# **CONSTRUCTION NOTES**

### STRUCTURAL STEEL

 ALL BEAMS CANTILEVERED OR CONTINUOUS OVER A COLUMN OR OTHER SUPPORT, AND BEAMS SUPPORTING POINTS OF CONCENTRATED LOAD, SHALL CAN/CSA-S136. HAVE A MIN. OF 2-10 mm (3/8") STIFFENERS EACH SIDE OF WEB UNLESS OTHERWISE NOTED.

2. TOP OF COLUMNS WHICH ARE NOT BRACED BY JOISTS OR BEAMS SHALL BE BRACED DIAGONALLY TO AND ERECTOR FULLY APPROVED BY THE CANADIAN THE ROOF OR FLOOR BY A MINIMUM OF 4-L76 x 76 WELDING BUREAU TO THE REQUIREMENTS OF CSA x 6.4 mm (L3 x 3 x 1/4") ANGLES FOR INTERIOR COLUMNS; A MINIMUM  $2-L76 \times 76 \times 6.4 \text{ mm}$  (L3 x 3 x 1/4") ANGLES FOR EXTERIOR COLUMNS. BRACING WELDING AND WELDING MAY ONLY BE CARRIED OUT SHALL BE BETWEEN TOP OF COLUMN AND TOP CHORD OF JOISTS.

3. COLUMN BASE PLATES AND BEAM BEARING PLATES SHALL BE GROUTED WITH 40 mm (1.5") NON-SHRINK 40MPa GROUT.

4. ALL COLUMNS BUILT INTO MASONRY WALLS SHALL HAVE ADJUSTABLE ANCHORS AT MINIMUM 600mm (24") O.C.

5. ALL ROOF OPENINGS TO BE REINFORCED BY

FRAMES COMPRISED OF C130x10 (C5x6.7) CHANNEL

MEMBERS UNLESS NOTED OTHERWISE. MAXIMUM SPAN

2250 mm (7'–6"). 6. SUPPORT AT COLUMNS AND IRREGULARITIES: A. ) INSTALL L76 x 76 x 6.4 mm (L3 x 3 x 1/4") DEAD LOADS SHOWN. ADJUST STIFFNESS AND ANGLE SEATS FOR STEEL DECK AT CONNECTIONS, AT COLUMNS OR OTHER IRREGULARITIES, TO PROVIDE SUPPORT TO THE RIBS OF THE DECK. B.) INSTALL L102 x 102 x 9.8 mm (L4 x 4 x 3/8") ANGLE SEATS FOR PRECAST SUPPORT AT CONNECTIONS, AT COLUMNS OR OTHER

IRREGULARITIES, TO PROVIDE BEARING FOR

. MAINTAIN ERECTION BRACING UNTIL COMPLETION OF ENTIRE STRUCTURE, INCLUDING ROOF DECKS AND OTHER ELEMENTS WHICH ARE PART OF THE LATERAL LOAD RESISTING SYSTEM.

STEEL DECK

PRECAST PLANKS.

REQUIREMENTS OF CSA S136 FOR THE LOADS INDICATED ON THE DRAWINGS. . SUBMIT SHOP DRAWINGS INDICATING WELDS, MATERIALS AND FINISHES, AND BEARING THE SEAL OF A PROFESSIONAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO FOR REVIEW BY THE ENGINEER. SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO PROCEEDING WITH ANY FABRICATION.

UNLESS NOTED OTHERWISE, A. ) ROOF DECK SHALL BE 38 mm x 0.76 mm  $(1.5" \times .030")$  VIC WEST STEEL INC. RD 938 (OR APPROVED EQUAL), MINIMUM 3 SPANS CONTINUOUS. B. ) FLOOR DECK SHALL BE 38 mm x 0.76 mm (1.5" x .030") VIC WEST STEEL INC. HB 938 (OR APPROVED EQUAL), MINIMUM 3 SPANS CONTINUOUS.

4. METAL DECK SHALL BE LIGHT ZINC COATED STRUCTURAL STEEL SHEET FABRICATED AND ERECTED IN ACCORDANCE WITH CSSBI 10M, CAN/CSA-S136, AND CSSBI 101M. THE MINIMUM ZINC COATING DESIGNATION SHALL BE ZF075 (U.N.O.).

5. DECK SHALL OVERLAP A MINIMUM OF 50 mm (2") AT ALL END JOINTS AND HAVE A MINIMUM BEARING LENGTH OF 50 mm (2") ON ALL STRUCTURAL STEEL.

6. DECK HAS BEEN DESIGNED FOR DIAPHRAGM ACTION AND SHALL BE FASTENED AS FOLLOWS: WELD DECK TO SUPPORTING STEEL WITH 20 mm (3/4") DIAMETER PLUG WELD AT TRANSVERSE WELD SPACING =300mm (12") O.C. PERIMETER WELD SPACING =300mm (12") O.C. SIDE LAP BUTTON PUNCHING =300mm (12") O.C. LONGITUDINAL WELD SPACING =600mm (24") O.C.

7. DECK WELDS SHALL BE TOUCHED UP WITH APPROVED PAINT BY THE DECK ERECTOR. 8. PROTECT ROOF AND FLOOR DECK FROM DAMAGE DURING SHIPPING STORAGE AND ERECTION. CONTRACTOR SHALL REPLACE ANY PUNCTURED,

9. STEEL DECK WORK SHALL INCLUDE THE SUPPLY AND INSTALLATION OF ALL SHEET STEEL ANGLES, COVER PLATES, CLOSURES, STIFFENERS AND ANY OTHER ACCESSORIES REQUIRED.

DENTED OR WELD PERFORATED DECK.

10. CUT OPENINGS AND REINFORCE EDGES AS REQUIRED FOR PIPES, DUCTS, ETC. A. ) THE MAXIMUM SIZE OF AN UNREINFORCED OPENING is 150 mm (6"). B. ) REINFORCE ALL OPENINGS LARGER THAN 150mm (6"), BUT NOT EXCEEDING 450 mm (18"), AS INDICATÉD BY THE METAL DECK SUPPLIER. C. ) FOR OPENINGS GREATER THAN 450mm (18") NOT SHOWN ON THE DRAWINGS, CONTACT ENGINEER FOR DIRECTION.

11. HANGER WIRE FOR SUSPENDED CEILINGS SHOULD PIERCE BOTH SIDES OF THE FLUTE AND BE LOOPED AROUND AND TIED.

OPEN WEB STEEL JOISTS

REGARDING WELDING.

CONFORM TO CSA STANDARDS S16 AND

WELDING OF STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF CSA STANDARD W59 AND SHALL BE UNDERTAKEN BY A FABRICATOR STANDARD W47, DIVISION 1 AND DIVISION 2. FABRICATOR TO SUPPLY CERTIFICATION OF FUSION IN ACCORDANCE WITH OWNER'S SAFETY REGULATIONS

3. JOISTS TO BE DESIGNED FOR THE LOADS AS SPECIFIED ON DRAWINGS AND IN ACCORDANCE WITH THE 2012 OBC. DESIGN OF JOISTS SHALL ALSO INCLUDE ALL LOADS FROM MECHANICAL EQUIPMENT SUCH AS ROOF TOP UNITS, DUCTS AND PIPING. 4. SHOP DRAWINGS OF JOIST DETAILS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW BEFORE FABRICATION. JOIST DESIGN AND DETAILS SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN

SUBMITTED FOR RECORD PURPOSES. 5. PROVIDE SUFFICIENT CAMBER TO JOISTS TO ENSURE "O" CAMBER AFTER APPLICATION OF ALL REQUIRED CAMBER OF JOISTS ADJACENT TO MASONRY WALLS, STEEL BEAMS OF SHORTER SPAN AND THE LIKE TO PERMIT THE PROPER FASTENING OF THE STEEL DECK. AS A GUIDE, LIMIT THE DIFFERENTIAL DEFLECTION OF THE ADJACENT JOIST, UNDER ALL DEAD LOADS, TO L/120, WHERE 'L' IS

ONTARIO. JOIST DESIGN CALCULATIONS SHALL BE

THE SPAN OF THE STEEL DECK PERPENDICULAR TO 6. "TJ" ON PLANS DENOTES "TIE JOIST". BOTTOM CHORD TO BE FRAMED INTO COLUMNS, BEAMS OR WALLS. ALL JOISTS AT COLUMNS TO BE TIE JOISTS UNLESS OTHERWISE NOTED. TIE JOIST CONNECTIONS SHALL BE BOLTED.

7. WHERE TIE JOISTS ARE INDICATED, DESIGN TOP AND BOTTOM CHORDS AND CONNECT TO COLUMNS TO SAFELY DEVELOP LOADS SHOWN OR A MINIMUM OF A 25 kN SPECIFIED LOAD IN TENSION OR

1. DESIGN METAL DECK IN CONFORMANCE WITH THE 8. DESIGN AND INSTALLATION OF ALL OWSJ BRIDGING SHALL BE IN ACCORDANCE WITH CSA S16. COMBINED DIAGONAL AND HORIZONTAL BRIDGING SHALL BE PROVIDED AT THE ENDS OF BRIDGING LINES AS REQUIRED. ENDS OF BRIDGING LINES SHALL BE ANCHORED TO STEEL, MASONRY OR OTHERWISE SHOWN AND BE CAPABLE OF RESISTING AN AXIAL LOAD OF AT LEAST 3 kN.

> 9. BRIDGING SHOWN ON THE DRAWINGS IS INTENDED AS A GUIDELINE ONLY. DESIGN AND PROVIDE BRIDGING FOR ALL OWSJ AND TRUSSES AS FOR ALL BUILDING COMPONENTS AS LISTED IN THE

10. ALL OWSJ'S HAVE A 127 mm (5") SHOE (U.N.O.) 11. ALL STEEL JOISTS SHALL BE WELDED TO STEEL

 $\times$  5 mm (2"  $\times$  3/16") FILLET ON BOTH SIDES OF

12. ALL HANGERS, STUB COLUMNS, TRAPEZE BARS, C. THAT SUPPORT MECHANICAL, ELECTRICAL OR STRUCTURAL EQUIPMENTS, PIPES, DUCTS, CATWALKS, ETC. MUST BE CONNECTED TO AN OWSJ PANEL POINT OR WHERE THE WEB OF THE JOIST MEETS THE CHORD OF THE JOIST.

OPEN WEB STEEL JOISTS (OWSJ'S) SHALL

PROJECT DESIGN DATA TABLE BUILDING IMPORTANCE CATEGORY SPECIFIED WIND LOADS HOURLY WIND PRESSURE (1/50) q 0.43 kPa DESIGN DATA: WIND DESIGN CATEGORY CATEGORY 2 OPEN SPECIFIED DEAD AND LIVE LOADS FLOOR AND ROOF DESIGN LOADS AS NOTED ON FRAMING SPECIFIED SNOW AND RAIN LOADS BASIC ROOF SNOW LOAD: S 1.63 kPa Ss 1.3 kPa SNOW AND RAIN LOADING (1/50) Sr 0.4 kPa DESIGN DATA: 24hr Rain | 125 mm Cb 0.94 FACTORS USED FOR BASIC ROOF Cw 1.0 SNOW LOAD. Cs 1.0 ADDITIONAL SNOW ACCUMULATION AROUND MECHANICAL UNITS AND ADJACENT TO HIGHER ROOF LEVELS OR

WALLS IS INDICATED ON THE DRAWINGS. SPECIFIED EARTHQUAKE LOADS Sa(0.2) 0.26 \*(SITE CLASS TO BE CONFIRMED SITE CLASS\* D BY GEOTECHNICAL ENGINEER) SEISMIC FORCE MODIFICATION | Rd | 1.5 FACTORS FOR SEISMIC FORCE Ro 1.3 RESISTING SYSTEM SEISMIC HAZARD INDEX | IEFaSa(0.2) | 0.337

ALL LOADS AND ANALYSIS CONFORM TO THE 2012 OBC DIV B PART 4 AND THE USER'S GUIDE - NBC 2010 STRUCTURAL COMMENTARIES. . ALL DESIGN DATA ABOVE IS FROM UMEN WIND SOFFETS SUPPLEMENTARY STANDARD SB-1 TABLE 1.2 . WIND LOADING IS BASED ON THE STATIC

4. SEISMIC LOADING IS BASED ON THE EQUIVALENT STATIC FORCE PROCEDURE. SITE CLASS HAS BEEN PROVIDED BY THE EXP GEOTECHNICAL REPORT NO. BRM-00603770-B0, DATED NOVEMBER 27, 2015. 5. THE STRUCTURE HAS NOT BEEN DESIGNED FOR ANY FUTURE EXTENSION.

# SHOP DRAWING REVIEW

1. ERECTION AND FABRICATION SHOP DRAWINGS REQUIRED SUBMITTALS TABLE AND ANY RELATED WORKS ARE TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE COMMENCING WITH FABRICATION.

AS PART OF THEIR FIELD SERVICES, MTE CONSULTANTS ("MTE") WILL REVIEW SHOP DRAWINGS BEAMS OR BEARING PLATES WITH A MINIMUM 50 mm PERTAINING TO WORK SHOWN ON MTE CONSULTANT'S DRAWINGS BY MEANS OF APPROPRIATE RATIONAL SAMPLING PROCEDURES AND COMMENT ON THE ACCURACY WITH WHICH THE CONTRACTOR PREPARED THE DRAWINGS.

> REVIEW OF THE SHOP DRAWINGS IS FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH THE GENERAL DESIGN CONCEPT AND IS NOT AN APPROVAL OF THE DETAIL DESIGN INHERENT IN THE SHOP DRAWINGS, RESPONSIBILITY FOR WHICH SHALL REMAIN WITH THE CONTRACTOR SUBMITTING THEM. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY FOR ERRORS AND OMISSIONS IN THE SHOP DRAWINGS OR FOR MEETING ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INFORMATION PERTAINING TO THE FABRICATION PROCESS TECHNIQUES OF CONSTRUCTION AND INSTALLATION AND FOR COORDINATION OF THE WORK

OF ALL SUB-TRADES. 4. THE APPROVAL OF SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY OF THE FITTING OF BUILDING COMPONENTS. ANY DISCREPANCIES IN THE SHOP DRAWINGS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

5. ALL SHOP DRAWINGS MUST BEAR THE SEAL OF A PROFESSIONAL ENGINEER LICENSED IN ONTARIO UNLESS NOTED OTHERWISE IN THE SUBMITTALS TABLE BELOW. UNSEALED SHOP DRAWINGS WILL NOT BE REVIEWED UNLESS ALTERNATIVE ARRANGEMENTS HAVE BEEN AGREED UPON.

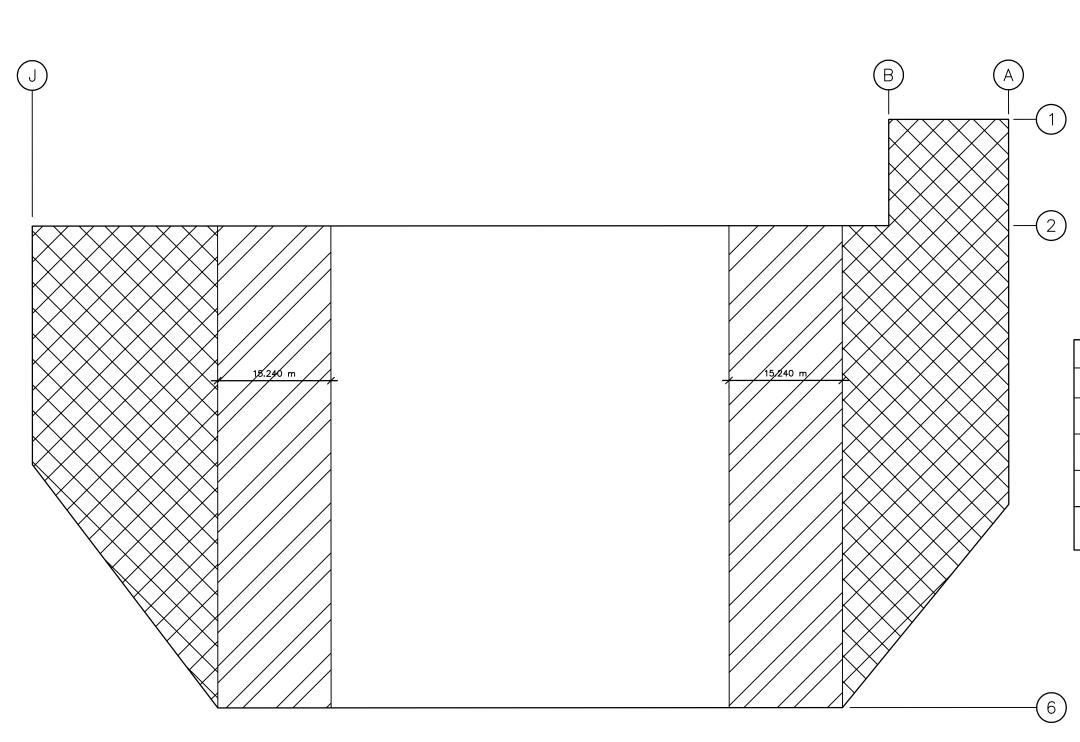
### REQUIRED SUBMITTALS

THE FOLLOWING ITEMS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.

| ITEM                          | REQ'D<br>SUBMITTAL? | ENGINEER'S<br>STAMP<br>REQ'D? | NOTES |
|-------------------------------|---------------------|-------------------------------|-------|
| STEEL JOIST<br>SHOP DRAWINGS  | YES                 | YES                           |       |
| STEEL JOIST<br>CALCULATIONS   | YES                 | YES                           |       |
| STEEL DECK<br>SHOP DRAWINGS   | YES                 | YES                           |       |
| STEEL SIDING<br>SHOP DRAWINGS | YES                 | YES                           |       |

# 

| ROOF UPLIFT (UNFACTORED)     |              |                |  |  |  |  |  |  |  |
|------------------------------|--------------|----------------|--|--|--|--|--|--|--|
| ROOF SECTION                 | LOAD ON DECK | LOAD ON JOISTS |  |  |  |  |  |  |  |
| MIN. DEAD LOAD (ENTIRE ROOF) | 0.1 kPa      | 0.19 kPa       |  |  |  |  |  |  |  |
| R                            | -1.1 kPa     | −0.9 kPa       |  |  |  |  |  |  |  |
| s                            | -1.4 kPa     | −1.1 kPa       |  |  |  |  |  |  |  |
| c                            | -2.6 kPa     | −1.1 kPa       |  |  |  |  |  |  |  |
|                              | Z = 4.51 m   |                |  |  |  |  |  |  |  |
|                              |              |                |  |  |  |  |  |  |  |



| DECK FASTENING SCHEDULE            |                     |                                  |                             |                   |                                    |                              |  |  |
|------------------------------------|---------------------|----------------------------------|-----------------------------|-------------------|------------------------------------|------------------------------|--|--|
| 1051                               | WELDED CONNECTIONS  |                                  |                             | HILTI CONNECTIONS |                                    |                              |  |  |
| AREA                               | DECK THICKNESS      | AT SUPPORTS                      | AT SIDE-LAPS                | DECK THICKNESS    | AT SUPPORTS                        | AT SIDE-LAPS                 |  |  |
| FASTENING<br>TYPE ROOF-1           | 0.030"              | 34"ø PUDDLE-WELD<br>36/7 PATTERN | BUTTON-PUNCH<br>at 12" o/c  | 0.030"            | HILTI X-ENP-19-L15<br>36/3 PATTERN | S-SLC 01 M HWH<br>at 18" o/c |  |  |
| FASTENING<br>TYPE ROOF-2           | 0.036"              | 34"ø PUDDLE-WELD<br>36/7 PATTERN | BUTTON-PUNCH<br>at 6" o/c   | 0.030"            | HILTI X-ENP-19-L15<br>36/4 PATTERN | S-SLC 01 M HWH<br>at 9" o/c  |  |  |
| FASTENING<br>TYPE ROOF-3           | 0.036"              | 34"ø PUDDLE-WELD<br>36/7 PATTERN | 1.5" SEAM<br>WELDS @ 6" o/c | 0.030"            | HILTI X-HSN 24<br>36/7 PATTERN     | S-SLC 01 M HWH<br>at 6" o/c  |  |  |
| NOTES:<br>1. WELD DECK AT PERIMETE | R OF BUILDING AT 12 | "o∕c U.N.O.                      |                             |                   |                                    |                              |  |  |

**CONSTRUCTION NOTES** 

DESIGN (LSD)
ALL STRUCTURAL STEEL TO BE FABRICATED & ERECTED TO THE REQUIREMENTS OF CAN/CSA S16-01 (LATEST EDITION). ALL WELDING TO CONFORM TO CSA SPECS W47, W48, W59 (ALL LATEST EDITIONS) USING CWB APPROVED WELDERS. DESIGNED TO THE ONTARIO BUILDING CODE, CSA STD. S16-01 W47 W59 - ALL LATEST EDITIONS.

ALL CONNECTIONS TO BE BEARING TYPE. FIELD WELD USE E49XX ELECTRODES.

ANCHOR BOLTS = G40.21-44W FIELD BOLTS = ASTM-A325  $\frac{3}{4}$ "ø HSS MATERIALS TO BE G40.21-50W (CLASS C) ALL W-SHAPES TO BE G40.21-50W COLD FORMED CHANNEL TO BE G40.21-50W ALL OTHER MATERIAL TO BE G40.21-44W

INSPECTION
ALL STEEL TO BE SHOP-INSPECTED AS PER ACL STEEL REQUIREMENTS.

<u>PAINT</u> PREPARATION: ALL STEEL TO BE WIRE BRUSH CLEANED. ALL STEEL TO RECEIVE ONE SHOP COAT OF QUICK-DRY PRIMER WHICH COMPLIES TO CISC/CPMA STANDARD 1-73a AND C.G.S.B. Spec. 1-GP-40M-M89 UNLESS NOTED. COLOUR: STANDARD GREY FIELD TOUCH-UP BY ERECTOR.

ERECTION: BY ACL STEEL SUPPLY ONLY ITEMS: ANCHOR BOLTS LEVELING PLATES LOOSE LINTELS ADJUSTABLE MASONRY ANCHORS WALL/BEARING PLATES

OTHER ITEMS AS SPECIFIED ON ACL DRAWINGS

PIECEMARKS ADDED & ISSUED FOR CONSTRUCTION JULY 31, 201 ISSUED FOR BUILDING PERMIT APPLICATION REVISIONS 2255 Shirley Drive Kitchener, Ontario, Canada, N2B 3X4 Phone: (519) 568-8822 Fax: (519) 568-8331 www.aclsteel.ca DRAFTING ENGINEERING DESIGN BUILDERS DESIGN & CONSTRUCTION NOTES PROJECT: 8300 PARKHILL BLDG 2 **ONTARIO** MILTON BROCCOLINI CONSTRUCTION WARE MALCOMB ENGINEER: MTE CONSULTANTS INC. & ACL STEEL CAD FILE: P:\2000\2729 CHKD BY: C.T. SCALE: 1:200 DATE: JANUARY, 2016 SO ACL STEEL LTD.

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