Deferred Submittals

The following item is required and will be provided as a deferred submittal:

1. Fire Sprinkler System.
Automatic Fire Sprinkler System submittal documents for deferred submittal shall be submitted to the local fire district, who shall review them and forward them to the building official, with a notation indicating that the deferred submittal documents have been reviewed and that they have been found to be in general conformance with the design of the building. The deferred submittal items shall "NOT" be installed until their design and submittal documents have been approved by the fire marshal having jurisdiction.

NOTE: An Automatic Fire Sprinkler System is existing in building 17, and will be modified for this project.

NOTE: An Automatic Fire Alarm System panel is existing from a previous remodel phase and is located within Building 17. This panel will be utilized during the proposed renovation.

Graphic Standards

NORTH ARROW INDICATOR

BUILDING SECTION DESIGNATOR

DETAIL DESIGNATOR

GRID LINE DESIGNATOR

REVISION DESIGNATOR

ELEVATION DESIGNATOR

DESCRIPTIVE NOTE DESIGNATOR

ROOM NUMBER / FINISH DESIGNATOR

DOOR NUMBER DESIGNATOR

DOOR TYPE DESIGNATOR

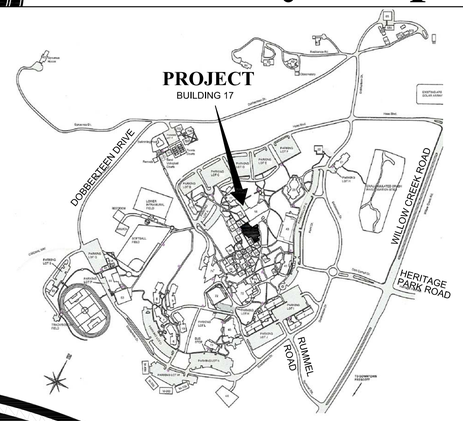
WINDOW TYPE DESIGNATOR

WALL TYPE DESIGNATOR

Project Description

Embry-Riddle Aeronautical University intends to renovate existing building 17, which is the College of Global Security and Intelligence. The existing tutor lab will be converted to a new classroom. The existing night vision lab will be modified. Multiple new offices and several new copy rooms will be added. New built in casework, and cabinets will be added. A new staff break room will be added. The existing restrooms will be removed, and the current student lounge will be expanded. Additional drinking fountains will be added. An existing open classroom will be converted to new accessible restrooms. The existing accessible ramp will be widened. One of the exiting wings will be internally demolished and new offices will be constructed. A new janitor closet, with janitor sink will be constructed. Several new HVAC units will be installed to replace outdated existing equipment, and new ductwork will be added as appropriate. New electrical and plumbing will be installed as needed. New data cable, will be run to an expanded IT closet, with an exterior entrance. Fire alarm, and automatic fire sprinkler systems will be modified and expanded as appropriate, using existing systems.

Site / Vicinity Map



IMPROVEMENTS FOR EMBRY-RIDDLE

COLLEGE OF GLOBAL SECURITY & INTELLIGENCE

BUILDING 17

Project Information

OWNER:	Embry-Riddle Aeronautical University 3700 Willow Creek Road Prescott, AZ 86301	PH: 928-777-6600 FAX: 928-777-3950 CONTACT: Carl Beumer beumerc@erau.edu
PREPARED BY:	W. Alan Kenson & Associates, P.C. P.O. Box 11593 Prescott, AZ 86304	PH: 928-443-5812 FAX: 928-443-5815 CONTACT: Alan Kenson waka@cableone.net
CONTRACTOR:	TO BE DETERMINED	
SCOPE OF WORK:	Interior Remodel	
PROJECT ADDRESS:	3700 Willow Creek Road (Building 17) Prescott, AZ 86301 (APN: 106-03-004)	
ZONE:	BG - PAD	
OCCUPANCY:	B (Educational Facility for students above the 12th grade) , Non-Separated	
CONSTRUCTION TYPE:	II-B (1991 Addition), IV-HT (Original Building), Fully Sprinklered	
ALLOWABLE AREA:	ALLOWABLE AREA (IV-HT) = 36,000 S.F. + 300% = 144,000 SF ALLOWABLE AREA (II-B) = 23,000 S.F. + 300% = 92,000 SF TOTAL ALLOWABLE AREA = 236,000 SQUARE FEET	

ACTUAL AREA

ORIGINAL BUILDING (IV-HT):	10,238 SQUARE FEET
1991 ADDITION (II-B):	6,340 SQUARE FEET
TOTAL AREA:	16,578 SQUARE FEET
AREA OF BUILDING BEING REMODELED:	±6,600 SQUARE FEET

EMERGENCY LIGHTING:	Yes
FIRE ALARMS:	Yes
FIRE SPRINKLERS:	Yes
FIRE EXTINGUISHERS:	Yes - 1 per 3,000 S.F.
BUILDING CODE:	2006 International Building Code
PARKING:	Parking is existing and adequate
OCCUPANT LOAD:	(Refer to Sheet A0.3)
EXITS REQUIRED:	2
EXITS PROVIDED:	5 (Refer to Sheet A0.3)

Sheet Index

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A0.2	Temporary Construction Walls Plan
A0.3	Occupancy Floor Plan / Egress / Plumbing Fixture Calculations / Overall Floor Plan
A1.0	Demolition Floor Plan A
A1.1	Demolition Floor Plan B
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A1.3	Reference Floor Plan B
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A1.7	Wall Types Plan A
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A2.0	Demolition Reflected Ceiling Plan A
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A2.4	Ceiling Framing Plans
A3.0	Building Sections
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A4.1	Ramp Sections and Details
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A6.0	Door Schedule / Details
A6.1	Window Types / Details
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A7.0	Roof Plan
A8.0	Specifications

MECHANICAL

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M0.1	Mechanical Roof Plan - South Side
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M1.1	Mechanical Floor Plan - South Side
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E1.1	Lighting Plan
E1.2	Lighting Plan
E2.0	Power Demo Plan
E2.1	Power Plan
E2.2	Power Plan
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E3.1	Panel Schedules
E3.2	Panel Schedules
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FA301	Fire Alarm Layout
FA401	Fire Alarm Riser Diagram, FACP and Wiring Details
FA601	Fire Alarm Calculations

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T1.1	IT Demolition Floor Plan A
T1.2	IT Demolition Floor PLan B
T2.0	IT Reference Floor Plan A
T2.1	IT Reference Floor Plan B

Architect:

W. Alan Kenson & Associates, P.C.

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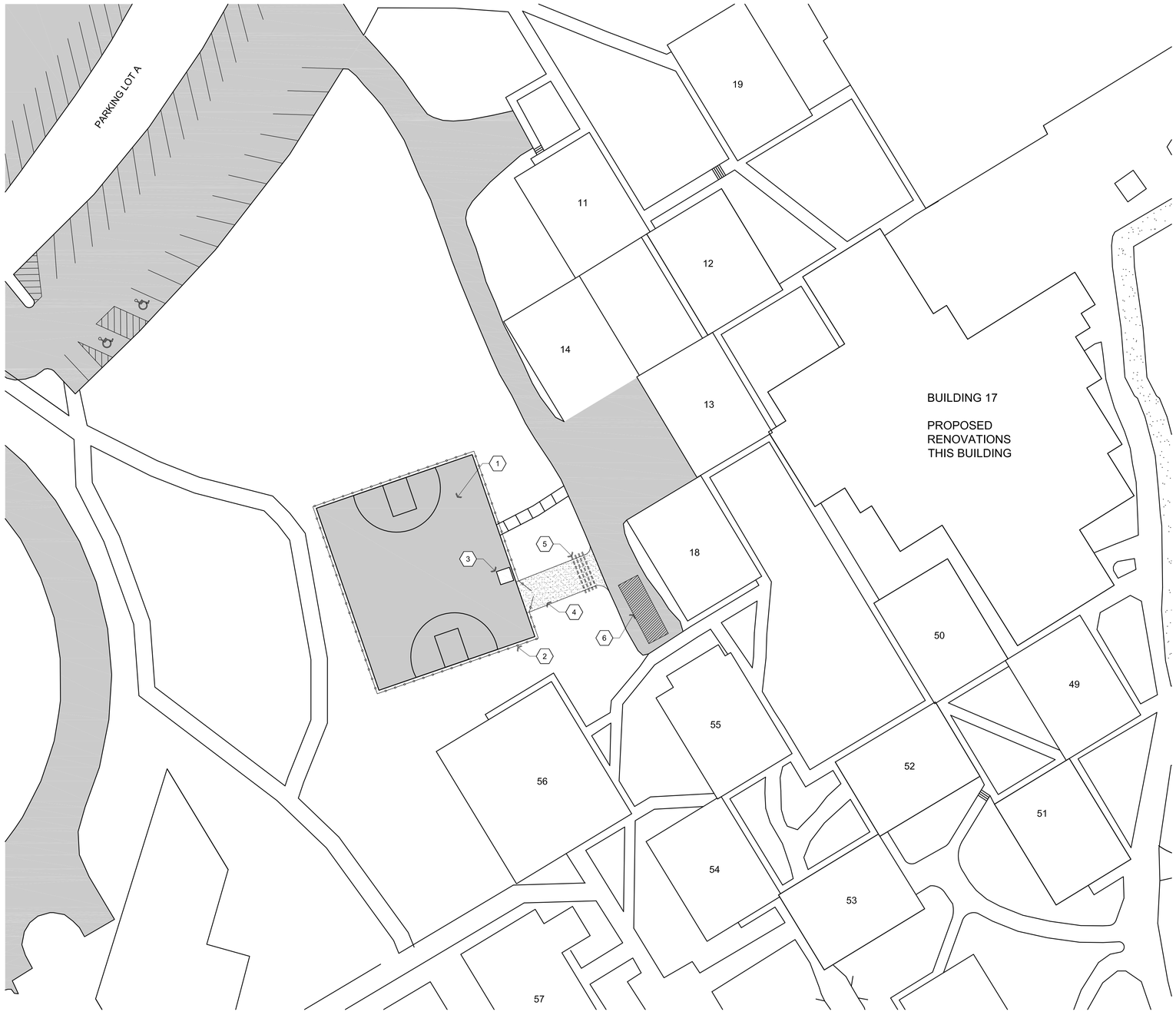
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REGISTERED ARCHITECT WA KA

DRAWING: COVER SHEET

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

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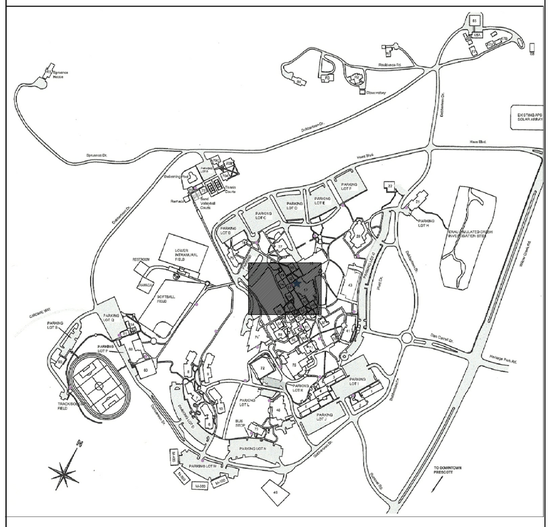
A1 Construction Access Plan

Scale: 1" = 20'-0"

Plan North

Descriptive Keynotes

1. CONTRACTOR PARKING AREA AND MATERIAL STORAGE
2. TEMPORARY CONSTRUCTION FENCE
3. J-JON
4. PROVIDE TEMPORARY COMPACTED ABC ACCESS DRIVE. AREA TO BE RESTORED TO ORIGINAL CONDITION AT END OF PROJECT.
5. PROVIDE 4, 20' LONG 4" DIAMETER SCHEDULE 40 GALVANIZED PIPES FOR DRAINAGE. PLACE PIPES IN EXISTING CONCRETE DRAINAGE SWALE.
6. ROLL-OFF DUMPSTER LOCATION



Key Plan

Scale: NTS

Plan North

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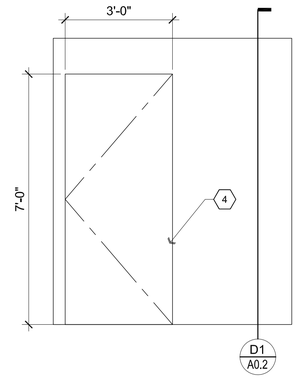
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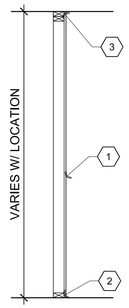
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DRAWING: CONSTRUCTION ACCESS PLAN

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

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Descriptive Keynotes

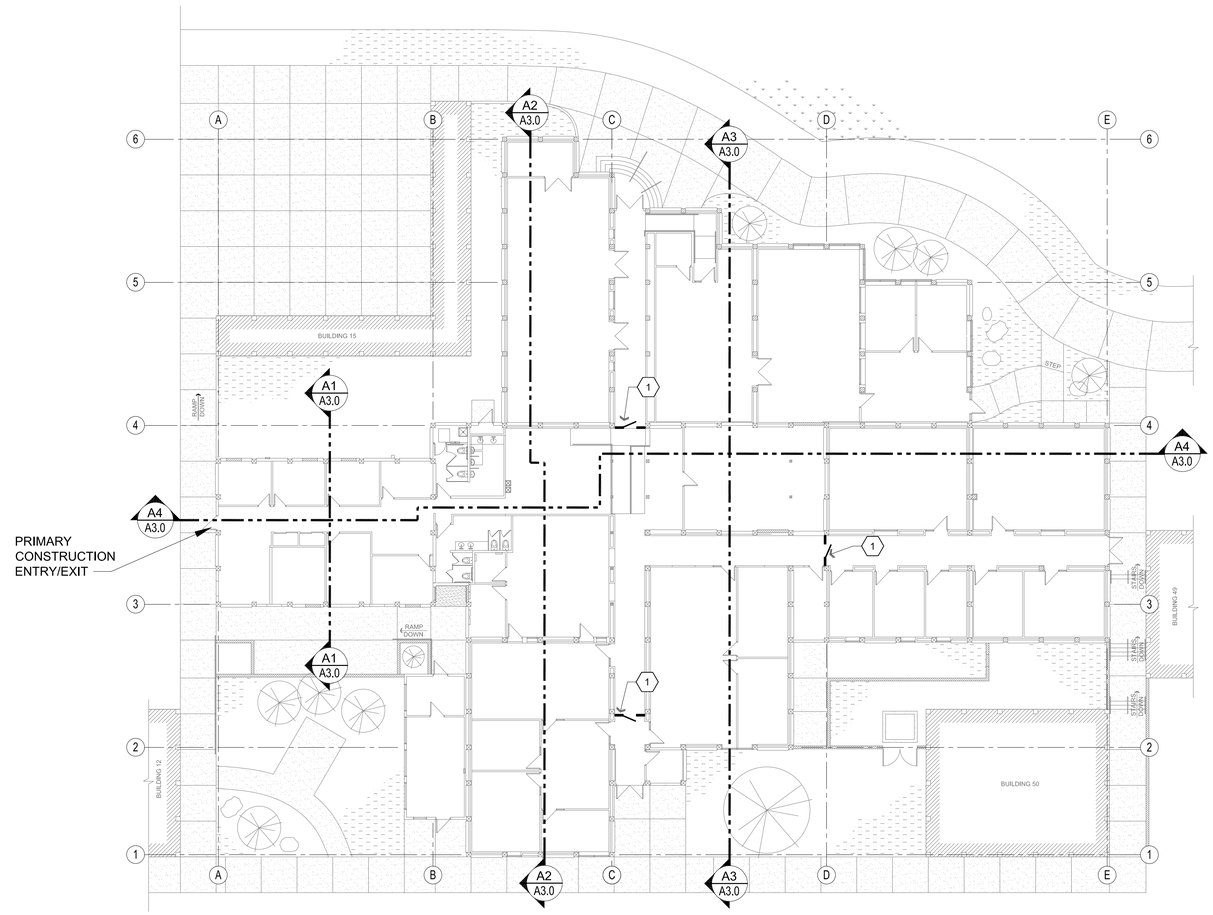
1. PROVIDE FULL HEIGHT TEMPORARY CONSTRUCTION BARRIER WALL WITH PLYWOOD DOOR. PROVIDE 2x4s @ 1'-4" O.C. WITH 1/2" PLYWOOD ONE SIDE.
2. 2x4 SILL PLATE.
3. 2x4 DOUBLE TOP PLATE RUN TO BOTTOM OF EXISTING CEILING.
4. 1/2" PLYWOOD DOOR WITH SURFACE HINGES AND PADLOCK HASP.

C1 Temporary Wall Elevation

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

D1 Temporary Wall Detail

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



C4 Temporary Construction Walls Plan

Scale: 1/16" = 1'-0"

Plan North

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DRAWING: TEMPORARY CONSTRUCTION WALLS

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

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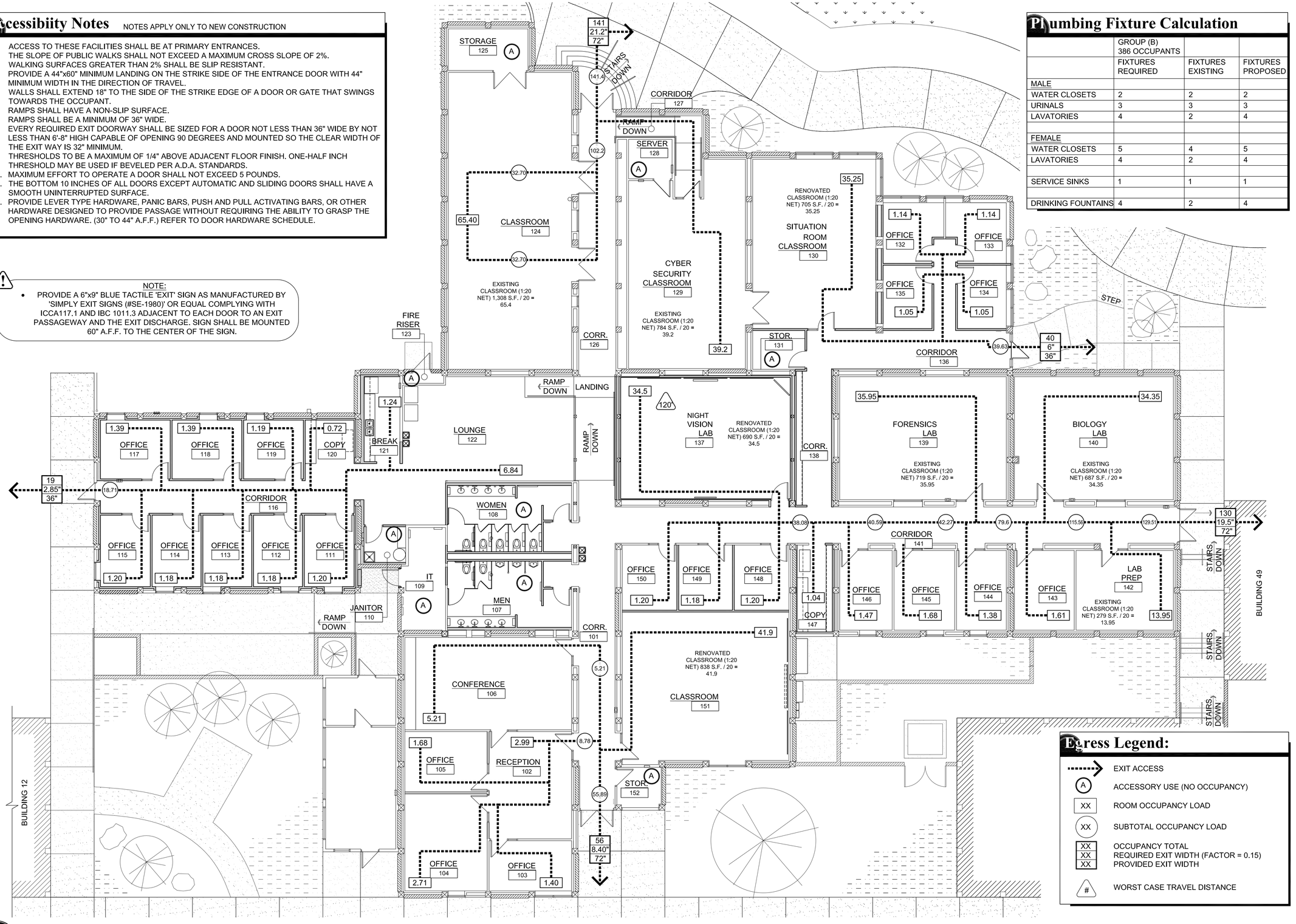
Accessibiity Notes

NOTES APPLY ONLY TO NEW CONSTRUCTION

1. ACCESS TO THESE FACILITIES SHALL BE AT PRIMARY ENTRANCES.
2. THE SLOPE OF PUBLIC WALKS SHALL NOT EXCEED A MAXIMUM CROSS SLOPE OF 2%.
3. WALKING SURFACES GREATER THAN 2% SHALL BE SLIP RESISTANT.
4. PROVIDE A 44"x60" MINIMUM LANDING ON THE STRIKE SIDE OF THE ENTRANCE DOOR WITH 44" MINIMUM WIDTH IN THE DIRECTION OF TRAVEL.
5. WALLS SHALL EXTEND 18" TO THE SIDE OF THE STRIKE EDGE OF A DOOR OR GATE THAT SWINGS TOWARDS THE OCCUPANT.
6. RAMPS SHALL HAVE A NON-SLIP SURFACE.
7. RAMPS SHALL BE A MINIMUM OF 36" WIDE.
8. EVERY REQUIRED EXIT DOORWAY SHALL BE SIZED FOR A DOOR NOT LESS THAN 36" WIDE BY NOT LESS THAN 6'-8" HIGH CAPABLE OF OPENING 90 DEGREES AND MOUNTED SO THE CLEAR WIDTH OF THE EXIT WAY IS 32" MINIMUM.
9. THRESHOLDS TO BE A MAXIMUM OF 1/4" ABOVE ADJACENT FLOOR FINISH. ONE-HALF INCH THRESHOLD MAY BE USED IF BEVELED PER A.D.A. STANDARDS.
10. MAXIMUM EFFORT TO OPERATE A DOOR SHALL NOT EXCEED 5 POUNDS.
11. THE BOTTOM 10 INCHES OF ALL DOORS EXCEPT AUTOMATIC AND SLIDING DOORS SHALL HAVE A SMOOTH UNINTERRUPTED SURFACE.
12. PROVIDE LEVER TYPE HARDWARE, PANIC BARS, PUSH AND PULL ACTIVATING BARS, OR OTHER HARDWARE DESIGNED TO PROVIDE PASSAGE WITHOUT REQUIRING THE ABILITY TO GRASP THE OPENING HARDWARE. (30" TO 44" A.F.F.) REFER TO DOOR HARDWARE SCHEDULE.

NOTE:

- PROVIDE A 6"x9" BLUE TACTILE 'EXIT' SIGN AS MANUFACTURED BY 'SIMPLY EXIT SIGNS (#SE-1980)' OR EQUAL COMPLYING WITH ICCA117.1 AND IBC 1011.3 ADJACENT TO EACH DOOR TO AN EXIT PASSAGEWAY AND THE EXIT DISCHARGE. SIGN SHALL BE MOUNTED 60" A.F.F. TO THE CENTER OF THE SIGN.



Plumbing Fixture Calculation

	GROUP (B) 386 OCCUPANTS		
	FIXTURES REQUIRED	FIXTURES EXISTING	FIXTURES PROPOSED
MALE			
WATER CLOSETS	2	2	2
URINALS	3	3	3
LAVATORIES	4	2	4
FEMALE			
WATER CLOSETS	5	4	5
LAVATORIES	4	2	4
SERVICE SINKS	1	1	1
DRINKING FOUNTAINS	4	2	4

Egress Legend:

- EXIT ACCESS
- (A) ACCESSORY USE (NO OCCUPANCY)
- XX ROOM OCCUPANCY LOAD
- (XX) SUBTOTAL OCCUPANCY LOAD
- XX / XX / XX OCCUPANCY TOTAL / REQUIRED EXIT WIDTH (FACTOR = 0.15) / PROVIDED EXIT WIDTH
- (#) WORST CASE TRAVEL DISTANCE

A1 Occupancy / Egress / Overall Floor Plan / Plumbing Fixture Calculations

North

Scale: 1/8" = 1'-0"

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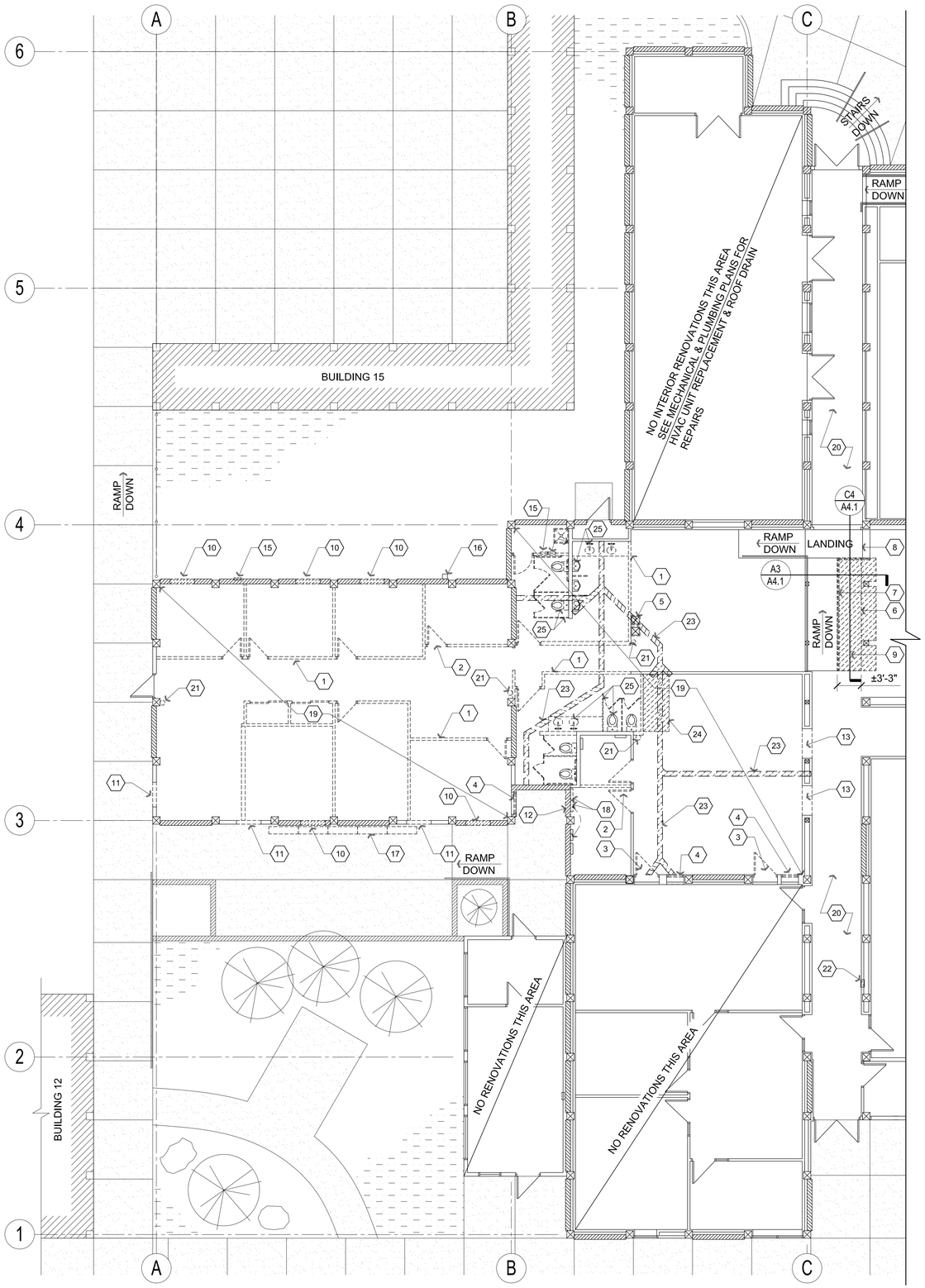
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ARCHITECTURE & PLANNING

DRAWING: OCCUPANCY / EGRESS / OVERALL FLOOR PLAN / PLUMBING FIXTURE CALCULATIONS

PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, CGSI PRESCOTT, ARIZONA

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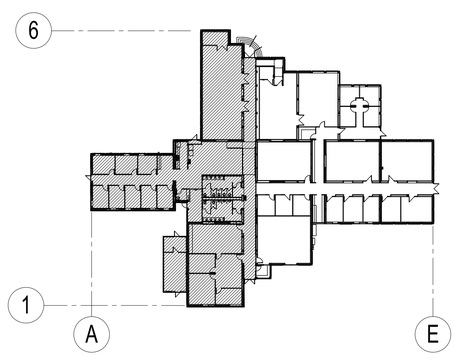
A1 Demolition Plan A

Scale: 1/8"=1'-0"

Plan North

Descriptive Keynotes

1. TYPICALLY INDICATES EXISTING WALL TO BE REMOVED.
2. TYPICALLY INDICATES EXISTING DOOR TO BE REMOVED.
3. REMOVE DOOR / FRAME THIS WALL ONLY.
4. REMOVE WINDOW THIS WALL ONLY.
5. REMOVE AND RELOCATE EXISTING DRINKING FOUNTAINS. REFER TO PLUMBING PLANS.
6. SAWCUT EXISTING CONCRETE SLAB.
7. REMOVE EXISTING GUARD RAIL.
8. EXISTING CONCRETE STAIRS.
9. DEMOLISH PORTION OF EXISTING CONCRETE SLAB.
10. SAWCUT NEW WINDOW OPENING IN EXISTING SLUMP BLOCK MASONRY WALL. REFER TO DIMENSION PLAN A1.4 (EXISTING VERMICULITE INSULATION IN BLOCK CONTAINS ASBESTOS.)
11. REMOVE PORTION OF EXISTING FRAMED WALL FOR NEW WINDOW.
12. SAWCUT NEW DOOR OPENING IN EXISTING SLUMP BLOCK MASONRY WALL.
13. REMOVE PORTION OF EXISTING WALL FOR NEW OPENING.
14. OWNER TO RELOCATE EXISTING LOCKERS.
15. REMOVE EXISTING ELECTRICAL PANEL.
16. REMOVE JUNCTION BOX WHICH FEEDS BUILDING 15, AND ALL ASSOCIATED ELECTRICAL CONDUIT, REFER TO ELECTRICAL DRAWINGS.
17. NOT USED.
18. RELOCATE METAL BATTERY BOXES.
19. REMOVE FLOORING IN THIS AREA. REFER TO SHEET A6.2 FOR MORE INFORMATION ON PROPOSED FLOORING.
20. FLOORING TO REMAIN IN THIS AREA. REFER TO SHEET A6.2 FOR MORE INFORMATION ON PROPOSED FLOORING.
21. FIRE EXTINGUISHER TO BE REMOVED AND RETURNED TO OWNER, OR RE-USED IN NEW FIRE EXTINGUISHER RECESSED CABINETS.
22. EXISTING FIRE EXTINGUISHER TO REMAIN.
23. SAWCUT AND REMOVE CONCRETE FLOOR TO ACCOMMODATE PLUMBING WASTE LINE. REFER TO PLUMBING PLANS.
24. REMOVE EXISTING INFILL FLOOR FRAMING.
25. TYPICALLY INDICATES PLUMBING FIXTURES, TOILET ACCESSORIES, ETC. TO BE REMOVED. REFER TO PLUMBING PLANS.



Key Plan

Scale: NTS

Plan North

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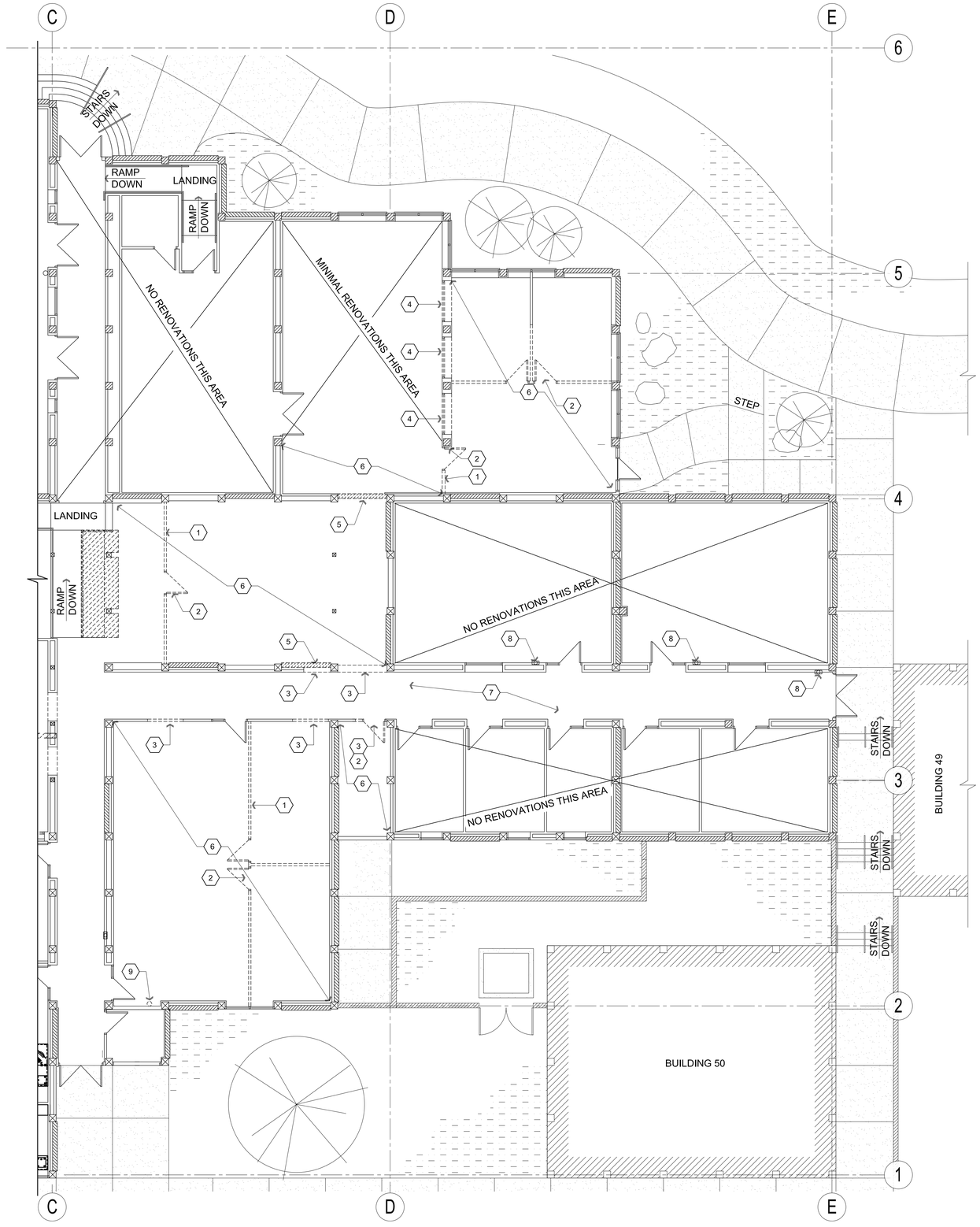
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DRAWING: DEMOLITION FLOOR PLAN A

PROJECT: IMPROVEMENTS FOR:
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BUILDINGS 17, CGSI
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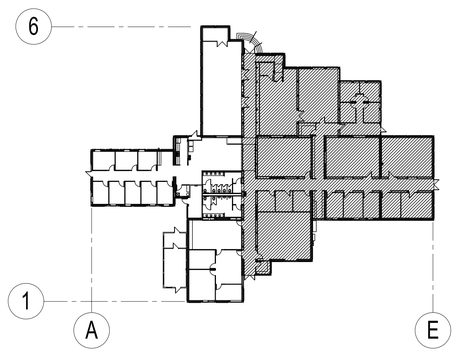
A1 Demolition Plan B

Scale: 1/8"=1'-0"

Plan North

Descriptive Keynotes

1. TYPICALLY INDICATES EXISTING WALL TO BE REMOVED.
2. TYPICALLY INDICATES EXISTING DOOR / FRAME TO BE REMOVED.
3. REMOVE PORTION OF EXISTING WALL FOR NEW OPENING.
4. REMOVE EXISTING WINDOW.
5. DEMOLISH ENTIRE SECTION OF SLUMP BLOCK MASONRY WALL.
6. REMOVE FLOORING IN THIS AREA. SEE SHEET A6.2 FOR MORE INFORMATION ON PROPOSED FLOORING.
7. FLOORING TO REMAIN IN THIS AREA. SEE SHEET A6.2 FOR MORE INFORMATION ON PROPOSED FLOORING.
8. EXISTING FIRE EXTINGUISHER CABINET TO REMAIN.
9. FIRE EXTINGUISHER TO BE REMOVED AND RETURNED TO OWNER, OR RE-USED IN NEW FIRE EXTINGUISHER RECESSED CABINETS.



Key Plan

Scale: NTS

Plan North

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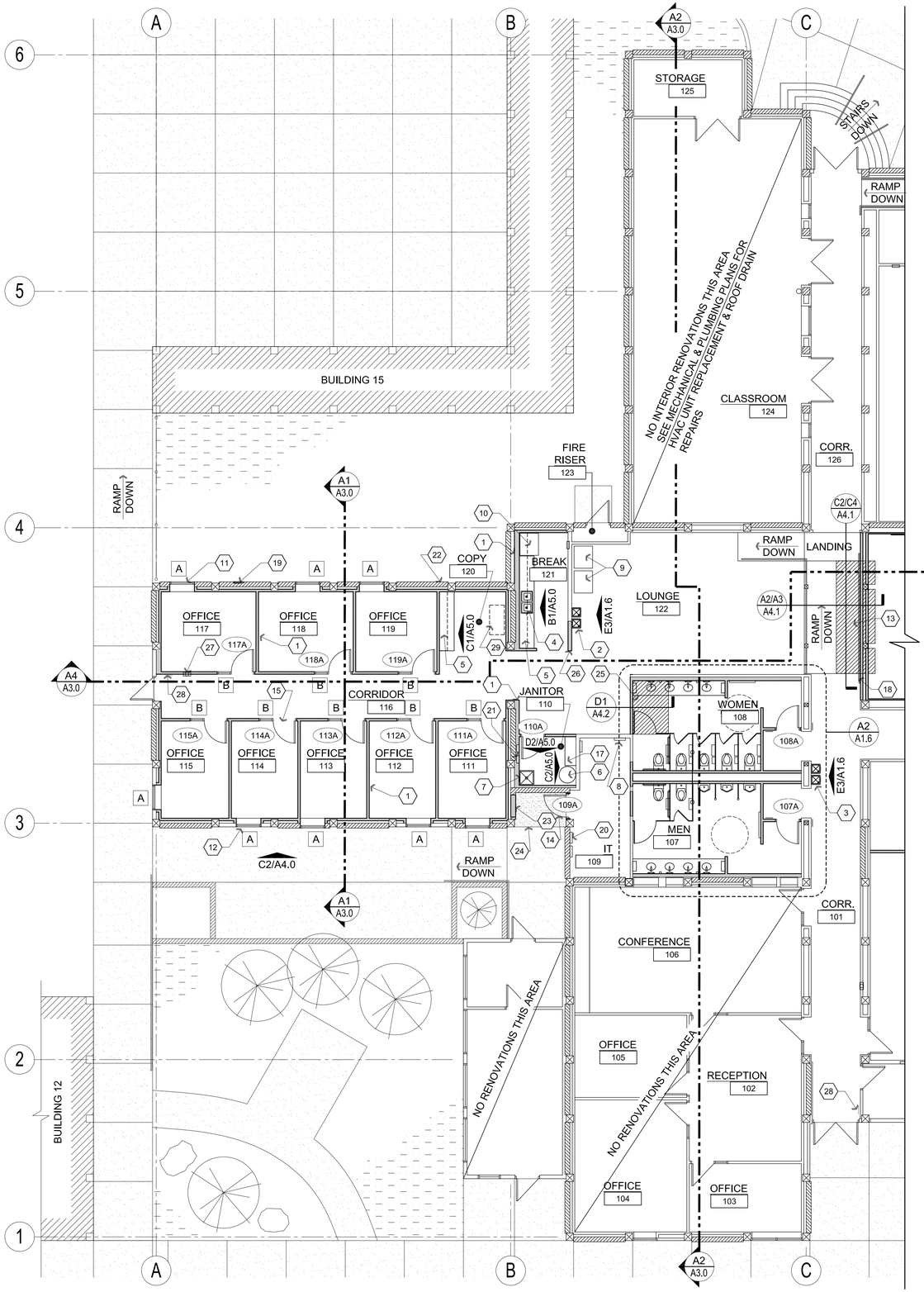
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DRAWING: DEMOLITION FLOOR PLAN B

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BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

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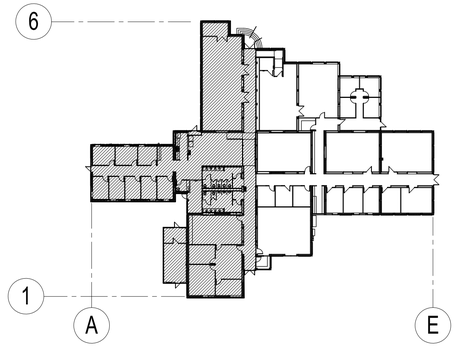
Descriptive Keynotes

1. TYPICALLY INDICATES STEEL STUD PARTITION WALL, REFER TO WALL TYPES PLAN.
2. REINSTALL ELECTRIC DRINKING FOUNTAINS. REFER TO PLUMBING PLANS.
3. INSTALL NEW DRINKING FOUNTAINS, REFER TO PLUMBING PLANS.
4. DUAL COMPARTMENT SINK, REFER TO PLUMBING PLANS.
5. PROVIDE UPPER AND LOWER CABINETS AND COUNTERTOP, REFER TO INTERIOR ELEVATIONS.
6. WATER HEATER, REFER TO PLUMBING PLANS.
7. PROVIDE JANITOR SINK, REFER TO PLUMBING PLANS.
8. FIRE ALARM CONTROL PANEL, MODIFY EXISTING SYSTEM FOR NEW CONSTRUCTION, REFER TO FIRE ALARM PLANS.
9. VENDING MACHINES BY OWNER.
10. REFRIGERATOR BY OWNER.
11. INSTALL NEW WINDOW IN SAWCUT MASONRY OPENING, REFER TO WINDOW SCHEDULE, TYPICAL OF (5).
12. INSTALL NEW WINDOW IN NEW FRAMED WALL OPENING, REFER TO WINDOW SCHEDULE, TYPICAL OF (3).
13. EXISTING CAST IN PLACE CONCRETE, ACCESSIBLE RAMP TO BE WIDENED.
14. INSTALL NEW DOOR AND HOLLOW METAL FRAME, REFER TO DOOR SCHEDULE, TYPICAL.
15. INSTALL NEW DOOR AND HOLLOW METAL FRAME, WITH SIDELITE, REFER TO DOOR SCHEDULE.
16. NOT USED
17. PROVIDE SHELVING, REFER TO INTERIOR ELEVATIONS.
18. INSTALL NEW 1-1/2" Ø, PAINTED METAL HANDRAIL AT NEW RAMP, REFER TO RAMP DETAIL.
19. INFILL VOID IN WALL WHERE EXISTING ELECTRICAL PANEL WAS REMOVED WITH NEW SLUMP BLOCK TO MATCH EXISTING.
20. RELOCATED BATTERY BOXES.
21. NEW ELECTRICAL PANEL, REFER TO ELECTRICAL DRAWINGS.
22. PATCH WHERE ELECTRICAL J-BOX AND CONDUIT WERE REMOVED.
23. INFILL OPENING WITH 2X8 WOOD STUD OUTER FRAME, AND 2X6 INNER FRAME WITH STUDS @ 16" O.C., PROVIDE 5/8" T-111 INSET SHEATHING TO MATCH EXISTING, PROVIDE SEALANT AT ALL EDGES WHERE SHEATHING MEETS OUTER FRAME, PAINT SHEATHING TO MATCH EXISTING AT EXTERIOR. PROVIDE R-19 FRICTION FIT BATT INSULATION AT EACH STUD CAVITY. SECURE WOOD INFILL FRAME WITH SHOT PIN ANCHORS TO MASONRY, AND NAILS TO WOOD MEMBERS.
24. NEW CONCRETE AT FINISHED FLOOR LEVEL, WITH STEP DOWN TO EXISTING CONCRETE.
25. INFILL TO MAKE FLOOR LEVEL WITH CAST-IN-PLACE CONCRETE.
26. EXTEND WALL, MATCHING EXISTING WIDTH.
27. PROVIDE NEW FIRE EXTINGUISHER RECESSED CABINET, WITH RELOCATED FIRE EXTINGUISHER.
28. PROVIDE A 6"x9" BLUE TACTILE 'EXIT' SIGN AS MANUFACTURED BY 'SIMPLY EXIT SIGNS (#SE-1980)' OR EQUAL COMPLYING WITH ICCA117.1 AND IBC 1011.3 ADJACENT TO EACH DOOR TO AN EXIT PASSAGEWAY AND THE EXIT DISCHARGE. SIGN SHALL BE MOUNTED 60" A.F.F. TO THE CENTER OF THE SIGN.
29. PROPOSED COPIER LOCATION. (PROVIDED BY OWNER)

Legend:

TYPICALLY INDICATES EXISTING DOOR & FRAME TO REMAIN

TYPICALLY INDICATES PROPOSED DOOR & FRAME - REFER TO DOOR SCHEDULE



Key Plan

Scale: NTS

Plan North

A1 Reference Floor Plan A

Scale: 1/8"=1'-0"

Plan North

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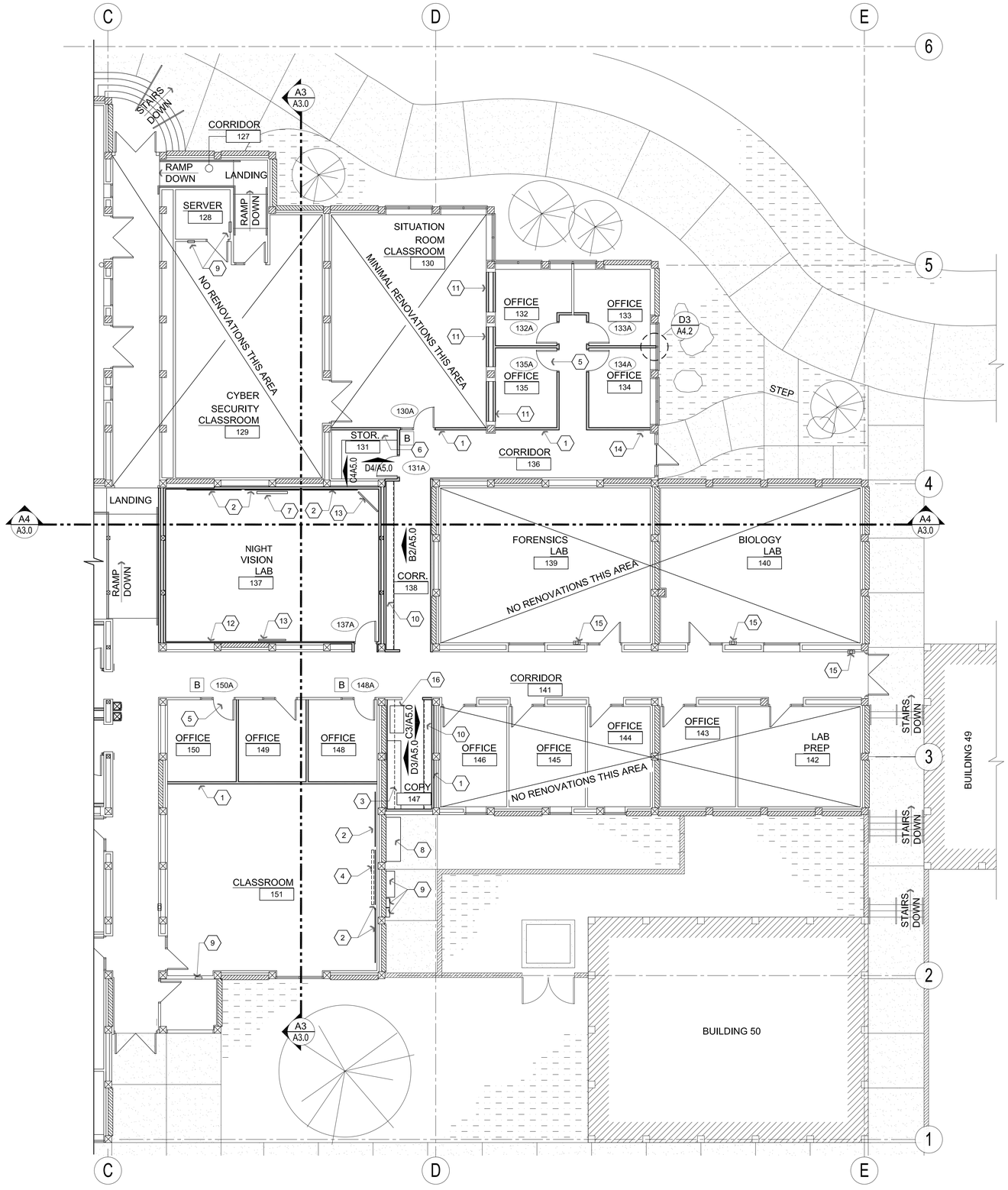
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ARCHITECTURE & PLANNING

DRAWING: REFERENCE FLOOR PLAN A

PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, CGSI PRESCOTT, ARIZONA

DRAWN BY	PLM - LO
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DATE	12/10/2014
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SHEET	A1.2



A1 Reference Floor Plan B

Scale: 1/8"=1'-0"

Plan North

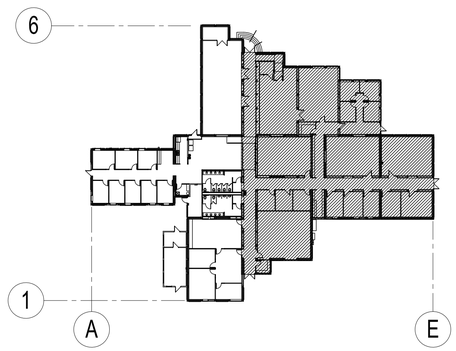
Descriptive Keynotes

1. TYPICALLY INDICATES STEEL STUD PARTITION WALL, REFER TO WALL TYPES PLAN.
2. OWNER PROVIDED WHITE BOARD. PROVIDE BACKING AS REQUIRED.
3. PROVIDE UPPER AND LOWER CABINETS AND COUNTERTOP, REFER TO INTERIOR ELEVATIONS.
4. OWNER PROVIDED RETRACTABLE, SCREEN. PROVIDE SUPPORT STRUCTURE.
5. INSTALL NEW DOOR AND HOLLOW METAL FRAME, REFER TO DOOR SCHEDULE, TYPICAL.
6. PROVIDE SHELVING. REFER TO INTERIOR ELEVATIONS.
7. OWNER PROVIDED SMART BOARD. PROVIDE SUPPORT STRUCTURE.
8. EXISTING ELECTRICAL SERVICE ENTRANCE SECTION, REFER TO ELECTRICAL PLANS.
9. EXISTING ELECTRICAL PANEL(S), REFER TO ELECTRICAL PLANS.
10. BUILT IN MILLWORK, REFER TO INTERIOR ELEVATIONS.
11. INFILL EXISTING WINDOW WITH NEW WALL, MATCH EXISTING TEXTURE AND REPAINT WALL, REFER TO WALL TYPES PLAN.
12. FUR OUT EXISTING INTERIOR CLASSROOM WALLS, REFER TO WALL TYPES PLAN.
13. OWNER PROVIDED MONITOR. PROVIDE BACKING AS REQUIRED.
14. PROVIDE A 6"x9" BLUE TACTILE 'EXIT' SIGN AS MANUFACTURED BY 'SIMPLY EXIT SIGNS (#SE-1980)' OR EQUAL COMPLYING WITH ICCA117.1 AND IBC 1011.3 ADJACENT TO EACH DOOR TO AN EXIT PASSAGEWAY AND THE EXIT DISCHARGE. SIGN SHALL BE MOUNTED 60" A.F.F. TO THE CENTER OF THE SIGN.
15. EXISTING FIRE EXTINGUISHER
16. PROPOSED COPIER LOCATION. (PROVIDED BY OWNER)

Legend:

TYPICALLY INDICATES EXISTING DOOR & FRAME TO REMAIN

TYPICALLY INDICATES PROPOSED DOOR & FRAME - REFER TO DOOR SCHEDULE



Key Plan

Scale: NTS

Plan North

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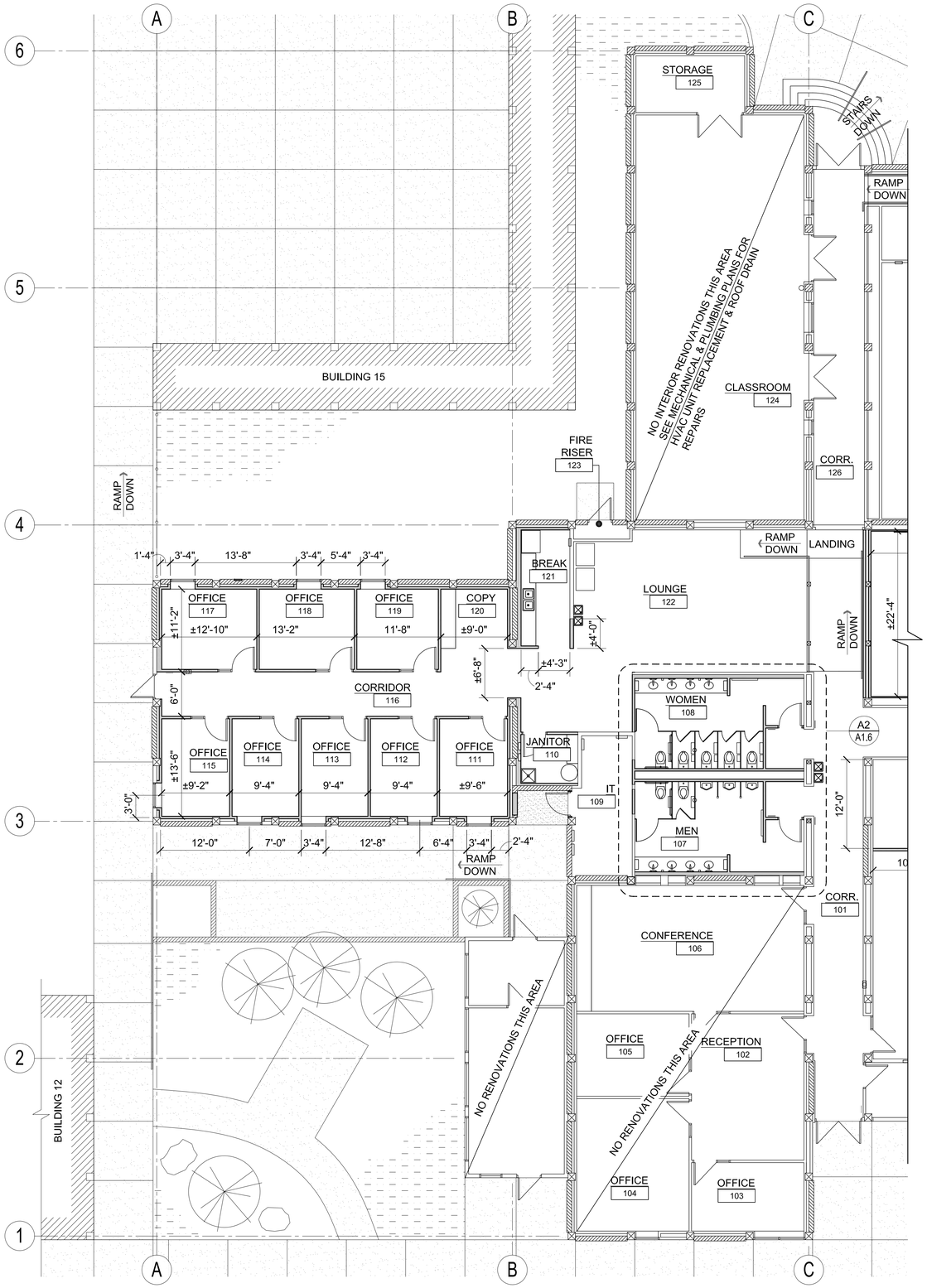
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DRAWING: REFERENCE FLOOR PLAN B

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

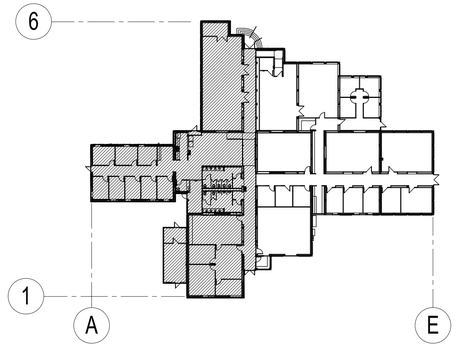
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A1 Dimension Floor Plan A

Scale: 1/8"=1'-0"

Plan North



Key Plan

Scale: NTS

Plan North

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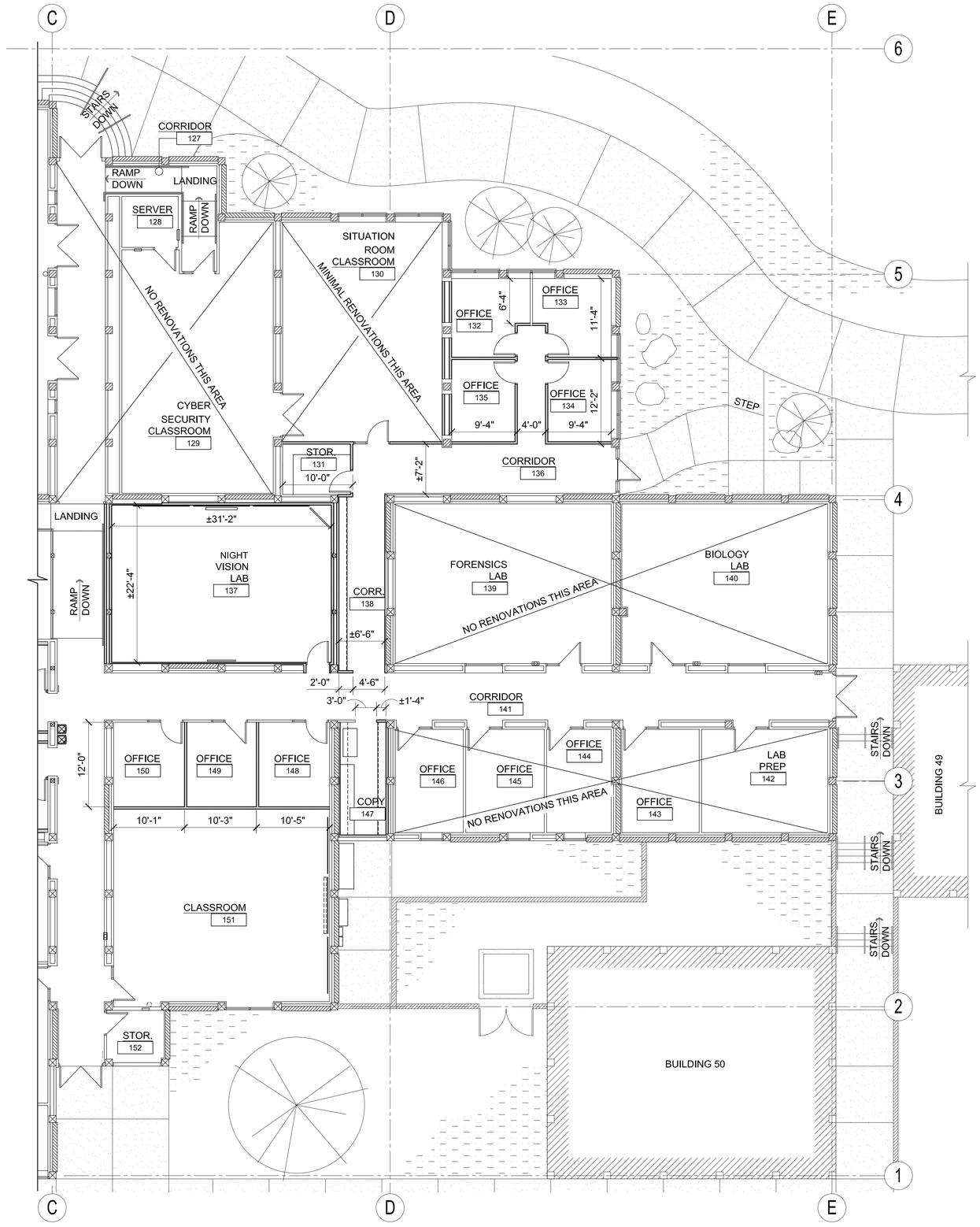
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DRAWING: DIMENSION FLOOR PLAN A

PROJECT: IMPROVEMENTS FOR:
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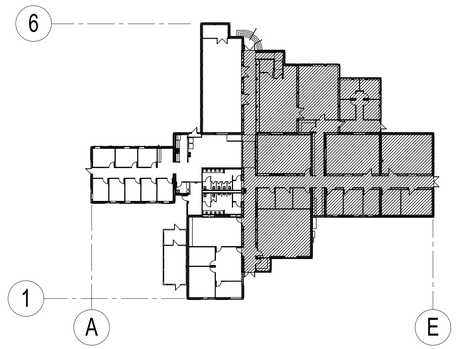
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SCALE	AS NOTED
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A1 Dimension Floor Plan B

Scale: 1/8"=1'-0"

Plan North



Key Plan

Scale: NTS

Plan North

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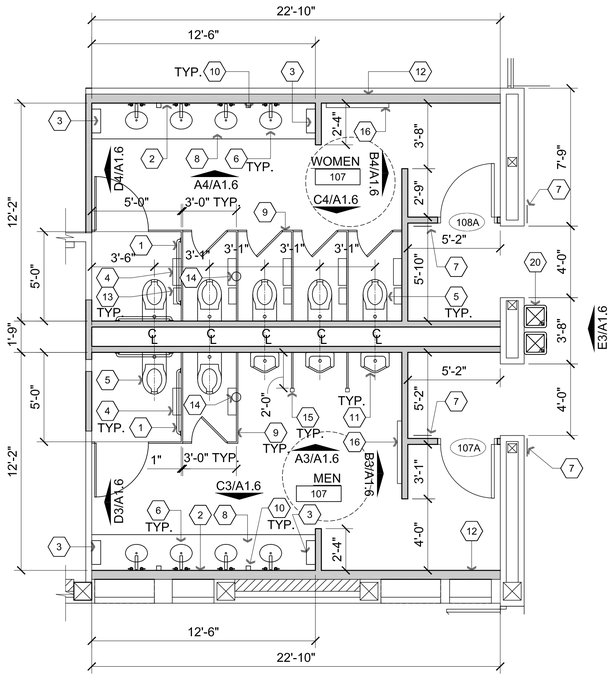
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DRAWING: DIMENSION FLOOR PLAN B

PROJECT: IMPROVEMENTS FOR:
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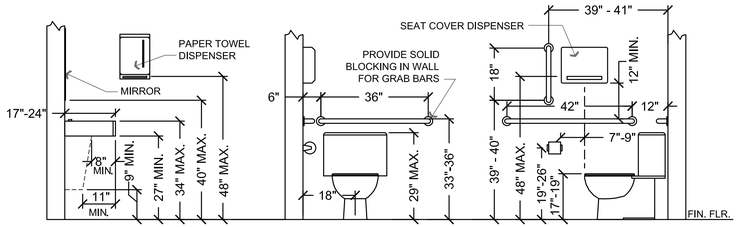
A2 Enlarged Restroom Plan

Scale: 1/4"=1'-0"

Plan North

Toilet Accessory Schedule

FIXTURE	MANUFACTURER	MODEL	COLOR	CONTACT
BABY CHANGING STATION	KOALA KARE	KB108-12	GREY GRANITE	WWW.KOALABEAR.COM
HAND SOAP DISPENSER	GOJO	FMX-12	BLACK	WWW.GOJO.COM
PAPER TOWEL DISPENSER	TORK	ELEVATION MATIC	BLACK	WWW.TORKUSA.COM
TOILET PAPER DISPENSER	GEORGIA PACIFIC	GP59209		WWW.PRODUCTCATALOG.GP.COM
TOILET SEAT COVER DISPENSER	GEORGIA PACIFIC	SAFE-T-GARD 27748		WWW.PRODUCTCATALOG.GP.COM
SANITARY NAPKIN RECEPTACLE	RUBBER MAID	6140		WWW.RUBBERMAIDCOMMERCIAL.COM
GRAB BARS 18", 36" & 42"	GAMCO	1505x18, 1505x36, 1505x42		WWW.GAMCOUSA.COM

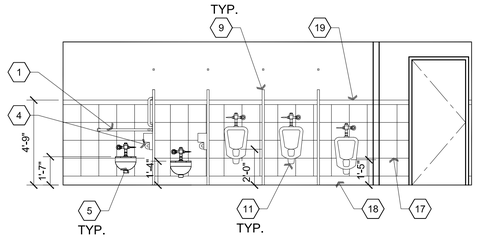


C2 Typical Fixture Mounting Heights

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

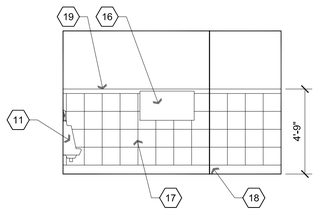
Descriptive Keynotes

1. PROVIDE 1-1/2" DIAMETER GRAB BARS PER A.D.A. REQUIREMENTS, 42" LONG AT SIDE OF WATER CLOSET / 36" LONG AT REAR OF WATER CLOSET / 18" VERTICAL GRAB BAR, PROVIDE SOLID BLOCKING.
2. PROVIDE 1/4" PLATE MIRROR FULL LENGTH OF WALL ABOVE VANITY TOP.
3. PROVIDE PAPER TOWEL DISPENSER.
4. PROVIDE TOILET PAPER HOLDER.
5. PROVIDE WALL HUNG WATER CLOSET, REFER TO PLUMBING DRAWINGS.
6. PROVIDE SELF-RIMMING LAVATORY IN SOLID SURFACE COUNTER TOP, INSULATE PIPES, REFER TO PLUMBING DRAWINGS.
7. PROVIDE ACCESSIBILITY SIGNAGE MOUNTED PER A.D.A. REQUIREMENTS.
8. PROVIDE SOLID SURFACE COUNTER TOP. SS-1
9. PROVIDE HEAD RAIL-BRACED TOILET PARTITION. TC-1
10. PROVIDE SOAP DISPENSER.
11. PROVIDE WALL HUNG URINAL, REFER TO PLUMBING PLANS.
12. INTERIOR WALL - REFER TO WALL TYPES LEGEND.
13. PROVIDE SANITARY NAPKIN DISPOSAL.
14. PROVIDE FLOOR DRAIN, REFER TO PLUMBING PLANS.
15. PROVIDE 2"X2" FLOOR TO CEILING URINAL SCREEN POST.
16. PROVIDE ADA COMPLIANT BABY CHANGING TABLE, INSTALL PER MANUFACTURER INSTRUCTIONS, PROVIDE SOLID BLOCKING.
17. PROVIDE 12" X 12" THINSET WALL TILE. CT-4
18. PROVIDE 6" X 12" THINSET COVE BASE TILE. CT-2
19. PROVIDE 3" THINSET BULLNOSE TILE. CT-3
20. ADA COMPLIANT DRINKING FOUNTAIN REFER TO PLUMBING PLANS.
21. BASE AS SCHEDULED.
22. MODIFY TILE AT PAPER TOWEL DISPENSER LOCATION, SO THE ENTIRE PAPER TOWEL DISPENSER IS FLUSH WITH THE TILE. HEIGHT OF TILE FROM THE FLOOR AND DISTANCE OF SURROUNDING TILE TO BE CONSISTENT WITH ALL 4 PAPER TOWEL DISPENSERS.



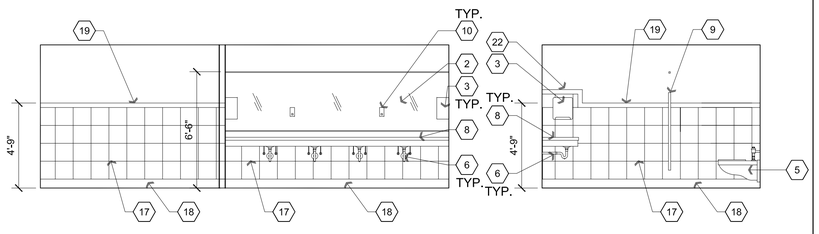
A3 Men's - 107

Scale: 1/4" = 1'-0"



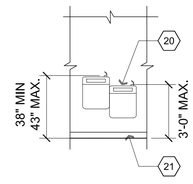
B3 Men's - 107

Scale: 1/4" = 1'-0"



C3 Men's - 107

Scale: 1/4" = 1'-0"

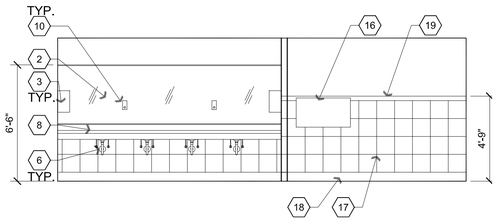


E3 Corridor - 101 & Lounge - 122

Scale: 1/4" = 1'-0"

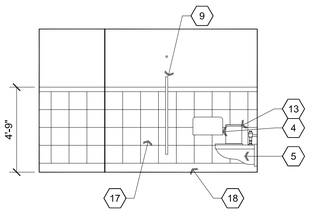
D3 Men's - 107

Scale: 1/4" = 1'-0"



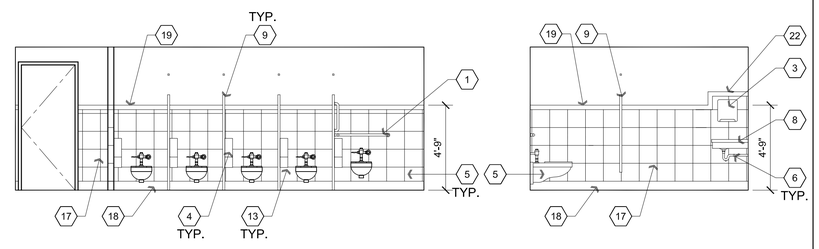
A4 Women's - 108

Scale: 1/4" = 1'-0"



B4 Women's - 108

Scale: 1/4" = 1'-0"

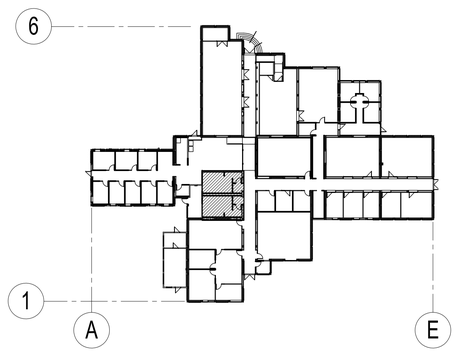


C4 Women's - 108

Scale: 1/4" = 1'-0"

D4 Women's - 108

Scale: 1/4" = 1'-0"



Key Plan

Scale: NTS

Plan North

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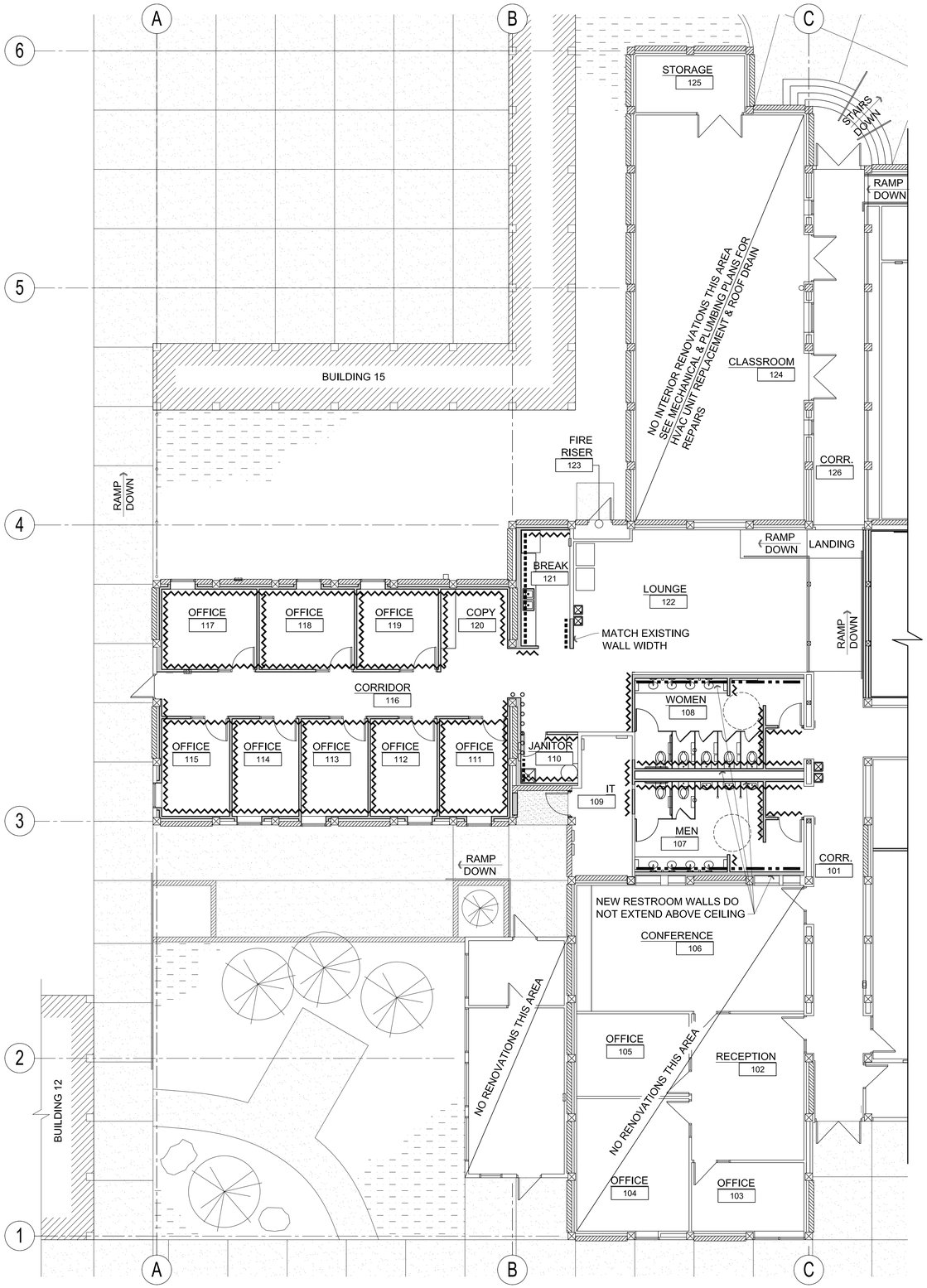
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DRAWING: ENLARGED RESTROOM PLAN / INTERIOR ELEVATIONS

PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, CGSI PRESCOTT, ARIZONA

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SHEET	A1.6



A1 Wall Types Plan A

Scale: 1/8"=1'-0"

Plan North

Wall Types Legend

EXISTING WALL: WOOD OR METAL FRAME WALL, THICKNESS VARIES.

EXISTING WALL: 8" WIDE SLUMP BLOCK CMU WALL.

3-5/8" STUD WALL: PROVIDE TO 6" ABOVE CEILING 3-⅝" 25 GA. STEEL STUDS AT 2'-0" O.C. WITH 5/8" GPDW ON EXPOSED SIDES. PROVIDE R-11 UNFACED BATT INSULATION AT ALL RESTROOMS, OFFICES AND CLASSROOMS. APPLY CERAMIC TILE OVER 5/8" DENS-DECK IN RESTROOM AREAS IN ACCORDANCE WITH INTERIOR ELEVATIONS.

6" STUD WALL WITH CERAMIC TILE: PROVIDE UP TO CEILING 6" 25 GA. STEEL STUDS AT 2'-0" O.C. PROVIDE R-11 UNFACED BATT INSULATION. PROVIDE 4'-9" HIGH CERAMIC TILE OVER 5/8" DENS-DECK GYPSUM BOARD ON STEEL STUDS AT NEW RESTROOMS.

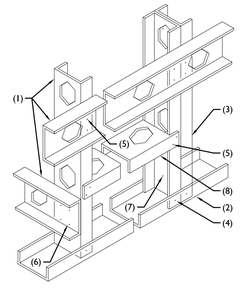
6" STUD WALL: PROVIDE TO 6" ABOVE CEILING 6" 25 GA. STEEL STUDS AT 2'-0" O.C. WITH 5/8" GPDW ON EXPOSED SIDES. PROVIDE R-11 UNFACED BATT INSULATION.

INTERIOR FURRED-OUT WALL: PROVIDE 1-LAYER 5/8" TYPE 'X' GPDW ON INTERIOR ROOM SIDE OF 1-5/8" 25 GA. STEEL STUDS AT 2'-0" ON CENTER TO +6" ABOVE CEILING.

STRUCTURAL COLUMN: EXISTING 12" X 12" HEAVY TIMBER COLUMN

STRUCTURAL COLUMN: EXISTING 6" X 6" OR 8" X 8" WOOD COLUMN

STRUCTURAL COLUMN: EXISTING 12" X 12" X 4" CMU COLUMN, GROUTED SOLID

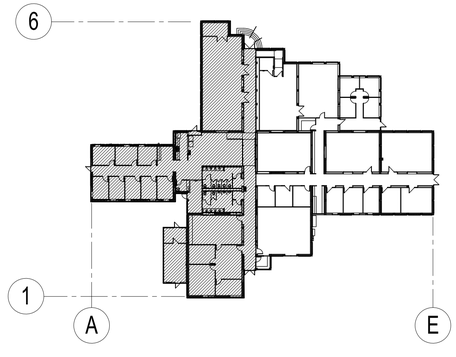


NOTES:

1. STEEL STUD.
2. UNPUNCHED STEEL STUD TRACK - ATTACHMENT REQUIRED 1/2" DIA. EXPANSION BOLTS AT 48" O.C. (2 MINIMUM) OR 3/8" X 3/4" LONG POWDER DRIVEN PINS AT 12" O.C. FASTENER SHALL HAVE I.C.B.O. REPORT FOR SAME INSTALLATION.
3. MULTIPLE OR INTERSECTING STUDS WHERE SHOWN ON PLAN OR DETAILS. CONNECT WITH #10 X 3/4" LONG SHEET METAL SCREWS AT 24" O.C. STAGGERED SPACING. AT INTERSECTING STUDS 1 ROW OF SCREWS.
4. #10 X 3/4" LONG SHEET METAL SCREWS EACH SIDE, EACH STUD.
5. 2 #10 X 3/4" LONG SHEET METAL SCREWS.
6. 4 #10 X 3/4" LONG SHEET METAL SCREWS.
7. #10 X 3/4" LONG SHEET METAL SCREWS AT 12" O.C. AT DOUBLE STUDS.
8. STUD BLOCKING.

D2 Typical Framing Detail

Scale: NTS



Key Plan

Scale: NTS

Plan North

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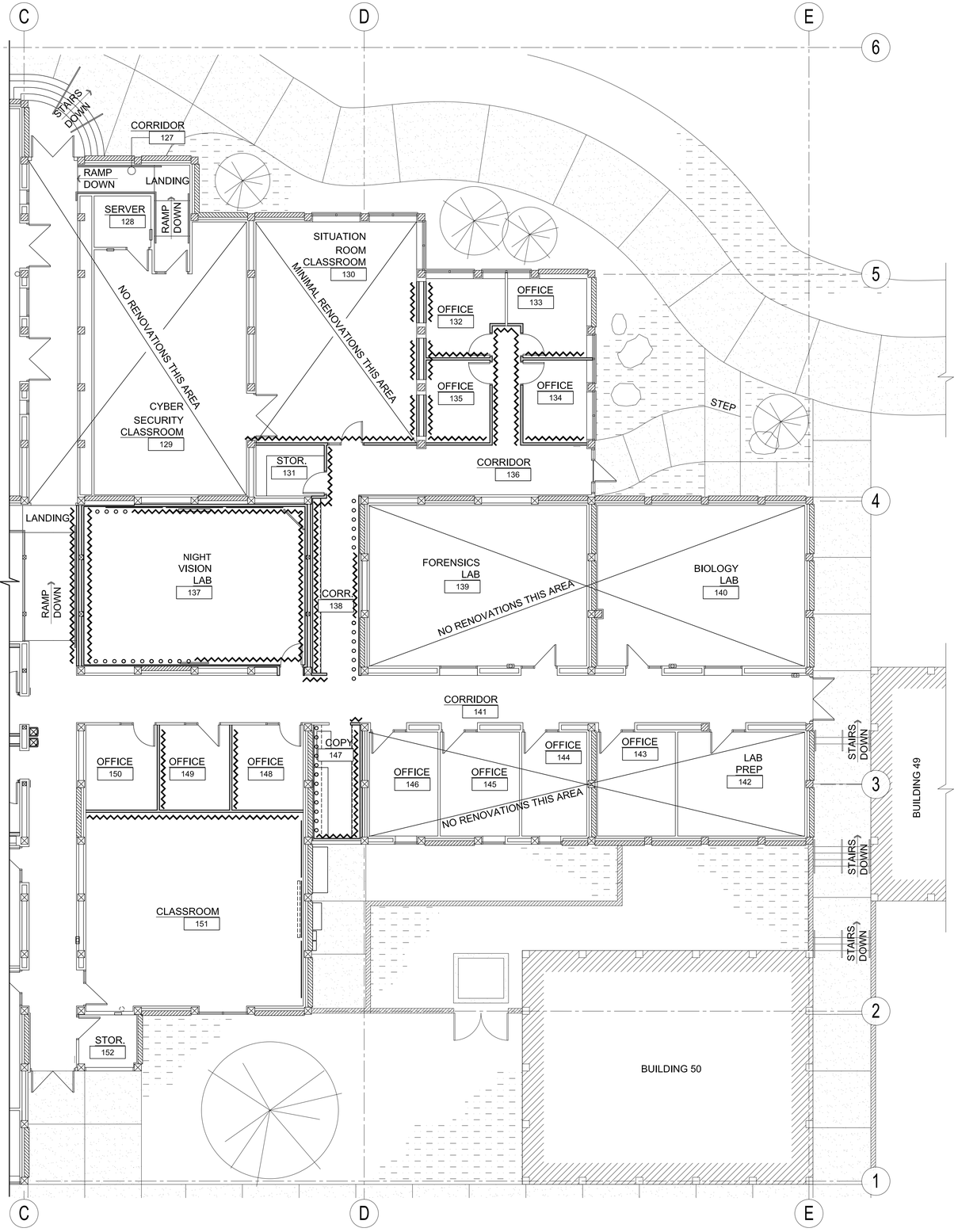
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ARCHITECTURE & PLANNING

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PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, CGSI PRESCOTT, ARIZONA

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SHEET	A1.7



A1 Wall Types Plan B

Scale: 1/8"=1'-0"

Plan North

Wall Types Legend

EXISTING WALL: WOOD OR METAL FRAME WALL, THICKNESS VARIES.

EXISTING WALL: 8" WIDE SLUMP BLOCK CMU WALL.

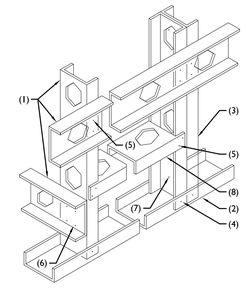
3-5/8" STUD WALL: PROVIDE TO 6" ABOVE CEILING 3-⅝" 25 GA. STEEL STUDS AT 2'-0" O.C. WITH 5/8" GPDW ON EXPOSED SIDES. PROVIDE R-11 UNFACED BATT INSULATION AT ALL RESTROOMS, OFFICES AND CLASSROOMS.

INTERIOR FURRED-OUT WALL: PROVIDE 1-LAYER 5/8" TYPE 'X' GPDW ON INTERIOR ROOM SIDE OF 1-5/8" 25 GA. STEEL STUDS AT 2'-0" ON CENTER TO +6" ABOVE CEILING.

STRUCTURAL COLUMN: EXISTING 12" X 12" HEAVY TIMBER COLUMN

STRUCTURAL COLUMN: EXISTING 6" X 6" OR 8" X 8" WOOD COLUMN

STRUCTURAL COLUMN: EXISTING 12" X 12" CMU COLUMN, GROUTED SOLID

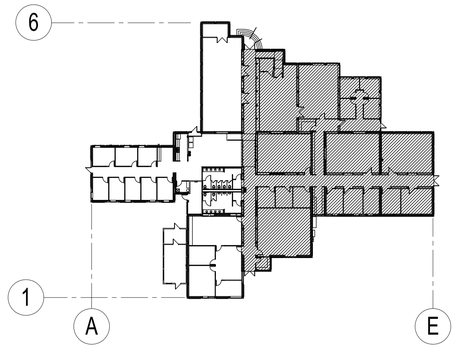


NOTES:

1. STEEL STUD.
2. UNPUNCHED STEEL STUD TRACK - ATTACHMENT REQUIRED 1/2" DIA. EXPANSION BOLTS AT 48" O.C. (2 MINIMUM) OR 3/8" X 3/4" LONG POWDER DRIVEN PINS AT 12" O.C. FASTENER SHALL HAVE I.C.B.O. REPORT FOR SAME INSTALLATION.
3. MULTIPLE OR INTERSECTING STUDS WHERE SHOWN ON PLAN OR DETAILS. CONNECT WITH #10 X 3/4" LONG SHEET METAL SCREWS AT 24" O.C. STAGGERED SPACING. AT INTERSECTING STUDS 1 ROW OF SCREWS.
4. #10 X 3/4" LONG SHEET METAL SCREWS EACH SIDE, EACH STUD.
5. 2 #10 X 3/4" LONG SHEET METAL SCREWS.
6. 4 #10 X 3/4" LONG SHEET METAL SCREWS.
7. #10 X 3/4" LONG SHEET METAL SCREWS AT 12" O.C. AT DOUBLE STUDS.
8. STUD BLOCKING.

D2 Typical Framing Detail

Scale: NTS



Key Plan

Scale: NTS

Plan North

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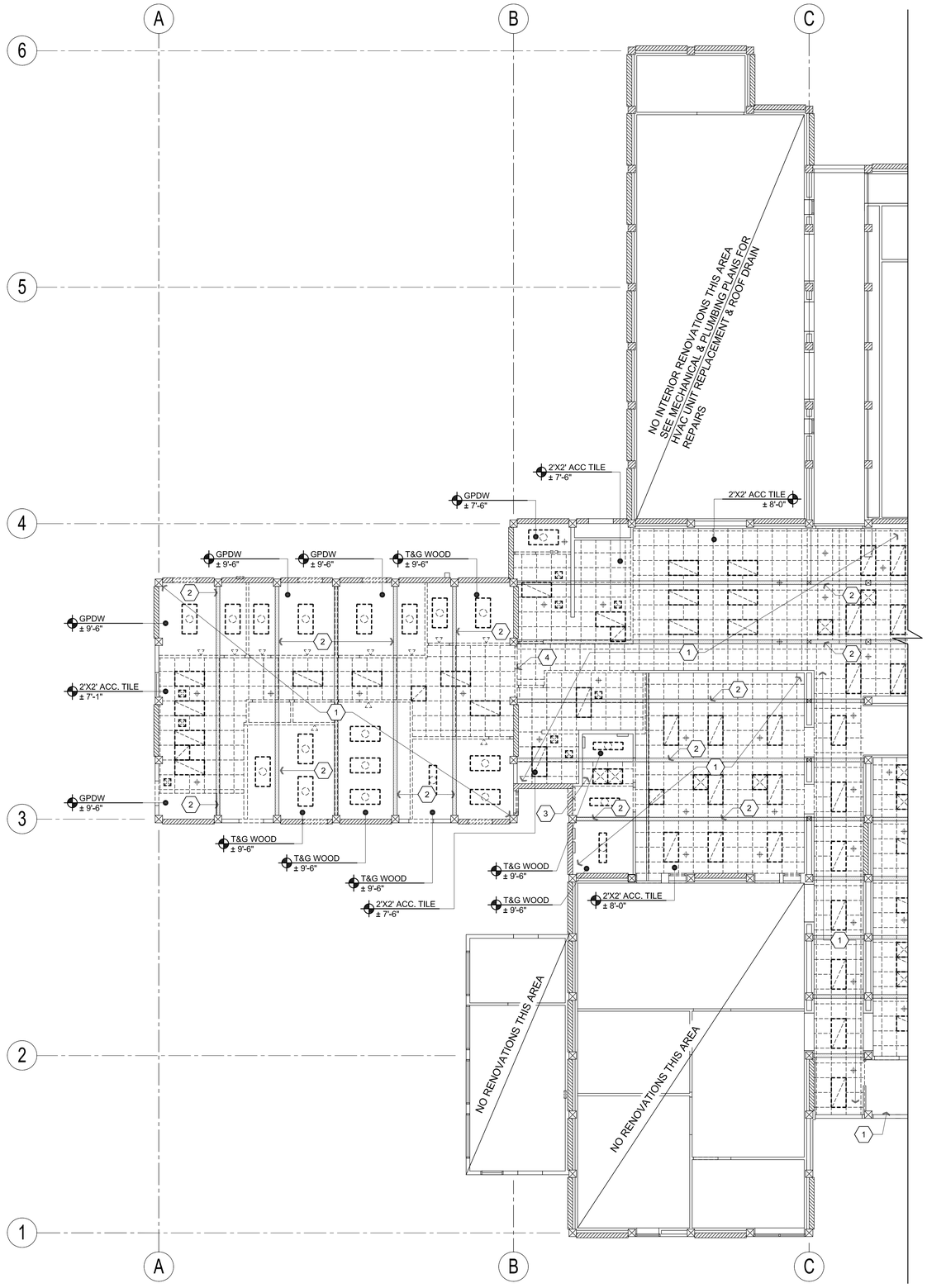
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ARCHITECTURE & PLANNING

DRAWING: WALL TYPES PLAN B

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	PLM - LO
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DATE	12/10/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	A1.8



Descriptive Keynotes

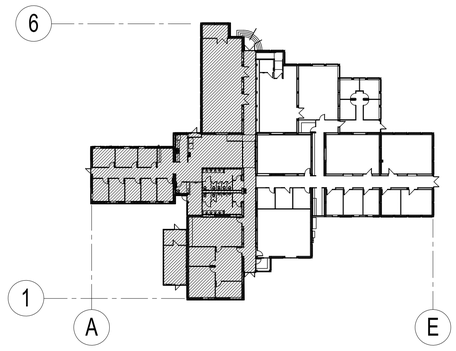
1. DEMOLISH ENTIRE ACOUSTICAL CEILING THIS AREA, INCLUDING ALL MECHANICAL, ELECTRICAL, & LOW VOLTAGE. EXISTING TONGUE AND GROOVE SHEATHING & GLULAM BEAMS TO REMAIN. AUTOMATIC FIRE SPRINKLER SYSTEM TO BE MODIFIED AS REQUIRED TO ACCOMMODATE THE NEW LAYOUT.
2. EXISTING GLULAM BEAMS TO REMAIN.
3. DEMOLISH ACOUSTICAL PANEL CEILING, GRID AND MECHANICAL DUCTWORK IN IT ROOM.
4. DEMOLISH EXISTING HEADER.

Legend

- 2'x2' ACOUSTICAL PANEL CEILING & GRID TO BE REMOVED
- 2'X4' SURFACE MOUNTED LIGHT FIXTURE TO BE REMOVED
- 2'X4' TROFFER LIGHT FIXTURE TO BE REMOVED
- 6" RECESSED CAN LIGHT FIXTURE TO BE REMOVED
- 1' X 4' SURFACE MOUNTED LIGHT FIXTURE TO BE REMOVED
- 2'X2' HVAC SUPPLY DIFFUSER TO BE REMOVED
- 1'X1' HVAC SUPPLY DIFFUSER TO BE REMOVED
- 2'X2' HVAC RETURN TO BE REMOVED
- 1'X1' EXHAUST FAN TO BE REMOVED
- 1'X1' HVAC RETURN TO BE REMOVED
- EXISTING LOCATION OF AUTOMATIC FIRE SPRINKLER HEAD

NOTE:

- AUTOMATIC FIRE SPRINKLER HEAD LOCATIONS ARE PROVIDED FOR INFORMATION ONLY. AUTOMATIC FIRE SPRINKLER SUBCONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS. SUBMIT AUTOMATIC FIRE SPRINKLER SHOP DRAWINGS FOR APPROVAL BY ARCHITECT, GENERAL CONTRACTOR, AND AUTHORITY HAVING JURISDICTION.



Key Plan

Scale: NTS

Plan North

A1 Demolition Reflected Ceiling Plan A

Scale: 1/8"=1'-0"

Plan North

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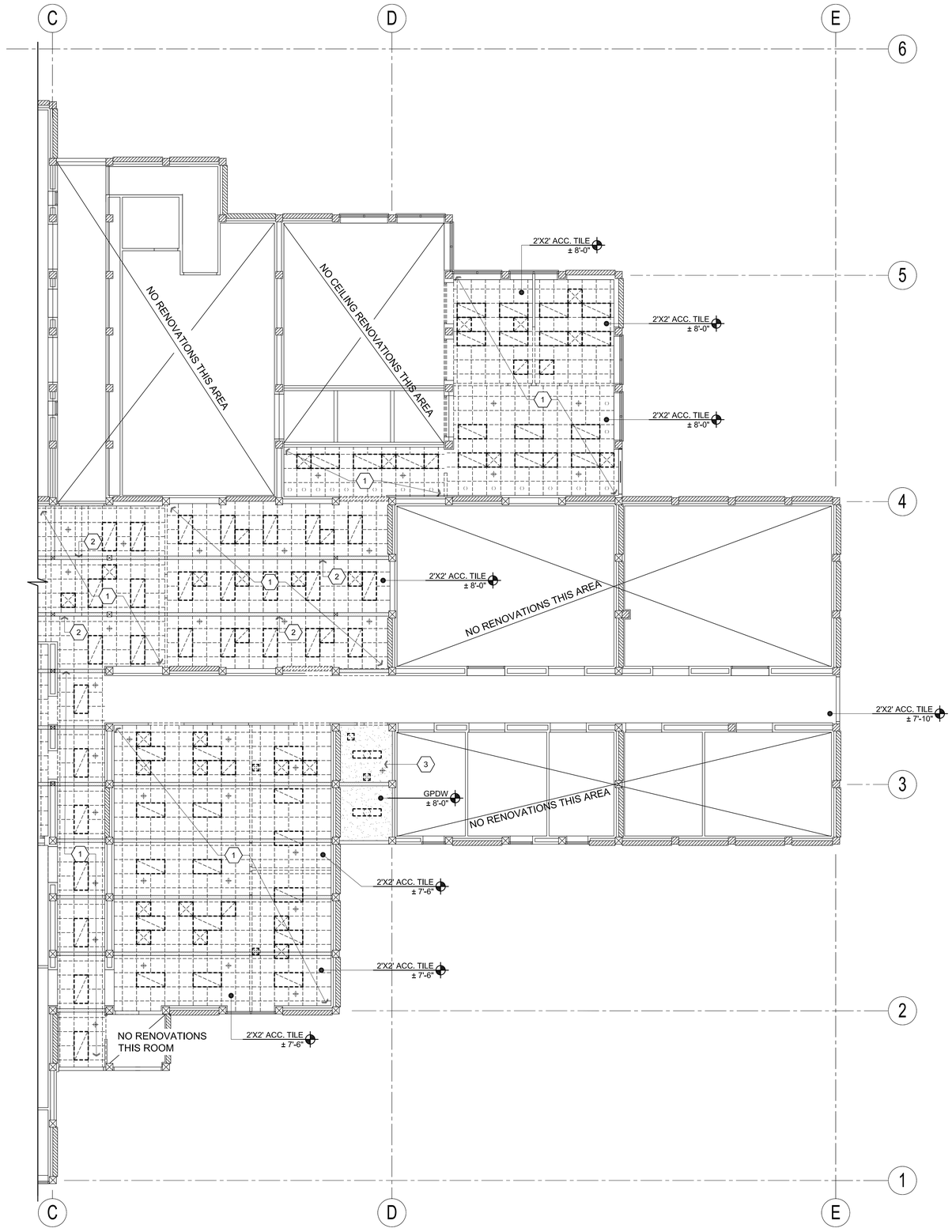
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ARCHITECTURE & PLANNING

DRAWING: DEMOLITION REFLECTED CEILING PLAN A

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

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SHEET	A2.0



A1 Demolition Reflected Ceiling Plan B

Scale: 1/8"=1'-0"

Plan North

Descriptive Keynotes

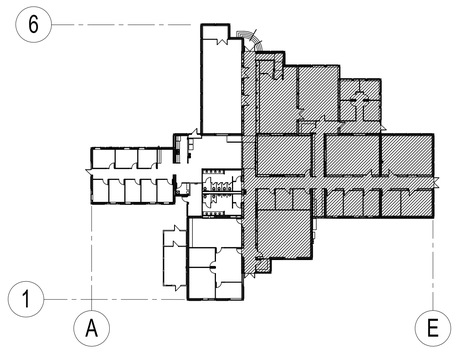
1. DEMOLISH ENTIRE ACOUSTICAL CEILING THIS AREA, INCLUDING ALL MECHANICAL, ELECTRICAL, & LOW VOLTAGE. EXISTING TONGUE AND GROOVE SHEATHING & GLULAM BEAMS TO REMAIN. AUTOMATIC FIRE SPRINKLER SYSTEM TO BE MODIFIED AS REQUIRED TO ACCOMMODATE THE NEW LAYOUT,
2. EXISTING GLULAM BEAMS TO REMAIN.
3. DEMOLISH GPDW CEILING, INCLUDING MECHANICAL, ELECTRICAL & LOW VOLTAGE. EXISTING TONGUE AND GROOVE SHEATHING & GLULAM BEAMS TO REMAIN.

Legend

- 2'x2' ACOUSTICAL PANEL CEILING & GRID TO BE REMOVED
- 2'X4' SURFACE MOUNTED LIGHT FIXTURE TO BE REMOVED
- 2'X4' TROFFER LIGHT FIXTURE TO BE REMOVED
- 6" RECESSED CAN LIGHT FIXTURE TO BE REMOVED
- 1' X 4' SURFACE MOUNTED LIGHT FIXTURE TO BE REMOVED
- 2'X2' HVAC SUPPLY DIFFUSER TO BE REMOVED
- 1'X1' HVAC SUPPLY DIFFUSER TO BE REMOVED
- 2'X2' HVAC RETURN TO BE REMOVED
- 1'X1' EXHAUST FAN TO BE REMOVED
- 1'X1' HVAC RETURN TO BE REMOVED
- EXISTING LOCATION OF AUTOMATIC FIRE SPRINKLER HEAD

NOTE:

- AUTOMATIC FIRE SPRINKLER HEAD LOCATIONS ARE PROVIDED FOR INFORMATION ONLY. AUTOMATIC FIRE SPRINKLER SUBCONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS. SUBMIT AUTOMATIC FIRE SPRINKLER SHOP DRAWINGS FOR APPROVAL BY ARCHITECT, GENERAL CONTRACTOR, AND AUTHORITY HAVING JURISDICTION.



Key Plan

Scale: NTS

Plan North

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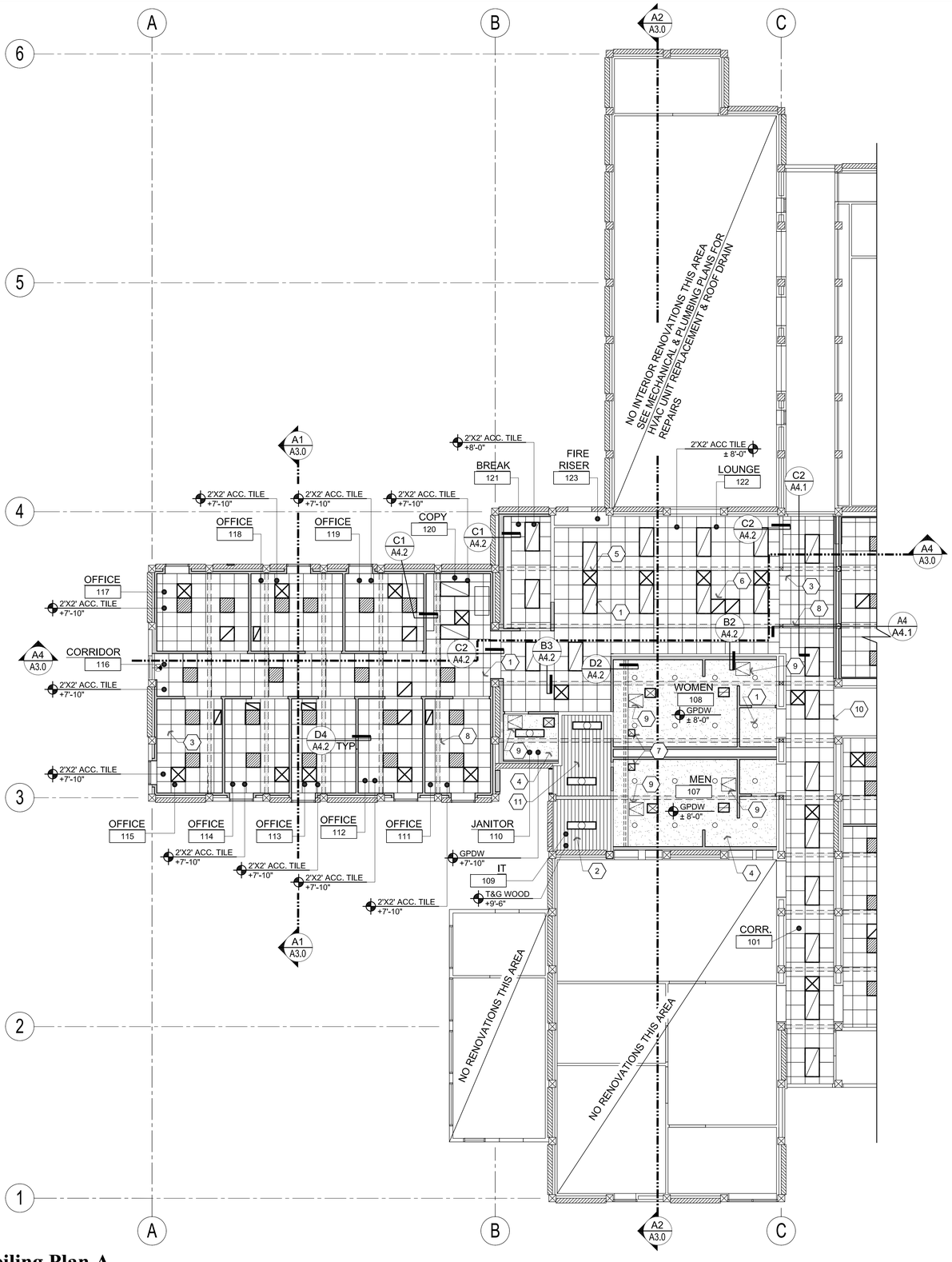
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ARCHITECTURE & PLANNING

DRAWING: DEMOLITION REFLECTED CEILING PLAN B

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

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DATE	12/10/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	A2.1



A1 Reflected Ceiling Plan A

Scale: 1/8"=1'-0"

Plan North

Descriptive Keynotes

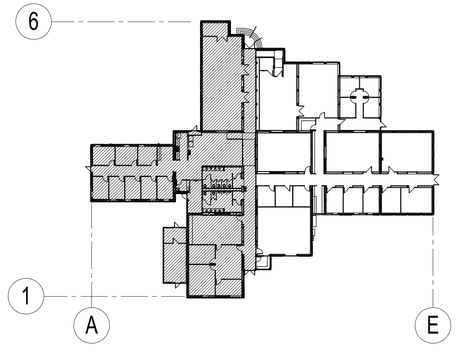
1. LIGHT FIXTURE(S) SHOWN FOR QUANTITY AND LOCATION ONLY. REFER TO ELECTRICAL PLANS.
2. NO CHANGE TO CEILING FINISH IN THIS ROOM.
3. PROVIDE SUSPENDED ACOUSTIC PANEL CEILING. AC-1
4. PROVIDE 5/8" GPDW CEILING.
5. HVAC SUPPLY DIFFUSER, REFER TO MECHANICAL PLANS, TYPICAL.
6. HVAC RETURN GRILLE, REFER TO MECHANICAL PLANS, TYPICAL.
7. HVAC EXHAUST FAN, REFER TO MECHANICAL PLANS, TYPICAL.
8. EXISTING GLULAM BEAM @ 8' A.F.F. CEILING GRID TO BE BELOW GLULAM BEAM.
9. 1'-10" x 2'-0" CEILING ACCESS.
10. ALIGN WITH EXISTING CEILING GRID.
11. REPAIR TONGUE AND GROOVE CEILINGS TO MATCH EXISTING.

Legend

- 2'x2' ACOUSTIC PANEL CEILING AC-1
- 2'X4' TROFFER LIGHT FIXTURE
- 2'X2' LED TROFFER LIGHT FIXTURE
- 6" RECESSED CAN LIGHT FIXTURE
- EMERGENCY EXIT SIGN WITH BATTERY BACK UP
- 1' X 4' SURFACE MOUNTED LIGHT FIXTURE
- 2'X2' HVAC SUPPLY DIFFUSER
- 2'X2' HVAC RETURN
- GLULAM BEAM ABOVE CEILING GRID. BOTTOM OF GLULAM BEAM @ 8'-0"

NOTE:
- REFER TO ELECTRICAL DRAWINGS FOR EXACT LIGHT LOCATIONS.

NOTE:
- REFER TO MECHANICAL PLANS FOR EXACT LOCATIONS OF HVAC DUCTWORK, DIFFUSERS, REGISTERS, ETC.



Key Plan

Scale: NTS

Plan North

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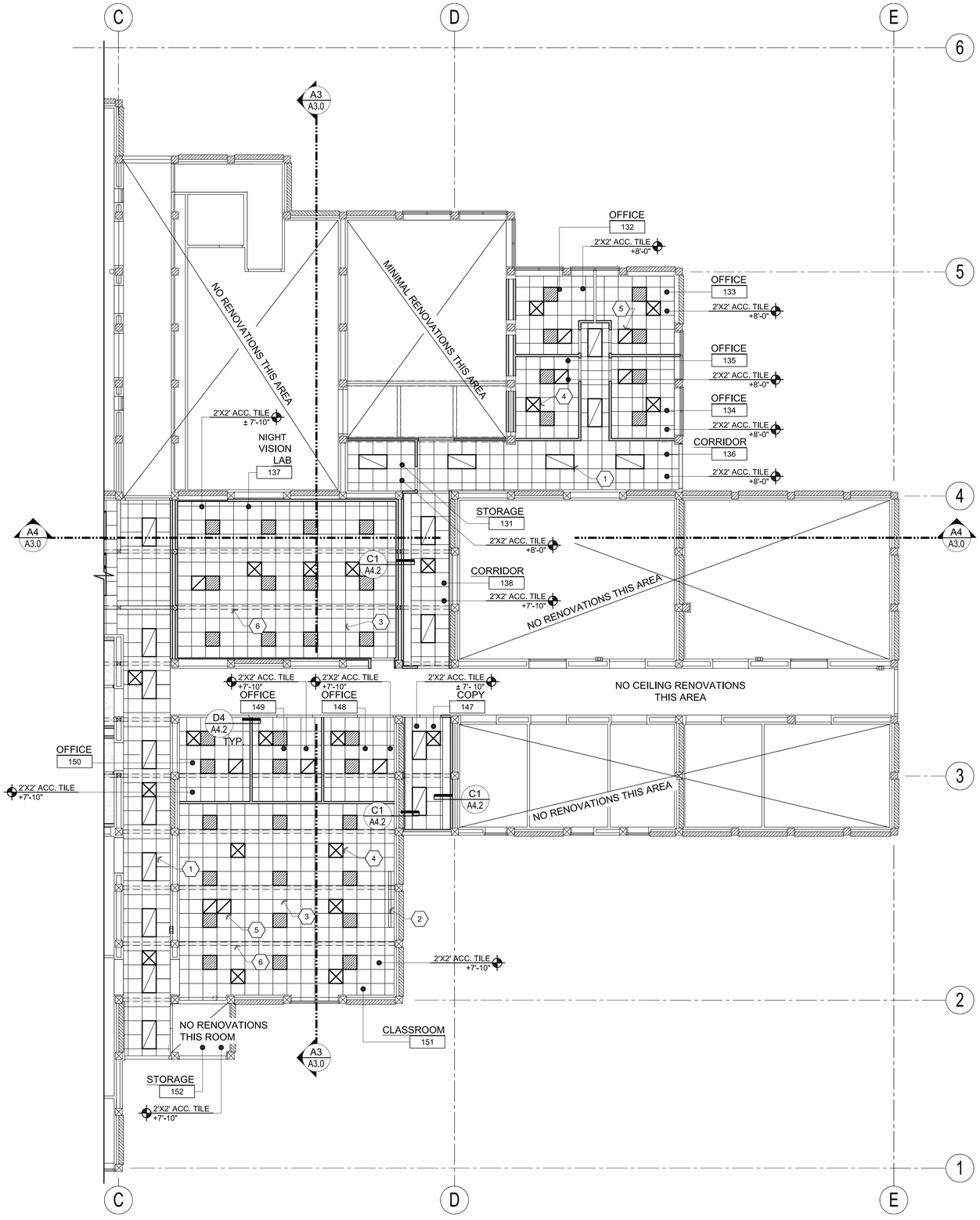
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ARCHITECTURE & PLANNING

DRAWING: REFLECTED CEILING PLAN A

PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, CGSI PRESCOTT, ARIZONA

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DATE	12/10/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	A2.2



A1 Reflected Ceiling Plan B

Scale: 1/8"=1'-0"

Plan North

Descriptive Keynotes

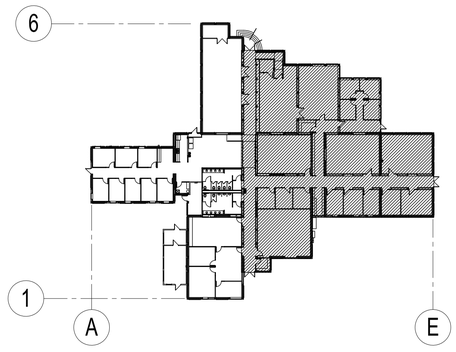
1. LIGHT FIXTURE(S) SHOWN FOR QUANTITY AND LOCATION ONLY. REFER TO ELECTRICAL PLANS.
2. RETRACTABLE CEILING SCREEN.
3. PROVIDE SUSPENDED ACOUSTIC PANEL CEILING. AC-1
4. HVAC SUPPLY DIFFUSER, REFER TO MECHANICAL PLANS.
5. HVAC RETURN GRILLE, REFER TO MECHANICAL PLANS.
6. EXISTING GLULAM BEAM @ 8' A.F.F.
   CEILING GRID TO BE BELOW GLULAM BEAM.

Legend

- 2'x2' ACOUSTIC PANEL CEILING AC-1
- 2'X2' TROFFER LIGHT FIXTURE
- 2'X4' TROFFER LIGHT FIXTURE
- 2'X2' LED TROFFER LIGHT FIXTURE
- 6" RECESSED CAN LIGHT FIXTURE
- EMERGENCY EXIT SIGN WITH BATTERY BACK UP
- 1' X 4' SURFACE MOUNTED LIGHT FIXTURE
- 2'X2' HVAC SUPPLY DIFFUSER
- 2'X2' HVAC RETURN
- GLULAM BEAM ABOVE CEILING GRID. BOTTOM OF GLULAM BEAM @ 8'-0"

NOTE:
- REFER TO ELECTRICAL DRAWINGS FOR EXACT LIGHT LOCATIONS.

NOTE:
- REFER TO MECHANICAL PLANS FOR EXACT LOCATIONS OF HVAC DUCTWORK, DIFFUSERS, REGISTERS, ETC.



Key Plan

Scale: NTS

Plan North

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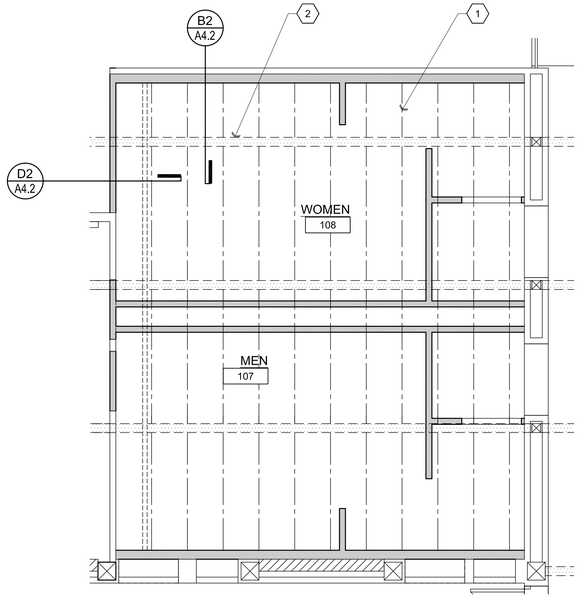
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DRAWING: REFLECTED CEILING PLAN B

PROJECT: IMPROVEMENTS FOR:
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BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

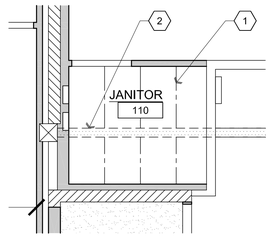
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SCALE	AS NOTED
JOB NO.	645
SHEET	A2.3



C2 Partial Ceiling Framing Plan

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

Plan North



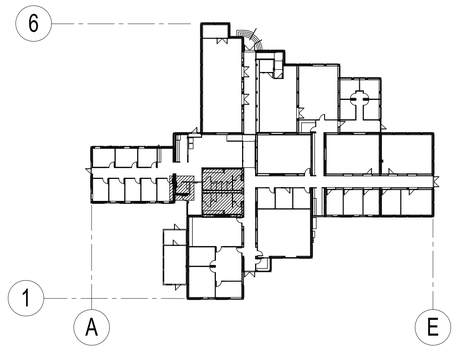
C3 Partial Ceiling Framing Plan

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

Plan North

Descriptive Keynotes

1. 2x4 FRAMING @ 24" O.C.
2. EXISTING GLULAM BEAM @ 8' A.F.F.



Key Plan

Scale: NTS

Plan North

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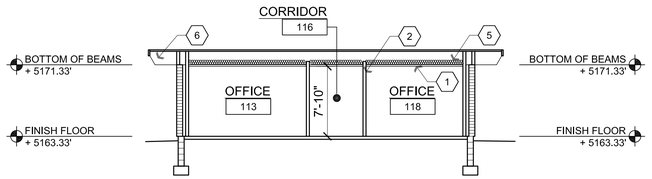
DRAWING: CEILING FRAMING PLANS

PROJECT: IMPROVEMENTS FOR:
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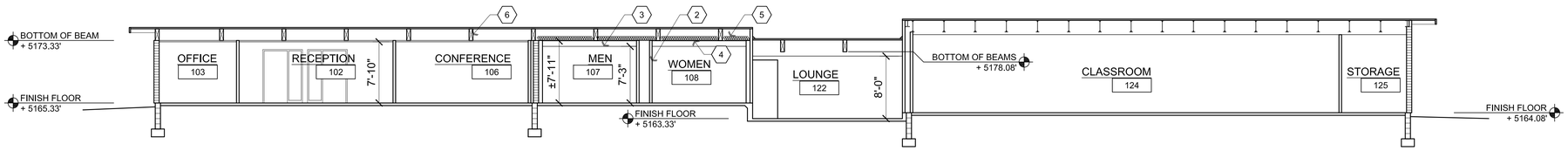
Descriptive Keynotes

1. PROVIDE SUSPENDED ACOUSTIC PANEL CEILING, REFER TO REFLECTED CEILING PLAN.
2. TYPICALLY INDICATES INTERIOR PARTITION WALL, REFER TO WALL TYPES PLAN AND REFERENCE FLOOR PLAN.
3. SOFFIT ENCLOSING FIRE SPRINKLER PIPE.
4. PROVIDE 5/8" GPDW CEILING IN RESTROOMS.
5. PROVIDE R-19 UNFACED BATT INSULATION.
6. EXISTING ROOF BEAM.



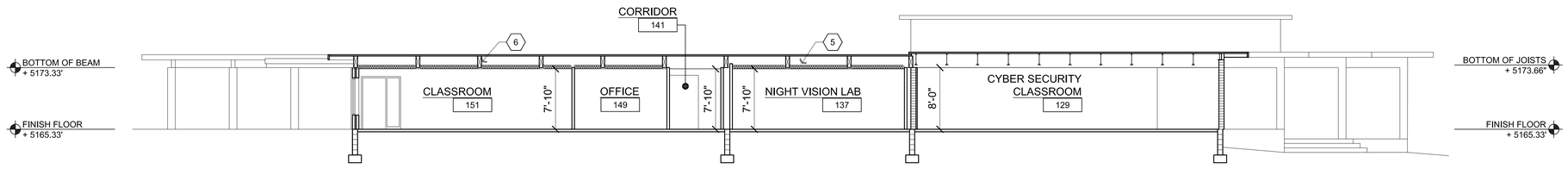
A1 Building Section

Scale: 1/8"=1'-0"



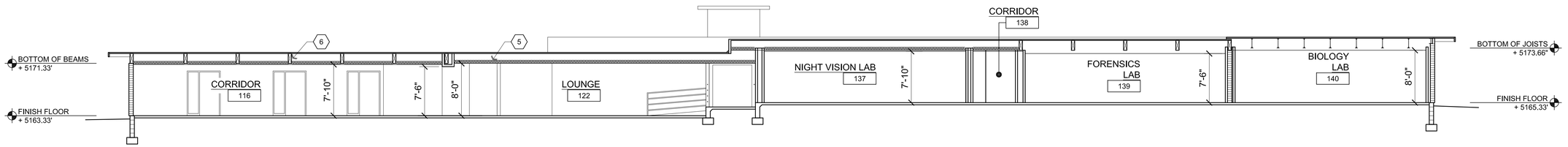
A2 Building Section

Scale: 1/8"=1'-0"



A3 Building Section

Scale: 1/8"=1'-0"



A4 Building Section

Scale: 1/8"=1'-0"

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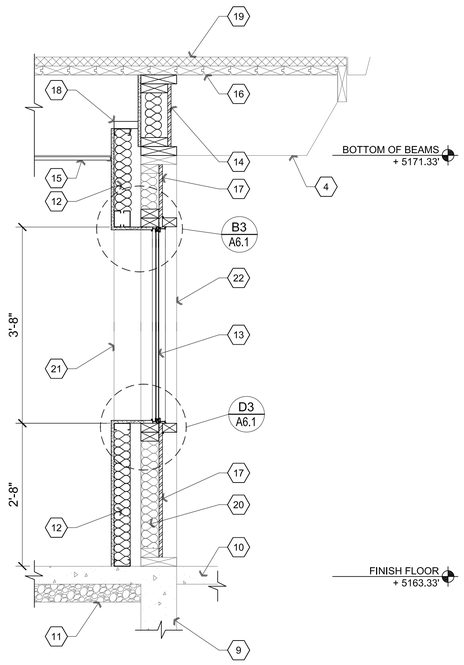
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DRAWING: BUILDING SECTIONS

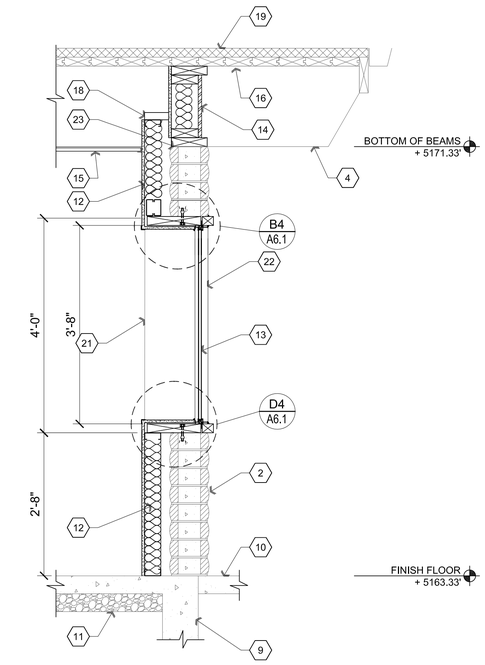
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SHEET	A3.0



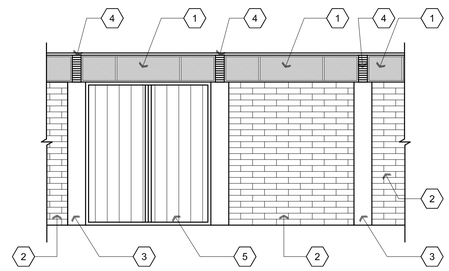
A2 Renovated Wall Section

SCALE: 3/4" = 1'-0"



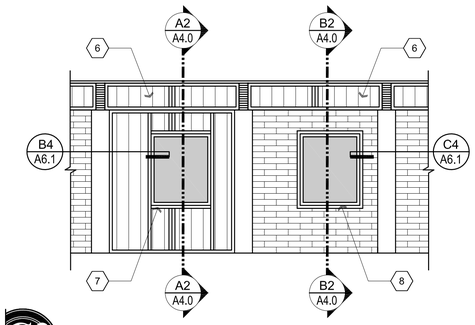
B2 Renovated Wall Section

SCALE: 3/4" = 1'-0"



C1 Existing Partial Exterior Elevation

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



C2 Renovated Partial Exterior Elevation

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

Descriptive Keynotes

1. REMOVE EXISTING ALUMINUM FRAME CLERESTORY WINDOWS, TYPICAL.
2. EXISTING 8"X4"X16" SLUMP BLOCK INFILL WALL.
3. EXISTING 12"X12" STRUCTURAL WOOD COLUMN.
4. EXISTING 6"X18" GLU-LAM BEAMS.
5. EXISTING WOOD FRAMED INFILL WALL, WITH T-111 SIDING.
6. NEW WOOD FRAME INFILL WALLS TO MATCH EXISTING WOOD WALLS.
7. PROVIDE NEW WOOD FRAME FOR NEW ALUMINUM WINDOW.
8. SAW-CUT EXISTING SLUMP BLOCK WALL FOR NEW ALUMINUM WINDOW.
9. EXISTING FOUNDATION.
10. EXISTING EXTERIOR CONCRETE SLAB.
11. EXISTING COMPACTED ABC.
12. NEW STEEL STUD WALL, REFER TO WALL TYPES PLAN.
13. ALUMINUM FRAMED WINDOW, REFER TO WINDOW TYPES.
14. INFILL OPENING WITH 2X8 WOOD STUD OUTER FRAME, AND 2X6 INNER FRAME WITH STUDS @ 16" O.C., PROVIDE 5/8" T-111 INSET SHEATHING TO MATCH EXISTING, PROVIDE SEALANT AT ALL EDGES WHERE SHEATHING MEETS OUTER FRAME. PAINT SHEATHING TO MATCH EXISTING AT EXTERIOR. PROVIDE R-19 FRICTION FIT BATT INSULATION AT EACH STUD CAVITY. ON INTERIOR SIDE, PROVIDE 5/8" GPDW, UP TO T&G WOOD ROOF DECK. SECURE WOOD INFILL FRAME WITH SHOT PIN ANCHORS TO MASONRY, AND NAILS TO WOOD MEMBERS.
15. PROVIDE SUSPENDED ACOUSTICAL CEILING, REFER TO REFLECTED CEILING PLAN.
16. EXISTING 2X6 TONGUE AND GROOVE WOOD DECK.
17. CUT NEW OPENING FOR NEW WINDOW IN EXISTING WOOD FRAMED WALL, PROVIDE FULL LENGTH TRIMMER AND KING STUDS AT EACH SIDE OF WINDOW, SEAL ALL EDGES WITH SEALANT, AND REPAINT TO MATCH EXISTING.
18. PROVIDE STEEL STUD BRACING BACK TO WALL @ 4'-0" O.C.
19. EXISTING ROOFING.
20. EXISTING BATT INSULATION.
21. EDGE OF EXISTING WOOD COLUMN BEYOND.
22. EDGE OF EXISTING CMU BEYOND.
23. CUT NAIL / EXPANSION BOLT TO CMU.

CAUTION:
DO NOT PENETRATE EXISTING ROOFING MEMBRANE WITH NAILS OR OTHER FASTENERS WHEN FASTENING WOOD INFILL WALL, ABOVE EXISTING MASONRY.

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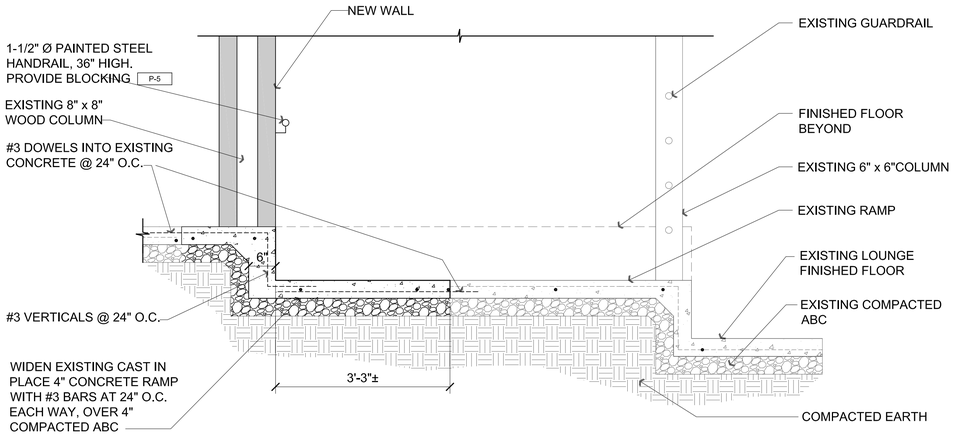
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KENSON
Date Signed 12/10/14
ARIZONA, U.S.A.
EXPIRES: 6/30/15

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DRAWING: EXTERIOR ELEVATIONS AND WALL SECTIONS

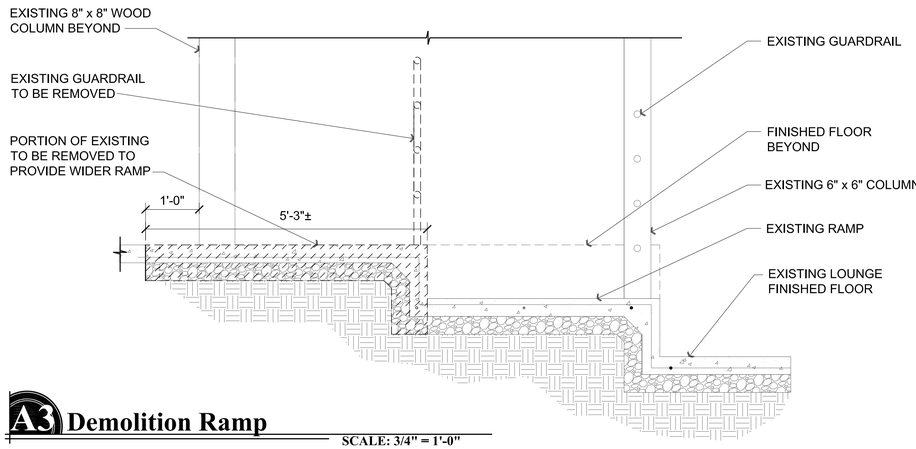
PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

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DATE	12/10/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	A4.0



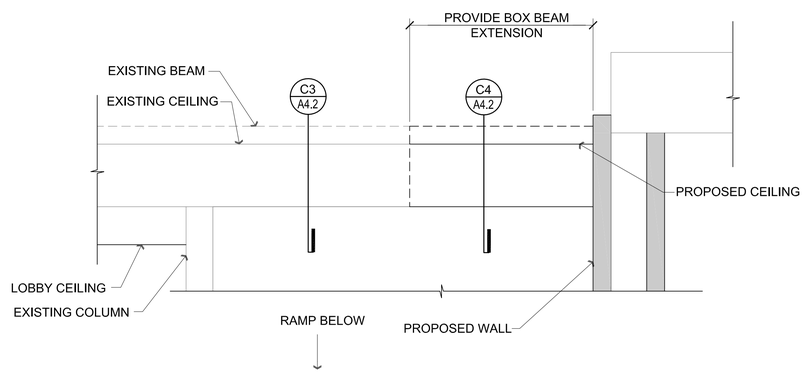
A2 Proposed Ramp

SCALE: 3/4" = 1'-0"



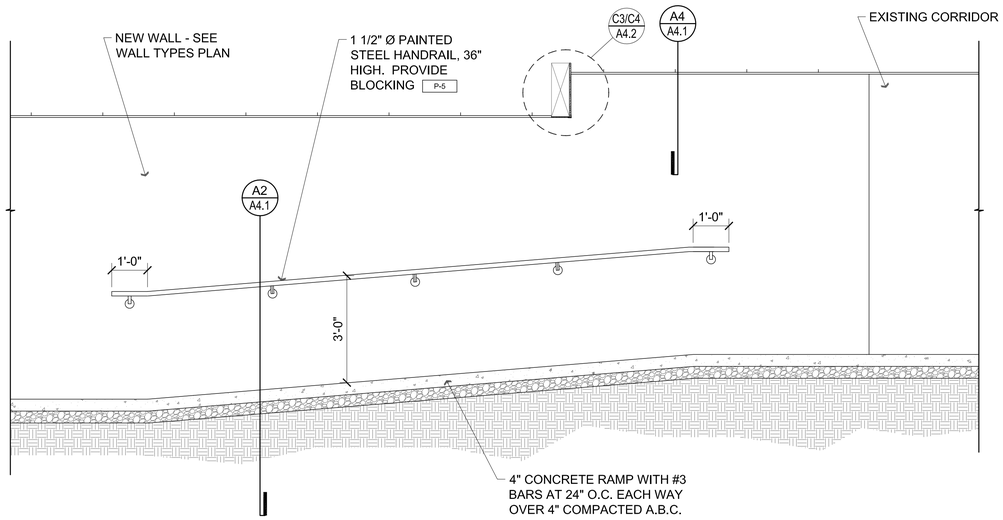
A3 Demolition Ramp

SCALE: 3/4" = 1'-0"



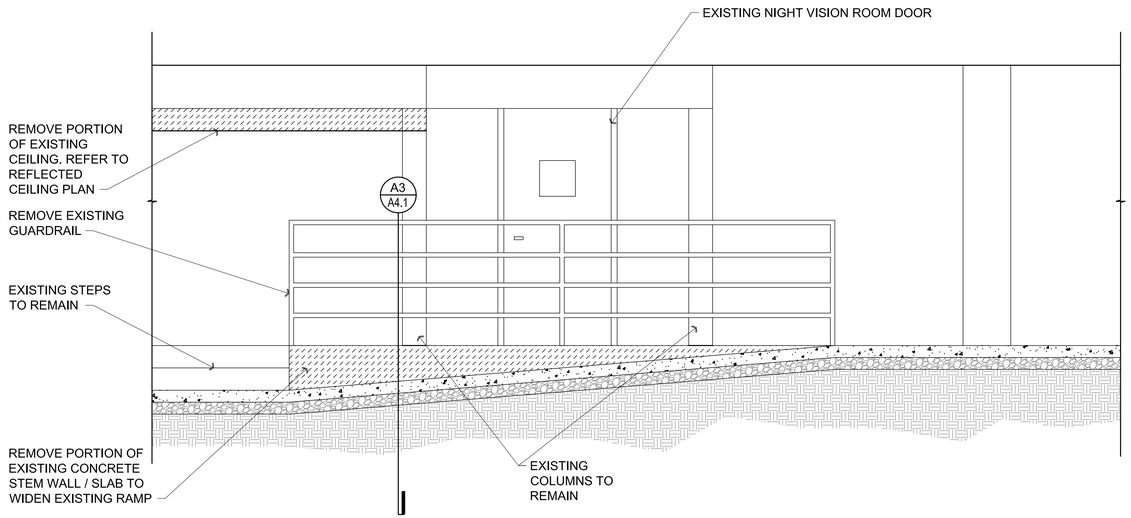
A4 Ceiling Section above Ramp

SCALE: 3/4" = 1'-0"



C2 Proposed Ramp Section

SCALE: 1/2"=1'-0"



C4 Demolition Ramp section

SCALE: 1/2"=1'-0"

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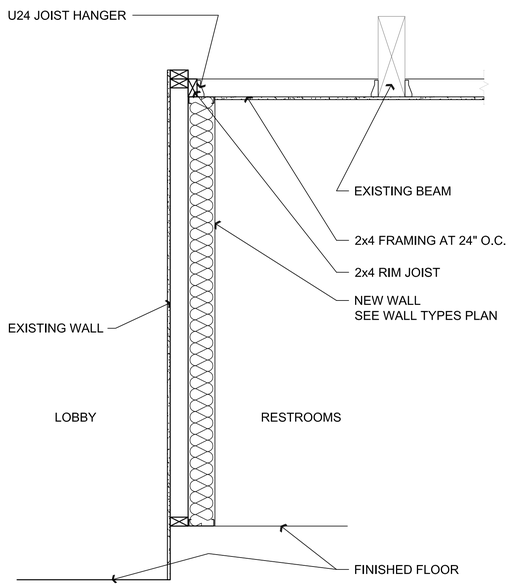
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DRAWING: RAMP SECTIONS AND DETAILS

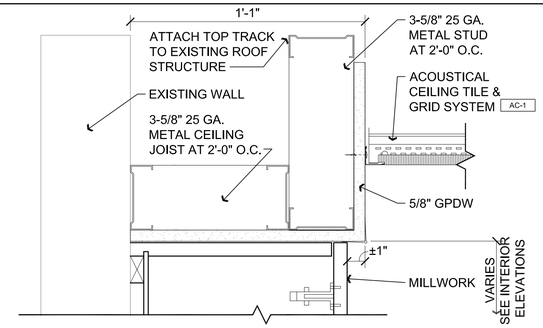
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SCALE	AS NOTED
JOB NO.	645
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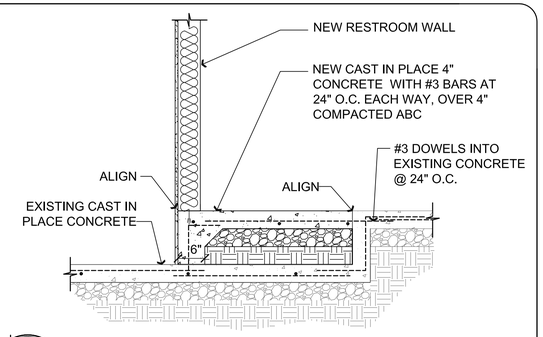
B2 GPDW Ceiling at Restroom

SCALE: 3/4" = 1'-0"



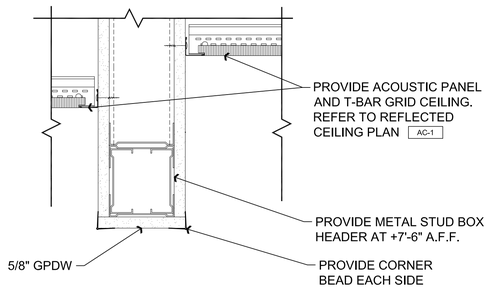
C1 Soffit at Cabinets

SCALE: 3" = 1'-0"



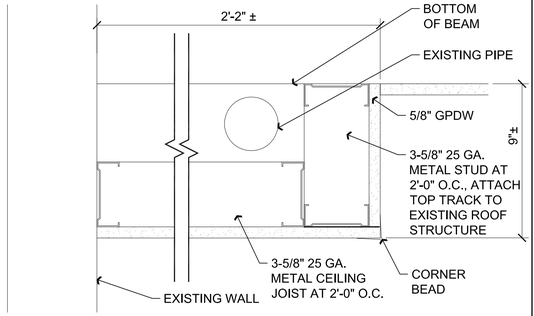
D1 Concrete Fill

SCALE: 3/4" = 1'-0"



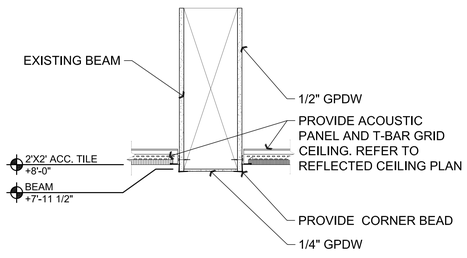
C2 Header

SCALE: 3" = 1'-0"



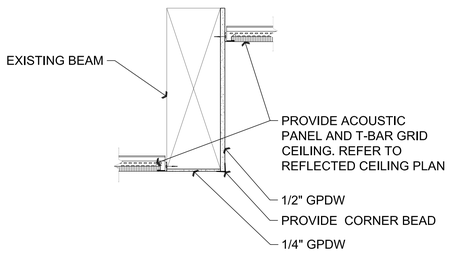
D2 Soffit at pipe

SCALE: 3" = 1'-0"



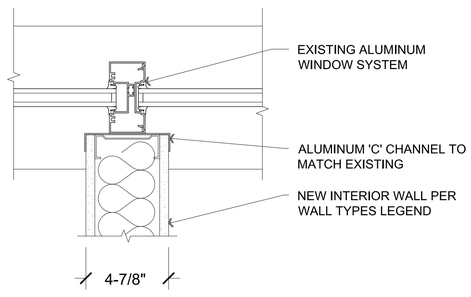
B3 Beam to Ceiling connection

SCALE: 1 1/2" = 1'-0"



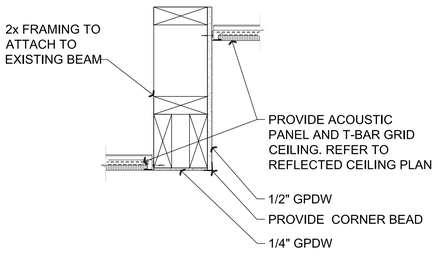
C3 Beam to Ceiling connection

SCALE: 1 1/2" = 1'-0"



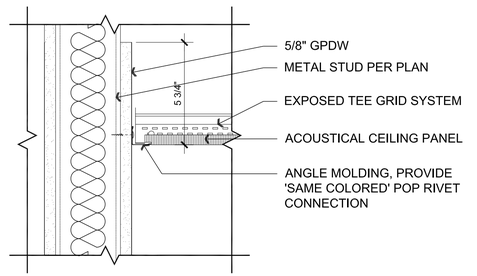
D3 Interior Wall at Mullion

SCALE: 3" = 1'-0"



C4 Beam to Ceiling connection

SCALE: 1 1/2" = 1'-0"



D4 Ceiling Grid Connection

SCALE: 3" = 1'-0"

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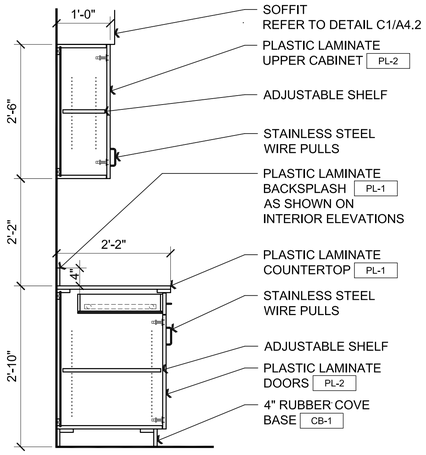
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DRAWING: DETAILS

PROJECT: IMPROVEMENTS FOR:
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SHEET	A4.2



A2 Millwork

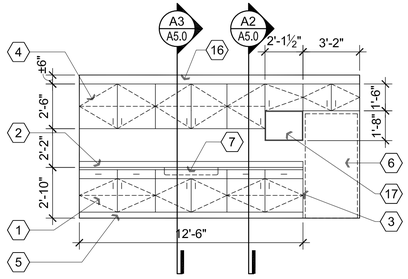
SCALE: 3/4" = 1'-0"

A3 Millwork with Sink

SCALE: 3/4" = 1'-0"

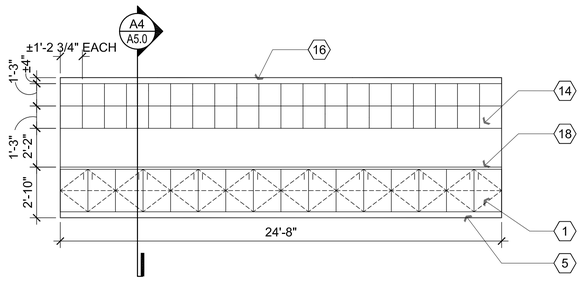
A4 Millwork with Mail Slots

SCALE: 3/4" = 1'-0"



B1 Millwork @ Break 121

Scale: 1/4" = 1'-0"

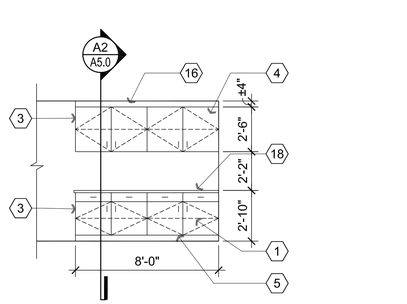


B2 Millwork @ Corridor 138

Scale: 1/4" = 1'-0"

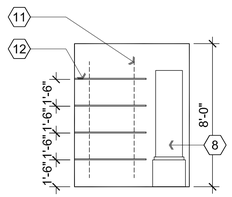
B4 Millwork Tall Cabinets

SCALE: 3/4" = 1'-0"



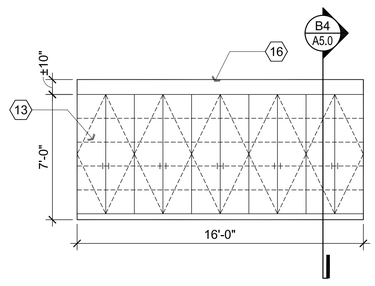
C1 Millwork @ Copy 120

Scale: 1/4" = 1'-0"



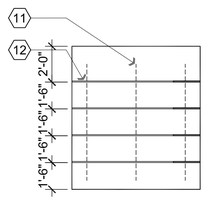
C2 Millwork @ Janitor 110

Scale: 1/4" = 1'-0"



C3 Millwork @ Copy 147

Scale: 1/4" = 1'-0"

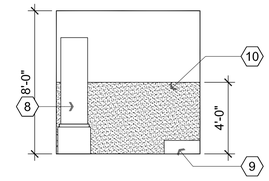


C4 Millwork @ Storage 131

Scale: 1/4" = 1'-0"

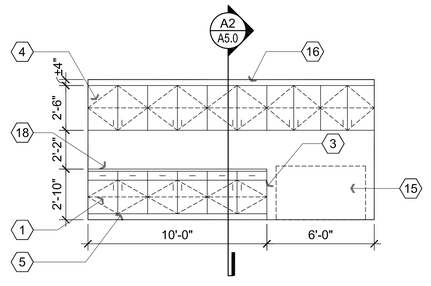
Descriptive Keynotes

1. PLASTIC LAMINATE LOWER CABINETS. PL-2
2. PLASTIC LAMINATE COUNTERTOP WITH 4" BACKSPLASH AND EDGE BANDING. PL-1
3. FINISHED END PANEL. PL-2
4. PLASTIC LAMINATE UPPER CABINET. PL-2
5. 4" TOE SPACE.
6. REFRIGERATOR BY OWNER.
7. DOUBLE COMPARTMENT SINK, REFER TO PLUMBING PLANS.
8. WATER HEATER ON STAND WITH DRAIN PAN, REFER TO PLUMBING PLANS.
9. JANITOR SINK, REFER TO PLUMBING PLANS.
10. FIBERGLASS REINFORCED PLASTIC PANEL WITH EDGE TRIM ON 2 WALLS. FRP-1
11. KV STEEL SHELF STANDARDS, WITH ADJUSTABLE STEEL SHELF BRACKETS.
12. 1'-6" DEEP PLASTIC LAMINATE SHELVING WITH EDGE BANDING. PL-2
13. FULL HEIGHT PLASTIC LAMINATE STORAGE CABINET WITH ADJUSTABLE SHELVES. PL-2
14. PLASTIC LAMINATE MAIL CUBBIES WITH BANDED EDGES. PL-2
15. COPY MACHINE BY OWNER.
16. SOFFIT ABOVE CABINETS. REFER TO DETAIL C1 SHEET A4.2.
17. MICROWAVE SHELF. PLATFORM BASE TO EXTEND 6" BEYOND FACE OF CABINETRY. (MICROWAVE SUPPLIED BY OWNER)
18. PLASTIC LAMINATE COUNTERTOP WITH EDGE BANDING.



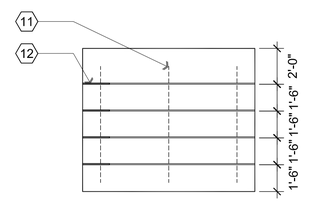
D2 Janitor 110

Scale: 1/4" = 1'-0"



D3 Millwork @ Copy 147

Scale: 1/4" = 1'-0"



D4 Millwork @ Storage 131

Scale: 1/4" = 1'-0"

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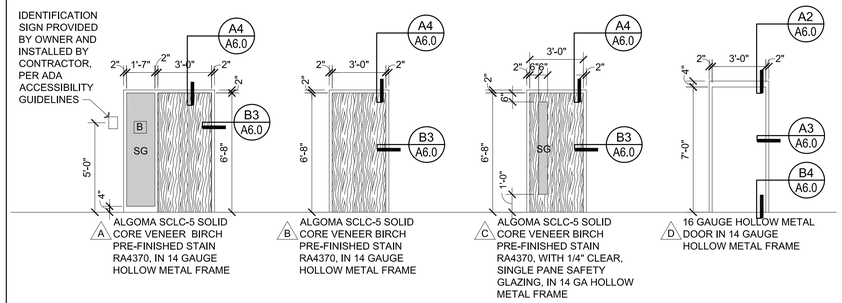
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DRAWING: INTERIOR ELEVATIONS & MILLWORK DETAILS

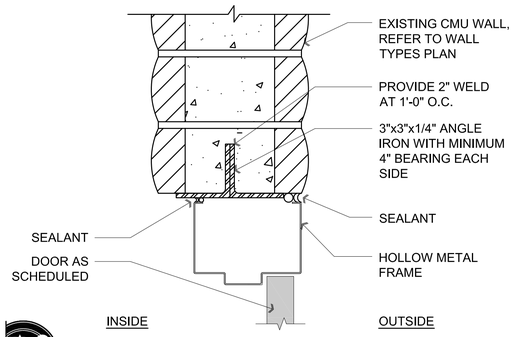
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SCALE	AS NOTED
JOB NO.	645
SHEET	A5.0



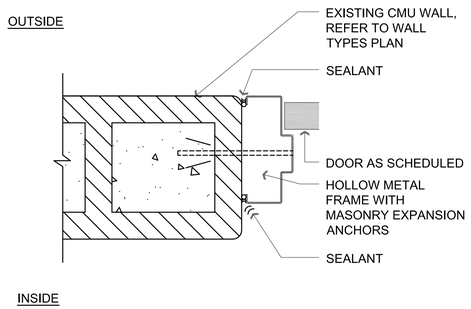
A1 Door Types

Scale: 1/4"=1'-0"



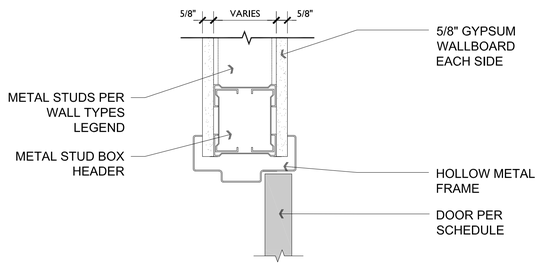
A2 Door Head @ CMU Wall

SCALE: 3" = 1'-0"



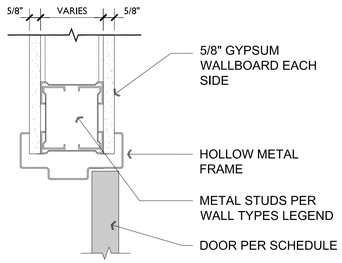
A3 Door Jamb @ CMU Wall

SCALE: 3" = 1'-0"



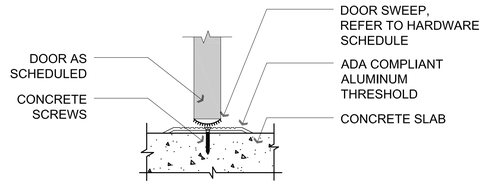
A4 Interior Hollow Metal Door Head

SCALE: 3" = 1'-0"



B3 Interior Hollow Metal Door Jamb

SCALE: 3" = 1'-0"



B4 Door Sill @ CMU Wall

SCALE: 3" = 1'-0"

Door Schedule:

NO.	SIZE	TYPE	DOOR MATL.	DOOR FINISH	FRAME MATL.	FRAME FINISH	COMMENTS
107A	3'-0" x 6'-8"	B	SCWD	STAIN	H.M.	PAINT	
108A	3'-0" x 6'-8"	B	SCWD	STAIN	H.M.	PAINT	
109A	3'-0" x 7'-0"	D	H.M.	PAINT	H.M.	PAINT	
110A	3'-0" x 6'-8"	B	SCWD	STAIN	H.M.	PAINT	
111A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	
112A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	
113A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	
114A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	
115A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	
117A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	
118A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	
119A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	
130A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	
131A	3'-0" x 6'-8"	B	SCWD	STAIN	H.M.	PAINT	
132A	3'-0" x 6'-8"	C	SCWD	STAIN	H.M.	PAINT	
133A	3'-0" x 6'-8"	C	SCWD	STAIN	H.M.	PAINT	
134A	3'-0" x 6'-8"	C	SCWD	STAIN	H.M.	PAINT	
135A	3'-0" x 6'-8"	C	SCWD	STAIN	H.M.	PAINT	
137A	3'-0" x 6'-8"	C	SCWD	STAIN	H.M.	PAINT	
148A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	
150A	3'-0" x 6'-8"	A	SCWD	STAIN	H.M.	PAINT	

NOTE:
1. ALL EXIT DOORS & HARDWARE SHALL COMPLY WITH THE 2006 I.B.C.
2. DOOR THRESHOLDS SHALL HAVE A MAX HEIGHT OF 1/2" FOR H.C. ACCESSIBILITY. THRESHOLD SHALL HAVE A MAXIMUM RISE OF 1/4" AND 1/2" RISE WHEN BEVELED WITH MAXIMUM 1:2 SLOPE.
3. ALL GLAZING IN DOORS SHALL BE SAFETY GLAZING.
4. ALL DOORS SHALL BE OPERABLE FOR EMERGENCY EXITING PURPOSES WITHOUT THE USE OF A KEY, SPECIAL KNOWLEDGE NOR EFFORT.
5. ALL GLAZING WITHIN 24" OF OPENINGS SHALL BE SAFETY GLASS.
6. IF A DOOR HAS A CLOSER, THEN THE SWEEP PERIOD OF THE CLOSER SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 70 DEGREES, THE DOOR WILL TAKE AT LEAST 3 SECONDS TO MOVE TO A POINT 3" FROM THE LATCH, MEASURED TO THE LEADING EDGE OF THE DOOR.
7. DOOR HANDLES, PULLS, LATCHES, LOCKS, AND OTHER OPERATING DEVICES ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING, OR TWISTING OF THE WRIST TO OPERATE. HARDWARE REQUIRED FOR DOOR PASSAGE SHALL BE MOUNTED NO HIGHER THAN 48" ABOVE FINISH FLOOR.
8. DOOR OPENING FORCE SHALL BE: 5lbf MAX INTERIOR HINGED, SLIDING OR FOLDING DOORS; FIRE DOORS SHALL HAVE THE MINIMUM OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY

Hardware Schedule

Heading # HW-01

1	SGL	Door 111A	Corridor 116 to Office 111 LH		90 Deg
1	SGL	Door 112A	Corridor 116 to Office 112 LH		90 Deg
1	SGL	Door 113A	Corridor 116 to Office 113 LH		90 Deg
1	SGL	Door 114A	Corridor 116 to Office 114 LH		90 Deg
1	SGL	Door 115A	Corridor 116 to Office 115 LH		90 Deg
1	SGL	Door 117A	Corridor 116 to Office 117 RH		90 Deg
1	SGL	Door 118A	Corridor 116 to Office 118 RH		90 Deg
1	SGL	Door 119A	Corridor 116 to Office 119 RH		90 Deg
1	SGL	Door 132A	Corridor 136 to Office 132 LH		90 Deg
1	SGL	Door 133A	Corridor 136 to Office 133 RH		90 Deg
1	SGL	Door 134A	Corridor 136 to Office 134 LH		90 Deg
1	SGL	Door 135A	Corridor 136 to Office 135 LH		90 Deg
1	SGL	Door 148A	Corridor 141 to Office 148 LH		90 Deg
1	SGL	Door 150A	Corridor 141 to Office 150 LH		90 Deg
		3-0 x 7-0 x 1-3/4 SCW x HMF			
3	EA.	Hinge	5BB1 4.5 x 4.5	652	IVES
1	EA.	Entry Lock	195 RAB/US26D- E4 SFIC G3		Marks
1	EA.	Core	1C72 Verify Keyway	626	Best
1	EA.	Floor Stop	241F Dome Type	626	Hager
3	EA.	Silencers	SR64-GRY		IVES

Heading # HW-02

1	SGL	Door 107A	Corridor 101 to Mens 107	LH	90 Deg
1	SGL	Door 108A	Corridor 101 to Womens 108	RH	90 Deg
		3-0 x 7-0 x 1-3/4 SCW x HMF			
3	EA.	Hinge	5BB1 4.5 x 4.5	652	IVES
1	EA.	Dead Bolt	83T 7 S STK	626	Best
1	EA.	Core	1C72 Verify Keyway	626	Best
1	EA.	Closer	4040XP H Cush	689	LCN
1	EA.	Push Plate	8200 - 4" x 16"	630	IVES
1	EA.	Pull Plate	8302-6 - 4" x 16"	630	IVES
1	EA.	Kick Plate	8400 12" x 34"	630	IVES
3	EA.	Silencers	SR64-GRY		IVES

Heading # HW-03

1	SGL	Door 110A	Corridor 116 to Storeroom 110	RH	90 Deg
		3-0 x 7-0 x 1-3/4 SCW x HMF			
3	EA.	Hinge	5BB1 4.5 x 4.5	652	IVES
1	EA.	Storeroom	195 RF/US26D-E4 SFIC G3	626	Mark
1	EA.	Core	1C72 Verify Keyway	626	Best
1	EA.	Closer	4040XP H Cush	689	LCN
3	EA.	Silencers	SR64-GRY		IVES

Heading # HW-04

1	SGL	Door 131A	Corridor 138 to Storeroom 131 LH		90 Deg
		3-0 x 7-0 x 1-3/4 SCW x HMF			
3	EA.	Hinge	5BB1 4.5 x 4.5	652	IVES
1	EA.	Storeroom	195 RF/US26D-E4 SFIC G3	626	Mark
1	EA.	Core	1C72 Verify Keyway	626	Best
1	EA.	Floor Stop	241F Dome Type	626	Hager
3	EA.	Silencers	SR64-GRY		IVES

Heading # HW-05

1	SGL	Door 109A	Exterior from IT Room 109 RHR		90 Deg
		3-0 x 7-0 x 1-3/4 SCW x HMF			
3	EA.	Hinge	5BB1 4.5 x 4.5 NRP	652	IVES
1	EA.	Access Entry	AD400-CY-70-SMK-BD-B8	626	SCH
1	EA.	Core	1C72 Verify Keyway	626	Best
1	EA.	Closer	4040XP H Cush	689	LCN
1	EA.	Gasketing	303AS 1 x 36" + 2 x 84"		PEM
1	EA.	Sweep	315CN-36"		PEM
1	EA.	Threshold	171A-36"		PEM

Heading # HW-06

1	SGL	Door 130A	Corridor 138 to Classroom 130 RH		90 Deg
1	SGL	Door 137A	Corridor 141 to Night Vision Lab RH		90 Deg
		3-0 x 7-0 x 1-3/4 SCW x HMF			
3	EA.	Hinge	5BB1 4.5 x 4.5	652	IVES
1	EA.	Access Entry	AD400MD-40-MT-RHO-BD-B8	626	SCH
1	EA.	Core	1C72 Verify Keyway	626	Best
1	EA.	Closer	4040XP H Cush	689	LCN
1	EA.	Silencers	SR64-GRY		IVES

REVISIONS	BY

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ARCHITECTURE & PLANNING

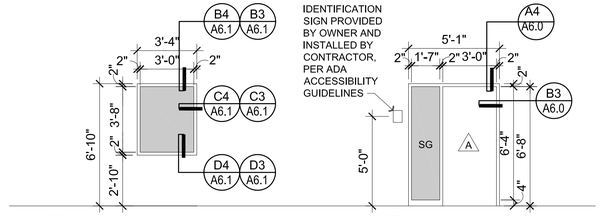
DRAWING: DOOR TYPES / HARDWARE SCHEDULE / DETAILS

PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, CGSI PRESCOTT, ARIZONA

DRAWN BY	PLM - LO
CHECKED BY	WAK
DATE	12/10/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	A6.0

NOTE:
ALL GLAZING WITHIN 24" OF OPENINGS SHALL BE SAFETY GLAZING

NOTE:
SG = SAFETY GLAZING
REFER TO 2006 IBC FOR ADDITIONAL SAFETY GLAZING REQUIREMENTS.

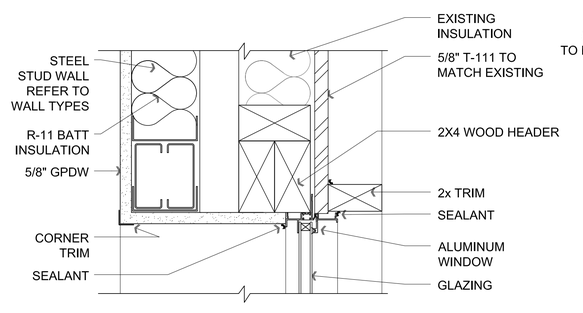


A 1/4" DUAL-PANE 1" LOW-E, CLEAR, INSULATED GLAZING IN BRONZE ALUMINUM FRAME MANUFACTURED BY MI WINDOWS AND DOORS.
PRODUCT: REGALVIEW - 5A5
FRAME: WEST ALUMINUM
FRAME TYPE: FIN. 1 3/8"
COLOR: DARK BRONZE
GLAZING TYPE: INSULATED
GLASS TINT: CLEAR, LOW-E 366, ARGON GAS, GLASS STRENGTH - DSB
NFRC: SERIES 500: DIRECTSET,
U-FACTOR: 0.33, SHGC: 0.25, VT: 0.58

B 1/4" SINGLE PANE CLEAR SAFETY GLAZING IN 14 GAUGE HOLLOW METAL FRAME

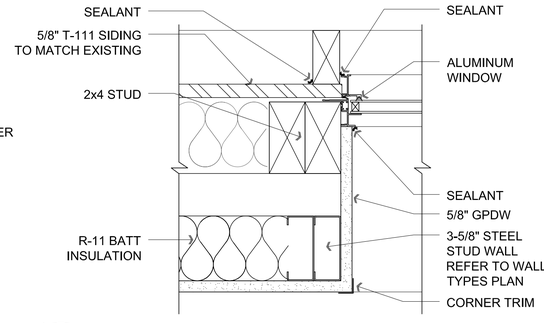
D2 Window Types

Scale: 1/4"=1'-0"



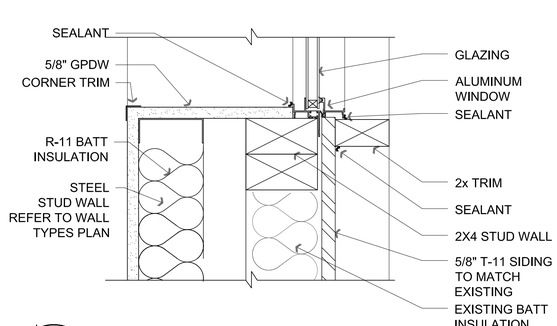
B3 Window Head @ Framed Wall

SCALE: 3" = 1'-0"



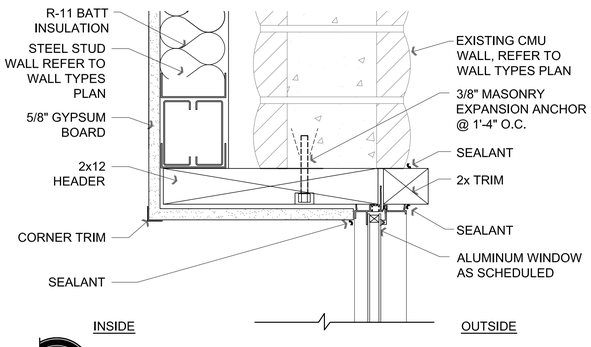
C3 Window Jamb @ Framed Wall

SCALE: 3" = 1'-0"



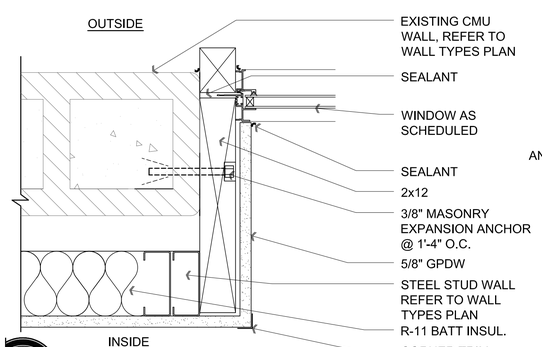
D3 Window Sill @ Framed Wall

SCALE: 3" = 1'-0"



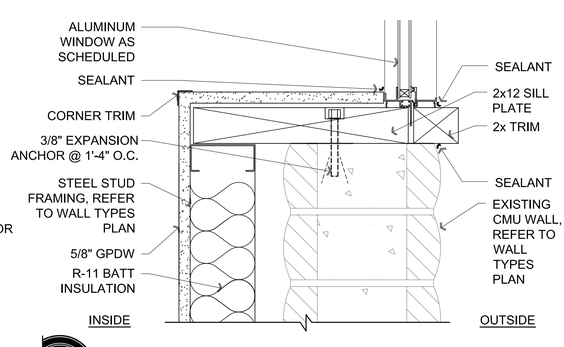
B4 Window Head @ CMU

SCALE: 3" = 1'-0"



C4 Window Jamb @ CMU

SCALE: 3" = 1'-0"



D4 Window Sill @ CMU

SCALE: 3" = 1'-0"

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REGISTERED ARCHITECT
CERTIFICATE NO.
25646
W. ALAN KENSON
Date Signed 12/10/14
ARIZONA, U.S.A.
EXPIRES: 6/30/15

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DRAWING: WINDOW TYPES / DETAILS

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	PLM - LO
CHECKED BY	WAK
DATE	12/10/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	A6.1

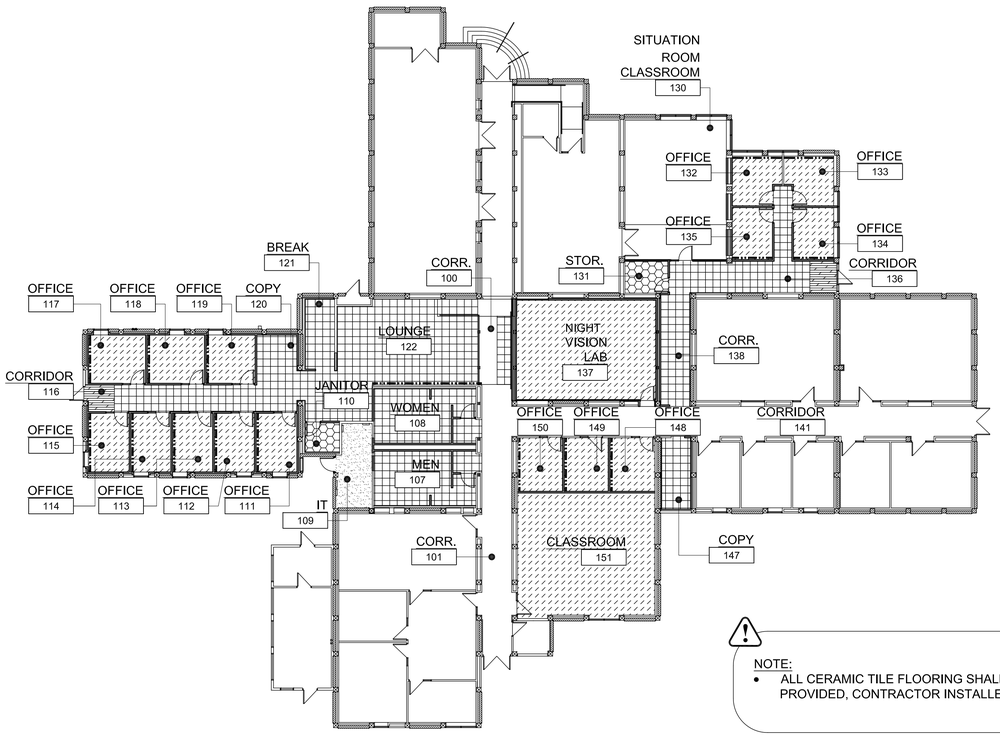
Interior Materials & Finish Schedule

XX-#

CODE	MATERIAL	LOCATION	MANUFACTURER	SPECIFICATION
AC-1	ACOUSTICAL CEILING TILE	REFER TO THE REFLECTED CEILING PLANS	ARMSTRONG	ASTM C 36; 2'x2' #770 NON DIRECTIONAL SQUARE LAY-IN TILE, WHITE SUSPENDE GRIDS; 15/16" METAL WHITE
CB-1	RUBBER COVE BASE	ALL CARPETED AND VCT AREAS	FLEXCO	4" COVED WITH PRE-FORMED CORNERS, BLACK MATTE FINISH FLEXCO, BLACK DAHLIA # WF01
CP-1	CARPET	OFFICES, CLASSROOMS AND LABS	TANDUS	C&A CRAYON POWERBOND CUSHION RS PRECIOUS METAL #48010
CT-1	CERAMIC FLOOR TILE (PROVIDED BY OWNER)	ALL TILED AREAS (FLOORS)	DALTILE	20x20, CASTLE DE VERRE GLAZED CHALICE GOLD, CV11
CT-2	CERAMIC TILE COVE BASE	RESTROOM WALLS	REFIN CERAMICHE	6x12 COVE BASE FABULA / BEIGE NOTE: SUBJECT TO CHANGE, VERIFY WITH ARCHITECT PRIOR TO ORDERING
CT-3	CERAMIC TILE BULLNOSE	RESTROOM WALLS	REFIN CERAMICHE	3" BULLNOSE FABULA / BEIGE NOTE: SUBJECT TO CHANGE, VERIFY WITH ARCHITECT PRIOR TO ORDERING
CT-4	CERAMIC WALL TILE	RESTROOM WALLS	REFIN CERAMICHE	12x12 FABULA / BEIGE NOTE: SUBJECT TO CHANGE, VERIFY WITH ARCHITECT PRIOR TO ORDERING
CT-5	CERAMIC TILE BULLNOSE BASE	ALL TILED AREAS (FLOORS)		3x12, CASTLE DE VERRE - TO MATCH EXISTING
FRP-1	FIBERGLASS REINFORCED PLASTIC	JANITOR CLOSET 2 WALLS		
P-1	PAINT	OFFICES, CLASSROOMS AND LABS	SHERWIN WILLIAMS	SAND DOLLAR SW6099
P-2	PAINT	INTERIOR TRIM (DOORS, FRAMES, WOOD TRIM)	SHERWIN WILLIAMS	FAMILIAR BEIGE SW6093
P-3	PAINT	CEILINGS	SHERWIN WILLIAMS	PACER WHITE SW6098
P-4	PAINT	ACCENT WALLS	SHERWIN WILLIAMS	COLOR TO BE DETERMINED
P-5	PAINT	HANDRAIL	SHERWIN WILLIAMS	SHERWIN WILLIAMS B50AZ6 KEM-KROMIK GREY PRIMER WITH SHERWIN WILLIAMS F75BC14 SHER-KEM RAVEN BLACK
PL-1	PLASTIC LAMINATE	COUNTER TOPS	WILSONART	FLAME SOAPSTONE 4884-38
PL-2	PLASTIC LAMINATE	VERTICAL SURFACES	WILSONART	SLATE GREY D91-60
SS-1	SOLID SURFACE	RESTROOM COUNTERTOPS	LG SURFACES	638 SEA OAT QUARTZ
VCT-1	VINYL COMPOSITION TILE	STORAGE ROOMS & JANITOR'S CLOSET	ALTRO	DOLCE 18"x18" COLOR: AD514
TC-1	PLASTIC TOILET COMPARTMENTS	RESTROOMS	SCRANTON PRODUCTS	HEADRAIL BRACED, 1" THICK HDPE OR PP RESINS COLOR AND PATTERN: ROTARY BRUSHED BRONZE
WM-1	WALK-OFF MAT	CORRIDORS	C & A	ABRASIVE ACTION POWER BOND CUSHION CHARCOAL #19100

Exterior Materials & Finish Schedule

CODE	MATERIAL	LOCATION	MANUFACTURER	SPECIFICATION
P-6	PAINT	EXTERIOR BODY	SHERWIN WILLIAMS	SANDS OF TIME SW 6101
P-7	PAINT	EXTERIOR TRIM	SHERWIN WILLIAMS	PORTABELLO SW6102



NOTE:
- ALL CERAMIC TILE FLOORING SHALL BE OWNER PROVIDED, CONTRACTOR INSTALLED.

Floor Finish and Accent Wall Paint Plan

A4

Scale: 1/16"=1'-0"

Plan North

Room Finish Schedule

NO.	ROOM NAME	FLOOR	BASE	WALLS	CEILING	HEIGHT	COMMENTS
100	CORRIDOR	F4 & F2	B3 & B4	W1	C2	7'-10"	REFER TO NOTE #1, 4
107	MEN'S RR	F2	B1	W2/W3	C3	7'-10"	REFER TO NOTE #3
108	WOMEN'S RR	F2	B1	W2/W3	C3	7'-10"	REFER TO NOTE #3
109	IT	F1	B5	W2	C4	9'-6"	
110	JANITOR	F5	B2	W2/W4	C3	7'-10"	REFER TO NOTE #2
111	OFFICE	F3	B2	W2	C2	7'-10"	
112	OFFICE	F3	B2	W2	C2	7'-10"	
113	OFFICE	F3	B2	W2	C2	7'-10"	
114	OFFICE	F3	B2	W2	C2	7'-10"	
115	OFFICE	F3	B2	W2	C2	7'-10"	
116	CORRIDOR	F2	B4	W2	C2	7'-10"	
117	OFFICE	F3	B2	W2	C2	7'-10"	
118	OFFICE	F3	B2	W2	C2	7'-10"	
119	OFFICE	F3	B2	W2	C2	7'-10"	
120	COPY	F2	B4	W2	C2	7'-10"	
121	BREAK	F2	B4	W2	C2	8'-0"	
122	LOUNGE	F2	B4	W2	C2	8'-0"	
130	CLASSROOM	F4	B2/B3	W2	C1	7'-10"	REFER TO NOTE #1
131	STORAGE	F5	B2	W2	C2	8'-0"	
132	OFFICE	F3	B2	W2	C2	8'-0"	
133	OFFICE	F3	B2	W2	C2	8'-0"	
134	OFFICE	F3	B2	W2	C2	8'-0"	
135	OFFICE	F3	B2	W2	C2	8'-0"	
136	CORRIDOR	F3	B2	W2	C2	8'-0"	
137	CLASSROOM	F3	B2	W2	C2	7'-10"	
138	CORRIDOR	F2	B4	W2	C2	7'-10"	
141	CORRIDOR	F4	B3	W1	C1	7'-10"	REFER TO NOTE #1
147	COPY	F2	B4	W2	C2	7'-10"	
148	OFFICE	F3	B2	W2	C2	7'-10"	
149	OFFICE	F3	B2	W2	C2	7'-10"	
150	OFFICE	F3	B2	W2	C2	7'-10"	
151	CLASSROOM	F3	B2	W2	C2	7'-10"	REFER TO NOTE #1

FLOOR:
- F1 CONCRETE
- F2 PORCELAIN TILE 20"x20"
- F3 CARPET
- F4 EXISTING FLOORING
- F5 VCT

BASE:
- B1 6"x12" CERAMIC COVE BASE
- B2 4" RUBBER BASE
- B3 EXISTING BASE
- B4 3" X 12" CERAMIC BULLNOSE
- B5 NO BASE REQUIRED

WALLS:
- W1 EXISTING PAINTED GPDW
- W2 PAINTED GPDW, TEXTURE TO MATCH EXISTING.
- W3 ±4'-9" TILE WAINSCOT
- W4 4'-0" FRP WAINSCOT

CEILING:
- C1 EXISTING ACOUSTIC PANEL WITH SUSPENDED GRID
- C2 NEW ACOUSTIC PANEL WITH SUSPENDED GRID
- C3 PAINTED GPDW
- C4 EXISTING 2X6 TONGUE AND GROOVE DECKING

NOTES:
1. EXISTING FINISHES TO REMAIN - PROVIDE FINISH TO MATCH EXISTING AT REPAIR / INFILL AREAS.
2. 4'-0" FRP WAINSCOT AT (2) MOP SINK WALLS ONLY
3. PROVIDE 1/2" CEMENTITIOUS BACKER BOARD BEHIND CERAMIC TILE UP TO 4'-9" HEIGHT.
4. PROVIDE NEW CERAMIC TILE FLOORING & BASE TO MATCH EXISTING CONSTRUCTION AT ENLARGED RAMP AREA.

Legend:

- TYPICALLY INDICATES PROPOSED 20" x 20" PORCELAIN TILE FLOORING WITH 3"x12" CERAMIC BULLNOSE BASE CT-1 CT-5
- TYPICALLY INDICATES CONCRETE FLOOR SURFACE
- TYPICALLY INDICATES PROPOSED CARPET WITH 4" RUBBER BASE CP-1 CB-1
- TYPICALLY INDICATES PROPOSED VCT WITH 4" RUBBER BASE VCT-1 CB-1
- TYPICALLY INDICATES WALK-OFF MAT WM-1
- TYPICALLY INDICATES ACCENT WALL PAINT. (ROOMS: 111, 112, 113, 114, 115, 117, 118, 119,122, 132, 133, 134, 135, 148, 149, AND 150) P-4

NOTE: REFER TO MATERIALS SCHEDULE THIS SHEET XX-#

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REGISTERED ARCHITECT CERTIFICATE NO. 25646 W. ALAN KENSON Date Signed 12/10/14 ARIZONA, U.S.A. EXPIRES: 6/30/15

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Prescott, AZ 86304
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email: waka@cableone.net
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ARCHITECTURE & PLANNING

DRAWING: ROOM FINISH PLAN AND SCHEDULES

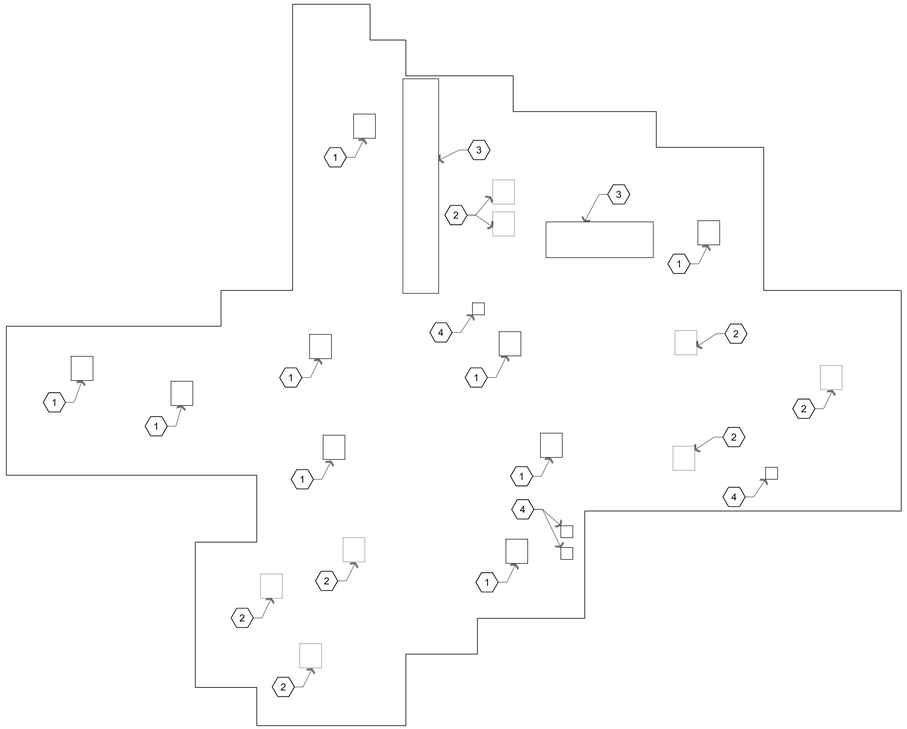
PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, CGSI PRESCOTT, ARIZONA

DRAWN BY	PLM - LO
CHECKED BY	WAK
DATE	12/10/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	A6.2

Descriptive Keynotes

1. INSTALL OWNER PROVIDED ROOF CURB AT HVAC UNIT TO BE REPLACED IF REQUIRED DUE TO SIZE OF NEW OWNER PROVIDED HVAC UNIT. REFER TO MECHANICAL PLANS. REPAIR ROOF AS REQUIRED.
2. EXISTING HVAC UNIT TO REMAIN.
3. EXISTING CLERESTORY WINDOW TOWER.
4. REPAIR ROOF WHERE ROOF MOUNTED ELECTRICAL CONDUIT IS TO BE REMOVED. REFER TO ELECTRICAL PLANS. VERIFY EXACT LOCATION IN FIELD WITH ARCHITECT.

1. NOTE:
   ALL ROOF PENETRATIONS WILL BE MADE BY A CERTIFIED TREMCO ROOF INSTALLER. NO OTHER CONTRACTOR OR ROOFING SYSTEM IS ACCEPTABLE. PROVIDE TREMCO APPROVED ROOF JACK TO ROOFING CONTRACTOR FOR INSTALLTION.
   CONTACT TREMCO ROOFING REPRESENTATIVE:
   WALT HITCHCOCK
   CELL: 480-694-3433
   EMAIL: WALT.HITCHCOCK@ME.COM



C4 Roof Plan

Scale: 1/16" = 1'-0"

Plan North

REVISIONS	BY

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ARCHITECTURE & PLANNING

DRAWING: ROOF PLAN

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	PLM - LO
CHECKED BY	WAK
DATE	12/10/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	A7.0

00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

00 70 00 - GENERAL CONDITIONS

General Conditions of the Contract for Construction, AIA Document A201, 2007 Edition, is made a part of the Construction Documents by reference. A copy of the referenced document is available for inspection at the office of the Architect.

01 - GENERAL REQUIREMENTS

01 30 00 - ADMINISTRATIVE REQUIREMENTS

Shop Drawings Six (6) paper copies of Shop Drawings and/or Catalog Cut Sheets are to be submitted to the Architect for review and approval. The Architect will review the shop drawings and affix a stamp indicating the findings of the review and return three (3) copies to the Contractor. The Contractor shall correct and resubmit as necessary. Required for all products and samples and materials to be included in the project.

Meetings Contractor shall hold weekly or bi-monthly (whichever owner chooses) construction progress meetings at jobsite. Representatives from owner, architect, contractor, and any relative subcontractor or suppliers shall attend. Contractor shall take minutes of the meetings and distribute to all attendees.

Portable Toilet Facility Contractor to maintain portable toilet facility throughout construction period.

Dumpster Contractor to provide dumpster throughout construction period.

Samples Three (3) samples of each color or style of the products to be submitted to the Architect.

01 50 00 - TEMPORARY FACILITIES AND CONTROLS

Designated Areas Owner shall provide designated areas for the contractor's employee parking, material storage and staging. Contractor shall control his employees, sub-contractors and material suppliers from parking in un-designated areas.

Protection Contractor shall take All necessary precautionary measures to protect their work and ensure the safety of workmen, public and property. Neither the Owner nor Architect shall have any responsibility or control of construction means, methods, techniques, sequences or procedures affecting job-site safety, or for safety precautions and programs. contractor shall legally defend and hold harmless the Owner and Architect from all such claims.

Contractor's Responsibility The Contractor shall supervise and direct the work, and be solely responsible for and have control over all methods, techniques and procedures necessary for the proper execution of the work. Where the work of this agreement affects owner's utilities, fire alarm, fire suppression or controls systems, the contractor shall give the owner a minimum of 24 hours advance notice.

The Contractor shall be responsible to the owner for the acts and omissions of the Contractor's employees, agents, sub-contractors, and their agents, employees, and other persons performing portions of the work under a contract with the Contractor to the fullest extent permitted by law.

The Contractor shall indemnify and hold harmless the Owner, the Owner's consultants, agents and employees of any of them from and against claims, damages, losses and expenses including but not limited to attorney's fees arising out of or resulting from performance of the work, provided that such claim damages, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury or destruction of tangible property other than the work itself, including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the contractor, a sub-contractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable regardless of whether or not such damage, claim, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this paragraph.

Material The Contractor warrants that unless otherwise specified, all materials and equipment shall be new, free from defects, suitable for the intended purpose, and in conformance with laws in effect on the date of this agreement.

01 70 00 - EXECUTION REQUIREMENTS

General Contractor shall field verify all existing conditions and lay out all of the work prior to starting construction on any part of the work. As a minimum contractor shall verify:
- all dimensions, both horizontal and vertical
- Utility locations, buried and overhead
- existing conditions affecting this project

Conflicts If Contractor discovers an existing condition which differs from that shown (or is not shown), Contractor shall immediately notify the Architect.

Cutting and Demolition In all cases, exercise extreme care in cutting operations and perform such operations under adequate supervision by competent mechanics skilled in the applicable trade. Openings shall be neatly cut and shall be kept as small as possible to avoid unnecessary damage. careless and/or avoidable cutting damage, etc. will not be tolerated and the contractor will be held responsible for such avoidable or willful damage.

Patching and Refinishing All replacing, patching and repairing of materials and surfaces cut or damaged in the execution of the work shall be performed by experienced mechanics of the specific trades involved. Such repairing and/or patching shall be done with the applicable materials in a manner that all surfaces so replaced, etc. will, upon completion of the work, match the surrounding similar surfaces.

Locations Walls - paint all affected walls, interior and exterior from corner to corner. (e.g. if you install a door in an existing frame, you need only to paint the door and frame, but if you install a door and frame, paint the entire wall to match existing)
Gypsum wall board ceilings - Paint the entire ceiling of the room affected. (e.g. if anything is installed in/on/through the ceiling of a room, paint the ceiling of that room)
Roofs - Replace portion of roof covering as required to flash new assembly. If roof warranty is still in effect, Contractor issuing warranty shall perform the required work. All patching and refinishing will be performed in a manner such that at the completion of the work, it shall not be obvious where an item was removed from, or added to.

Disposal Remove all materials noted on the drawings and all miscellaneous materials which will be rendered useless with removal of the item noted. Unless specifically noted otherwise, materials shall become the property of the contractor and shall be removed from the site in a legal and safe manner. Patch and repair all adjacent surfaces such that at the completion of the work, it shall not be obvious where an item was removed from or added to. Final appearance shall be totally acceptable to the owner.
Contractor shall provide and maintain his own trash receptacles, unless specifically directed otherwise. All surplus materials become the property of the contractor. Remove all trash, rubbish and surplus materials from the site and dispose of in a legal and safe manner.

As-Builts Contractor shall maintain a clean set of drawings at the job site that is specifically set aside for recording:
- all differences between the work as shown on the drawings and the work installed.
- All work added or deleted during the course of construction
- Exact measurements of all buried and/or concealed work (e.g. conduit below slab, conduit and data cable below raised platforms, conduit in walls etc.)

All recordings shall be neat and legible. Stamp this set of drawings 'As-Built drawings' and list as a minimum, the name, address and telephone number of the General Contractor and all major sub-contractors. (e.g. electrical, HVAC, etc.) At the completion of the project as prerequisite for final payment, Contractor shall turn these as-builts over to the owner.

Final Cleaning After the construction of each phase and before occupancy, thoroughly clean the space by dusting the sills, washing windows, vacuuming the carpet and replace all HVAC filters. Clean site areas of any refuse created in the scope of work.

03 - CONCRETE

03 30 00 CAST-IN-PLACE-CONCRETE

General Structural notes on the engineering drawings shall supersede this section.

Mix Design Concrete Mix # 160X109 in Winter and #160X149 in Summer as produced by Hanson products.

Curing compound provided on all slabs per ACI and ASTM specifications.

06 - WOOD, PLASTICS, COMPOSITES

06 10 00 - ROUGH CARPENTRY

General Identify each piece of lumber or plywood used for structural framing with grade and trade mark of a lumber grading organization. Trade mark of manufacturer shall also appear on each piece.
Grading Rules: conform with applicable requirements of American Lumber Standards "Simplified Practice Recommendation R-16" and to grading rules of manufacturer's association under whose rules the lumber is produced.
Standards: Conform with requirements of The Engineered Wood Association, U.S. Department of Commerce Commercial Standards and American Wood Preservers Institute Standards (www.preservedwood.com), as they apply.

Products Lumber Species: Douglas Fir - Larch, Hem Fir graded in accordance with Standard Grading and Dressing Rules of WCLIB.
Framing lumber shall be stress grade. All sides shall be surfaced.
Lumber Grades: provide dimensional lumber framing of grades indicated on Drawings, and the following:
One inch boards: Construction.
Misc. blocking, bridging, etc.: Utility.
Grounds and furring: Construction Grade Douglas Fur or No. 2 White Pine.
Moisture content: Lumber shall be air-dried or kiln-dried.
At time of installation, moisture content, expressed a s a percentage of the weight of the oven-dry wood, shall not exceed 19 percent for lumber of up to two inches nominal thickness.
Moisture content of lumber over two inches nominal thickness shall conform to the rules of the association under which it is graded.

Plywood 3/4" C-D plugged

Installation General design requirements and maximum spacing are as indicated on drawings.

Connections Securely attach carpentry work to substrates by anchoring and fastening as require by these specifications.

Connectors
1. Make framed connections with pre-manufactured framing on each side.
2. Pre-drill all holes for nails larger than 20d.
3. Field drill bolt holes for proper size.
4. Nailing schedule in accordance with 2012 IBC section 2304.8.3.2 and table 2304.9.1 unless noted otherwise.

Blocking Blocking to be of size and shape required for securing and supporting other work or equipment.

06 20 00 - FINISH CARPENTRY

General Formaldehyde containing particleboard and similar composition products are not allowable.

06 40 00 - ARCHITECTURAL WOODWORK

General The installation of all architectural woodwork and casework shall comply with premium grade per AWI specifications. This section also includes natural stone, engineered stone, recycled glass and all materials associated with millwork.

Custom Casework Case or millwork specified as receiving a painted finish should be limited to lower cost species (birch, poplar, etc…).

All cabinet and millwork tops, sides, dividers, shelving, etc., shall be 3/4" minimum stock.

Stained veneer materials shall conform to AWI custom grade, minimum thickness 1/16".

Doors and drawer fronts shall be 3/4" minimum core stock.

Drawer boxes shall be 1/2" minimum with minimum 1/4" plywood bottoms.

Cabinet tops should be of sufficient height to comply with minimum disabled accessibility requirements.

Most shelving should be designed as fully adjustable, 3/4" minimum thickness.

"line bore and pin" method of shelving adjustment (either in cabinets or standing shelving) is desired. Shelf standards mortised in with brackets is also acceptable.

All millwork and accessory hardware shall comply with ANSI A156.9, minimum quality level type 2 (Institutional). Hinges, guides, slides, etc., shall utilize bearings complying with BHMA 201.

All cabinet hinges should be self-closing.

Drawer slides should allow full extension (1" longer than total drawer depth) and be specified as heavy duty (100 lb minimum), Blum or approved alternate.

The use of painted particleboard as the finish for cabinets and tops is not acceptable.

Particleboard is allowable as core stock in low/no moisture areas when receiving a high-pressure plastic laminate finish.

Particleboard is not an acceptable material for shelving with greater than a 2 foot unsupported span.

The use of melamine or other similar low mill finishes (less than.020") as interior cabinet lining or underside of shelving is not acceptable. Melamine thermo fused 3/4" is acceptable for interior finish of cabinets only.

All exposed cabinetry hardware should be specified with a permanent, durable finish that is easily cleanable. Cabinet pulls 4" brushed aluminum wire.

All countertops designed as work surfaces shall be of an appropriate height to accommodate the physically disabled.

Restroom counter tops for lavatories will be composite material open on bottom with self-rimming sinks. Sheet mirror mounted full length of wall above top. Top manufacturer to cut lavatory openings in top to dimensions supplied by the plumber.

All millwork designed to support electrical equipment (computers, phones, clocks, etc.…) shall have grommet openings allowing cords, interconnect cables, etc., to be concealed or routed internally. Grommets shall be 2-1/2" minimum diameter plastic, color to match adjacent finish. Grommet holes are to be drilled don-site b cabinet installer after equipment layout is determined by IT staff who will mark appropriate locations.

Refer to materials & finish schedule for finishes.

08 - OPENINGS

08 11 00 - METAL DOORS AND FRAMES

General Provide metal doors and frames as shown on the drawings per steel door institute standards.

08 14 00 - WOOD DOORS AND FRAMES

General Provide wood veneer doors and frames per schedule.

08 70 00 - HARDWARE

General Refer to hardware schedule.

08 80 00 - GLAZING

General Provide and install glass and glazing as indicated on the drawings and specified herein. Comply with building code, safety standard for architectural glazing materials and consumer products safety commission.

09 - FINISHES

09 29 00 - GYPSUM BOARD

General Installation and application of materials to be in accordance with the latest printed instructions of the U.S. gypsum company or approved equal. After finishing, make joints invisible. No gaps or voids between gypsum board units or between drywall and adjacent work unless otherwise detailed. Not more than 1/8" in 10'-0" deviation from true plane, plumb and level in finished work.

Gypsum Board ASTM C 36; regular types except where special types are required. Minimum 5/8" thick. Texture: Light Skip Trowel.

09 30 00 - TILE

General Install porcelain tile as indicated on the drawings and in strict accordance with manufacturer's recommended instructions.

09 50 00 - CEILING TILE

General Provide and install suspended acoustical ceiling system where indicated on drawings and refer to interior materials & finish schedule.

09 65 00 - RESILIENT FLOORING

Vinyl Composition Tile VCT shall be applied with a suitable waterproof mastic. All VCT tile floors are to be sealed by the contractor, minimum 2 layers, per manufacturer's recommendations. Refer to Interior materials & finish schedule and floor finish plan for layout.

Base Install base where indicated on drawings and in strict accordance with manufacturer's printed instructions. Refer to interior materials & finish schedule and floor finish plan for layout.

09 68 00 - CARPET

General Refer to materials & finish schedule and floor finish plan for layout.

Preparation of Surfaces Inspect surfaces to receive carpet, make tests recommended by manufacturer, take corrective action deemed necessary or notify owner in writing of any condition which could be detrimental to carpet installation, Remove all foreign and incompatible materials and vacuum clean surfaces immediately prior to installation of carpet. Fill cracks, construction joints and other surface imperfections with latex underlayment compound troweled level with adjacent surface. Commencement of work constitutes acceptance of surfaces and responsibility for them.

09 90 00 - PAINTING

General Painting products shall be specified from Sherwin Williams.
Break room, restrooms, labs, doors, door trim and window trim shall be Semi-gloss.
Classrooms, offices, corridors, and reception areas shall be eggshell.
All wet areas to have semi-gloss mildew resistant paint.

Scope of Work Items included, but not limited to interior conditions:
1. Refer to room finish schedule on the drawings.
2. Drywall partitions and soffits - new and existing.
3. Wood doors and hm frames.
4. Access doors and panels, electric panels, exposed cable trays, miscellaneous trim and surfaces not prefinished or excluded specifically.
5. Wall mounted mechanical grilles, registers, diffusers, and electrical cable trays. Paint to match adjacent surfaces.

Number of Coats Number of coats listed below are minimum number. Apply as many coats as necessary to obtain full coverage and uniform appearance.

Paint Schedule

Interior drywall	1 coat latex wall primer 2 coats eggshell
Gypsum ceilings	1 coat latex wall primer 2 coats flat
Hollow metal doors, finish - semi gloss	
Frames and other ferrous materials	1 coat ferrous metal primer 2nd -3rd coats acrylic eggshell enamel

Refer to room finish schedule and materials schedule for color and location.

REVISIONS	BY

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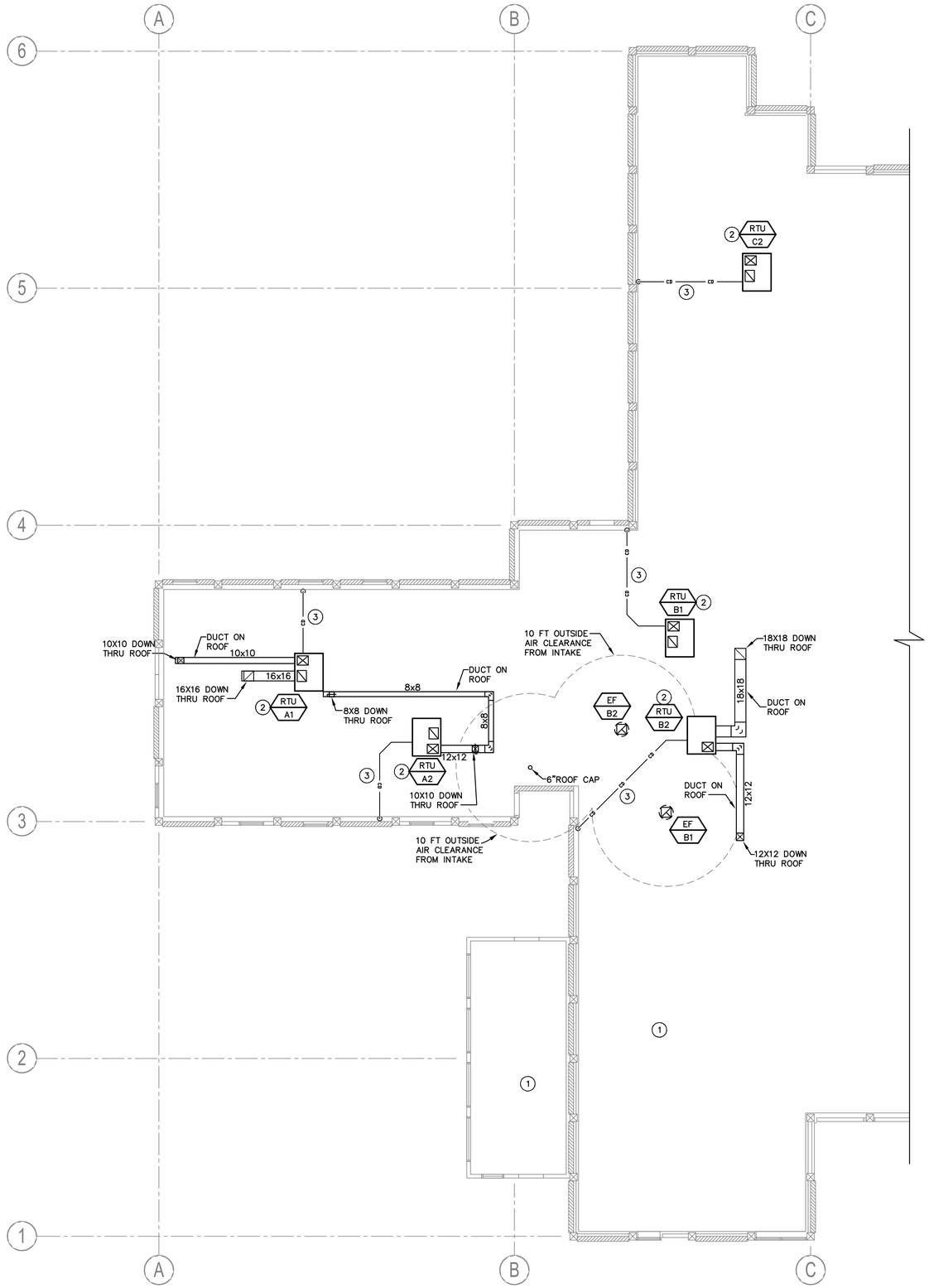
REGISTERED ARCHITECT
CERTIFICATE NO.
25646
W. ALAN KENSON
Date Signed 12/10/14
ARIZONA, U.S.A.
EXPIRES: 6/30/15

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ARCHITECTURE & PLANNING

DRAWING: SPECIFICATIONS

PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, CGSI PRESCOTT, ARIZONA

DRAWN BY	PLM - LO
CHECKED BY	WAK
DATE	12/10/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	A8.0



MECHANICAL ROOF PLAN - NORTH SIDE

Scale: 1/8"=1'-0"

Plan North

KEYED NOTES : (#)

1. EXISTING MECHANICAL SERVING AREA IS EXISTING TO REMAIN.
2. REMOVE EXISTING MECHANICAL UNIT, RE-USE EXISTING ROOF CURB IF POSSIBLE. IF NOT, INSTALL NEW ROOF CURB PROVIDED BY OWNER. PROVIDE NEW UNIT PER SCHEDULE.
3. ROUTE ¾"CONDENSATE DRAIN ON ROOF TO TERMINATE AT NEAREST GUTTER, VERIFY EXACT LOCATION IN FIELD.

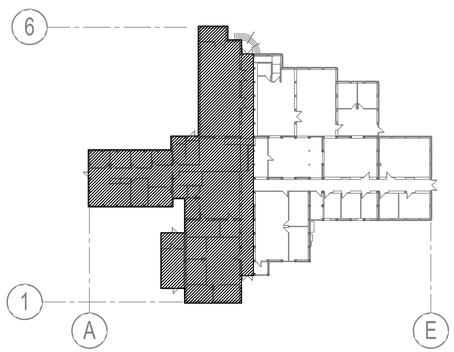
CONDENSATE DRAINS

TONNAGE	MIN. PIPE SIZE
0 – 10 TONS	3/4"
OVER 10 TONS	1"
OVER 35 TONS	1-1/4"
OVER 55 TONS	1-1/2"
OVER 120 TONS	2"

SLOPE ALL CONDENSATE DRAIN PIPING AT MINIMUM 1/8" PER FOOT.

ALL CONDENSATE DRAIN PIPING SHALL BE TYPE "M" COPPER.

NOTE:
ALL ROOF PENETRATIONS WILL BE MADE BY A CERTIFIED TREMCO ROOF INSTALLER. NO OTHER CONTRACTOR OR ROOFING SYSTEM IS ACCEPTABLE. PROVIDE TREMCO APPROVED ROOF JACK TO ROOFING CONTRACTOR FOR INSTALLATION. CONTACT TREMCO ROOFING
REPRESENTATIVE: WALT HITCHCOCK
CELL: 480-694-34-33
EMAIL: WALT.HITCHCOCK@ME.COM



Key Plan

Scale: NTS

Plan North

MAVEN ENGINEERING
Job #14EMB148
Tel: (480) 303-0160
Fax: (480) 302-7927
230 West Baseline Rd, Suite 103
Tempe, Arizona 85283

Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

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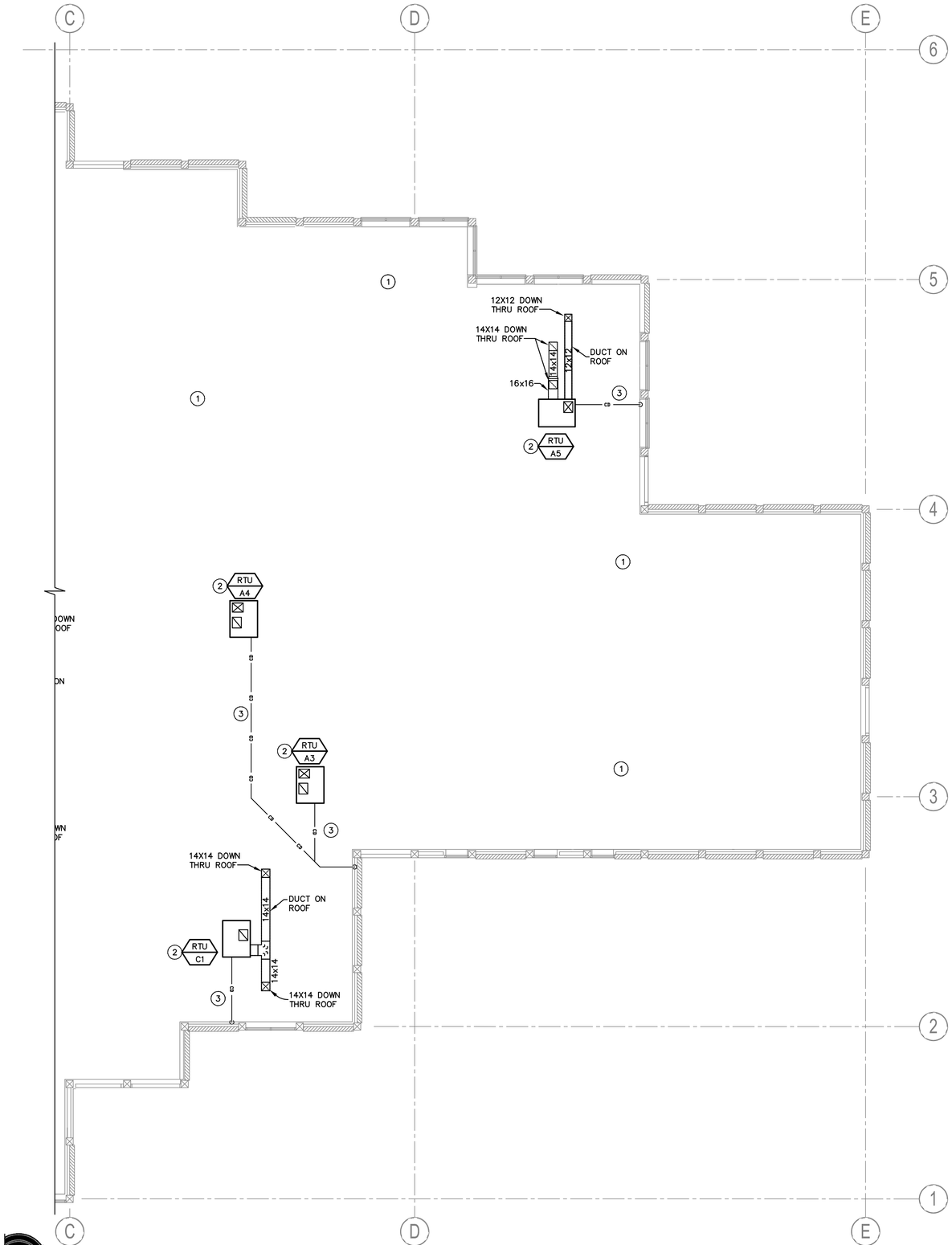
Certified Construction Document
KJH
Kirk J. Hofman
No. 24488
Prescott, Arizona, U.S.A.
EXPIRES 03/31/15

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ARCHITECTURE & PLANNING

DRAWING: MECHANICAL ROOF PLAN - NORTH SIDE

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	AJW
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	M0.0



MECHANICAL ROOF PLAN - SOUTH SIDE

Scale: 1/8"=1'-0"

Plan North

KEYED NOTES : (#)

1. EXISTING MECHANICAL SERVING AREA IS EXISTING TO REMAIN.
2. REMOVE EXISTING MECHANICAL UNIT, RE-USE EXISTING ROOF CURB IF POSSIBLE. IF NOT, INSTALL NEW ROOF CURB PROVIDED BY OWNER. PROVIDE NEW UNIT PER SCHEDULE.
3. ROUTE ¾"CONDENSATE DRAIN ON ROOF TO TERMINATE AT NEAREST GUTTER, VERIFY EXACT LOCATION IN FIELD.

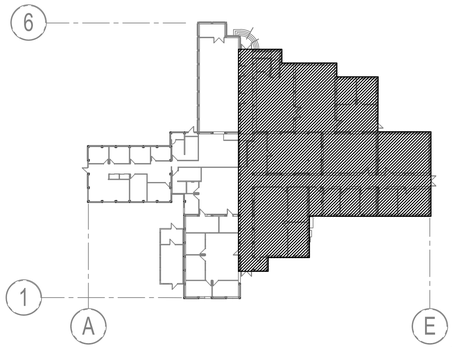
CONDENSATE DRAINS

TONNAGE	MIN. PIPE SIZE
0 – 10 TONS	3/4"
OVER 10 TONS	1"
OVER 35 TONS	1-1/4"
OVER 55 TONS	1-1/2"
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SLOPE ALL CONDENSATE DRAIN PIPING AT MINIMUM 1/8" PER FOOT.

ALL CONDENSATE DRAIN PIPING SHALL BE TYPE "M" COPPER.

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Key Plan

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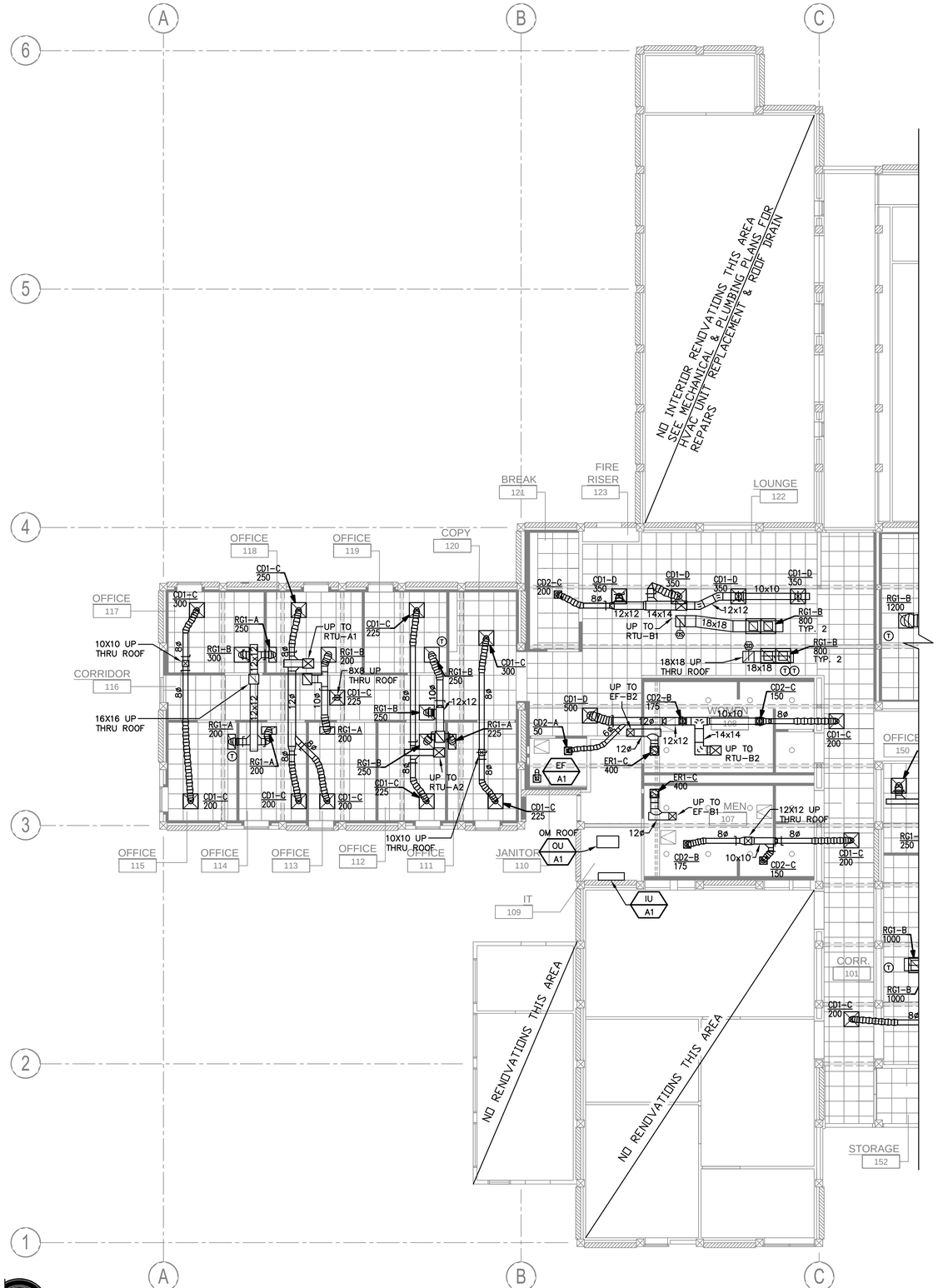
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DRAWING: MECHANICAL ROOF PLAN - SOUTH SIDE

PROJECT: IMPROVEMENTS FOR:
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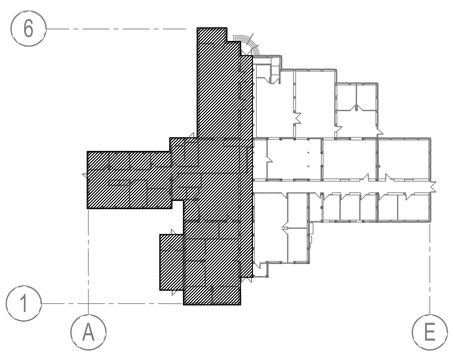
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SHEET	M0.1



MECHANICAL FLOOR PLAN - NORTH SIDE

Scale: 1/8"=1'-0"

Plan North



Key Plan

Scale: NTS

Plan North

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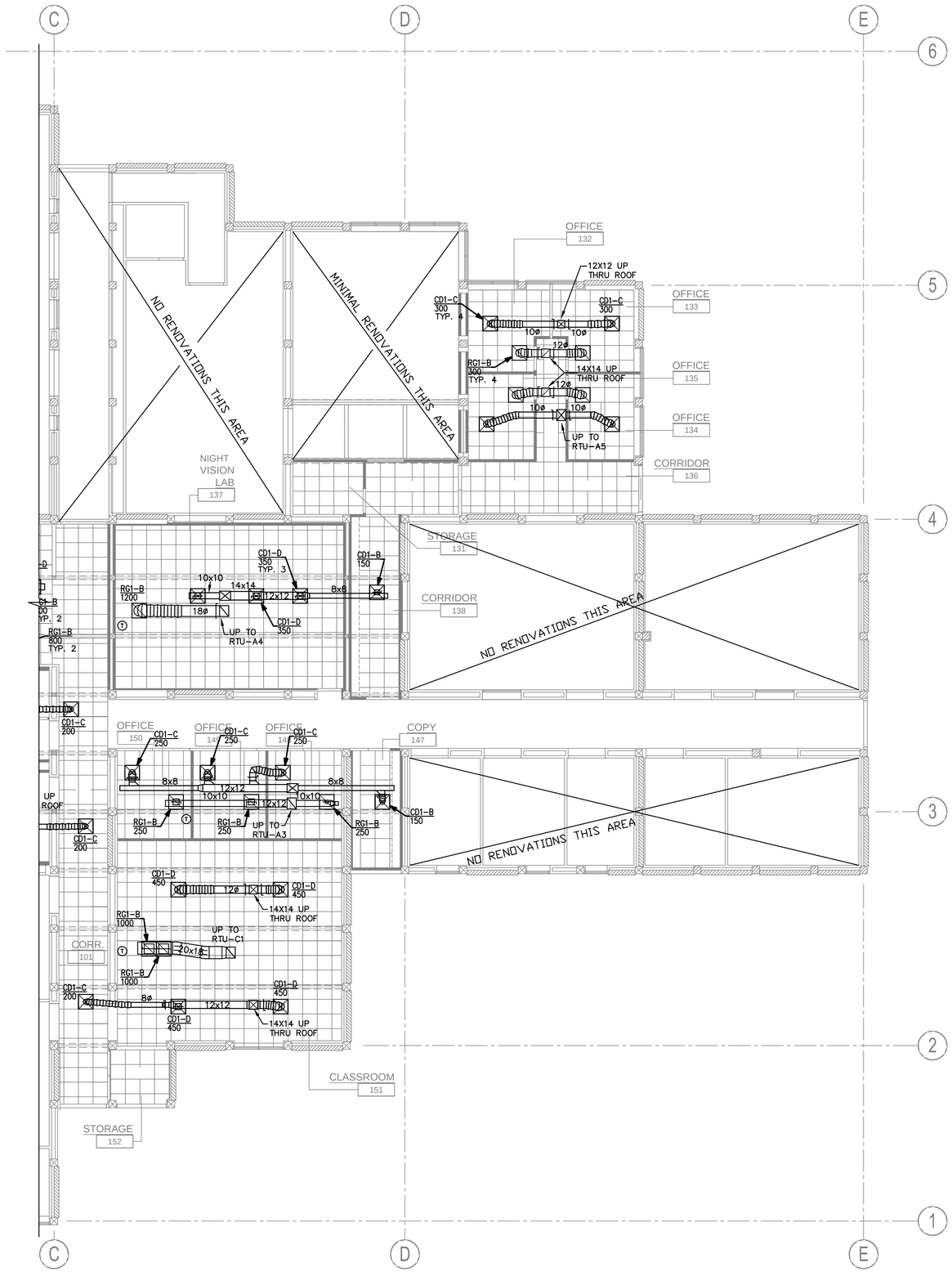
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ARCHITECTURE & PLANNING

REGISTERED

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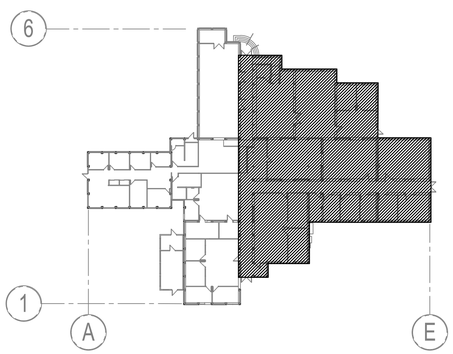
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SHEET	M1.0



MECHANICAL FLOOR PLAN - SOUTH SIDE

Scale: 1/8"=1'-0"

Plan North



Key Plan

Scale: NTS

Plan North

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MECHANICAL EQUIPMENT SCHEDULE

NOTE: 1. AMBIENT TEMPERATURE 96 F COOLING, 10 F HEATING.
2. NO EQUIPMENT WITH LESS THAN 98% OF LISTED CAPACITIES WILL BE APPROVED. COOLING CAPACITY INCLUDES FAN HEAT.
3. FILTERS SHALL HAVE A MAXIMUM VELOCITY OF 500 FPM, 1" DEEP, 30% ATMOSPHERIC EFFICIENT.
4. UNIT SHALL HAVE LOW AMBIENT COMPRESSOR LOCKOUT THERMOSTAT – TRANE TOUCH–SCREEN #TCONT 800 PROVIDED BY OWNER.
5. SEE SPECIFICATION SECTION 15210 "AIR CONDITIONING UNITS" AND 15330 "FILTERS" FOR ADDITIONAL REQUIREMENTS.
6. PROVIDE ONE ELECTRICAL CONNECTION FOR EACH UNIT.
7. VERIFY ON PLAN FOR HORIZONTAL OR VERTICAL INSTALLATION.
8. APPROVED HVAC MANUFACTURERS ARE: TRANE ONLY.
9. ALL UNITS SHALL BE INSPECTED, CHECKED, AND STARTED UP BY MANUFACTURER'S FACTORY CERTIFIED HVAC TECHNICIAN. UPON COMPLETION, MANUFACTURER SHALL PROVIDE ONE YEAR PARTS AND LABOR WARRANTY.
10. PROVIDE ON 3–5 TON UNITS, MODULATING ECONOMIZER WITH BAROMETRIC RELIEF. FOR UNITS WITH SIDE DISCHARGE PROVIDE CANFAB DEDICATED HORIZONTAL ECONOMIZER.
11. OWNER SHALL PURCHASE AND HAVE MECHANICAL EQUIPMENT THAT IS MANUFACTURED BY TRANE DELIVERED TO JOBSITE. MECHANICAL CONTRACTOR SHALL CONFIRM EQUIPMENT TO BE PURCHASED PRIOR TO ORDERING.
12 ALL ROOFTOP EQUIPMENT SHALL BE PROVIDED WITH PRE MANUFACTURED ROOF CURB AS MANUFACTURED BY "TRANE"

UNIT										COOLING				HEATING						
MARK	MANUFACTURER	MODEL	SEER /EER	CFM	ESP "WG"	HP	VOLT	PH	MCA	SEN MBH	TOT MBH	ENT AIR DB	ENT AIR WB	GAS MBH	GAS OUPUT	VOLT	PH	OSA CFM	WEIGHT LBS	NOTES
RTU–A1–5	TRANE	4YCZ6036	16.0S	1200	0.5	1.0	208	3	19.1	25.3	31.2	80	67	75.0	–	–	–	SEE CALC	525	–
RTU–B1–2	TRANE	4YCZ6048	16.0S	1600	0.5	1.0	208	3	24.5	34.0	42.2	80	67	96.0	–	–	–	SEE CALC	725	–
RTU–C1–2	TRANE	4YCZ6060	16.0S	2000	0.5	1.0	208	3	30.3	42.0	50.9	80	67	120.0	–	–	–	SEE CALC	700	–
IU–A1	MITSUBISHI	PKA–A24KA4	–	775	–	–	–	–	–	–	–	–	–	–	–	–	–	–	50	–
OU–A1	MITSUBISHI	PUY–A24NHA4	17.0	–	–	–	208	1	18.0	–	24.0	80	67	–	–	–	–	–	175	–

EXHAUST FAN EQUIPMENT SCHEDULE

UNIT										COOLING				HEATING						
MARK	MANUFACTURER	MODEL	SEER /EER	CFM	ESP "WG"	HP	VOLT	PH	MCA	SEN MBH	TOT MBH	ENT AIR DB	ENT AIR WB	COMP MBH	KW/ STAGES	VOLT	PH	OSA CFM	WEIGHT LBS	NOTES
EF–A1	GREENHECK	SP–A110	–	100	0.125	–	120	1	–	–	–	–	–	–	–	–	–	–	40	SW ON WALL
EF–B1–2	GREENHECK	GB–091	–	400	0.375	0.25	120	1	–	–	–	–	–	–	–	–	–	–	65	ON TIME CLOCK

LEGEND: EXHAUST FAN (EF), SPLIT SYSTEM: INDOOR UNIT (IU), OUTDOOR UNIT (OU), HEATPUMP (HP), AIR HANDLING UNIT (AHU), AIR CONDITIONER (AC), EVAPORATIVE COOLER (EC), MAKE–UP AIR UNIT (MUA)

GRILLES, REGISTERS AND DIFFUSER SCHEDULE

NOTE: 1. PROVIDE OBD'S SHALL BE PROVIDED AT TAKE–OFF OF MAIN DUCT FOR ALL LAY–IN TYPE DIFFUSERS OR GRILLES AND OBD'S AT THE DIFFUSER OR GRILLE WHEN FLANGE TYPE.
2. SEE SIZING SCHEDULES FOR NECK AND FLEX DUCT SIZES, UNLESS OTHERWISE DIRECTED.
3. ALL LAY–IN DIFFUSERS OR GRILLES SHALL BE WHITE IN COLOR UNLESS DIRECTED OTHERWISE. ALL FLANGE TYPE DIFFUSERS, REGISTERS OR GRILLE COLORS SHALL BE AS DIRECTED BY THE ARCHITECT.
4. CONTRACTOR SHALL PROVIDE SQUARE TO ROUND ADAPTERS AS REQUIRED FOR INSTALLATION.
5. CONTRACTOR SHALL PROVIDE T–BAR BORDER IN ALL LAY–IN CEILINGS AND FLANGE TYPE BORDERS FOR ALL OTHER APPLICATIONS UNLESS OTHERWISE INDICATED.

MARK	DESCRIPTION	MANUFACTURER	MODEL	MATERIAL	BORDER	FRONT BLADES	DAMPER	REMARKS
CD1–CD2	CEILING DIFFUSER	TITUS	TDC	STEEL	NOTE 5	HORIZONTAL	OBD	–
ER1	EXH. REGISTER	TITUS	350RS	STEEL	NOTE 5	HORIZONTAL	–	–
RG1	RETURN REGISTER	TITUS	350RS	STEEL	NOTE 5	HORIZONTAL	–	–

Ventilation Schedule

Location	Room Type	Ventilation Requirements	Area (ft^2)	People	Ventilation CFM	Supply CFM	Ventilation %
Zone 109 - IT			146	0	22	0	0%
Room 109 - IT	General-Storage	0.15 CFM / ft^2	146	0	22	0	0%
Zone 111-120 OFFICE			1,400	5.1	112	2,350	5%
Room 111-115 - OFFICE	Office-Office Space	5 CFM / person 0.06 CFM / ft^2	614	3.1	53	1,050	5%
Room 116 - CORRIDOR	General-Corridors	0.06 CFM / ft^2	383	0	23	525	4%
Room 117-119 - OFFICE	Office-Office Space	5 CFM / person 0.06 CFM / ft^2	404	2	36	775	5%
Zone 122 LOUNGE			2,180	23.1	280	3,350	8%
Room 101 - CORRIDOR	General-Corridors	0.06 CFM / ft^2	628	0	38	550	7%
Room 107-108 - RESTROOMS	General-Restrooms	Direct	527	0	0	650	0%
Room 110 - JANITOR	General-Storage	0.15 CFM / ft^2	51.5	0	8	50	16%
Room 121 - BREAK	Office-Office Space	5 CFM / person 0.06 CFM / ft^2	105	0.5	10	200	5%
Room 122 - LOUNGE	Hotel-Lobby/Prefunction	7.5 CFM / person 0.06 CFM / ft^2	750	22.5	216	1,900	11%
Room 127 - CORRIDOR	General-Corridors	0.06 CFM / ft^2	122	0	8	0	0%
Zone 132-136 OFFICE			674	2.2	54	800	7%
Room 132&135 - OFFICE	Office-Office Space	5 CFM / person 0.06 CFM / ft^2	222	1.1	20	400	5%
Room 133-134 - OFFICE	Office-Office Space	5 CFM / person 0.06 CFM / ft^2	222	1.1	20	400	5%
Room 136 - CORRIDOR	General-Corridors	0.06 CFM / ft^2	230	0	14	0	0%
Zone 136-138 CORRIDOR			1,040	0	70	0	0%
Room 131 - STORAGE	General-Storage	0.15 CFM / ft^2	69	0	11	0	0%
Room 138 - CORRIDOR	General-Corridors	0.06 CFM / ft^2	253	0	16	0	0%
Room 141 - CORRIDOR	General-Corridors	0.06 CFM / ft^2	716	0	43	0	0%
Zone 137 NIGHT VISION			690	24.2	326	1,200	27%
Room 137 - NIGHT VISION	Educational-Classroom (age 9 plus)	10 CFM / person 0.12 CFM / ft^2	690	24.2	326	1,200	27%
Zone 147-150 OFFICE			472	1.8	49	900	5%
Room 147 - COPY	General-Storage	0.15 CFM / ft^2	104	0	16	150	11%
Room 148-150 - office	Office-Office Space	5 CFM / person 0.06 CFM / ft^2	368	1.8	33	750	4%
Zone 151 CLASSROOM			849	29.8	400	2,000	20%
Room 151 - CLASSROOM	Educational-Classroom (age 9 plus)	10 CFM / person 0.12 CFM / ft^2	849	29.8	400	2,000	20%

GRILLES, REGISTERS AND DIFFUSER SIZING SCHEDULE

CD1 CD2 INSTALL DIFFUSERS PER SCHEDULE BELOW. DO NOT EXCEED MAXIMUM CFM INDICATED
BASIS DESIGN TDC OR TDC–A, MAX 25 NC
–BORDER 1: LAYIN CEILING
–BORDER 6: HARD CEILING

PROVIDE DAMPER AT GRILLE

	NECK SIZE	RD NECK SIZE	MAX CFM
A	9 X 9	6" DIA	85
B	12 X 12	8" DIA	180
C	12 X 12	10" DIA	300
D	15 X 15	12" DIA	500
E	18 X 18	16" DIA	750
F	21 X 21	21 X 21	1500

RG1 INSTALL RETURN GRILLES PER SCHEDULE BELOW. DO NOT EXCEED MAXIMUM CFM INDICATED.
BASIS OF DESIGN: TITUS 350RS. MAX. 25 NC. PROVIDE PLENUM FOR DUCT CONNECTION IF REQUIRED

	24 x 12 MODULE NECK SIZE	MAX CFM
A	12 x 22	1100

	24 x 24 MODULE NECK SIZE	MAX CFM
B	22 x 22	1800

ER1 INSTALL EXHAUST GRILLES PER SCHEDULE BELOW. DO NOT EXCEED MAXIMUM CFM INDICATED.
BASIS OF DESIGN: TITUS 350RS. MAX. 25 NC.

	NECK SIZE	RD NECK SIZE	MAX CFM
A	10 X 10	8" DIA	230
B	12 X 12	10" DIA	350
C	14 X 14	12" DIA	480
D	16 X 16	14" DIA	650
E	18 X 18	16" DIA	830

NOTE: USE SIZES OF FLEXIBLE DUCT SHOWN BELOW. SELECT DUCT SIZE FROM SCHEDULED CFM ON FLOOR PLANS. DO NOT EXCEED CFM LIMITS BELOW. PROVIDE 1:5 SLOPE TRANS–ITION BETWEEN DUCT AND OPENING.

DUCT SIZE	MAX CFM
6	85
8	180
10	300
12	500
14	700
16	1000
18	1400
20	1800
22	2300
24	3000

CD CFM NOMINAL SIZE

NOTE: FLEX DUCTWORK SHALL BE A MAXIMUM OF 8'–0"LONG AND MATCH THE NECK SIZE OF THE DIFFUSER OR GRILLE OR AS INDICATED ON THE DRAWINGS.

AIR BALANCE SCHEDULE

OSA CFM	UNIT NO.		EXH CFM	UNIT NO.
100	RTU–A1	–	100	EF–A1
100	RTU–A2	–	400	EF–B1
100	RTU–A3	–	400	EF–B2
330	RTU–A4	–	–	–
100	RTU–A5	–	–	–
225	RTU–B1	–	–	–
225	RTU–B2	–	–	–
400	RTU–C1	–	–	–
–	–	–	–	–
–	–	–	–	–
1580	–	TOTAL	900	–

DUCT SMOKE DETECTORS

THE 2006 IFC SECTION 907.12 IS REVISED TO READ AS FOLLOWS: DUCT SMOKE DETECTORS SHALL BE CONNECTED TO THE BUILDING'S FIRE ALARM CONTROL PANEL WHEN A MONITORED FIRE ALARM SYSTEM IS PROVIDED. ACTIVATION OF A DUCT SMOKE DETECTOR SHALL INITIATE A SUPERVISORY CONDITION AT THE FIRE ALARM CONTROL PANEL. DUCT SMOKE DETECTORS SHALL NOT BE USED AS A SUBSTITUTE FOR REQUIRED OPEN AREA DETECTION. A FIRE ALARM CONTROL PANEL THAT MONITORS DUCT SMOKE DETECTORS SHALL BE EQUIPPED WITH THE NECESSARY ADDITIONAL ZONES(S) TO SUPERVISE INDIVIDUAL TENANT SPACES OR OTHER REQUIRED ZONES.

IF A FIRE ALARM SYSTEM IS NOT AVAILABLE, PROVIDE A VISIBLE AND AUDIBLE SUPERVISORY SIGNAL AT A CONSTANTLY SUPERVISED LOCATION TRIGGERED BY THE ACTIVATION OF A DUCT SMOKE DETECTOR. INCLUDE THE AIR DUCT DETECTOR TROUBLE INDICATOR AS REQUIRED BY IMC 606.4.1, EXCEPTION 2."

UPON ACTIVATION, THE SMOKE DETECTORS SHALL SHUT DOWN ALL OPERATIONAL CAPABILITIES OF THE AIR DISTRIBUTION SYSTEM IN A COMMON AREA INCLUDING MULTIPLE UNITS SERVING THAT AREA.

THE 2002 EDITION OF NFPA 72 SECTION 5.14.5.8 IS REVISED TO READ AS FOLLOWS: WHERE IN–DUCT SMOKE DETECTORS ARE INSTALLED IN CONCEALED LOCATIONS OR IN ARRANGEMENTS WHERE THE DETECTOR'S SUPERVISORY INDICATOR IS NOT READILY VISIBLE TO RESPONDING PERSONNEL, THE DETECTORS SHALL BE PROVIDED WITH REMOTE SUPERVISORY INDICATORS INSTALLED BELOW THE IN–DUCT SMOKE DETECTOR(S) AT CEILING LEVEL WHERE APPLICABLE. THIS REQUIREMENT SHALL BE APPLIED TO BOTH ADDRESSABLE AND NONADDRESSABLE FIRE ALARM SYSTEMS. ACCESS DOORS AND APPROPRIATE SIGNAGE SHALL BE PROVIDED WHERE NECESSARY.

INSPECTION REPORT OF HVAC AUTOMATIC SHUT–OFFS AND SMOKE DAMPERS PER 2006 IMC & IBC.

NEW INSTALLATIONS OF SMOKE DETECTORS ASSOCIATED WITH SMOKE DAMPERS AND HVAC SHUT–OFFS SHALL BE TESTED BY THE PROFESSIONAL ENGINEER OF RECORD, OR AN APPROVED TESTING AGENCY OR A QUALIFIED THIRD PARTY SPECIAL INSPECTOR. THE TESTING AGENCY OR QUALIFIED THIRD PARTY SPECIAL INSPECTOR SHALL BE AN APPROVED INDEPENDENT THIRD PARTY INDIVIDUAL OR FIRM SHALL NOT BE THE INSTALLING CONTRACTOR.
THE FINAL REPORT SUBMITTED TO THE FIRE INSPECTOR SHALL BE SIGNED, SEALED(WET) AND DATED PRIOR TO CERTIFICATE OF OCCUPANCY.

CONTRACTOR SHALL VERIFY WITH LOCAL CODE WHETHER INTER CONNECTING ALL SMOKE DUCT DETECTORS IS REQUIRE AND PROVIDE IF NEEDED.

DUCTWORK SYMBOLS

SINGLE	DOUBLE	ABBR.	DESCRIPTION
		●	RECTANGULAR DUCT
		●	ROUND DUCT
		●	45 DEG. TAP: USE AT BRANCH DUCTS ONLY
		●	DUCT SPLIT W/DAMPER: USE AT ELBOWS AND TEES: PROPORTION DUCT AREAS BY CFM'S
		●	CURVED ELBOW–MIN. RADIUS R: 1.5 WIDTH
		●	90 DEG. ELBOW WITH SINGLE RADIUS TURNING VANES
		●	FLEXIBLE DUCT CONNECTION
		FD	FIRE DAMPER
		BD	BALANCING DAMPER (USE O.B.D. UNLESS NOTED OTHERWISE)
		●	SPIN–IN FLEX DUCT TAKE–OFF W/DAMPER
●		SA	SUPPLY AIR
●		EXH	EXHAUST AIR
●		RA	RETURN AIR
●		REL	RELIEF AIR
●		OSA	OUTSIDE AIR
●	T X	T	THERMOSTAT X: UNIT OR ZONE NUMBER
			POINT OF CONNECTION
SD			SMOKE DUCT DETECTOR

REVISIONS	BY

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Registered Professional Engineer Certificate Kirk J. Hoffman No. 24488 State of Arizona, U.S.A.
EXPIRES 03/31/15

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ARCHITECTURE & PLANNING

DRAWING: MECHANICAL SCHEDULES

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	AJW
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	M2.0

MAVEN ENGINEERING
Job #14EMB148
Tel: (480) 303-0180
Fax: (480) 302-7927
230 West Baseline Rd, Suite 103
Tempe, Arizona 85283

Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

AIR CONDITIONING SPECIFICATIONS

1. GENERAL REQUIREMENTS AND SCOPE OF WORK:
THE WORK INCLUDED UNDER THIS SECTION CONSISTS OF FURNISHING ALL MATERIALS, EQUIPMENT AND LABOR, AND THE PERFORMING OF ALL FUNCTIONS, EXCEPT AS OTHERWISE SPECIFIED HEREIN OR SHOWN ON THE DRAWINGS TO BE PERFORMED BY OTHERS, FOR THE INSTALLATION OF COMPLETE AND WORKING AIR CONDITIONING, HEATING AND VENTILATING SYSTEMS WHICH COMPLIES WITH ALL CODES. CHECK FIELD CONDITIONS AND MAKE MEASUREMENTS BEFORE ORDERING MATERIALS.

MAINTENANCE MANUAL SHALL INCLUDE ALL AVAILABLE MANUFACTURERS' OPERATION AND MAINTENANCE INSTRUCTIONS TOGETHER WITH THE RECORD DRAWINGS TO PROPERLY OPERATE AND MAINTAIN THE EQUIPMENT. THE MANUAL SHALL ALSO INCLUDE THE NAME, ADDRESS, AND PHONE NUMBER OF THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS INVOLVED IN ANY OF THE WORK SPECIFIED HEREIN.

THE CONTRACTOR MUST COMPLY WITH ALL STATE AND MUNICIPAL BUILDING AND SAFETY LAWS, ORDINANCES AND REGULATIONS RELATING TO BUILDING AND PUBLIC HEALTH & SAFETY. ALL WORK AND MATERIALS SHALL BE IN CONFORMANCE WITH THE GOVERNING CODES.

PROVIDE MECHANICAL EQUIPMENT HAVING MOTORS WITH MOTOR PROTECTORS AND INTEGRAL STARTERS. WIRING AND PROPER OPERATION OF THE MECHANICAL EQUIPMENT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. ALL WIRING SHALL BE ROUTED IN CONDUIT OR IN PLENUM RATED WIRING.

THE SYSTEM SHALL HAVE A WARRANTY COVERING LABOR, MATERIALS AND EQUIPMENT FOR A PERIOD OF ONE YEAR AFTER COMPLETION AND ACCEPTANCE. REPLACE OR REPAIR ALL DEFECTIVE WORKMANSHIP, EQUIPMENT, AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

THE MECHANICAL CONTRACTOR SHALL COORDINATE EXACT DIFFUSER AND GRILLE LOCATIONS WITH ELECTRICAL CONTRACTOR AND ALL OTHER TRADES AND ALSO COORDINATE SPACE AVAILABILITY FOR DUCTWORK ABOVE RECESSED LIGHTING TO AVOID RELOCATING DUCTWORK AT THE MECHANICAL CONTRACTORS EXPENSE. ALL AIR DISTRIBUTION DEVICES IN LAY-IN CEILING SHALL BE INDEPENDENTLY SUPPORTED TO THE STRUCTURE WITH A MINIMUM OF (2) SUPPORT RODS OR WIRES IN COMPLIANCE WITH SECTION 2.3.1.3 OF THE NFPA 90A & BUILDING CODE IF REQUIRED BY THE LOCAL CODE AUTHORITY.

SHOULD A CHANGE ORDER TO THE CONTRACT DOCUMENTS BE NECESSARY, THE CONTRACTOR SHALL SUBMIT A FORMAL CHANGE ORDER TO THE ARCHITECT/ENGINEER FOR REVIEW BEFORE ANY WORK COMMENCES. ANY WORK DONE WITHOUT PRIOR WRITTEN APPROVAL IS SUBJECT TO COMPLETION AT THE CONTRACTOR'S EXPENSE. CHANGE ORDERS SHALL INCLUDE A DETAILED MATERIAL, EQUIPMENT, AND LABOR TAKE-OFF IDENTIFYING ALL NEW AND CREDITED ITEMS. COSTS FOR SUCH ITEMS SHALL NOT EXCEED THE VALUES LISTED IN THE LATEST EDITION OF THE MEANS ESTIMATING GUIDE.

PERFORM COMPLETE TESTING AND BALANCING OF ALL MECHANICAL SYSTEMS IN ACCORDANCE WITH AABC OR NEBB LATEST STANDARDS WITH REPORT. MECHANICAL CONTRACTOR TO PROVIDE BALANCE REPORT TO MECHANICAL INSPECTOR AT FINAL INSPECTION.

2. CONDENSATE DRAIN PIPING:
USE TYPE "M" HARD DRAWN COPPER FOR ALL CONDENSATE DRAIN LINES WITH MINIMUM FALL 1/8" PER FOOT FROM UNITS TO APPROVED PLUMBING CONNECTION. PROVIDE TRAPS AT UNIT AND INSTALL OVERFLOW DRAINS AS REQUIRED BY MECHANICAL CODE. TEST CONDENSATE PIPING TO HIGHEST POINT IN SYSTEM AND HOLD FOR FOUR HOURS.

3. DUCTWORK:
INSTALL ALL DUCTWORK IN ACCORDANCE WITH SMACNA GUIDELINES AND LOCAL STANDARDS FOR A MINIMUM OF 1" STATIC PRESSURE. RADIUS ELBOWS SHALL HAVE A MINIMUM RADIUS OF 1.5 TIMES THE DUCT DIMENSION IN THE DIRECTION OF TURN, AND SQUARE ELBOWS SHALL HAVE SINGLE THICKNESS TURNING VANES. ALL JOINTS SHALL BE TAPED WITH GLASS CLOTH AND HARDCAST OR ADHESIVE (UL LISTED). ALL DUCT SIZES ARE TO THE INSIDE OF LINING, INCREASE OUTSIDE DIMENSIONS AS NECESSARY. COVERINGS, LININGS, ADHESIVES AND INSULATION SHALL HAVE A SPREAD INDEX OF NOT OVER 25 AND A SMOKE-DEVELOPED INDEX OF NOT OVER 50. ALL INSULATION SHALL COMPLY WITH THE INTERNATIONAL ENERGY CONSERVATION CODE.

ALL INSULATION ADHESIVES & INSTALLATION SHALL COMPLY WITH NFPA_E 84.

CONCEALED DUCTS INSIDE OF BUILDING: SHALL BE SHEET METAL WRAPPED WITH 1" THERMAL INSULATION (MINIMUM OF R-5), WITH VAPOR BARRIER COVER.

EXPOSED SQUARE DUCTS INSIDE BUILDING AND DUCTS WITHIN 10 FEET OF A MECHANICAL UNIT SHALL BE SHEET METAL LINED WITH 1" ACOUSTICAL INSULATION. EXPOSED ROUND DUCTS DO NOT REQUIRE INSULATION.

FLEX DUCT: FLEX DUCT SHALL BE CLASS 0 OR 1 AND TESTED PER UL 181.

DUCTS OUTSIDE BUILDING OR IN UNCONDITIONED CEILING OR ATTIC SHALL BE SHEET METAL LINED WITH 2" ACOUSTICAL INSULATION (MINIMUM OF R-8).

4. GRILLES AND REGISTERS
GRILLES AND REGISTERS SHALL BE OF THE TYPE AND FINISH AS INDICATED ON THE DRAWINGS, COMPLETE WITH OPPOSED BLADE DAMPERS EXTRACTORS AND STRAIGHTENING GRIDS AS REQUIRED.

5. AIR CONDITIONING UNITS (PACKAGED GAS HEATING, ELECTRIC COOLING)
DESCRIPTION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO FURNISH AND INSTALL PACKAGED GAS HEATING AND ELECTRIC COOLING UNITS IN ONE WEATHERTIGHT INSULATED CASING, FACTORY ASSEMBLED AND TESTED AND DESIGNED FOR THE USE INTENDED. PROVIDE FURNACE SECTION, INDOOR BLOWER AND COIL, COMPRESSOR, OUTDOOR FAN AND COIL, CRANKCASE HEATER AND CONTROL PANEL IN A SINGLE UNIT, OSA INTAKE, INTERNAL DISPOSABLE FILTER. PROVIDE WIRE COIL GUARD AND ROOF CURB FOR ENTIRE UNIT. ITEMS NOT LISTED BUT REQUIRED DUE TO LOCAL CODES OR OPERATIONAL REQUIREMENTS SHALL BE INCLUDED UNDER BASE BID.

CONTROLS AND POWER WIRING: REFER TO MECHANICAL EQUIPMENT SCHEDULE.

6. AIR CONDITIONING UNITS (SPLIT SYSTEM HEAT PUMP)
DESCRIPTION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO FURNISH AND INSTALL INDOOR BLOWER COIL SECTION, OUTDOOR SECTION WITH COMPRESSOR, CRANKCASE HEATER, COIL AND CONTROLS, FAN AND REFRIGERANT PIPING, OSA INTAKE, AND INSULATION INCLUDING PIPING VALVES, HANGERS, SUPPORTS, CONNECTIONS, ETC FOR A COMPLETE AND OPERATIONAL SYSTEM. ITEMS NOT LISTED BUT REQUIRED DUE TO LOCAL CODES OR OPERATIONAL REQUIREMENTS SHALL BE INCLUDED UNDER BASE BID. UNIT SHALL COME OPERATIONAL DOWN TO 20%ºF AMBIENT. 1" DISPOSABLE TYPE WITH HINGED FILTER ACCESS AT REAR OF UNIT.

CONTROLS AND POWER WIRING: REFER TO MECHANICAL EQUIPMENT SCHEDULE.

REFRIGERANT ACCESSORIES REQUIRED: REFRIGERANT SYSTEMS OF LESS THAN 60 MBH SCHEDULED TOTAL CAPACITY PER COMPRESSOR (SEE DRAWINGS) SHALL BE PROVIDED WITH THE FOLLOWING ACCESSORIES, TO BE FIELD-PIPED IF NOT INCLUDED BY THE MANUFACTURER IN THE UNIT: FILTER DRYER, EXPANSION DEVICE, SITE GLASS (PLACE IMMEDIATELY UPSTREAM OF EXPANSION DEVICE), CHARGING VALVE, AND REFRIGERANT SHUT-OFF VALVE IN SUCTION AND LIQUID LINE AT OR NEAR CONDENSING UNIT.

REFRIGERANT PIPING: HARD DRAWN COPPER TUBING, TYPE "L" ESPECIALLY DESIGNATED AS AIR CONDITIONING REFRIGERANT PIPING OR PRECHARGED REFRIGERANT PIPING DESIGNED FOR SPLIT SYSTEM INSTALLATION.

DRYER SIZE SHALL BE FULL LIQUID LINE SIZE AS INDICATED ON DRAWINGS. SIGHT GLASS SHALL BE MOISTURE INDICATING TYPE. SOLENOID VALVE SHALL BE FULL LIQUID LINE SIZE WITH MANUAL OPENING STEM AND VALVE SHALL BE COMPLETELY MOISTURE PROOF. MANUAL REFRIGERANT SHUT-OFF VALVES SHALL BE REFRIGERATION SERVICE WITH BACK SEATING CONSTRUCTION AND CAP SEALS. FLEXIBLE CONNECTIONS SHALL BE PROVIDED IN EACH LIQUID LINE, HOT GAS LINE, AND EACH SUCTION LINE AT EACH PIECE OF EQUIPMENT. CONNECTIONS SHALL BE FOR REFRIGERANT SERVICE WITH BRONZE SEAMLESS CORRUGATED HOSE AND BRONZE BRAIDING.

REFRIGERANT PIPING CALCULATION SUBMITTAL: IN ADDITION TO THE SUBMITTAL REQUIREMENTS THE MANUFACTURER'S REPRESENTATIVE FOR EQUIPMENT PROVIDED IN THIS SPECIFICATION SHALL INCLUDE WITH ITS SUBMITTAL, TABLES AND/OR DRAWINGS OF REFRIGERANT PIPING AND ACCESSORIES, INCLUDING RECOMMENDED SIZES OF PIPES, VALVES, FITTINGS, ETC.

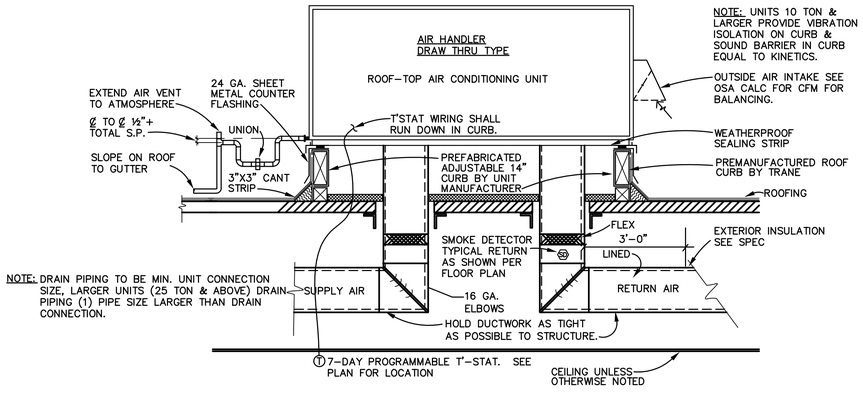
REFRIGERANT PIPING: TO BE INSTALLED BY AND UNITS STARTED UP BY A REFRIGERANT CONTRACTOR LICENSED BY THE STATE.

PIPE INSULATION: INSULATE ALL REFRIGERANT GAS PIPING WITH 1/2" THICK FLEXIBLE FOAMED PLASTIC CLOSED CELL PIPE INSULATION, "K" FACTOR OF NOT MORE THAN .26 @ 70%ºF, ASTM C177-63 AND ASTM C355-64 WATER METHOD. SEAL JOINTS AND BUTT ENDS WITH FIRE RETARDANT, WATERPROOF ADHESIVE EQUAL TO ARMSTRONG 520. FINISH ALL PIPE INSULATION EXPOSED TO WEATHER WITH TWO COATS OF ARMAFLEX FINISH (OR APPROVED EQUAL). SEAL AROUND PIPE IN SLEEVES WITH SILICONE SEALANT FOR NON_FIRE RATED WALLS. SEAL AROUND PIPE IN SLEEVES PASSING THROUGH FIRE RATED WALLS OR FLOORS WITH APPROVED FIRE RATED PACKING.

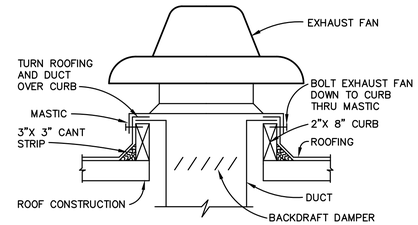
7. START-UP FOR MECHANICAL EQUIPMENT
ALL UNITS SHALL BE INSPECTED, CHECKED, AND STARTED UP BY MANUFACTURER'S FACTORY CERTIFIED HVAC TECHNICIAN. UPON COMPLETION, MANUFACTURER SHALL PROVIDE ONE YEAR PARTS AND LABOR WARRANTY.

8. EXHAUST FANS
DESCRIPTION: PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO FURNISH AND INSTALL EXHAUST FANS AND BLOWERS FOR A COMPLETE AND OPERATIONAL SYSTEM. ITEMS NOT LISTED BUT REQUIRED DUE TO LOCAL CODES OR OPERATIONAL REQUIREMENTS SHALL BE INCLUDED UNDER BASE BID.

PROVIDE ROOF CAPS, WALL CAPS, FLASHINGS, BASES, SPEED SWITCHES, APPROVED VIBRATION ISOLATORS, INTEGRAL INLET GRILLES, INTEGRAL STARTERS AND DUCT CONNECTIONS AS INDICATED OR SPECIFIED. PROVIDE INTERNAL DISCONNECTING MEANS AND OVERLOAD PROTECTION ON ALL UNITS 1/2 HP AND SMALLER AND/OR 120 VOLT, SINGLE PHASE. TWO SPEED MOTOR SHALL BE TWO WINDING TYPE. ALL BELT DRIVEN EXHAUST FANS SHALL HAVE ADJUSTABLE MOTOR PULLEYS FOR FAN SPEED CONTROL. RATE BELTS FOR 150% OF MOTOR RATED HP. ALL FANS, EXCEPT TOILET EXHAUST FANS 200 CFM AND BELOW, SHALL BE AMCA CERTIFIED AND APPROVED.

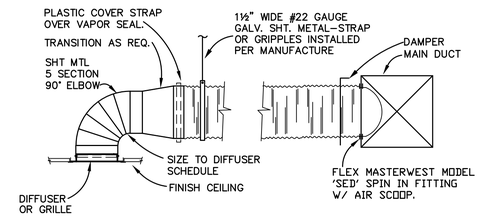


1 ROOF-TOP UNIT DETAIL
N.T.S.

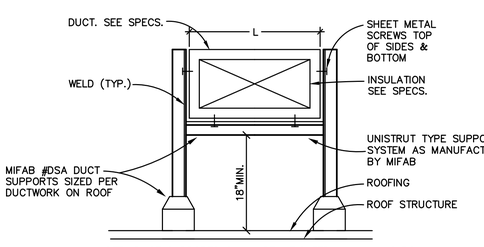


5 EXHAUST FAN
N.T.S.

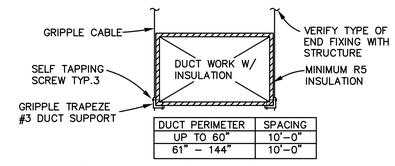
NOTE: FLEX DUCT CONNECTION WITH MINIMUM RADIUS OR 2 DIAMETERS IS AN ACCEPTABLE ALTERNATE. MAX FLEX DUCT 8'-0"



2 DIFFUSER INSTALLATION (W/ FLEX DUCTWORK)
N.T.S.

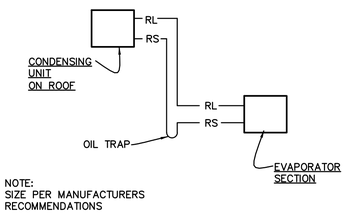


6 ROOF MOUNTED DUCT SUPPORT
N.T.S.



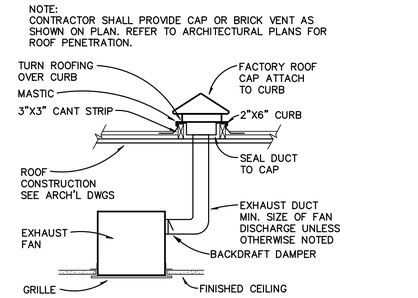
DUCT PERIMETER	SPACING
UP TO 60"	10'-0"
61" - 144"	10'-0"

3 RETANGULAR DUCTWORK GRIPPLE SUPPORTS
N.T.S.



NOTE:
SIZE PER MANUFACTURERS RECOMMENDATIONS

4 SPLIT SYSTEM
N.T.S.



7 EXHAUST FAN - CEILING TYPE
N.T.S.

NOTE:
ALL ROOF PENETRATIONS WILL BE MADE BY A CERTIFIED TREMCO ROOF INSTALLER. NO OTHER CONTRACTOR OR ROOFING SYSTEM IS ACCEPTABLE. PROVIDE TREMCO APPROVED ROOF JACK TO ROOFING CONTRACTOR FOR INSTALLATION. CONTACT TREMCO ROOFING
REPRESENTATIVE: WALT HITCHCOCK
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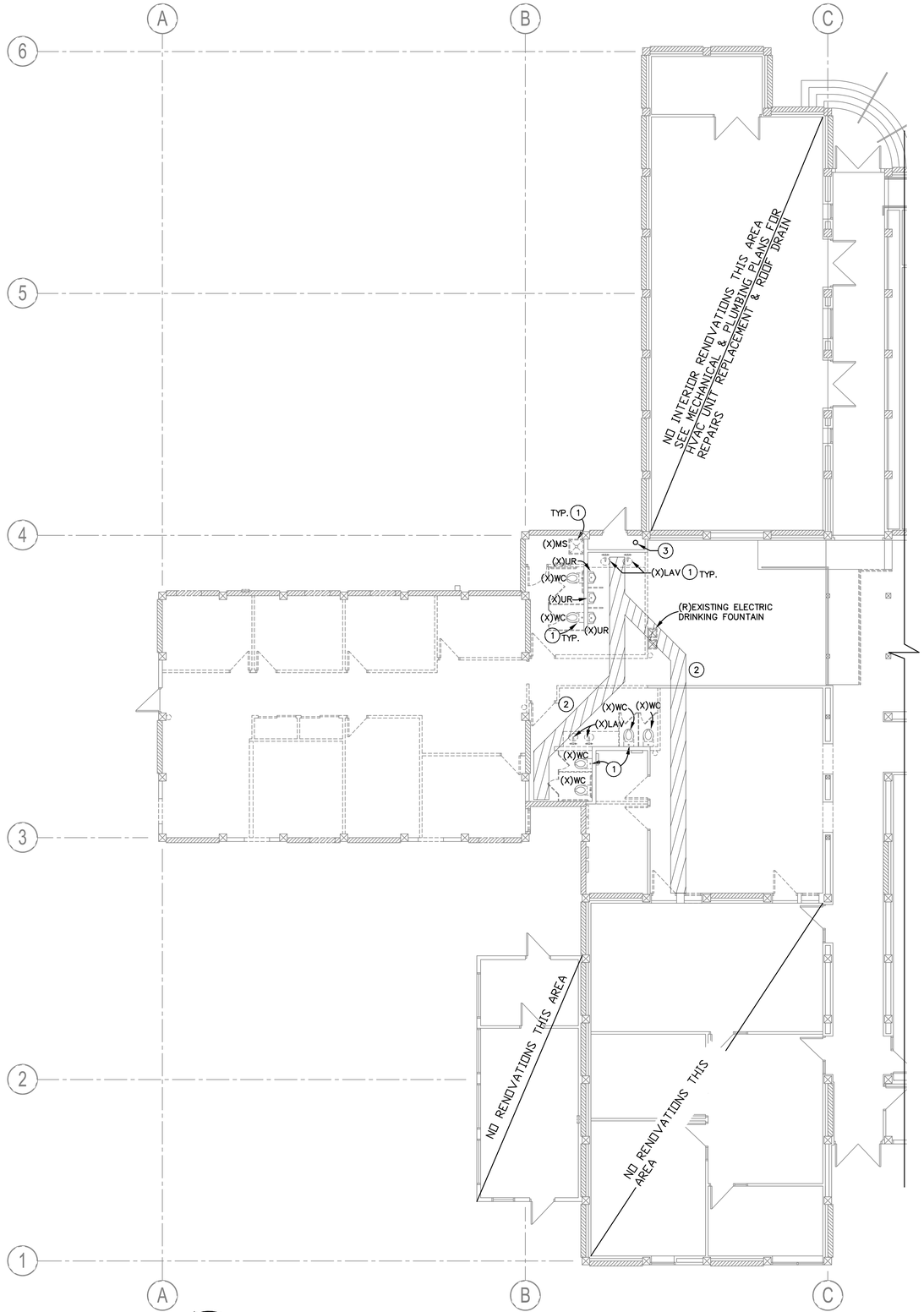
EXPIRES 03/31/15

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ARCHITECTURE & PLANNING

DRAWING: MECHANICAL DETAILS

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	AJW
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	M2.1



P1 PLUMBING DEMOLITION PLAN

Scale: 1/8"=1'-0"

Plan North

KEYED NOTES : (#)

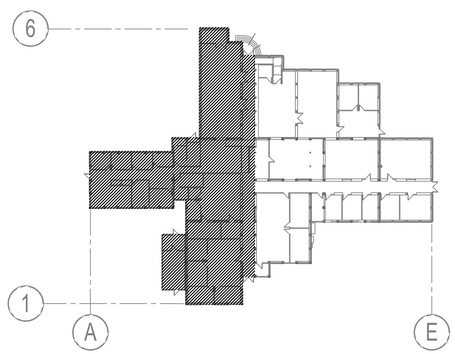
1. REMOVE EXISTING FIXTURES AS NOTED. CAP ALL WASTE IN FLOOR REMOVE WATER AND VENT ABOVE CEILING.
2. SAWCUT EXISTING CONCRETE SLAB AND REMOVE CONCRETE AND SOIL TO ACCOMMODATE NEW WASTE LINE REFER TO PLUMBING FLOOR PLAN.
3. EXISTING AUTOMATIC FIRE SPRINKLER SYSTEM RISER

GENERAL NOTES :

1. EXACT LOCATION OF PLUMBING FIXTURES SHALL BE DETERMINED FROM ARCHITECTURAL DRAWINGS.
2. BEFORE SUBMITTING BID, THE PLUMBING CONTRACTOR SHALL REVIEW THE ARCHITECTURAL DRAWINGS AND INCLUDE IN HIS BID AN AMOUNT TO FURNISH AND INSTALL ANY FIXTURES WHICH ARE SHOWN IN ADDITION TO FIXTURES SHOWN ON THE PLUMBING DRAWINGS.
3. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS OF SEWERS TO WHICH NEW WASTE LINES ARE TO BE CONNECTED BEFORE MAKING UP OR INSTALLATION OF NEW WASTE SYSTEM.
4. CONTRACTOR SHALL VERIFY AND COORDINATE LOCATION OF ALL PLUMBING LINES WITH DUCTWORK AND ELECTRICAL SERVICES.
5. THE INSTALLATION OF ALL VALVES, UNIONS, THERMOMETERS, GAUGES, OR OTHER INDICATING OR RECORDING EQUIPMENT, OR SPECIALTIES REQUIRING FREQUENT READING, REPAIRS, ADJUSTMENT, INSPECTION, REMOVAL OR REPLACEMENT SHALL BE CONVENIENTLY AND ACCESSIBLY LOCATED WITH REFERENCE TO THE FINISHED BUILDING.
6. ALL VENTS THROUGH ROOF SHALL BE 10'-0" REMOVED FROM ALL AIR INTAKES, EVAPORATIVE COOLERS, ETC.
7. WHERE POSSIBLE, TIE VENTS TOGETHER SO THAT A MINIMUM NUMBER TERMINATE THROUGH THE ROOF.
8. WATER CLOSETS IN PUBLIC TOILET ROOMS SHALL CENTER ON THE FINAL LAYOUT OF TOILET PARTITIONS.
9. CONTRACTOR SHALL NOT CUT HOLES IN STRUCTURAL MEMBERS WITHOUT FIRST SECURING WRITTEN APPROVAL FROM THE ARCHITECT.
10. CONTRACTOR SHALL INSTALL DIELECTRIC UNIONS AT CONNECTIONS OF DISSIMILAR METALS.
11. CONTRACTOR SHALL ROUGH-IN ALL WASTES AND SUPPLIES TO SPECIAL EQUIPMENT ACCORDING TO MANUFACTURERS SHOP DRAWINGS AND MAKE FINAL CONNECTIONS. ALL SUPPLIES SHALL BE VALVED.
12. ASSUMED WATER PRESSURE-CONTRACTOR SHALL VERIFY ACTUAL WATER PRESSURE PRIOR TO CONSTRUCTION. IF PRESSURE IS LESS THAN 50 PSI CONTRACTOR SHALL CONTACT THE ENGINEER FOR PIPE SIZING EVALUATION. IF PRESSURE EXCEEDS 80 PSI, A PRESSURE REDUCING VALVE SHALL BE PROVIDED. PIPING VELOCITY SHALL NOT EXCEED 8 FEET PER SECOND.
13. COORDINATE IN FIELD AND RELOCATE ALL PIPES IN DEMO WALL.

LEGEND

(E) EXISTING FIXTURES TO REMAIN.
(R) RELOCATED EXISTING FIXTURES.
(X) REMOVE EXISTING FIXTURES.



Key Plan

Scale: NTS

Plan North

MAVEN ENGINEERING
Job #14EMB148
Tel: (480) 303-0180
Fax: (480) 302-7927
230 West Baseline Rd, Suite 103
Tempe, Arizona 85283

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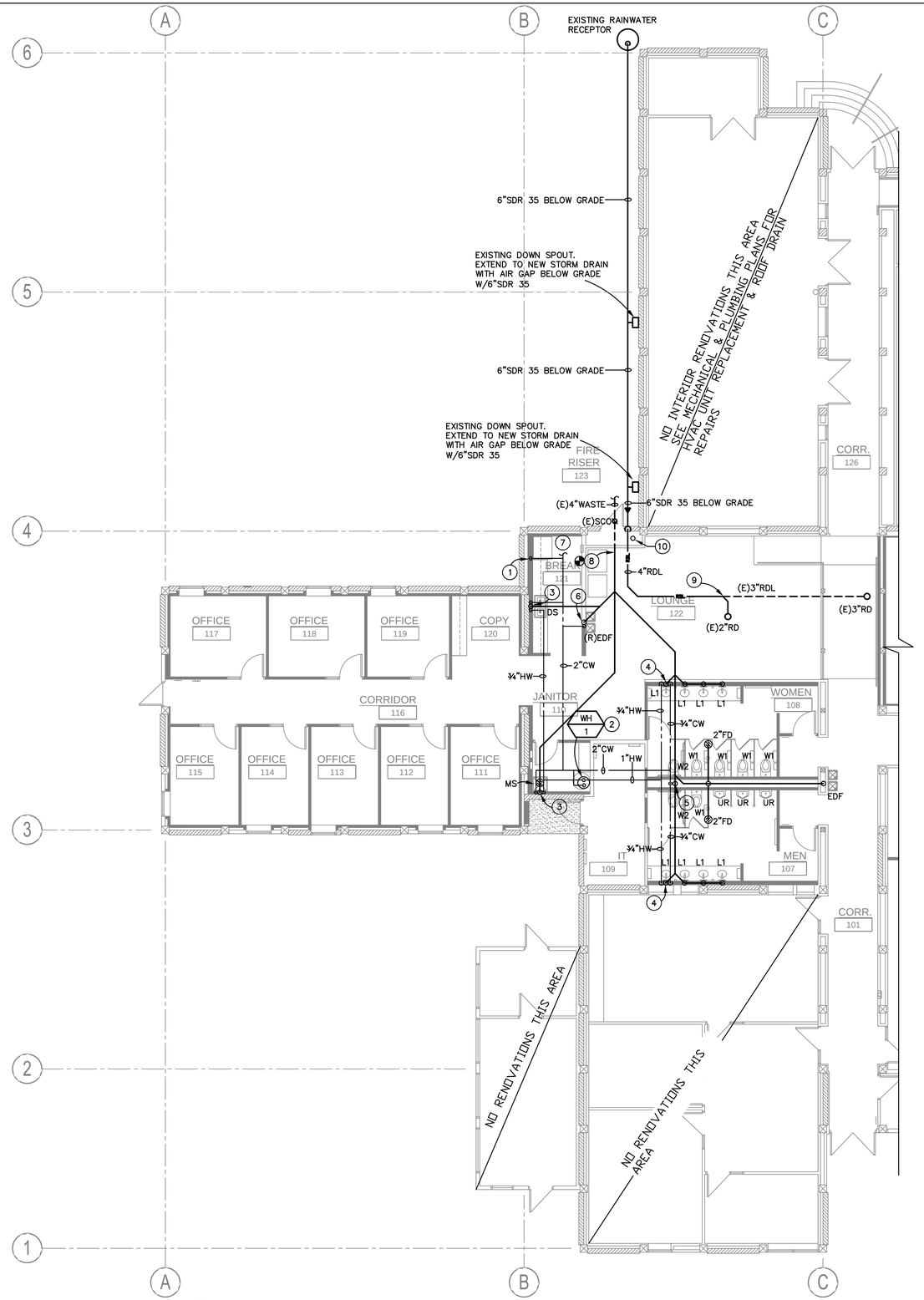


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DRAWING: PLUMBING DEMOLITION PLAN

PROJECT: IMPROVEMENTS FOR:
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BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	KEF
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
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SHEET	P0.0



P1 PLUMBING FLOOR PLAN

Scale: 1/8"=1'-0"

Plan North

KEYED NOTES :

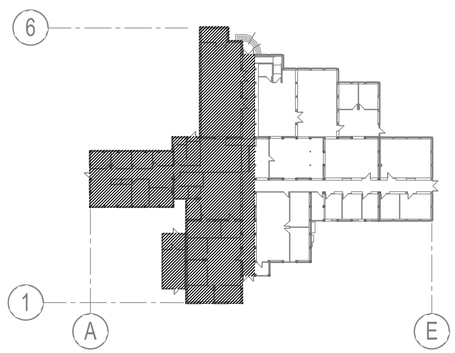
1. ½"CW DOWN IN WALL TO REFRIGERATOR SHUT OFF VALVE BOX FOR ICE MAKER.
2. FULL SIZED T&P TO TERMINATE ABOVE MS W/ 1"AIR GAP.
3. ¾"H&CW DOWN IN WALL TO FIXTURE.
4. ¾"H&CW DOWN IN WALL. PROVIDE ½"H&CW TO EACH L1.
5. 2"CW DOWN IN WALL TO FULL SIZE HEADER. PROVIDE 1¼"CW TO EACH W1 AND W2, 1"CW TO EACH UR, AND ½"CW TO EDF. PROVIDE SHOCK ABSORBER AT END OF HEADER.
6. ½"CW DOWN IN WALL TO FIXTURE.
7. EXTEND AND CONNECT NEW 2"CW TO EXISTING DOMESTIC WATER IN FIRE RISER ROOM.
8. EXTEND AND CONNECT NEW 4"WASTE TO EXISTING. VERIFY EXACT LOCATION AND INVERT IN FIELD.
9. REMOVE EXISTING 2"RDL AND REPLACE WITH 4" AS SHOWN.
10. EXISTING AUTOMATIC FIRE SPRINKLER SYSTEM RISER.

GENERAL NOTES :

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13. COORDINATE IN FIELD AND RELOCATE ALL PIPES IN DEMO WALL.

LEGEND

(E)	EXISTING FIXTURES TO REMAIN.
(R)	RELOCATED EXISTING FIXTURES.
(X)	REMOVE EXISTING FIXTURES.



Key Plan

Scale: NTS

Plan North

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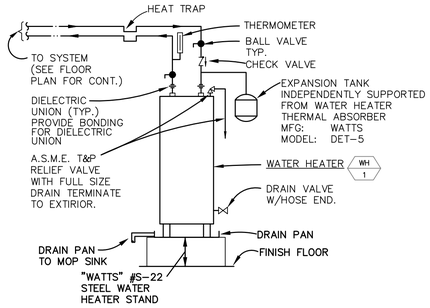
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Kirk J. Hofman
Prescott, Arizona, U.S.A.
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ARCHITECTURE & PLANNING

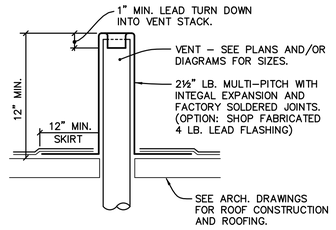
DRAWING: PLUMBING FLOOR PLAN

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	KEF
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
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SHEET	P1.0

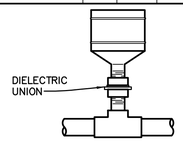


1 ELECTRIC WATER HEATER PIPING DIAGRAM N.T.S.



2 VENT FLASHING N.T.S.

SHOCK ABSORBER DETAIL						
SIOUX CHIEF HYDRA RESTER	652A	653B	654C	655D	656E	657F
FIXTURE UNIT RATING	1-9	10-19	20-34	3564	64-129	130-250



1. CONTRACTOR SHALL FURNISH & INSTALL SHOCK ABSORBERS ON ALL FLUSH VALVE OPERATED FIXTURES OR FIXTURES W/QUICK CLOSING VALVES.

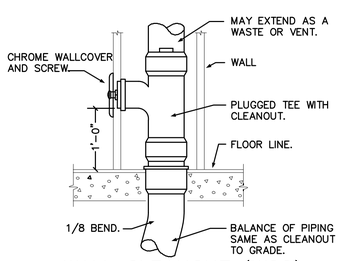
2. WHEN WATER PRESSURE IN THE LINE IS OVER 65 PSI, INSTALL THE NEXT LARGER UNIT.

3. CONTRACTOR SHALL PIPE AIR CHAMBERS 12" LONG & (2) PIPE SIZES LARGER THAN SUPPLY LINE AT ALL ISOLATED FIXTURES OR BATTERY OF FIXTURES NOT REQUIRING SHOCK ABSORBERS.

4. SIZE OF SHOCK ABSORBERS REQUIRED ON BATTERY OF FIXTURES SHALL BE BASED ON FIXTURE UNIT VALVES OF FLUSH VALVE OPERATED FIXTURES ONLY.

5. SHOCK ABSORBERS MANUFACTURED BY SIOUX CHIEF, ZURN, JOSAM OR WADE EQUAL TO LIST ABV. ARE APPROVED.

3 SHOCK ABSORBER DETAIL N.T.S.



4 WALL CLEANOUT (WCO) N.T.S.

• VERIFY EXACT FIXTURES WITH OWNER/ARCH. PRIOR TO ORDERING.

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	MANUFACTURER AND MODEL NUMBER	FITTING & CAPACITY	ACCESSORIES/ REMARKS	FIXTURE CONNECTIONS C.W.	H.W.	WASTE	VENT
W1	HANDICAP WATER CLOSET WALL MOUNTED FLUSH VALVE	"AMERICAN STANDARD" MODEL# AFWALL 3351.001	"SLOAN" OPTIMA #8111-1.28 1.28 GAL PER FLUSH	JR SMITH #0410 SERIES WALL SUPPORT W/ TOTO #534 SEAT	1¼"	–	4"	2"
W2	WATER CLOSET WALL MOUNTED FLUSH VALVE	"AMERICAN STANDARD" MODEL# AFWALL 3351.001	"SLOAN" OPTIMA #8111-1.28 1.28 GAL PER FLUSH	JR SMITH #0410 SERIES WALL SUPPORT W/ TOTO #534 SEAT	1¼"	–	4"	2"
L1	OVAL SELF RIMMING LAVATORY VITREOUS CHINA	"AMERICAN STANDARD" AQUALYN #0476.028 WHITE	"SLOAN" #EBF-650-BDT W/ MIXING VALVE	¼ TURN ANGLE STOPS & RISER TAILPIECE P-TRAP	½"	½"	2"	1½"
EDF	ELECTRIC DRINKING FOUNTAIN BARRIER FREE	"ELKAY" #EZSTL8LC (SPLIT LEVEL)	9.7 GPH OF 70°F WATER 115V, 1°	THREE PUSH PAD ACTIVATING 5 YEAR WARRANTY	½"	–	2"	1½"
DS	DOUBLE SINK ADA 2-COMPARTMENT STAINLESS STEEL (18 GA.)	"ELKAY" LRAD-3221-4-65 #LK-35 STRAINER	"ELKAY" FAUCET #LK-4102	ANGLE STOPS W/ FLEXIBLE KEY & FLEXIBLE TUBE RISERS, TAILPIECE AND P-TRAP	½"	½"	2"	1½"
MS	MOP SINK 24"x24"x10" DEEP FLOOR BASIN	"FIAT" #MSB-2424 –	SERVICE FAUCET #830-AA	HOSE & BRACKET - MOP HANGER W/ VACUUM BREAKER	¾"	¾"	3"	2"
FD	– FLOOR DRAIN –	"ZURN" #Z400S –	– – –	– SQUARE TOP W/ JR. SMITH QUAD CLOSE TRAP SEAL	–	–	2"	1½"
WH-1	ELECTRIC WATER HEATER –	"A.O. SMITH" # DEN-30 30 GAL. CAPACITY	TWO 4500 W NONSIMULTANEOUS ELEMENTS	23 GPH @ 80°F RISE 208V, 1ø –	–	–	–	–
UR	URINAL WALL MOUNTED FLUSH VALVE	"AMERICAN STANDARD" MAYBROOK #6581.015	"SLOAN" OPTIMA #8186 1.0 GAL PER FLUSH	JR SMITH #0615 WALL SUPPORT –	1"	–	3"	2"

WATER CALCULATION

STATIC PRESS.:	60 PSI		
BLDG. HEIGHT :	20		
60.00 PSI PRESSURE IN MAIN			
20.00 PSI PRESSURE REQUIRED AT FURTHEST FIXTURE			
40.00 PSI SUBTOTAL			
7.00 PSI PRESSURE DROP THRU METER	EXISTING		
10.00 PSI DROP THRU RPPBFP			
23.00 PSI SUBTOTAL			
8.66 PSI DROP FOR ELEVATION			
14.34 PSI ALLOWABLE FOR PIPE FRICTION			
TOTAL LENGTH OF WTR SYSTEM =	226		
EQUIVALENT FEET OF PIPE ALLOWED FOR TEES, ELBOWS, FITTINGS, ETC. =	74.58		
TOT. DEVELOPED LENGTH OF WTR SYSTEM=	300.58		
* ALLOWABLE FRICTION LOSS =	= 4.7708	PSI/100'*	
8 LAV	2 FU =	16 FU	
7 WC	10 FU =	70 FU	
3 UR	5 FU =	15 FU	
2 EDF	1.5 FU =	3 FU	
1 MS	3 FU =	3 FU	
1 DS	4 FU =	4 FU	
TOTAL FU		111	
EXISTING FU		0	
FUTURE FU		0	
TOTAL		111	70 GPM

NOTE:
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REPRESENTATIVE: WALT HITCHCOCK
CELL: 480-694-34-33
EMAIL: WALT.HITCHCOCK@ME.COM

NOTE:
SUPPORT ALL PIPING ON ROOF WITH "TREK" COMPOSITE WOOD BLOCKING

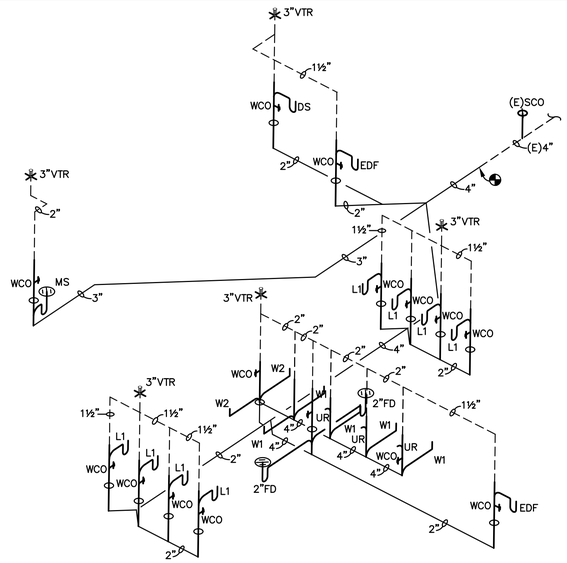
PIPING MATERIALS

SANITARY WASTE AND VENT SYSTEMS
PIPING:
DWV PVC CONFORMING TO ASTM D 1784 NO. 301. GALVANIZED STEEL PIPE,

DOMESTIC WATER SYSTEM
PIPING:
TYPE "L" HARD DRAWN COPPER, CONFORMING TO ASTM B-88. TYPE "K" HARD DRAWN COPPER, CONFORMING TO ASTM B-88. TYPE "K" SOFT DRAWN COPPER, CONFORMING TO ASTM B-88.

8.0 PSI DROP

PIPE SIZE	GPM	FU (FT)	FU (FV)
½"	3	3	–
¾"	8	11	–
1"	18	25	–
1¼"	30	55	14
1½"	44	103	35
2"	77	259	135
2½"	120	479	365
3"	170	748	739



WASTE & VENT SCHEMATIC

Scale: NONE

PLUMBING SYMBOL LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
—GW—	GREASE WASTE (GW)		POINT OF CONNECTION
– – – –	EXISTING (E)		SHUT OFF VALVE (GATE)
———	SOIL WASTE LINE (W)		CHECK VALVE
– – – –	VENT LINE (V)		UNION
—·—·—	COLD WATER (C.W.)		LUBRICATED PLUG VALVE
– – – –	HOT WATER (H.W.)		HOSE BIBB (H.B.)
– – – –	HOT WATER RETURN		BRANCH RISE OFF MAIN
— G —	GAS LINE	S.C.O.	SURFACE CLEANOUT
—TW—	TEMPERED WATER	F.C.O.	FLOOR CLEANOUT
—SW—	SOFT WATER		GLOBE VALVE
———	BUILDING SEWER		BALL VALVE
	FLOOR DRAIN (F.D.)	-R.D.L.-	ROOF DRAIN LEADER
	FLOOR SINK (F.S.)	-O.D.L.-	OVERFLOW DRAIN LEADER
	ROOF DRAIN (R.D.)	—CD—	CONDENSATE DRAIN LINE
	OVER FLOW DRAIN	—ICW—	INDUSTRIAL COLD WATER

NOTE: ONLY THOSE SYMBOLS SHOWN ON THE DRAWING APPLY

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ARCHITECTURE & PLANNING

DRAWING: WASTE & VENT SCHEMATIC, PLUMBING DETIALS

PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, CGSI PRESCOTT, ARIZONA

DRAWN BY	KEF
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	P2.0

PLUMBING SPECIFICATIONS

1. SCOPE
THE WORK SPECIFIED UNDER THIS CONTRACT INCLUDES THE FURNISHING OF ALL LABOR, MATERIALS, TOOLS, TRANSPORTATION, SERVICES, PERMITS, INSPECTION FEES, ETC., REQUIRED IN THE COMPLETE INSTALLATION OF PLUMBING WORK AS SPECIFIED HEREIN AND SHOWN ON ACCOMPANYING DRAWINGS AND AS REQUIRED BY THE CONDITIONS AT THE SITE. THE GENERAL AND SPECIAL CONDITIONS ARE HEREBY MADE A PART OF THIS SECTION. IN ADDITION, WORK IN THESE SECTIONS ARE GOVERNED BY ALL PROVISIONS OF THE CONTRACT DOCUMENTS.

2. SUBMITTALS
SUBMIT SIX SETS OF SHOP DRAWINGS AND ALL DATA REQUIRED FOR ALL WORK PROVIDED UNDER DIVISION 15.

3. RECORD DRAWINGS
PROVIDE RECORD DRAWINGS WHICH SHALL CLEARLY SHOW ALL DIFFERENCES BETWEEN THE CONTRACT WORK AS DRAWN AND INSTALLED. PIPING MAINS BELOW SLAB AND/OR GRADE AND ALL BRANCH LINES BELOW SLAB OR GRADE IN EXCESS OF 5 FT. IN LENGTH SHALL BE DIMENSIONED FROM COLUMNS OF ANY PERMANENT STRUCTURE. ALSO, SHOW ALL WORK ADDED TO THE CONTRACT WHICH IS NOT SHOWN ON THE CONTRACT DRAWINGS.

RECORD DRAWINGS SHALL BE IN ACCORDANCE WITH DIVISION REQUIREMENTS.

4. EQUIPMENT LIST AND MAINTENANCE MANUAL
MAINTENANCE MANUAL SHALL INCLUDE ALL AVAILABLE MANUFACTURERS' OPERATION AND MAINTENANCE INSTRUCTIONS TOGETHER WITH THE RECORD DRAWINGS HERE IN BEFORE SPECIFIED AND ALL OTHER DIAGRAMS AND INSTRUCTIONS NECESSARY TO PROPERLY OPERATE AND MAINTAIN THE EQUIPMENT. THE MANUAL SHALL ALSO INCLUDE THE NAME, ADDRESS, AND PHONE NUMBER OF THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS INVOLVED IN ANY OF THE WORK SPECIFIED HEREIN. THE EQUIPMENT LIST AND MAINTENANCE MANUAL SHALL BE SUBMITTED.

5. CODES, PERMITS, FEES, INSPECTIONS, RULES & REGULATIONS
THE CONTRACTOR MUST COMPLY WITH ALL STATE AND MUNICIPAL BUILDING AND SAFETY LAWS, ORDINANCES AND REGULATIONS, RELATING TO BUILDING AND PUBLIC HEALTH AND SAFETY. ALL WORK SHALL BE IN CONFORMANCE WITH THE GOVERNING CITY CODES.

6. EXCAVATION AND BACKFILL
COMPLETE ALL SAW CUTTING, EXCAVATION AND BACKFILL AS NECESSARY FOR THE INSTALLATION OF UNDERGROUND PIPING. COMPACT AND TAMP BACKFILL TO ORIGINAL GRADE IN ACCORDANCE WITH REQUIREMENTS AS SPECIFIED IN SECTION ENTITLED 'EARTHWORK' AND REMOVE EXCESS DIRT AS DIRECTED. NO WORK SHALL BE COVERED UNTIL PROPERLY TESTED AND APPROVED. ALL PAVEMENT, SIDEWALK, PIPING, ELECTRICAL CONDUIT, ETC., CAUSED TO BE CUT OR DAMAGED BY THIS SECTION SHALL BE RESTORED TO ORIGINAL CONDITION BY WORKMEN QUALIFIED AND ACTIVE IN THE TRADES INVOLVED.

7. ELECTRIC WIRING
ALL POWER WIRING IS INCLUDED IN DIVISION 16, ELECTRICAL. THE RESPONSIBILITY FOR PROPER CONNECTIONS AND OPERATION IS INCLUDED UNDER THIS DIVISION.

8. WARRANTY
WARRANT THE SYSTEM, LABOR, MATERIALS AND EQUIPMENT FOR ONE (1) YEAR AFTER COMPLETION AND ACCEPTANCE. REPLACE OR REPAIR ALL DEFECTIVE WORKMANSHIP, EQUIPMENT, AND MATERIALS AT NO ADDITIONAL COST TO THE OWNER.

9. WORK SPECIFIED HEREIN
PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES NECESSARY TO FURNISH AND INSTALL COMPLETE PLUMBING AND PIPING SYSTEMS AS INDICATED OR SPECIFIED. INSTALL AND DELIVER ALL SYSTEMS COMPLETE, IN PERFECT WORKING ORDER, AND IN FULL ACCORDANCE WITH THE INTENT AND MEANING OF THE DRAWINGS AND SPECIFICATIONS. THE WORK, IN GENERAL, CONSISTS OF, BUT IS NOT NECESSARILY LIMITED TO, THE FOLLOWING:

COMPLETE SANITARY PLUMBING SYSTEMS FOR THE BUILDING WITH CONNECTIONS FROM EXISTING LINE IN THE BUILDING.

DOMESTIC WATER SYSTEM INCLUDING CONNECTION TO EXISTING, AND CONNECTIONS TO ALL PLUMBING FIXTURES AND EQUIPMENT.

ROUGH-IN AND FINAL CONNECTIONS OF WASTE AND WATER TO SPECIAL EQUIPMENT SPECIFIED UNDER OTHER SECTIONS OF THESE SPECIFICATIONS OR SUPPLIED BY OWNER, INCLUDING KITCHEN EQUIPMENT, CONDENSATE DRAIN PIPING, P-TRAPS, WASTE TUBING STOPS, FLEXIBLE TUBE RISERS, ETC. AS REQUIRED.

VALVED OUTLETS AND CONNECTIONS TO ALL HEATING, AIR CONDITIONING, OR ELECTRICAL EQUIPMENT WITH LOCATION AS REQUIRED.

INSULATION INCLUDING DOMESTIC HOT WATER SUPPLY PIPING AS SPECIFIED.

PLUMBING SPECIALTIES, INCLUDING CLEAN-OUTS, DRAINS, FIXTURE SUPPORTS, INTERCEPTORS, ETC.

PLUMBING EQUIPMENT AS SPECIFIED AND SCHEDULED.

PLUMBING FIXTURES AS SPECIFIED.

ADEQUATE SUPERVISION OF ERECTION, BALANCING, ADJUSTMENTS AND INSTRUCTIONS FOR PROPER OPERATION AND MAINTENANCE.

STERILIZATION OF POTABLE WATER SYSTEM.

10. APPROVED MANUFACTURERS
SPECIFICATION HEREIN BY BRAND NAME IS INTENDED TO ESTABLISH A STANDARD OF QUALITY. FURTHER, THIS EQUIPMENT HAS BEEN CHECKED AS TO SIZE AND WEIGHT REQUIREMENTS AND SPACE ALLOCATION HAS BEEN MADE ACCORDINGLY.

SUBMITTAL OF EQUIPMENT BY OTHER ACCEPTABLE MANUFACTURERS MUST BE COMPLETE IN EVERY DETAIL, INCLUDING SPACE REQUIREMENTS, WEIGHT, COMPLETE PERFORMANCE DATA, AND SUPPLEMENTAL DATA REQUESTED BY THE ARCHITECT. CONTRACTOR SHALL BE RESPONSIBLE FOR ASSURANCE THAT THE EQUIPMENT MEETS ALL THE REQUIREMENTS DETAILED IN THIS AND OTHER SECTIONS, AND INDICATED ON THE DRAWINGS.

EACH SECTION INCLUDES A LIST OF MANUFACTURERS WHOSE EQUIPMENT IS ACCEPTABLE TO MANUFACTURE, SUBJECT TO CONFORMANCE WITH ALL DRAWINGS, SPECIFICATIONS AND ADDENDA ITEMS. CAREFUL CHECKING MUST BE MADE TO VERIFY THAT THE EQUIPMENT WILL MEET ALL CAPACITIES, REQUIREMENTS, SPACE ALLOCATIONS, AND THAT THE WEIGHTS ARE NOT EXCESSIVE.

11. MATERIALS
MANUFACTURERS INDICATE A STANDARD OF QUALITY, OTHER MANUFACTURES MUST BE APPROVED AS AN EQUAL.

SANITARY WASTE VENT AND STORM DRAINAGE: DWV PVC CONFORMING TO ASTM D 1784.

DOMESTIC WATER: TYPE 'L' HARD DRAWN COPPER, CONFORMING TO ASTM B-88.

CLEAN OUTS: INTERIOR CONCRETE AND TILE FLOORS: 'WADE W-7000'. INTERIOR FINISHED WALLS: 'WADE W-8460-R'.

FLOOR DRAINS: TOILET ROOMS AND FINISHED AREAS: 'ZURN Z400S'.

BALL VALVES: NIBCO #S-585-70, 150# SOLDER JOINT FOR ALL LINES UP TO 2" IN DIAMETER.

CHECK VALVES: NIBCO #S-413-Y, 150# SOLDER JOINT FOR ALL VALVES UP TO 2" IN DIAMETER.

GLOBE VALVES: NIBCO #S-235-Y, 150# SOLDER JOINT FOR ALL VALVES UP TO 2" IN DIAMETER.

FIXTURES: USE POLISHED CHROME PLATED, ADJUSTABLE BRASS P-TRAPS AND WASTE ARMS WITH WALL ESCUTCHEONS AT ALL EXPOSED LOCATIONS. USE POLISHED CHROME PLATED FAUCETS WITH REMOVABLE TRIP, BRASS BODY AND BRASS HANDLES. FIXTURES AND SUPPLY FITTING SHALL BE AS SPECIFIED. PROVIDE DIAPHRAGM TYPE POLISHED CHROME PLATED FLUSH VALVES WITH INTEGRAL VACUUM BREAKERS AND SCREW DRIVER STOPS. PROVIDE FIXTURE STOPS AND VALVES AHEAD OF ALL EQUIPMENT OR FIXTURES. AFTER FIXTURES ARE SET IN PLACE AND SECURED TO WALLS, CAULK ALL AROUND BETWEEN FIXTURES AND WALL WITH EITHER 'DOW CORNING #780' OR G.E. CONSTRUCTION SEALANT' WHITE SILICONE CAULKING COMPOUND.

12. INSTALLATION
THE ENTIRE PLUMBING SYSTEM SHALL BE INSTALLED IN A NEAT, WORKMANLIKE, FINISHED, AND SAFE MANNER. CONCEAL ALL PIPING IN FINISHED AREAS UNLESS NOTED OTHERWISE. ALL PIPING SHALL BE ADEQUATELY SUPPORTED AND INSTALLED PARALLEL WITH THE BUILDING WALLS. THE ENTIRE INSTALLATION SHALL BE SUBJECT TO THE ARCHITECT'S APPROVAL.

13. TESTS
TEST WATER PIPING TO 100 PSI AND HOLD FOR 4 HOURS.
TEST SEWER AND VENT PIPING WITH A 10 FOOT HEAD OF WATER FOR 4 HOURS.
REPAIR ALL LEAKS UNTIL SYSTEMS ARE WATERTIGHT.

END OF SECTION

MAVEN ENGINEERING
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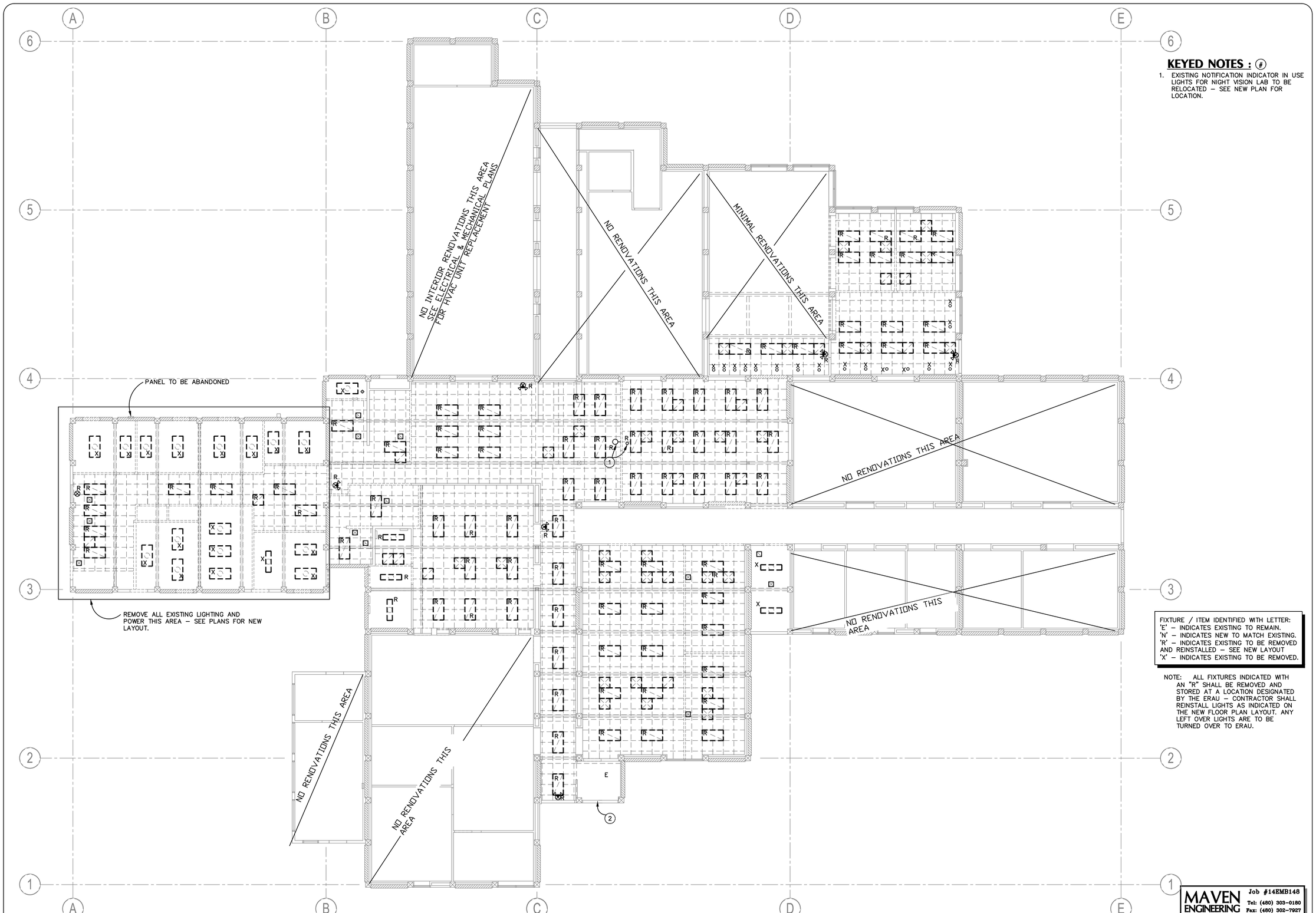


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ARCHITECTURE & PLANNING

DRAWING: PLUMBING SPECIFICATIONS

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	KEF
CHECKED BY	KJH
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SCALE	AS NOTED
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SHEET	P3.0



KEYED NOTES : (#)

1. EXISTING NOTIFICATION INDICATOR IN USE LIGHTS FOR NIGHT VISION LAB TO BE RELOCATED – SEE NEW PLAN FOR LOCATION.

FIXTURE / ITEM IDENTIFIED WITH LETTER:
'E' – INDICATES EXISTING TO REMAIN.
'N' – INDICATES NEW TO MATCH EXISTING.
'R' – INDICATES EXISTING TO BE REMOVED AND REINSTALLED – SEE NEW LAYOUT
'X' – INDICATES EXISTING TO BE REMOVED.

NOTE: ALL FIXTURES INDICATED WITH AN "R" SHALL BE REMOVED AND STORED AT A LOCATION DESIGNATED BY THE ERAU – CONTRACTOR SHALL REINSTALL LIGHTS AS INDICATED ON THE NEW FLOOR PLAN LAYOUT. ANY LEFT OVER LIGHTS ARE TO BE TURNED OVER TO ERAU.

E1 ELECTRICAL DEMO PLAN

Scale: 1/8"=1'-0"

Plan North

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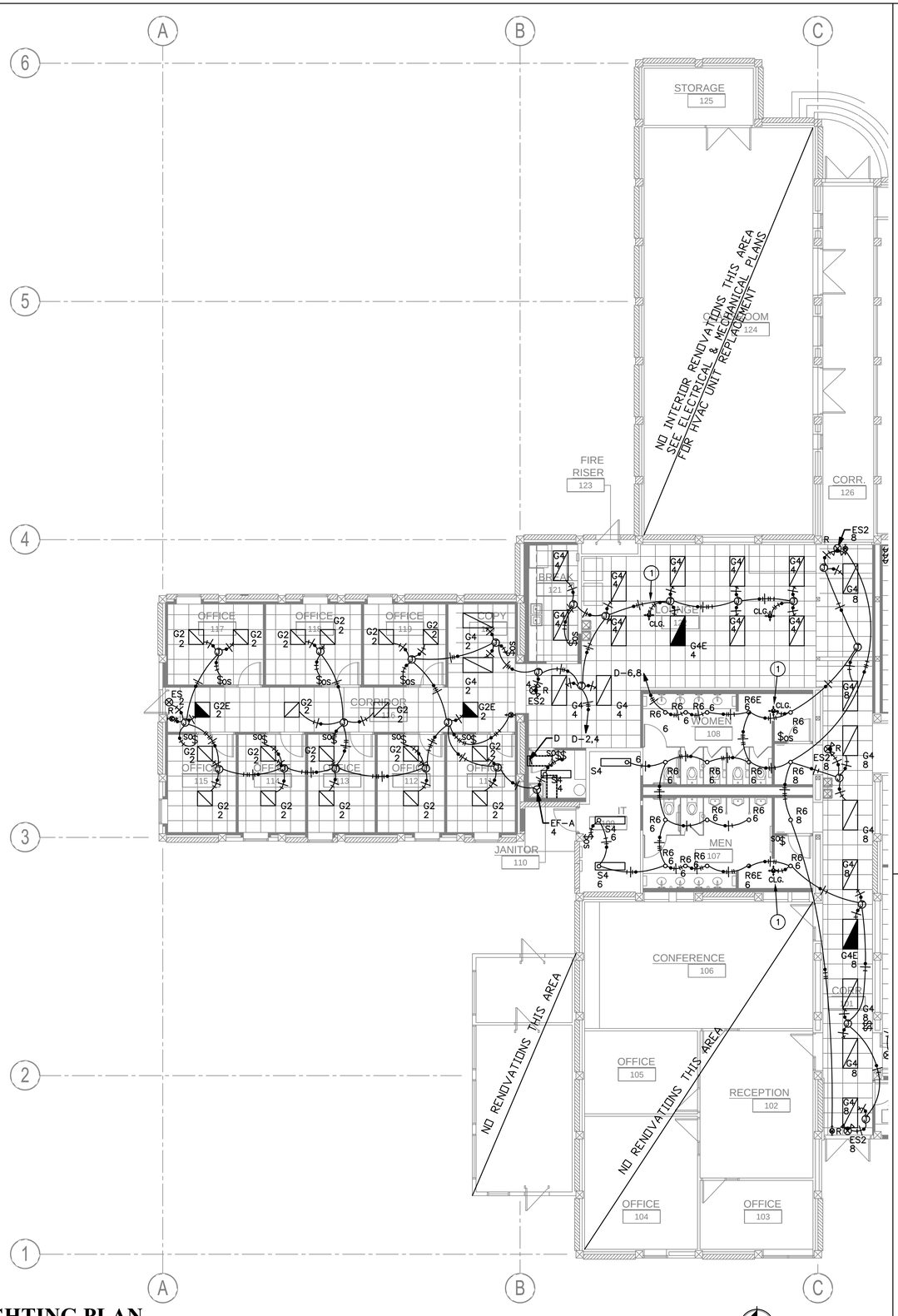


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ARCHITECTURE & PLANNING

DRAWING: ELECTRICAL LIGHTING DEMO PLAN

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	ERC
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	E1.0



E1 LIGHTING PLAN

Scale: 1/8"=1'-0"

Plan North

LIGHTING GENERAL NOTES:

A. PRIOR TO ROUGH-IN, THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF ALL LIGHT FIXTURES: TO INCLUDE MOUNTING HEIGHTS AND LOCATIONS. ALL CONFLICTS SHALL BE REPORTED TO THE ENGINEER/ARCHITECT.

B. THE ELECTRICAL CONTRACTOR SHALL (PRIOR TO THEIR BID) a) VISIT THE SITE AND FIELD VERIFY ALL EXISTING CONDITIONS AND b) TAKE ALL CONSIDERATIONS INTO ACCOUNT AT THE TIME OF BID. NO CONSIDERATIONS WILL BE GRANTED THE CONTRACTOR AFTER THE BID IS ACCEPTED.

C. THE ELECTRICAL LIGHTING INSTALLATIONS SHALL CONFORM TO ALL STATE AND LOCAL SEISMIC AND CODE REQUIREMENTS REGARDING LIGHT FIXTURE SUPPORT.

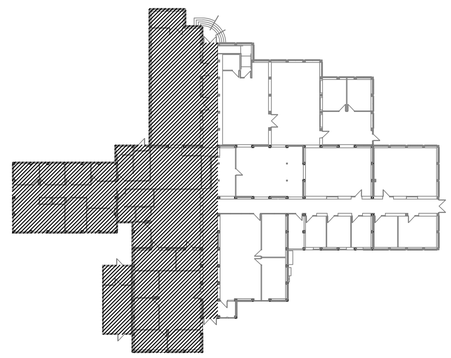
D. ALL ELECTRICAL METALLIC TUBING (EMT), RIDGED NON-METALLIC CONDUITS, "SEAL TIGHT" TYPE CONDUITS AND ALL OTHER CONDUITS THAT DO NOT CONTAIN A CODE SIZED GROUND WIRE SHALL HAVE A CODE SIZED BOND WIRE INSTALLED WITH THE CIRCUIT CONDUCTORS.

E. ALL FIXTURES INSTALLED OUTDOORS SHALL BE RATED FOR DAMP/WET LOCATIONS AS REQUIRED. THE CONTRACTOR SHALL COORDINATE DAMP/WET LOCATION RATING PER NEC ARTICLE 410.10(A). ALL INSTALLATIONS SHALL CONFORM TO NEC ARTICLE 410, ALL SUB ARTICLES.

F. ALL FLUORESCENT FIXTURES THAT UTILIZE DOUBLE ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL BE CODE COMPLIANT WITH N.E.C. 410.130(G)

KEYED NOTES : (#)

1. PROVIDE LEVITON DUAL TECHNOLOGY LOW VOLTAGE CEILING OCCUPANCY SENSOR FOR LIGHTING CONTROL.



Key Plan

Scale: NTS

Plan North

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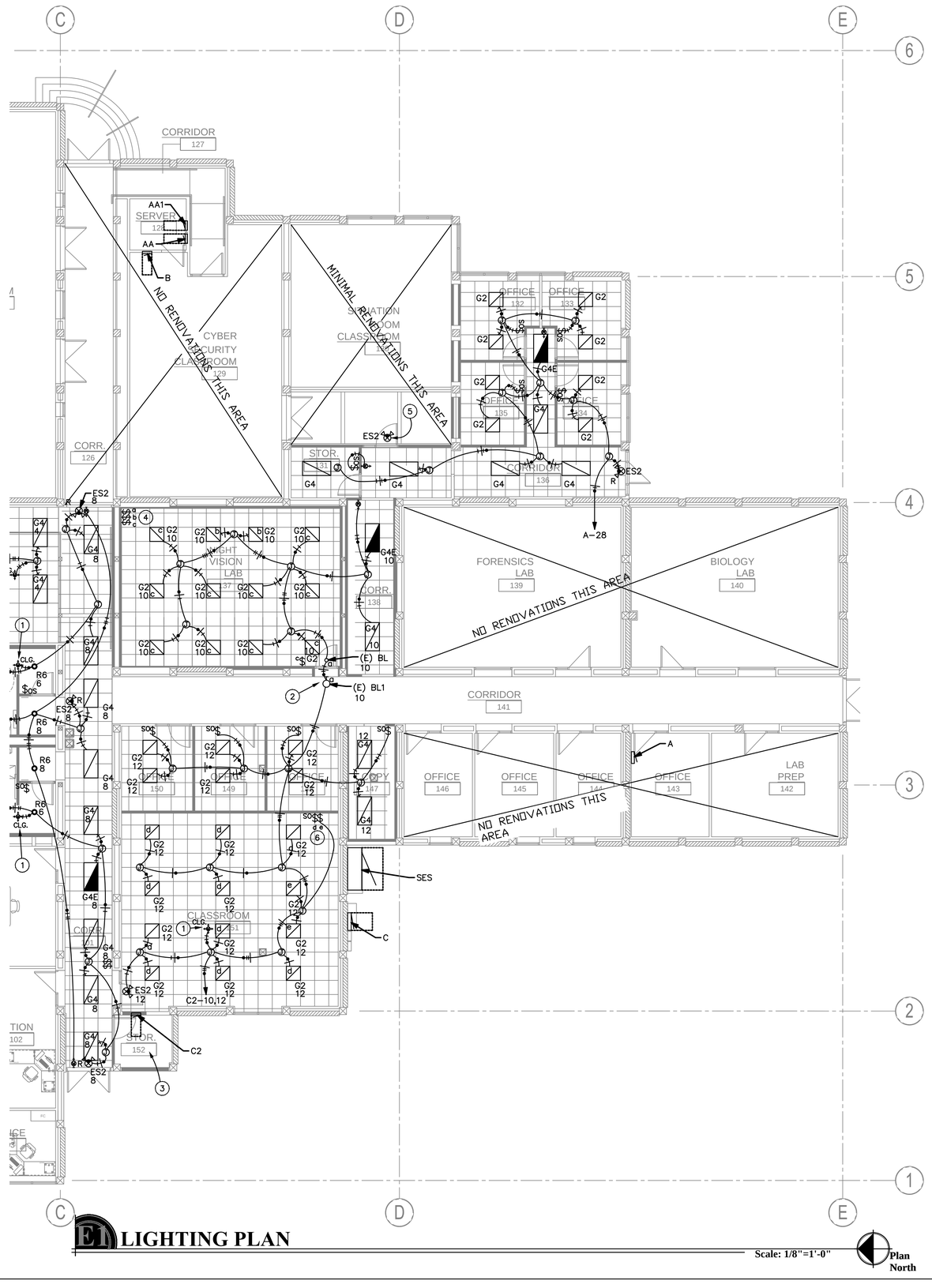
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DRAWING: LIGHTING PLAN

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	ERC
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	E1.1



E1 LIGHTING PLAN

Scale: 1/8"=1'-0"

Plan North

LIGHTING GENERAL NOTES:

A. PRIOR TO ROUGH-IN, THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF ALL LIGHT FIXTURES: TO INCLUDE MOUNTING HEIGHTS AND LOCATIONS. ALL CONFLICTS SHALL BE REPORTED TO THE ENGINEER/ARCHITECT.

B. THE ELECTRICAL CONTRACTOR SHALL (PRIOR TO THEIR BID) a) VISIT THE SITE AND FIELD VERIFY ALL EXISTING CONDITIONS AND b) TAKE ALL CONSIDERATIONS INTO ACCOUNT AT THE TIME OF BID. NO CONSIDERATIONS WILL BE GRANTED THE CONTRACTOR AFTER THE BID IS ACCEPTED.

C. THE ELECTRICAL LIGHTING INSTALLATIONS SHALL CONFORM TO ALL STATE AND LOCAL SEISMIC AND CODE REQUIREMENTS REGARDING LIGHT FIXTURE SUPPORT.

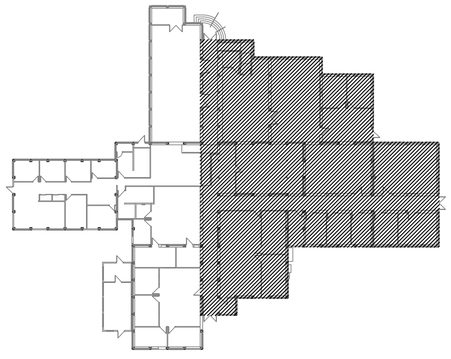
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F. ALL FLUORESCENT FIXTURES THAT UTILIZE DOUBLE ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL BE CODE COMPLIANT WITH N.E.C. 410.130(G)

KEYED NOTES : (#)

1. PROVIDE LEVITON CEILING MOUNTED DUAL TECHNOLOGY ULTRASONIC AND PASSIVE INFRARED OCCUPANCY SENSOR FOR LOCAL LIGHTING CONTROL.
2. REINSTALL EXISTING RELOCATED BLACK LIGHTS AND CONNECT TO NEW SWITCH. VERIFY EXISTING SET UP IN FIELD PRIOR TO MOVING.
3. NO RENOVATIONS THIS AREA.
4. PROVIDE (1) THREE WAY SWITCH FOR ZONE 'c', ONE MANUAL SWITCH FOR ZONE 'b' AND ONE MANUAL FOR RELOCATED BLACK LIGHTS AT DOOR.
5. NEW EXIT SIGN WITH LIGHT CONNECT TO EXISTING LIGHTING CIRCUIT THIS ROOM – COORDINATE IN FIELD.
6. PROVIDE OCCUPANCY SENSOR OVERRIDE SWITCH & MANUAL SWITCH FOR ZONE 'e'.



Key Plan

Scale: NTS

Plan North

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Registered Professional Engineer (Electrical) 32857 BRYAN P. JEHLING Date Signed 12-1-14 ARIZONA, U.S.A.

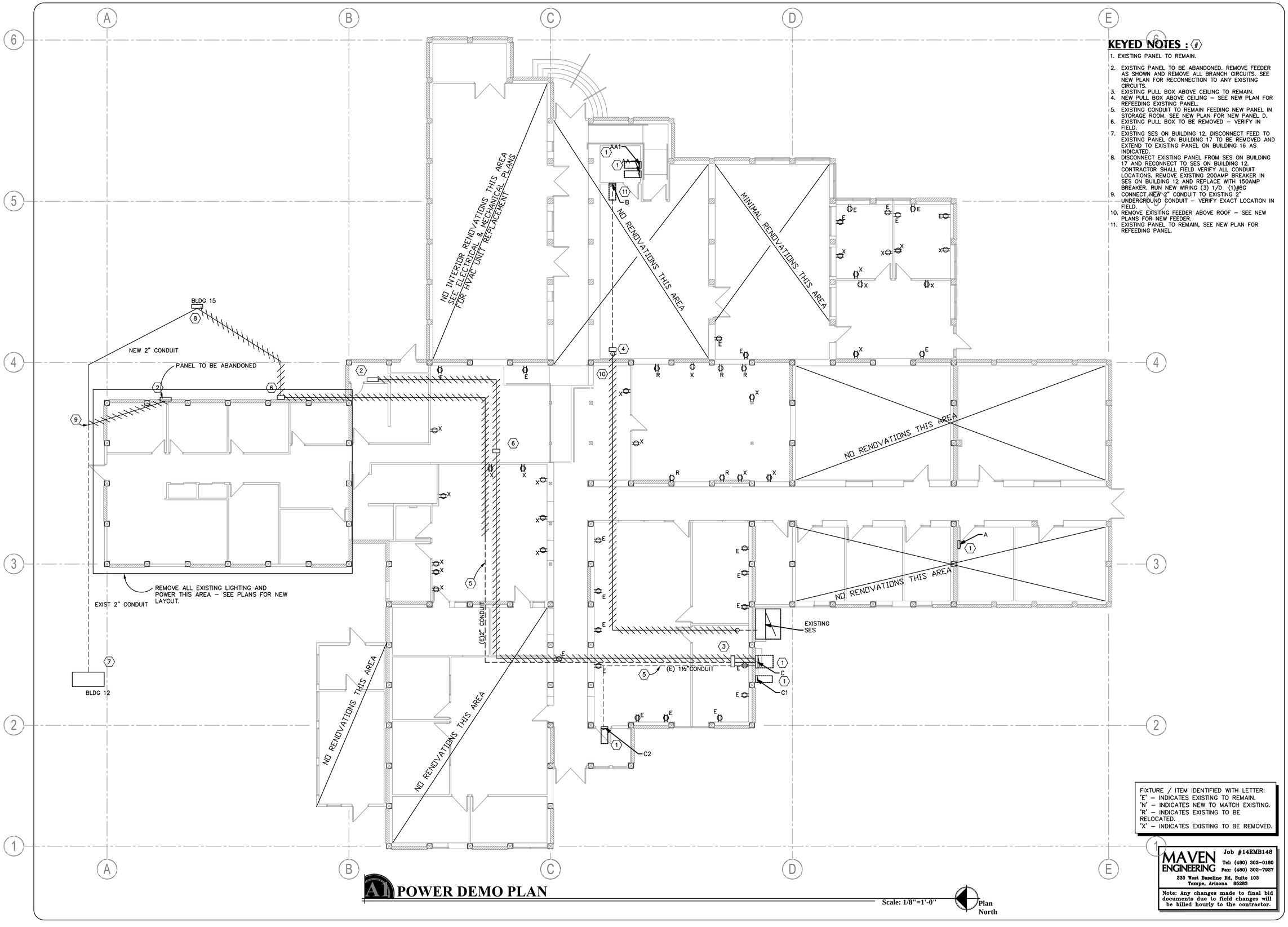
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DRAWING: LIGHTING PLAN

PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, COSI PRESCOTT, ARIZONA

DRAWN BY	ERC
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	E1.2



KEYED NOTES : (#)

1. EXISTING PANEL TO REMAIN.
2. EXISTING PANEL TO BE ABANDONED. REMOVE FEEDER AS SHOWN AND REMOVE ALL BRANCH CIRCUITS. SEE NEW PLAN FOR RECONNECTION TO ANY EXISTING CIRCUITS.
3. EXISTING PULL BOX ABOVE CEILING TO REMAIN.
4. NEW PULL BOX ABOVE CEILING – SEE NEW PLAN FOR REFEEDING EXISTING PANEL.
5. EXISTING CONDUIT TO REMAIN FEEDING NEW PANEL IN STORAGE ROOM. SEE NEW PLAN FOR NEW PANEL D.
6. EXISTING PULL BOX TO BE REMOVED – VERIFY IN FIELD.
7. EXISTING SES ON BUILDING 12, DISCONNECT FEED TO EXISTING PANEL ON BUILDING 17 TO BE REMOVED AND EXTEND TO EXISTING PANEL ON BUILDING 16 AS INDICATED.
8. DISCONNECT EXISTING PANEL FROM SES ON BUILDING 17 AND RECONNECT TO SES ON BUILDING 12. CONTRACTOR SHALL FIELD VERIFY ALL CONDUIT LOCATIONS. REMOVE EXISTING 200AMP BREAKER IN SES ON BUILDING 12 AND REPLACE WITH 150AMP BREAKER. RUN NEW WIRING (3) 1/0 (1)#6G
9. CONNECT NEW 2" CONDUIT TO EXISTING 2" UNDERGROUND CONDUIT – VERIFY EXACT LOCATION IN FIELD.
10. REMOVE EXISTING FEEDER ABOVE ROOF – SEE NEW PLANS FOR NEW FEEDER.
11. EXISTING PANEL TO REMAIN, SEE NEW PLAN FOR REFEEDING PANEL.

FIXTURE / ITEM IDENTIFIED WITH LETTER:
'E' – INDICATES EXISTING TO REMAIN.
'N' – INDICATES NEW TO MATCH EXISTING.
'R' – INDICATES EXISTING TO BE RELOCATED.
'X' – INDICATES EXISTING TO BE REMOVED.

A1 POWER DEMO PLAN

Scale: 1/8"=1'-0"

Plan North

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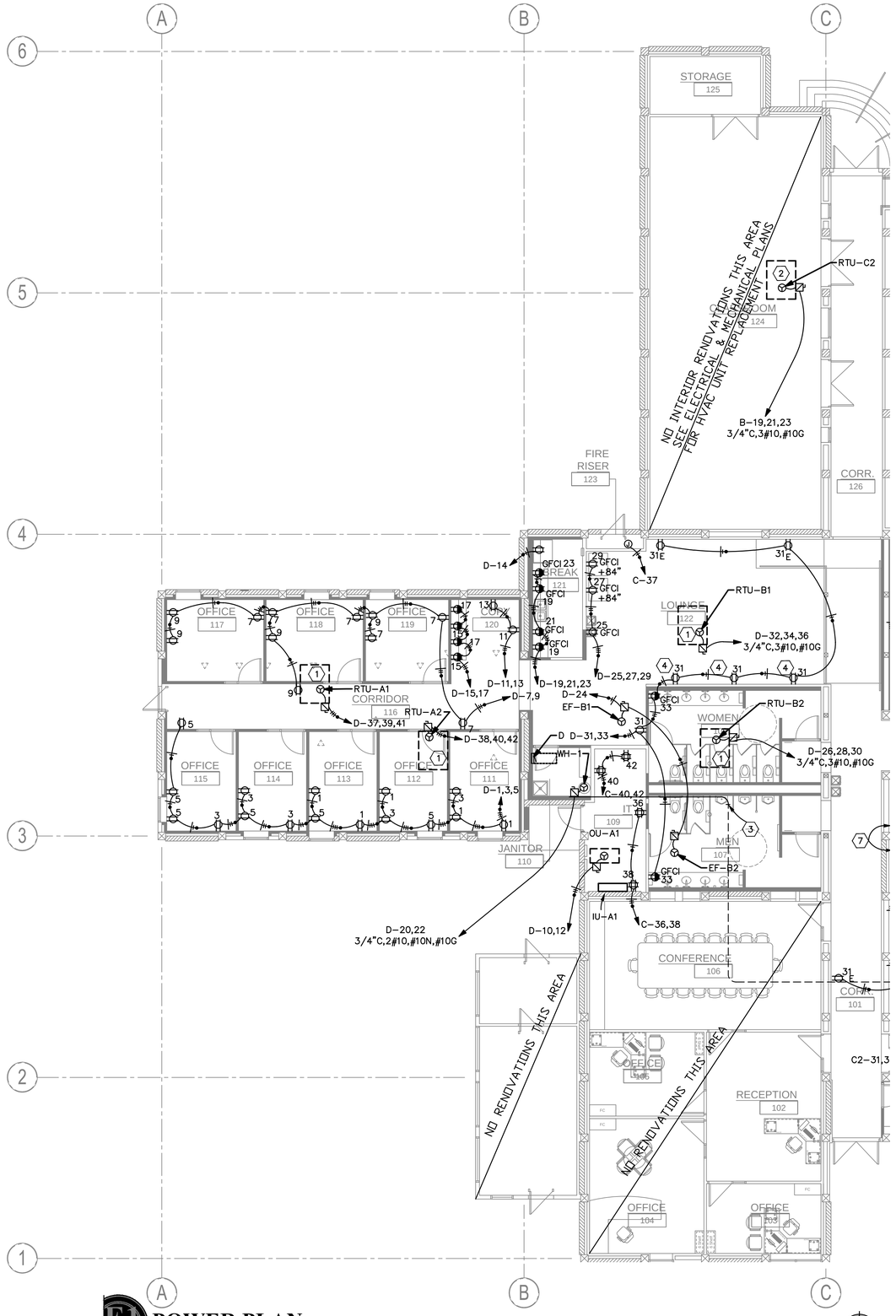


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SHEET	E2.0



E1 POWER PLAN

Scale: 1/8"=1'-0"

Plan North

POWER GENERAL NOTES:

A. ALL EXTERIOR DISCONNECTS SHALL BE W.P. TYPE.

B. ALL RECEPTACLES WITHIN 6'-0" OF A SINK TO BE GFCI RATED.

C. REFER TO MECHANICAL AND PLUMBING PLANS FOR EXACT SIZE, LOCATION, AND ELECTRICAL REQUIREMENTS FOR ALL MECHANICAL AND PLUMBING EQUIPMENT. PROVIDE ELECTRICAL SERVICE AS REQUIRED FOR EACH ITEM.

D. ELECTRICAL CONTRACTOR RESPONSIBLE FOR COORDINATING EXACT LOCATION, QUANTITIES, AND INSTALLATION REQUIREMENTS OF ELECTRICAL EQUIPMENT IN MILL WORK.

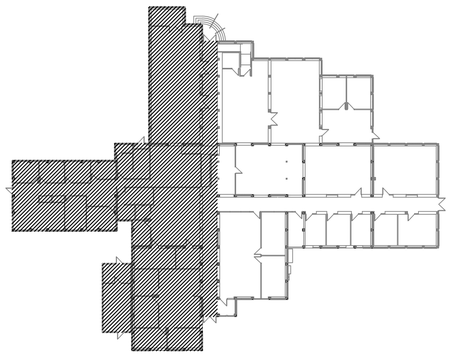
F. ALL EXTERIOR RECEPTACLES SHALL BE W.P./GFCI TYPE.

G. ALL ELECTRICAL SWITCHGEAR EQUIPMENT SHOWN IS BASED ON SIEMENS BRAND EQUIPMENT U.N.O.

H. ALL ELECTRICAL PANEL BOARDS SHALL MAINTAIN 3'-0" INFRONT WORKING CLEARANCE REFER TO ONE-LINE FOR DETAILS.

KEYED NOTES : (#)

1. EXISTING UNIT BE REPLACED, FEED FROM NEW PANEL, RUN NEW CONDUIT AND WIRE AS REQUIRED.
2. EXISTING UNIT TO BE REPLACED, FEED FROM EXISTING PANEL, REUSE EXISTING CONDUIT, REPLACE WIRING IF REQUIRED DUE TO SIZING OR CONDITION TO BE DETERMINED IN FIELD. COORDINATED BREAKER SIZE WITH NEW UNIT REQUIREMENTS.
3. EXTEND NEW 2" CONDUIT FROM EXISTING CONDUIT TO NEW PANEL UNDER ROOF IN ATTIC SPACE – VERIFY EXACT LOCATION IN FIELD.
4. NEW OUTLET IN EXISTING WALL.



Key Plan

Scale: NTS

Plan North

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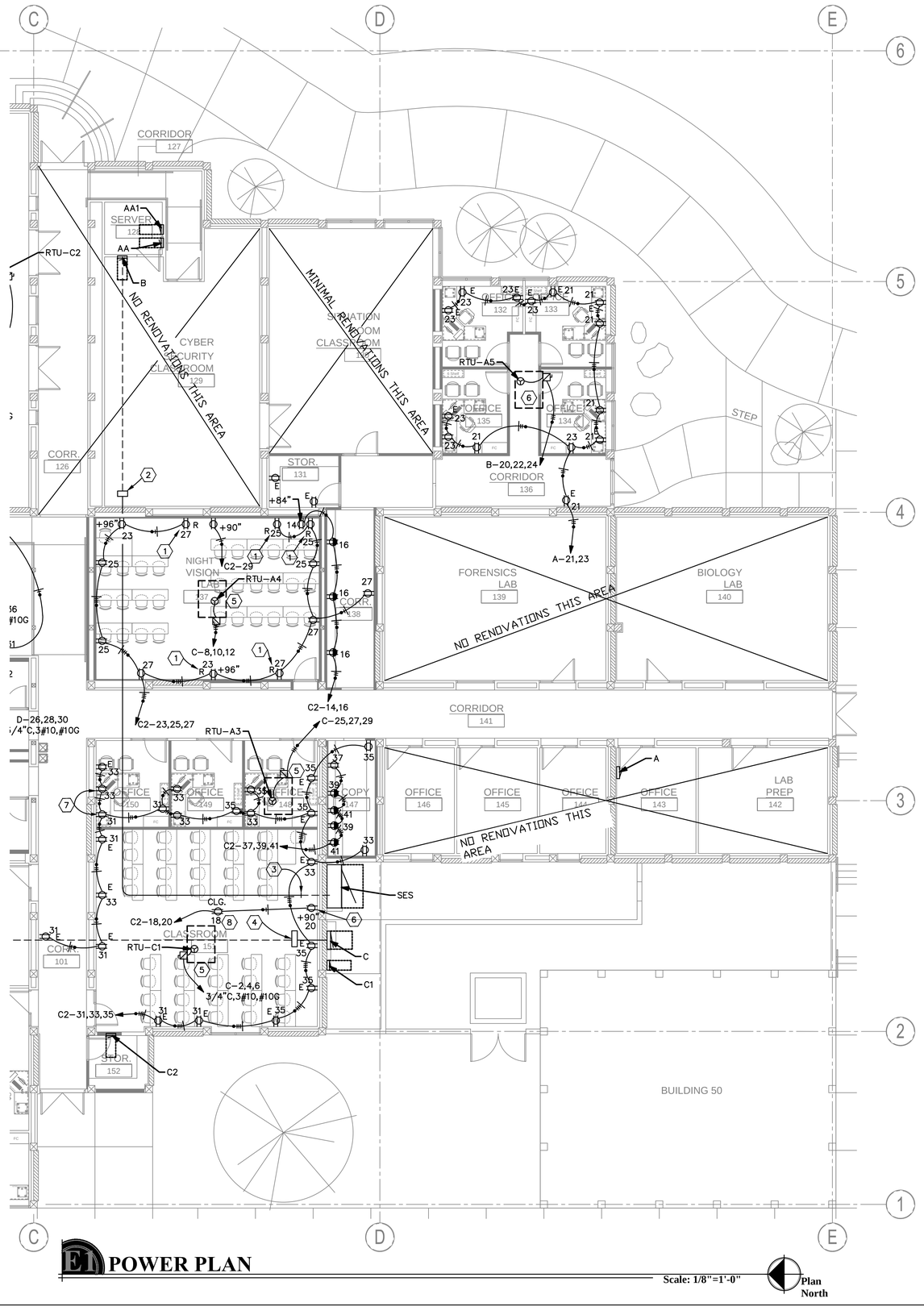


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ARCHITECTURE & PLANNING

DRAWING: POWER PLAN

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	ERC
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	E2.1



POWER GENERAL NOTES:

A. ALL EXTERIOR DISCONNECTS SHALL BE W.P. TYPE.

B. ALL RECEPTACLES WITHIN 6'-0" OF A SINK TO BE GFCI RATED.

C. REFER TO MECHANICAL AND PLUMBING PLANS FOR EXACT SIZE, LOCATION, AND ELECTRICAL REQUIREMENTS FOR ALL MECHANICAL AND PLUMBING EQUIPMENT. PROVIDE ELECTRICAL SERVICE AS REQUIRED FOR EACH ITEM.

D. ELECTRICAL CONTRACTOR RESPONSIBLE FOR COORDINATING EXACT LOCATION, QUANTITIES, AND INSTALLATION REQUIREMENTS OF ELECTRICAL EQUIPMENT IN MILL WORK.

F. ALL EXTERIOR RECEPTACLES SHALL BE W.P./GFCI TYPE.

G. ALL ELECTRICAL SWITCHGEAR EQUIPMENT SHOWN IS BASED ON SIEMENS BRAND EQUIPMENT U.N.O.

H. ALL ELECTRICAL PANEL BOARDS SHALL MAINTAIN 3'-0" INFRONT WORKING CLEARANCE REFER TO ONE-LINE FOR DETAILS.

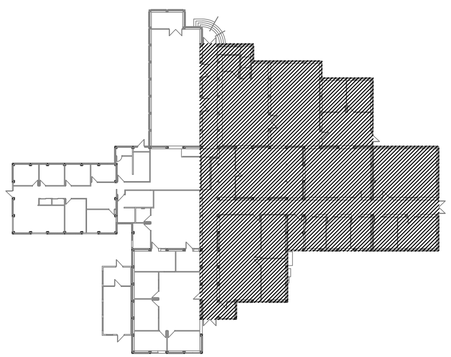
KEYED NOTES : (#)

1. RELOCATED RECEPTICAL EXTEND FROM OLD WALL TO NEW WALL OR RUN NEW CONDUIT AS REQUIRED – CONTRACTOR SHALL VERIFY BEST METHOD IN FIELD.
2. NEW PULL BOX IN CEILING RUN NEW CONDUIT AND PULL NEW WIRE AS REQUIRED – VERIFY EXACT LOCATION IN FIELD.
3. EXTEND NEW 2-1/2" CONDUIT FROM EXISTING CONDUIT – PULL NEW WIRE AS REQUIRED – VERIFY EXACT LOCATION IN FIELD. REMOVE EXISTING ROOF MOUNTED SUBFEED IN CONDUIT BELOW ROOF IN ATTIC SPACE TO PANEL B.
4. EXISTING PULL BOX IN CEILING FEED FROM PANEL C.
5. EXISTING UNIT TO BE REPLACED, FED FROM EXISTING PANEL, REUSE EXISTING CONDUIT, REPLACE WIRING AND BREAKER SIZE WITH NEW UNIT REQUIREMENTS.
6. EXISTING UNIT TO BE REPLACED, FED FROM EXISTING PANEL, REUSE EXISTING CONDUIT, REPLACE WIRING IF REQUIRED DUE TO SIZING OR CONDITION TO BE DETERMINED IN FIELD. COORDINATED BREAKER SIZE WITH NEW UNIT REQUIREMENTS.
7. NEW OUTLET IN EXISTING WALL.
8. PROVIDE CEILING OUTLET FOR PROJECTOR. VERIFY EXACT LOCATION IN FIELD.

E1 POWER PLAN

Scale: 1/8"=1'-0"

Plan North



Key Plan

Scale: NTS

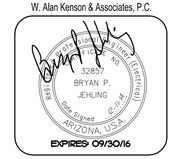
Plan North

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Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

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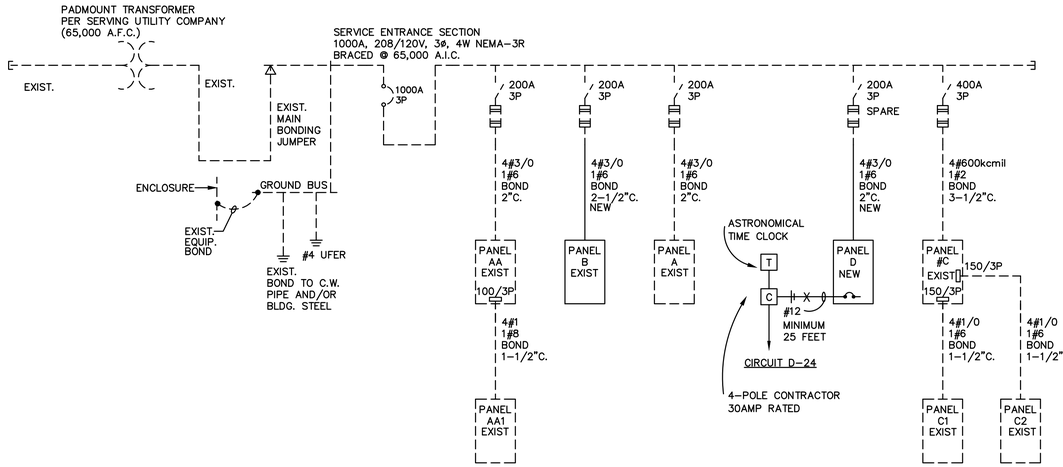
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FAULT CURRENT SCHEDULE

DEVICE	FAULT	AIC RATING	L-N VOLTS	UTILITY			FED FROM				FEEDER						TOTAL MOTOR	DIRECTLY CONNECTED MOTOR LOAD			
				FAULT	X	R	DEVICE	FAULT	X	R	SIZE	X / 1000'	R / 1000'	LENGTH	X	R	FAULT	KVA	FAULT	X	R
SES	43,565	65,000	120V	42,000	0.002802	0.0005603					(3)#400kcmil	0.0133	0.011		0	0	1,565				
A	16,260	65/10K	120V	15,784	0.00541	0.005342	SES	42,000	0.002802	0.0005603	#3/0	0.042	0.077	62'-1"	0.0026	0.0048	476	30.8	341	0.341	0.08524
AA	9,740	65/10K	120V	9,589	0.007824	0.009767	SES	42,000	0.002802	0.0005603	#3/0	0.042	0.077	119'-7"	0.005	0.0092	151				
AA1	8,551	65/10K	120V	8,415	0.008369	0.01155	AA	9,589	0.007824	0.009767	#1	0.046	0.15	11'-10"	0.0005	0.0018	136	8.7	97	1.205	0.3013
B	9,693	65/10K	120V	9,336	0.007989	0.01007	SES	42,000	0.002802	0.0005603	#3/0	0.042	0.077	123'-6"	0.0052	0.0095	357	28.2	314	0.3713	0.09282
C	32,665	65/10K	120V	31,587	0.003648	0.00106	SES	42,000	0.002802	0.0005603	#600kcmil	0.039	0.023	21'-8"	0.0008	0.0005	1,078	28.2	314	0.3713	0.09283
C1	24,838	65/10K	120V	24,203	0.004216	0.002609	C	31,587	0.003648	0.00106	#1/0	0.044	0.12	12'-11"	0.0006	0.0015	635	9	100	1.165	0.2913
C2	12,884	65/10K	120V	12,706	0.005949	0.007335	C	31,587	0.003648	0.00106	#1/0	0.044	0.12	52'-4"	0.0023	0.0063	178	4.58	51	2.289	0.5723
D	10,825	65/10K	120V	10,404	0.007346	0.008892	SES	42,000	0.002802	0.0005603	#3/0	0.042	0.077	108'-2"	0.0045	0.0083	421	33.2	368	0.3161	0.07903



PARTIAL ONE-LINE DIAGRAM

N.T.S.

GENERAL NOTES :

A. DASHED LINES INDICATE EXISTING EQUIPMENT. SOLID LINES INDICATE NEW EQUIPMENT U.N.O.

B. ALL NEW ELECTRICAL GEAR TO BE SIEMENS BRAND EQUIPMENT U.N.O.

C. PER NEC 210.4(B), ALL MULTIWIRE BRANCH CIRCUITS ARE TO BE PROVIDED WITH A DEVICE THAT WILL DISCONNECT POWER TO ALL UNGROUNDED CONDUCTORS SIMULTANEOUSLY AT POINT OF ORIGIN.

ONE-LINE NOTES:

A. SWITCHBOARD COMPONENTS, INCLUDING OVERCURRENT PROTECTIVE DEVICES SHALL BE FULLY RATED FOR THE AVAILABLE FAULT CURRENT SHOWN.

B. PER NEC ARTICLE 110.22, PROVIDE IDENTIFICATION AT ENCLOSURE OF PANEL BOARDS WHERE BREAKERS ARE APPLIED IN SERIES COMBINATION, STATING: "CAUTION – SERIES COMBINATION SYSTEM RATED _____AMPS AVAILABLE. IDENTIFIED REPLACEMENT COMPONENTS REQUIRED." CONTRACTOR TO FILL IN BLANK WITH AVAILABLE FAULT CURRENT AS SHOWN ON ONE-LINE DIAGRAM.

C. PER NEC ARTICLE 240.86(A), PROVIDE IDENTIFICATION AT EACH DISCONNECTING MEANS FEEDING DOWNSTREAM DEVICES APPLIED IN SERIES COMBINATION. PROVIDE NOTE INDICATING: "CAUTION – SERIES RATED DEVICES ARE FED FROM THIS REMOTE MAIN. _____AMPS AVAILABLE. IDENTIFIED REPLACEMENT COMPONENT REQUIRED." CONTRACTOR TO FILL IN BLANK WITH AVAILABLE FAULT CURRENT AS SHOWN ON ONE-LINE DIAGRAM.

D. THE SERIES RATED SYSTEM WILL BE 1-TIER WITH DEVICES RATED @ 65K/14K FOR 480V SYSTEMS AND 65K/10K FOR 208V SYSTEMS.

F. UNLESS NOTED OTHERWISE, LIGHTING AND APPLIANCE BRANCH CIRCUIT BREAKERS ARE SERIES RATED WITH REMOTE UPSTREAM MAIN BREAKERS IN ACCORDANCE WITH 'UL' 489.

G. PROVIDE ARC FLASH AND SHOCK HAZARD WARNING IDENTIFICATION PER NEC ARTICLE 110.16

H. "NO DESIGN CHANGES MAY BE MADE TO THE SYSTEM WITHOUT THE PRIOR APPROVAL OF THE DESIGN ENGINEER AND THE ELECTRICAL INSPECTOR."

PANEL SCHEDULE NOTES:

A. A.I.C. RATING SHOWN ON PANEL SCHEDULES ARE THE MINIMUM RATING FOR NEW AND REPLACEMENT OVERCURRENT PROTECTIVE DEVICES. EACH DEVICE SHALL BE SERIES RATED WITH THE UPSTREAM DEVICE AT AFC AS SHOWN ON ONE-LINE DIAGRAM.

B. ALL PANEL BOARDS SHALL HAVE A TYPE WRITTEN DIRECTORY IDENTIFYING EACH NUMBERED CIRCUIT PLACED IN A DIRECTORY HOLDER INSIDE THE DOOR.

C. THE CONTRACTOR SHALL PERMANENTLY MARK WITH PERMANENT MARKER THE CIRCUIT IDENTIFICATIONS ON THE COVERPLATES OF RECEPTACLES, EQUIPMENT, AND LIGHTING JUNCTION BOXES. (STICK ON LABELS NOT ACCEPTABLE)

SES

ROOM EXTERIOR — VOLTS 208Y/120V 3P 4W — AIC 65,000
MOUNTING FLOOR — BUS AMPS 1000 — MAIN BKR 1000
FED FROM UTILITY — NEUTRAL 100% — LUGS STANDARD
NOTE EXISTING

CKT #	BREAKER TRIP/POLES	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	FEEDER RACEWAY AND CONDUCTORS
1	200/3	PANEL AA	18.8	18.8	16.5	2"C,3#3/0,#3/0N,#6G
2	200/3	PANEL B	17.6	16	16.1	2"C,3#3/0,#3/0N,#6G
3	200/3	PANEL D	19.8	17.4	16.5	2"C,3#3/0,#3/0N,#6G
4	200/3	PANEL A	19.6	20.7	23.4	2"C,3#3/0,#3/0N,#6G
5	400/3	PANEL C	18	25.3	27.1	3-1/2"C,3#600kcmil,#600kcmil N,#2G
		TOTAL CONNECTED KVA BY PHASE	93.7	98.2	99.6	

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	22.4	28.1	(125%)	CONTINUOUS	0.92	1.15	(125%)
LARGEST MOTOR	6.34	7.93	(125%)	HEATING	4.5	0	(0%)
OTHER MOTORS	112	112	(100%)	COOLING	23.9	23.9	(100%)
RECEPTACLES	112	61	(50%>10)	NONCONTINUOUS	8.9	8.9	(100%)
KITCHEN EQUIP	0	0	(N/A)	DIVERSE	0	0	(N/A)
				METERED DEMAND	0	0	(125%)
				TOTAL KVA	292	243	
				BALANCED 3-PHASE AMPS		676	

EQUIPMENT SCHEDULE

CALLOUT	SYMBOL	NEMA	VOLTS	AMPS	KVA	MOCP	CIRCUIT	WIRE CALLOUT	NOTE 1
EF-A			120V 1P 2W	0.8	0.1		D-4	3/4"C,1#10,#10N,#10G	SWITCH ON WALL
EF-B1		NEMA 3R	120V 1P 2W	5.8	0.7		D-24	3/4"C,1#12,#12N,#12G	PROVIDE 30A/2P NEMA 3R FUSED DISCONNECT, FUSED PER MFR'S RECOMMENDATION – ON TIME CLOCK
EF-B2		NEMA 3R	120V 1P 2W	5.8	0.7		D-24	3/4"C,1#12,#12N,#12G	PROVIDE 30A/2P NEMA 3R FUSED DISCONNECT, FUSED PER MFR'S RECOMMENDATION – ON TIME CLOCK
OU-A1		NEMA 3R	208/120V 2P 3W	14.4	3	30	D-10,12	3/4"C,2#12,#12N,#12G	PROVIDE 30A/2P NEMA 3R FUSED DISCONNECT, FUSED PER MFR'S RECOMMENDATIONS –OU POWERS INDOOR UNIT – INSTALL PER MFR RECOMMENDATIONS
RTU-A1		NEMA 3R	208V 3P 3W	17.2	6.2	30	D-37,39,41	3/4"C,3#12,#12G	PROVIDE 30A/3P NEMA 3R FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION
RTU-A2		NEMA 3R	208V 3P 3W	17.2	6.2	30	D-38,40,42	3/4"C,3#12,#12G	PROVIDE 30A/3P NEMA 3R FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION
RTU-A3		NEMA 3R	208V 3P 3W	17.2	6.2	30	C-25,27,29	3/4"C,3#12,#12G	PROVIDE 30A/3P NEMA 3R FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION
RTU-A4		NEMA 3R	208V 3P 3W	17.2	6.2	30	C-8,10,12	3/4"C,3#12,#12G	PROVIDE 30A/3P NEMA 3R FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION
RTU-A5		NEMA 3R	208V 3P 3W	17.2	6.2	30	B-20,22,24	3/4"C,3#10,#10G	PROVIDE 30A/3P NEMA 3R FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION
RTU-B1		NEMA 3R	208V 3P 3W	22.6	8.14	35	D-32,34,36	3/4"C,3#10,#10G	PROVIDE 60A/3P NEMA 3R FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION
RTU-B2		NEMA 3R	208V 3P 3W	22.6	8.14	35	D-26,28,30	3/4"C,3#10,#10G	PROVIDE 60A/3P NEMA 3R FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION
RTU-C1		NEMA 3R	208V 3P 3W	26.8	9.64	40	C-2,4,6	3/4"C,3#10,#10G	PROVIDE 60A/3P NEMA 3R FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION
RTU-C2		NEMA 3R	208V 3P 3W	26.8	9.64	40	B-19,21,23	3/4"C,3#10,#10G	PROVIDE 60A/3P NEMA 3R FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION
WH-1		NEMA 1	208/120V 2P 3W	21.6	4.5		D-20,22	3/4"C,2#10,#10N,#10G	PROVIDE 30A/2P NEMA 1 FUSED DISCONNECT, FUSED PER MANUFACTUROR'S RECOMMENDATION

EQUIPMENT SCHEDULE

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EXPIRES 09/30/16

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A

ROOM RM 137 | VOLTS 208Y/120V 3P 4W | AIC 65/10K
MOUNTING RECESSED | BUS AMPS 200 | MAIN BKR MLO
FED FROM SES | NEUTRAL 100% | LUGS STANDARD
NOTE NEMA-1

	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C	
(1)	1	30/1	EXIST. LTG	2.12			2	20/1	EXIST.RECEPT.	0.2			(1)
(1)	3	20/1	EXIST.RECEPT.		0.35		4	20/1	MISC. REF.		0.75		(1)
(1)	5	20/1	EXIST LIGHTING			1.26	6	20/1	137 COUNTER RECEPTACLE			0.54	(1)
(1)	7	20/1	EXIST.RECEPT.	0.8			8	20/1	RM 136 RECEPTACLE	0.72			(1)
(1)	9	20/1	EXIST.RECEPT.		0.22		10	20/1	RM 137 RECEPTACLE		0.9		(1)
(1)	11	20/1	RN 135 RECEPTACLE			0.72	12	30/1	EXIST. MECH AC2			5.82	(1)
(1)	13	20/1	EXIST.RECEPT.	0.18			14	30/1	EXIST. MECH AC2	5.82			(1)
(1)	15	20/1	EXIST.RECEPT.		0.15		16	30/1	EXIST. MECH AC2		5.82		(1)
(1)	17	20/1	LIGHTING			0.015	18	30/1	EXIST. MECH AC1			5.82	(1)
(1)	19	20/1	EXIST.RECEPT.	0.18			20	30/1	EXIST. MECH AC1	5.82			(1)
(2)	21	20/1	RECEPTACLE		1.26		22	20/1	EXIST.RECEPT.		0.32		(1)
(2)	23	20/1	RECEPTACLE			1.26	24	20/1	EXIST. LIGHTING			1.66	(1)
(1)	25	20/1	SPARE	0			26	20/1	EXIST.RECEPT.	0.25			(1)
(1)	27	20/1	EXIST. HALL LTG		0.8		28	20/1	LIGHTING		0.857		(1)
(1)	29	20/1	EXIST. LIGHTING			1.26	30	20/1	EXIST.RECEPT.			0.11	(1)
(1)	31	20/1	EXIST.RECEPT.	0.165			32	20/1	EXIST.RECEPT.	0.2			(1)
(1)	33	30/1	RM 136 LAB TABLE RECEPTACLE		2.16		34	30/1	135 LAB TABLE RECEPTACLE		2.16		(1)
(1)	35	20/1	MISC. MICROWAVE			1.2	36	20/1	RM 135 COUNTER RECEPTACLE			0.54	(1)
(1)	37	40/1	1 & 2 FUME HOOD	1.63			38	20/1	MISC. REF.	1.5			(1)
(1)	39	20/1	EXIST. GLASS WSHR GLASS WASHER		1.92		40	20/2	CENTRIFUGE		3		(1)
(1)	41	20/1	MISC. W/H			0.18	42	|				3	
									TOTAL CONNECTED KVA BY PHASE	19.6	20.7	23.4	
									TOTAL CONNECTED AMPS BY PHASE	163	173	195	

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	7.97	9.97	(125%)	CONTINUOUS	0	0	(125%)
LARGEST MOTOR	5.82	7.28	(125%)	HEATING	0	0	(N/A)
OTHER MOTORS	24.9	24.9	(100%)	COOLING	0	0	(N/A)
RECEPTACLES	16.8	13.4	(50%>10)	NONCONTINUOUS	8.1	8.1	(100%)
KITCHEN EQUIP	0	0	(N/A)	DIVERSE	0	0	(N/A)
				METERED DEMAND	0	0	(125%)
				TOTAL KVA	63.7	63.7	
EXISTING				BALANCED 3-PHASE AMPS		177	

C1

ROOM EXTERIOR | VOLTS 208Y/120V 3P 4W | AIC 65/10K
MOUNTING FLUSH | BUS AMPS 200 | MAIN BKR 150
FED FROM C | NEUTRAL 100% | LUGS STANDARD
NOTE NEMA 3R

	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C	
(1)	1	20/1	SPARE	0			2	50/2	SPARE	0			(1)
(1)	3	20/1	EXIST OFF RECEPT		0.72		4	|			0		(1)
(1)	5	30/2	EXIST AC DEANS OFF			2.25	6	30/2	EXIST AC DEANS OFF			2.25	(1)
	7	|		2.25			8	|		2.25			
	9	20/1	SPARE		0		10	20/1	SPARE		0		
	11	20/1	SPARE			0	12	20/1	SPARE			0	
	13	20/1	SPARE	0			14	20/1	SPARE	0			
	15	20/1	SPARE		0		16	20/1	SPARE		0		
	17	20/1	SPARE			0	18	20/1	SPARE			0	
	19	20/1	SPARE	0			20	20/1	SPARE	0			
	21	20/1	SPARE		0		22	20/1	SPARE		0		
	23	20/1	SPARE			0	24	20/1	SPARE			0	
	25	20/1	SPARE	0			26	20/1	SPARE	0			
	27	20/1	SPARE		0		28	20/1	SPARE		0		
	29	20/1	SPARE			0	30	20/1	SPARE			0	
	31	20/1	SPARE	0			32	20/1	SPARE	0			
	33	20/1	SPARE		0		34	20/1	SPARE		0		
	35	20/1	SPARE			0	36	20/1	SPARE			0	
	37	20/1	SPARE	0			38	20/1	SPARE	0			
	39	20/1	SPARE		0		40	20/1	SPARE		0		
	41	20/1	SPARE			0	42	20/1	SPARE			0	
									TOTAL CONNECTED KVA BY PHASE	4.5	0.72	4.5	

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	0	0	(125%)	CONTINUOUS	0	0	(125%)
LARGEST MOTOR	4.5	1.13	(25%)	HEATING	0	0	(N/A)
OTHER MOTORS	0	0	(100%)	COOLING	9	9	(100%)
RECEPTACLES	0.72	0.72	(50%>10)	NONCONTINUOUS	0	0	(100%)
KITCHEN EQUIP	0	0	(N/A)	DIVERSE	0	0	(N/A)
				METERED DEMAND	0	0	(125%)
				TOTAL KVA	9.72	10.8	
EXISTING				BALANCED 3-PHASE AMPS		30.1	

C2

ROOM RM 152 | VOLTS 208Y/120V 3P 4W | AIC 65/10K
MOUNTING FLUSH | BUS AMPS 200 | MAIN BKR 150
FED FROM C | NEUTRAL 100% | LUGS STANDARD
NOTE NEMA 1

	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C	
(1)	1	20/1	EXIST RECEPT	0.36			2	20/1	EXIST LIGHTING	0.496			(1)
(1)	3	20/1	EXIST RECEPT		0.9		4	20/1	EXIST LIGHTING		0.721		(1)
(1)	5	20/1	EXIST RECEPT			0.36	6	20/1	EXIST LIGHTING			0.72	(1)
(1)	7	20/1	EXIST RECEPT	0.36			8	20/1	EXIST LIGHTING	0.63			(1)
(1)	9	20/1	EXIST FLOOR RECEPT		0.36		10	20/1	LIGHTING		0.774		(3)(4)
(1)	11	20/1	EXIST RECEPT			1.26	12	20/1	LIGHTING			0.892	(3)(4)
(1)	13	20/1	EXIST RECEPT	0.18			14	20/1	RECEPTACLE	0.3			
(1)	15	20/1	EXIST RECEPT		1.26		16	20/1	RECEPTACLE		0.54		
(1)	17	20/1	EXIST RECEPT			1.26	18	20/1	MISC. PROJECTOR			0.6	
(1)	19	20/1	EXIST RECEPT	1.08			20	20/1	RECEPTACLE	0.3			
(1)	21	20/1	EXIST MISC. COPY MACH		0.6		22	20/1	SPARE		0		
(3)(4)	23	20/1	RECEPTACLE			0.6	24	20/1	SPARE			0	
(3)(4)	25	20/1	RECEPTACLE	0.9			26	20/1	SPARE	0			
(3)(4)	27	20/1	RECEPTACLE		0.9		28	20/1	SPARE		0		
(3)(4)	29	20/1	RECEPTACLE			0.3	30	20/1	SPARE			0	
(3)(4)	31	20/1	RECEPTACLE	1.26			32	20/1	SPARE	0			
(3)(4)	33	20/1	RECEPTACLE		1.44		34	20/1	SPARE		0		
(3)(4)	35	20/1	RECEPTACLE			1.44	36	20/1	SPARE			0	
(3)(4)	37	20/1	MISC. COPY MACHINE	0.6			38	20/1	SPARE	0			
(3)(4)	39	20/1	RECEPTACLE		0.36		40	30/2	EXIST AC-SALON		2.29		
(3)(4)	41	20/1	RECEPTACLE			0.36	42	|				2.29	
									TOTAL CONNECTED KVA BY PHASE	6.47	10.1	10.1	

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	4.23	5.29	(125%)	CONTINUOUS	0	0	(125%)
LARGEST MOTOR	4.58	5.73	(125%)	HEATING	0	0	(N/A)
OTHER MOTORS	0	0	(100%)	COOLING	0	0	(N/A)
RECEPTACLES	17.3	13.6	(50%>10)	NONCONTINUOUS	0.6	0.6	(100%)
KITCHEN EQUIP	0	0	(N/A)	DIVERSE	0	0	(N/A)
				METERED DEMAND	0	0	(125%)
				TOTAL KVA	26.7	25.3	
EXISTING				BALANCED 3-PHASE AMPS		70.1	

C

ROOM EXTERIOR | VOLTS 208Y/120V 3P 4W | AIC 65/10K
MOUNTING FLUSH | BUS AMPS 400 | MAIN BKR 400
FED FROM SES | NEUTRAL 100% | LUGS STANDARD
NOTE NEMA 3R

	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	B	C	
(2)	1	150/3	PANEL C2	6.47			2	40/3	RTU-C1	3.21			(3)
	3	|			10.1		4	|		3.21		
	5	|				10.1	6	|			3.21	
(1)	7	20/1	SPARE	0			8	30/3	RTU-A4	2.07			(3)
(1)	9	150/3	SPARE		0		10	|			2.07		
	11	|				0	12	|				2.07	
	13	|		0			14	20/1	SPARE	0			(1)
(1)	15	20/1	SPARE		0		16	20/1	SPARE		0		(1)
(1)	17	20/1	SPARE			0	18	150/3	PANEL C1			4.5	(1)
(1)	19	20/1	SPARE	0			20	|		0.72			
(1)	21	20/1	SPARE		0		22	|			4.5		
(1)	23	20/1	SPARE			0	24	20/1	SPARE			0	(1)
(3)	25	30/3	RTU-A3	2.07			26	30/3	EXIST AC	2.07			(1)
	27	|			2.07		28	|			2.07		
	29	|				2.07	30	|				2.07	
(1)	31	20/1	SPARE	0			32	20/1	SPARE	0			(1)
(1)	33	20/1	SPARE		0		34	20/1	SPARE		0		(1)
(1)	35	20/1	SPARE			0	36	20/1	MISC. SERVER			1.2	(1)
(1)	37	20/1	FIRE SUPPRESSION	0.2			38	20/1	MISC. SERVER	1.2			(1)
(1)	39	20/1	SPARE		0		40	20/1	MISC. SERVER		1.2		(1)
(1)	41	20/1	EXIST ROOF GFCI RECEPT			0.72	42	20/1	MISC. SERVER			1.2	(1)
									TOTAL CONNECTED KVA BY PHASE	18	25.3	27.1	

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	4.23	5.29	(125%)	CONTINUOUS	0	0	(125%)
LARGEST MOTOR	6.34	7.93	(125%)	HEATING	0	0	(N/A)
OTHER MOTORS	20.3	20.3	(100%)	COOLING	15.2	15.2	(100%)
RECEPTACLES	23.5	16.8	(50%>10)	NONCONTINUOUS	0.8	0.8	(100%)
KITCHEN EQUIP	0	0	(N/A)	DIVERSE	0	0	(N/A)
				METERED DEMAND	0	0	(125%)
				TOTAL KVA	70.4	66.3	
EXISTING				BALANCED 3-PHASE AMPS		184	

PANEL SCHEDULE KEYED NOTES :

(1) INDICATES EXISTING BREAKER EXISTING LOAD.
(2) INDICATES EXISTING BREAKER NEW LOAD.
(3) INDICATES NEW BREAKER NEW LOAD.
(4) INDICATES INSTALL HANDLE TIE DEVICE TO COMPLY WITH NEC 210.4 (B)
(5) INDICATES PROVIDE & INSTALL A LOCK-ON DEVICE.
(6) INDICATES CIRCUIT THRU TIMECLOCK. SEE ONE-LINE DIAGRAM FOR DETAILS.

MAVEN ENGINEERING
Job #14EMB148
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Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

REVISIONS	BY

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ARCHITECTURE & PLANNING

DRAWING: PANEL SCHEDULES

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	ERC
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	E3.1

LUMINAIRE SCHEDULE

CALLOUT	SYMBOL	LAMP	DESCRIPTION	BALLAST	MOUNTING	MODEL	INPUT WATTS	VOLTS	NOTE 1
(E) BL	○	(1)	EXISTING BLACK LIGHT RELOCATED		CEILING	EXISTING BLACK LIGHT MAX 60 WATTS	60	120V 1P 2W	
(E) BL1	⊢○	(1) 60W BLACKLIGHT	EXISTING BLACK LIGHT RELOCATED		WALL	EXISTING BLACK LIGHT 60 WATTS MAX	60	120V 1P 2W	
ES	⊗	(1) INCLUDED	EXIT SIGN WITH EMERGENCY BATTERY BACK UP.	ELECTRONIC	CEILING	REINSTALL EXISTING EXIT SIGN NEW EXIT SIGNS SHALL MATCH EXISTING	1	120V 1P 2W	
ES2	⊗	(1) INCLUDED	EXIT SIGN/EMERGENCY UNIT COMBO.	ELECTRONIC	CEILING	REINSTALL EXISTING EXIT SIGN NEW EXIT SIGNS SHALL MATCH EXISTING	1.5	120V 1P 2W	
G2	▨	39.5W LED	LED PANEL 2'X2' – 41W WARM NEUTRAL	ELECTRONIC	LAY–IN GRID	RAB LIGHTING PANEL 2'X2' – 41YN 3500K COLOR TEMP	39.5	120V 1P 2W	
G2E	◪	39.5W LED	LED PANEL 2'X2' – 41W WARM NEUTRAL EMERGENCY	ELECTRONIC	LAY–IN GRID	RAB LIGHTING PANEL 2'X2' – 41YN–E2 3500K COLOR TEMP	39.5	120V 1P 2W	
G4	▨	(3) 32W F32T8	EXISTING 2'X4' 3 LP T8 18 CELL PARABOLIC LENS	ELECTRONIC	LAY–IN GRID	EXISTING REINSTALL IN NEW CEILING – CONTRACTOR SHALL RELAMP UPON REINSTALLATION	90	120V 1P 2W	THREE 32–WATT T8 LINEAR FLUORESCENT.
G4E	◪	(3) 32W F32T8	EXISTING 2'X4' 3 LP T8 18 CELL PARABOLIC LENS, ADD NEW EMERGENCY BATTERY BACK UP 90 MINUTE MINIMUM.	ELECTRONIC	LAY–IN GRID	EXISTING REINSTALL IN NEW CEILING ADD BATTERY BACK UP VERIFY IN FIELD. CONTRACTOR SHALL RELAMP UPON REINSTALLATION	90	120V 1P 2W	THREE 32–WATT T8 LINEAR FLUORESCENT.
R6	○	(1) 26W PL–T 26W 4PIN	6" RECESSED DOWNLIGHT, SINGLE HORIZONTAL 26W CFL, AND ELECTRONIC BALLAST.	ELECTRONIC	RECESSED	GOTHAM LIGHTING AF–1/26TRT–6AR–MVOLT	27	120V 1P 2W	ONE 26–WATT COMPACT FLUORESCENT TRT, HORIZONTAL POS.
R6E	◉	(1) 26W PL–T 26W 4PIN	6" RECESSED DOWNLIGHT, SINGLE HORIZONTAL 26W CFL, ELECTRONIC BALLAST, & EMERGENCY BATTERY BACK UP 90 MINUTE MIN.	ELECTRONIC	RECESSED	GOTHAM LIGHTING AF–1/26TRT–6AR–MVOLT–EL	27	120V 1P 2W	ONE 26–WATT COMPACT FLUORESCENT TRT, HORIZONTAL POS.
S4	▭	(2) 32W F32T8	LOW PROFILE WRAP, 15 3/8"X4' 2LP T8 PRISMATIC	ELECTRONIC	SURFACE	LITHONIA LIGHTING LB–2–32–MVOLT–GEB10IS	77	120V 1P 2W	TWO 32–WATT T8 LINEAR FLUORESCENT

B

ROOM RM 129 | VOLTS 208Y/120V 3P 4W | AIC 65/10K
MOUNTING FLUSH | BUS AMPS 200 | MAIN BKR 200
FED FROM SES | NEUTRAL 100% | LUGS STANDARD
NOTE NEMA 1

	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	
(1)	1	20/1	EXIST LIGHTS NORTH	0.72			2	20/1	EXIST LIGHTS CENTER	0.72			(1)
(1)	3	20/1	EXIST LIGHTS NORTH		0.72		4	20/1	EXIST COVE LIGHTS		0.6		(1)
(1)	5	20/1	EXIST LIGHTS OFFICE			0.72	6	20/1	EXISTING CYBER LIGHTS			1.1	(1)
(1)	7	20/1	SPARE	0			8	20/1	EXIST RECEPT	1.08			(1)
(1)	9	20/1	EXIST CONTACTOR CONTROL		0.32		10	20/1	EXIST RECEPT		1.08		(1)
(1)	11	20/1	EXIST HALL SERVER LIGHTS			0.4	12	20/1	EXIST RECEPT			0.72	(1)
(1)	13	20/1	EXIST HALL & SUMP PUMP REC	0.96			14	20/1	EXIST RECEPT	1.08			(1)
(1)	15	20/1	EXIST RECEPT		0.72		16	20/1	EXIST RECEPT		0.72		(1)
(1)	17	20/1	EXIST RECEPT			0.72	18	20/1	EXIST RECEPT			1.08	(1)
(3)	19	40/3	RTU–C2	3.21			20	30/3	RTU–A5	2.07			(3)
	21	|			3.21		22	|			2.07		
	23	|				3.21	24	|				2.07	
(1)	25	35/3	EXIST AC CYBER RM	2.07			26	20/1	EXIST GROUP STUDY A&B	0.72			(1)
	27	|			2.07		28	20/1	EXIST GROUP STUDY C		0.72		(1)
	29	|				2.07	30	20/1	EXIST GROUP STUDY D			0.72	(1)
(1)	31	20/1	EXIST RC LIGHT SIT RM	0.5			32	20/1	EXIST MONITOR/TABLE	1.2			(1)
(1)	33	20/1	EXIST LIGHT SIT RM		1.1		34	20/1	EXIST MONITOR SIT RM		0.6		(1)
(1)	35	20/1	EXIST RECEPT SIT RM			1.2	36	20/1	SPARE			0	(1)
(1)	37	20/1	EXIST RECEPT SIT RM	1.2			38	30/3	EXIST AC SIT RM	2.07			(1)
(1)	39	20/1	SPARE		0		40	|			2.07		
(1)	41	20/1	SPARE			0	42	|				2.07	
									TOTAL CONNECTED KVA BY PHASE	17.6	16	16.1	

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	6.58	8.23	(125%)	CONTINUOUS	0.32	0.4	(125%)
LARGEST MOTOR	6.34	7.93	(125%)	HEATING	0	0	(N/A)
OTHER MOTORS	21.9	21.9	(100%)	COOLING	0	0	(N/A)
RECEPTACLES	14.5	12.3	(50%>10)	NONCONTINUOUS	0	0	(100%)
KITCHEN EQUIP	0	0	(N/A)	DIVERSE	0	0	(N/A)
				METERED DEMAND	0	0	(125%)
				TOTAL KVA	49.7	50.7	
EXISTING				BALANCED 3–PHASE AMPS		141	

D

ROOM RM 110 | VOLTS 208Y/120V 3P 4W | AIC 65/10K
MOUNTING FLUSH | BUS AMPS 200 | MAIN BKR 200
FED FROM SES | NEUTRAL 100% | LUGS STANDARD
NOTE NEMA 1

	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	CKT #	CKT BKR	CIRCUIT DESCRIPTION	LOAD KVA A	LOAD KVA B	LOAD KVA C	
(4)	1	20/1	RECEPTACLE	0.9			2	20/1	LIGHTING	0.971			(4)
(4)	3	20/1	RECEPTACLE		0.9		4	20/1	EF–A, LIGHTING		1.26		(4)
(4)	5	20/1	RECEPTACLE			1.08	6	20/1	LIGHTING			0.663	(4)
(4)	7	20/1	RECEPTACLE	1.08			8	20/1	LIGHTING	0.868			(4)
(4)	9	20/1	RECEPTACLE		0.9		10	30/2	OU–A1		1.5		
(4)	11	20/1	MISC. COPY MACHINE			0.6	12	|				1.5	
(4)	13	20/1	MISC. COPY MACHINE	0.6			14	20/1	MISC. REF.	1.5			
(4)	15	20/1	RECEPTACLE		0.36		16	20/1	SPARE		0		
(4)	17	20/1	RECEPTACLE			0.36	18	20/1	SPARE			0	
(4)	19	20/1	RECEPTACLE	0.36			20	30/2	WH–1	2.25			
(4)	21	20/1	RECEPTACLE		0.18		22	|			2.25		
(4)	23	20/1	MISC. MICROWAVE			1.2	24	20/1	EF–B1, EF–B2			1.39	(6)
(4)	25	20/1	MISC. E.D.F.	0.6			26	35/3	RTU–B2	2.71			
(4)	27	20/1	RECEPTACLE		0.18		28	|			2.71		
(4)	29	20/1	RECEPTACLE			0.18	30	|				2.71	
(4)	31	20/1	RECEPTACLE	1.08			32	35/3	RTU–B1	2.71			
(4)	33	20/1	RECEPTACLE		0.36		34	|			2.71		
	35	20/1	SPARE			0	36	|				2.71	
	37	30/3	RTU–A1	2.07			38	30/3	RTU–A2	2.07			
	39	|			2.07		40	|			2.07		
	41	|				2.07	42	|				2.07	
									TOTAL CONNECTED KVA BY PHASE	19.8	17.4	16.5	

	CONN KVA	CALC KVA			CONN KVA	CALC KVA	
LIGHTING	3.66	4.58	(125%)	CONTINUOUS	0.6	0.75	(125%)
LARGEST MOTOR	5.04	6.3	(125%)	HEATING	4.5	4.5	(100%)
OTHER MOTORS	28.1	28.1	(100%)	COOLING	0	0	(N/A)
RECEPTACLES	11.8	10.9	(50%>10)	NONCONTINUOUS	0	0	(100%)
KITCHEN EQUIP	0	0	(N/A)	DIVERSE	0	0	(N/A)
				METERED DEMAND	0	0	(125%)
				TOTAL KVA	53.7	55.2	
NEW				BALANCED 3–PHASE AMPS		153	

PANEL SCHEDULE KEYED NOTES :

(1) INDICATES EXISTING BREAKER EXISTING LOAD.
(2) INDICATES EXISTING BREAKER NEW LOAD.
(3) INDICATES NEW BREAKER NEW LOAD.
(4) INDICATES INSTALL HANDLE TIE DEVICE TO COMPLY WITH NEC 210.4 (B)
(5) INDICATES PROVIDE & INSTALL A LOCK–ON DEVICE.
(6) INDICATES CIRCUIT THRU TIMECLOCK. SEE ONE–LINE DIAGRAM FOR DETAILS.

MAVEN ENGINEERING
Job #14EMB148
Tel: (480) 303–0160
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230 West Baseline Rd, Suite 103
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Note: Any changes made to final bid documents due to field changes will be billed hourly to the contractor.

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EXPIRES 09/30/16

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DRAWING: PANEL SCHEDULES

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, COSI
PRESCOTT, ARIZONA

DRAWN BY	ERC
CHECKED BY	KJH
DATE	12/5/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	E3.2

ELECTRICAL SPECIFICATIONS

1 GENERAL PROVISIONS:

SUMMARY: THIS SECTION DESCRIBES IN GENERAL, REQUIREMENTS OF THE ELECTRICAL AND RELATED ITEMS OF WORK NECESSARY FOR THE COMPLETE JOB INDICATED BY THE CONTRACT DOCUMENTS. THE GENERAL CONDITIONS ARE APPLICABLE TO THIS SECTION AND SHALL FORM A PART OF THE CONTRACT.

GENERAL LIST OF WORK: RELATED WORK DESCRIBED IN OTHER SECTIONS WHICH IS COMMONLY EXECUTED BY AN ELECTRICAL SUB-CONTRACTOR AND/OR HIS SUPPLIER INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:

FURNISHING AND INSTALLING:

DISTRIBUTION SYSTEMS FOR LIGHTING AND POWER INCLUDING FEEDERS, BRANCH CIRCUIT PANELS, LIGHTING FIXTURES WITH LAMPS, CONTROL SWITCHES, RECEPTACLES, AND DISCONNECT SWITCHES.

WIRING TO AND CONNECTION OF MOTORS AND CONTROLS AND INSTALLING MOTORS, CONTROLS AND MOTORIZED EQUIPMENT. STARTERS NOT FURNISHED INTEGRAL WITH THE EQUIPMENT SHALL BE FURNISHED AS A PART OF THIS CONTRACT.

SLEEVES, BLOCKOUTS, INSERTS, ANCHORAGE DEVICES, ETC.

WORK LISTED ELSEWHERE:

THE FOLLOWING ITEMS OF WORK, EVEN IF DESCRIBED IN THIS SECTION SHALL BE EXECUTED UNDER OTHER SECTIONS.

FURNISHING AND INSTALLING MOTORS AND CONTROLS.

FURNISHING HOLE CUTTING IN PRE-CAST STRUCTURAL CONCRETE.

PERMITS: OWNER TO SECURE AND PAY FOR ALL NECESSARY PERMITS AND LICENSES, SERVICES, AND ALL INSPECTION FEES AS REQUIRED BY JOB.

CODES AND ORDINANCES: INSTALL ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ITS LATEST REVISIONS, WITH THE REGULATIONS OF ANY AND ALL STATE AND LOCAL CODES AND ORDINANCES STANDARD SPECIFICATIONS OF THE POWER COMPANY.

CERTIFICATES:

ALL WORK INCLUDED SHALL COMPLY WITH ALL STATE AND LOCAL RULES AND REGULATIONS. FURNISH TO THE OWNER ALL CERTIFICATES OF INSPECTION AND APPROVAL AS REQUIRED.

EXAMINATION OF PREMISES:

PRIOR TO SUBMITTING PROPOSAL, THE BIDDER SHALL EXAMINE ALL GENERAL CONSTRUCTION DRAWINGS AND VISIT CONSTRUCTION SITE TO BECOME FAMILIAR WITH EXISTING CONDITIONS UNDER WHICH HE WILL HAVE TO OPERATE AND WHICH WILL IN ANY WAY AFFECT THE WORK UNDER THIS CONTRACT. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN THIS CONNECTION ON BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.

PRIOR TO ORDERING ANY MATERIALS OR DOING ANY WORK, VERIFY THE DIMENSIONS AT THE SITE; CORRECTNESS OF DIMENSIONS WILL BE THIS CONTRACTOR'S RESPONSIBILITY. NO EXTRA CHARGES OR COMPENSATION WILL BE ALLOWED FOR DIFFERENCES BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE DRAWINGS. IMMEDIATELY REPORT DIFFERENCES TO THE ARCHITECT AND DO NOT PROCEED WITH WORK UNTIL THE ARCHITECT RENDERS HIS DECISION.

HANGERS: FURNISH AND INSTALL ALL UNISTRUT, HANGERS, SUPPORTS, ETC., REQUIRED FOR WORK UNDER THIS DIVISION. SUPPORT CONDUIT FROM BUILDING STRUCTURE, NOT FROM CEILING SUPPORTS. BRANCH CIRCUIT CONDUIT 3/4" AND SMALLER MAY BE RUN FROM CEILING SUPPORTS USING SPRING STEEL CLIPS.

FINAL LOCATION OF SURFACE FEATURES: SHALL BE ACCOMPLISHED IN THE FIELD, SUBJECT TO THE APPROVAL OF THE ARCHITECT. THE LOCATION OF ALL SWITCHES, FIXTURES, PANELS, ETC., AND THEIR PROXIMITY AND RELATIONSHIP TO ALL VISIBLE FEATURES OF EQUIPMENT FURNISHED BY OTHER TRADES, SHALL BE MADE KNOWN TO THE ARCHITECT. IN CASE OF CONFLICT BETWEEN TRADES, OR BETWEEN A TRADE AND THE ARCHITECT, THE DECISION OF THE ARCHITECT SHALL BE FINAL AND HIS INSTRUCTIONS IN THESE MATTERS SHALL BE FOLLOWED BY ALL CONCERNED.

STANDARD OF MATERIAL AND WORKMANSHIP: ALL MATERIALS SHALL BE NEW AND SHALL CONFORM TO UL STANDARDS IN EVERY CASE WHERE SUCH A STANDARD HAS BEEN ESTABLISHED AND SHALL BEAR THE UL LABEL. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE BEST ACCEPTED STANDARDS OF GOOD WORKMANSHIP AND SHALL PRESENT A NEAT APPEARANCE WHEN COMPLETE.

CUTTING AND PATCHING:

ALL CUTTING NECESSARY FOR INSTALLATION OF THE WORK AND REPAIR OF ALL DAMAGE TO WORK UNDER OTHER SECTIONS, SHALL BE INCLUDED IN WORK SPECIFIED UNDER THIS SECTION INCLUDING PATCHING, FLASHING AND SEALING ALL ROOF PENETRATIONS RELATING TO OVERHEAD SERVICES. NO CUTTING SHALL BE DONE WITHOUT APPROVAL OF ARCHITECT.

CONTRACTOR SHALL REPAIR ANY DAMAGE DONE BY HIMSELF OR HIS WORKMEN AND SHALL COORDINATE HIS WORK WITH THAT OF OTHER PARTIES. CUTTING, PATCHING, AND PROVIDING ANY OPENINGS, LINTEL, OR SUPPORTS REQUIRED FOR INSTALLATION OF THE WORK SHALL BE INCLUDED IN THIS SECTION.

PAINTING:

ALL EXPOSED ELECTRICAL EQUIPMENT, CONDUIT, FLUSH PANEL FRONTS, TRANSFORMERS, SWITCHES, SWITCHBOARDS, PANELS AND SIMILAR ITEMS SHALL BE PAINTED AS SPECIFIED UNDER THE PAINTING SECTION OF ARCH. SPECIFICATIONS.

SUPERVISE ALL PAINTING OF ELECTRICAL EQUIPMENT.

NEW SERVICES:

PROVIDE AND INSTALL NEW SERVICE SECTION AS SHOWN ON DRAWINGS AND WILL BE U.L. LABEL.

CONTRACTOR WILL COORDINATE WORK WITH UTILITY COMPANY AND INSTALL PER UTILITY COMPANY REQUIREMENTS.

SERVICE WILL BE WITH COPPER OR ALUMINUM BUSSING - SILVER PLATED ARKED WITH STEEL TAGS SHOWING U.L., AMPACITY VOLTAGE AND WIRING PLUS LABEL "WARNING- ELECTRICAL EQUIPMENT -DANGER- QUALIFIED PERSONNEL ONLY TO OPERATE OR OPEN EQUIPMENT." (QUALIFIED DEFINED BY NEC)

ACCEPTABLE MANUFACTURERS: GENERAL ELECTRIC, SQUARE D, SIEMENS, CHALLENGER OR ENGINEER APPROVED EQUAL.

WORK BY OTHERS: CERTAIN ITEMS OF WORK BY OTHER TRADES WILL BE NECESSARY FOR THE COMPLETION OF WORK UNDER THIS DIVISION. COOPERATE WITH OTHER TRADES AND ARRANGE FOR THESE ITEMS TO BE PERFORMED IN ORDERLY COURSE OF WORK. FAILURE TO COOPERATE SHALL NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR SAID ITEMS.

CLEANING UP THE PREMISES: AT ALL TIMES KEEP THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL OR RUBBISH CAUSED BY EMPLOYEES. METAL FLOOR PANELS SHALL BE PROVIDED FOR PIPE THREADING MACHINES AND BENCHES AND SHALL BE USED AT ALL TIMES TO PREVENT CONCRETE FLOORS FROM BECOMING OIL SOAKED. UPON COMPLETION OF THE JOB, REMOVE ALL DEBRIS, CLEAN ALL SWITCHPLATES, FIXTURES, PANEL TRIMS AND IN GENERAL, LEAVE THE PREMISES IN A CLEAN AND TIDY CONDITION.

FINAL INSPECTION AND TEST:

FURNISH ALL METERS, CABLE, CONNECTIONS AND APPARATUS NECESSARY FOR MAKING TESTS.

TEST SYSTEM FOR SHORTS AND GROUNDS. FAULTY WIRING SHALL BE REMOVED AND REPLACED. ANY DEVICE, APPARATUS OR FIXTURE INSTALLED SHOWING SUBSTANDARD PERFORMANCE SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ARCHITECT.

GUARANTEE: FULLY GUARANTEE ALL WORK UNDER THIS SECTION FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE OWNER, AGAINST IMPERFECT WORKMANSHIP OR FAILURE/MALFUNCTION OF MATERIALS AND/OR EQUIPMENT DUE TO FAULTY OR IMPERFECT WORKMANSHIP. GIVE THIS GUARANTEE IN WRITING TO THE OWNER AT THE TIME OF ISSUING FINAL CERTIFICATE. WORK FOUND TO BE DEFECTIVE WITHIN THIS PERIOD SHALL BE REPLACED WITHOUT COST TO THE OWNER.

2 BASIC MATERIALS AND METHODS:

WIRE AND CABLE:

GENERAL: ALL CONDUCTORS SHALL BE COPPER.

ALL INTERIOR BRANCH WIRING SHALL BE TYPE "THW-2", "THHN-2" OR "THWN-2", 600 VOLT AND A MINIMUM OF #12 EXCEPT FOR CONTROL WIRING WHICH SHALL BE STRANDED AND A MINIMUM OF #14.

WIRE #8 AND LARGER SHALL BE STRANDED. WIRE #2 AND LARGER, OR AS NOTED, SHALL BE TYPE "XHHW-2" WITH CROSS LINK POLYETHYLENE INSULATION.

MANUFACTURERS SHALL BE GENERAL CABLE, OKONITE, ROME CABLE, ANACONDA, GENERAL ELECTRIC, KAISER OR SOUTHWIRE.

INSTALLATION: INSTALL ALL WIRE AND CABLE IN CONDUIT. (MC CABLE MAY BE USED ONLY WITH WRITTEN PERMISSION FROM THE OWNER PRIOR TO INSTALLATION. USED ONLY WHERE CONCEALED ONLY IN ACCESSIBLE PLACES AND AT LIGHTING CIRCUITS. ALL INSTALLATIONS SHALL COMPLY WITH NEC ARTICLE 330)

WIRE SINGLE PHASE EQUIPMENT AND LIGHTING SO THERE IS A MINIMUM OF IMBALANCE BETWEEN CURRENT CARRYING CONDUCTORS. CONDUCTORS SHALL BE CONTINUOUS AND OF SUCH LENGTHS THAT NO SPLICE OCCURS EXCEPT WITHIN OUTLET, JUNCTION OR PULLBOXES, SWITCH, CONDUIT FITTINGS, OR OTHER SIMILAR DEVICES IN EQUIPMENT. SPLICES SHALL JOIN CONDUCTORS SECURELY TOGETHER BOTH MECHANICALLY AND ELECTRICALLY.

INSTALLATION: INSTALL ALL WIRE AND CABLE IN CONDUIT. (MC CABLE MAY BE USED ONLY WITH WRITTEN PERMISSION FROM THE OWNER PRIOR TO INSTALLATION. USED ONLY WHERE CONCEALED ONLY IN ACCESSIBLE PLACES AND AT LIGHTING CIRCUITS. ALL INSTALLATIONS SHALL COMPLY WITH NEC ARTICLE 330)

MAKE CONNECTIONS AND SPLICES FOR #10 WIRE AND SMALLER WITH BUCHANAN B-CAP, 3-M SCOTCHLOK OR IDEAL WING-NUT, PRE-INSULATING WIRE CONNECTORS SIZES AS RECOMMENDED BY MANUFACTURER). MAKE CONNECTIONS AND SPLICES FOR #8 COMPRESSION TYPE CONNECTORS BY O.Z., BURNDY, BUCHANAN, T & B OR ILSCO. TAPE ALL SPLICES WITH PLASTIC SO INSULATION IS AT LEAST EQUIVALENT TO INSULATION OF CONDUCTORS. THOROUGHLY CLEAN ENDS BEFORE SPLICING. WHERE PLASTIC TAPE IS USED AND THERE IS ANY DANGER OF INSULATION DAMAGE FROM PRESSURE OR JOINT AGAINST NON-CURRENT CARRYING METAL PARTS, USE FRICTION TAPE FOR ADDITIONAL PROTECTION.

ALL WIRING IN PANELBOARDS, CENTERS AND GUTTERS SHALL BE NEATLY ARRANGED. WIRE SHALL BE HELD BUNDLED BY TY-RAPS. WIRES SHALL BE CONNECTED TO CIRCUIT BREAKERS, SWITCHES AND OTHER DEVICES PERPENDICULAR TO TERMINAL LUGS.

LIGHTING AND POWER CIRCUITS SHALL BE IDENTIFIED BY PANEL LETTER AND CIRCUIT NUMBER WITH BRADY WRAPAROUND CLOTH WIRE MARKERS AT ALL TERMINATIONS AND JUNCTIONS.

ALL BRANCH CIRCUIT AND FEEDER CONDUCTORS SHALL BE COLOR- CODED TO CONFORM TO THE EXISTING COLOR CODES.

SOLID CONDUCTORS SHALL LOOP TIGHTLY AND COMPLETELY AROUND TERMINAL SCREWS ON ALL WIRING DEVICES.

CONDUIT RACEWAYS:

CONDUIT SYSTEMS SHALL BE RIGID GALVANIZED METAL, INTERMEDIATE METAL CONDUIT (IMC), ELECTRICAL METALLIC TUBING (EMT), RIGID ALUMINUM, NON-METALLIC FIBER OR AS SPECIFIED HEREIN OR AS INDICATED ON THE PLANS. ALL SYSTEMS SHALL BE CONTINUOUS.

MC CABLE MAY BE USED WHERE CONCEALED ONLY IN ACCESSIBLE SPACES AND ONLY WITH WRITTEN PERMISSION FROM THE OWNER PRIOR TO INSTALLATION.

RIGID STEEL CONDUIT SHALL BE HEAVY-WALLED, HOT-DIPPED, GALVANIZED OR SHERARIZED. USE RIGID STEEL CONDUIT IN CONCRETE SLABS, IN GRADE, IN EXPOSED LOCATIONS SUCH AS TUNNELS AND EQUIPMENT ROOMS, WHERE EXPOSED TO WEATHER AND WHERE BURIED IN EARTH. SCHEDULE 40 PVC NON-METALLIC CONDUIT MAY BE USED BURIED IN EARTH MINIMUM 24" BELOW GRADE. ALL CONDUIT EXTENDED UNDER DRIVEWAYS OR AREAS OF VEHICULAR USAGE SHALL BE GALVANIZED HEAVY WALL STEEL CONDUIT OR SCHEDULE 80 PVC NON-METALLIC CONDUIT, MINIMUM 30" BELOW GRADE. STEEL CONDUIT INSTALLED UNDERGROUND SHALL BE ENCASED IN TWO INCH MINIMUM, CONCRETE ENVELOPE OR COMPLETELY COVERED WITH HALF-LAPPED #50 SCOTCH-WRAP TOP OF UNDERGROUND CONDUITS SHALL NOT BE LESS THAN 24". PVC ELECTRICAL CONDUIT, UL LISTED MAY BE USED FOR UNDERGROUND SECTIONS OF LIGHTING CIRCUITS AND FEEDER RACEWAYS. ALL NON-METALLIC CONDUITS SHALL HAVE BOND WIRES, EXCEPT WHEN FEEDING SERVICES.

IMC SHALL BE ZINC COATED STEEL TUBING. IMC MAY BE USED WHERE RIGID STEEL IS PERMITTED.

EMT SHALL BE ZINC-COATED. EMT MAY BE USED IN FURRED SPACES, IN METAL OR WOOD STUD WALLS IN EITHER EXPOSED OR CONCEALED FASHION AND WHERE NOT SUBJECT TO DAMAGE EXCEPT FOR BRANCH CIRCUITS AND FEEDERS OVER 100A. EMT SHALL BE REAMED AFTER CUTTING AND SHALL BE MADE TO BUTT IN THE CENTER OF THE COUPLING.

FLEXIBLE CONDUIT SHALL BE USED IN MINIMUM LENGTHS TO CONNECT TO MOTORS, RECESSED FIXTURES, TRANSFORMERS AND EQUIPMENT SUBJECT TO VIBRATION. IN EXTERIOR AND WET LOCATIONS, USE ANACONDA TYPE VA FLEXIBLE CONDUIT WITH APPLETON OR T & B WATER TIGHT CONNECTORS. FLEXIBLE CONDUIT CONNECTORS SHALL BE COMPRESSION OR CLAMP TYPE; SCREW ON TYPE NOT PERMITTED.

WHERE EXPOSED, INSTALL CONDUIT PARALLEL TO WALLS AND PARTITIONS; DO NOT CROSS WINDOW OPENINGS.

WHERE SUSPENDED CEILING OCCURS, RUN CONDUIT CONCEALED ABOVE FURRED CEILING AND IN WALLS.

ALL CONDUIT STUBBED-UP THROUGH ROOF SHALL BE FLASHED WITH A TYPE OF FLASHING APPROVED BY MANUFACTURER OF ROOFING MATERIALS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

CONDUIT SHALL BE FIRMLY FASTENED WITHIN 3 FEET OF EACH OUTLET BOX, JUNCTION BOX, CABINET OR FITTING AND SHALL BE SUPPORTED AT LEAST EVERY 10 FEET.

CONDUIT FITTINGS:

EMT OR THREADLESS RIGID SHALL BE COMPRESSION TYPE, MACHINE STEEL INSULATED THROAT, APPLETON, RACO, T & B, OR TOMIC INSULATED TAP-ON. SET SCREW FITTINGS WILL NOT BE PERMITTED.

PROVIDE DOUBLE LOCKNUTS AND BUSHINGS AT ALL RIGID CONDUIT TERMINATIONS EXCEPT AT THREADED HUBS. BUSHINGS SHALL BE O.Z. TYPE A, MOLDED BAKELITE EXCEPT FOR 2" CONDUIT AND LARGER SHALL BE O.Z. TYPE B OR BL WHERE GROUNDING IS REQUIRED.

GUTTER, PULLBOXES AND JUNCTION BOXES:

BOXES SHALL BE FABRICATED FROM CODE GAUGE STEEL WITHOUT KNOCKOUTS AND A MINIMUM 14 GAUGE FRONT COVER. FINISH SHALL BE GALVANIZED STEEL OR PHOSPHATE UNDERCOATING WITH 2 FINISH COATS; HAMMER GRAY OR BAKED ENAMEL.

JUNCTION BOXES SHOWN OUTSIDE, FLUSH OR SURFACE MOUNTED, SHALL BE WATER TIGHT, ALL WELDED CONSTRUCTION WITH NEOPRENE GASKETED SCREWED COVERS, NEMA TYPE III.

NAMEPLATES:

PROVIDE CONTRAST PLASTIC EMBOSSING TAPE, ADHESIVE BACKED NAMEPLATES FOR ALL STARTERS AND DISCONNECT SWITCHES.PROVIDE LAMICOID NAMEPLATES FOR ALL DISTRIBUTION SWITCHES, BREAKERS, LIGHTING AND POWER PANELS; SIZE OF LETTERS SHALL BE A MINIMUM OF 3/16" HIGH.

FUSES:

FUSES SHALL BE HIGH-CAPACITY, CURRENT-LIMITING, LOW-PEAK OR DUAL ELEMENT AS INDICATED.

DUAL-ELEMENT FUSES SHALL BE USED FOR ALL MOTOR LOADS.

TYPE "R" FUSE SHALL BE USED FOR MOTOR LOADS AND WHERE INDICATED ON DRAWINGS.

FURNISH TO THE OWNER AT EACH SWITCHBOARD, 2 SETS OF SPARE FUSES FOR EACH SIZE USED BELOW 100 AMPS AND ONE SET FOR EACH SIZE 100 AMPS AND ABOVE.

ALL FUSES SHALL BE ON THE SAME MANUFACTURER.

FUSES AS SPECIFIED ON THE DRAWINGS ARE SELECTED TO PROVIDE COMPLIANCE WITH SECTION 110-9, 110-10 AND 230-98 OF THE NATIONAL ELECTRICAL CODE. SUBSTATION OF FUSES BY OTHER MANUFACTURER'S (BUSSMAN, ECONOMY FUSE OR SHAWMUT) WILL BE CONSIDERED ONLY WHEN SHORT CIRCUIT CALCULATIONS AND FUSE CURVES ARE PROVIDED TO THE ENGINEER FOR REVIEW. ADDITIONALLY, THE CONTRACTOR SHALL PROVIDE CALCULATIONS TO SHOW THE PROPOSED FUSES PROVIDE FOR A SELECTIVELY COORDINATED DESIGN.

OUTLETS:

OUTLET BOXES SHALL BE STANDARD GALVANIZED STEEL TYPE MINIMUM 1.5" DEEP, SINGLE OR GANG STYLE, OF SIZE TO ACCOMMODATE DEVICE NOTED AND INSTALLED IN ACCORDANCE WITH ARTICLE 370 OF THE NEC. HANDY BOXES AND SECTIONAL SWITCH BOXES WILL NOT BE PERMITTED.
BOXES EXPOSED OUTDOORS SHALL BE CAST FERROUS ALLOY, TYPE FS UNILETS WITH SCREW HUBS OR EQUAL.

BOXES SHALL BE SECURELY AND RIGIDLY FASTENED TO THE STRUCTURE UPON WHICH THEY ARE MOUNTED OR SECURELY AND RIGIDLY EMBEDDED IN CONCRETE OR MASONRY.

PROVIDE FIXTURE STUDS AND PLASTER RINGS AS REQUIRED TO BRING ALL OUTLETS TO WITHIN 1/8" OR LESS OF FINISHED SURFACE.

APPROVED MANUFACTURERS ARE: APPLETON, RACO, STEEL CITY OR BOWERS.

LIGHT SWITCHES: (COLOR SELECTION BY ARCH.)

HUBBELL #1221-I 20A SINGLE POLE

HUBBELL #1223-I 20A THREE WAY

MANUFACTURERS SHALL BE HUBBELL, BRYANT OR SIERRA.

RECEPTACLES:

HUBBELL #5362-I 20A/125V/DUPLEX
OR #5242 MOUNT WITH GROUND "L" SLOT DOWN
FOR ISOLATED GROUND - HUBBELL #IG8300 (ORANGE)

FINISH WALL PLATES:

PLATES SHALL BE S = POSTSC SMOOTH PLASTIC TO MATCH RECEPTACLE AND OF ONE MANUFACTURER; BRYANT, SIERRA OR APPROVED EQUAL. COLOR MUST BE CONFIRMED BY ARCH OR OWNER (ERAU STD IS ALMOND).

DEVICE PLATES SHALL BE INSTALLED SO AS TO COMPLETELY SEAT AGAINST THE WALL SURFACE.

3 SERVICE AND DISTRIBUTION:

LIGHTING PANELS:

LIGHTING PANELS SHALL BE CIRCUIT BREAKER TYPE. CABINETS SHALL HAVE DOORS FASTENED TO TRIM WITH CONCEALED HINGES AND BE PROVIDED WITH FLUSH TYPE COMBINATION LATCH AND LOCK; THREE KEYS FOR EACH. ALL PANELS SHALL BE KEYED ALIKE. CABINETS AND TRIMS SHALL BE FACTORY PAINTED TWO FINISH COATS AND SHALL BE FLUSH OR SURFACE MOUNTED AS INDICATED. EACH CIRCUIT SHALL BE NUMBERED AND COMPLETELY IDENTIFIED BY MEANS OF A TYPEWRITTEN CARD PLACED IN DIRECTORY HOLDER ON INSIDE OF DOOR. ALL DIRECTORY HOLDERS SHALL BE SIX (6) INCHES WIDE. BEFORE INSTALLING, TIGHTEN ALL BOLTED CONNECTIONS THAT MAY HAVE BECOME LOOSE IN SHIPPING.

CABINETS SHALL BE WITHOUT KNOCKOUTS. ALL KNOCKOUTS SHALL BE CUT ON THE JOB.

STUB UP ON 3/4" CONDUIT INTO THE FURRED SPACE ABOVE FLUSH MOUNTED CABINETS FOR EACH TWO SPARE CIRCUITS OR SPACES; TO A MAXIMUM OF 5 CONDUITS.

ALL PANELS SHALL BE EQUIPPED WITH GROUND BUS.

ALL PANELBOARDS SHALL HAVE THE SIZE OF THE FEEDER AND CONDUIT STENCILED ON THE INSIDE OF THE DOOR. "DYMO" TAPE OR EQUIVALENT IS NOT ACCEPTABLE.

SAFETY (DISCONNECT) SWITCHES:

SHALL BE HEAVY DUTY TYPE WITH COVER INTERLOCKS. PROVIDE ALL DISCONNECT SWITCHES REQUIRED BY CODE. SWITCHES FOR MOTOR APPLICATIONS SHALL BE HORSEPOWER RATED.

SWITCHES LOCATED OUTSIDE THE BUILDING SHALL HAVE NEMA TYPE 3R ENCLOSURES.

FURNISH AND INSTALL THE PROPER SIZE FUSES (DETERMINED FROM FULL LOAD NAMEPLATE READINGS ON MOTORS AND COMPENSATED FOR AMBIENT TEMPERATURE) IN ALL SAFETY SWITCHES WHETHER THEY BE FURNISHED BY THIS CONTRACTOR OR OTHERS.

MOTOR WIRING:

ALL MOTORS WILL BE FURNISHED AND SET IN PLACE BY TRADE FURNISHED THE DRIVEN EQUIPMENT. FURNISH AND INSTALL ALL CONDUIT, WIRING, CONTROL AND PROTECTIVE DEVICES, AND SUCH OTHER APPURTENANCES NECESSARY TO COMPLETE CONNECTION OF ALL MOTORS AND CONTROLS. THIS SHALL INCLUDE THE HIGH AND LOW VOLTAGE CONTROL WIRING. MOTORS AND CONTROLS FOR MECHANICAL EQUIPMENT SHALL BE WIRED IN ACCORDANCE WITH MANUFACTURER'S WIRING DIAGRAMS.

CONNECTIONS TO MOTOR STARTERS AND CONTROLS SHALL BE MADE WITH CONDUIT. FINAL CONNECTIONS TO MOTORS ON ADJUSTABLE BASES OR MOTORS SUBJECT TO EXCESSIVE VIBRATION SHALL BE MADE WITH FLEXIBLE CONDUIT, EXCEPT FOR OUTDOOR INSTALLATION IN WHICH CASE SEAL-TITE NEOPRENE COVERED FLEXIBLE CONDUIT WITH SEAL-TITE FITTINGS OR TYPE "SO" CORD WITH RUBBER GLAND WATER-TITE CORD GRIPS SHALL BE USED, BUT ONLY TO THE EXTENT OF MINIMUM LENGTHS REQUIRED FOR A CASE GROUND. REFER TO AIR CONDITIONING SECTION FOR SPECIFIC CONTROLS, SWITCHES, THERMOSTATS, ETC., FURNISHED FOR INSTALLATION UNDER THIS SECTION.

VERIFY HORSEPOWER RATINGS AND FULL LOAD CURRENTS OF MOTORS BEING SUPPLIED BY OTHER TRADES. ANY DISCREPANCY BETWEEN ACTUAL FULL LOAD CURRENTS OF MOTORS DELIVERED TO THE JOB SITE AND STANDARD FULL LOAD CURRENTS OF SINGLE PHASE AND THREE PHASE SQUIRREL CAGE INDUCTION MOTORS, (HORSEPOWER RATING AS LISTED) SHALL BE REPORTED TO THE ARCHITECT FOR CORRECTION AND DECISION BEFORE ANY AFFECTED WORK IS DONE.

GROUNDING:

THE NEUTRAL CONDUCTORS AND ALL OTHER EXPOSED NON CURRENT CARRYING METAL PARTS AS REQUIRED BY CODE SHALL BE GROUNDED. GROUNDING BUSHINGS SHALL BE USED AS REQUIRED AND SHALL BE O.Z. INSULATED TYPE BL OR APPROVED EQUAL. NO GROUNDING SHALL BE MADE TO GAS PIPING. WHERE EQUIPMENT OR DEVICES ARE SERVED BY NON-METALLIC DUCTS, ENCLOSURES SHALL BE GROUNDED BY MEANS OF A CODE SIZE BARE OR GREEN INSULATED EQUIPMENT GROUND WIRE INSTALLED IN THE DUCT WITH THE CURRENT CARRYING CONDUCTORS AND BE BONDED SECURELY IN EACH CABINET TERMINATING THE GROUND WIRE. COPPER JUMPERS SHALL BRIDGE FLEXIBLE CONDUIT AND BE INSTALLED IN THE CONDUIT. ALL SERVICE GROUNDS SHALL BE IN ACCORDANCE WITH THE UFER GROUND.

4 LIGHTING:

LIGHTING FIXTURES:

FIXTURES SHALL BE FURNISHED COMPLETE WITH LAMPS OF PROPER WATTAGE AND BE UL LISTED IN ACCORDANCE WITH LIGHTING FIXTURE SCHEDULE. PROVIDE ALL FITTINGS, HANGERS, SUPPORTS, PLASTER FRAMES AND OTHER NECESSARY APPURTENANCE. FIXTURES SHOWN IN FIXTURE SCHEDULE WITH SAME LETTER DESIGNATION SHALL BE OF ONE MANUFACTURER AND BE IDENTICAL IN DESIGN AND APPEARANCE.

ALL FLUORESCENT FIXTURES SHALL BE UL APPROVED AND HAVE PROTECTED BALLASTS, UL CLASS P RATED CBM APPROVED, ETL TESTED.

FIXTURE MANUFACTURER SHALL PROVIDED THE PROPER BALLAST WITH THE FIXTURE TO PERMIT CONTINUOUS OPERATION WITHIN THE TEMPERATURE CONDITION OF THE INSTALLED LOCATION.

VERIFY THE TYPE AND CONSTRUCTION OF ALL CEILINGS BEFORE SUBMITTING SHOP DRAWINGS OR ORDERING FIXTURES TO DETERMINE COMPATIBILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE CEILING SUPPLIER AND MODIFICATION NECESSARY FOR PROPER INSTALLATION OF THE FIXTURES WITHIN OR ON THE CEILINGS.

INCANDESCENT FIXTURES SHALL BE UL LISTED FOR THE APPLICATION AND BE PROVIDED WITH JUNCTION BOXES APPROVED FOR THROUGH WIRING. FLUSH OR RECESSED INCANDESCENT FIXTURES SHALL HAVE THERMAL PROTECTION AND SHALL BE IDENTIFIED AS THERMALLY PROTECTED.

LAMPS:

FLUORESCENT LAMPS SHALL BE T-8, RAPID-START, UNLESS OTHERWISE NOTED. ALL INCANDESCENT LAMPS SHALL BE 130 VOLTS UNLESS OTHERWISE SPECIFIED.

APPROVED MANUFACTURERS ARE: GENERAL ELECTRIC, SYLVANIA OR PHILLIPS.

LIGHTING FIXTURE INSTALLATION:

FIXTURES SHALL BE WIRED COMPLETE WITH COLOR-CODED WIRES TO INDICATED POLARITY. WHITE FIXTURE WIRE SHALL BE CONNECTED TO THE SHELL TERMINALS OF SOCKETS AND CONNECTED TO THE NEUTRAL WIRE OF THE LIGHTING SYSTEM.

INSTALL AND CONNECT LIGHTING FIXTURES ON ALL DESIGNATED OUTLETS IN BUILDING. NON-DESIGNATED OUTLETS SHALL BE EQUIPPED WITH FIXTURES SIMILAR TO LIKE AREAS.

ALL FIXTURES SHALL BE TESTED BEFORE AND AFTER INSTALLATION AND SHALL SHOW FREE OF GROUNDS, SHORTS, ETC.

ALL FIXTURES AND FIXTURE SUPPORTS SHALL BE CLEANED, PAINTED WHERE NECESSARY AND LEFT IN FIRST CLASS OPERATING CONDITION UPON COMPLETION OF THE WORK. THIS CONTRACTOR SHALL MAKE GOOD ALL BREAKAGE OF LAMPS, GLASS AND FIXTURE BOWLS OR OTHER DAMAGE OR ARRANGE FOR REPLACEMENT WITH THE ARCHITECT.

ALL FIXTURES SHALL BE PROPERLY SUPPORTED FROM CEILING STRUCTURE.

COMPLETE THE CONNECTION OF ALL FIXTURES TO THE BUILDING WIRING AT THE OUTLET FOR FIXTURES. CIRCUIT WIRES FOR FLUORESCENT FIXTURES THAT RUN THROUGH THE RACEWAYS OF SAID FIXTURES SHALL BE TYPE THHN, RHH, OR MTW. MINIMUM SIZE SHALL BE #12.

ALL FLUORESCENT FIXTURES RECESSED IN THE CEILING OR IN A GRID CEILING SHALL BE PROVIDED WITH EARTHQUAKE CLIPS.

END OF SECTION

ELECTRICAL/ SPECIAL SYSTEM SYMBOLS

NOT ALL SYMBOLS MAY APPLY.

- FLUORESCENT SURFACE MOUNTED FIXTURE. LETTER OR NOTE INDICATES TYPE.
- FLUORESCENT STRIP FIXTURE (LETTER OR NOTE INDICATES TYPE)
- 2'x4' FLUORESCENT LIGHT FIXTURE (LETTER OR NOTE INDICATES TYPE)
- INDICATES N.L. & EMERGENCY LIGHT FIXTURE. BALLAST TO BE CONNECTED TO UNSWITCHED CONDUCTORS WITH BATTERY BACK-UP TO BE BODINE #B50 (OR EQUAL). TYPICAL OF SHADED FIXTURES.
- 2'X2' FLUORESCENT LIGHT FIXTURE (LETTER OR NOTE INDICATES TYPE)
- RECESSED DOWNLIGHT, SUPERSCRIPT INDICATES TYPE. SHADED INDICATES BATTERY BACK-UP TO BE PROVIDED.
- EMERGENCY EXIT SIGN, CONNECT TO UNSWITCHED CONDUCTORS WITH BATTERY BACK UP. FACES & MOUNTING TO BE FIELD VERIFIED WITH LOCAL AUTHORITY. AUDIBLE AND VISIBLE ANNUNCIATION IN EMERGENCY MODE TIED TO FIRE/ALARM.
- WALL MOUNTED LIGHTING FIXTURE; SUPERSCRIPT INDICATES TYPE.
- POLE MOUNTED LIGHTING FIXTURE; SUPERSCRIPT INDICATES TYPE.
- DUPLEX RECEPTACLE, NEMA 5-20R, 18" A.F.F., UNLESS NOTED OTHERWISE.
- DUPLEX RECEPTACLE, NEMA 5-20R, MTD. 6" ABOVE COUNTER BACK SPLASH OR PER ADA AND ARCHITECT, OR U.N.O.
- 1/2 SWITCHED DUPLEX RECEPTACLE.
- FOURPLEX RECEPTACLE, NEMA 5-20R, 18" A.F.F., U.N.O.
- WALL MOUNTED DUPLEX RECEPTACLE IN DEDICATED CIRCUIT; 20R, 120V., 3 WIRE GROUNDED, 5-20R, MTD. @ +18" A.F.F., (U.N.O.). "HUBBEL" #5362-1, OR EQUAL.
- WALL MOUNTED DUPLEX RECEPTACLE WITH GROUNDED FAULT CIRCUIT INTERRUPTER; 20A., 125V., 3 WIRE, GROUNDED, NEMA 5-20R, MTD. @ +18" A.F.F. (U.N.O.). "HUBBEL" #GF-5362-1, OR EQUAL & SHALL BE ON ALL RECEPTS. WITHIN 6' OF SINKS.
- EXISTING RECEPTACLE OUTLET TO REMAIN-NO CHANGES MADE OR RECIRCUIT AS INDICATED ON PLAN.
- ALL ISOLATED GROUND RECEPTACLE TO HAVE ORANGE COVER OR ISOLATED GROUND SYMBOL. PROVIDE (1) NEUTRAL, (1) GROUND, & (1) ISOLATED GROUND. PROVIDE I.G. RECEPTACLE WHEN PANEL SCHEDULE(S) INDICATE ISOLATED GROUND WIRES ON CIRCUIT(S).
- FLOOR BOX FLUSH MOUNTED IN FLOOR BOX WITH DUPLEX RECEPTACLE (20A, 125V., 3W., GROUNDED) NEMA 5-20R WITH CARPET FLANGE IN CARPETED AREAS. STEEL-CITY #864-5C/864-CST.
- FLOOR BOX FLUSH MOUNTED IN FLOOR BOX WITH QUAD-PLEX RECEPTACLE (20A, 125V., 3W., GROUNDED) NEMA 5-20R WITH CARPET FLANGE IN CARPETED AREAS. STEEL-CITY #942-5C

FIRE ALARM SYMBOLS LEGEND

DEVICE SPECIFICATION TABLE		QUANTITY					NEW AND REPLACEMENT DEVICES ONLY		
SYMBOL	DESCRIPTION	DM	EX	NW	RL	RP	PART #	MANUFACTURER	ROUGH-IN/MOUNTING
FACP	FIRE ALARM CONTROL PANEL	1			1		NFS-320	NOTIFIER	14 1/4" H x 24 1/8" W x 5 1/8" D SELF CONTAINED, SURFACE MOUNT, 72" TO TOP. BACKBOX BY MFR.
FAAP	FIRE ALARM ANNUNCIATOR PANEL ANNUNCIATOR BACKBOX		1 1				FDU-80 10103	NOTIFIER	3 GANG ELECTRICAL BACKBOX, MINIMUM 2 1/4" D, SEMI-FLUSH MOUNT, 54" TO BOTTOM
S	ADDRESSABLE SMOKE DETECTOR ADDRESSABLE DETECTOR BASE	1 1			1 1		FSP-851 B210LP	NOTIFIER	MOUNT TO B210LP DETECTOR BASE MOUNT IN 4" SQUARE ELECTRICAL BOX WITH "3/0" MUD RING
R S RET xx	DUCT DETECTOR HOUSING, RET=RETURN, SUP=SUPPLY, XX=UNIT SAMPLING TUBE (xx=SIZE, DETERMINED BY INSTALLING CONTRACTOR) ADDRESSABLE SMOKE DETECTOR ADDRESSABLE RELAY MODULE		2 2 2 2	2 2 2 2			DNR DST-xx FSP-851 FRM-1	NOTIFIER	MOUNT TO DUCTWORK W/ PROVIDED SCREWS MOUNT IN DNR HOUSING MOUNT IN DNR HOUSING MOUNT IN DNR HOUSING
RI	REMOTE INDICATOR		2	2			RA100Z	NOTIFIER	MOUNT IN SINGLE GANG ELECTRICAL BOX
H CD S#	WALL MOUNT HORN/STROBE		1				P2W	SYSTEM SENSOR	MOUNT IN 4" SQUARE DEEP ELECTRICAL BOX
C CD H CD S#	CEILING MOUNT HORN/STROBE	9	15	1	9		PC2W	SYSTEM SENSOR	MOUNT IN 4" SQUARE DEEP ELECTRICAL BOX
C CD L CD S#	CEILING MOUNT STROBE ONLY	1	1				SCW	SYSTEM SENSOR	MOUNT IN 4" SQUARE DEEP ELECTRICAL BOX
PS	ADDRESSABLE PULL STATION	1			1		NBG-12LX	NOTIFIER	MOUNT IN 4" SQUARE ELECTRICAL BOX W/SINGLE GANG MUD RING
ZM	ADDRESSABLE DUAL MONITOR MODULE		1				FDM-1	NOTIFIER	MOUNT IN 4" SQUARE DEEP ELECTRICAL BOX
FTB	FIELD TERMINATION BOX						FBO	FBO	STD. 12x12 OR LARGER NEMA 1 ENCLOSURE
J	JUNCTION BOX						FBO	FBO	SELF CONTAINED 4" SQUARE ELECTRICAL BOX
	EQUIPMENT INTERFACE (BY OTHERS)						FBO	FBO	REFER TO EQUIPMENT SUPPLIER
TS	TAMPER SWITCH (BY OTHERS)						FBO	FBO	REFER TO SPRINKLER CONTRACTOR
WF	WATERFLOW SWITCH (BY OTHERS)						FBO	FBO	REFER TO SPRINKLER CONTRACTOR
FSD	FIRE/SMOKE DAMPER (BY OTHERS)						FBO	FBO	REFER TO MECHANICAL CONTRACTOR

NOTE:
QUANTITIES APPLY ONLY TO DEVICES LOCATED
WITHIN THE SCOPE OF WORK.

DEVICE ANNOTATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
DM	ADJACENT TO SYMBOL DENOTES "EXISTING DEVICE TO BE REMOVED"	S#	ADJACENT TO SYMBOL DENOTES "STROBE CIRCUIT"
EX	ADJACENT TO SYMBOL DENOTES "EXISTING DEVICE TO REMAIN"	V#	ADJACENT TO SYMBOL DENOTES "VOICE EVACUATION CIRCUIT"
NW	ADJACENT TO SYMBOL DENOTES "NEW DEVICE TO BE ADDED"	C	ADJACENT TO SYMBOL DENOTES "CEILING MOUNT"
RL	ADJACENT TO SYMBOL DENOTES "EXISTING DEVICE IN NEW LOCATION"	WP	ADJACENT TO SYMBOL DENOTES "WEATHER PROOF DEVICE"
RP	ADJACENT TO SYMBOL DENOTES "NEW DEVICE IN EXISTING LOCATION"	x#	ADJACENT TO SYMBOL DENOTES "QUANTITY OF DEVICES ON SLC LOOP"

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDING 17
SEQUENCE OF CONTROLS MATRIX

EXISTING NOTIFIER NFS-320
LOCATED IN I.T. ROOM

OUTPUTS & CONTROLS	INPUTS AND ACTIONS: SMOKE DETECTOR	MANUAL PULL STATION	SUPERVISORY DEVICE	WATER FLOW FOR AREA	TAMPER SWITCH	FACP CPU FAILURE	BATTERY FAULT	GROUND FAULT	OPEN CIRCUIT	LOSS OF PRIMARY POWER	MISSING DEVICE	DIRTY SMOKE DETECTOR
OPERATE ALL AREA OF EVACUATION SIGNALS	●	●			●							
SOUND PIEZO AT FACP AND FAAP	●	●	●	●	●	●	●	●	●	●	●	●
INDICATE DEVICE LOCATION AT THE FACP	●	●	●	●	●	●	●				●	●
INDICATE DEVICE LOCATION AT FAAP	●	●	●	●	●		●	●	●	●	●	●
SEND ALARM SIGNAL TO OFFSITE MONITORING LOCATION	●	●			●							
SEND TROUBLE SIGNAL TO OFFSITE MONITORING LOCATION						●	●	●	●	●	●	●
SEND SUPERVISORY SIGNAL TO OFFSITE MONITORING LOCATION			●		●							
ILLUMINATE LED ON APPROPRIATE REMOTE INDICATOR			●									
ACTIVATE APPROPRIATE HVAC UNIT SHUTDOWN			●									

EXISTING MATRIX TO REMAIN UNCHANGED

FIRE ALARM NOTES

GENERAL:
1) SCOPE OF WORK: THIS CONTRACT INCLUDES THE INSTALLATION, TERMINATION AND TESTING OF FIRE ALARM DEVICES REQUIRED FOR THE PROTECTION OF EMBRY RIDDLE AERONAUTICAL UNIVERSITY BUILDING 17.

2) ALL NEW CONTROL PANEL MODULES, DEVICES, WIRE AND CABLE SHALL BE FURNISHED, INSTALLED, TERMINATED AND PROGRAMMED BY COPPERSTATE FIRE PROTECTION. ALL NEW SPECIAL BACKBOXES SHALL BE FURNISHED BY COPPERSTATE FIRE PROTECTION

3) ALL NEW BACKBOXES, AND CONDUIT SHALL BE FURNISHED, AND INSTALLED BY THE ELECTRICAL CONTRACTOR. ALL NEW SPECIAL BACKBOXES SHALL BE INSTALLED BY THE ELECTRICAL CONTRACTOR.

4) AFTER INSTALLATION IS COMPLETE, COPPERSTATE FIRE PROTECTION SHALL TEST ALL NEW DEVICES FOR ALARM AND TROUBLE CONDITIONS, AND VERIFY PROPER PROGRAMMING OF THE CONTROL PANEL.

5) UPON COMPLETION OF TESTING, THE SHOP DRAWINGS WILL BE MARKED UP TO SHOW ACTUAL INSTALLED LOCATIONS AND OTHER APPLICABLE CHANGES. RECORD (AS-BUILT) DRAWINGS WILL BE ISSUED AFTER COMPLETION OF ALL WORK.

6) EXCLUSIONS:
A) 120VAC DEDICATED CIRCUIT TO THE FIRE ALARM CONTROL PANELS AND AUXILIARY POWER SUPPLIES
B) INSTALLATION OF ANY CONDUIT OR WIRE MOLD (INCLUDING BACKBOXES, J-BOXES, UNDERGROUND, STUB-UPS, MISC.)
C) FURNISHING, INSTALLATION, POWERING OF DUCT DETECTORS
D) SHUTDOWN INTERCONNECTION TO ELEVATOR CONTROL SYSTEM
E) SHUTDOWN INTERCONNECTION OF HVAC SYSTEM IF APPLICABLE
F) INTERCONNECTION WIRING FROM TELEPHONE BOARD TO FACP
G) BOND, AVAILABLE UPON REQUEST

MOUNTING STANDARDS:
1) MANUAL PULL STATIONS SHALL BE MOUNTED WITH THE OPERABLE PART OF PULL STATION AT 48" ABOVE FINISHED FLOOR (AFF) PER ADA STANDARDS.

2) ALL WALL MOUNTED VISUAL ALARM NOTIFICATION APPLIANCES (STROBE AND AUDIBLE/STROBE COMBINATION UNITS) SHALL HAVE THE BOTTOM OF THE LENS AT A HEIGHT OF 80" AFF AND BELOW THE FINISHED CEILINGS NOT LESS THAN 6" (PER NFPA 72 2002 EDITION AND ADA STANDARDS).

3) MOUNT ALL AUDIBLE ONLY ALARM NOTIFICATION APPLIANCES WITH THE TOP OF THE DEVICE AT A MINIMUM OF 90" AFF AND BELOW THE FINISHED CEILINGS NOT LESS THAN 6".

4) ALL NOTIFICATION DEVICES SHALL BE SYNCHRONIZED AND UTILIZE AUDIBLE EMERGENCY EVACUATION SIGNAL (3 PULSE TEMPORAL CODE - 3 PATTERN).

5) WALL NOTIFICATION DEVICE MOUNTING SPACING SHALL BE IN ACCORDANCE WITH NFPA 72 2002 EDITION TABLE 7-5.4.1.1(A). CEILING MOUNTING SPACING SHALL BE IN ACCORDANCE WITH NFPA 72 2002 EDITION TABLE 7-5.4.1.1(B). THE SEPARATION BETWEEN APPLIANCES SHALL NOT EXCEED 100FT.

6) CORRIDOR SPACING SHALL BE IN ACCORDANCE WITH NFPA 72 2002 EDITION TABLE 7-5.4.2.

7) ELECTRICAL CLASSIFICATION OF ALL AREAS IN THIS PROJECT IS RATED AS NON-HAZARDOUS, STANDARD INSTALLATION.

8) DETECTORS SHOULD NOT BE LOCATED IN A DIRECT AIRFLOW NOR CLOSER THAN 3'-0" FROM AN AIR SUPPLY DIFFUSER OR RETURN AIR OPENING AND 1'-0" FROM ANY LIGHT FIXTURE.

9) DUCT DETECTOR REMOTE TEST STATIONS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION AND SHALL BE CLEARLY LABELED TO INDICATE BOTH THEIR FUNCTION AND THE AIR HANDLING UNIT(S) ASSOCIATED WITH EACH DETECTOR.

LIGHTNING/SURGE PROTECTION:
1) LIGHTNING SURGE PROTECTION SHALL BE INSTALLED ON ALL CIRCUITS WHICH ENTER AND EXIT THE BUILDINGS PER NEC 70 SECTION 800-47, IF REQUIRED.

2) USE AWG #12 SOLID WIRE TO CONNECT THE LIGHTNING ARRESTOR UNIT TO EARTH GROUND.

CONDUIT/WIRE:
1) WIRING COLOR CODE SHALL BE MAINTAINED THROUGH THE INSTALLATION.

2) ANY SHUTDOWN (I.E. HVAC) THAT EXCEEDS THE CONTACT RATINGS OF THE CONTROL RELAY, MUST BE INTERFACED BETWEEN THE RELAY AND THE UNIT BEING SHUTDOWN, WITH A HEAVY DUTY POWER RELAY RATED AT SUFFICIENT CURRENT CAPACITY, PROVIDED BY CONTRACTOR RESPONSIBLE FOR WIRING THE SHUTDOWNS.

3) ALL NEW CONDUIT AND FITTINGS (COMPRESSION TYPE U.N.O.) SHALL BE MINIMUM 3/4"Ø AND CONFORM TO CURRENT FEDERAL SPECIFICATIONS.

4) FASTENINGS: SUPPORT CONDUITS AT INTERVALS NOT TO EXCEED 10 FEET, NOT LESS THAN TWO SUPPORTS IN ANY SINGLE RUN. USE APPROVED CLAMPS, HANGERS, OR RACKS; PERFORATED HANGER IRON WILL NOT BE ACCEPTABLE. USE APPROVED INSERTS, EXPANSION ANCHORS, OR TOGGLE BOLTS TO SECURE SUPPORTS TO MASONRY; WOOD SCREWS OR LAG SCREWS FOR FRAME CONSTRUCTION; AND MACHINE SCREWS OR BOLTS FOR STEEL CONSTRUCTION.

5) ALL JUNCTION BOXES, PULL BOXES AND OTHER TYPE BOXES, SHALL BE PAINTED RED OR LABELED "FA" TO INDICATE FIRE ALARM CABLE AND ALLOW EASY IDENTIFICATION FOR MAINTENANCE.

6) MANNER OF INSTALLATION: THE CONDUIT INSTALLATION SHALL BE INCONSPICUOUS AND CONCEALED WHERE PRACTICABLE IN FINISHED AREAS. WHERE CONDUIT IS CONCEALED AS IN ATTIC SPACES, ETC. EXPOSED CONDUIT SHALL BE RUN PARALLEL WITH BUILDING LINES. INSERT ELECTRICAL METALLIC TUBING FULL DEPTH IN EACH FITTING. CLEAR HOT WATER AND HEATING PIPING NOT LESS THAN 6 INCHES.

7) DO NOT DEVIATE FROM CONDUIT RUNS AS SHOWN ON FLOOR PLANS WITHOUT PRIOR APPROVAL FROM COPPERSTATE FIRE PROTECTION ADDITIONAL COSTS RESULTING FROM UNAPPROVED CONDUIT RUN DEVIATIONS SHALL BE THE SOLE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.

8) FPL CABLE MAY BE USED PER NEC 760 WITH THE FOLLOWING AMENDMENTS:
A) CABLES SHALL BE INSTALLED IN CONDUIT BELOW 10' AFF. SUCH CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMAN LIKE MANNER AND SHALL BE INSTALLED TO BE INCONSPICUOUS AND CONCEALED WHERE POSSIBLE.
B) IN FINISHED AREA'S, CABLES ABOVE 10' AFF SHALL BE INSTALLED IN CONDUIT WHEN THEY CANNOT BE CONCEALED BY THE BUILDING STRUCTURE.
C) EXPOSED CABLES SHALL BE INSTALLED WITH THE MAXIMUM PROTECTION AGAINST PHYSICAL DAMAGE IS AFFORDED BY THE BUILDING STRUCTURE AND IN SUCH A WAY AS THEY WILL NOT BE DAMAGED BY NORMAL USE OF THE FACILITY.

9) FPL CABLE INSTALLED UNDERGROUND AND ENTERING OR LEAVING THE BUILDING SHALL BE WEST PENN "AQUASEAL" OR APPROVED EQUAL.

PRIMARY POWER:
1) THE FIRE ALARM CONTROL PANEL SHALL RECEIVE 120VAC POWER VIA A DEDICATED FUSED DISCONNECT CIRCUIT LOCATED AT A MAIN ELECTRICAL PANEL. THIS CIRCUIT SHALL BE IDENTIFIED AND LOCKED PER NEC 70. ALL NEW 120VAC POWER SHALL COME FROM EXISTING ELECTRICAL DISTRIBUTION PANELS THAT HAVE EITHER AN EXISTING 1P-20A SPARE CIRCUIT OR AN OPENING TO PROVIDE A NEW 1P-20A BREAKER. IN THE EVENT THAT AN EXISTING MAIN DISTRIBUTION PANEL CAN NOT SUPPORT EITHER PREVIOUS SITUATIONS, A NEW DEPENDENT FUSED SWITCH SHALL BE INSTALLED WITH POWER COMING FROM AFTER THE MAIN POWER DISTRIBUTION PANEL AND BUILDING SERVICES.

GROUNDED CONNECTIONS:
1) THE ENTIRE CONDUIT SYSTEM INCLUDING ALL NON-CURRENT CARRYING METAL SHALL BE GROUNDED AS REQUIRED BY NEC.

2) SIZES OF GROUNDING CONDUCTOR AND CONDUCTOR ENCLOSURE: SIZES SHALL BE IN ACCORDANCE WITH NEC REQUIREMENTS.

3) POINT OF ATTACHMENT: FIRE ALARM SYSTEM OR COMMON GROUNDING CONDUCTOR SHALL BE BONDED IN CONDUIT TO THE EXISTING BUILDING GROUND.

NICET REVIEW STAMP

SHANE KNUDTSON
NICET #116040, LEVEL III
FIRE ALARM SYSTEMS
SIGNED:
DATE: 12-04-2014
VALID THROUGH 03/01/2015

COPPERSTATE® FIRE PROTECTION
1830 North 95th Ave Suite 106 Phoenix, Arizona 85037
Phone: 623-936-4081 AZ License L67-ROC270148

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PROJECT INFORMATION

FIRE ALARM SUPPLIER:
NAME: COPPERSTATE FIRE PROTECTION
ADDRESS: 1830 N 95TH AVE SUITE 106 PHOENIX, AZ 85037
TELEPHONE: 623-936-4081
AZ LICENSE: L67-ROC270148

TYPE OF SYSTEM:
PROTECTED PREMISES
DIGITAL ADDRESSABLE
INDICATING CLASS "B"
SLC STYLE "4"
INITIATING CLASS "B"
TEMPORAL SOUNDERS/SYNCHRONIZED STROBES
POWER-LIMITED SYSTEM
FREE AIR CABLE WITH CONDUIT STUBUP INSTALLATION

BUILDING OWNER:
NAME: EMBRY-RIDDLE AERO UNIVERSITY
ADDRESS: 3700 WILLOW CREEK ROAD PRESCOTT, AZ 86301
TELEPHONE: 928-777-6600
CONTACT: CARL BEUMER

APPROVING AGENCY:
NAME: CITY OF PRESCOTT
ADDRESS: 201 SOUTH CORTEZ PRESCOTT, AZ 86303
TELEPHONE: 928-777-1207

CODES AND STANDARDS:

IBC	2006
IMC	2006
IFC	2006
NEC	2005
NFPA 72	2002

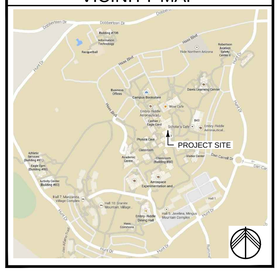
BUILDING OCCUPANCY:
GROUP "B" BUSINESS

SQUARE FOOTAGE:
BUILDING: 16,575 S.F.

SHEET INDEX

FA001.....COVER SHEET
FA201.....FIRE ALARM DEMO LAYOUT BUILDING 17
FA301.....FIRE ALARM LAYOUT BUILDING 17
FA401.....FIRE ALARM RISER DIAGRAM, FACP AND WIRING DETAILS
FA601.....CALCULATIONS

VICINITY MAP



APPROVAL STAMP

NFPA 72 .5.7.1.11 SMOKE DETECTORS SHALL NOT BE INSTALLED UNTIL AFTER THE CONSTRUCTION CLEANUP OF ALL TRADES IS COMPLETE AND FINAL.

REVISIONS	BY

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ARCHITECTURE & PLANNING

DRAWING: COVER SHEET

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY: SMK
CHECKED BY: RKB
DATE: 12/4/2014
SCALE: AS NOTED
JOB NO.: 645
SHEET: FA001



1 FIRE ALARM DEMO LAYOUT BUILDING 17

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

0 1 2 4 8 16

COPPERSTATE® FIRE PROTECTION

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NICET REVIEW STAMP

SHANE KNUDTSON
NICET #116040, LEVEL III
FIRE ALARM SYSTEMS
SIGNED:
DATE: 12-04-2014
VALID THROUGH 03/01/2015

REVISIONS	BY

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ARCHITECTURE & PLANNING

DRAWING: FIRE ALARM DEMO LAYOUT BUILDING 17

PROJECT: IMPROVEMENTS FOR: EMBRY-RIDDLE AERONAUTICAL UNIVERSITY BUILDINGS 17, CGSI PRESCOTT, ARIZONA

DRAWN BY	SMK
CHECKED BY	RKB
DATE	12/4/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	FA201



1 FIRE ALARM LAYOUT BUILDING 17

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

0 1 2 4 8 16

NORTH

GENERAL NOTES

1) DETECTORS SHOULD NOT BE LOCATED IN A DIRECT AIRFLOW OR CLOSER THAN 3'-0" FROM AN AIR SUPPLY DIFFUSER OR RETURN AIR OPENING AND 1'-0" FROM ANY LIGHT FIXTURE.

2) DUCT DETECTOR REMOTE INDICATORS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION AND SHALL BE CLEARLY LABELED TO INDICATE BOTH THEIR FUNCTION AND THE AIR HANDLING UNIT(S) ASSOCIATED WITH EACH DETECTOR.

3) SEE DEVICE DATA SHEETS LOCATED WITHIN THE SUBMITTAL BOOKS FOR PROPER WIRING AND MOUNTING INSTRUCTIONS.

4) ***ALL CONDUCTORS ENTERING ANY HEADEND EQUIPMENT SHALL BE CLEARLY LABELED TO INDICATE THE CIRCUIT NUMBER AS INDICATED ON THE DESIGN DOCUMENTS (I.E. A, 1, V1, ETC). VINYL DYMO INDUSTRIAL TAPE SHALL BE UTILIZED FOR LABELING.***

LINETYPE SCHEDULE

NEW	EXISTING	DESCRIPTION
		CONDUIT, 3/4"Ø UNLESS NOTED OTHERWISE
		UNDERGROUND CONDUIT
		SLC LOOP AND INITIATING CABLING
		NAC AND SYNC CABLING
		VOICE COMMUNICATIONS CABLING
		485 ANNUNCIATOR DATA CABLING
		24V POWER CABLING

WIRE SCHEDULE

ID	FUNCTION	DESCRIPTION	COLOR
A	SLC LOOP #1	2/C 16AWG. SOLID TWISTED/UNSHIELDED, FPLP	RED JACKET
RI	DUCT DETECTOR RI	2/C 18AWG. SOLID TWISTED/UNSHIELDED, FPLP	RED JACKET
CO	CONTROL/SHUTDOWN	2/C 16AWG. SOLID TWISTED/UNSHIELDED, FPLP	RED JACKET
IN	INITIATING CIRCUIT	2/C 16AWG. SOLID TWISTED/UNSHIELDED, FPLP	RED JACKET
SU	SUPERVISORY CIRCUIT	2/C 16AWG. SOLID TWISTED/UNSHIELDED, FPLP	RED JACKET
DA	485/RDP DATA	2/C 16AWG. SOLID TWISTED/SHIELDED, FPLP	WHITE JACKET
NP	24VDC NON-RESETTABLE	2/C 14AWG. SOLID TWISTED/UNSHIELDED, FPLP	BLUE JACKET
1	NOTIFICATION APPLIANCE CKT	2/C 14AWG. SOLID TWISTED/UNSHIELDED, FPLP	RED JACKET - YELLOW STRIPE
2	NOTIFICATION APPLIANCE CKT	2/C 14AWG. SOLID TWISTED/UNSHIELDED, FPLP	RED JACKET - GREEN STRIPE
3	NOTIFICATION APPLIANCE CKT	2/C 14AWG. SOLID TWISTED/UNSHIELDED, FPLP	RED JACKET - BLUE STRIPE
4	NOTIFICATION APPLIANCE CKT	2/C 14AWG. SOLID TWISTED/UNSHIELDED, FPLP	RED JACKET
AC	120VAC, 50/60Hz 20 AMP/1P DEDICATED CIRCUIT	BY OTHERS	BY OTHERS

NOTES:
1) CONDUIT TO BE LABELED "FA" OR MARKED BY APPROVED METHOD AT 10'-0" INTERVALS.
2) ALL FIRE ALARM JUNCTION BOXES, PULL BOXES AND OTHER TYPE BOXES SHALL BE SPRAYED RED FOR EASY IDENTIFICATION.
3) WIRING COLOR CODE SHALL BE MAINTAINED THROUGH THE INSTALLATION.
4) FPL CABLE INSTALLED UNDERGROUND AND ENTERING OR LEAVING THE BUILDING SHALL BE WEST PENN "AQUASEAL" OR APPROVED EQUAL.

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NICET REVIEW STAMP

SHANE KNUDTSON
NICET #116040, LEVEL III
FIRE ALARM SYSTEMS
SIGNED:
DATE: 12-04-2014
VALID THROUGH 03/01/2015

REVISIONS	BY

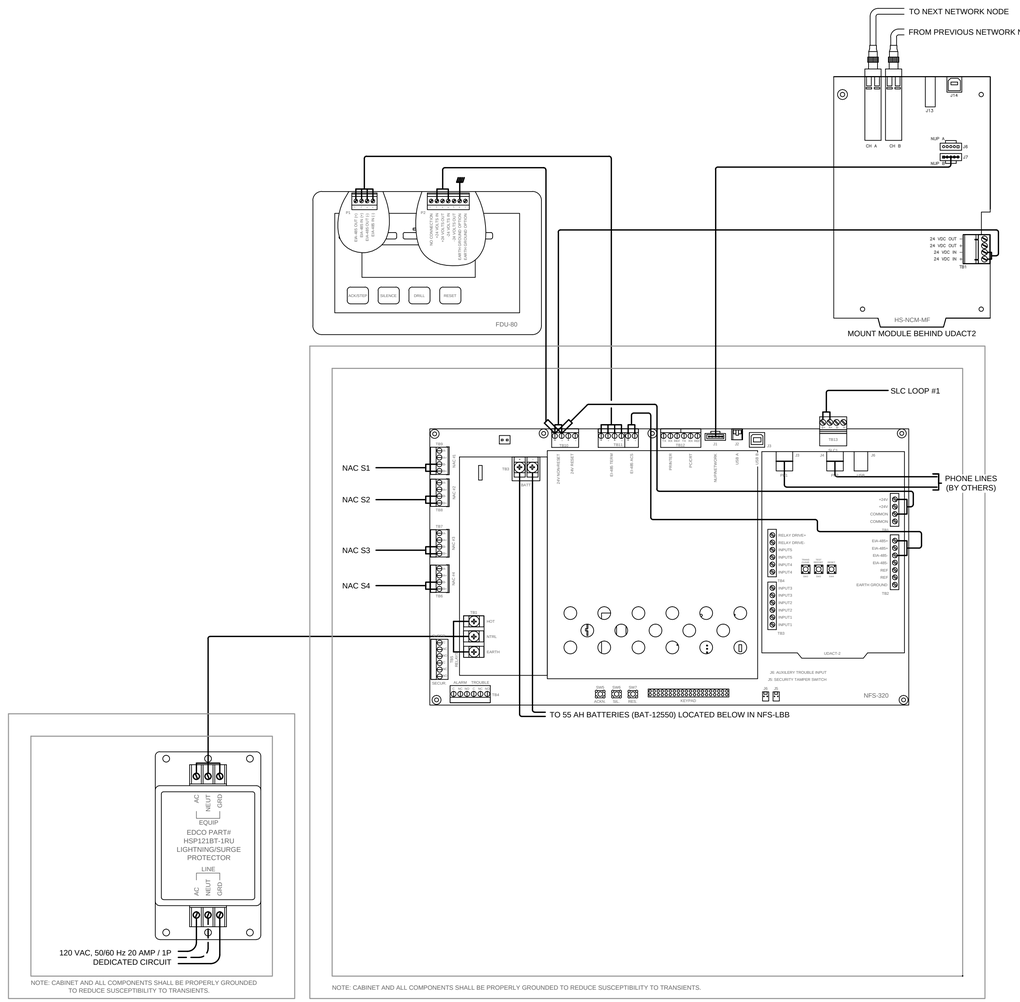
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DRAWING: FIRE ALARM LAYOUT BUILDING 17

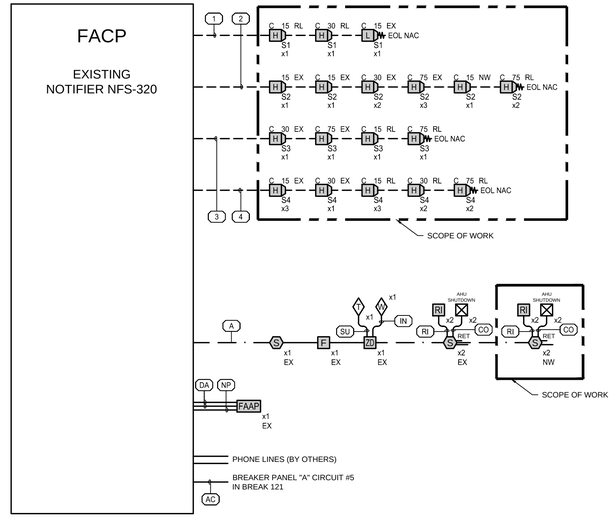
PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	SMK
CHECKED BY	RKB
DATE	12/4/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	FA301



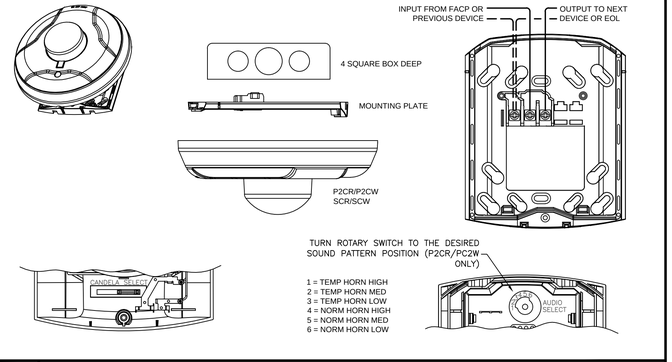
1 EXISTING FACP WIRING DIAGRAM

SCALE: 2:1



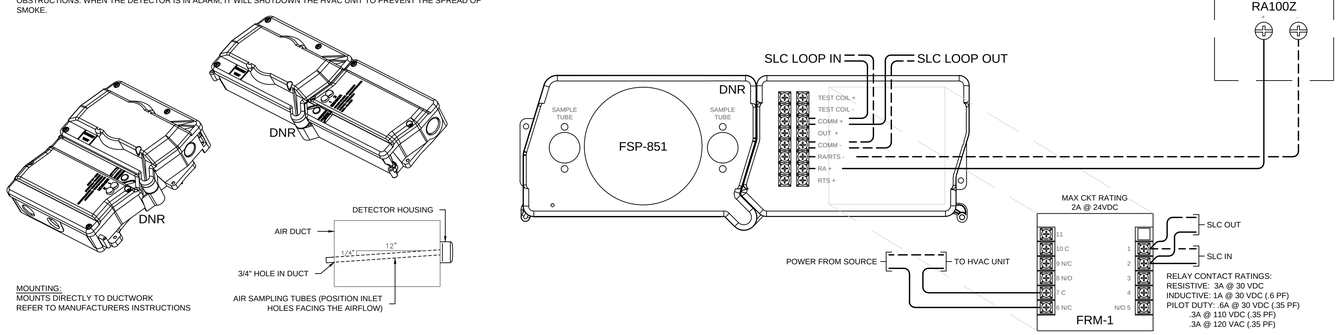
2 FIRE ALARM RISER DIAGRAM

SCALE: N.T.S.



1 CEILING HORN/STROBE DETAIL

MOUNT HOUSING TO DUCTWORK USING TEMPLATE INCLUDED WITH UNIT. POSITION UNIT AT THE START OF THE DUCTWORK AND A MINIMUM 6 DUCT WIDTHS AWAY FROM ANY DUCT OPENINGS, BENDS, DIFFUSERS, OR OBSTRUCTIONS. WHEN THE DETECTOR IS IN ALARM, IT WILL SHUTDOWN THE HVAC UNIT TO PREVENT THE SPREAD OF SMOKE.



2 DUCT DETECTOR WITH RELAY

LINETYPE SCHEDULE

NEW	EXISTING	DESCRIPTION
		CONDUIT, 3/4"Ø UNLESS NOTED OTHERWISE
		UNDERGROUND CONDUIT
		SLC LOOP AND INITIATING CABLING
		NAC AND SYNC CABLING
		VOICE COMMUNICATIONS CABLING
		485 ANNUNCIATOR DATA CABLING
		24V POWER CABLING

WIRE SCHEDULE

ID	FUNCTION	DESCRIPTION	COLOR
A	SLC LOOP #1	2/C 16AWG. SOLID TWISTED/UNSHIELDED, FPLP	RED JACKET
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3) WIRING COLOR CODE SHALL BE MAINTAINED THROUGH THE INSTALLATION.
4) FPL CABLE INSTALLED UNDERGROUND AND ENTERING OR LEAVING THE BUILDING SHALL BE WEST PENN "AQUASEAL" OR APPROVED EQUAL.

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NICET REVIEW STAMP
SHANE KNUDTSON
NICET #116040, LEVEL III
FIRE ALARM SYSTEMS
SIGNED:
DATE: 12-04-2014
VALID THROUGH 03/01/2015

REVISIONS	BY

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ARCHITECTURE & PLANNING

DRAWING: FIRE ALARM RISER DIAGRAM, FACP AND WIRING DETAILS

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY: SMK
CHECKED BY: RKB
DATE: 12/4/2014
SCALE: AS NOTED
JOB NO.: 645
SHEET: FA401

Power Supply Calculations

Notifier NFS-320 FACP

Project Information

Date: 12/3/2014

Protected Property: Embry Riddle Aeronautical University Building 17

Street: 3700 Willow Creek Road

City: Prescott State: Arizona Zip: 86301

Prepared By: Shane Knudtson Location: IT Room Panel No.: 1

Secondary Power Source Requirements

Device Type	Qty	Standby Current (A) Current Draw	Total	Qty	Secondary Alarm Current (A) Current Draw	Total
CPU-320	1	x 0.25000	= 0.25000	1	x 0.25000	= 0.25000
CPS-24	1	x 0.04000	= 0.04000	1	x 0.00000	= 0.00000
NACs in use	4	x 0.03500	= 0.14000	4	x 0.03500	= 0.14000
HS-NCM-W/WF/SF/WMF/WSF/WFSF	1	x 0.40000	= 0.40000	1	x 0.40000	= 0.40000
Annunciator Control System						
FDU-80	1	x 0.06430	= 0.06430	1	x 0.06430	= 0.06430
UDACT (1 maximum)	1	x 0.04000	= 0.04000	1	x 0.10000	= 0.10000
Addressable Devices						
FDM-1	1	x 0.00075	= 0.00075	1	x 0.00640	= 0.00640
FSP-851, FSP-851T	5	x 0.00030	= 0.00150	5	x 0.00650	= 0.03250
NBG-12LX	1	x 0.00038	= 0.00038	1	x 0.00500	= 0.00500
RA1002	4	x 0.00000	= 0.00000	4	x 0.01200	= 0.04800
Notification Appliance Devices						
NAC 1				1	x 0.25500	= 0.25500
NAC 2				1	x 1.33100	= 1.33100
NAC 3				1	x 0.53800	= 0.53800
NAC 4				1	x 1.14700	= 1.14700
Sum each column for totals.		Total Standby Current	0.93693		Total Alarm Current	4.31729

Ampere-Hour Calculations

			Required Standby Time in Hours per 2010 NFPA 72 10.5.6.3.1	
			(24 hours = 24)	
NFPA Standby Load Current (A)	0.937 A	x	24	= 22.486 AH
			Required Alarm Time in Hours per 2010 NFPA 72 10.5.6.3.1	
			(5 minutes = 0.084)	
NFPA Alarm Load Current (A)	4.317 A	x	0.084	= 0.363 AH
	NFPA Standby and NFPA Alarm Load Subtotal			= 22.849 AH
	Derating Factor			= x 1.2
	Total Ampere Hours Required			= **27.419 AH**
	Battery Supplied 12V 18AH x2			= **55.0 AH**

Battery Check

An external battery charger is not required for this system.

**BATTERIES WILL NOT FIT WITHIN CABINET. USE NFS-LBB FOR 26AH & 55AH, USE BB-100 FOR 100AH.

Batteries meet minimum charging size

Current Draw Check

NAC 1 current is within the limitations of the circuit.

NAC 2 current is within the limitations of the circuit.

NAC 3 current is within the limitations of the circuit.

NAC 4 current is within the limitations of the circuit.

The Standby current is within the limitations of the panel.

The Alarm current is within output limitations of the panel.

AC Branch Circuit Calculations

Device Type	No. of Devices		Current		Total Current
CPS-24	1	x	5.00	=	5.00
Sum column for AC Branch Current required = Amps					5.00

This calculator provided voltage drop calculations in three formats (Point to Point, End of Line, and Load Centering).
Make sure that you know what method is accepted by, and the results do not exceed the limits set by the respective jurisdiction

Project Name: Embry Riddle Aeronautical - Bldg 17 | Date: 12/3/2014 | Circuit Number: NAC Ckt S1 | Area Covered: Bldg 17 | Nominal System Voltage: 20.4 | Minimum Device Voltage: 16 | Total Circuit Current: 0.255

	Point to Point Method CIRCUIT IS WITHIN LIMITS			End of Line Method CIRCUIT IS WITHIN LIMITS			Load Centering Method CIRCUIT IS WITHIN LIMITS		
	Totals Current	Distance	Voltage Drop	Totals Current	Distance	Voltage Drop	Totals Current	Distance	Voltage Drop
	0.255	108	**0.12**	0.255	108	**0.169**	0.255	108	**0.085**
	End of Line Voltage		**20.28**	End of Line Voltage		**20.23**	End of Line Voltage		**20.32**
	Percent Drop 0.60%			Percent Drop 0.83%			Percent Drop 0.41%		

Distance from source to 1st device: 50 | Wire Gauge: 14 | Ohm's Per 1000: 3.07
Wire Gauge for balance of circuit: 14 | 3.07
Enter current in amps. 150 = 150 ma

End of Line and Load Centering Methods use only the wire guage for the first device to source
Standard Wire Resistance in Ohms per 1000 feet.
18=7.77 16=4.89 14=3.07 12=1.98 10=1.24
18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors

Device Number	Device Current	Distance from previous device	At Device	Voltage Drop from source	Percent Drop
Device 1	0.069	50	20.32	0.078	0.38%
Device 2	0.107	25	20.29	0.107	0.52%
Device 3	0.079	33	20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
END			20.28	0.123	0.60%
Totals	0.255	108	End of Line Voltage		**20.28**

Notes:
Wire resistance is doubled in the calculations for two wires (Positive and Negative)
The voltage calculated to the last device in any method must not be lower then
the manufacturers listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).

Device Manufacturer	System Sensor		
Horn Strobes			Current @Rated Voltage
Model #	Candela		
PC2* or P2*	15		0.079
PC2* or P2*	30		0.107
PC2* or P2*	75		0.176
PC2* or P2*	95		0.194
PC2* or P2*	110		0.212
PC2* or P2*	115		0.218
PC2*H or P2*H	135		0.245
PC2*H or P2*H	150		0.259
PC2*H or P2*H	177		0.290
PC2*H or P2*H	185		0.297
MHR or MHW			0.017
SSM24-6 Bell			0.054

Device Manufacturer	System Sensor		
Strobe Only			Current @Rated Voltage
Model #	Candela		
SC* or S*	15		0.069
SC* or S*	30		0.094
SC* or S*	75		0.158
SC* or S*	95		0.181
SC* or S*	110		0.202
SC* or S*	115		0.210
SC*H or S*H	135		0.228
SC*H or S*H	150		0.246
SC*H or S*H	177		0.281
SC*H or S*H	185		0.286

This calculator provided voltage drop calculations in three formats (Point to Point, End of Line, and Load Centering).
Make sure that you know what method is accepted by, and the results do not exceed the limits set by the respective jurisdiction

Project Name: Embry Riddle Aeronautical - Bldg 17 | Date: 12/3/2014 | Circuit Number: 0 NAC Ckt #2 | Area Covered: Bldg 17 | Nominal System Voltage: 20.4 | Minimum Device Voltage: 16 | Total Circuit Current: 1.331

	Point to Point Method CIRCUIT IS WITHIN LIMITS			End of Line Method CIRCUIT IS WITHIN LIMITS			Load Centering Method CIRCUIT IS WITHIN LIMITS		
	Totals Current	Distance	Voltage Drop	Totals Current	Distance	Voltage Drop	Totals Current	Distance	Voltage Drop
	1.331	428	**2.23**	1.331	428	**3.498**	1.331	428	**1.749**
	End of Line Voltage		**18.17**	End of Line Voltage		**16.90**	End of Line Voltage		**18.65**
	Percent Drop 10.93%			Percent Drop 17.15%			Percent Drop 8.57%		

Distance from source to 1st device: 60 | Wire Gauge: 14 | Ohm's Per 1000: 3.07
Wire Gauge for balance of circuit: 14 | 3.07
Enter current in amps. 150 = 150 ma

End of Line and Load Centering Methods use only the wire guage for the first device to source
Standard Wire Resistance in Ohms per 1000 feet.
18=7.77 16=4.89 14=3.07 12=1.98 10=1.24
18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors

Device Number	Device Current	Distance from previous device	At Device	Voltage Drop from source	Percent Drop
Device 1	0.176	60	19.91	0.490	2.40%
Device 2	0.107	50	19.56	0.845	4.14%
Device 3	0.107	30	19.36	1.038	5.09%
Device 4	0.079	66	18.98	1.419	6.96%
Device 5	0.079	85	18.53	1.869	9.16%
Device 6	0.176	17	18.45	1.951	9.56%
Device 7	0.176	25	18.36	2.044	10.02%
Device 8	0.176	46	18.23	2.166	10.62%
Device 9	0.079	22	18.20	2.200	10.79%
Device 10	0.176	27	18.17	2.229	10.93%
END			18.17	2.229	10.93%
END			18.17	2.229	10.93%
END			18.17	2.229	10.93%
END			18.17	2.229	10.93%
END			18.17	2.229	10.93%
END			18.17	2.229	10.93%
END			18.17	2.229	10.93%
END			18.17	2.229	10.93%
END			18.17	2.229	10.93%
END			18.17	2.229	10.93%
Totals	1.331	428	End of Line Voltage		**18.17**

Notes:
Wire resistance is doubled in the calculations for two wires (Positive and Negative)
The voltage calculated to the last device in any method must not be lower then
the manufacturers listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).

Device Manufacturer	System Sensor		
Horn Strobes			Current @Rated Voltage
Model #	Candela		
PC2* or P2*	15		0.079
PC2* or P2*	30		0.107
PC2* or P2*	75		0.176
PC2* or P2*	95		0.194
PC2* or P2*	110		0.212
PC2* or P2*	115		0.218
PC2*H or P2*H	135		0.245
PC2*H or P2*H	150		0.259
PC2*H or P2*H	177		0.290
PC2*H or P2*H	185		0.297
MHR or MHW			0.017
SSM24-6 Bell			0.054

Device Manufacturer	System Sensor		
Strobe Only			Current @Rated Voltage
Model #	Candela		
SC* or S*	15		0.069
SC* or S*	30		0.094
SC* or S*	75		0.158
SC* or S*	95		0.181
SC* or S*	110		0.202
SC* or S*	115		0.210
SC*H or S*H	135		0.228
SC*H or S*H	150		0.246
SC*H or S*H	177		0.281
SC*H or S*H	185		0.286

This calculator provided voltage drop calculations in three formats (Point to Point, End of Line, and Load Centering).
Make sure that you know what method is accepted by, and the results do not exceed the limits set by the respective jurisdiction

Project Name: Embry Riddle Aeronautical - Bldg 17 | Date: 12/3/2014 | Circuit Number: 0 NAC Ckt #3 | Area Covered: Bldg 17 | Nominal System Voltage: 20.4 | Minimum Device Voltage: 16 | Total Circuit Current: 0.538

	Point to Point Method CIRCUIT IS WITHIN LIMITS			End of Line Method CIRCUIT IS WITHIN LIMITS			Load Centering Method CIRCUIT IS WITHIN LIMITS		
	Totals Current	Distance	Voltage Drop	Totals Current	Distance	Voltage Drop	Totals Current	Distance	Voltage Drop
	0.538	180	**0.44**	0.538	180	**0.595**	0.538	180	**0.297**
	End of Line Voltage		**19.96**	End of Line Voltage		**19.91**	End of Line Voltage		**20.10**
	Percent Drop 2.17%			Percent Drop 2.91%			Percent Drop 1.49%		

Distance from source to 1st device: 100 | Wire Gauge: 14 | Ohm's Per 1000: 3.07
Wire Gauge for balance of circuit: 14 | 3.07
Enter current in amps. 150 = 150 ma

End of Line and Load Centering Methods use only the wire guage for the first device to source
Standard Wire Resistance in Ohms per 1000 feet.
18=7.77 16=4.89 14=3.07 12=1.98 10=1.24
18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors

Device Number	Device Current	Distance from previous device	At Device	Voltage Drop from source	Percent Drop
Device 1	0.176	100	20.07	0.330	1.62%
Device 2	0.079	22	20.02	0.379	1.86%
Device 3	0.176	23	19.98	0.419	2.05%
Device 4	0.107	35	19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
END			19.96	0.442	2.17%
Totals	0.538	180	End of Line Voltage		**19.96**

Notes:
Wire resistance is doubled in the calculations for two wires (Positive and Negative)
The voltage calculated to the last device in any method must not be lower then
the manufacturers listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).

Device Manufacturer	System Sensor		
Horn Strobes			Current @Rated Voltage
Model #	Candela		
PC2* or P2*	15		0.079
PC2* or P2*	30		0.107
PC2* or P2*	75		0.176
PC2* or P2*	95		0.194
PC2* or P2*	110		0.212
PC2* or P2*	115		0.218
PC2*H or P2*H	135		0.245
PC2*H or P2*H	150		0.259
PC2*H or P2*H	177		0.290
PC2*H or P2*H	185		0.297
MHR or MHW			0.017
SSM24-6 Bell			0.054

Device Manufacturer	System Sensor		
Strobe Only			Current @Rated Voltage
Model #	Candela		
SC* or S*	15		0.069
SC* or S*	30		0.094
SC* or S*	75		0.158
SC* or S*	95		0.181
SC* or S*	110		0.202
SC* or S*	115		0.210
SC*H or S*H	135		0.228
SC*H or S*H	150		0.246
SC*H or S*H	177		0.281
SC*H or S*H	185		0.286

This calculator provided voltage drop calculations in three formats (Point to Point, End of Line, and Load Centering).
Make sure that you know what method is accepted by, and the results do not exceed the limits set by the respective jurisdiction

Project Name: Embry Riddle Aeronautical - Bldg 17 | Date: 12/3/2014 | Circuit Number: 0 NAC Ckt #4 | Area Covered: Bldg 17 | Nominal System Voltage: 20.4 | Minimum Device Voltage: 16 | Total Circuit Current: 1.147

	Point to Point Method CIRCUIT IS WITHIN LIMITS			End of Line Method CIRCUIT IS WITHIN LIMITS			Load Centering Method CIRCUIT IS WITHIN LIMITS		
	Totals Current	Distance	Voltage Drop	Totals Current	Distance	Voltage Drop	Totals Current	Distance	Voltage Drop
	1.147	445	**1.50**	1.147	445	**3.134**	1.147	445	**1.567**
	End of Line Voltage		**18.90**	End of Line Voltage		**17.27**	End of Line Voltage		**18.83**
	Percent Drop 7.36%			Percent Drop 15.36%			Percent Drop 7.68%		

Distance from source to 1st device: 40 | Wire Gauge: 14 | Ohm's Per 1000: 3.07
Wire Gauge for balance of circuit: 14 | 3.07
Enter current in amps. 150 = 150 ma

End of Line and Load Centering Methods use only the wire guage for the first device to source
Standard Wire Resistance in Ohms per 1000 feet.
18=7.77 16=4.89 14=3.07 12=1.98 10=1.24
18-14 Awg = Solid Conductors 12-10 Awg = Stranded Conductors

Device Number	Device Current	Distance from previous device	At Device	Voltage Drop from source	Percent Drop
Device 1	0.107	40	20.12	0.282	1.38%
Device 2	0.079	22	19.98	0.422	2.07%
Device 3	0.107	30	19.80	0.599	2.94%
Device 4	0.176	55	19.51	0.888	4.35%
Device 5	0.107	35	19.37	1.033	5.07%
Device 6	0.176	16	19.31	1.089	5.34%
Device 7	0.079	50	19.19	1.211	5.93%
Device 8	0.079	100	19.00	1.405	6.89%
Device 9	0.079	22	18.96	1.437	7.04%
Device 10	0.079	60	18.91	1.495	7.33%
Device 11	0.079	15	18.90	1.502	7.36%
END			18.90	1.502	7.36%
END			18.90	1.502	7.36%
END			18.90	1.502	7.36%
END			18.90	1.502	7.36%
END			18.90	1.502	7.36%
END			18.90	1.502	7.36%
END			18.90	1.502	7.36%
END			18.90	1.502	7.36%
END			18.90	1.502	7.36%
END			18.90	1.502	7.36%
Totals	1.147	445	End of Line Voltage		**18.90**

Notes:
Wire resistance is doubled in the calculations for two wires (Positive and Negative)
The voltage calculated to the last device in any method must not be lower then
the manufacturers listed minimum operating voltage (IE: rated operating voltage 20-32 VDC).

Device Manufacturer	System Sensor		
Horn Strobes			Current @Rated Voltage
Model #	Candela		
PC2* or P2*	15		0.079
PC2* or P2*	30		0.107
PC2* or P2*	75		0.176
PC2* or P2*	95		0.194
PC2* or P2*	110		0.212
PC2* or P2*	115		0.218
PC2*H or P2*H	135		0.245
PC2*H or P2*H	150		0.259
PC2*H or P2*H	177		0.290
PC2*H or P2*H	185		0.297
MHR or MHW			0.017
SSM24-6 Bell			0.054

Device Manufacturer	System Sensor		
Strobe Only			Current @Rated Voltage
Model #	Candela		
SC* or S*	15		0.069
SC* or S*	30		0.094
SC* or S*	75		0.158
SC* or S*	95		0.181
SC* or S*	110		0.202
SC* or S*	115		0.210
SC*H or S*H	135		0.228
SC*H or S*H	150		0.246
SC*H or S*H	177		0.281
SC*H or S*H	185		0.286

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NICET REVIEW STAMP

SHANE KNUDTSON
NICET #116040, LEVEL III
FIRE ALARM SYSTEMS
SIGNED:
DATE: 12-04-2014
VALID THROUGH 03/01/2015

REVISIONS	BY

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DRAWING: FIRE ALARM CALCULATIONS
BUILDING 17

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	SMK
CHECKED BY	RKB
DATE	12/4/2014
SCALE	AS NOTED
JOB NO.	645
SHEET	FA601

Scope of Work

Data / Communications: Building 17 IT copper and fiber

- Pull, terminate, and test a total of 34 new voice and 72 data cables per remodel program.
- Provide cord cover (s) as needed from Instructor Station to wall boxes for any exposed data, voice, computer projector, and power cables.
- Supply 3ft & 5ft blue CAT6 patch cables. Quantity of each length patch cables supplied shall equal the total number of data ports installed.
- Supply 3ft & 5ft white CAT6 patch cables. Quantity of each length patch cables supplied shall equal the total number of voice ports installed.

General Notes:

General

- Terminate horizontal data and voice cables to new CAT6 patch panels in existing 2 post rack in room 109.
- Use blue colored CAT6 cable and jacks for data ports and white colored CAT6 cable and jacks for phone ports.
- Remove existing data & voice cabling from demo areas （rooms 111 through 120） .
- Relocate any surface mounted/exposed cabling （computer projector, power, data, and voice） that is to be reused into framed walls （rooms 137 & 147） .
- Internal building cables shall be routed in framed walls and above ceiling. Cables may be neatly suspended in enclosed ceilling areas using cable hangers. Cable molding and/or surface mounted conduit is acceptable if the cabling cannot be routed in walls and/or above ceiling. Match existing wall colors with all surface mounted items.
- Head end equipment will be owner supplied.
- Any deviations from recommended parts list shall require prior approval by owner.
- See Exhibit II - "Wiring Requirements for New construction and Renovations" for a list of typical part numbers for items mentioned above. All standards and specifications in the document must be followed. Document available for download at http://stats.pr.erau.edu/maps/PRCwiring.pdf
- Provide SYSTIMAX 20 year warranty at completion of the project.

This document and the attached Architectural Drawings are intended to be a guide and reference only. All dimensions, mechanical locations, features, and quantity take offs are to be field verified, and are the responsibility of the contractor and sub-contranctors. It is assumed common construction practices/ common sense will prevail. Any substitution of materials requires written approval by ERAU prior to installation. Every subcontractor shall be required to provide Embry-Riddle with Operation and Maintenance Manuals listing manufactures's name and model numbers for each product used in their portion, in lieu of excess stock.

Contractor must schedule final walk through of the project with PM at completion of job.

All construction shall follow ERAU Architectural and Engineering Design Standards.

All information Technology / Special systems shall follow IT "Standardized Wiring Requirements for New Construction and Renovations" document located at http://stats.pr.erau.edu/maps/PRCwiring.pdf

Telecommunications Symbols

Not all symbol may be reflected on the plans.

1V, 2D - One voice and two data cables, wall mounted.	1D - One data wireless access point above ceiling in surface mount box. +16ft service loop.
Voice only. x = number of voice cables, wall mounted.	1RG6, 1D - One RG6 coax and one data cable, wall mounted
1V, 3D - One voice and three data cables, wall mounted.	(1) 22/6 shielded, (1) 18/4, (1) 22/4, (1) 22/2. Coiled above location. Cable to IT room 116.
1V - One voice, wall mounted.	
1V - One voice wall phone, wall mounted at +48 AFF.	Door intrusion switch.
Data only - x = number of data cables, wall mounted.	Junction box
1V, 2D - One voice and two data cables, floor mounted.	

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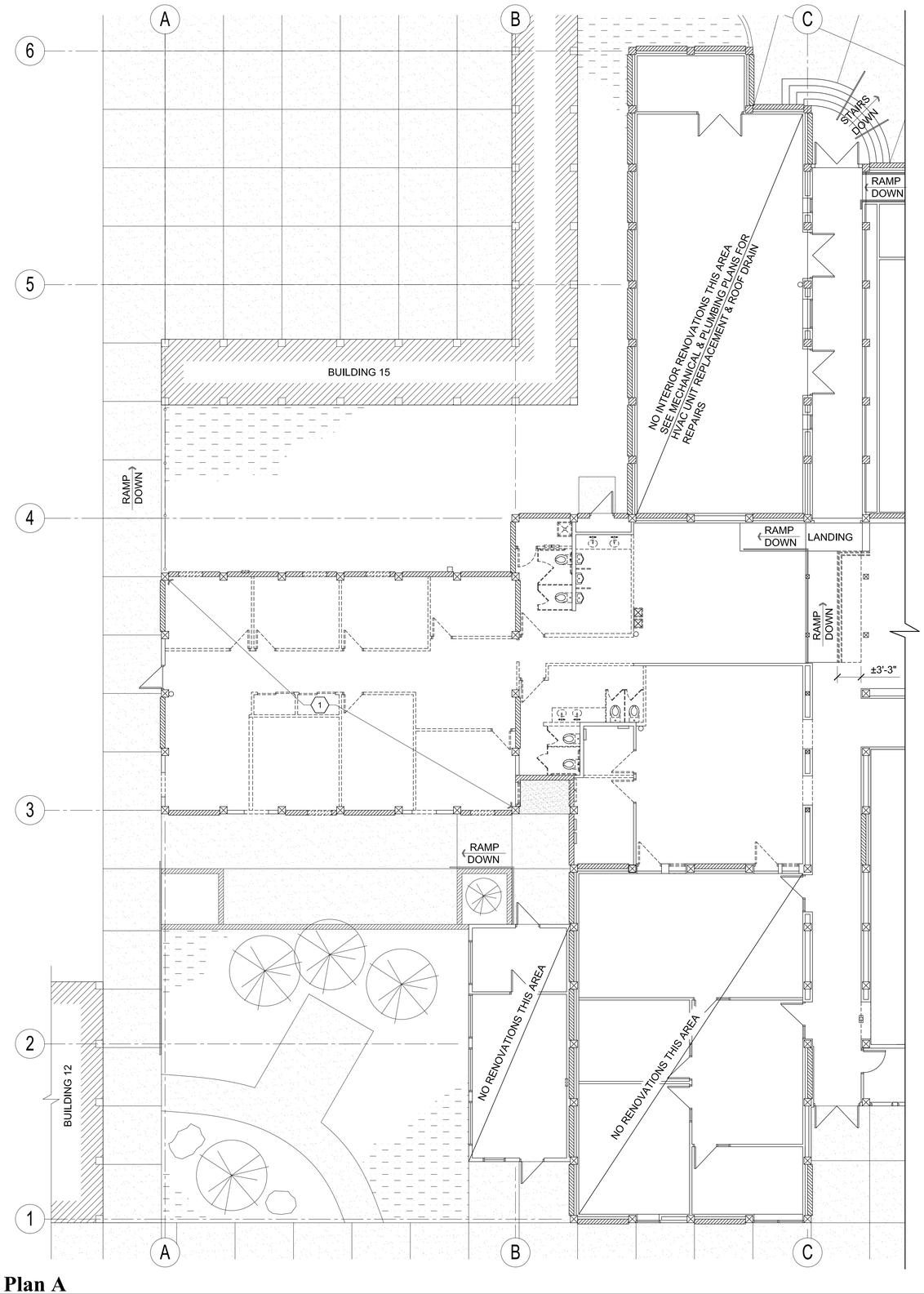
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ARCHITECTURE & PLANNING

DRAWING: TELECOMMUNICATIONS GENERAL INFO

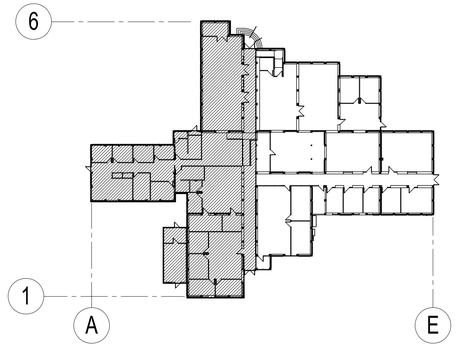
PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	CSLLC-TRA
CHECKED BY	JIM D.
DATE	12/05/2014
SCALE	AS NOTED
JOB NO.	TBD
SHEET	T1.0



Descriptive Keynotes

1. REMOVE ALL EXISTING VOICE/DATA CABLING FROM ROOMS 111-120.



Key Plan Scale: NTS

Plan North

IT Demolition Plan A Scale: 1/8"=1'-0"

Plan North

REVISIONS	BY

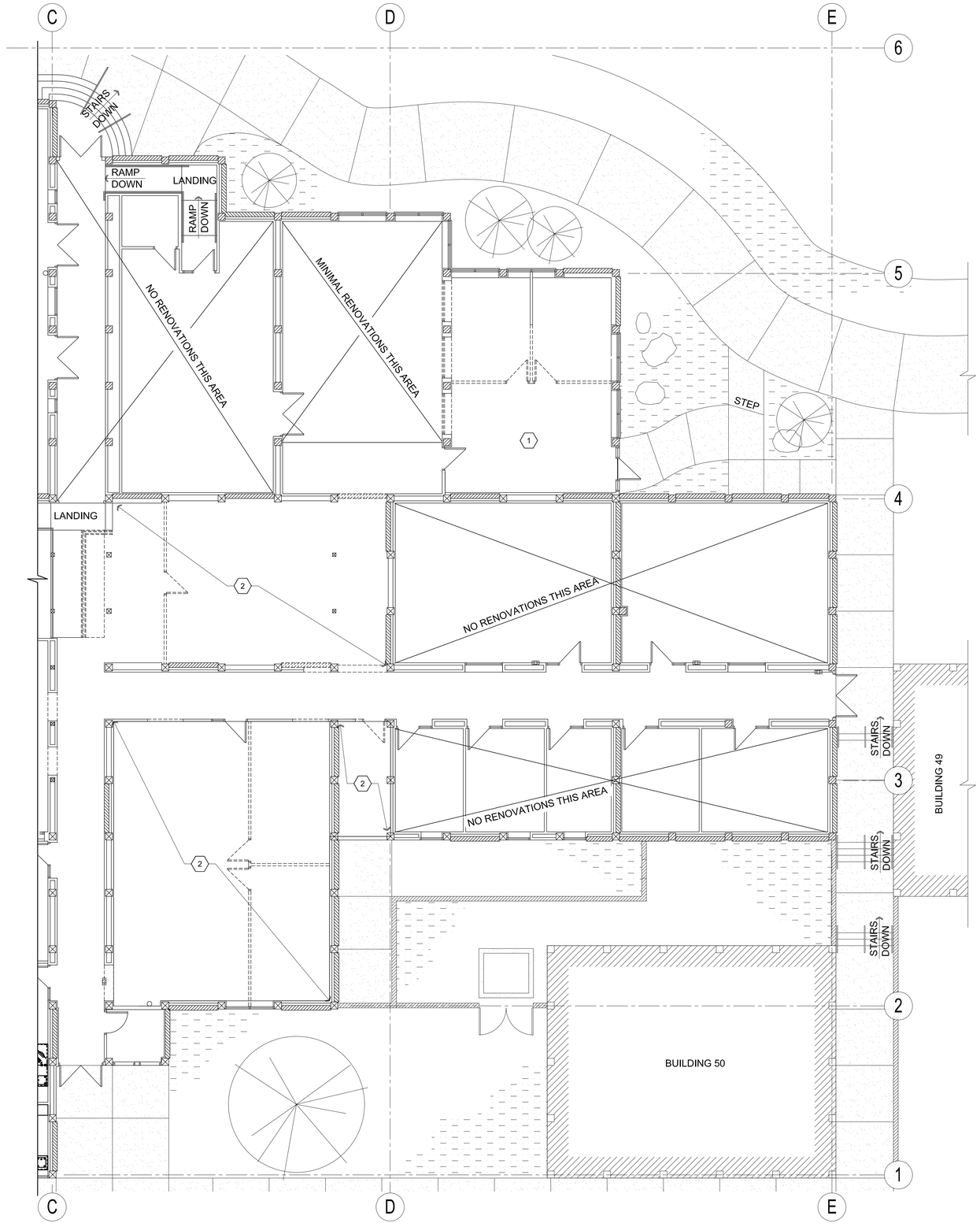
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ARCHITECTURE & PLANNING

DRAWING: IT DEMOLITION FLOOR PLAN A

PROJECT: IMPROVEMENTS FOR:
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
BUILDINGS 17, CGSI
PRESCOTT, ARIZONA

DRAWN BY	CSLLC-TRA
CHECKED BY	JIM D.
DATE	12/05/2014
SCALE	AS NOTED
JOB NO.	TBD
SHEET	T1.1



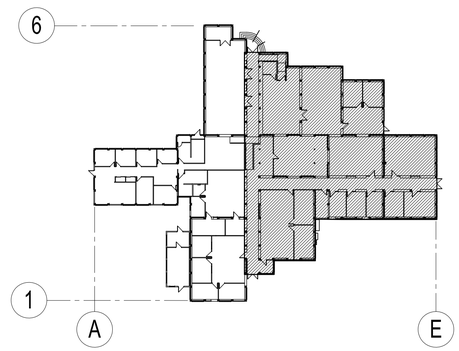
IT Demolition Plan B

Scale: 1/8"=1'-0"

Plan North

Descriptive Keynotes

1. COIL AND MAKE SAFE EXISTING DATA CABLE FOR FUTURE WIRELESS ACCESS POINT.
2. COIL AND MAKE SAFE ALL EXISTING VOICE/DATA CABLING FOR FUTURE USE. A/V AND VOICE/DATA CABLING LOCATED IN SURFACE MOLDING RELOCATE TO IN WALL DURING CONSTRUCTION.



Key Plan

Scale: NTS

Plan North

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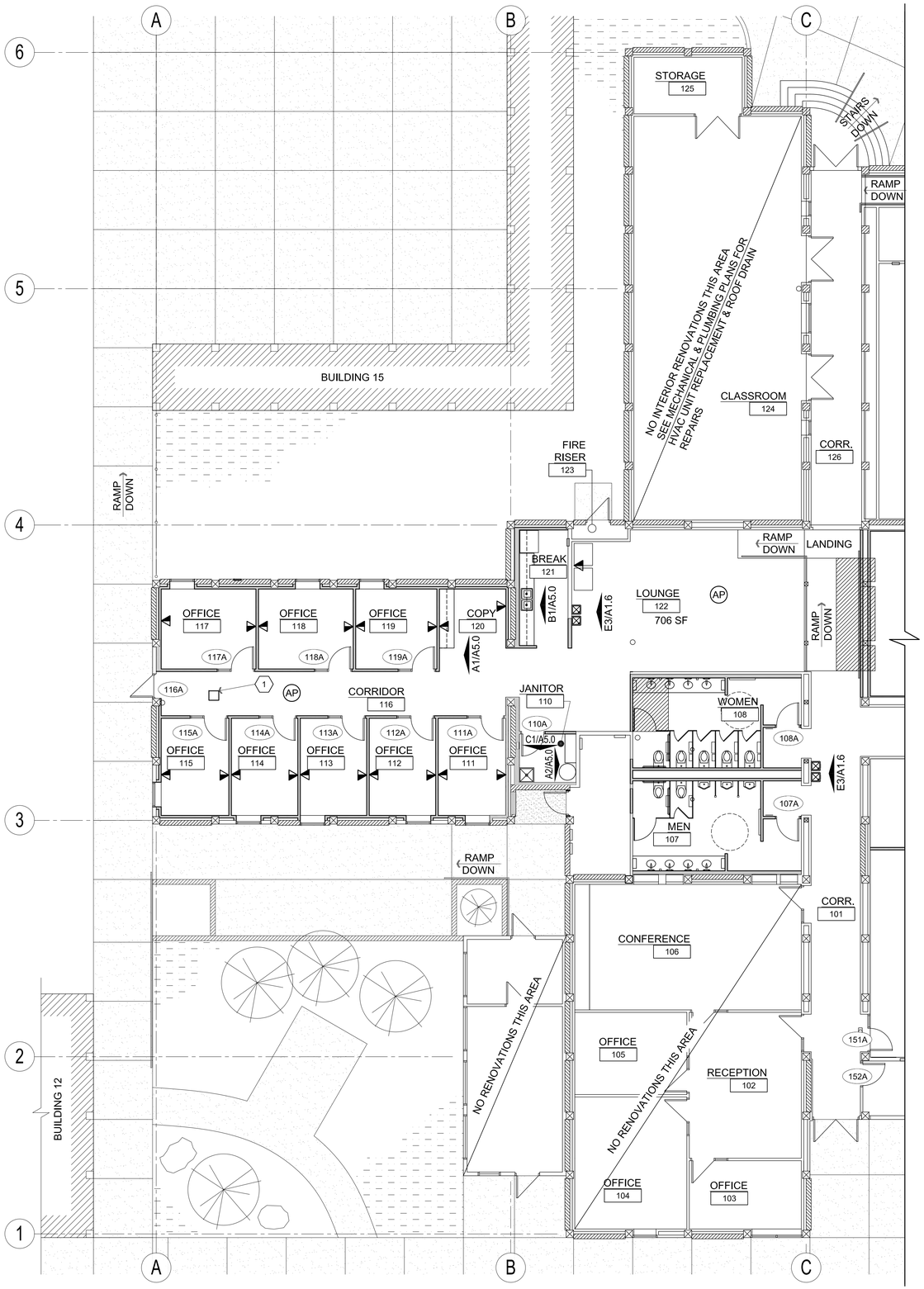
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SHEET	T1.2



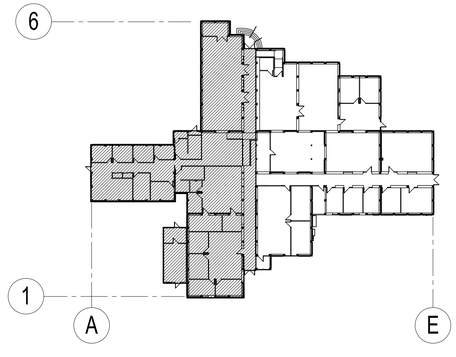
Reference Floor Plan A

Scale: 1/8"=1'-0"

Plan North

Descriptive Keynotes

1. PROVIDE SECURITY ROUGH IN CABLING ABOVE CEILING AND LEAVE COILED FOR FUTURE CAMERA.



Key Plan

Scale: NTS

Plan North

REVISIONS	BY

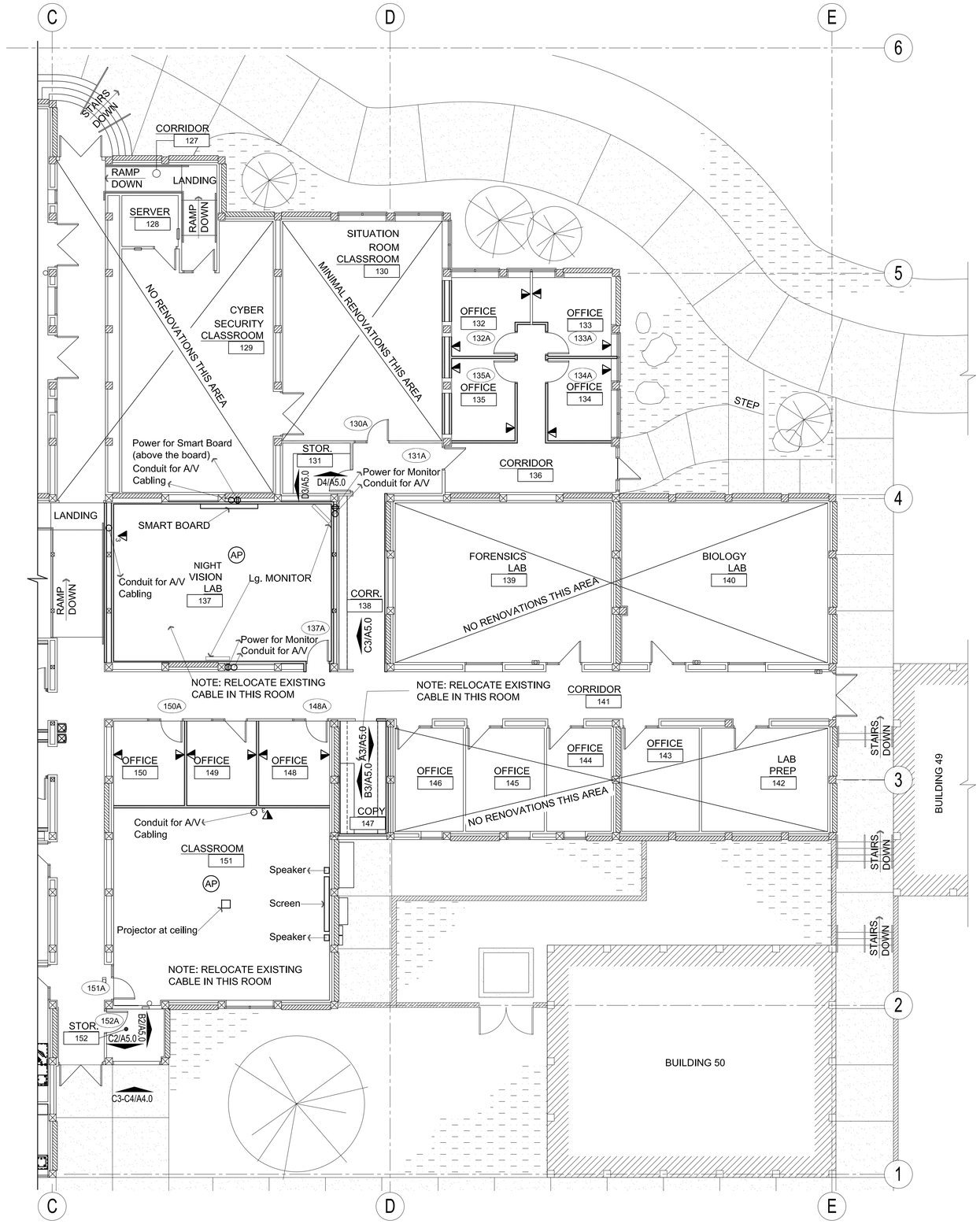
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SHEET	T2.0

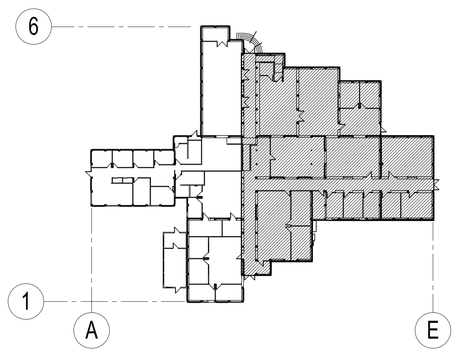


IT Reference Floor Plan B

Scale: 1/8"=1'-0"

Plan North

Descriptive Keynotes



Key Plan

Scale: NTS

Plan North

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