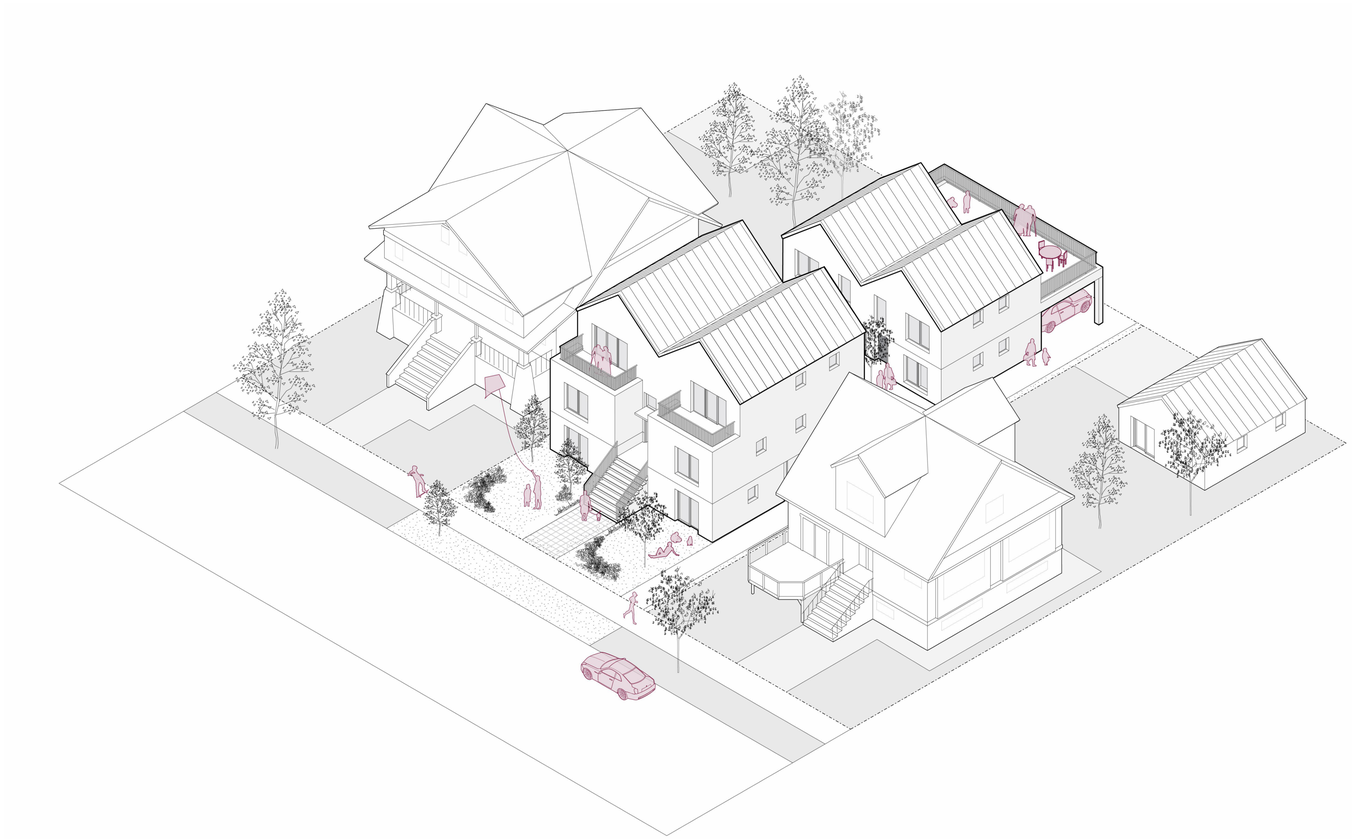
HOUSING DESIGN CATALOGUE
BC - SIXPLEX COURTYARD

Housing, Infrastructure and Communities Canada
Logement, Infrastructures et Collectivités Canada
Canada
CMHC SCHL

CMHC HOUSING DESIGN CATALOGUE
BC SIXPLEX COURTYARD

ARCHITECTURAL DRAWINGS



BUILDING DATA

BUILDING FOOTPRINT	212.9 m² / 2292 ft²
BUILDING HEIGHT	10.98 m / 36'- 0" & 8.43 m / 27' - 8"
STOREYS	3 STOREY + 2 STOREY
NUMBER OF UNITS	6

UNIT SUMMARY

UNIT 1	1 BEDROOM, 1 BATHROOM, ADAPTABLE*
UNIT 2	1 BEDROOM, 1 BATHROOM, ADAPTABLE*
UNIT 3	3 BEDROOM, 2 BATHROOM
UNIT 4	3 BEDROOM, 2 BATHROOM
UNIT 5	2 BEDROOM, 1 BATHROOM
UNIT 6	2 BEDROOM, 1 BATHROOM

ADAPTABLE*: THIS UNIT CAN BE **ADAPTED** TO AN **BCBC ACCESSIBLE** UNIT WITH *MODERATE EFFORT*, MEANING WITHOUT SIGNIFICANT STRUCTURAL OR MECHANICAL MODIFICATIONS, AS DEFINED IN THE *BRITISH COLUMBIA BUILDING CODE (BCBC) 2024.*
PLANS TITLED **FLOOR PLAN - BCBC ADAPTABLE** SHOW COMPLIANCE TO ADAPTABILITY REQUIREMENTS IN BCBC 2024 SECTION 3.8.5

ARCHITECTURAL SHEET LIST

A001	COVER SHEET
A002	EXTERIOR ASSEMBLIES SCHEDULE
A003	INTERIOR ASSEMBLIES SCHEDULE
A004	DOOR AND WINDOW SCHEDULE
A005	FIRE RATING DETAILS
A006	TYPICAL DETAILS
A007	TYPICAL DETAILS 2
A010	SITE PLAN & CODE MATRIX
A011	CODE - OPENINGS
A101a	MAIN FLOOR PLAN - FRONT BUILDING
A101b	MAIN FLOOR PLAN - FRONT BUILDING - BCBC ADAPTABLE
A101c	MAIN FLOOR PLAN - REAR BUILDING
A102a	SECOND FLOOR PLAN - FRONT BUILDING
A102c	SECOND FLOOR PLAN - REAR BUILDING
A103a	THIRD FLOOR PLAN- FRONT BUILDING
A104a	ROOF PLAN - FRONT BUILDING
A104c	ROOF PLAN - REAR BUILDING
A200	ELEVATIONS
A201	ELEVATIONS
A202	ELEVATIONS
A203	ELEVATIONS
A300	SECTIONS
A301	SECTIONS

ABBREVIATIONS

ABBREVIATIONS MAY OR MAY NOT INCLUDE PERIOD PUNCTUATION.
ABBREVIATIONS APPLY TO ARCHITECTURAL DOCUMENTS ONLY.

ARCH	ARCHITECTURAL
ASHP	AIR SOURCE HEAT PUMP
BCBC	BRITISH COLUMBIA BUILDING CODE
BF	BARRIER FREE
C/C	CENTRE TO CENTRE
CL	CENTER LINE
CIV	CIVIL
DIA	DIAMETER
DIM	DIMENSION
DWG	DRAWING
ELEC	ELECTRICAL
ELEV	ELEVATION
EQ	EQUAL
GEOTECH	GEOTECHNICAL
GWB	GYPSUM WALL BOARD
FFE	FINISH FLOOR ELEVATION
FRR	FIRE RESISTANCE RATING
FD	FLOOR DRAIN
HR	HOUR
MAX	MAXIMUM
MECH	MECHANICAL
MIN	MINIMUM
N/A	NOT APPLICABLE
NTS	NOT TO SCALE
O/C	ON CENTRE
RM	ROOM
R/O	ROUGH OPENING
RWL	RAIN WATER LEADER
SBS	STYRENE BUTADIENE STYRENE
SCH	SCHEDULE
SF	SQUARE FEET
SIM	SIMILAR
SM	SQUARE METER
SPEC	SPECIFICATION
STC	SOUND TRANSMISSION CLASS
STRUC	STRUCTURAL
TBD	TO BE DETERMINED
T/O	TOP OF
T&G	TOUNGE & GROOVE
TYP	TYPICAL
U/S	UNDERSIDE
W/C	WASHROOM

GENERAL NOTES

1. ALL STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS TO BE TAKEN OFF THE RESPECTIVE DISCIPLINE'S DOCUMENTS. NO STRUCTURAL, MECHANICAL AND/OR ELECTRICAL DESIGN INFORMATION SHALL BE INFERRED FROM THE ARCHITECTURAL DRAWINGS.
2. ALL UNDERGROUND SERVICES ARE TO BE IDENTIFIED PRIOR TO THE COMMENCEMENT OF WORK AND EXCAVATIONS.
3. ALL GRADES AND SURFACES ADJACENT THE BUILDING EXTERIOR SHALL SLOPE A MINIMUM OF 2% AWAY FROM THE BUILDING, UNLESS OTHERWISE NOTED.

ANNOTATION LEGEND

ASSEMBLY TAGS

- W# — EXTERIOR WALL TAG
- P# — INTERIOR PARTITION TAG
- R# — ROOF TAG
- F# — FLOOR TAG

(REFER TO ASSEMBLIES SCHEDULES)

TAGS

- D## — DOOR TAG *REFER TO DOOR SCHEDULE*
- W## / ### AFF / ### — WINDOW TAG *REFER TO WINDOW SCHEDULE*
- XYZ-# — MATERIAL TAG
- ## — KEYNOTES *REFER TO SHEET SPECIFIC KEYNOTE SCHEDULE*

DRAWING TAGS

- 1 / A101 (SIM) — DETAIL NUMBER / DRAWING SHEET NUMBER
- 1 / A101 (SIM) — BUILDING SECTION NUMBER / DRAWING SHEET NUMBER
- 1 / A101 / 1 — EXTERIOR ELEVATION NUMBER / DRAWING SHEET NUMBER
- 0 — GRID BUBBLE
- SPOT ELEVATION (ABOVE FINISH FLOOR)
- UNIT # — ROOM TAG
- CENTRELINE

CMHC SCHL

DISCLAIMER

This drawing was created for use solely as part of the CMHC Housing Design Catalogue. It is a sample of standardized housing design, reflecting general design intention only and does not incorporate any elements or other information specific to any location or project. This design is provided for illustrative purposes only and must not be used for construction or permitting purposes. In using this design, you are responsible for your compliance with the Terms and Conditions, including but not limited to engaging the services of a Qualified Professional.

NO.	DATE	DESCRIPTION
1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

COVER SHEET

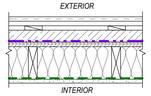
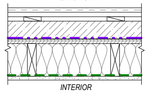
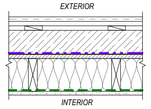
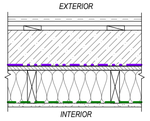
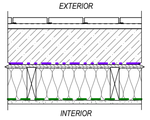
BC Sixplex Courtyard

PROJECT NO: 241058
SCALE: As indicated

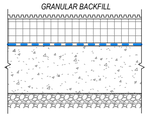
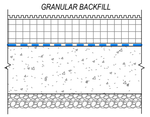
SHEET NO:

A001

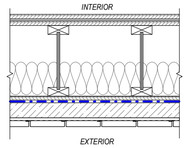
EW - EXTERIOR WALL ASSEMBLIES

TYPE	DIAGRAM	DESCRIPTION	PERFORMANCE
W1.1		**2x6 WOOD STUD W/ EXTERIOR INSULATION** 3/4"/19mm VERTICAL LIGHTWEIGHT CLADDING PLACEHOLDER 3/4"/19mm HORIZONTAL TREATED PLY STRAPPING @ 16" C/C 3/4" / 19mm VERTICAL TREATED PLY STRAPPING @ 16" C/C 2"/51mm SEMI-RIGID INSULATION AIR BARRIER, VAPOUR PERMEABLE 2x6/38x140mm MIN 3/4" PLYWOOD SHEATHING (REF ALSO STRUC) WOOD STUD FRAMING, SPACING PER STRUCTURAL C/W IN-FILL INSULATION VAPOUR CONTROL BARRIER 5/8"/16mm TYPE "X" GYPSUM WALL BOARD	R_e EFFECTIVE 24.1 R_d EFFECTIVE 4.24 ASSUMED INSULATION R-VALUES ARE LISTED IN ACCORDANCE TO BCBC SUBSECTION 9.35.5. FURTHER CALCULATIONS ARE REQUIRED IF CONFORMING TO SUBSECTION 10.2.3.4
W1.2		**2x6 WOOD STUD W/ EXTERIOR INSULATION** 3/4"/19mm VERTICAL LIGHTWEIGHT CLADDING PLACEHOLDER 3/4"/19mm HORIZONTAL TREATED PLY STRAPPING @ 16" C/C 3/4"/19mm VERTICAL TREATED PLY STRAPPING @ 16" C/C 3"/76mm SEMI-RIGID INSULATION AIR BARRIER, VAPOUR PERMEABLE 2x6/38x140mm MIN 3/4" PLYWOOD SHEATHING (REF ALSO STRUC) WOOD STUD FRAMING, SPACING PER STRUCTURAL C/W IN-FILL INSULATION VAPOUR CONTROL BARRIER 5/8"/16mm TYPE "X" GYPSUM WALL BOARD	R_e EFFECTIVE 32.1 R_d EFFECTIVE 5.65 1 HR FRR *EW1a PER 9.10.3.1-A OR OTHER ASSEMBLY COMPLIANT TO REQUIRED RATING PER CODE MATRIX
W1.3		**2x6 WOOD STUD W/ EXTERIOR INSULATION** 3/4"/19mm VERTICAL LIGHTWEIGHT CLADDING PLACEHOLDER 3/4"/19mm HORIZONTAL TREATED PLY STRAPPING @ 16" C/C 3/4"/19mm VERTICAL TREATED PLY STRAPPING @ 16" C/C 4"/102mm SEMI-RIGID INSULATION AIR BARRIER, VAPOUR PERMEABLE 2x6/38x140mm MIN 3/4" PLYWOOD SHEATHING (REF ALSO STRUC) WOOD STUD FRAMING, SPACING PER STRUCTURAL C/W IN-FILL INSULATION VAPOUR CONTROL BARRIER 5/8"/16mm TYPE "X" GYPSUM WALL BOARD	R_e EFFECTIVE 38.1 R_d EFFECTIVE 6.71 1 HR FRR
W1.4		**2x6 WOOD STUD W/ EXTERIOR INSULATION** 3/4"/19mm VERTICAL LIGHTWEIGHT CLADDING PLACEHOLDER 3/4"/19mm HORIZONTAL TREATED PLY STRAPPING @ 16" C/C 3/4"/19mm VERTICAL TREATED PLY STRAPPING @ 16" C/C 6"/152mm SEMI-RIGID INSULATION AIR BARRIER, VAPOUR PERMEABLE 2x6/38x140mm MIN 3/4" PLYWOOD SHEATHING (REF ALSO STRUC) WOOD STUD FRAMING, SPACING PER STRUCTURAL C/W IN-FILL INSULATION VAPOUR CONTROL BARRIER 5/8"/16mm TYPE "X" GYPSUM WALL BOARD	R_e EFFECTIVE 40.1 R_d EFFECTIVE 7.06 1 HR FRR
W2		**NON- COMBUSTIBLE EXTERIOR CLADDING** 1"/25mm VERTICAL LIGHTWEIGHT CLADDING PLACEHOLDER 7/8"/22mm HORIZONTAL METAL FURRING @ 16" C/C VAR INSULATION PER EW1, THICKNESS AS REQ'D FOR CLIMATE ZONE w// AIR BARRIER, SHEATHING, FRAMING, INSULATION, VAPOUR BARRIER AND TYPE X GWB PER EW1	R_e EFFECTIVE MATCH W1.X R_d EFFECTIVE MATCH W1.X 1 HR FRR

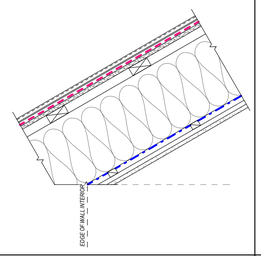
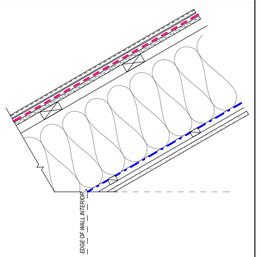
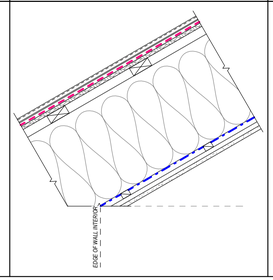
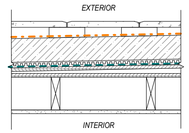
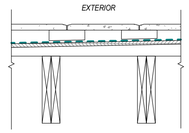
FW - FOUNDATION WALL ASSEMBLIES

TYPE	DIAGRAM	DESCRIPTION	PERFORMANCE
FW1.1		**FOUNDATION WALL** 4"/102mm DRAINAGE AND PROTECTION BOARD RIGID INSULATION (R-20.0) FOUNDATION DAMPPROOFING CAST-IN-PLACE CONCRETE (REFER TO STRUCTURAL)	R_e EFFECTIVE 20.0 R_d EFFECTIVE 3.52 ASSUMED INSULATION R-VALUES ARE LISTED IN ACCORDANCE TO BCBC SUBSECTION 9.35.5. FURTHER CALCULATIONS ARE REQUIRED IF CONFORMING TO SUBSECTION 10.2.3.4
FW1.2		**FOUNDATION WALL** 6"/152mm DRAINAGE AND PROTECTION BOARD RIGID INSULATION (R-30.0) FOUNDATION DAMPPROOFING CAST-IN-PLACE CONCRETE (REFER TO STRUCTURAL)	R_e EFFECTIVE 30.0 R_d EFFECTIVE 5.28

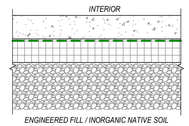
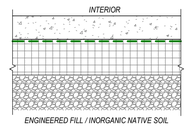
S - SOFFIT ASSEMBLIES

TYPE	DIAGRAM	DESCRIPTION	PERFORMANCE
S2		**SOFFIT, SAME UNIT** FLOOR FINISH W/ UNDERLAY DESIGN THICKNESS OF FLOOR FINISH 1 1/8" 3/4"/19mm T&G SUBFLOOR PLYWOOD PANEL 11 7/8"/302mm (GLUED - ACTS AS VAPOUR CONTROL BARRIER) PRE-ENG WOOD JOISTS @ 24" C/C U.N.O. REFER TO STRUCTURAL 5 1/2" IN-FILL INSULATION 5/8"/16mm PLYWOOD SHEATHING AIR BARRIER 3"/76mm SEMI-RIGID INSULATION 1/2"/13mm RESILIENT CHANNEL PREFINISHED LIGHTWEIGHT CLADDING	R_e EFFECTIVE 34.6 R_d EFFECTIVE 6.10 ASSUMED INSULATION R-VALUES ARE LISTED IN ACCORDANCE TO BCBC SUBSECTION 9.35.5. FURTHER CALCULATIONS ARE REQUIRED IF CONFORMING TO SUBSECTION 10.2.3.4

R - ROOF ASSEMBLIES

TYPE	DIAGRAM	DESCRIPTION	PERFORMANCE
R1.1		**VAULTED ROOF** 3/4"/19mm ROOFING PLACEHOLDER IMPERMEABLE ROOFING UNDERLAYMENT 1/2"/13mm PLYWOOD SHEATHING 1 1/2"/38mm WOOD STRAPPING AT MAX 24" C/C 11 7/8"/302mm PRE-ENG WOOD JOISTS OR TRUSSES @ MAX 24" C/C - REFER TO STRUCTURAL C/W 11" IN-FILL INSULATION (3" SPACE BETWEEN INSULATION AND U/S PLY) POLY AIR VAPOUR BARRIER 3/4"/19mm HORIZONTAL STRAPPING (SERVICE CHASE) 3/4"/19mm VERTICAL STRAPPING (SERVICE CHASE) 5/8"/16mm GYPSUM BOARD CEILING	R_e EFFECTIVE 36.5 R_d EFFECTIVE 6.43 ASSUMED INSULATION R-VALUES ARE LISTED IN ACCORDANCE TO BCBC SUBSECTION 9.35.5. FURTHER CALCULATIONS ARE REQUIRED IF CONFORMING TO SUBSECTION 10.2.3.4
R1.2		**VAULTED ROOF** 3/4"/19mm ROOFING PLACEHOLDER IMPERMEABLE ROOFING UNDERLAYMENT 1/2"/13mm PLYWOOD SHEATHING 1 1/2"/38mm WOOD STRAPPING AT MAX 24" C/C 14"/356mm PRE-ENG WOOD JOISTS OR TRUSSES @ MAX 24" C/C - REFER TO STRUCTURAL C/W 13" IN-FILL INSULATION (2.5" SPACE BETWEEN INSULATION AND U/S PLY) POLY AIR VAPOUR BARRIER 3/4"/19mm HORIZONTAL STRAPPING (SERVICE CHASE) 3/4"/19mm VERTICAL STRAPPING (SERVICE CHASE) 5/8"/16mm GYPSUM BOARD CEILING	R_e EFFECTIVE 43.2 R_d EFFECTIVE 7.61
R1.3		**VAULTED ROOF** 3/4"/19mm ROOFING PLACEHOLDER IMPERMEABLE ROOFING UNDERLAYMENT 1/2"/13mm PLYWOOD SHEATHING 1 1/2"/38mm WOOD STRAPPING AT MAX 24" C/C 16"/406mm PRE-ENG WOOD JOISTS OR TRUSSES @ MAX 24" C/C - REFER TO STRUCTURAL C/W 15" IN-FILL INSULATION (2.5" SPACE BETWEEN INSULATION AND U/S PLY) POLY AIR VAPOUR BARRIER 3/4"/19mm HORIZONTAL STRAPPING (SERVICE CHASE) 3/4"/19mm VERTICAL STRAPPING (SERVICE CHASE) 5/8"/16mm GYPSUM BOARD CEILING	R_e EFFECTIVE 49.5 R_d EFFECTIVE 8.72
R2		**TERRACE / DECK ROOF ABOVE SAME UNIT** 3/4"/19mm DECK FINISH VAR EPDM OR COMPOSITE SHIMS UV STABLE FILTER FABRIC 4"/102mm XPS INSULATION DRAINAGE MAT 5/8"/16mm SLOPED PLYWOOD DECK MIN 2% WOOD TAPERS VAR WOOD JOISTS @ MAX 24" C/C MIN DEPTH 5 1/2", REFER TO STRUCTURAL 5/8"/16mm GYPSUM BOARD	R_e EFFECTIVE 23.2 R_d EFFECTIVE 4.09 ASSUMED INSULATION R-VALUES ARE LISTED IN ACCORDANCE TO BCBC SUBSECTION 9.35.5. FURTHER CALCULATIONS ARE REQUIRED IF CONFORMING TO SUBSECTION 10.2.3.4
R4		**BALCONY ABOVE CARPORT** 3/4"/19mm DECK FINISH VAR EPDM OR COMPOSITE SHIMS 2-PLY SBS ROOFING MEMBRANE 5/8"/16mm SLOPED WOOD TAPERS MIN 2% VAR DOUBLED WOOD JOISTS @ MAX 16" C/C REFER TO STRUCTURAL	

SOG - SLAB ON GRADE ASSEMBLIES

TYPE	DIAGRAM	DESCRIPTION	PERFORMANCE
SOG1.1		**SLAB ON GRADE** VAR CAST-IN-PLACE CONCRETE SLAB-ON-GRADE, W/ STEEL REINFORCEMENT, REFER TO STRUC VAPOUR CONTROL + SOIL GAS BARRIER - AIR TIGHT VAR 4"/102mm RIGID INSULATION (R-20.0) VAR COMPACTED, FREE-DRAINING GRANULAR BASE. ENSURE BASE CONTAINS LESS THAN 10% MATERIAL THAT WOULD PASS THROUGH A 4mm SIEVE.	R_e EFFECTIVE 20.0 R_d EFFECTIVE 3.52 ASSUMED INSULATION R-VALUES ARE LISTED IN ACCORDANCE TO BCBC SUBSECTION 9.35.5. FURTHER CALCULATIONS ARE REQUIRED IF CONFORMING TO SUBSECTION 10.2.3.4
SOG1.1		**SLAB ON GRADE** VAR CAST-IN-PLACE CONCRETE SLAB-ON-GRADE, W/ STEEL REINFORCEMENT, REFER TO STRUC VAPOUR CONTROL + SOIL GAS BARRIER - AIR TIGHT VAR 6"/152mm RIGID INSULATION (R-30.0) VAR COMPACTED, FREE-DRAINING GRANULAR BASE. ENSURE BASE CONTAINS LESS THAN 10% MATERIAL THAT WOULD PASS THROUGH A 4mm SIEVE.	R_e EFFECTIVE 30.0 R_d EFFECTIVE 5.28

ASSEMBLY GENERAL NOTES

1. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE MEASURED AS FOLLOWS:
   A. TO CENTRE OF STUD WALL ASSEMBLIES
   B. TO EXTERIOR FACE OF CONCRETE AND CMU
   C. TO EXTERIOR FACE OF EXTERIOR SHEATHING
   D. TO EXTERIOR FACE OF GLASS.
2. REFER TO STRUCTURAL DRAWINGS AND DOCUMENTATION FOR STRUCTURAL DESIGN PARAMETERS INCLUDING BRACE WALLS, STAIRS, CONCRETE ETC.
3. UNLESS OTHERWISE NOTED, ALL PARTITION (INCLUDING BUT NOT LIMITED TO ALL COMPONENTS THAT MAKE UP THE PARTITION) AND FURRING ASSEMBLIES ARE TO EXTEND FROM STRUCTURAL DECK/SLAB TO U/S OF STRUCTURAL DECK/SLAB ABOVE.
4. IN ADDITION TO THIS PAGE, REFER ALSO TO FIRE SEPARATION DRAWINGS FOR REQUIRED FIRE SEPARATION RATINGS. ENSURE THE CONTINUITY OF ALL FIRE SEPARATIONS AS REQUIRED AND PROVIDE ULC LISTED FIRESTOPPING SYSTEMS FOR ALL CONDITIONS.
5. LOADBEARING WALLS AND OTHER ELEMENTS SHALL HAVE THE SAME FIRE RATING AS THE FLOOR ASSEMBLY IT IS SUPPORTING.
6. STEEL SUPPORTING A FIRE RATED ASSEMBLY SHALL BE PROTECTED TO MATCH THE RATING OF THE SUPPORTED ASSEMBLY.
7. PROVIDE TILE BACKER IN LIEU OF GYPSUM BOARD AT ALL ASSEMBLIES TO RECEIVE TILE FINISHES, REFER TO FINISH PLANS. REFER TO SPECIFICATIONS. ENSURE TILE BACKER IS TYPE X GYPSUM AT REQUIRED FIRE RESISTANCE RATED ASSEMBLIES.
8. IN AREAS WITH HIGH VAPOUR CONTENT (INCLUDING BUT NOT LIMITED TO BATHROOMS) PROVIDE MOISTURE AND MOULD-RESISTANT GYPSUM BOARD IN LIEU OF REGULAR GYPSUM BOARD. ENSURE THAT THE MOISTURE AND MOULD-RESISTANT GYPSUM BOARD MEETS ALL THE FIRE AND ACOUSTIC RATINGS REFERENCED IN THE ASSEMBLY SCHEDULE.
9. COORDINATE ACCESS PANELS LOCATED WITHIN SUSPENDED GYPSUM BOARD CEILING ASSEMBLIES TO BE PAINTED OUT TO MATCH THE SURROUNDING CEILING FINISH. PROVIDE ULC-LISTED ACCESS PANEL WHERE PANEL IS LOCATED IN A RATED CEILING. IN ADDITION TO THIS PAGE, REFER ALSO TO FIRE SEPARATION DRAWINGS.
10. UNLESS NOTED OTHERWISE, ASSEMBLIES ABOVE OR BELOW DOORS, WINDOWS, EXTERIOR OPENINGS AND INTERIOR SCREENS ARE TO BE THE SAME AS THE TYPE DENOTED ON EITHER SIDE
11. PROVIDE 19mm FIRE RATED PLYWOOD BLOCKING AND STUD REINFORCING IN WALLS FOR INSTALLATION OF ALL ELEMENTS NEEDING BLOCKING/REINFORCEMENT, INCLUDING BUT NOT LIMITED TO ALL FIXTURES, PLUMBING ACCESSORIES, ADULT CHANGE TABLES, MILLWORK, EQUIPMENT, ELECTRIC PANELS, ROOF ACCESS LADDER ECT. DESIGN/BUILD ALL BLOCKING AND STUD REINFORCING AS REQUIRED. FULLY COORDINATE ALL ADDITIONAL SUPPORT REQUIRED FOR ANCHORAGE OF MECHANICAL EQUIPMENT OR DUCTS AND ELECTRICAL FIXTURES.
12. GRAB BARS SHALL BE CAPABLE OF RESISTING A LOAD OF NO LESS THAN 1.3kN.
13. PROVIDE ALL PLUMBING CHASES AND MECHANICAL SHAFTS IN ADDITION TO ASSEMBLIES. COORDINATE REQUIRED CRITICAL DIMENSIONS WHEN LAYING OUT WALLS.
14. IF FLOOR DRAINS ARE LOCATED IN A ROOM, COORDINATE SLOPING ENTIRE FLOOR TOWARD THE DRAIN. THERE WILL BE NO FLAT FLOOR SURFACE IN THE ROOM WITH A REQUIRED FLOOR DRAIN WHERE WATER CAN PUDDLE. FLOOR TO SLOPE A MINIMUM OF 2%. REFER TO THE MECHANICAL DOCUMENTS TO DETERMINE WHICH ROOMS HAVE FLOOR DRAINS. REPAIR ANY FLOORS THAT PUDDLE WATER AND/ OR DO NOT DIRECT WATER TO THE PROPER FLOOR DRAIN.
15. REPAIR EXISTING EXTERIOR WALL VAPOUR OR AIR BARRIERS DISTURBED BY THE WORK.
16. COORDINATE MINIMUM STUD SPACE REQUIRED TO SUPPORT EQUIPMENT AS NOTED ON ARCHITECTURAL AND ENGINEERING DRAWINGS.
17. ISOLATE ALL MECHANICAL PIPES, DUCTS, AND EQUIPMENT FROM INTERIOR PARTITIONS TO AVOID ACOUSTIC NOISE TRANSFER.
18. MAINTAIN CONTINUITY OF BUILDING ENVELOPE AIR AND AIR/VAPOUR BARRIER AT TRANSITIONS AND PENETRATIONS.
19. COORDINATE VERTICAL SERVICE SPACES THAT DO NOT EXTEND THROUGH THE ROOF AND/OR DO NOT TERMINATE AT HORIZONTAL FIRE RATED ASSEMBLY (ROOF, FLOOR, MEZZANINE, ETC.), TO BE ENCLOSED AT THE TOP AND/OR BOTTOM WITH A ULC CONSTRUCTION ASSEMBLY HAVING A FIRE RESISTANCE RATING NOT LESS THAN THAT REQUIRED FOR THE VERTICAL SERVICE SPACE WALLS.
20. ALL ROOFS, GUTTERS AND TROUGHS HAVE POSITIVE SLOPE TO DRAIN.
21. ALL CAP FLASHINGS SLOPE INWARDS TOWARDS ROOF DECKS.
22. PROVIDE CONTINUOUS DAMPROOFING TO FULL DEPTH OF PERIMETER FOOTINGS TO FULL PERIMETER OF BUILDING.
23. PROVIDE BUG SCREEN AT ALL OPENINGS GREATER THAN 5MM IN THE NARROWEST DIRECTION IN ALL EXTERIOR WALL ASSEMBLIES.
24. PROVIDE PHYSICAL BARRIER OR SPATIAL SEPARATION BETWEEN DISSIMILAR METALS AS REQUIRED TO PREVENT GALVANIC CORROSION.
25. AIR BARRIER MATERIALS FOR SLABS-ON-GRADE SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH 9.25.3.6.
26. PROVIDE A BOND BREAKING MATERIAL BETWEEN FLOOR SLABS AND FOOTINGS AND ROCKS.
27. ENDS OF WOOD MEMBERS FRAMING INTO CONCRETE SHALL BE TREATED TO PREVENT DECAY WHERE THE BOTTOM MEMBER IS AT OR BELOW GROUND LEVEL.
28. WOOD FRAMING MEMBERS WITHIN 6" (150mm) OF GROUND, THAT ARE NOT PRESSURE TREATED WITH A WOOD PRESERVATIVE AND THAT ARE SUPPORTED ON CONCRETE IN CONTACT WITH THE GROUND, SHALL BE SEPARATED FROM THE CONCRETE BY NO LESS THAN 0.05mm POLYETHLENE FILM.
29. CONFIRM SLOPES OF ROOFING CLADDING COMPLY WITH MANUFACTURER REQUIREMENTS.
30. REFER TO 9.27.5.4. FOR REQUIRED SPACING OF FASTENERS FOR CLADDING.
31. PROVIDE WEATHERPROOF ENCLOSURES FOR EXTERIOR DEVICES AS REQUIRED.

ASSEMBLY MATRIX

	EXTERIOR WALL	ROOF	SLAB ON GRADE	FOUNDATION WALL	GLAZING
CZ4	FRONT & REAR: W1.1 / W2.1	FRONT & REAR: R1.1	FRONT & REAR: SOG1.1	FRONT & REAR: FW1.1	FRONT & REAR: DOUBLE
CZ5	FRONT & REAR: W1.2 / W2.2	FRONT: R1.1 REAR: R1.2	FRONT & REAR: SOG1.1	FRONT & REAR: FW1.2	FRONT & REAR: TRIPLE
CZ6	FRONT: W1.3 / W2.3 REAR: W1.4 / W2.4	FRONT: R1.2 REAR: R1.3	FRONT: SOG1.1 REAR: SOG1.2	FRONT: FW1.1 REAR: FW1.2	FRONT & REAR: TRIPLE

NOTES:
- EXTERIOR CLADDING AND/OR WALL CONSTRUCTION SHALL BE NON-COMBUSTIBLE WHERE REQUIRED
- SEE "BC ENERGY MODELLING GUIDELINE FOR MORE INFORMATION REGARDING ASSUMED MODELLING PARAMETERS AND NEXT STEPS FOR COMPLIANCE TO APPLICABLE CODES AND STANDARDS
- ASSUMED INSULATION R-VALUES ARE LISTED IN ACCORDANCE TO BCBC SUBSECTION 9.35.5. FURTHER CALCULATIONS ARE REQUIRED IF CONFORMING TO SUBSECTION 10.2.3.4. SEE USER GUIDE AND MATERIAL GUIDE FOR MORE INFORMATION ON PRODUCT SELECTION FOR ASSEMBLIES THAT ACHIEVE REQUIRED PERFORMANCE TO APPLICABLE CODES AND STANDARDS.
- R_e = hr.ft².°F/BTU
- R_d = m².K/W

CMHC SCHL

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MEMBRANE LEGEND

- AIR BARRIER, VAPOUR PERMEABLE
- AIR BARRIER, NON-VAPOUR PERMEABLE
- UV STABLE FILTER FABRIC
- THROUGH-WALL FLASHING
- VAPOUR CONTROL BARRIER
- FOUNDATION DAMP PROOFING
- PRE-FIN METAL FLASHING
- SBS ROOFING MEMBRANE
- IMPERMEABLE ROOFING UNDERLAY

INSULATION LEGEND

- SEMI-RIGID INSULATION
- RIGID INSULATION 1
- RIGID INSULATION 2, HIGH DENSITY
- SPRAY FOAM
- STUD CAVITY IN-FILL INSULATION

NO.	DATE	DESCRIPTION
1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

EXTERIOR ASSEMBLIES SCHEDULE

BC Sixplex Courtyard

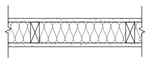
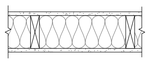
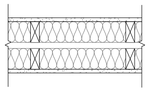
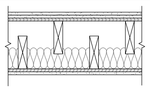
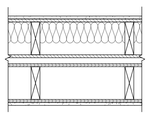
PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

A002

P - INTERIOR PARTITIONS AND FURRING ASSEMBLIES

TYPE	DIAGRAM	DESCRIPTION	PERFORMANCE
P1		**2x4 INTERIOR PARTITION** 5/8"/16mm GYPSUM WALL BOARD 2x4/38x89mm WOOD STUD FRAMING @ 16" C/C REFER ALSO TO STRUCTURAL 5/8"/16mm GYPSUM WALL BOARD	FRR 1HR STC 32 ASSEMBLY W1d FROM BCBC 9.10.3.1.-A
P2		**2x4 INTERIOR PARTITION (ACOUSTIC)** 5/8"/16mm TYPE X GYPSUM WALL BOARD 2x4/38x89mm WOOD STUD FRAMING @ 16" C/C REFER ALSO TO STRUCTURAL C/W 3 1/2" MW ACOUSTIC BATT 5/8"/16mm TYPE X GYPSUM WALL BOARD	FRR 1HR STC 36 ASSEMBLY W1a FROM BCBC 9.10.3.1.-A
P3		**2x6 INTERIOR PARTITION (SERVICE WALL)** 5/8"/16mm TYPE X GYPSUM WALL BOARD 2x6/38x140mm WOOD STUD FRAMING @ 16" C/C REFER ALSO TO STRUCTURAL C/W 5 1/2" MW ACOUSTIC BATT 5/8"/16mm TYPE X GYPSUM WALL BOARD	FRR 1HR STC 36 ASSEMBLY W1a FROM BCBC 9.10.3.1.-A
P4		**DEMISING WALL - 1 hr FRR** 5/8"/16mm TYPE 'X' GYPSUM BOARD 2x4/38x89mm WOOD STUD FRAMING @ 16" C/C REFER ALSO TO STRUCTURAL C/W 3 1/2" MW ACOUSTIC BATT 1"/25mm AIR SPACE 2x4/38x89mm WOOD STUD FRAMING @ 16" C/C C/W 3 1/2" MW ACOUSTIC BATT 5/8"/16mm TYPE 'X' GYPSUM BOARD	FRR 1HR STC 57 ASSEMBLY W13a FROM BCBC 9.10.3.1.-A
P5		**2x6 INTERIOR SHEAR WALL** 5/8"/16mm 2X TYPE 'X' GYPSUM WALL BOARD 1/2"/13mm PLYWOOD 2x6/38x140mm STAGGERED 2"X6" WOOD STUD FRAMING @ 16" C/C REFER ALSO TO STRUCTURAL C/W 3 1/2" MW ACOUSTIC BATT 1/2"/13mm PLYWOOD 5/8"/16mm 1X TYPE 'X' GYPSUM WALL BOARD	FRR 1HR STC 55 ASSEMBLY W9b FROM BCBC 9.10.3.1.-A
P6		**2-2x6 INTERIOR SHEAR WALL** 1/2"/13mm TYPE 'X' GYPSUM WALL BOARD 1/2"/13mm PLYWOOD 2x6/38x140mm 2"X6" WOOD STUD FRAMING @ 16" C/C REFER ALSO TO STRUCTURAL C/W 3 1/2" MW ACOUSTIC BATT 1/2"/13mm PLYWOOD 1"/25mm AIR GAP 1/2"/13mm PLYWOOD 2x6/38x140mm 2"X6" WOOD STUD FRAMING @ 16" C/C REFER ALSO TO STRUCTURAL 1/2"/13mm PLYWOOD 1/2"/13mm TYPE 'X' GYPSUM WALL BOARD	FRR 1HR STC 54 ASSEMBLY W13c FROM BCBC 9.10.3.1.-A

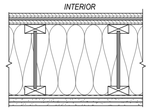
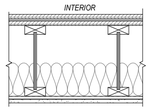
REF ST: 2 SW1-A

TYPE EFFECTED:
ROW 02, 4PLEX 2, 6PLEX 01

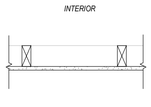
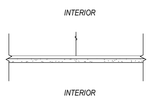
REF ST: 2 SW2-A

TYPE EFFECTED:
ROW 1, 4 PLEX 1, 4 PLEX 2

F - FLOOR ASSEMBLIES

TYPE	DIAGRAM	DESCRIPTION	PERFORMANCE
F1		**FLOOR BETWEEN UNITS** FLOOR FINISH w/ UNDERLAY DESIGN THICKNESS OF FLOOR FINISH 1 1/8" 3/4"/19mm T&G SUBFLOOR PLYWOOD PANEL PER STRUCTURAL 11 7/8"/302mm WOOD JOISTS @ 16" C/C REFER TO STRUCTURAL C/W 11 1/4" UNFACED FIBERGLASS BATT INSULATION 1/2"/13mm RESILIENT METAL CHANNEL @ MAX 24" C/C 5/8"/16mm GYPSUM WALL BOARD, TYPE X 5/8"/16mm GYPSUM WALL BOARD, TYPE X	FRR 1HR STC 54 ASSEMBLY F9d FROM BCBC 9.10.3.1.-B
F2		**FLOOR, SAME UNIT** FLOOR FINISH w/ UNDERLAY DESIGN THICKNESS OF FLOOR FINISH 1 1/8" 3/4"/19mm T&G SUBFLOOR PLYWOOD PANEL PER STRUCTURAL WOOD JOISTS @ 16" C/C REFER TO STRUCTURAL C/W 5 1/2" UNFACED FIBERGLASS BATT INSULATION 1/2"/13mm RESILIENT METAL CHANNEL @ MAX 24" C/C 5/8"/16mm GYPSUM WALL BOARD	FRR N/A STC 54

C - CEILING ASSEMBLIES

TYPE	DIAGRAM	DESCRIPTION	PERFORMANCE
C1		**DROPPED CEILING / BULKHEAD, FRAMED** 2"x4"/38mm x 89mm 2x4 WOOD FRAMING 5/8"/16mm GYPSUM WALL BOARD	FRR N/A STC N/A
C2		**DROPPED CEILING, GWB ON T-BAR** 5/8"/16mm GYPSUM WALL BOARD	FRR N/A STC N/A

ASSEMBLY GENERAL NOTES

1. THE DESCRIPTION OF THE ASSEMBLIES NOTED IN THE DRAWINGS ARE NOTED "AS BASIS OF DESIGN" AND MAY NOT REPRESENT THE FULL CRITERIA AS DEFINED BY THE TESTING AUTHORITIES.
2. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE MEASURED AS FOLLOWS:
   A. TO CENTRE OF STUD WALL ASSEMBLIES
   B. TO EXTERIOR FACE OF CONCRETE AND CMU
   C. TO EXTERIOR FACE OF EXTERIOR SHEATHING
   D. TO EXTERIOR FACE OF GLASS.
3. REFER TO STRUCTURAL DRAWINGS AND DOCUMENTATION FOR STRUCTURAL DESIGN PARAMETERS INCLUDING BRACE WALLS, STAIRS, CONCRETE ETC.
4. UNLESS OTHERWISE NOTED, ALL PARTITION (INCLUDING BUT NOT LIMITED TO ALL COMPONENTS THAT MAKE UP THE PARTITION) AND FURRING ASSEMBLIES ARE TO EXTEND FROM STRUCTURAL DECK/SLAB TO U/S OF STRUCTURAL DECK/SLAB ABOVE.
5. IN ADDITION TO THIS PAGE, REFER ALSO TO FIRE SEPARATION DRAWINGS FOR REQUIRED FIRE SEPARATION RATINGS. ENSURE THE CONTINUITY OF ALL FIRE SEPARATIONS AS REQUIRED AND PROVIDE ULC LISTED FIRESTOPPING SYSTEMS FOR ALL CONDITIONS.
6. LOADBEARING WALLS AND OTHER ELEMENTS SHALL HAVE THE SAME FIRE RATING AS THE FLOOR ASSEMBLY IT IS SUPPORTING.
7. ALL FIRE SEPARATIONS SHALL BE CONSTRUCTED AS A CONTINUOUS BARRIER AGAINST THE SPREAD OF FIRE AND SHALL RETARD THE PASSAGE OF SMOKE PER 9.10.9.2.
8. PROVIDE ULC-LISTED FIRESTOP SYSTEMS AS REQUIRED FOR ALL BUILDING SERVICE PENETRATIONS THROUGH RATED ASSEMBLIES AND TO ENSURE THE CONTINUITY OF RATED ASSEMBLIES. COORDINATE WITH MECHANICAL AND ELECTRICAL CONTRACT DOCUMENTS.
9. WHERE FIRE BLOCKS ARE PIERCED BY PIPES, DUCTS OR OTHER ELEMENTS, THE EFFECTIVENESS OF THE FIRE BLOCKS SHALL BE MAINTAINED AROUND SUCH ELEMENTS.
10. THE EXPOSED SURFACE OF EVERY INTERIOR WALL AND CEILING, INCLUDING SKYLIGHTS AND GLAZING, SHALL HAVE A SURFACE FLAME-SPREAD RATING OF NOT MORE THAN 150. DOORS DO NOT NEED TO HAVE A FLAME-SPREAD RATING.
11. REQUIRED FLAME-SPREAD RATINGS SHALL COMPLY WITH TESTING STANDARDS ACCORDING TO CODE. REFER TO 9.10.3.2.
12. STEEL SUPPORTING A FIRE RATED ASSEMBLY SHALL BE PROTECTED TO MATCH THE RATING OF THE SUPPORTED ASSEMBLY.
13. IF REQUIRED BY THE AUTHORITIES HAVING JURISDICTION, PROVIDE ENGINEERED SHOP DRAWINGS, SIGNED AND SEALED BY A STRUCTURAL P.ENG LICENSED WITHIN THE PROVINCE OF BRITISH COLLUMBIA FOR ALL EXTERIOR CLADDING PANEL SYSTEMS, INCLUDING ALL ASSOCIATED SUPPORT FRAMING AND CONNECTIONS. REFER TO SPECIFICATION
14. PROVIDE TILE BACKER IN LIEU OF GYPSUM BOARD AT ALL ASSEMBLIES TO RECEIVE TILE FINISHES, REFER TO FINISH PLANS. REFER TO SPECIFICATIONS. ENSURE TILE BACKER IS TYPE X GYPSUM AT REQUIRED FIRE RESISTANCE RATED ASSEMBLIES.
15. IN AREAS WITH HIGH VAPOUR CONTENT (INCLUDING BUT NOT LIMITED TO BATHROOMS) PROVIDE MOISTURE AND MOULD-RESISTANT GYPSUM BOARD IN LIEU OF REGULAR GYPSUM BOARD. ENSURE THAT THE MOISTURE AND MOULD-RESISTANT GYPSUM BOARD MEETS ALL THE FIRE AND ACOUSTIC RATINGS REFERENCED IN THE ASSEMBLY SCHEDULE.
16. PROVIDE ULC-LISTED ACCESS PANEL WHERE PANEL IS LOCATED IN A RATED CEILING. IN ADDITION TO THIS PAGE, REFER ALSO TO FIRE SEPARATION DRAWINGS.
17. UNLESS NOTED OTHERWISE, ASSEMBLIES ABOVE OR BELOW DOORS, WINDOWS, EXTERIOR OPENINGS AND INTERIOR SCREENS ARE TO BE THE SAME AS THE TYPE DENOTED ON EITHER SIDE
18. PROVIDE 19mm FIRE RATED PLYWOOD BLOCKING AND STUD REINFORCING IN WALLS FOR INSTALLATION OF ALL ELEMENTS NEEDING BLOCKING/REINFORCEMENT, INCLUDING BUT NOT LIMITED TO ALL FIXTURES, PLUMBING ACCESSORIES, ADULT CHANGE TABLES, MILLWORK, EQUIPMENT, ELECTRIC PANELS, ROOF ACCESS LADDER ECT. DESIGN/BUILD ALL BLOCKING AND STUD REINFORCING AS REQUIRED. FULLY COORDINATE ALL ADDITIONAL SUPPORT REQUIRED FOR ANCHORAGE OF MECHANICAL EQUIPMENT OR DUCTS AND ELECTRICAL FIXTURES.
19. GRAB BARS SHALL BE CAPABLE OF RESISTING A LOAD OF NO LESS THAN 1.3kN.
20. PROVIDE ALL PLUMBING CHASES AND MECHANICAL SHAFTS IN ADDITION TO ASSEMBLIES. COORDINATE REQUIRED CRITICAL DIMENSIONS WHEN LAYING OUT WALLS.
21. IF FLOOR DRAINS ARE LOCATED IN A ROOM, COORDINATE SLOPING ENTIRE FLOOR TOWARD THE DRAIN. THERE WILL BE NO FLAT FLOOR SURFACE IN THE ROOM WITH A REQUIRED FLOOR DRAIN WHERE WATER CAN PUDDLE. FLOOR TO SLOPE A MINIMUM OF 2%. REFER TO THE MECHANICAL DOCUMENTS TO DETERMINE WHICH ROOMS HAVE FLOOR DRAINS. REPAIR ANY FLOORS THAT PUDDLE WATER AND/ OR DO NOT DIRECT WATER TO THE PROPER FLOOR DRAIN.
22. COORDINATE MINIMUM STUD SPACE REQUIRED TO SUPPORT EQUIPMENT AS NOTED ON ARCHITECTURAL AND ENGINEERING DRAWINGS.
23. ISOLATE ALL MECHANICAL PIPES, DUCTS, AND EQUIPMENT FROM INTERIOR PARTITIONS TO AVOID ACOUSTIC NOISE TRANSFER.
24. MAINTAIN CONTINUITY OF BUILDING ENVELOPE AIR AND AIR/VAPOUR BARRIER AT TRANSITIONS AND PENETRATIONS.
25. COORDINATE VERTICAL SERVICE SPACES THAT DO NOT EXTEND THROUGH THE ROOF AND/OR DO NOT TERMINATE AT HORIZONTAL FIRE RATED ASSEMBLY (ROOF, FLOOR, MEZZANINE, ECT.), TO BE ENCLOSED AT THE TOP AND/OR BOTTOM WITH A ULC CONSTRUCTION ASSEMBLY HAVING A FIRE RESISTANCE RATING NOT LESS THAN THAT REQUIRED FOR THE VERTICAL SERVICE SPACE WALLS.

CMHC SCHL

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MEMBRANE LEGEND

- AIR BARRIER, VAPOUR PERMEABLE
- AIR BARRIER, NON-VAPOUR PERMEABLE
- UV STABLE FILTER FABRIC
- THROUGH-WALL FLASHING
- VAPOUR CONTROL BARRIER
- FOUNDATION DAMP PROOFING
- PRE-FIN METAL FLASHING
- SBS ROOFING MEMBRANE
- IMPERMEABLE ROOFING UNDERLAY

INSULATION LEGEND

- SEMI-RIGID INSULATION
- RIGID INSULATION 1
- RIGID INSULATION 2, HIGH DENSITY
- SPRAY FOAM
- STUD CAVITY IN-FILL INSULATION

NO.	DATE	DESCRIPTION
1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

INTERIOR ASSEMBLIES SCHEDULE

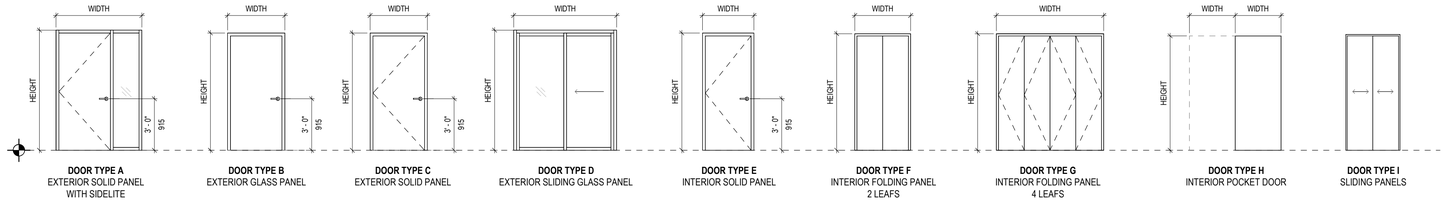
BC Sixplex Courtyard

PROJECT NO: 241058
SCALE: As indicated

SHEET NO:

A003

DOOR TYPES



DOOR TYPE A
EXTERIOR SOLID PANEL
WITH SIDELITE

DOOR TYPE B
EXTERIOR GLASS PANEL

DOOR TYPE C
EXTERIOR SOLID PANEL

DOOR TYPE D
EXTERIOR SLIDING GLASS PANEL

DOOR TYPE E
INTERIOR SOLID PANEL

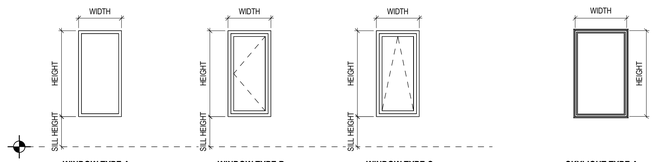
DOOR TYPE F
INTERIOR FOLDING PANEL
2 LEAFS

DOOR TYPE G
INTERIOR FOLDING PANEL
4 LEAFS

DOOR TYPE H
INTERIOR POCKET DOOR

DOOR TYPE I
SLIDING PANELS

WINDOW TYPES



WINDOW TYPE A
FIXED

WINDOW TYPE B
CASEMENT

WINDOW TYPE C
AWNING

SKYLIGHT TYPE A
'FIXED'

DOOR, WINDOW & SKYLIGHT GENERAL NOTES

1. WINDOWS AND DOORS TO CONFORM TO REQUIREMENTS OF BCBC 9.7.3 AND 9.7.4
2. MAXIMUM U-VALUE FOR WINDOWS TO CONFORM TO BCBC TABLE 9.36.2.7 AND EESR PART 3. WHERE THE U-VALUES DIFFER, THE MOST RESTRICTIVE U-VALUE SHALL APPLY.
3. ALL OPERABLE WINDOWS WITH A SILL HEIGHT OR OPERABLE SECTION LESS THAN 900mm ABOVE FINISHED FLOOR AND 1800mm ABOVE THE FLOOR OR GROUND ON THE OTHER SIDE OF THE WINDOW SHALL BE PROTECTED BY A SWING LIMITER RESTRICTING THE SWING TO NOT MORE THAN 100mm EITHER VERTICALLY OR HORIZONTALLY PER BCBC 9.8.8.1.
4. ALL ENTRY DOORS AND ALL EXIT DOORS SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF KEYS OR SPECIALIZED KNOWLEDGE.
5. ALL SLIDING DOORS SHALL RESIST FORCED ENTRY ACCORDING TO 9.7.5.1.
6. ALL WINDOWS AND GLAZED DOORS WITHIN 2M OF GRADE TO MEET BCBC 9.7.5.3
7. SIDELIGHTS NEEDING TO CONFROM TO BCBC 9.6.1.4 SHALL HAVE SAFETY GLAZING OR OTHER ACCEPTABLE SOLUTION.
8. PROVIDE DOOR STOPS AT ALL LOCATIONS WHERE THE DOOR MAY DAMAGE THE INTEGRITY OF A FIRE-RATED WALL.
9. MAIN ENTRANCE DOORS TO DWELLING UNITS SHALL HAVE DOOR VIEWER, TRANSPARENT GLAZING, OR A SIDELIGHT PER BCBC 9.7.2.1.(2)

DOOR SCHEDULE

TAG	TYPE	DIMENSIONS		FIRE RATING	NOTES
		WIDTH	HEIGHT		
DA01	DOOR TYPE A	3' - 0"	6' - 10"	N/A	
DC01	DOOR TYPE C	3' - 0"	6' - 10"	N/A	
DD01	DOOR TYPE D	6' - 0"	7' - 0"	N/A	
DE01	DOOR TYPE E	3' - 0"	6' - 8"	N/A	
DE02	DOOR TYPE E	2' - 8"	6' - 8"	N/A	
DF01	DOOR TYPE F	2' - 8"	6' - 8"	N/A	
DF02	DOOR TYPE F	3' - 0"	6' - 8"	N/A	
DF03	DOOR TYPE F	3' - 6"	6' - 8"	N/A	
DF04	DOOR TYPE F	4' - 0"	6' - 8"	N/A	
DF07	DOOR TYPE F	2' - 0"	6' - 8"	N/A	
DF09	DOOR TYPE F	2' - 4"	6' - 8"	N/A	
DF10	DOOR TYPE F	2' - 0"	4' - 10"	N/A	
DG03	DOOR TYPE G	5' - 0"	6' - 8"	N/A	
DG04	DOOR TYPE G	6' - 0"	6' - 8"	N/A	
DH01	DOOR TYPE H	2' - 8"	6' - 8"	N/A	

WINDOW SCHEDULE

TAG	TYPE	OPERATION	DIMENSIONS	
			WIDTH	HEIGHT
WA01	WINDOW TYPE A	Fixed	3' - 0"	3' - 0"
WA02	WINDOW TYPE A	Fixed	2' - 6"	3' - 0"
WA04	WINDOW TYPE A	Fixed	3' - 0"	6' - 0"
WA06	WINDOW TYPE A	Fixed	3' - 0"	6' - 4"
WA08	WINDOW TYPE A	Fixed	3' - 0"	7' - 0"
WB03	WINDOW TYPE B	Casement	3' - 0"	6' - 0"
WB05	WINDOW TYPE B	Casement	3' - 0"	6' - 4"
WB07	WINDOW TYPE B	Casement	2' - 6"	3' - 0"

CMHC SCHL

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PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT
OR CONSTRUCTION

SHEET TITLE:

DOOR AND WINDOW SCHEDULE

BC Sixplex Courtyard

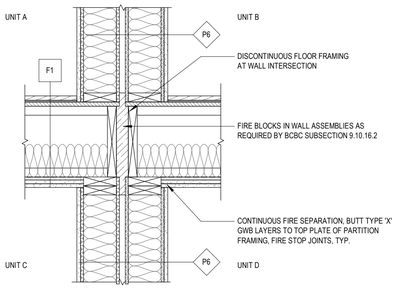
PROJECT NO: 241058
SCALE: 1 : 50

SHEET NO:

A004

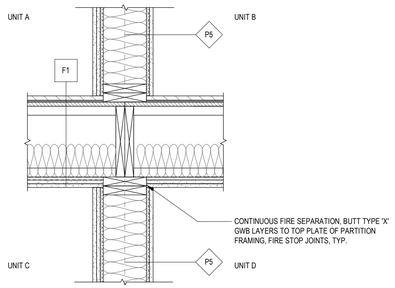
GENERAL NOTES - FIRE SEPARATIONS

1. REQUIRED FIRE-RESISTANCE AND FIRE-PROECTION RATINGS SHALL BE DETERMINED BY AND IN CONFORMANCE TO METHODS LISTED IN BCBC CLAUSE 9.10.3.1(1)
2. OPENINGS IN WALL AND CEILING MEMBRANES IN ASSEMBLIES REQUIRED TO HAVE A FIRE-RESISTANCE RATING SHALL FOLLOW REQUIREMENTS IN BCBC SUBSECTION 9.10.5
3. THE CONTINUITY OF A FIRE SEPARATION SHALL BE MAINTAINED WHEN IT ABUTTS ANOTHER FIRE SEPARATION, A FLOOR, A CEILING, A ROOF, OR AN EXTERNAL WALL ASSEMBLY PER BCBC SUBSECTION 9.10.9.2
4. PENETRATIONS OF FIRE SEPARATIONS SHALL CONFORM TO PROVISIONS OF BCBC SUBSECTION 9.10.9.6
5. FIRE BLOCKS SHALL BE PROVIDED AT THE TOP AND BOTTOM OF EACH RUN OF STAIRS WHERE APPLICABLE PER BCBC CLAUSE 9.10.16.1.(4)



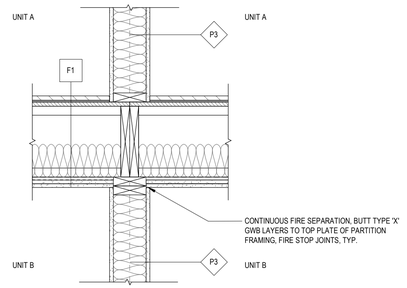
2 A005 SECTION - 1 HR FRR WALL (P6) AT RATED FLOOR (F1)

1" = 1'-0"



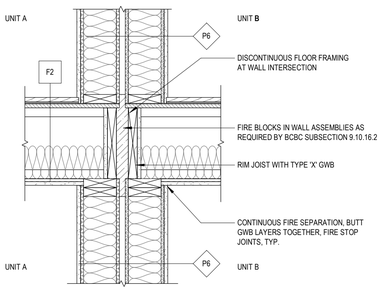
1 A005 SECTION - 1 HR FRR WALL (P5) AT RATED FLOOR (F1)

1" = 1'-0"



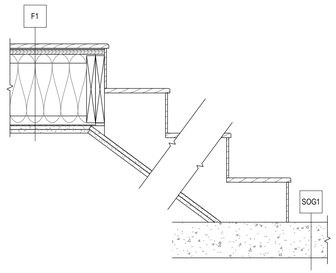
5 A005 SECTION - LOADBEARING WALL (P3) AT RATED FLOOR (F1)

1" = 1'-0"



4 A005 SECTION - 1 HR FRR WALL (P6) AT UNRATED FLOOR (F2)

1" = 1'-0"



3 A005 SECTION - FIRE SEPARATION, STAIRS

1" = 1'-0"

CMHC SCHL

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MEMBRANE LEGEND

- AIR BARRIER, VAPOUR PERMEABLE
- AIR BARRIER, NON-VAPOUR PERMEABLE
- UV STABLE FILTER FABRIC
- THROUGH-WALL FLASHING
- VAPOUR CONTROL BARRIER
- FOUNDATION DAMP PROOFING
- PRE-FIN METAL FLASHING
- SBS ROOFING MEMBRANE
- IMPERMEABLE ROOFING UNDERLAY

INSULATION LEGEND

- SEMI-RIGID INSULATION
- RIGID INSULATION 1
- RIGID INSULATION 2, HIGH DENSITY
- SPRAY FOAM
- STUD CAVITY IN-FILL INSULATION

1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

NO.	DATE	DESCRIPTION

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

FIRE RATING DETAILS

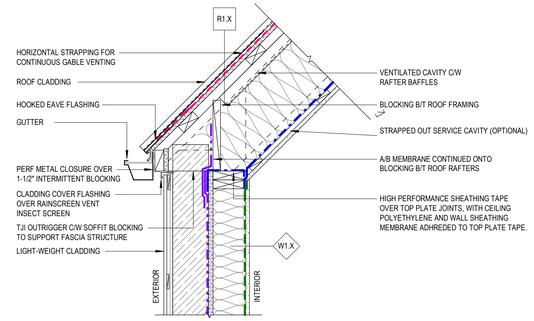
BC Sixplex Courtyard

PROJECT NO: 241058

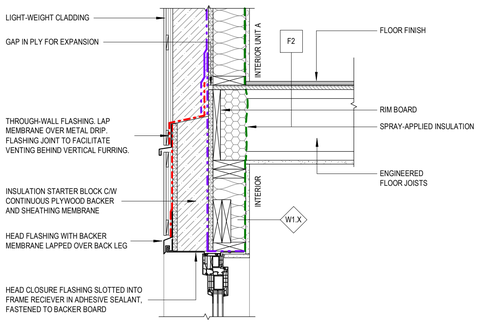
SCALE: As indicated

SHEET NO:

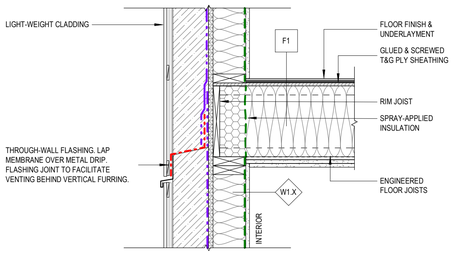
A005



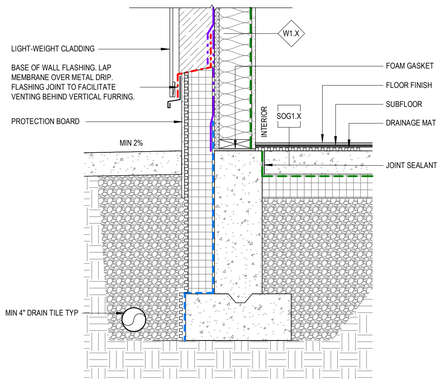
1 A006 TYP. WALL TO ROOF - EAVE
1" = 1'-0"



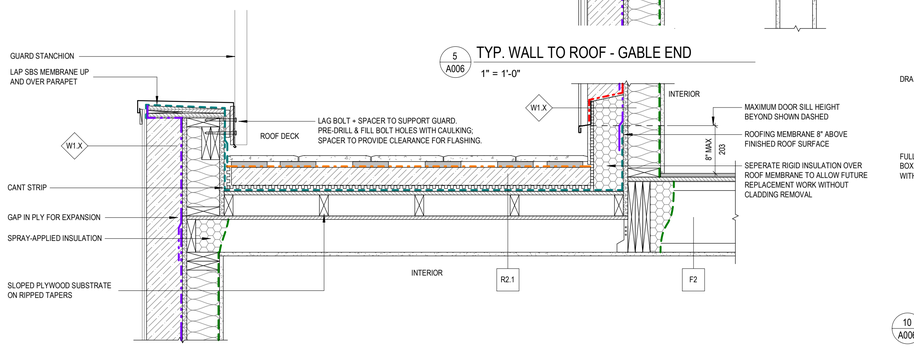
2 A006 TYP. FLOOR TO FLOOR - SAME UNIT
1" = 1'-0"



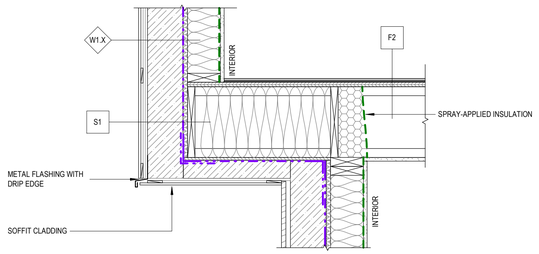
3 A006 TYP. FLOOR TO FLOOR - FRR
1" = 1'-0"



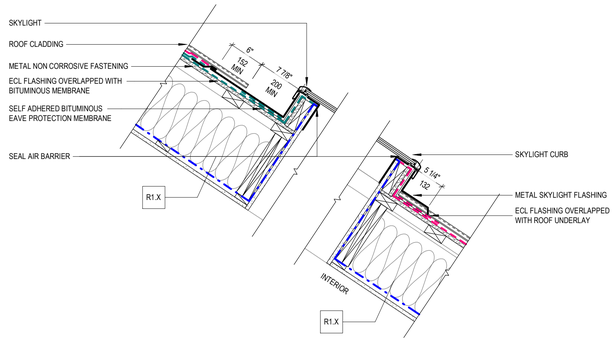
4 A006 TYP. FOOTING TO WALL
1" = 1'-0"



6 A006 TYP. ROOF DECK
1" = 1'-0"

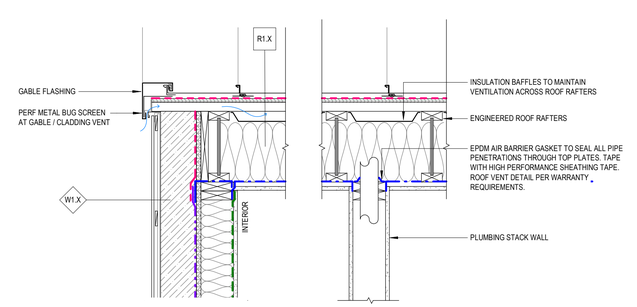


7 A006 TYP. OVERHANG WITH CANOPY
1" = 1'-0"

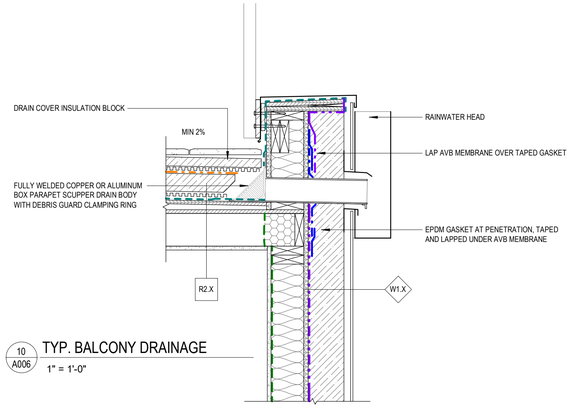


8 A006 SKYLIGHT - HEAD
1" = 1'-0"

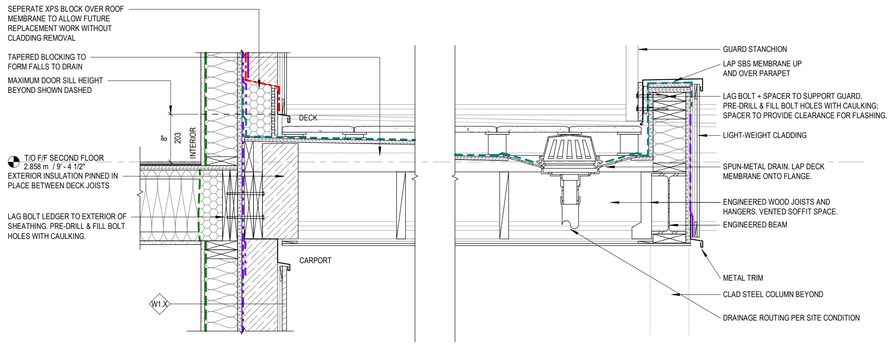
9 A006 SKYLIGHT - SILL
1" = 1'-0"



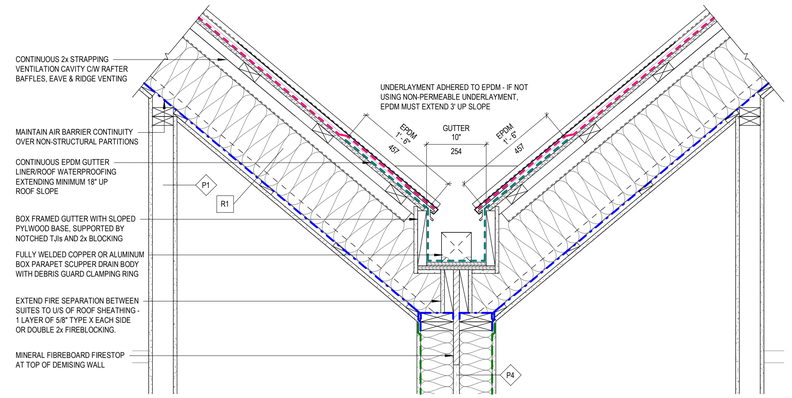
5 A006 TYP. WALL TO ROOF - GABLE END
1" = 1'-0"



10 A006 TYP. BALCONY DRAINAGE
1" = 1'-0"



11 A006 TYP. CAR PORT DECK
1" = 1'-0"



12 A006 TYP. VALLEY GUTTER DETAIL
1" = 1'-0"

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INSULATION LEGEND

- SEMI-RIGID INSULATION
- RIGID INSULATION 1
- RIGID INSULATION 2, HIGH DENSITY
- SPRAY FOAM
- STUD CAVITY IN-FILL INSULATION

NO.	DATE	DESCRIPTION
1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

TYPICAL DETAILS

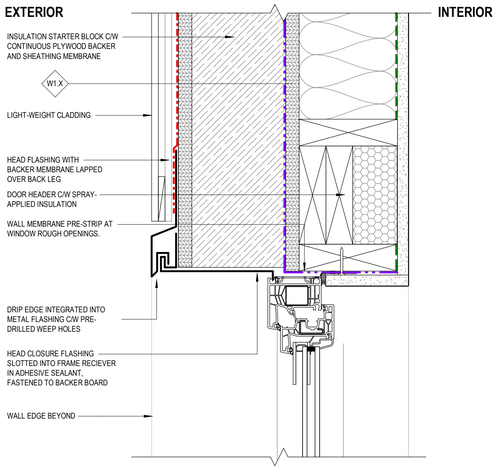
BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

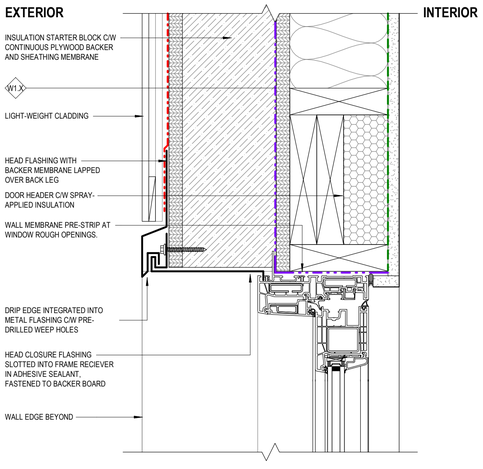
SHEET NO:

A006



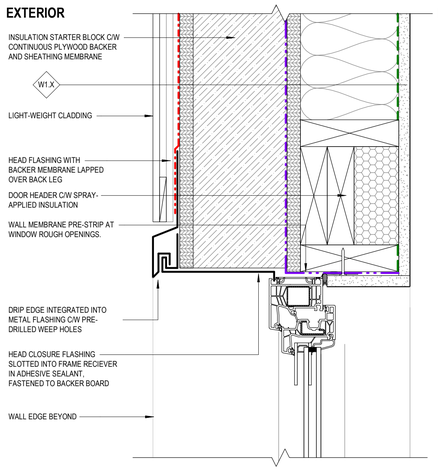
2 A007 TYP EXTERIOR DOOR - HEAD

3" = 1'-0"



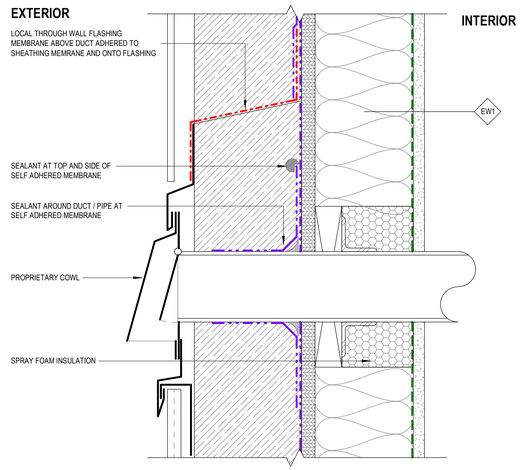
4 A007 TYP SLIDING DOOR HEAD

3" = 1'-0"



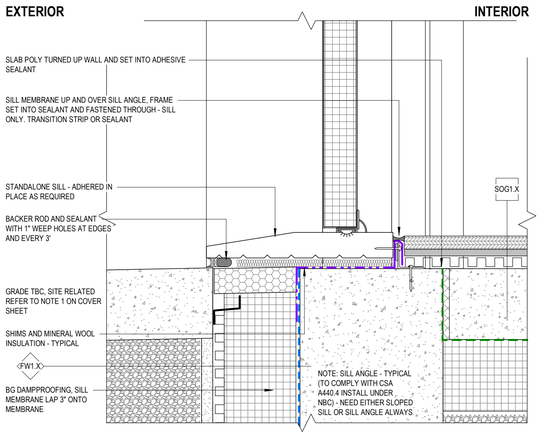
7 A007 TYP WINDOW - HEAD

3" = 1'-0"



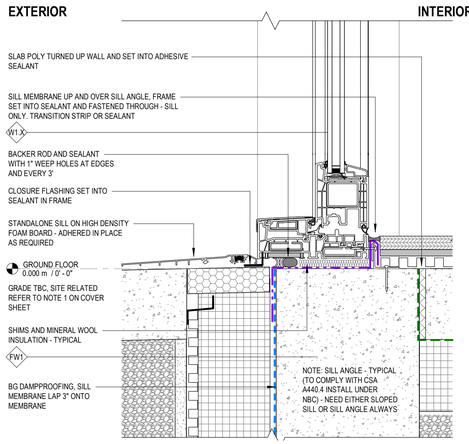
9 A007 TYP. WALL PENETRATION

3" = 1'-0"



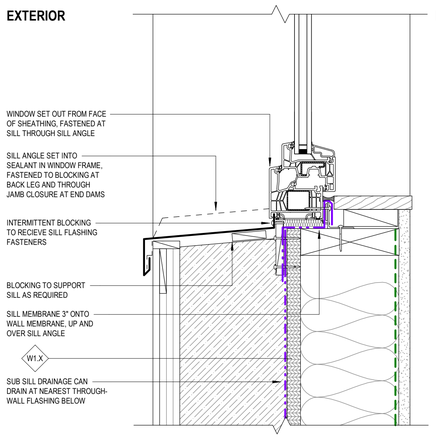
1 A007 TYP EXTERIOR DOOR - SILL

3" = 1'-0"



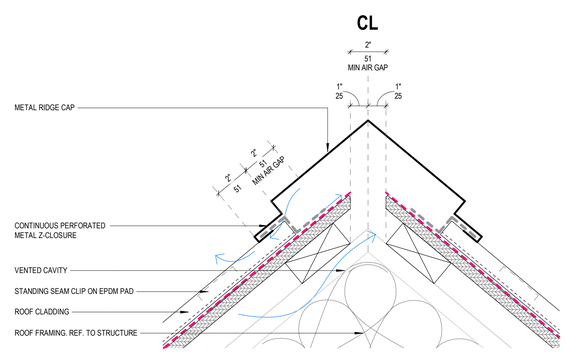
5 A007 TYP SLIDING DOOR SILL

3" = 1'-0"



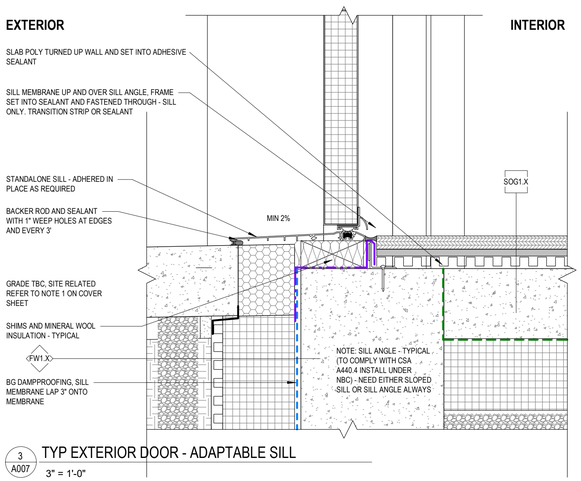
6 A007 TYP WINDOW - SILL

3" = 1'-0"



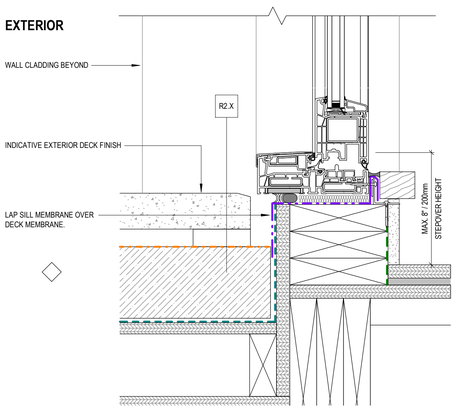
10 A007 TYP. RIDGE DETAIL

3" = 1'-0"



3 A007 TYP EXTERIOR DOOR - ADAPTABLE SILL

3" = 1'-0"



8 A007 TYP SLIDING DOOR @ ROOF DECK

3" = 1'-0"

MEMBRANE LEGEND

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- AIR BARRIER, NON-VAPOUR PERMEABLE
- UV STABLE FILTER FABRIC
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- VAPOUR CONTROL BARRIER
- FOUNDATION DAMP PROOFING
- PRE-FIN METAL FLASHING
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NO.	DATE	DESCRIPTION
1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

TYPICAL DETAILS 2

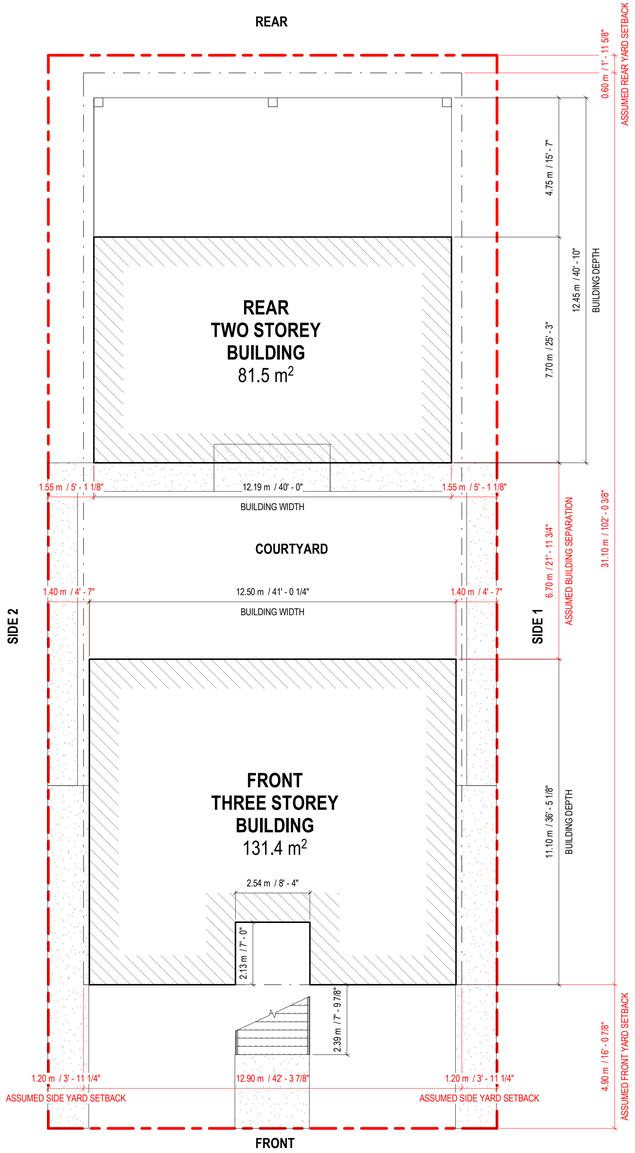
BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

A007



1 / A010 SITE PLAN

1/8" = 1'-0"

BRITISH COLUMBIA BUILDING CODE SUMMARY

PART 9 - HOUSING AND SMALL BUILDINGS

						BCBC REFERENCE
BUILDING CODE VERSION	BC. BA 2024 04		LAST AMENDMENT: BC BA. 2024 / 04			
PROJECT TYPE	NEW CONSTRUCTION CONSTRUCTION OF NEW 3-STOREY MULTI UNIT RESIDENTIAL BUILDING AND NEW 2-STOREY TWO UNIT RESIDENTIAL BUILDING					[A] 1.3.3.
MAJOR OCCUPANCY CLASSIFICATION	GROUP / DIVISION:	DESCRIPTION:	USE:			9.10.2
	C	FOURPLEX AND DUPLEX	RESIDENTIAL			
SUPERIMPOSED MAJOR OCCUPANCIES	NO					9.10.2.3.
BUILDING AREA (m²)	DESCRIPTION:		TOTAL (m²):			[A] 1.4.1.2..
	NEW CONSTRUCTION		233.3			
GROSS AREA (m²)	FLOOR LEVEL:	DESCRIPTION:	TOTAL (m²):			[A] 1.4.1.2
	GROUND FLOOR	4 RESIDENTIAL UNITS	222.1			
	SECOND FLOOR	2 RESIDENTIAL UNITS	232.0			
	THIRD FLOOR		119.8			
	TOTAL (m²):		573.9			
BUILDING HEIGHT		STOREYS ABOVE GRADE	10.97 m ABOVE AVERAGE GRADE			[A] 1.4.1.2. AND 9.10.4.
NUMBER OF STREETS	TBC					9.10.20
SPRINKLER SYSTEM	SPRINKLERED	PROVIDED:				9.10.8.2. TO 9.10.8.4.
FIRE ALARM SYSTEM	NOT REQUIRED	TYPE PROVIDED: N/A				9.10.18
WATER SUPPLY IS ADEQUATE	TBC					
CONSTRUCTION TYPE	PERMITTED:	COMBUSTIBLE				9.10.6
	PROPOSED:	COMBUSTIBLE				
POST-DISASTER BUILDING	YES/NO					[A] 1.3.3.2.(1)
OCCUPANT LOAD	FLOOR LEVEL:	UNIT #:	OCCUPANCY TYPE:	BASED ON:	OCCUPANT LOAD (PERSONS):	3.1.17.
	GROUND FLOOR	UNIT 1, UNIT 2	RESIDENTIAL	3.1.17.1.(1)(b)	4	
	SECOND FLOOR	UNIT 3, UNIT 4	SECOND FLOOR	3.1.17.1.(1)(b)	12	
	GROUND FLOOR	UNIT 5, UNIT 6	GROUND FLOOR	3.1.17.1.(1)(b)	8	
BARRIER-FREE DESIGN	NOT APPLICABLE					9.5.2.
HAZARDOUS SUBSTANCES	NO					9.10.1.3.
REQUIRED FIRE RESISTANCE RATINGS	HORIZONTAL ASSEMBLY:		RATING:	SUPPORTING ASSEMBLY:	NON-COMBUSTIBLE IN LIEU OF RATING:	9.10.8.
	FLOORS EXCEPT CRAWLSPACE:		45 MIN	45 MIN	N/A	
PLUMBING FIXTURE REQUIREMENTS	A KITCHEN SINK, LAVATORY, WATER CLOSET, AND BATHTUB OR SHOWER SHALL BE PROVIDED FOR EVERY DWELLING UNIT					9.31.4(1) and 3.7.2.2.(11)
NOTES	01 ALL REFERENCES ARE TO DIVISION B OF THE BRITISH COLUMBIA BUILDING CODE UNLESS PRECEDED BY (A) FOR DIVISION A AND (C) FOR DIVISION C.					

SPATIAL SEPARATION	WALL:	EBF AREA (m²):	LD (m):	% OPENINGS MAX	% PROVIDED	RATING:	CONSTRUCTION TYPE:	CLADDING TYPE:	9.10.14. & 9.10.15
UNIT 1	FRONT	12.4	4.9	100	30.5	45 MIN	COMBUSTIBLE	COMBUSTIBLE	
	REAR	16.1	3.4	62	24.2	45 MIN	COMBUSTIBLE	COMBUSTIBLE	
	SIDE	-	-	-	-	-	-	-	
	SIDE	28.5	1.4	16.6	12.6	1 HR	COMBUSTIBLE	NONCOMBUSTIBLE	
UNIT 2	FRONT	12.4	4.9	100	30.5	45 MIN	COMBUSTIBLE	COMBUSTIBLE	
	REAR	16.1	3.4	62	24.2	45 MIN	COMBUSTIBLE	COMBUSTIBLE	
	SIDE	28.5	1.4	16.6	12.6	1 HR	COMBUSTIBLE	NONCOMBUSTIBLE	
	SIDE	-	-	-	-	-	-	-	
UNIT 3	FRONT	45.7	4.9	82	26.5	45 MIN	COMBUSTIBLE	27.2BUSTIBLE	
	REAR	44.4	3.4	45.2	15.1	45 MIN	COMBUSTIBLE	COMBUSTIBLE	
	SIDE	-	-	-	-	-	-	-	
	SIDE	62.9	1.4	15.2	5.5	1 HR	COMBUSTIBLE	NONCOMBUSTIBLE	
UNIT 4	FRONT	45.7	4.9	82	26.5	45 MIN	COMBUSTIBLE	COMBUSTIBLE	
	REAR	44.4	3.4	45.2	15.1	45 MIN	COMBUSTIBLE	COMBUSTIBLE	
	SIDE	62.9	1.4	15.2	5.5	1 HR	COMBUSTIBLE	NONCOMBUSTIBLE	
	SIDE	-	-	-	-	-	-	-	
UNIT 5	FRONT	40.3	3.4	50	29.3	N/A	COMBUSTIBLE	COMBUSTIBLE	
	REAR	40.3	3.9	61.8	13.6	N/A	COMBUSTIBLE	COMBUSTIBLE	
	SIDE	-	-	-	-	-	-	-	
	SIDE	40.2	1.5	16	7	N/A	COMBUSTIBLE	COMBUSTIBLE	
UNIT 6	FRONT	40.3	3.4	50	29.3	N/A	COMBUSTIBLE	COMBUSTIBLE	
	REAR	40.3	3.9	61.8	13.6	N/A	COMBUSTIBLE	COMBUSTIBLE	
	SIDE	40.2	1.5	16	7	N/A	COMBUSTIBLE	COMBUSTIBLE	
	SIDE	-	-	-	-	-	-	-	

SITE DATA

ADDRESS	N/A
LOT & PLAN NO.	N/A
ZONING	N/A
LOT AREA	560.0 m²
BUILDING AREA	223.3 m² (131.4 + 91.9)
COVERAGE	40 %
LANDSCAPED OPEN SPACE	336.7 m²
SOFTSCAPE AREA	
HARDSCAPE AREA	
PARKING SPOTS	N/A
DENSITY	
SETBACKS	
FRONT	4.9 m
REAR	0.9 m
SIDE 1	1.2 m
SIDE 2	1.2 m
BUILDING DEPTH	11.1m (FRONT BUILDING), 7.7 m (REAR BUILDING)

SITE LEGEND

- ASSUMED PROPERTY LINE
- SETBACK
- BUILDING
- SOFTSCAPE
- HARDSCAPE

SITE PLAN GENERAL NOTES

1. SITE DESIGN TO CONFORM TO FIREFIGHTING ACCESS REQUIREMENTS AS PER BCBC 9.10.20.3.
2. SITE GRADE TO BE SLOPED AWAY FROM BUILDING AS PER BCBC 9.14.6.1
3. WHERE UNCONNECTED DOWNSPOUTS ARE PROVIDED, EXTENSIONS SHALL BE PROVIDED TO CARRY RAINWATER AWAY FROM THE BUILDING IN A MANNER CONFORMING TO BCBC 9.26.18.2.
4. SITE DESIGN TO CONFORM TO ACCESSIBILITY REQUIREMENTS PER BCBC 33.8.2.3, BCBC 33.8.2.5, BCBC 33.8.2.10
5. ENTRANCES TO BARRIER FREE UNIT TO CONFORM TO BCBC 3.8.2.2.
6. EXTERIOR AND INTERIOR PATHS THAT FORM PART OF AN ACCESSIBLE PATH OF TRAVEL TO CONFORM FOR BCBC 3.8.3.2. EXTERIOR WALKS TO BE DESIGNED IN COMFORMANCE TO BCBC 3.8.3.3.
7. BUILDING SPRINKLER REQUIREMENTS SHALL BE DETERMINED BASED ON FINAL SITE DESIGN, SPATIAL SEPARATION, AND CONSTRUCTION TYPE, IN ACCORDANCE WITH THE BCBC 2024.

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PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

SITE PLAN & CODE MATRIX

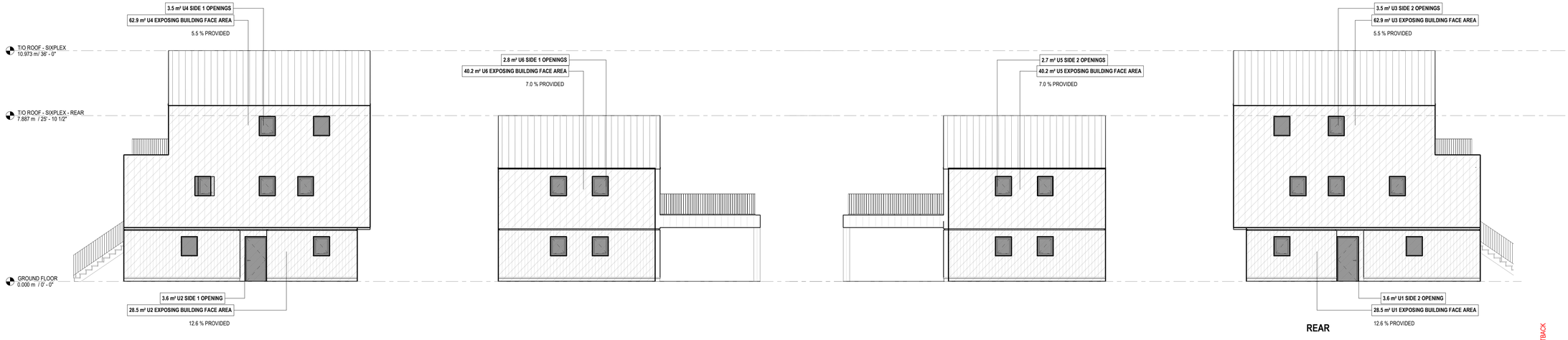
BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

A010

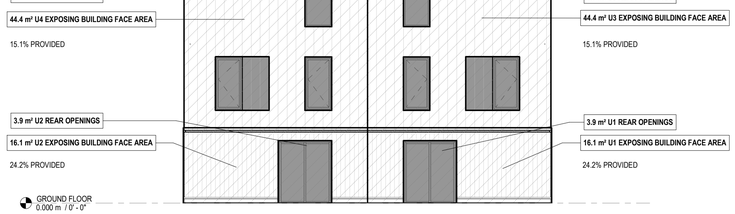


5 A011 UNPROTECTED OPENINGS ELEVATION - SIDE 1

1/8" = 1'-0"

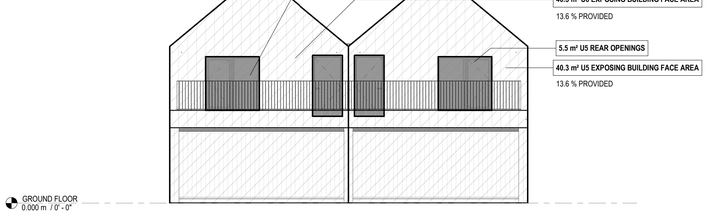
6 A011 UNPROTECTED OPENINGS ELEVATION - SIDE 2

1/8" = 1'-0"



3 A011 UNPROTECTED OPENINGS ELEVATION (FRONT) - REAR

1/8" = 1'-0"



4 A011 UNPROTECTED OPENINGS ELEVATION (REAR) - REAR

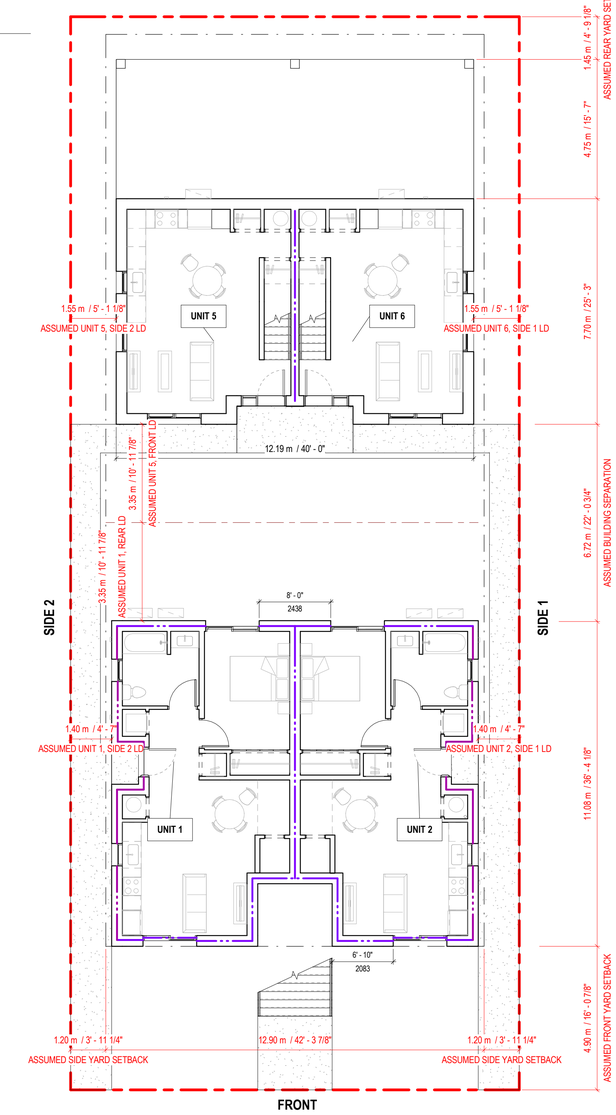
1/8" = 1'-0"

1 A011 UNPROTECTED OPENINGS ELEVATION (FRONT) - FRONT

1/8" = 1'-0"

2 A011 UNPROTECTED OPENINGS ELEVATION (REAR) - FRONT

1/8" = 1'-0"



7 A011 SITE PLAN

1/8" = 1'-0"

CMHC SCHL

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NO.	DATE	DESCRIPTION
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PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

CODE - OPENINGS

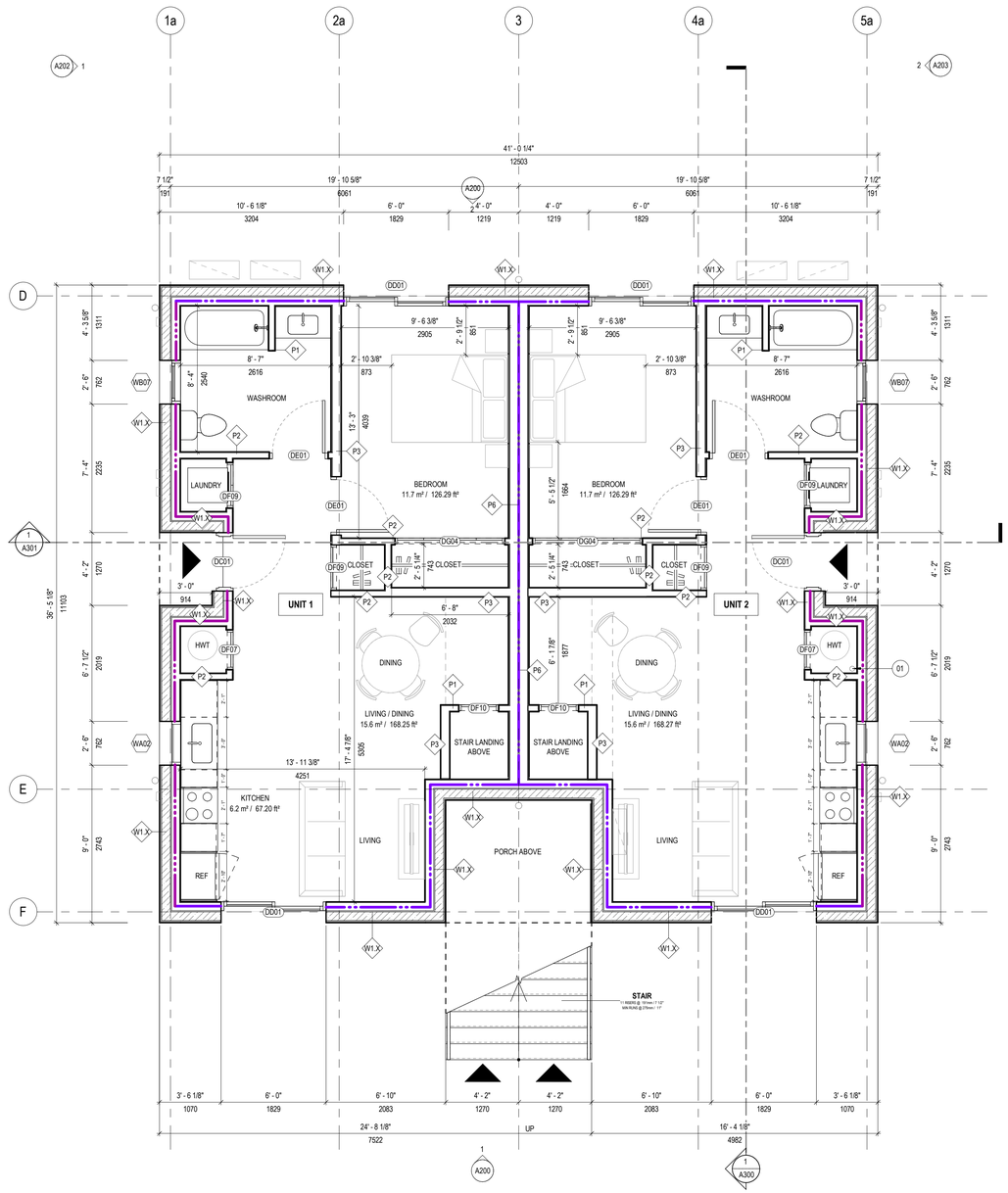
BC Sixplex Courtyard

PROJECT NO: 241058

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

SHEET NO:

A011



1 MAIN FLOOR PLAN - FRONT BUILDING
1/4" = 1'-0"

FIRE SEPARATION LEGEND

- 3/4 HR FIRE RESISTANCE RATING
- 1HR FIRE RESISTANCE RATING

FLOOR PLAN KEYNOTES

01 LOCATION OF SOIL GAS DEPRESSURIZATION PER BCBC 9.13.4.3. RUN UNDERSLAB PIPES TO CENTER OF EACH SLAB THAT IS COMPARTMENTALIZED BY FOUNDATION WALLS. REFER ALSO TO MECHANICAL DRAWINGS.

FLOOR PLAN LEGEND

	FLOOR MOUNTED TOILET
REFER TO PLAN	SHOWER
5' - 0"	ALCOVE TUB
2' - 3"	KITCHEN SINK
1' - 6 1/2"	WASHROOM SINK
W	WASHER
D	DRYER
	BOILER
MEP	MECHANICAL / ELECTRICAL / PLUMBING
	RANGE, TYPICAL
	RANGE, NARROW
REF	REFRIGERATOR
	DISHWASHER
	CLOSET COAT ROD

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PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

MAIN FLOOR PLAN - FRONT BUILDING

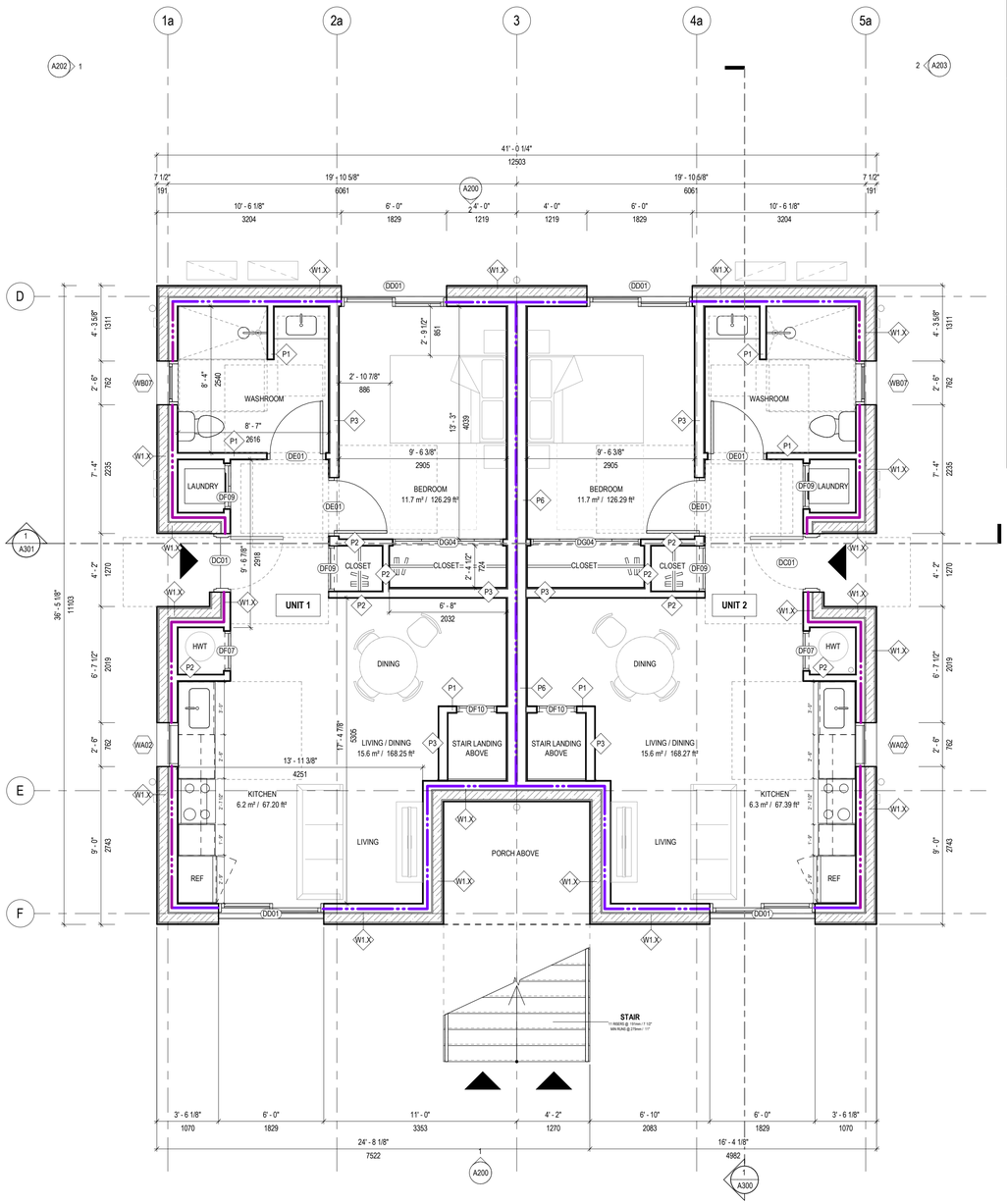
BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

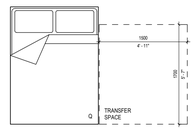
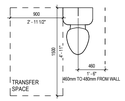
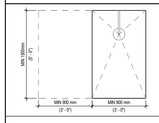
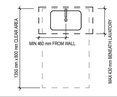
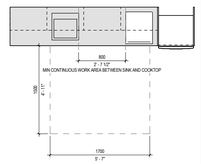
A101a



1 A101b MAIN FLOOR PLAN - FRONT BUILDING, ADAPTABLE

1/4" = 1'-0"

ADAPTABILITY NOTES PER BCBC 3.8.5

	BED TRANSFER SPACE *SPACES TO CONFORM TO BCBC 3.8.5.6 FOR LATERAL TRANSFER SPACES AND PATHWAY CLEARANCE
	BCBC TOILET TRANSFER SPACE BCBC 3.8.5.7.(1)(e) WALLS ADJACENT THE WATER CLOSET AND SHOWER LOCATION REINFORCED TO ACCOMODATE THE FUTURE INSTALLATION OF GRAB BARS.
	ADAPTABLE ROLL-IN SHOWER *PLUMBING SYSTEM TO CONFORM TO 3.8.5.7.(d) *BCBC 3.8.5.7.(1)(e) WALLS ADJACENT THE WATER CLOSET AND SHOWER LOCATION REINFORCED TO ACCOMODATE THE FUTURE INSTALLATION OF GRAB BARS.
	SINK, ADAPTABLE *PLUMBING SYSTEM SHALL ACCOMODATE FUTURE INSTALLATION OF A LAVATORY WITH REQUIREMENTS AS DESCRIBED IN CLAUSES 3.8.3.16.(1)(b) to (f)
	KITCHEN MILLWORK BCBC 3.8.5.8. 3) PLUMBING SYSTEM AND CASEWORK SHALL ACCOMODATE FUTURE INSTALLATION OF A LAVATORY WITH REQUIREMENTS AS DESCRIBED IN CLAUSES 3.8.3.16.(1)(b) to (f)

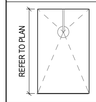
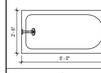
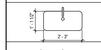
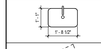
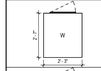
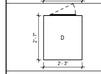
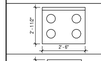
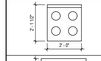
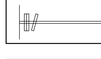
FIRE SEPARATION LEGEND

	3/4 HR FIRE RESISTANCE RATING
	1HR FIRE RESISTANCE RATING

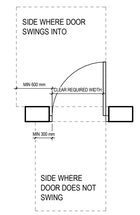
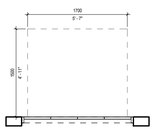
FLOOR PLAN KEYNOTES

01	LOCATION OF SOIL GAS DEPRESSURIZATION PER BCBC 9.13.4.3. RUN UNDERSLAB PIPES TO CENTER OF EACH SLAB THAT IS COMPARTMENTALIZED BY FOUNDATION WALLS. REFER ALSO TO MECHANICAL DRAWINGS.

FLOOR PLAN LEGEND

	FLOOR MOUNTED TOILET
	SHOWER
	ALCOVE TUB
	KITCHEN SINK
	WASHROOM SINK
	WASHER
	DRYER
	BOILER
	MECHANICAL / ELECTRICAL / PLUMBING
	RANGE, TYPICAL
	RANGE, NARROW
	REFRIGERATOR
	DISHWASHER
	CLOSET COAT ROD

EXTERIOR ENTRY / INTERIOR DOOR - BCBC ADAPTABLE

	EXTERIOR ENTY / INTERNAL DOORS
	CLOSET DOORS

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PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

MAIN FLOOR PLAN - FRONT BUILDING - BCBC ADAPTABLE

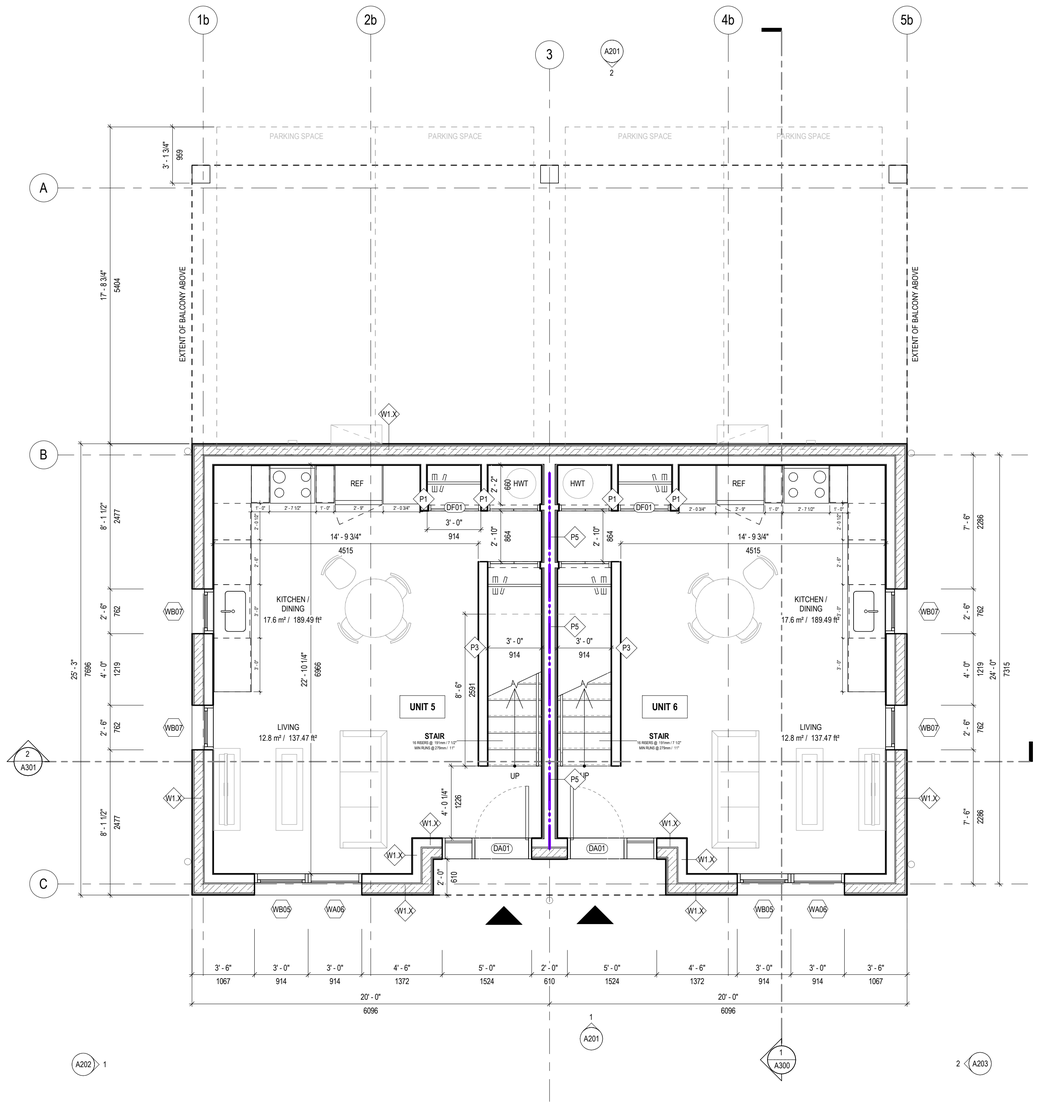
BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

A101b



1 A101c MAIN FLOOR PLAN - REAR BUILDING

1/4" = 1'-0"

FIRE SEPARATION LEGEND

- 3/4 HR FIRE RESISTANCE RATING
- 1HR FIRE RESISTANCE RATING

FLOOR PLAN KEYNOTES

01 LOCATION OF SOIL GAS DEPRESSURIZATION PER BCBC 9.13.4.3. RUN UNDERSLAB PIPES TO CENTER OF EACH SLAB THAT IS COMPARTMENTALIZED BY FOUNDATION WALLS. REFER ALSO TO MECHANICAL DRAWINGS.

FLOOR PLAN LEGEND

	FLOOR MOUNTED TOILET
REFER TO PLAN	SHOWER
2'-8" 5'-0"	ALCOVE TUB
2'-1 1/2" 2'-7"	KITCHEN SINK
1'-5" 1'-4 1/2"	WASHROOM SINK
2'-7" W 2'-7"	WASHER
2'-7" D 2'-7"	DRYER
	BOILER
MEP	MECHANICAL / ELECTRICAL / PLUMBING
2'-1 1/2" 2'-6"	RANGE, TYPICAL
2'-1 1/2" 2'-7"	RANGE, NARROW
2'-7 1/2" REF 2'-7 1/2"	REFRIGERATOR
1'-10 1/2" 2'-0"	DISHWASHER
	CLOSET COAT ROD

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CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

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SHEET TITLE:

MAIN FLOOR PLAN - REAR BUILDING

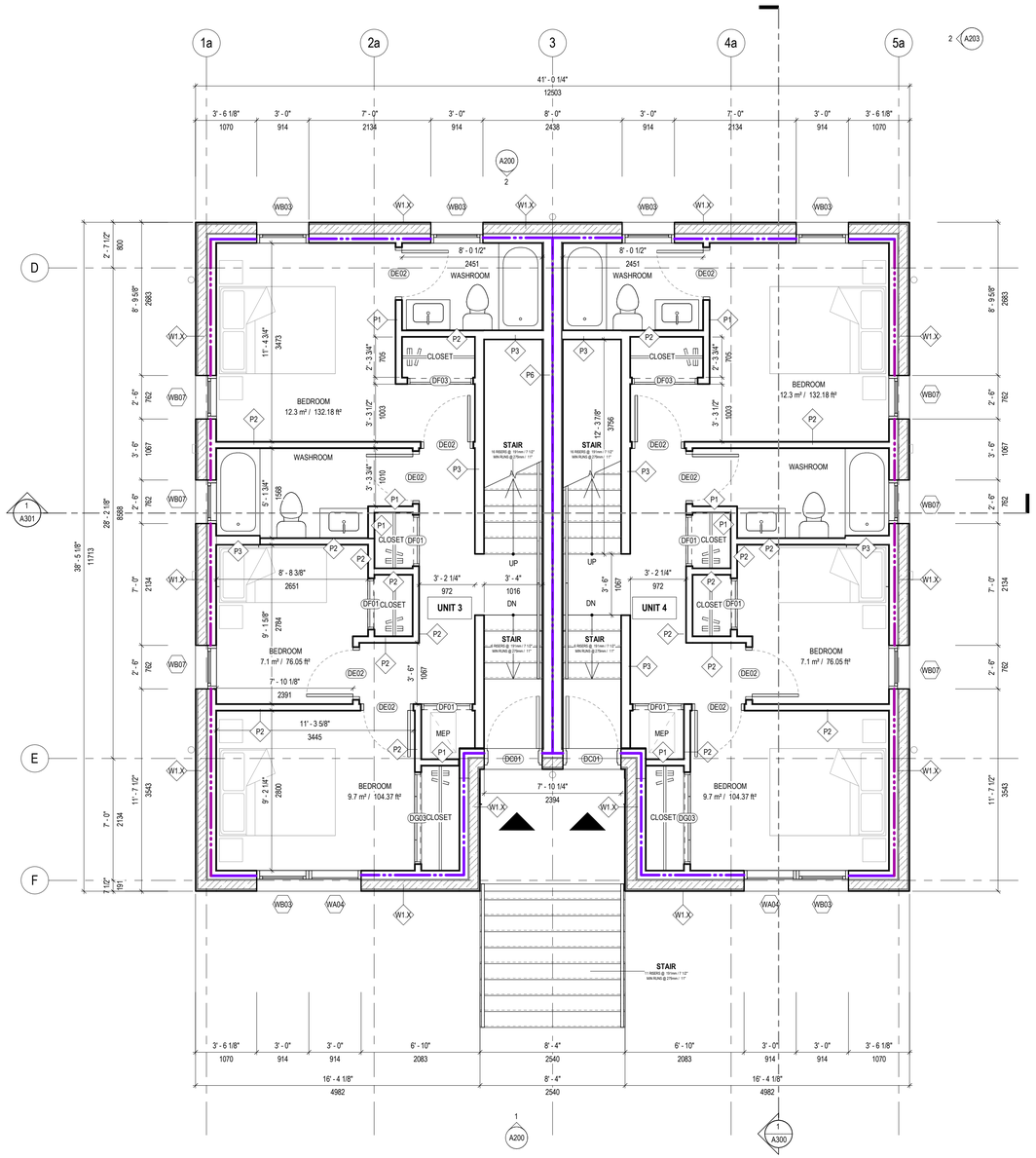
BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

A101c



1 A102a SECOND FLOOR PLAN - FRONT BUILDING

1/4" = 1'-0"

FIRE SEPARATION LEGEND

- 3/4 HR FIRE RESISTANCE RATING
- 1HR FIRE RESISTANCE RATING

FLOOR PLAN KEYNOTES

01 LOCATION OF SOIL GAS DEPRESSURIZATION PER BCBC 9.13.4.3. RUN UNDERSLAB PIPES TO CENTER OF EACH SLAB THAT IS COMPARTMENTALIZED BY FOUNDATION WALLS. REFER ALSO TO MECHANICAL DRAWINGS.

FLOOR PLAN LEGEND

	FLOOR MOUNTED TOILET
REFER TO PLAN	SHOWER
5' - 0"	ALCOVE TUB
2' - 7"	KITCHEN SINK
1' - 5" 1' - 4 1/2"	WASHROOM SINK
2' - 7" W 2' - 7"	WASHER
2' - 7" D 2' - 7"	DRYER
	BOILER
MEP	MECHANICAL / ELECTRICAL / PLUMBING
2' - 1 1/2" 2' - 6"	RANGE, TYPICAL
2' - 1 1/2" 2' - 0"	RANGE, NARROW
2' - 3 1/2" REF 2' - 1 1/2"	REFRIGERATOR
1' - 10 1/2" 2' - 0"	DISHWASHER
	CLOSET COAT ROD

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CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

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SHEET TITLE:

SECOND FLOOR PLAN - FRONT BUILDING

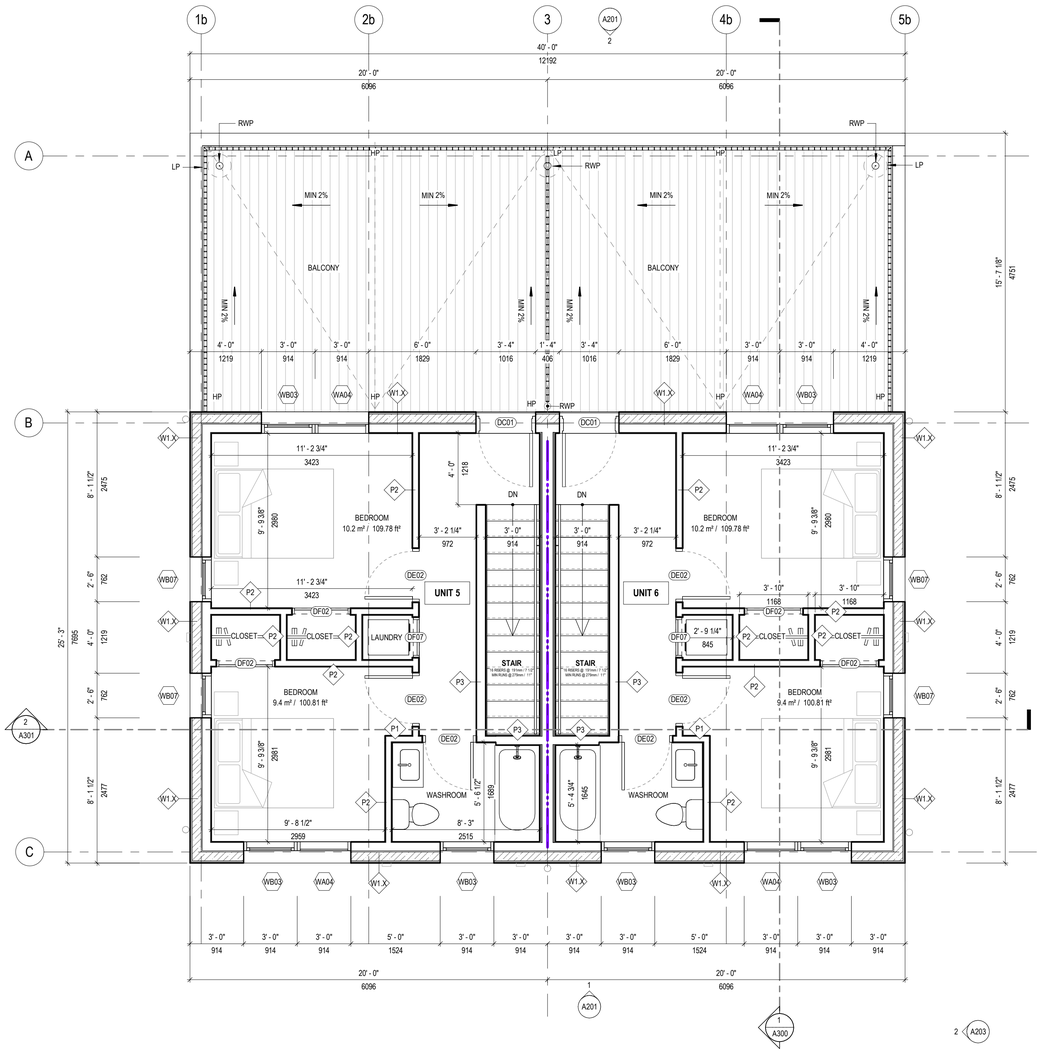
BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

A102a



1 A102c SECOND FLOOR PLAN - REAR BUILDING

1/4" = 1'-0"

FIRE SEPARATION LEGEND

- 3/4 HR FIRE RESISTANCE RATING
- 1HR FIRE RESISTANCE RATING

FLOOR PLAN KEYNOTES

01 LOCATION OF SOIL GAS DEPRESSURIZATION PER BCBC 9.13.4.3. RUN UNDERSLAB PIPES TO CENTER OF EACH SLAB THAT IS COMPARTMENTALIZED BY FOUNDATION WALLS. REFER ALSO TO MECHANICAL DRAWINGS.

FLOOR PLAN LEGEND

	FLOOR MOUNTED TOILET
REFER TO PLAN	SHOWER
5' - 0" / 2' - 6"	ALCOVE TUB
2' - 7" / 1' - 1 1/2"	KITCHEN SINK
1' - 7" / 1' - 6 1/2"	WASHROOM SINK
2' - 7" / W / 2' - 7"	WASHER
2' - 7" / D / 2' - 7"	DRYER
	BOILER
MEP	MECHANICAL / ELECTRICAL / PLUMBING
2' - 1 1/2" / 2' - 0"	RANGE, TYPICAL
2' - 1 1/2" / 1' - 7"	RANGE, NARROW
2' - 1 1/2" / REF / 2' - 1 1/2"	REFRIGERATOR
1' - 10 1/2" / 2' - 0"	DISHWASHER
	CLOSET COAT ROD

CMHC SCHL

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SECOND FLOOR PLAN - REAR BUILDING

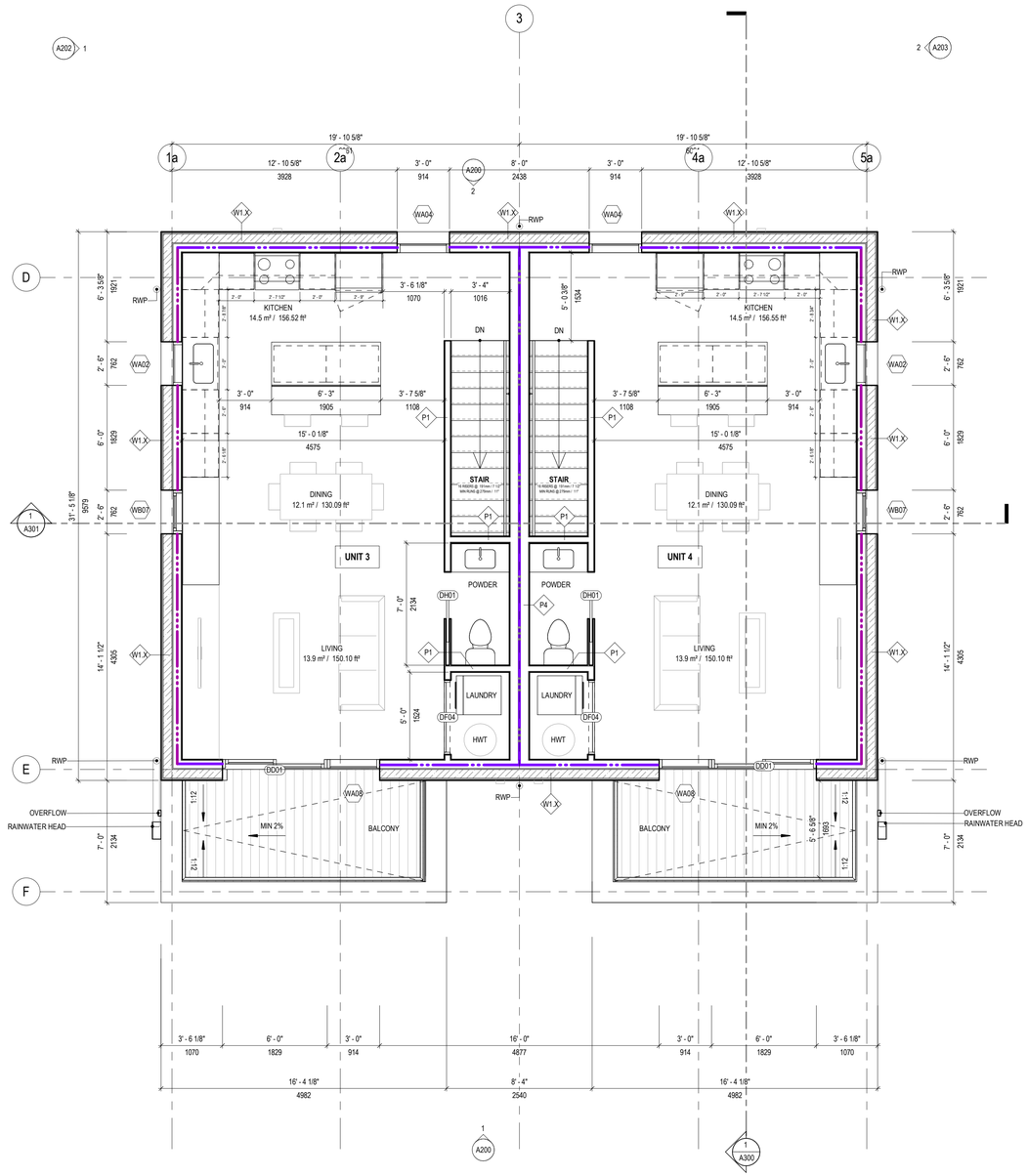
BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

A102c



1 A103a THIRD FLOOR PLAN - FRONT BUILDING

1/4" = 1'-0"

FIRE SEPARATION LEGEND

	3/4 HR FIRE RESISTANCE RATING
	1HR FIRE RESISTANCE RATING

FLOOR PLAN KEYNOTES

01	LOCATION OF SOIL GAS DEPRESSURIZATION PER BCBC 9.13.4.3. RUN UNDERSLAB PIPES TO CENTER OF EACH SLAB THAT IS COMPARTMENTALIZED BY FOUNDATION WALLS. REFER ALSO TO MECHANICAL DRAWINGS.

FLOOR PLAN LEGEND

	FLOOR MOUNTED TOILET
REFER TO PLAN	SHOWER
5' - 0" / 2' - 6"	ALCOVE TUB
2' - 3" / 1' - 1 1/2"	KITCHEN SINK
1' - 6 1/2" / 1' - 4 1/2"	WASHROOM SINK
W / 2' - 7" / 2' - 7"	WASHER
D / 2' - 7" / 2' - 7"	DRYER
	BOILER
MEP	MECHANICAL / ELECTRICAL / PLUMBING
2' - 6" / 2' - 6" / 2' - 1 1/2"	RANGE, TYPICAL
2' - 0" / 2' - 0" / 2' - 1 1/2"	RANGE, NARROW
REF / 2' - 7 1/2" / 2' - 7 1/2"	REFRIGERATOR
1' - 9 1/8" / 1' - 9 1/8"	DISHWASHER
	CLOSET COAT ROD

CMHC SCHL

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BRITISH COLUMBIA, CANADA

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SHEET TITLE:

THIRD FLOOR PLAN- FRONT BUILDING

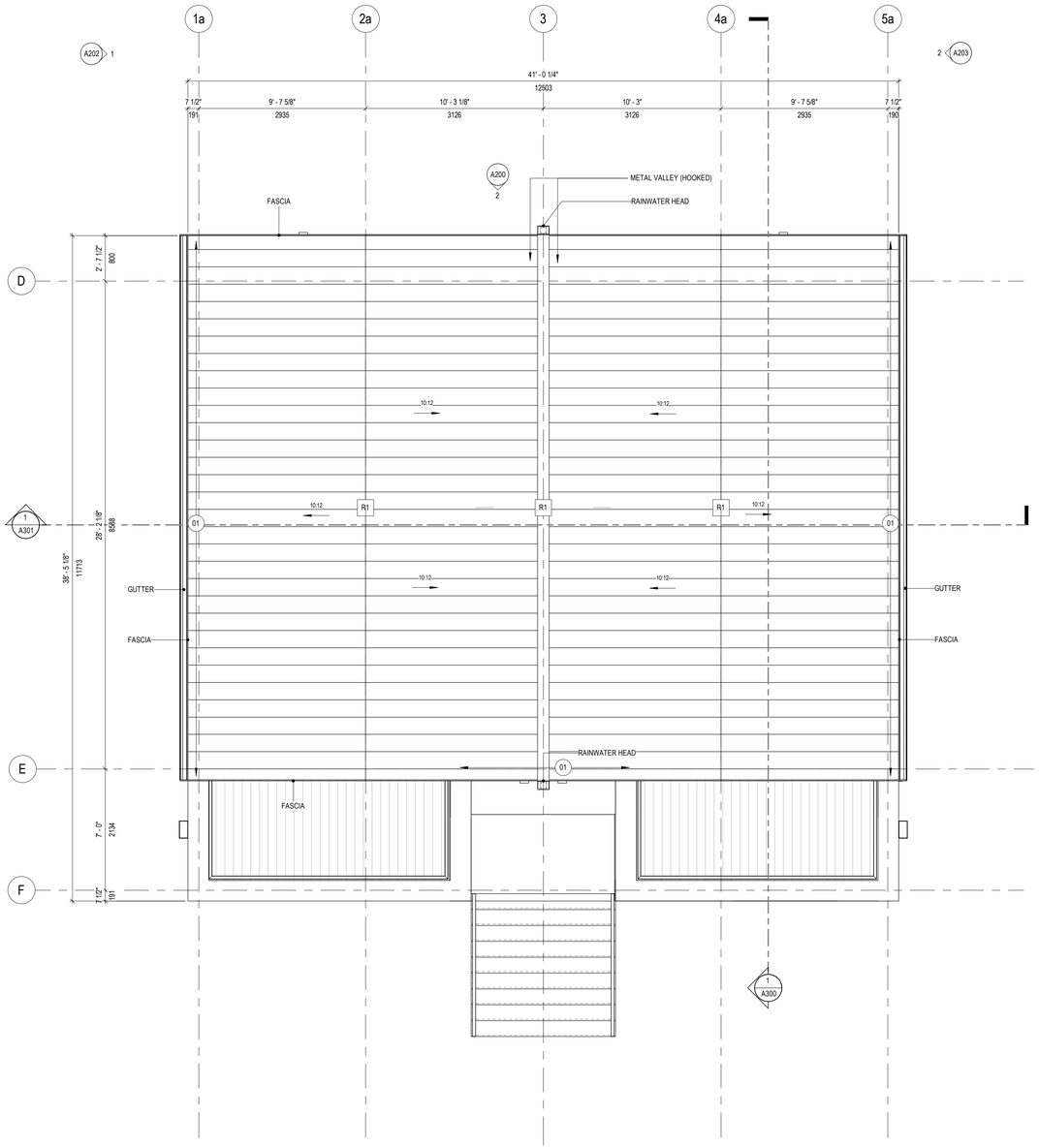
BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

A103a



1 A104a ROOF PLAN - FRONT BUILDING

1/4" = 1'-0"

ROOF PLAN GENERAL NOTES

1. SNOW GUARDS SHOULD BE INSTALLED AT ROOF EAVES ADJACENT TO PATHS OF EGRESS AND/OR ENTRY

ROOF PLAN KEYNOTES

01 POTENTIAL SNOW GUARD LOCATION, REVISE BASED ON SITE FACTORS

ROOF VENTING CALCULATIONS

AREA OF ROOF [A]:	1753.5sf
AREA OF VENTILATION REQUIRED (A/300):	5.845sf (841.7 sq in [B])
LENGTH OF ROOF EDGE AT GABLES:	118' (1416 in [C])
AVG FREE AREA DEPTH REQUIRED ALONG GABLE (B/C):	.59 in

CMHC SCHL

DISCLAIMER

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NO.	DATE	DESCRIPTION
1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

ROOF PLAN - FRONT BUILDING

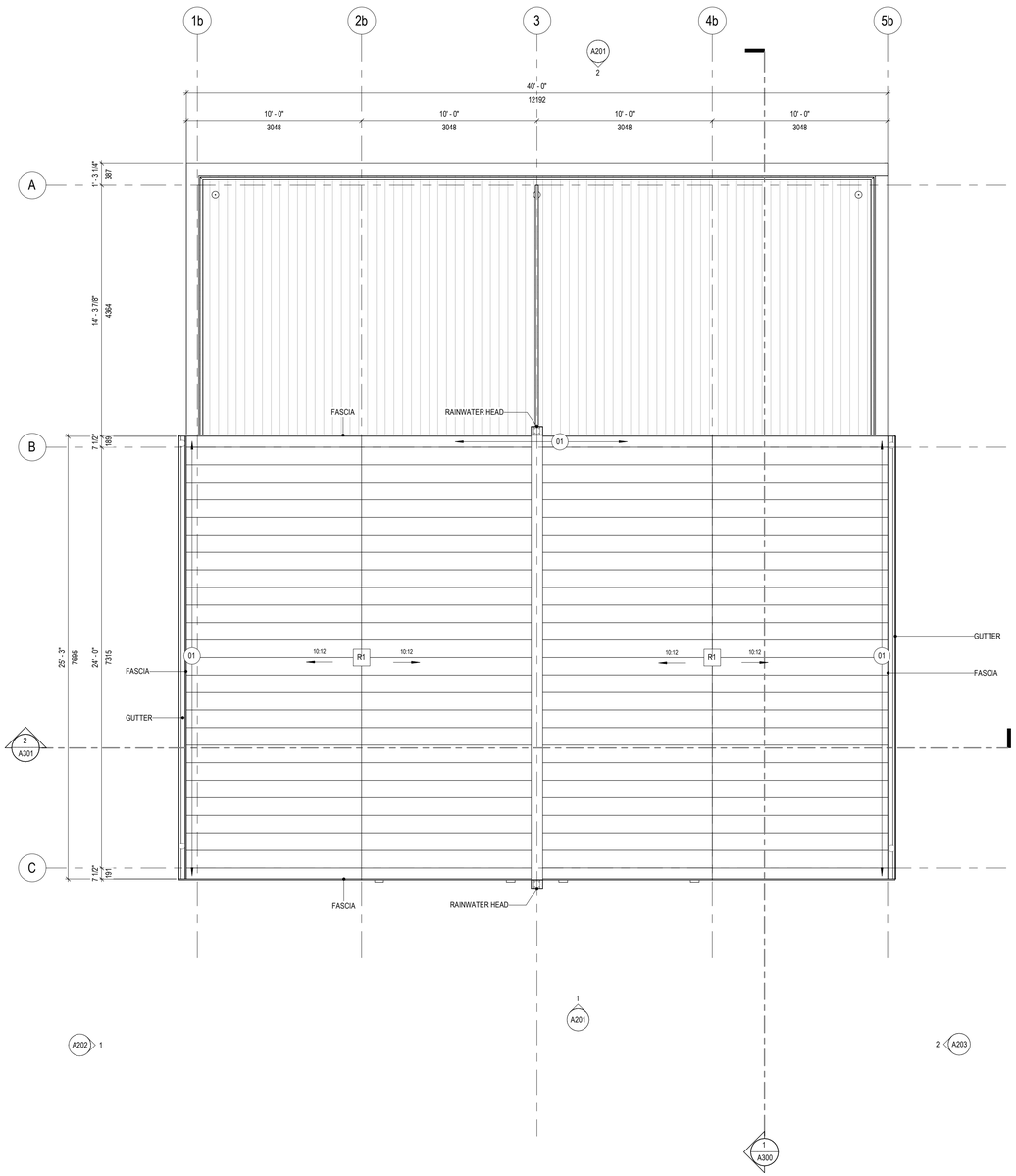
BC Sixplex Courtyard

PROJECT NO: 241058

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

SHEET NO:

A104a



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

ROOF PLAN GENERAL NOTES

1. SNOW GUARDS SHOULD BE INSTALLED AT ROOF EAVES ADJACENT TO PATHS OF EGRESS AND/OR ENTRY

ROOF PLAN KEYNOTES

01 POTENTIAL SNOW GUARD LOCATION, REVISE BASED ON SITE FACTORS

ROOF VENTING CALCULATIONS

AREA OF ROOF [A]:	1490sf
AREA OF VENTILATION REQUIRED (A/300):	4.97sf (715.2 sq in [B])
LENGTH OF ROOF EDGE AT GABLES:	118' (1416 in [C])
AVG FREE AREA DEPTH REQUIRED ALONG GABLE (B/C):	.51 in

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ROOF PLAN - REAR BUILDING

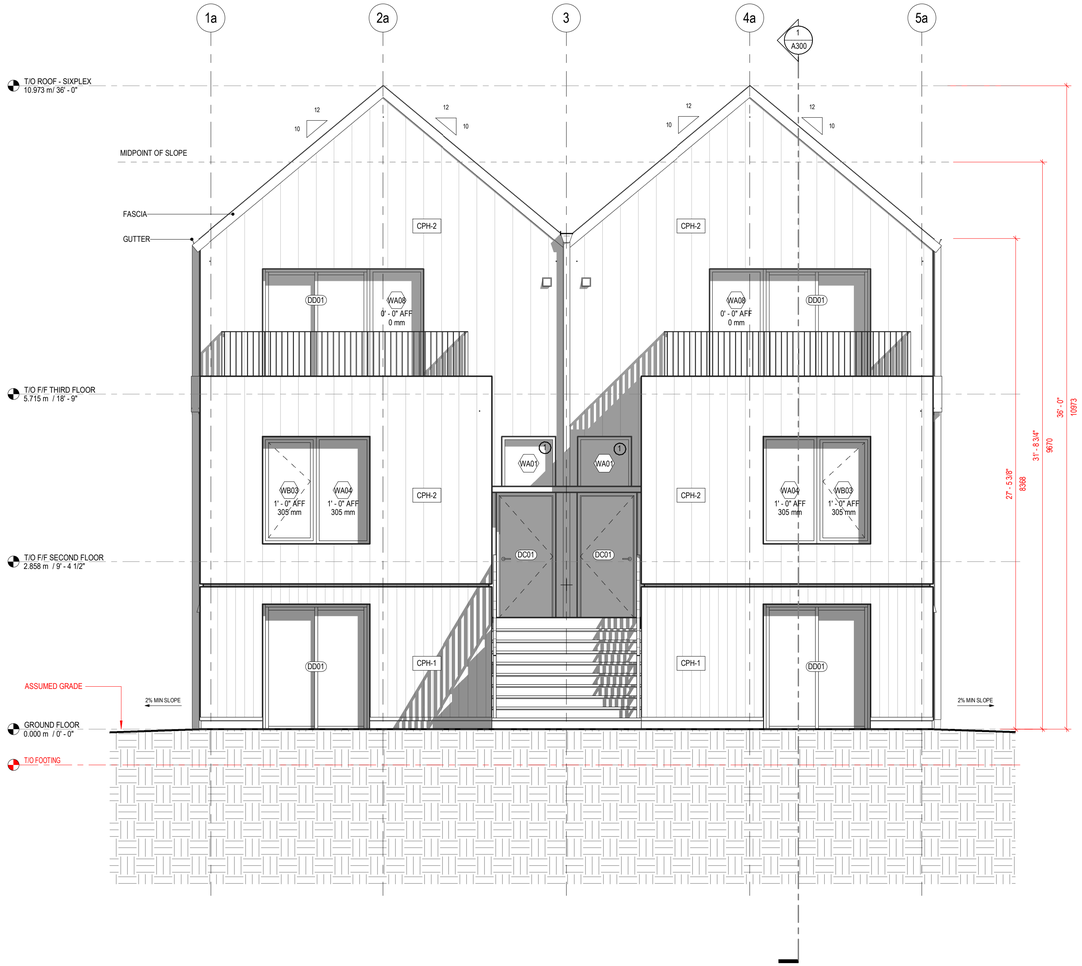
BC Sixplex Courtyard

PROJECT NO: 241058
SCALE: 1/4" = 1'-0"

SHEET NO:

A104c

ELEVATION MATERIAL SCHEDULE	
TAG	MATERIAL
CPH-1	CLADDING PLACEHOLDER, TYPE 1
CPH-2	CLADDING PLACEHOLDER, TYPE 2



1 A200 BUILDING ELEVATION (FRONT) - FRONT

1/4" = 1'-0"

2 A200 BUILDING ELEVATION (FRONT) - REAR

1/4" = 1'-0"

1 WIRED GLASS IN FIXED STEEL FRAMES, GLAZING TO CONFORM TO 9.10.13.5 AS REQUIRED PER 9.9.4.4

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CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

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SHEET TITLE:

ELEVATIONS

BC Sixplex Courtyard

PROJECT NO: 241058

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

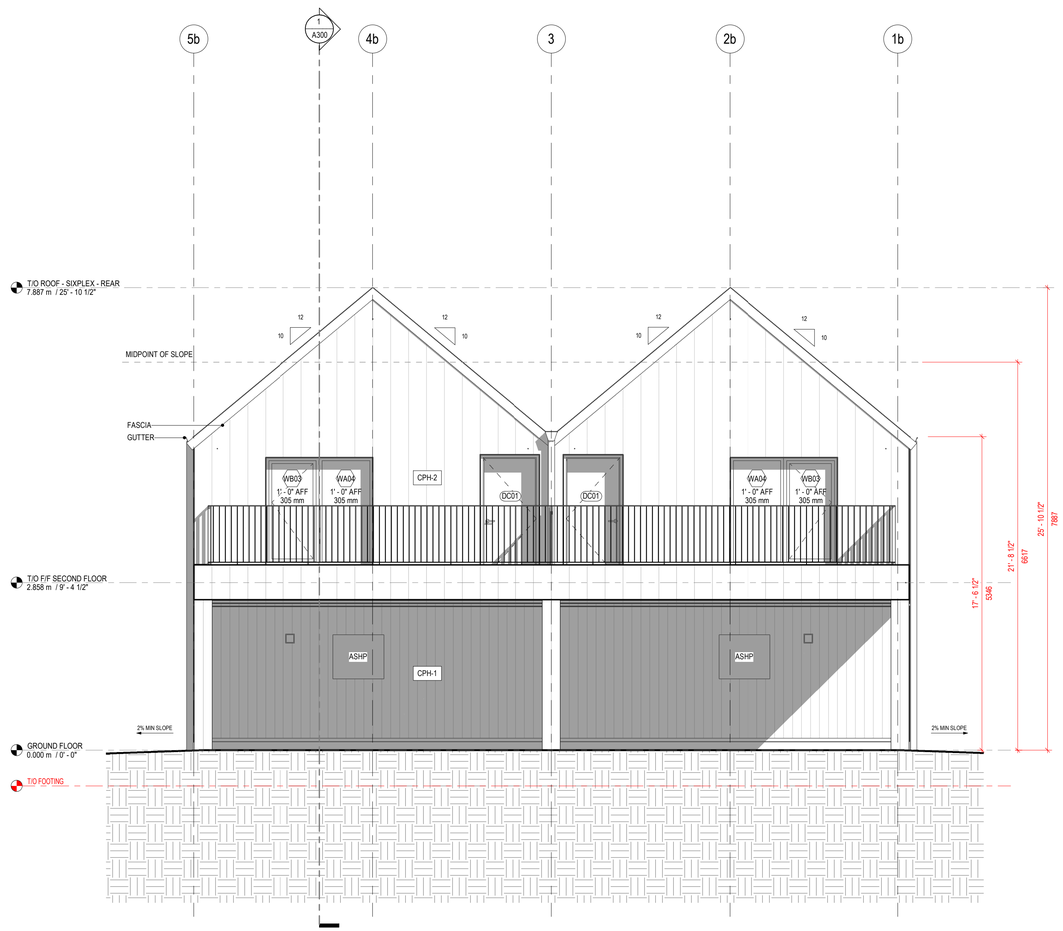
SHEET NO:

A200

ELEVATION MATERIAL SCHEDULE	
TAG	MATERIAL
CPH-1	CLADDING PLACEHOLDER, TYPE 1
CPH-2	CLADDING PLACEHOLDER, TYPE 2

1 A201 BUILDING ELEVATION (REAR) - FRONT

1/4" = 1'-0"



2 A201 BUILDING ELEVATION (REAR) - REAR

1/4" = 1'-0"

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BRITISH COLUMBIA, CANADA

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ELEVATIONS

BC Sixplex Courtyard

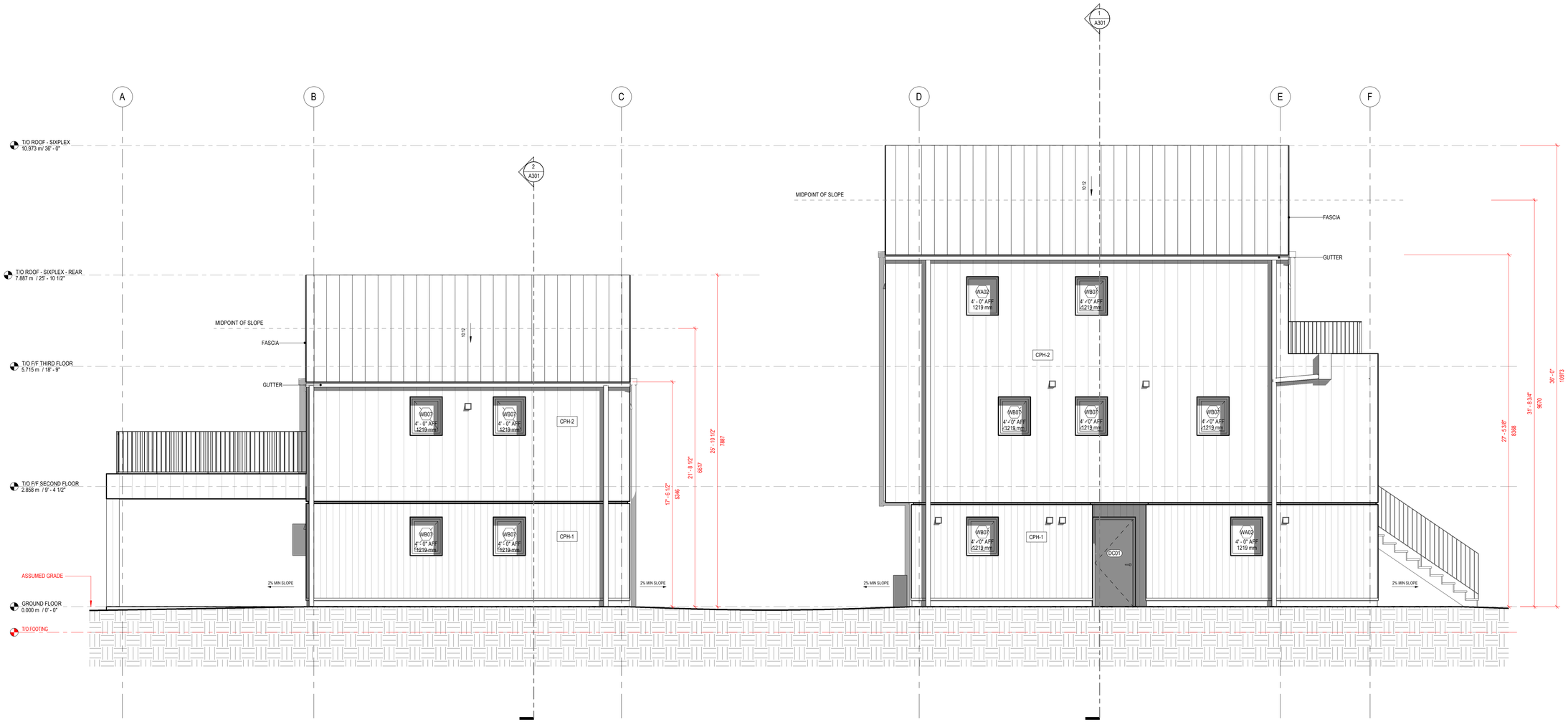
PROJECT NO: 241058

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

SHEET NO:

A201

ELEVATION MATERIAL SCHEDULE	
TAG	MATERIAL
CPH-1	CLADDING PLACEHOLDER, TYPE 1
CPH-2	CLADDING PLACEHOLDER, TYPE 2



1 A202 BUILDING ELEVATION - SIDE 2

1/4" = 1'-0"

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SHEET TITLE:

ELEVATIONS

BC Sixplex Courtyard

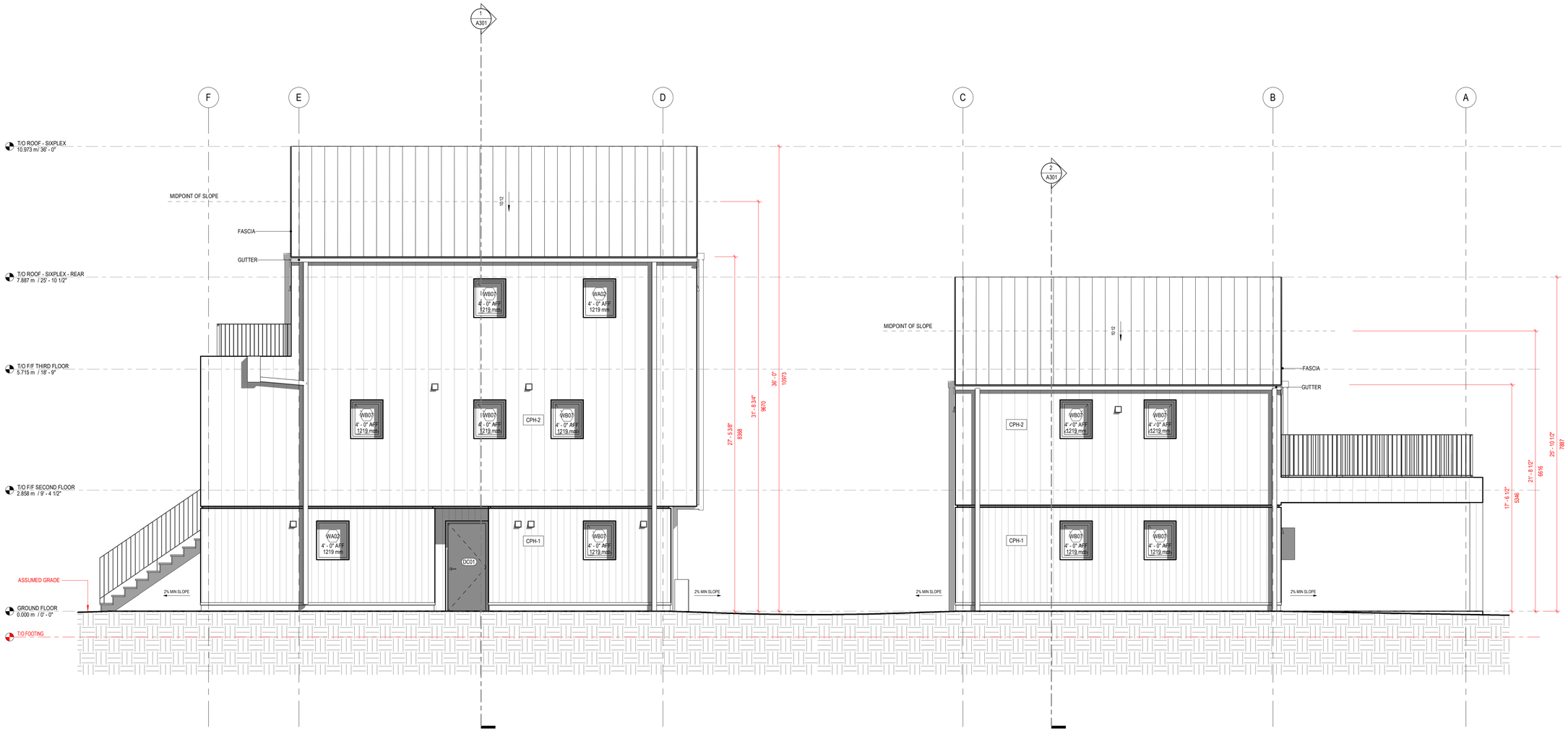
PROJECT NO: 241058

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

SHEET NO:

A202

ELEVATION MATERIAL SCHEDULE	
TAG	MATERIAL
CPH-1	CLADDING PLACEHOLDER, TYPE 1
CPH-2	CLADDING PLACEHOLDER, TYPE 2



2 A203 BUILDING ELEVATION - SIDE 1

1/4" = 1'-0"

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BRITISH COLUMBIA, CANADA

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ELEVATIONS

BC Sixplex Courtyard

PROJECT NO: 241058

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

SHEET NO:

A203

SECTION GENERAL NOTES

1. SITE GRADE TO BE SLOPED AWAY FROM BUILDING AS PER BCBC 9.14.6.1

SECTION KEYNOTES

01 FOUNDATIONS: ASSUMED; REFER TO STRUCTURAL

02 STAIRS AND TREADS TO CONFORM TO APPLICABLE SUBSECTIONS IN BCBC 9.8

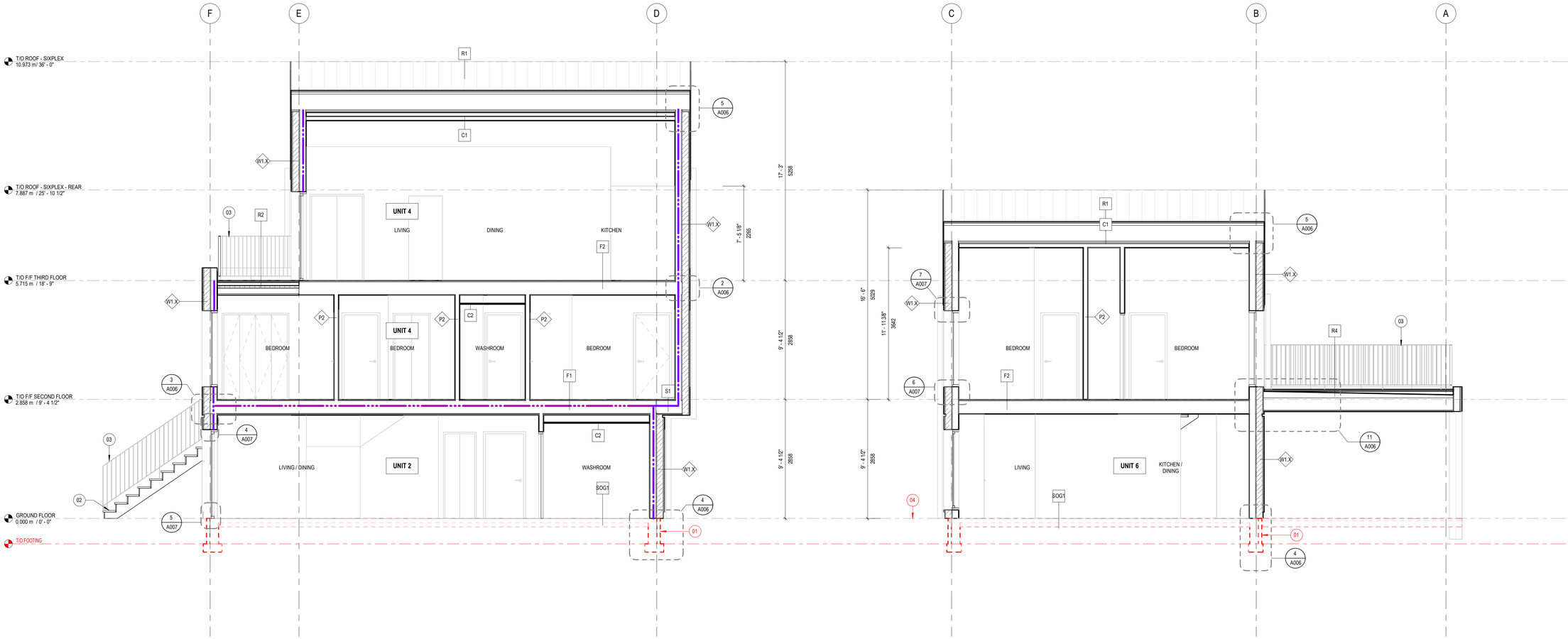
03 HANDRAILS AND GUARDS TO BE DESIGNED IN CONFORMANCE TO BCBC 9.8.7 AND 9.8.8

04 ASSUMED FINISHED GRADE IS FLUSH WITH FINISHED FLOOR LEVEL TO FACILITATE ZERO STEP ENTRY

FIRE RATED RESISTANCE LEGEND

3/4HR FIRE RESISTANCE RATING

1HR FIRE RESISTANCE RATING



1 A300 BUILDING SECTION

1/4" = 1'-0"

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1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

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SHEET TITLE:

SECTIONS

BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

A300

SECTION GENERAL NOTES

1. SITE GRADE TO BE SLOPED AWAY FROM BUILDING AS PER BCBC 9.14.6.1

SECTION KEYNOTES

01 FOUNDATIONS: ASSUMED; REFER TO STRUCTURAL

02 STAIRS AND TREADS TO CONFORM TO APPLICABLE SUBSECTIONS IN BCBC 9.8

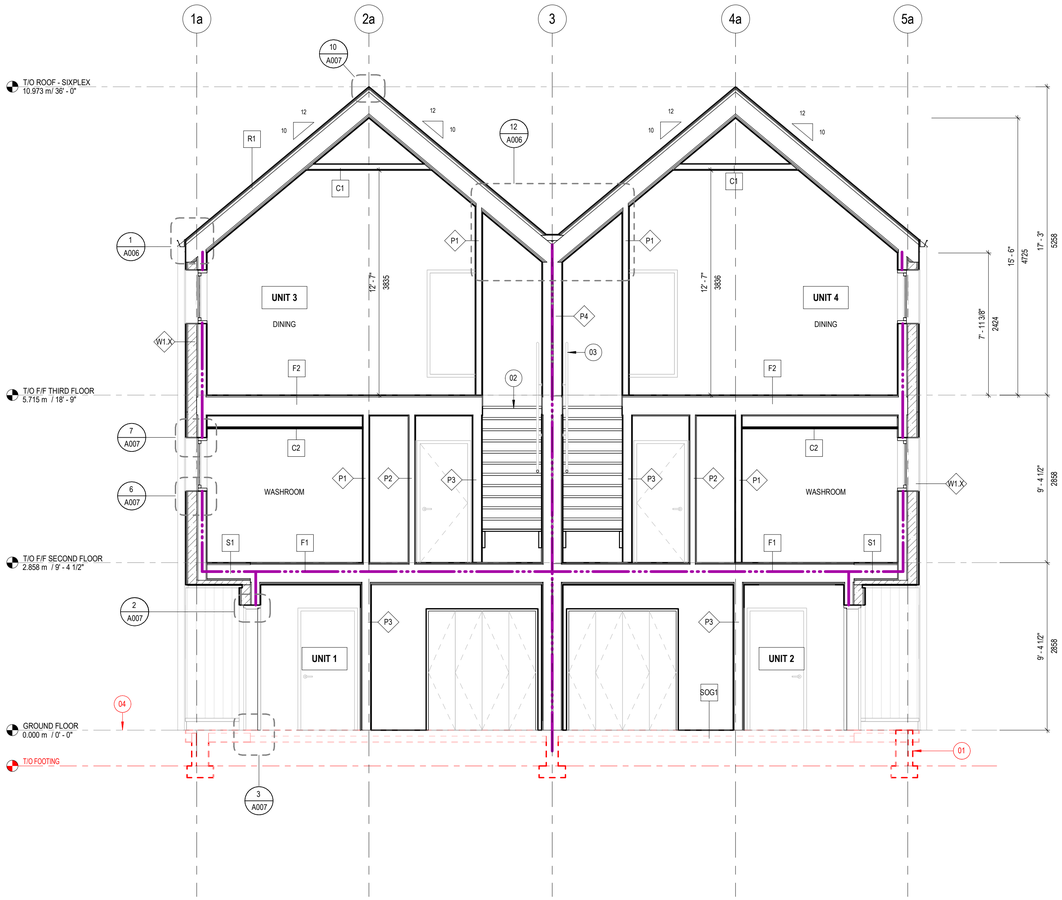
03 HANDRAILS AND GUARDS TO BE DESIGNED IN CONFORMANCE TO BCBC 9.8.7 AND 9.8.8

04 ASSUMED FINISHED GRADE IS FLUSH WITH FINISHED FLOOR LEVEL TO FACILITATE ZERO STEP ENTRY

FIRE RATED RESISTANCE LEGEND

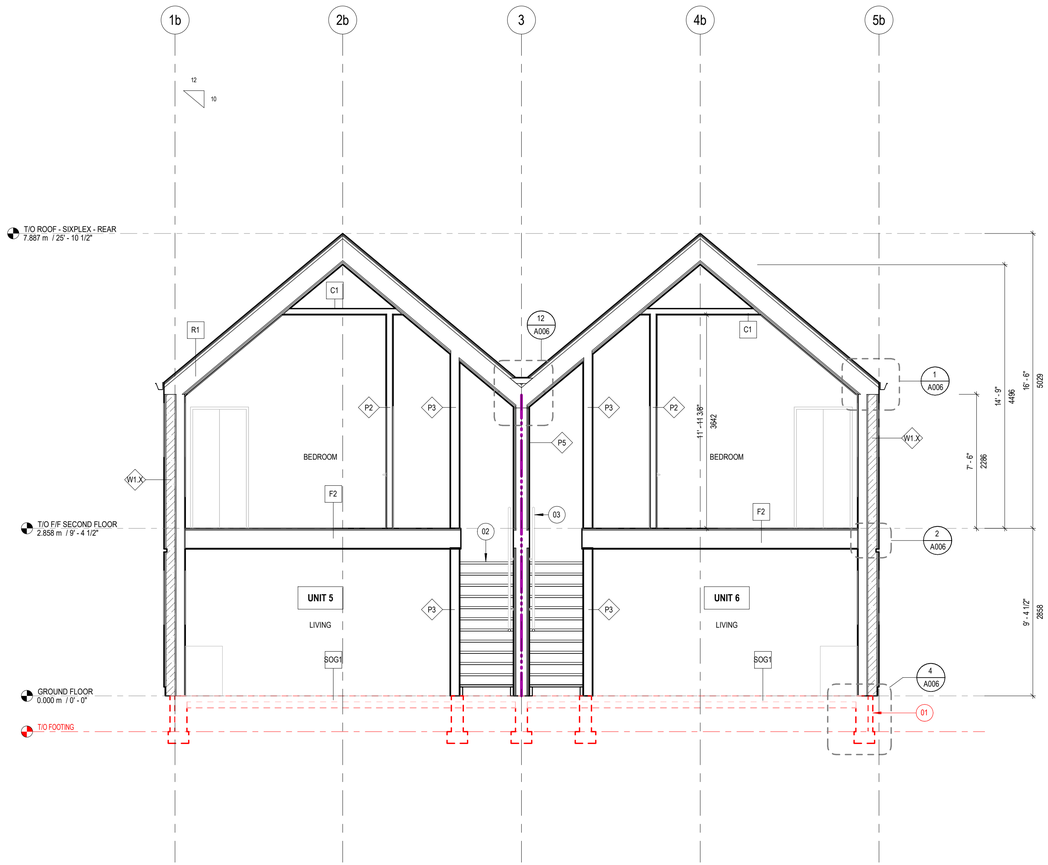
3/4HR FIRE RESISTANCE RATING

1HR FIRE RESISTANCE RATING



1 A301 BUILDING SECTION

1/4" = 1'-0"



2 A301 BUILDING SECTION

1/4" = 1'-0"

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1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

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CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

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SHEET TITLE:

SECTIONS

BC Sixplex Courtyard

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

A301

CMHC HOUSING DESIGN CATALOGUE
BC SIXPLEX COURTYARD

STRUCTURAL DRAWINGS

STRUCTURAL SHEET LIST	
S000	COVER SHEET
S001	GENERAL NOTES AND SCHEDULES
S101a	FOUNDATION / MAIN FLOOR PLAN - FRONT BUILDING
S101c	FOUNDATION / MAIN FLOOR PLAN - REAR BUILDING
S102a	SECOND FLOOR PLAN - FRONT BUILDING
S102c	SECOND FLOOR PLAN - REAR BUILDING
S103a	THIRD FLOOR PLAN - FRONT BUILDING
S104a	ROOF PLAN - FRONT BUILDING
S104c	ROOF PLAN - REAR BUILDING

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CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

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OR CONSTRUCTION

SHEET TITLE:

COVER SHEET

BC SIXPLEX COURTYARD

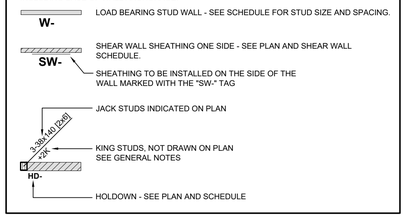
PROJECT NO: 241058
SCALE: NTS

SHEET NO:

S000

WOOD STUD WALL LEGEND

NOTE:
SEE SECTIONS, DETAILS AND STRUCTURAL NOTES FOR ADDITIONAL INFORMATION INCLUDING BASE OF WALL ANCHORAGE.



SHEAR WALL SCHEDULE

MARK	SHEATHING	PANEL EDGE NAILING	ANCHORAGE TO CONCRETE
SW1-A	½" [12.5mm] PLY ONE SIDE	3.33Ø x 2½" [64] COMMON NAILS @4" [100mm] OC	¾" [19mm] Ø ANCHOR BOLT @48" [1200mm] OC
SW2-A	½" [12.5mm] PLY BOTH SIDES	3.33Ø x 2½" [64] COMMON NAILS @4" [100mm] OC	¾" [19mm] Ø ANCHOR BOLT @24" [600mm] OC
SW2-B	½" [12.5mm] PLY BOTH SIDES	3.33Ø x 2½" [64] COMMON NAILS @3" [75mm] OC	¾" [19mm] Ø ANCHOR BOLT @16" [400mm] OC

NOTES:

1. NAIL PLYWOOD PANEL @12" [300mm] OC IN THE FIELD FOR ALL SHEAR WALL TYPES.
2. BLOCK ALL PLY EDGES.
3. WHERE NAIL SPACING IS @2" [50mm] OC, DOUBLE UP ALL FRAMING MEMBERS AT PANEL EDGES.
4. ENSURE BASE ANCHORAGE TO CONCRETE.
5. HOLDOWNS TO BE PROVIDED AT THE END OF EACH SEGMENT OF SHEAR WALL (REFER TO SCHEDULE).
6. ALLOW FOR HOLDOWNS AT EACH END OF ORTHOGONAL INTERSECTIONS OF WALL IN BOTH DIRECTIONS.
7. ENSURE 2 VERTICAL FOUNDATION WALL REINFORCEMENT BARS ARE PLACED WITHIN 2" [50mm] OF EACH CAST-IN HOLDOWN ANCHOR, TYP.
8. ENGINEER TO DESIGN AND CONFIRM NAILING PATTERN, TOP PLATE AND BOTTOM PLATE CONNECTION AND ANCHORAGE TO CONCRETE.
9. OPENINGS AND PENETRATIONS IN SHEAR WALLS ARE NOT PERMITTED, UNLESS SPECIFIED ON THE DRAWINGS.

FINAL DESIGN OF ELEMENTS TO BE COMPLETED TO PART 9 PRESCRIPTIVE METHODS FOR CLIMATIC CONDITIONS APPROPRIATE TO INDIVIDUAL SITES.

WHERE THE LATERAL SYSTEM (SHEAR WALLS, DIAPHRAGMS AND ASSOCIATED HOLDOWN AND FOUNDATIONS) FALL OUTSIDE THE PRESCRIPTIVE REQUIREMENTS IN SECTION 9.23. DESIGN TO PART 4 IN ACCORDANCE WITH CLAUSE 9.23.1.1.2.

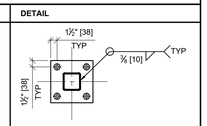
WOOD STUD WALL SCHEDULE

MARK	STUD SIZE AND SPACING	SILL PLATE	TOP PLATE	REMARKS
W1	2x6 [38x140] SPF STUDS @16" [400mm] OC	2x6 [38x140] PT SPF	(2) 2x6 [38x140] SPF	TYP FOR ALL INTERNAL AND EXTERNAL WALLS UNO
W2	2x4 [38x89] SPF STUDS @16" [400mm] OC	2x4 [38x89] PT SPF	(2) 2x4 [38x89] SPF	AS MARKED ON PLANS

NOTES:

1. ALL STUDS/PLATES TO BE No. 2 OR BETTER UNO.
2. SEE GENERAL NOTES FOR SHEATHING AND ANCHORAGE.
3. SEE SHEAR WALL SCHEDULE FOR WALL SHEATHING AND ANCHORAGE FOR WALLS MARKED SW- ON PLAN.
4. SPLICE ALL TOP PLATES.
5. WHERE BUILT-UP AND STEEL BEAMS ARE SUPPORTED ON STUD WALLS BELOW, STUD PACK TO BE ALLOWED FOR TO MATCH BEAM WIDTH.

BASE PLATE SCHEDULE

MARK	BP SIZE & ANCHORS	DETAIL
BP1	PL⅝x10x0'-10" [16x250x250] C/W (4) ¾" [19]Ø THREADED BAR W/ 3" [75] HOOK.	

FOOTING SCHEDULE

MARK	TYPE	SIZE	REINFORCEMENT	REMARKS
SF1	STRIP	2'-0" [600] WD x 18" [450] DP	[220 kg/m3]	AS MARKED ON PLANS
SF2	STRIP	2'-0" [600] WD x 10" [250] DP	[110 - 150 kg/m3]	AS MARKED ON PLANS
SF3	STRIP	3'-0" [900] WD x 18" [450] DP	[220 kg/m3]	AS MARKED ON PLANS
PF1	PAD	4'-0" [1200] x 4'-0" [1200] x 10" [250] DP	[70 - 90 kg/m3]	

NOTES:

1. PROVIDE HOOKED DOWELS FROM BOTTOM OF FOOTING TO MATCH AND LAP WITH VERTICALS.
2. FOOTINGS TO BE DESIGNED IN ACCORDANCE WITH CL. 9.4.4.1. AND 9.4.4.3, AND AT THE REQUIRED DEPTH FOR FROST PROTECTION APPROPRIATE TO THE SITE CONDITIONS.

FOUNDATION WALL SCHEDULE

MARK	SIZE	REINFORCEMENT	REMARKS
FW1	8" [200mm]	[110 - 150 kg/m3]	TYP FOR STRIP FOOTINGS UNO
FW2	10" [250mm]	[110 - 150 kg/m3]	FOR SF3, AS MARKED ON PLANS
FW3	14" [350mm]	[110 - 150 kg/m3]	FOR SF3, AS MARKED ON PLANS

LINTEL / HEADER SCHEDULE

MARK	SIZE	REMARKS
L1	(2) 2x10 [38x235]	TYP FOR LOAD BEARING WALLS UNO

NOTES:

1. SIZES PROVIDED FOR INITIAL COSTING. DESIGNER TO SIZE LINTELS AND FLOOR BEAMS BASED ON SPAN AND LOAD WIDTHS IN ACCORDANCE WITH PART 9 REQUIREMENTS AND SITE-SPECIFIC SNOW LOADS AS APPROPRIATE.

JOIST SCHEDULE

MARK	SIZE AND SPACING	REMARKS
J1	⅝" [16mm] T&G PLY ON 2x12 [38x286] SPF JOISTS @16" [400] OC	TYP FOR FLOOR UNO
J2	⅝" [16mm] T&G PLY ON 2x12 [38x286] SPF JOISTS @16" [400] OC	TYP FOR ROOF UNO

NOTES:

1. TIMBER BEAMS TO BE SIZED IN ACCORDANCE WITH TABLE 9.23.4.2.-H.
2. ALL JOISTS TO BE SPF GRADE No. 1/No. 2 OR BETTER. ALTERNATIVELY USE TJI'S TO MANUFACTURER'S SPAN-TO-LOAD TABLES.
3. ALL FLOOR JOISTS W/ STRAPPING @16" [400] OC.

NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS FOR SETTING OUT DETAILS.
2. DO NOT SCALE FROM DRAWINGS.
3. TRIAL PITS TO CONFIRM SOIL TYPE PRIOR TO CONSTRUCTION.
4. ALL EXTERIOR STEELWORK TO BE GALVANISED AND PAINTED AS PER ARCH SPECIFICATIONS.
5. CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY WORKS INCLUDING SHORING.
6. CONTRACTOR TO PROVIDE ADEQUATE SHORING AS REQUIRED DURING ALL PHASES OF CONSTRUCTION.
7. ANY CONNECTIONS NOT SHOWN TO BE AS PER PART 9.

DEFLECTIONS:

1. DEFLECTION LIMITS AS SPECIFIED IN TABLE 9.4.3.1.
2. WHERE ELEMENTS ARE CANTILEVERED, A MAX ALLOWABLE LIMIT OF 1/180 IS PERMITEED.
3. WHERE ELEMENTS ARE TRANSFERRING, A MAX ALLOWABLE LIMIT OF 1/500 IS PERMITTED.
4. WHERE ELEMENTS ARE SUPPORTING BRITTLE ELEMENT (I.E. GLASS), A MAX ALLOWABLE LIMIT OF 1/500 IS PERMITTED.

OPENING IN WALLS:

1. JACK AND KING STUDS:
   a. INSTALL DOUBLE JACK STUDS UNDER LINTELS, UNO.
   b. INSTALL 2 KING STUDS AT POST FOR EXTERIOR WALLS, UNO.
   c. INSTALL 1 KING STUD POST AT INTERIOR WALLS, UNO.
2. MINIMUM LINTEL SHALL BE LSL3½x9½ [89x241] OR (2) 2x10 [38x235] LUMBER, UNO.

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BRITISH COLUMBIA, CANADA

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SHEET TITLE:

GENERAL NOTES AND SCHEDULES

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: NTS

SHEET NO:

S001

PRELIMINARY DESIGN BASED ON THE FOLLOWING ASSUMPTIONS:

INDICATIVE BC LOCATIONS CONSIDERED IN BASE DESIGN:
- VICTORIA
- VANCOUVER
- KELOWNA
- PRINCE GEORGE

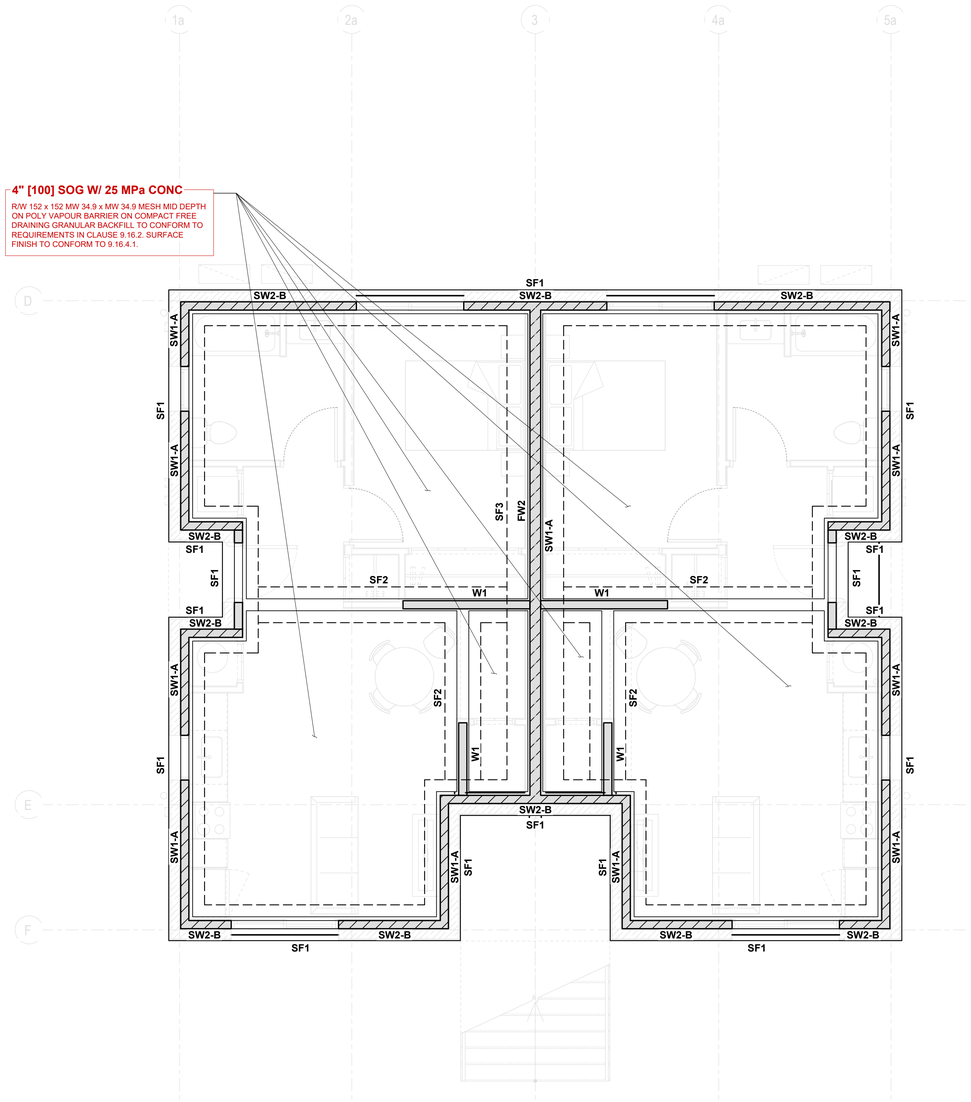
ALL FINAL DESIGNS TO BE COMPLETED FOR THE APPROPRIATE CLIMATIC CONDITIONS OF THE PROPOSED SITE, INCLUDING SNOW, WIND AND SEISMIC LOADING.

STRUCTURAL ENGINEERING DESIGN TO PART 4 REQUIRED WHERE NOTED ON PLANS.

SHEAR WALLS FALL OUTSIDE THE PRESCRIPTIVE REQUIREMENTS IN SECTION 9.23. AND MUST HENCE BE DESIGNED TO PART 4 IN ACCORDANCE WITH CLAUSE 9.23.1.1.2.

4" [100] SOG W/ 25 MPa CONC

R/W 152 x 152 MW 34.9 x MW 34.9 MESH MID DEPTH ON POLY VAPOUR BARRIER ON COMPACT FREE DRAINING GRANULAR BACKFILL TO CONFORM TO REQUIREMENTS IN CLAUSE 9.16.2. SURFACE FINISH TO CONFORM TO 9.16.4.1.



FOUNDATION / MAIN FLOOR PLAN

1/4" = 1'-0"

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BRITISH COLUMBIA, CANADA

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SHEET TITLE:

FOUNDATION / MAIN FLOOR PLAN - FRONT BUILDING

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

S101a

PRELIMINARY DESIGN BASED ON THE FOLLOWING ASSUMPTIONS:

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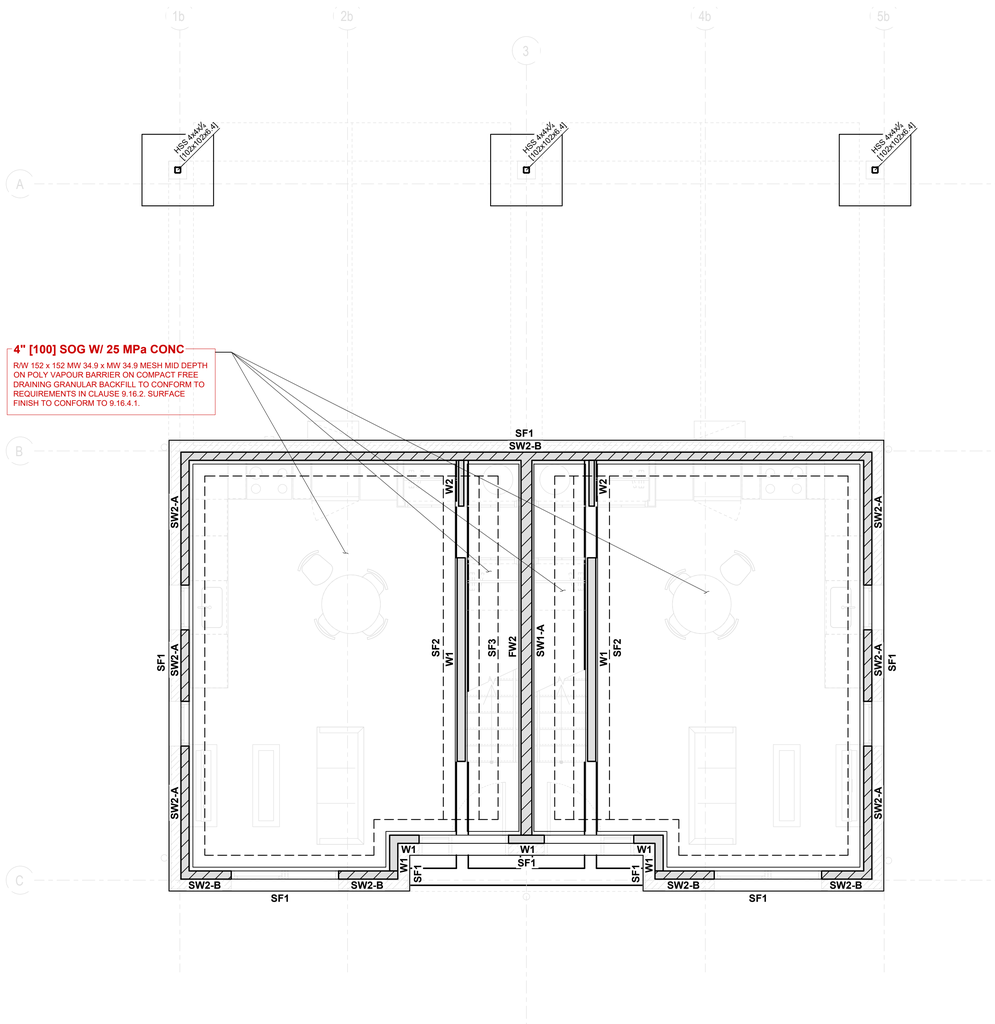
- KELOWNA
- PRINCE GEORGE

ALL FINAL DESIGNS TO BE COMPLETED FOR THE APPROPRIATE CLIMATIC CONDITIONS OF THE PROPOSED SITE, INCLUDING SNOW, WIND AND SEISMIC LOADING.

STRUCTURAL ENGINEERING DESIGN TO PART 4 REQUIRED WHERE NOTED ON PLANS.

SHEAR WALLS FALL OUTSIDE THE PRESCRIPTIVE REQUIREMENTS IN SECTION 9.23. AND MUST HENCE BE DESIGNED TO PART 4 IN ACCORDANCE WITH CLAUSE 9.23.1.1.2.



FOUNDATION / MAIN FLOOR PLAN - REAR BUILDING

1/4" = 1'-0"

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CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

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FOUNDATION / MAIN FLOOR PLAN - REAR BUILDING

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

S101c

PRELIMINARY DESIGN BASED ON THE FOLLOWING ASSUMPTIONS:

INDICATIVE BC LOCATIONS CONSIDERED IN BASE DESIGN:
- VICTORIA
- VANCOUVER
- KELOWNA
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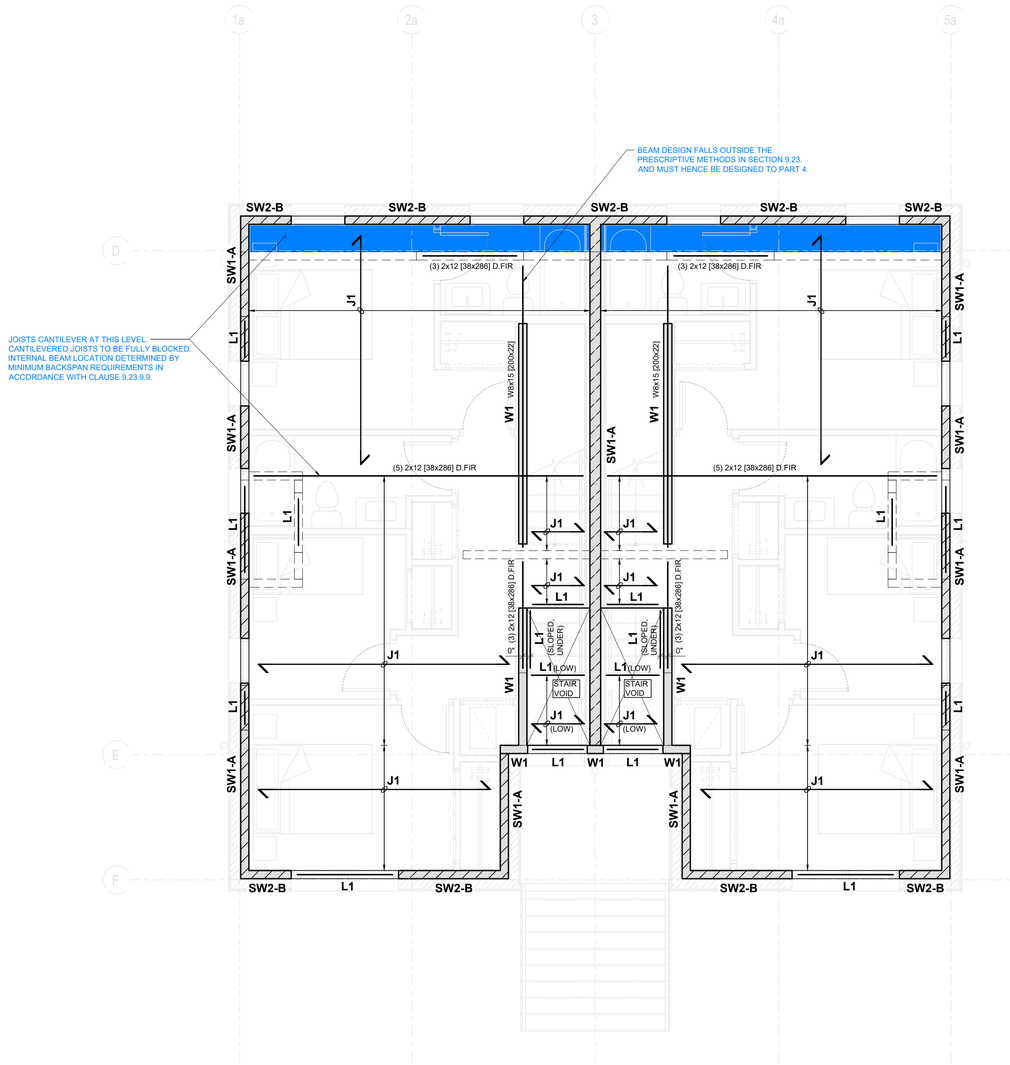
ALL FINAL DESIGNS TO BE COMPLETED FOR THE APPROPRIATE CLIMATIC CONDITIONS OF THE PROPOSED SITE, INCLUDING SNOW, WIND AND SEISMIC LOADING.

STRUCTURAL ENGINEERING DESIGN TO PART 4 REQUIRED WHERE NOTED ON PLANS.

SHEAR WALLS FALL OUTSIDE THE PRESCRIPTIVE REQUIREMENTS IN SECTION 9.23. AND MUST HENCE BE DESIGNED TO PART 4 IN ACCORDANCE WITH CLAUSE 9.23.1.1.2.



SECOND FLOOR PLAN - FRONT BUILDING

1/4" = 1'-0"

DISCLAIMER

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NO.	DATE	DESCRIPTION
1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

SECOND FLOOR PLAN - FRONT BUILDING

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

S102a

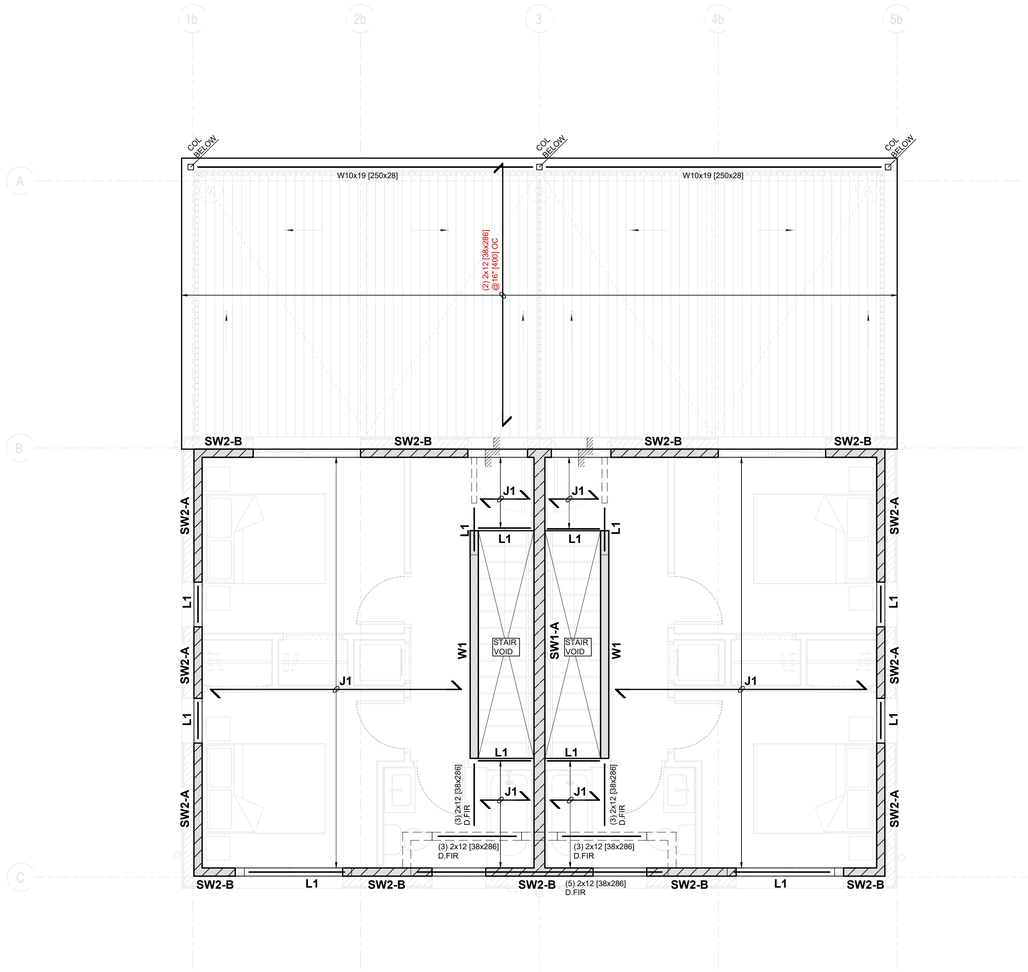
PRELIMINARY DESIGN BASED ON THE FOLLOWING ASSUMPTIONS:

INDICATIVE BC LOCATIONS CONSIDERED IN BASE DESIGN:
- VICTORIA
- VANCOUVER
- KELOWNA
- PRINCE GEORGE

ALL FINAL DESIGNS TO BE COMPLETED FOR THE APPROPRIATE CLIMATIC CONDITIONS OF THE PROPOSED SITE, INCLUDING SNOW, WIND AND SEISMIC LOADING.

STRUCTURAL ENGINEERING DESIGN TO PART 4 REQUIRED WHERE NOTED ON PLANS.

SHEAR WALLS FALL OUTSIDE THE PRESCRIPTIVE REQUIREMENTS IN SECTION 9.23. AND MUST HENCE BE DESIGNED TO PART 4 IN ACCORDANCE WITH CLAUSE 9.23.1.1.2.



SECOND FLOOR PLAN - REAR BUILDING

1/4" = 1'-0"

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PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

SECOND FLOOR PLAN - REAR BUILDING

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

S102c

PRELIMINARY DESIGN BASED ON THE FOLLOWING ASSUMPTIONS:

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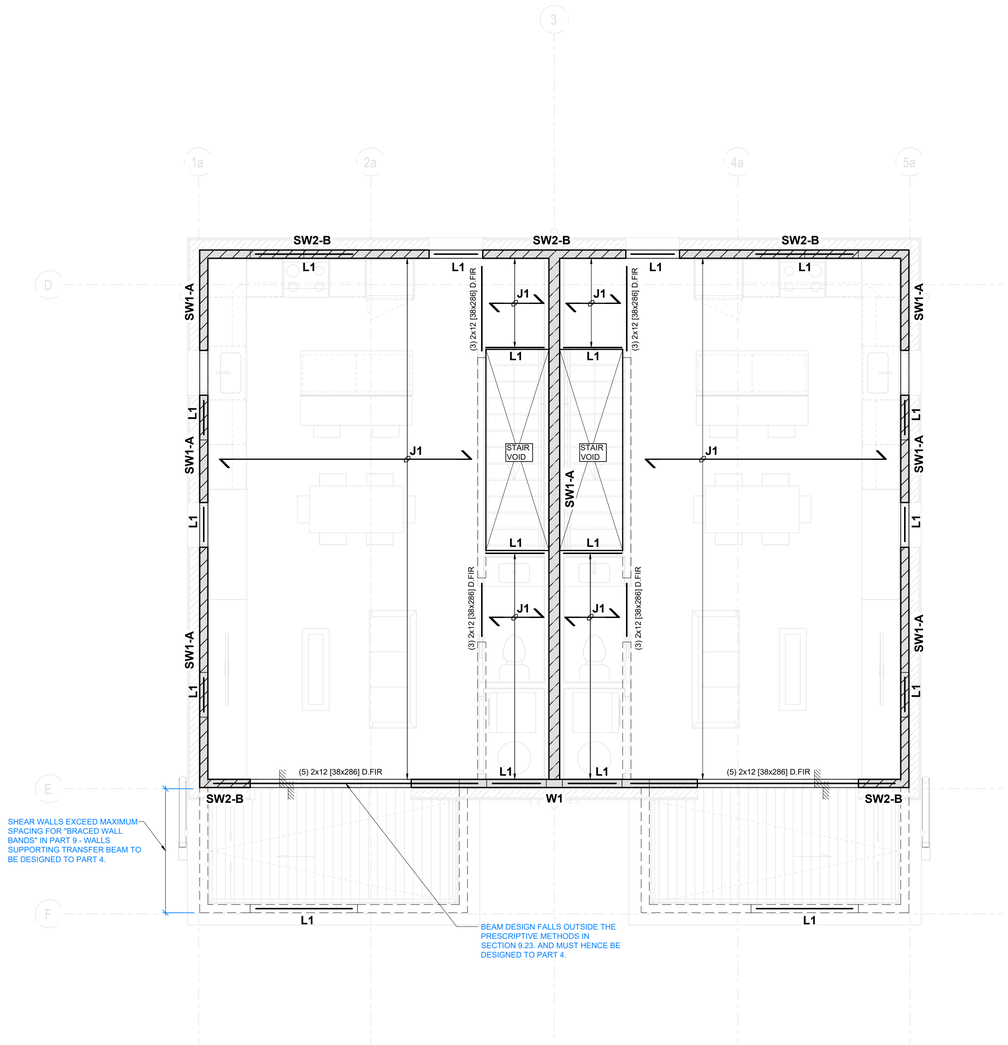

THIRD FLOOR PLAN - FRONT BUILDING

1/4" = 1'-0"

CMHC SCHL

NO.	DATE	DESCRIPTION
1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

THIRD FLOOR PLAN - FRONT BUILDING

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

S103a

PRELIMINARY DESIGN BASED ON THE FOLLOWING ASSUMPTIONS:

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- PRINCE GEORGE

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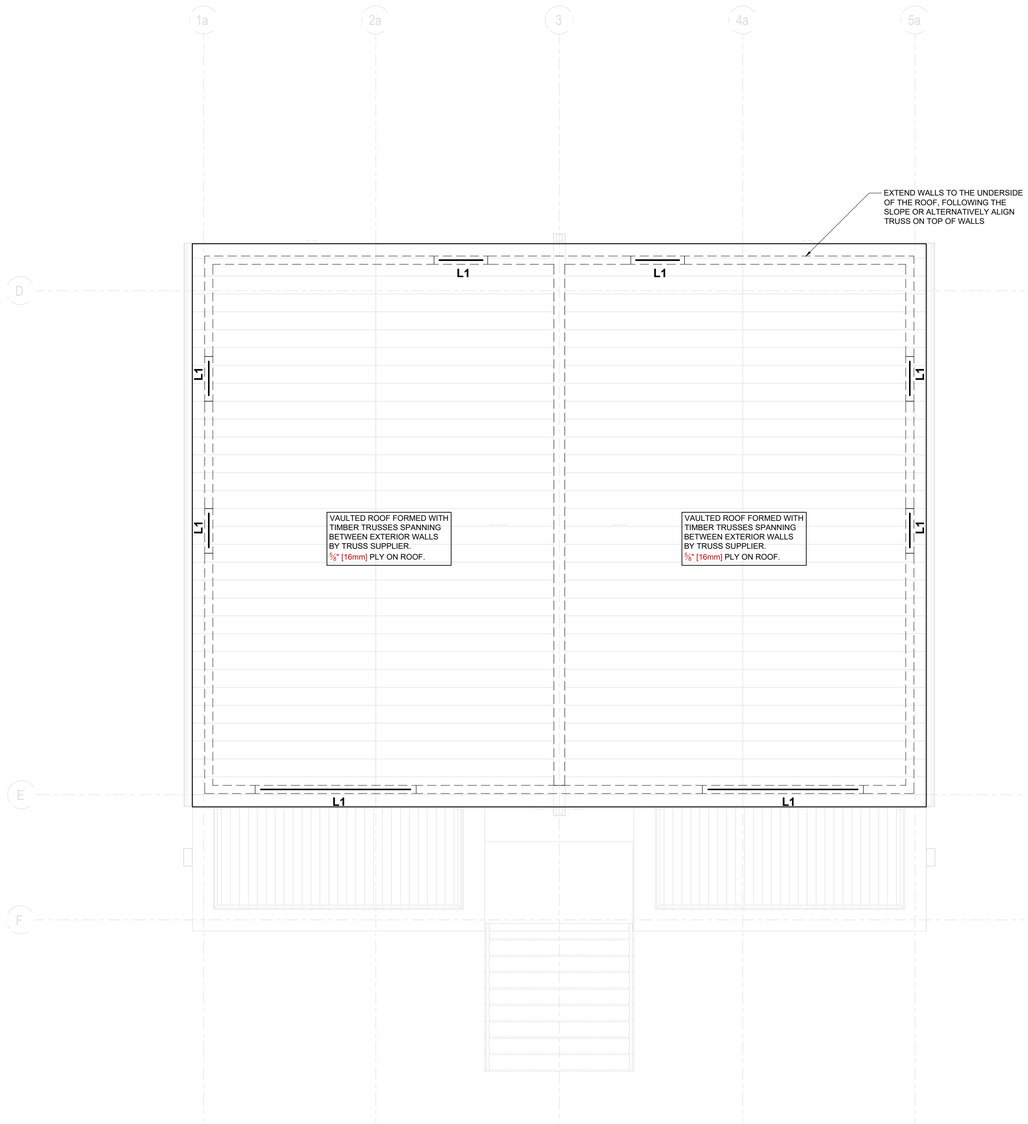
SHEAR WALLS FALL OUTSIDE THE PRESCRIPTIVE REQUIREMENTS IN SECTION 9.23. AND MUST HENCE BE DESIGNED TO PART 4 IN ACCORDANCE WITH CLAUSE 9.23.1.1.2.



ROOF PLAN - FRONT BUILDING

1/4" = 1'-0"

CMHC SCHL

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PROJECT:

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BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

ROOF PLAN - FRONT BUILDING

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

S104a

PRELIMINARY DESIGN BASED ON THE FOLLOWING ASSUMPTIONS:

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- VANCOUVER
- KELOWNA
- PRINCE GEORGE

ALL FINAL DESIGNS TO BE COMPLETED FOR THE APPROPRIATE CLIMATIC CONDITIONS OF THE PROPOSED SITE, INCLUDING SNOW, WIND AND SEISMIC LOADING.

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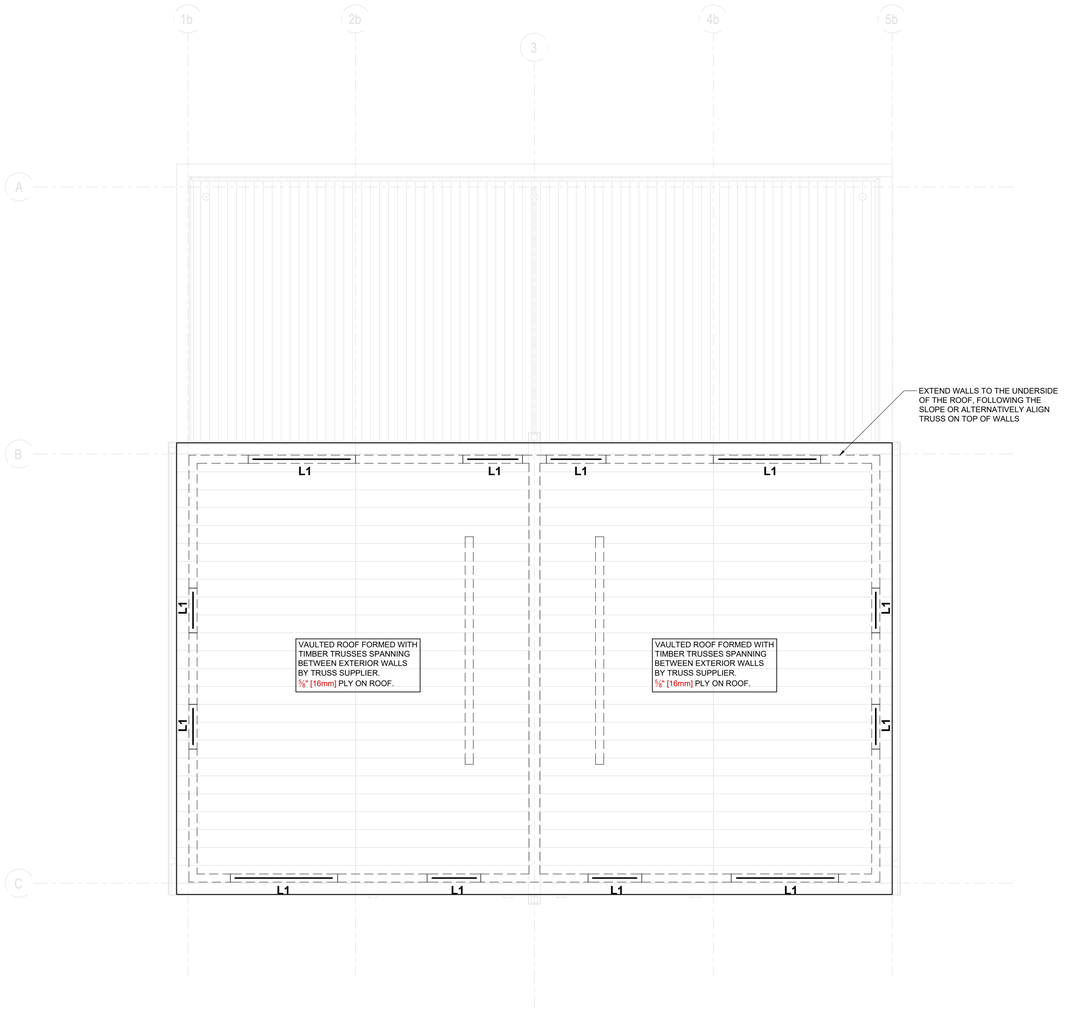

ROOF PLAN - REAR BUILDING

1/4" = 1'-0"

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BRITISH COLUMBIA, CANADA

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SHEET TITLE:

ROOF PLAN - REAR BUILDING

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: As indicated

SHEET NO:

S104c

CMHC HOUSING DESIGN CATALOGUE
BC SIXPLEX COURTYARD OPTION 1

MECHANICAL DRAWINGS

MECHANICAL SHEET LIST	
M700	MECHANICAL COVER PAGE
M701.1	BC SIXPLEX MAIN AND SECOND FLOOR MECH (OPTION 1)
M702.1	BC SIXPLEX THIRD FLOOR MECHANICAL (OPTION 1)
M001	MECHANICAL DETAILS
M002	MECHANICAL SPECIFICATIONS

MECHANICAL SYSTEMS		
	EQUIPMENT	**DESCRIPTION**
VENTILATION	ENERGY RECOVERY VENTILATOR (ERV)	DWELLING UNIT TO BE SERVED BY A SINGLE ERV (MIN. 80% HEAT RECOVERY EFFECTIVENESS) FOR CONTINUOUS SUPPLY OF OUTDOOR AIR TO ALL OCCUPIED SPACES AND EXHAUST AIR FROM WASHROOM.
HEATING AND COOLING	DUCTLESS SPLIT-SYSTEM HEAT PUMP(FCU-INDOOR UNIT, CU-OUTDOOR UNIT) SUPPLEMENTARY BASEBOARD HEATER (EBBH)	HEATING AND COOLING OF SUITE IS SERVED BY ELECTRIC SPLIT SYSTEM WITH WALL MOUNTED, DUCTLESS INDOOR UNITS. FOR CLIMATE ZONES 5 & 6, ELECTRIC BASEBOARD IS REQUIRED FOR ALL SPACES AS BACK UP HEAT WHEN OUTDOOR AMBIENT TEMPERATURE IS BELOW -15°C, OR DURING POWER OUTAGE
DOMESTIC HOT WATER	HYBRID HEAT PUMP WATER HEATER (DHWT)	DOMESTIC HOT WATER PRODUCTION BY STANDALONE HYBRID HEAT PUMP AND ELECTRIC HOT WATER HEATER
KITCHEN EXHAUST	-	KITCHEN RANGE EXHAUST TO BE SEPARATE FROM MAIN VENTILATION SYSTEM AND TO BE DUCTED DIRECTLY TO OUTSIDE. (NOTE: THIS IS DESIGNED FOR ALL ELECTRIC APPLIANCE. A MAKE-UP AIR (MUA) FAN INTERLOCKED WITH KITCHEN RANGE EXHAUST IS RECOMMENDED FOR HOMES THAT INCLUDE ANY GAS-FIRED OR NATURAL-DRAFTING APPLIANCES OR FIREPLACES, TO PREVENT DEPRESSURIZATON AND BACKDRAFT"
DRYER EXHAUST	-	DRYER EXHAUST TO BE SEPARATE FROM MAIN VENTILATION SYSTEM AND TO BE DUCTED DIRECTLY TO OUTSIDE. (NOTE: THIS IS BASED ON CONVENTIONAL DOMESTIC DRYERS. CONDENSING DRYERS DO NOT REQUIRE DUCTED EXHAUST)

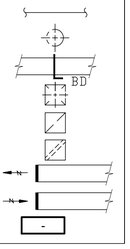
MECHANICAL LEGEND

LIST OF ABBREVIATIONS

C/W	COMPLETE WITH
DN	DOWN
F/A, T/A	FROM ABOVE, TO ABOVE
F/B, T/B	FROM BELOW, TO BELOW
NTS	NOT TO SCALE
O/A	OUTSIDE AIR
R/A	RETURN AIR
E/A	EXHAUST AIR
S/A	SUPPLY AIR

LIST OF SYMBOLS AND SERVICES

DUCTWORK
ROUND DUCT DROP
BALANCING DAMPER
SUPPLY DIFFUSER
RETURN GRILLE
EXHAUST GRILLE
SUPPLY OUTLET
RETURN OR EXHAUST INLET
EQUIPMENT TAG



PLUMBING ROUGH-IN SCHEDULE

TYPE	FIXTURE	SAN	DCW	DHW	VENT	REMARKS
SK	SINK	38 (1½")	12 (½")	12 (½")	32 (1¼")	-
LAV	LAVATORY	32 (1¼")	12 (½")	12 (½")	32 (1¼")	-
WC	WATER CLOSET	75 (3")	12 (½") / 25 (1")	-	38 (1½")	FLUSH TANK
SH	SHOWER	50 (2")	12 (½")	12 (½")	38 (1½")	-
BT	BATHTUB	50 (2")	12 (½")	12 (½")	38 (1½")	-
JS	JANITOR SINK	38 (1½")	12 (½")	12 (½")	32 (1¼")	-
FD-1	FLOOR DRAIN	100 (4")	-	-	-	C/W TRAP PRIMER
CW	DOMESTIC CLOTHES WASHER	75 (3")	20 (¾")	20 (¾")	38 (1½")	
DW	DOMESTIC DISH WASHER	-	-	12 (½")	-	C/W SHOCK ARRESTOR. CONNECT DRAIN HOSE TO ADJACENT SINK.

* MINIMUM SIZE, REFER TO MANUFACTURER'S RECOMMENDATIONS. MULTIPLE ADJACENT APPLIANCES SHALL USE INDEPENDENT PLUMBING CONNECTIONS, SHUT-OFF VALVES, AND SHOCK ARRESTORS (DO NOT GANG CONNECTIONS TOGETHER).

ERV SIZING

SUITE TYPE	QTY. BEDROOM	QTY. OCCUPANT	QTY. BATHROOM	Area (sqft)	Area (sqm)	OUTDOOR AIR		EXHAUST AIR	
						CFM	L/s	CFM	L/s
SIX-PLEX COURTYARD - 1 BED SUITE	1	2	1			**30**	**14**	19	9
SIX-PLEX COURTYARD - 2 BED SUITE	2	3	1			**44**	**21**	19	9
SIX-PLEX COURTYARD - 3 BED SUITE	3	4	3			44	21	**57**	**27**

1. AIRFLOW RATE PER BCBC2024
   PRINCIPAL VENTILATION SYSTEM EXHAUST FAN MINIMUM AIRFLOW RATES (TABLE 9.32.3.5)
   KITCHEN/BATHROOM EXHAUST FAN MINIMUM AIR-FLOW RATE (TABLE 9.32.3.6)
2. ERV TO OPERATE IN CONSTANT VOLUME TO MEET ABOVE MINIMUM AIRFLOW RATES. OPTIONAL BOOST MODE TO INCREASE WASHROOM EXHAUST INTERMITTENDLY IS RECOMMENDED.
3. ERV TO BE MIN. 1"w.c. ESP
4. ERV TO BE C/W MERV 13 SUPPLY FILTER

CMHC SCHL

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SHEET TITLE:

MECHANICAL COVER PAGE

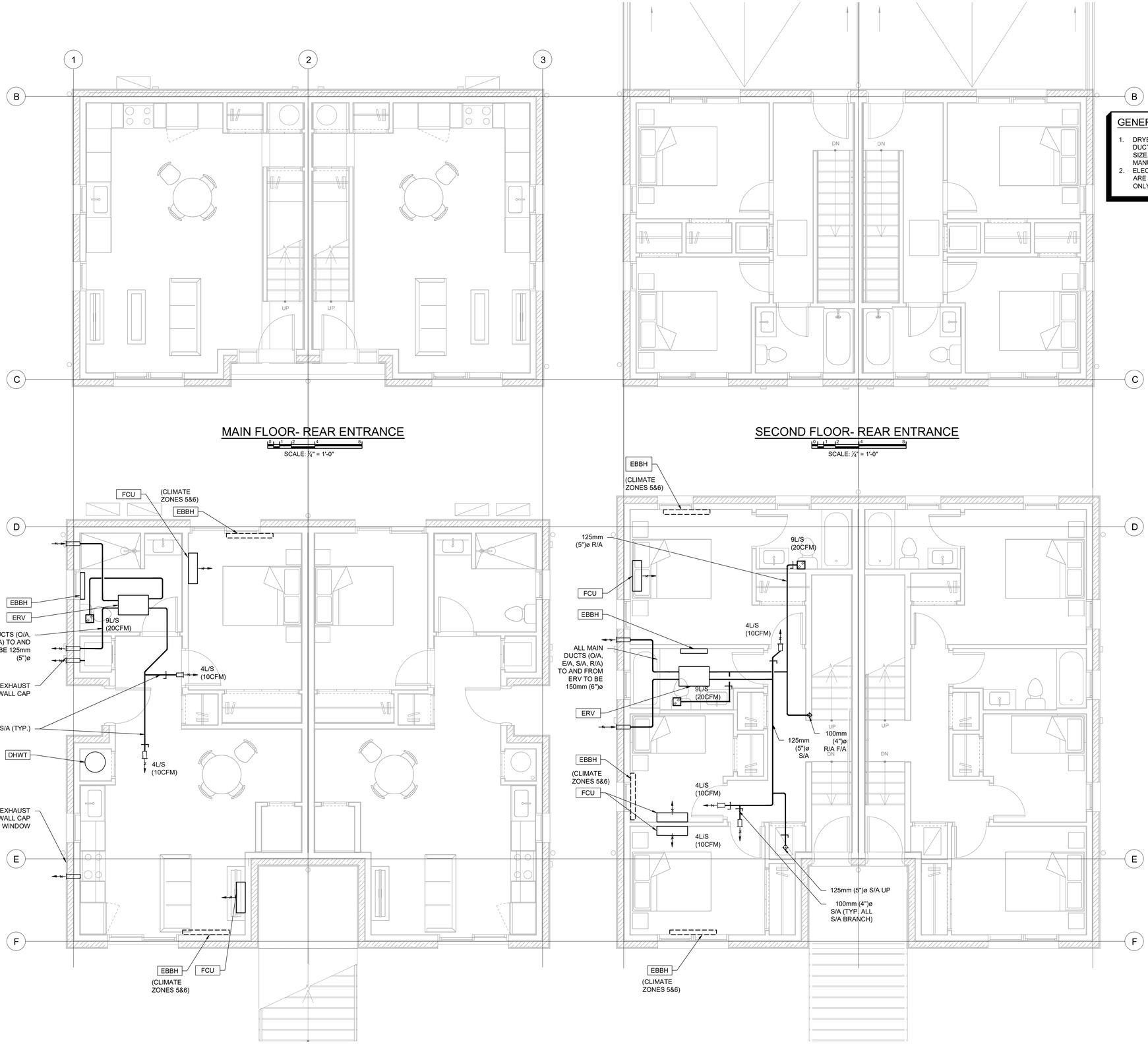
BC SIXPLEX COURTYARD OPTION 1

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO:

M700



MAIN FLOOR- REAR ENTRANCE

SCALE: ¼" = 1'-0"

SECOND FLOOR- REAR ENTRANCE

SCALE: ¼" = 1'-0"

MAIN FLOOR- FRONT ENTRANCE

SCALE: ¼" = 1'-0"

SECOND FLOOR- FRONT ENTRANCE

SCALE: ¼" = 1'-0"

GENERAL NOTES:

1. DRYER EXHAUST AND KITCHEN EXHAUST DUCTS VARY BY APPLIANCE MODEL AND SIZE. EXHAUST DUCT SIZED TO MANUFACTURER'S RECOMMENDATION.
2. ELECTRIC BASEBOARD BACK UP HEATERS ARE REQUIRED FOR CLIMATE ZONES 5 & 6 ONLY, AND OPTIONAL FOR CLIMATE ZONE 4.

CMHC SCHL

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CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

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SHEET TITLE:

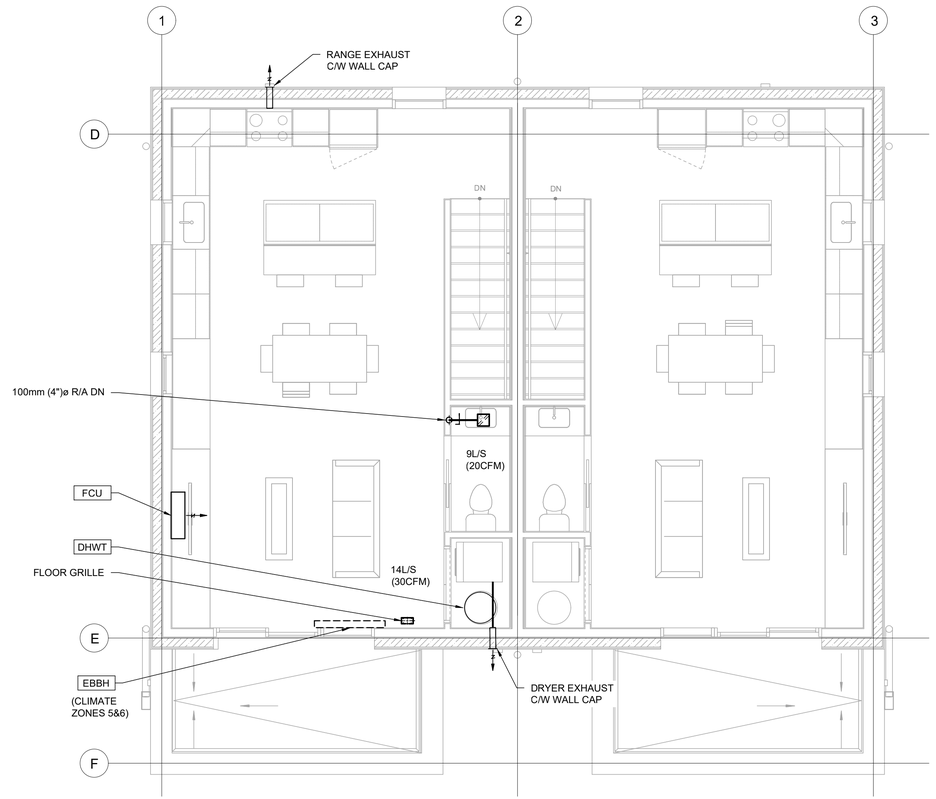
BC SIXPLEX COURTYARD MECHANICAL OPTION 1 LEVEL 1 AND 2

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO: DW DW

M701.1



THIRD FLOOR-FRONT ENTRANCE

SCALE: ¼" = 1'-0"

GENERAL NOTES:

1. DRYER EXHAUST AND KITCHEN EXHAUST DUCTS VARY BY APPLIANCE MODEL AND SIZE. EXHAUST DUCT SIZED TO MANUFACTURER'S RECOMMENDATION.
2. ELECTRIC BASEBOARD BACK UP HEATERS ARE REQUIRED FOR CLIMATE ZONES 5 & 6 ONLY, AND OPTIONAL FOR CLIMATE ZONE 4.

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SHEET TITLE:

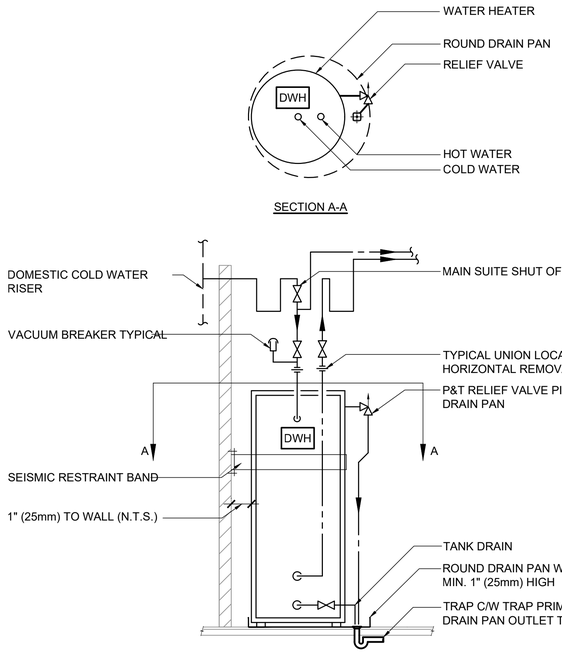
BC SIXPLEX COURTYARD MECHANICAL OPTION 1 LEVEL 3

PROJECT NO: 241058

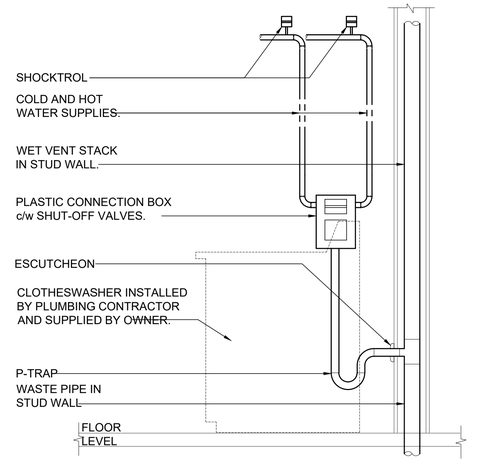
SCALE: AS NOTED

SHEET NO: DW DW

M702.1

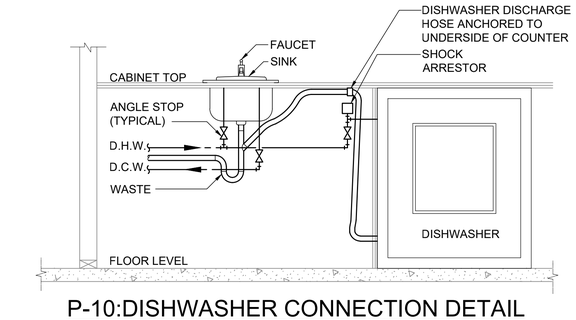


P-12:DOMESTIC WATER HEATER DETAIL



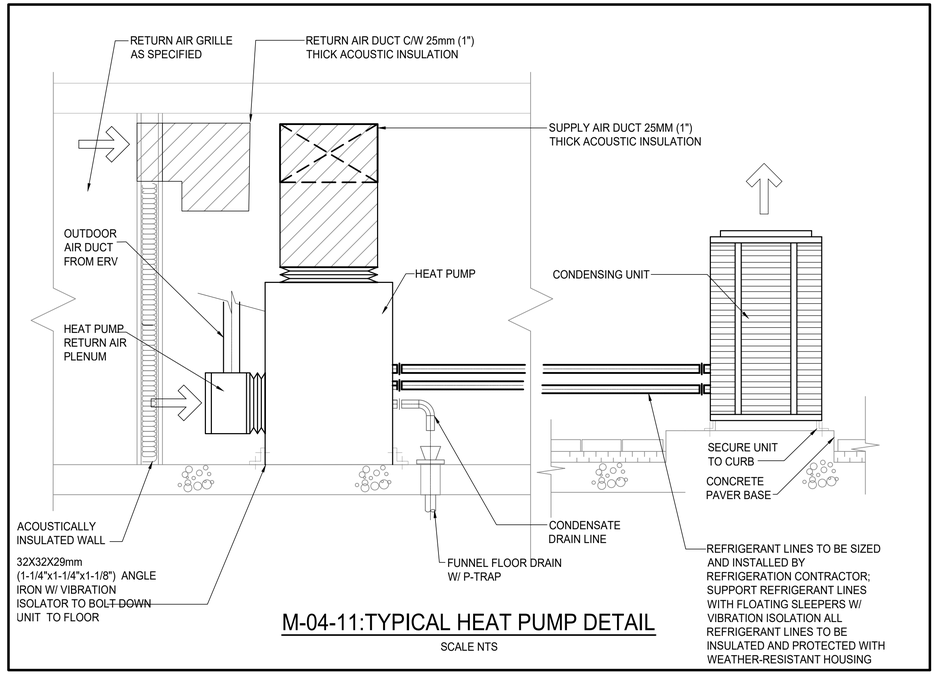
P-6:CLOTHES WASHER CONNECTION DETAIL

SCALE NTS



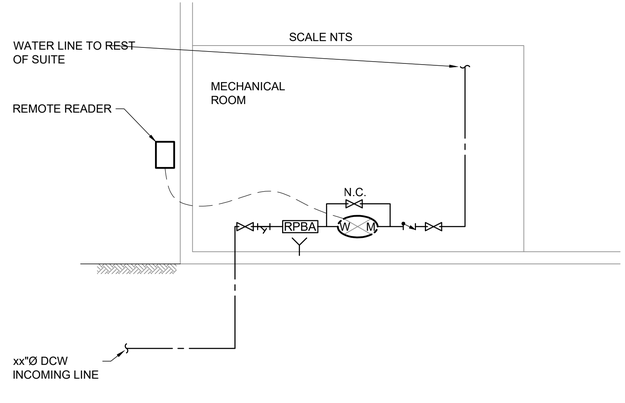
P-10:DISHWASHER CONNECTION DETAIL

SCALE NTS



M-04-11:TYPICAL HEAT PUMP DETAIL

SCALE NTS



DOMESTIC WATER SCHEMATIC

SCALE NTS

CMHC SCHL

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BRITISH COLUMBIA, CANADA

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SHEET TITLE:

MECHANICAL DETAILS

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO:

M001

MECHANICAL SPECIFICATIONS

1. <u>GENERAL</u>

1.1. INTENT: THIS SPECIFICATION SHALL SERVE TO PROVIDE DIRECTION AND STANDARDS TO ENABLE THE CONTRACTOR TO SUPPLY AND INSTALL A FINISHED, FULLY FUNCTIONAL MECHANICAL SYSTEM FOR THE PROJECT, IN COMPLETE ACCORDANCE WITH CURRENT BUILDING CODE AND LOCAL BYLAWS. THE MECHANICAL CONTRACTOR SHALL INCLUDE ALL LABOUR, MATERIAL AND EQUIPMENT NECESSARY TO COMPLETE THE MECHANICAL WORK.

1.2. LIABILITY: ASSUME RESPONSIBILITY FOR LAYING OUT WORK AND FOR DAMAGE CAUSED TO THE OWNER OR OTHERS BY IMPROPER EXECUTION OF WORK. PROTECT FINISHED AND UNFINISHED WORK FROM DAMAGE. TAKE RESPONSIBILITY FOR CONDITION OF MATERIALS AND EQUIPMENT SUPPLIED, AND PROTECT UNTIL WORK IS COMPLETED AND ACCEPTED.

1.3. CERTIFICATES: GIVE NOTICES, OBTAIN PERMITS, AND PAY PERMIT AND INSPECTION FEES SO WORK SPECIFIED AND SHOWN MAY BE CARRIED OUT. FURNISH CERTIFICATES, IF REQUESTED, AS EVIDENCE THAT WORK CONFORMS WITH LAWS AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION.

1.4. CUTTING AND PATCHING: MEASURE OUT AND PROVIDE LOCATIONS FOR HOLES FOR MECHANICAL EQUIPMENT AND PROVIDE SLEEVES REQUIRED FOR THE MECHANICAL INSTALLATIONS. BE RESPONSIBLE FOR CUTTING AND PATCHING OF BUILDING STRUCTURE REQUIRED BY WORK UNLESS OTHERWISE INDICATED. ALLOW FOR SCANNING PRIOR TO CORING OR CUTTING AND SCANS TO BE APPROVED BY BASE BUILDING STRUCTURAL CONSULTANT.

1.5. TESTING: TEST EQUIPMENT AND MATERIALS WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION, TO DEMONSTRATE PROPER OPERATION.

1.6. GUARANTEE: PROVIDE THE OWNER WITH A WRITTEN GUARANTEE FOR LABOUR AND MATERIAL WARRANTING SYSTEMS AND EQUIPMENT FURNISHED TO REMAIN IN SERVICEABLE CONDITION FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE OWNER.

1.7. STANDARD OF MATERIALS AND WORKMANSHIP: MAKE AND QUALITY OF MATERIALS USED ARE SUBJECT TO ACCEPTANCE BY THE CONSULTANT. REMOVE CONDEMNED MATERIALS AND INSTALL SUITABLE MATERIALS IN THEIR PLACE. MATERIALS SHALL BE NEW AND OF UNIFORM PATTERN THROUGHOUT, WHERE SPECIFICALLY IDENTIFIED IN THIS SPECIFICATION. WORKMANSHIP SHALL FOLLOW THE BEST TRADITION AND TRADESMANSHIP. EMPLOY ONLY TRADESMEN PROPERLY LICENSED FOR WORK REQUIRING TRADESMEN WITH SPECIAL SKILL.

1.8. ACCESS: ENSURE ADEQUATE MAINTENANCE ACCESS IS MAINTAINED TO MANUAL BALANCING DAMPERS, FIRE DAMPERS, VALVES, METERS, EQUIPMENT, INCLUDING THOSE EXISTING. PROVIDE ADEQUATELY-SIZED AND FIRE-RATED (WHERE REQUIRED) ACCESS DOORS WHERE A SOLID FINISHED CEILING EXISTS. COORDINATE TYPE, COLOUR, AND INSTALLATION WITH THE GENERAL CONTRACTOR AND ARCHITECT/INTERIOR DESIGNER. FOR EXISTING BASE BUILDING EQUIPMENT, MARK PROPOSED ACCESS PANEL LOCATIONS ON FLOOR FOR REVIEW AND COORDINATION WITH THE LANDLORD'S TENANT COORDINATOR PRIOR TO INSTALLATION OF CEILING FRAMING AND PANELING.

1.9. RECORD DRAWINGS: ENSURE ONE SET OF WHITE PRINT PLANS AND SPECIFICATIONS ARE KEPT ON SITE AT ALL TIMES FOR CONSULTANT INSPECTION. INDICATE ANY CHANGES AND DEVIATIONS FROM THE CONTRACT DOCUMENTS, INCLUDING WORK BY CHANGE ORDERS AND JOB INSTRUCTIONS. THE CONTRACTOR SHALL INCLUDE A CASH ALLOWANCE OF $300 PER PLAN SHEET FOR THE CONSULTANT TO TRANSFER MARKED UP CHANGES TO CAD FILES, AND FOR PROVIDING TWO SETS OF RECORD DRAWINGS AND ELECTRONIC CAD FILES TO THE OWNER.

1.10. CLOSE-OUT DOCUMENTATION/OPERATION AND MAINTENANCE MANUALS: WITHIN TWO WEEKS OF SUBSTANTIAL COMPLETION, PROVIDE THREE COPIES OF THE FOLLOWING (WHERE APPLICABLE):

1. PROJECT INFORMATION
    - PROJECT NAME, ADDRESS, AND DATE OF SUBSTANTIAL COMPLETION
    - CONTACT INFORMATION FOR GENERAL CONTRACTORS AND ALL MECHANICAL CONTRACTORS AND SUBTRADES
2. LETTERS OF ASSURANCE AND WARRANTY DOCUMENTS
    - COPIES OF ALL APPLICABLE WORK PERMITS
    - COPY OF CONTRACTOR'S (AND MECHANICAL SUB-CONTRACTOR'S IF APPLICABLE) 1-YEAR WARRANTY LETTER
    - WARRANTY FORMS FOR ALL APPLICABLE MECHANICAL EQUIPMENT
    - PLUMBING FINAL INSPECTION CERTIFICATE.
    - BACKFLOW PREVENTER TEST CERTIFICATES.
    - CHLORINATION REPORT OF DOMESTIC WATER LINES.
3. TESTING, ADJUSTING, AND BALANCING (TAB) DOCUMENTATION
    - PIPING TEST FORMS
    - REFRIGERATION STARTUP CHECKLISTS
4. HVAC SYSTEM
    - BRIEF DESCRIPTION OF HVAC SYSTEM COMPONENTS AND OPERATION
    - OPERATING AND MAINTENANCE MANUALS FOR NEW EQUIPMENT

4.1. ADDITIONAL DOCUMENTATION: CONTRACTOR SHALL SUPPLY ALL DOCUMENTATION AND INFORMATION WHICH IS REQUIRED FOR APPLICATION TO INCENTIVE AND REBATE PROGRAMS (SUCH AS FORTIS BC EFFICIENT BOILER PROGRAM).

5. <u>BALANCING</u>

5.1. QUALITY ASSURANCE

1. PROCEDURES SHALL BE IN ACCORDANCE WITH CURRENT EDITION OF AABC'S NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION, TOTAL SYSTEM BALANCE.

3.1. INSTRUMENTS FOR TESTING AND BALANCING OF AIR SYSTEMS SHALL HAVE BEEN CALIBRATED WITHIN SIX MONTHS AND VERIFIED FOR ACCURACY BEFORE START OF WORK.

3.2. PROCEDURES

1. BALANCE TO MAXIMUM FLOW DEVIATION FROM SPECIFIED VALUES OF 10% AT TERMINAL DEVICE AND 5% AT EQUIPMENT OR MEAN SOUND LEVEL DEVIATION OF 20 DB.
2. PERMANENTLY MARK SETTING ON VALVES, SPLITTERS, DAMPERS AND OTHER ADJUSTMENT DEVICES. TAKE MEASUREMENTS TO VERIFY BALANCE HAS NOT BEEN DISRUPTED OR SUCH DISRUPTION HAS BEEN RECTIFIED.
3. ADJUST MAIN SUPPLY AND RETURN DUCTS TO DESIGN FLOW RATES. ADJUST ZONES TO DESIGN, SUPPLY AND RETURN FLOW RATES. TEST AND ADJUST EACH DIFFUSER, GRILLE AND REGISTER TO WITHIN 10% OF DESIGN REQUIREMENTS. ADJUST DIFFUSERS, GRILLES AND REGISTERS TO MINIMIZE DRAFTS.

4. <u>TESTING</u>

4.1. TEST EQUIPMENT AND MATERIAL WHERE SPECIFIED OR REQUIRED BY AUTHORITY HAVING JURISDICTION. TEST IN ACCORDANCE WITH APPLICABLE PORTIONS OF ASME, ASHRAE, SMACNA, NFPA, CSA AND OTHER RECOGNIZED TEST STANDARDS/CODES.

4.2. PROVIDE NOTICE OF TESTS TO CONSULTANT. ON COMPLETION OF INSTALLATION, PROVIDE CERTIFICATION OF TESTS WITH REQUIRED DETAIL. ITEMIZE TESTS AS TO TIME PERFORMED AND PERSONNEL RESPONSIBLE. INCLUDE COPY OF FIELD DATA IN OPERATING AND MAINTENANCE MANUALS.

4.3. PRESSURE TESTS

1. PIPING, FIXTURES OR EQUIPMENT SHALL NOT BE CONCEALED UNTIL INSPECTED AND APPROVED BY CONSULTANT. CARRY OUT HYDRAULIC TESTS FOR 8 HOURS. MAINTAIN PRESSURE. WHERE LEAKAGE OCCURS, REPAIR AND RE-TEST.
2. DOMESTIC WATER PIPING: TEST TO 1-1/2 TIMES MAXIMUM WORKING PRESSURE OR 1034 kPa (150 PSI) WATER PRESSURE MEASURED AT SYSTEM LOW POINT.
3. DRAINAGE SYSTEM: TEST BY FILLING WITH WATER TO PRODUCE WATER PRESSURE OF 1.5 M (5 FEET) WATER COLUMN MINIMUM AND 7.6M (25 FEET) WATER COLUMN MAXIMUM. CHECK FOR PROPER GRADE AND OBSTRUCTION BY BALL TEST.
4. NATURAL GAS PIPING: TEST AS REQUIRED BY AUTHORITY HAVING JURISDICTION.
5. LOW PRESSURE DUCTS: TEST FOR TIGHTNESS SUCH THAT LEAKAGE IS INAUDIBLE AND NOT DETECTABLE BY FEEL.
6. SHOULD TESTS INDICATE DEFECTIVE WORK OR VARIANCE WITH SPECIFIED REQUIREMENTS, CORRECT DEFECTS. CORRECT LEAKS BY RE-MAKING JOINTS IN SCREWED FITTINGS, CUTTING OUT AND RE-WELDING WELDED JOINTS AND RE-MAKING JOINTS IN COPPER LINES. DO NOT CAULK.

4.1. PERFORMANCE TESTS

1. LUBRICATE BEARINGS, ADJUST AND/OR REPLACE AND SET DIRECT AND "V"-BELT DRIVES FOR PROPER ALIGNMENT AND TENSION.
2. CALIBRATE AND ADJUST THERMOSTATS, LINKAGES AND DAMPERS. OPERATE AND TEST MOTORS FOR CORRECT WIRING AND SEQUENCES. CHECK OVERLOAD HEATERS IN MOTOR STARTERS. FASTEN LOOSE AND RATTLING PIECES OF EQUIPMENT TO ENSURE QUIET OPERATION.
3. GAS-FIRED APPLIANCES SHALL BE OPERATIONALLY TESTED TO THE SATISFACTION OF THE GAS SAFETY BRANCH BEFORE BEING APPROVED FOR OPERATION.

5. <u>VIBRATION ISOLATION AND SEISMIC RESTRAINT</u>

5.1. PROVIDE VIBRATION ISOLATORS AND SEISMIC RESTRAINT SYSTEMS MEETING REQUIREMENTS OF AUTHORITY HAVING JURISDICTION AND COMMENTARY J, EFFECTS OF EARTHQUAKES, IN SUPPLEMENT TO NATIONAL BUILDING CODE OF CANADA WITH REGARD TO SEISMIC FORCES TRANSMITTED TO PIPING/EQUIPMENT FROM BUILDING STRUCTURE DURING AN EARTHQUAKE AT PROJECT LOCATION. PROVIDE SEALED AND SIGNED ENGINEERED DETAILS BY SEISMIC ENGINEER LICENSED IN BRITISH COLUMBIA. FINAL SEISMIC INSPECTION AND SCHEDULE CB TO BE COMPLETED PRIOR TO SUBSTANTIAL PERFORMANCE, AND COPIED TO THE CONSULTANT.

5.2. RESILIENTLY FASTEN ALL MECHANICAL EQUIPMENT TO STRUCTURE INCLUDING (BUT NOT LIMITED TO) HEAT RECOVERY VENTILATORS, FANS, AIR HANDLING UNITS, SPLIT SYSTEM OUTDOOR UNITS, DOMESTIC HOT WATER TANKS.

5.3. STRAPS, ANCHOR BOLTS AND STRAPS SHALL BE CAPABLE OF WITHSTANDING SEISMIC FORCES IN ALL DIRECTIONS. AIRCRAFT CABLE AND FASTENING MATERIALS SHALL BE CAPABLE OF RESTRAINING 1.5 TIMES CALCULATED SEISMIC FORCES TRANSMITTED THROUGH EQUIPMENT OR PIPING RESTRAINED. WHERE TOP OF INDIVIDUALLY SUSPENDED PIPE OR DUCT IS LESS THAN 300 MM (12") BELOW SUPPORTING STRUCTURE, TRANSVERSE AND LONGITUDINAL BRACING SHALL NOT BE REQUIRED.

5.4. FOR SUSPENDED EQUIPMENT WHERE SWAY WILL EXCEED 100MM (4"), SLACK CABLE RESTRAINTS SHALL BE CONNECTED FROM EACH SUPPORT POINT (MINIMUM FOUR) TO STRUCTURE AT ANGLE OF 45° IN ELEVATION AND AT 90° TO EACH OTHER IN PLAN VIEW.

5.5. PROVIDE MINIMUM TWO STEEL BAND STRAPS ABOVE CENTRE OF GRAVITY ON VERTICAL TANKS ANCHORED TO STRUCTURE.

5.6. BRANCH LINES SHALL NOT BE USED TO RESTRAIN MAIN PIPING.

5.7. WHERE NOMINALLY HORIZONTAL LENGTH OF PIPE OR DUCT EXCEEDS THE MAXIMUM ALLOWABLE TRANSVERSE RESTRAINT SPACING LISTED IN THE RESTRAINT INSTALLATION SCHEDULE, A MINIMUM OF ONE LONGITUDINAL AND ONE TRANSVERSE RESTRAINT SHALL BE PROVIDED.

5.8. WHERE HORIZONTAL PIPE OR DUCT PASSES THROUGH VERTICAL CONCRETE OR CONCRETE BLOCK WALL WITHIN SLEEVE, WALL WILL BE CONSIDERED TRANSVERSE RESTRAINT POINT. CABLES SHALL BE TIGHTENED TO REMOVE SLACK (25mm (1") DEFLECTION UNDER THUMB PRESSURE), BUT SHALL NOT SUPPORT ANY WEIGHT UNDER NORMAL OPERATING CONDITIONS. ALLOWANCES SHALL BE MADE FOR NORMAL EXPANSION AND CONTRACTION OF PIPING SYSTEMS WHERE APPLICABLE.

5.9. PROVIDE TRANSVERSE AND LONGITUDINAL SEISMIC RESTRAINT ON NOMINALLY HORIZONTAL PIPING AS FOLLOWS:

1. NATURAL GAS PIPING:
    - 25mmø AND LARGER: LONGITUDINAL RESTRAINT 12m O.C., TRANSVERSE RESTRAINT 6m O.C.
2. ALL OTHER PIPE SERVICES:
    - 65mmø AND LARGER: LONGITUDINAL RESTRAINT 24m O.C., TRANSVERSE RESTRAINT 12m O.C.

3. <u>INSULATION</u>

3.1. MATERIALS AND APPLICATION TEMPERATURES SHALL BE AS RECOMMENDED BY ADHESIVE, COATING OR SEALER MANUFACTURER. MAKE GOOD SEPARATIONS OF JOINTS OR CRACKING OR INSULATION DUE TO THERMAL MOVEMENT OR POOR WORKMANSHIP. COMPOSITE FIRE AND SMOKE HAZARD RATINGS FOR ADHESIVES, INSULATION, COATINGS AND JACKETS SHALL NOT EXCEED 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED OR OTHERWISE AS REQUIRED BY CODE. USE ONLY ULC LISTED OR TESTED COVERING MATERIALS.

3.2. PIPING INSULATION THICKNESS:

1. DOMESTIC COLD WATER, ALL SIZES = 25mm (1”) THICK
2. DOMESTIC HOT WATER AND RECIRC, PIPE SIZE < 38mm (1-1/2”)ø = 12mm (1/2”) THICK
3. DOMESTIC HOT WATER AND RECIRC, PIPE SIZE 38mm (1-1/2”)ø AND UP = 12 mm (1/2”) THICK

7.1. PIPING INSULATION FINISHES:

1. EXPOSED: BCICA STANDARD “PF2 PREMIUM 2” OR 15 MIL PVC JACKET WITH SOLVENT WELDS (INCLUDES WITHIN MECHANICAL ROOMS)
2. CONCEALED: BCICA STANDARD “PF3 ECONOMY” ALL SERVICE JACKET WITH ITNEGRAL VAPOUR BARRIER.

7.1. DUCTWORK AND PLENUMS INSULATION THICKNESS:

1. SUPPLY AIR DUCTS AND PLENUMS ABOVE FINISHED CEILINGS = 25mm (1”) THICK (UP TO FLEXIBLE DUCT CONNECTION OR 1.5m (5') FROM DIFFUSER)
2. OUTDOOR AIR DUCT IN HEATED SPACE = 50mm (2”) THICK

7.1. DUCTWORK AND PLENUMS INSULATION FINISHES:

1. FACTORY FINISHED WITH NO FURTHER FINISH REQUIRED. RAW EDGE OF INSULATION SHALL NOT BE ALLOWED TO BE EXPOSED IN CEILING PLENUM/SPACE.

7.1. FOR ANY SERVICES, TEMPERATURES, OR SIZES NOT REFERENCED ABOVE, INSULATION THICKNESS SHALL BE PROVIDED ACCORDING TO ASHRAE/IES STANDARD 90.1-2010 (TABLE 6.8.2 MINIMUM DUCT INSULATION, TABLE 6.8.3 MINIMUM PIPE INSULATION THICKNESS).

7.2. VAPOUR BARRIER SHALL BE CONTINUOUS FOR ALL “COLD” SERVICES INCLUDING DOMESTIC COLD WATER AND CHILLED WATER. PROVIDE RIGID BLOCKING AND OVERSIZED PIPE HANGERS/SUPPORTS FOR THESE SERVICES. PENETRATIONS THROUGH WALLS SHALL HAVE CONTINUOUS INSULATION.

7.3. REFRIGERATION PIPING: REFER TO REFRIGERATION SECTION.

8. <u>PLUMBING</u>

8.1. PROVIDE ALL NECESSARY PIPING MATERIAL AND LABOUR FOR THE SYSTEMS AS SHOWN ON THE DRAWINGS. PIPING AND FITTINGS SHALL BE IN ACCORDANCE WITH CURRENT EDITION OR APPLICABLE REVISIONS OF APPLICABLE CODES OR GOVERNING REGULATIONS.

8.2. PIPE AND FITTINGS

1. SANITARY DRAINAGE WASTE VENT (DWV) BELOW GRADE
    - ABS OR DWV PVC
2. SANITARY DRAINAGE WASTE VENT (DWV) ABOVE GRADE
    - UP TO 65mm (2-1/2”)ø: DWV COPPER WITH WROUGHT OR CAST BRASS FITTINGS AND 50-50 SOLDER
    - ALL SIZES: CAST IRON WITH S.S. MECHANICAL JOINT COUPLINGS
3. DOMESTIC WATER ABOVE GRADE
    - ALL SIZES: CERTIFIED TYPE “L” OR “K” HARD COPPER WITH SILVABRITE 100 LEAD-FREE SOLDER
    - ALL SIZES: VIEGA PRO-PRESS (CONTRACTOR MUST CONFIRM CERTIFICATION BY MANUFACTURER AND MINIMUM 5 YEARS OF EXPERIENCE)
4. NATURAL GAS PIPING ABOVE GRADE
    - UP TO 50mm (2”): SCH 40 BLACK STEEL WITH MALLEABLE SCREWED OR BUTT-WELDED JOINTS
    - PIPING OVER 50mm (2”)ø SHALL BE WELDED.
5. NATURAL GAS PIPING BELOW GRADE SHALL BE ”YELLOW JACKET” WITH CATHODIC PROTECTION AND TRACER WIRE.
6. CONDENSATE DRAINS
    - FROM COOLING COILS / HRV / ERV: DWV COPPER, IPEX SYSTEM 15 DWV PVC, (COMBUSTIBLE BUILDINGS ONLY: PVC PIPE OR PE TUBE)
    - FROM CONDENSING GAS-FIRED APPLIANCES: SYSTEM 15 DWV PVC, (COMBUSTIBLE BUILDINGS ONLY: PVC PIPE OR PE TUBE)

6.1. PIPE SUPPORTS: ALL “COLD” SERVICES INCLUDING DOMESTIC COLD WATER, IRRIGATION, AND CHILLED WATER PIPING SHALL USE OVERSIZED PIPE HANGERS TO PERMIT CONTINUOUS INSULATION AND VAPOUR BARRIER TO BE MAINTAINED. PROVIDE RIGID INSULATION BLOCKING AND METAL INSULATION SHIELDS BETWEEN PIPE AND HANGER OR RISER CLAMPS.

6.2. VALVES

1. PROVIDE VALVES OF SAME MANUFACTURER THROUGHOUT WHERE POSSIBLE. VALVES ON DOMESTIC COLD, HOT AND RECIRCULATION WATER SERVICE SHALL BE RATED AT 860 kPa (125 PSI).
2. BACK FLOW PREVENTER ASSEMBLIES: PROVIDE ULC LISTED BACKFLOW PREVENTERS AS SHOWN PER DRAWINGS AND/OR AS REQUIRED BY THE LOCAL AUTHORITIES HAVING JURISDICTION.
3. PROVIDE AIR GAP FITTING ON DRAIN FROM REQUIRED FIXTURES.
4. TRAP SEAL PRIMERS: PROVIDE PRIMING DEVICE AND PIPING TO NEAREST ACCEPTABLE FIXTURE SO THAT DEVICE WILL INTRODUCE REGULATED AMOUNT OF WATER INTO TRAP.

8.1. CLEAN-OUTS AND ACCESS COVERS: INSTALL ACCESSIBLE CLEAN-OUTS AT TRAPS, WHERE REQUIRED BY CODE AND AS INDICATED ON DRAWINGS. CLEAN-OUT COVERS SHALL HAVE DEPRESSED CENTRE TO ACCEPT FLOOR FINISH OR BE SELECTED TO SUIT TRAFFIC LOADING REQUIREMENTS, WHERE APPLICABLE. CLEAN-OUTS ON SUB-SURFACE DRAINAGE SYSTEM EXTENSIONS SHALL BE ZURN Z-1500 (OR EQUAL) IN UNFINISHED CONCRETE, ENCASED IN 400mm x 400mm x100mm (16" X 16" X 4") THICK CONCRETE PAD IN SOFT LANDSCAPING AND IN FINISHED CONCRETE OR PAVERS.

8.2. DRAINS: PROVIDE DRAINS AS SHOWN ON DRAWINGS. DRAINS SHALL BE 75mm (3") UNLESS NOTED OTHERWISE. REVIEW LOCATION OF DRAINS ON ARCHITECTURAL DRAWINGS AND CONFIRM WITH CONSULTANT THAT DRAINS WILL BE AT LOW POINTS ON FLOOR. IMPROPERLY LOCATED DRAINS SHALL BE RELOCATED AT NO COST TO OWNER.

8.3. PLUMBING FIXTURES AND TRIM

1. PROVIDE NEW FIXTURES OF ONE MANUFACTURER AND OF SAME COLOUR, CSA APPROVED, FREE FROM DEFECTS WITH CLEAR, SMOOTH AND BRIGHT FINISH. PROVIDE CSA APPROVED PLUMBING BRASS WITH METAL WORK HEAVY CHROMIUM PLATED AND PRODUCT OF ONE MANUFACTURER.
2. PROVIDE FLEXIBLE ANGLE TYPE HOT AND COLD WATER SUPPLIES WITH SCREWDRIVER STOP, HEXAGONAL REDUCER AND ESCUTCHEON. PROVIDE HEAVY CHROMIUM PLATING WHERE EXPOSED.
3. REVIEW MILLWORK DRAWINGS AND ADVISE CONSULTANT OF DISCREPANCIES BEFORE ORDERING FIXTURES. REVIEW ARCHITECTURAL DRAWING TO CHECK PLUMBING FIXTURE SPECIFICATION PRIOR TO PREPARING SHOP DRAWINGS.
4. INSTALL EACH FIXTURE WITH ITS OWN TRAP, EASILY REMOVABLE FOR SERVICING AND CLEANING. AT COMPLETION, THOROUGHLY CLEAN PLUMBING FIXTURES AND EQUIPMENT.
5. INSTALL WALL MOUNTED FIXTURES WITH APPROVED WALL CARRIERS, MODEL TO SUIT INSTALLATION. WHERE FIXTURES OR TRIM COME IN CONTACT WITH WALL AND/OR FLOOR, MAKE JOINT WATERTIGHT WITH WHITE SILICONE BASE NON-HARDENING CAULKING COMPOUND, FINISHED IN NEAT MANNER. ATTACH FLOOR MOUNTED WATER CLOSETS TO FLOOR WITH LAG SCREWS. LEAD FLASHING SHALL NOT HOLD CLOSET IN PLACE. PROVIDE FIXED COVER ON HANDICAPPED WATER CLOSET TANK.

8.1. EXECUTION

1. NO PIPE SHALL BE INSTALLED IN ANY PART OF WALL WHERE TEMPERATURE IS LESS THAN 5°C UNDER WINTER DESIGN CONDITIONS.
2. UPON COMPLETION, WATER PIPING SYSTEMS SHALL BE FLUSHED WITH WATER BEFORE INSTALLATION OF FIXTURES IN ORDER TO REMOVE ANY FOREIGN MATERIAL IN PIPING. PLUMBING FIXTURES AND EQUIPMENT SHALL BE THOROUGHLY CLEANED AND LEFT IN GOOD OPERATING CONDITION.
3. GRADE DRAINAGE LINES MINIMUM 2%, PIPING 100mm (4") AND LARGER MAY BE GRADED AT 1% SLOPE. PLUG OR CAP PIPE AND FITTINGS TO KEEP OUT DEBRIS DURING CONSTRUCTION. LAY PIPE IN PROPER COMPACTED BEDDING MATERIAL (SAND INSIDE BUILDING, CLEAN GRAVEL OUTSIDE OF BUILDING); DO NOT LAY PIPE WHEN WATER IS PRESENT IN TRENCH. PROVIDE 1,500 PSI CONCRETE FOR BURIED LINES WITHIN 45 DEG. OF FOOTING. GRADE VENTS SO CONDENSATION WILL NOT FORM TRAP.
4. WHEREVER DISSIMILAR METALS ARE JOINED OR SUPPORTED, PIPING SHALL HAVE NON-CONDUCTING TYPE CONNECTIONS OR HANGERS TO PREVENT GALVANIC CORROSION. BRASS ADAPTERS AND VALVES ARE ACCEPTABLE FOR PIPE CONNECTIONS.
5. DOMESTIC HOT WATER HEATERS: PROVIDE AS SPECIFIED COMPLETE WITH SHEET METAL DRAIN PAN; ENSURE GOOD ACCESS TO HEATERS FOR SERVICING. PIPE RELIEF OUTLET TO DRAIN.
6. WATER SPECIALTIES: PROVIDE BACK FLOW PREVENTERS AS SPECIFIED AND AS REQUIRED BY AUTHORITIES. PROVIDE TRAP PRIMERS TO ALL FLOOR DRAINS.

9. <u>VENTILATION</u>

9.1. DUCTWORK

1. DUCTWORK SHALL BE GALVANIZED STEEL. FABRICATED IN ACCORDANCE WITH RECENT SMACNA DUCT MANUALS AND ASHRAE HANDBOOKS. DUCTWORK SHALL MEET THE REQUIREMENTS OF NFPA 90A AND 91 AND CONFORM WITH ALL APPLICABLE CODES.
2. PRIOR TO FABRICATION OF DUCTWORK, CHECK ALL CEILING SPACE AND HEIGHTS AND CONFLICTS WITH OTHER TRADES.
3. THE MINIMUM SHEET METAL THICKNESS FOR LOW PRESSURE DUCTS, INCLUDING FITTINGS, ACCESS DOORS AND OTHER ACCESSORIES, SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE".
4. DUCT SIZES ON DRAWINGS INDICATE INSIDE CLEAR DIMENSIONS. ADJUST ACTUAL SHEET METAL DIMENSIONS TO ACCOMMODATE ACOUSTICALLY LINED OR INTERNALLY INSULATED DUCTS.
5. ALL TRANSVERSE DUCT JOINTS SHALL BE SEALED (CLASS C SMACNA) WITH DUCT SEALANT. FLEXIBLE DUCTWORK SHALL BE EQUAL TO THERMAFLEX TYPE ST OR E.H. PRICE MK-10.
6. CONNECT DIFFUSERS TO DUCTS WITH 1.5m (5'-0") MAXIMUM LENGTH OF FLEXIBLE DUCT. HOLD IN PLACE WITH CAULKING COMPOUND AND STRAP OR CLAMP. FLEXIBLE DUCTWORK SHALL NOT FORM ANY DIPS, KINKS OR LOOPS.
7. PROVIDE RETURN AIR OPENINGS AND/OR INSULATED SOUND TRAPS WHERE INDICATED.

9.1. AIR OUTLETS: PROVIDE AIR OUTLETS AS SPECIFIED ON THE DRAWINGS.

9.2. HEAT/ENTHALPY RECOVERY VENTILATORS (HRV/ERV):

1. ECM BLOWERS RATED FOR CONTINUOUS OPERATION (PSC MOTORS NOT ACCEPTABLE), DRAIN PAN AND CONDENSATE DRAIN CONNECTION, AUTOMATIC FAN CYCLED DEFROST, INTEGRATED BACKDRAFT DAMPERS. UNIT SHALL INCLUDE OPTION FOR FURNACE/FAN-COIL INTERLOCK AND DUAL-SPEED SWITCH OPERATION.
2. POLY HEAT EXCHANGER CORE SHALL BE WASHABLE AND REMOVABLE WITH 10 YEAR WARRANTY.

9.1. THE AIR HVAC SYSTEM SHALL OPERATE FOR A MINIMUM OF 48 CONSECUTIVE HOURS PRIOR TO THE DELIVERY OF THE EQUIPMENT.

9.2. ON COMPLETION OF CONSTRUCTION, INCLUDE REPLACEMENT OF FILTERS FOR ALL HVAC SERVING THE SPACE, INCLUDING THOSE EXISTING (MATCH EXISTING TYPE AND SIZE).

9.3. DUCT CLEANING: THE CONTRACTOR SHALL PROTECT ALL EQUIPMENT AND OPEN ENDED DUCTS THROUGHOUT CONSTRUCTION. UPON COMPLETION, DUCT CLEANLINESS WILL BE REVIEWED BY CONSULTANT ON SIGHT. IF DUCTWORK CLEANLINESS IS NOT TO THE CONSULTANT'S SATISFACTION, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ENGAGING A PROFESSIONAL DUCT CLEANING CONTRACTOR (ED IT) TO POWER CLEAN ALL DUCTWORK WITHIN THE SPACE, AT NO ADDITIONAL COST TO THE OWNER.

10. <u>HEAT PUMP AND SPLIT-TYPE DIRECT EXPANSION COOLING SYSTEMS</u>

10.1. GENERAL

1. PROVIDE FOR COMPLETE AND OPERATIONAL SPLIT TYPE HEAT PUMP SYSTEMS AS INDICATED ON DRAWINGS AND EQUIPMENT SCHEDULES. COMPLY WITH APPLICABLE CODES, LAWS AND REGULATIONS. CONFORM TO CSA-B52, CODE FOR MECHANICAL REFRIGERATION AND CSA-B131.5, CODE FOR REFRIGERANT PIPING. MATCH OUTDOOR AND INDOOR UNITS WITH OPERATION CONTROLS, ELECTRONIC DIGITAL CONTROLS AND COMMUNICATION SYSTEM BY ONE MANUFACTURER. DO NOT MIX MANUFACTURERS OF INDOOR AND OUTDOOR UNITS. PROVIDE PROPER OPERATION OF SAFETY CONTROLS AND AUTOMATIC CONTROLS NOT PROVIDED BY OTHERS.
2. WARRANTY: EXTENDED 5-YEAR PARTS-ONLY WARRANTY ON ALL COMPRESSORS.
3. “DESIGN-BUILD” DELIVERY OF REFRIGERANT PIPING SYSTEMS: THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTING EXISTING SITE CONDITIONS, COORDINATING WITH WORK BY OTHER TRADES, AND SIZING PIPING AND PROPOSING ROUTING THROUGH THE EXISTING AND NEW PORTIONS OF THE BUILDING TO SUIT EQUIPMENT LOCATIONS SHOWN ON MECHANICAL PLANS IN ACCORDANCE WITH RECOMMENDATIONS AND LIMITATIONS ADVISED BY THE EQUIPMENT MANUFACTURER.

10.1. PRODUCTS

1. ALL EQUIPMENT SHALL COMPLY WITH THE MINIMUM EFFICIENCY REQUIREMENTS OF ASHRAE 90.1-2010 FOR THE APPLICABLE EQUIPMENT TYPE AND CAPACITY RANGES. PERFORMANCE SHALL BE RATED IN ACCORDANCE WITH AHRI STANDARDS WITH RESULTS PUBLISHED FOR PUBLIC REVIEW. ALL EQUIPMENT SHALL BE FACTORY ASSEMBLED, WIRED AND RUN TESTED. INDOOR UNIT AND REFRIGERANT PIPES SHALL BE CHARGED WITH DEHYDRATED NITROGEN GAS BEFORE SHIPMENT FROM THE FACTORY.
2. REFRIGERANT PIPING AND ACCESSORIES
    - PIPING SHALL BE BRIGHT ANNEALED REFRIGERANT GRADE ACR COPPER, MANUFACTURED TO ASME STANDARDS.
    - MAKE JOINTS WITH BRAZED COPPER-TO-COPPER FITTINGS. DO NO USE CAST FITTINGS.
    - SHUT-OFF VALVES SHALL BE REFRIGERANT GRADE ANGLE, GLOBE AND BALL TYPE.
    - SILVER BRAZED JOINTS USING COPPER-PHOSPHOROUS ALLOY WITH MELTING POINT BETWEEN 1,112°F (600°C) AND 1,472°F (800°C).
    - PROVIDE SAFETY VALVES SIZED TO CODE.
    - PROVIDE SERVICE VALVES ON SUCTION AND DISCHARGE OF COMPRESSORS.
3. INDOOR UNITS:
    - PROVIDE UNITS SHALL OF THE CONFIGURATION, AIRFLOW CAPACITY, AND STATIC PRESSURE SHOWN ON DRAWINGS.
    - INDOOR COILS SHALL BE NONFERROUS CONSTRUCTION, COPPER SEAMLESS TUBING FORCE FITTED TO ALUMINUM CONTINUOUS FLAT PLATE FINS. TUBE JOINTS SHALL BE BRAZED WITH PHOS-COPPER OR SILVER ALLOY, WITH HYDROPHILIC COATING. COILS SHALL BE FACTORY INSTALLED IN UNIT.
    - CONDENSATE PAN. INCLUDE INTEGRAL CONDENSATE PUMP CAPABLE OF 750MM (29.5”) LIFT WHERE NOTED ON DRAWINGS.
    - VARIABLE SPEED DIRECT DRIVE BLOWER MOTOR, STATICALLY AND DYNAMICALLY BALANCED, WITH INHERENT PROTECTION, PERMANENTLY LUBRICATED BEARINGS, MOUNTED FOR QUIET OPERATION. UNIT SHALL BE FITTED WITH LINEAR ELECTRONIC EXPANSION VALVE.
    - INTEGRATED CONTROL SHALL INCLUDE SELF-DIAGNOSTIC FUNCTION, 3-MINUTE TIME DELAY MECHANISM, AND AUTO RESTART FUNCTION.
    - DUCTED UNITS SHALL HAVE CABINET FABRICATED OF GALVANIZED STEEL, INSULATED, WITH REMOVABLE ACCESS PANELS, WITH FACTORY INSTALLED RETURN AIR FILTER ON REAR OF UNIT.
    - DUCTLESS UNITS SHALL HAVE A WHITE FINISH, MANUAL ADJUSTABLE GUIDE VANE, AND MOTORIZED AIR SWEEP LOUVER FOR UNIFORM AIR DISTRIBUTION. REMOVABLE, WASHABLE FILTER. INTEGRAL RETURN AIR SENSOR.
4. OUTDOOR UNITS
    - ONE DIRECT DRIVE, VARIABLE SPEED PROPELLER TYPE FAN. RAISED GUARD TO PREVENT CONTACT WITH MOVING PARTS.
    - OUTDOOR UNIT SHALL HAVE A SOUND RATING NO HIGHER THAN 54 DB
    - HIGH PRESSURE SAFETY SWITCH, FUSE, OVER-CURRENT PROTECTION AND CRANK CASE HEATER.
    - CAPABLE OF OPERATING IN OUTSIDE AMBIENT TEMPERATURES BETWEEN -5°C (23°F) TO 46°C (115°F) IN COOLING MODE WITHOUT ADDITIONAL LOW AMBIENT CONTROLS.
    - CAPABLE OF OPERATING IN OUTSIDE AMBIENT TEMPERATURES BETWEEN -15°C (5°F) AND 23°C (75°F) IN HEATING MODE WITHOUT ADDITIONAL LOW AMBIENT CONTROLS.
    - ELECTRONIC EXPANSION VALVES TO CONTROL REFRIGERANT FLOW TO EACH INDOOR UNIT INDEPENDENTLY (MULTI-SPLIT SYSTEMS ONLY)
    - NONFERROUS COIL CONSTRUCTION WITH LANCED OR CORRUGATED ALUMINUM PLATE FINS ON COPPER TUBING, WITH A HYDROPHILIC/PROTECTIVE COATING TO REDUCE CORROSION AND PROMOTE MOISTURE SHEDDING.
    - INVERTER DRIVEN DC COMPRESSOR, TWIN BLDC ROTARY TYPE WITH CRANKCASE HEATER AND THERMAL OVERLOAD PROTECTION, MOUNTED TO AVOID THE TRANSMISSION OF VIBRATION.
5. SHOP DRAWINGS: PROVIDE SUBMITTALS INCLUDING:
    - REFRIGERANT PIPING PLANS INCLUDING PROPOSED SIZES AND ROUTING TO SUIT EQUIPMENT LOCATIONS SHOWN ON MECHANICAL PLANS IN ACCORDANCE WITH RECOMMENDATIONS AND LIMITATIONS ADVISED BY THE EQUIPMENT MANUFACTURER. INCLUDE PIPING LENGTH ESTIMATE, AND TOTAL REFRIGERANT CHARGE REQUIRED.
    - REFRIGERANT SCHEMATIC.
    - FAN PERFORMANCE SHOWING DESIGN OPERATIONS POINT, R/MIN, POWER, ETC.
    - DIMENSIONAL DATA INCLUDING WEIGHTS, SERVICE SPACE AND CLEARANCE REQUIREMENTS.
    - ELECTRICAL CIRCUIT DIAGRAMS INCLUDING FIELD-WIRED COMPONENTS AND REQUIREMENTS FOR SPECIFIC INSTALLATION.
    - ELECTRICAL VOLTAGES, PHASE AND POWER REQUIREMENTS.
    - COMPLETE INSTALLATION INSTRUCTIONS.
    - POWER REQUIREMENTS.
    - CONTROL OPTIONS AND ACCESSORIES, AND CONTROL WIRING DIAGRAM.
    - PROGRAMMING INSTRUCTIONS FOR INCLUSION IN MAINTENANCE MANUALS.
    - ACOUSTIC SOUND PRESSURE LEVEL DATA FOR OUTDOOR CONDENSING UNIT.
    - WARRANTY INFORMATION, INCLUDING CONFIRMATION OF EXTENDED WARRANTY FOR COMPRESSORS.
    - TESTING, DEHYDRATION, CHARGING AND START-UP OF REFRIGERANT SYSTEM

10.1. EXECUTION

1. REFRIGERANT PIPING: INSTALLATION SHALL ENSURE COMPRESSOR OIL AND LIQUID REFRIGERANT RETURN TO COMPRESSOR UNDER LOAD WITHOUT HARM TO COMPRESSOR, MINIMUM PRESSURE DROPS, RESTRICTED REFRIGERANT MIGRATION DURING INOPERATIVE CYCLES, ACCESSORIES AND PIPING PREVENT EXCESSIVE COMPRESSOR CYCLING, PIPE ROUTING AND ISOLATION TO AVOID LINE BREAKAGE OR EXCESSIVE VIBRATION AND SOUND TRANSMISSION TO CONDITIONED SPACE, MAINTENANCE OF CLEAN AND DRY SYSTEM.
2. PROVIDE SUBMITTAL DRAWINGS OF THE REFRIGERANT PIPE WORK LAYOUT, INCLUDING ALL PIPE SIZING AND POSITIONS OF BOXES, ETC.
3. ALL INDOOR PIPING SHALL BE CONCEALED UNLESS OTHERWISE NOTED OR ACCEPTED BY THE CONSULTANT. SPECIFICALLY INDICATE ON SHOP DRAWING PLANS WHERE REFRIGERANT PIPING CANNOT BE CONCEALED, OR IS IMPRACTICAL TO CONCEAL, AND INCLUDE PREMANUFACTURED SHROUD PRODUCTS WHERE PIPING MUST BE EXPOSED.
4. ALL PIPE WORK SHALL BE CLEAN, DEHYDRATED AND CHARGED WITH INERT GAS AND SEALED FOR SHIPMENT FROM FACTORY. PIPE WORK SHALL BE STORED IN DRY CONDITIONS; END CAPS MUST BE USED. WHERE SPECIALIST PIPE WORK FITTINGS BRANCHING OFF TO THE INDOOR FAN COIL UNITS ARE NECESSARY, THESE BRANCHES SHALL BE SUPPLIED BY THE UNIT MANUFACTURER. NO OTHER FITTINGS ARE ACCEPTABLE. THE POSITION OF THE JOINTS SHALL BE STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION. REFRIGERANT PIPE WORK SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. ALL REFRIGERATION PIPE WORK SHALL BE SUPPORTED ON GALVANIZED CABLE TRAY, WIDTH TO ACCOMMODATE PIPE WORK AND CONTROLS CABLE. PIPE WORK SUPPORTS SHALL BE PROVIDED THROUGH ENTIRE LENGTH ACCORDING TO GOOD PRACTICE. ON HORIZONTAL PIPE WORK, THE BRACKETING SHALL ALLOW PIPE MOVEMENT DUE TO CONTRACTION AND EXPANSION. VERTICAL PIPE WORK SHALL BE BRACKETED AT NO MORE THAN 40” (1000 MM) CENTRES AND THE HORIZONTAL AT NO MORE THAN 60” (1,500 MM) CENTRES. THE PROVISIONS OF SPECIAL SUPPORTS SHALL BE INCORPORATED IN DROP RODS OR PIPE CLIPS IN PIPE WORK SUPPORTS. PROVIDE SUITABLE ISOLATION VALVING AS REQUIRED FOR THE SYSTEM CONFIGURATION TO ENABLE MINIMIZED RAIN/REFILLING OF REFRIGERANT.
5. ALL INSTALLED PIPE WORK LENGTHS SHALL BE ACCURATELY MEASURED AND RECORDED ON THE FORM PROVIDED ON THE REMOVABLE ACCESS PANEL WITHIN THE OUTDOOR UNITS AND THE OPERATING AND MAINTENANCE MANUALS (THIS INFORMATION IS REQUIRED FOR THE ACCURATE CALCULATION OF THE REFRIGERANT CHARGE FOR THE SYSTEM).
6. THE PRESSURE TESTING AND EVACUATION SHALL BE CARRIED OUT STRICTLY ACCORDING TO THE MANUFACTURER'S SPECIFICATION.
7. THE FINAL REFRIGERANT CHARGING AND THE COMMISSION OF THE SYSTEM SHALL BE CARRIED OUT BY THE SPECIALIST REFRIGERATION SUB-CONTRACTOR AUTHORIZED BY THE MANUFACTURER. CONTRACTOR SHALL PROVIDE A VERIFIED AND SUBMITTED COMMISSIONING REPORT TO THE CONSULTANT VERIFYING THAT THE SYSTEM HAS MET THE REQUIREMENTS FOR PROPER INSTALLATION, AND FUNCTION.
8. ALL REFRIGERANT PIPE WORK SHALL BE INSULATED WITH ARMAFLEX CLASS “O” INSULATION, ½” (12 MM) THICK, AS MANUFACTURED BY ARMSTRONG INDUSTRIES. BOTH REFRIGERANT LINES FROM THE OUTDOOR UNIT TO INDOOR UNITS SHALL BE INSULATED. THE JOINTS OR HEADERS SHALL BE INSULATED WITH THE PRE-FORMED INSULATION SUPPLIED WITH THESE FITTINGS. INSULATION EXPOSED TO ATMOSPHERIC CONDITIONS SHALL BE PROTECTED WITH TWO COATS OF SPECIAL ARMSTRONG ADHESIVE AND CARE SHOULD BE TAKEN THAT EVERY PART OF THE INSULATION IS SEALED TO MAINTAIN A VAPOUR BARRIER. PROVIDE METAL CLADDING FINISH FOR PIPING EXPOSED OUTDOORS (REFER TO SECTION 23 07 19).
9. AT COMPLETION OF INSTALLATION, PRESSURIZE SYSTEM WITH NITROGEN OR REFRIGERANT AND CHECK FOR LEAKS. REPAIR LEAKS AND RE-TEST. DEHYDRATE SYSTEM AND CHARGE WITH REFRIGERANT. START-UP SYSTEM AND CHECK OPERATION.
10. IF INSTALLATION IS COMPLETED IN WINTER SEASON, PUMP DOWN REFRIGERANT WHERE APPLICABLE AND REPEAT PROCEDURE AT START OF NEXT COOLING SEASON.
11. CARRY OUT CHECK USING DETAILED CHECK SHEETS PROVIDED BY EQUIPMENT MANUFACTURER. INCLUDE COMPLETED AND SIGNED CHECKLISTS IN OPERATING AND MAINTENANCE MANUALS.
12. PROVIDE DOCUMENTATION FOR PROPER OPERATION AND MAINTENANCE OF SYSTEM. PROVIDE ON-SITE INSTRUCTION PERIOD FOR OWNER'S PERSONNEL WITH CONSULTANT'S REPRESENTATIVE.

11. <u>CONTROLS</u>

11.1. THERMOSTATS: MOUNT THERMOSTATS AND TEMPERATURE SENSORS AS INDICATED ON DRAWINGS. ALL TEMPERATURE SENSORS AND THERMOSTATS SHALL BE WALL OR COLUMN MOUNTED AT 1.5M (60") ABOVE FLOOR UNLESS SPECIFICALLY NOTED OTHERWISE. COORDINATE FINAL MOUNTING LOCATIONS WITH INTERIOR DESIGNER/ARCHITECT AND CONSULTANT ON SITE BEFORE ROUGH-IN.

12. <u>FIRE PROTECTION</u>

12.1. FIRE EXTINGUISHERS

1. PROVIDE NEW PORTABLE-TYPE ABC FIRE EXTINGUISHERS AS INDICATED ON DRAWINGS, AND TO SUIT THE REQUIREMENTS OF NFPA 10 AND/OR THE LOCAL AUTHORITIES HAVING JURISDICTION AND FIRE DEPARTMENT.

END OF SPECIFICATION

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PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

MECHANICAL SPECIFICATIONS

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO:

M002

CMHC HOUSING DESIGN CATALOGUE
BC SIXPLEX COURTYARD OPTION 2

MECHANICAL DRAWINGS

MECHANICAL SHEET LIST	
M700	MECHANICAL COVER PAGE
M701.2	BC SIXPLEX MAIN AND SECOND FLOOR MECH (OPTION 2)
M702.2	BC SIXPLEX THIRD FLOOR MECHANICAL (OPTION 2)
M001	MECHANICAL DETAILS
M002	MECHANICAL SPECIFICATIONS

MECHANICAL SYSTEMS		
	EQUIPMENT	**DESCRIPTION**
VENTILATION	ENERGY RECOVERY VENTILATOR (ERV)	DWELLING UNIT TO BE SERVED BY A SINGLE ERV (MIN. 80% HEAT RECOVERY EFFECTIVENESS) FOR CONTINUOUS SUPPLY OF OUTDOOR AIR TO ALL OCCUPIED SPACES AND EXHAUST AIR FROM WASHROOM.
HEATING AND COOLING	DUCTLESS SPLIT-SYSTEM HEAT PUMP(FCU-INDOOR UNIT, CU-OUTDOOR UNIT) SUPPLEMENTARY BASEBOARD HEATER (EBBH)	HEATING AND COOLING OF SUITE IS SERVED BY ELECTRIC SPLIT SYSTEM WITH WALL MOUNTED, DUCTLESS INDOOR UNITS. FOR CLIMATE ZONES 5 & 6, ELECTRIC BASEBOARD IS REQUIRED FOR ALL SPACES AS BACK UP HEAT WHEN OUTDOOR AMBIENT TEMPERATURE IS BELOW -15°C, OR DURING POWER OUTAGE
DOMESTIC HOT WATER	HYBRID HEAT PUMP WATER HEATER (DHWT)	DOMESTIC HOT WATER PRODUCTION BY STANDALONE HYBRID HEAT PUMP AND ELECTRIC HOT WATER HEATER
KITCHEN EXHAUST	-	KITCHEN RANGE EXHAUST TO BE SEPARATE FROM MAIN VENTILATION SYSTEM AND TO BE DUCTED DIRECTLY TO OUTSIDE. (NOTE: THIS IS DESIGNED FOR ALL ELECTRIC APPLIANCE. A MAKE-UP AIR (MUA) FAN INTERLOCKED WITH KITCHEN RANGE EXHAUST IS RECOMMENDED FOR HOMES THAT INCLUDE ANY GAS-FIRED OR NATURAL-DRAFTING APPLIANCES OR FIREPLACES, TO PREVENT DEPRESSURIZATON AND BACKDRAFT"
DRYER EXHAUST	-	DRYER EXHAUST TO BE SEPARATE FROM MAIN VENTILATION SYSTEM AND TO BE DUCTED DIRECTLY TO OUTSIDE. (NOTE: THIS IS BASED ON CONVENTIONAL DOMESTIC DRYERS. CONDENSING DRYERS DO NOT REQUIRE DUCTED EXHAUST)

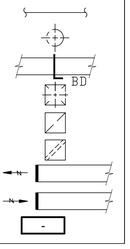
MECHANICAL LEGEND

LIST OF ABBREVIATIONS

C/W	COMPLETE WITH
DN	DOWN
F/A, T/A	FROM ABOVE, TO ABOVE
F/B, T/B	FROM BELOW, TO BELOW
NTS	NOT TO SCALE
O/A	OUTSIDE AIR
R/A	RETURN AIR
E/A	EXHAUST AIR
S/A	SUPPLY AIR

LIST OF SYMBOLS AND SERVICES

DUCTWORK
ROUND DUCT DROP
BALANCING DAMPER
SUPPLY DIFFUSER
RETURN GRILLE
EXHAUST GRILLE
SUPPLY OUTLET
RETURN OR EXHAUST INLET
EQUIPMENT TAG



PLUMBING ROUGH-IN SCHEDULE

TYPE	FIXTURE	SAN	DCW	DHW	VENT	REMARKS
SK	SINK	38 (1½")	12 (½")	12 (½")	32 (1¼")	-
LAV	LAVATORY	32 (1¼")	12 (½")	12 (½")	32 (1¼")	-
WC	WATER CLOSET	75 (3")	12 (½") / 25 (1")	-	38 (1½")	FLUSH TANK
SH	SHOWER	50 (2")	12 (½")	12 (½")	38 (1½")	-
BT	BATHTUB	50 (2")	12 (½")	12 (½")	38 (1½")	-
JS	JANITOR SINK	38 (1½")	12 (½")	12 (½")	32 (1¼")	-
FD-1	FLOOR DRAIN	100 (4")	-	-	-	C/W TRAP PRIMER
CW	DOMESTIC CLOTHES WASHER	75 (3")	20 (¾")	20 (¾")	38 (1½")	
DW	DOMESTIC DISH WASHER	-	-	12 (½")	-	C/W SHOCK ARRESTOR. CONNECT DRAIN HOSE TO ADJACENT SINK.

* MINIMUM SIZE, REFER TO MANUFACTURER'S RECOMMENDATIONS. MULTIPLE ADJACENT APPLIANCES SHALL USE INDEPENDENT PLUMBING CONNECTIONS, SHUT-OFF VALVES, AND SHOCK ARRESTORS (DO NOT GANG CONNECTIONS TOGETHER).

ERV SIZING

SUITE TYPE	QTY. BEDROOM	QTY. OCCUPANT	QTY. BATHROOM	Area (sqft)	Area (sqm)	OUTDOOR AIR		EXHAUST AIR	
						CFM	L/s	CFM	L/s
SIX-PLEX COURTYARD - 1 BED SUITE	1	2	1			**30**	**14**	19	9
SIX-PLEX COURTYARD - 2 BED SUITE	2	3	1			**44**	**21**	19	9
SIX-PLEX COURTYARD - 3 BED SUITE	3	4	3			44	21	**57**	**27**

1. AIRFLOW RATE PER BCBC2024
   PRINCIPAL VENTILATION SYSTEM EXHAUST FAN MINIMUM AIRFLOW RATES (TABLE 9.32.3.5)
   KITCHEN/BATHROOM EXHAUST FAN MINIMUM AIR-FLOW RATE (TABLE 9.32.3.6)
2. ERV TO OPERATE IN CONSTANT VOLUME TO MEET ABOVE MINIMUM AIRFLOW RATES. OPTIONAL BOOST MODE TO INCREASE WASHROOM EXHAUST INTERMITTENDLY IS RECOMMENDED.
3. ERV TO BE MIN. 1"w.c. ESP
4. ERV TO BE C/W MERV 13 SUPPLY FILTER

CMHC SCHL

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PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

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SHEET TITLE:

MECHANICAL COVER PAGE

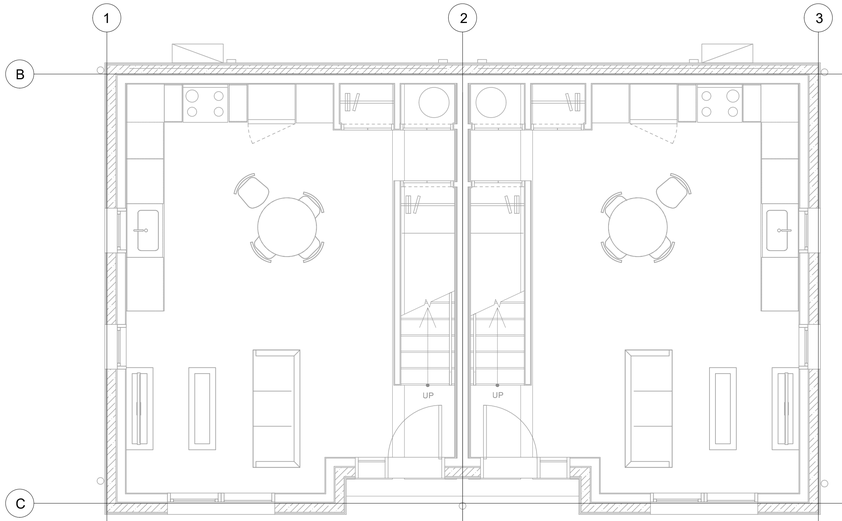
BC SIXPLEX COURTYARD OPTION 2

PROJECT NO: 241058

SCALE: AS NOTED

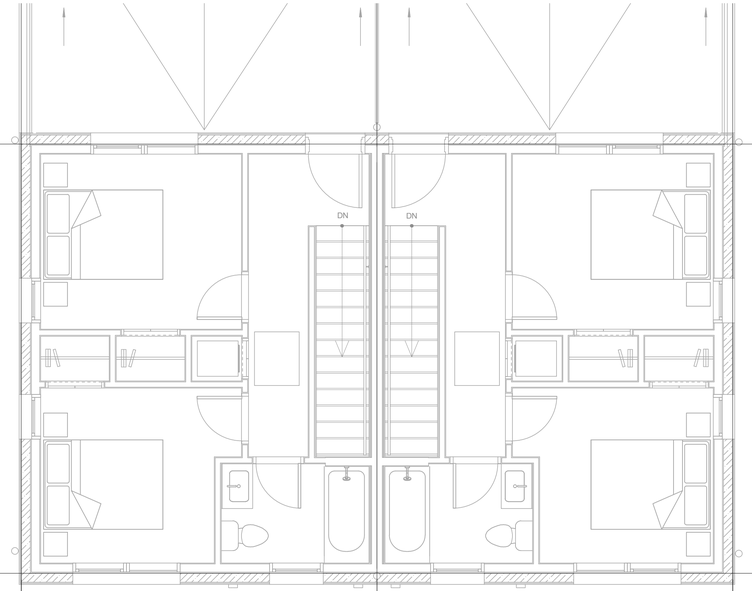
SHEET NO:

M700



MAIN FLOOR- REAR ENTRANCE

SCALE: ¼" = 1'-0"

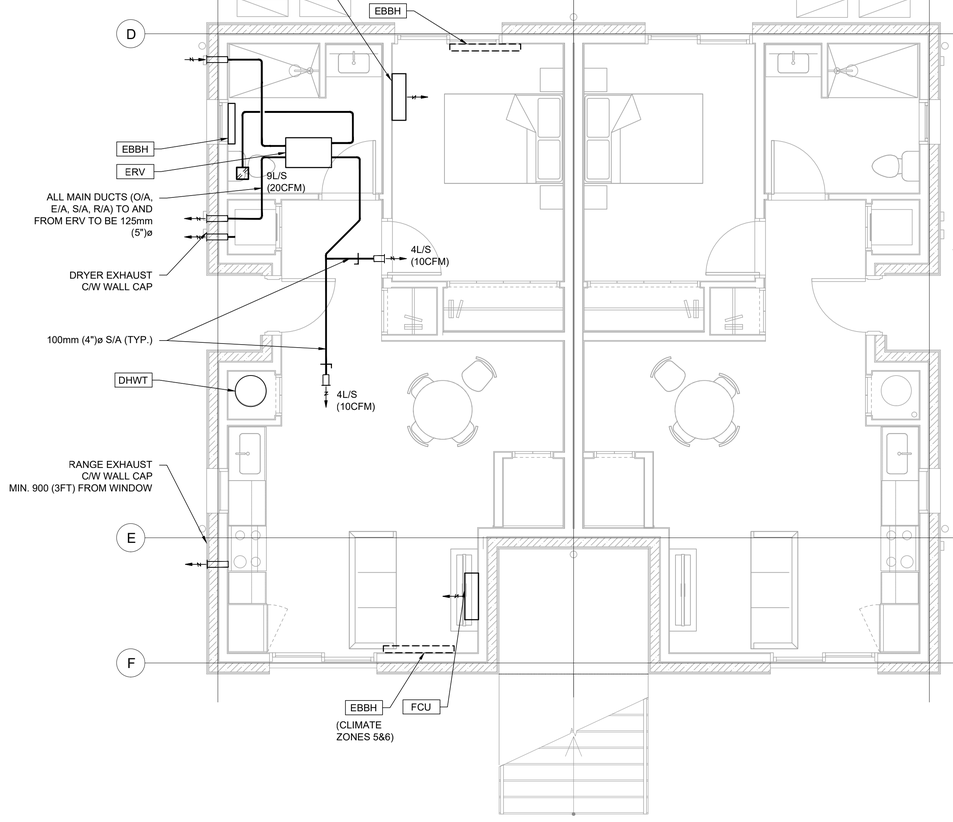


SECOND FLOOR- REAR ENTRANCE

SCALE: ¼" = 1'-0"

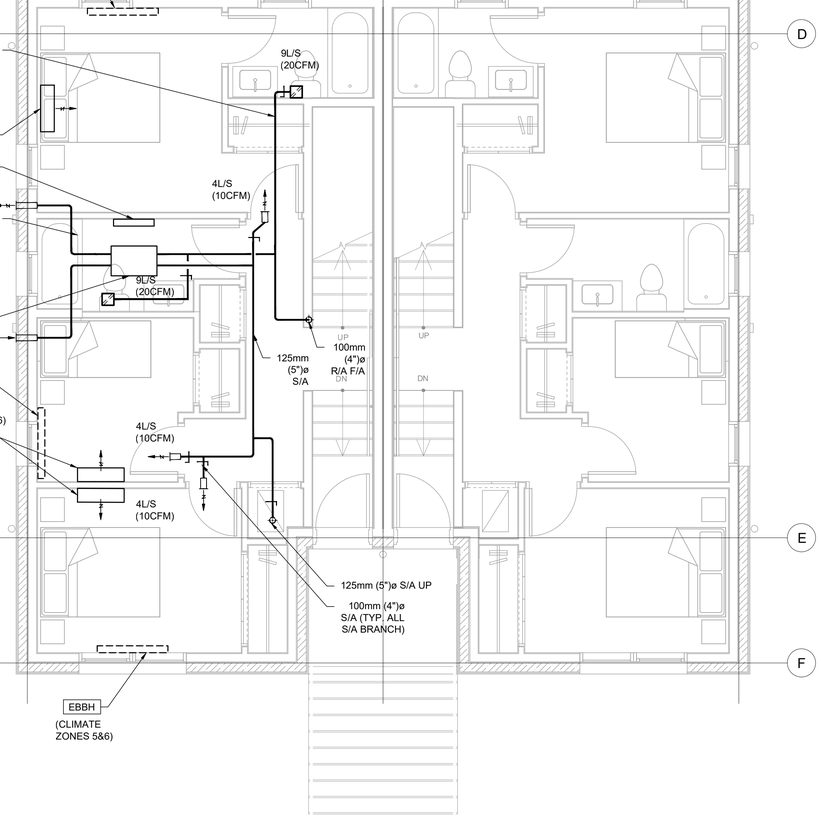
GENERAL NOTES:

1. DRYER EXHAUST AND KITCHEN EXHAUST DUCTS VARY BY APPLIANCE MODEL AND SIZE. EXHAUST DUCT SIZED TO MANUFACTURER'S RECOMMENDATION.
2. ELECTRIC BASEBOARD BACK UP HEATERS ARE REQUIRED FOR CLIMATE ZONES 5 & 6 ONLY, AND OPTIONAL FOR CLIMATE ZONE 4.
3. THIS DESIGN OPTION IS FOR A DUCTED HEAT PUMP SYSTEM. HEAT PUMP SUPPLY AND RETURN AIR DUCTS TO BE DETERMINED BY REGIONAL QUALIFIED DESIGNER OR CONTRACTOR BASED ON SITE-SPECIFIC HEAT PUMP SYSTEM SIZING.
4. OPTION 2 (DUCTED SPLIT SYSTEM) IS ONLY APPLICABLE TO LEVEL 2 AND 3 FRONT ENTRANCE SUITE ONLY. REAR SUITE AND MAIN FLOOR FRONT ENTRANCE SUITE DO NOT HAVE OPTION 2. THE TWO SUITES ABOVE REMAIN OPTION 1 (DUCTLESS SPLIT SYSTEM)



MAIN FLOOR- FRONT ENTRANCE

SCALE: ¼" = 1'-0"



SECOND FLOOR- FRONT ENTRANCE

SCALE: ¼" = 1'-0"

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CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

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SHEET TITLE:

BC SIXPLEX COURTYARD MECHANICAL OPTION 2 LEVEL 1 AND 2

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO: M701.2

DW
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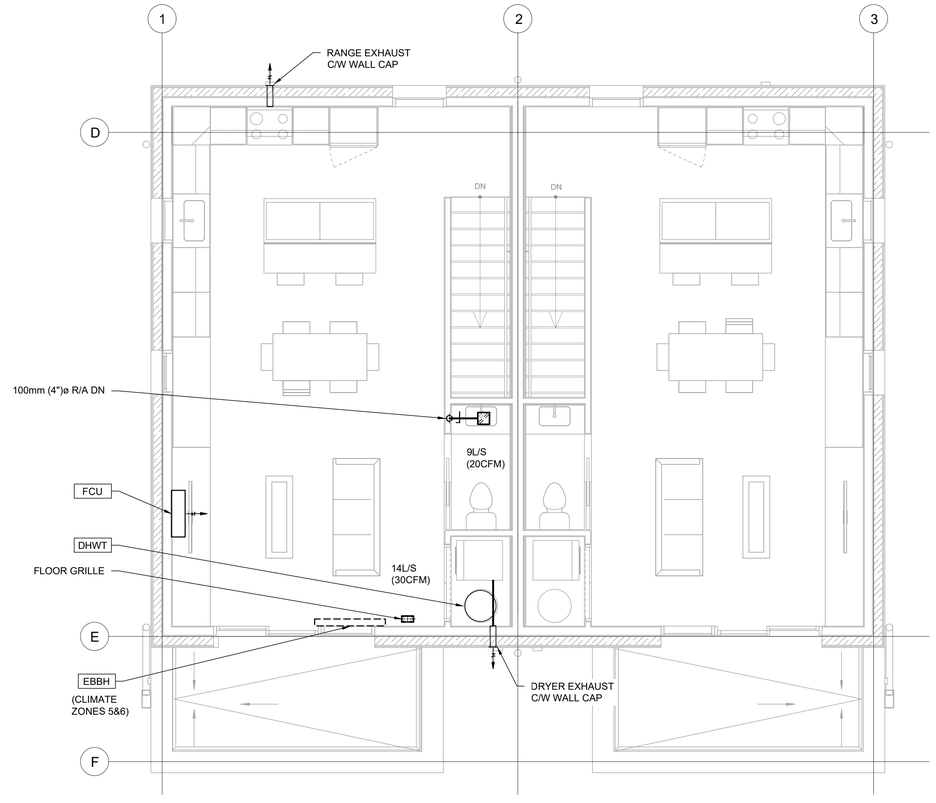

THIRD FLOOR-FRONT ENTRANCE

SCALE: ¼" = 1'-0"

GENERAL NOTES:

1. DRYER EXHAUST AND KITCHEN EXHAUST DUCTS VARY BY APPLIANCE MODEL AND SIZE. EXHAUST DUCT SIZED TO MANUFACTURER'S RECOMMENDATION.
2. ELECTRIC BASEBOARD BACK UP HEATERS ARE REQUIRED FOR CLIMATE ZONES 5 & 6 ONLY, AND OPTIONAL FOR CLIMATE ZONE 4.
3. THIS DESIGN OPTION IS FOR A DUCTED HEAT PUMP SYSTEM. HEAT PUMP SUPPLY AND RETURN AIR DUCTS TO BE DETERMINED BY REGIONAL QUALIFIED DESIGNER OR CONTRACTOR BASED ON SITE-SPECIFIC HEAT PUMP SYSTEM SIZING.
4. OPTION 2 (DUCTED SPLIT SYSTEM) IS ONLY APPLICABLE TO LEVEL 2 AND 3 FRONT ENTRANCE SUITE ONLY. REAR SUITE AND MAIN FLOOR FRONT ENTRANCE SUITE DO NOT HAVE OPTION 2. THE TWO SUITES ABOVE REMAIN OPTION 1 (DUCTLESS SPLIT SYSTEM)

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SHEET TITLE:

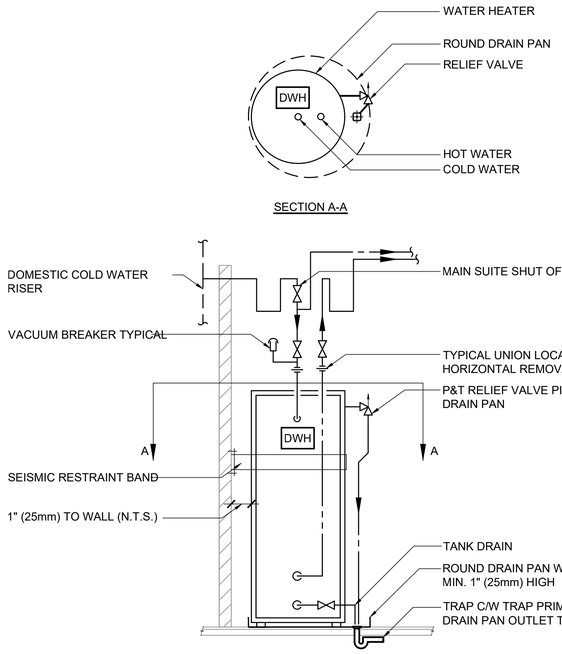
BC SIXPLEX COURTYARD MECHANICAL OPTION 2 LEVEL 3

PROJECT NO: 241058

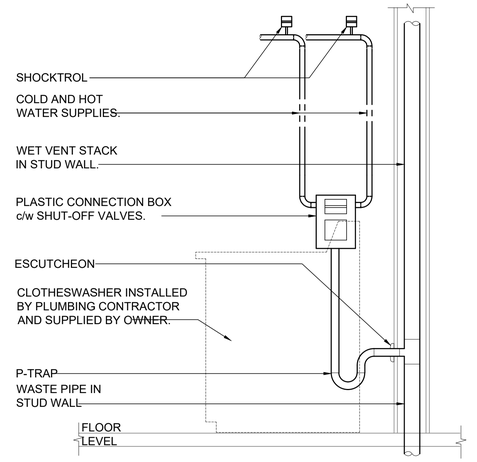
SCALE: AS NOTED

SHEET NO: DW DW

M702.2

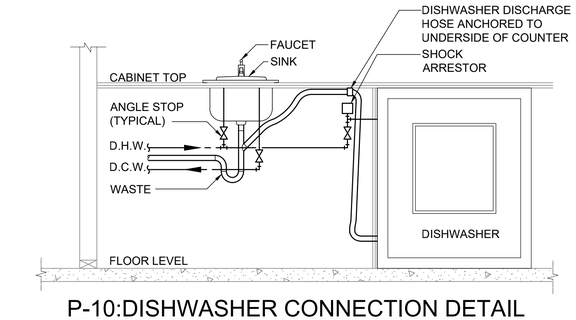


P-12:DOMESTIC WATER HEATER DETAIL



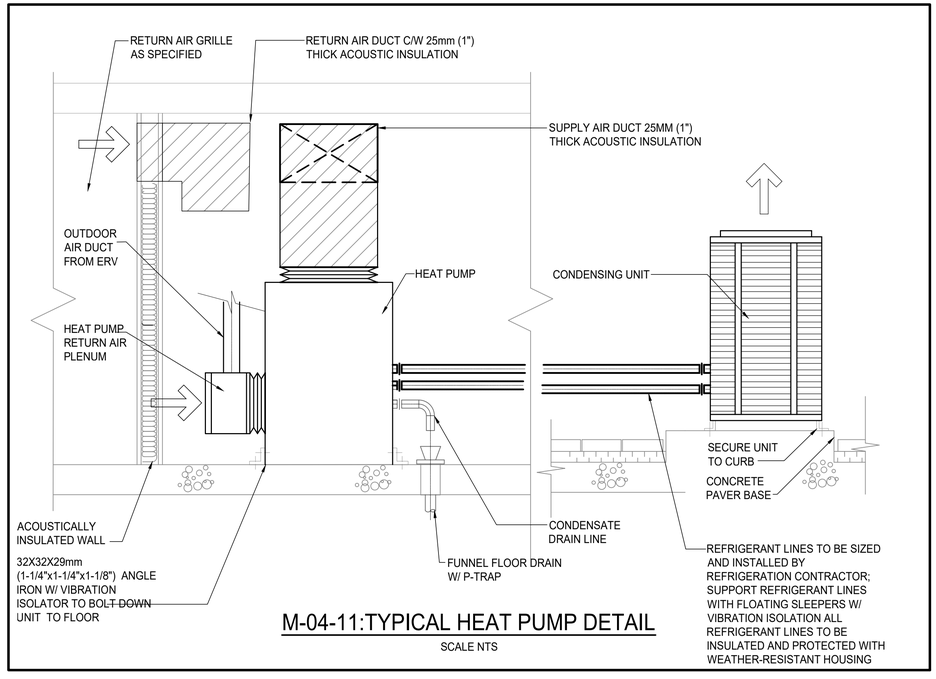
P-6:CLOTHES WASHER CONNECTION DETAIL

SCALE NTS



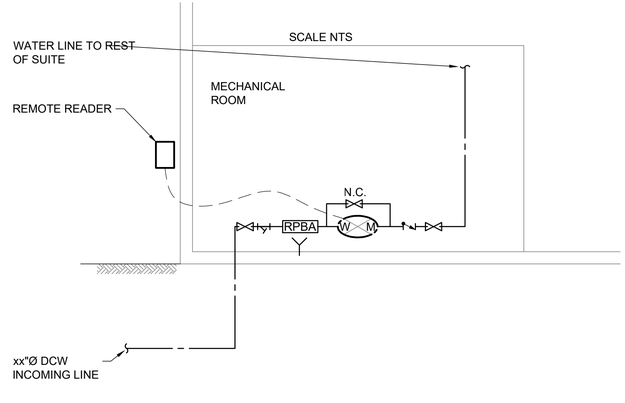
P-10:DISHWASHER CONNECTION DETAIL

SCALE NTS



M-04-11:TYPICAL HEAT PUMP DETAIL

SCALE NTS



DOMESTIC WATER SCHEMATIC

SCALE NTS

CMHC SCHL

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BRITISH COLUMBIA, CANADA

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SHEET TITLE:

MECHANICAL DETAILS

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO:

M001

MECHANICAL SPECIFICATIONS

1. GENERAL

1.1. INTENT: THIS SPECIFICATION SHALL SERVE TO PROVIDE DIRECTION AND STANDARDS TO ENABLE THE CONTRACTOR TO SUPPLY AND INSTALL A FINISHED, FULLY FUNCTIONAL MECHANICAL SYSTEM FOR THE PROJECT, IN COMPLETE ACCORDANCE WITH CURRENT BUILDING CODE AND LOCAL BYLAWS. THE MECHANICAL CONTRACTOR SHALL INCLUDE ALL LABOUR, MATERIAL AND EQUIPMENT NECESSARY TO COMPLETE THE MECHANICAL WORK.

1.2. LIABILITY: ASSUME RESPONSIBILITY FOR LAYING OUT WORK AND FOR DAMAGE CAUSED TO THE OWNER OR OTHERS BY IMPROPER EXECUTION OF WORK. PROTECT FINISHED AND UNFINISHED WORK FROM DAMAGE. TAKE RESPONSIBILITY FOR CONDITION OF MATERIALS AND EQUIPMENT SUPPLIED, AND PROTECT UNTIL WORK IS COMPLETED AND ACCEPTED.

1.3. CERTIFICATES: GIVE NOTICES, OBTAIN PERMITS, AND PAY PERMIT AND INSPECTION FEES SO WORK SPECIFIED AND SHOWN MAY BE CARRIED OUT. FURNISH CERTIFICATES, IF REQUESTED, AS EVIDENCE THAT WORK CONFORMS WITH LAWS AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION.

1.4. CUTTING AND PATCHING: MEASURE OUT AND PROVIDE LOCATIONS FOR HOLES FOR MECHANICAL EQUIPMENT AND PROVIDE SLEEVES REQUIRED FOR THE MECHANICAL INSTALLATIONS. BE RESPONSIBLE FOR CUTTING AND PATCHING OF BUILDING STRUCTURE REQUIRED BY WORK UNLESS OTHERWISE INDICATED. ALLOW FOR SCANNING PRIOR TO CORING OR CUTTING AND SCANS TO BE APPROVED BY BASE BUILDING STRUCTURAL CONSULTANT.

1.5. TESTING: TEST EQUIPMENT AND MATERIALS WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION, TO DEMONSTRATE PROPER OPERATION.

1.6. GUARANTEE: PROVIDE THE OWNER WITH A WRITTEN GUARANTEE FOR LABOUR AND MATERIAL WARRANTING SYSTEMS AND EQUIPMENT FURNISHED TO REMAIN IN SERVICEABLE CONDITION FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY THE OWNER.

1.7. STANDARD OF MATERIALS AND WORKMANSHIP: MAKE AND QUALITY OF MATERIALS USED ARE SUBJECT TO ACCEPTANCE BY THE CONSULTANT. REMOVE CONDEMNED MATERIALS AND INSTALL SUITABLE MATERIALS IN THEIR PLACE. MATERIALS SHALL BE NEW AND OF UNIFORM PATTERN THROUGHOUT, WHERE SPECIFICALLY IDENTIFIED IN THIS SPECIFICATION. WORKMANSHIP SHALL FOLLOW THE BEST TRADITION AND TRADESMANSHIP. EMPLOY ONLY TRADESMEN PROPERLY LICENSED FOR WORK REQUIRING TRADESMEN WITH SPECIAL SKILL.

1.8. ACCESS: ENSURE ADEQUATE MAINTENANCE ACCESS IS MAINTAINED TO MANUAL BALANCING DAMPERS, FIRE DAMPERS, VALVES, METERS, EQUIPMENT, INCLUDING THOSE EXISTING. PROVIDE ADEQUATELY-SIZED AND FIRE-RATED (WHERE REQUIRED) ACCESS DOORS WHERE A SOLID FINISHED CEILING EXISTS. COORDINATE TYPE, COLOUR, AND INSTALLATION WITH THE GENERAL CONTRACTOR AND ARCHITECT/INTERIOR DESIGNER. FOR EXISTING BASE BUILDING EQUIPMENT, MARK PROPOSED ACCESS PANEL LOCATIONS ON FLOOR FOR REVIEW AND COORDINATION WITH THE LANDLORD'S TENANT COORDINATOR PRIOR TO INSTALLATION OF CEILING FRAMING AND PANELING.

1.9. RECORD DRAWINGS: ENSURE ONE SET OF WHITE PRINT PLANS AND SPECIFICATIONS ARE KEPT ON SITE AT ALL TIMES FOR CONSULTANT INSPECTION. INDICATE ANY CHANGES AND DEVIATIONS FROM THE CONTRACT DOCUMENTS, INCLUDING WORK BY CHANGE ORDERS AND JOB INSTRUCTIONS. THE CONTRACTOR SHALL INCLUDE A CASH ALLOWANCE OF $300 PER PLAN SHEET FOR THE CONSULTANT TO TRANSFER MARKED UP CHANGES TO CAD FILES, AND FOR PROVIDING TWO SETS OF RECORD DRAWINGS AND ELECTRONIC CAD FILES TO THE OWNER.

1.10. CLOSE-OUT DOCUMENTATION/OPERATION AND MAINTENANCE MANUALS: WITHIN TWO WEEKS OF SUBSTANTIAL COMPLETION, PROVIDE THREE COPIES OF THE FOLLOWING (WHERE APPLICABLE):

1. PROJECT INFORMATION
   - PROJECT NAME, ADDRESS, AND DATE OF SUBSTANTIAL COMPLETION
   - CONTACT INFORMATION FOR GENERAL CONTRACTORS AND ALL MECHANICAL CONTRACTORS AND SUBTRADES
2. LETTERS OF ASSURANCE AND WARRANTY DOCUMENTS
   - COPIES OF ALL APPLICABLE WORK PERMITS
   - COPY OF CONTRACTOR'S (AND MECHANICAL SUB-CONTRACTOR'S IF APPLICABLE) 1-YEAR WARRANTY LETTER
   - WARRANTY FORMS FOR ALL APPLICABLE MECHANICAL EQUIPMENT
   - PLUMBING FINAL INSPECTION CERTIFICATE.
   - BACKFLOW PREVENTER TEST CERTIFICATES.
   - CHLORINATION REPORT OF DOMESTIC WATER LINES.
3. TESTING, ADJUSTING, AND BALANCING (TAB) DOCUMENTATION
   - PIPING TEST FORMS
   - REFRIGERATION STARTUP CHECKLISTS
4. HVAC SYSTEM
   - BRIEF DESCRIPTION OF HVAC SYSTEM COMPONENTS AND OPERATION
   - OPERATING AND MAINTENANCE MANUALS FOR NEW EQUIPMENT

4.1. ADDITIONAL DOCUMENTATION: CONTRACTOR SHALL SUPPLY ALL DOCUMENTATION AND INFORMATION WHICH IS REQUIRED FOR APPLICATION TO INCENTIVE AND REBATE PROGRAMS (SUCH AS FORTIS BC EFFICIENT BOILER PROGRAM).

5. BALANCING

5.1. QUALITY ASSURANCE

1. PROCEDURES SHALL BE IN ACCORDANCE WITH CURRENT EDITION OF AABC'S NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION, TOTAL SYSTEM BALANCE.

3.1. INSTRUMENTS FOR TESTING AND BALANCING OF AIR SYSTEMS SHALL HAVE BEEN CALIBRATED WITHIN SIX MONTHS AND VERIFIED FOR ACCURACY BEFORE START OF WORK.

3.2. PROCEDURES

1. BALANCE TO MAXIMUM FLOW DEVIATION FROM SPECIFIED VALUES OF 10% AT TERMINAL DEVICE AND 5% AT EQUIPMENT OR MEAN SOUND LEVEL DEVIATION OF 20 DB.
2. PERMANENTLY MARK SETTING ON VALVES, SPLITTERS, DAMPERS AND OTHER ADJUSTMENT DEVICES. TAKE MEASUREMENTS TO VERIFY BALANCE HAS NOT BEEN DISRUPTED OR SUCH DISRUPTION HAS BEEN RECTIFIED.
3. ADJUST MAIN SUPPLY AND RETURN DUCTS TO DESIGN FLOW RATES. ADJUST ZONES TO DESIGN, SUPPLY AND RETURN FLOW RATES. TEST AND ADJUST EACH DIFFUSER, GRILLE AND REGISTER TO WITHIN 10% OF DESIGN REQUIREMENTS. ADJUST DIFFUSERS, GRILLES AND REGISTERS TO MINIMIZE DRAFTS.

4. TESTING

4.1. TEST EQUIPMENT AND MATERIAL WHERE SPECIFIED OR REQUIRED BY AUTHORITY HAVING JURISDICTION. TEST IN ACCORDANCE WITH APPLICABLE PORTIONS OF ASME, ASHRAE, SMACNA, NFPA, CSA AND OTHER RECOGNIZED TEST STANDARDS/CODES.

4.2. PROVIDE NOTICE OF TESTS TO CONSULTANT. ON COMPLETION OF INSTALLATION, PROVIDE CERTIFICATION OF TESTS WITH REQUIRED DETAIL. ITEMIZE TESTS AS TO TIME PERFORMED AND PERSONNEL RESPONSIBLE. INCLUDE COPY OF FIELD DATA IN OPERATING AND MAINTENANCE MANUALS.

4.3. PRESSURE TESTS

1. PIPING, FIXTURES OR EQUIPMENT SHALL NOT BE CONCEALED UNTIL INSPECTED AND APPROVED BY CONSULTANT. CARRY OUT HYDRAULIC TESTS FOR 8 HOURS. MAINTAIN PRESSURE. WHERE LEAKAGE OCCURS, REPAIR AND RE-TEST.
2. DOMESTIC WATER PIPING: TEST TO 1-1/2 TIMES MAXIMUM WORKING PRESSURE OR 1034 kPa (150 PSI) WATER PRESSURE MEASURED AT SYSTEM LOW POINT.
3. DRAINAGE SYSTEM: TEST BY FILLING WITH WATER TO PRODUCE WATER PRESSURE OF 1.5 M (5 FEET) WATER COLUMN MINIMUM AND 7.6M (25 FEET) WATER COLUMN MAXIMUM. CHECK FOR PROPER GRADE AND OBSTRUCTION BY BALL TEST.
4. NATURAL GAS PIPING: TEST AS REQUIRED BY AUTHORITY HAVING JURISDICTION.
5. LOW PRESSURE DUCTS: TEST FOR TIGHTNESS SUCH THAT LEAKAGE IS INAUDIBLE AND NOT DETECTABLE BY FEEL.
6. SHOULD TESTS INDICATE DEFECTIVE WORK OR VARIANCE WITH SPECIFIED REQUIREMENTS, CORRECT DEFECTS. CORRECT LEAKS BY RE-MAKING JOINTS IN SCREWED FITTINGS, CUTTING OUT AND RE-WELDING WELDED JOINTS AND RE-MAKING JOINTS IN COPPER LINES. DO NOT CAULK.

4.1. PERFORMANCE TESTS

1. LUBRICATE BEARINGS, ADJUST AND/OR REPLACE AND SET DIRECT AND "V"-BELT DRIVES FOR PROPER ALIGNMENT AND TENSION.
2. CALIBRATE AND ADJUST THERMOSTATS, LINKAGES AND DAMPERS. OPERATE AND TEST MOTORS FOR CORRECT WIRING AND SEQUENCES. CHECK OVERLOAD HEATERS IN MOTOR STARTERS. FASTEN LOOSE AND RATTLING PIECES OF EQUIPMENT TO ENSURE QUIET OPERATION.
3. GAS-FIRED APPLIANCES SHALL BE OPERATIONALLY TESTED TO THE SATISFACTION OF THE GAS SAFETY BRANCH BEFORE BEING APPROVED FOR OPERATION.

5. VIBRATION ISOLATION AND SEISMIC RESTRAINT

5.1. PROVIDE VIBRATION ISOLATORS AND SEISMIC RESTRAINT SYSTEMS MEETING REQUIREMENTS OF AUTHORITY HAVING JURISDICTION AND COMMENTARY J, EFFECTS OF EARTHQUAKES, IN SUPPLEMENT TO NATIONAL BUILDING CODE OF CANADA WITH REGARD TO SEISMIC FORCES TRANSMITTED TO PIPING/EQUIPMENT FROM BUILDING STRUCTURE DURING AN EARTHQUAKE AT PROJECT LOCATION. PROVIDE SEALED AND SIGNED ENGINEERED DETAILS BY SEISMIC ENGINEER LICENSED IN BRITISH COLUMBIA. FINAL SEISMIC INSPECTION AND SCHEDULE CB TO BE COMPLETED PRIOR TO SUBSTANTIAL PERFORMANCE, AND COPIED TO THE CONSULTANT.

5.2. RESILIENTLY FASTEN ALL MECHANICAL EQUIPMENT TO STRUCTURE INCLUDING (BUT NOT LIMITED TO) HEAT RECOVERY VENTILATORS, FANS, AIR HANDLING UNITS, SPLIT SYSTEM OUTDOOR UNITS, DOMESTIC HOT WATER TANKS.

5.3. STRAPS, ANCHOR BOLTS AND STRAPS SHALL BE CAPABLE OF WITHSTANDING SEISMIC FORCES IN ALL DIRECTIONS. AIRCRAFT CABLE AND FASTENING MATERIALS SHALL BE CAPABLE OF RESTRAINING 1.5 TIMES CALCULATED SEISMIC FORCES TRANSMITTED THROUGH EQUIPMENT OR PIPING RESTRAINED. WHERE TOP OF INDIVIDUALLY SUSPENDED PIPE OR DUCT IS LESS THAN 300 MM (12") BELOW SUPPORTING STRUCTURE, TRANSVERSE AND LONGITUDINAL BRACING SHALL NOT BE REQUIRED.

5.4. FOR SUSPENDED EQUIPMENT WHERE SWAY WILL EXCEED 100MM (4"), SLACK CABLE RESTRAINTS SHALL BE CONNECTED FROM EACH SUPPORT POINT (MINIMUM FOUR) TO STRUCTURE AT ANGLE OF 45° IN ELEVATION AND AT 90° TO EACH OTHER IN PLAN VIEW.

5.5. PROVIDE MINIMUM TWO STEEL BAND STRAPS ABOVE CENTRE OF GRAVITY ON VERTICAL TANKS ANCHORED TO STRUCTURE.

5.6. BRANCH LINES SHALL NOT BE USED TO RESTRAIN MAIN PIPING.

5.7. WHERE NOMINALLY HORIZONTAL LENGTH OF PIPE OR DUCT EXCEEDS THE MAXIMUM ALLOWABLE TRANSVERSE RESTRAINT SPACING LISTED IN THE RESTRAINT INSTALLATION SCHEDULE, A MINIMUM OF ONE LONGITUDINAL AND ONE TRANSVERSE RESTRAINT SHALL BE PROVIDED.

5.8. WHERE HORIZONTAL PIPE OR DUCT PASSES THROUGH VERTICAL CONCRETE OR CONCRETE BLOCK WALL WITHIN SLEEVE, WALL WILL BE CONSIDERED TRANSVERSE RESTRAINT POINT. CABLES SHALL BE TIGHTENED TO REMOVE SLACK (25mm (1") DEFLECTION UNDER THUMB PRESSURE), BUT SHALL NOT SUPPORT ANY WEIGHT UNDER NORMAL OPERATING CONDITIONS. ALLOWANCES SHALL BE MADE FOR NORMAL EXPANSION AND CONTRACTION OF PIPING SYSTEMS WHERE APPLICABLE.

5.9. PROVIDE TRANSVERSE AND LONGITUDINAL SEISMIC RESTRAINT ON NOMINALLY HORIZONTAL PIPING AS FOLLOWS:

1. NATURAL GAS PIPING:
   - 25mmø AND LARGER: LONGITUDINAL RESTRAINT 12m O.C., TRANSVERSE RESTRAINT 6m O.C.
2. ALL OTHER PIPE SERVICES:
   - 65mmø AND LARGER: LONGITUDINAL RESTRAINT 24m O.C., TRANSVERSE RESTRAINT 12m O.C.

3. INSULATION

3.1. MATERIALS AND APPLICATION TEMPERATURES SHALL BE AS RECOMMENDED BY ADHESIVE, COATING OR SEALER MANUFACTURER. MAKE GOOD SEPARATIONS OF JOINTS OR CRACKING OR INSULATION DUE TO THERMAL MOVEMENT OR POOR WORKMANSHIP. COMPOSITE FIRE AND SMOKE HAZARD RATINGS FOR ADHESIVES, INSULATION, COATINGS AND JACKETS SHALL NOT EXCEED 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED OR OTHERWISE AS REQUIRED BY CODE. USE ONLY ULC LISTED OR TESTED COVERING MATERIALS.

3.2. PIPING INSULATION THICKNESS:

1. DOMESTIC COLD WATER, ALL SIZES = 25mm (1") THICK
2. DOMESTIC HOT WATER AND RECIRC, PIPE SIZE < 38mm (1-1/2")ø = 12mm (1/2") THICK
3. DOMESTIC HOT WATER AND RECIRC, PIPE SIZE 38mm (1-1/2")ø AND UP = 12 mm (1/2") THICK

7.1. PIPING INSULATION FINISHES:

1. EXPOSED: BCICA STANDARD "PF2 PREMIUM 2" OR 15 MIL PVC JACKET WITH SOLVENT WELDS (INCLUDES WITHIN MECHANICAL ROOMS)
2. CONCEALED: BCICA STANDARD "PF3 ECONOMY" ALL SERVICE JACKET WITH ITNEGRAL VAPOUR BARRIER.

7.1. DUCTWORK AND PLENUMS INSULATION THICKNESS:

1. SUPPLY AIR DUCTS AND PLENUMS ABOVE FINISHED CEILINGS = 25mm (1") THICK (UP TO FLEXIBLE DUCT CONNECTION OR 1.5m (5') FROM DIFFUSER)
2. OUTDOOR AIR DUCT IN HEATED SPACE = 50mm (2") THICK

7.1. DUCTWORK AND PLENUMS INSULATION FINISHES:

1. FACTORY FINISHED WITH NO FURTHER FINISH REQUIRED. RAW EDGE OF INSULATION SHALL NOT BE ALLOWED TO BE EXPOSED IN CEILING PLENUM/SPACE.

7.1. FOR ANY SERVICES, TEMPERATURES, OR SIZES NOT REFERENCED ABOVE, INSULATION THICKNESS SHALL BE PROVIDED ACCORDING TO ASHRAE/IES STANDARD 90.1-2010 (TABLE 6.8.2 MINIMUM DUCT INSULATION, TABLE 6.8.3 MINIMUM PIPE INSULATION THICKNESS).

7.2. VAPOUR BARRIER SHALL BE CONTINUOUS FOR ALL "COLD" SERVICES INCLUDING DOMESTIC COLD WATER AND CHILLED WATER. PROVIDE RIGID BLOCKING AND OVERSIZED PIPE HANGERS/SUPPORTS FOR THESE SERVICES. PENETRATIONS THROUGH WALLS SHALL HAVE CONTINUOUS INSULATION.

7.3. REFRIGERATION PIPING: REFER TO REFRIGERATION SECTION.

8. PLUMBING

8.1. PROVIDE ALL NECESSARY PIPING MATERIAL AND LABOUR FOR THE SYSTEMS AS SHOWN ON THE DRAWINGS. PIPING AND FITTINGS SHALL BE IN ACCORDANCE WITH CURRENT EDITION OR APPLICABLE REVISIONS OF APPLICABLE CODES OR GOVERNING REGULATIONS.

8.2. PIPE AND FITTINGS

1. SANITARY DRAINAGE WASTE VENT (DWV) BELOW GRADE
   - ABS OR DWV PVC
2. SANITARY DRAINAGE WASTE VENT (DWV) ABOVE GRADE
   - UP TO 65mm (2-1/2")ø: DWV COPPER WITH WROUGHT OR CAST BRASS FITTINGS AND 50-50 SOLDER
   - ALL SIZES: CAST IRON WITH S.S. MECHANICAL JOINT COUPLINGS
3. DOMESTIC WATER ABOVE GRADE
   - ALL SIZES: CERTIFIED TYPE "L" OR "K" HARD COPPER WITH SILVABRITE 100 LEAD-FREE SOLDER
   - ALL SIZES: VIEGA PRO-PRESS (CONTRACTOR MUST CONFIRM CERTIFICATION BY MANUFACTURER AND MINIMUM 5 YEARS OF EXPERIENCE)
4. NATURAL GAS PIPING ABOVE GRADE
   - UP TO 50mm (2"): SCH 40 BLACK STEEL WITH MALLEABLE SCREWED OR BUTT-WELDED JOINTS
   - PIPING OVER 50mm (2")ø SHALL BE WELDED.
5. NATURAL GAS PIPING BELOW GRADE SHALL BE "YELLOW JACKET" WITH CATHODIC PROTECTION AND TRACER WIRE.
6. CONDENSATE DRAINS
   - FROM COOLING COILS / HRV / ERV: DWV COPPER, IPEX SYSTEM 15 DWV PVC, (COMBUSTIBLE BUILDINGS ONLY: PVC PIPE OR PE TUBE)
   - FROM CONDENSING GAS-FIRED APPLIANCES: SYSTEM 15 DWV PVC, (COMBUSTIBLE BUILDINGS ONLY: PVC PIPE OR PE TUBE)

6.1. PIPE SUPPORTS: ALL "COLD" SERVICES INCLUDING DOMESTIC COLD WATER, IRRIGATION, AND CHILLED WATER PIPING SHALL USE OVERSIZED PIPE HANGERS TO PERMIT CONTINUOUS INSULATION AND VAPOUR BARRIER TO BE MAINTAINED. PROVIDE RIGID INSULATION BLOCKING AND METAL INSULATION SHIELDS BETWEEN PIPE AND HANGER OR RISER CLAMPS.

6.2. VALVES

1. PROVIDE VALVES OF SAME MANUFACTURER THROUGHOUT WHERE POSSIBLE. VALVES ON DOMESTIC COLD, HOT AND RECIRCULATION WATER SERVICE SHALL BE RATED AT 860 kPa (125 PSI).
2. BACK FLOW PREVENTER ASSEMBLIES: PROVIDE ULC LISTED BACKFLOW PREVENTERS AS SHOWN PER DRAWINGS AND/OR AS REQUIRED BY THE LOCAL AUTHORITIES HAVING JURISDICTION.
3. PROVIDE AIR GAP FITTING ON DRAIN FROM REQUIRED FIXTURES.
4. TRAP SEAL PRIMERS: PROVIDE PRIMING DEVICE AND PIPING TO NEAREST ACCEPTABLE FIXTURE SO THAT DEVICE WILL INTRODUCE REGULATED AMOUNT OF WATER INTO TRAP.

8.1. CLEAN-OUTS AND ACCESS COVERS: INSTALL ACCESSIBLE CLEAN-OUTS AT TRAPS, WHERE REQUIRED BY CODE AND AS INDICATED ON DRAWINGS. CLEAN-OUT COVERS SHALL HAVE DEPRESSED CENTRE TO ACCEPT FLOOR FINISH OR BE SELECTED TO SUIT TRAFFIC LOADING REQUIREMENTS, WHERE APPLICABLE. CLEAN-OUTS ON SUB-SURFACE DRAINAGE SYSTEM EXTENSIONS SHALL BE ZURN Z-1500 (OR EQUAL) IN UNFINISHED CONCRETE, ENCASED IN 400mm x 400mm x100mm (16" X 16" X 4") THICK CONCRETE PAD IN SOFT LANDSCAPING AND IN FINISHED CONCRETE OR PAVERS.

8.2. DRAINS: PROVIDE DRAINS AS SHOWN ON DRAWINGS. DRAINS SHALL BE 75mm (3") UNLESS NOTED OTHERWISE. REVIEW LOCATION OF DRAINS ON ARCHITECTURAL DRAWINGS AND CONFIRM WITH CONSULTANT THAT DRAINS WILL BE AT LOW POINTS ON FLOOR. IMPROPERLY LOCATED DRAINS SHALL BE RELOCATED AT NO COST TO OWNER.

8.3. PLUMBING FIXTURES AND TRIM

1. PROVIDE NEW FIXTURES OF ONE MANUFACTURER AND OF SAME COLOUR, CSA APPROVED, FREE FROM DEFECTS WITH CLEAR, SMOOTH AND BRIGHT FINISH. PROVIDE CSA APPROVED PLUMBING BRASS WITH METAL WORK HEAVY CHROMIUM PLATED AND PRODUCT OF ONE MANUFACTURER.
2. PROVIDE FLEXIBLE ANGLE TYPE HOT AND COLD WATER SUPPLIES WITH SCREWDRIVER STOP, HEXAGONAL REDUCER AND ESCUTCHEON. PROVIDE HEAVY CHROMIUM PLATING WHERE EXPOSED.
3. REVIEW MILLWORK DRAWINGS AND ADVISE CONSULTANT OF DISCREPANCIES BEFORE ORDERING FIXTURES. REVIEW ARCHITECTURAL DRAWING TO CHECK PLUMBING FIXTURE SPECIFICATION PRIOR TO PREPARING SHOP DRAWINGS.
4. INSTALL EACH FIXTURE WITH ITS OWN TRAP, EASILY REMOVABLE FOR SERVICING AND CLEANING. AT COMPLETION, THOROUGHLY CLEAN PLUMBING FIXTURES AND EQUIPMENT.
5. INSTALL WALL MOUNTED FIXTURES WITH APPROVED WALL CARRIERS, MODEL TO SUIT INSTALLATION. WHERE FIXTURES OR TRIM COME IN CONTACT WITH WALL AND/OR FLOOR, MAKE JOINT WATERTIGHT WITH WHITE SILICONE BASE NON-HARDENING CAULKING COMPOUND, FINISHED IN NEAT MANNER. ATTACH FLOOR MOUNTED WATER CLOSETS TO FLOOR WITH LAG SCREWS. LEAD FLASHING SHALL NOT HOLD CLOSET IN PLACE. PROVIDE FIXED COVER ON HANDICAPPED WATER CLOSET TANK.

8.1. EXECUTION

1. NO PIPE SHALL BE INSTALLED IN ANY PART OF WALL WHERE TEMPERATURE IS LESS THAN 5°C UNDER WINTER DESIGN CONDITIONS.
2. UPON COMPLETION, WATER PIPING SYSTEMS SHALL BE FLUSHED WITH WATER BEFORE INSTALLATION OF FIXTURES IN ORDER TO REMOVE ANY FOREIGN MATERIAL IN PIPING. PLUMBING FIXTURES AND EQUIPMENT SHALL BE THOROUGHLY CLEANED AND LEFT IN GOOD OPERATING CONDITION.
3. GRADE DRAINAGE LINES MINIMUM 2%, PIPING 100mm (4") AND LARGER MAY BE GRADED AT 1% SLOPE. PLUG OR CAP PIPE AND FITTINGS TO KEEP OUT DEBRIS DURING CONSTRUCTION. LAY PIPE IN PROPER COMPACTED BEDDING MATERIAL (SAND INSIDE BUILDING, CLEAN GRAVEL OUTSIDE OF BUILDING); DO NOT LAY PIPE WHEN WATER IS PRESENT IN TRENCH. PROVIDE 1,500 PSI CONCRETE FOR BURIED LINES WITHIN 45 DEG. OF FOOTING. GRADE VENTS SO CONDENSATION WILL NOT FORM TRAP.
4. WHEREVER DISSIMILAR METALS ARE JOINED OR SUPPORTED, PIPING SHALL HAVE NON-CONDUCTING TYPE CONNECTIONS OR HANGERS TO PREVENT GALVANIC CORROSION. BRASS ADAPTERS AND VALVES ARE ACCEPTABLE FOR PIPE CONNECTIONS.
5. DOMESTIC HOT WATER HEATERS: PROVIDE AS SPECIFIED COMPLETE WITH SHEET METAL DRAIN PAN; ENSURE GOOD ACCESS TO HEATERS FOR SERVICING. PIPE RELIEF OUTLET TO DRAIN.
6. WATER SPECIALTIES: PROVIDE BACK FLOW PREVENTERS AS SPECIFIED AND AS REQUIRED BY AUTHORITIES. PROVIDE TRAP PRIMERS TO ALL FLOOR DRAINS.

9. VENTILATION

9.1. DUCTWORK

1. DUCTWORK SHALL BE GALVANIZED STEEL. FABRICATED IN ACCORDANCE WITH RECENT SMACNA DUCT MANUALS AND ASHRAE HANDBOOKS. DUCTWORK SHALL MEET THE REQUIREMENTS OF NFPA 90A AND 91 AND CONFORM WITH ALL APPLICABLE CODES.
2. PRIOR TO FABRICATION OF DUCTWORK, CHECK ALL CEILING SPACE AND HEIGHTS AND CONFLICTS WITH OTHER TRADES.
3. THE MINIMUM SHEET METAL THICKNESS FOR LOW PRESSURE DUCTS, INCLUDING FITTINGS, ACCESS DOORS AND OTHER ACCESSORIES, SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE".
4. DUCT SIZES ON DRAWINGS INDICATE INSIDE CLEAR DIMENSIONS. ADJUST ACTUAL SHEET METAL DIMENSIONS TO ACCOMMODATE ACOUSTICALLY LINED OR INTERNALLY INSULATED DUCTS.
5. ALL TRANSVERSE DUCT JOINTS SHALL BE SEALED (CLASS C SMACNA) WITH DUCT SEALANT. FLEXIBLE DUCTWORK SHALL BE EQUAL TO THERMAFLEX TYPE ST OR E.H. PRICE MK-10.
6. CONNECT DIFFUSERS TO DUCTS WITH 1.5m (5'-0") MAXIMUM LENGTH OF FLEXIBLE DUCT. HOLD IN PLACE WITH CAULKING COMPOUND AND STRAP OR CLAMP. FLEXIBLE DUCTWORK SHALL NOT FORM ANY DIPS, KINKS OR LOOPS.
7. PROVIDE RETURN AIR OPENINGS AND/OR INSULATED SOUND TRAPS WHERE INDICATED.

9.1. AIR OUTLETS: PROVIDE AIR OUTLETS AS SPECIFIED ON THE DRAWINGS.

9.2. HEAT/ENTHALPY RECOVERY VENTILATORS (HRV/ERV):

1. ECM BLOWERS RATED FOR CONTINUOUS OPERATION (PSC MOTORS NOT ACCEPTABLE), DRAIN PAN AND CONDENSATE DRAIN CONNECTION, AUTOMATIC FAN CYCLED DEFROST, INTEGRATED BACKDRAFT DAMPERS. UNIT SHALL INCLUDE OPTION FOR FURNACE/FAN-COIL INTERLOCK AND DUAL-SPEED SWITCH OPERATION.
2. POLY HEAT EXCHANGER CORE SHALL BE WASHABLE AND REMOVABLE WITH 10 YEAR WARRANTY.

9.1. THE AIR HVAC SYSTEM SHALL OPERATE FOR A MINIMUM OF 48 CONSECUTIVE HOURS PRIOR TO THE DELIVERY OF THE EQUIPMENT.

9.2. ON COMPLETION OF CONSTRUCTION, INCLUDE REPLACEMENT OF FILTERS FOR ALL HVAC SERVING THE SPACE, INCLUDING THOSE EXISTING (MATCH EXISTING TYPE AND SIZE).

9.3. DUCT CLEANING: THE CONTRACTOR SHALL PROTECT ALL EQUIPMENT AND OPEN ENDED DUCTS THROUGHOUT CONSTRUCTION. UPON COMPLETION, DUCT CLEANLINESS WILL BE REVIEWED BY CONSULTANT ON SIGHT. IF DUCTWORK CLEANLINESS IS NOT TO THE CONSULTANT'S SATISFACTION, THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ENGAGING A PROFESSIONAL DUCT CLEANING CONTRACTOR (ED IT) TO POWER CLEAN ALL DUCTWORK WITHIN THE SPACE, AT NO ADDITIONAL COST TO THE OWNER.

10. HEAT PUMP AND SPLIT-TYPE DIRECT EXPANSION COOLING SYSTEMS

10.1. GENERAL

1. PROVIDE FOR COMPLETE AND OPERATIONAL SPLIT TYPE HEAT PUMP SYSTEMS AS INDICATED ON DRAWINGS AND EQUIPMENT SCHEDULES. COMPLY WITH APPLICABLE CODES, LAWS AND REGULATIONS. CONFORM TO CSA-B52, CODE FOR MECHANICAL REFRIGERATION AND CSA-B131.5, CODE FOR REFRIGERANT PIPING. MATCH OUTDOOR AND INDOOR UNITS WITH OPERATION CONTROLS, ELECTRONIC DIGITAL CONTROLS AND COMMUNICATION SYSTEM BY ONE MANUFACTURER. DO NOT MIX MANUFACTURERS OF INDOOR AND OUTDOOR UNITS. PROVIDE PROPER OPERATION OF SAFETY CONTROLS AND AUTOMATIC CONTROLS NOT PROVIDED BY OTHERS.
2. WARRANTY: EXTENDED 5-YEAR PARTS-ONLY WARRANTY ON ALL COMPRESSORS.
3. "DESIGN-BUILD" DELIVERY OF REFRIGERANT PIPING SYSTEMS: THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTING EXISTING SITE CONDITIONS, COORDINATING WITH WORK BY OTHER TRADES, AND SIZING PIPING AND PROPOSING ROUTING THROUGH THE EXISTING AND NEW PORTIONS OF THE BUILDING TO SUIT EQUIPMENT LOCATIONS SHOWN ON MECHANICAL PLANS IN ACCORDANCE WITH RECOMMENDATIONS AND LIMITATIONS ADVISED BY THE EQUIPMENT MANUFACTURER.

10.1. PRODUCTS

1. ALL EQUIPMENT SHALL COMPLY WITH THE MINIMUM EFFICIENCY REQUIREMENTS OF ASHRAE 90.1-2010 FOR THE APPLICABLE EQUIPMENT TYPE AND CAPACITY RANGES. PERFORMANCE SHALL BE RATED IN ACCORDANCE WITH AHRI STANDARDS WITH RESULTS PUBLISHED FOR PUBLIC REVIEW. ALL EQUIPMENT SHALL BE FACTORY ASSEMBLED, WIRED AND RUN TESTED. INDOOR UNIT AND REFRIGERANT PIPES SHALL BE CHARGED WITH DEHYDRATED NITROGEN GAS BEFORE SHIPMENT FROM THE FACTORY.
2. REFRIGERANT PIPING AND ACCESSORIES
   - PIPING SHALL BE BRIGHT ANNEALED REFRIGERANT GRADE ACR COPPER, MANUFACTURED TO ASME STANDARDS.
   - MAKE JOINTS WITH BRAZED COPPER-TO-COPPER FITTINGS. DO NO USE CAST FITTINGS.
   - SHUT-OFF VALVES SHALL BE REFRIGERANT GRADE ANGLE, GLOBE AND BALL TYPE.
   - SILVER BRAZED JOINTS USING COPPER-PHOSPHOROUS ALLOY WITH MELTING POINT BETWEEN 1,112°F (600°C) AND 1,472°F (800°C).
   - PROVIDE SAFETY VALVES SIZED TO CODE.
   - PROVIDE SERVICE VALVES ON SUCTION AND DISCHARGE OF COMPRESSORS.
3. INDOOR UNITS:
   - PROVIDE UNITS SHALL OF THE CONFIGURATION, AIRFLOW CAPACITY, AND STATIC PRESSURE SHOWN ON DRAWINGS.
   - INDOOR COILS SHALL BE NONFERROUS CONSTRUCTION, COPPER SEAMLESS TUBING FORCE FITTED TO ALUMINUM CONTINUOUS FLAT PLATE FINS. TUBE JOINTS SHALL BE BRAZED WITH PHOS-COPPER OR SILVER ALLOY, WITH HYDROPHILIC COATING. COILS SHALL BE FACTORY INSTALLED IN UNIT.
   - CONDENSATE PAN. INCLUDE INTEGRAL CONDENSATE PUMP CAPABLE OF 750MM (29.5") LIFT WHERE NOTED ON DRAWINGS.
   - VARIABLE SPEED DIRECT DRIVE BLOWER MOTOR, STATICALLY AND DYNAMICALLY BALANCED, WITH INHERENT PROTECTION, PERMANENTLY LUBRICATED BEARINGS, MOUNTED FOR QUIET OPERATION. UNIT SHALL BE FITTED WITH LINEAR ELECTRONIC EXPANSION VALVE.
   - INTEGRATED CONTROL SHALL INCLUDE SELF-DIAGNOSTIC FUNCTION, 3-MINUTE TIME DELAY MECHANISM, AND AUTO RESTART FUNCTION.
   - DUCTED UNITS SHALL HAVE CABINET FABRICATED OF GALVANIZED STEEL, INSULATED, WITH REMOVABLE ACCESS PANELS, WITH FACTORY INSTALLED RETURN AIR FILTER ON REAR OF UNIT.
   - DUCTLESS UNITS SHALL HAVE A WHITE FINISH, MANUAL ADJUSTABLE GUIDE VANE, AND MOTORIZED AIR SWEEP LOUVER FOR UNIFORM AIR DISTRIBUTION. REMOVABLE, WASHABLE FILTER. INTEGRAL RETURN AIR SENSOR.
4. OUTDOOR UNITS
   - ONE DIRECT DRIVE, VARIABLE SPEED PROPELLER TYPE FAN. RAISED GUARD TO PREVENT CONTACT WITH MOVING PARTS.
   - OUTDOOR UNIT SHALL HAVE A SOUND RATING NO HIGHER THAN 54 DB
   - HIGH PRESSURE SAFETY SWITCH, FUSE, OVER-CURRENT PROTECTION AND CRANK CASE HEATER.
   - CAPABLE OF OPERATING IN OUTSIDE AMBIENT TEMPERATURES BETWEEN -5ºC (23ºF) TO 46ºC (115ºF) IN COOLING MODE WITHOUT ADDITIONAL LOW AMBIENT CONTROLS.
   - CAPABLE OF OPERATING IN OUTSIDE AMBIENT TEMPERATURES BETWEEN -15ºC (5ºF) AND 23ºC (75ºF) IN HEATING MODE WITHOUT ADDITIONAL LOW AMBIENT CONTROLS.
   - ELECTRONIC EXPANSION VALVES TO CONTROL REFRIGERANT FLOW TO EACH INDOOR UNIT INDEPENDENTLY (MULTI-SPLIT SYSTEMS ONLY)
   - NONFERROUS COIL CONSTRUCTION WITH LANCED OR CORRUGATED ALUMINUM PLATE FINS ON COPPER TUBING, WITH A HYDROPHILIC/PROTECTIVE COATING TO REDUCE CORROSION AND PROMOTE MOISTURE SHEDDING.
   - INVERTER DRIVEN DC COMPRESSOR, TWIN BLDC ROTARY TYPE WITH CRANKCASE HEATER AND THERMAL OVERLOAD PROTECTION, MOUNTED TO AVOID THE TRANSMISSION OF VIBRATION.
5. SHOP DRAWINGS: PROVIDE SUBMITTALS INCLUDING:
   - REFRIGERANT PIPING PLANS INCLUDING PROPOSED SIZES AND ROUTING TO SUIT EQUIPMENT LOCATIONS SHOWN ON MECHANICAL PLANS IN ACCORDANCE WITH RECOMMENDATIONS AND LIMITATIONS ADVISED BY THE EQUIPMENT MANUFACTURER. INCLUDE PIPING LENGTH ESTIMATE, AND TOTAL REFRIGERANT CHARGE REQUIRED.
   - REFRIGERANT SCHEMATIC.
   - FAN PERFORMANCE SHOWING DESIGN OPERATIONS POINT, R/MIN, POWER, ETC.
   - DIMENSIONAL DATA INCLUDING WEIGHTS, SERVICE SPACE AND CLEARANCE REQUIREMENTS.
   - ELECTRICAL CIRCUIT DIAGRAMS INCLUDING FIELD-WIRED COMPONENTS AND REQUIREMENTS FOR SPECIFIC INSTALLATION.
   - ELECTRICAL VOLTAGES, PHASE AND POWER REQUIREMENTS.
   - COMPLETE INSTALLATION INSTRUCTIONS.
   - POWER REQUIREMENTS.
   - CONTROL OPTIONS AND ACCESSORIES, AND CONTROL WIRING DIAGRAM.
   - PROGRAMMING INSTRUCTIONS FOR INCLUSION IN MAINTENANCE MANUALS.
   - ACOUSTIC SOUND PRESSURE LEVEL DATA FOR OUTDOOR CONDENSING UNIT.
   - WARRANTY INFORMATION, INCLUDING CONFIRMATION OF EXTENDED WARRANTY FOR COMPRESSORS.
   - TESTING, DEHYDRATION, CHARGING AND START-UP OF REFRIGERANT SYSTEM

10.1. EXECUTION

1. REFRIGERANT PIPING: INSTALLATION SHALL ENSURE COMPRESSOR OIL AND LIQUID REFRIGERANT RETURN TO COMPRESSOR UNDER LOAD WITHOUT HARM TO COMPRESSOR, MINIMUM PRESSURE DROPS, RESTRICTED REFRIGERANT MIGRATION DURING INOPERATIVE CYCLES, ACCESSORIES AND PIPING PREVENT EXCESSIVE COMPRESSOR CYCLING, PIPE ROUTING AND ISOLATION TO AVOID LINE BREAKAGE OR EXCESSIVE VIBRATION AND SOUND TRANSMISSION TO CONDITIONED SPACE, MAINTENANCE OF CLEAN AND DRY SYSTEM.
2. PROVIDE SUBMITTAL DRAWINGS OF THE REFRIGERANT PIPE WORK LAYOUT, INCLUDING ALL PIPE SIZING AND POSITIONS OF BOXES, ETC.
3. ALL INDOOR PIPING SHALL BE CONCEALED UNLESS OTHERWISE NOTED OR ACCEPTED BY THE CONSULTANT. SPECIFICALLY INDICATE ON SHOP DRAWING PLANS WHERE REFRIGERANT PIPING CANNOT BE CONCEALED, OR IS IMPRACTICAL TO CONCEAL, AND INCLUDE PREMANUFACTURED SHROUD PRODUCTS WHERE PIPING MUST BE EXPOSED.
4. ALL PIPE WORK SHALL BE CLEAN, DEHYDRATED AND CHARGED WITH INERT GAS AND SEALED FOR SHIPMENT FROM FACTORY. PIPE WORK SHALL BE STORED IN DRY CONDITIONS; END CAPS MUST BE USED. WHERE SPECIALIST PIPE WORK FITTINGS BRANCHING OFF TO THE INDOOR FAN COIL UNITS ARE NECESSARY, THESE BRANCHES SHALL BE SUPPLIED BY THE UNIT MANUFACTURER. NO OTHER FITTINGS ARE ACCEPTABLE. THE POSITION OF THE JOINTS SHALL BE STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATION. REFRIGERANT PIPE WORK SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. ALL REFRIGERATION PIPE WORK SHALL BE SUPPORTED ON GALVANIZED CABLE TRAY, WIDTH TO ACCOMMODATE PIPE WORK AND CONTROLS CABLE. PIPE WORK SUPPORTS SHALL BE PROVIDED THROUGH ENTIRE LENGTH ACCORDING TO GOOD PRACTICE. ON HORIZONTAL PIPE WORK, THE BRACKETING SHALL ALLOW PIPE MOVEMENT DUE TO CONTRACTION AND EXPANSION. VERTICAL PIPE WORK SHALL BE BRACKETED AT NO MORE THAN 40" (1000 MM) CENTRES AND THE HORIZONTAL AT NO MORE THAN 60" (1,500 MM) CENTRES. THE PROVISIONS OF SPECIAL SUPPORTS SHALL BE INCORPORATED IN DROP RODS OR PIPE CLIPS IN PIPE WORK SUPPORTS. PROVIDE SUITABLE ISOLATION VALVING AS REQUIRED FOR THE SYSTEM CONFIGURATION TO ENABLE MINIMIZED RAIN/REFILLING OF REFRIGERANT.
5. ALL INSTALLED PIPE WORK LENGTHS SHALL BE ACCURATELY MEASURED AND RECORDED ON THE FORM PROVIDED ON THE REMOVABLE ACCESS PANEL WITHIN THE OUTDOOR UNITS AND THE OPERATING AND MAINTENANCE MANUALS (THIS INFORMATION IS REQUIRED FOR THE ACCURATE CALCULATION OF THE REFRIGERANT CHARGE FOR THE SYSTEM).
6. THE PRESSURE TESTING AND EVACUATION SHALL BE CARRIED OUT STRICTLY ACCORDING TO THE MANUFACTURER'S SPECIFICATION.
7. THE FINAL REFRIGERANT CHARGING AND THE COMMISSION OF THE SYSTEM SHALL BE CARRIED OUT BY THE SPECIALIST REFRIGERATION SUB-CONTRACTOR AUTHORIZED BY THE MANUFACTURER. CONTRACTOR SHALL PROVIDE A VERIFIED AND SUBMITTED COMMISSIONING REPORT TO THE CONSULTANT VERIFYING THAT THE SYSTEM HAS MET THE REQUIREMENTS FOR PROPER INSTALLATION, AND FUNCTION.
8. ALL REFRIGERANT PIPE WORK SHALL BE INSULATED WITH ARMAFLEX CLASS "O" INSULATION, ½" (12 MM) THICK, AS MANUFACTURED BY ARMSTRONG INDUSTRIES. BOTH REFRIGERANT LINES FROM THE OUTDOOR UNIT TO INDOOR UNITS SHALL BE INSULATED. THE JOINTS OR HEADERS SHALL BE INSULATED WITH THE PRE-FORMED INSULATION SUPPLIED WITH THESE FITTINGS. INSULATION EXPOSED TO ATMOSPHERIC CONDITIONS SHALL BE PROTECTED WITH TWO COATS OF SPECIAL ARMSTRONG ADHESIVE AND CARE SHOULD BE TAKEN THAT EVERY PART OF THE INSULATION IS SEALED TO MAINTAIN A VAPOUR BARRIER. PROVIDE METAL CLADDING FINISH FOR PIPING EXPOSED OUTDOORS (REFER TO SECTION 23 07 19).
9. AT COMPLETION OF INSTALLATION, PRESSURIZE SYSTEM WITH NITROGEN OR REFRIGERANT AND CHECK FOR LEAKS. REPAIR LEAKS AND RE-TEST. DEHYDRATE SYSTEM AND CHARGE WITH REFRIGERANT. START-UP SYSTEM AND CHECK OPERATION.
10. IF INSTALLATION IS COMPLETED IN WINTER SEASON, PUMP DOWN REFRIGERANT WHERE APPLICABLE AND REPEAT PROCEDURE AT START OF NEXT COOLING SEASON.
11. CARRY OUT CHECK USING DETAILED CHECK SHEETS PROVIDED BY EQUIPMENT MANUFACTURER. INCLUDE COMPLETED AND SIGNED CHECKLISTS IN OPERATING AND MAINTENANCE MANUALS.
12. PROVIDE DOCUMENTATION FOR PROPER OPERATION AND MAINTENANCE OF SYSTEM. PROVIDE ON-SITE INSTRUCTION PERIOD FOR OWNER'S PERSONNEL WITH CONSULTANT'S REPRESENTATIVE.

11. CONTROLS

11.1. THERMOSTATS: MOUNT THERMOSTATS AND TEMPERATURE SENSORS AS INDICATED ON DRAWINGS. ALL TEMPERATURE SENSORS AND THERMOSTATS SHALL BE WALL OR COLUMN MOUNTED AT 1.5M (60") ABOVE FLOOR UNLESS SPECIFICALLY NOTED OTHERWISE. COORDINATE FINAL MOUNTING LOCATIONS WITH INTERIOR DESIGNER/ARCHITECT AND CONSULTANT ON SITE BEFORE ROUGH-IN.

12. FIRE PROTECTION

12.1. FIRE EXTINGUISHERS

1. PROVIDE NEW PORTABLE-TYPE ABC FIRE EXTINGUISHERS AS INDICATED ON DRAWINGS, AND TO SUIT THE REQUIREMENTS OF NFPA 10 AND/OR THE LOCAL AUTHORITIES HAVING JURISDICTION AND FIRE DEPARTMENT.

END OF SPECIFICATION

CMHC SCHL

NO.	DATE	DESCRIPTION
1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

MECHANICAL SPECIFICATIONS

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO:

M002

CMHC HOUSING DESIGN CATALOGUE
BC SIXPLEX COURTYARD

ELECTRICAL DRAWINGS

ELECTRICAL SHEET LIST	
SHEET NUMBER	SHEET TITLE
E000	COVER SHEET
E001	SYMBOL LEGEND AND ELECTRICAL SERVICE CALCULATION
E101	SIX PLEX FRONT BUILDING - LEVEL 1 AND 2 ELECTRICAL PLANS
E102	SIX PLEX REAR BUILDING - LEVEL 1 AND 2 ELECTRICAL PLANS
E103	SIX PLEX FRONT BUILDING - LEVEL 3 ELECTRICAL PLANS
E200	ELECTRICAL SPECIFICATIONS

CMHC SCHL

1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWINGS

NO.	DATE	DESCRIPTION

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT
OR CONSTRUCTION

SHEET TITLE:

COVER SHEET

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: NTS

SHEET NO:

E-000

POWER SYMBOL SCHEDULE

SYMBOL			DESCRIPTION	NOTES
WALL	ABOVE COUNTER	FLOOR		
			EQUIPMENT CONNECTION AS NOTED ON PLAN	
			EQUIPMENT CONNECTION AS NOTED ON PLAN	
			EQUIPMENT CONNECTION AS NOTED ON PLAN	
#	#	#	SPECIAL RECEPTACLE R - RANGE RECEPTACLE D - DRYER RECEPTACLE	
EF-1			MOTOR CONNECTION (EF-1 DENOTES MOTOR IDENTIFICATION)	
			FUSED DISCONNECT	
			UTILITY METER	
			JUNCTION BOX	
			SURFACE MOUNTED PANEL BOARD	
			RECESSED PANEL BOARD	

FIRE ALARM SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	NOTES
	SMOKE ALARM: LINE VOLTAGE	

ELECTRICAL SERVICE CALCULATION

SIXPLEX COURTYARD

			AREA	LOAD	
BASIC AREA LOAD, FIRST 90 SQM	5,000	W/ 90m²	90 m²	5000	W
NEXT 90 SQM OR PORTION THEREOF	1000	W/ 90m²	21.3 m²	1000	W
			Demand Factor, per CEC		
HEATING ALLOWANCE, FIRST 10KW	9,000	W	100%	9000	W
HEATING ALLOWANCE, EXCESS OF 10KW	0	W	75%	0	W
RESIDENTIAL LOADS			*Demand Factor, per CEC*		
DRYER	5,000	W	25%	1250	W
WASHER	1,200	W	25%	300	W
DHWT	5,500	W	25%	1375	W
RANGE	6,000	W	100%	6000	W
			TOTAL	23,925	W
			CURRENT @240V 1Ph	99.69	A
			SERVICE SIZE (125%)	**124.61**	**A**

NOTE: SERVICE SIZE IS ESTIMATED BASED ON AN ALL-ELECTRIC MECHANICAL SYSTEM AND ELECTRICAL ALLOWANCES FOR THE LARGEST DWELLING UNIT WITHIN THE BUILDING. EXACT SIZE OF ELECTRICAL PANEL AND SERVICE SHALL BE DETERMINED BASED ON CANADIAN ELECTRICAL CODE AT THE TIME OF DESIGN.

ONE LINE SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	NOTES
A	BREAKER	
	CAPACITOR	
	AUTO CAPACITOR BANK	
F	TWO HOUR FIRE RATED CONDUCTORS	
ST	SHUNT TRIP	
M	UTILITY METER	
M	INFORMATION METER	
	CONTACTOR	
A	FUSE	
	MOTOR STARTER	
	PANEL	
	RECTIFIER	
A	DISCONNECT SWITCH	
N E	TRANSFER SWITCH	
	TRANSFORMER (CT)	
	TRANSFORMER (ΔY)	
	TRANSFORMER (SMALL)	
	BUS	
	DRAW OUT BREAKER	
G	GENERATOR	
UPS	UNINTERRUPTED POWER SUPPLY	
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION	
	FUSIBLE SWITCH	

CMHC SCHL

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1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

NO.	DATE	DESCRIPTION

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

SYMBOL LEGEND AND ELECTRICAL SERVICE CALCULATION

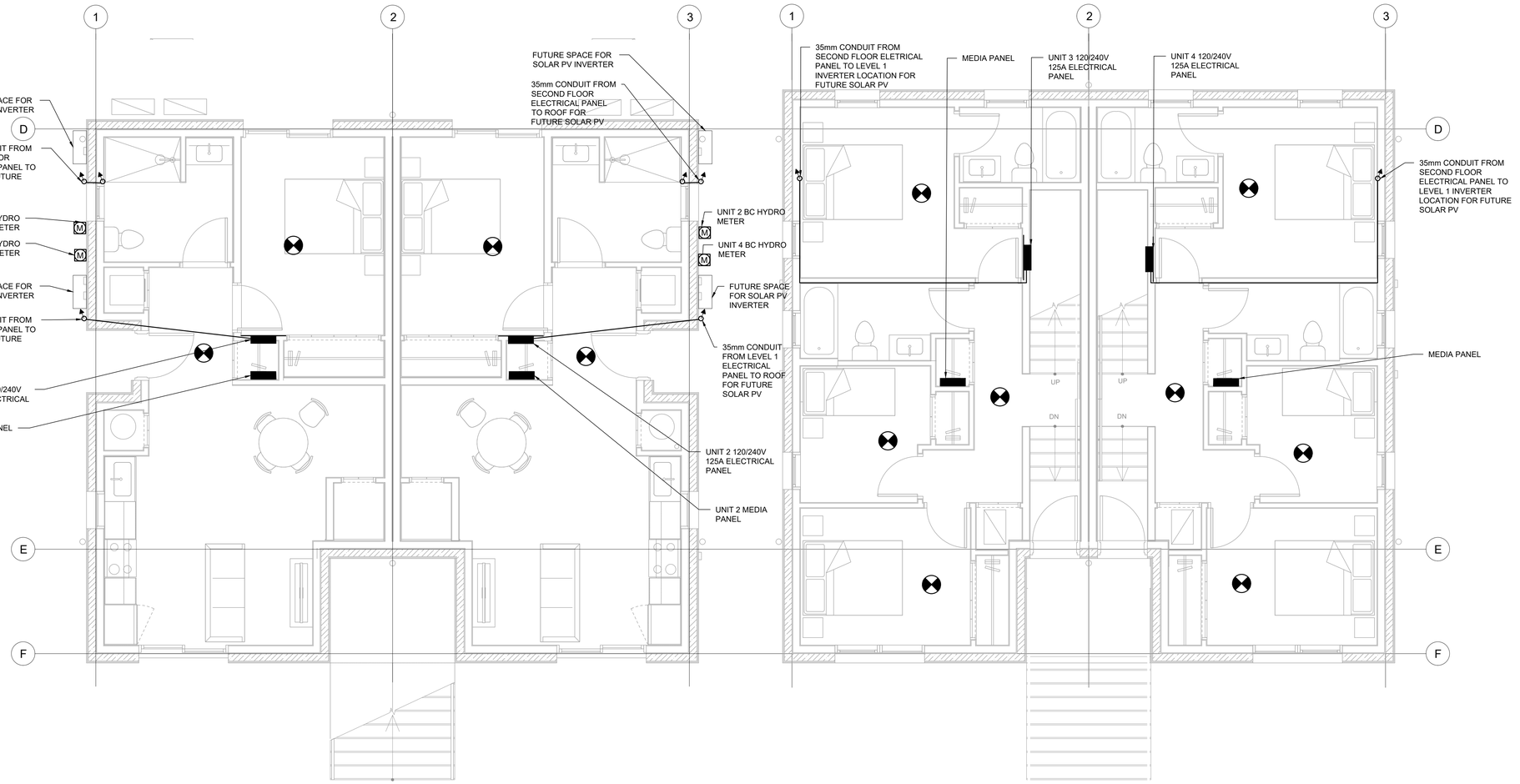
BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO:

E001



SIX PLEX FRONT BUILDING - LEVEL 1

SCALE: ¼" = 1'-0"

SIX PLEX FRONT BUILDING - LEVEL 2

SCALE: ¼" = 1'-0"

CMHC SCHL

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NO.	DATE	DESCRIPTION
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PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

SIX PLEX FRONT BUILDING - LEVEL 1 AND 2 ELECTRICAL PLANS

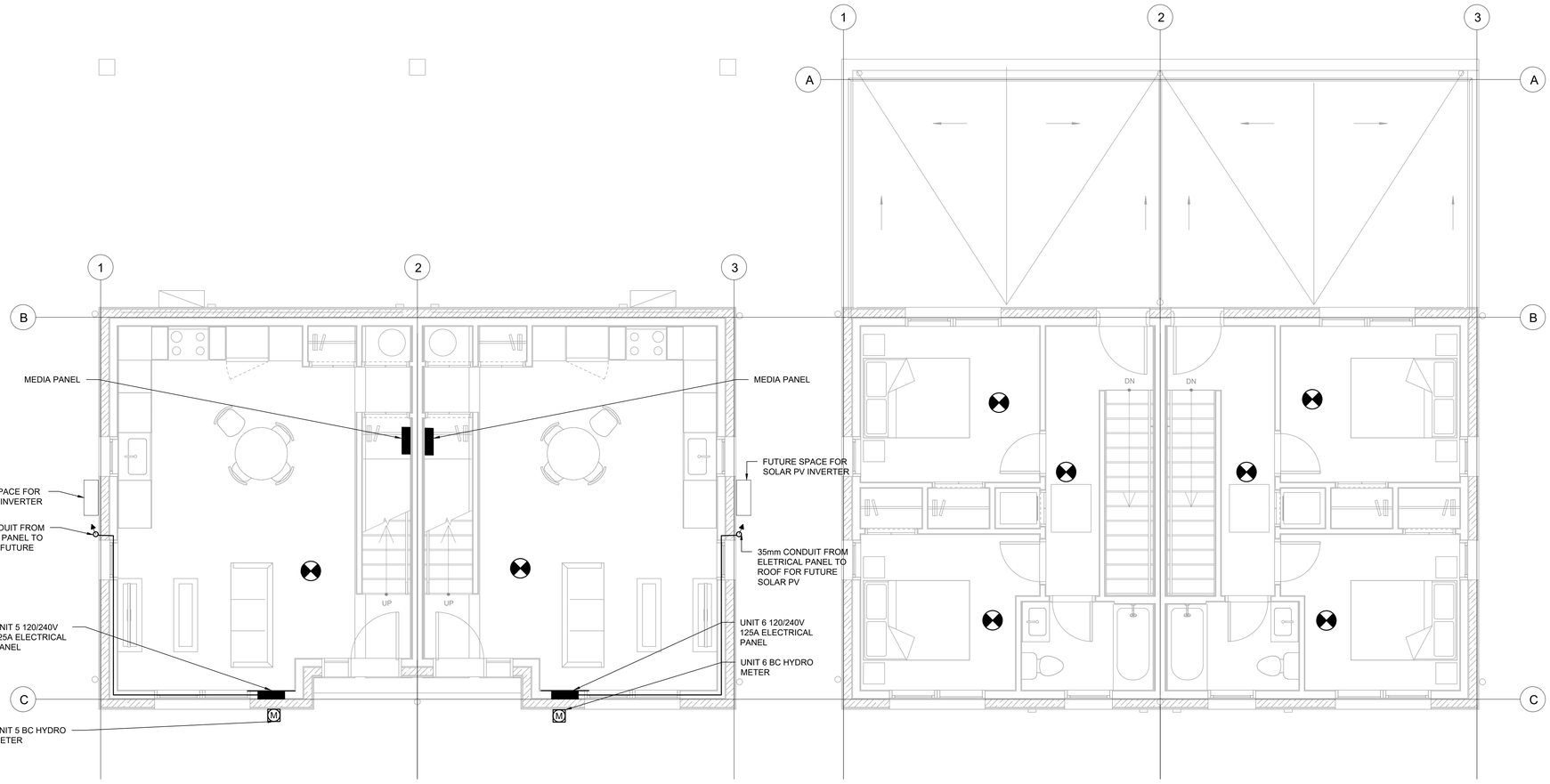
BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO:

E101



SIX PLEX REAR BUILDING - LEVEL 1

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

SIX PLEX REAR BUILDING - LEVEL 2

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

CMHC SCHL

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1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

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PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

SIX PLEX REAR BUILDING - LEVEL 1 AND 2 ELECTRICAL PLANS

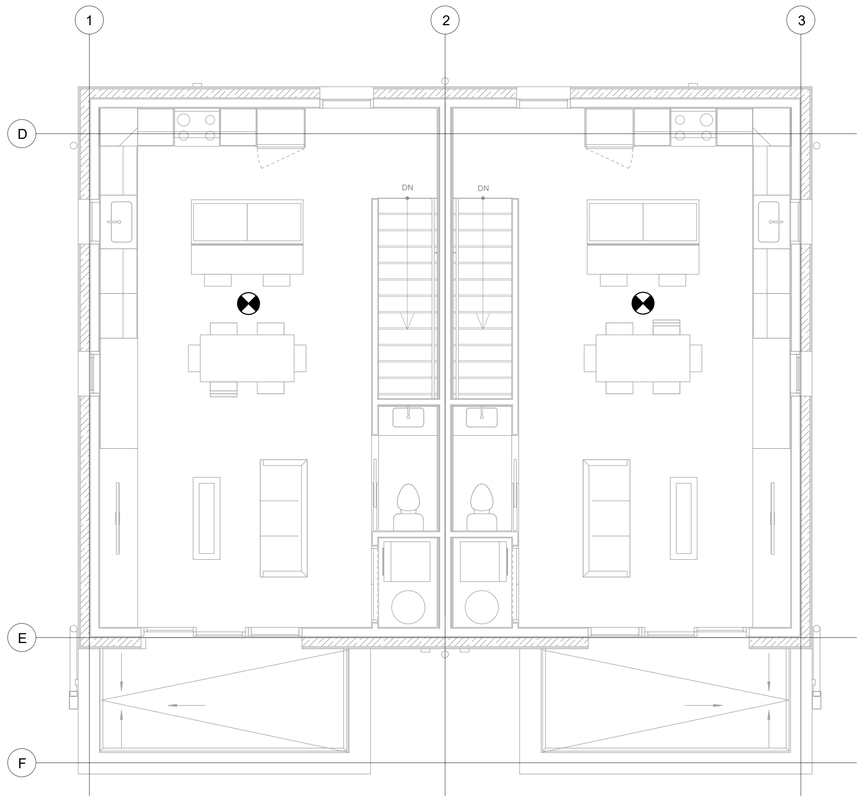
BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO:

E102



SIX PLEX FRONT BUILDING LEVEL 3 FLOOR PLAN

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

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1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

NO.	DATE	DESCRIPTION

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

SIX PLEX FRONT BUILDING - LEVEL 3 ELECTRICAL PLANS

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO:

E103

1. INTRODUCTION

This document is to be read in conjunction with the Mechanical, & Architectural outline specifications and associated drawings to give a full definitive scope of work.

The electrical systems are required to be installed according to all applicable codes and standards and as required by the BC Building Code.

2. GENERAL PROJECT REQUIREMENTS

.1 General Requirements

.1 The most stringent requirements of this and other electrical sections shall govern.

.2 All work shall be in accordance with the Project Drawings and Specifications and their intent, complete with all necessary components, including those not normally shown or specified, but required for a complete installation.

.3 Provide seismic restraints for all required electrical equipment, piping and ductwork.

.4 Connect to equipment specified in other Sections and to equipment supplied and installed by other Trade Contractors or by the Owner. Uncrate equipment, move in place and install complete; start up and test. Include all field assembly of loosely/separately packaged accessories.

.2 Standards of Material and Workmanship

.1 All materials shall be of the quality specified and shall conform to the standards of the Canadian Standards Association.

.2 Provide materials, equipment and plant, or specified design, performance and quality, and current models with published certified ratings for which replacement parts are readily available.

.3 All work shall be executed in a neat and workmanlike manner by qualified tradespersons. Electrical contractor shall keep a competent foreman and necessary assistants on the job during the progress of the work.

.3 Codes, Permits and Inspections

.1 Comply with all laws, ordinances, rules, regulations and codes of all authorities having jurisdiction relative to this project.

.2 Complete installation is to comply with the latest versions of Canadian Electrical Code and the British Columbia Building Code including the latest amendments and local municipal codes and related CSA Electrical Bulletins.

.3 Pay all associated fees and obtain all permits, licenses etc. to complete the project.

.4 Drawings and Specifications

.1 The drawings and specifications are complementary each to the other and what is called for by one shall be binding as if called for by both.

.5 Examination of other Drawings

.1 This contractor shall examine carefully the structural, architectural and mechanical drawings and work of other trades to their satisfaction that the work under this contract can be acceptably carried out as shown on the plans.

3. DEFINITIONS

.1 Electrical and electronic terms: unless otherwise specified or indicated, terms used in these specifications, and on drawings, are those defined by IEEE SP1122.

.2 The "Trade Contractor" is defined as the supplier of the Scope of Work as defined in the Electrical Specifications sections in Division 26.

.3 "Provide" is defined as "supply, install, test and commission."

.4 "Install" is defined as all work and materials necessary to place the specified item into full operation, securely fastened, and to give a presentable finished appearance. "Install" also includes all necessary connections and conductors.

.5 "Coordinate" is defined as: to make all arrangements directly with agencies and individuals, confirm schedules, be in attendance at the time work is being carried out, and take full responsibility for having the work carried out correctly and in a timely manner to meet the construction schedule.

4. PRODUCTS

.1 Shop Drawings

.1 Electrical contractor shall submit shop drawings to the owner for review of electrical components for all relevant systems.

.2 All drawings shall be submitted in PDF version via the general contractor for review.

.3 The owner's review of shop drawings shall be for general design only and shall not relieve the electrical contractor or suppliers from their responsibility for errors, proper fitting, and construction of the work and furnishing of materials. Electrical contractor shall be responsible for verifying all dimensions.

.2 Uniformity of Equipment

.1 Unless otherwise specifically called for in the specifications, uniformity of manufacture shall be maintained for any item throughout the building.

.2 Where the project encompasses renovations or additions to an existing building the manufacturer shall match the existing unless noted otherwise. All new manufacturers' equipment that varies from the existing must be fully compatible with the existing.

.3 Equivalent Products

.1 All tenders shall be based on the product specified or equivalent products.

.2 Providing alternate products will not relieve the electrical contractor from providing all necessary components and functions required in the specifications or on the drawings.

.3 Alternate service rated equipment shall meet the Utilities' requirements.

.4 Any change in the footprint size due to alternate equipment shall not result in a redesign. Any cost to revise the design due to an alternate manufacturers' requirement shall be borne by the electrical contractor.

5. SETTING OUT OF THE WORK

.1 The electrical contractor shall be responsible for correcting all work completed contrary to the intent of drawings and specifications and shall bear all cost for same. Where intent of drawings and specifications is not clear, he shall obtain clarification of the owner before proceeding with work.

.2 The electrical contractor shall give the work personal supervision, lay out their own work, do all necessary leveling and measuring or employ a competent engineer to do so. Figures, full size and detail drawings shall take precedence over scale measurements.

.3 Where equipment supplied by the electrical contractor must be built in with the work of other trades, the electrical contractor shall be responsible for the supplying of the equipment to be built in or measurements to allow necessary openings to be left so as not to hold up the work.

.4 Electrical contractor shall be responsible for any damage caused the owner or any of the other trades by improper location or carrying out of his work.

.5 The electrical contractor, in setting out of their work, shall refer to architectural, structural and mechanical drawings. The electrical contractor shall consult with the respective trades in setting out locations for conduit runs, luminaires, panel assemblies, etc., so that conflicts are avoided and symmetrical even spacing is maintained.

.6 Switch mounting heights shall be coordinated with architectural details and shall be adjusted, if required, to coordinate with millwork, millwork paneling, masonry course lines, etc.

.7 Where outlets occur in exterior walls, the electrical contractor shall ensure that there is insulation behind the outlet boxes to prevent condensation through the boxes.

6. PAINTING AND FINISHES

.1 All electrical fittings, supports, hanger rods, pullboxes, channel frames, conduit racks, outlet boxes, brackets, clamps, etc., shall have galvanized finish or paint finish over corrosion-resistant primer.

.2 All panelboards shall be factory finished with spray-on air dry enamel. All enamel shall be applied over corrosion resistant primer. Matte or flat type finish paint will not be accepted. All panels or similar factory finished units that are scratched or marked during installation shall be touched up with matching spray on air dry lacquer and if required to provide a satisfactory job shall be completely refinished.

.3 All distribution equipment, panel boards, pull boxes, etc. shall be finished in grey enamel unless noted otherwise.

.4 Pullboxes, junction boxes, terminal panels, etc. shall be color coded where applicable (fire alarm).

7. PROJECT CLEAN-UP

.1 The electrical contractor and their sub-trades shall always during construction, keep the site free of all debris, boxes, packing, etc., resulting from work of this trade.

.2 At the completion of the work, the electrical installation shall be left in a clean finished condition to the satisfaction of the owner.

8. ELECTRICAL SYSTEMS TESTS

.1 All portions of the electrical work shall be tested and checked for satisfactory operation.

.2 Before energizing any portion of the electrical system, perform megohmeter tests on all feeders and branch circuits. Results of such tests shall conform to the requirements of the Canadian Electrical Code and shall be to the satisfaction of the authorized inspection agency and the engineer where applicable.

.3 Upon completion of the contract and immediately prior to substantial review and takeover, check the load balance on all feeders and at distribution centers, panels, etc. The tests shall be carried out by turning on all possible loads in the contract area and checking load current balance. If load unbalance exceeds 15%, reconnect circuits to balance the load.

9. SUBSTANTIAL COMPLETION

.1 Before calling for substantial completion review the contractor shall provide the following relevant documents to the owner (as applicable):

.1 Sealed Seismic drawings and Letter of Assurance from the Seismic Engineer have been submitted to owner and included in Maintenance Manual.

.2 All lighting in stairwells, corridors and public areas installed and operational.

.3 All junction outlet boxes covered, maintenance manuals submitted for review.

10. SEISMIC RESTRAINTS

.1 Retain the services of a qualified seismic engineer to provide seismic restraint requirements, installation details, site reviews and letter of Assurance for the project. Exact scope of seismic work shall be determined by the seismic engineer. All seismic details shall be submitted as shop drawings to the developer and owner.

11. BASIC ELECTRICAL MATERIALS AND METHODS

.1 The electrical systems will be designed to conform to the BC Building Code, Canadian Electrical Code, CAN ULC S524 and the BC Fire Code.

.2 Electrical equipment and installation methods will be consistent with a Part 9 building utilizing residential or commercial grade equipment.

.3 Wiring materials will be in accordance with Canadian Electrical Code including NMD90, EMT conduit or PVC underground. Teck cable and Armored cabling may be used where permissible by code.

.4 Provide AFGI and GFCI circuits as required by Canadian Electrical Code.

12. BRANCH CIRCUIT WIRING

.1 Generally speaking, not more than 8 devices will be connected to a circuit with the exception of low voltage connections.

.2 No wire smaller than No.14 AWG shall be used for branch circuit wiring. Wiring shall be color coded to the Canadian Electrical Code requirements. Rigid threaded galvanized steel conduit shall be used where required by Code. 90 degree wiring may be used but shall be de-rated to 75 degree wiring where connected to 75 degree rated equipment.

.1 Wiring larger than 2/0 may be paralleled as permitted by Code.

.2 Cabling may be aluminum when sized 1/0 or larger.

.3 Cabling shall meet flame spread requirements of the National Building Code of Canada.

.3 Armoured cabling may be used where permissible by code; Risertek 90 Cable or equal shall be used for vertical runs.

.4 Corline flexible conduit may be used in slabs where permissible by the Canadian Electrical Code.

.1 AC90 (BX) cable shall be complete with anti-short bushings. AC90 cable may be used as permissible by code.

.5 Non-metallic sheathed cable (Lumex) shall be used where applicable by the Canadian Electrical Code.

.6 Conductors to be sized to limit voltage drop to the limits outlined in the Canadian Electrical Code.

.7 Aluminum wiring shall not be used for connections to vibrating equipment such as motors, roof top units etc.

13. WIRING DEVICES

.1 Line voltage switches shall be rated at 20A and 125V, white nylon handle and residential grade. Two pole and 3 way switches, were required, shall be of matching type. Provide decora style switches. Gang switches whenever possible. Install on latch side of door.

.2 Line voltage dimmers shall be rated at 20A, 125V, wattage to match circuit as noted on drawings. Three way switches/dimmer to be of matching type. Gang with switches where possible. Install on latch side of door.

.3 Receptacles shall be rated at 15/20A and 125V, white nylon, residential grade. Provide decora style Receptacles. Provide tamper resistant receptacles where shown and as required by Code.

.4 Ground Fault Circuit Interrupting receptacles (GFI) shall be rated at 15/20A and 125V, white nylon, residential grade. GFI shall have indicator lamp and be tamper resistant where required by Code.

.5 Ground Fault Circuit Interrupting receptacles (GFI) located outside shall be rated at 15/20A and 125V, white nylon, residential grade. GFI shall have indicator lamp and be tamper resistant where required by Code. Provide wet location cover plates which provide a seal whether or not a plug is inserted into the receptacle.

.6 Cover plates for devices shall match device in color, be nylon and match devices in manufacturer.

.7 Breakers for branch circuits will generally be 20A 120V connected to 15/20A "T' slot receptacles.

14. MECHANICAL EQUIPMENT WIRING

.1 Electrical contractor shall provide all conduits, wire, manual motor protection switches, make all power connections, etc. to mechanical equipment as outlined herein and indicated on the mechanical drawings.

.2 All low voltage controls and control wiring (24 volt DC and less) will be the responsibility of the mechanical trade and/or his control sub-trade. Electrical contractor shall confirm with the mechanical contractor the size, characteristics and locations of all mechanical equipment before installation of conduits, outlets, etc.

.3 All line voltage equipment, controls, wiring and connections will be the responsibility of the electrical contractor. Review the mechanical drawings and confirm with the mechanical contractor to determine the scope of work.

.4 Connections to motors and other vibrating equipment shall be made with flexible cabling, weather proof where required.

15. PULLBOXES AND OUTLET BOXES

.1 Supply and install pullboxes and junction boxes as required to suit job conditions. Pullboxes shall conform to Canadian Electrical Code requirements and shall be finished in enamel over corrosion resistant primer with screw-on or hinged cover. Utilize the CEC for determining sizes of boxes.

.2 In removable ceiling areas, pullboxes are to be installed above the ceiling. Pullboxes in finished walls and plaster or non-removable ceilings shall have overlapping type trims with covers prime coated and painted on job to match wall or ceiling. Color pull box covers as noted in other sections of this specification.

.3 Device outlet boxes shall be 4x4 with single or double gang plaster ring, depth to be as required; coordinate with general contractor for depth of wall finishing. Outlet boxes shall be supported on two sides. Handy boxes shall not be used.

.4 When installed in concrete utilize appropriate masonry boxes intended for such applications.

.5 Mounting heights for device outlets shall be as follows:

.1 Receptacles - 450mm

.2 Switches - 1200mm

.3 Exterior Receptacles - 600mm

.4 Tel/Data Outlet - 450mm

.5 Card Reader - 1200mm

.6 Thermostat - 1200mm

.7 Emergency Battery Pack - 2100mm or 300mm down from ceiling

.8 Exit Lights - Ceiling mounted, 300mm down from the ceiling or 450mm above the door.

.9 Wall Sconces - 2140mm

.10 Pull Stations - 1150mm

.11 Horn-Strobe/Bells - 2100mm or 300mm down from ceiling

.12 Clocks/Cameras - 2100mm or 300mm down from ceiling

.6 Where devices are installed in an adaptable units, heights of devices shall meet the requirements of the BC Building Code for accessibility.

16. ACCESS DOORS

.1 The electrical contractor shall supply and install access doors required for proper servicing of all electrical work. Access doors shall be complete with necessary frames and hinged doors held closed with captive studs. Access panel shall be of not less than 3 mm steel, prime coat finished and painted on the job to match the wall or ceiling finish.

.2 Number of access doors to be kept to an absolute minimum.

.3 Access doors to be fire rated where required.

17. GROUNDING AND BONDING

.1 Supply and install complete grounding and bonding system as indicated and as required by Canadian Electrical Code, the local electrical inspection department and as defined in other sections of this specification.

.2 Provide #6 common grounding conductor from the neutral grounding terminal to the grounding electrode(s). Installing a grounding plate in lieu of ground rods as permissible by the Canadian Electrical Code.

.3 All components shall be securely and adequately bonded to ground and where required to accomplish this, bonding jumpers, bonding studs and bushings shall be used. Ensure that all raceways, distribution equipment, terminal panels and equipment for low voltage systems, fire alarm, sound, etc. are securely and adequately bonded.

.4 Ground the secondary star point of step down transformers, sized to the Canadian Electrical Code. Where indicated, isolated ground panels shall have its isolated ground source at the star point of the upstream transformer feeding the panel.

.5 Provide bonding conductor to water main where called for or where required.

18. 26 05 34 - CONDUIT, FASTENINGS AND FITTINGS

.1 All EMT conduit will utilize steel connectors and couplings. Provide expansion joints and EMT to PVC connectors for all seismic or expansion joints and as required.

.2 EMT conduits and junction boxes will be color coded and painted. Junction boxes will also be labelled with circuits contained within.

19. 26 05 45 - ELECTRICAL FIRESTOPPING

.1 All fire stopping solutions will be in accordance with the BC Building Code

.2 All fire stopping installations will be labelled beside the penetration.

20. 26 09 23 - METERING INSTRUMENTATION

.1 Metering will be provided and installed as required per BC Hydro. Locate metering in accordance with BC Hydro standards.

21. 26 11 10 - SHORT CIRCUIT, PROTECTIVE DEVICE COORDINATION & ARC FLASH ANALYSIS

.1 An arc flash study will be completed by the electrical equipment supplier in conjunction with the electrical trade.

.2 Electrical equipment will be provided indicating the incident energy rating.

22. SERVICE UTILITY CONNECTIONS

.1 Provide conduit and wire from pole mounted transformer to service entrance equipment to BC Hydro or Fortis standards or alternately provide primary conduit and wire from property line to utility pad mount transformer and secondary conduit and wire from utility transformer to service entrance equipment to BC Hydro or Fortis standards.

.2 Provide service mast and head when required for overhead connection by BC Hydro or Fortis.

.3 Provide pilaster to Utilities standards at service pole for connection by BC Hydro or Fortis.

.4 Include for drainage of service entrance conduits.

.5 Provide concrete transformer pad if applicable to utility standards. Install grounding to utility standards.

.6 Primary and secondary conduits to be DB2.

.7 Provide protective bollards as as required by utilities standards.

.8 Trenching, backfilling and concrete encasing shall be provided by the general contractor.

.9 Co-ordinate exact requirements and scope of work with BC Hydro or Fortis and co-ordinate service connection and install with utility during construction.

.10 All fees for the utility shall be paid for by the contractor.

23. 26 23 00 - ELECTRICAL DISTIBUTION

.1 All electrical distribution equipment for this project will be of residential grade utilizing copper bussing, push-on breakers and lockable clasps.

.2 Service entrance equipment shall be rated and sized for utility requirements.

.3 Service entrance distribution board shall be sized as noted on the electrical drawings. Metering will be provided and installed as required per BC Hydro.

.4 Multi-unit facility: the main distribution center (MDC) shall have a utility wire way, C/T-P/T cabinet and digital metering to utility standards.

.5 All floor mounted equipment will be installed on concrete housekeeping pad. Vibrating equipment will have isolators to mitigate vibrations to the structure.

.6 All electrical equipment will be provided with 10% spare ampacity and 10% spare physical space for new breakers.

.7 Panels to be surface or flush mounted complete with panel trim having concealed hinges and trim mounting screws, hinged locking door with flush catch. Provide push-in branch circuit breakers for all panelboards. Provide new typewritten panel directories for all panels and affix to inside of panelboard doors.

.8 All AIC ratings shall be a minimum of 10k.

24. 26 50 00 - LIGHTING

.1 Provide and install a complete lighting system in accordance with the Canadian Electrical Code, Provincial and Local Codes, requirements of authorities having jurisdiction and the applicable standards.

.2. Provide lighting of entrances including an exterior lighting outlet controlled by a wall switch located inside the building as per BC Building Code.

.3. In adaptable units, provide illumination to an average level not less than 50 lux at floor or tread level at exits as per BC Building Code. The minimum level of illumination at exits shall be 10 lux.

.4. All lighting will be easily maintainable, readily sourced and come with all necessary parts and pieces for a complete installation.

.5 Electrical contractor shall supply and install luminaires complete with mounting brackets, lenses, LEDs, drivers and all necessary accessories in accordance with luminaire types selected for the project unless otherwise directed by the owner.

.6 Recessed down light luminaires shall be of the approved pre-wired type with junction box forming an integral part of luminaires assembly with access facility to the satisfaction of the electrical inspection authority. Supply and install all necessary plaster rings, supports, etc. required for complete and proper installation.

.7 Where recessed luminaires are to be mounted in drywall ceilings or type of ceilings requiring frames, supply drywall frames for the recessed luminaires and turn frames over to the general contractor for installation.

.8 Supply and install complete and proper support and hangers for all luminaires in ceiling space where required for proper support of outlet boxes and luminaire hanger assemblies.

.9 Lumen maintenance as per IES TM-21-11 "projecting long term lumen maintenance of LED light sources" to be a minimum of 30,000 hours at L90.

.10 Fixtures selected will be low glare, indirect where possible. Fixtures with replaceable LED strips and drivers will be provided.

.11 Fixtures will be of 3 step bin rating, minimum CRI of 80, LED between 50,000 - 90,000 hours at L70 rated. Generally, fixtures will be at 2500-3,500 Kelvin and provide a warm colour temperature.

32. COMMUNICATION SYSTEM

.1 Provide, install, test, and commission a complete communication distribution system as detailed on the drawings and this specification. The complete install shall be as per manufacturer's requirements, in accordance with the Canadian Electrical Code, Provincial and Local Codes, requirements of authorities having jurisdiction and the applicable standards.

.2 Provide entrance equipment and installation to TELUS or ROGERS installation requirements.

.3 Provide communications backbone cabling from the utility to demarcation point to utility standards.

.4 A dedicated 120V - 20 amp 'T-slot' duplex receptacle shall be provided at each distribution panel.

.5 Provide CAT 5e horizontal cabling and modular phone jacks for all telephone locations.

.6 Provide a multimedia panel within each unit.

.7 Furnish all labor, supervision, tooling, miscellaneous mounting hardware and consumables for each cabling system installed.

25. CATV SYSTEM

.1 Provide a television cable system as shown on the drawings and as specified herein.

.2 Reference ANSI/TIA standards

.3 Reference BICSI TDMM (latest Edition) standards.

.4 Coordinate installation with the cable television carrier prior to proceeding with work.

.5 Horizontal cabling conduit runs from the distribution panel to the last outlet shall not exceed 50 meters.

.6 The maximum conduit length, without a pull box, is not to exceed 30 meters.

.7 Pull wires or cords are required for conduit lengths in excess of 5 meters.

.8 The conduit must be continuous into the distribution panel.

.9 A pull box is required after two 90 degree bends (regardless of whether they are vertical or horizontal). Paint pull box covers blue with a yellow stripe.

.10 Where a pull box is required, they shall be of the appropriate size, but never smaller than the standard 10 cm x 3.8 cm box.

.11 All outlet boxes shall be the standard 10 cm x 10 cm x 3.8 cm size, with plaster ring.

.12 The distribution panel(s) shall be of the sizes specified by the local operator.

.13 A backboard of plywood shall be provided at each distribution panel.

.14 A dedicated 120V - 20 amp 'T-slot' duplex receptacle shall be provided at each distribution panel.

.15 A primary PVC conduit (78 mm minimum) must be provided from a designated point at the property line to the entrance facility.

.16 Coaxial cable: shall be type RG6 type to suit cable TV operator. Type of cable used may vary depending on local conditions and must be approved by the cable TV operator.

.17 Coverplate complete with connector shall be modular design to match switches and receptacles; color to match receptacles and switches.

.18 Install coaxial cable in conduit and cable tray system to Cable TV Company requirements. Each outlet shall be serviced by an individual cable.

.19 Connect coaxial cable to cable distribution system; terminate utilizing tools designed specifically for the task.

.20 At each TV outlet, install coaxial cable; terminate utilizing tools designed specifically for the task.

.21 Test cable attenuation lost and signal strength at each outlet to ensure proper and acceptable operation of each outlet.

26. 33 71 73 - UNDERGROUND ELECTRICAL SERVICE

.1 The BC Hydro and TELUS or ROGERS service to the site will be installed in-ground in a PVC duct bank.

27. SMOKE ALARMS

.1 Provide line voltage smoke alarms complete with sounder bases, battery backup, and strobes where required by BC Building Code and as noted on the electrical drawings. Combination smoke and CO alarms shall be provided in locations adjacent to, and on floors above, and below gas-fired equipment.

.2 Smoke alarms shall be interconnected so that the activation of any one alarm causes all alarms within the dwelling unit to sound.

END OF SPECIFICATION

ISSUE DATE: 2025-02-14

NO.	DATE	DESCRIPTION
1	2025-02-14	ISSUED AS PROTOTYPICAL DRAWING

PROJECT:

CMHC HOUSING DESIGN CATALOGUE

BRITISH COLUMBIA, CANADA

NOT FOR PERMIT OR CONSTRUCTION

SHEET TITLE:

ELECTRICAL SPECIFICATIONS

BC SIXPLEX COURTYARD

PROJECT NO: 241058

SCALE: AS NOTED

SHEET NO:

E200