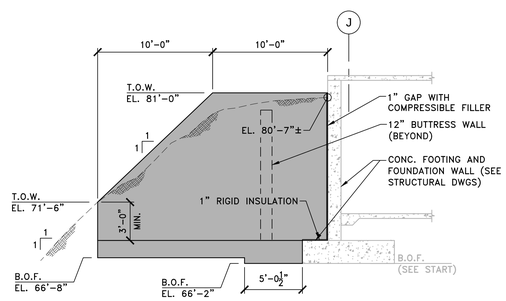
RETAINING WALL 1 – PLAN
SCALE: 3/16"=1'-0"



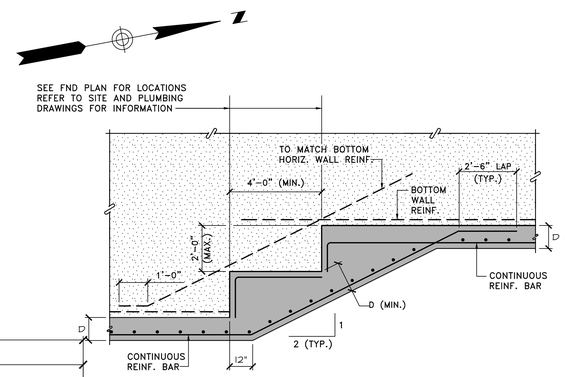
ELEVATION 1
SCALE: 3/16"=1'-0"



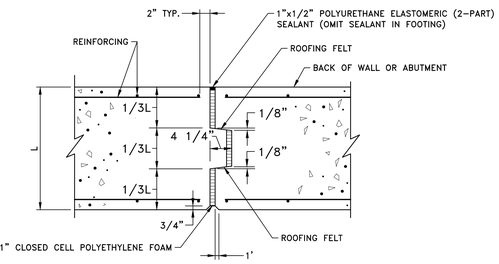
RETAINING WALL 2 – PLAN
SCALE: 3/16"=1'-0"



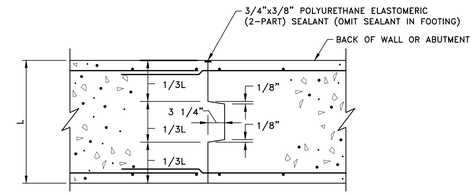
ELEVATION 2
SCALE: 3/16"=1'-0"



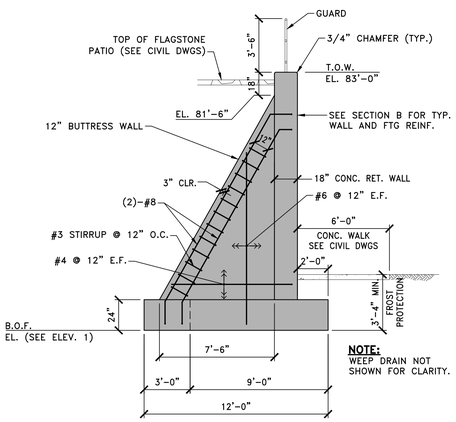
TYPICAL ELEVATION OF CONTINUOUS STEPPED WALL FOOTING
NOT TO SCALE



EXPANSION JOINT DETAIL
NOT TO SCALE

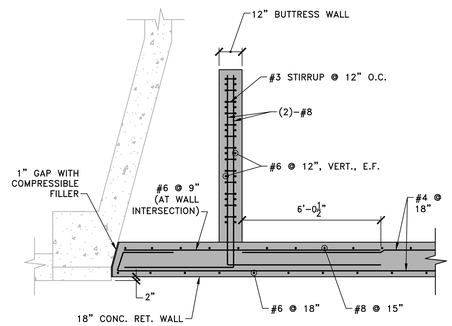


CONSTRUCTION JOINT DETAIL
NOT TO SCALE

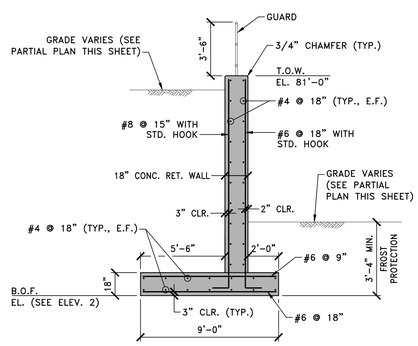


NOTE:
WEEP DRAIN NOT SHOWN FOR CLARITY.

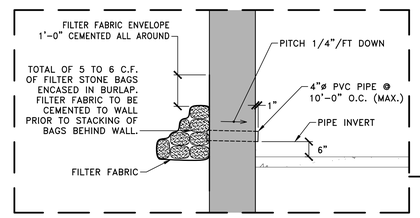
SECTION A
SCALE: 1/4"=1'-0"



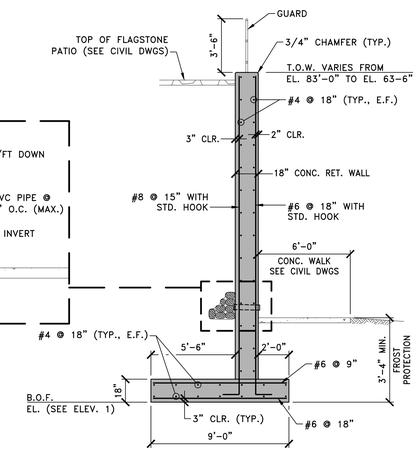
BUTTRESS WALL – PLAN
SCALE: 3/16"=1'-0"



SECTION C
SCALE: 1/4"=1'-0"



WEEP DRAIN DETAIL



SECTION B
SCALE: 1/4"=1'-0"

MICHAEL J. RONGIONE
No. 7437
REGISTERED PROFESSIONAL ENGINEER (STRUCTURAL)

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

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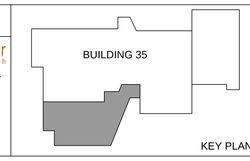


KEY PLAN

N

Drawing Title
RETAINING WALL PLANS, ELEVATIONS, & DETAILS

Designed By: JDG
Checked By: SDL
Approved By: SDL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

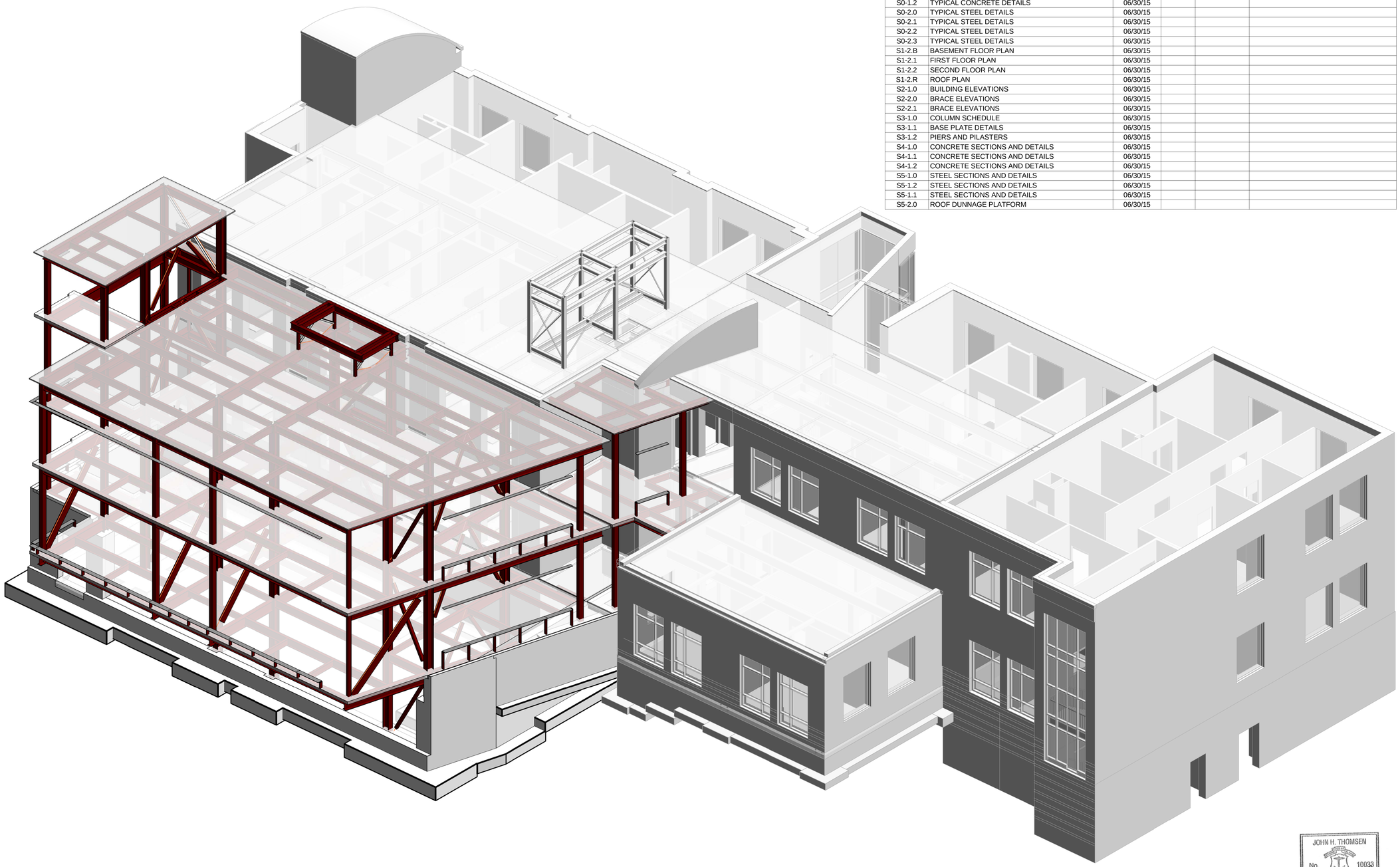
Building #
Scale AS NOTED
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No. C-4.3

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

STRUCTURAL SHEET LIST					
Sheet Number	Sheet Name	Sheet Issue Date	Current Revision	Current Revision Date	Current Revision Description
S0-0.0	STRUCTURAL AXON AND SHEET LIST	06/30/15			
S0-0.1	GENERAL NOTES	06/30/15			
S0-1.0	TYPICAL CONCRETE DETAILS	06/30/15			
S0-1.1	TYPICAL CONCRETE DETAILS	06/30/15			
S0-1.2	TYPICAL CONCRETE DETAILS	06/30/15			
S0-2.0	TYPICAL STEEL DETAILS	06/30/15			
S0-2.1	TYPICAL STEEL DETAILS	06/30/15			
S0-2.2	TYPICAL STEEL DETAILS	06/30/15			
S0-2.3	TYPICAL STEEL DETAILS	06/30/15			
S1-2.B	BASEMENT FLOOR PLAN	06/30/15			
S1-2.1	FIRST FLOOR PLAN	06/30/15			
S1-2.2	SECOND FLOOR PLAN	06/30/15			
S1-2.R	ROOF PLAN	06/30/15			
S2-1.0	BUILDING ELEVATIONS	06/30/15			
S2-2.0	BRACE ELEVATIONS	06/30/15			
S2-2.1	BRACE ELEVATIONS	06/30/15			
S3-1.0	COLUMN SCHEDULE	06/30/15			
S3-1.1	BASE PLATE DETAILS	06/30/15			
S3-1.2	PIERS AND PILASTERS	06/30/15			
S4-1.0	CONCRETE SECTIONS AND DETAILS	06/30/15			
S4-1.1	CONCRETE SECTIONS AND DETAILS	06/30/15			
S4-1.2	CONCRETE SECTIONS AND DETAILS	06/30/15			
S5-1.0	STEEL SECTIONS AND DETAILS	06/30/15			
S5-1.2	STEEL SECTIONS AND DETAILS	06/30/15			
S5-1.1	STEEL SECTIONS AND DETAILS	06/30/15			
S5-2.0	ROOF DUNNAGE PLATFORM	06/30/15			



NOTE:
RENDERED STRUCTURAL VIEW FOR GENERAL PROJECT SCOPE ONLY.
NOT ALL STRUCTURAL ELEMENTS ARE SHOWN FOR CLARITY.

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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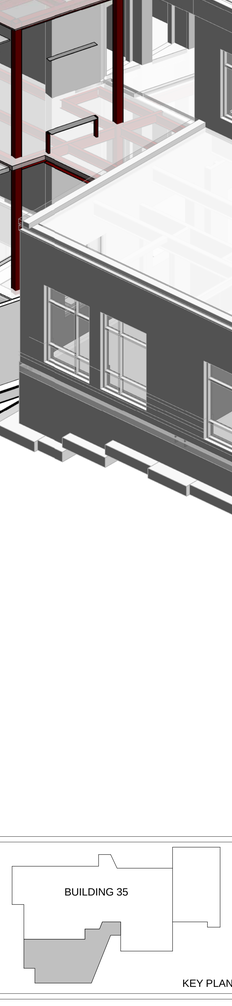


Drawing Title
STRUCTURAL AXON AND SHEET LIST

Designed By: CMB
Checked By: MJB
Approved By: JHT

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
Location

Date
06/30/2015

VA Project No.
650-338

Drawing No.
S0-0.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6321

STRUCTURAL GENERAL NOTES

PART 1 – GENERAL REQUIREMENTS AND DESIGN CRITERIA

1.1 GENERAL
A. Refer to project specifications for detailed requirements for material and workmanship.
B. Unless otherwise noted, details, sections, and notes contained in the structural contract documents shall be considered typical for all similar conditions even if not explicitly referenced.
C. Deficient work and/or work not in conformance with the contract documents shall be repaired at the contractor's expense. The contractor shall compensate the client for services arising from deficient work, review of modifications/contractor substitution, or expediting of submittals.
D. Cost of investigation and/or redesign incurred by the SER due to contractor errors will be at the contractor's expense.
E. The contractor shall submit a single dimensioned and coordinated drawing for each level showing the locations of all sleeves and openings required by all trades prior to initiating any work.
F. Loads imposed on the base building structure and temporary conditions intended to accommodate construction means and methods are not explicitly considered in this design. The contractor shall advise the SER regarding construction loads and temporary conditions imposed on the building structure and shall compensate the SER for reviewing these conditions.

1.2 ELEVATIONS & DIMENSIONS
A. All dimensions, elevations and conditions shall be verified in the field by the contractors and any discrepancies shall be brought to the attention of the SER for clarification before proceeding with the affected part of the work. Dimensions and elevations noted in the contract documents as (±) and all field conditions shall be verified in the field (VIF) by the contractors prior to the submissions of shop drawings. Upon receipt of shop drawings, the SER has the right to assume that all field dimensions, elevations and conditions have been verified by the contractors and that the shop drawings accurately reflect such verifications unless stated otherwise on the shop drawings.

1.3 BUILDING CODES AND REFERENCED STANDARDS
A. 2012 International Building Code with Rhode Island Amendments (2013).
B. ASCE/SEI 7–10, Minimum Design Loads for Buildings and Other Structures Including Supplement No. 1

1.4 DESIGN LOADS
A. Building Classification, Occupancy Risk Category II.
B. Dead Loads:
All permanent stationary construction including mechanical equipment and their weights where noted on the structural drawings.
C. Floor Live loads (uniform/concentrated):

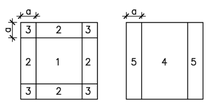
1. Corridors, at or below ground floor	100 psf / 1,000 lbs
2. Stairs and Exits (not reducible)	100 psf
3. Typical Floor	80 psf

D. Live Load Reduction: Where appropriate, the live loads above have been reduced in accordance with Section 1607.9 of the Building Code.
E. Roof Snow/Rain Load Parameters
Where appropriate, drifting snow loads have been considered in accordance with Section 7.7 of ASCE/SEI 7–10.

1. Ground Snow Load, P_g	30 psf
2. Flat Roof Snow Load, P_f	
a. Roof over occupied space, heated	30 psf
b. Canopy/overhang roofs	30 psf
3. Snow Exposure Factor, C_e	1.0
4. Snow Load Importance Factor, I_s	1.0
5. Thermal Factor, C_t	
a. For Unheated Canopy Roofs	1.2
b. For Other Roofs	1.0

F. Wind Load Parameters

1. Basic Wind Speed (Nominal 3 second gust), V	134 mph (Risk Category II)
2. Wind Exposure	B
3. Internal Pressure Coefficient	±0.18
4. Design Wind Pressure: Components and Cladding	



Roof Wall

Notes:
1. The salient corner "a" distance is 3' on this project.
2. Positive indicates pressure to the building surface, negative indicates suction to the building surface.
3. "h" is the mean roof height.
4. Linear interpolation is not permitted between areas of 10 sf and 100 sf, see ASCE 7 for more information.

Component and Cladding Wind Loads (PSF)

Area (SF)	Zone 1 Positive	Zone 1 Negative	Zone 2 Positive	Zone 2 Negative	Zone 3 Positive	Zone 3 Negative	Zone 4 Positive	Zone 4 Negative	Zone 5 Positive	Zone 5 Negative
≤10	14	−35	14	−59	14	−89	32	−35	32	−43
≥100	11	−32	11	−38	11	−38	26	−29	26	−31

G. Seismic Load Parameters

1. Seismic Importance Factor, I_E	1.0
2. Spectral Response Acceleration, S_S	0.176
3. Spectral Response Acceleration, S_1	0.062
4. Site Class	D
5. Spectral Response Coefficient, S_{DS}	0.141
6. Spectral Response Coefficient, S_{D1}	0.070
7. Seismic Design Category	C
8. Long-Period Transition Period, T_L	6 sec
9. Base Elevation	At Grade
10. Seismic Force Resisting System:	
a. Ordinary Steel Moment Frames not specifically detailed for seismic resistance	
1) Resource modification factor R = 3.0	
2) Deflection amplification factor C_d = 3.0	
11. Seismic Response Coefficient, C_s	0.070 (Eq. 12.8–2)
12. Base Shear, V	44 kips
13. Analysis Procedure	
a. Equivalent Lateral Force	

H. Seismic Load Parameters (Non–Structural Components)

1. Component Importance Factor, I_P	1.5
2. Component Amplification Factor, a_P	Varies by component
3. Component Response Modification Factor, R_P	Varies by component
4. Horizontal Design Force, Fp (for major equipment above grade)	Varies by component

1.5 BEAM DEFLECTION CRITERIA

A. Composite Steel Beams	
1. Post–Composite Live Load Deflection	span/360
2. Post–Composite Superimposed Deflection, Typical Conditions	span/240
3. Post–Composite Superimposed Deflection, Supporting Brick Veneer	lesser of span/600 or 0.375 in.
4. Post–Composite Superimposed Deflection, Supporting Curtain Wall	lesser of span/360 or 0.5 in.
5. Net Total Deflection	0.75 in.
B. Non–Composite Steel Beams	
1. Live Load Deflection	span/360
2. Net Total Deflection, Typical Conditions	lesser of span/240 or 1.25 in.
3. Net Total Deflection, Supporting Brick Veneer	lesser of span/600 or 0.25 in.
4. Net Total Deflection, Supporting Curtain Wall	lesser of span/360 or 0.75 in.

PART 2 – FOUNDATIONS

2.1 REFERENCE GEOTECHNICAL REPORT
A. Foundation design is in accordance with the recommendations provided by the following:
1. PARE Corporation: Geotechnical Design Basis Report, Proposed Neurological Research Facility Addition, Building 35, Veterans Affairs Medical Center, Providence, Rhode Island, dated November 2014.
B. A copy of the geotechnical report is included as Appendix B of the specification package. The Contractor shall be responsible for reading, understanding, and implementing the recommendations outlined in the Geotechnical Report. Where recommendations in the report vary from information contained in these drawings and the project specifications, the more stringent recommendation shall govern.

2.2 FOUNDATION DESIGN PARAMETERS
A. Spread Footing Design Parameters: Designed for a maximum allowable bearing pressure of 4.0 ksf and are to bear on compacted structural fill over the proof–rolled glacial deposits (Stratum 4) or glacial till (Stratum 5) per the project specifications. Previous subsurface explorations indicate that the glacial deposits (Stratum 4) or glacial till (Stratum 5) are approximately 8 to 10 ft below existing ground levels (approximate EL. 68–72 ft) in this area, but final excavation depths shall be determined in the field.

2.3 EXCAVATION
A. All foundation excavation to be inspected by the Special Inspector.
B. The elevations shown on the drawings are anticipated and actual elevations are to be established in the field by the Geotechnical Engineer.
C. In no case shall the bottom of foundation be located less than 3'–4" below the lowest adjacent surface exposed to freezing.

2.4 SUBGRADE PREPARATION
A. Follow recommendations of the project specifications and geotechnical report included in the project manual. Where recommendations in the report vary from information contained in these drawings and the project specifications, the more stringent recommendation shall govern.
B. Proof roll and compact existing soils to 95% density at optimum moisture content as defined by ASTM D–1557, Method D.
C. Place all spread and strip footings on 12 in. compacted structural fill.
D. Do not leave bearing surface of subgrade exposed to wet weather.

2.5 BACKFILL UNDER SLAB ON GRADE
A. Backfill where required below slabs with approved granular soil placed in 8 to 10 in. layers and compacted to 95% density at optimum moisture content as defined by ASTM D–1557, Method D.
B. Use a polyethylene vapor barrier between the compacted structural fill and the slab–on–grade.
C. Do not leave bearing surface exposed to wet weather.

2.6 FOUNDATION PLACEMENT & PROTECTION
A. Do not place foundation concrete in water or on frozen ground.
B. Protect all soil bearing surfaces from freezing before and after foundation construction.
C. Protect in–place foundations and slabs from frost penetration until the project is complete.
D. Do not use salt or chloride compounds to de–ice the site.

2.7 BACKFILL AGAINST WALLS
A. Do not backfill against walls until wall concrete is at full design strength.
B. Backfill with approved material placed in 8 in. layers and compacted to 95% density at optimum moisture content as defined by ASTM D–698, Method D.

2.8 DEWATERING SYSTEM
A. Use temporary dewatering system to remove excess water from the excavation as required.

2.9 UTILITIES AND OTHER UNDERGROUND STRUCTURES
A. Foundations (footings and mat foundations) shall bear below a theoretical reference line drawn upward and outward on a 1V:2H slope from the bottom of any adjacent utilities or other underground structures.

PART 3 – CONCRETE WORK

3.1 CONCRETE MIX PROPERTIES

A. Element	28–Day Design Compressive Strength, f'c, (psi)	Density of Concrete (pcf)	Max w/c Ratio	Maximum Entrained Air Content(%)
1. Spread Footings, and Strip Foundation	4,000 psi	145 ± 3%	0.45	6% ± 1%
2. Foundation Walls and Piers	4,000 psi	145 ± 3%	0.45	6% ± 1%
3. Interior Slabs–on–Grade	4,000 psi	145 ± 3%	0.45	< 3%
4. Exterior Slabs–on–Grade	5,000 psi	145 ± 3%	0.45	6% ± 1%
5. Concrete on Metal Deck	4,000 psi	145 ± 3%	0.45	< 3%
6. Slab Depression Infill/Topping	4,000 psi	145 ± 3%	0.45	< 3%

B. Portland Cement: ASTM C150, Type II.
C. Admixtures: See project specifications for permissible admixtures.
D. Fly Ash: See project specifications for permissible cementitious substitutes.

3.2 BASE PLATE GROUT:
A. 8,000 psi 28–day compressive strength, with fluid consistency.

3.3 STEEL REINFORCEMENT
A. ASTM A615 Grade 60, deformed.
B. ASTM A706, deformed where rebar is indicated to be welded.
C. ASTM A995 Stainless Steel Type 304 Grade 60, deformed.
D. Do not tack or spot–weld crossing bars.
E. ASTM A497 welded wire reinforcement. (Use flat sheets only).
F. Headed deformed bars may be used in lieu of hooks in congested areas. Place per ACI 318–11.

3.4 REINFORCEMENT AT OPENINGS
A. UON, provide 2 – #6 at each side of all openings in walls and slabs, and extend 2 ft–6 in. beyond the opening or as detailed, except vertical bars at sides of openings in walls, which are to extend from floor to floor.
B. Upon Approval by SER, bars may be moved aside at openings or sleeves, but do not cut or omit.

3.5 SPLICING OF REINFORCEMENT:
A. Refer to table in typical details.
B. Tie bars together at lap.

3.6 MINIMUM REINFORCEMENT
A. Reinforce all walls with at least #4 @ 12 in. each way each face and 2 – #6 each edge.
B. In slabs, provide at least 0.0018 times the area of concrete in each direction.

3.7 REINFORCEMENT SHOP DRAWINGS
A. Submit for approval, complete bending and placing details of all reinforcement, indicating position of splices.
B. Include accessory drawings.
C. Include locations of all sleeves cast into concrete to accommodate mechanical trades. Contractor shall coordinate all sleeve locations.
D. Include all conduit, piping, ductwork, etc. to be embedded within the structural concrete for approval by the SER. Contractor shall coordinate all embed locations.

3.8 CONCRETE CLEAR COVER

A. Concrete placed against earth	3 in.
B. Slabs–on–grade top	1 in.
C. Formed concrete exposed to earth, water, or weather	2 in.
D. Interior faces of walls	1 in.
E. Exterior faces of walls	2 in.
F. Column or Piers (primary reinforcement)	2 in.

3.9 POST–INSTALLED ANCHORS
A. Expansion Anchors: Hilti Kwik Bolt 3, ⅝"ø min.
1. Install per Hilti installation recommendations.
2. Provide standard depth of embedment as listed by Hilti, UON.
3. Provide Stainless Steel anchors and hardware in all exterior applications.

B. Adhesive Anchors: Hilti HIT–HY 200 Injection Adhesive Anchors
1. Install per Hilti installation recommendations.
2. Provide standard depth of embedment as listed by Hilti, UON.
3. Do not use in an overhead application.
4. Provide Stainless Steel anchors and hardware in all exterior applications.

3.10 EXISTING SURFACE TREATMENT
A. Roughen all existing concrete surfaces common with new concrete to amplitude of 1/4 inch.
B. Existing concrete shall also be considered concrete on this job at construction joints or where a secondary pour is required.

3.11 HOUSEKEEPING PADS AND CURBS
A. Pads and curbs may be shown on plan in certain instances for reference only. See Architectural and Mechanical Drawings and Specifications and coordinate with equipment manufacturer's requirements and location.
B. Provide the same concrete as base slab, UON.

3.12 STANDARD SPECIFICATIONS AND REFERENCE STANDARDS
A. ACI 301 Specification for Structural Concrete
B. CRSI Manual of Standard Practice
C. Follow the latest recommendations and specifications of the American Concrete Institute:

1. ACI 302	Concrete Floor and Slab Construction
2. ACI 304	Measuring, Mixing, Transporting and Placing Concrete
3. ACI 305	Hot Weather Concreting
4. ACI 306	Cold Weather Concreting
5. ACI 315	Detailing for Reinforcing
6. ACI 318	General Design of Items Not Otherwise Specified
7. ACI 347	Formwork

3.13 CONSTRUCTION JOINTS
A. Refer to Typical Details.

3.14 CURING COMPOUNDS
A. All curing compounds must be approved by the SER and Architect. See specifications for requirements.
B. Curing compounds shall not be used on flatwork.

3.15 CONCRETE INFILL AT SLABS DEPRESSIONS
A. Use ⅜" maximum aggregate size to infill interior slab depressions.

3.16 EDGE OF SLAB
A. Refer to architectural edge of slab plans for extents and locations of slab edges, house keeping pads, and curbs not otherwise shown on drawings.

3.17 STRUCTURAL TESTING AND INSPECTIONS
A. Absolutely no concrete is to be placed prior to rebar being inspected and approved.
B. Refer to program of structural tests and special inspections for additional requirements.

PART 4 – STRUCTURAL STEEL

4.1 STRUCTURAL SHAPES

A. Wide Flange Shapes	ASTM A992 (Fy = 50 ksi)
B. Hollow Structural Sections	ASTM A500, Gr. B (Fy = 46 ksi) or ASTM 1085 (Fy=50ksi)
C. Angles	ASTM A36, UON (Fy = 36 ksi)
D. Channels	ASTM A36, UON (Fy = 36 ksi)
E. Plate	ASTM A36, UON (Fy = 36 ksi)
F. Pipe	ASTM A53, Type E, Grade B or ASTM A501 (Fy=42ksi)

4.2 BOLTED CONNECTIONS
A. ASTM A325/F1852 and A490/F2280

4.3 ANCHOR RODS
A. ASTM F1554 Grade 55 rods (UON) with Supplementary Requirement S1 (weldability)

4.4 WELDING ELECTRODES
A. Conform to AWS Specifications for electrodes based on welding process and the type and grade of steel.
B. E70XX electrodes (MIN.) for fillet welds
C. See project specifications for additional requirements for beam–column and column splice welds in moment frames.

4.5 FABRICATION
A. Shop fabricate to greatest extent possible by welding, including beam stiffeners, column caps and bases, holes and connections.
B. Submit complete shop drawings from field dimensions for the Architect's approval of all structural steel prior to fabrication.

4.6 ERECTION
A. Provide anchor rods, steel wedges, threaded screws, or shims to support and plumb all columns.
B. Grout solid under base plates immediately after columns are plumb.
C. Provide bearing plates and wall anchors or anchor rods for all beams resting on concrete and all other necessary connecting hardware.
D. Set anchor rods using template and protect anchors prior to erection.
E. Do not field cut or field modify any structural steel without prior written approval by Architect for each specific case.

4.7 PAINT
A. Shop prime all steel not encased in concrete, not fireproofed, or not galvanized.
B. See Architectural Drawings and Specifications for finish coat requirements.

4.8 HOT–DIP GALVANIZING
A. All steel, including but not limited to structural members, connection materials, brick relieving angles, loose lintels, and misc. metals, that is exposed to the exterior elements (weather) shall be hot–dip galvanized.
B. Galvanized members that are to be field welded shall have weld–affected areas masked prior to galvanizing.
C. All field welds, or areas where hot–dip galvanizing is damaged, shall be touched–up with a zinc–rich paint ("cold galvanizing') after steel is completely installed, including exposed end of tension controlled bolts.

4.9 FRAMING
A. Beams are equally spaced, UON.
B. Cantilever beams are same size as back span, UON.
C. Bolt patterns shown on details illustrate the concept of the connection and do not necessarily show the actually number and arrangement of the bolts in the connection, unless specifically detailed.

4.10 STANDARD SPECIFICATIONS
A. AISC 360–10 Specification for Structural Steel Buildings
B. AISC 341–10 Seismic Provisions for Structural Steel Buildings, Including Supplement No.1
C. AWS D1.1 Structural Welding Code – Steel

4.11 STRUCTURAL TESTS AND INSPECTIONS
A. Structural tests and inspections are required for this project. Refer to program of structural tests and special inspections for requirements.

PART 5 – STEEL DECK AND SHEAR STUDS

5.1 STEEL DECK
A. Provide steel deck made from galvanized steel with minimum yield strength of 33 ksi, UON.
B. See Drawings and Specifications for gauge and profile.
C. Provide sheet metal pour stops with thickness based on SDI criteria (SDI Publication #31); 14 gauge min. thickness.
D. All Steel Deck and supporting members are sized and spaced assuming at least a two span condition for the metal deck. The steel deck supplier, installer and general contractor shall coordinate installation and shoring requirements for single span deck.

5.2 HEADED STUDS
A. Provide headed type studs which conform to ASTM A108 Grade 1010 or 1020 cold finished carbon steel.
B. Provide ¾ in. diameter by 4½" in. long studs, UON.
C. See the drawings for number and locations of studs.
D. Space studs uniformly along length of beam, UON.
E. Provide a minimum of 1 in. from the edge of any stud and the face of concrete, a metal deck rib or similar discontinuity.
F. Where composite steel beams on plan are missing a shear stud designation, provide the following minimum number of shear studs:
1. Beams designated as part of lateral force–resisting system: 1 stud per foot
2. All other beams: 1 stud per 2 feet

5.3 STANDARD SPECIFICATIONS
A. AISC Specifications per PART 16, Chapter I.
B. AISI Specification for the Design of Cold–Formed Steel Structural Members
C. SDI Code of Recommended Practice and Specifications for Composite Steel Floor Deck
D. AWS Structural Welding Code – Steel and Structural Steel Welding Code – Sheet Steel

5.4 STRUCTURAL TESTS AND INSPECTIONS
A. Structural tests and inspections are required for this project. Refer to program of structural tests and special inspections for requirements.

SYMBOL LEGEND

	BEAM TO COLUMN MOMENT CONNECTION (PART OF LATERAL FORCE–RESISTING SYSTEM)		DIRECTION OF DECK SPAN
	BEAM TO COLUMN CANTILEVER MOMENT CONNECTION		NEW CAST IN PLACE CONCRETE
	BEAM TO BEAM CANTILEVER MOMENT CONNECTION		SLAB OR ROOF DECK OPENING
	STANDARD BEAM CONNECTION		COMPACTED FILL OR UNDISTURBED SOIL
	BEAM TO CONC. FOUNDATION WALL CONNECTION USING EMBED PLATE		GRANULAR FILL
P_u =	FACTORED AXIAL FORCE ON MEMBER (KIPS)	H	INDICATES COLUMN STARTS AT THIS LEVEL
V_u =	FACTORED SHEAR FORCE ON MEMBER (KIPS)		INDICATES COLUMN STOPS AT THIS LEVEL
M_u =	FACTORED MOMENT ON MEMBER (KIP–FEET)	H	INDICATES COLUMN CONTINUES
℄	CENTERLINE	[00'–0"]	INDICATES BOTTOM OF FOOTING ELEVATION
(N)	NUMBER OF HEADED SHEAR STUDS		BEAM PENETRATION
C =	AMOUNT UPWARD OF BEAM CAMBER		

ABBREVIATIONS:

ABBREVIATION	WORD or PHRASE
ASD	Allowable Stress Design
Alt.	Alternate
AFF	Above Finished Floor
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ASTM	American Society for Testing and Materials
AWS	American Welding Society
Arch. or Arch't	Architect
@	At
Bal.	Balance
Bm	Beam
B or Bot.	Bottom
BEW	Bottom Each Way
CEP	Central Energy Plant
CIP	Cast–in–Place
CG	Center of Gravity
Ctrd.	Centered
℄	Centerline
CJ	Control Joint
CJP	Complete Joint Penetration Weld
Clr.	Clear
Col.	Column
Conc.	Concrete
CMU	Concrete Masonry Unit
CRSI	Concrete Reinforcing Steel Institute
Conn.	Connection
Const.	Construction
Const. Jt.	Construction Joint
Cont.	Continuous
CW	Curtain Wall
DBA	Dowel Bar Anchor
Depr.	Depression
Dia. or ø	Diameter
Dim.	Dimension
Dwls	Dowels
Dwg	Drawing
Ea.	Each
EE	Each End
EF	Each Face
ES	Each Side
EW	Each Way
El.	Elevation
Elev.	Elevator
EOS	Edge of Slab
EOR	Engineer of Record
EP	Embed Plate
Eq.	Equal
Exp. Bolt	Expansion Bolt
Exp. Jt or EJ	Expansion Joint
Ext.	Exterior
(E)	Existing
Ft or '	Feet
Fin.	Finish
Fin. Fl.	Finish Floor
Fl.	Floor
FD	Floor Drain
Ftg.	Footing
Fnd	Foundation
FP	Fire Protection
FS	Footing Steps
Galv.	Galvanized
Ga	Gauge
Gr.	Grade
GB	Grade Beam
HP	High Point
HSS	Hollow Structural Section
H or Horiz.	Horizontal
HEF	Horizontal Each Face
HIF	Horizontal Inside Face
HOF	Horizontal Outside Face
In. or "	Inch
Incl.	Inclusive or Including
Info.	Information
Jt	Joint

ABBREVIATION	WORD or PHRASE
K	Kip (1000 pounds)
Ksf	Kips/Square Foot
LW	Lightweight
LWC	Lightweight Concrete
LRFD	Load & Resistance Factor Design
LLH	Long Leg Horizontal
LLV	Long Leg Vertical
LP	Low Point
Mfr	Manufacturer
Max.	Maximum
Mech.	Mechanical
MEP+T	Mechanical, Electrical, Plumbing and Technology
Min.	Minimum
NIC	Not In Contract
NWC	Normal Weight Concrete
NTS	Not to Scale
No. or #	Number
O.C.	On Center
O.D.	Outer Diameter
Opng	Opening
Pl. or ℙ	Plate
PLF	Pounds/Linear Foot
Psf	Pounds/Square Foot
Psi	Pounds/Square Inch
P/C	Pre–cast
Ref.	Reference
Reinf.	Reinforce or Reinforcement
Rem.	Remainder
RD	Roof Drain
SAD	See Architectural Drawings
Sect.	Section
SC	Shear Connector or Slip Critical Bolt
SCJ	Slab Control Joint
SER	Structural Engineer of Record
SH	Headed Shear Stud
Sht	Sheet
Sim.	Similar
SJI	Steel Joist Institute
Spa.	Spaces
SOG	Slab–on–Grade
Sq.	Square
SS	Stainless Steel
Std	Standard
Stl	Steel
SDI	Steel Deck Institute
Stiff.	Stiffener
Str.	Structural
SP	Sump Pit
Sup.	Support
Sym.	Symmetrical
T&B	Top & Bottom
TOC	Top of Concrete
TOS	Top of Steel
TOW	Top of Wall
Typ.	Typical
UON	Unless Otherwise Noted
V or Vert.	Vertical
VEF	Vertical Each Face
VIF	Vertical Inside Face
VIF	Verify in Field
VOF	Vertical Outside Face
WWR	Welded Wire Reinforcement
W/	With
WP	Working Point
W.P.	Waterproofing (Coord. with Architectural Dwgs)

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
3-2-2016

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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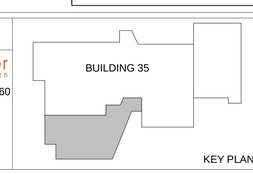


KEY PLAN

N

Drawing Title
GENERAL NOTES

Designed By: CMB
Checked By: MJB
Approved By: JHT

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
Location

Date
06/30/2015

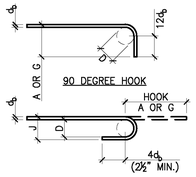
VA Project No.
650-338

Drawing No.
S0-0.1

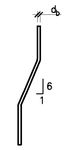
Office of Facilities
Department of Veterans Affairs

VA FORM 08-6221

BAR SIZE	BEND DIAMETER (D) INCHES	180°HOOKS		90° HOOKS
		A OR G INCHES	J INCHES	A OR G INCHES
#3	2¼	5	3	6
#4	3	6	4	8
#5	3¾	7	5	10
#6	4½	8	6	12
#7	5¼	10	7	14
#8	6	11	8	16
#9	9½	15	11¾	19
#10	10¾	17	13¾	22
#11	12	19	14¾	24



180 DEGREE HOOK



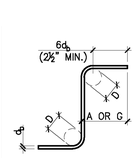
OFFSET BEND

NOTES:
1. ALL BENDS SHALL BE MADE COLD AND SHALL BE MADE PRIOR TO PARTIAL EMBEDMENT IN CONCRETE.
2. d_b = BAR DIAMETER.
3. D = BEND DIAMETER, MEASURED ON THE INSIDE OF BAR.

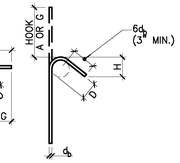
1 TYPICAL REINFORCEMENT BENDS IN CONCRETE AND MASONRY

N.T.S.

BAR SIZE	BEND DIAMETER (D) INCHES	90° HOOK	135° HOOKS	
		HOOK A OR G INCHES	HOOK A OR G INCHES	H (APPROX.) INCHES
#3	1½	4	4¼	3
#4	2	4½	4½	3
#5	2½	6	5½	3¾



90 DEGREE HOOK



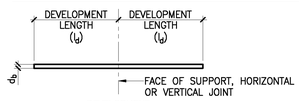
135 DEGREE HOOK

NOTES:
1. ALL BENDS SHALL BE MADE COLD AND SHALL BE MADE PRIOR TO PARTIAL EMBEDMENT IN CONCRETE.
2. d_b = BAR DIAMETER.
3. D = BEND DIAMETER, MEASURED ON THE INSIDE OF BAR.

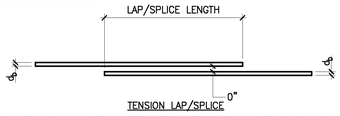
2 TYPICAL TIE AND STIRRUP HOOKS IN CONCRETE AND MASONRY

N.T.S.

BAR SIZE	TENSION DEVELOPMENT LENGTH INCHES (l_d)				TENSION LAP/SPLICE LENGTH INCHES			
	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
	4000 PSI	5000 PSI	4000 PSI	5000 PSI	4000 PSI	5000 PSI	4000 PSI	5000 PSI
#3	19	17	15	13	25	23	20	17
#4	25	23	19	17	33	30	25	23
#5	31	28	24	22	41	37	32	29
#6	37	34	29	26	49	45	38	34
#7	54	49	42	38	71	64	55	50
#8	62	56	48	43	81	73	63	56
#9	70	63	54	48	91	82	71	63
#10	79	71	61	54	103	93	80	71
#11	87	78	67	60	114	102	88	78



DEVELOPMENT



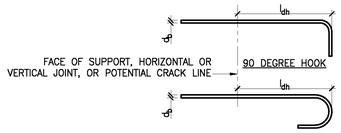
TENSION LAP/SPLICE

NOTES:
1. REFER TO HOOKED REINFORCEMENT TENSION DEVELOPMENT LENGTH SCHEDULE IN CONCRETE WHEN THE STRAIGHT DEVELOPMENT LENGTH IN TENSION CANNOT BE ACCOMMODATED IN THE CONCRETE SECTION.
2. TABULATED DEVELOPMENT LENGTHS ARE BASED ON REINFORCING STEEL YIELD STRENGTH F_y=60 KSI AND NORMAL WEIGHT CONCRETE. LAP SPLICE LENGTHS ARE CLASS B, UNLESS OTHERWISE NOTED IN DRAWINGS.
3. TOP BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 12 INCHES OF FRESH CONCRETE CAST IN THE MEMBER BELOW THE BARS TO BE DEVELOPED OR SPLICED. THE TOP BAR FACTOR SHALL BE APPLIED TO HORIZONTAL BARS IN WALLS.
4. WHEN BARS OF DIFFERENT SIZE ARE LAP SPLICED IN TENSION, SPLICE LENGTH SHALL BE THE LARGER OF l_d OF THE LARGER BAR AND TENSION LAP SPLICE LENGTH OF THE SMALLER BAR.
5. ALL TABULATED VALUES ARE MINIMUM LENGTHS, IN CASE OF CONFLICT WITH PLANS, SECTIONS, OR DETAILS, USE THE LONGER LENGTH.
6. d_b = BAR DIAMETER.
7. l_d = DEVELOPMENT LENGTH.
8. ADJUST TABULATED LENGTHS BY THE FOLLOWING MULTIPLICATION FACTORS WHERE APPLICABLE. NOTE THAT FACTORS ARE CUMULATIVE: (E.G. 1.30x1.50 = 1.95)
   A. LIGHT WEIGHT CONCRETE: 1.33
   B. 3 OR LESS BUNDLED BARS: 1.20
   C. 4 OR MORE BUNDLED BARS: 1.33
   D. CLEAR SPACING LESS THAN $2d_b$ AND CLEAR COVER LESS THAN d_b: 1.50
   E. CLASS A LAP SPLICE: 0.77
   F. EPOXY COATED BARS: 1.50
9. WELDED AND/OR MECHANICAL SPLICES MAY BE USED IF APPROVED BY THE STRUCTURAL ENGINEER OF RECORD PROVIDED THAT THE SPLICE IS CAPABLE OF DEVELOPING AT LEAST 125% OF THE YIELD STRENGTH OF THE LARGER BAR IN TENSION. WHERE WELDED AND/OR MECHANICAL SPLICES ARE TO BE USED, THE GENERAL CONTRACTOR SHALL SUBMIT FULL DATA ON THE PROPOSED MATERIAL, PROCEDURES, AND INSTALLATION INSTRUCTIONS TO THE ENGINEER FOR REVIEW AS A SHOP DRAWING SUBMISSION.
10. USE MECHANICAL COUPLERS FOR #14 AND LARGER BARS.
11. FOR LAP SPLICES IN CONCRETE MASONRY, SEE MASONRY REINFORCEMENT DETAILS.

3 STRAIGHT REINFORCEMENT DEVELOPMENT AND SPLICE LENGTH SCHEDULE FOR CONCRETE

N.T.S.

BAR SIZE	TENSION DEVELOPMENT LENGTH FOR HOOKED BARS (l_{dh}) INCHES	
	4,000 PSI	5,000 PSI
#3	8	7
#4	10	9
#5	12	11
#6	15	13
#7	17	15
#8	19	17
#9	22	20
#10	24	22
#11	27	24

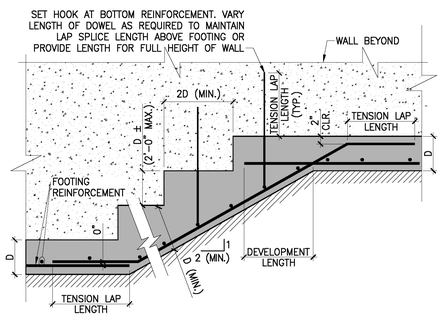


180 DEGREE HOOK

NOTES:
1. SEE TYPICAL REINFORCEMENT BEND DETAIL FOR ADDITIONAL INFORMATION.
2. TABULATED DEVELOPMENT LENGTHS ARE BASED ON REINFORCING STEEL YIELD STRENGTH (F_y = 60 KSI) AND NORMAL WEIGHT CONCRETE.
3. ALL TABULATED VALUES ARE MINIMUM LENGTHS. IN CASE OF CONFLICT WITH THE PLANS, SECTIONS, OR DETAILS, USE THE LONGER LENGTH.
4. d_b = BAR DIAMETER
5. l_{dh}= TENSION DEVELOPMENT LENGTH (HOOK BARS)
6. ADJUST TABULATED LENGTHS BY THE FOLLOWING MULTIPLICATION FACTORS WHERE APPLICABLE. NOTE THAT THE FACTORS ARE CUMULATIVE: (e.g. 1.33 x 1.20 = 1.60)
   A. REINFORCING BAR STRENGTH OTHER THAN 60 KSI: (F_y/60,000)
   B. LIGHT WEIGHT CONCRETE: 1.33
   C. EPOXY COATED BARS: 1.20

4 HOOKED REINFORCEMENT TENSION DEVELOPMENT LENGTH SCHEDULE IN CONCRETE

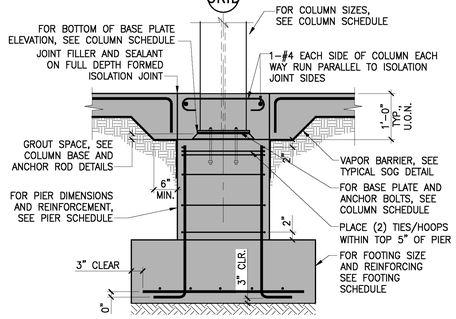
N.T.S.



NOTES:
1. D = THICKNESS OF FOOTING
2. ▨ ON PLAN INDICATES SUBGRADE. REFER TO PROJECT GEOTECHNICAL RECOMMENDATIONS

5 STEPPED WALL FOOTING

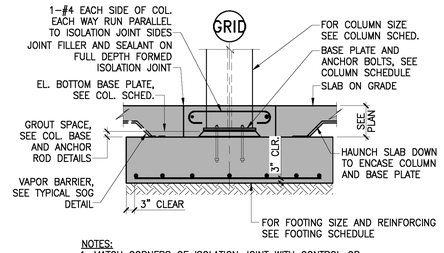
NTS



NOTES:
1. DO NOT USE SOIL TO FORM FOOTING SIDES.
2. MATCH CORNERS OF ISOLATION JOINT WITH CONTROL AND CONSTRUCTION JOINTS TERMINATING AT COLUMN.

6 INTERIOR STEEL COLUMN FOOTING WITH PIER

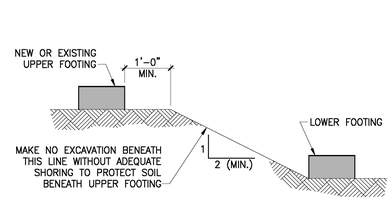
NTS



NOTES:
1. MATCH CORNERS OF ISOLATION JOINT WITH CONTROL OR CONSTRUCTION JOINTS TERMINATING AT COLUMN.
2. DO NOT USE SOIL TO FORM FOOTING SIDES.

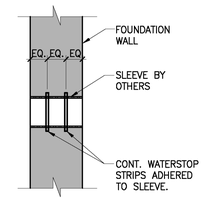
7 INTERIOR STEEL COLUMN FOOTING DETAIL

NTS



8 SLOPE BETWEEN FOOTINGS

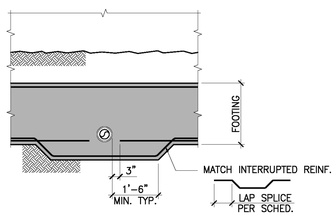
NTS



NOTES:
1. REVIEW ALTERNATE SCHEMES FOR WATERPROOFING SLEEVES WITH ARCHITECT AND ENGINEER.

9 PIPE SLEEVE DETAIL THROUGH FOUNDATION WALL

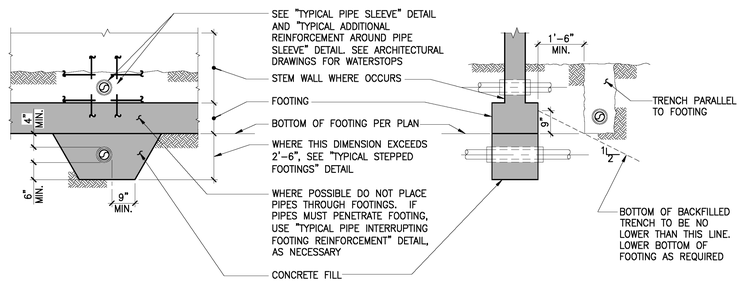
NTS



NOTES:
1. FOR DETAILS NOT NOTED, SEE "TYPICAL CONDITIONS FOR PIPES BELOW GRADE" DETAIL.
2. FOR ADDITIONAL INFO., SEE "TYPICAL PIPE SLEEVE DETAIL" AND "TYPICAL ADDITIONAL REINF. @ PIPE SLEEVE" DETAIL.

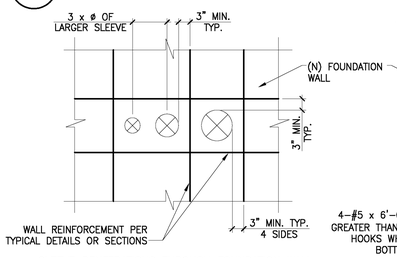
10 TYPICAL PENETRATION THROUGH FOOTING

NTS

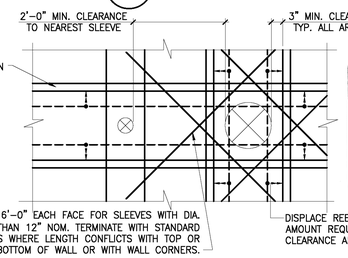


11 TYPICAL CONDITIONS FOR PIPES BELOW GRADE

NTS



SLEEVE PENETRATIONS THROUGH FOUNDATION WALL PLACED WITHOUT NEED FOR DISPLACING REINFORCEMENT



SLEEVE PENETRATIONS THROUGH FOUNDATION WALL PLACED WITH NEED FOR DISPLACING REINFORCEMENT CAGE – 3'-0" MAX., SLEEVE DIAMETER.

12 TYPICAL REINFORCEMENT AROUND PIPE SLEEVES

NTS

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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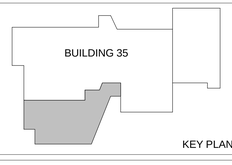


KEY PLAN

N

Drawing Title
TYPICAL CONCRETE DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
Location

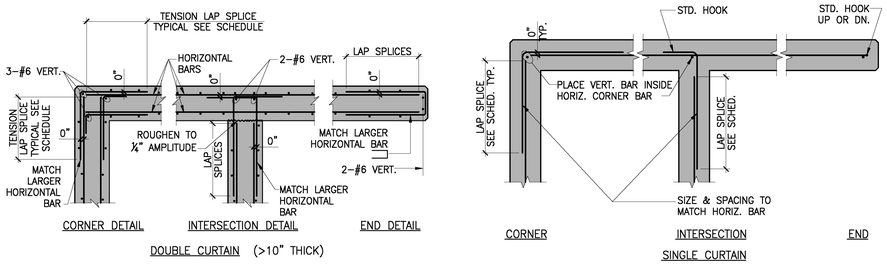
Date
06/30/2015

VA Project No.
650-338

Drawing No.
S0-1.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



1 HORIZONTAL WALL REINFORCEMENT DETAILS

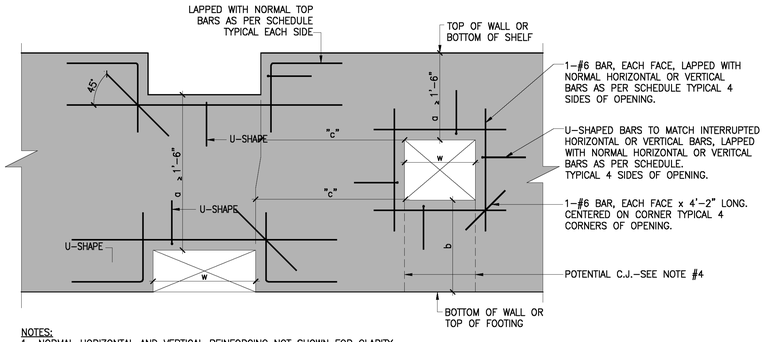
N.T.S.

MINIMUM CONCRETE WALL REINFORCEMENT SCHEDULE		
WALL THICKNESS	VERT. REINF.	HORIZ. REINF.
LESS THAN 10"	#4 @ 12" MID.	#5 @ 12" MID.
10" TO 12" INCL.	#4 @ 12" E.F.	#4 @ 12" E.F.
12" TO 18" INCL.	#5 @ 12" E.F.	#5 @ 12" E.F.

NOTE:
PROVIDE THE ABOVE MINIMUM REINFORCEMENT IN ALL CONCRETE WALLS WHERE REINFORCEMENT IS NOT INDICATED ON THE DRAWINGS

2 MINIMUM WALL REINFORCEMENT SCHEDULE

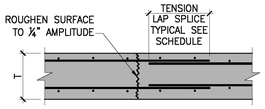
NTS



NOTES:
1. NORMAL HORIZONTAL AND VERTICAL REINFORCING NOT SHOWN FOR CLARITY.
2. OPENINGS ARE SHOWN SQUARE AND RECTANGULAR. CIRCULAR OPENINGS REQUIRE THE SAME DETAILS AND REINFORCEMENT.
3. WHEN DIMENSION "a" IS LESS THAN 0.5 w, REPLACE U–SHAPED BARS WITH CLOSED STIRRUPS. SPACE CLOSED STIRRUPS TO MATCH VERTICAL WALL REINFORCING BUT NOT GREATER THAN "a"/2.
4. WHERE DIMENSION "b" IS SMALL AND PLACING/FINISHING OF CONCRETE BELOW OPENING IS DIFFICULT, THE GENERAL CONTRACTOR MAY ELECT TO ADD VERTICAL CONSTRUCTION JOINTS THAT ALIGN WITH THE EDGES OF THE OPENINGS, PROVIDED THAT ALL REINFORCEMENT IS CONTINUOUS THROUGH THE JOINTS.
5. WHEN DIMENSION "c" IS LESS THAN 6'–0", THE ENGINEER MAY REQUIRE SPECIAL REINFORCEMENT AROUND THE OPENINGS. SUBMIT THESE OPENINGS TO THE ENGINEER FOR REVIEW.
6. REFER TO ALL THE CONTRACT DRAWINGS TO DETERMINE THE SIZES AND LOCATIONS OF ALL OPENINGS THROUGH THE CONCRETE WALLS.
7. HOLES IN SHEAR WALLS NOT SPECIFICALLY DETAILED IN THE DRAWINGS ARE PROHIBITED, UNLESS NOTED ON PLAN.

3 OPENING THROUGH CONCRETE WALL DETAIL

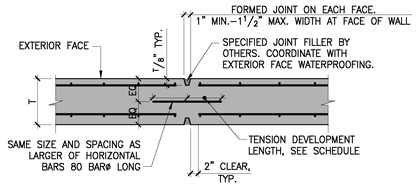
NTS



NOTES:
1. CONSTRUCTION JOINTS SHALL BE PLACED AT A VERTICAL CONTROL JOINT. SEE VERTICAL CONTROL JOINT DETAIL.

4 VERTICAL CONSTRUCTION JOINT IN WALL

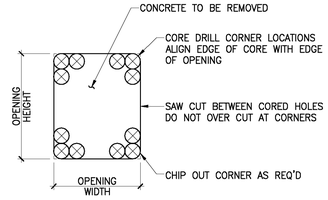
NTS



NOTES:
1. T INDICATES WALL THICKNESS.
2. 60' MAXIMUM SPACING BETWEEN CONTROL AND/OR CONSTRUCTION JOINTS.
3. PROVIDE JOINTS WITHIN 5 FT. OF ALL CORNERS AND/OR INTERSECTIONS.
4. PROVIDE JOINTS ALIGNED WITH MOVEMENT JOINTS ABOVE.

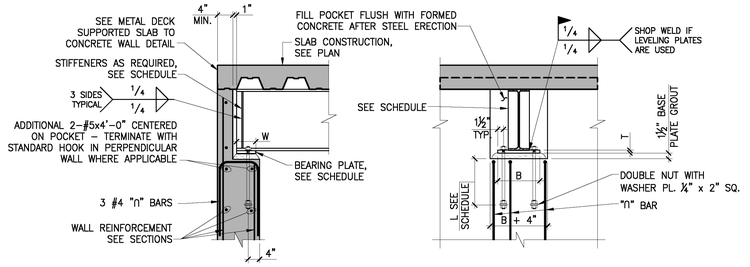
5 VERTICAL CONTROL JOINT IN WALL

NTS



6 TYPICAL OPENING DETAIL THROUGH (E) CONCRETE WALL OR SLAB

N.T.S.

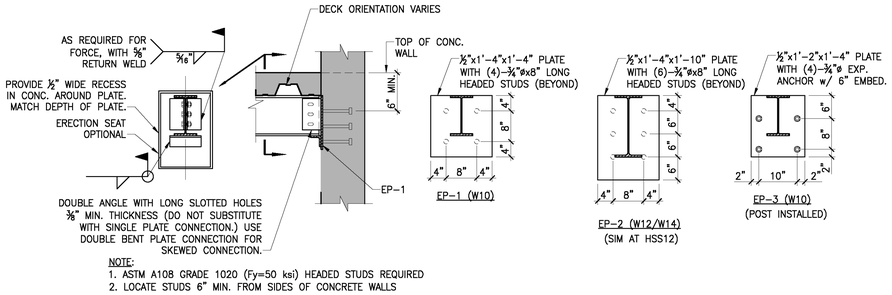


NOTES:
1. GROUT BED THICKNESS IS NOMINAL. PROVIDE LEVELING NUTS AND/OR SHIM PACKS AS REQUIRED TO MAINTAIN PLATE ELEVATION AND LEVELNESS PRIOR TO GROUTING. LEVELING PLATE ¼" MIN. THICKNESS ACCEPTABLE.
2. BASE PLATE GROUT: 8,000 PSI MIN. NON–SHRINK GROUT MIXED TO FLUID CONSISTENCY. IF APPLICABLE, POCKET FILL GROUT CONSISTENCY IS AT CONTRACTOR'S DISCRETION.
3. WASHER PLATES AND WASHERS: ASTM A36.
4. MATCH SURFACE PREPARATION AND FINISH OF BEARING PLATE, ANCHOR RODS, WASHERS AND WASHER PLATES TO THAT OF BEAM.
5. MITER CUT ENDS OF BEAMS AS REQUIRED TO MAKE FLANGE ENDS PARALLEL TO FOUNDATION WALL.
6. B = BEARING PLATE LENGTH
   L = ANCHOR ROD EMBEDMENT LENGTH
   T = BEARING PLATE THICKNESS
   W = BEARING PLATE WIDTH

MARK	BEARING PLATE				STIFFENER PLATE		ANCHOR RODS				NOTES
	T	W	B	MATERIAL	THICKNESS	COMMENT	DIAMETER	L	ROD MATERIAL	NUT MATERIAL	
BP–1	1'–1½"	1'–3"	1'–0"	A36	⅜"		¾"⌀	12"	F1554 GR. 36	A563 GR. A	TYP., UON

8 STEEL BEAM BEARING AT CONCRETE WALL POCKET

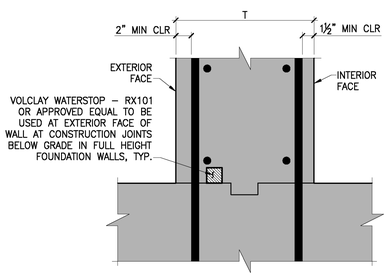
NTS



NOTE:
1. ASTM A108 GRADE 1020 (Fy=50 ksi) HEADED STUDS REQUIRED
2. LOCATE STUDS 6" MIN. FROM SIDES OF CONCRETE WALLS

7 STEEL BEAM TO STEEL PLATE EMBEDDED IN CONCRETE DETAIL

NTS



9 SECTION: CONSTRUCTION JOINT BELOW GRADE FOR FULL HEIGHT FOUNDATION WALLS

NTS

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No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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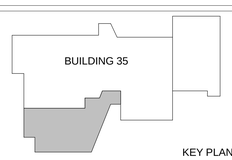


KEY PLAN

N

Drawing Title
TYPICAL CONCRETE DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

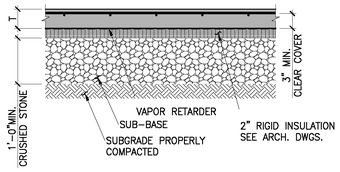
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
Location

Date
06/30/2015
VA Project No.
650-338
Drawing No.
S0-1.1

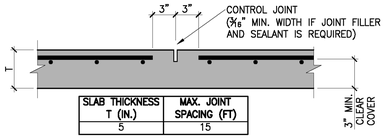
Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



NOTES:
1. SEE PLANS FOR SLAB CONSTRUCTION.
2. SEE PLANS, GENERAL NOTES AND/OR SPECIFICATIONS FOR VAPOR BARRIER.
3. SEE PLANS, GENERAL NOTES AND/OR SPECIFICATIONS FOR SUB-BASE AND/OR SUBGRADE REQUIREMENTS.
4. SEE GENERAL NOTES FOR ADDITIONAL REINFORCING BAR CONCRETE COVER REQUIREMENTS.

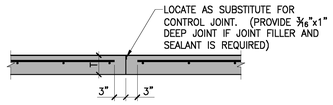
1 TYPICAL SLAB-ON-GRADE DETAIL
NTS



SLAB THICKNESS T (IN.)	MAX. JOINT SPACING (FT)
5	15

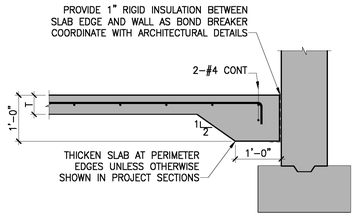
NOTES:
1. SAW CUT 1" (MIN.) DEEP JOINT WITH EARLY ENTRY SAW AS SOON AS POSSIBLE AFTER FINISHING SLAB. (4 TO 8 HOURS MAX.)
2. DETAIL REINFORCEMENT TO STOP AT JOINTS AS INDICATED.
3. LOCATE CONTROL JOINTS ON A RECTANGULAR GRID AND SUBMIT LAYOUT OF CONTROL JOINTS FOR APPROVAL UNLESS JOINT LOCATIONS ARE OTHERWISE SPECIFIED. RE-ENTRANT CORNERS ARE DISCOURAGED. WHERE UNAVOIDABLE, PROVIDE CORNER BARS PER DETAIL. TYPICAL SLAB REINFORCEMENT AT RE-ENTRANT CORNER.
4. ASPECT RATIO OF RECTANGLES SHALL NOT EXCEED 1.25.
5. SEE PLANS, GENERAL NOTES AND/OR SPECIFICATIONS FOR JOINT FILLER AND SEALANT REQUIREMENTS.
6. REINFORCEMENT SHOWN GRAPHICALLY. REFER ELSEWHERE FOR SIZE AND SPACING.
7. SEE GENERAL NOTES FOR ADDITIONAL REINFORCING BAR CLEAR COVER REQUIREMENTS.

2 CONTROL JOINT IN SLAB-ON-GRADE
NTS

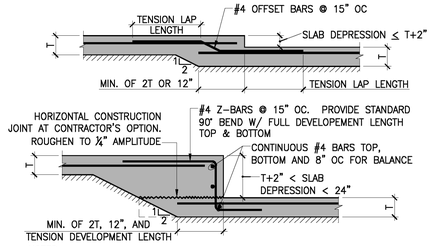


NOTES:
1. DETAIL REINFORCEMENT TO STOP AT JOINT.
2. SUBMIT LOCATIONS OF CONSTRUCTION JOINTS FOR APPROVAL.
3. ALLOW A MINIMUM OF 72 HOURS BETWEEN ADJACENT POURS.
4. SEE SPECIFICATIONS FOR JOINT FILLER AND SEALANT REQUIREMENTS.

3 SLAB-ON-GRADE CONSTRUCTION JOINT
NTS

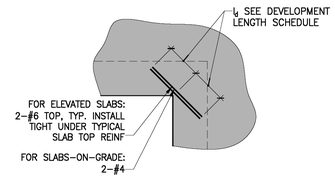


4 THICKENED SLAB-ON-GRADE AT PERIMETER
NTS



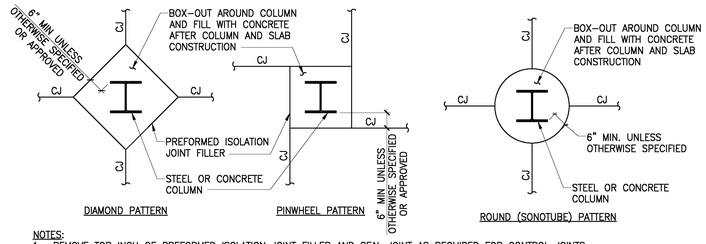
NOTES:
1. ON DETAIL INDICATES SUBGRADE. REFER TO TYPICAL SLAB-ON-GRADE DETAIL, GENERAL NOTES AND/OR SPECIFICATIONS.
2. SEE PLANS FOR SLAB CONSTRUCTION.

5 DEPRESSIONS AT SLAB-ON-GRADE
NTS



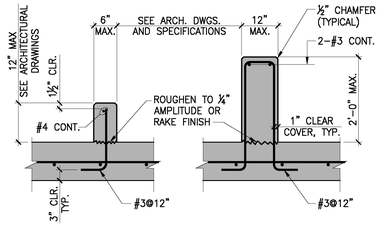
NOTE:
DETAIL APPLIES AT OPENINGS AND CORNERS OF SLAB DEPRESSIONS.

6 TYPICAL SLAB REINFORCEMENT AT RE-ENTRANT CORNER
NTS



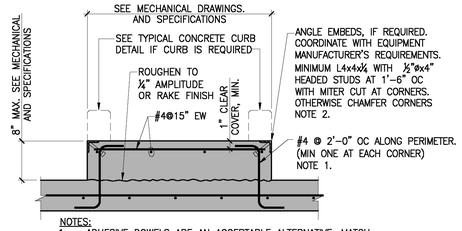
NOTES:
1. REMOVE TOP INCH OF PREFORMED ISOLATION JOINT FILLER AND SEAL JOINT AS REQUIRED FOR CONTROL JOINTS.
2. AT PINWHEEL PATTERN, CONTRACTOR HAS OPTION OF PLACING ISOLATION JOINT TIGHT TO COLUMN AND SAW CUT PINWHEEL PATTERN.

7 SLAB-ON-GRADE ISOLATION JOINT
DETAILS AT COLUMNS
NTS



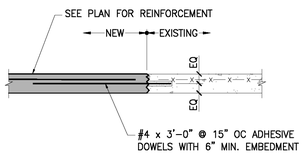
NOTES:
1. ADHESIVE DOWELS ARE AN ACCEPTABLE ALTERNATIVE. MATCH REINFORCING BAR SIZE AND SPACING SHOWN. PROVIDE A MINIMUM EMBEDMENT OF 2½".

8 CONCRETE CURB AT SLAB-ON-GRADE
SIMILAR AT ELEVATED CONCRETE SLAB
NTS

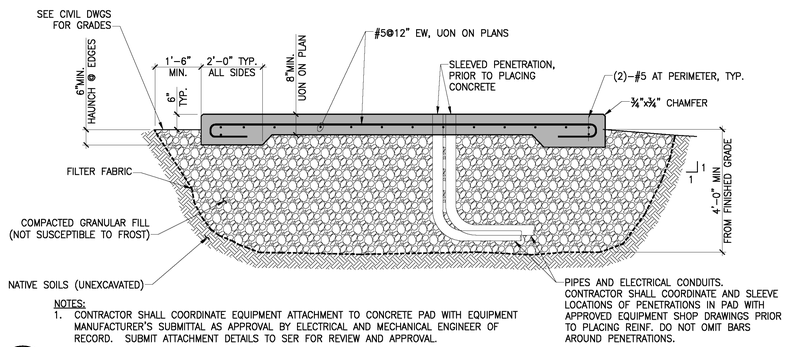


NOTES:
1. ADHESIVE DOWELS ARE AN ACCEPTABLE ALTERNATIVE. MATCH REINFORCING BAR SIZE AND LOCATIONS SHOWN. PROVIDE A MINIMUM EMBEDMENT OF 2½".
2. PROVIDE 1" CHAMFER IF CONTINUOUS STEEL ANGLES ARE NOT REQUIRED.

9 EQUIPMENT PAD AT SLAB-ON-GRADE
SIMILAR AT ELEVATED CONCRETE SLAB
NTS

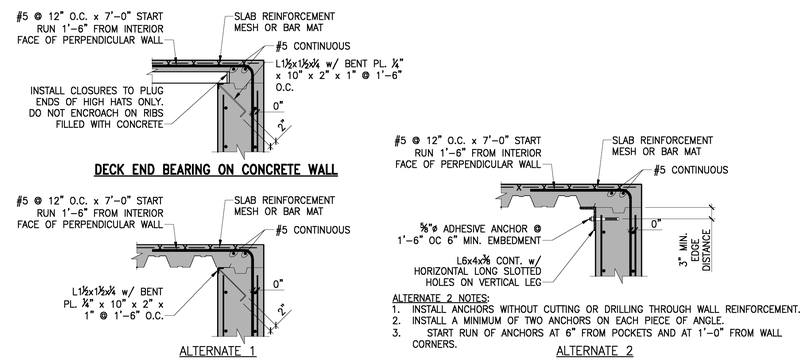


10 SLAB-ON-GRADE CONNECTION TO (E) SLAB
NTS



NOTES:
1. CONTRACTOR SHALL COORDINATE EQUIPMENT ATTACHMENT TO CONCRETE PAD WITH EQUIPMENT MANUFACTURER'S SUBMITTAL AS APPROVAL BY ELECTRICAL AND MECHANICAL ENGINEER OF RECORD. SUBMIT ATTACHMENT DETAILS TO SER FOR REVIEW AND APPROVAL.

11 TYPICAL EXTERIOR EQUIPMENT PAD REINFORCING DETAILS
NTS



ALTERNATE 2 NOTES:
1. INSTALL ANCHORS WITHOUT CUTTING OR DRILLING THROUGH WALL REINFORCEMENT.
2. INSTALL A MINIMUM OF TWO ANCHORS ON EACH PIECE OF ANGLE.
3. START RUN OF ANCHORS AT 6" FROM POCKETS AND AT 1'-0" FROM WALL CORNERS.

12 METAL DECK SUPPORTED SLAB TO TOP OF CONCRETE WALL
NTS

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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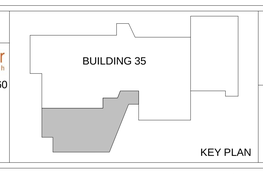


N

Drawing Title
TYPICAL CONCRETE DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

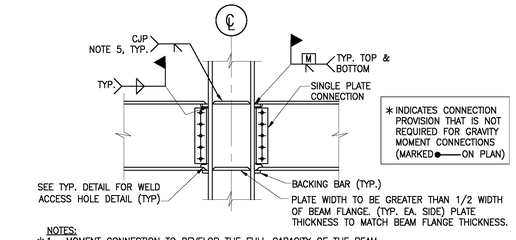
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
Location

Date
06/30/2015
VA Project No.
650-338
Drawing No.
S0-1.2

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

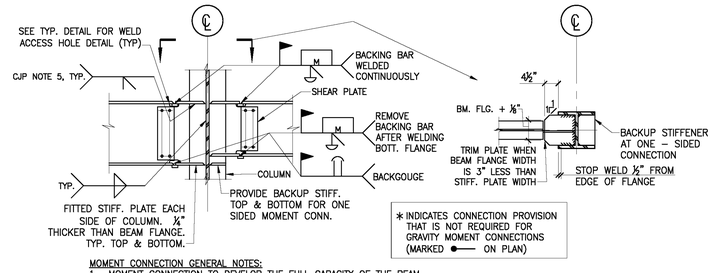


∗ INDICATES CONNECTION PROVISION THAT IS NOT REQUIRED FOR GRAVITY MOMENT CONNECTIONS (MARKED ●—— ON PLAN)

NOTES:
∗1. MOMENT CONNECTION TO DEVELOP THE FULL CAPACITY OF THE BEAM.
2. FOR DESIGN MOMENTS AT GRAVITY CONNECTIONS, SEE GRAVITY MOMENT CONNECTION SCHEDULE THIS SHEET.
∗3. SHEAR CONNECTION TO DEVELOP THE LOWER OF THE FACTORED REACTION LISTED IN THE SCHEDULE + 2.4(M_P/SPAN), OR 80% OF THE UNREDUCED SHEAR STRENGTH OF THE COPED WEB. BOLTS ARE SLIP CRITICAL.
4. INSTALL ALL BOLTS SNUG TIGHT PRIOR TO FIRST TORQUING. TENSION BOLTS FULLY PRIOR TO WELDING.
5. EDGE PREPARATION OF CONTINUITY PLATES AT FABRICATORS DISCRETION. BACK GOUGE ROOT PASS OF DOUBLE BEVEL GROOVE WELDS.
∗6. REMOVE BOTTOM FLANGE BACKING BAR, BACK GOUGE, AND INSTALL REINFORCING 5/16" FILLET ON TOP & BOTTOM OF BOTTOM FLANGE WELD.
∗7. WELD TOP FLANGE BACKING BAR CONTINUOUSLY TO COLUMN FLANGE OR CONTINUITY PLATE.
∗8. ADD A 5/16" REINFORCING FILLET TO TOP OF TOP FLANGE WELD.
9. FILLER WELD MATERIAL TO HAVE MINIMUM CHARPY V-NOTCH VALUE OF 20 FT-LBS. AT 40° F.

1A TYPICAL BEAM-TO-COLUMN MOMENT CONNECTION DETAIL (STRONG AXIS) SIM. AT TOP OF COLUMN

N.T.S.

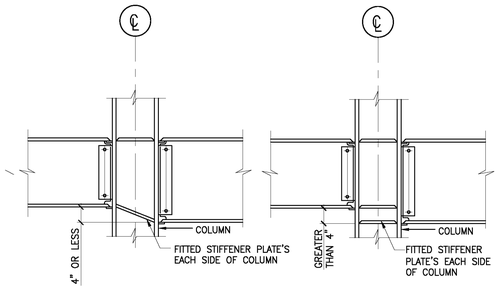


∗ INDICATES CONNECTION PROVISION THAT IS NOT REQUIRED FOR GRAVITY MOMENT CONNECTIONS (MARKED ●—— ON PLAN)

MOMENT CONNECTION GENERAL NOTES:
1. MOMENT CONNECTION TO DEVELOP THE FULL CAPACITY OF THE BEAM.
2. FOR DESIGN MOMENTS AT GRAVITY CONNECTIONS, SEE SCHEDULE ON THIS SHEET.
∗3. SHEAR CONNECTION TO DEVELOP THE LOWER OF THE FACTORED REACTION LISTED IN THE SCHEDULE + 2.4(M_P/SPAN), OR 80% OF THE UNREDUCED SHEAR STRENGTH OF THE COPED WEB. BOLTS ARE SLIP CRITICAL.
∗4. INSTALL ALL BOLTS SNUG TIGHT PRIOR TO FIRST TORQUING. TENSION BOLTS FULLY PRIOR TO WELDING.
5. EDGE PREPARATION OF CONTINUITY PLATES AT FABRICATOR'S DISCRETION. BACK GOUGE ROOT PASS OF DOUBLE BEVEL GROOVE WELDS.
∗6. FILLER WELD MATERIAL TO HAVE MINIMUM CHARPY V-NOTCH VALUE OF 20 FT-LBS. AT 40° F.

1B TYPICAL BEAM-TO-COLUMN MOMENT CONNECTION DETAIL (WEAK AXIS) SIM. AT TOP OF COLUMN

N.T.S.



ALTERNATE: BEAM TO COLUMN FLANGE

ALTERNATE: BEAM TO COLUMN FLANGE

NOTE:
FOR INFORMATION NOT SHOWN, SEE NOTES IN BEAM-TO-COLUMN MOMENT CONNECTION DETAILS.

1C ALTERNATE STRONG AXIS BEAM-TO-COLUMN MOMENT CONNECTION DETAIL

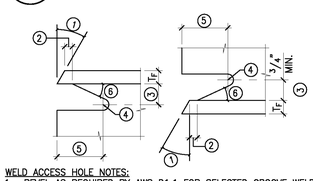
3/4"=1'-0"

GRAVITY MOMENT CONNECTION SCHEDULE (UON)	
BEAM SIZE	DESIGN FACTORED MOMENT (LRFD) (KIP-FT)
W10	50
W12/W14	100
W16/W18	150
W21	200

NOTES:
1. SEE TS-1A THROUGH TS-1E FOR ADDITIONAL INFORMATION.
2. DESIGN MOMENT NEED NOT EXCEED MEMBER MOMENT CAPACITY.

1D GRAVITY MOMENT CONNECTION SCHEDULE

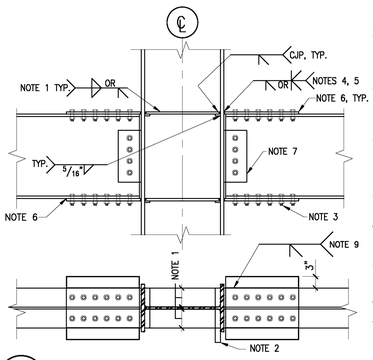
N.T.S.



WELD ACCESS HOLE NOTES:
1. BEVEL AS REQUIRED BY AWS D1.1 FOR SELECTED GROOVE WELD PROCEDURE
2. LARGER OF T_F OR 1/2" (TOLERANCE: PLUS 1/2 T_F, OR MINUS 1/4 T_F)
3. 3/4 T_F TO T_F, 3/4" MINIMUM (TOLERANCE: ± 1/4")
4. 3/8" MINIMUM RADIUS (TOLERANCE: PLUS NOT LIMITED, OR MINUS 0)
5. 3 T_F (TOLERANCE: ± 1/2")
6. 25° MAXIMUM AS-BUILT ANGLE AFTER TOLERANCES

1E WELD ACCESS HOLE DETAILS

N.T.S.

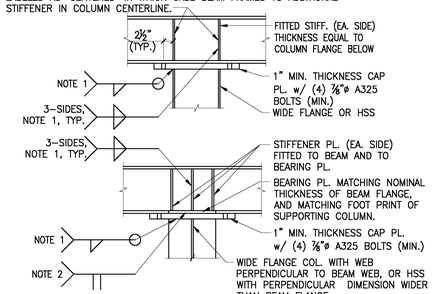


BOLTED MOMENT CONNECTION NOTES:
1. MINIMUM WIDTH TO MATCH BEAM FLANGE, THICKNESS TO MATCH OR EXCEED FLANGE OF THICKER BEAM FLANGE AT CONNECTION.
2. REMOVE WELD TABS TO 1/4" MAXIMUM FROM EDGE OF CONTINUITY PLATE. GRIND END OF WELD SMOOTH, NOT FLUSH; DO NOT GOUGE COLUMN FLANGE.
3. ALL BOLTS PRETENSIONED; DESIGNED FOR BEARING. BOLT HOLES IN FLANGE PLATE ARE OVERSIZED, BOLT HOLES IN BEAM FLANGE ARE STANDARD.
4. SHOP WELD: WHEN USING SINGLE BEVEL PREPARATION, REMOVE BACKING AFTER WELDING, BACKGOUGE, AND REINFORCE WITH 5/16" MIN. FILLET WELD.
5. WHEN USING DOUBLE BEVEL PREPARATION, BACKGOUGE FIRST WELD BEFORE WELDING OTHER SIDE.
6. SHIMS BETWEEN BEAM FLANGE AND FLANGE PLATES ARE ALLOWED. USE FULL COVERAGE SHIM PLATES OR FULL DEPTH FINGER SHIMS.
7. HOLES IN SHEAR TABS ARE SHORT SLOTTED HORIZONTAL HOLES. HOLES IN BEAM WEB ARE STANDARD.
8. MOMENT CONNECTION SHALL DEVELOP THE FULL CAPACITY OF THE BEAM.
9. ADD PLATE 1/4"x3" FLUSH WITH TOP BEAM FLANGE FOR DECK SUPPORT, AS REQUIRED AT MOMENTS PLATES.

1F ALTERNATE BOLTED STRONG AXIS BEAM-TO-COLUMN MOMENT CONNECTION DETAIL

3/4"=1'-0"

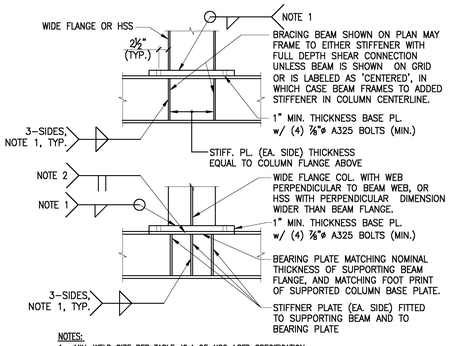
BRACING BEAM SHOWN ON PLAN MAY FRAME TO EITHER STIFFENER WITH FULL DEPTH SHEAR CONNECTION UNLESS BEAM IS SHOWN ON GRID OR IS LABELED AS 'CENTERED' IN WHICH CASE BEAM FRAMES TO ADDITIONAL STIFFENER IN COLUMN CENTERLINE.



NOTES:
1. MINIMUM WELD SIZE PER TABLE J2.4 OF AISC-LRFD SPECIFICATION.
2. CJP BETWEEN BEARING PLATE AND SUPPORTING BEAM.
3. FULLY TENSION ALL BOLTS.

2 STANDARD BEAM OVER COLUMN DETAIL

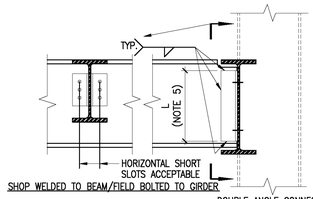
3/4"=1'-0"



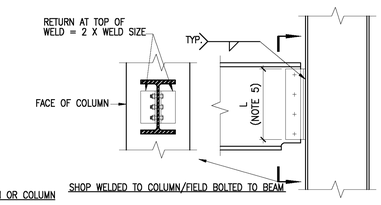
NOTES:
1. MIN. WELD SIZE PER TABLE J2.4 OF AISC-LRFD SPECIFICATION.
2. CJP BETWEEN BEARING PLATE AND SUPPORTING BEAM.
3. FULLY TENSION ALL BOLTS.

3 COLUMN BASE TO STEEL SUPPORT

3/4"=1'-0"



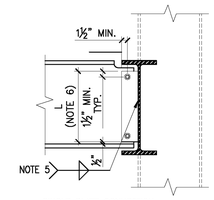
SHOP WELDED TO BEAM/FIELD BOLTED TO GIRDER



SHOP WELDED TO COLUMN/FIELD BOLTED TO BEAM

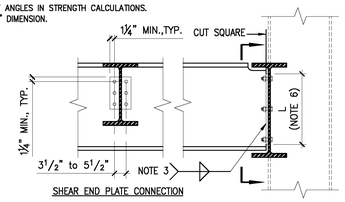
DOUBLE ANGLE CONNECTION TO BEAM OR COLUMN

NOTES:
1. DETAIL SIMILAR AT CONNECTION TO COLUMN FLANGE OR COLUMN WEB.
2. BOLTED – BOLTED ALTERNATES ACCEPTABLE.
3. MAXIMUM ANGLE THICKNESS : 5/8".
4. NEGLECT WELD RETURNS AT TOP OF ANGLES IN STRENGTH CALCULATIONS.
5. L = GREATER THAN 0.5 X BEAM "T" DIMENSION.



SINGLE PLATE CONNECTION

NOTES:
1. DESIGN MODEL : MANUAL OF STEEL CONSTRUCTION, 14TH EDITION.
2. TREAT COLUMN FLANGES AND GIRDERS WITH SHEAR TABS ON OPPOSITE SIDES WITHIN 6" AS RIGID ELEMENTS.
3. TREAT ALL OTHER GIRDER WEBS AS FLEXIBLE ELEMENTS.
4. PLATE MATERIAL : ASTM A36 STEEL.
5. MINIMUM WELD SIZE = 3/4 X PLATE THICKNESS WITH E70XX ELECTRODES.
6. L = GREATER THAN 0.5 X BEAM "T" DIMENSION.
7. MAXIMUM PLATE THICKNESS = BOLT ø/2 + 1/16".
8. DO NOT USE AT COLUMN WEBS.



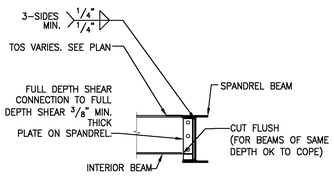
SHEAR END PLATE CONNECTION

NOTES:
1. DETAIL SIMILAR AT COLUMN FLANGE OR COLUMN WEB.
2. END PLATE THICKNESS RANGE: FROM 1/4" TO 3/8" INCLUSIVE.
3. DO NOT RETURN WELD ACROSS THICKNESS OF BEAM WEB.
4. END PLATE MATERIAL: ASTM A36
5. DO NOT USE ON CAMBERED BEAMS.
6. L = GREATER THAN 0.5 X BEAM "T" DIMENSION.

GENERAL NOTES:
1. DESIGN CONNECTIONS FOR THE GREATER OF THE FORCES SHOWN ON PLAN OR THE FORCES SHOWN ON THE BEAM SHEAR REACTION TABLE.
2. MINIMUM BOLT SIZE IS 3/4"ø A325, U.O.N.
3. FULLY TENSION ALL BOLTS.
4. REINFORCE WEBS AS REQUIRED BY COPES, WEB CUTS, ETC.
5. ALTERNATE CONNECTION TYPES, SUCH AS SINGLE ANGLE, TEE, SEATED CONNECTIONS, ETC. MAY BE ACCEPTABLE UNDER CERTAIN CIRCUMSTANCES. REVIEW WITH SER.
6. SEE DETAILS & SECTIONS FOR BEAMS REQUIRING FULL DEPTH SHEAR CONNECTIONS.
7. DETAIL CONNECTIONS IN CONFORMANCE WITH THE REQUIREMENTS OF "29 CFR PART 1926, SUBPART R – STEEL ERECTION".
8. GRIND COPES FOR GROUP 4 AND 5 SECTIONS PER THE AISC LRFD SPECIFICATION SECTION J1.6.

6 STANDARD BEAM SHEAR CONNECTIONS

3/4" = 1'-0"



4 TYPICAL BEAM FRAMING TO SPANDREL BEAM CONNECTION

3/4" = 1'-0"

MINIMUM SIZE OF FILLET WELDS TABLE (AISC TABLE J2.4)	
MATERIAL THICKNESS OF THINNER PART JOINED (IN.)	MINIMUM SIZE OF FILLET WELD[a] (IN.)
UP TO 1/4 INCLUSIVE	1/8
OVER 1/4 TO 1/2	3/16
OVER 1/2 TO 3/4	1/4
OVER 3/4	5/16
[a] LEG DIMENSION OF FILLET WELDS. SINGLE-PASS WELDS MUST BE USED.	

5 WELD TABLE

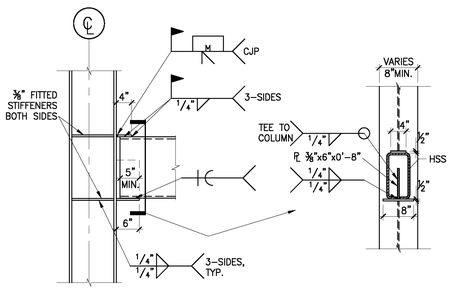
N.T.S.

BEAM SHEAR REACTION TABLE (UON)			
BEAM SIZE	VERTICAL FACTORED (LOAD) REACTION (KIPS) (SEE NOTE 1)	MINIMUM NUMBER OF BOLTS (SEE NOTE 6)	HORIZONTAL FACTORED TENSILE FORCE (KIPS) (SEE NOTE 7)
W8	19	2	13
W10x26 AND LIGHTER	23	2	16
W10x30 AND HEAVIER	26	2	18
W12x22 AND LIGHTER	26	2	18
W12x26 AND HEAVIER	26	3	20
W14x26 AND LIGHTER	30	3	20
W14x30 AND HEAVIER	30	3	20
W16x31 AND LIGHTER	34	3	23
W16x36 AND HEAVIER	43	4	29
W18x46 AND LIGHTER	43	4	29
W18x50 AND HEAVIER	43	5	29
W21x62 AND LIGHTER	63	5	42
W21x68 AND HEAVIER	63	6	42

NOTES:
1. LOADS IN THIS TABLE HAVE BEEN FACTORED IN ACCORDANCE WITH SECTION 2.3 OF ASCE 7-10.
2. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION.
3. BEAM REACTIONS SHOWN ON PLAN TAKE PRECEDENT OVER THOSE SHOWN IN THIS TABLE. FOR THOSE SHOWN ON PLAN, PROVIDE A HORIZONTAL FACTORED TENSILE FORCE EQUAL TO 2/3 THE VERTICAL FACTORED LOAD UON. VERTICAL AND HORIZONTAL LOADS NEED NOT BE ASSUMED TO ACT CONCURRENTLY.
4. SEE DETAILS AND SECTIONS FOR BEAMS REQUIRING FULL DEPTH SHEAR CONNECTIONS.
5. FIELD WELDED CONNECTIONS MAY BE USED IN LIEU OF BOLTED CONNECTIONS AT CONTRACTOR'S OPTION. HOWEVER, SHOP DRAWINGS FOR ALL FIELD WELDED CONNECTIONS MUST BE SUBMITTED AND APPROVED BY THE EOR PRIOR TO BEGINNING FABRICATION.
6. USE 3/4"ø A325N BOLTS (MIN).
7. FOR COMPLIANCE WITH STRUCTURAL INTEGRITY REQUIREMENTS OF 2012 IBC 1614.3.2.2, CONNECTIONS SHALL HAVE THE MINIMUM HORIZONTAL AXIAL TENSILE STRENGTH INDICATED. VERTICAL REACTION AND HORIZONTAL TENSILE FORCE NEED NOT ACT CONCURRENTLY, EXCEPT AT BRACED FRAME MEMBERS, WHERE FORCES WILL ACT CONCURRENTLY.

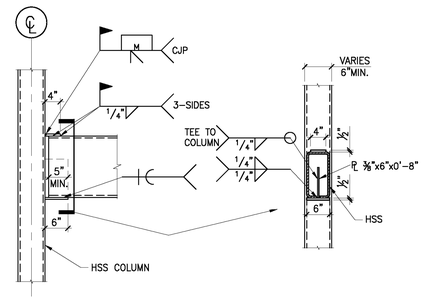
7 BEAM SHEAR REACTION TABLE

N.T.S



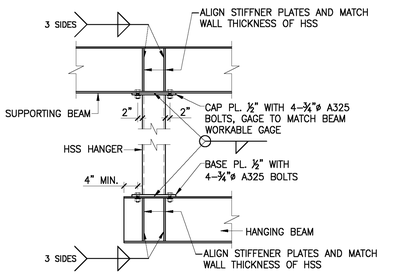
8 HSS TO WIDE FLANGE CONNECTION

N.T.S.



9 HSS TO HSS COLUMN CONNECTION

N.T.S.



10 TYPICAL HSS HANGER

NTS

JOHN H. THOMSEN
No. 10032
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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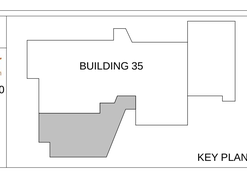


N

Drawing Title
TYPICAL STEEL DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
Location

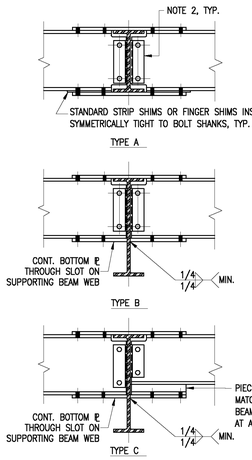
Date
06/30/2015

VA Project No.
650-338

Drawing No.
S0-2.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6321

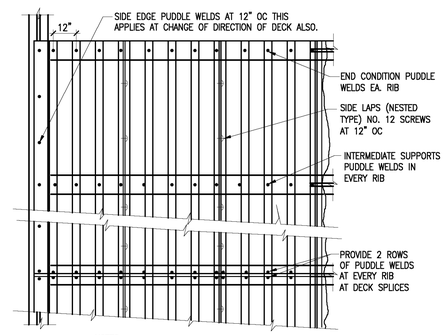


NOTES:

1. DESIGN FLANGE PLATES FOR (0.8 ø)(Z)(FY) OF THE SMALLER BEAM.
2. UON ON PLAN, DESIGN SHEAR CONNECTION FOR 80% OF THE SHEAR STRENGTH OF THE COPED BEAM. REINFORCE WEB AS REQUIRED BY REACTIONS SHOWN ON PLAN. DOUBLE ANGLE, SINGLE PLATE, AND END PLATE CONNECTIONS ACCEPTABLE.
3. ALL BOLTS ARE SLIP CRITICAL.
4. FIELD WELDED FLANGE PLATE ALTERNATES ACCEPTABLE.
5. DETAIL SHIMS AND/ OR FILLERS PER AISC LRFD SPECIFICATION SECTION J6.
6. PROVIDE DECK SUPPORT AS REQUIRED. DECK SUPPORT BY OVERSIZE TOP FLANGE FILLER PLATE IS ACCEPTABLE IF IT HAS A ¼" MIN. THICKNESS AND IT EXTENDS A MINIMUM OF 3" BEYOND THE BEAM FLANGES

1 "BEAM–TO–BEAM" MOMENT CONNECTIONS

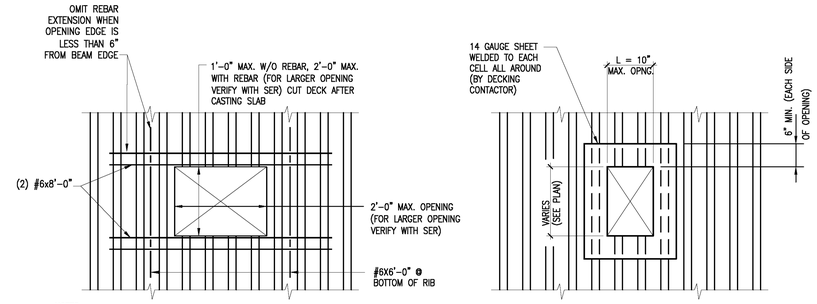
3/4" = 1'–0"



NOTES:
1. USE NESTED SIDE LAPS.
2. PUDDLE WELDS 5/8" MIN.

2 FASTENING PATTERN FOR COMPOSITE METAL FLOOR DECK

NTS



NOTES:
1. NO REINFORCEMENT REQUIRED FOR HOLES 6"ø OR LESS
2. DO NOT CUT DECK PRIOR TO CASTING SLAB
3. PROVIDE POUR STOP AT ALL OPENINGS
4. SHORING OF DECK IS AN ACCEPTABLE ALTERNATIVE TO REINFORCEMENT CHANNELS AND SHEET METAL SHOWN FOR DECK CUT BEFORE CONCRETE IS POURED
5. DETAIL DOES NOT APPLY FOR SINGLE SPAN FRAMING. FOR THESE CONDITIONS ADD SUB FRAMING, INCREASE GAUGE OF DECK, OR SUBMIT PREFERRED SCHEME TO SER FOR REVIEW AND APPROVAL

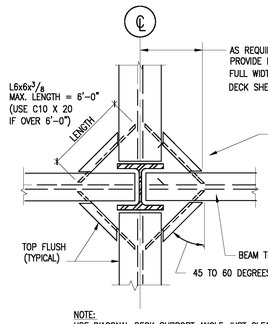
FOR OPENINGS 10" TO 2'–0" PERPENDICULAR TO DECK

NOTE:
NO REINFORCEMENT WHERE "L" IS 6" OR LESS

FOR OPENINGS UP TO 10" PERPENDICULAR TO DECK

3 COMPOSITE FLOOR DECK REINFORCING AT OPENINGS

NTS



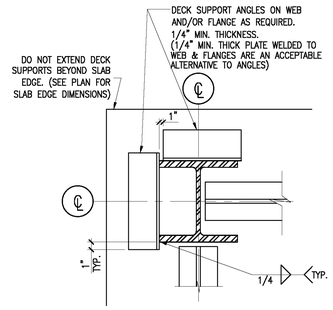
NOTE:
USE DIAGONAL DECK SUPPORT ANGLE JUST CLEARING THE COLUMN AT CONDITIONS WHERE TOP FLANGE OF GIRDER 90 DEGREES TO DECK SPAN IS BUTT WELDED TO COLUMN.

USE SIMILAR DETAIL:

1. AT BEAM TO BEAM MOMENT CONNECTION.
2. WHERE PIPE SLEEVES AND ROOF DRAINS OCCUR NEXT TO COLUMN.
3. WHERE COLUMN BASE PLATE OCCURS ON TOP FLANGE OF STEEL BEAM.
4. AT ALL OTHER CONDITIONS WHERE DECK SUPPORT IS INTERRUPTED FOR A DISTANCE GREATER THAN 6".

4 DECK SUPPORT AT MOMENT CONNECTION AT COLUMN

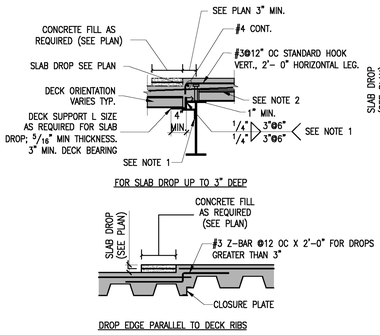
NTS

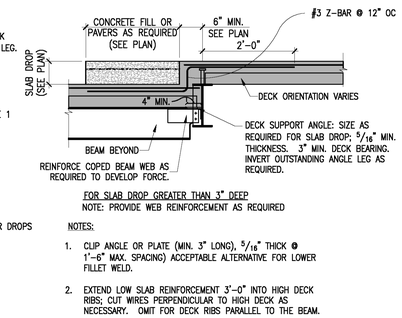


NOTE:
POUR STOPS, CONTINUOUS ALONG SLAB EDGE, NOT SHOWN FOR CLARITY.

5 DECK SUPPORT AT PERIMETER COLUMNS

NTS





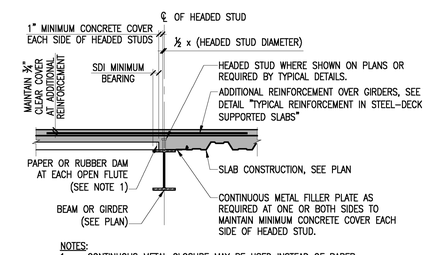
NOTE: PROVIDE WEB REINFORCEMENT AS REQUIRED

NOTES:

1. CLIP ANGLE OR PLATE (MIN. 3" LONG), 5/16" THICK @ 1'–6" MAX. SPACING) ACCEPTABLE ALTERNATIVE FOR LOWER FILLET WELD.
2. EXTEND LOW SLAB REINFORCEMENT 3'–0" INTO HIGH DECK RIBS; CUT WIRES PERPENDICULAR TO HIGH DECK AS NECESSARY. OMIT FOR DECK RIBS PARALLEL TO THE BEAM.

6 SLAB DROP: DECK AND REINFORCING DETAILS

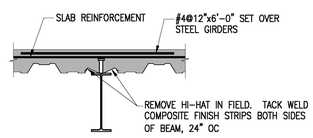
NTS



NOTES:
1. CONTINUOUS METAL CLOSURE MAY BE USED INSTEAD OF PAPER DAM ONLY WHEN SDI MINIMUM BEARING AND 1" MINIMUM COVER TO SIDE OF STUD CAN BE MAINTAINED.

7 STEEL DECK DIRECTION CHANGE DETAIL

NTS

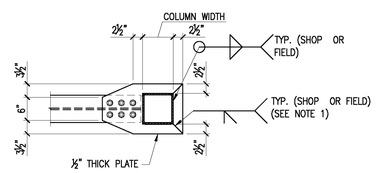


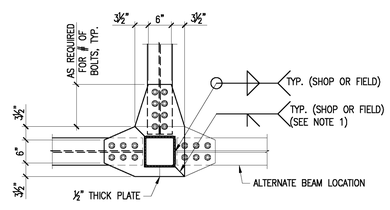
GAP	FINISH STRIP GAUGE
0 TO 4"	20
4" TO 7"	16
7" TO 9"	14

NOTES:
1. DETAIL APPLIES ONLY TO BEAMS WITH STUDS, AND TO ALL GIRDERS.
2. DETAIL APPLIES TO SKEW BEAMS AS REQUIRED FOR STUD PLACEMENT.

8 STEEL DECK PARALLEL TO STEEL SUPPORT DETAIL

NTS





NOTES:
1. PLATE SPLICES W/ FULL–PENETRATION WELDS ARE OPTIONAL. ALTERNATIVE METHOD OF SLIDING A CONTINUOUS PLATE OVER TOP OF COLUMN ALSO ACCEPTABLE.
2. PROVIDE THE FOLLOWING # OF ¾"ø A325 S.C. BOLTS FOR EA. BEAM SIZE:
   W16 — 6 BOLTS
   W18, W21, & W24 — 8 BOLTS
3. SHEAR CONNECTION NOT SHOWN FOR CLARITY. PROVIDE SIMPLE SHEAR CONNECTION FROM WEB OF BEAM TO FACE OF HSS COLUMN AS INDICATED IN 6/S0–2.0.

9 STANDARD WIDE FLANGE BEAM TO HSS COLUMN MOMENT CONNECTION

N.T.S.

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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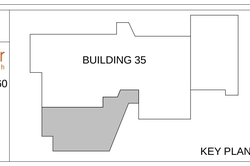


KEY PLAN

N

Drawing Title
TYPICAL STEEL DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
Location

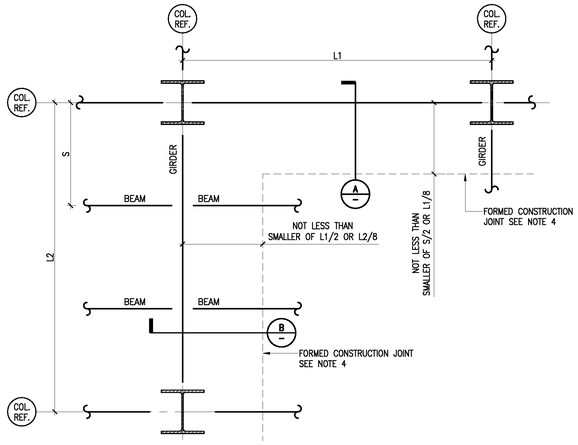
Date
06/30/2015

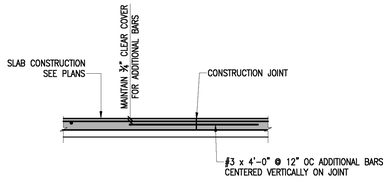
VA Project No.
650-338

Drawing No.
S0-2.1

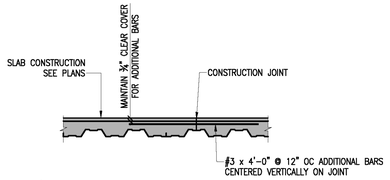
Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231





A CONSTRUCTION JOINT PERPENDICULAR TO DECK SPAN

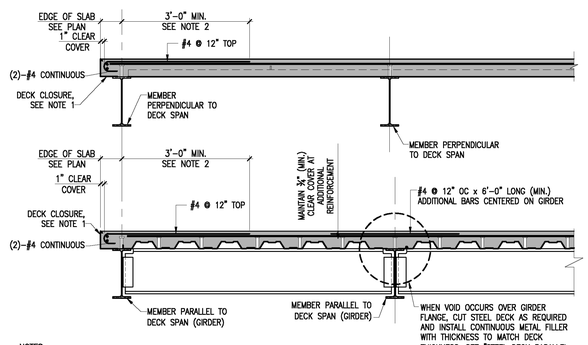


B CONSTRUCTION JOINT PARALLEL TO DECK SPAN

NOTES:
1. S = SPACING BETWEEN COLUMN LINE AND CENTERLINE OF FIRST FILLER BEAM.
2. L_1 = BEAM LENGTH
3. L_2 = GIRDER LENGTH
4. PROVIDE LAP SPLICE WITH REINFORCEMENT OF SUBSEQUENT POUR.
5. AT CONSTRUCTION JOINTS, PROVIDE TAPERED KEY WAY AND BULKHEAD TO FORM JOINT. CHIP OUT AND REMOVE CONCRETE THAT EXTENDS UNDER THE BULKHEAD TO PROVIDE A SOUND VERTICAL SURFACE PRIOR TO POURING THE ABUTTING CONCRETE.
6. PRIOR TO THE SUBSEQUENT POUR WET FACE OF JOINT WITH WATER MIST AND REMOVE ANY STANDING WATER FROM DECK. SURFACE OF CONSTRUCTION JOINT SHALL BE CLEAN AND FREE OF LAITANCE.
7. WHERE CONSTRUCTION JOINTS ARE NOT SHOWN ON PLAN, SUBMIT TO THE STRUCTURAL ENGINEER OF RECORD FOR REVIEW DRAWINGS WITH THE LOCATION OF CONSTRUCTION JOINTS AND THE CONCRETE PLACING SEQUENCE. SUBMIT DRAWINGS PRIOR TO PREPARATION OF THE REINFORCEMENT SHOP DRAWINGS.
8. LIMIT THE SIZE OF CONCRETE PLACEMENTS, UNLESS OTHERWISE NOTED, TO A MAXIMUM LENGTH OF 80 FEET AND A MAXIMUM AREA OF 6400 SQ FT (MAX AREA)

1 CONSTRUCTION JOINT LAYOUT FOR COMPOSITE SLABS

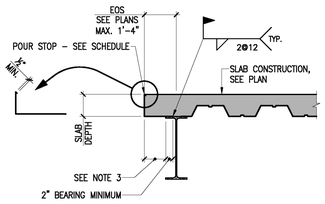
NTS



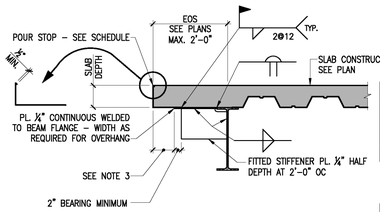
NOTES:
1. COORDINATE EDGE CONDITION WITH "COMPOSITE DECK SLAB EDGE DETAIL" AND BUILDING SECTIONS.
2. GIRDERS ARE DEFINED AS BEAMS FRAMING TO COLUMNS AND/OR SUPPORTING BEAMS LARGER THAN W8.

2 TYPICAL REINFORCEMENT IN STEEL-DECK SUPPORTED SLAB

NTS



TYPICAL SLAB EDGE UP TO 1'-4" EOS



LARGE OVERHANG SLAB EDGE UP TO 2'-0" EOS

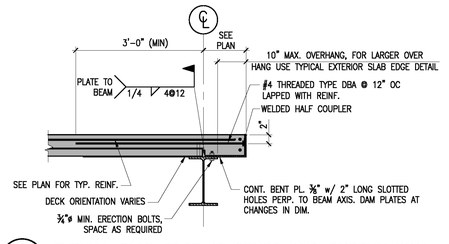
MINIMUM POUR STOP GAUGE										
SLAB DEPTH (INCHES)	OVERHANG (INCHES)									
	0	1	2	3	4	5	6	7	8	9	10
5¼	20	18	18	16	16	14	14	12	12	12	10

MINIMUM BENT PLATE THICKNESS (IN.)									
SLAB THICKNESS (INCHES)	OVERHANG (INCHES)								
	10	11	12	13	14	15	16	17	18
5¼	3/16	3/16	3/16	¼	¼	¼	5/16	5/16	5/16

NOTES:
1. UON, PLACE GALVANIZED SHEET METAL POUR STOPS. POUR STOPS SHOWN ARE A MINIMUM. GENERAL CONTRACTOR TO COORDINATE WITH MANUFACTURER
2. AT CURTAIN WALL SLAB EDGES, STAIR EDGES, AND WHEN NOTED @ BRICK FACADE PROVIDE CONTINUOUS BENT PL. 3/8" AS POUR STOP WITH #4 x 3'-9" @ 15" OC THREADED INTO WELDED HALF COUPLER
3. OVERHANG <10" – SEE POUR STOP SCHEDULE.
   OVERHANG ≥10" – SEE BENT PLATE SCHEDULE.

3 COMPOSITE DECK SLAB EDGE DETAIL

NTS



4 TYPICAL SLAB EDGE AT STAIRS AND CURTAIN WALL

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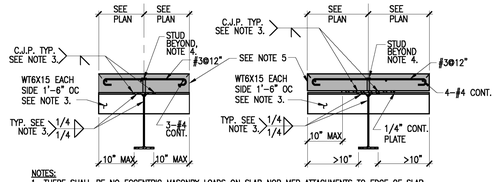

NOTES:
1. THERE SHALL BE NO ECCENTRIC MASONRY LOADS ON SLAB NOR MEP ATTACHMENTS TO EDGE OF SLAB.
2. DEVELOP LONGITUDINAL BARS INTO SLAB BEYOND SLAB EDGE WITH 60 d_b EXTENSION OR STANDARD HOOK IF SPACE DOES NOT ALLOW FOR EXTENSION.
3. APPLIES ONLY WHERE "ALTERNATE DETAIL" IS INDICATED IN PLAN.
4. PLACE STUDS AS SHOWN ON PLAN.
5. COORDINATE EDGE CONDITION WITH "COMPOSITE DECK SLAB EDGE DETAIL" AND BUILDING SECTIONS.

5 FLOOR OPENING ON BOTH SIDES OF BEAM

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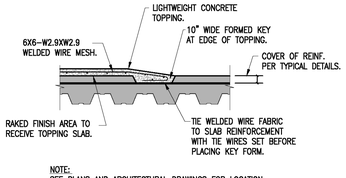

NOTE:
SEE PLANS AND ARCHITECTURAL DRAWINGS FOR LOCATION OF TOPPING, DIMENSIONS, AND SLOPE OF EDGE.

6 SLOPED TOPPING SLAB & SLAB ELEVATION TRANSITIONS

NTS

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REGISTERED PROFESSIONAL ENGINEER
6/30/2015

100% DESIGN DOCUMENTS
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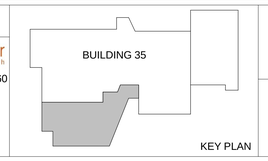

KEY PLAN

N

Drawing Title
TYPICAL STEEL DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

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BUILDING 35 ADDITION FOR RESEARCH

Building #
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06/30/2015

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650-338

Drawing No.
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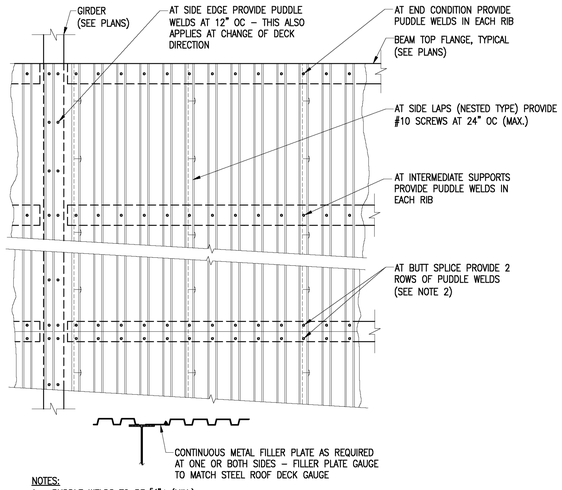
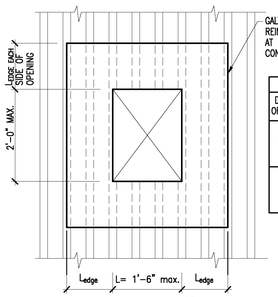


NOTES:
1. PUDDLE WELDS TO BE 5/8"ø (MIN.)
2. DECK ENDS ARE TO BE BUTT SPLICED. LAPPED DECK ENDS ARE PROHIBITED.
3. RIBS AT 6" OC FOR 1½" DECK, AND AT 8" OC FOR 3" DECK.

1 FASTENING PATTERN FOR 1 1/2" OR 3" METAL ROOF DECK

3/4" = 1'–0"



NOTE: NO REINFORCEMENT NEEDED WHERE "L" IS 6 INCHES OR LESS.

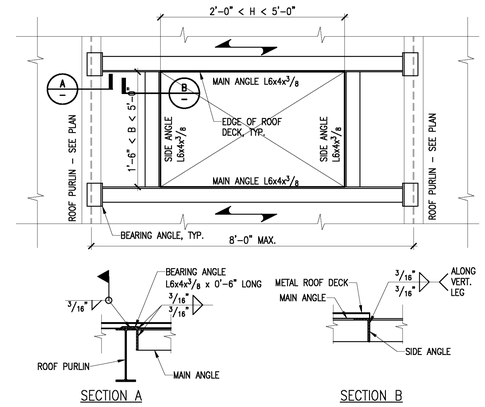
FOR OPENINGS UP TO 1'-6" PERPENDICULAR TO DECK

PARAMETERS FOR DECK CUT			
DEPTH OF DECK	DECK GAUGE	REINFORCING SHEET THICKNESS	MAX. CLEAR SPAN OF DECK
1½"	20	13 GA.	5'–0"
	18	12 GA.	6'–0"
	16	12 GA.	7'–0"
3"	20	12 GA.	7'–0"
	18	1/8" or 10 GA.	8'–0"
	16	1/8" or 10 GA.	9'–0"

NOTES:
1. L_{EDGE} = 1'–0" MIN.
2. DETAIL DOES NOT APPLY TO OPENINGS SHOWN ON PLAN WITH STEEL SUBFRAMING.
3. FOR OPENINGS CUT IN THE FIELD, NOT SHOWN ON PLAN, AND EXCEEDING THE MAXIMUM SPAN LIMITS, ADD SUBRAMING PER TYPICAL FLOOR OPENING DETAILS. DETAIL APPLIES TO OPENINGS SPACED NO CLOSER THAN 5'–0" CLEAR IN DIRECTION TRANSVERSE TO DECK RIBS AND NO CLOSER THAN 10'–0" CLEAR IN DIRECTION PARALLEL TO RIBS. REVIEW SPECIFIC CONDITIONS WITH SER THAT MIGHT ALLOW MODIFICATIONS TO THE SPECIFIED PARAMETERS OF THE DETAIL.

2 REINF. FOR ROOF DECK OPENING SMALLER THAN 2'–0"x1'–6"

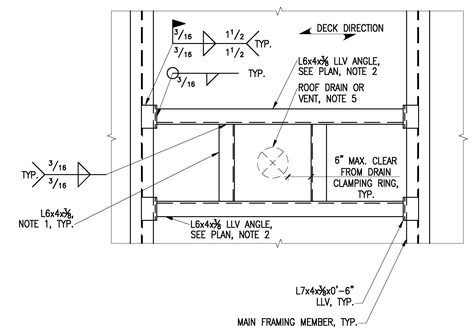
3/4" = 1'–0"



NOTES:
1. ADVISE SER IF OPENING EXCEEDS DIMENSION LIMITS SHOWN.
2. ROOF DECK MUST BE FASTENED TO SUBFRAMING ANGLES AS SHOWN IN 1/S0–2.3.
3. TOPS OF MAIN AND SIDE ANGLES ARE FLUSH WITH TOP OF ROOF STEEL.
4. SUBFRAMING IS DESIGNED FOR EQUIVALENT 100 PSF LIVE LOAD AND NET 30 PSF WIND SUCTION.
5. CONTRACTOR MAY ELECT TO OMIT BEARING ANGLES AND COPE VERTICAL LEG OF MAIN ANGLES SUCH THAT THEY BEAR AT LEAST 4" ON TOP FLANGE OF ROOF PURLINS.
6. CONTRACTOR MAY ELECT TO FABRICATE ANGLE FRAMES IN FIELD.

3 SUBFRAMING FOR ROOF OPENING LARGER THAN 2'–0" x 1'–6"

3/4" = 1'–0"



NOTES:
1. OMIT WHEN DRAIN IS LESS THAN 1'–6" CLEAR FROM A MAIN FRAMING MEMBER FLANGE EDGE.
2. OMIT ANGLE WHEN DRAIN IS LESS THAN 1'–0" CLEAR FROM A MAIN FRAMING MEMBER FLANGE EDGE, CONNECT SHORT ANGLES TO MAIN FRAMING MEMBER WITH L6x4x3/8.
3. TOP OF STEEL ELEVATION TO MATCH MAIN FRAMING MEMBER ELEVATIONS EXCEPT FOR BEARING CONNECTIONS.
4. REFER TO TYPICAL DETAILS FOR SUPPORT AT CORNER CONDITION.
5. MAX OPENING SIZE 2'–0" x 2'–0". MAX. EQUIPMENT WEIGHT 600 LB.

4 ROOF DRAIN, VENT, OR EQUIPMENT SUBFRAMING DETAIL

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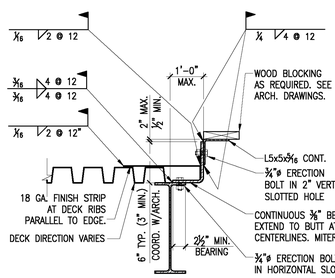
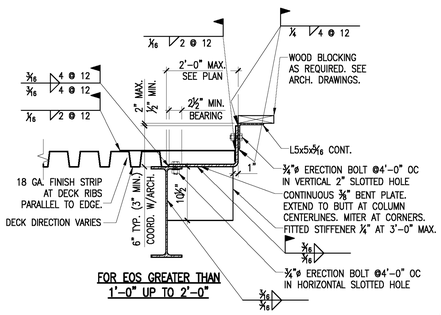
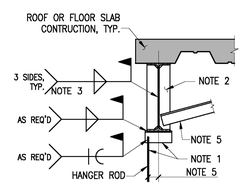
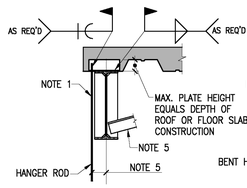


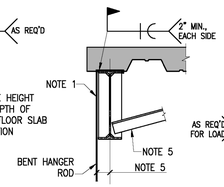


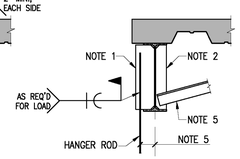
5 TYPICAL ROOF DECK EDGE SUPPORT

NTS





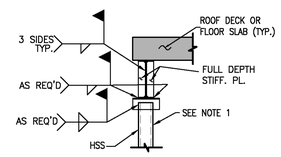




NOTES:
1. HANGER ASSEMBLY AND CONNECTION TO BASE BUILDING STRUCTURE TO BE PROVIDED AND DESIGNED BY STAIR FABRICATOR.
2. STIFFENERS AND PLATES SHOWN IN DETAILS ABOVE TO BE INSTALLED BY STAIR MANUFACTURER. PROVIDE ¼" MINIMUM THICKNESS STIFFENER PLATES, BUT NOT LESS THAN THE THICKNESS OF THE BEAM WEB. STIFFENER PLATES TO BE FULL DEPTH FOR W16 AND SHALLOWER BEAMS AND 14" TALL FOR ALL DEEPER BEAMS (MIN.).
3. STIFFENER WELDS TO BE ⅛" LESS THAN STIFFENER THICKNESS.
4. COORDINATE STEEL ERECTION AND HANGER INSTALLATION AS REQUIRED.
5. MAXIMUM ECCENTRICITY TO BE THE WIDTH OF THE SUPPORTING BEAM FLANGE. IF A GREATER ECCENTRICITY IS REQUIRED, PROVIDE L3x3x3/8 KICKER ANGLE AND CONNECTION PLATES TO ADJACENT BEAM.

6 STAIR HANGER DETAILS

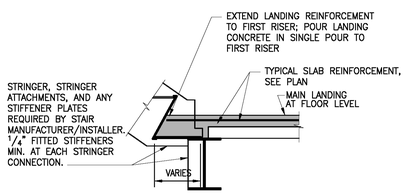
3/4"=1'–0"



NOTES:
1. HANGER ASSEMBLY PLUS CONNECTION TO BE PROVIDED AND DESIGNED BY STAIR MANUFACTURER.
2. STIFFENERS AND PLATES SHOWN IN DETAILS ABOVE TO BE INSTALLED BY STAIR MANUFACTURER, ¼" MINIMUM THICKNESS.
3. STIFFENER WELDS: ¼" MIN. SUBMIT SIGNED AND SEALED CALCULATIONS WITH ANY ALTERNATE WELD DESIGN REQUESTED.
4. COORDINATE STEEL ERECTION AND HANGER INSTALLATION AS REQUIRED.

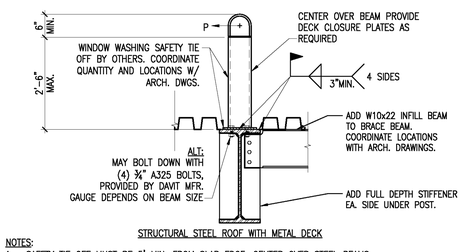
7 HSS STAIR HANGER DETAILS

NTS



8 TYPICAL STAIR HEADER BEAM DETAIL

NTS



NOTES:
1. SAFETY TIE OFF MUST BE 5' MIN. FROM SLAB EDGE, CENTER OVER STEEL BEAMS.
2. P = 5 KIPS MAX ULTIMATE LOAD

9 SAFETY TIE–OFF AT ROOF

N.T.S.

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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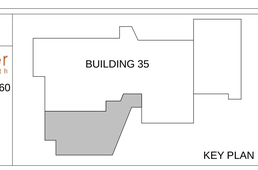


N

Drawing Title: TYPICAL STEEL DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

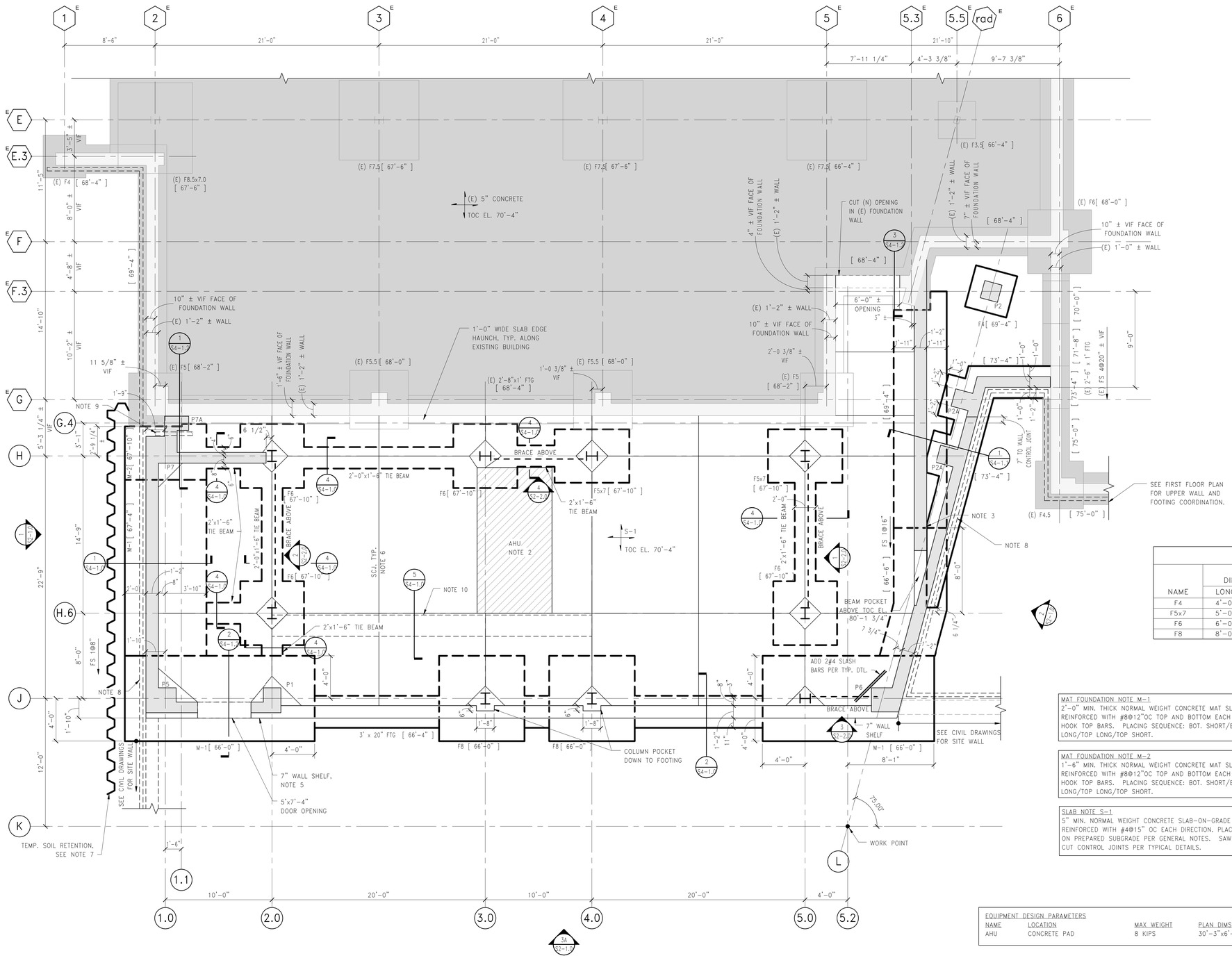
Project Title: BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
Location

Date: 06/30/2015
VA Project No. 650-338
Drawing No. S0-2.3

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



BASEMENT PLAN NOTES:

1. [X'-X"] INDICATES FINAL BOTTOM OF CONCRETE FOOTING ELEVATION. EXCAVATE, PROOF-ROLL SUBGRADE AND BACKFILL WITH COMPACTED STRUCTURAL FILL UNDER ALL FOOTINGS PER THE PROJECT SPECIFICATIONS.
2. COORDINATE EQUIPMENT PADS WITH ARCH AND MEP DWGS. SEE EQUIPMENT DESIGN PARAMETERS ON THIS SHEET.
3. DO NOT BACKFILL FOUNDATION WALLS UNTIL UPPER SLAB STEEL AND SLAB ARE CONSTRUCTED, UON.
4. SEE SHEET S3-1.2 FOR PIER AND PILASTER DETAILS.
5. COORDINATE ALL SHELF ELEVATIONS AND EXTENTS WITH ARCH. DWGS.
6. SCJ: SEE TYPICAL DETAIL FOR SAW CUT JOINTS IN SLAB-ON-GRADE.
7. CONTRACTOR TO PROVIDE TEMPORARY SOIL RENTENTION TO INSTALL FOUNDATIONS AND WALLS.
8. PROVIDE PERIMETER FOUNDATION DRAINS FOR FULL DEPTH FOUNDTION WALLS. SEE CIVIL DWGS.
9. CONTRACTOR TO COORDINATE BURIED UTILITIES WITH MEP AND CIVIL DRAWINGS. SEE TYPICAL DETAILS FOR OPENING DETAILS THROUGH NEW FOUNDATIONS.
10. THICKEN SLAB UNDER CHAIN LINK FENCE POSTS. COORDINATE FINAL LOCATION WITH ARCH DWGS..
11. CONTRACTOR TO VERIFY ALL EXISTING DIMENSIONS IN FIELD.

FOUNDATION SCHEDULE

NAME	DIMENSIONS LONG	DIMENSIONS SHORT	THICKNESS	BOTTOM REINFORCEMENT LONG	BOTTOM REINFORCEMENT SHORT	TOP REINFORCEMENT LONG	TOP REINFORCEMENT SHORT	NOTES
F4	4'-0"	4'-0"	1'-4"	5#5	5#5			HOOK
F5x7	5'-0"	7'-0"	1'-6"	6#6	8#6			HOOK
F6	6'-0"	6'-0"	1'-6"	7#6	7#6			HOOK
F8	8'-0"	8'-0"	2'-0"	9#7	9#7			

MAT FOUNDATION NOTE M-1
2'-0" MIN. THICK NORMAL WEIGHT CONCRETE MAT SLAB REINFORCED WITH #8@12"OC TOP AND BOTTOM EACH WAY. HOOK TOP BARS. PLACING SEQUENCE: BOT. SHORT/BOT. LONG/TOP LONG/TOP SHORT.

MAT FOUNDATION NOTE M-2
1'-6" MIN. THICK NORMAL WEIGHT CONCRETE MAT SLAB REINFORCED WITH #8@12"OC TOP AND BOTTOM EACH WAY. HOOK TOP BARS. PLACING SEQUENCE: BOT. SHORT/BOT. LONG/TOP LONG/TOP SHORT.

SLAB NOTE S-1
5" MIN. NORMAL WEIGHT CONCRETE SLAB-ON-GRADE REINFORCED WITH #4@15" OC EACH DIRECTION. PLACE ON PREPARED SUBGRADE PER GENERAL NOTES. SAW CUT CONTROL JOINTS PER TYPICAL DETAILS.

EQUIPMENT DESIGN PARAMETERS

NAME	LOCATION	MAX WEIGHT	PLAN DIMS
AHU	CONCRETE PAD	8 KIPS	30'-3"x6'-0"

BASEMENT FLOOR PLAN
1/4" = 1'-0"

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
3-2-2016

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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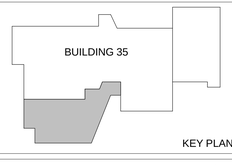


KEY PLAN

N

Drawing Title
BASEMENT FLOOR PLAN

Designed By: CMB
Checked By: MJB
Approved By: JHT

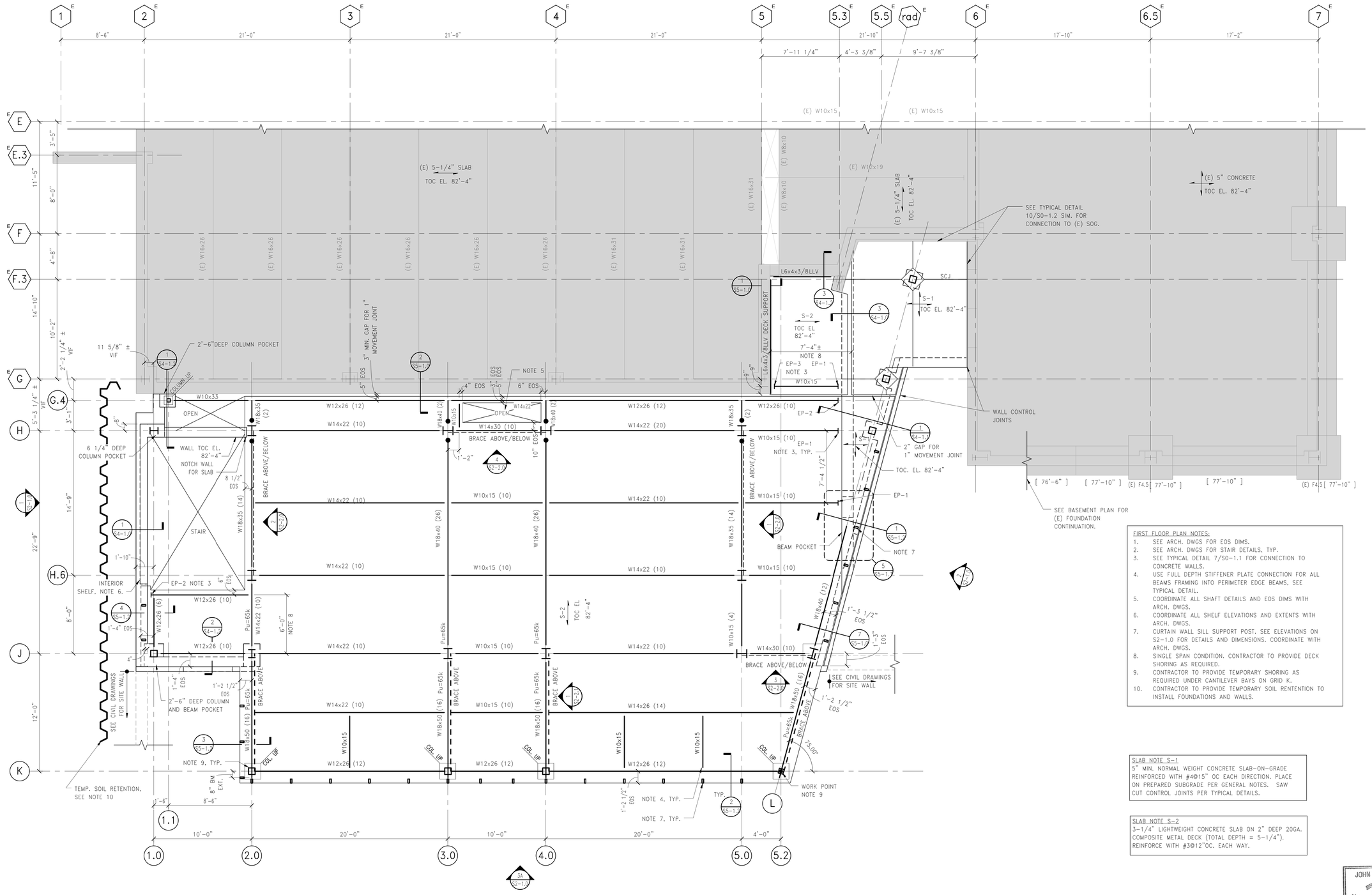
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/4" = 1'-0"
Location

Date 06/30/2015
VA Project No. 650-338
Drawing No.
S1-2.B

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



FIRST FLOOR PLAN
1/4" = 1'-0"

FIRST FLOOR PLAN NOTES:

1. SEE ARCH. DWGS FOR EOS DIMS.
2. SEE ARCH. DWGS FOR STAIR DETAILS. TYP.
3. SEE TYPICAL DETAIL 7/S0-1.1 FOR CONNECTION TO CONCRETE WALLS.
4. USE FULL DEPTH STIFFENER PLATE CONNECTION FOR ALL BEAMS FRAMING INTO PERIMETER EDGE BEAMS, SEE TYPICAL DETAIL.
5. COORDINATE ALL SHAFT DETAILS AND EOS DIMS WITH ARCH. DWGS.
6. COORDINATE ALL SHELF ELEVATIONS AND EXTENTS WITH ARCH. DWGS.
7. CURTAIN WALL SILL SUPPORT POST. SEE ELEVATIONS ON S2-1.0 FOR DETAILS AND DIMENSIONS. COORDINATE WITH ARCH. DWGS.
8. SINGLE SPAN CONDITION. CONTRACTOR TO PROVIDE DECK SHORING AS REQUIRED.
9. CONTRACTOR TO PROVIDE TEMPORARY SHORING AS REQUIRED UNDER CANTILEVER BAYS ON GRID K.
10. CONTRACTOR TO PROVIDE TEMPORARY SOIL RENTENTION TO INSTALL FOUNDATIONS AND WALLS.

SLAB NOTE S-1
5" MIN. NORMAL WEIGHT CONCRETE SLAB-ON-GRADE REINFORCED WITH #4@15" OC EACH DIRECTION. PLACE ON PREPARED SUBGRADE PER GENERAL NOTES. SAW CUT CONTROL JOINTS PER TYPICAL DETAILS.

SLAB NOTE S-2
3-1/4" LIGHTWEIGHT CONCRETE SLAB ON 2" DEEP 20GA. COMPOSITE METAL DECK (TOTAL DEPTH = 5-1/4"). REINFORCE WITH #3@12"OC. EACH WAY.

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

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BUILDING 35
KEY PLAN
N

Drawing Title
FIRST FLOOR PLAN

Designed By: CMB
Checked By: MJB
Approved By: JHT

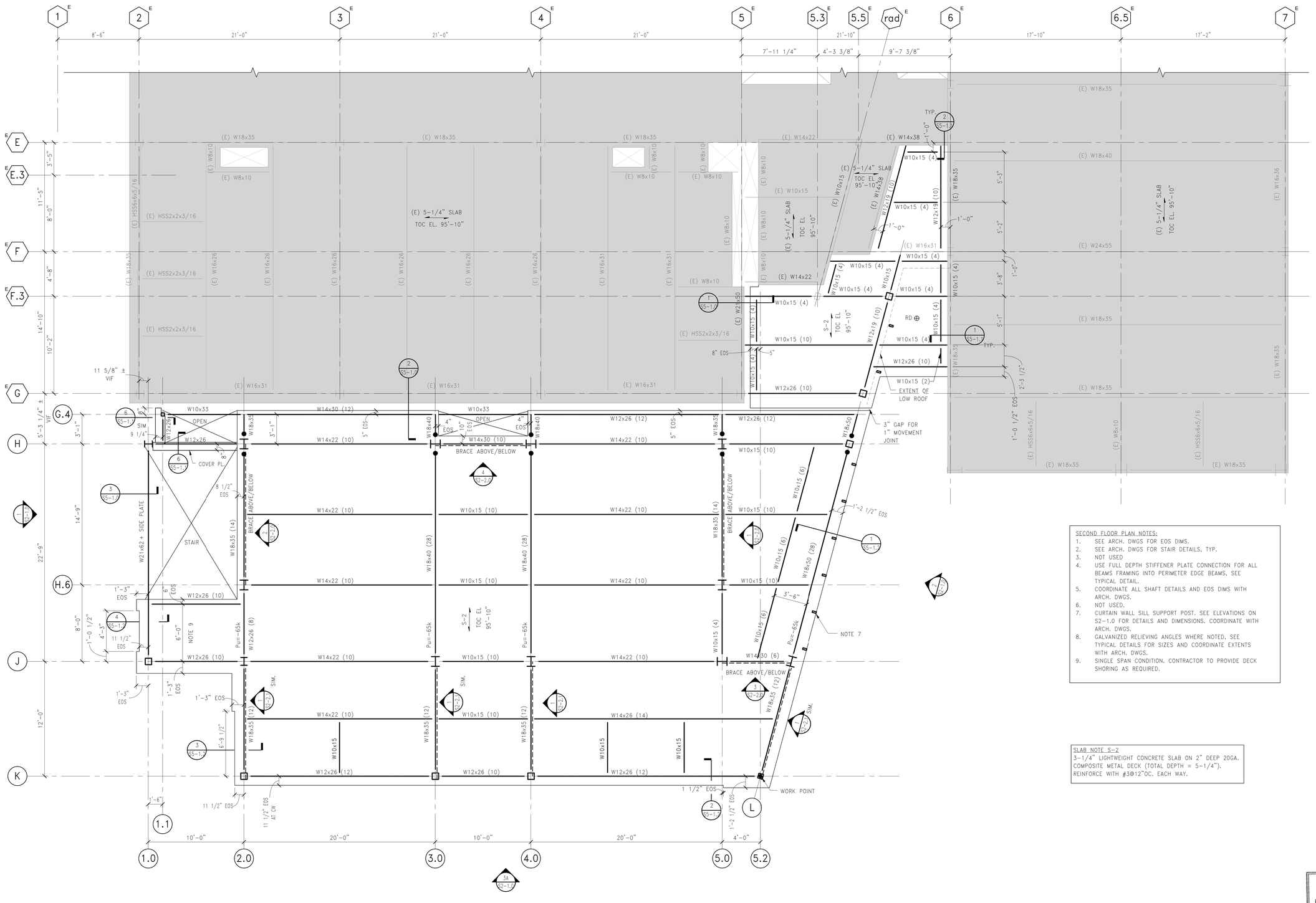
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/4" = 1'-0"
Location

Date 06/30/2015
VA Project No. 650-338
Drawing No. S1-2.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



SECOND FLOOR PLAN NOTES:

1. SEE ARCH. DWGS FOR EOS DIMS.
2. SEE ARCH. DWGS FOR STAIR DETAILS, TYP.
3. NOT USED
4. USE FULL DEPTH STIFFENER PLATE CONNECTION FOR ALL BEAMS FRAMING INTO PERIMETER EDGE BEAMS, SEE TYPICAL DETAIL.
5. COORDINATE ALL SHAFT DETAILS AND EOS DIMS WITH ARCH. DWGS.
6. NOT USED.
7. CURTAIN WALL SILL SUPPORT POST. SEE ELEVATIONS ON S2-1.0 FOR DETAILS AND DIMENSIONS. COORDINATE WITH ARCH. DWGS.
8. GALVANIZED RELIEVING ANGLES WHERE NOTED. SEE TYPICAL DETAILS FOR SIZES AND COORDINATE EXTENTS WITH ARCH. DWGS.
9. SINGLE SPAN CONDITION. CONTRACTOR TO PROVIDE DECK SHORING AS REQUIRED.

SLAB NOTE S-2
3-1/4" LIGHTWEIGHT CONCRETE SLAB ON 2" DEEP 20GA. COMPOSITE METAL DECK (TOTAL DEPTH = 5-1/4"). REINFORCE WITH #3@12"OC. EACH WAY.

SECOND FLOOR PLAN
1/4" = 1'-0"

JOHN H. THOMSEN
No. 10032
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

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FULLY SPRINKLERED

Number	Date	Revision

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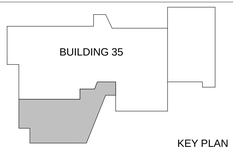


KEY PLAN

N

Drawing Title
SECOND FLOOR PLAN

Designed By: CMB
Checked By: MJB
Approved By: JHT

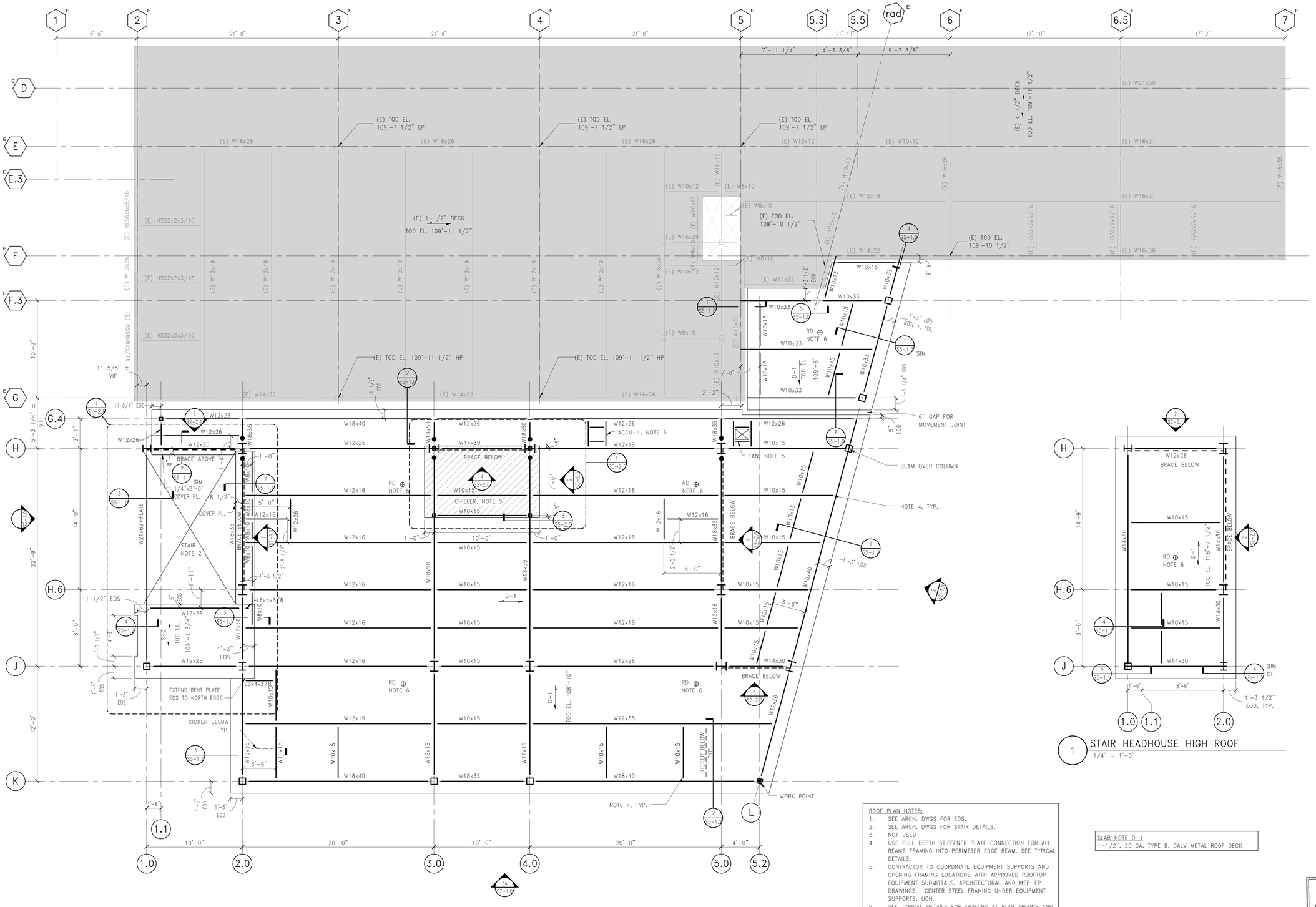
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/4" = 1'-0"
Location

Date 06/30/2015
VA Project No. 650-338
Drawing No. S1-2.2

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



ROOF PLAN
1/4" = 1'-0"

1 STAIR HEADHOUSE HIGH ROOF
1/4" = 1'-0"

ROOF PLAN NOTES:
1. SEE ARCH. DWGS FOR EOS.
2. SEE ARCH. DWGS FOR STAIR DETAILS.
3. NOT USED
4. USE FULL DEPTH STIFFENER PLATE CONNECTION FOR ALL BEAMS FRAMING INTO PERIMETER EDGE BEAM. SEE TYPICAL DETAILS.
5. CONTRACTOR TO COORDINATE EQUIPMENT SUPPORTS AND OPENING FRAMING LOCATIONS WITH APPROVED ROOFTOP EQUIPMENT SUBMITTALS, ARCHITECTURAL AND MEP-FP DRAWINGS. CENTER STEEL FRAMING UNDER EQUIPMENT SUPPORTS, UON.
6. SEE TYPICAL DETAILS FOR FRAMING AT ROOF DRAINS AND VENTS OPENINGS. MAXIMUM DRAIN OR VENT EQUIPMENT WEIGHT = 600LBS.

SLAB NOTE D-1
1-1/2", 20 GA. TYPE B. GALV METAL ROOF DECK

EQUIPMENT DESIGN PARAMETERS

NAME	LOCATION	MAX WEIGHT	PLAN DIMS
CHILLER	DUNNAGE	3 KIPS	12'-0"x7'-6"

JOHN H. THOMSEN
No. 10032
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

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BUILDING 35
KEY PLAN
N

Drawing Title
ROOF PLAN

Designed By: CMB
Checked By: MJB
Approved By: JHT

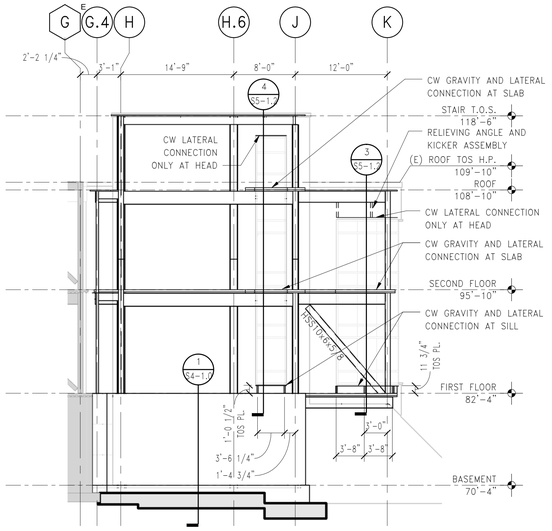
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/4" = 1'-0"
Location

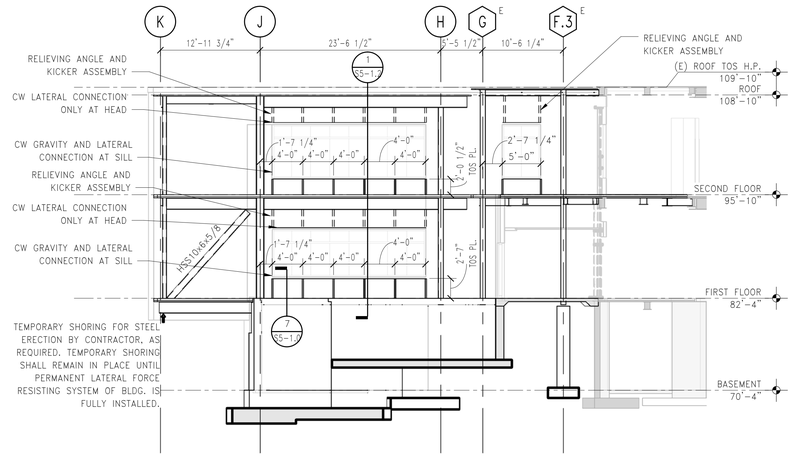
Date 06/30/2015
VA Project No. 650-338
Drawing No. S1-2.R

Office of Facilities
department of Veterans Affairs

VA FORM 08-6231

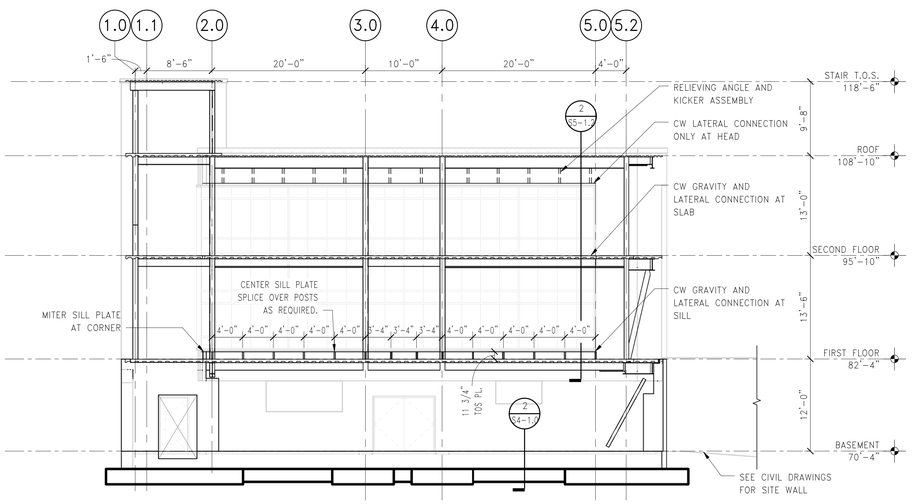


1 SOUTH ELEVATION
1/8" = 1'-0"



NOTE: DIMENSIONS ARE ALONG SKEWED GRIDLINE L, PARALLEL WITH WALL.

2 NORTH ELEVATION
1/8" = 1'-0"



3A EAST ELEVATION
1/8" = 1'-0"

JOHN H. THOMSEN
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REGISTERED PROFESSIONAL ENGINEER
6/30/2015

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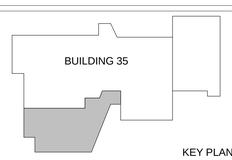


KEY PLAN

N

Drawing Title
BUILDING ELEVATIONS

Designed By: CMB
Checked By: MJB
Approved By: JHT

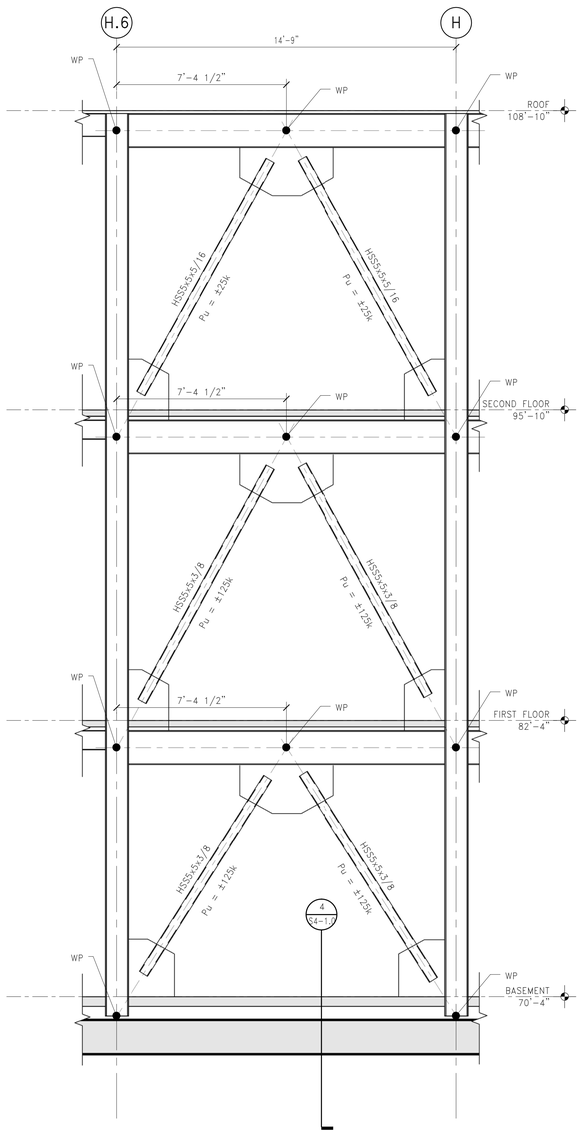
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/8" = 1'-0"
Location

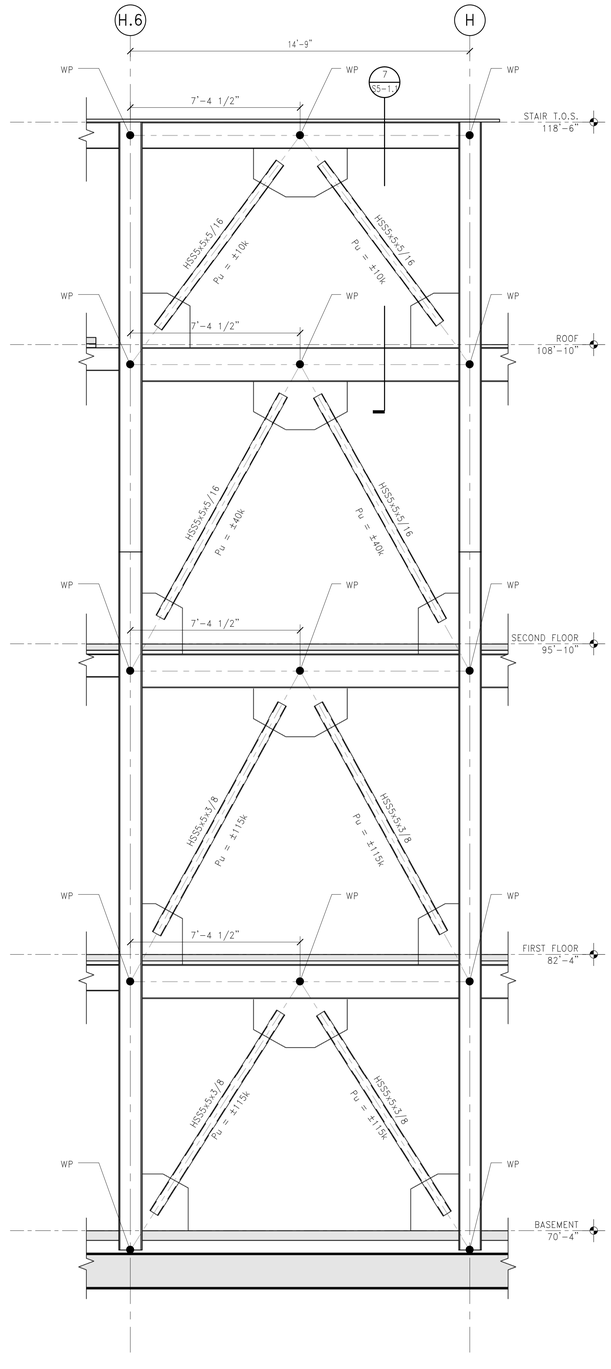
Date 06/30/2015
VA Project No. 650-338
Drawing No. S2-1.0

Office of Facilities
Department of Veterans Affairs

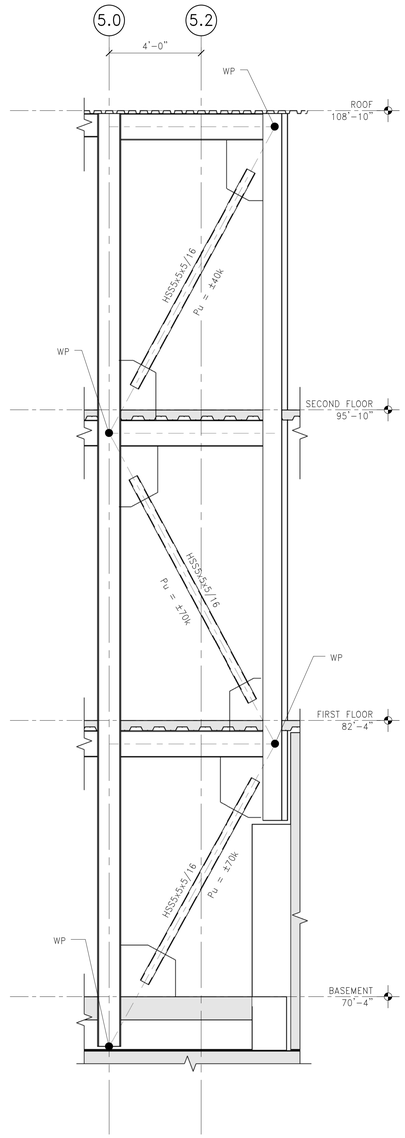
VA FORM 08-6231



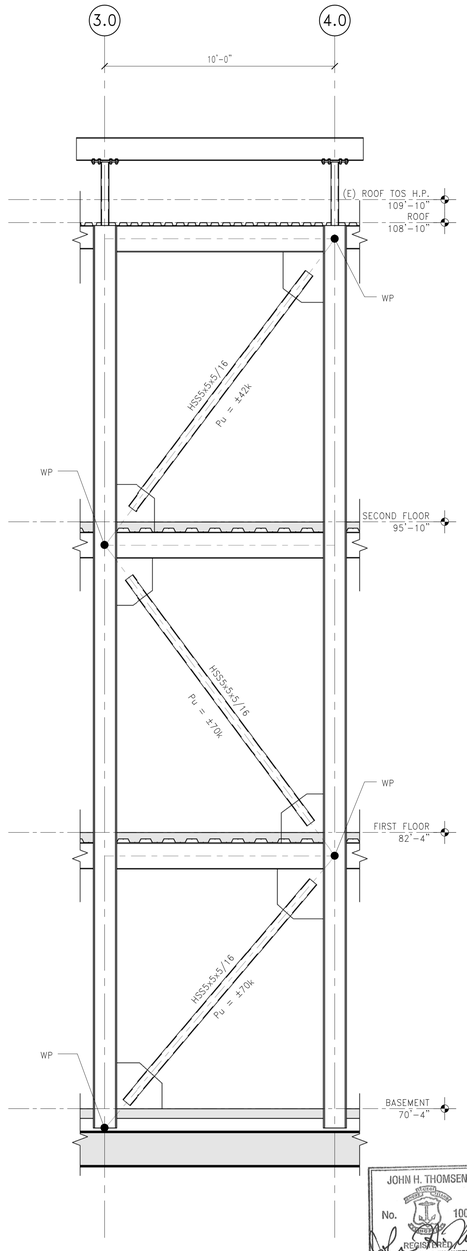
1 BRACED FRAME ON GRIDLINE 5.0
3/8" = 1'-0"



2 BRACED FRAME ON GRIDLINE 2.0
3/8" = 1'-0"



3 BRACED FRAME ON GRIDLINE J
3/8" = 1'-0"



4 BRACED FRAME ON GRIDLINE H
3/8" = 1'-0"

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

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FULLY SPRINKLERED

Number	Date	Revision

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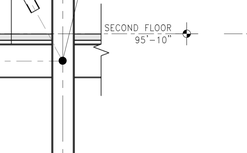


KEY PLAN

N

Drawing Title
BRACE ELEVATIONS

Designed By: CMB
Checked By: MJB
Approved By: JHT

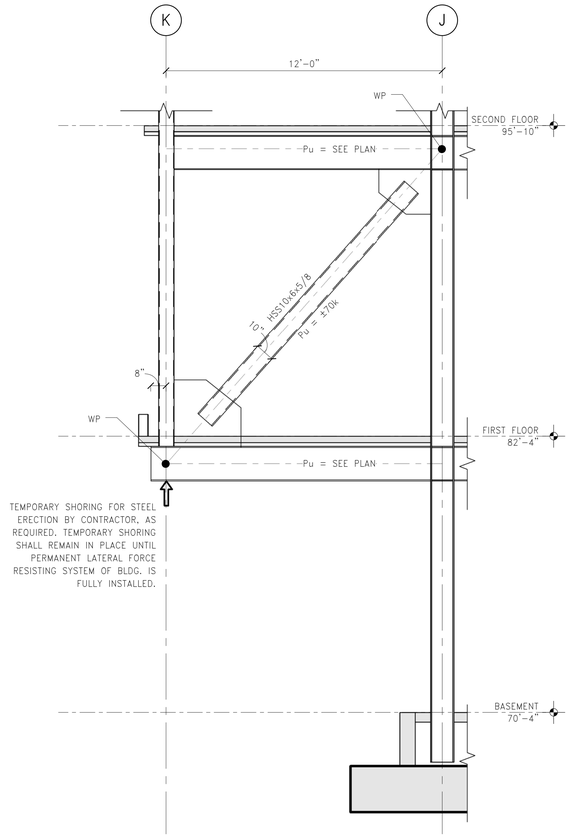
Project Title
BUILDING 35 ADDITION
FOR RESEARCH

Building #
Scale 3/8" = 1'-0"
Location

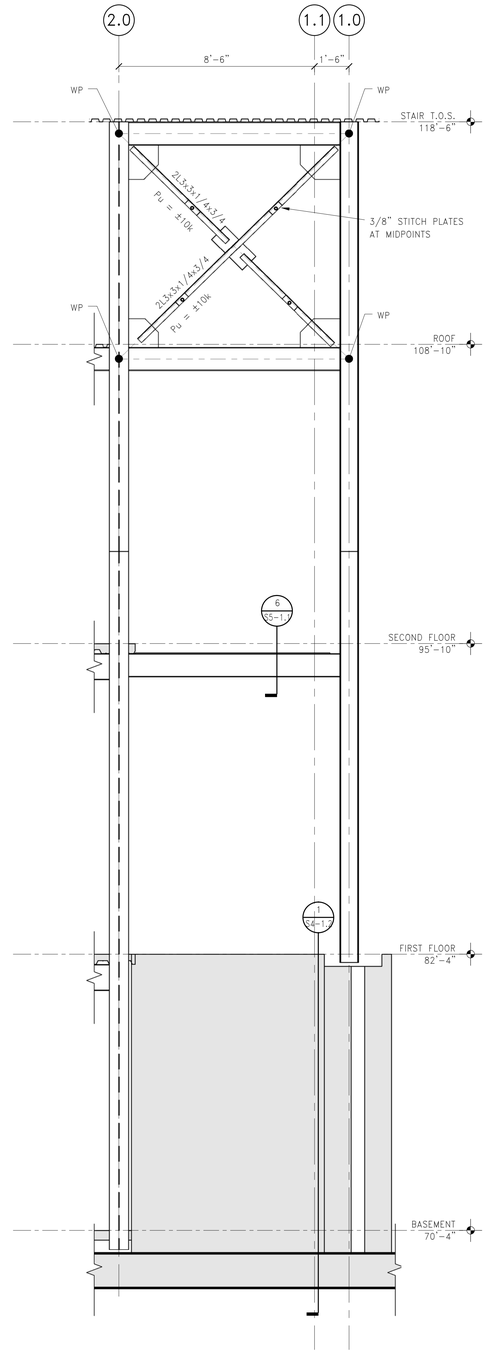
Date 06/30/2015
VA Project No. 650-338
Drawing No.
S2-2.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



1 TYPICAL CANTILEVERED BRACE
3/8" = 1'-0"



2 BRACED FRAME AT STAIR HEADHOUSE ON GRIDLINE H
3/8" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER
6/30/2015

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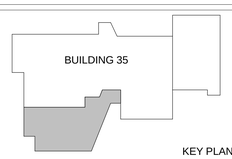


KEY PLAN

N

Drawing Title
BRACE ELEVATIONS

Designed By: CMB
Checked By: MJB
Approved By: JHT

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #

Scale
3/8" = 1'-0"

Location

Date
06/30/2015

VA Project No.
650-338

Drawing No.
S2-2.1

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6221

COLUMN SCHEDULE

STAIR T.O.S.																				STAIR T.O.S.
118'-6" ROOF																				118'-6" ROOF
108'-10" SECOND FLOOR			W12x53				W12x53													108'-10" SECOND FLOOR
95'-10" FIRST FLOOR	HSS4x4x5/16	W10x33		W12x53	W12x53	W12x53		W12x53	HSS8x8x5/16	W10x33	W12x53	W12x53	W12x53	HSS8x8x5/16	HSS8x8x5/16	HSS8x8x5/16	HSS6x6x3/8	HSS8x8x5/16	HSS8x8x5/16	HSS8x8x5/16	W12x53	95'-10" FIRST FLOOR
82'-4" BASEMENT	PILASTER	PILASTER	W12x53				W12x53		PILASTER	PILASTER								PILASTER	PILASTER	PILASTER	PILASTER	82'-4" BASEMENT
70'-4"																						70'-4"
BOTTOM OF BASE PLATE ELEVATION	80'-0"	81'-11 3/4"	69'-6"	69'-6"	69'-6"	69'-6"	69'-6"	69'-6"	80'-0"	80'-0"	68'-2"	68'-2"	68'-2"					81'-6"	81'-6"	81'-6"	78'-0"	
BASE PLATE TYPE	BP-4	BP-1	BP-3	BP-3	BP-2	BP-3	BP-3	BP-3	BP-5	BP-1	BP-2	BP-2	BP-3					BP-5	BP-5	BP-5	BP-2	
BASE PLATE THICKNESS	3/4"	1"	1"	1"	1"	1"	1"	1"	3/4"	3/4"	1"	1"	1"					3/4"	3/4"	3/4"	1"	
NOTES																						
LATERAL MEMBER		BF	BF	BF	BF	BF	BF	BF		BF	BF	BF	BF	BF	BF	BF	BF				BF	
COLUMN LOCATIONS	G.4-1.1	H-1.0	H-2.0	H-3.0	H-4.0	H-5.0	H.6-2.0	H.6-5.0	J-1.0	J-2.0	J-3.0	J-4.0	J-5.0	K-2.0	K-3.0	K-4.0	K-5.2	F.3-L	G-L	H-L	J-L	

COLUMN SCHEDULE NOTES

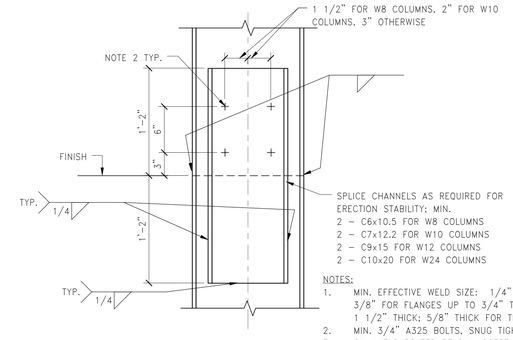
1. TOP OF STANDARD COLUMN STACK ELEVATION IS AT TOP OF STEEL ELEVATION OF HIGHEST BEAM FRAMING TO IT UON. TOP OF COLUMNS WITH CAP PLATES SHALL ALIGN WITH TOP OF CONCRETE SLAB.
2. SEE BASE PLATE DETAILS ON S3-2.1 FOR INFORMATION ON BASE PLATE TYPES.
3. SEE CONCRETE PILASTER DETAILS FOR INFORMATION ON PILASTER TYPES.
4. WHERE INDICATED BY "GALV.", COLUMN SHALL BE HOT-DIPPED GALVANIZED.
5. IF FABRICATOR ADDS COLUMNS SPLICES FOR ERECTION, PLACE ALL SPLICES +4'-6" FROM NEAREST LEVEL.

COLUMN SCHEDULE SYMBOLS LEGEND

- BF — BF INDICATES THAT COLUMN IS PART OF BRACED FRAME LATERAL LOAD-RESISTING SYSTEM.
- INDICATES THAT COLUMN LOCATION IS OFFSET IN PLAN FROM GRID. SEE PLAN FOR EXACT LOCATIONS.
- INDICATES THAT COLUMN BEARS ON TRANSFER BEAM. SEE TYPICAL DETAIL.
- INDICATES BEAM RUNS OVER COLUMN WITH CAP PLATE. SEE TYPICAL DETAIL.
- PILASTER — INDICATES THAT COLUMN BEARS ON CONCRETE PILASTER.
- INDICATES THAT COLUMN BEARS ON CONCRETE WALL.

COLUMN SCHEDULE SYMBOLS LEGEND (CONT.)

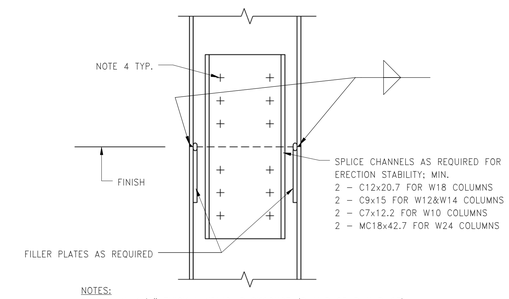
- INDICATES COLUMN SPLICE WITH END CAP PLATE AND BASE PLATE.
- INDICATES TYPICAL GRAVITY COLUMN SPLICE.



NOTES:
1. MIN. EFFECTIVE WELD SIZE: 1/4" FOR FLANGES UP TO 1/2" THICK; 3/8" FOR FLANGES UP TO 3/4" THICK; 1/2" FOR FLANGES UP TO 1 1/2" THICK; 5/8" THICK FOR THICKER FLANGES.
2. MIN. 3/4" A325 BOLTS, SNUG TIGHT.
3. CHANNELS BOLTED BELOW ACCEPTABLE ALTERNATE.
4. SPLICE DESIGN SHALL COMPLY WITH IBC SECTION 1614.3.2 TO TRANSFER (IN TENSION) A LOAD EQUAL TO 0.90ϕcPn CALCULATED USING THE UNBRACED LENGTH OF THE LOWEST SEGMENT OF THE COLUMN AND K=1.0.

1 TYPICAL GRAVITY COLUMN SPLICE

NOT TO SCALE



NOTES:
1. MIN. 1/8" THICK LANDING, BACKGOUGE (B-U4B OR B-U4B-GF)
2. DESIGN CHANNEL AND BOLTS TO TRANSFER 25% OF THE COLUMN WEB SHEAR STRENGTH DEFINED AS 0.6FyAw
3. BOLTED-WELDED SPLICE CHANNEL ACCEPTABLE ALTERNATE.
4. MIN. 7/8" A325 SLIP CRITICAL BOLTS.
5. SPLICE DESIGN SHALL COMPLY WITH IBC SECTION 1614.3.2 TO TRANSFER (IN TENSION) A LOAD EQUAL TO 0.90ϕcPn CALCULATED USING THE UNBRACED LENGTH OF THE LOWEST SEGMENT OF THE COLUMN AND K=1.0.

2 TYPICAL LATERAL LOAD-RESISTING SYSTEM COLUMN SPLICE

NOT TO SCALE

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

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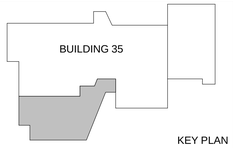


KEY PLAN

N

Drawing Title
COLUMN SCHEDULE

Designed By: CMB
Checked By: MJB
Approved By: JHT

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #

Scale
As indicated

Location

Date
06/30/2015

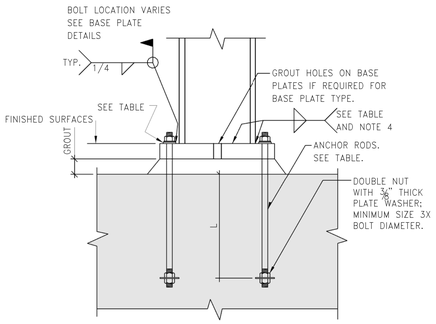
VA Project No.
650-338

Drawing No.
S3-1.0

Office of Facilities

Department of Veterans Affairs

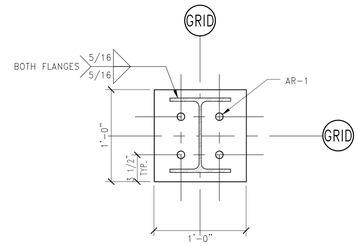
VA FORM 08-6231



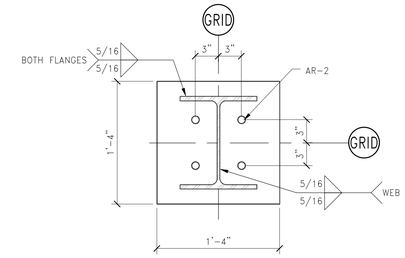
NOTES:
1. PROVIDE LEVELING NUTS AND SHIM PACKS AS REQUIRED TO MAINTAIN COLUMN LEVELNESS.
2. WASHER PLATES ASTM A36
3. MATCH SURFACE PREPARATION AND FINISH OF BEARING PLATE, ANCHOR RODS, WASHERS, AND WASHER PLATES TO THAT OF COLUMNS.
4. FOR ROUND COLUMNS, WELD ALL AROUND PERIMETER OF SECTION.

TYPE	ANCHOR ROD		ROD MATERIAL	NUT MATERIAL	WASHER DIAMETER	WASHER THICKNESS	MIN. WELD	GROUT	BASE PL ANCHOR ROD HOLE	NOTES
	DIAMETER	L								
AR-1	3/4"ø	1'-3"	F1554 GRADE 55	A563 GRADE A	2"ø	3/8"	5/16	2"	1 5/16"ø	WELDABILITY SUPPLEMENT
AR-2	1 1/4"ø	1'-6"	F1554 GRADE 55	A563 GRADE A	3"ø	1/2"	5/16	2"	2 1/16"ø	WELDABILITY SUPPLEMENT

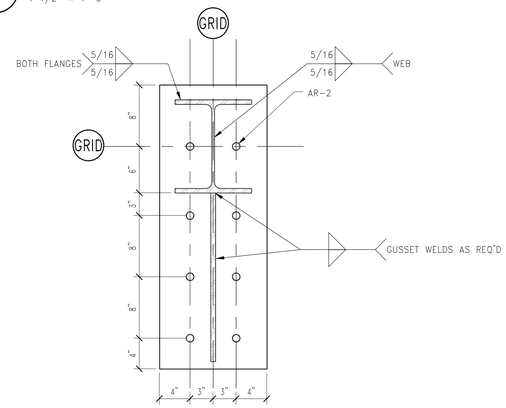
1 BASE DETAIL
3/4" = 1'-0"



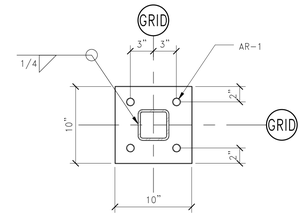
BP-1 BASE PLATE TYPE: BP-1 (W10 GRAVITY)
1 1/2" = 1'-0"



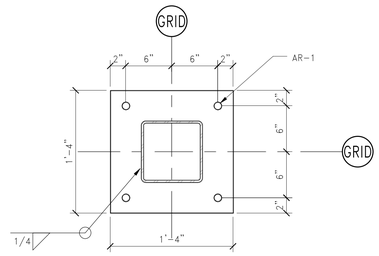
BP-2 BASE PLATE TYPE: BP-2 (W12 LATERAL)
1 1/2" = 1'-0"



BP-3 BASE PLATE TYPE: BP-3 (W12 LATERAL W/ GUSSET)
1 1/2" = 1'-0"



BP-4 BASE PLATE TYPE: BP-4 (5x5 OR SMALLER HSS)
1 1/2" = 1'-0"



BP-5 BASE PLATE TYPE: BP-5 (6x6 OR LARGER HSS, UP TO 12x12)
1 1/2" = 1'-0"

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

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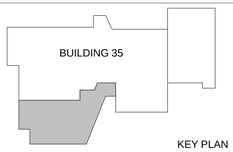


KEY PLAN

N

Drawing Title
BASE PLATE DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

Proiect Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
As indicated
Location

Date
06/30/2015

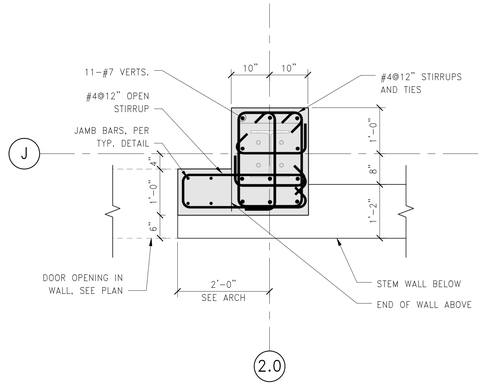
VA Project No.
650-338

Drawing No.
S3-1.1

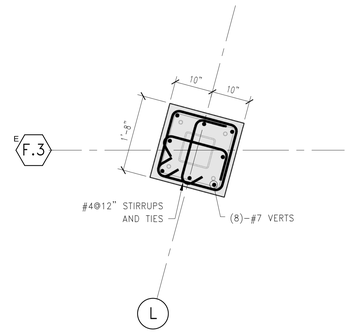
Office of Facilities

Department of Veterans Affairs

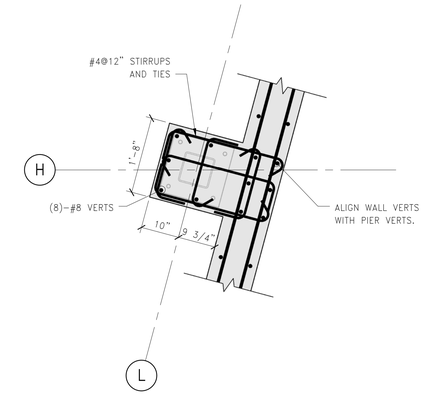
VA FORM 08-6721



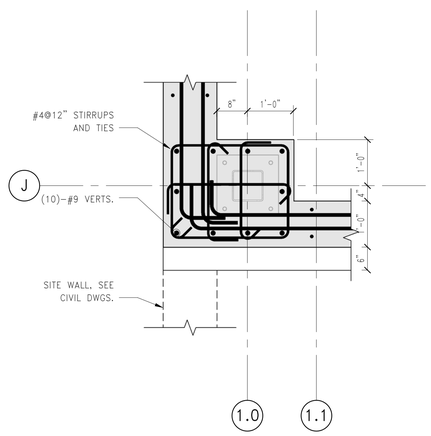
P1 PIER – P1
3/4" = 1'-0"



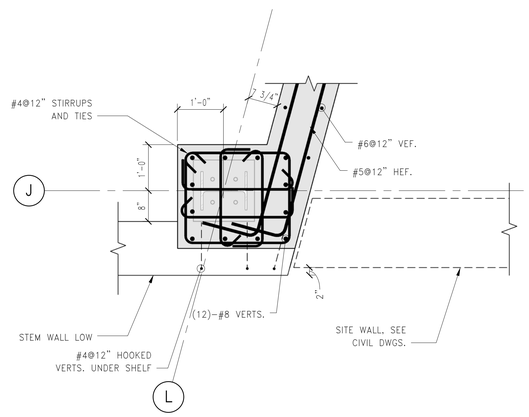
P2 PIER – P2
3/4" = 1'-0"



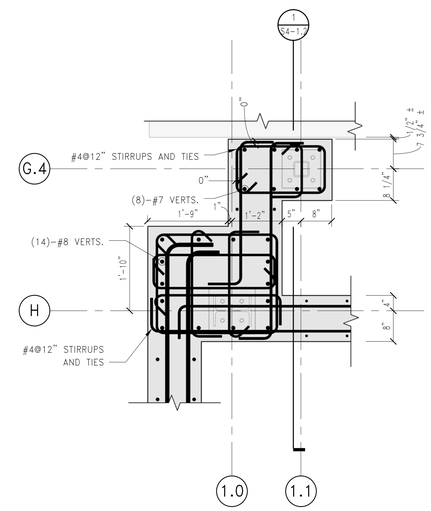
P2A PIER – P2A
3/4" = 1'-0"



P5 PIER – P5
3/4" = 1'-0"



P6 PIER – P6
3/4" = 1'-0"



P7 PIERS – P7 AND P7A
3/4" = 1'-0"

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No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

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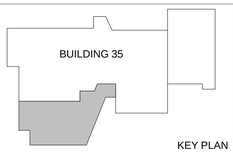


KEY PLAN

N

Drawing Title
PIERS AND PILASTERS

Designed By: CMB
Checked By: MJB
Approved By: JHT

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #

Scale
3/4" = 1'-0"

Location

Date
06/30/2015

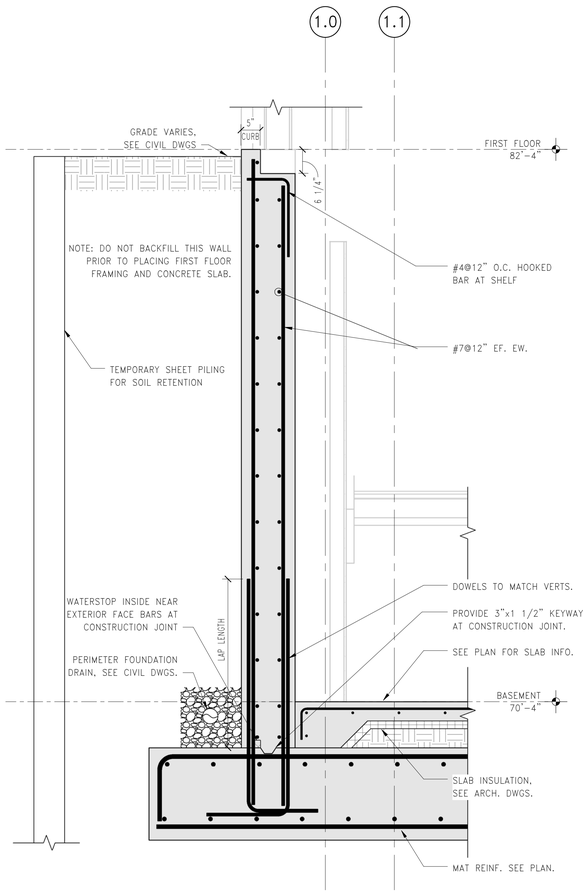
VA Project No.
650-338

Drawing No.
S3-1.2

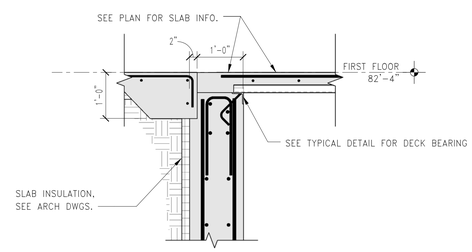
Office of Facilities

Department of Veterans Affairs

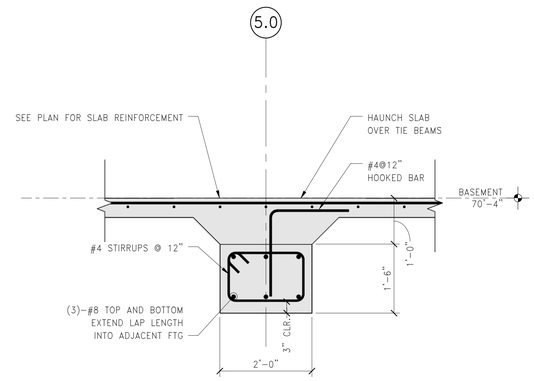
VA FORM 08-6231



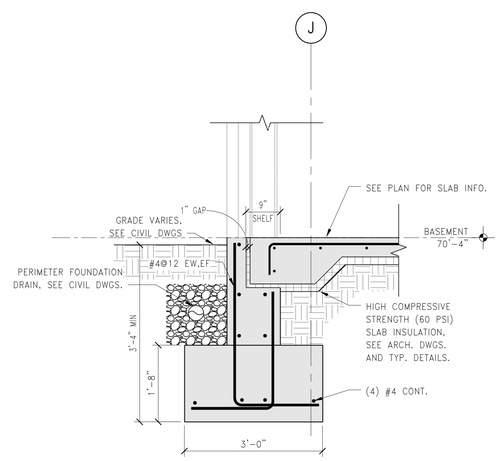
1 SECTION: RETAINING WALL AT STAIR
3/4" = 1'-0"



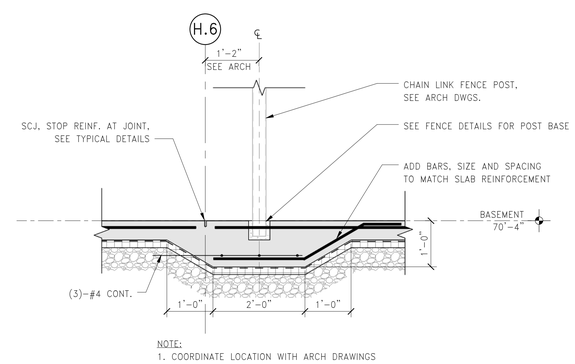
3 SECTION: DECK, SLAB TRANSITION
3/4" = 1'-0"



4 SECTION: TYPICAL INTERIOR TIE BEAM
3/4" = 1'-0"



2 SECTION: TYPICAL STEM WALL
3/4" = 1'-0"



5 SECTION: THICKENED SLAB AT CHAIN LINK FENCE
3/4" = 1'-0"

JOHN H. THOMSEN
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REGISTERED PROFESSIONAL ENGINEER
6/30/2015

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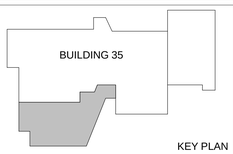


KEY PLAN

N

Drawing Title
CONCRETE SECTIONS AND DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

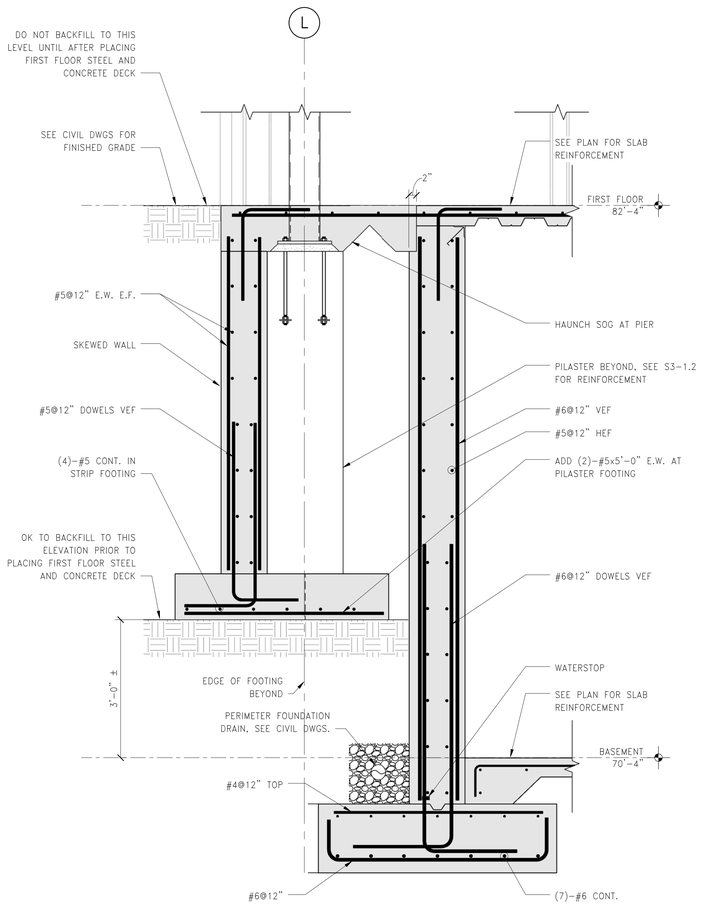
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 3/4" = 1'-0"
Location

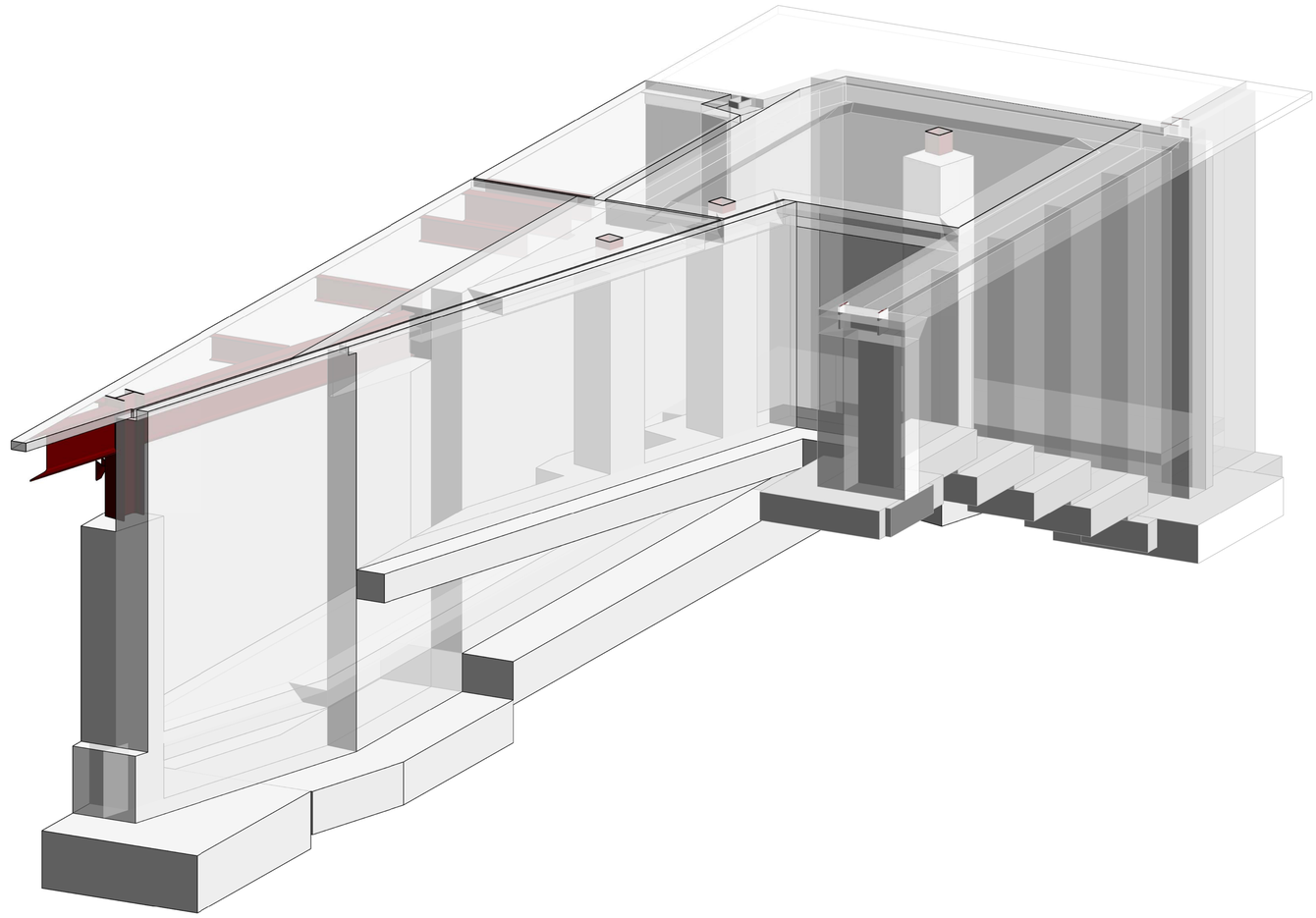
Date 06/30/2015
VA Project No. 650-338
Drawing No. S4-1.0

Office of Facilities
department of Veterans Affairs

VA FORM 08-6321



1 SECTION: HIGH AND LOW BASEMENT WALLS
3/4" = 1'-0"



2 3D: FOUNDATIONS AT INFILL

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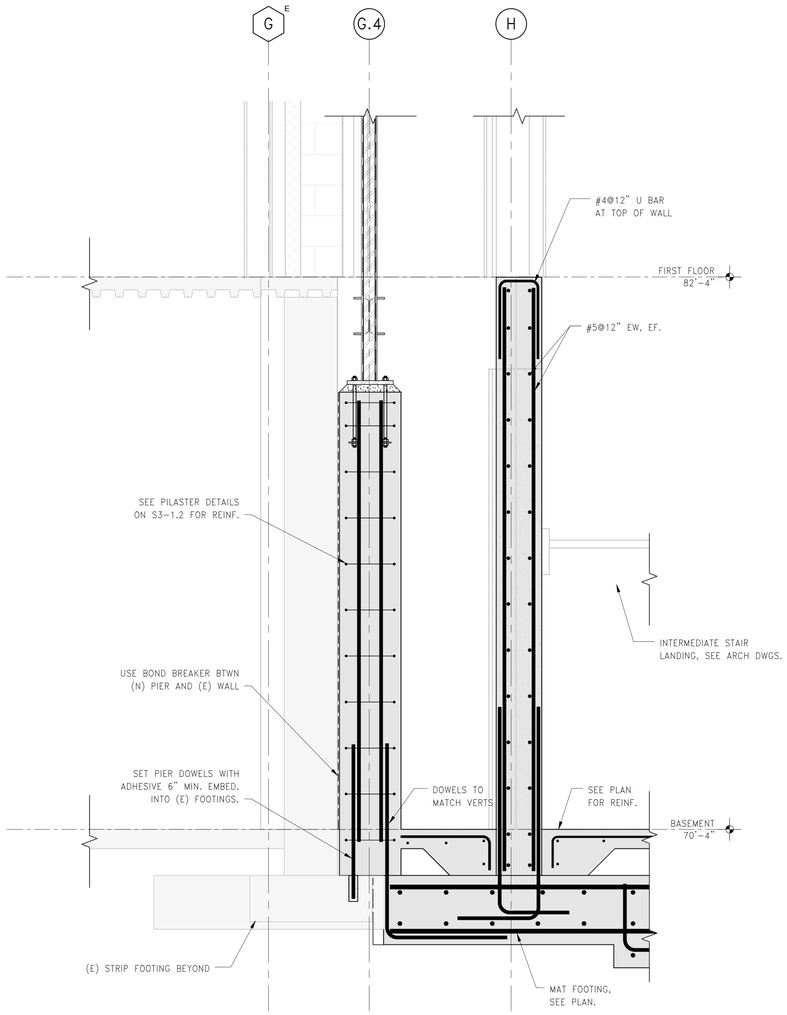
S4-1.1

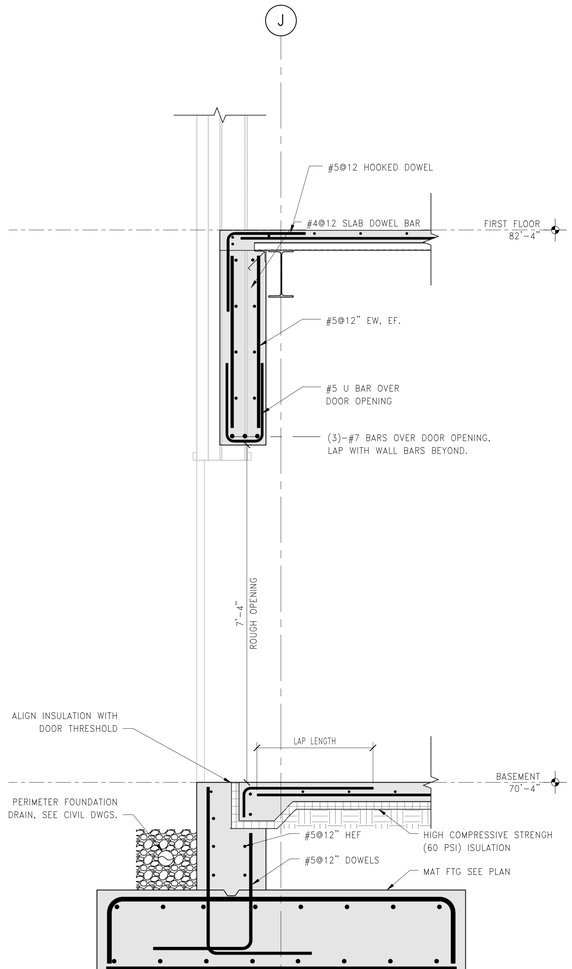
Office of Facilities
Department of Veterans Affairs

VA FORM 08-6321



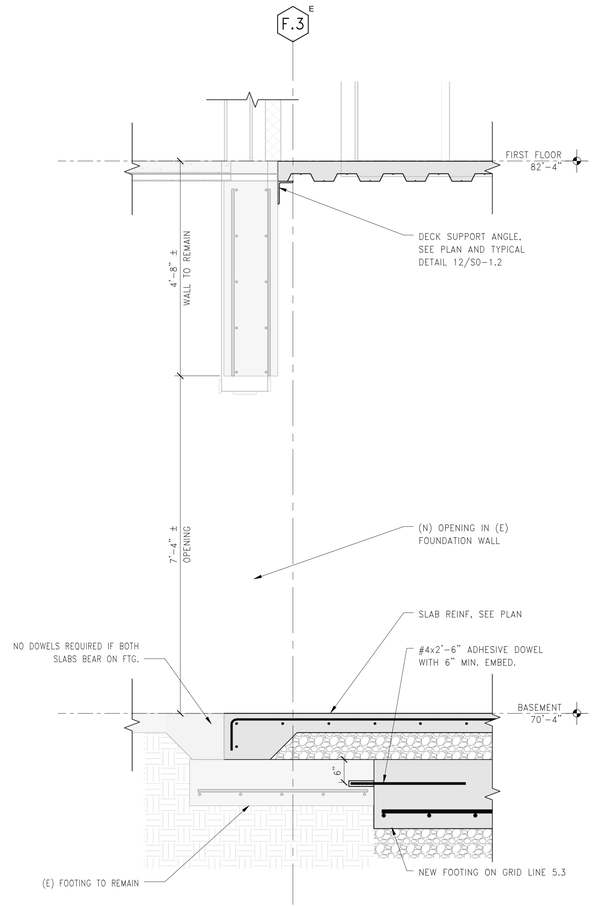
1 SECTION: INTERFACE WITH (E) FTG. AT GRIDLINE 1.0

3/4" = 1'-0"



2 SECTION: WALL OPENING FOR STAIR DOOR

3/4" = 1'-0"



3 SECTION: INTERFACE WITH (E) FOOTING AND WALL AT GRIDLINE 5.3

3/4" = 1'-0"

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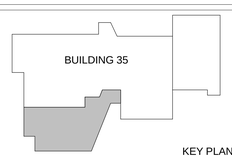

KEY PLAN

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CONCRETE SECTIONS
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Project Title
BUILDING 35 ADDITION
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Building #
Scale 3/4" = 1'-0"
Location

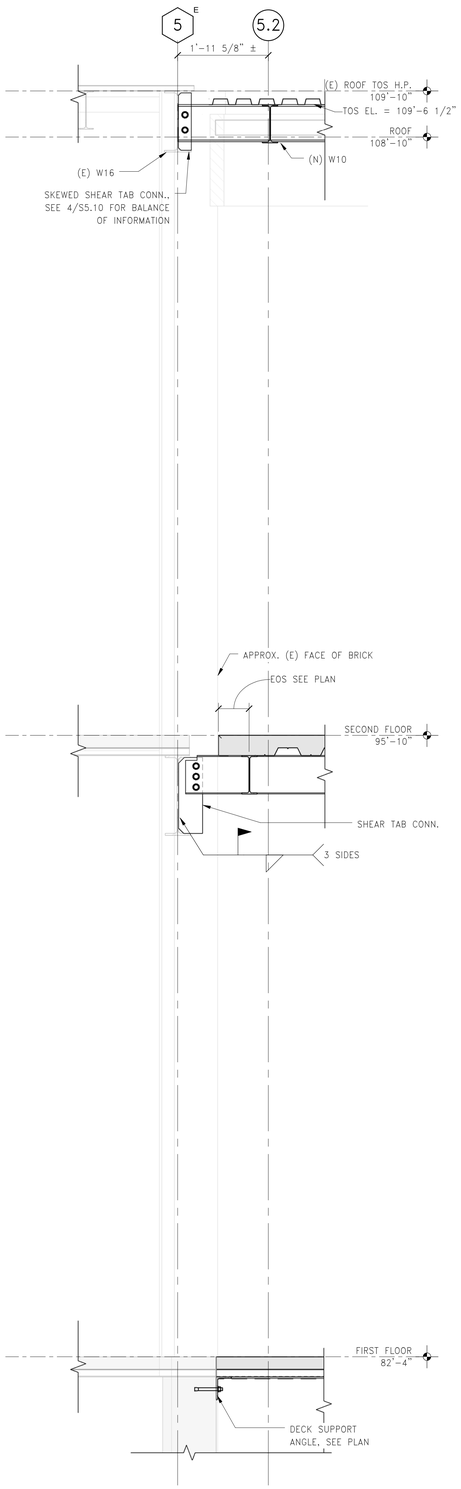
Date
06/30/2015

VA Project No.
650-338

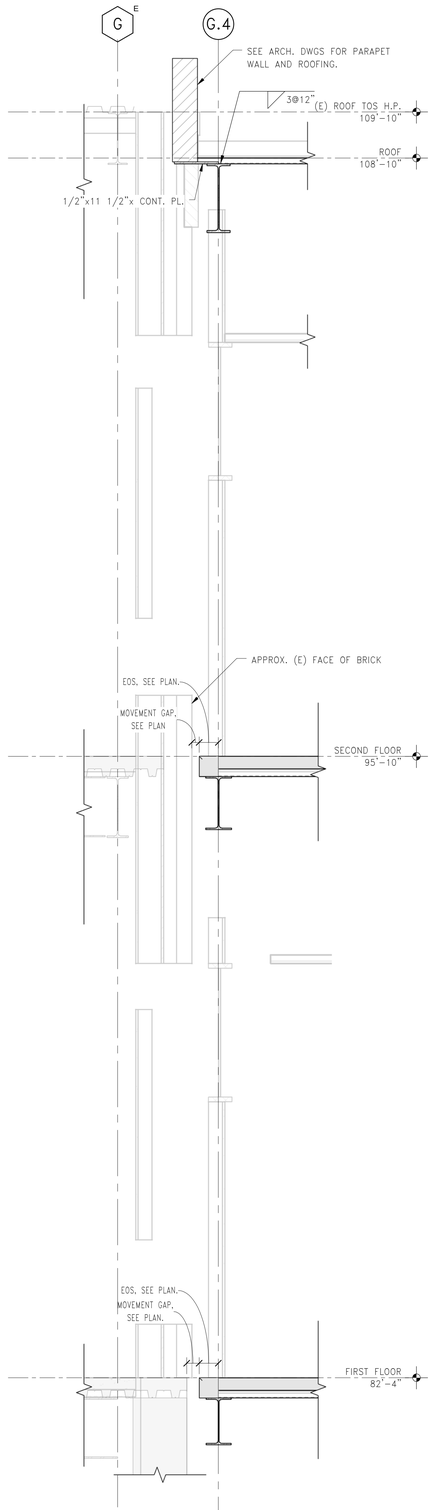
Drawing No.
S4-1.2

Office of Facilities
Department of Veterans Affairs

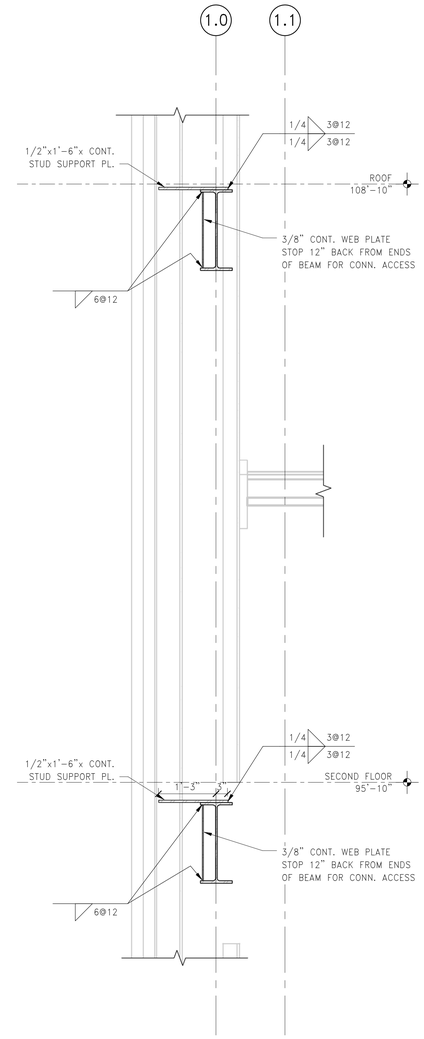
VA FORM 08-6221



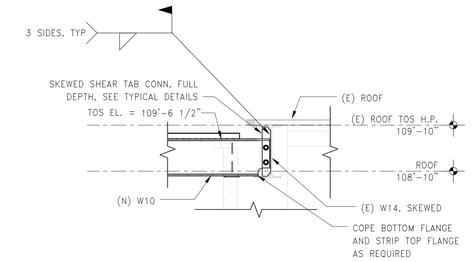
1 SECTION: INTERFACE WITH (E) BUILDING
3/4" = 1'-0"



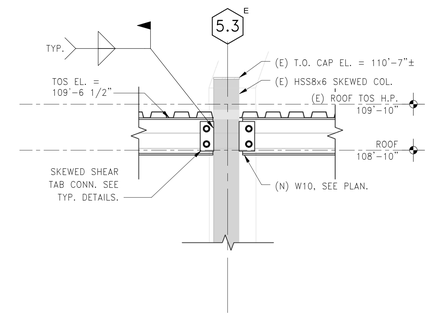
2 SECTION: INTERFACE WITH (E) CLADDING
3/4" = 1'-0"



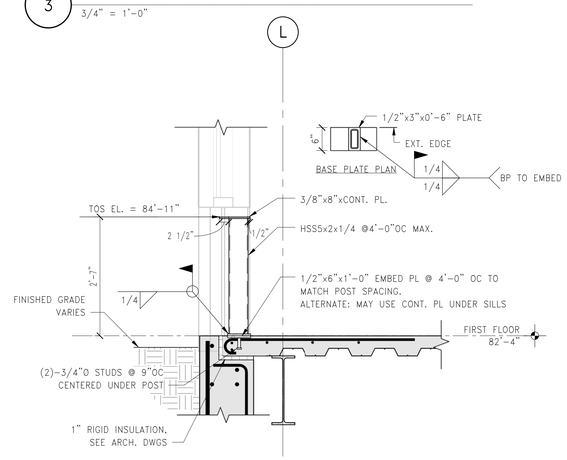
3 SECTION: EXTERIOR STAIR BEAM
3/4" = 1'-0"



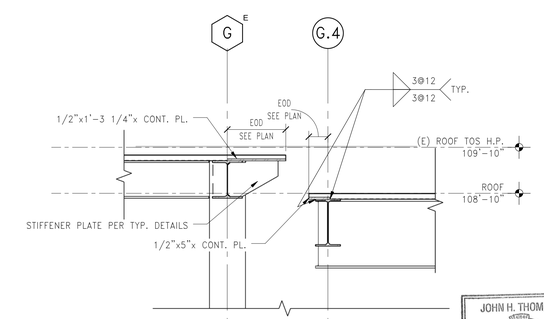
4 SECTION: (N) BEAM CONN. @ ROOF INFILL
3/4" = 1'-0"



5 SECTION: (N) BEAM TO (E) COLUMN
3/4" = 1'-0"



7 SECTION: CW SILL RAISED
3/4" = 1'-0"



6 SECTION: MOVEMENT JOINT
3/4" = 1'-0"

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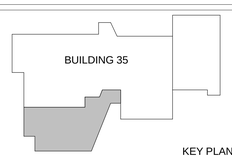


KEY PLAN

N

Drawing Title
STEEL SECTIONS AND DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

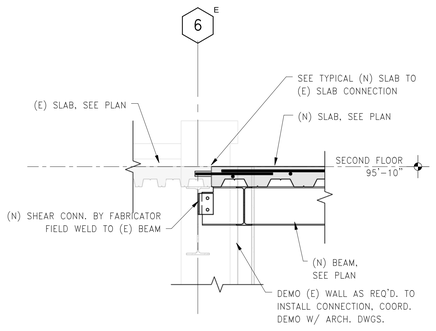
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 3/4" = 1'-0"
Location

Date 06/30/2015
VA Project No. 650-338
Drawing No.
S5-1.0

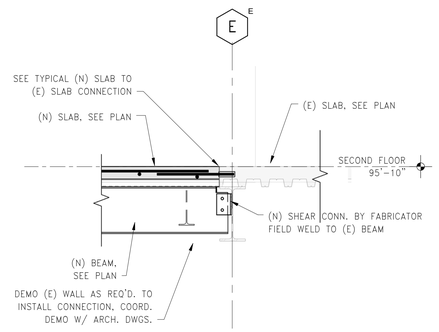
Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



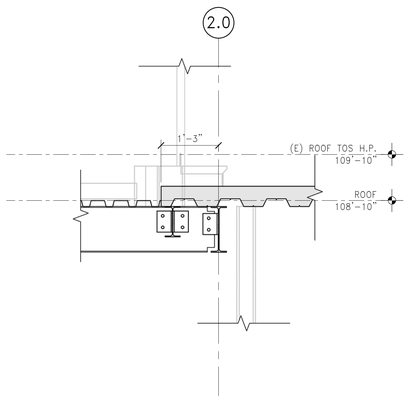
NOTE:
BEAM SIZES MAY VARY ON PLAN, DETAILS ARE SIMILAR

1 SECTION: INTERFACE WITH EXISITNG AT (E) GRID LINE 6
3/4" = 1'-0"

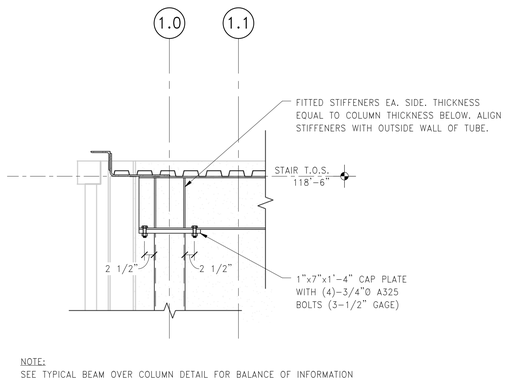


NOTE:
BEAM SIZES MAY VARY ON PLAN, DETAILS ARE SIMILAR

2 SECTION: INTERFACE WITH EXISTING AT (E) GRID LINE E
3/4" = 1'-0"

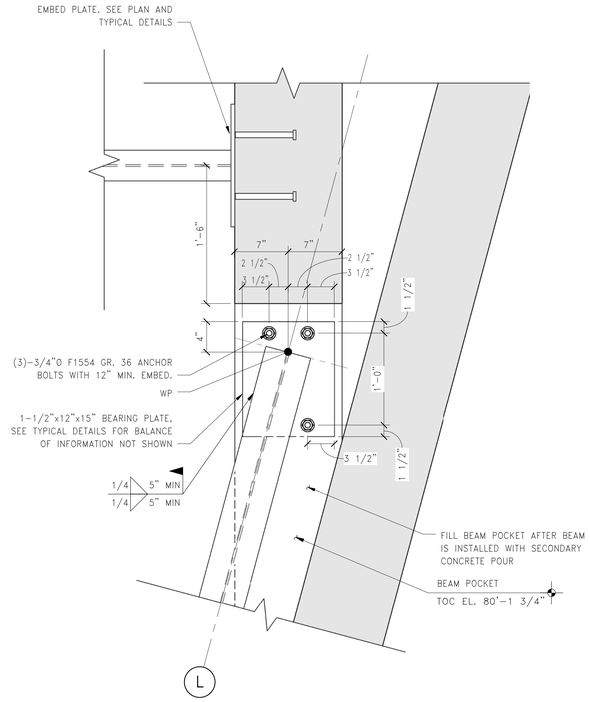


3 SECTION: SLAB TO DECK TRANSITION AT STAIR HEAD HOUSE
3/4" = 1'-0"

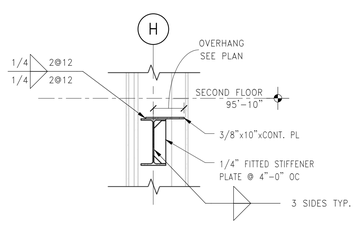


NOTE:
SEE TYPICAL BEAM OVER COLUMN DETAIL FOR BALANCE OF INFORMATION

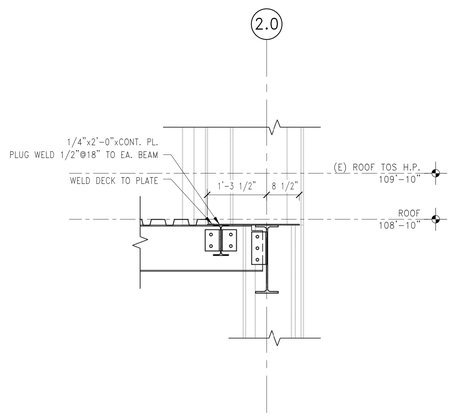
4 SECTION: BEAM OVER COLUMN MOMENT CONNECTION
3/4" = 1'-0"



5 DETAIL: BEARING PLATE AT LINE L BEAM POCKET
1 1/2" = 1'-0"



6 SECTION: SHAFT SUPPORT AT STAIR
3/4" = 1'-0"



7 SECTION: STAIR HEAD HOUSE WALL SUPPORT
3/4" = 1'-0"

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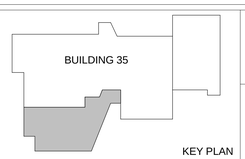


Drawing Title
STEEL SECTIONS AND DETAILS

Designed By: CMB
Checked By: MJB
Approved By: JHT

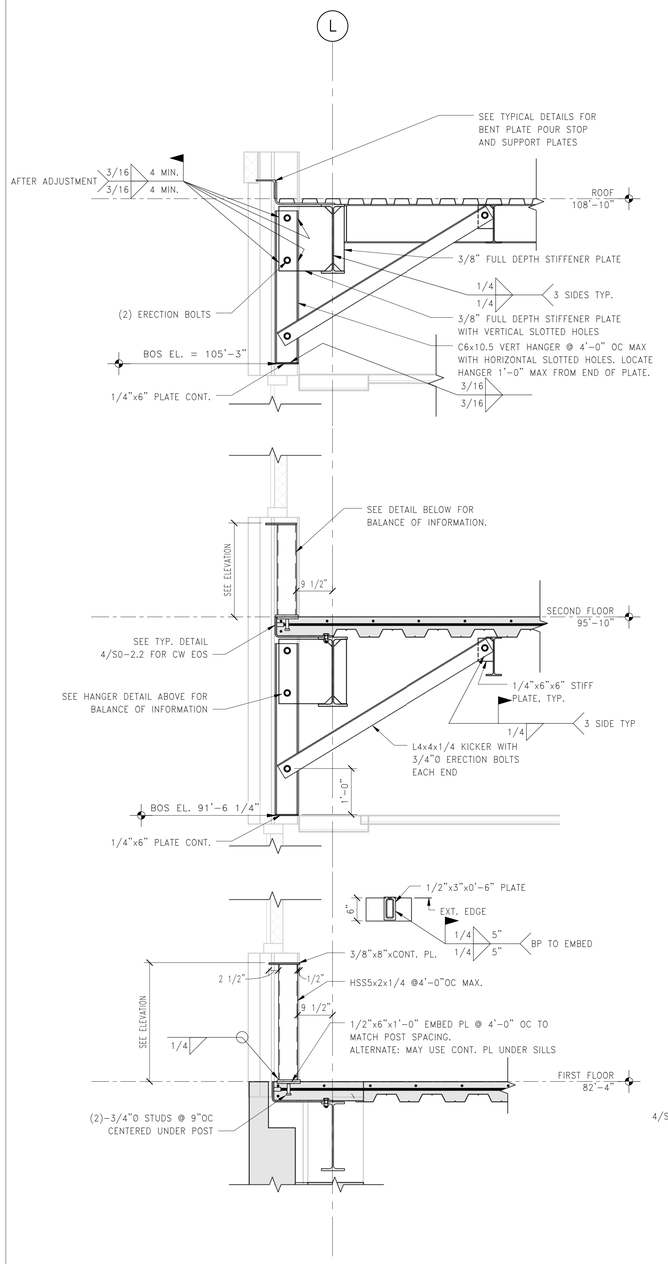
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
As indicated
Location

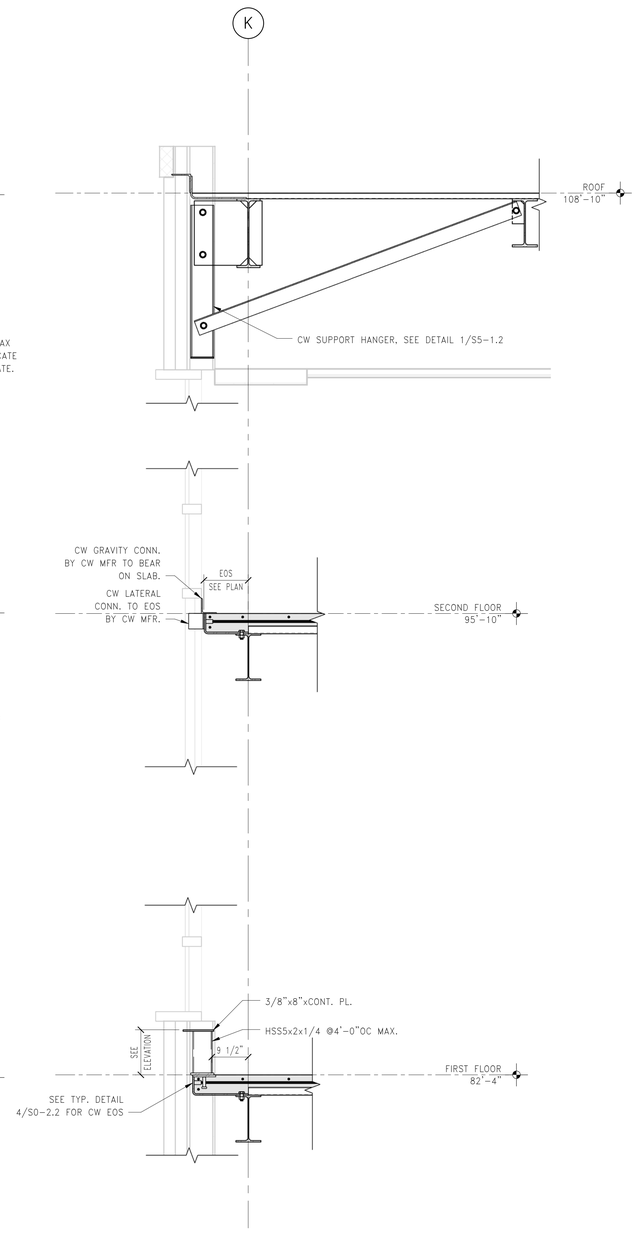
Date
06/30/2015
VA Project No.
650-338
Drawing No.
S5-1.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6221

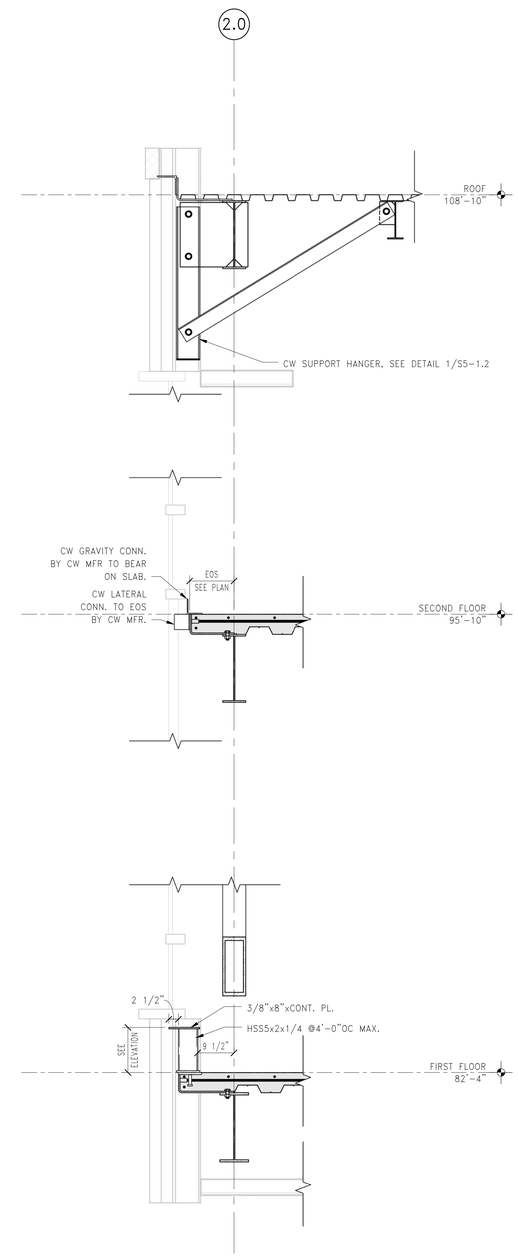


1 SECTION: CW RAISED SILL ON GRIDLINE L
3/4" = 1'-0"



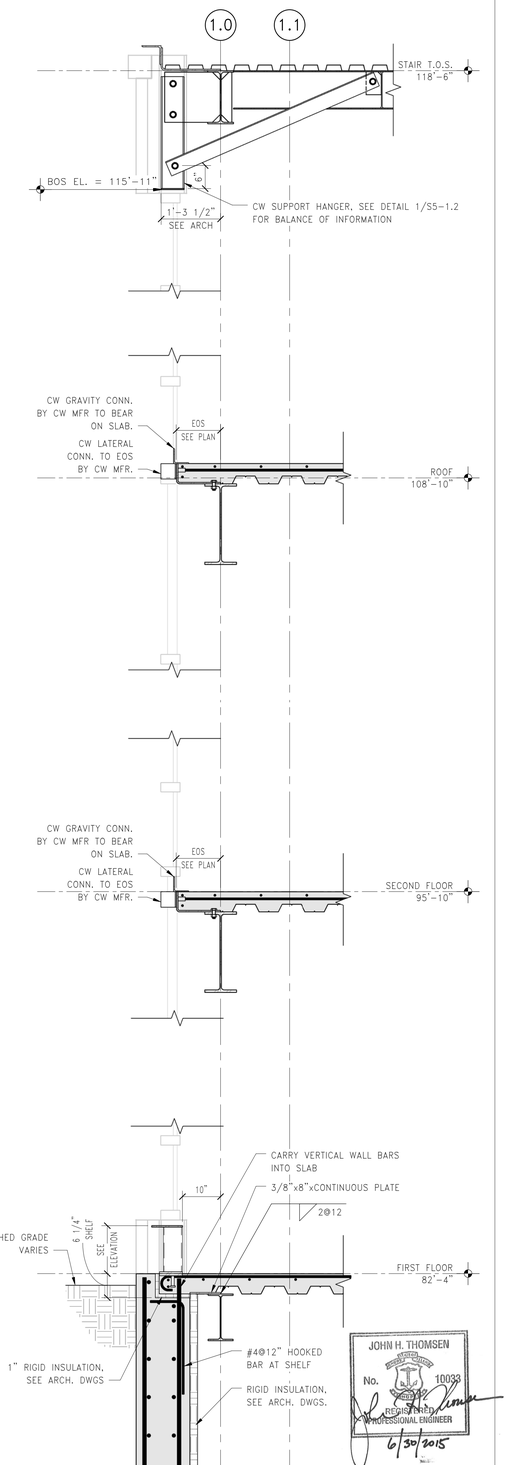
NOTES:
1. SEE 1/S5-1.2 FOR BALANCE OF INFORMATION.

2 SECTION: CW RAISED SILL ON GRIDLINE K
3/4" = 1'-0"



NOTES:
1. SEE 1/S5-1.2 FOR BALANCE OF INFORMATION.

3 SECTION: CW RAISED SILL ON GRIDLINE 2.0
3/4" = 1'-0"



NOTES:
1. SEE 1/S5-1.2 FOR BALANCE OF INFORMATION.

4 SECTION: CW RAISED SILL ON GRIDLINE 1.0
3/4" = 1'-0"

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6/30/2015

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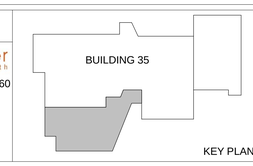

KEY PLAN

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Drawing Title
STEEL SECTIONS AND DETAILS

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Approved By: JHT

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
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Location

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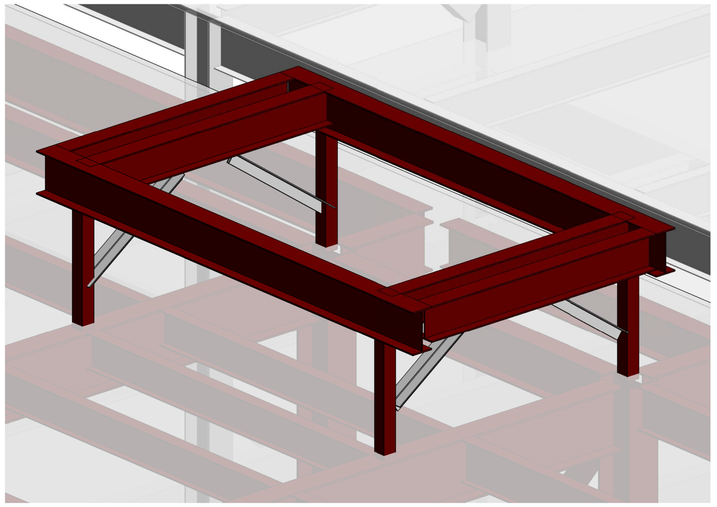
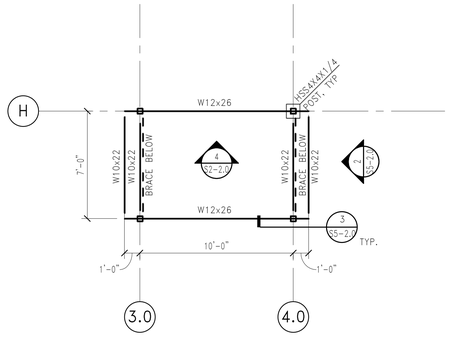
VA Project No. 650-338
Drawing No. S5-1.2

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

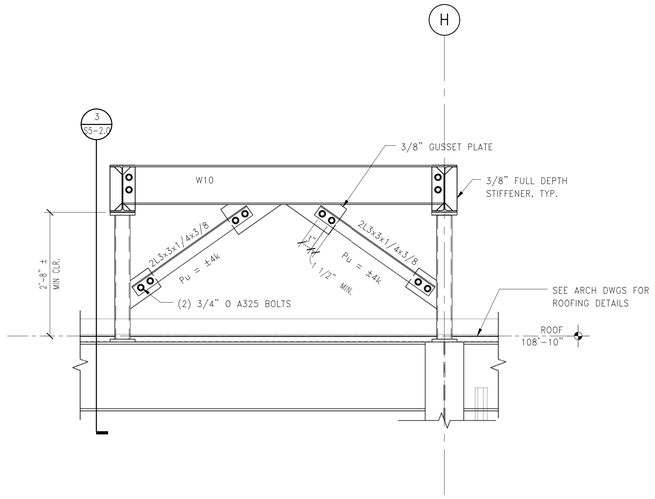


ISOMETRIC: ROOF DUNNAGE FOR CHILLER

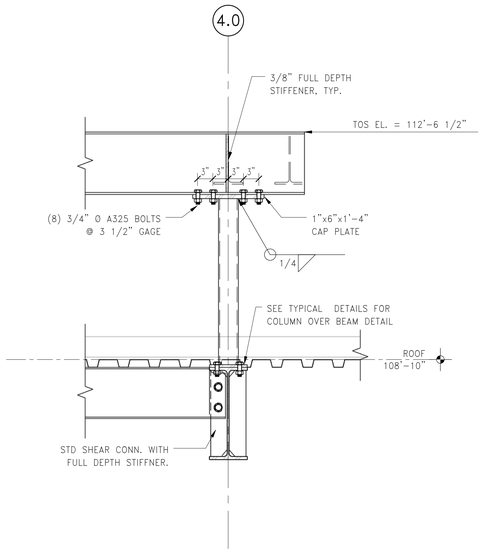


NOTE:
1. GALVANIZE ALL DUNNAGE STEEL AND CONN. ASSEMBLIES. TOUCH UP ALL FIELD WELDS WITH COLD GALV. COMPOUND.

1 PART PLAN: ROOF DUNNAGE PLATFORM
1/4" = 1'-0"



2 ELEVATION: DUNNAGE BRACES
3/4" = 1'-0"



3 SECTION: DUNNAGE POST MOMENT FRAME CONNECTIONS
1" = 1'-0"

JOHN H. THOMSEN
No. 10033
REGISTERED PROFESSIONAL ENGINEER
6/30/2015

100% DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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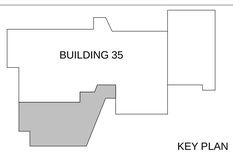


N

Drawing Title
ROOF DUNNAGE PLATFORM

Designed By: CMB
Checked By: MJB
Approved By: JHT

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
As indicated
Location

Date
06/30/2015

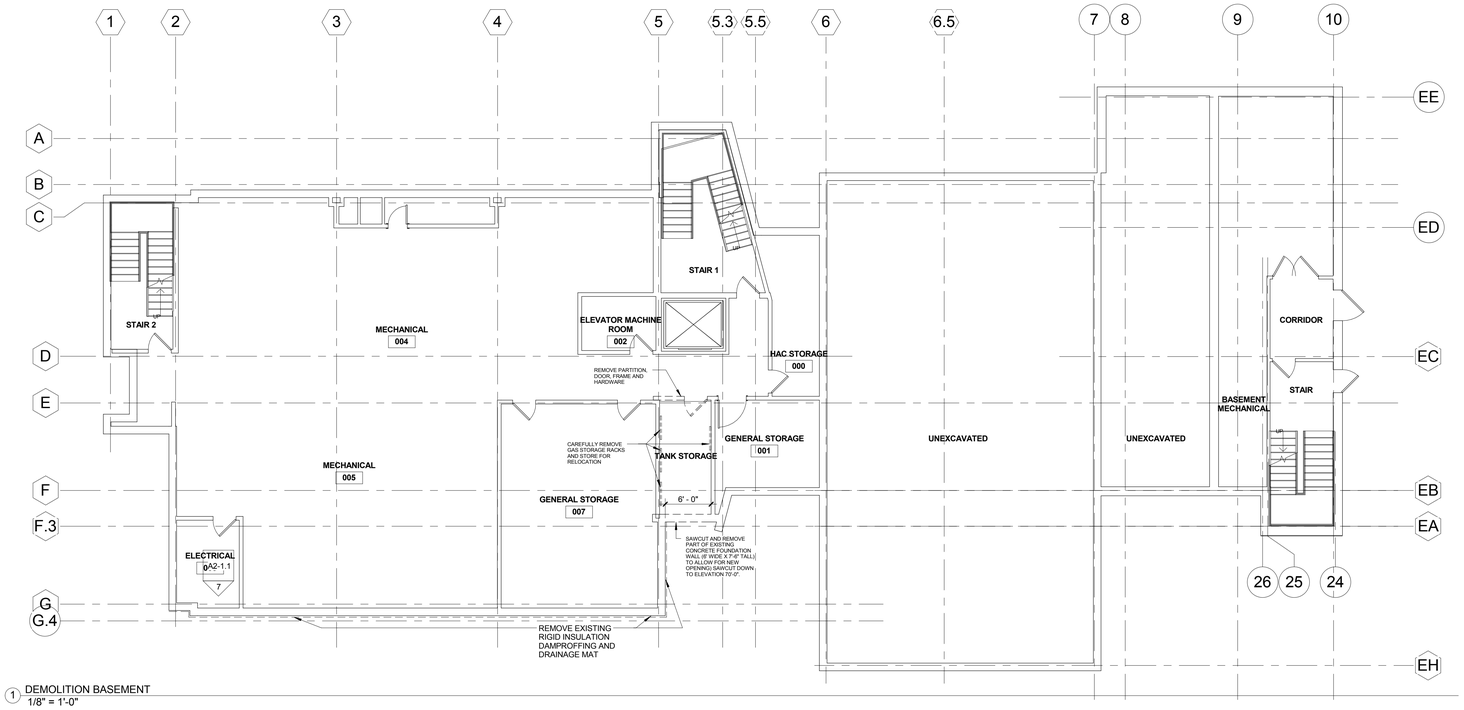
VA Project No.
650-338

Drawing No.
S5-2.0

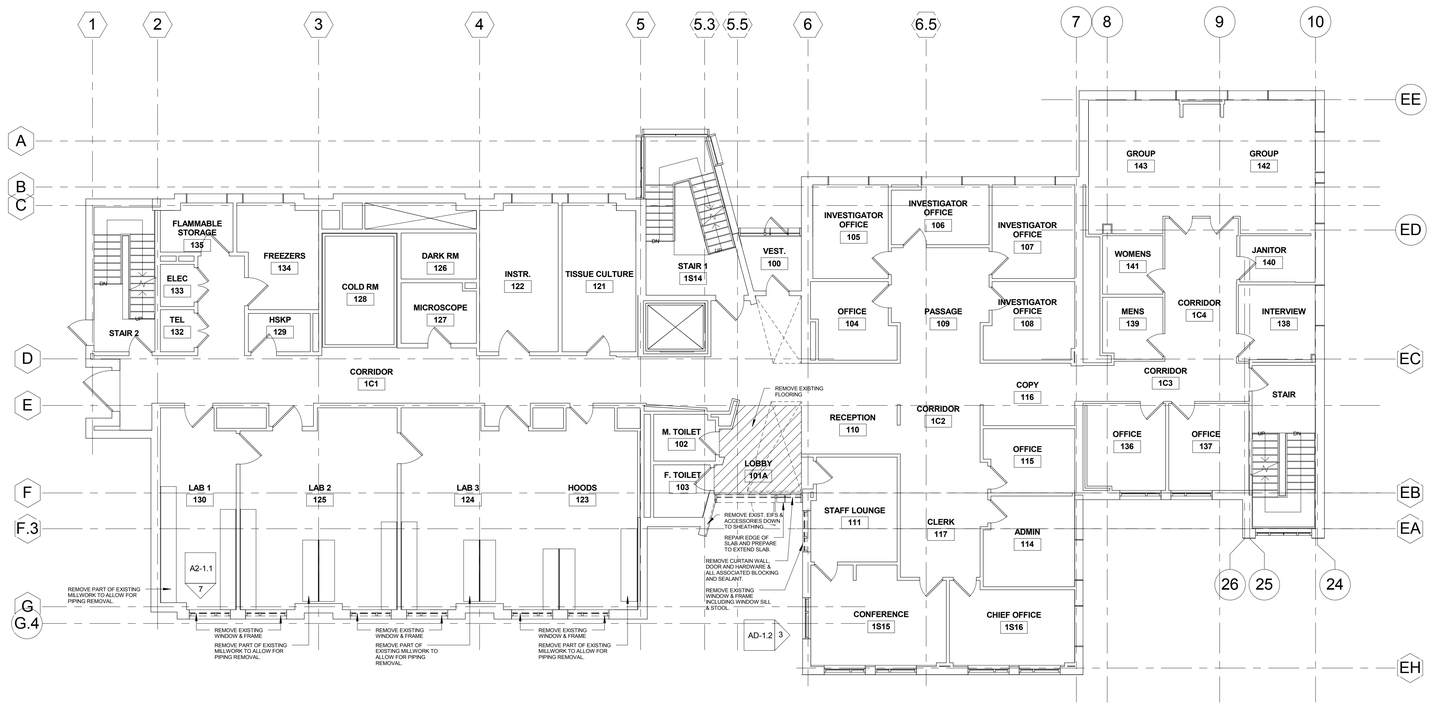
Office of Facilities

Department of Veterans Affairs

VA FORM 08-6721



1 DEMOLITION BASEMENT
1/8" = 1'-0"



2 DEMOLITION FIRST FLOOR
1/8" = 1'-0"

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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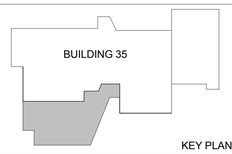


KEY PLAN

N

Drawing Title
BASEMENT AND FIRST FLOOR DEMO PLANS

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

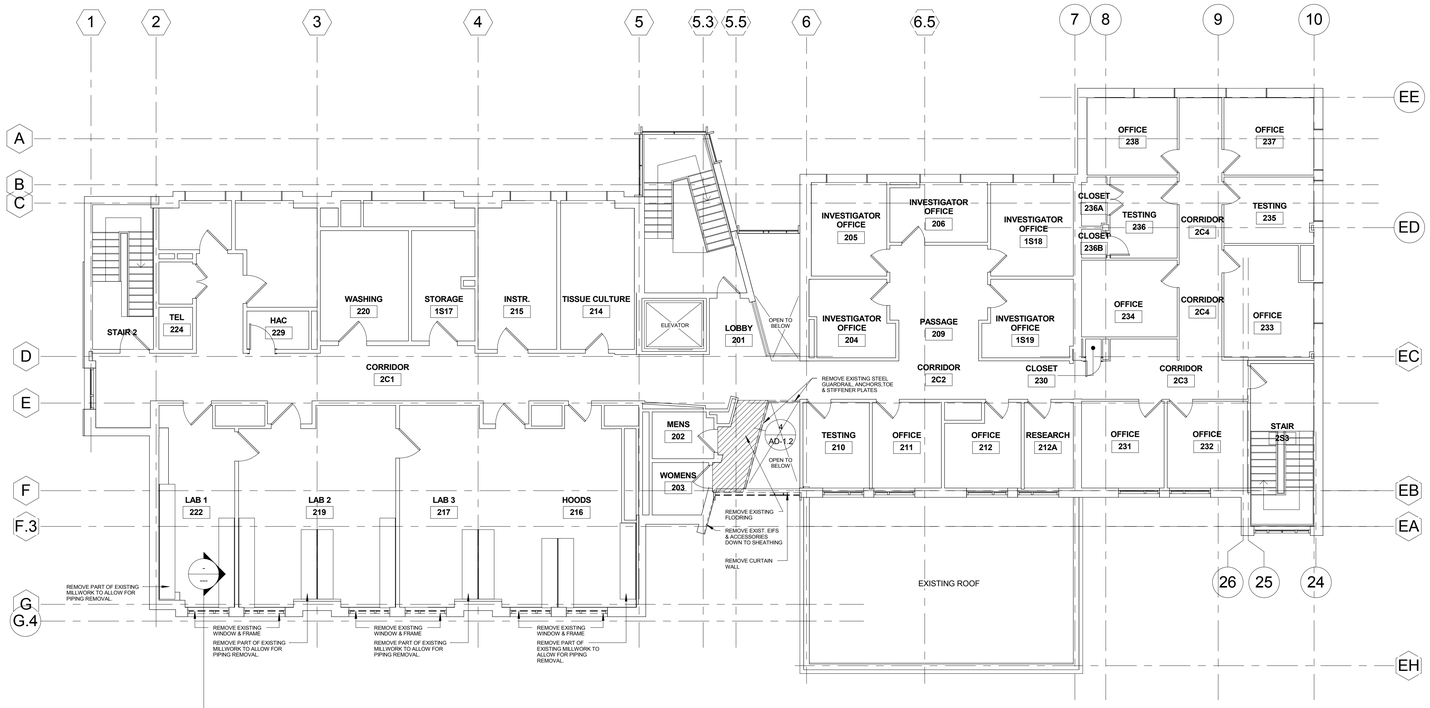
Building #
Scale 1/8" = 1'-0"
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No.
AD-1.1

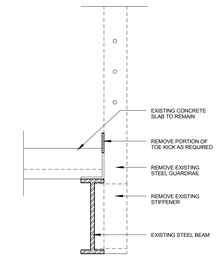
Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

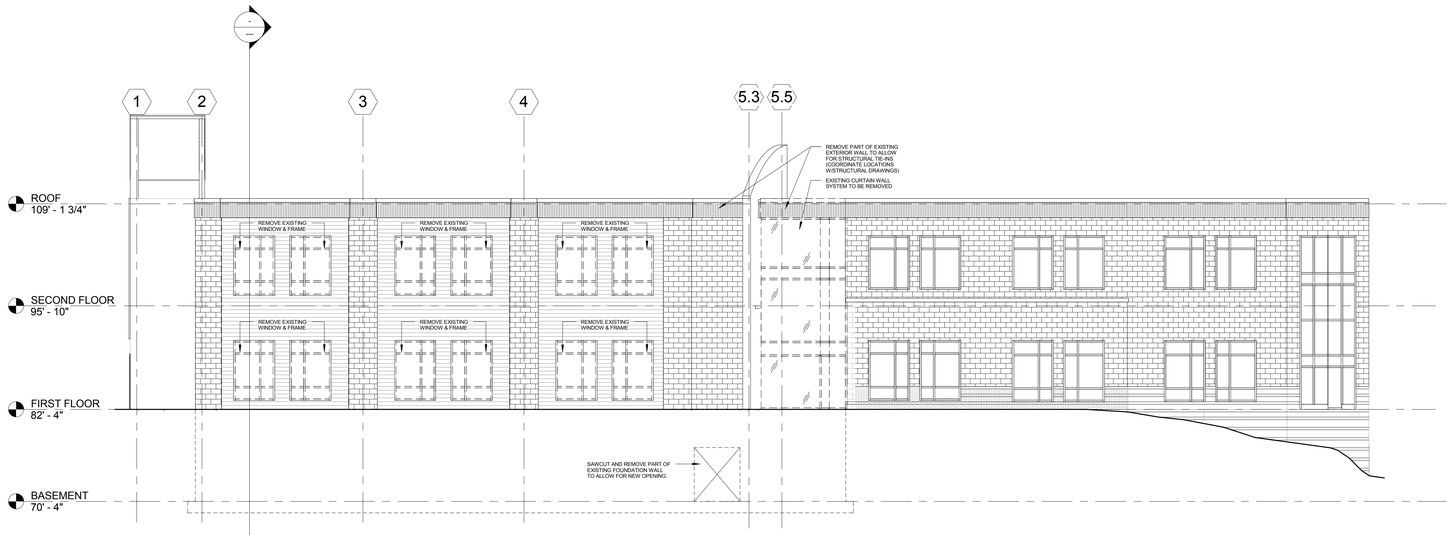
DATE & TIME PRINTED: 6/30/2015 11:55:55 AM C:\Users\admindator\Documents\VAE - Basem\ Lab_AD\admindator.rvt



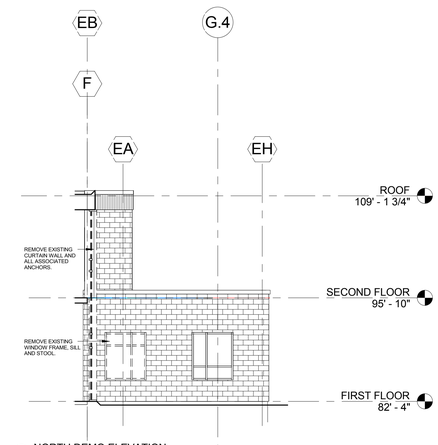
1 DEMOLITION SECOND FLOOR
1/8" = 1'-0"



4 GUARDRAIL DEMOLITION DETAIL
1 1/2" = 1'-0"



2 EAST DEMOLITION ELEVATION
1/8" = 1'-0"



3 NORTH DEMO ELEVATION
1/8" = 1'-0"

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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KEY PLAN

N

Drawing Title
SECOND FLOOR DEMO PLAN DEMO ELEVATIONS

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
As indicated
Location

Date
6/30/2015
VA Project No.
650-338
Drawing No.
AD-1.2

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

CODE INFORMATION

CODE REVIEW SUMMARY

BUILDING CLASSIFICATION

THE EXISTING BUILDING 3 WAS CONSTRUCTED IN 1995 AND CONSISTS OF A BASEMENT WITH 2 STORIES. THE BUILDING STRUCTURE CONSISTS OF CONCRETE FOUNDATION WALLS (BASEMENT), STEEL COLUMNS AND BEAMS AND A COMPOSITE CONCRETE SLAB FLOORS. THE CONSTRUCTION TYPE, AS PROVIDED BY THE VA IS TYPE 2B (IBC) AND TYPE II(000) NFPA.

	EXISTING BUILDING	NEW CONSTRUCTION
USER GROUP	B - BUSINESS	B - BUSINESS
CONSTRUCTION TYPE	2B (IBC) II (000) NFPA 101	2B (IBC) II (000) NFPA 101
FIRE SUPPRESSION	FULLY SPRINKLERED	FULLY SPRINKLERED
BLDG HEIGHT (ABOVE GRADE) **BLDG AREA** (INCL MH ADDITION	2 STORIES – 31' 8,816 SF	2 STORIES – 31' 3,100 SF

BUILDING HEIGHT AND AREA LIMITATION

ALLOWABLE HEIGHT AND BLDG AREA (IBC TABLE 503)	EXISTING BUILDING	NEW ADDITION	TOTAL EXISTING + ADDITION
4 STORIES	2 STORIES	2 STORIES	2 STORIES
23,000 SF	8,816 SF/ 1st FL.	3,100 SF/ 1st FL.	11,916 SF/ 1st FL.

THE EXISTING BUILDING ALONG WITH THE MENTAL HEALTH ADDITION (CURRENTLY UNDER CONSTRUCTION) AND THE NEW ADDITION FOR RESEARCH, WILL BE TWO (2) STORIES IN HEIGHT WITH A MAXIMUM FLOOR AREA OF 11,916 SF. THE RESULTING STRUCTURE WILL BE CONSIDERED ONE BUILDING (NOT SEPARATED BY ANY RATING), SINCE THE ACTUAL TOTAL BUILDING HEIGHT AND AREA ARE LESS THAN THE ALLOWABLE HEIGHT AND BUILDING AREA INDICATED ABOVE.

FIRE RESISTANCE RATINGS FOR BUILDING ELEMENTS

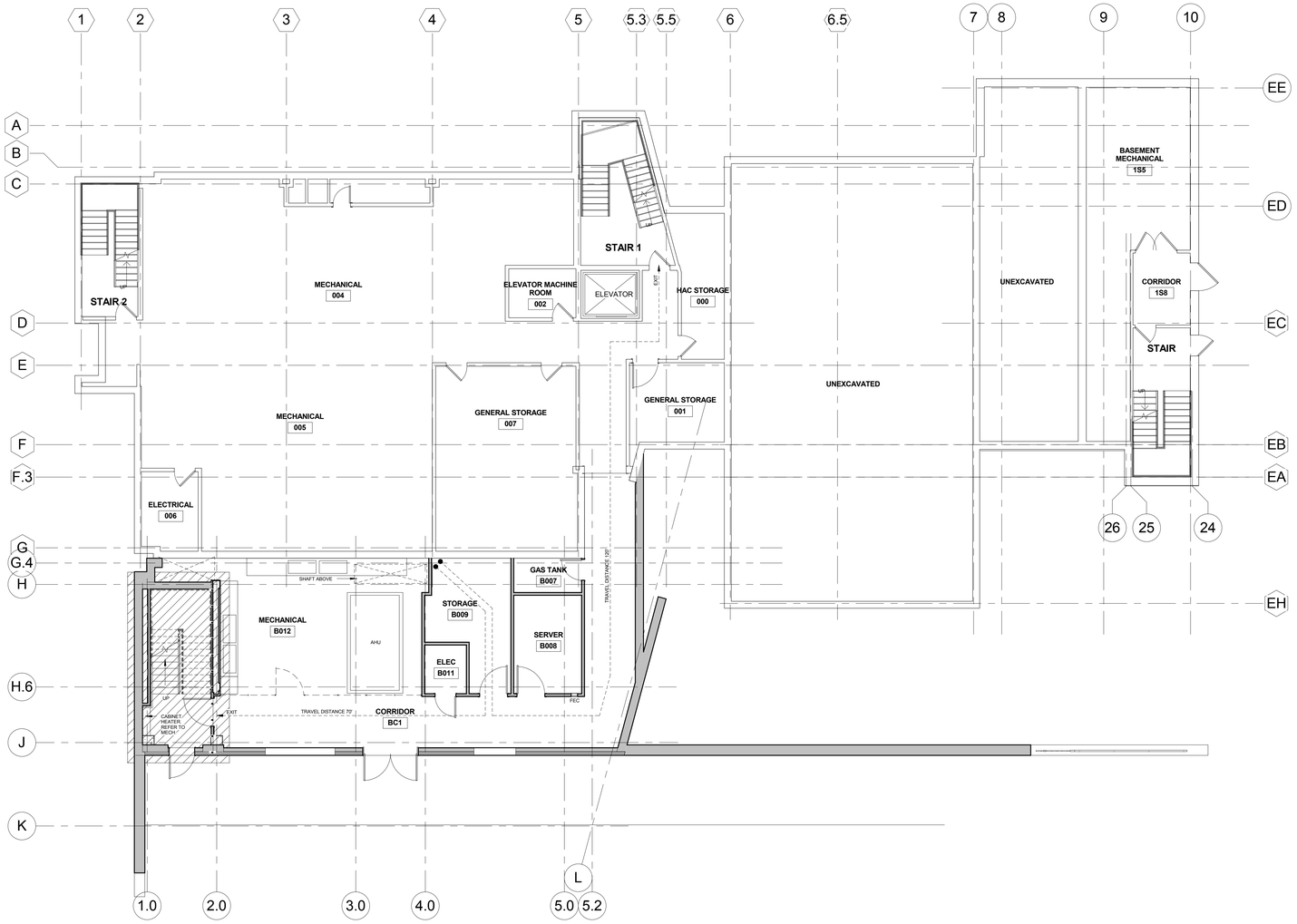
BUILDING ELEMENT	TYPE 2B (IBC)	TYPE II (000) NFPA	
PRIMARY STRUCTURAL FRAME: COLUMNS & BEAMS	0 HOURS	0 HOURS	EXCEPT AS INDICATED BELOW
NON BEARING WALLS – EXTERIOR	0 HOURS	0 HOURS	
NON BEARING WALLS - INTERIOR	0 HOURS	0 HOURS	
FLOOR CONSTRUCTION	0 HOURS	0 HOURS	ONE HOUR PROVIDED AT FIRST FLOOR UL DESIGN D902
ROOF CONSTRUCTION	0 HOURS	0 HOURS	
SHAFT WALLS & STAIR ENCLOSURE	1 HOURS	1 HOURS	

BUILDING COMPONENTS NFPA	TYPE 2B (IBC)	TYPE II (000)
STAIR ENCLOSURE (CONNECTING 3 STORIES)	1 HOUR	1 HOUR
CORRIDORS (BUILDING FULLY SPRINKLERED)	0 HOUR	0 HOUR
STORAGE ROOMS (OVER 100 SF)	0 HOUR	0 HOUR

STRUCTURAL FRAME (COLUMNS AND BEAMS) SUPPORTING THE SHAFT/STAIR ENCLOSURES SHALL RECEIVE SPRAY FIRE PROOFING TO PROVIDE ONE HOUR FIRE RATING:
COLUMNS: UL DESIGN - X723
BEAMS : UL DESIGN - S706

LEGEND

- 1 HOUR FIRE RATED BARRIER
- 2 HOUR FIRE RATED BARRIER
- 1 HOUR FIRE RATED SMOKE BARRIER
- 2 HOUR FIRE RATED SMOKE BARRIER
- SMOKE BARRIER
- EXIT SIGN



FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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BUILDING 35

KEY PLAN

N

Drawing Title
BASEMENT OVERALL / LIFE SAFETY PLAN

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #

Scale
As indicated

Location

Date
6/30/2015

VA Project No.
650-338

Drawing No.
A1-1.B

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231

DATE & TIME PRINTED: 7/1/2015 10:06:14 AM C:\Users\aschneider\Documents\VAMC - Baxter's Labs_A2\rvtaxbldgr.rvt

CODE INFORMATION

CODE REVIEW SUMMARY
BUILDING CLASSIFICATION
THE EXISTING BUILDING 3 WAS CONSTRUCTED IN 1995 AND CONSISTS OF A BASEMENT WITH 2 STORIES. THE BUILDING STRUCTURE CONSISTS OF CONCRETE FOUNDATION WALLS (BASEMENT), STEEL COLUMNS AND BEAMS AND A COMPOSITE CONCRETE SLAB FLOORS. THE CONSTRUCTION TYPE, AS PROVIDED BY THE VA IS TYPE 2B (IBC) AND TYPE II(000) NFPA.

	EXISTING BUILDING	NEW CONSTRUCTION
USER GROUP	B - BUSINESS	B - BUSINESS
CONSTRUCTION TYPE	2B (IBC) II (000) NFPA 101	2B (IBC) II (000) NFPA 101
FIRE SUPPRESSION	FULLY SPRINKLERED	FULLY SPRINKLERED
BLDG HEIGHT (ABOVE GRADE) **BLDG AREA** (INCL MH ADDITION)	2 STORIES – 31' 8,816 SF	2 STORIES – 31' 3,100 SF

BUILDING HEIGHT AND AREA LIMITATION

ALLOWABLE HEIGHT AND BLDG AREA (IBC TABLE 503)	EXISTING BUILDING	NEW ADDITION	TOTAL EXISTING + ADDITION
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FIRE RESISTANCE RATINGS FOR BUILDING ELEMENTS

BUILDING ELEMENT	TYPE 2B (IBC)	TYPE II (000) NFPA	
PRIMARY STRUCTURAL FRAME: COLUMNS & BEAMS	0 HOURS	0 HOURS	EXCEPT AS INDICATED BELOW
NON BEARING WALLS – EXTERIOR	0 HOURS	0 HOURS	
NON BEARING WALLS - INTERIOR	0 HOURS	0 HOURS	
FLOOR CONSTRUCTION	0 HOURS	0 HOURS	ONE HOUR PROVIDED AT FIRST FLOOR UL DESIGN D902
ROOF CONSTRUCTION	0 HOURS	0 HOURS	
SHAFT WALLS & STAIR ENCLOSURE	1 HOURS	1 HOURS	

BUILDING COMPONENTS NFPA	TYPE 2B (IBC)	TYPE II (000)
STAIR ENCLOSURE (CONNECTING 3 STORIES)	1 HOUR	1 HOUR
CORRIDORS (BUILDING FULLY SPRINKLERED)	0 HOUR	0 HOUR
STORAGE ROOMS (OVER 100 SF)	0 HOUR	0 HOUR

STRUCTURAL FRAME (COLUMNS AND BEAMS) SUPPORTING THE SHAFT/STAIR ENCLOSURES SHALL RECEIVE SPRAY FIRE PROOFING TO PROVIDE ONE HOUR FIRE RATING:
COLUMNS: UL DESIGN - X723
BEAMS : UL DESIGN - S706

LEGEND
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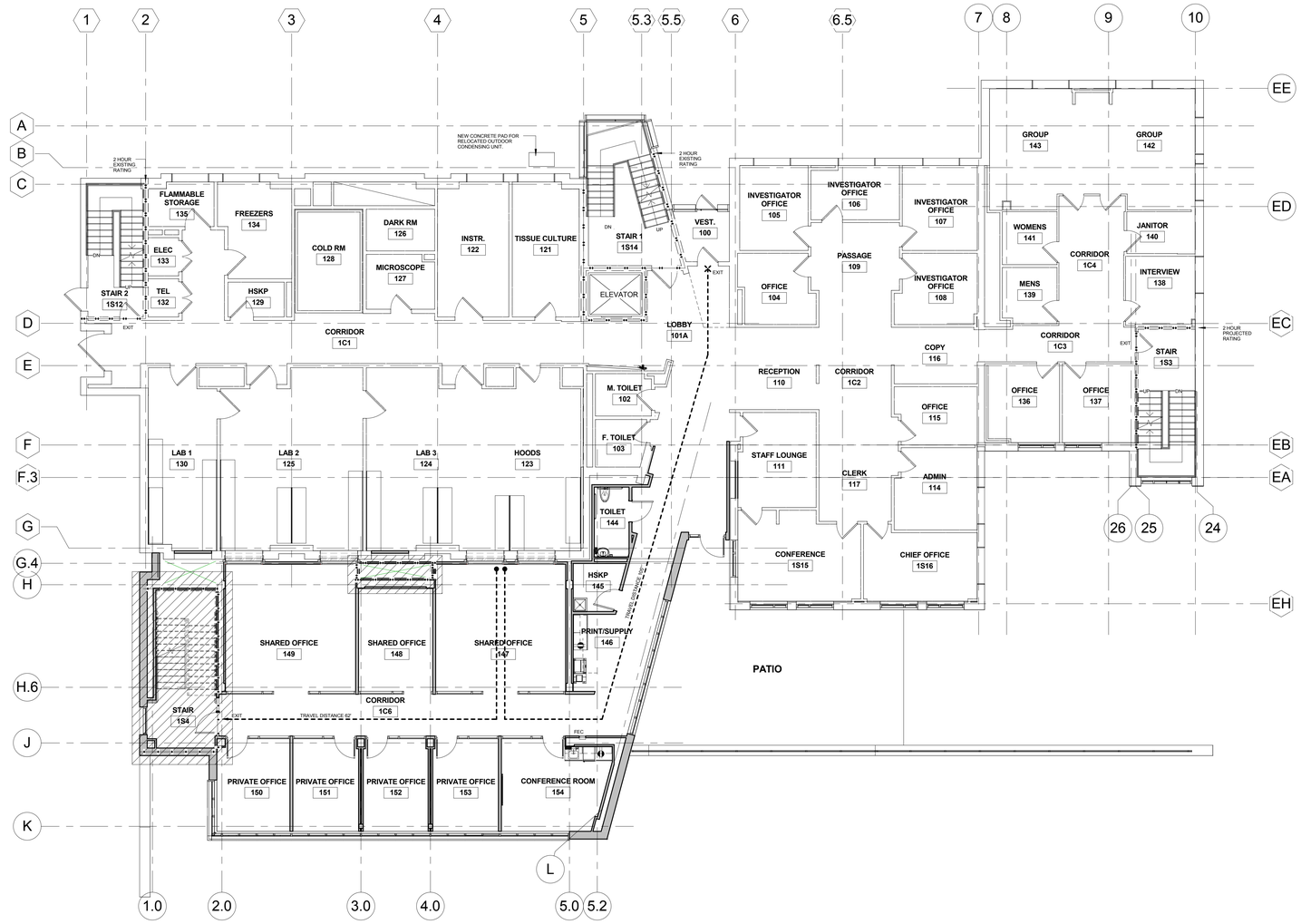
- 1 HOUR FIRE RATED SMOKE BARRIER
- 2 HOUR FIRE RATED SMOKE BARRIER
- SMOKE BARRIER
- EXIT SIGN



FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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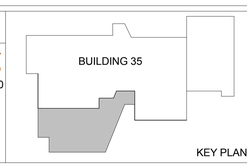

KEY PLAN

N

Drawing Title
FIRST FLOOR OVERALL / LIFE SAFETY PLAN

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale: As indicated
Location

Date: 6/30/2015
VA Project No. 650-338
Drawing No. A1-1.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

CODE INFORMATION

CODE REVIEW SUMMARY
BUILDING CLASSIFICATION
THE EXISTING BUILDING 3 WAS CONSTRUCTED IN 1995 AND CONSISTS OF A BASEMENT WITH 2 STORIES. THE BUILDING STRUCTURE CONSISTS OF CONCRETE FOUNDATION WALLS (BASEMENT), STEEL COLUMNS AND BEAMS AND A COMPOSITE CONCRETE SLAB FLOORS. THE CONSTRUCTION TYPE, AS PROVIDED BY THE VA IS TYPE 2B (IBC) AND TYPE II(000) NFPA.

	EXISTING BUILDING	NEW CONSTRUCTION
USER GROUP	B - BUSINESS	B - BUSINESS
CONSTRUCTION TYPE	2B (IBC) II (000) NFPA 101	2B (IBC) II (000) NFPA 101
FIRE SUPPRESSION	FULLY SPRINKLERED	FULLY SPRINKLERED
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FIRE RESISTANCE RATINGS FOR BUILDING ELEMENTS

BUILDING ELEMENT	TYPE 2B (IBC)	TYPE II (000) NFPA	
PRIMARY STRUCTURAL FRAME: COLUMNS & BEAMS	0 HOURS	0 HOURS	EXCEPT AS INDICATED BELOW
NON BEARING WALLS – EXTERIOR	0 HOURS	0 HOURS	
NON BEARING WALLS - INTERIOR	0 HOURS	0 HOURS	
FLOOR CONSTRUCTION	0 HOURS	0 HOURS	ONE HOUR PROVIDED AT FIRST FLOOR UL DESIGN D902
ROOF CONSTRUCTION	0 HOURS	0 HOURS	
SHAFT WALLS & STAIR ENCLOSURE	1 HOURS	1 HOURS	

BUILDING COMPONENTS NFPA	TYPE 2B (IBC)	TYPE II (000)
STAIR ENCLOSURE (CONNECTING 3 STORIES)	1 HOUR	1 HOUR
CORRIDORS (BUILDING FULLY SPRINKLERED)	0 HOUR	0 HOUR
STORAGE ROOMS (OVER 100 SF)	0 HOUR	0 HOUR

STRUCTURAL FRAME (COLUMNS AND BEAMS) SUPPORTING THE SHAFT/STAIR ENCLOSURES SHALL RECEIVE SPRAY FIRE PROOFING TO PROVIDE ONE HOUR FIRE RATING:
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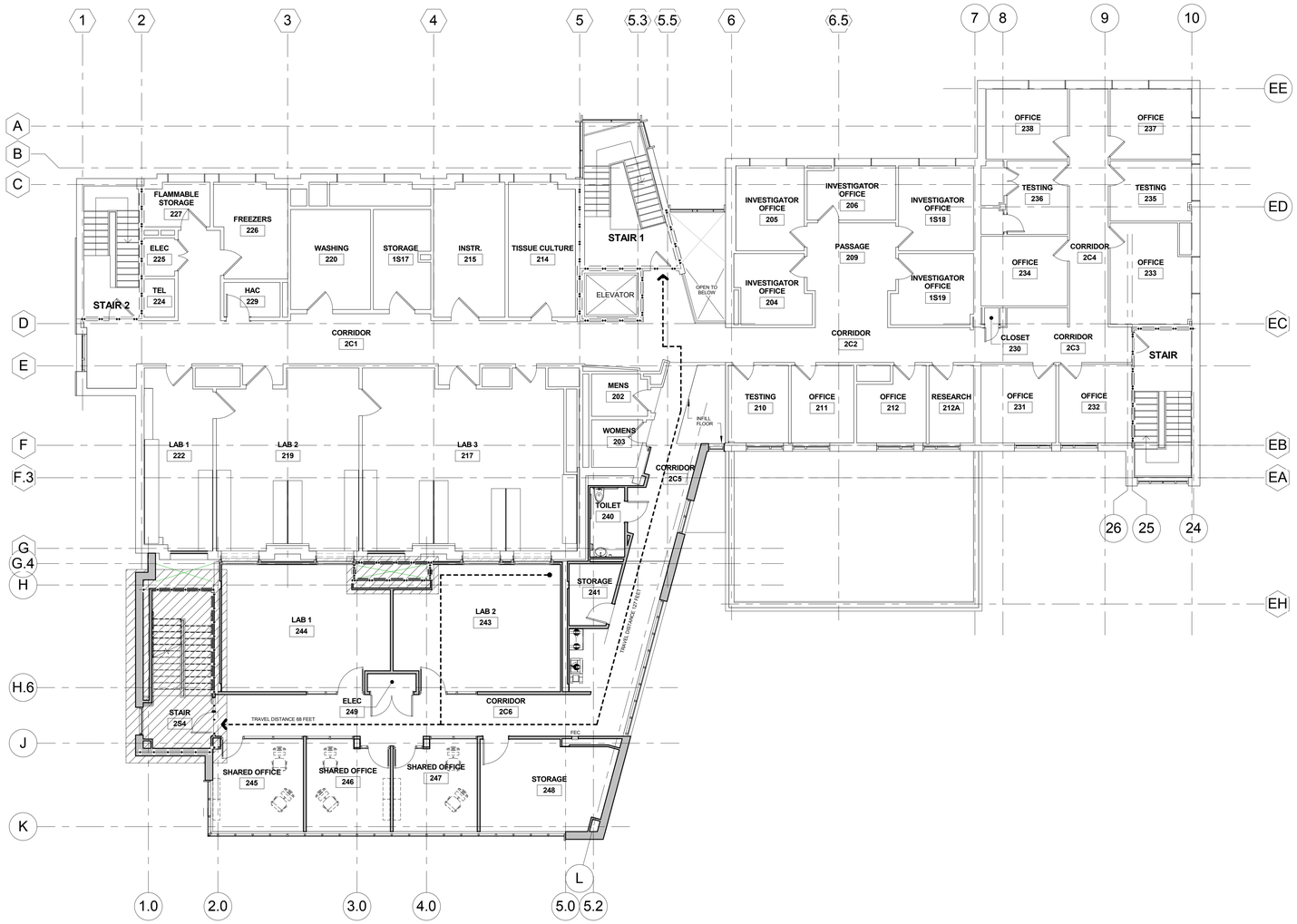

FINAL DESIGN DOCUMENTS
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Number	Date	Revision
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BUILDING 35
KEY PLAN
N

Drawing Title
SECOND FLOOR OVERALL / LIFE SAFETY PLAN

Designed By: Approver
Checked By: Approver
Approved By: Approver

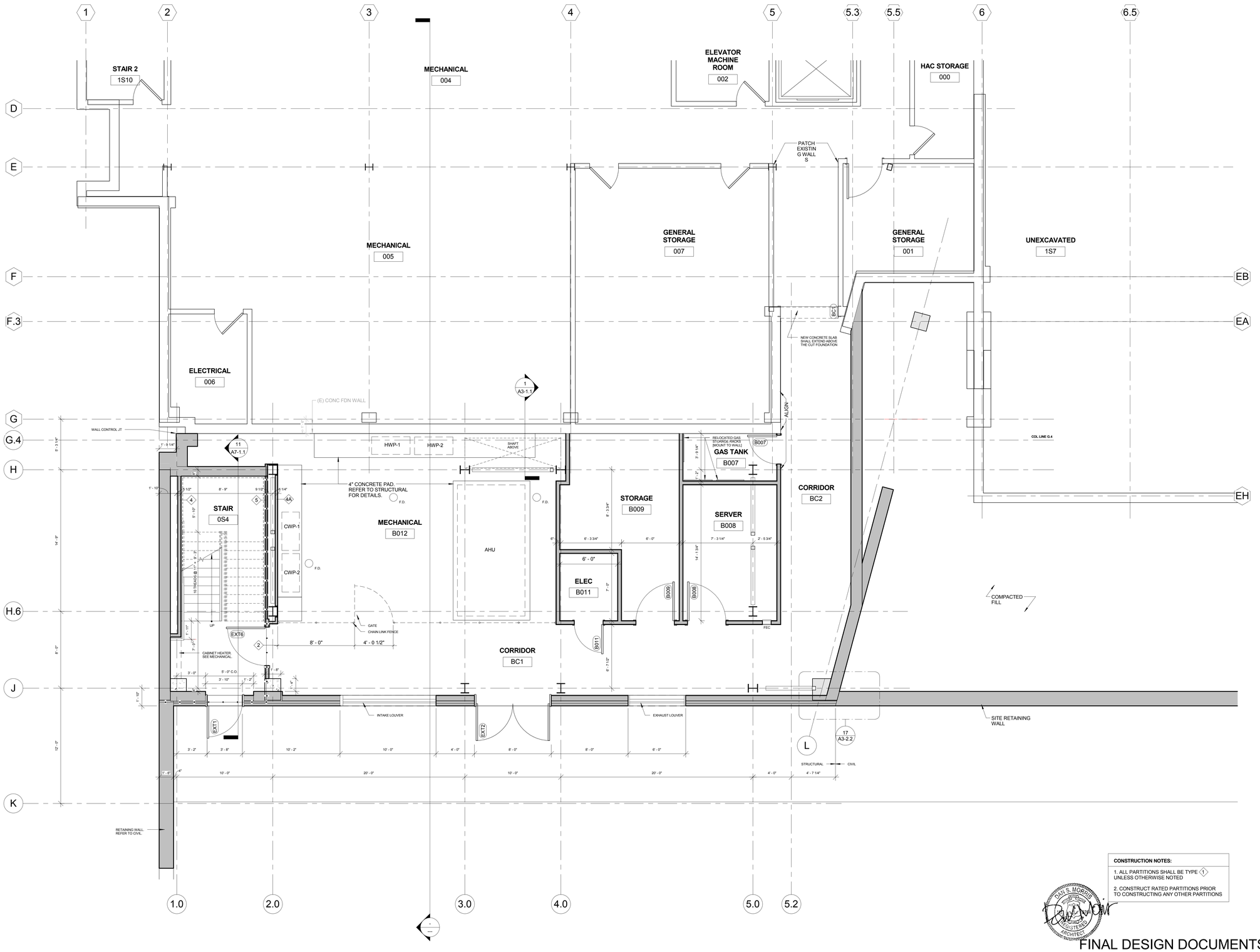
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale: As indicated
Location

Date: 6/30/2015
VA Project No. 650-338
Drawing No. A1-1.2

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



CONSTRUCTION NOTES:

1. ALL PARTITIONS SHALL BE TYPE 1 UNLESS OTHERWISE NOTED
2. CONSTRUCT RATED PARTITIONS PRIOR TO CONSTRUCTING ANY OTHER PARTITIONS

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

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F: 617.772.0261
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BUILDING 35
KEY PLAN
N

Drawing Title
BASEMENT FLOOR PLAN

Designed By: Approver
Checked By: Approver
Approved By: Approver

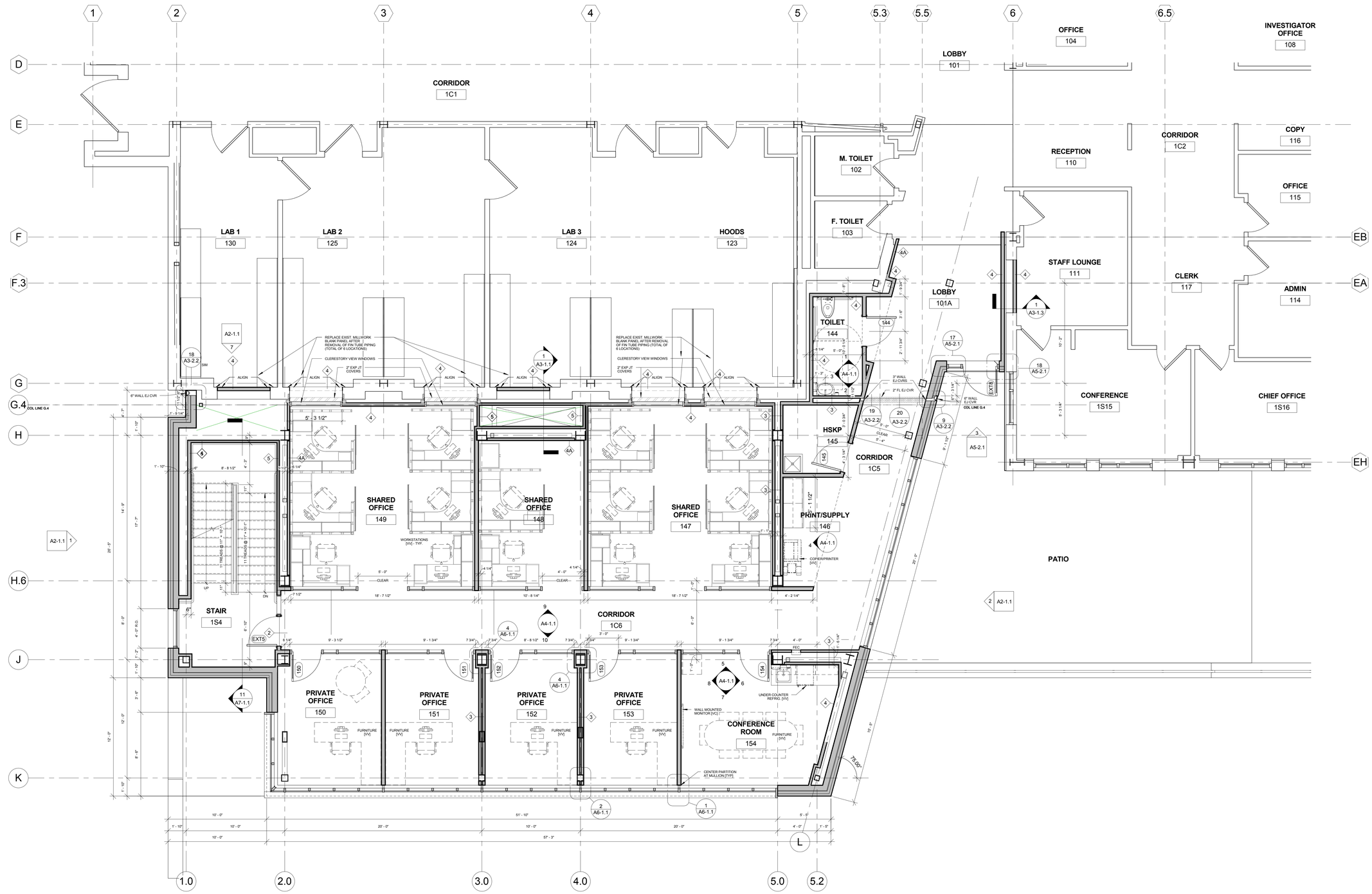
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/4" = 1'-0"
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No. A1-2.B

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



CONSTRUCTION NOTES:

1. ALL PARTITIONS SHALL BE TYPE 1 UNLESS OTHERWISE NOTED
2. CONSTRUCT RATED PARTITIONS PRIOR TO CONSTRUCTING ANY OTHER PARTITIONS

DAN S. MORRIS REGISTERED ARCHITECT

FINAL DESIGN DOCUMENTS
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Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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BUILDING 35

KEY PLAN

N

Drawing Title
FIRST FLOOR PLAN

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/4" = 1'-0"
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No. A1-2.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

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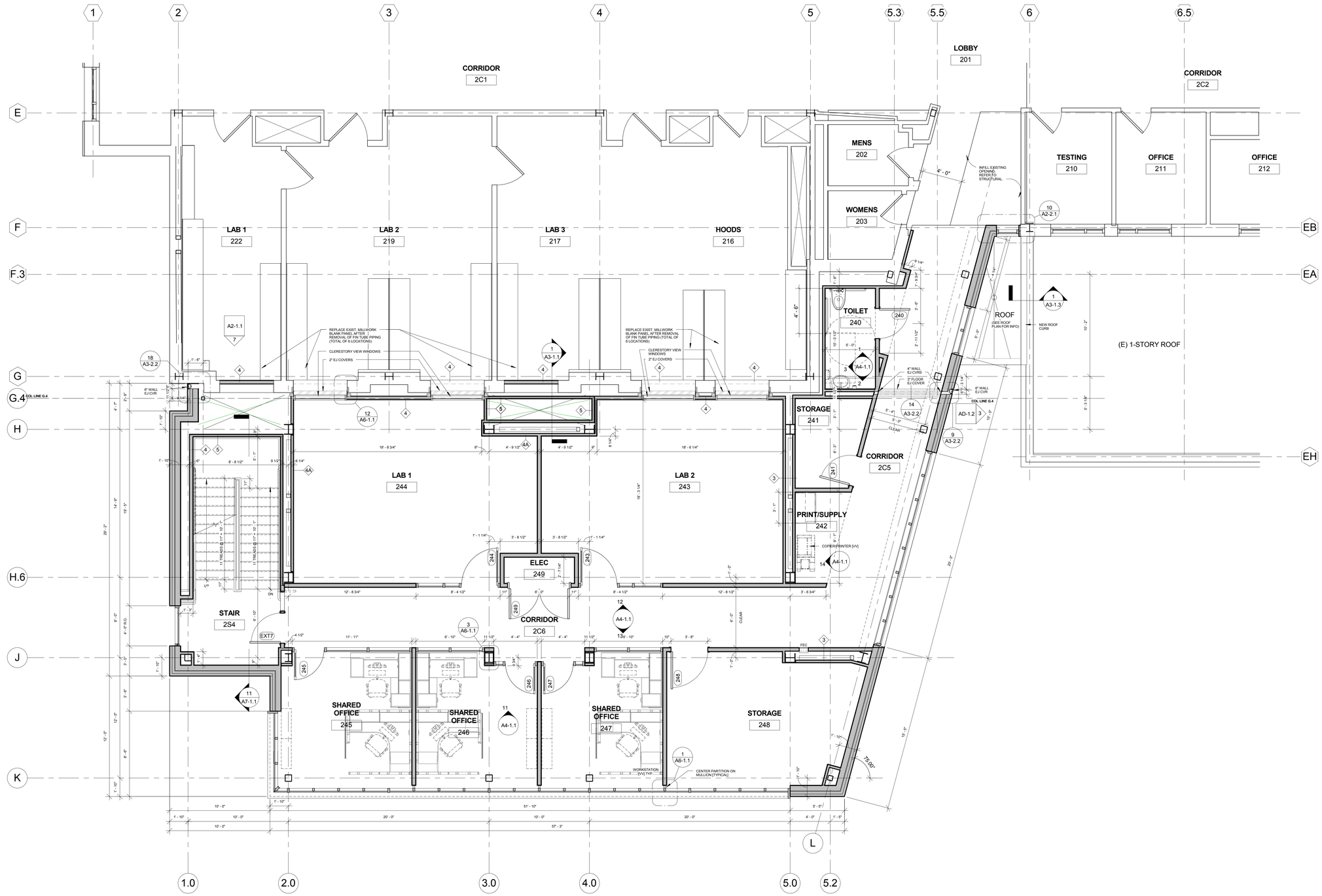

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FULLY SPRINKLERED

Number	Date	Revision
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BUILDING 35
KEY PLAN

N

Drawing Title
SECOND FLOOR PLAN

Designed By: Approver
Checked By: Approver
Approved By: Approver

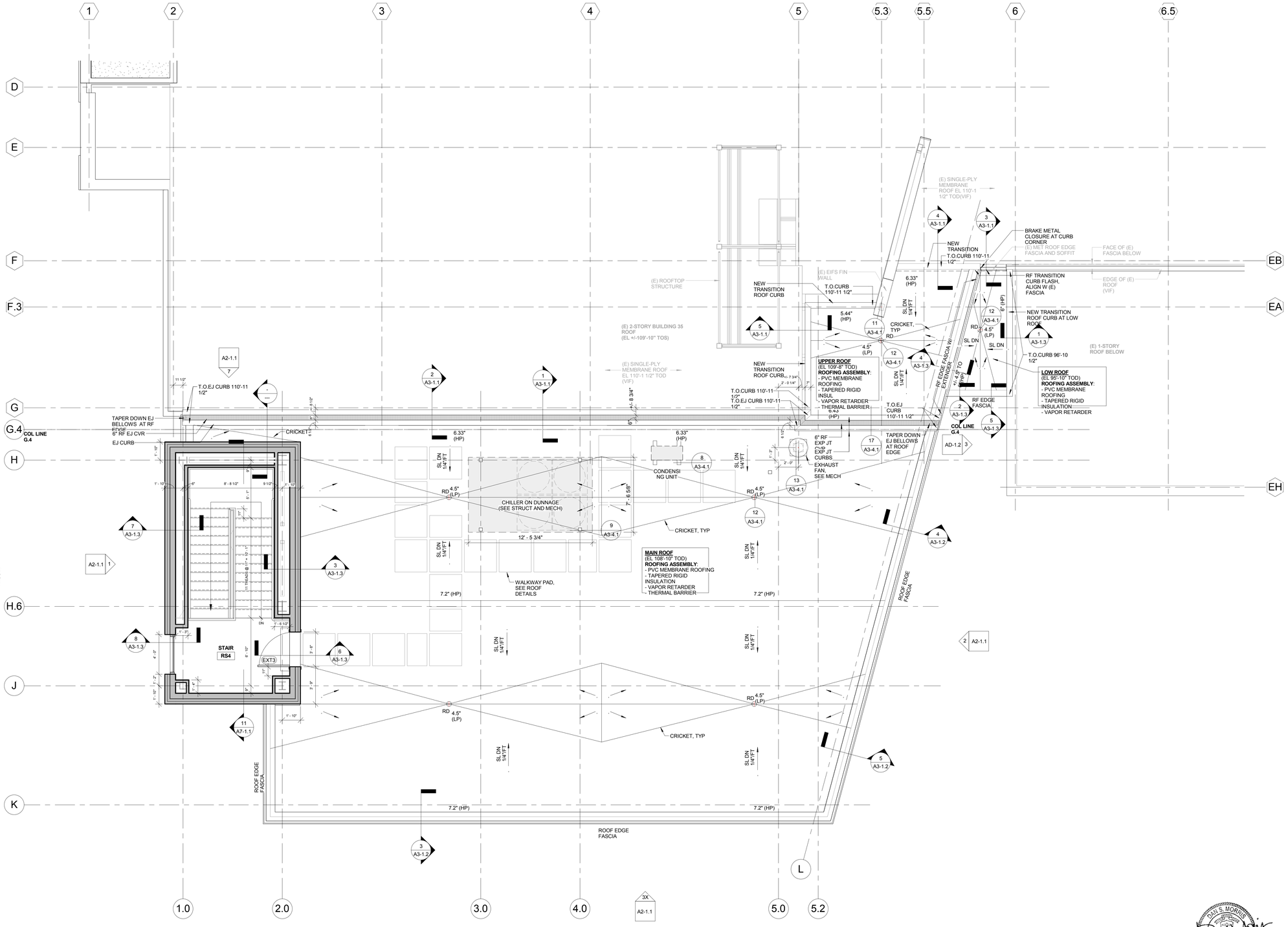
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/4" = 1'-0"
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No.
A1-2.2

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



STAIR ROOF PLAN

STAIR ROOF
(EL 118'-7 1/2" TOD)
ROOFING ASSEMBLY:
- PVC MEMBRANE ROOFING
- TAPERED RIGID INSULATION
- VAPOR RETARDER
- THERMAL BARRIER

FINAL DESIGN DOCUMENTS
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Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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BUILDING 35
KEY PLAN
N

Drawing Title
ROOF PLAN

Designed By: Approver
Checked By: Approver
Approved By: Approver

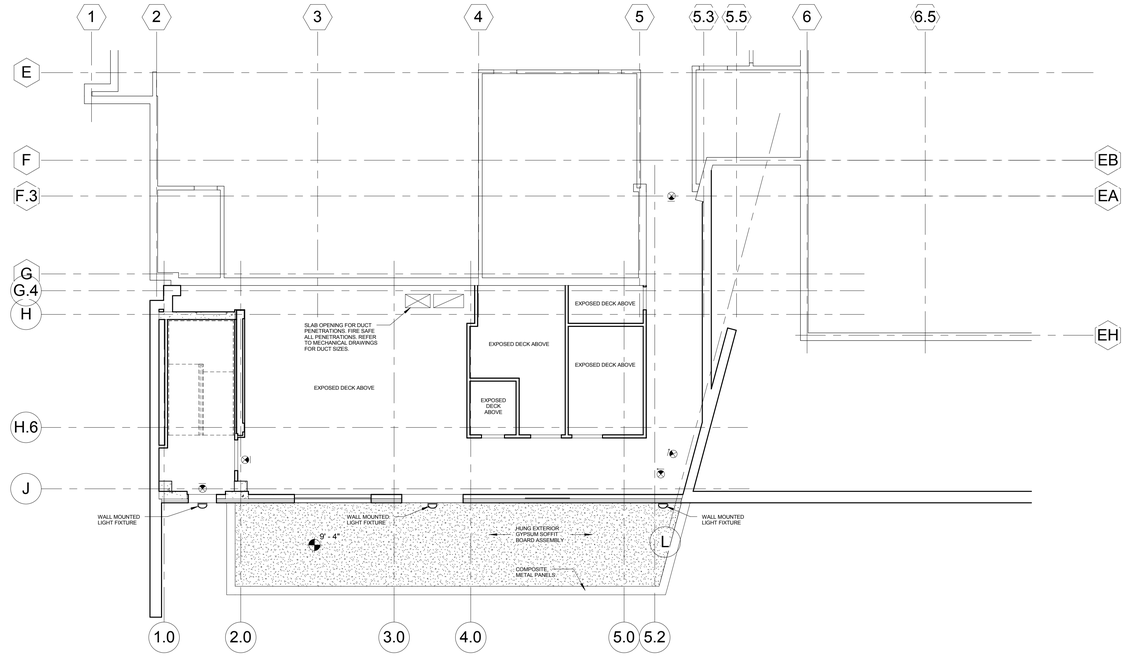
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/4" = 1'-0"
Location

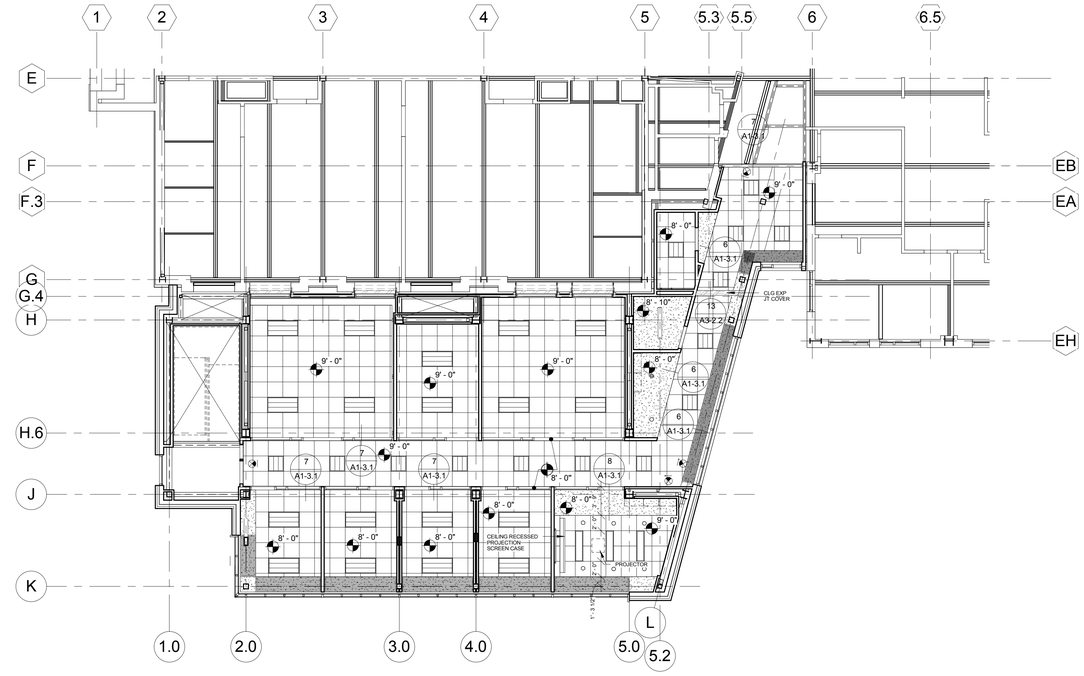
Date 6/30/2015
VA Project No. 650-338
Drawing No. A1-2.R

Office of Facilities
Department of Veterans Affairs

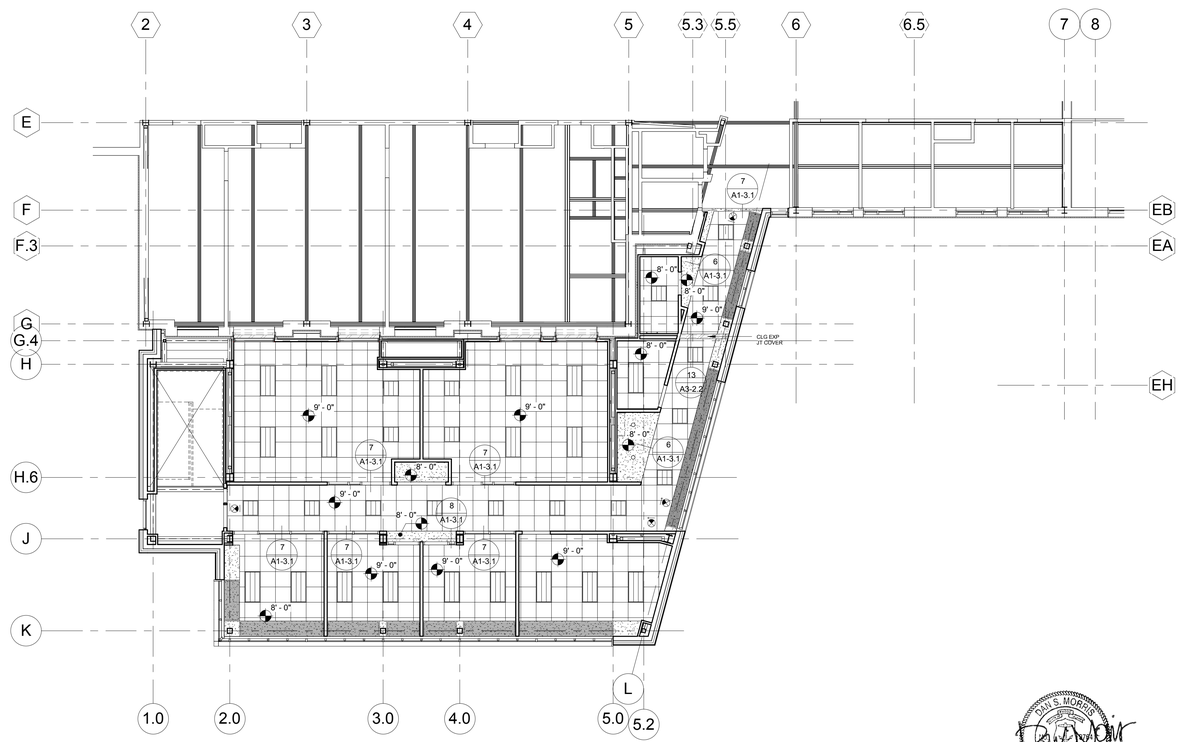
VA FORM 08-6231



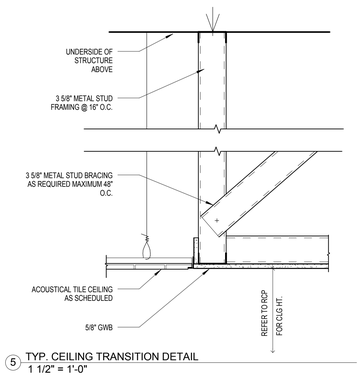
3 BASEMENT
1/8" = 1'-0"



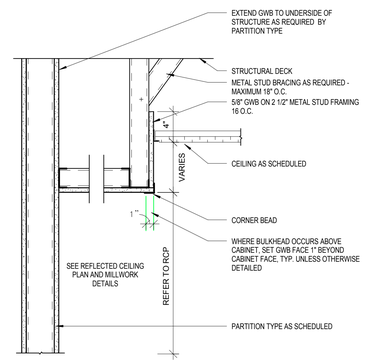
1 FIRST FLOOR
1/8" = 1'-0"



2 SECOND FLOOR
1/8" = 1'-0"

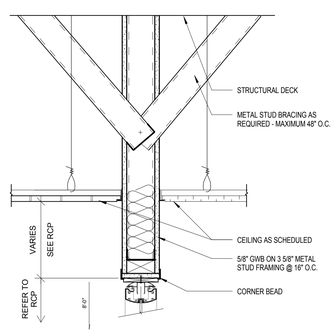


5 TYP. CEILING TRANSITION DETAIL
1 1/2" = 1'-0"

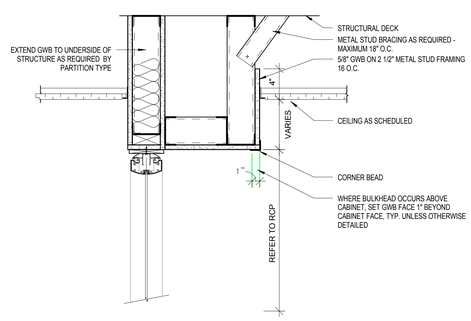


6 TYPICAL BULKHEAD DETAIL
1 1/2" = 1'-0"

REFLECTED CEILING LEGEND
2' X 4' ACOUSTIC CEILING TILE
2' X 2' ACOUSTIC CEILING TILE
GYPSUM WALL BOARD
RADIANT HEAT PANEL
SUPPLY DIFFUSER
RETURN DIFFUSER
2'X2' LIGHT FIXTURE
2'X4' LIGHT FIXTURE
4" LINEAR FLOURESCENT LIGHT FIXTURE
SURFACE MOUNTED LIGHT FIXTURE
6" RECESSED CAN LIGHT FIXTURE
EXIT SIGN
SPOT ELEVATION



7 TYPICAL SOFFIT DETAIL
1 1/2" = 1'-0"



8 SOFFIT AT DEMOUNTABLE PARTITION
1 1/2" = 1'-0"

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Number	Date	Revision
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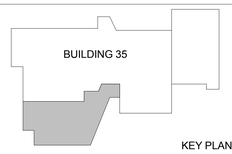

KEY PLAN

N

Drawing Title
REFLECTED CEILING PLANS

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
As indicated
Location

Date
6/30/2015
VA Project No.
650-338
Drawing No.
A1-3.1

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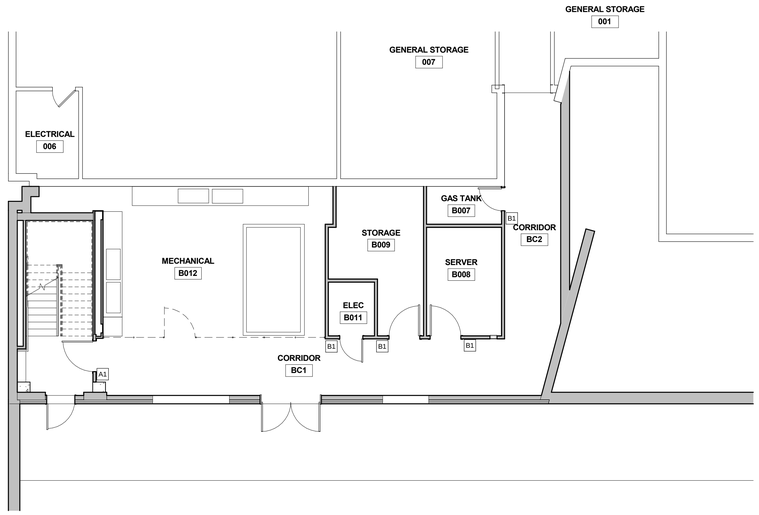
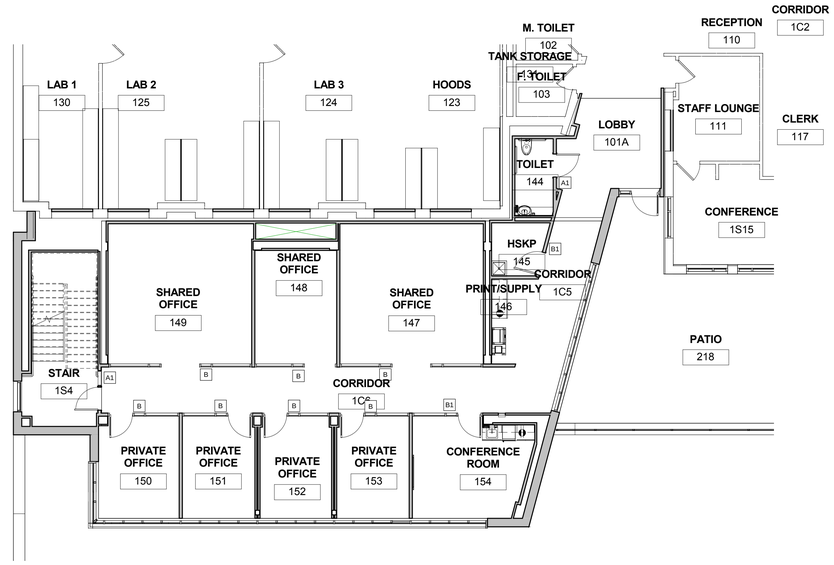
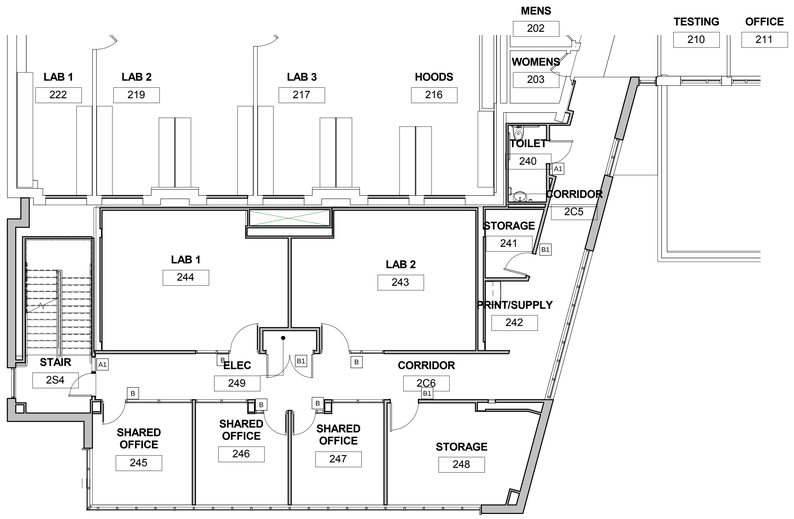


1 BASEMENT SIGNAGE PLAN
1/8" = 1'-0"



2 FIRST FLOOR SIGNAGE PLAN
1/8" = 1'-0"

SIGNAGE SCHEDULE				LEGEND: SIGN TYPE / SIGN LOCATION
ROOM NO.	SIGN TYPE	QTY	COPY	NOTES/COMMENTS
0S4	A1	1	STAIR S4	STAIR SYMBOL
1S4	A1	1	STAIR S4	STAIR SYMBOL
2S4	A1	1	STAIR S4	STAIR SYMBOL
B007	B1	1	GAS TANK STORAGE	
B008	B1	1	SERVER	
B009	B1	1	STORAGE	
B011	B1	1	ELECTRICAL ROOM	
144	A1	1	TOILET	TOILET UNISEX/HANDICAP ACCESS. SYMBOL
145	B1	1	HOUSEKEEPING	
147	B	1		
148	B	1		
149	B	1		
150	B	1		
151	B	1		
152	B	1		
153	B	1		
154	B1	1	CONFERENCE ROOM	
240	A1	1	TOILET	TOILET UNISEX/HANDICAP ACCESS. SYMBOL
241	B1	1	STORAGE	
243	B1	1	LAB	
244	B1	1	LAB	
245	B	1		
246	B	1		
247	B	1		
248	B1	1	STORAGE	
249	B1	1	ELECTRICAL	



3 SECOND FLOOR SIGNAGE PLAN
1/8" = 1'-0"

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Number	Date	Revision

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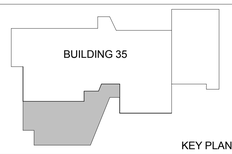


KEY PLAN

N

Drawing Title
SIGNAGE PLAN

Designed By: Approver
Checked By: Approver
Approved By: Approver

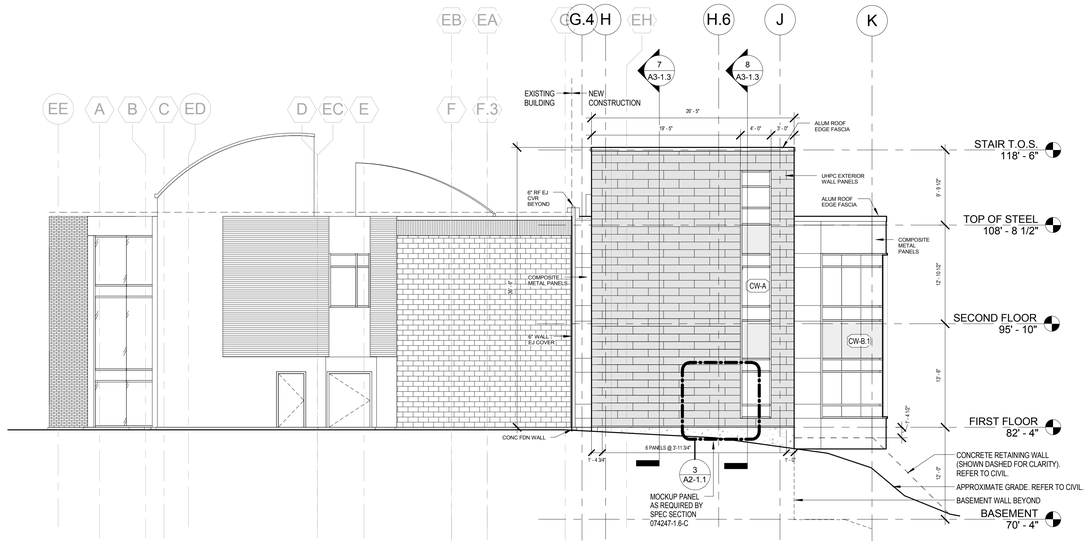
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/8" = 1'-0"
Location

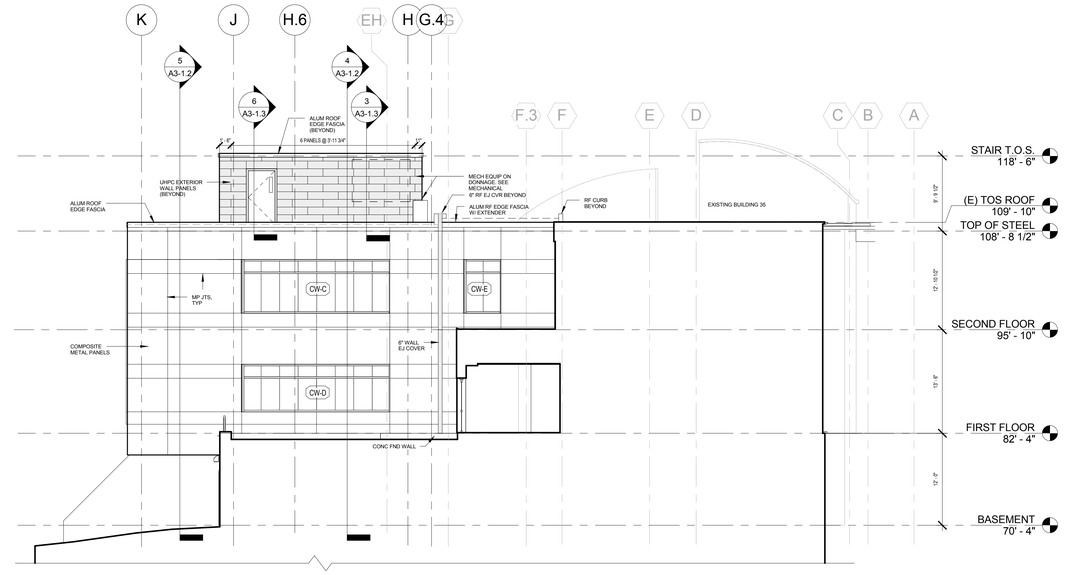
Date 6/30/2015
VA Project No. 650-338
Drawing No.
A1-4.0

Office of Facilities
Department of Veterans Affairs

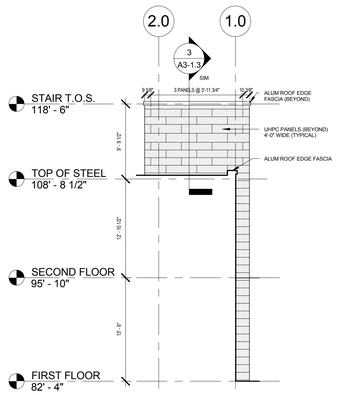
VA FORM 08-6231



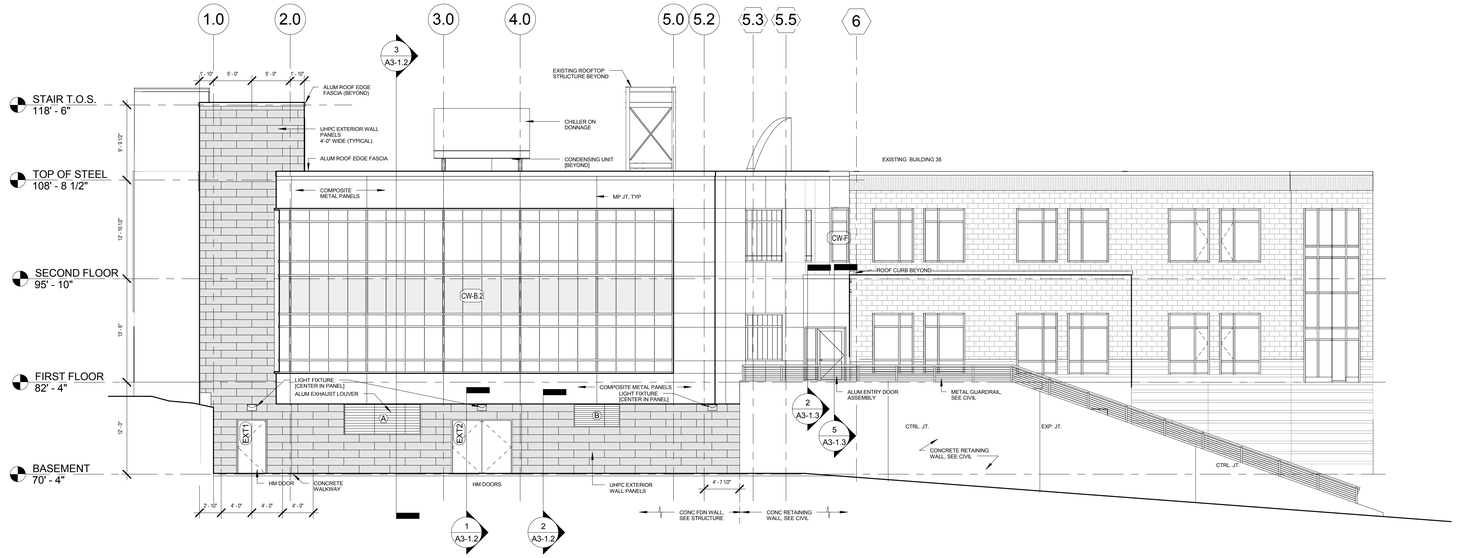
1 SOUTH ELEVATION
1/8" = 1'-0"



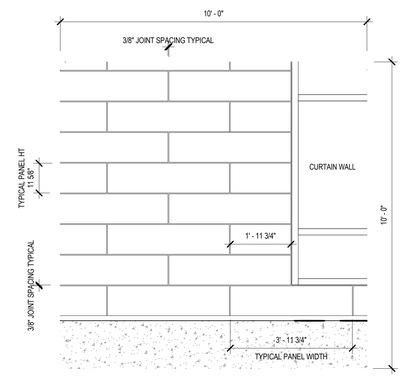
2 NORTH ELEVATION
1/8" = 1'-0"



7 WEST STAIR TOWER ELEVATION
1/8" = 1'-0"



3X EAST ELEVATION
1/8" = 1'-0"



3 MOCKUP PANEL ELEVATION
1/2" = 1'-0"

FINAL DESIGN DOCUMENTS
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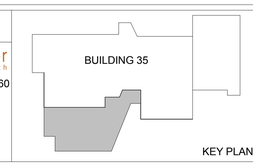


KEY PLAN

N

Drawing Title
BUILDING ELEVATIONS

Designed By: Approver
Checked By: Approver
Approved By: Approver

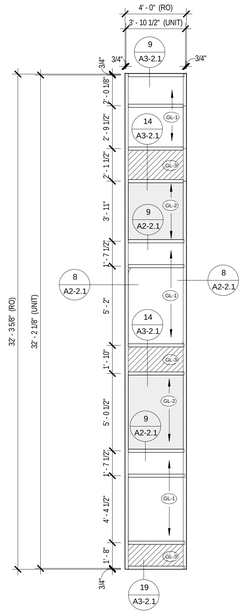
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
As indicated
Location

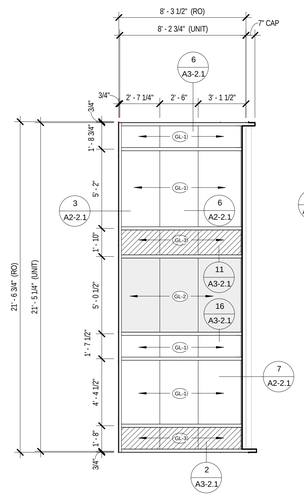
Date
6/30/2015
VA Project No.
650-338
Drawing No.
A2-1.1

Office of Facilities
Department of Veterans Affairs

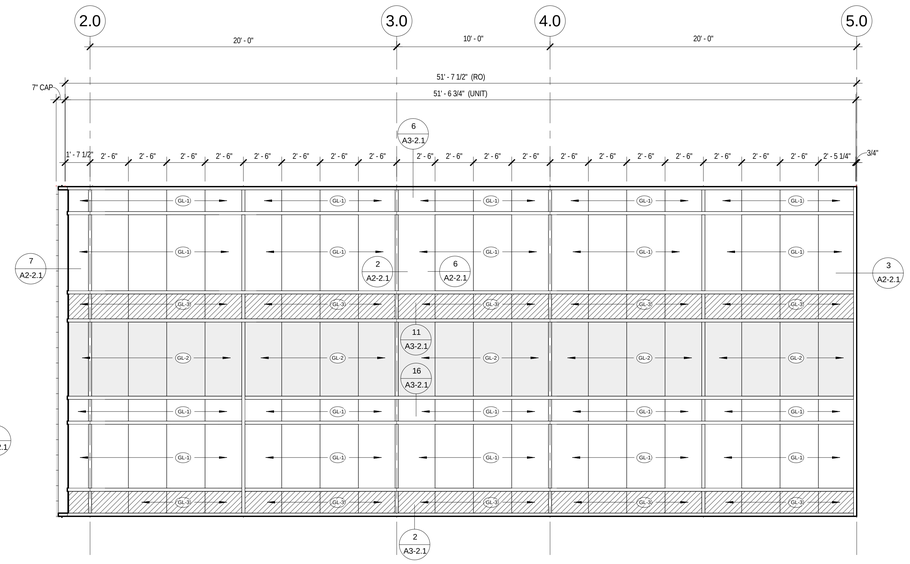
VA FORM 08-6231



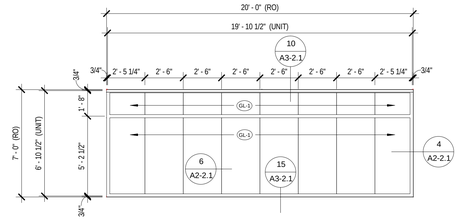
A CURTAIN WALL TYPE A
1/4" = 1'-0"



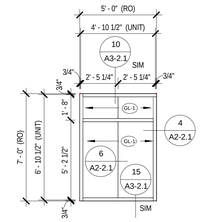
B.1 CURTAIN WALL TYPE B (SOUTH)
1/4" = 1'-0"



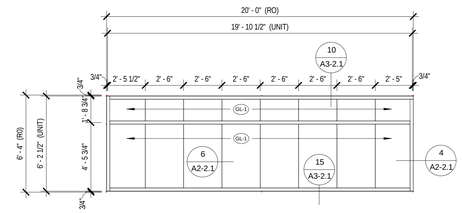
B.2 CURTAIN WALL TYPE B (EAST)
1/4" = 1'-0"



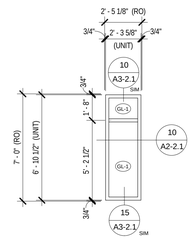
C CURTAIN WALL TYPE C
1/4" = 1'-0"



E CURTAIN WALL TYPE E
1/4" = 1'-0"



D CURTAIN WALL TYPE D
1/4" = 1'-0"

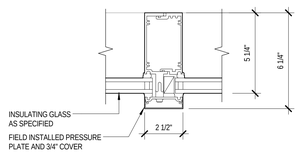


F CURTAIN WALL TYPE F
1/4" = 1'-0"

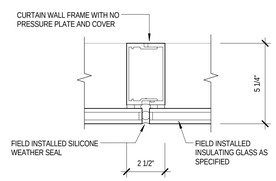
GLAZING TYPES:

GL-1 INSULATED GLASS
GL-2 SPANDREL GLASS
GL-3 INSULATED GLASS WITH TEMPERED GLASS ON INTERIOR

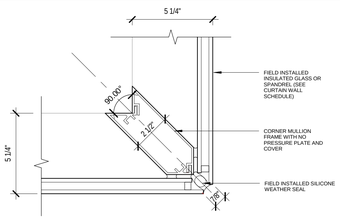
CURTAIN WALL SCHEDULE



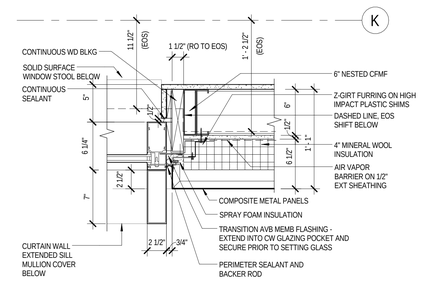
2 PLAN DETAIL AT CURTAIN WALL TYPICAL INTERM VERTICAL FRAME WITH 3/4" MULLION COVER
SCALE: 3" = 1'-0"



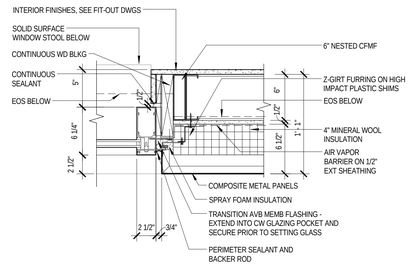
6 PLAN DETAIL OF CW INTERMEDIATE VERTICAL FRAME WITH NO PRESSURE PLATE AND COVER
SCALE: 3" = 1'-0"



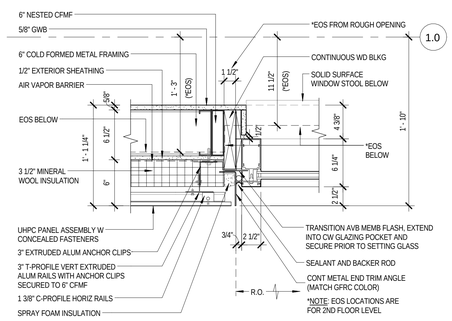
7 PLAN DETAIL AT CURTAIN WALL CORNER MULLION
SCALE: 3" = 1'-0"



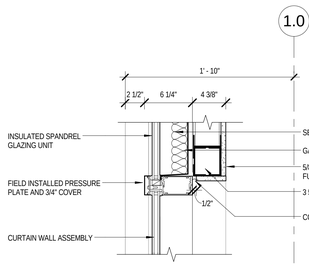
3 PLAN DETAIL OF CURTAIN WALL JAMB WITH 7" EXTENDED MULLION COVER
SCALE: 1 1/2" = 1'-0"



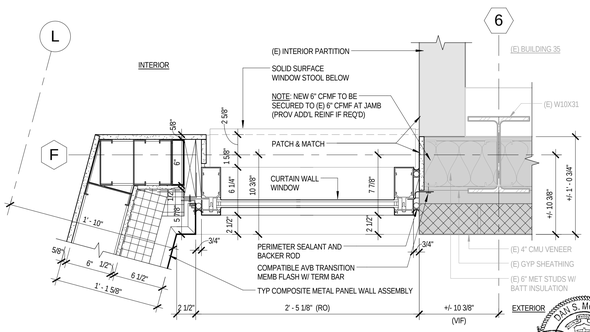
4 PLAN DETAIL OF CURTAIN WALL JAMB
SCALE: 1 1/2" = 1'-0"



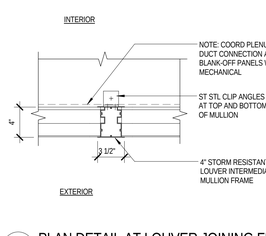
8 PLAN DETAIL OF CURTAIN WALL JAMB AT GFRC WALL
SCALE: 1 1/2" = 1'-0"



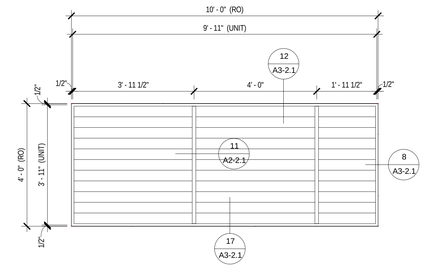
9 SECTION DETAIL OF CURTAIN WALL AT STAIRS
SCALE: 1 1/2" = 1'-0"



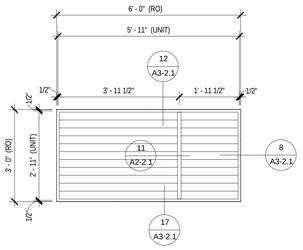
10 PLAN DETAIL OF CURTAIN WALL WINDOW AT (E) COL LINE F
SCALE: 1 1/2" = 1'-0"



11 PLAN DETAIL AT LOUVER JOINING FRAME
SCALE: 1 1/2" = 1'-0"



A LOUVER - TYPE A
1/2" = 1'-0"



B LOUVER - TYPE B
1/2" = 1'-0"

LOUVER SCHEDULE

NOTE: STORM-RESISTANT ALUMINUM LOUVERS. COORDINATE BLANK-OFF PANELS AND DUCT ATTACHMENT WITH MECHANICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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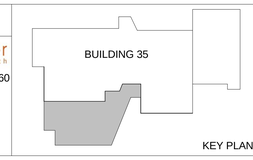


KEY PLAN

N

Drawing Title
CURTAIN WALL SCHEDULE AND DETAILS

Designed By: Approver
Checked By: Approver
Approved By: Approver

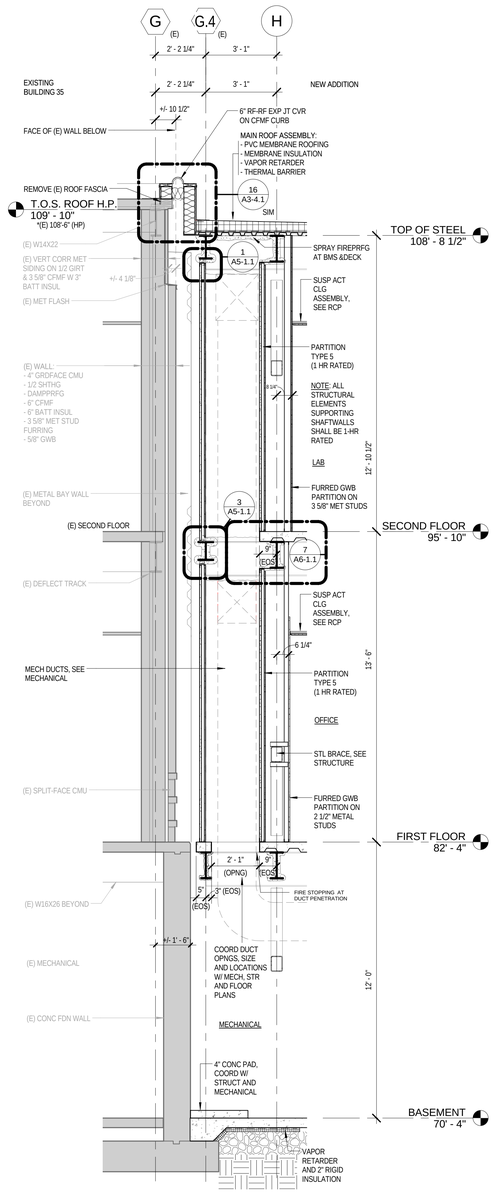
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale: As indicated
Location

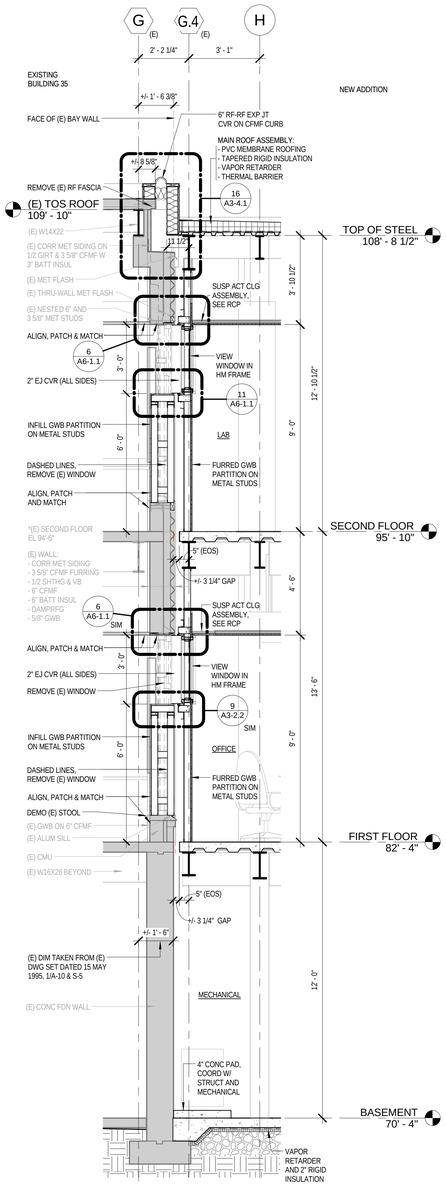
Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: A2-2.1

Office of Facilities
Department of Veterans Affairs

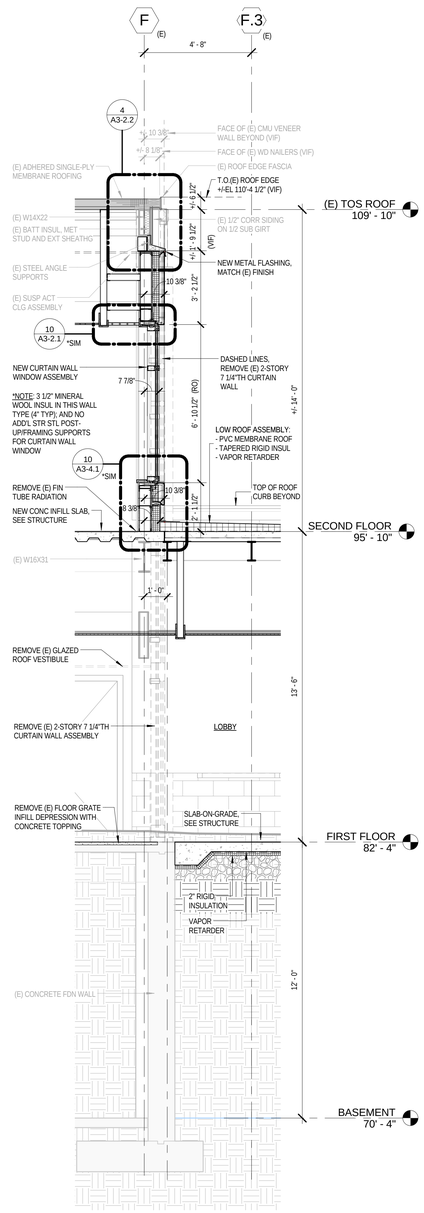
VA FORM 08-6231



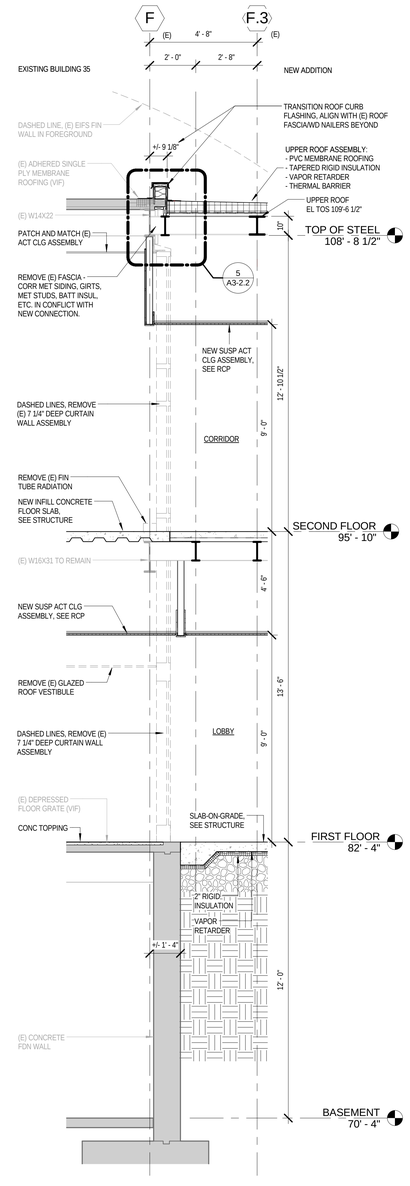
1 WALL SECTION AT (E) EAST INTERFACE
SCALE: 3/8" = 1'-0"



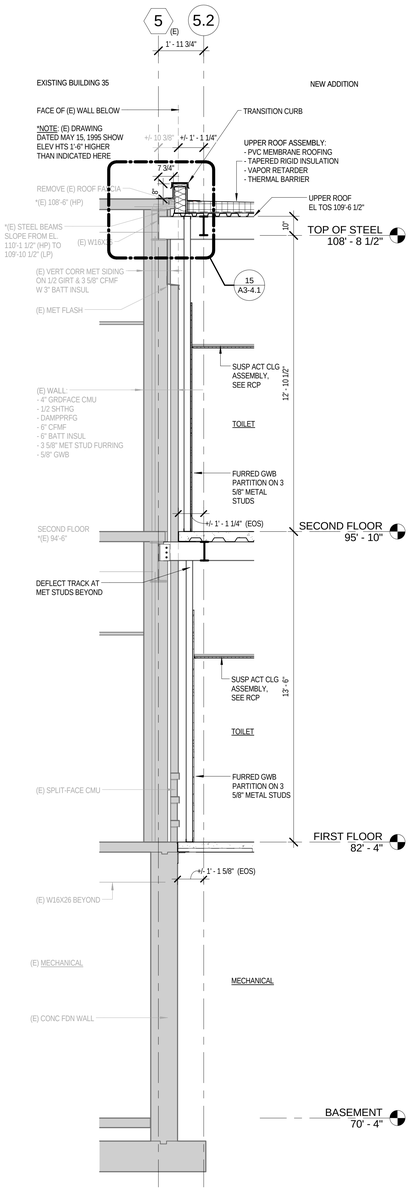
2 WALL SECTION AT (E) EAST INTEFACE
SCALE: 3/8" = 1'-0"



3 WALL SECTION AT (E) EAST CURTAIN WALL INTERFACE (LOW ROOF)
SCALE: 3/8" = 1'-0"



4 WALL SECTION AT (E) EAST CURTAIN WALL INTERFACE (HIGH ROOF)
SCALE: 3/8" = 1'-0"



5 WALL SECTION AT (E) NORTH INTERFACE
SCALE: 3/8" = 1'-0"

NOTES:
FLOOR HEIGHT ELEVATIONS INDICATED IN ARCH & STRUCTURAL SETS DATED 15 MAY 1995 HAVE BEEN ADJUSTED PROPORTIONALLY REFLECT CURRENT SURVEY HEIGHTS AS FOLLOWS:

FLOOR LEVEL	15 MAY 1995 SETS	CURRENT SET
BASEMENT	EL 69'-0"	EL 70'-4"
FIRST FLOOR	EL	

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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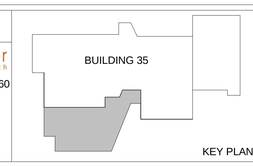


KEY PLAN

N

Drawing Title
WALL SECTIONS

Designed By: Approver
Checked By: Approver
Approved By: Approver

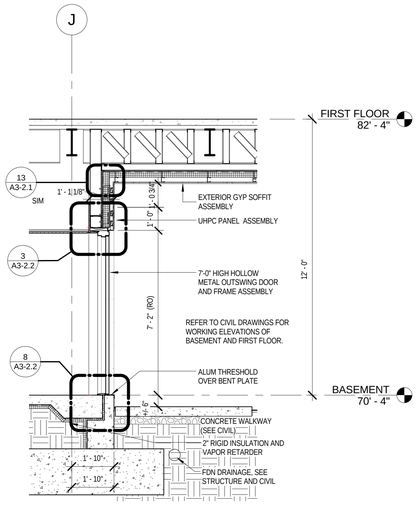
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 3/8" = 1'-0"
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No. A3-1.1

Office of Facilities
Department of Veterans Affairs

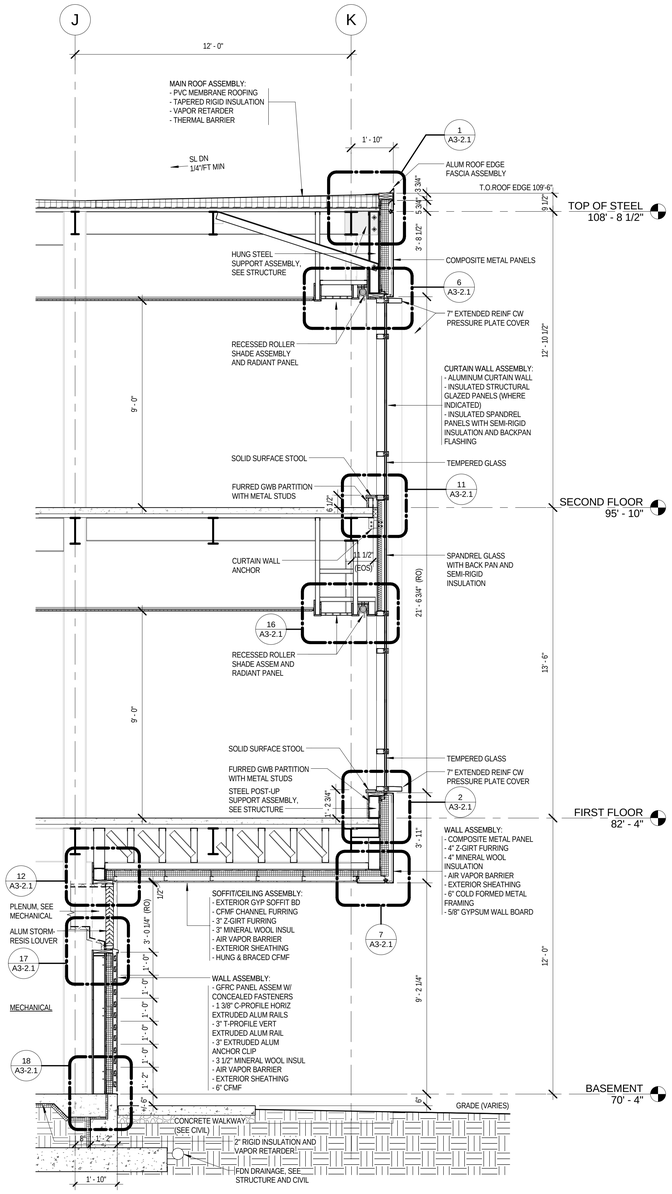
VA FORM 08-6231



1 PARTIAL WALL SECTION AT EAST - GFRC

SCALE: 3/8" = 1'-0"

REFER TO CIVIL DRAWINGS FOR WORKING ELEVATIONS OF BASEMENT AND FIRST FLOOR.



2 PARTIAL WALL SECTION AT EAST - GFRC

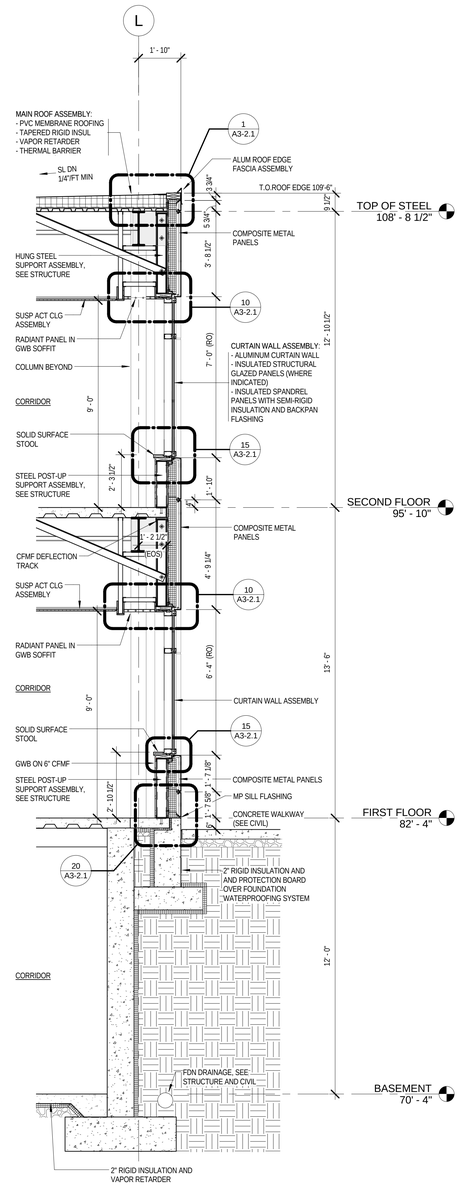
SCALE: 3/8" = 1'-0"

REFER TO CIVIL DRAWINGS FOR WORKING ELEVATIONS OF BASEMENT AND FIRST FLOOR.

3 WALL SECTION AT EAST

SCALE: 3/8" = 1'-0"

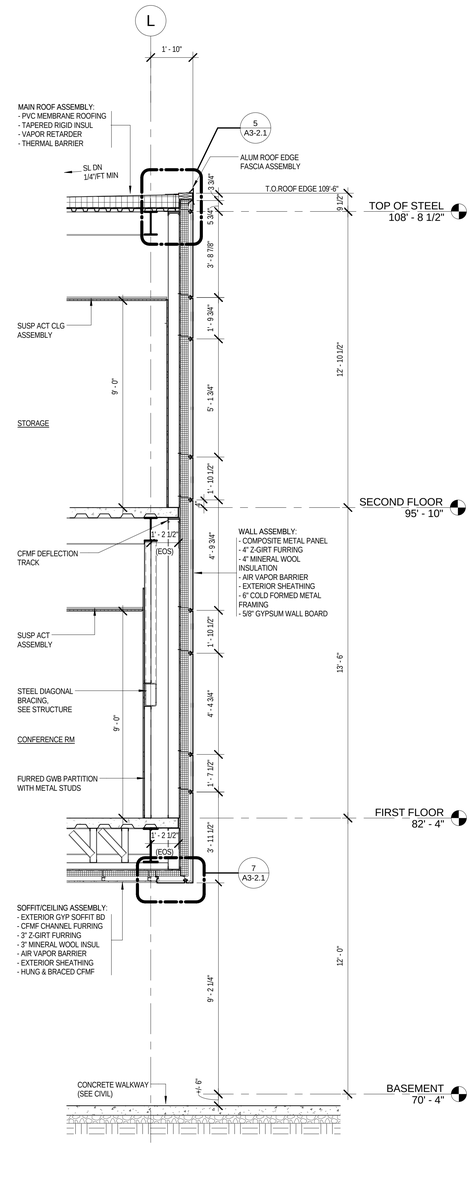
REFER TO CIVIL DRAWINGS FOR WORKING ELEVATIONS OF BASEMENT AND FIRST FLOOR.



4 WALL SECTION AT NORTH CURTAIN WALL

SCALE: 3/8" = 1'-0"

REFER TO CIVIL DRAWINGS FOR WORKING ELEVATIONS OF BASEMENT AND FIRST FLOOR.



5 WALL SECTION AT NORTH METAL PANELS

SCALE: 3/8" = 1'-0"

REFER TO CIVIL DRAWINGS FOR WORKING ELEVATIONS OF BASEMENT AND FIRST FLOOR.

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

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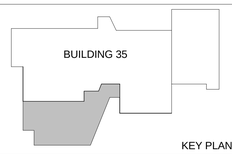


KEY PLAN

N

Drawing Title
WALL SECTIONS

Designed By: Approver
Checked By: Approver
Approved By: Approver

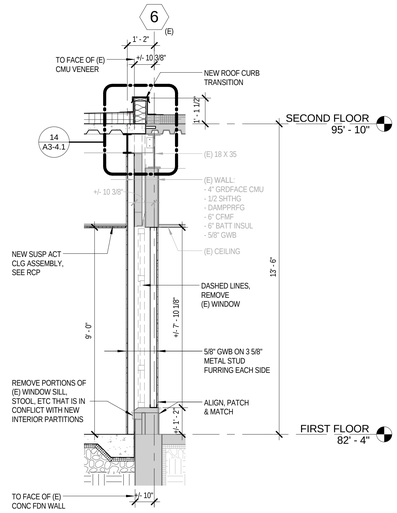
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 3/8" = 1'-0"
Location

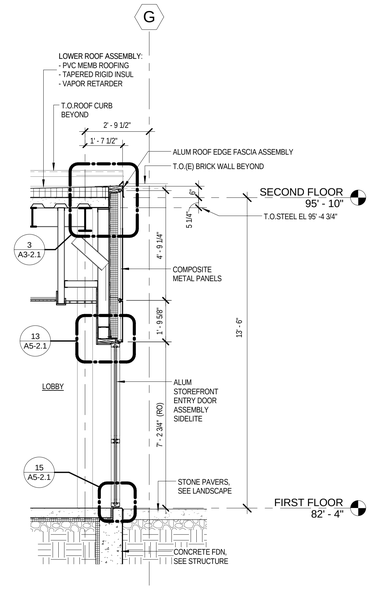
Date 6/30/2015
VA Project No. 650-338
Drawing No. A3-1.2

Office of Facilities
Department of Veterans Affairs

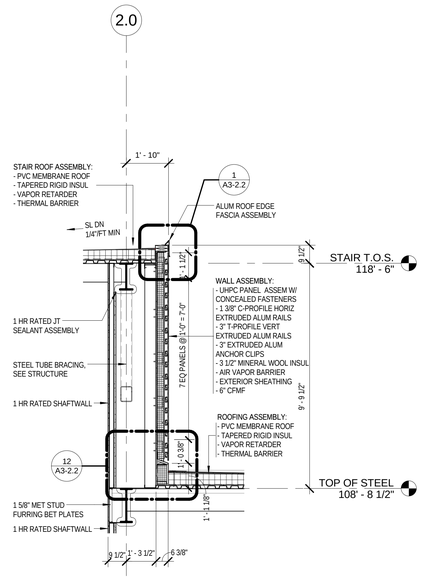
VA FORM 08-6231



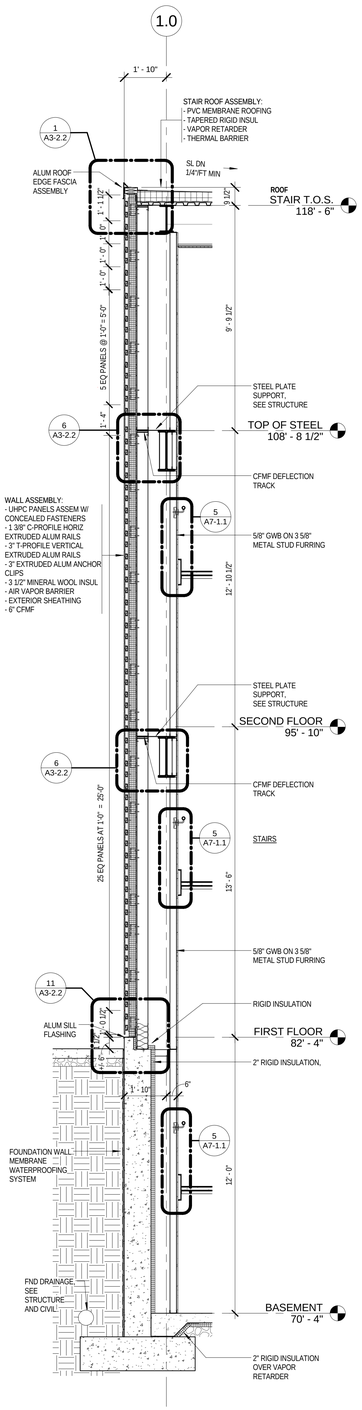
1 WALL SECTION OF UPPER ROOF AT (E) COL LINE 6
SCALE: 3/8" = 1'-0"



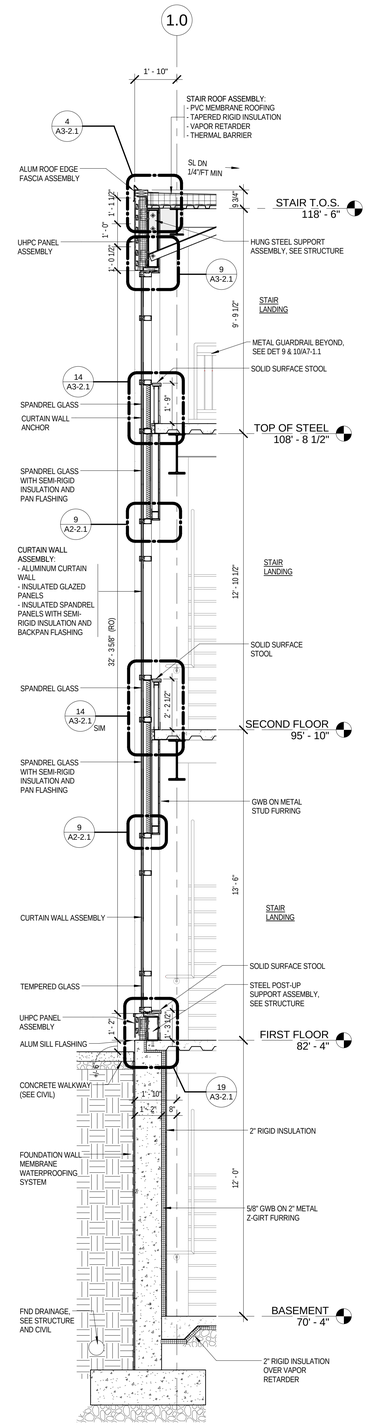
2 SECTION DETAIL AT EAST ENTRY SIDELITE
SCALE: 3/8" = 1'-0"



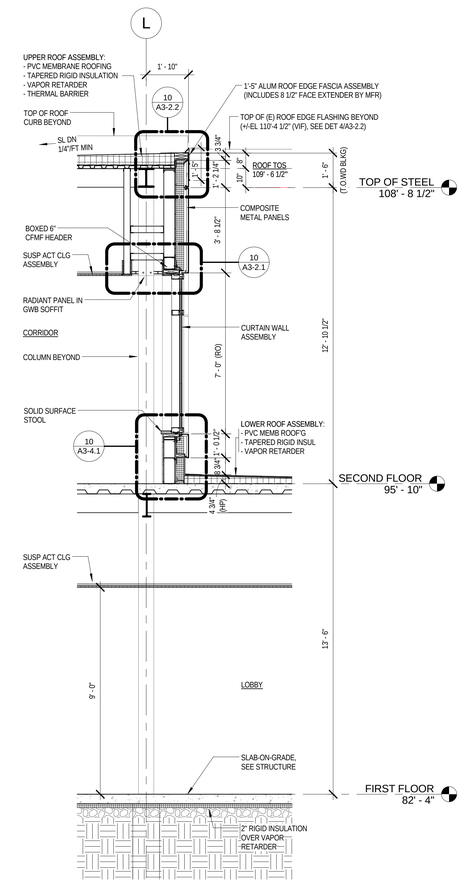
3 WALL SECTION AT STAIRS AND ROOF
SCALE: 3/8" = 1'-0"



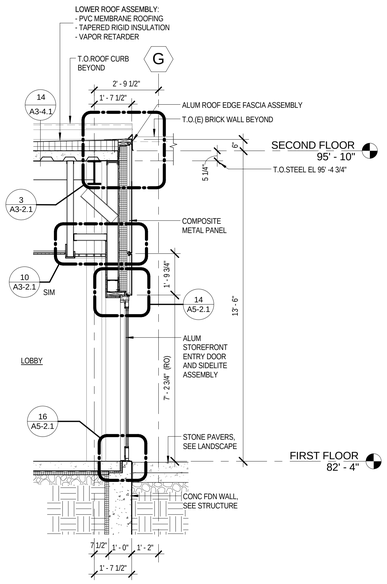
7 WALL SEC AT STAIRS - GFRC PANELS
SCALE: 3/8" = 1'-0"



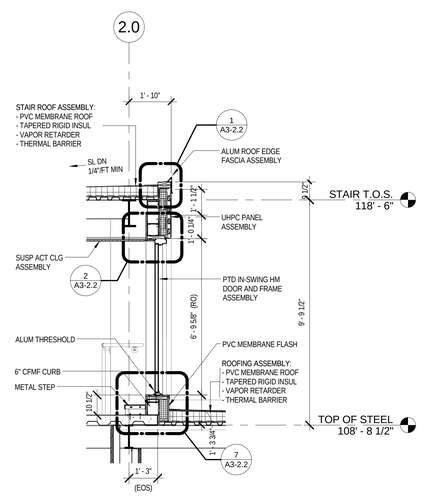
8 WALL SECTION AT STAIRS - CURTAIN WALL
SCALE: 3/8" = 1'-0"



4 WALL SECTION OF UPPER & LOWER ROOFS AT LOBBY
SCALE: 3/8" = 1'-0"



5 SECTION DETAIL AT EAST ENTRY DOOR
SCALE: 3/8" = 1'-0"



6 WALL SECTION AT STAIRS - ROOF DOOR
SCALE: 3/8" = 1'-0"

DAN S. MORRIS
STATE OF MASSACHUSETTS
REGISTERED ARCHITECT

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FULLY SPRINKLERED

Number	Date	Revision

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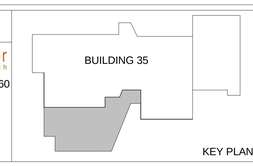


KEY PLAN

N

Drawing Title
WALL SECTIONS

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #

Scale
3/8" = 1'-0"

Location

Date
6/30/2015

VA Project No.
650-338

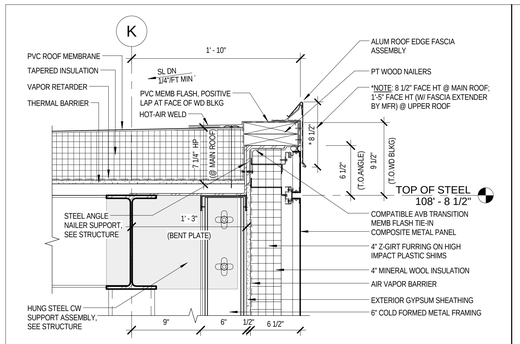
Drawing No.
A3-1.3

Office of Facilities

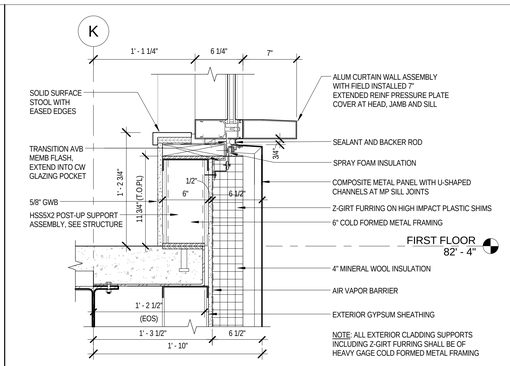
Department of Veterans Affairs

VA FORM 08-6231

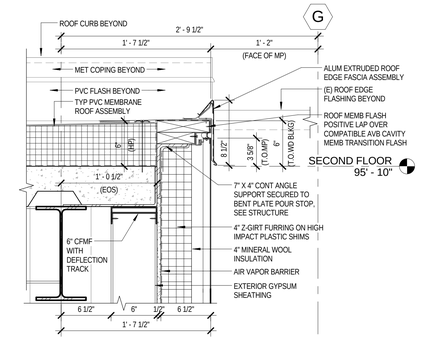
DATE & TIME PRINTED: 6/26/2015 3:17:09 PM C:\Users\FXhang\Documents\VA\R1 - Research Labs_FXhang.rvt



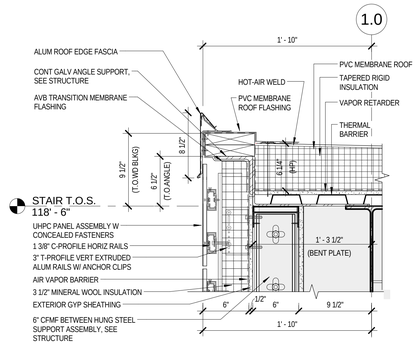
1 SECTION DETAIL AT ROOF EDGE FASCIA (CW SUPPORT HANGER)
SCALE: 1 1/2" = 1'-0"



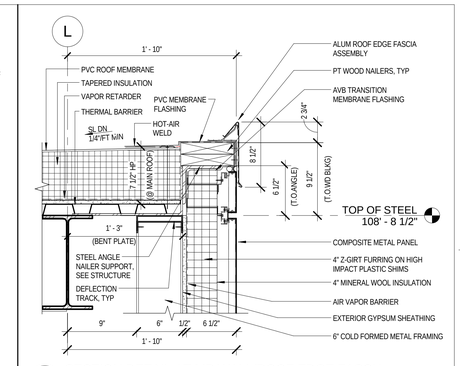
2 SECTION DETAIL AT CW SILL - 1ST FL
SCALE: 1 1/2" = 1'-0"



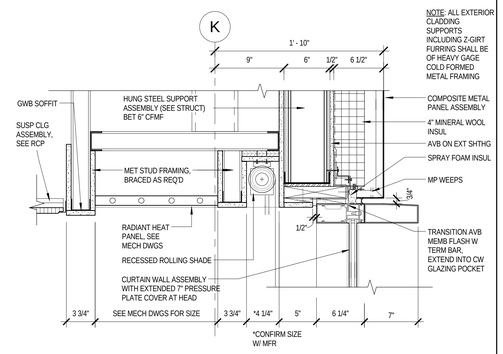
3 SECTION DETAIL AT LOBBY LOWER ROOF EDGE
SCALE: 1 1/2" = 1'-0"



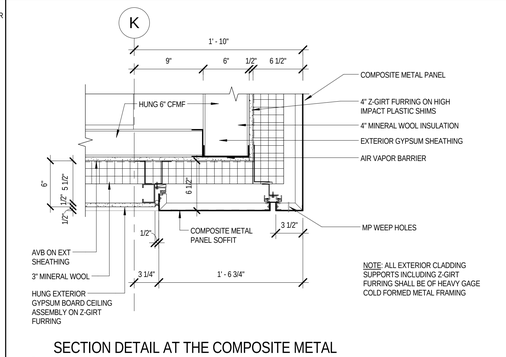
4 SECTION DETAIL AT UHPC/ROOF EDGE FASCIA
SCALE: 1 1/2" = 1'-0"



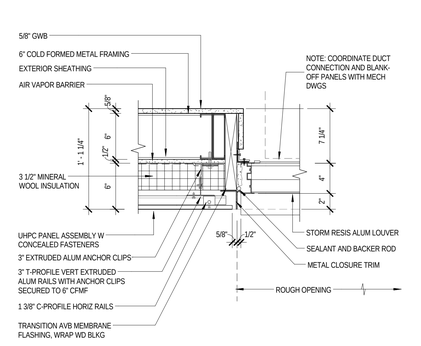
5 SECTION DETAIL AT MP WALL/ROOF EDGE FASCIA
SCALE: 1 1/2" = 1'-0"



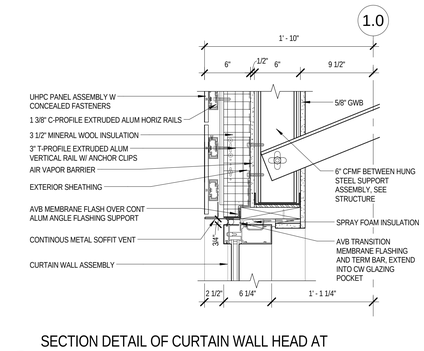
6 SECTION DETAIL AT CURTAIN WALL HEAD
SCALE: 1 1/2" = 1'-0"



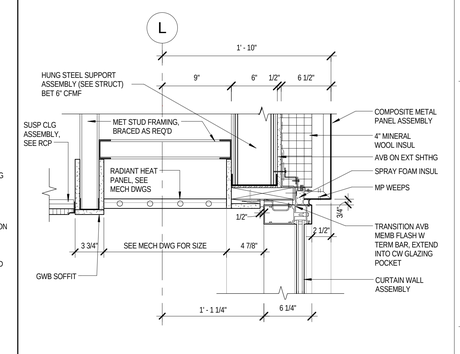
7 SECTION DETAIL AT THE COMPOSITE METAL PANEL AND GYPSUM EXTERIOR CEILING/SOFFIT
SCALE: 1 1/2" = 1'-0"



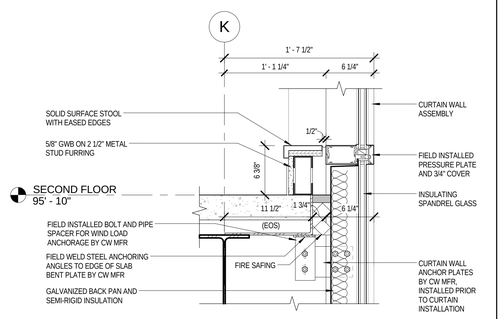
8 PLAN DETAIL OF LOUVER JAMB AT UHPC WALL
SCALE: 1 1/2" = 1'-0"



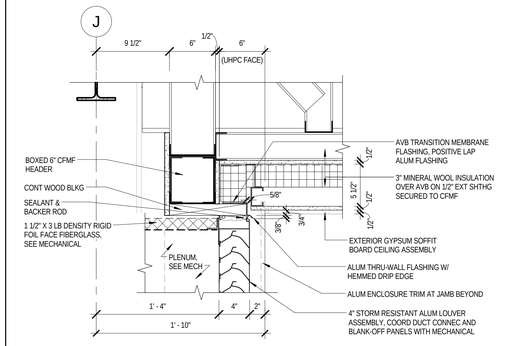
9 SECTION DETAIL OF CURTAIN WALL HEAD AT STAIRS
SCALE: 1 1/2" = 1'-0"



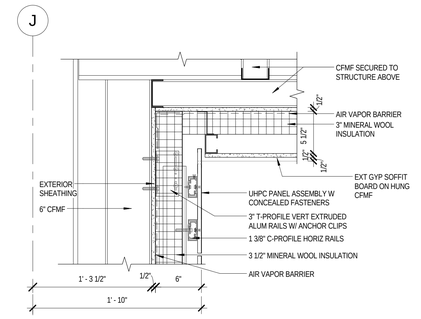
10 SECTION DETAIL AT CURTAIN WALL HEAD
SCALE: 1 1/2" = 1'-0"



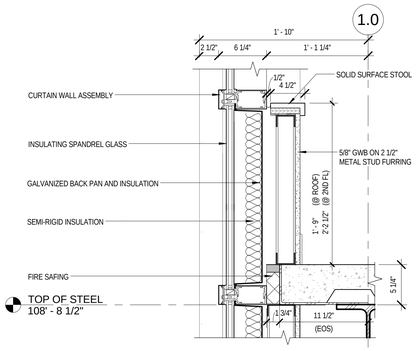
11 SECTION DETAIL AT CURTAIN WALL SILL ANCHOR AT 2ND FLOOR
SCALE: 1 1/2" = 1'-0"



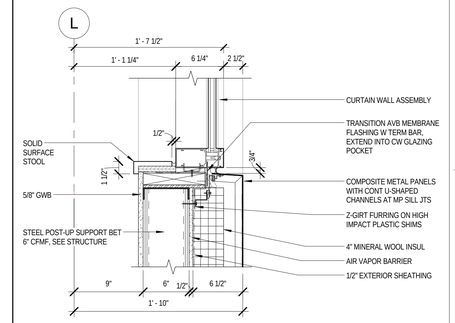
12 SECTION DETAIL OF LOUVER HEAD AT GFRC WALL
SCALE: 1 1/2" = 1'-0"



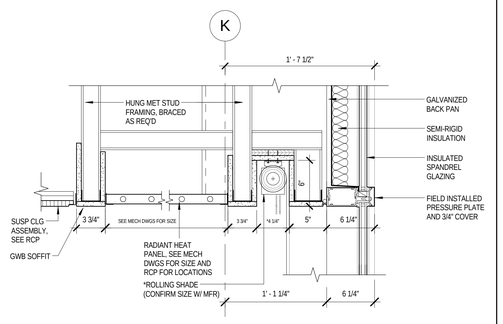
13 SECTION DETAIL AT UHPC WALL AND EXTERIOR SOFFIT
SCALE: 1 1/2" = 1'-0"



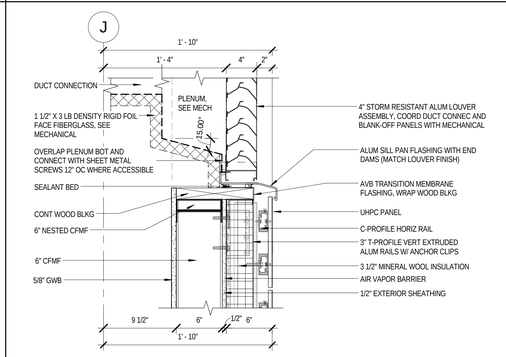
14 SECTION DETAIL OF CW SILL AT STAIR LANDING
SCALE: 1 1/2" = 1'-0"



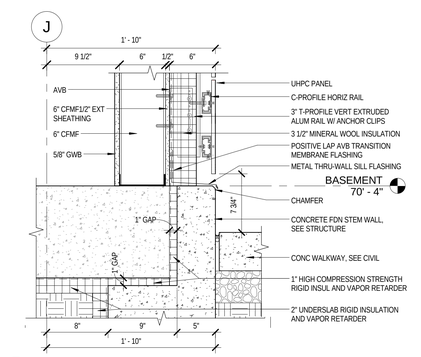
15 SECTION DETAIL OF CURTAIN WALL SILL AT METAL PANEL WALL
SCALE: 1 1/2" = 1'-0"



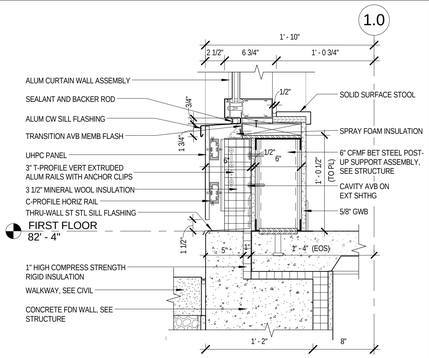
16 SECTION DETAIL AT CURTAIN WALL HEAD
SCALE: 1 1/2" = 1'-0"



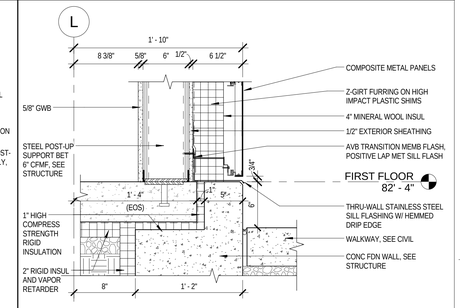
17 SECTION DETAIL AT LOUVER SILL AT UHPC WALL
SCALE: 1 1/2" = 1'-0"



18 SECTION DETAIL OF UHPC SILL AT FDN WALL
SCALE: 1 1/2" = 1'-0"



19 SECTION DETAIL OF CW SILL AT STAIR FDN WALL
SCALE: 1 1/2" = 1'-0"



20 SECTION DETAIL OF METAL PANEL SILL AT FDN
SCALE: 1 1/2" = 1'-0"

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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CIVIL
PARE Corporation
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FITZMEYER & TOCCI
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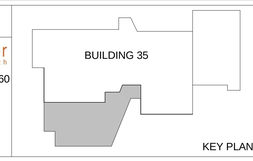
morris+switzer
environments for health
11 Drydock Ave, Suite 2060
Boston, MA 02210
T: 617.772.0260
F: 617.772.0261
www.morrisswitzer.com



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Drawing Title
EXTERIOR DETAILS

Designed By: Approver
Checked By: Approver
Approved By: Approver

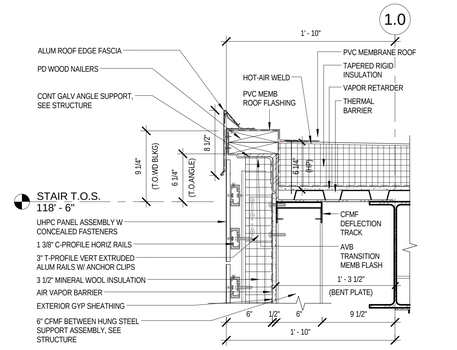
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1 1/2" = 1'-0"
Location

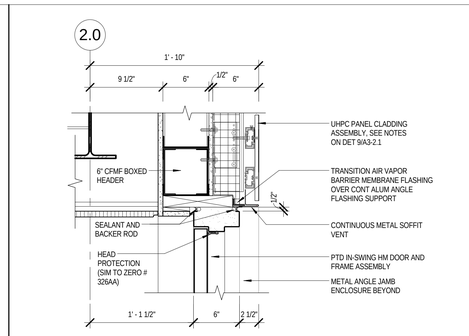
Date 6/30/2015
VA Project No. 650-338
Drawing No. A3-2.1

Office of Facilities
Department of Veterans Affairs

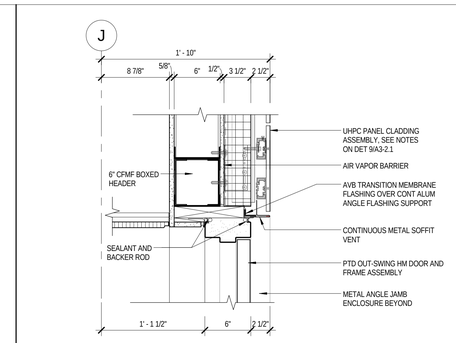
VA FORM 08-6231



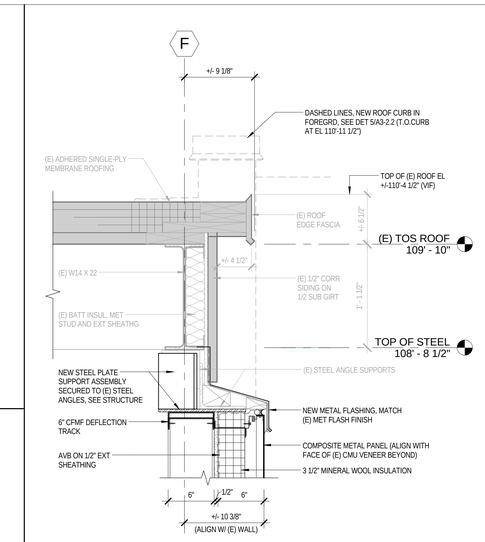
1 SECTION DETAIL AT STAIR ROOF EDGE
SCALE: 1 1/2" = 1'-0"



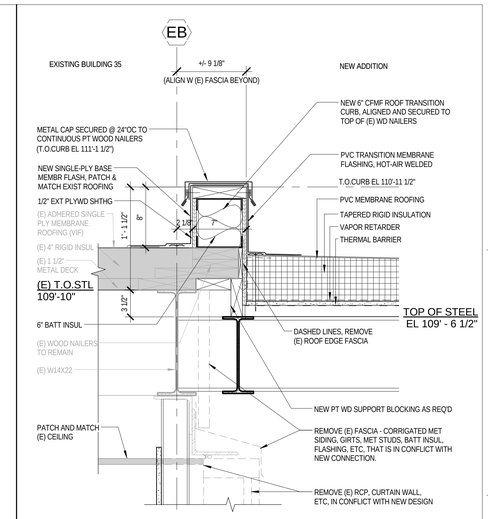
2 SECTION DETAIL AT ROOF IN-SWING DOOR HEAD
SCALE: 1 1/2" = 1'-0"



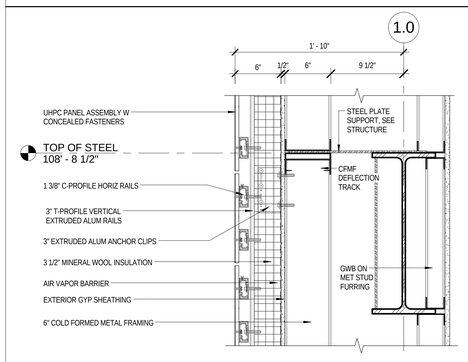
3 SECTION DETAIL AT OUT-SWING HM DOOR HEAD
SCALE: 1 1/2" = 1'-0"



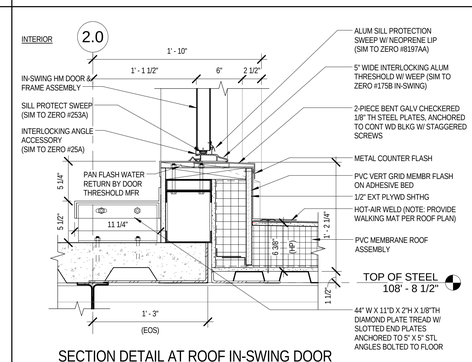
4 SECTION DETAIL AT (E) ROOF EDGE AT COL LINE F
SCALE: 1 1/2" = 1'-0"



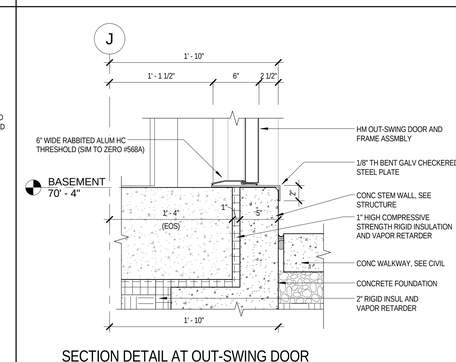
5 SECTION DETAIL OF ROOF CURB AT COL LINE EB
SCALE: 1 1/2" = 1'-0"



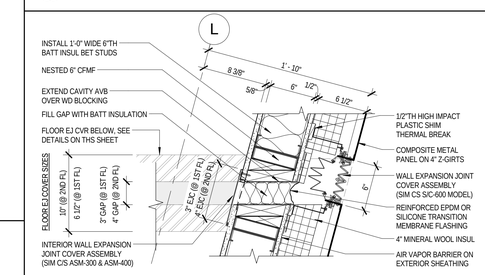
6 SECTION DETAIL AT STAIRS
SCALE: 1 1/2" = 1'-0"



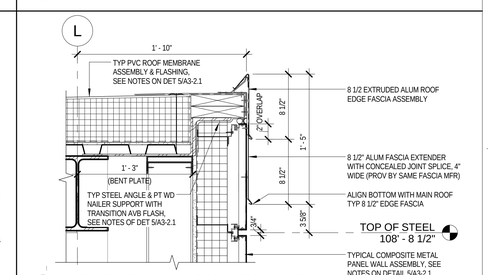
7 SECTION DETAIL AT ROOF IN-SWING DOOR THRESHOLD
SCALE: 1 1/2" = 1'-0"



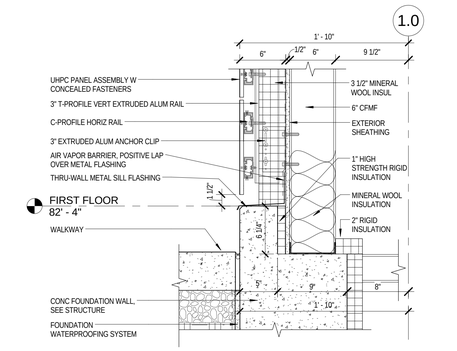
8 SECTION DETAIL AT OUT-SWING DOOR THRESHOLD
SCALE: 1 1/2" = 1'-0"



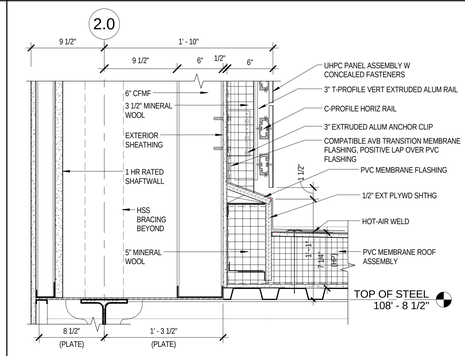
9 PLAN DETAIL OF WALL EXP JT COVER ASSEMBLIES
SCALE: 1 1/2" = 1'-0"



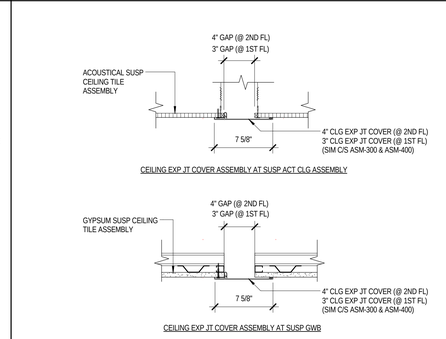
10 SECTION DETAIL AT ROOF EDGE FASCIA
SCALE: 1 1/2" = 1'-0"



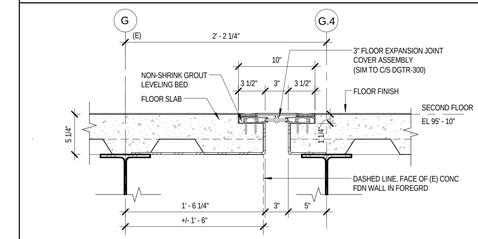
11 SECTION DETAIL AT STAIR FOUNDATION WALL
SCALE: 1 1/2" = 1'-0"



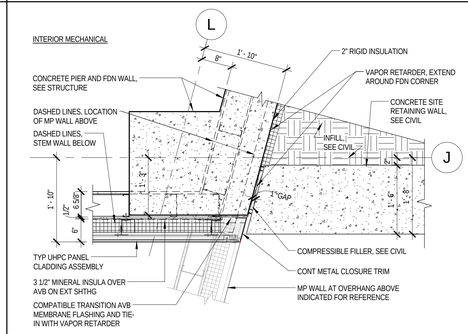
12 SECTION DETAIL AT STAIRS AND MAIN ROOF
SCALE: 1 1/2" = 1'-0"



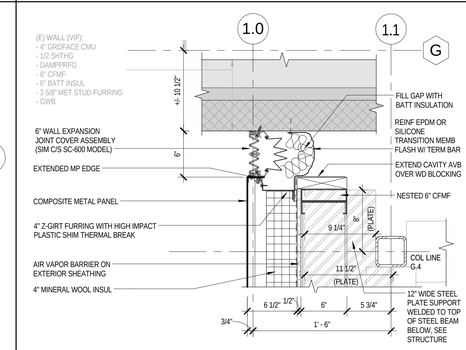
13 CEILING EXPANSION JOINT COVER ASSEMBLIES
SCALE: 1 1/2" = 1'-0"



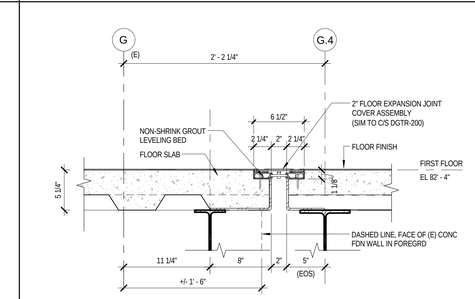
14 SECTION DETAIL AT 3 INCH FLOOR EXP JT COVER (2ND FL)
SCALE: 1 1/2" = 1'-0"



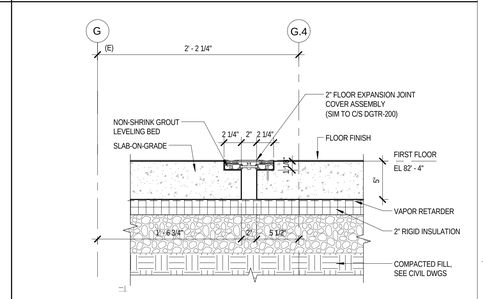
17 PLAN DETAIL OF BASEMENT CORNER AT COLUMN LINES J AND L
SCALE: 3/4" = 1'-0"



18 PLAN DETAIL AT 6" WALL EXP JT COVER (2ND FL)
SCALE: 1 1/2" = 1'-0"



19 SECTION DETAIL AT 2 INCH FLOOR EXP JT COVER (1ST FL)
SCALE: 1 1/2" = 1'-0"



20 SECTION DETAIL AT 2" FL EXP JT COVER (1ST FL)
SCALE: 1 1/2" = 1'-0"

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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CIVIL
PARE Corporation
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11 Drydock Ave, Suite 2060
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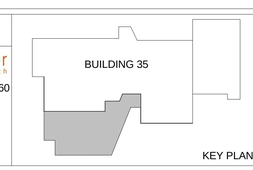
T: 617.772.0260
F: 617.772.0261
www.morrisswitzer.com



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Drawing Title
EXTERIOR DETAILS

Designed By: Approver
Checked By: Approver
Approved By: Approver

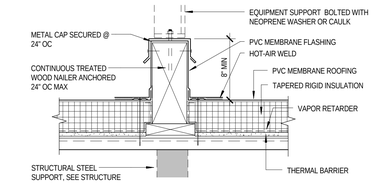
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale: As indicated
Location

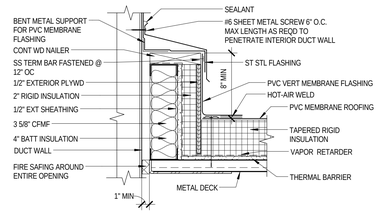
Date: 6/30/2015
VA Project No. 650-338
Drawing No. A3-2.2

Office of Facilities
Department of Veterans Affairs

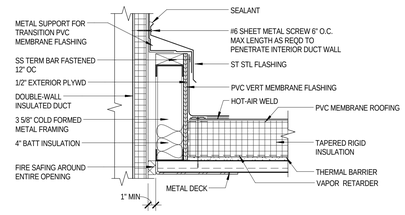
VA FORM 08-6231



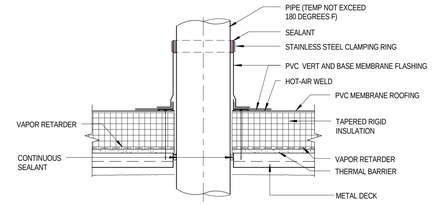
1 SECTION DETAIL OF SLEEPER CURB AT ROOF
SCALE: 1 1/2" = 1'-0"



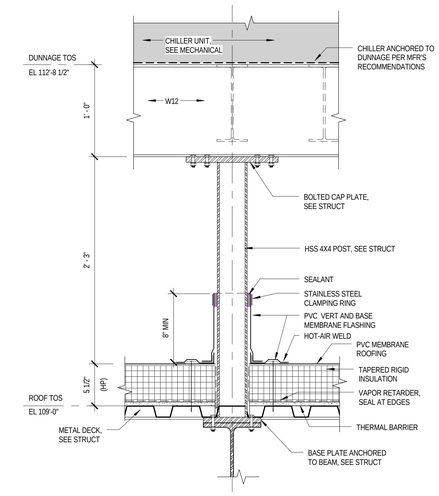
2 SECTION DETAIL OF CURB FOR DUCT PENETRATION AT ROOF
SCALE: 1 1/2" = 1'-0"



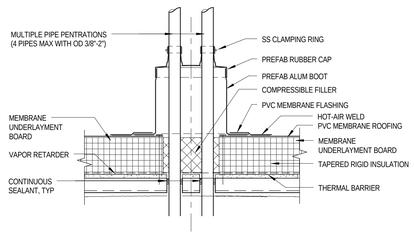
3 SECTION DETAIL OF CURB FOR INSULATED DUCT PENETRATION AT ROOF
SCALE: 1 1/2" = 1'-0"



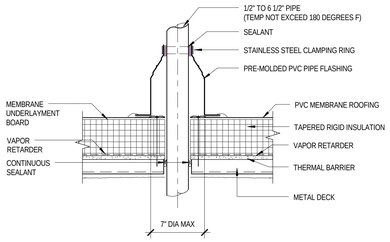
4 SECTION DETAIL OF LARGE PIPE PENETRATION AT ROOF
SCALE: 1 1/2" = 1'-0"



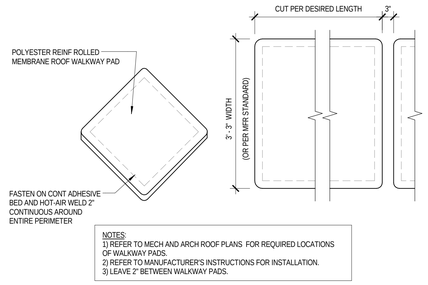
9 SECTION DETAIL OF CHILLER DUNNAGE POST-UP FLASHING PENETRATION AT ROOF
SCALE: 1 1/2" = 1'-0"



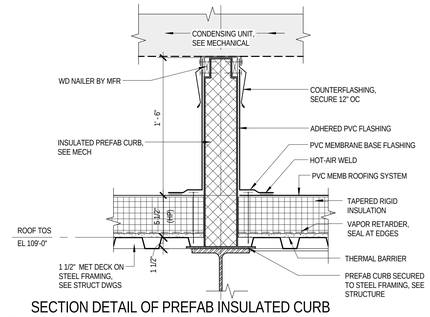
5 SECTION DETAIL OF PREFAB BOOT ASSEMBLY FOR MULTIPLE-PIPE PENETRATIONS AT ROOF
SCALE: 1 1/2" = 1'-0"



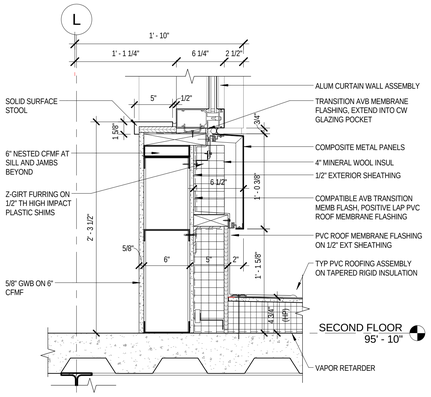
6 SECTION DETAIL OF PRE-MOLDED PVC BOOT FOR SMALL PIPE PENETRATION AT ROOF
SCALE: 1 1/2" = 1'-0"



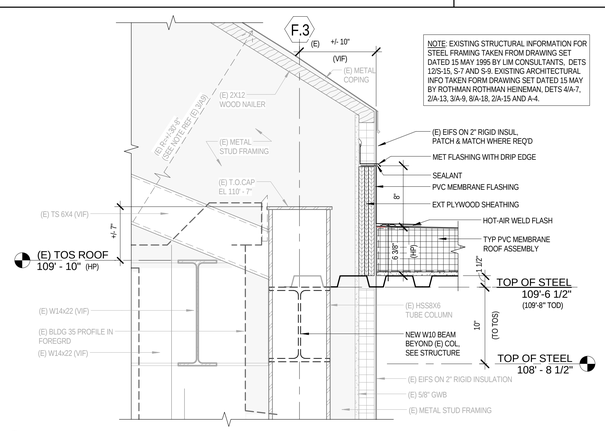
7 MEMBRANE ROOF PAD FOR PVC ROOFING
SCALE: 3/4" = 1'-0"



8 SECTION DETAIL OF PREFAB INSULATED CURB FLASHING AT ROOF
SCALE: 1 1/2" = 1'-0"

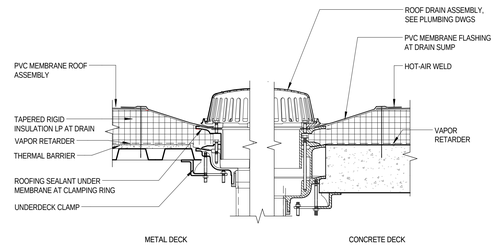


10 SECTION DETAIL OF MP WALL AT LOWER ROOF
SCALE: 1 1/2" = 1'-0"

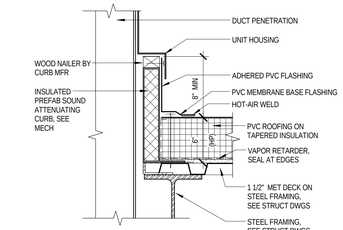


NOTE: EXISTING STRUCTURAL INFORMATION FOR STEEL FRAMING TAKEN FROM DRAWING SET DATED 15 MAY 1995 BY LIM CONSULTANTS, DETS 12/S-15, S-7 AND S-9. EXISTING ARCHITECTURAL INFO TAKEN FORM DRAWING SET DATED 15 MAY BY ROTHMAN ROTHMAN HEINEMAN, DETS 4/A-7, 2/A-13, 3/A-9, 8/A-18, 2/A-15 AND A-4.

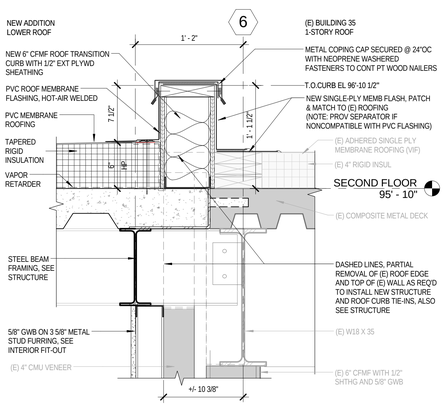
11 SECTION DETAIL AT ROOF FLASHING & (E) EIFS FIN
SCALE: 1 1/2" = 1'-0"



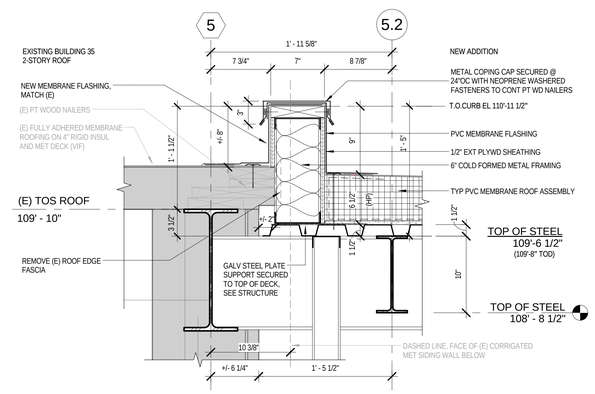
12 SECTION DETAIL OF ROOF DRAIN AT ROOF
SCALE: 1 1/2" = 1'-0"



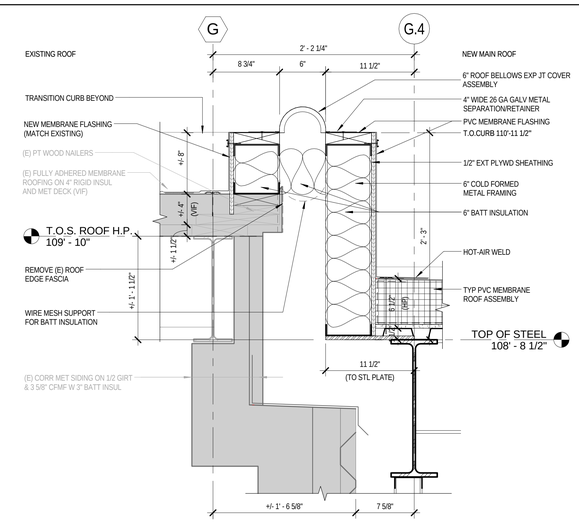
13 SECTION DETAIL OF PREFAB INSULATED CURB FLASHING AT ROOF
SCALE: 1 1/2" = 1'-0"



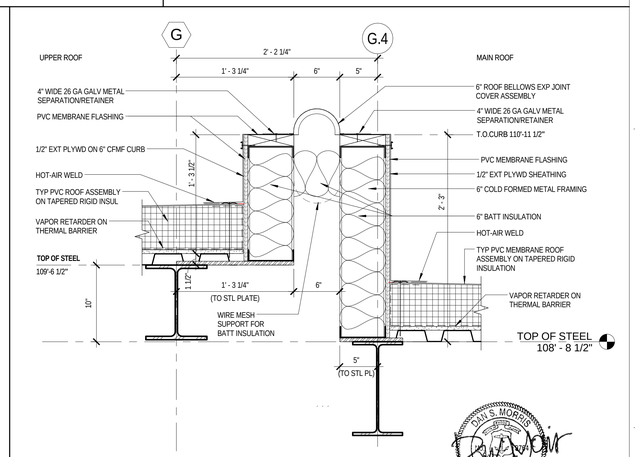
14 SECTION DETAIL OF ROOF CURB AT (E) COL LINE 6
SCALE: 1 1/2" = 1'-0"



15 SECTION DETAIL AT ROOF TRANSITIONS CURB
SCALE: 1 1/2" = 1'-0"



16 SECTION DETAIL AT 6" RF EXP JT CVR - INTERFACE
SCALE: 1 1/2" = 1'-0"



17 SECTION DETAIL OF 6 INCH EXPANSION JOINT COVER AT UPPER AND MAIN ROOFS
SCALE: 1 1/2" = 1'-0"

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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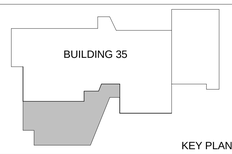


KEY PLAN

N

Drawing Title
ROOF DETAILS

Designed By: Approver
Checked By: Approver
Approved By: Approver

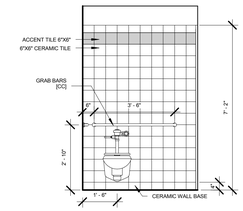
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale: As indicated
Location

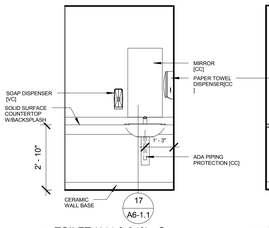
Date: 6/30/2015
VA Project No. 650-338
Drawing No.
A3-4.1

Office of Facilities
Department of Veterans Affairs

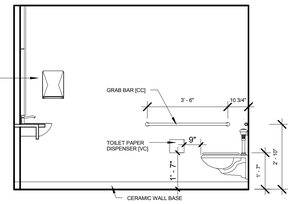
VA FORM 08-6231



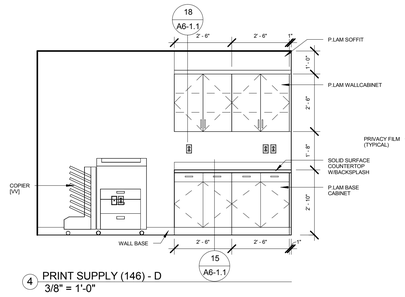
1 TOILET (144 & 240) - A
3/8" = 1'-0"



2 TOILET (144 & 240) - C
3/8" = 1'-0"



3 TOILET (144 & 240) - D
3/8" = 1'-0"



4 PRINT SUPPLY (146) - D
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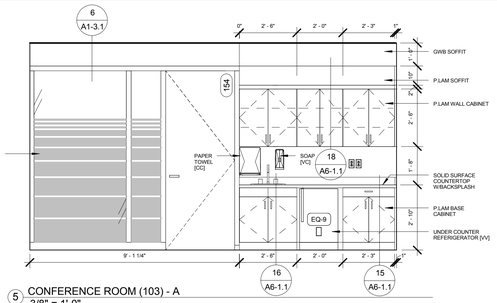
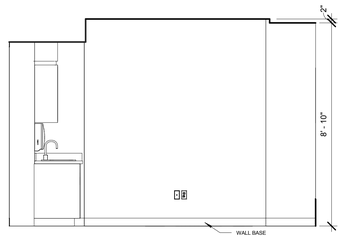


5 CONFERENCE ROOM (103) - A
3/8" = 1'-0"



6 CONFERENCE ROOM (103) - B
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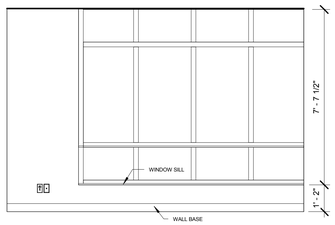

7 CONFERENCE ROOM (103) - C
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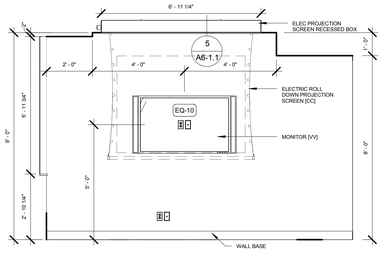

8 CONFERENCE ROOM (103) - D
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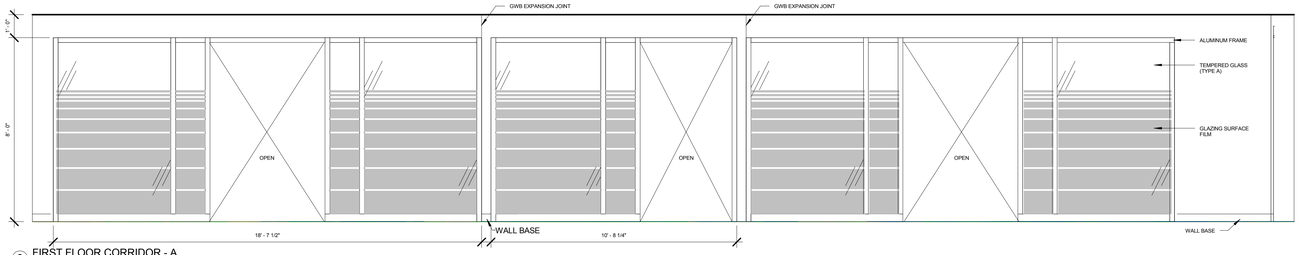
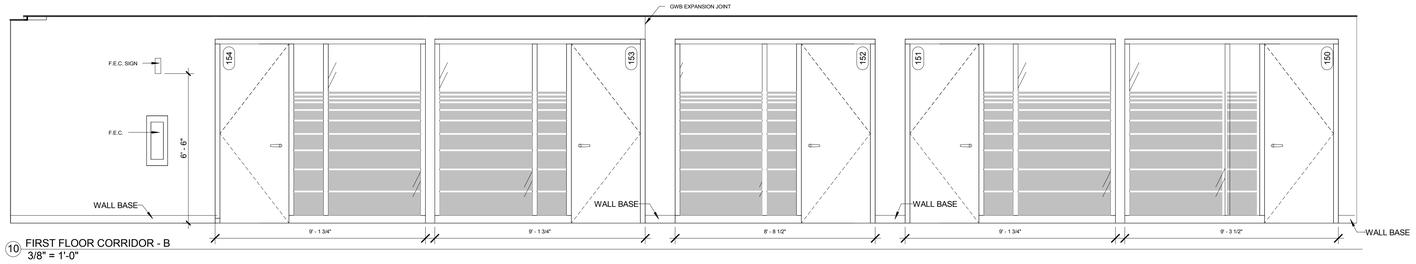
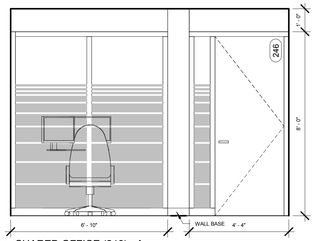


9 FIRST FLOOR CORRIDOR - A
3/8" = 1'-0"



10 FIRST FLOOR CORRIDOR - B
3/8" = 1'-0"



11 SHARED OFFICE (246) - A
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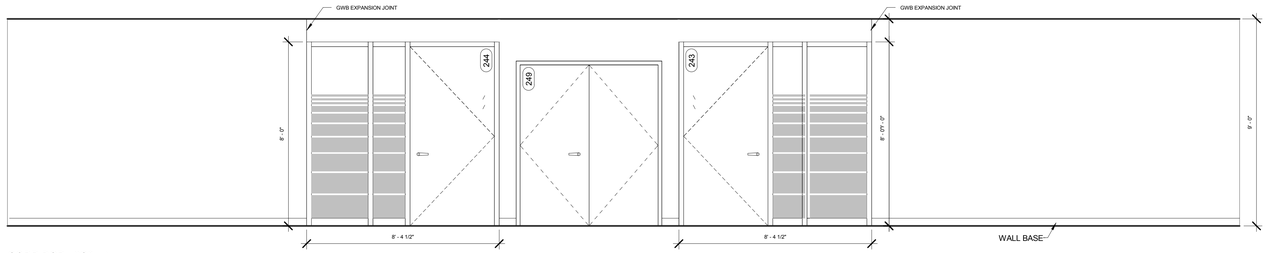
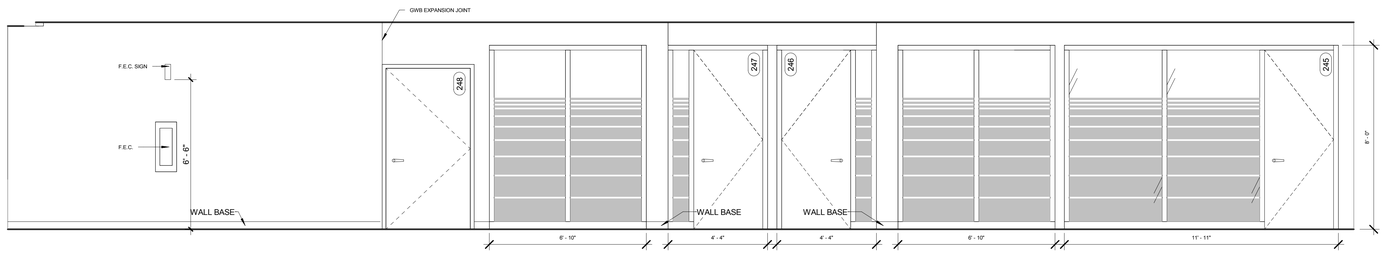
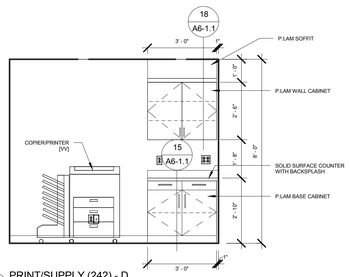


12 CORRIDOR - 2C6 - A
3/8" = 1'-0"



13 CORRIDOR - 2C6 - C
3/8" = 1'-0"



14 PRINT/SUPPLY (242) - D
3/8" = 1'-0"

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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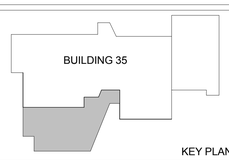


KEY PLAN

N

Drawing Title
INTERIOR ELEVATIONS

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #

Scale
3/8" = 1'-0"

Location

Date
6/30/2015

VA Project No.
650-338

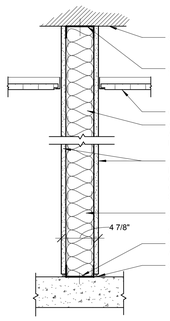
Drawing No.
A4-1.1

Office of Facilities

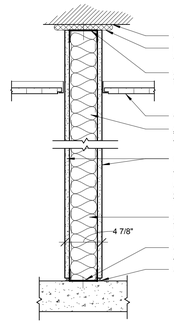
Department of Veterans Affairs

VA FORM 08-6231

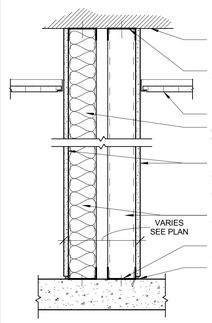
DATE & TIME PRINTED: 6/30/2015 11:55:38 AM C:\Users\administrator\Documents\VAR2 - Research Labs_AD\mirsitzer.rvt



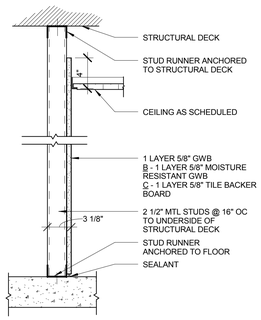
1 NON-RATED PARTITION



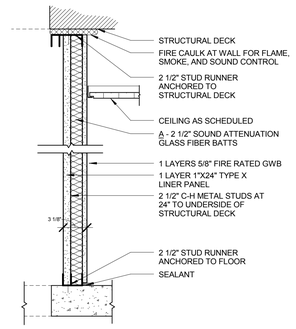
2 1 HOUR RATED PARTITION
UL DESIGN NUMBER: U419



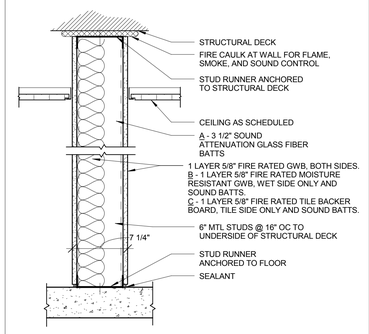
3 NON-RATED CHASE WALL



4 NON-RATED PARTITION
3 5/8" METAL STUD
4A NON-RATED PARTITION
2 1/2" METAL STUD

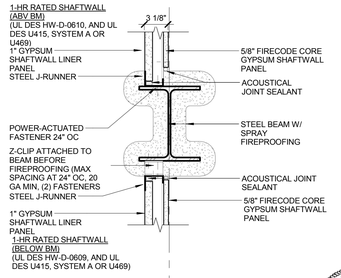


5 1 HOUR RATED SHAFT WALL
UL DESIGN NUMBER: U417



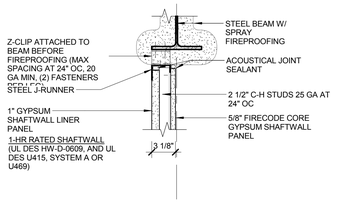
6 1 HOUR RATED PARTITION
UL DESIGN NUMBER: U419

G.4



3 SECTION DETAIL AT SHAFTWALL AND BEAM INTERFACE
SCALE: 1 1/2" = 1'-0"

G.4



1 SECTION DETAIL AT SHAFTWALL AND BEAM INTERFACE
SCALE: 1 1/2" = 1'-0"

DAN S. MORRIS REGISTERED ARCHITECT Commonwealth of Massachusetts

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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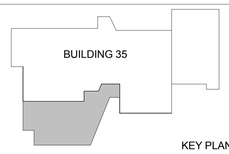


KEY PLAN

N

Drawing Title
INTERIOR PARTITION TYPES

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

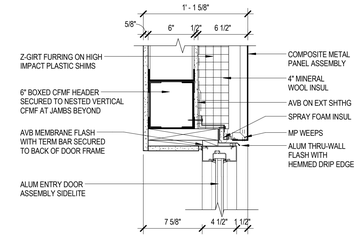
Building #
Scale 1 1/2" = 1'-0"
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No. A5-1.1

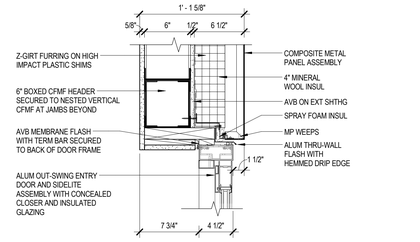
Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

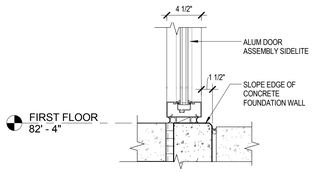
DATE & TIME PRINTED: 6/30/2015 11:29:42 AM C:\Users\administrator\Documents\VA\B1 - Research Lab_Administrator.rvt



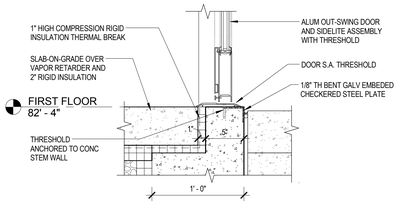
13 SECTION DETAIL AT ENTRY DOOR SIDELIGHT HEAD
SCALE: 1 1/2" = 1'-0"



14 SECTION DETAIL AT ENTRY DOOR HEAD
SCALE: 1 1/2" = 1'-0"



15 SECTION DETAIL AT ENTRY DOOR SIDELITE SILL
SCALE: 1 1/2" = 1'-0"



16 SECTION DETAIL AT ENTRY DOOR THRESHOLD
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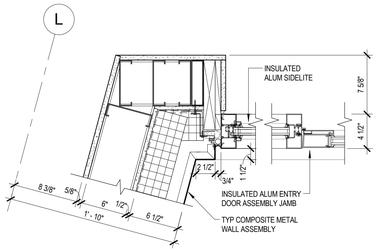
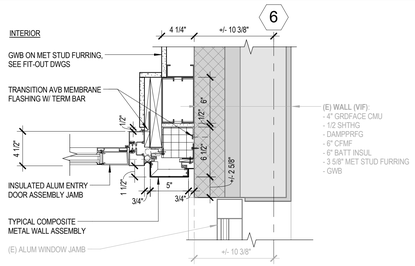
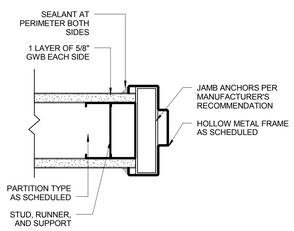


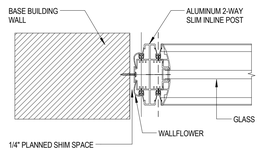
17 PLAN DETAIL AT ENTRANCE DOOR JAMB
SCALE: 1 1/2" = 1'-0"



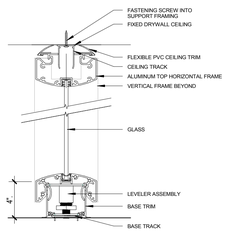
18 PLAN DETAIL AT ENTRY DOOR JAMB
SCALE: 1 1/2" = 1'-0"



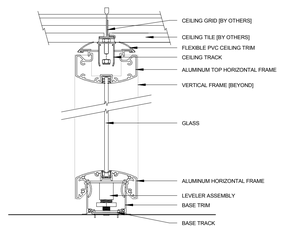
19 JAMB DETAIL-TYPICAL PARTITION
SCALE: 3" = 1'-0"



20 DEMOUNTABLE PARTITION JAMB
SCALE: 3" = 1'-0"



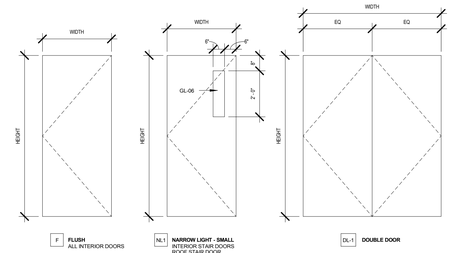
21 DEMOUNTABLE PARTITION - GLASS WALL TO GWB CEILING
SCALE: 3" = 1'-0"



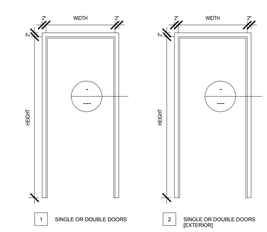
22 DEMOUNTABLE PARTITION - GLASS WALL TO ACT
SCALE: 3" = 1'-0"

DOOR & FRAME SCHEDULE

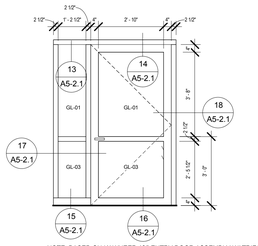
DOOR #	ROOM NAME	DOOR TYPE	DOOR MATERIAL	SIZE WIDTH	SIZE HEIGHT	ROBE HOOK	GLAZING TYPE	FRAME TYPE	FRAME MATERIAL	FRAME DETAILS HEAD	FRAME DETAILS JAMB	FRAME DETAILS SILL	HARDWARE GROUP	FIRE RATING	REMARKS
144	TOILET	F	WD	3' - 0"	7' - 0"	2		1	HM				4		
145	HSKP	F	WD	3' - 0"	7' - 0"			1	HM				1		
150	PRIVATE OFFICE	F	WD	3' - 0"	7' - 9 1/2"	1		*	ALUM				5		* REFER TO ELEVATIONS 5 THROUGH 12 BELOW
151	PRIVATE OFFICE	F	WD	3' - 0"	7' - 9 1/2"	1		*	ALUM				5		* REFER TO ELEVATIONS 5 THROUGH 12 BELOW
152	PRIVATE OFFICE	F	WD	3' - 0"	7' - 9 1/2"	1		*	ALUM				5		* REFER TO ELEVATIONS 5 THROUGH 12 BELOW
153	PRIVATE OFFICE	F	WD	3' - 0"	7' - 9 1/2"	1		*	ALUM				5		* REFER TO ELEVATIONS 5 THROUGH 12 BELOW
154	CONFERENCE ROOM	F	WD	3' - 0"	7' - 9 1/2"			*	ALUM				5		* REFER TO ELEVATIONS 5 THROUGH 12 BELOW
240	TOILET	F	WD	3' - 0"	7' - 0"	2		1	WD				4		
241	STORAGE	F	WD	3' - 0"	7' - 0"			1	HM				1		
243	LAB 2	F	WD	3' - 8"	7' - 9 1/2"			*	ALUM				8		* REFER TO ELEVATIONS 5 THROUGH 12 BELOW
244	LAB 1	F	WD	3' - 8"	7' - 9 1/2"			*	ALUM				8		* REFER TO ELEVATIONS 5 THROUGH 12 BELOW
245	SHARED OFFICE	F	WD	3' - 0"	7' - 9 1/2"	2		*	ALUM				5		* REFER TO ELEVATIONS 5 THROUGH 12 BELOW
246	SHARED OFFICE	F	WD	3' - 0"	7' - 9 1/2"	2		*	ALUM				5		* REFER TO ELEVATIONS 5 THROUGH 12 BELOW
247	SHARED OFFICE	F	WD	3' - 0"	7' - 9 1/2"	2		*	ALUM				5		* REFER TO ELEVATIONS 5 THROUGH 12 BELOW
248	STORAGE	F	WD	3' - 8"	7' - 0"			1	HM				1		
249	ELEC	DL-1	WD	6' - 0"	7' - 0"			1	HM				7		
B007	GAS TANK	F	HM	3' - 0"	7' - 0"			1	HM				1		
B008	SERVER	F	HM	4' - 0"	7' - 0"			1	HM				1		
B009	STORAGE	F	HM	4' - 0"	7' - 0"			1	HM				1		
B011	ELEC	F	HM	3' - 0"	7' - 0"			1	HM				2		
EXT1	STAIR (0S4)	F	HM	3' - 8"	7' - 0"			2	HM				11	1 HR	
EXT2	CORRIDOR (BC1)	DL-1	HM	7' - 8"	7' - 0"			2	HM				10		
EXT3	STAIR (RS4)	NL-1	HM	3' - 6"	7' - 0"		GL-06	2	HM				9		
EXT5	STAIR (1S4)	NL-1	HM	3' - 0"	7' - 0"		GL-06	1	HM				6	1 HR	
EXT6	STAIR (0S4)	NL-1	HM	4' - 0"	7' - 0"		GL-06	1	HM				6	1 HR	
EXT7	STAIR (2S4)	NL-1	HM	3' - 0"	7' - 0"		GL-06	1	HM				6	1 HR	
EXT8	LOBBY	*	ALUM / GL	3' - 6"	7' - 0"			*	ALUM	*			12		* REFER TO ELEVATION 3 - BELOW



1 DOOR ELEVATIONS
3/8" = 1'-0"

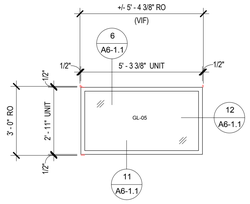


2 METAL DOOR FRAME ELEVATIONS
3/8" = 1'-0"



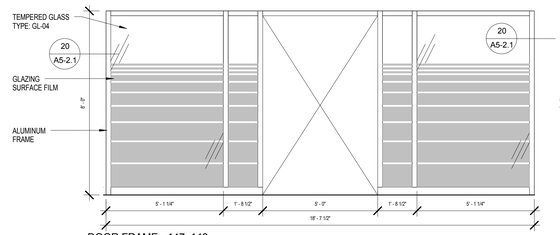
NOTE: BASED ON KAWNEER 425 ENTRY DOOR ASSEMBLY W/ TRIFAB VG 451T FRAME & SIDELITE OR EQUAL

3 ENTRY DOOR & SIDELIGHT ASSEMBLY
3/8" = 1'-0"

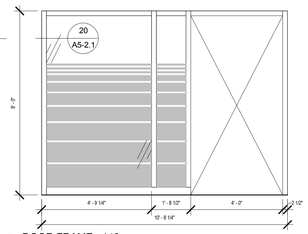


4 VIEW WINDOW WITH HOLLOW METAL FRAME (CLERESTORY AT INTERFACE)
3/8" = 1'-0"

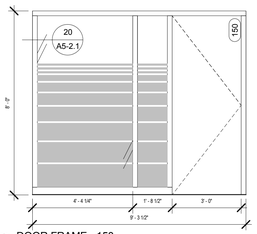
DEMOUNTABLE PARTITIONS



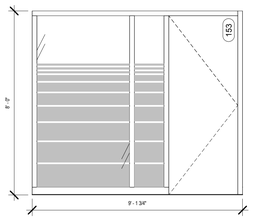
5 DOOR FRAME - 147, 149
3/8" = 1'-0"



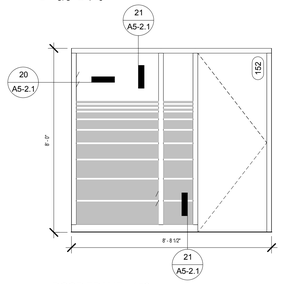
6 DOOR FRAME - 148
3/8" = 1'-0"



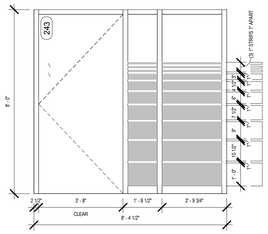
7 DOOR FRAME - 150
3/8" = 1'-0"



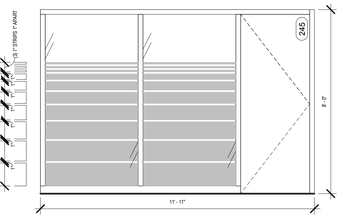
8 DOOR FRAME - 151, 154, 153 (MIRROR)
3/8" = 1'-0"



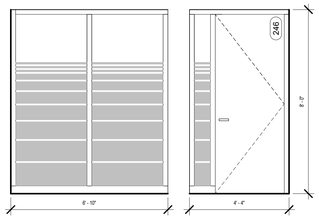
9 DOOR FRAME - 152
3/8" = 1'-0"



10 DOOR FRAME - 243, 244 (MIRROR)
3/8" = 1'-0"



11 DOOR FRAME - 245
3/8" = 1'-0"



12 DOOR FRAME - 246, 247(MIRROR)
3/8" = 1'-0"

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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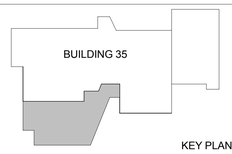


KEY PLAN

N

Drawing Title
DOOR & VIEW WINDOW SCHEDULE & DETAILS

Designed By: Approver
Checked By: Approver
Approved By: Approver

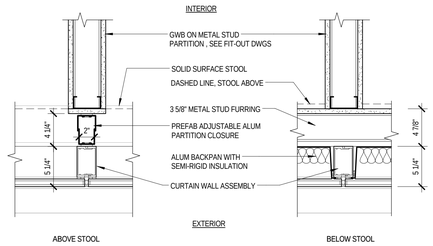
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale: As indicated
Location

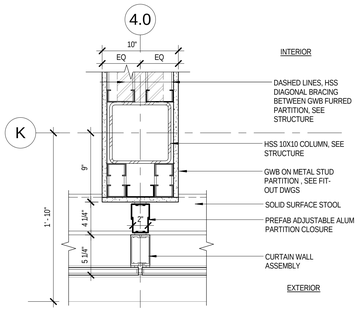
Date: 6/30/2015
VA Project No. 650-338
Drawing No. A5-2.1

Office of Facilities
Department of Veterans Affairs

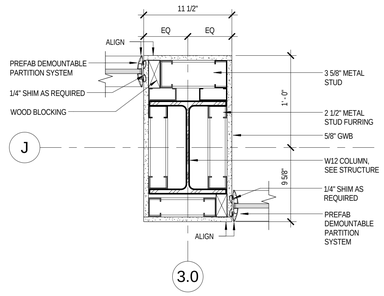
VA FORM 08-6231



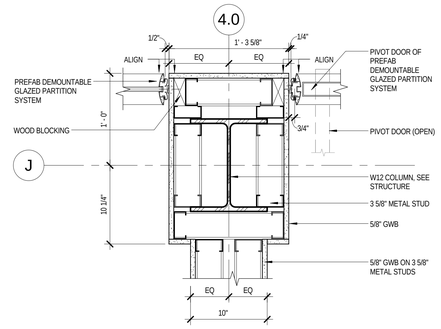
1 PLAN DETAIL AT CURTAIN WALL AND INTERIOR PREFAB PARTITION
SCALE: 1 1/2" = 1'-0"



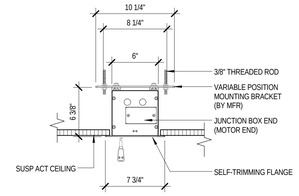
2 PLAN DETAIL AT CURTAIN WALL AND INTERIOR PREFAB PARTITION (AT STEEL BRACING)
SCALE: 1 1/2" = 1'-0"



3 PLAN DETAIL OF PREFAB DEMOUNTABLE PARTITION AT COLUMN ENCLOSURE
SCALE: 1 1/2" = 1'-0"

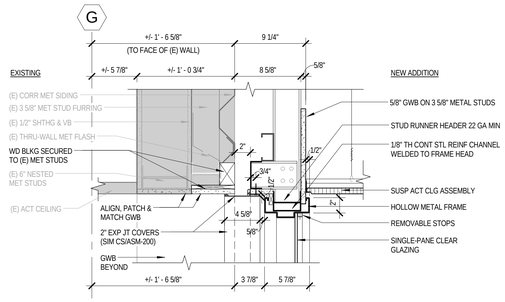


4 COLUMN ENCLOSURE AT PRIVATE OFFICE
SCALE: 1 1/2" = 1'-0"

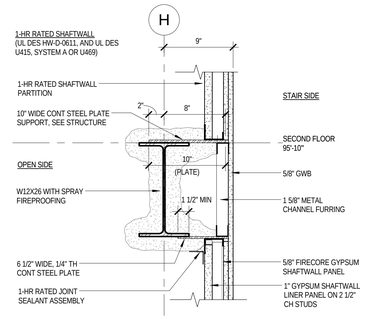


NOTES:
1) DETAIL SIZE AND DIMENSIONS BASED ON DA-LITE AUTOMATIC CEILING RECESSED ELECTRIC PROJECTION SCREEN MODEL "TENSIONED ADVANTAGE ELECTROL" 70" X 70" SQUARE FORMAT
2) COORDINATE PLACEMENT WITH RCP
3) COORDINATE ELECTRICAL CONNECTIONS WITH ELECTRICAL DRAWINGS

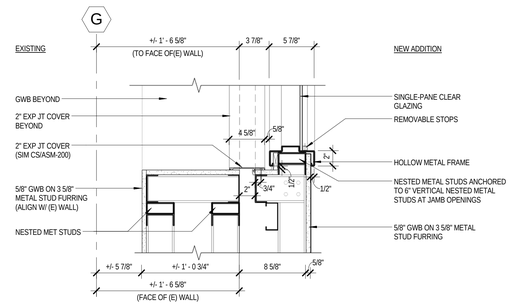
5 PROJECTION SCREEN
SCALE: 1 1/2" = 1'-0"



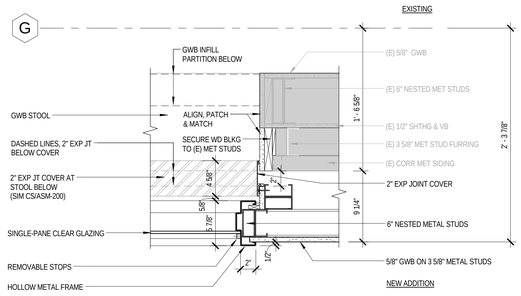
6 SECTION DETAIL OF CLERESTORY VIEW WINDOW HEAD AT BUILDING INTERFACE
SCALE: 1 1/2" = 1'-0"



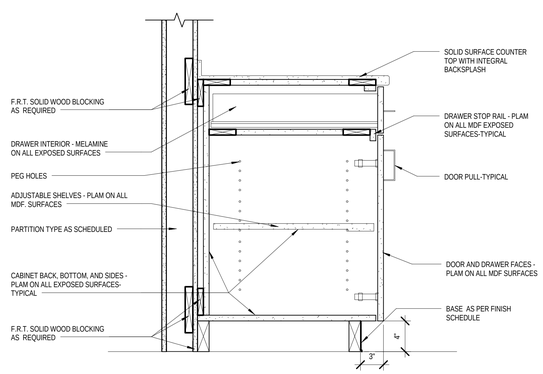
7 SECTION DETAIL AT STAIRS (2ND FL COL LINE H)
SCALE: 1 1/2" = 1'-0"



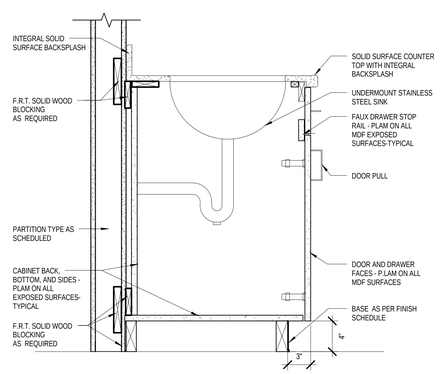
11 SECTION DETAIL OF CLERESTORY INTERIOR VIEW WINDOW SILL AT BUILDING INTERFACE
SCALE: 1 1/2" = 1'-0"



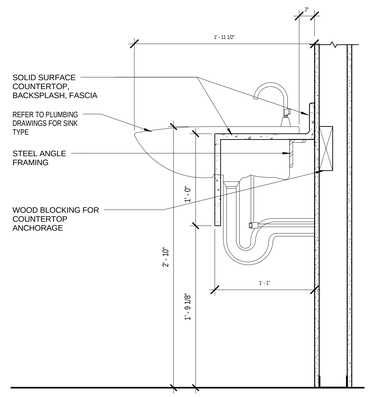
12 PLAN DETAIL OF CLERESTORY VIEW WINDOW
SCALE: 1 1/2" = 1'-0"



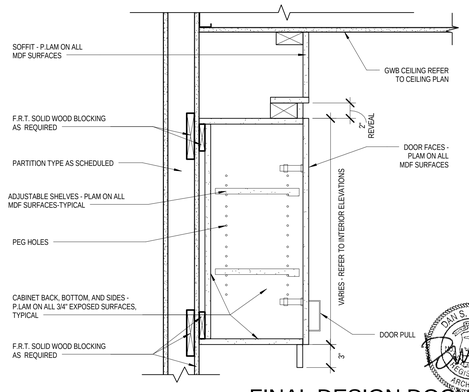
15 BASE CABINET WITH DOORS AND DRAWERS
SCALE: 1 1/2" = 1'-0"



16 BASE CABINET WITH SINK AND DOORS
SCALE: 1 1/2" = 1'-0"



17 MILLWORK - MEZZO SINK @ TOILETS
SCALE: 1 1/2" = 1'-0"



18 UPPER CABINET (PLAM SOFFIT)
SCALE: 1 1/2" = 1'-0"

JOHN S. MORRIS III
REGISTERED ARCHITECT

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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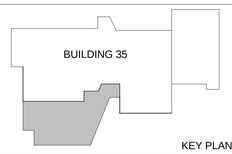


KEY PLAN

N

Drawing Title
INTERIOR MISC. DETAILS

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

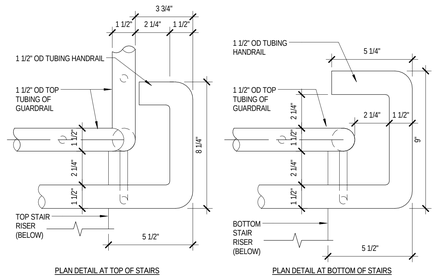
Building #
Scale 1 1/2" = 1'-0"
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No. A6-1.1

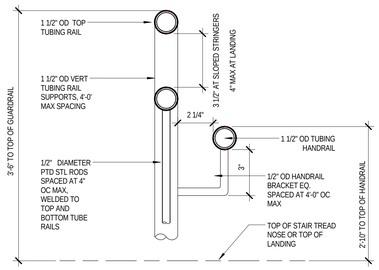
Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

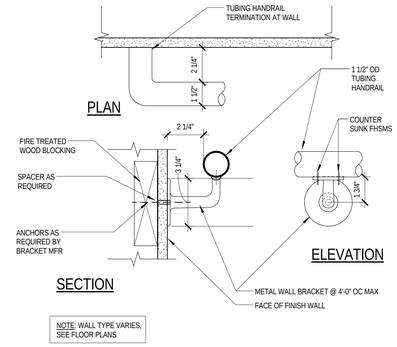
DATE & TIME PRINTED: 6/25/2015 2:31:20 PM C:\Users\Drawing\Documents\VAR - Research Lab_Sheng.rvt



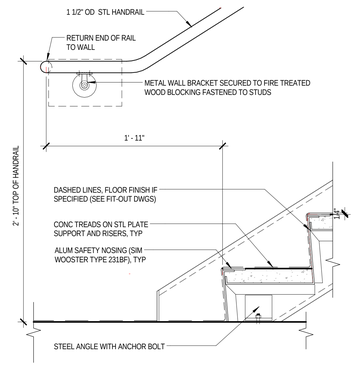
1 PLAN DETAIL AT STAIR HANDRAIL
SCALE: 3" = 1'-0"



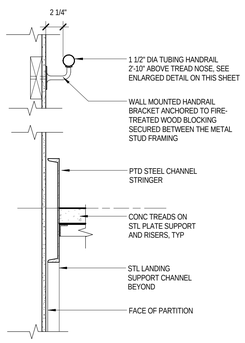
2 SECTION DETAIL AT HANDRAIL AND GUARDRAIL
SCALE: 3" = 1'-0"



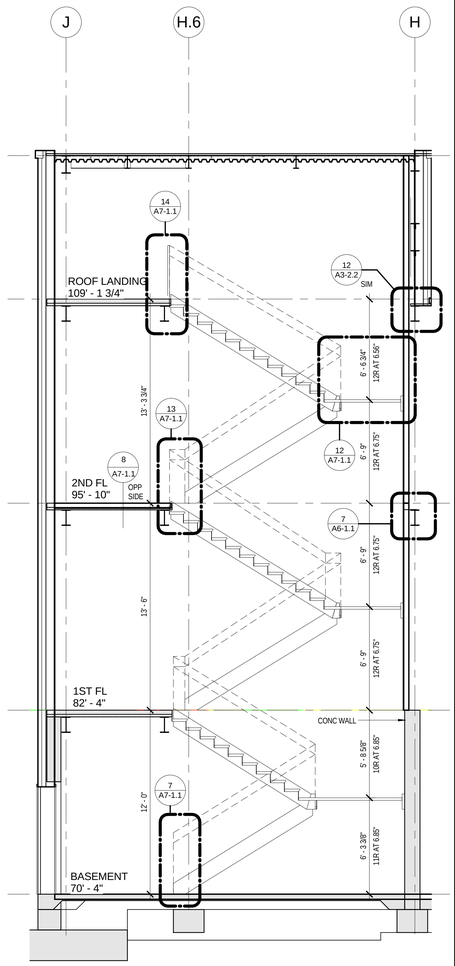
3 SECTION DETAIL AT WALL MOUNTED STAIR HANDRAIL
SCALE: 3" = 1'-0"



4 ELEVATION AT WALL MOUNTED STAIR HANDRAIL
SCALE: 1 1/2" = 1'-0"

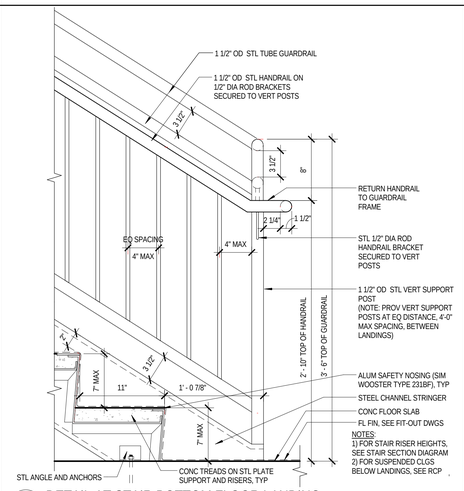


5 SECTION DETAIL AT STAIR STRINGER AND WALL MOUNTED HANDRAIL
SCALE: 1 1/2" = 1'-0"

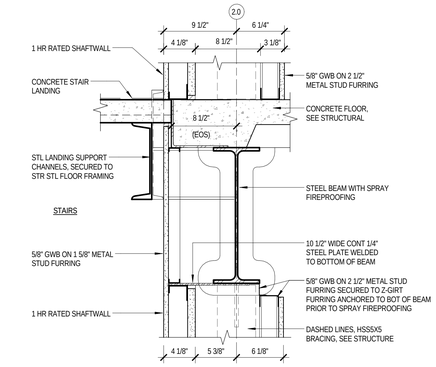


NOTE: SEE WALL SECTIONS 3,6,7 & 8/A3-1.3 FOR ADDITIONAL STAIR INFORMATION

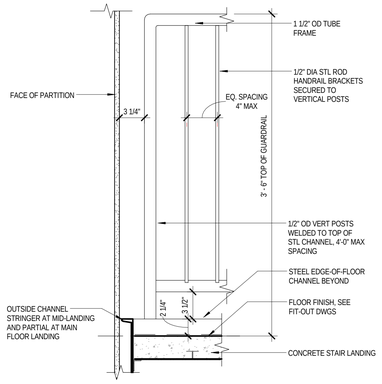
11 STAIR SECTION DIAGRAM
SCALE: 1/4" = 1'-0"



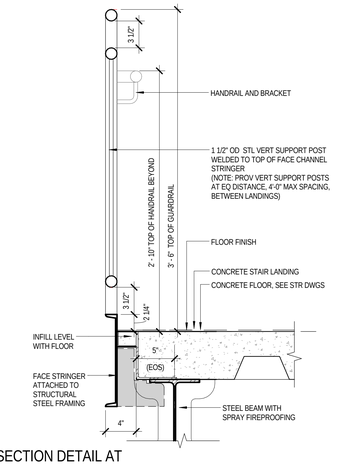
7 DETAIL AT STAIR BOTTOM FLOOR LANDING
SCALE: 1 1/2" = 1'-0"



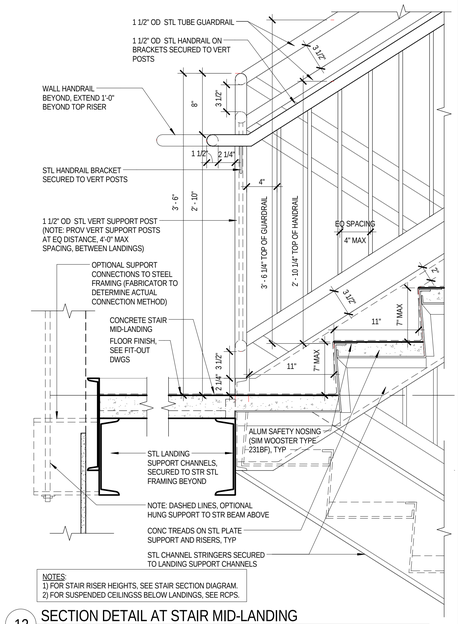
8 SECTION DETAIL AT CONCRETE FLOOR TO STAIR LANDING TRANSITION
SCALE: 1 1/2" = 1'-0"



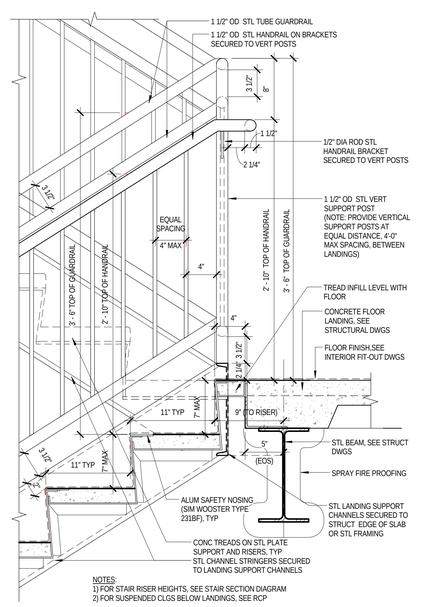
9 ELEVATION DETAIL AT STAIR GUARDRAIL
SCALE: 1 1/2" = 1'-0"



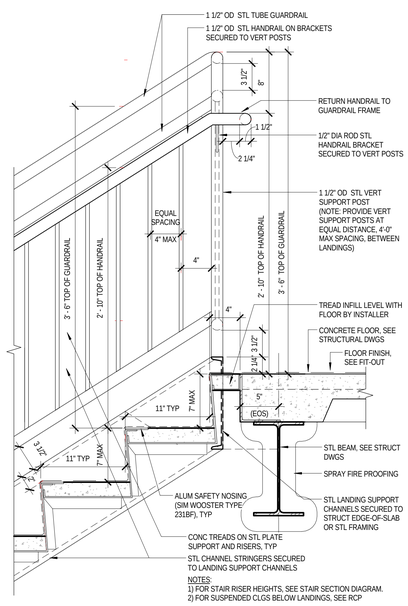
10 SECTION DETAIL AT STAIR GUARDRAIL AND LANDING
SCALE: 1 1/2" = 1'-0"



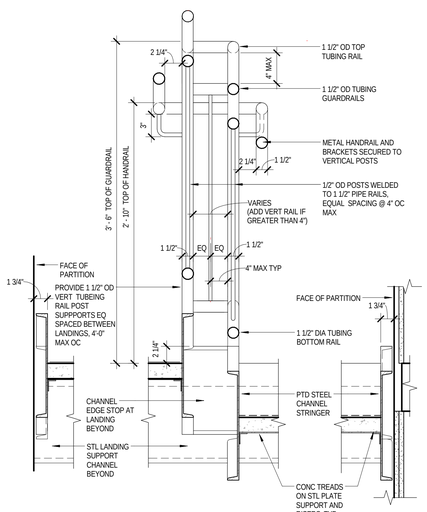
12 SECTION DETAIL AT STAIR MID-LANDING
SCALE: 1 1/2" = 1'-0"



13 SECTION DETAIL AT STAIR TYP FLOOR LANDING
SCALE: 1 1/2" = 1'-0"



14 SECTION DETAIL AT STAIR TOP FLOOR LANDING
SCALE: 1 1/2" = 1'-0"



15 SECTION DETAIL AT STAIR STRINGERS
SCALE: 1 1/2" = 1'-0"

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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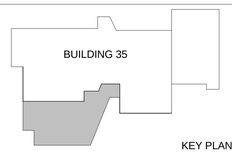

KEY PLAN

N

Drawing Title
STAIR DETAILS

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale: As indicated
Location

Date: 6/30/2015
VA Project No. 650-338
Drawing No. A7-1.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

ROOM FINISH SCHEDULE

Number	Name	Floor Finish	Base Finish	Wall Finish	Casework Vertical	Casework Counter Top	Ceiling Finish	Comments
0S4	STAIR	RUBT-1	RB-1	PT-1a			PT	
1C5	CORRIDOR	CPT-1a, 1b	RB-1	PT-1a			ACT-1, PT	
1C6	CORRIDOR	CPT-1a, 1b, 1c	RB-1	PT-1a			ACT-1	
1S4	STAIR	RUBT-1	RB-1	PT-1a			PT	
2C5	CORRIDOR	CPT-1a, 1b, VCT-1a, 1b	RB-1	PT-1a			ACT-1, PT	
2C6	CORRIDOR	CPT-1a, 1b, 1c	RB-1	PT-1a			ACT-1, PT	
2S4	STAIR	RUBT-1	RB-1	PT-1a			PT	
101A	LOBBY	VCT-1a, 1b	RB-1	PT-1a			ACT-1, PT	
144	TOILET	PCT-1	PCT-1	CWT-1, GMT-1, PT-1a		SSM-1	ACT-1	REFER TO ELEVATIONS FOR TILE DISTRIBUTION.
145	HSKP	PCT-1	PCT-1	PT-1a, PWC-1			PT	PWC TO 48" A.F.F. ALL WALLS, U.O.N.
146	PRINT/SUPPLY	CPT-1b	RB-1	PT-1a	PLAM-1	SSM-1	PT	
147	SHARED OFFICE	CPT-1a, 1b	RB-1	PT-1a			ACT-1	
148	SHARED OFFICE	CPT-1a,1b	RB-1	PT-1a			ACT-1	
149	SHARED OFFICE	CPT-1a, 1b	RB-1	PT-1a			ACT-1	
150	PRIVATE OFFICE	CPT-1a, 1b,1c	RB-1	PT-1a			ACT-1, PT	
151	PRIVATE OFFICE	CPT-1a, 1b, 1c	RB-1	PT-1a			ACT-1, PT	
152	PRIVATE OFFICE	CPT-1a, 1b, 1c	RB-1	PT-1a			ACT-1, PT	
153	PRIVATE OFFICE	CPT-1a, 1b, 1c	RB-1	PT-1a			ACT-1, PT	
154	CONFERENCE ROOM	CPT-1a, 1b, 1c	RB-1b	PT-1b	PLAM-1	SSM-1	ACT-1, PT	
240	TOILET	PCT-1	PCT-1	CWT-1, GMT-1, PT-1a		SSM-1	ACT-1	REFER TO ELEVATIONS FOR TILE DISTRIBUTION.
241	STORAGE	VCT-1b	RB-1	PT-1a			ACT-1	
242	PRINT/SUPPLY	CPT-1b	RB-1	PT-1a	PLAM-1	SSM-1	PT	
243	LAB 2	VCT-1b	RB-1	PT-1a			ACT-1	
244	LAB 1	VCT-1b	RB-1	PT-1a			ACT-1	
245	SHARED OFFICE	CPT-1a, 1b, 1c	RB-1	PT-1a			ACT-1, PT	
246	SHARED OFFICE	CPT-1a, 1b, 1c	RB-1	PT-1a			ACT-1, PT	
247	SHARED OFFICE	CPT-1a, 1b, 1c	RB-1	PT-1a			ACT-1, PT	
248	STORAGE	VCT-1b	RB-1	PT-1a			ACT-1, PT	
249	ELEC	VCT-1b	RB-1	PT-1a			PT	
B007	GAS TANK	CON	RB-1	PT-1a			EXP	
B008	SERVER	CON	RB-1	PT-1a			EXP	
B009	STORAGE	CON	RB-1	PT-1a			EXP	
B011	ELEC	CON	RB-1	PT-1a			EXP	
B012	MECHANICAL	CON	RB-1	PT-1a			EXP	
BC1	CORRIDOR	CON	RB-1	PT-1a			EXP	
BC2	CORRIDOR	CON	RB-1	PT-1a			EXP	
RS4	STAIR	RUBT-1	RB-1	PT-1a			PT	

FLOORCOVERING FINISH NOTES

FLOORCOVERING MATERIALS ARE IDENTIFIED ON BOTH THE ROOM FINISH SCHEDULE AND ON THE ATTACHED FLOORCOVERING DISTRIBUTION PLAN. THE COMPLEXITY OF FINISHES/MATERIALS ARE CLARIFIED ON THE DISTRIBUTION PLANS BY ONE OF THE SYMBOLS NOTED BELOW:

FLOORCOVERING SYMBOL LEGEND

CARPET DISTRIBUTION SYMBOL
MATERIAL CODE

RESILIENT TILE DISTRIBUTION SYMBOL
MATERIAL CODE

REDUCER/TRANSITION STRIP
(NOTE: NOT ALL SHOWN)

1. CARPET

CPT

AREAS DESIGNATED AS CPT-1a SHALL RECEIVE SHAW CONTRACT COLOR FORM 9" X 36" TILE SAND 81155
UNLESS DESIGNATED ON THE DISTRIBUTION PLANS TO RECEIVE ANOTHER COLOR ILLUSTRATED BY ONE OF THE SYMBOLS BELOW.

1b COLOR: APPEARANCE 81761

1c COLOR: FIGMENT 81486

2. RESILIENT TILE FLOORING

VCT (VINYL COMPOSITION TILE)

AREAS DESIGNATED AS VCT-1a SHALL RECEIVE ARMSTRONG STRIATIONS 9ST 12" X 24" COLOR: T3614 BISQUE
UNLESS DESIGNATED ON THE DISTRIBUTION PLANS TO RECEIVE ANOTHER COLOR ILLUSTRATED BY ONE OF THE SYMBOLS BELOW.

1b COLOR: T3615 HONEY

RUBT (RUBBER STAIR TREAD & LANDING TILE)

AREAS DESIGNATED AS RUBT-1 SHALL RECEIVE NORAMENT SATURA ONE PIECE NOSING, TREAD, RISER AND TILE LANDING. COLOR: 5102 GRUS

NOTE: INCLUDE VISUALLY IMPAIRED STRIPE ON STAIR TREAD.

3. PORCELAIN TILE

PCT

AREAS DESIGNATED AS PCT-1 SHALL RECEIVE KEYSTONE BLENDS 2" X 2" MOSAIC COLOR: BEACH DK04

SPECIAL INSTRUCTIONS: INSTALL WITH COORDINATING BUILT-UP WALL BASE. EPOXY GROUT TO MATCH EACH COLOR OF TILE. SUBMIT SELECTOR TO DESIGNER. REFER TO FLOOR FINISH DISTRIBUTION PLANS FOR LAYOUTS.

NOTE: TILE JOINT WIDTH TO BE MINIMIZED AS MUCH AS POSSIBLE.

4. RUBBER BASE

RB

AREAS DESIGNATED AS RB-1 SHALL RECEIVE JOHNSONITE TOPSET RUBBER BASE, 4" HIGH

COLOR: ALMOND 34

5. TRANSITION STRIPS

TRANSITION STRIPS FROM CARPET TO A DISSIMILAR MATERIAL SHALL USE: JOHNSONITE RUBBER REDUCER, COLOR ALMOND 34.

TRANSITION STRIPS FROM PORCELAIN TILE TO A DISSIMILAR MATERIAL SHALL USE: SCHLUTER SCHIENE

6. THE CONTRACTOR SHALL SUBMIT TO THIS OFFICE ACTUAL SAMPLES IN TRIPLICATE, OF EACH COLOR AND MATERIAL SELECTED BY THE DESIGNER FOR DESIGNER'S VERIFICATION AND APPROVAL NOT LATER THAN TWO (2) WEEKS FROM DATE OF CONTRACT. SAMPLES SHALL BE PROPERLY LABELED BY PRODUCT AND CODE.

WALL FINISH NOTES

WALL FINISH MATERIALS ARE IDENTIFIED ON BOTH THE ROOM FINISH SCHEDULE.

1. PAINT

PT

AREAS DESIGNATED AS PT-1a SHALL BE BENJAMIN MOORE OC-131 WHITE DOWN
EXCEPT THOSE WALLS DESIGNATED TO RECEIVE ANOTHER COLOR AS SHOWN BELOW:

1b COLOR: MANCHESTER TAN HC-81

AREAS DESIGNATED AS EPXY SHALL USE SAME COLOR CODE AS NOTED ABOVE.

2. WALL TILE

CWT (CERAMIC WALL TILE)

AREAS DESIGNATED AS CWT-1 SHALL RECEIVE DALTILE SEMI-GLOSS SERIES 6" X 6" COLOR: ALMOND 0136

GMT (GLASS MOSAIC TILE)

AREAS DESIGNATED AS GMT-2 SHALL RECEIVE GLASS REFLECTIONS 11-1/2" X 15-1/2" RANDOM INTERLOCKING GLASS MOSAIC WINTER BLUES GR25

SPECIAL INSTRUCTIONS: MAY NEED TO REFER TO INTERIOR ELEVATIONS FOR TILING DISTRIBUTION AND FOR PATTERN. EPOXY GROUT TO MATCH COLOR OF FIELD TILE, CONTRACTOR TO SUBMIT SELECTOR TO DESIGNER FOR APPROVAL.

3. PROTECTIVE WALL COVERING

PWC

AREAS DESIGNATED AS PWC SHALL RECEIVE INPRO RIGID VINYL WALL SHEET COLOR: 0104 ANTIQUE WHITE
EXCEPT THOSE WALLS DESIGNATED TO RECEIVE ANOTHER COLOR DESIGNATED BY THE SYMBOLS BELOW:

4. CONTRACTOR SHALL SUBMIT TO THIS OFFICE ACTUAL SAMPLES IN TRIPLICATE OF ALL COLORS, MATERIALS AND PATTERNS FOR DESIGNER'S VERIFICATION AND APPROVAL, NOT LATER THAN TWO (2) WEEKS FROM DATE OF CONTRACT. SIZE OF SAMPLES SHALL BE APPROXIMATELY 12"x12". SAMPLES SHALL BE PROPERLY LABELED BY PROJECT AND CODE AND SUBMITTED FOR APPROVAL PRIOR TO CONTRACTOR ORDERING MATERIAL.

CASEWORK FINISH NOTES

CASEWORK FINISHES/MATERIALS MAY BE IDENTIFIED ON BOTH THE CUSTOM CASEWORK DRAWINGS AND ON THE FINISH SCHEDULE.

1. PLASTIC LAMINATE

PLAM

CASEWORK DESIGNATED TO RECEIVE PLAM - 1SHALL RECEIVE: VENEER ART BY LAMINART, COLOR: 953-TG RENAISSANCE CHERRY

2. SOLID SURFACE MATERIAL

SSM

CASEWORK DESIGNATED TO RECEIVE SSM-1 SHALL RECEIVE: CORIAN RICE PAPER

3. CONTRACTOR SHALL SUBMIT TO THIS OFFICE ACTUAL SAMPLES IN TRIPLICATE OF ALL COLORS, MATERIALS AND PATTERNS FOR DESIGNER'S VERIFICATION AND APPROVAL, NOT LATER THAN TWO (2) WEEKS FROM DATE OF CONTRACT. SIZE OF SAMPLES SHALL BE APPROXIMATELY 12"x12". SAMPLES SHALL BE PROPERLY LABELED BY PROJECT AND CODE AND SUBMITTED FOR APPROVAL PRIOR TO CONTRACTOR ORDERING MATERIAL.

MISCELLANEOUS NOTES

1. KICK PLATES, PUSH PLATES, ARMOR PLATES SHALL BE STAINLESS STEEL.
2. WINDOW SILLS SHALL BE CORIAN RICE PAPER.
3. INTERIOR SOFFITS DESIGNATED AS PT SHALL BE PAINTED TO MATCH ADJACENT WALL COLOR.
4. INTERIOR FACIAS DESIGNATED AS PT SHALL BE PAINTED TO MATCH SOFFIT.
5. INTERIOR CEILINGS DESIGNATED AS PT SHALL BE PAINTED TO MATCH ADJACENT CEILING.
6. INTERIOR DOOR FRAMES DESIGNATED AS PT SHALL BE BENJAMIN MOORE HC-81 MANCHESTER TAN.
7. INTERIOR DOORS DESIGNATED AS WD SHALL BE STAINED TO MATCH VAMC PROVIDENCE FACILITY STANDARD, PLAIN SLICED WHITE MAPLE RA-4370.
8. ARCHITECTURAL GLASS FILM SHALL BE SONNY'S GLASS TINTING, PATTERN: CUSTOM, 68" HIGH, 3M DUSTED CRYSTAL VIEW CONTROL WINDOW FILM. REFER TO ELEVATIONS FOR LOCATIONS.
9. **P+M** REFERS TO PATCH AND MATCH EXISTING FINISH MATERIALS.
10. HVAC REGISTERS AND GRILLS, ELECTRICAL PANELS, ACCESS PANELS, ELECTRICAL OUTLET STRIPS AND FIRE EXTINGUISHER CABINETS SHALL BE FIELD PAINTED TO MATCH ADJACENT WALL OR ACT.
11. ELECTRICAL SWITCHES/OUTLETS/COVERPLATES SHALL BE WHITE UNLESS OTHERWISE RESTRICTED BY CODE - REFER TO ARCHITECTURAL SPECIFICATIONS.
12. THE CONTRACTOR SHALL SUBMIT TO THIS OFFICE ACTUAL SAMPLES IN TRIPLICATE, OF EACH COLOR AND MATERIAL SELECTED BY THE DESIGNER FOR DESIGNER'S VERIFICATION AND APPROVAL NOT LATER THAN TWO (2) WEEKS FROM DATE OF CONTRACT. SAMPLES SHALL BE PROPERLY LABELED BY PROJECT AND CODE.

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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BUILDING 35
KEY PLAN
N

Drawing Title
FINISH SCHEDULE

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale 1/8" = 1'-0"
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No. I1-1.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

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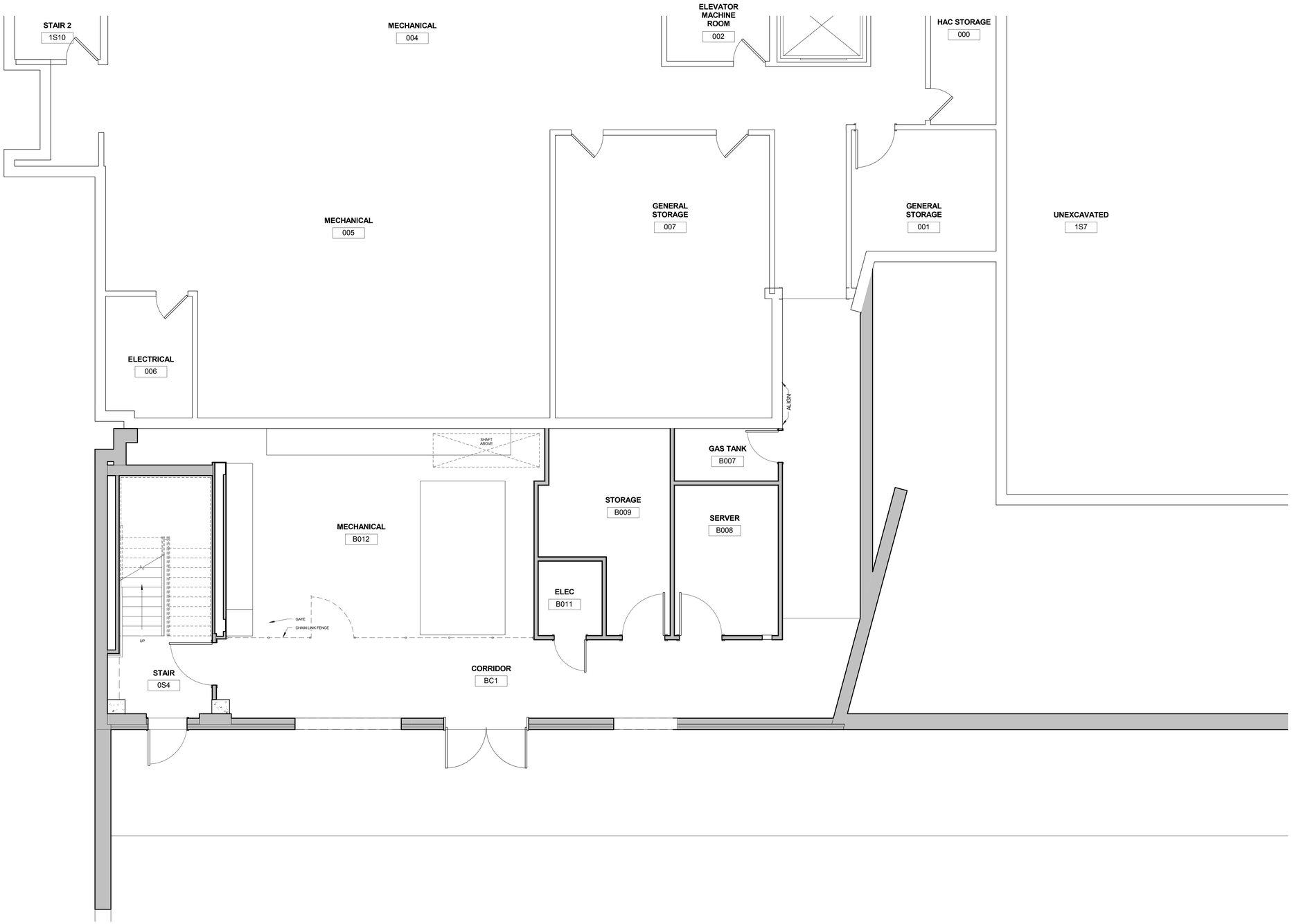

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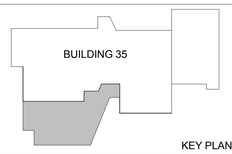


KEY PLAN

N

Drawing Title
BASEMENT - FLOOR FINISH

Designed By: Approver
Checked By: Approver
Approved By: Approver

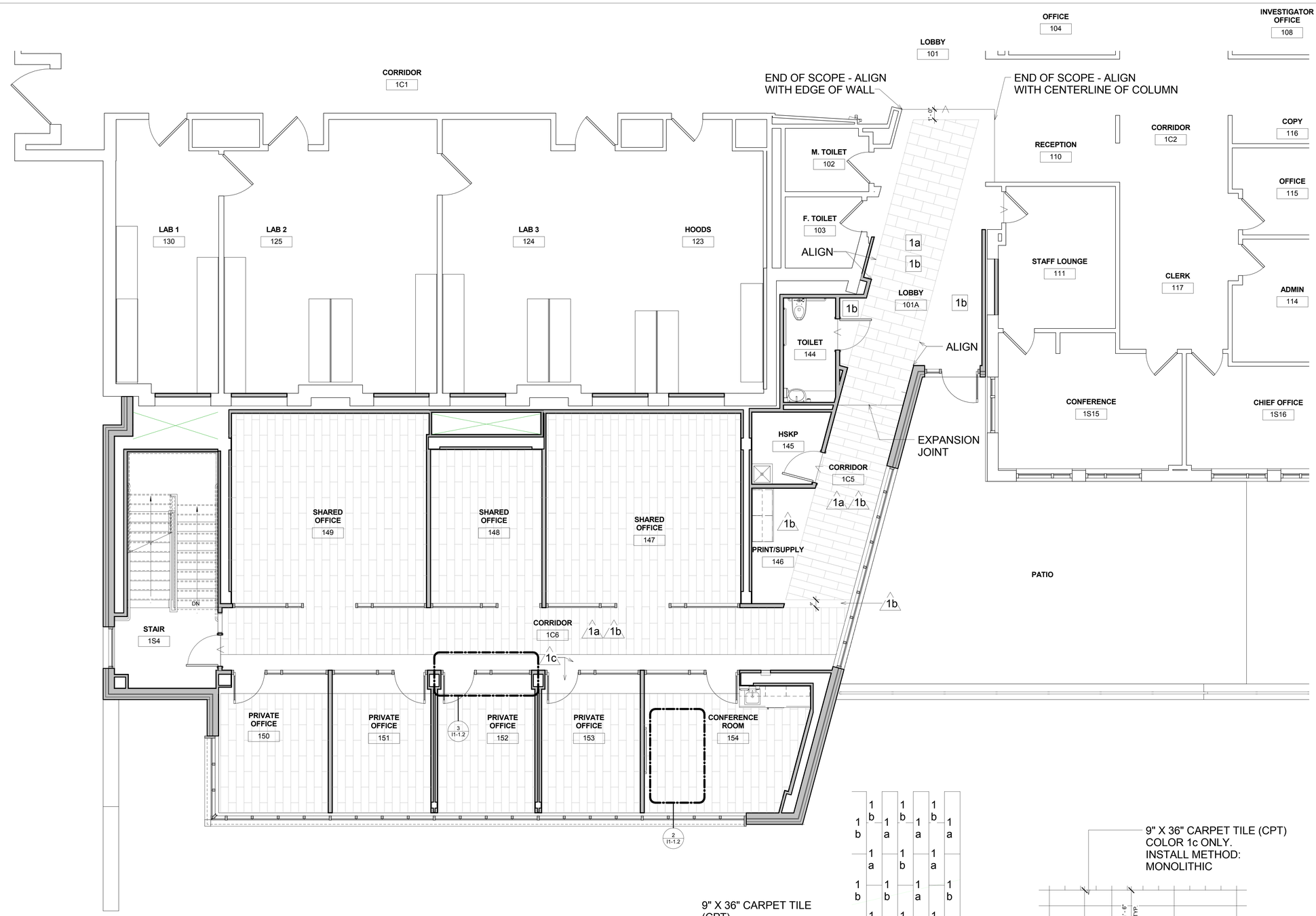
Project Title
BUILDING 35 ADDITION FOR RESEARCH

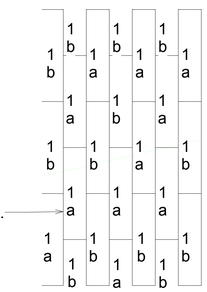
Building #
Scale 1/4" = 1'-0"
Location

Date 6/30/2015
VA Project No. 650-338
Drawing No. I1-1.1

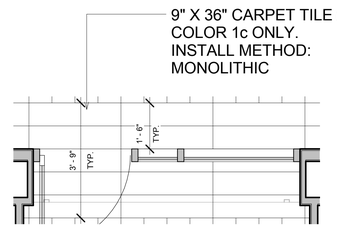
Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231





ENLARGED TYP. FLOOR FINISH PATTERN
2 1/2" = 1'-0"



ENLARGED ACCENT FLOOR FINISH PATTERN
3 1/2" = 1'-0"

ENLARGED PROPOSED FIRST FLOOR - FLOOR FINISH
1 1/4" = 1'-0"

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision

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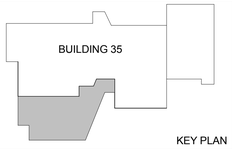

KEY PLAN

N

Drawing Title
FIRST FLOOR - FLOOR FINISH

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
Scale
As indicated
Location

Date
6/30/2015

VA Project No.
650-338

Drawing No.
I1-1.2

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

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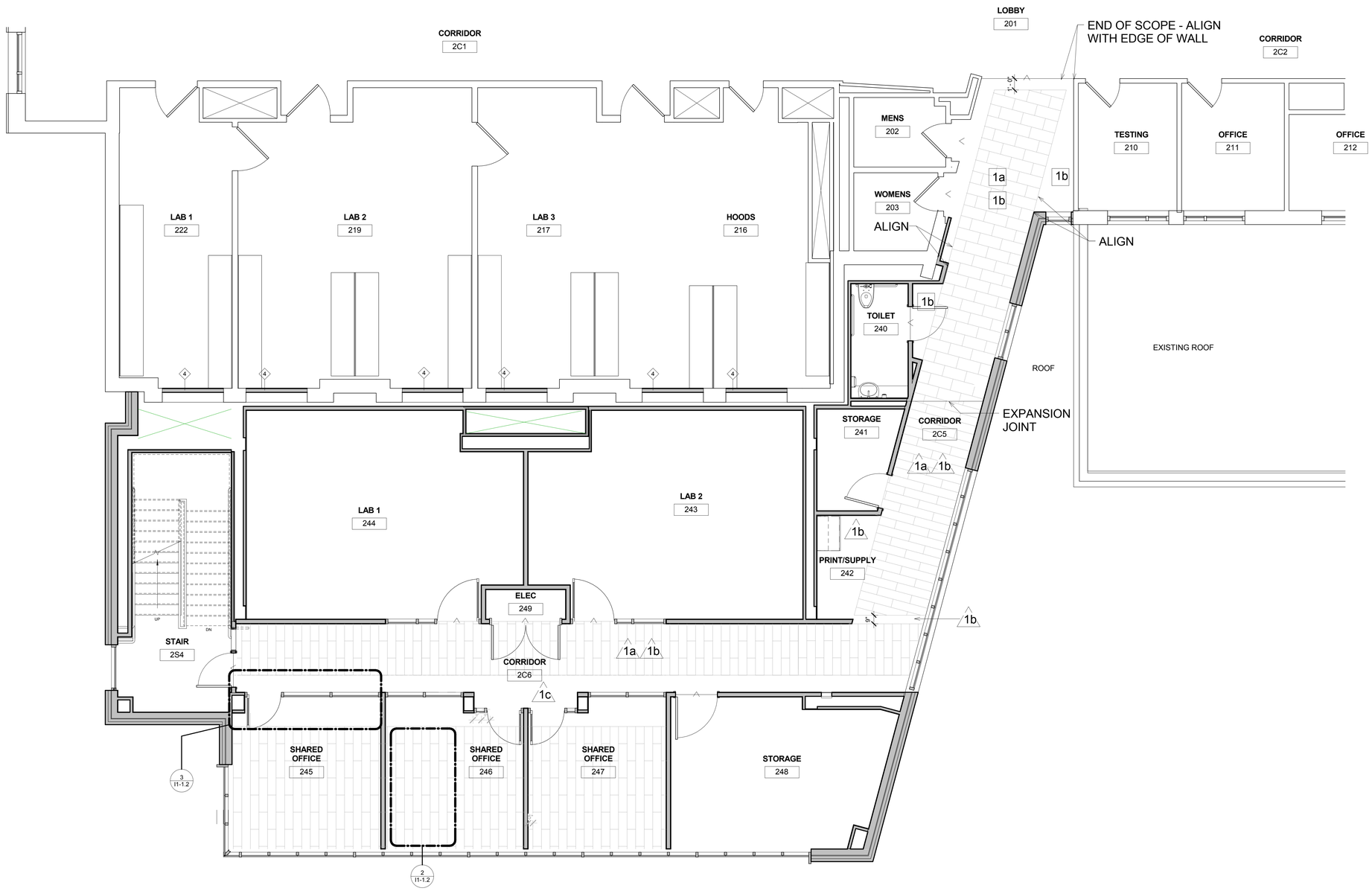

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BUILDING 35

KEY PLAN

N

Number	Date	Revision

Drawing Title
SECOND FLOOR - FLOOR FINISH

Designed By: Approver
Checked By: Approver
Approved By: Approver

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #

Scale
1/4" = 1'-0"

Location

Date
6/30/2015

VA Project No.
650-338

Drawing No.
I1-1.3

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231

HAZARD DESIGN CRITERIA

DESIGN CRITERIA	
DENSITY 0.10 GPM/SF	AREA OF APPLICATION 1,500 SQ. FT.
225 SQ. FT. PER HEAD	HOSE ALLOWANCE 100 GPM
LIGHT HAZARD (UNLESS NOTED OTHERWISE)	

DESIGN CRITERIA	
DENSITY 0.15 GPM/SF	AREA OF APPLICATION AS NOTED ON DWG.
130 SQ. FT. PER HEAD	HOSE ALLOWANCE 250 GPM
ORDINARY HAZARD (AS NOTED ON DRAWING)	

DEMOLITION LEGEND

"X" EXISTING SPRINKLER HEAD, EQUIPMENT OR SYSTEM TO BE SELECTIVELY DEMOLISHED

"XR" EXISTING FIRE PROTECTION EQUIPMENT OR SYSTEM TO BE REMOVED, STORED AND RELOCATED

"XT" EXISTING FIRE PROTECTION EQUIPMENT OR SYSTEM TO BE REMOVED AND TURNED OVER TO OWNER FOR REUSE.

"XN" NEW LOCATION OF EXISTING RELOCATED FIRE PROTECTION EQUIPMENT OR SYSTEM.

"E" EXISTING SPRINKLER HEAD, EQUIPMENT OR SYSTEM TO REMAIN

EXAMPLE

X XR XT XN E

ABBREVIATIONS

CI	CAST IRON
CONTR	CONTRACTOR
CLDI	CEMENT LINED DUCTILE IRON
DN	DOWN
DWG	DRAWING
EA.	EACH
FCVA	FLOOR CONTROL VALVE ASSEMBLY
F.B.O.C.	FURNISHED BY OTHER CONTRACTOR
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O.S.&Y.	OUTSIDE SCREW AND YOKE
PSI	POUNDS PER SQUARE INCH
RM	ROOM
TB	THRUST BLOCK
TS	TAMPER SWITCH

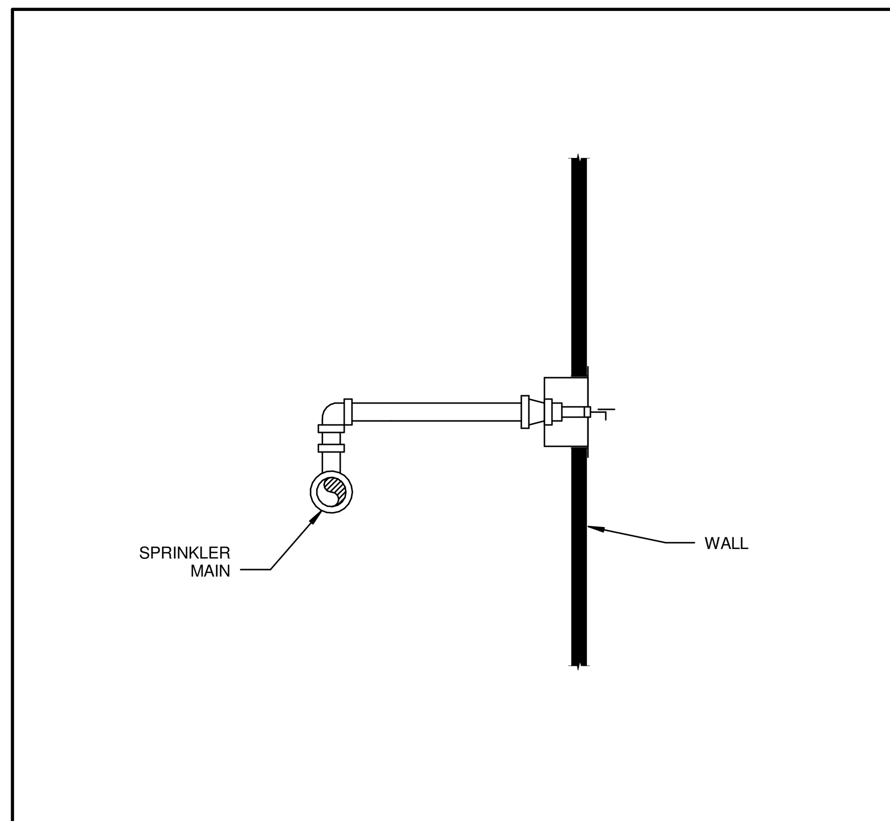
VALVE LEGEND

GV	GATE VALVE
F.D.V.	FIRE DEPARTMENT VALVE
F.V.C.	FIRE VALVE AND CABINET
BV	BALL VALVE
BFV	BUTTERFLY VALVE
DV	DRAIN VALVE
CV	CHECK VALVE
	UNION
FLG	FLANGE
PG	PRESSURE GAUGE
FSW	FLOW SWITCH
	FIRE DEPARTMENT CONNECTION

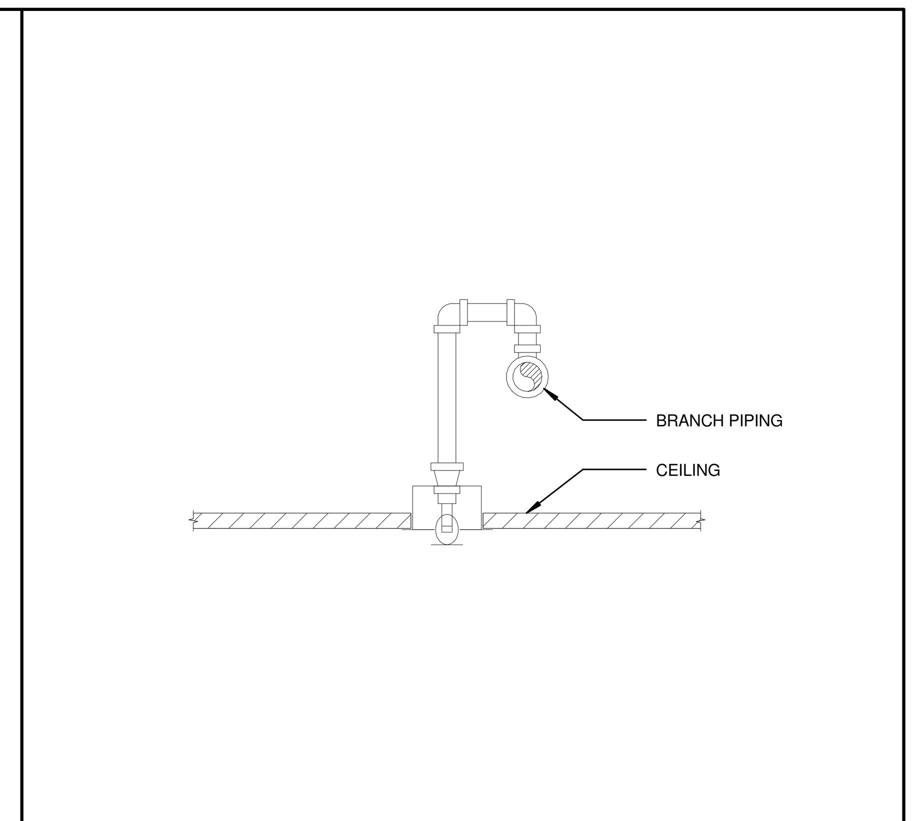
PIPING LEGEND

FP	FIRE PROTECTION
WS	WET SPRINKLER PIPING
DS	DRY SPRINKLER PIPING
PA	PRE-ACTION SPRINKLER PIPING
D.R.	DRAIN RISER
FS	FLOW SWITCH
	FIRE HOSE CABINET (SURFACE MOUNTED)
	FIRE HOSE CABINET (RECESSED)
SB	SLEEVE BEAM
	RUN-OUT OFF TOP
	RUN-OUT OFF BOTTOM
	PIPE UP
	PIPE DOWN
	CAP ON END OF PIPE
	PIPE BREAK

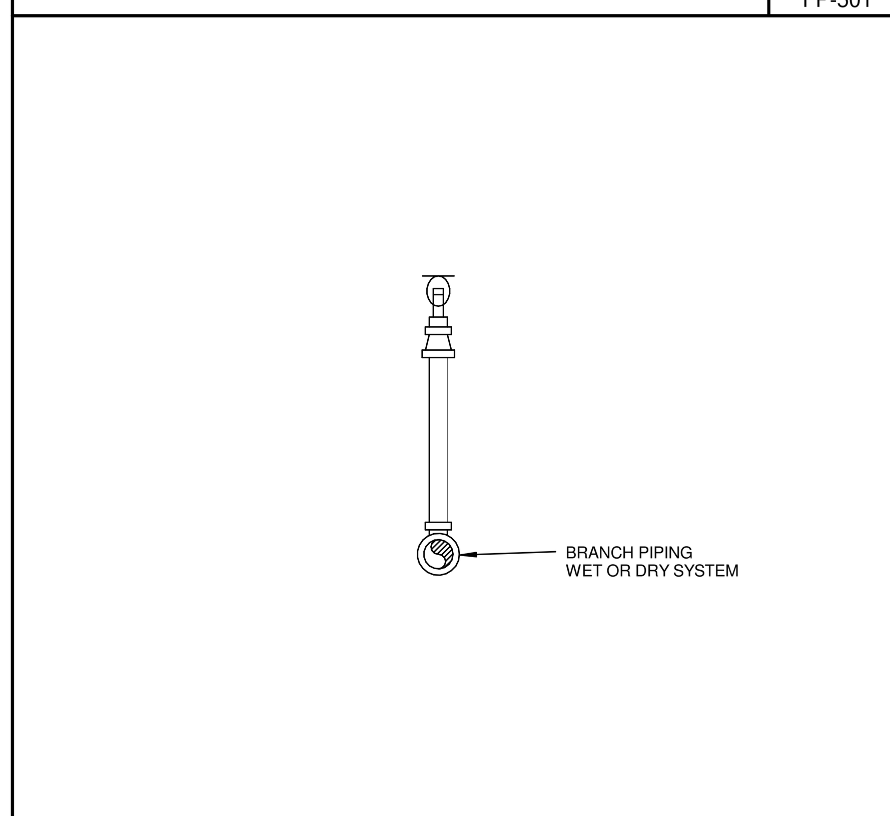
DETAILS



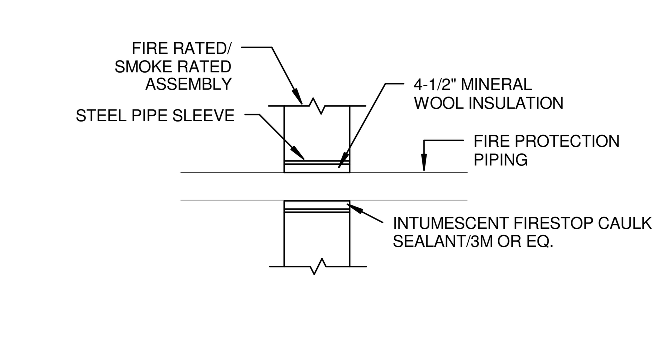
SIDEWALL SPRINKLER PIPING DETAIL	N.T.S. FP-501



SEMIRECESSED SPRINKLER PIPING DETAIL	N.T.S. FP-502



UPRIGHT SPRINKLER PIPING DETAIL	N.T.S. FP-503



FIRESTOPPING METHOD BASED ON HILTI UL SYSTEM WL1058. REFER TO MFG LITERATURE FOR SPECIFIC PRODUCT LIMITATIONS. SUBSTITUTE OTHER UL APPROVED FIRESTOPPING METHODS, IF NECESSARY, TO MEET REQUIREMENTS OF INSTALLATION

PIPE PENETRATION THRU FIRE RATED/SMOKE RATED ASSEMBLY	N.T.S. FP-601

SCHEDULES

F - SPRINKLER SCHEDULE

SYMBOL	DESCRIPTION	MFR	MODEL	TEMP RATING	ORIFICE SIZE	RESPONSE	ESCUTCHEON FINISH	SPRINKLER FINISH	K-FACTOR	COMMENTS
△	DRY SIDEWALL SPRINKLER	VIKING	VK182	155 °F	1/2"	Quick	CHROME	CHROME	5.6	
●	PENDANT SPRINKLER	VIKING	VK302	155 °F	1/2"	Quick	CHROME	CHROME	5.6	
○	UPRIGHT SPRINKLER	VIKING	VK300	155 °F	1/2"	Quick	N/A	ROUGH BRASS	5.6	

DRAWING NOTES

- DEMOLITION NOTE
- NEW WORK NOTE
- HYDRAULIC CALCULATION NODE
- CONNECT TO EXISTING
- CAP EXISTING
- LIMIT OF DEMOLITION
- DRAWING REVISION DESIGNATION
- REVISION CLOUD
- ELECTRICAL AREA - THE AREA INDICATED IS AN ELECTRICAL ZONE. DUCTWORK, PIPING, AND SYSTEMS SHALL NOT RUN THROUGH THIS ZONE. EXCEPTION: PIPES, DUCTS, AND EQUIPMENT DEDICATED TO SERVE THE ZONE ARE ALLOWED. COORDINATE WITH ELECTRICAL CONTRACTOR AND COMPLY WITH ALL CODE CLEARANCE REQUIREMENTS.

GENERAL NOTES

1. FIRE PROTECTION SYSTEM AS SHOWN IS DIAGRAMMATIC AND FOR REFERENCE ONLY. DRAWINGS SHOW A SUGGESTED PIPING ROUTE ONLY. FIRE PROTECTION CONTRACTOR MAY ALTER PIPING ROUTE AND SPRINKLER HEAD LOCATIONS WITH APPROVAL OF ENGINEER.
2. SPRINKLER LOCATIONS ARE FOR REFERENCE ONLY. FIRE PROTECTION CONTRACTOR SHALL INSURE THAT PROPOSED FIRE PROTECTION DESIGN MEETS ALL REQUIREMENTS OF NFPA-13 INCLUDING ADEQUATE COVERAGE OF SPRINKLERS.
3. FIRE PROTECTION CONTRACTOR SHALL INSTALL NEW PIPING TAKE-OFFS WHERE NECESSARY TO PROVIDE ADEQUATE COVERAGE OR TO AVOID SUSPENDED CEILING FRAMING.
4. ALL PIPING CUT DURING DEMO PHASE SHALL BE CAPPED WHETHER INDICATED ON DRAWING OR NOT.
5. SPRINKLER SYSTEM HYDRAULICALLY DESIGNED TO PROVIDE AT LEAST 0.10 GPM/SQ. FT FOR ALL AREAS, INCLUDING HYDRAULICALLY MOST REMOTE 1050 SQ. FT OF FLOOR AREA FOR LIGHT HAZARD OCCUPANCY OR AS REQUIRED BY OWNER'S INSURANCE UNDERWRITER.
6. THE CONTRACTOR SHALL FURNISH LABOR, MATERIALS, TOOLS AND OTHER EQUIPMENT REQUIRED TO INSTALL THE WORK SHOWN AND SPECIFIED. THE CONTRACTOR SHALL FURNISH AND INSTALL ITEMS NECESSARY FOR COMPLETE FIRE PROTECTION SYSTEM. MATERIALS SHALL BE NEW AND SHALL BEAR THE REGISTERED UL/FM MARK. WORK SHALL CONFORM WITH THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARD 13 AND APPLICABLE FEDERAL, STATE AND LOCAL CODES. CONTRACTOR SHALL SECURE PERMITS AND PAY THE FEES REQUIRED TO CARRY OUT HIS WORK. THE CONTRACTOR SHALL FURNISH COPIES OF CERTIFICATES AND PERMITS TO THE ARCHITECT.
7. PIPE ROUTING IS SHOWN DIAGRAMMATICALLY ON FIRE PROTECTION DRAWINGS SHALL BE ADJUSTED FOR ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL CLEARANCES AND LIMITATIONS AND FOR EQUIPMENT SELECTION. FURNISH AND INSTALL ALL ELEMENTS REQUIRED TO COMPLETE INTENDED PIPING SYSTEMS WHETHER OR NOT THESE ELEMENTS ARE SPECIFICALLY SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS.
8. CONSULT ALL DRAWINGS, NOTE ARCHITECTURAL DETAILS AND ALL CONDITIONS THAT MAY AFFECT THE WORK AND CARE FOR SAME, WHILE EXECUTING THE WORK UNDER THIS SECTION. COOPERATE AND COORDINATE WITH THE ARCHITECT, ALL OTHER TRADES, BUILDING MANAGEMENT AND THE OWNER.
9. ALL WORK SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS.
10. IN EVENT OF CONFLICT BETWEEN OR AMONG SPECIFIED REQUIREMENTS AND PERTINENT CODES OR REGULATIONS, MORE STRINGENT REQUIREMENTS SHALL GOVERN.
11. TAKE ALL MEASURES REQUIRED TO PROTECT OWNER'S PROPERTY AND EQUIPMENT DURING COURSE OF WORK. SHOULD DAMAGE TO OWNER'S PROPERTY OR EQUIP. OCCUR, REPAIR DAMAGE PROMPTLY AT NO COST TO OWNER.
12. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT CONFORMANCE WITH EQUIPMENT AND MATERIALS MANUFACTURERS' WRITTEN RECOMMENDATIONS.
13. LOCATE PIPES TO FALL WITHIN PARTITIONS, WALLS, OR ROOF CAVITIES AND TO PRECLUDE FURRING, OTHER THAN THAT SHOWN ON ARCHITECTURAL DRAWINGS.
14. ALL FIRE PROTECTION EQUIPMENT, VALVES, ETC. SHALL BE INSTALLED WITH CLEARANCE FOR SERVICING AS RECOMMENDED BY THE MANUFACTURER.

SELECTIVE DEMOLTION NOTES

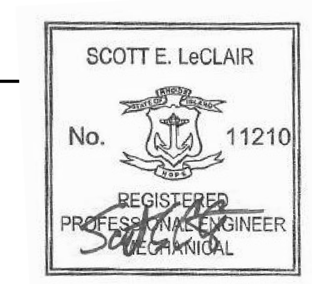
1. CONTRACTOR SHALL VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVERS.
2. PRIOR TO COMMENCING WORK OF THIS SECTION, EXAMINE SITE AND CONDITIONS UNDER WHICH WORK WILL BE PERFORMED. DETERMINE EXACT LOCATIONS OF EXISTING EQUIPMENT, PIPING AND CONTROLS. REPORT TO OWNER ANY CONDITIONS THAT MIGHT ADVERSELY AFFECT WORK. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS AND PREPARATORY WORK.
3. ABANDONING OF SPRINKLER HEADS, VALVES, PIPING OR EQUIPMENT IN PLACE SHALL NOT BE ALLOWED. COMPLETE REMOVAL REQUIRED UNLESS NOTED OTHERWISE.
4. PIPING TO BE REMOVED: REMOVE PORTION OF PIPING INDICATED TO BE REMOVED AND CAP REMAINING PIPING.
5. SPRINKLERS TO BE REMOVED: WHERE AN AREA WILL BE WITHOUT SPRINKLER PROTECTION FOR MORE THAN FOUR HOURS A FIRE WATCH SHALL BE PLACED INTO EFFECT UNTIL PROTECTION HAS BEEN RESTORED. ALL SPRINKLER HEADS MARKED FOR DEMOLITION SHALL BE COMPLETELY REMOVED.
6. EQUIPMENT TO BE REMOVED: DISCONNECT AND REMOVE EQUIPMENT. WHERE THE SYSTEM WILL BE EFFECTED FOR MORE THAN FOUR HOURS PROVIDE A TEMPORARY SYSTEM CAPABLE OF PROVIDING FOR THE EXISTING SYSTEM BEING REMOVED. COMPLETELY REMOVE ALL UNUSED EQUIPMENT CONNECTED TO DEMOLISHED EQUIPMENT.
7. COMPLY WITH ALL STATE AND LOCAL CODES AS TO REMOVAL AND DISPOSAL OF EQUIPMENT REMOVED FROM THE SITE.
8. COMPLY WITH GOVERNING EPA NOTIFICATION REGULATIONS BEFORE BEGINNING SELECTIVE DEMOLITION.
9. COMPLY WITH HAULING AND DISPOSAL REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
10. COMPLY WITH ANSI A10.6 (SAFETY REQUIREMENTS FOR DEMOLITION OPERATIONS) AND NFPA 241 (STANDARD FOR SAFEGUARDING CONSTRUCTION, ALTERATION AND DEMOLITION OPERATIONS)
11. PERMITS: GIVE ALL REQUIRED NOTICES, FILE ALL REQUIRED PLANS AND SPECIFICATIONS RELATING TO THE WORK OF THIS SECTION WITH THE PROPER AUTHORITIES AND PAY FOR ANY REQUIRED PERMITS.
12. ALL EQUIPMENT AND SYSTEMS TO BE REMOVED OR DEMOLISHED UNDER THIS SECTION AND NOT DESIRED BY OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL REMOVE ALL SUCH EQUIPMENT FROM THE SITE PROMPTLY AFTER DETACHMENT FROM BUILDING STRUCTURE.
13. STORAGE OR SALE OF REMOVED ITEMS OR MATERIALS ON-SITE IS NOT PERMITTED.
14. IT IS UNKNOWN WHETHER HAZARDOUS MATERIALS WILL BE ENCOUNTERED IN THE WORK. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; IMMEDIATELY NOTIFY ARCHITECT AND OWNER.
15. EXISTING PIPING SHOWN ON DRAWINGS DOES NOT INDICATE FULL EXTENT OF PIPING DEMOLITION. FIELD VERIFICATIONS REQUIRED.
16. SPRINKLERS EXISTING TO REMAIN: SPRINKLERS SHALL BE PROTECTED DURING DEMOLITION. SPRINKLERS DAMAGED DURING DEMOLITION SHALL BE REPLACED WITH NEW SPRINKLERS MATCHING THE MOUNTING TYPE (I.E. SIDEWALL FOR SIDEWALL OR SEMI RECESSED FOR SEMI RECESSED). MANUFACTURER SHALL BE APPROVED BY OWNER AND ENGINEER PRIOR TO INSTALLATION. ALL WORK SHALL BE PERFORMED AT NO COST TO OWNER.

FIRE PROTECTION EQUIPMENT COORDINATION

FIRE PROTECTION CONTRACTOR SHALL REFER TO THE ARCHITECTURAL, PLUMBING, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR LOCATIONS AND QUANTITIES OF EQUIPMENT RELEASED TO EACH TRADE.

FIRE PROTECTION DRAWING LIST

DWG NO.	DRAWING TITLE
FA0.0	FIRE PROTECTION SCHD., LEGEND AND DETAILS
FA2.0	FIRE PROTECTION NEW WORK PLANS



FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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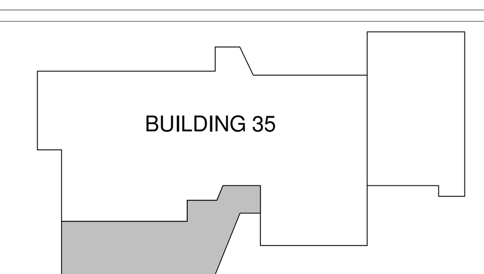


KEY PLAN

N

Drawing Title: FIRE PROTECTION SCHD., LEGEND AND DETAILS

Designed By: ZTR
Checked By: TRB
Approved By: JDB

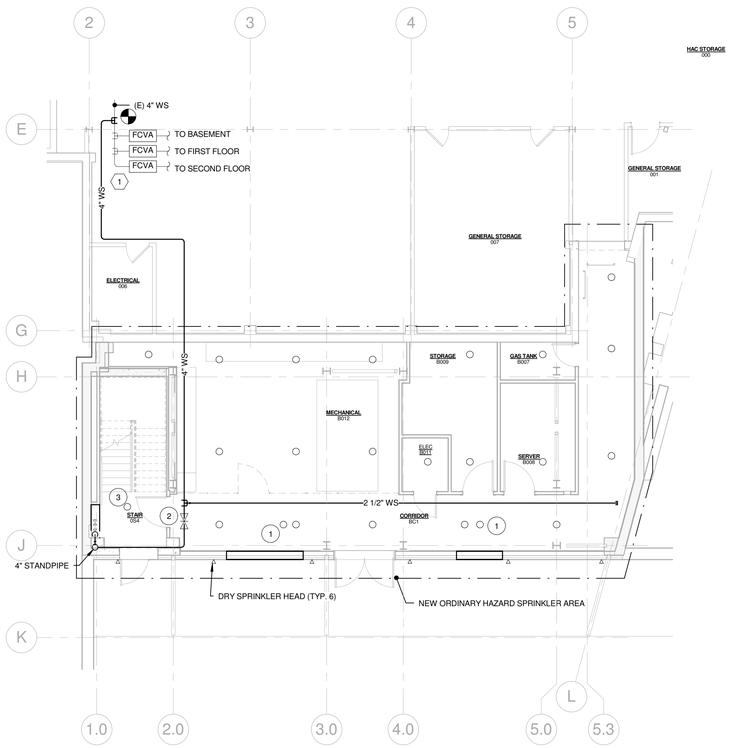
Project Title: BUILDING 35 ADDITION FOR RESEARCH

Building #: 35
Scale: As indicated
Location: PROVIDENCE

Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: FA0.0

Office of Facilities
Department of Veterans Affairs

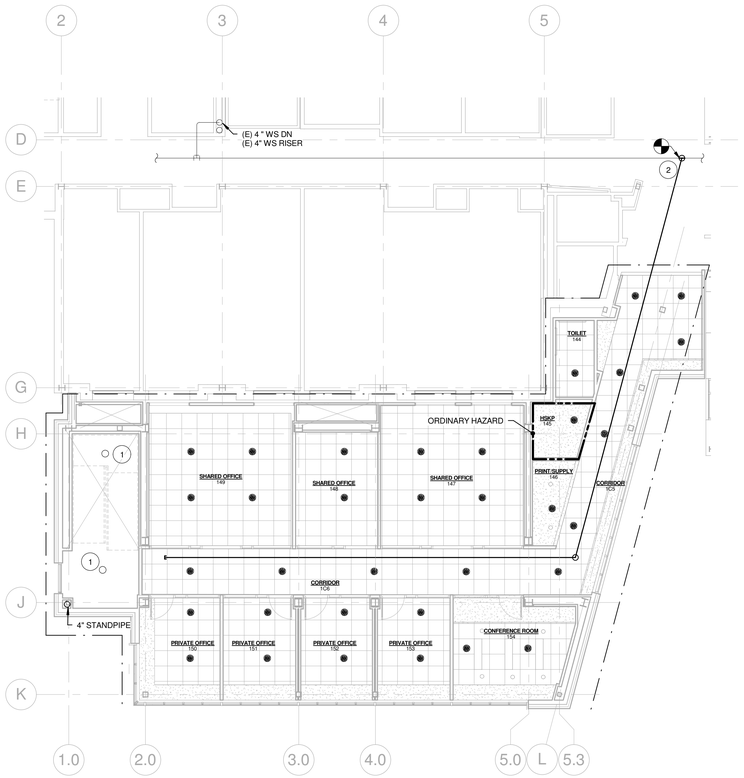
VA FORM 08-6231



FIRE PROTECTION BASEMENT NEW WORK NOTES

1. PROVIDE UPRIGHT SPRINKLER BELOW HVAC DUCTWORK AT LOUVERS.
2. PROVIDE ISOLATION VALVE ON STANDPIPE LINE.
3. CONNECT TO SPRINKLER MAIN USING 1" PIPE. PROVIDE 2 HR FIRE RATED PENETRATION THROUGH STAIRWELL WALL.

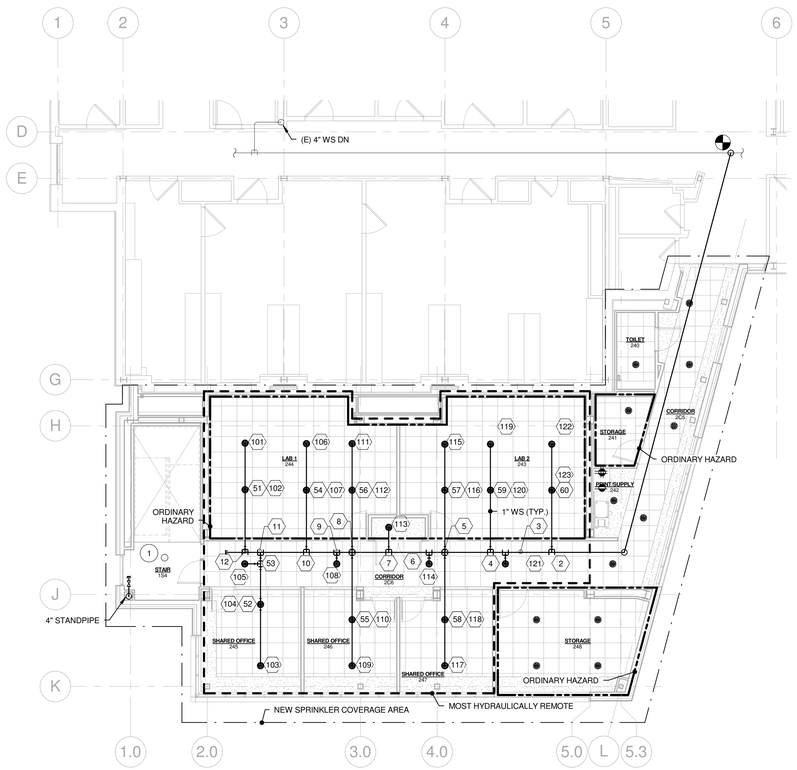
1 FA2.0 FIRE PROTECTION - BASEMENT PLAN
1/8" = 1'-0"



FIRE PROTECTION FIRST FLOOR NEW WORK NOTES

1. CONNECT TO SPRINKLER MAIN USING 1" PIPE VIA SINGLE 2 HR FIRE RATED PENETRATION THROUGH STAIRWELL WALL.
2. PAINT NEW 4" WS PIPE TO MATCH EXISTING WS PIPE WHERE EXPOSED.

2 FA2.0 1 - FIRST FLOOR-FIRE PROTECTION-NEW
1/8" = 1'-0"



FIRE PROTECTION SECOND FLOOR NEW WORK NOTES

1. CONNECT TO SPRINKLER MAIN USING 1" PIPE. PROVIDE 2 HR FIRE RATED PENETRATION THROUGH STAIRWELL WALL.

3 FA2.0 2 - SECOND FLOOR-FIRE PROTECTION-NEW
1/8" = 1'-0"

SCOTT E. LeCLAIR
No. 11210
REGISTERED PROFESSIONAL ENGINEER
MECHANICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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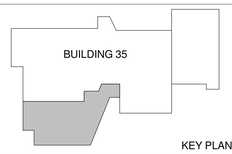

KEY PLAN

N

Drawing Title
FIRE PROTECTION NEW WORK PLANS

Designed By: ZTR
Checked By: TRB
Approved By: JDB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. FA2.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

DATE & TIME PRINTED: 6/30/2015 1:20:28 PM D:\SheetProjects\5414\14009\11 VA Providence Bldg 35 Addition_Local 3D.rvt

ABBREVIATIONS

AC	AIR CHAMBER
AVTR	ACID VENT THROUGH ROOF
BFP	BACK FLOW PREVENTER
CI	CAST IRON
CD	CEILING DIFFUSER
CFH	CUBIC FEET PER HOUR
C.L.D.I.	CEMENT LINED DUCTILE IRON
CONTR	CONTRACTOR
CWR	COLD WATER RISER
DN	DOWN
DWM	DOMESTIC WATER HEATER
DWG	DRAWING
EA.	EACH
E.T.R.	EXISTING TO REMAIN
EAT	ENTERING AIR TEMPERATURE
EX.	EXISTING
F.B.O.C.	FURNISHED BY OTHER CONTRACTOR
FT	FEET
GAL	GALLONS
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HP	HORSE POWER
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HWR	HOT WATER RISER
INV.	INVERT
IN	INCHES
KW	KILOWATTS
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O.E.D.&T.	OPEN END DRAIN AND TRAP
O.S.&Y.	OUTSIDE SCREW AND YOKE
PC	PLUMBING CONTRACTOR
PSI	POUNDS PER SQUARE INCH
RM	ROOM
SA	SHOCK ABSORBER
SF	SQUARE FEET
SPD	SPEED
SS	STAINLESS STEEL
TYP	TYPICAL
WS	WASTE STACK
VB	VACUUM BREAKER
V.T.R.	VENT THROUGH ROOF
V.C.	VITRIFIED CLAY

VALVE LEGEND

IS	ISOLATION VALVE REFER TO DETAILS AND SPEC.
GV	GATE VALVE
GLV	GLOBE VALVE
BLV	BALL VALVE
BFV	BUTTERFLY VALVE
DV	DRAIN VALVE
SCV	SWING CHECK VALVE
LCV	LIFT CHECK VALVE
BV	BALANCE VALVE
PRV	PRESSURE REDUCING VALVE
RV	RELIEF VALVE
TMV	THERMOSTATIC MIXING VALVE
	UNION
FLG	FLANGE
PLS	PIPE LINE STRAINER
BKS	BASKET STRAINER
TRM	THERMOMETER
PG	PRESSURE GAUGE
FSW	FLOW SWITCH
AN	PIPE ANCHOR
GD	PIPE GUIDE
EC	EXPANSION COMPENSATOR
PFC	PIPE FLEXIBLE CONNECTION
PT	PRESSURE/TEMPERATURE PLUG
	PIPE CAP
	STRAINER WITH DRAIN VALVE AND CAP

PIPING LEGEND

	CW	COLD WATER
	HW	HOT WATER
	HWC	HOT WATER CIRCULATION
T	T	TEMPERED WATER
D	DW	DISTILLED WATER
DI	DIW	DEIONIZED WATER
RO	RO	REVERSE OSMOSIS
G	G	GAS
MA	MA	MEDICAL COMPRESSED AIR
MV	MV	MEDICAL VACUUM
VCL	VCL	VACUUM CLEANING
TP	TP	TRAP PRIMER
SW	SW	SPECIAL WASTE
SW	SW	SPECIAL WASTE - BELOW FLOOR
SV	SV	SPECIAL VENT
SV	SV	SPECIAL VENT - BELOW FLOOR
O	OX	OXYGEN
NO	NO	NITROUS OXIDE
OS	OS	ORAL SUCTION
	S. OR W.	SANITARY OR WASTE
	V.	VENT
SD	SD	STORM DRAIN
	V.	VENT - BELOW FLOOR
	SB OR WB	SANITARY OR WASTE - BELOW FLOOR
SD	SD	STORM DRAIN - BELOW FLOOR
IW	IW	INDIRECT WASTE
FM	FM	FORCED MAIN
GS	GS	GLYCOL SUPPLY
		PIPING TO BE REMOVED
		EXISTING PIPING TO REMAIN
	SLB	SLEEVE BEAM
		RUN-OUT OFF TOP
		RUN-OUT OFF BOTTOM
		PIPE UP
		PIPE DOWN
		CAP ON END OF PIPE
		PIPE BREAK
	C.T.E.	CONNECT TO EXISTING
	W. & T.	WASTE AND TRAP
SW	SW. & T.	SPECIAL WASTE AND TRAP
	C.O.	CLEANOUT
	D.C.O.	DANDY CLEANOUT
	F.C.O.	FLOOR CLEANOUT
	W.C.O.	WALL CLEANOUT
	W.H.	WALL HYDRANT
		DIRECTION OF FLOW
		DIRECTION OF PITCH DOWN
	FD	FLOOR DRAIN
	RD	ROOF DRAIN
	AD	AREA DRAIN
	PD	PLANTER DRAIN
	TB	THRUST BLOCK

DRAWING NOTES

- DEMOLITION NOTE
- NEW WORK NOTE
- CONNECT TO EXISTING
- CAP EXISTING
- LIMIT OF DEMOLITION
- DRAWING REVISION DESIGNATION
- REVISION CLOUD
- ELECTRICAL AREA - THE AREA INDICATED IS AN ELECTRICAL ZONE. DUCTWORK, PIPING, AND SYSTEMS SHALL NOT RUN THROUGH THIS ZONE. EXCEPTION:PIPES, DUCTS, AND EQUIPMENT DEDICATED TO SERVE THE ZONE ARE ALLOWED. COORDINATE WITH ELECTRICAL CONTRACTOR AND COMPLY WITH ALL CODE CLEARANCE REQUIREMENTS.

PLUMBING EQUIPMENT COORDINATION

- PLUMBING CONTRACTOR SHALL REFER TO THE ARCHITECTURAL, FIRE PROTECTION, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR LOCATIONS AND QUANTITIES OF EQUIPMENT RELEASED TO EACH TRADE.

SELECTIVE DEMOLTION NOTES

1. CONTRACTOR SHALL VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVERS.
2. PRIOR TO COMMENCING WORK OF THIS SECTION, EXAMINE SITE AND CONDITIONS UNDER WHICH WORK WILL BE PERFORMED. DETERMINE EXACT LOCATIONS OF EXISTING EQUIPMENT, PIPING AND CONTROLS. REPORT TO OWNER ANY CONDITIONS THAT MIGHT ADVERSELY AFFECT WORK. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS AND PREPARATORY WORK.
3. ABANDONING OF FIXTURES, CARRIERS, PIPING OR EQUIPMENT IN PLACE SHALL NOT BE ALLOWED. COMPLETE REMOVAL REQUIRED UNLESS NOTED OTHERWISE.
4. PIPING TO BE REMOVED: REMOVE PORTION OF PIPING INDICATED TO BE REMOVED, PROVIDE FULL PORT BALL VALVE AND CAP REMAINING PIPING WITH SAME OR COMPATIBLE PIPING MATERIAL.
5. FIXTURES TO BE REMOVED: REMOVE FIXTURES AND ALL ASSOCIATED ACCESSORIES INCLUDING BUT NOT LIMITED TOO, CARRIERS, SUPPORTS, PIPING, FLANGES, OTHER MOUNTING ACCESSORIES AND ETC.
6. EQUIPMENT TO BE REMOVED: DISCONNECT AND REMOVE EQUIPMENT. ALL UNUSED SERVICES CONNECTED TO DEMOLISHED EQUIPMENT SHALL BE REMOVED BACK TO UNUSED PORTION AND SERVICES CAPPED.
7. EQUIPMENT TO BE REMOVED AND SALVAGED: DISCONNECT AND CAP SERVICES, REMOVE EQUIPMENT AND DELIVER TO OWNER. ALL UNUSED PORTIONS SHALL BE DEMOLISHED AS INDICATED WITHIN THESE DOCUMENTS.
8. COMPLY WITH ALL STATE AND LOCAL CODES AS TO REMOVAL AND DISPOSAL OF EQUIPMENT REMOVED FROM THE SITE.
9. COMPLY WITH GOVERNING EPA NOTIFICATION REGULATIONS BEFORE BEGINNING SELECTIVE DEMOLITION.
10. REMOVE PREVIOUSLY ABANDONED WORK IN THE WAY OF EXISTING CONSTRUCTION, OR AS NOTED.
11. COMPLY WITH HAULING AND DISPOSAL REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
12. COMPLY WITH ANSI A10.6 (SAFETY REQUIREMENTS FOR DEMOLITION OPERATIONS) AND NFPA 241 (STANDARD FOR SAFEGUARDING CONSTRUCTION, ALTERATION AND DEMOLITION OPERATIONS)
13. PERMITS: GIVE ALL REQUIRED NOTICES, FILE ALL REQUIRED PLANS AND SPECIFICATIONS RELATING TO THE WORK OF THIS SECTION WITH THE PROPER AUTHORITIES AND PAY FOR ANY REQUIRED PERMITS.
14. ALL EQUIPMENT AND SYSTEMS TO BE REMOVED OR DEMOLISHED UNDER THIS SECTION AND NOT DESIRED BY OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL REMOVE ALL SUCH EQUIPMENT FROM THE SITE PROMPTLY AFTER DETACHMENT FROM BUILDING STRUCTURE.
15. STORAGE OR SALE OF REMOVED ITEMS OR MATERIALS ON-SITE IS NOT PERMITTED.
16. IT IS UNKNOWN WHETHER HAZARDOUS MATERIALS WILL BE ENCOUNTERED IN THE WORK. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; IMMEDIATELY NOTIFY ARCHITECT AND OWNER.
17. EXISTING PIPING SHOWN ON DRAWINGS DOES NOT INDICATE FULL EXTENT OF PIPING DEMOLITION. FIELD VERIFICATIONS REQUIRED.
18. HOT WATER RECIRCULATION SYSTEM SHALL BE BALANCE TESTED BEFORE DEMOLITION WORK BEGINS. CONTRACTOR IS RESPONSIBLE FOR SETTING A BASELINE TO ADHERE TO AFTER NEW CONSTRUCTION. FAILURE TO ESTABLISH A BASELINE WILL REQUIRE THE NEW SYSTEM TO BE BALANCED AND ACHIEVE A STANDARD ACCEPTABLE TO THE OWNER AND ENGINEER.
19. MEDICAL GAS SYSTEMS SHALL BE DEMOLISHED IN ACCORDANCE WITH NFPA 99 AND FGI GUIDELINES.
20. FIXTURES EXISTING TO REMAIN: FIXTURES SHALL BE PROTECTED DURING DEMOLITION. FIXTURES DAMAGED DURING DEMOLITION SHALL BE REPAIRED TO LIKE NEW WORKING CONDITION OR REPLACED WITH SAME FIXTURE. WHERE SAME FIXTURE IS NO LONGER AVAILABLE AN APPROVED EQUAL BY OWNER AND ENGINEER SHALL BE USED. ALL WORK SHALL BE PERFORMED AT NO COST TO OWNER.

GENERAL NOTES

1. PIPE ROUTING IS SHOWN DIAGRAMMATICALLY ON PLUMBING DRAWINGS AND SHALL BE ADJUSTED FOR ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL CLEARANCES AND LIMITATIONS AND FOR EQUIPMENT SELECTION. FURNISH AND INSTALL ALL ELEMENTS REQUIRED TO COMPLETE INTENDED PIPING SYSTEMS WHETHER OR NOT THESE ELEMENTS ARE SPECIFICALLY SHOWN ON DRAWINGS OR CALLED FOR IN SPECIFICATIONS.
2. CONSULT ALL DRAWINGS, NOTE ARCHITECTURAL DETAILS AND ALL CONDITIONS THAT MAY AFFECT THE WORK AND CARE FOR SAME, WHILE EXECUTING THE WORK UNDER THIS SECTION. COOPERATE AND COORDINATE WITH THE ARCHITECT, ALL OTHER TRADES, BLDG. MANAGEMENT, AND THE OWNER.
3. ALL WORK SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS.
4. IN EVENT OF CONFLICT BETWEEN OR AMONG SPECIFIED REQUIREMENTS AND PERTINENT CODES OR REGULATIONS, MORE STRINGENT REQUIREMENTS SHALL GOVERN.
5. TAKE ALL MEASURES REQUIRED TO PROTECT OWNER'S PROPERTY AND EQUIPMENT DURING COURSE OF WORK. SHOULD DAMAGE TO OWNER'S PROPERTY OR EQUIPMENT OCCUR, REPAIR DAMAGE PROMPTLY AT NO COST TO OWNER.
6. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT CONFORMANCE WITH EQUIPMENT AND MATERIALS MANUFACTURERS' WRITTEN RECOMMENDATIONS.
7. LOCATIONS, PLUMBING MOUNTING HEIGHTS, AND DETAILS SHOWN ON ARCHITECTURAL DRAWINGS TAKE PRECEDENCE OVER SAME SHOWN ON PLUMBING DRAWINGS AND DESCRIBED IN SECTIONS OF THE SPECIFICATIONS. WHEN ARCHITECTURAL DRAWINGS DO NOT SHOW PRECISE LOCATIONS OF DEVICES OR EQUIPMENT, LOCATE AS DIRECTED BY THE ARCHITECT.
8. LOCATE PIPES TO FALL WITHIN PARTITIONS, WALLS, OR ROOF CAVITIES AND TO PRECLUDE FURRING, OTHER THAN THAT SHOWN ON ARCHITECTURAL DRAWINGS.
9. ALL PLUMBING EQUIPMENT, VALVES, ETC. SHALL BE INSTALLED WITH CLEARANCE FOR SERVICING AS RECOMMENDED BY THE MANUFACTURER.
10. REFER TO SCHEDULES AND SPECIFICATIONS FOR PLUMBING FIXTURES AND EQUIPMENT REQUIRING LOW VOLTAGE. COORDINATE ALL LOW VOLTAGE REQUIREMENTS, INCLUDING ALARMS, WITH CONTROLS CONTRACTOR.
11. REFER TO SCHEDULES AND SPECIFICATIONS FOR PLUMBING FIXTURES AND EQUIPMENT REQUIRING ELECTRICAL POWER. COORDINATE ALL POWER REQUIREMENTS WITH ELECTRICAL CONTRACTOR.

PLUMBING DRAWING LIST

DWG NO.	DRAWING TITLE
PL0.0	PLUMBING LEGEND
PL1.0	PLUMBING BASEMENT DEMOLITION PLAN
PL1.1	PLUMBING FIRST FLOOR DEMOLITION PLAN
PL2.0	PLUMBING BASEMENT PLAN
PL2.1	PLUMBING FIRST FLOOR PLAN
PL2.2	PLUMBING SECOND FLOOR PLAN
PL2.3	PLUMBING ROOF PLAN
PL3.0	PLUMBING SCHEDULES AND DETAILS
PL3.1	PLUMBING RISER DIAGRAMS

DEMOLITION LEGEND

"X"	EXISTING PLUMBING FIXTURE, EQUIPMENT OR SYSTEM TO BE SELECTIVELY DEMOLISHED
"XR"	EXISTING PLUMBING FIXTURE, EQUIPMENT OR SYSTEM TO BE REMOVED, STORED AND RELOCATED
"XT"	EXISTING PLUMBING FIXTURE, EQUIPMENT OR SYSTEM TO BE REMOVED AND TURNED OVER TO OWNER FOR REUSE.
"XN"	NEW LOCATION OF EXISTING RELOCATED PLUMBING FIXTURE OR EQUIPMENT
"E"	EXISTING PLUMBING FIXTURE, EQUIPMENT OR SYSTEM TO REMAIN

EXAMPLE

X XR XT XN E

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Number	Date	Revision
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BUILDING 35
KEY PLAN
N

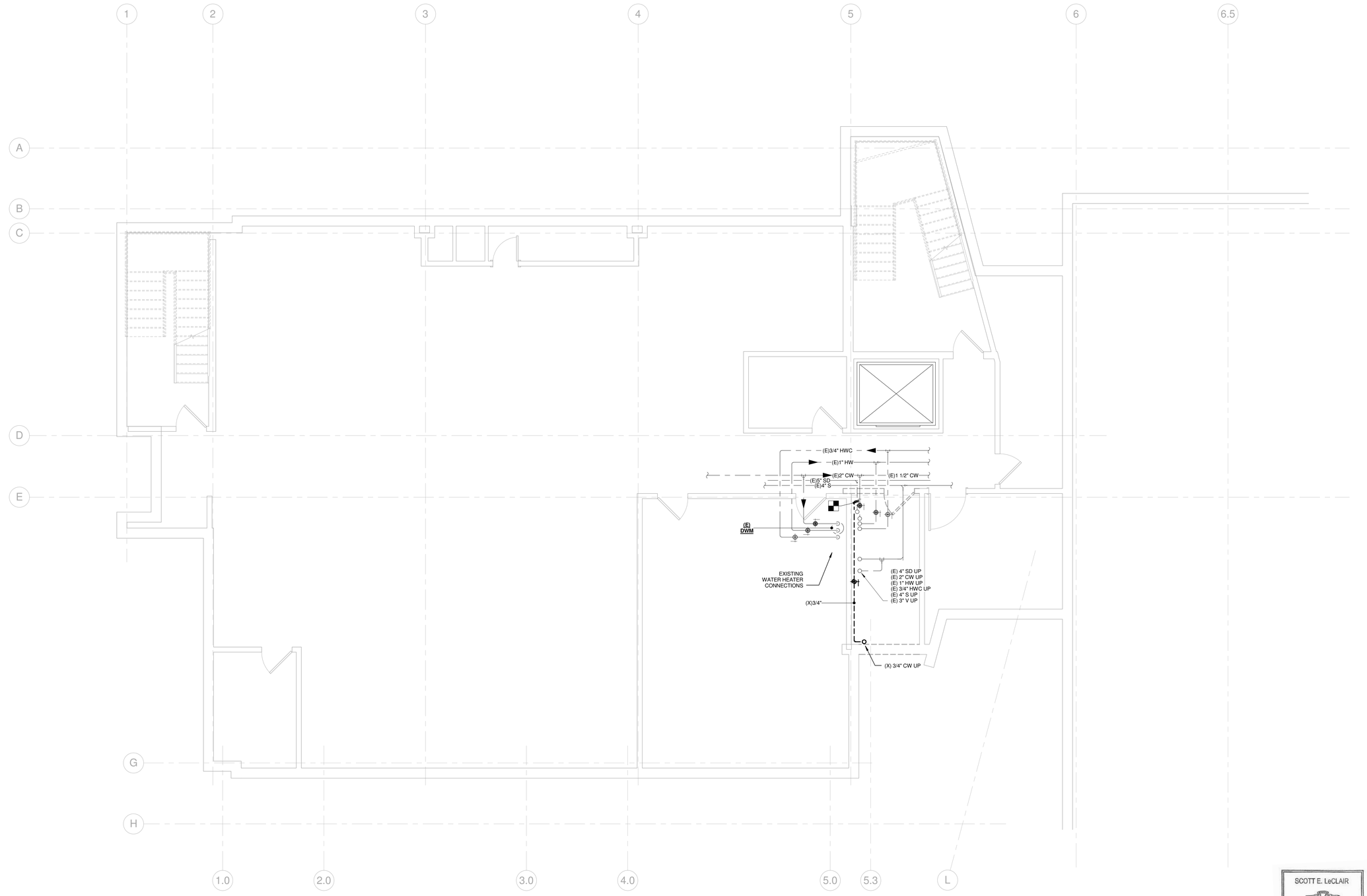
Drawing Title: PLUMBING LEGEND
Designed By: ZTR
Checked By: TRB
Approved By: JDB

Project Title: BUILDING 35 ADDITION FOR RESEARCH
Building #: 35
Scale: 12" = 1'-0"
Location: PROVIDENCE

Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: PL0.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



1	PLUMBING BASEMENT DEMOLITION PLAN
PL1.0	1/4" = 1'-0"

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BUILDING 35
KEY PLAN

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Drawing Title
PLUMBING BASEMENT DEMOLITION PLAN

Designed By: ZTR
Checked By: TRB
Approved By: JDB

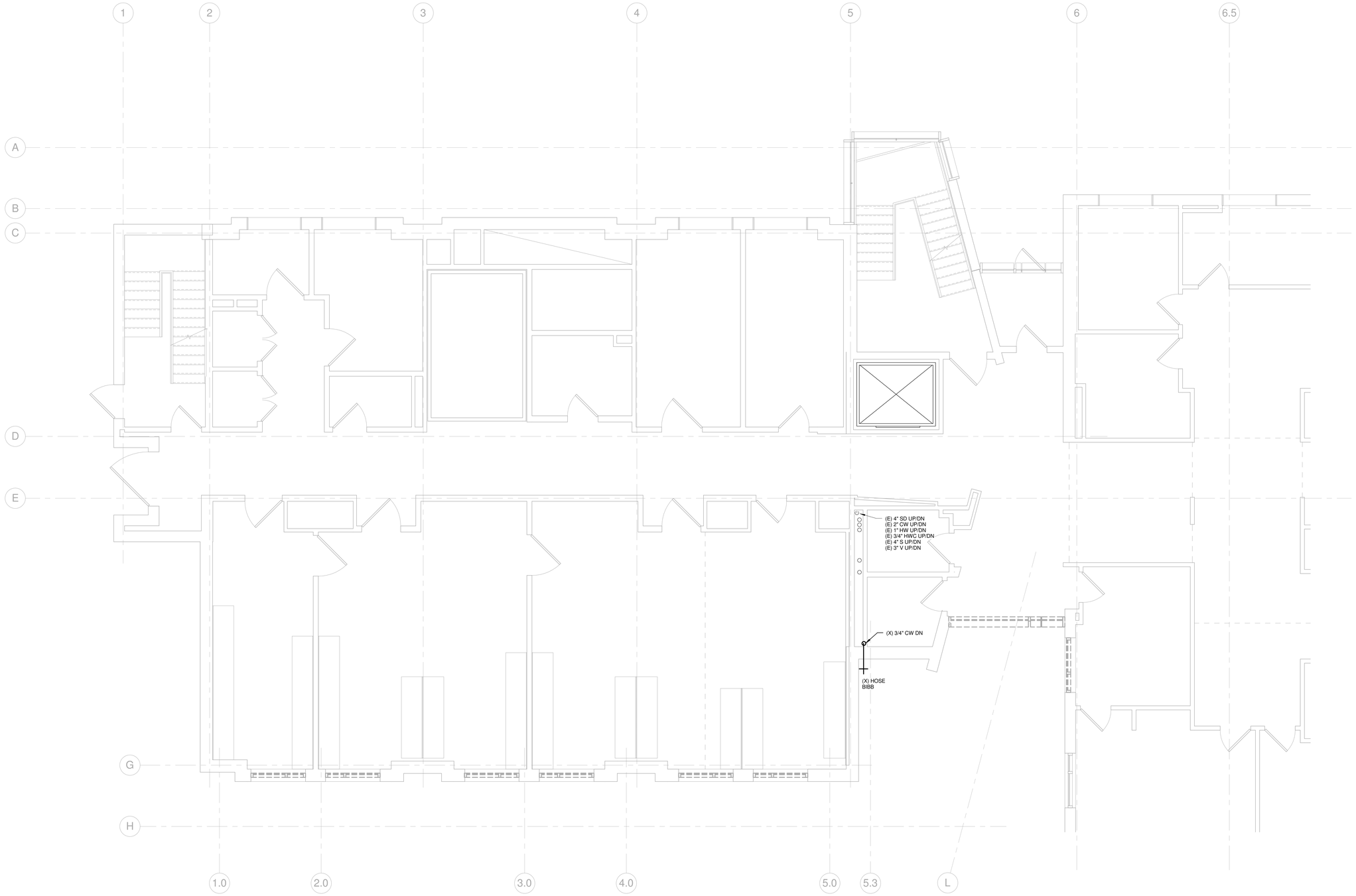
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/4" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. PL1.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



1 PLUMBING FIRST FLOOR DEMOLITION PLAN
PL1.1 1/4" = 1'-0"

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BUILDING 35
KEY PLAN
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Drawing Title
PLUMBING FIRST FLOOR DEMOLITION PLAN

Designed By: ZTR
Checked By: TRB
Approved By: JDB

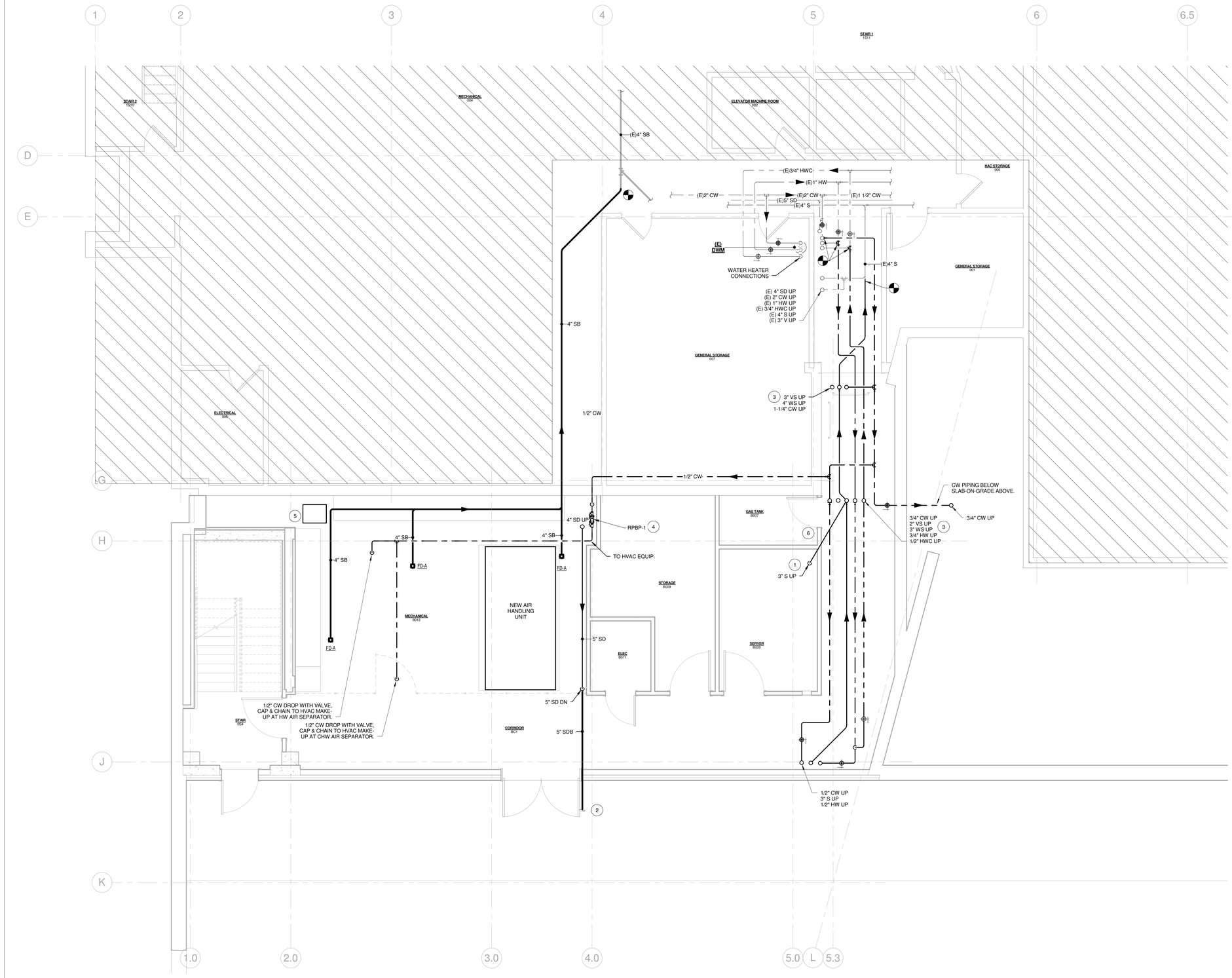
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/4" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. PL1.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



1 PL2.0 PLUMBING BASEMENT PLAN
1/4" = 1'-0"

PLUMBING NEW WORK NOTES

1. CONNECT SANITARY PIPING TO SANITARY STACK ABOVE NEW STACK VENT CONNECTION POINT ON SANITARY STACK.
2. CONNECT NEW STORM DRAINAGE TO EXISTING STORM DRAINAGE BASIN OUTSIDE OF BUILDING. COORDINATE CONNECTION WITH CIVIL ENGINEER DRAWINGS AND SITE CONTRACTOR.
3. PROVIDE SHUT OFF QUARTER TURN BALL VALVES ON DOMESTIC WATER RISERS TO FIRST AND SECOND FLOOR ABOVE.
4. PROVIDE REDUCED PRESSURE BACKFLOW PREVENTER AFTER DROP FOR MAKEUP WATER TO HVAC EQUIPMENT.
5. NEW DRI-STEEM MODEL RO-202 REVERSE OSMOSIS SYSTEM BY PLUMBING CONTRACTOR. MAKE-UP PIPING AND OTHER CONNECTIONS BY MECHANICAL CONTRACTOR.
6. PROVIDE DRIP PANS UNDER DRAINAGE LINE WITHIN SERVER ROOM.

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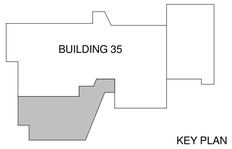

N

Drawing Title
PLUMBING BASEMENT PLAN

Designed By: ZTR
Checked By: TRB
Approved By: JTB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. PL2.0

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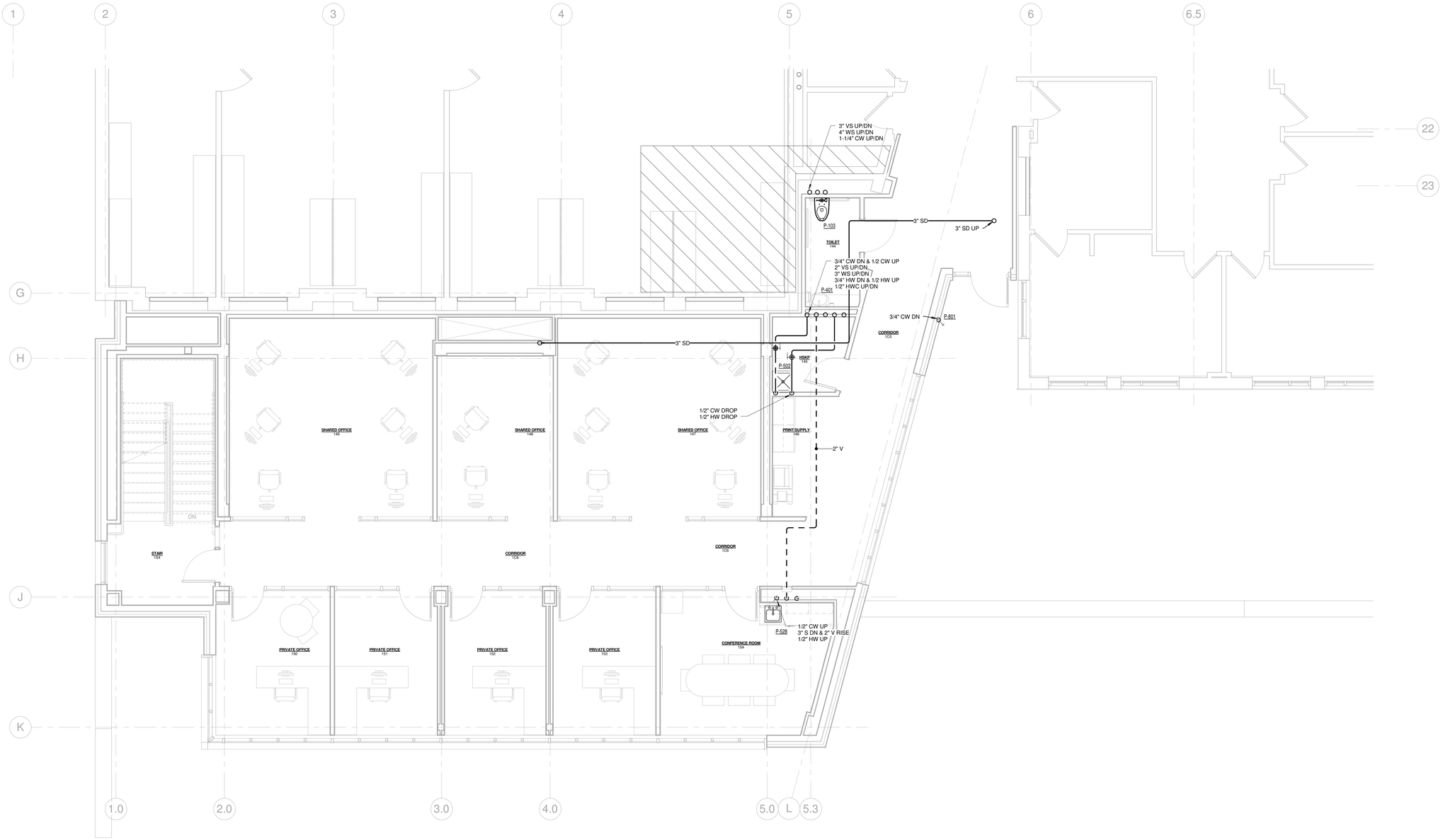

2 ENLARGED PLUMBING FIRST FLOOR PLAN
PL2.1 1/4" = 1'-0"

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BUILDING 35

KEY PLAN

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Drawing Title
PLUMBING FIRST FLOOR PLAN

Designed By: ZTR
Checked By: TRB
Approved By: JDB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/4" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. PL2.1

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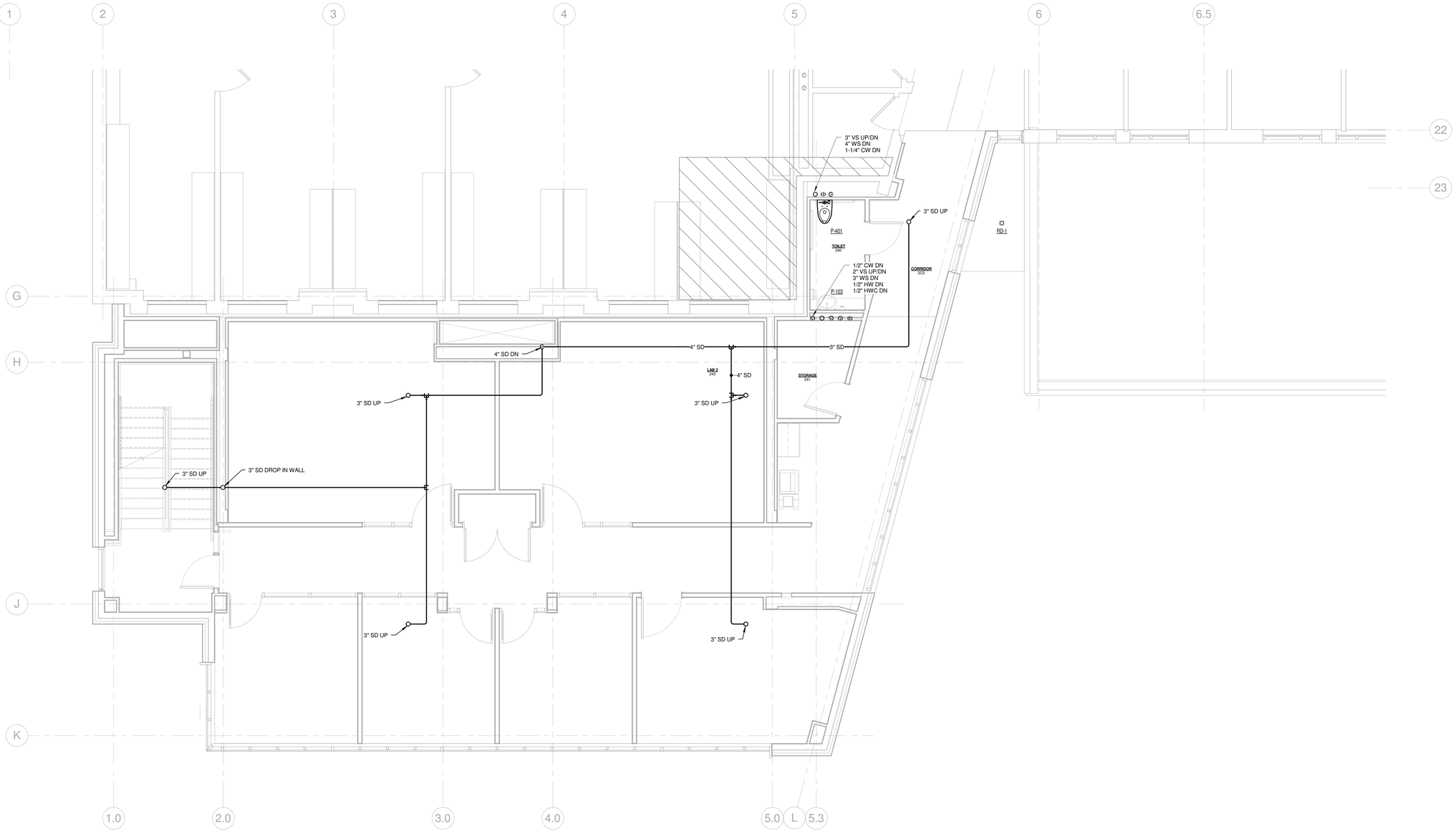

1 ENLARGED PLUMBING SECOND FLOOR PLAN
PL2.2 1/4" = 1'-0"

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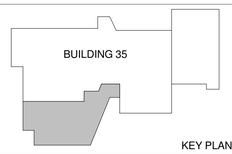

KEY PLAN

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Drawing Title
PLUMBING SECOND FLOOR PLAN

Designed By: ZTR
Checked By: TRB
Approved By: JDB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/4" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. PL2.2

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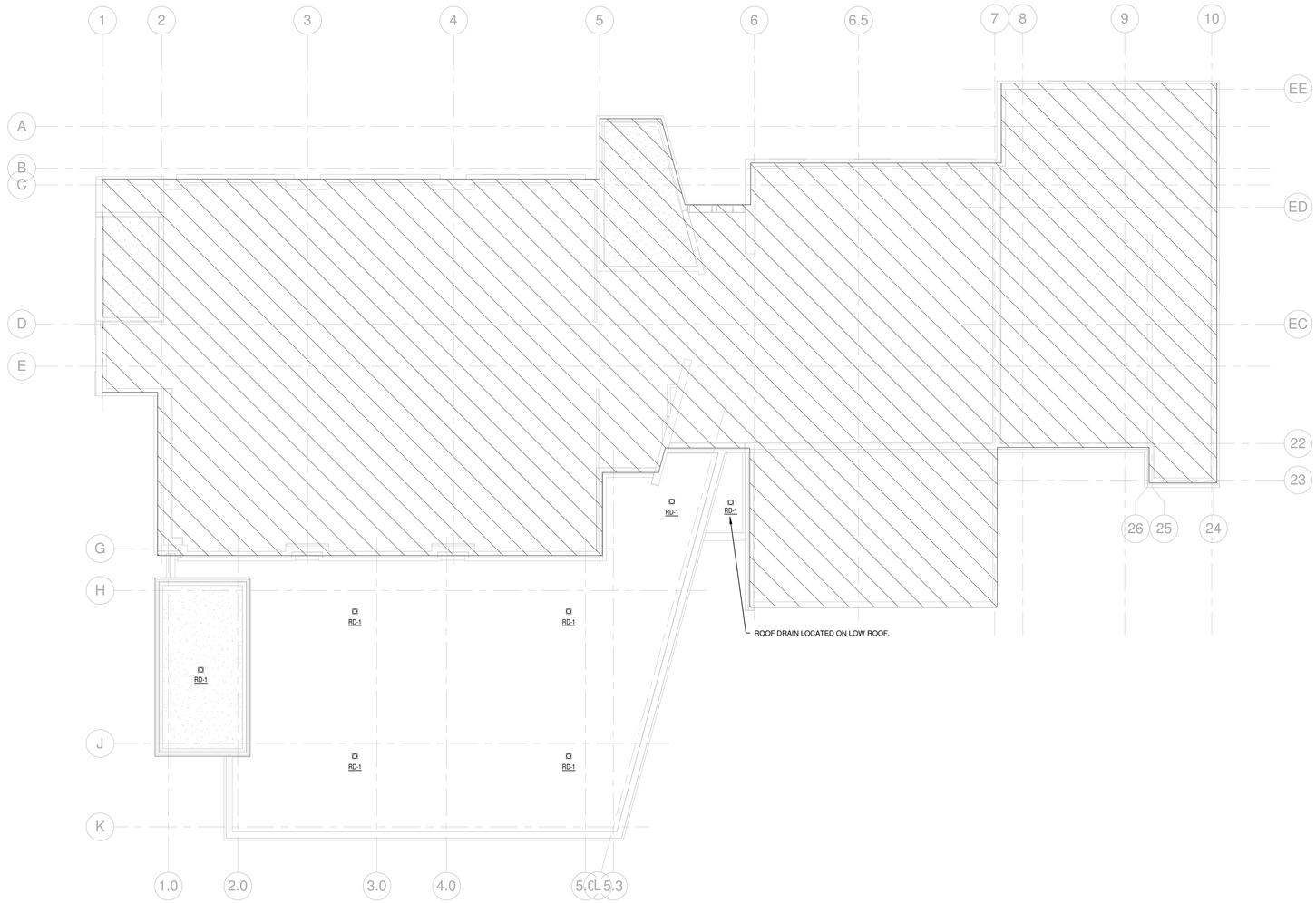

1 PLUMBING ROOF PLAN
PL2.3 1/8" = 1'-0"

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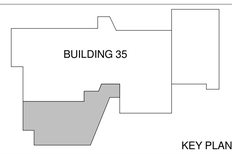

KEY PLAN

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Drawing Title
PLUMBING ROOF PLAN

Designed By: ZTR
Checked By: TRB
Approved By: JDB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/8" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. PL2.3

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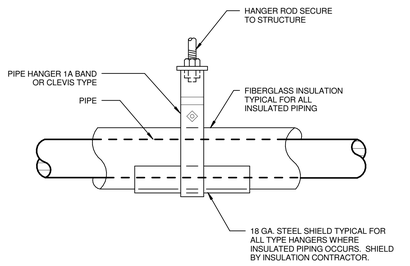
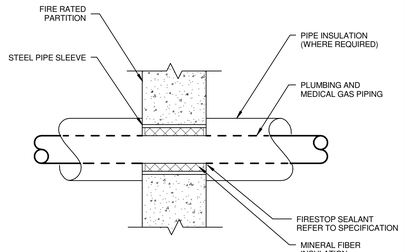
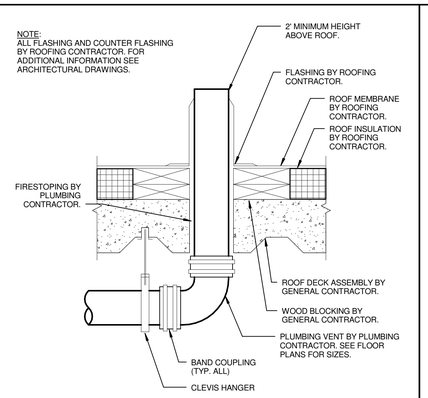
P - PLUMBING FIXTURE SCHEDULE																
					PIPE CONNECTION SIZE				PRESSURE				MOUNTING			
TAG	DESCRIPTION	MFR.	MODEL	ADA (Y/N)	CW	HW	W	V	MIN	MAX	FLOW CONTROL	FAUCET / VALVE	WALL	COUNTER		REMARKS
FD-A	FLOOR DRAIN	JR SMITH	2005	N/A	0"	0"	4"	2"				N/A				PROVIDE WITH TRAP PRIMER.
P-103	WATER CLOSET	AMERICAN STD.	AF WALL 2257.101	N	1 1/2"	0"	4"	2"	25	80	1.28 GPF	SLOAN ROYAL 111	X			PROVIDE CHURCH, MODEL 295CT SEAT
P-401	LAVATORY	AMERICAN STD.	9960.403 "MEZZO"	Y	1/2"	1/2"	2"	1 1/2"	8	80	0.5 GPM	DELTA 21C124		X		PROVIDE WITH STOPS & SUPPLIES, OFFSET GRID DRAIN, TRAP, & INSULATION KIT. PROVIDE THERMOSTATIC MIXING VALVE SYMMONS S-210.
P-502	MOP SINK	FIAT	TSB-100	N/A	1/2"	1/2"	0"	0"	8	80	3.0 GPM	CHICAGO 445-897SRCXKCP				PROVIDE WITH STAINLESS STEEL WALL GUARDS, MOP HANGER AND BALL VALVES ON WALL FOR SHUT OFFS.
P-528	HANDWASH SINK	JUST MFG	USADA13518	Y	1/2"	1/2"	2"	1 1/2"	8	80	1.5 GPM	CHICAGO 786-E29XKABCP		UNDERMOUNT		PROVIDE WITH STOPS & SUPPLIES, OFFSET GRID DRAIN, TRAP, THERMOSTATIC MIXING VALVE, & INSULATION KIT.
P-801	FROST PROOF HOSE BIBB	JR SMITH	5609QT	N/A	1/2"	0"	0"	0"	8	80	3.0 GPM	N/A				COORDINATE WALL THICKNESS PRIOR TO PURCHASE OF HOSE BIBB.
RD-1	ROOF DRAIN	JR SMITH	1310	N/A	0"	0"	3"	0"				N/A				ROOF DRAIN



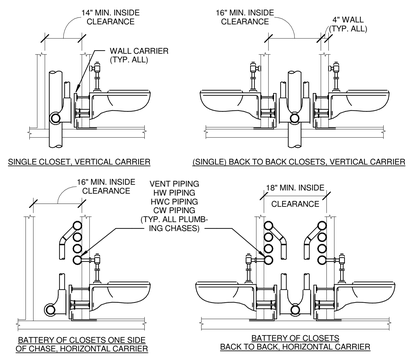
PIPE HANGER DIAGRAM — NO SCALE — 220529-01



PIPE PENETRATION THRU FIRE RATED PARTITION — NO SCALE — 220517-02



TYPICAL VENT THROUGH ROOF DETAIL — NO SCALE — 221316-01



PIPE CHASE CLEARANCES DIAGRAM FOR WALL HUNG CARRIER CLOSETS — NO SCALE — 224213-01

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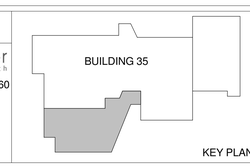

KEY PLAN

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Drawing Title
PLUMBING SCHEDULES AND DETAILS

Designed By: ZTR
Checked By: TRB
Approved By: JDB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale NTS
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. PL3.0

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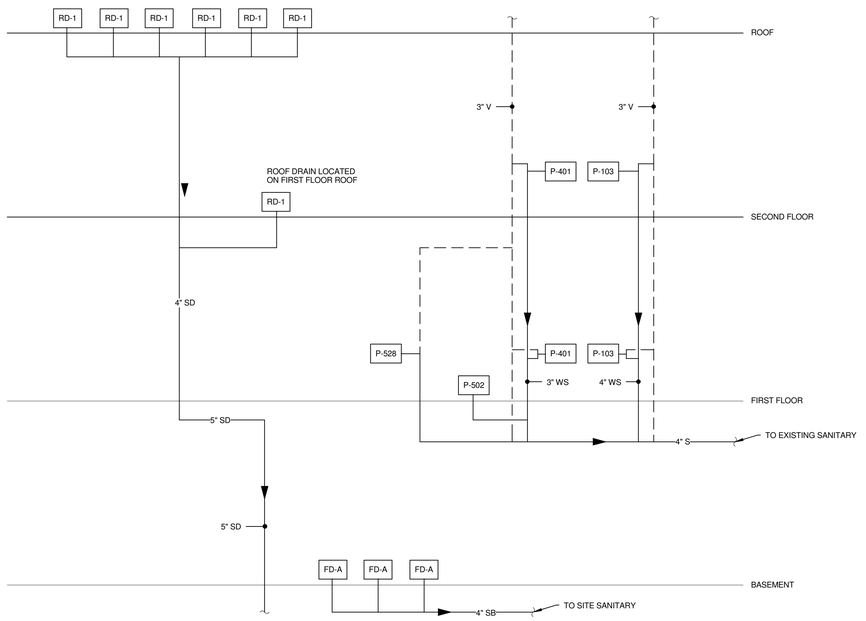
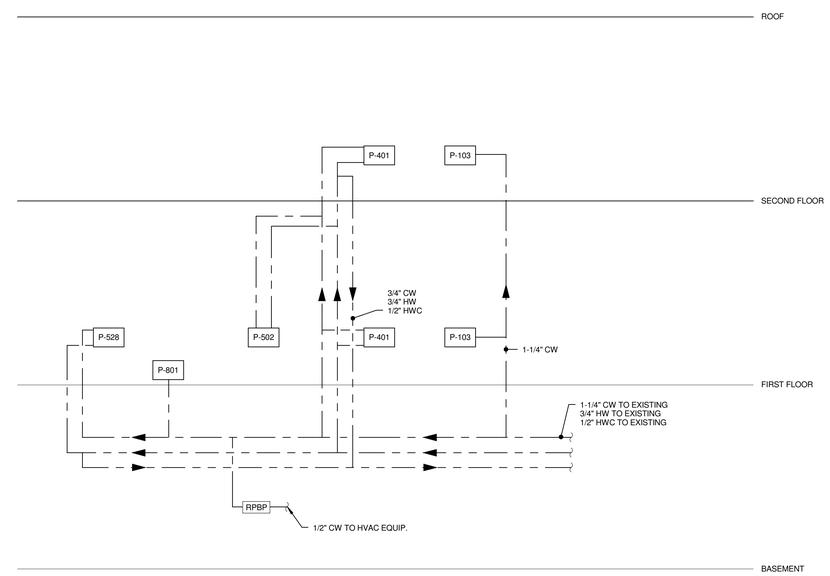
Department of Veterans Affairs

VA FORM 08-6231



1 PL3.1 PLUMBING SANITARY RISER DIAGRAM
NTS



2 PL3.1 PLUMBING DOMESTIC RISER DIAGRAM
NTS

SCOTT E. LeCLAIR
No. 11210
REGISTERED PROFESSIONAL ENGINEER
MECHANICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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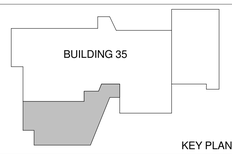

KEY PLAN

N

Drawing Title
PLUMBING RISER DIAGRAMS

Designed By: ZTR
Checked By: TRB
Approved By: JDB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale NTS
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. PL3.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

PIPING LEGEND

LPS	LPS	LOW PRESSURE STEAM
LPC	LPC	LOW PRESSURE STEAM CONDENSATE
MPS	MPS	MEDIUM PRESSURE STEAM
MPC	MPC	MEDIUM PRESSURE STEAM CONDENSATE
HPS	HPS	HIGH PRESSURE STEAM
HPC	HPC	HIGH PRESSURE STEAM CONDENSATE
HCS	HCS	HOT/CHILLED WATER SUPPLY
HCR	HCR	HOT/CHILLED WATER RETURN
HWS	HWS	HOT WATER SUPPLY
HWR	HWR	HOT WATER RETURN
CHS	CHS	CHILLED WATER SUPPLY
CHR	CHR	CHILLED WATER RETURN
CWS	CWS	CONDENSER WATER SUPPLY
CWR	CWR	CONDENSER WATER RETURN
	X	PIPING TO BE REMOVED
	E	EXISTING PIPING TO REMAIN
		PIPE OFF BOTTOM
		PIPE OFF TOP
		RUN-OUT OFF TOP
		RUN-OUT OFF BOTTOM
		BRANCH CONNECTION (DIRECTION TO BE FIELD DETERMINED)
		PIPE UP
		PIPE DOWN
		DIRECTION OF FLOW
		PIPE BREAK
		DRAIN PIPE PITCH AND FLOW

VALVE LEGEND

IS	ISOLATION VALVE REFER TO DETAILS AND SPEC.
GV	GATE VALVE
GLV	GLOBE VALVE
BLV	BALL VALVE
BFV	BUTTERFLY VALVE
DV	DRAIN VALVE
SCV	SWING CHECK VALVE
LCV	LIFT CHECK VALVE
BC	BALANCE COCK
BV	BALANCE VALVE
PRV	PRESSURE REDUCING VALVE
RV	RELIEF VALVE
SC	SELF CONTAINED CONTROL VALVE
	UNION
FLG	FLANGE
PLS	PIPE LINE STRAINER
BKS	BASKET STRAINER
CRD	CONCENTRIC REDUCER (ENLARGER)
ERD	ECCENTRIC REDUCER (ENLARGER)
TRM	THERMOMETER
PG	PRESSURE GAUGE
FSW	FLOW SWITCH
AAV	AUTOMATIC AIR VENT
MAV	MANUAL AIR VENT
FMS	FLOW MEASURING STATION
AN	PIPE ANCHOR
GD	PIPE GUIDE
EC	EXPANSION COMPENSATOR
PFC	PIPE FLEXIBLE CONNECTION
TT	THERMOSTATIC STEAM TRAP
F&TT	FLOAT & THERMOSTATIC STEAM TRAP
BT	BUCKET STEAM TRAP
PT	PRESSURE/TEMPERATURE PLUG
	PIPE CAP
	STRAINER WITH DRAIN VALVE AND CAP

DUCTWORK LEGEND

12"x8"	RECTANGULAR DUCTWORK - FIRST DIMENSION IS SIDE SHOWN (IN.)
12"Ø	ROUND DUCTWORK - DIMENSION IS DUCT DIAMETER (IN.)
(E) 12"x8"	EXISTING DUCTWORK TO REMAIN
(X) 12"x8"	EXISTING DUCTWORK TO BE DEMOLISHED
	RECTANGULAR SUPPLY DUCTWORK UP
	RECTANGULAR SUPPLY DUCTWORK DOWN
	RECTANGULAR RETURN/EXHAUST DUCTWORK UP
	RECTANGULAR RETURN/EXHAUST DUCTWORK DOWN

MECHANICAL DEMOLITION / RELOCATION LEGEND

"X"	EXISTING MECHANICAL EQUIPMENT, DEVICE AND/OR SYSTEM TO BE SELECTIVELY DEMOLISHED
"XR"	EXISTING MECHANICAL EQUIPMENT TO BE REMOVED, STORED AND RE-LOCATED.
"XT"	EXISTING MECHANICAL DEVICE OR EQUIPMENT TO BE REMOVED AND TURNED OVER TO OWNER FOR RE-USE
"XL"	RE-LOCATED EXISTING MECHANICAL EQUIPMENT OR DEVICE.
"E"	EXISTING MECHANICAL EQUIPMENT OR DEVICE TO REMAIN

EXAMPLE

X XR XT XL E

DAMPERS

ACD	MOTORIZED OR AUTOMATIC CONTROL DAMPER
SD	SMOKE DAMPER
BD	BACK DRAFT DAMPER
FD	FIRE DAMPER
FS	FIRE & SMOKE DAMPER
OBD	OPPOSED-BLADE DAMPER
VD	VOLUME DAMPER

CONTROL LEGEND

CO	CO SENSOR
CO2	CO2 SENSOR
HS1	HUMIDITY SENSOR
TS1	TEMPERATURE SENSOR
SP1	STATIC PRESSURE SENSOR
DPS	DIFFERENTIAL PRESSURE SENSOR
RDP	ROOM DIFFERENTIAL PRESSURE SENSOR
T	HEAT/COOL THERMOSTAT/SENSOR
TR	REVERSE ACTING THERMOSTAT
$	SWITCH CONTROLLER
C	TIME CLOCK CONTROLLER
H	HUMIDITY SENSOR
TS	TEMPERATURE SENSOR
FS1	FLOW SWITCH
F	FLOW RATE SENSOR
DPS	DIFFERENTIAL PRESSURE SENSOR
DPS	DIFFERENTIAL PRESSURE SWITCH
HHL	HIGH HUMIDITY LIMIT SWITCH
SPH	HIGH STATIC PRESSURE SWITCH, MANUAL RESET
SPL	LOW STATIC PRESSURE SWITCH, MANUAL RESET
FZ	FREEZESTAT
HLT	HIGH LIMIT THERMOSTAT
E1	ENTHALPY CONTROL
AFS-	AIR FLOW MEASURING STATION
WFS-	WATER FLOW MEASURING STATION
VFD	VARIABLE FREQUENCY DRIVE
DPS	DIFFERENTIAL PRESSURE SENSOR
DSD	DUCT SMOKE DETECTOR
OE	OUTSIDE ENTHALPY SENSOR
	FILTER GAUGE
FMS	FACILITY MANAGEMENT PANEL
	CAPILLARY TUBE
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
	COIL
	CONTROL LINE

DRAWING NOTES

SG-A, RG-A or EG-A 10"Ø, 12"x12" 200 TYP 3	SUPPLY/RETURN/EXHAUST REGISTER OR GRILLE TAG NECK SIZE OR LENGTH IF LINEAR DIFFUSER AIR VOLUME (CFM) QUANTITY
SD-A-# 10"Ø, 12"x12" 200 TYP 3	SUPPLY DIFFUSER TAG NECK SIZE OR LENGTH IF LINEAR DIFFUSER AIR VOLUME (CFM) QUANTITY
FTR-A 10'-0" 11.8	FIN TUBE RADIATION DESIGNATION ELEMENT LENGTH HEATING CAPACITY (MBH)
ACCU-1	EQUIPMENT TAG
	REVISION NOTE
	DEMOLITION WORK NOTE
	NEW WORK NOTE
	NEW WORK NOTE
	CONNECT TO EXISTING
	CAP EXISTING
	LIMIT OF DEMOLITION
	REVISION CLOUD
	ELECTRICAL AREA - THE AREA INDICATED IS AN ELECTRICAL ZONE. DUCTWORK, PIPING, AND SYSTEMS SHALL NOT RUN THROUGH THIS ZONE. EXCEPTION:PIPES, DUCTS, AND EQUIPMENT DEDICATED TO SERVE THE ZONE ARE ALLOWED. COORDINATE WITH ELECTRICAL CONTRACTOR AND COMPLY WITH ALL CODE CLEARANCE REQUIREMENTS.

EQUIPMENT TAGS

AC	COMPUTER ROOM AIR CONDITIONING UNIT
ACCU	AIR COOLED CONDENSING UNIT
AFS	AIR FLOW STATION
ARC	AIR COOLED REFRIGERANT CONDENSER
B	BOILER
CH	CHILLER
CP	CONDENSATE PUMP
CT	COOLING TOWER
CUH	CABINET UNIT HEATER (STEAM OR WATER)
CV	CONVECTOR
DC	DRY COOLER
DH	DUCT HEATING COIL
EB	ELECTRIC BASEBOARD
EC	EVAPORATIVE COOLER
EG	EXHAUST GRILLE
EH	EXHAUST HOOD
ER	EXHAUST REGISTER
F	FAN (GENERIC)
FB	FILTER BOX
FCU	FAN COIL UNIT
FP	FAN POWERED AIR TERMINAL
FTR	FIN TUBE RADIATION
H	HUMIDIFIER
HP	WATER SOURCE HEAT PUMP
HX	HEAT EXCHANGER
LU	LOUVER
MUA	GAS FIRED MAKE-UP AIR UNIT
P	PUMP
RG	RETURN GRILLE
RR	RETURN REGISTER
RH/IH	RELIEF HOOD/ INTAKE HOOD
RTU	ROOFTOP UNIT
SA	SOUND ATTENUATOR
SD	SUPPLY DIFFUSER
SG	SUPPLY GRILLE
SR	SUPPLY REGISTER
UH	UNIT HEATER
UV	UNIT VENTILATOR
V	VARIABLE AIR VOLUME BOX
VI	VIBRATION INSOLATION
WFS	WATER FLOW STATION

AIR DEVICE LEGEND

SG	SIDEWALL SUPPLY REGISTER
SD	SUPPLY DIFFUSER
RG	RETURN GRILLE
EG	EXHAUST REGISTER OR GRILLE
EG/RG	SIDEWALL EXHAUST/RETURN REGISTER
SD-?	SUPPLY AIR DIFFUSER 4-WAY BLOW
SD-?- 4	SUPPLY AIR DIFFUSER 4-WAY BLOW
SD-?- 3	SUPPLY AIR DIFFUSER 3-WAY BLOW
SD-?-2A	SUPPLY AIR DIFFUSER 2-WAY BLOW
SD-?-2B	SUPPLY AIR DIFFUSER 2-WAY BLOW
SD/R	SUPPLY DIFFUSER OR REGISTER BELOW DUCT
RG	RETURN REGISTER OR GRILLE BELOW DUCT
EG	EXHAUST REGISTER OR GRILLE BELOW DUCT
	SUPPLY AIR
	RETURN OR EXHAUST AIR
U	UNDERCUT DOORWAY (BY G.C.)
DL	DOOR LOUVER (BY G.C.)

ABBREVIATIONS

AAV	AUTOMATIC AIR VENT
ACC	AIR COOLED CONDENSER
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
ARCH.	ARCHITECT
AS	AIR SEPARATOR
ATC	AUTOMATIC TEMPERATURE CONTROL
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT PER HOUR
C	CLOSED
CA	COMBUSTION AIR
CAP	CAPACITY
CAR	COMBUSTION AIR RELEASE
CAS	COMBUSTION AIR SUPPLY
CC	COOLING COIL
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CO	CLEAN OUT
CONN.	CONNECT
CONTR	CONTRACTOR
CP	CONTROL PANEL
CT	CURRENT TRANSFORMER
CV	CONTROL VALVE
DB	DRY BULB TEMPERATURE (°F)
DDC	DIRECT DIGITAL CONTROL
DIA.	DIAMETER
DN	DOWN
DR	DRAIN
DSF	DESTRATIFICATION FAN
DWG	DRAWING
EA	EACH
E.A.	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECU	EVAPORATIVE CONDENSING UNIT
EF	EXHAUST FAN
EG	EXHAUST AIR GRILLE
EL	EXPANSION LOOP
FMS	FACILITY MANAGEMENT SYSTEM
ER	EXHAUST AIR REGISTER
ERV	EXHAUST ROOF VENT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETBR	EXISTING TO BE REMOVED
ETR	EXISTING TO REMAIN
EUH	ELECTRIC UNIT HEATER
EWT	ENTERING WATER TEMPERATURE
EX.	EXISTING
EXH	EXHAUST
FA	FREE AREA
FAI	FRESH AIR INTAKE
FLA	FULL LOAD AMPS
FLD	FLOOR DRAIN
FPC	FIRE PROTECTION CONTRACTOR
FPI	FINS PER INCH
FPM	FEET PER MINUTE
FS	COMBINATION FIRE AND SMOKE DAMPER
FT	FEET
GAL	GALLONS
GC	GENERAL CONTRACTOR
GE	GENERAL EXHAUST
GPM	GALLONS PER MINUTE
GUH	GAS FIRED UNIT HEATER
HC	HEATING COIL
HE	HOOD EXHAUST
HEF	HOOD EXHAUST FAN
HP	HORSE POWER
HSF	HOOD SUPPLY FAN
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
IH	INTAKE HOOD
IN	INCHES
ID	INSIDE DIAMETER
KE	KITCHEN EXHAUST
KW	KILOWATTS
LAT	LEAVING AIR TEMPERATURE
LD	LOUVERED DOOR
LWT	LEAVING WATER TEMPERATURE

GENERAL NOTES

1. MECHANICAL WORK IS INDICATED DIAGRAMMATIC. EXACT LOCATIONS OF ALL COMPONENTS ARE TO BE DETERMINED IN THE FIELD (SPACING SUBJECT TO ARCHITECT'S REVIEW AND APPROVAL) TO AVOID CONFLICT WITH OTHER TRADES AND EXISTING SITE CONDITIONS.
2. THE CONTRACTOR SHALL VISIT AND CAREFULLY EXAMINE THE SITE TO IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE WORK OF THIS SECTION. REPORT IN WRITING TO THE ARCHITECT CONDITIONS WHICH MIGHT ADVERSELY AFFECT WORK. NO EXTRA PAYMENT WILL BE PROVIDED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY AN EXPERIENCED OBSERVER.
3. WORK REQUIRING INTERRUPTION OF BUILDING SERVICES SHALL BE CAREFULLY REVIEWED AND COORDINATED WITH THE OWNER TO MINIMIZE FREQUENCY AND DURATION OF SERVICE INTERRUPTIONS.
4. REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATION OF CEILING GRID, DIFFUSERS, AND GRILLES.
5. ALL INSTALLATIONS SHALL PERMIT AND PROVIDE ACCESSIBILITY FOR SERVICE AND REPLACEMENT OF ALL NEW EQUIPMENT AND EXISTING EQUIPMENT IMPACTED BY THIS WORK.
6. COORDINATE ALL OPENINGS IN FLOORS WITH STRUCTURAL DRAWINGS AND GENERAL CONTRACTOR.
7. COORDINATE ALL ROOF OPENINGS WITH ARCHITECT AND STRUCTURAL ENGINEER.
8. REFER TO STRUCTURAL FRAMING PLANS FOR EXACT LOCATION OF ALL ROOF MOUNTED EQUIPMENT.
9. ALL MECHANICAL EQUIPMENT, PIPING, AND DUCTWORK SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF GOVERNING LOCAL, STATE, AND FEDERAL SEISMIC CODES. PARTICULAR ATTENTION SHALL BE MADE TO VIBRATION ISOLATION, ANCHORING, AND BALANCING REQUIREMENTS.
10. PROVIDE SMOKE DETECTORS AND SMOKE DAMPERS WHERE SHOWN ON THE MECHANICAL DRAWINGS. COORDINATE THE QUANTITY AND EXACT LOCATION WITH ACTUAL SHEET METAL SHOP DRAWINGS, TO BE PRODUCED BY MECHANICAL CONTRACTOR, AND APPROVED BY ENGINEER. PROVIDE SMOKE DETECTORS AND SMOKE DAMPERS IN BOTH SUPPLY AND RETURN DUCTS ON ALL AIR HANDLERS AS SHOWN IN MECHANICAL DRAWINGS.
11. ALL DUCTWORK SHALL BE INSTALLED IN ACCORDANCE WITH CODES AND STANDARDS SET FORTH IN NFPA, SMACNA, AND ASHRAE FOR LOW PRESSURE DUCTWORK SYSTEMS.
12. ALL EXPOSED DUCTWORK SHALL BE PAINTED TO MATCH CEILING. REFER TO ARCHITECTURAL DRAWINGS.
13. PROVIDE MANUAL VOLUME DAMPERS AT ALL BRANCH DUCTS FOR AIR BALANCING.
14. ALL SHEET METAL PLENUMS AT OUTSIDE AIR LOUVERS SHALL BE INSULATED WITH RIGID INSULATION, AS PER SPECIFICATIONS.
15. RUN-OUTS TO RETURN AND EXHAUST REGISTERS, OR GRILLES ABOVE GYP BOARD CEILINGS, SHALL BE RIGID DUCTED. NO FLEXIBLE DUCT SHALL BE ALLOWED ON RETURN OR EXHAUST REGISTERS.
16. ALL DUCTS, PIPES, AND EQUIPMENT SHALL BE INDEPENDENTLY SUPPORTED FROM THE BUILDING STRUCTURE WITH PROPER ALLOWANCES FOR CONTRACTION, EXPANSION, AND VIBRATION ELIMINATION.
17. PROVIDE 12"x10" ACCESS PANELS AT ALL BASEBOARD CONTROL VALVES. COORDINATE EXACT LOCATIONS WITH GENERAL CONTRACTOR.
18. PROVIDE COPPER 3/4" RUN-OUTS TO HOT WATER REHEAT COILS, CABINET HEATERS AND UNIT HEATERS UNLESS NOTED OTHERWISE.
19. PROVIDE SWING JOINTS AT ALL BRANCH CONNECTIONS TO HYDRONIC EQUIPMENT.
20. ROOM THERMOSTATS SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE SHOWN OR DIRECTED. COORDINATE LOCATIONS WITH ARCHITECTURAL WALL PROTECTIONS.
21. COORDINATE EXACT LOCATION OF UNIT HEATERS WITHIN ELECTRIC ROOMS WITH ELECTRICAL CONTRACTOR.
22. REFER TO SPECIFICATIONS FOR TYPE OF VALVE TO BE USED. VALVES ARE SHOWN ON PLANS FOR PLACEMENT ONLY.
23. ALL DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR FREE AREA REQUIRED.
24. ALL DIFFUSER, REGISTER, AND GRILLE SIZES INDICATED ON FLOOR PLANS ARE NECK SIZE REQUIRED.
25. ALL PIPING IS TO BE SLOPED A MINIMUM OF 1/4" PER HUNDRED FEET IN THE DIRECTION OF DRAINAGE.
26. NOT ALL SYMBOLS OR ABBREVIATIONS ARE USED ON THIS PROJECT.
27. COORDINATE ENTIRE INSTALLATION WITH THE WORK OF ALL OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATIONS.

DEMOLITION GENERAL NOTES

1. CONTRACTOR SHALL VISIT SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK OF THIS SECTION. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVERS.
2. PRIOR TO COMMENCING WORK OF THIS SECTION, EXAMINE SITE AND CONDITIONS UNDER WHICH WORK WILL BE PERFORMED. DETERMINE EXACT LOCATIONS OF EXISTING EQUIPMENT, PIPING AND CONTROLS. REPORT TO OWNER ANY CONDITIONS THAT MIGHT ADVERSELY AFFECT WORK. COMMENCEMENT OF WORK SHALL BE CONSTRUED AS COMPLETE ACCEPTANCE OF EXISTING CONDITIONS AND PREPARATORY WORK.
3. ABANDONING OF DUCTWORK, PIPING OR EQUIPMENT IN PLACE SHALL NOT BE ALLOWED. COMPLETE REMOVAL REQUIRED UNLESS NOTED OTHERWISE.
4. PIPING TO BE REMOVED: REMOVE PORTION OF PIPING INDICATED TO BE REMOVED AND CAP REMAINING PIPING WITH SAME OR COMPATIBLE PIPING MATERIAL.
5. DUCTS TO BE REMOVED: REMOVE PORTION OF DUCTS INDICATED TO BE REMOVED AND CAP REMAINING DUCTS WITH SAME OR COMPATIBLE DUCTWORK MATERIAL.
6. EQUIPMENT TO BE REMOVED: DISCONNECT AND CAP SERVICES AND REMOVE EQUIPMENT.
7. EQUIPMENT TO BE REMOVED AND SALVAGED: DISCONNECT AND CAP SERVICES AND REMOVE EQUIPMENT AND DELIVER TO OWNER.
8. COMPLY WITH ALL STATE AND LOCAL CODES AS TO REMOVAL AND DISPOSAL OF EQUIPMENT REMOVED FROM THE SITE.
9. COMPLY WITH GOVERNING EPA NOTIFICATION REGULATIONS BEFORE BEGINNING SELECTIVE DEMOLITION.
10. REMOVE PREVIOUSLY ABANDONED WORK IN THE WAY OF EXISTING CONSTRUCTION, OR AS NOTED.
11. COMPLY WITH HAULING AND DISPOSAL REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
12. COMPLY WITH ANSI A10.6 (SAFETY REQUIREMENTS FOR DEMOLITION OPERATIONS) AND NFPA 241 (STANDARD FOR SAFEGUARDING CONSTRUCTION, ALTERATION AND DEMOLITION OPERATIONS).
13. PERMITS: GIVE ALL REQUIRED NOTICES, FILE ALL REQUIRED PLANS AND SPECIFICATIONS RELATING TO THE WORK OF THIS SECTION WITH THE PROPER AUTHORITIES AND PAY FOR ANY REQUIRED PERMITS.
14. ALL AIR-CONDITIONING EQUIPMENT AND SYSTEMS SHALL BE REMOVED WITHOUT RELEASING REFRIGERANTS. REFRIGERANT RECOVERY IS TO BE PERFORMED BY A REFRIGERANT RECOVERY TECHNICAN CERTIFIED BY AN EPA-APPROVED CERTIFICATION PROGRAM.
15. ALL EQUIPMENT AND SYSTEMS TO BE DEMOLISHED UNDER THIS SECTION AND NOT DESIRED BY OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL REMOVE ALL SUCH EQUIPMENT FROM THE SITE PROMPTLY AFTER DETACHMENT FROM BUILDING STRUCTURE.
16. STORAGE OR SALE OF REMOVED ITEMS OR MATERIALS ON-SITE IS NOT PERMITTED.
17. IT IS UNKNOWN WHETHER HAZARDOUS MATERIALS WILL BE ENCOUNTERED IN THE WORK. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; IMMEDIATELY NOTIFY ARCHITECT AND OWNER.
18. EXISTING PIPING SHOWN ON DRAWINGS DOES NOT INDICATE FULL EXTENT OF PIPING DEMOLITION. FIELD VERIFICATIONS REQUIRED.

MECHANICAL DRAWING LIST

DWG NO.	DRAWING TITLE
MH0.0	MECHANICAL LEGEND
MH1.0	MECHANICAL PIPING DEMOLITION PLAN
MH2.0	MECHANICAL BASEMENT DUCTWORK PLAN
MH2.1	MECHANICAL FIRST FLOOR DUCTWORK PLAN
MH2.2	MECHANICAL SECOND FLOOR DUCTWORK PLAN
MH3.0	MECHANICAL BASEMENT PIPING PLAN
MH3.1	MECHANICAL FIRST FLOOR PIPING PLAN
MH3.2	MECHANICAL SECOND FLOOR PIPING PLAN
MH3.3	MECHANICAL ROOF DUCT & PIPING PLAN
MH4.0	MECHANICAL SCHEDULES & SCHEMATICS
MH5.0	MECHANICAL DETAILS
MH5.1	MECHANICAL DETAILS & SCHEMATICS
MH6.0	MECHANICAL CONTROL SCHEMATICS AND SEQUENCES
MH6.1	MECHANICAL CONTROL SCHEMATICS AND SEQUENCES
MH6.2	MECHANICAL CONTROL POINT LISTS

SCOTT E. LeCLAIR
No. 11210
REGISTERED PROFESSIONAL ENGINEER MECHANICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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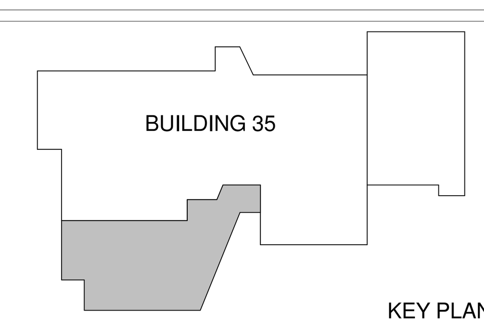


KEY PLAN

N

Drawing Title: MECHANICAL LEGEND

Designed By: LPM
Checked By: JRF
Approved By: SEL

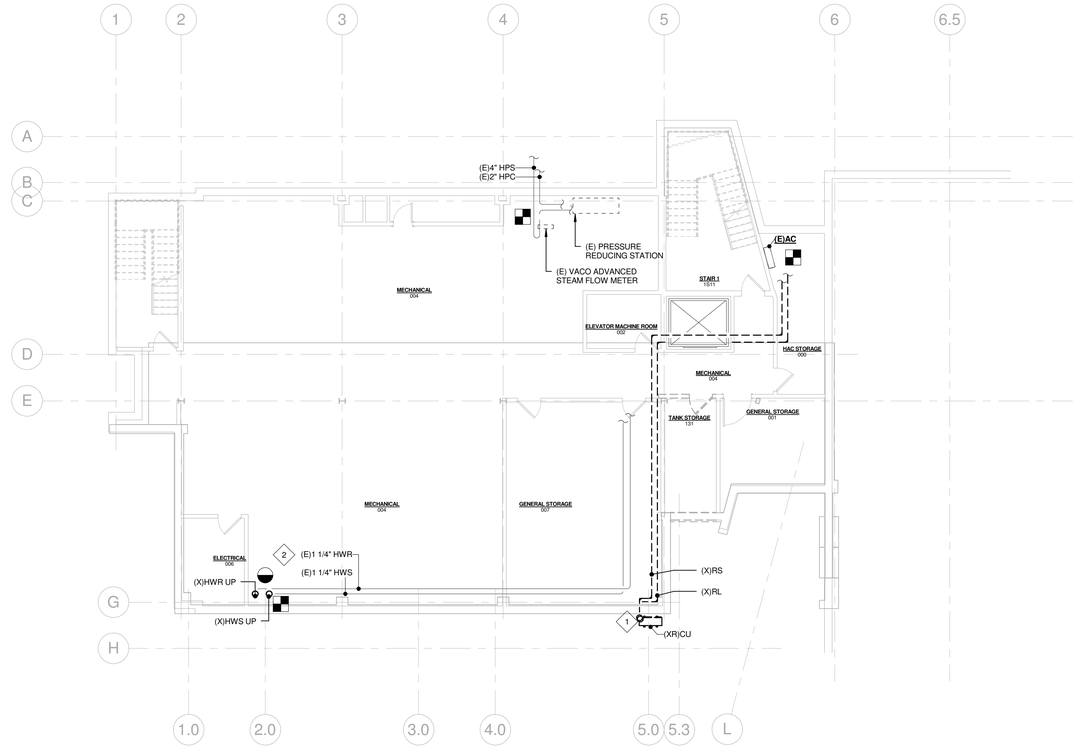
Project Title: BUILDING 35 ADDITION FOR RESEARCH

Building #: 35
Scale: 12" = 1'-0"
Location: PROVIDENCE

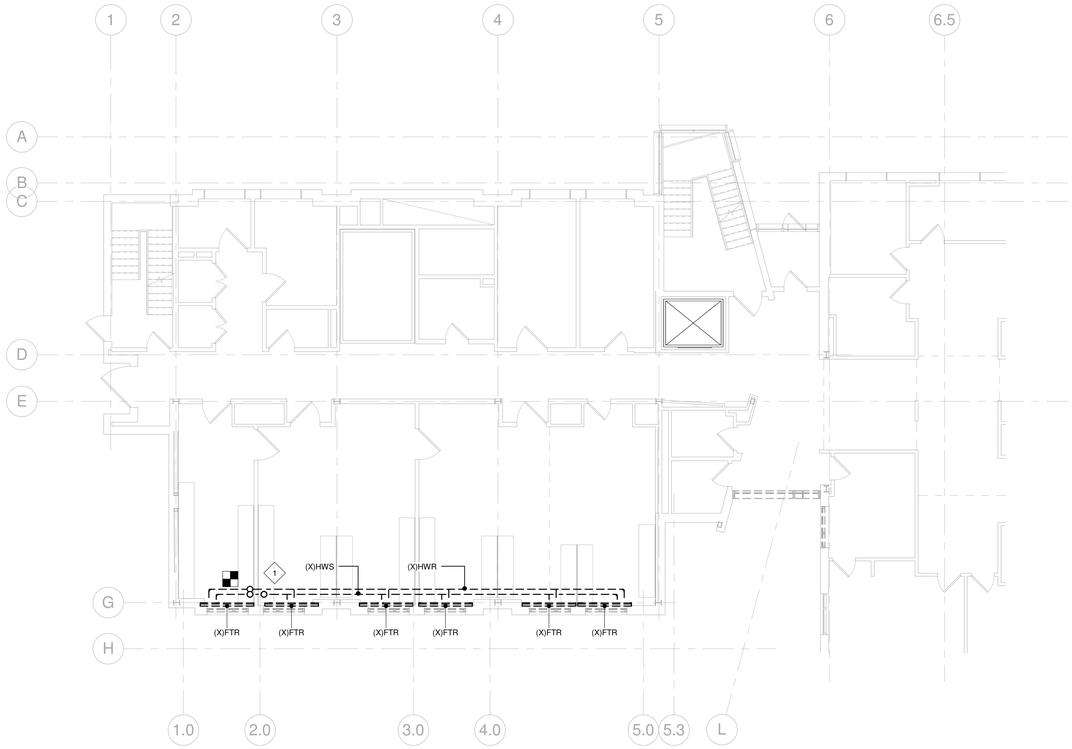
Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: MH0.0

Office of Facilities
Department of Veterans Affairs

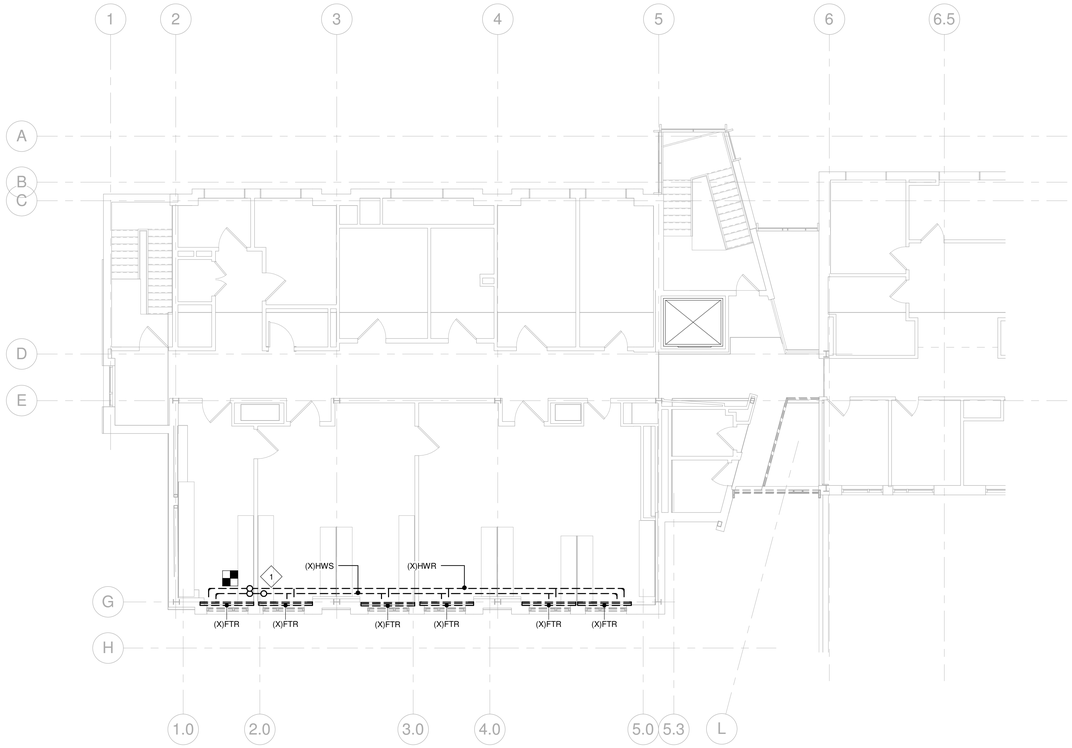
VA FORM 08-6231



-1- BASEMENT-MECHANICAL PIPING DEMOLITION PLAN -
MH1.0 1/8" = 1'-0"



-2- FIRST FLOOR - MECHANICAL PIPING DEMOLITION PLAN
MH1.0 1/8" = 1'-0"



-3- SECOND FLOOR - MECHANICAL PIPING DEMOLITION PLAN
MH1.0 1/8" = 1'-0"

MECHANICAL BASEMENT DEMOLITION NOTES

1. DISCONNECT ALL CU-1 PIPING AND ACCESSORIES. REFER TO SHEET MH3.0 FOR NEW LOCATION.
2. REMOVE EXISTING FIN TUBE RADIANT HEATERS AND ALL ASSOCIATED PIPING/VALVES/FITTING/ AND ACCESSORIES.

MECHANICAL 1ST AND 2ND FLOOR DEMOLITION NOTES

1. REMOVE EXISTING FIN TUBE RADIANT HEATERS AND ALL ASSOCIATED PIPING/VALVES/FITTINGS/ AND ACCESSORIES.

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No. 11210
REGISTERED PROFESSIONAL ENGINEER MECHANICAL

FINAL DESIGN DOCUMENTS
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Number	Date	Revision
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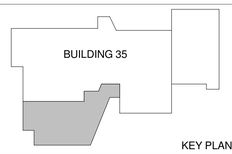

KEY PLAN

N

Drawing Title
MECHANICAL PIPING DEMOLITION PLAN

Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. MH1.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

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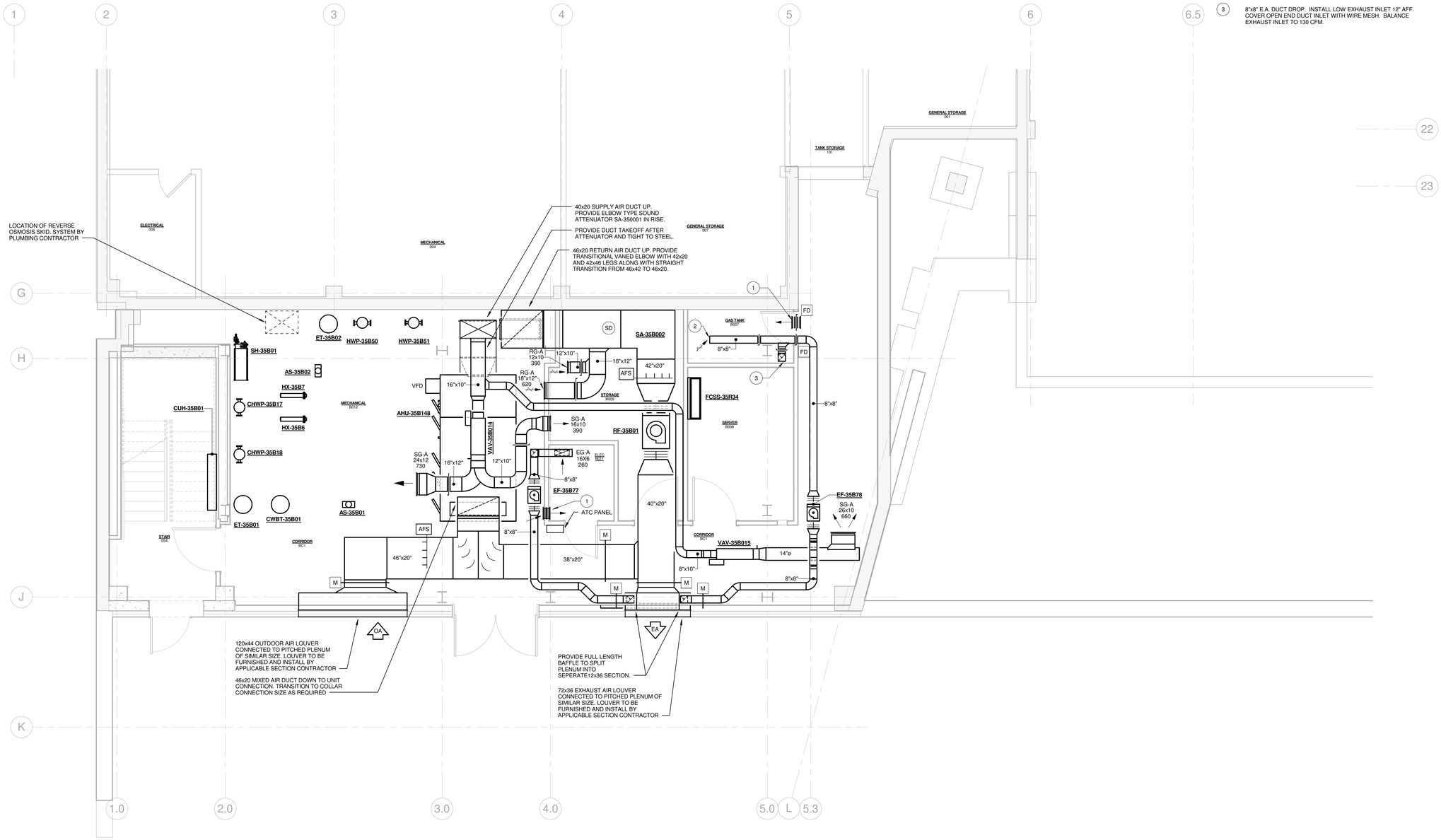
MECHANICAL NEW WORK NOTES

1. TWO (2) 12x12 TRANSFER GRILLES (TYPE RG-A) LOCATED 12" ABOVE FINISHED FLOOR.
2. COVER OPEN END DUCT INLET WITH WIRE MESH. BALANCE EXHAUST INLET TO 130 CFM.
3. 8"x8" E.A. DUCT DROP. INSTALL LOW EXHAUST INLET 12" AFF. COVER OPEN END DUCT INLET WITH WIRE MESH. BALANCE EXHAUST INLET TO 130 CFM.



-1- BASEMENT - MECHANICAL DUCTWORK PLAN
MH2.0 1/4" = 1'-0"

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BUILDING 35
KEY PLAN
N

Drawing Title: MECHANICAL BASEMENT DUCTWORK PLAN
Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title: BUILDING 35 ADDITION FOR RESEARCH
Building #: 35
Scale: As indicated
Location: PROVIDENCE

Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: MH2.0

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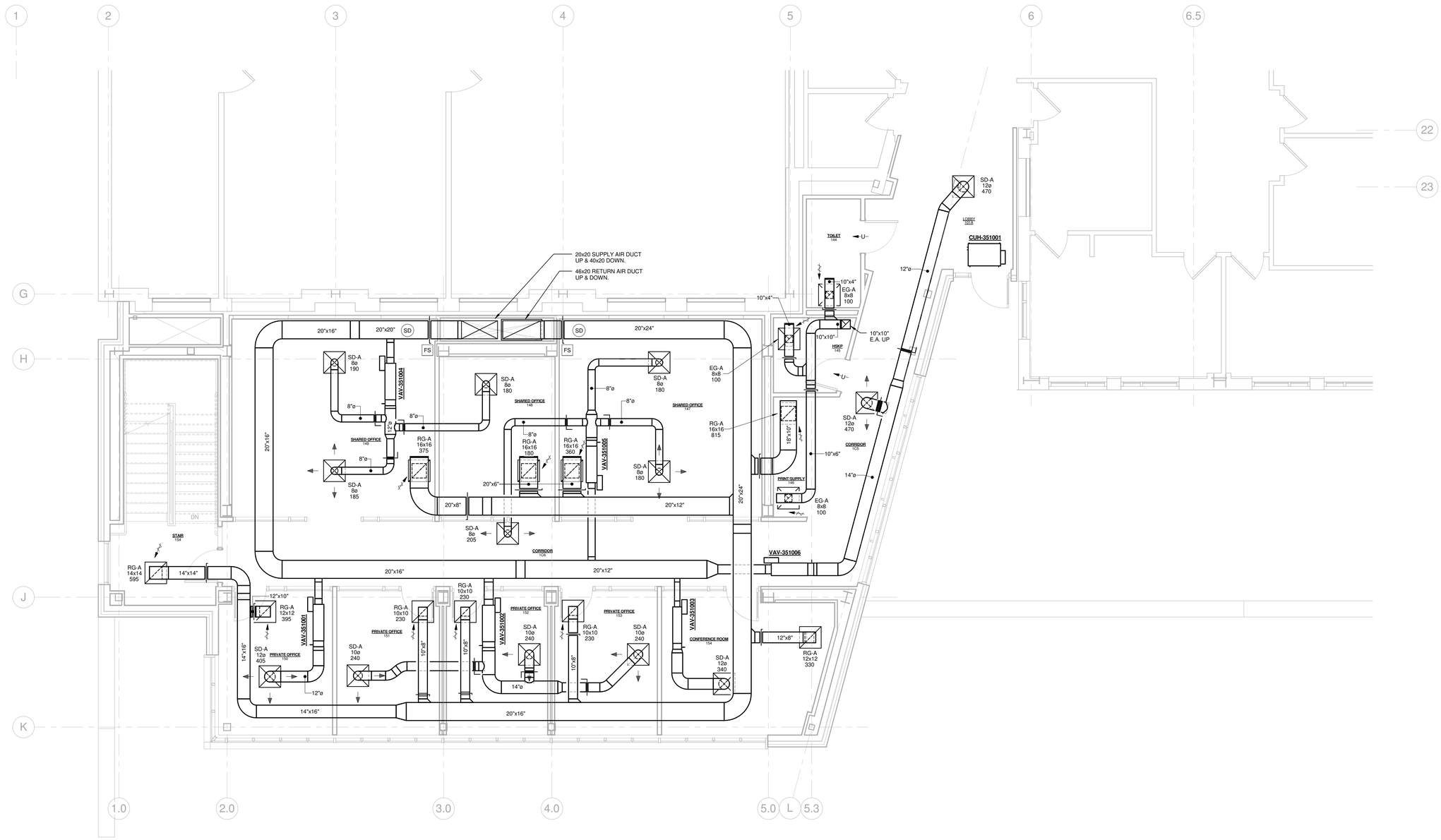

-1- FIRST FLOOR - MECHANICAL DUCTWORK PLAN
MH2.1 1/4" = 1'-0"

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BUILDING 35
KEY PLAN
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Drawing Title
MECHANICAL FIRST FLOOR DUCTWORK PLAN

Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/4" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. MH2.1

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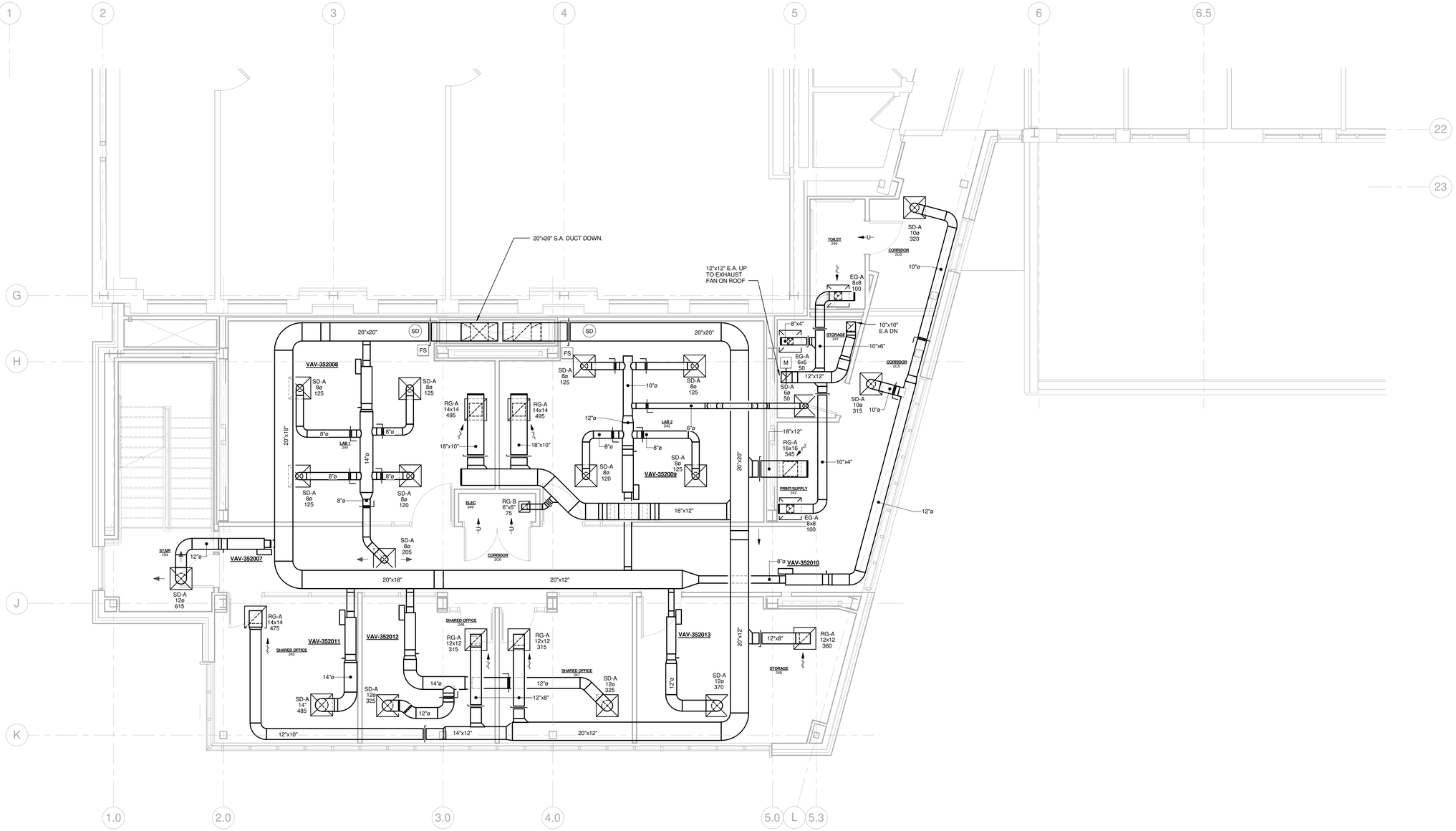

-1- SECOND FLOOR - MECHANICAL DUCTWORK PLAN
MH2.2 1/4" = 1'-0"

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BUILDING 35
KEY PLAN
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Drawing Title
MECHANICAL SECOND FLOOR DUCTWORK PLAN

Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/4" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. MH2.2

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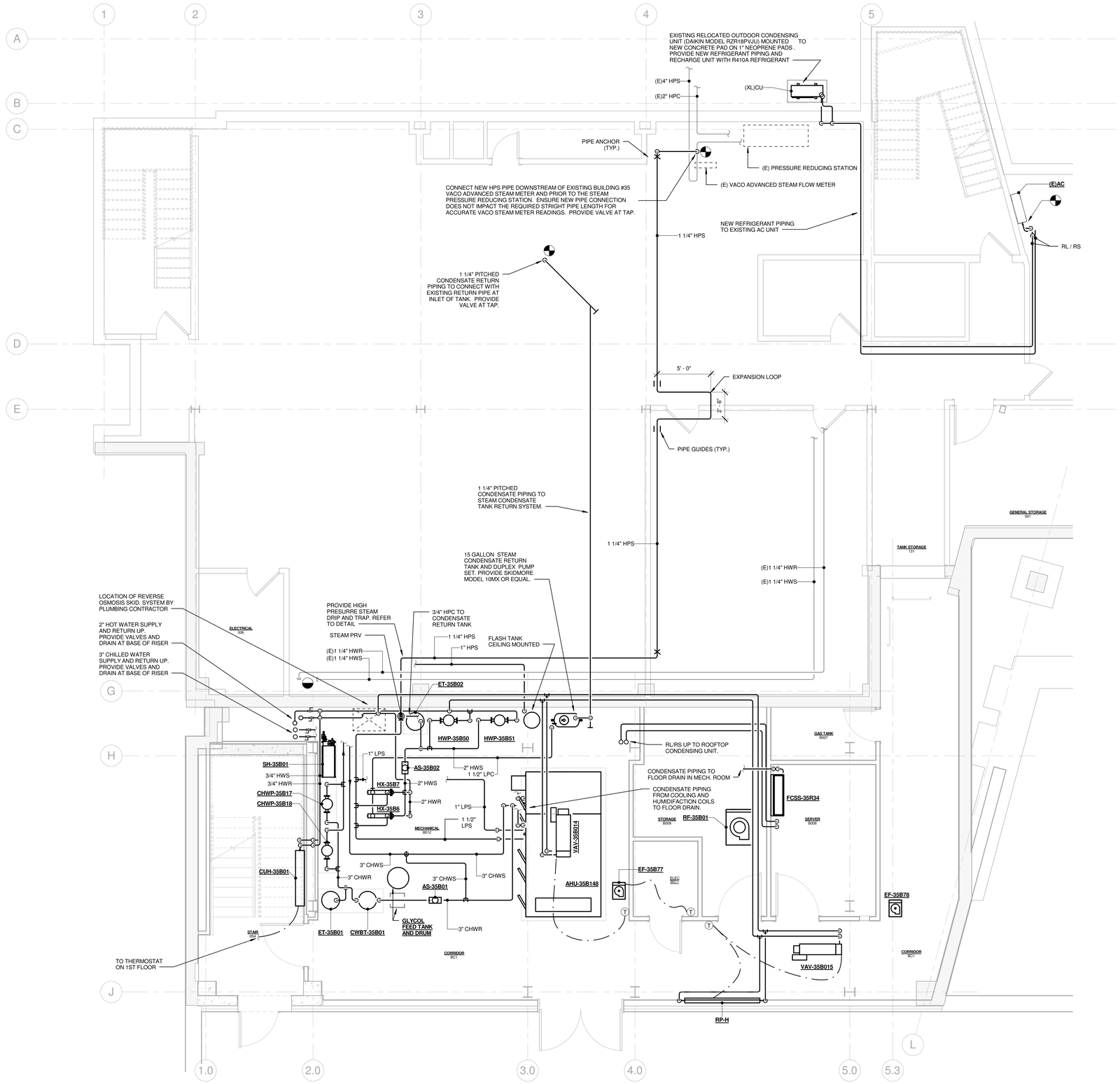

-1- BASEMENT - MECHANICAL PIPING PLAN
MH3.0 1/4" = 1'-0"

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BUILDING 35
KEY PLAN
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Drawing Title
MECHANICAL BASEMENT PIPING PLAN

Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/4" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. MH3.0

Office of Facilities
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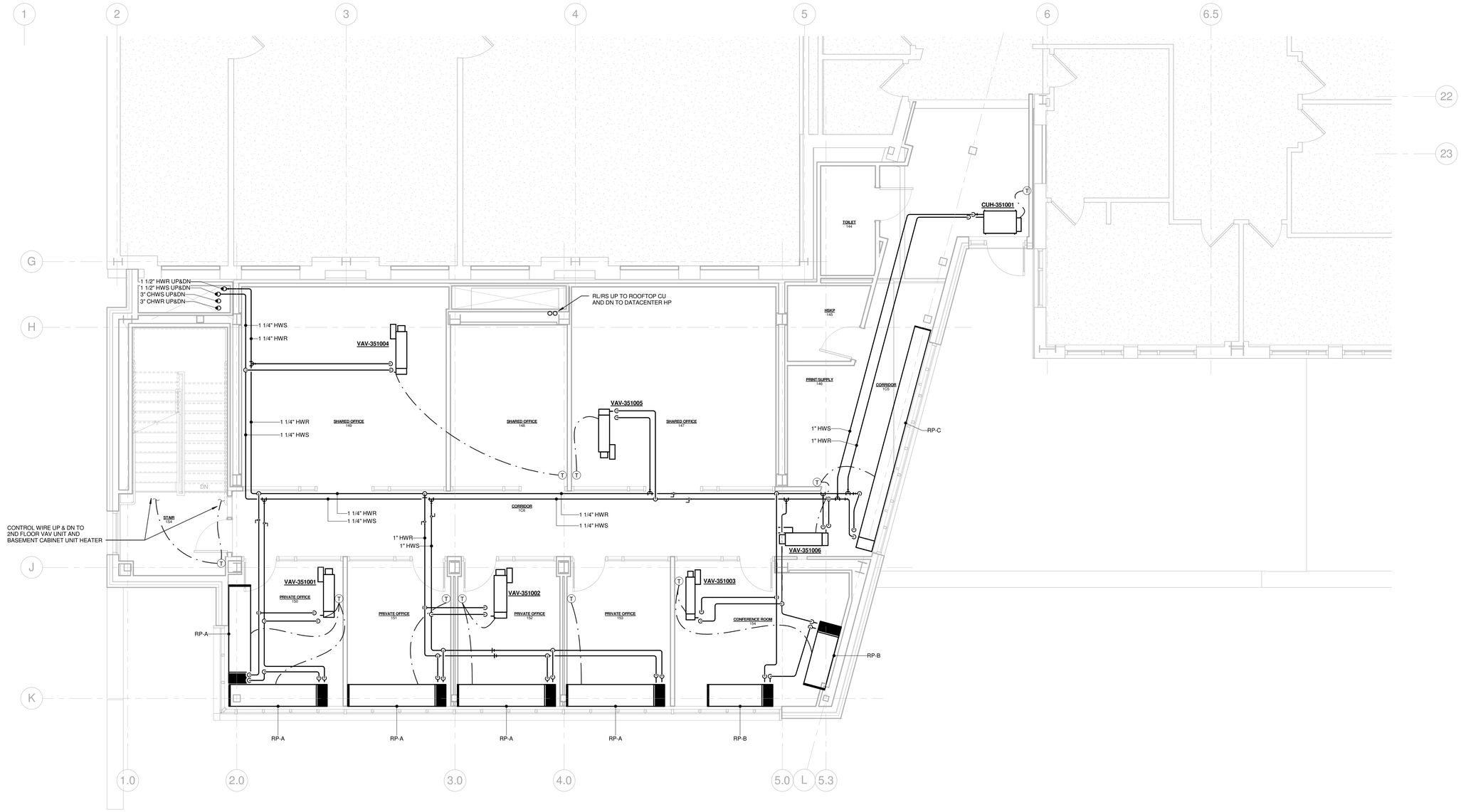

-1- FIRST FLOOR - MECHANICAL PIPING PLAN
MH3.1 1/4" = 1'-0"

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BUILDING 35
KEY PLAN
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Drawing Title
MECHANICAL FIRST FLOOR PIPING PLAN

Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/4" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. MH3.1

Office of Facilities
Department of Veterans Affairs

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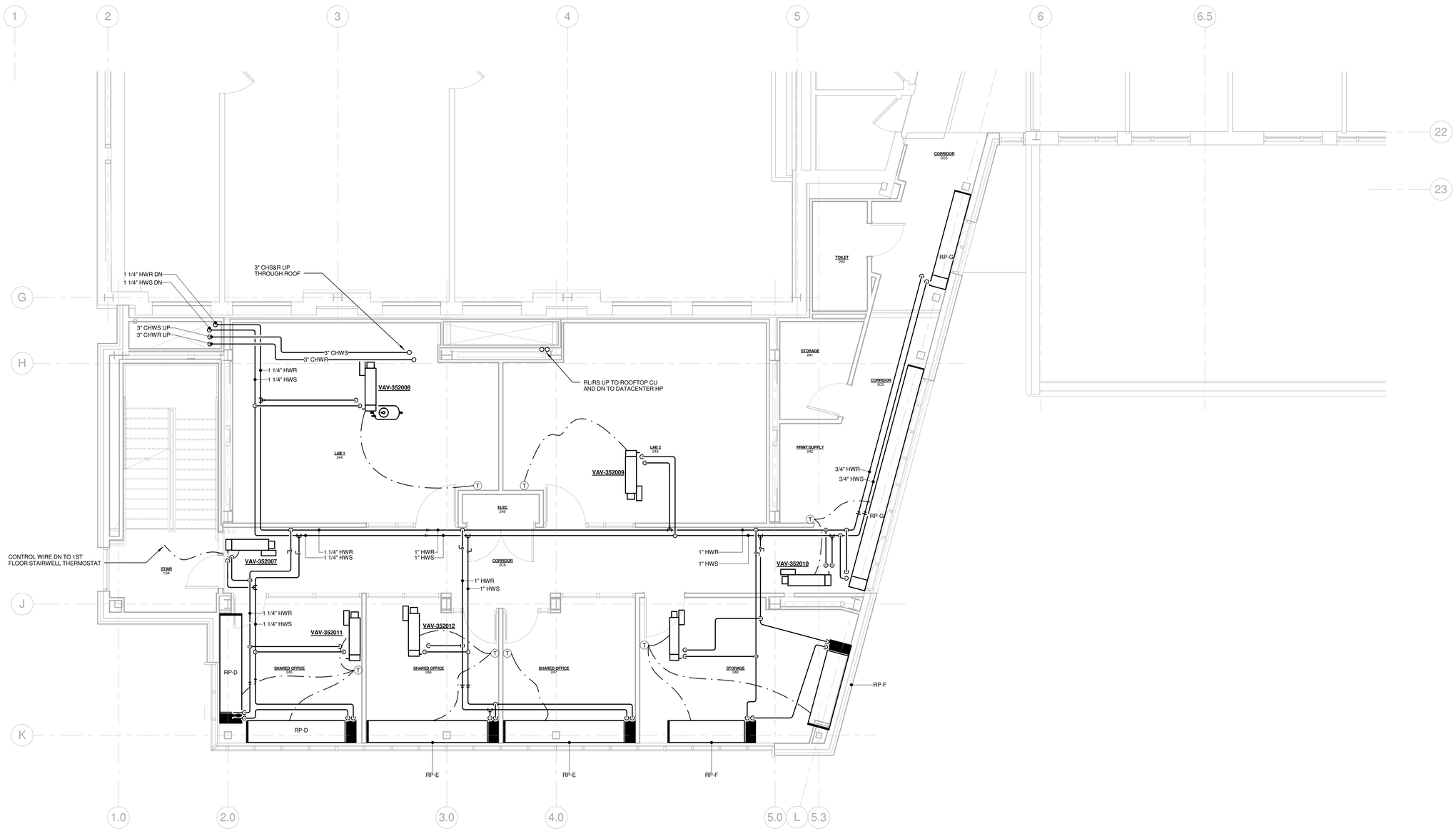

-1- SECONF FLOOR - MECHANICAL PIPING PLAN
MH3.2 1/4" = 1'-0"

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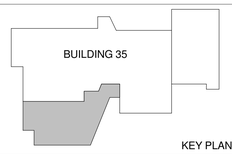

KEY PLAN

N

Drawing Title
MECHANICAL SECOND FLOOR PIPING PLAN

Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/4" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. MH3.2

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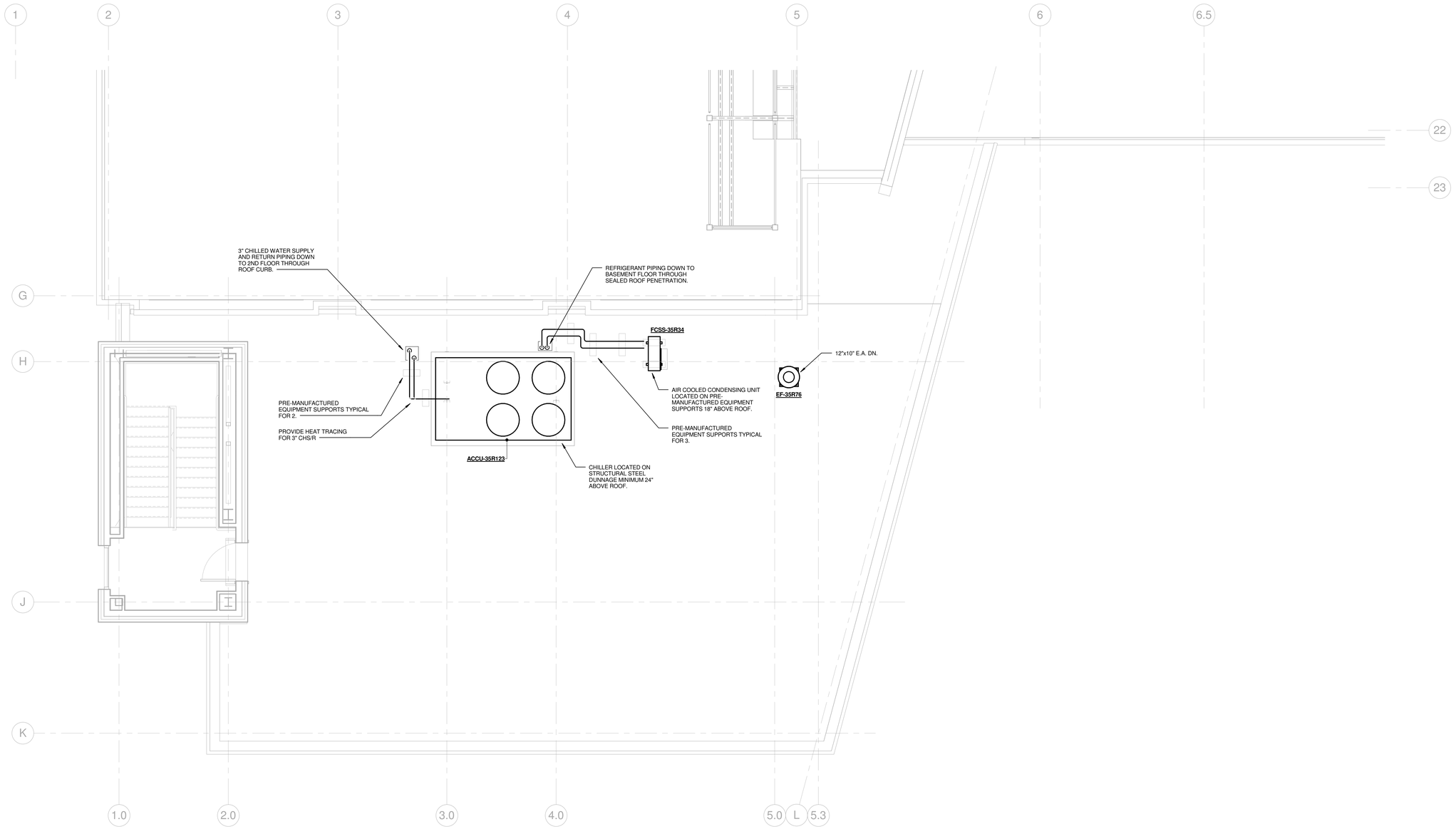
Department of Veterans Affairs

VA FORM 08-6231



-1- 3- ROOF -HVAC-NEW PIPING
MH3.3 1/4" = 1'-0"

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BUILDING 35
KEY PLAN
N

Drawing Title
MECHANICAL ROOF DUCT & PIPING PLAN

Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 1/4" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. MH3.3

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

AIR HANDLING UNIT SCHEDULE

GENERAL NOTES:

1. DRAW-THRU, VARIABLE-AIR-VOLUME, LPS HEATING, LPS HUMIDIFICATION, CHILLED WATER COOLING AIR HANDLING UNIT.
2. WELDED FRAME, DOUBLE-WALL, FOAM PANEL w/THERMAL BREAKS & RUBBER MEMBRANE.
3. PROVIDE UNIT WITH SINGLE-POINT POWER CONNECTIONS. PROVIDE TWO (2) POWER CONNECTIONS. ONE 120/1 FOR SERVICE POWER AND LIGHTING, AND ONE 460/3 FOR FAN MOTOR.
4. REFER TO PROJECT SPECIFICATIONS FOR ALL REQUIRED OPTIONS AND ACCESSORIES.

COMPONENT NOTES:

1. STAINLESS STEEL DRAIN PAN.
2. STAINLESS STEEL COIL RACK.
3. SERVICE LIGHT.
4. SERVICE RECEPTACLE.
5. PREMIUM EFFICIENCY MOTOR.
6. FACTORY-MOUNTED & -WIRED VFD & DISCONNECT
7. SEISMICALLY-RATED VIBRATION-ISOLATION RESTRAINTS (2" SPRING ISOLATORS).
8. AIRFOW MEASURING STATIONS ON SUPPLY AIR.
9. FILTER BANK DIFFERENTIAL PRESSURE GAUAGES.
10. ULTRA-LOW-LEAKAGE DAMPERS.
11. SMOKE DETECTOR, REFER TO DETAIL.
12. PROVIDE DRISTEEM ULTRA-SORB MODEL XV STEAM DISPERSION COIL IN HUMIDIFIER SECTION OF AIR HANDLING UNIT. STEAM GENERATOR SG-1 AND ASSOCIATED DISPERSION COIL SHALL BE PROVIDED BY SAME...
13. UNIT SHALL HAVE BELT DRIVE CENTRIFUGAL FAN WITH AIRFOIL WHEEL SEGMENT STACKED ABOVE COOLING COIL.

COMPONENT	TOTAL AIRFLOW (CFM)	MINIMUM O.A. (CFM)	FAN DATA ESP (IN WC)	FAN DATA TSP (IN WC)	FAN MOTOR DATA HP	NOMINAL RPM	VOLUME CONTROL	V	PH	Hz	COIL / HUMIDIFIER DATA FLUID TYPE	MAXIMUM FACE VELOCITY (FPM)	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	EWT (°F)	LWT (°F)	FLUID FLOW (GPM)	MAX. FLUID PD (FT WC)	STEAM (LBS / HR)	STEAM (PSI)	FILTER DATA TYPE	EFF. (%)	INITIAL PD (IN WC)	FINAL PD (IN WC)	COMPONENT NOTES
AHU-35B148																													
YORK - JCI SOLUTIONS UNIT																													
AIR BLENDER																													
AHU-350001																													
YORK - JCI SOLUTIONS UNIT																													
INLET PLENUM	9000	2250																											
PRE-FILTER																									PLEATED	30	0.2	0.23	3 & 9
FINAL FILTER																									CARTRIDGE	90	0.2	0.49	3 & 9
HEATING COIL	7100										LPS STEAM	500	177.8		50.8		73.2						155	15					1-3
HUMIDIFIER	7100										LPS STEAM	500											63	15					1-3, 12
COOLING COIL											WATER (30%PG)	500	380	266	80.4	65.5	54	52.8	45	55	92	20							1-3
TURNING SEGMENT																													
SUPPLY FAN	9000		3	PLENUM	15	1800	VFD	460	3	60																			3-8, 10, 13

M-CHILLED WATER BUFFER TANK SCHEDULE (CWBT)

TAG	MFR/Model
CWBT-35B01	CEMLINE V200CWB

M - STEAM GENERATOR SCHEDULE (SG)

1. PROVIDE VAPOR-LOGIC 4 CONTROL WITH ELECTRIC MODULATING DRI-STEEM
2. PROVIDE DUCT HUMIDITY TRANDUCER.
3. PROVIDE AIRFLOR PROVING SWITCH - PRESSURE (2-10 VDC)
4. PROVIDE CONTROL CABINET

TYPE	SERVES	Steam Capacity @ 15psi (pph)	Controls Type	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL
SH-35B01	AHU-350001	64	DDC	DRI-STEEM	STS-50S

AIR SEPARATOR SCHEDULE (AS)

TAG	TYPE	GPM	INLET IN	OUTLET IN	STRAINER (Y/N)	WPD (FT)	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL
AS-35B01	HW - TANGENTIAL	30	2	3	N	2	TACO	ACT02-150
AS-35B02	CHW - TANGENTIAL	92	3	3	N	2	TACO	ACT03-150

M - EXPANSION TANK SCHEDULE (ET)

TAG	Serves	TYPE	VOLUME GALS	DIMENSIONS (D)IA. X H)	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL
ET-35B01	CHILLED WATER SYSTEM	BLADDER	37	20x40	TACO	CA140-125
ET-35B02	HOT WATER SYSTEN	BLADDER	79	20X58	TACO	CA300-125
ET-350002						

VARIABLE AIR VOLUME TERMINAL SCHEDULE

NOTES:

1. PROVIDE WITH INTEGRAL SOUND ATTENUATOR.
2. PROVIDE WITH HOSPITAL GRADE LINER.
3. PROVIDE WITH INTEGRAL CONTROL POWER DISCONNECT.
4. PROVIDE WITH 1- OR 2- ROW COIL AS REQUIRED TO MEET SCHEDULED CAPACITY.
5. REFER TO PROJECT SPECIFICATIONS FOR ALL REQUIRED OPTIONS AND ACCESSORIES.

TAG	INLET DIA Ø IN	SOUND SP IN WG	SOUND DELTA P IN WG	SOUND DISCHARGE NC	SOUND RADIATED NC	AIR FLOW MAX CFM	AIR FLOW HEAT CFM	AIR FLOW MIN CFM	COIL TYPE /FLUID	COIL TOTAL MBH	COIL APD IN WC	COIL EDB °F	COIL LDB °F	COIL WATER EWT °F	COIL WATER LWT °F	COIL WATER GPM	COIL WATER WPD (FT)	CONTROLS TYPE	CONTROLS FURNISHED BY	ACCESSORIES	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL
VAV-35B014	12	1	0.5	20	20	1120	1120	1120	HW	42.3	0.25	55	90	180	160	4.2	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-35B015	8	1	0.5	20	20	660	660	660	HW	24.9	0.25	55	90	180	160	2.5	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-351001	8	1	0.5	20	20	405	185	185	HW	7.1	0.25	55	90	180	160	0.7	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-351002	10	1	0.5	20	20	720	505	505	HW	9.3	0.25	55	72	180	160	0.9	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-351003	6	1	0.5	20	20	340	290	290	HW	5.3	0.25	55	72	180	160	0.5	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-351004	8	1	0.5	20	20	555	555	555	HW	20.1	0.25	55	90	180	160	2	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-351005	8	1	0.5	20	20	565	565	565	HW	21.3	0.25	55	90	180	160	2.1	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-351006	10	1	0.5	20	20	940	940	940	HW	35.5	0.25	55	90	180	160	3.5	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-352007	8	1	0.5	20	20	615	155	155	HW	5.6	0.25	55	90	180	160	0.56	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-352008	8	1	0.5	20	20	700	460	460	HW	17.4	0.25	55	90	180	160	1.7	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-352009	8	1	0.5	20	20	520	520	520	HW	19.6	0.25	55	90	180	160	2	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-352010	8	1	0.5	20	20	635	570	570	HW	21.5	0.25	55	90	180	160	2.1	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-352011	8	1	0.5	20	20	485	245	245	HW	9.2	0.25	55	90	180	160	0.9	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-352012	8	1	0.5	20	20	650	390	390	HW	14.7	0.25	55	90	180	160	1.5	1.5	DDC	ATC	NOTES 1,2,3,4,5	JOHNSON CONTROLS	TSS
VAV-352013																						

HEAT EXCHANGER SCHEDULE

TAG	TYPE	CAPACITY (MBH)	HEATING SIDE FLUID	HEATING SIDE FLUID FLOW (LB / HR)	HEATING SIDE INLET PRESSURE (PSI)	HEATING SIDE FOULING FACTOR	HEATED SIDE FLUID	HEATED SIDE EWT (°F)	HEATED SIDE LWT (°F)	HEATED SIDE FLUID FLOW (GPM)	HEATED SIDE MAXIMUM PRESSURE DROP (FT WC)	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL
HX-35B6	SHELL & TUBE	305	STEAM	321	15	0.000302	WATER	160	180	30	0.46	BELL & GOSSETT	SU 4 2-2
HX-35B7	SHELL & TUBE	305	STEAM	321	15	0.000302	WATER	160	180	30	0.46	BELL & GOSSETT	SU 4 2-2

PUMP SCHEDULE (P)

NOTES:

1. REFER TO PROJECT SPECIFICATIONS FOR ALL REQUIREMENTS AND ACCESSORIES.
2. CHW PUMPS SHALL BE SELECTED WITH 30% PROPYLENE GLYCOL.
3. PROVIDE VFD WITH EACH PUMP.

TAG	LOCATION	TYPE	FLOW GPM	HEAD FT WATER	SUCT Ø IN	DSCH Ø IN	IMP. Ø IN	MOTOR HP	MOTOR RPM	ELECTRICAL VOLTS	ELECTRICAL PH	ELECTRICAL HZ	CONTROLLER	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL
CHWP-35B17	PIPING - BASEMENT	INLINE	92	80	3	9	9	5	1750	460	3	60	DDC	TACO	KV3009
CHWP-35B18	PIPING - BASEMENT	INLINE	92	80	3	9	9	5	1750	460	3	60	DDC	TACO	KV3009
HWP-35B50	PIPING - BASEMENT	INLINE	30	60	1.5	1.5	7.5	2	1750	460	3	60	DDC	TACO	KV1509
HWP-35B51	PIPING - BASEMENT	INLINE	30	60	1.5	1.5	7.5	2	1750	460	3	60	DDC	TACO	KV1509

CABINET UNIT HEATER SCHEDULE

TAG	LOCATION / SERVES	COIL DATA OUTPUT (MBH)	COIL DATA TYPE	COIL DATA EWT (°F)	COIL DATA LWT (°F)	COIL DATA FLUID FLOW (GPM)	MOTOR HP	MOTOR RPM	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL Hz	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL
CUH-35B01	STAIRWELL	6.1	HW	180	160	0.61	0.25	1050	120	1	60	RITTLING	RWI-280-02
CUH-351001	CORRIDOR 1C5	40	HW	180	160	4	0.25	1120	120	1	60	RITTLING	RFRC-420-06

FAN SCHEDULE (F)

NOTES:

1. PROVIDE WITH EXTERIOR MOUNTED WEATHERPROOF DISCONNECT.
2. PROVIDE WITH SOUND ATTENUATING ROOF CURB.
3. REFER TO PROJECT SPECIFICATIONS FOR ALL ADDITIONAL ACCESSORIES AND REQUIREMENTS.
4. PROVIDE FACILITY MOUNTED DISCONNECTS.
5. PROVIDE FAN SPEED CONTROLLER FROM FAN MANUFACTURER.
6. PROVIDE EXPLOSION-PROOF MOTOR.
7. PROVIDE FAN WITH VFD.

TAG	SERVES	LOCATION	TYPE	AIR FLOW CFM	SP TOTAL IN WC	VOLUME CONTROL	RPM	HOUSING DESIGN	HOUSING MTL	MOTOR HP	MOTOR RPM	ELECTRICAL VOLTS	ELECTRICAL PH	ELECTRICAL HZ	ACCESSORIES	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL
EF-35B77	ELECTRIC ROOM	BASEMENT	CENTRIGUGAL - INLINE	260	0.5	YES	1653	INLINE	AL	0.16	1725	115	1	60	NOTES 3, 4 & 5	GREENHECK	SQ-80-VG
EF-35B78	GAS ROOM	BASEMENT	CENTRIGUGAL - INLINE	200	0.75	YES	1538	INLINE	AL	0.25	1725	115	1	60	NOTES 3, 4, 5 & 6	GREENHECK	SQ-97-VG
EF-35R76	GENERAL	LOW ROOF	CENTRIFUGAL - DOWNBLAST	550	0.25	YES	1203	DOME	AL	0.16	1725	115	1	60	NOTES 1,2,3	GREENHECK	G-095-VG
RF-35B01	AHU-350001 RETURN FAN	BASEMENT	MIXED FLOW	7100	2	YES	1743	INLINE	AL	5	1770	460	3	60	NOTES 3,4 & 7	GREENHECK	QEID-20-80-A5

M - RADIANT CEILING PANEL SCHEDULE

NOTES:

1. COORDINATE FINISH & MOUNTING STYLE w/ ARCHITECTURAL DOCUMENTS.
2. REFER TO PROJECT SPECIFICATIONS FOR ALL ADDITIONAL REQUIRED OPTIONS AND ACCESSORIES.

TAG	LENGTH (FT)	WIDTH (IN)	ELEMENT TUBES	ELEMENT OUTPUT (BTUH / LF)	TOTAL OUTPUT (MBH)	MWT (°F)	FLUID FLOW (GPM)	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL
RP-A	9	24	4	413	3.7	170	0.37	STERLING	LRP
RP-B	6	24	4	413	2.5	170	0.25	STERLING	LRP
RP-C	30	18	4	322	9.7	170	0.97	STERLING	LRP
RP-D	10	24	4	413	4.1	170	0.41	STERLING	LRP
RP-E	12	24	4	413	5	170	0.5	STERLING	LRP
RP-F	8	24	4	413	3.3	170	0.33	STERLING	LRP
RP-G	42	18	4	322	13.5	170	1.4	STERLING	LRP
RP-H	16	1	3	384	6.14	170	0.61	RITTLING	PR

CHILLER SCHEDULE (CH)

NOTES:

1. SEE PROJECT SPECIFICATIONS FOR EQUIPMENT OPTIONS AND ACCESSORIES.
2. UNIT SHALL BE MOUNTED ON STRUCTURAL DUNNAGE MINIMUM 24" ABOVE FINISHED ROOF.
3. PROVIDE UNIT WITH A SINGLE POINT DISCONNECT. COORDINATE WITH ELECTRICAL CONTRACTOR AND VENDOR ON ELECTRICAL CONNECTION REQUIREMENTS.
4. PROVIDE WITH HOT GAS BYPASS REFRIGERANT CIRCUIT.

TAG	TYPE	TONS	EVAPORATOR FLUID	EVAPORATOR FLOW GPM	EVAPORATOR EFT °F	EVAPORATOR LFT °F	EVAPORATOR PD FT	COMPRESSOR TYPE	COMPRESSOR QTY	REFRIGERANT TYPE	ELECTRICAL VOLTS	ELECTRICAL PH	ELECTRICAL HZ	ELECTRICAL MCA	ELECTRICAL MOCP	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL
ACCU-35R123	Air Cooled - Scroll	36.2	30% PG	92	54	44	10.1	Scroll	2	R410A	460	3	60	104	110	JCI	YCAL0043

AIR TERMINAL SCHEDULE

NOTES:

1. COORDINATE FINISH WITH ARCHITECTURAL DOCUMENTS.
2. COORDINATE MOUNTING STYLE WITH ARCHITECTURAL DOCUMENTS.
3. REFER TO HVAC PLANS FOR DISCHARGE ORIENTATIONS.
4. REFER TO HVAC PLANS FOR NECK SIZES.
5. REFER TO PROJECT SPECIFICATIONS FOR ALL ADDITIONAL REQUIRED OPTIONS AND ACCESSORIES.

TAG	TYPE	MOUNTING	FACE TYPE	FACE BAR	MATERIAL	FINISH	DAMPER TYPE	REMARKS	BASIS OF DESIGN MFR	BASIS OF DESIGN MODEL
SD-A	DIFFUSER	CEILING	24"x24" SQUARE		AL	NOTE 1	NONE	NOTES 2-5	TITUS	OMNI-A
SG-A	GRILLE	SIDEWALL	RECT./LONG	ADJUSTABLE	AL	NOTE1	NONE	NOTES 2-5	TITUS	300FL
RG-A	GRILLE	CEILING/SIDEWALL	24"x24" SQUARE	35° DEFLECTION	AL	NOTE 1	NONE	NOTES 2-5	TITUS	355FL
RG-B	GRILLE	CEILING	12"x12" SQUARE	35° DEFLECTION	AL	NOTE 1	NONE	NOTES 2-5	TITUS	355FL
EG-A	GRILLE	CEILING	24"x24" SQUARE	35° DEFLECTION	AL	NOTE 1	NONE	NOTES 2-5	TITUS	355FL

DUCT-LESS SPLIT SYSTEM AIR CONDITIONER SCHEDULE

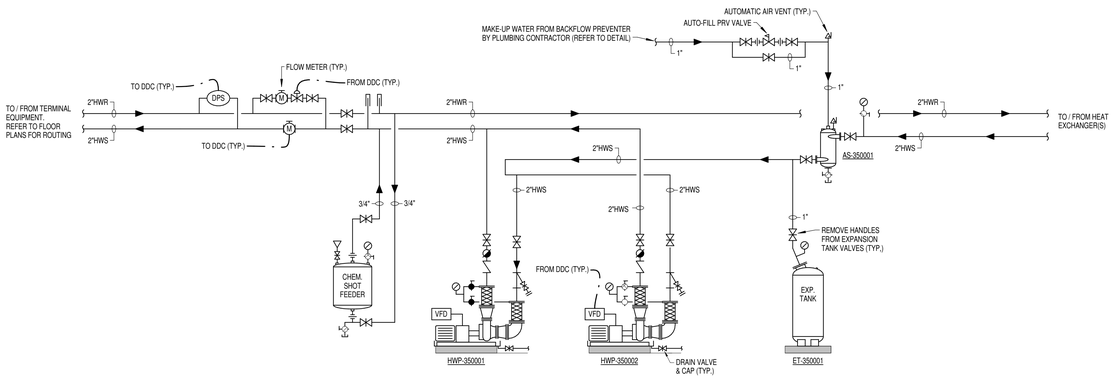
NOTES:

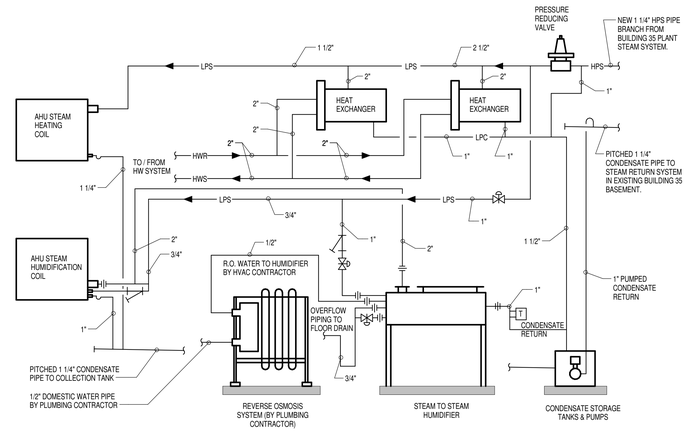
1. PROVIDE INTEGRAL CONDENSATE PUMP POWERED FROM UNIT.
2. PROVIDE INTEGRAL DISCONNECT ON INDOOR AND OUTDOOR UNITS.
3. MOUNT OUTDOOR UNIT ON PRE-FABRICATED EQUIPMENT SUPPORT(S) WITH A MINIMUM 18" HEIGHT.
4. LOW AMBIENT OPERATION
5. REFER TO PROJECT SPECIFICATIONS FOR ALL ADDITIONAL REQUIRED OPTIONS AND ACCESSORIES.
6. INDOOR UNIT RECEIVE POWER FROM OUTDOOR UNIT THROUGH FIELD SUPPLIED INTER-CONNECTED WIRING.

INDOOR UNIT TAG	TOTAL COOLING CAPACITY (MBH)	FAN DATA AIRFLOW (CFM)	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL MCA	ELECTRICAL MOCP	MANUFACTURER	MODEL	OUTDOOR UNIT GENERAL DATA AMBIENT (°F)	GENERAL DATA SEER	GENERAL DATA COMPRESSORS	GENERAL DATA FANS	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL MCA	ELECTRICAL MOCP	MANUFACTURER	MODEL
FCSS-35R34	34.2	920	208	1	1		MITSUBISHI	PKA-A36KA4										
FCSS-35R34									0	14	1	1	208	1	25	40.0	MITSUBISHI	PUY-A36NHA4

SOUND ATTENUATOR SCHEDULE (SA)

TAG	SERVES	SYSTEM	CFM	APD IN HG	DIMENSIONS WIDTH IN	DIMENSIONS HEIGHT IN	DIMENSIONS LENGTH FT	DYNAMIC INSERTION LOSS 1 63	2 125	3 250	4 500	5 1k	6 2k	7 4k	8 8k	MANUFACTURER	MODEL
SA-35B001	ALL FLOORS	AHU-350001	9000	0.25	40"	20"	5' - 0"	3	7	4	15	21	18	11	13	VIBRO-ACOUSTICS	RENM-UHV-F9
SA-35B002	ALL FLOORS	RF-350001	7100	0.25	42"	20"	5' - 0"	6	8	9	23	21	10	17	16	VIBRO-ACOUSTICS	RENM-UHV-F8
SA-350003																	
SA-350004																	





1 HW Piping Schematic - STEAM TO HW
MH4.0 12" = 1'-0"

SCOTT E. LeCLAIR
No. 11210
REGISTERED PROFESSIONAL ENGINEER MECHANICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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BUILDING 35
KEY PLAN
N

Drawing Title
MECHANICAL SCHEDULES & SCHEMATICS

Designed By: LPM
Checked By: JRF
Approved By: SEL

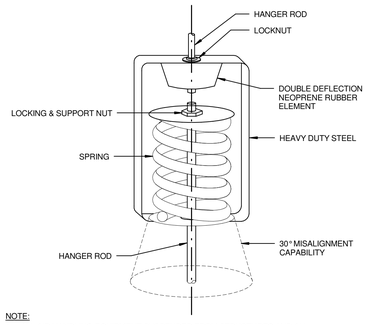
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 12" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. MH4.0

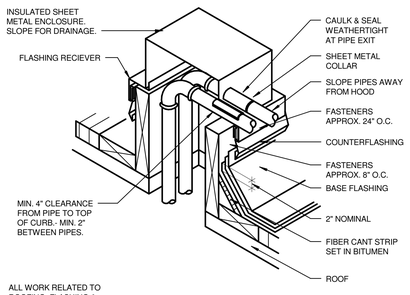
Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



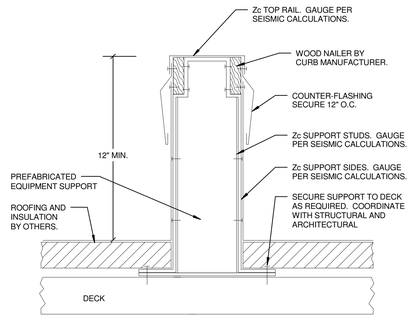
NOTE:
1. ALL AIR HANDLING EQUIPMENT SUSPENDED FROM STRUCTURES AND ALL STEAM AND CHILLED WATER PIPING IN MECHANICAL ROOMS SHALL BE HUNG WITH VIBRATION ISOLATORS.
2. HANGER SIZE SHALL BE AS PER MANUFACTURER'S RECOMMENDATIONS AND ACCORDING TO THE LOAD OF THE EQUIPMENT.

VIBRATION ISOLATION HANGER DETAIL — NO SCALE — 230548-08

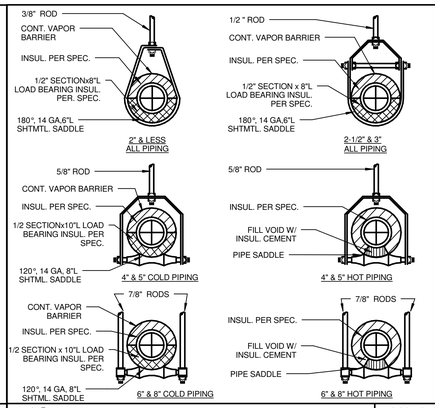


ALL WORK RELATED TO ROOFING, FLASHING & COUNTERFLASHING SHALL BE DONE BY G.C.

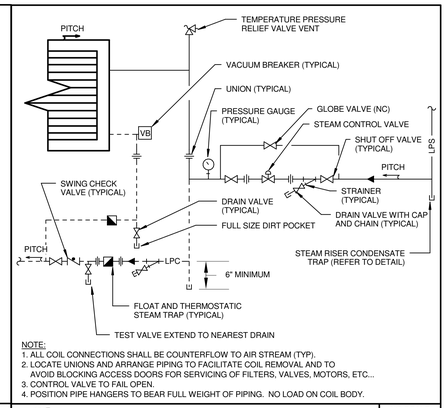
PIPING ROOF PENETRATION DETAIL — NO SCALE — 232113-25



PRE-FABRICATED EQUIPMENT SUPPORT DETAIL — NO SCALE — 230529-05



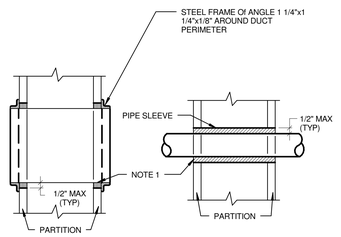
PIPE HANGER DETAIL — NO SCALE — 232113-08



NOTE:
1. ALL COIL CONNECTIONS SHALL BE COUNTERFLOW TO AIR STREAM (TYP).
2. LOCATE UNIONS AND ARRANGE PIPING TO FACILITATE COIL REMOVAL AND TO AVOID BLOCKING ACCESS DOORS FOR SERVICING OF FILTERS, VALVES, MOTORS, ETC...
3. CONTROL VALVE TO FAIL OPEN.
4. POSITION PIPE HANGERS TO BEAR FULL WEIGHT OF PIPING. NO LOAD ON COIL BODY.

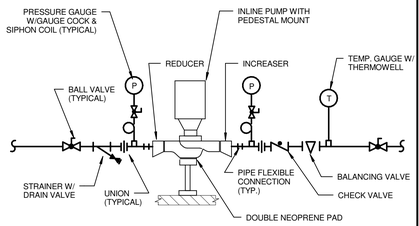
AIR HANDLER STEAM COIL PIPING — NO SCALE — 232213-06

NOTE:
DUCT PENETRATION SHOWN IS WHERE FIRE DAMPER IS NOT REQUIRED BY CODE



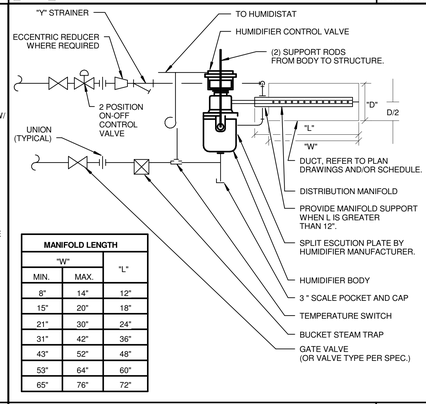
NOTES:
1. AT FIRE RATED PARTITIONS, ADD ADDITIONAL LAYER OF FIRE SAFING INSULATION AROUND PENETRATION SO AS TO FILL CAVITY.
2. DUCT AND PIPE PENETRATIONS THRU CORRIDOR WALLS ABOVE THE CEILING ARE TO BE FIRE STOPPED AROUND THE PENETRATION.

DUCT AND PIPE PENETRATIONS — NO SCALE — 232113-12



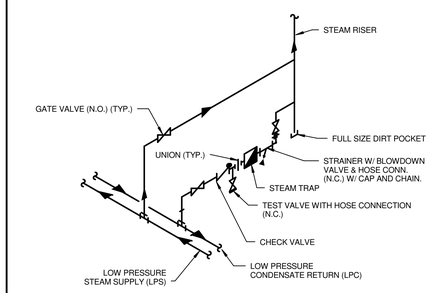
NOTES:
1. ALL REDUCERS SHALL BE ECCENTRIC TYPE WITH STRAIGHT SIDE UP TO PREVENT TRAPPING AIR.

INLINE PUMP VALVE STATION — NO SCALE — 232123-03

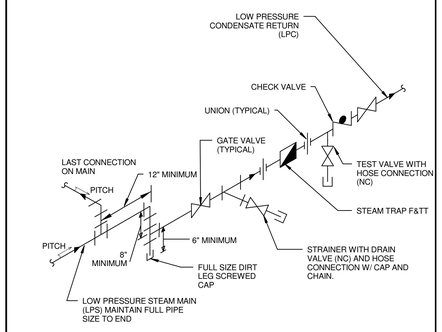


MANIFOLD LENGTH		
"W"		"L"
MIN.	MAX.	
8"	14"	12"
15"	20"	18"
21"	30"	24"
31"	42"	36"
43"	52"	48"
53"	64"	60"
65"	76"	72"

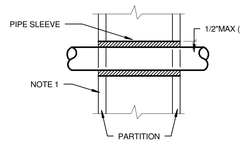
HUMIDIFIER DETAIL — NO SCALE — 232213-01



STEAM RISER CONDENSATE TRAP PIPING SCHEMATIC — NO SCALE — 232213-02

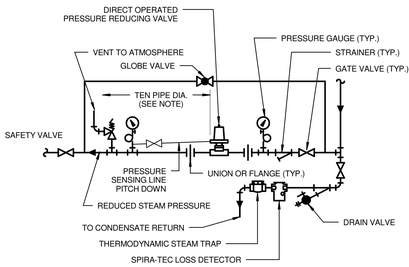


LOW PRESSURE END OF MAIN DRIP SCHEMATIC PIPING — NO SCALE — 232213-03



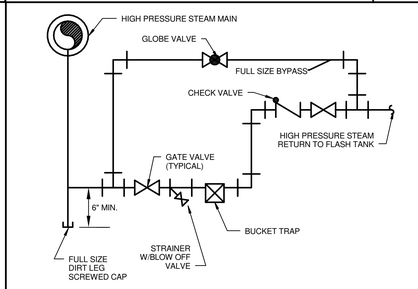
NOTES:
1. AT FIRE RATED PARTITIONS, ADD ADDITIONAL LAYER OF FIRE SAFING INSULATION AROUND PENETRATION SO AS TO FILL CAVITY.
2. PIPE PENETRATIONS THRU CORRIDOR WALLS ABOVE THE CEILING ARE TO BE FIRE STOPPED AROUND THE PENETRATION.

PIPE WALL PENETRATIONS — NO SCALE — 232113-10



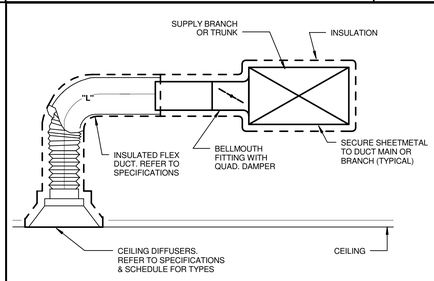
NOTE:
1. RUN PIPING IN A STRAIGHT LINE FOR A DISTANCE OF TEN PIPE DIAMETERS AFTER THE REDUCING VALVE.

STEAM PRESSURE REDUCING STATION PIPING SCHEMATIC — NO SCALE — 232213-10



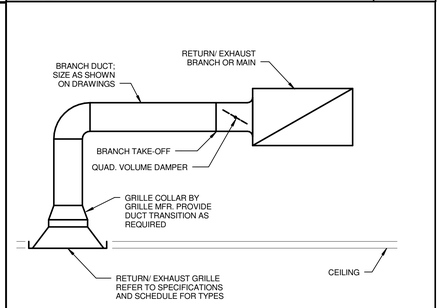
NOTES:
1. ALL HIGH PRESSURE STEAM RETURN PIPING TO BE INSULATED.

HIGH PRESSURE STEAM DRIP AND TRAP — NO SCALE — 2322113-11

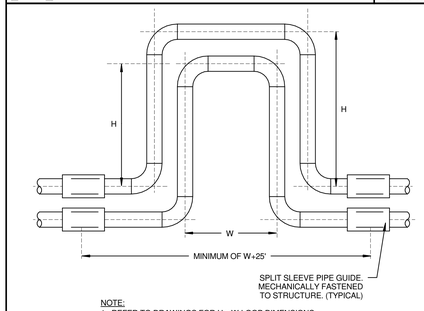


NOTES:
1. FASTEN INSULATED FLEX DUCT TO METAL DUCT WITH 22 GAUGE BAND CLAMPS & 4 SHEETMETAL SCREWS AND SEAL. DO NOT USE PLASTIC ZIP-TIES.
2. MAXIMUM LENGTH OF INSULATED FLEX DUCT "L" = 3'-0"
3. NO BOTTOM SUPPLY CONNECTIONS TO MAIN OR BRANCH ALLOWED

CEILING SUPPLY DIFFUSERS INSTALLATION DETAIL — NO SCALE — 233113-01

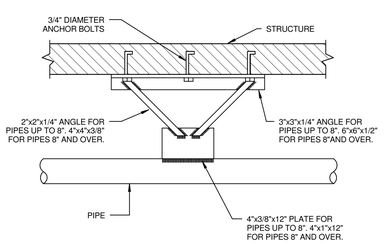


INSTALLATION AT CEILING RETURN/EXHAUST GRILLES — NO SCALE — 233113-02

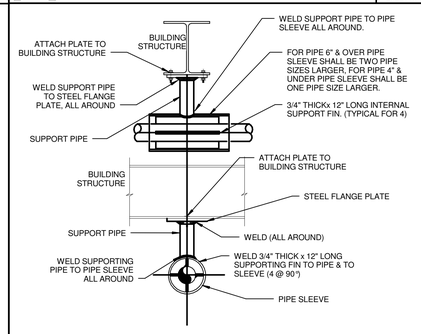


NOTE:
1. REFER TO DRAWINGS FOR H x W LOOP DIMENSIONS
2. H = W x 2
3. REFER TO DRAWINGS FOR PIPE ANCHOR LOCATIONS.

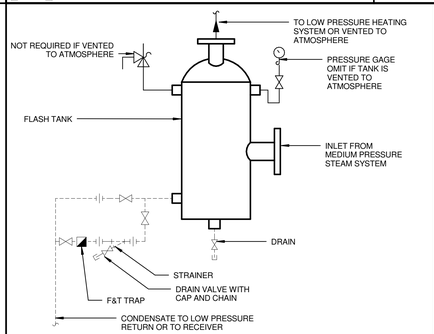
EXPANSION LOOP DETAIL — NO SCALE — 232113-01



PIPE ANCHOR — NO SCALE — 232113-06



PIPE GUIDE INSTALLATION — NO SCALE — 232113-16



VERTICAL FLASH TANK PIPING SCHEMATIC — NO SCALE — 232213-04

SCOTT E. LeCLAIR
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REGISTERED PROFESSIONAL ENGINEER MECHANICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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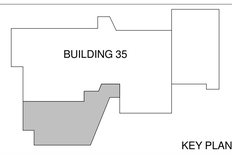


KEY PLAN

N

Drawing Title
MECHANICAL DETAILS

Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

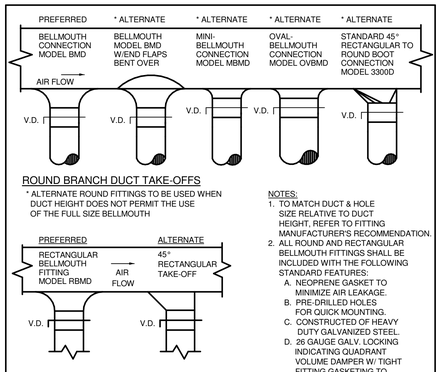
Building # 35
Scale 12" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. MH5.0

Office of Facilities
Department of Veterans Affairs

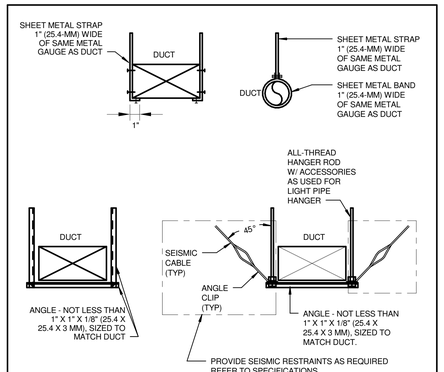
VA FORM 08-6231

DATE & TIME PRINTED: 2/26/2016 5:15:43 PM D:\Revit Projects 2014\14006.01 - VA Providence BLDG 35 Expansion\14006R2_MechanicalMODEL_Central_Plant_R14.rvt

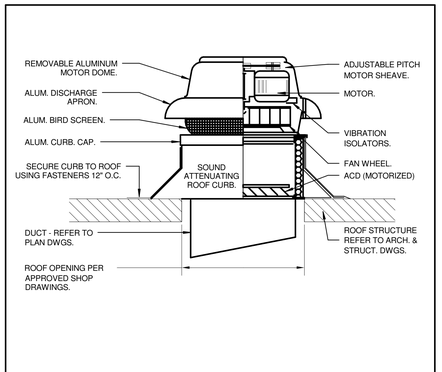


NOTES:
1. TO MATCH DUCT & HOLE SIZE RELATIVE TO DUCT HEIGHT, REFER TO FITTING MANUFACTURER'S RECOMMENDATION.
2. ALL ROUND AND RECTANGULAR BELLMOUTH FITTINGS SHALL BE INCLUDED WITH THE FOLLOWING STANDARD FEATURES:
   A. NEOPRENE GASKET TO MINIMIZE AIR LEAKAGE.
   B. PRE-DRILLED HOLES FOR QUICK MOUNTING.
   C. CONSTRUCTED OF HEAVY DUTY GALVANIZED STEEL.
   D. 26 GAUGE GALV. LOCKING INDICATING QUADRANT VOLUME DAMPER W/ TIGHT FITTING GASKETING TO MINIMIZE LEAKAGE AT DAMPER PIVOT POINTS.

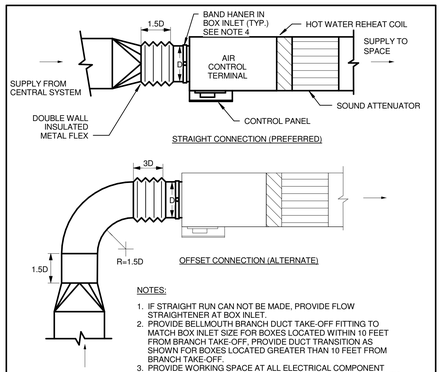
BRANCH TAKE-OFFS — NO SCALE — 233113-14



SHEET-METAL DUCT HANGERS — NO SCALE — 233113-35

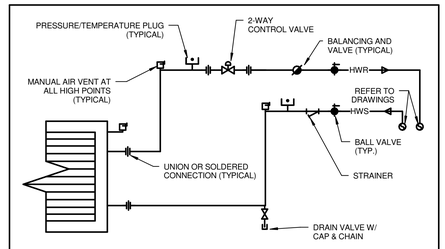


ROOF FAN DETAIL — NO SCALE — 233423-03



NOTES:
1. IF STRAIGHT RUN CAN NOT BE MADE, PROVIDE FLOW STRAIGHTENER AT BOX INLET.
2. PROVIDE BELLMOUTH BRANCH DUCT TAKE-OFF FITTING TO MATCH BOX INLET SIZE FOR BOXES LOCATED WITHIN 10 FEET FROM BRANCH TAKE-OFF, PROVIDE DUCT TRANSITION AS SHOWN FOR BOXES LOCATED GREATER THAN 10 FEET FROM BRANCH TAKE-OFF.
3. PROVIDE WORKING SPACE AT ALL ELECTRICAL COMPONENT ACCESS, PER LATEST NEC. COORDINATE EXACT REQUIREMENTS WITH ELEC. CONTRACTOR REQUIREMENTS.

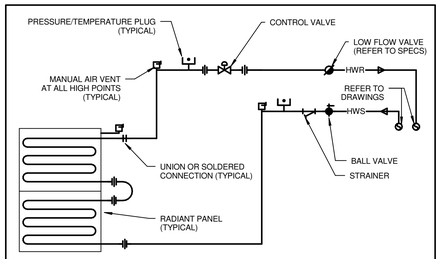
AIR CONTROL TERMINAL W / H.W. REHEAT COIL DETAIL — NO SCALE — 233600-05



NOTE:
1. POSITION PIPE HANGERS TO BEAR FULL WEIGHT OF PIPING. NO LOAD ON COIL BODY.
2. LOCATE UNIONS AND ARRANGE PIPING TO FACILITATE COIL REMOVAL AND TO AVOID BLOCKING ACCESS DOORS, CONTROL PANELS, FILTERS, VALVES, MOTORS, ETC...
3. CONTROL VALVE TO FAIL OPEN.
4. PROVIDE THREE WAY MODULATING VALVE AND BY-PASS WITH BALANCE COCK WHERE REQUIRED. REFER TO THE SPECIFICATIONS AND DRAWINGS FOR CONTROL VALVE TYPE.

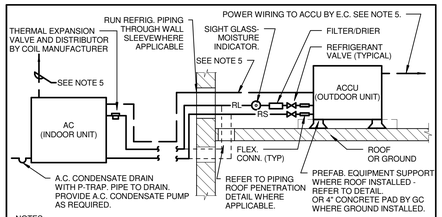
11/17/05

TERMINAL HOT WATER COIL PIPING SCHEMATIC — NO SCALE — 238219-02



NOTE:
1. POSITION PIPE HANGERS TO BEAR FULL WEIGHT OF PIPING. NO LOAD ON COIL BODY.
2. CONTROL VALVE TO FAIL OPEN.
3. LOCATE UNIONS AND ARRANGE PIPING TO FACILITATE PANEL REMOVAL.
4. PROVIDE THREE WAY MODULATING VALVE AND BY-PASS WITH BALANCE COCK WHERE REQUIRED. REFER TO THE SCHEMATIC DIAGRAMS FOR CONTROL VALVE TYPE.
5. MAXIMUM OF 3 PANELS IN SERIES. REFER TO DRAWINGS.

RADIANT PANEL HOT WATER PIPING SCHEMATIC — NO SCALE — 238316-01

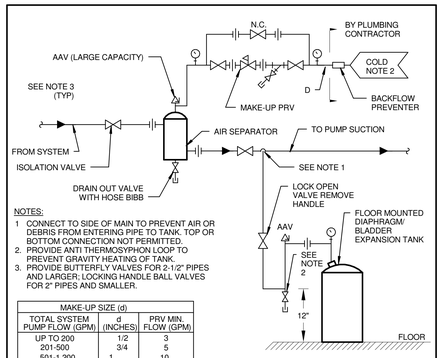


NOTES:
1. SIZE PIPING PER EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
2. ALL INTERIOR PIPING SHALL BE CONCEALED IN CEILINGS AND WALLS..
3. FURNISH AND INSTALL ALL REFRIGERANT VALVES AND SPECIALTIES REQUIRED BY MANUFACTURER.
4. PROVIDE WEATHERTIGHT SEAL AT ALL PIPING PENETRATIONS. COORDINATE PENETRATIONS WITH G.C. AND ALL ASSOCIATED TRADES AS REQUIRED.
5. SPLIT SYSTEM MANUFACTURERS UTILIZE DIFFERENT WIRING CONFIGURATIONS. THE MECH. CONT'R SHALL COORDINATE WIRING/POWER REQUIREMENTS OF THE SHOP DRAWING APPROVED EQUIPMENT WITH THE ELEC. CON'TR.

A. SINGLE FEED SYSTEM
THE ELEC. CONT'R SHALL BE RESPONSIBLE FOR POWER WIRING TO THE ACCU UNIT, FUSED DISCONNECT AND WIRING TO THE ACCU. THE LOW OR LINE VOLTAGE CONTROL/FAN POWER WIRING BETWEEN THE ACCU AND THE AC UNIT SHALL BE PROVIDED BY THE ATC CONT'R.

B. DUAL FEED SYSTEM
THE ELEC. CONT'R SHALL BE RESPONSIBLE FOR POWER WIRING TO THE ACCU AND AC UNITS. THE ELEC. CONT'R SHALL PROVIDE POWER FEED AND FUSED DISCONNECT AND WIRING TO THE ACCU. THE ELEC. CONT'R SHALL PROVIDE POWER FEED, NON-FUSED DISCONNECT AND WIRING TO AC UNIT. THE CONTROL WIRING BETWEEN ACCU AND AC UNIT SHALL BE PROVIDED BY THE ATC CONT'R.

SPLIT SYSTEM A.C. DETAIL — NO SCALE — 238126-01

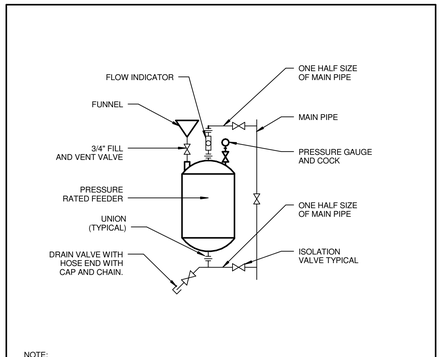


NOTES:
1 CONNECT TO SIDE OF MAIN TO PREVENT AIR OR DEBRIS FROM ENTERING PIPE TO TANK. TOP OR BOTTOM CONNECTION NOT PERMITTED.
2. PROVIDE ANTI THERMOSYPHON LOOP TO PREVENT GRAVITY HEATING OF TANK.
3. PROVIDE BUTTERFLY VALVES FOR 2-1/2" PIPES AND LARGER; LOCKING HANDLE BALL VALVES FOR 2" PIPES AND SMALLER.

MAKE-UP SIZE (d)		
TOTAL SYSTEM PUMP FLOW (GPM)	d (INCHES)	PRV MIN. FLOW (GPM)
UP TO 200	1/2	3
201-500	3/4	5
501-1,200	1	10
1,201-3,000	1 1/4	20
3,001-5,000	1 1/2	30
5,001-12,000	2	60

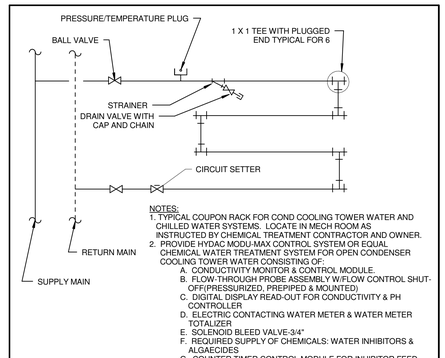
6/04/2003

MAKE-UP WATER, DIAPHRAGM EXPANSION TANK, & AIR SEPARATOR PIPING SCHEMATIC — NO SCALE — 232113-21



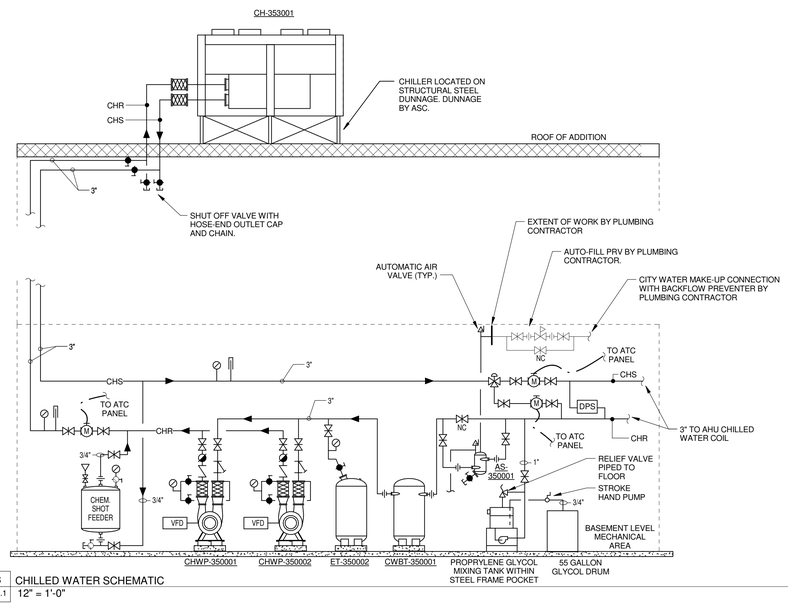
NOTE:
1. TOP OF SHOT FEEDER FUNNEL SHALL BE NO MORE THAN 3' ABOVE FINISHED FLOOR.

SHOT FEEDER DETAIL — NO SCALE — 232500-01

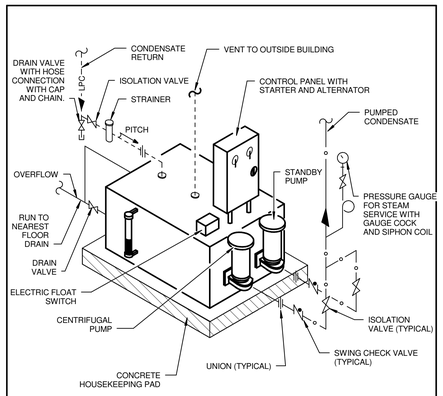


NOTES:
1. TYPICAL COUPON RACK FOR COND COOLING TOWER WATER AND CHILLED WATER SYSTEMS. LOCATE IN MECH ROOM AS INSTRUCTED BY CHEMICAL TREATMENT CONTRACTOR AND OWNER.
2. PROVIDE HYDAC MODU-MAX CONTROL SYSTEM OR EQUAL CHEMICAL WATER TREATMENT SYSTEM FOR OPEN CONDENSER COOLING TOWER WATER CONSISTING OF:
   A. CONDUCTIVITY MONITOR & CONTROL MODULE.
   B. FLOW-THROUGH PROBE ASSEMBLY W/FLOW CONTROL SHUT-OFF(PRESSURIZED, PREPIPED & MOUNTED)
   C. DIGITAL DISPLAY READ-OUT FOR CONDUCTIVITY & PH CONTROLLER
   D. ELECTRIC CONTACTING WATER METER & WATER METER TOTALIZER
   E. SOLENOID BLEED VALVE-3/4"
   F. REQUIRED SUPPLY OF CHEMICALS: WATER INHIBITORS & ALGAECIDES
   G. COUNTER TIMER CONTROL MODULE FOR INHIBITOR FEED.
   H. BIOCIDE PROGRAMMABLE MODULE-DUAL PUMPS.
   I. THREE CHEMICAL METERING PUMPS BY LIQUID METRONICS OR EQUAL

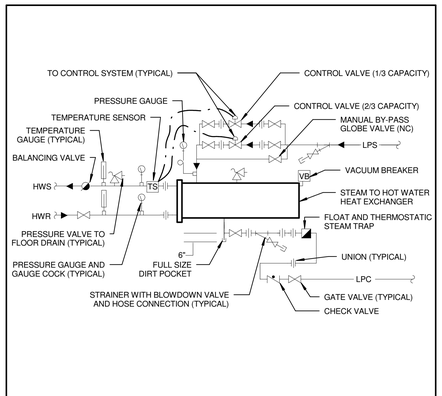
CHEMICAL TREATMENT & COUPON RACK DETAIL — NO SCALE — 232500-02



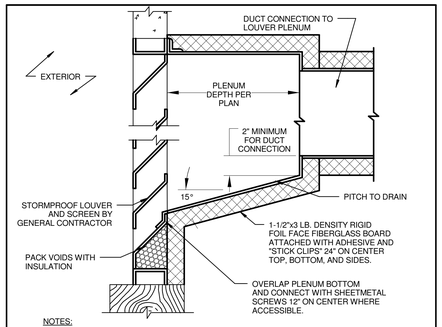
13 / MH5.1 CHILLED WATER SCHEMATIC
12" = 1'-0"



DUPLEX CONDENSATE UNIT DETAIL — NO SCALE — 232223-01



STEAM TO HOT WATER HEAT EXCHANGER PIPING — NO SCALE — 235700-01



NOTES:
1. SHEETMETAL PLENUM CONSTRUCTION SHALL BE PER SMACNA.
2. SUPPORT PLENUM FROM FLOOR OR STRUCTURE ABOVE WITH GALVANIZED STEEL ANGLES AND CHANNELS, CROSS BREAK ALL PANELS FOR RIGIDITY.
3. LOUVER SHALL BE INSTALLED A MINIMUM OF 3 FEET ABOVE SNOW ACCUMULATING SURFACE (ROOF, WALKWAY, ETC.).
4. BARE SHEETMETAL PAINTED BY HVAC SUBCONTRACTOR (BLACK OR AS DIRECTED BY ARCHITECT)

PLENUM AT LOUVER DETAIL — NO SCALE — 233113-15

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FINAL DESIGN DOCUMENTS
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Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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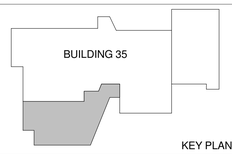

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Drawing Title: MECHANICAL DETAILS & SCHEMATICS
Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title: BUILDING 35 ADDITION FOR RESEARCH
Building #: 35
Scale: 12" = 1'-0"
Location: PROVIDENCE

Date: 6/30/2015
VA Project No. 650-338
Drawing No. MH5.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

GENERAL CONTROL NOTES:

1. CONTRACTOR SHALL PROVIDE COMPLETE DDC AUTOMATIC TEMPERATURE CONTROL SYSTEM COMPATIBLE WITH THE EXISTING METASYS BUILDING MANAGEMENT SYSTEM BY JOHNSON CONTROLS, INC. ALL HVAC SYSTEM AND ANCILLARY COMPONENTS SHALL BE CONTROLLED BY THE EXISTING METASYS BUILDING MANAGEMENT SYSTEM. FINAL CONNECTION OF NEW EQUIPMENT TO THE EXISTING METASYS BUILDING MANAGEMENT SYSTEM SHALL BE MADE BY A COMPANY AND TECHNICIANS FULLY QUALIFIED AND CERTIFIED BY JOHNSON CONTROLS, INC. TO PROGRAM, INSTALL, ADJUST, REPAIR, MAINTAIN, MODIFY, OR OTHERWISE MANIPULATE THE METASYS BUILDING MANAGEMENT SYSTEM BY JOHNSON CONTROLS, INC. CURRENT COMPANY AND TECHNICIAN QUALIFICATIONS AND CERTIFICATIONS TO PROGRAM, INSTALL, ADJUST, REPAIR, MAINTAIN, MODIFY, OR OTHERWISE MANIPULATE THE JOHNSON CONTROLS METASYS SYSTEM MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION OF THE PROJECT INCLUDING ANY EXTENSIONS OF THE CONSTRUCTION PERFORMANCE PERIOD. IF THE CONTRACTOR UTILIZES THE SERVICES OF A SUBCONTRACTOR OTHER THAN JOHNSON CONTROLS TO PERFORM THIS WORK, THE CONTRACTOR SHALL PROVIDE THE VA, VIA SUBMITTAL, COPIES OF FACTORY TRAINING CERTIFICATES FOR EACH TECHNICIAN WORKING ON THE PROVIDENCE VAMC METASYS SYSTEM PRIOR TO COMMENCEMENT OF ANY CONTROLS WORK. THE PROVIDENCE VAMC WILL REVIEW THE CERTIFICATIONS AS PART OF THE SUBMITTAL PROCESS. CONTRACTOR SHALL CARRY THE COST OF THIS WORK IN THEIR BID.

2. ALL DDC CONTROLS SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL BE BACNET METASYS CONTROLS BY JOHNSON CONTROLS.

3. ALL CONTROLS SHALL HAVE OCCUPIED AND UNOCCUPIED FUNCTIONS.

4. ALL SET POINTS SHALL BE FULLY ADJUSTABLE

5. ALL MONITORED POINTS, INCLUDING STATUS (ON, OFF, FAILED) AND ANY ALARMS SHALL DISPLAY AT THE DDC WORKSTATION(S).

6. "COOLING MODE" SHALL BE DEFINED AS ANY TIME THE OUTSIDE AIR TEMPERATURE IS ABOVE 50℉ (ADJUSTABLE) AND A CALL FOR COOLING EXISTS FROM ANY ASSOCIATED PIECE OF EQUIPMENT. "COOLING MODE" SHALL EXTEND TO 1 HOUR BEYOND THE CALL FOR COOLING IS SATISFIED TO PREVENT SHORT CYCLING.

7. "HEATING MODE" SHALL BE DEFINED AS ANY TIME THE OUTSIDE AIR TEMPERATURE IS BELOW 68℉ (ADJUSTABLE) AND A CALL FOR HEATING EXISTS FROM ANY ASSOCIATED PIECE OF EQUIPMENT.

8. WHERE 100% REDUNDANT MOTORIZED EQUIPMENT IS INSTALLED, THE TWO (OR MORE) PIECES OF EQUIPMENT SHALL ALTERNATE OPERATION ON AN ADJUSTABLE, EQUAL RUN-TIME BASIS. THE DDC SYSTEM SHALL DISPLAY CUMULATIVE RUN-TIME OF EACH UNIT. IF ONE UNIT FAILS, THE OTHER UNIT SHALL START AUTOMATICALLY AND THE DDC SYSTEM SHALL GENERATE AN ALARM SIGNAL.

9. HVAC SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH THE LATEST VERSION OF THE VA HVAC DESIGN MANUAL AND THE LATEST VERSIONS OF THOSE STANDARDS REFERENCED WITHIN THAT MANUAL. THE DESIGNER IS RESPONSIBLE FOR VERIFICATION OF THE LATEST VERSION.

10. ALL INDIVIDUAL ROOM ENVIRONMENTAL PARAMETERS SHALL BE DESIGNED AND SET IN ACCORDANCE WITH THE LATEST VERSION OF THE VA HVAC DESIGN MANUAL.

11. ALL EQUIPMENT SHALL BE ENERGY STAR CERTIFIED AND MAXIMUM EFFICIENCY.

12. THE CONTRACTOR SHALL PROGRAM ALL THERMOSTATS AND HUMIDISTATS AT PROJECT COMPLETION. COORDINATE WITH OWNER FOR PROGRAM SETTINGS. CONTRACTOR SHALL PROVIDE ALL LOW VOLTAGE WIRING, SENSORS, CONTROL DEVICES, ETC. IN ORDER TO MEET REQUIREMENTS OF THE SEQUENCES OF OPERATION.

13. PROVIDE A COORDINATED AUTOMATED TEMPERATURE CONTROL SYSTEM FOR AIR HANDLING UNITS, CHILLERS, CHILLED WATER PUMPS, STEAM TO HOT WATER HEAT EXCHANGER, HOT WATER PUMPS, GLYCOL PUMPS, CONSTANT AIR VOLUME BOXES, AIR FLOW CONTROL VALVES, EXHAUST FANS AND OTHER EQUIPMENT SHOWN ON THE PLANS. THIS WORK INCLUDES BUT IS NOT LIMITED TO:
    - A. MODIFICATION OF THE EXISTING JOHNSON CONTROLS METASYS DIRECT DIGITAL CONTROL SYSTEM TO DELETE CONTROL POINTS AND SEQUENCE OF OPERATION ASSOCIATED WITH THE EQUIPMENT TO BE REMOVED.
    - B. INSTALLATION OF A NEW INDEPENDENT BACNET DIRECT DIGITAL CONTROL SYSTEM TO INCLUDE SYSTEM CONTROL POINTS AND SEQUENCE OF OPERATION ASSOCIATED WITH THE EQUIPMENT NOTED ABOVE. ALL REQUIRED BACNET CONTROLLERS, CONTROL POINT DEVICES, ELECTRICAL AND MECHANICAL INSTALLATION AND PROGRAMMING WILL BE PROVIDED TO ACHIEVE A COMPLETE FUNCTIONING CONTROL SYSTEM IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, VA REQUIREMENTS, MANUFACTURERS INSTRUCTIONS, AND APPLICABLE CODES.
    - C. INSTALLATION OF BACNET GATEWAY PANEL TO ALLOW MONITORING AND CONTROL CAPABILITY OF THE NEW BACNET CONTROL SYSTEM AT EXISTING JOHNSON CONTROLS METASYS WORKSTATION.
    - D. TESTING AND REPAIR OR REPLACEMENT OF EXISTING DDC SENSORS, RELAYS, AND ACTUATORS AS REQUIRED FOR PROPER OPERATION AND TO MEET THE SEQUENCE OF OPERATION.
    - E. START-UP AND COMMISSIONING.
    - F. THE CONTRACT IS TO INCLUDE FOUR (4) FOLLOW-UP VISITS DURING THE FIRST YEAR OF USE TO VERIFY AND ADJUST OPERTAION OF THE NEW DDC SYSTEM.

AIR HANDLING UNIT SEQUENCE OF OPERATIONS:

1. CONTROL AND MONITORING SHALL BE VIA THE BAS

2. GENERAL:
    - a. WHENEVER THE AIR HANDLING SYSTEM IS SHUT DOWN BY COMMAND OF THE CONTROL SYSTEM OR POWER DISCONNECT, ALL CONTROL DEVICES ASSOCIATED WITH THE SYSTEM SHALL REVERT TO THE NORMAL STATE OR POSITION. NORMAL CONTROL DEVICE STATE OR POSITION SHALL BE AS FOLLOWS:
        - 1) SUPPLY FAN SHALL BE OFF
        - 2) ASSOCIATED RETURN FAN SHALL BE OFF
        - 4) HUMIDIFER, STEAM HEATING AND CHILLED WATER VALVES SHALL BE CLOSED (EXCEPTION: UPON POWER FAILURE OR FREEZE-STAT TRIP, HOT WATER VALVE SHALL BE OPEN).
        - 5) OUTSIDE AIR DAMPER SHALL BE CLOSED
        - 6) RETURN AIR DAMPER SHALL BE CLOSED
        - 7) RELIEF AIR DAMPER SHALL BE OPEN
    - b. AFTER A POWER INTERRUPTION, THE AIR HANDLING SYSTEM SHALL BE AUTOMATICALLY RESTART IN THE MODE APPROPRIATE TO THE OPERATING SCHEDULE
    - c. THE BAS SHALL INCLUDE LOGIC TO STAGGER EQUIPMENT STARTUPS TO LIMIT ELECTRICAL SURGES.
    - d. AIR HANDLING SYSTEMS SHALL BE ENERGIZED BASED ON SPECIFIC OCCUPIED/UNOCCUPIED SCHEDULES.

3. SUPPLY FAN START AND STATIC PRESSURE CONTROL:
    - a. UPON UNIT START-UP, THE UNIT DAMPERS SHALL OPEN AND PROVE OPEN. THE SUPPLY FAN SHALL START AND RUN AT A MINIMUM SPEED. ASSOCIATED AIR TERMINAL UNITS SHALL ENTER THE APPROPRIATE MODE (SEE AIR TERMINAL UNIT CONTROL SEQUENCE). AFTER A 30 SECOND DELAY, THE SUPPLY FAN STATIC PRESSURE CONTROLS SHALL BE ENABLED.
    - b. THE VFD SHALL MODULATE THE SUPPLY FAN SPEED TO MAINTAIN THE DUCT STATIC PRESSURE SET POINT. THE STATIC PRESSURE SENSOR SHALL BE LOCATED APPROXIMATELY 2/3 OF THE DISTANCE DOWNSTREAM IN THE LONGEST MEDIUM PRESSURE DUCT MAIN. THE BAS CONTRACTOR SHALL COORDINATE WITH THE BALANCING CONTRACTOR IN ORDER TO ESTABLISH THE STATIC PRESSURE SET POINT NECESSARY TO OBTAIN THE REQUIRED AIRFLOW RATE AT THE LOWEST POSSIBLE FAN SPEED.

4. OCCUPIED MODE:
    - a. THE SUPPLY FAN SHALL START AND RUN CONTINUOUSLY UNDER STATIC PRESSURE CONTROLS (SEE SUPPLY FAN START AND STATIC PRESSURE CONTROL SEQUENCE).
        - 1) THE RELIEF AIR DAMPER SHALL OPEN AND THE OUTSIDE AIR AND RETURN AIR DAMPERS SHALL BE POSITIONED FOR MINIMUM VENTILATION. UPON PROOF OF DAMPER OPENING, THE RETURN FAN SHALL MODULATE THE FAN SPEEDS TO MAINTAIN 80% OF THE SUPPLY FAN SPEED.
    - b. THE DISCHARGE AIR TEMPERATURE SET POINT SHALL BE LINEARLY RESET BETWEEN 54° F AND 65° F (ADJUSTABLE) BASED ON OUTSIDE AIR TEMPERATURE. WHEN OUTSIDE AIR TEMPERATURE IS 30° F OR BELOW, SET POINT SHALL BE 60° F. WHEN OUTSIDE AIR TEMPERATURE IS 50° F OR ABOVE SET POINT SHALL BE 54° F. DISCHARGE AIR SET POINT SHALL BE LINEARLY RESET BETWEEN THESE TWO POINTS.
    - c. THE UNIT SHALL ENTER A COOLING MODE WHEN THE DISCHARGE AIR TEMPERATURE RISES ABOVE SET POINT. WHEN COOLING MODE THE HOT WATER VALVE SHALL BE CLOSED. THE UNIT SHALL HAVE ECONOMIZER CYCLE CONTROLS TO ALLOW FOR FREE COOLING AS THE FIRST STAGE OF COOLING. OUTSIDE AIR SHALL BE UTILIZED FOR FREE COOLING WHEN THE OUTSIDE AIR DRY BULB TEMPERATURE IS LESS THAN THE RETURN DRY BULB TEMPERATURE. .
        - 1) WHEN THE OUTSIDE AIR TEMPERATURE IS AT OR ABOVE THE DISCHARGE AIR TEMPERATURE SET POINT, THE UNIT SHALL PROVIDE MINIMUM OUTSIDE AIR.
        - 2) WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW THE DISCHARGE AIR TEMPERATURE SET POINT, THE UNIT SHALL MODULATE THE OUTSIDE AIR TO MAINTAIN THE MIXED AIR TEMPERATURE SET POINT.
    - e. WHEN IN COOLING MODE, IF THE ECONOMIZER CYCLE ALONE IS INSUFFICIENT OR NOT AVAILABLE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT, THE CHILLED WATER VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT.
    - f. THE UNIT SHALL ENTER A HEATING MODE WHEN THE DISCHARGE AIR TEMPERATURE FALLS BELOW SET POINT. WHEN IN HEATING MODE THE CHILLED WATER VALVE SHALL BE CLOSED AND THE OUTSIDE AIR FLOW SHALL BE AT MINIMUM SET POINT. THE HOT WATER VALVE SHALL MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SET POINT.

5. WARM-UP MODE:
    - a. A WARM-UP MODE SHALL BE INITIATED ON A TIME BASED SCHEDULE PRIOR TO ENTERING THE OCCUPIED MODE WHEN THE AVERAGE SPACE TEMP OF ALL SPACES SERVED BY THE AHU IS BELOW THE OCCUPIED HEATING SET-POINT.
    - b. THE SUPPLY FAN SHALL START AND RUN CONTINUOUSLY UNDER STATIC PRESSURE CONTROLS (SEE SUPPLY FAN START AND STATIC PRESSURE CONTROL SEQUENCE) AND THE UNIT SHALL OPERATE WITH 100 % RE-CIRCULATED AIR.
    - c. HOT WATER VALVE SHALL MODULATE TO MAINTAIN A DISCHARGE AIR SET POINT OF 70° F AND ASSOCIATED AIR TERMINAL UNITS SHALL ENTER THE WARM-UP MODE (SEE AIR TERMINAL UNIT CONTROL SEQUENCE).

6. COOL-DOWN MODE:
    - a. A COOL-DOWN MODE SHALL BE INITIATED ON A TIME BASED SCHEDULE PRIOR TO ENTERING THE OCCUPIED MODE WHEN THE AVERAGE SPACE TEMP OF ALL SPACES SERVED BY THE AHU IS ABOVE THE OCCUPIED COOLING SET-POINT AND OUTSIDE AIR TEMPERATURE IS ABOVE 65° F.
    - b. THE SUPPLY FAN SHALL START AND RUN CONTINUOUSLY UNDER STATIC PRESSURE CONTROLS (SEE SUPPLY FAN START AND STATIC PRESSURE CONTROL SEQUENCE) AND THE UNIT SHALL OPERATE WITH 100% RE-CIRCULATED AIR.
    - c. CHILLED WATER VALVE SHALL MODULATE TO MAINTAIN A DISCHARGE AIR SET POINT OF 54° F AND ASSOCIATED AIR TERMINAL UNITS SHALL ENTER THE COOL-DOWN MODE (SEE AIR TERMINAL UNIT CONTROL SEQUENCE).

7. AHU SYSTEM LEVEL CONTROL, STATIC PRESSURE OPTIMIZATION OF DISCHARGE AIR TEMPERATURE, AND STATIC PRESSURE SET POINTS:
    - a. THE BMS SHALL MONITOR THE DAMPER POSITION OF ALL VAV TERMINAL UNITS AND DETERMINE EACH VAV RTU'S CRITICAL ZONE VAV TERMINAL (CZ), WHICH IS THE VAV TERMINAL UNIT DAMPER THAT IS THE MOST OPEN.
    - b. WHEN THE CZ IS MORE THAN 95% OPEN, THE SUPPLY FAN DISCHARGE STATIC PRESSURE SET POINT SHALL BE RESET DOWNWARD BY 10% OF THE PREVIOUS SET POINT AT A FREQUENCY OF 10 MINUTES UNTIL THE CZ IS MORE THAN 97% OPEN OR THE STATIC PRESSURE SET POINT HAS RESET DOWNWARD TO THE SYSTEM MINIMUM SETTING OR THE VSD IS AT ITS MINIMUM SETTING.
    - c. WHEN THE CZ IS LESS THAN 95% OPEN AND THE SUPPLY FAN DISCHARGE STATIC PRESSURE SET POINT IS AT THE MINIMUM SETTING, THE DISCHARGE AIR TEMPERATURE SET POINT SHALL BE RESET UPWARD IN INCREMENTS OF 0.5°F AT A FREQUENCY OF 10 MINUTES AND THE STATIC PRESSURE SET POINT HELD CONSTANT UNTIL THE CZ IS MORE THAN 97% OPEN OR THE DISCHARGE AIR TEMPERATURE IS RESET TO ITS MAXIMUM SETTING OF 60°F. MINIMUM DISCHARGE AIR TEMPERATURE SHALL BE 50°F.
    - d. THE REVERSE CONTROL SEQUENCING SHALL OCCUR WHEN THE CZ IS ABOVE 98% OPEN UNTIL THE DISCHARGE AIR TEMPERATURE SET POINT AND THE STATIC PRESSURE SET POINT ARE AT THEIR DESIGN SET POINTS.
    - e. THE CONTROL BAND, SET POINT INCREMENT VALUES, SET POINT DECREMENT VALUES AND ADJUSTMENT FREQUENCIES SHALL BE ADJUSTED TO MAINTAIN MAXIMUM STATIC PRESSURE OPTIMIZATION WITH STABLE SYSTEM CONTROL AND MAXIMUM COMFORT CONTROL.

8. UNOCCUPIED MODE:
    - a. UNIT SHALL NOT OPERATE DURING THE UNOCCUPIED MODE.

9. FILTERS:
    - a. PRE-FILTER DIFFERENTIAL PRESSURE MONITOR:

      THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PRE-FILTER.

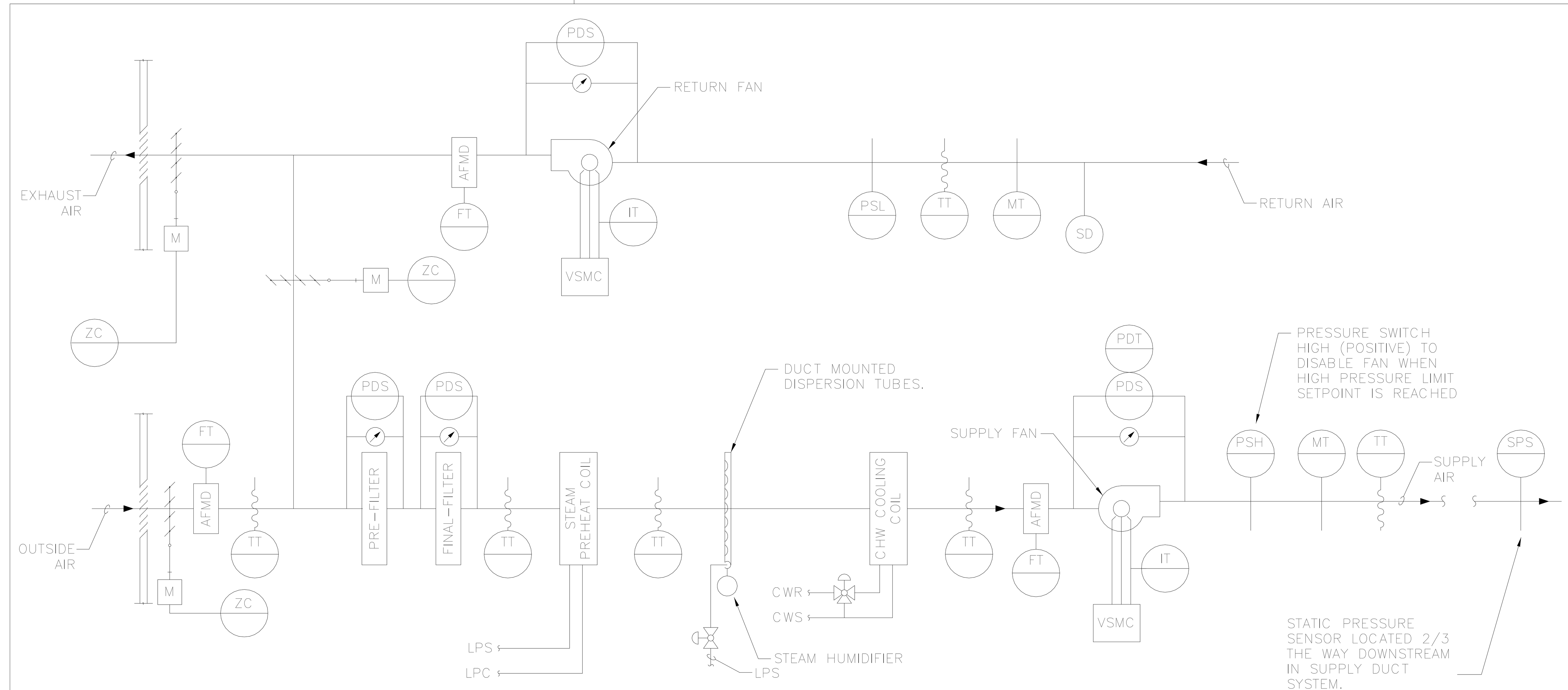
      ALARMS SHALL BE PROVIDED AS FOLLOWS:
        1. PRE-FILTER CHANGE REQUIRED: PRE-FILTER DIFFERENTIAL.
        2. PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.) OR TWICE THE ALLOTTED PRESSURE DROP STATED IN AHU SUBMITTAL .
    - b. FINAL FILTER DIFFERENTIAL PRESSURE MONITOR

      THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER.

      ALARMS SHALL BE PROVIDED AS FOLLOWS:
        1. FINAL FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL.
        2. PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.) OR TWICE THE ALLOTTED PRESSURE DROP STATED IN AHU SUBMITTAL.

GENERAL CONTROL SYMBOLS:

Symbol	Description	Symbol	Description
T	ROOM THERMOSTAT/TRANSMITTER – WALL MOUNT	LC	LEVEL CONTROLLER
M	ROOM HUMIDISTAT (MOISTURE)/TRANSMITTER – WALL MOUNT	LT	LEVEL TRANSMITTER
TT	TEMPERATURE TRANSMITTER	M	MOTORIZED CONTROL DAMPER
TT	TEMPERATURE TRANSMITTER, AVERAGING ELEMENT	PSH	PRESSURE SWITCH HIGH
MT	MOISTURE (HUMIDITY) TRANSMITTER	PSL	PRESSURE SWITCH LOW
PT	PRESSURE TRANSMITTER	AT CO2	CARBON DIOXIDE TRANSMITTER
SPS	STATIC PRESSURE SENSOR	AT CO	CARBON MONOXIDE TRANSMITTER
FT	FLOW TRANSMITTER	AT OC	OCCUPANCY SENSOR
IT	CURRENT TRANSMITTER	VSMC	VARIABLE SPEED MOTOR CONTROLLER
CT	CONDUCTIVITY TRANSMITTER	TC	TEMPERATURE CONTROLLER. SEE SEQUENCE OF OPERATION
SD	SMOKE DETECTOR	PC	PRESSURE CONTROLLER. SEE SEQUENCE OF OPERATION
PDT	PRESSURE DIFFERENTIAL TRANSMITTER	FSH	FLOW SWITCH HIGH
PDS	PRESSURE DIFFERENTIAL SWITCH	FSL	FLOW SWITCH LOW
HS	HAND SWITCH (HAND–OFF–AUTO SWITCH)	SD	SMOKE DETECTOR
ZC	VALVE OR DAMPER POSITION CONTROLLER (END SWITCH)		
KR	LOCAL RECORDING TIME CLOCK (RUNTIME)		
SST	START/STOP		
TSL	TEMPERATURE SWITCH, LOW (FREEZESTAT)		
TSH	TEMPERATURE SWITCH, HIGH (FREEZESTAT)		



1 VARIABLE VOLUME AIR HANDLING UNIT CONTROL DIAGRAM

NTS

SCOTT E. LeCLAIR
No. 11210
REGISTERED PROFESSIONAL ENGINEER MECHANICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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BUILDING 35
KEY PLAN
N

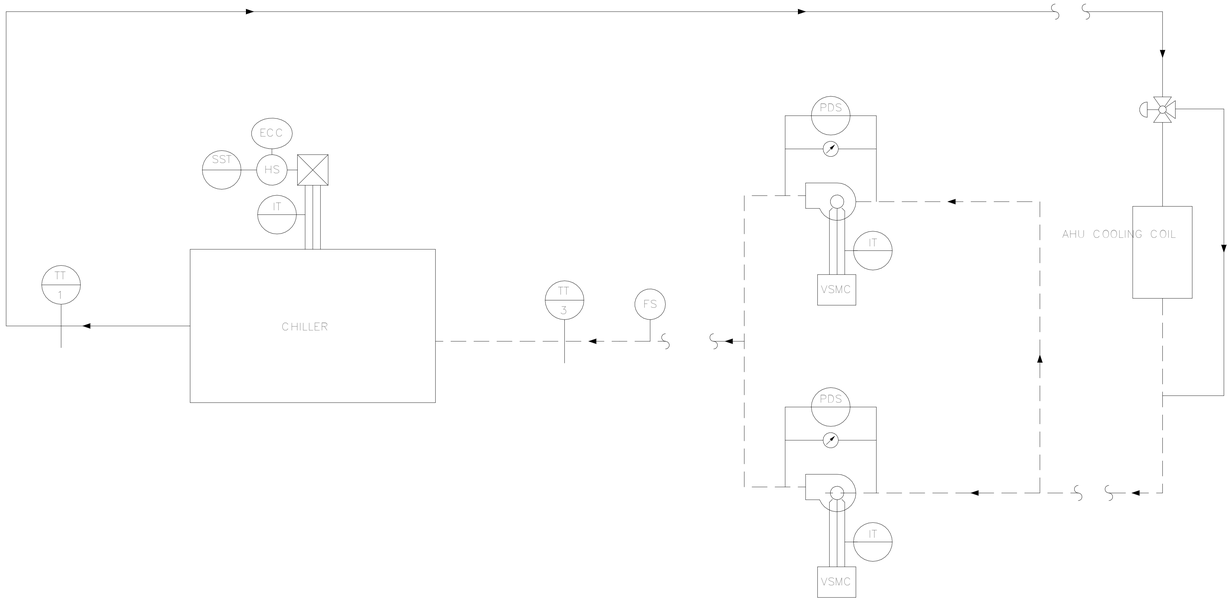
Drawing Title: MECHANICAL CONTROL SCHEMATICS AND SEQUENCES
Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title: BUILDING 35 ADDITION FOR RESEARCH
Building #: 35
Scale: 12" = 1'-0"
Location: PROVIDENCE

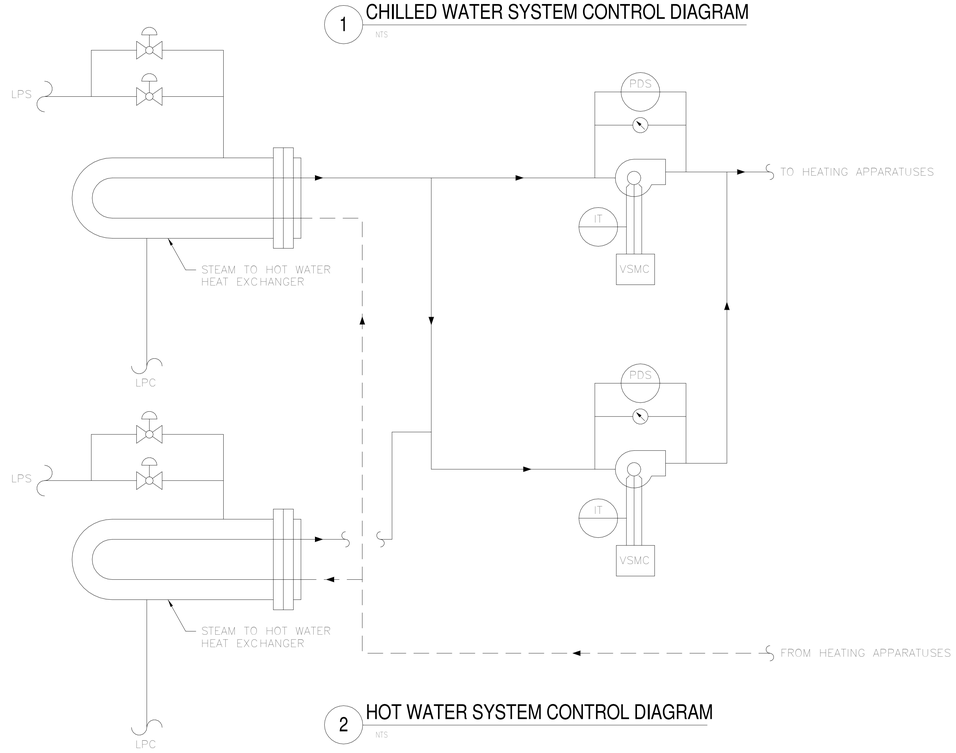
Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: MH6.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



1 CHILLED WATER SYSTEM CONTROL DIAGRAM
NTS



2 HOT WATER SYSTEM CONTROL DIAGRAM
NTS

SEQUENCE OFOPERATION-CHILLED WATER SYSTEM

CHILLER - RUN CONDITIONS:
THE CHILLER SHALL BE ENABLED TO RUN WHENEVER:
- WHEN TERMINAL VAV UNITS ARE AT OR NEAR FULL OPEN AND SPACE COOLING SET POINTS CANNOT BE MAINTAINED.
- AND THE OUTSIDE AIR TEMPERATURE IS GREATER THAN 50°F (ADJ.).

TO PREVENT SHORT CYCLING, THE CHILLER SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE), UNLESS SHUTDOWN ON SAFETIES OR OUTSIDE AIR CONDITIONS. THE CHILLER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

EMERGENCY SHUTDOWN:
THE CHILLER SHALL SHUT DOWN AND AN ALARM GENERATED UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL STATUS.

CHILLED WATER ISOLATION VALVES:
THE VALVES SHALL OPEN ANYTIME THE CHILLER IS CALLED TO RUN.
THE VALVES SHALL ALSO OPEN WHENEVER THE CHILLED WATER PUMP RUNS FOR FREEZE PROTECTION.
THE VALVES SHALL OPEN PRIOR TO THE CHILLER BEING ENABLED AND SHALL CLOSE ONLY AFTER THE CHILLER IS DISABLED. THE VALVES SHALL THEREFORE HAVE:
- A USER ADJUSTABLE DELAY ON START.
- AND A USER ADJUSTABLE DELAY ON STOP.

THE DELAY TIMES SHALL BE SET APPROPRIATELY TO ALLOW FOR ORDERLY CHILLED WATER SYSTEM START-UP, SHUTDOWN AND SEQUENCING.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- FAILURE: VALVE COMMANDED OPEN BUT THE STATUS INDICATES CLOSED.
- OPEN IN HAND: VALVE COMMANDED CLOSED BUT THE STATUS INDICATES OPEN.
- RUNTIME EXCEEDED: VALVE STATUS RUNTIME EXCEEDS A USER-DEFINABLE LIMIT.

CHILLED WATER PUMP LEAD/STANDBY OPERATION:
WHEN THE SYSEM CALLS FOR COOLING, ONE CHILLED WATER PUMP SHALL START AND RUN AT A CONSTANT VOLUME.
THE CHILLED WATER PUMP SHALL ALSO RUN FOR FREEZE PROTECTION WHENEVER THE OUTSIDE AIR TEMPERATURE IS LESS THAN A USER DEFINABLE SETPOINT (ADJ.).
THE LEAD PUMP SHALL START PRIOR TO THE CHILLER BEING ENABLED AND SHALL STOP ONLY AFTER THE CHILLER IS DISABLED.
THE PUMP(S) SHALL THEREFORE HAVE:
- A USER ADJUSTABLE DELAY ON START.
- AND A USER ADJUSTABLE DELAY ON STOP.

THE DELAY TIMES SHALL BE SET APPROPRIATELY TO ALLOW FOR ORDERLY CHILLED WATER SYSTEM START-UP, SHUTDOWN AND SEQUENCING.
THE TWO PUMPS SHALL OPERATE IN A LEAD/STANDBY FASHION.
- THE LEAD PUMP SHALL RUN FIRST.
- ON FAILURE OF THE LEAD PUMP, THE STANDBY PUMP SHALL RUN AND THE LEAD PUMP SHALL TURN OFF.

SEQUENCE OFOPERATION-HOT WATER SYSTEM

HEAT EXCHANGER SYSTEM RUN CONDITIONS:
THE HEAT EXCHANGER SYSTEM SHALL BE ENABLED TO RUN WHENEVER:
- A DEFINABLE NUMBER OF HOT WATER COILS NEED HEATING.
- AND OUTSIDE AIR TEMPERATURE IS LESS THAN 68°F (ADJ.).

TO PREVENT SHORT CYCLING, THE HEAT EXCHANGER SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE).
THE HEAT EXCHANGER SYSTEM SHALL ALSO RUN FOR FREEZE PROTECTION WHENEVER OUTSIDE AIR TEMPERATURE IS LESS THAN 38°F (ADJ.).

HOT WATER PUMP LEAD/STANDBY OPERATION:
THE TWO HOT WATER PUMPS SHALL OPERATE IN A LEAD/STANDBY FASHION.
- THE LEAD PUMP SHALL RUN FIRST.
- ON FAILURE OF THE LEAD PUMP, THE LAG PUMP SHALL RUN AND THE LEAD PUMP SHALL TURN OFF.

THE DESIGNATED LEAD PUMP SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS (USER SELECTABLE):
- MANUALLY THROUGH A SOFTWARE SWITCH
- IF PUMP RUNTIME (ADJ.) IS EXCEEDED
- WEEKLY

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HOT WATER PUMP 1

FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

- HOT WATER PUMP 2

FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

HOT WATER PUMP CONTROL:
THE HOT WATER PUMP SHALL BE VARIABLE SPEED WITH SPEED ADJUSTED TO MAINTAIN A SYSTEM PRESSURE ALLOWING ALL COILS AND HEATING UNITS TO MEET SPACE SET POINTS. SYSTEM SHALL RUN WHENEVER:
- A DEFINABLE NUMBER OF HOT WATER COILS NEED HEATING.
- AND OUTSIDE AIR TEMPERATURE IS LESS THAN 68°F (ADJ.).

TO PREVENT SHORT CYCLING, THE HOT WATER PUMP SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE).
THE HOT WATER PUMP SHALL ALSO RUN FOR FREEZE PROTECTION WHENEVER OUTSIDE AIR TEMPERATURE IS LESS THAN 38°F (ADJ.).

HOT WATER SUPPLY TEMPERATURE SETPOINT:
THE HOT WATER SUPPLY TEMPERATURE SETPOINT SHALL BE A FIXED SETPOINT OF 180°F (ADJ.).
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- HIGH HOT WATER SUPPLY TEMP: IF GREATER THAN 200°F (ADJ.).
- LOW HOT WATER SUPPLY TEMP: IF LESS THAN 140°F (ADJ.).

SEQUENCE OFOPERATION-CHILLED WATER SYSTEM

THE DESIGNATED LEAD PUMP SHALL ROTATE UPON ONE OF THE FOLLOWING CONDITIONS (USER SELECTABLE):
- MANUALLY THROUGH A SOFTWARE SWITCH
- IF PUMP RUNTIME (ADJ.) IS EXCEEDED
- WEEKLY

ALARMS SHALL BE PROVIDED AS FOLLOWS:
- CHILLED WATER PUMP 1
  FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
  RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
  RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

- CHILLED WATER PUMP 2
  FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
  RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
  RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

CHILLER:
THE CHILLER SHALL BE ENABLED A USER ADJUSTABLE TIME AFTER PUMP STATUSES ARE PROVEN ON. THE CHILLER SHALL THEREFORE HAVE A USER ADJUSTABLE DELAY ON START. THE DELAY TIME SHALL BE SET APPROPRIATELY TO ALLOW FOR ORDERLY CHILLED WATER SYSTEM START-UP, SHUTDOWN AND SEQUENCING.
THE CHILLER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.
ALARMS SHALL BE PROVIDED AS FOLLOWS:
- CHILLER FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- CHILLER RUNNING IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- CHILLER RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT.

CHILLER CHILLED WATER SUPPLY SETPOINT:
THE CHILLER SHALL MAINTAIN A CHILLED WATER SUPPLY TEMPERATURE SETPOINT OF 44°F WITH 2° FLUCUATION (ADJUSTABLE SET POINTS).
A DISCHARE AIR TEMPERATURE (DB) SENSOR DOWNSTREAM OF AHU COIL SHALL MODULATE THE 3-WAY CHILLED WATER VALVE TO MAINTAIN SPACE COOLING SET POINTS AS NEEDED.

CHILLED WATER MONITORING:
REFER TO POINTS LIST FOR ATC MONITORING.

SEQUENCE OFOPERATION-HOT WATER SYSTEM

HEAT EXCHANGER STEAM VALVE - HOT WATER CONTROL:
THE CONTROLLER SHALL MEASURE THE HOT WATER SUPPLY TEMPERATURE AND MODULATE THE STEAM VALVES TO MAINTAIN ITS SETPOINT. ONLY ONE HEAT EXCHANGER SHALL OPERATE AT A TIME WITH THE OTHER FOR REDUNDANCY. A ROTATION SCHEDULE SHALL BE PROVIDED TO ENSURE EQUAL USEAGE.
THE STEAM VALVE SHALL BE ENABLED WHENEVER:
- THE HEAT EXCHANGER IS CALLED TO RUN.
- AND HOT WATER SUPPLY TEMPERATURE IS BELOW SETPOINT.

THE STEAM VALVE SHALL OPEN TO 100% (ADJ.) WHENEVER THE HEAT EXCHANGER IS IN FREEZE PROTECTION DUE TO LOW OUTSIDE AIR TEMPERATURE. THE STEAM VALVE SHALL CLOSE WHENEVER THE HOT WATER SUPPLY TEMPERATURE RISES FROM 180°F TO 200°F (ADJ.).

VAV TERMINAL BOX SEQUENCE OF OPERATIONS:

1. CONTROL AND MONITORING SHALL BE VIA THE CONTROLS SYSTEM.
2. VAV BOXES SHALL OPERATE WHENEVER THE ASSOCIATED AIR HANDLING UNIT IS OPERATING. EACH BOX CONTROLLER SHALL MODULATE DAMPER POSITION, COIL VALVE AND ASSOCIATED RADIATION VALVE IN SEQUENCE TO MAINTAIN SET POINT. SEPARATE SPACE TEMPERATURE SET POINTS SHALL BE PROVIDED FOR OCCUPIED AND UNOCCUPIED PERIODS.
3. NORMAL CONTROL DEVICE STATE OR POSITION SHALL BE AS FOLLOWS:
   1) DAMPER SHALL BE LAST POSITION
   2) COIL VALVES SHALL BE LAST POSITION
4. OCCUPIED MODE: THE VAV BOX SHALL BE CONTROLLED WITHIN DEFINED MAXIMUM AND MINIMUM AIRFLOW RATE SETTINGS. THE CONTROLLER SHALL MONITOR THE SPACE TEMPERATURE AND BOX AIRFLOW VELOCITY TO DETERMINE PROPER DAMPER AND VALVE POSITIONS. ON A RISE IN SPACE TEMPERATURE ABOVE OCCUPIED SET POINT, THE DAMPER SHALL MODULATE FROM MINIMUM TOWARD MAXIMUM IN AN ATTEMPT TO SATISFY THE COOLING SET POINT. THE COIL AND RADIATION VALVES SHALL BE FULLY CLOSED. ON A DROP IN SPACE TEMPERATURE BELOW OCCUPIED SET POINT, THE DAMPER SHALL MODULATE TOWARD MINIMUM POSITION. IF DAMPER IS AT MINIMUM POSITION, AND UPON A FURTHER DROP IN SPACE TEMPERATURE, THE RADIATION VALVE(S) SHALL OPEN IN AN ATTEMPT TO ACHIEVE HEATING SET POINT. IF RADIATION VALVE IS FULL OPEN AND SPACE TEMPERATURE IS STILL BELOW SETPOINT AFTER 5 MINUTES, COIL VALVE SHALL OPEN AND MODULATE TO MAINTAIN TEMPERATURE. IF SPACE TEMPERATURE RISES ABOVE SET POINT, SEQUENCE SHALL WORK IN REVERSE.
5. UNOCCUPIED MODE:
   a. ASSOCIATED AIR HANDLING UNIT WILL BE DEENERGIZED DURING THIS MODE AND VAV BOXES AIR DAMPERS SHALL REMAIN IN LAST COMMANDED POSITION WITH COIL VALVES CLOSED. RADIATION VALVES (WHERE APPLICABLE) SHALL OPEN AND CLOSED TO MAINTAIN SPACE SETBACK TEMPERATURE.

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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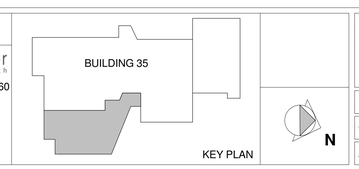

Drawing Title
MECHANICAL CONTROL SCHEMATICS AND SEQUENCES

Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 12" = 1'-0"
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. MH6.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

Air Handling Unit Points List							
Description	**Analog Input**	**Binary Input**	**Analog Output**	**Binary Output**	**Software Interlock**	**Hardware Interlock**	**Notes**
Supply Fan Start/Stop				1			
Supply Fan Speed	1		1				
Supply Airflow	1						
Supply Fan Current Sensor	1						
Supply Air Temperature	1						
Supply Air RH Sensor	1						
Supply Air Static hi/low		2			Yes	Yes (high static alarm)	
Supply Air Static Pressure	2		1				
Return Fan Start/Stop				1			
Return Fan Speed	1		1				
Return Airflow	1						
Return Air Damper	1	1	1			Damper End Switch	
Return Fan Current Sensor	1						
Return Air Temperature	1						
Retrun Air RH Sensor	1						Located In Return Air Ductwork
Return Air Smoke Detector	1					Yes	
Exhaust Air Damper	1	1	1			Damper End Switch	
Outside Air Damper Position	1	1	1			Damper End Switch	For Minimum Control
Outside Air Airflow	1						
Outside Air Temperture	1						
Mixed Air Temperature	1						
Heating Coil (Steam) Discharge Air Temp	1						
Humidifier Status		1			Yes		
Humidifer Alarm		1			Yes		Malfunction Alarm
Condensate Pump Tank High Water Sensor		1					Water sensor Alarm
Cooling Coil Discharge Air Temperature	1						
Cooling Coil Water Temperature	1						
Cooling Coil Valve Position	1		1	1			
Filter Bank Pressure Drop	2						Alarm

Chiller							
Description	**Analog Input**	**Binary Input**	**Analog Output**	**Binary Output**	**Software Interlock**	**Hardware Interlock**	**Notes**
Chiller Start/Stop				1			
Flow Switch						Wired by ATC	Provided by Chiller Manufacturer
Evaporator Differential Pressure	1						
Chilled Water Temperature	1						
Chiller Status	1					Yes	
Chiller Alarm		1				Yes	
Chilled Water Pumps Start/Stop, Status, Flow	1	1	1	1			
Chilled Water Pump Speed	1		1				
Chilled Water Temperature	4						Located on both sides of Supply/Return at 3-way valve
Chilled Water Valve Position	1		1				
Chilled Water Temperature	1						Provide temp sensor in piping outdoors on Roof

Hot Water System							
Description	**Analog Input**	**Binary Input**	**Analog Output**	**Binary Output**	**Software Interlock**	**Hardware Interlock**	**Notes**
Pumps Start/Stop, Status, VFD Modulation, Flow	1	1	1	1		VFD Modulation	Differential Pressure Switch for pumps
Piping System Flow	1					Wired by ATC	Provided by Chiller Manufacturer
System Differential Pressure	1						
Hot Water Temperature	2						Supply and Return
DP By-pass Valve	1		1				Provide valve position feedback
By-pass Flow Measuring Station and Valve Operation	2		1				Provide valve position feedback
Heat Exchangers Steam Valve Position	1		1				

VAV Units							
Description	**Analog Input**	**Binary Input**	**Analog Output**	**Binary Output**	**Software Interlock**	**Hardware Interlock**	**Notes**
Space Temperature	1		1				
Reheat Control Valve	1		1				Provide Position Feedback
Air Damper Position	1			2			
Airflow	1		1		Yes		
Discharge Temp Sensor	1						

Heating Panels							
Description	**Analog Input**	**Binary Input**	**Analog Output**	**Binary Output**	**Software Interlock**	**Hardware Interlock**	**Notes**
Space Temperature	1						
Control Valve		1		1			

Cabinet and Unit Heater							
Description	**Analog Input**	**Binary Input**	**Analog Output**	**Binary Output**	**Software Interlock**	**Hardware Interlock**	**Notes**
Space Temperature	1						
Control Valve		1		1			

Exhaust Fans							
Description	**Analog Input**	**Binary Input**	**Analog Output**	**Binary Output**	**Software Interlock**	**Hardware Interlock**	**Notes**
Space Temperature	1		1				If wired to space sensor (adjustable temperature setpoint)
Fan Start/Stop				1			
Isolation Damper Position		1		1	Yes		Provide damper with end switch
Fan Current Sensor	1						

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No. 11210
REGISTERED PROFESSIONAL ENGINEER MECHANICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

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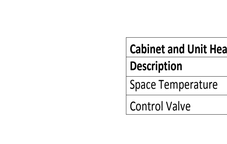

KEY PLAN

N

Drawing Title
MECHANICAL CONTROL POINT LISTS

Designed By: LPM
Checked By: JRF
Approved By: SEL

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
35

Scale
12" = 1'-0"

Location
PROVIDENCE

Date
6/30/2015

VA Project No.
650-338

Drawing No.
MH6.2

Office of Facilities

Department of Veterans Affairs

VA FORM 08-6231

POWER PLAN LEGEND

- FLUSH MOUNTED PANELBOARD
- SURFACE MOUNTED PANELBOARD
- 60AS/40AF 3P — DISCONNECT SWITCH - NEMA 1 ENCLOSURE - FUSED 30A-3 POLE UNLESS OTHERWISE NOTED
  - "60AS" - DENOTES SWITCH AMPERAGE RATING
  - "40AF" - DENOTES FUSE AMPERAGE RATING
  - "3P" - DENOTES 3-POLE
  - "3R" - DENOTES NEMA 3R ENCLOSURE
- DISCONNECT SWITCH - NEMA 1 ENCLOSURE - UNFUSED
- $M — MANUAL MOTOR STARTER WITH INTEGRAL THERMAL PROTECTION
- VFD — VARIABLE FREQUENCY DRIVE PROVIDED BY HVAC CONTRACTOR WIRED BY THE ELECTRICAL CONTRACTOR
- ECB 100AF/60AT 3P — ENCLOSED CIRCUIT BREAKER - NEMA 1 ENCLOSURE - AMPERAGE AND NO. OF POLES AS INDICATED.
  - 100AF - DENOTES CIRCUIT BREAKER FRAME
  - 60AT - DENOTES CIRCUIT BREAKER TRIP
- 5 — MOTOR - "5" INDICATES HORSEPOWER
- J — JUNCTION BOX

"ADO" INDICATES CONNECTION TO AUTOMATIC DOOR OPERATOR
"ATC" INDICATES CONNECTION FOR AUTOMATIC TEMPERATURE CONTROLS
"B" INDICATES JUNCTION BOX WITH BLANK COVER
"EF" INDICATES CONNECTION TO ELECTRONIC FAUCET OR FLUSH VALVE
"EM" INDICATES CONNECTION TO EMERGENCY POWER CIRCUIT AS INDICATED
"EWC" INDICATES CONNECTION TO ELECTRIC WATER COOLER
"GD" INDICATES CONNECTION TO GARBAGE DISPOSAL
"HM" INDICATES CONNECTION TO HUMIDIFIER
"MD" INDICATES CONNECTION TO MOTORIZED DAMPER
"NM" INDICATES CONNECTION TO NORMAL POWER CIRCUIT AS INDICATED
"PS" INDICATES CONNECTION TO MOTORIZED PROJECTION SCREEN
"SEC" INDICATES CONNECTION SECURITY DEVICES
"T/D" INDICATES TEL/DATA WIRING

- T — DRY TYPE TRANSFORMER
- PB — PULL BOX

WIRING DEVICE LEGEND

- DUPLEX RECEPTACLE NEMA 5-20R
- DOUBLE DUPLEX RECEPTACLE NEMA 5-20R
- SINGLE RECEPTACLE NEMA 5-20R
- DUPLEX RECEPTACLE GFI TYPE NEMA 5-20R
- DUPLEX RECEPTACLE NEMA 5-20R EMERGENCY BRANCH CIRCUIT
- DOUBLE DUPLEX RECEPTACLE NEMA 5-20R EMERGENCY BRANCH CIRCUIT
- SINGLE RECEPTACLE NEMA 5-20R EMERGENCY BRANCH CIRCUIT
- DUPLEX RECEPTACLE GFI TYPE NEMA 5-20R EMERGENCY BRANCH CIRCUIT
- SPECIAL PURPOSE RECEPTACLE NEMA TYPE AS INDICATED ON THE PLANS

RECEPTACLE TYPE DESIGNATIONS:

ALL RECEPTACLES ARE MOUNTED 18" AFF UNLESS OTHERWISE NOTED.

- "C"- DENOTES MOUNTED 8" ABOVE WORK SURFACE OR COUNTER TOP
- "CM"- DENOTES RECEPTACLE MOUNTED 8" ABOVE WORK SURFACE OR COUNTER TOP FOR COFFEE MACHINE
- "D"- DENOTES DEVICE FED VIA DEDICATED BRANCH CIRCUITRY
- "ICE"- DENOTES RECEPTACLE MOUNTED 8" ABOVE WORK SURFACE OR COUNTER TOP FOR ICE MACHINE
- "IH"- DENOTES RECEPTACLE MOUNTED IN CASEWORK BELOW SINK FOR INSTANT HOT WATER DISPENSER, COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH THE CASEWORK VENDOR AND ARCHITECT PRIOR TO INSTALLATION.
- "MC"- DENOTES RECEPTACLE MOUNTED IN CASEWORK FOR MICROWAVE, COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH THE CASEWORK VENDOR AND ARCHITECT PRIOR TO INSTALLATION
- "REF"- DENOTES RECEPTACLE MOUNTED AT 48" FOR FULL HEIGHT REFRIGERATOR
- "UC"- DENOTES RECEPTACLE MOUNTED AT 18" IN CASEWORK FOR UNDERCABINET REFRIGERATOR
- "WP"- DENOTES WEATHERPROOF TYPE: NEMA 3R MINIMUM
- "WR"- DENOTES LISTED WEATHER RESISTANT TYPE DEVICE AND IN-USE COVER AS DESCRIBED IN N.E.C. 2011 SECTION 406.8

- CEILING MOUNTED RECEPTACLE
  - "CP"- DENOTES RECEPTACLE MOUNTED IN CEILING FOR PROJECTOR
- FLOOR MOUNTED DUPLEX RECEPTACLE NEMA 5-20R. PROVIDE RECTANGULAR METALLIC CAST IRON ADJUSTABLE FLOOR BOX WITH ALUMINUM COVERS. PROVIDE CARPET FLANGES AS REQUIRED.
  - "F" - DENOTES FLUSH FLOOR MOUNTED
  - "PT" - DENOTES 2 HOUR FIRE RATED POKE-THROUGH
- TRIPLE CHANNEL, SURFACE MOUNTED, ALUMINUM RACEWAY, DUAL COVER WIREMOLD #AL7450 SERIES OR APPROVED EQUAL. RACEWAY TO BE MOUNTED 6" ABOVE WORK SURFACE OR AS DIRECTED BY ARCHITECT AND HOSPITAL REPRESENTATIVE. RACEWAY TO BE FACTORY PRE-WIRED, WITH DUPLEX NEMA 5-20R RECEPTACLES FOR NORMAL POWER, DUPLEX RED NEMA 5-20R RECEPTACLES FOR EMERGENCY POWER, AND VOICE/DATA PROVISION LOCATIONS. NORMAL POWER DEVICES 24" ON CENTER, EMERGENCY POWER DEVICES 48" ON CENTER, AND TELE/DATA LOCATIONS 48" ON CENTER, UNLESS OTHERWISE NOTED. DEVICES WITHIN 6'-0" OF SINKS SHALL BE GFCI PROTECTED.

DEMOLITION LEGEND

- "E" EXISTING ELECTRICAL EQUIPMENT OR DEVICE SHALL BE MAINTAINED
- "X" EXISTING ELECTRICAL EQUIPMENT OR DEVICE SHALL BE REMOVED
- "XR" EXISTING ELECTRICAL EQUIPMENT OR DEVICE SHALL BE REMOVED AND RELOCATED
- "XL" EXISTING ELECTRICAL EQUIPMENT OR DEVICE INDICATED IN NEW LOCATION
- "XN" EXISTING ELECTRICAL EQUIPMENT OR DEVICE SHALL BE REMOVED AND REPLACED WITH NEW; MAINTAIN EXISTING BOX, RACEWAY AND WIRING. REPLACE EXISTING DEVICES AND COVERPLATES WITH NEW.
- "XT" EXISTING ELECTRICAL EQUIPMENT OR DEVICE AND COVER PLATE ONLY SHALL BE REMOVED AND TURNED OVER TO OWNER

EXAMPLE: X, XR, XL, XN, E

LIGHTING PLAN LEGEND

- FR / 1a — LIGHTING FIXTURE AS DESIGNATED ON LIGHTING FIXTURE SCHEDULE
  - "1" - DENOTES PANELBOARD BRANCH CIRCUIT NUMBER
  - "a" - DENOTES FIXTURE CONTROLLED BY LOCAL SWITCH "a"
  - "FR" - DENOTES FIXTURE TYPE AS NOTED ON FIXTURE SCHEDULE.
  - "NL" - DENOTES NIGHT LIGHT FIXTURE
  - DENOTES LIGHT FIXTURE WITH EMERGENCY BATTERY BALLAST
- EXIT SIGN - SHADED AREA INDICATES LOCATION AND QUANTITY OF FACES; DIRECTIONAL ARROWS AS INDICATED
- REMOTE EMERGENCY LIGHTING, SINGLE HEAD MOUNT 7'-6" AFF
- REMOTE EMERGENCY LIGHTING, DUAL HEAD MOUNT 7'-6" AFF
- EMERGENCY BATTERY UNIT, MOUNT 7'-6" AFF; NO OF EMERGENCY LIGHTING HEADS AS INDICATED.

SWITCHES LEGEND

MOUNT 48" AFF UNO:

- $a — LOCAL SWITCH, SINGLE POLE
  - "a" - DENOTES LIGHT FIXTURE CONTROL
- $3 — LOCAL SWITCH, 3-WAY, SINGLE POLE DOUBLE THROW
- $4 — LOCAL SWITCH, 4-WAY, DOUBLE POLE, DOUBLE THROW
- $D — DIMMER SWITCH, SINGLE POLE
- $3D — DIMMER SWITCH, 3-WAY
- $LV — LOW VOLTAGE SWITCH
  - "MS" - DENOTES MASTER STATION OVERRIDE
  - "a" - DENOTES LOW VOLTAGE SWITCH CIRCUIT

- $OS — OCCUPANCY SENSOR - WALL MOUNTED INTEGRAL, DUAL TECHNOLOGY, SINGLE POLE SWITCH. MOUNT 48" AFF UNLESS NOTED OTHERWISE.
- $P — PILOT LIGHTED SWITCH
- OS — OCCUPANCY SENSOR - WALL MOUNTED INTEGRAL, DUAL TECHNOLOGY, DUAL RELAY SWITCH. MOUNT 48" AFF UNLESS NOTED OTHERWISE.
- OS — OCCUPANCY SENSOR - WALL MOUNTED INTEGRAL, DUAL TECHNOLOGY, DUAL RELAY SWITCH, WITH INTEGRAL PHOTOCELL. MOUNT 48" AFF UNLESS NOTED OTHERWISE.
- OS — OCCUPANCY SENSOR, CEILING MOUNTED, DUAL TECHNOLOGY.
- OS — OCCUPANCY SENSOR, CEILING PEDESTAL MOUNTED CORNER UNIT, DUAL TECHNOLOGY.
- ER — EMERGENCY LIGHTING SUPERVISORY RELAY - UL 924 LISTED REFER TO ELECTRICAL DETAILS FOR ADDITIONAL INFORMATION

FOR CEILING MOUNTED AND CORNER MOUNTED OCCUPANCY SENSORS: PROVIDE THE APPROPRIATE QUANTITY OF POWER SUPPLIES FOR SINGLE AND MULTIPLE LEVEL SWITCHING. REFER TO FLOOR PLANS FOR SWITCHING LAYOUTS TO DETERMINE EXACT QUANTITY OF POWER SUPPLIES

ONE-LINE DIAGRAM LEGEND

- CR43A1 — PANELBOARD "CR43A1"
- 45 KVA — 45 KVA DRY-TYPE TRANSFORMER
- ATS 4P BP LS — AUTOMATIC TRANSFER SWITCH
  - "LS" - DENOTES LIFE SAFETY BRANCH
  - "ELEV" - DENOTES ELEVATOR BRANCH
  - "3P" - DENOTES NUMBER OF POLES; 3 POLE
  - "4P" - DENOTES NUMBER OF POLES; 4 POLE
  - "ATS" - DENOTES AUTOMATIC TRANSFER SWITCH
  - "MTS" - DENOTES MANUAL TRANSFER SWITCH
  - "BP" - DENOTES BYPASS ISOLATION SWITCH
  - "CR" - DENOTES CRITICAL BRANCH
  - "EQ" - DENOTES EQUIPMENT BRANCH
  - "X-RAY" - DENOTES X-RAY EQUIPMENT BRANCH
- GROUND CONNECTION
- SPD — SURGE PROTECTIVE DEVICE

WIRING METHODS

REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION

NORMAL SYSTEM FEEDERS	THHN/THWN/XHHW CONDUCTORS IN EMT
EMERGENCY SYSTEM FEEDERS	MI CABLE
NORMAL BRANCH CIRCUITS	THHN/THWN/XHHW CONDUCTORS IN EMT OR MC CABLE
EMERGENCY SYSTEM BRANCH CIRCUITS	THHN/THWN/XHHW CONDUCTORS IN EMT
TELEDATA WIRING	CAT5e WIRING IN EMT (REFER TO COMMUNICATIONS LEGEND FOR ADDITIONAL INFORMATION)
TELEVISION WIRING	RG6 IN EMT (REFER TO COMMUNICATIONS LEGEND FOR ADDITIONAL INFORMATION)

COMMUNICATIONS LEGEND (WITH WIRING)

- COMBINATION VOICE/DATA OUTLET DEVICE - MOUNTED 18"AFF, UNLESS NOTED OTHERWISE. (1 VOICE, 2 DATA UNLESS OTHERWISE NOTED) WITH 1"C (WITH PULL STRING) RUN CONCEALED WITHIN WALL TO ABOVE FINISHED CEILING AND TERMINATING WITHIN 6" OF CABLE MANAGEMENT SYSTEM. PROVIDE WITH CAT5e CABLES BACK TO PATCH PANEL SERVING THE AREA.
  - "C" - DENOTES MOUNTED 8" ABOVE WORK SURFACE
  - "W" - DENOTES MOUNTED 54" AFF
  - "TV" - DENOTES DEVICE MOUNTED HIGH ON WALL FOR TELEVISION. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT WITH THE ARCHITECT PRIOR TO INSTALLATION.
- VOICE ONLY OUTLET DEVICE - MOUNTED 18" AFF, UNLESS NOTED OTHERWISE, WITH 1"C (WITH PULL STRING) RUN CONCEALED WITHIN WALL TO ABOVE FINISHED CEILING AND TERMINATING WITHIN 6" OF CABLE MANAGEMENT SYSTEM. PROVIDE WITH CAT5e CABLES BACK TO PATCH PANEL SERVING THE AREA.
  - "C" - DENOTES MOUNTED 8" ABOVE WORK SURFACE
  - "W" - DENOTES MOUNTED 54" AFF
- DATA ONLY OUTLET DEVICE (2 DATA) - MOUNTED 18" AFF, UNLESS NOTED OTHERWISE, WITH 1"C (WITH PULL STRING) RUN CONCEALED WITHIN WALL TO ABOVE FINISHED CEILING AND TERMINATING WITHIN 6" OF CABLE MANAGEMENT SYSTEM. PROVIDE WITH CAT5e CABLES BACK TO PATCH PANEL SERVING THE AREA.
  - "WAP" - DENOTES WIRELESS ACCESS POINT 1"EMT TO WITHIN 6" OF NEAREST CABLE MANAGEMENT SYSTEM
  - "C" - DENOTES MOUNTED 8" ABOVE WORK SURFACE
- FLOOR MOUNTED DATA ONLY OUTLET DEVICE (2 DATA) WITH 1"C (WITH PULL STRING) RUN CONCEALED WITHIN WALL TO ABOVE FINISHED CEILING AND TERMINATING WITHIN 6" OF CABLE MANAGEMENT SYSTEM. PROVIDE WITH CAT5e CABLES BACK TO PATCH PANEL SERVING THE AREA.
- INFORMATION TECHNOLOGY (IT) OUTLET DEVICE PROVISIONS - CEILING MOUNTED WITH 1"C (WITH PULL STRING) RUN CONCEALED WITHIN WALL TO ABOVE FINISHED CEILING AND TERMINATING WITHIN 6" OF CABLE MANAGEMENT SYSTEM. PROVIDE WITH CAT5e CABLES BACK TO PATCH PANEL SERVING THE AREA.
  - "CCTV"- DENOTES DATA DEVICE FOR CONNECTION TO SECURITY CAMERA. DEVICE TO BE LOCATED ABOVE ACCESSIBLE CEILING. COORDINATE EXACT LOCATION WITH OWNER AND SECURITY VENDOR.
  - "CAP"- DENOTES CEILING MOUNTED WIRELESS ACCESS POINT
- 3/4" THICK x 8'-0" HIGH x LENGTH AS INDICATED ON THE DRAWINGS PLYWOOD. PLYWOOD SHALL BE PAINTED GRAY AND MOUNTED TO WALL.
- TV — TELEVISION OUTLET - CEILING OR WALL MOUNTED AS INDICATED ON ARCHITECTURAL DRAWINGS. PROVIDE WITH 3/4"C TO ABOVE ACCESIBLE CEILING WITH RG6 CABLING TO CATV TERMINATION POINT.
- AV — 2-GANG BACKBOX WITH SINGLE GANG PLASTER RING AND COVERPLATE (TYPE AND MANUFACTURE PER FACILITY STANDARDS) WITH 1"C (EMPTY, WITH PULLSTRING) TERMINATED IN ACCESSIBLE CEILING WITH BELL END BUSHING, UNLESS OTHER SIZE CONDUIT IS INDICATED ON DRAWINGS.

ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING TD DEVICES, BACK BOXES, CONDUIT, FACEPLATES AND CABLE FOR A COMPLETE TD SYSTEM. REFER TO SPECIFICATIONS FOR TELE/DATA AND TELEVISION WIRING REQUIREMENTS. THE ELECTRICAL CONTRACTOR SHALL FOLLOW ALL OF THE THE FACILITY'S TELECOMMUNCATION AND DATA STANDARDS AND COORDINATE WITH THE FACILITY'S TEL/DATA DEPARTMENT PRIOR TO PURCHASE AND ROUGH-IN OF EQUIPMENT, DEVICES, OR CABLE.

SECURITY SYSTEMS LEGEND

- J CCTV — CLOSED CIRCUIT TELEVISION CAMERA JUNCTION BOX
- M CCTV — CLOSED CIRCUIT TELEVISION MONITOR JUNCTION BOX
- CR — CARD READER OUTLET BOX
- EL — ELECTRO-MAGNETIC DOOR LOCK CONNECTION/ LOCATION
- ES — ELECTRIC DOOR STRIKE CONNECTION/ LOCATION
- DB — DURESS BUTTON LOCATION
- DS — DOOR SWITCH/ CONTACT CONNECTION/ LOCATION
- DR — DOOR RELEASE PUSHBUTTON LOCATION
- KP — KEY PAD LOCATION
- MD — MOTION DETECTOR LOCATION
- CCTV — CCTV CAMERA
- GB — GLASS BREAK DETECTOR CONNECTION/LOCATION
- WC — WINDOW CONTACTS CONNECTION/ LOCATION

NOTE:
ALL DOOR CONTROL LOCATIONS SHALL BE COORDINATED WITH FACILITY REPRESENTATIVE PRIOR TO INSTALLATION.

TYPICAL SECURITY DEVICE NOTE:
REFER TO SPECIFICATIONS FOR SECURITY CABLING REQUIREMENTS. THE CONTRACTOR SHALL PROVIDE BACKBOXES, DEVICES, AND FACEPLATES. CONTRACTOR SHALL ALSO PROVIDE CABLE FROM DEVICE BACKBOX TO EXISTING TERMINATION EQUIPMENT IN EXISTING TELE/DATA ROOM 35-224 . FINAL TERMINATION AND PROGRAMMING SHALL BE BY THE OWNER'S SECURITY VENDOR. REFER TO FLOOR PLANS AND DETAILS FOR ADDITIONAL REQUIREMENTS. COORDINATE EXACT REQUIREMENTS WITH SECURITY AND HARDWARE VENDORS.

GROUNDING LEGEND

- GROUNDING COUNTERPOISE - (3) COPPER GROUND RODS AT 10'-0" ON CENTER
- —GND— GROUNDING CONDUCTOR; 1/0 CU GND MINIMUM - UNLESS NOTED OTHERWISE
- GROUND ROD
- GROUND BAR - 2"H x 1/4" THICK x 18"L, MOUNTED 24" AFF WITH 2" SPACE BETWEEN GROUND BUS AND WALL
- GROUNDING ELECTRODE CONDUCTOR OF SEPARATELY DERIVED SYSTEM.

MECHANICAL EQUIPMENT COORDINATION

ELECTRICAL CONTRACTOR SHALL REFER TO THE MECHANICAL, PLUMBING, AND FIRE PROTECTION DRAWINGS AND SPECIFICATIONS FOR LOCATIONS AND QUANTITIES OF EQUIPMENT RELEASED TO EACH TRADE.

WIRING METHODS LEGEND

- J-HOOK CABLE MANAGEMENT TYPICALLY MOUNTED 6" ABOVE FINISHED CEILING
- BASKET STYLE CABLE TRAY ELEVATION TRANSITION FITTING
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- CONDUIT STUBBED 6" ABOVE ACCESSIBLE CEILING AT 90° ANGLE WITH BUSHED END
- FLEXIBLE RACEWAY
- L4GA-5 — HOMERUN TO PANELBOARD "L4GA" ; BRANCH CIRCUIT No. 5; MINIMUM SIZE CONDUCTOR #12 AWG/ MINIMUM SIZE CONDUIT 3/4"C. PANELBOARD SCHEDULES ON DWG. ES#.# INDICATES CIRCUIT BREAKER SIZE. REFERENCE THE BRANCH CIRCUIT FEEDER SCHEDULE ON DWG. ES#.# FOR WIRING AND CONDUIT SIZES ASSOCIATED WITH BREAKER SIZE.

ABBREVIATIONS

A	AMPERES	JB	JUNCTION BOX
ACT	ACOUSTICAL CEILING TILE	KAIC	THOUSAND AMPERES INTERRUPTING CAPACITY
AF	AMPERE FRAME	KCMIL	THOUSAND CIRCULAR MILS
AFCI	ARC-FAULT CIRCUIT INTERRUPTER	KEC	KITCHEN EQUIPMENT CONTRACTOR
AFF	ABOVE FINISHED FLOOR	KV	KILOVOLTS
AFG	ABOVE FINISHED GRADE	kVA	KILOVOLT AMPERES
AIC	AMPERE INTERRUPTING CAPACITY	kVAR	KILOVOLT AMPERES REACTIVE
AL	ALUMINUM	kW	KILOWATTS
ANN	ANNUNCIATOR	kWH	KILOWATTS HOURS
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	LTG	LIGHTING
		MAX	MAXIMUM
ARCH	ARCHITECT	MC	METAL CLAD CABLE
AT	AMPERE TRIP	MCB	MAIN CIRCUIT BREAKER
ATC	AUTOMATIC TEMPERATURE CONTROL	MCC	MOTOR CONTROL CENTER
		MCP	MOTOR CIRCUIT PROTECTOR
ATS	AUTOMATIC TRANSFER SWITCH	MCSW	MOLDED CASE SWITCH
AWG	AMERICAN WIRE GAUGE	MDP	MAIN DISTRIBUTION PANEL
BLDG	BUILDING	MECH	MECHANICAL
BOND	BONDING JUMPER	MIN	MINIMUM
BR	BRANCH	MISC	MISCELLANEOUS
C	CONDUIT - RACEWAY	MTD	MOUNTED
CAT	CATALOG	MTG	MOUNTING
CB	CIRCUIT BREAKER	MV	MEDIUM VOLTAGE
cd	CANDELA	MLO	MAIN LUGS ONLY
CKT	CIRCUIT	N	NEUTRAL (GROUNDED CONDUCTOR)
CMS	CABLE MANAGEMENT SYSTEM	NA	NOT APPLICABLE
CLG	CEILING	NC	NORMALLY CLOSED
COL	COLUMN	NEC	NATIONAL ELECTRICAL CODE
CMU	CONCRETE MASONRY UNIT	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
CT	CURRENT TRANSFORMER OR CABLE TRAY		
CU	COPPER	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
CWS	CONDUIT WALL SEAL		
DETD	DUAL ELEMENT TIME DELAY	NIC	NOT IN CONTRACT
DIA	DIAMETER	NL	NIGHT LIGHT
DP	DISTRIBUTION PANEL	NO	NORMALLY OPEN
DWG	DRAWING	NTS	NOT TO SCALE
EA	EACH	OCPD	OVER CURRENT PROTECTION DEVICE
EC	ELECTRICAL CONTRACTOR		
EGC	EQUIPMENT GROUND CONDUCTOR	PH	PHASE
		PNL	PANEL
ELEC	ELECTRICAL	PNLBD	PANEL BOARD
ELEV	ELEVATOR	POS	PROVIDED UNDER OTHER SECTIONS
EM	EMERGENCY		
EMS	ENERGY MANAGEMENT SYSTEM	PT	POTENTIAL TRANSFORMER
EMT	ELECTRICAL METALLIC TUBING	PVC	POLYVINYL CHLORIDE, RACEWAY
EO	ELECTRICALLY OPERATED		
EQUIP	EQUIPMENT	PWR	POWER
EWC	ELECTRIC WATER COOLER	RGS	GALVANIZED RIGID STEEL CONDUIT
EXP	EXPLOSION PROOF		
FA	FIRE ALARM	RMC	RIGID METAL CONDUIT
FAA	FIRE ALARM ANNUNCIATOR	RNC	RIGID NON-METAL CONDUIT
FLUOR	FLUORESCENT	RSC	RIGID STEEL CONDUIT
FMS	FACILITIES MANAGEMENT SYSTEM	SATS	STANDBY AUTOMATIC TRANSFER SWITCH
FT	FEET		
FU	FUSE	SE	SERVICE ENTRANCE
G	GROUND	SP	SPARE
GA	GAUGE	SW	SWITCH
GC	GENERAL CONTRACTOR	SWBD	SWITCHBOARD
GEN	GENERATOR	SWGR	SWITCH GEAR
GF	GROUND FAULT	TEL	TELEPHONE
GFI	GROUND FAULT INTERRUPTER	TL	TWIST LOCK
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	TP	TWISTED PAIR
		TRANS	TRANSFORMER
GND	GROUND	TSP	TWISTED SHIELDED PAIR
GWB	GYPSUM WALL BOARD	UG	UNDERGROUND OR UNDER GRADE
HID	HIGH INTENSITY DISCHARGE		
HOA	HAND-OFF-AUTO	UL	UNDERWRITER'S LABORATORIES
HP	HORSE POWER		
HR	HOUR		
HTR	HEATER	UNO	UNLESS NOTED OTHERWISE
HVAC	HEATING, VENTILATION & AIR CONDITIONING	V	VOLT
		W/	WITH
HZ	HERTZ	W	WIRE
IC	INTERRUPTING CAPACITY	WP	WEATHERPROOF
INC	INCANDESCENT	Δ	DELTA
IMC	INTERMEDIATE METAL CONDUIT	Y	WYE

FIRE ALARM SYSTEM LEGEND

- FACP — FIRE ALARM CONTROL PANEL
- FATB — FIRE ALARM TERMINAL BOX
- FAA — FIRE ALARM ANNUNCIATOR PANEL
- FIRE ALARM MASTERBOX
- FIRE ALARM WEATHERPROOF EXTERIOR FIRE BEACON
- K — FIRE ALARM KNOX BOX
- F — FIRE ALARM ADA COMPATIBLE MANUAL PULL STATION
- FIRE ALARM ADA COMPATIBLE, WALL MOUNTED SPEAKER/ STROBE COMBINATION UNIT 90db OUTPUT, ADJUSTABLE CANDELA RATING, FACTORY SET AT 75cd, UNLESS NOTED OTHERWISE
  - "S" - DENOTES AUDIBLE ONLY DEVICE
- FIRE ALARM ADA COMPATIBLE, WALL MOUNTED STROBE UNIT ADJUSTABLE CANDELA RATING
- FIRE ALARM SMOKE DETECTOR, CEILING MOUNTED UNLESS NOTED OTHERWISE.
  - "D" - DENOTES DUCT SMOKE DETECTOR
  - "HT" - DENOTES SMOKE/ HEAT DETECTOR COMBINATION UNIT
  - "S" - DENOTES SINGLE STATION SMOKE DETECTOR WITH INTEGRAL AUDIBLE SIGNALS
  - "SD" - SMOKE DAMPER
  - "FSD" - FIRE SMOKE DAMPER
- RI — FIRE ALARM REMOTE LED INDICATOR
- RTS — FIRE ALARM REMOTE TEST STATION
- FIRE ALARM HEAT DETECTOR; CEILING MOUNTED, 135° FIXED TEMPERATURE UNLESS NOTED OTHERWISE.
  - "C" - DENOTES COMBINATION RATE OF RISE AND 135° FIXED TEMPERATURE
  - "R" - DENOTES RATE OF RISE
- CM — FIRE ALARM CONTROL MODULE
- MM — FIRE ALARM MONITORING MODULE
- IR — FIRE ALARM INTERFACE RELAY
- DH — FIRE ALARM ELECTRO-MAGNETIC DOOR HOLDER

PROJECT GENERAL NOTES

1. THIS IS A STANDARD SYMBOL LIST. ALL DEVICE SYMBOLS AND ABBREVIATIONS MAY NOT NECESSARILY APPEAR ON THE FLOOR PLANS OR DETAIL SHEET. ONLY THOSE SYMBOLS INDICATED ON THE FLOORS PLANS ARE USED AND OTHERS SHOULD BE DISREGARDED.
2. THE CONTRACTOR SHALL FURNISH LABOR, MATERIALS, TOOLS AND OTHER EQUIPMENT REQUIRED TO INSTALL THE WORK SHOWN AND SPECIFIED. THE CONTRACTOR SHALL FURNISH AND INSTALL ITEMS NECESSARY FOR A COMPLETE ELECTRICAL SYSTEM. MATERIALS SHALL BE NEW AND SHALL BEAR THE REGISTERED UL MARK. WORK SHALL CONFORM WITH THE NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 70 (NEC), THE NATIONAL ELECTRICAL CODE (NEC), AND APPLICABLE FEDERAL, STATE AND LOCAL CODES. CONTRACTOR SHALL SECURE PERMITS AND PAY THE FEES REQUIRED TO CARRY OUT HIS WORK. THE CONTRACTOR SHALL FURNISH COPIES OF CERTIFICATES AND PERMITS TO THE ARCHITECT.
3. THE DRAWINGS AND SPECIFICATIONS INDICATE THE INTENT OF THE DESIGN AND SHALL BE CONSIDERED AS DIAGRAMMATIC ONLY. EXACT LOCATIONS FOR OUTLETS AND EQUIPMENT SHALL BE DETERMINED AT THE SITE AS WORK PROGRESSES. DIMENSIONS AND CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR AT THE SITE. FINAL WORK SHALL BE DOCUMENTED ON AS BUILT RECORD DRAWINGS.
4. PIPING, CONDUITS AND EQUIPMENT OF ALL TRADES SHALL BE PROPERLY COORDINATED AND SET TO MAINTAIN THE CLEARANCES REQUIRED BY APPLICABLE FEDERAL, STATE AND LOCAL CODES.
5 CONDUIT RUNS CROSSING EXPANSION JOINTS SHALL HAVE EXPANSION OR EXPANSION DEFLECTION TYPE FITTINGS AS REQUIRED. VERIFY EXISTING JOINTS BY FIELD MEASUREMENTS.
6. RACEWAYS AND CABLE SHALL BE RUN CONCEALED IN FINISHED SPACES UNLESS OTHERWISE NOTED.
7. LOAD CENTERS, PANELBOARDS AND SWITCHBOARDS SHALL BE PROVIDED WITH DEDICATED SPACE EXTENDING FROM THE FLOOR TO THE STRUCTURAL CEILING WITH A WIDTH AND DEPTH THAT OF THE EQUIPMENT, INCLUDING ANY ADDITIONAL SPACE DESCRIBED IN OF THE NEC. NO PIPING, DUCTS OR EQUIPMENT FOREIGN TO THE ELECTRICAL EQUIPMENT OR ARCHITECTURAL APPURTENANCES SHALL BE PERMITTED TO BE INSTALLED IN, ENTER OR PASS THROUGH SUCH SPACE.
8. WIRING DEVICES SHALL BE MOUNTED IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE ARCHITECTURAL BARRIERS BOARD.
9. PANELBOARD SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE TOP CIRCUIT BREAKER OPERATING HANDLE TO THE FLOOR SHALL NOT EXCEED 6'-6".
10. ALL RECEPTACLES INSTALLED IN UNFINISHED AREAS SHALL BE GFI TYPE, MOUNTED 4'-0" ABOVE FINISHED FLOOR.
11. EXIT SIGNS AND EMERGENCY LIGHTING UNITS SHALL BE UNSWITCHED.
12. ALL BRANCH CIRCUITS (LIGHTING AND POWER) SHALL HAVE A DEDICATED NEUTRAL CONDUCTOR. COMMON NEUTRALS WILL NOT BE ALLOWED.
13. RECEPTACLES, SWITCHES, LIGHTING FIXTURES, SMOKE DETECTORS, ETC. INDICATE QUANTITY, EXACT LOCATIONS OF DEVICES SHALL BE DETERMINED IN THE FIELD AND COORDINATE WITH ARCHITECTURAL DRAWINGS.
14. OUTDOOR ELECTRICAL EQUIPMENT SHALL BE NEMA 3R TYPE, UNLESS OTHERWISE NOTED.
15. MOUNTING HEIGHTS SHALL BE AS INDICATED ON MOUNTING HEIGHT DETAIL.
16. CONTRACTOR SHALL VERIFY ALL DOORS SWINGS BEFORE INSTALLING SWITCH BOXES.
17. FOR EXACT LOCATION OF LIGHTING FIXTURES SEE REFLECTED CEILING PLAN DRAWINGS. FOR MOUNTING HEIGHT OF UNDER-COUNTER LIGHTING FIXTURES AND OTHER TASK LIGHTING, REFER TO ARCHITECTURAL ELEVATION DRAWINGS.
18. ELECTRICAL CONTRACTOR IS TO COORDINATE THE EXACT LOCATION OF LIGHTING FIXTURES IN MECHANICAL AND STORAGE AREAS WITH OTHER TRADES.
19. FOR EXACT LOCATION OF MECHANICAL EQUIPMENT (AC UNITS, FANS, PUMPS, ETC.) REFER TO RESPECTIVE TRADES DRAWINGS. FOR ELECTRICAL INFORMATION, REFER TO MEP COORDINATION SCHEDULE.
20. CURRENT CARRYING MATERIAL USED SHALL BE COPPER, INCLUDING PANELBOARD BUS MATERIALS AND TRANSFORMER WINDINGS.
21. FURNISH GROUNDING/ BONDING BUSHINGS ONTO ALL CONDUIT ENTERING/ LEAVING BOXES.
22. ALL GROUND CONDUCTORS SHALL BE GREEN, ISOLATED GROUND CONDUCTORS SHALL BE GREEN/ YELLOW STRIPPED, AND NEUTRAL CONDUCTORS SHALL BE WHITE.
23. UNLESS NOTED OTHERWISE, ALL DATA AND TELEPHONE CABLING IS BY OTHERS. ELECTRICAL DRAWINGS PROVIDE RACEWAY SYSTEMS ONLY AND INDICATE TEL/DATA OUTLET CONFIGURATIONS FOR REFERENCE ONLY.
24. MODIFICATIONS TO THE EXISTING FIRE ALARM SYSTEM SHALL BE COORDINATED WITH THE FIRM WHO HOLDS THE EXISTING SYSTEM MAINTENANCE CONTRACT. THE FIRM WHO HOLDS THE EXISTING SYSTEM MAINTENANCE CONTRACT SHALL MAKE ALL FINAL CONNECTIONS, AND PERFORM ALL PROGRAMMING AND TESTING. ALL COSTS ASSOCIATED WITH FINAL CONNECTIONS, PROGRAMMING AND TESTING SHALL BE INCLUDED UNDER THIS CONTRACT AND SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
25. THE ELECTRICAL CONTRACTOR SHALL CARRY ALL COSTS ASSOCIATED WITH DISABLING THE CONNECTIONS TO THE EXISTIGN MUNICIPAL LOOP DURING FINAL CONNECTIONS AND TESTING AND SHALL CARRY COSTS FOR RECONNECTION OF LOOP.
26. WHERE PANELS ARE INDICATED TO BE RELOCATED, THE ELECTRICAL CONTRACTOR SHALL TRACE OUT EACH CIRCUIT TO DETERMINE WHAT CIRCUITS FEED AREAS OUTSIDE THE SCOPE OF WORK. CIRCUITS WHICH MUST BE MAINTAINED ARE TO BE RE-ROUTED TO THE NEW PANEL LOCATION BY PROVIDING AN ADEQUATELY SIZED PULL BOX AND SPLICING AND EXTENDING THE CONDUCTORS.

SITE LIGHTING AND POWER LEGEND

- SL1 — SITE LIGHTING FIXTURE
- SL2 — SITE LIGHTING BOLLARD
- HH — HANDHOLE
- MH — MANHOLE
- UP-1 — UTILITY POLE
- LC — LIGHTING CONTACTOR
- TC — TIME CLOCK
- PC — PHOTOCELL

PUBLIC ADDRESS SYSTEM LEGEND

- S — CEILING MOUNTED SPEAKER - BOGEN #CSD2X2 OR APPROVED EQUAL
- PA BA — PUBLIC ADDRESS SYSTEM AMPLIFIER
  - "BA" - DENOTES BOOSTER AMPLIFIER

DEMOLITION GENERAL NOTES

1. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE FULL EXTENT OF THE SCOPE OF DEMOLITION. DISCONNECT AND MAKE SAFE ALL ELECTRICAL EQUIPMENT IDENTIFIED FOR REMOVAL ON THE ARCHITECTURAL, HVAC, PLUMBING AND FIRE PROTECTION PLANS. THE ELECTRICAL SCOPE MAY EXTEND BEYOND THE AREA DEFINED BY THE ARCHITECTURAL DEMOLITION LIMITS TO FULLY COMPLY WITH THE VARIOUS REQUIREMENTS DEFINED BY THESE NOTES.
2. THE ELECTRICAL DEMOLITION PLANS INDICATE THE GENERAL INTENT AND ARE NOT INTENDED TO SHOW ALL COMPONENTS AND ITEMS TO BE REMOVED OR RETAINED. THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMISSION OF THIER BID TO BECOME FAMILIAR WITH THE ACTUAL WORKING CONDITIONS AND EXTENT OF WORK. DEVICES AND EQUIPMENT LOCATED ON WALLS AND/OR CEILINGS DESIGNATED TO BE REMOVED SHALL BE DISCONNECTED AND MADE SAFE. THE ELECTRICAL CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE OF ANY UNANTICIPATED OR HIDDEN CONDITIONS ENCOUNTERED DURING DEMOLITION.
3. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ALL SYSTEMS OR BUILDING COMPONENTS DAMAGED DURING THE EXECUTION OF THE WORK. DAMAGE SHALL INCLUDE, BUT NOT BE LIMITED TO, THE DESTRUCTION OR DISPOSAL OF ITEMS INTENDED TO REMAIN OR BE SALVAGED.
4. THE ELECTRICAL CONTRACTOR SHALL CIRCUIT TRACE AND LABEL ALL EXISTING BRANCH CIRCUITS AND FEEDERS WITHIN OR ASSOCIATED WITH THE AREA OF DEMOLITION SCOPE PRIOR TO DE-ENERGIZING AND DISCONNECTION. ALL CIRCUITS WITHIN PANELBOARDS IDENTIFIED FOR REMOVAL SHALL BE TRACED AND LABELED TO ENSURE THAT NO AREA OUTSIDE THE DEMOLITION SCOPE LIMIT IS AFFECTED.
5. THE ELECTRICAL CONTRACTOR SHALL IDENTIFY ALL BRANCH CIRCUITS, FEEDERS AND SYSTEM COMPONENTS WHICH ARE TO REMAIN WITHIN THE AREA OF DEMOLITION SCOPE. THERE SHALL BE NO INTERRUPTION OF SERVICE TO ANY AREA OUTSIDE THE SCOPE LIMITS WITHOUT APPROVAL FROM THE OWNER'S REPRESENTATIVE. EXISTING EQUIPMENT TO REMAIN SHALL BE LEFT IN A CODE COMPLIANT CONDITION.
6. THE ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUCTORS AND RACEWAYS TO THEIR POINTS OF ORIGIN WITHIN THE AREA OF DEMOLITION SCOPE. ITEMS IDENTIFIED FOR DEMOLITION SHALL NOT BE ABANDONED IN PLACE. RACEWAYS THAT ENTER MASONRY WALLS AND FLOORS SHALL BE CUT FLUSH AT THE SURFACE FOR PATCHING BY OTHERS. ALL CIRCUIT BREAKERS ASSOCIATED WITH THE DEMOLITION SHALL BE DE-ENERGIZED AND LABELED SPARE.
7. THE ELECTRICAL CONTRACTOR SHALL TEMPORARILY SUPPORT ALL ITEMS TO REMAIN THAT ARE AFFECTED BY THE DEMOLITION OF BUILDING STRUCTURAL COMPONENTS (WALLS, CEILINGS, ETC.). TEMPORARILY SUPPORTED ITEMS SHALL BE PERMANENTLY SUPPORTED AND INSTALLED WHEN FINALIZED STRUCTURES ARE IN PLACE.
8. ALL REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF UNLESS IDENTIFIED FOR REUSE. THE OWNER'S REPRESENTATIVE SHALL INSPECT ALL RETAINED ITEMS PRIOR TO PLACEMENT IN THE INDENTIFIED STORAGE LOCATION BY THE ELECTRICAL CONTRACTOR.
9. THE EXISTING FIRE ALARM SYSTEM SHALL REMAIN FULLY FUNCTIONAL DURING THE ENTIRE DEMOLITION AND CONSTRUCTION PERIOD. REUSE OF EXISTING FIRE ALARM RACEWAYS SHALL NOT BE ALLOWED. ALL REQUIRED SYSTEM SHUTDOWNS SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER'S REPRESENTATIVE AND THE AUTHORITY HAVING JURISDICTION. DEMOLITION OF THE EXISITING SYSTEM SHALL NOT COMMENCE UNTIL THE NEW SYSTEM HAS BEEN COMPLETELY INSTALLED, TESTED AND APPROVED BY THE AUTHORITY HAVING JURISDICTION.
10. ALL DEMOLITION SCOPE ASSOCIATED WITH LOW VOLTAGE SYSTEMS INCLUDING BUT NOT LIMITED TO TELEPHONE, DATA, SECURITY, PAGING, CCTV, ETC. SHALL BE INCLUDED IN THIS CONTRACT.
11. REMOVED FLUORESCENT AND HID LAMPS AND BATTERIES SHALL BE RECYCLED BY A FACILITY APPROVED BY THE OWNER'S REPRESENTATIVE. A UNIFORM HAZARDOUS WASTE MANIFEST SHALL BE PREPARED FOR ALL DISPOSALS AND RETURNED WITH ALL APPLICABLE SIGN-OFFS PRIOR TO APPLICATION FOR FINAL PAYMENT.
12. ALL BALLASTS IN LIGHTING FIXTURES TO BE DISPOSED SHALL BE VERIFIED TO BE PCB FREE. ALL BALLASTS MANUFACTURED PRIOR TO 1979 AND NOT LABELED AS PCB FREE SHALL BE CONSIDERED TO CONTAIN PCBs. PROVIDE WRITTEN REPRESENTATION TO THE OWNER'S REPRESENTATIVE THAT CONFIRMS PCB FREE WASTE. WHERE PCB FREE WASTE CANNOT BE VERIFIED, BALLASTS SHALL BE RECYCLED BY A FACILITY APPROVED BY THE OWNER'S REPRESENTATIVE, WITH PCB COMPONENTS ELIMINATED BY A HIGH TEMPERATURE INCINERATION. A UNIFORM HAZARDOUS WASTE MANIFEST SHALL BE PREPARED FOR ALL DISPOSALS AND RETURNED WITH ALL APPLICABLE SIGNOFFS PRIOR TO APPLICATION FOR FINAL PAYMENT. ALL HANDLING SHALL CONFORM TO EPA REQUIREMENTS. PROVIDE BREAKOUT COST FOR THIS SCOPE.

ELECTRICAL DRAWING LIST

DWG NO.	DRAWING TITLE
ES5.1	ELECTRICAL DETAILS
ES0.0	ELECTRICAL LEGEND
ES1.0	ELECTRICAL BASEMENT DEMOLITION PLAN
ES1.1	ELECTRICAL FIRST & SECOND FLOOR DEMOLITION PLAN
ES2.0	ELECTRICAL BASEMENT LIGHTING PLAN
ES2.1	ELECTRICAL FIRST FLOOR LIGHTING PLAN
ES2.2	ELECTRICAL SECOND FLOOR LIGHTING PLAN
ES3.0	ELECTRICAL BASEMENT POWER AND SIGNAL PLAN
ES3.1	ELECTRICAL FIRST FLOOR POWER AND SIGNAL PLAN
ES3.2	ELECTRICAL SECOND FLOOR POWER AND SIGNAL PLAN
ES3.3	ELECTRICAL ROOF POWER AND SIGNAL PLAN
ES4.0	ELECTRICAL POWER RISER DIAGRAMS
ES4.1	ELECTRICAL RISERS AND SCHEDULES
ES5.0	ELECTRICAL DETAILS
EFA1.0	ELECTRICAL BASEMENT FIRE ALARM PLAN
EFA1.1	ELECTRICAL FIRST FLOOR FIRE ALARM PLAN
EFA1.2	ELECTRICAL SECOND FLOOR FIRE ALARM PLAN
EFA1.3	ELECTRICAL ROOF FIRE ALARM PLAN
EFA2.0	FIRE ALARM RISER DIAGRAM

CAMERON BELLAO No. 11250 REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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COST: D.G. Jones, 3 Baldwin Green Common, Suite 202, Woburn, MA 01801, T: 781.932.3131, www.dgjonesboston.com

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KEY PLAN: BUILDING 35

Drawing Title: ELECTRICAL LEGEND
Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title: BUILDING 35 ADDITION FOR RESEARCH
Building #: 35
Scale: 12" = 1'-0"
Location: PROVIDENCE

Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: ES0.0

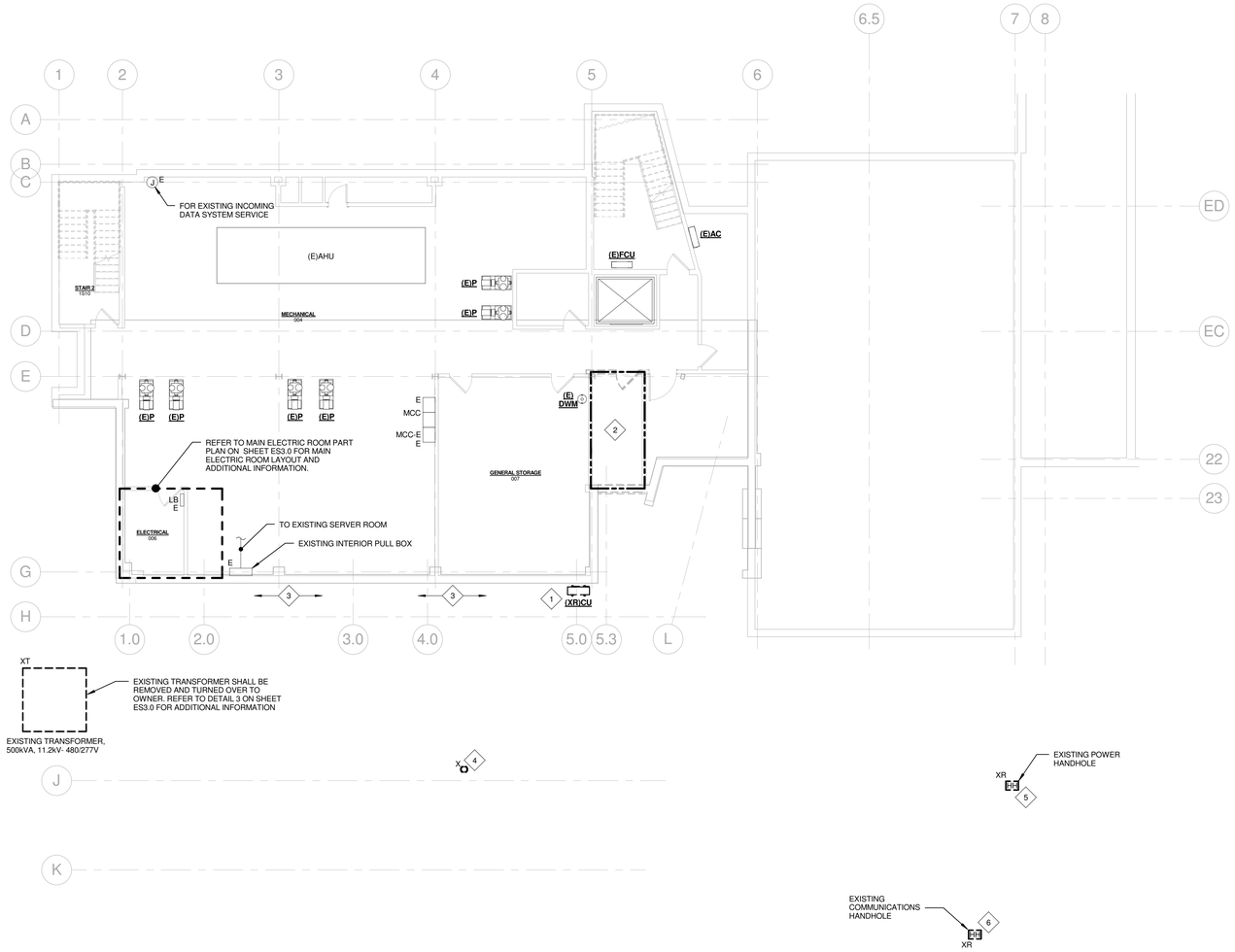
Office of Facilities — Department of Veterans Affairs

DEMOLITION PLAN NOTES

1. WORK MAY BE REQUIRED OUTSIDE OF THE PROJECT'S AREA OF RENOVATION. CONTRACTOR SHALL NOT ASSUME THAT AREA OF RENOVATION IS CONSIDERED THE SCOPE OF WORK AREA.

DEMOLITION KEYED NOTES

1. DISCONNECT AND REMOVE EXISTING CONNECTIONS TO CONDENSING UNIT TO BE RELOCATED. INSTALL NEW BRANCH CIRCUIT WIRING AND CIRCUIT BREAKER FOR CONNECTION AT NEW UNIT LOCATION.
2. ALL EXISTING DEVICES (POWER, LOW VOLTAGE, AND LIGHTING), LIGHT FIXTURES AND ASSOCIATED WIRING AND RACEWAYS SHALL BE REMOVED BACK TO ITS POINT OF ORIGIN TO ACCOMMODATE NEW BUILDING ADDITION. ASSOCIATED CIRCUIT BREAKER SHALL BE MAINTAINED FOR RE-USE IN THIS PROJECT UNLESS OTHERWISE INDICATED.
3. ALL EXISTING EXTERIOR WALL MOUNTED SITE LIGHTING FIXTURES AND ASSOCIATED WIRING AND RACEWAYS WITHIN NEW ADDITION FOOTPRINT SHALL BE REMOVED AND RELOCATED TO ACCOMMODATE NEW BUILDING ADDITION. ASSOCIATED CIRCUIT BREAKERS SHALL BE MAINTAINED FOR RE-USE IN THIS PROJECT UNLESS OTHERWISE INDICATED.
4. EXISTING EXTERIOR POLE MOUNTED SITE LIGHTING FIXTURE SHALL BE REMOVED TO ACCOMMODATE NEW BUILDING ADDITION. ASSOCIATED WIRING AND RACEWAY SHALL BE INTERCEPTED AND REROUTED TO NEAREST ELECTRICAL SITE LIGHTING HANDHOLE TO MAINTAIN SERVICE TO REMAINING FIXTURES/CIRCUIT. NEW WIRING AND RACEWAY SHALL MATCH EXISTING IN THEIR ENTIRETY.
5. EXISTING ELECTRICAL HANDHOLE SHALL BE REMOVED AND RELOCATED TO ACCOMMODATE NEW BUILDING ADDITION. EXISTING FEEDERS SHALL BE REMOVED BACK TO EXISTING HANDHOLE LOCATION . 4#2 & 1#8G. FEEDERS SHALL BE INTERCEPTED AND EXTENDED VIA RELOCATED HANDHOLE. THROUGH NEW BUILDING ADDITION TO EXISTING 60A-3P CIRCUIT BREAKER IN EXISTING PANELBOARD 'DPH' IN BUILDING 35 SERVING EXISTING SITE POWER REQUIREMENTS. NEW FEEDERS AND RACEWAY SHALL MATCH EXISTING IN THEIR ENTIRETY.
6. EXISTING COMMUNICATIONS HANDHOLE FOR VALLEY STREET CAMERAS SHALL BE REMOVED AND RELOCATED TO ACCOMMODATE NEW BUILDING ADDITION. EXISTING RACEWAY AND 24 STRAND FIBEROPTIC CABLING SHALL BE REMOVED FROM EXISTING INTERIOR PULL BOX TO EXISTING HANDHOLE LOCATION . CABLING AND RACEWAY SHALL BE INTERCEPTED AND EXTENDED VIA RELOCATED HANDHOLE TO EXISTING INTERIOR PULL BOX. EXISTING CABLING AND RACEWAY SHALL MATCH EXISTING IN THEIR ENTIRETY.



1 ES1.0 0-BASEMENT-ELECTRICAL-DEMOLITION
1/8" = 1'-0"

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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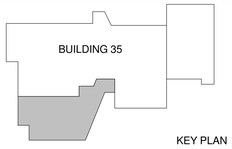


KEY PLAN

N

Drawing Title
ELECTRICAL BASEMENT DEMOLITION PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. ES1.0

Office of Facilities
Department of Veterans Affairs

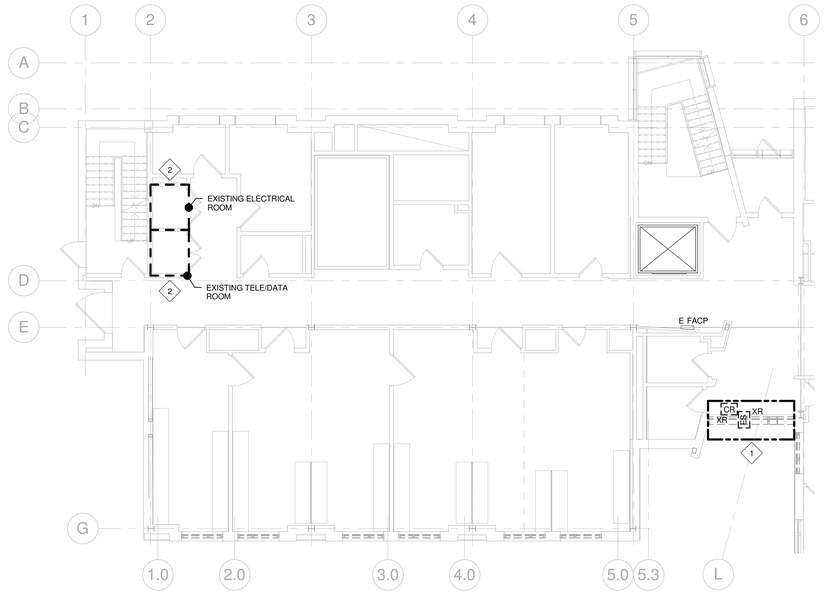
VA FORM 08-6231

DEMOLITION PLAN NOTES

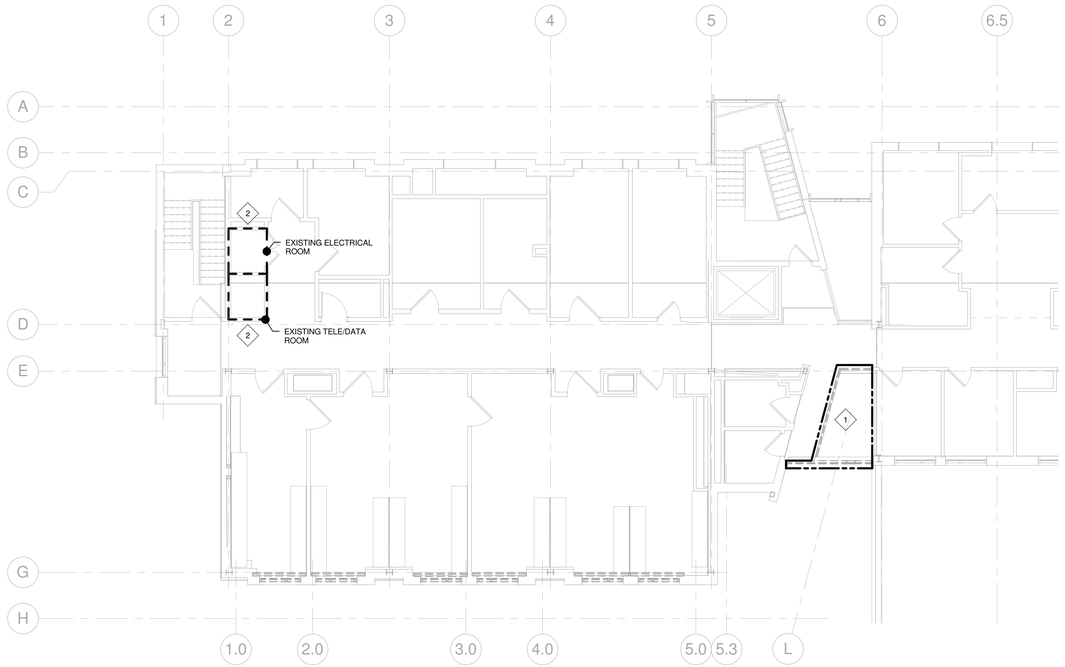
1. WORK MAY BE REQUIRED OUTSIDE OF THE PROJECT'S AREA OF RENOVATION. CONTRACTOR SHALL NOT ASSUME THAT AREA OF RENOVATION IS CONSIDERED THE SCOPE OF WORK AREA.

DEMOLITION KEYED NOTES

1. ALL EXISTING DEVICES (POWER, LOW VOLTAGE, AND LIGHTING), LIGHT FIXTURES AND ASSOCIATED WIRING AND RACEWAYS SHALL BE REMOVED BACK TO ITS POINT OF ORIGIN TO ACCOMMODATE NEW BUILDING ADDITION. ASSOCIATED CIRCUIT BREAKERS SHALL BE MAINTAINED FOR RE-USE IN THIS PROJECT UNLESS OTHERWISE INDICATED.
2. ALL EXISTING EQUIPMENT AND PANELS IN EXISTING ELECTRIC AND DATA ROOMS SHALL BE MAINTAINED. UNLESS SPECIFICALLY NOTED OTHERWISE.



1 | ES1.1 — 1-FIRST FLOOR-ELECTRICAL-DEMOLITION
1/8" = 1'-0"



2 | ES1.1 — 2-SECOND FLOOR-ELECTRICAL-DEMOLITION
1/8" = 1'-0"

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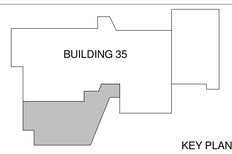


KEY PLAN

N

Drawing Title
ELECTRICAL FIRST & SECOND FLOOR DEMOLITION PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. ES1.1

Office of Facilities
Department of Veterans Affairs

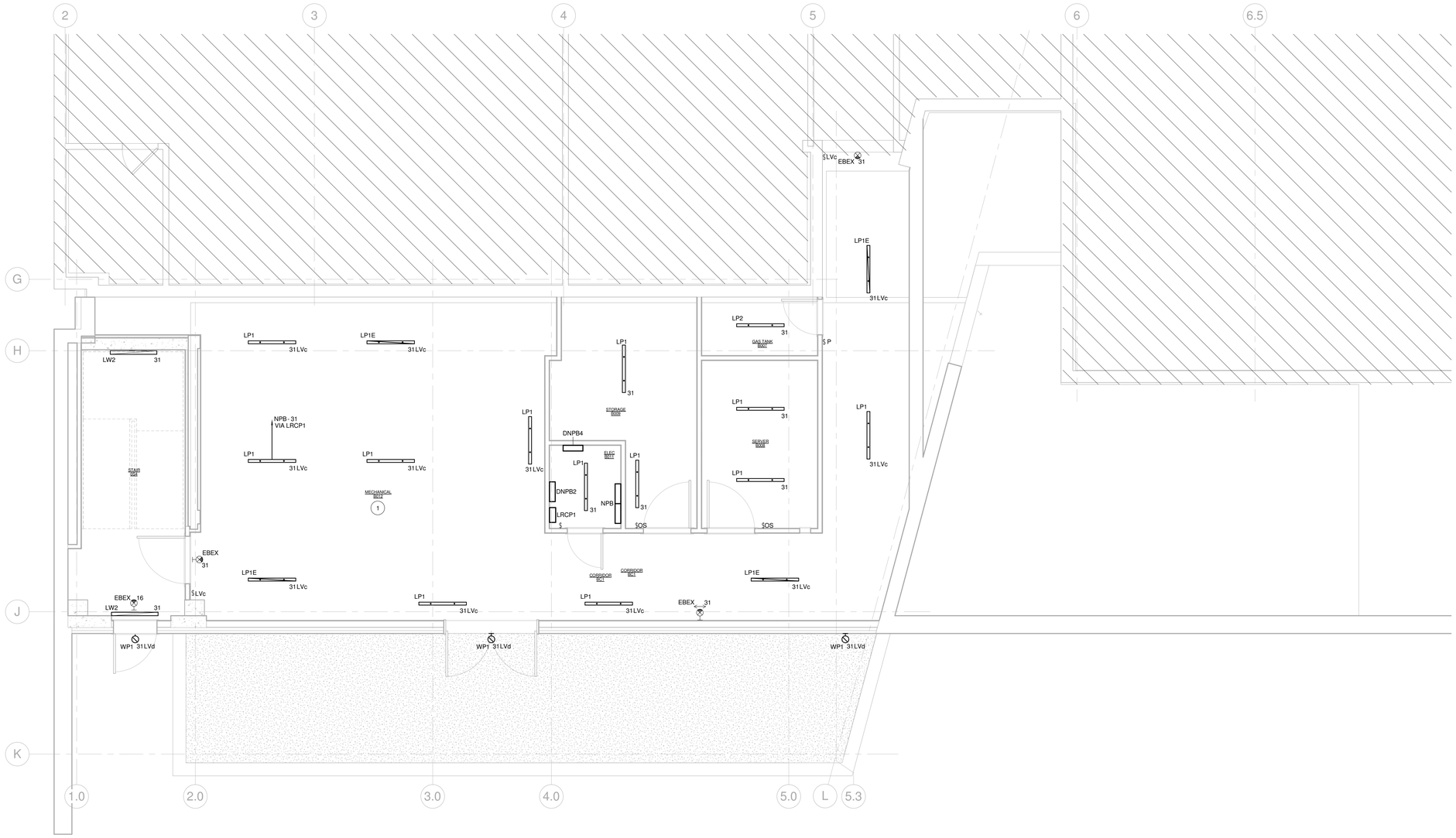
VA FORM 08-6231

LIGHTING PLAN NOTES

1. CIRCUIT NUMBERS ARE FOR DESCRIPTIVE PURPOSES ONLY. EXACT NUMBERS SHALL BE DETERMINED IN FIELD AND SHALL BE NOTED ON THE CONTRACTORS AS-BUILT DRAWINGS.
2. BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED AND INSTALLED FOR A MAXIMUM BRANCH CIRCUIT VOLTAGEDROP OF 3% FROM PANELBOARD. TOTAL VOLTAGE DROP FROM SERVICE ENTRY TO LAST DEVICE ON CIRCUIT SHALL NOT EXCEED 5%. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND OPTIONS
3. EXIT SIGNS, FIXTURES DESIGNATED AS NIGHT LIGHTS, AND EMERGENCY BATTERY UNITS SHALL BE CONNECTED TO AN UNSWITCHED, CONSTANT "ON" SOURCE AS INDICATED.
4. FIXTURES SHOWN TO INCLUDE EMERGENCY BALLAST SHALL HAVE ADDITIONAL "CONSTANT ON" SOURCE.
5. ALL UNDERCABINET LIGHTING SHALL BE CONNECTED TO RECEPTACLE BRANCH CIRCUIT SERVING THE AREA. IF THE FIXTURE IS WITHIN 6' OF A SINK, THE CONNECTION SHALL BE AFTER THE GFCI DEVICE FOR GFCI PROTECTION.

LIGHTING KEYED NOTES

1. EXACT LOCATION AND MOUNTING HEIGHT FOR ALL MECHANICAL ROOM PENDANT LIGHTING FIXTURES SHALL BE COORDINATED WITH ALL TRADES PRIOR TO INSTALLATION.



1	0 - BASEMENT-ELECTRICAL LIGHTING-NEW
ES2.0	1/4" = 1'-0"

CAMERON BELLAO
No. 11250
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KEY PLAN

N

Drawing Title
ELECTRICAL BASEMENT LIGHTING PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. ES2.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

LIGHTING PLAN NOTES

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3. EXIT SIGNS, FIXTURES DESIGNATED AS NIGHT LIGHTS, AND EMERGENCY BATTERY UNITS SHALL BE CONNECTED TO AN UNSWITCHED, CONSTANT "ON" SOURCE AS INDICATED.
4. FIXTURES SHOWN TO INCLUDE EMERGENCY BALLAST SHALL HAVE ADDITIONAL "CONSTANT ON" SOURCE.
5. ALL UNDERCABINET LIGHTING SHALL BE CONNECTED TO RECEPTACLE BRANCH CIRCUIT SERVING THE AREA. IF THE FIXTURE IS WITHIN 6' OF A SINK, THE CONNECTION SHALL BE AFTER THE GFCI DEVICE FOR GFCI PROTECTION.

1 1 - FIRST FLOOR-ELECTRICAL LIGHTING-NEW
ES2.1 1/4" = 1'-0"

CAMERON BELLAO
No. 11250
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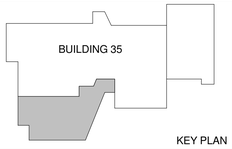

KEY PLAN

N

Drawing Title
ELECTRICAL FIRST FLOOR LIGHTING PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. ES2.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

LIGHTING PLAN NOTES

1. CIRCUIT NUMBERS ARE FOR DESCRIPTIVE PURPOSES ONLY. EXACT NUMBERS SHALL BE DETERMINED IN FIELD AND SHALL BE NOTED ON THE CONTRACTORS AS-BUILT DRAWINGS.
2. BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED AND INSTALLED FOR A MAXIMUM BRANCH CIRCUIT VOLTAGEDROP OF 3% FROM PANELBOARD. TOTAL VOLTAGE DROP FROM SERVICE ENTRY TO LAST DEVICE ON CIRCUIT SHALL NOT EXCEED 5%. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND OPTIONS
3. EXIT SIGNS, FIXTURES DESIGNATED AS NIGHT LIGHTS, AND EMERGENCY BATTERY UNITS SHALL BE CONNECTED TO AN UNSWITCHED, CONSTANT "ON" SOURCE AS INDICATED.
4. FIXTURES SHOWN TO INCLUDE EMERGENCY BALLAST SHALL HAVE ADDITIONAL "CONSTANT ON" SOURCE.
5. ALL UNDERCABINET LIGHTING SHALL BE CONNECTED TO RECEPTACLE BRANCH CIRCUIT SERVING THE AREA. IF THE FIXTURE IS WITHIN 6' OF A SINK, THE CONNECTION SHALL BE AFTER THE GFCI DEVICE FOR GFCI PROTECTION.

1 2 - SECOND FLOOR-ELECTRICAL LIGHTING-NEW
ES2.2 1/4" = 1'-0"

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

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FULLY SPRINKLERED

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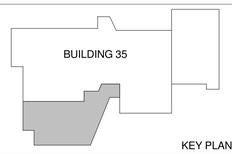

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ELECTRICAL SECOND FLOOR LIGHTING PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

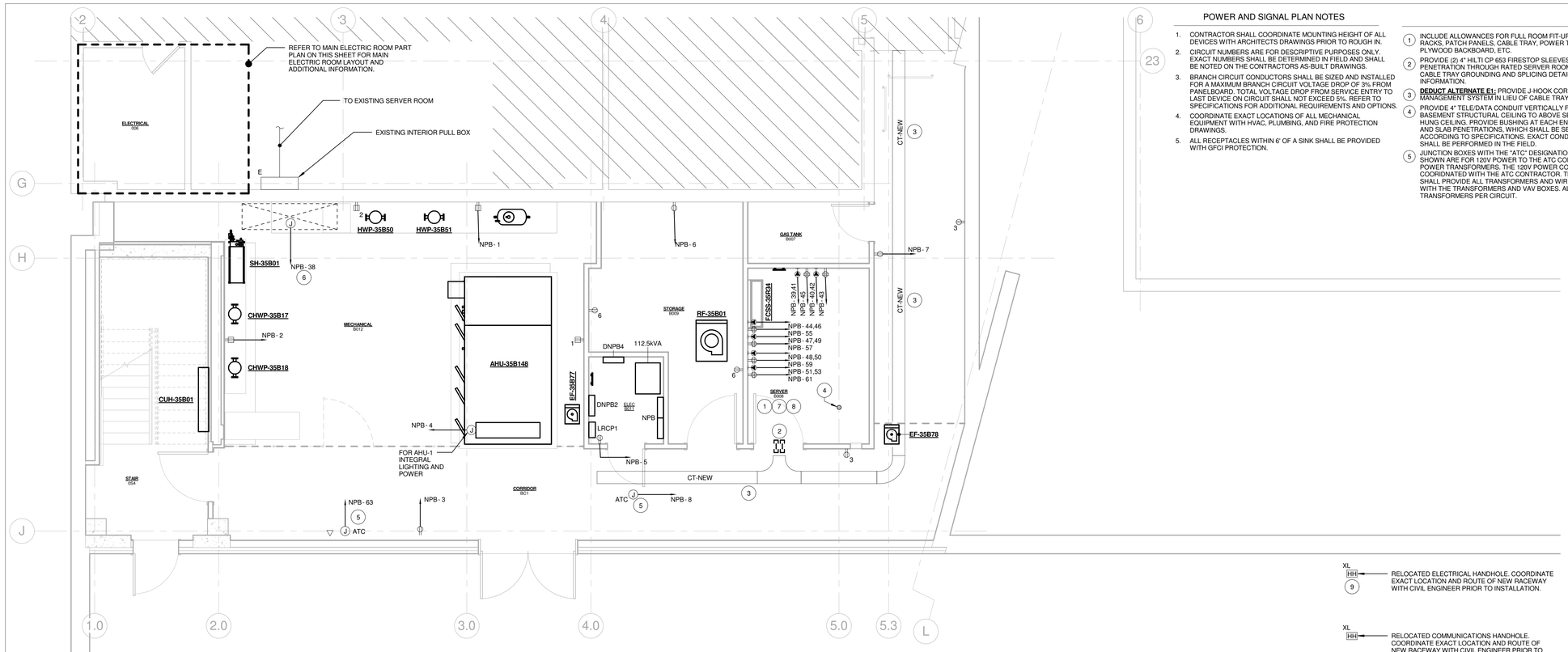
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. ES2.2

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



1 ES3.0 0-BASEMENT-ELECTRICAL-NEW POWER AND SIGNAL
1/4" = 1'-0"

POWER AND SIGNAL PLAN NOTES

1. CONTRACTOR SHALL COORDINATE MOUNTING HEIGHT OF ALL DEVICES WITH ARCHITECTS DRAWINGS PRIOR TO ROUGH IN.
2. CIRCUIT NUMBERS ARE FOR DESCRIPTIVE PURPOSES ONLY. EXACT NUMBERS SHALL BE DETERMINED IN FIELD AND SHALL BE NOTED ON THE CONTRACTORS AS-BUILT DRAWINGS.
3. BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED AND INSTALLED FOR A MAXIMUM BRANCH CIRCUIT VOLTAGE DROP OF 3% FROM PANELBOARD. TOTAL VOLTAGE DROP FROM SERVICE ENTRY TO LAST DEVICE ON CIRCUIT SHALL NOT EXCEED 5%. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND OPTIONS.
4. COORDINATE EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT WITH HVAC, PLUMBING, AND FIRE PROTECTION DRAWINGS.
5. ALL RECEPTACLES WITHIN 6' OF A SINK SHALL BE PROVIDED WITH GFCI PROTECTION.

POWER AND SIGNAL KEYED NOTES

1. INCLUDE ALLOWANCES FOR FULL ROOM FIT-UP; INCLUDING RACKS, PATCH PANELS, CABLE TRAY, POWER TO EQUIPMENT, PLYWOOD BACKBOARD, ETC.
2. PROVIDE (2) 4" HILTI CP 653 FIRESTOP SLEEVES FOR PENETRATION THROUGH RATED SERVER ROOM WALL. REFER TO CABLE TRAY GROUNDING AND SPLICING DETAIL FOR ADDITIONAL INFORMATION.
3. **DEDUCT ALTERNATE E1:** PROVIDE J-HOOK CORRIDOR CABLE MANAGEMENT SYSTEM IN LIEU OF CABLE TRAY.
4. PROVIDE 4" TELE/DATA CONDUIT VERTICALLY FROM 6" BELOW BASEMENT STRUCTURAL CEILING TO ABOVE SECOND FLOOR HUNG CEILING. PROVIDE BUSHING AT EACH END OF CONDUIT AND SLAB PENETRATIONS, WHICH SHALL BE SEALED ACCORDING TO SPECIFICATIONS. EXACT CONDUIT ROUTING SHALL BE PERFORMED IN THE FIELD.
5. JUNCTION BOXES WITH THE "ATC" DESIGNATION AND CIRCUITS SHOWN ARE FOR 120V POWER TO THE ATC CONTRACTOR'S CONTROL POWER TRANSFORMERS. THE 120V POWER CONNECTION SHALL BE COORIDNATED WITH THE ATC CONTRACTOR. THE ATC CONTRACTOR SHALL PROVIDE ALL TRANSFORMERS AND WIRING ASSOCIATED WITH THE TRANSFORMERS AND VAV BOXES. ALL FOR 5 TRANSFORMERS PER CIRCUIT.
6. PROVIDE NEW 2#12 & 1#12G. - 3/4"C. FEEDER TO NEW 20A-1P CIRCUIT BREAKER IN PANEL LB2 TO SERVE NEW REVERSE OSMOSIS SKID. COORDINATE EXACT CONNECTION REQUIREMENTS WITH THE MANUFACTURER.
7. PROVIDE NEW 25 PAIR COPPER TELEPHONE BACKBONE FROM BUILDING #1 BASEMENT OR TELE/DATA CLOSET TO NEW SERVER ROOM #B008. BACKBONE SHALL BE RUN VIA EXISTING UNDERGROUND CONDUIT TO BUILDING #1. FINAL TERMINATION ON TERMINATION FIELDS IN OR TELE/DATA CLOSET SHALL BE BY CONTRACTOR. EXACT ROUTING THROUGH EXISTING BUILDING(S) SHALL BE COORDINATED IN THE FIELD. CONTRACTOR SHALL OWN REPLACEMENT OF ALL LIGHT FIXTURES AND CEILING TILES DAMAGED DURING ROUTING. EXACT CABLE TYPE SHALL BE COORINDATED WITH VA IT PERSONNEL.
8. PROVIDE NEW 12 STRAND FIBER OPTIC DATA BACKBONE FROM BUILDING #1 BASEMENT OR TELE/DATA CLOSET TO NEW SERVER ROOM #B008. BACKBONE SHALL BE RUN VIA EXISTING UNDERGROUND CONDUIT TO BUILDING #1. FINAL TERMINATION ON LIU RACK IN OR TELE/DATA CLOSET SHALL BE BY CONTRACTOR. EXACT ROUTING THROUGH EXISTING BUILDING(S) SHALL BE COORDINATED IN THE FIELD. CONTRACTOR SHALL OWN REPLACEMENT OF ALL LIGHT FIXTURES AND CEILING TILES DAMAGED DURING ROUTING. EXACT CABLE TYPE SHALL BE COORINDATED WITH VA IT PERSONNEL.
9. INTERCEPT EXISTING 4#2 & 1#8G. SITE LIGHTING FEEDER AND RACEWAY VIA RELOCATED HANDHOLE AND EXTEND THROUGH NEW ADDITION BASEMENT TO EXISTING 60A-3P CIRCUIT BREAKER IN EXISTING PANEL 'DPH' SERVING EXISTING SITE LIGHTING. NEW WIRING AND RACEWAY SHALL MATCH THE EXISTING IN THEIR ENTIRETY.

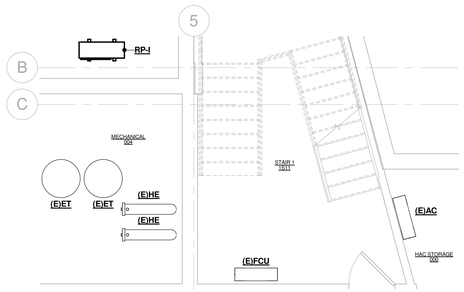
SITE POWER KEYED NOTES

1. EXISTING 11.2KV PRIMARY UNDERGROUND FEEDER FROM 15KV SWITCH #1 OUTSIDE BUILDING #9 SHALL BE INTERCEPTED AND EXTENDED TO NEW TRANSFORMER LOCATION VIA NEW ELECTRICAL HANDHOLE. NEW UNDERGROUND CONDUCTORS AND RACEWAY SHALL MATCH EXISTING IN ALL RESPECTS. HANDHOLE SHALL BE SIZED PER NEC REQUIREMENTS. REFER TO DUCT BANK SECTION "B-B" ON THIS SHEET FOR ADDITIONAL INFORMATION.
2. NEW FEEDER AS INDICATED BELOW FROM NEW 500KVA TRANSFORMER TO NORMAL SOURCE OF EXISTING ATS-35. NEW FEEDER SHALL BE RUN IN RIGID METAL CONDUIT (RMC) ABOVE GRADE ALONG APPROXIMATE PATH INDICATED:
   - TWO (2) SETS OF 4#500KCMIL & 1#2/0G. - 4"C.
3. NEW TWO (2) SETS OF 4#600KCMIL & 1#1/0G. EMERGENCY FEEDER IN NEW CONCRETE DUCTBANK FROM LOAD SOURCE OF EXISTING ATS-35 TO EXISTING 800A MAIN DISCONNECT SWITCH FOR MAIN SERVICE ENTRANCE. UNDERGROUND CONDUIT SHALL TURN UP FROM DUCT BANK INTO NEW EXTERIOR PULL BOX. CORE DRILL PENETRATIONS FOR TWO (2) 4" CONDUIT TO EXISTING MAIN DISCONNECT SWITCH. REFER TO DUCT BANK SECTION "A-A" AND EXTERIOR PULL BOX DETAIL ON THIS SHEET FOR ADDITIONAL INFORMATION. COORDINATE PENETRATIONS WITH STRUCTURAL ENGINEER PRIOR TO INSTALLATION. COORDINATE EXACT FEEDER ROUTING WITH CIVIL ENGINEER AND EXISTING CHILLER CONCRETE PAD.
4. NEW SEVEN (7) UNDERGROUND CONDUITS FOR OUTSIDE TRAILERS AND SHED. REFER TO RISER DIAGRAM ON DRAWING ES4.0 FOR FURTHER INSTRUCTIONS. COORDINATE PENETRATIONS WITH STRUCTURAL ENGINEER PRIOR TO INSTALLATION. COORDINATE EXACT CONDUIT ROUTING WITH CIVIL ENGINEER AND EXISTING CHILLER CONCRETE PAD.
5. EXISTING TRANSFORMER SERVICING BUILDING #35 SHALL BE REMOVED AND TURNED OVER TO OWNER AFTER NEW TRANSFORMER PRIMARY AND SECONDARY FEEDERS ARE IN PLACE FOR SWITCHOVER. ENSURE ELECTRICAL SPECIFICATIONS (I.E. KVA RATING, WINDING MATERIAL, TAP RATING, ETC.) SHALL MATCH EXISTING IN ALL RESPECTS. REFER TO ONE LINE DIAGRAM ON SHEET ES4.0 FOR ADDITIONAL INFORMATION.

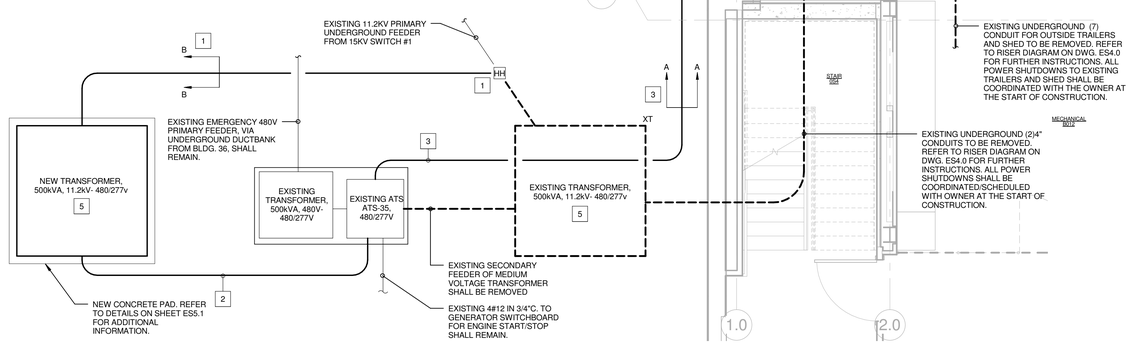
   DEDUCT ALTERNATE: EXISTING 500KVA TRANSFORMER SERVICING BUILDING #35 SHALL BE REMOVED AND RELOCATED FROM ITS EXISTING LOCATION. PROVIDE NEW PAD AND ALL WORK ASSOCIATED WITH TRANSFORMER INSTALLATION. INTENT IS FOR SCOPE TO REMAIN THE SAME, BUT WITH A RELOCATED TRANSFORMER.

XL HH 9 — RELOCATED ELECTRICAL HANDHOLE. COORDINATE EXACT LOCATION AND ROUTE OF NEW RACEWAY WITH CIVIL ENGINEER PRIOR TO INSTALLATION.

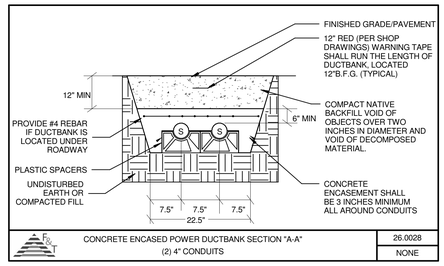
XL HH — RELOCATED COMMUNICATIONS HANDHOLE. COORDINATE EXACT LOCATION AND ROUTE OF NEW RACEWAY WITH CIVIL ENGINEER PRIOR TO INSTALLATION.



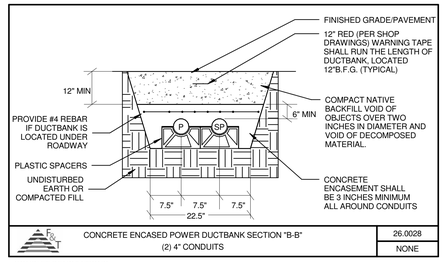
2 ES3.0 0 - BASEMENT - ELECTRICAL - NEW POWER AND SIGNAL PART PLAN
1/4" = 1'-0"



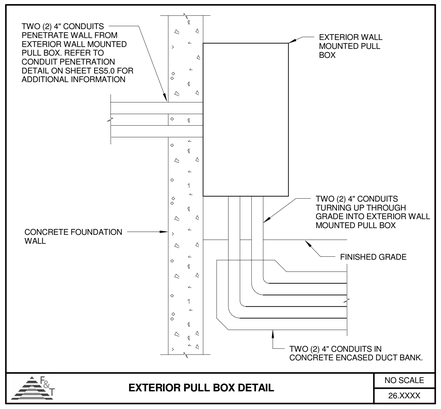
3 ES3.0 ELECTRICAL-SITE POWER PART PLAN
1/4" = 1'-0"



CONCRETE ENCASED POWER DUCTBANK SECTION "A-A" (2) 4" CONDUITS — 26.0028 — NONE



CONCRETE ENCASED POWER DUCTBANK SECTION "B-B" (2) 4" CONDUITS — 26.0028 — NONE



EXTERIOR PULL BOX DETAIL — NO SCALE — 26.XXXX

CONDUIT DENOTATIONS:

P — 4" PVC POWER CONDUIT FOR PRIMARY FEEDERS
S — 4" PVC POWER CONDUIT FOR SECONDARY FEEDERS
SP — 4" SPARE WITH PULLSTRING

CONDUIT NOTES:

THE RACEWAY PROVIDED FOR THE SECONDARY FEEDERS BETWEEN THE MAIN BUILDING TRANSFORMER AND THE SWITCHBOARD SHALL BE AS RIGID STEEL ELBOWS WITH ONLY STRAIGHT PORTIONS OF UNDERSLAB RACEWAY ALLOWED TO BE PVC RACEWAY.

DUCTBANK INSTALLATION NOTES:

1. ALL CONDUIT IS TO BE SCHEDULE 40 PVC, ELECTRICAL GRADE, GRAY IN COLOR AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. A 10 FOOT HORIZONTAL SECTION OF RIGID STEEL CONDUIT WILL BE REQUIRED AT EACH SWEEP. ALL JOINTS ARE TO BE WATERTIGHT.
2. ALL 90 DEGREE SWEEPS WILL BE MADE WITH RIGID GALVANIZED STEEL WITH A MINIMUM RADIUS OF 36 INCHES FOR PRIMARY AND 24 INCHES FOR SECONDARY CABLES.
3. BACKFILL MAY BE MADE WITH EXCAVATED MATERIAL OR COMPARABLE, UNLESS MATERIAL IS DEEMED UNSUITABLE BY ENGINEER. BACKFILL SHALL BE FREE OF FROZEN LUMPS, ROCKS, DEBRIS AND RUBBISH. ORGANIC MATERIAL SHALL NOT BE USED AS BACKFILL. BACKFILL SHALL BE 6-INCH LAYER AND THOROUGHLY COMPACTED.
4. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

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FULLY SPRINKLERED

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BUILDING 35
KEY PLAN
N

Drawing Title: ELECTRICAL BASEMENT POWER AND SIGNAL PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title: BUILDING 35 ADDITION FOR RESEARCH

Building #: 35
Scale: As indicated
Location: PROVIDENCE

Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: ES3.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

DATE & TIME PRINTED: 2/26/2016 4:06:47 PM H:\10 - 600KV VA Providence\Arch\600-03 VA Providence Bldg 35 Addition_Local.rvt

POWER AND SIGNAL PLAN NOTES

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2. CIRCUIT NUMBERS ARE FOR DESCRIPTIVE PURPOSES ONLY. EXACT NUMBERS SHALL BE DETERMINED IN FIELD AND SHALL BE NOTED ON THE CONTRACTORS AS-BUILT DRAWINGS.
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POWER AND SIGNAL KEYED NOTES

1. **DEDUCT ALTERNATE E1:** PROVIDE J-HOOK CABLE MANAGEMENT SYSTEM, TYPICALLY MOUNTED 6" ABOVE FINISHED CEILING, IN LIEU OF CABLE TRAY.
2. PROVIDE 4" TELE/DATA CONDUIT VERTICALLY FROM 6" BELOW BASEMENT STRUCTURAL CEILING TO ABOVE SECOND FLOOR HUNG CEILING. PROVIDE BUSHING AT EACH END OF CONDUIT AND SLAB PENETRATIONS, WHICH SHALL BE SEALED ACCORDING TO SPECIFICATIONS. EXACT CONDUIT ROUTING SHALL BE PERFORMED IN THE FIELD.
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4. PROVIDE SINGLE GANG BACK BOX AND 1" CONDUIT CONCEALED WITHIN WALL TO ABOVE HUNG CEILING, TERMINATING WITH BELL END BUSHING FOR PROJECTION SCREEN CONTROL SWITCH. COORDINATE ADDITIONAL REQUIREMENTS AND EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH IN.
5. JUNCTION BOXES WITH THE "ATC" DESIGNATION AND CIRCUITS SHOWN ARE FOR 120V POWER TO THE ATC CONTRACTOR'S CONTROL POWER TRANSFORMERS. THE 120V POWER CONNECTION SHALL BE COORDINATED WITH THE ATC CONTRACTOR. THE ATC CONTRACTOR SHALL PROVIDE ALL TRANSFORMERS AND WIRING ASSOCIATED WITH THE TRANSFORMERS AND VAV BOXES. ALL FOR 5 TRANSFORMERS PER CIRCUIT.
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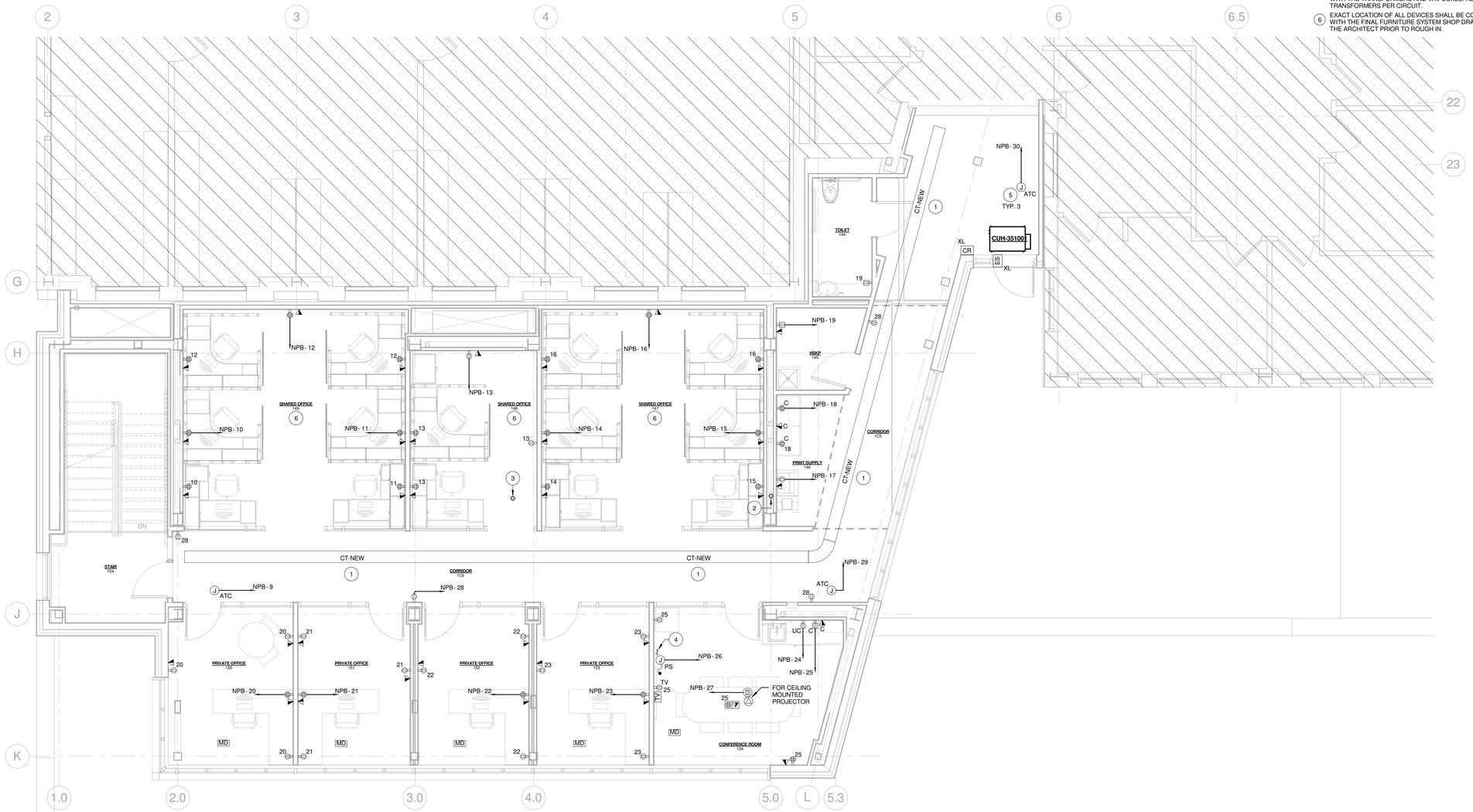

1 1-FIRST FLOOR-ELECTRICAL-NEW POWER AND SIGNAL
ES3.1 1/4" = 1'-0"

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BUILDING 35
KEY PLAN
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Drawing Title: ELECTRICAL FIRST FLOOR POWER AND SIGNAL PLAN
Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title: BUILDING 35 ADDITION FOR RESEARCH
Building #: 35
Scale: As indicated
Location: PROVIDENCE

Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: ES3.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

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3. PROVIDE CONNECTION ABOVE FINISHED CEILING TO POWER POLE FEEDING COMPUTER LAB FURNITURE BY OTHERS, WIREMOLD 25DTP SERIES OR APPROVED EQUAL. ABOVE CEILING POWER CONNECTION SHALL BE PROVIDED WITH SLACK MC CABLE WHIP TO ALLOW FLEXIBILITY IN PLACEMENT OF FURNITURE POWER POLE. POWER POLE SHALL BE PROVIDED WITH PROVISIONS FOR FOUR (4) DUPLEX RECEPTACLES AND TWO (2) TELE/DATA OUTLETS. COORDINATE LOCATION WITH FINAL FURNITURE LAYOUT.
4. JUNCTION BOXES WITH THE "ATC" DESIGNATION AND CIRCUITS SHOWN ARE FOR 120V POWER TO THE ATC CONTRACTOR'S CONTROL POWER TRANSFORMERS. THE 120V POWER CONNECTION SHALL BE COORDINATED WITH THE ATC CONTRACTOR. THE ATC CONTRACTOR SHALL PROVIDE ALL TRANSFORMERS AND WIRING ASSOCIATED WITH THE TRANSFORMERS AND VAV BOXES. ALL FOR 5 TRANSFORMERS PER CIRCUIT.
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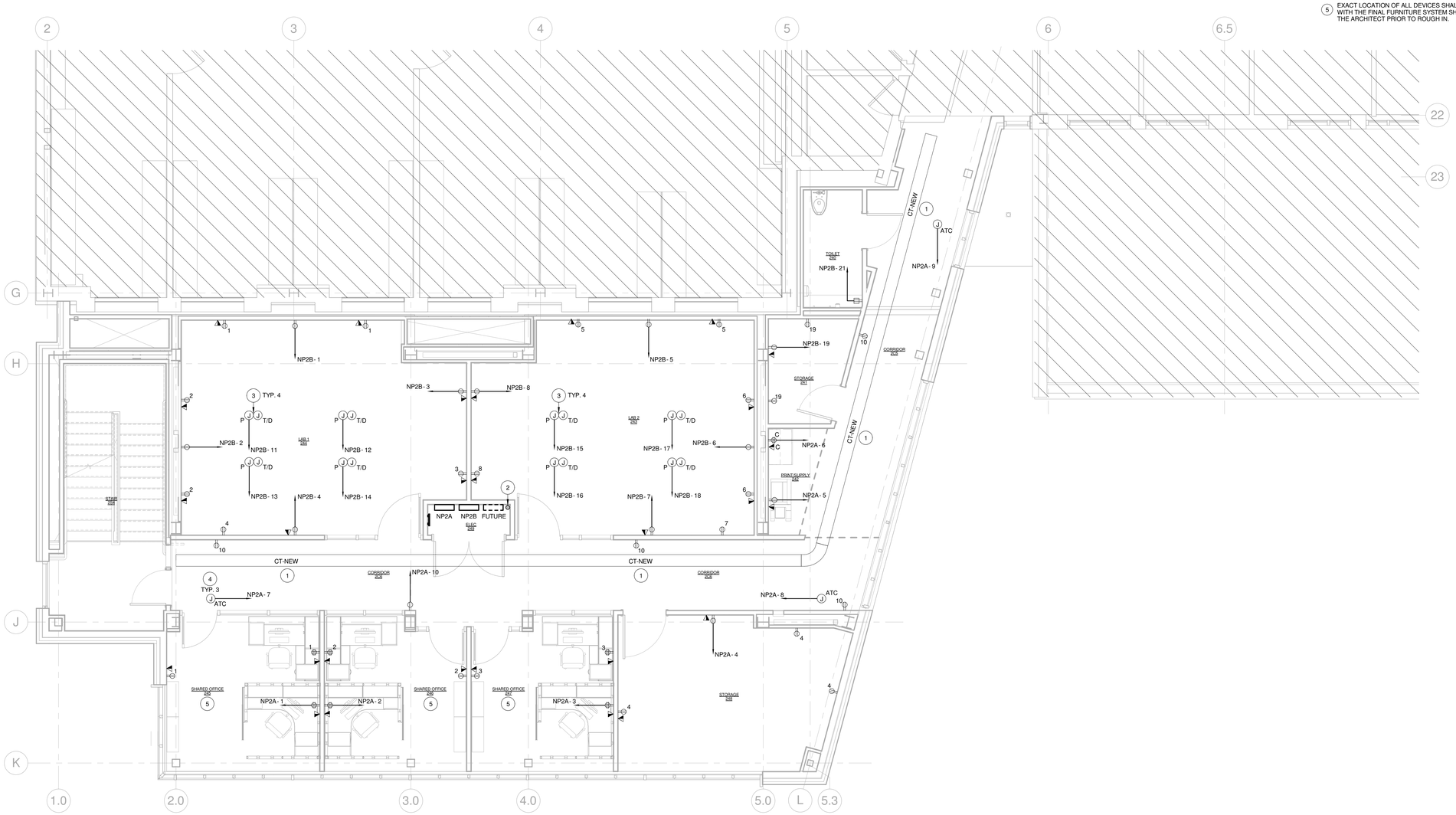

1 2-SECOND FLOOR-ELECTRICAL-NEW POWER AND SIGNAL
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BUILDING 35
KEY PLAN
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Drawing Title
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Designed By: JN
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Approved By: CMB

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BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. ES3.2

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

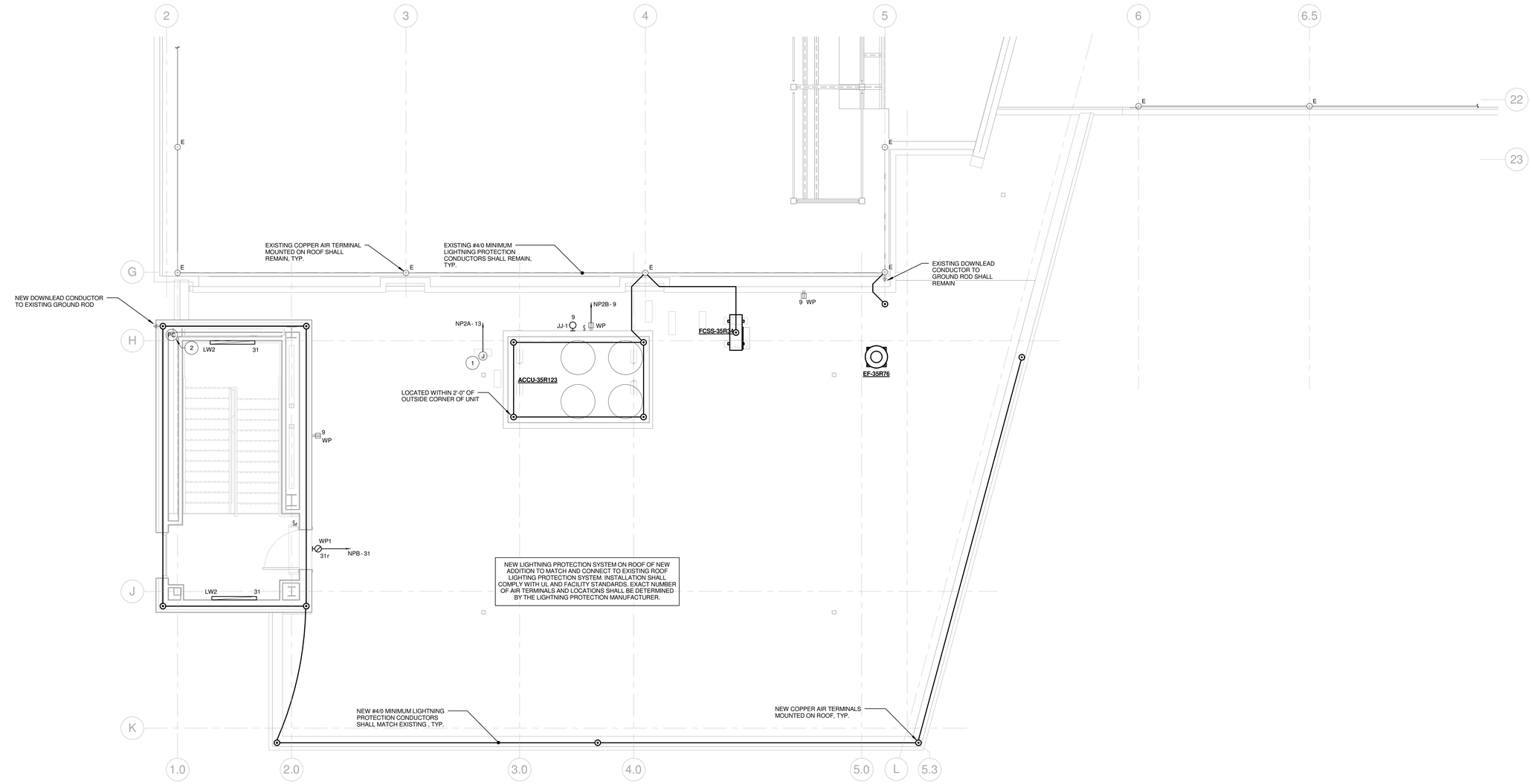
POWER PLAN NOTES

1. CIRCUIT NUMBERS ARE FOR DESCRIPTIVE PURPOSES ONLY. EXACT NUMBERS SHALL BE DETERMINED IN FIELD AND SHALL BE NOTED ON THE CONTRACTORS AS-BUILT DRAWINGS.
2. BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED AND INSTALLED FOR A MAXIMUM BRANCH CIRCUIT VOLTAGE DROP OF 3% FROM PANELBOARD. TOTAL VOLTAGE DROP FROM SERVICE ENTRY TO LAST DEVICE ON CIRCUIT SHALL NOT EXCEED 5%. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND OPTIONS.
3. COORDINATE EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT WITH HVAC, PLUMBING, AND FIRE PROTECTION DRAWINGS.

POWER KEYED NOTES

1. AT APPROXIMATE LOCATION INDICATED PROVIDE ALLOWANCE FOR APPROXIMATELY 12'-0" OF HEAT TRACE FOR 3" CHILLED WATER SUPPLY AND RETURN PIPING.

   PROVIDE HEAT TRACE AND CONTROL EQUIPMENT AS MANUFACTURED BY RAYCHEM - XL TRACE SERIES, OR APPROVED EQUAL. PROVIDE (1) 20A-1P GFCI CIRCUIT BREAKER, WITH 30 MILLIAMP TRIP IN PANEL INDICATED. PROVIDE BACK BOX AND ASSOCIATED WIRING (2#12 & 1#12G. - 3/4"C.) FROM PANEL TO ACCESSIBLE LOCATION ADJACENT TO THE PIPE BEING PROTECTED. SIZE BOX TO ACCEPT THE CONTROL EQUIPMENT. PROVIDE THE ASSOCIATED THERMOSTATS AND CONTROL EQUIPMENT AND COORDINATE EXACT LOCATION OF THE EQUIPMENT WITH THE SYSTEM VENDOR AND FACILITY PERSONNEL PRIOR TO INSTALLATION. CONTROL PANEL SHALL BE RAYCHEM DIGITRACE CONTROLLER WITH ALARM OUTPUTS TO DDC SYSTEM. COORDINATE CONNECTIONS WITH THE ATC CONTRACTOR.
2. PHOTOCELL FOR NEW BASEMENT EXTERIOR LIGHTING (LRCP1: RELAY #4, SWITCH LED LVd) SHALL BE MOUNTED ON TOP OF THE STAIRWELL ROOF. PHOTOCELL SHALL BE WIRED BACK TO THE LIGHTING CONTROL PANEL IN THE NEW BASEMENT ELECTRIC ROOM. PHOTOCELL SHALL BE LOCATED AT THE HIGHEST, MOST NORTHERN POINT OF THE NEW ADDITION.



1 ES3.3 3-ROOF-ELECTRICAL-NEW POWER
1/4" = 1'-0"

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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BUILDING 35
KEY PLAN
N

Drawing Title
ELECTRICAL ROOF POWER AND SIGNAL PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

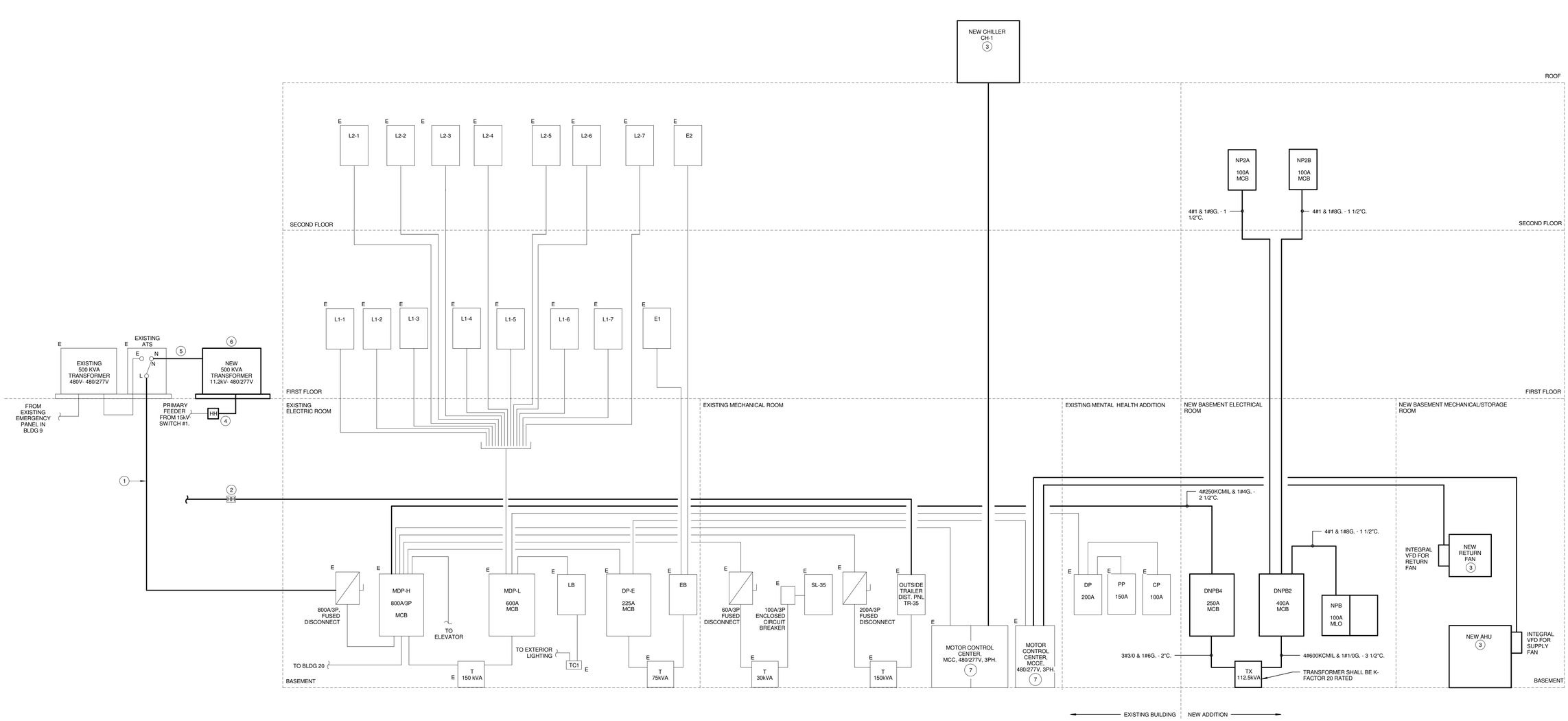
Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. ES3.3

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

DATE & TIME PRINTED: 2/20/2015 1:41:15 PM H:\10 - 14090 VA Providence\14090.01 VA Providence Bldg 35 Addition_Local.rvt



ELECTRICAL RISER DIAGRAM OF BUILDING 36
N.T.S.

RISER DIAGRAM NOTES:

1. PROVIDE NEW UNDERGROUND (2)4" CONDUIT DUCTBANK FROM MAIN ELECTRICAL ROOM TO NORMAL SOURCE OF EXISTING ATS-35. COORDINATE EXACT LOCATION OF CONDUIT PATH WITH CIVIL CONTRACTOR AND EXISTING FIELD CONDITIONS. ALL POWER SHUT DOWNS SHALL BE COORDINATED AND SCHEDULED WITH OWNER. NEW FEEDER SHALL MATCH EXISTING IN ALL RESPECTS. EXISTING TRANSFORMER SECONDARY FEEDERS SHALL BE REMOVED AFTER NEW SECONDARY FEEDERS ARE IN PLACE FOR SWITCHOVER. REFER TO DETAIL 3 ON SHEET ES3.0 FOR ADDITIONAL INFORMATION.
2. PROVIDE NEW EXTERIOR HANDHOLE TO INTERCEPT EACH EXISTING (6)100A, 1PH, 208/120V FEEDERS TO EXISTING OUTSIDE TRAILERS AND (1)50A, 3PH, 208/120V FEEDER TO EXISTING HILL SHED. HANDHOLES SHALL BE LOCATED ABOUT 10 FT OUTSIDE THE NEW ADDITION FOOTPRINT. REMOVE FEEDERS FROM HANDHOLES BACK TO PANEL TR-35. EACH NEW FEEDER SHALL BE ROUTED FROM THE PANEL TO THE HANDHOLE VIA UNDERGROUND 1 1/2" CONDUIT OUTSIDE THE ADDITION'S FOOTPRINT. WIRING CONFIGURATION SHALL MATCH EXISTING. ALL POWER SHUT DOWNS SHALL BE COORDINATED AND SCHEDULED WITH OWNER. FIELD VERIFY EXACT LOCATION OF HANDHOLES AND CONDUIT PATHS.
3. REFER TO MECHANICAL EQUIPMENT SCHEDULE ON SHEET ES4.1 FOR ADDITIONAL INFORMATION.
4. EXISTING 11.2KV PRIMARY UNDERGROUND FEEDER FROM 15KV SWITCH #1 OUTSIDE BUILDING #9 SHALL BE INTERCEPTED AND EXTENDED TO NEW TRANSFORMER LOCATION VIA NEW ELECTRICAL HANDHOLE. NEW UNDERGROUND CONDUCTORS AND RACEWAY SHALL MATCH EXISTING IN ALL RESPECTS.
5. NEW FEEDER AS INDICATED ON DRAWING ES3.0 FROM RELOCATED 500KVA TRANSFORMER TO NORMAL SOURCE OF EXISTING ATS-35.
6. EXISTING TRANSFORMER SERVICING BUILDING #35 SHALL BE REMOVED AFTER NEW TRANSFORMER PRIMARY AND SECONDARY FEEDERS ARE IN PLACE FOR SWITCHOVER. REMOVAL OF EXISTING TRANSFORMER SHALL NOT OCCUR UNTIL THE NEW TRANSFORMER HAS BEEN FILLED, TESTED, AND COMMISSIONED/APPROVED FOR SERVICE. ENSURE ELECTRICAL SPECIFICATIONS (I.E. KVA RATING, WINDING MATERIAL, TAP RATING, ETC.) SHALL MATCH EXISTING IN ALL RESPECTS. REFER TO ONE LINE DIAGRAM ON SHEET ES4.0 FOR ADDITIONAL INFORMATION.

   DEDUCT ALTERNATE: EXISTING 500KVA TRANSFORMER SERVICING BUILDING #35 SHALL BE REMOVED AND RELOCATED FROM ITS EXISTING LOCATION.
7. PROVIDE ALL ACCESSORIES FOR AND MODIFICATIONS TO EXISTING MOTOR CONTROL CENTER BUCKET(S) REQUIRED TO ACCOMMODATE NEW BREAKERS IN EXISTING MOTOR CONTROL CENTER.

CAMERON BELLAO
No. 11250
REGISTERED
PROFESSIONAL ENGINEER
ELECTRICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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BUILDING 35
KEY PLAN

N

Drawing Title
ELECTRICAL POWER
RISER DIAGRAMS

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION
FOR RESEARCH

Building #
35

Scale
12" = 1'-0"

Location
PROVIDENCE

Date
6/30/2015

VA Project No.
650-338

Drawing No.
ES4.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

E - LIGHTING FIXTURE SCHEDULE

MARK	DESCRIPTION	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN CAT. NUMBER	ALTERNATE 1 MANUFACTURER	LAMPS QTY.	LAMPS WATTS	LAMPS TYPE	MOUNTING	VOLTAGE	INPUT WATTS	NOTES
EBEX	UNIVERSAL MOUNT SELF-POWERED LED EXIT SIGN	SURE-LITES	SLX7(FACE)(ACCESSORIES)	EQUAL	-	-	1.03W LED	UNIVERSAL	UNV	1.03	LF12
JJ-1	LED VAPORPROOF FIXTURE	CANLET	02-15W-L-W-F-OG-01	EQUAL	-	-	15W LED	WALL	UNV	15	
LD4	4" OPEN APERTURE LED DOWNLIGHT	PORTFOLIO	LD4A09D010TE-ERM4A09835-4LM1LIWFHB26	EQUAL	-	-	14.1W LED	RECESSED	UNV	14.1	
LD6	6" OPEN APERTURE LED DOWNLIGHT	PORTFOLIO	LD6A15D010TE-ERM6A15835-6LM1LIWFHB26	EQUAL	-	-	22.4W LED	RECESSED	UNV	22.4	
LD6E	IDENTICAL TO TYPE LD6 WITH "-IEMBOD" BODINE EMERGENCY MODULE WITH INTEGRAL TEST SWITCH										
LP1	4' LENSED LED STRIP LIGHT - WITH CHAIN HANGER SET	METALUX	4SNLED-LD4-46SL-LC-UNV-L835-CD-1-U / AYC-CHAIN/SET	EQUAL	-	-	41.03W LED	SUSPENDED	UNV	41.03	
LP1E	IDENTICAL TO TYPE LP1 WITH "-EL" EMERGENCY OPTION										
LP2	4' HAZARDOUS LOCATION LED ENCLOSED AND GASKETED LUMINAIRE - WITH CHAIN HANGER SET	COLUMBIA LIGHTING	HEM4-35-ML-RFA-E-U / XEHC	EQUAL	-	-	47W LED	SUSPENDED	UNV	47	
LR1	4" LINEAR RECESSED LED FIXTURE	GAMMALUX	GB44RC2-1SOLED35-UNIV-DIM-4'-REC/(CEILING)-ASLMD-(COLOR/FINISH)	EQUAL	-	-	33.2W LED	RECESSED	UNV	33.2	
LR2	2' x 4' RECESSED LED FIXTURE	METALUX	24EN-LD1-45-UNV-L835-CD1-U	EQUAL	-	-	47.0W LED	RECESSED	UNV	47.0	
LR3	2' x 2' RECESSED LED FIXTURE	METALUX	22EN-LD1-25-UNV-L835-CD1-U	EQUAL	-	-	25.5W LED	RECESSED	UNV	25.5	
LR3E	IDENTICAL TO TYPE LR3 WITH "-EL" EMERGENCY OPTION										
LR4	2' x 2' LENSED LED TROFFER	METALUX	22GR-LD4-24-F1-UNV-L835-CD1-PAF-U	EQUAL	-	-	23.78W LED	RECESSED	UNV	23.78	
LR5	2' x 4' LENSED LED TROFFER	METALUX	24GR-LD4-38-F1-UNV-L835-CD1-PAF-U	EQUAL	-	-	35.99W LED	RECESSED	UNV	35.99	
LS1	4' LENSED LED STRIPLIGHT	METALUX	4SNLED-LD4-26SL-LC-UNV-L835-CD-1-U	EQUAL	-	-	21.68W LED	SURFACE	UNV	21.68	
LW1	37" LED DECORATIVE VANITY FIXTURE - WITH FINISH AND OPTIONS SELECTED BY ARCHITECT	SHAPER	605-37-W-L4/827-UNV-(FINISH)-(OPTIONS)	EQUAL	-	-	27W LED	WALL	UNV	27	
LW2	4' LINEAR VANDAL RESISTANT LED FIXTURE - STAIRWELL	FAIL-SAFE	HVL8-4-LD3-1STD-35-UNV-O-ED1C-(END CAPS)-QS1(277V)-(FINISH)	EQUAL	-	-	40W LED	WALL	277V	40	
WP1	EXTERIOR LED WALL PACK FIXTURE WITH INTEGRAL PHOTOCELL AND EMERGENCY BATTERY PACK	MCGRAW-EDISON	IST-C01-LED-E1-G2W-(FINISH)-P-BBB	EQUAL	-	-	27W LED	WALL	277V	27	

NEW LIGHTING RELAY CABINET

NAME: LRCP1

RELAY #	SWITCH LEG	SERVICE	CIRCUIT	CONTROL	
1	LVa	FIRST FLOOR CORRIDOR LIGHTING	LB2-33	TIME ON/OFF & KEYPAD	3
2	LVb	SECOND FLOOR CORRIDOR LIGHTING	L2-8-11	TIME ON/OFF & KEYPAD	3
3	LVc	BASEMENT CORRIDOR/MECH LIGHTING	LB2-31	TIME ON/OFF & KEYPAD	3
4	LVd	BASEMENT EXTERIOR LIGHTING	EB-16	TIME ON/OFF VIA PHOTOCELL	
5	LVe	SPARE	--	TIME ON/OFF & KEYPAD	
6	LVf	SPARE	--	TIME ON/OFF & KEYPAD	
7	LVg	SPARE	--	TIME ON/OFF & KEYPAD	
8	LVh	SPARE	--	TIME ON/OFF & KEYPAD	
9	LVi	SPARE	--	TIME ON/OFF & KEYPAD	
10	LVj	SPARE	--	TIME ON/OFF & KEYPAD	
11	LVk	SPARE	--	TIME ON/OFF & KEYPAD	
12	LVl	SPARE	--	TIME ON/OFF & KEYPAD	
13	LVm	SPARE	--	TIME ON/OFF & KEYPAD	
14	LVn	SPARE	--	TIME ON/OFF & KEYPAD	
15	LVo	SPARE	--	TIME ON/OFF & KEYPAD	
16	LVp	SPARE	--	TIME ON/OFF & KEYPAD	

NOTES:
1. ALL LIGHTING CONTROLS SHALL BE NETWORKED TOGETHER
2. LIGHTING ON/OFF VIA SWITCH INPUT, OFF VIA TIMED SWEEP.
3. PROVIDE NEW RELAY WITH INTEGRAL UL924 RATED EMERGENCY BYPASS

LIGHTING FIXTURE SCHEDULE NOTES:

THE BASIS OF DESIGN FOR LIGHTING FIXTURES SHALL BE AS INDICATED ON THESE DOCUMENTS. ANY SUBSTITUTIONS AND/OR ALTERNATE MANUFACTURERS SHALL BE IDENTIFIED IN THE CONTRACTORS BID FOR THE PROJECT AND SHALL BE ACCOMPANIED WITH A FULL SUBMITTAL OF ALL PROPOSED SUBSTITUTIONS. THE ARCHITECT, OWNER, AND ENGINEER MUST PROVIDE APPROVAL FOR THE SUBSTITUTIONS FOR EQUIVALENT PERFORMANCE AND AESTHETIC APPEARANCE PRIOR TO THE SUBSTITUTIONS BEING ACCEPTED. EQUIVALENT FIXTURE PERFORMANCE SHALL BE DEMONSTRATED BY LIGHTING PERFORMANCE CALCULLATIONS IF REQUESTED AND SHALL INCLUDE MEETING UTILITY COMPANY INCENTIVE PROGRAMS.

(NOTES LF1 THROUGH LF10 ARE GENERAL NOTES AND APPLY TO ALL LIGHT FIXTURES).

LF1. FINAL MOUNTING HEIGHT, AND LOCATION SHALL BE AS DIRECTED BY ARCHITECT.

LF2. FLUORESCENT LIGHT FIXTURES TO BE EQUIPPED WITH ELECTRONIC BALLASTS.

LF3. CATALOG NUMBERS INDICATED ARE FOR REFERENCE ONLY, CONTRACTOR IS RESPONSIBLE FOR FINAL FIXTURE COORDINATION AND INSTALLATION, REFER TO SPECIFICATIONS.

LF4. FLUORESCENT LAMPS SHALL BE LOW MERCURY LEVEL TYPE, MINIMUM 82 CRI, 3500°K, UNLESS SPECIFICALLY NOTED OTHERWISE.

LF5. RECESSED FIXTURES LOCATED WITHIN INSULATED CEILING OR WALL SHALL BE "IC" RATED.

LF6. FINAL FINISH/COLOR OF FIXTURE TO BE APPROVED IN WRITING BY ARCHITECT.

LF7. COORDINATE LIGHTING FIXTURE INSTALLATION AND TRIM KIT WITH CEILING TYPE INDICATED ON ARCHITECTURAL DRAWINGS.

LF8. COORDINATE TASK LIGHT FIXTURE INSTALLATION WITH CASEWORK AS DETAILED ON ARCHITECTURAL DRAWINGS.

LF9. ALL FIXTURES SHALL COMPLY WITH THE NATIONAL GRID REQUIRED FIXTURE EFFICIENCIES AND LISTED BY THE DESIGN LIGHTS CONSORTIUM TO ACQUIRE A UTILITY INCENTIVE. ALL DOWNLIGHTING FIXTURES SHALL BE ENERGY STAR APPROVED PRODUCTS TO ACQUIRE A REBATE INCENTIVE WITHIN NATIONAL GRID'S PROGRAMS.

LF10. COORDINATE EXACT FIXTURE MOUNTING REQUIREMENTS, LAMPING AND ADDITIONAL INFORMATION WITH ARCHITECT AND LIGHTING DESIGNER PRIOR TO INSTALLATION AND ORDERING.

LF11. ALL FACILITY LIGHTING FIXTURES SHALL BE RETROFITTED TO LED WITHIN THE NEXT YEAR.

(NOTES LF12 THROUGH LF13 ARE SPECIFIC NOTES-REFER TO NOTES COLUMN FOR WHICH FIXTURE THE NOTE APPLIES).

LF12. NUMBER OF FACES, DIRECTIONAL ARROWS AND MOUNTING AS SHOWN ON THE PLAN.

LF13. PROVIDE REQUIRED NUMBER OF BALLASTS TO ACCOMMODATE LIGHTING FIXTURES WITH MULTI-LEVEL SWITCHING AS INDICATED ON FLOOR PLANS.

E - MECHANICAL/ELECTRICAL/PLUMBING EQUIPMENT SCHEDULE

EQUIPMENT DESIGNATION TAG	DESCRIPTION	LOCATION	ELECTRICAL CHARACTERISTICS HP	FLA	MOCP	MCA	VOLTAGE	PHASE	PANEL DESIGNATION	CIRCUIT BREAKER	WIRE SIZE	DISCONNECT/CONTROLS DISCONNECT UNFUSED	DISCONNECT FUSED	MANUAL MOTOR STARTER	VFD	PROVIDED BY FURNISHED BY DIV. 23	DIV. 26	PACKAGED UNIT	REMARKS
ACCU-35R123	CHILLER	ROOF			110.0	194.0	480V	3	MCC	110A-3P	3#1 & 1#6G. - 1 1/2"C.	Y				Y		Y	
AHU-35B148	AIR HANDLING UNIT SUPPLY SEGMENT	MECHANICAL B012		23.0	50.0	28.8	480V	3	MCC-E	50A-3P	3#6 & 1#10G - 3/4"C.	Y			Y	Y		Y	
CHWP-35B17	CHILLED WATER PUMP	MECHANICAL B012	5				480V	3	DNPB4 - 2,4,6	20A-3P	3#12 & 1#12G. - 3/4"C.				Y	Y			
CHWP-35B18	CHILLED WATER PUMP	MECHANICAL B012	5				480V	3	DNPB4 - 7,9,11	20A-3P	3#12 & 1#12G. - 3/4"C.				Y	Y			
CUH-35B01	CABINET UNIT HEATER	STAIR 0S4	1/15	1.13			120V	1	NPB - 34	15A-1P	2#12 & 1#12G. - 3/4"C.			Y			Y		
CUH-351001	CABINET UNIT HEATER	CORRIDOR 1C5	1/15	1.13			120V	1	NPB - 35	15A-1P	2#12 & 1#12G. - 3/4"C.			Y			Y		
EF-35B77	EXHAUST FAN	MECHANICAL B012	1/6				120V	1	NPB - 36	15A-1P	2#12 & 1#12G. - 3/4"C.	Y				Y			
EF-35B78	EXHAUST FAN	CORRIDOR BC1	1/4				120V	1	NPB - 37	15A-1P	2#12 & 1#12G. - 3/4"C.	Y				Y			
EF-35R76	EXHAUST FAN	ROOF	1/6				120V	1	NP2A - 12	15A-1P	2#12 & 1#12G. - 3/4"C.	Y				Y			
FCSS-35R34	DUCTLESS SPLIT AIR CONDITIONING UNIT	SERVER B008										Y				Y			PROVIDE INTERCONNECT WIRING TO OUTDOOR UNIT, ACCU-1, IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
FCSS-35R34	AIR COOLED CONDENSING UNIT	ROOF			40.0	25.0	208V	1	EB - 21,23	40A-2P	2#8 & 1#10G - 3/4"C.	Y				Y			
HWP-35B50	HOT WATER PUMP	MECHANICAL B012	3				480V	3	DP-E - 13,15,17	15A-3P	3#12 & 1#12G. - 3/4"C.				Y	Y			
HWP-35B51	HOT WATER PUMP	MECHANICAL B012	3				480V	3	DP-E - 19,21,23	15A-3P	3#12 & 1#12G. - 3/4"C.				Y	Y			
RF-35B01	AIR HANDLING UNIT RETURN SEGMENT	STORAGE B009	5				480V	3	MCC-E	20A-3P	3#12 & 1#12G. - 3/4"C.								
RP-I	RELOCATED AIR COOLED CONDENSING UNIT	BUILDING EXTERIOR			20.0	16.5	208V	1	CONNECT TO EXISTING	20A-2P	2#12 & 1#12G. - 3/4"C.								RELOCATE EXISTING UNIT DISCONNECT. PROVIDE NEW INTERCONNECT WIRING TO EXISTING INDOOR UNIT PER MANUFACTURER'S RECOMMENDATIONS.
SH-35B01	ELECTRIC STEAM HUMIDIFIER	MECHANICAL B012		30.1			480V	3	DNPB4 - 8,10,12	50A-3P	3#6 & 1#10G - 3/4"C.		Y				Y		

Branch Panel: DNPB4

Location: ELEC B011 | Volts: 480/277 Wye | A.I.C. Rating: 42KAIC
Supply From: MDP-H | Phases: 3 | Mains Type: MCB
Mounting: Surface | Wires: 4 | Mains Rating: 250 A
Enclosure: Type 1 | MCB Rating: 250 A

CKT	Circuit Description	Trip	Poles	A (KVA)	B (KVA)	C (KVA)	Poles	Trip	Circuit Description	CKT
1	DPLB2 VIA T6XFMR	200...	3	17... 0...			3	20 A	CWP-1	2
3	--	--	--		16... 0...		--	--	--	4
5	--	--	--			10... 0 kVA	--	--	--	6
7	CWP-2	20 A	3	0 kVA 0...			3	50 A	SG-1	8
9	--	--	--		0... 0...		--	--	--	10
11	--	--	--			0... 0 kVA	--	--	--	12
13	Spare	20 A	3	0 kVA 0...			3	50 A	Spare	14
15	--	--	--		0... 0...		--	--	--	16
17	--	--	--			0... 0 kVA	--	--	--	18
19										20
21										22
23										24
25										26
27										28
29										30
31										32
33										34
35										36
37										38
39										40
41										42

Branch Panel: DNPB2

Location: ELEC B011 | Volts: 120/208 Wye | A.I.C. Rating: 42KAIC
Supply From: 112.5kVA via DNPB4 | Phases: 3 | Mains Type: MCB
Mounting: Surface | Wires: 4 | Mains Rating: 400 A
Enclosure: Type 1 | MCB Rating: 400 A

CKT	Circuit Description	Trip	Poles	A (KVA)	B (KVA)	C (KVA)	Poles	Trip	Circuit Description	CKT
1	LB2	100...	3	10... 3...			3	100...	L2-8	2
3	--	--	--		9... 3...		--	--	--	4
5	--	--	--			6... 1 kVA	--	--	--	6
7	L2-9	100...	3	3 kVA 0...			3	60 A	Spare	8
9	--	--	--		3... 0...		--	--	--	10
11	--	--	--			3... 0 kVA	--	--	--	12
13	Spare	100...	3	0 kVA						14
15	--	--	--		0...					16
17	--	--	--			0...				18
19										20
21										22
23										24
25										26
27										28
29										30
31										32
33										34
35										36
37										38
39										40
41										42

Branch Panel: NPB

Location: ELEC B011 | Volts: 120/208 Wye | A.I.C. Rating: 22KAIC
Supply From: DNPB2 | Phases: 3 | Mains Type: MLO
Mounting: Surface | Wires: 4 | Mains Rating: 100 A
Enclosure: Type 1

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
1	MECHANICAL B012 RECEPS	20 A	1	0 kVA 0...			1	20 A	MECHANICAL B012 RECEPS	2
3	CORRIDOR BC1 RECEPS	20 A	1		1... 1...		1	20 A	AHU-1 INTEGRAL LIGHTING &...	4
5	ELEC B011 RECEP	20 A	1			0... 1 kVA	1	20 A	STORAGE B009 RECEPS	6
7	GAS TANK B007 RECEP	20 A	1	0 kVA 1...			1	20 A	CORRIDOR BC1 ATC	8
9	CORRIDOR 1C6 ATC	20 A	1		1... 1...		1	20 A	SHARED OFFICE 149 RECEPS	10
11	SHARED OFFICE 149 RECEPS	20 A	1			1... 1 kVA	1	20 A	SHARED OFFICE 149 RECEPS	12
13	SHARED OFFICE 148 RECEPS	20 A	1	1 kVA 1...			1	20 A	SHARED OFFICE 147 RECEPS	14
15	SHARED OFFICE 147 RECEPS	20 A	1		1... 1...		1	20 A	SHARED OFFICE 147 RECEPS	16
17	PRINT/SUPPLY 146 COPIER	20 A	1			0... 1 kVA	1	20 A	PRINT/SUPPLY 146 RECEPS	18
19	HSKP 145/TOILET 144 RECEPS	20 A	1	0 kVA 1...			1	20 A	PRIVATE OFFICE 150 RECEPS	20
21	PRIVATE OFFICE 151 RECEPS	20 A	1		1... 1...		1	20 A	PRIVATE OFFICE 152 RECEPS	22
23	PRIVATE OFFICE 153 RECEPS	20 A	1			1... 1 kVA	1	20 A	CONFERENCE ROOM 154 UC...	24
25	CONFERENCE ROOM 154...	20 A	1	1 kVA 1...			1	20 A	CONFERENCE ROOM 154...	26
27	CONFERENCE ROOM 154...	20 A	1		0... 1...		1	20 A	CORRIDOR 1C6 RECEPS	28
29	CORRIDOR 1C6 ATC	20 A	1			1... 1 kVA	1	20 A	CORRIDOR 1C6 ATC	30
31	Basement Lighting	20 A	1	1 kVA 1...			1	20 A	FIRST FLOOR LIGHTING	32
33	FIRST FLOOR LIGHTING	20 A	1		0... 1...		1	15 A	CUH Stair 0S4	34
35	CUH CORRIDOR 1C5	15 A	1			0... 0 kVA	1	15 A	EF-2	36
37	EF-3	15 A	1	0 kVA 1...			1	20 A	WATER TREATMENT SYSTEM	38
39	Server B008 Recep	20 A	2		0... 0...		2	20 A	Server B008 Recep	40
41	--	--	--			0... 0 kVA	--	--	--	42
43	Server B008 Recep	20 A	1	0 kVA 0...			2	20 A	Server B008 Recep	44
45	Server B008 Recep	20 A	1		0... 0...		--	--	--	46
47	Server B008 Recep	20 A	2			0... 0 kVA	2	20 A	Server B008 Recep	48
49	--	--	--	0 kVA 0...			--	--	--	50
51	Server B008 Recep	20 A	2		0... 0...		1	20 A	Spare	52
53	--	--	--			0... 0 kVA	1	20 A	Spare	54
55	Server B008 Recep...	20 A	1	0 kVA 0...			1	20 A	Spare	56
57	Server B008 Recep	20 A	1		0... 0...		1	20 A	Spare	58
59	Server B008 Recep	20 A	1			0... 0 kVA	1	20 A	Spare	60
61	Server B008 Receps	20 A	1	0 kVA 0...			1	20 A	Spare	62
63	MECH ROOM ATC	20 A	1		1... 0...		1	20 A	Spare	64
65	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	66
67	Spare	20 A	1	0 kVA 0...			1	20 A	Spare	68
69	Spare	20 A	1		0... 0...		1	20 A	Spare	70
71	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	72
73	Spare	20 A	1	0 kVA 0...			1	20 A	Spare	74
75	Spare	20 A	1		0... 0...		1	20 A	Spare	76
77	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	78
79	Spare	20 A	1	0 kVA 0...			1	20 A	Spare	80
81	Spare	20 A	1		0... 0...		1	20 A	Spare	82
83	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	84

Branch Panel: NP2A

Location: ELEC 249 | Volts: 120/208 Wye | A.I.C. Rating: 22KAIC
Supply From: DNPB2 | Phases: 3 | Mains Type: MCB
Mounting: Surface | Wires: 4 | Mains Rating: 100 A
Enclosure: Type 1 | MCB Rating: 100 A

CKT	Circuit Description	Trip	Poles	A (KVA)	B (KVA)	C (KVA)	Poles	Trip	Circuit Description	CKT
1	SHARED OFFICE 245 RECEPS	20 A	1	1 kVA 1...			1	20 A	SHARED OFFICE 246 RECEPS	2
3	SHARED OFFICE 247 RECEPS	20 A	1		1... 1...		1	20 A	STORAGE 248 RECEPS	4
5	PRINT/SUPPLY 242 COPIER	20 A	1			0... 0 kVA	1	20 A	242 RECEPS	6
7	CORRIDOR 2C6 ATC	20 A	1	1 kVA 1...			1	20 A	CORRIDOR 2C6 ATC	8
9	CORRIDOR 2C6 ATC	20 A	1		1... 1...		1	20 A	CORRIDOR 2C6 RECEPS	10
11	SECOND FLOOR LIGHTING	20 A	1			0... 0 kVA	1	15 A	EF-1	12
13	CHILLED WATER PIPING HEAT...	20 A	1	1 kVA 0...			1	20 A	Spare	14
15	Spare	20 A	1		0... 0...		1	20 A	Spare	16
17	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	18
19	Spare	20 A	1	0 kVA 0...			1	20 A	Spare	20
21	Spare	20 A	1		0... 0...		1	20 A	Spare	22
23	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	24
25	Spare	20 A	1	0 kVA 0...			1	20 A	Spare	26
27	Spare	20 A	1		0... 0...		1	20 A	Spare	28
29	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	30
31	Spare	20 A	1	0 kVA 0...			1	20 A	Spare	32
33	Spare	20 A	1		0... 0...		1	20 A	Spare	34
35	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	36
37	Spare	20 A	1	0 kVA 0...			1	20 A	Spare	38
39	Spare	20 A	1		0... 0...		1	20 A	Spare	40
41	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	42

Branch Panel: NP2B

Location: ELEC 249 | Volts: 120/208 Wye | A.I.C. Rating: 22KAIC
Supply From: DNPB2 | Phases: 3 | Mains Type: MCB
Mounting: Surface | Wires: 4 | Mains Rating: 100 A
Enclosure: Type 1 | MCB Rating: 100 A

CKT	Circuit Description	Trip	Poles	A (KVA)	B (KVA)	C (KVA)	Poles	Trip	Circuit Description	CKT
1	LAB 1 244 RECEPS	20 A	1	1 kVA 1...			1	20 A	LAB 1 244 RECEPS	2
3	LAB 1 244 RECEPS	20 A	1		0... 0...		1	20 A	LAB 1 244 RECEPS	4
5	LAB 2 243 RECEPS	20 A	1			1... 1 kVA	1	20 A	LAB 2 243 RECEPS	6
7	LAB 2 243 RECEPS	20 A	1	0 kVA 0...			1	20 A	LAB 2 243 RECEPS	8
9	ROOFTOP SERVICE OUTLETS	20 A	1		1... 1...		1	20 A	SECOND FLOOR LIGHTING	10
11	LAB 1 POWER POLE	20 A	1			1... 1 kVA	1	20 A	LAB 1 POWER POLE	12
13	LAB 1 POWER POLE	20 A	1	1 kVA 1...			1	20 A	LAB 1 POWER POLE	14
15	LAB 2 POWER POLE	20 A	1		1... 1...		1	20 A	LAB 2 POWER POLE	16
17	LAB 2 POWER POLE	20 A	1			1... 1 kVA	1	20 A	LAB 2 POWER POLE	18
19	Storage 241 Receps	20 A	1	1 kVA 0...			1	20 A	Spare	20
21	Toilet 240 Recep	20 A	1		0... 0...		1	20 A	Spare	22
23	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	24
25	Spare	20 A	1	0 kVA 0...			1	20 A	Spare	26
27	Spare	20 A	1		0... 0...		1	20 A	Spare	28
29	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	30
31	Spare	20 A	1	0 kVA 0...			1	20 A	Spare	32
33	Spare	20 A	1		0... 0...		1	20 A	Spare	34
35	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	36
37	Spare	20 A	1	0 kVA 0...			1	20 A	Spare	38
39	Spare	20 A	1		0... 0...		1	20 A	Spare	40
41	Spare	20 A	1			0... 0 kVA	1	20 A	Spare	42

TYPICAL PANELBOARD NOTES

1. PROVIDE SUB-FEED LUGS FOR MULTI-SECTION PANELS.
2. FURNISH ALL PANELBOARDS (EXCLUDING DISTRIBUTION TYPE PANELBOARDS) FULLY POPULATED WITH BRANCH CIRCUIT BREAKERS, THAT IS, ALL SPACES SHALL HAVE A 20AMP, 1 POLE CIRCUIT BREAKER INSTALLED.
3. PANEL FACE PLATES SHALL BE ATTACHED TO BACK BOX WITH FULL-LENGTH PIANO HINGE AND PROVIDED WITH LOCKING DOOR IN DOOR.
4. PANELBOARDS CONTAINING MAIN SERVICE DISCONNECT MUST BE LISTED FOR THE USE.
5. SERIES RATED INTERRUPTING CAPACITY IS NOT ALLOWED.
6. ALL CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE AND HACR RATED.

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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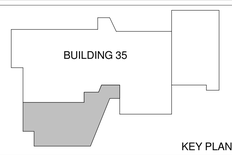


KEY PLAN

N

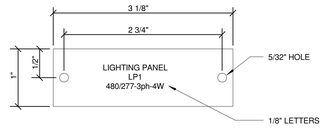
Drawing Title: ELECTRICAL RISERS AND SCHEDULES
Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title: BUILDING 35 ADDITION FOR RESEARCH
Building #: 35
Scale: 12" = 1'-0"
Location: PROVIDENCE

Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: ES4.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231



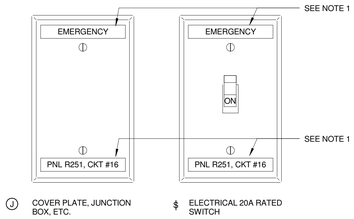
NOTES:

1. NAMEPLATE TO BE CONSTRUCTED OF 1/16" THICK WHITE SURFACE WITH LETTER ENGRAVED INTO BLACK LAMINATIONS.

2. ALL NAMEPLATES SHALL BE SECURED BY MACHINE SCREWS.

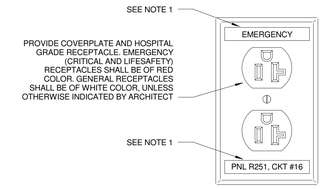
3. NO NAMEPLATES SHALL BE PASTED ON.

TYPICAL NAMEPLATE DETAIL — NO SCALE — 26.1007



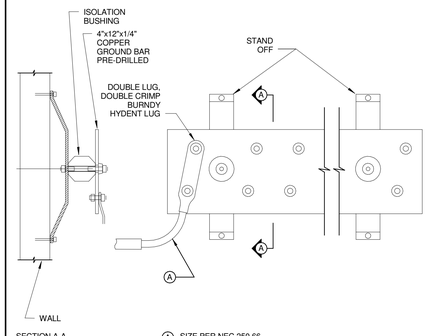
1. AT A MINIMUM, ELECTRICAL CONTRACTOR SHALL PROVIDE CLEAR PLASTIC TYPED LABELS WITH BLACK LETTERING MADE WITH PTOUCH MACHINE TO INDICATE PANEL NAME AND CIRCUIT NUMBER. PROVIDE "EMERGENCY" TYPED LABEL FOR CIRCUITS CONNECTED TO EMERGENCY PANELS. COORDINATE EXACT NAMING WITH HOSPITAL PERSONNEL. IF FACILITY STANDARD IS ENGRAVED COVERPLATES, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ENGRAVED COVERPLATES TO MATCH FACILITY REQUIREMENTS.

TYPICAL COVERPLATE AND SWITCH DETAIL — NO SCALE — 26.1004

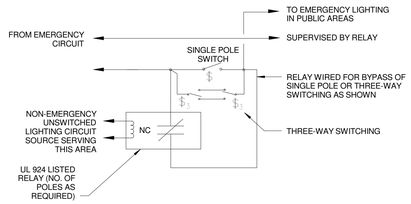


1. AT A MINIMUM, ELECTRICAL CONTRACTOR SHALL PROVIDE CLEAR PLASTIC TYPED LABELS WITH BLACK LETTERING MADE WITH PTOUCH MACHINE TO INDICATE PANEL NAME AND CIRCUIT NUMBER. PROVIDE "EMERGENCY" TYPED LABEL FOR CIRCUITS CONNECTED TO EMERGENCY PANELS. COORDINATE EXACT NAMING WITH HOSPITAL PERSONNEL. IF FACILITY STANDARD IS ENGRAVED COVERPLATES, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ENGRAVED COVERPLATES TO MATCH FACILITY REQUIREMENTS.

TYPICAL RECEPTACLE LABELING DETAIL — NO SCALE — 26.1001

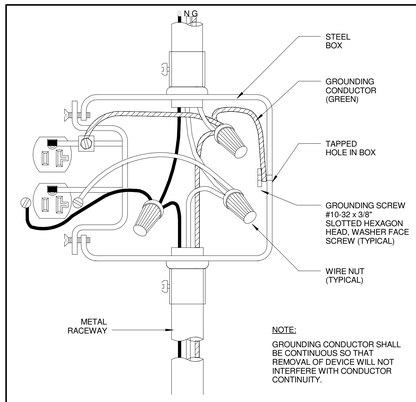


TYPICAL GROUND BAR DETAIL — NO SCALE — 26.0501



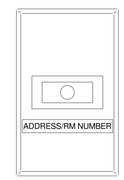
NOTE:
ALL SWITCH CONTROLLED EMERGENCY LIGHTING IN PUBLIC AREAS, EGRESS ROUTES AND ALL "NORMALLY-OFF" EMERGENCY LIGHTING SHALL BE CONTROLLED BY AN EMERGENCY SUPERVISORY RELAY TO AUTOMATICALLY ENERGIZE EMERGENCY LIGHTS WHEN NORMAL POWER FAILS.

EMERGENCY SUPERVISORY BYPASS RELAY — NO SCALE — 26.2010



NOTE:
GROUNDING CONDUCTOR SHALL BE CONTINUOUS SO THAT REMOVAL OF DEVICE WILL NOT INTERFERE WITH CONDUCTOR CONTINUITY.

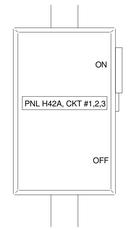
TYPICAL DEVICE WIRING DETAIL — NO SCALE — 26.1016



SINGLE LED LIGHT REMOTE ALARM INDICATOR
RTS REMOTE TEST STATION
S SMOKE DETECTOR
FS SPEAKER/STROBE

1. AT A MINIMUM, ELECTRICAL CONTRACTOR SHALL PROVIDE CLEAR PLASTIC TYPED LABELS WITH BLACK LETTERING MADE WITH PTOUCH MACHINE TO INDICATE ADDRESS OF SMOKE DETECTOR WITHIN ENCLOSED ROOM OR ROOM NUMBER OR IF SYSTEMS IS ZONED. SAME TYPE OF LABELING SYSTEM SHALL BE APPLIED TO DEVICES LISTED ABOVE.

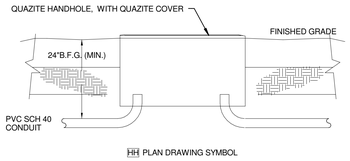
TYPICAL FIRE ALARM DEVICE LABELING DETAIL — NO SCALE — 26.1013



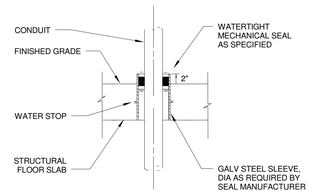
FUSED DISCONNECT SWITCH
UNFUSED DISCONNECT SWITCH

1. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ENGRAVED COVERPLATES TO MATCH FACILITY REQUIREMENTS.

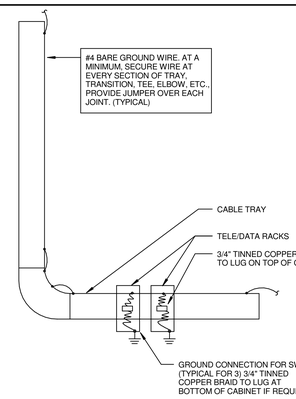
DISCONNECT LABELING DETAIL — NO SCALE — 26.1010



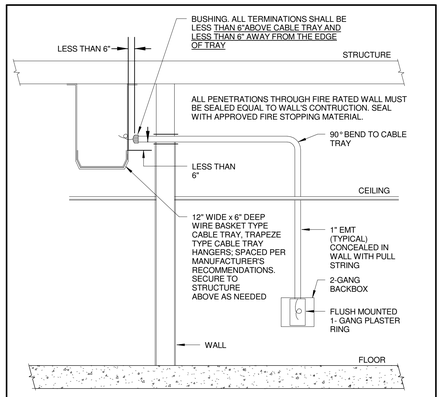
HANDHOLE DETAIL — 26.7008 — NONE



CONDUIT PENETRATION — NO SCALE — 26.6504



TYPICAL CABLE TRAY GROUNDING — NO SCALE — 26.7004



TELECOMMUNICATIONS RACEWAY DETAIL — NO SCALE — 26.6510

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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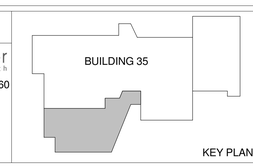


N

Drawing Title
ELECTRICAL DETAILS

Designed By: JN
Checked By: JDB
Approved By: CMB

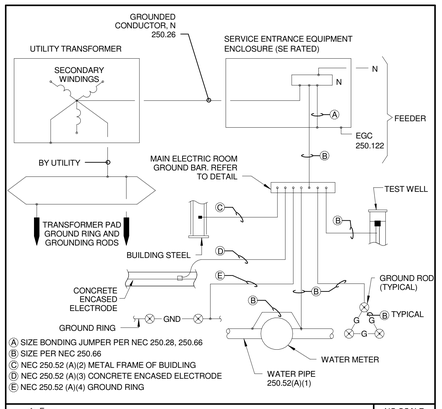
Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale 12" = 1'-0"
Location PROVIDENCE

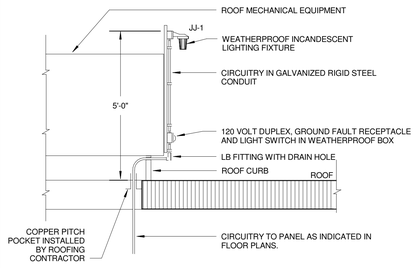
Date 6/30/2015
VA Project No. 650-338
Drawing No. ES5.0

Office of Facilities
Department of Veterans Affairs

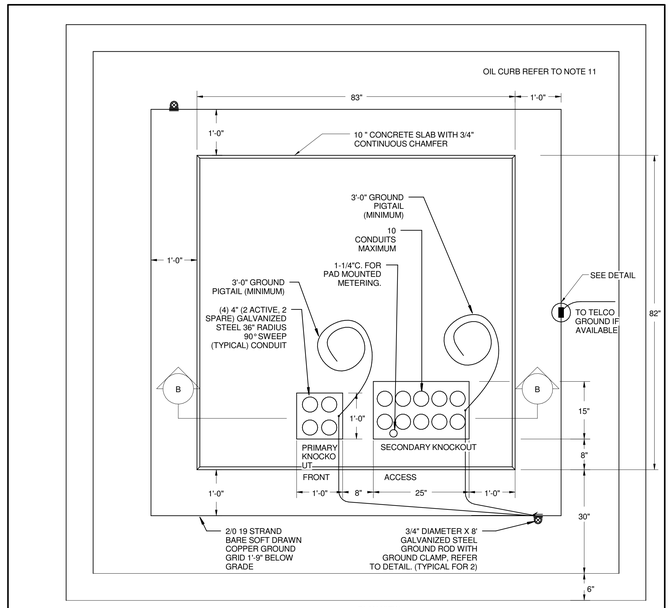
VA FORM 08-6231



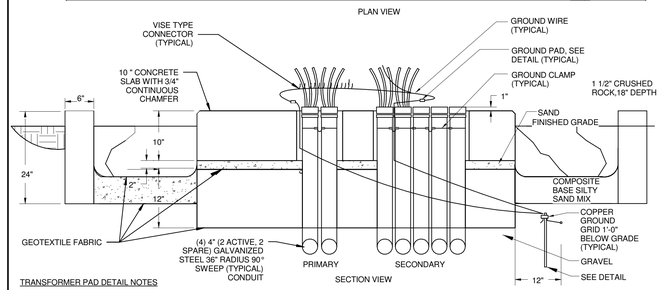
NEC UTILITY SERVICE ENTRANCE GROUNDING DETAIL — NO SCALE — 26.4507



TYPICAL ROOFTOP EQUIPMENT AND LIGHTING DETAIL — NO SCALE — 26.4501



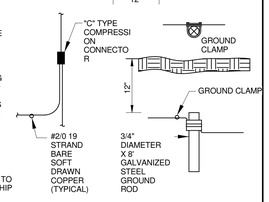
PLAN VIEW



SECTION VIEW

TRANSFORMER PAD DETAIL NOTES

1. INSTALL CONDUITS AS SHOWN PLANS AND DUCT BANK DETAILS, BEFORE SLAB IS POURED. USE 36" RADIUS BEND, GALVANIZED STEEL RIGID STEEL CONDUIT SWEEPS AND RISER, WITH COUPLINGS, NIPPLES AND BUSHINGS AS REQUIRED. BENDS FOR PRIMARY CABLES SHALL BE GALVANIZED STEEL. TERMINATIONS AND BUSHINGS SHALL BE INSTALLED AFTER THE TRANSFORMER IS PLACED, AND BEFORE THE CABLES ARE PULLED.
2. INSTALL #2/0 19 STRAND BARE SOFT DRAWN COPPER WIRE LOOP 12" BELOW GRADE. BOND TO ALL EXPOSED METALLIC CONDUIT AND LEAVE 3'-0" OF WIRE ABOVE PAD FOR GROUNDING TRANSFORMER AT TWO OPPOSITE POINTS IN THE CABLE CONDUIT OPENINGS. INSTALL TWO 8" COPPERWELD (3/4") GROUND RODS AND APPROVED CONNECTORS BELOW GROUND. LEAVE GROUND GRID EXPOSED UNTIL INSPECTED BY THE UTILITY COMPANY. CONNECTIONS TO GROUND GRID TO BE MADE AS FOUND IN DETAILS, EXCEPT THAT EXOTHERMIC WELDING ("CADDWELD") SHALL BE AN ACCEPTABLE ALTERNATE TO COMPRESSION BOLTED CONNECTIONS.
3. GRAVEL AND SAND SHALL BE PLACED AS SHOWN IN DETAIL. THE GRAVEL, BEING THOROUGHLY COMPACTED, AND THE SAND THOROUGHLY WETTED, JUST BEFORE PLACING THE CONCRETE.
4. CONCRETE TO HAVE A MINIMUM STRENGTH OF 5000 PSI AFTER 28 DAYS. AIR ENTRAINMENT TO BE 6% +/- 1%. ALL EXPOSED EDGES TO HAVE A 3/4" CHAMFER. MATERIALS AND WORKMANSHIP SHALL CONFORM TO ACI-318.
5. REINFORCING RODS TO BE #5 AT 10" ON CENTER, TOP AND BOTTOM EACH WAY. GRADE 60 AND SHALL CONFORM TO ASTM. STANDARD A-615 OF LATEST DATA. REINFORCING RODS TO BE LOCATED A MINIMUM OF 2" CLEARANCE FROM FACE OF CONCRETE.
6. ALL OPENINGS SHALL HAVE ADDITIONAL REBAR REINFORCEMENT OF 1 #5 EACH CORNER, MID- DEPTH.
7. LIFTING ANCHORS SHALL BE INSTALLED WITH APPROPRIATE DAYTON LIFTING ANCHORS OR EQUIVALENT.
8. UPON COMPLETION OF THE SLAB, AND THE INSTALLATION OF CONDUIT, FILL THE OPEN AREA AROUND THE CONDUITS WITH EXPANDING FOAM, CONCRETE AND GROUT AROUND THE CONDUIT TO SEAL THIS AREA.
9. TRANSFORMER TO BE FURNISHED AND INSTALLED BY THE UTILITY COMPANY.
10. INSTALLATION OF CONDUITS AND GROUND GRID BY THE ELECTRICAL CONTRACTOR. CONCRETE, GRAVEL AND SAND INSTALLATION TO BE BY THE GENERAL CONTRACTOR.
11. VERIFY OIL CURB AND BOLLARD REQUIREMENTS WITH THE UTILITY COMPANY PRIOR TO CONSTRUCTION OF TRANSFORMER PAD
12. BOLLARDS SHALL BE PROVIDED PER UTILITY COMPANY REQUIREMENTS.



CONNECTION & GROUNDING DETAILS

THREE PHASE TRANSFORMER (15KV PRIMARY, 750-2500KVA) PAD DETAIL (BASED ON NATIONAL GRID) WITH OIL CONTAINMENT CURB — 26.0013 — NONE

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

FINAL DESIGN DOCUMENTS
FULLY SPRINKLERED

Number	Date	Revision
1	11/12/2014	30% SUBMISSION

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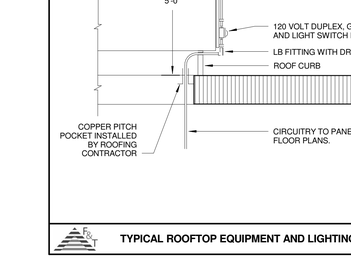


Drawing Title: ELECTRICAL DETAILS
Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title: BUILDING 35 ADDITION FOR RESEARCH
Building #: 35
Scale: 12" = 1'-0"
Location: PROVIDENCE

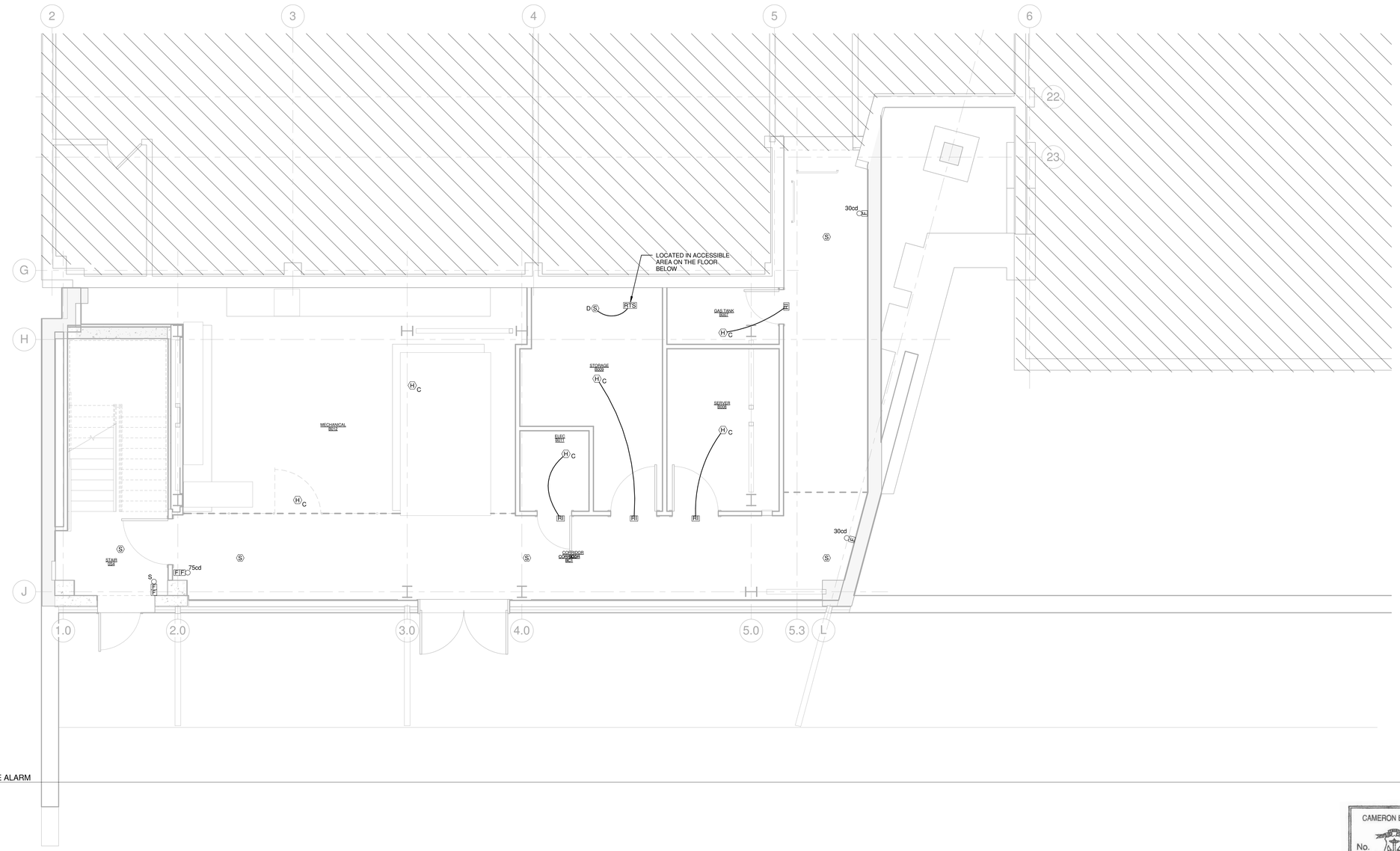
Date: 6/30/2015
VA Project No.: 650-338
Drawing No.: ES5.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

FIRE ALARM GENERAL NOTES

1. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AND LOCATIONS AS INDICATED ON THE ARCHITECTURAL ELEVATIONS, PART PLANS AND DETAILS. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR INFORMATION.
2. REFER TO DRAWING ES0.0 FOR LEGEND & GENERAL NOTES.
3. COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT WITH HVAC, PLUMBING AND FIRE PROTECTION DRAWINGS.
4. CONNECT NEW FIRE ALARM SYSTEM DEVICES TO THE EXISTING SYSTEM.(FIELD VERIFY EXACT LOCATION OF FIRE ALARM CONTROL PANEL). REPROGRAM SYSTEM AND ADD POWER SUPPLIES, SIGNAL MODULES, ETC. AS REQUIRED TO ACCOMMODATE ADDITIONS. INSTALLATION SHALL CONFORM TO BUILDING STANDARDS. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY EQUIPMENT AND FINAL CONNECTIONS, PROGRAMMING AND PERFORM ALL TESTING.
5. REFER TO THE FIRE ALARM RISER DIAGRAM ON DRAWING EFA2.0 FOR ADDITIONAL INFORMATION.



1 EFA1.0 0-BASEMENT-ELECTRICAL-NEW FIRE ALARM
1/4" = 1'-0"

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

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BUILDING 35
KEY PLAN
N

Drawing Title
ELECTRICAL BASEMENT FIRE ALARM PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. EFA1.0

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

DATE & TIME PRINTED: 2/26/2016 4:40:29 PM FILE: I:\650\VA Providence\Building 35 Addition_Local.rvt

FIRE ALARM GENERAL NOTES

1. ALL DEVICES SHALL BE INSTALLED AT MOUNTING HEIGHTS AND LOCATIONS AS INDICATED ON THE ARCHITECTURAL ELEVATIONS, PART PLANS AND DETAILS. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL DRAWINGS FOR INFORMATION.
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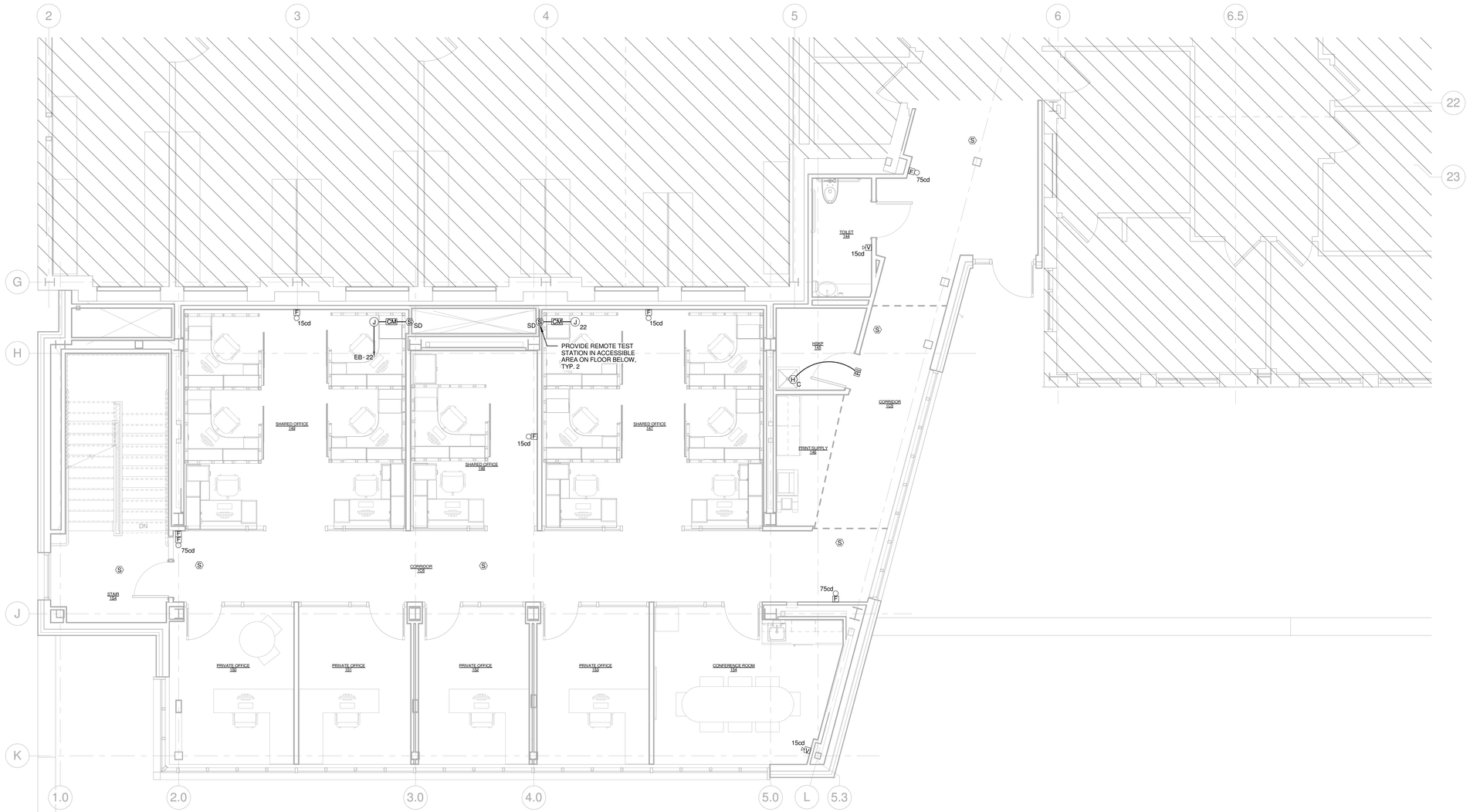
5. REFER TO THE FIRE ALARM RISER DIAGRAM ON DRAWING EFA2.0 FOR ADDITIONAL INFORMATION.



1 EFA1.1 1-FIRST FLOOR-ELECTRICAL-NEW FIRE ALARM
1/4" = 1'-0"

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

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FULLY SPRINKLERED

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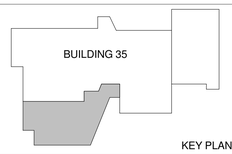

KEY PLAN

N

Drawing Title
ELECTRICAL FIRST FLOOR FIRE ALARM PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. EFA1.1

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

FIRE ALARM GENERAL NOTES

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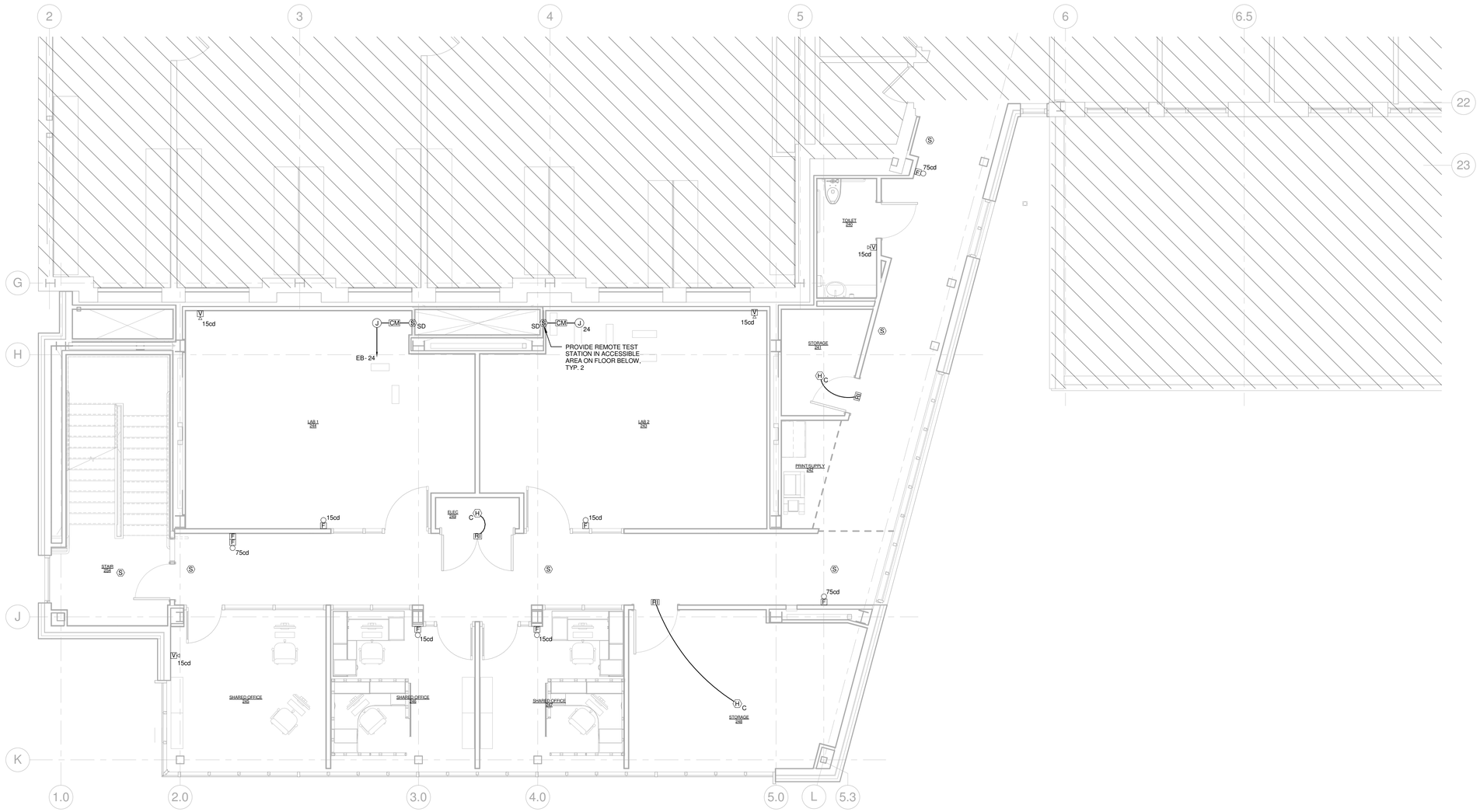

1 EFA1.2 2-SECOND FLOOR-ELECTRICAL-NEW FIRE ALARM
1/4" = 1'-0"

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

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BUILDING 35
KEY PLAN
N

Drawing Title
ELECTRICAL SECOND FLOOR FIRE ALARM PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. EFA1.2

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

FIRE ALARM GENERAL NOTES

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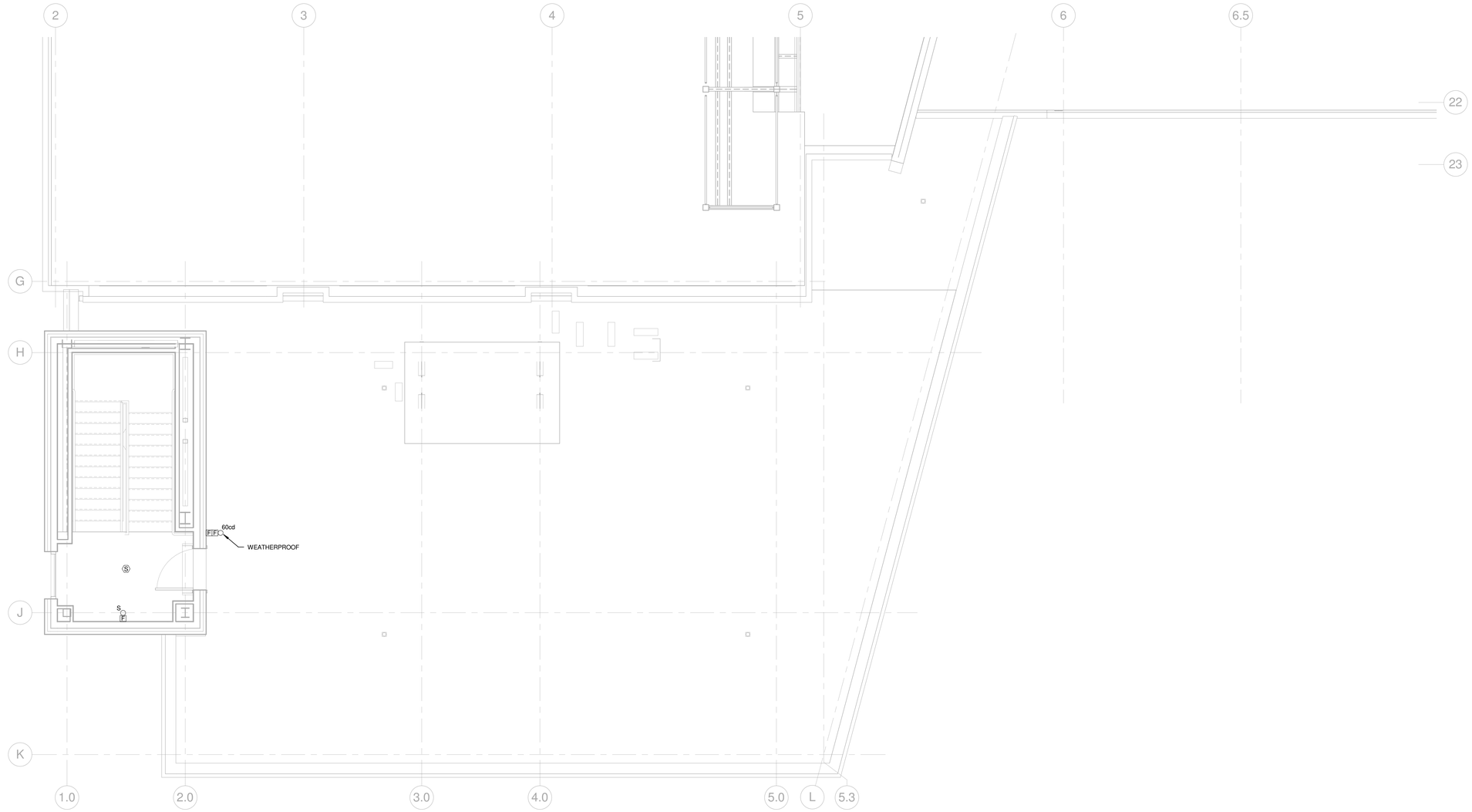
5. REFER TO THE FIRE ALARM RISER DIAGRAM ON DRAWING EFA2.0 FOR ADDITIONAL INFORMATION.



1 | EFA1.3 — 3-ROOF-ELECTRICAL-NEW FIRE ALARM
1/4" = 1'-0"

CAMERON BELLAO
No. 11250
REGISTERED PROFESSIONAL ENGINEER ELECTRICAL

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KEY PLAN

N

Drawing Title
ELECTRICAL ROOF FIRE ALARM PLAN

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building # 35
Scale As indicated
Location PROVIDENCE

Date 6/30/2015
VA Project No. 650-338
Drawing No. EFA1.3

Office of Facilities
Department of Veterans Affairs

VA FORM 08-6231

FIRE ALARM SYSTEMNOTES:

FA1. REFER TO ELECTRICAL DRAWINGS FOR EXACT QUANTITIES OF FIRE ALARM DEVICES.

FA2. ELECTRICAL CONTRACTOR SHALL PROGRAM, TEST AND CERTIFY FIRE ALARM SYSTEM UPON COMPLETION WORK.

FA3. FIRE ALARM SYSTEM AND INSTALLATION SHALL COMPLY WITH APPLICABLE REGULATIONS OF NFPA #72, LIFE-SAFETY CODE #101, NATIONAL ELECTRIC CODE AND LOCAL FIRE DEPARTMENT.

FA4. FIRE ALARM WIRING TERMINATIONS SHALL BE MADE ON TERMINAL BLOCKS, NO SPLICES WILL BE ALLOWED.

FA5. ELECTRICAL CONTRACTOR SHALL FIELD CONFORM THAT ENOUGH BATTERY CAPACITY EXISTS FOR THE FIRE ALARM SYSTEM TO OPERATE FOR 24 HOURS IN NON-ALARM CONDITION AND CAPABLE OF OPERATING IN ALARM FOR 5 MINUTES AT THE END OF THE 24 HOUR PERIOD. PROVIDE BATTERY AMP-HOUR CALCULATIONS, RISERS AND WIRING SCHEMATICS WITH SUBMISSION.

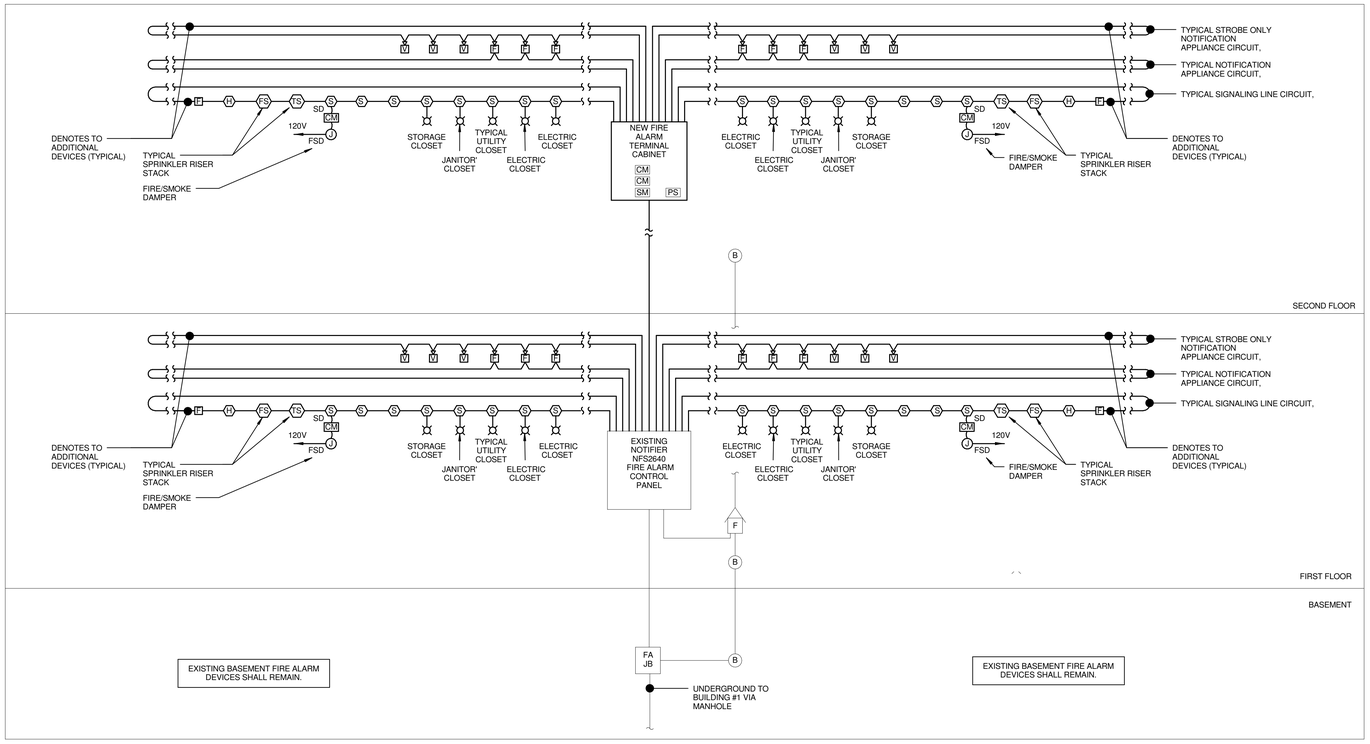
FA6. SYSTEM MANUFACTURER SHALL PROVIDE INSTALLATION WIRING DIAGRAM OF THE FIRE ALARM SYSTEM, AND VERIFICATION CERTIFICATE OF SYSTEM OPERATING PRIOR TO FINAL ACCEPTANCE.

FA7. ALL FIELD WIRING AND EQUIPMENT SHALL BE AS REQUIRED PER MANUFACTURERS WIRING DIAGRAMS.

FA8. ALL FIRE ALARM WIRING SHALL BE CLASS A (OUTGOING AND RETURNING CIRCUITS SHALL NOT BE PHYSICALLY INSTALLED IN THE SAME RACEWAY). FAULT ISOLATOR MODULES SHALL BE INSTALLED IN THE FACP. ALSO, FAULT ISOLATOR MODULES WILL BE PROVIDED FOR EVERY 18 ADDRESSABLE FIRE ALARM DEVICES. NOTIFICATION DEVICE CIRCUITS SHALL BE INSTALLED IN SEPARATE RACEWAYS FROM SIGNALING LINE CIRCUITS.

FA9. CEILING MOUNTED SMOKE DETECTORS SHALL NOT BE LOCATED CLOSER THAN 3 FT. FROM AIR SUPPLY FROM AIR SUPPLY DIFFUSERS.

FA10. PROVIDE A REMOTE TEST STATION FOR ALL DUCT MOUNTED SMOKE DETECTORS.



1 FIRE ALARM RISER DIAGRAM

SCALE: N.T.S.

CAMERON BELLAO
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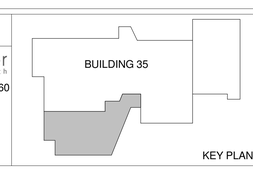

KEY PLAN

N

Drawing Title
FIRE ALARM RISER DIAGRAM

Designed By: JN
Checked By: JDB
Approved By: CMB

Project Title
BUILDING 35 ADDITION FOR RESEARCH

Building #
35

Scale
12" = 1'-0"

Location
PROVIDENCE

Date
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VA Project No.
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Drawing No.
EFA2.0

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