



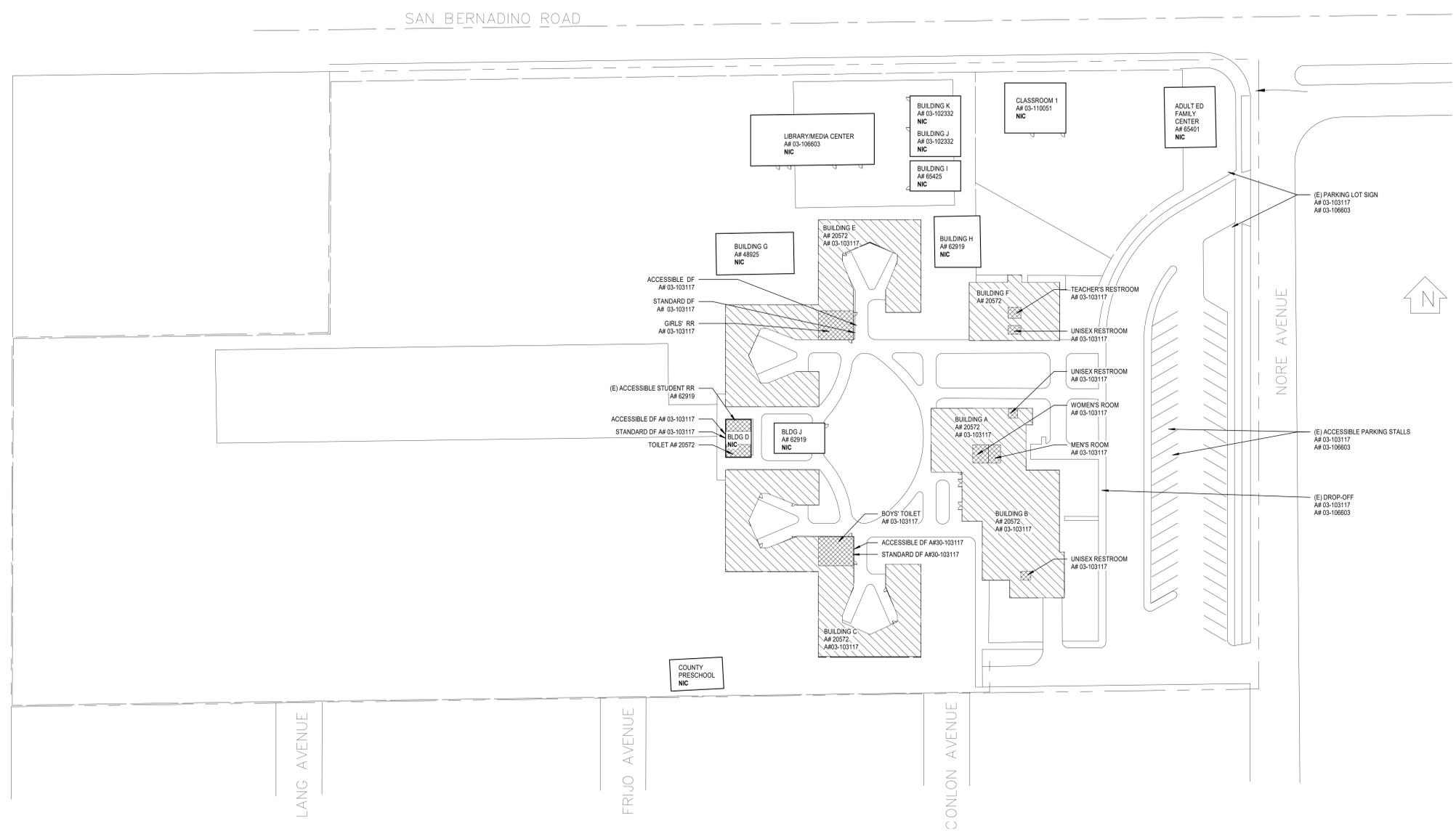


A B C D E F

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**DSA CERTIFICATION LIST**

| APPLICATION # | FILE # | APPROVAL YEAR | NOTE  |
|---------------|--------|---------------|---|
| 03-20572      | 19-25  | 1961          | ORIGINAL CAMPUS BUILDINGS                             |
| 03-62919      | 19-25  | 1996          | CONSTRUCTION OF RELOCATABLES                          |
| 03-65401      | 19-25  | 1996          | CONSTRUCTION OF CLASSROOM BLDG                        |
| 03-107000     | 19-25  | 2006          | CONSTRUCTION OF SITE WORK                             |
| 03-102332     | 19-25  | 2006          | CONSTRUCTION OF (5) RELOCATABLES; FIRE ALARM UPGRADES |
| 03-110051     | 19-25  | 2007          | RELOCATION OF TOILET BUILDING (AR04-1101310)          |
| 03-106603     | 19-25  | 2011          | CONSTRUCTION OF SITE IMPROVEMENTS, RELOCATABLE        |
| 03-103117     | 19-25  | 2012          | ALTERATION TO ADMINP BLDG. & 3 CLASSROOM BLDG.        |



**SITE LEGEND**

- EXISTING BUILDING NOT IN SCOPE
- EXISTING BUILDING - SCOPE OF WORK UNDER THIS DSA APPLICATION
- (E) RESTROOMS - NOT IN SCOPE



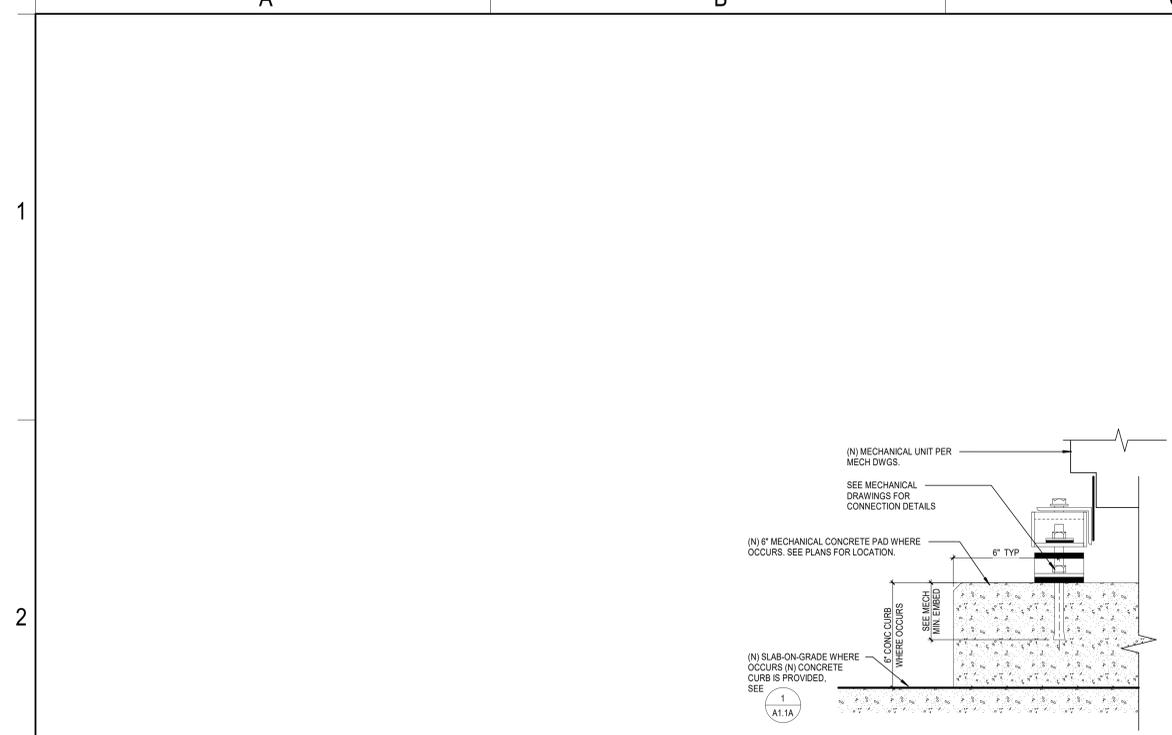
**MANZANITA ELEMENTARY SCHOOL**  
 COVID 19 - COVINA VALLEY DISTRICT HVAC REPLACEMENT  
 4131 N INDIRA AVE COVINA, CA 91722

100%  
 CONSTRUCTION  
 DOCUMENTS  
 11/02/2022  
 REVISIONS

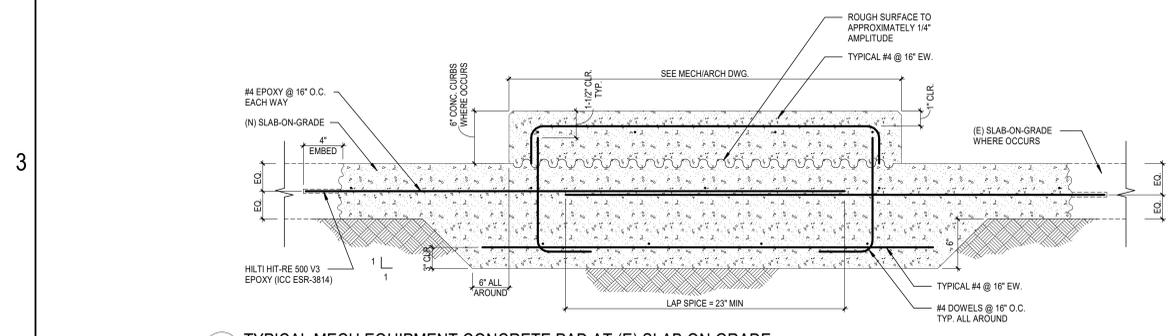
75-22605-00  
 DSA A#03-122231  
 DSA File #: 19-25  
 ARCHITECTURAL  
 SITE PLAN

A1.1

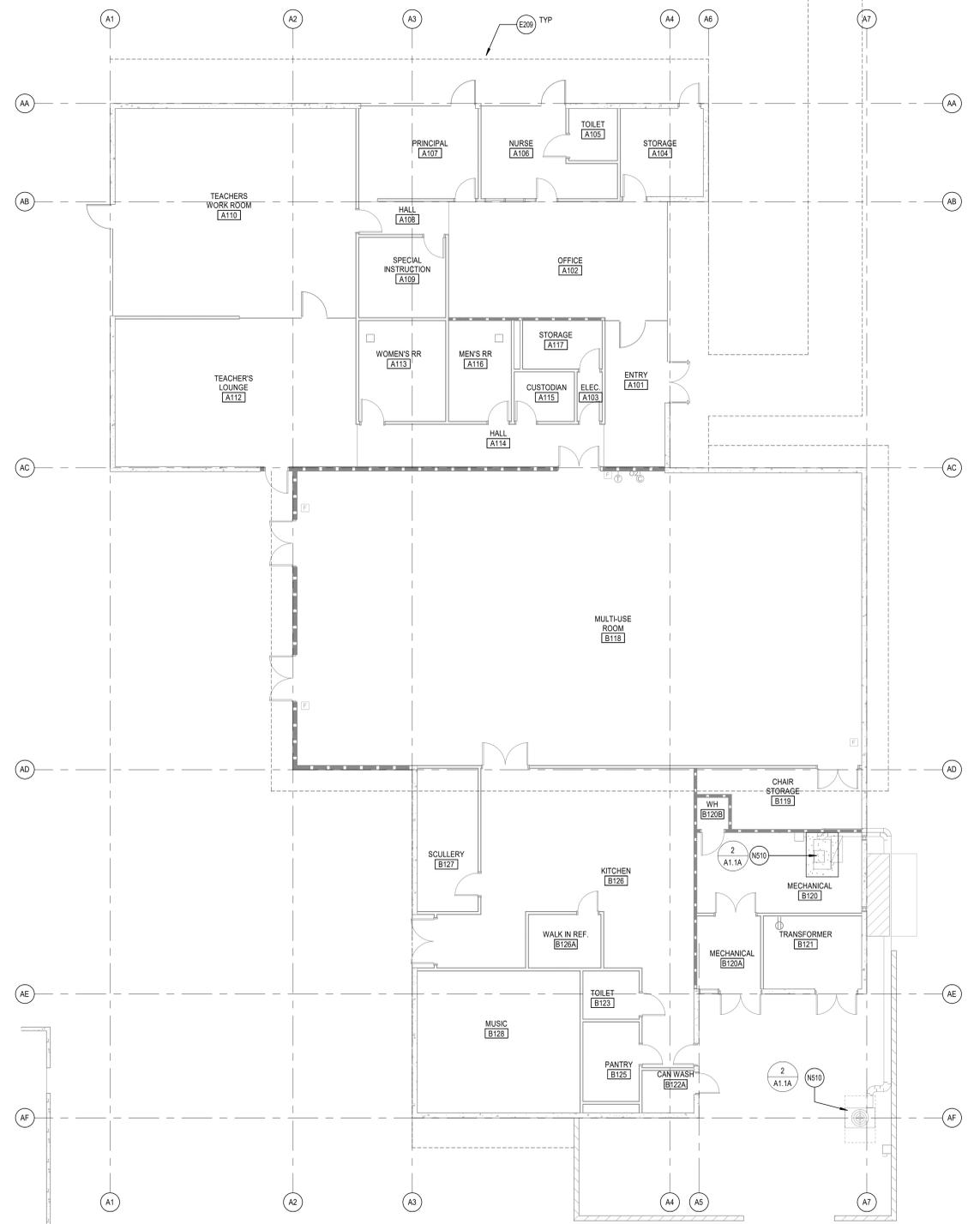
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2 MECH. ANCHORAGE AT CONC. CURB  
A1.1A / SCALE: 3" = 1'-0"



1 TYPICAL MECH EQUIPMENT CONCRETE PAD AT (E) SLAB ON GRADE  
A1.1A / SCALE: 1 1/2" = 1'-0"



ADMIN BUILDING A & B FLOOR PLAN  
SCALE: 1/8" = 1'-0"

REFERENCE KEYNOTES

N510 NEW MECH. EQUIPMENT. SEE MECHANICAL DWGS.

GENERAL ARCHITECTURAL NOTES

- ALL INTERIOR CMU WALLS SHALL REMAIN U.N.O.
- SCRIBE (E) GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

DEMOLITION GENERAL NOTES

- DEMOLITION NOTES APPLY TO ALL DEMOLITION SHEETS.
- THE CONTRACTOR SHALL:
- COORDINATE ALL DEMOLITION AND PHASING EFFORTS WITH THE ARCHITECT AND OWNER'S REPRESENTATIVE. EVERY EFFORT SHALL BE MADE TO MINIMIZE DISRUPTION OF OWNER'S OPERATIONS. EXCESSIVE NOISE OR VIBRATION SHALL BE PRE-APPROVED AND COORDINATED WITH THE OWNER'S REPRESENTATIVE. IN ALL CASES, PROVISIONS SHALL BE MADE FOR USER'S SAFETY.
  - COORDINATE ANY DISRUPTION OF UTILITY SERVICES WITH THE OWNER AND AS SPECIFIED.
  - CONSTRUCT TEMPORARY CONSTRUCTION PARTITIONS WITHIN THE EXISTING BUILDING WHICH OFFER A ONE-HOUR ENCLOSURE TO ISOLATE ANY DEMOLITION CONSTRUCTION WORK FROM THE GENERAL PUBLIC AND AS DEEMED NECESSARY BY THE OWNER AND CODE OFFICIAL HAVING JURISDICTION. COORDINATE LOCATIONS WITH THE OWNER AND MAINTAIN MEANS OF EGRESS THROUGHOUT THE WORK.
  - MAINTAIN A SECURE, WEATHER-TIGHT ENCLOSURE AT ALL TIMES.
  - VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
  - REMOVE IN THEIR ENTIRETY ALL EXISTING WALLS, DOORS, MILLWORK, PLUMBING FIXTURES, CEILINGS, SOFFITS, MARKERBOARDS, AND OTHER ITEMS, AS REQUIRED TO EXECUTE THE DEMOLITION/CONSTRUCTION WORK DESCRIBED BY THE DRAWINGS.
  - THE OWNER SHALL RESERVE THE RIGHT TO SALVAGE ANY MATERIALS.
  - PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT FROM DAMAGE DUE TO ANY DEMOLITION OR CONSTRUCTION-RELATED INCIDENT PERFORMED UNDER THIS CONTRACT.
  - REPAIR OR REPLACE ITEMS THAT ARE DAMAGED AS A RESULT OF DEMOLITION OR CONSTRUCTION TO MATCH EXISTING FINISH AND/OR CONDITION.
  - EXISTING MATERIALS SHALL NOT BE REUSED UNLESS NOTED OTHERWISE OR AS AUTHORIZED BY ARCHITECT.
  - VERIFY AND MAINTAIN THE LOCATION OF EXISTING POWER, COMMUNICATION AND DATA CABLES TO PREVENT INTERRUPTION OF THEIR SERVICE.
  - PATCH FLOOR, WALL AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR RE-ROUTING OF NEW OR EXISTING PIPING, DUCTWORK, CONDUIT, AND OTHER ITEMS, AS REQUIRED TO MAINTAIN FIRE-RESISTANCE-RATED SEPARATIONS. FINISH AS REQUIRED FOR NEW OR EXISTING ADJACENT SURFACES.
  - CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR FLOOR. PATCH AND FINISH AS REQUIRED TO MATCH NEW OR EXISTING ADJACENT SURFACES.
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  - WHERE CMU WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY REMOVING CMU IN TOOTH-IN PATTERN BOTH SIDES OF DEMOLITION FOR CONTRACTOR TO TOOTH-IN NEW CMU PATCHES.
  - WHERE PLASTER/STUD WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY SAWCUTTING ADJACENT PLASTER FINISH A MINIMUM OF 1'-0" BEYOND DEMOLITION.



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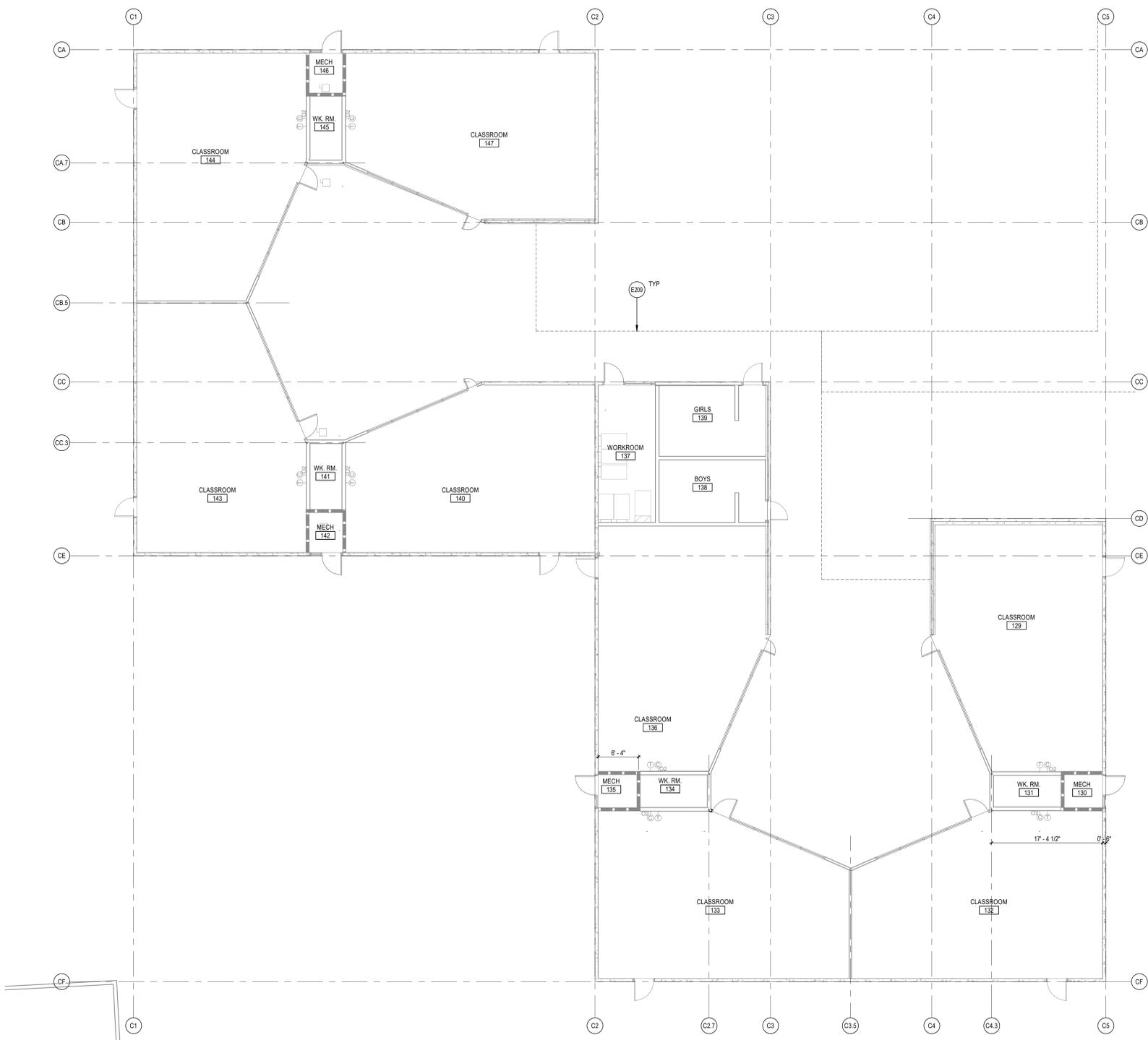
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75-22605-00  
DSA A#03-122231  
DSA File #: 19-25  
ADMIN BUILDINGS FLOOR PLAN

A1.1A

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**BUILDING C FLOOR PLAN**  
SCALE: 1/8" = 1'-0"

REFERENCE KEYNOTES

1. ALL INTERIOR CMU WALLS SHALL REMAIN U.N.O.
2. SCRIBE (E) GYPSUM WALL BOARD OF WALLS AND PARTITIONS TO IRREGULARITIES OF DECK ABOVE. SEAL TIGHTLY AROUND ALL PENETRATIONS.

GENERAL ARCHITECTURAL NOTES

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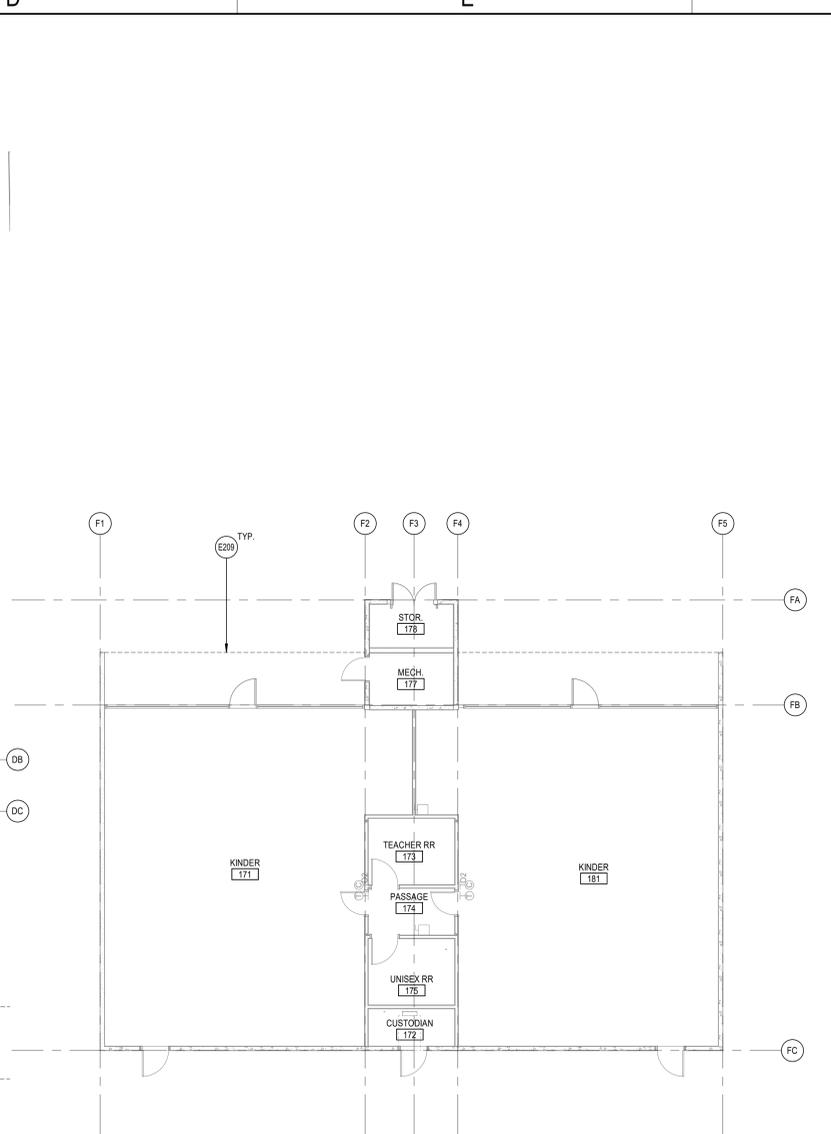
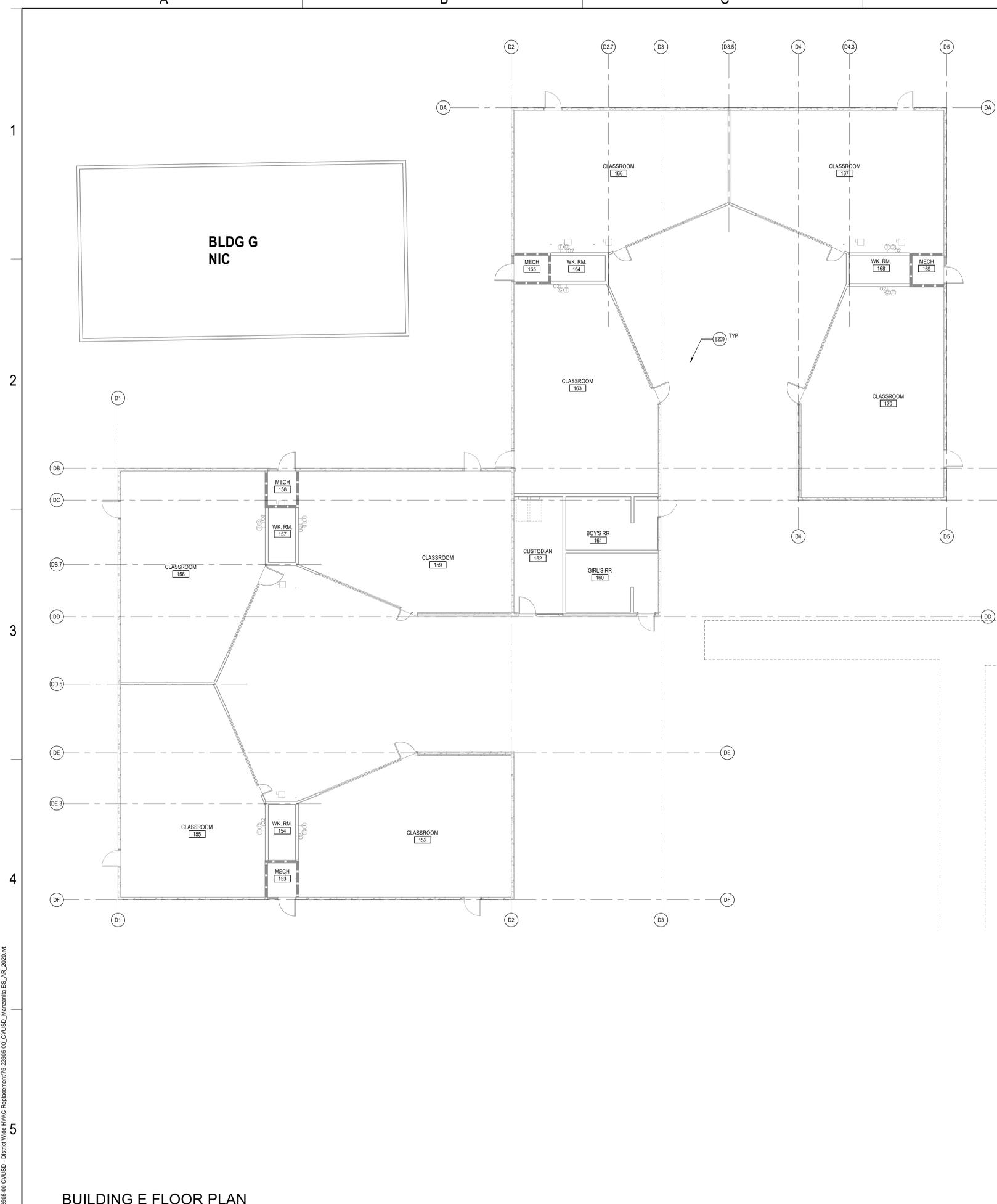
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75-22605-00  
DSA A#03-122231  
DSA File #: 19-25

BUILDING C  
FLOOR PLAN

A1.1C



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**BUILDING E & F  
FLOOR PLAN**

**A1.1E**

A

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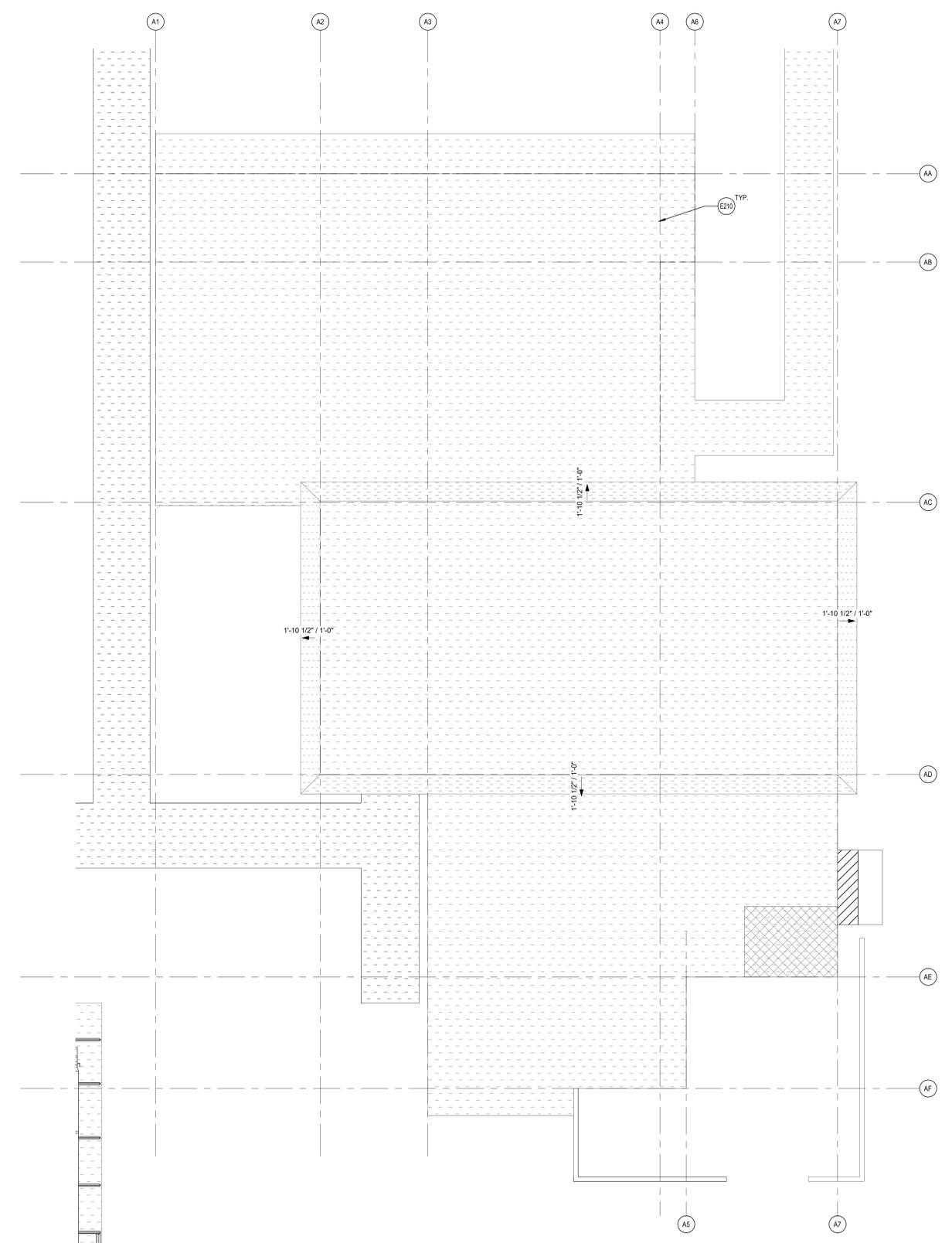
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REFERENCE KEYNOTES

E210 LINE OF (E) BLDG BELOW SHOWN DASHED

ROOF PLAN GENERAL NOTES

- A. ROOF PLAN GENERAL NOTES APPLY TO ALL ROOF PLAN SHEETS.
- B. ROOF SLOPES ARE CREATED BY SLOPING THE ROOF STRUCTURE UNLESS NOTED OTHERWISE. SEE STRUCTURAL DRAWINGS FOR ELEVATIONS OF THE HIGH AND LOW POINTS TO DETERMINE PROPER TAPER IN INSULATION.
- C. TAPERED INSULATION SHALL PROVIDE A MINIMUM OF 1/4-INCH PER FOOT OF SLOPE TO ROOF DRAINS, UNLESS NOTED OTHERWISE.
- D. AREAS MARKED WITH A HATCHED PATTERN INDICATE TAPERED INSULATION.
- E. ALL ROOF CURBS TO BE A MINIMUM OF 8 INCHES ABOVE ROOFING LEVELS. PROVIDE TAPERED INSULATION ROOF SADDLES AT ROOF CURBS TO PROVIDE DRAINAGE AROUND CURB.
- F. SEE STRUCTURAL DRAWINGS FOR FRAMING AROUND ROOF PENETRATIONS.
- G. COORDINATE THE SIZE AND LOCATION OF ROOF PENETRATIONS FOR MECHANICAL AND ELECTRICAL EQUIPMENT. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR PENETRATIONS NOT SHOWN ON THIS DRAWING.
- H. FLASH DRAINS, CURBS, VENTS AND STACKS PER MANUFACTURER'S RECOMMENDATIONS IF DETAIL NOT SHOWN ON DRAWINGS.
- I. NO ROOF PENETRATIONS ALLOWED WITHIN 4'-0" EACH SIDE OF FIREWALL. SEE CODE PLAN FOR FIRE WALL LOCATIONS.

DEMOLITION GENERAL NOTES

- DEMOLITION NOTES APPLY TO ALL DEMOLITION SHEETS.
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  - D. MAINTAIN A SECURE, WEATHER-TIGHT ENCLOSURE AT ALL TIMES.
  - E. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
  - F. REMOVE IN THEIR ENTIRETY ALL EXISTING WALLS, DOORS, MILLWORK, PLUMBING FIXTURES, CEILINGS, SOFFITS, MARKERBOARDS, AND OTHER ITEMS, AS REQUIRED TO EXECUTE THE DEMOLITION/CONSTRUCTION WORK DESCRIBED BY THE DRAWINGS.
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  - H. PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT FROM DAMAGE DUE TO ANY DEMOLITION OR CONSTRUCTION-RELATED INCIDENT PERFORMED UNDER THIS CONTRACT.
  - I. REPAIR OR REPLACE ITEMS THAT ARE DAMAGED AS A RESULT OF DEMOLITION OR CONSTRUCTION TO MATCH EXISTING FINISH AND/OR CONDITION.
  - J. EXISTING MATERIALS SHALL NOT BE REUSED UNLESS NOTED OTHERWISE OR AS AUTHORIZED BY ARCHITECT.
  - K. VERIFY AND MAINTAIN THE LOCATION OF EXISTING POWER, COMMUNICATION AND DATA CABLES TO PREVENT INTERRUPTION OF THEIR SERVICE.
  - L. PATCH FLOOR, WALL AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR RE-ROUTING OF NEW OR EXISTING PIPING, DUCTWORK, CONDUIT, AND OTHER ITEMS, AS REQUIRED TO MAINTAIN FIRE-RESISTANCE-RATED SEPARATIONS. FINISH AS REQUIRED FOR NEW OR EXISTING ADJACENT SURFACES.
  - M. CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR FLOOR. PATCH AND FINISH AS REQUIRED TO MATCH NEW OR EXISTING ADJACENT SURFACES.
  - N. SEE MECHANICAL AND ELECTRICAL DRAWINGS AND NOTES FOR FURTHER SEQUENCING AND SCOPE OF WORK.
  - O. AVOID ANY DISTURBANCE OF SOILS WITHIN THE ZONE OF INFLUENCE AROUND EXISTING FOOTINGS AND FLOOR SLABS AS DIRECTED BY GEOTECHNICAL ENGINEER.
  - P. WHERE CMU WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY REMOVING CMU IN TOOTH-IN PATTERN BOTH SIDES OF DEMOLITION FOR CONTRACTOR TO TOOTH-IN NEW CMU PATCHES.
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ADMIN BUILDING A & B ROOF PLAN  
SCALE: 1/8" = 1'-0"

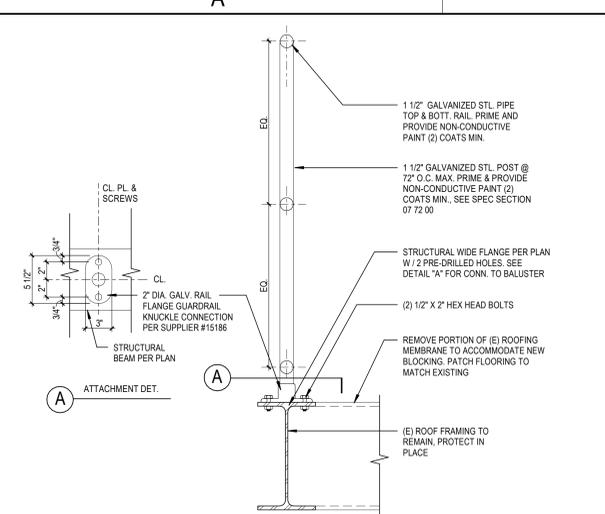


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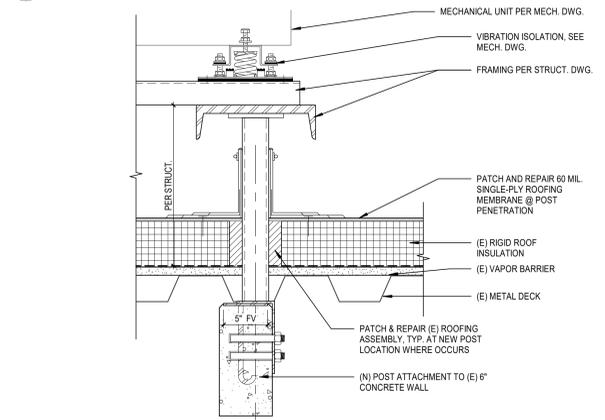
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ADMIN BUILDINGS  
ROOF PLAN

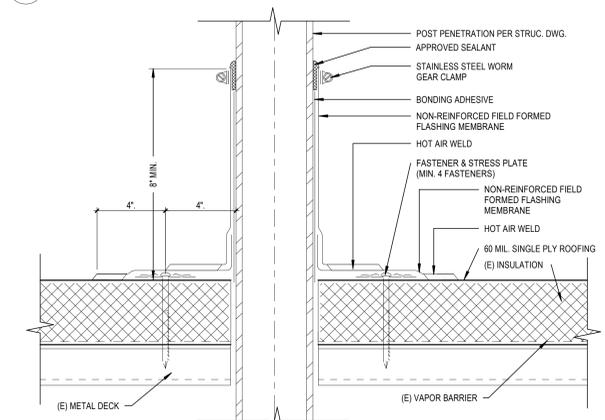
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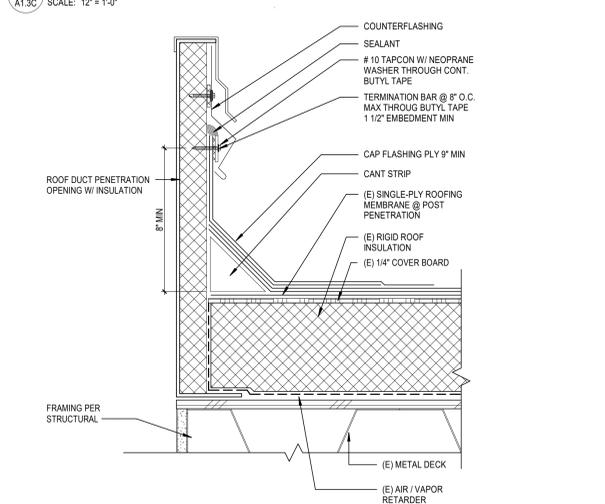
5 HVAC ROOF GUARDRAIL - STL FRAMING  
SCALE: 1 1/2" = 1'-0"



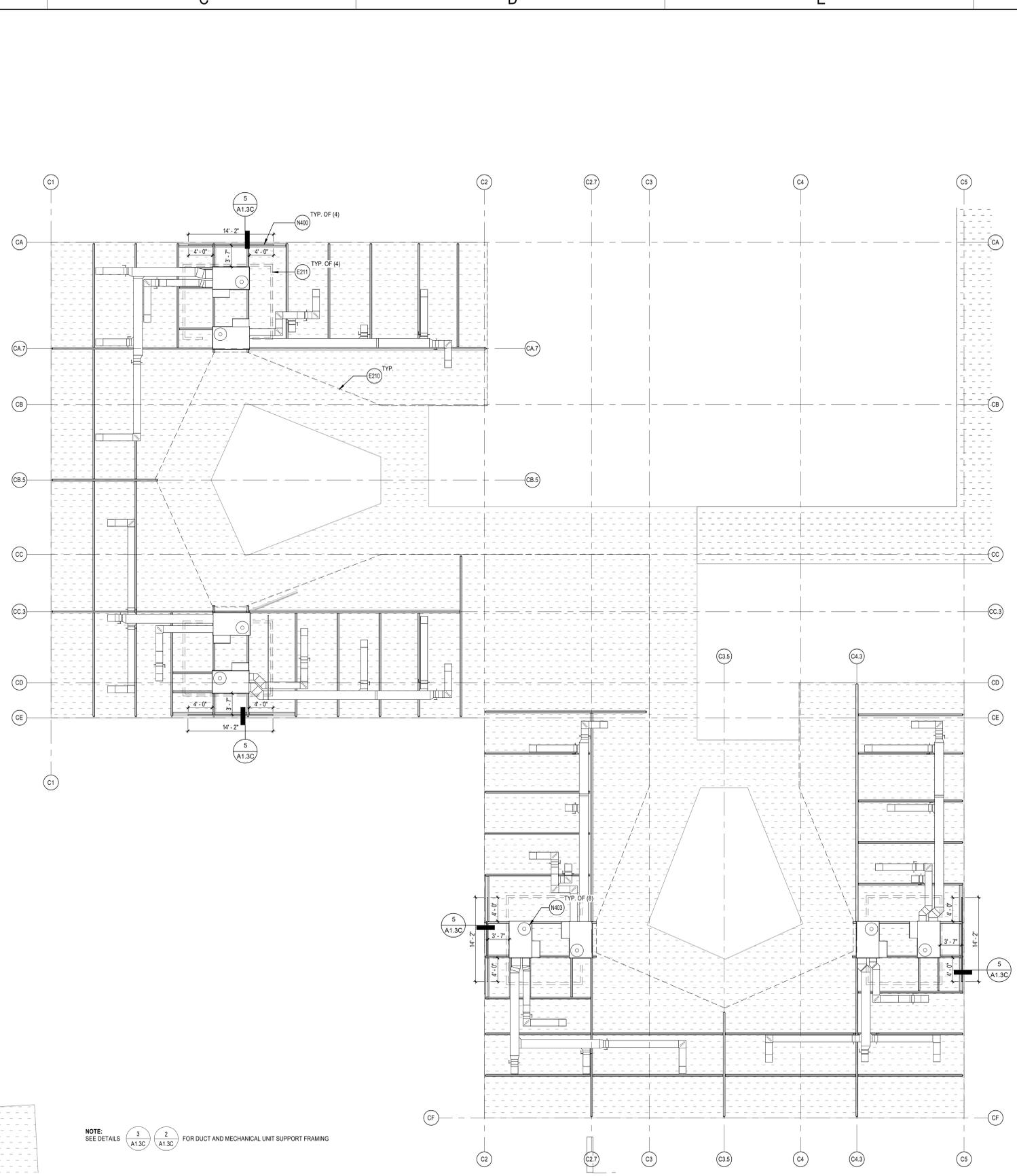
3 MECH UNIT/DUCT SUPPORT @ WALL  
SCALE: 1 1/2" = 1'-0"



2 FIELD FABRICATED PIPE FLASHING  
SCALE: 12" = 1'-0"



4 TYPICAL MECH. DUCT PENETRATION FLASHING  
SCALE: 3" = 1'-0"



BUILDING C ROOF PLAN  
SCALE: 1/8" = 1'-0"

REFERENCE KEYNOTES

- E210 LINE OF (E) BLDG BELOW SHOWN DASHED
- E211 DEMO (E) MECHANICAL SCREEN AND CAP ANY EXPOSED PIPES AND ACCESSORY ITEMS
- N400 NEW FREESTANDING METAL GUARDRAIL SYSTEM. SEE SUPPLIER FOR ANCHORAGE AND SPEC. SECTION 07 72 00
- N403 (N) MECHANICAL UNITS ATTACHED TO THE (E) UNIT CURB. SEE MECHANICAL DRAWING SHEET M1.3B & M1.3D

ROOF PLAN GENERAL NOTES

- A. ROOF PLAN GENERAL NOTES APPLY TO ALL ROOF PLAN SHEETS
- B. ROOF SLOPES ARE CREATED BY SLOPING THE ROOF STRUCTURE UNLESS NOTED OTHERWISE. SEE STRUCTURAL DRAWINGS FOR ELEVATIONS OF THE HIGH AND LOW POINTS TO DETERMINE PROPER TAPER IN INSULATION.
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- E. ALL ROOF CURBS TO BE A MINIMUM OF 8 INCHES ABOVE ROOFING LEVELS. PROVIDE TAPERED INSULATION ROOF SADDLES AT ROOF CURBS TO PROVIDE DRAINAGE AROUND CURB.
- F. SEE STRUCTURAL DRAWINGS FOR FRAMING AROUND ROOF PENETRATIONS
- G. COORDINATE THE SIZE AND LOCATION OF ROOF PENETRATIONS FOR MECHANICAL AND ELECTRICAL EQUIPMENT. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR PENETRATIONS NOT SHOWN ON THIS DRAWING.
- H. FLASH DRAINS, CURBS, VENTS AND STACKS PER MANUFACTURER'S RECOMMENDATIONS IF DETAIL NOT SHOWN ON DRAWINGS.
- I. NO ROOF PENETRATIONS ALLOWED WITHIN 4'-0" EACH SIDE OF FIREWALL. SEE CODE PLAN FOR FIRE WALL LOCATIONS.

DEMOLITION GENERAL NOTES

- DEMOLITION NOTES APPLY TO ALL DEMOLITION SHEETS.
- THE CONTRACTOR SHALL:
- A. COORDINATE ALL DEMOLITION AND PHASING EFFORTS WITH THE ARCHITECT AND OWNER'S REPRESENTATIVE. EVERY EFFORT SHALL BE MADE TO MINIMIZE DISRUPTION OF OWNER'S OPERATIONS. EXCESSIVE NOISE OR VIBRATION SHALL BE PRE-APPROVED AND COORDINATED WITH THE OWNER'S REPRESENTATIVE. IN ALL CASES, PROVISIONS SHALL BE MADE FOR USER'S SAFETY.
  - B. COORDINATE ANY DISRUPTION OF UTILITY SERVICES WITH THE OWNER AND AS SPECIFIED.
  - C. CONSTRUCT TEMPORARY CONSTRUCTION PARTITIONS WITHIN THE EXISTING BUILDING WHICH OFFER A ONE-HOUR ENCLOSURE TO ISOLATE ANY DEMOLITION/CONSTRUCTION WORK FROM THE GENERAL PUBLIC AND AS DEEMED NECESSARY BY THE OWNER AND CODE OFFICIAL HAVING JURISDICTION. COORDINATE LOCATIONS WITH THE OWNER AND MAINTAIN MEANS OF EGRESS THROUGHOUT THE WORK.
  - D. MAINTAIN A SECURE, WEATHER-TIGHT ENCLOSURE AT ALL TIMES.
  - E. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
  - F. REMOVE IN THEIR ENTIRETY ALL EXISTING WALLS, DOORS, MILLWORK, PLUMBING FIXTURES, CEILING, SOFFITS, MARKERBOARDS, AND OTHER ITEMS, AS REQUIRED TO EXECUTE THE DEMOLITION/CONSTRUCTION WORK DESCRIBED BY THE DRAWINGS.
  - G. THE OWNER SHALL RESERVE THE RIGHT TO SALVAGE ANY MATERIALS.
  - H. PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT FROM DAMAGE DUE TO ANY DEMOLITION OR CONSTRUCTION-RELATED INCIDENT PERFORMED UNDER THIS CONTRACT.
  - I. REPAIR OR REPLACE ITEMS THAT ARE DAMAGED AS A RESULT OF DEMOLITION OR CONSTRUCTION TO MATCH EXISTING FINISH AND/OR CONDITION.
  - J. EXISTING MATERIALS SHALL NOT BE REUSED UNLESS NOTED OTHERWISE OR AS AUTHORIZED BY ARCHITECT.
  - K. VERIFY AND MAINTAIN THE LOCATION OF EXISTING POWER, COMMUNICATION AND DATA CABLES TO PREVENT INTERRUPTION OF THEIR SERVICE.
  - L. PATCH FLOOR, WALL AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR RE-ROUTING OF NEW OR EXISTING PIPING, DUCTWORK, CONDUIT, AND OTHER ITEMS, AS REQUIRED TO MAINTAIN FIRE-RESISTANCE-RATED SEPARATIONS. FINISH AS REQUIRED FOR NEW OR EXISTING ADJACENT SURFACES.
  - M. CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR FLOOR. PATCH AND FINISH AS REQUIRED TO MATCH NEW OR EXISTING ADJACENT SURFACES.
  - N. SEE MECHANICAL AND ELECTRICAL DRAWINGS AND NOTES FOR FURTHER SEQUENCING AND SCOPE OF WORK.
  - O. AVOID ANY DISTURBANCE OF SOILS WITHIN THE ZONE OF INFLUENCE AROUND EXISTING FOOTINGS AND FLOOR SLABS AS DIRECTED BY GEOTECHNICAL ENGINEER.
  - P. WHERE CMU WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY REMOVING CMU IN TOOTH-IN PATTERN BOTH SIDES OF DEMOLITION FOR CONTRACTOR TO TOOTH-IN NEW CMU PATCHES.
  - Q. WHERE PLASTER/STUD WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY SAWCUTTING ADJACENT PLASTER FINISH A MINIMUM OF 1'-0" BEYOND DEMOLITION.



MANZANITA ELEMENTARY SCHOOL  
COVID 19- COVINA VALLEY DISTRICT HVAC REPLACEMENT  
4131 N INDIANA AVE COVINA, CA 91722

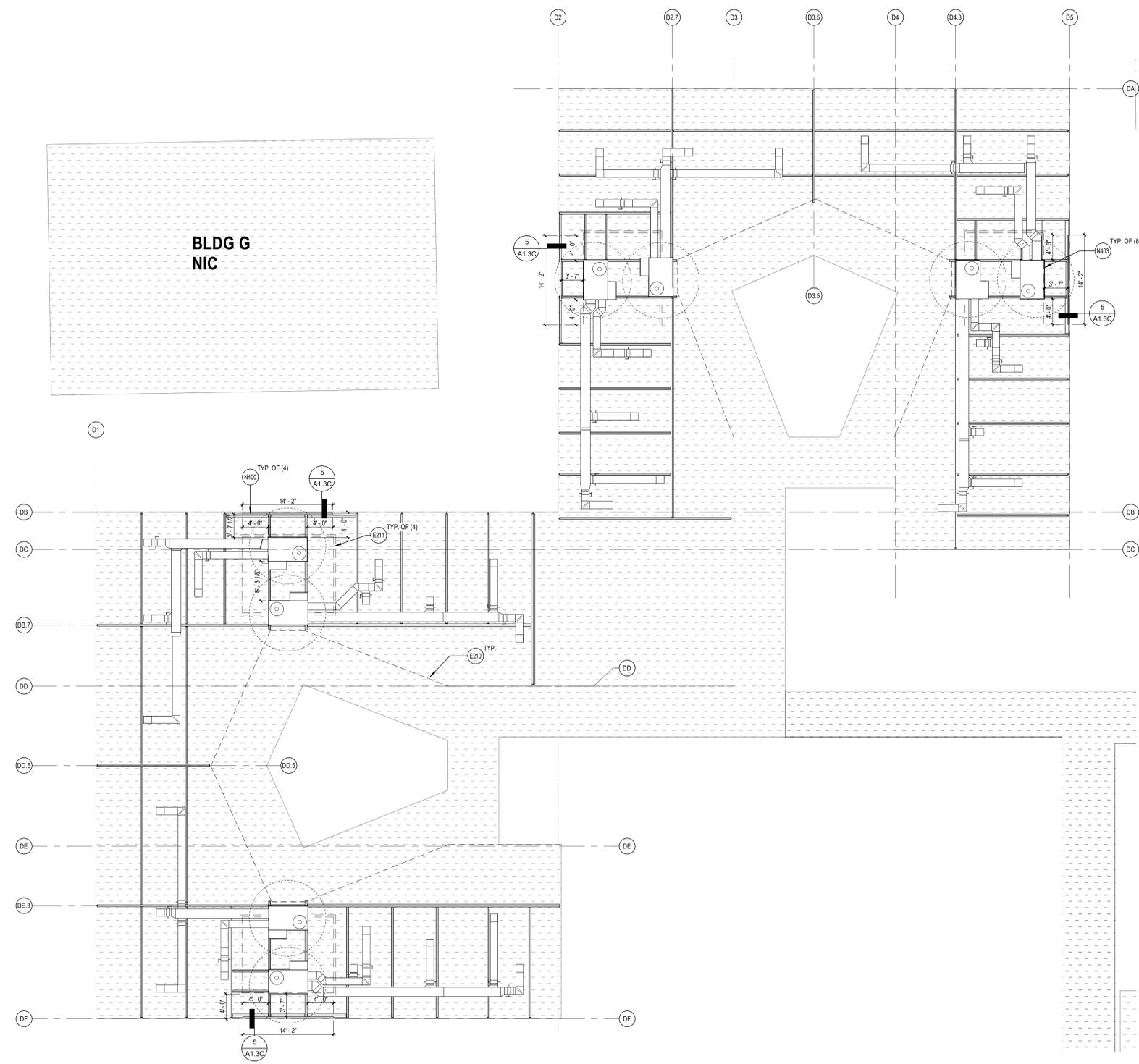
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REVISIONS

75-22605-00  
DSA A#03-12231  
DSA File #: 19-25  
BUILDING C ROOF PLAN

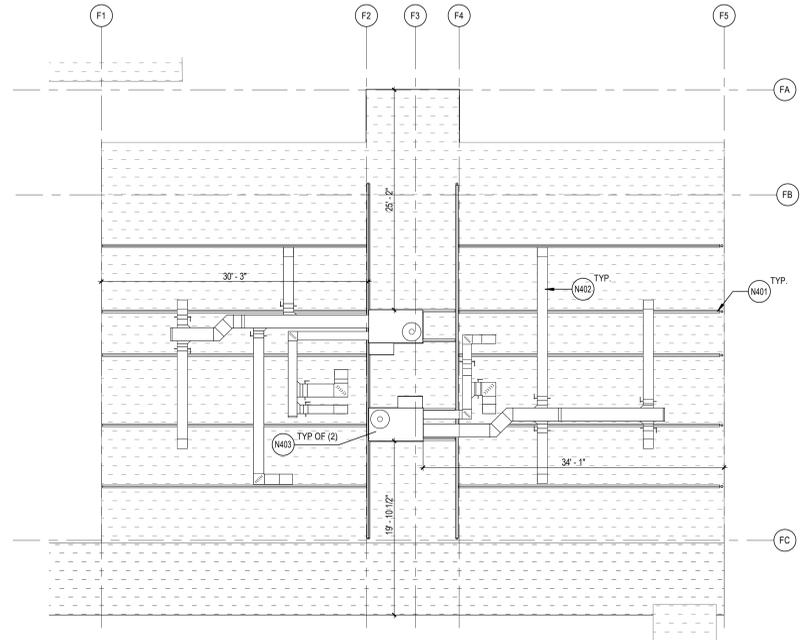
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**BLDG G  
NIC**



**BUILDING E ROOF PLAN**  
SCALE: 1/8" = 1'-0"



**BUILDING F ROOF PLAN**  
SCALE: 1/8" = 1'-0"

**REFERENCE KEYNOTES**

- E210 LINE OF (E) BLDG BELOW SHOWN DASHED
- E211 DEMO (E) MECHANICAL SCREEN AND CAP ANY EXPOSED PIPES AND ACCESSORY ITEMS
- N400 NEW FREESTANDING METAL GUARDRAIL SYSTEM. SEE SUPPLIER FOR ANCHORAGE AND SPEC SECTION 07 72 00
- N401 NEW STRUCTURAL POST AND BEAM SUPPORT FRAMING. SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION
- N402 NEW DUCTWORK. SEE MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION
- N403 (N) MECHANICAL UNITS ATTACHED TO THE (E) UNIT CURB. SEE MECHANICAL DRAWING SHEET M1.3B & M1.3D

**ROOF PLAN GENERAL NOTES**

- A. ROOF PLAN GENERAL NOTES APPLY TO ALL ROOF PLAN SHEETS.
- B. ROOF SLOPES ARE CREATED BY SLOPING THE ROOF STRUCTURE UNLESS NOTED OTHERWISE. SEE STRUCTURAL DRAWINGS FOR ELEVATIONS OF THE HIGH AND LOW POINTS TO DETERMINE PROPER TAPER IN INSULATION.
- C. TAPERED INSULATION SHALL PROVIDE A MINIMUM OF 1/4-INCH PER FOOT OF SLOPE TO ROOF DRAINS, UNLESS NOTED OTHERWISE.
- D. AREAS MARKED WITH A HATCHED PATTERN INDICATE TAPERED INSULATION.
- E. ALL ROOF CURBS TO BE A MINIMUM OF 8 INCHES ABOVE ROOFING LEVELS. PROVIDE TAPERED INSULATION ROOF SADDLES AT ROOF CURBS TO PROVIDE DRAINAGE AROUND CURB.
- F. SEE STRUCTURAL DRAWINGS FOR FRAMING AROUND ROOF PENETRATIONS.
- G. COORDINATE THE SIZE AND LOCATION OF ROOF PENETRATIONS FOR MECHANICAL AND ELECTRICAL EQUIPMENT. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR PENETRATIONS NOT SHOWN ON THIS DRAWING.
- H. FLASH DRAINS, CURBS, VENTS AND STACKS PER MANUFACTURER'S RECOMMENDATIONS IF DETAIL NOT SHOWN ON DRAWINGS.
- I. NO ROOF PENETRATIONS ALLOWED WITHIN 4'-0" EACH SIDE OF FIREWALL. SEE CODE PLAN FOR FIRE WALL LOCATIONS.

**DEMOLITION GENERAL NOTES**

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  - B. COORDINATE ANY DISRUPTION OF UTILITY SERVICES WITH THE OWNER AND AS SPECIFIED.
  - C. CONSTRUCT TEMPORARY CONSTRUCTION PARTITIONS WITHIN THE EXISTING BUILDING WHICH OFFER A ONE-HOUR ENCLOSURE TO ISOLATE ANY DEMOLITION/CONSTRUCTION WORK FROM THE GENERAL PUBLIC AND AS DEEMED NECESSARY BY THE OWNER AND CODE OFFICIAL HAVING JURISDICTION. COORDINATE LOCATIONS WITH THE OWNER AND MAINTAIN MEANS OF EGRESS THROUGHOUT THE WORK.
  - D. MAINTAIN A SECURE, WEATHER-TIGHT ENCLOSURE AT ALL TIMES.
  - E. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
  - F. REMOVE IN THEIR ENTIRETY ALL EXISTING WALLS, DOORS, MILLWORK, PLUMBING FIXTURES, CEILINGS, SOFFITS, MARKERBOARDS, AND OTHER ITEMS, AS REQUIRED TO EXECUTE THE DEMOLITION/CONSTRUCTION WORK DESCRIBED BY THE DRAWINGS.
  - G. THE OWNER SHALL RESERVE THE RIGHT TO SALVAGE ANY MATERIALS.
  - H. PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT FROM DAMAGE DUE TO ANY DEMOLITION OR CONSTRUCTION-RELATED INCIDENT PERFORMED UNDER THIS CONTRACT.
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  - L. PATCH FLOOR, WALL AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR RE-ROUTING OF NEW OR EXISTING PIPING, DUCTWORK, CONDUIT, AND OTHER ITEMS, AS REQUIRED TO MAINTAIN FIRE-RESISTANCE-RATED SEPARATIONS. FINISH AS REQUIRED FOR NEW OR EXISTING ADJACENT SURFACES.
  - M. CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR FLOOR. PATCH AND FINISH AS REQUIRED TO MATCH NEW OR EXISTING ADJACENT SURFACES.
  - N. SEE MECHANICAL AND ELECTRICAL DRAWINGS AND NOTES FOR FURTHER SEQUENCING AND SCOPE OF WORK.
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  - P. WHERE CMU WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY REMOVING CMU IN TOOTH-IN PATTERN BOTH SIDES OF DEMOLITION FOR CONTRACTOR TO TOOTH-IN NEW CMU PATCHES.
  - Q. WHERE PLASTER/STUD WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY SAWCUTTING ADJACENT PLASTER FINISH A MINIMUM OF 1'-0" BEYOND DEMOLITION.



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COVID 19 - COVINA VALLEY DISTRICT HVAC REPLACEMENT  
4131 N INDIANA AVE COVINA, CA 91722

100%  
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DOCUMENTS  
11/02/2022  
REVISIONS

75-22605-00  
DSA A#03-122231  
DSA File #: 19-25  
**BUILDING E & F  
ROOF PLAN**

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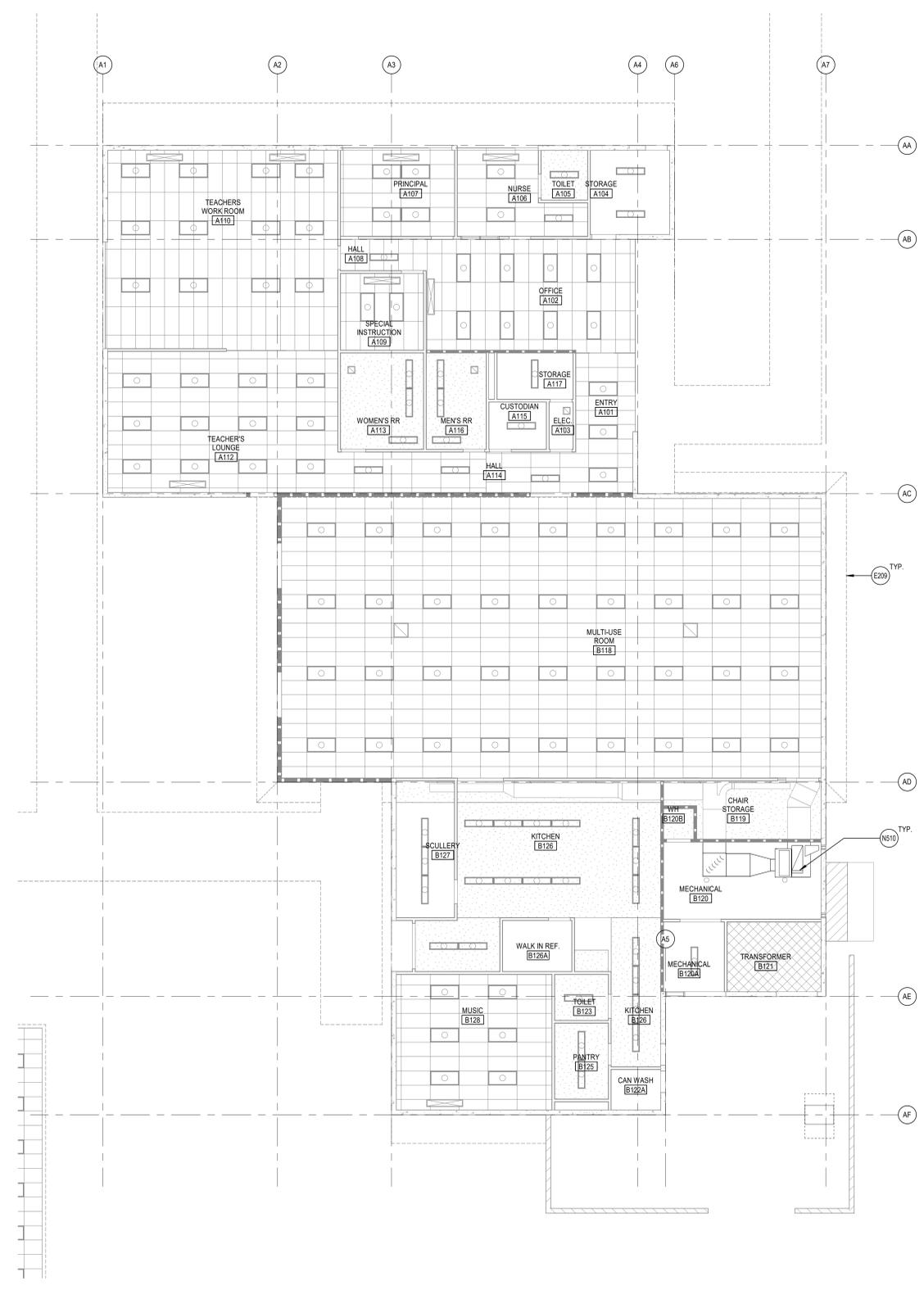
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**REFERENCE KEYNOTES**  
 E209 LINE OF (E) ROOF ABOVE SHOWN DASHED  
 N510 NEW MECH. EQUIPMENT. SEE MECHANICAL DWGS.

**REFLECTED CEILING PLAN  
 GENERAL NOTES**

- A. REFLECTED CEILING PLAN GENERAL NOTES APPLY TO ALL REFLECTED CEILING PLAN SHEETS.
- B. ALL CEILING GRID/PANELS SHALL BE CENTERED IN EACH ROOM UNLESS NOTED OTHERWISE.
- C. (E) CEILING HEIGHTS ARE TO REMAIN U.N.O. REFLECTED CEILING PLANS ARE MEASURED FROM THE FINISHED FLOOR OF THE ROOM.
- D. IN ACOUSTICAL CEILING PANELS WITH SCORE IN THE CENTER, CENTER DEVICES IN ONE HALF OF THE TILE. DO NOT LOCATE ON THE SCORE. FOR ACP WITH MULTIPLE SCORED PATTERNS, COORDINATE LOCATION WITH THE ARCHITECT.
- E. PROVIDE SUSPENSION SYSTEM AROUND ELECTRICAL FIXTURES, MECHANICAL GRILLES, DIFFUSERS, AND OTHER CEILING MOUNTED DEVICES. AT ACOUSTICAL PANEL CEILINGS.
- F. ALL DIMENSIONS ON REFLECTED CEILING PLANS ARE ACTUAL AND ARE TO THE FOLLOWING UNLESS NOTED OTHERWISE:
  - a. FACE OF FINISHED WALL
  - b. FACE OF FINISHED BULKHEADS
  - c. CENTERLINE OF COLUMNS
  - d. CENTERLINE OF TEES
- G. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, COORDINATE EXACT LOCATIONS OF MECHANICAL GRILLES, DIFFUSERS, DUCTWORK AND ELECTRICAL FIXTURES WITH EACH REPRESENTATIVE SUBCONTRACTOR.

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  - D. MAINTAIN A SECURE, WEATHER-TIGHT ENCLOSURE AT ALL TIMES.
  - E. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
  - F. REMOVE IN THEIR ENTIRETY ALL EXISTING WALLS, DOORS, MILLWORK, PLUMBING FIXTURES, CEILINGS, SOFFITS, MARKERBOARDS, AND OTHER ITEMS, AS REQUIRED TO EXECUTE THE DEMOLITION/CONSTRUCTION WORK DESCRIBED BY THE DRAWINGS.
  - G. THE OWNER SHALL RESERVE THE RIGHT TO SALVAGE ANY MATERIALS.
  - H. PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT FROM DAMAGE DUE TO ANY DEMOLITION OR CONSTRUCTION-RELATED INCIDENT PERFORMED UNDER THIS CONTRACT.
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  - K. VERIFY AND MAINTAIN THE LOCATION OF EXISTING POWER, COMMUNICATION AND DATA CABLES TO PREVENT INTERRUPTION OF THEIR SERVICE.
  - L. PATCH FLOOR, WALL AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR RE-ROUTING OF NEW OR EXISTING PIPING, DUCTWORK, CONDUIT, AND OTHER ITEMS, AS REQUIRED TO MAINTAIN FIRE-RESISTANCE-RATED SEPARATIONS. FINISH AS REQUIRED FOR NEW OR EXISTING ADJACENT SURFACES.
  - M. CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR FLOOR. PATCH AND FINISH AS REQUIRED TO MATCH NEW OR EXISTING ADJACENT SURFACES.
  - N. SEE MECHANICAL AND ELECTRICAL DRAWINGS AND NOTES FOR FURTHER SEQUENCING AND SCOPE OF WORK.
  - O. AVOID ANY DISTURBANCE OF SOILS WITHIN THE ZONE OF INFLUENCE AROUND EXISTING FOOTINGS AND FLOOR SLABS AS DIRECTED BY GEOTECHNICAL ENGINEER.
  - P. WHERE CMU WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY REMOVING CMU IN TOOTH-IN PATTERN BOTH SIDES OF DEMOLITION FOR CONTRACTOR TO TOOTH-IN NEW CMU PATCHES.
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**MANZANITA ELEMENTARY SCHOOL**  
 COVID 19- COVINA VALLEY DISTRICT HVAC REPLACEMENT  
 4131 N. NORRA AVE. COVINA, CA 91722

100%  
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 DOCUMENTS  
 11/02/2022  
 REVISIONS

75-22605-00  
 DSA A#03-12231  
 DSA File #: 19-25  
 ADMIN BUILDINGS  
 REFLECTED  
 CEILING PLAN

A3.1A

**ADMIN BUILDING A & B REFLECTED CEILING PLAN**  
 SCALE: 1/8" = 1'-0"

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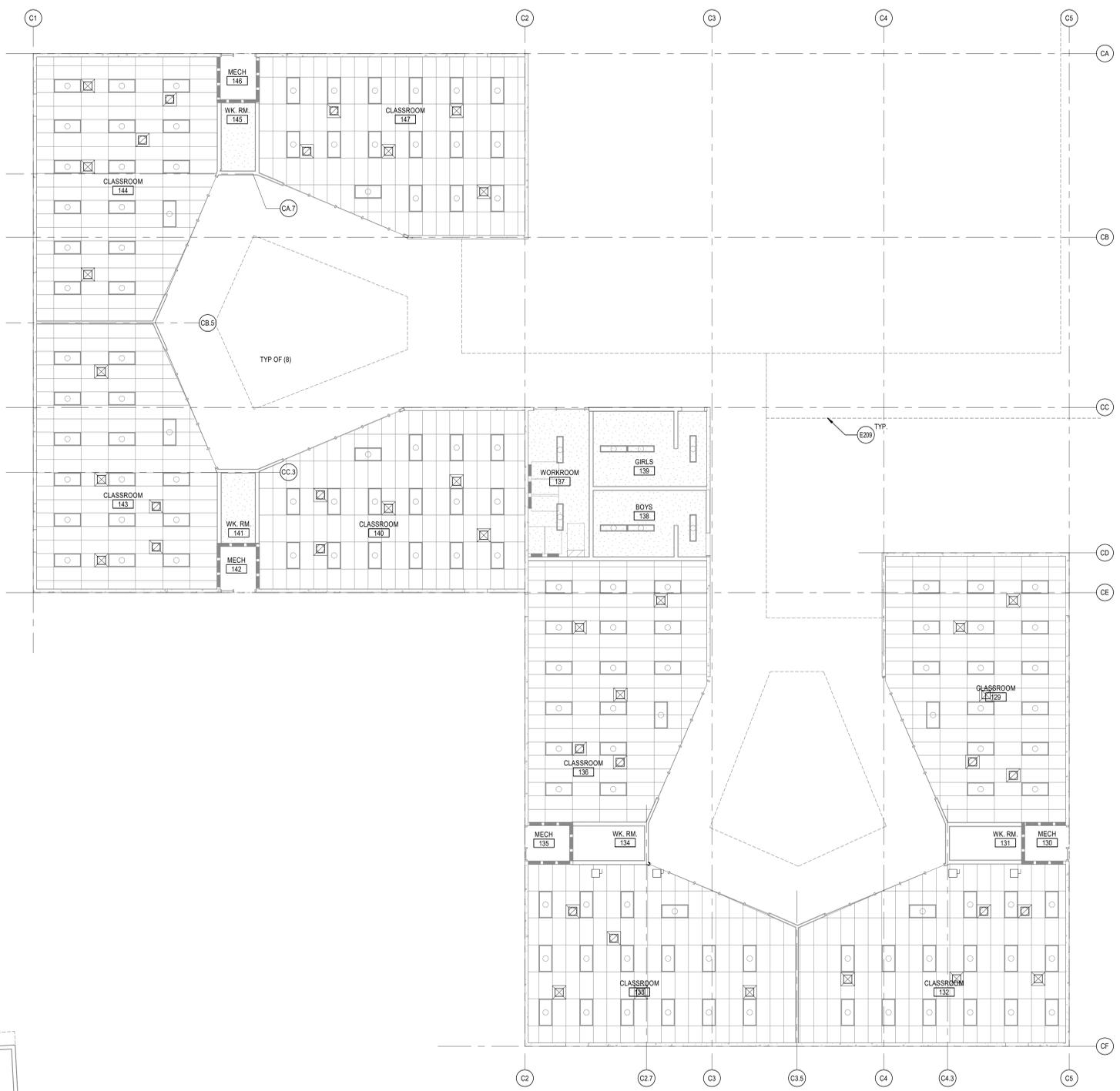
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**BUILDING C REFLECTED CEILING PLAN**  
SCALE: 1/8" = 1'-0"

**REFERENCE KEYNOTES**

E209 LINE OF (E) ROOF ABOVE SHOWN DASHED

**REFLECTED CEILING PLAN GENERAL NOTES**

- A. REFLECTED CEILING PLAN GENERAL NOTES APPLY TO ALL REFLECTED CEILING PLAN SHEETS.
- B. ALL CEILING GRID/PANELS SHALL BE CENTERED IN EACH ROOM UNLESS NOTED OTHERWISE.
- C. (E) CEILING HEIGHTS ARE TO REMAIN U.N.O. REFLECTED CEILING PLANS ARE MEASURED FROM THE FINISHED FLOOR OF THE ROOM.
- D. IN ACOUSTICAL CEILING PANELS WITH SCORE IN THE CENTER, CENTER DEVICES IN ONE HALF OF THE TILE. DO NOT LOCATE ON THE SCORE. FOR ACP WITH MULTIPLE SCORED PATTERNS, COORDINATE LOCATION WITH THE ARCHITECT.
- E. PROVIDE SUSPENSION SYSTEM AROUND ELECTRICAL FIXTURES, MECHANICAL GRILLES, DIFFUSERS, AND OTHER CEILING MOUNTED DEVICES. AT ACOUSTICAL PANEL CEILINGS, ALL DIMENSIONS ON REFLECTED CEILING PLANS ARE ACTUAL AND ARE TO THE FOLLOWING UNLESS NOTED OTHERWISE:
  - a. FACE OF FINISHED WALL
  - b. FACE OF FINISHED BULKHEADS
  - c. CENTERLINE OF COLUMNS
  - d. CENTERLINE OF TEES
- G. IN AREAS WITH EXPOSED STRUCTURE CEILINGS, COORDINATE EXACT LOCATIONS OF MECHANICAL GRILLES, DIFFUSERS, DUCTWORK AND ELECTRICAL FIXTURES WITH EACH REPRESENTATIVE SUBCONTRACTOR.

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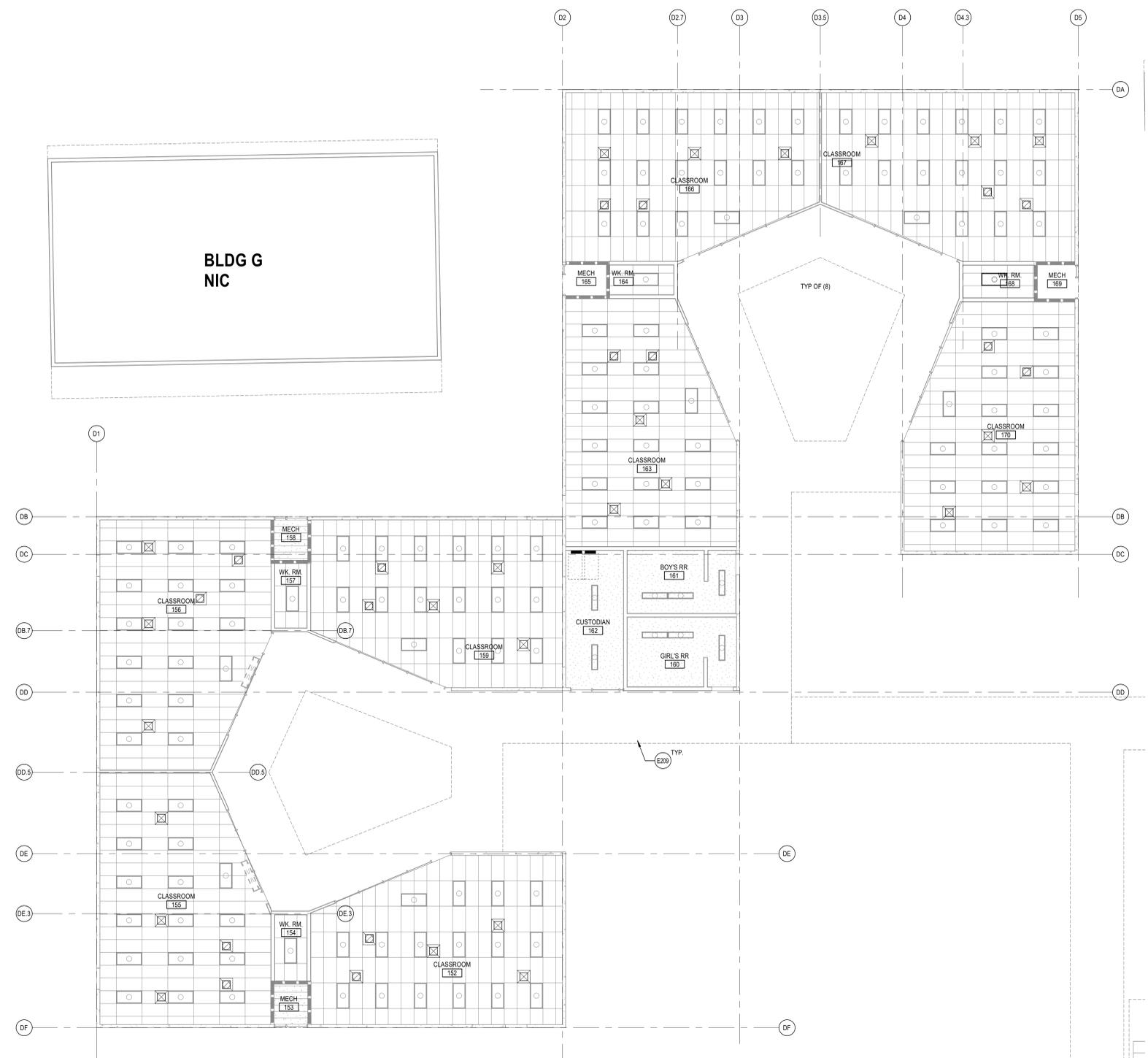
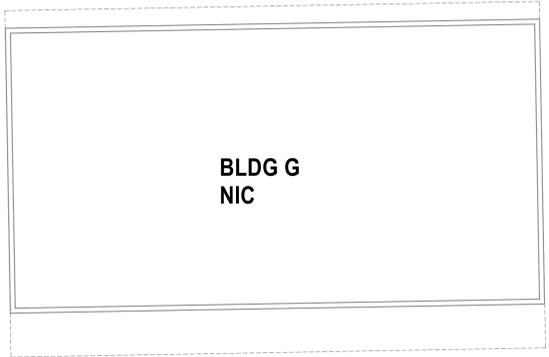
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DSA A#03-122231  
DSA File #: 19-25  
**BUILDING C REFLECTED CEILING PLAN**

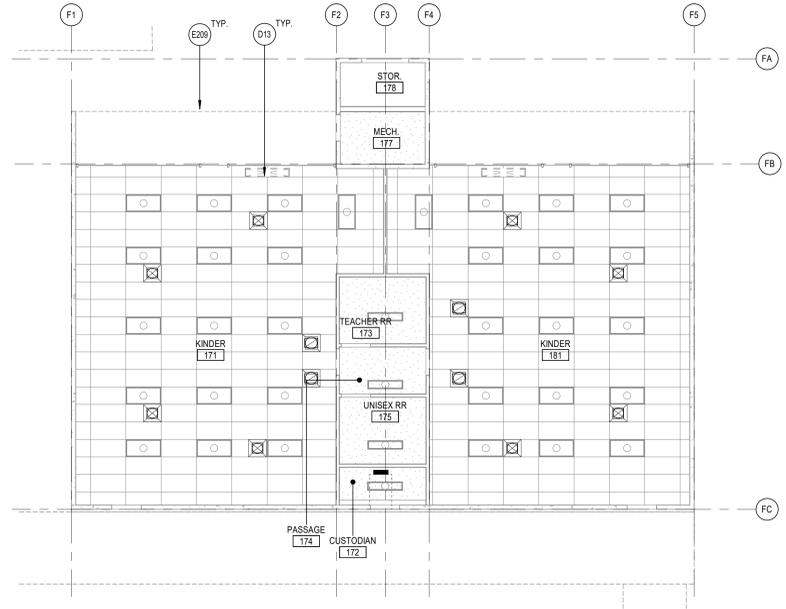
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**BUILDING E REFLECTED CEILING PLAN**  
SCALE: 1/8" = 1'-0"



**BUILDING F REFLECTED CEILING PLAN**  
SCALE: 1/8" = 1'-0"

**REFERENCE KEYNOTES**

- D13 REMOVE (E) CEILING MOUNTED FAN COIL UNIT - SEE MECHANICAL DRAWINGS
- E209 LINE OF (E) ROOF ABOVE SHOWN DASHED

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- DEMOLITION NOTES APPLY TO ALL DEMOLITION SHEETS.
- THE CONTRACTOR SHALL:
- A. COORDINATE ALL DEMOLITION AND PHASING EFFORTS WITH THE ARCHITECT AND OWNER'S REPRESENTATIVE. EVERY EFFORT SHALL BE MADE TO MINIMIZE DISRUPTION OF OWNER'S OPERATIONS. EXCESSIVE NOISE OR VIBRATION SHALL BE PRE-APPROVED AND COORDINATED WITH THE OWNER'S REPRESENTATIVE. IN ALL CASES, PROVISIONS SHALL BE MADE FOR USER'S SAFETY.
  - B. COORDINATE ANY DISRUPTION OF UTILITY SERVICES WITH THE OWNER AND AS SPECIFIED.
  - C. CONSTRUCT TEMPORARY CONSTRUCTION PARTITIONS WITHIN THE EXISTING BUILDING WHICH OFFER A ONE-HOUR ENCLOSURE TO ISOLATE ANY DEMOLITION/CONSTRUCTION WORK FROM THE GENERAL PUBLIC AND AS DEEMED NECESSARY BY THE OWNER AND CODE OFFICIAL HAVING JURISDICTION. COORDINATE LOCATIONS WITH THE OWNER AND MAINTAIN MEANS OF EGRESS THROUGHOUT THE WORK.
  - D. MAINTAIN A SECURE, WEATHER-TIGHT ENCLOSURE AT ALL TIMES.
  - E. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS AND ELEVATIONS AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.
  - F. REMOVE IN THEIR ENTIRETY ALL EXISTING WALLS, DOORS, MILLWORK, PLUMBING FIXTURES, CEILINGS, SOFFITS, MARKERBOARDS, AND OTHER ITEMS, AS REQUIRED TO EXECUTE THE DEMOLITION/CONSTRUCTION WORK DESCRIBED BY THE DRAWINGS.
  - G. THE OWNER SHALL RESERVE THE RIGHT TO SALVAGE ANY MATERIALS.
  - H. PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT FROM DAMAGE DUE TO ANY DEMOLITION OR CONSTRUCTION-RELATED INCIDENT PERFORMED UNDER THIS CONTRACT.
  - I. REPAIR OR REPLACE ITEMS THAT ARE DAMAGED AS A RESULT OF DEMOLITION OR CONSTRUCTION TO MATCH EXISTING FINISH AND/OR CONDITION.
  - J. EXISTING MATERIALS SHALL NOT BE REUSED UNLESS NOTED OTHERWISE OR AS AUTHORIZED BY ARCHITECT.
  - K. VERIFY AND MAINTAIN THE LOCATION OF EXISTING POWER, COMMUNICATION AND DATA CABLES TO PREVENT INTERRUPTION OF THEIR SERVICE.
  - L. PATCH FLOOR, WALL AND CEILING PENETRATIONS RESULTING FROM REMOVAL OR RE-ROUTING OF NEW OR EXISTING PIPING, DUCTWORK, CONDUIT, AND OTHER ITEMS, AS REQUIRED TO MAINTAIN FIRE-RESISTANCE-RATED SEPARATIONS. FINISH AS REQUIRED FOR NEW OR EXISTING ADJACENT SURFACES.
  - M. CAP ALL DISCONNECTED MECHANICAL PIPING LINES WITHIN THE WALL OR FLOOR. PATCH AND FINISH AS REQUIRED TO MATCH NEW OR EXISTING ADJACENT SURFACES.
  - N. SEE MECHANICAL AND ELECTRICAL DRAWINGS AND NOTES FOR FURTHER SEQUENCING AND SCOPE OF WORK.
  - O. AVOID ANY DISTURBANCE OF SOILS WITHIN THE ZONE OF INFLUENCE AROUND EXISTING FOOTINGS AND FLOOR SLABS AS DIRECTED BY GEOTECHNICAL ENGINEER.
  - P. WHERE CMU WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY REMOVING CMU IN TOOTH-IN PATTERN BOTH SIDES OF DEMOLITION FOR CONTRACTOR TO TOOTH-IN NEW CMU PATCHES.
  - Q. WHERE PLASTER/STUD WALLS ARE INDICATED TO BE REMOVED, PREPARE ADJACENT WALLS TO RECEIVE NEW PATCH/FINISH BY SAWCUTTING ADJACENT PLASTER FINISH A MINIMUM OF 1'-0" BEYOND DEMOLITION.



**MANZANITA ELEMENTARY SCHOOL**  
COVID 19 - COVINA VALLEY DISTRICT HVAC REPLACEMENT  
4131 N. NORRA AVE. COVINA, CA 91722

100%  
CONSTRUCTION  
DOCUMENTS  
11/02/2022  
REVISIONS

75-22605-00  
DSA A#03-122231  
DSA File #: 19-25  
**BUILDING E & F  
REFLECTED  
CEILING PLAN**

**A3.1E**

Autodesk Docu75-22605-00 CVUSD - District Web - HVAC Replacement/75-22605-00 CVUSD - Manzanita ES\_AR\_2022.rvt  
 11/2/2022 9:35:50 AM

**GENERAL**

- THE DRAWINGS REPRESENT THE FINISHED STRUCTURE, NOT THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY GUYING AND BRACING REQUIRED TO ERECT AND HOLD THE STRUCTURE IN PROPER ALIGNMENT UNTIL ALL STRUCTURAL WORK AND CONNECTIONS HAVE BEEN COMPLETED. THE RESEARCH, DESIGN, SAFETY, ADEQUACY, AND INSPECTION OF ERECTION BRACING, SHORING, GUYING, TEMPORARY SUPPORTS, ETC., IS THE RESPONSIBILITY OF THE CONTRACTOR.
- THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S MEANS AND METHODS. SEQUENCES OF CONSTRUCTION, OR CONSTRUCTION TECHNIQUES USED TO PERFORM THE WORK, OBSERVATION VISITS TO THE SITE WILL NOT INVOLVE REVIEW OF THESE ITEMS.
- THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S SAFETY PROGRAM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH ALL SAFETY PRECAUTIONS AND REGULATIONS DURING THE WORK. THE ENGINEER WILL NOT ADVISE ON NOR ISSUE DIRECTIONS AS TO SAFETY PRECAUTIONS AND PROGRAMS. OBSERVATION VISITS TO THE SITE WILL NOT INVOLVE REVIEW OF THESE ITEMS.
- CONTRACTOR IS TO ESTABLISH AND VERIFY OPENINGS AND INSERTS FOR ITEMS TO BE INSTALLED BY OTHER TRADES PRIOR TO SUBMITTAL OF SHOP DRAWINGS AND CONSTRUCTION.
- CONSTRUCTION MATERIAL AND EQUIPMENT LOADS PLACED ON THE STRUCTURE DURING THE CONSTRUCTION PROCESS SHALL NOT EXCEED THE DESIGN LIVE LOAD OF THE STRUCTURE NOTED IN THESE DRAWINGS. THE ENGINEER SHALL NOT BE RESPONSIBLE TO INVESTIGATE, NOR APPROVE, THE STRUCTURE FOR CONSTRUCTION MATERIAL OR EQUIPMENT LOADING. ERECTION OR CONSTRUCTION LOADS ARE NOT TO BE APPLIED UNTIL PROPER STRUCTURAL FRAMING CONNECTIONS ARE MADE, AND ALL TEMPORARY BRACING IS IN PLACE. THE CONTRACTOR SHALL DESIGN AND PROVIDE TEMPORARY BRACINGS OF THE STRUCTURE WHERE NECESSARY FOR CONSTRUCTION LOADS.
- DETAILS THAT ARE NOTED AS "TYPICAL OR TYP" ON DETAIL TITLES ARE TO BE APPLIED TO THE PROJECT CONSTRUCTION AS GENERAL CONSTRUCTION METHODS UNLESS NOTED OTHERWISE. THESE DETAILS ARE NOT CUT AT ALL LOCATIONS WHERE THEY OCCUR, AND THEY MAY NOT BE CUT AT ALL. WHERE NO SPECIFIC DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR CONDITIONS ELSEWHERE ON THE PROJECT, SUBJECT TO APPROVAL OF THE ENGINEER.
- DO NOT SCALE DRAWINGS. CONTRACTOR IS TO VERIFY ALL DIMENSIONS RELATIVE TO ARCHITECTURAL OR OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION.
- WHERE DISCREPANCIES OCCUR BETWEEN GENERAL NOTES, PLANS, DETAILS, AND SPECIFICATIONS, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN, UNLESS APPROVED OTHERWISE BY THE ENGINEER IN WRITING PRIOR TO CONSTRUCTION.
- THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS OF ALL OTHER DISCIPLINES AND SPECIFICATIONS. THE CONTRACTOR SHALL ESTABLISH AND VERIFY THE REQUIREMENTS OF OTHER TRADES AS TO SLEEVES, CHANGES, HANGERS, INSERT ANCHORS, HOLES, AND OTHER ITEMS TO BE PLACED OR IN THE STRUCTURAL WORK. DO NOT PENETRATE ANY STRUCTURAL ELEMENTS (BEAMS, COLUMNS, WALLS, SLABS, STEEL DECK, ETC) WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER.
- IF THE ENGINEER'S SEAL AND SIGNATURE IS NOT AFFIXED TO THESE DRAWINGS, THESE DRAWINGS ARE INTENDED FOR PRELIMINARY PURPOSES ONLY AND SHALL NOT BE USED FOR CONSTRUCTION.

**DESIGN CATEGORY**

- ALL CONSTRUCTION, MATERIALS, AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THESE DRAWINGS, SPECIFICATIONS, AND THE CODES, RULES AND REGULATIONS OF THE 2019 CALIFORNIA BUILDING CODE (CBC), AS ADOPTED AND AMENDED BY THE CITY OF CIVINA, CA HEREAFTER REFERRED TO AS THE BUILDING CODE.
- MATERIAL SPECIFIC DESIGN STANDARDS LISTED IN THESE GENERAL NOTES ARE THE VERSION REFERENCED BY THE BUILDING CODE. IF NOT REFERENCED BY THE BUILDING CODE, USE THE LATEST EDITION APPROVED BY THE AUTHORITY HAVING JURISDICTION ON THE DATE OF THE PERMIT ISSUANCE.
- RISK CATEGORY III
- EXISTING DEAD LOADS  
ROOF - TOTAL 18 PSF (INCLUDES STRUCTURE SELF WEIGHT)
- EXISTING LIVE LOADS  
ROOF LIVE LOAD 20 PSF
- WIND LOADS  
BASIC WIND SPEED (3 SECOND GUST), V 102 MPH  
NOMINAL WIND SPEED, V<sub>50</sub> 79 MPH  
EXPOSURE CATEGORY C  
TOPOGRAPHIC FACTOR, K<sub>zt</sub> 1.0  
AIR DENSITY FACTOR, K<sub>e</sub> 1.0  
INTERNAL PRESSURE COEFFICIENT, GC<sub>i</sub> +/- 0.18
- SEISMIC LOADS  
SITE LATITUDE 34.0897  
SITE LONGITUDE -117.9385  
SITE CLASS D  
IMPORTANCE FACTOR, I 1.25  
MAPPED SPECTRAL RESPONSE ACCELERATIONS S<sub>s</sub> = 1.659  
S<sub>1</sub> = 0.814  
S<sub>0.1</sub> = 1.937  
DESIGN SPECTRAL RESPONSE ACCELERATIONS S<sub>s</sub> = 0.696  
S<sub>1</sub> = 0.696  
S<sub>0.1</sub> = 0.696  
SEISMIC DESIGN CATEGORY D  
EXISTING SEISMIC FORCE RESISTING SYSTEM:  
ORDINARY PLAN CONCRETE SHEAR WALLS (REMAIN UNALTERED)

**POST-INSTALLED ANCHORS**

- UNO, THE FOLLOWING APPLIES TO ALL POST-INSTALLED ANCHORAGE INTO HARDENED CONCRETE OR MASONRY WHICH INCLUDES TYPES SUCH AS EXPANSION, WEDGE, SLEEVE, ADHESIVE, EPOXY, SHOT-PIV, SCREW AND UNDERCUT.
- POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED.
- CONTRACTOR SHALL OBTAIN APPROVAL FROM ENGINEER OF RECORD PRIOR TO USING POST-INSTALLED ANCHORS FOR MISSING, DAMAGED OR MISPLACED CAST-IN-PLACE ANCHORS.
- CARE SHALL BE GIVEN TO AVOID CONFLICTS WITH EXISTING REBAR WHEN DRILLING HOLES. HOLES SHALL BE DRILLED AND CLEANED PER THE MANUFACTURER'S INSTRUCTIONS.
- MAINTAIN A MINIMUM OF 2 INCHES FROM EXISTING REINFORCEMENT, CONDUIT, POST-TENSIONING (WHERE OCCURS), ETC. USE NON-DESTRUCTIVE TESTING TO LOCATE PRIOR TO DRILLING, CORING OR SHOOTING PINS INTO THE EXISTING CONCRETE OR MASONRY. FOR INSTALLATION DEEPER THAN 3 INCHES USE GROUND PENETRATING RADAR OR X-RAY METHODS.
- ALL ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS, MANUFACTURER'S RECOMMENDATIONS AND ALL APPLICABLE ICC-ES REPORTS, INCLUDING, BUT NOT LIMITED TO, ALL ANCHOR SPACINGS, EMBEDMENTS AND EDGE DISTANCES.
- SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO USE. CONTRACTOR SHALL PROVIDE CALCULATIONS DEMONSTRATING THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERFORMANCE VALUES OF THE SPECIFIED PRODUCT. SUBSTITUTIONS WILL BE EVALUATED BY HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS. ADHESIVE ANCHOR EVALUATION WILL ALSO CONSIDER CREEP, IN-SERVICE AND INSTALLATION TEMPERATURES.
- EMBEDMENT REFERS TO THE FINAL INSTALLED EFFECTIVE DEPTH "H" OF ALL ANCHORS SHALL HAVE EMBEDMENT NOTED OR EMBEDMENT AS RECOMMENDED BY MANUFACTURER WHERE NO EMBEDMENT IS SHOWN. REBAR ANCHOR HOLE DEPTH FOR INSTALLATION MAY BE DEEPER.
- IF THE FULL ANCHOR EMBEDMENT DEPTH, SPACING OR EDGE DISTANCE CANNOT BE ACHIEVED, NOTIFY THE ENGINEER.
- DO NOT SCALE DRAWINGS. CONTRACTOR IS TO VERIFY ALL DIMENSIONS RELATIVE TO ARCHITECTURAL OR OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION. ANY DISCREPANCIES MUST BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION.
- WHERE DISCREPANCIES OCCUR BETWEEN GENERAL NOTES, PLANS, DETAILS, AND SPECIFICATIONS, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN, UNLESS APPROVED OTHERWISE BY THE ENGINEER IN WRITING PRIOR TO CONSTRUCTION.
- INSTALLATION OF ADHESIVE ANCHORS IN HORIZONTAL TO VERTICALLY OVERHEAD ORIENTATION SHALL BE DONE BY A CERTIFIED ADHESIVE ANCHOR INSTALLER (AAI) AS CERTIFIED THROUGH AAI AND IN ACCORDANCE WITH AAI'S PROOF OF CURRENT CERTIFICATION. SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF INSTALLATION.
- EXPANSION BOLTS IN CONCRETE SHALL BE ONE OF THE FOLLOWING:
  - HILTI HIT-KW BOLT T22 CONCRETE ANCHORS (ICC ESR-4266)
  - DEWALT POWER-STUD-SD3 (ICC ESR-2818), POWER-STUD-SD2 (ICC ESR-2502)
  - SIMPSON STRONG-TIE STRONG-BOLT 2 WEDGE ANCHORS (ICC ESR-3037)
- WHERE CONNECTIONS ARE NOTED TO BE SLIP CRITICAL (EXAMPLE: A325-SC), BOLTS SHALL BE TIGHTENED TO THE MINIMUM PRETENSION FOR FULLY TIGHTENED BOLTS BY ONE OF THE AISC APPROVED METHODS. SLIP CRITICAL BOLTS SHALL HAVE CLASS "A" FINISH SURFACES.
- SCREW ANCHORS IN CONCRETE SHALL BE ONE OF THE FOLLOWING:
  - HILTI HUS-EZ SCREW ANCHOR (ICC ESR-3027)
  - DEWALT SCREW BOLT 2 SCREW ANCHOR (ICC ESR-3889)
  - SIMPSON STRONG-TIE TITEN HD SCREW ANCHORS (ICC ESR-2713)
- ADHESIVE ANCHORS IN CONCRETE SHALL BE ONE OF THE FOLLOWING:
  - HILTI HY-200 SAFE SET SYSTEM ADHESIVE ANCHORS (ESR-3187) (FAST CURE APPLICATIONS)
  - HILTI RE-200 V3 ADHESIVE ANCHORS (ESR-3814)
  - HILTI RE-100 ADHESIVE ANCHORS (ICC ESR-3829) (STANDARD CURE APPLICATIONS)
  - DEWALT A200+ ADHESIVE ANCHORS (ICC ESR-4077) (FAST CURE APPLICATIONS)
  - DEWALT PURE 100+ ADHESIVE ANCHORS (ICC ESR-3286) (STANDARD CURE APPLICATIONS)
  - SIMPSON STRONG-TIE SET-3G ADHESIVE ANCHORING SYSTEM (ESR-4057)
  - SIMPSON STRONG-TIE AT-XP ADHESIVE ANCHORING SYSTEM (AFMO USE ESR-263)
  - SIMPSON STRONG-TIE SET-XP ADHESIVE ANCHORING SYSTEM (ESR-2598) (STANDARD CURE APPLICATIONS)
- ANCHORS ARE NOT TO BE INSTALLED UNTIL CONCRETE OR GROUT HAS REACHED ITS DESIGN STRENGTH. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE WITH A MIN. AGE OF 21 DAYS.
- MASONRY CELLS SHALL BE FULLY GROUTED AND CURED FOR INSTALLATION OF POST-INSTALLED ANCHORS.
- USE INSTALLATION PROCEDURES FOR CRACKED CONCRETE CONDITIONS. DO NOT CORE DRILL FOR ANCHOR HOLES WITHOUT ENGINEER APPROVAL.
- PROVIDE GALVANIZED CARBON STEEL ANCHORS AT DRY INTERIOR LOCATIONS AND STAINLESS-STEEL TYPE 304 OR 316 AT EXTERIOR / DAMP INTERIOR LOCATIONS. ANCHORS SHALL BE CLEAN AND FREE OF DEBONDING SUBSTANCES.
- PATCH ABANDONED HOLES AND SPALLS USING NON-SHRINK GROUT AND REPAIR FINISHES AS REQUIRED. ANCHORS PENETRATING THROUGH WATERPROOFING OR VAPOR MEMBRANES SHALL BE SEALED OR FLASHED.
- ADHESIVE / EPOXY ANCHORS ON THIS PROJECT ARE NOT DESIGNED TO SUPPORT OR INTENDED TO RESIST STANDARD TENSION LOADS.

**STRUCTURAL STEEL**

- FABRICATOR QUALIFICATIONS: FABRICATOR SHALL BE AISC CERTIFIED OR AN "APPROVED FABRICATOR" IN ACCORDANCE WITH THE BUILDING CODE AND APPROVED BY THE AAI. IN LIEU OF THE PREVIOUS, FABRICATOR SHALL INCLUDE IN THEIR BID THE SERVICES OF A SPECIAL INSPECTOR TO PROVIDE INSPECTION/TESTING SERVICES FOR WORK COMPLETED ON THE FABRICATOR'S PREMISES TO MEET BUILDING CODE REQUIREMENTS. AT THE COMPLETION OF WORK, FABRICATOR SHALL SUBMIT A "CERTIFICATE OF COMPLIANCE" TO THE ARCHITECT AND AAI STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENTS.
- STRUCTURAL STEEL SHAPES AND CONNECTING COMPONENTS SHALL CONFORM TO THE FOLLOWING MATERIAL SPECIFICATIONS UNO:
 

|   |   |
|---|---|
| RECTANGULAR & SQUARE WIDE FLANGE SHAPES | ASTM A992, F <sub>y</sub> = 50 KSI          |
| HOLLOW STRUCTURAL SECTIONS (HSS)        |   |
| RECTANGULAR & SQUARE                    | ASTM A500, GRADE C, F <sub>y</sub> = 50 KSI |
| ROUND                                   | ASTM A500, GRADE C, F <sub>y</sub> = 46 KSI |
| STEEL PIPE                              | ASTM A53, GRADE B, F <sub>y</sub> = 35 KSI  |
| OTHER STEEL SHAPES AND PLATES           | ASTM A36, F <sub>y</sub> = 36 KSI           |
| HIGH STRENGTH STRUCTURAL BOLTS          | ASTM F1554, GRADE 5 WELDABLE (S1)           |
| COLUMN ANCHOR ROOFS                     | ASTM A307                                   |
| MACHINE BOLTS                           | ASTM A36                                    |
| THREAD RODS                             | ASTM A36                                    |
| WELDING ELECTRODES                      | E70XX                                       |
| DEFORMED BARS (REBAR)                   | ASTM A603, F <sub>y</sub> = 70 KSI          |
| WELDED HEADED STUDS (WHS)               | ASTM A108, F <sub>y</sub> = 65 KSI          |
| WELDED HEADED STUDS (WTS)               | ASTM A108, F <sub>y</sub> = 65 KSI          |
- CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE BUILDING SYSTEM AT ALL TIMES DURING THE ERECTION PROCESS. ELEMENTS HAVE BEEN DESIGNED FOR THE FINAL COMPLETED CONDITION AND HAVE NOT BEEN INVESTIGATED FOR TEMPORARY LOADING DURING CONSTRUCTION. INVESTIGATION OF THE STRUCTURAL ELEMENTS FOR ADEQUACY DURING THE STEEL ERECTION AND CONSTRUCTION PROCESS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR TO PROVIDE TEMPORARY SUPPORTS AS REQUIRED TO MAINTAIN STABILITY.
- COLUMNS AND BEAMS WITH BASE, CAP OR END PLATES SHALL HAVE SQUARE CUT OR MILLED ENDS.
- NON-METALLIC, NON-SHRINK, CHLORIDE FREE GROUT UNDER ALL COLUMN BASE PLATES AND BEAM BEARING PLATES SHALL CONSIST OF A PRE-MIXED PRODUCT COMPLYING WITH ALL REQUIREMENTS OF ASTM C1117. THE 28-DAY COMPRESSIVE STRENGTH OF THE GROUT SHALL BE TWICE THE FOUNDATION REQUIRED COMPRESSIVE STRENGTH, 5,000 PSI MINIMUM.
- UNO, ALL STRUCTURAL STEEL PERMANENTLY EXPOSED TO THE WEATHER, SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALL DAMAGED GALVANIZING SHALL BE REPAIRED IN ACCORDANCE WITH ASTM A780. STAINLESS AND WEATHERING STEELS, WHERE SPECIFIED, ARE EXEMPT FROM THIS REQUIREMENT.
- COAT STEEL BELOW GRADE WITH COLD-APPLIED ASPHALT EMULSION PER ASTM D1187.
- ALL ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) SHALL COMPLY WITH AISC CODE OF STANDARD PRACTICE, SECTION 10. REFER TO DRAWINGS FOR LOCATIONS OF AESS.
- WHERE CONNECTIONS ARE NOTED TO BE SLIP CRITICAL (EXAMPLE: A325-SC), BOLTS SHALL BE TIGHTENED TO THE MINIMUM PRETENSION FOR FULLY TIGHTENED BOLTS BY ONE OF THE AISC APPROVED METHODS. SLIP CRITICAL BOLTS SHALL HAVE CLASS "A" FINISH SURFACES.
- ALL BOLTS (HIGH STRENGTH, ANCHOR BOLTS, EXPANSION BOLTS, ADHESIVE ANCHORS, ETC.) SHALL BE INSTALLED WITH STEEL NUTS AND WASHERS. NUTS AND WASHERS FOR HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM A563 AND TO ASTM F436, RESPECTIVELY.
- WELDING PROCEDURES, ELECTRODES, AND WELDER QUALIFICATIONS SHALL CONFORM TO THE AMERICAN WELDING SOCIETY CODE D1.1, AISC STANDARDS, AND LOCAL CODE REQUIREMENTS.
- ALL WELDS SHOWN ON THE DRAWINGS SHALL BE SHOP WELDS. UNO, WHERE SHOWN, FIELD WELDING SHALL BE USED. CONTRACTOR MAY SUBSTITUTE FIELD WELDS FOR SHOP WELDS AT THEIR DISCRETION. SHOP DRAWINGS SHALL CLEARLY NOTE ALL WELDING USINGS A2S 4 SYMBOLS.
- WHERE CONTINUOUS ANGLES OR BENT PLATES ARE INDICATED, PROVIDE A CONTINUOUS BUTT WELD OR FULL PENETRATION WELD AT THE SPURCE POINTS UNO. THE STEEL FABRICATOR MAY SUBMIT AN ALTERNATE BOLT CONNECTION DETAIL FOR APPROVAL.
- COORDINATE WITH ALL OTHER TRADES WHICH STEEL INTERACTS. THIS INCLUDES BUT IS NOT LIMITED TO COORDINATING WITH MASONRY, PRECAST CONCRETE, CAST-IN-PLACE CONCRETE, JOIST, AND METAL DECK SUPPLIERS.

**SUBMITTALS**

- THE FOLLOWING ITEMS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATOR/ERECTION/INSTALLATION. THESE ITEMS ARE IN ADDITION TO ANY SUBMITTAL REQUIREMENTS SPECIFIED ON THESE PLANS OR IN THE PROJECT SPECIFICATIONS.

| STRUCTURAL SUBMITTALS            |           |           |              |       |                    |
|----------------------------------|-----------|-----------|--------------|-------|--------------------|
| ITEM                             | PROD DATA | SHOP DWGS | TEST RESULTS | CALCS | DEFERRED SUBMITTAL |
| STRUCTURAL STEEL                 | -         | YES       | -            | -     | -                  |
| CONCRETE MATERIALS               | YES       | -         | YES          | -     | -                  |
| GROUT                            | YES       | -         | -            | -     | -                  |
| STEEL DECK                       | YES       | YES       | -            | -     | -                  |
| COLD FORMED STEEL                | YES       | YES       | -            | -     | -                  |
| EPOXY AND EXP ANCHORS            | YES       | -         | -            | -     | -                  |
| WELD FILLER MATERIAL             | YES       | -         | YES          | -     | -                  |
| ANCHORAGE FOR MECHELEC EQUIPMENT | -         | YES       | -            | -     | -                  |

- "PROD DATA" - SUBMIT ADEQUATE DOCUMENTATION THAT THE PRODUCT PROPOSED TO BE USED MEETS THE REQUIREMENTS ON THESE PLANS AND THE PROJECT SPECIFICATIONS.
- "SHOP DWGS" - SUBMIT COMPLETE SHOP DRAWINGS SUFFICIENT TO SHOW QUANTITIES AND KINDS OF MATERIALS, METHODS OF ASSEMBLY, AND ALL DATA REQUIRED FOR FABRICATION, ERECTION, AND INSTALLATION. THE PURPOSE OF THESE DRAWINGS IS TO DEMONSTRATE THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT DOCUMENTED HEREIN. SUBMITTALS CONSISTING OF DRAWINGS TAKEN DIRECTLY FROM THESE PLANS WILL NOT BE APPROVED.
- "TEST RESULTS" - SUBMIT RESULTS FOR ANY TESTING REQUIRED BY BUILDING CODE OR THESE PLANS.
- "CALCS" - SUBMIT CALCULATIONS AND THE CORRESPONDING SHOP OR ERECTION DRAWINGS SIGNED AND SEALED BY A DESIGN PROFESSIONAL AUTHORIZED TO PERFORM WORK IN THE PROJECT JURISDICTION.
- "DEFERRED SUBMITTAL" - SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ONCE REVIEWED, CONTRACTOR SHALL FORWARD TO THE PLAN CHECK AUTHORITY (DIVISION OF STATE ARCHITECTS) FOR REVIEW AND APPROVAL. FABRICATION AND/OR INSTALLATION OF DEFERRED SUBMITTAL ITEMS SHALL NOT OCCUR UNTIL APPROVAL OF THE PLAN CHECK AUTHORITY IS RECEIVED.

**STRUCTURAL RENOVATION SCOPE**

- PROJECT STRUCTURAL SCOPE IS LIMITED TO THE FOLLOWING:
  - SECTION 1 ITEMIZE ELEMENTS WITHIN THE STRUCTURAL SCOPE HERE.
- EXISTING CONDITIONS
  - CONTRACTOR IS TO FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING. ALL WORK AND MATERIALS NECESSARY TO INSTALL NEW WORK IN EXISTING BUILDING(S) SHALL BE INCLUDED.
  - CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AND SHALL CONTACT THE ENGINEER IF ANY DISCREPANCIES ARE FOUND BEFORE PROCEEDING. NOTIFY ENGINEER IMMEDIATELY IF EXISTING CONDITIONS DO NOT MATCH, OR SEEM IN CONFLICT WITH INFORMATION SHOWN ON DRAWINGS.
  - DIMENSIONS INDICATED ON PLANS AS FIELD VERIFY OR "FV" ARE DIMENSIONS THAT MAY BE REQUIRED FOR FABRICATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF DIMENSIONS IN THE FIELD NECESSARY FOR FABRICATION OF MEMBERS AND PRIOR TO SUBMISSION OF SHOP DRAWINGS.
  - CONTRACTOR TO PROVIDE PROTECTION FOR ALL EXISTING BUILDING MATERIALS AND EQUIPMENT TO REMAIN FROM DAMAGE DUE TO DEMOLITION OR CONSTRUCTION OPERATIONS PERFORMED UNDER THIS CONTRACT.
  - THE SEQUENCE OF CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL TEMPORARY GUY, BRACING, AND OTHER SUPPORTS AS NEEDED TO SAFELY RESIST ALL GRAVITY AND LATERAL LOADS TO WHICH THE EXISTING OR PROPOSED STRUCTURE MAY BE SUBJECTED, INCLUDING LOADS FROM ERECTION EQUIPMENT AND ERECTION OPERATIONS, AND WIND OR SEISMIC FORCES COMPARABLE IN INTENSITY FOR WHICH THE STRUCTURE IS DESIGNED. LOAD VERIFICATION OF EXISTING MEMBERS TO RECEIVE TEMPORARY SHORING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR'S ENGINEER.
  - ALL ERECTION AND CONSTRUCTION PROCEDURES SHALL MEET THE REQUIREMENTS OF ALL APPLICABLE CODES AND ORDINANCES.
  - ALL FRAMING CONNECTIONS TO EXISTING STRUCTURE SHALL BE FIELD VERIFIED PRIOR TO SHOP DRAWING PRODUCTION AND FABRICATION. FIELD VERIFIED DIMENSIONS SHALL BE INCLUDED ON SHOP DRAWING SUBMITTAL AND NOTED AS SUCH.
  - EXISTING UTILITY LINES SHALL BE PROBED PRIOR TO CONSTRUCTION OF FOUNDATIONS. NOTIFY ENGINEER IF THE TOP OF ANY UTILITY PIPE COMES WITHIN 3'-0" OF THE BOTTOM OF ANY FOUNDATION. DETERMINE THE LOCATION OF ALL NEW AND EXISTING UNDERGROUND UTILITIES IN AND ADJACENT TO THE AREA OF WORK PRIOR TO EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES WHICH MAY RESULT FROM FAILURE TO EXACTLY LOCATE, PROTECT, AND PRESERVE ALL EXISTING UNDERGROUND UTILITIES.
  - EXCAVATION UNDER OR NEAR IN-PLACE FOOTINGS WHICH DISTURBS THE COMPACTED SOIL BENEATH THE FOOTINGS IS NOT PERMITTED.
  - CONTRACTOR SHALL LOCATE REBAR IN EXIST. CONSTRUCTION PRIOR TO DRILLING OF HOLES AND SHALL TAKE CARE NOT TO DAMAGE EXIST. BARS. IF DAMAGE TO EXIST. REBAR OCCURS DURING CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING THE DAMAGE. REPAIR PROCEDURES NOT DETAILED IN THE CONTRACT DOCUMENTS WILL REQUIRE PREPARATION BY A QUALIFIED PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED AND MUST BE APPROVED BY THE ENGINEER.
- EXISTING DOCUMENTATION
  - THE FOLLOWING DOCUMENTS WERE USED TO REPRESENT EXISTING STRUCTURE IN THE CONSTRUCTION DOCUMENTS. NOT ALL ELEMENTS AND INFORMATION HAS BEEN PROVIDED. COPIES OF THE EXISTING DRAWINGS MAY BE AVAILABLE AT THE CONTRACTOR'S REQUEST.
    - ARCHITECTS, INC.
    - STRUCTURAL DRAWINGS DATED OCTOBER 11, 1980 BY JAMES D. SCHWEICKERT AND ASSOCIATES CONSULTING ENGINEERS, INC.
- DEMOLITION
  - DEMOLITION OF EXISTING STRUCTURE TO BE REMOVED SHALL BE PERFORMED BY THE CONTRACTOR USING MEANS NECESSARY TO PREVENT DAMAGE TO THE EXISTING STRUCTURE TO REMAIN. DAMAGE TO THE EXISTING STRUCTURE TO REMAIN SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE USING METHODS REVIEWED BY THE STRUCTURAL ENGINEER. IF EXISTING CONDITIONS DIFFER FROM THOSE SHOWN IN THE CONTRACT DOCUMENTS CONTACT THE ARCHITECT PRIOR TO PROCEEDING WITH WORK.
  - SHORING OF THE EXISTING STRUCTURE SHALL BE PROVIDED BY THE CONTRACTOR AND DESIGNED BY A QUALIFIED PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED.

**ABBREVIATIONS**

ABBREVIATIONS ARE AS SHOWN IN THE CONTRACT DOCUMENTS WITH THE FOLLOWING EXCEPTIONS:

|        |                                   |         |  |
|--------|-----------------------------------|---------|--|
| #      | REINFORCING BAR SIZE              | LB(S)   | POUNDS(S)  |
| Ld     | SHEET METAL SCREW SIZE            | Ld      | REINFORCING BAR DEVELOPMENT LENGTH                           |
| @      | AT (SPACING)                      | Ldh     | HOOKED REINFORCING BAR DEVELOPMENT LENGTH                    |
| Ø      | DIAMETER                          | LF      | LATERAL FORCE RESISTING SYSTEM                               |
| AB     | ANCHOR BOLT                       | LN      | LINEAR   |
| ABC    | AGGREGATE BASE COURSE             | LNB     | LONG LEG BACK TO BACK  |
| ADDL   | ADDITIONAL                        | LNL     | LONG LEG HORIZONTAL  |
| AFF    | ABOVE FINISHED FLOOR              | LNS     | LONG LEG VERTICAL  |
| AHJ    | AUTHORITY HAVING JURISDICTION     | LLB     | LONG LEG BACK TO BACK  |
| ALT    | ALTERNATE                         | LLH     | LONG LEG HORIZONTAL  |
| ANCH   | ANCHOR                            | LVL     | LONG VERTICAL  |
| ANCH   | ANCHOR                            | LVL     | LAMINATED VENEER LUMBER                                      |
| APPROX | APPROXIMATE                       | LWC     | LIGHT WEIGHT CONCRETE  |
| AR     | ARCHITECTURAL                     | MAX     | MAXIMUM  |
| AS     | AS REQUIRED                       | MECH    | MECHANICAL   |
| B      | BOTTOM OF DECK                    | MEP     | MECHANICAL, ELECTRICAL & PLUMBING                            |
| BD     | BUILDING                          | MF      | MOMENT FRAME   |
| BK     | BLOCKING                          | MFR     | MANUFACTURER   |
| BWS    | BEAMS                             | MIN     | MINIMUM  |
| BOF    | BOTTOM OF FOOTING                 | MIS     | MISCELLANEOUS  |
| BOL    | BOTTOM OF INTEL                   | MWFRS   | MAIN WIND FORCE RESISTING SYSTEM                             |
| BS     | BOTTOM SIDE                       | N/A     | NOT APPLICABLE   |
| BT     | BOTTOM                            | NC      | NOT IN CONTRACT  |
| BRB    | BUCKLING RESTRAINED BRACED MEMBER | NO      | NUMBER   |
| BRG    | BEARING                           | NTS     | NOT TO SCALE   |
| BTWN   | BETWEEN                           | NWC     | NORMAL WEIGHT CONCRETE                                       |
| C      | CHANNEL                           | OC      | ON CENTER  |
| CANT   | CANTILEVER                        | OCBF    | ORDINARY CONCENTRICALLY BRACED FRAME                         |
| CFM    | COLD-FORMED METAL FRAMING         | OCSS    | ORDINARY CANTILEVER COLUMN SYSTEM                            |
| CP     | CAST-IN-PLACE                     | OD      | OUTSIDE DIAMETER   |
| CJ     | CONTROL JOINT                     | OF      | OUTSIDE FACE   |
| CL     | CENTRAL LINE                      | OH      | OPPOSITE HAND  |
| CL     | CENTRLINE                         | OP      | OPPOSITE   |
| CMU    | CONCRETE MASONRY UNIT             | OPG(S)  | OPENING(S)   |
| CL     | CLEAR                             | OPP     | OPPOSITE   |
| COL    | COLUMN                            | OWJ     | OPEN WEB JOIST   |
| COM    | COMPOSITE                         | PAF     | POWER ACTUATED FASTENER                                      |
| CONC   | CONCRETE                          | PC      | PRECAST CONCRETE   |
| CON(S) | CONNECTION(S)                     | PCBE    | PRECAST CONCRETE BEARING ELEVATION                           |
| CONST  | CONSTANT                          | PCF     | POUNDS PER CUBIC FOOT  |
| CONTR  | CONTRACT(OR)                      | PERP    | PERPENDICULAR  |
| CSJ    | CONSTRUCTION JOINT                | PJ      | PARTIAL JOINT PENETRATION                                    |
| CTR    | CENTER                            | PL      | PLATE  |
| (D)    | DEMOLISH                          | PLF     | POUNDS PER LINEAL FOOT                                       |
| DBA    | DEFORMED BAR ANCHOR               | PLWD    | PLYWOOD  |
| DCA    | DEMAND CRITICAL WELD              | PREFAB  | PREFABRICATED  |
| DEG    | DEGREE                            | PROJ    | PROJECTION   |
| DI     | DIAMETER                          | PSF     | POUNDS PER SQUARE FOOT                                       |
| DIAG   | DIAGONAL                          | PSI     | POUNDS PER SQUARE INCH                                       |
| DM     | DIAMENSION                        | PT      | PRESERVATIVE-TREATED WOOD                                    |
| DL     | DEAD LOAD                         | PTW     | RADIUS   |
| DL     | DITTO                             | RAD     | RADIUS   |
| DL     | DITTO                             | RAC     | REINFORCED CONCRETE  |
| DL     | DITTO                             | REF     | REFERENCE  |
| DL     | DITTO                             | REIN    | REINFORCE, REINFORCED, REINFORCEMENT, REINFORCING (REQUIRED) |
| DL     | DITTO                             | REQ(D)  | REQUIRED   |
| DL     | DITTO                             | REVIS   | REVISION(S)  |
| DL     | DITTO                             | RTU     | ROOFTOP UNIT   |
| DL     | DITTO                             | SCBF    | SPECIAL CONCENTRICALLY BRACED FRAME                          |
| DL     | DITTO                             | SCCS    | SPECIAL CANTILEVER COLUMN SYSTEM                             |
| DL     | DITTO                             | SCHED   | SCHEDULE   |
| DL     | DITTO                             | SD      | SELF-DRILLING SCREWS   |
| DL     | DITTO                             | SDS     | SELF-DRILLING SCREWS   |
| DL     | DITTO                             | SSH     | SHORT SLOTTED HOLE   |
| DL     | DITTO                             | SECTION | SECTION  |
| DL     | DITTO                             | SEOR    | STRUCTURAL ENGINEER OF RECORD                                |
| DL     | DITTO                             | SF      | SQUARE FOOT  |
| DL     | DITTO                             | SFS     | SEISMIC FORCE RESISTING SYSTEM                               |
| DL     | DITTO                             | SHT     | SHEET  |
| DL     | DITTO                             | SHR     | SHRINK   |
| DL     | DITTO                             | SL      | SNOW LOAD  |
| DL     | DITTO                             | SMF     | SPECIAL MOMENT FRAME   |
| DL     | DITTO                             | SG      | SLAB ON GRADE  |
| DL     | DITTO                             | SP      | SPECIAL MOMENT FRAME   |
| DL     | DITTO                             | SPEC(S) | SPECIFICATION(S)   |
| DL     | DITTO                             | SST     | STAINLESS STEEL  |
| DL     | DITTO                             | STAGD   | STAGGERED  |
| DL     | DITTO                             | STD     | STANDARD   |
| DL     | DITTO                             | STIFF   | STIFFENER  |
| DL     | DITTO                             | STL     | STEEL  |
| DL     | DITTO                             | STRUCT  | STRUCTURE, STRUCTURAL  |
| DL     | DITTO                             | SYM     | SYMMETRICAL  |
| DL     | DITTO                             | T       | THICKNESS  |
| DL     | DITTO                             | T&B     | TOP & BOTTOM   |
| DL     | DITTO                             | T&G     | TONGUE & GROOVE  |
| DL     | DITTO                             | TC      | TENSION CONTROL  |
| DL     | DITTO                             | TCW     | TOP OF CONCRETE WALL   |
| DL     | DITTO                             | TEMP    | TEMPORARY  |
| DL     | DITTO                             | THRD    | THREADED   |
| DL     | DITTO                             | T/      | TOP OF   |
| DL     | DITTO                             | TOB     | TOP OF BEAM  |
| DL     | DITTO                             | TOC     | TOP OF CONCRETE  |
| DL     | DITTO                             | TOF     | TOP OF FOOTING   |
| DL     | DITTO                             | TOS     | TOP OF STEEL   |
| DL     | DITTO                             | TOW     | TOP OF WALL  |
| DL     | DITTO                             | TPE     | TOP OF PIER ELEVATION  |
| DL     | DITTO                             | TRANS   | TRANSVERSE   |
| DL     | DITTO                             | TSE     | TOP OF SLAB ELEVATION  |
| DL     | DITTO                             | TW      | TOP OF WALL ELEVATION  |
| DL     | DITTO                             | TYP     | TYPICAL  |
| DL     | DITTO                             | UNO     | UNLESS NOTED OTHERWISE                                       |
| DL     | DITTO                             | VERT    | VERTICAL   |
| DL     | DITTO                             | VFY     | VERIFY   |
| DL     | DITTO                             | W       | WITH   |
| DL     | DITTO                             | WO      | WITHOUT  |
| DL     | DITTO                             | WOOD    | WOOD   |
| DL     | DITTO                             | WFRS    | WIND FORCE RESISTING SYSTEM                                  |
| DL     | DITTO                             | WGT     | WEIGHT   |
| DL     | DITTO                             | WP      | WORK POINT   |
| DL     | DITTO                             | WPS     | WELDING PROCEDURE SPECIFICATION                              |
| DL     | DITTO                             | WT      | STEEL TEE SECTION  |
| DL     | DITTO                             | WWR     | WELDED WIRE FABRIC/REINFORCEMENT                             |
| DL     | DITTO                             | X-STR   | EXTRA STRONG   |
| DL     | DITTO                             | XX-STR  | DOUBLE EXTRA STRONG  |
| DL     | DITTO                             | ZRC     | ZINC RICH COATING  |

**GENERAL SYMBOLS**

DETAIL NUMBER  
CROSS REFERENCE  
SHEET NUMBER  
SIMILAR OR TYPICAL REFERENCE

WALL SECTION

DETAIL REFERENCE

BUILDING SECTION

CASEWORK ELEVATION

KEYNOTE

COLUMN GRID LINE

ROOM NAME

ROOM NUMBER/NAME

DOOR NUMBER / INTERIOR WINDOW

EXTERIOR WINDOW NUMBER

WALL TYPE

REVISION NUMBER

EARTH  
GRAVEL  
SAND  
CONCRETE  
PRECAST CONCRETE  
STEEL  
GYM FLOOR  
WOOD (CONTINUOUS BLOCKING)  
WOOD (NON-CONTINUOUS BLOCKING)  
WOOD (TRIM/FINISH)  
GLASS  
SHINGLES  
CONCRETE MASONRY UNIT  
BRICK VENEER  
STEEL (LARGE SCALE)  
PLYWOOD (LARGE SCALE)  
GYPSUM WALL BOARD  
BATT INSULATION  
RIGID INSULATION  
SPRAY FOAM INSULATION  
FIRE SAFING INSULATION  
PROTECTION BOARD  
CARPET (LARGE SCALE)  
ACOUSTIC TILE (LARGE SCALE)  
TILE (LARGE SCALE)

**STRUCTURAL SHEET LIST**

| SHEET NUMBER | SHEET NAME |
|--------------|------------|
|--------------|------------|

**REQUIRED STRUCTURAL OBSERVATIONS**

- IN ACCORDANCE WITH IBC, SECTION 1704.6, THE OWNER'S REPRESENTATIVE SHALL EMPLOY A REGISTERED DESIGN PROFESSIONAL TO PERFORM STRUCTURAL OBSERVATIONS AS LISTED IN THE BELOW STATEMENT OF REQUIRED STRUCTURAL OBSERVATIONS.
- STRUCTURAL OBSERVATION DOES NOT INCLUDE, OR WAIVE, THE RESPONSIBILITY FOR COMPLETING THE LISTED SPECIAL INSPECTIONS OR INSPECTIONS REQUIRED BY IBC SECTION 110.
- AT THE CONCLUSION OF THE WORK, THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE AHJ A WRITTEN STATEMENT THAT THE SITE VISITS HAVE BEEN MADE AND IDENTIFY ANY REPORTED DEFICIENCIES WHICH, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLEDGE, HAVE NOT BEEN RESOLVED.
- IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER TO NOTIFY THE ENGINEER AS TO WHEN EACH MAJOR PHASE OF CONSTRUCTION IS READY FOR OBSERVATION A MINIMUM OF TEN (10) WORKING DAYS IN ADVANCE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT NAILING, REINFORCEMENT, WELDS, CONNECTIONS, ETC. ARE VISIBLE FOR DESIGNATED STRUCTURAL OBSERVER AT THE TIME OF SITE VISIT.
- PRIOR TO THE FIRST STRUCTURAL OBSERVATION, THE OWNER'S REPRESENTATIVE SHALL COORDINATE A PRE-CONSTRUCTION MEETING BETWEEN THE OBSERVING ENGINEER, ARCHITECT, CONTRACTOR, SUBCONTRACTORS AND OTHER INSPECTORS. THE PURPOSE OF THE MEETING SHALL BE TO IDENTIFY THE STRUCTURAL ELEMENTS AND CONNECTIONS THAT ARE PART OF THE VERTICAL AND LATERAL LOAD RESISTING SYSTEMS AND REVIEW SCHEDULING OF SCHEDULED STRUCTURAL OBSERVATIONS.
- THE STRUCTURAL OBSERVER SHALL PERFORM OBSERVATIONS AT THE FOLLOWING SIGNIFICANT CONSTRUCTION STAGES:
  - CONSTRUCTION STAGES ELEMENTS/CONNECTIONS TO BE OBSERVED
  - AT SUBSTANTIAL COMPLETION OF THE PRIMARY STRUCTURE

**STATEMENT OF SPECIAL INSPECTIONS**

- IN ACCORDANCE WITH IBC, SECTION 1704, THE OWNER'S REPRESENTATIVE SHALL EMPLOY ONE OR MORE QUALIFIED SPECIAL INSPECTORS AND/OR TESTING AGENCIES TO PERFORM STRUCTURAL TESTS AND SPECIAL INSPECTIONS ON THE TYPES OF WORK LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS.
- THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS SHALL BE RESPONSIBLE FOR DEFINING THE ACTIVITIES OF THE INSPECTORS, FOR CERTIFYING THE QUALIFICATIONS OF THE INSPECTORS WITH THE AHJ, AND TO ATTEND THE PRE-CONSTRUCTION MEETING TO DEFINE THEIR SCOPE OF SERVICES AND THE TESTING OR TEST PROCEDURES THAT ARE REQUIRED AS OUTLINED IN THE BUILDING CODE.
- THE INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO VERIFY CONFORMANCE WITH THE APPROVED CONTRACT DOCUMENTS.
- THE INSPECTOR SHALL FURNISH DAILY INSPECTION REPORTS ON THE WORK TO THE OWNER'S REPRESENTATIVE. AHJ AND ENGINEER. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, AND, IF UNCORRECTED, TO THE ENGINEER AND THE AHJ.
- THE DESIGNATED ENGINEER OF RECORD FOR SPECIAL INSPECTIONS SHALL COMPLETE, SIGN AND SEAL A FINAL REPORT CERTIFYING THAT TO THE BEST OF THEIR KNOWLEDGE, THE WORK IS IN CONFORMANCE WITH THE APPROVED CONTRACT DOCUMENTS.
- SPECIAL INSPECTION IS TO BE PROVIDED IN ADDITION TO THE INSPECTIONS CONDUCTED BY THE AHJ AND SHALL NOT BE CONSTRUED TO RELIEVE THE OWNER OR AUTHORIZED AGENT FROM REQUESTING THE INSPECTIONS REQUIRED BY IBC SECTION 110.
- CONTRACTOR RESPONSIBILITY: EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND- OR SEISMIC FORCE-RESISTING COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE AHJ AND THE OWNER'S REPRESENTATIVE ACKNOWLEDGING AWARENESS OF REQUIRED SPECIAL INSPECTIONS PRIOR TO COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT.
- STEEL CONSTRUCTION: SPECIAL INSPECTIONS FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF AISC 360-16. PROVIDE INSPECTION PER IBC SECTION 1704.2.5 FOR STRUCTURAL LOADING-BEARING MEMBERS AND ASSEMBLIES FABRICATED ON THE PREMISES OF A FABRICATOR'S SHOP. THESE INSPECTIONS SHALL BE AT CONTRACTOR'S EXPENSE IF THE FABRICATOR IS NOT AN APPROVED FABRICATOR PER SECTION 1704.2.5.1.
- WELDING: WELDING INSPECTION SHALL BE IN COMPLIANCE WITH AWS D1.1. THE BASIS FOR WELDING INSPECTOR QUALIFICATIONS SHALL BE AWS D1.1. PROVIDE SPECIAL INSPECTION IN ACCORDANCE WITH AISC 360-16 TABLE NS-4-1 THROUGH TABLE NS-4-3.
- STEEL DETAILING: AN INSPECTION OF THE STEEL FRAME SHALL BE PERFORMED TO VERIFY COMPLIANCE WITH THE DETAILS SHOWN ON THE APPROVED CONSTRUCTION DOCUMENTS, SUCH AS BRACING, STIFFENING, MEMBER LOCATIONS AND PROPER APPLICATION OF JOINT DETAILS AT EACH CONNECTION.
- HIGH STRENGTH BOLTING: INSTALLATION OF HIGH STRENGTH BOLTS SHALL BE PERIODICALLY INSPECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. HIGH STRENGTH BOLTING, PROVIDE SPECIAL INSPECTION IN ACCORDANCE WITH AISC 360-16 TABLE NS-6-1 THROUGH TABLE NS-6-3.
- SPRAY-APPLIED FIREPROOFING: PER SECTION 1705.14.
- MASTIC AND INTUMESCENT FIRE RESISTING COATINGS: PER SECTION 1705.15.
- EXTERIOR INSULATION AND FINISH SYSTEM (EIFS): PER SECTION 1705.16.
- FIRE-RESISTANT PENETRATIONS AND JOINTS: PER SECTION 1705.17.
- SMOKE CONTROL: PER SECTION 1705.18.
- EXPANSION BOLT, SCREW ANCHOR AND ADHESIVE ANCHORS: INSTALLATION TO VERIFY INSTALLATION IN ACCORDANCE WITH ICC-ES REPORTS NOTED PREVIOUSLY OR APPROVED EQUAL.
- HEADED CONCRETE SHEAR CONNECTORS: INSPECTED AND TESTED PER AMERICAN WELDING SOCIETY CODE AWS D1.1.

**TMS 402 / 602 — TABLE 3**

**MINIMUM VERIFICATION REQUIREMENTS**

| MINIMUM VERIFICATION   | REQUIRED FOR QUALITY ASSURANCE (a) |         |         | REFERENCE FOR CRITERIA |
|--|------------------------------------|---------|---------|------------------------|
|  | LEVEL 1                            | LEVEL 2 | LEVEL 3 |                        |
| Prior to construction, verification of compliance of submittals.   | R                                  | R       | R       | Art. 1.5               |
| Prior to construction, verification of Fm and FAAC, except where specifically exempted by the Code.  | NR                                 | R       | R       | Art. 1.4B              |
| During construction, verification of Slump flow and Visual Stability Index (VSI) when self-consolidating grout is delivered to the project site.   | NR                                 | R       | R       | Art. 1.5 & 1.6.3       |
| During construction, verification of Fm and FAAC for every 5,000 square feet (465 square meters).  | NR                                 | NR      | R       | Art. 1.4B              |
| During construction, verification of proportions of materials as delivered to the project site for premixed or preblended mortar, prestressing grout, and grout other than self-consolidating grout. | NR                                 | NR      | R       | Art. 1.4B              |

a. R = Required, NR = Not Required

**AISC 360 — TABLE NS-6-1**

**INSPECTION TASKS PRIOR TO BOLTING**

| INSPECTION TASKS PRIOR TO BOLTING  | QC | QA |
|--|----|----|
| Manufacturer's certifications available for fastener materials   | O  | P  |
| Fasteners marked in accordance with ASTM requirements  | O  | O  |
| Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)                                 | O  | O  |
| Proper bolting procedure selected for joint detail   | O  | O  |
| Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements                 | O  | O  |
| Pre-installation verification leading by installation personnel observed and documented for fastener assemblies and methods used                         | P  | O  |
| Proper storage provided for bolts, nuts, washers, and other fastener components  | O  | O  |
| O - Observe these items on a random basis. Operations need not be delayed pending these inspections. P - Perform these tasks for each bolted connection. |    |    |

**AISC 360 — TABLE NS-6-2**

**INSPECTION TASKS DURING BOLTING**

| INSPECTION TASKS DURING BOLTING  | QC | QA |
|--|----|----|
| Fastener assemblies placed in all holes and washers and nuts are positioned as required  | O  | O  |
| Joint brought to the snug-tight condition prior to the pretensioning operation   | O  | O  |
| Fastener component not turned by the wrench prevented from rotating  | O  | O  |
| Fasteners are pretensioned in accordance with the RSCC Specification, progressing systematically from the most rigid point toward the free edges         | O  | O  |
| O - Observe these items on a random basis. Operations need not be delayed pending these inspections. P - Perform these tasks for each bolted connection. |    |    |

**AISC 360 — TABLE NS-6-3**

**INSPECTION TASKS AFTER BOLTING**

| INSPECTION TASKS AFTER BOLTING   | QC | QA |
|--|----|----|
| Document acceptance or rejection of bolted connections   | P  | P  |
| O - Observe these items on a random basis. Operations need not be delayed pending these inspections. P - Perform these tasks for each bolted connection. |    |    |

**AISC 360 — TABLE NS-4-1**

**INSPECTION TASKS PRIOR TO WELDING**

| INSPECTION TASKS PRIOR TO WELDING  | QC | QA |
|--|----|----|
| Welder qualification records and continuity records  | P  | O  |
| Welding procedure specifications (WPS) available   | P  | P  |
| Manufacturer certifications for welding consumables available  | P  | P  |
| Material identification (type / grade)   | O  | O  |
| Welder identification system [a]   | O  | O  |
| Fit-up of groove welds (including joint geometry) joint preparations <ul style="list-style-type: none"> <li>Dimensions (alignment, root opening, root face, bevel)</li> <li>Cleanliness (condition of steel surfaces)</li> <li>Tacking (back weld quality and location)</li> <li>Backing type and fit (if applicable)</li> </ul>                         | O  | O  |
| Fit-up of C/J groove welds of HSS T-, Y- and K-joints without backing (including joint geometry) <ul style="list-style-type: none"> <li>Joint preparations</li> <li>Dimensions (alignment, root opening, root face, bevel)</li> <li>Cleanliness (condition of steel surfaces)</li> <li>Tacking (back weld quality and location)</li> </ul>               | P  | O  |
| Configuration and finish of access holes   | O  | O  |
| Fit-up of fillet welds <ul style="list-style-type: none"> <li>Dimensions (alignment, gaps at root)</li> <li>Cleanliness (condition of steel surfaces)</li> <li>Tacking (back weld quality and location)</li> </ul>   | O  | O  |
| Check welding equipment  | O  | —  |
| [a] The fabricator or erector, as applicable, shall maintain a system by which a welder who has welded a joint or member can be identified. Stamps, if used, shall be the low-stress type. O - Observe these items on a random basis. Operations need not be delayed pending these inspections. P - Perform these tasks for each welded joint or member. |    |    |

**AISC 360 — TABLE NS-4-2**

**INSPECTION TASKS DURING WELDING**

| INSPECTION TASKS DURING WELDING  | QC | QA |
|--|----|----|
| Control and handling of welding consumables <ul style="list-style-type: none"> <li>Packaging</li> <li>Exposure Control</li> </ul>  | O  | O  |
| No welding over cracked tack welds   | O  | O  |
| Environmental conditions <ul style="list-style-type: none"> <li>Wind speed within limits</li> <li>Precipitation and temperature</li> </ul>   | O  | O  |
| WPS Followed <ul style="list-style-type: none"> <li>Settings on welding equipment</li> <li>Travel Speed</li> <li>Selected welding materials</li> <li>Shielding gas type / flow rate</li> <li>Preheat applied</li> <li>Interpass temperature maintained (min. / max.)</li> <li>Proper position (F, V, H, OH)</li> </ul> | O  | O  |
| Welding techniques <ul style="list-style-type: none"> <li>Interpass and final cleaning</li> <li>Each pass within profile limitations</li> <li>Each pass meets quality requirements</li> </ul>  | O  | O  |
| Placement and installation of steel headed stud anchors  | P  | P  |
| O - Observe these items on a random basis. Operations need not be delayed pending these inspections. P - Perform these tasks for each welded joint or member.  |    |    |

**AISC 360 — TABLE NS-4-3**

**INSPECTION TASKS AFTER WELDING**

| INSPECTION TASKS AFTER WELDING  | QC | QA |
|---|----|----|
| Welds cleaned   | O  | O  |
| Size, length and location of welds  | P  | P  |
| Welds meet visual acceptance criteria <ul style="list-style-type: none"> <li>Crack prohibition</li> <li>Weld / base-metal fusion</li> <li>Crater cross section</li> <li>Weld profiles</li> <li>Weld size</li> <li>Undercut</li> <li>Porosity</li> </ul> | P  | P  |
| Arc strikes   | P  | P  |
| k-area [a]  | P  | P  |
| Weld access holes in rolled heavy shapes and built-up heavy shapes [b]  | P  | P  |
| Backing removed and weld tabs removed (if required)   | P  | P  |
| Repair activities   | P  | P  |
| Document acceptance or rejection of welded joint or member  | P  | P  |
| No prohibited welds have been added without the approval of the EOR   | O  | O  |
| [a] When welding of doubler plates, continuity plates or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3 inches (75 mm) of the weld.   |    |    |
| [b] After rolled heavy shapes (see Section A3.1c) and built-up heavy shapes (see Section A3.1d) are welded, visually inspect the weld access hole for cracks.   |    |    |
| O - Observe these items on a random basis. Operations need not be delayed pending these inspections. P - Perform these tasks for each welded joint or member.   |    |    |

**ANSI / SDI QA/QC — TABLE 1.3**

**INSPECTION OR EXECUTION TASKS PRIOR TO WELDING**

| TASK  | QC | QA |
|---|----|----|
| A. Welding procedure specifications (WPS) available   | O  | O  |
| B. Manufacturer certifications for welding consumables available  | O  | O  |
| C. Material identification (type / grade)   | O  | O  |
| D. Check welding equipment  | O  | O  |
| O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections. P - Perform these tasks prior to final acceptance for each item or element. |    |    |

**ANSI / SDI QA/QC — TABLE 1.4**

**INSPECTION OR EXECUTION TASKS DURING WELDING**

| TASK  | QC | QA |
|---|----|----|
| A. Use of qualified welders   | O  | O  |
| B. Control and handling of welding consumables  | O  | O  |
| C. Environmental conditions (wind speed, moisture, temperature)   | O  | O  |
| D. WPS followed   | O  | O  |
| O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections. P - Perform these tasks prior to final acceptance for each item or element. |    |    |

**ANSI / SDI QA/QC — TABLE 1.5**

**INSPECTION OR EXECUTION TASKS AFTER WELDING**

| TASK  | QC | QA |
|---|----|----|
| A. Verify size and location of welds, including support, sidelap, and perimeter welds   | P  | P  |
| B. Welds meet visual acceptance criteria  | P  | P  |
| C. Verify repair activities   | P  | P  |
| D. Document acceptance or rejection of welds  | P  | P  |
| O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections. P - Perform these tasks prior to final acceptance for each item or element. |    |    |

**ANSI / SDI QA/QC — TABLE 1.6**

**INSPECTION OR EXECUTION TASKS PRIOR TO MECHANICAL FASTENING**

| TASK  | QC | QA |
|---|----|----|
| A. Manufacturer installation instructions available for mechanical fasteners  | O  | O  |
| B. Proper tools available for fastener installation   | O  | O  |
| C. Proper storage for mechanical fasteners  | O  | O  |
| O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections. P - Perform these tasks prior to final acceptance for each item or element. |    |    |

**ANSI / SDI QA/QC — TABLE 1.7**

**INSPECTION OR EXECUTION TASKS DURING MECHANICAL FASTENING**

| TASK  | QC | QA |
|---|----|----|
| A. Fasteners are positioned as required   | O  | O  |
| B. Fasteners are installed in accordance with manufacturer's instructions   | O  | O  |
| O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections. P - Perform these tasks prior to final acceptance for each item or element. |    |    |

**ANSI / SDI QA/QC — TABLE 1.8**

**INSPECTION OR EXECUTION TASKS AFTER MECHANICAL FASTENING**

| TASK  | QC | QA |
|---|----|----|
| A. Check spacing, type, and installation of support fasteners   | P  | P  |
| B. Check spacing, type, and installation of sidelap fasteners   | P  | P  |
| C. Check spacing, type, and installation of perimeter fasteners   | P  | P  |
| D. Verify repair activities   | P  | P  |
| E. Document acceptance or rejection on mechanical fasteners   | P  | P  |
| O - Observe these items on an intermittent basis. Operations need not be delayed pending these inspections. P - Perform these tasks prior to final acceptance for each item or element. |    |    |

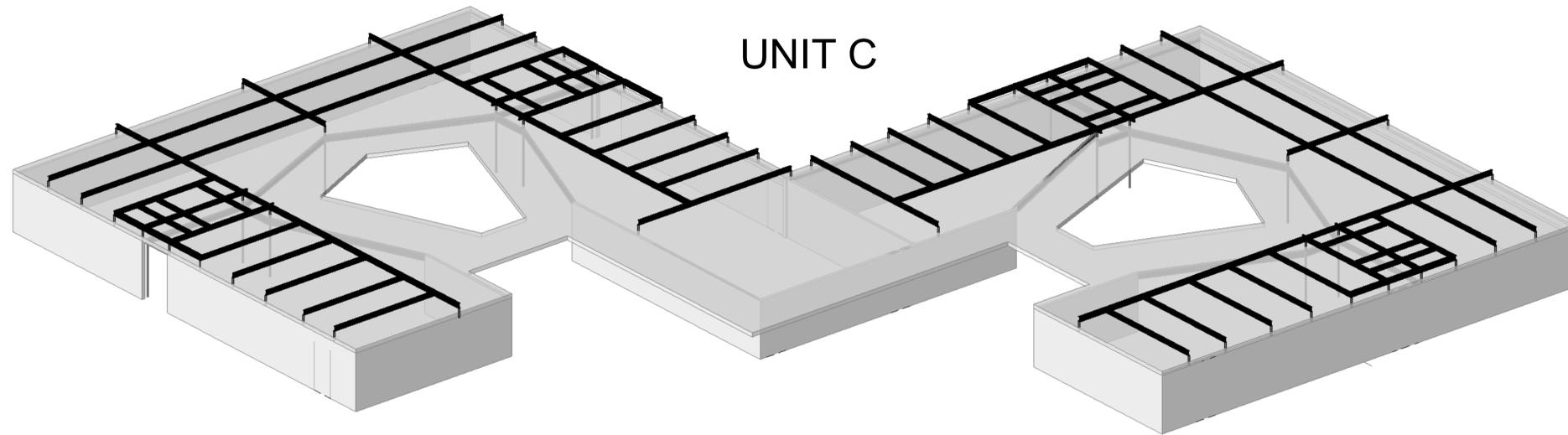


**MANZANITA ELEMENTARY SCHOOL**  
 COVID 19 - COVINA VALLEY DISTRICT HVAC REPLACEMENT  
 4131 N INDIRA AVE COVINA, CA 91722

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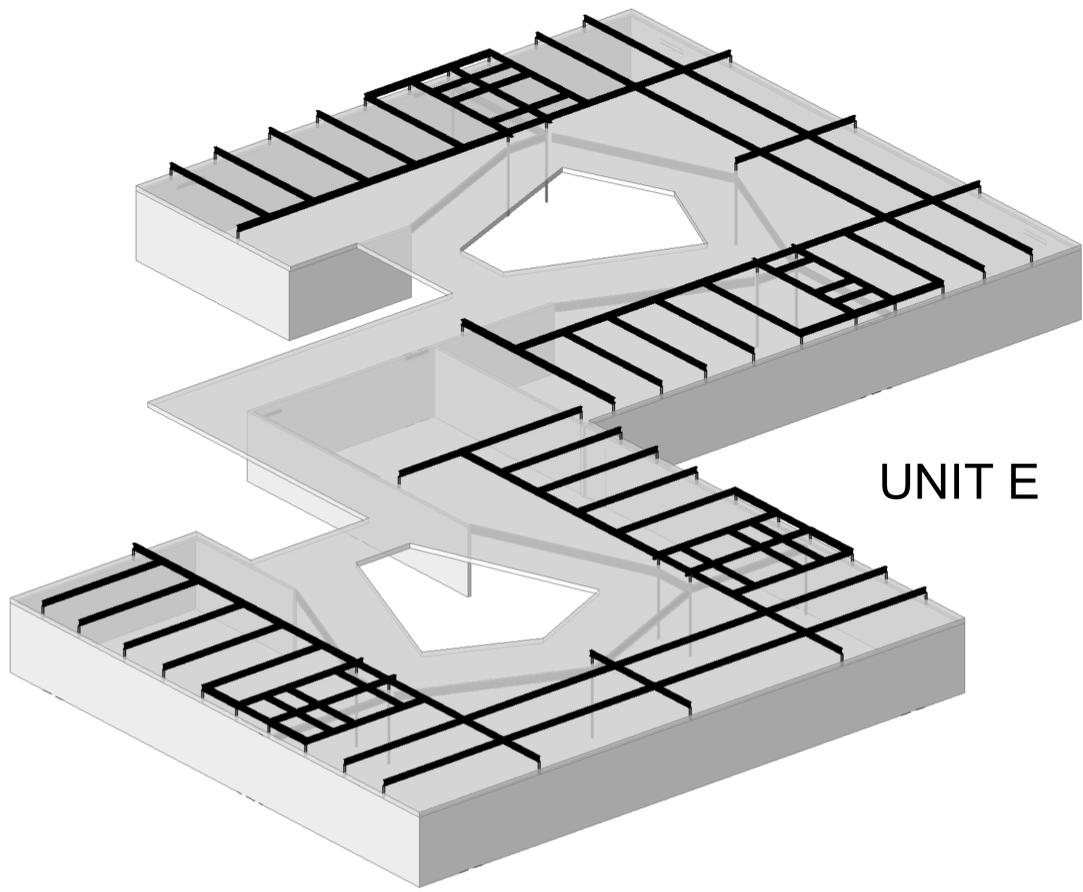
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 DSA A#03-122231  
 DSA File#: 19-25  
 GENERAL STRUCTURAL NOTES & SPECIAL INSPECTIONS

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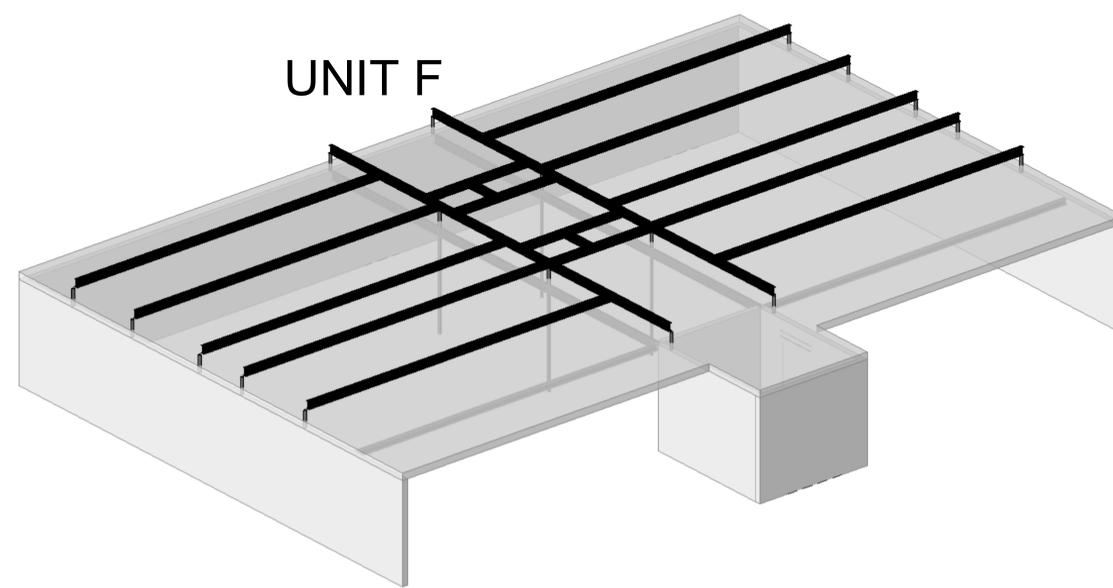
UNIT C

2A ISOMETRIC VIEW UNIT C  
SCALE: 1/8" = 1'-0"



UNIT E

5A ISOMETRIC VIEW UNIT E  
SCALE: 1/8" = 1'-0"



UNIT F

5D ISOMETRIC VIEW UNIT F  
SCALE: 1/8" = 1'-0"

- NOTES:**
- 3D VIEW SHOWN (INCLUDING, BUT NOT LIMITED TO ISOMETRICS, PERSPECTIVES, ETC.) ARE PROVIDED FOR REFERENCE PURPOSES ONLY.
  - IN THE EVENT OF ANY DISCREPANCY BETWEEN INFORMATION REPRESENTED BY BOTH A 3D VIEW AND BY A NON-3D VIEW WITHIN THE CONSTRUCTION DOCUMENTS, THE NON-3D VIEW SHALL GOVERN IN ALL CASES.



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 VIEWS

S1.0

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A

B

C

D

E

F

1

2

3

4

5

**ROOF FRAMING PLAN NOTES:**

- ELEVATIONS ARE BASED ON A FLOOR DATUM OF 0'-0" UNO.
- RTU SIZES AND LOCATIONS SHOWN ON PLAN ARE ONLY SCHEMATIC. CONTRACTOR SHALL VERIFY AND COORDINATE FINAL LOCATIONS, PLAN DIMENSIONS, WEIGHTS AND ROOF OPENING SIZES, LOCATIONS FOR ALL MECHANICAL UNITS/EQUIPMENT.
- FOR ELEVATIONS, WALL SECTIONS AND DIMENSIONS NOT SHOWN SEE ARCHITECTURAL DRAWINGS.
- (E) STEEL FRAMING LOCATION, SIZES AND ELEVATIONS SHOWN FOR REFERENCE ONLY. CONTRACTOR TO FIELD VERIFY ALL (E) BEAMS TO SUPPORTING NEW POST ABOVE.
- ALL (N) STRUCTURAL STEEL PERMANENTLY EXPOSED TO THE WEATHER SHALL BE HOT DIP GALVANIZED PER GENERAL NOTES.
- ROOF SYSTEM CONSISTS OF 1 1/2" DECKING 18"x1" LONG FILLET WELDS @ 30" OC. PLEASE REFER TO EXISTING DRAWINGS FOR DETAILS.
- FV (N) FRAMING ATTACHMENT IS TO (E) CONCRETE WALL. CONTACT SEOR IF (N) FRAMING ATTACHMENT CANNOT BE MET.

**LEGEND**

EXISTING CONCRETE WALL

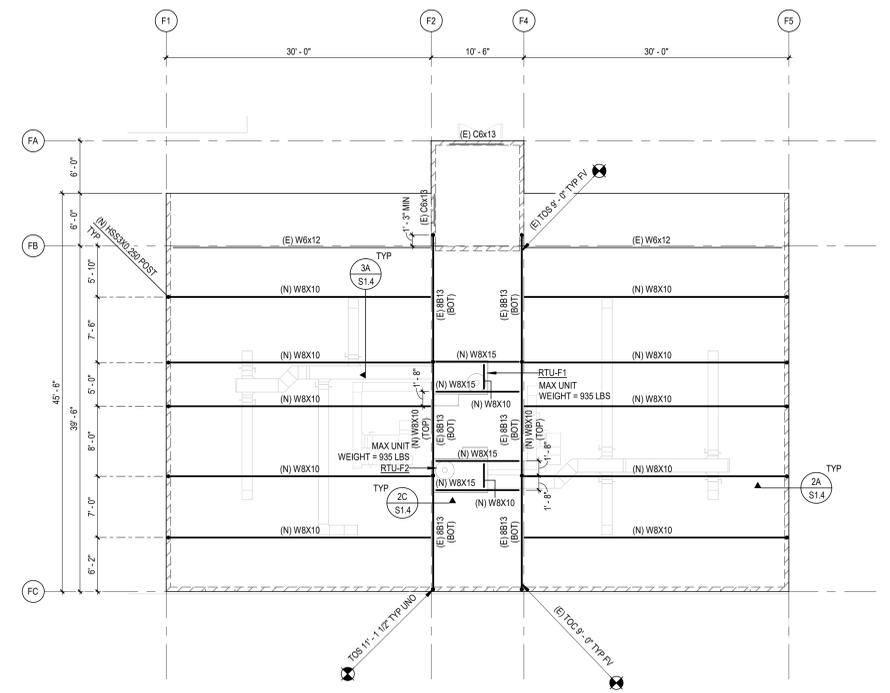


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DSA File#: 19-25  
**ROOF FRAMING  
PLAN UNIT F**

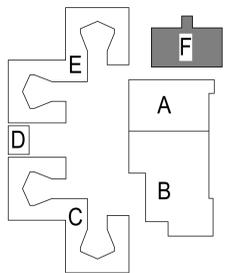
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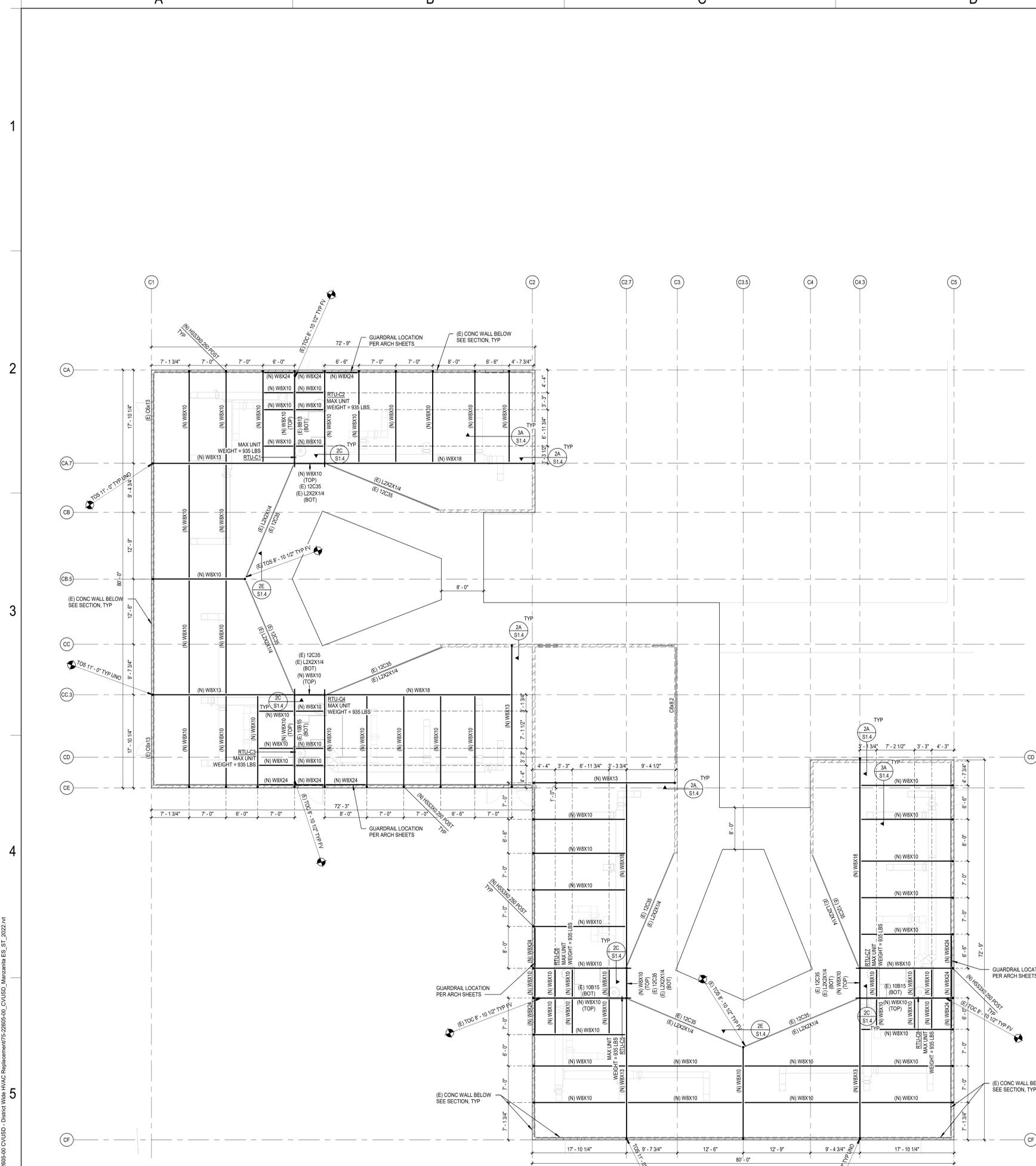


**ROOF FRAMING PLAN UNIT F**  
SCALE: 1/8" = 1'-0"



**KEY PLAN**





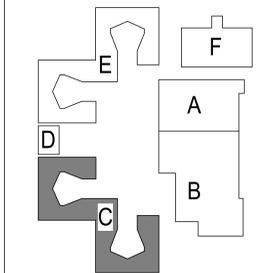
**ROOF FRAMING PLAN NOTES:**

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- ROOF SYSTEM CONSISTS OF 1 1/2" DECKING 18"x11" LONG FILLET WELDS @ 3" OC. PLEASE REFER TO EXISTING DRAWINGS FOR DETAILS.
- FV (N) FRAMING ATTACHMENT IS TO (E) CONCRETE WALL. CONTACT SEOR IF (N) FRAMING ATTACHMENT CANNOT BE MET.

**LEGEND**

EXISTING CONCRETE WALL

**KEY PLAN**



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**ROOF FRAMING PLAN UNIT C**

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



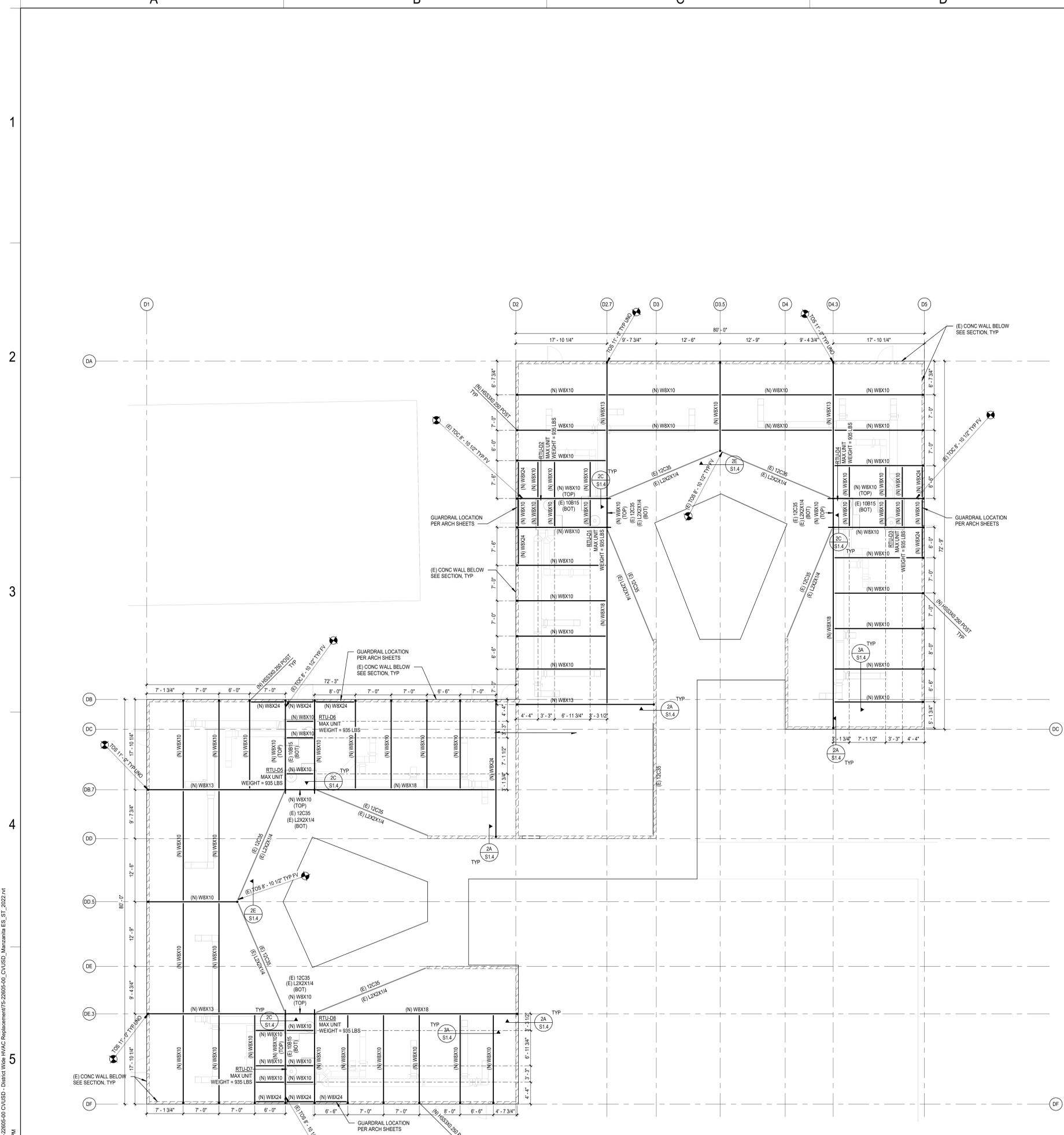
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ROOF FRAMING  
 PLAN UNIT C

**S1.2**



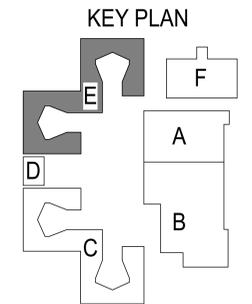
- ROOF FRAMING PLAN NOTES:**
- ELEVATIONS ARE BASED ON A FLOOR DATUM OF 0'-0" UNO.
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**LEGEND**  
 EXISTING CONCRETE WALL



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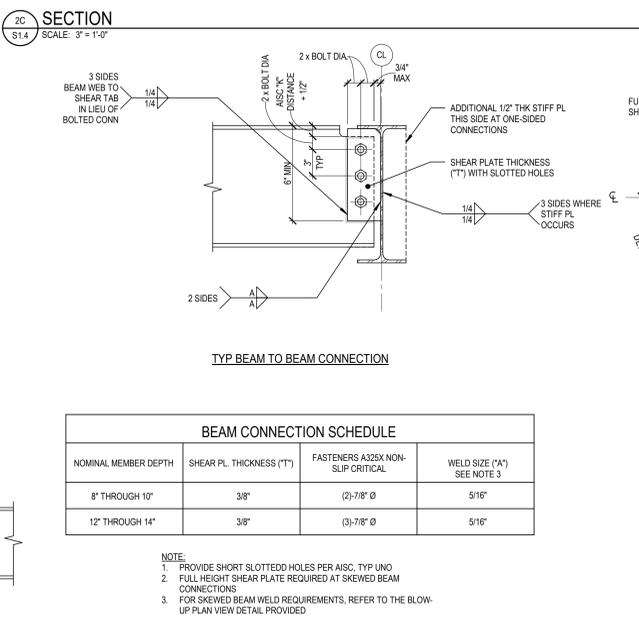
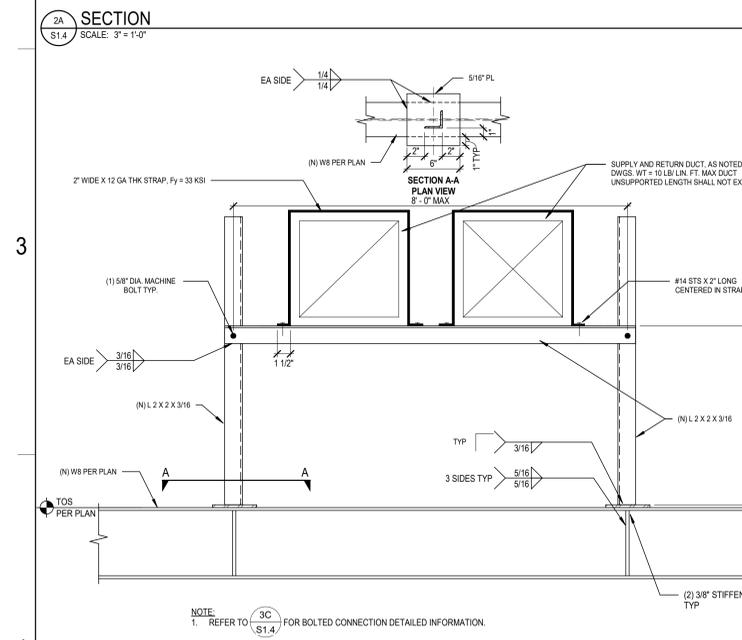
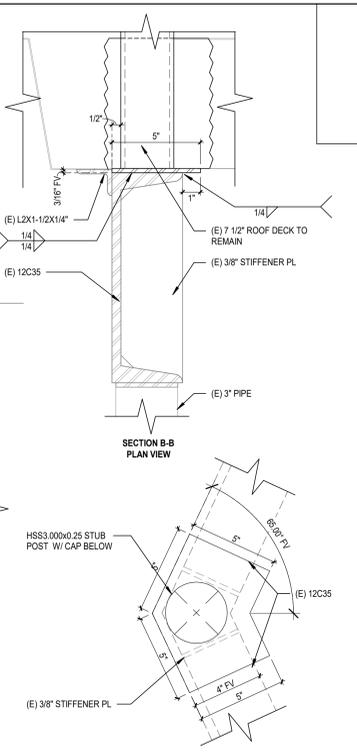
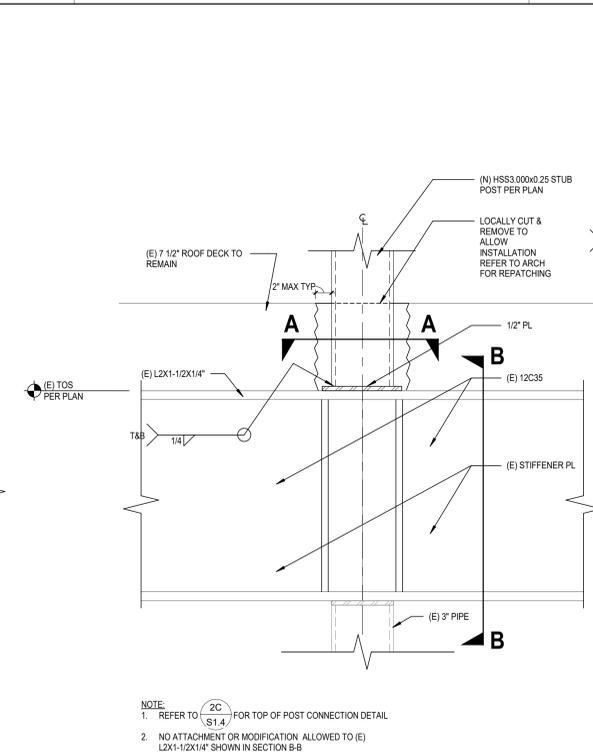
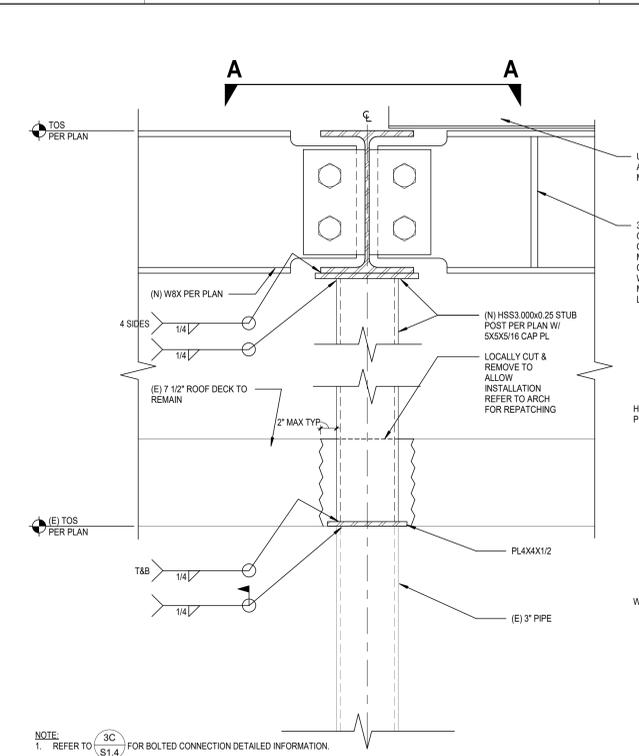
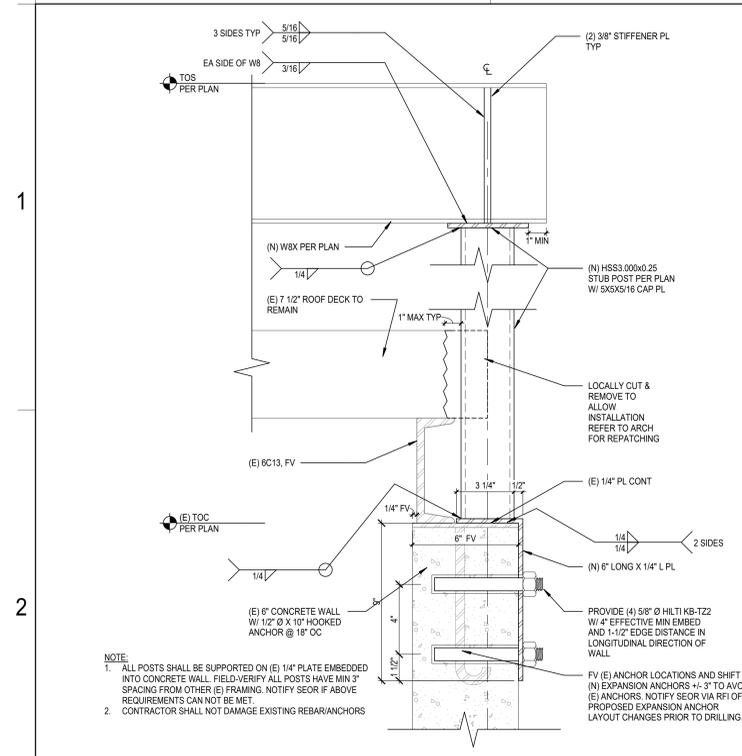
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ROOF FRAMING  
 PLAN UNIT E

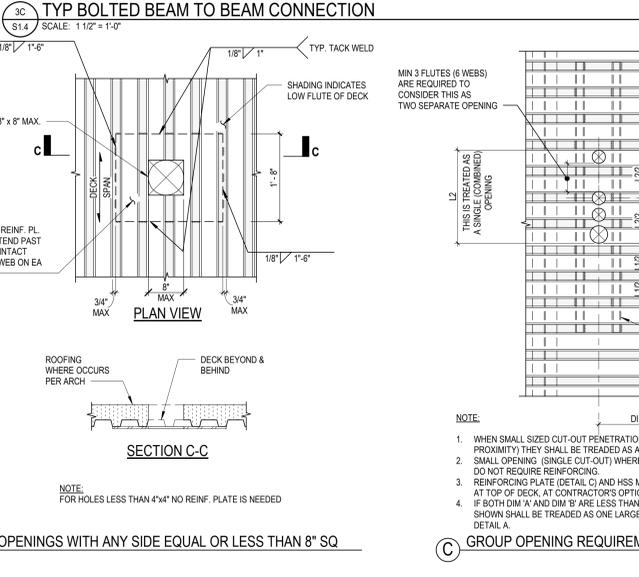
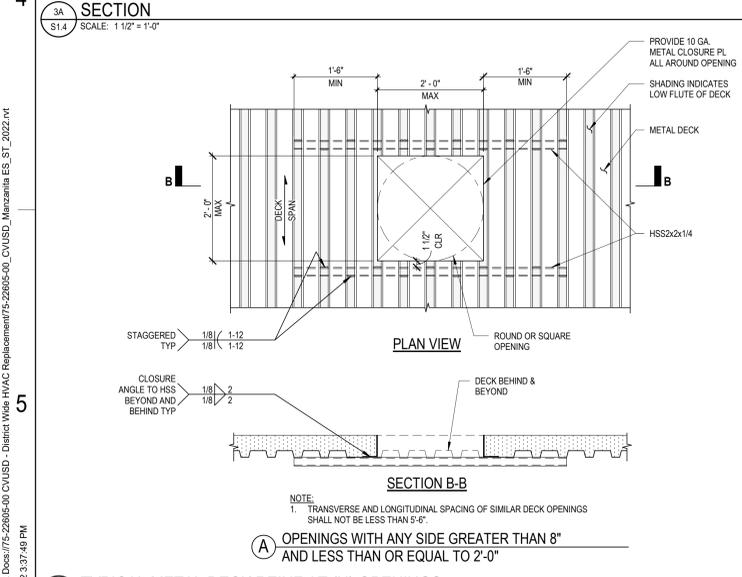
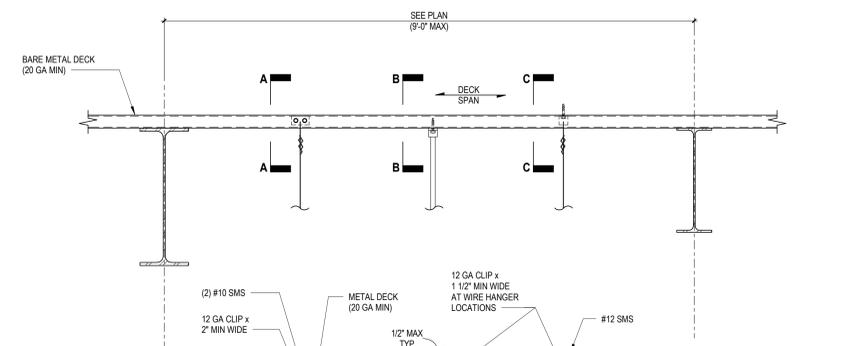
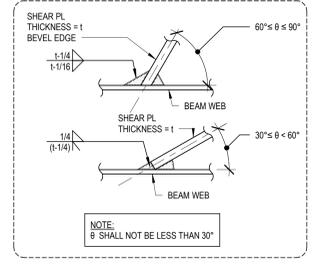
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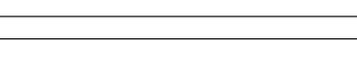
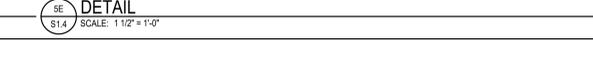
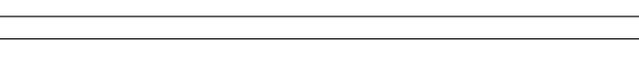
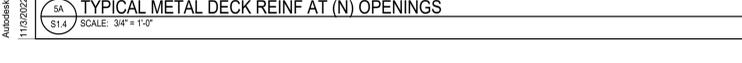
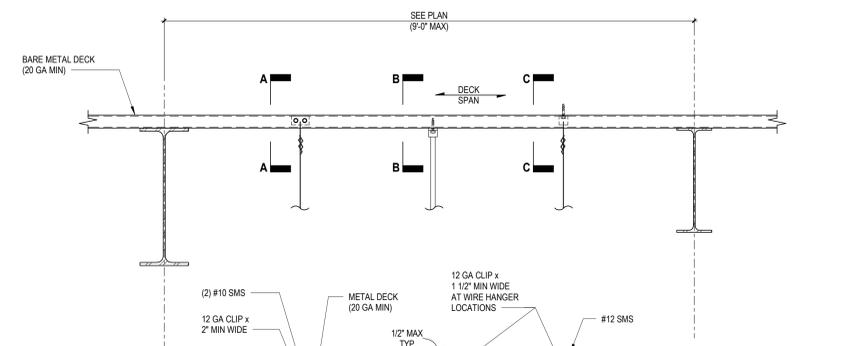
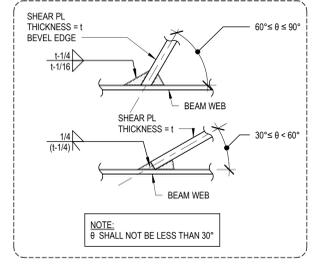
**ROOF FRAMING PLAN UNIT E**  
 SCALE: 1/8" = 1'-0"



| BEAM CONNECTION SCHEDULE |                             |                                   |                              |
|--------------------------|-----------------------------|-----------------------------------|------------------------------|
| NOMINAL MEMBER DEPTH     | SHEAR PL. THICKNESS (\"T\") | FASTENERS A325X NON-SLIP CRITICAL | WELD SIZE (\"A\") SEE NOTE 3 |
| 8\" THROUGH 10\"         | 3/8\"                       | (2)-7/8\" Ø                       | 5/16\"                       |
| 12\" THROUGH 14\"        | 3/8\"                       | (3)-7/8\" Ø                       | 5/16\"                       |



| BEAM CONNECTION SCHEDULE |                             |                                   |                              |
|--------------------------|-----------------------------|-----------------------------------|------------------------------|
| NOMINAL MEMBER DEPTH     | SHEAR PL. THICKNESS (\"T\") | FASTENERS A325X NON-SLIP CRITICAL | WELD SIZE (\"A\") SEE NOTE 3 |
| 8\" THROUGH 10\"         | 3/8\"                       | (2)-7/8\" Ø                       | 5/16\"                       |
| 12\" THROUGH 14\"        | 3/8\"                       | (3)-7/8\" Ø                       | 5/16\"                       |



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STATE OF CALIFORNIA  
**Mechanical Systems**  
 NRC-C-MCH-4 CALIFORNIA ENERGY COMMISSION

**CERTIFICATE OF COMPLIANCE** NRC-C-MCH-4  
 (Page 1 of 43)

Project Name: CVUSD Manzanita Report Page: (Page 1 of 43)  
 Project Address: 4131 N Nora Ave Date Prepared: 8/11/2022

**A. GENERAL INFORMATION**

|  |   |   |             |
|--|---|---|-------------|
| 01 Project Location (city)                               | Covina  | 04 Total Conditioned Floor Area                         | 21120       |
| 02 Climate Zone  | 10  | 05 Total Unconditioned Floor Area                       | 0           |
| 03 Occupancy Types Within Project:                       |   | 06 # of Stories (Habitable Above Grade)                 | 1           |
| <input type="checkbox"/> Office (O)                      | <input type="checkbox"/> Retail (R)                 | <input type="checkbox"/> Non-refrigerated Warehouse (S) |             |
| <input type="checkbox"/> Hotel/ Motel Guest Rooms (R-1)  | <input type="checkbox"/> School (E)                 | <input type="checkbox"/> Healthcare Facility (I)        |             |
| <input type="checkbox"/> High-Rise Residential (R-2/R-3) | <input type="checkbox"/> Relocatable Class Bldg (E) | <input checked="" type="checkbox"/> Other (write in)    | See Table J |

**B. PROJECT SCOPE**  
 This table includes mechanical systems or components that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.4, or §141.0(b)(2), for alterations.

|  |   |   |
|--|---|---|
| 01 Air System(s)   | 02 Wet System Components                  | 03 Dry System Components  |
| <input checked="" type="checkbox"/> Heating Air System                                       | <input type="checkbox"/> Water Economizer | <input checked="" type="checkbox"/> Air Economizer                                |
| <input checked="" type="checkbox"/> Cooling Air System                                       | <input type="checkbox"/> Pumps            | <input type="checkbox"/> Electric Resistance Heat                                 |
| <input type="checkbox"/> Mechanical Controls   | <input type="checkbox"/> System Piping    | <input checked="" type="checkbox"/> Fan Systems                                   |
| <input checked="" type="checkbox"/> Mechanical Controls (existing to remain, altered or new) | <input type="checkbox"/> Cooling Towers   | <input checked="" type="checkbox"/> Ductwork (existing to remain, altered or new) |
|  | <input type="checkbox"/> Chillers         | <input checked="" type="checkbox"/> Ventilation                                   |
|  | <input type="checkbox"/> Boilers          | <input type="checkbox"/> Zonal Systems/Terminal Boxes                             |

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 Schema Version: rev 20200601

STATE OF CALIFORNIA  
**Mechanical Systems**  
 NRC-C-MCH-4 CALIFORNIA ENERGY COMMISSION

**CERTIFICATE OF COMPLIANCE** NRC-C-MCH-4  
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Project Name: CVUSD Manzanita Report Page: (Page 4 of 43)  
 Project Address: 4131 N Nora Ave Date Prepared: 8/11/2022

**F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)**  
 Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters)

| 01     | 02                 | 03                        | 04                | 05    | 06   | 07 | 08    | 09   | 10    | 11    |
|--------|--------------------|---------------------------|-------------------|-------|------|----|-------|------|-------|-------|
| RTU-D1 | Unitary Heat Pumps | Air-cooled, pkg (3 phase) | NA: Load Controls | 12.7  | 21.5 | 0  | 22.54 | 23   | 30.74 | 27.55 |
| RTU-D2 | Unitary Heat Pumps | Air-cooled, pkg (3 phase) | NA: Load Controls | 12.4  | 21   | 0  | 23.14 | 23.5 | 29.92 | 28.34 |
| RTU-D3 | Unitary Heat Pumps | Air-cooled, pkg (3 phase) | NA: Load Controls | 12.7  | 21.5 | 0  | 23.02 | 23.5 | 30.74 | 28.04 |
| RTU-D4 | Unitary Heat Pumps | Air-cooled, pkg (3 phase) | NA: Load Controls | 13.29 | 22.5 | 0  | 23.74 | 24   | 31.86 | 28.87 |
| RTU-D5 | Unitary Heat Pumps | Air-cooled, pkg (3 phase) | NA: Load Controls | 13.29 | 22.5 | 0  | 23.14 | 23.5 | 31.83 | 28.42 |
| RTU-D6 | Unitary Heat Pumps | Air-cooled, pkg (3 phase) | NA: Load Controls | 12.7  | 21.5 | 0  | 23.73 | 24   | 30.74 | 28.78 |
| RTU-D7 | Unitary Heat Pumps | Air-cooled, pkg (3 phase) | NA: Load Controls | 13.29 | 22.5 | 0  | 23.73 | 24   | 31.86 | 28.48 |
| RTU-D8 | Unitary Heat Pumps | Air-cooled, pkg (3 phase) | NA: Load Controls | 12.7  | 21.5 | 0  | 23.73 | 24   | 30.74 | 28.84 |
| RTU-F1 | Unitary Heat Pumps | Air-cooled, pkg (3 phase) | NA: Load Controls | 13.29 | 22.5 | 0  | 24.44 | 24.5 | 35.81 | 33.86 |
| RTU-F2 | Unitary Heat Pumps | Air-cooled, pkg (3 phase) | NA: Load Controls | 14.18 | 24   | 0  | 24.46 | 24.5 | 35.81 | 34.46 |

FOOTNOTES: Equipment shall be the smallest size, within the available options of the desired equipment line, necessary to meet the design heating and cooling loads of the building per §140.4(a). Healthcare facilities are exempt.  
 2 It is common practice to show rated output capacity on the equipment schedule. Sensible cooling output comes from specification sheet tables.  
 3 If equipment is heating only, leave cooling output and load blank. If equipment is cooling only, leave heating output and load blank.  
 4 Authority Having Jurisdiction may ask for load calculations used for compliance per §140.4(b).

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 CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.1.003 Report Generated: 2022-08-11 13:12:11  
 Schema Version: rev 20200601

STATE OF CALIFORNIA  
**Mechanical Systems**  
 NRC-C-MCH-4 CALIFORNIA ENERGY COMMISSION

**CERTIFICATE OF COMPLIANCE** NRC-C-MCH-4  
 (Page 7 of 43)

Project Name: CVUSD Manzanita Report Page: (Page 7 of 43)  
 Project Address: 4131 N Nora Ave Date Prepared: 8/11/2022

**H. FAN SYSTEMS & AIR ECONOMIZERS**

| System Name:                              | RTU-C2       | Economizer: <sup>1</sup> | NA: <=54 kbtu/h cooling             | Economizer Controls:       | Designed per §140.4(c) and (m) | System Fan Type:                                   | Constant Volume                        |
|---|--------------|--------------------------|-------------------------------------|----------------------------|--------------------------------|--|--|
| 01  | 02           | 03                       | 04                                  | 05                         | 06                             | 07   | 08                                     |
| Fan Name or Item Tag                      | Fan Function | Qty                      | Maximum Design Supply Airflow (CFM) | HP Unit <sup>2</sup>       | Design HP                      | Fan Power Pressure Drop Adjustment - Table 140.4-B | Design Airflow through Device (CFM)    |
| SF  | Supply       | 1                        | 2000                                | BHP                        | 0.91                           |  |  |
| Total System Design Supply Airflow (CFM): |              |                          | 2000                                | Total System Design (BHP): |                                | 0.91   | <b>Maximum System Fan Power (BHP):</b> |

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 CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.1.003 Report Generated: 2022-08-11 13:12:11  
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**Mechanical Systems**  
 NRC-C-MCH-4 CALIFORNIA ENERGY COMMISSION

**CERTIFICATE OF COMPLIANCE** NRC-C-MCH-4  
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**C. COMPLIANCE RESULTS**  
 Table C will indicate if the project data input into the compliance document is compliant with mechanical requirements. This table is not editable by the user. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, or the table indicated as not compliant for guidance.

| System Summary | 01            | 02            | 03            | 04               | 05            | 06              | 07            | 08          | 09  |                       |     |              |     |                |     |                    |
|----------------|---------------|---------------|---------------|------------------|---------------|-----------------|---------------|-------------|-----|-----------------------|-----|--------------|-----|----------------|-----|--------------------|
| System Summary | AND           | Pumps         | AND           | Fans/Economizers | AND           | System Controls | AND           | Ventilation | AND | Terminal Box Controls | AND | Distribution | AND | Cooling Towers | AND | Compliance Results |
| (See Table F)  | (See Table G) | (See Table H) | (See Table I) | (See Table J)    | (See Table K) | (See Table L)   | (See Table M) |             |     |                       |     |              |     |                |     | COMPLIES           |

**D. EXCEPTIONAL CONDITIONS**  
 This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

**E. ADDITIONAL REMARKS**  
 This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

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**F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)**  
 Dry System Equipment Efficiency (other than Package Terminal Air Conditioners (PTAC) and Package Terminal Heat Pumps (PTHP))

| Name or Item Tag | Size Category (Btu/h) | Rating Condition (°F) | Heating Mode    |   |                   | Cooling Mode    |   |                   |
|------------------|-----------------------|-----------------------|-----------------|---|-------------------|-----------------|---|-------------------|
|                  |                       |                       | Efficiency Unit | Minimum Efficiency Required per Tables 110.2 / Title 20 | Design Efficiency | Efficiency Unit | Minimum Efficiency Required per Tables 110.2 / Title 20 | Design Efficiency |
| FCU/CU-B1        | >=65,000 and <135,000 |                       | COP             | 3.3   | 3.5               | EER             | 11  | 12.2              |
| RTU-C1           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-C2           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-C3           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-C4           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-C5           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-C6           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-C7           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-C8           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-D1           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-D2           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-D3           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-D4           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-D5           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-D6           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-D7           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-D8           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-F1           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |
| RTU-F2           | <65,000               |                       | HSPF            | 7.7   | 8.2               | SEER            | 13.0  | 14.3              |

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**H. FAN SYSTEMS & AIR ECONOMIZERS**

| System Name:                              | RTU-C5       | Economizer: <sup>1</sup> | NA: <=54 kbtu/h cooling             | Economizer Controls:       | Designed per §140.4(c) and (m) | System Fan Type:                                   | Constant Volume                        |
|---|--------------|--------------------------|-------------------------------------|----------------------------|--------------------------------|--|--|
| 01  | 02           | 03                       | 04                                  | 05                         | 06                             | 07   | 08                                     |
| Fan Name or Item Tag                      | Fan Function | Qty                      | Maximum Design Supply Airflow (CFM) | HP Unit <sup>2</sup>       | Design HP                      | Fan Power Pressure Drop Adjustment - Table 140.4-B | Design Airflow through Device (CFM)    |
| SF  | Supply       | 1                        | 2000                                | BHP                        | 0.91                           |  |  |
| Total System Design Supply Airflow (CFM): |              |                          | 2000                                | Total System Design (BHP): |                                | 0.91   | <b>Maximum System Fan Power (BHP):</b> |

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**F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)**  
 This table is used to demonstrate compliance for mechanical equipment with mandatory requirements found in §110.1 and §110.2(a) and prescriptive requirements found in §140.4(a), §140.4(b) and §140.4(c) or §141.0(b)(2), for alterations.

**Dry System Equipment Sizing (includes air conditioners, condensers, heat pumps, VRF, furnaces and unit heaters)**

| Name or Item Tag | Equipment Category per Tables 110.2 | Equipment Type per Tables 110.2 / Title 20 | Smallest Size Available <sup>1</sup> §140.4(a) | Equipment Sizing per Mechanical Schedule (kbtu/h) |                               |                                  | Total Sensible Cooling Load (kbtu/h) |                |                             |                                      |
|------------------|-------------------------------------|--|--|---|-------------------------------|----------------------------------|--------------------------------------|----------------|-----------------------------|--------------------------------------|
|                  |                                     |  |  | Heating Output <sup>2,3</sup>                     | Cooling Output <sup>2,3</sup> | Load Calculations <sup>3,4</sup> |                                      |                |                             |                                      |
|                  |                                     |  |  | Per Design (kbtu/h)                               | Rated (kbtu/h)                | Supp. Heating Output (kbtu/h)    | Per Design (kbtu/h)                  | Rated (kbtu/h) | Total Heating Load (kbtu/h) | Total Sensible Cooling Load (kbtu/h) |
| FCU/CU-B1        | Unitary Heat Pumps                  | Air-cooled, split (3 phase)                | NA: Load Controls                              | 59.07   | 100                           | 0                                | 115.19                               | 110            | 134.63                      | 120.07                               |
| RTU-C1           | Unitary Heat Pumps                  | Air-cooled, pkg (3 phase)                  | NA: Load Controls                              | 14.18   | 24                            | 0                                | 24.32                                | 24.5           | 33.86                       | 29.12                                |
| RTU-C2           | Unitary Heat Pumps                  | Air-cooled, pkg (3 phase)                  | NA: Load Controls                              | 13.29   | 22.5                          | 0                                | 24.33                                | 24.5           | 31.86                       | 29.3                                 |
| RTU-C3           | Unitary Heat Pumps                  | Air-cooled, pkg (3 phase)                  | NA: Load Controls                              | 12.7  | 21.5                          | 0                                | 23.73                                | 24             | 30.74                       | 28.84                                |
| RTU-C4           | Unitary Heat Pumps                  | Air-cooled, pkg (3 phase)                  | NA: Load Controls                              | 13.29   | 22.5                          | 0                                | 23.73                                | 24             | 31.86                       | 28.48                                |
| RTU-C5           | Unitary Heat Pumps                  | Air-cooled, pkg (3 phase)                  | NA: Load Controls                              | 12.4  | 21                            | 0                                | 23.14                                | 23.5           | 29.92                       | 28.39                                |
| RTU-C6           | Unitary Heat Pumps                  | Air-cooled, pkg (3 phase)                  | NA: Load Controls                              | 13.29   | 22.5                          | 0                                | 23.62                                | 24             | 31.86                       | 28.53                                |
| RTU-C7           | Unitary Heat Pumps                  | Air-cooled, pkg (3 phase)                  | NA: Load Controls                              | 12.7  | 21.5                          | 0                                | 23.13                                | 23.5           | 30.74                       | 28.04                                |
| RTU-C8           | Unitary Heat Pumps                  | Air-cooled, pkg (3 phase)                  | NA: Load Controls                              | 13.29   | 22.5                          | 0                                | 24.32                                | 24.5           | 31.86                       | 29.06                                |

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**G. PUMPS**  
 This section does not apply to this project.

**H. FAN SYSTEMS & AIR ECONOMIZERS**  
 This table is used to demonstrate compliance with prescriptive requirements found in §140.4(c), §140.4(e) and §140.4(m) for fan systems. Fan systems serving only process loads are exempt from these requirements and do not need to be included in Table H.

| System Name:                              | FCU/CU-B1    | Economizer: <sup>1</sup> | NA: Special OA Filtration           | Economizer Controls:       | Designed per §140.4(c) and (m) | System Fan Type:                                   | Constant Volume                        |
|---|--------------|--------------------------|-------------------------------------|----------------------------|--------------------------------|--|--|
| 01  | 02           | 03                       | 04                                  | 05                         | 06                             | 07   | 08                                     |
| Fan Name or Item Tag                      | Fan Function | Qty                      | Maximum Design Supply Airflow (CFM) | HP Unit <sup>2</sup>       | Design HP                      | Fan Power Pressure Drop Adjustment - Table 140.4-B | Design Airflow through Device (CFM)    |
| SF  | Supply       | 1                        | 4472                                | BHP                        | 0.91                           |  |  |
| Total System Design Supply Airflow (CFM): |              |                          | 4472                                | Total System Design (BHP): |                                | 0.91   | <b>Maximum System Fan Power (BHP):</b> |

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**H. FAN SYSTEMS & AIR ECONOMIZERS**

| System Name:                              | RTU-D2       | Economizer: <sup>1</sup> | NA: <=54 kbtu/h cooling             | Economizer Controls:       | Designed per §140.4(c) and (m) | System Fan Type:                                   | Constant Volume                        |
|---|--------------|--------------------------|-------------------------------------|----------------------------|--------------------------------|--|--|
| 01  | 02           | 03                       | 04                                  | 05                         | 06                             | 07   | 08                                     |
| Fan Name or Item Tag                      | Fan Function | Qty                      | Maximum Design Supply Airflow (CFM) | HP Unit <sup>2</sup>       | Design HP                      | Fan Power Pressure Drop Adjustment - Table 140.4-B | Design Airflow through Device (CFM)    |
| SF  | Supply       | 1                        | 2000                                | BHP                        | 0.91                           |  |  |
| Total System Design Supply Airflow (CFM): |              |                          | 2000                                | Total System Design (BHP): |                                | 0.91   | <b>Maximum System Fan Power (BHP):</b> |

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Manzanita Elementary School  
 COVINA VALLEY USD  
 4131 North Nora Avenue Covina CA 91722

DSA Submitted Set  
 11/02/2022  
 REVISIONS

75-22605-00  
 TITLE 24  
 COMPLIANCE

M0.2

**H. FAN SYSTEMS & AIR ECONOMIZERS**

| System Name:                              | RTU-D3       | Economizer <sup>1</sup> : | NA: <=54 kbtu/h cooling             | Economizer Controls:       | Designed per §140.4(e) and (m) | System Fan Type:                                   | Constant Volume                     |
|---|--------------|---------------------------|-------------------------------------|----------------------------|--------------------------------|--|-------------------------------------|
| 01  | 02           | 03                        | 04                                  | 05                         | 06                             | 07   | 08                                  |
| Fan Name or Item Tag                      | Fan Function | Qty                       | Maximum Design Supply Airflow (CFM) | HP Unit <sup>2</sup>       | Design HP                      | Fan Power Pressure Drop Adjustment - Table 140.4-B | Design Airflow through Device (CFM) |
| SF  | Supply       | 1                         | 2000                                | BHP                        | 0.91                           |  |                                     |
| Total System Design Supply Airflow (CFM): |              |                           | 2000                                | Total System Design (B)HP: | 0.91                           | Maximum System Fan Power (B)HP:                    |                                     |

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**I. SYSTEM CONTROLS**

This table is used to demonstrate compliance with mandatory controls in §110.2 and §120.2 and prescriptive controls in §140.4(f) and (n) or requirements in §141.0(b)2 for altered space conditioning systems.

| System Name | System Zoning | Conditioned Floor Area Being Served (ft <sup>2</sup> ) | Thermostats §110.2(b) & (c) <sup>1</sup> , §120.2(a) or §141.0(b)2E | Shut-Off Controls §120.2(e) | Isolation Zone Controls §120.2(g) | Demand Response §110.12 and §120.2(b) | Supply Air Temp. Reset §140.4(f) | Window Interlocks per §140.4(n) |
|-------------|---------------|--|---|-----------------------------|-----------------------------------|---------------------------------------|----------------------------------|---------------------------------|
| 01          | 02            | 03   | 04  | 05                          | 06                                | 07                                    | 08                               | 09                              |
| FCU/CU-B1   | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-C1      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-C2      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-C3      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-C4      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-C5      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-C6      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-C7      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-C8      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-D1      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-D2      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |
| RTU-D3      | Single zone   | <= 25,000 ft <sup>2</sup>                              | Setback   | Auto Timer Switch           | 4 Hour Timer                      | EMCS                                  | Included                         | Provided                        |

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**J. VENTILATION AND INDOOR AIR QUALITY**

| System Name                      | RTU-C2                           | System Design OA CFM Airflow <sup>2</sup> | 225                       | System Design Transfer Air CFM | 0                   | Air Filtration per §120.1(c) and §141.0(b)2 <sup>2</sup> |                         |
|----------------------------------|----------------------------------|---|---------------------------|--------------------------------|---------------------|--|-------------------------|
| 04                               | 05                               | 06  | 07                        | 08                             | 09                  | 10   |                         |
| Space Name or Item Tag           | Occupancy Type <sup>4</sup>      | Conditioned Floor Area (ft <sup>2</sup> ) | # of Shower heads/toilets | # of people <sup>5</sup>       | Required Min OA CFM | Required Min CFM   | Provided per Design CFM |
| Classroom                        | Lecture/ postsecondary classroom | 945                                       |                           | 15                             | 225                 | 0  | 0                       |
| Total System Required Min OA CFM |                                  |   |                           | 225                            | 18                  | Ventilation for this System Complies?                    | Yes                     |

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**H. FAN SYSTEMS & AIR ECONOMIZERS**

| System Name:                              | RTU-D6       | Economizer <sup>1</sup> : | NA: <=54 kbtu/h cooling             | Economizer Controls:       | Designed per §140.4(e) and (m) | System Fan Type:                                   | Constant Volume                     |
|---|--------------|---------------------------|-------------------------------------|----------------------------|--------------------------------|--|-------------------------------------|
| 01  | 02           | 03                        | 04                                  | 05                         | 06                             | 07   | 08                                  |
| Fan Name or Item Tag                      | Fan Function | Qty                       | Maximum Design Supply Airflow (CFM) | HP Unit <sup>2</sup>       | Design HP                      | Fan Power Pressure Drop Adjustment - Table 140.4-B | Design Airflow through Device (CFM) |
| SF  | Supply       | 1                         | 2000                                | BHP                        | 0.91                           |  |                                     |
| Total System Design Supply Airflow (CFM): |              |                           | 2000                                | Total System Design (B)HP: | 0.91                           | Maximum System Fan Power (B)HP:                    |                                     |

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**I. SYSTEM CONTROLS**

| RTU-D4 | Single zone | <= 25,000 ft <sup>2</sup> | Setback | Auto Timer Switch | 4 Hour Timer | EMCS | Included | Provided |
|--------|-------------|---------------------------|---------|-------------------|--------------|------|----------|----------|
| RTU-D5 | Single zone | <= 25,000 ft <sup>2</sup> | Setback | Auto Timer Switch | 4 Hour Timer | EMCS | Included | Provided |
| RTU-D6 | Single zone | <= 25,000 ft <sup>2</sup> | Setback | Auto Timer Switch | 4 Hour Timer | EMCS | Included | Provided |
| RTU-D7 | Single zone | <= 25,000 ft <sup>2</sup> | Setback | Auto Timer Switch | 4 Hour Timer | EMCS | Included | Provided |
| RTU-D8 | Single zone | <= 25,000 ft <sup>2</sup> | Setback | Auto Timer Switch | 4 Hour Timer | EMCS | Included | Provided |
| RTU-F1 | Single zone | <= 25,000 ft <sup>2</sup> | Setback | Auto Timer Switch | 4 Hour Timer | EMCS | Included | Provided |
| RTU-F2 | Single zone | <= 25,000 ft <sup>2</sup> | Setback | Auto Timer Switch | 4 Hour Timer | EMCS | Included | Provided |

<sup>1</sup>FOOTNOTES: Gravity gas wall heaters, gravity floor heaters, gravity room heaters, non-central electric heaters, fireplaces or decorative gas appliances, wood stoves are not required to have setback thermostats.  
<sup>2</sup>Notes: Controls with a \* require a note in the space below explaining how compliance is achieved. EX: System 1: SA Temp Reset: Exempt because zones compliant with §140.4(d); EXCEPTION 1 to §140.4(d)

**J. VENTILATION AND INDOOR AIR QUALITY**

This table is used to demonstrate compliance with mandatory ventilation requirements in §120.1 and §120.2(e)3B for all nonresidential, high-rise residential and hotel/motel occupancies. For alterations, only ventilation systems being altered within the scope of the permit application need to be documented in this table. In lieu of this table, the required outdoor ventilation rates and airflow may be shown on the plans or the calculations can be presented in a spreadsheet.

| 01                                  | 02   | 03 |
|-------------------------------------|--|----|
| <input type="checkbox"/>            | Check the box if the project is showing ventilation calculations on the plans, or attaching the calculations instead of completing this table.           |    |
| <input checked="" type="checkbox"/> | Check this box if the project included Nonresidential or Hotel/Motel spaces.   |    |
| <input type="checkbox"/>            | Check this box if the project included new or altered high-rise residential dwelling units.  |    |
| <input type="checkbox"/>            | Check the box if the project is using natural ventilation in any nonresidential or hotel/motel spaces to meet required ventilation rates per §120.1(c)2. |    |

**Nonresidential and Hotel/ Motel Ventilation Systems**

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**J. VENTILATION AND INDOOR AIR QUALITY**

| System Name                      | RTU-C4                           | System Design OA CFM Airflow <sup>2</sup> | 225                       | System Design Transfer Air CFM | 0                   | Air Filtration per §120.1(c) and §141.0(b)2 <sup>2</sup> |                         |
|----------------------------------|----------------------------------|---|---------------------------|--------------------------------|---------------------|--|-------------------------|
| 04                               | 05                               | 06  | 07                        | 08                             | 09                  | 10   |                         |
| Space Name or Item Tag           | Occupancy Type <sup>4</sup>      | Conditioned Floor Area (ft <sup>2</sup> ) | # of Shower heads/toilets | # of people <sup>5</sup>       | Required Min OA CFM | Required Min CFM   | Provided per Design CFM |
| Classroom                        | Lecture/ postsecondary classroom | 945                                       |                           | 15                             | 225                 | 0  | 0                       |
| Total System Required Min OA CFM |                                  |   |                           | 225                            | 18                  | Ventilation for this System Complies?                    | Yes                     |

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**H. FAN SYSTEMS & AIR ECONOMIZERS**

| System Name:                              | RTU-F1       | Economizer <sup>1</sup> : | NA: <=54 kbtu/h cooling             | Economizer Controls:       | Designed per §140.4(e) and (m) | System Fan Type:                                   | Constant Volume                     |
|---|--------------|---------------------------|-------------------------------------|----------------------------|--------------------------------|--|-------------------------------------|
| 01  | 02           | 03                        | 04                                  | 05                         | 06                             | 07   | 08                                  |
| Fan Name or Item Tag                      | Fan Function | Qty                       | Maximum Design Supply Airflow (CFM) | HP Unit <sup>2</sup>       | Design HP                      | Fan Power Pressure Drop Adjustment - Table 140.4-B | Design Airflow through Device (CFM) |
| SF  | Supply       | 1                         | 2000                                | BHP                        | 0.91                           |  |                                     |
| Total System Design Supply Airflow (CFM): |              |                           | 2000                                | Total System Design (B)HP: | 0.91                           | Maximum System Fan Power (B)HP:                    |                                     |

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**J. VENTILATION AND INDOOR AIR QUALITY**

| System Name                      | FCU/CU-B1                   | System Design OA CFM Airflow <sup>2</sup> | 1200                      | System Design Transfer Air CFM | 0                   | Air Filtration per §120.1(c) and §141.0(b)2 <sup>2</sup> |                         |
|----------------------------------|-----------------------------|---|---------------------------|--------------------------------|---------------------|--|-------------------------|
| 04                               | 05                          | 06  | 07                        | 08                             | 09                  | 10   |                         |
| Space Name or Item Tag           | Occupancy Type <sup>4</sup> | Conditioned Floor Area (ft <sup>2</sup> ) | # of Shower heads/toilets | # of people <sup>5</sup>       | Required Min OA CFM | Required Min CFM   | Provided per Design CFM |
| MPR                              | Assembly- multiuse          | 3550                                      |                           | 80                             | 1200                | 0  | 0                       |
| Total System Required Min OA CFM |                             |   |                           | 1200                           | 18                  | Ventilation for this System Complies?                    | Yes                     |

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**J. VENTILATION AND INDOOR AIR QUALITY**

| System Name                      | RTU-C6                           | System Design OA CFM Airflow <sup>2</sup> | 225                       | System Design Transfer Air CFM | 0                   | Air Filtration per §120.1(c) and §141.0(b)2 <sup>2</sup> |                         |
|----------------------------------|----------------------------------|---|---------------------------|--------------------------------|---------------------|--|-------------------------|
| 04                               | 05                               | 06  | 07                        | 08                             | 09                  | 10   |                         |
| Space Name or Item Tag           | Occupancy Type <sup>4</sup>      | Conditioned Floor Area (ft <sup>2</sup> ) | # of Shower heads/toilets | # of people <sup>5</sup>       | Required Min OA CFM | Required Min CFM   | Provided per Design CFM |
| Classroom                        | Lecture/ postsecondary classroom | 945                                       |                           | 15                             | 225                 | 0  | 0                       |
| Total System Required Min OA CFM |                                  |   |                           | 225                            | 18                  | Ventilation for this System Complies?                    | Yes                     |

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Manzanita Elementary School  
 COVINA VALLEY USD  
 4131 North Nora Avenue Covina CA 91722

DSA Submitted Set  
 11/02/2022  
 REVISIONS

75-22605-00

TITLE 24  
 COMPLIANCE

M0.3

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| 04                     |   | 05  |                           |                                | 06                  |  |  | 07                          |                             |            |
|------------------------|---|---|---------------------------|--------------------------------|---------------------|--|--|-----------------------------|-----------------------------|------------|
| System Name            | RTU-C8  | System Design OA CFM Airflow <sup>2</sup> | 225                       | System Design Transfer Air CFM | 0                   | Air Filtration per §120.1(c) and §141.0(b)2 <sup>2</sup> | Provided per §120.1(c) (NR and Hotel/Motel)                                    |                             |                             |            |
| 08                     | 09  | 10  | 11                        | 12                             | 13                  | 14   | 15   | 16                          |                             |            |
| Space Name of Item Tag | Mechanical Ventilation Required per §120.1(c)3 <sup>3</sup> |   |                           | Exh. Vent per §120.1(c)4       |                     |  | DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 <sup>4</sup> |                             |                             |            |
|                        | Occupancy Type <sup>4</sup>                                 | Conditioned Floor Area (ft <sup>2</sup> ) | # of Shower heads/toilets | # of people <sup>5</sup>       | Required Min OA CFM | Required Min CFM   | Provided per Design CFM  | DCV                         | Provided per §120.1(d)4     | Occ Sensor |
| Classroom              | Lecture/ postsecondary classroom                            | 945                                       |                           | 15                             | 225                 | 0  | 0  | NA: Not required space type | NA: Not required space type |            |
| 17                     | Total System Required Min OA CFM                            |   |                           | 225                            | 18                  | Ventilation for this System Complies?                    |  |                             | Yes                         |            |

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| 04                     |   | 05  |                           |                                | 06                  |  |  | 07                          |                             |            |
|------------------------|---|---|---------------------------|--------------------------------|---------------------|--|--|-----------------------------|-----------------------------|------------|
| System Name            | RTU-D1  | System Design OA CFM Airflow <sup>2</sup> | 225                       | System Design Transfer Air CFM | 0                   | Air Filtration per §120.1(c) and §141.0(b)2 <sup>2</sup> | Provided per §120.1(c) (NR and Hotel/Motel)                                    |                             |                             |            |
| 08                     | 09  | 10  | 11                        | 12                             | 13                  | 14   | 15   | 16                          |                             |            |
| Space Name of Item Tag | Mechanical Ventilation Required per §120.1(c)3 <sup>3</sup> |   |                           | Exh. Vent per §120.1(c)4       |                     |  | DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 <sup>4</sup> |                             |                             |            |
|                        | Occupancy Type <sup>4</sup>                                 | Conditioned Floor Area (ft <sup>2</sup> ) | # of Shower heads/toilets | # of people <sup>5</sup>       | Required Min OA CFM | Required Min CFM   | Provided per Design CFM  | DCV                         | Provided per §120.1(d)4     | Occ Sensor |
| Classroom              | Lecture/ postsecondary classroom                            | 945                                       |                           | 15                             | 225                 | 0  | 0  | NA: Not required space type | NA: Not required space type |            |
| 17                     | Total System Required Min OA CFM                            |   |                           | 225                            | 18                  | Ventilation for this System Complies?                    |  |                             | Yes                         |            |

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| L. DISTRIBUTION (DUCTWORK and PIPING)  |     |  |   |   |    |
|--|-----|--|---|---|----|
| This table is used to show compliance with mandatory pipe insulation requirements found in §120.3 and prescriptive requirements found in §140.4(f) for duct leakage testing. |     |  |   |   |    |
| 11   | No  | The scope of the project includes only duct systems serving healthcare facilities  | FCU/CU-B1   | Duct leakage testing triggered for these systems? | No |
| 12   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |   |    |
| 13   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |   |    |
| 14   | No  | The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:  |   |   |    |
|  |     | Outdoors   |   |   |    |
|  |     | In a space directly under a roof that has a U-factor greater than the u-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces            |   |   |    |
|  |     | In an unconditioned crawl space  |   |   |    |
|  |     | In other unconditioned spaces  |   |   |    |
| 15   |     | The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.  |   |   |    |
| 16   |     | The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2. |   |   |    |
| 17   | Yes | Duct system shall be sealed in accordance with the California Mechanical Code  |   |   |    |
| The answers to the questions below apply to the following duct systems:  |     | RTU-C1   | Duct leakage testing triggered for these systems? | No  |    |
| 11   | No  | The scope of the project includes only duct systems serving healthcare facilities  |   |   |    |
| 12   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |   |    |
| 13   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |   |    |
| 14   | No  | The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:  |   |   |    |
|  |     | Outdoors   |   |   |    |
|  |     | In a space directly under a roof that has a U-factor greater than the u-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces            |   |   |    |
|  |     | In an unconditioned crawl space  |   |   |    |
|  |     | In other unconditioned spaces  |   |   |    |

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| 04                     |   | 05  |                           |                                | 06                  |  |  | 07                          |                             |            |
|------------------------|---|---|---------------------------|--------------------------------|---------------------|--|--|-----------------------------|-----------------------------|------------|
| System Name            | RTU-D2  | System Design OA CFM Airflow <sup>2</sup> | 225                       | System Design Transfer Air CFM | 0                   | Air Filtration per §120.1(c) and §141.0(b)2 <sup>2</sup> | Provided per §120.1(c) (NR and Hotel/Motel)                                    |                             |                             |            |
| 08                     | 09  | 10  | 11                        | 12                             | 13                  | 14   | 15   | 16                          |                             |            |
| Space Name of Item Tag | Mechanical Ventilation Required per §120.1(c)3 <sup>3</sup> |   |                           | Exh. Vent per §120.1(c)4       |                     |  | DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 <sup>4</sup> |                             |                             |            |
|                        | Occupancy Type <sup>4</sup>                                 | Conditioned Floor Area (ft <sup>2</sup> ) | # of Shower heads/toilets | # of people <sup>5</sup>       | Required Min OA CFM | Required Min CFM   | Provided per Design CFM  | DCV                         | Provided per §120.1(d)4     | Occ Sensor |
| Classroom              | Lecture/ postsecondary classroom                            | 945                                       |                           | 15                             | 225                 | 0  | 0  | NA: Not required space type | NA: Not required space type |            |
| 17                     | Total System Required Min OA CFM                            |   |                           | 225                            | 18                  | Ventilation for this System Complies?                    |  |                             | Yes                         |            |

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| 04                     |   | 05  |                           |                                | 06                  |  |  | 07                          |                             |            |
|------------------------|---|---|---------------------------|--------------------------------|---------------------|--|--|-----------------------------|-----------------------------|------------|
| System Name            | RTU-D8  | System Design OA CFM Airflow <sup>2</sup> | 225                       | System Design Transfer Air CFM | 0                   | Air Filtration per §120.1(c) and §141.0(b)2 <sup>2</sup> | Provided per §120.1(c) (NR and Hotel/Motel)                                    |                             |                             |            |
| 08                     | 09  | 10  | 11                        | 12                             | 13                  | 14   | 15   | 16                          |                             |            |
| Space Name of Item Tag | Mechanical Ventilation Required per §120.1(c)3 <sup>3</sup> |   |                           | Exh. Vent per §120.1(c)4       |                     |  | DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 <sup>4</sup> |                             |                             |            |
|                        | Occupancy Type <sup>4</sup>                                 | Conditioned Floor Area (ft <sup>2</sup> ) | # of Shower heads/toilets | # of people <sup>5</sup>       | Required Min OA CFM | Required Min CFM   | Provided per Design CFM  | DCV                         | Provided per §120.1(d)4     | Occ Sensor |
| Classroom              | Lecture/ postsecondary classroom                            | 945                                       |                           | 15                             | 225                 | 0  | 0  | NA: Not required space type | NA: Not required space type |            |
| 17                     | Total System Required Min OA CFM                            |   |                           | 225                            | 18                  | Ventilation for this System Complies?                    |  |                             | Yes                         |            |

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| L. DISTRIBUTION (DUCTWORK and PIPING)  |     |  |   |    |  |
|--|-----|--|---|----|--|
| This table is used to show compliance with mandatory pipe insulation requirements found in §120.3 and prescriptive requirements found in §140.4(f) for duct leakage testing. |     |  |   |    |  |
| 15   |     | The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.  |   |    |  |
| 16   |     | The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2. |   |    |  |
| 17   | Yes | Duct system shall be sealed in accordance with the California Mechanical Code  |   |    |  |
| The answers to the questions below apply to the following duct systems:  |     | RTU-C2   | Duct leakage testing triggered for these systems? | No |  |
| 11   | No  | The scope of the project includes only duct systems serving healthcare facilities  |   |    |  |
| 12   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |    |  |
| 13   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |    |  |
| 14   | No  | The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:  |   |    |  |
|  |     | Outdoors   |   |    |  |
|  |     | In a space directly under a roof that has a U-factor greater than the u-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces            |   |    |  |
|  |     | In an unconditioned crawl space  |   |    |  |
|  |     | In other unconditioned spaces  |   |    |  |
| 15   |     | The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.  |   |    |  |
| 16   |     | The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2. |   |    |  |
| 17   | Yes | Duct system shall be sealed in accordance with the California Mechanical Code  |   |    |  |
| The answers to the questions below apply to the following duct systems:  |     | RTU-C3   | Duct leakage testing triggered for these systems? | No |  |
| 11   | No  | The scope of the project includes only duct systems serving healthcare facilities  |   |    |  |
| 12   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |    |  |
| 13   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |    |  |
| 14   | No  | The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:  |   |    |  |
|  |     | Outdoors   |   |    |  |
|  |     | In a space directly under a roof that has a U-factor greater than the u-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces            |   |    |  |
|  |     | In an unconditioned crawl space  |   |    |  |
|  |     | In other unconditioned spaces  |   |    |  |

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| 04                     |   | 05  |                           |                                | 06                  |  |  | 07                          |                             |            |
|------------------------|---|---|---------------------------|--------------------------------|---------------------|--|--|-----------------------------|-----------------------------|------------|
| System Name            | RTU-D4  | System Design OA CFM Airflow <sup>2</sup> | 225                       | System Design Transfer Air CFM | 0                   | Air Filtration per §120.1(c) and §141.0(b)2 <sup>2</sup> | Provided per §120.1(c) (NR and Hotel/Motel)                                    |                             |                             |            |
| 08                     | 09  | 10  | 11                        | 12                             | 13                  | 14   | 15   | 16                          |                             |            |
| Space Name of Item Tag | Mechanical Ventilation Required per §120.1(c)3 <sup>3</sup> |   |                           | Exh. Vent per §120.1(c)4       |                     |  | DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 <sup>4</sup> |                             |                             |            |
|                        | Occupancy Type <sup>4</sup>                                 | Conditioned Floor Area (ft <sup>2</sup> ) | # of Shower heads/toilets | # of people <sup>5</sup>       | Required Min OA CFM | Required Min CFM   | Provided per Design CFM  | DCV                         | Provided per §120.1(d)4     | Occ Sensor |
| Classroom              | Lecture/ postsecondary classroom                            | 945                                       |                           | 15                             | 225                 | 0  | 0  | NA: Not required space type | NA: Not required space type |            |
| 17                     | Total System Required Min OA CFM                            |   |                           | 225                            | 18                  | Ventilation for this System Complies?                    |  |                             | Yes                         |            |

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| 04                     |   | 05  |                           |                                | 06                  |  |  | 07                          |                             |            |
|------------------------|---|---|---------------------------|--------------------------------|---------------------|--|--|-----------------------------|-----------------------------|------------|
| System Name            | RTU-F2  | System Design OA CFM Airflow <sup>2</sup> | 225                       | System Design Transfer Air CFM | 0                   | Air Filtration per §120.1(c) and §141.0(b)2 <sup>2</sup> | Provided per §120.1(c) (NR and Hotel/Motel)                                    |                             |                             |            |
| 08                     | 09  | 10  | 11                        | 12                             | 13                  | 14   | 15   | 16                          |                             |            |
| Space Name of Item Tag | Mechanical Ventilation Required per §120.1(c)3 <sup>3</sup> |   |                           | Exh. Vent per §120.1(c)4       |                     |  | DCV or Sensor Controls per §120.1(d)3, §120.1(d)5, and §120.1(e)3 <sup>4</sup> |                             |                             |            |
|                        | Occupancy Type <sup>4</sup>                                 | Conditioned Floor Area (ft <sup>2</sup> ) | # of Shower heads/toilets | # of people <sup>5</sup>       | Required Min OA CFM | Required Min CFM   | Provided per Design CFM  | DCV                         | Provided per §120.1(d)4     | Occ Sensor |
| Classroom              | Lecture/ postsecondary classroom                            | 1230                                      |                           | 15                             | 225                 | 0  | 0  | NA: Not required space type | NA: Not required space type |            |
| 17                     | Total System Required Min OA CFM                            |   |                           | 225                            | 18                  | Ventilation for this System Complies?                    |  |                             | Yes                         |            |

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| L. DISTRIBUTION (DUCTWORK and PIPING)  |     |  |   |    |  |
|--|-----|--|---|----|--|
| This table is used to show compliance with mandatory pipe insulation requirements found in §120.3 and prescriptive requirements found in §140.4(f) for duct leakage testing. |     |  |   |    |  |
| 15   |     | The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.  |   |    |  |
| 16   |     | The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2. |   |    |  |
| 17   | Yes | Duct system shall be sealed in accordance with the California Mechanical Code  |   |    |  |
| The answers to the questions below apply to the following duct systems:  |     | RTU-C4   | Duct leakage testing triggered for these systems? | No |  |
| 11   | No  | The scope of the project includes only duct systems serving healthcare facilities  |   |    |  |
| 12   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |    |  |
| 13   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |    |  |
| 14   | No  | The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:  |   |    |  |
|  |     | Outdoors   |   |    |  |
|  |     | In a space directly under a roof that has a U-factor greater than the u-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces            |   |    |  |
|  |     | In an unconditioned crawl space  |   |    |  |
|  |     | In other unconditioned spaces  |   |    |  |
| 15   |     | The scope of the project includes extending an existing duct system, which is constructed, insulated or sealed with asbestos.  |   |    |  |
| 16   |     | The scope of the project includes an existing duct system that is documented to have been previously sealed as confirmed through field verification and diagnostic testing in accordance with procedures in the Reference Nonresidential Appendix NA2. |   |    |  |
| 17   | Yes | Duct system shall be sealed in accordance with the California Mechanical Code  |   |    |  |
| The answers to the questions below apply to the following duct systems:  |     | RTU-C5   | Duct leakage testing triggered for these systems? | No |  |
| 11   | No  | The scope of the project includes only duct systems serving healthcare facilities  |   |    |  |
| 12   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |    |  |
| 13   | Yes | The space conditioning system serves less than 5,000 ft <sup>2</sup> of conditioned floor area.  |   |    |  |
| 14   | No  | The combined surface area of the ducts in the following locations is more than 25% of the total surface area of the entire duct system:  |   |    |  |
|  |     | Outdoors   |   |    |  |
|  |     | In a space directly under a roof that has a U-factor greater than the u-factor of the ceiling, or if the roof does not meet the requirements of §140.3(a)1B or if the roof has fixed vents or openings to the outside/ unconditioned spaces            |   |    |  |
|  |     | In an unconditioned crawl space  |   |    |  |
|  |     | In other unconditioned spaces  |   |    |  |

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Manzanita Elementary School  
COVINA VALLEY USD  
4131 North Nora Avenue Covina CA 91722

DSA Submitted Set  
11/02/2022  
REVISIONS

75-22605-00  
TITLE 24  
COMPLIANCE

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STATE OF CALIFORNIA  
**Mechanical Systems**  
 NRCC-MCH-E CALIFORNIA ENERGY COMMISSION

**CERTIFICATE OF COMPLIANCE**  
 Project Name: CVUSD Manzanita Report Page: NRCC-MCH-E (Page 37 of 43)  
 Project Address: 4131 N Nora Ave Date Prepared: 8/11/2022

**O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE**  
 Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at [https://www.energy.ca.gov/title24/2019standards/2019\\_compliance\\_documents/Nonresidential\\_Documents/NRCA/](https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/)

| Form/Title                              | Systems/Spaces To Be Field Verified  | Field Inspector          |                          |
|---|--|--------------------------|--------------------------|
|   |  | Pass                     | Fail                     |
| NRCA-MCH-05-A - Air Economizer Controls | RTU-C1 CARRIER 5-TON;<br>RTU-C2 CARRIER 5-TON;<br>RTU-C3 CARRIER 5-TON;<br>RTU-C4 CARRIER 5-TON;<br>RTU-C5 CARRIER 5-TON;<br>RTU-C6 CARRIER 5-TON;<br>RTU-C7 CARRIER 5-TON;<br>RTU-C8 CARRIER 5-TON;<br>RTU-D1 CARRIER 5-TON;<br>RTU-D2 CARRIER 5-TON;<br>RTU-D3 CARRIER 5-TON;<br>RTU-D4 CARRIER 5-TON;<br>RTU-D5 CARRIER 5-TON;<br>RTU-D6 CARRIER 5-TON;<br>RTU-D7 CARRIER 5-TON;<br>RTU-D8 CARRIER 5-TON;<br>RTU-F1 CARRIER 5-TON;<br>RTU-F2 CARRIER 5-TON; | <input type="checkbox"/> | <input type="checkbox"/> |

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STATE OF CALIFORNIA  
**Mechanical Systems**  
 NRCC-MCH-E CALIFORNIA ENERGY COMMISSION

**CERTIFICATE OF COMPLIANCE**  
 Project Name: CVUSD Manzanita Report Page: NRCC-MCH-E (Page 40 of 43)  
 Project Address: 4131 N Nora Ave Date Prepared: 8/11/2022

**O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE**  
 Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at [https://www.energy.ca.gov/title24/2019standards/2019\\_compliance\\_documents/Nonresidential\\_Documents/NRCA/](https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/)

| Form/Title  | Systems/Spaces To Be Field Verified   | Field Inspector          |                          |
|---|---|--------------------------|--------------------------|
|   |   | Pass                     | Fail                     |
| NRCA-MCH-16-A Supply Air Temperature Reset Controls | FCU/CU-B1A & B1B; RTU-C1 CARRIER 5-TON; RTU-C2 CARRIER 5-TON; RTU-C3 CARRIER 5-TON; RTU-C4 CARRIER 5-TON; RTU-C5 CARRIER 5-TON; RTU-C6 CARRIER 5-TON; RTU-C7 CARRIER 5-TON; RTU-C8 CARRIER 5-TON; RTU-D1 CARRIER 5-TON; RTU-D2 CARRIER 5-TON; RTU-D3 CARRIER 5-TON; RTU-D4 CARRIER 5-TON; RTU-D5 CARRIER 5-TON; RTU-D6 CARRIER 5-TON; RTU-D7 CARRIER 5-TON; RTU-D8 CARRIER 5-TON; RTU-F1 CARRIER 5-TON; RTU-F2 CARRIER 5-TON; | <input type="checkbox"/> | <input type="checkbox"/> |

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance  
 Registration Date/Time: Report Version: 2019.1.003 Schema Version: rev 20200601  
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STATE OF CALIFORNIA  
**Mechanical Systems**  
 NRCC-MCH-E CALIFORNIA ENERGY COMMISSION

**CERTIFICATE OF COMPLIANCE**  
 Project Name: CVUSD Manzanita Report Page: NRCC-MCH-E (Page 43 of 43)  
 Project Address: 4131 N Nora Ave Date Prepared: 8/11/2022

**DOCUMENTATION AUTHOR'S DECLARATION STATEMENT**  
 I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Abhijit Rege  
 Company: DLR Group  
 Address: 9F30-5A88-E6C4-7653-2F72-AB2E-9671-A2D4-7A20-7AD7-DA3E-A598-BF3B-18A3-B88E-17FE  
 City/State/Zip: Phoenix, AZ 85001

**RESPONSIBLE PERSON'S DECLARATION STATEMENT**  
 I certify the following under penalty of perjury, under the laws of the State of California:  
 1. The information provided on this Certificate of Compliance is true and correct.  
 2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).  
 3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.  
 4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.  
 5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: TONG FANG ZHAO  
 Company: DLR GROUP  
 Address: 700 FLOWER STREET  
 City/State/Zip: LOS ANGELES CA 90017

Responsible Designer Signature: [Signature]  
 Date Signed: 2022-08-11  
 License: M-34291  
 Phone: [Redacted]

Registration Number: CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance  
 Registration Date/Time: Report Version: 2019.1.003 Schema Version: rev 20200601  
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STATE OF CALIFORNIA  
**Mechanical Systems**  
 NRCC-MCH-E CALIFORNIA ENERGY COMMISSION

**CERTIFICATE OF COMPLIANCE**  
 Project Name: CVUSD Manzanita Report Page: NRCC-MCH-E (Page 38 of 43)  
 Project Address: 4131 N Nora Ave Date Prepared: 8/11/2022

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| Form/Title   | Systems/Spaces To Be Field Verified   | Field Inspector          |                          |
|--|---|--------------------------|--------------------------|
|  |   | Pass                     | Fail                     |
| NRCA-MCH-06-A Demand Control Ventilation Systems must be submitted for all systems required to employ demand controlled ventilation (refer to §120.11(c)(1)) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO2) concentration setpoints. | FCU/CU-B1A & B1B; RTU-C1 CARRIER 5-TON; RTU-C2 CARRIER 5-TON; RTU-C3 CARRIER 5-TON; RTU-C4 CARRIER 5-TON; RTU-C5 CARRIER 5-TON; RTU-C6 CARRIER 5-TON; RTU-C7 CARRIER 5-TON; RTU-C8 CARRIER 5-TON; RTU-D1 CARRIER 5-TON; RTU-D2 CARRIER 5-TON; RTU-D3 CARRIER 5-TON; RTU-D4 CARRIER 5-TON; RTU-D5 CARRIER 5-TON; RTU-D6 CARRIER 5-TON; RTU-D7 CARRIER 5-TON; RTU-D8 CARRIER 5-TON; RTU-F1 CARRIER 5-TON; RTU-F2 CARRIER 5-TON; | <input type="checkbox"/> | <input type="checkbox"/> |

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STATE OF CALIFORNIA  
**Mechanical Systems**  
 NRCC-MCH-E CALIFORNIA ENERGY COMMISSION

**CERTIFICATE OF COMPLIANCE**  
 Project Name: CVUSD Manzanita Report Page: NRCC-MCH-E (Page 41 of 43)  
 Project Address: 4131 N Nora Ave Date Prepared: 8/11/2022

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| Form/Title                                      | Systems/Spaces To Be Field Verified   | Field Inspector          |                          |
|---|---|--------------------------|--------------------------|
|   |   | Pass                     | Fail                     |
| NRCA-MCH-18-A Energy Management Control Systems | FCU/CU-B1A & B1B; RTU-C1 CARRIER 5-TON; RTU-C2 CARRIER 5-TON; RTU-C3 CARRIER 5-TON; RTU-C4 CARRIER 5-TON; RTU-C5 CARRIER 5-TON; RTU-C6 CARRIER 5-TON; RTU-C7 CARRIER 5-TON; RTU-C8 CARRIER 5-TON; RTU-D1 CARRIER 5-TON; RTU-D2 CARRIER 5-TON; RTU-D3 CARRIER 5-TON; RTU-D4 CARRIER 5-TON; RTU-D5 CARRIER 5-TON; RTU-D6 CARRIER 5-TON; RTU-D7 CARRIER 5-TON; RTU-D8 CARRIER 5-TON; RTU-F1 CARRIER 5-TON; RTU-F2 CARRIER 5-TON; | <input type="checkbox"/> | <input type="checkbox"/> |

**P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION**  
 There are no NRCV forms required for this project.

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STATE OF CALIFORNIA  
**Mechanical Systems**  
 NRCC-MCH-E CALIFORNIA ENERGY COMMISSION

**CERTIFICATE OF COMPLIANCE**  
 Project Name: CVUSD Manzanita Report Page: NRCC-MCH-E (Page 39 of 43)  
 Project Address: 4131 N Nora Ave Date Prepared: 8/11/2022

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| Form/Title                                   | Systems/Spaces To Be Field Verified   | Field Inspector          |                          |
|--|---|--------------------------|--------------------------|
|  |   | Pass                     | Fail                     |
| NRCA-MCH-11-A Automatic Demand Shed Controls | FCU/CU-B1A & B1B; RTU-C1 CARRIER 5-TON; RTU-C2 CARRIER 5-TON; RTU-C3 CARRIER 5-TON; RTU-C4 CARRIER 5-TON; RTU-C5 CARRIER 5-TON; RTU-C6 CARRIER 5-TON; RTU-C7 CARRIER 5-TON; RTU-C8 CARRIER 5-TON; RTU-D1 CARRIER 5-TON; RTU-D2 CARRIER 5-TON; RTU-D3 CARRIER 5-TON; RTU-D4 CARRIER 5-TON; RTU-D5 CARRIER 5-TON; RTU-D6 CARRIER 5-TON; RTU-D7 CARRIER 5-TON; RTU-D8 CARRIER 5-TON; RTU-F1 CARRIER 5-TON; RTU-F2 CARRIER 5-TON; | <input type="checkbox"/> | <input type="checkbox"/> |

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**Q. MANDATORY MEASURES DOCUMENTATION LOCATION**  
 This table is used to indicate where mandatory measures are documented in the plan set or construction documentation.

|   | 01  | 02       |
|---|-----|----------|
| Compliance with Mandatory Measures documented through MCH | Yes | M-Sheets |
| Mandatory Measures Note Block                             |     |          |

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Manzanita Elementary School  
 COVINA VALLEY USD  
 4131 North Nora Avenue Covina CA 91722

DSA Submitted Set  
 11/02/2022  
 REVISIONS

75-22605-00

TITLE 24  
 COMPLIANCE

M0.6

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A B C D E F

1

2

3

4

5

SAN BERNADINO ROAD

ORANGE AVENUE

LANG AVENUE

FRIJO AVENUE

CONLON AVENUE

NORE AVENUE



OVERALL MECHANICAL SITE PLAN

SCALE: 1" = 40'-0"

SITE LEGEND

-  EXISTING BUILDING NOT IN SCOPE
-  EXISTING BUILDING - SCOPE OF WORK UNDER THIS DSA APPLICATION
-  (E) RESTROOMS - NOT IN SCOPE



**Manzanita Elementary School**  
 COVINA VALLEY USD  
 4131 North Nora Avenue Covina CA 91722

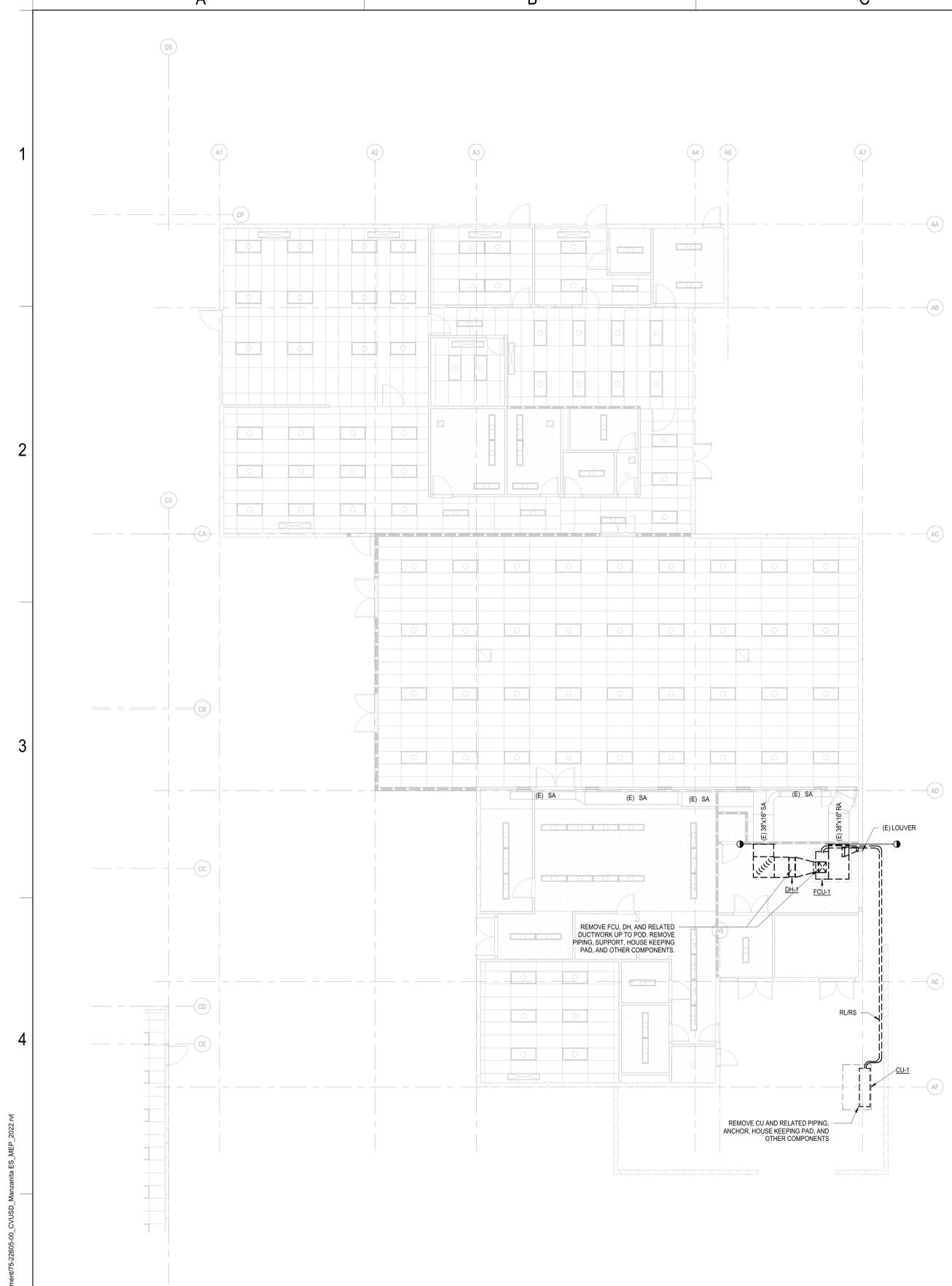
DSA Submitted Set  
 11/02/2022  
 REVISIONS

75-22605-00

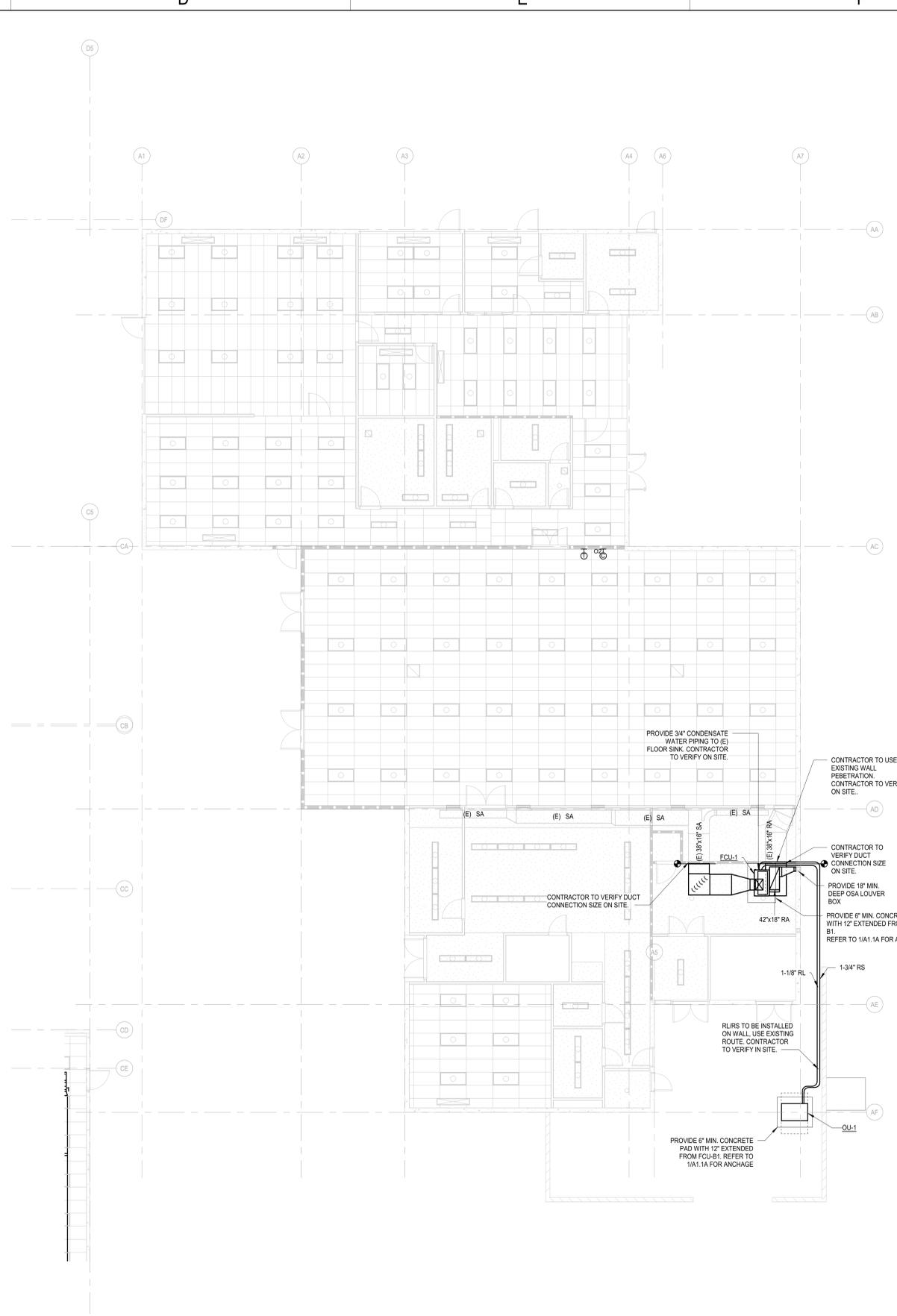
OVERALL MECHANICAL SITE PLAN

M1.1

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**ADMIN BUILDING MECHANICAL DEMOLITION FLOOR PLAN - MPR ROOM**  
 SCALE: 1/8" = 1'-0"



**ADMIN BUILDING MECHANICAL FLOOR PLAN - MPR ROOM**  
 SCALE: 1/8" = 1'-0"

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**Manzanita Elementary School**  
 COVINA VALLEY USD  
 4131 North Nora Avenue Covina CA 91722

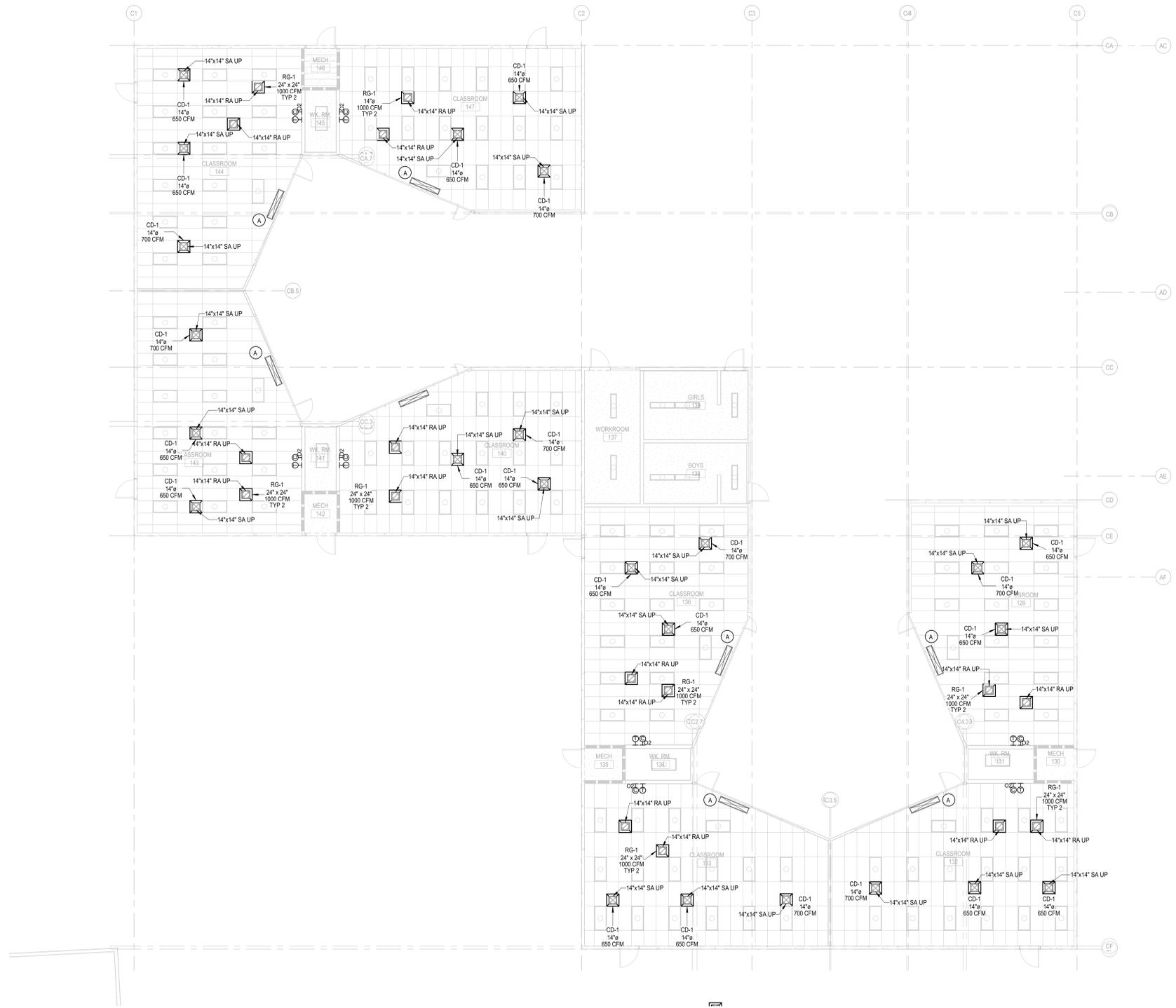
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75-22605-00

BUILDING B  
 MECHANICAL  
 DEMO AND  
 FLOOR PLANS

M1.1B

1  
2  
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4  
5



Space 174  
**BUILDING C MECHANICAL FLOOR PLAN**  
 SCALE: 1/8" = 1'-0"

**DEMO NOTES**

A DEMOLISH EXISTING OUTDOOR CONDENSING UNIT ON ROOF AND INDOOR FANCOIL UNITS, ALONG WITH RELATED CONCRETE PADS, PIPING, CONDUIT, FENCE, SUPPORTS AND OTHER APPURTENANCES. REFER TO ARCH PLANS OR SPECS FOR FILLING HOLES AND MATCHING WALL. CONTRACTOR TO VERIFY LOCATIONS ON SITE. TYP.

**GENERAL NOTES**

A SCOPE OF WORK IS CLASSROOMS & MPR ONLY.  
 B DIFFUSERS AND GRILLES TO MATCH (E) CEILING TILES. REFER TO RCP.



**Manzanita Elementary School**  
 COVINA VALLEY USD  
 4131 North Nora Avenue Covina CA 91722

DSA Submitted Set  
 11/02/2022  
 REVISIONS

75-22605-00

**BUILDING C  
 MECHANICAL  
 FLOOR PLAN**

**M1.1C**





**BUILDING C MECHANICAL ROOF PLAN**  
 SCALE: 1/8" = 1'-0"

**GENERAL HVAC NOTES**

1. INSTALL NEW RTU ON BEAM WITH ISOLATORS.
2. NEW OPENINGS FOR SUPPLY AND RETURN DUCTS SHOULD BE MADE BETWEEN THE ROOF JOISTS. DO NOT CUT THE JOISTS.
3. PROVIDE FLEXIBLE DUCT AT UNIT CONNECTION FOR SA & RA DUCT.

**KEY NOTES**

1. PROVIDE POWER EXHAUST ON RETURN DUCT WITH LEG LENGTH TO FIT THE ROOF SLOPE. CONTRACTOR TO VERIFY ON SITE. TYP.
2. RTU IS LESS THAN 10'-0" FROM ROOF EDGE. ARCH TO PROVIDE PROTECTION GUARDS. TYP.



**Manzanita Elementary School**  
 COVINA VALLEY USD  
 4131 North Nara Avenue Covina CA 91722

DSA Submitted Set  
 11/02/2022  
 REVISIONS

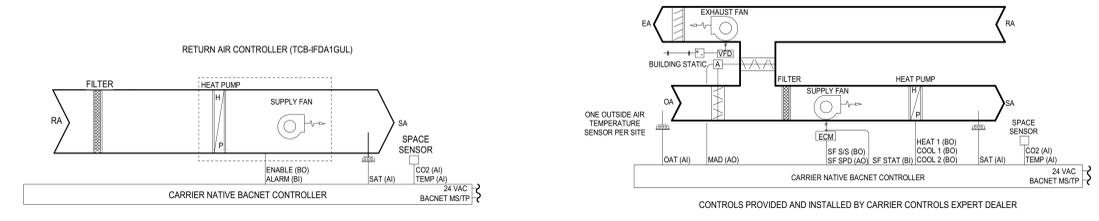
75-22605-00

BUILDING C  
 MECHANICAL  
 ROOF PLAN

M1.3C

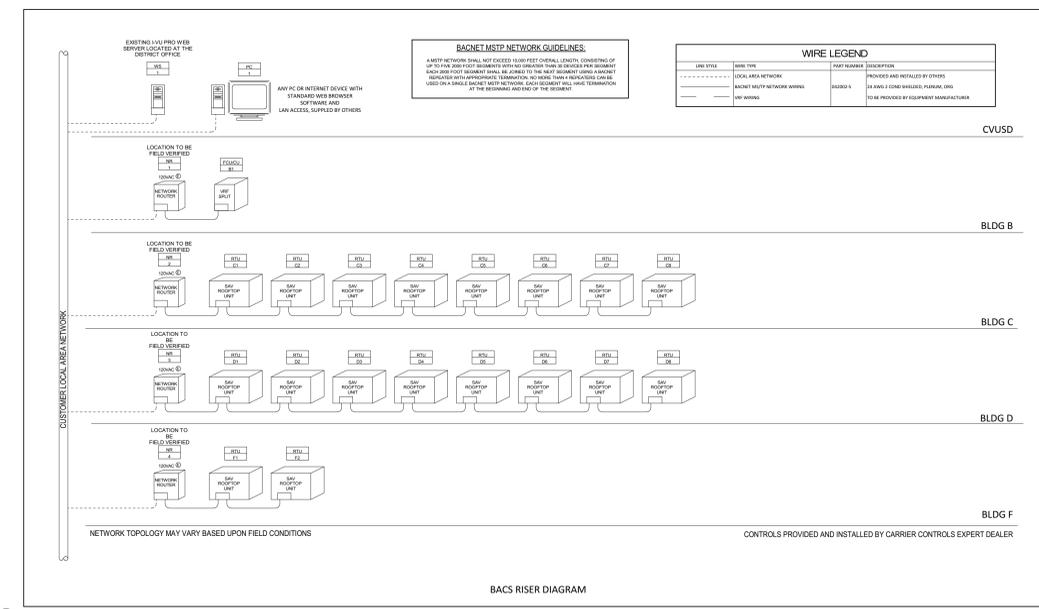
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**1 FAN COIL UNIT (FCU-B1)**  
M5.1 NO SCALE

**2 50FCQ HEAT PUMP RTU (RTU-C1 THRU RTU-C8, RTU-D1 THRU RTU-D8, & RTU-F1 TO RTU-F2)**  
M5.1 NO SCALE



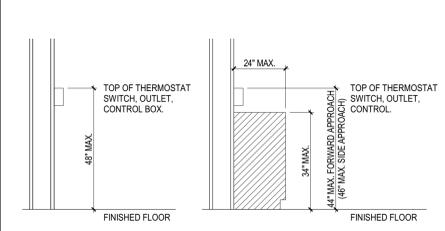
**3 RISER DIAGRAM**  
M5.1 NO SCALE

**SEQUENCES OF OPERATION**

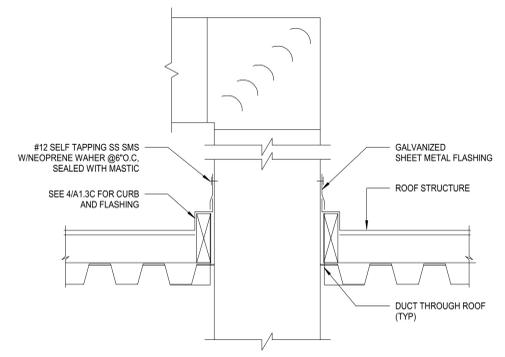
- FAN COIL CONTROLLER (FCU-1)**
  - UNIT ENABLE**  
DURING OCCUPIED PERIODS, THE UNIT WILL BE ENABLED, AND THE FAN SHALL OPERATE CONTINUOUSLY. DURING UNOCCUPIED PERIODS, THE UNIT SHALL BE DISABLED. THE FAN OPERATES AT 1 OF 2 SPEEDS DEPENDING ON THE MODE OF OPERATION AND LOAD CONDITIONS. UNIT SHALL CONTROL HEATING AND COOLING STAGES WHEN ENABLED.
  - CO2 CONTROL**  
UNIT SHALL MONITOR SPACE CO2 WHEN THE SUPPLY FAN IS ENERGIZED. WHEN CO2 IS ABOVE SETPOINT OF 1000 PPM, AN ALARM SHALL BE ENABLED THROUGH THE EMS.
- 50FCQ HEAT PUMP RTU CONTROLLER (RTU-C1 THRU RTU-C8, RTU-D1 THRU RTU-D8 & RTU-F1 TO RTU-F2)**
  - INDOOR FAN**  
THE FAN OPERATES AT A VARIABLE SPEED TO MEET THE LOAD CONDITIONS AND SAT SAFETY REQUIREMENTS TO PROVIDE MAXIMUM ENERGY SAVINGS BY MINIMIZING FAN HORSEPOWER CONSUMPTION. FAN SPEED IS NOT CONTROLLED BY STATIC PRESSURE.
  - HEATING MODE**  
WHEN SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT, UNIT SHALL OPERATE IN THE HEATING MODE. UNIT SHALL STAGE AVAILABLE HEAT STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE.
  - COOLING MODE**  
WHEN SPACE TEMPERATURE IS ABOVE OCCUPIED COOLING SETPOINT, UNIT SHALL OPERATE IN THE COOLING MODE. UNIT SHALL ENABLE AVAILABLE COOLING STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE.
  - ECONOMIZER**  
ECONOMIZER SHALL CLOSE WHEN FAN IS OFF OR DURING A LOSS OF POWER. DURING OCCUPIED HOURS WHEN FAN IS ENERGIZED, THE ECONOMIZER SHALL OPEN TO ADJUSTABLE MINIMUM POSITION. WHEN OUTSIDE AIR TEMPERATURE IS BELOW 71° AND OCCUPIED SPACE REQUIRES COOLING, ECONOMIZER SHALL OPEN. IF ECONOMIZER AIR IS NOT SUFFICIENT TO MEET THE DEMAND IN THE OCCUPIED SPACE, UNIT SHALL ENABLE AVAILABLE MECHANICAL COOLING STAGES TO SATISFY DEMAND IN THE OCCUPIED SPACE.
  - CO2 CONTROL**  
UNIT SHALL MONITOR SPACE CO2 WHEN THE SUPPLY FAN IS ENERGIZED. WHEN CO2 IS ABOVE SETPOINT OF 1000 PPM, ECONOMIZER SHALL MODULATE OPEN TOWARD AN ADJUSTABLE MAXIMUM CO2 POSITION. AS THE CO2 LEVEL IN THE SPACE INCREASES ABOVE THE SETPOINT, THE MINIMUM POSITIONS OF THE DAMPERS WILL BE INCREASED PROPORTIONALLY, UNTIL THE MAXIMUM VENTILATION SETTING IS REACHED. AS THE SPACE CO2 LEVEL DECREASES BECAUSE OF THE INCREASE IN FRESH AIR, THE OUTDOOR DAMPER WILL FOLLOW THE HIGHER DEMAND CONDITION FROM THE DCV MODE OR FROM THE FREE-COOLING MODE.
  - POWER EXHAUST**  
THE EXHAUST FAN SHALL MODULATE TO MAINTAIN THE ROOM PRESSURE SETPOINT (AS DETERMINED BY AIR BALANCER), NOT CONTROLLED THROUGH EMS.

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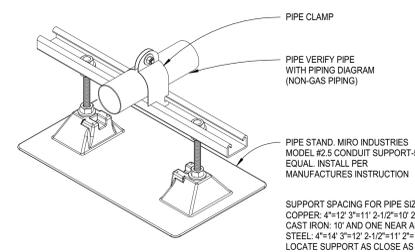
1  
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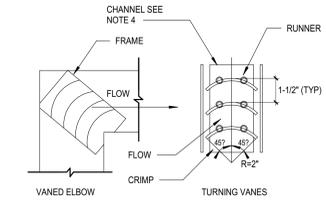
1 THERMOSTAT MOUNTING  
M7.1 NO SCALE



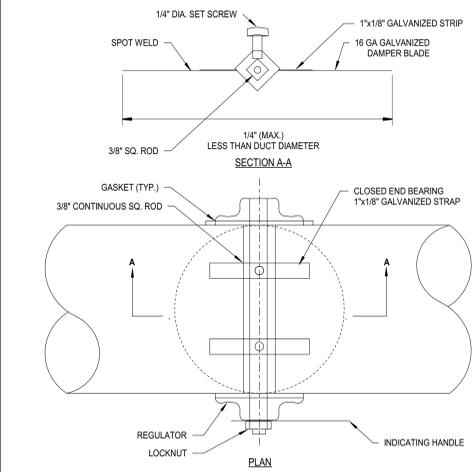
2 DUCT THRU ROOF PENETRATION  
M7.1 NO SCALE



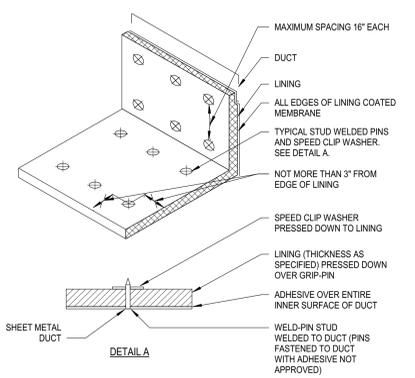
3 PIPE SUPPORT ON ROOF DETAIL  
M7.1 NO SCALE



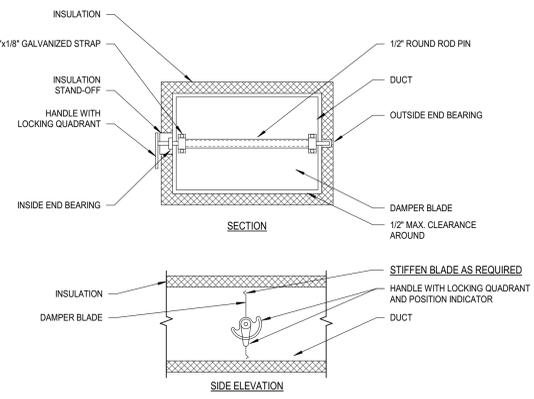
4 RECTANGULAR ELBOW W/ TURNING VANES DETAIL  
M7.1 NO SCALE



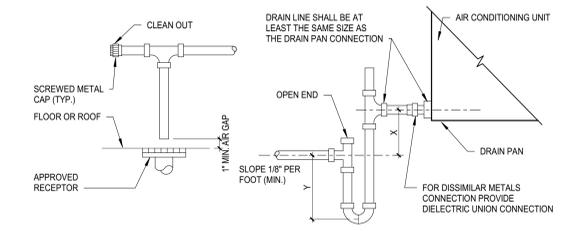
5 ROUND VOLUME DAMPER (UP TO 14")  
M7.1 NO SCALE



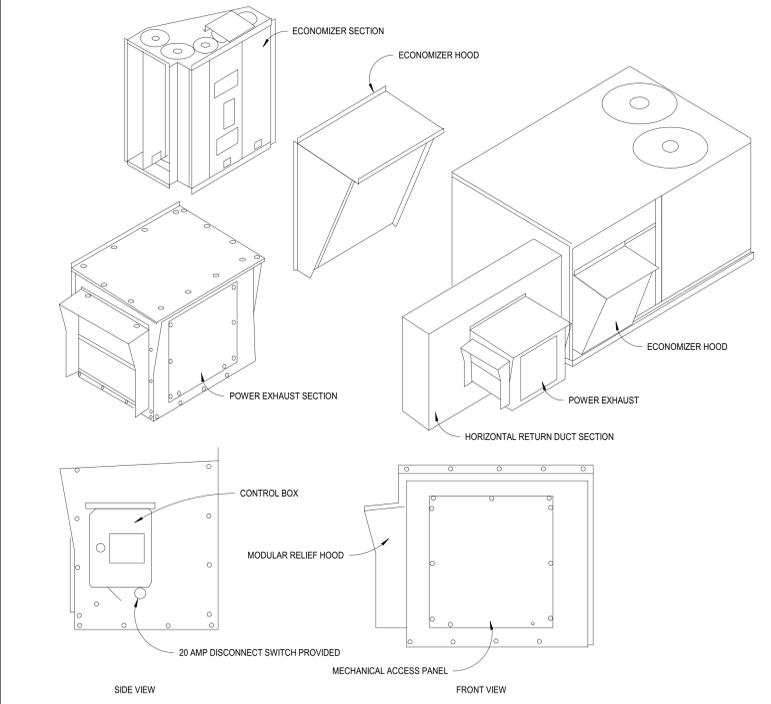
6 ACOUSTICAL DUCT LINING INSTALLATION DETAIL  
M7.1 NO SCALE



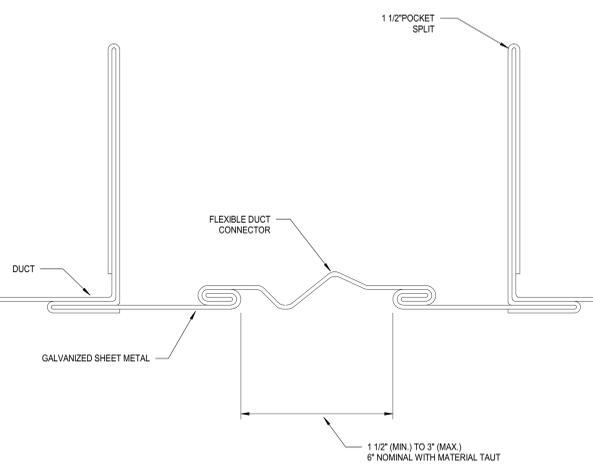
7 RECTANGULAR VOLUME DAMPER DETAIL  
M7.1 NO SCALE



8 CONDENSATE DRAIN CONNECTION DETAIL  
M7.1 NO SCALE

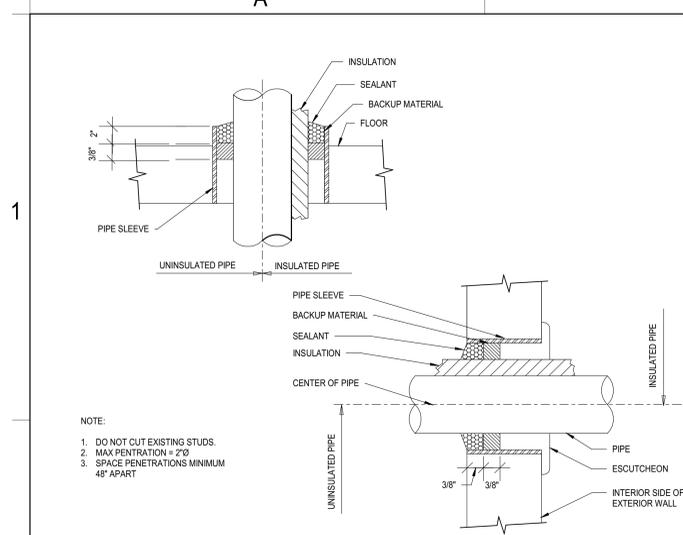


9 ECONOMIZER AND POWER EXHAUST DETAIL - HORIZONTAL DISCHARGE RTU (LESS THAN 15 TONS)  
M7.1 NO SCALE

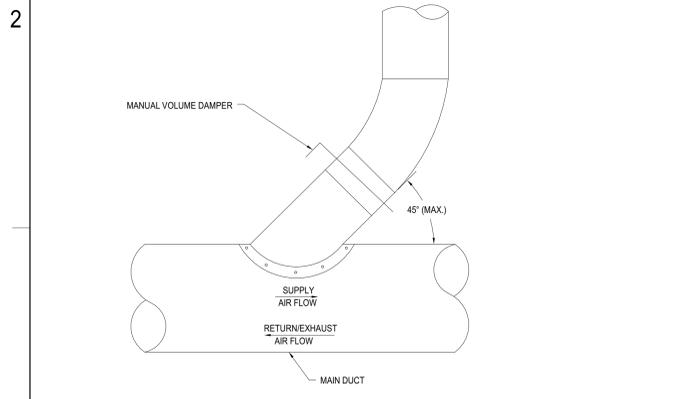


10 FLEXIBLE DUCT CONNECTOR DETAIL  
M7.1 NO SCALE

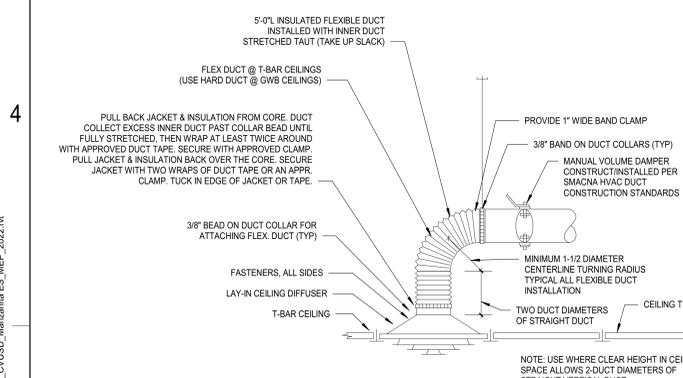
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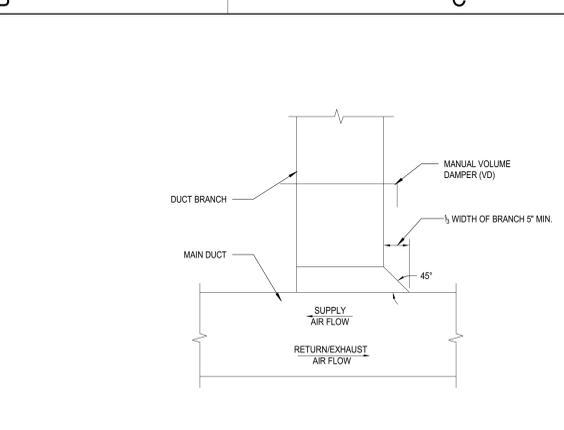
1 PIPE PENETRATION DETAILS  
M7.2 NO SCALE



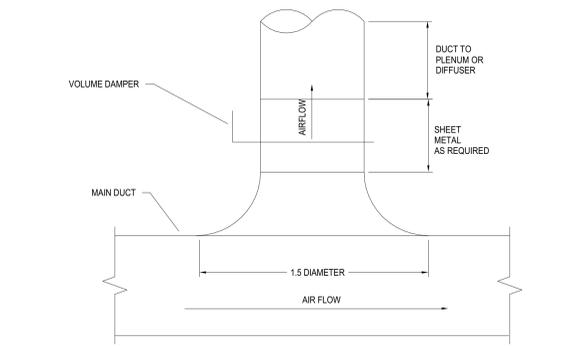
5 ROUND DUCT BRANCH TO ROUND MAIN CONNECTION  
M7.2 NO SCALE



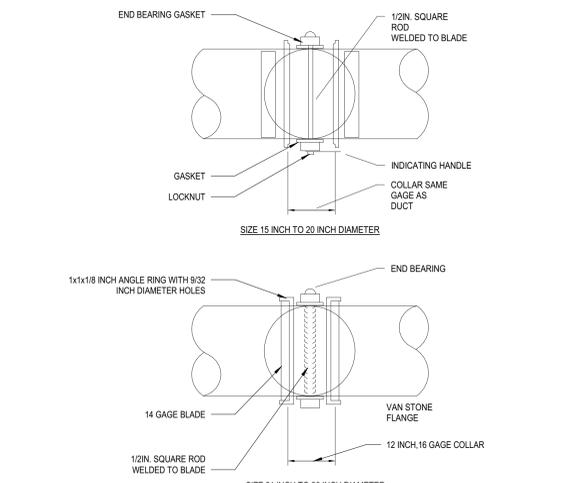
9 CEILING SUPPLY DIFFUSER CONNECTION DETAIL  
M7.2 NO SCALE



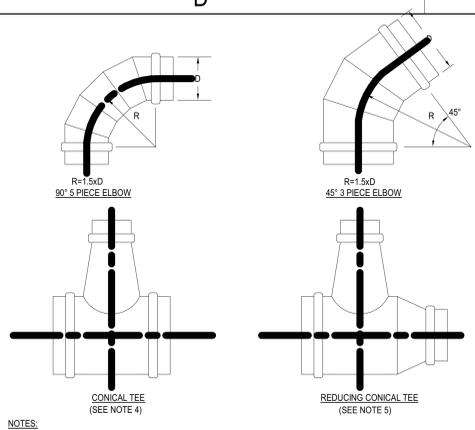
2 RECTANGULAR DUCT BRANCH TO RECTANGULAR DUCT  
M7.2 NO SCALE



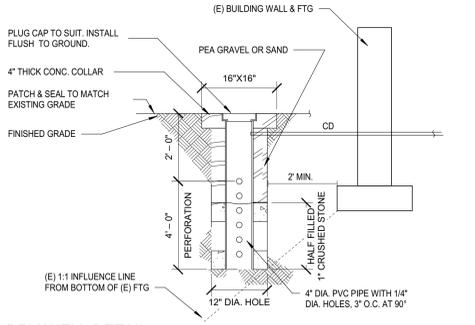
6 ROUND SUPPLY DUCT BRANCH TO RECTANGULAR DUCT  
M7.2 NO SCALE



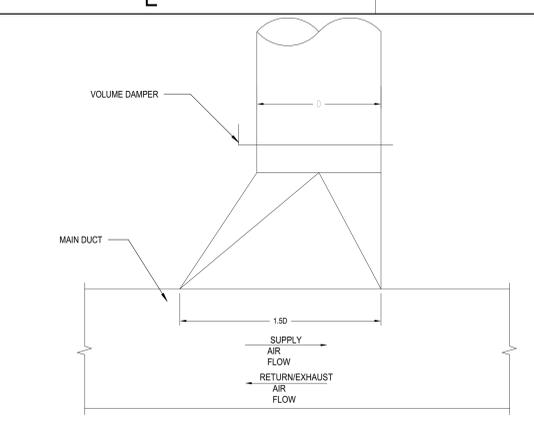
10 ROUND VOLUME DAMPER (LARGER THAN 14\"/>



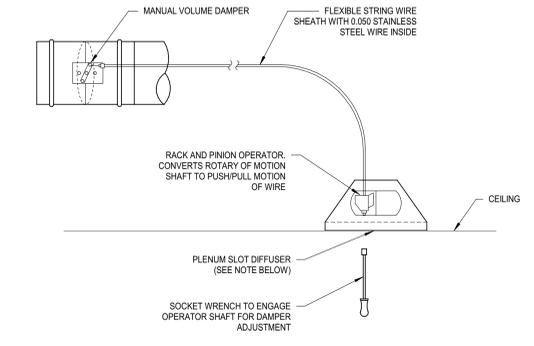
3 ROUND DUCT FITTINGS  
M7.2 NO SCALE



7 DRY WELL DETAIL  
M7.2 NO SCALE



4 ROUND DUCT BRANCH TO MAIN RECT. CONNECTION  
M7.2 NO SCALE

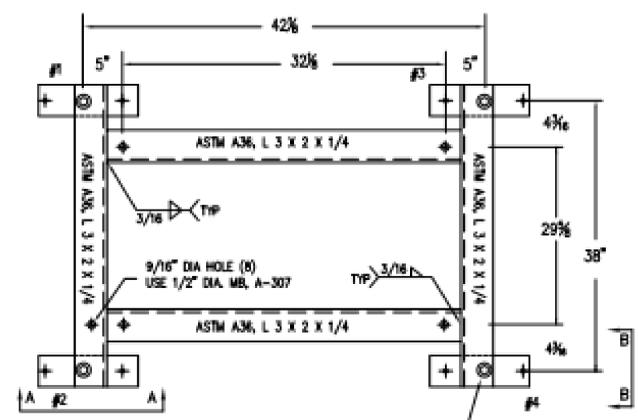


8 BOWDEN TYPE CABLE CONTROL (YOUNG'S REGULATOR)  
M7.2 NO SCALE

Autodesk Docs/75-22605-00\_CVUSD - District Wide HVAC Replacement/75-22605-00\_CVUSD\_Manzanita ES\_MEP\_2022.rvt 10/21/2022 4:46:28 PM

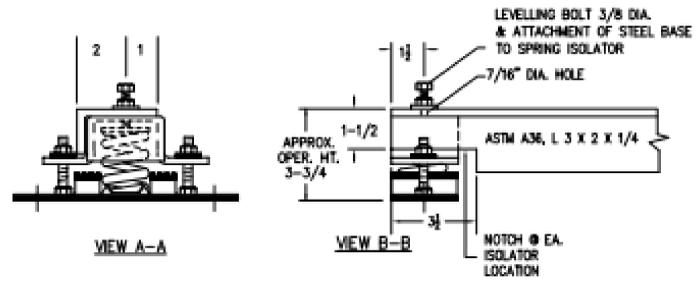
| MARK  | MAKE    | MODEL       | STEEL FRAME             |
|-------|---------|-------------|-------------------------|
| CU-B1 | TOSHIBA | MMY-MAP1206 | ASTM A36, L 3 X 2 X 1/4 |

DETAIL-1



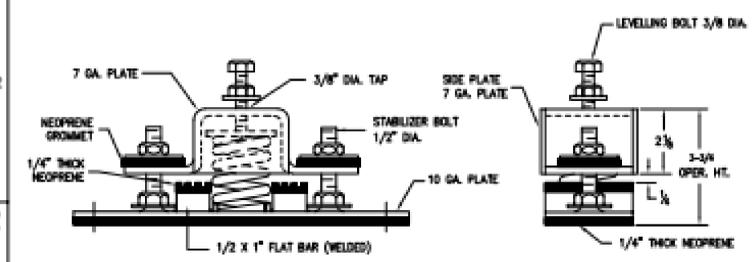
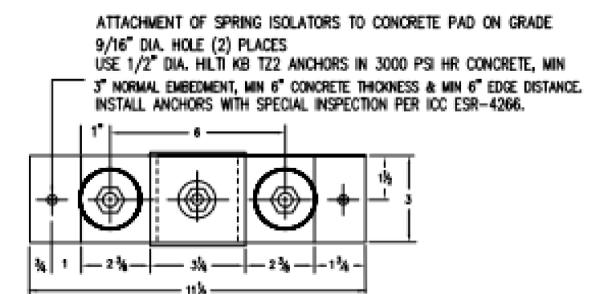
- NOTES:
- APPROX. STEEL WEIGHT INCLUDING ISOLATORS: 100 LBS.
  - FOR ISOLATORS. SEE DETAIL 3.
  - M.W. SAUSSE & CO. INC. IS NOT RESPONSIBLE FOR THE STRUCTURAL INTEGRITY OF THE EQUIPMENT WHEN ANCHORED AS SHOWN.
  - NOT FOR CONSTRUCTION, ALL DIMENSIONS REQUIRE FINAL REVIEW AT COMMENCEMENT OF PROJECT.

DETAIL-2

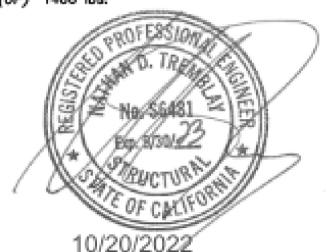


DETAIL-3

| MTG | SPRING CO | DEFL. |
|-----|-----------|-------|
| 1-4 | 2.0"      | 1"    |



MAX. ALLOW. LOADS: HORIZ 1100 lbs. VERT. (UP) 1400 lbs.  
**RMU-00-58-1**



**M. W. SAUSSE & CO., INC.**  
 28774 Whitherspoon Pkwy. Valencia, CA 91355  
 Phone: (661) 257-3311 Fax: (661) 257-7673  
**Vibrex** **RMUAB**

|              |                           |
|--------------|---------------------------|
| JOB NAME:    | COVINA USD - MANZANITA ES |
| CUST.:       |                           |
| CUST. P.O.:  |                           |
| MECH. ENGR.: | DLR                       |
| MARK:        | CU-B1                     |

|            |                                    |
|------------|------------------------------------|
| REVISIONS: |                                    |
| A:         | CALL OUT ALL ATTACHMENTS (9-12-22) |
| B:         | SPECS ANGLE (9-20-22)              |
| C:         |                                    |
| D:         |                                    |

|              |          |
|--------------|----------|
| DRN:         | TDT      |
| DATE:        | 08-11-22 |
| DRAWING NO.: | -1B      |

1 CU-B1  
 M7.3 / NO SCALE



| MARK         | MAKE    | TYPE     | STEEL SIZE              |
|--------------|---------|----------|-------------------------|
| RTU C1 to C8 | CARRIER | 50FCQA06 |                         |
| RTU D1 to D8 | CARRIER | 50FCQA06 | ASTM A36, L 3 X 2 X 1/4 |
| RTU F1,F2    | CARRIER | 50FCQA06 |                         |

### DETAIL-1

TIE-DOWN STRAPS

LEVELLING BOLT 3/8 DIA. & ATTACHMENT OF STEEL BASE TO SPRING ISOLATOR

### DETAIL-3

ATTACHMENT OF SPRING ISOLATORS TO ROOF STRUCTURE

MAX. ALLOW. LOADS:    HORIZ. 1100 lbs.    VERT. (UP) 1400 lbs.

**RMU-BQ-SI-1**

TIE DOWN STRAP DETAIL

ATTACHMENT OF UNIT TO STEEL BASE

### DETAIL-2

VIEW A-A      VIEW B-B

LEVELLING BOLT 3/8 DIA. & ATTACHMENT OF STEEL BASE TO SPRING ISOLATOR

APPROX. OPER. HT. 3-3/4

ASTM A36, L 3 X 2 X 1/4

NOTCH @ EA. ISOLATOR LOCATION

**NOTES:**

- APPROX. STEEL WEIGHT INCLUDING ISOLATORS: 200 LBS.
- ISOLATORS, SEE DETAIL 3.
- INDICATES TIE-DOWN STRAP. SEE DETAIL 3.
- M.W. SAUSSE & CO. INC. IS NOT RESPONSIBLE FOR THE STRUCTURAL INTEGRITY OF THE EQUIPMENT WHEN ANCHORED AS SHOWN.
- ALL DIMENSIONS REQUIRE FINAL REVIEW AT COMMENCEMENT OF PROJECT.

| MTS | SPRING O.D. | DEFL |
|-----|-------------|------|
| 1-6 | 2"          | 1"   |

1 RTU CURB  
M7.5 NO SCALE

|   |  |  |   |
|---|--|--|---|
| <b>M. W. SAUSSE &amp; CO., INC.</b><br>28774 Whitherspoon Pkwy. Valencia, CA 91355<br>Phone: (661) 257-3311 Fax: (661) 257-7673<br> | <b>JOB NAME:</b> COVINA USD - MANZANITA ES<br><b>CUST.:</b><br><b>CUST. P.O.:</b><br><b>MECH. ENGR.:</b> DLR<br><b>MARK:</b> RTU-C1-C8,D1-D8,F1,F2 (RTU 5 TON) | <b>REVISIONS:</b><br><b>A:</b> ROOF CURB TO RMUAB (8-17-22)<br><b>B:</b> CALL OUT ALL ATTACHMENTS (9-2-22)<br><b>C:</b> SPECS ANGLE (9-20-22)<br><b>D:</b> | <b>DRN:</b> TDT<br><b>DATE:</b> 08-17-22<br><b>DRAWING NO.:</b><br><div style="border: 1px solid black; padding: 5px; text-align: center; width: 50px; margin: 0 auto;">-3C</div> |
|---|--|--|---|

MANZANITA E.S. AC UNIT REPLACEMENT

MANZANITA E.S. EXISTING UNIT

NEW UNIT

| TAGS                         | MAKE    | SPLIT SYSTEM MODEL   | CAPACITY (TONS) | ELECTRICAL (SINGLE CIRCUIT) |      |      |      | WEIGHT (LBS) | POWER EXHAUST |        | OPERATING WEIGHT (LBS) | DIRECT REPLACEMENT? Y/N | CARRIER MODEL #    | NET COOLING CAPACITY |              |                 | AIRFLOW (CFM) |         | ESP (IN WG) | SEER | EER   | HEATING CAPACITY (MBH) | NEW MERV RATING | FILTER QUANTITY & SIZE (W" X H" X D") | ELECTRICAL |     |      | WEIGHT (LBS) | OUTSIDE AIR HOOD WEIGHT (LBS) | ECONOMIZER |                    |        | POWER EXHAUST |         |      | ROOF CURB WEIGHT (LBS) | TOTAL WEIGHT (LBS) | UNIT DIMENSIONS (L" X W" X H") | ANCHORAGE DETAIL REFERENCE |              |        |
|------------------------------|---------|----------------------|-----------------|-----------------------------|------|------|------|--------------|---------------|--------|------------------------|-------------------------|--------------------|----------------------|--------------|-----------------|---------------|---------|-------------|------|-------|------------------------|-----------------|---------------------------------------|------------|-----|------|--------------|-------------------------------|------------|--------------------|--------|---------------|---------|------|------------------------|--------------------|--------------------------------|----------------------------|--------------|--------|
|                              |         |                      |                 | VIPH                        | MCA  | FLA  | MCCP |              | EXISTING      | WEIGHT |                        |                         |                    | NOMINAL TON          | TOTAL (BTUH) | SENSIBLE (BTUH) | SUPPLY        | MIN OSA |             |      |       |                        |                 |                                       | VIPH       | MCA | MCCP |              |                               | LBS        | REQUIRED?          | WEIGHT | REQUIRED?     | MODEL # | MCA  |                        |                    |                                |                            | MCCP         | WEIGHT |
|                              |         |                      |                 |                             |      |      |      |              |               |        |                        |                         |                    |                      |              |                 |               |         |             |      |       |                        |                 |                                       |            |     |      |              |                               |            |                    |        |               |         |      |                        |                    |                                |                            |              |        |
| RTU-C1 THRU RTU-C8 (BLDG. C) | CARRIER | 38QRC060<br>40QAE060 | 5.0             | 208/1                       | 42   | 33.2 |      | 272          | NO            | -      | 272                    | N                       | 50FCQA06A2A3       | 5                    | 58890        | 45950           | 2000          | 600     | 1           | 14.3 | 10.96 | 56.8                   | 13              | 4 (16X16X2)                           | 208/1      | 41  | 60   | 586          | NA                            | YES        | REFER TO PE WEIGHT | YES    | PECD-SRT12CB  | 7.1     | 12.8 | 191                    | NA                 | 777                            | 75 X 47 X 42               | 1/M7.5       |        |
| RTU-D1 THRU RTU-D8 (BLDG. D) | CARRIER | 38QRC060<br>40QAE060 | 5.0             | 208/1                       | 42   | 33.2 |      | 272          | NO            | -      | 272                    | N                       | 50FCQA06A2A3       | 5                    | 58890        | 45950           | 2000          | 600     | 1           | 14.3 | 10.96 | 56.8                   | 13              | 4 (16X16X2)                           | 208/1      | 41  | 60   | 586          | NA                            | YES        | REFER TO PE WEIGHT | YES    | PECD-SRT12CB  | 7.1     | 12.8 | 191                    | NA                 | 777                            | 75 X 47 X 42               | 1/M7.5       |        |
| RTU-F1 & RTU-F2 (BLDG. F)    | CARRIER | 38QRC060<br>40QAE060 | 5.0             | 208/1                       | 42   | 33.2 |      | 272          | NO            | -      | 272                    | N                       | 50FCQA06A2A3       | 5                    | 58890        | 45950           | 2000          | 600     | 1           | 14.3 | 10.96 | 56.8                   | 13              | 4 (16X16X2)                           | 208/1      | 41  | 60   | 586          | NA                            | YES        | REFER TO PE WEIGHT | YES    | PECD-SRT12CB  | 7.1     | 12.8 | 191                    | NA                 | 777                            | 75 X 47 X 42               | 1/M7.5       |        |
| CU-B1 (BLDG. B)              | CARRIER | 38AKS014             | 10.0            | 208/3                       | 69.6 |      | 100  | 800          | NO            | -      | 800                    | Y                       | MMY-MAP1206HT9P-JL | 10                   |              |                 |               |         |             |      |       |                        |                 |                                       |            |     |      |              |                               |            |                    |        |               |         |      |                        | 684                | 48 X 31 X 73                   | 1/M7.3                     |              |        |
| FCU-B1 (BLDG. B)             | CARRIER | 40RM-012             | 10.0            | 208/3                       | 12.8 | 10.2 |      | 650          | NO            | -      | 650                    | N                       | 40RUQA12T3A5-0A0A0 |                      | 120900       | 86,400          | 3960          | 1188    | 1.4         |      |       |                        |                 |                                       |            |     |      |              |                               |            |                    |        |               |         |      |                        |                    |                                | 427                        | 49 X 28 X 56 | 1/M7.4 |

- NOTES:
1. PROVIDE MECHANICAL UNIT WITH INTEGRAL CONVENIENCE RECEPTACLE.
  2. ALL ROOFTOP UNITS SHALL BE PROVIDED WITH UNPOWERED CONVENIENCE OUTLET.
  3. ALL ROOFTOP UNITS ARE HORIZONTALLY DISCHARGED CONFIGURATION, UNO. FIELD VERIFY PRIOR TO ORDERING.
  4. PROVIDE HINGED ACCESS PANEL FOR ALL ROOFTOP UNITS.
  5. FINAL WEIGHT (LBS) IS SUMMATION OF RTU WEIGHT AND ECONOMIZER SECTION, AS APPLICABLE.
  6. SCOR RATING OF RTUs AND FCU-B1 SHALL BE MINIMUM OF 10KA AND CU-B1 SHALL BE 6SKA.

DIFFUSER AND GRILLE SCHEDULE

| MARK NO. | MANUFACTURER & MODEL NO. | TYPE           | OVERALL DIMENSIONS | NECK SIZE | CFM RANGE | MAX NC | MAX SP | NOTES |
|----------|--------------------------|----------------|--------------------|-----------|-----------|--------|--------|-------|
| CD-1     | TITUS PAS                | CEILING SUPPLY | 24"x24"            | 6"Ø       | 0 - 110   | 25     | 0.1    | 1,2,3 |
|          |                          |                |                    | 8"Ø       | 111 - 190 | 25     | 0.1    |       |
|          |                          |                |                    | 10"Ø      | 191 - 280 | 25     | 0.1    |       |
|          |                          |                |                    | 12"Ø      | 281 - 350 | 25     | 0.1    |       |
|          |                          |                |                    | 14"Ø      | 351 - 450 | 25     | 0.1    |       |
|          |                          |                |                    | 16"Ø      | 451 - 550 | 25     | 0.1    |       |
| RC-1     | TITUS PAR                | CEILING RETURN | 24"x24"            | 6"Ø       | 0 - 100   | 20     | 0.1    | 1,2,3 |
|          |                          |                |                    | 8"Ø       | 101 - 175 | 20     | 0.1    |       |
|          |                          |                |                    | 10"Ø      | 176 - 275 | 20     | 0.1    |       |
|          |                          |                |                    | 12"Ø      | 276 - 380 | 20     | 0.1    |       |
|          |                          |                |                    | 14"Ø      | 381 - 500 | 20     | 0.1    |       |
|          |                          |                |                    | 16"Ø      | 501 - 570 | 20     | 0.1    |       |

- NOTES:
1. OBTAIN ARCHITECT'S APPROVAL FOR COLOR AND FINISH.
  2. MATCH THE BORDER TYPE TO THE CEILING.
  3. PROVIDE FLAT BLACK INTERNAL FINISH.

DUCT SIZING SCHEDULE \*\*\* FOR LOW VELOCITY SUPPLY, RETURN AND EXHAUST

| CFM RANGE | ROUND DUCT DIAMETER OR EQUIVALENT RECTANGULAR DUCT | CFM RANGE | ROUND DUCT DIAMETER OR EQUIVALENT RECTANGULAR DUCT |
|-----------|--|-----------|--|
| 0-110     | 6" OR 8" X 4"                                      | 1400-1900 | 18" OR 24" X 12"                                   |
| 101-180   | 8" OR 10" X 6"                                     | 1900-2500 | 20" OR 24" X 14"                                   |
| 181-270   | 10" OR 10" X 8"                                    | 2500-3300 | 22" OR 32" X 14"                                   |
| 271-400   | 10" OR 12" X 8"                                    | 3300-4100 | 24" OR 36" X 14"                                   |
| 401-600   | 12" OR 12" X 10"                                   | 4100-5000 | 26" OR 40" X 16"                                   |
| 601-900   | 14" OR 16" X 10"                                   | 5000-6200 | 28" OR 48" X 16"                                   |
| 901-1400  | 16" OR 18" X 12"                                   | 6200-7500 | 30" OR 48" X 18"                                   |

REMARKS:

DUCT SIZES INDICATED ARE INSIDE DIMENSIONS WHICH MAY BE ALTERED BY CONTRACTOR TO OTHER DIMENSIONS TO AVOID INTERFERENCES AND CLEARANCE REQUIREMENTS. USE EQUAL FRICTION METHOD, 0.1" WG PER 100FT. OF DUCT TO DETERMINE DUCT SIZES.

VERIFY ALL DIMENSIONS AT THE SITE. MAKE ALL FIELD MEASUREMENTS AND SHOP DRAWINGS NECESSARY FOR FABRICATION AND ERECTION OF SHEET METAL WORK. MAKE ALLOWANCES FOR BEAMS, PIPE OR OTHER OBSTRUCTION AND FOR WORK BY OTHER TRADES AND NOTIFY THE ARCHITECT IN THE EVENT OF ANY POTENTIAL INTERFERENCE. MAKE AN INITIAL VERIFICATION OF BEAM PENETRATIONS SHOWN ON STRUCTURAL DRAWINGS AND ADVISE OF ANY POTENTIAL INTERFERENCES.

| LOCATION              | AIR VELOCITY GUIDELINES (FPM) |      |      |     |     |     |
|-----------------------|-------------------------------|------|------|-----|-----|-----|
|                       | NOISE CRITERIA (NC)           |      |      |     |     |     |
|                       | 40                            | 35   | 30   | 25  | 20  | 15  |
| MAIN SUPPLY DUCT      | 1700                          | 1500 | 1000 | 800 | 700 | 600 |
| MAIN RETURN DUCT      | 1200                          | 1000 | 750  | 600 | 500 | 400 |
| DUCT TO GRILLE SUPPLY | 600                           | 500  | 400  | 300 | 250 | 200 |
| DUCT TO GRILLE RETURN | 600                           | 500  | 400  | 300 | 250 | 200 |

DUCT SIZING \*\*\* MEDIUM PRESSURE DUCTWORK

| CFM       | ROUND DUCT (IN) | RECTANGULAR DUCT (IN) (W IS DUCT WIDTH) |     |     |      |      |
|-----------|-----------------|---|-----|-----|------|------|
|           |                 | WX4                                     | WX6 | WX8 | WX10 | WX12 |
| UP TO 150 | 6               | 8                                       | 6   | X   | X    | X    |
| 151-280   | 8               | 10                                      | 10  | 8   | X    | X    |
| 281-500   | 10              | X                                       | 16  | 12  | 10   | X    |
| 501-800   | 12              | X                                       | X   | 16  | 12   | X    |
| 801-1200  | 14              | X                                       | X   | 22  | 16   | 14   |

REMARKS:

DUCT SIZES INDICATED ARE INSIDE DIMENSIONS WHICH MAY BE ALTERED BY CONTRACTOR TO OTHER DIMENSIONS TO AVOID INTERFERENCES AND CLEARANCE REQUIREMENTS. USE EQUAL FRICTION METHOD, 0.1" WG PER 100FT. OF DUCT TO DETERMINE DUCT SIZES.

VERIFY ALL DIMENSIONS AT THE SITE. MAKE ALL FIELD MEASUREMENTS AND SHOP DRAWINGS NECESSARY FOR FABRICATION AND ERECTION OF SHEET METAL WORK. MAKE ALLOWANCES FOR BEAMS, PIPE OR OTHER OBSTRUCTION AND FOR WORK BY OTHER TRADES AND NOTIFY THE ARCHITECT IN THE EVENT OF ANY POTENTIAL INTERFERENCE. MAKE AN INITIAL VERIFICATION OF BEAM PENETRATIONS SHOWN ON STRUCTURAL DRAWINGS AND ADVISE OF ANY POTENTIAL INTERFERENCES.



Manzanita Elementary School  
COVINA VALLEY USD  
4131 North Nora Avenue Covina, CA 91722

DSA Submitted Set  
11/02/2022  
REVISIONS

75-22605-00

MECHANICAL SCHEDULES

M8.1

A

B

C

D

E

F

1

2

3

4

5

SAN BERNADINO ROAD

ORANGE AVENUE

LANG AVENUE

FRIJO AVENUE

CONLON AVENUE

NORE AVENUE



### MECHANICAL PLUMBING SITE PLAN

SCALE: 1" = 40'-0"

#### SITE LEGEND

-  EXISTING BUILDING NOT IN SCOPE
-  EXISTING BUILDING - SCOPE OF WORK UNDER THIS DSA APPLICATION
-  (E) RESTROOMS - NOT IN SCOPE



**Manzanita Elementary School**  
 COVINA VALLEY USD  
 4131 North Nora Avenue Covina CA 91722

DSA Submitted Set  
 11/02/2022  
 REVISIONS

75-22605-00

MECHANICAL  
 PLUMBING SITE  
 PLAN

## MP1.1

Autodesk Docs/75-22605-00\_CVUSD - District Wide HVAC Replacement/75-22605-00\_CVUSD\_Manzanita ES\_MEP\_2022.rvt  
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MEP COMPONENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA-APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER, "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

- A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
- B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

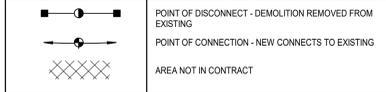
PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

|    |    |    |   |  |
|----|----|----|---|--|
| MP | MD | PP | E | OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS. |
| MP | MD | PP | E | OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM) # 00043-13       |

GENERAL SYMBOLS



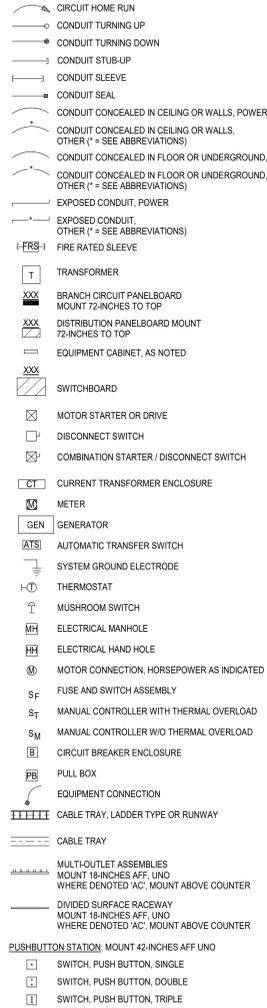
SHEET INDEX

|      |   |
|------|---|
| E0.1 | ELECTRICAL SYMBOLS, ABBREVIATIONS, NOTES & SCHEDULE |
| E2.1 | ROOF ELECTRICAL PLAN                                |
| E6.1 | ELECTRICAL DETAILS                                  |

GENERAL NOTES

1. PENETRATIONS IN WALLS REQUIRING PROTECTED OPENINGS MUST BE FIRESTOPPED WITH AN APPROVED MATERIAL.
2. UNLESS SPECIFICALLY SHOWN ON THESE DRAWINGS, NO STRUCTURAL MEMBER SHALL BE CUT, DRILLED, OR NOTCHED WITHOUT PRIOR AUTHORIZATION IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD AND DSA.

POWER



RECEPTACLES: MOUNT 18-INCHES AFF, UNO  
 DIAGONAL LINE THROUGH SYMBOL OR DENOTED 'AC' INDICATES MOUNT DEVICE ABOVE COUNTER WHERE INDICATED AS MOUNT ABOVE COUNTER MOUNT BOTTOM OF BOX 2-INCHES ABOVE TOP OF BACKSPASH OR 8-INCHES ABOVE COUNTER TOP IF NO BACKSPASH EXISTS  
 LABELS SHALL BE MACHINE PRINTED, UNO  
 SIMPLEX RECEPTACLE  
 DUPLEX RECEPTACLE  
 DUPLEX RECEPTACLE, GFI TYPE  
 DUPLEX RECEPTACLE, MOUNT ABOVE COUNTER  
 DUPLEX RECEPTACLE, GFI TYPE, MOUNT ABOVE COUNTER  
 FOURPLEX RECEPTACLE  
 FOURPLEX RECEPTACLE, GFI TYPE  
 FOURPLEX RECEPTACLE, MOUNT ABOVE COUNTER  
 FOURPLEX RECEPTACLE, GFI TYPE, MOUNT ABOVE COUNTER  
 DUPLEX RECEPTACLE, FLUSH IN CEILING  
 FOURPLEX RECEPTACLE, FLUSH IN CEILING  
 DUPLEX RECEPTACLE, HORIZONTALLY MOUNTED  
 DUPLEX RECEPTACLE, HORIZ. MTD, GFI TYPE  
 DUPLEX RECEPTACLE, HORIZ. MTD, ABOVE COUNTER  
 DUPLEX RECEPTACLE, HORIZ. MTD, GFI TYPE, MOUNT ABOVE COUNTER  
 WEATHER RESISTANT GFI DUPLEX RECEPTACLE, ROOF MOUNT 18-INCHES ABOVE ADJACENT STRUCTURE WITH A WEATHERPROOF, IN-USE COVER  
 WEATHER RESISTANT GFI DUPLEX RECEPTACLE, MOUNT 18-INCHES AFF WITH A WEATHERPROOF, IN-USE COVER  
 STD DUPLEX RECEPTACLE TO SERVE ELECTRIC WATER COOLER, MOUNT AT HEIGHT PER  
 EWC EQUIPMENT MANUFACTURER'S INSTALLATION GUIDELINES. WIRE TO GFCI BKR IN PANELBOARD.  
 DUPLEX RECEPTACLE TO SERVE TELEVISION MOUNT AT SAME HEIGHT AND WITHIN 8-INCHES OF ADJACENT TV OUTLET  
 DUPLEX RECEPTACLE, EMERGENCY  
 FOURPLEX RECEPTACLE, EMERGENCY  
 DUPLEX RECEPTACLE, LOWER SWITCH  
 DUPLEX RECEPTACLE, SWITCHED  
 RANGE RECEPTACLE, MOUNT 8-INCHES AFF  
 SPECIAL RECEPTACLE, DEEP WELL BOX  
 FLUSH FLOOR OUTLET BOX UNO  
 FLUSH FLOOR BOX WITH DUPLEX RECEPTACLE UNO  
 MULTI-DEVICE FLOOR BOX WITH DUPLEX RECEPTACLE AND TELECOMMUNICATIONS OUTLETS  
 USB ONLY RECEPTACLE  
 RECEPTACLE WITH USB PORTS  
 FLUSH JUNCTION BOX, CEILING MOUNTED  
 JUNCTION BOX FOR FUTURE PROJECTOR POWER MOUNT 24-INCHES ABOVE SUSPENDED CEILING MOUNT TIGHT TO CEILING AT EXPOSED STRUCTURE LABEL BOX COVER PROJECTOR POWER  
 JUNCTION BOX ABOVE SUSPENDED CEILING WITH FLEX CONNECTION  
 FLUSH JUNCTION BOX, WALL MOUNTED  
 SURFACE JUNCTION BOX, WALL MOUNTED  
 SURFACE JUNCTION BOX, CEILING MOUNTED  
 HAND DRYER, INSTALL HAND DRYER SPECIFIED IN DIV. 11

ABBREVIATIONS

|           |   |
|-----------|---|
| (D)       | DEMOLISHED                                |
| (E)       | EXISTING                                  |
| (R)       | RELOCATED                                 |
| Ø         | PHASE                                     |
| A         | AMPERE                                    |
| AC        | ABOVE COUNTER                             |
| AF        | AMP FRAME (CIRCUIT BREAKER)               |
| MB        | AMPERE INTERRUPTING CAPACITY              |
| AL        | ALUMINUM                                  |
| AMP       | AMPERE                                    |
| AP        | WIRELESS ACCESS POINT                     |
| AT        | AMP TRIP (CIRCUIT BREAKER OR FUSE)        |
| ATS       | AUTOMATIC TRANSFER SWITCH                 |
| AV        | AUDIO-VIDEO, AUDIO-VISUAL                 |
| AWG       | AMERICAN WIRE GAUGE                       |
| BAS       | BUILDING AUTOMATION SYSTEM                |
| BJ        | BONDING JUMPER                            |
| BKR       | BREAKER                                   |
| BMS       | BUILDING MANAGEMENT SYSTEM                |
| C         | CONDUIT                                   |
| CATV      | CABLE TELEVISION                          |
| CB        | CIRCUIT BREAKER                           |
| CCTV      | CLOSED CIRCUIT TELEVISION                 |
| CFCI      | CONTRACTOR FURNISHED CONTRACTOR INSTALLED |
| CKT       | CIRCUIT                                   |
| CTL       | CONTROL                                   |
| CU        | COPPER                                    |
| DB        | DECIBEL                                   |
| DC        | DIRECT CURRENT                            |
| DISC      | DISCONNECT                                |
| DP        | DISTRIBUTION PANELBOARD                   |
| DW        | DISHWASHER                                |
| ECG       | EMERGENCY COMMUNICATION SYSTEM            |
| EGB       | ELECTRICAL GROUNDING BUSBAR               |
| EMD       | ESTIMATED MAXIMUM DEMAND                  |
| EMGB      | ELECTRICAL MAIN GROUNDING BUSBAR          |
| EP        | EXPLOSION PROOF                           |
| ER        | EXISTING (TO BE) RELOCATED                |
| ERMS      | ENERGY REDUCTION MAINTENANCE SWITCH       |
| EWC       | ELECTRIC WATER COOLER                     |
| FA        | FIRE ALARM                                |
| FAA       | FIRE ALARM ANNUNCIATOR                    |
| FACP      | FIRE ALARM CONTROL PANEL                  |
| FC        | FOOT CANDLE                               |
| FLA       | FULL LOAD AMPS                            |
| FS        | FLOW SWITCH                               |
| FSD       | FIRE SMOKE DAMPER                         |
| G         | EQUIPMENT GROUNDING CONDUCTOR             |
| GEN       | GENERATOR                                 |
| GFI, GFCI | GROUND FAULT CIRCUIT INTERRUPTER          |
| GFPE      | GROUND FAULT PROTECTION OF EQUIPMENT      |
| GND       | EQUIPMENT GROUNDING CONDUCTOR             |
| HH        | HANDHOLE                                  |
| HOA       | HAND-OFF-AUTOMATIC                        |
| HP        | HORSE POWER                               |
| IC        | INTERCOM                                  |
| IG        | ISOLATED GROUND                           |
| JB        | JUNCTION BOX                              |
| KAIC      | THOUSAND AMPERE INTERRUPTING CIRCUIT      |

ABBREVIATIONS

|      |  |
|------|--|
| KV   | KILOVOLT                                 |
| KVA  | KILOVOLT AMPERES                         |
| KW   | KILOWATT                                 |
| LT   | LIGHT                                    |
| LTG  | LIGHTING                                 |
| MCA  | MINIMUM CIRCUIT AMPACITY                 |
| MCB  | MAIN CIRCUIT BREAKER                     |
| MCC  | MOTOR CONTROL CENTER                     |
| MH   | MANHOLE                                  |
| MLO  | MAIN LUGS ONLY                           |
| MOCB | MAXIMUM OVERCURRENT PROTECTION           |
| MRTS | MOTOR RATED TOGGLE SWITCH                |
| MSB  | MAIN SWITCHBOARD                         |
| MTD  | MOUNTED                                  |
| MTG  | MOUNTING                                 |
| MTS  | MAIN TRANSFER SWITCH                     |
| N    | NEUTRAL                                  |
| N.C. | NORMALLY CLOSED                          |
| N.O. | NORMALLY OPEN                            |
| NF   | NON-FUSED                                |
| NL   | NIGHT LIGHT                              |
| OFCI | OWNER FURNISHED CONTRACTOR INSTALLED     |
| OS&Y | OUTSIDE SCREW AND YOKE                   |
| P    | POLE(S)                                  |
| PA   | PUBLIC ADDRESS                           |
| PB   | PULL BOX                                 |
| PH   | PHASE                                    |
| PIV  | PISTON INDICATOR VALVE                   |
| PNL  | PANEL                                    |
| PWR  | POWER                                    |
| RCP  | REFLECTED CEILING PLAN                   |
| RECP | RECEPTACLE                               |
| REF  | REFERENCE                                |
| RESP | RESPONSIVE                               |
| SCCR | SHORT CIRCUIT CURRENT RATING             |
| SD   | SMOKE DAMPER                             |
| SEC  | SECONDARY                                |
| SPD  | SURGE PROTECTION DEVICE                  |
| SWBD | SWITCHBOARD                              |
| TBB  | TELECOMMUNICATIONS BONDING BACKBONE      |
| TC   | TIME CLOCK                               |
| TGB  | TELECOMMUNICATIONS GROUNDING BUSBAR      |
| TMGB | TELECOMMUNICATIONS MAIN GROUNDING BUSBAR |
| TO   | TELECOMMUNICATIONS OUTLET                |
| TR   | TELECOMMUNICATIONS ROOM                  |
| TS   | TAMPER SWITCH                            |
| TV   | TELEVISION                               |
| UG   | UNDERGROUND                              |
| UPS  | UNINTERRUPTIBLE POWER SUPPLY             |
| V    | VOLT                                     |
| VA   | VOLT-AMPERE                              |
| VFD  | VARIABLE FREQUENCY DRIVE                 |
| W    | WIRE                                     |
| WA   | TELECOMMUNICATIONS WORK AREA             |
| WG   | WIRE GUARD                               |
| WP   | WEATHER-PROOF (NEMA 3R)                  |
| XFMR | TRANSFORMER                              |

\*NOTE\*  
 ALL NOTES ON THIS SHEET ARE APPLICABLE TO ALL OTHER SHEETS IN THIS SET.  
 THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE APPLICABLE IN THIS SET OF DRAWINGS.

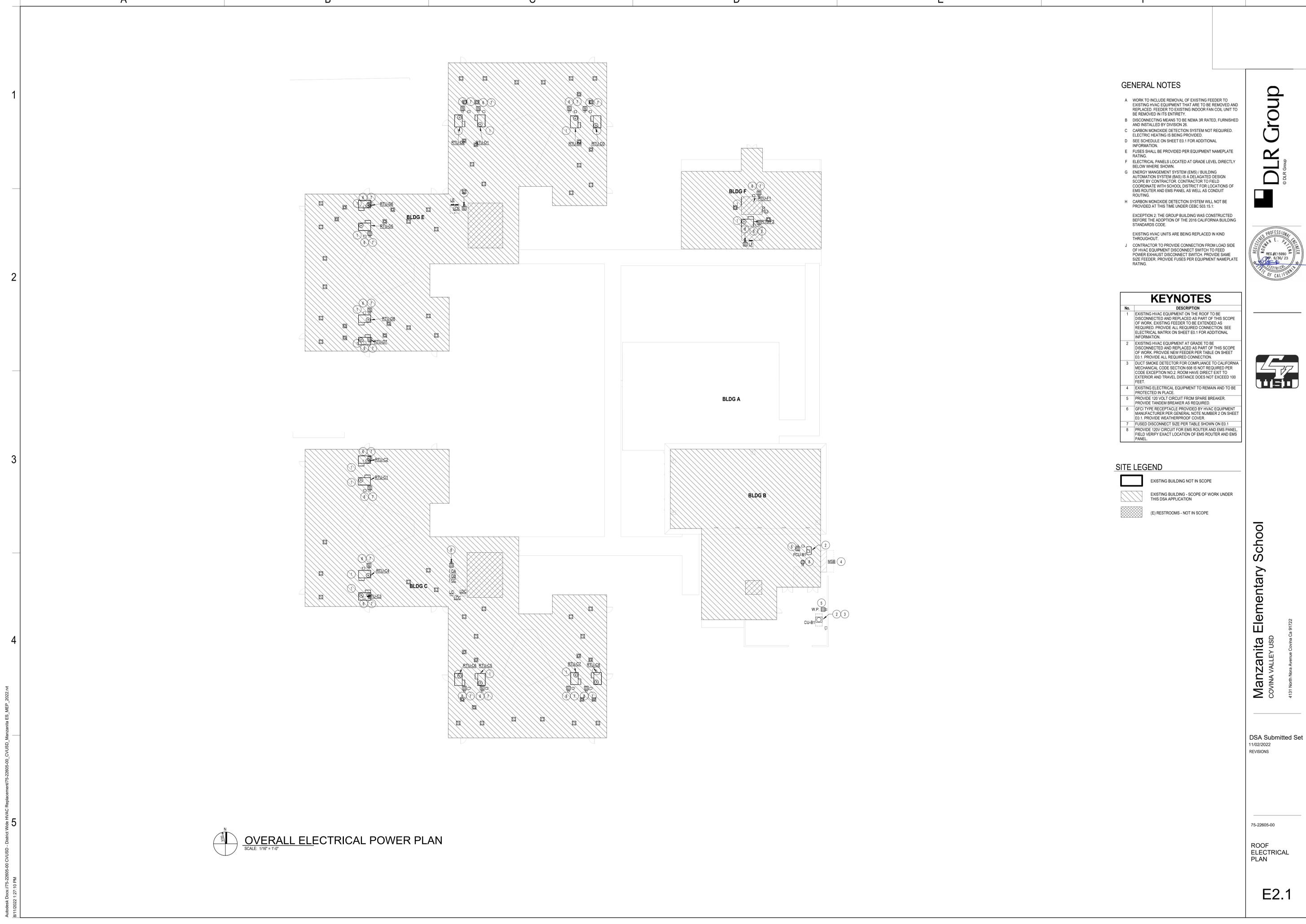
| Manzanita E.S. AC UNIT REPLACEMENT |       |      |       |      |             |          |                         |       |       |      |       |                |            |              |        |      |                |                  |             |
|------------------------------------|-------|------|-------|------|-------------|----------|-------------------------|-------|-------|------|-------|----------------|------------|--------------|--------|------|----------------|------------------|-------------|
| EXISTING UNIT                      |       |      |       |      |             | NEW UNIT |                         |       |       |      | NOTES |                |            |              |        |      |                |                  |             |
| TAGS                               | V-PH  | MCA  | FLA   | MOCB | PANEL/ CKT# | TAGS     | DIRECT REPLACEMENT? Y/N | CFM   | V-PH  | MCA  |       | MOCB           | DISCONNECT | REQUIRED?    | Model# | MCA  | MOCB           | DISCONNECT       | FEEDER SIZE |
| CU-B1 (BLDG B)                     | 208/3 | 69.6 | 55.68 | 100  | MSB-2       | CU-B1    | Y                       | 7,480 | 208/3 | 45.4 | 50    | 60A (50A FUSE) | NA         | NA           | NA     | NA   | NA             | NA               |             |
| FCU-B1 (BLDG B)                    | 208/3 | 12.8 | 10.2  | 20   | MSB-3       | FCU-B1   | Y                       | 4,500 | 208/3 | 14   | 20    | 30A (20A FUSE) | NA         | NA           | NA     | NA   | NA             | NA               |             |
| CU-C1 (BLDG C)                     | 208/1 | 42   | 33.2  | 60A  | LC-1.3      | RTU-C1   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-C2 (BLDG C)                     | 208/1 | 42   | 33.2  | 60A  | LC-2.4      | RTU-C2   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-C3 (BLDG C)                     | 208/1 | 42   | 33.2  | 60A  | LC-5.7      | RTU-C3   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-C4 (BLDG C)                     | 208/1 | 42   | 33.2  | 60A  | LC-6.8      | RTU-C4   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-C5 (BLDG C)                     | 208/1 | 42   | 33.2  | 60A  | LC-9.11     | RTU-C5   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-C6 (BLDG C)                     | 208/1 | 42   | 33.2  | 60A  | LC-10.12    | RTU-C6   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-C7 (BLDG C)                     | 208/1 | 42   | 33.2  | 60A  | LC-13.15    | RTU-C7   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-C8 (BLDG C)                     | 208/1 | 42   | 33.2  | 60A  | LC-14.16    | RTU-C8   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-D1 (BLDG D)                     | 208/1 | 42   | 33.2  | 60A  | LE-1.3      | RTU-E1   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-D2 (BLDG D)                     | 208/1 | 42   | 33.2  | 60A  | LE-2.4      | RTU-E2   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-D3 (BLDG D)                     | 208/1 | 42   | 33.2  | 60A  | LE-5.7      | RTU-E3   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-D4 (BLDG D)                     | 208/1 | 42   | 33.2  | 60A  | LE-6.8      | RTU-E4   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-D5 (BLDG D)                     | 208/1 | 42   | 33.2  | 60A  | LE-9.11     | RTU-E5   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-D6 (BLDG D)                     | 208/1 | 42   | 33.2  | 60A  | LE-10.12    | RTU-E6   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-D7 (BLDG D)                     | 208/1 | 42   | 33.2  | 60A  | LE-13.15    | RTU-E7   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-D8 (BLDG D)                     | 208/1 | 42   | 33.2  | 60A  | LE-14.16    | RTU-E7   | Y                       | 2,000 | 208/1 | 41   | 60    | 60A (60A FUSE) | YES        | PECD-SRT12CB | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-F1 (BLDG F)                     | 208/1 | 15.3 | 12.4  | 60A  | LF-25.27    | RTU-F1   | Y                       | 1,600 | 208/1 | 34   | 50    | 60A (60A FUSE) | YES        | PCD-SRT12CA  | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |
| CU-F2 (BLDG F)                     | 208/1 | 15.3 | 12.4  | 60A  | LF-29.31    | RTU-F2   | Y                       | 1,600 | 208/1 | 34   | 50    | 60A (60A FUSE) | YES        | PCD-SRT12CA  | 7.1    | 12.8 | 30A (20A FUSE) | 2#8 1#10GND-1" C |             |

- GENERAL NOTES:
1. CONTRACTOR TO FIELD VERIFY CIRCUITING AND FEEDER INFORMATION PRIOR TO EQUIPMENT REMOVAL. CONTRACTOR TO PROVIDE REQUIRED ADJUSTMENTS AS NEEDED.  
 PROVIDE MECHANICAL UNIT WITH INTEGRAL CONVENIENCE RECEPTACLE. FEED FROM SPARE 20A/1P BREAKER IN NEAREST PANEL. ROUTE 2#12+1#12GND IN 1/2" EMT CONDUIT FROM PANEL TO RECEPTACLE.
  2. POWER NO MORE THAN 10 RECEPTACLES ON ONE CIRCUIT. FIELD VERIFY EXACT LOCATION OF NEAREST PANEL AND ROUTE OF NEW CIRCUIT FROM PANEL TO UNIT RECEPTACLE.
  3. CONTRACTOR TO DEMOLISH POWER CONNECTION FROM ALL ROOF TOP UNITS AND FAN COIL UNITS. DEMOLITION TO CONSIST OF REMOVAL OF POWER CONNECTION, CABLING, AND CONDUIT BACK TO SOURCE UNLESS NOTED OTHERWISE.
  4. FIELD COORDINATE EQUIPMENT MANUFACTURER FOR FAULT CURRENT LIMITING FUSE TYPES



Manzanita Elementary School  
 COVINA VALLEY USD  
 4131 North Nera Avenue Covina, CA 91722

DSA Submitted Set  
 11/02/2022  
 REVISIONS



**GENERAL NOTES**

- A WORK TO INCLUDE REMOVAL OF EXISTING FEEDER TO EXISTING HVAC EQUIPMENT THAT ARE TO BE REMOVED AND REPLACED. FEEDER TO EXISTING INDOOR FAN COIL UNIT TO BE REMOVED IN ITS ENTIRETY.
- B DISCONNECTING MEANS TO BE NEMA 3R RATED, FURNISHED AND INSTALLED BY DIVISION 28.
- C CARBON MONOXIDE DETECTION SYSTEM NOT REQUIRED. ELECTRIC HEATING IS BEING PROVIDED.
- D SEE SCHEDULE ON SHEET E0.1 FOR ADDITIONAL INFORMATION.
- E FUSES SHALL BE PROVIDED PER EQUIPMENT NAMEPLATE RATING.
- F ELECTRICAL PANELS LOCATED AT GRADE LEVEL DIRECTLY BELOW WHERE SHOWN.
- G ENERGY MANAGEMENT SYSTEM (EMS) / BUILDING AUTOMATION SYSTEM (BAS) IS A DELAGATED DESIGN SCOPE BY CONTRACTOR. CONTRACTOR TO FIELD COORDINATE WITH SCHOOL DISTRICT FOR LOCATIONS OF EMS ROUTER AND EMS PANEL AS WELL AS CONDUIT ROUTING.
- H CARBON MONOXIDE DETECTION SYSTEM WILL NOT BE PROVIDED AT THIS TIME UNDER CEBC 503.15.1:  
EXCEPTION 2: THE GROUP BUILDING WAS CONSTRUCTED BEFORE THE ADOPTION OF THE 2016 CALIFORNIA BUILDING STANDARDS CODE.  
EXISTING HVAC UNITS ARE BEING REPLACED IN KIND THROUGHOUT.
- J CONTRACTOR TO PROVIDE CONNECTION FROM LOAD SIDE OF HVAC EQUIPMENT DISCONNECT SWITCH TO FEED POWER EXHAUST DISCONNECT SWITCH. PROVIDE SAME SIZE FEEDER. PROVIDE FUSES PER EQUIPMENT NAMEPLATE RATING.

| KEYNOTES |   |
|----------|---|
| No.      | DESCRIPTION   |
| 1        | EXISTING HVAC EQUIPMENT ON THE ROOF TO BE DISCONNECTED AND REPLACED AS PART OF THIS SCOPE OF WORK. EXISTING FEEDER TO BE EXTENDED AS REQUIRED. PROVIDE ALL REQUIRED CONNECTION. SEE ELECTRICAL MATRIX ON SHEET E0.1 FOR ADDITIONAL INFORMATION. |
| 2        | EXISTING HVAC EQUIPMENT AT GRADE TO BE DISCONNECTED AND REPLACED AS PART OF THIS SCOPE OF WORK. PROVIDE NEW FEEDER PER TABLE ON SHEET E0.1. PROVIDE ALL REQUIRED CONNECTION.  |
| 3        | DUCT SMOKE DETECTOR FOR COMPLIANCE TO CALIFORNIA MECHANICAL CODE SECTION 909 IS NOT REQUIRED PER CODE EXCEPTION NO.2. ROOM HAVE DIRECT EXIT TO EXTERIOR AND TRAVEL DISTANCE DOES NOT EXCEED 100 FEET.   |
| 4        | EXISTING ELECTRICAL EQUIPMENT TO REMAIN AND TO BE PROTECTED IN PLACE.   |
| 5        | PROVIDE 120 VOLT CIRCUIT FROM SPARE BREAKER. PROVIDE TANDEM BREAKER AS REQUIRED.  |
| 6        | GFCI TYPE RECEPTACLE PROVIDED BY HVAC EQUIPMENT MANUFACTURER PER GENERAL NOTE NUMBER 2 ON SHEET E0.1. PROVIDE WEATHERPROOF COVER.   |
| 7        | FUSED DISCONNECT SIZE PER TABLE SHOWN ON E0.1   |
| 8        | PROVIDE 120V CIRCUIT FOR EMS ROUTER AND EMS PANEL. FIELD VERIFY EXACT LOCATION OF EMS ROUTER AND EMS PANEL.   |

**SITE LEGEND**

|  |  |
|--|--|
|  | EXISTING BUILDING - SCOPE OF WORK UNDER THIS DSA APPLICATION |
|  | EXISTING BUILDING NOT IN SCOPE                               |
|  | (E) RESTROOMS - NOT IN SCOPE                                 |

**OVERALL ELECTRICAL POWER PLAN**  
SCALE: 1/16" = 1'-0"



**Manzanita Elementary School**  
COVINA VALLEY USD  
4131 North Nara Avenue Covina CA 91722

DSA Submitted Set  
11/02/2022  
REVISIONS

75-22605-00  
ROOF ELECTRICAL PLAN

E2.1

Autodesk Docs/75-22605-00\_CVUSD - District Wide HVAC Replacement/75-22605-00\_CVUSD\_Manzanita ES\_MEP\_2022.rvt  
8/11/2022 1:27:10 PM

### ALTERNATE ARRANGEMENT OF SEISMIC BRACES FOR CONDUITS ON TRAPEZE

ELEVATION VIEW SOLID BRACE INSTALLED BETWEEN HANGERS (TRANSVERSE OR ALL-DIRECTIONAL BRACE)

ELEVATION VIEW CABLE BRACE INSTALLED IN-BETWEEN HANGERS

ELEVATION VIEW CABLE BRACE INSTALLED AT SINGLE HANGER (TRANSVERSE BRACES ONLY)

PLAN VIEW LONGITUDINAL SOLID BRACES INSTALLED IN ALTERNATING DIRECTIONS

PLAN VIEW ALL-DIRECTIONAL SOLID BRACES INSTALLED IN ALTERNATING DIRECTIONS

PLAN VIEW CABLE X-PATTERN BRACE INSTALLED IN-BETWEEN HANGERS

NOTES:  
 (1) REFER TO APPROPRIATE DETAIL PAGES FOR DIMENSIONS AND NOTATIONS NOT SHOWN.

**MASON WEST, INC.**  
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DATE: 08/16/2019

PAGE **A25.1**

### SEISMIC BRACKET ATTACHMENT TO STRUCTURAL TIMBER WITH (1) THRU BOLT OR THREADED ROD

MIN. 2x MEMBER, TYP. (MIN. SPECIES SPECIFIC GRAVITY G = 0.42 AND GRADE NO. 2)

ASTM A307 BOLT OR ASTM A36 THREADED ROD, WITH 2x2x1/2 PLATE WASHER ON BACK SIDE OF 4x4

MAX. 4 JOIST, TYP. (MIN. SPECIES SPECIFIC GRAVITY G = 0.42 AND GRADE NO. 2)

4x4 (MIN. SPECIES SPECIFIC GRAVITY G = 0.42 AND GRADE NO. 2)

ADDITIONAL BLOCKING OF WOOD JOIST TO BE DESIGNED BY THE STRUCTURAL ENGINEER OF RECORD.

SEISMIC BRACE BRACKET PERPENDICULAR TO JOIST

| BRACE BRACKET ATTACHMENT TYPE | ALLOWABLE LATERAL LOAD Fp LBS | MAX BRACE RANGE INCH | MIN. DIA. INCH | MIN. EDGE Cmin1 INCH | MIN. EDGE Cmin2 INCH |
|-------------------------------|-------------------------------|----------------------|----------------|----------------------|----------------------|
| 3A TO 3B                      | 250                           | 30'-45'              | 1/2            | 1 1/2                | 1 1/2                |
| 3A TO 3B                      | 150                           | 46'-60'              | 3/4            | 1 1/2                | 1 1/2                |
| 5A TO 5B                      | 300                           | 30'-45'              | 1/2            | 1 1/2                | 2                    |
| 5A TO 5B                      | 170                           | 46'-60'              | 3/4            | 1 1/2                | 2                    |
| 6A TO 6B                      | 340                           | 30'-45'              | 3/4            | 1 1/2                | 2 1/2                |
| 6A TO 6B                      | 200                           | 46'-60'              | 1/2            | 1 1/2                | 2 1/2                |

SEE DETAIL NO. 00 FOR SECTION NOTES

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PAGE **N4.10**

### SEISMIC BRACKET ATTACHMENT TO WOOD I-JOISTS WITH (1) THRU BOLT OR THREADED ROD

2x6x1-0" (MIN. SPECIES SPECIFIC GRAVITY G=0.42 AND GRADE NO. 2)

ASTM A307 BOLT OR ASTM A36 THREADED ROD, WITH 2x2x1/2 PLATE WASHER ON BACK SIDE OF JOIST, SNUG TIGHT TYP.

12-12x (3/4") COMMON NAIL, CLINCH NAILS AT I-JOIST WEB TYP.

MASON IND. N.Y. SEISMIC BRACKET FOR CABLE OR SOLID BRACING.

ADDITIONAL BLOCKING OF WOOD JOIST TO BE DESIGNED BY THE STRUCTURAL ENGINEER OF RECORD.

PERPENDICULAR TO JOIST

| BRACE BRACKET ATTACHMENT TYPE | ALLOWABLE LATERAL LOAD Fp LBS | MAX BRACE RANGE INCH | MIN. DIA. INCH |
|-------------------------------|-------------------------------|----------------------|----------------|
| 3A TO 3B                      | 150                           | 30'-45'              | 1/2            |
| 3A TO 3A                      | 80                            | 46'-60'              | 3/4            |
| 5A TO 5C                      | 180                           | 30'-45'              | 1/2            |
| 5A TO 5A                      | 100                           | 46'-60'              | 3/4            |
| 6A TO 6C                      | 210                           | 30'-45'              | 3/4            |
| 6A TO 6A                      | 120                           | 46'-60'              | 1/2            |

SEE DETAIL NO. 00 FOR SECTION NOTES

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PAGE **N4.11**

### SEISMIC BRACKET ATTACHMENT TO WOOD JOIST

MIN. 2x (MIN. SPECIES SPECIFIC GRAVITY G=0.42 AND GRADE NO. 2), TYP.

2 3/4" DIA. ASTM A307 BOLT OR ASTM A36 THREADED ROD THROUGH 3/4" DIA. HOLE, WITH STANDARD WASHER ON BACK SIDE OF JOIST, SNUG TIGHT TYP.

3x3x3/4, 5" L.G.

MASON IND. N.Y. SEISMIC BRACKET FOR SOLID OR CABLE BRACING. BRACE BRACKET MAY BE ROTATED TO ANY ANGLE AROUND BOLT.

ADDITIONAL BLOCKING OF WOOD JOIST TO BE DESIGNED BY THE STRUCTURAL ENGINEER OF RECORD.

AT JOIST

| BRACE BRACKET ATTACHMENT TYPE | ALLOWABLE LATERAL LOAD Fp LBS | MAX BRACE RANGE INCH | MIN. DIA. INCH |
|-------------------------------|-------------------------------|----------------------|----------------|
| 3A TO 3E                      | 420                           | 30'-45'              | 3/4            |
| 3A TO 3D                      | 300                           | 46'-60'              | 1/2            |
| 5A TO 5E                      | 420                           | 30'-45'              | 3/4            |
| 5A TO 5D                      | 300                           | 46'-60'              | 1/2            |
| 6A TO 6E                      | 420                           | 30'-45'              | 3/4            |
| 6A TO 6D                      | 300                           | 46'-60'              | 1/2            |

SEE DETAIL NO. 00 FOR SECTION NOTES

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### CONDUIT ELECTRICAL METALLIC TUBING (EMT) MAXIMUM SEISMIC BRACE SPACINGS

| TRADE SIZE | MAX WEIGHT PER FOOT (LBS/FT) | MAX GRAVITY SUPPORT SPACING (FT) | MAX TRANSVERSE BRACE SPACING BASED ON TRADE SIZE AND g FORCE (FT) |    |             |    |              |    |
|------------|------------------------------|----------------------------------|---|----|-------------|----|--------------|----|
|            |                              |                                  | g FORCE 0.25  |    | g FORCE 0.5 |    | g FORCE 0.75 |    |
| 3          | 9.25                         | 10                               | 45  | 41 | 38          | 36 | 35           | 33 |
| 3.5        | 10.98                        | 10                               | 48  | 44 | 41          | 39 | 37           | 35 |
| 4          | 13.64                        | 10                               | 50  | 45 | 42          | 40 | 38           | 36 |

NOTES:  
 1. MAXIMUM BRACE SPACING IS BASED ON ASCE 7-10 SECTION 13.6.3, NOTE 9, 75 PERCENT OF THE MATERIAL MINIMUM SPECIFIED TENSILE STRENGTH FOR STEEL TUBING.  
 2. EMT CONSIDERED FULL OF CONDUCTORS WHEN DETERMINING WEIGHT (REFER TO APPENDIX).  
 3. FOR LONGITUDINAL AND ALL-DIRECTIONAL BRACE SPACING, MULTIPLY THE TABULATED VALUES BY 3. BRACE AND OR CONNECTION CAPACITY MAY GOVERN MAXIMUM SPACING IN SOME CASES.  
 4. BRACE SPACING ARE BASED ON EMT STEEL TUBING CONSTRUCTED TO UL-797 OR ANSI C-81.3 WITH A MINIMUM YIELD STRENGTH OF 36,000 PSI.  
 5. COUPLINGS FOR UP TO 2 1/2" EMT TO MEET PROJECT SPECIFICATIONS, HOWEVER, COMPRESSION COUPLINGS OR COUPLINGS WITH MIN. (2) SCREWS AT EACH END OF CONDUIT CAN BE PUSHED INTO COUPLING 2" AND SET WITH MIN. (2) SCREWS. SHALL BE USED FOR 3", 3 1/2", AND 4" EMT.

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### ELECTRICAL CONDUIT WEIGHT TABLES

| CONDUIT DIAMETER (IN) | PIPE TYPE                               | CONDUIT WEIGHTS                  |            |       |
|-----------------------|---|----------------------------------|------------|-------|
|                       |   | PIPE                             | CONDUCTORS | TOTAL |
| 1/2                   | ELECTRICAL METALLIC TUBING (EMT) WEIGHT | 0.29                             | 0.22       | 0.51  |
| 3/4                   |   | 0.44                             | 0.40       | 0.84  |
| 1                     |   | 0.64                             | 0.66       | 1.30  |
| 1 1/2                 |   | 1.17                             | 1.17       | 2.34  |
| 2                     |   | 1.40                             | 2.62       | 4.02  |
| 2 1/2                 |   | 2.05                             | 3.74       | 5.79  |
| 3                     | INTERMEDIATE METAL CONDUIT (IMC) WEIGHT | 2.96                             | 5.76       | 8.72  |
| 3 1/2                 |   | 3.25                             | 7.73       | 10.98 |
| 4                     |   | 3.70                             | 9.94       | 13.64 |
| 5                     |   | —                                | —          | —     |
| 6                     |   | —                                | —          | —     |
| 6                     |   | RIGID METAL CONDUIT (RMC) WEIGHT | 0.80       | 0.22  |
| 3/4                   | 0.82                                    |                                  | 0.41       | 1.23  |
| 1                     | 1.16                                    |                                  | 0.60       | 1.82  |
| 1 1/2                 | 1.50                                    |                                  | 1.17       | 2.67  |
| 2                     | 1.82                                    |                                  | 1.60       | 3.42  |
| 2 1/2                 | 2.42                                    |                                  | 2.62       | 5.04  |
| 3                     | 3.32                                    | 3.47                             | 7.75       |       |
| 3 1/2                 | 5.28                                    | 5.43                             | 10.69      |       |
| 4                     | 6.12                                    | 7.34                             | 13.46      |       |
| 5                     | 6.82                                    | 9.50                             | 16.32      |       |
| 6                     | —                                       | —                                | —          |       |
| 6                     | RIGID METAL CONDUIT (RMC) WEIGHT        | 0.79                             | 0.22       | 1.01  |
| 3/4                   |   | 1.05                             | 0.41       | 1.46  |
| 1                     |   | 1.53                             | 0.60       | 2.13  |
| 1 1/2                 |   | 2.01                             | 1.17       | 3.18  |
| 2                     |   | 2.48                             | 1.61       | 4.09  |
| 2 1/2                 |   | 3.32                             | 2.62       | 5.94  |
| 3                     | 5.27                                    | 3.74                             | 9.01       |       |
| 3 1/2                 | 6.82                                    | 5.77                             | 12.59      |       |
| 4                     | 8.31                                    | 7.73                             | 16.04      |       |
| 5                     | 9.72                                    | 9.95                             | 19.67      |       |
| 6                     | 13.14                                   | 16.62                            | 29.76      |       |
| 6                     | 17.45                                   | 22.58                            | 40.03      |       |

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PAGE **APP3.0**

### ROOF PENETRATION DETAIL

GALV PIPE CONDUIT FOR ELECTRICAL /LV.

LAP SEALANT

STAINLESS STEEL CLAMPING RING

PRE-MOLDED PIPE BOOT

LAP SEALANT

ROOF MEMBRANE

ROOFING MATERIAL

STEEL JOIST - SEE STRUCTURAL (AS APPLICABLE)

PIPE CLAMP TOP AND BOTTOM

2 x 2 x 3/16 x 6" LONG TOP AND BOTTOM OF JOIST

### TYP WALL EQUIPMENT BACKING

DOUBLE TOP PL

SIMPSON A34 (T&B) EA END

WALL MOUNTED EQUIP SEE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS PROVIDE WD BACKING AND ANGLES PER SCHED

4x BLOCKING TYP

SIMPSON A34 (T&B) EA END

DOUBLE STUDS LAMINATE STUDS W/ 10d FACE NAILS AT 6" OC

SILL PL

WALL MOUNTED EQUIP SEE ARCHITECTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS PROVIDE WD BACKING AND ANGLES PER SCHED

ANCHOR SPACING

1'-0" MAX TO CENTER OF MASS

HEIGHT ABOVE FLOOR TO CENTER OF MASS

SEE ARCH (17'-0" MAX)

| NON-STRUCTURAL EQUIPMENT WEIGHT |                |
|---------------------------------|----------------|
| WEIGHT < 250 LBS                | SINGLE 2x STUD |
| 250 LBS & WEIGHT                | DOUBLE 2x STUD |

NOTES:  
 1. MAXIMUM WEIGHT OF EQUIPMENT UNIT NOT TO EXCEED 500 LBS.  
 2. COORDINATE EXACT LOCATIONS WITH MECHANICAL, ELECTRICAL AND ARCHITECTURAL DRAWINGS.

**DLR Group**  
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 REGISTERED PROFESSIONAL ENGINEER  
 No. 61586  
 Exp. 6/30/23  
 STATE OF CALIFORNIA

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75-22605-00

DSA Submitted Set  
 11/02/2022  
 REVISIONS

ELECTRICAL DETAILS

**E6.1**