STRUCTURAL STEEL

GENERAL

1. CONFORM TO THE GENERAL REQUIREMENTS AND SPECIAL CONDITIONS CONTAINED IN (DIVISION 1) AND GENERAL NOTES. FOLLOW CISC CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL, UNLESS PROJECT SPECIFICATIONS ARE MORE STRINGENT. THESE NOTES RELATE TO THE ITEMS DESIGNED BY NUNA BURNSIDE.
2. CONFORM TO CSA STANDARDS CSA_S16, CSA_S136, W47.1, W48.1, W48.1, W55.3, W59 AND CSA G40.20 LATEST EDITIONS.
3. MATERIALS SHOWN ON THE DRAWINGS OR IN THIS SPECIFICATION ARE TO ESTABLISH THE REQUIRED DEGREE OF QUALITY OR PERFORMANCE. SUBSTITUTION MAY BE PERMITTED UPON PROOF OF EQUIVALENCE. SUBMIT ALL PROPOSALS FOR SUBSTITUTION TO THE CONSULTANT IN WRITING IN ADVANCE OF SHOP DRAWINGS. EACH ITEM WILL BE CLEARLY IDENTIFIED. DO NOT PROCEED WITH PROPOSAL UNLESS IT IS ACCEPTED IN WRITING BY THE CONSULTANT.
4. TOLERANCES: FABRICATION AND ERECTION TOLERANCES SHALL MEET THE REQUIREMENTS OF CSA STANDARD S16.
5. DEFLECTION REQUIREMENTS: TOTAL DEFLECTION NOT TO EXCEED 1/180 OF THE SPAN, LIVE LOAD DEFLECTION TO 1/360 OF THE SPAN, EXCEPT WHERE SUPPORTING MASONRY INCREASE STIFFNESS TO 1/720 OF THE SPAN.
6. WORK SHALL BE CARRIED OUT BY A MEMBER OF THE CANADIAN INSTITUTE OF STEEL CONSTRUCTION. WELDING SHALL BE PERFORMED BY FIRMS FULLY APPROVED BY THE CANADIAN WELDING BUREAU UNDER THE REQUIREMENTS OF CSA STANDARD W47.1. SUBMIT VERIFICATION DOCUMENTATION BEFORE COMMENCING WORK.
7. DESIGN CONNECTIONS TO CONFORM TO CSA-S16 AND THE CISC HANDBOOK OF STEEL CONSTRUCTION, USING STANDARDIZED CONNECTIONS WHERE POSSIBLE. UNLESS A SPECIFIC FACTORED CONNECTION LOAD IS SHOWN ON THE PLANS, PROVIDE CONNECTION CAPACITIES AS FOLLOWS:

   FOR STANDARD BEAM SHEAR CONNECTIONS, DESIGN FOR A SERVICE CAPACITY IN kN EQUAL TO THE BEAM DEPTH IN MM MULTIPLIED BY .5.

   DESIGN ALL SPLICES AND CONNECTIONS OF TENSION OR COMPRESSION MEMBERS FOR THEIR FULL CAPACITY, UNLESS FACTORED CONNECTION LOADS ARE SHOWN.

   THE MINIMUM WELD SIZE SHALL BE A 5 mm FILLET WELD, AND WHERE INTERMITTENT, 40 mm LONG MINIMUM.

   ARRANGE AND PAY FOR NON-DESTRUCTIVE TESTING OF ALL UNSPECIFIED SPLICES IN COLUMNS, BEAMS AND JOIST COMPONENTS. ALL CONNECTIONS AND DETAILS SHALL BE DESIGNED BY A QUALIFIED REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN NUNAVUT, WHOSE STAMP AND SIGNATURE SHALL BE ON THE SHOP DRAWINGS. AN EXCEPTION IS FOR MISCELLANEOUS STEEL ITEMS WHERE CONNECTIONS ARE DETAILED ON THESE DRAWINGS.
8. DESIGN AND PROVIDE BEARING PLATES FOR A MAXIMUM PRESSURE OF 3.5 MPa ON ENGINEERED MASONRY AND 10 MPa ON CONCRETE, BASED ON FACTORED LOADS USING LIMIT STATES DESIGN.
9. SEE GENERAL NOTES SECTION FOR SHOP DRAWING SUBMISSION REQUIREMENTS IN ADDITION TO NOTES ABOVE.
10. VISIT THE SITE TO CONFIRM CONDITIONS AFFECTING THE WORK.

PRODUCTS

1. MATERIALS: STRUCTURAL STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING CSA STANDARDS CAN/CSA G40.21 GRADE 350W FOR ALL WIDE FLANGE & HSS SECTIONS, ASTM A500 FOR HSS, 300W FOR ALL OTHER MATERIALS. FOR EXISTING STEEL ON SITE THAT IS BEING MODIFIED OR CONNECTED TO NEW WORK, BASE CONNECTION DESIGNS ON EXISTING GRADES OF CSA G40.21 GRADE 300 W MATERIAL, UNLESS OTHERWISE NOTED.

STEEL JOISTS:	CAN/CSA G40.21 Grade 300W and CAN/CSA_S136.
COLD FORMED SHAPES:	CAN/CSA S136, minimum thickness 1.2mm.
HIGH STRENGTH BOLTS:	to ASTM A325.
ANCHOR RODS:	to CAN/CSA Standard G40.21 Grade 300W
TIE RODS:	to CAN/CSA Standard G40.21 Grade 300W.
PRIMER PAINT:	to CISC/CPMA specification 2_75.
ZINC_RICH SHOP PRIMER PAINT:	to CGSB 1_GP_181M.
HOT DIP GALVANIZING:	to CSA G164 minimum 610 g/m2 coating thickness.
STEEL GRATING:	STEEL BARS TO ASTM A1011/A1011M
NUTS:	COMMERCIAL STEEL (TYPE 2) CROSS RODS ASTM A510. STOVER GRADE C AUTOMATION LOCKNUTS WHERE LOCKNUTS SPECIFIED, OTHERWISE ASTM A325.

2. FABRICATION SHALL CONFORM TO CSA STANDARDS CSA-S16, W59 AND W55.3.
3. ALL STEEL TO BE CLEANED AND SHOP PRIMED UNLESS NOTED. OMIT PRIMER WHERE SURFACES ARE TO BE COVERED WITH A SPRAYED ON FIRE PROOFING PRODUCT, OR WHERE SURFACES ARE TO BE FIELD WELDED, OR ENCASED IN CONCRETE.
4. SHELF ANGLES, HANGERS AND LINTELS IN EXTERIOR WALLS AND EXPOSED EXTERIOR STEEL MEMBERS SHALL BE COMMERCIAL BLAST (MECHANICALLY) CLEANED TO SSPC-SP6. ALL 'MILL COATINGS' MUST BE REMOVED BY THE STEEL FABRICATOR. FOR EXTERIOR AND EXPOSED EXTERIOR STEEL THE FINISH IS TO BE HOT DIPPED GALVANIZED. FOR INTERIOR STEEL THE FINISH IS AS PER THE ARCHITECTURAL REQUIREMENTS. REFER TO ARCHITECTURAL SPECIFICATIONS FOR SURFACE PREPARATION OF GALVANIZED MATERIALS PRIOR TO APPLICATION OF FINISHED PAINTING.

EXECUTION

1. STORE MATERIALS TO PREVENT DAMAGE AND DISTORTION.
2. CHECK SITE CONDITIONS PRIOR TO THE COMMENCEMENT OF STEEL ERECTION, TO ENSURE THAT SUPPORTING CONDITIONS ARE WITHIN SATISFACTORY TOLERANCES (BASE PLATE AND ANCHOR ROD POSITIONS). BRING ALL NON-CONFORMING CONDITIONS TO THE ATTENTION OF THE GENERAL CONTRACTOR FOR RECTIFICATION.
3. ERECTION SHALL BE CARRIED OUT BY FORCES OF THE STEEL FABRICATOR. PROVIDE ALL TEMPORARY BRACING TO KEEP THE STRUCTURE STABLE UNTIL THE ENTIRE STRUCTURE IS COMPLETE. PROTECT ALL EXISTING BUILDING COMPONENTS FROM DAMAGE. MAINTAIN SAFE WORKING PRACTICES.
4. WHERE MISCELLANEOUS STEEL ITEMS ARE INSTALLED BY OTHERS, SUCH AS BENCH BRACKETS, RAILINGS, STAIRS, PROVIDE ERECTION AND COORDINATION DRAWINGS TO OTHERS IN SUFFICIENT TIME TO ALLOW SETTING OF HARDWARE.
5. PROVIDE CONTINUOUS WELDING AT ARCHITECTURALLY EXPOSED JOINTS SUCH AS DOORJAMBS AND HEADS, AND GRIND SMOOTH. REFER ALSO TO ARCHITECTURAL REQUIREMENTS.
6. PROVIDE FRAMING FOR ALL OPENINGS IN METAL DECK GREATER THAN 450 MM SQUARE.
7. ANCHOR ROOF MEMBERS TO SUPPORTING WALL WITH MINIMUM TWO ANCHOR BOLTS 16 mm DIA. X 400 mm LONG + 50 mm END HOOKS. SET PLATE 25 mm BACK FROM EDGE OF WALL.
8. BASE PLATES SUPPORTED DIRECTLY ON GROUT ARE PREFERRED. LEVELING PLATES MAY BE USED, HOWEVER, LARGE LEVELING PLATES CAN ONLY BE USED WHERE THE FABRICATOR PROVIDES DETAILS TO ENSURE THAT THERE ARE NO VOIDS BENEATH THE PLATE, AND DETAILS HOW GAPS BETWEEN THE LEVELING PLATE AND BASE PLATE WILL BE ACCOUNTED FOR/REMEDIATED.
9. DO NOT MODIFY ANY MEMBERS IN THE FIELD UNLESS CHANGES ARE APPROVED BY THE ENGINEER. THE STEEL SUPPLIER IS TO ISSUE ENGINEERED SKETCHES AS REQUIRED.
10. WHERE STEEL GRATING IS REQUIRED, PROVIDE LOCAL BANDING IF BEARING BARS ARE NOTCHED OUT AROUND SUPPORTS AND WHERE BANDING IS CALLED FOR ON PLAN. FASTEN USING GRATEFAST LGF037 FASTENER (BY UNISTRUT), 3 PER SHEET AT EACH BEARING LOCATION, SCREW LENGTH TO SUIT GRATING DEPTH.
11. FIELD TOUCH UP ALL DAMAGED SURFACES AFTER ERECTION.
12. WHEN EVER ITEMS ARE TO BE HUNG FROM OWSJ OR TRUSSES, SECUREMENT SHALL BE FROM THE TOP CHORDS AT PANEL POINTS UNLESS OTHERWISE PERMITTED. ENSURE THAT HANGING LOADS HAVE BEEN ACCOUNTED FOR IN THE DESIGN ALLOWANCE. IF IN DOUBT, CONTACT THE ENGINEER FOR APPROVAL.

STRUCTURAL STEEL CONT'D.

GENERAL

13. INDEPENDENT INSPECTION AND TESTING: THE GENERAL CONTRACTOR IN CONSULTATION WITH THE CONSULTANTS WILL APPOINT AN INDEPENDENT INSPECTION AND TESTING AGENCY, CERTIFIED BY THE CANADIAN WELDING BUREAU TO CSA STANDARD W178_1973. THE COST OF INSPECTION SHALL BE COORDINATED BETWEEN THE GENERAL CONTRACTOR AND OWNER. WORK WILL BE INSPECTED IN THE SHOP AND WHEN ERECTED TO DETERMINE CONFORMANCE TO THE DRAWINGS AND SPECIFICATIONS. SEE ALSO THE GENERAL NOTES.
14. THE STEEL ERECTOR IS TO RECTIFY DEFICIENCIES NOTED IN ANY INSPECTION REPORTS AS SOON AS POSSIBLE AFTER NOTIFICATION, AND PRIOR TO THE COMMENCEMENT OF WORK OF OTHER TRADES, WHOSE WORK DEPENDS UPON THE INSTALLATION OF THE STRUCTURAL STEEL.
15. THE STEEL FABRICATOR IS TO PROVIDE THEIR OWN QUALITY CONTROL MEASURES AND NOT RELY SOLELY ON THE INDEPENDENT INSPECTION REPORTS PROVIDED BY THE OWNER AND GENERAL CONTRACTOR.

WOOD

GENERAL

1. CONFORM TO THE GENERAL REQUIREMENTS AND SPECIAL CONDITIONS CONTAINED IN DIVISION 1 AND RELATED SECTIONS OF THE CONTRACT SPECIFICATIONS
2. WHERE OTHERWISE NOT SHOWN ON THE PLANS, MINIMUM CONSTRUCTION IS TO BE IN ACCORDANCE WITH SECTION 9.23 OF THE NBCC FOR WOOD FRAME CONSTRUCTION.

PRODUCTS

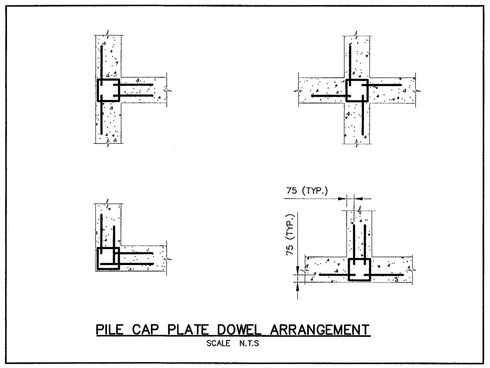
1. ALL LUMBER TO BE SPF No. 1/2 UNLESS OTHERWISE NOTED
2. LOAD BEARING COLUMNS OF 89X89 OR LARGER DIMENSION MUST BE SPF No. 1 MATERIAL.
3. ALL FRAMING LUMBER SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD GRADING RULES FOR CANADIAN LUMBER OF NATIONAL LUMBER GRADES AUTHORITY (NLGA)
4. PRE-ENGINEERED LUMBER INCLUDING WOOD I JOIST SYSTEM TO BE SUBMITTED FOR REVIEW PRIOR TO DELIVERY; ENSURE ALL DESIGNS ARE SEALED BY AN ENGINEER LICENSED IN NUNAVUT; MATERIAL TO BE WEYERHOUSE OR EQUIVALENT.

EXECUTION

1. ENGINEER TO UNDERTAKE A FRAMING REVIEW PRIOR TO ENCLOSING OF WALLS; NOTIFY ENGINEER AT START OF CONSTRUCTION AND SCHEDULE REVIEW APPROPRIATELY.
2. PROVIDE NUMBER OF PLIES AS INDICATED ON DRAWINGS.
3. PLIES OF BUILT UP BEAMS AND COLUMNS SHALL BE SECURED TOGETHER AS PER THE REQUIREMENTS OF 9.23 OF THE NBCC.
4. ALL WOOD EXPOSED TO SOIL, CONCRETE OR NOTED ON THE DRAWINGS AS 'PT' IS TO BE PRESSURE TREATED. CUT ENDS TO HAVE APPROVED TREATMENT PAINT APPLIED.
5. ENSURE FASTENERS AND METAL CONNECTORS IN CONTACT WITH TREATED WOOD PRODUCTS ARE PROTECTED SUFICIENTLY TO RESIST THE CORROSIVE PROPERTIES OF THE PRESERVATIVE MATERIALS BEING USED. USE HOT DIP GALVANIZED (MINIMUM ZINC COATING OF 600 g/M2) OR STAINLESS STEEL (TYPES 304 OR 316) FASTENERS AND CONNECTORS IN THESE APPLICATIONS.
6. ALL PRE-ENGINEERED WOOD ROOF TRUSSES MUST BE DESIGNED FOR THE LOADS NOTED AS A MINIMUM. PROVIDE BRIDGING AND BRACING AS PER FINAL REVIEWED SHOP DRAWINGS.
7. PROVIDE UPLIFT CLIPS OR APPROVED ANCHORAGE DEVICES AT THE SUPPORTING WALLS OF ALL TRUSSES, JOISTS, RAFTERS, ETC. THAT HAVE UPLIFT REACTIONS.
8. FRAMED WALLS SHALL BE ANCHORED TO THE FOUNDATION WITH A MINIMUM OF 12.7MM ANCHORS AT 1200MM C/C UNLESS OTHERWISE NOTED.

PILES

1. REFER TO DRAWINGS, FOUNDATION AND STRUCTURAL SLAB NOTES AND APPENDICED GEOTECHNICAL REPORT FOR RECOMMENDATIONS ON PILE INSTALLATION.
2. MATERIAL FOR PILES TO BE NEW HSS SHAPES CONFORMING TO CAN/CSA – G400.21 GRADE 350 W (50ksi) MATERIAL.
3. PILE CAP STEEL PLATES TO BE IN ACCORDANCE WITH CAN/CSA – G40.21 GRADE 300 W (43ksi) MATERIAL



PILE CAP PLATE DOWEL ARRANGEMENT
SCALE N.T.S

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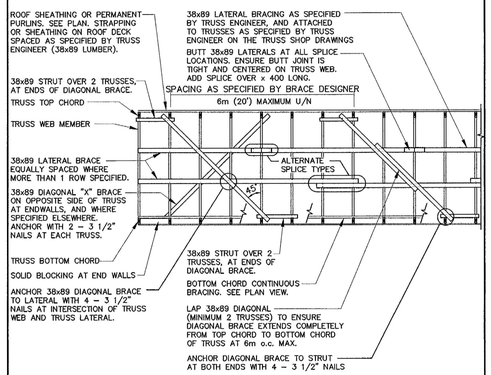
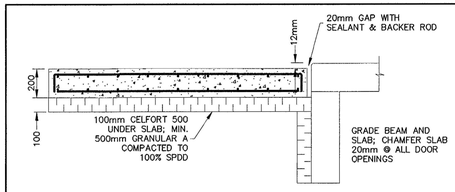
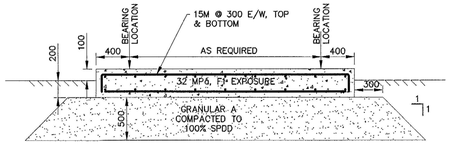
3. DIAGONAL WEB BRACING:

- SPACE 5m o.c. ACROSS BUILDING WIDTH, UNLESS CLOSER SPACING SHOWN ON TRUSS SHOP DWGS.
- BRACING SHOWN BASED ON CUMULATIVE FORCE OF 1% OF COMPRESSION LOAD IN WEB MEMBERS. VERIFY WITH SHOP DRAWINGS.

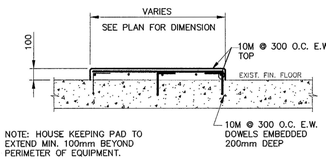




EXTERIOR APPROACH PAD (TYPICAL)
SCALE N.T.S



FUEL TANK STORAGE PAD
SCALE N.T.S



HOUSEKEEPING PAD DETAIL
SCALE N.T.S

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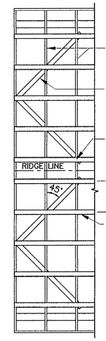
NOTE:

- FOLLOW THESE STANDARD BRACING DETAILS IN COORDINATION WITH CONTRACT DOCUMENTS, SPECIFICATIONS AND SPECIFIC BRACING REQUIREMENTS AS REQUIRED ON TRUSS SHOP DRAWINGS.
- BRACING IS REQUIRED ALONG 3 PLANES, TOP CHORD, WEB MEMBERS AND BOTTOM CHORD.
- BRACING MEMBERS TO BE 38 x 89 No.1/No.2 GRADE SPF S-DRY OR KILN DRY, U/N.
- BRACING FASTENED WITH 2-90mm (3 1/2") STD. SPIRAL ARDOX NAILS (10d) PER CONNECTION POINT U/N.
- BRACING REQUIREMENTS APPLY REGARDLESS OF TRUSS SHAPE.
- ERECTION BRACING – SEE FABRICATOR'S DRAWINGS AND GUIDELINES.
- PROVIDE DIAGONAL BRACING AT ALL DISCONTINUITIES IN LATERAL BRACING SUCH AS WHERE TRUSS TYPES CHANGE

1. TOP CHORD BRACING:

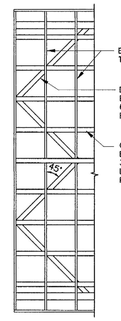
- FOR PLYWOOD SHEATHED TRUSSES, APPLY SHEATHING DURING TRUSS ERECTION OR APPLY 38 x 89 MIN PURLINS AT EACH PANEL POINT. FOR LARGE TRUSSES, MAXIMUM 3m ON CENTRE: APPLY PURLINS TO U/S TOP CHORDS IF SHEATHING INSTALLED LATER.



PLAN VIEW

2. BOTTOM CHORD BRACING:

- ALIGN BRACING LINE WITH POINT AT WHICH VERTICAL BRACING HITS BOTTOM CHORD WHERE POSSIBLE.



PLAN VIEW

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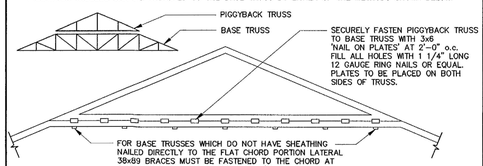
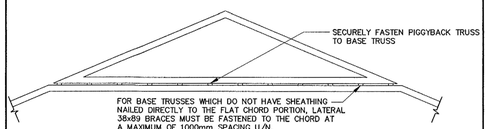
4. OPTIONAL PIGGYBACK ATTACHMENT DETAILS:

- PIGGYBACK TRUSSES CAN BE ATTACHED TO THE BASE TRUSS BY EITHER OF THE METHODS SHOWN BELOW.



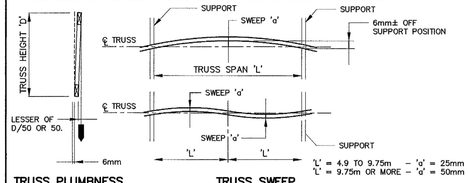
PIGGYBACK TRUSS DETAIL 1



PIGGYBACK TRUSS DETAIL 2

5. ERECTION TOLERANCE:

- WHEN SHEATHING, MAKE SURE NAILS ARE DRIVEN INTO THE TOP CHORD OF THE TRUSSES.



TRUSS PLUMBNESS TRUSS SWEEP

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3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.
4. Do not scale the drawings.

	Issue / Revision	Date
1	ISSUED FOR 66% SUBMISSION	NOVEMBER 2012
2	ISSUED FOR 99 SUBMISSION	JANUARY 2013
3	ISSUED FOR TENDER	FEBRUARY 2013
4	REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION	APRIL 2013

PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature
Date May 27/13
PERMIT NUMBER: P 535
The Association of Professional Engineers, Geologists and Geophysicists of NWT/NU

REGISTERED PROFESSIONAL ENGINEER C. V. JONES LICENSEE APPROVED NT/NU

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Client
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

Drawing Title
STRUCTURAL GENERAL REQUIREMENTS CONT'D. AND TYPICAL DETAILS

Drawn By	Checked By	Drawing No.
W. WHITEDUCK	C. JONES	S7
Scale: NTS	Project No.: 300031281	