

# WINNIPEG TRANSIT : GARAGE BUILDING CENTRAL TRENCH AND ADJACENT SLAB REPAIRS WINNIPEG, MANITOBA

## LIST OF DRAWINGS

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### GENERAL NOTES

#### GENERAL

- DRAWINGS ARE PREPARED BASED ON THE BEST AVAILABLE INFORMATION. REVIEW ALL SITE CONDITIONS PRIOR TO PROCEEDING WITH WORK. ADVISE CONTRACT ADMINISTRATOR OF ANY DISCREPANCIES IN EXISTING CONSTRUCTION'S CONFIGURATION, SIZES, LOCATIONS, ETC. WHERE DISCREPANCIES ARE FOUND, DO NOT PROCEED WITHOUT DIRECTION.
- DO NOT SCALE DRAWINGS. ALL DIMENSIONS ARE TO BE VERIFIED ON SITE PRIOR TO CONSTRUCTION. DIMENSIONS SHOWN TRANSCRIBED FROM ORIGINAL DRAWINGS. ONUS REMAINS ON CONTRACTOR TO SITE VERIFY ALL DIMENSIONS.
- PROVIDE SUITABLE AND SAFE MEANS OF GAINING ACCESS TO ALL WORK AREAS TO ENABLE THE WORKS DESCRIBED IN THE SPECIFICATIONS AND SHOWN ON THE DRAWINGS TO BE CARRIED OUT AND THE CONTRACT ADMINISTRATOR TO CARRY OUT THE NECESSARY INSPECTIONS.
- COORDINATE WITH CITY OF WINNIPEG OPERATIONS. DO NOT BLOCK CORRIDORS RESULTING IN NO ACCESS FOR CITY OF WINNIPEG OPERATIONS.
- ALL NECESSARY MEASURES SHALL BE TAKEN TO PROVIDE PROTECTION TO OTHER TRADES AND CITY OF WINNIPEG OCCUPYING AND WORKING WITHIN THE BUILDING.
- CONTRACTOR SHALL MAKE GOOD OR RECTIFY ANY DAMAGE CAUSED TO THE STRUCTURE OR ITEMS DESIGNATED TO REMAIN.

#### CONCRETE REPAIRS

- THE CONTRACTOR WILL BE REQUIRED TO FURNISH ALL MATERIALS, LABOUR, ACCESS, AND EQUIPMENT REQUIRED TO COMPLETE REPAIR WORK IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.
- PROVIDE SUITABLE AND SAFE MEANS OF GAINING ACCESS TO ALL REPAIR AREAS TO ENABLE THE WORKS DESCRIBED IN THE SPECIFICATIONS AND SHOWN ON THE DRAWINGS TO BE CARRIED OUT, AND THE CONTRACT ADMINISTRATOR TO CARRY OUT THE NECESSARY INSPECTIONS.
- THE LOCATION NUMBER AND EXTENT OF DEFECTS ARE TO BE DETERMINED ON-SITE BY VISUAL AND HAMMER SOUNDING SURVEY
- ANY AREAS BROKEN OUT, CORED OR DRILLED FOR THE PURPOSES OF TESTING OR SAMPLING SHALL BE MADE GOOD.
- THE POWER AND SIZE OF THE EQUIPMENT USED FOR CONCRETE REMOVAL SHALL BE APPROPRIATE TO THE SCALE OF THE INDIVIDUAL REPAIRS AND SHALL BE SUBJECT TO THE APPROVAL OF THE CONTRACT ADMINISTRATOR. PARTICULAR CARE SHALL BE TAKEN THAT DAMAGE IS NOT CAUSED TO CONCRETE SUBSTRATE AND REINFORCING STEEL WHICH IS TO REMAIN IN PLACE.
- PRIOR TO INSTALLATION OF FORMWORK OBTAIN CONTRACT ADMINISTRATOR'S APPROVAL OF PREPARED SURFACE AND ANY SUPPLEMENTAL REINFORCING STEEL PLACEMENT REQUIRED.
- UNLESS OTHERWISE NOTED ON DRAWINGS REPAIR AREAS TO MATCH EXISTING PROFILES AND DIMENSION.

#### CONCRETE DELAMINATION REMOVAL

- THE PERIMETER OF THE AREAS MARKED AS DELAMINATED ARE TO BE SAWCUT TO A DEPTH OF 1/2". IF REINFORCING STEEL IS ENCOUNTERED, THE SAW DEPTH MUST BE IMMEDIATELY REDUCED AS REQUIRED. CHECK DEPTH OF THE CUT REGULARLY.
- THE ENTIRE AREA WITHIN THE SAWCUT MUST HAVE A MINIMUM OF 2 1/4" OF CONCRETE REMOVED FROM THE TOP SURFACE USING A MAXIMUM 15 LB. ELECTRIC CHIPPING HAMMER.
- WHERE THE BOND BETWEEN EXISTING CONCRETE AND REINFORCING STEEL OR MESH HAS BEEN DESTROYED (EITHER BY THE CONCRETE'S DETRIORATION OR CORROSION OF THE REINFORCING STEEL) OR IF THE CHIPPING OPERATION HAS CAUSED ONE-THIRD THE PERIPHERY OF A BAR TO BE EXPOSED FOR A DISTANCE OF 6" OR MORE, THE CONCRETE ADJACENT TO THE BAR SHALL BE REMOVED BY HANDCHIPPING OR WITH THE USE OF SHORT STROKE ELECTRIC CHIPPING HAMMERS TO A DEPTH THAT WILL PERMIT NEW CONCRETE TO BOND TO THE ENTIRE PERIPHERY OF THE BAR SO EXPOSED AND A MINIMUM OF 3/4" CLEARANCE ALL AROUND.
- AFTER ALL DELAMINATED, UNSOUND, OR LOOSE MATERIAL IS REMOVED FROM THE SLAB SURFACE, THE CONTRACTOR SHALL REQUEST AN INSPECTION FROM THE CONTRACT ADMINISTRATOR. THIS INSPECTION IS TO BE DONE IN THE PRESENCE OF THE CONTRACTOR AND IF ANY FURTHER WORK IS REQUIRED, THE CONTRACTOR IS TO COMPLETE IT IMMEDIATELY.

#### CONCRETE SUBSTRATE PREPARATION

- WITHIN 24 HOURS PRIOR TO INFILLING, SANDBLAST THE SUBSTRATE TO REMOVE LOOSE AND DETRIORATED CONCRETE, LAITANCE, DUST, OIL, AND ANY OTHER MATERIAL THAT COULD INTERFERE WITH THE BOND OF THE NEW CONCRETE. PROVIDE A UNIFORM SURFACE PROFILE OF ICR-ICSP-5 OR BETTER.
- CLEAN REINFORCING STEEL DESIGNATED TO REMAIN TO NEAR-WHITE METAL VIA BLAST CLEANING. THE REINFORCING STEEL MUST BE FREE OF ALL VISIBLE OIL, GREASE, DUST, DIRT, MILL SCALE, RUST, COATING, OXIDES CORROSION PRODUCTS, AND OTHER FOREIGN MATTER.
- EXPOSED REINFORCING STEEL TO BE CLEANED TO NEAR WHITE METAL AND TOTALLY FREE OF RUST.
- VACUUM CLEAN SURFACE AND/OR AIR BLAST WITH OIL FREE COMPRESSED AIR TO REMOVE RESIDUE AND SPENT MEDIA CREATED BY SURFACE PREPARATION.
- WATERBLAST SUBSTRATE AT MINIMUM 3,000 PSI TO REMOVE ANY RESIDUAL DUST AND DIRT. MAINTAIN SUBSTRATE IN A SATURATED CONDITION FOR A PERIOD OF NOT LESS THAN FOUR (4) HOURS PRIOR TO CONCRETE PLACEMENT. IF THE CONCRETE SURFACE BECOMES WET AND SUBSEQUENTLY DRIES, THE SURFACE PREPARATION AND CLEANING PROCEDURE MUST BE REPEATED.

#### CAST-IN-PLACE CONCRETE

- 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".
- 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.
- 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.

- CONCRETE PROPERTIES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE ON THE DRAWINGS.

INTERIOR SLABS-ON-GRADE: 32 MPa MIN. AT 28 DAYS  
CLASS OF EXPOSURE: C-2  
ENRAINED AIR/CATEGORY: 1 (5% TO 8%)  
MAX W/C RATIO: 0.45  
AGGREGATE MAX. 20 mm  
CURING TYPE: TYPE 2 - ADDITIONAL

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

- 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.

- 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 ENRAINED 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".

#### REINFORCING STEEL

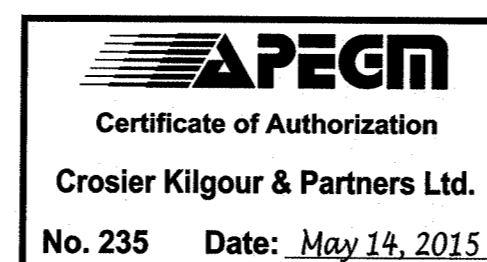
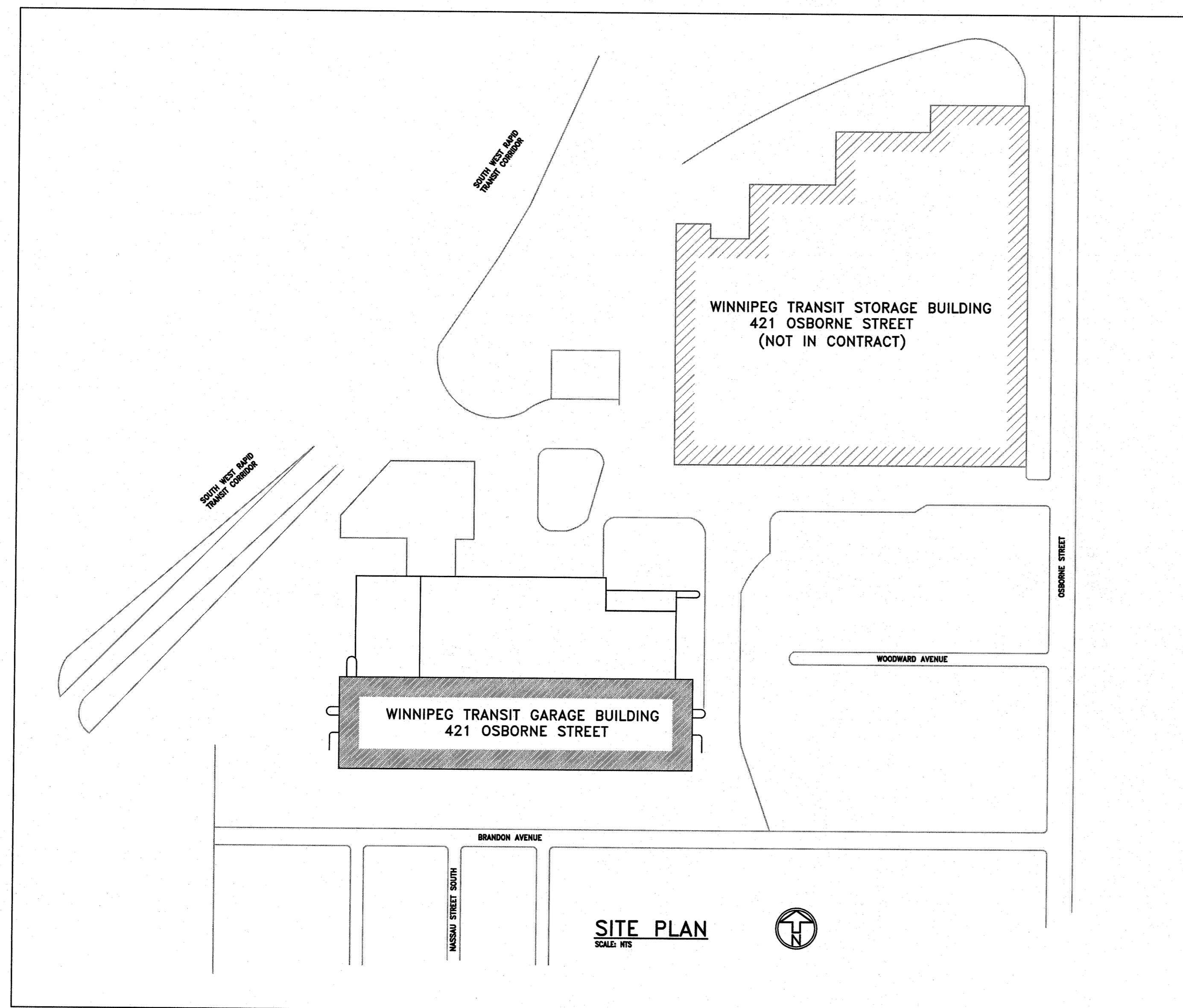
- ALL REINFORCING STEEL TO BE CSA-G30.18M-09 GRADE 400R DEFORMED BARS EXCEPT COLUMN TIES AND BEAM STIRRUPS WHICH SHALL BE GRADE 400W STEEL. ALL REINFORCING IS TO BE DETAILED IN ACCORDANCE WITH THE LATEST EDITION OF THE REINFORCING STEEL INSTITUTE OF CANADA - MANUAL OF STANDARD PRACTICE, EXCEPT OTHERWISE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

INTERIOR SLABS-ON-GRADE: 1 1/2 IN. TOP 3/4 IN. BOTTOM

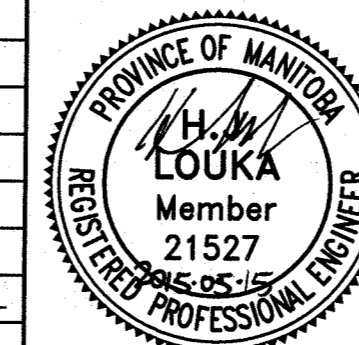
- ALL REINFORCING TO BE HELD IN PLACE, AND TIED BY THE USE OF PROPER ACCESSORIES, SUCH AS HI-CHAIRS, SPAGERS, ETC. TO BE SUPPLIED BY THE REINFORCING STEEL FABRICATOR. HI-CHAIRS TO HAVE 4 LEGS AND TO BE STAPLED OR WAILED TO THE FORMWORK.
- ALL OPENINGS IN CAST-IN-PLACE CONCRETE FLATWORK TO BE TRIMMED WITH 2-15M ALL AROUND ON BOTH FACES, EXCEPT AS NOTED.

#### FORMWORK

- UNLESS NOTED OTHERWISE PROVIDE SLIP JOINT ALL PAVING OR CONCRETE SLABS ON GRADE AGAINST STRUCTURAL MEMBERS WITH 12 mm 1/2 IN. ASPHALT IMPREGNATED FIBREBOARD.
- PLACE 10 MIL POLYETHYLENE UNDER ALL SLABS ON FILL AND OVER TOP OF VOIDFORM.



No.	Date	Issue/Revision	By
0	2015/05/15	ISSUED FOR CONSTRUCTION	HJL



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The General Contractor shall check & verify all dimensions and report any errors or omissions to the designers.

Project <b>WINNIPEG TRANSIT: GARAGE BUILDING CENTRAL TRENCH AND ADJACENT SLAB REPAIRS 421 OSBORNE STREET, WINNIPEG, MANITOBA</b>					
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