FOUNDATIONS

1. ALL FRICTION PILES ARE DESIGNED ON AN ASSUMED FACTORED SLS SKIN FRICTION OF 250 PSF AND FACTORED ULS SKIN FRICTION OF 350 PSF. EFFECTIVE LENGTH OF FRICTION PILES IS TOTAL LENGTH AS SHOWN ON PLAN MINUS 10'-0" . THE CONTRACTOR IS TO CONTACT THE GEOTECHNICAL ENGINEER TO COORDINATE THE REQUIRED SITE VISIT DURING PILING.
2. FRICTION PILE REINFORCING TO BE 20'-0" LONG UNLESS NOTED IN PLANS; 10M RINGS AT 48" ON-CENTRE AND 3-10M RINGS AT 6" ON-CENTRE AT TOP. EXTEND VERTICAL PILE REINFORCING 18" INTO BEAMS OR WALLS, BEND AS REQUIRED. PROVIDE DOWELS IN PLACE OF VERTICAL REINFORCEMENT EXTENSION AS REQUIRED. PILE REINFORCING TO BE 5-10M FOR 16 IN. DIAMETER PILES.
3. PROVIDE 10 MIL POLYETHYLENE WRAPPED SONOTUBE, GREASED COMPLETELY ON INSIDE FOR TOP 6'-0" OF ALL PILES.

CAST-IN-PLACE CONCRETE

I CONCRETE

1. ALL CONCRETE IS TO BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF CSA-A23.1-14 "CONCRETE MATERIALS AND METHODS OF CONCRETE CONSTRUCTION" AND CSA-A23.2-14 "METHOD OF TEST FOR CONCRETE".
2. PROVIDE CERTIFICATION THAT MIX PROPORTIONS SELECTED WILL PRODUCE CONCRETE OF QUALITY, YIELD AND STRENGTH AS SPECIFIED IN CONCRETE MIXES, AND WILL COMPLY WITH CSA-A23.1. CERTIFICATION LETTER TO BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA.
3. PROVIDE CERTIFICATION THAT PLANT, EQUIPMENT, AND MATERIALS TO BE USED IN CONCRETE COMPLY WITH REQUIREMENTS OF CSA-A23.1. CERTIFICATION LETTER TO BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE PROVINCE OF MANITOBA.
4. CONCRETE PROPERTIES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON THE DRAWINGS.

PILES AND PILE CAPS: 32 MPA MIN. AT 56 DAYS
CLASS OF EXPOSURE: S-2
ENTRAINED AIR/CATEGORY: 2 (4% TO 7%)
CEMENT TYPE: HS OR HSB
AGGREGATE: MAX. 20 MM
CURING TYPE: TYPE 1 - BASIC

UNLESS INDICATED OTHERWISE THE CONTRACTOR SHALL SPECIFY CONCRETE SLUMP APPROPRIATE WITH PLACEMENT METHODS AND SITE CONDITIONS. THE CONTRACTOR SPECIFIED SLUMP MUST BE SHOWN ON THE CERTIFICATION LETTER AND CONCRETE DELIVERY TICKET.

5. UNLESS NOTED OTHERWISE CONCRETE CURING TO CONFORM TO THE LATEST EDITION OF CSA-A23.1-14 AS FOLLOWS:
   A) TYPE 1 - BASIC: 3 DAYS ≥ 10°C AND FOR A TIME NECESSARY TO ATTAIN 40% OF THE SPECIFIED STRENGTH.
   B) TYPE 2 - ADDITIONAL: 7 DAYS ≥ 10°C AND FOR A TIME NECESSARY TO ATTAIN 70% OF THE SPECIFIED STRENGTH.
   C) TYPE 3 - EXTENDED: 7 DAYS WET CURING ≥ 10°C.
6. AIR ENTRAINING ADMIXTURES SHALL CONFORM TO THE REQUIREMENTS OF ASTM C260/C260M-10A "STANDARD SPECIFICATION FOR AIR ENTRAINING ADMIXTURES FOR CONCRETE". SUPERPLASTICIZING ADMIXTURES SHALL CONFORM TO ASTM C494/C494M "STANDARD SPECIFICATION FOR CHEMICAL ADMIXTURES FOR CONCRETE" OR ASTM C1017/C1017M "STANDARD SPECIFICATION FOR CHEMICAL ADMIXTURES FOR USE IN PRODUCING FLOWING CONCRETE" WHEN FLOWING CONCRETE IS APPLICABLE. AIR ENTRAINED ADMIXTURES TO HAVE A DURABILITY FACTOR GREATER THAN 75, WHEN TESTED TO ASTM STANDARDS C666/C666M PROCEDURE A. SPACING FACTOR FOR ANY AIR ENTRAINING ADMIXTURE MUST BE 0.17MM OR LESS WHEN TESTED IN ACCORDANCE WITH ASTM C457 "STANDARD TEST METHOD FOR MICROSCOPICAL DETERMINATION OF PARAMETERS OF THE AIR-VOID SYSTEM IN HARDENED CONCRETE".

II REINFORCING STEEL

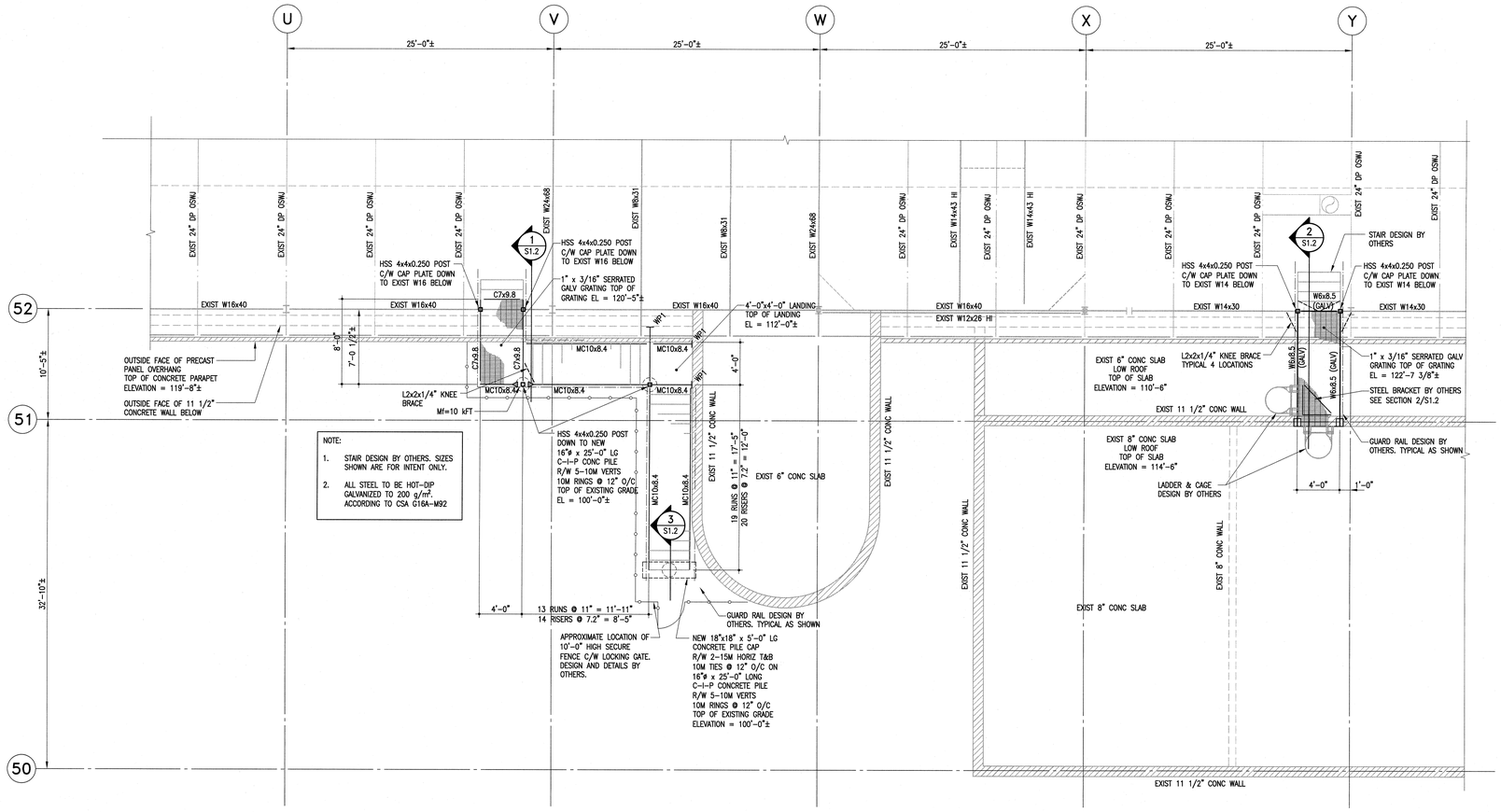
1. ALL REINFORCING STEEL TO BE CSA-G30.18M-09 GRADE 400R DEFORMED BARS EXCEPT COLUMN TIES AND BEAM STIRRUPS WHICH SHALL BE GRADE 400W STEEL. ALL REINFORCING IS TO BE DETAILED IN ACCORDANCE WITH THE LATEST EDITION OF THE REINFORCING STEEL INSTITUTE OF CANADA - MANUAL OF STANDARD PRACTICE, EXCEPT OTHERWISE NOTED.
2. WELDED STEEL WIRE MESH SHALL BE TO ASTM A185/A185M-07, 400 MPA YIELD, FLAT SHEETS ONLY.
3. REINFORCING STEEL COVER IS TO CONFORM TO CAN/CSA A23.3-14 "DESIGN OF CONCRETE STRUCTURES FOR BUILDINGS" AS FOLLOWS:

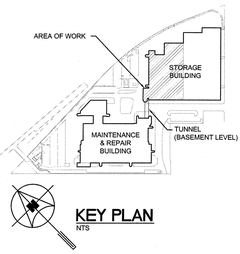
PILES AND PILE CAPS:
EXPOSURE CLASS: S-2 3 IN. TO TIES.

4. 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. HI-CHAIRS TO HAVE 4 LEGS AND TO BE STAPLED OR NAILED TO THE FORMWORK.

III FORMWORK

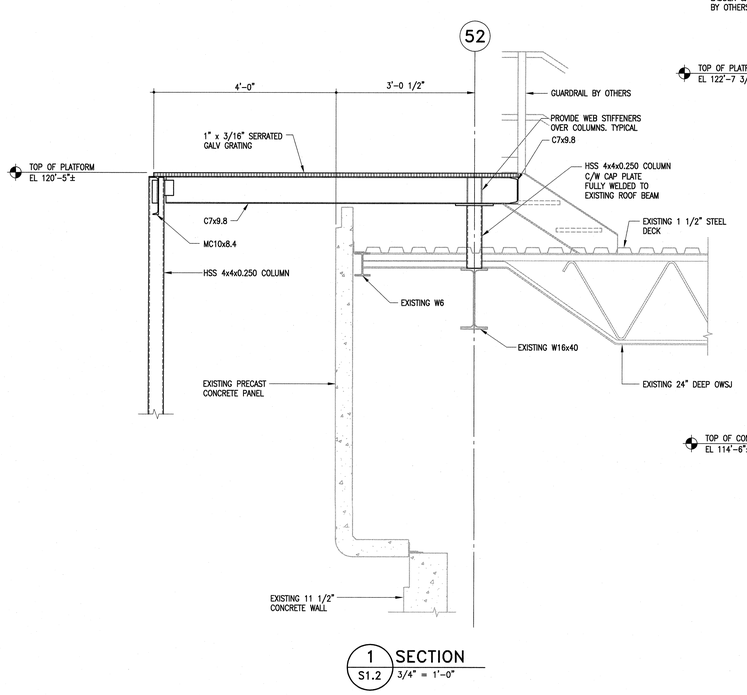
1. SHEARMAT OR APPROVED CARDBOARD VOIDFORM WITH A MIN. DEPTH OF 6 IN. SHALL BE USED AS THE BOTTOM FORM FOR PILE CAPS. SELECT AND INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. ACCESSORIES SUCH AS HI-CHAIRS, SPACERS, ETC. SHALL BE SUPPORTED BY PADS OF PLYWOOD OR TEMPERED HARDBOARD TO PREVENT PUNCTURING THE VOIDFORM.



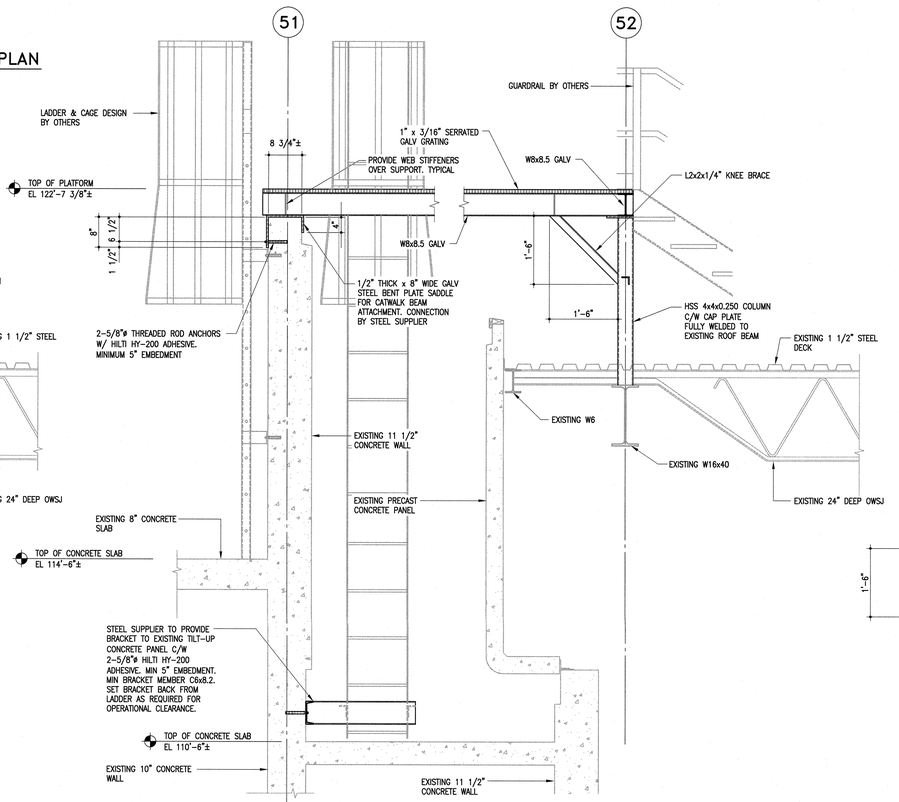


KEY PLAN
NTS

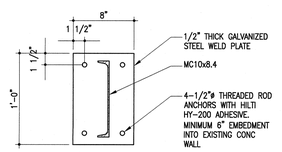
PARTIAL ROOF FRAMING PLAN
3/16" = 1'-0"



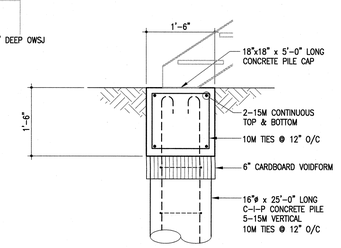
1 SECTION S1.2 — 3/4" = 1'-0"



2 SECTION S1.2 — 3/4" = 1'-0"



A DETAIL WP1 S1.2 — 1 1/2" = 1'-0"



3 SECTION S1.2 — 3/4" = 1'-0"

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2016-1162
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CONSULTING STRUCTURAL ENGINEERS

NO.	Description	BY	DD/MM/YY
5			
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0	ISSUED FOR CONSTRUCTION	JAL	21/08/17

APEGM Certificate of Authorization — Crosier Kilgour & Partners Ltd. — No. 235 Date: 2017-08-21

PROVINCE OF MANITOBA — H. JAL LOUKA — Member 21527 — REGISTERED PROFESSIONAL ENGINEER

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Project Title
CITY OF WINNIPEG FORT ROUGE TRANSIT BASE - STORAGE TRACK 1-12 VENTILATION UPGRADE
WINNIPEG MANITOBA

Drawing Title
CATWALK & STAIR FRAMING PLANS & SECTIONS

Drawn By	Checked By	Approved By
JLP	JAL	H.L.
Scale: AS SHOWN	Date: 2017-08-21	Project No.: 16-149-01
Revision Number: 0	Drawing Number: S1.2	Sheet Order: 2 OF 3