

May 9, 2023

## Linklater Public School Renovations

300 Stone St. North,  
Gananoque, Ontario  
UCDSB Tender No. 23-020  
SZA Project No. 22113

### Addendum No. 1

The following items are part of the Contract Documents and are to be included in the Base Bid.

#### 1. ARCHITECTURAL

##### 1. Drawing A2 – Ground Floor Plan

1. ADD note h) to the general notes: 'h) - Infill openings from removed services as required to match and be flush to existing adjacent finishes. Refer to mechanical and electrical drawings for full scope.'
2. ADD note 31 – '31. Infill opening in existing wall to hatch existing at removal of mechanical unit. New stucco finish to match existing adjacent. Repaint affected wall on the interior.' Refer to drawings for locations.
3. ADD note 32 – '32. Existing grill to be removed. Replace with new stainless-steel cover.' Refer to drawings for locations.
4. ADD note 33 – '33. Existing window to be removed. Modify opening to suit new ductwork. In fill wall flush to and to match existing adjacent.' Refer to drawings for locations.
5. ADD note 24 – '34. Modify existing wall as required to install new ductwork.' Refer to drawings for locations.
6. ADD note to Basement Plans 2 and 3 'in fill openings at electrical removals and fire stop all new penetrations. Refer to electrical drawings for full scope'.
7. Refer to attached revised drawing A2 for additional revisions, all revisions have been bubbled.

##### 2. Drawing A3 – Second Floor Plan, RCP and Screen Elevations and Drawing A4 – Ground Floor RCP

1. ADD notes as indicated for drawing A2.
2. ADD RCP General note J) – 'J) - Infill openings from removed services as required to match and be flush to existing adjacent finishes. Refer to mechanical and electrical drawings for full scope of work required.'
3. ADD RCP note 13. '13. Existing opening from mechanical / electrical removals, infill opening flush to and to match existing adjacent.' Refer to drawings for locations.
4. ADD note 14. '14. Existing ductwork to be removed, patch and repaint ceiling.' Refer to drawings for locations.
5. ADD note 15. '15. Existing grill to be removed. Replace with new stainless-steel cover.' Refer to drawings for locations.

6. ADD note 16 '16. Remove portion of existing tile ceiling and adjacent bulkhead as required to install new roof drain and leader to be tied back into existing roof drain. Reinstall ceiling and bulkhead to match existing and repaint. Temporarily remove and reinstall lights as required to carry out work.' Refer to drawings for locations.
  7. ADD note 17 '17. New liner diffuser.' Refer to drawings for locations.
  8. REVISE RCP Legend, refer to drawing.
  9. Refer to attached revised drawing A3 and A4 for additional revisions, all revisions have been bubbled.
3. Drawing A5 – Roof Plan, Lift Section
    1. REVISE note 1 to '1. Remove rooftop equipment. Refer to Mechanical / Electrical.
    2. Refer to attached revised drawing A5 for additional revisions, all revisions have been bubbled.
  4. Drawing A6 – Elevations
    1. ADD note 6. '6. Infill opening in existing wall to hatch existing at removal of mechanical unit. New stucco finish to match existing adjacent.' Refer to drawings for locations.
    2. ADD note 7. '7. Existing AC unit to be removed.' Refer to drawings for locations.
    3. ADD note 8. '8. Modify existing opening as required for new exhaust louver.' Refer to drawings for locations.
    4. ADD note 9 '9. Existing window to be removed. Modify opening to suit new ductwork. In fill wall flush to and to match existing adjacent.' Refer to drawings for locations.
    5. ADD note 10. '10. New ballasted roof guard.' Refer to drawings for locations.
    6. Refer to attached revised drawing A6 for additional revisions, all revisions have been bubbled.

## 2. ROOFING AND STRUCTURAL

1. Drawing 2, Partial Roof Plans
  1. Delete drawing 2 in its entirety and replace with drawing 2 attached, dated 2023-04-26 For Addendum 1, total 1 page.
2. Drawing 3, Details

Revise Existing Roof Assembly E1 as follows:

EXISTING ROOF ASSEMBLY E1

  - 4-PLY BUR WITH GRAVEL TO BE REMOVED
  - 25 mm FIBREBOARD TO BE REMOVED
  - 63 mm POLYISO INSULATION TO BE REMOVED
  - EXISTING AIR/VAPOUR BARRIER TO REMAIN
  - EXISTING CONCRETE DECK TO REMAIN

Revise Typical Roof Assembly R1 as follows:

## TYPICAL ROOF ASSEMBLY R1

- 2-PLY MOD. BIT. MEMBRANE
- 6 mm OVERLAY BOARD
- 2% TAPERED POLYISO INSULATION AS INDICATED
- 50 mm POLYISO INSULATION
- 1-PLY MOD. BIT. AIR/VAPOUR BARRIER MEMBRANE
- 3 mm PROTECTION BOARD
- EXISTING AIR/VAPOUR BARRIER TO REMAIN
- EXISTING CONCRETE DECK TO REMAIN

Project details are to be revised to reflect the above changes in assembly.

3. Drawing 6, Details

1. Revise roof drain details 15/6 and 16/6 to remove reference to back flow device. Back flow devices are not to be installed.

4. Drawing 7, Details

1. Add drawing 7 attached, dated 2023-04-26 For Addendum 1, total 1 page.

5. Specification 22 05 11, Plumbing and Drainage

1. Add specification section 22 05 11, Plumbing and Drainage attached, dated April 2023 For Addendum 1, total 7 pages.

6. Specification 05 51 29, Metal Ladders

1. Delete specification 05 51 29, Metal Ladders in its entirety and replace with specification 05 51 29, Metal Ladders attached, dated April 2023 For Addendum 1, total 4 pages.

7. Drawing S3, Structural Details

1. Note that the distance between the wall face and the siderails of the ladder indicated on detail 13/S3 is to be a minimum 150mm. Ladder is required to be hot dipped galvanized after fabrication in accordance with Specification Section 05 51 29 included in this addendum.

8. Drawing 5, Details

1. Delete Detail 10/5 in its entirety. Refer to mechanical for scope of work.

9. Drawing 6, Details

1. Delete Detail 16/6 in its entirety. Refer to mechanical for scope of work.

**3. MECHANICAL AND ELECTRICAL**

1. Refer to attached Mechanical / Electrical Addendum ME-01.

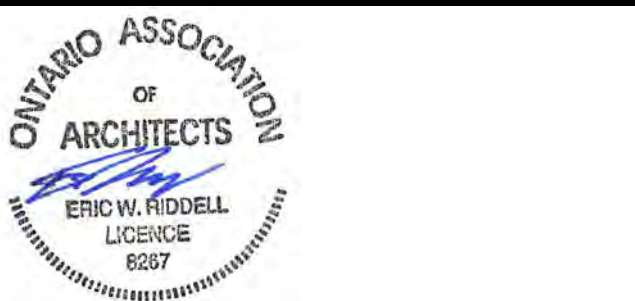
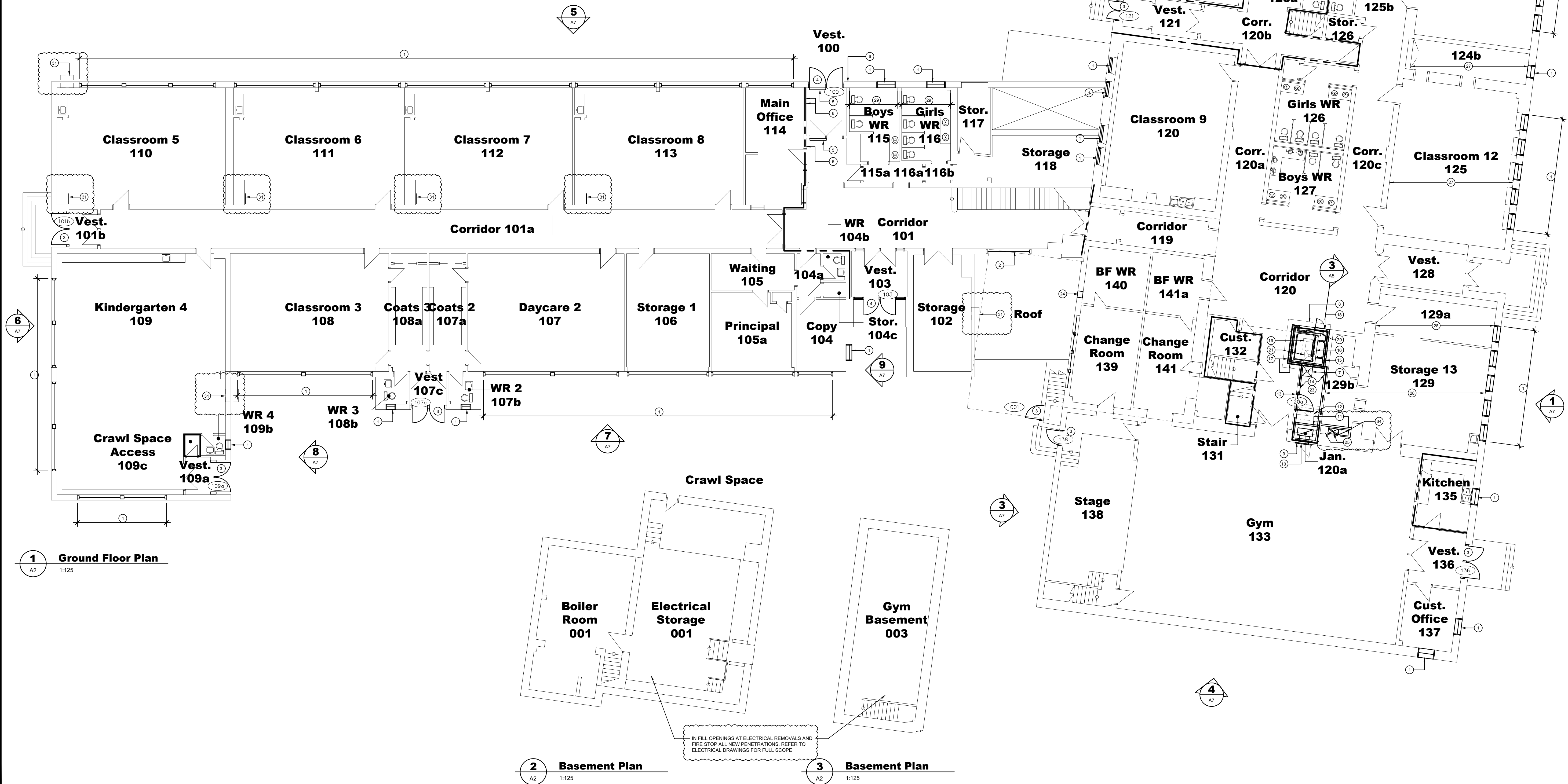
**END OF ADDENDUM NO. 1**

Floor Plan Notes:

- GENERAL:
- CAREFULLY SAW CUT NEW OPENING IN EXISTING CONCRETE BLOCK WALL AS REQUIRED FOR NEW DUCTWORK. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS.
  - TEMPORARILY OPEN CEILING AND WALLS AS REQUIRED TO CARRY OUT WORK. REINSTATE TO MATCH EXISTING ADJACENT.
  - ALL SERVICES ARE TO BE CONCEALED WHENEVER POSSIBLE. EXPOSED SERVICES (WHERE ALLOWED) ARE TO BE PAINTED TO MATCH ADJACENT WALL / CEILING.
  - REPAINT ALL AREAS AFFECTED BY THE WORK. IF A WALL / CEILING IS TO BE REPAINTED, THE ENTIRE WALL / CEILING IS TO BE REPAINTED. PAINT COLOURS TO MATCH EXISTING.
  - SITE VERIFY ALL OPENINGS.
  - DENOTES EXISTING FIRE REPAIRATION. FIRE STOP ALL PENETRATIONS.
  - THERE ARE EXISTING FIRE SEPARATIONS BETWEEN ALL LEVELS (BASEMENT (CRAWL SPACE) TO GROUND FLOOR AND GROUND FLOOR TO SECOND FLOOR.
  - INFILL OPENINGS FROM REMOVED SERVICES AS REQUIRED TO MATCH AND BE FLUSH TO EXISTING ADJACENT FINISHES. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR FULL SCOPE.

- NOTES:
- EXISTING WINDOW TO BE REMOVED. INSTALL NEW ALUMINUM WINDOW TO MATCH EXISTING CONFIGURATION. FILL ALL VOIDS WITH SPRAY FOAM INSULATION. CONTINUOUS SEALANT BOTH SIDES OF WINDOW HEAD, SILL AND JAMBS. REVIEW EACH LOCATION ON SITE. OPEN CEILINGS AS REQUIRED AND REINSTATE. REPLACE WINDOW STOOL.
  - EXISTING WINDOW TO BE REMOVED. INSTALL NEW ALUMINUM CURTAIN WALL TO MATCH EXISTING CONFIGURATION. FILL ALL VOIDS WITH SPRAY FOAM INSULATION. CONTINUOUS SEALANT BOTH SIDES OF WINDOW HEAD, SILL AND JAMBS.
  - REMOVE EXISTING DOOR, HARDWARE, FRAME AND GLAZING. INSTALL NEW HOLLOW METAL FRAME (PAINTED), HOLLOW METAL DOOR (PAINTED) TO MATCH EXISTING LAYOUT. INSTALL NEW DOOR HARDWARE. FILL ALL VOIDS WITH SPRAY FOAM INSULATION. CONTINUOUS SEALANT BOTH SIDES OF FRAME HEAD, AND JAMBS.
  - REMOVE EXISTING DOOR, HARDWARE, FRAME AND GLAZING. INSTALL NEW THERMALLY BROKEN ANODIZED ALUMINUM DOOR AND FRAME TO MATCH EXISTING LAYOUT. INSTALL NEW DOOR HARDWARE. FILL ALL VOIDS WITH SPRAY FOAM INSULATION. CONTINUOUS SEALANT BOTH SIDES OF FRAME HEAD, AND JAMBS.
  - NEW BARRIER FREE DOOR OPERATOR. TIE INTO EXISTING BUILDING SECURITY SYSTEM. DURING SCHOOL HOUSE THE EXTERIOR ACTUATOR IS TO BE DEACTIVATED AND THE OPERATOR ONLY ACTIVATED BY THE INTERIOR ACTUATOR OR BY SWITCH FROM THE MAIN OFFICE. THERE ARE EXISTING ELECTRIC STRIKES ON THE REVIEW EXISTING CONDITIONS AND PROVIDE ALL ADDITIONAL DEVICES. ETO AS REQUIRED FOR A FULLY FUNCTIONING SYSTEM.
  - ELECTRIC STRIKE TO BE POWERED OFF OF OPERATOR. OPERATOR SUPPLIER TO SUPPLY APPROPRIATE RELAY / SWITCH. KEYSWITCH TO BE MOUNTED ON FRAME JAMB AND WIRED (BY OPERATOR INSTALLER) TO TURN OFF OUTSIDE ACTUATOR AT LOCK UP.
  - MODE OF OPERATION - PUSHING INSIDE ACTUATOR MOMENTARILY OPENS ELECTRIC STRIKE AND BEGINS OPERATOR CYCLE AT ALL TIMES - PUSHING OUTSIDE ACTUATOR BEGINS OPERATOR CYCLE AT ALL TIMES BUT DOES NOT OPERATE DOOR STRIKE. - ACTUATOR IS "TURNED OFF" BY KEYSWITCH AT LOCK-UP.
  - BARRIER FREE DOOR PUSH BUTTON (ACTUATOR). ENSURE A MINIMUM CLARENCE OF 800mm FROM THE EDGE OF THE DOOR SWING.

- NEW JANITORS SINK. REVISE PLUMBING AND DRAINAGE AS REQUIRED TO SUIT.
- OPEN EXISTING WOOD FLOOR. SHORE AND MODIFY EXISTING STRUCTURE AS REQUIRED. RELOCATE EXISTING PLUMBING AS REQUIRED. REINSTATE FLOOR LEVEL TO EXISTING ADJACENT. INSTALL NEW SHEET FLOORING AND BASE TO MATCH EXISTING.
- EXISTING HM DOOR AND FRAME TO BE REMOVED. IN FILL OPENING WITH 19mm VERY HIGH IMPACT (VHI) GYPSUM BOARD ON 92mm 19 GAUGE STEEL STUDS AT 400mm O.C. SET BACK FROM FACE OF ADJACENT MASONRY BY 25mm. PROVIDE NEW WOOD BASE TO MATCH EXISTING ADJACENT. PROVIDE CONTINUOUS SEALANT AT JUNCTION OF GYPSUM BOARD AND MASONRY.
- NEW RETURN AIR LOUVER.
- NEW WALL - 16mm GYPSUM BOARD ON 92mm STEEL STUDS AT 400mm O.C. WITH WALL BASE TO MATCH EXISTING.
- EXISTING STEEL STAIRS TO BE REMOVED.
- NEW HOLLOW METAL DOOR AND FRAME. (PAINTED) MODIFY EXISTING GYPSUM BOARD AND STUD WALL AS REQUIRED.
- INSTALL NEW 16mm MOISTURE RESISTANT TYPE X GYPSUM BOARD ON ALL WALLS UP TO THE SECOND FLOOR CEILING. FIRE STOP ALL PENETRATIONS.
- NEW 150mm CONCRETE BLOCK LIFT SHAFT.
- NEW LULU LIFT.
- NEW 16mm GYPSUM BOARD (PAINTED) ON 22mm FURRING CHANNELS ON CONCRETE BLOCK LIFT SHAFT.
- LIFT FRONT WALL TO BE 16mm GYPSUM BOARD (PAINTED) ON 152mm STEEL STUDS AT 400mm O.C. WITH 22mm FURRING CHANNELS AT 400mm O.C. PROVIDE ALL REQUIRED BLOCKING.
- PORTION OF EXISTING GYPSUM BOARD WALL TO BE REMOVED FOR NEW LIFT.
- EXISTING HOLLOW METAL DOOR TO BE REMOVED.
- EXISTING JANITORS SINK TO BE REMOVED. ASSOCIATED PLUMBING IS TO BE MODIFIED TO SUIT NEW LAYOUT.
- NEW HOLLOW METAL SCREEN (PAINTED) IN EXISTING MODIFIED OPENING c/w FIRE RATED FIRELITE CERAMIC GLASS, LIGHT ACID ETCH ON MULTI-STORY SIDE OF SCREEN. REFER TO SCREEN ELEVATION 3 ON A3.
- NEW SHEET FLOORING AND BASE TO MATCH EXISTING. PREPARE EXISTING WOOD SUB-FLOOR AS REQUIRED.
- MODIFY EXISTING EXTERIOR WALL AS REQUIRED TO SUIT NEW DUCTWORK AND DUCT PENETRATION.
- MODIFY EXISTING WOOD FLOOR AND STRUCTURE AS REQUIRED FOR NEW DUCT OPENING. FIRE STOP PENETRATION.
- MODIFY EXISTING WOOD FLOOR AND STRUCTURE AS REQUIRED FOR NEW LIFT. MAKE GOOD AFFECTED AREAS FLUSH TO EXISTING ADJACENT.
- REMOVE EXISTING FLOORING DOWN TO WOOD SUB-FLOOR. PREPARE AS REQUIRED AND INSTALL NEW SHEET FLOORING.
- REMOVE EXISTING FLOORING DOWN TO WOOD SUB-FLOOR. PREPARE AS REQUIRED AND INSTALL NEW VCT FLOORING.
- REPAIR DAMAGE GYPSUM BOARD WALLS IN THIS AREA. REPAINT ENTIRE WALL.
- REMOVE EXISTING WINDOW INTO STAIRWELL. INFILL WITH NEW GYPSUM BOARD AND STEEL STUDS. MAKE GOOD AND REPAINT ENTIRE WALL.
- INFILL OPENING IN EXISTING WALL TO MATCH EXISTING AT REMOVAL OF MECHANICAL UNIT. NEW STUCCO FINISH TO MATCH EXISTING ADJACENT. REPAINT AFFECTED WALL ON THE INTERIOR.
- EXISTING GRILL TO BE REMOVED. REPLACE WITH NEW STAINLESS-STEEL COVER.
- EXISTING WINDOW TO BE REMOVED. MODIFY OPENING TO SUIT NEW DUCTWORK. IN FILL WALL FLUSH TO AND TO MATCH EXISTING ADJACENT.
- MODIFY EXISTING WALL AS REQUIRED TO INSTALL NEW DUCTWORK.



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1	Issued for Addendum 1	2023-05-09
0	Issued for Permit and Tender	2023-04-18
C	Issued for 90% Review	2023-03-15
B	Issued for 60% Review	2023-02-24
A	Issued for 30% Review	2023-01-18
Revision	Description	Date

Project:  
Renovations to Linklater  
Public School

Location:

300 Stone St. North  
Gananoque, Ontario

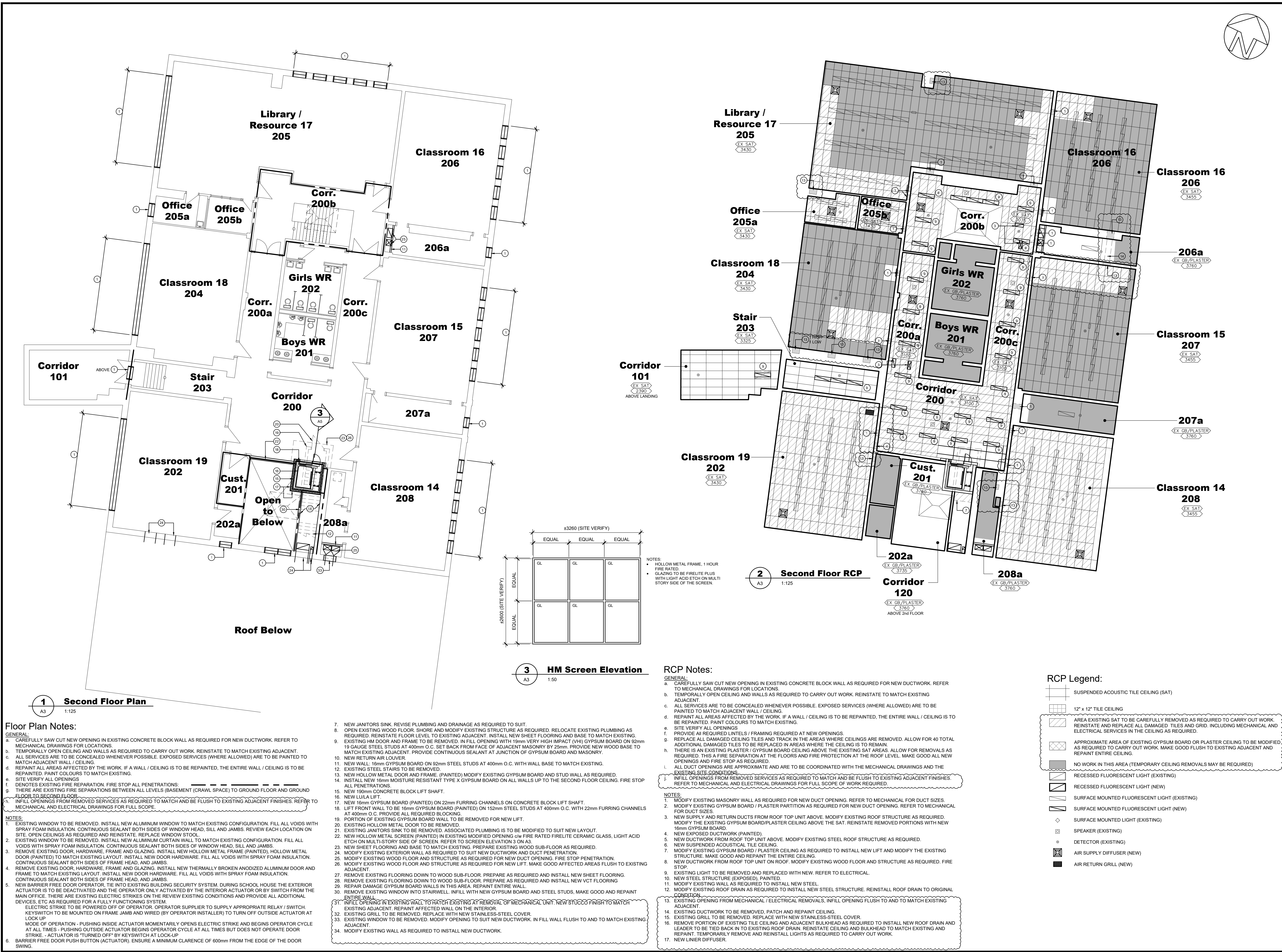
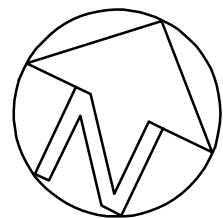
Client:  
Upper Canada District School Board

Drawing:  
Ground Floor

Drawn by JR	Date Jan 2023
File Name 22113-Linklater-Arch	Scale 1:125
Client Project #	Drawing Number

Project # 22113	Revision # 1	A2
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### Floor Plan Notes:

- GENERAL:**
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  - TEMPORARILY OPEN CEILING AND WALLS AS REQUIRED TO CARRY OUT WORK. REINSTATE TO MATCH EXISTING ADJACENT.
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  - SITE VERIFY ALL OPENINGS.
  - DENOTES EXISTING FIRE SEPARATION. FIRE STOP ALL PENETRATIONS.
  - THERE ARE EXISTING FIRE SEPARATIONS BETWEEN ALL LEVELS (BASEMENT (CRAWL SPACE) TO GROUND FLOOR AND GROUND FLOOR TO SECOND FLOOR).
  - INFILL OPENINGS FROM REMOVED SERVICES AS REQUIRED TO MATCH AND BE FLUSH TO EXISTING ADJACENT FINISHES. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR FULL SCOPE.

- NOTES:**
- EXISTING WINDOW TO BE REMOVED. INSTALL NEW ALUMINUM WINDOW TO MATCH EXISTING CONFIGURATION. FILL ALL VOIDS WITH SPRAY FOAM INSULATION. CONTINUOUS SEALANT BOTH SIDES OF WINDOW HEAD, SILL AND JAMBS. REVIEW EACH LOCATION ON SITE. OPEN CEILINGS AS REQUIRED AND REINSTATE. REPLACE WINDOW STOOL.
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  - REMOVE EXISTING DOOR, HARDWARE, FRAME AND GLAZING. INSTALL NEW HOLLOW METAL FRAME (PAINTED), HOLLOW METAL DOOR (PAINTED) TO MATCH EXISTING LAYOUT. INSTALL NEW DOOR HARDWARE. FILL ALL VOIDS WITH SPRAY FOAM INSULATION. CONTINUOUS SEALANT BOTH SIDES OF FRAME HEAD, AND JAMBS.
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  - NEW BARRIER FREE DOOR OPERATOR. TIE INTO EXISTING BUILDING SECURITY SYSTEM. DURING SCHOOL HOUSE THE EXTERIOR ACTUATOR IS TO BE DEACTIVATED AND THE OPERATOR ONLY ACTIVATED BY THE INTERIOR ACTUATOR OR BY SWITCH FROM THE MAIN OFFICE. THERE ARE EXISTING ELECTRIC STRIKES ON THE REVIEW EXISTING CONDITIONS AND PROVIDE ALL ADDITIONAL DEVICES, ETC AS REQUIRED FOR A FULLY FUNCTIONING SYSTEM.
  - ELECTRIC STRIKE TO BE POWERED OFF OF OPERATOR. OPERATOR SUPPLIER TO SUPPLY APPROPRIATE RELAY / SWITCH. KEYSWITCH TO BE MOUNTED ON FRAME JAMB AND WIRED (BY OPERATOR INSTALLER) TO TURN OFF OUTSIDE ACTUATOR AT LOCK UP.
  - MODE OF OPERATION - PUSHING INSIDE ACTUATOR MOMENTARILY OPENS ELECTRIC STRIKE AND BEGINS OPERATOR CYCLE AT ALL TIMES - PUSHING OUTSIDE ACTUATOR BEGINS OPERATOR CYCLE AT ALL TIMES BUT DOES NOT OPERATE DOOR STRIKE. - ACTUATOR IS "TURNED OFF" BY KEYSWITCH AT LOCK-UP.
  - BARRIER FREE DOOR PUSH BUTTON (ACTUATOR). ENSURE A MINIMUM CLARENCE OF 600mm FROM THE EDGE OF THE DOOR SWING.

### RCP Notes:

- GENERAL:**
- CAREFULLY SAW CUT NEW OPENING IN EXISTING CONCRETE BLOCK WALL AS REQUIRED FOR NEW DUCTWORK. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS.
  - TEMPORARILY OPEN CEILING AND WALLS AS REQUIRED TO CARRY OUT WORK. REINSTATE TO MATCH EXISTING ADJACENT.
  - ALL SERVICES ARE TO BE CONCEALED WHENEVER POSSIBLE. EXPOSED SERVICES (WHERE ALLOWED) ARE TO BE PAINTED TO MATCH ADJACENT WALL / CEILING.
  - REPAINT ALL AREAS AFFECTED BY THE WORK. IF A WALL / CEILING IS TO BE REPAINTED, THE ENTIRE WALL / CEILING IS TO BE REPAINTED. PAINT COLOURS TO MATCH EXISTING.
  - SITE VERIFY ALL OPENINGS.
  - PROVIDE ALL REQUIRED LINTELS / FRAMING REQUIRED AT NEW OPENINGS.
  - REPLACE ALL DAMAGED CEILING TILES AND TRACK IN THE AREAS WHERE CEILINGS ARE REMOVED. ALLOW FOR 40 TOTAL ADDITIONAL DAMAGED TILES TO BE REPLACED IN AREAS WHERE THE CEILING IS TO REMAIN.
  - THERE IS AN EXISTING PLASTER / GYPSUM BOARD CEILING ABOVE THE EXISTING SAT AREAS. ALLOW FOR REMOVALS AS REQUIRED. THIS A FIRE SEPARATION AT THE FLOORS AND FIRE PROTECTION AT THE ROOF LEVEL. MAKE GOOD ALL NEW OPENINGS AND FIRE STOP AS REQUIRED.
  - ALL DUCT OPENINGS ARE APPROXIMATE AND ARE TO BE COORDINATED WITH THE MECHANICAL DRAWINGS AND THE EXISTING SITE CONDITIONS.
  - INFILL OPENINGS FROM REMOVED SERVICES AS REQUIRED TO MATCH AND BE FLUSH TO EXISTING ADJACENT FINISHES. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR FULL SCOPE OF WORK REQUIRED.

- NOTES:**
- MODIFY EXISTING MASONRY WALL AS REQUIRED FOR NEW DUCTWORK. REFER TO MECHANICAL FOR DUCT SIZES.
  - MODIFY EXISTING GYPSUM BOARD / PLASTER PARTITION AS REQUIRED FOR NEW DUCT OPENING. REFER TO MECHANICAL FOR DUCT SIZES.
  - NEW SUPPLY AND RETURN DUCTS FROM ROOF TOP UNIT ABOVE. MODIFY EXISTING ROOF STRUCTURE AS REQUIRED.
  - MODIFY THE EXISTING GYPSUM BOARD/PLASTER CEILING ABOVE THE SAT. REINSTATE REMOVED PORTIONS WITH NEW 16mm GYPSUM BOARD.
  - NEW EXPOSED DUCTWORK (PAINTED).
  - NEW DUCTWORK FROM ROOF TOP UNIT ABOVE. MODIFY EXISTING STEEL ROOF STRUCTURE AS REQUIRED.
  - NEW SUSPENDED ACOUSTICAL TILE CEILING.
  - MODIFY EXISTING GYPSUM BOARD / PLASTER CEILING AS REQUIRED TO INSTALL NEW LIFT AND MODIFY THE EXISTING STRUCTURE. MAKE GOOD AND REPAINT THE ENTIRE CEILING.
  - NEW DUCTWORK FROM ROOF TOP UNIT ON ROOF. MODIFY EXISTING WOOD FLOOR AND STRUCTURE AS REQUIRED. FIRE STOP.
  - EXISTING LIGHT TO BE REMOVED AND REPLACED WITH NEW. REFER TO ELECTRICAL.
  - NEW STEEL STRUCTURE (EXPOSED). PAINTED.
  - MODIFY EXISTING WALL AS REQUIRED TO INSTALL NEW STEEL.
  - MODIFY EXISTING ROOF DRAIN AS REQUIRED TO INSTALL NEW STEEL STRUCTURE. REINSTALL ROOF DRAIN TO ORIGINAL CONDITION.
  - EXISTING OPENING FROM MECHANICAL / ELECTRICAL REMOVALS. INFILL OPENING FLUSH TO AND TO MATCH EXISTING ADJACENT.
  - EXISTING DUCTWORK TO BE REMOVED. PATCH AND REPAINT CEILING.
  - EXISTING GRILL TO BE REMOVED. REPLACE WITH NEW STAINLESS-STEEL COVER.
  - REMOVE PORTION OF EXISTING TILE CEILING AND ADJACENT BULKHEAD AS REQUIRED TO INSTALL NEW ROOF DRAIN AND LEADER TO BE TIED BACK IN TO EXISTING ROOF DRAIN. REINSTATE CEILING AND BULKHEAD TO MATCH EXISTING AND REPAINT. TEMPORARILY REMOVE AND REINSTALL LIGHTS AS REQUIRED TO CARRY OUT WORK.
  - NEW LINER DIFFUSER.

1	Issued for Addendum 1	2023-05-09
0	Issued for Permit and Tender	2023-04-18
C	Issued for 90% Review	2023-03-15
B	Issued for 60% Review	2023-02-24
A	Issued for 30% Review	2023-01-18
Revision	Description	Date

Project  
**Renovations to Linklater Public School**

Location  
**300 Stone St. North  
Gananoque, Ontario**

Client  
**Upper Canada District School Board**

Drawing  
**Second Floor RCP  
Screen Elevation**

Drawn by JR	Date Jan 2023
File Name 22113-Linklater-Arch	Scale 1:125
Client Project #	Drawing Number
Project # 22113	Revision # 1
<b>A3</b>	



**GENERAL:**

- a. CAREFULLY SAW CUT NEW OPENING IN EXISTING CONCRETE BLOCK WALL AS REQUIRED FOR NEW DUCTWORK. REFER TO MECHANICAL DRAWINGS FOR LOCATIONS.
- b. TEMPORARILY OPEN CEILING AND WALLS AS REQUIRED TO CARRY OUT WORK. REINSTATE TO MATCH EXISTING ADJACENT.
- c. ALL SERVICES ARE TO BE CONCEALED WHENEVER POSSIBLE. EXPOSED SERVICES (WHERE ALLOWED) ARE TO BE PAINTED TO MATCH ADJACENT WALL / CEILING.
- d. REPAIR ALL DAMAGES AFFECTED BY THE WORK. IF A WALL / CEILING IS TO BE REPAINTED, THE ENTIRE WALL / CEILING IS TO BE REPAINTED. PAINT COLOURS TO MATCH EXISTING.
- e. SITE VERIFY ALL OPENINGS.
- f. PROVIDE AIR REQUIRED UNTELS / FRAMINGS REQUIRED AT NEW OPENINGS.
- g. REPLACE ALL DAMAGED CEILING TELLS AND TRACK IN THE AREAS WHERE CEILINGS ARE REMOVED. ALLOW FOR 40% TOTAL BOTTOMING DAMAGING TO BE REPLACED. ALL DAMAGING WHERE NOT TO BE REPLACED IS TO REMAIN.
- h. THERE IS AN EXISTING PLASTER / GYPSUM BOARD CEILING ABOVE THE EXISTING SAT AREA. ALLOW FOR REMOVALS AS REQUIRED. THIS IS A FIRE SEPARATION AT THE FLOORS AND FIRE PROTECTION AT THE ROOF LEVEL. MAKE GOOD ALL NEW DAMAGE TO CEILING AND FIRE PROTECTION.
- i. ALL DUCT OPENINGS ARE APPROXIMATE AND ARE TO BE COORDINATED WITH THE MECHANICAL DRAWINGS AND THE EXISTING SITE CONDITIONS.
- j. NOTIFY ALL AGENCIES FROM APPROVED SERVICES AS REQUIRED TO MATCH AND BE FLUSH TO EXISTING ADJACENT FINISHES. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR FULL SCOPE OF WORK REQUIRED.

**SUSPENDED ACOUSTIC TILE CEILING (SAT)**

**12' x 12' TILE CEILING**

**AREA EXISTING SAT TO BE CAREFULLY REMOVED AS REQUIRED TO CARRY OUT WORK. REINSTATE AND REPLACE ALL DAMAGED TILES AND GRID, INCLUDING MECHANICAL AND ELECTRICAL SERVICES IN THE CEILING AS REQUIRED**

**APPROXIMATE AREA OF EXISTING GYPSUM BOARD OR PLASTER CEILING TO BE MODIFIED AS REQUIRED TO CARRY OUT WORK. MAKE GOOD FLUSH TO EXISTING ADJACENT AND REPAINT ENTIRE CEILING.**

**NO WORK IN THIS AREA (TEMPORARY CEILING REMOVALS MAY BE REQUIRED)**

**RECESSED FLUORESCENT LIGHT (EXISTING)**

**RECESSED FLUORESCENT LIGHT (NEW)**

**SURFACE MOUNTED FLUORESCENT LIGHT (EXISTING)**

**SURFACE MOUNTED FLUORESCENT LIGHT (NEW)**

**SURFACE MOUNTED LIGHT (EXISTING)**

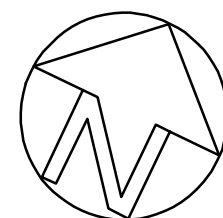
**SPEAKER (EXISTING)**

**DETECTOR (EXISTING)**

**AIR SUPPLY DIFFUSER (NEW)**

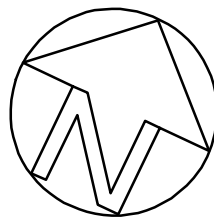
**AIR RETURN GRILL (NEW)**

- NOTES:
1. MODIFY EXISTING MASONRY WALL AS REQUIRED FOR NEW DUCT OPENING. REFER TO MECHANICAL FOR DUCT SIZES.
2. MODIFY EXISTING GYPSUM BOARD / PLASTER PARTITION AS REQUIRED FOR NEW DUCT OPENING. REFER TO MECHANICAL FOR DUCT SIZES.
3. NEW SUPPLY AND RETURN DUCTS FROM ROOF TOP UNIT ABOVE. MODIFY EXISTING ROOF STRUCTURE AS REQUIRED. MODIFY THE EXISTING GYPSUM BOARD/PLASTER CEILING ABOVE THE SAT. REINSTATE REMOVED PORTIONS WITH NEW 12mm GYPSUM BOARD.
4. NEW EXPOSED DUCTWORK (PAINTED).
5. NEW DUCTWORK FROM ROOF TOP UNIT ABOVE. MODIFY EXISTING STEEL ROOF STRUCTURE AS REQUIRED.
6. NEW SUSPENDED ACOUSTICAL TILE CEILING.
7. TO THE EXISTING WALL / PLASTER CEILING AS REQUIRED TO INSTALL NEW LIFT AND MODIFY THE EXISTING STRUCTURE. MAKE GOOD AND REPAIR THE ENTIRE CEILING.
8. NEW DUCTWORK FROM ROOF TOP UNIT ON ROOF. MODIFY EXISTING WOOD FLOOR AND STRUCTURE AS REQUIRED. FIRE STOP.
9. EXISTING LIGHT TO BE REMOVED AND REPLACED WITH NEW. REFER TO ELECTRICAL.
10. NEW STEEL STRUCTURE (EXPOSED), PAINTED.
11. MODIFY EXISTING WALL AS REQUIRED TO INSTALL NEW STEEL.
12. MODIFY EXISTING ROOF DRAIN AS REQUIRED TO INSTALL NEW STEEL STRUCTURE. REINSTALL ROOF DRAIN TO ORIGINAL CONDITION.
13. EXISTING OPENING FROM MECHANICAL / PLASTER REMOVALS. INFILL OPENING FLUSH TO AND TO MATCH EXISTING ADJACENT.
14. EXISTING DUCTWORK TO BE REMOVED, PATCH AND REPAINT CEILING.
15. EXISTING GRILL TO BE REMOVED, REPLACE WITH NEW STAINLESS-STEEL COVER.
16. REMOVE PORTION OF EXISTING TILE CEILING AND ADJACENT BULKHEAD AS REQUIRED TO INSTALL NEW ROOF DRAIN AND LEADER TO BE TIED BACK IN TO EXISTING ROOF DRAIN. REINSTATE CEILING AND BULKHEAD TO MATCH EXISTING AND REPAINT. TEMPORARILY REMOVE AND REINSTALL LIGHTS AS REQUIRED TO CARRY OUT WORK.
17. NEWLY FINISH DRYER.



Project # 22113	Revision # 1	<b>A4</b>
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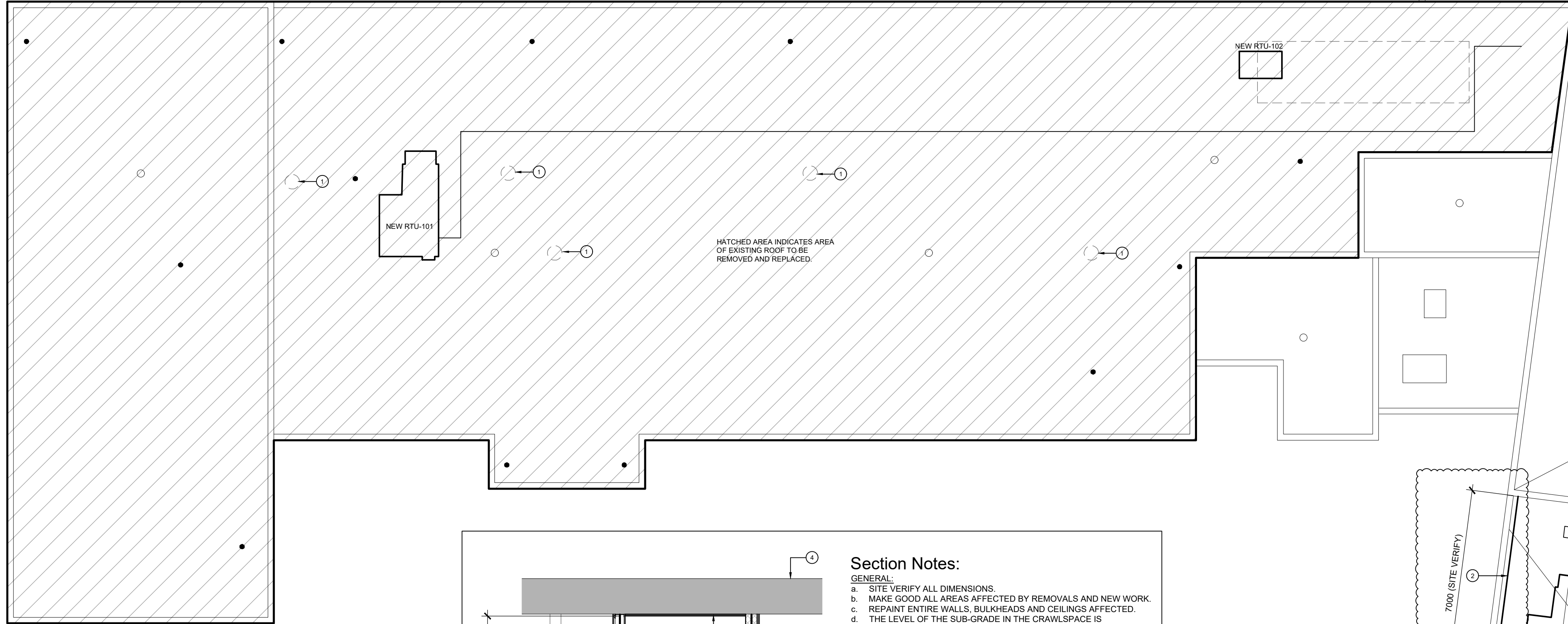
### Roof Plan Notes:

#### GENERAL:

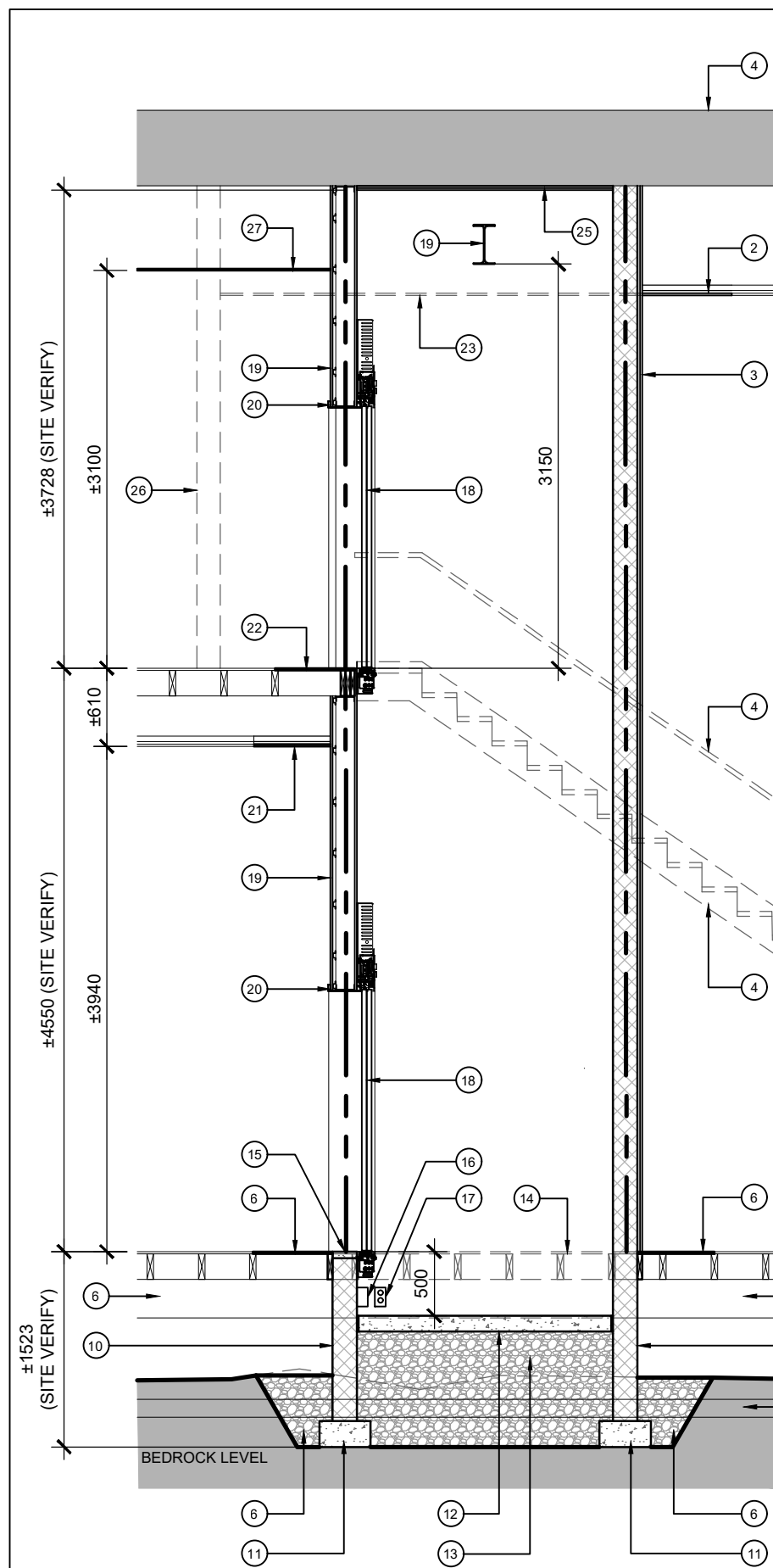
- AFTER REMOVALS ENSURE THAT BUILDING REMAINS WATER TIGHT AT ALL TIMES. CAP / SEAL ALL OPENINGS AS REQUIRED.
- REFER TO ROOFING DRAWINGS FOR FULL EXTENT OF ROOFING WORK.
- REFER TO MECHANICAL DRAWINGS FOR FULL EXTENT OF REMOVALS AND NEW UNIT LOCATIONS AND ROOF OPENINGS.
- REFER TO ELECTRICAL DRAWINGS FOR ELECTRICAL PENETRATIONS.
- REFER TO STRUCTURAL DRAWINGS FOR ROOF REINFORCEMENT FOR NEW PHOTOVOLTAIC SYSTEM AND ROOF TOP UNIT OPENINGS.

#### NOTES:

REMOVE ROOF TOP EQUIPMENT. REFER TO MECHANICAL / ELECTRICAL DRAWINGS FOR NEW PHOTOVOLTAIC SYSTEM AND ROOF TOP UNIT OPENINGS.



**1**  
A5  
**Roof Plan**  
1:125



**2**  
A5  
**LULA Lift Section**  
1:50

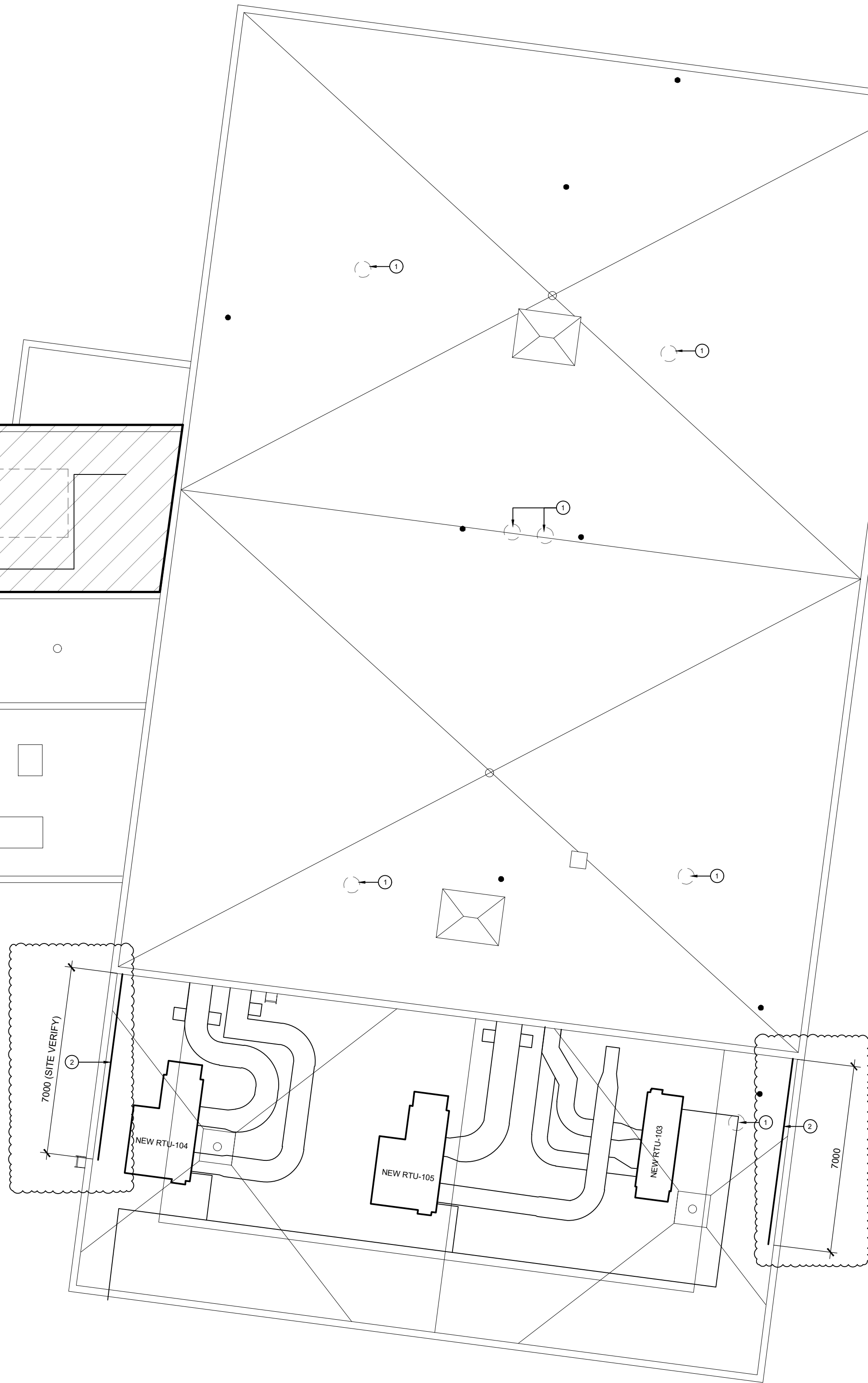
### Section Notes:

#### GENERAL:

- SITE VERIFY ALL DIMENSIONS.
- MAKE GOOD ALL AREAS AFFECTED BY REMOVALS AND NEW WORK.
- REPAINT ENTIRE WALLS, BULKHEADS AND CEILINGS AFFECTED.
- THE LEVEL OF THE SUB-GRADE IN THE CRAWLSPACE IS APPROXIMATE. ALLOW FOR ±200mm.
- ALLOW FOR BEDROCK TO BE ±600mm FROM LEVEL SHOWN ON SECTION.

#### NOTES:

- EXISTING ROOF STRUCTURE WITH PLASTER CEILING.
- EXISTING GYPSUM BOARD CEILING IN STAIR, MODIFY AS REQUIRED TO INSTALL NEW LIFT AND MAKE GOOD. REMOVE SURFACE MOUNTED LIGHTING AND ASSOCIATED SWITCHES.
- NEW 16mm GYPSUM BOARD (PAINTED) ON 22mm FURRING CHANNELS ON CONCRETE BLOCK LIFT SHAFT.
- EXISTING STAIR HANDRAIL (BOTH SIDES) TO BE REMOVED.
- EXISTING STEEL STAIRS TO BE REMOVED. MAKE GOOD AFFECTED WALLS.
- OPEN EXISTING WOOD FLOOR AS REQUIRED FOR NEW LIFT. SHORE AND MODIFY EXISTING STRUCTURE AS REQUIRED. REINSTATE FLOOR LEVEL TO EXISTING ADJACENT. INSTALL NEW SHEET FLOORING AND BASE TO MATCH EXISTING.
- SHORE AND MODIFY EXISTING STEEL BEAM. NOW TO BE SUPPORTED BY NEW CONCRETE BLOCK WALLS.
- REMOVE SUB-GRADE IN CRAWL SPACE AS REQUIRED TO REACH BEDROCK FOR NEW FOOTINGS. INFILL WITH SALVAGED MATERIAL ONCE SHAFT IS COMPLETED.
- EXISTING PLUMBING, RE-ROUT AS REQUIRED TO SHIFT PLUMBING AWAY FROM NEW LIFT LOCATION.
- NEW 190mm CONCRETE BLOCK FOUNDATION WALL.
- NEW POURED CONCRETE FOOTING ON BEDROCK.
- NEW 125mm POURED CONCRETE SLAB ON GRADE.
- COMPLETED GRANULAR A IN 150mm LIFTS.
- PORTION OF EXISTING WOOD FLOOR TO BE REMOVED.
- CAP TOP OF CONCRETE BLOCK WITH 50mm CONCRETE.
- NEW LIFT PIT LIGHT.
- NEW DUPLEX RECEPTACLE.
- NEW LIFT HOIST WAY DOORS.
- LIFT FRONT WALL TO BE 16mm GYPSUM BOARD (PAINTED) ON 152mm STEEL STUDS AT 400mm O.C. WITH 22mm FURRING CHANNELS AT 400mm O.C. PROVIDE ALL REQUIRED BLOCKING.
- NEW LIFT DOOR FRAME.
- MODIFY EXISTING GYPSUM BOARD / PLASTER CEILING AS REQUIRED TO INSTALL NEW LIFT AND MODIFY THE EXISTING STRUCTURE. MAKE GOOD AND REPAINT THE ENTIRE CEILING.
- MODIFY EXISTING WOOD FLOOR AND STRUCTURE AS REQUIRED FOR NEW LIFT. MAKE GOOD AFFECTED AREAS FLUSH TO EXISTING ADJACENT. NEW SHEET FLOORING AND BASE TO MATCH EXISTING. PREPARE EXISTING WOOD SUB-FLOOR AS REQUIRED.
- PORTION OF EXISTING CEILING TO BE REMOVED.
- NEW STEEL HOIST BEAM AS REQUIRED TO SUPPORT A MIN. OF 1514 kg.
- 2 LAYERS OF 16mm TYPE X GYPSUM BOARD OVER EXISTING PLASTER FINISH (PAINTED).
- EXISTING GYPSUM BOARD AND STEEL STUD WALL TO BE REMOVED. MAKE GOOD AFFECTED AREAS.
- REMOVE EXISTING SUSPENDED ACOUSTIC TILE (SAT) CEILING AND GRID AS REQUIRED TO CARRY OUT WORK. INSTALL NEW SAT CEILING AND GRID AS REQUIRED AS COMPLETION.



**sza**

Shoalts and Zaback Architects Ltd



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Tel: 613 541 0776 Fax: 613 541 0804  
mail@szaarch.com www.szaarchitects.ca

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1	Issued for Addendum 1	2023-05-09
0	Issued for Permit and Tender	2023-04-18
C	Issued for 90% Review	2023-03-15
B	Issued for 60% Review	2023-02-24
A	Issued for 30% Review	2023-01-18
Revision	Description	Date

Project  
**Renovations to Linklater Public School**

Location  
**300 Stone St. North  
Gananoque, Ontario**

Client  
**Upper Canada District School Board**

Drawing  
**Roof Plan  
Lift Section**

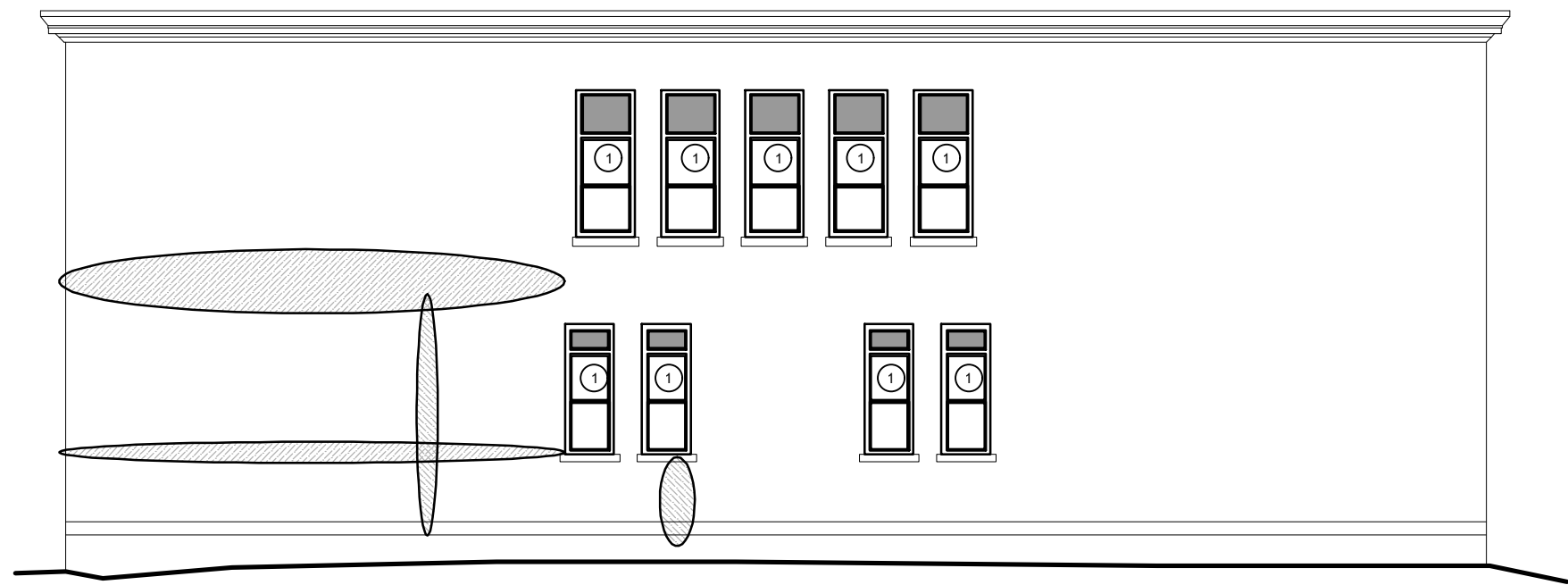
Drawn by JR	Date Jan 2023
File Name 22113-Linklater-Arch	Scale 1:125
Client Project #	Drawing Number

Project # 22113	Revision # 1	<b>A5</b>
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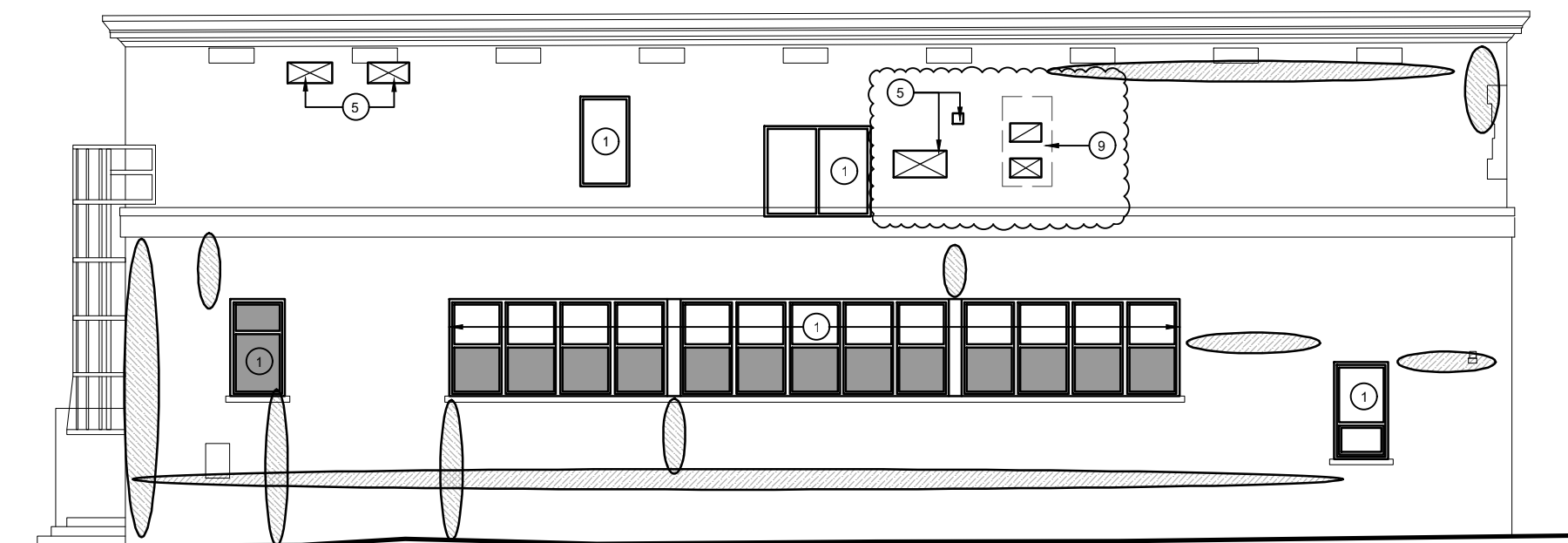
1  
A6  
Two-Story Building  
East Elevation  
1:125



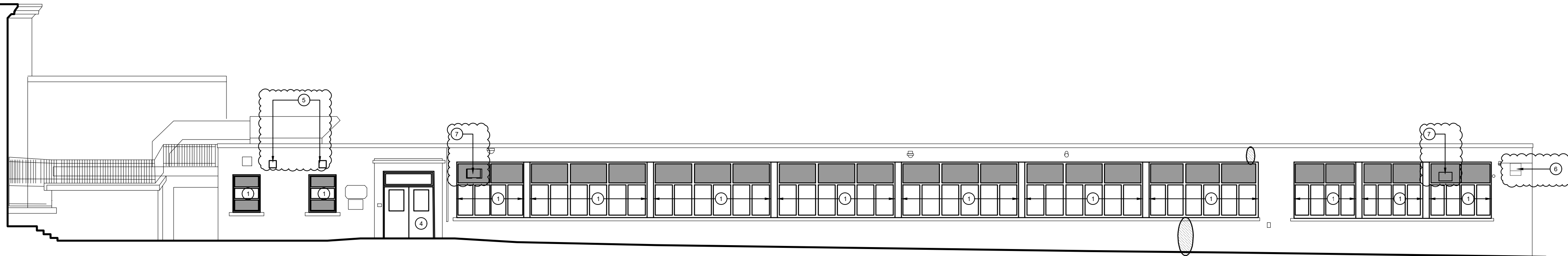
2  
A6  
Two-Story Building  
North Elevation  
1:125



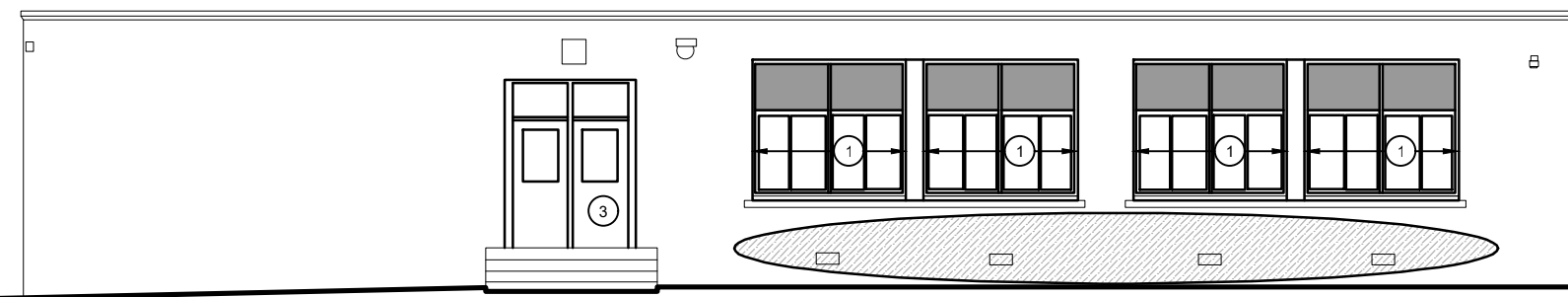
3  
A6  
Two-Story Building  
West Elevation  
1:125



4  
A6  
Two-Story Building  
South Elevation  
1:125



5  
A6  
One-Story Building  
North Elevation  
1:125



6  
A6  
One-Story Building  
West Elevation  
1:125

#### Elevation Notes:

##### GENERAL:

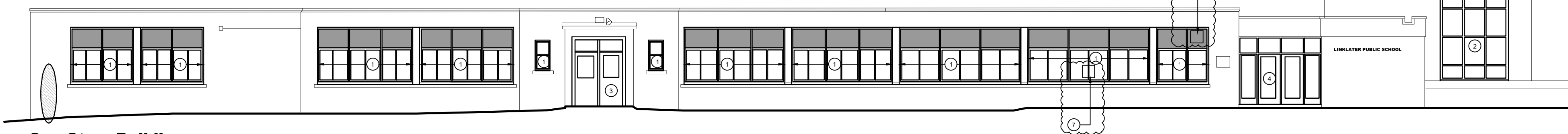
- SITE VERIFY ALL EXISTING OPENINGS.
- ALL GLAZING IS GL-1 UNLESS OTHERWISE NOTED.
- SITE VERIFY ALL OPENINGS
- REFER TO HAZARDOUS BUILDING MATERIALS ASSESSMENT REPORT. WINDOW CALKING IS ASBESTOS CONTAINING.

ANODIZED ALUMINUM SPANDREL PANEL (GL-2)

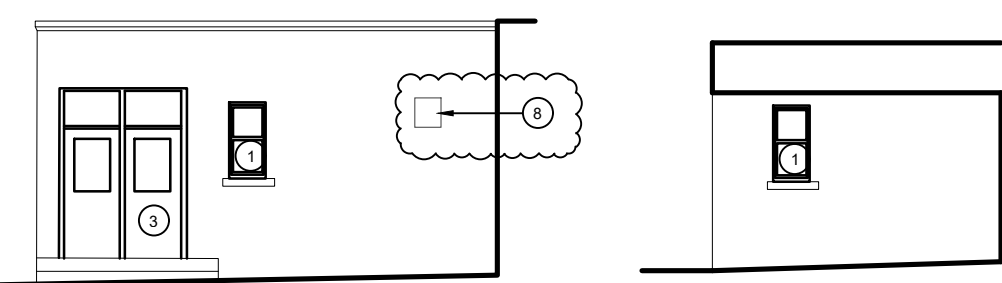
APPROXIMATE AREA OF EXISTING DAMAGED STUCCO TO BE REPAIRED TO MATCH EXISTING. SITE VERIFY FOR FULL EXTENT.

##### NOTES:

- EXISTING WINDOW TO BE REMOVED. INSTALL NEW ALUMINUM WINDOW TO MATCH EXISTING CONFIGURATION. FILL ALL VOIDS WITH SPRAY FOAM INSULATION. CONTINUOUS SEALANT BOTH SIDES OF WINDOW HEAD, SILL AND JAMBS.
- EXISTING WINDOW TO BE REMOVED. INSTALL NEW ALUMINUM CURTAIN WALL TO MATCH EXISTING CONFIGURATION. FILL ALL VOIDS WITH SPRAY FOAM INSULATION. CONTINUOUS SEALANT BOTH SIDES OF WINDOW HEAD, SILL AND JAMBS.
- REMOVE EXISTING DOOR, HARDWARE, FRAME AND GLAZING. INSTALL NEW HOLLOW METAL FRAME (PAINTED), HOLLOW METAL DOOR (PAINTED) TO MATCH EXISTING LAYOUT. INSTALL NEW DOOR HARDWARE. FILL ALL VOIDS WITH SPRAY FOAM INSULATION. CONTINUOUS SEALANT BOTH SIDES OF FRAME HEAD, AND JAMBS.
- REMOVE EXISTING DOOR, HARDWARE, FRAME AND GLAZING. INSTALL NEW THERMALLY BROKEN ANODIZED ALUMINUM DOOR AND FRAME TO MATCH EXISTING LAYOUT. INSTALL NEW DOOR HARDWARE. FILL ALL VOIDS WITH SPRAY FOAM INSULATION. CONTINUOUS SEALANT BOTH SIDES OF FRAME HEAD, AND JAMBS.
- MODIFY EXISTING EXTERIOR WALL AS REQUIRED TO SUIT NEW DUCTWORK AND DUCT PENETRATION.
- INFILL OPENING IN EXISTING WALL TO HATCH EXISTING AT REMOVAL OF MECHANICAL UNIT. NEW STUCCO FINISH TO MATCH EXISTING ADJACENT.
- EXISTING AC UNIT TO BE REMOVED.
- MODIFY EXISTING OPENING AS REQUIRED FOR NEW EXHAUST LOUVER.
- EXISTING WINDOW TO BE REMOVED. MODIFY OPENING TO SUIT NEW DUCTWORK. IN FILL WALL FLUSH TO AND TO MATCH EXISTING ADJACENT.
- NEW BALLASTED ROOF GUARD.



7  
A6  
One-Story Building  
South Elevation  
1:125



8  
A6  
One-Story Building  
East Elevation  
1:125

9  
A6  
One-Story Building  
East Elevation  
1:125

1	Issued for Addendum 1	2023-05-09
0	Issued for Permit and Tender	2023-04-18
C	Issued for 90% Review	2023-03-15
B	Issued for 60% Review	2023-02-24
A	Issued for 30% Review	2023-01-18
Revision	Description	Date

Project  
Renovations to Linklater  
Public School

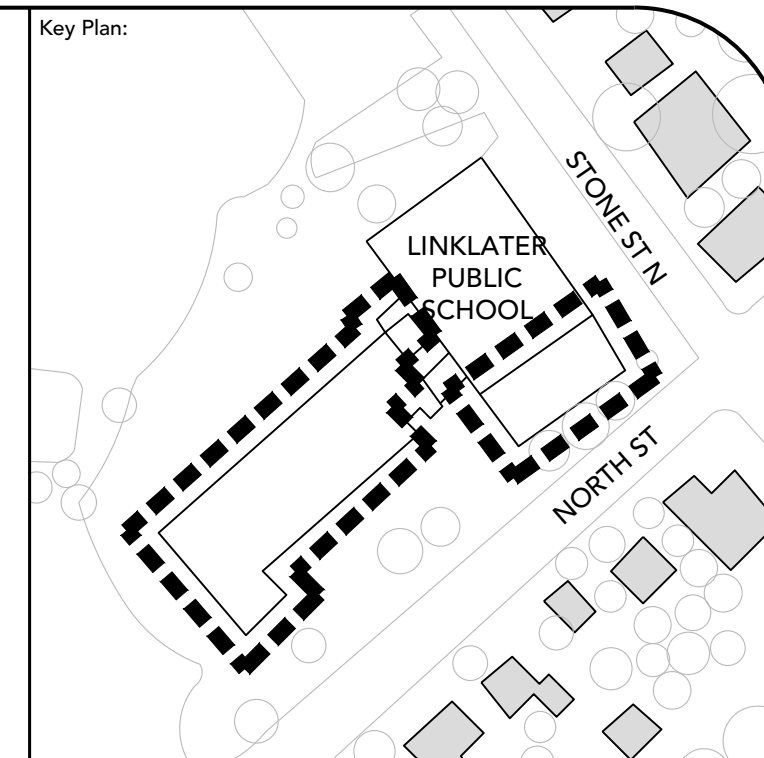
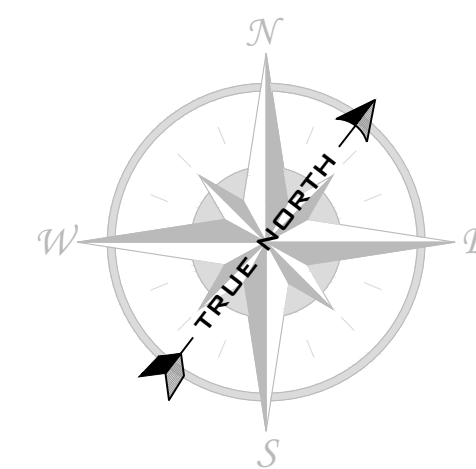
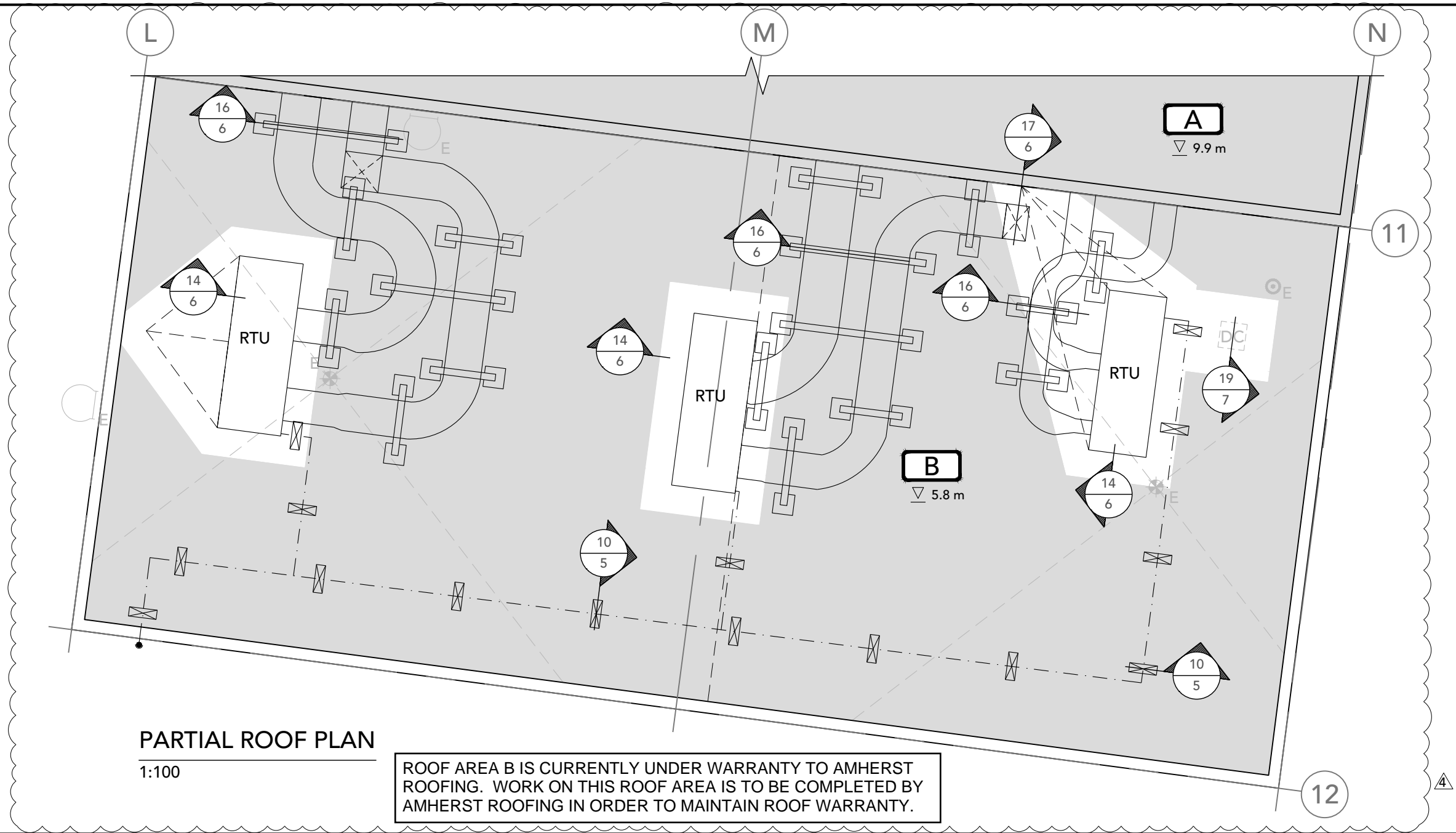
Location  
300 Stone St. North  
Gananoque, Ontario

Client  
Upper Canada District School Board

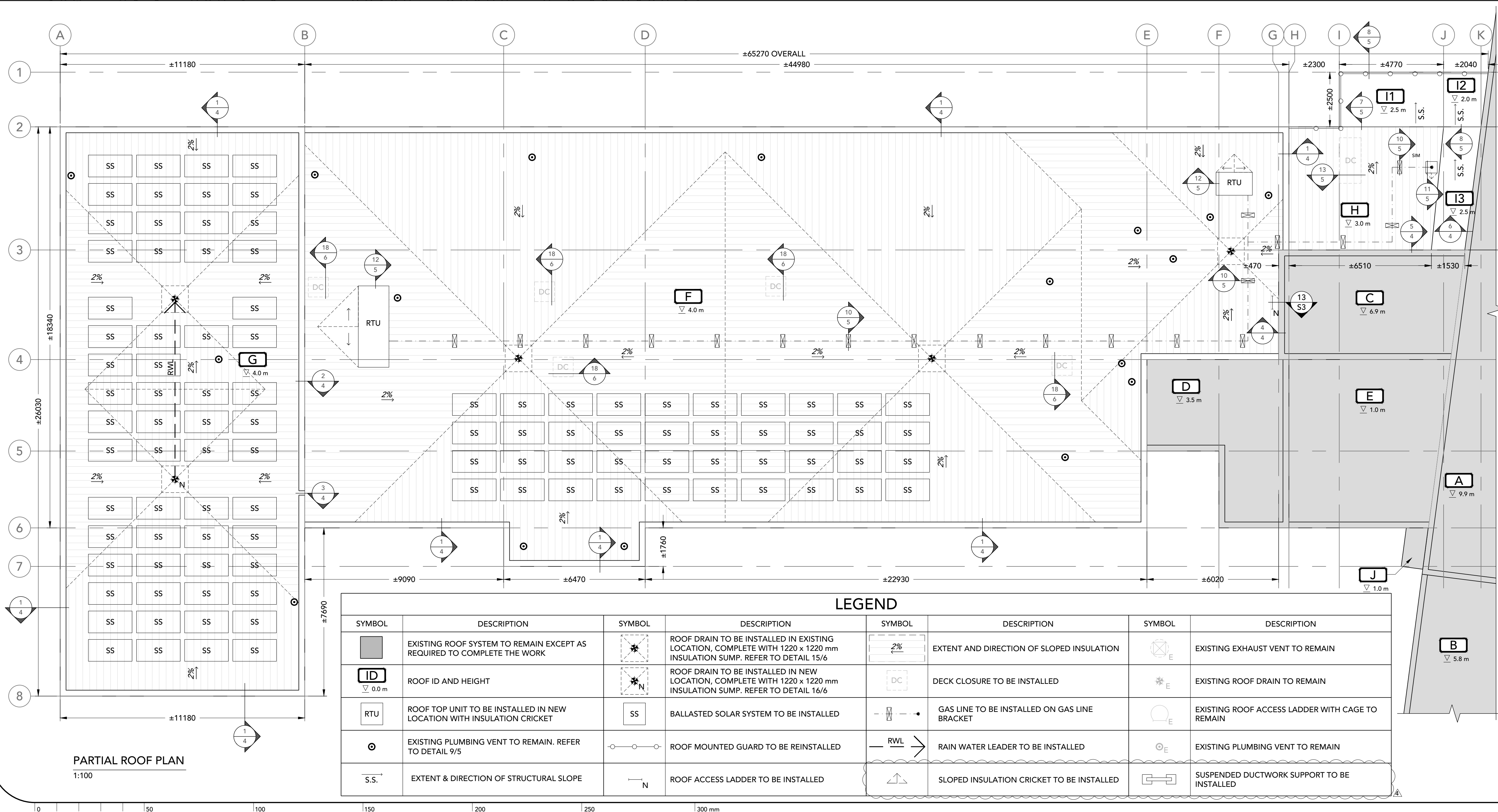
Drawing  
Elevations

Drawn by JR	Date Jan 2023
File Name 22113-Linklater-Arch	Scale 1:125
Client Project #	Drawing Number
Project # 22113	Revision # 1
A6	





- Notes:
1. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL DIMENSIONS AND CONFIRM EXISTING CONDITIONS.
  2. NOTIFY CONSULTANT IMMEDIATELY OF ANY DEVIATIONS FROM ASSUMED EXISTING CONDITIONS AS THEY ARE ENCOUNTERED ON SITE.
  3. TEMPORARILY REMOVE AND SUPPORT ELECTRICAL BOXES AND CONDUITS RUNNING ALONG PARAPETS AND ON ROOF SURFACES. REINSTATE UPON COMPLETION AND RE-SECURE AS REQUIRED.
  4. DRAWINGS ARE NOT TO BE SCALED.
  5. THE PROJECT CONSTRUCTOR IS RESPONSIBLE FOR RETAINING/COORDINATING SUB-TRADES, AND SUPPLY AND INSTALLATION OF ALL EQUIPMENT AND MATERIALS AS REQUIRED TO COMPLETE THE WORK AS OUTLINED IN THE TENDER DOCUMENTS.

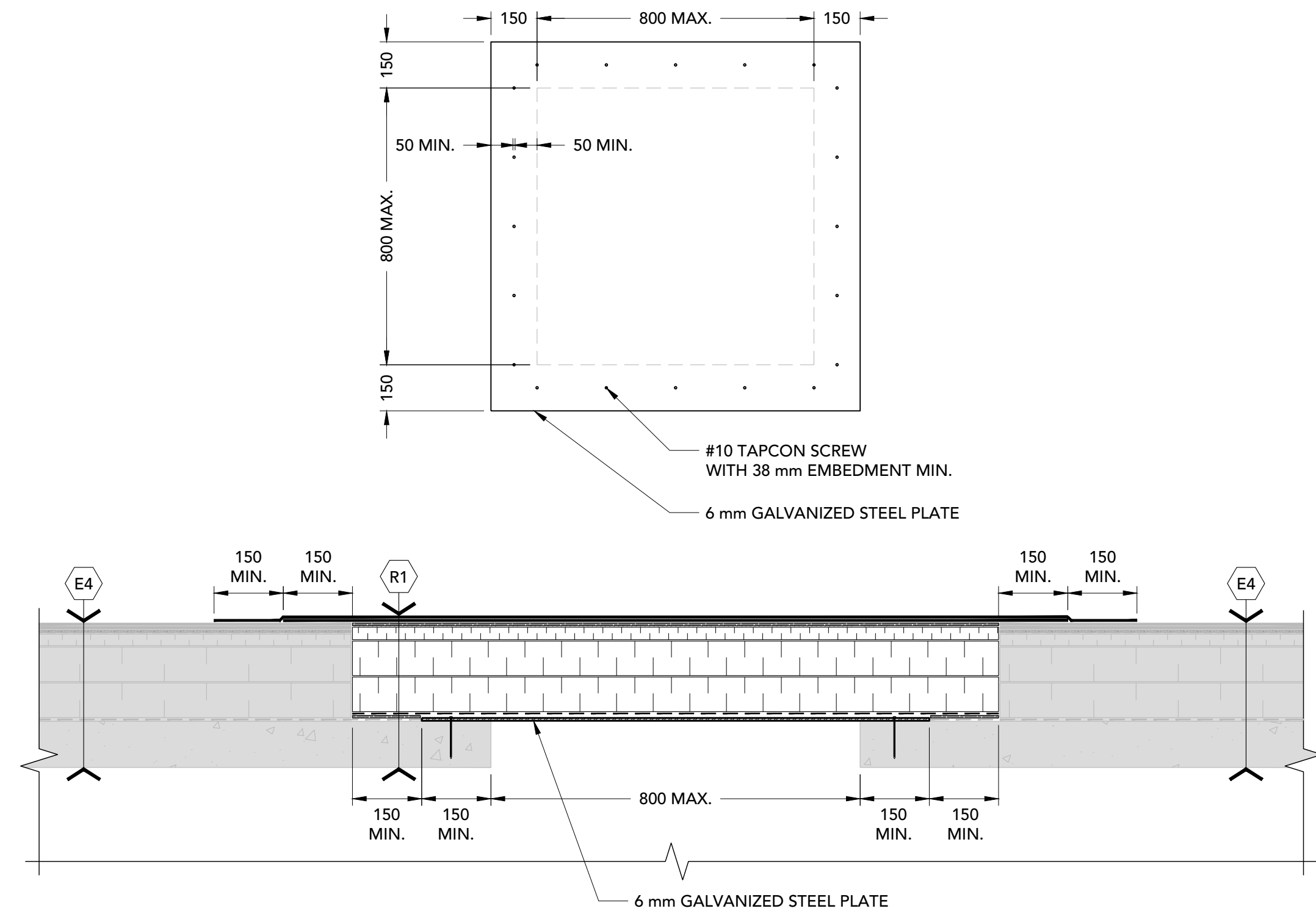


105-1020 Bayridge Drive, Kingston ON K7P 2S2  
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3	2023-04-26	FOR ADDENDUM 1
3	2023-04-18	FOR TENDER
2	2023-03-29	FOR REVIEW
1	2023-01-18	FOR 30% REVIEW
REV #	DATE	DESCRIPTION
Client: SHOALTS AND ZABACK ARCHITECTS LTD. UPPER CANADA DISTRICT SCHOOL BOARD		
Project: UCDSB LINKLATER PUBLIC SCHOOL, ROOF REPLACEMENT		
Project #: FSA Project #: 22314DK		

## PARTIAL ROOF PLANS

Address of Project: 300 Stone St N, Gananoque, Ontario K7G 1Y8		Scale: 1:100 Draw.: RRC Dgn.: DJA Chk.: DJA	Page Number: <b>2</b>
Date: 2023-01-18   22314DK-1.dwg			



19 DECK CLOSURE - EXISTING CONCRETE DECK  
7 1:10

Key Plan:

Notes:

1. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL DIMENSIONS AND CONFIRM EXISTING CONDITIONS.
2. NOTIFY CONSULTANT IMMEDIATELY OF ANY DEVIATIONS FROM ASSUMED EXISTING CONDITIONS AS THEY ARE ENCOUNTERED ON SITE.
3. TEMPORARILY REMOVE AND SUPPORT ELECTRICAL BOXES AND CONDUITS RUNNING ALONG PARAPETS AND ON ROOF SURFACES. REINSTATE UPON COMPLETION AND RE-SECURE AS REQUIRED.
4. DRAWINGS ARE NOT TO BE SCALED.
5. THE PROJECT CONSTRUCTOR IS RESPONSIBLE FOR RETAINING/COORDINATING SUB-TRADES, AND SUPPLY AND INSTALLATION OF ALL EQUIPMENT AND MATERIALS AS REQUIRED TO COMPLETE THE WORK AS OUTLINED IN THE TENDER DOCUMENTS.



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3	2023-04-18	FOR TENDER
2	2023-03-29	FOR REVIEW
1	2023-01-18	FOR 30% REVIEW

REV # DATE DESCRIPTION

Client: SHOALTS AND ZABACK ARCHITECTS LTD.

UPPER CANADA DISTRICT SCHOOL BOARD

Project: UCDSB LINKLATER PUBLIC SCHOOL, ROOF REPLACEMENT

Project #: FSA Project #: 22314DK

Title:

## DETAILS

Address of Project:	Scale: VARIES	Page Number:
300 Stone St N,	Drw.: RRC	7
Gananoque, Ontario	Dgn.: DJA	
K7G 1Y8	Chk.: DJA	
Date: 2023-01-18	22314DK-1.dwg	

**Part 1 General**

**1.1 REFERENCES**

- .1 ASTM International
  - .1 ASTM A307-21, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.40, Anti-corrosive Structural Steel Alkyd Primer.
- .3 CSA International
  - .1 CSA G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CSA W47.1-09(R2014), Certification of companies for fusion welding of steel.
  - .3 CSA W59-13, Welded Steel Construction (Metal Arc Welding).
- .4 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
  - .1 Safety Data Sheets (SDS).
- .5 The Society for Protective Coatings (SSPC)
  - .1 Systems and Specifications Manual, Volume 2, 2008 Edition.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
- .3 Product data:
  - .1 Submit primer and paint manufacturer's printed product literature, specifications and datasheet for review by Consultant.
  - .2 Submit WHMIS SDS - Safety Data Sheets for review by Consultant.

**1.3 QUALITY ASSURANCE**

- .1 Structural steel work: In accordance with CAN/CSA S16.
- .2 Welding to be performed to CSA W59.
- .3 Companies to be certified under CSA W47.1 for fusion welding of steel structures.



#### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and acceptance requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and handling requirements:
  - .1 Store materials indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect ladders from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

### **Part 2 Products**

#### **2.1 SYSTEM DESCRIPTION**

- .1 Design ladder to comply with Ontario Ministry of Labour Engineering Data Sheet 2-04 and the Ontario Building Code (2012).
- .2 As part of the shop drawing, Contractor to provide a valid method of preventing unauthorized personnel from accessing the ladder. The drawing details are shown for illustration purposes only.

#### **2.2 MATERIALS**

- .1 Ladder components: Steel to CSA G40.20/G40.21 Grade 300W.
- .2 Welding materials: To CSA W59.
- .3 Bolts: To ASTM A307.
- .4 Concrete connectors: Galvanized, expansion anchors. See drawings for size and location.
- .5 Masonry connections: Galvanized, threaded rods, epoxy adhered with insert sleeves. See drawings for size and location.
- .6 Paint materials listed in latest edition of MPI Approved Products List (APL) are acceptable for use on this project.
- .7 Paint materials for paint systems: To be products of single manufacturer.

#### **2.3 FABRICATION**

- .1 Weld connections where possible, otherwise bolt connections. Countersink exposed fasteners, cut off bolts leaving two threads exposed. Make exposed connections of same material, colour and finish as base material on which they occur.



- .2 Accurately form connections with exposed faces flush:
  - .1 Make mitres and joints tight.
  - .2 Make rungs equal spaced through the height.
- .3 Grind or file exposed welds and steel sections smooth.

## **2.4 FINISHES**

- .1 Galvanized items shall be hot dipped galvanizing with zinc coating 600 g/m<sup>2</sup> to CAN/CSA-G164.
- .2 Galvanizing to be completed after full fabrication only.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verify that field conditions are acceptable and are ready to receive work.
- .2 Ladder location to be confirmed by Consultant in writing prior to installation.

### **3.2 PREPARATION**

- .1 Clean and strip primed steel items to bare metal, where site welding is required.
- .2 Apply paint materials in accordance with paint manufacturer's written application instructions.
  - .1 Work paint into cracks, crevices and corners.
  - .2 Apply coats of paint as continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied. Remove runs, sags and brush marks from finished work and repaint.
  - .3 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
  - .4 Sand and dust between coats to remove visible defects.

### **3.3 INSTALLATION**

- .1 Ladder: Refer to Drawing Details.
- .2 Install components plumb and level, accurately fitted, free from distortion or defects.
- .3 Field welding of galvanized work is not permitted.

### **3.4 CLEANING**

- .1 Progress Cleaning: Clean in accordance with Section 01 74 00 - Cleaning.
  - .1 Leave Work area clean at end of each day.

- .2 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- .3 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.

### **3.5 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal ladders installation.

**END OF SECTION**

## **ADDENDUM NO. ME-01**

---

**Attention:** Eric Riddell

**Address:** Shoalts and Zaback Architects Ltd.  
4 Cataraqui Street, Unit 206  
Kingston, ON K7K 1Z7

**Date:** May 8, 2023

**Project #:** CE-5514

**Project:** UCDSB Linklater PS 2023 Upgrades  
300 Stone St. N.  
Gananoque, ON K7G 1Y8

**Cc.** ---

Please amend the drawings and specifications for the above noted project as described below. Identify this addendum on the tender form to insure a complete tender form.

---

### **1. MECHANICAL**

- 1.1. All Drawings: Update units of measurement to metric throughout.
- 1.2. Drawing M1, M2, M3, M4, M6, M7, M8, M9, M11, M12, & M13 : Refer to revised drawings, attached.

### **2. ELECTRICAL**

- 2.1. Drawing E1, E2, E3 & E7: Revised incoming service requirements to 600/347V 3phase, 4W, with 600V distribution panel and transformer, RTU requirements, and electrical single line.
- 2.2. Drawing E2 & E8: Added EF-103, 104 & 105.
- 2.3. Drawing E2 & E8: Revisions to EF-101 & EF-102 requirements.
- 2.4. Drawing E2 & E8: Fixture type BB added to schedule. Revisions to fixture type required as shown on plans.
- 2.5. Drawing E2, E4 & E8: Fixture type DA added to schedule. In W/R 4 109B replacement of existing fixture with new type DA fixture located on new ceiling.
- 2.6. Drawing E4 & E8: Additional PA speaker to be relocated and reinstalled per location shown in Corridor 101.
- 2.7. Drawing E5 & E9: Revised devices to be relocated as shown on drawings.
- 2.8. Drawing E8: Revision to note as shown.
- 2.9. Drawing E11: Add spec for new transformer and provisions for integrated testing.

### **3. ATTACHMENTS**

- 3.1. Mechanical Drawings- M1, M2, M3, M4, M6, M7, M8, M9, M11, M12 & M13 (11 Drawings)
  - 3.2. Electrical Drawings- E1, E2, E3, E4, E5, E7, E8, E9 & E11 (9 Drawings).
- 

#### **WE MAKE BUILDINGS WORK**

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**E** info@callidus.ca

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**KITCHENER**  
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OFFICE 141, KITCHENER, ON. N2G 4X8  
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*END OF ADDENDUM No. ME-01*

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**Part 1 General**

**1.1 SUMMARY**

- .1 The content of this section is related to roofing related plumbing only and specifically related to the modifications to, or installation of roof drains and associated roof drain piping.

**1.2 RELATED SECTIONS**

- .1 Section 06 10 53 – Miscellaneous Rough Carpentry.
- .2 Section 07 52 00 - Modified Bituminous Membrane Roofing.
- .3 Section 07 92 00 – Joint Sealants.

**1.3 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM C547-12. Standard Specification for Mineral Fiber Pipe Insulation.
- .2 Canadian Standards Association (CSA International)
  - .1 CAN/CSA B70.1-03 (R2013), Frames and Covers for Maintenance Holes and Catchbasins.
  - .2 CAN/CSA-B70-12, Cast Iron Soil Pipe, Fittings, and Means of Joining.
  - .3 CSA B79-08 (R2013), Commercial and residential drains and cleanouts.
  - .4 CAN/CSA B1800-11, Thermoplastic Nonpressure Piping Compendium.

**1.4 SUBMITTAL / APPROVAL**

- .1 Do not commence work until satisfactory installation of related work has been completed and approved.
- .2 Inspect work and advise Consultant of conditions that would adversely affect the work of this trade.
- .3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepted responsibility for appearance and performance of completed work.
- .4 Defective work resulting from work on unsatisfactory surfaces will be considered the responsibility of those performing the work of this Section.
- .5 Repair damage and inferior work caused by the work of this Contract with materials and finish to match the original to Consultant's approval.
- .6 Submit to the Consultant a list of materials intended for use before they are ordered.
- .7 Provide samples of material without additional cost, to the Consultant for review as requested.

## **1.5 QUALITY ASSURANCE**

- .1 All drain installations, including insert type drains, shall be completed by plumbing subtrades licensed to undertake plumbing work in Ontario.
- .2 Equipment and materials must be new and free of imperfections.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 All standards, regulations and specifications listed herein are considered to be the latest available edition.
- .2 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.
- .3 Copper roof drains: Soldered copper body with flat hub. Provide appropriate bearing pans, under deck clamping and hardware, as required.
  - .1 At existing drain locations: Insert type drain with soldered copper leader and large flange, internal clamping ring, depressed receiving area, and copper or aluminum basket. Diameter to suit existing drain leader.
    - .1 Standard of acceptance: Model RD-4C-RR by Thaler Metal Industries Inc. or Consultant approved alternative.
      - .1 Mechanical connection using double clamp to drain body and rainwater leader.
      - .2 Standard of acceptance: Fernco Couplings or Consultant approved alternative.
- .4 Pipe: fire resistant PVC drain waste and vent pipe and pipe fittings to CAN/CSA B1800.
- .5 Pipe hangers: Adjustable type wrought iron design to allow pipe movement and insulation to pass unbroken through hanger.
- .6 Mechanical joints for drain pipe: Neoprene or butyl rubber gasket with stainless steel clamp type joint to CISPI 310-12.
- .7 Downpipe clamp: 1.21 mm (18 ga.) galvanized 2-hole clamp. Profile to suit pipe and size.
- .8 Insulation for pipes: 25 mm thick performed type mineral fibre insulation to ASTM C547.
  - .1 Standard of acceptance: Roxul Techton 1200 or SSL II Fiberglas by Owens Corning.
- .9 Insulation for underside of drain: 2-component, 1 kg density polyurethane foam as detailed.

- .10 Insulation covering:
  - .1 Cover pipe insulation with canvas membrane wrap and paint.
  - .2 Where exposed, use preformed PVC.

### **Part 3 Execution**

#### **3.1 PREPARATION**

- .1 Inspect surfaces and ensure that:
  - .1 Roof deck is level or sloped to provide proper and complete drainage from the roofing system in conformity to design intent.
  - .2 Existing pipe hangers are in adequate condition to independently support distribution pipes, prior to disconnection of any drains at roof level.
  - .3 Roof drains are set at a level to allow for positive drainage and are connected or capped.
  - .4 Plumbing is accessible and work can be completed as specified. Notify Consultant of any adverse conditions.
  - .5 Existing roof drains are open and functioning properly.
  - .6 For costing and practical purposes, location of new drains and plumbing are approximate and should be considered accurate within 3 m. Advise Consultant of variances and adjust locations as required to facilitate installation without additional cost, to the Consultant's approval.
- .2 Contractor shall advise Consultant in the event that the existing system or materials do not meet current code requirements.
- .3 Unless indicated otherwise, the plumbing sub-trade shall be responsible for the removal and reinstatement of furniture, plants and interior equipment, excluding computers, monitors, copiers and the like.
- .4 Contractor to provide interior protection to all areas where plumbing work is being completed. Provide sufficient dust and debris protection for the temporary removal of ceiling tiles, and include for any supplemental clean up to return interiors to pre-construction conditions.
- .5 Remove all ceiling panels and plaster finish to provide access to the work. Re-install and make good all existing finishes to match original materials and conditions. Repainting of surfaces shall include all ceiling all wall areas up to a break in plane, unless otherwise indicated on drawings.
- .6 Remove and discard all existing drains and plumbing not designated for re-use. Notify Owner of any hazardous materials encountered.
- .7 In poured concrete decks, scan roof deck for presence of reinforcing steel or cast-in conduits, prior to coring.

#### **3.2 INSTALLATION OF NEW DRAIN LOCATIONS**

- .1 Provide core holes through substrate for new drain locations.

- .2 Reinforce holes in deck in accordance with drawings.
- .3 Relocate drains at locations shown on drawings. Provide new openings and new plumbing to connect to existing drainage system. Remove and roof over existing drain of these locations.
- .4 Where new plumbing is required, install cast iron pipe of 75 mm minimum diameter. New plumbing lines are to be connected into existing plumbing. Contractor responsible for determining plumbing runs. Allow for penetrating block walls, structural members, rerouting ductwork and any other mechanical services required. Provide any required fireproofing of new penetrations.
- .5 Ensure water conductor has proper slope to meet design requirements to ensure adequate drainage. Slope horizontal drain pipe at 20 mm/1000 mm unless otherwise specified.
- .6 Provide clean-outs for drains and soil pipes in straight runs at end of branches.
- .7 Piping shall be provided with support that is capable of keeping the pipe in alignment and bearing the weight of the pipe and its contents. Provide solid support to existing structure. Secure to underside of concrete decks or steel decks with approved anchors. Support cast iron pipe:
  - .1 At or adjacent to each hub or joint.
  - .2 At intervals not exceeding 1800 mm with 13 mm diameter rods and
  - .3 At intervals not exceeding 900 mm if the pipe has mechanical joints and the length of pipe between adjacent fittings is 300 mm or less.
- .8 Join pipe by means of rubber gaskets or mechanical couplings.
- .9 Include means to accommodate expansion and contraction of the piping system caused by temperature change.
- .10 Fill voids around drain opening on concrete or lightweight concrete decks with quick dry concrete grout flush with top and bottom of deck.
- .11 Insulate all new plumbing lines to meet acoustical and thermal requirements.
- .12 Wrap all new insulated plumbing lines with PVC covering at exposed locations.
- .13 Extend insulation from pipes to drain hub. Cover with pipe wrapping and finish to general standards. If blanket insulation is used, ensure that all insulation fits tight to drain hub. Seal overlaps, edges and joints with reinforced vapour proof tape suitable to permanently hold insulation in place. Alternatively, in conformance with drawings, protect hubs with spray foam insulation, minimum thickness 38 mm unless otherwise specified or shown. Provide metal protection pan over deck as detailed.
- .14 Provide firestop material around plumbing penetrations through firewalls.
- .15 All ceilings to be restored to original condition. Suspended ceilings to be restored to original condition and painted to match existing colour and finish. If



paint colour cannot be matched, entire wall or ceiling area to be painted to blend into existing room to Owner's approval.

- .16 Restore all existing surfaces affected by work of this trade to match existing material and finish.
- .17 Cap all drain lines that are no longer required.
- .18 Ensure each roof is provided with operational drainage at the end of each work day.

### **3.3 INSTALLATION AT EXISTING DRAIN LOCATIONS**

- .1 Increase openings in structures to facilitate plumbing as required.
- .2 Join pipe by means of mechanical couplings.
- .3 Fill voids around drain opening on concrete or lightweight concrete decks with quick dry concrete grout flush with top and bottom of deck.
- .4 Where area is inaccessible to install couplings, advise and request Consultant to obtain a ruling on acceptability. Where directed by Consultant, install anti-backflow seals to match pipe size and secure in place.
- .5 Extend insulation from pipes to drain hub. Cover with pipe wrapping and finish to general standards. If blanket insulation is used, ensure that all insulation fits tight to drain hub. Seal overlaps, edges and joints with reinforced vapour proof tape suitable to permanently hold insulation in place. Alternatively, in conformance with drawings, protect hubs with spray foam insulation, minimum thickness 38 mm unless otherwise specified or shown. Provide metal protection pan over deck as detailed.
- .6 If the existing pipe is not insulated, install insulation covering on horizontal and vertical sections of drainage pipes, minimum 3 m from drain. Ensure all seams are tight fitting, overlap and sealed to design intent.
- .7 Install PVC covering over insulated piping where plumbing is exposed on the interior of the building.
- .8 All ceilings to be restored to original condition. Suspended ceilings to be restored to original condition and painted to match existing colour and finish. If paint colour cannot be matched, entire wall or ceiling area to be painted to blend into existing room to Owner's approval.
- .9 Restore all existing surfaces affected by work of this trade to match existing material and finish.
- .10 Ensure each roof is provided with operational drainage at the end of each work day.

### **3.4 PIPING TEST**

- .1 Perform water tests before restoring interior ceilings and finishes.
- .2 Install plumbing line plugs below the level of connection and water test new plumbing installation. Correct all leaks.
- .3 Make leaks watertight while systems are still under test. If this is impossible, remove and refit defective parts. Caulking of threaded joints will not be permitted.
- .4 After leaks have been repaired, repeat tests as often as necessary to obtain approval and to ensure watertightness of each system.
- .5 Correct level of drains or pipes, if roof or pipes hold water.

### **3.5 FINISH**

- .1 Contractor is to fully flush all roof drains and associated rainwater leaders on roof areas affected by the work in order to confirm there are no blockages in the existing piping and to confirm proper flow. Report anomalies to the Consultant immediately.
- .2 Reset existing ceiling finishes removed to execute work of this Contract.
- .3 Restore and repair all existing surfaces affected by the work to match existing materials and finish.
- .4 Re-paint entire ceiling or walls where it is required to make patching work undisguisable with existing surfaces.

**END OF SECTION**

ELECTRICAL TAG/NAME LEGEND	
SYMBOL	DESCRIPTION
WP	WEATHERPROOF
EX	EXISTING TO REMAIN
REM	REMOVE EXISTING
REL	RELOCATE EXISTING
ER	EXISTING AS RELOCATED

ELECTRICAL LINE TYPE LEGEND	
SYMBOL	DESCRIPTION
✕ ✕	DEMOLITION
—	EXISTING
—	NEW
~	CIRCUIT WIRE
---	BELOW GRADE OR SLAB RACEWAY OR FEEDER ROUTE AS NOTED

LIGHTING LEGEND	
SYMBOL	DESCRIPTION
☐	WALL MOUNT LINEAR LIGHT FIXTURE
☐	RECTANGULAR LIGHT FIXTURE
☐	RECTANGULAR LIGHT FIXTURE
☐	RECTANGULAR LIGHT FIXTURE
☐	LINEAR LIGHT FIXTURE
☐	CEILING OR PENDANT LIGHT FIXTURE
⌚ ⌚ ⌚	SWITCH 1-GANG, 2-GANG, 3-GANG
⊙	OCCUPANCY SENSOR
⌚	OCCUPANCY SENSOR SWITCH
⌚	OCCUPANCY SENSOR DIMMER SWITCH

EMERGENCY/EXIT LIGHTING LEGEND	
SYMBOL	DESCRIPTION
☐	EMERGENCY LIGHT HEADS - SINGLE AND DOUBLE
EXIT	EXIT SIGN (PRE-2012 OBC)

RECEPTACLE LEGEND	
SYMBOL	DESCRIPTION
⌚	GFI RECEPTACLE
T	20 AMP T-SLOT RECEPTACLE

EQUIPMENT AND CONNECTION LEGEND	
SYMBOL	DESCRIPTION
☐	ELECTRICAL PANEL
☐	DISCONNECT
☐	CONNECTION TO MOTOR OR MOTORIZED PIECE OF EQUIPMENT
☐	DIRECT CONNECTION
☐	PUSH BUTTON
☐	TRANSFORMER

01

FIRE ALARM LEGEND	
SYMBOL	DESCRIPTION
☐	FIRE ALARM CONTROL PANEL
☐	RATE-OF-RISE HEAT DETECTOR
☐	SMOKE DETECTOR, SUBSCRIPT A- ADDRESSABLE
☐	SINGLE POINT ADDRESSABLE CONTROL MODULE
☐	ISOLATION MODULE
☐	CONTROL PANEL

BARRIER FREE LEGEND	
SYMBOL	DESCRIPTION
☐	ELECTRIC DOOR OPERATOR
☐	BARRIER FREE DOOR OPERATOR PUSH BUTTON

SECURITY AND ACCESS CONTROL LEGEND	
SYMBOL	DESCRIPTION
☐	CLOSED-CIRCUIT VIDEO CAMERA
☐	ELECTRIC STRIKE

COMMUNICATION LEGEND	
SYMBOL	DESCRIPTION
☐	CEILING WIRELESS ANTENNAE OUTLET
☐	CEILING P/A SPEAKER

GENERAL NOTES: (APPLICABLE TO ALL DRAWINGS)

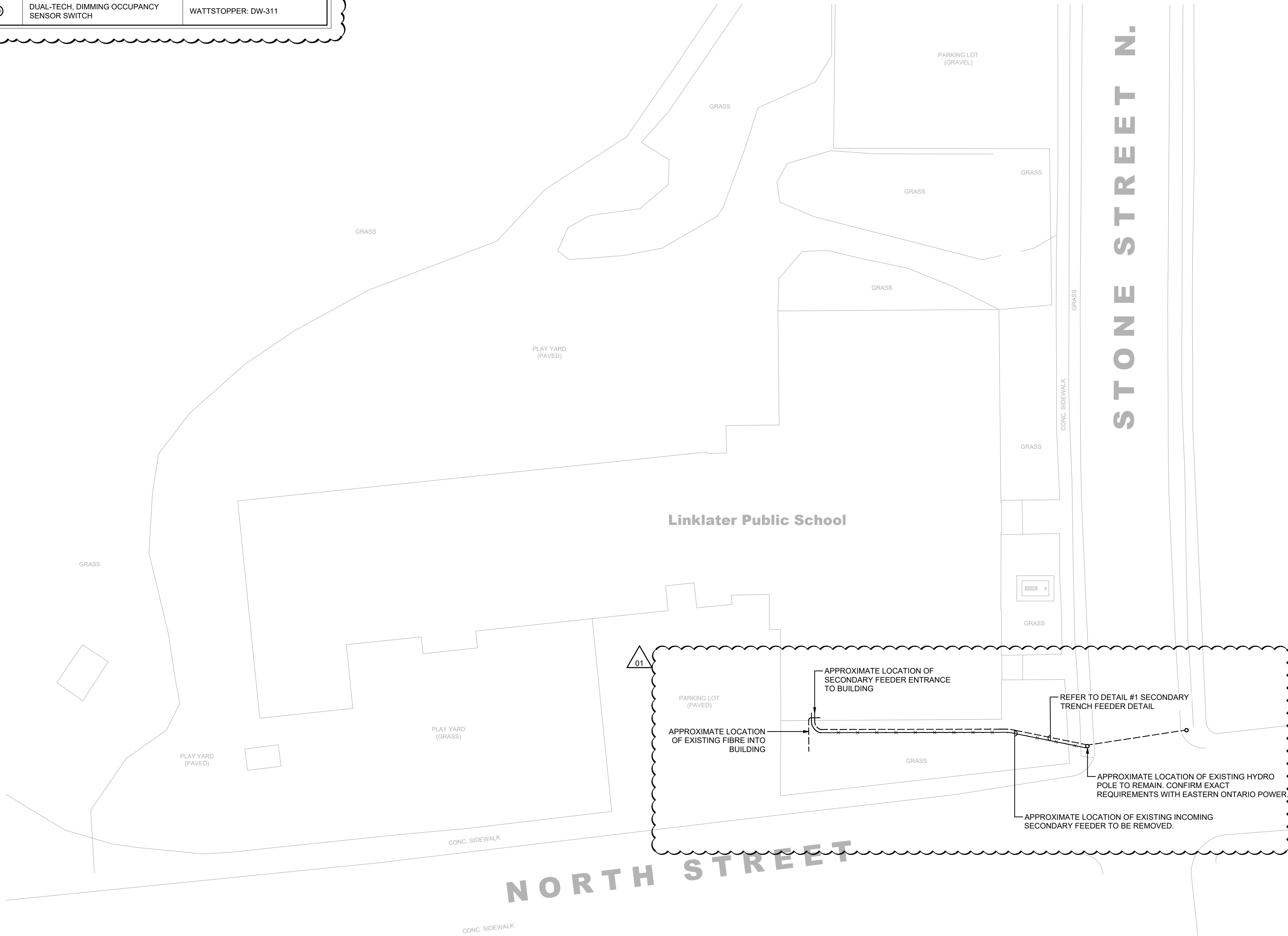
- PROVIDE ALL WORK AND MATERIAL IN ACCORDANCE WITH THE LATEST EDITIONS OF THE ELECTRICAL SAFETY CODE, THE ONTARIO BUILDING CODE, APPLICABLE CSA STANDARDS, THE REQUIREMENTS OF THE ELECTRICAL SAFETY AUTHORITY AND ALL OTHER APPLICABLE MUNICIPAL AND PROVINCIAL CODES AND REGULATIONS. ANY MATERIALS, EQUIPMENT OR INSTALLATIONS NOT MEETING ALL REQUIREMENTS OR THE APPROPRIATE REGULATORY AGENCIES WILL NOT BE ACCEPTED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THESE REQUIREMENTS ARE MET AND PROVIDE EVIDENCE OF SUCH AS REQUESTED.
- PROVIDE ALL GROUNDING INDICATED OR REQUIRED BY THE ELECTRICAL AUTHORITY. ALL GROUNDING FEEDERS AND BRANCH CIRCUITS SHALL BE PROVIDED WITH A SEPARATE GROUND CONDUCTOR SIZED ACCORDING TO THE ONTARIO ELECTRICAL SAFETY CODE REGULATIONS. THE CONDUIT SYSTEM SHALL NOT BE USED AS THE GROUND PATH, HOWEVER ALL CONDUITS SHALL BE SOLIDLY GROUNDED.
- IN GENERAL, ALL NECESSARY CUTTING AND PATCHING FOR THE ELECTRICAL WORK SHALL BE PROVIDED BY THE APPROPRIATE TRADE AT THE EXPENSE OF THE CONTRACTOR UNLESS INDICATED OTHERWISE ON THE DRAWINGS. HOLES THROUGH EXTERIOR WALLS AND ROOF ARE TO BE PROPERLY FLASHED AND MADE WEATHERPROOF. REPAIR ANY DAMAGE CAUSED BY THE ELECTRICAL TRADE TO EXISTING BUILDINGS OR EQUIPMENT, ETC., TO THE CONSULTANT'S SATISFACTION. IN GENERAL, PAINTING OF ELECTRICAL WORK AND PATCHES AS REQUIRED WILL BE PROVIDED BY THE ELECTRICAL TRADE.
- REPAIR ANY DAMAGE CAUSED BY THE ELECTRICAL TRADE TO EXISTING BUILDINGS OR EQUIPMENT, ETC., TO THE CONSULTANT'S SATISFACTION. UPON COMPLETION OF THE WORK, CLEAN ALL EQUIPMENT AND REMOVE FROM THE SITE ALL ELECTRICAL DEBRIS.
- PROVIDE LEGIBLE SIGNS AND BARRIERS ON OR AROUND ALL LIVE PANELS AND EQUIPMENT DURING CONSTRUCTION TO PREVENT INJURY OR SHOCK.
- PROVIDE ALL SLEEVES, INSERTS AND HANGERS REQUIRED FOR THE ELECTRICAL WORK. TREAT ALL SLEEVES OR HOLES PIERCING ACoustICAL SEPARATIONS FOR INSTALLATIONS OF THIS DIVISION TO MAINTAIN ACoustICAL RATING. ALL GAPS SHALL BE PACKED WITH ACoustICAL INSULATION AND SEALED AT BOTH ENDS WITH ACoustICAL CAULKING. PATCH ALL OPENINGS AROUND INSTALLATIONS OF THIS DIVISION PIERCING FIRE OR SMOKE SEPARATIONS WITH AN APPROVED WATERTIGHT SMOKE AND FIRE STOP SEALANT.
- PROVIDE ALL ACCESS DOORS REQUIRED FOR THE ELECTRICAL INSTALLATIONS AND ENSURE PROPER ACCESS DOOR SIZE, TYPE AND FIRE RATING.
- COORDINATE ALL WORK WITH OTHER TRADES AND SUPPLIERS/MANUFACTURERS TO AVOID INTERFERENCES AND CONFLICTS BETWEEN SERVICES. PLAN WORK WELL IN ADVANCE TO ELIMINATE INSTALLATION AND COORDINATE DIFFICULTIES. COOPERATE WITH OTHER TRADES ON SITE TO RESOLVE INTERFERENCES TO SATISFACTORILY COMPLETE THE PROJECT.
- SCHEDULE AND PHASE DEMOLITION AND NEW WORK TO REDUCE INTERFERENCE AND DOWNTIME OF EXISTING SYSTEMS. NOTIFY OWNER'S REPRESENTATIVE OF ALL DOWNTIME PRIOR TO PROCEEDING WITH WORK.
- DO NOT SCALE DRAWINGS. OBTAIN ALL DIMENSIONS FROM EXISTING ARCHITECTURAL PLANS, SITE INSPECTIONS, AND MANUFACTURER'S SHOP DRAWINGS.
- PRIOR TO INSTALLATION OF DEVICES WITHIN WALLS, VERIFY THAT NO INTERFERENCES EXIST. CONFIRM ON SITE WITH OWNER/DESIGNER THE EXACT DEVICE LOCATIONS AND ELEVATIONS.
- MAKE GOOD ALL BUILDING COMPONENTS DAMAGED BY WORK OF THIS TRADE.
- ALL MATERIALS AND WORKMANSHIP SHALL BE NEW, FREE OF DEFECTS, AND COMPLY WITH ALL APPLICABLE STANDARDS.
- CONTRACTORS SHALL VISIT THE SITE TO DETERMINE THE FULL EXTENT OF THE WORK BEFORE SUBMITTING PRICING. MAKE ALL ALLOWANCES FOR SITE CONDITIONS.
- FIRE STOP ALL WALL/FLOOR PENETRATIONS FROM BOTH SIDES (TYPICAL).

GENERAL DEMOLITION NOTES: (APPLICABLE TO ALL DRAWINGS)

- ALL FIXTURES AND DEVICES ARE EXISTING TO REMAIN UNLESS IDENTIFIED OTHERWISE ON THE DRAWINGS. GENERAL NOTES OR SPECIFICATIONS.
- REMOVE ALL UNUSED, ABANDONED OR REDUNDANT WIRING BACK TO SOURCE.
- EXISTING EQUIPMENT AND DEVICES IN ROOM TO REMAIN UNLESS OTHERWISE NOTED.
- RELOCATE EXISTING FIXTURE/DEVICE AS SHOWN ON DRAWINGS. EXTEND CONDUIT AND WIRING AS REQUIRED. TRACE EXISTING CIRCUITS PRIOR TO DEMOLITION. CONSULT WITH OWNERS REPRESENTATIVE FOR ANY INTERRUPTIONS THIS MAY CAUSE DURING REMOVAL AND REINSTALLATION.
- COORDINATE WITH FACILITY MAINTENANCE DEPARTMENT FOR DISPOSAL OF REMOVED DEVICES. DISPOSE OF ALL UNWANTED DEVICES AS REQUIRED AS PER FACILITY STANDARDS.
- IN AREAS BEING RENOVATED: REMOVE AND DISCARD, COMPLETE EXISTING LIGHTING SYSTEM ASSEMBLY (BALLAST, LAMPS, LAMP SOCKETS, BALLAST COVERS, ETC.) TO BE RETROFITTED. PROVIDE SAFE TERMINATION OF EXISTING CIRCUIT TO BE RE-USED FOR NEW INSTALLATION AS REQUIRED. COMPLETELY DISCONNECT AND REMOVE EXISTING BRANCH CIRCUITS NOT REQUIRED FOR NEW INSTALLATION BACK TO THE SOURCE PANEL AND MARK IT AS SPARE. PROVIDE PULLSTRING IN EMPTY CONDUIT.
- ELECTRICAL CONTRACTOR TO ALLOW FOR ALL COSTS TO REMOVE & DISPOSE OF ANY LUMINAIRES WITH PCB BALLASTS.
- ELECTRICAL EQUIPMENT TO BE REMOVED MUST BE ISOLATED AND DISCONNECTED AT THE SOURCE PRIOR TO REMOVAL OPERATIONS. DURING ISOLATION AND DISCONNECTION PROCEDURES DANGER TAGS MUST BE USED TO IDENTIFY ANY FEEDERS OR EQUIPMENT REMAINING ENERGIZED TO ACCOMMODATE NEW CONSTRUCTION.
- COORDINATE EXISTING LUMINAIRES REMOVAL AND REPLACEMENT WITH OTHER TRADES IF REQUIRED.
- PROTECT ALL INTERIOR AND EXTERIOR FINISHES: CEILINGS, WALLS, FLOORS, ETC. FROM DAMAGE DUE TO LIGHTING SYSTEM WORK.
- UNLESS OTHERWISE NOTED IN SPEC OR ON DRAWINGS, ALL EXISTING ELECTRICAL INSTALLATIONS (E. SWITCHES, FIXTURES, OUTLETS, FIRE ALARM, SECURITY, COMMUNICATION ETC.) IN NON RENOVATED AREAS TO REMAIN AS PRESENTLY INSTALLED. MODIFY/EXTEND EXISTING CONTROL CIRCUITS AS REQUIRED TO MAINTAIN OPERATION.
- EXISTING FIXTURES THAT ARE TO REMAIN BE CLEANED. ALLOW FOR REPLACEMENT OF BROKEN LENSES, LAMPS OR BALLASTS.

LIGHTING CONTROL LEGEND		
SYMBOL	DESCRIPTION	MODEL # (120V)
⌚	SINGLE RELAY, DUAL-TECH, OCCUPANCY SENSOR SWITCH	WATTSTOPPER: DW-100
⌚	DUAL-TECH, DIMMING OCCUPANCY SENSOR SWITCH	WATTSTOPPER: DW-311

01



PARTIAL SITE PLAN- ELECTRICAL

SCALE: 1:300

01



DETAIL #1 - SECONDARY FEEDER TRENCH DETAIL  
SCALE: 1:75



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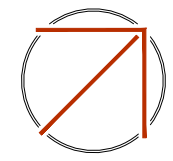
**KITCHENER:** 210-137 Glasgow Street, Office #141  
Kitchener, ON N2G 4X8 P 519.472.7640

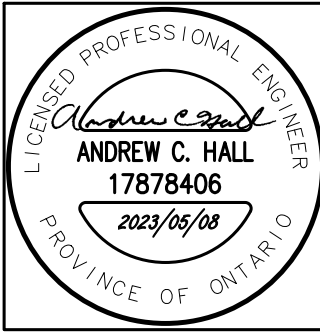
W [www.callidus.ca](http://www.callidus.ca) E [info@callidus.ca](mailto:info@callidus.ca)



REVISIONS		
NO.	ISSUED FOR	DATE
00	ISSUED FOR PERMIT/ TENDER	23.04.18
01	ISSUED FOR ADDENDUM ME-01	23.05.08

**NORTH**





DESIGN	KM	DRAWN	KM
CHECKED	ACH	REVIEWED	ACH

**PROJECT**

UCDSB LINKLATER PS  
2023 UPGRADES

**ADDRESS**

300 STONE ST. N.  
GANANOQUE, ON

**PROJECT NO.**

CE-5514

**DRAWING TITLE**

SITE PLAN- ELECTRICAL

**DRAWING NUMBER**

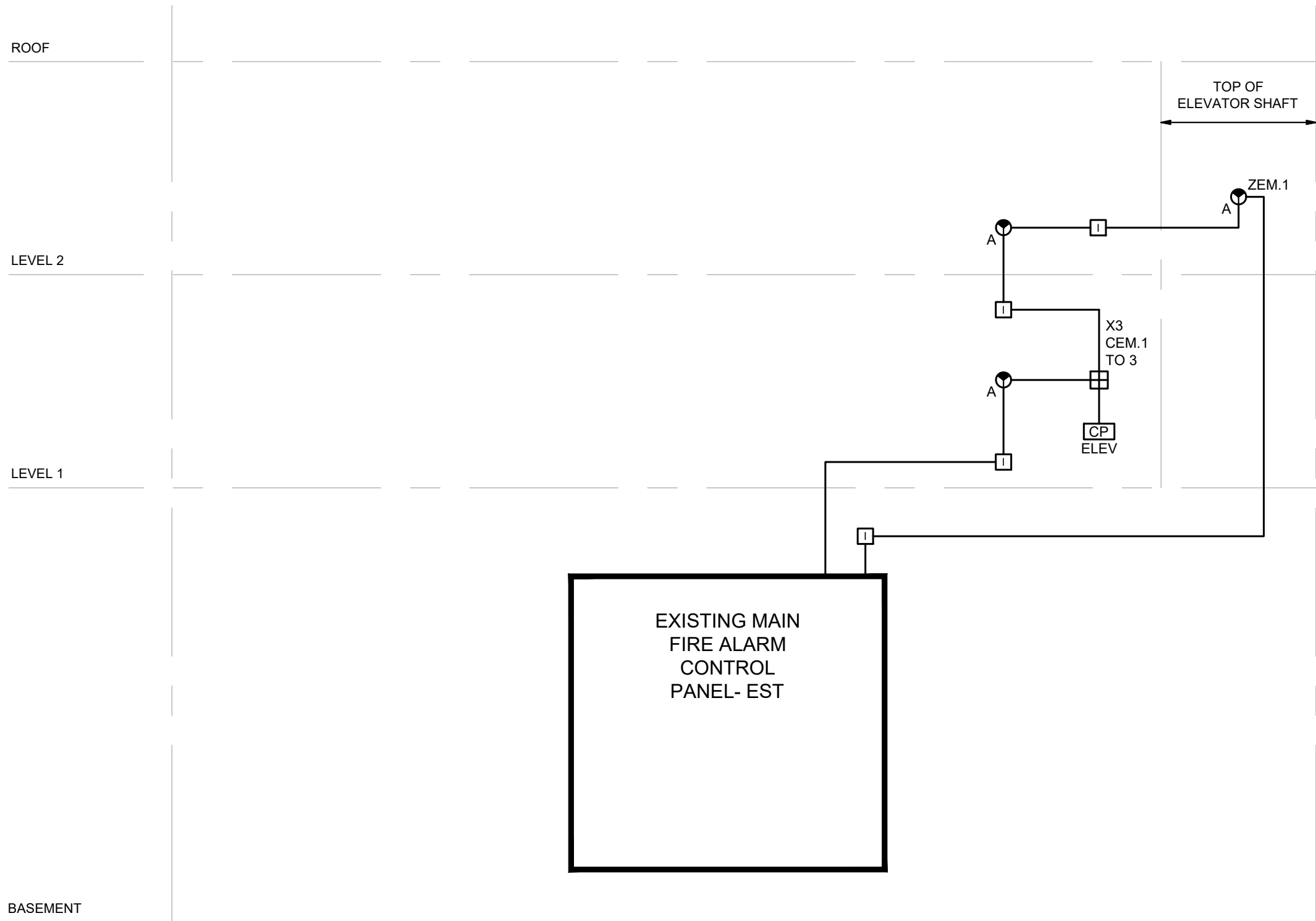
E1 OF 11



ELECTRICAL FEEDER SCHEDULE		
ID	AMPACITY	FEEDER DESCRIPTION
C0.25	25A	3-#12 CU IN 3/4" C
C0.35	35A	3-#10 CU IN 3/4" C
C1.3N	130A	4-#1 CU IN 1 1/2" C
C2N	200A	4-#3/0 CU IN 2" C
C4N	400A	2 RUNS OF 4-#3/0 CU IN 2" C

#### SINGLE STAGE FIRE ALARM SEQUENCE OF OPERATION:

- THE SYSTEM SEQUENCE OF OPERATION SHALL PERFORM AS DESCRIBED BELOW:
  - UPON ACTIVATION OF ANY ALARM INITIATING DEVICE (E.G. MANUAL STATION, SMOKE DETECTOR, HEAT DETECTOR, SPRINKLER FLOW DEVICE), SYSTEM SHALL OPERATE AS FOLLOWS:
    - ANNUNCIATE RESPECTIVE ZONE AT THE FIRE ALARM MAIN CONTROL AND REMOTE ANNUNCIATOR(S).
    - ACTIVATE ALL SIGNAL APPLIANCES IN THE ALARM MODE.
    - ACTIVATION OF ANCILLARY DEVICES (I.E.: RELEASE ALL DOOR HOLD OPEN DEVICES AND DOOR OPERATORS IN FIRE SEPARATION).
    - PROVIDE FOR SILENCING SIGNAL MANUALLY BY AUTHORIZED PERSONNEL AT THE CONTROL PANEL AFTER 60 SECONDS OF OPERATION.
    - SIGNAL ALARM CONDITION TO SIGNAL TRANSMITTING UNIT FOR MONITORING AGENCY OR FIRE DEPARTMENT NOTIFICATION.
    - PROVIDE FOR "SILENT TEST". PREVENTING SIGNAL APPLIANCE OPERATION DURING MAINTENANCE OR SYSTEM TEST.
    - SOUND ALARM SIGNAL AGAIN AS OUTLINED HEREIN, IF A SUBSEQUENT ALARM FROM ANOTHER INITIATING CIRCUIT IS ACTIVATED.
    - THE FIRE ALARM CONTROL PANEL SHALL RECORD THE INCIDENT.
  - ACTIVATION OF THE FOLLOWING SPECIFIED DETECTOR(S) SHALL OPERATE AS PER SECTION 1.1 ABOVE AND AS FOLLOWS:
    - BALANCE LOADS TO A MAX OF 10% DIFFERENCE BETWEEN ALL 3 PHASES.
    - GROUNDING AND BONDING TO COMPLY WITH OESC SECTION 10.
  - SMOKE DETECTOR IN ELEVATOR LOBBY ON ANY BUT RECALL FLOOR TO SIGNAL ELEVATOR CONTROLLER TO RETURN ELEVATOR TO THE RECALL LEVEL.
  - SMOKE DETECTOR IN ELEVATOR SHAFT TO SIGNAL ELEVATOR CONTROLLER TO RETURN TO THE RECALL LEVEL.
  - SMOKE DETECTOR IN ELEVATOR LOBBY ON RECALL LEVEL WHEN NOT SPRINKLERED TO SIGNAL ELEVATOR CONTROLLER TO RETURN TO ELEVATOR TO THE ALTERNATE RECALL LEVEL.

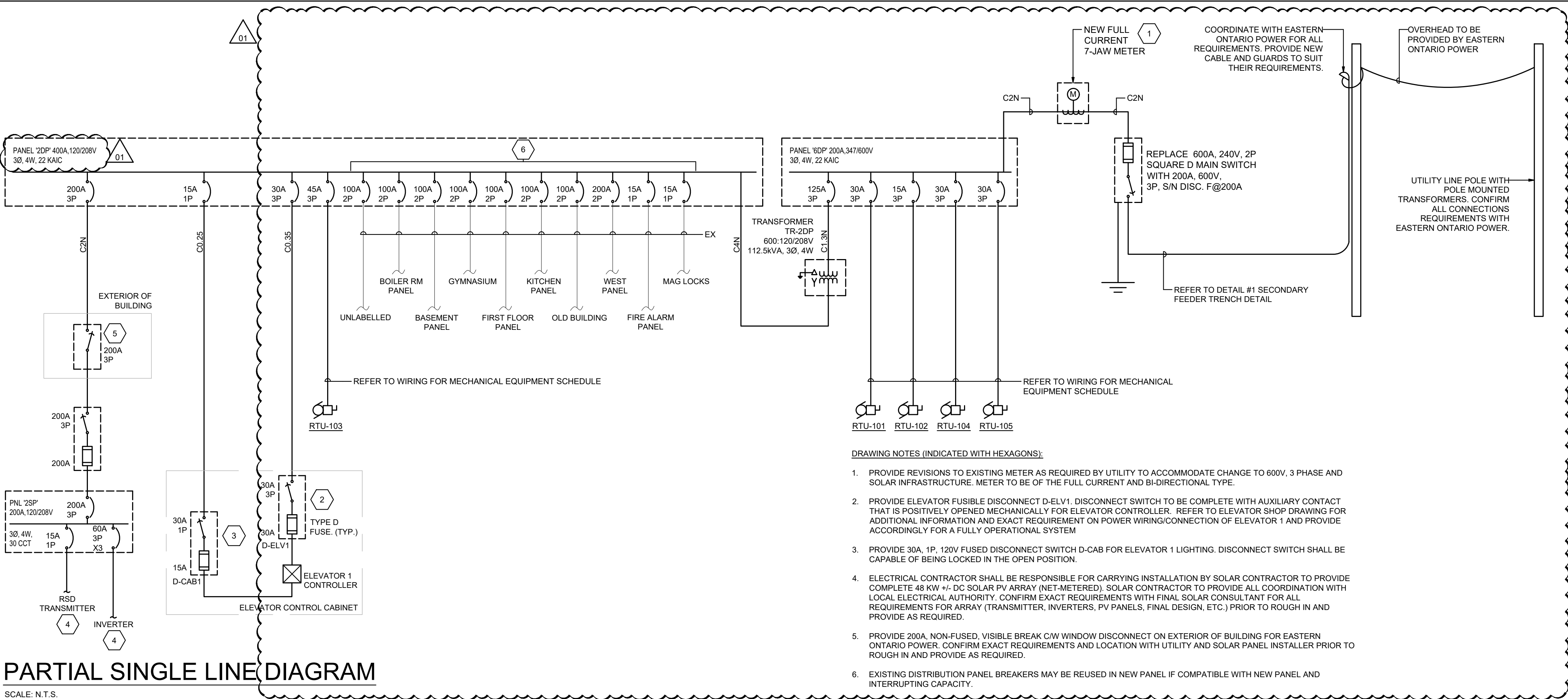


#### PARTIAL FIRE ALARM RISER

SCALE: N.T.S.

##### FIRE ALARM NOTES:

- CONNECT NEW ELEVATOR SHAFT AND LOBBY SMOKE DETECTORS TO NEW ADDRESSABLE LOOP FROM EXISTING PANEL.
- CONNECT NEW ELEVATOR CONTROL MODULES TO NEW ELEVATOR CONTROL PANEL TO SIGNAL ELEVATOR RECALL AS DESCRIBED IN SEQUENCE OF OPERATION.
- REVISE EXISTING ANNUNCIATOR AND PASSIVE GRAPHIC TO INDICATE NEW ELEVATOR SHAFT ZONE.
- REMOVE AND RELOCATE EXISTING DETECTORS AS INDICATED ON FLOOR PLANS. REROUTE OR REPLACE WIRING AS NECESSARY.



#### PARTIAL SINGLE LINE DIAGRAM

SCALE: N.T.S.

##### NOTES:

- CONFIRM OVER CURRENT PROTECTION WITH EQUIPMENT MANUFACTURER PRIOR TO FINAL INSTALLATION.
- INCREASE CABLE SIZE FOR MAX 3% VOLTAGE DROP.
- BALANCE LOADS TO A MAX OF 10% DIFFERENCE BETWEEN ALL 3 PHASES.
- GROUNDING AND BONDING TO COMPLY WITH OESC SECTION 10.

WIRING FOR MECHANICAL EQUIPMENT SCHEDULE																	
LABEL	DESCRIPTION	LOCATION	VOLT	PH	HP	WATTS	MCA	ISO. SW.	P	POWER WIRING	CTRL BY ELEC	SOURCE PNL	DISC AMP	FUSE	BRK	P	REMARKS
RTU-101	ROOFTOP UNIT	ROOF	600	3	-	-	25.5	-	3	3C-#10 CU + GND IN 3/4"	-	6DP	-	-	30	3	NOTE 3
RTU-102	ROOFTOP UNIT	ROOF	600	3	-	-	8	-	3	3C-#12 CU + GND IN 3/4"	-	6DP	-	-	15	3	NOTE 3
RTU-103	ROOFTOP UNIT	ROOF	208	3	-	-	33.4	-	3	3C-#8 CU + GND IN 1"	-	2DP	-	-	45	3	NOTE 3
RTU-104	ROOFTOP UNIT	ROOF	600	3	-	-	25.5	-	3	3C-#10 CU + GND IN 3/4"	-	6DP	-	-	30	3	NOTE 3
RTU-105	ROOFTOP UNIT	ROOF	600	3	-	-	24.9	-	3	3C-#10 CU + GND IN 3/4"	-	6DP	-	-	30	3	NOTE 3
EF-101	EXHAUST FAN	RM 139	120	1	0.15	-	-	-	1	2C-#12 CU + GND IN 3/4"	-	P9	-	-	15	1	NOTE 1, 2
EF-102	EXHAUST FAN	RM 120A	120	1	FHP	-	-	-	1	2C-#12 CU + GND IN 3/4"	-	P9	-	-	15	1	NOTE 1, 2
EF-103/104	EXHAUST FAN	RM 115/116	120	1	FHP	-	-	-	1	2C-#12 CU + GND IN 3/4"	-	P9	-	-	15	1	NOTE 1, 4
EF-105	EXHAUST FAN	RM 109B	120	1	FHP	-	-	-	1	2C-#12 CU + GND IN 3/4"	-	P9	-	-	15	1	NOTE 1, 2, 4
ABBREVIATIONS:																	
CONT	-	CONTACTOR, SIZE AS INDICATED	OS	-	OCCUPANCY SENSOR	RAT	-	REVERSE ACTING THERMOSTAT	1	INSTALL ALL WIRING IN CONDUIT WITH SHORT LENGTH LIQUID TIGHT FLEX TO MOTOR OR VIBRATING EQUIPMENT							
COMB	-	COMBINATION DISCONNECT & STARTER	R	-	RELAY	RPB	-	REMOTE PUSH BUTTON OFF	2	WIRE THROUGH TC SPEED CONTROLLER OR RAT SUPPLIED BY MECHANICAL TRADE							
FVNR	-	FULL VOLTAGE NON REVERSING STARTER	SW	-	LIGHT SWITCH	NOA	-	7 DAY PROGRAMMABLE TIMECLOCK	3	UNIT COMES COMPLETE WITH BUILT IN DISCONNECT SWITCH AND 16' MAX DISTANCE							
HOA	-	HAND OFF AUTO SWITCH C/W ON PILOT LIGHT	TS	-	TIMER SWITCH	WP	-	WEATHER PROOF	4	PROVIDE CONNECTION TO ASSOCIATED MD (MOTORIZED DAMPER)							
MAN	-	MANUAL MOTOR SWITCH C/W PILOT LIGHT															
NOTES:																	
1. INSTALL ALL WIRING IN CONDUIT WITH SHORT LENGTH LIQUID TIGHT FLEX TO MOTOR OR VIBRATING EQUIPMENT																	
2. WIRE THROUGH TC SPEED CONTROLLER OR RAT SUPPLIED BY MECHANICAL TRADE																	
3. UNIT COMES COMPLETE WITH BUILT IN DISCONNECT SWITCH AND 16' MAX DISTANCE																	
4. PROVIDE CONNECTION TO ASSOCIATED MD (MOTORIZED DAMPER)																	

FIRE ALARM SCHEDULE		
ZONE/POINT #	CIRCUIT TYPE #	DESCRIPTION
ZEM.1	DA1	ELEV. SHAFT SMOKE
CEM.1	DA1	SMOKE IN ELEV. SHAFT RECALL SIGNAL
CEM.2	DA1	2ND FLOOR SMOKE IN ELEV. LOBBY SIGNAL RECALL
CEM.3	DA1	SMOKE IN 1ST FLOOR ELEV. LOBBY ALT LEVEL RECALL SIGNAL
ZONE/POINT TYPES (AREA# ZONE/POINT#)		
ZR#	ALARM ZONE	NC= SIGNAL CONTACT
SR#	SUPERVISORY ZONE	DA#= DATA COM. LINK STYLE A/C LOOP
AR#	AUDIBLE SIGNAL ZONE	DB#= DATA COM. LINK STYLE B
VR#	VISUAL SIGNAL ZONE	MA= ZONE INITIATION CIRCUIT CLASS A
FR#	FIRE FIGHTER PHONE	MB= ZONE INITIATION CIRCUIT CLASS B
CR#	CONTROL POINT	NA= SIGNAL CIRCUIT CLASS A LOOP
XR#	AUXILIARY SIGNAL/CONTROL POINT	NB= SIGNAL CIRCUIT CLASS B
		PA#= LV POWER CIRCUIT CLASS A
		PB#= LV POWER CIRCUIT CLASS B

INTERIOR LIGHTING FIXTURE SCHEDULE				
FIXTURE TAG	DESCRIPTION AND MODEL SERIES	INPUT	LIGHT SOURCE	MOUNTING
AA	SURFACE MOUNTED LED FIXTURE. PHILIPS DAYBRITE OWN SERIES C/W 2 LED TUBES PHILIPS MODEL 1278 OR APPROVED EQUAL WITH DLC LISTING. FIXTURE TO BE SECURED TO T-BAR USING CADDY CLAMP 4G SERIES TO LIMIT GAP BETWEEN FIXTURE AND T-BAR. CONTRACTOR TO PROVIDE A MOCK-UP INSTALLATION OF FIXTURE AND GET PM APPROVAL TO PROCEED IF FIXTURE INSTALLATION IS STRAIGHT AND FLUSH.	120V 12.0W / LAMP	2 @ T8 LED 1800L / LAMP 4000K	SURFACE MOUNTED
BA	SURFACE MOUNTED LED FIXTURE. PHILIPS DAYBRITE OWN SERIES C/W 4 LED TUBES PHILIPS MODEL 1278 OR APPROVED EQUAL WITH DLC LISTING. FIXTURE TO BE SECURED TO T-BAR USING CADDY CLAMP 4G SERIES TO LIMIT GAP BETWEEN FIXTURE AND T-BAR. CONTRACTOR TO PROVIDE A MOCK-UP INSTALLATION OF FIXTURE AND GET PM APPROVAL TO PROCEED IF FIXTURE INSTALLATION IS STRAIGHT AND FLUSH.	120V 12.0W / LAMP	4 @ T8 LED 1800L / LAMP 4000K	SURFACE MOUNTED
BB	SURFACE MOUNTED LED FIXTURE C/W 0-10V DIMMING CAPABILITIES. PHILIPS DAYBRITE OWN SERIES C/W 4 LED TUBES PHILIPS MODEL 1278 OR APPROVED EQUAL WITH DLC LISTING. FIXTURE TO BE SECURED TO T-BAR USING CADDY CLAMP 4G SERIES TO LIMIT GAP BETWEEN FIXTURE AND T-BAR. CONTRACTOR TO PROVIDE A MOCK-UP INSTALLATION OF FIXTURE AND GET PM APPROVAL TO PROCEED IF FIXTURE INSTALLATION IS STRAIGHT AND FLUSH.	120V 12.0W / LAMP	4 @ T8 LED 1800L / LAMP 4000K	SURFACE MOUNTED
CA	2" LOW PROFILE ENCLOSED AND GASKETED LED FIXTURE C/W WET LOCATION RATING, CLEAR LENS AND WIDE DISTRIBUTION. LITHONIA LIGHTING: FEM SERIES	120V 19.9W	LED 3291L 4000K 90 CRI	SURFACE WALL MOUNTED
DA	7" LED FLUSH MOUNT FIXTURE C/W WHITE FINISH. LITHONIA LIGHTING: VERSI LITE SERIES	120V 12.2W	LED 695L 4000K 90 CRI	SURFACE MOUNTED
NOTES: <ul style="list-style-type: none"><li>PROVIDE ALL NECESSARY MOUNTING HARDWARE FOR A COMPLETE INSTALLATION.</li><li>COORDINATE WITH ARCHITECTURAL CEILING PLAN TO CONFIRM CEILING MATERIAL AND MOUNTING TYPE.</li><li>COORDINATE FINAL FIXTURE SELECTION WITH ARCHITECT AND OWNER PRIOR TO ORDERING.</li></ul>				



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**PROJECT**

UCDSB LINKLATER PS  
2023 UPGRADES

**ADDRESS**

300 STONE ST. N.  
GANANOQUE, ON

**PROJECT NO.**

CE-5514

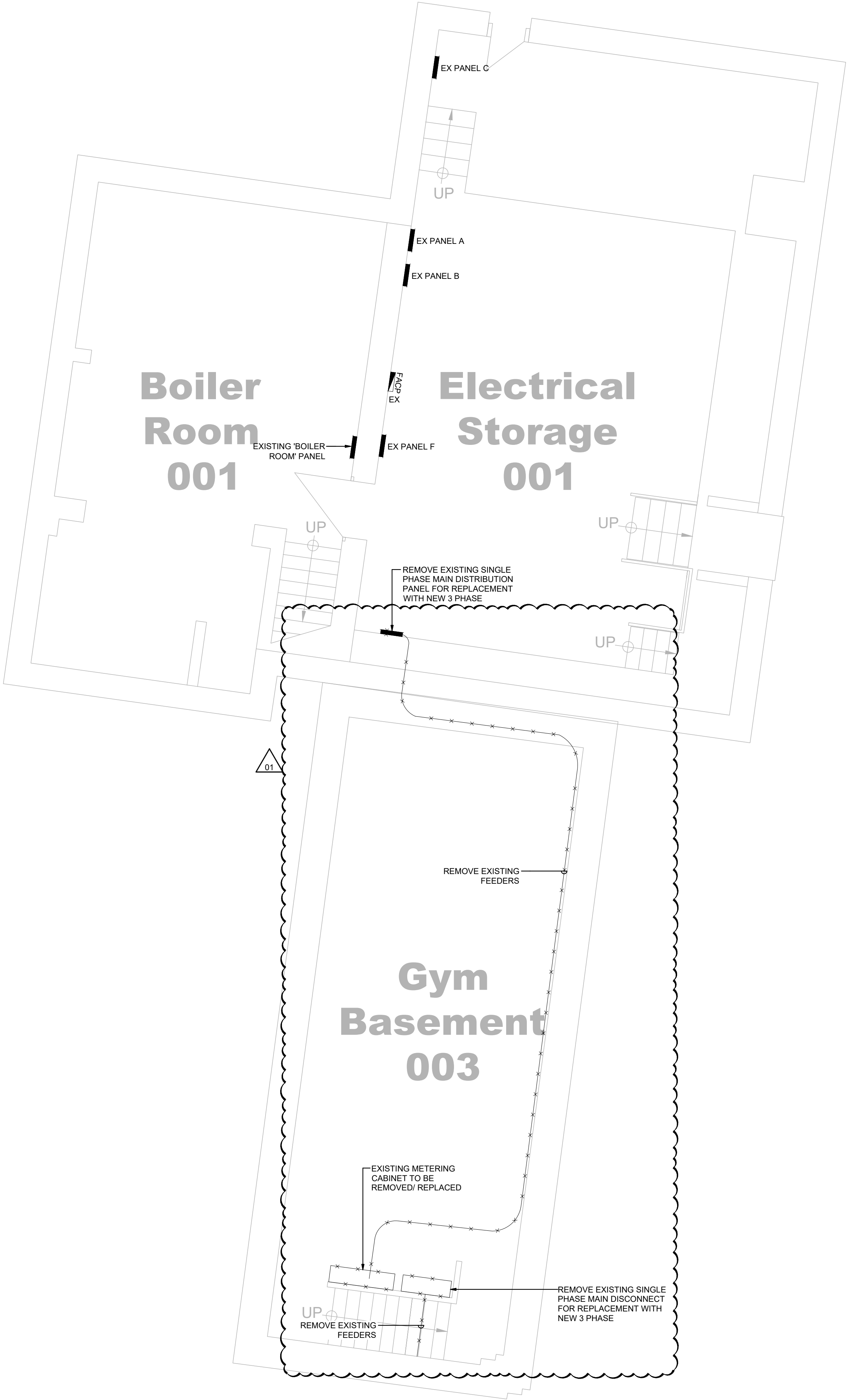
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SINGLE LINE DIAGRAM &  
SCHEDULES- ELECTRICAL

**DRAWING NUMBER**

E2 OF 11





PARTIAL BASEMENT- DEMO  
SCALE: 1:50



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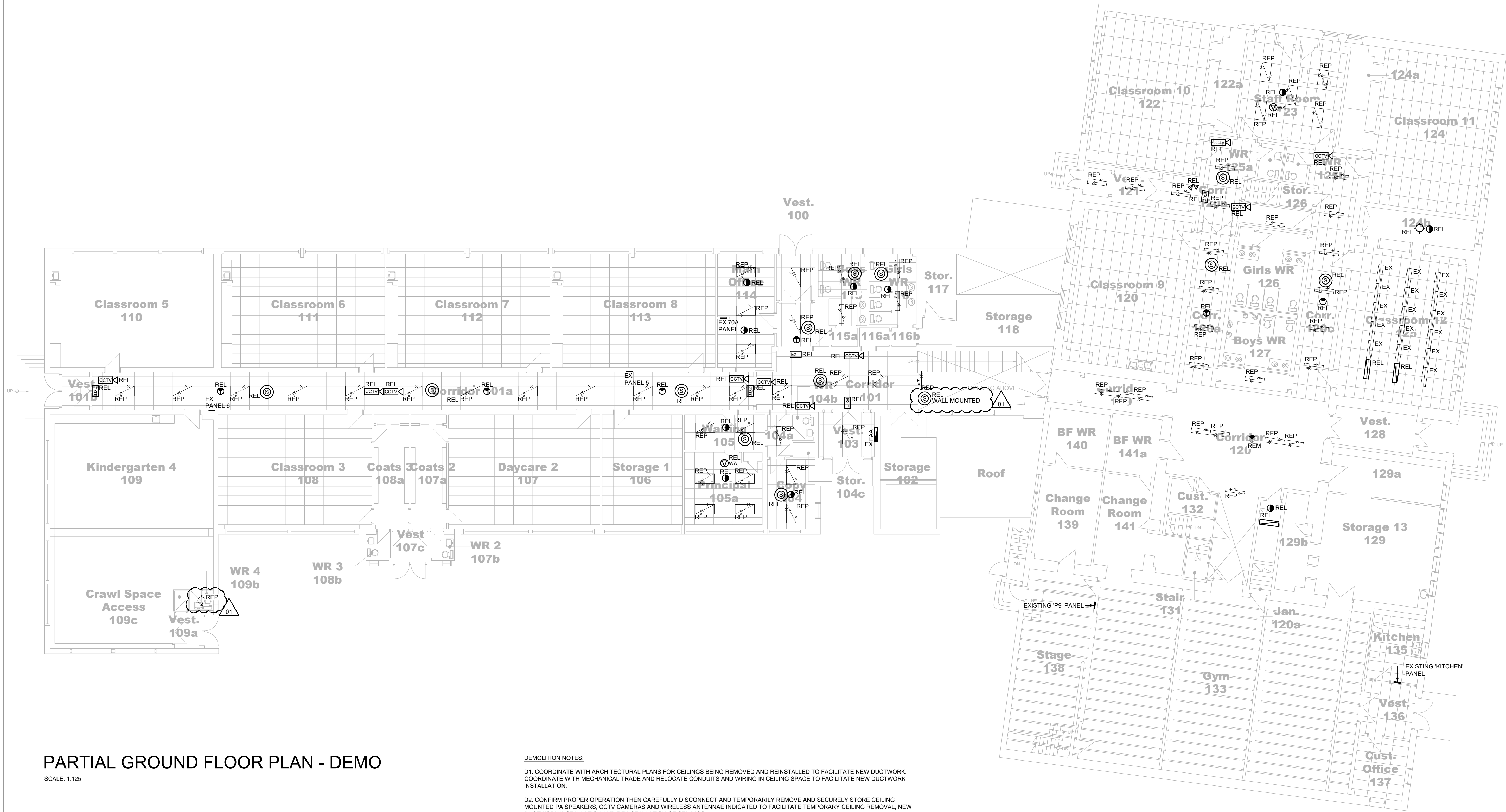
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PARTIAL GROUND FLOOR PLAN - DEMO

SCALE: 1:125




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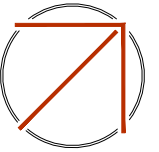
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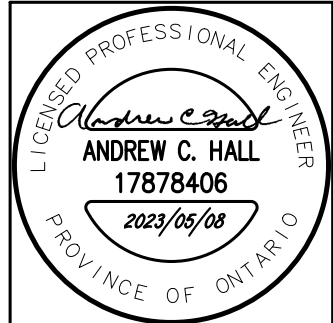


**UPPER CANADA**  
DISTRICT SCHOOL BOARD

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PARTIAL GROUND FLOOR-  
DEMO

**DRAWING NUMBER**

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PARTIAL SECOND FLOOR-  
DEMO

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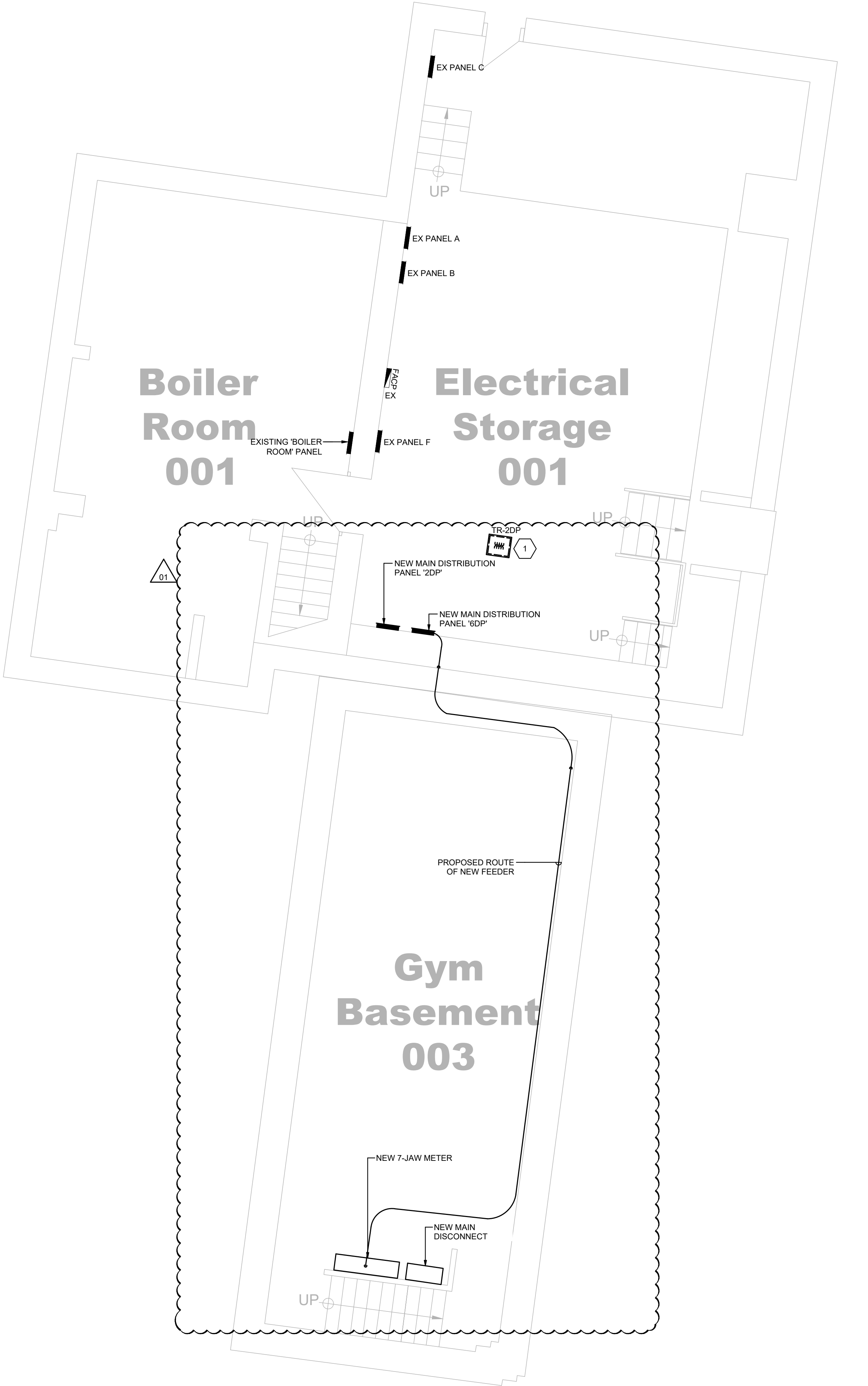
E5 OF 11



PARTIAL SECOND FLOOR PLAN - DEMO

SCALE: 1:125

- DEMOLITION NOTES:
- D1. COORDINATE WITH ARCHITECTURAL PLANS FOR CEILINGS BEING REMOVED AND REINSTALLED TO FACILITATE NEW DUCTWORK. COORDINATE WITH MECHANICAL TRADE AND RELOCATE CONDUITS AND WIRING IN CEILING SPACE TO FACILITATE NEW DUCTWORK INSTALLATION.
- D2. CONFIRM PROPER OPERATION THEN CAREFULLY DISCONNECT AND TEMPORARILY REMOVE AND SECURELY STORE CEILING MOUNTED PA SPEAKERS, CCTV CAMERAS AND WIRELESS ANTENNAE INDICATED TO FACILITATE TEMPORARY CEILING REMOVAL, NEW DUCTWORK INSTALLATION AND REINSTALLATION OF CEILINGS.
- D3. TEMPORARILY DISCONNECT, REMOVE AND SECURELY STORE EXISTING CEILING MOUNTED FIRE ALARM DEVICES INDICATED FOR RELOCATION TO FACILITATE TEMPORARY CEILING REMOVALS AND NEW DUCTWORK INSTALLATION. REMOVE FIRE ALARM DEVICES INDICATED FOR REMOVAL.
- D4. REMOVE LIGHT FIXTURES INDICATED FOR REPLACEMENT. CAREFULLY REMOVE AND SECURELY STORE LIGHT FIXTURES OR CONTROLS INDICATED FOR RELOCATION TO FACILITATE TEMPORARY CEILING REMOVALS, NEW DUCTWORK INSTALLATION AND CEILING REINSTALLATION.



**PARTIAL BASEMENT- PROPOSED**

SCALE: 1:50

DRAWING NOTES (INDICATED WITH HEXAGONS):

1. MOUNT NEW TRANSFORMER ON CONCRETE HOUSEKEEPING PAD.



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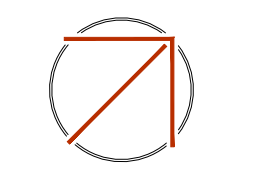
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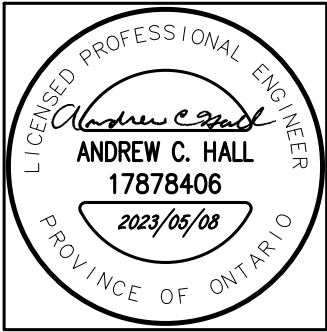
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PARTIAL BASEMENT-  
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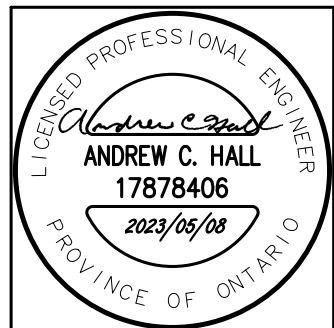
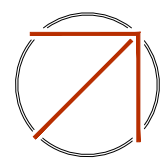
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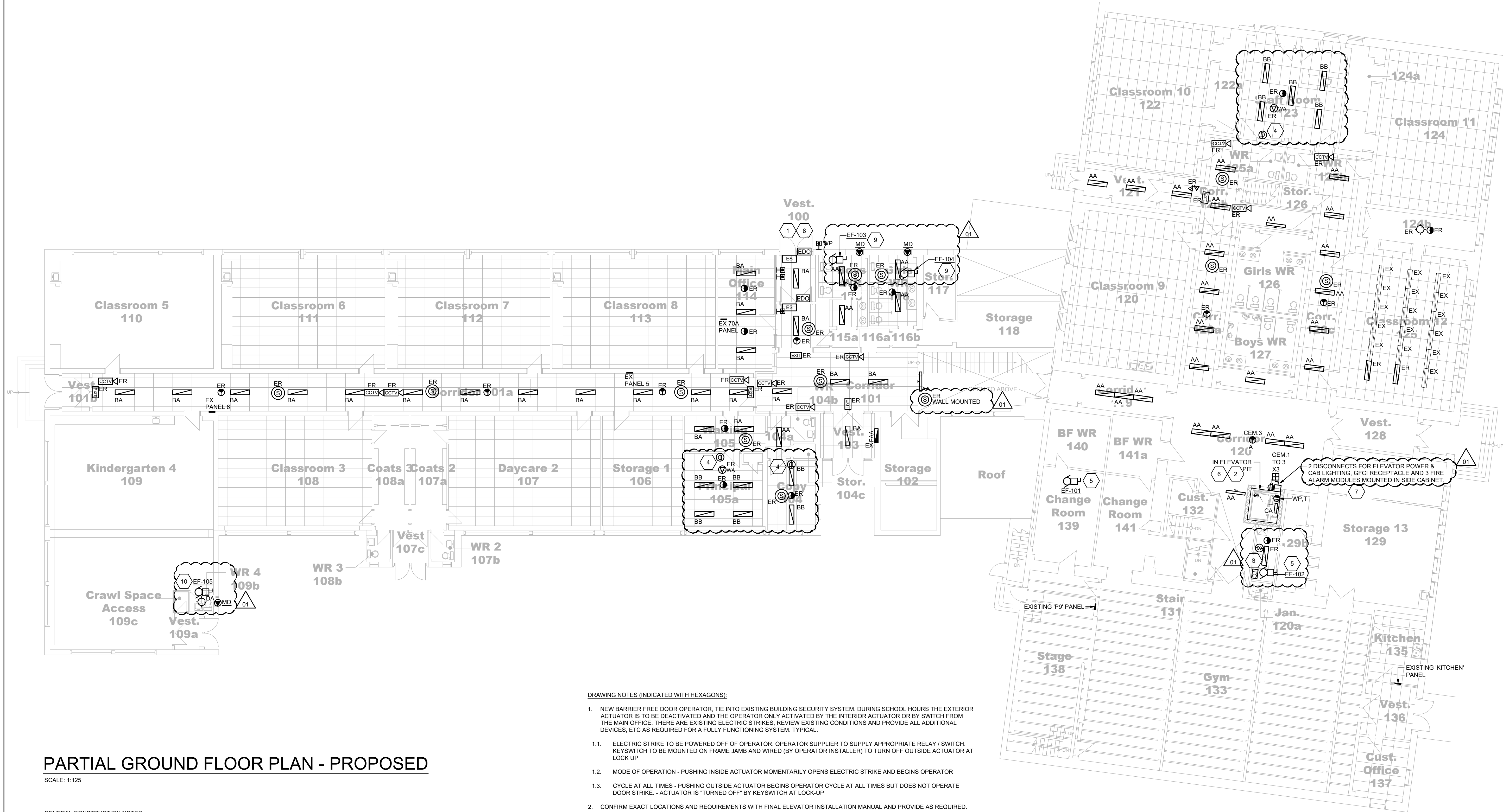
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**DRAWING TITLE**

PARTIAL GROUND FLOOR-  
PROPOSED

**DRAWING NUMBER**

E8 OF 11



**DRAWING NOTES (INDICATED WITH HEXAGONS):**

1. NEW BARRIER FREE DOOR OPERATOR, TIE INTO EXISTING BUILDING SECURITY SYSTEM. DURING SCHOOL HOURS THE EXTERIOR ACTUATOR IS TO BE DEACTIVATED AND THE OPERATOR ONLY ACTIVATED BY THE INTERIOR ACTUATOR OR BY SWITCH FROM THE MAIN OFFICE. THERE ARE EXISTING ELECTRIC STRIKES. REVIEW EXISTING CONDITIONS AND PROVIDE ALL ADDITIONAL DEVICES, ETC AS REQUIRED FOR A FULLY FUNCTIONING SYSTEM. TYPICAL.
- 1.1. ELECTRIC STRIKE TO BE POWERED OFF OF OPERATOR. OPERATOR SUPPLIER TO SUPPLY APPROPRIATE RELAY / SWITCH. KEYSWITCH TO BE MOUNTED ON FRAME JAMB AND WIRED (BY OPERATOR INSTALLER) TO TURN OFF OUTSIDE ACTUATOR AT LOCK UP
- 1.2. MODE OF OPERATION - PUSHING INSIDE ACTUATOR MOMENTARILY OPENS ELECTRIC STRIKE AND BEGINS OPERATOR
- 1.3. CYCLE AT ALL TIMES - PUSHING OUTSIDE ACTUATOR BEGINS OPERATOR CYCLE AT ALL TIMES BUT DOES NOT OPERATE DOOR STRIKE. - ACTUATOR IS "TURNED OFF" BY KEYSWITCH AT LOCK-UP
2. CONFIRM EXACT LOCATIONS AND REQUIREMENTS WITH FINAL ELEVATOR INSTALLATION MANUAL AND PROVIDE AS REQUIRED.
3. REUSE EXISTING LIGHTING CIRCUIT FROM ORIGINAL JANITORS ROOM. PROVIDE AND EXTEND ALL NEW WIRING AND CONDUIT AS REQUIRED.
4. REPLACE EXISTING LIGHT SWITCH WITH OCCUPANCY DIMMER SENSOR SWITCH AS INDICATED. CONFIRM LOCATION ON SITE.
5. PROVIDE NEW 15A, 120V FEED FROM EXISTING PANEL 'P9' LOCATED ON STAGE AND ROUTE THROUGH TIMECLOCK SUPPLIED BY MECH IN JAN 120A. PROVIDE NEW 15A, 1P BREAKER TO MATCH EXISTING PANEL REQUIREMENTS AND KAIC RAITING.
6. PROVIDE NEW SEPARATE 20A, 120V FEED FROM EXISTING PANEL 'P9' LOCATED ON STAGE FOR ELEVATOR PIT GFCI AND ELEVATOR PIT LIGHTING. PROVIDE NEW 20A, 1P BREAKER FOR EACH CIRCUIT TO MATCH EXISTING PANEL REQUIREMENTS AND KAIC RAITING.
7. PROVIDE NEW 15A, 120V FEED FROM EXISTING PANEL 'P9' LOCATED ON STAGE TO GFI LOCATED IN SIDE CABINET. PROVIDE NEW 15A, 1P BREAKER TO MATCH EXISTING PANEL REQUIREMENTS AND KAIC RAITING.
8. PROVIDE NEW 15A, 120V FEED FROM EXISTING PANEL 'S' LOCATED IN EAST WING CORRIDOR TO MAIN DOOR OPERATORS. PROVIDE NEW 15A, 1P BREAKER TO MATCH EXISTING PANEL REQUIREMENTS AND KAIC RAITING. REUSE EXISTING SPACE FROM REMOVED FANS
9. PROVIDE NEW 15A, 120V FEED FROM EXISTING PANEL 'S' LOCATED IN EAST WING CORRIDOR TO EF-103 AND EF-104. PROVIDE NEW 15A, 1P BREAKER TO MATCH EXISTING PANEL REQUIREMENTS AND KAIC RAITING. REUSE EXISTING SPACE FROM REMOVED FANS.
10. PROVIDE NEW 15A, 120V FEED FROM EXISTING PANEL 'S' LOCATED IN EAST WING CORRIDOR TO EF-105. PROVIDE NEW 15A, 1P BREAKER TO MATCH EXISTING PANEL REQUIREMENTS AND KAIC RAITING. REUSE EXISTING SPACE FROM REMOVED FANS.

**PARTIAL GROUND FLOOR PLAN - PROPOSED**

SCALE: 1:125

**GENERAL CONSTRUCTION NOTES:**

- COORDINATE REINSTALLATION OF CONDUIT AND WIRING WITH NEW DUCTWORK TO MAINTAIN ANY REQUIRED ACCESS TO JUNCTION OR PULL POINTS
- REINSTALL CEILING MOUNTED PA SPEAKERS, CCTV CAMERAS AND WIRELESS ANTENNAE WIRING AND DEVICES AND TEST TO CONFIRM PROPER OPERATION.
- REINSTALL CEILING MOUNTED FIRE ALARM DEVICES AND RE-VERIFY TO CONFIRM PROPER OPERATION. PROVIDE NEW FIRE ALARM DEVICES INDICATED AND REFER TO FIRE ALARM PARTIAL RISER AND SCHEDULE FOR CONNECTIONS.
- REINSTALL LIGHTING FIXTURES OR CONTROLS INDICATED AND TEST FOR PROPER OPERATION. INSTALL NEW ROOM LIGHTING CONTROLS INDICATED AND TEST FOR OPERATION.



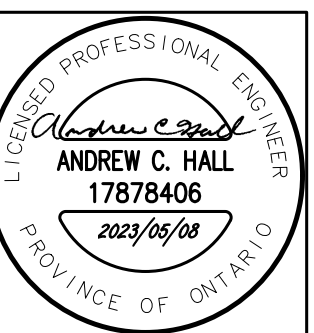
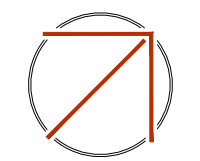


GENERAL CONSTRUCTION NOTES:

- COORDINATE REINSTALLATION OF CONDUIT AND WIRING WITH NEW DUCTWORK TO MAINTAIN ANY REQUIRED ACCESS TO JUNCTION BOXES.
- REINSTALL CEILING MOUNTED PA SPEAKERS, CCTV CAMERAS AND WIRELESS ANTENNAE WIRING AND DEVICES AND TEST TO CONFIRM PROPER OPERATION.
- REINSTALL CEILING MOUNTED FIRE ALARM DEVICES AND RE-VERIFY TO CONFIRM PROPER OPERATION. PROVIDE NEW FIRE ALARM DEVICES INDICATED AND REFER TO FIRE ALARM PARTIAL RISER AND SCHEDULE FOR CONNECTIONS.
- REINSTALL LIGHTING FIXTURES OR CONTROLS INDICATED AND TEST FOR PROPER OPERATION. INSTALL NEW ROOM LIGHTING CONTROLS INDICATED AND TEST FOR OPERATION.



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PARTIAL SECOND FLOOR-  
PROPOSED

## E9 OF 11



ELECTRICAL GENERAL REQUIREMENTS			
GENERAL CONDITIONS			
1.	ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE ONTARIO ELECTRICAL SAFETY CODE, THE LOCAL ELECTRICAL INSPECTION OFFICE, THE ONTARIO BUILDING CODE, THE ONTARIO FIRE CODE AND ANY OTHER LOCAL REGULATIONS HAVING JURISDICTION OVER THE WORK OF THIS TRADE.	8.	PROVIDE CIRCUIT BREAKER PANELS OF THE TYPE, WITH AMPERE CAPACITY, NUMBER OF POLES, BRANCH BREAKER CAPACITY, ETC., AS SPECIFIED IN PANEL SCHEDULE. MOUNTING TO BE AS INDICATED.
2.	BEFORE TENDERING, EXAMINE THE SITE AND ALL DRAWINGS AND SPECIFICATIONS OF ALL TRADES AND BE FAMILIAR WITH THE WORK OF THIS TRADE. NO EXTRAS WILL BE ALLOWED FOR THE FAILURE TO DO SO.	9.	PROVIDE A DIRECTORY CARD ON THE INSIDE OF THE PANEL DOOR IN A METAL FRAME WITH CLEAR PLASTIC COVER.
3.	ALL ELECTRICAL WORK SHALL COMPLY WITH CSA ELECTRICAL BULLETIN APPLICABLE AT TENDER CLOSE, WHERE SPECIFIC BULLETINS ARE NOT NAMED THEY ARE STILL CONSIDERED AN INTEGRAL PART OF THIS SPECIFICATION.	10.	ALL BRANCH BREAKERS SHALL BE THERMAL-MAGNETIC TRIP INDICATED, AMBIENT TEMPERATURE COMPENSATED AND BOLTED TO THE BUS BAR.
4.	PROVIDE ALL GROUNDING AND BONDING TO GROUND REQUIRED, REGARDLESS IF NOT SHOWN ON THE DRAWINGS. GROUNDING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE.	11.	ALL SURFACE MOUNTED EQUIPMENT SHALL BE MOUNTED ON 19 MM (3/4"), FIRE RATED, PLYWOOD BACKBOARD.
5.	PROVIDE ALL NEW MATERIALS HAVING CSA, CUL, WARNOCK HERSEY OR OTHER APPROVAL AGENCY LABEL AND LISTING. ALL WORKMANSHIP BY THIS TRADE SHALL BE FIRST CLASS, CONFORMING TO INDUSTRY STANDARD PRACTICES FOR SAFETY, ACCESSIBILITY, DURABILITY AND NEATNESS FOR ACCEPTANCE BY THE OWNERS' REPRESENTATIVES.	DEVICES	
6.	ARRANGE AND PAY FOR ALL PERMITS AND INSPECTION FEES REQUIRED FOR THE WORK OF THIS TRADE. SUBMIT TO THE LOCAL ELECTRICAL INSPECTION DEPARTMENT AND/OR ELECTRICAL SUPPLY AUTHORITY ANY AND ALL DRAWINGS REQUIRED FOR PERMITS, FEES, APPROVALS, EXAMINATIONS AND SERVICES.	1.	SWITCHES:
7.	PROVIDE ALL CUTTING AND PATCHING REQUIRED FOR THE WORK OF THIS TRADE. ALL CUTTING AND PATCHING SHALL BE PERFORMED BY QUALIFIED TRADES PERSONS. INCLUDE ALL COSTS FOR CUTTING AND PATCHING RELATED TO THE WORK OF THIS TRADE IN THE TENDER PRICE.	1.1.	SPEC GRADE, RATED 20 AMP, 125 VAC, SINGLE POLE, SINGLE THROW. (3-WAY OR 4-WAY AS NOTED ON DRAWINGS.)
8.	TOUCH-UP ALL SHOP PAINTED EQUIPMENT DAMAGED IN TRANSIT OR DURING INSTALLATION TO MATCH ORIGINAL SHOP FINISH.	1.2.	MANUFACTURERS: SMITH AND STONE, HARVEY HUBBEL, LEVITON, PASS AND SEYMOUR, LUTRON.
9.	AVOID ACCUMULATION OF DEBRIS AS THE WORK PROGRESSES. ON COMPLETION OF THE CONSTRUCTION AND PRIOR TO THE FINAL INSPECTION AND ACCEPTANCE BY THE OWNER, CLEAN UP AND REMOVE FROM THE SITE ALL SCRAP MATERIALS RESULTING FROM THE WORK OF THIS TRADE.	2.	RECEPTACLES:
10.	CO-ORDINATE THE WORK OF THIS TRADE WITH ALL OTHER TRADES ON THE JOB SO THAT THE WORK MAY PROGRESS WITHOUT ANY DELAY.	2.1.	GROUND FAULT INTERRUPTING, CLASS A DUPLEX, RATED 15 AMP, 125 VAC, EEMAC 5-15R FIG. TRIP RATED FOR 4-6 MA LEAKAGE CURRENT. C/W PUSH TO TEST AND RESET BUTTONS.
11.	PRIOR TO THE FINAL INSPECTION, CLEAN ALL ELECTRICAL EQUIPMENT. CLEAN ALL CONSTRUCTION DUST AND DIRT FROM INSTALLED EQUIPMENT AT THE END OF THE JOB.	2.2.	GROUND FAULT INTERRUPTING, CLASS A DUPLEX, RATED 20 AMP, 125 VAC, T-SLOT EEMAC 5-20R FIG. TRIP RATED FOR 4-6 MA LEAKAGE CURRENT. C/W PUSH TO TEST AND RESET BUTTONS.
12.	UPON COMPLETION OF THE WORK, PROVIDE THE FINAL UNCONDITIONAL CERTIFICATE OF ACCEPTANCE FROM THE LOCAL ELECTRICAL SAFETY AUTHORITY INSPECTION OFFICE.	2.3.	EXTERIOR GROUND FAULT INTERRUPTING, CLASS A DUPLEX, RATED 15 AMP, 125 VAC, EEMAC 5-15R FIG. TRIP RATED FOR 4-6 MA LEAKAGE CURRENT. C/W PUSH TO TEST AND RESET BUTTONS. NEMA 3R WEATHERPROOF C/W WHILE IN USE COVER PLATE. HUBBELL RW57300 OR APPROVED EQUAL
13.	PROVIDE A ONE YEAR GUARANTEE ON ALL MATERIALS, AND LABOUR FROM THE DATE OF ACCEPTANCE BY THE OWNER. COMPLETE ALL WARRANTY REGISTRATION DOCUMENTATION ON BEHALF OF THE BUILDING OWNER. SUBMIT COPIES OF COMPLETED DOCUMENTATION IN OPERATIONS AND MAINTENANCE MANUALS.	3.	COVER PLATES:
14.	ON MULTI-PHASE FEEDERS AND PANELS, ADJUST THE PHASE LOADING SO AS NOT TO EXCEED A PHASE IMBALANCE OF 10%, LINE TO LINE, UNDER NORMAL OPERATING CONDITIONS OF THE FEEDER OR PANEL.	3.1.	SMOOTHLINE BAKELITE, COLOUR TO MATCH SWITCHES AND RECEPTACLES.
15.	SUBMIT SHOP DRAWINGS IN ELECTRONIC PDF FORMAT FOR THE FOLLOWING EQUIPMENT: BREAKERS, FIRE ALARM DEVICES, EXIT AND EMERGENCY LIGHTING UNITS, ETC. THE SHOP DRAWINGS SHALL BEAR THE NAME OF THE MANUFACTURER, THE MANUFACTURER'S CATALOGUE NUMBER, AND THE CONSULTANT'S DESIGNATION, ALONG WITH ALL PERTINENT INFORMATION PERTAINING TO THAT SPECIFIC PIECE OF EQUIPMENT.	3.2.	BRUSHED STAINLESS STEEL, NUMBER 430, IN OFFICES AND KITCHENS.
16.	ALL ELECTRICAL EQUIPMENT SHALL BE MOUNTED PLUMBED TRUE.	3.3.	GALVANIZED STEEL COVERPLATES, FOR SURFACE MOUNTED DEVICES IN UNFINISHED AREAS.
17.	OBTAIN ONE SET OF PRINTS FOR AS-BUILT PURPOSES AND RECORD ON THESE PRINTS ALL CHANGES TO THE DESIGN DRAWINGS TO REFLECT THE ACTUAL CONSTRUCTION CONDITIONS, EQUIPMENT LOCATIONS AND EQUIPMENT SPECIFICATIONS. AT THE END OF CONSTRUCTION, AND PRIOR TO THE FINAL INSPECTION BY THE CONSULTANT, TRANSMIT AS-BUILT MARK-UPS TO AUTOCAD/REVIT AND SUBMIT AUTOCAD AND PDF FILES TO THE CONSULTANT SUBMIT FOR REVIEW. SUBMIT FINAL CAD FILES OF THE AS-BUILT DRAWINGS ON CD/USB KEY. NO FINAL INSPECTION WILL BE PERFORMED UNTIL THESE DRAWINGS ARE SUBMITTED.	3.4.	COVERPLATES TO BE OF THE SAME MANUFACTURER AS THE DEVICES. PROVIDE A TYPED LABEL ON EACH DEVICE PLATE INDICATING THE PANEL BOARD NAME AND CIRCUIT NUMBER THE DEVICE IS FED FROM.
18.	PREPARE (THREE SETS) OF OPERATIONS AND MAINTENANCE MANUALS FOR PRESENTATION TO THE OWNER. PROVIDE COPIES OF ALL REVIEWED SHOP DRAWINGS FOR THE PROJECT, MANUFACTURERS INSTALLATION INSTRUCTIONS, MANUFACTURERS MAINTENANCE INSTRUCTIONS, AND COPIES OF ALL TEST DATA, VERIFICATION CERTIFICATES, MANUFACTURERS WARRANTIES AND GUARANTEES. THE GUARANTEE OF THIS TRADE INDICATING START DATE AND END DATE AS WELL AS CONTRACT NUMBERS.	3.5.	FOR OUTDOOR APPLICATIONS, PROVIDE WEATHER PROOF WHILE IN USE COVERPLATES. COVERPLATE TO BE CLEAR LEXAN WITH SEALED-IN-PLACE GASKET.
19.	WHERE THE WORD PROVIDE IS USED IN THESE SPECIFICATIONS OR ON THE DRAWINGS, IT HAS THE MEANING "PROVIDE AND INSTALL COMPLETE WITH ALL ASSOCIATED MOUNTING HARDWARE AND CONNECTIONS".	4.	COLOUR OF DEVICES: MATCH EXISTING.
20.	CHANGES IN THE WORK	5.	EQUIPMENT ISOLATING DISCONNECTS: SIZE DISCONNECTING DEVICES FOR THE CURRENT CARRYING CAPACITIES OF THE EQUIPMENT TO BE ISOLATED. PROVIDE NUMBER OF ISOLATING POLES AS REQUIRED BY EQUIPMENT TO BE ISOLATED. TYPE OF ENCLOSURE AS INDICATED BELOW:
20.1.	CHANGES TO THE CONTRACT REQUIRING ADDITIONS TO OR DELETIONS FROM THE WORK OF THIS DIVISION SHALL BE CARRIED OUT UPON WRITTEN REQUEST OF THE CONSULTANT. EXTRAS TO THE CONTRACT OR CREDITS SHALL BE SUBMITTED WITH A COMPLETE COST BREAKDOWN AS FOLLOWS: MATERIALS, QUANTITIES AND UNIT PRICES FOR ALL EQUIPMENT REQUIRED OR DELETED. UNIT MAN HOURS TOTAL MATERIAL COST. TOTAL MAN HOURS. HOURLY RATE. (REFER TO SUPPLEMENTARY CONDITIONS AND GENERAL CONTRACT). TOTAL OVERHEAD AND PROFIT. (REFER TO SUPPLEMENTARY CONDITIONS AND GENERAL CONTRACT).	5.1.	DUST FREE OR STANDARD - EEMAC TYPE 1.
		5.2.	OUTDOOR OR DAMP LOCATION - EEMAC TYPE 3R.
		5.3.	MANUFACTURERS: CUTLER HAMMER - EATON, SCHNEIDER CANADA, SIEMENS
		6.	ALL DEVICES OF THE SAME TYPE, SIZE AND RATING ARE TO BE OF THE SAME MANUFACTURER THROUGHOUT THE PROJECT.
		7.	MOUNTING HEIGHTS - BARRIER FREE DESIGN (OBC LATEST)
		7.1.	THERMOSTATS SHALL BE MOUNTED AT 1200MM ABOVE THE FINISHED FLOOR
		7.2.	ALL OTHER CONTROLS (INCLUDING ELECTRICAL SWITCHES, INTERCOM SWITCHES, ETC.) SHALL BE MOUNTED NOT LESS THAN 900MM AND NOT MORE THAN 1100MM ABOVE THE FINISHED FLOOR.
		LIGHTING CONTROL	
		1.	REFER TO FLOOR PLANS, LEGEND, DETAILS, AND LIGHTING CONTROL OPERATIONS FOR SPECIFIC ROOM/SPACE/AREA LIGHTING CONTROL REQUIREMENTS.
		2.	PROVIDE NEW LIGHTING CONTROL EQUIPMENT AND DEVICES INDICATED FROM MANUFACTURER INDICATED C/W MINIMUM 5 YEAR MANUFACTURERS GUARANTEE TO REPAIR OR REPLACE DEFECTIVE EQUIPMENT OR DEVICES WITHIN 5 YEARS OF SUBSTANTIAL PERFORMANCE OF THE CONTRACT.
		3.	ALTERNATE MANUFACTURERS OF EQUIVALENT LIGHTING CONTROL SYSTEMS WILL BE CONSIDERED FOR ACCEPTANCE PRIOR TO BID CLOSE ONLY WHEN LITERATURE DESCRIBING PROPOSED MANUFACTURERS EQUIPMENT AND OPERATION IS SUBMITTED FOR REVIEW MINIMUM SEVEN (7) WORK DAYS PRIOR TO BID CLOSE.
		4.	SUBMIT SHOP DRAWINGS FOR LIGHTING CONTROL EQUIPMENT TO CONSULTANT FOR REVIEW PRIOR TO ORDERING OF EQUIPMENT.
		5.	SUPPLY AND INSTALL LIGHTING CONTROL EQUIPMENT AND WIRING AS RECOMMENDED BY MANUFACTURER TO COMPLY WITH LIGHTING CONTROL REQUIREMENTS INDICATED. LOW VOLTAGE CONTROL WIRING NOT INSTALLED IN CONDUIT OR INCORPORATED INTO ARMoured CABLE MUST BE FT4 RATED IN NON-COMBUSTIBLE BUILDINGS AND FT6 RATED WHEN RUN THROUGH AIR HANDLING PLENUMS.
		6.	PROVIDE PROGRAMING, SET-UP, DEMONSTRATION, AND TRAINING BY MANUFACTURER TRAINED TECHNICIAN.
		7.	FUNCTIONAL TESTING:
		7.1.	SET UP AND TEST LIGHTING CONTROL DEVICES AND CONTROL SYSTEMS TO CONFIRM HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS. WHEN OCCUPANT SENSORS, TIME SWITCHES, PROGRAMMABLE SCHEDULE CONTROLS, OR PHOTOSENSORS ARE INSTALLED, AT A MINIMUM, THE FOLLOWING PROCEDURES SHALL BE PERFORMED:
		7.2.	OCCUPANT SENSORS:
		7.2.1.	CERTIFY THAT THE SENSOR HAS BEEN LOCATED AND AIMED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
		7.2.2.	FOR PROJECTS WITH UP TO SEVEN (7) OCCUPANCY SENSORS, ALL OCCUPANCY SENSORS SHALL BE TESTED.
		7.2.3.	FOR EACH SENSOR TO BE TESTED, VERIFY THE FOLLOWING: <ul style="list-style-type: none"><li>- STATUS INDICATOR (AS APPLICABLE) OPERATES CORRECTLY.</li><li>- CONTROLLED LIGHTS TURN OFF OR DOWN TO THE PERMITTED LEVEL WITHIN THE REQUIRED TIME</li><li>- FOR AUTO-ON OCCUPANT SENSORS, THE LIGHTS TURN ON TO THE PERMITTED LEVEL WHEN SOMEONE ENTERS THE SPACE</li><li>- FOR MANUAL-ON SENSORS, THE LIGHTS TURN ON ONLY WHEN MANUALLY ACTIVATED</li><li>- THE LIGHTS ARE NOT INCORRECTLY TURNED ON BY MOVEMENT IN NEARBY AREAS OR BY HVAC OPERATION.</li></ul>
		8.	CLOSEOUT DOCUMENTS
		8.1.	PROVIDE CERTIFICATE OF VERIFICATION OF LIGHTING CONTROLS SYSTEM TO ENGINEER ON COMPLETION OF WORK. PROVIDE CERTIFICATION OF INSTALLATION TO CONTRACT DOCUMENTS AND REFERENCED OBC SUPPLEMENTARY STANDARD SB-10.
		LIGHTING	
		1.	PROVIDE FIXTURES COMPLETE WITH ALL ACCESSORIES MOUNTING HARDWARE, AND LAMPS AS SPECIFIED IN THE FIXTURE SCHEDULE OR AS APPROVED BY OWNERS AS AN EQUAL FIXTURE COMPLETE WITH MIN. 5 YEAR WARRANTY.
		2.	PRODUCTS OF EQUAL QUALITY BY ALTERNATE MANUFACTURERS SUCH AS LITHONIA, SIGNIFY, COOPER, HUBBELL, AND CREE ARE ALSO ACCEPTABLE. PROVIDE PHOTOMETRIC CALCULATIONS ALONG WITH ALTERNATE FIXTURE SELECTIONS TO THE ENGINEER FOR REVIEW AT LEAST TWO FULL BUSINESS DAYS PRIOR TO TENDER CLOSING.
		FIRE ALARM SYSTEM	
		1.	FIRE ALARM SYSTEM IS EXISTING EST SYSTEM.
		2.	PROVIDE ADDITIONS AND MODIFICATIONS TO EXISTING FIRE ALARM SYSTEM AS INDICATED ON DRAWINGS AND DESCRIBED HEREIN. PROVIDE MODIFICATIONS TO SEQUENCE OF OPERATIONS AS DESCRIBED IN SEPARATE NOTES. ALL NEW AND RELOCATED WIRING PER MANUFACTURERS REQUIREMENTS INSTALLED IN RED COLOURED CONDUIT TO MATCH EXISTING.
		3.	FIRE DETECTORS: MOUNTED ON SEPARATE BASE WITH INTERCHANGEABLE ADDRESSABLE DETECTION HEADS OF THE FOLLOWING TYPES AS INDICATED ON PLANS.
		3.1.	SMOKE DETECTORS: TO ULC S529 STANDARD FOR SMOKE DETECTORS FOR FIRE ALARM SYSTEMS.
		3.1.1.	PHOTOELECTRIC OPERATION. DELAY SIGNAL CAPABILITY. AUTOMATIC SENSITIVITY ADJUSTMENT.
		4.	ADDRESSABLE MODULES:
		4.1.	MONITOR MODULES OF SINGLE, DUAL OR MULTI-ZONE TYPE FOR CONNECTION AND SUPERVISION OF ALARM AND SUPERVISORY DEVICES AS INDICATED ON PLANS.
		4.2.	CONTROL MODULES WITH BUILT IN RELAYS FOR CONTROL AND SIGNALING OF DEVICES AND EQUIPMENT AS INDICATED ON PLANS, FIRE ALARM SCHEDULE, RISER AND NOTES.
		4.3.	ISOLATION MODULES TO OPEN CIRCUIT IF FAULT DETECTED.
		5.	ACCEPTABLE MANUFACTURERS INCLUDE: TO MATCH EXISTING.
		6.	FIRE ALARM INSTALLATION TO ULC STANDARD S524.
		7.	FIRE ALARM VERIFICATION TO ULC STANDARD S537.
		7.1.	PROVIDE REPORT OF VERIFICATION OF FIRE ALARM SYSTEM TO ENGINEER ON COMPLETION OF WORK. PROVIDE CERTIFICATION OF INSTALLATION TO CANULC - S524.
		ELEVATOR WIRING	
		1.	THIS DIVISION WILL PROVIDE ALL POWER FEEDERS FROM THE FUSIBLE DISCONNECT SWITCHES TO THE ELEVATOR CONTROLLERS AND CAB LIGHTING.
		2.	THIS DIVISION SHALL BE RESPONSIBLE FOR THE TERMINATION OF THE FIRE ALARM INTERCONNECTION, ALTERNATE LANDING SIGNAL, AND ENSURE THE TELEPHONE COMPANY TERMINATES THE EMERGENCY COMMUNICATION SIGNAL.
		WIRING FOR OTHER TRADES	
		1.	PROVIDE POWER WIRING FOR ELECTRICALLY OPERATED EQUIPMENT OF OTHER TRADES AS NOTED ON THE DRAWINGS OR DEFINED IN THIS SPECIFICATION. PROVIDE ALL STARTERS AND DISCONNECT SWITCHES FOR A COMPLETE AND OPERATING SYSTEM.
		2.	PROVIDE POWER AND WIRING TO THE ELECTRICALLY OPERATED EQUIPMENT AS DETAILED IN WIRING FOR MECHANICAL EQUIPMENT SCHEDULE. THIS LIST DOES NOT DETAIL THE SCOPE OF WORK FOR EACH PIECE OF EQUIPMENT. CO-ORDINATE WITH MECHANICAL CONTRACTOR FOR THE EXACT POWER REQUIREMENTS OF THE EQUIPMENT TO BE SUPPLIED TO THE PROJECT. DO NOT PROCEED WITH THE INSTALLATION OF ANY OF THE ELECTRICAL ROUGH-IN UNTIL THE POWER SUPPLY REQUIREMENTS AND THE POINTS OF CONNECTION HAVE BEEN ESTABLISHED FROM THE SHOP DRAWINGS FOR THE EQUIPMENT OF MECHANICAL CONTRACTOR.
		3.	PROVIDE POWER WIRING TO ALL CONTROL DEVICES SUPPLIED BY MECHANICAL CONTRACTOR AND OPERATING AT 100 VAC OR GREATER.
		4.	PROVIDE CONTROL WIRING FOR ALL CONTROL DEVICES WITH OPERATING VOLTAGES OF THE CONTROLS GREATER THAN 100VAC.
		5.	PROVIDE RACEWAYS/CONDUITS FOR ALL CONTROL WIRING AS IDENTIFIED ON THE DRAWINGS FOR USE BY MECHANICAL CONTRACTOR. PROVIDE OUTLET BOXES DIRECTED BY MECHANICAL CONTRACTOR FOR ALL TERMINAL POINTS IN THE CONTROL SYSTEM. CO-ORDINATE WITH MECHANICAL CONTRACTOR.
		RENOVATIONS ON EXISTING BUILDING	
		1.	RENOVATIONS SHALL BE MADE ON THE EXISTING BUILDING AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN. REMOVE ALL EXISTING LUMINAIRES, OUTLET BOXES, SWITCHES, RECEPTACLES, ETC. AS INDICATED ON DRAWINGS. ALL EQUIPMENT REMOVED AND NOT REUSED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS SPECIFICALLY NOTED OTHERWISE. ALL EQUIPMENT INSTALLED IN RENOVATED AREAS SHALL BE NEW. ELECTRICAL TRADE WILL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR ELECTRICAL INSTALLATION. ALL CONDUIT SHALL BE INSTALLED CONCEALED IN FINISHED AREAS UNLESS SPECIFICALLY NOTED OTHERWISE.
		2.	NEW CONDUCTORS SHALL BE INSTALLED TO THE NEAREST OUTLET AS REQUIRED FOR EQUIPMENT THAT IS RELOCATED. INSTALLATION OF JUNCTION BOXES FOR SPLICING PURPOSES SHALL NOT BE PERMITTED UNLESS SPECIFICALLY CALLED FOR.
		3.	PROVIDE ALL CONDUCTORS REQUIRED TO RECONNECT EXISTING CIRCUITS WHERE REQUIRED THAT MAY BE DISRUPTED DUE TO RENOVATIONS ON THE EXISTING FLOOR.
		4.	PROVIDE NEW BREAKERS WHERE REQUIRED IN EXISTING PANELS TO PICK-UP ADDITIONAL CIRCUITS INDICATED ON THE DRAWINGS.
		5.	ALL EXISTING LUMINAIRES THAT ARE RELOCATED SHALL BE REMOVED, CHECKED, SERVICED, CLEANED, AND RELAMPED PRIOR TO RE-INSTALLATION. ALL UNITS NOT REUSED SHALL BE TURNED OVER TO THE OWNER, COMPLETE WITH LAMPS.
		6.	COORDINATE WITH MECHANICAL DRAWINGS AND SAFELY DISCONNECT AND REMOVE ALL MOTOR/MECHANICAL EQUIPMENT BEING DEMOLISHED. REMOVE UNUSED WIRING/CONNECTION BACK TO SOURCE PANEL. EXTEND WIRING/CONNECTION OF ALL MOTOR/MECHANICAL EQUIPMENT BEING RELOCATED. PROVIDE PROPER JUNCTION BOX AT EACH POINT OF EXTENSION.
		TRANSFORMERS	
		1.	SECONDARY DISTRIBUTION TRANSFORMERS SHALL BE AS MANUFACTURED BY REX OR APPROVED EQUAL. OF THE TYPE AND VOLTAGES AS SPECIFIED BELOW, WITH KVA RATINGS AS SPECIFIED ON THE DRAWINGS.
		1.1.	DRY TYPE: THREE PHASE - TYPE DT, 800/120/208 VAC, 3 PHASE, 60 HZ, INDOOR, AIR COOLED, DRY CORE WITH GEMA 1 ENCLOSURE. INSULATION SHALL BE CLASS H, 150 OC, WITH SOUND RATING OF 55 DB OR LESS. IT SHALL HAVE 4-2 1/2% TAPS, 2 - FCAN AND 2 - FCBN WITH SOLDERLESS CONNECTOR CLAMPS AS REQUIRED AND KVA RATING AS SHOWN ON DRAWINGS.
		2.	PROVIDE VIBRATION ISOLATORS BETWEEN THE TRANSFORMER CORE AND ENCLOSURE AND BETWEEN THE ENCLOSURE AND THE MOUNTING SURFACE OR DEVICE.
		3.	TRANSFORMER CONSTRUCTION SHALL CONFORM TO CSA STANDARDS C9-M1981 AND CSA C22.2 NO. 47 AND CSA C80202.
		4.	SIMILAR TRANSFORMERS SHALL BE OF ONE MANUFACTURER.
		5.	PROVIDE DRIP PROOF SHIELDS FOR ALL TRANSFORMERS LOCATED IN SPRINKLERED AREAS.
		INTEGRATED SYSTEMS TESTING OF FIRE PROTECTION AND LIFE SAFETY SYSTEMS	
		THE OWNER SHALL CARRY AND ENGAGE THE SERVICE OF THE INTEGRATED TESTING COORDINATOR (ITC). THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE THE FOLLOWING:	
		1.	IN CONFORMANCE WITH CANULC-S1001-11, PROVIDE FOR INTEGRATED SYSTEMS TESTING OF THE FOLLOWING LIFE SAFETY AND FIRE PROTECTION SYSTEMS AS DIRECTED BY THE ITC TO CONFIRM THE OPERATION AND SEQUENCE OF SYSTEMS AS DESCRIBED IN THE CONTRACT DOCUMENTS. INCLUDE FOR THE SERVICES OF PERSONNEL QUALIFIED IN THE INSTALLATION, COMMISSIONING, VERIFICATION AND TESTING OF INTEGRATED LIFE SAFETY SYSTEMS (ILS) PROVIDED UNDER THE ELECTRICAL DIVISION OF THE WORK TO PARTICIPATE IN THE TESTING PROCEDURES ASSOCIATED WITH THE FOLLOWING SYSTEMS:
		1.1.	FIRE ALARM SYSTEM.
		1.2.	ELEVATORS
		2.	SERVICES TO INCLUDE:
		1.1.	SUBMISSION AND COMPLETION OF DOCUMENTATION REQUIRED BY ITC CONFIRMING THE PROVIDED SYSTEMS HAVE BEEN INSTALLED, TESTED, VERIFIED, INSPECTED AND COMMISSIONED PER CONTRACT DOCUMENTS AND ARE READY FOR INTEGRATED TESTING.
		1.2.	PARTICIPATION OF QUALIFIED PERSONNEL IN SCHEDULED INTEGRATED TEST PROCEDURES INCLUDING OPERATION OF THE PROVIDED SYSTEMS DURING TESTING PROCEDURES AS DESCRIBED IN INTEGRATED TESTING PLAN AND AS DIRECTED BY ITC.
		1.3.	CORRECTION OF ANY PROVIDED SYSTEM DEFICIENCIES EXPOSED DURING INTEGRATED TESTING.
		1.4.	PROVIDE SUBSEQUENT RE-TESTING AND RE-SUBMISSION OF REQUIRED DOCUMENTATION DESCRIBED HEREIN.



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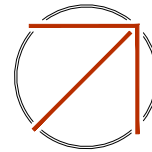
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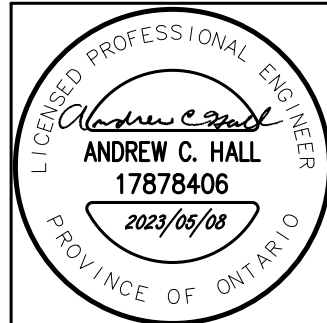


**UPPER**  
**CANADA**  
DISTRICT SCHOOL BOARD

REVISIONS		
NO.	ISSUED FOR	DATE
00	ISSUED FOR PERMIT/ TENDER	23.04.18
01	ISSUED FOR ADDENDUM ME-01	23.05.08

**NORTH**





DESIGN	KM	DRAWN	KM
CHECKED	ACH	REVIEWED	ACH

**PROJECT**

UCDSB LINKLATER PS  
2023 UPGRADES

**ADDRESS**

300 STONE ST. N.  
GANANOQUE, ON

**PROJECT NO.**

CE-5514

**DRAWING TITLE**

SPECIFICATIONS-  
ELECTRICAL

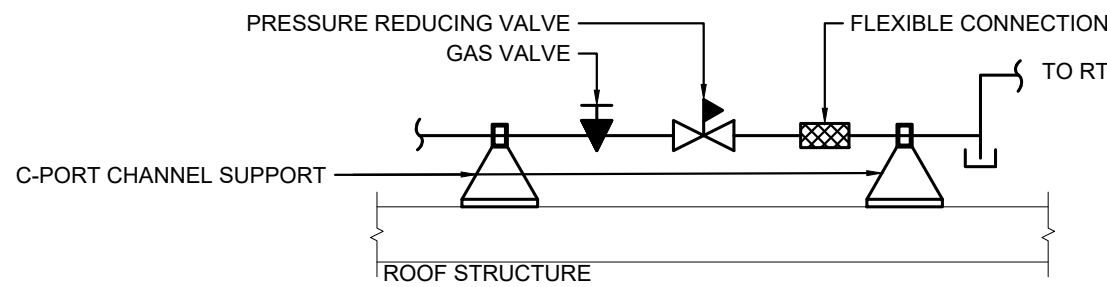
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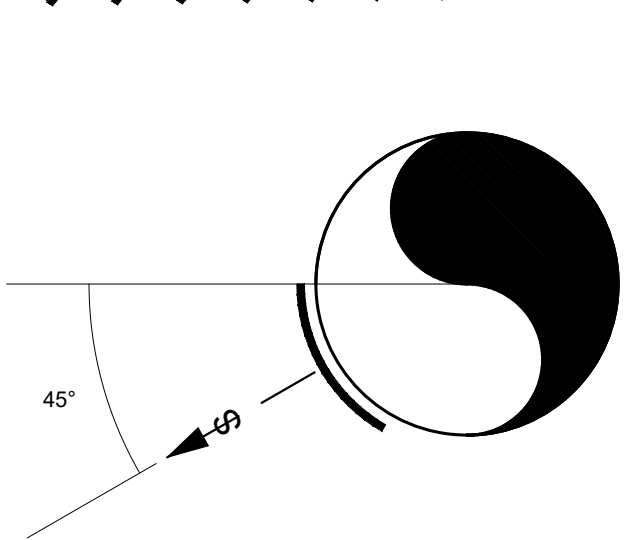


## DRAWING LIST

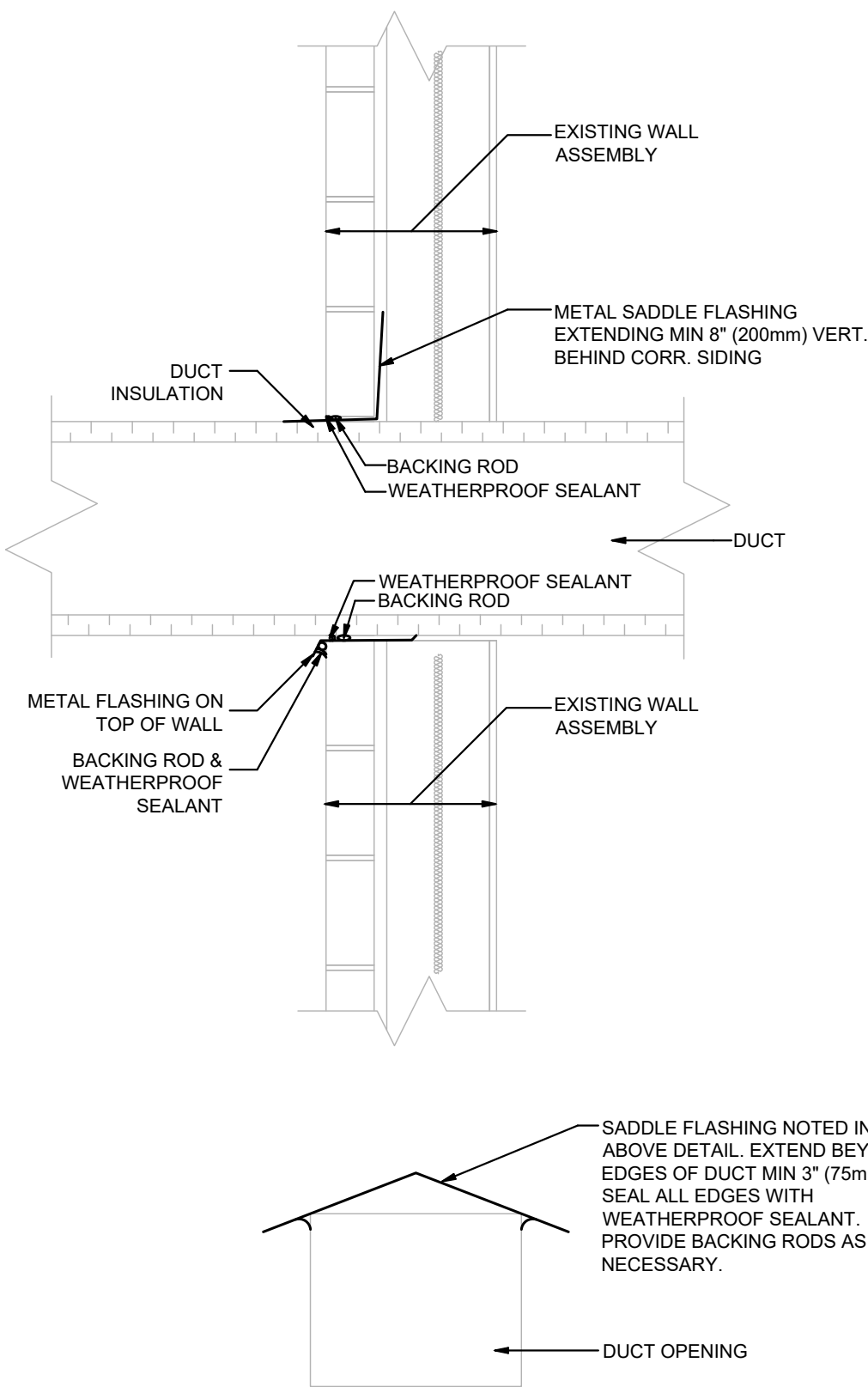
M1	MECHANICAL LEGENDS, NOTES & DETAILS
M2	MECHANICAL SCHEDULES & CONTROL NOTES
M3	GROUND FLOOR PLAN MECHANICAL DEMOLITION
M4	SECOND FLOOR PLAN MECHANICAL DEMOLITION
M5	ROOF PLAN MECHANICAL DEMOLITION
M6	GROUND FLOOR PLAN PIPING
M7	GROUND FLOOR PLAN AIR DISTRIBUTION
M8	SECOND FLOOR PLAN AIR DISTRIBUTION
M9	ROOF PLAN MECHANICAL
M10	MECHANICAL SPECIFICATIONS
M11	MECHANICAL SPECIFICATIONS CONT'D
M12	MECHANICAL SPECIFICATIONS CONT'D



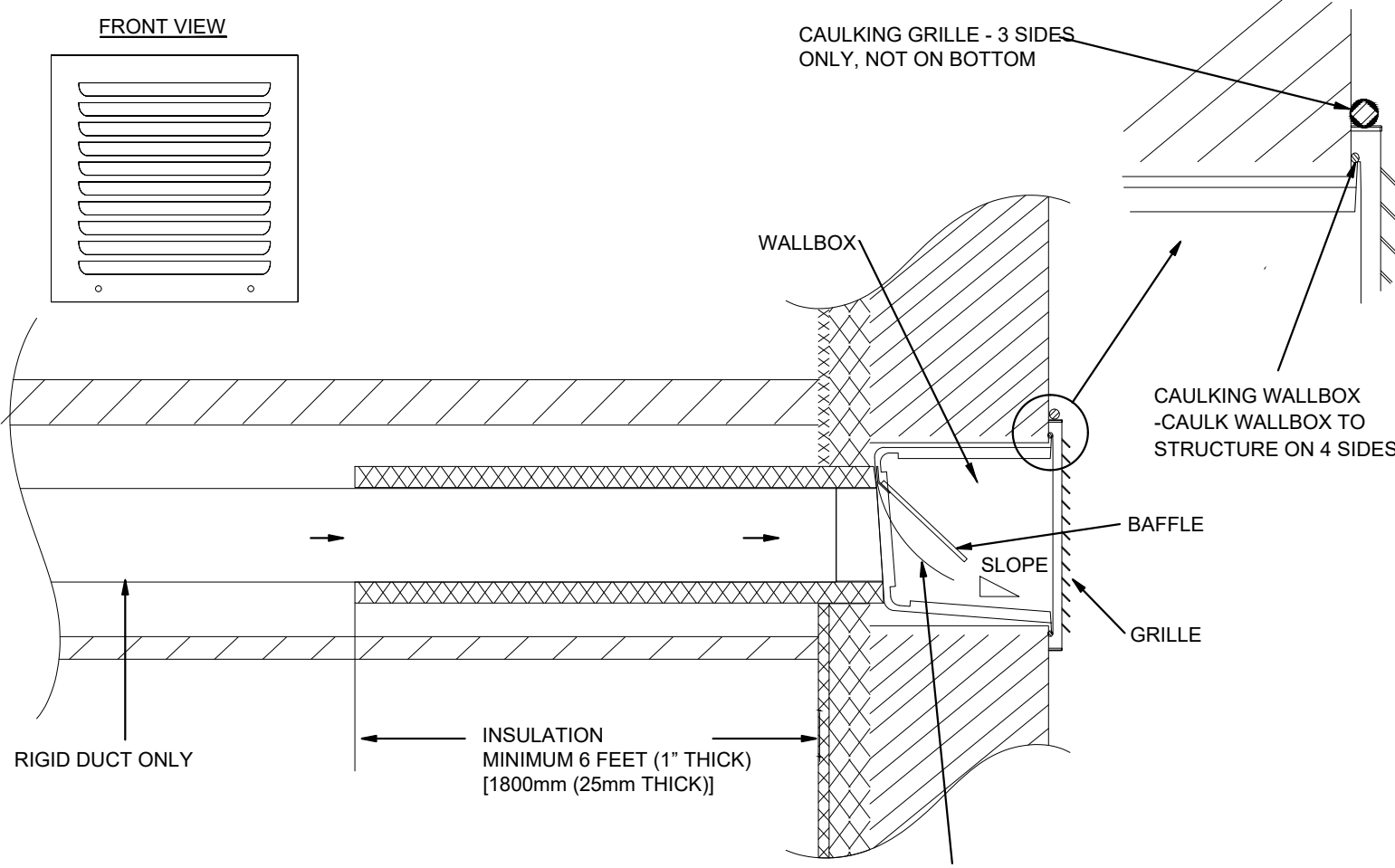
ROOFTOP UNIT GAS CONNECTION DETAIL  
SCALE: N.T.S.



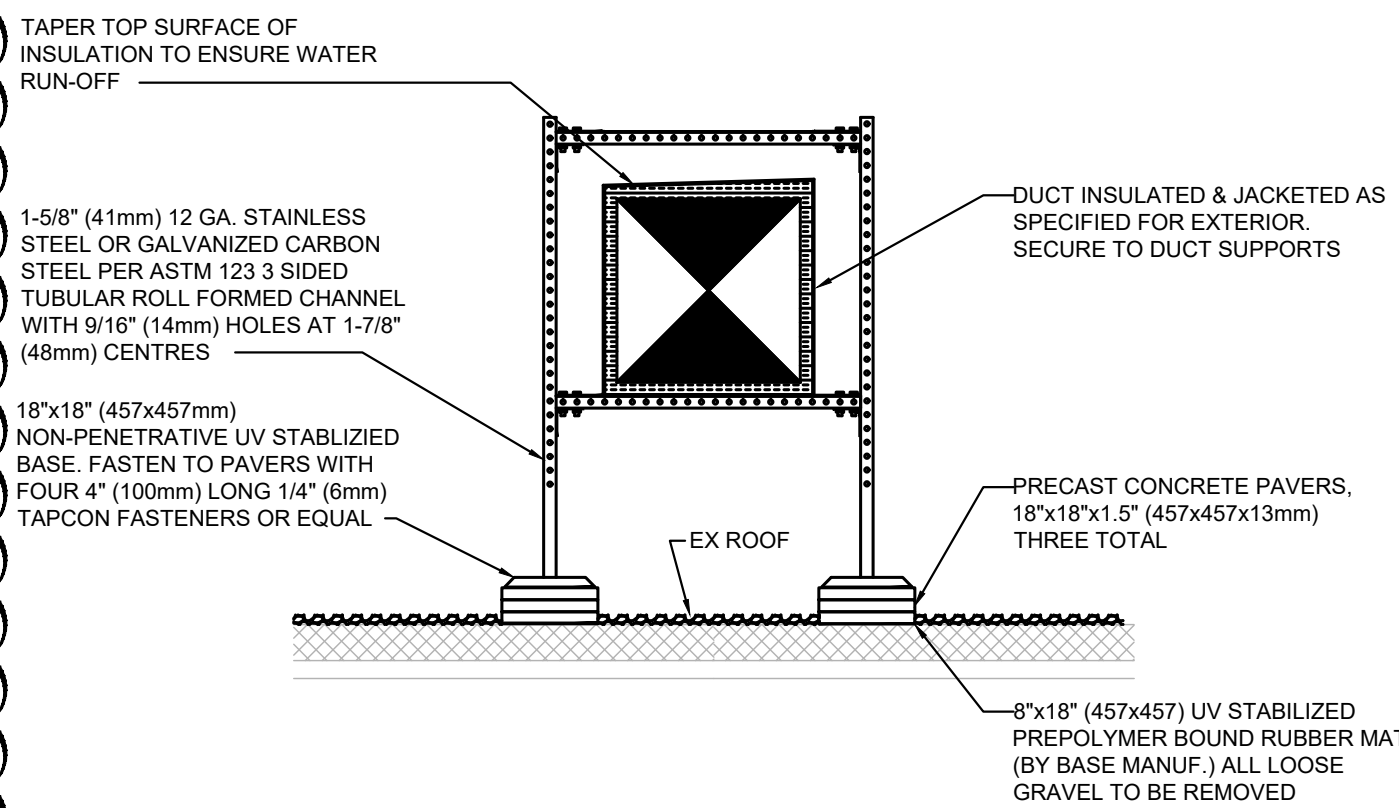
SPIRAL DUCT DIFFUSER INSTALLATION DETAIL  
SCALE: N.T.S.



EXTERIOR DUCT WALL PENETRATION  
SCALE: N.T.S.



WALL BOX DETAIL  
SCALE: N.T.S.



- NOTES:
1. PROVIDE SUPPORTS IN ACCORDANCE WITH SMACNA DUCT MANUAL FOR MINIMUM 3" (76mm) STATIC PRESSURE DUCT CONSTRUCTION. SUPPORT SPACING MAXIMUM 10'-0" (254mm) ON CENTER.
  2. USE STAINLESS STEEL FASTENERS.

ROOF MOUNTED DUCT SUPPORT DETAIL  
SCALE: N.T.S.

### GENERAL NOTES: (APPLICABLE TO ALL DRAWINGS)

- THESE DRAWINGS ARE AN INTEGRAL PART OF THE SPECIFICATIONS WHICH ACCOMPANY THEM.
- ALL MATERIALS AND WORKMANSHIP SHALL BE NEW UNLESS NOTED OTHERWISE, FREE OF DEFECTS, AND COMPLY WITH ALL APPLICABLE STANDARDS.
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE
- INSTALL DUCTWORK / PIPING TIGHT TO UNDERSIDE OF STRUCTURE UNLESS NOTED OTHERWISE.
- DO NOT SCALE DRAWINGS. OBTAIN ALL DIMENSIONS FROM EXISTING ARCHITECTURAL PLANS, SITE INSPECTIONS, AND MANUFACTURER'S SHOP DRAWINGS.
- ALL ROOF FLASHING FOR CURBS & PENETRATIONS TO COMPLY WITH ROOF WARRANTOR'S REQUIREMENTS.
- ALL NECESSARY CUTTING / PATCHING FOR MECHANICAL WORK SHALL BE PROVIDED BY APPROPRIATE TRADE(S) AT CONTRACTOR'S EXPENSE UNLESS NOTED OTHERWISE.
- MAKE GOOD ALL BUILDING COMPONENTS DAMAGED BY WORK OF THIS TRADE TO THE CONSULTANT'S SATISFACTION.
- PROVIDE ALL SLEEVES, INSERTS AND HANGERS REQUIRED FOR THE WORK. TREAT ALL SLEEVES OR HOLES PIERCING ACOUSTICAL SEPARATIONS FOR INSTALLATIONS OF THIS DIVISION TO MAINTAIN ACOUSTICAL RATING. ALL GAPS SHALL BE PACKED WITH ACOUSTICAL INSULATION AND SEALED AT BOTH ENDS WITH ACOUSTICAL CAULKING. PATCH ALL OPENINGS AROUND INSTALLATIONS OF THIS DIVISION PIERCING FIRE OR SMOKE SEPARATIONS WITH AN APPROVED WATERTIGHT SMOKE AND FIRE STOP SEALANT.
- INSTALL ALL EQUIPMENT & ASSOCIATED DUCTWORK, PIPING, APPURTENANCES TO PROVIDE MAINTENANCE ACCESS. ALLOW FOR ALL ACCESS DOORS REQUIRED FOR EQUIPMENT INSTALLATIONS & SERVICE. ENSURE PROPER ACCESS DOOR SIZE, TYPE AND FIRE RATING.
- COORDINATE ALL WORK WITH OTHER TRADES AND SUPPLIERS/MANUFACTURERS TO AVOID INTERFERENCES AND CONFLICTS BETWEEN SERVICES. PLAN WORK WELL IN ADVANCE TO ELIMINATE INSTALLATION AND COORDINATE DIFFICULTIES. COOPERATE WITH OTHER TRADES ON SITE TO RESOLVE INTERFERENCES TO SATISFACTORILY COMPLETE THE PROJECT.
- ALL COLD CONDENSATE DRAINAGE FROM ROOFTOP EQUIPMENT SHALL BE TRAPPED PER MANUFACTURER'S RECOMMENDATIONS & SPILL TO PRECAST 600mmx250mm (24"x10") CONCRETE SPLASH BLOCK.
- DEBRIS SHALL BE KEPT TO A MINIMUM. ON COMPLETION OF CONSTRUCTION AND PRIOR TO THE FINAL INSPECTION AND ACCEPTANCE BY THE OWNER, SITE SHALL BE CLEANED AND ALL SCRAP MATERIALS RESULTING FROM THE WORK SHALL BE REMOVED.
- PRIOR TO THE FINAL INSPECTION, ALL EQUIPMENT SHALL BE CLEANED. ALL CONSTRUCTION DUST AND DIRT SHALL BE REMOVED FROM INSTALLED EQUIPMENT AT THE END OF THE JOB.
- EXISTING INSTALLATIONS SHOWN FOR GENERAL REFERENCE ONLY. ATTEND SITE TO ASSESS WORK PRIOR TO BID SUBMISSION. INCLUDE ALL COSTS TO MODIFY AND / OR EXTEND NEW WORK AS REQUIRED TO MEET DESIGN INTENT. VERIFY ALL EXISTING DUCT / PIPE SIZES & CLEARANCES ON SITE.
- ALL EXISTING MECHANICAL EQUIPMENT TO REMAIN UNLESS NOTED OTHERWISE
- SCHEDULE AND PHASE WORK TO REDUCE INTERFERENCE AND DOWNTIME OF EXISTING SYSTEMS. NOTIFY OWNER'S REPRESENTATIVE OF ALL DOWNTIME PRIOR TO PROCEEDING WITH WORK.
- REMOVE EXISTING CEILING TILES AS REQUIRED TO PERFORM WORK. SAFELY STORE TILES FOR REINSTALLATION AFTER WORK & INSPECTIONS ARE COMPLETE. EXISTING DAMAGED TILES MUST BE IDENTIFIED & REPORTED TO OWNER'S REPRESENTATIVE BEFORE REMOVAL. REPLACE ANY DAMAGED TILES TO MATCH EXISTING.
- WHERE REPLACEMENT EQUIPMENT EXPOSES PREVIOUSLY UNFINISHED SURFACES, FINISH TO MATCH ADJACENT ASSEMBLIES.

### GENERAL DEMOLITION NOTES: (APPLICABLE TO ALL DRAWINGS)

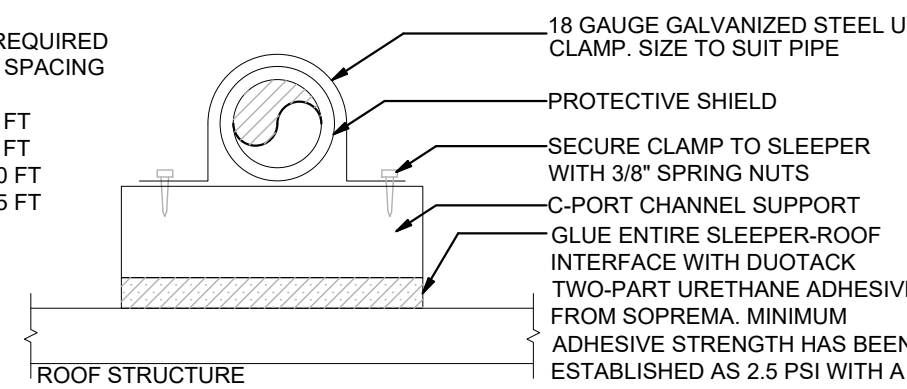
- ALL EXISTING EQUIPMENT TO REMAIN UNLESS IDENTIFIED OTHERWISE ON THE DRAWINGS, GENERAL NOTES OR SPECIFICATIONS.
- EXTENTS OF DEMOLITION SHOWN ARE APPROXIMATE AND THIS TRADE IS RESPONSIBLE FOR ALL DEMOLITION REQUIRED TO MEET DESIGN INTENT.
- REMOVE ALL UNUSED, ABANDONED OR REDUNDANT PIPING, HANGERS, & ACCESSORIES BACK TO SOURCE & CAP.
- REMOVE ALL UNUSED, ABANDONED OR REDUNDANT DUCTWORK, HANGERS, & ACCESSORIES BACK TO SOURCE & CAP.
- COORDINATE WITH FACILITY MAINTENANCE DEPARTMENT FOR DISPOSAL OF REMOVED DEVICES. DISPOSE OF ALL UNWANTED DEVICES AS REQUIRED AS PER FACILITY STANDARDS.

PIPING LEGEND	
ITEM	DESCRIPTION
—	NEW ITEM
---	EXISTING ITEM TO REMAIN
-x-x-	EXISTING ITEM TO BE REMOVED
—G—	NATURAL GAS
—HWS—	HOT WATER SUPPLY
—HWR—	HOT WATER RETURN
—RHW—	REVERSE HOT WATER RETURN
—G—	GATE VALVE
—B—	BALL VALVE
—B—	BUTTERFLY VALVE
—G—	GLOBE VALVE
—B—	THERMOSTATIC BALANCING VALVE
—B—	BALANCING VALVE
—B—	? = FLOW RATE
—B—	PRESSURE INDEPENDENT CONTROL VALVE
—B—	UNION
—B—	CIRCUIT SETTER
—B—	PLUG VALVE
—B—	GAS VALVE
—B—	STRAINER
—B—	CHECK VALVE
—B—	TRIPLE DUTY VALVE
—B—	2 WAY CONTROL VALVE
—B—	3 WAY CONTROL VALVE
—B—	PRESSURE RELIEF VALVE
—B—	PRESSURE REDUCING VALVE
—B—	BACKFLOW PREVENTER
—B—	DOUBLE CHECK VALVE ASSEMBLY
—B—	REDUCED PRESSURE ASSEMBLY
—B—	PUMP
—B—	FLEXIBLE CONNECTION
—B—	REDUCER/INCREASER
—B—	ELBOW TURNED UP
—B—	ELBOW TURNED DOWN
—B—	PIPE CAP
—B—	PIPE SINGLE LINE CUTOFF
—B—	PRESSURE GAUGE
—B—	THERMOMETER
—B—	SENSOR WELL (T-TEMPERATURE)
—B—	SENSOR WELL (P-PRESSURE)
—B—	FLOW SWITCH
—B—	LOW WATER CUT OFF
—B—	ANCHOR
—B—	GUIDE
—B—	FLOOR CLEAN OUT
—B—	WALL CLEAN OUT
—B—	ROOF DRAIN
—B—	HOSE BIB
—B—	FROST PROOF WALL HYDRANT
—B—	FLOOR DRAIN; FFD: FUNNEL FLOOR DRAIN; HD: HUB DRAIN
—B—	FIRE EXTINGUISHER
—B—	NEW CONNECTION TO EXISTING
THIS IS A STANDARD LEGEND. ALL SYMBOLS MAY NOT NECESSARILY BE USED ON DRAWINGS.	

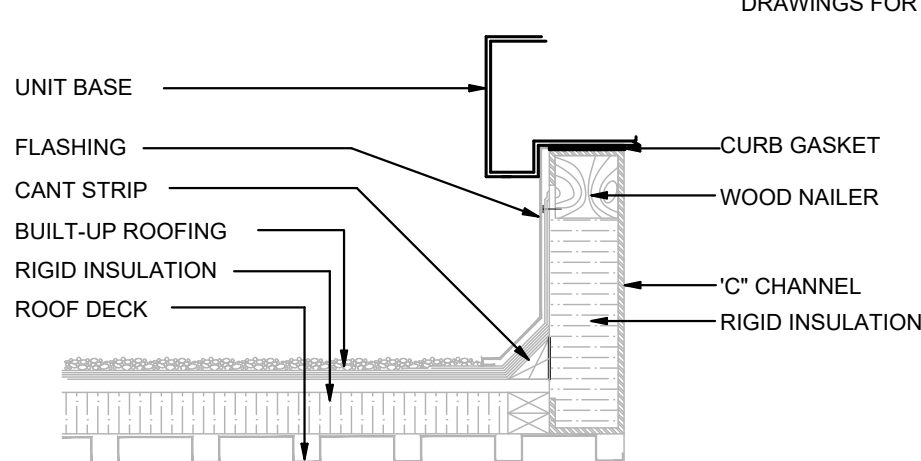
DUCTWORK LEGEND	
SYMBOL	DESCRIPTION
—	NEW ITEM
---	EXISTING ITEM TO REMAIN
-x-x-	EXISTING ITEM TO BE REMOVED
REL	EXISTING ITEM TO BE RELOCATED
ER	EXISTING ITEM IN RELOCATED POSITION
EX	EXISTING ITEM TO REMAIN
OED	OPEN ENDED DUCT
—	DUCTWORK SHOWN DOUBLE LINE
—FD—	DYNAMIC FIRE DAMPER
—MD—	MOTORIZED DAMPER
—	BALANCING DAMPER
—BDD—	BACKDRAFT DAMPER
—OC—	OCCUPANCY SENSOR
—CO2—	CO2 SENSOR (-D DENOTES DUCT MOUNTED)
—R—	REVERSE ACTING THERMOSTAT
—T—	THERMOSTAT/TEMPERATURE SENSOR
—TC—	TIMECLOCK
—UIC—	3/4" UNDERCUT
—	FLEXIBLE DUCT CONNECTION
—	SUPPLY AIR GRILLE
—	RETURN AIR GRILLE
—	SIDEWALL GRILLE C/W BALANCE DAMPER TYPICAL AT ALL SIDEWALL GRILLES
—	INTERNALLY INSULATED DUCT
—	EXTERNALLY INSULATED DUCT
—	DRAWING NOTE TAG
—	DIFFUSER TAG
—	DIFFUSER/GRILLE SIZE (AND NECK SIZE WHERE APPLICABLE)
—	AIR VOLUME (CFM OR l/s AS INDICATED)
—	DIFFUSER/GRILLE DESIGNATION (REFER TO SCHEDULE FOR TYPE)
—	EQUIPMENT TAG
—	EQUIPMENT TYPE
—	EQUIPMENT NUMBER (REFER TO SCHEDULES FOR INFO)
—	NEW DIFFUSER NOTES
—	SQUARE DIFFUSER (ROUND IF SHOWN)
—	DUCT COLLAR CONNECTION SIZE AS PER GRILLE AND DIFFUSER SCHEDULE
—	FLEXIBLE DUCT - MAX. 5'-0" (1.5M)
—	DIFFUSER SUPPLY DUCT - TO BE THE SAME SIZE AS DIFFUSER COLLAR
—	BALANCE DAMPER - TYPICAL AT ALL DIFFUSER SUPPLIES
—	SUPPLY DUCT
THIS IS A STANDARD LEGEND. ALL SYMBOLS MAY NOT NECESSARILY BE USED ON DRAWINGS.	

### NOTES:

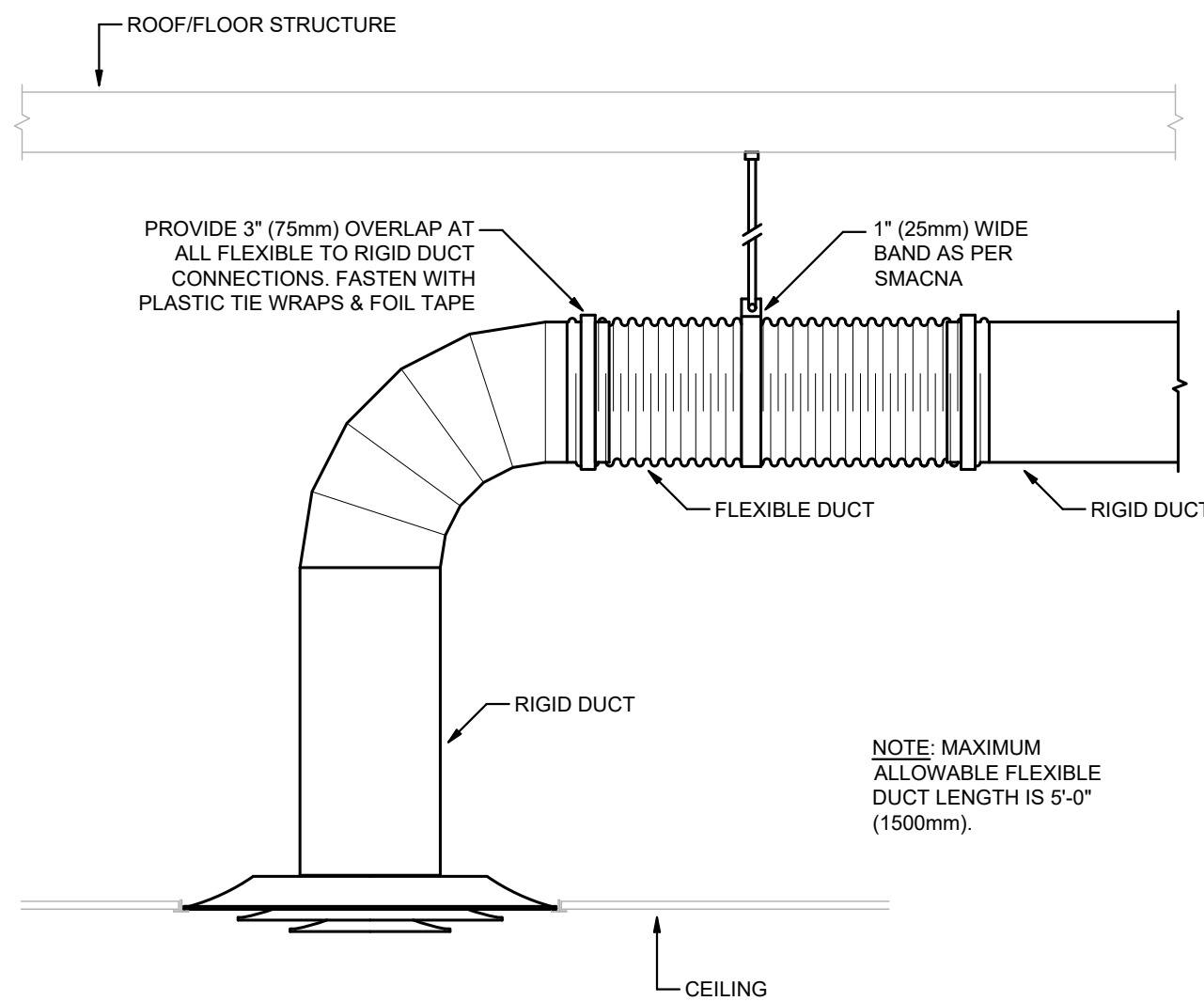
1. PROVIDE EXTENSION KITS AS REQUIRED FOR ELEVATED PIPING
2. PROVIDE ACCOMMODATION FOR PIPE MOVEMENT DUE TO EXPANSION/CONTRACTION AS REQUIRED
3. MAXIMUM ROOF PIPE SUPPORT SPACING IS TO BE AS FOLLOWS:
  - 1/2" (13mm) OR LESS: 6 FT
  - 3/4"-1" (19mm - 25mm): 8 FT
  - 1-1/4" - 2-1/2" (32mm - 63mm): 10 FT
  - 3"-4" (75mm - 100mm): 15 FT



NATURAL GAS PIPE SUPPORT ON ROOF DETAIL  
SCALE: N.T.S.



INSULATED ROOF CURB DETAIL  
SCALE: N.T.S.



CEILING DIFFUSER INSTALLATION DETAIL  
SCALE: N.T.S.

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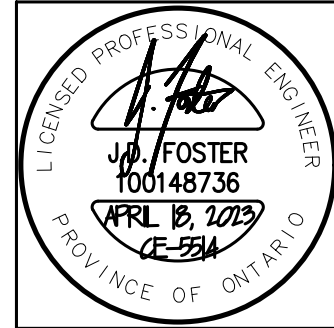
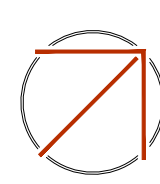
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00	ISSUED FOR PERMIT/ TENDER	23.04.18
01	RE-ISSUED FOR ADDENDUM	23.05.08

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DESIGN	NH	DRAWN	NH
CHECKED	JDF	REVIEWED	JDF

### PROJECT

UCDSB LINKLATER PS  
2023 UPGRADES

### ADDRESS

300 STONE ST. N.  
GANANOQUE, ON

### PROJECT NO.

CE-5514

### DRAWING TITLE

MECHANICAL LEGENDS, NOTES  
& DETAILS

### DRAWING NUMBER

M1 OF 13



LOUVER SCHEDULE							
DWG REF	SERVING.	MANUF.	MODEL	SIZE [WxH in.] (WxH mm)	AIR FLOW [CFM] (L/s)	PRESS. DROP [in. w.c.] (Pa)	REMARKS
LVR-101	EF-101	GREENHECK	ESD-435	18 x 14 (457 x 356)	360 (170)	0.10 (24.88)	EXTRUDED ALUMINUM STATIONARY DRAINABLE LOUVER, 4" (102MM) DEPTH, FLANGE FRAME
LVR-102	EF-102	GREENHECK	ESD-435	12 x 12 (305 x 305)	165 (78)	0.10 (24.88)	EXTRUDED ALUMINUM STATIONARY DRAINABLE LOUVER, 4" (102MM) DEPTH, FLANGE FRAME
LVR-103, LVR-104	EF-103, EF-104	GREENHECK	ESD-435	12 x 12 (305 x 305)	200 (94)	0.10 (24.88)	EXTRUDED ALUMINUM STATIONARY DRAINABLE LOUVER, 4" (102MM) DEPTH, FLANGE FRAME
WB-101	EF-105	REVERSOMATIC	SWBL-8	8 x 8 (203 x 203)	55 (26)	0.10 (24.88)	EXTRUDED ALUMINUM STATIONARY DRAINABLE LOUVER, 4" (102MM) DEPTH, FLANGE FRAME
ALTERNATE MANUFACTURERS: E.H. PRICE, GREENHECK, REVERSOMATIC, VENTEX							

PACKAGED ROOFTOP UNIT SCHEDULE											
CONTROL PACKAGE 1) 18" HIGH 2) STEEL HEAT EXCHANGER		10) AVERAGING THERMOSTAT 11) PROGRAMMABLE THERMOSTAT 12) DISCONNECT SWITCH		13) HOT GAS REHEAT FOR DE-HUMIDIFICATION 14) HOT GAS BYPASS FOR CAPACITY REDUCTION 15) DIGITAL SCROLL COMPRESSOR		16) INTEGRAL BACNET CONTROLLER		01			
HEATING OUTPUT [MBH] [kW]	EXTERNAL STATIC PRESSURE [in.wg] [PA]	TOTAL AIR FLOW [CFM] [L/S]	OUTDOOR AIR FLOW [CFM] [L/S]	MOTOR [HP]	SEER	ELECTRICAL			ACCESSORIES	WEIGHT [LBS] [KG]	REMARKS
						VOLTAGE	MCA [A]	MOP [A]			
64.8 (19.0)	0.75 (187)	1400 (661)	220 (104)	0.75	14	575V / 3Ø	8.0	15	1, 2, 3, 4, 8, 12, 13, 16	747 (338.8)	15A CONVENIENCE OUTLET
243 (71.2)	0.60 (149)	4000 (1888)	1500 (708)	5	12.6	575V / 3Ø	24.9	30	1, 2, 3, 4, 8, 9, 12, 13, 16	3740 (1696.4)	C/W ENERGY RECOVERY WHEEL, 15A CONVENIENCE OUTLET & CUSTOM HORIZONTAL DISCHARGE PLENUM ROOF CURB
						01			01		

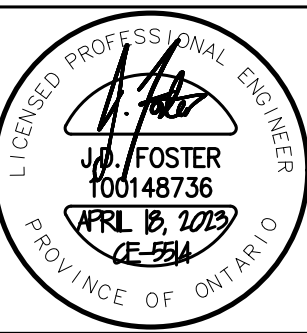
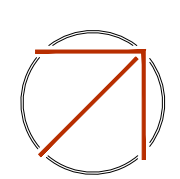
DIRECT OUTDOOR AIR UNIT SCHEDULE																					
<div>ACCESSORIES: 1) MERV 13 FILTERS 2) SPARE SET OF FILTERS 3) POWER EXHAUST</div> <div>4) ECONOMIZER SECTION 5) GRAVITY RELIEF DAMPERS 6) COMPARATIVE ENTHALPY CONTROLS</div> <div>7) VVT CONTROL PACKAGE 8) ROOF CURB, 18" HIGH 9) STAINLESS STEEL HEAT EXCHANGER</div> <div>10) AVERAGING THERMOSTAT 11) PROGRAMMABLE THERMOSTAT 12) DISCONNECT SWITCH</div> <div>13) HOT GAS REHEAT FOR DE-HUMIDIFICATION 14) HOT GAS BYPASS FOR CAPACITY REDUCTION 15) DIGITAL SCROLL COMPRESSOR</div> <div>16) INTEGRAL BACNET CONTROLLER</div> <div>01</div>																					
DWG REF	MANUF.	MODEL	SUPPLY FAN				EXHAUST FAN				TOTAL COOLING [MBH] [kW]	SENSIBLE COOLING [MBH] [kW]	HEATING INPUT [MBH] [kW]	HEATING OUTPUT [MBH] [kW]	TEMP. RISE [°F] [°C]	ELECTRICAL			WEIGHT [LBS] [KG]	ACCESSORIES	REMARKS
			AIR FLOW [CFM] [L/S]	ESP [in. wg] [PA]	FAN R.P.M.	MOTOR HP	AIR FLOW [CFM] [L/S]	ESP [in. wg] [PA]	FAN R.P.M.	MOTOR HP						VOLTAGE	MCA [A]	MOPC [A]			
RTU-101	TRANE	MIXED AIR E010	3875 (1829)	0.5 (124)	1618	3	3254 (1536)	0.5 (124)	1460	2	120.3 (35.3)	90.3 (26.5)	300 (87.9)	243 (71.2)	72 (22.2)	575V / 3Ø	25.5	30	3806 (1726.4)	2, 3, 4, 6, 8, 9, 12, 13, 16	C/W ENERGY RECOVERY WHEEL, C/W 100 AMP NON FUSED DISCONNECT & MAINTENANCE RECEPTACLE
RTU-103	TRANE	HORIZON OABD	2375 (1121)	0.5 (124)	2360	1.5	2038 (962)	0.5 (124)	2141	1.5	44.5 (13.0)	40 (11.7)	300 (87.9)	243 (71.2)	20 (-6.7)	208V / 3Ø	33.4	45	2004 (909.0)	2, 3, 4, 6, 8, 9, 12, 13, 16	C/W ENERGY RECOVERY WHEEL, C/W 100 AMP NON FUSED DISCONNECT & MAINTENANCE RECEPTACLE
RTU-104	TRANE	MIXED AIR E010	3475 (1640)	0.5 (124)	2917	5	2919 (1378)	0.5 (124)	2861	3	76.2 (22.3)	63.2 (18.5)	300 (87.9)	243 (71.2)	23 (-5.0)	575V / 3Ø	25.5	30	2074 (940.8)	2, 3, 4, 6, 8, 9, 12, 13, 16	C/W ENERGY RECOVERY WHEEL, C/W 100 AMP NON FUSED DISCONNECT & MAINTENANCE RECEPTACLE
ALTERNATE MANUFACTURERS: CARRIER, ENGINEERED AIR, LENNOX, YORK (JCI)																				01	



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**PROJECT**

UCDSB LINKLATER PS  
2023 UPGRADES

**ADDRESS**

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**PROJECT NO.**

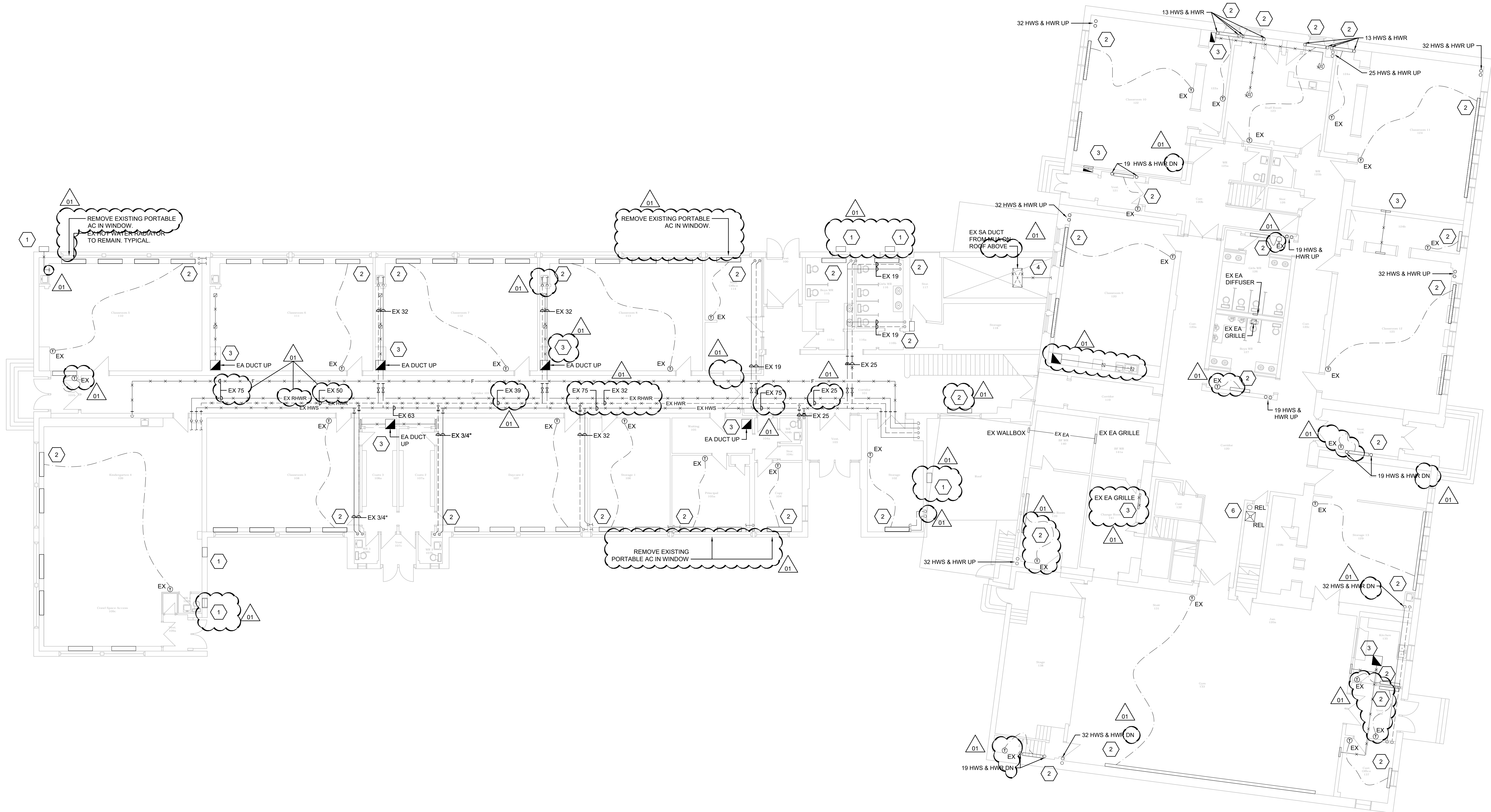
CE-5514

**DRAWING TITLE**

GROUND FLOOR PLAN  
MECHANICAL DEMOLITION

**DRAWING NUMBER**

M3 OF 13



**GROUND FLOOR PLAN - DEMOLITION**

SCALE: 1:125

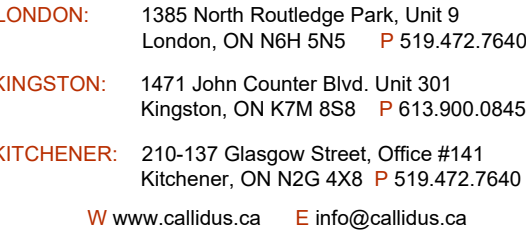
**GENERAL DRAWING NOTES:**

- WHERE EXISTING SUPPLY AND EXHAUST GRILLES ARE REMOVED, PROVIDE PATCH AS REQUIRED. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS.

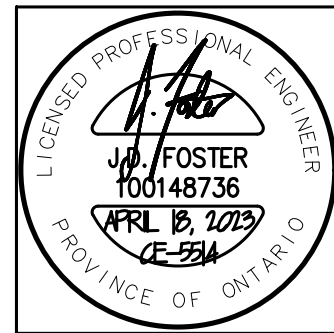
**DRAWING NOTES (INDICATED WITH HEXAGONS):**

- REMOVE EXISTING EXHAUST FAN AND ALL ASSOCIATED DUCTWORK, HANGERS, AND APPURTENANCES.
- REMOVE EXISTING SHUTOFF AND CONTROL VALVE. PREPARE PIPING FOR INSTALLATION OF NEW VALVES.
- REMOVE ALL EXISTING DUCTWORK UP TO ROOF AND ALL ASSOCIATED EXISTING GRILLES, REGISTERS, AND DIFFUSERS.
- REMOVE ALL EXISTING DUCTWORK IN CRAWL SPACE BELOW GROUND FLOOR. CAP AND ABANDON EXISTING DUCTWORK WHERE IT LEAVES THE CRAWL SPACE. NOT ALL DUCTWORK SHOWN.
- REMOVE EXISTING SUPPLY AIR GRILLES AND EXPOSED DUCTWORK. CAP EXISTING DUCTWORK BEHIND WALLS TO ALLOW FOR PATCHING (BY OTHERS).
- REMOVE EXISTING MOP SINK, EYE WASH STATION AND ASSOCIATED PIPING, HANGERS, AND APPURTENANCES BELOW FLOOR. PREPARE PIPING FOR CONNECTION TO RELOCATED PLUMBING FIXTURES. POTABLE HOT AND COLD WATER PIPING LOCATED IN CRAWLSPACE BELOW.





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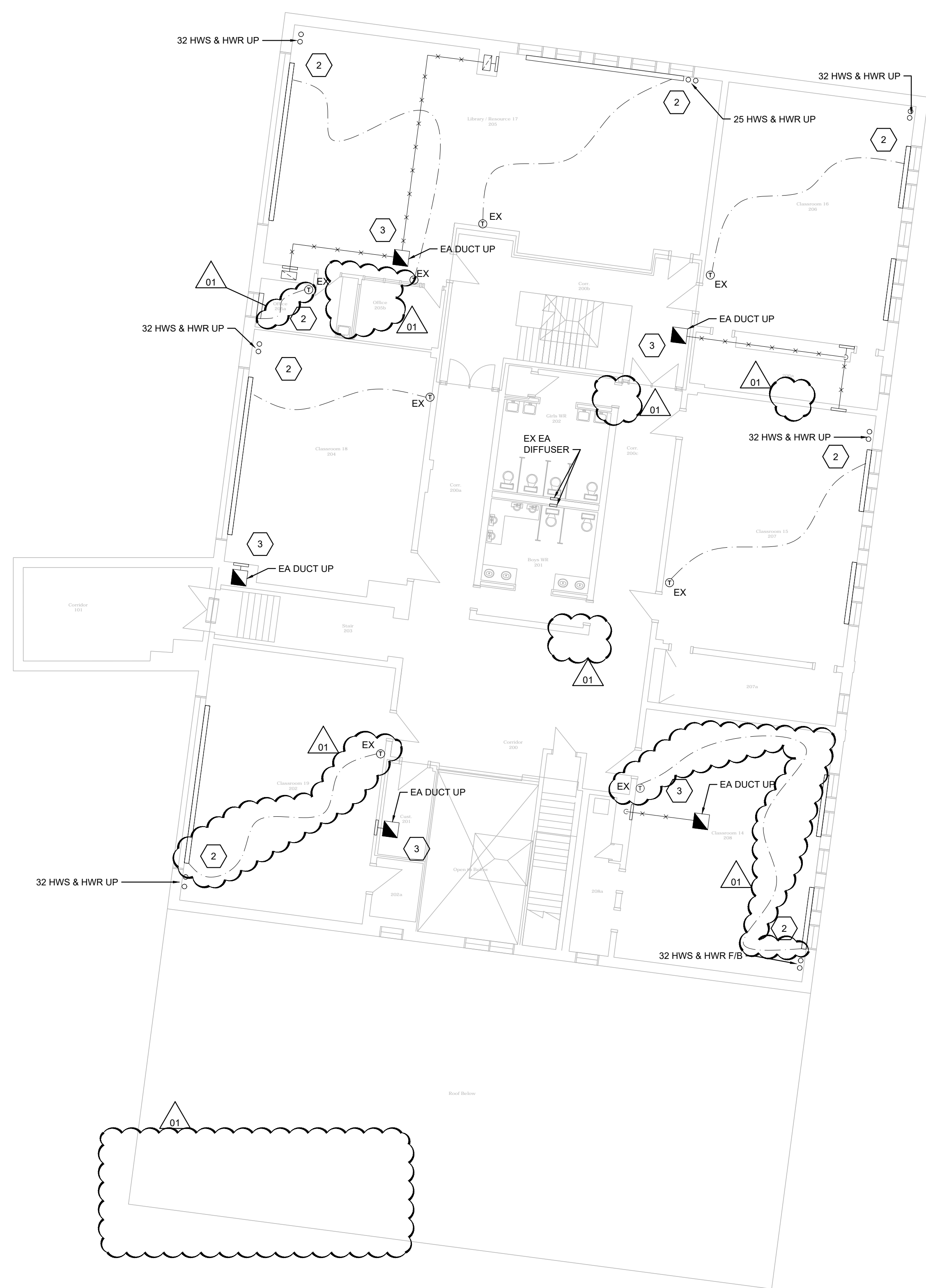
## UCDSB LINKLATER PS 2023 UPGRADES

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## SECOND FLOOR PLAN MECHANICAL DEMOLITION

M4 OF 13



## SECOND FLOOR PLAN - DEMOLITION

SCALE: 1:125

GENERAL DRAWING NOTES:

- WHERE EXISTING SUPPLY AND EXHAUST GRILLES ARE REMOVED, PROVIDE PATCH AS REQUIRED. REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS.

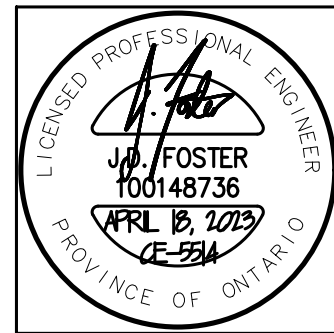
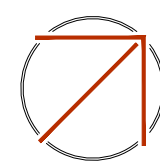
DRAWING NOTES (INDICATED WITH HEXAGONS)

1. NOT USED.
2. REMOVE EXISTING SHUTOFF AND CONTROL VALVE. PREPARE PIPING FOR INSTALLATION OF NEW VALVE.
3. REMOVE ALL EXISTING DUCTWORK UP TO ROOF AND ALL ASSOCIATED EXISTING GRILLES, REGISTERS, AND DIFFUSERS.

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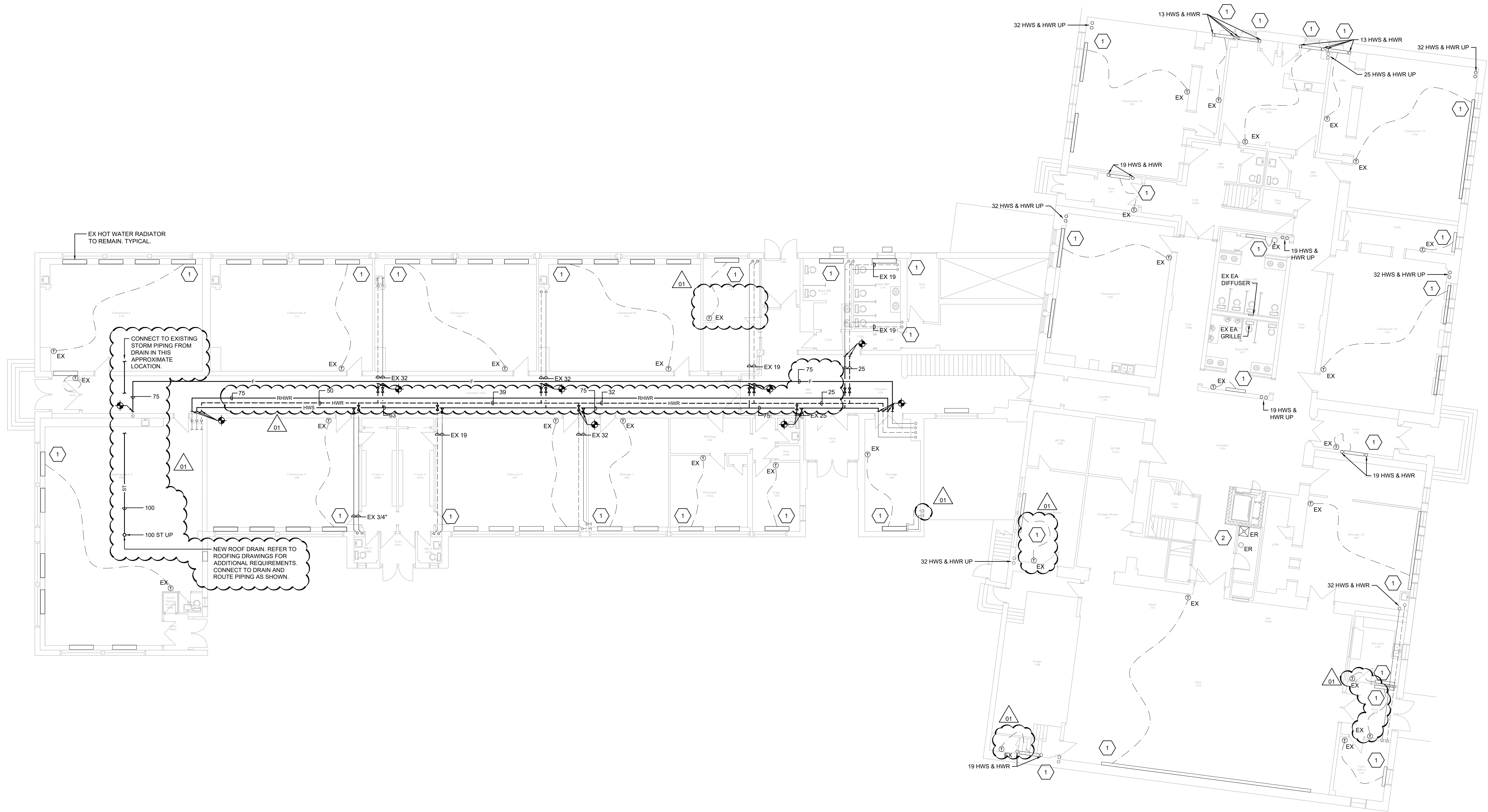
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DRAWING TITLE

GROUND FLOOR PLAN  
PIPING

DRAWING NUMBER

M6 OF 13



GROUND FLOOR PLAN - PIPING

SCALE: 1:125

DRAWING NOTES (INDICATED WITH HEXAGONS):

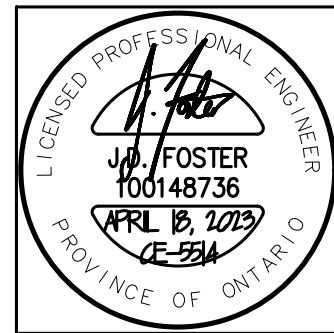
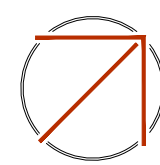
1. PROVIDE NEW CONTROL VALVE AND ISOLATION VALVE. SIZE TO MATCH EXISTING.
2. CONNECT TO EXISTING PIPING AND EXTEND AND CONNECT TO RELOCATED MOP SINK AND EYE WASH.



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UCDSB LINKLATER PS  
2023 UPGRADES

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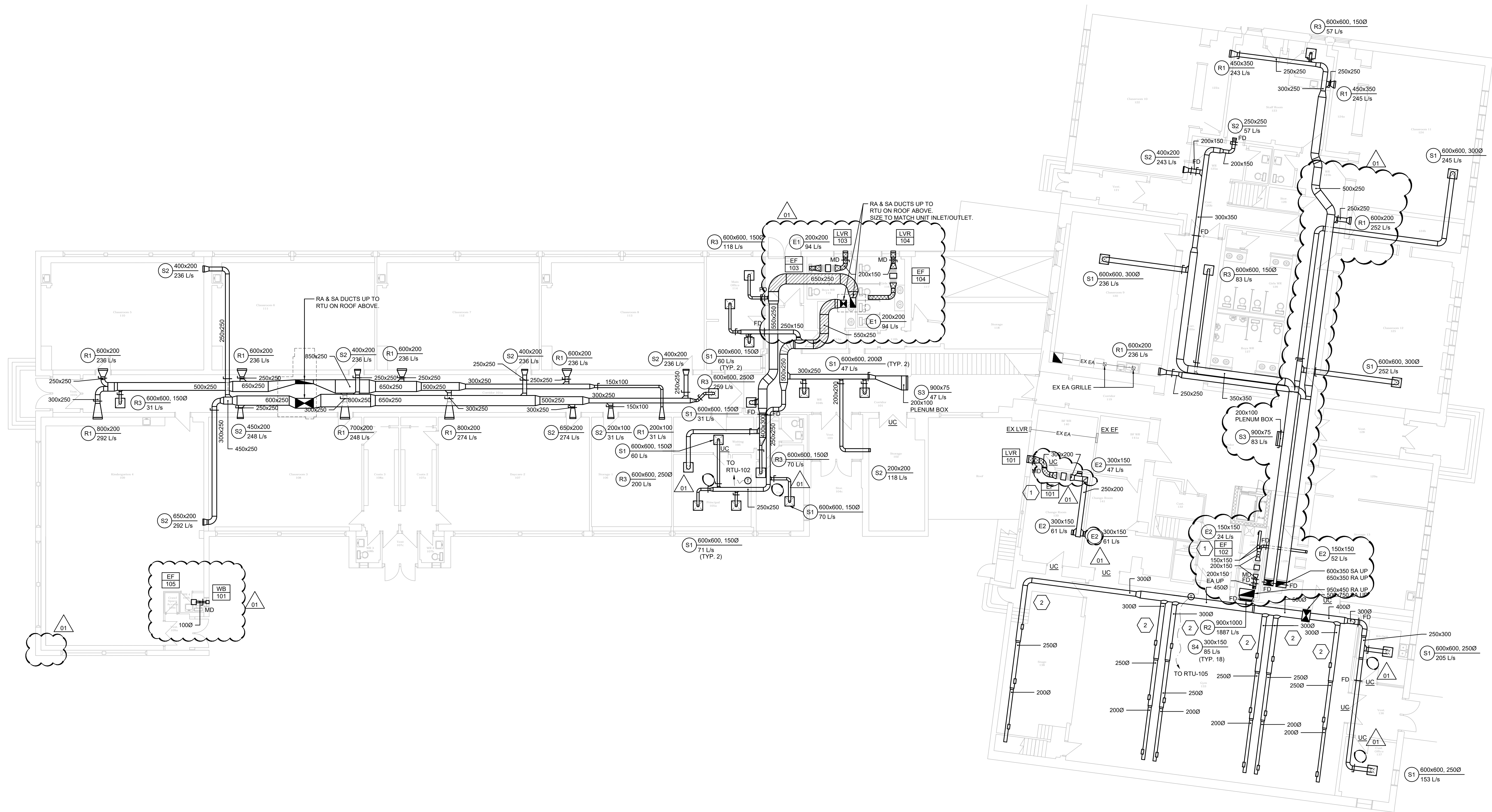
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DRAWING TITLE

GROUND FLOOR PLAN  
AIR DISTRIBUTION

DRAWING NUMBER

M7 OF 13



GROUND FLOOR PLAN - AIR DISTRIBUTION

SCALE: 1:125

GENERAL DRAWING NOTES:

- EXTERNALLY INSULATE ALL CONCEALED DUCTWORK.
- INTERNALLY INSULATE FIRST 3m OF SA & RA DUCTWORK FROM RTU.

DRAWING NOTES (INDICATED WITH HEXAGONS):

- TRANSITION TO UNIT CONNECTION SIZE & ATTACH WITH FLEXIBLE CONNECTOR.
- DEGREASE & PRIME EXPOSED SPIRAL DUCT - FINAL FINISH BY GC.





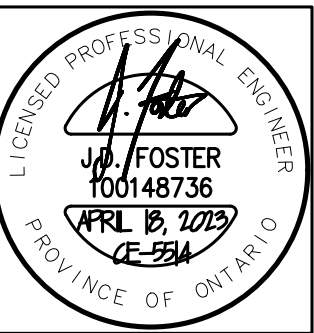
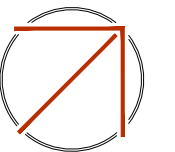


## KEYPLAN



## REVISIONS

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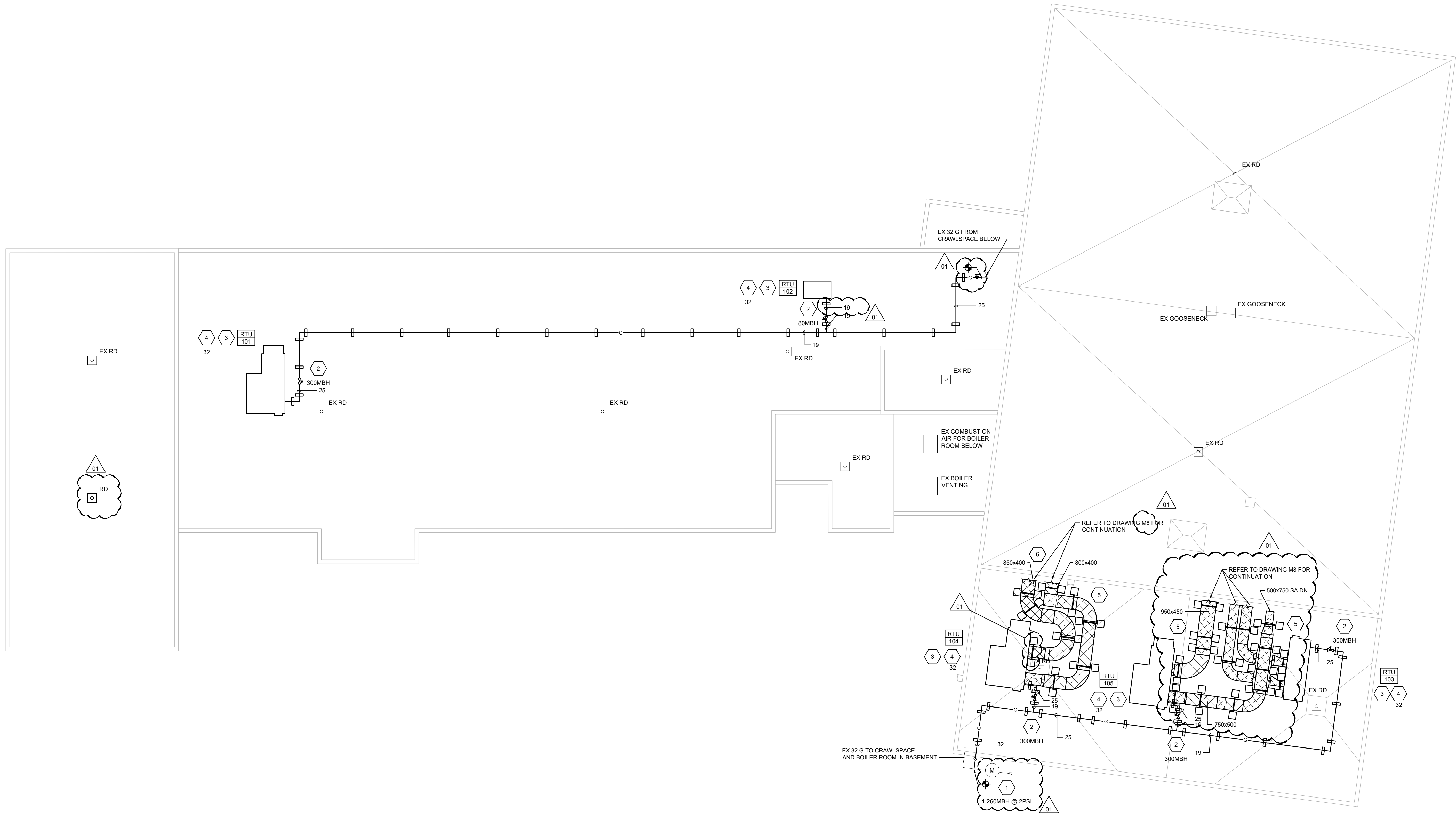
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## DRAWING TITLE

ROOF PLAN  
MECHANICAL

## DRAWING NUMBER

M9 OF 13



## ROOF PLAN - MECHANICAL

SCALE: 1:125

DRAWING NOTES (INDICATED WITH HEXAGONS):

1. COORDINATE UPGRADE OF METER & REGULATOR BY NATURAL GAS UTILITY AS SPECIFIED FOR NOTED DEMAND & PRESSURE.
2. PROVIDE PRESSURE REDUCING VALVE. INLET PRESSURE: 2PSI; OUTLET PRESSURE: 7-14" WC. DOWNSTREAM CONNECTED GAS LOAD AS NOTED.
3. CONNECT GAS FIRED EQUIPMENT WITH PRESSURE REDUCING VALVE, SHUTOFF VALVE, UNION AND DIRT TRAP. SEE DETAIL ON DRAWING M1.
4. TRAP CONDENSATE PER MANUFACTURER'S REQUIREMENTS & SPILL TO SPLASH BLOCK ON ROOF. SIZE AS NOTED.
5. PROVIDE INTERNAL LINING ON DUCTWORK ON ROOF.
6. DUCTWORK TO RISE TO HIGH LEVEL BEFORE ENTERING SECOND FLOOR CEILING SPACE. SUPPORT VERTICAL DUCTWORK FROM EXTERIOR WALL. DUCTWORK TO AVOID INTERFERENCE WITH EXISTING WINDOWS.



5. **PIPING SYSTEMS:**

1. **GENERAL:**

1. **EXPANSION AND CONTRACTION:** INSTALL ALL PIPING SO AS TO BE FREE FROM STRAIN AND DISTORTION DUE TO EXPANSION AND CONTRACTION AS GOVERNED BY REQUIREMENTS OF ANSI B31.1, EXCEPT AS HEREINAFTER MODIFIED. ALLOW FOR EXPANSION AND CONTRACTION BY OFFSETS. EXPANSION U-BENDS OR LOOPS. DO NOT USE EXPANSION JOINTS OF ANY TYPE UNLESS SPECIFICALLY INDICATED ON DRAWINGS.

2. **PIPING SUBJECT TO FREEZING:**

1. WHERE HORIZONTAL OR VERTICAL PIPING IS RUN ALONG AN OUTSIDE BUILDING WALL, AND CONCEALED IN A PIPE SPACE, CIRCULATION OF INTERIOR AIR SHALL BE MAINTAINED IN THE PIPE SPACE BY MEANS OF AN AIR GRILLE(S), LOCATED AT THE TOP AND THE BOTTOM OF THE PIPE SPACE, FACING THE INTERIOR OF THE BUILDING.

2. WHERE HORIZONTAL PIPING IS RUN IN A CEILING SPACE UNDER UNINSULATED ROOF, THE INSULATED PIPE SHALL BE ENCASED IN SLAB INSULATION ON BOTH SIDES AND TOP AND CIRCULATION OF INTERIOR AIR SHALL BE MAINTAINED IN THE ENCASEMENT BY MEANS OF AIR GRILLES, LOCATED IN THE CEILING BELOW, FACING DOWN INTO THE INTERIOR OF THE BUILDING. THE SPACING OF GRILLES SHALL NOT BE LESS THAN 300 MM (12") O.C.

3. **LINES, GRADES AND SLOPES:**

1. INSTALL LIQUID AND AIR PIPING FREE OF POCKETS AND PITCH TO DRAIN, AT LOW POINTS IN PIPING, WITH VALVES OR TRAPS INSTALLED AS REQUIRED FOR DRAINAGE OF THE PIPING.

2. INSTALL PIPING TO FOLLOWING SLOPES:

- DRAINAGE PIPING: 1:50 ON DRAINS OF NPS 3 SIZE AND LESS AND 1:100 ON DRAINS OF NPS 4 AND LARGER.
- POTABLE (DOMESTIC) WATER PIPING: PITCH TO LOW POINTS SO THAT ALL PIPING MAY BE COMPLETELY DRAINED.
- HOT WATER HEATING PIPING: SLOPE UP 1:500 IN DIRECTION OF FLOW.
- NATURAL GAS: SLOPE DOWN 1:1000 IN DIRECTION OF FLOW.

4. **UNIONS OR FLANGES – PROVIDE IN THE FOLLOWING LOCATIONS:**

1. FOR BY-PASSES AROUND EQUIPMENT, CONTROL VALVES, DEVICES IN PIPING SYSTEMS, AND ELSEWHERE INDICATED ON DRAWINGS.

2. AT CONNECTIONS TO EQUIPMENT (LOCATE BETWEEN SHUT-OFF VALVE AND EQUIPMENT).

5. **PIPING CONNECTIONS TO MAINS:**

1. MAKE BRANCH CONNECTIONS OF STEAM, GAS, AND COMPRESSED AIR PIPING, TO RESPECTIVE HORIZONTAL PIPING OF LARGER DIAMETER, TO UPPER QUADRANT OF LARGER PIPE.

2. MAKE DOWN FEED PIPING CONNECTIONS, TO HORIZONTAL SUPPLY AND RETURN WATER MAINS, ON BOTTOM QUADRANT OF MAINS.

6. **SLEEVES:**

1. INSTALL SLEEVES WHERE PIPING PASSES THROUGH FOUNDATIONS, ABOVE GRADE FLOORS, AND WALLS. FABRICATE SLEEVES OF SCHEDULE 40 BLACK STEEL PIPE OR TYPE "K" COPPER TUBING.

2. SLEEVES FOR PIPING PASSING THROUGH ROOFS WILL BE SUPPLIED AND INSTALLED UNDER THIS DIVISION.

3. MAKE SLEEVES LARGE ENOUGH TO PASS FULL THICKNESS OF PIPE COVERING WHERE SAME IS USED, AND WITH SUFFICIENT CLEARANCE BETWEEN PIPE AND SLEEVE TO ALLOW FOR ANY LATERAL MOVEMENT OF PIPING DUE TO EXPANSION AND CONTRACTION.

4. FILL SLEEVES FOR FUTURE USE WITH LIME MORTAR.

7. **ESCUTCHEON PLATES:** PROVIDE ESCUTCHEON PLATES ON BARE PIPING PASSING THROUGH FINISHED WALLS OR FLOORS.

8. **VALVES:** PROVIDE DRAIN VALVES WITH HOSE THREAD OUTLET CONNECTION, OR VALVE WITH LONG NIPPLE ON OUTLET, AT ALL LOW POINTS OF EACH WATER SYSTEM, AND ABOVE ALL RISER OR BRANCH STOP VALVES, FOR PROPER DRAINAGE OF PIPING.

9. **VALVE TAGS AND INDEXES:** UPON COMPLETION OF WORK, FURNISH AND INSTALL 25 MM (1") DIA. BRASS TAG AT EACH VALVE BEARING AN INDEX NUMBER DESIGNATING VALVE. PROVIDE DIGITAL AND HARDCOPY DIRECTORY MOUNTED IN GLAZED HARDWOOD FRAME FOR EACH SYSTEM, GIVING THE VALVE INDEX NUMBER, SIZE, MAKE AND CATALOGUE NO. AND "SERVICE" OF EACH VALVE AND LOCATION OF VALVE. INCLUDE SCHEMATIC SHOWING EACH VALVE ALONG WITH INDEX NUMBER FOR CROSS-REFERENCE.

10. **PIPE IDENTIFICATION:**

1. LABEL PIPING INSTALLED UNDER THIS DIVISION TO INDICATE CONTENT AND DIRECTION OF FLOW, INCLUDE OPERATING PRESSURE OR VACUUM, AS APPLICABLE.

2. ALL LABELS SHALL BE OF SUFFICIENT WIDTH TO OVERLAP ITSELF.

3. PROVIDE LABELS OF PLASTIC COATED TAPE, WITH SELF-ADHESIVE BACKING SURFACE, FOR INSTALLATION ON INSULATED PIPE. PROVIDE ADHESIVE SUITABLE FOR THIS APPLICATION. CONFORM WITH CAN/CSG B-24.3 AND/OR OWNER STANDARDS FOR PRIMARY LABEL COLOUR, AND WITH LEGEND AND DIRECTION ARROWS IN BLACK. PRINT LEGEND IN FULL WHEREVER FEASIBLE, OR A RECOGNIZED ABBREVIATION OF SERVICE INVOLVED.

4. LOCATE LABELS AS FOLLOWS: AT EVERY END OF EVERY PIPE RUN, ADJACENT TO VALVE OR ITEM OF EQUIPMENT. SERVICES ON EACH EXPOSED PIPE PASSING THROUGH WALL, PARTITION OR FLOOR AT INTERVALS OF 15 M (50'-0") ALONG EVERY EXPOSED PIPE RUN EXCEEDING 15 M (50'-0") IN LENGTH. AT EVERY ACCESS POINT ON CONCEALED PIPING.

2. **HANGERS AND SUPPORTS:**

1. **GENERAL:**

1. PIPE HANGERS & SUPPORTS TO CSA B214 & MSS SP-58.

2. SUPPORT OR SUSPEND ALL PIPING WITH NECESSARY HANGERS, STRUCTURAL SUPPORTS AND/OR BRACKETS AS REQUIRED, TO PREVENT SAGGING, WARPING AND VIBRATION.

3. DO NOT ALLOW LOADS, OF ANY NATURE, TO BE TRANSMITTED THROUGH PIPING CONNECTIONS TO EQUIPMENT.

4. PROVIDE SUITABLY DAMPENED SPRING HANGERS FOR FIRST THREE SUPPORTS FROM EQUIPMENT CONNECTION ON PIPING SUBJECT TO EXCESSIVE MOVEMENT.

5. DO NOT HANG ANY PIPE, FROM ANOTHER PIPE OR FROM ROOF DECK, UNLESS SPECIFICALLY INDICATED ON DRAWINGS.

6. PROVIDE DIELECTRIC SEPARATION AS REQUIRED.

2. **HANGERS:**

1. FOR ALL INSULATED PIPING UP TO NPS 4, CARRYING LIQUIDS AT TEMPERATURES 10.5°C (51°F) AND HIGHER, USE STANDARD WEIGHT CLEVIS HANGERS.

2. FOR INSULATED PIPING OF NPS 4 DIA. AND LARGER, CARRYING LIQUIDS AT TEMPERATURES 10.5°C (51°F) OR HIGHER, USE ADJUSTABLE ROLLER TYPE HANGERS WITH LOCKNUTS. SUPPORT ROLLERS AT BOTH ENDS WITH 2 ADJUSTABLE RODS WITH LOCKNUTS.

3. FOR INSULATED PIPING CARRYING LIQUIDS AT A TEMPERATURE OF 10°C (50°F) OR LESS, USE ELONGATED CLEVIS TYPE HANGERS.

4. PROVIDE INSULATION PROTECTION BEARING PLATES AT ALL HANGERS AND SUPPORTS FOR ALL INSULATED PIPING.

5. FOR NON-INSULATED PIPING USE CLEVIS TYPE OF WROUGHT STEEL CONSTRUCTION.

6. FOR COPPER TUBING PROVIDE COPPER COATED HANGERS.

7. ATTACH HANGER RODS, TO BUILDING STRUCTURE, BY MEANS OF MALLEABLE IRON BEAM CLAMPS OR CONCRETE INSERTS

3. **HANGER SPACING:**

1. FOR HORIZONTAL RUNS OF PLUMBING AND DRAINAGE PIPING COMPLY WITH HANGER SPACING REQUIREMENTS OF BUILDING CODE.

2. FOR HORIZONTAL RUNS OF BLACK OR GALVANIZED STEEL PIPE, OTHER THAN FOR PLUMBING SERVICE, DO NOT EXCEED MAXIMUM DISTANCES BETWEEN SUPPORTS AND WITH MINIMUM DIAMETER RODS AS FOLLOWS:

- 9 MM (1/2") THROUGH 75 MM (3"); 3.66 M (12') SPACING, 12 MM (1/2") ROD DIA.

- 100 MM (4") THROUGH 200 MM (8"); 5.8 M (19') SPACING, 22 MM (7/8") ROD DIA.

4. **ROOF PIPING:**

1. PROVIDE ECOBLOK PIPE SUPPORT, UV SATBLIZED RECYCLED RUBBER, MAKE PROVISIONS FOR EXPANSION AND CONTRACTION.

2. PROVIDE GALVANIZED STRUT AND HORSESHOE CLAMPS OF SUFFICIENT HEIGHT TO SECURE PIPING TO SUPPORT BLOCKS. PROVIDE EXTENSION KITS AS REQUIRED.

3. **MATERIALS OF CONSTRUCTION:**

1. **SANITARY AND INDIRECT DRAIN (INCLUDING VENTING):**

1. **REFERENCE STANDARDS:**

1. **COPPER, DWV:** HARD DRAWN COPPER DRAINAGE TUBE CONFORMING TO ASTM B 308 WITH WROUGHT COPPER OR CAST BRASS SOLDER JOINT DRAINAGE FITTINGS TO ASME B16.29 OR ASME B16-29.

2. **APPLICATION:**

1. **ABOVE GRADE:**

1. **PIPING 75 MM (3") AND SMALLER:** DWV COPPER

2. **POTABLE (DOMESTIC) HOT AND COLD WATER:**

1. **REFERENCE STANDARDS:**

1. ALL MATERIALS TO BE NSF/ANSI 61 & 372 CERTIFIED.

2. **COPPER:**

1. PIPING - SEAMLESS WATER TUBE TO ASTM B88

2. **FITTINGS:**

1. SOLDER JOINT FITTINGS TO ASME B16.18 (CAST) OR B16.22 (WROUGHT)

2. COLD PRESS FITTINGS WITH EPDM SEALING ELEMENT TO ASME B16.18 OR ASME B16.22. INSTALLED USING PROPER TOOL, ACTUATOR, JAWS, AND RINGS AS INSTRUCTED BY THE PRESS FITTING MANUFACTURER.

3. **PEX-A:**

1. CROSSLINKED POLYETHYLENE PIPING TO CAN/CSA-B137.5.

1. 50 MM (2") AND SMALLER - CANULC-S102.2 LISTED TO A MAXIMUM OF 25 FLAME SPREAD / 50 SMOKE DEVELOPED.

2. 65 MM (2-1/2") AND LARGER - CANULC-S102.2 LISTED TO A MAXIMUM OF 25 FLAME SPREAD / 50 SMOKE DEVELOPED WITH RATED FIBERGLASS INSULATION, PRESSURE AND TEMPERATURE RATINGS: 93°C (200°F) AT 80 PSI (551 KPA), 82°C (180°F) AT 100 PSI (689 KPA).

2. SEAL PENETRATIONS AT FIRE SEPARATIONS PER CANULC-S115.

3. PIPING WITHIN A FIRE SEPARATION PER CANULC-S101.

4. ALL FITTINGS BY TUBING MANUFACTURER.

5. 25 YEAR WARRANTY FROM INSTALLATION DATE.

2. **APPLICATION:**

1. **ABOVE GROUND PIPING 75 MM (3") AND SMALLER:**

1. TYPE "L" HARD DRAWN COPPER TUBING. PROVIDE SOLDER TO THREADED ADAPTERS AT SCREWED VALVES OR EQUIPMENT.

2. PEX-A FOR 38 MM (1-1/2") AND SMALLER (ON COMPLETION OF INSTALLATION THE SYSTEM SHALL BE CHARGED WITH POTABLE WATER TO A PRESSURE WHICH MEETS LOCAL PLUMBING CODES. THE SYSTEM SHALL REMAIN AT THIS PRESSURE FOR A MINIMUM OF 24 HOURS TO ENSURE SYSTEM INTEGRITY.)

3. CPVC: BUILDINGS OF NON-COMBUSTIBLE CONSTRUCTION, HIGH-RISE BUILDINGS AND IN RETURN AIR PLENUMS. FIRESTOPPING SYSTEMS SHALL BE LISTED UNDER CANULC S115 AND TESTED WITH A PRESSURE DIFFERENTIAL OF 50 PA.

3. **NATURAL GAS:**

1. **PIPING 50 MM (2") AND SMALLER ABOVE GRADE PIPING (EXPOSED):** SCHEDULE 40 ERW OR CW BLACK CARBON STEEL PIPE CONFORMING TO ASTM A 53/A53M-99B GRADE B, WITH THREADED ENDS. FITTINGS: CLASS 150 BLACK MALLEABLE IRON SCREWED FITTINGS CONFORMING TO ASTM A 197/A197M-96 AND ASME B16.3-1998.

4. **HYDRONIC (HEATING):**

1. **REFERENCE STANDARDS:**

1. **PIPING:**

1. **COPPER:** SEAMLESS WATER TUBE TO ASTM B88 / B88M.

2. **STEEL:** CONTINUOUS WELD OR ELECTRIC RESISTANCE WELDED BLACK CARBON STEEL CONFORMING TO ASTM A 53/A53M GRADE B.

2. **END FITTINGS & JOINTS:**

1. **SOLDERED COPPER:** TO ASME B16.18 CAST BRASS OR ASME B16.22. SOLDER - WROUGHT COPPER WITH LEAD FREE SOLDER TO ASTM B32.

2. **THREADED:** TO ASME B1.20.1.

3. **SOLDER:** TO ASME B16.18.

4. **COLD PRESS:** TO ASME B16.3 WITH FACTORY INSTALLED EPDM. INSTALLED USING PROPER TOOL, ACTUATOR, JAWS, AND RINGS AS INSTRUCTED BY THE PRESS FITTING MANUFACTURER.

5. **SOCKET WELD:** TO ASTM A105/A-105M & ASME B16.1.

6. **GROOVED:** CSA B242 TO ASTM A-356 WITH GRADE 'E' EPDM GASKETS RATED FOR -34°C TO 120°C (-30°F TO 250°F)

7. **FLANGED:** TO ASTM B16.1.

8. **COUPLINGS:** HINGED, TWO PIECE FLANGES, SHOULDERED OR KEYED CAST DUCTILE IRON CONFORMING TO ASTM A-536 GRADE 65-45-12 AND LOCK BOLT, FLANGE BOLTING - ZINC PLATED HEX HEAD MACHINE BOLTS AND HEX NUTS CONFORMING TO ASTM A 307-97 CLASS A.

9. **FLANGED:** CLASS 150 FORGED STEEL SLIP-ON OR WELDNCK RAISED FACE TYPE CONFORMING TO ASTM A 181/A181M-95B GRADE 1 AND ASME B16.5, 1.6 MM (1/16") EPDM GASKETS FOR ANSI CLASS 150. SEMI-FINISHED HEX HEAD MACHINE BOLTS AND SEMI-FINISHED HEX NUTS, BOTH OF CARBON STEEL CONFORMING TO ASTM A 307-97 CLASS A.

2. **APPLICATION:**

1. **ABOVE FLOOR PIPING 50 MM (2") AND SMALLER:**

1. **COPPER** - TYPE "L" HARD DRAWN COPPER TUBING, TYPE "L" SOFT ANNEALED COPPER TUBING MAY BE USED WITHIN CONNECTOR ENCLOSURES. FITTINGS: WROUGHT COPPER SOLDER JOINT PRESSURE TYPE, WITH IPS TO COPPER ADAPTERS AT SCREWED CONNECTIONS.

2. **STEEL** - SCHEDULE 40 WITH ASME B16.3 CLASS 150 THREADED OR COLD PRESS FITTINGS.

3. **PEX-A** - WITH F1960 COLD-EXPANSION FITTINGS

4. **PVC (CONDENSER WATER ONLY)** - SCHEDULE 40

2. **ABOVE FLOOR PIPING, 63 MM (2-1/2") AND LARGER:**

1. **STEEL** - SCHEDULE 40 WITH RAISED FACE FLANGE OR GROOVED FITTINGS.

2. **PEX-A** - WITH COMPRESSION FITTINGS UP TO 100 MM (4").

3. **PVC (CONDENSER WATER ONLY)** - SCHEDULE 40

3. **CLEANING:**

1. CLEAN ALL NEW HYDRONIC PIPING.

2. FLUSH SYSTEMS TO REMOVE LOOSE DIRT.

3. PROVIDE CLEANER TO ADEQUATELY CLEAN NEW SYSTEM PIPING. MIX CONCENTRATION IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND CIRCULATE FOR 24 TO 72 HOURS AT A TEMPERATURE BETWEEN 21-60°C (70-140°F).

4. DRAIN SYSTEMS, REFILL WITH FRESH WATER AND CIRCULATE FOR MINIMUM OF 4 HOURS TO FLUSH OUT REMAINING CHEMICAL SOLUTION.

5. REFILL SYSTEMS WITH CLEAN WATER AND INHIBITOR AS REQUIRED.

6. INCLUDE SUPPLIER OF WATER TREATMENT SYSTEMS SUPERVISION AND ASSISTANCE DURING INSTALLATION FOR CLEAN OUT AND STARTUP PROCEDURES. PROVIDE ELECTRONIC VERSION OF WRITTEN REPORT TO CONSULTANT.

5. **FIRE PROTECTION:**

1. STANDARD BLACK STEEL PIPE WITH SCREWED OR FLANGED CAST IRON SPRINKLER FITTINGS SUITABLE FOR 1200 KPA (175 PSIG) PRESSURE, COLD WATER, NON-SHOCK. USE SCREWED OR FLANGED TYPE JOINTS BETWEEN PIPE AND FITTINGS OR VALVES, FOR PIPE SIZES 32 MM (1-1/4") AND LARGER. MECHANICAL TYPE COUPLINGS, CANADIAN UNDERWRITER'S LISTED AND IAO APPROVED, MAY BE USED. ENSURE WALL THICKNESS OF PIPE IS IN ACCORDANCE WITH NFPA 13 AND 14 FOR THE TYPE OF CONNECTIONS USED. USE HOT-DIPPED ZINC COATED (GALVANIZED) WELDED AND SEAMLESS PIPE TO ANSI/ASTM A53 FOR DRY PIPE SYSTEMS OR WHERE OTHERWISE INDICATED.

4. **TESTING:**

1. **NATURAL GAS:** CONDUCT FINAL TESTS ON NATURAL GAS PIPING IN ACCORDANCE WITH ONTARIO GAS UTILIZATION CODE AND WITH REQUIREMENTS OF LOCAL GAS COMPANY OR GOVERNING AUTHORITY.

2. **WATER:** HYDROSTATICALLY TEST WATER PIPING AT 862 KPA (125 PSIG) PRESSURE TO DETECT EXCESSIVE WATER LOSSES.

6. **PLUMBING SYSTEM:**

1. **REFERENCE STANDARDS:**

1. CONFORM TO ALL APPLICABLE CODES INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

1. **CSA-B149.1:** NATURAL GAS AND PROPANE INSTALLATION CODE

2. **VENTING:** PLUMBING VENTING MAY NOT BE SHOWN ON DRAWINGS. PROVIDE A COMPLETE PLUMBING VENTING SYSTEM FOR ALL PLUMBING FIXTURES SHOWN, IN ACCORDANCE WITH OBC SECTION 7.5.

3. **STERILIZATION OF POTABLE (DOMESTIC) WATER SYSTEMS:**

1. FLUSH EACH SYSTEM, AFTER COMPLETION, BY ALLOWING FULL FLOW OF WATER THROUGH SYSTEM FOR A PERIOD OF FIFTEEN MINUTES, OR LONGER WHEN DIRECTED BY CONSULTANT.

2. AFTER FLUSHING OF THE SYSTEM IS COMPLETED, PROVIDE A 24 HOUR CONTACT STERILIZATION TREATMENT BY TREATING THE WATER WITH 50 PPM OF CHLORINE AS RECOMMENDED IN AWWA SPECIFICATION C-651. AFTER STERILIZATION PERIOD HAS ELAPSED, FLUSH SYSTEM TO REDUCE CHLORINE CONTENT TO AN ACCEPTABLE LEVEL.

4. **CONNECTIONS SERVICES:**

1. **NATURAL GAS SERVICE:** MAKE ARRANGEMENTS WITH LOCAL GAS UTILITY FOR UPGRADE OF UNDERGROUND GAS SERVICE, GAS METER, MAIN PRESSURE REDUCING STATION, AND CONNECTION THERETO AT LOCATION INDICATED. PAY FOR COSTS LEVIED BY GAS UTILITY FOR PROVISION, INSTALLATION AND CONNECTION OF THIS SERVICE.

5. **VALVES:**

1. SUBMIT SHOP DRAWINGS FOR ALL VALVES.

2. **NATURAL GAS ISOLATION:**

1. **UP TO 50 MM (2"), 1.034 KPA (150PSIG) / 500WOG RATING:** BRASS OR BRONZE BODY, FULL PORT BALL VALVE, PTFE SEATS, DOUBLE O-RING DESIGN OR PTFE PACKING, CHROME PLATED SOLID BRONZE BALL, LEVER HANDLE. CSA/GCA 125 /3, 16 APPROVED.

7. **HYDRONCS (HEATING WATER) SYSTEM:**

1. THE SYSTEMS SHALL CONFORM TO ALL APPLICABLE CODES INCLUDING, BUT NOT LIMITED TO, CSA-B214.

2. **VALVES:**

1. **REFERENCE STANDARDS:**

1. **BRONZE:** TO ASTM B62.

2. **BRASS:** TO ASTM B283.

3. **CAST IRON:** TO ASTM A126

4. **STAINLESS STEEL:** TO ASTM A351.

2. **GENERAL:** PROVIDE SAME MANUFACTURER THROUGHOUT WITH PRESSURE RATING MARKED PER MSS-SP-25. ALL VALVES TO HAVE VALID CRN REGISTRATION NO. ISSUED BY RESPECTIVE PROVINCE. SUBMIT SHOP DRAWINGS FOR ALL VALVES.

3. **VALVES, 50 MM (2") AND SMALLER:**

1. **ISOLATION:** 2 PIECE BRASS OR BRONZE BODY, 1.034 KPA (150 psi) 60 WOG RATING, FULL PORT, STAINLESS STEEL BALL, LOCKING LEVER HANDLE WITH INSULATION STEM EXTENSION, SOLDERED, THREADED OR PEX CONNECTIONS. MANUFACTURED TO MSS SP-110 STANDARD.

2. **CHECK, Y PATTERN SWING TYPE, BRONZE BODY / TRIM, 860 KPA(125 psi) 200 WOG RATING**

4. **VALVES, 63MM (2-1/2") AND LARGER:**

2. **CHECK:** WAFER, CAST IRON BODY, STAINLESS STEEL TRIM & SEAT, VITON A SEAT RING, CLASS 125, 200 WOG RATING.

3. **CHECK AT PUMP DISCHARGE:** SILENT, CAST IRON BODY, STAINLESS STEEL TRIM & SEAT, SPRING LOAD CENTRE GUIDED DISC, CLASS 125, 200 WOG RATING.

5. **BALANCING VALVES:**

1. FOR SIZES 50 MM (2") AND UNDER: USE VALVE WITH ADJUSTABLE HIDDEN MEMORY FOR TAMPER PROOF BALANCING, CAST COPPER ALLOY BODY COMPLETE EPOXY RESIN COATING, SELF SEALING TEST POINTS FOR PRESSURE, TEMPERATURE SENSING PROBES, PROTECTIVE CAP AND END CONNECTIONS TO SUIT PIPING SYSTEM.

2. FOR SIZES 65 MM (2½") AND OVER: VALVE WITH ADJUSTABLE HIDDEN MEMORY FOR TAMPER PROOF BALANCING, CAST COPPER ALLOY BODY COMPLETE EPOXY RESIN COATING, SELF SEALING TEST POINTS FOR PRESSURE, TEMPERATURE SENSING PROBES, PROTECTIVE CAP AND END CONNECTIONS TO SUIT PIPING SYSTEM.

8. **MECHANICAL EQUIPMENT:**

1. **ROOFTOP UNIT:**

1. **DESCRIPTION:** OUTDOOR, CONSTANT VOLUME, PACKAGED ROOFTOP UNIT WITH GAS HEATING AND DIRECT EXPANSION (DX) COOLING, OF SIZE AND PERFORMANCE AS INDICATED IN SCHEDULES ON DRAWINGS, PROVIDE COMPLETE FACTORY ASSEMBLED UNIT PRE-WIRED AND PIPED WITH FACTORY INSTALLED CONTROLS.

2. **UNIT CONSTRUCTION:** CASING SHALL BE FABRICATED OF WEATHER-TIGHT GALVANIZED STEEL PANELS COATED WITH BAKED ENAMEL FINISH AND INSULATED WITH 25MM (1") INSULATION. UNIT SHALL HAVE HINGED AND GASKETED PANELS FOR EASY ACCESS TO ALL INTERNAL PARTS FOR SERVICING OR REPLACEMENT.

3. **FANS:** THE INDOOR FAN SHALL BE CENTRIFUGAL, FORWARD-CURVED, BELT-DRIVEN FAN WITH STATICALLY AND DYNAMICALLY BALANCED ROTOR, MOUNT FAN AND MOTOR ON VIBRATION ISOLATION BASE(S) AND SEPARATED FROM CASING WITH FLEXIBLE CONNECTION. THE OUTDOOR FAN SHALL BE DIRECT DRIVEN TYPE, WITH COATED STEEL WIRE GUARD AND DISCHARGE AIR VERTICALLY.

4. **COMPRESSOR:** COMPRESSOR SHALL BE SEMI-HERMETIC (HERMETIC) TYPE FACTORY MOUNTED ON SPRING VIBRATION ISOLATORS AND FLEXIBLE SUCTION AND DISCHARGE CONNECTIONS, OIL SIGHT GLASS, COMPRESSOR DISCHARGE VALVES, LIQUID LINE SERVICE VALVES, THERMAL EXPANSION VALVES, OIL PRESSURE SWITCH, CRANKCASE HEATER, AND AUTOMATIC PUMP DOWN SYSTEM WITH CONTROL TO LIQUID LINE SOLENOID VALVE.

5. PROVIDE HOT GAS BYPASS FOR CAPACITY REDUCTION CYCLINDER UNLOADING. PROVIDE HEAD PRESSURE CONTROLS CAPABLE OF OPERATION TO -30 C OUTDOOR AIR TEMPERATURE.

6. **GAS HEATING:** INDUCED DRAFT COMBUSTION WITH INTERMITTENT SPARK IGNITION AND REDUNDANT GAS VALVE. HEAT EXCHANGER SHALL BE MADE OF A MINIMUM 20 GAUGE ALUMINUM SILICON ALLOY COATED STEEL.

7. **ECONOMIZER:** ECONOMIZER SHALL BE FACTORY INSTALLED TYPE AS SCHEDULED CAPABLE OF SIMULTANEOUS ECONOMIZER AND COMPRESSOR OPERATION.

8. **ROOF CURB:** PROVIDE FACTORY FABRICATED 16 GAUGE GALVANIZED STEEL CURB

WITH WOOD NAILER STRIP SUITABLE FOR UNIT DIMENSIONS.

9. **CONTROLS:** PROVIDE FACTORY WIRED BACKET COMPATIBLE CONTROLLER CAPABLE OF PERFORMING SEQUENCES OF OPERATION IDENTIFIED ON DRAWINGS.

10. PROVIDE CONDENSATE DRAIN PER MANUFACTURER'S REQUIREMENTS.

11. PROVIDE ALL SAFETY CONTROLS FOR THE GAS HEATING INCLUDING ALL INTERLOCKS AND AIR FLOW PROVING SWITCHES TO MEET CGA AND CSA REQUIREMENTS.

2. **DIRECT OUTDOOR AIR UNIT:**

1. **DESCRIPTION:** OUTDOOR PACKAGED DIRECT OUTDOOR AIR UNIT WITH GAS HEATING AND DIRECT EXPANSION (DX) COOLING OF SIZE AND PERFORMANCE AS INDICATED IN DRAWING SCHEDULES, ASHRAE 90.1 COMPLIANT AND LABELLED, COMPLETE FACTORY ASSEMBLED UNIT PRE-WIRED WITH FACTORY INSTALLED CONTROLS.

2. **UNIT CONSTRUCTION:** CASING SHALL BE FABRICATED OF WEATHER-TIGHT FOAM INSULATED TO ASTM E84 PANELS WITH FACTORY FINISH. UNIT SHALL HAVE HINGED AND GASKETED PANELS FOR ACCESS TO ALL INTERNAL PARTS FOR SERVICING OR REPLACEMENT.

5. **FILTERS:**

1. OUTSIDE AIR - REMOVABLE 50 MM (2 INCHES) THICK GLASS FIBRE DISPOSABLE MERV 8 FILTERS IN METAL FRAMES.

2. RETURN AIR - REMOVABLE 50MM (2 INCHES) THICK GLASS FIBRE DISPOSABLE MERV 13 FILTERS IN METAL FRAME.

4. **OUTSIDE AIR DAMPER:** LOW LEAK INSULATED (MAX. 10 CFM / FT²) MOTORIZED WITH MECHANICALLY LOCKED BLADE EDGE SEALS

5. RETURN AIR DAMPER, MOTORIZED: FACTORY INSTALLED TO PERMIT 100% RECIRCULATION, CONTROLLED BY TIME CLOCK

6. **FANS, MOTOR(S) & DRIVES:**

1. SUPPLY FAN, CENTRIFUGAL, FORWARD-CURVED, DIRECT OR BELT-DRIVEN WITH ADJUSTABLE PITCH SHEAVE DRIVE ASSEMBLY, FAN WITH STATICALLY AND DYNAMICALLY BALANCED ROTOR IN ACCORDANCE WITH THE LATEST ARI GUIDELINE AND ANSI 2.19. FAN SYSTEM SHALL BE FULLY VIBRATION ISOLATED USING SPRINGS AND FLEXIBLE CONNECTORS.

2. **MOTOR:** CONTINUOUS DUTY, THERMALLY PROTECTED, PERMANENTLY LUBRICATED, BALL BEARING WITH A 1.15 SERVICE FACTOR. EFFICIENCY TO MM4H 58-10 REQUIREMENTS.

7. **HEATING:**

1. NATURAL GAS HEATING SYSTEM CONSISTING OF 409 STAINLESS STEEL HEAT EXCHANGER, VENTER FAN, SPARK IGNITION SYSTEM, CONTROL VALVES AND ALL NECESSARY SAFETIES TO PROVIDE A FULLY OPERATIONAL HEATING SYSTEM READY FOR OPERATION FROM FACTORY. HEAT EXCHANGER SHALL PROPERLY DRAIN CONDENSATE OR OTHER WATER DURING THE HEATING AND COOLING SEASON. SYSTEM SHALL MODULATE BOTH THE GAS AND COMBUSTION AIR TO MAINTAIN TEMPERATURE SETPOINT(S) AND THERMAL EFFICIENCY, CERTIFIED TO CSA 2.6.

2. GAS BURNER, CAPABLE OF MODULATING TURN DOWN AS SCHEDULED, ELECTRIC MODULATING MAIN GAS VALVE, MOTORIZED SHUT DOWN VALVE, MAIN AND PILOT GAS REGULATORS, PILOT ELECTRIC GAS VALVE, MANUAL SHUT-OFF VALVE AND PILOT ADJUSTMENT VALVE.

3. NONCONDENSING MINIMUM THERMAL EFFICIENCY OF 81%, THE THERMAL EFFICIENCY SHALL NOT FALL BELOW 80% THROUGH THE MODULATED OPERATIONAL RANGE.

4. PROVIDE ALL SAFETY CONTROLS FOR THE GAS HEATING INCLUDING ALL INTERLOCKS AND AIR FLOW PROVING SWITCHES TO MEET CGA AND CSA REQUIREMENTS.

8. **COOLING:**

1. COMPRESSOR SHALL BE SEMI-HERMETIC (HERMETIC) TYPE FACTORY MOUNTED ON SPRING VIBRATION ISOLATORS AND FLEXIBLE SUCTION AND DISCHARGE CONNECTIONS, OIL SIGHT GLASS, COMPRESSOR DISCHARGE VALVES, LIQUID LINE SERVICE VALVES, THERMAL EXPANSION VALVES, OIL PRESSURE SWITCH, CRANKCASE HEATER, AND AUTOMATIC PUMP DOWN SYSTEM WITH CONTROL TO LIQUID LINE SOLENOID VALVE.

2. CONDENSER FAN(S) SHALL BE DIRECT DRIVEN TYPE FAN, COATED STEEL WIRE GUARD AND DISCHARGING AIR VERTICALLY.

3. CONDENSATE DRAIN PAN OF STAINLESS STEEL OR POLYMER, SLOPED IN TWO DIRECTIONS, SEALED DISCHARGE THROUGH CABINET.

4. PROVIDE FACTORY INSTALLED HOT GAS BYPASS REHEAT FOR CAPACITY REDUCTION COMPLIANT WITH ASHRAE 90.1

9. PROVIDE CONDENSATE DRAIN PER MANUFACTURER'S REQUIREMENTS. PROVIDE CONDENSATE NEUTRALIZER.

10. **CURB:** MANUFACTURER SUPPLIED 2.8 MM (12 GAUGE) ZINC COATED STEEL WITH A 51 MM X 152 MM (2" X 6") NAILER

11. **CONTROLS:** PROVIDE FACTORY WIRED BACKET CONTROLLER CAPABLE OF PERFORMING SEQUENCES OF OPERATION IDENTIFIED ON DRAWINGS.

3. **INLINE CENTRIFUGAL FAN CABINET:** BELT-DRIVEN, CENTRIFUGAL DUCT FAN UNITS, CONFIGURED FOR HORIZONTAL FLOW FOR HVAC APPLICATIONS. HEAVY-GAUGE GALVANIZED STEEL HOUSING WITH REMOVABLE SIDE PANELS FOR MAINTENANCE. UNIVERSAL MOUNTING BRACKETS TO ALLOW SUSPENSION OF UNIT FROM TOP OR BOTTOM CONNECTIONS. 25 MM (1") FIBERGLASS INSULATION LINER IN FAN HOUSING. PERMANENTLY LUBRICATED SELF-ALIGNING BALL BEARINGS, GALVANIZED STEEL, FORWARD-CURVED, DOUBLE-WIDTH, DOUBLE-INLET, STATICALLY AND DYNAMICALLY BALANCED FAN WHEEL, CONSTRUCTED OF GALVAN



9. AIR DISTRIBUTION SYSTEM:

1. DUCTWORK:

1. GENERAL:

1. PROVIDE DUCTWORK CONSTRUCTED TO SMACNA 250 PA (1" W.G.) PRESSURE CLASSIFICATION & SEAL CLASS A. FOLLOW ALL OF THE LATEST SMACNA REQUIREMENTS.
2. SEAL ALL DUCT JOINTS AND CONNECTIONS TO DIFFUSERS AND EQUIPMENT WITH HIGH VELOCITY WATER BASED DUCT SEALER.
3. PROVIDE DUCTS OF SIZES INDICATED ON DRAWINGS. WHERE DUCTS ARE TO BE FURNISHED WITH ACOUSTIC DUCT INSULATION, ADJUST DUCT SIZE TO ACCOMMODATE THICKNESS, WITH CLEAR INSIDE DIMENSIONS AS INDICATED ON DRAWINGS.
4. CONTINUOUSLY SOLDER OR SEAL JOINTS IN EXTERIOR AIR INTAKE DUCTS AND PLENUMS TO PREVENT DRIPPING OF MOISTURE.
5. PROVIDE DUCTWORK OF GALVANIZED STEEL SHEET UNLESS INDICATED OTHERWISE.
6. DUCTWORK ASPECT RATIOS CAN BE ADJUSTED TO A MAXIMUM OF 4:1 WHILE KEEPING AT LEAST THE SAME CROSS SECTIONAL AREA, TO AVOID INTERFERENCES, AS REQUIRED.

2. RECTANGULAR DUCTWORK:

1. FOR LONGITUDINAL JOINTS ON RECTANGULAR DUCTWORK, FURNISH PITTSBURGH LOCK JOINTS TIGHTLY CLOSED ALONG FULL LENGTH OF SEAM.
2. CROSS-BREAK FLAT SURFACES BETWEEN JOINTS, OR BETWEEN JOINTS AND INTERMEDIATE REINFORCEMENTS, TO PREVENT VIBRATION OR BUCKLING.
3. WHERE ELBOWS ARE INDICATED AS SQUARE TYPE, PROVIDE AIR TURNING VANES OF DOUBLE BLADE CONSTRUCTION.

3. ROUND DUCTWORK:

1. FURNISH NINETY DEGREE ELBOWS WITH SMOOTH CENTRE LINE RADIUS OF 1.5 TIMES DUCT DIAMETER. ALTERNATIVELY FURNISH ELBOWS OF 5 PIECE CONSTRUCTION, SUBJECT TO APPROVAL BY CONSULTANT.
2. DUCTWORK SHALL USE SPIRAL LOCK SEAM TYPE DUCT, SLIP JOINTS IN DIRECTION OF FLOW, IN ACCORDANCE WITH SMACNA STANDARDS.

4. FLEXIBLE TYPE ROUND DUCTWORK:

1. FURNISH FLEXIBLE TYPE ROUND DUCTWORK BETWEEN TRUNK SUPPLY DUCT AND CEILING DIFFUSERS AND WHERE INDICATED ON DRAWINGS (MAXIMUM 1,500 MM (5') LENGTH). REFER TO DETAIL ON DRAWING.
2. PROVIDE FLEXIBLE DUCT OF POLYMERIC LINER BONDED TO WIRE SPIRAL, WHERE INSTALLED IN CEILING SPACE USED AS A RETURN PLENUM, DUCTS SHALL MEET BUILDING CODE FLAME SPREAD AND SMOKE DEVELOPMENT REQUIREMENTS.
3. FLEXIBLE TYPE ROUND DUCTWORK EXPOSED TO VIEW IS NOT ACCEPTABLE.

5. ACOUSTIC DUCT INSULATION: FURNISH RIGID COATED DUCT LINER CONFORMING TO ANSINFFPA 90A AND 90B, OF 25 MM (1") THICKNESS AND 72 KG/M3 (4.5 LB/CU FT) DENSITY. FASTEN DUCT LINER WITH PLATE TYPE IMPALING PINS AND SELF-LOCKING WASHERS. SEAL EXPOSED ENDS OF LINER WITH AN EDGE TREATMENT OR DUCT SEAL TO PREVENT LIFTING. IN HIGH VELOCITY DUCTWORK FURNISH PERFORATED OR EXPANDED METAL INNER LINER OVER ACOUSTIC INSULATION.

6. SUPPORTS AND HANGERS:

1. GENERAL:

1. DUCTWORK SHALL NOT BE SUPPORTED FROM ROOF DECK
2. ALL DUCTWORK SHALL BE SUPPORTED FROM BUILDING STRUCTURE.

2. RECTANGULAR DUCTWORK:

1. FOR DUCTS UP TO 760 MM (30") WIDE, FURNISH STRAP HANGERS OF GALVANIZED SHEET STOCK WITH EDGES FOLDED OVER. BEND STRAP HANGER AROUND BOTTOM OF DUCT FOR MINIMUM OF 38 MM (1-1/2") AND ATTACH TO SIDES AND BOTTOM OF DUCT
2. FOR DUCTS OVER 760 MM (30") WIDE, FURNISH MILD STEEL ROD HANGERS OF MINIMUM 10 MM (3/8") DIA SIZE AND FURNISH 38 MM X 38 MM X 3 MM (1-1/2" X 1-1/2" X 1/8") STEEL ANGLE ACROSS BOTTOM OF DUCT, ATTACH HANGER TO ANGLE (NOT DUCT).

3. ROUND DUCTWORK:

1. FOR DUCTS UP TO 900 MM (36") DIAMETER, FURNISH STRAP BAND AND HANGER OF 25 MM (1") X 20 GA. GALVANIZED SHEET STOCK WITH EDGES FOLDED OVER. BAND IS TO FIT TIGHT TO DUCT ALL AROUND AND CONNECT TO HANGER STRAP WITH LOAD RATED FASTENER.

4. ROOFTOP DUCT:

1. ADJUSTABLE DUCT SUPPORT COMPLETE WITH 425MM Ø (17") INJECTION MOLDED POLYPROPYLENE SUPPORT BASE SUITABLE FOR ROOF CONSTRUCTION, 41MM X 41 MM (1-5/8" X 1-5/8") 12GA VERTICAL CHANNEL & TOP AND BOTTOM MEMBERS IN GALVANIZED ZINC COATING.
2. PROVIDE ALL NECESSARY HARDWARE INCLUDING CORNER BRACKETS, BOLTS & NUTS, AND DUCT STRUT CLAMPS. ALL HARDWARE TO BE STAINLESS STEEL.
3. ECOFOOT QUICK FRAME, ADVANCED SUPPORT PRODUCTS SS2000D, OR EQUAL.

2. DIFFUSERS, REGISTERS AND GRILLES:

1. REFER TO SCHEDULE AND TAGS ON DRAWINGS FOR ACCESSORIES, NECK SIZE, DIMENSIONS AND CAPACITY.
  2. COORDINATE PLACEMENT OF DIFFUSERS, REGISTERS AND GRILLES IN CEILINGS WITH ELECTRICAL AND CEILING INSTALLATION TRADES AND EXACT LOCATION TO FINAL APPROVAL OF CONSULTANT.
  3. PROVIDE FRAME ACCESSORIES AS REQUIRED TO SUIT CEILING AND WALL CONSTRUCTION. COORDINATE WITH ARCHITECTURAL DRAWINGS.
3. SHEET METAL SPECIALTIES:

1. BALANCING DAMPERS:

1. LOCKING QUADRANT BALANCING DAMPERS, MANUALLY OPERATED OPPOSED BLADE TYPE, OR BUTTERFLY BLADE TYPE, FABRICATED FROM GALVANIZED STEEL SHEET. PROVIDE WHERE INDICATED ON DRAWINGS AND AS REQUIRED TO ALLOW FOR SYSTEM BALANCING.

2. FIRE DAMPERS: DYNAMIC FIRE DAMPERS OF HINGED, FUSIBLE LINK TYPE, CHANNEL FRAMES, BLADES AND HOUSING, ULC LABELED AND CONFORMING TO ANSINFFPA 90A, FURNISH "TYPE B" FIRE DAMPERS FOR RECTANGULAR OR SQUARE DUCTWORK AND "TYPE C" FIRE DAMPERS FOR ROUND DUCTWORK. FIRE DAMPERS SHALL BE RATED FOR OPERATION. PROVIDE WHERE INDICATED ON DRAWINGS.

3. COMBINATION FIRE/SMOKE DAMPERS: FABRICATED TO CAN/ULC S112 & CAN/ULC S112.1, AND TESTED TO AMCA 511, UL 555 FIRE RATING OF 1.5 HOURS. FACTORY SLEEVE AND COLLAR FOR EACH DAMPER IN A THROUGH-WALL CONFIGURATION. PROVIDE FIELD FABRICATED SLEEVE WITH FLANGE FOR SUPPLY GRILLE AT SHAFT CONFIGURATION. FABRICATED WITH GALVANIZED STEEL FRAME AND BLADES, OIL-IMPREGNATED BRONZE OR STAINLESS STEEL SLEEVE BEARINGS AND PLATED STEEL AXLES, STAINLESS STEEL JAMB SEALS, PLATED STEEL CONCEALED LINKAGE, STAINLESS STEEL CLOSURE SPRING, BLADE STOPS, LOCK AND ACTUATOR SHAFT. OPERATORS LISTED / LABELLED SPRING RETURN, ELECTRIC TYPE, 120V / 1Ø. LOCATE DAMPER OPERATOR ON DUCT EXTERIOR, LINKED TO DAMPER OPERATING SHAFT WHERE DUCT EXTERIOR IS ACCESSIBLE. OTHERWISE LOCATE DAMPER OPERATOR ON INTERIOR OF DUCT.

4. ACCESS DOORS: PROVIDE ACCESS DOORS IN DUCTWORK AND PLENUMS TO ALLOW SERVICING, MAINTENANCE AND INSPECTION OF CONTROL DAMPERS, FIRE DETECTORS, BOTH SIDES OF FIRE AND FIRE/SMOKE DAMPERS, CONTROL ELEMENTS, BEARINGS AND AS INDICATED ON DRAWINGS. FURNISH ACCESS DOORS AT LEAST 300 MM X 150 MM (12" X 6") UNLESS DUCT DIMENSIONS PREVENT.

5. FLEXIBLE DUCT CONNECTIONS: 75 MM (3") WIDE LISTED FIRE RETARDENT NEOPRENE COATED WOVEN GLASS FIBRE FABRIC TO NFPA 701, CRIMPED INTO 75 MM (3") 24 GA. (0.6MM) GALVANIZED STEEL EDGING STRIPS, MANUFACTURED TO SMACNA STANDARDS.

10. CONTROL SYSTEM:

1. EXISTING CONTROL SYSTEM FRONT END IS PROVIDED BY A JACE 8000 N4 AND IS BACNET CAPABLE. MODIFY AND EXTEND EXISTING SYSTEM TO SUIT.
2. INSTALL CONTROLS SUPPLIED WITH EQUIPMENT UNLESS NOTED OTHERWISE.
3. REFER TO DRAWINGS AND SCHEMATICS FOR DEVICE AND EQUIPMENT LOCATIONS.
4. ELECTRICAL:

1. PROVIDE POWER BOTH HIGH > 120V AND LOW < 120 VOLTAGE REQUIRED FOR THIS SECTION.
  2. ELECTRICAL INTERLOCK WIRING OF EQUIPMENT SPECIFIED UNDER OTHER SECTIONS OF THIS DIVISION IS THE RESPONSIBILITY OF TRADE SECTION INSTALLING THAT EQUIPMENT, UNLESS INDICATED OTHERWISE.
  3. SUPPLY AND INSTALL ELECTRICAL WIRING INCLUDING RACEWAYS FOR COMPONENTS FURNISHED UNDER THIS SECTION. INSTALL WIRING IN ACCORDANCE WITH GOVERNING ELECTRICAL CODE.
5. QUALIFICATIONS:

1. MINIMUM OF 5 YEARS EXPERIENCE INSTALLING SIMILAR SYSTEMS INVOLVING COMPUTER BASED CONTROL SYSTEMS AND BE LICENSED REPRESENTATIVE, AFFILIATE, OR OPERATING DIVISION OF CONTROLS MANUFACTURER, WHOLESALERS OR FRANCHISED DEALER/REPRESENTATIVES ARE NOT ACCEPTABLE. USE INSTALLATION PERSONNEL THAT ARE TRAINED AND CERTIFIED AS QUALIFIED BY CONTROLS MANUFACTURER.

2. UPON COMPLETION OF INSTALLATION, VERIFY BY TEST AND WRITTEN REPORT, THAT SYSTEM IS FULLY FUNCTIONAL, INSTALLED IN ACCORDANCE WITH PLANS AND SPECIFICATIONS AND CALIBRATED WITHIN OPERATIONAL LIMITS SPECIFIED.

6. WARRANTY: PROVIDE LABOUR, MATERIAL AND EQUIPMENT NECESSARY TO MAINTAIN BENEFICIAL PERFORMANCE OF ENTIRE BUILDING AUTOMATION SYSTEM FOR PERIOD OF 2 YEARS AFTER ACCEPTANCE OF SYSTEM, OR PARTS THEREOF.

7. SEQUENCE OF OPERATIONS: PROVIDE NECESSARY CONTROL DEVICES AND APPLICATION SOFTWARE TO CARRY OUT DESCRIBED SEQUENCES OF OPERATION. SEE DRAWINGS FOR SPECIFIED SEQUENCE OF OPERATIONS.

8. SHOP DRAWINGS:

1. PREPARE AND SUBMIT SHOP DRAWINGS FOR EQUIPMENT AND SYSTEMS COVERED BY THIS SECTION, AS MINIMUM INCLUDE FOLLOWING:

1. COMPLETE CATALOGUE DATA AND INSTALLATION INSTRUCTIONS FOR EACH CONTROL COMPONENT.
2. GENERAL SYSTEM ARCHITECTURE SCHEMATICS AND RISER DIAGRAMS.
3. VALVE SCHEDULE WITH PIPE SIZES, FLOW RATES, DESIGN AND ACTUAL PRESSURE DROPS.
4. DAMPER ACTUATOR SCHEDULE WITH SIZE, FLOW AND PRESSURE DROPS.
5. SEQUENCE OF OPERATION DIAGRAMS AND DESCRIPTIVE PROSE.
6. DETAILED SOFTWARE DESCRIPTION OF CONTROL AND MONITORING ROUTINES FURNISHED WITH SYSTEM.
7. PROJECT TEST PLAN, INDICATING HOW SYSTEM WILL BE TESTED AND FOUND TO BE OPERATING IN ACCORDANCE WITH PLANS AND SPECIFICATION.

2. PROVIDE COMPLETE AND APPROVED AS-BUILT SHOP DRAWINGS DETAILING EQUIPMENT AND INSTALLATION.

9. TRAINING:

1. PROVIDE OWNER'S SYSTEM OPERATORS COMPLETE INSTRUCTIONS FOR PROPER CONTROL OF SYSTEM UNDER MODES OF OPERATION INCLUDING BUT NOT LIMITED TO SUMMER/WINTER, OCCUPIED/UNOCCUPIED, ENERGY MANAGEMENT AND ALARM EVENT SEQUENCES.

2. CONDUCT INSTRUCTION DURING NORMAL WORKING HOURS, MONDAY THROUGH FRIDAY AT SITE, PROVIDE ON-SITE TRAINING CONSISTING OF BOTH CLASSROOM AND HANDS-ON TRAINING.

3. ADDRESS FOLLOWING OPERATOR FUNCTIONS:

1. SENSOR/ACTUATOR OPERATION
2. SYSTEM ARCHITECTURE AND BASIC THEORY OF OPERATION
3. OPERATOR LEVEL (PASSWORD LEVEL 1) INTERFACE TO SYSTEM FOR PASSWORD ACCESS, ALARM HANDLING, POINT ADDRESSING, MANUAL COMMANDS AND DISPLAY OF STATISTICAL DATA
4. PROGRAM LEVEL (PASSWORD LEVEL 2) OPERATION FOR COMMAND CONTROL AND DEFINITION OF ENERGY MANAGEMENT PARAMETERS
5. CONFIGURATION LEVEL (PASSWORD LEVEL 3) FOR DATABASE ENTRY AND MODIFICATION
6. USER DEFINED PROGRAMMING
7. SUPERVISORY COMPUTER AND OTHER PERIPHERALS OPERATION

10. EQUIPMENT:

1. IDENTIFICATION OF EQUIPMENT:

1. IDENTIFY EACH PIECE OF EQUIPMENT WITH NAMEPLATE IDENTIFYING EQUIPMENT AND FUNCTIONS WITH LETTER AND NUMBER DESIGNATION.
2. USE LAMINATED PLASTIC NAMEPLATES OF AT LEAST 75 MM X 25 MM X 3 MM (3" X 1" X 1/8") WITH BLACK FACE AND WHITE CENTRE AND 6 MM (1/4") HIGH ENGRAVED LETTERING. SECURELY ATTACH TO EQUIPMENT.

2. PANELS: MOUNT RELAYS, TRANSDUCERS, GAUGES AND SIMILAR DEVICES IN CONTROL PANELS.

3. AUTOMATIC CONTROL VALVES:

1. USE MODULATING BELIMO ZONE TIGHT VALVE ONLY. NORMALLY OPEN/FAIL OPEN. CHARACTERISTICS OF CONTROL VALVES SHALL BE SUITED TO REQUIRED APPLICATION, SIZE AND SELECT VALVES.

2. MAXIMUM ALLOWABLE PRESSURE DROPS:

- CHILLED WATER COIL VALVES – 21 KPA (3 PSIG)
- HOT WATER COIL VALVES – 21 KPA (3 PSIG)
- STEAM COIL VALVES - CRITICAL PRESSURE
- HOT WATER CONVECTORS – 7 KPA (1 PSIG)

3. VALVE TYPE:

- VALVES 13 MM (1/2") THROUGH 32 MM (1-1/4") - FEMALE NPT INLET AND MALE NPT UNION OUTLET
- VALVES 38 MM (1-1/2") THROUGH 51 MM (2") - SCREWED BODIES
- VALVES 2-1/2" AND LARGER - FLANGED BODIES

4. LIST OF OTHER EQUIPMENT:

- AUTOMATIC DAMPERS AND ACTUATORS
- TEMPERATURE SENSORS
- THERMOSTATS
- CURRENT SENSING RELAYS
- RELAYS

11. THE FOLLOWING CONTROL SYSTEMS COMPANIES ARE ACCEPTABLE:

1. AINSWORTH
2. HONEYWELL
3. AIRON
4. REGULVAR
5. TRANE
6. B. LUNDY MECHANICAL

11. COMMISSIONING:

1. GENERAL: CARRY COSTS TO ASSIST IN THE COMMISSIONING PROCESS FOR ACHIEVING, VERIFYING, AND DOCUMENTING THAT THE FACILITY AND ITS SYSTEMS ARE PLANNED, DESIGNED, INSTALLED, AND TESTED TO MEET THE ORIGINAL PROJECT REQUIREMENTS ESTABLISHED BY THE OWNER.

2. COMMISSIONING TEAM:

1. OWNER'S REPRESENTATIVE - REPRESENTATIVE OF THE OWNER, AS DEFINED IN THE AGREEMENT.
2. CONSULTANT - CONSULTANT, AS DEFINED IN THE AGREEMENT.
3. COMMISSIONING AUTHORITY - PARTY ENGAGED BY THE OWNER TO LEAD COMMISSIONING ACTIVITIES AND COORDINATE OTHER TEAM MEMBERS.

4. CONTRACTOR REPRESENTATIVES - REPRESENTATIVES OF THE CONTRACTOR, INCLUDING ANY SUB-CONTRACTORS WHOSE SCOPE OF WORK INCLUDES ITEMS REQUIRING COMMISSIONING.

5. TESTING AGENCY - SPECIALTY AGENCY ENGAGED BY THE GENERAL CONTRACTOR TO PERFORM TESTS ON COMPONENTS OR SYSTEMS TO VERIFY CONFORMANCE TO OWNER'S REQUIREMENTS OR SPECIFIED REQUIREMENTS.

3. TEAM MEMBER RESPONSIBILITIES:

1. THE COMMISSIONING AUTHORITY WILL PROVIDE THE FOLLOWING:

1. COMMISSIONING PLAN, INCLUDING BUT NOT LIMITED TO, THE MANAGEMENT OF COMMISSIONING MEETINGS AS REQUIRED AND THE MANAGEMENT OF PROJECT-SPECIFIC COMMISSIONING DOCUMENTS.
2. ASSEMBLY OF PROJECT REQUIREMENTS, INCLUDING DESIGN CRITERIA & PERFORMANCE GOALS FROM THE CONSTRUCTION DOCUMENTS.
3. SUPPORT THE SCHEDULING OF THE COMMISSIONING VERIFICATION MEETINGS BETWEEN TEAM MEMBERS.
4. DEVELOPMENT OF FUNCTIONAL PERFORMANCE CHECKLISTS FOR INDIVIDUAL EQUIPMENT
5. PREPARE A COMMISSIONING REPORT AND ASSEMBLY OF TESTING AND BALANCING REPORTS, START-UP REPORTS, AND TESTING REPORTS.
6. AUDIT PROCEDURE, TO BE PERFORMED IN THE EVENT OF DISPUTE OR FAILURE.

2. CONTRACTOR REPRESENTATIVES SHALL:

1. ALLOW COMMISSIONING TEAM MEMBERS TO WITNESS STARTING, TESTING, ADJUSTING AND BALANCING PROCEDURES AND ALLOW COMMISSIONING AUTHORITY FREE ACCESS TO THE SITE.
2. PAY COSTS ASSOCIATED WITH STARTING, TESTING, ADJUSTING AND BALANCING AND RELEVANT INSTRUMENTS AND SUPPLIES REQUIRED TO PERFORM THOSE DUTIES.
3. EMPLOY EXPERIENCED PERSONNEL FOR EQUIPMENT STARTUP AND COMMISSIONING, WHO ARE ABLE TO INTERPRET RESULTS OF READINGS AND TESTS, AND REPORT THE SYSTEM STATUS IN A CLEAR AND CONCISE MANNER.
4. PROVIDE ALL EQUIPMENT REQUIRED TO PERFORM TESTING, BALANCING, AND COMMISSIONING OF SYSTEMS. CALIBRATE INSTRUMENTS USED IN START UP AS ACCURATE, PROVIDE CALIBRATION CERTIFICATES IF REQUESTED BY THE COMMISSIONING AUTHORITY.
5. UTILIZE EQUIPMENT CHECKLIST AND OTHER COMMISSIONING DOCUMENTS REQUIRED BY THE COMMISSIONING AUTHORITY.
6. VERIFY THAT EQUIPMENT IS INSTALLED IN ACCORDANCE WITH CONTRACT DOCUMENTS AND REVIEWED SHOP DRAWINGS.

4. COMMISSION TESTING & VERIFICATION PREREQUISITES:

1. PROVIDE COPIES TO THE COMMISSIONING AUTHORITY, OF COMPONENT AND ASSEMBLY CONTRACT DOCUMENT COMPLIANCE:
  - EQUIPMENT OPERATING CERTIFICATES
  - INSPECTION CERTIFICATES FROM AUTHORITIES HAVING JURISDICTION
  - REQUIRED COPIES OF SHOP DRAWINGS
  - OPERATION AND MAINTENANCE MANUAL (INCLUDING ALL MAJOR EQUIPMENT)
  - ENSURE ALL SYSTEMS HAVE BEEN STARTED, ADJUSTED TO DESIGN CRITERIA, AND ARE FUNCTIONALLY OPERATIONAL, READY FOR INDEPENDENT TESTING
  - COOPERATE WITH THE COMMISSIONING AUTHORITY IN ADVANCE OF ACTIVATING OPERATING SYSTEMS
  - COMPLETE ALL DEFICIENCIES IDENTIFIED IN THE DEFICIENCIES LOG TO MEET THE PROJECT REQUIREMENTS. CARRY ANY ADDITIONAL COSTS REQUIRED FOR RE-VERIFICATION IF REQUIRED BY THE COMMISSIONING AUTHORITY.

5. COMMISSION TESTING & VERIFICATION:

1. ALLOW FOR WORK EFFORT AND ASSOCIATED COSTS NECESSARY TO ASSIST AN OWNER APPOINTED AND REMUNERATED COMMISSIONING AUTHORITY, FOR FULFILLMENT OF A COMMISSION TESTING PROCESS OF THE FACILITY AND WORK.
2. COORDINATE, COOPERATE AND HARMONIZE EFFORTS WITH THE COMMISSIONING AUTHORITY.
3. COMMISSION TESTING WILL INCLUDE A RANDOM TESTING AND EVALUATION PROCESS AS DETERMINED BY THE COMMISSIONING AUTHORITY.
4. COMMISSIONING REPORT SHALL BE SUITABLY LOGGED, TABULATED, SIGNED, AND INCORPORATED INTO PROJECT OPERATING AND MAINTENANCE MANUALS.
5. THE COMMISSIONING PROCESS WILL NOT:
  - 1. PRECLUDE THE DUTIES AND RESPONSIBILITIES DESCRIBED IN THE CONTRACT DOCUMENTS NOR THE REQUIREMENTS AND OBLIGATIONS OF THE CONTRACT.
  - 2. CIRCUMVENT ANY REQUIRED WARRANTIES.
  - 3. RELIEVE THE CONTRACTOR FROM WARRANTY REQUIREMENTS, RESPONSIBILITIES, OR OBLIGATIONS.

6. THE FOLLOWING COMMISSIONING COMPANIES ARE ACCEPTABLE:

1. A CFMS CONSULTING INC – 905-787-9449 x 202. CONTACT – WENDY COLLINS.
2. C.E.S. ENGINEERING LTD – 416-226-4224 x 111. CONTACT – BOBAN RATKOVICH
3. ISOTHERM COMMISSIONING OTTAWA LTD – 613-423-5182. CONTACT – MARC LALONDE.
4. MORRISON HERSHFIELD LTD – 416-495-4294. CONTACT – RINO ZAN.
5. NOVA COMMISSIONING SERVICES LTD – 613-830-6656. CONTACT MATTER VAN GURP OR JEREMIAH POINT.
6. PACT ENGINEERING – 905-773-2442 x 301. CONTACT – REZA ILKHANI
7. WSP CANADA INC – 61-690-3861. CONTACT – SANDY FRAZEE

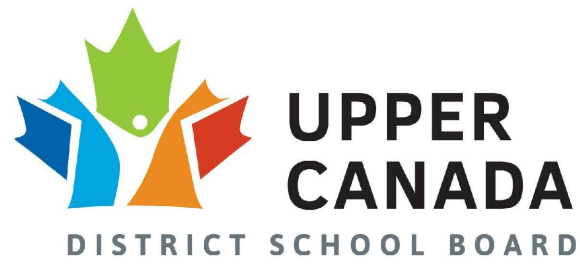


**LONDON:** 1385 North Routledge Park, Unit 9  
London, ON N6H 5N5 P 519.472.7640

**KINGSTON:** 1471 John Counter Blvd. Unit 301  
Kingston, ON K7M 8S8 P 613.900.0845

**KITCHENER:** 210-137 Glasgow Street, Office #141  
Kitchener, ON N2G 4X8 P 519.472.7640

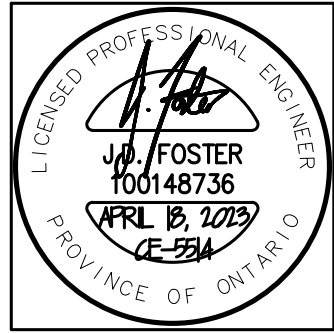
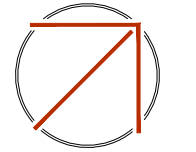
W [www.callidus.ca](http://www.callidus.ca) E [info@callidus.ca](mailto:info@callidus.ca)



REVISIONS

NO.	ISSUED FOR	DATE
00	ISSUED FOR PERMIT/ TENDER	23.04.18
01	RE-ISSUED FOR ADDENDUM	23.05.08

NORTH



DESIGN	NH	DRAWN	NH
CHECKED	JDF	REVIEWED	JDF

PROJECT

UCDSB LINKLATER PS  
2023 UPGRADES

ADDRESS

300 STONE ST. N.  
GANANOQUE, ON

PROJECT NO.

CE-5514



DRAWING TITLE

MECHANICAL SPECIFICATIONS  
CONT'D

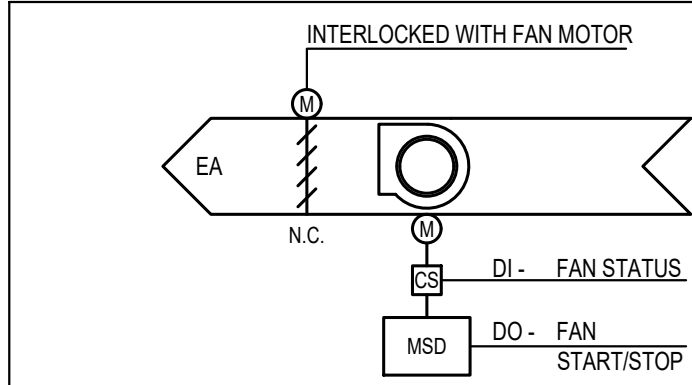
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M12 OF 13



CONTROL SCHEMATIC LEGEND	
AI	ANALOG INPUT
AO	ANALOG OUTPUT
BCNT	BACNET INTERFACE
CC	COOLING COIL
CS	CURRENT SENSOR
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DX	DX COOLING COIL
EH	ELECTRIC HEATER
	FIELD WIRING LOW VOLT
FM	FLOW METER
HC	HEATING COIL
HP	HEAT PUMP
IL	INDICATOR LIGHT
MCP	MANUFACTURER'S CONTROL PANEL
MS	MANUAL SWITCH
MSD	MOTOR STARTING DEVICE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
VFD	VARIABLE FREQUENCY DRIVE
	MOTOR
SCR	
SF	SUPPLY FAN

- CONTROL NOTES:**
- CONNECT TO BACNET CONTROLLER IN ROOFTOP UNITS.
  - PROVIDE NEW CONTROL VALVES WHERE SHOWN ON DRAWINGS.
  - PROVIDE NEW TEMPERATURE/HUMIDITY/CO2 SENSOR, TO REPLACE EXISTING THERMOSTATS IN ROOMS SERVED BY NEW ROOFTOP UNITS. THERMISTOR TYPE.
  - PROVIDE RTU PHASE PROTECTION.
  - ALL BAS CONTROLLERS TO BE INSTALLED IN NEMA 1 ENCLOSURES.
  - PROVIDE BATTERY BACKUP FOR ALL CONTROLLERS.
  - ALL EXPOSED CONTROL WIRING TO BE CONTAINED WITHIN EMT CONDUIT. CONDUIT TO BE PAINTED TO BLEND IN WITH SURROUNDINGS. CONDUIT ROUTING TO BE APPROVED BY UCDSB PROJECT MANAGER PRIOR TO INSTALLATION.
  - ALL CONCEALED CONTROL WIRING TO BE INSTALLED WITH J HOOKS AT A MAXIMUM 5' (1500MM) SPACING. J HOOKS TO BE MOUNTED TO BUILDING STRUCTURE. THREADED ROD MOUNTING WILL NOT BE ACCEPTED.
  - CONTROL WIRING TO BE GROUPED TOGETHER USING VELCRO STRAPS. ZIP TIES NOT PERMISSIBLE.
  - CONTROL WIRING TO BE ORANGE TO MATCH UCDSB STANDARD.
  - PROVIDE GRAPHICAL INTERFACE FOR EACH SYSTEM, INCLUDING ALL PERTINENT INFORMATION. POINTS IN OVERRIDE CONDITION DISPLAYED IN PURPLE. POINTS IN ALARM DISPLAYED IN RED.
  - GRAPHICS TO INCLUDE FLOOR PLAN WITH INFORMATION AVAILABLE FOR EACH ROOM DISPLAYED. INCLUDE LINK IN EACH ROOM TO SYSTEM SERVING THAT ROOM. GRAPHICS TO SHOW CONTROLLER LOCATIONS.
  - IMPLEMENT BUILDING WARM UP/COOL DOWN FUNCTION PRIOR TO OCCUPANCY. INTENT IS TO BRING AREAS TO OCCUPIED MODE SETPOINTS PRIOR TO OCCUPANCY. OUTSIDE AND EXHAUST AIR DAMPERS TO BE CLOSED DURING THIS PERIOD.
  - OPERATE SYSTEMS IN ECONOMIZER MODE WHEN OUTSIDE AIR ENTHALPY IS LESS THAN INDOOR ENTHALPY.
  - PROVIDE ABILITY TO SCHEDULE INDIVIDUAL ROOFTOP UNITS INDEPENDENTLY.
  - IMPLEMENT OPTIMIZED START/STOP CONTROLS.
  - PROVIDE CURRENT SENSOR FOR ALL FANS.
  - CONCEAL WIRING RUNS TO THE EQUIPMENT/DEVICES WHERE POSSIBLE.



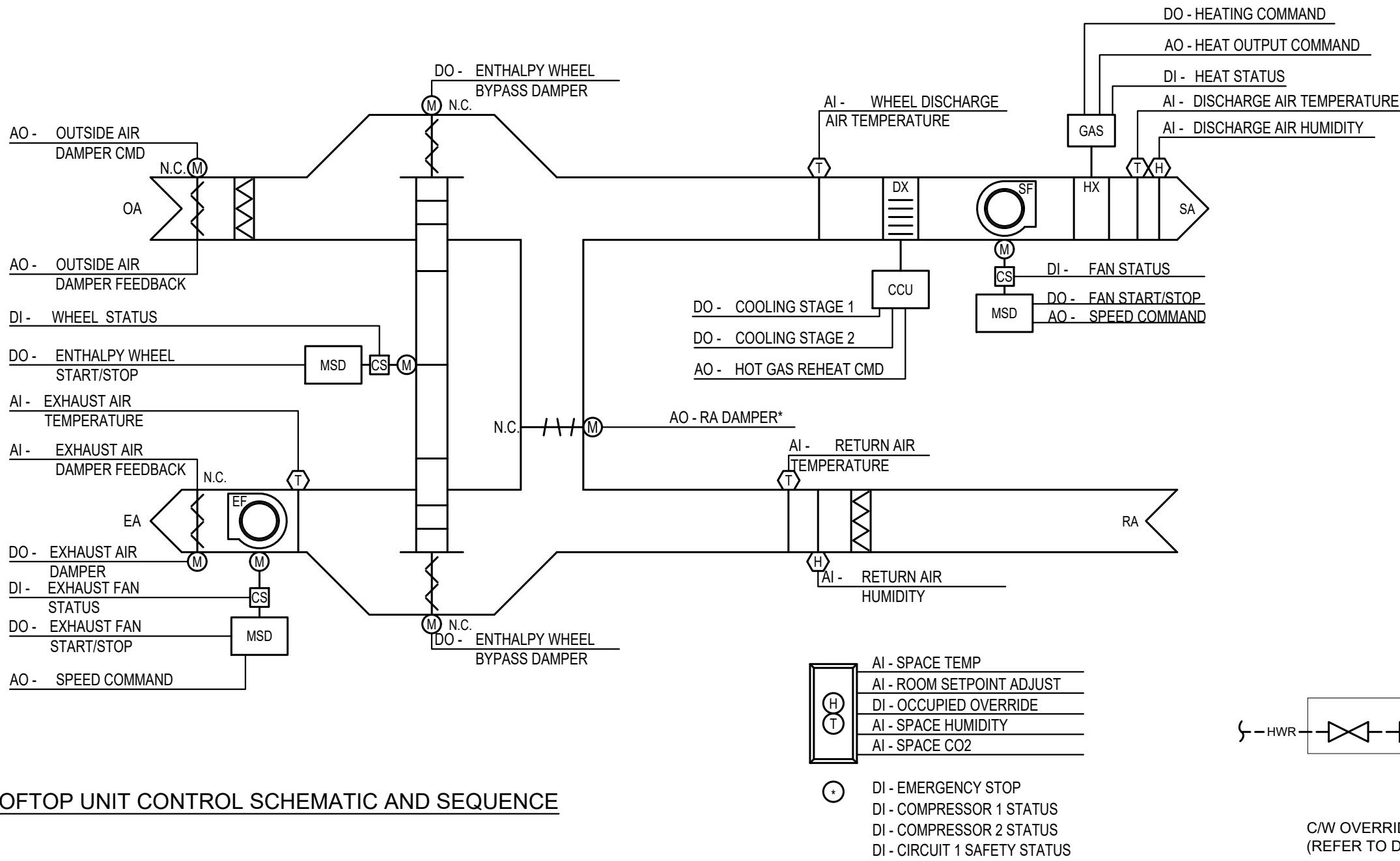
**SEQUENCE OF OPERATIONS:**

BASED ON PRE-DETERMINED SCHEDULE. OPEN MOTORIZED DAMPER AND ENABLE EXHAUST FAN. OUTSIDE OF SCHEDULED TIMES, DISABLE EXHAUST FAN.

**ALARMS:**

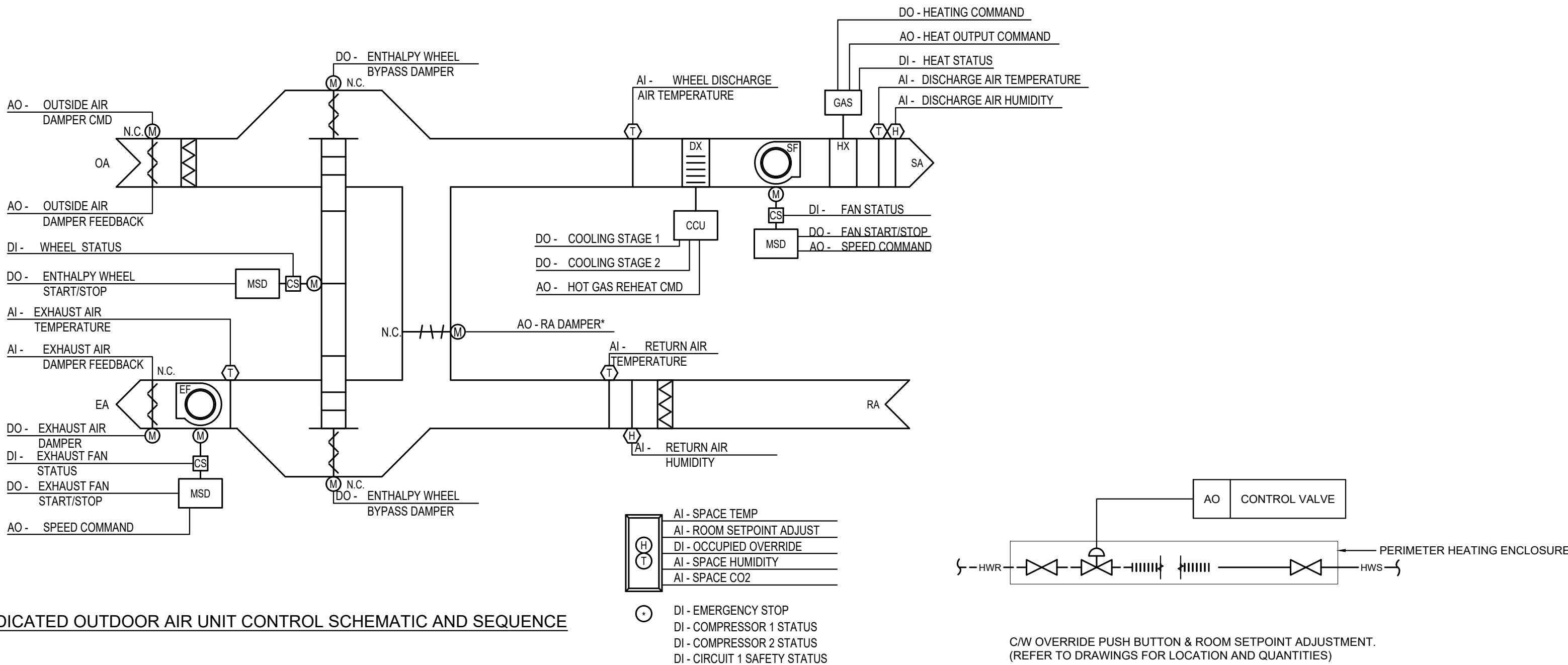
IF STATUS DOES NOT MATCH COMMAND, GENERATE ALARM ON BCS.

DETAIL CS1 - SCHEDULED EXHAUST FAN CONTROL SCHEMATIC



DETAIL CS2 - ROOFTOP UNIT CONTROL SCHEMATIC AND SEQUENCE

ENTHALPY WHEEL NOT INCLUDED ON ALL UNITS.



DETAIL CS3 - DEDICATED OUTDOOR AIR UNIT CONTROL SCHEMATIC AND SEQUENCE

ENTHALPY WHEEL NOT INCLUDED ON ALL UNITS.

**SEQUENCE OF OPERATIONS:**

**OCCUPIED**

SUMMER: RUN SUPPLY/EXHAUST FAN CONTINUOUSLY. RUN ERW CONTINUOUSLY (WHERE APPLICABLE). MODULATE COOLING TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT. DISABLE HYDRONIC HEATING. RESET SUPPLY AIR TEMPERATURE TO MAINTAIN AVERAGE SPACE TEMPERATURE SETPOINT.

WINTER: RUN SUPPLY/EXHAUST FAN CONTINUOUSLY. MODULATE GAS AND PERIMETER HEATING TO MAINTAIN AVERAGE SPACE TEMPERATURE SETPOINT.

**UNOCCUPIED**

SUMMER: CYCLE SUPPLY FAN AND COOLING TO MAINTAIN AVERAGE SPACE TEMPERATURE SETPOINT AT UNOCCUPIED SETPOINT. OUTSIDE AIR AND EXHAUST AIR DAMPERS TO BE CLOSED. BYPASS DAMPER TO BE FULLY OPEN.

WINTER: UNIT TO BE OFF. MODULATE HEATING CONTROL VALVE WITHIN ROOM (WHERE APPLICABLE) TO MAINTAIN ROOM TEMPERATURE SETPOINT.

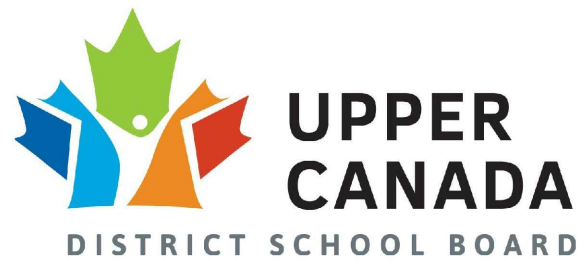
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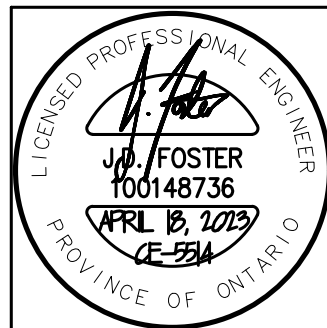
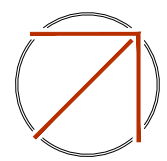
W www.callidus.ca E info@callidus.ca



**REVISIONS**

NO.	ISSUED FOR	DATE
01	ISSUED FOR ADDENDUM	23.05.08

**NORTH**



DESIGN	NH	DRAWN	NH
CHECKED	JDF	REVIEWED	JDF

**PROJECT**

UCDSB LINKLATER PS  
2023 UPGRADES

**ADDRESS**

300 STONE ST. N.  
GANANOQUE, ON

**PROJECT NO.**

CE-5514

**DRAWING TITLE**

CONTROL NOTES &  
SCHEMATICS  
MECHANICAL

**DRAWING NUMBER**

M13 OF 13