DESIGN NOTES

1. GENERAL

1. THE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE:

   a) ALBERTA BUILDING CODE (2014)
   b) NATIONAL BUILDING CODE OF CANADA (2015)
   c) CSA A438-00 CONCRETE CONSTRUCTION FOR HOUSING AND SMALL BUILDINGS

2. ALL REINFORCED CONCRETE ELEMENTS HAVE BEEN DESIGNED AND OR SHALL BE CONSTRUCTED IN ACCORDANCE WITH:

   a) CSA - A23.3 "DESIGN OF CONCRETE STRUCTURES"
   b) CSA - A23.1 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION"
   c) CSA - A23.2 "TEST METHODS AND STANDARD PRACTICES FOR CONCRETE"

3. ALL CONCRETE FORMWORK AND OR FALSEWORK SHALL CONFORM WITH:

   a) CSA 269.1 "FALSEWORK FOR CONSTRUCTION PURPOSES"
   b) CSA S269.2-M "ACCESS SCAFFOLDING FOR CONSTRUCTION PURPOSES
   c) CSA S269.3-M "CONCRETE FORMWORK"

4. ALL STRUCTURAL WOOD ELEMENTS HAVE BEEN DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH:

   a) CSA - O86 " ENGINEERING DESIGN IN WOOD"
   b) CSA - O325-07 "CONSTRUCTION SHEATHING"
   c) CSA-080.1-08 "PRESERVATIVE TREATMENT OF WOOD"

5. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR LOCATIONS OF REQUIRED FIRE RESISTANCE AND RATINGS.

6. FLOOR AND ROOF LOADINGS, SOIL BEARING PRESSURES AND FOUNDATION LOADS GIVEN ON DRAWINGS ARE UNFACTORED. MEMBER FORCES GIVEN ON DRAWINGS ARE FACTORED.

2. LATERAL LOADS ON STRUCTURAL FRAME

THE STRUCTURE HAS BEEN DESIGNED TO RESIST THE LEAST FAVORABLE EFFECTS OF THE WIND AND EARTHQUAKE LOADS. THE DESIGN PARAMETERS FOR THESE LOADS ARE AS NOTED BELOW:

- LOCATION: JASPER AB
- DESIGN LIFESPAN: 50 YEARS

1. WIND LOADS:

   WIND LOAD
   Q = Iw [q (Ce x Cp x Cg)]

   FACTORS
   Iw = 1.0
   q = 0.32 kPa
   Ce = 0.7

	CpCg	ULS Q(kPa)	SLS Q(kPa)
1	0.75	0.17	0.13
1E	1.15	0.26	0.19
4	-0.55	-0.12	-0.09
4E	-0.8	-0.18	-0.13

2. EARTHQUAKE LOADS:

   - DESIGN GROUND MOTION VALUES:

     Sa (0.2) = 0.28 Sa (1.0) = 0.07
     Sa (0.5) = 0.14 Sa (2.0) = 0.04

   - SITE CLASSIFICATION FOR SEISMIC SITE RESPONSE:

     CLASS = D

   - ACCELERATION AND VELOCITY SITE COEFFICIENTS:

     Fa = 1.3 Fv = 1.4

   - STRUCTURE WEIGHT PARTICIPATION:

     W (USED) = 221 kN

   - FUNDAMENTAL PERIOD OF VIBRATION:

     Ta = 0.3

   - MAXIMUM PERIOD OF VIBRATION:

     Tmax = 1.5 x Ta
     Tmax = 0.45

   - DESIGN SPECTRAL ACCELERATION:

     Sx (Tx) = 0.17
     Sy (Ty) = 0.17

   - TYPES OF SEISMIC FORCE RESISTING SYSTEM:

     Rd = 3.0 Ro = 1.7

   - MODIFICATION FACTORS:

     Ie = 1.0 Mv = 1.0

   - BASE SHEAR:

     V = (S x Ta x Mu x Ie x W)/Rd x Ro

     V(min) = 1.15KN V(max) = 9.01 KN

     EQ LOAD BASE SHEAR
     V(WLx) = 9.01 kN
     V(WLy) = 9.01 kN

3. THE LATERAL FORCES DUE TO WIND OR EARTHQUAKE ARE RESISTED BY WOOD PANEL SHEAR WALLS, UNTIL THE MAIN FLOOR LEVEL AND CARRIED BY CONCRETE SHEAR WALLS IN THE BASEMENT FLOOR.

3. DEAD LOADS (SERVICE):

1. DEAD LOADS ARE LOADS GENERATED BY THE SELFWEIGHT OF THE STRUCTURE.

2. SUPERIMPOSED DEAD LOADS ARE LOADS GENERATED BY THE WEIGHT OF MECHANICAL SYSTEMS, ELECTRICAL SYSTEMS, TOPPINGS, PARTITIONS, AND MISCELLANEOUS LOADINGS.

3. REFER TO NOTES ON PLANS FOR ALL LOADS APPLIED TO THE STRUCTURE.

4. ROOF LIVE LOADS

1. THE ROOF AREAS HAVE BEEN DESIGNED TO RESIST THE LEAST FAVORABLE EFFECTS OF THE SNOW, RAIN AND WIND LOADINGS. THE DESIGN PARAMETERS FOR THESE LOADS ARE AS NOTED BELOW.

2. SNOW LOAD

   a) THE FOLLOWING SNOW LOAD HAS BEEN CONSIDERED IN THE DESIGN OF THE ROOF AREAS.

   S = Is [Ss (Cb x Cw x Cs x Ca) + Sr]
   S = 2.25 kPa (SLS)
   S = 2.5 kPa (ULS)

   FACTORS
   Is = 1.0
   Ss = 3 kPa
   Sr = 0.1 kPa
   Cb = 0.8
   Cw = 1.0
   Cs = 1.0
   Ca = 1.0

   b) ADDITIONAL SNOW ACCUMULATION ADJACENT TO HIGHER WALLS, ROOFS AND MECHANICAL UNITS IS INDICATED ON PLANS.

   c) ALL ROOFS HAVE BEED DESIGNED ASSUMING THAT SNOW STOPS OR FENCES WILL BE INSTALLED TO PREVENT SLIDING OF SNOW FROM HIGHER BACK SLOPING OR CURVED ROOFS ONTO LOWER ROOFS.

3. RAIN LOAD:

   a) THE DESIGN OF THE ROOF STRUCTURE IS BASED ON THE ASSUMPTION THAT THE FLOW CONTROL ROOF DRAINS SATISFY ALL REQUIREMENTS OF THE NATIONAL PLUMBING CODE OF CANADA, 2005 EDITION.

   b) THE TOTAL RAIN LOAD APPLIED OVER THE HORIZONTAL PROJECTION OF THE SURFACE SHALL BE THE LESSER OF EITHER THE ONE-DAY RAINFALL OR A DEPTH OF RAINWATER EQUAL TO 30 mm ABOVE THE LEVEL OF THE SCUPPERS.

      ONE-DAY RAINFALL = 76 mm (1/50 yr)

   c) THE ACTUAL DISTRIBUTION OF THIS LOAD HAS BEEN ADJUSTED TO ACCOUNT FOR THE ACTUAL ROOF SLOPES AND PROFILE.

4. WIND UPLIFT ON ROOFS

   a) ROOF ELEMENTS (TRUSSES, JOISTS, STEEL DECK, BEAMS, ETC.) AND THEIR CONNECTIONS TO THE STRUCTURE ARE TO BE DESIGNED BY FOR UPWARD SUCTION DUE TO WIND. THE UNFACTORED NET UPWARD DESIGN PRESSURES ARE SHOWN ON DETAIL S4.3.

5. LIVE AND OTHER LOADS

   a) SEE NOTES ON FLOOR PLANS. ALL VALUES GIVEN ARE UNFACTORED LOADS UNLESS OTHERWISE SHOWN ON PLAN.
   b) LIVE LOADS ON ALL STRUCTURAL ELEMENTS HAVE BEEN REDUCED AS PERMITTED BY CODE.

5. GEOTECHNICAL INFORMATION:

1. A SITE SPECIFIC GEOTECHNICAL REPORT WAS NOT AVAILABLE AT THE TIME OF DESIGN. THE FOUNDATION SYSTEM WILL CONSIST OF STRIP AND SPREAD FOOTINGS. THE CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF ALBERTA TO CONFIRM ALL DESIGN ASSUMPTIONS (E.G. SOIL BEARING CAPACITY) PRIOR TO POUR CONCRETE.

2. REFER TO FOUNDATION GENERAL NOTES FOR SOIL BEARING CAPACITY ASSUMPTION.

6. LATERAL LOADS ON FOUNDATION WALLS

1. WALLS RETAINING EARTH ARE DESIGNED TO WITHSTAND A HORIZONTAL PRESSURE 'P' [kPa] AT ANY DEPTH 'h' [m] GIVEN BY THE EQUATION:

   P=K (gh+q)

   WHERE THE:
   SOIL PRESSURE COEFFICIENT K = 0.35
   UNIT WEIGHT OF SOIL g = 20.0 kN/m^2
   SURCHARGE q = 12.0 kPa

2. THE WALLS HAVE BEEN DESIGNED ASSUMING FREE DRAINING BACKFILL WHICH DOES NOT PERMIT THE BUILD-UP OF HYDROSTATIC PRESSURE. REFER ALSO TO TYPICAL DETAILS.

7. SERVICEABILITY CRITERIA

1. TYPICAL HORIZONTAL ELEMENTS NOT SUPPORTING CLADDING HAVE BEEN DESIGNED SO THAT THE THEORETICAL DEFLECTIONS WILL NOT EXCEED THE FOLLOWING VALUES:

DEFLECTION LIMITS		
TYPE OF MEMBER	DEFLECTION TO BE CONSIDERED	DEFLECTION LIMIT
REINFORCED CONCRETE MEMBERS		
ROOF OR FLOOR CONSTRUCTION SUPPORTING NON-STRUCTURAL ELEMENTS NOT LIKELY TO BE DAMAGED BY LARGE DEFLECTIONS	SUM OF THE LONG-TIME DEFLECTION DUE TO ALL SUSTAINED LOADS AND THE IMMEDIATE DEFLECTION DUE TO ANY ADDITIONAL LIVE LOAD	SPAN/240
FLOORS NOT SUPPORTING NON-STRUCTURAL ELEMENTS LIKELY TO BE DAMAGED BY LARGE DEFLECTIONS	IMMEDIATE DEFLECTION DUE TO SPECIFIED LIVE LOAD	SPAN/360
ROOF OR FLOOR CONSTRUCTION SUPPORTING NON-STRUCTURAL ELEMENTS LIKELY TO BE DAMAGED BY LARGE DEFLECTIONS	THAT PART OF THE TOTAL DEFLECTION OCCURRING AFTER ATTACHMENT OF NON-STRUCTURAL ELEMENTS	SPAN/480
STRUCTURAL STEEL MEMBERS		
SIMPLE SPAN MEMBERS OF FLOORS AND ROOFS SUPPORTING CONSTRUCTION AND FINISHES NOT SUSCEPTIBLE TO CRACKING	LIVE LOAD	SPAN/300
SIMPLE SPAN MEMBERS OF FLOORS AND ROOFS SUPPORTING CONSTRUCTION AND FINISHES SUSCEPTIBLE TO CRACKING	LIVE LOAD	SPAN/360

2. PERIMETER OR SPANDREL ELEMENTS (SUPPORTING CLADDING) AND ELEMENTS SUPPORTING MASONRY WALLS HAVE BEEN DESIGNED FOR AN ALLOWABLE DEFLECTION OF ONE HALF THE VALUES NOTED ABOVE, OR 15 mm WHICHEVER LESS.

3. THE STRUCTURE HAS BEEN DESIGNED ASSUMING THAT THE INSTALLATION OF NONSTRUCTURAL ELEMENTS SUCH AS CLADDING, MECHANICAL AND ELECTRICAL SERVICES AND THE LIKE, WILL NOT COMMENCE UNTIL AT LEAST ONE MONTH AFTER THE REINFORCED CONCRETE SLAB SUPPORTING THE NONSTRUCTURAL ELEMENTS HAS BEEN POURED AND THE RESHORES REMOVED.

4. THE STRUCTURE HAS BEEN DESIGNED TO LIMIT THE MAXIMUM INTERSTORY DRIFT UNDER 1/10 AVERAGE HOURLY WIND PRESSURE TO H/500, WHERE H IS THE FLOOR TO FLOOR HEIGHT BETWEEN TWO ADJACENT FLOORS. UNDER SEISMIC LOAD, THE INTERSTORY DRIFT HAS BEEN LIMITED TO Hs/400, WHERE Hs IS THE HEIGHT OF THE STOREY.

5. NONSTRUCTURAL ELEMENTS SUCH AS CLADDING, MECHANICAL AND ELECTRICAL SYSTEMS AND THEIR SUPPORTS, AND THE LIKE, MUST BE DESIGNED AND DETAILED TO ACCOMMODATE THE ANTICIPATED MOVEMENTS NOTED ABOVE.

8. PROVISIONS FOR FUTURE EXTENSIONS

1. THE STRUCTURE HAS NOT BEEN DESIGNED FOR ANY FUTURE EXTENSIONS.

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Client / client

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GENERAL NOTES

Project no./No. du projet	Drawing no./No. du dessin	Revision no.
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