**NAME OF PRACTICE: GRGURIC ARCHITECTS INCORPORATED**
**CERTIFICATE OF PRACTICE NUMBER: 4760**
CONTACT: **JOHN GRGURIC**

28 KING STREET EAST, UNIT B, STONEY CREEK, ON L8G 1J8
TEL: 905-664-8737

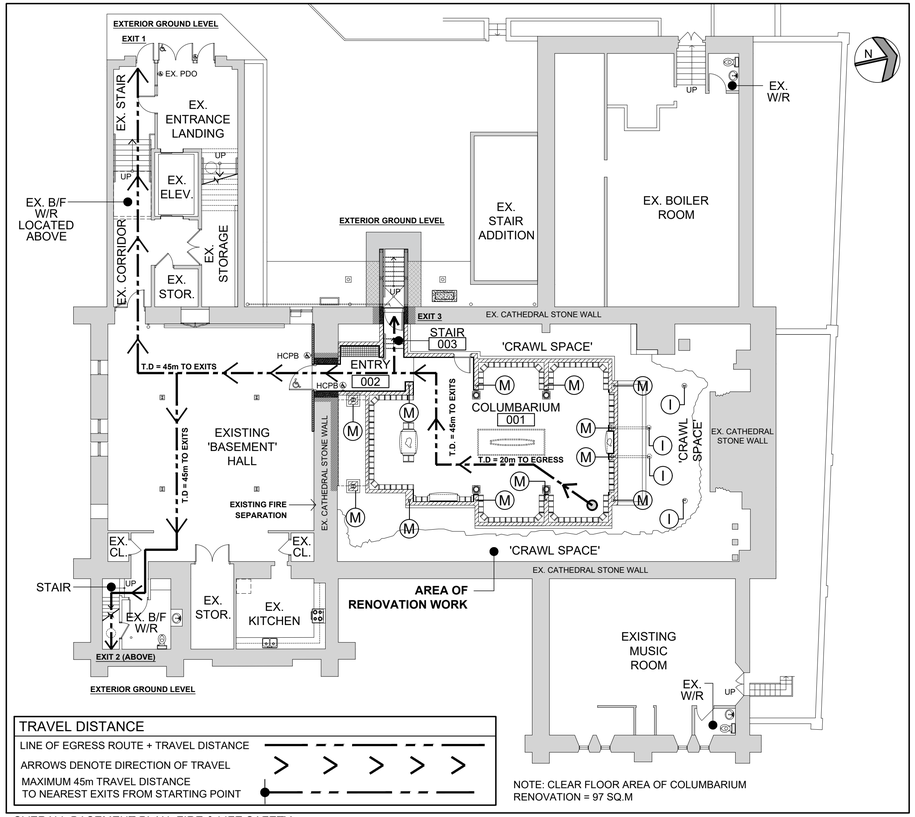
**NAME OF PROJECT:**
**CATHEDRAL OF ST. CATHERINE**
**OF ALEXANDRIA: COLUMBARIUM RENOVATION**

**LOCATION:**
67 CHURCH STREET, ST. CATHARINES, ONTARIO L2R 3C4

| Item | Ontario's 2012 Building Code Data Matrix Parts 3 or 9 | | | | OBC Reference (References are to Division B unless noted [A] for Division A or [C] for Division C | |
|---|---|---|---|---|---|---|
| 1 | Project Description: **INTERIOR RENOVATIONS TO EXISTING CATHEDRAL BASEMENT TO NEW COLUMBARIUM** | ☐ New ☐ Addition ☐ Change of Use | ■ Part 11 | 11.1 to 11.4 | ■ Part 3 1.1.2. [A] | ☐ Part 9 1.1.2 [A] & 9.10.1.3 |
| 2 | Major Occupancy(s) **A2 Assembly Occupancy** | | | | 3.1.2.1.(1) | 9.10.2 |
| 3 | Building Area Existing **1,352.37 m²** | Ex. Area to Remain Unchanged as a Part of these Renovations | | | 1.4.1.2.[A] | 1.4.1.2.[A] |
| 4 | Gross Area Existing **1,189.72 m²** | | | | 1.4.1.2.[A] | 1.4.1.2.[A] |
| 5 | Number of storeys **1** Above grade **1** Below grade **1** | | | | 1.4.1.2.[A] & 3.2.1.1 | 1.4.1.2.[A] & 9.10.4 |
| 6 | Number of Streets/ Fire Fighter Access **2** | | | | 3.2.2.10 & 3.2.5 | 9.10.20. |
| 7 | Building Classification **(EXISTING TO REMAIN) Group A, Division 2, up to 2 Storeys 3.2.2.25.** | | | | 3.2.2.20.-.83 | 9.10.2. |
| 8 | Sprinkler System Proposed | ☐ entire building ☐ selected compartments ☐ selected floor areas ■ basement only **(EXISTING)** ☐ in lieu of roof rating ☐ not required | | | 3.2.2.20.-.83 3.2.1.5. 3.2.2.17. INDEX | 9.10.8.2 INDEX |
| 9 | Standpipe required | ☐ Yes ■ No **(EXISTING)** | | | 3.2.9 | N/A |
| 10 | Fire Alarm required | ■ Yes ☐ No **(EXISTING)** | | | 3.2.4 | 9.10.18 |
| 11 | Water Service/Supply is Adequate | ■ Yes ☐ No | | | 3.2.5.7. | N/A |
| 12 | High Building | ☐ Yes ■ No | | | 3.2.6 | N/A |
| 13 | Permitted Construction / Actual Construction | ☐ Combustible permitted / ☐ Combustible | ☐ Non-combustible required / ☐ Non-combustible | ■ Both / ■ Both | 3.2.2.20.-.83 | 9.10.6 |
| 14 | Mezzanine(s) Area m 2 **N/A** | | | | 3.2.1.1.(3)-(8) | 9.10.4.1 |
| 15 | Occupant load based on: Columbarium Occupancy **A2** Load **10** persons; Existing Church Occupancy **A2**; Existing Basement 'Hall' Occupancy **A2** | ☐ m² /person ■ design of building | | Load **Existing to Remain Unchanged as a part of these renovations** | 3.1.17 | 9.9.1.3 |
| 16 | Barrier-free Design | ■ Yes ☐ No (Explain) (Existing) | | | 3.8 | 9.5.2 |
| 17 | Hazardous Substances | ☐ Yes ■ No | | | 3.3.1.2. & 3.3.1.19 | 9.10.1.3(4) |
| 18 | Required Fire Resistance Rating (FRR) | Horizontal Assemblies FRR (Hours) | | Listed Design No. or Description (SB-2) | 3.2.2.20.-.83 & 3.2.1.4 | 9.10.8. 9.10.9. |
| | | Floors **45 MIN.** Hours (Floor Assembly over Basement) **1 HOUR PROVIDED** | | **- Per SB-2 - 2-Layers Type-X Fire Rated Gypsum Board at Columbarium Space. - Refer to Drawings for construction details of fire separation. - Fire Retardant Coating at existing wood floor over 'Crawl Space' ULC Tested CAN-S-101, NFPA 251** | | |
| | | Roof **N/A** Hours | | **N/A** | | |
| | | Mezzanine **N/A** Hours | | **N/A** | | |
| | | FRR of Supporting Members | | Listed Design No. or Description (SB-2) | | |
| | | Floors **45 MIN.** Hours (Floor Assembly over Basement) **1 HOUR PROVIDED** | | **- Columns: Per SB-2 - Table 2.1.1 for masonry protection. Min. 73mm Equivalent Thickness for 1 Hour FRR. - Beams (at columbarium space): SB-2 2-Layers Type-X Fire Rated Gypsum board (refer to drawings) - Steel Columns / Beams (at Crawl Space) ULC Design #: Z612** | | |
| | | Roof **N/A** Hours | | **N/A** | | |
| | | Mezzanine **N/A** Hours | | **N/A** | | |
| 19 | Spatial Separation - Construction of Exterior Walls **Not Applicable** | | | | 3.2.3 | 9.10.14 |

| Wall | Area of EBF (m²) | L.D. (m) | L/H or H/L | Permitted Max. % of Openings | Proposed % of Openings | Min. FRR (Hours) Required | Listed Design or Description | Construction Type Required | Cladding Type Required |
|---|---|---|---|---|---|---|---|---|---|
| North | - | - | - | - | - | - | Refer to drawings | Combustible or Noncombustible | Combustible or Noncombustible |
| South | - | - | - | - | - | - | Refer to drawings | Combustible or Noncombustible | Combustible or Noncombustible |
| East | - | - | - | - | - | - | Refer to drawings | Combustible or Noncombustible | Combustible or Noncombustible |
| West | - | - | - | - | - | - | Refer to drawings | Combustible or Noncombustible | Combustible or Noncombustible |

| | | | | Building Code Reference |
|---|---|---|---|---|
| 21 | Travel Distance to Exits (Refer to Drawings) | | | |
| 11.2. | Existing Building classification: | Describe Existing Use: **Group A2 (Existing Church)**; Construction Index:; Hazard Index:; ■ Not Applicable (no major change of occupancy) | | 11.2.1 T 11.2.1.1A T 11.2.1.1B to N |
| 11.3. | Alteration to Existing Building is: | Basic Renovation ■; Extensive Renovation ☐ | | 11.3.3.1 11.3.3.2 |
| 11.4. | Reduction in Performance Level: | | | 11.4.2 |
| | | Structural: ■ No ☐ Yes | | 11.4.2.1 |
| | | By Increase in occupant load: ■ No ☐ Yes | | 11.4.2.2 |
| | | By change of major occupancy: ■ No ☐ Yes | | 11.4.2.3 |
| | | Plumbing: ■ No ☐ Yes | | 11.4.2.4 |
| | | Sewage System: ■ No ☐ Yes | | 11.4.2.5 |
| 11.4.3. | Compensating Construction: | | | 11.4.3 |
| | | Structural: ■ No ☐ Yes (explain | | 11.4.3.2 |
| | | Increase in occupant load: ■ No ☐ Yes (explain) | | 11.4.3.3 |
| | | Change of major occupancy: ■ No ☐ Yes (explain) | | 11.4.3.4 |
| | | Plumbing: ■ No ☐ Yes (explain) | | 11.4.3.5 |
| | | Sewage system: ■ No ☐ Yes (explain) | | 11.4.3.6 |
| 11.5 | Compliance Alternatives Proposed: | ☐ No ■ Yes (give number [s]) OBC Part 11 Compliance Alternative - Table 11.5.1.1.A. Item 69. | | 11.4.2 |




OVERALL BASEMENT PLAN: FIRE & LIFE SAFETY
SCALE: 1:150

LEGEND

| | |
|---|---|
| B/F | BARRIER FREE |
| CL | CLOSET |
| COL | COLUMN |
| CONC | CONCRETE |
| CONT. | CONTINUOUS |
| C/W | COMPLETE WITH |
| EQ | EQUAL |
| EX | EXISTING |
| FRR | FIRE RESISTANCE RATING |
| GYP | GYPSUM |
| HCPB | HANDICAP PUSH BUTTON |
| HR | HOUR |
| MIN | MINIMUM |
| NTS | NOT TO SCALE |
| O/C | ON CENTRE |
| PDO | POWER DOOR OPERATOR |
| RM | ROOM |
| STOR | STORAGE |
| T.D | TRAVEL DISTANCE |
| T/R | TO REMAIN |
| TYP | TYPICAL |
| U/S | UNDERSIDE |

## GENERAL FIRE PROTECTION NOTES:

1. REFER TO FIRE SEPARATION LOCATIONS INDICATED ON PLANS OF THIS DRAWING AND BUILDING SECTIONS.
2. A) ALL STRUCTURAL STEEL COLUMNS AND STEEL COLUMN STRUCTURAL BRACING SUPPORTING THE FLOOR ABOVE BASEMENT REQUIRE **1 HR FRR.** PROTECTION TO BE PROTECTED WITH EITHER INTUMESCENT FIRE RESISTIVE COATING / SPRAY OR MASONRY PROTECTION INDICATED ON THE PLANS AS FOLLOWS:
   (M) MASONRY FIRE PROTECTION OF STEEL COLUMNS / HANGERS (CONC. BLOCK, FILL SOLID WITH GROUT OR MORTAR, 73mm EQUIVALENT THICKNESS)
   (I) THIN FILM INTUMESCENT FIRE RESISTIVE COATING
   B) ALL STRUCTURAL STEEL BEAMS, BRACING & HANGERS, ETC. SUPPORTING THE FLOOR ABOVE BASEMENT REQUIRE **1 HR FRR.** PROTECTION TO BE PROTECTED WITH EITHER INTUMESCENT FIRE RESISTIVE COATING / SPRAY WHERE NOT DIRECTLY SHOWN, DETAILED OR OTHERWISE NOTED ON PLANS. (I.E. ALL EXISTING EXPOSED STEEL IN EXISTING 'CRAWL SPACE')
   C) EXISTING EXPOSED WOOD FLOOR STRUCTURE (WOOD JOISTS, DECKING, BEAMS ETC.) IN 'CRAWL SPACE' TO RECEIVE FIRE RETARDANT COATING FOR 1 HR FRR.
   D) REFER TO ARCHITECTURAL DRAWINGS FOR TYPICAL DETAILS FOR LOCATIONS WHERE COLUMNS ARE LOCATED WITHIN MASONRY WALL CAVITIES
3. EVERY DOOR IN A FIRE SEPARATION SHALL BE EQUIPPED WITH A SELF CLOSING DEVICE & POSITIVE LATCHING MECHANISM AS PER OBC 3.1.8.11 & 3.1.8.13.

PROPOSED INTERIOR PERSPECTIVE

# CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA: COLUMBARIUM RENOVATION

67 CHURCH STREET, ST. CATHARINES, ONTARIO L2R 3C4

**Diocese of St. Catharines**
*Where Faith Lives*

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

**DFE**
**DOYTCH & FILO ENGINEERING INC.**
Structural Engineers
Phones: (647) 836-4805 ; (905) 719-1482

CK ENGINEERING INC.
3390 SOUTH SERVICE ROAD SUITE 302
BURLINGTON, ON. L7N 3J5
TEL: (905) 631-1115
EMAIL: info@ckengs.net

## DRAWING LIST:

**ARCHITECTURAL**


| | |
|---|---|
| A 1.00 | COVER SHEET, OBC MATRIX & LIFE SAFETY |
| A 1.00 | BASEMENT DEMOLITION PLAN |
| A 2.00 | BASEMENT FLOOR PLAN |
| A 2.10 | BASEMENT REFLECTED CEILING PLAN & DETAILS |
| A 3.00 | PARTIAL BASEMENT BUILDING SECTIONS |
| A 3.10 | WALL SECTIONS |
| A 3.20 | WALL SECTIONS |
| A 3.30 | WALL SECTIONS |
| A 3.40 | STAIR DETAILS & PLAN DETAILS |
| A 4.00 | INTERIOR ELEVATIONS & PLAN DETAILS |


**STRUCTURAL**


| | |
|---|---|
| S100 | GENERAL NOTES |
| S200 | BASEMENT FOUNDATION PLAN |
| S300 | FOUNDATION DETAILS |

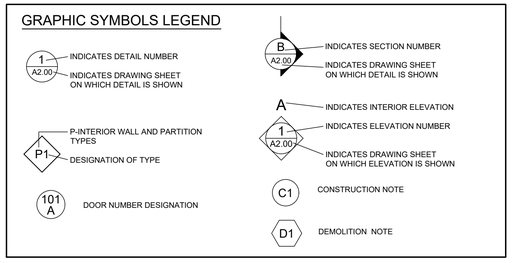

**MECHANICAL**


| | |
|---|---|
| M1.1 | MECHANICAL SPECIFICATIONS & DRAWING LIST |
| M1.2 | MECHANICAL SCHEDULES, LEGENDS |
| M1.3 | MECHANICAL DETAILS |
| M2.1 | PLUMBING & SPRINKLER PLAN |
| M3.1 | HVAC PLAN |


**ELECTRICAL**


| | |
|---|---|
| E1.1 | SPECIFICATIONS AND DRAWING LIST SHEET 1 OF 2 |
| E1.2 | SPECIFICATIONS AND LEGENDS SHEET 2 OF 2 |
| E1.3 | SCHEDULES AND DETAILS |
| E2.1 | KEY PLANS |
| E3.1 | SINGLE LINE DIAGRAM |
| E4.1 | ELECTRICAL DEMOLITION |
| E4.2 | ELECTRICAL DEMOLITION SITE PHOTOS |
| E5.1 | NEW POWER, LIGHTING, FIRE ALARM AND SYSTEMS |


## GRAPHIC SYMBOLS LEGEND




## GENERAL NOTES

1. COORDINATE AND VERIFY WITH THE OWNER ALL ITEMS TO BE SALVAGED, MOVED & STORED PRIOR TO DEMOLITION.
2. CAUSE NO DAMAGE TO EXISTING CONSTRUCTION TO REMAIN. TAKE CARE NOT TO ENCROACH ON ADJACENT OCCUPIED AREAS OR AREAS NOT WITHIN THE SCOPE OF WORK. PROTECT ALL EXISTING FINISHES, DOORS, FRAMES, ETC. WHICH ARE TO REMAIN. PATCH AND MAKE GOOD ALL EXISTING ADJACENT SURFACES FINISHES & MATERIALS WHERE DISTURBED BY NEW CONSTRUCTION.
3. MECHANICAL AND ELECTRICAL ITEMS SHOWN ON ARCHITECTURAL DRAWINGS, I.E. DUCTWORK, PIPING, LIGHT FIXTURES, ETC. ARE FOR REFERENCE ONLY AND ARE NOT INCLUSIVE. REFER TO MECHANICAL AND ELECTRICAL DRAWING FOR ALL RELATED NEW AND DEMOLITION WORK REQUIRED.
4. CONNECTIONS OF ALL NON STRUCTURAL ELEMENTS AND EQUIPMENT TO SUPPORTING STRUCTURE TO BE DESIGNED TO COMPLY WITH ARTICLE 4.1.8.18 OF THE 2012 ONTARIO BUILDING CODE FOR SEISMIC LOADS. CONTRACTOR TO SUBMIT SHOP DRAWINGS SHOWING THESE CONNECTIONS STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER.
5. TRANSITIONS BETWEEN NEW AND EXISTING FLOOR FINISHES ARE TO BE MADE SMOOTH AND CONTINUOUS. GRIND EXISTING FLOOR SLAB ACROSS DOOR THRESHOLDS TO SUIT THICKNESS OF NEW MATERIALS AND ENSURE NEW MATERIAL IS INSTALLED FLUSH WITH EXISTING WHERE APPLICABLE
6. CONTRACTOR TO ALLOW FOR PATCHING AND REPAIR OF ADJACENT MATERIALS AT ALL ELECTRICAL LIGHTING, EQUIPMENT, CONDUIT, RACEWAYS, ETC. TO BE REMOVED OR RELOCATED. REFER TO ELECTRICAL DRAWINGS. PREPARE ALL SURFACES FOR NEW FINISHES.

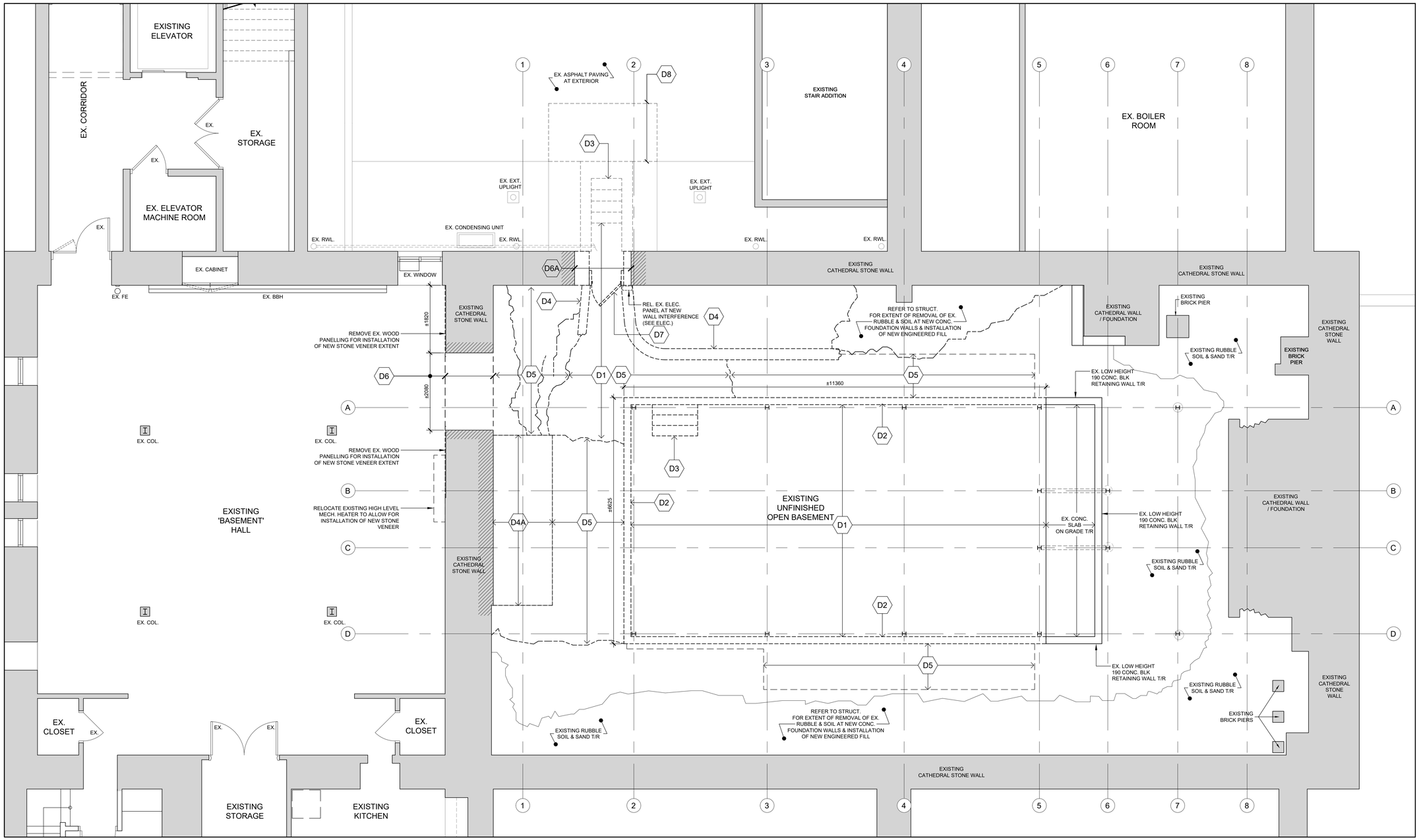
## GENERAL LIFE SAFETY NOTES:

1. THE FOLLOWING GENERAL NOTES ON THIS DRAWING PROVIDE AN OVERVIEW AND SHALL BE READ IN CONJUNCTION WITH ARCHITECTURAL, STRUCTURAL MECHANICAL AND ELECTRICAL DRAWINGS, DETAILS AND SPECIFICATIONS.
2. REFER TO FIRE SEPARATION LOCATIONS INDICATED ON PLANS OF THIS DRAWING AND BUILDING SECTIONS.
3. BARRIER FREE PATH OF TRAVEL SHALL HAVE AN UNOBSTRUCTED WIDTH OF 1.1m
4. PORTABLE FIRE EXTINGUISHERS SHALL BE PROVIDED IN ACCORDANCE WITH OBC 3.2.5.17. (1).
5. BARRIER FREE DOORS & HARDWARE TO COMPLY WITH THE REQUIREMENT OF THE 2012 OBC 3.8.3.3. & 3.8.2.1.
6. ALL DOOR LOCKING HARDWARE IN AN ACCESS TO EXITS ARE TO BE IN COMPLIANCE WITH OBC 3.3.1.12. DOORS SHALL BE READILY OPENABLE IN TRAVELLING TO AN EXIT WITHOUT REQUIRING KEYS, SPECIAL DEVICES, OR SPECIALIZED KNOWLEDGE OF THE DOOR OPENING MECHANISM.

**ISSUED FOR TENDER**
2021-12-08

PROJECT NUMBER
2019-04

SHEET NUMBER
A 0.00




PARTIAL BASEMENT DEMOLITION PLAN
SCALE: 1:50

## NOTES

### DEMOLITION NOTES

- D1 — REMOVE & DISCARD EXITING CONCRETE BASEMENT SLAB ON GRADE OVER EXTENT DENOTED
- D2 — REMOVE & DISCARD EXISTING CONCRETE BLOCK PARTIAL HEIGHT RETAINING WALL OVER EXTENT DENOTED ON PLAN & ASSOCIATED STRIP FOOTINGS BELOW. EXISTING BLOCK WALL IS APPROXIMATELY 3 TO 4 COURSES HIGH. EXISTING PIER FOOTINGS AT ALL EXISTING COLUMNS ARE TO REMAIN. (REFER TO STRUCTURAL DRAWINGS FOR RELATED WORK)
- D3 — REMOVE & DISCARD EXISTING CONCRETE PRECAST CONCRETE STAIRS & COPING STONES IN ITS ENTIRETY, INCLUDING BUT NOT LIMITED TO: EXISTING CONC. BLOCK STAIR WALLS / FOUNDATION & FOOTINGS & EXISTING CONC. LANDING PAD.
- D4 — CUT DOWN, REMOVE & DISCARD EXISTING STONE & RUBBLE RETAINING WALL OVER EXTENT DENOTED ON PLAN.
- D4A — CUT DOWN, REMOVE & DISCARD EXISTING FULL HEIGHT STONE CATHEDRAL WALL PORTION OVER EXTENT DENOTED ON PLAN ONLY TO ALLOW FOR INSTALLATION OF NEW COLUMNS, FOOTINGS & LOAD BEARING CONCRETE BLOCK WALLS. PROVIDE TEMPORARY SHORING OF EXISTING FLOOR STRUCTURE ABOVE AS REQUIRED.
- D5 — CUT DOWN, REMOVE & DISCARD EXISTING STONE, SAND, SOIL & RUBBLE DEBRIS TO ALLOW FOR INSTALLATION OF NEW INTERIOR PARTITION WALLS & CONC. FLOOR SLAB AS PER NEW FLOOR PLAN LAYOUT. REFER TO SECTIONS FOR APPROX. HEIGHTS. REFER TO STRUCTURAL DRAWINGS FOR WHERE NEW ENGINEERED FILL IS REQUIRED BEHIND NEW WALLS.
- D6 — CUT OUT NEW OPENING IN EXISTING STONE CATHEDRAL WALL TO SUIT NEW DOOR & FRAME & NEW CONC. BEARING SIDE WALLS FOR ENTRY INTO NEW COLUMBARIUM. PROVIDE TEMPORARY SHORING OF STRUCTURE ABOVE AS REQUIRED.
- D6A — CUT OUT WIDER OPENING AT EXISTING STONE CATHEDRAL WALL TO SUIT NEW DOOR & FRAME & NEW CONC. BEARING SIDE WALLS FOR EXTERIOR ENTRY INTO NEW COLUMBARIUM. ENSURE ALL EXISTING STRUCTURE & ADJACENT BEAMS ARE FULLY SHORED & SUPPORTED TO ALLOW FOR INSTALLATION OF NEW LINTELS (REFER TO STRUCT. FOR RELATED)
- D7 — REMOVE & DISCARD EXISTING WOOD DOOR & FRAME
- D8 — REMOVE & DISCARD EXISTING ASPHALT PAVING OVER APPROX. EXTENT DENOTED TO ALLOW FOR INSTALLATION OF NEW EXTERIOR CONCRETE STAIR. (REFER TO TYP. STAIR DETAILS)

**Diocese of St. Catharines**
*Where Faith Lives*

LEGEND

| | |
|---|---|
| APPROX. | APPROXIMATELY |
| BLK | BLOCK |
| COL. | COLUMN |
| CONC | CONCRETE |
| CONT. | CONTINUOUS |
| C/W | COMPLETE WITH |
| EQ | EQUAL |
| EX | EXISTING |
| EXT | EXTERIOR |
| FD | FLOOR DRAIN |
| MIN | MINIMUM |
| NIC | NOT IN CONTRACT |
| NTS | NOT TO SCALE |
| O/C | ON CENTRE |
| PT | PORCELAIN TILE |
| RWL | RAIN WATER LEADER |
| SIM | SIMILAR |
| STRUCT. | STRUCTURAL |
| T/R | TO REMAIN |
| TYP | TYPICAL |
| U/S | UNDERSIDE |

| NO | REVISIONS | DATE |
|---|---|---|
| 4 | ISSUED FOR TENDER | 2021-12-08 |
| 3 | REVISED PER BLDG DEPT. REVIEW | 2021-09-15 |
| 2 | ISSUED FOR PERMIT APPLICATION | 2021-06-18 |
| 1 | ISSUED FOR CLIENT REVIEW | 2021-06-10 |

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA: COLUMBARIUM RENOVATION

67 CHURCH STREET,
ST. CATHARINES, ONTARIO L2R 3C4

# BASEMENT DEMOLITION PLAN

GRGURIC ARCHITECTS INCORPORATED

28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

| | |
|---|---|
| SCALE: AS NOTED | PROJECT: 2019-04 |
| START DATE: MARCH 2021 | |
| DRAWN R.P. | DRAWING: A1.00 |
| CHECKED J.G. | |
| PRINT DATE | 12/08/21 |

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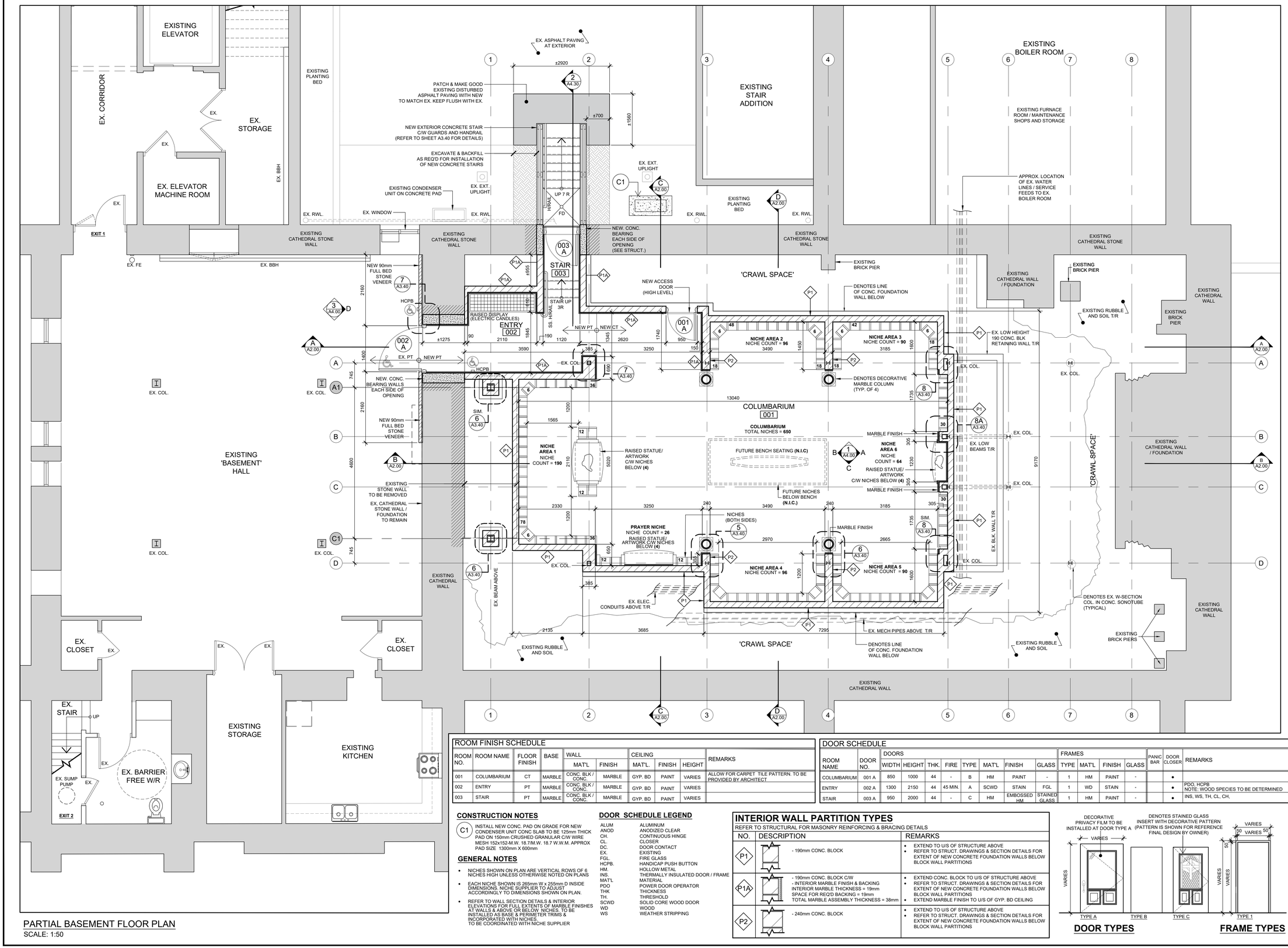
A1.00-A2-00-Floor-Plans-RCP-[2019-04].dwg




PARTIAL BASEMENT FLOOR PLAN

SCALE: 1:50

## ROOM FINISH SCHEDULE

| ROOM NO. | ROOM NAME | FLOOR FINISH | BASE | WALL MAT'L | WALL FINISH | CEILING MAT'L | CEILING FINISH | CEILING HEIGHT | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| 001 | COLUMBARIUM | CT | MARBLE | CONC. BLK / CONC. | MARBLE | GYP. BD | PAINT | VARIES | ALLOW FOR CARPET TILE PATTERN. TO BE PROVIDED BY ARCHITECT |
| 002 | ENTRY | PT | MARBLE | CONC. BLK / CONC. | MARBLE | GYP. BD | PAINT | VARIES | |
| 003 | STAIR | PT | MARBLE | CONC. BLK / CONC. | MARBLE | GYP. BD | PAINT | VARIES | |

## DOOR SCHEDULE

| ROOM NAME | DOOR NO. | DOORS WIDTH | HEIGHT | THK. | FIRE | TYPE | MAT'L | FINISH | GLASS | FRAMES TYPE | MAT'L | FINISH | GLASS | PANIC BAR | DOOR CLOSER | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COLUMBARIUM | 001 A | 850 | 1000 | 44 | - | B | HM | PAINT | - | 1 | HM | PAINT | - | | • | |
| ENTRY | 002 A | 1300 | 2150 | 44 | 45 MIN. | A | SCWD | STAIN | FGL | 1 | WD | STAIN | - | | • | PDO, HCPB<br>NOTE: WOOD SPECIES TO BE DETERMINED |
| STAIR | 003 A | 950 | 2000 | 44 | - | C | HM | EMBOSSED HM | STAINED GLASS | 1 | HM | PAINT | - | | • | INS, WS, TH, CL, CH, |

## CONSTRUCTION NOTES

C1 INSTALL NEW CONC. PAD ON GRADE FOR NEW CONDENSER UNIT CONC SLAB TO BE 125mm THICK PAD ON 150mm CRUSHED GRANULAR C/W WIRE MESH 152x152-M.W. 18.7/M.W. 18.7 W.W.M. APPROX PAD SIZE 1300mm X 600mm

## GENERAL NOTES

- NICHES SHOWN ON PLAN ARE VERTICAL ROWS OF 8 NICHES HIGH UNLESS OTHERWISE NOTED ON PLANS
- EACH NICHE SHOWN IS 265mm W x 255mm D INSIDE DIMENSIONS. NICHE SUPPLIER TO ADJUST ACCORDINGLY TO DIMENSIONS SHOWN ON PLAN.
- REFER TO WALL SECTION DETAILS & INTERIOR ELEVATIONS FOR FULL EXTENTS OF MARBLE FINISHES AT WALLS & ABOVE OR BELOW NICHES. TO BE INSTALLED AS BASE & PERIMETER TRIMS & INCORPORATED WITH NICHES. TO BE COORDINATED WITH NICHE SUPPLIER

## DOOR SCHEDULE LEGEND

| | |
|---|---|
| ALUM. | ALUMINUM |
| ANOD. | ANODIZED CLEAR |
| CH. | CONTINUOUS HINGE |
| CL. | CLOSER |
| DC. | DOOR CONTACT |
| EX. | EXISTING |
| FGL. | FIRE GLASS |
| HCPB. | HANDICAP PUSH BUTTON |
| HM. | HOLLOW METAL |
| INS. | THERMALLY INSULATED DOOR / FRAME |
| MAT'L. | MATERIAL |
| PDO | POWER DOOR OPERATOR |
| THK | THICKNESS |
| TH. | THRESHOLD |
| SCWD | SOLID CORE WOOD DOOR |
| WD | WOOD |
| WS | WEATHER STRIPPING |

## INTERIOR WALL PARTITION TYPES

REFER TO STRUCTURAL FOR MASONRY REINFORCING & BRACING DETAILS

| NO. | DESCRIPTION | REMARKS |
|---|---|---|
| P1 | - 190mm CONC. BLOCK | • EXTEND TO U/S OF STRUCTURE ABOVE<br>• REFER TO STRUCT. DRAWINGS & SECTION DETAILS FOR EXTENT OF NEW CONCRETE FOUNDATION WALLS BELOW BLOCK WALL PARTITIONS |
| P1A | - 190mm CONC. BLOCK C/W<br>- INTERIOR MARBLE FINISH & BACKING<br>INTERIOR MARBLE THICKNESS = 19mm<br>SPACE FOR REQ'D BACKING = 19mm<br>TOTAL MARBLE ASSEMBLY THICKNESS = 38mm | • EXTEND CONC. BLOCK TO U/S OF STRUCTURE ABOVE<br>• REFER TO STRUCT. DRAWINGS & SECTION DETAILS FOR EXTENT OF NEW CONCRETE FOUNDATION WALLS BELOW BLOCK WALL PARTITIONS<br>• EXTEND MARBLE FINISH TO U/S OF GYP. BD CEILING |
| P2 | - 240mm CONC. BLOCK | • EXTEND TO U/S OF STRUCTURE ABOVE<br>• REFER TO STRUCT. DRAWINGS & SECTION DETAILS FOR EXTENT OF NEW CONCRETE FOUNDATION WALLS BELOW BLOCK WALL PARTITIONS |




**DOOR TYPES** **FRAME TYPES**

**Diocese of St. Catharines**
*Where Faith Lives*

LEGEND

| | |
|---|---|
| ACT | ACOUSTIC CEILING TILE |
| ALUM | ALUMINUM |
| APPROX | APPROXIMATELY |
| BD | BOARD |
| BLK | BLOCK |
| CLR | CLEAR |
| CT | CARPET TILE |
| COL. | COLUMN |
| CONC | CONCRETE |
| CONT. | CONTINUOUS |
| C/W | COMPLETE WITH |
| EQ | EQUAL |
| EX | EXISTING |
| EXT | EXTERIOR |
| FE | FIRE EXTINGUISHER |
| FD | FLOOR DRAIN |
| GYP | GYPSUM |
| H/RAIL | HAND RAIL |
| MR | MIRROR TYPE |
| MAT'L | MATERIAL |
| MIN | MINIMUM |
| NIC | NOT IN CONTRACT |
| NO. | NUMBER |
| NTS | NOT TO SCALE |
| O/C | ON CENTRE |
| PDO | POWER DOOR OPERATOR |
| PT | PORCELAIN TILE |
| REL. | RELOCATED ITEM |
| RM | ROOM |
| RWL | RAIN WATER LEADER |
| SIM | SIMILAR |
| SS H/RAIL | STAINLESS STEEL HANDRAIL |
| T/R | TO REMAIN |
| TYP | TYPICAL |
| U/S | UNDERSIDE |

| NO | REVISIONS | DATE |
|---|---|---|
| 4 | ISSUED FOR TENDER | 2021-12-08 |
| 3 | REVISED PER BLDG DEPT. REVIEW | 2021-09-15 |
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CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA: COLUMBARIUM RENOVATION

67 CHURCH STREET, ST. CATHARINES, ONTARIO L2R 3C4

BASEMENT FLOOR PLAN

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

| | |
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| START DATE: MARCH 2021 | |
| DRAWN R.P. | DRAWING: A2.00 |
| CHECKED J.G. | |
| PRINT DATE | 12/08/21 |

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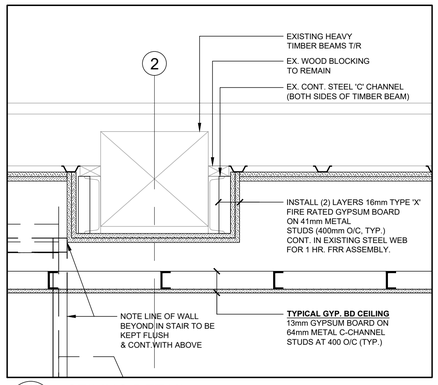


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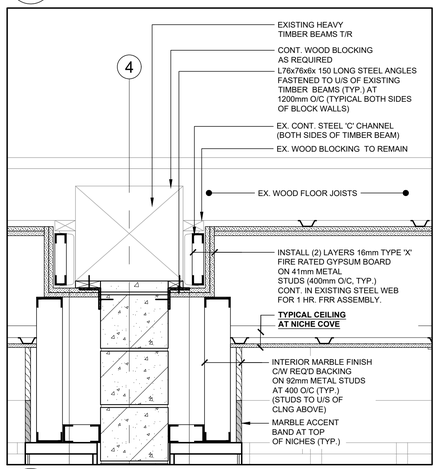


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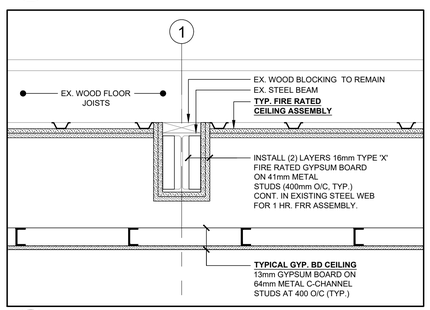


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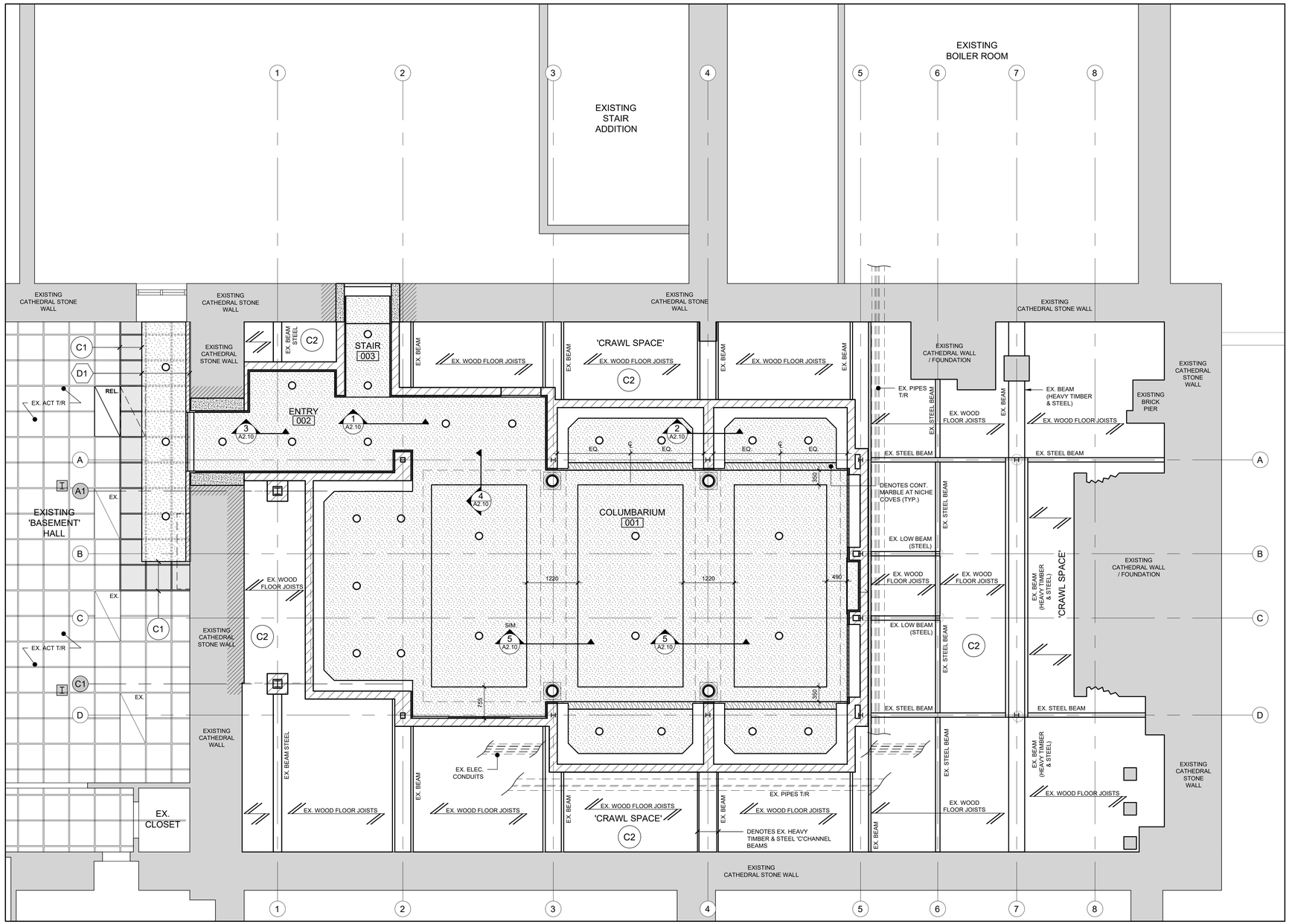


PARTIAL BASEMENT REFLECTED CEILING PLAN
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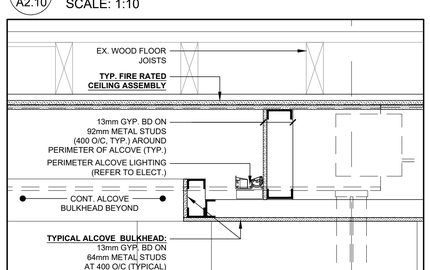


4 A2.10 CEILING DETAIL
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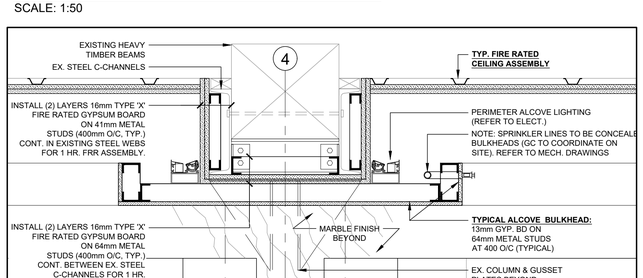


5 A2.10 CEILING DETAIL
SCALE: 1:10

## GRAPHIC RCP LEGEND

- REFER TO ELECTRICAL DRAWINGS FOR ACTUAL FIXTURE TYPES & EXTENT OF ALL NEW ELECTRICAL WORK. MECHANICAL AND ELECTRICAL ITEMS SHOWN, I.E. DUCTWORK, PIPING, LIGHT FIXTURES, ETC. **ARE FOR REFERENCE ONLY AND ARE NOT INCLUSIVE.** REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ALL RELATED WORK.

- NEW GYPSUM BOARD CEILING OR BULKHEAD
- DENOTES MODIFIED EX. ACOUSTIC CEILING TILE & GRID/TRACK
- EX. ACOUSTIC CEILING TILE TO REMAIN
- EX. LIGHT FIXTURE
- **REL.** = RELOCATED LIGHT FIXTURE
- LIGHT FIXTURE TO BE RELOCATED (REFER TO ELECTRICAL DWGS)
- RECESSED DOWN LIGHT FIXTURE
- BH - # BULKHEAD TAG
- CH- #### CEILING BULKHEAD HEIGHT TAG

## RCP NOTES

### CONSTRUCTION NOTES

C1 REMOVE, CUT BACK & MODIFY EXISTING ACOUSTIC CEILING TILE, GRID & TRACK TO ALLOW FOR INSTALLATION OF NEW BULKHEAD. RE-USE & REINSTATE BACK INTO PLACE AS PER NEW LAYOUT SHOWN ONCE BULKHEAD HAS BEEN INSTALLED.

C2 INSTALL NEW FIRE RETARDANT COATING AT ALL EXISTING STRUCTURAL MEMBERS IN EXISTING 'CRAWL' SPACE, INCLUDES BUT NOT LIMITED TO: EXISTING WOOD JOISTS, DECKING, WOOD BEAMS, STEEL BEAMS & COLUMNS, STEEL GUSSET & CONNECTOR PLATES ETC. FOR 1 HOUR FRR. (REFER TO SPECIFICATIONS & DRAWING A0.00 FOR TYPES OF COATINGS REQUIRED)

### DEMOLITION NOTES

D1 REMOVE & DISCARD EXISTING 2'-0" x 2'-0" ACOUSTIC CEILING TILE, GRID & PERIMETER TRACK WITHIN EXISTING ROOMS OR OVER EXTENT SHOWN ON PLAN.

**Diocese of St. Catharines**
*Where Faith Lives*

LEGEND

| | |
|---|---|
| ACT. | ACOUSTIC CEILING TILE |
| BD. | BOARD |
| BLK. | BLOCK |
| BRG. | BEARING |
| CONC. | CONCRETE |
| CONT. | CONTINUOUS |
| C/W | COMPLETE WITH |
| ℄ | CENTRE LINE |
| DN. | DOWN |
| EQ. | EQUAL |
| EX. | EXISTING |
| EXT. | EXTERIOR |
| FFE | FINISHED FLOOR ELEVATION |
| FRR | FIRE RESISTANCE RATING |
| FIN. | FINISHED |
| GYP. | GYPSUM |
| MECH | MECHANICAL |
| MIN | MINIMUM |
| HSS. | HOLLOW STRUCTURAL STEEL |
| O/C | ON CENTRE |
| REQ'D | REQUIRED |
| SIM | SIMILAR |
| STRUCT. | STRUCTURAL |
| T/O | TOP OF |
| T/R | TO REMAIN |
| TYP. | TYPICAL |
| U/S | UNDERSIDE |

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CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA: COLUMBARIUM RENOVATION

67 CHURCH STREET,
ST. CATHARINES, ONTARIO L2R 3C4

# BASEMENT REFLECTED CEILING PLAN & DETAILS

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

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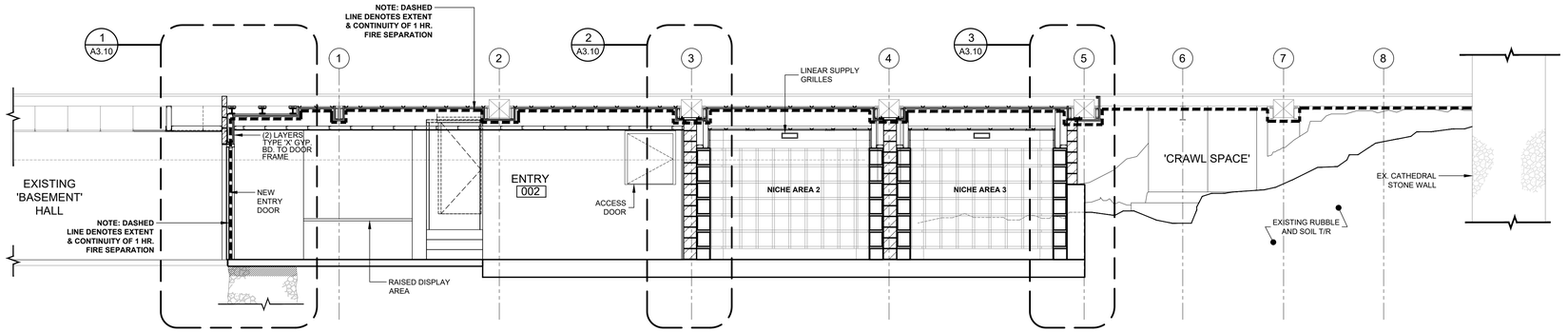


A-A A4.00 PARTIAL BUILDING SECTION
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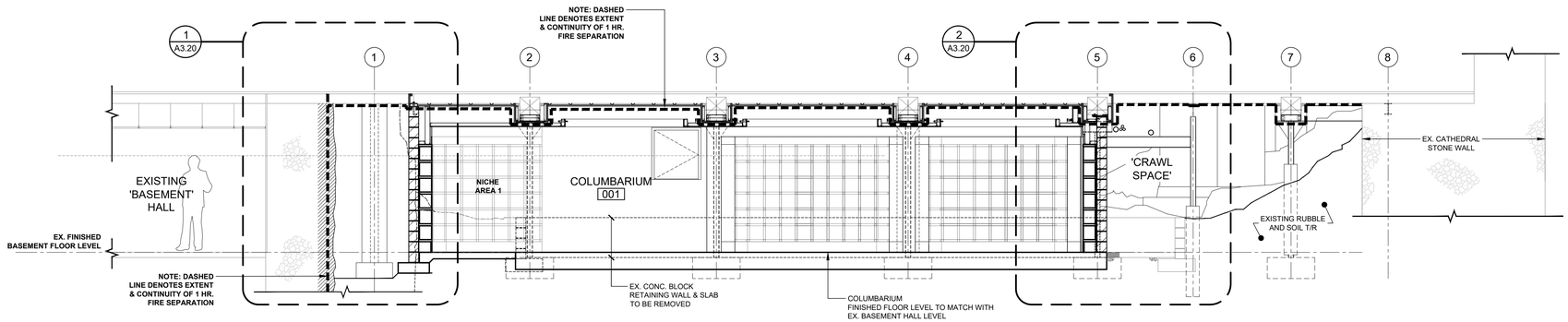


B-B A4.00 PARTIAL BUILDING SECTION
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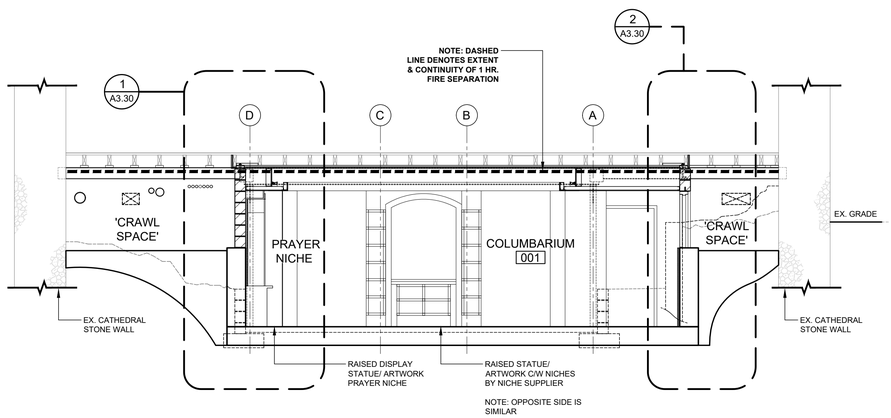


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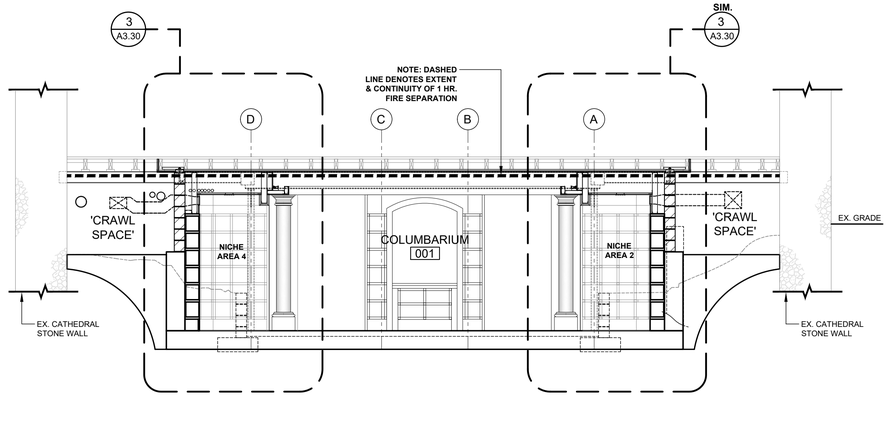


D-D A4.00 PARTIAL BUILDING SECTION
SCALE: 1:50

**Diocese of St. Catharines**
*Where Faith Lives*

LEGEND
DENOTES EXTENT OF FIRE SEPARATION

| NO | REVISIONS | DATE |
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CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA: COLUMBARIUM RENOVATION

67 CHURCH STREET,
ST. CATHARINES, ONTARIO L2R 3C4

PARTIAL BASEMENT BUILDING SECTIONS

GRGURIC ARCHITECTS INCORPORATED

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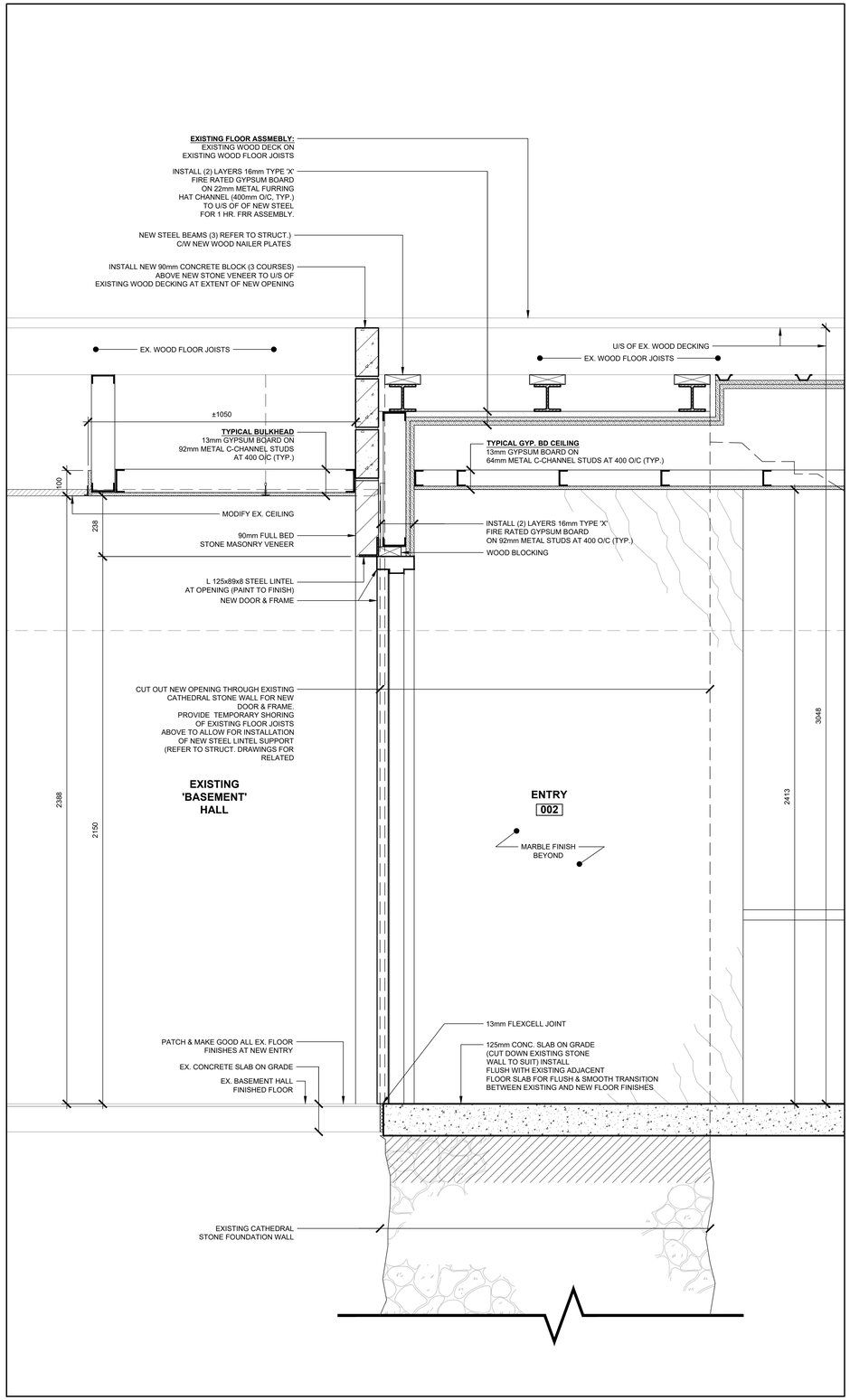


1 A3.10 **WALL SECTION**
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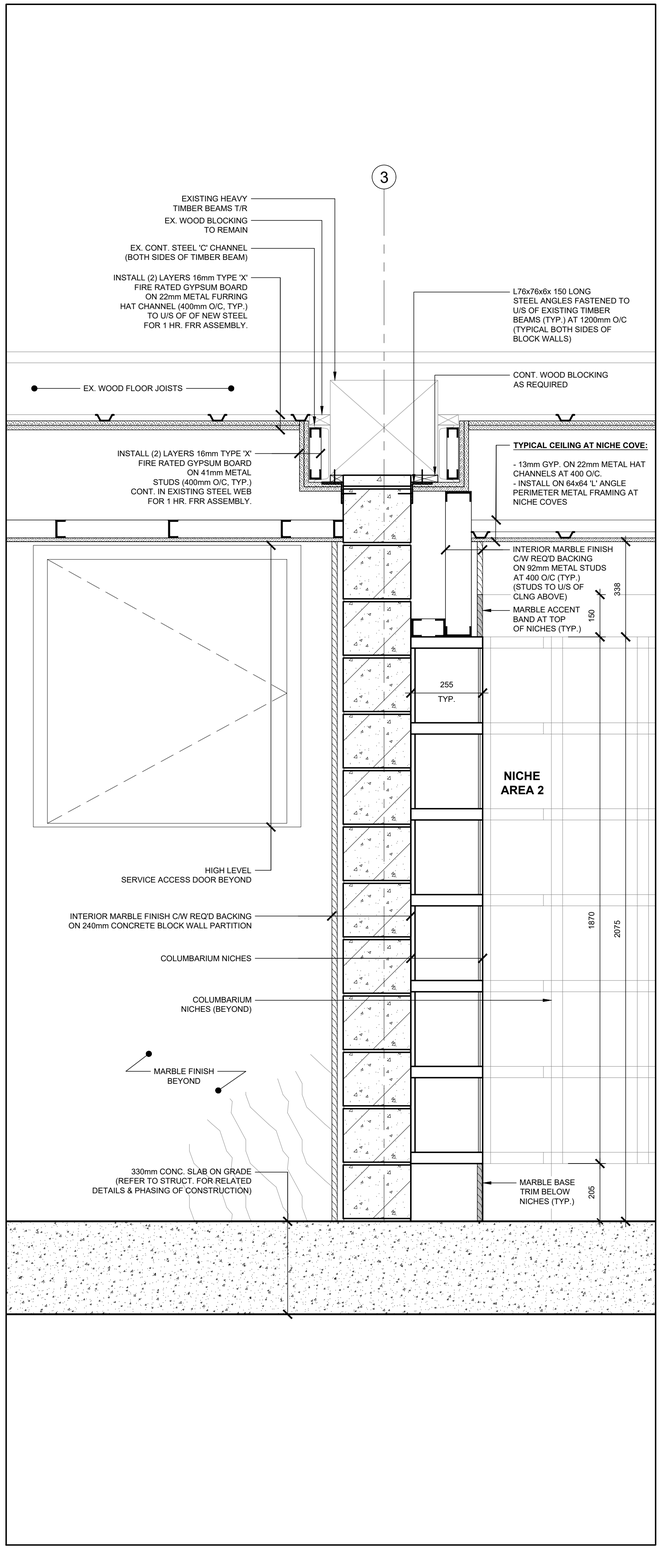
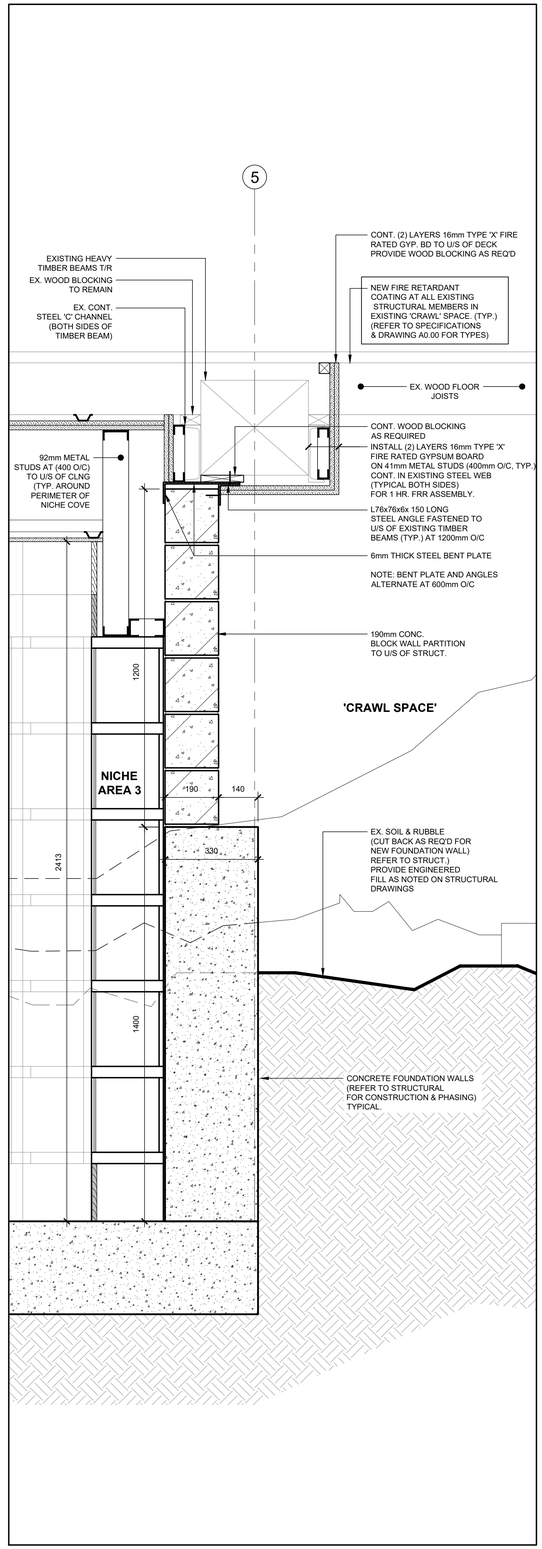



2 A3.10 **WALL SECTION**
SCALE: 1:10




3 A3.10 **WALL SECTION**
SCALE: 1:10

**Diocese of St. Catharines**
*Where Faith Lives*

LEGEND

| | |
|---|---|
| ALUM. | ALUMINUM |
| BLK. | BLOCK |
| CLNG | CEILING |
| CONC. | CONCRETE |
| CONT. | CONTINUOUS |
| C/W | COMPLETE WITH |
| ℄ | CENTRE LINE |
| DN. | DOWN |
| EX. | EXISTING |
| EXT. | EXTERIOR |
| FIN. | FINISHED |
| Ga. | GAUGE |
| GALV. | GALVANIZED |
| GYP. | GYPSUM BOARD |
| HM | HOLLOW METAL |
| HR. | HOUR |
| HSS. | HOLLOW STRUCTURAL STEEL |
| O/C | ON CENTRE |
| REQ'D | REQUIRED |
| SIM | SIMILAR |
| STRUCT. | STRUCTURAL |
| T/O | TOP OF |
| TYP. | TYPICAL |
| U/S | UNDERSIDE |

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67 CHURCH STREET,
ST. CATHARINES, ONTARIO L2R 3C4

WALL SECTIONS

GRGURIC ARCHITECTS INCORPORATED
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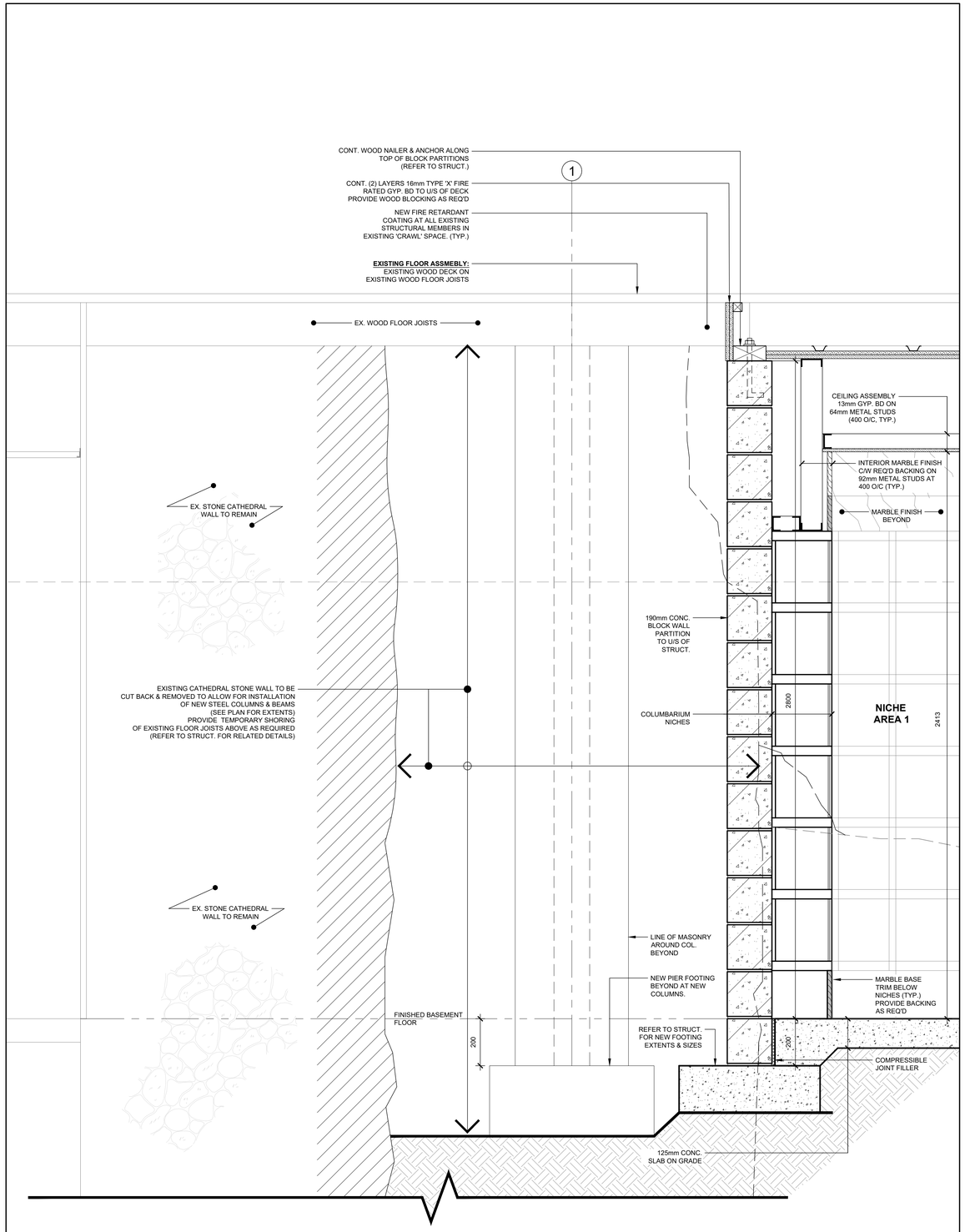


1 A3.20 WALL SECTION
SCALE: 1:10

2 A3.20 WALL SECTION
SCALE: 1:10

**Diocese of St. Catharines**
*Where Faith Lives*

LEGEND

| | |
|---|---|
| ALUM. | ALUMINUM |
| BLK. | BLOCK |
| CLNG | CEILING |
| CONC. | CONCRETE |
| CONT. | CONTINUOUS |
| C/W | COMPLETE WITH |
| ℄ | CENTRE LINE |
| DN. | DOWN |
| EX. | EXISTING |
| EXT. | EXTERIOR |
| FIN. | FINISHED |
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| GYP. | GYPSUM BOARD |
| HM | HOLLOW METAL |
| HR | HOUR |
| HSS. | HOLLOW STRUCTURAL STEEL |
| O/C | ON CENTRE |
| REQ'D | REQUIRED |
| SIM | SIMILAR |
| STRUCT. | STRUCTURAL |
| T/O | TOP OF |
| TYP. | TYPICAL |
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67 CHURCH STREET,
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WALL SECTIONS

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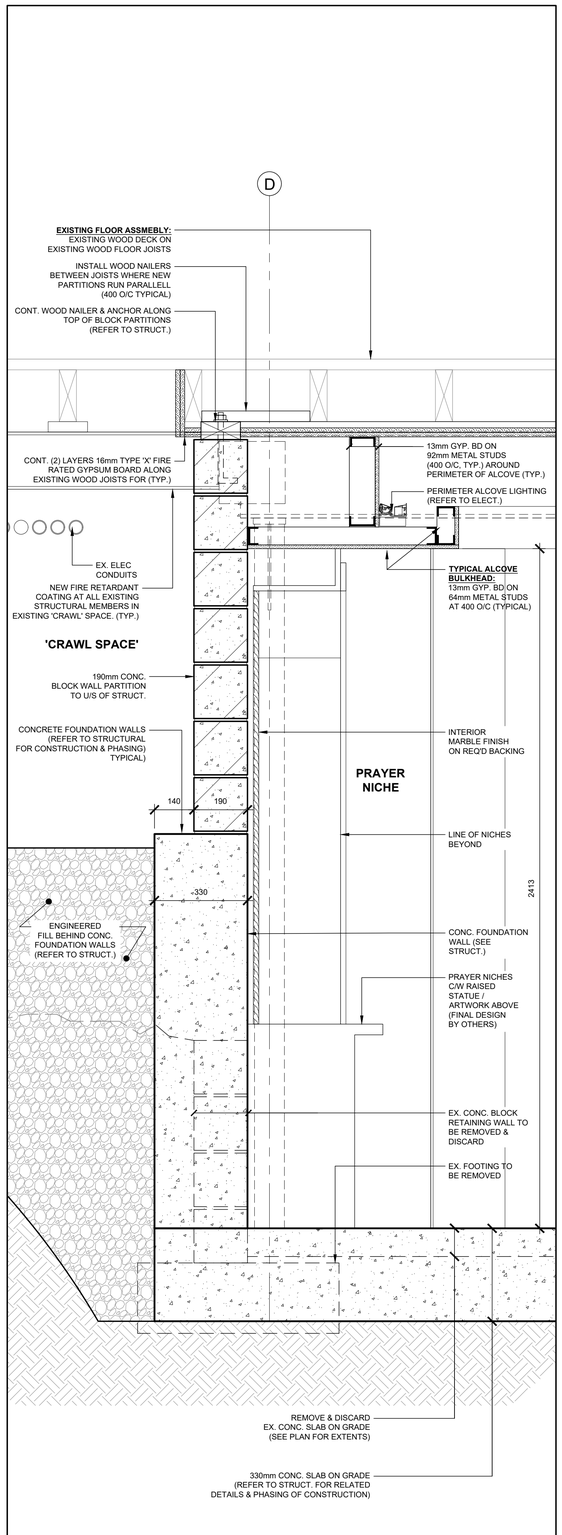


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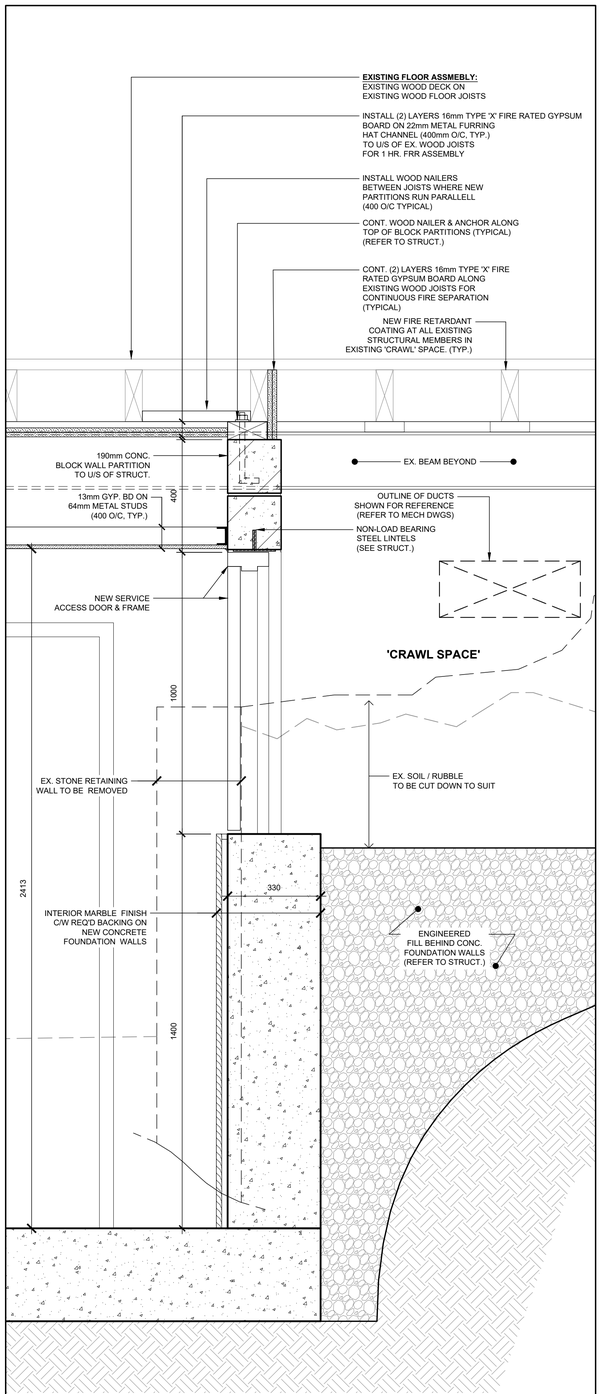
SCALE: 1:10




2 A3.30 WALL SECTION
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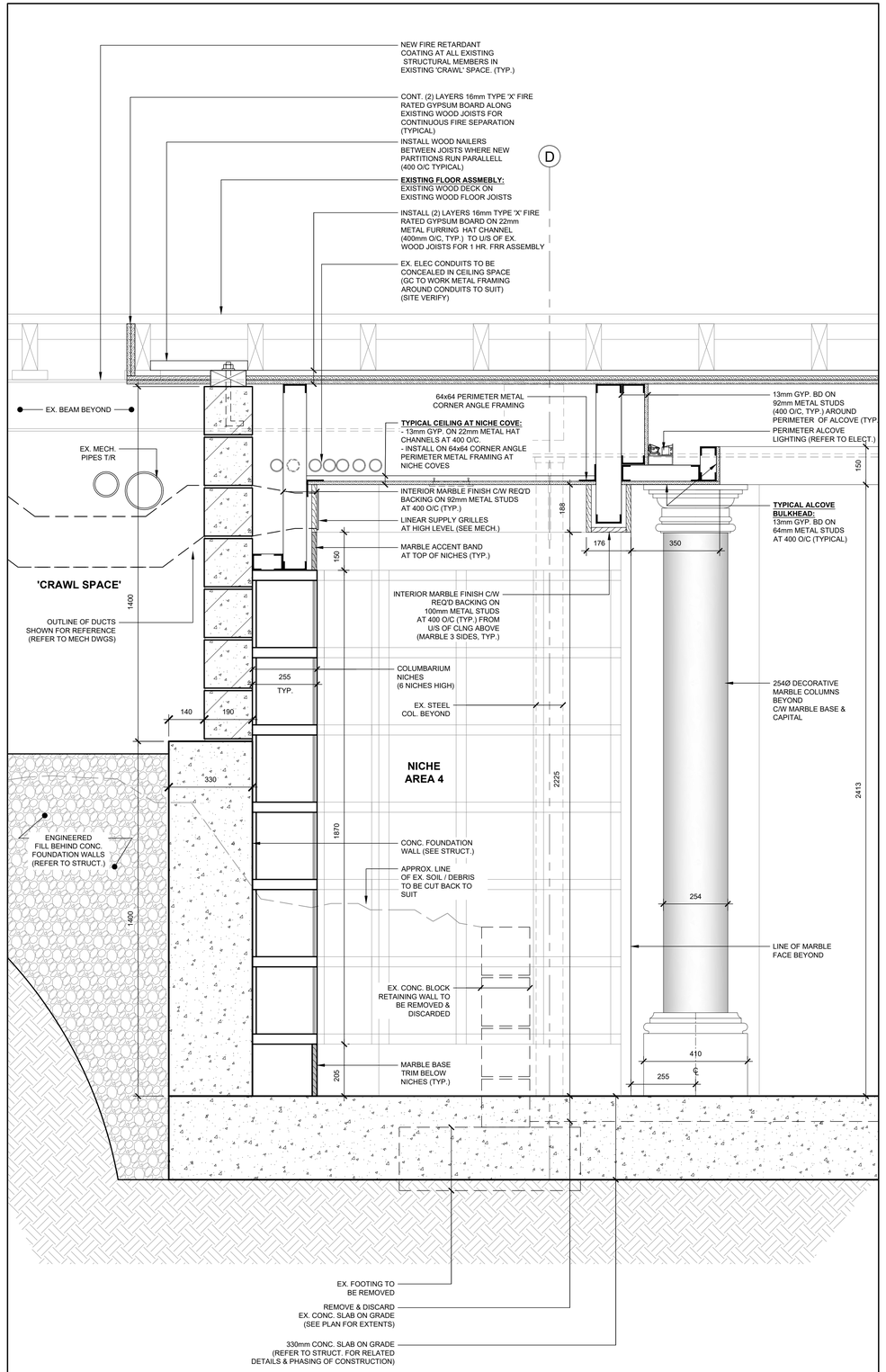


3 A3.30 WALL SECTION
SCALE: 1:10

**Diocese of St. Catharines**
*Where Faith Lives*

LEGEND

| | |
|---|---|
| ALUM. | ALUMINUM |
| BLK. | BLOCK |
| CLNG | CEILING |
| CONC. | CONCRETE |
| CONT. | CONTINUOUS |
| C/W | COMPLETE WITH |
| ℄ | CENTRE LINE |
| DN. | DOWN |
| EX. | EXISTING |
| EXT. | EXTERIOR |
| FIN. | FINISHED |
| Ga. | GAUGE |
| GALV. | GALVANIZED |
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| HM | HOLLOW METAL |
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| O/C | ON CENTRE |
| REQ'D | REQUIRED |
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| CHECKED J.G. | |
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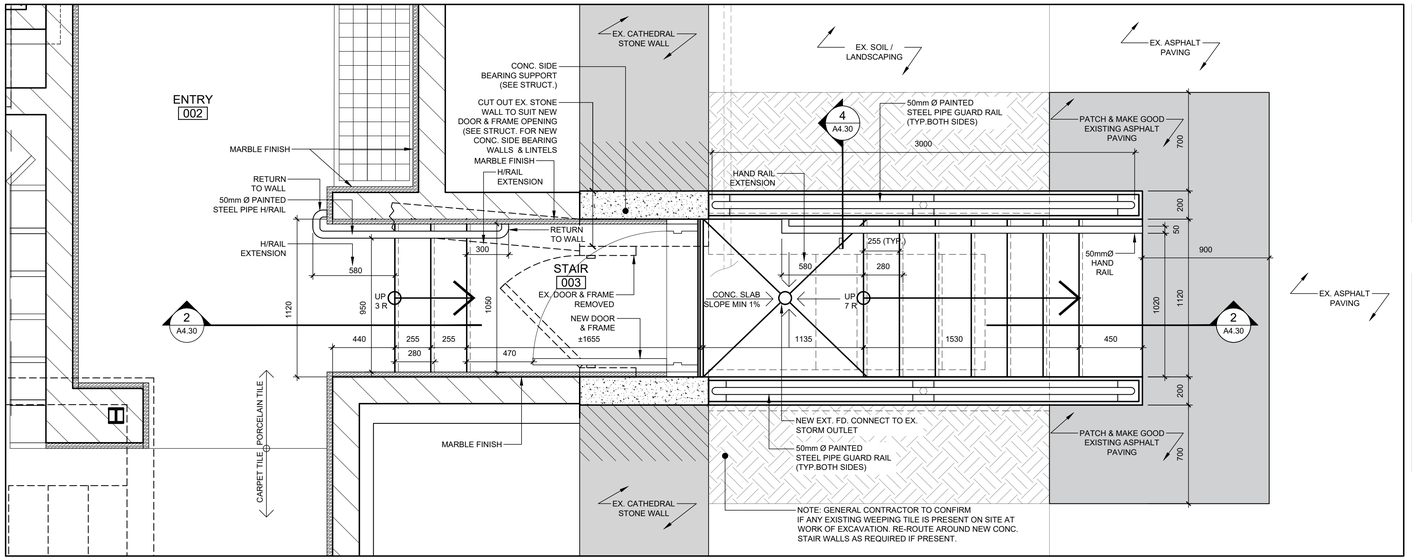


1 A3.40 **ENLARGED STAIR PLAN**
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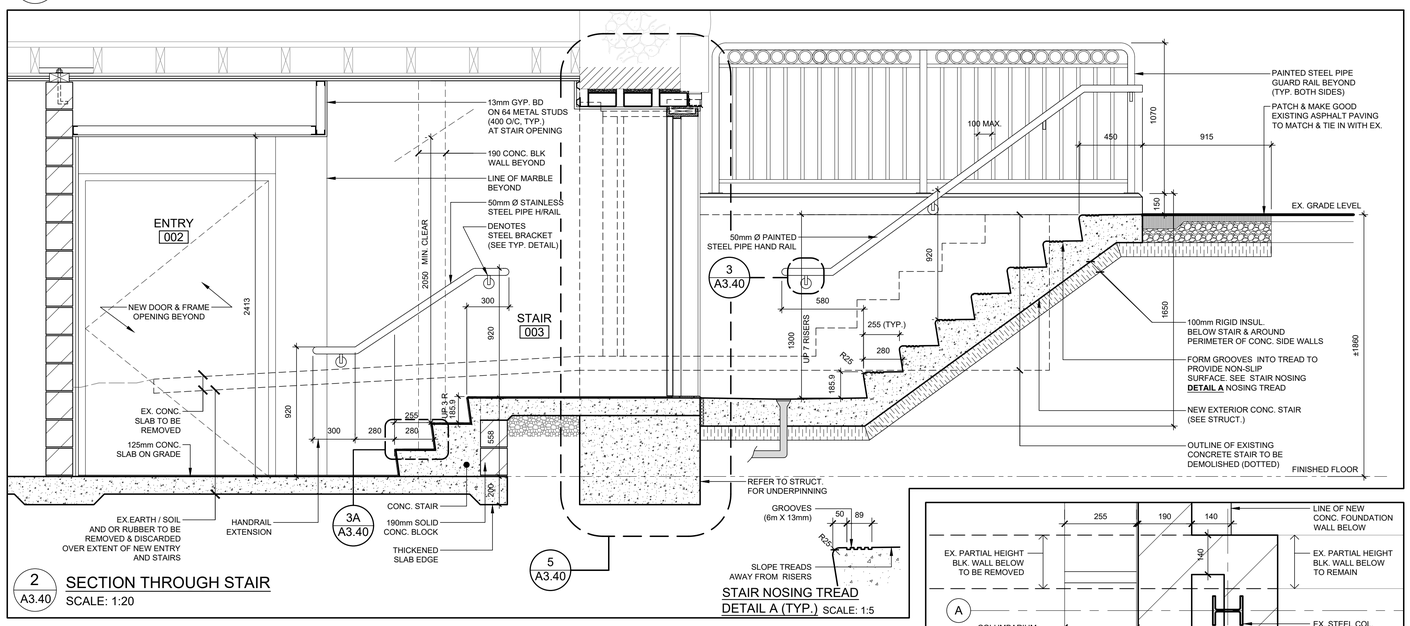
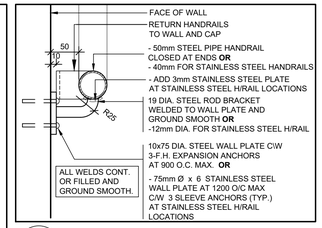



2 A3.40 **SECTION THROUGH STAIR**
SCALE: 1:20

STAIR NOSING TREAD DETAIL A (TYP.) SCALE: 1:5




3 A3.40 **TYP. HANDRAIL DETAIL**
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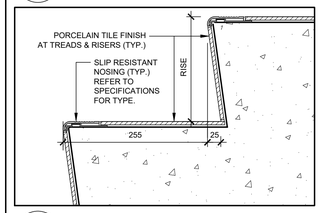
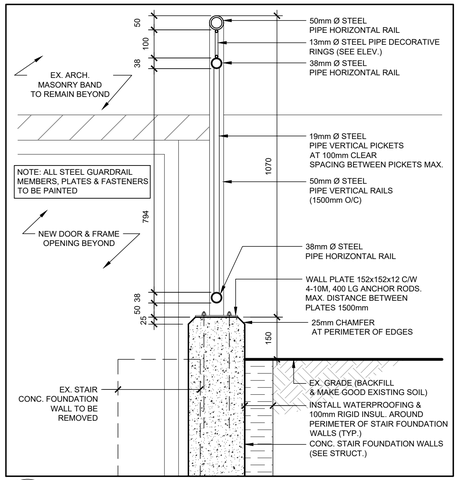
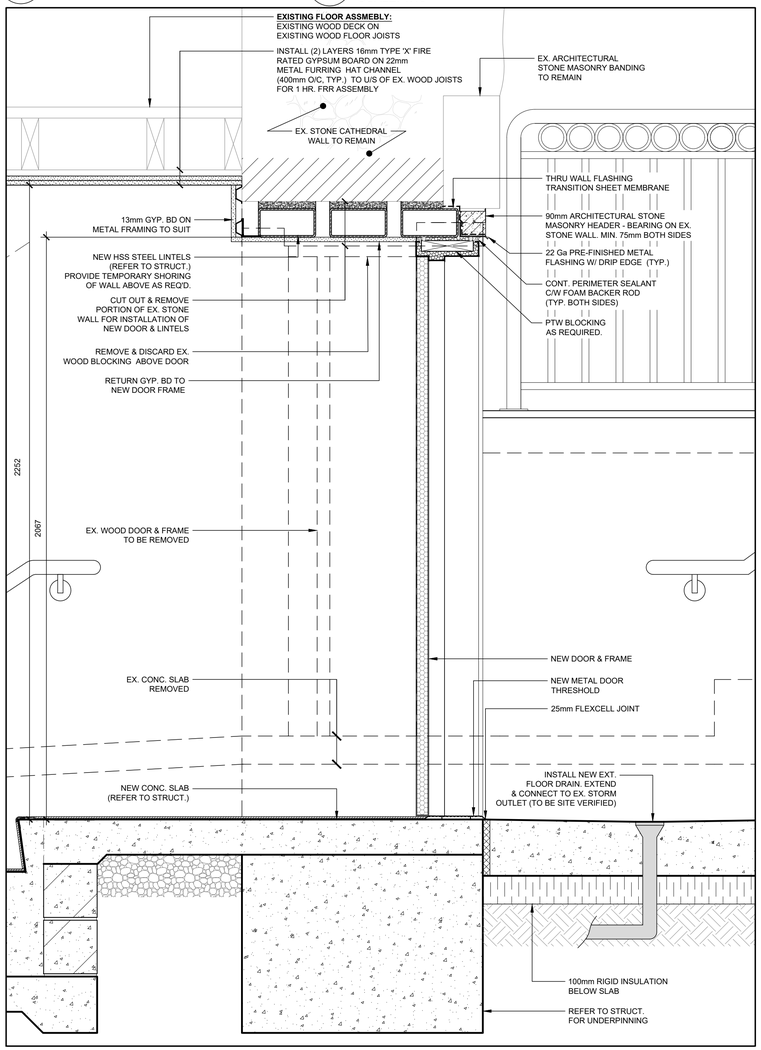


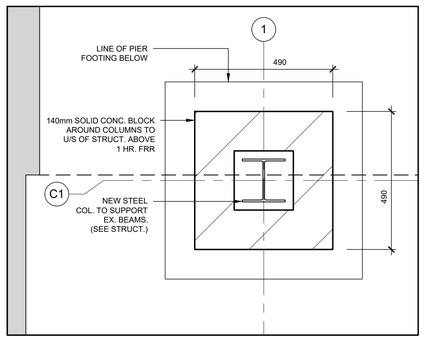

3A A3.40 **STAIR NOSING DETAIL B**
SCALE: 1:5



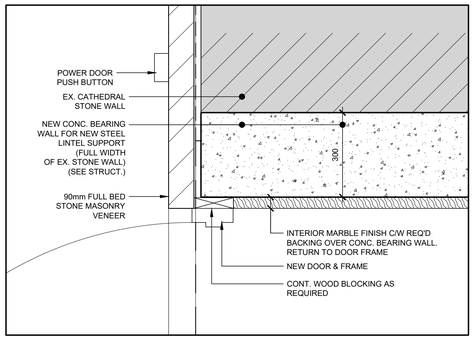

4 A3.40 **TYP. GUARDRAIL DETAIL**
SCALE: 1:10



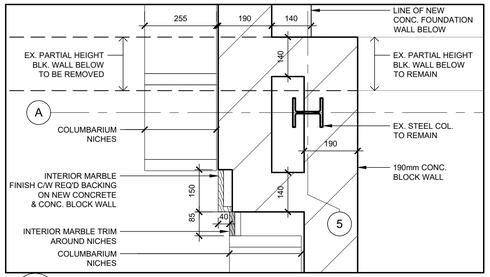

5 A3.40 **WALL SECTION**
SCALE: 1:10



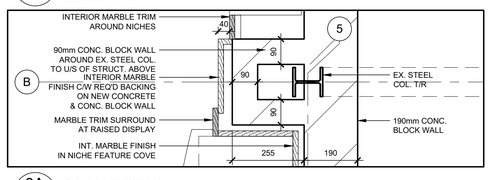

6 A3.40 **PLAN DETAIL**
SCALE: 1:10




7 A3.40 **PLAN DETAIL**
SCALE: 1:10




8 A3.40 **PLAN DETAIL**
SCALE: 1:10




8A A3.40 **PLAN DETAIL**
SCALE: 1:10


**Diocese of St. Catharines**
*Where Faith Lives*


LEGEND

| | |
|---|---|
| ALUM. | ALUMINUM |
| BLK. | BLOCK |
| CLNG | CEILING |
| CONC. | CONCRETE |
| CONT. | CONTINUOUS |
| C/W | COMPLETE WITH |
| ℄ | CENTRE LINE |
| DN. | DOWN |
| EX. | EXISTING |
| ELEV | ELEVATION |
| EXT. | EXTERIOR |
| FIN. | FINISHED |
| Ga. | GAUGE |
| GALV. | GALVANIZED |
| GYP. | GYPSUM BOARD |
| HM | HOLLOW METAL |
| HR | HOUR |
| H/RAIL | HAND RAIL |
| HSS. | HOLLOW STRUCTURAL STEEL |
| LG | LONG |
| MIN | MINIMUM |
| O/C | ON CENTRE |
| PTW | PRESSURE TREATED WOOD |
| REQ'D | REQUIRED |
| SIM | SIMILAR |
| STRUCT. | STRUCTURAL |
| THK | THICK |
| T/O | TOP OF |
| TYP. | TYPICAL |
| U/S | UNDERSIDE |

| NO | REVISIONS | DATE |
|---|---|---|
| 4 | ISSUED FOR TENDER | 2021-12-08 |
| 3 | REVISED PER BLDG DEPT. REVIEW | 2021-09-15 |
| 2 | ISSUED FOR PERMIT APPLICATION | 2021-06-18 |
| 1 | ISSUED FOR CLIENT REVIEW | 2021-06-10 |


DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT; AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK. THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.


CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA: COLUMBARIUM RENOVATION

67 CHURCH STREET, ST. CATHARINES, ONTARIO L2R 3C4

# STAIR DETAILS & PLAN DETAILS


GRGURIC ARCHITECTS INCORPORATED

28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com


| | |
|---|---|
| SCALE: AS NOTED | PROJECT: 2019-04 |
| START DATE: MARCH 2021 | |
| DRAWN R.P. | DRAWING: A3.40 |
| CHECKED J.G. | |
| PRINT DATE | 12/08/21 |

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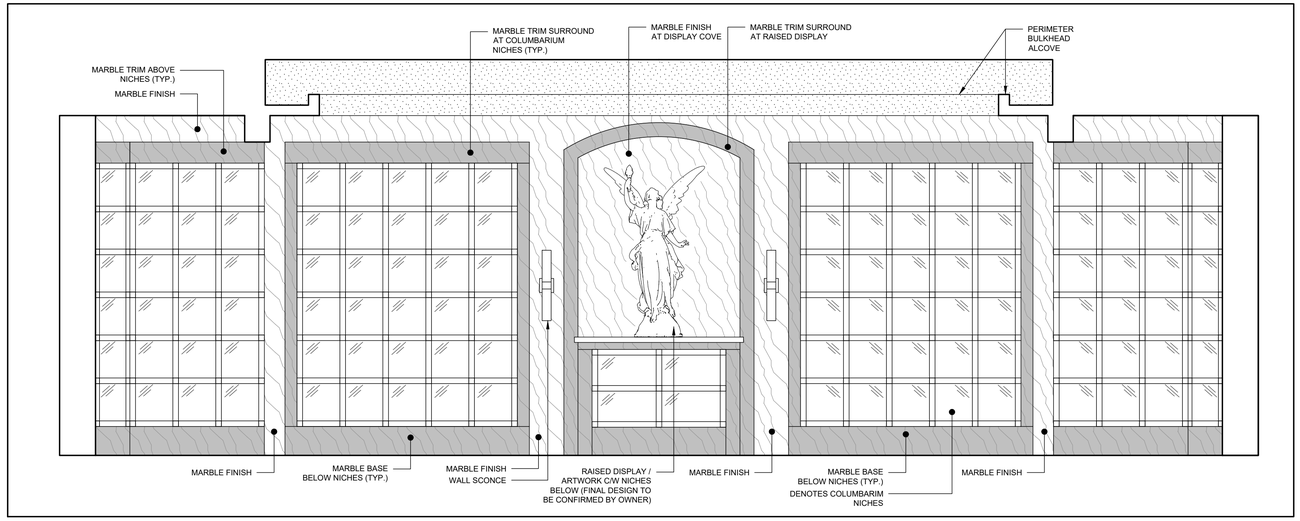


1 A4.00 **INTERIOR ELEVATION A**
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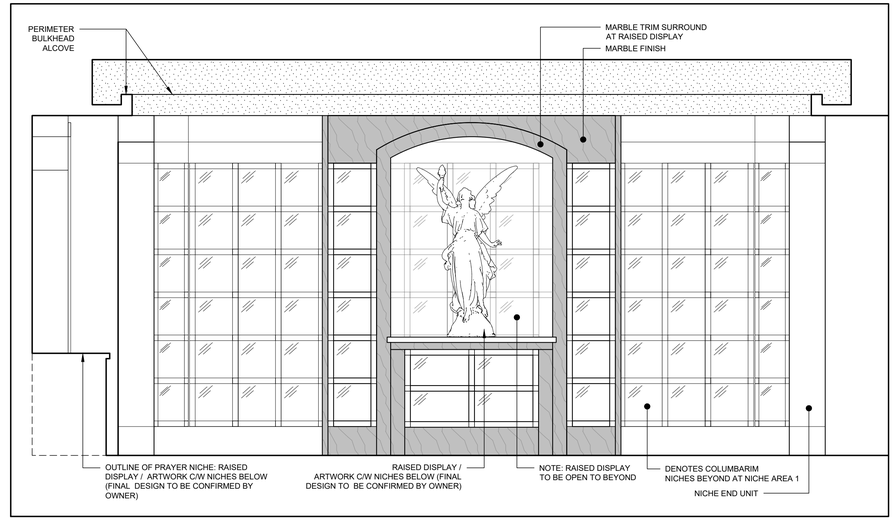
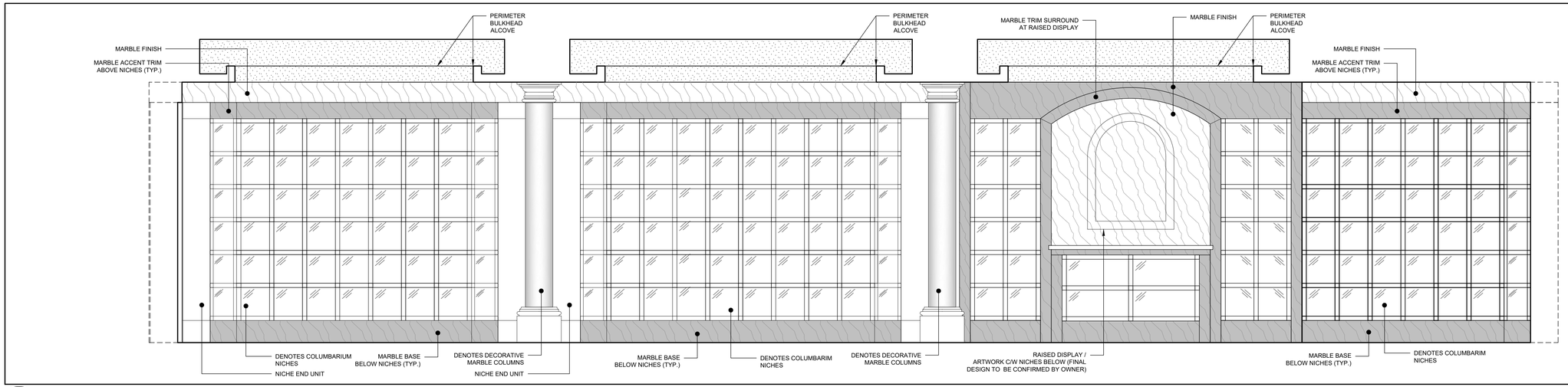



2 A4.00 **INTERIOR ELEVATION B**
SCALE: 1:20




3 A4.00 **INTERIOR ELEVATION C**
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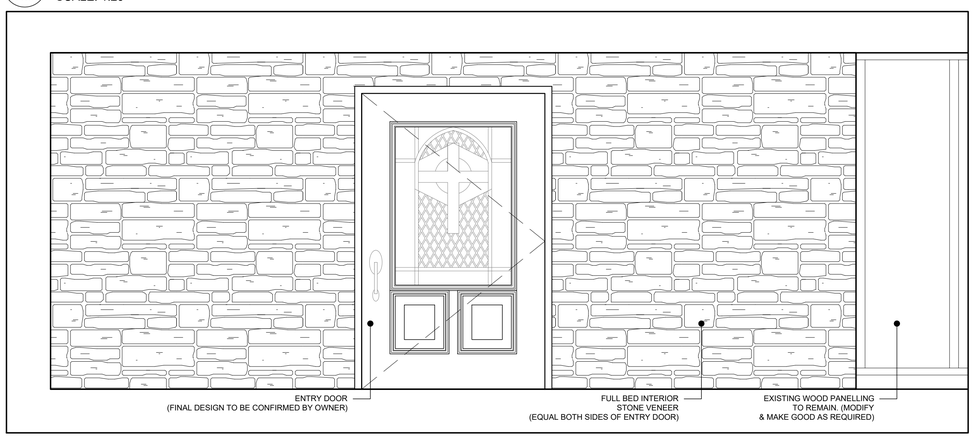
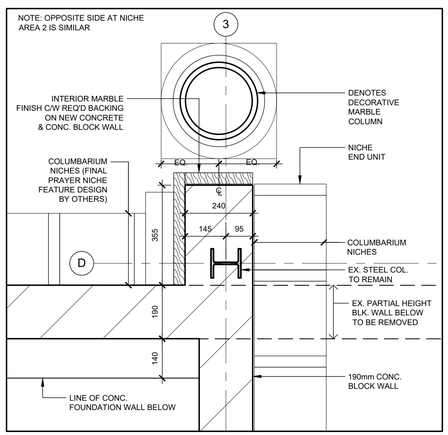
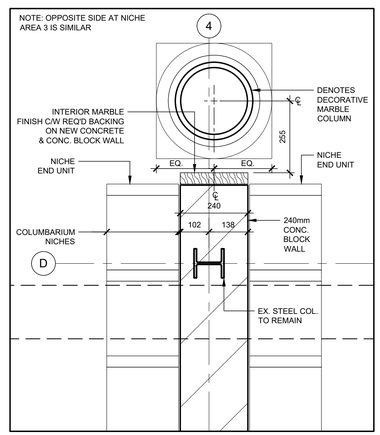


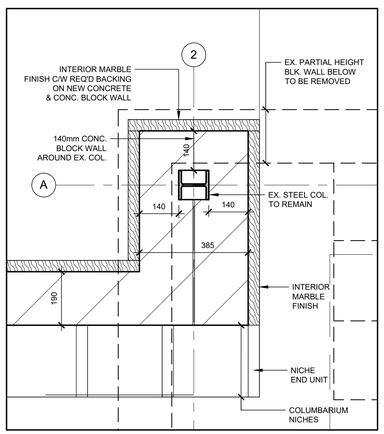

4 A4.00 **INTERIOR ELEVATION D**
SCALE: 1:20




5 A3.40 **PLAN DETAIL**
SCALE: 1:10




6 A3.40 **PLAN DETAIL**
SCALE: 1:10




7 A3.40 **PLAN DETAIL**
SCALE: 1:10

**Diocese of St. Catharines**
*Where Faith Lives*

LEGEND

| | |
|---|---|
| ALUM. | ALUMINUM |
| BLK. | BLOCK |
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CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA:
COLUMBARIUM RENOVATION

67 CHURCH STREET,
ST. CATHARINES, ONTARIO L2R 3C4

# INTERIOR ELEVATIONS & PLAN DETAILS

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Tel. 905-664-8735 Fax. 905-664-8737
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| PRINT DATE | 12/08/21 |

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A3.00-A4.00-Sections-Details-Elevations-(2019-04).dwg

## GENERAL NOTES

1. THESE DOCUMENTS ARE TO BE USED ONLY BY THE PARTY WITH WHOM DFE HAS ENTERED INTO A CONTRACT.
2. THE USE OF THESE DRAWINGS IS LIMITED TO THAT IDENTIFIED IN THE REVISION COLUMN.
3. CONFORM TO THE LATEST ONTARIO BUILDING CODE (OBC) INCLUDING ALL THE LATEST STANDARDS REFERENCED THEREIN, AND ANY APPLICABLE ACTS OF AUTHORITY. USE THE LATEST VERSIONs OF STANDARDS AND CODES LISTED BELOW.
4. DO NOT SCALE THESE DRAWINGS. ERRORS MADE BECAUSE OF SCALING THESE DRAWINGS ARE RESPONSIBILITY OF THE PARTY WHO USED THE DRAWINGS.
5. WHERE DISCREPANCIES EXIST, THE MOST STRINGENT SHALL PREVAIL. NOTIFY THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. STRUCTURAL DRAWINGS TO BE USED TOGETHER WITH ALL OTHER SPECIFICATIONS AND CONTRACT DOCUMENTS.
7. REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATIONS AND SIZES OF HOLES, SUMP PITS, TRENCHES, CURBS, BOLTS, SLEEVES, OPENINGS, ETC.
8. THE CONTRACTOR SHALL BECOME FAMILIARIZED WITH THE PROJECT ON SITE, INCLUDING EXISTING CONSTRUCTION. ANY ALTERATIONS FROM ASSUMED IN THE DRAWINGS MUST BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
9. THE ENGINEER MUST APPROVE SUBSTITUTIONS FOR SPECIFIED PRODUCTS AND MATERIALS.
10. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS - O.REG. 213/91.
11. THE CONTRACTOR SHALL PROVIDE DESIGN AND CONSTRUCTION OF HORIZONTAL AND VERTICAL SHORING AND TEMPORARY BRACING AS PER O.REG 213/91. THE CONTRACTOR SHALL PROVIDE BRACING, SHORING, SHEET PILING ETC. TO PROTECT EXISTING OR ADJACENT STRUCTURES AFFECTED BY THIS WORK.
12. AN INDEPENDENT INSPECTION AND TESTING COMPANY SHALL PROVIDE TESTS TO PROVE THAT CONSTRUCTION IS IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS. REQUIRED TESTING SHALL BE AS PER THE TESTING AND INSPECTION TABLE BELOW.
13. DOYTCH & FILO ENGINEERING WILL PROVIDE GENERAL REVIEW OF CONSTRUCTION. DOYTCH & FILO ENGINEERING WILL REVIEW SHOP DRAWINGS FOR GENERAL CONFORMITY WITH THE CONTRACT DOCUMENTS PREPARED BY "DOYTCH & FILO". THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PERFORMANCE OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. "DOYTCH & FILO" IS NOT RESPONSIBLE FOR THE FAILURE OF THE CONTRACTOR TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. REVIEWED SHOP DRAWINGS DO NOT RELIEVE CONTRACTORS FROM RESPONSIBILITY FOR THEIR MISTAKES.
14. SHOP DRAWINGS MUST BE SEALED BY PROFESSIONAL ENGINEER BEFORE BEING SUBMITTED TO DFE FOR REVIEW, U.N.O.
15. THE OWNER AND THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF CONSTRUCTION PROGRESS, AND THEY SHALL INVITE THE ENGINEER TO COMPLETE GENERAL REVIEWS.

## TESTING AND INSPECTION

1. THE FOLLOWING ITEMS REQUIRE TESTING OR INSPECTION BY A CERTIFIED INDEPENDENT TESTING OR INSPECTION AGENCY UNLESS NOTED OTHERWISE. THE AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS TO THE ENGINEER FOR REVIEW.

| ITEM | REQ'D | COMMENTS |
|---|---|---|
| SOIL BEARING CAPACITY | YES | BY SOILS ENGINEER |
| SOIL COMPACTION | YES | BY SOILS ENGINEER |
| REINFORCING STEEL PLACMENT | YES | INSPECT FINAL PLACEMENT |
| CONC. COMPRESSIVE TESTS | YES | MIN. 2 SETS PER 100 CUBIC METRES |
| CONCRETE SLUMP | YES | |
| STRUCTURAL STEEL BOLTING | YES | |
| STRUCTURAL STEEL WELDING | YES | INSPECT ALL FIELD WELDS |
| MORTAR CUBES | YES | |

2. IT IS THE RESPONSIBILITY OF BOTH THE OWNER AND THE CONTRACTOR TO NOTIFY THE ENGINEER OF CONSTRUCTION PROGRESS AND INVITE THE ENGINEER TO COMPLETE GENERAL REVIEWS.
3. STRUCTURAL CONSULTANTS WILL PROVIDE GENERAL REVIEW OF CONSTRUCTION TO DETERMINE WHETHER THE CONSTRUCTION OF THAT WORK SHOWN ON THE DRAWINGS IS IN GENERAL CONFORMITY WITH THE PLANS, SKETCHES, DRAWINGS, AND SPECIFICATIONS FORMING PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR QUALITY CONTROL AND THE PERFORMANCE OF THE WORK IN ACCORDANCE WITH THE CONTRACT. STRUCTURAL CONSULTANTS SHALL NOT BE RESPONSIBLE FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUB-CONTRACTOR, OR ANY OTHER PERSON PERFORMING ANY OF THE WORK OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

## REQUIRED SUBMITTALS

1. THE FOLLOWING ITEMS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION WHERE APPLICABLE.
2. REVIEW OF THE SHOP DRAWINGS IS FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT AND IS NOT AN APPROVAL OF THE DETAIL DESIGN INHERENT IN THE SHOP DRAWINGS, RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR SUBMITTING THEM. SUCH REVIEW SHALL NOT REL'IEVE THE CONTRACTOR OF THEIR RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THE SHOP DRAWINGS OR FOR MEETING ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INFORMATION PERTAINING TO THE FABRICATION PROCESS TECHNIQUES OF CONSTRUCTION AND INSTALLATION AND FOR COORDINATION OF THE WORK OF ALL SUB-TRADES.
3. THE APPROVAL OF SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY OF THE FITTING OF BUILDING COMPONENTS. ANY DISCREPANCIES IN THE SHOP DRAWINGS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

| ITEM | REEQ'D SUBMITTAL? | ENGINEER'S STAMP REQ'D? | NOTES |
|---|---|---|---|
| REBAR SHOP DRAWINGS | YES | NO | INCL CONC BLOCK REINF |
| CONCRETE MIX DESIGNS | YES | NO | |
| MASONRY GROUT MIX DESIGN | YES | NO | |
| BLOCK MILL REPORT | YES | NO | |
| STRUCTURAL STEEL SHOP DRAWINGS | YES | YES | FOR CONNECTIONS ONLY |
| MISCELLANEOUS STEEL SHOP DRAWINGS | YES | YES | STAMP FOR STAIRS, LADDERS AND GUARDS |
| STEEL DECK SHOP DRAWINGS | YES | YES | |
| COLD FORMED STEEL FRAMING SHOP DWGS. | YES | YES | |
| FALL ARREST ANCHORS | YES | YES | |

## COLD FORM STEEL FRAMING [BY OTHERS]

1. ALL COLD FORMED STEEL FRAMING SHALL BE DESIGNED BY CFS SUPPLIER IN CONFORMANCE WITH THE REQUIREMENTS OF CSA S136.
2. DESIGN ALL COLD FORMED STEEL FRAMING MEMBERS FOR THE GRAVITY AND LATERAL LOADINGS INDICATED ON THE DRAWINGS AND IN ACCORDANCE WITH THE 2006 OBC.
3. CONFORM TO THE DEFLECTION REQUIREMENTS OF CSA S304.1 FOR STUDS SUPPORTING MASONRY VENEER.
4. SHOP DRAWINGS FOR ALL COLD FORMED STRUCTURAL STEEL FRAMING INCLUDING CONNECTION, BRACING, AND BRIDGING DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW BEFORE FABRICATION.
5. SHOP DRAWINGS FOR ALL COLD FORMED STRUCTURAL STEEL FRAMING SHALL SHOW BOTH DESIGN AND INSTALLATION REQUIREMENTS. RETAIN A LICENSED PROFESSIONAL ENGINEER OF THE PROVINCE OF ONTARIO TO PREPARE, SEAL AND SIGN ALL SHOP DRAWINGS; AND TO PERFORM FIELD REVIEW.
6. STEEL SHALL MEET THE REQUIREMENTS OF ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEET, ZINC COATED (GALVANIZED) BY THE HOT-DIP PROCESS, STRUCTURAL (PHYSICAL) QUALITY. STEEL STUDS 18 ga. AND LIGHTER SHALL HAVE MINIMUM YIELD STRENGTH OF 230MPa (33ksi). HEAVIER STUDS SHALL HAVE MINIMUM YIELD STRENGTH OF 345MPa (50ksi).

## FOUNDATIONS

1. NO SOIL INVESTIGATION REPORT WAS UNDERTAKEN FOR THIS SITE. THE MIN. SOIL BEARING CAPACITY HAS BEEN ASSUMED PER NOT #2. CONTRACTOR TO RETAIN A GEOTECHNICAL ENGINEER TO CONFIRM THE MINIMUM BEARING CAPACITY. ALL DISCREPANCIES TO BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
2. ALL FOOTINGS SHALL BEAR DIRECTLY ON NATURALLY CONSOLIDATED, UNDISTURBED SOIL, WITH A MINIMUM SOIL BEARING CAPACITY OF 100 kPa (SLS) AND 150 kPa (ULS) AT THE DEPTHS INDICATED ON THE DRAWINGS.
3. BOTTOM OF THE FOOTINGS SHALL BE BELOW THE LEVEL OF FREEZING DEPTH, BUT A MINIMUM 1200 mm (4'-0") BELOW FINISHED EXTERIOR GRADE, UNLESS NOTED OTHERWISE.
4. PROTECT ALL SOIL FROM FREEZING ADJACENT TO AND BELOW ALL FOUNDATIONS DURING CONSTRUCTION.
5. INSULATION IS SHOWN WHERE REQUIRED FOR PROTECTION OF THE FOUNDATIONS FROM DAMAGE DUE TO FROST ACTION ONLY. REFER TO ARCHITECTURAL DRAWINGS FOR FOUNDATION INSULATION NOT SHOWN ON THE STRUCTURAL DRAWINGS.
6. THE BEARING SOIL HAS MUST BE APPROVED BY THE GEOTECHNICAL ENGINEER BEFORE POURING THE FOOTINGS.
7. ALL ORGANIC TOPSOIL AND LOOSE FILL TO BE REMOVED FROM THE SITE BEFORE CONSTRUCTION.
8. WHERE APPROVED, GRANULAR FILL UNDER ALL FOOTINGS ON GRADE SHALL BE COMPACTED IN 150 mm (6") LAYERS TO SPECIFIED IN THE SOILS REPORT STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).
9. PLACE BOTTTOM OF NEW FOOTINGS AT THE SAME ELEVATION AS THE EXISTING ADJACENT FOOTINGS, UNLESS NOTED OTHERWISE. THE LINE OF SLOPE BETWEEN ADJACENT FOOTINGS OR ALONG STEPPED FOOTINGS SHALL NOT EXCEED 7 VERT. TO 10 HOR., AND MAX HEIGHT OF ONE STEP TO BE 600mm.
10. SLABS ON GRADE
    A. PLACE SLABS ON GRADE ON MATERIAL CAPABLE OF SAFELY SUPPORTING 25 kPa WITHOUT SETTLEMENT RELATIVE TO THE BUILDING FOUNDATIONS.
    B. PROOF-ROLL EXISTING FILL MATERIAL. REMOVE ANY LOOSE OR SOFTENED AREAS BENEATH SLAB-ON-GRADE BEFORE PLACING GRANULAR FILL.
    C. APPROVED GRANULAR FILL UNDER ALL SLABS ON GRADE SHALL BE COMPACTED IN 150 mm (6") LAYERS TO 100% STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).
    D. BEFORE CASTING THE SLAB PLACE 200 mm (8") OF 19 mm (3/4") CLEAR CRUSHED STONE OVER THE SUB-BASE AND THOROUGHLY ROLL AND CONSOLIDATE TO THE LEVELS REQUIRED.
11. FOUNDATION WALLS WITH BACKFILL ON BOTH SIDES TO BE BACKFILLED SYMMETRICALLY, UNLESS TEMPORARY SHORING FOR THE WALL IS PROVIDED.
12. ANY HORIZONTAL CONSTRUCTION JOINTS IN FOUNDATION WALLS TO BE APPROVED BY THE ENGINEER.
13. DO NOT PLACE BACKFILL AGAINST WALLS RETAINING EARTH (OTHER THAN CANTILEVERED RETAINING WALLS) UNTIL THE WALLS AND THE FLOOR CONSTRUCTIONS AT THE TOP AND BOTTOM OF THE WALLS HAVE BEEN CAST AND HAVE ATTAINED 100% OF THEIR DESIGN STRENGTH.

## CAST-IN-PLACE CONCRETE AND REINFORCING

1. ALL CONCRETE WORK TO CONFORM TO THE LATEST REQUIREMENTS OF CSA STANDARDS A23.1, A23.2 & A23.3.

**CONCRETE MIX PROPERTIES TABLE**

| CONCRETE | MIN.28 DAYS STRENGTH (MPa) | SLUMP mm | AIR CONTENT (%) | MAX. AGGREGATE SIZE (in) | EXPOSURE CLASS |
|---|---|---|---|---|---|
| EXTERIOR FOUNDATION WALLS | 30 | 80 (±30) | 4-7 | 3/4" | N |
| INTERIOR FOUNDATION WALLS | 30 | 80 (±30) | 0 | 3/4" | N |
| INT. S.O.G. AND RETAINING WALLS | 35 | 80 (±30) | 0 | 3/4" | N |
| FREEZE THAW EXPOSURE | 25 | 80 (±30) | 4-7 | 3/4" | F-2 |
| EXTERIOR SLAB (UNREINFORCED) | 32 | 80 (±30) | 5-8 | 3/4" | C-2 |
| EXTERIOR SLAB (REINFORCED) AND STAIRS | 35 | 80 (±30) | 5-8 | 3/4" | C-1 |
| NON-SHRINKABLE GROUT | 30 | AS PER MANUF. RECOMEND. | 0 | - | N |
| LEAN MIX CONCRETE | 4 | 80 (±30) | 0 | - | N |
| SPREAD FOOTINGS | 30 | 80 (±30) | 4-7 | 3/4" | N |
| STRIP FOOTINGS, MATT PADS | 30 | 80 (±30) | 4-7 | 3/4" | N |

**CONCRETE MIX PROPERTIES TABLE FOR PARKING AREA**

| ELEMENT | MIN.28 DAYS STRENGTH (MPa) | EXPOSURE CLASS | NOTES |
|---|---|---|---|
| FOOTINGS | 35 | N | C-1 FOR FTGS WITH TOP REINFORCING |
| S.O.G. REINGORCED | 35 | C-1 | |
| RETAINING/ EXTERIOR FOUNDATION WALLS ADJACENT TO DRIVE AISLES | 35 | C-1 | |
| RETAINING/ EXTERIOR FOUNDATION WALLS (ALL OTHER LOCATIONS) | 35 | F-2 | |
| ALL OTHER INTERIOR CONCRETE (COLUMNS, WALLS, SLABS AND STAIRS) | 35 | C-1 | |

2. WELDED WIRE FABRIC SHALL CONFORM TO CAN/CSA G30.5 WITH A MINIMUM YIELD STRENGTH OF FY = 450 MPa. WELDED WIRE FABRICK SHEETS SHALL BE LAPPED A MINIMUM OF 150mm (6") AT JOINTS (U.N.O.).
3. REINFORCING BARS SHALL CONFORM TO CAN/CSA G30.18 GRADE 400W FOR REINFORCING STEEL WITH MINIMUM YIELD STRENGTH OF FY = 400 MPa.
4. INSTALLATION OF THE REINFORCING STEEL SHALL CONFORM TO THE REINFORCING STEEL INSTITUTE OF CANADA "MANUAL OF STANDARD PRACTICE".
5. ALL REINFORCING LAP SPLICES SHALL CONFORM TO THE LATEST CSA STANDARD A23.3 AND ALL BAR SPLICES SHALL BE CLASS "B" TENSION SPLICES (U.N.O.).
   a. NO BAR SPLICES SHALL BE LESS THAN IN THE TABLE BELOW.
   b. INCREASE HORIZONTAL SPLICE LENGTHS IN THE TABLE BY 1.3 WHERE MORE THAN 300mm (12") OF FRESH CONCRETE IS CAST BELOW THE SPLICE.

| CONCRETE / REBAR SIZE | TENSION SPLICE 25 MPa | TENSION SPLICE 30 MPa | TENSION SPLICE 35 MPa | COMPRESSION SPLICE |
|---|---|---|---|---|
| 10M | 400 (16") | 400 (16") | 400 (16") | 450 (18") |
| 15M | 600 (24") | 600 (24") | 600 (24") | 450 (18") |
| 20M | 800 (32") | 800 (32") | 800 (32") | 600 (24") |
| 25M | 1200 (48") | 1100 (44") | 1000 (40") | 750 (30") |
| 30M | 1400 (56") | 1300 (52") | 1200 (48") | 900 (36") |
| 35M | 1650 (66") | 1500 (60") | 1400 (56") | 1050 (42") |

6. EMBEDMENT OF DOWELS SHALL BE MIN. EQUAL TO TENSION SPLICE LENGTH, UNLESS NOTED OTHERWISE.
7. REINFORCING BARS TO BE SYMMETRIC OVER SUPPORTS AND SYMMETRIC IN SPANS, UNLESS NOTED OTHERWISE.
8. REINFORCING STEEL SHALL BE FIXED IN PLACE DURING PLACEMENT OF CONCRETE. BAR SUPPORTS SHALL SHALL BE STEEL, CONCRETE OR PLASTIC.
9. THE REINFORCING STEEL SHALL BE CLEANED FROM OIL, GREASE, RUST AND DEBRIS BEFORE PLACEMENT OF CONCRETE.
10. CONCRETE PROPERTIES:
    a. ALL CONCRETE SHALL HAVE A 28 DAY MINIMUM COMPRESSIVE STRENGTH OF 35MPa UNLESS OTHERWISE SPECIFIED.
11. THE SLUMP SHOWN IN THE TABLE MAY BE INCREASED WHEN SUPER-PLASTICIZER IS USED.
12. DO NOT ADD WATER TO CONCRETE UNLESS WRITTEN APPROVAL GIVEN BY THE ENGINEER. IF HIGHER SLUMP CONCRETE IS DESIRED, CONCRETE SUPPLIER SHALL DESIGN AND SUPPLY ACCORDINGLY.
13. CONCRETE FORMWORK TOLERANCES SHALL CONFORM TO CSA STANDARD A23.1, UNLESS NOTED OTHERWISE.

## CONCRETE AND REINFORCING (cont'd)

14. CURING OF CONCRETE SHALL BE IN ACCORDANCE WITH CSA A23.1 SECTION 7.4.
15. VIBRATE ALL CONCRETE AT THE TIME OF POURING.
16. CONTROL JOINTS IN SLABS ON GRADE SHALL BE MIN. t/3 (SEE TYP DETAIL). MAX. DISTANCE BETWEEN CONTROL JOINTS IN SLABS-ON-GRADE SHALL BE LESS THAN THE GREATER OF 25 x t OR 3000 mm (10'-0") UNLESS NOTED OTHERWISE.
17. SUPPLY AND SET ANCHOR BOLTS, SLEEVES, PIPE HANGERS, JOISTS AND OTHER INSERTS AND OPENINGS AS INDICATED OR SPECIFIED ELSEWHERE.
    FOR BEAMS AND COLUMNS: NO SLEEVES, DUCTS, PIPES OR OTHER OPENINGS SHALL PASS VERTICALLY OR HORIZONTALLY EXCEPT WHERE EXPRESSLY DETAILED ON STRUCTURAL DRAWINGS OR WHERE APPROVED IN ADVANCE BY ENGINEER.
    FOR SLABS AND WALLS: : ALL SLEEVES AND OPENINGS GREATER THAN 100 mm (4 ) IN ANY DIMENSION OR REQUIRING THE CUTTING OF ANY REINFORCEMENT, AND NOT INDICATED ON STRUCTURAL DRAWINGS, MUST BE APPROVED BY THE ENGINEER.
    FOR MULTIPLE OPENINGS OR SLEEVES: IF WITHIN 600mm (24 ) OF EACH OTHER CONSULT ENGINEER FOR DIRECTION. DO NOT MAKE HOLES IN SLABS CLOSER THAN 24" TO EDGE OF COLUMNS.
18. CAST IN ANCHOR BOLTS SHALL CONFORM TO THE LATEST CSA STANDARD G40.21 OR ASTM F1554 WITH A MINIMUM YIELD STRENGTH OF 250 MPa AND SHALL BE SET TRUE AS TO LOCATION, ELEVATION AND PROJECTION TO THE FOLLOWING TOLERANCES:
    ANCHOR BOLT LOCATION = ± 3mm (1/8").
    ANCHOR BOLT PROJECTION = ± 6mm (1/4").
19. CONSTRUCTION JOINTS FOR WALLS ARE BASED UPON VERTICAL JOINTS AT A MAXIMUM SPACING OF 10000mm (30'-0"). UNLESS CONTROL JOINTS ARE PROVIDED AS PER TYPICAL DETAIL. TOTAL LENGTH OF POUR TO BE DISCUSSED WITH ENGINEER PRIOR TO PROCEEDING.
20. CONSTRUCTION JOINTS FOR WALLS, SLABS, AND BEAMS NOT SHOWN ON THE DRAWINGS SHALL BE APPROVED BY THE STRUCTURAL CONSULTANT BEFORE CONSTRUCTION. GENERALLY JOINTS IN SLABS SHALL BE AT RIGHT ANGLES TO THE SPANS, AT MID SPAN IF POSSIBLE AND BE CLEAR OF SUPPORTS AND POINT LOADS.
21. INSERTS, FRAME-OUTS, SLEEVES, BRACKETS, CONDUITS AND FASTENING DEVICES, SHALL BE INSTALLED AS REQUIRED BY THE DRAWINGS AND SPECIFICATIONS IN A MANNER THAT SHALL NOT IMPAIR THE STRUCTURAL STRENGTH OF THE SYSTEM, BE SO INSTALLED THAT THEY SHALL NO REQUIRE THE CUTTING, BENDING, OR DISPLACEMENT OF THE REINFORCING OTHER THAN AS SHOWN ON THE TYPICAL DETAILS.
22. ELECTRICAL CONDUITS SHALL NOT PASS THROUGH A COLUMN, SHALL NOT BE LARGER IN OUTSIDE DIAMETER THAN 1/3 SLAB THICKNESS OR WALL OR BEAM WHICH IT IS EMBEDDED, SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS ON CENTER UNLESS APPROVED AND HAVE A MINIMUM CONCRETE COVER OF 25mm (1") AND UNLESS SPECIFICALLY PERMITTED OTHERWISE, SHALL NOT RUN HORIZONTALLY IN A CONCRETE WALL.
23. CONFORM TO THE CONCRETE COVER REQUIREMENTS OF CSA A23.1 AND THE FOLLOWING, UNLESS NOTED OTHERWISE:
    - FOR CONCRETE CAST AGAINST EARTH AND PERMANENTLY EXPOSED TO EARTH - 75mm

NOTES:
a. THE SLAB COVERS IN TABLE 1, 2 AND 3 ARE FOR CONCRETE NOT PROTECTED BY A MEMBRANE OR A CORROSION INHIBITOR. FOR PARKING GARAGE SLABS - SEE TABLE 4.
b. FOR COLUMN COVERS (TO MAIN REINFORCEMENT) EXCEEDING 63mm WITH 4 HOUR FIRE RATING PROVIDE WIRE MESH USING 1.57mmØ 100mm EA WAY.
c. THE COVER FOR A BUNDLE OF BARS SHALL BE THE SAME AS THAT FOR A SINGLE BAR WITH AN EQUIVALENT AREA.
d. PROVIDE COVER FOR MINIMUM 2 HOURS FIRE RATING UNLESS OTHERWISE NOTED
e. REINFORCED CONCRETE WALLS WHICH MAY BE EXPOSED TO FIRE ON BOTH SIDES SIMULTANEOUSLY SHALL HAVE THE MINIMUM COVER REQUIREMENTS FOR COLUMNS.

**TABLE 1**

MINIMUM CONCRETE COVER FOR ELEMENTS NOT EXPOSED TO CHLORIDES NOR FREEZING AND THAWING (mm)

| ELEMENTS | | COMMENTS | BAR SIZE | FIRE RATING <= 2 | FIRE RATING 3 | FIRE RATING 4 |
|---|---|---|---|---|---|---|
| WALLS | FOUNDATION WALLS, RETAINING WALLS | NOT CAST AGAINST CONC. FORMWORK (CAST AGAINST LAGGING, CAISSON, WALL) | ALL BAR SIZES | 50 | | |
| | FOUNDATION WALLS, SHEAR WALLS (e) RETAINING WALLS AND MISC. WALLS | | Ø <= 25M | 25 | | |
| | | | 30M | 30 | | |
| | | | 35M | 35 | | |
| COLUMNS | COLUMNS | | Ø <= 30M | 40 | | 55 |
| | | | 35M | | | |
| SLABS AND BEAMS | SLABS | | Ø <= 25M | 25 | 35 | 40 |
| | | | 30M | 30 | | |
| | | | 35M | 35 | | |
| | BEAMS | | Ø <= 25M | 30 | | 40 |
| | | | 30M | | | |
| | | | 35M | 35 | | |
| | | | 45M | 45 | | |

NOTES:
a. THE SLAB COVERS IN TABLE 1,2,3 AND 4 ARE FOR C-1 CONCRETE NOT PROTECTED BY A MEMBRANE OR A CORROSION INHIBITOR.
b. FOR COLUMN COVERS (TO MAIN REINFORCEMENT) EXCEEDING 63mm WITH 4 HOUR FIRE RATING PROVIDE WIRE MESH USING 1.57mmØ 100mm EA WAY.
c. THE COVER FOR A BUNDLE OF BARS SHALL BE THE SAME AS THAT FOR A SINGLE BAR WITH AN EQUIVALENT AREA.
d. PROVIDE COVER FOR MINIMUM 2 HOURS FIRE RATING UNLESS OTHERWISE NOTED.
e. REINFORCED CONCRETE WALLS WHICH MAY BE EXPOSED TO FIRE ON BOTH SIDES SIMULTANEOUSLY SHALL HAVE THE MINIMUM COVER REQUIREMENTS FOR COLUMNS.

**TABLE 2**

MINIMUM CONCRETE COVER FOR ELEMENTS EXPOSED TO FREEZING AND THAWING (mm)

| ELEMENTS | | COMMENTS | BAR SIZE | FIRE RATING <= 3 | FIRE RATING 4 |
|---|---|---|---|---|---|
| WALLS | FOUNDATION WALLS, RETAINING WALLS | NOT CAST AGAINST CONC. FORMWORK (CAST AGAINST LAGGING, CAISSON, WALL) | ALL BAR SIZES | 50 | |
| | FOUNDATION WALLS, SHEAR WALLS (e) RETAINING WALLS AND MISC. WALLS | | Ø <= 25M | 40 | |
| | | | 30M | 45 | |
| | | | 35M | 55 | |
| COLUMNS | COLUMNS | | Ø <= 30M | 45 | 55 |
| | | | 35M | 55 | |
| SLABS AND BEAMS | SLABS AND BEAMS | | Ø <= 25M | 40 | |
| | | | 30M | 45 | |
| | | | 35M | 55 | |
| | | | 45M | 70 | |

**TABLE 3**

MINIMUM CONCRETE COVER FOR ELEMENTS EXPOSED TO CHLORIDES (mm)

| ELEMENTS | | COMMENTS | BAR SIZE | FIRE RATING <=4 |
|---|---|---|---|---|
| WALLS | FOUNDATION WALLS, SHEAR WALLS AND MISC. WALLS (e) | | Ø <= 25M | 60 |
| | | | 30M | 60 |
| | | | 35M | 70 |
| | | | 45M | 90 |
| COLUMNS | COLUMNS | | Ø <= 30M | 60 |
| | | | 35M | |
| | | | 45M | 80 |
| | | | 55M | 105 |
| SLABS AND BEAMS | SLABS AND BEAMS | | Ø <= 25M | 60 |
| | | | 30M | |
| | | | 35M | 70 |
| | | | 45M | 90 |

**TABLE 4**

MINIMUM CONCRETE COVER FOR ELEMENTS OF PARKING GARAGE PROTECTED BY MEMBRANE AND CORROSION INHIBITOR "MI"

| ELEMENTS | | COMMENTS | BAR SIZE | TOP COVER NORM./SEVERE FIRE RATING <=4 | BOT. COVER NORM./SEVERE FIRE RATING <=2 | BOT. COVER 3 | BOT. COVER 4 |
|---|---|---|---|---|---|---|---|
| SLABS AND BEAMS | SLAB AND BEAMS | | Ø <= 20M | 40 | 30 | 35 | 40 |
| | | | 25M | | 40 | | |
| | | | 30M | 45 | | | |
| | | | 35M | 55 | | | |

## STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL AND JOIST DESIGN CONNECTIONS AND DETAILS SHALL BE IN ACCORDANCE WITH THE LATEST CSA STANDARD S16.
   a. REFER ALSO TO NOTES UNDER PLANS.
2. STRUCTURAL STEEL SHALL CONFORM TO CAN/CSA-G40.20, AND CAN/CSA-G40.21
   a. GRADE 350W CLASS C FOR H.S.S.
   b. GRADE 350W FOR W SHAPES, S SHAPES, AND TEES.
   c. GRADE 300W FOR CHANNELS, ANGLES, PLATES, RODS
3. BOLTED CONNECTIONS SHALL USE ASTM A325 BOLTS. ALL BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325. ANCHOR RODS SHALL BE FABRICATED FROM STEEL ROD CONFORMING TO CSA STANDARD G40.21 GRADE 300W.
4. SHEAR STUDS TO CONFORM ASTM A108.
5. WELDING MATERIALS TO CONFORM TO CSA W48.
6. WELDING OF STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF CSA STANDARD W59.
7. FILLET WELDS SHALL BE 6mm (1/4") MIN. U.N.O. BOLTS SHALL BE A325 19mm (3/4") MIN. U.N.O. BOLTED CONNECTIONS SHALL HAVE MIN. OF TWO BOLTS IN EACH CONNECTED PIECE. BOLTED CONNECTIONS SHALL BE DESIGNED AS BEARING CONNECTIONS U.N.O.
8. STEEL COATINGS - STRUCTURAL STEEL SHALL BE CLEANED AND PREPARED TO CONFORM TO CSA STANDARD S16:
   a. INTERIOR STRUCTURAL STEEL SHALL BE PRIMED AND PAINTED AS PER CSA/CAN-S-16.
   b. EXPOSED STEEL TO BE HOT DIP GALVANIZED IN ACCORDANCE TO CAN/CSA-G164. TOUCH UP OF WELDS AND CUTS OF GALVANIZED MEMBERS TO BE DONE WITH A MINIMUM OF 3 COATS OF ZINC RICH PAINT.
   c. INTERIOR STEEL MREMBERS THAT ARE TO BE PROTECTED BY A CEMENTIOUS FIRE PROOFING SHALL BE CLEANED AND REMAIN UNCOATED.
9. FABRICATOR SHALL DESIGN CONNECTIONS IN ACCORDANCE WITH THE 2012 OBC FOR THE FORCES SHOWN ON THE DRAWINGS. BEAM CONNECTIONS SHALL BE DESIGNED FOR A MINIMUM OF 50% OF THE BEAM SHEAR CAPACITY IF FACTORED DESIGN FORCES ARE NOT SHOWN ON THE DRAWINGS.
10. MOMENT FRAMES CONNECTIONS TO BE CONTINUOUS COLUMN / INTERRUPTED BEAM TYPE U.N.O.
11. WHERE MOMENT CONNECTIONS ARE CALLED FOR BUT VALUES ARE NOT INDICATED, DESIGN CONNECTIONS FOR 100% SECTION CAPACITY OF THE SMALLER MEMBER JOINED.
12. COLUMN CAP PLATES TO BE MIN. 16mm (5/8") THICK U.N.O. COLUMN BASE PLATES TO BE MIN. 20mm (3/4") THICK U.N.O. HSS COLUMNS TO HAVE MIN. 10mm (3/8") THICK CAP PLATE WELDED ALL-AROUND U.N.O.
13. ALL BEAMS CANTILEVERED OR CONTINUOUS OR SUPPORTED OVER A COLUMN OR OTHER SUPPORT, AND BEAMS SUPPORTING POINTS OF CONCENTRATED LOAD, SHALL HAVE A MIN. OF 2-10 mm (3/8") STIFFENERS EACH SIDE OF WEB U. N.O.
14. TOP OF COLUMNS WHICH ARE NOT BRACED BY JOISTS OR BEAMS SHALL BE BRACED DIAGONALLY TO THE ROOF OR FLOOR BY A MINIMUM OF 4-L76 x 76 x 6.4 mm (L3 x 3 x 1/4") ANGLES FOR INTERIOR COLUMNS; A MINIMUM 2-L76 x 76 x 6.4mm (L3 x 3 x 1/4") ANGLES FOR EXTERIOR COLUMNS. BRACING SHALL BE BETWEEN TOP OF COLUMN AND TOP CHORD OF JOISTS.
15. COLUMNS BUILT INTO MASONRY, ABUTTED BY, OR FACED WITH MASONRY WALLS SHALL HAVE ADJUSTABLE ANCHORS AT 400 mm (16") O.C. SPACED VERTICALLY. WHERE STEEL PROVIDES LATERAL BRACING ONLY TO MASONRY, ANCHORS SHALL ALLOW VERTICAL MOVEMENT BETWEEN STEEL MEMBERS AND MASONRY.
16. BEARING PLATES ARE TO BE CENTRED BELOW ALL BEAMS OR LINTELS U.N.O ON THE DRAWINGS. WELD TO BEARING PLATE WITH A MINIMUM 50 mm x 5 mm (2" x 3/16") FILLET ON BOTH SIDES OF BEAM.
17. STEEL BEAMS AND LINTELS SHALL HAVE 200 mm (8") MINIMUM END BEARING ON MASONRY AND 65 mm (2 1/2") MINIMUM BEARING ON STEEL UNLESS INDICATED OTHERWISE.
18. WHERE BACK-TO-BACK ANGLES ARE USED AS LINTELS OR SUPPORTS. STITCH WELD TOGETHER AT A MAXIMUM SPACING OF 300mm (12") O.C.
19. ALL ROOF OPENINGS TO BE REINFORCED BY FRAMES PER TYP. DETAIL UNLESS NOTED OTHERWISE. MAXIMUM SPAN 2000 mm (6'-8"). FOR LARGER OPENING CONSULT STRUCTURAL ENGINEER. COORDINATE WITH MECHANICAL, ELECTRICVAL AND SUB-TRADES TO AVOID INTERFERENCE WITH STRUCTURAL MEMBERS.
20. PROVIDE TEMPORARY BRACING TO KEEP STRUCTURE SAFE AND PLUMB UNTIL PERMANENT BRACING SHOWN ON DRAWINGS INCLUDING FLOORS AND ROOFS IS CONSTRUCTED.

## ABBREVIATIONS

| | | | |
|---|---|---|---|
| A.B | ANCHOR BOLT | HD. | HOOKED |
| ALT. | ALTERNATE | I.D. | INSIDE DIAMETER |
| ALUM. | ALUMINUM | kN. | KILONEWTON |
| ANCH'S | ANCHORS | kPa | KILOPASCAL |
| APPROX. | APPROXIMATELY | L | ANGLE |
| ARCH. | ARCHITECTURAL | L.L.H. | LONG LEG HORIZONTAL |
| B/F | BOTTOM FACE | L.L.V. | LONG LEG VERTICAL |
| B.PL | BASE PLATE | L.P. | LOW POINT |
| BLK. | BLOCK | LG. | LONG |
| BM. | BEAM | MAX. | MAXIMUM |
| BOT. | BOTTOM | MECH | MECHANICAL |
| BRG. | BEARING | MET'L | METAL |
| BT.PL. | BENT PLATE | MIN. | MINIMUM |
| C/W | COMPLETE WITH | MISC. | MISCELLANEOUS |
| C/C | CENTRE TO CENTRE | m | METRE |
| C.J. | CONTROL JOINT | mm | MILLIMETRE |
| CLG. | CEILING | MPa | MEGAPASCAL |
| COL. | COLUMN | N.I.C. | NOT IN CONTRACT |
| CONC. | CONCRETE | N.T.S. | NOT TO SCALE |
| CONN. | CONNECTION | No. | NUMBER |
| CONSTR'N | CONSTRUCTION | O.C. | ON CENTRE |
| CONT. | CONTINUOUS | O.D. | OUTSIDE DIAMETER |
| DEMO. | DEMOLITION | O.H. | OVERHEAD |
| DET. | DETAIL | OWSJ | OPEN WEB STEEL JOIST |
| DIA. | DIAMETER | PART'N | PARTITION |
| DIM. | DIMENSION | PL. | PLATE |
| DO. | DITTO | R.C. | REINFORCED CONCRETE |
| DP. | DEEP | R.D. | ROOF DRAIN |
| DWG. | DRAWING | R.O. | ROUGH OPENING |
| DWL. | DOWEL | REF. | REFERENCE |
| E.F. | EACH FACE | REINF. | REINFORCED |
| E.J. | EXPANSION JOINT | REQ'D | REQUIRED |
| ELEC. | ELECTRICAL | S.C. | SAWCUT |
| EMBED. | EMBEDMENT | S.D.F. | STEP DOWN FOOTING |
| E.S. | EACH SIDE | SECT. | SECTION |
| E.W. | EACH WAY | S.L.H | SHORT LEG HORIZONTAL |
| EA. | EACH | S.L.V. | SHORT LEG VERTICAL |
| EL. | ELEVATION | S.O.G. | SLAB ON GRADE |
| EQ. | EQUAL | STL. | STEEL |
| EXTG. | EXISTING | STIFF. | STIFFENER |
| F.F | FACE TO FACE | STRUCT. | STRUCTURAL |
| FIN. | FINISHED | T/O | TOP OF |
| FLR. | FLOOR | T.L.L | TOP LOWER LAYER |
| FNDN. | FOUNDATION | T.U.L. | TOP UPPER LAYER |
| FTG. | FOOTING | TYP | TYPICAL |
| Ga. | GAUGE | U.N.O. | UNLESS NOTED OTHERWISE |
| GALV. | GALVANIZED | U/S | UNDERSIDE |
| GRD. | GRADE | VERT. | VERTICAL |
| H.D. | HEAVY DUTY | V.E.F. | VERTICAL EACH FACE |
| H.D.G. | HOT DIPPED GALVANIZED | V.I.F. | VERTICAL INSIDE FACE |
| H.E.F. | HORIZONTAL EACH FACE | V.O.F. | VERTICAL OUTSIDE FACE |
| H.I.F. | HORIZONTAL INSIDE FACE | W.P. | WORKING POINT |
| H.O.F. | HORIZONTAL OUTSIDE FACE | W.W.M. | WELEDED WIRE MESH |
| HORIZ. | HORIZONTAL | @ | SPACED AT |
| H.P. | HIGH POINT | | |
| HSS | HOLLOW STRUCTURAL STEEL | | |

## MASONRY

1. CONCRETE MASONRY UNITS SHALL CONFORM TO THE CSA CAN/CSA-A165 AND SHALL HAVE A MINIMUM COMPRESIVE STRENGTH OF 15MPa BASED ON NET CROSS-SECTIONAL AREA.
2. REINFORCING BARS SHALL CONFORM TO CAN/CSA G30.18 GRADE 400W FOR REINFORCING STEEL WITH MINIMUM YIELD STRENGTH OF FY = 400 MPa.
3. TYPE S MORTAR SHALL BE USED THROUGHOUT FOR LOAD BEARING BLOCK. TYPE N MORTAR SHALL BE USED FOR BRICK VENEER OR DECORATIVE NON-LOAD BEARING BLOCK.
   MORTAR TYPE S: MIN. COMPRESSIVE STRENGTH - 12.0 MPa
   MORTAR TYPE N: MIN. COMPRESSIVE STRENGTH - 7.5 MPa
   GROUT SHALL CONFORM TO CAN/CSA A179
   GROUT MIN. COMPRESSIVE STRENGTH - 20 MPa
4. ALL MASONRY CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF CSA STANDARDS CAN/CSA-A370, CAN/CSA- A371 AND CSA S304.1.
5. ALL MASONRY WALLS SHALL BE HORIZONTALLY REINFORCED. MINIMUM REQUIREMENTS WITH (4.76 mm Ø) HEAVY DUTY "LADDER" TYPE JOINT REINFORCEMENT (OR APPROVED EQUAL) AND CONTINUOUS REINFORCEMENT AT EVERY SECOND COURSE (400 mm/16").
   a. ALL JOINT REINFORCEMENT SHALL BE HOT-DIPPED GALVANIZED.
   b. REINFORCEMENT SHALL BE LAPPED A MINIMUM OF 300mm (12":) AT ALL JOINTS.
   c. PREFABRICATED CORNER AND TEE REINFORCEMENT SHALL BE USED AT ALL WALL INTERSECTIONS.
   d. REINFORCEMENT SHALL BE PLACED AS TO PROVIDE 16 mm (5/8") MORTAR COVER ON THE EXTERIOR FACE OF WALL AND 12 mm (1/2") COVER ON THE INTERIOR FACE OF WALL.
6. UNLESS NOTED OTHERWISE, PROVIDE CONTINUOUS BOND BEAMS (REINFORCED WITH 1-15M) AT UNDERSIDE OF EACH FLOOR, ROOF AND AT TOP OF PARAPETS. ALSO PROVIDE BOND BEAMS AT TOP AND BOTTOM OF OPENINGS AND EXTEND 600mm PAST CORNERS. REINFORCE BOTTOM BOND BEAM WITH 1-15M . REINFORCE TOP BOND BEAM AS FOLLOWS:
   - SPANS LESS THAN 1500 mm
   200 mm DEEP BOND BEAM c/w 1-15M FULL LENGTH
   - SPANS 1500 mm TO 3000 mm
   400 mm DEEP BOND BEAM c/w 2-15M FULL LENGTH
7. IN SEISMIC ZONES, IN ADDITION TO NOTE # 6 PROVIDE CONTINUOUS BOND BEAMS ( REINFORCED WITH 1-15M ) AT MAXIMUM VERTICAL INTERVALS OF 2400 mm O/C.
8. ALL TIES FOR MASONRY VENEER SHALL BE DESIGNED AND SUPPLIED BY THE MASONRY CONTRACTOR IN ACCORDANCE WITH CSA STANDARDS S304.1 AND CAN/CSA-A370.
9. ALL BLOCK MASONRY UNITS SHALL BE CONSTRUCTED WITH FULL HEAD JOINTS, AND FULL BED JOINTS UNDER THE FULL BEARING AREAS OF THE FACE SHELLS, AND UNDER WEBS SURROUNDING THOSE CELLS TO BE FILLED WITH GROUT.
10. WHERE MASONRY THICKNESS CHANGES, GROUT 100% SOLID MIN. 200mm (8") THE LOWER/THICKER PORTION OF THE WALL.
11. GROUT 100% SOLID BLOCKS AT PARAPETS.
12. THE INTERSECTION OF ALL MASONRY WALLS SHALL BE TOOTHED OR CONTINUOUSLY REINFORCED WITH JOINT REINFORCEMENT.
13. ALL MASONRY BENEATH CONCENTRATED LOADS (SUCH AS BEAMS, LINTELS, AND JOISTS) SHALL BE SOLID BLOCKS OR 100% GROUTED BLOCKS FOR A MINIMUM DEPTH OF 400 mm (16") OR 3 TIMES THE LENGTH OF BEARING AND PROJECTING A MINIMUM OF 200 mm (8") OR THE LENGTH OF BEARING BEYOND EACH EDGE OF BEARING, UNLESS OTHERWISE NOTED OR SHOWN.
14. MAINTAIN SUPPORT OF MASONRY LINTELS FOR A MINIMUM OF SEVEN DAYS OR UNTIL SUFFICIENT STRENGTH IS GAINED TO SAFELY SUPPORT LOADS IMPOSED.
15. WHERE STEEL BEARING PLATES ARE SHOWN ON THE DRAWINGS, THEY SHALL BE ANCHORED WITH A MINIMUM OF TWO 15M X 300mm LONG + 75mm HOOKED ANCHOR RODS WELDED TO THE PLATES AND EMBEDDED INTO GROUT FILL AS NOTED ABOVE
16. SEE PLANS AND SCHEDULES REGARDING LINTEL SIZES FOR MASONRY WALLS AND VENEER.
    FOR ALL OPENINGS OR RECESSES IN MASONRY NOT SHOWN ON DRAWINGS GREATER THAN 300mm (12") AND UP TO 1200mm (4 FT.), INCLUDING THOSE FOR MECHANICAL OR ELECTRICAL SERVICES OR EQUIPMENT, PROVIDE ONE L89X89X6.4 (L3 1/2 X 3 1/2 X 1/4") ANGLE FOR EACH 100 mm (4") THICKNESS OF WALL.
17. ALL MASONRY WALLS SHALL BE ADEQUATELY BRACED DURING CONSTRUCTION UNTIL ADEQUATE DIAPHRAGM ACTION CAN BE DEVELOPED BY INSTALLED FLOOR AND ROOF STRUCTURAL COMPONENTS.
18. REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF MASONRY CONTROL JOINTS. SPACING OF CONTROL JOINTS IN ALL WALLS SHALL BE CONSTRUCTED AS PER PLAN, BUT SHALL NOT EXCEED 6000 mm (20'-0") O.C. ALL REINFORCING TO BE DISCONTINUOUS AT CONTROL JOINTS. CONTROL JOINTS SHALL BE CAULKED WITH FOAM BACKER ROD AND SHALL NOT BE FILLED WITH MORTAR.
19. REINFORCED MASONRY:
    a. CELLS TO BE REINFORCED SHALL BE KEPT CLEAN OF MORTAR.
    b. GROUT FOR REINFORCED CELLS, BOND BEAMS, LINTELS AND CELLS CONTAINING DOWELS, ANCHOR BOLTS AND INSERTS PER NOTE #3.
    c. PROVIDE MINIMUM 2-15M VERTICALS FULL HEIGHT AT ALL WALL ENDS, CORNERS, INTERSECTIONS AND OPENINGS UNLESS OTHERWISE NOTED ON DRAWINGS.
    d. PROVIDE 1-15M VERTICAL FULL HEIGHT EACH SIDE OF MOVEMENT JOINTS.
    e. DOWELS FROM FOUNDATIONS TO MATCH VERTICAL REINFORCEMENT IN WALL.
    f. PROVIDE THE FOLLOWING LAPS FOR THE REINFORCEMENT INDICATED:
       - 10M BARS = 450 mm (18")
       - 15M BARS = 600 mm (24")
       - 20M BARS = 900 mm (36")
    EMBEDDED ITEMS ARE NOT TO INTERFERE WITH THE INTEGRITY OF THE MASONRY WALL OR LOCATION OF REINFORCEMENT. PROVIDE FULLY GROUTED LINTEL BEAM FOR CONDUITS AND PIPES RUNNING HORIZONTALLY WITHIN WALL.
20. PROVIDE COLD WEATHER PROTECTION AS REQUIRED BY CAN/CSA-A371.
21. PROVIDE MOVEMENT JOINTS PER ARCHITECTURAL DRAWINGS. MAXIMUM DISTANCE BETWEEN MOVEMENT JOINTS TO BE 6000mm (20'-0"). COORDINATE LOCATION WITH ENGINEER.

## STRUCTURAL DRAWING LIST


S100 GENERAL NOTES
S200 BASEMENT FOUNDATION PLAN
S300 FOUNDATION DETAILS


**DESIGN DATA TABLE**

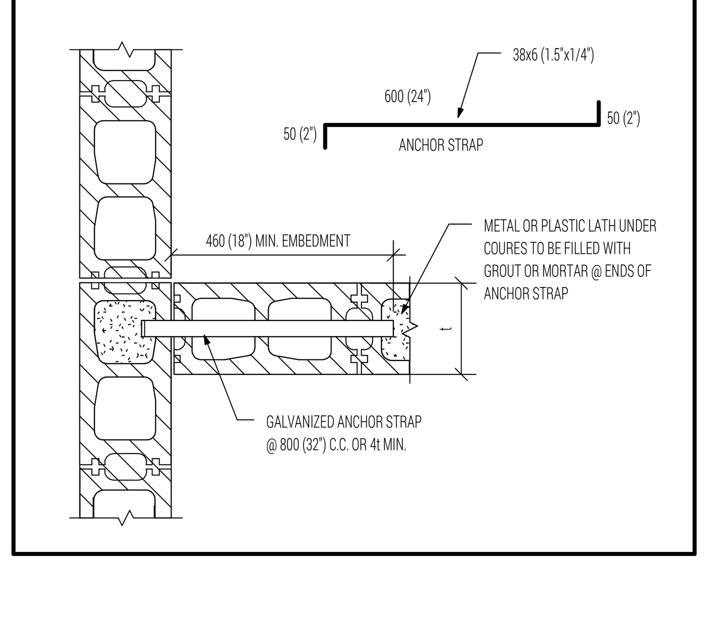
| | | |
|---|---|---|
| BUILDING IMPORTANCE | NORMAL | |
| FLOOR AND ROOF DESIGN LIVE LOADS ARE NOTED ON FRAMING PLANS | | |
| SPECIFIED SNOW LOADS | | |
| RAIN LOADING DESIGN DATA (1/50) | 24h RAIN | 92mm |
| SNOW LOADING DESIGN DATA (1/50) | Ss | 1.0 kPa |
| | Sr | 0.4 kPa |
| BASIC ROOF SNOW LOAD | S | 1.2 kPa |
| FACTORS USED FOR BASIC ROOF SNOW LOAD | Cb | 0.8 |
| | Cw | 1.0 |
| | Cs | 1.0 |
| | Ca | 1.0 |
| ADDITIONAL SNOW ACCUMULATION IS SHOWN ON THE DRAWINGS. | | |
| SPECIFIED WIND LOADS | | |
| HOURLY WIND PRESSURE DESIGN DATA (1/50) | 0.46 kPa | |
| WIND DESIGN CATEGORY | CATAGORY 2 | |
| TERRAIN TYPE | 'OPEN' | |
| SPECIFIED EARTHQUAKE LOADS | | |
| SEISMIC LOADING DESIGN DATA | Sa (0.2) | 0.319 |
| | Sa (0.5) | 0.155 |
| | Sa (1.0) | 0.071 |
| | Sa (2.0) | 0.032 |
| SITE CLASS TO BE CONFIRMED BY GEOTECHNICAL ENGINEER | SITE CLASS | 'D' |
| SEISMIC FORCE MODIFICATION FACTORS FOR SEISMIC FORCE RESISTING SYSTEM | Rd | 1.5 |
| | Ro | 1.5 |
| SEISMIC HAZARD INDEX | IeFaSa (0.2) | 0.32 |

NOTES:
1. THE FOUNDATION WALLS HAVE BEEN DESIGNED ASSUMING THAT THEY ARE NOT SUBJECT TO HYDROSTATIC PRESSURE. ENSURE PROVISIONS HAVE BEEN MADE FOR APPROPRIATE DRAINAGE OF GROUNDWATER.

## CONCRETE BLOCK WALL SCHEDULE

| MARK | DESCRIPTION |
|---|---|
| **W1** | - 190 CONC. BLOCK<br>- BLOCK COMP. STRENGTH = **15 MPa**<br>- 15M @ 600 VERT.<br>- HEAVY DUTY BLOCK-LOK TRUSS / LADDER AT EVERY SECOND COURSE<br>-RESTRAIN TOP OF WALL LATERALLY TO EXISTING FLOOR FRAMING AT GROUND LEVEL |

NOTES:
1. FULLY GROUT ALL REINFORCED CORES.
2. ALL WALLS NOTED FULLY GROUTED ARE TO BE 100% FILLED WITH GROUT.
3. CO-ORDINATE ALL WALL OPENINGS WITH ARCH. DWGS. AND MECHANICAL CONTRACTOR.
4. PROVIDE ADDITIONAL BAR/ MATCHING WALL REINF. SIZE. FULL HEIGHT @ ALL WALL ENDS. INTERSECTIONS AND OPENINGS UNLESS OTHERWISE NOTED ON DRAWINGS.
5. PROVIDE STANDARD TENSION SPLICES FOR ALL HORIZONTAL AND VERTICAL WALL REINFORCEMENT.
6. ALL BARS CONNECTING BETWEEN FLOORS TO BE TIED TOGETHER (REFER TO SECTION DETAILS).
7. SOLID FILLED VOIDS TO BE MADE WITH 20MPa FLOWABLE GROUT (MORTAR FILL NOT PERMITTED).
8. PROVIDE DOWELS FROM THE FOOTING TO WALLS ABOVE TO MATCH VERTICAL WALL REINFORCEMENT.




- DO NOT SCALE DRAWINGS. CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED OR REUSED WITHOUT THE ENGINEER'S WRITTEN PERMISSION.
- THE OWNER/ARCHITECT/CONTRACTOR IS ADVISED THAT OUR OFFICE CANNOT CERTIFY ANY COMPONENT OF THE SITE WORKS NOT INSPECTED DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY OUR OFFICE PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ARRANGE FOR INSPECTION.

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T. N. DOYTCHEV
100113262
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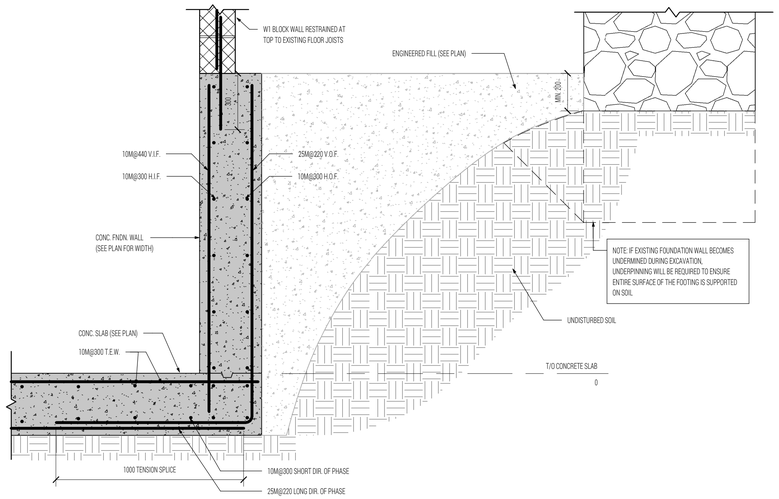
# CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA. COLUMBARIUM RENOVATION
-

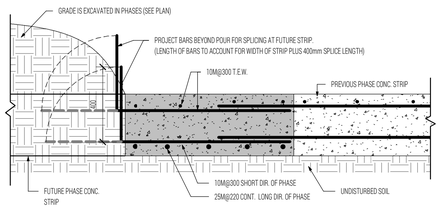
Design By: TD/AF

PROJECT # 21031501

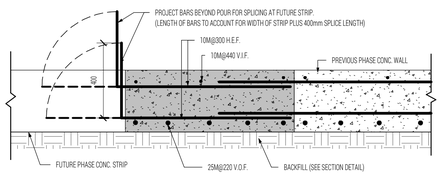
# GENERAL NOTES S100



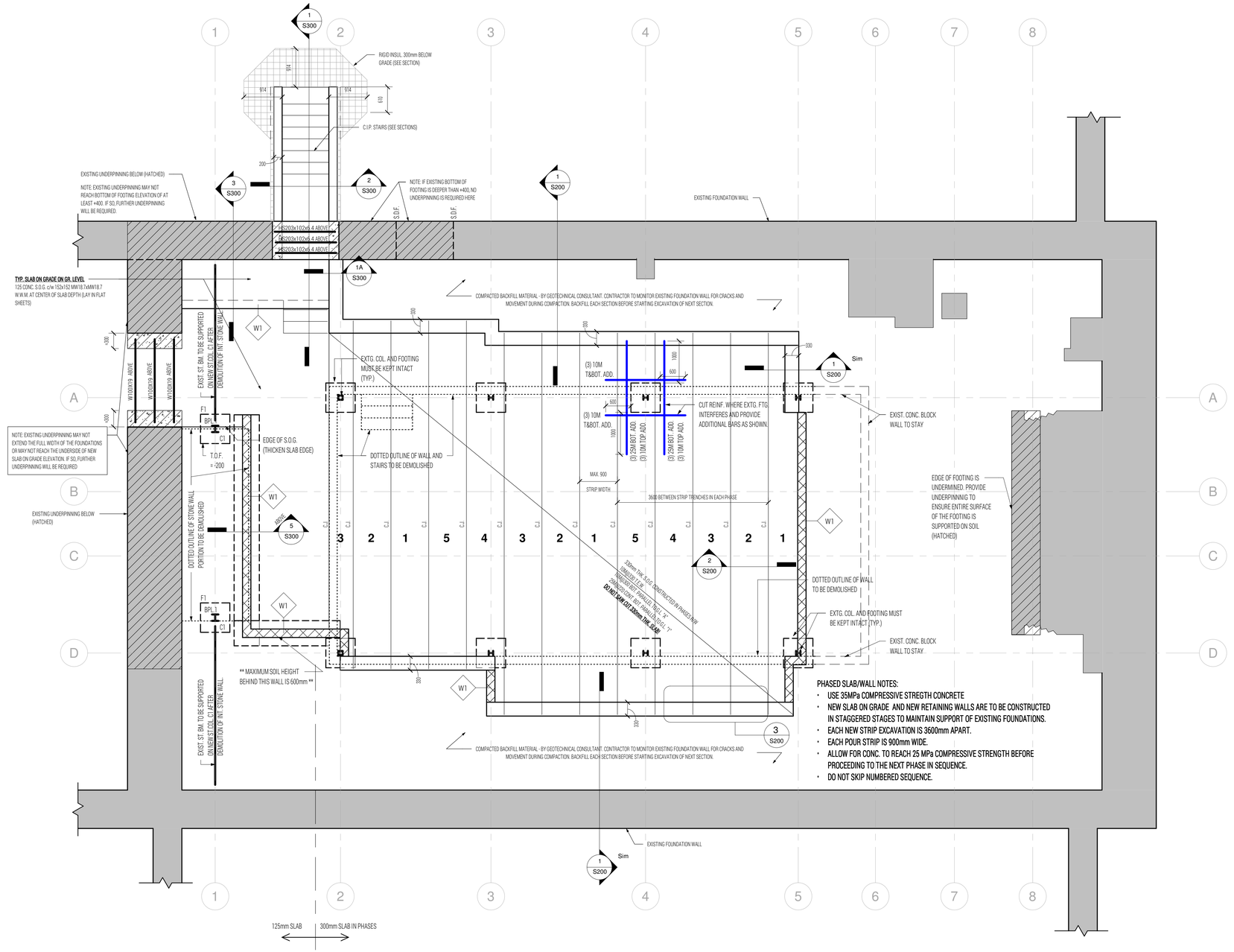

## 1 SECTION AT RETAINED FILL
1 : 15




## 2 SECTION AT PHASED SLAB SEQUENCE
1 : 15




## 3 PLAN DETAIL AT PHASED WALL SEQUENCE
1 : 15

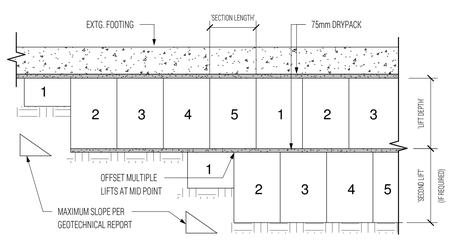



# BASEMENT FOUNDATION PLAN
1 : 50

**NOTES:**
1. T/O SLAB EL. = 0'-0" U.N.O. (REFER TO ARCHITECTURAL DRAWINGS FOR GEODETIC ELEVATION)
2. ALL ELEVATIONS ON PLAN ARE REFERENCED FROM TOP OF CONCRETE SLAB
3. REFER TO ARCH. DWGS. FOR DIMENSIONS, OPENINGS AND SLOPES NOT SHOWN ON THIS DWG.

**LEGEND:**
C2 ..... CONSTRUCTION JOINT
1 ..... PHASE SEQUENCE MARKER
F1 ..... 700x700x300mm THK. FOOTING c/w 10M@300 B.E.W.
BP1 ..... 330x15x330 THK. BPL. c/w (4) 15mmØ ANCHORS (200mm EMBEDMENT, 75mm HOOK)
C1 ..... W150x22

## TYPICAL UNDERPINNING ELEVATION DIAGRAM




UNDERPINNING NOTES:
1. UNDERPINNING TO BE PLACED USING 30MPa CONCRETE AT 28 DAYS. MIN STRENGTH AT 3 DAYS TO BE 25MPa.
2. UNDERPINNING SECTION IN 900mm (3'-0") WIDTHS MAXIMUM IN ORDER 1, 2, 3, 4, 5 AS SHOWN ON PLAN ABOVE.
3. ALL SECTIONS (1) MUST BE COMPLETED PRIOR TO STARTING SECTIONS (2) AND SO ON. ALLOW A MIN. OF 48 HOURS AFTER PLACING GROUT BEFORE STARTING AN ADJACENT SECTION.
4. CLEAN UNDERSIDE OF EXISTING FOUNDATION WALL!
5. RAM PACK 75mm (3") OF NON-SHRINK GROUT OR 1:3 CEMENT/ SAND GROUT BETWEEN UNDERSIDE OF EXISTING FOOTING AND TOP OF UNDERPINNING NO SOONER THAN 24 HOURS AFTER PLACING UNDERPINNING.
6. UNDERPINNING TO BE PLACED DIRECTLY AGAINST EXISTING UNDISTURBED SOIL. ENSURE AGAINST VOIDS NOT FILLED WITH CONCRETE.
7. ENSURE AGAINST LOSS OF MATERIAL FROM BENEATH EXISTING BUILDING.
8. PROVIDE ALL NECESSARY SHORING AND NEEDLING IN ORDER TO SAFELY CARRY OUT THIS WORK AND TO PREVENT DISTRESS IN THE EXISTING BUILDING.
9. DETAILS SHOWN ARE FOR ASSUMED CONDITIONS ANY VARIATION MUST BE REPORTED TO THE STRUCTURAL CONSULTANT BEFORE PROCEEDING.
10. MAX. HEIGHT OF UNDERPINNING SHALL NOT EXCEED 1200mm (4'-0") TYPICAL IN ONE LIFT. IF UNDERPINNING DEPTH IS LARGER, MULTIPLE LIFTS ARE REQUIRED. EACH LIFT TO BE COMPLETED AND FULLY CURED PRIOR TO SUBSEQUENT LIFT PROCEEDING. UNDERPINNING TO MATCH EXISTING FOUNDATION WALL U.N.O.
11. DO NOT LEAVE OPEN EXCAVATION OVERNIGHT.
12. WHERE EXIST. SERVICES RUN THROUGH UNDERPINNING, WRAP SERVICE WITH 50mm THK. COMPRESSIBLE MATERIAL.


• DO NOT SCALE DRAWINGS. CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
• ALL DRAWINGS REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED OR REUSED WITHOUT THE ENGINEER'S WRITTEN PERMISSION.
• THE OWNER/ARCHITECT/CONTRACTOR IS ADVISED THAT OUR OFFICE CANNOT CERTIFY ANY CONSTRUCTION WORK UNLESS WE HAVE BEEN RETAINED TO DO SO. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY OUR OFFICE PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ARRANGE FOR INSPECTION.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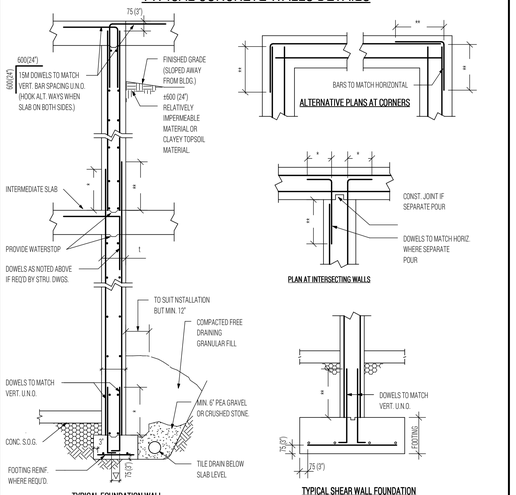
Design By: TD/AF

PROJECT # 21031501

# BASEMENT FOUNDATION PLAN S200

## TYPICAL CONCRETE WALLS DETAILS




| MINIMUM REINFORCEMENT FOR CONCRETE WALLS TO BE AS FOLLOWS (UNLESS NOTED OTHERWISE) | | | | | |
|---|---|---|---|---|---|
| t | 150 | 200 | 250 | 300 | 350 |
| VERT. | 10@440 $\Omega_s$ | 10@460 EF | 10@460 EF | 10@440 EF | 10@280 EF |
| HORIZ. | 10@220 $\Omega_s$ | 10@460 EF | 10@400 EF | 10@320 EF | 10@280 EF |
| t | 6" | 8" | 10" | 12" | 14" |
| VERT. | 10@17 $\Omega_s$ | 10@18" EF | 10@18" EF | 10@17" EF | 10@14" EF |
| HORIZ. | 10@12" $\Omega_s$ | 10@18" EF | 10@15" EF | 10@12" EF | 10@11" EF |

* COMPRESSION LAP SPLICE

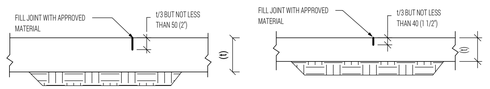
** TENSION SPLICE

▽ STANDARD HOOK

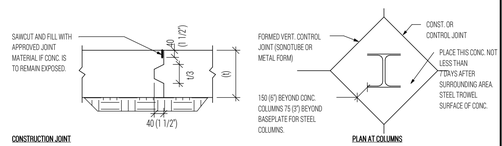
**NOTES:**
1. LAP HORZ. WALL REINF. WITH BASIC TENSION SPLICE
2. PROVIDE A MIN. OF 2-15M BARS IN ALL HEADS, SILLS, & JAMBS OF OPENINGS THROUGH CONC. WALLS, SUCH BARS TO EXTEND A MIN. OF 24" BEYOND EDGE OF OPENING.
3. WALLS and FOOTINGS ARE DESIGNED ASSUMING BOTH FACES ARE FORMED. IF WALL and/OR FOOTINGS ARE TO BE PLACED DIRECTLY AGAINST SOIL (I.E. NO FORM USED), PERMISSION and INSTRUCTIONS MUST BE OBTAINED FROM THE STRUCTURAL CONSULTANT.

## TYPICAL SLAB ON GRADE DETAILS
## APPLIES ONLY TO 125mm SOG OF THIS PROJECT

**SLAB ON GRADE REINFORCED WITH SYNTHETIC FIBRES**

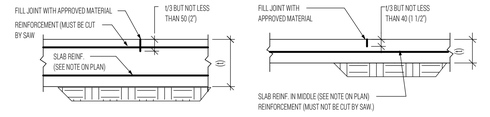



SAWCUT CONTROL JOINT FOR SLAB t GREATER THAN 150mm (6") | SAWCUT CONTROL JOINT FOR SLAB t UP TO 150mm (6")

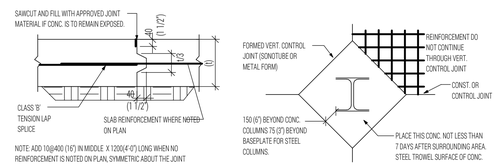



CONSTRUCTION JOINT | PLAN AT COLUMNS

**SLAB ON GRADE REINFORCED WITH WELDED WIRE FABRIC OR DEFORMED BARS**

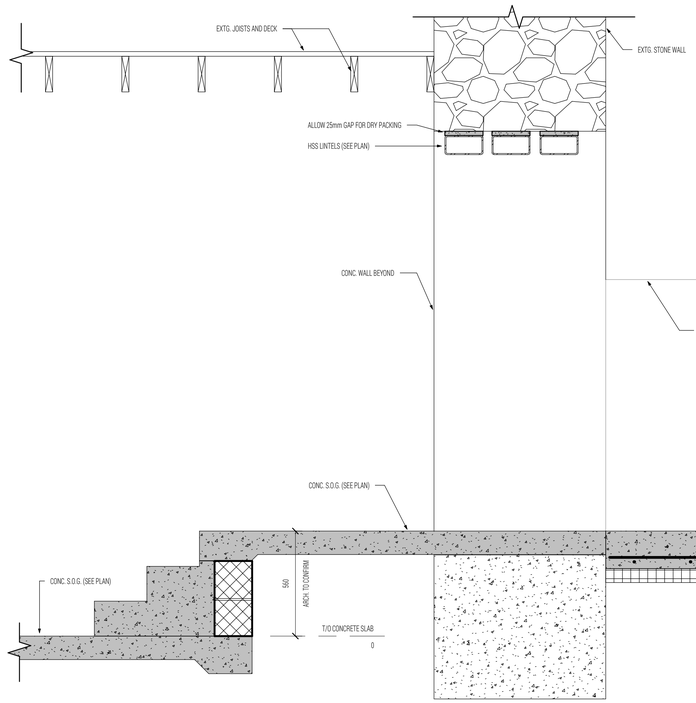



SAWCUT CONTROL JOINT FOR SLAB t GREATER THAN 150mm (6") | SAWCUT CONTROL JOINT FOR SLAB t UP TO 150mm (6")

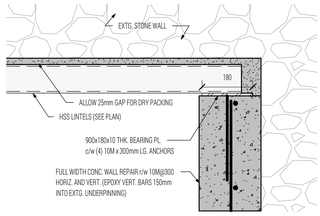



NOTE: ADD 10@400 (16") IN MIDDLE X 1200(4'-0") LONG WHEN NO REINFORCEMENT IS NOTED ON PLAN, SYMMETRIC ABOUT THE JOINT

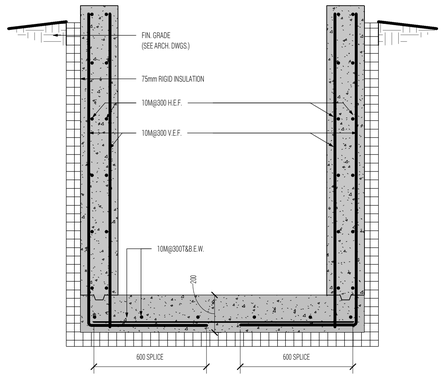
CONSTRUCTION JOINT | PLAN AT COLUMNS



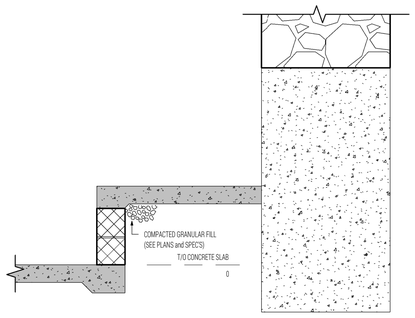

## 1 STAIRS - LONGITUDINAL SECTION DETAIL
1 : 15



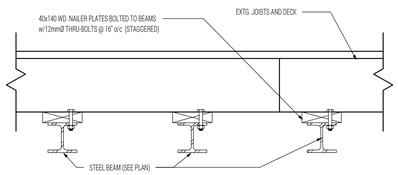

## 1A ELEVATION AT STAIR LINTEL BEARING
1 : 10



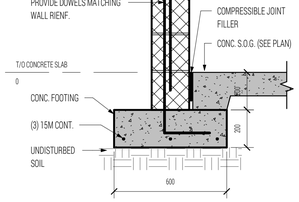

## 2 STAIRS - CROSS SECTION DETAIL
1 : 15



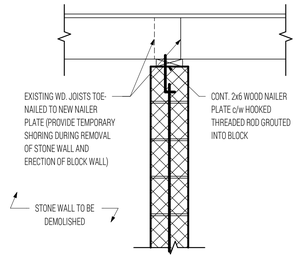

## 3 PLATFORM SECTION DETAIL
1 : 20



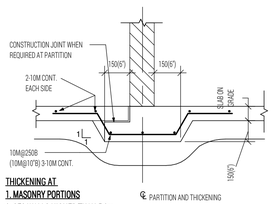

## 4 SECTION AT INTERIOR LINTEL
1 : 10



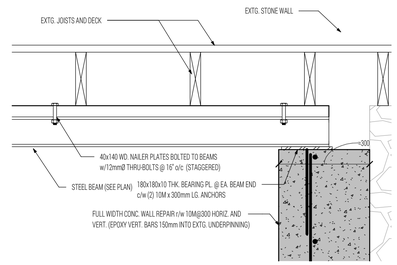

## 5 JOIST BEARING BLOCK WALL SECTION
1 : 15




## TYPICAL THICKENED SLAB ON GRADE DETAIL




**THICKENING AT**
**1. MASONRY PORTIONS**
**2. CFS WALLS HIGHER THAN 5.0m**




## 4A ELEVATION AT INTERIOR LINTEL BEARING
1 : 10

## NON-LOAD BEARING BLOCK LINTEL SCHED.

| WIDTH | <1220 (<4'-0") | | <1830 (<6'-0") | | <2440 (<8'-0") | <3080 (<10'-0") | <3660 (<12'-0") | SECTION DETAIL |
|---|---|---|---|---|---|---|---|---|
| | VER 1 | VER 2 | VER 1 | VER 2 | | | | |
| 100 (4") | (1) L89x89x6 (1) L3 1/2x3 1/2x1/4 | (1) L 64x64x5 (2) L 3"x4" 3/4x3/16 | (1) L 125x89x8 (LLV) (1) L 5x3 1/2x5/16 (LLV) | (1) L 64x89x6 (2) L 2 1/2x1 1/2x1/4 | (1) L 125x89x8 (LLV) | | | |
| 150 (6") | (1) L 125x89x8 (LLV) (1) L 5x3 1/2x5/16 (LLV) | (1) L 64x89x6 (2) L 2 1/2x2 1/2x1/4 | (1) L 125x125x8 (LLV) (1) L 5x5x5/16 (LLV) | (2) L 64x89x6 (2) L 3 1/2x2 1/2x1/4 | (1) L 125x125x8 (LLV) (1) L 5x5x5/16 (LLV) | (1) L 125x125x8 (LLV) (1) L 5x5x5/16 (LLV) | (1) L 125x125x8 (LLV) (1) L 5x5x5/16 (LLV) | |
| 200 (8") | (2) Ls 89x89x6 (2) Ls 3 1/2x3 1/2x1/4 | | (2) Ls 125x89x8 (LLV) (2) Ls 5x3 1/2x5/16 (LLV) | | (2) Ls 125x89x8 (LLV) (2) Ls 5x3 1/2x5/16 (LLV) | W200x21 + PL 175x6 BOT. W8x14 + PL 7x1/4 BOT. | W200x21 + PL 175x6 BOT. W8x14 + PL 7x1/4 BOT. | |
| 250 (10") | (2) Ls 102x89x6 (LLH) (2) Ls 4x3 1/2x1/4 (LLH) | | (2) Ls 102x102x8 (2) Ls 6x4x5/16 | | (2) Ls 152x102x8 (LLV) (2) Ls 6x4x5/16 (LLV) | W200x21 + PL 225x6 BOT. W8x14 + PL 9x1/4 BOT. | W200x21 + PL 225x6 BOT. W8x14 + PL 9x1/4 BOT. | |

NOTES:
1. STRUCTURAL STEEL SHALL BE G40.21.
2. BEARING LENGTH = 6" AT EACH END.
3. CONNECT ANGLES @ 24" o/c BY WELDING or BOLTING FOR ANGLES WITH A TOTAL LENGTH OF 6'-0" OR MORE.


- DO NOT SCALE DRAWINGS. CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE COMMENCING WORK.
- ALL DRAWINGS REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED OR REUSED WITHOUT THE ENGINEER'S WRITTEN PERMISSION.
- THE OWNER/ARCHITECT/CONTRACTOR IS ADVISED THAT OUR OFFICE CANNOT CERTIFY ANY CONSTRUCTION WHICH IS NOT OBSERVED BY OUR FIELD REVIEW. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY OUR OFFICE PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ARRANGE FOR INSPECTION.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Design By: TD/AF

PROJECT # 21031501

**CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA. COLUMBARIUM RENOVATION**
-

# FOUNDATION DETAILS S300

# MECHANICAL SPECIFICATIONS

MECHANICAL CONTRACTOR SHALL SUBMIT PRICE FOR THE COST OF SUPPLY AND INSTALLATION OF EQUIPMENT AND MATERIAL NECESSARY TO PROVIDE A COMPLETE AND OPERATING MECHANICAL PACKAGE. MECHANICAL PACKAGE TO CONSIST OF EQUIPMENT AND MATERIALS AS DESCRIBED IN THIS OUTLINE SPECIFICATION. REFER TO MECHANICAL PLANS FOR ACTUAL REQUIREMENTS OF EQUIPMENT.

## A. GENERAL CONDITIONS

1. PROVIDE ALL LABOUR, MATERIALS, AND EQUIPMENT NECESSARY TO COMPLETE THE WORK SHOWN ON ALL MECHANICAL DRAWINGS INCLUSIVE AND AS SPECIFIED HEREIN.
2. ALL NECESSARY PERMITS SHALL BE OBTAINED AND ALL FEES SHALL BE PAID TO CARRY OUT THE SPECIFIED WORK. PROVIDE ALL REQUIRED LOCAL PROVINCIAL ENGINEERING SEALS FOR DRAWINGS AND DESIGNS TO OBTAIN BUILDING CONSTRUCTION PERMITS, ETC.
3. ALL WORK SHALL BE GUARANTEED FOR ONE YEAR FROM DATE OF COMPLETED WORK ACCEPTANCE BY THE ARCHITECT. SUBMIT DOCUMENTATION IDENTIFYING ADDITIONAL EQUIPMENT WARRANTY COVERAGE AND TIME FRAMES.
4. ALL WORK SHALL COMPLY IN EVERY RESPECT WITH ALL NATIONAL, PROVINCIAL, AND LOCAL BY–LAWS AND CODES, WHICH SHALL BE CONSIDERED PART OF THIS SPECIFICATION.
5. ALL CUTTING, PATCHING, FLASHING FOR WORK AS REQUIRED HEREIN SHALL BE BY THE GENERAL CONTRACTOR.
6. THE MECHANICAL CONTRACTOR SHALL INSTALL HEATING, AIR CONDITIONING, AND PLUMBING SYSTEMS IN COMPLETE ACCORDANCE WITH THE RECOMMENDATIONS OF THE ASHRAE, NATIONAL WARM AIR STANDARDS, SMACNA LATEST EDITION DUCT STANDARDS, AND LOCAL PLUMBING CODES.
7. CO–ORDINATE WORK WITH WORK OF OTHER TRADES TO AVOID CONFLICT.
8. ALTER THE LOCATION OF DUCTS OR PIPES AT THE DIRECTION OF THE ENGINEER WITHOUT CHARGE TO THE OWNER, PROVIDED THE CHANGE IS MADE BEFORE INSTALLATION AND DOES NOT NECESSITATE ADDITIONAL MATERIALS.
9. TENDER QUOTATIONS SHALL BE BASED ON THE USE OF SPECIFIED MANUFACTURERS, UNLESS APPROVAL FOR THE USE OF EQUAL MANUFACTURERS IS OBTAINED FROM THE ENGINEER PRIOR TO SUBMISSION OF TENDERS. ALTERNATE MANUFACTURERS MAY BE QUOTED AS AN INCREASE OR DECREASE AMOUNT TO THE TENDER PRICE, WITHOUT PRIOR APPROVAL OF THE ENGINEER. THE USE OF AN EQUAL OR ALTERNATE MANUFACTURER SHALL IN NO WAY RELIEVE THE MECHANICAL CONTRACTOR FROM THE RESPONSIBILITY OF PROVIDING ALL WORK THAT MAY BE REQUIRED BY REASON OF DIFFERENT SPACE, WEIGHT, ELECTRICAL, OR OTHER REQUIREMENTS FROM THAT OF THE SPECIFIED MANUFACTURER.
10. FURNISH TO THE ENGINEER THREE (3) HARD–COVERED LOOSE–LEAF BINDERS CONTAINING THEREIN ONE (1) COMPLETE SET OF MANUFACTURERS' OPERATING AND MAINTENANCE INSTRUCTIONS SHOWING ALL MAJOR EQUIPMENT, AND APPARATUS REQUIRING MAINTENANCE. INSTRUCTIONS SHALL BE COMPLETE FOR INSTALLATION, OPERATION AND MAINTENANCE AND SHALL INCLUDE PERTINENT INFORMATION SUCH AS DETAILED DRAWINGS AND OPERATION CURVES. SPARE PARTS, SUPPLIER LISTS AND ADDRESSES SHALL BE SUPPLIED. INSTRUCTIONS SHALL BE REQUIRED WITH THE OWNERS' REPRESENTATIVE TO ENSURE A THOROUGH UNDERSTANDING OF THE EQUIPMENT AND ITS OPERATION.
11. ALL WIRING AND SUPPLY AND INSTALLATION OF DISCONNECT SWITCHES FOR EQUIPMENT SPECIFIED HEREIN SHALL BE PERFORMED BY THE ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.
12. PRIOR TO SUBMITTING TENDER PRICE, CONTRACTOR SHALL EXAMINE THE SITE AND CONDITIONS AFFECTING WORK, METHODS OF CONNECTION AND LOCATION OF ALL SERVICES INVOLVED UNDER THIS CONTRACT. FAILURE TO MAKE THIS VISIT IN NO WAY ALLEVIATES THE MECHANICAL CONTRACTOR FROM RESPONSIBILITY FOR COMPLETING THE MECHANICAL WORK OF THIS CONTRACT IN A WORKMANLIKE MANNER. NO ALLOWANCE WILL BE MADE AFTER CONTRACT AWARD FOR ANY EXPENSE INCURRED THROUGH A FAILURE TO MAKE THIS EXAMINATION AND INVESTIGATION.
13. SCHEDULING OF ALL WORK SHALL BE ARRANGED WITH THE OWNER, AND THE OWNER SHALL BE NOTIFIED AND HIS APPROVAL OBTAINED PRIOR TO SHUTTING OFF EXISTING SERVICES FOR PURPOSES OF CONNECTING NEW WORK.
14. PROVIDE AN AUTOCAD DISK COPY OF THE CONTRACT DRAWINGS FOR RECORD 'AS–BUILT' DRAWINGS, REVISED AS REQUIRED TO SHOW ANY DEVIATIONS OF LAYOUTS FROM THAT ORIGINALLY SHOWN.
15. PROVIDE ONE SET OF SPECIAL TOOLS REQUIRED TO SERVICE EQUIPMENT AS RECOMMENDED BY MANUFACTURERS.
16. PROVIDE DIELECTRIC COUPLINGS WHEREVER PIPES OF DISSIMILAR METALS ARE JOINED.
17. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROVIDE TEMPORARY HEATING AS REQUIRED FOR THE PROPER AND PROGRESS OF THE WORK.
18. THE MECHANICAL CONTRACTOR SHALL PROVIDE SIX (6) SETS OF SHOP DRAWINGS FOR ALL EQUIPMENT FOR REVIEW AND APPROVAL BY ENGINEERS.
19. PIPE HANGERS WHERE REQUIRED SHALL BE GRINNELL FIG. 65 FOR STEEL PIPE AND FIG. CP65 FOR COPPER PIPE, ALL WITH FIG. 140 THREADED ROD ATTACHED TO FIG. 117 EXPANSION CASE SET IN HOLES DRILLED IN CONCRETE, OR ATTACHED TO FIG. 225 OR 227 CLAMP ATTACHED TO FLOOR JOIST AND ROOF JOIST. FOR INSULATED PIPING, PROVIDE PROTECTION SADDLES SIZE HANGER TO ACCOMMODATE INSULATION WHERE APPLIED. (NO PERFORATED STRAP HANGERS WILL BE ACCEPTED FOR SUPPORT METHOD.

## B. SHOP DRAWINGS

1. SHOP DRAWINGS AND DATA SHEETS FOR EQUIPMENT INTENDED FOR INSTALLATION UNDER THIS CONTRACT SHALL BE SUBMITTED FOR REVIEW. AFTER CHECKING AND WHEN REVIEWED, COPIES WILL BE RETURNED TO THE CONTRACTOR.

## C. GUARANTEE

1. THE CONTRACTOR SHALL EXECUTE AND DELIVER TO THE OWNER, BEFORE FINAL PAYMENT, A WRITTEN GUARANTEE IN FORM SATISFACTORY TO THE OWNER THAT ALL LABOUR AND MATERIALS FURNISHED AND WORK PERFORMED BY THE CONTRACTOR ARE IN ACCORDANCE WITH THE CONTRACT. CONTRACT DRAWINGS, SPECIFICATIONS AND AUTHORIZED ALTERATIONS AND ADDITIONS THERETO AND, SHOULD ANY DEFECT DEVELOP DURING THE CONTRACT GUARANTEE PERIOD, AS HEREINAFTER DEFINED DUE TO IMPROPER MATERIALS, WORKMANSHIP OR ARRANGEMENT, THE SAME TOGETHER WITH ANY OTHER WORK AFFECTED IN CORRECTING SUCH DEFECT SHALL, UPON WRITTEN NOTICE BE MADE GOOD BY THE CONTRACTOR WITHOUT EXPENSE TO THE OWNER.
2. THE CONTRACTOR'S AFORESAID GUARANTEE SHALL COVER ALL WORK UNDER THE CONTRACT, WHETHER OR NOT ANY PORTION OR TRADE HAS BEEN ASSIGNED OR SUBLET. IN THE EVENT ANY PORTION OF THE WORK IS PERFORMED BY ASSIGNEES AND SUBCONTRACTORS THEIR WRITTEN GUARANTEE TO THE OWNER COVERING THEIR RESPECTIVE PORTIONS OF THE WORK FOR THE PERIODS SPECIFIED AND SHALL DELIVER SAME, TOGETHER WITH HIS OWN GUARANTEE, TO THE OWNER. ASSIGNEES AND SUBCONTRACTORS' GUARANTEES SHALL EXPRESSLY PROVIDE THAT THE SAME SHALL BE ENFORCEABLE DIRECTLY BY THE OWNER AND SHALL RUN CONCURRENTLY WITH THE CONTRACTOR'S GUARANTEE.

## D. CLOSE–OUT DOCUMENTS AND INSTRUCTIONS

- AS–BUILT DRAWINGS
- ALL TEST REPORTS
- WARRANTIES
- ALL APPROVAL AND VERIFICATION CERTIFICATIES
- THREE (3) COPIES OF MAINTENANCE MANUALS
- COPIES OF PANEL BOARD INDEXES
- C.S.A. OR SPECIAL HYDRO INSPECTION CERTIFICATES
- FRAME POWER DISTRIBUTION DIAGRAM
- INSTRUCT OWNER IN THE OPERATION OF ALL EQUIPMENT AND MAKE FAMILIAR WITH SYSTEM.

## E. COMMISSIONING AND DEMONSTRATION

1. THE COMMISSIONING PROCESS REQUIRES THE COMPLETE PROCESS TO TEST, ADJUST AND BALANCE SYSTEMS TO PERFORM IN ACCORDANCE WITH REQUIREMENTS OF CONTRACT DOCUMENTS AND TO DO ALL OTHER WORK AS SPECIFIED IN THIS SECTION.
2. THE MECHANICAL CONTRACTOR SHALL ACT AS THE COMMISSIONING AGENT FOR THIS PROJECT.
3. TO ADJUST AND REGULATE EQUIPMENT AND SYSTEMS SO AS TO MEET SPECIFIED PERFORMANCE REQUIREMENTS AND TO ACHIEVE SPECIFIED INTERACTION WITH ALL OTHER RELATED SYSTEMS UNDER ALL NORMAL AND EMERGENCY LOADS AND OPERATING CONDITIONS.
4. BALANCE SYSTEMS AND EQUIPMENT TO REGULATE FLOW RATES TO MATCH LOAD REQUIREMENTS OVER FULL OPERATING RANGES.

## F. PLUMBING

1. PROVIDE COMPLETE FUNCTIONAL PLUMBING SYSTEM COMPRISED OF DOMESTIC WATER PIPING, NATURAL GAS PIPING, VENT PIPING, SANITARY DRAINAGE PIPING, ETC.
2. SANITARY DRAINAGE AND VENT PIPING MATERIAL SHALL BE CAST IRON OR PVC DRAIN, WASTE, AND VENT PIPE AND PIPE FITTINGS CERTIFIED TO CAN/CSA–B181.2.
3. PROVIDE IPEX SYSTEM XFR PIPE AND FITTINGS C/W APPROVED FIRE STOPS TO CAN/ULC–S115 IN AREA WHERE THE CEILING SPACE IS UTILIZED AS RETURN AIR PLENUM OR WHEN INSTALLED IN A BUILDING CLASSIFIED AS A HIGH BUILDING.
4. DOMESTIC HOT AND COLD WATER PIPING SHALL BE TYPE "L" HARD COPPER TUBING WITH SOLDERED FITTINGS OR CROSS–LINKED POLYETHYLENE PIPE AND FITTINGS CERTIFIED TO CAN/SCA–B137.5.
5. DRAINS AND VENT PIPING ABOVE GROUND INSIDE BUILDING SHALL BE DWV COPPER, CAST IRON CLASS 4000 OR PLASTIC PIPE WHERE APPLICABLE OR APPROVED BY LOCAL AUTHORITIES. JOINTS SHALL BE SOLDERED FOR COPPER, MECHANICAL JOINT FOR CAST IRON PIPE, AND SOLVENT CEMENT FOR PLASTIC PIPE.
6. MECHANICAL CONTRACTOR SHALL VERIFY ON SITE ALL CONNECTION POINTS TO EXISTING SERVICES. EXTEND ALL SERVICES INSIDE BUILDING AS SHOWN ON DRAWINGS. CONNECT SEWER AND WATER SERVICES TO EXTERIOR BUILDING SERVICES. CONFIRM AND VERIFY EXACT LOCATIONS AND INVERTS OF BUILDING SERVICES WITH SITE CONDITIONS. ALL CONNECTIONS TO BE MADE IN ACCORDANCE WITH LOCAL PROVINCIAL CODE REQUIREMENTS.
7. USE 95.5 TIN ANTINONY BRAZING SOLDER ON ALL HOT AND COLD WATER PIPING. USE NON–CORROSIVE NON–LEADED FLUX.
8. ALL VALVES TO BE BY ONE MANUFACTURER.
9. MECHANICAL CONTRACTOR SHALL ALLOW FOR IN TENDER QUOTATION ANY ADDITIONAL LABOUR, MATERIALS, ETC. DEEMED NECESSARY DUE TO EXACT SITE CONDITIONS WHICH HAVE NOT BEEN REFLECTED ON MECHANICAL DRAWING OR IN MECHANICAL SPECIFICATION.
10. MECHANICAL CONTRACTOR SHALL CONNECT DOMESTIC WATER LINES, VENT LINES, SANITARY DRAIN SERVICES AS SHOWN FOR ALL PLUMBING FIXTURE INSTALLATIONS.
11. PROVIDE ACCESS DOORS, CLEANOUT COVERS, ETC FOR ALL EQUIPMENT REQUIRING ACCESS FOR SERVICING OR OPERATING PURPOSES. ACCESS DOORS TO BE PROVIDED BY DIVISION 15 FOR INSTALLATION BY SUB–TRADE PROVIDING WALL, CEILING, FLOORING, ETC.
12. PROVIDE SHUT–OFF VALVES ON BOTH DOMESTIC WATER LINES SERVING EACH PIECE OF EQUIPMENT, PLUMBING FIXTURE, ETC.
13. PROVIDE ESCUTCHEON PLATE COVERS OVER ANY DOMESTIC WATER LINES, DRAIN LINES, ETC PENETRATING WALLS.
14. PROVIDE TRAP PRIMERS AS PER LOCAL CODE REQUIREMENTS.

## G. PIPING AND EQUIPMENT IDENTIFICATION

1. IDENTIFY ALL PIPING SYSTEMS. INDICATE PIPE SIZE, SERVICE AND DIRECTION OF FLOW.
2. THE LETTERING SHALL BE PROPORTIONAL TO THE OUTSIDE DIAMETER OF THE PIPE OR COVERING RANGING FROM 13MM HIGH TO 20MM O.D., PIPE OR COVERING UP TO 100MM HIGH ON 300MM O.D. PIPE OR COVERING. BRADEY PIPE TAG SHALL BE THE STANDARD OF LABELS. PIPES SMALLER THAN 20MM O.D. PIPE OR COVERING MAY BE BANDED WITH COLOURED PLASTIC TAPE IN LIEU OF PAINT AND THE CONTENTS IDENTIFIED BY MEANS OF "DYMO" EMBOSSED PLASTIC LABELS. STENCIL A DIRECTION–OF–FLOW ARROW ON EACH COLOUR BAND. PIPE IDENTIFICATION SHALL BE APPLIED AT EACH HORIZONTAL OR VERTICAL CHANGE IN DIRECTION AND A MAXIMUM OF 12 METER APART.

## H. PIPING INSULATION

1. ALL WATER LINES LISTED BELOW SHALL BE INSULATED WITH 25MM THICK DUAL TEMPERATURE GLASS FIBRE PIPE INSULATION. INSULATION SHALL BE MANUFACTURED BY FIBREGLASS OF CANADA.
2. THIS INSULATION SHALL BE SUPPLIED COMPLETE WITH FLAME RETARDANT VAPOUR BARRIER JACKET CONSISTING OF GLASS FIBRE, REINFORCED LAMINATE OF ALUMINUM FOIL AND KRAFT PAPER. LONGITUDINAL SEAMS OF THE VAPOUR BARRIER JACKET SHALL BE SEALED WITH VAPOUR–PROOF ADHESIVE, FLINTKOTE TYPE 32. INSULATE AND TAPE ALL VALVES AND FITTINGS. EXPOSED PIPING INSULATION TO BE FINISHED WITH 8 OZ. FATTAL U.L.C. LISTED CANVAS AND CHILDERS LAGGING. NON–U.L.C. LISTED CANVAS WILL NOT BE ACCEPTED.
3. INSULATE ALL PIPING INSIDE MECHANICAL ROOM COMPLETE WITH POLYVINYL COVERING.

## H. PIPING INSULATION (CONTINUED)

4. INSULATE THE FOLLOWING PIPING:
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER AND RECIRCULATION
- HOT WATER HEATING
- INTERNAL RAIN WATER LEADERS ABOVE GRADE
- LOW TEMPERATURE HEAT PUMP SUPPLY AND RETURN

## I. HEATING, VENTILATION & AIR CONDITIONING

1. PROVIDE SUPPLY AIR, RETURN AIR, AND EXHAUST AIR DUCT SYSTEMS FROM ROOFTOP UNITS, AND EXHAUST FAN EQUIPMENT AS SHOWN.
2. ALL DUCTWORK INSTALLATION SHALL BE PERFORMED IN ACCORDANCE WITH SMACNA LATEST EDITION DUCT STANDARDS.
3. THIS CONTRACTOR SHALL SUPPLY AND INSTALL ALL DUCTWORK INCLUDING APPURTENANCES, HANGERS, DAMPERS, ETC.

   ALL EXPOSED ROUND DUCTWORK SHALL BE ROUND SPIRAL CONDUIT CONSTRUCTED OF ZINC COATED STEEL: ACCEPTABLE PRODUCT: UNITED SHEET METAL CO. SHOP FABRICATED DUCTWORK AND FITTINGS CONSTRUCTED IN A MANNER SIMILAR TO THE FACTORY TYPE SPECIFIED WILL BE ACCEPTED.

| CONDUIT SIZE | GAUGE OF METAL |
|---|---|
| 8" AND SMALLER | 26 |
| 9" TO 22" | 24 |
| 24" TO 36" | 22 |

   RECTANGULAR DUCTWORK SHALL BE CONSTRUCTED FROM GALVANIZED SHEET METAL OF THE FOLLOWING U.S. STANDARD GAUGES:

| | |
|---|---|
| DUCTS UP TO 12" ON LONGEST DIMENSION | 26 GA. |
| DUCTS 13" TO 28" ON LONGEST DIMENSION | 24 GA. |
| DUCTS 29" TO 48" ON LONGEST DIMENSION | 22 GA. |

4. BALANCING DAMPERS SHALL BE CONSTRUCTED FROM GALVANIZED STEEL 2 GAUGES HEAVIER THAN THE DUCTWORK IN WHICH THEY ARE INSTALLED C/W LOCKING QUADRANT AND INDICATING DEVICE.
5. PROVIDE FIRE DAMPERS WHICH CONFORM TO NFPA REGULATIONS, BEAR ULC LABEL, AND HAVE APPROVAL OF DFC. DAMPERS TO BE TYPE 'B' AND INSTALLED IN DUCTWORK AT FIRE SEPARATIONS WHETHER SHOWN OR NOT.
6. ALL DUCTWORK SHALL BE SEALED USING DURO–DYNE S–2 DUCT SEALER THROUGHOUT ALL SEAMS AND JOINTS.
7. PROVIDE ACCESS DOORS WHERE REQUIRED FOR SERVICING OR OPERATING OF MECHANICAL EQUIPMENT.
8. PROVIDE 4" FLEXIBLE DUCT CONNECTIONS ON BOTH INLET AND OUTLET DISCHARGE SIDES OF EACH FAN, AIR HANDLING ROOFTOP UNIT, ETC.
9. DUCTWORK SHOWN CROSS HATCHED SHALL BE ACOUSTICALLY LINED WITH 1" THICK RIGID FIBERGLASS COVERED WITH BLACK PLASTIC COATED MAT FACING. SEAL ENDS. STANDARD OF ACCEPTANCE JOHNS–MANVILLE LINACOUSTIC OR APPROVED EQUAL.

## J. AIR TESTING AND BALANCING

1. BALANCE AND ADJUST EACH FAN. SYSTEM VOLUMES SHALL BE WITHIN 5% OF REQUIREMENTS SHOWN. ADJUST AND SET BALANCE DAMPERS, FANS AND DRIVES TO GIVE THE SPECIFIED VOLUMES AT ALL OUTLETS. THE BALANCING OF AIR SYSTEMS IS TO BE DONE BY A BALANCING FIRM SPECIALIZING IN THIS WORK. CLEAN DUCT SYSTEMS, FILTERS, ETC., BEFORE TESTING IS DONE.
2. PROVIDE TWO BOUND COPIES OF THE AIR BALANCING REPORT. AIR QUANTITIES AT EACH OUTLET SHALL BE AS INDICATED IN THE DRAWINGS. THIS REPORT SHALL SHOW THE QUANTITIES, VELOCITIES AND AREA OF EACH OUTLET, TYPE AND MODEL NUMBER OF FANS AND MOTOR INSTALLED, ACTUAL AIR DELIVERED BY THE FAN WITH TOTAL STATIC PRESSURE AND VOLTAGE DRAWN BY THE MOTORS. ADJUST AND RETEST TO THE SATISFACTION OF THE PROJECT COORDINATOR. PROVIDE ADDITIONAL COPY OF THE AIR BALANCE REPORT TO THE MECHANICAL CONSULTANT.
3. UPON COMPLETION OF THE AIR BALANCE TEST, SUBMIT THE AIR BALANCE REPORT TO THE OWNER. THIS CONTRACTOR SHALL PROVIDE, IF CALLED FOR, A SPOT CHECK ON THE SYSTEM WITH THE CONSULTANT. IF ACTUAL AIR QUANTITIES DO NOT AGREE WITH THE AIR BALANCE REPORT DATA, THIS CONTRACTOR MAY BE CALLED UPON TO COMPLETELY REBALANCE THE SYSTEM UNTIL REQUIREMENTS ARE ACHIEVED AND ACCEPTED BY THE CONSULTANT.

**MECHANICAL DRAWING LIST**

| | |
|---|---|
| M1.1 | MECHANICAL SPECIFICATIONS & DRAWING LIST |
| M1.2 | MECHANICAL SCHEDULES & LEGEND |
| M1.3 | MECHANICAL DETAILS |
| M2.1 | PLUMBING & SPRINKLER PLAN |
| M3.1 | MECHANICAL HVAC PLAN |

| NO | REVISIONS | DATE |
|---|---|---|
| D | ISSUED FOR TENDER | 2021-12-08 |
| C | ISSUED FOR PERMIT | 2021.06.10 |
| B | ISSUED FOR COORDINATION | 2021.06.09 |
| A | ISSUED FOR COORDINATION | 2021.02.17 |

DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.

Diocese of St. Catharines
*Where Faith Lives*

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
3390 SOUTH SERVICE ROAD, SUITE 302
BURLINGTON, ON. L7N 3J5
www.ckengs.com | info@ckengs.net | 905.631.1115

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA: COLUMBARIUM RENOVATION

67 CHURCH STREET,
ST. CATHARINES, ONTARIO L2R 3C4

MECHANICAL SPECIFICATIONS AND DRAWING LIST

| | |
|---|---|
| SCALE: AS NOTED | PROJECT: ARCH PR. NO. 2019-04 ENGI. PR. NO. 20003 |
| DATE: DEC 2018 | |
| DRAWN E.L. | DRAWING M1.1 |
| CHECKED C.K. | |
| PRINT DATE | |

## HEAT PUMP SCHEDULE

| OUTDOOR UNIT | | | | | | | | | INDOOR CONDENSING UNIT | | | | | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UNIT TAG | MANUFACTURER | MODEL NO. | COOLING CAPACITY (MBH) | HEATING CAPACITY (MBH) | ELECTRICAL | | | WEIGHT (LBS) | TAG | SERVICE AREA | MODEL No. | TYPE | MAX AIRFLOW (CFM) | COOLING CAPACITY (MBH) | HEATING CAPACITY (MBH) | ELECTRICAL | | | WEIGHT (LBS) | |
| | | | | | V/PH/HZ | MCA | MOCP | | | | | | | | | V/PH/HZ | MCA | MOCP | | |
| CU-1 | MITSUBISHI | PUZ-HA24NHA | 2.08-24 | 1.92-25 | 208/1/60 | 19 | 25 | 188 | HP-1 | 103 LOBBY | PEAD-A24AA7 | HYPER HEAT - DUCTED HORIZONTAL | 741 | 2.08-24 | 1.92-25 | 208/1/60 | 2.63 | - | 69 | - SEE NOTES BELOW |

NOTES:
1. EACH SYSTEM c/w WEATHERPROOF DISCONNECT SWITCH, WIRED WALL MOUNTED CONTROLLER (PAR-40MAAU) FOR EACH UNIT.
2. INDOOR UNIT POWERED BY OUTDOOR UNIT.
3. FACTORY INSTALLED WINDSCREEN
4. OUTDOOR UNITS MUST BE INSTALLED ON A SNOW STAND/FOUR FOOTED ECOFOOT STAND WITH MIN. OF 18" ABOVE GRADE LEVEL.
5. BOTH REFRIGERANT LINES SHOULD BE INSULATED SEPARATELY AND ORGANIZED. CONTRACTOR MUST PUT EFFORT TO BEND THE PIPING WITH GOOD WORKMANSHIP.
6. ACCEPTABLE ALTERNATE: DAIKIN

## INDOOR ERV UNIT SCHEDULE

| TAG | SERVICE | MANUFACTURER | MODEL | AIR FLOW | | CONDENSATE DRAIN LINE REQUIRED | WINTER | | SUMMER | | ELECTRICAL | | | WEIGHT (LBS) | DUCT HEATER TAG | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CFM | EX. SP. (INCH) | | ENERGY SAVINGS (MBH) | SUPPLY AIR TEMP DB/WB(°F) | ENERGY SAVINGS (TONS) | SUPPLY AIR TEMP (°F) DB | V/PH/HZ | MCA | MOCP | | | |
| ERV-1 | BASEMENT COLUMBRIAN | ALDES | E190-TRG | 165 | 0.40 | NO | - | 70/54.4 | - | 75/62.6 | 120/1/60 | 1.95 | - | 46 | DH-1 | c/w DUCT HEATER, REFER TO DUCT HEATER SCHEDULE |

NOTES:
1. UNITS TO BE MOUNTED IN CEILING PLENUM UNLESS EXPOSED CEILING c/w HANGING RODS AND VIBRATION ISOLATORS.
2. UNITS c/w MERV6 AIR FILTER(S)
3. ALL UNITS c/w LOW VOLTAGE MOTORIZED EXHAUST AIR & OUTDOOR AIR DAMPERS LOCATED AT WALL LOUVERS
4. ACCEPTABLE EQUIVALENT: RENEWAIRE

## WALL LOUVER SCHEDULE

| TAG | SYSTEM | MANUFACTURER | MODEL NO. | TYPE | SIZE (WxH) | FREE AREA (WxH) | VELOCITY (fpm) | WATER PENETRATION S.F | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| WB-1 | ERV INTAKE | REVERSOMATIC | SVI-50 | | | | | | FIELD PAINTED, COLOR BY ARCHITECT |
| WB-2 | ERV EXHAUST | REVERSOMATIC | SVE-50 | | | | | | FIELD PAINTED, COLOR BY ARCHITECT |
| | | | | | | | | | |

NOTES:
1. ACCEPTABLE EQUIVALENT: VENTEX, EH PRICE

## DIFFUSER AND GRILLE SCHEDULE

| TAG | MANUFACTURER | MODEL No. | TYPE | SIZE (mm x mm) | NECK SIZE (mm) | FINISH | MOUNTING | DAMPER | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| SA1 | PRICE | LBP15A | SUPPLY | AS NOTED | - | B12 | DUCT | YES | LINEAR BAR GRILLE, 15 DEGREE DEFLECTION |
| RA1 | PRICE | LBP15A | RETURN | AS NOTED | - | B12 | DUCT | YES | LINEAR BAR GRILLE, 15 DEGREE DEFLECTION |
| | | | | | | | | | |

NOTES:
1. ACCEPTABLE EQUIVALENT: KRUEGER, NAILOR, METALAIRE

## DUCT HEATER SCHEDULE

| TAG | SERVES | MANUFACTURER | MODEL | AIR FLOW (CFM) | CAPACITY (Kw) | ELECTRICAL | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | V/PH/HZ | MCA | MOPD | |
| DH-1 | ERV-1 | THERMOLEC | SLIP-IN TYPE | 170 | 1.5 | 208/1/60 | | | SEE NOTES BELOW, S.C.R BY THERMOLEC, STAT 0-10VDC (CTH291) + DS600 |

NOTES:
1. INSTALL UNIT TO MANUFACTURER'S RECOMMENDATION.
2. EACH UNIT IS INTERLOCKED WITH THE RELATED UNIT
3. C/W AUTOMATIC RESET THERMAL CUT-OUT, AIR FLOW SENSOR, MANUAL RESET THERMAL CUT-OUT, SCR CONTROL
4. TEMPERATURE SENSOR, OPEN COIL ELEMENT, CORROSION RESISTANCE ENCLOSURE
5. BUILT IN ELECTRONIC TEMP. AND SENSOR AND COLLARS.

## MECHANICAL LEGEND

### SITE PLAN

- EXISTING BUILDING
- NEW BUILDING
- SITE BOUNDARY
- ST — STORM PIPING
- WATERMAIN
- FIRE WATERMAIN
- SANITARY SEWER
- G — GAS LINE
- M — WATER METER
- CATCH BASIN
- MANHOLE
- GAS METER

### PIPING/PLUMBING

- SANITARY LINE
- G — NATURAL GAS LINE
- DOMESTIC COLD WATER (DCW)
- DOMESTIC HOT WATER (DHW)
- DOMESTIC HOT WATER RECIRCULATION (DHWR)
- ST — RAIN WATER PIPING
- V — VENT PIPE
- PIPE UP
- PIPE DOWN
- CO — CLEAN OUT
- F — FIRE LINE
- S — SPRINKLER PIPING
- HOT WATER SUPPLY (HWS)
- HOT WATER RETURN (HWR)
- PIPE HEAT TRACING
- KS–1 — PLUMBING FIXTURE TAG

### HVAC

- DUCTWORK
- BD — BALANCING DAMPER
- OBD — OPPOSED BLADE DAMPER
- R.A. — RETURN AIR DUCT
- S.A. — SUPPLY AIR DUCT
- T — THERMOSTAT
- S — TEMPERATURE SENSOR
- FD — FIRE DAMPER
- SFD — COMBINATION SMOKE & FIRE DAMPER
- CO2 — CO2 SENSOR
- SUPPLY DUCT UP
- RETURN OR EXHAUST UP
- SUPPLY TURNING DOWN
- RETURN OR EXHAUST DOWN
- FLEXIBLE DUCT
- EF–1 — HVAC EQUIPMENT TAG
- DIFFUSER
- RETURN AIR GRILLE
- A | 200 / 300 — 200–CFM, A–TYPE, 300–SIZE (mm)

### ANNOTATION LEGEND

| | |
|---|---|
| CTE | CONNECT TO EXISTING |
| FFD | FUNNEL FLOOR DRAIN |
| T/B | TO BELOW |
| T/A | TO ABOVE |
| F/B | FROM BELOW |
| F/A | FROM ABOVE |
| U/C | UNDERCUT DOOR |
| CBV | CIRCUIT BALANCING VALVE |
| AP | ACCESS PANEL |
| VTR | VENT THRU ROOF |

| NO | REVISIONS | DATE |
|---|---|---|
| D | ISSUED FOR TENDER | 2021-12-08 |
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*Where Faith Lives*

CK ENGINEERING INC
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3390 SOUTH SERVICE ROAD, SUITE 302
BURLINGTON, ON. L7N 3J5
www.ckengs.com | info@ckengs.net | 905.631.1115

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA:
COLUMBARIUM RENOVATION
67 CHURCH STREET,
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MECHANICAL
SCHEDULES, LEGENDS

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|---|---|
| SCALE: AS NOTED | PROJECT: ARCH PR. NO. 2019-04 ENGI. PR. NO. 20003 |
| DATE: DEC 2018 | |
| DRAWN E.L. | DRAWING M1.2 |
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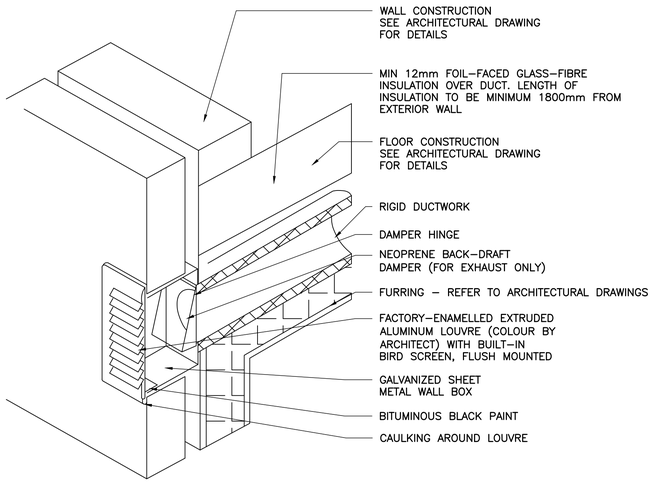
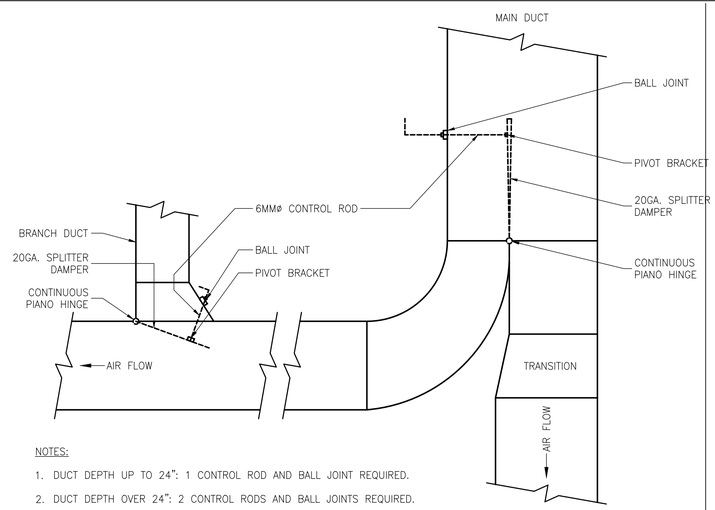
| PRINT DATE | |



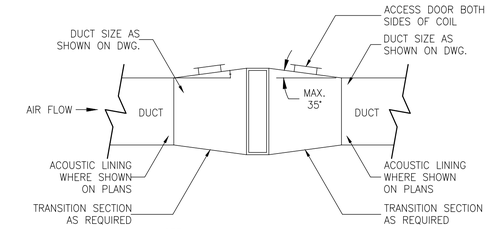

## TYPICAL WALL BOX DETAIL
SCALE: N.T.S.




NOTES:

1. DUCT DEPTH UP TO 24": 1 CONTROL ROD AND BALL JOINT REQUIRED.
2. DUCT DEPTH OVER 24": 2 CONTROL RODS AND BALL JOINTS REQUIRED.
3. HARDWARE IS DURO–DYNE OR EQUAL.

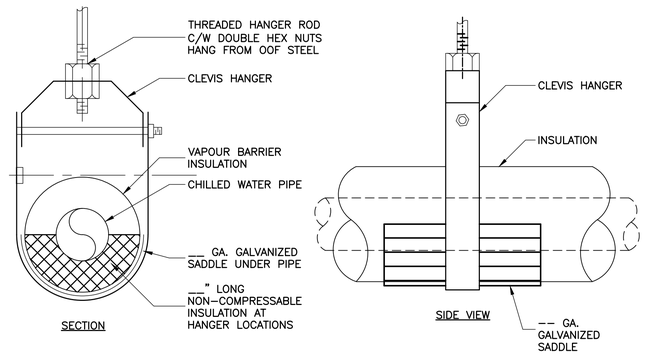
## TYPICAL DUCT DETAIL
SCALE: N.T.S.



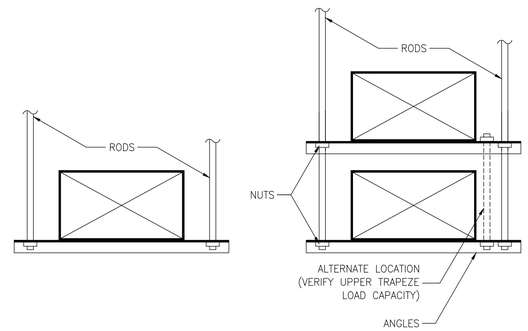

NOTE:
PROVIDE ADEQUATE SPACE FOR COIL
REMOVAL. INSTALL COIL WITH SLOPE AS
RECOMMENDED BY MANUFACTURER.

## COIL DUCT DETAIL
SCALE: N.T.S.

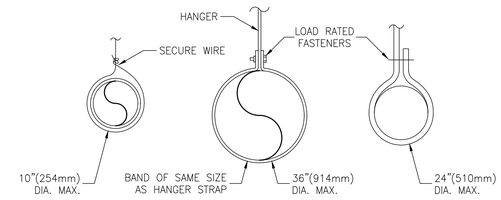
NOTE:
THIS INSTALLATION USED
IF PIPING IS NOT
INSTALLED ON PIPE RACK.



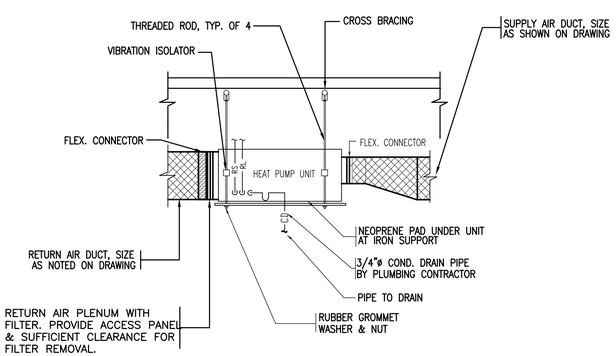

## TYPICAL WATER PIPE SUPPORT DETAIL
SCALE: N.T.S.



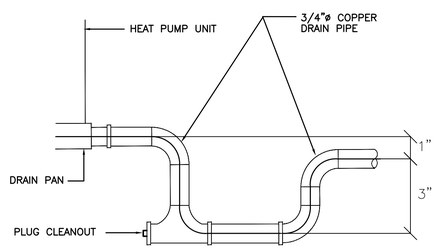

## DUCT HANGER ATTACHEMENT DETAILS
SCALE: N.T.S.




## ROUND HANGER DETAIL
SCALE: N.T.S.




## HEAT PUMP UNIT INSTALLATION DETAIL
SCALE: N.T.S.




## HEAT PUMP CONDENSATION DRAIN PIPE INSTALLATION DETAIL
SCALE: N.T.S.

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MECHANICAL
DETAILS

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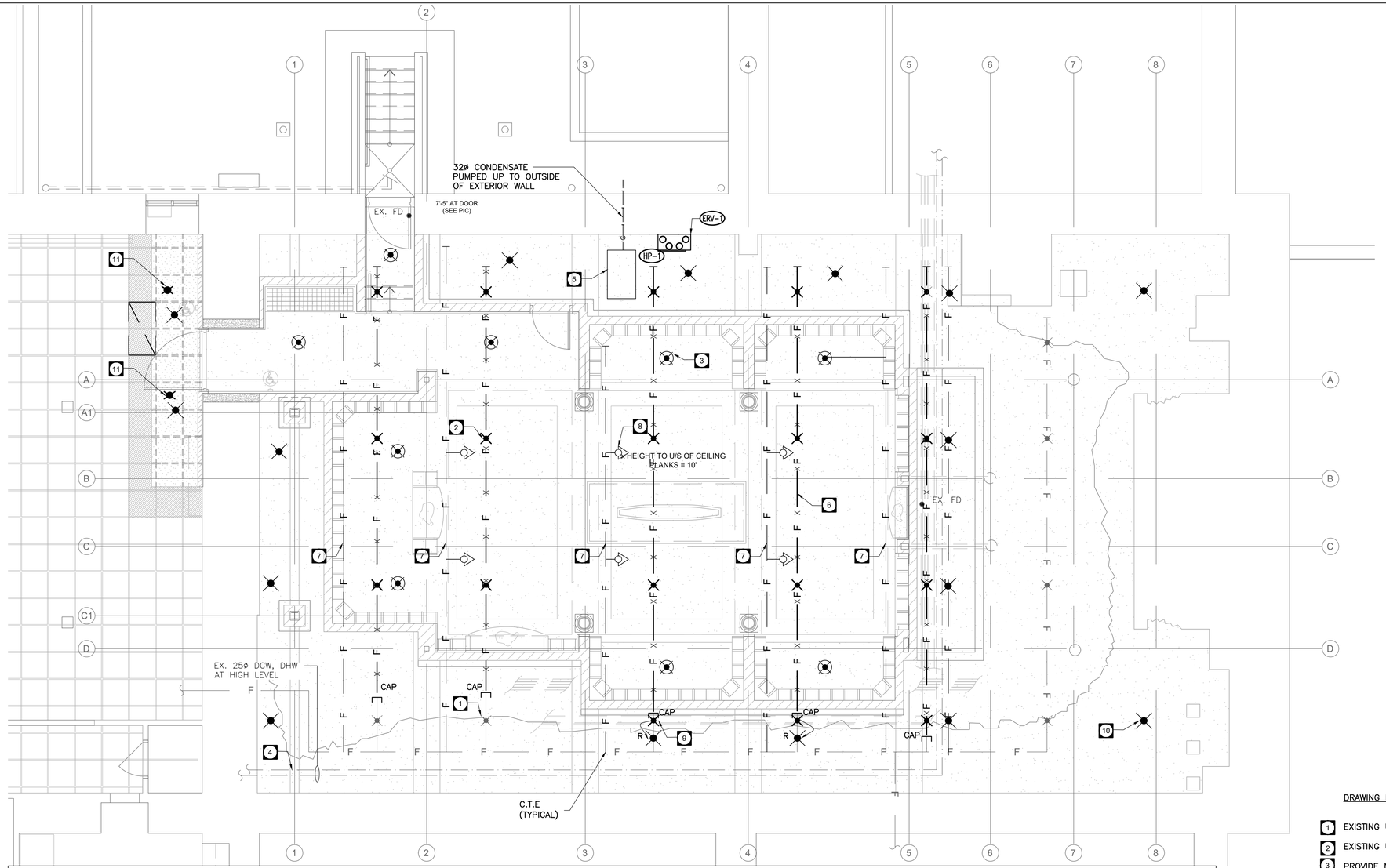


## SPRINKLER HEAD LEGEND

| SYMBOL | DESCRIPTION | REMARKS |
|---|---|---|
| NEW | NEW UPRIGHT SPRINKLER HEAD | UL/ULC LISTED, FM APPROVED |
| EX | EXISTING UPRIGHT SPRINKLER HEAD TO REMAIN | |
| | EXISTING UPRIGHT SPRINKLER TO DEMO | |
| R | RELOCATE EX. UPRIGHT SPRINKLER TO LOCATION SHOWN | |
| NEW | NEW CONCEALED SPRINKLER HEAD | UL/ULC LISTED, FM APPROVED |
| EX | EXISTING CONCEALED SPRINKLER TO REMAIN | |
| | EXISTING CONCEALED SPRINKLER TO DEMO | |
| R | RELOCATE EX. CONCEALED SPRINKLER TO LOCATION SHOWN | |
| | NEW SIDEWALL SPRINKLER HEAD | UL/ULC LISTED, FM APPROVED |
| | EXISTING PENDANT SPRINKLER TO DEMO | |

## SPRINKLER SPECIFICATIONS

**1.0 SCOPE OF WORK**

.1 THE DESIGN, SUPPLY AND INSTALLATION OF ALL MATERIALS AND EQUIPMENT FOR COMPLETE SPRINKLER PROTECTION SYSTEM FOR MINOR RENOVATION AS HEREINAFTER DESCRIBED AND SHOWN ON THE DRAWINGS INCLUDING ALL PERMITS AND FEES.

.2 ALL NECESSARY WATER FLOW TESTS FOR BIDDING AND FOR SYSTEM DESIGN.

.3 PREPARATION OF SPRINKLER SHOP DRAWINGS AND SYSTEMS HYDRAULIC CALCULATIONS.
NOTE: THE SPRINKLER SYSTEM SHOP DRAWINGS AND ASSOCIATED HYDRAULIC CALCULATIONS MUST BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER, LICENSED TO PRACTICE IN THE PROVINCE OF ONTARIO.

.4 OBTAINING APPROVALS FROM THE LOCAL AUTHORITY HAVING JURISDICTION AND THE INSURANCE AUTHORITY.

.5 PREPARATION OF SCALED FLOOR PLANS INCLUDING SECTIONAL VIEWS THROUGH THE BUILDING.

.6 PREPARATION OF "AS-BUILT" DRAWINGS INDICATING INSTALLED LOCATION OF SPRINKLER HEADS, PIPING SYSTEMS AND SYSTEM DEVICES.

**2.0 CODES AND STANDARDS**

.1 SYSTEMS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE PROVINCIAL BUILDING CODE; LATEST EDITIONS OF NFPA STANDARDS, REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND THE REQUIREMENTS, STANDARDS AND INTERPRETIVE GUIDES OF THE INSURANCE AUTHORITY.

.2 WHERE CONFLICTS OCCUR, THE MOST STRINGENT REQUIREMENT SHALL APPLY.

.3 THE SYSTEMS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE FOLLOWING STANDARDS:

- NFPA-13, INSTALLATION OF SPRINKLER SYSTEMS.
- INSURANCE AUTHORITY, INTERPRETIVE GUIDES.
- APPLICABLE PROVINCIAL AND LOCAL CODES AND BY-LAWS.

**3.0 APPROVALS**

.1 PREPARE NOT LESS THAN SIX (6) SETS OF SPRINKLER SYSTEM INSTALLATION DRAWINGS (SPRINKLER SHOP DRAWINGS), ASSOCIATED SYSTEM HYDRAULIC CALCULATIONS, APPROVED DRAWINGS AND HYDRAULIC CALCULATIONS TO THE LOCAL BUILDING AND FIRE DEPARTMENTS FOR THEIR REVIEW AND APPROVAL IF REQUIRED. THE FULLY APPROVED DRAWINGS AND HYDRAULIC CALCULATIONS SHALL THEN BE SUBMITTED TO THE ENGINEER FOR REVIEW.
NOTE: NO FABRICATION OR INSTALLATION SHALL PROCEED ON THE SPRINKLER SYSTEMS UNTIL ALL APPROVALS HAVE BEEN OBTAINED.

.2 APPLY AND PAY FOR ALL PERMITS, FEES AND INSPECTIONS THAT ARE REQUIRED FOR FINAL ACCEPTANCE OF THE SPRINKLER SYSTEMS.

.3 ALL FIRE SUPPRESSION COMPONENTS FURNISHED UNDER THIS SECTION SHALL BE UNDERWRITER'S LABORATORIES, ULC LISTED IN THE "FIRE EQUIPMENT LIST"; AND FACTORY MUTUAL, "FM", APPROVED FOR FIRE SUPPRESSION USE. ALL ACCESSORY EQUIPMENT SHALL ALSO BE SO "LISTED" OR "APPROVED". ASSEMBLIES SHALL INCLUDE TRIM AND ACCESSORIES MANUFACTURED OR NORMALLY SUPPLIED BY THE BASIC EQUIPMENT MANUFACTURER. ALL COMPONENTS SHALL BE NEW AND RATED FOR A WORKING PRESSURE OF 175 PSI UNLESS REQUIRED TO BE HIGHER.

.4 SPRINKLER PIPING SHALL BE UL, ULC LISTED AND FM APPROVED, TO NFPA 13 REQUIREMENTS AND THE INSURANCE AUTHORITY APPROVAL.

.5 HANGERS AND SUPPORTS: PROVIDE HANGERS AND SUPPORTS AS REQUIRED BY NFPA-13 AND BY GOVERNING AUTHORITIES AND UL; ULC LISTED. ATTACH PIPING TO STRUCTURAL JOISTS WITH SUPPORT CLIPS AT EDGE OF JOIST ANGLES. ATTACH PIPING OVER 2.1/2 INCHES DIAMETER AT STRUCTURAL JOIST PANEL POINTS ONLY. OBTAIN APPROVAL OF SUPPORT METHOD FROM THE STRUCTURAL ENGINEER PRIOR TO BEGINNING ANY PIPE INSTALLATION.

.6 SPRINKLER HEADS SHALL BE UL, ULC LISTED AND FM APPROVED FOR INTENDED USE AND SHALL MEET THE REQUIREMENTS OF NFPA 13.

**4.0 TESTING AND VERIFICATION**

.1 ACCEPTANCE TESTING OF THE FIRE PROTECTION SYSTEM SHALL BE IN ACCORDANCE WITH AUTHORITY REQUIREMENTS. THE APPLICABLE TEST CERTIFICATE(S) SHALL BE COMPLETED AT THE TIME OF TESTING AND SUBMITTED.

.2 PERFORM ALL TESTS IN ACCORDANCE WITH THE AUTHORITIES REQUIREMENTS, WITH N.F.P.A. STANDARDS. ALL PIPING SHALL BE HYDROSTATIC TESTED AFTER BEING FLUSHED AND CLEANED. HYDROSTATIC TEST SHALL BE, AT MINIMUM, 1379 kPa (200 psi) FOR A MINIMUM OF 2 H. REPAIR ALL LEAKS.

**5.0 DECLARATION OF COMPLETION**

.1 ON COMPLETION OF WORK SUBMIT TO THE OWNER A CERTIFICATE OF FINAL ACCEPTANCE FROM THE AUTHORITIES HAVING JURISDICTION. SUBMIT ALL TEST REPORTS TO THE CONSULTANT.

.2 PROVIDE THREE (3) SETS OF OPERATING AND MAINTENANCE INSTRUCTIONS AND AS-BUILT DRAWINGS TO THE OWNER. PROVIDE SYSTEM OPERATING INSTRUCTION TO OWNER'S PERSONNEL ON SITE.

.3 THE COMPLETE INSTALLATION SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER.

**6.0 SPRINKLER SYSTEM DESIGN REQUIREMENTS**

.1 CONDUCT NEW WATER FLOW TESTS PRIOR TO FINALIZATION OF ALL DESIGNS AND PIPE SIZING. SUBMIT TEST RESULTS ALONG WITH THE SHOP DRAWINGS AND HYDRAULIC CALCULATIONS.

.2 DESIGN REQUIREMENT SPRINKLER CLASSIFICATION - ORDINARY HAZARD GROUP 2, DESIGN CRITERIA 0.2GPM/1950 SQFT

.3 THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED TO THE FOLLOWING MINIMUM REQUIREMENTS.

## DRAWING NOTES:

1. EXISTING UPRIGHT SPRINKLER HEAD TO REMAIN. (TYPICAL)
2. EXISTING UPRIGHT SPRINKLER HEAD TO BE REMOVED. (TYPICAL)
3. PROVIDE NEW CONCEALED SPRINKLER HEAD. (TYPICAL)
4. EXISTING HEATING LINES TO REMAIN. (TYPICAL)
5. TERMINATE CONDENSATE DRAIN FROM HEAT PUMP HP-1 AT EXTERIOR WALL C/W BRAIDED HOSE PIPE SIZED TO CONDENSATE PIPE OUTLET CONNECTION. CAULK/SEAL WALL OPENING AND EDGES OF CONDENSATE LINE WALL PENETRATION. CONDENSATE LINE NOT SHOWN IN DRAWING.

   RUN CONDENSATE PIPING FROM CEILING MOUNTED HP-1 AND CONNECT TO CONDENSATE PUMP OF HP-1
6. REMOVE EXISTING SPRINKLER LINE. PROVIDE FIRE WATCH DURING DEMOILTION UNTIL NEW SPRINKLER SYSTEM IN OPERATION. (TYPICAL)
7. PROVIDE NEW SPRINKLER LINE. SPRINKLER LINE TO BE CONCEALED IN NEW BULKHEAD. (TYPICAL)
8. PROVIDE NEW SIDEWALL SPRINKLER HEAD BY SIDE OF BULKHEAD. (TYPICAL)
9. EXISTING UPRIGHT SPRINKLER HEAD TO BE RELOCATED. (TYPICAL)
10. PROVIDE NEW UPRIGHT SPRINKLER HEAD IN SERVICE AREA/CRAWL SPACE. (TYPICAL)
11. EXISTING PENDANT SPRINKLER HEAD IN T-BAR CEILING TO BE REMOVED.

THESE SPRINKLER LAYOUT DRAWINGS INDICATE A GENERAL LOCATION OF SPRINKLER HEADS AND MAIN PIPES. THIS CONTRACTOR IS REQUIRED TO PROVIDE SPRINKLER HEADS IN ALL BUILDING AREAS IN ACCORDANCE TO NFPA. LOCATION AND ROUTING OF PIPES SHALL BE COORDINATED WITH OTHER TRADES BEFORE SUBMITTING SHOP DRAWINGS. NO EXTRA WILL BE APPROVED FOR CHANGES OR REVISIONS DUE TO LACK OF COORDINATION. PROVIDE ADDITIONAL HEADS IN DROPPED BULKHEADS AS REQUIRED.

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PLUMBING & SPRINKLER PLAN

| | |
|---|---|
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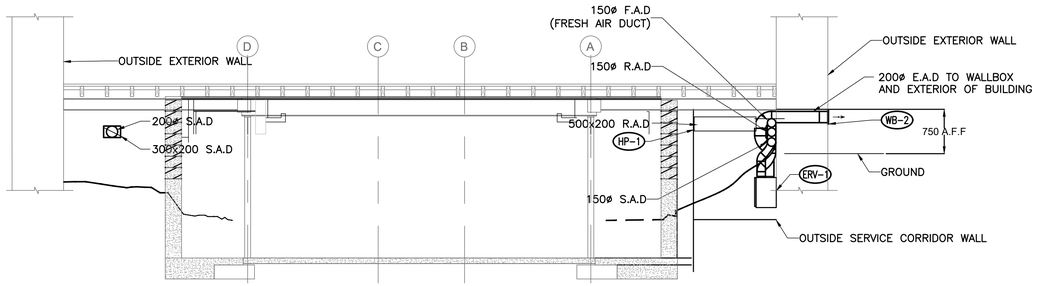
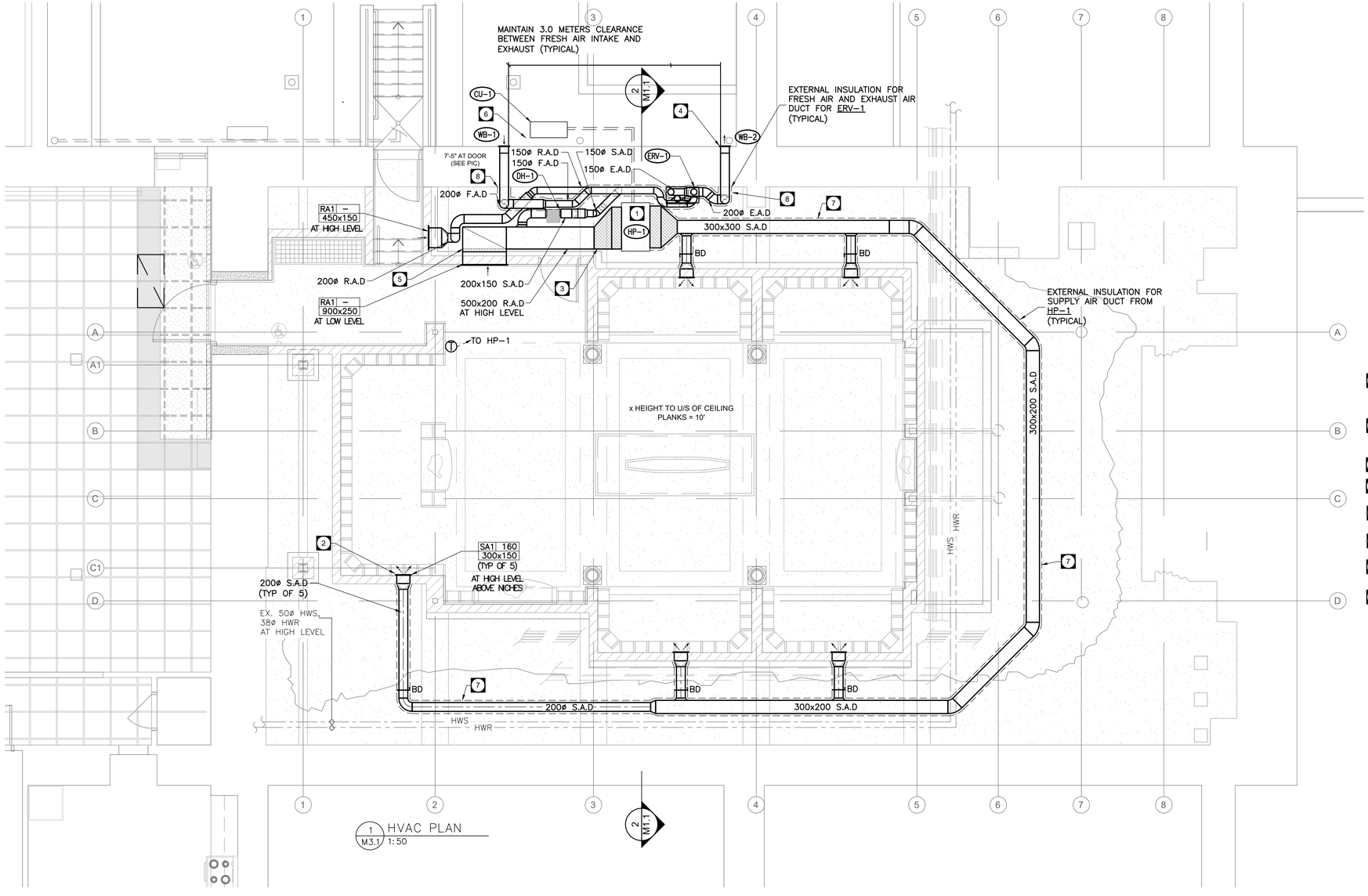



2 / M3.1 SECTION 'D-D' – SERVICE CORRIDOR
N.T.S.




## GENERAL NOTES:

a. MECHANICAL CONTRACTOR SHALL CARRYOUT A FULL SURVEY OF ALL EXISTING SERVICES AND STRUCTURE TO CONFIRM THE SIZE AND LOCATION OF THESE SERVICES, BEFORE THE COMMENCEMENT OF ANY WORK.

b. THIS DRAWING DOES NOT SHOW ALL HIDDEN OR CONCEALED PIPING, DUCTS, PLUMBING AND EQUIPMENT. CONTRACTOR SHALL VISIT THE SITE AND MAKE THEIR OWN EVALUATION AND ESTIMATE OF THE EXTENT AND MAGNITUDE OF THE WORK INVOLVED PRIOR TO SUBMITTING PROPOSAL.

c. MECHANICAL CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR FOR CUTTING AND PATCHING OF WALLS.

d. CONTRACTOR TO PROVIDE FIRE DAMPERS AT RATED PENETRATIONS.

e. ALL LOW VOLTAGE CONTROL WIRING BY MECHANICAL CONTRACTOR INSIDE PLENUM SPACE TO BE FIRE RATED.

f. CONTRACTOR MAY OFFSET PIPING FOR INSTALLATION. SCOPE TO BE VERIFIED AT SITE AND COORDINATED BEFORE PROCEEDING WITH WORK.

g. EXTERNAL INSULATION FOR SUPPLY AIR DUCT FROM HP–1, OUTDOOR (FRESH AIR) AND EXHAUST DUCTS FOR ERV–1;

INSULATION TO BE 1–1/2" (38 MM) THICK FIBERGLASS BLANKET INSULATION 12 KG/M$^3$ DENSITY WITH REINFORCED FOIL–SCRIM KRAFT (FSK) JACKET. INSULATION SHALL HAVE MAXIMUM VAPOR TRANSMISSION RATE OF 0.02 PERMS AND 0.032 W/M·K THERMAL CONDUCTIVITY AT A MEAN TEMPERATURE OF 24°C. BASIS OF DESIGN: MANSON ALLEY WRAP B ECOSE TECHNOLOGY FORMALDEHYDE FREE

## DRAWING NOTES

1. SUPPLY AND INSTALL NEW HEAT PUMP UNIT C/W ASSOCIATED OUTDOOR CONDENSER UNIT AT LOCATION SHOWN. RUN NEW INSULATED REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNITS. COORDINATE WITH GENERAL CONTRACTOR AS REQUIRED.
2. SUPPLY AND INSTALL NEW GRILLES AT LOCATION SHOWN. BALANCE AIRFLOW AS NOTED. FIELD VERIFY EX. CORRIDOR SPACE BEFORE PROCEEDING WITH WORK. (TYP.)
3. INSULATE DUCTWORK AT LOCATION SHOWN.
4. SUPPLY AND INSTALL WALL CAP AT LOCATION SHOWN. COORDINATE HEIGHT WITH DUCT PENETRATION FROM CEILING SPACE MAKE UP AIR UNIT.
5. EXTEND 900x250 RETURN AIR DUCTWORK FROM LOW LEVEL UP TO CEILING SPACE AND CONNECT TO HEAT PUMP HP–1.
6. CONDENSING UNIT MOUNTED ON SNOW STAND. INSULATE BOTH REFRIGERATION LINES.
7. EXTERNAL INSULATE ENTIRE LENGTH OF SA DUCT FOR HEAT PUMP. REFER TO GENERAL NOTES FOR DUCT EXTERIOR INSULATION SPEC.
8. EXTERNAL INSULATE INTAKE (FRESH AIR) AND EXHAUST DUCTWORK OF ERV. REFER TO GENERAL NOTES TO DUCT EXTERNAL INSULATION SPEC.

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# HVAC PLAN

| | |
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| PRINT DATE | |

# ELECTRICAL SPECIFICATIONS

## A. GENERAL CONDITIONS

1. CONFORM WITH LATEST EDITION OF THE ONTARIO BUILDING CODE (OBC), ONTARIO ELECTRICAL SAFETY CODE (OESC), CANADIAN STANDARDS ASSOCIATION (CSA), UNDERWRITERS LABORATORIES OF CANADA (ULC) AND LOCAL BY-LAWS AND AUTHORITIES HAVING JURISDICTION.
2. MATERIALS & EQUIPMENT SHALL CARRY APPROVAL AND CONFORM WITH CSA OR ULC STANDARDS. INSTALLATION SHALL COMPLY WITH ALL RULES AND REGULATIONS REGARDING MATERIALS AND WORKMANSHIP CONFORMING TO CSA, OESC, OBC AND LOCAL AUTHORITIES HAVING JURISDICTION.
3. VISIT JOB SITE PRIOR TO SUBMITTING TENDER AND EXAMINE ALL EXISTING CONDITIONS WHICH AFFECT THE WORK. NO EXTRAS WILL BE ALLOWED FOR FAILURE TO DO SO.
4. SUPPLY AND INSTALL COMPLETE ELECTRICAL SYSTEMS AS SHOWN AND/OR SPECIFIED HEREIN. DRAWINGS SHALL BE USED FOR ROUTING PURPOSES ONLY, DO NOT SCALE DRAWINGS. PROVIDE ALL NECESSARY MATERIAL AND LABOUR ETC. TO PROVIDE COMPLETE SYSTEMS.
5. FURNISH ALL REQUIRED LABOUR AND MATERIALS, MACHINERY, AND TOOLS, WITH ALL PROPER AND REQUIRED FACILITIES FOR MOVING AND TRANSPORTING SAME, SO THAT THE CONTRACT AND ALL WORK TO BE DONE UNDER IT, CAN AND WILL BE CARRIED OUT IN A PROFESSIONAL MANNER, PROPERLY, SATISFACTORILY, CONTINUOUSLY, AND EXPEDITIOUSLY, TO COMPLETION, IN ALL RESPECTS, TO THE SATISFACTION OF THE OWNER.
6. MOUNTING HEIGHT OF EQUIPMENT IS FROM FINISHED FLOOR TO CENTER LINE OF EQUIPMENT, UNLESS SPECIFIED OR INDICATED OTHERWISE. IF MOUNTING HEIGHT OF EQUIPMENT IS NOT INDICATED, VERIFY BEFORE PROCEEDING WITH INSTALLATION. THE FOLLOWING IS GENERAL MOUNTING HEIGHTS:
   - 6.1. GENERAL SWITCHES, DIMMERS: 1100mm (43")
   - 6.2. WALL RECEPTACLES (GENERAL): 450mm (18")
   - 6.3. DATA, VOIP, TELEPHONE OUTLETS: 450mm (18")
   - 6.4. POWER DOOR OPERATORS: 1050mm (41")
   - 6.5. PANEL BOARDS: 1700mm (67") (MAXIMUM FROM TOP BREAKER)
   - 6.6. FIRE PULL STATION: 1150mm (45")
   - 6.7. FIRE ALARM VISUAL, AUDIBLE OR COMBINATION OF BOTH DEVICES" 150mm (6") BELOW CEILING TO THE TOP OF THE DEVICE WHERE THE CEILING HEIGHT IS LESS THAN 2450mm (96") A.F.F.. WHERE CEILING HEIGHT IS 2450mm (96") OR GREATER, MOUNT DEVICE AT 2300mm (90.5") A.F.F. TO THE TOP OF THE DEVICE.
7. CO-ORDINATE ON SITE THE LOCATION OF EQUIPMENT, CONTROL DEVICES, SERVICE DISTRIBUTION SYSTEMS, ETC. COORDINATE WORK AND SCHEDULE WITH OTHER TRADES.
8. AT ALL TIMES KEEP THE OWNER'S PROPERTY CLEAN AND IN TIDY CONDITION. CLEAN AFFECTED WORK AREA AND REMOVE ALL DEBRIS FROM EQUIPMENT. FOLLOW MANUFACTURERS' INSTALLATION AND STARTUP INSTRUCTIONS.
9. PROVIDE WARNING SIGNS AND BARRIERS AS REQUIRED TO MEET INSPECTION DEPARTMENT'S REQUIREMENTS.
10. DRAWINGS SHOW GENERAL INTENT OF WORK AND NOT THE DETAILS OF THE INSTALLATION.
11. GUARANTEE IN WRITING ALL MATERIAL AND WORKMANSHIP INCLUDING THE MANUFACTURER'S GUARANTEE FOR THE MINIMUM PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE UNLESS NOTED OTHERWISE IN MAIN FRONT END CONTRACT DOCUMENTS.
12. NO EXTRA CHARGES SHALL BE HONOURED EXCEPT WHERE THE CONTRACTOR RECEIVES A WRITTEN ORDER COUNTER-SIGNED OR OTHERWISE APPROVED BY THE OWNER.
13. AFTER THE APPROVAL OF DRAWINGS, THE RIGHT IS RESERVED TO MAKE REASONABLE CHANGES IN THE DESIGN OF THE WORK OR TO OMIT ANY SUCH PARTS AS THE OWNER MAY REQUIRE. IN THE CASE WHERE WORK OR MATERIAL IS ADDED TO OR DEDUCTED FOR THE WORK HEREIN SPECIFIED, A FAIR AND REASONABLE VALUATION OF THE SAME SHALL BE ADDED TO OR DEDUCTED FROM THE AMOUNT OF THIS CONTRACT.
14. THE CONSULTANT RESERVES THE RIGHT TO SELECT THE FINAL PRODUCT AND OR OPTIONS/ACCESSORIES DURING SHOP DRAWING REVIEW AT NO ADDITIONAL COST TO THE OWNER IN THE CASE OF ANY DISCREPANCIES LISTED BETWEEN CATALOGUE NUMBERS, WRITTEN PRODUCT DESCRIPTIONS AND/OR DETAILS SHOWN ON THE DRAWINGS. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE CONSULTANT IN WRITING BEFORE TENDER CLOSES OF ANY DISCREPANCIES THAT MAY BE SHOWN ON THE DRAWINGS REGARDING LISTED PRODUCT SPECIFICATIONS AND CATALOGUE NUMBERS THAT MAY AFFECT PRICING AND GET CLARIFICATION ON THESE ITEMS BEFORE SUBMITTING FINAL TENDER PRICE. FAILURE OF THE ELECTRICAL CONTRACTOR TO REQUEST CLARIFICATIONS ON SUCH ITEMS DURING TENDER MAKES NULL AND VOID ANY FUTURE CLAIMS RELATING TO FINAL PRODUCT SELECTION BY THE CONSULTANT.
15. ALL ELECTRICAL EQUIPMENT TO BE SPRINKLER PROOF.

## B. SUBMITTALS

1. BEFORE FABRICATION OF ANY MATERIALS OR EQUIPMENT, SUBMIT ONE (1) COPY OF DETAILED MANUFACTURER'S SHOP DRAWINGS OF EQUIPMENT AND APPARATUS FOR REVIEW. DO NOT ORDER MATERIALS UNTIL CONSULTANT HAS REVIEWED THE SHOP DRAWINGS. IF CORRECTIONS ARE REQUIRED, COPIES WILL BE RETURNED WITH CORRECTIONS NOTED. CORRECTED COPIES SHALL BE RESUBMITTED FOR REVIEW AND DISTRIBUTION. SUBMISSIONS SHALL BE MADE IN AMPLE TIME TO AVOID DELAYS IN THE WORK. THE REVIEW OF THE SHOP DRAWINGS SHALL BE, AND IS MUTUALLY UNDERSTOOD TO BE, IN REFERENCE TO GENERAL DESIGN ONLY. IF ERRORS IN THE DETAILED DIMENSIONS OR INTERFERENCE WITH THE WORKS ARE NOTICED, THE ATTENTION OF THE CONTRACTOR WILL BE CALLED TO SUCH ERRORS OR INTERFERENCE, BUT REVIEW OF THE DRAWINGS SHALL NOT IN ANY WAY RELIEVE THIS CONTRACTOR OF RESPONSIBILITY FOR ERRORS OR INTERFERENCE, OR FROM THE NECESSITY OF FURNISHING SUCH WORKS AND MATERIALS AS MAY BE REQUIRED FOR THE COMPLETION OF THE WORK AT ANY TIME UNTIL FORMAL ACCEPTANCE.
2. THE ELECTRICAL CONTRACTOR IS TO REVIEW, DATE AND SIGN ALL ELECTRICAL SHOP DRAWINGS PRIOR TO SUBMITTING TO THE CONSULTANT FOR REVIEW.
3. THE ELECTRICAL CONTRACTOR TO PREPARE RECORD DRAWINGS (IN AUTOCAD AND PDF FORMATS) INCLUDING ALL CHANGES AND DEVIATIONS FROM CONSTRUCTION SET AND SUBMIT THEM TO THE CONSULTANT AND THE OWNER UPON THE COMPLETION OF THE PROJECT. AUTOCAD FILES CAN BE SUPPLIED BY THE CONSULTANT UPON REQUEST. THE CONSULTANT CAN PREPARE AS BUILT AUTOCAD DRAWINGS FOR THE ELECTRICAL CONTRACTOR FOR A NOMINAL FEE.
4. THE FOLLOWING ITEMS ARE TO BE SUBMITTED TO THE CONSULTANT AND THE OWNER AT THE END OF THE PROJECT IN A HARD COVER, THREE-RING BINDER WITH TABS INDICATING EACH SECTION:
   - 4.1. FINAL INSPECTION/VERIFICATION REPORTS FROM THE INSPECTION AUTHORITIES AND TESTING AGENCIES
   - 4.2. MANUFACTURER'S SPECIFICATION SHEETS AND PHOTOMETRIC DATA FOR LIGHT FIXTURES
   - 4.3. A COPY OF ALL FINAL REVIEWED SHOP DRAWINGS
   - 4.4. AUTOCAD AND PDF RECORD DRAWINGS
   - 4.5. OPERATING INSTRUCTIONS FOR EACH SYSTEM INCLUDING CONTROL AND WIRING DIAGRAMS
   - 4.6. MANUFACTURER RECOMMENCED MAINTENANCE PROCEDURES AND SCHEDULES
   - 4.7. ALL PANELBOARD TYPEWRITTEN DIRECTORIES
   - 4.8. USB DRIVE WITH ELECTRONIC COPY OF ITEMS 5.1 TO 5.7

## C. PERMITS, TEST, REGULATIONS, ETC.

1. CARRY OUT ALL CHANGES AND ALTERATIONS REQUIRED BY THE AUTHORIZED INSPECTOR OF ANY AUTHORITY HAVING JURISDICTION WITHOUT DELAY TO THE PROGRESS OF THE WORK AND WITHOUT EXTRA COST.
2. PROVIDE WARNING SIGNS AND ARC FLASH LABELS AS SPECIFIED OR TO MEET REQUIREMENTS OF O.E.S.C, INSPECTION DEPARTMENT AND THE CONSULTANT.
3. UPON COMPLETION OF THE CONTRACT, ISSUE TO THE OWNER A FORMAL CERTIFICATION OF COMPLETION OF WORK BEFORE FINAL PAYMENT FOR WORK MAY BE CONSIDERED DUE.
4. PAYMENTS FOR ALL PERMITS, DEPOSITS, INSPECTION, SERVICES, AND OTHER FEES NECESSARY FOR THE WORK SHALL BE INCLUDED IN THE TENDER.

## D. MATERIALS

1. ALL MATERIALS AND EQUIPMENT (PRODUCTS) TO BE NEW AND FREE OF DEFECTS, CSA, ULC OR CANADIAN RECOGNIZED CERTIFICATION.
2. THIS IS A BASE BID SPECIFICATION. ITEMS ON THE DRAWINGS AND SUBSEQUENT DIVISIONS OF THESE SPECIFICATIONS ARE LISTED WITH THE NAMES OF A SPECIFIC MANUFACTURER, THE FIRST OF WHICH IS BASE BID AND HAS BEEN USED IN THE DESIGN AND IS THE EQUIPMENT SHOWN ON THE DRAWINGS. THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON THE USE OF MATERIALS AND EQUIPMENT SPECIFIED AS THE BASE BID.
3. WHERE MORE THAN ONE MANUFACTURER IS LISTED FOR A PARTICULAR ITEM OR GROUPS OF ITEMS, THE CONTRACTOR SHALL STATE IN HIS TENDER FORM COST SAVINGS (IF ANY) FOR THE USE OF ALTERNATE PRODUCTS, AND SHALL NAME THE ALTERNATE MANUFACTURERS. HOWEVER, THESE PROPOSED MATERIALS MUST NOT BE USED IN CALCULATING THE BASE TENDER PRICE. THE CONSULTANT AND/OR OWNER SHALL HAVE THE FINAL OPTION OF ACCEPTING OR REJECTING ALTERNATE EQUIPMENT.
4. WHERE OTHER THAN A FIRST-NAMED PRODUCT IS PROPOSED, THE BIDDER WILL BE DEEMED TO REPRESENT THAT NAMED PRODUCT CONFORMS TO THE PERFORMANCE, QUALITY, SPACE AND WEIGHT CHARACTERISTICS OF THE BASE BID PRODUCT. THIS CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL DESIGN OR CONSTRUCTION COSTS GENERATED BY THE USE OF THE NON-FIRST NAMED BID MATERIAL. ACCEPTANCE OF NON-BASE MANUFACTURERS WITH RESPECT TO THEIR EQUIVALENCY SHALL BE SUBJECT TO THE CONSULTANT'S REVIEW OF SHOP DRAWINGS.

## E. WIRES AND CABLES

1. ALL WIRING SHALL BE MINIMUM COPPER NO. 12 AWG WITH 600V INSULATION FOR 120/208V WIRING AND 1000V FOR 600V WIRING OF CHEMICALLY CROSS-LINKED THERMOSETTING POLYETHYLENE (XLPE) MATERIAL SUITABLE FOR 90° OPERATION. CONDUCTORS NO. 10 AWG AND LARGER SHALL BE STRANDED. CONDUCTOR SIZES SHALL BE IN ACCORDANCE WITH THE OESC AND AS INDICATED ON THE DRAWINGS. ALUMINUM WIRING IS NOT ACCEPTABLE UNLESS NOTED OTHERWISE.
2. ALL LOW VOLTAGE 6-24VDC EMERGENCY LIGHTING WIRING SHALL BE MINIMUM COPPER NO.10 AWG.
3. AC90 CABLE MAY ONLY BE USED FOR SHORT RUNS WITH MAXIMUM DISTANCE OF 3660mm (12ft) TO LIGHT FIXTURES AND RECEPTACLES IN CONCEALED AREAS ONLY UNLESS NOTED OTHERWISE ON DRAWINGS. AC90 CABLE (INCLUDING FIRE ALARM) NOT TO BE USED IN OPEN CEILING AREAS, ELEVATOR SHAFT AND STAIRWELL.
4. WHERE CONDUCTOR SIZES ARE NOT INDICATED THEY SHALL BE SIZED TO ENSURE THE VOLTAGE DROP DOES NOT EXCEED 2% FOR BRANCH CIRCUIT AND 3% FOR MAIN FEEDER AND THE REQUIREMENTS OF THE OESC.
5. ALL RACEWAYS SHALL BE EQUIPPED WITH A GREEN INSULATED GROUND CONDUCTOR AND SHALL MEET THE REQUIREMENTS OF THE OESC.

## F. CONDUIT

1. EMT AND RIGID GALVANIZED STEEL (RGS) CONDUIT TO BE CONCEALED IN FINISHED AREAS OF THE BUILDING.
2. RIGID PVC CONDUIT TO BE USED ONLY FOR DIRECT BURIED AND CONCRETE ENCASED INSTALLATIONS.
3. FLEXIBLE METALLIC CONDUIT MAY BE USED FOR SHORT CONNECTIONS TO VIBRATING MECHANICAL EQUIPMENT.
4. MINIMUM CONDUIT SIZE SHALL BE 21mm (3/4") UNLESS NOTED OTHERWISE ON THE DRAWINGS.
5. WHERE SLEEVES OR OPENINGS ARE INSTALLED IN WALLS, FLOORS, ROOF OR PARTITIONS TO ACCOMMODATE RACEWAYS OR CABLES, PROVIDE ALL NECESSARY SEALS, FITTINGS, BARRIERS AND FIRE-RESISTANT MATERIALS TO RESTORE THE INSTALLATION TO ITS ORIGINAL FIRE RATING TO THE SATISFACTION OF THE GOVERNING AUTHORITIES.
6. WHERE CONDUIT MUST BE SURFACE MOUNTED TO EXPOSED CEILING/WALL SURFACES, PROVIDE METALLIC WIREMOLD PAINTED TO MATCH CEILING/WALL SURFACES UNLESS NOTED OTHERWISE.
7. ALL CONDUITS THAT PENETRATE EXTERIOR WALLS/ROOF ARE TO BE SEALED AIR/LIQUID TIGHT AFTER INSTALLATION AT BOTH ENDS OF THE CONDUIT.

## G. OUTLETS AND JUNCTION BOXES

1. PROVIDE STICK ON LABELS (BLACK LETTERING ON WHITE BACKGROUND) INDICATING THE PANEL AND CIRCUIT NUMBER FOR ALL RECEPTACLES AND CONTROL DEVICES.
2. THE OWNER/CONSULTANT RESERVES THE RIGHT TO CHANGE LOCATIONS OF OUTLETS TO WITHIN 3660mm (12ft) OF LOCATION INDICATED ON THE DRAWINGS WITHOUT EXTRA CHARGE, PROVIDING CONTRACTOR IS ADVISED PRIOR TO INSTALLATION.
3. ALL PULL/JUNCTION BOXES MUST BE ACCESSIBLE AFTER THE BUILDING IS COMPLETE. INSTALL PULL ROPE IN ALL EMPTY CONDUITS.
4. ALL JUNCTION BOXES AND CONDUIT SUPPORT SYSTEM SHALL BE SECURED TIGHT TO THE UNDERSIDE OF THE BUILDING STRUCTURE. SUSPENDED JUNCTION BOXES AND CONDUITS WILL NOT BE ACCEPTED.
5. ALL DEVICE BOXES TO BE RECESSED WHEREVER POSSIBLE. ALL JUNCTION BOXES SHALL BE SIZED TO ACCOMMODATE THE NUMBER OF RACEWAYS AND CONDUCTORS AND BE EASILY ACCESSIBLE AFTER INSTALLATION.
6. WHERE BOXES MUST BE SURFACE MOUNTED TO EXPOSED CEILING/WALL SURFACES, PROVIDE SURFACE MOUNTED DIE-CAST ALUMINUM BOXES PAINTED TO MATCH CEILING/WALL SURFACES UNLESS NOTED OTHERWISE.

## H. WIRING DEVICES

1. SWITCHES, RECEPTACLES AND OUTLETS TO BE WHITE COLOR WITH STAINLESS STEEL COVER PLATES.
2. RECEPTACLES TO BE TAMPER RESISTANT AND MARKED AS SUCH IN THE FOLLOWING SPACES:
   - 2.1. CHILD CARE FACILITIES
   - 2.2. PRESCHOOLS AND ELEMENTARY EDUCATION FACILITIES
3. DUPLEX RECEPTACLES
   - 3.1. 15 OR 20 AMP, 120 VOLT SPECIFICATION GRADE COMPLETE WITH BACK BOX
   - 3.2. EXTERIOR RECEPTACLES TO HAVE WET LOCATION WHILE-IN-USE COVER AND MARKED "EXTRA DUTY"
4. TOGGLE SWITCHES TO BE 15 OR 20 AMP, 120 OR 347 VOLT AS REQUIRED COMPLETE WITH BACK BOX.
5. LOW VOLTAGE SWITCHES OR VACANCY SENSORS TO BE AS SPECIFIED COMPLETE WITH BACK BOX.

## I. GROUNDING

1. GROUND THE SERVICE AND ALL NON-CURRENT CARRYING METAL PARTS IN ACCORDANCE WITH OESC.
2. PROVIDE COMPLETE GROUNDING AND BONDING SYSTEM AS REQUIRED BY OESC.
3. PROVIDE GROUND CONNECTION TO TELEPHONE PANEL, WATER MAIN AND ALL METALLIC PIPING.

## J. FIRE STOPPING

1. SEALS FOR CABLES AND CONDUIT:
   - PROVIDE SEALS FOR CONDUIT AT ALL FIRE RATED WALL/FLOOR PENETRATIONS.
   - APPLY ALL THROUGH-FLOOR FIRE PUTTY SEALS (3M OR EQUIVALENT) THAT SEAL HOLES IN WALL/FLOOR.

## K. DISCONNECT SWITCHES

1. INSTALL FUSED OR NON FUSED HORSE POWER RATED HEAVY DUTY DISCONNECT SWITCHES AS REQUIRED BY CODE OR AS SHOWN ON DRAWINGS. NEMA RATINGS OF DISCONNECT SWITCHES TO BE AS INDICATED ON DRAWINGS.
2. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL FUSES IN ANY FUSED DISCONNECT SWITCH.

## L. FIRE ALARM SYSTEM RENOVATIONS

1. THE ELECTRICAL CONTRACTOR SHALL HIRE A FIRE ALARM SYSTEM COMPANY TO TEST AND VERIFY ANY NEW OR RELOCATED FIRE ALARM DEVICES AND PROVIDE WRITTEN VERIFICATION REPORT INDICATING THE DEVICES HAVE BEEN TESTED AND VERIFIED TO THE LATEST APPLICABLE CODES AND STANDARDS.
2. THE ELECTRICAL CONTRACTOR SHALL CARRY ALL COSTS ASSOCIATED WITH TESTING AND VERIFICATION AS REQUIRED BY THE FIRE ALARM WORK INDICATED ON THE ELECTRICAL DRAWINGS.
3. THE FIRE ALARM SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH THE LATEST EDITION OF CAN/ULC-S524, "INSTALLATION OF FIRE ALARM SYSTEMS".
4. THE FIRE ALARM SYSTEM SHALL BE VERIFIED IN CONFORMANCE WITH THE LATEST EDITION OF CAN/ULC-S537, "VERIFICATION OF FIRE ALARM SYSTEM" TO ENSURE SATISFACTORY PERFORMANCE.
5. ALL STROBE CANDELAS TO BE 15cd UNLESS OTHERWISE STATED.

## M. BREAKER PANELBOARDS

1. PANEL TRIM TO HAVE CONCEALED HINGES, TRIM MOUNTING SCREWS, HINGED LOCKING DOOR AND FLUSH CATCH.
2. PANEL BOARDS TO HAVE COPPER MAIN BUS, COPPER GROUND BUS AND COPPER NEUTRAL BUS.
3. KAIC RATINGS FOR PANELS AND BREAKERS TO BE AS INDICATED ON DRAWINGS. SERIES RATED BREAKERS/PANELS ARE NOT ACCEPTABLE.
4. AFFIX TYPEWRITTEN DIRECTORY TO THE INSIDE OF PANEL BOARD INDICATING LOADS CONTROLLED BY EACH CIRCUIT.
5. ALL PANELBOARDS ARE TO BE SURFACE MOUNTED UNLESS INDICATED OTHERWISE.
6. SERIES RATED BREAKER ARE NOT ACCEPTABLE.
7. ACCEPTABLE MANUFACTURERS ARE SCHNEIDER ELECTRIC, EATON OR SIEMENS.

## N. LIGHTING

1. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ALL LIGHT FIXTURES AS SPECIFIED ON PLANS. ALTERNATE LIGHT FIXTURES SHALL NOT BE USED IN CALCULATING BASE TENDER PRICE. THE ELECTRICAL CONTRACTOR MAY SUBMIT AN ALTERNATE LIGHTING PACKAGE WITH TENDER PRICE IF THERE IS A COST SAVING OVER THE BASE SPECIFIED LIGHT FIXTURES. THE CONTRACTOR SHALL STATE THE COST SAVING FOR THE ALTERNATE FIXTURES WITH TENDER AND THE OWNER RESERVES THE RIGHT TO ACCEPT OR REJECT THE ALTERNATE FIXTURES PACKAGE COST SAVING.
2. PROVIDE ALL MOUNTING HARDWARE AND ACCESSORIES TO SUIT THE CEILING AND INSTALLATION. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES AND PROVIDE REQUIRED MOUNTING ACCESSORIES AS REQUIRED. ALL FIXTURES TO BE CSA OR ULC LISTED.
3. ALL LIGHT FIXTURES THAT ARE NOT SUPPORTED DIRECTLY BY AN OUTLET BOX AS PER OESC 30-302, ARE TO BE SECURED TO BUILDING STRUCTURE INDEPENDENTLY BY CHAINS.
4. EMERGENCY LIGHTING SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 3.2.7.3 OF THE LATEST EDITION OF ONTARIO BUILDING CODE. EMERGENCY LIGHTING SHALL BE PROVIDED TO AN AVERAGE LEVEL OF ILLUMINATION NOT LESS THAN 10 LUX AT FLOOR OR TREAD LEVEL AS REQUIRED BY OBC.
5. LOCATE EACH EMERGENCY LIGHT ON SITE TO SUIT EXIT ROUTING AND LINE OF SIGHT. ELECTRICAL CONTRACTOR SHALL ARRANGE FOR TESTING OF EMERGENCY LIGHTS AND SUBMIT SEALED CERTIFICATE ALONG WITH TEST REPORT TO THE CONSULTANT BEFORE FINAL PAYMENT.
6. EACH EMERGENCY POWER BATTERY UNIT SHALL PROVIDE SUFFICIENT WATTAGE TO LIGHT ALL REMOTE EMERGENCY EXIT LIGHT HEADS WIRED TO IT FOR A MINIMUM PERIOD DESCRIBED IN SECTION 3.2.7.4 OF OBC.
7. ALL LOW VOLTAGE LIGHTING CONTROL DEVICES TO BE CSA OR ULC LISTED.

## O. LIGHTING CONTROLS

1. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL ALL LIGHTING CONTROL DEVICES AS SPECIFIED ON PLANS. ALTERNATE LIGHTING CONTROL DEVICES SHALL NOT BE USED IN CALCULATING BASE TENDER PRICE. THE ELECTRICAL CONTRACTOR MAY SUBMIT AN ALTERNATE LIGHTING CONTROL PACKAGE WITH TENDER PRICE IF THERE IS A COST SAVING OVER THE BASE SPECIFIED LIGHTING CONTROL PACKAGE. THE CONTRACTOR SHALL STATE THE COST SAVING FOR THE ALTERNATE LIGHTING CONTROL DEVICES WITH TENDER AND THE OWNER RESERVE THE RIGHTS TO ACCEPT OR REJECT THE ALTERNATE LIGHTING CONTROL PACKAGE COST SAVING.
2. ELECTRICAL CONTRACTOR TO PROVIDE ALL LOW VOLTAGE LIGHTING CONTROL DEVICES INCLUDING WIRING, ACCESSORIES, COVER PLATES, ETC. ALL LOW VOLTAGE WIRING DETAILS TO BE CONFIRMED BY LIGHTING CONTROL MANUFACTURER. ALL LIGHTING CONTROL WIRING TO BE INSTALL IN CONDUIT/BOXES.
3. ALL LOW VOLTAGE LIGHTING CONTROL WIRING TO BE INSTALLED IN CONDUIT WHERE INSTALLED IN EXPOSED AREAS. LOW VOLTAGE WIRING INSTALLED ABOVE ACCESSIBLE CEILING SPACES TO BE PROPERLY SUPPORTED SECURED TO STRUCTURE.
4. ELECTRICAL CONTRACTOR TO SUBMIT DETAILED OCCUPANCY SENSOR, LOW VOLTAGE SWITCHING AND POWER PACK WIRING DIAGRAMS SPECIFIC TO THIS PROJECT DURING SHOP DRAWING SUBMISSION STAGE FOR REVIEW BY THE CONSULTANT.
5. ELECTRICAL CONTRACTOR TO FIELD ADJUST AIMING, SENSITIVITY AND TIME DELAY AS REQUIRED.
6. LIGHTING CONTROL DEVICES AND CONTROL SYSTEMS SHALL BE TESTED TO ENSURE THAT CONTROL HARDWARE AND SOFTWARE ARE CALIBRATED, ADJUSTED, PROGRAMMED AND IN PROPER WORKING CONDITION IN ACCORDANCE WITH DRAWINGS AND MANUFACTURES INSTALLATION INSTRUCTIONS. WHERE OCCUPANT SENSORS, TIME SWITCHES, PROGRAMMABLE SCHEDULE CONTROLS, OR PHOTOSENSORS ARE INSTALLED, AT A MINIMUM, THE FOLLOWING PROCEDURES SHALL BE PERFORMED:
   - 6.1. CERTIFY THAT OCCUPANT SENSORS HAVE BEEN LOCATED AND AIMED IN ACCORDANCE WITH MANUFACTURES RECOMMENDATIONS.
   - 6.2. OCCUPANCY SENSORS AND EACH UNIQUE COMBINATION OF SENSOR TYPE AND SPACE GEOMETRY.
     - 6.2.1. STATUS INDICATOR OPERATES PROPERLY
     - 6.2.2. CONTROLLED LIGHTS TURN OFF OR DOWN TO THE PERMITTED LEVEL WITHIN REQUIRED TIME
     - 6.2.3. FOR AUTO-ON OCCUPANT SENSORS, THE LIGHTS TURN ON TO THE PERMITTED LEVEL WITH THE TIME REQUIRED
     - 6.2.4. FOR MANUAL-ON SENSORS, THE LIGHTS TURN ON ONLY WHEN MANUALLY ACTIVATED
     - 6.2.5. THE LIGHTS ARE NOT INCORRECTLY TURNED ON BY MOVEMENT IN NEARBY AREAS OR BY HVAC OPERATION
   - 6.2. AUTOMATIC TIME SWITCHES
     - 6.2.1. CONFIRM THAT THE AUTOMATIC TIME-SWITCH CONTROL IS PROGRAMMED WITH APPROPRIATE WEEKDAY, WEEKEND AND HOLIDAY SCHEDULES
     - 6.2.2. DOCUMENT FOR OWNER AUTOMATIC TIME-SWITCH CONTROL IS PROGRAMMED WITH APPROPRIATE WEEKDAY,WEEKEND AND HOLIDAY SCHEDULES AS WELL AS ALL SETUP AND PREFERENCE PROGRAM SETTINGS.
     - 6.2.3. VERIFY CORRECT TIME AND DATE ARE PROPERLY SET IN THE TIME SWITCH
     - 6.2.4. VERIFY BATTERY BACKUP IS INSTALLED AND ENERGIZED
     - 6.2.5. VERIFY THAT OVERRIDE TIME LIMIT SET TO NO MORE THAN TWO (2) HOURS
     - 6.2.6. SIMULATE OCCUPIED CONDITION. VERIFY THE FOLLOWING
       - 6.2.6.1. ALL LIGHTS TURN ON AND OFF BY THEIR RESPECTIVE CONTROL SWITCH
       - 6.2.6.2. THE SWITCH ONLY OPERATES LIGHTING IN THE ENCLOSED SPACE IN WHICH THE SWITCH IS LOCATED.
   - 6.3. THE INDIVIDUALS RESPONSIBLE FOR THE FUNCTIONAL TESTING SHALL NOT BE DIRECTLY INVOLVED IN EITHER THE DESIGN OR CONSTRUCTION OF THE PROJECT AND SHALL PROVIDE DOCUMENTATION CERTIFYING THAT THE INSTALLED LIGHTING CONTROLS MEET OR EXCEED ALL DOCUMENTED PERFORMANCE CRITERIA.

## ELECTRICAL DRAWING LIST


| | |
|---|---|
| E1.1 | SPECIFICATIONS AND DRAWING LIST SHEET 1 OF 2 |
| E1.2 | SPECIFICATIONS AND LEGENDS SHEET 2 OF 2 |
| E1.3 | SCHEDULES AND DETAILS |
| E2.1 | KEY PLANS |
| E3.1 | SINGLE LINE DIAGRAM |
| E4.1 | ELECTRICAL DEMOLITION |
| E4.2 | ELECTRICAL DEMOLITION SITE PHOTOS |
| E5.1 | NEW POWER, LIGHTING, FIRE ALARM AND SYSTEMS |


| NO | REVISIONS | DATE |
|---|---|---|
| C | ISSUED FOR TENDER | 2021-12-08 |
| B | ISSUED FOR PERMIT | 2021.06.11 |
| A | ISSUED FOR COORDINATION | 2021.06.09 |


DRAWINGS ARE NOT TO BE SCALED. CONTRACTOR MUST CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT, AND MUST REPORT ANY DISCREPANCIES TO THE ARCHITECTS BEFORE PROCEEDING WITH THE WORK.
THE USE OF THIS DRAWING OR PART THEREOF IS FORBIDDEN WITHOUT THE WRITTEN APPROVAL OF THE ARCHITECTS.


Diocese of St. Catharines
*Where Faith Lives*


CK ENGINEERING INC
MECHANICAL | ELECTRICAL
3390 SOUTH SERVICE ROAD, SUITE 302
BURLINGTON, ON. L7N 3J5
www.ckengs.com | info@ckengs.net | 905.631.1115

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com


CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA: COLUMBARIUM RENOVATION
67 CHURCH STREET,
ST. CATHARINES, ONTARIO L2R 3C4

SPECIFICATIONS AND DRAWING LIST SHEET 1 OF 2

| | |
|---|---|
| SCALE: NTS | PROJECT: ARCH PR. NO. 2019-04 ENGI. PR. NO. 20003 |
| DATE: DEC 2018 | |
| DRAWN N.K. | DRAWING E1.1 |
| CHECKED J.S. | |
| PRINT DATE | |

## ELECTRICAL SPECIFICATIONS

### P. MECHANICAL EQUIPMENT

1. PROVIDE LINE VOLTAGE CONNECTIONS AS REQUIRED FOR ALL MECHANICAL EQUIPMENT. CONFIRM FINAL CONNECTIONS, LOADS AND LOCATIONS PRIOR TO INSTALLATION. NO EXTRAS WILL BE ALLOWED FOR ELECTRICAL CONTRACTOR NOT THOROUGHLY REVIEWING ALL MECHANICAL DRAWINGS DURING TENDER AND SHOP DRAWINGS DURING CONSTRUCTION.
2. FUSES PROTECTING MOTOR FEEDERS TO BE TIME–DELAY TYPE UNLESS NOTED OTHERWISE.
3. PROVIDE ALL NECESSARY LINE VOLTAGE CONTROL WIRING FOR MECHANICAL CONTROLS CONTRACTOR AS REQUIRED. PROVIDE CONTROL WIRING AS SHOWN ON THE ELECTRICAL AND MECHANICAL DRAWINGS.
4. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL NECESSARY COMBINATION STARTERS FOR MECHANICAL EQUIPMENT UNLESS NOTED OTHERWISE ON MECHANICAL DRAWINGS.

### Q. FIELD QUALITY CONTROL

1. TEST ALL WORK. REMEDY AND MAKE GOOD ANY DEFECTS DISCLOSED BY SUCH TESTS AND TEST THE WORK AGAIN. TEST IN ACCORDANCE WITH APPROVED PROCEDURE.
2. TEST EACH POWER AND CONTROL CONDUCTOR FOR CONTINUITY AND GROUNDS. IMMEDIATELY FOLLOWING THIS TEST, CONNECT CONDUCTOR TO ITS PERMANENT TERMINAL.
3. INSPECT ALL CONNECTIONS, PROTECTIVE AND SAFETY DEVICES PRIOR TO ENERGIZING ANY EQUIPMENT AND MAKE NECESSARY ADJUSTMENTS, WHERE REQUIRED, TO ASSURE A PROPER AND SAFE OPERATION.
4. ALL EQUIPMENT SHALL BE WIPED CLEAN AND VACUUMED.

### R. EXECUTION

RACEWAYS:

1. INSTALL CONDUIT AS A COMPLETE SYSTEM WITHOUT WIRES. CONTINUE CONDUIT FROM FITTING TO FITTING AND FASTEN SECURELY TO PLACE. CLEAN AND SEAL CONDUIT SYSTEM UNTIL WIRING IS INSTALLED.
2. INSTALL CONDUIT PARALLEL OR AT RIGHT ANGLES TO PROPERTY LINES, CURBS, ETC., WHERE PRACTICAL.
3. CUT ALL CONDUITS SQUARE AND REAM TO REMOVE SHARP EDGES AND BURRS. FIT CONDUITS CLOSELY AND TIGHTLY IN COUPLINGS.
4. INSTALL A PULL WIRE IN EACH EMPTY CONDUIT PROVIDED FOR FUTURE USE BY OTHERS.
5. CAP ALL CONDUITS WITH METAL, CARDBOARD OR PLASTIC, DURING CONSTRUCTION.

WIRES AND CABLES:

1. DO NOT PULL THE WIRES BEFORE THE ENTIRE CONDUIT SYSTEM IS COMPLETED AND CLEANED.
2. ENSURE THAT WIRES INSTALLED IN THE INTERIOR OF EQUIPMENT ARE NEATLY LACED WITH PLASTIC TIES AND GRASPED AND SECURED IN PLACE.
3. RUN POWER CONDUCTORS FULL LENGTH WITHOUT SPLICES OR TAPS FROM ORIGIN TO DESTINATION, UNLESS SPECIFICALLY CALLED FOR ON THE DRAWINGS. NO CABLE SPLICING ALLOWED IN UNDERGROUND INSTALLATION.
4. IDENTIFY EACH CABLE AND WIRE AT BOTH ENDS WITH PROPER CABLE AND WIRE NUMBER AS SHOWN ON THE DRAWINGS AND CABLE SCHEDULES IN ALL CONTROL PANELS, CONTROL DEVICES, DISTRIBUTION PANELS, PULL AND JUNCTION BOXES, ETC., USING APPROVED CABLE AND WIRE MARKERS.
5. FOLLOW NORMAL RECOMMENDED PRACTICES WHEN INSTALLING CABLES IN CABLE TRAYS TO AVOID DAMAGE TO CABLE SHEATHS, CONDUCTORS OR INSULATION. ENSURE THAT CABLES ARE NOT DAMAGED BY EXCESSIVE TENSION WHEN PULLING. REPLACE ANY DAMAGED AND REJECTED CABLE WITHOUT COST TO THE OWNER.
6. USE SUITABLE NON–HARDENING CABLE LUBRICANTS, WHERE REQUIRED, WHICH DO NOT CONTAIN ANY MATERIALS SUCH AS OIL, GREASE OR OTHER COMPOUNDS HARMFUL TO RUBBER, PVC OR POLYETHYLENE.
7. MAKE SPLICES AND TAPS FOR CONTROL CONDUCTORS AT APPROVED TERMINAL BLOCKS IN JUNCTION BOXES.

### GENERAL LIGHTING

| SYMBOL | DESCRIPTION |
|---|---|
| LX | CEILING MOUNTED LINEAR LIGHT FIXTURE. 'X' DENOTES TYPE |
| LX | WALL MOUNTED LINEAR LIGHT FIXTURE. 'X' DENOTES TYPE |
| LX | 2'X4' (610mmX1220mm) LIGHT FIXTURE. 'X' DENOTES TYPE |
| (LX) | WALL MOUNTED LIGHT FIXTURE. 'X' DENOTES TYPE |
| (LX) | ROUND DOWN LIGHT FIXTURE. 'X' DENOTES TYPE |
| GENERAL NOTE: 1. REFER TO GENERAL LIGHTING SCHEDULE FOR DETAILED SPECIFICATIONS. | |

### EMERGENCY LIGHTING

| SYMBOL | DESCRIPTION |
|---|---|
| BUX | EMERGENCY BATTERY UNIT WITH TWO DC HEADS. 'X' DENOTES TYPE |
| RX YUX.C | WALL MOUNTED EMERGENCY LIGHTING DOUBLE REMOTE DC HEADS. 'X' DENOTES TYPE |
| RX YUX.C | CEILING MOUNTED EMERGENCY LIGHTING DOUBLE REMOTE DC HEADS. 'X' DENOTES TYPE |
| EMX YUX.C | EMERGENCY CEILING MOUNTED RUNNING MAN OR EXIT SIGN. ARROW DENOTES DIRECTION OF EXIT. HATCHED AREA DENOTES ILLUMINATED FACE(ES). 'X' DENOTES TYPE |
| EMX YUX.C | EMERGENCY WALL MOUNTED RUNNING MAN OR EXIT SIGN. ARROW DENOTES DIRECTION OF EXIT. HATCHED AREA DENOTES ILLUMINATED FACE(ES). 'X' DENOTES TYPE |
| YUX.C | 'Y' INDICATES BATTERY OR COMBO UNIT.<br>'X' INDICATES TYPE OF BATTERY OR COMBO UNIT.<br>'.C' INDICATES DEDICATED BRANCH WIRING CIRCUIT FROM BATTERY OR COMBO UNIT. WIRE TO BE SIZED TO ENSURE NO MORE THAN 5% VOLTAGE DROP PER BRANCH |
| GENERAL NOTE: 1. REFER TO EMERGENCY LIGHTING SCHEDULE FOR DETAILED SPECIFICATION. | |

### FIRE ALARM AND CARBON MONOXIDE SYSTEMS

| SYMBOL | DESCRIPTION |
|---|---|
| | FIRE ALARM PHOTOELECTRIC SMOKE DETECTOR. |
| | 120V LOCAL HARDWIRED SMOKE/STROBE COMBO ALARM c/w BATTERY BACKUP |
| | FIRE ALARM FIXED HEAT DETECTOR, 57°C (135°F). |
| F | FIRE ALARM PULL STATION. |
| F | WALL MOUNTED FIRE ALARM HORN |
| F | CEILING MOUNTED FIRE ALARM HORN |
| FACP | SURFACE MOUNTED FIRE ALARM CONTROL PANEL |
| GENERAL NOTE: 1. REFER TO "FIRE ALARM SYSTEM RENOVATIONS" IN ELECTRICAL SPECIFICATION FOR MORE DETAILS. | |

### ABBREVIATIONS

| | |
|---|---|
| AFF | DENOTES ABOVE FINISHED FLOOR |
| AFG | DENOTES ABOVE FINISHED GRADE |
| c/w | DENOTES COMPLETE WITH |
| DS | DENOTES DISCONNECT SWITCH |
| ED | DENOTES EXISTING DEVICE TO BE DEMOLISHED INCLUDING WIRING/CONDUIT(S) STRIPPED BACK TO SOURCE |
| ER | DENOTES EXISTING DEVICE TO BE RELOCATED |
| EX | DENOTES EXISTING DEVICE TO REMAIN |
| HL | DENOTES DEVICE MOUNTED AT HIGH LEVEL NEAR CEILING |
| NTS | DENOTES NOT TO SCALE |
| REL | DENOTES EXISTING DEVICE AT RELOCATED LOCATION |
| TYP | DENOTES TYPICAL |
| WP | DENOTES WEATHERPROOF |

### POWER AND SYSTEMS

| SYMBOL | DESCRIPTION |
|---|---|
| | 120VAC, 15 AMP DUPLEX RECEPTACLE |
| | 120VAC, 15 AMP QUAD RECEPTACLE |
| | 120VAC, 20 AMP T–SLOT DUPLEX GROUND FAULT CIRCUIT INTERRUPT RECEPTACLE |
| | HARD WIRED POWER CONNECTION RATED PER EQUIPMENT SPECIFICATION |
| | SURFACE MOUNTED ELECTRICAL PANEL BOARD |
| | RECESSED ELECTRICAL PANEL BOARD |
| | FAN OR MOTOR |
| | NON–FUSED DISCONNECT SWITCH |
| JB | JUNCTION BOX |
| PB | PULL BOX |
| | FIRE RATED PLYWOOD BACKBOARD FOR EQUIPMENT |
| GENERAL NOTE: 1. REFER TO POWER AND SYSTEMS SCHEDULE FOR DETAILED SPECIFICATION. | |

### CONTROL DEVICE

| SYMBOL | DESCRIPTION |
|---|---|
| $X | 120V OR 347V SINGLE GANG, SINGLE POLE SWITCH, UNLESS NOTED WITH CONTROL DEVICE TYPE DESIGNATION LETTER. 'X' DENOTES CONTROL DEVICE TYPE |
| X$X | 120V OR 347V DOUBLE GANG, TWO SINGLE SWITCHES, UNLESS NOTED WITH CONTROL DEVICE TYPE DESIGNATION LETTER. 'X' DENOTES CONTROL DEVICE TYPE |
| X$X X | 120V OR 347V THREE GANG, THREE SINGLE POLE SWITCHES, UNLESS NOTED WITH CONTROL DEVICE TYPE DESIGNATION LETTER. 'X' DENOTES CONTROL DEVICE TYPE |
| (0X) | CEILING MOUNTED VACANCY/OCCUPANCY SENSOR. 'X' DENOTES CONTROL DEVICE TYPE |
| RCX | ROOM CONTROLLER. 'X' DENOTES CONTROL DEVICE TYPE |
| DTX | TIMER. 'X' DENOTES CONTROL DEVICE TYPE |
| | POWER DOOR OPERATOR PUSH TO OPEN BUTTON |
| GENERAL NOTE: 1. REFER TO CONTROL DEVICE SCHEDULE FOR DETAILED SPECIFICATION. | |

| NO | REVISIONS | DATE |
|---|---|---|
| C | ISSUED FOR TENDER | 2021-12-08 |
| B | ISSUED FOR PERMIT | 2021.06.11 |
| A | ISSUED FOR COORDINATION | 2021.06.09 |

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3390 SOUTH SERVICE ROAD, SUITE 302
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STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
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# SPECIFICATIONS AND LEGENDS
# SHEET 2 OF 2

| | |
|---|---|
| SCALE: NTS | PROJECT: ARCH PR. NO. 2019-04 ENGI. PR. NO. 20003 |
| DATE: DEC 2018 | |
| DRAWN N.K. | DRAWING E1.2 |
| CHECKED J.S. | |
| PRINT DATE | |

## GENERAL LIGHTING SCHEDULE

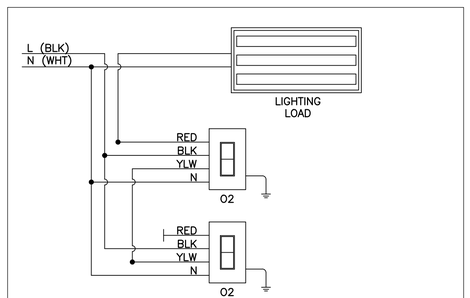
| TYPE | MANUFACTURER | CATALOG NUMBER | DESCRIPTION | VOLTAGE (V) | WATTS (W) | LUMENS | 0–10V DIMMING | LISTING REQUIRED | DISTR. TYPE | COLOUR TEMP(K) | CRI | MOUNTING | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L0 | | | ROUND DOWNLIGHT | | | | | | | | | RECESSED | EXISTING FIXTURE |
| L1 | | | 4' FIXTURE c/w 2x LAMPS | | | | | | | | | SURFACE | EXISTING FIXTURE |
| L2 | | | FIXTURE c/w 2x LAMPS | | | | | | | | | SURFACE | EXISTING FIXTURE |
| L3 | | | 2'X4' FIXTURE | | | | | | | | | RCESSED | EXISTING FIXTURE |
| L4 | SIGNIFY | S7R830K10Z10U | 6" ROUND, LOW PROFILE LED DOWNLIGHT WITH WHITE TRIM | 120 | 15 | 1000 | YES | | | 3000 | 80 | SURFACE CEILING | |
| L5 | KUZCO LIGHTING | WS9815–BN | 15" LONG LED WALL SCONCE, BRUSH NICKEL FINISH | 120 | 15 | 1200 | NO | | | 3000 | 80 | SURFACE WALL | |
| L6 | LUMENWERX | ALC–APO–LED–80–350–30–8FT–120–D1–1–COVH–W | 8FT LINEAR LED COVE LIGHT FIXTURE WITH ASYMMETRIC LIGHT DISTRIBUTION | 120 | 10.5 W/FT | 1400/ FT | YES | | | 3000 | 80 | SURFACE COVE | FIXTURE TO BE CONTINUOUS ROW MOUNTED AS SHOWN ON PLAN DRAWINGS. PROVIDE MOUNTING BRACKET AS REQUIRED FOR FIXTURE TO BE INSTALLED FLUSH TO TOP OF COVE. |
| L7 | CREE LIGHTING | XSPW–B–WM–4ME–2L–30K–UL–BK | LED WALL PACK, WITH SIDE CONDUIT ENTRY, BLACK FINISH | 120 | 20 | 2490 | NO | EXTERIOR | 4 | 3000 | 70 | SURFACE WALL | |

## EMERGENCY LIGHTING SCHEDULE

| TYPE | MANUFACTURER | CATALOG NUMBER | DESCRIPTION | VOLTAGE AC (VAC) | VOLTAGE DC (VDC) | LAMP BASE | LAMP TYPE | LAMP WATTS | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| EM1 | BEGHELLI | SL–RM–ACDC–U–0LR–M | LED LIT RUNNING MAN EXIT SIGN | 120 | 24 | | LED | | |
| BU1 | BEGHELLI | NV–24–144–2SR–LED–MR16–7W | 144W BATTERY UNIT c/w 2X LED HEADS | 120 | 24 | MR16 | LED | 2x7W | |
| R1 | BEGHELLI | SR–2–LED–MR16–7W–24V | DOUBLE REMOTE DC HEADS | | 24 | MR16 | LED | 2x7W | |
| | | | | | | | | | |

## CONTROL DEVICE SCHEDULE

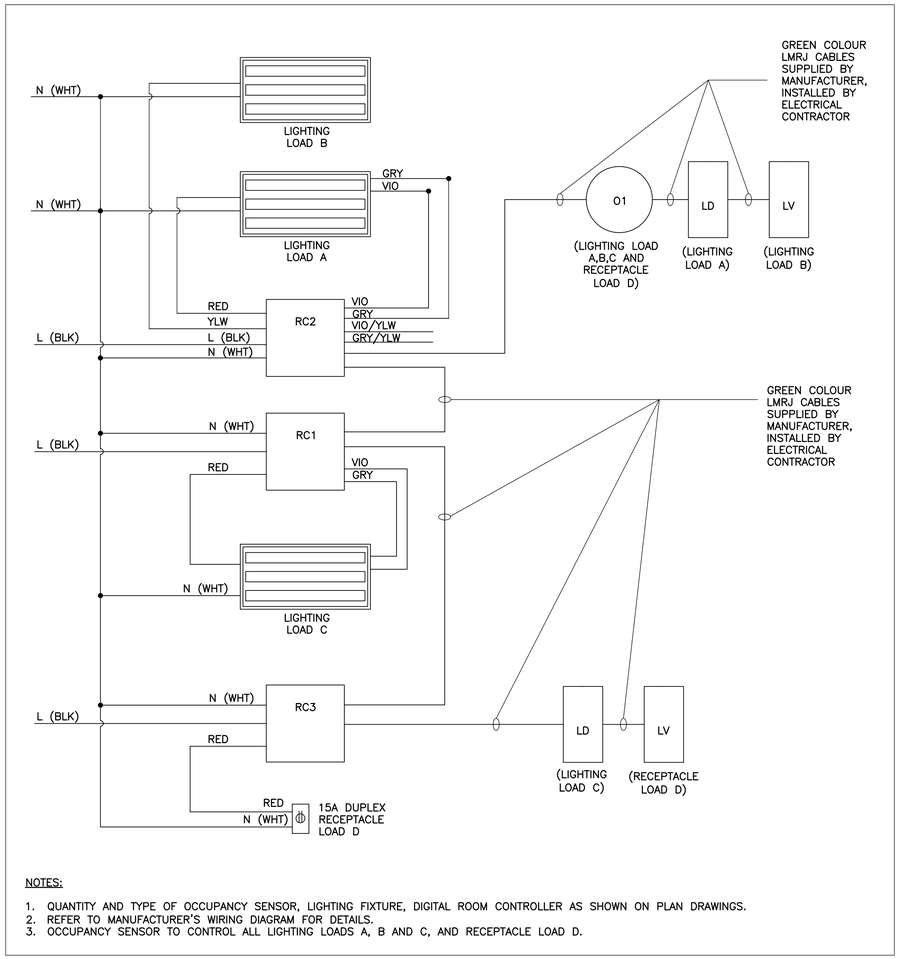
| TYPE | MANUFACTURER | CATALOG NUMBER | DESCRIPTION | VOTLAGE AC (V) | VOLTAGE DC (VDC) | NO. OF RELAYS | MOUNTING | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| 3 | | | 3–WAY SWITCH | | | | | |
| DT1 | | | TIMER | | | | | EXISTING DEVICE |
| LD | LEGRAND | LMSW–103– | DLM LOW VOLTAGE 3–BUTTON ON/OFF/DIM SWITCH | | 24 | | WALL | BUTTON 1–DIM UP, BUTTON 2–DIM DOWN, BUTTON 3–ON/OFF |
| LV | LEGRAND | LMSW–101–ENG1 | DLM LOW VOLTAGE 1–BUTTON ON/OFF SWITCH | | 24 | | WALL | |
| RC1 | LEGRAND | LMRC–111 | DIGITAL ROOM CONTROLLER c/w GREEN LMRJ CABLES | 120 | 24 | 1 | | GREEN LMRJ CABLES TO BE ORDERED FROM MANUFACTURER. |
| RC2 | LEGRAND | LMRC–112 | DIGITAL ROOM CONTROLLER c/w GREEN LMRJ CABLES | 120 | 24 | 2 | | GREEN LMRJ CABLES TO BE ORDERED FROM MANUFACTURER. |
| RC3 | LEGRAND | LMPL–101 | DIGITAL PLUG LOAD CONTROLLER c/w GREEN LMRJ CABLES | 120 | 24 | 1 | | GREEN LMRJ CABLES TO BE ORDERED FROM MANUFACTURER. |
| O1 | LEGRAND | LMDC–100 | DUAL TECHNOLOGY SENSOR | | 24 | 1 | CEILING | |
| O2 | LEGRAND | PW–103N | PIR MULTI–WAY WALL SWITCH SENSOR WITH NIGHT LIGHT | 120 | | | | |
| DT | LEGRAND | RT–200 | ASTRONOMICAL TIME SWITCH | 120 | | | | TIMER TO BE SET FOR LIGHT TO BE ON BETWEEN SUNSET TO SUNRISE. |
| | | | | | | | | |




NOTES:

1. REFER TO MANUFACTURERS INSTALLATION INSTRUCTION FOR ADDITIONAL NOTES AND MORE INFORMATION.

MULTI–WAY WIRING DIAGRAM FOR '02' SWITCH




NOTES:

1. QUANTITY AND TYPE OF OCCUPANCY SENSOR, LIGHTING FIXTURE, DIGITAL ROOM CONTROLLER AS SHOWN ON PLAN DRAWINGS.
2. REFER TO MANUFACTURER'S WIRING DIAGRAM FOR DETAILS.
3. OCCUPANCY SENSOR TO CONTROL ALL LIGHTING LOADS A, B AND C, AND RECEPTACLE LOAD D.

WIRING DIAGRAM FOR COLUMBARIUM LIGHTING CONTROL

| NO | REVISIONS | DATE |
|---|---|---|
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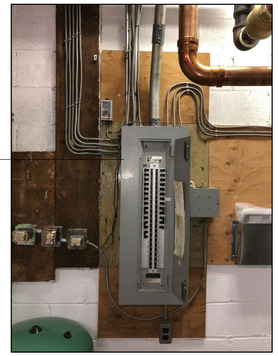
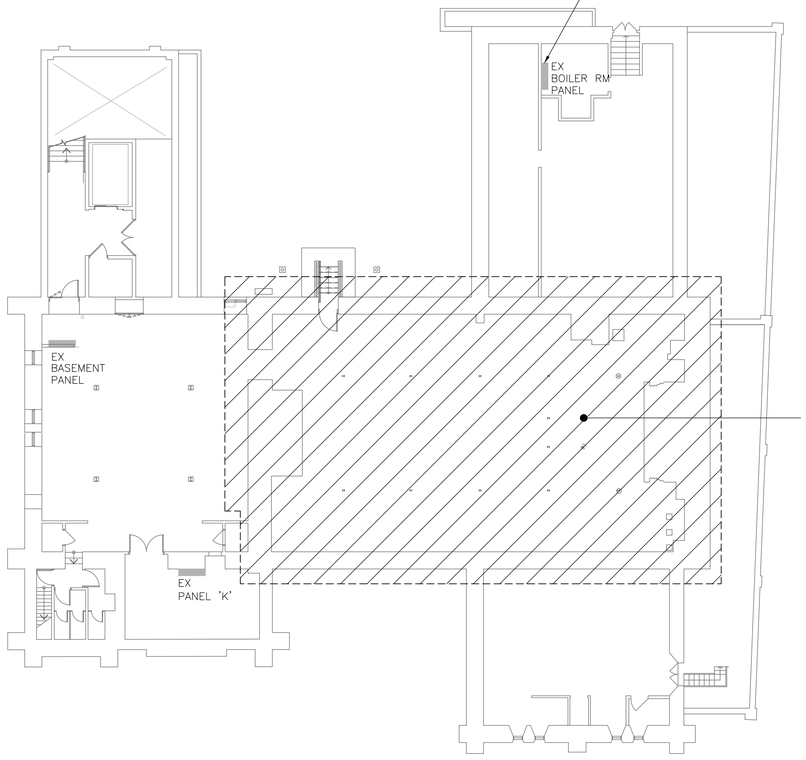
SCHEDULES AND DETAILS

| | |
|---|---|
| SCALE: AS NOTED | PROJECT: ARCH PR. NO. 2019-04 ENGI. PR. NO. 20003 |
| DATE: DEC 2018 | |
| DRAWN N.K. | DRAWING E1.3 |
| CHECKED J.S. | |
| PRINT DATE | |

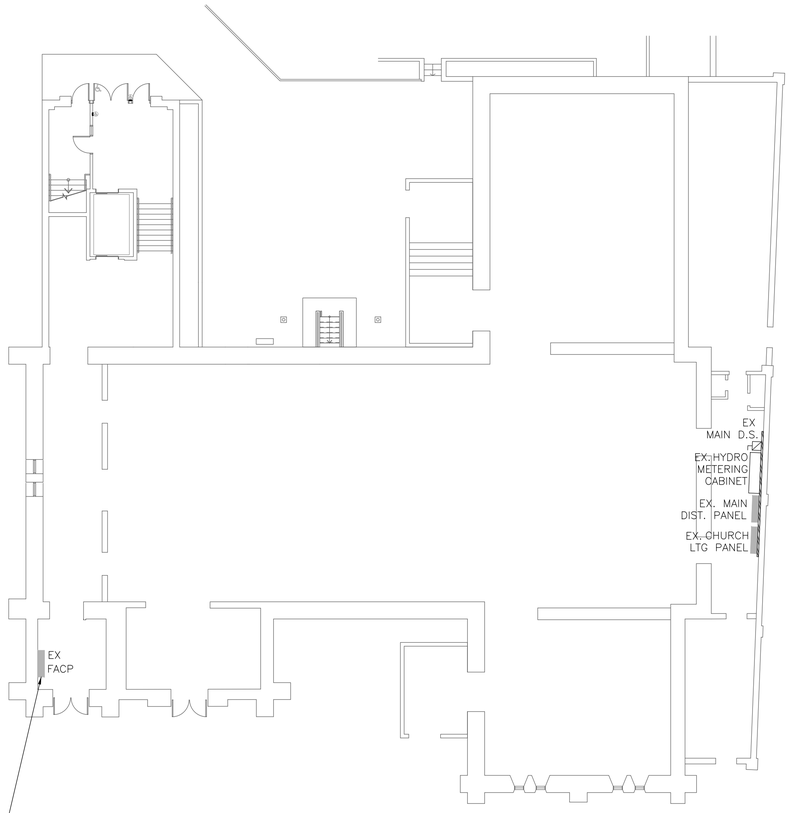


EXISTING BOILER ROOM PANEL




BASEMENT
1:150

EXISTING SIMPLEX 4002 FIRE ALARM PANEL




MAIN FLOOR
1:150

| NO | REVISIONS | DATE |
|---|---|---|
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KEY PLANS

| | |
|---|---|
| SCALE: AS NOTED | PROJECT: ARCH PR. NO. 2019-04 ENGI. PR. NO. 20003 |
| DATE: DEC 2018 | |
| DRAWN N.K. | DRAWING E2.1 |
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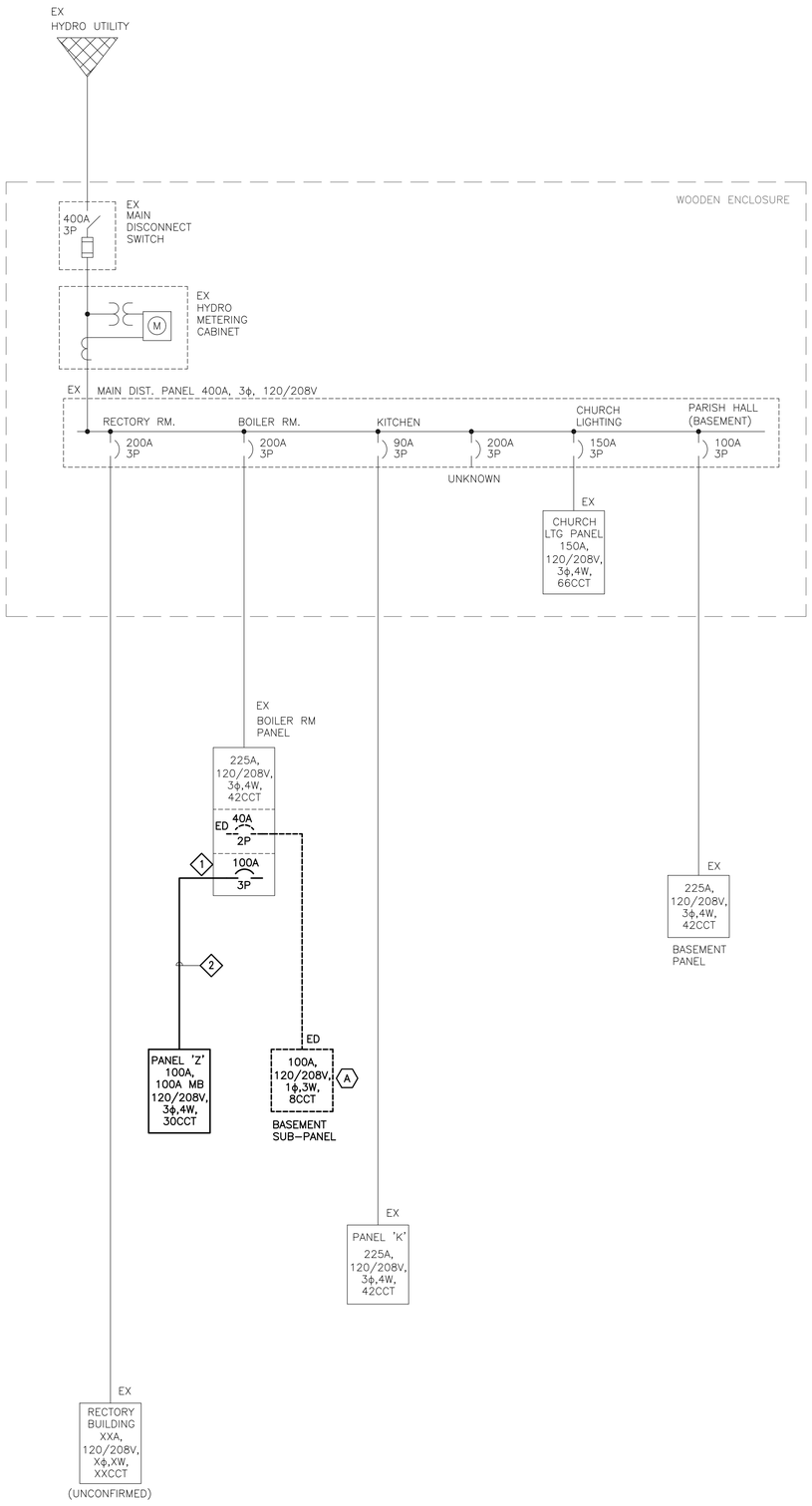


| PANEL ID: Z | MOUNTING: SURFACE | | | | | | | | | | | PANEL MAINS: 100 A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VOLTAGE: 120/208V | LOCATION: SERVICE AREA (UNFINISHED AREA) | | | | | | | | | | | MAIN BREAKER: 100 A |
| PHASE/WIRE: 3PH/4W | FED FROM: BOILER ROOM PANEL | | | | | | | | | | | KAIC RATING: 10 KAIC |
| DESCRIPTION | BRK SIZE | BRK TYPE | WIRE SIZE | LOAD | CCT | BUS | CCT | LOAD | WIRE SIZE | BRK TYPE | BRK SIZE | DESCRIPTION |
| CU–1(HP–1) | 25A–2P | | 2#10 | 2000 | 1 | A | 2 | 500 | 2#12 | | 15A–1P | EMERGENCY LIGHTING |
| | | | | 2000 | 3 | B | 4 | 1008 | 2#12 | | 15A–1P | LIGHTING–RC1 |
| DH–1 (FOR ERV–1) | 15A–2P | | 2#12 | 750 | 5 | C | 6 | 939 | 2#12 | | 15A–1P | LIGHTING–RC2 |
| | | | | 750 | 7 | A | 8 | 15 | 2#12 | | 15A–1P | LIGHTING–EXTERIOR |
| ERV–1 | 15A–1P | | 2#12 | 300 | 9 | B | 10 | 300 | 2#12 | | 15A–1P | RECEPTACLES–COLUMBARIUM |
| POWER DOOR OPERATOR | 15A–1P | | 2#12 | 500 | 11 | C | 12 | 300 | 2#12 | | 15A–1P | RECEPTACLES–SERVICE AREA |
| RECEPTACLE–EXTERIOR 20A GFCI | 20A–1P | | 2#12 | 300 | 13 | A | 14 | | 2#12 | | 15A–1P | RECEPTACLE–RAISED DISPLAY |
| EXISTING ("NAIVE FLOOR PLUG) | 15A–1P | | 2#12 | | 15 | B | 16 | | | | 15A–1P | SPARE |
| RELOCATED LIGHTING | 15A–1P | | 2#12 | 800 | 17 | C | 18 | | | | 15A–1P | SPARE |
| SPARE | 20A–1P | | | | 19 | A | 20 | | | | 15A–1P | SPARE |
| SPARE | 20A–1P | | | | 21 | B | 22 | | | | 15A–1P | SPARE |
| SPARE | 20A–1P | | | | 23 | C | 24 | | | | 15A–1P | SPARE |
| | | | | | 25 | A | 26 | | | | | |
| | | | | | 27 | B | 28 | | | | | |
| | | | | | 29 | C | 30 | | | | | |
| BRK TYPE: * GFCI BREAKER | | LOAD PHASE A (W): 3565 | | | | | | | | | | |
| ** COMBINATION AFCI | | LOAD PHASE B (W): 3608 | | | | | | TOTAL LOAD (W): 10462 | | | | |
| *** LOCK ON BREAKER | | LOAD PHASE C (W): 3289 | | | | | | TOTAL AMPS (A): 29.040 | | | | |

DEMOLITION KEYNOTES:

(A) EXISTING CIRCUIT #7 ("NAIVE FLOOR PLUG") TO BE REWIRED TO NEW PANEL 'Z'. REFER TO DRAWING E4.2 FOR PHOTO OF EXISTING SUBPANEL.

DRAWING KEYNOTES:

(1) SUPPLY AND INSTALL 100A–3P CIRCUIT BREAKER MATCHING EXISTING BOILER ROOM PANEL.

(2) SUPPLY AND INSTALL 4–1/C #3 AWG RW90 + GND IN 1 1/2" EMT CONDUIT.

| NO | REVISIONS | DATE |
|---|---|---|
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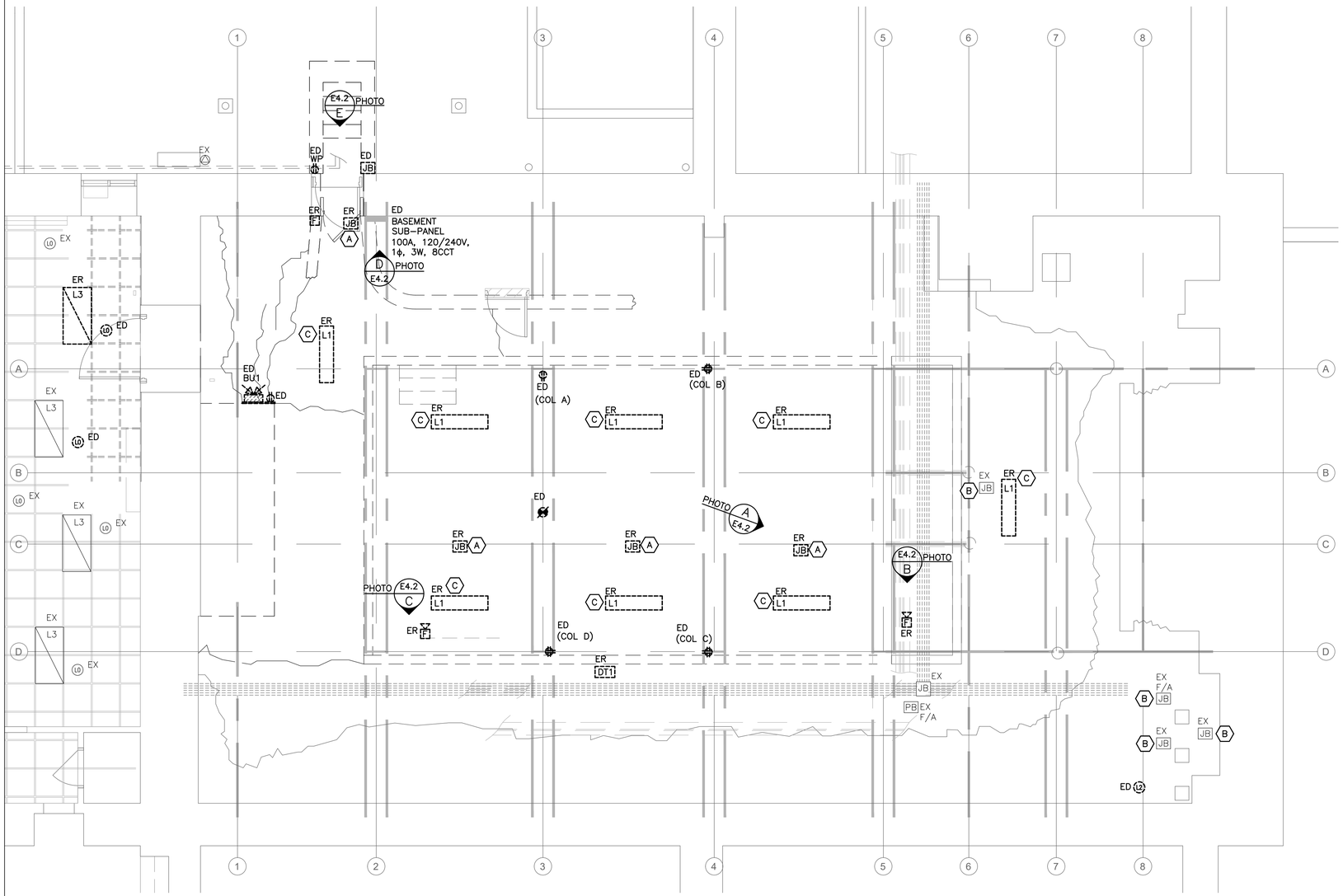
# SINGLE LINE DIAGRAM

| | |
|---|---|
| SCALE: NTS | PROJECT: ARCH PR. NO. 2019-04 ENGI. PR. NO. 20003 |
| DATE: DEC 2018 | |
| DRAWN N.K. | DRAWING E3.1 |
| CHECKED J.S. | |
| PRINT DATE | |




ELECTRICAL DEMOLITION – BASEMENT
1:50

DEMOLITION KEYNOTES:

(A) ALL EXISTING JUNCTION BOXES THAT ARE INSTALLED ON EXISTING CEILING WHERE NEW FINISHED CEILING WILL BE INSTALLED ARE TO BE RELOCATED TO AN ACCESSIBLE LOCATION ABOVE NEW FINISHED CEILING.

(B) EXISTING JUNCTION BOXES THAT ARE INSTALLED ON EXISTING CEILING WHERE NEW FINISHED CEILING WILL NOT BE INSTALLED MAY REMAIN IN SAME LOCATION. REWIRE JUNCTION BOXES AS REQUIRED.

(C) EXISTING FIXTURE TO BE REWIRED TO NEW PANEL 'Z' AS SHOWN ON NEW PLANS. DEMOLISH EXISTING BRANCH WIRING/CONDUIT. PROVIDE NEW BOXES/WIRING/CONDUIT AS REQUIRED.

GENERAL DEMOLITION NOTES:

1. THE ELECTRICAL CONTRACTOR IS FULLY RESPONSIBLE FOR VERIFYING ALL ELECTRICAL ITEMS ON SITE PRIOR TO COMMENCING WORK. IF THERE ARE ERRORS OR OMISSIONS ON THE DRAWINGS, THE CONTRACTOR WILL MODIFY THE DRAWINGS AND NOTIFY THE CONSULTANT OF ANY MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND SITE CONDITIONS.
2. THE ELECTRICAL CONTRACTOR IS FULLY RESPONSIBLE FOR REMOVING/RELOCATING ALL ELECTRICAL DEVICES/CABLES/CONDUITS ETC. IN AREAS BEING DEMOLISHED AS SHOWN ON ARCHITECTURAL AND ELECTRICAL DRAWINGS. NO ATTEMPT HAS BEEN MADE TO IDENTIFY EVERY SINGLE EXISTING ELECTRICAL DEVICE ON EXISTING DRAWINGS. THE CONTRACTOR IS TO VISIT THE SITE PRIOR TO SUBMITTING TENDER PRICE TO REVIEW WHAT IS REQUIRED WITH RESPECT TO DEMOLITION. NO EXTRAS WILL BE ALLOWED FOR NOT THOROUGHLY REVIEWING THE EXISTING SITE.
3. ELECTRICAL CONTRACTOR TO RE-ARRANGE AND RE-SUPPORT ALL EXISTING BOXES, CONDUITS AND WIRING. USE NEW BOX, CONDUITS AND WIRING AS REQUIRED TO MAKE SAFE AND CLEAN INSTALLATION TO MEET CURRENT CODE AND ESA REQUIREMENTS.
4. UNUSED CONDUITS AND WIRING IN EXISTING CEILING SPACE TO BE REMOVED. PROVIDE THE REQUIRED TESTS TO ENSURE SAFE REMOVAL AS REQUIRED.
5. FOR EXISTING PULL BOXES AND JUNCTION BOXES WITH NO COVER PLATES ABOVE EXISTING CEILINGS, THE ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL NEW COVERS TO MAKE SAFE AS REQUIRED.
6. FOR INDICATED DEVICES SHOWN TO BE DEMOLISHED, THE ELECTRICAL CONTRACTOR SHALL REMOVE ALL WIRING AND CONDUITS BACK TO SOURCE AND REWORK OR PROVIDE NEW WIRING/CONDUIT TO DEVICES THAT MAY BE FED ON THE SAME CIRCUIT AS THE DEVICE TO BE DEMOLISHED.
7. FOR INDICATED DEVICES SHOWN TO BE RELOCATED, ELECTRICAL CONTRACTOR TO REWORK OR PROVIDE NEW WIRING/CONDUIT TO REINSTALL EXISTING DEVICES AS SHOWN IN NEW PLAN.
8. ELECTRICAL CONTRACTOR SHALL COORDINATE AND VERIFY WITH THE OWNER ALL DEVICES TO BE SALVAGED, MOVED & STORED PRIOR TO DEMOLITION.

| NO | REVISIONS | DATE |
|---|---|---|
| C | ISSUED FOR TENDER | 2021-12-08 |
| B | ISSUED FOR PERMIT | 2021.06.11 |
| A | ISSUED FOR COORDINATION | 2021.06.09 |

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Diocese of St. Catharines
*Where Faith Lives*

CK ENGINEERING INC
MECHANICAL | ELECTRICAL
3390 SOUTH SERVICE ROAD, SUITE 302
BURLINGTON, ON. L7N 3J5
www.ckengs.com | info@ckengs.net | 905.631.1115

GRGURIC ARCHITECTS INCORPORATED
28 KING STREET EAST, UNIT B
STONEY CREEK, ONTARIO, L8G 1J8
Tel. 905-664-8735 Fax. 905-664-8737
Web: www.2gai.com

CATHEDRAL OF ST. CATHERINE OF ALEXANDRIA:
COLUMBARIUM RENOVATION

67 CHURCH STREET,
ST. CATHARINES, ONTARIO L2R 3C4

ELECTRICAL DEMOLITION

| | |
|---|---|
| SCALE: AS NOTED | PROJECT: ARCH PR. NO. 2019-04 ENGI. PR. NO. 20003 |
| DATE: DEC 2018 | |
| DRAWN N.K. | DRAWING E4.1 |
| CHECKED J.S. | |
| PRINT DATE | |

PHOTO A
EX JB (TYP.)
E4.1

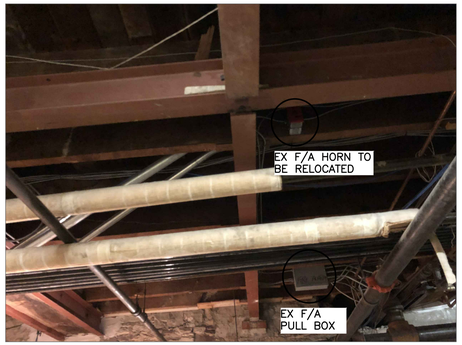


PHOTO B
EX F/A DEVICES (TYP.)
E4.1

PHOTO C
EX F/A HORN
E4.1

PHOTO D
EX SUBPANEL
E4.1

PHOTO E
EXTERIOR ENTRANCE
E4.1

| | | |
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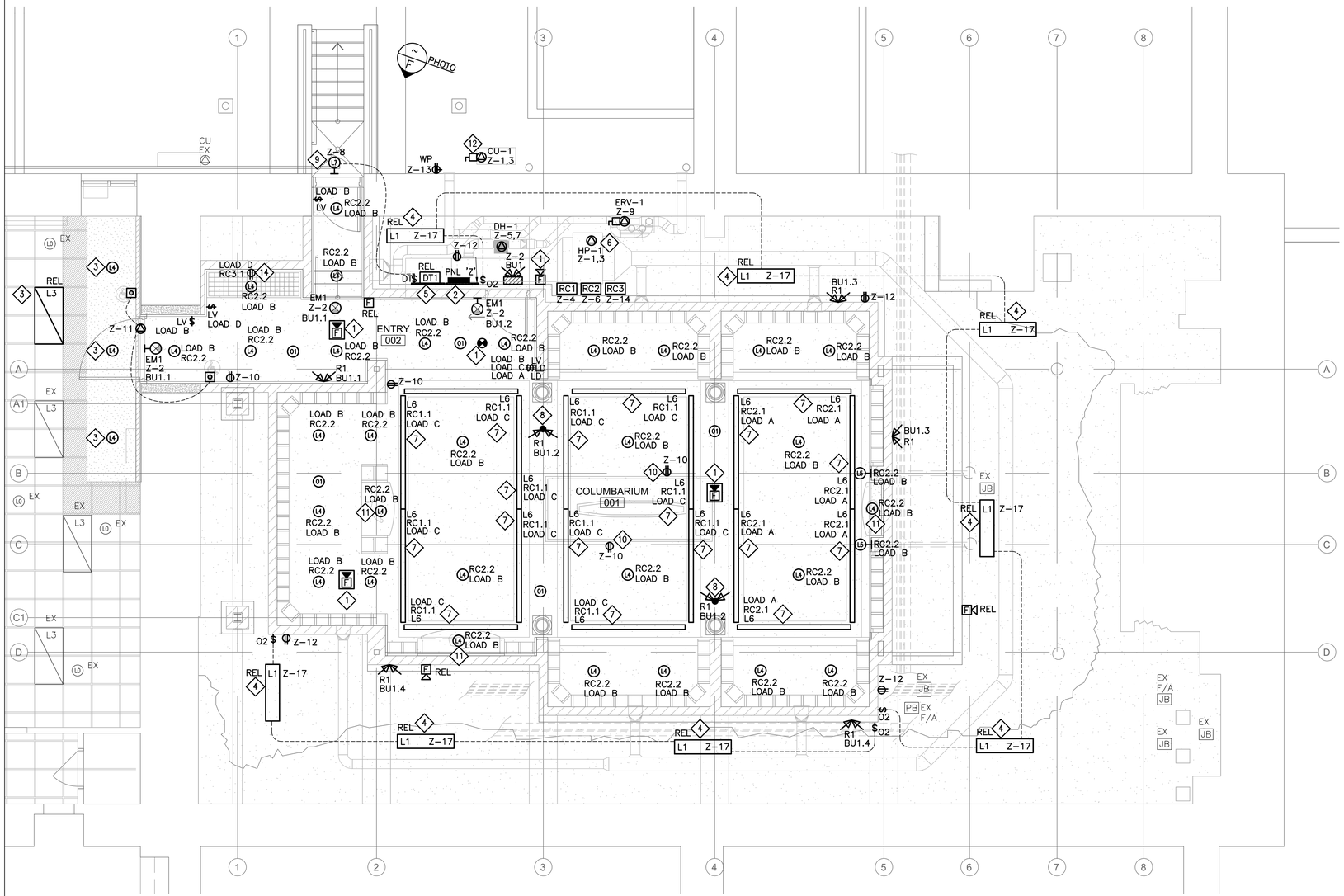
# ELECTRICAL DEMOLITION SITE PHOTOS

| | |
|---|---|
| SCALE: NTS | PROJECT: ARCH PR. NO. 2019-04 ENGI. PR. NO. 20003 |
| DATE: DEC 2018 | |
| DRAWN N.K. | DRAWING E4.2 |
| CHECKED J.S. | |
| PRINT DATE | |




NEW POWER, LIGHTING, FIRE ALARM AND SYSTEMS
1:50

GENERAL DRAWING NOTES:

1. RCX,Y
   - DENOTES ROOM CONTROLLER RELAY NUMBER
   - DENOTES ROOM CONTROLLER TAG
2. COORDINATE ALL MECHANICAL EQUIPMENT LOCATIONS WITH MECHANICAL CONTRACTOR AND MECHANICAL DRAWINGS.
3. REFER TO DRAWING E1.3 SCHEDULES AND DETAILS FOR TYPICAL LIGHTING CONTROL WIRING DIAGRAMS.

DRAWING KEYNOTES:

1. SUPPLY AND INSTALL NEW FIRE ALARM DEVICE MATCHING EXISTING SIMPLEX FIRE ALARM SYSTEM. FIRE ALARM PANEL TO BE UPGRADED AS REQUIRED FOR NEW VISUAL SIGNALING CIRCUITS. REFER TO MAIN FLOOR KEY PLAN ON DRAWING E2.1 FOR FIRE ALARM CONTROL PANEL LOCATION AND PHOTO.
2. SUPPLY AND INSTALL NEW FIRE RATED PLYWOOD BACKBOARD FOR NEW PANEL 'Z'.
3. WIRE NEW FIXTURE TO SAME EXISTING CIRCUIT AND LIGHTING CONTROL AS EXISTING 'L3' FIXTURES IN SAME ROOM. CONTRACTOR TO CONFIRM LIGHTING CIRCUIT AND LIGHTING CONTROL WILL NOT BE OVER LOADED.
4. COORDINATE LOCATION OF RELOCATED FIXTURES WITH NEW MECHANICAL DUCTS/EQUIPMENT AND ANY EXISTING PIPES/CABLES/DEVICES.
5. SUPPLY AND INSTALL NEW FIRE RATED BACKBOARD AS REQUIRED TO INSTALL NEW DEVICES AS SHOWN.
6. HP-1 POWERED FROM CU-1. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTION FOR DETAILS.
7. LIGHT FIXTURE 'L6' TO BE INSTALLED IN COVE
8. 'R1' TO BE INSTALLED UNDERSIDE OF BULKHEAD
9. INSTALL NEW EXTERIOR LIGHT FIXTURE ABOVE EXTERIOR ENTRANCE DOOR. REFER TO PHOTO F FOR APPROXIMATE LOCATION.
10. INSTALL NEW RECEPTACLE AT THE BASE OF NEW BENCH.
11. 'L4' TO BE INSTALLED ABOVE NEW ART DISPLAY. COORDINATE EXACT LOCATION WITH ARCHITECT.
12. WEATHERPROOF DISCONNECT SWITCH SUPPLIED BY EQUIPMENT MANUFACTURER. ELECTRICAL CONTRACTOR TO INSTALL.
13. SUPPLY AND INSTALL VISUAL SIGNAL CIRCUITS AS REQUIRED.
14. RECEPTACLE TO BE INSTALLED 406mm(16") AFF.

PHOTO F
EXTERIOR ENTRANCE

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NEW POWER, LIGHTING, FIRE ALARM AND SYSTEMS

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