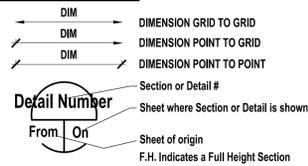


GENERAL NOTES

- DO NOT SCALE DRAWINGS.
- Design live loads shall not be exceeded at any time during construction. For concrete structures, design live loads may only be applied after concrete reaches its design strength.
- Construction loads must not be imposed on structure in excess of specified design live load. Design live loads may only be applied after concrete reaches its design strength.
- The General Contractor is to verify dimensions, elevations, slopes, details, conditions and other data noted on the structural drawings with conditions on the site, co-ordinate all dimensions with the Contract Administrator's drawings prior to construction or fabrication of any building component, and is held responsible for reporting any discrepancies that effect structural framing to the Contract Administrator before proceeding with the work. Variations and modifications to work shown on the structural drawings shall not be carried out without written permission from the Contract Administrator.
- Modifications, alterations or substitutions must be authorized in writing by the Contract Administrator.
- The General Contractor shall locate all existing site services prior to construction.
- For openings in slabs, floor, walls, roof, etc. refer to architectural, mechanical, structural and or other pertinent drawings.
- Location of construction joints not indicated on plans is the responsibility of the general Contractor but approval must be obtained from the Contract Administrator before proceeding.
- The General Contractor shall be responsible for the design and installation of all necessary shoring, bracing and form work. Form work for new construction shall be bridged over existing services.
- The structure and grade beams shall be braced in all directions to safely withstand all lateral forces which may be encountered during erection. The bracing shall remain in place until all permanent bracing, framing, cladding and backfill are in place.
- All codes referenced in these notes shall be of the latest applicable revision.
- All beams, angles and miscellaneous metals indicated on architectural drawings but not shown on structural drawings, shall be included in the Bid price. The General Contractor is responsible for confirming sizes and locations of these members with the Contract Administrator prior to Bid Opportunity closing.
- Do not cut or drill any openings into structural members without obtaining written permission from the Contract Administrator.
- The General Contractor shall retain a manufacturer's representative to provide onsite anchor installation training for all of their products specified. The Contract Administrator of record must receive documented confirmation that the General Contractors personnel are trained prior to the commencement of installing anchors.

DIMENSIONS & SYMBOLS



DESIGN SPECIFICATIONS

- The building is designed in accordance with the 2011 edition of the Manitoba Building Code of Canada,
 - Snow (Roof) 0.8(Ss) + (Sr) = 1.72 kPa (35.9 psf)
 - Wind q(150) - 0.45 kPa (9.4 psf)

REINFORCING STEEL

- Reinforcing steel shall be new billet, deformed bars in accordance with CSA Standard CAN/CSA-G30.18-M92 minimum yield strength to be 400 MPa, except 10M bars for stirrups and column ties may be 300 MPa.
- Reinforcing steel shall be detailed in accordance with the latest RSIC Reinforcing Steel Manual of Standard Practice.
- Lap top bars at centre span and bottom bars over supports.
- All reinforcing to be held in place and tied by the use of proper accessories such as hi-chairs, spacers, etc., to be supplied by the reinforcing steel fabricator.
- Reinforcing in concrete beams/walls and masonry bond beams to be bent 24" (600mm) around corners or use 3'-0" x 3'-0" (900mm x 900mm) corner bars.
- Frame all openings in concrete beams, walls and/or slabs with 2-20M bars (extra) all four sides. Extend bars 24" (600 mm) beyond edges of openings except as noted.
- Submit shop drawings which clearly indicate bar sizes, grade, spacing, hooks, bends, and supporting/spacing devices, etc., for review to the Contract Administrator prior to fabrication of the reinforcing steel.
- Pit Walls/Slabs shall be 8" (200mm) thick reinforced with 15M @ 12" (300mm) o.c. each way at center unless otherwise shown.
- Housekeeping pads shall be a minimum of 4" (100mm) thick and reinforced with 10M @ 12" (300mm) o.c. each way at centre unless otherwise shown.
- Prior to placing concrete, ensure all reinforcing steel is clean, free of loose scale, rust, mud, oil or other foreign material which would reduce bond.
- Heating, quenching and bending of reinforcing steel on the site is not allowed.
- Splices at points of maximum tensile stress shall be avoided wherever possible. Such splices, where used, shall be approved by the Contract Administrator, the minimum lap shall be 48 bar diameters.
- Continuous and temperature reinforcing bars shall be lapped 24 bar diameters, or 18" (450mm) minimum at splice or at corners. Terminate continuous bar at non-continuous ends with standard hook.
- Minimum clear distance between parallel bars shall be greater than the largest of the following:
 - 1.4 times bar diameter.
 - 1.4 times maximum size of aggregates.
 - 1 3/16" (30mm) minimum.
- Minimum concrete cover for reinforcing:

Exposure Condition	Exposure Class		
	N	F-1, F-2, S-1, S-2	C-1, C-2, C-3, A-1, A-2, A-3
PILES AND CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.	--	75mm	75mm
BEAMS	30mm	40mm	60mm
SLABS	20mm	40mm	60mm

CONCRETE

- Concrete, as specified in A23.1-09, shall have the following properties.

USE	EXPOSURE CLASS	CEMENT TYPE	MINIMUM COMPRESSIVE STRENGTH	MAXIMUM WATER TO CEMENT RATIO	AIR CONTENT (%)	SLUMP	MAXIMUM AGGREGATE SIZE
PILES	S-2	HS	32 MPa AT 56 DAYS	0.45	4 - 7	90 mm	20 mm
GRADE BEAMS	F-2	GU	25 MPa AT 28 DAYS	0.55	4 - 7	90 mm	20 mm
SLABS (STRUCTURAL OR ON GRADE)	N	GU	25 MPa AT 28 DAYS	0.55	NONE	90 mm	20 mm
EXTERIOR SIDEWALKS, CURBS, GUTTERS, SPLASH PADS & SUMP PITS	C-2	GU	32 MPa AT 28 DAYS	0.45	5 - 8	90 mm	20 mm
MASONRY GROUT / CORE INFILL	N	GU	20 MPa AT 28 DAYS	N/A	NONE	150 mm	10 mm

- Construction joints shall be made and located so as not to significantly impair the strength of the structure. The location of construction joints shall be approved by the Contract Administrator. Slab and beam construction joint details shall be approved by the Contract Administrator.
- Provide 6" (150mm) plastic wrapped cardboard void form below all beams, walls and pile caps.
- Place concrete as a continuous operation stopping only at construction joints. Construction joints shall be adequately dowelled and keyed. If not provided as part of this drawing set, details and locations of construction joints shall be provided by the General Contractor and reviewed by the Contract Administrator.
- Reinforcing steel must be reviewed by the Contract Administrator prior to placing concrete.
- The General Contractor shall notify the Contract Administrator at least 48 hours (72 hours for out-of-town projects) prior to all concrete pours.
- Fins on concrete surfaces shall be removed. Honeycombed or otherwise defected concrete shall be removed sufficiently to expose sound concrete and shall be repaired as directed by the Contract Administrator.
- Timing for removal of form work to be based on strength of concrete, as determined by the testing of field cured concrete cylinders. Do not remove form work from footings before concrete has reached 50% of its design strength. For walls and columns not supporting load, remove at 60% of design strength. For suspended structural slabs, form work may be removed at 80% of design strength, provided the slab is re-shored until full strength is reached.
- Unless noted otherwise, General Contractor to test concrete for each day's concreting and/or every 40 cubic meters each day concreting. Forward test results to the Contract Administrator.
- All freshly placed and consolidated concrete shall be cured in accordance with CSA standard A23.1, latest edition.
- All freshly placed, consolidated concrete shall be suitably protected during the curing period against damage from adverse weather conditions such as winds, precipitation and extreme temperatures in accordance with CSA standard A23.1, latest edition.

CAST IN PLACE FRICTION PILES

- The General Contractor shall confirm the location of sub-grade services prior to commencing drilling for piles.
- Piles shall be cast-in-place concrete friction piles to diameters and lengths indicated on the plan.
- Piles have been designed on the basis of shaft adhesion values shown below. Variance in soil conditions from the above shall be reported to the Contract Administrator before proceeding.
- Pile reinforcing for piles located in unheated areas shall extend the full length of the pile.
- The upper 10'-0" (3000mm) of all piles shall be consolidated with a mechanical vibrator.
- Pile installation shall be provided under the full time inspection of a qualified Contract Administrator selected by the Structural Consultant.
- Maintain accurate record of each pile. Submit a copy of this record to the Contract Administrator.
- A copy of the geotechnical Investigation report is available and included in the project specifications.
- Full-length steel sleeves should be maintained on site and utilized as required during construction to maintain pile holes in a clean dry state.

DESIGN PARAMETERS FOR C.I.P. CONCRETE FRICTION PILES	
0m (ft) to 3.0m (10ft) -0 kPa (PSF)	
3.0m (10 ft) to 10.5m (34.50 ft) -120 kPa (417 PSF) ULS	: [16.5 kPa (345 PSF) SLS]
10.5m (34.5 ft) to 13m (42.75 ft) -114 kPa (292 PSF) ULS	: [11.5 kPa (240 PSF) SLS]

FLOOR SLAB SUPPORTED ON GRADE

- Remove all top soil and soils containing organics. General Contractor is to refer to geotechnical report, if available, for indication of depths of unsuitable soil and is to remove soft or weak areas to competent material. All of this work is to be carried out under the direct instructions of the Geotechnical Engineer.
- Proof roll sub-grade as directed by the Geotechnical Engineer.
- A Geotechnical Engineer must provide a letter of certification with an engineer's seal, stating that the granular layer and sub-base preparation has been installed in accordance to their recommendations and requirements. Lavergne, Draward, & Associates Inc. will not certify these items. The letter of certification is to be forwarded to the General Contractor, Contract Administrator and City of Winnipeg.
- Prepare granular layer and sub-base as per Geotechnical Engineers recommendation and geotechnical report.
- Slab movement/cracking:
 - Since the stability of a slab-on-grade is entirely dependent on the nature of the soil upon which it is supported, some movement resulting in displacement and cracking of the slab should be expected.
 - Accurate limits defining the amount and frequency of movement cannot be given due to unknown and/or uncontrollable factors such as soil moisture content, water table, silt pockets, etc. The City of Winnipeg shall assume all risks associated with this system.

MASONRY

- Masonry work shall conform to CSA Standards S304.1 and A371.
- Masonry work shall comply with S304.1-04 masonry design for buildings (limit states design) including design testing and workmanship. Refer to S304.1 for material specifications.
- All concrete masonry shall be standard block for all walls, U/N on drawings. Unit compressive strength to be 15 MPa (Design value for grouted masonry is 7.5 MPa). Mortar shall be Type S. Provide durawall or equal every second course.
- Provide a minimum 1" (25 mm) joint at the top of masonry partition walls to allow for floor/roof deflection.
- Provide 1 1/2"x8"x18" (40mmx200mmx3mm) masonry strap anchors @ 16" (400mm) o.c. vertical at all columns that are within masonry walls.
- Provide block wall control joint at location shown on architectural drawings. Maximum spacing to be at 315" (8m). Reinforce one cell on either side of joint with 2-15M vertical and fill with concrete.
- Vertical core fills to be cast in lifts of 4'-0" (1200mm) maximum. Vertical reinforcing to have a maximum length of 6'-8" (2000mm) without splicing. Lap splice 10M bars: 18" (450mm), 15M bars: 26" (650mm), 20M bars: 36" (900mm).
- Also refer to architectural drawings for specialty blocks/bricks e.g. acoustic blocks/giant bricks etc.
- General Contractor to be responsible for temporary bracing of all masonry components until all masonry is self supporting or necessary structural elements are in place.
- For vertical core fills and reinforcement see plans. Unless otherwise noted on plans provide 1 void core fill complete with 1-15M vertical @ 32" (800mm) o.c. Provide minimum of 2 void core fill with 1-15M each void at all ends of wall, each side of wall openings and every corner of walls. Provide minimum of 2 void core fill at W360 or smaller beam, 3 void core fill at W410 and W460 beams, 4 void core fills at W530 beams and 5 void core fill at W610 beams U.N.O. provide 2-15M vertical each void. Provide 3 void core fills, 2-15M each void at wall openings of 72" (1800mm) to 96" (2400mm) and provide 4 core fills, 2-15M each void at wall openings of 96" (2400) to 120" (3000) U.N.O. on the drawings. Provide matching dowels x 36" (900mm) long at foundation, project 18" (450) above concrete.
- Fully grout bottom three courses.
- At top of all walls and below roof & floors, provide 1 course bond beam with 1-15M horizontal c/w knockout blocks. Fill with concrete.
- MASONRY REINFORCED BLOCK LINTEL SCHEDULE U.N.O. ON THE DRAWINGS:
 - Span up to 36" (915mm), 1 course 8" (200) high, 1-10M top & bottom
 - Span 36" (915) to 72" (1830), 2 course 16" (400) high, 1-15M top & bottom.
 - Extend reinforcing cage at least 16" (400) (2 voids) past openings. Provide minimum 20 cover to reinforcing. Provide Min. 8" (200mm) bearing each side of opening.
- LOOSE LINTEL ANGLES FOR 3 1/2" (90) BRICK:
 - Span L1 clear span - 0 to 52" (1300mm): L 3 1/2"x 3 1/2"x 1/4" (L 90mmx90mmx6.4)
 - Span L2 clear span - 52" (1300mm) to 72" (1800mm): L 5"x 3 1/2"x 5/16" (127mmx90mmx7.9mm)
 - Span L3 clear span - 72" (1800mm) to 84" (2100mm): L 5"x 3 1/2"x 3/8" (152mmx90mmx10mm)
 - Extend loose lintel angle 8" (200mm) past openings, typical.

OPEN-WEB STEEL JOISTS (O.W.S.J.)

- Design and fabricate steel joists in accordance with drawings and CSA Standards CAN/CSA-S16.1 & S136. Verify all drawings/site dimensions and conditions prior to fabrication.
- Joist members shall be fabricated using structural steel conforming to CSA Standard CAN/CSA-G40.21, Grade 300W (minimum).
- Bridging, bearing plates and angles shall be of structural steel conforming to CSA Standard CAN/CSA-G40.21 Grade 300W (minimum) unless noted otherwise.
- Welding shall be performed by qualified welders fully approved for structural welding by the Canadian Welding Bureau in accordance with CSA Standard W47.1 and W59.
- Minimum bearing length of joists to be 2 1/2" (64mm) on steel beams.
- Strut top and bottom chords of joists at all columns.
- Weld bridging to joists, steel beams and steel plates fastened to walls.
- Unless noted otherwise on plans provide 3x3x3/8" (75x75x10) angle frame from joist to joist on each side of all steel deck openings over 16" (450mm), and C5x6.7 (C130x10) frame at all mechanical and electrical units that sit on or hang from the roof or floors.
- Joist supplier to refer to mechanical and all other pertinent drawings for locations and weights of equipment supported by joists.
- Joist deflection due to live load shall not exceed 1/360 of the span.
- Fabricate all joists with camber to offset the deflections due to dead load.
- Submit shop drawings which clearly indicate joist spacing, depth, loading, camber, bearing, anchorage details, framed openings, accessories, etc., under the seal of a Professional Engineer registered in the project Province, to the Contract Administrator for approval prior to fabrication.
- Design joists to accommodate mechanical ducts which are located within the joist space.
- Provide Ceiling extensions where required by Contract Administrator.
- Do not connect any members to chords of joist between panel points unless chords have been designed for extra stress or an additional diagonal has been inserted at the point of connection.
- Joist to be designed for dead load of masonry walls as indicated on Arch. dwgs. Use masonry wall line load of 8.2 kN/m for walls up to 12' (3.6m) high. Calculate dead load of wall over 12', (3.6m).
- Professional Engineer whose seal is on shop drawings shall review construction and provide a letter certifying that connections have been provided in accordance with the approved shop drawings.
- All OWSJ to have 4" nominal seat.
- All OWSJ to be pre-cambered for dead load.
- All roof OWSJ to be designed for a minimum net uplift of 0.5 kPa.

STRUCTURAL STEEL

- Fabricate & erect structural steel to CSA Standard CAN/CSA-S16-09
- Structural steel shapes and plates shall conform to CSA Standard CAN/CSA-G40.21, Grade 350W and CAN/CSA-G40.21, Grade 350W for H.S.S., Class C.
- All welding shall be performed by qualified welders fully approved for structural welding by the Canadian Welding Bureau in accordance with CSA Specifications W47 and W59.
- Unless shown otherwise on the Drawings, connect all flexural members (beams, channels, etc.) at each end for one half of the total uniformly distributed factored load of the laterally supported beam, in addition to the transfer of factored moments, where shown on the Drawings.
- Splicing of members not permitted unless otherwise noted.
- Where beams are continuous over supports, no holes permitted in top flange. Provide 2-3/8" (10mm) welded web stiffener plates each side of beam, aligned with column walls.
- Column base and cap plates shall be welded to columns. Provide 3/4" (20mm) thick cap plate c/w 4-3/4"Ø (20mm) bolts for all columns supporting cantilevered beams.
- Structural steel erector shall supply and install all temporary guying and bracing necessary to provide stability for the structure as a whole. These shall remain in place until floor slabs are well cured, steel roof deck is fully welded and/or permanent bracing is installed.
- Steel stairs, handrails, guardrails shall be designed by others. Fabricator shall submit shop drawings under the seal of a Professional Engineer registered in the project Province, to the Contract Administrator for approval prior to fabrication.
- Structural Steel supplier shall submit shop drawings bearing the seal of a Professional Engineer in the project Province showing all design and fabrication details of connections to the Contract Administrator for review prior to fabrication.
- Pipe sections to ASTM A53, minimum yield point 241 MPa (35 ksi).
- Bolts, nuts, and washers to ASTM A325, minimum bolt diameter 3/4" (20mm).
- Anchor bolts to ASTM A307.
- Welding of reinforcing bars to CSA W186-M1990.
- Primer to conform to the requirements of CGSB or CISC/CPMA standards.
- Grout bed under base plates to be 35 MPa non shrink grout.
- All bolted connections shall have a minimum of two bolts in each connected piece and be designed with bearing-type connections with threads included in shear plane, unless noted otherwise.
- Unless noted otherwise on plans provide 3x3x3/8" (75x75x10) angle frame from joist to joist on each side of all steel deck openings over 16" (450mm), and C8x11.5 (C200x17) frame at all mechanical and electrical units that sit on or hang from the roof or floors.
- Provide 6"x6"x1/2" (150x150x13) clip angles x 12" (300mm) long at hollow core column openings. Co-ordinate with hollow contractor to ensure adequate bearing.
- All steel shall receive a shop coat of primer except surfaces to be concreted, welded, light zinc coated or galvanized.
- Clean all field welds after erection and touch up all unpainted surfaces with one coat of primer paint to match shop coat.
- There shall be no cutting of the structural steel members for the work of other trades without prior written approval of the Contract Administrator.
- Professional Engineer whose seal is on shop drawings shall review construction and provide a letter certifying that connections have been installed in accordance with the approved shop drawings.
- All exposed steel to be galvanized.

STEEL DECK

- Unless otherwise noted, Steel Deck shall be 1 1/2" X 22 ga. (38mmx 22 ga.) thick non-cellular, flutes at 6" (150mm) o.c. (minimum). Floor deck to have deformed webs for composite action.
- Provide Zinc-iron alloy (ZF) coated sheet steel to ASTM/A653/A653M Structural quality grade Z30 with ZF75 coating. Z275 where galvanized steel deck is specified on drawings.
- Supply all closures, cover plates and accessories.
- Design fabrication & installation of the steel deck to conform to CSA Standard S136 and the CSSBI Code of Practice.
- Welding Shall Conform to CSA Standard W59.
- Erector to be Certified to division 1 or 2.1 of CSA Standard W47.1.
- Mechanically clinch side laps at 12" (300mm) o.c. maximum. Lap end joints minimum 2" (50mm) Provide 3/4" (20mm) diameter fusion welds at 12" (300mm) o.c. at all supports. Minimum bearing on supports to be 1 1/4" (30mm). Spot prime welds immediately after welding.
- Steel deck supplier shall submit shop drawings bearing the seal of a Professional Engineer in the project province indicating
 - deck plan, profile, dimensions, base steel thickness, metallic coating designation, connections to supports and spacings, projections, openings, reinforcement details and accessories.
 - details of shoring of steel deck, such as location, time and duration of placement and removal of shoring for concrete fill decks.
- Install deck continuous over at least three spans except where otherwise pre-approved by the Contract Administrator.
- Paint all welds with an approved zinc-rich paint.
- Deck gauges shown on plan are suggested only. Supplier to provide deck gauge appropriate for the loadings shown. Deck gauge is to be increased at drift load and other high load areas as required.
- Provide steel wedges in deck flutes over joists for mechanical roof top units with wood sleepers.

STEEL STUDS

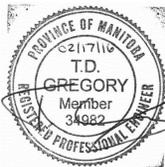
- Studs are designed in accordance with the requirements of the National Building Code of Canada CAN/CSA-S136-07 Cold Formed Steel Structural Members.
- Stud steel to meet the requirements of ASTM A446 Standard Specification for sheet steel, zinc coated (galvanized) by the hot dip process.
- Grades are as follows:
 - Grade A, 33 ksi (228 mPa) min. yield, for 0.048" (1.22mm) material and thinner
 - Grade D, 50 ksi (345 mPa) min. yield, for 0.060" (1.52mm) material and thicker
- All screws shall be manufactured by "Grabber Construction Products" or "Hilti Products". All screws to be as follows:
 - "Grabber Construction Products" "Hilti Products"
 - #10 Waferhead Drivall Self Drilling #10 Kwik-Pro Self Drilling (PWH - Phillips Waferhead)
 - #14 Hex Head Drivall Self Drilling #14 Hex Washer Head (HWH) Self Drilling
 Note: All screws to be installed in accordance to manufacturers specifications.
- All power actuated fasteners supplied by Hilti. Install in accordance with manufacturers specifications.
- Provide 18 ga. internal bridging complete with clip angle at 1220mm (4'-0") on centre.
- Provide slip track at top of walls where required to accommodate vertical deflection.
- Location of stud walls as per architectural and structural drawings.
- Design loads are as follows:
 - Wind Load q (150) = 0.45 kPa (9.4 psf)
- Drawings are to be read in conjunction with architectural & structural dwgs. Any discrepancies shall be reported to Contract Administrator.
- Rough opening dimensions of door & window openings to be confirmed with Architectural/Structural drawings.
- Steel stud material to be minimum 20ga or as designed by others.
- Steel stud details are a minimum, to be confirmed by steel stud designer.
- Submit shop drawings which clearly indicate stud depth, gauge, loading, section properties, location, connection details, framed openings, accessories, etc., under the seal of a Professional Engineer registered in the project Province, to the Contract Administrator for approval prior to fabrication.

THE CONTRACTOR IS TO VERIFY DIMENSIONS AND DATA NOTED ON THE STRUCTURAL DRAWINGS WITH CONDITIONS ON THE SITE. CO-ORDINATE ALL DIMENSIONS WITH THE ARCHITECTURAL DRAWINGS, AND IS HELD RESPONSIBLE FOR REPORTING ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR BEFORE PROCEEDING WITH THE WORK. VARIATIONS AND MODIFICATIONS TO WORK SHOWN ON THE STRUCTURAL DRAWINGS SHALL NOT BE CARRIED OUT WITHOUT WRITTEN PERMISSION FROM THE CONTRACT ADMINISTRATOR. THIS DRAWING IS NOT TO BE SCALED. ALL BEAMS, ANGLES AND MISCELLANEOUS METALS INDICATED ON ARCHITECTURAL, MECHANICAL AND/OR ELECTRICAL DRAWINGS BUT NOT SHOWN OR NOTED ON STRUCTURAL DRAWINGS, SHALL BE INCLUDED IN THE BID PRICE. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING SIZES AND LOCATIONS OF THESE MEMBERS PRIOR TO BID OPPORTUNITY CLOSING.

1 16.02.17 ISSUED FOR CONSTRUCTION

No. DATE REVISION / ISSUANCE

Seal



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Project

TRANSCONA CENTENNIAL POOL
PHASE 1B
1101 WABASHA STREET

Sheet Title

GENERAL NOTES

Project No.

Sheet

15281

Date

FEB. 17, 2016

S1.1