

ADDITION TO MAINTENANCE BUILDING
 110 Airport Road, Municipal Airport
 Prince Albert, Saskatchewan

City of Prince Albert Project No. 130/10

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TENDERS FOR MECHANICAL AND ELECTRICAL WILL BE CALLED AT A LATER DATE

Photographs

INVITATION TO BID
Project No. 130/10

ADDITION TO MAINTENANCE BUILDING
110 Airport Road, Municipal Airport
Prince Albert, Saskatchewan

Sealed Tenders will be received up to **2:30 p.m. C.S.T. Tuesday, August 17, 2010**, at the office of the Purchasing Department, Municipal Services Centre, 11 - 38 Street East, Prince Albert, SK, S6W 1A5

The project includes the construction of an addition to the existing maintenance building comprised of a Pre-Engineered Steel Building on a Pile and Grade Beam Foundation, Grade supported Floor Slab and related modifications to the existing building. The gross size is 236.9 m² (2550 s.f.) Note that Mechanical and Electrical Sub-trades will be called at a later date.

Tender Documents may be obtained from the Purchasing Department, Municipal Services Centre, 11 - 38 Street East, Prince Albert, SK. S6W 1A5. A Plan Deposit Fee of \$50.00 per set is required. Members of S.C.A. Plan Deposit Fund are exempt.

Tender Documents may be viewed at the Construction Association offices in Prince Albert, Saskatoon and Regina.

The Lowest or any Tender not necessarily accepted.

Owner:
City of Prince Albert
1084 Central Avenue
Prince Albert, SK S6V 7P3

Brian Klashinsky, Mechanical and Building
Maintenance Manager
1084 Central Avenue
Prince Albert, SK S6V 7P3
Phone 953-4819

Consultant:
Moore Architecture Consulting Group Ltd.
#100; 46 - 12 Street East
PRINCE ALBERT, SK S6V 1B2
Phone 306-763-6451
Fax 306-763-6419

TENDER NO. 130/10_____

**Airport Maintenance Garage – Phase 1 – Pre-Engineered
Building & Foundation Addition Project**

INSTRUCTIONS TO BIDDERS:

1. The tender provides for the **MODIFICATIONS TO THE EXISTING MAINTENANCE GARAGE AS WELL AS THE LABOUR AND MATERIAL REQUIRED TO NOT ONLY COMPLETE THE STRUCTURAL FOUNDATIONS BUT SUPPLY AND ERECT THE NEW PRE-ENGINEERED BUILDING AS PER THE INFORMATION IDENTIFIED IN THE ATTACHED DOCUMENTS.**
2. A site viewing, prior to tender close, is required and can be scheduled by contacting Brian Klashinsky at 306.981.2868.
3. Tenders will be received by the Purchasing Department, City of Prince Albert, Municipal Service Centre, 11 – 38th Street East, Prince Albert, Sask., S6W 1A5, until 2:30 PM, **TUESDAY AUGUST 17th, 2010** in sealed envelopes clearly marked as to contents. Tenders will be opened at a public tender opening, **immediately after 2:30 pm** at the Purchasing Department, Municipal Service Centre, 11 – 38th Street East, Prince Albert, Sask.
4. Tenders must be submitted on the enclosed form of tender supplied by the City. However, in extenuating circumstances bids will be received via facsimile quotation, but must be followed within five (5) working days by the original tender document. Only the Purchasing Agent or his Appointee may approve and accept the facsimile quotation. All unit prices must be clearly indicated. Return one completed copy of the tender form with your tender submission.
 - a. The bid must not be restricted by a statement added to the tender form or by a covering letter, or by alterations to the tender form supplied unless otherwise provided herein. Adjustments by telegram or letter to a tender already submitted will not be considered.
 - b. The tender form must be signed in the space provided on the form with the signature of a signing officer of the firm bidding. If a joint bid is submitted, it must be signed and addressed on behalf of the bidders.
5. **Bid Deposits:**
 - a. **NOTE: NO BID DEPOSITS REQUIRED ON THIS TENDER.**
6. A letter of good standing from the Workmen's Compensation Board shall be provided prior to commencement of work. Upon completion of the contract and prior to the

release of holdback, a clearance must be provided from the Workmen's Compensation Board in regards to this contract.

7. If the successful tenderer shall fail, neglect or refuse at any time to supply all materials to The City of Prince Albert within this tender, then The City shall be and is hereby empowered to forthwith procure such material elsewhere and to charge all costs thereby incurred to the Contractor as liquidated damages and to deduct the same from the monies due, or to become due to the successful tenderer on this or any contract.
8. The City of Prince Albert reserves the right to cancel any order or tender if the goods or services are unsatisfactory.
9. All prices shall be GST EXTRA and Sask. E & H Tax INCLUDED, where applicable and shall be F.O.B. any point in The City of Prince Albert. Taxes must be clearly stated in the space allocated.
10. **SAFETY:**
 - a. Be advised that the existing facility is occupied and airport related tasks are scheduled and undertaken daily over the course of construction.
 - b. Contractors shall be responsible for being aware of all governing regulations related to employee's safety fire regulations. They shall further be required to acquaint their staff with this information as well as any health regulations.
 - c. Contractor will follow all City of Prince Albert safety policies including but not limited to, safety glasses, green tag boots, and hard hat at all times over the course of this project.
 - d. Hearing protection, face shield, and dust masks will be worn during the removal of the existing product where applicable.
 - e. Contractor will have on hand any and all MSDS information sheets that pertain to the products being used.
 - f. Contractor will ensure construction area will be barricaded to restrict unauthorised local foot traffic from entering the work area.
 - g. Contractor will ensure the work site is free of trip hazards and all debris is hauled to the land fill daily.
 - h. A pre-construction meeting will be scheduled prior to the start of the project.
 - i. The same site foreman needs to be on site over the entire timeline of the project.
 - j. Copies of all toolbox meetings to be provided to the City's representative for review and file.
11. The Contractor agrees that all services shall be performed by fully trained personnel.
12. The Contractor agrees to indemnify and save harmless The City from all actions, suits, claims and demands, and costs and damages arising by reason of injury or death to any person or any property resulting from the services performed herein.

13. The City of Prince Albert reserves the right to delete any portion of the work from the contract should it be deemed in the interest of The City to do so.
14. The bids shall be open and irrevocable for 45 days from the tender closing date and time.
15. The conditions outlined herein shall be part of the tender.
16. Any questions regarding this tender should be directed to Ron Harris, Purchasing Agent, 953-4343; Technical questions should be referred to Brian Klashinsky, 306.981.2868.
17. Lowest or any tender not necessarily accepted.
18. The successful bidder will be required to obtain a Business License from the City of Prince Albert prior to commencing said work. Business taxes must be current.
19. The obligations and rights of bidders shall be those expressed herein. No terms, either implied or verbally expressed shall affect, restrict, or in anyway vary the written terms of this invitation to tender. Not to limit the generality of the foregoing, no terms may be implied by virtue of custom or usage.
20. **Disclosure Of Price:**
 - a. Bidders may obtain a tabulation of the total tendered amount submitted by all bidders, by enclosing a **stamped, self-addressed** return envelope along with their tender submission. Unit prices will only be available at the public tender opening.
 - b. Requests for prices received on previous tenders **will not** be fulfilled.
21. When a discrepancy is found between the "Unit Price" and the "Extension", the "Unit Price" will govern in all instances. The City reserves the right to correct such errors in extensions, re-total all the amounts shown and consider the corrected total prices as the Bidder's intention when tenders are compared.
22. Proceeds due to the contractor/vendor from this tender may be withheld by The City of Prince Albert and applied towards outstanding amounts due and payable to The City of Prince Albert.
23. The City reserves the right to give preference to that bidder whose proposal includes any material, specifications or methods of execution that are deemed by The City to be superior to those of the low bidder.
24. Unless otherwise listed on the bid pages, disposal of the used materials on each project will be the responsibility of the Contractor(s).
25. **General and Miscellaneous:**
 - a. A timeline to be provided at the pre-construction meeting that identifies the order and sequence of the project.



CITY OF PRINCE ALBERT TENDER FORM

Tender # **130/10**

Description: **Airport Maintenance Garage – Phase 1 – Pre-Engineered Building & Foundation Addition Project**

Tenders for the above referenced service/commodity will be received not later than 2:30 p.m. **TUESDAY AUGUST 17th, 2010**, in sealed envelopes clearly marked as to contents at the Purchasing Department. All unit prices shall be F.O.B. **PRINCE ALBERT, SK**

Date: **July 27th, 2010**

From: **Ramona Fauchoux**

City of Prince Albert
Purchasing Department
Municipal Service Centre
11 – 38th Street East
Prince Albert, SK S6W 1A5
Phone: (306) 953-4343
Fax: (306) 953-4353

QUANTITY	DESCRIPTION (VENDOR TO SPECIFY BRAND OR GRADE)	UNIT PRICE	TOTAL PRICE
<p>SUPPLY LABOR AND MATERIAL</p> <p>THE TENDER PROVIDES FOR THE MODIFICATIONS TO THE EXISTING MAINTENANCE GARAGE AS WELL AS THE LABOUR AND MATERIAL REQUIRED TO NOT ONLY COMPLETE THE STRUCTURAL FOUNDATIONS BUT SUPPLY AND ERECT THE NEW PRE-ENGINEERED BUILDING AS PER THE INFORMATION IDENTIFIED IN THE ATTACHED DOCUMENTS.</p> <p>PST Included, GST Extra</p>			\$ _____

State Completion Date _____ days. (After Receipt of Order)

NOTE: Tenders via Facsimile will be accepted only on approval from the Purchasing Department.

Conditions of the tender:

- ◆ Delivery time (ARO) must be stated in the space provided.
- ◆ Any goods or services found to be defective or fail to meet the specifications herein, by reason of poor material or workmanship will be replaced at NO CHARGE.
- ◆ The City of Prince Albert reserves the right to accept or reject all or any part of this tender.
- ◆ The tender prices shall be open and irrevocable for 45 days from the tender closing date.
- ◆ The lowest or any tender will not necessarily be accepted.
- ◆ Unit prices must be extended and totalled accordingly.
- ◆ No alternate, unless approved prior to tender closing will be considered.
- ◆ The City reserves the right to give preference to that bidder whose proposal includes any material, specifications or methods of execution that are deemed by The City to be superior to those of the low bidder.

Full Name of Company, Individual, Partnership (Please Print) _____

Address _____

City, Province, Postal Code _____

Signed by Authorized Signing Officer _____

Name and Title (Please Print) _____

Date
Phone
Fax

1. OWNER: CITY OF PRINCE ALBERT
1084 Central Avenue
Prince Albert, Saskatchewan.
S6V 7P3

2. CONSULTANT: MOORE ARCHITECTURE CONSULTING GROUP LTD.
46 - 12th Street East
Prince Albert, Saskatchewan S6V 1B2
Phone: (306) 763-6451 FAX: (306) 763-6419

3. TENDER CALL
 - .1 Sealed Tenders on Bid Form dated and signed will be received by the Owner at the office of the Purchasing Agent, City of Prince Albert, as set out in the INVITATION TO BID. The intent of this Tender Call is to obtain formal offers for the Construction of an Addition to the Existing Maintenance Building at the Municipal Airport, Prince Albert, Saskatchewan.
 - .2 Submit 1 copy of Tender on the Form provided.
 - .3 Tender Documents may be obtained by Contractors at the office of the Purchasing Agent, City of Prince Albert, 11 - 38 Street East, Prince Albert, SK S6W 1A5
 - .4 A deposit of Fifty Dollars (\$50.00) in the form of a Cheque in favour of the City of Prince Albert is required for each set of drawings and specifications. (Members of the Sask. Construction Association Plan Deposit Fund are exempted from this requirement.) Deposit will be forfeited if drawings and specifications are not returned complete and undamaged, unmarked and reusable within fifteen (15) days of Tender closing.

4. BID DEPOSITORY

This project is **NOT** being tendered through the Prince Albert Bid Depository.

5. ACCEPTANCE OF TENDER
 - .1 The Owner reserves the right to accept the Tender deemed most advantageous. The lowest or any Tender will not necessarily be accepted. After acceptance, the Owner will issue to the successful Bidder a written "Letter of Intent."
 - .2 Tenders shall remain open to acceptance and shall be irrevocable for a period of Forty-five (45) calendar days after the Tender closing date.
 - .3 Tenders that are improperly executed, incomplete, conditional, illegible, obscure, or contain errors, erasures, alterations, or irregularities of any kind, MAY be rejected as informal.

6. COMMENCEMENT AND COMPLETION OF WORK
 - .1 State in the Tender, the time required to complete the work. The completion date in the Agreement shall be this completion time calculated from the commencement date. The Owner desires that the work under this contract be completed as quickly as reasonable and consideration may be given to time of completion when awarding the Contract.

7. OMISSIONS, DISCREPANCIES, INTERPRETATIONS
 - .1 Bidders finding discrepancies or omissions in the drawings or specifications, or having doubt

as to the meaning or intent thereof, shall at once notify the Consultant who will provide written instructions or explanation to all Bidders. Oral interpretations made to any Bidder shall not effect a modification of any provision of the Tender Documents. **If written clarification is not received, allow for the most inclusive interpretation of the Tender Documents.**

- .2 Direct questions arising during the Tender period to the Consultant.
- .3 Bidders may, during the tendering period, be advised by Addendum of alterations to the Tender Documents. All such changes will become part of the Contract Documents and the effects thereof shall be included in the Tender Price.
- .4 The Consultant will endeavour not to issue any addenda later than three (3) calendar days prior to Tender Closing time, however, the Consultant may issue addenda if deemed essential up to 2 calendar days prior to closing time.

8. EQUIVALENT PRODUCTS

- .1 Where the drawings or specifications stipulate a particular product, the Base Bid shall be made with the specified product. Other materials may be bid as an "Alternative" or "Separate Price" adjustment to the Base Bid. and must so state on the Tender Form.
- .2 When a request to substitute an allegedly equivalent product is made, the Consultant may approve the substitution either as an "equal" or an "alternative". If an item is approved as "equal", all Bidders may use that item in place of the specified item and shall indicate in the Tender the change in price which will apply if use of the "alternative" item is allowed.
- .3 In submission for use of equivalents to products specified, Bidders shall include in their tenders for any changes required in the work. No allowance will be made in addition to the Contract Price because of changes in Work necessitated by use of alternatives or equals.

9. SITE EXAMINATION

- .1 The Bidder shall examine the Project Site and surrounding properties before submitting a Tender, either personally or through a representative and shall satisfy himself as to the nature and location of the Work, the equipment and facilities needed preliminary to and during the prosecution of the Work, the means of access to the site, on site accommodation, all necessary information as to risks, contingencies and circumstances which may affect his Tender and all other matters which can in any way affect the Work. The Bidder is fully responsible for obtaining information required for the preparation of the Tender.
- .2 Claims for additional costs will not be allowed with respect to conditions which would reasonably have been ascertained by an inspection of the site prior to Tender closing date.
- .3 SITE VISIT FOR BIDDERS Access to the Building can be arranged by contacting Brian Klashinsky, Phone 981-2868
- .4 The location of the project is at 110 Airport Road, Municipal Airport, Prince Albert, Saskatchewan.

10. TENDER SIGNING

- .1 The Tender shall be executed under seal by the Bidder.
- .2 If the Bidder is an individual or partnership, the Tender shall be executed by the individual or

a partner in the presence of a witness and the signer must show the capacity in which he signs (e.g. "Partner" or Proprietor").

- .3 If the Bidder is a corporation, the Tender shall be executed under the seal of the company, affixed in the presence of the authorized officers or two directors.
- .4 If the Bidder is a joint venture, each party to the joint venture shall execute the Tender under seal in the manner appropriate to such party.

11. TENDER DOCUMENTS CONSIST OF:

- .1 Invitation to Bid
- .2 Instructions to Bidders.
- .3 Tender Form: provided by Consultant
- .4 Working Drawings as Listed.
- .5 Specifications
- .6 Addendum to Drawings and Specifications. (If any)
- .7 Contract Form as prepared by Consultant. CCDC-2-1994 (by reference).
- .8 General Conditions of the Stipulated Price Contract CCDC-2-1994 (by reference), with Supplementary General Conditions - Section 00800.

12. THE CONTRACT DOCUMENTS CONSIST OF:

- .1 The Tender, in conformance with the Tender Documents.
- .2 The Working Drawings and Technical Specifications and Addenda (if any).
- .3 The Contract Form.

13. CONTRACTOR

- .1 Unless specifically noted otherwise, the Term "CONTRACTOR" shall mean the General Contractor, or Prime Contractor.

14. AWARD OF CONTRACT

- .1 The Award of this Contract is by the CITY OF PRINCE ALBERT

15. BUILDERS LIEN ACT HOLDBACK TRUST ACCOUNT

- .1 This project is subject to the Saskatchewan Builders Lien Act. The Owner will maintain the Holdback Account.

16. GOODS AND SERVICES TAX (G.S.T.)

- .1 The Contractor is NOT to include the Goods and Services Tax (G.S.T..) in the Base Tender Amount. The amount of the GST will be shown on the Tender Form as a separate amount.

17. BIDDING DEPOSIT REQUIREMENTS

- 1. NO BID DEPOSIT WILL BE REQUIRED FOR THIS PROJECT.

18. LIABILITY INSURANCE

- 1. The Contractor(s) shall take out and keep in force a policy of Liability Insurance in the amount of \$1,000,000 and a certified copy of such policy shall be provided prior to the award of the contract.

19. LETTER OF GOOD STANDING

1. The successful bidder must provide a 'letter of good standing' from the Worker's Compensation Board prior to commencement of work. Upon completion of the contract and prior to release of holdback, a clearance letter must be provided from the Worker's Compensation Board in regards to this contract.

20. AWARD OF CONTRACT

1. The City of Prince Albert reserves the right to cancel any order or tender if the goods or services are unsatisfactory.
2. All prices shall include the Sask. E. & H Tax (PST) and NOT include the G.S.T. but shown separately and shall be F.O.B. at any point in the City of Prince Albert. Taxes must be clearly stated in the space allocated.
3. Notwithstanding any provision in the listed specifications or other provisions of these tender documents, where minimum specifications are not met, specifications which will, in the opinion of the City, provide sufficient capacity, size or performance for its requirements may be accepted.

21. APPROVALS AND PERMITS

1. The construction of the works and all operations connected therewith are subject to the approval, inspection, by-laws and regulations of all City, Provincial and Federal and other authorities-having-jurisdiction in respect to any matter embraced in this contract. Building Permit shall be obtained by the Contractor and included in the Bid Amount.

22. SAFETY

1. Contractors shall be responsible for being aware of all governing regulations related to employee's safety and health regulations. The successful contractor will ensure compliance to the City of Prince Albert's Safety Policy as it relates to required Personal Protective Equipment, control of access/egress and site cleanliness. They shall further be required to acquaint their staff with this information as well as any health regulations.
2. The Contractor agrees that all services shall be performed by fully trained personnel.
3. The Contractor agrees to indemnify and save harmless the City of Prince Albert from all actions, suits, claims and demands and costs and damages arising by reason of injury or death to any person or any property resulting from services performed herein.

23. ADDITIONAL CONDITIONS

1. The successful bidder will be required to obtain a Business Licence from the City of Prince Albert prior to commencing said work.
2. Proceeds due to the Contractor from this tender may be withheld by the City of Prince Albert and applied towards outstanding amounts due and payable to the City of Prince Albert by the Contractor.
3. The City reserves the right to give preference to that bidder whose proposal includes any material, specifications or methods of execution that are deemed by the City to be superior to those of any other bidder.

24. LAW OF THE CONTRACT

1. The rights of the parties shall be governed by and the contractual terms shall be interpreted

in accordance with the laws of the Province of Saskatchewan.

2. All Contractors and Sub-Contractors employed on this project must operate in full compliance of all Apprenticeship and Trade Certification Act 1999.

25. **ALTERNATE PRICES**

1. The Contractor shall provide an Alternate Price for the provision of Sprayed-on Urethane Foam insulation to the Walls and Ceiling of the Addition instead of the Fiberglass Blanket Insulation. The Sprayed-on Urethane Insulation shall encase the Purlins and Girts.

25. **SEPARATE PRICES**

1. The Bidder shall state the value of 50% Performance Bond and 50% Labour & Materials Bond. This amount is to be used by the City of Prince Albert should it elect to require these bonds. The amount would then be added to the contract value.

END OF SECTION 00200

The GENERAL CONDITIONS OF THE CONTRACT and CONTRACT FORMS SHALL BE CCDC - 2 - 1994 Stipulated Price Contract (Latest Edition) by Reference. (Bidders may purchase copies from any Construction Association in Saskatchewan)

The Agreement and the General Conditions thereto are to be revised in accordance with the following;

Canadian Standard Construction Document CCDC #2 1994

1. Article GC 5.3.2. In the second line CHANGE the number '5' to '30'.
2. Article GC 5.7.4. In the second line CHANGE the number '5' to '30'.

1. REGULATORY REQUIREMENTS

1. **CODES/STANDARDS** - execute the work to meet or exceed specified codes and standards. The Work is to be governed by the National Building Code of Canada 2005 and The Saskatchewan Uniform Building and Accessibility Standards Act and Regulations and Supplements; keep one copy available on site. Standards and codes are to be as current at time of tendering.
2. **FIRES AND BURNING** - Fires or burning are not permitted on the construction site.
3. **ASSOCIATIONS** - maintain full membership and Certification, in good standing with specified agencies and/or associations; except as otherwise authorized by the Consultant.
4. **WASTE DISPOSAL** - arrange with authorities having jurisdiction for disposal of wastes, excess materials, and debris. Maintain public and private walks and roadways adjacent to the site clean of waste and debris from the construction. Waste Disposal Fees to be included in the Contract Price.

2. SITE AND CONSTRUCTION LAYOUT

1. **LAYOUT OF THE WORK** - The General Contractor is to lay out main lines and levels of the work in relation to designated reference points and bench marks. Protect stakes and markings from movement or destruction.

3. COORDINATION

1. **COOPERATION** - the General Contractor is to contract and be solely responsible for the coordination and the supply of all labour, material, plant equipment, and services required to lay out and to execute the work. Persons or firms engaged in the Work are to fully acquaint themselves with and cooperate fully in scheduling, layout and execution of the work.
2. **COORDINATION** - the Specifications are sub-divided into separate sections for convenience of reference. In the case of dispute, the Contractor is to determine who supplies and installs required materials of equipment. No allowance will be made in addition to the contract for the failure of any party to determine and clearly define the extent of his work; or to allow for coordination with related work.

Examine related work, and report in writing any defects or deficiencies which may affect the performance of the work. Do not proceed until related work is acceptable.

Coordinate the supply and installation of items requiring to be built-in or otherwise accommodated as the work progresses; together with required templates, measurements, drawings and schedules. Ensure timely coordination and allowance for items requiring structural support, framing, sleeving, or openings in the construction.

3. **DIMENSIONS** - The Contractor is to verify dimensions for each and every part of the work; including both fabrications and job dimensions. No allowance will be made for failure to verify or coordinate construction dimensions, prior to proceeding with work. Obtain and confirm supplementary job dimensions as required during the progress of the work.

Do not scale drawings for critical dimensions.

4. JOB PROGRESS MEETINGS

1. PRE-CONSTRUCTION MEETING - within 15 days after aware of Contract, arrange a meeting to discuss and resolve administrative procedures and responsibilities. Responsible representatives of the Owner, Consultants and Contractor, are to be in attendance. Establish time and location of meeting and give advance notice to all parties.
2. JOB AND PROGRESS MEETINGS - after commencing construction, arrange job and progress meetings at regular intervals at times and locations arranged with the Consultant and the Owner. Notify all parties concerned, including major Sub-contractors to attend, to ensure proper coordination of work. The Contractor is to record minutes of these meetings and circulate minutes to all attending parties within 5 days after meetings.

5. SUBMITTALS

1. BONDS AND INSURANCE - prior to starting construction provide the Consultant certified copies of required bonds and insurance policies.

Provide a **Separate Price** for the Value of the above Bonds should the Owner elect to require the provision of the Bonds.
2. DOCUMENTATION - immediately after award of the Contract prepare and submit:
 1. Construction progress schedule.
 2. Breakdown of Tender; by Specification Section; showing the total gross value of work in each section.
 3. Full list of sub-contractors and suppliers.
 4. Itemized lists of items required to be submitted upon completion of the Work; including all data, operating instructions, maintenance manuals; record drawings, etc., and all documentation (i.e. Statutory Declarations, Workers Compensation Board Letter of Good Standing, certifications, guarantees, etc.)
3. SHOP DRAWINGS - refer to General Conditions Article GC 3.11. Submit six (6) sets of printed literature and one sepia and two (2) prints of shop drawings requested. Clearly indicate materials, methods of construction, erection and attachment or anchorage, connections and other information necessary to completion of work. Clearly indicate that all articles and equipment have been properly coordinated with related construction. Show cross references to design drawings and specifications.
4. SAMPLES - Submit samples promptly. Notify the Consultant in writing at the time of submission of any deviations in samples from requirements of Contract Documents. The Consultants review will be for conformity of design. Review will not be considered relief of responsibility for errors or omissions in samples, or of responsibility for meeting all requirements of the Contract documents. Make changes in samples which the Consultants may require consistent with Contract Documents.
5. Should any adjustment made to Shop Drawings or Samples by Consultants affect the value of Work, clearly state such in writing for authorization prior to proceeding.
6. OPERATING/MAINTENANCE MANUALS - prior to Substantial Performance submit three

(3) copies of "Operating and Maintenance Manuals" containing operation information on all operating equipment, fixtures, hardware and accessories; and including cleaning and lubrication schedules, filter, overhaul and adjustment schedules and similar maintenance information. Bind contents in a three ring, hard-covered, plastic-jacketed binder, in specification sections. In addition include the following:

7. RECORD DRAWINGS - record all deviations from contract drawings and prior to Final Completion, submit a set of marked-up prints with all deviations neatly marked.

6. INSPECTION AND TESTING

1. LABORATORIES/AGENCIES - Independent Inspection/Testing Agencies will be engaged by the Owner, except where specified otherwise, for the purpose of inspecting and/or testing portions of work. All costs of such services will be borne by the Owner. All equipment required for carrying out inspection and testing will be provided by the appropriate agencies. Concrete, Soils and Roofing Tests will be as specified in the respective Sections, including Payment of Costs.

Employment of Inspection/Testing agencies does not relax the responsibility to perform work in accordance with the Contract Documents.

2. ACCESS TO WORK AND PLANT - allow the Inspection/Testing agencies access to all portions of Work, manufacturing and fabrication plants. Provide reasonable facilities for such access.
3. PROCEDURES FOR TESTS - notify the appropriate agency and Consultant well in advance of the requirements for tests, in order that attendant arrangements can be made.

Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as to cause no delay in the work. Provide workers and facilities to obtain and handle samples and/or materials on site. Provide sufficient space to store and cure samples.

If defects are revealed during inspection and/or testing, the Inspection/Testing Agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defects and irregularities as advised by Inspection/Testing agencies. Pay all costs for re-testing and re-inspection.

4. REFERENCE STANDARDS - If there is question as to whether any product or system is in conformance with applicable standards, the Consultant reserves the right to have such products or systems tested to prove or disprove conformance. The cost for such testing will be borne by the Owner in the event of conformance with Contract Documents or by the Contractor in the event of nonconformance.

END OF SECTION 01220

1. PRODUCTS

- 1.1 QUALITY OF PRODUCTS - Defective materials, equipment and articles whenever found at any time prior to the completion of work, will be rejected, regardless of previous inspections. Review by the Consultant does not relieve responsibility, but is merely a precaution against oversight or error. Contractor to remove and replace defective materials at own expense and be responsible for all necessary delays and expenses caused by rejection. Should any dispute arise as to the quality or fitness of materials, equipment or articles, the decision rests solely with the Consultant; based upon the requirements of the contract documents.

Unless otherwise indicated in the specifications, maintain uniformity of manufacturer for any particular or like item throughout the building.

- 1.2 AVAILABILITY OF PRODUCTS - review product delivery requirements and if delays in supply of materials, equipment or articles are foreseeable, notify the Consultant, requesting any substitutions or other remedial action to be authorized; in ample time to prevent delay in performance of work.
- 1.3 PRODUCTS ASSEMBLIES AND SYSTEMS - each product, application assembly and each system must include all components, materials, accessories, fasteners and service required for complete applications and installation adapted to the requirements of the Contract Documents.
- 1.4 SUPPLEMENTARY INFORMATION - material, procedures and workmanship must conform to applicable recommendations and specifications of manufacturer's or agencies whose material is being employed; adapted to the requirements of the Contract Documents. Provide such additional technical data as is required to thoroughly familiarize the Contractor and Workers with each material and procedure to be employed.
- 1.5 MANUFACTURER'S DIRECTION - unless otherwise indicated in the specifications, install or erect all products in accordance with manufacturer's recommendations. Where labels or enclosures provided with products are not adequate, obtain instructions directly from manufacturers. Notify the Consultant, in writing, of any conflicts between the specifications and manufacturer's instructions, for clarification prior to proceeding.

2. WORKMANSHIP

- 2.1 GENERAL REQUIREMENTS - workmanship is to be the best quality, executed by workers experienced and skilled in the respective duties for which they are employed. Immediately notify the Consultant if work is required in such a manner as to make it impractical to produce required results.
- 2.2 CONCEALMENT - in finished areas, conceal all pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise on drawings or in specifications. Before installation, inform the Consultant of any conflicting requirements. Install as directed.
- 2.3 LOCATION OF FIXTURES - consider the location of fixtures, outlets, and other mechanical and electrical items indicated on drawings as approximate. Clarify precise locations with the Consultant where applicable. Items set into masonry or wood finishes are to be set neatly between joints in the finish material.
- 2.4 CUTTING AND REMEDIAL WORK - perform all cutting and remedial work that may be required to make the several parts of work come together properly. Coordinate the schedule for work to ensure that this requirement is maintained to a minimum. Cutting and remedial work is to be by workers familiar with the materials affected. Perform in a manner to neither damage nor endanger any portion of work.
- 2.5 FASTENINGS - provide metal fastenings and accessories in same texture, colour and finish

as adjacent materials, unless otherwise indicated in specifications. Keep exposed fastenings to a minimum; space evenly and install neatly. Use a non-corrosive hot dip galvanized fasteners and anchors for securing exterior work, unless otherwise required. Prevent electrolytic action between dissimilar metals and materials. Space anchors within their load limit or shear capacity and ensure they provide positive permanent anchorage. Wood or organic material plugs, or fastenings which cause spalling or cracking of material to which anchorage is made, are not acceptable.

- 2.6 FRANCHISE WORK - to be by experienced personnel in the employ of a firm certified by manufacturer or other specified party as competent and legally franchised to perform and guarantee the work.

END OF SECTION 01600

1. FINAL CLEANING OF WORK

1.1 Refer to General Conditions GC 3.14. Before Final Inspection:

- .1 Broom clean and wash down exterior walks, steps, platforms and paved areas. Remove all direct disfigurements or markings from exterior surfaces.
- .2 Make a thorough inspection of all construction, finishes, fitments and equipment and ensure proper workmanship and operation.

2. INSPECTION/TAKE-OVER PROCEDURES

2.1 Refer to General Conditions Article GC 2.3 and Supplementary General Conditions. *Prior to requesting a Certificate of Substantial Performance, the Contractor shall formally inspect the construction to ensure the Work meets the requirements for Substantial Performance, as applicable, and shall issue a list of all uncompleted and unsatisfactory work to those concerned.*

2.2 CONTRACTOR'S APPLICATION FOR SUBSTANTIAL PERFORMANCE

When the Contractor is satisfied that the entire work is substantially complete, and after making his inspection, the Contractor may make written application to the Owner through the Consultant for a Certificate of Substantial Performance; including:

- .1 A Statement of Completion with the cost value of any work to be completed; including unsatisfactory work and work which cannot be performed for reasons beyond the control of the Contractor.
- .2 Date of completion for the Work and/or outstanding items as applicable.
- .3 Workers Compensation Board Clearance and all data, operating instructions, evidence of all tests, maintenance manuals, record drawings, spare parts, and materials, etc. to enable the Owner to operate the building.

Concurrent with making application for a Certificate of Substantial Performance, the Contractor shall complete the preparation and assembly of all items required for final documentation of the work.

2.3 Defects or deficiencies determined by inspections for Substantial or Total Performance shall be listed by the Consultant and provided to the Contractor. Further inspection will not be carried out until the listed items are complete, excepting only items deemed by the Consultant to be reasonably beyond the Contractor's control.

END OF SECTION 01700

1. GENERAL

1.1 WORK DESCRIPTION

- .1 Removal of existing Asphalt Surface where the Addition is to be constructed with sufficient clearance to allow for installation of Foundation Piles and grade Beams.
- .2 Removal of three existing Overhead Doors. (Note that one OH Door is to be re-used in the Addition.
- .3 Removal of existing Wall Construction in the 2 bays where the OH Doors are to be removed.

1.2 PROTECTION

1. Material is to be removed carefully so as not to damage the existing structure, which is to remain in place.
2. The work is to be carried out in such a manner as to protect the existing and adjacent facilities from damage. Do not interfere with the use of adjacent areas. Maintain free and safe passage to and from.
3. Prevent movement or settlement of existing structures, services, roadways and streets. Observe applicable regulations governing precautions to eliminate hazard and collapse arising from demolition work. Repair and make good any damage arising from the work of this Section, at no extra cost to the Owner.
4. Provide, erect and maintain street hoardings, notices, barricades, lighting and guard rails as required to protect public, workers and adjoining property from hazard arising from the work of this Section.

1.3 TRAFFIC

1. Do not close or obstruct roadways without permits.
2. Conduct operations with minimum interference to public roadways.

1.4 EXISTING PREMISES

1. Visit the existing building and examine the existing construction to be demolished or removed. No allowance will be made in addition to the contract amount arising from the failure to examine the existing site and building.
2. **Arrangement to visit the premises are to be made through Brian Klashinsky, Mechanical and Building Maintenance Manager, Phone 981-2868.**
3. SITE VISIT FOR BIDDERS to view the PROJECT AREA is to be arranged, notice to be given.

2. PRODUCTS

2.1 MATERIALS

1. Except where noted otherwise, maintain possession of all materials being demolished. Remove from site.
2. Carefully remove, store and protect items to be retained for re-use.

3. EXECUTION

3.1 DEMOLITION AND RENOVATION

1. Except as specifically noted otherwise, demolition and renovation shall be by the Contractor.

3.2 PATCHING AND REPAIRS

1. The Contractor shall arrange for all repairs and patching resulting from demolition.

2. Repair all demolition performed in excess of that required, to the approval of the Architect, at no additional cost to the Owner.

3.3 CLEANING

1. Maintain the premises clean of dust and debris resulting from demolition and renovation work, as the work progresses.
2. Remove debris from site daily. Maintain a heavy duty construction vacuum cleaner on site available for all trades. Keep the construction area "vacuum clean" as a minimum.

END OF SECTION 02112

Part 1 General**1.1 WORK DESCRIPTION**

- .1 Drilled Helical Screw Pile sufficient character to accept loads with the addition of factor of safety.
- .2 Establish required cut-off elevation.
- .3 Correct as directed all piles not meeting requirement of this specification at no expense to Owner.

1.2 RELATED WORK

- .1 Excavation and site preparation
- .2 Geotechnical Investigation

1.3 REFERENCE STANDARDS

- .1 CSA W59-03 "Welded Steel Construction (Metal Arc Welding)".
- .2 CAN/CSA G40.20-04/G40.21-04 - AGeneral Requirements for rolled or welded structural quality steel@.
- .3 CSA W47.1-03 ACertification of Companies for Fusion Welding of Steel@.

1.4 SUBMITTALS

- .1 All Submittals will be made in accordance with the Scope of Work, "Drawing and Information Submissions".
- .2 Prior to the start of piling operations the Contractor will submit, for review by the Consultant, full details of the equipment and accessories to be used for pile installation operations.
- .3 Prior to the start of piling operations the Contractor will submit, for review by the Consultant, the following:
 - .1 The proposed installation sequence for each group of piles;
 - .2 Copies of any necessary permits from local authorities or other agencies having jurisdiction;

1.5 QUALITY ASSURANCE

- .1 Welding will conform to CSA W59 and all welders will hold welding certificates, issued by the Canadian Welding Bureau.

- .2 The Contractor will be fully experienced in the installation of the type of piling specified.
- .3 The Contractor will provide at least one person thoroughly trained and experienced in the work, who will be present at all time during execution of the work and who will direct all work performed under the Contract.
- .4 The Contractor shall retain a qualified Geotechnical Consultant to be present on site at the time and duration of pile installation to verify that the piles are installed in accordance with the project specification, geotechnical report and design drawings. All costs related to this review are to be paid for by the Piling Contractor.

Part 2 Products

2.1 MATERIALS AND COMPONENTS

- .1 Screw Pile: New material conforming to ASTM 252 Grade 3.
- .2 Helix Plate: New material conforming to G40.21 - 300 MPa:

Part 3 Execution

3.1 PREPARATORY WORK

- .1 The Contractor will take all necessary precautions to protect existing utilities from damage due to pile installation.

3.2 EQUIPMENT AND ACCESSORIES

- .1 The Contractor will provide and operate all necessary equipment for installing the pile foundations. The Contractor will ensure that the piling equipment is suitable for the work.

3.3 FIELD FABRICATION

- .1 Pile elements may be spliced before and during screwing, as required. The piling contractor is to review overhead lines on site and determine a safe length of pipe to use during construction. Lengths are to be fully welded onsite.
- .2 The pile sections will be aligned at each splice so that the completed pile axis is straight.

3.4 INSTALLATION

- .1 Screw Piles will be screwed into the ground through the use of a rotary hydraulic drill rig.
- .2 Pile will be drilled without interruption until the lengths and driving criteria shown and specified elsewhere in the Contract Documents are met.

- .3 Should any obstruction be encountered in drilling pile which prevents the pile from being placed to approximately the expected tip elevation, or if drilling characteristics indicate that the pile is being damaged in drilling to the specified criteria, the pile will be abandoned or the pile will be pulled out. An abandoned pile will be cut off 0.6 metres below the pile cap soffit. An additional pile will be placed at an adjacent location, to be decided by the Owner.
- .4 Piles will be cut-off normal to the pile axis at the elevation shown on the Drawings.
- .5 The Contractor will measure the cut-off elevations of piles in place to the nearest millimetre.
- .6 The Contractor will adequately protect all materials and installed piles from the weather or physical abuse which may impair the quality, strength or usefulness of them. Items not so protected and suffering damage due to neglect by the Contractor in this regard will be rejected by the Owner.
- .7 The Contractor will fill pile with 25MPa concrete once pile is cut to proper elevation.

3.5 REJECTED PILES

A pile will be rejected if any one of the following conditions exists:

- .1 The pile is damaged during installation;
- .2 The as-installed location of the pile deviates by more than 50 millimetres in any direction from its indicated plan location;
- .3 The pile is out of plumb by more than two degrees;
- .4 It does not conform with any of the materials, workmanship or performance requirements of the contract Documents.
- .5 If the non-conformance in any rejected pile cannot be corrected, the Contractor will either remove the pile and replace it with a new pile installed in its place, or will install a new pile or piles to compensate for the rejected pile and make all other consequent structural modifications necessary at no additional expense to the Owner.
- .6 Where the Contractor is required to install additional piling as a result of pile rejection on the basis of non-conformance with the requirements of the Contract Documents, contraction will replace at no cost to the Owner.

3.6 INSPECTION, TESTING AND RECORDS

- .1 Pile drilling will be carried out only in the presence of the Consultant. The Contractor will notify at least 7 days in advance of any pile drilling operation.

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- .2 The Contractor will provide the Consultant with access to the piles and will co-operate with the Consultant at all times for such purposes as inspecting, recording pile movement during drilling and reading of the equipment during drilling.
 - .3 The Piling Contractor will compile a complete record of installation for each pile containing the following information:
 - .1 The exact location of the pile top at completion of installation;
 - .2 The length and type of pile;
 - .3 The date and time drilling started, the date and time drilling finished, and the times of interruption in drilling, if any;
 - .4 Obstructions and any other difficulties encountered and the elevations at which they occurred; and
 - .5 The tip and cut-off elevation of the pile in place.
 - .4 After the completion of pile installation, the contractor will furnish to the owner, free of charge, a copy of the drill record for each pile.
 - .5 The contractor will immediately inform the Consultant when any movement in an installed pile is detected, giving the reason for the movement, such as heave due to adjacent piling, and the measures proposed to correct the movement.

END OF SECTION

Part 1 General**1.1 RELATED WORK**

- | | | |
|----|--------------------------|---------------|
| .1 | Concrete Reinforcement | Section 03200 |
| .2 | Cast-in-place Concrete | Section 03300 |
| .3 | Concrete Floor Finishing | Section 03345 |
| .4 | Miscellaneous Metals | Section 05500 |

1.2 DESIGN AND CODE REQUIREMENTS

- .1 Formwork and supporting falsework shall be designed and construction in accordance with the requirements of CAN/CSA S269.3-M92 (R2008) and CAN/CSA-A23.1-04 as applicable to the work.
- .2 Assume full responsibility for the design and for the adequacy and safety of all formwork and falsework.
- .3 Retain a professional engineer to design falsework which consists of shoring more than one tier in height or which is a framed structure.
- .4 The design and erection of formwork and related supporting works shall comply with construction safety legislation and regulations.

1.3 HANDLING AND STORAGE

- .1 Deliver, handle and store formwork materials to prevent weathering, warping or damage detrimental to the strength of the materials or to the surface to be formed.
- .2 Ensure that formwork surfaces which will be in contact with concrete are not contaminated by foreign matter. Handle and erect the fabricated formwork so as to prevent damage.

Part 2 Products**2.1 QUALITY AND STRENGTH**

- .1 The quality and strength of formwork material shall comply with the requirements set forth in this Specification and CAN/CSA-A23.1-04

2.2 FINISHES

- .1 Form materials for concrete surfaces which shall be exposed to view, or which require smooth and uniform surfaces for applied finishes or other purposes, shall consist of square edges, smooth panels of plywood metal or plastic to approval of the Consultant. The panels shall be square and made in a true plane, clean, free of holes, surface markings and defects.
- .2 Layout and type of form ties used for exposed cast-in-place concrete work to be reviewed and approved by the Consultant prior to commencing this work.

- .3 The Contractor shall take whatever steps deemed necessary to ensure form joints in exposed concrete work are sealed and watertight.
- .4 Square, edged, tongue and groove or shiplap lumber may be used to form concrete which will not be exposed to view or which does not require a smooth uniform surface for other purposes.
- .5 Refer to Section 03300 Cast-in-Place Concrete for final finishing of formed surfaces.

2.3 MATERIALS

- .1 Form Plywood: exterior grade, Douglas Fir conforming to current CSA O121-08 Douglas Fir Plywood. Plywood shall be resin coated one side (in contact with concrete). Use sound undamaged plywood with clean true edges. Make up or patching strips between panels shall be kept to a minimum.
- .2 Lumber for Forms, Falsework, Shoring and Bracing: conform to current CSA O141-05 for Softwood Lumber, and the applicable authorized grading authority. All lumber shall be a grade to which allowable unit stresses may be assigned in accordance with the National Building Code. All lumber shall be grade marked by the authorized grading authority.
- .3 Form Ties: fabricated units having a minimum working strength when assembled of 21 MPa and shall be adjustable in lengths to permit tightening and alignment of forms. Ties shall be made with breakback ends or other means of removing the tie end to a depth of at least 25 mm from the concrete surface, after the forms are removed. Flat tie for Architectural exposed concrete to include plastic cones leaving no metal within 20 mm of surface.
- .4 Form Release Agent: proprietary material which will not stain the concrete or impair the natural bonding or colour characteristics of coating intended for use on the concrete.
- .5 Waterstops: purpose made polyvinyl chloride; 12 MPa minimum tensile strength, minus 46 degrees C. to plus 70 degrees C. Acceptable Equal - Voclay Waterstop.
- .6 Premoulded Joint Fillers:
 - .1 Bituminous impregnated fibreboard: to ASTM D1751-99.
 - .2 Vinyl form: to ASTM D1752, Type I, (Flexible) grade.
 - .3 Standard Cork: to ASTM D1752, Type II.

Part 3 Execution**3.1 CONDITION OF SURFACES**

- .1 Examine the excavations and foundations for adequate working room and support for the Work of this Section
- .2 Verify lines, levels and centre lines before proceeding with the work and ensure that all dimensions agree with the drawings.
- .3 Report to the Consultant discrepancies in other work which affect the Work of this Section.

3.2 PREPARATION

- .1 Coat the inside surfaces of forms with a form release agent, used in accordance with the manufacturer's instructions.
- .2 Apply the agent prior to replacing reinforcing steel, anchoring devices and embedded parts.

3.3 ASSEMBLY AND ERECTION

- .1 Construct the formwork and shoring and bracing to meet the design and code requirements, accurately so that the resultant finished concrete shall conform to the shapes, lines and dimensions shown on the drawings, within the specified tolerances.
- .2 Formwork shall be so arranged and assembled as to permit easy dismantling and stripping so that the concrete will not be damaged during its removal.
- .3 Review locations of ties and form panels for exposed concrete work with the Consultant prior to commencing forming.
- .4 Check and correct formwork as required, both horizontally and vertically, during the placing of the concrete.
- .5 Unless noted otherwise construct formwork to maintain the following maximum tolerances of finished concrete:
 - .1 Deviation from horizontal and vertical lines:
6 mm in 3000 mm,
10 mm in 6000 mm,
20 mm in 12000 mm or more.
 - .2 Deviation of building dimensions indicated on Drawings and position of columns, walls and partitions: 6 mm.

- .3 Deviation in cross sectional dimensions of columns or beams, or in thickness of slabs and walls, plus or minus 6 mm.
- .4 Camber Slabs and Beams: 10 mm per 3000 mm of span unless indicated otherwise on the drawings.
- .6 The perimeter grade beam containing embedded material for support of brick cladding shall be constructed such that the exterior face of the grade beam deviates no more than 5 mm from the location detailed on the drawings. The Contractor shall take such steps deemed necessary to maintain these tolerances.
- .7 Formwork for all cast-in-place concrete work exposed to view shall be constructed with due consideration to finish dimensions, aesthetics and final finishing requirements.
- .8 Obtain Consultant's approval for use of earth forms.

3.4 JOINTS IN FORMS

- .1 Make form joints tight in order to prevent leakage of concrete.
- .2 Clean all edges and contact surfaces before erection.
- .3 Where required, install waterstop to manufacturer's instructions and without displacing reinforcement. Do not distort or pierce waterstop.

3.5 SHORING AND BRACING

- .1 Provide bracing to ensure the stability of the formwork as a whole.
- .2 Prop or strengthen all previously constructed parts liable to be overstressed by construction loads.
- .3 Arrange forms to allow stripping without removal of the principal shores, where these are required to remain in place.

3.6 EMBEDDED PARTS AND OPENINGS

- .1 Provide formed openings where required for pipes, conduits, sleeves and other work to be embedded in and passing through concrete members. Accurately locate and set in place items which are to be cast directly into concrete. Co-ordinate work of other sections and co-operate with trades involved in forming openings, slots, recesses, chases and setting sleeves, bolts, anchors, and other inserts. No such forming or setting of openings, slots, recesses, chases, sleeves, or parts shall be done unless specifically shown on the drawings or approved prior to installation.

- .2 Obtain Consultant's approval before framing openings in concrete beams or columns not specifically detailed on structural drawings.
- .3 Provide temporary ports or openings where required to facilitate cleaning and inspection. Openings at the bottom of forms shall be located so that flushing water will drain from the forms.
- .4 Close the temporary ports or openings with tight fitting panels, flush with the inside face of the forms, neatly fitted so that the joints will not be apparent in exposed concrete surfaces.
- .5 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval in writing of all modifications from the Consultant before placing concrete.

3.7 FIELD QUALITY CONTROL

- .1 Inspect and check the completed formwork, shoring and bracing to ensure that the work is in accordance with the formwork design, and that the supports, fastenings, wedges, ties and parts are secure. The Consultant responsible for the design of the formwork shall assist in this inspection.
- .2 Inform the Consultant when the formwork is complete and has been cleaned. Obtain the approval of the Engineer responsible for the design of the formwork and the general approval of the Consultant before placing concrete.

3.8 CLEANING

- .1 Clean the forms as erection proceeds, to remove foreign matter.
- .2 Remove cuttings, shavings and debris from within forms.
- .3 Flush the completed forms with water or air jet to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

3.9 WINTER CONSTRUCTION

- .1 Remove ice and snow from within the forms.
- .2 The use of de-icing salts will not be permitted.
- .3 Unless formwork and concrete construction proceed within a heated enclosure, do not use water to clean out completed forms. Use compressed air or other means to remove foreign matter.

3.10 REMOVAL OF FORMWORK

- .1 Notify the Consultant before removing formwork. Removal of formwork prior to dates listed in Item 3 are at the discretion of the consultant.
- .2 Remove formwork progressively and in accordance with the reference code requirements, and so that no shock loads or imbalanced loads are imposed on the structure.
- .3 Do not remove forms and shoring before concrete has attained sufficient strength to ensure safety of structure. If evidence to verify concrete strength is not available, the forms and shores shall not be removed before the following minimum intervals after concrete is placed.

.1	Footings, Walls & Grade Beams	-	4 days
.2	Columns	-	7 days
.3	Beams, Soffits and Slabs	-	21 days
- .4 Loosen forms carefully. Do not wedge pry bars, hammers or tools against concrete surfaces.
- .5 Leave forms loosely in place, against vertical surfaces, for protection until complete removal is approved by the Consultant.
- .6 Store removed forms, for exposed architectural concrete, in a manner that surfaces to be in contact with fresh concrete will not be damaged. Marked or scored forms will be rejected.
- .7 Restore structural members where required due to design requirements or construction conditions and as required to permit progressive construction.
- .8 Remove forms not directly supporting weight of concrete as soon as stripping operations will not damage concrete.
- .9 Re-use of formwork and false work is subject to the requirements of CAN/CSA-A23.1-04, Clause 27.4.

END OF SECTION

Part 1 General**1.1 RELATED SECTIONS**

- .1 Section 03100 – Concrete Forming and Accessories.
- .2 Section 03300 – Cast-In-Place Concrete.

1.2 MEASUREMENT PROCEDURES

- .1 No measurement will be made under this Section.
 - .1 Include reinforcement costs in items of concrete work in Section 03300 - Cast-In-Place Concrete.

1.3 REFERENCES

- .1 American Concrete Institute (ACI)
 - .1 SP-66-04, ACI Detailing Manual 2004.
 - .1 ACI 315-99, Details and Detailing of Concrete Reinforcement.
 - .2 ACI 315R-04, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.
- .2 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1-04/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA-A23.3-04, Design of Concrete Structures.
 - .3 CAN/CSA-G30.18-M92(R2002), Billet-Steel Bars for Concrete Reinforcement, A National Standard of Canada.
 - .4 CSA-G40.20/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .5 CSA W186-M1990(R2002), Welding of Reinforcing Bars in Reinforced Concrete Construction.
- .3 Concrete Reinforcing Steel Institute (CRSI)
 - .1 Manual of Standard Practice - 2009.

1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01330 - Submittal Procedures.
- .2 All drawings and schedules shall be prepared and checked under the direct supervision of a qualified professional engineer who is experienced in this work.
- .3 Submit shop drawings including placing of reinforcement and indicate:
 - .1 Bar bending details.
 - .2 Lists.

- .3 Quantities of reinforcement.
- .4 Sizes, spacing, locations of reinforcement and mechanical splices if approved by Consultant, with identifying code marks to permit correct placement without reference to structural drawings.
- .5 Indicate sizes, spacing and locations of chairs, spacers and hangers.
- .4 Detail lap lengths and bar development lengths to CSA-A23.3, unless otherwise indicated.
- .5 Review of shop drawings for size and arrangement of principal and auxiliary members only. Such review will not relieve the Contractor of responsibility for general and detail dimensions and fit, or any errors or omissions.
- .6 Quality Assurance: in accordance with Section 01450 - Quality Control.
 - .1 Mill Test Certificates will be accepted in lieu of physical tests.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Reinforcing steel, welded wire fabric and accessories shall be delivered, handled and stored in a manner which prevents contamination from bond reducing or foreign matter and damage to its fabricated form.

Part 2 Products

2.1 MATERIALS

- .1 Substitute different size bars only if permitted in writing by Consultant.
- .2 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.
- .3 Weldable Reinforcing steel: weldable low alloy steel, grade 400, deformed bars to CAN/CSA-G30.18.
- .4 Beam stirrups shall conform to the current CSA-G30.18, Grade 300.
- .5 Ties wires shall be 1.29 mm or heavier annealed wire or a patented system approved by the Consultant.
- .6 Welded steel wire fabric: to CSA 30.55-91
 - .1 Provide in flat sheets only.
- .7 Chairs, bolsters, bar supports, spacers: to ACI Standard 315.
- .8 Mechanical splices: subject to approval of Consultant.
- .9 Plain round bars: to CSA-G40.20/G40.21.
- .10 Mechanical splices subject to the approval of the Consultant.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2 and ACI 315.
- .2 Obtain Consultant's approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Upon approval of Consultant, weld reinforcement in accordance with CSA W186.
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.
- .5 All intermediate grade reinforcing bars shall be bent cold without hickeying. All high strength steel shall be preheated as approved by the Consultant.
- .6 Reinforcing shall not be straightened or rebent.
- .7 Splices shall be provide sufficient lap to transfer the stresses between bars by bond and shear in accordance with the National Building Code.

Part 3 Execution**3.1 FIELD BENDING**

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Consultant.
- .2 When field bending is authorized, bend without heat, applying slow and steady pressure.
- .3 Replace bars, which develop cracks or splits.

3.2 PLACING REINFORCEMENT

- .1 Place reinforcing steel as indicated on placing drawings and in accordance with CSA-A23.1/A23.2.
- .2 Prior to placing concrete, obtain Consultant's approval of reinforcing material and placement.
- .3 Ensure cover to reinforcement is maintained during concrete pour.
- .4 Clear distance between bars, except for columns, shall not be less than the nominal diameter of the bar, or 25 mm, or one and one-third the maximum size of the coarse aggregate. Bars placed in two or more layers shall have a minimum clear distance between the layers of not less than 25 mm and shall be placed directly above and below each other.
- .5 Clear distances between bars, except for columns, shall be not less than one and one-half the nominal diameter of the bar, or 40 mm, or one and one-half times the maximum size of the coarse aggregate.
- .6 Reinforcing steel shall, where not otherwise shown on the structural drawings, be protected by the clear cover of concrete over the reinforcement as follows:
 - .1 Where concrete is formed against earth, not less than 75 mm

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- .2 Where concrete placed against forms is to be exposed to the weather or be in contact with the ground, not less than 50 mm for bars larger than 15M, and not less than 40 mm for bars 15M and smaller.
 - .3 In slabs and walls not exposed to the ground or weather, not less than 20 mm, except otherwise detailed.
 - .4 In beams, girders and columns not exposed to the ground or weather, not less than 40 mm, except as otherwise detailed.
 - .5 The foregoing clear covers shall be maintained within 5 mm.
 - .6 Reinforcement shall be adequately supported by metal chairs, spacers or hangers and secured against displacement within the tolerance permitted and in accordance with the latest ACI Standard 315.
 - .7 For slabs on grade, footings or similar construction, concrete blocks may be used in place of metal chairs.
 - .8 Lap Bars as Follows:
 - .1 Compression Splices - 30 bar diameters minimum.
 - .2 Tension Splices - 40 bar diameters minimum
 - .3 No splice shall be less than 300 mm (12")
 - .4 Steel reinforcing bars shall run continuous through cold joints.
 - .7 Cleaning
 - .1 All material shall be clean and free of all form oil or deleterious materials.
 - .2 All deleterious material shall be removed from the surface of the reinforcing steel in a manner acceptable to the Consultant.
 - .8 Welding
 - .1 Do welding to meet requirements of CSA W186. Have welding performed by workmen qualified under CSA W47. Welding only by written authority of the Consultant.

END OF SECTION

Part 1 General**1.1 RELATED WORK**

- .1 Concrete Formwork Section 03100
- .2 Concrete Reinforcing Section 03200

1.2 QUALITY ASSURANCE

- .1 Provide at least one person who shall be present at all times during execution of this portion of the Work and who shall be thoroughly trained and experienced in placing the types of concrete specified and who shall direct all work performed under this Section.
- .2 For finishing of exposed surfaces of the concrete, use only thoroughly trained and experienced journeyman concrete finishers.
- .3 Perform cast-in-place concrete work to requirements of CAN/CSA-A23.1-04 -~~A~~Concrete Materials and Methods of Concrete Construction®.

1.3 PRODUCT HANDLING

- .1 Use all means necessary to protect cast-in-place concrete materials before, during and after installation and to protect the installed work and materials of all other trades.
- .2 In the event of damage, immediately make all repairs and replacements necessary to approval of the Consultant and at no additional cost to the Owner.

1.4 INSPECTION AND TESTING

- .1 Concrete sampling, inspection and testing will be performed by a firm approved by the Consultant and paid for by the Contractor.
- .2 Provide free access to all portion of work and co-operate with appointed firm.
- .3 Submit proposed mix design for each class of concrete to Consultant for approval two weeks prior to commencement of the Work.
- .4 Tests of cement and aggregates may be performed to ensure conformance with requirements stated herein.
- .5 One concrete test, consisting of three test cylinders, will be taken for every 40 cubic meters or less of each class of concrete placed per day.
- .6 One (1) additional test cylinder will be taken during cold weather concreting, and will be cured on the job site under the same condition as the concrete it represents.
- .7 One (1) slump test and one (1) air content test will be taken for each set of test cylinders taken. Concrete and atmospheric temperatures shall also be recorded.

- .8 Testing of concrete will be performed in accordance with CAN/CSA-A23.2-04 Methods of Test for Concrete.
- .9 Test results will be issued to the Contractor, Consultants (Structural, Architect) and Owner. Test reports are to be numbered consecutively with number one.
- .10 Required retesting will be paid for by the Contractor.
- .11 The Consultant may order additional testing any time even though the required tests indicate the strength requirements have been met. Cost to be borne by the Contractor.

PART 2 Products

2.1 CONCRETE MATERIALS

- .1 Cement: Normal-Type GU (type 10), and sulphate resistant – Type HS (type 50) Portland Type, conforming to CAN/CSA-A3000-03.
- .2 Fine and Course Aggregate: conforming to CAN/CSA-A23.1-04.
- .3 Water: clean and free from injurious amounts of oil, alkali, organic matter, or deleterious materials.

2.2 ADMIXTURES

- .1 Air Entrainment: conforming to ASTM C260-94.
- .2 Chemical: ASTM C 494-92. Water-reducing, strength increasing type WN - normal setting.

2.3 ACCESSORIES

- .1 Vapour Barrier: 0.15 mm polyethylene film conforming to CGSB CAN2-51.33-M80 or latest edition, Type 1 - low permeance heavy duty.
- .2 Curing Compound: conforming to CAN/CSA A23.1 (WHITE) and to ASTM C309 Type 1 chlorinated rubber, Type D with fugitive dye.
- .3 Non-Shrink Grout: premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 20 MPa at 3 days and 50 MPa at 28 days.
- .4 Void Form: system made decomposable slab and beam forms as manufactured by Shearmat or approved equal.
- .5 Joint filler: pre-moulded bituminous impregnated cane fibre board Flexcell as manufactured by Sternson or approved equal.

- .6 Vertical Joint Sealant: non-sag polyurethane sealant designed for use on vertical surfaces. RC-1/NP-1, Sikaflex 1A or approved equal. Install strictly in accordance with manufacturer's recommendations.
- .7 Horizontal Joint Sealant: three component, chemically curing self-levelling polyurethane joint sealant, RC-270, Sikaflex 2C. Install strictly in accordance with manufacturer's recommendations.
- .8 Concrete Expansion Anchors: to be Hilti Kwik-Bolt or approved equivalent. Sized as per drawings. Minimum embedment length of all Hilti Kwik-Bolt to be 150 mm unless noted otherwise.
- .9 Concrete Inserts with Bolt Extension: concrete inserts to be Hilti HIT anchors or approved equivalent, sized as detailed on drawings. Bolt extensions to be mild steel threaded extensions sized as detailed on drawings.
- .10 Concrete Patching Material: pre-packaged, air-entrained, cementitious product containing graded natural aggregate. Natural MasterPatch 901 Rapid Setting Mortar as manufactured by Master Builders.
- .11 Bonding Agent: approved high polymer polyvinyl acetate emulsion applied in strict accordance with manufacturer's recommendations for proposed application. Daraweld -C or approved equal.

2.4 CONCRETE MIXES

- .1 Provide concrete mixed in accordance with requirements of CAN/CSA A23.1-04 to meet the following specifications:

Type	Location	Strength fc(MPa)	Cement Symbol	Aggregate Max.(mm)	Total Air Slump	Content %
.1	Exterior Grade Supported Slabs	30	HS	20	75 ± 25	5 ± 1
.2	Interior Grade Supported Slabs	25	GU	20	75 ± 25	5 ± 1
.3	Grade Beams/Pile Caps	30	HS	20	75 ± 25	5 ± 1

- .2 Submit proposed mix design to inspection and testing firm and to Consultant two weeks prior to commencement of work. Provide certification that mix proportions selected will produce concrete of specified quality and that strength will comply with CAN/CSA A23.1-04.
- .3 Each load of ready-mixed or transit-mixed concrete delivered to the project site shall be accompanied by duplicate delivery slips providing the following information:
- .1 Name of ready-mix batch plant
 - .2 Serial number of ticket
 - .3 Date and truck number
 - .4 Name of contractor

- .5 Specific designation of project
 - .6 Specific class of concrete
 - .7 Amount of concrete in cubic meters
 - .8 Time of loading or first mixing of aggregate, cement and water.
-
- .6 Use accelerating admixtures in cold weather only when approved by Consultant. If approved, the use of admixtures will not relax cold weather placement requirements. Do not use calcium chloride.
 - .7 Use set-retarding admixtures during hot weather only when approved by Consultant.
 - .8 All admixtures shall be subject to the approval of the Consultant. List all proposed admixtures in mix design submission. Do not change or add admixtures to approved design mixes without Consultant's approval.

Part 3 Execution

3.1 INSPECTION

- .1 Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- .2 Verify that all items to be embedded in concrete are in place.
- .3 Verify that concrete may be placed to the lines and elevations indicated on the Drawings, with all required clearance from reinforcement.

3.2 DISCREPANCIES

- .1 In the event of discrepancy, immediately notify the Consultant.
- .2 Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.3 PREPARATION

- .1 Remove all wood scraps and debris from the formed areas in which concrete will be placed.
- .2 Thoroughly clean the forms to ensure proper placement and bonding of concrete.
- .3 Thoroughly wet the forms, except in freezing weather, or oil them; remove all standing water.
- .4 Thoroughly clean all transporting and handling equipment

3.4 PLACING CONCRETE

- .1 Place concrete in accordance with requirements of CAN/CSA A23.1-04 and as indicated on Drawings.
- .2 Notify Consultant and Inspection and Testing Firm a minimum of 48 hours prior to commencement of concrete operations.
- .3 Ensure all anchors, seats, plates, and other items to be cast into concrete are securely placed, and will not interfere with concrete placement.
- .4 Maintain accurate records of cast-in-place concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.
- .5 Ensure reinforcement, inserts and embedded parts are not disturbed during concrete placement.
- .6 Prepare previously placed concrete by cleaning with steel brush.
- .7 Pour concrete continuously between predetermined construction and control joints. All construction joints subject to approval of the Consultant.
- .8 Approval to place concrete shall be contingent on the formwork and reinforcing steel placement and evidence that the Contractor can place the planned casting without stopping.
- .9 Convey concrete to the place of final deposit by methods which will prevent the segregation or loss of material.
- .10 Equipment to be such that when concreting has once started, the depositing of concrete is to proceed at a rate and sequence such that concrete is at all times sufficiently plastic to ensure proper bonding of successive layers or panels.
- .11 Conveying and placing equipment to be free of hardened concrete and foreign material. Clean at frequent intervals.
- .12 Concrete to be deposited as close as practicable to final position. Avoid segregation due to rehandling or flowing. Place in horizontal lifts to maintain a level surface.
- .13 Vertical height of free fall of concrete not to exceed maximum required for good practice. If segregation occurs, chutes and spouts to be used.
- .14 Consolidate thoroughly and uniformly by tamping, hand tools, vibrators and finishing machines. Secure dense, homogeneous structure, close bond with reinforcement and smooth formed surfaces. Use internal vibrators wherever practicable. External type vibrators only where satisfactory surfaces cannot be obtained with internal type.
- .15 Internal vibrators applied at the point of deposit in the areas of freshly placed concrete. Allow to sink in the concrete until penetrated into the previous layer of concrete. Withdraw immediately at the same speed at which they sank. Move about 300 mm to a new location and then repeat process. Extreme care to be taken not to disturb the reinforcing steel or the forms.

- .16 Pour slabs on grade in a checkerboard pattern. Saw cut slab maximum 4000o/c. Saw cut control joints within 24 hours after finishing. Use 6 mm thick blades, cutting 1/3 depth of slab thickness. Vacuum clean saw cut prior to installation of sealant and back-up rod. Saw cuts on structural slab and slab with heat pipes are not permitted.
- .17 Excessive honeycomb or embedded debris in concrete is not acceptable. Remove and replace defective concrete at the direction of the Consultant. For exposed architectural finishes, excessive honeycomb is when eraser end of pencil fits into the cavity. Exposed or segregated aggregate, exposed reinforcing all are to be reviewed by the Consultant for corrective measures.

3.5 COLD WEATHER REQUIREMENTS

- .1 When the air temperature is at or below 5°C or when there is a probability of it falling to that limit during the placing or curing period, cold weather requirements shall be applicable.
- .2 Provide heating equipment or heating plant on the job ready for use when concrete is being placed during cold weather. Such equipment shall be adequate for the purpose of maintaining the required temperature during the placing and curing of the concrete. The methods used for heating shall be approved by the Consultant. Equipment including carbon monoxide gas in the building shall not be accepted.
- .3 Concrete shall not be placed on or against reinforcement, formwork, ground or any surface that is at a temperature less than 5°C.
- .4 The temperature of the concrete at all surfaces shall be maintained at not less than 25°C for three days, or not less than 10°C for five days after placing. Means shall be provided to humidify the air within enclosures and to keep the concrete and formwork continuously moist if dry heat is used.
- .5 The concrete shall be kept above freezing temperature for a period of seven days, and shall be kept from alternate freezing and thawing for at least fourteen (14) days after placement.
- .6 At the end of the specification protection period the temperature of the concrete shall be reduced gradually at a rate not exceeding that shown in CAN/CSA-A23.1-04.
- .7 Accelerators, or so-called anti-freeze compounds shall not be permitted unless otherwise approved in writing by the Consultant.
- .8 All protective coverings shall be kept clear of the concrete and form surfaces to permit free circulation of air and shall be maintained intact for at least 24 hours after artificial heat is discontinued.

3.6 HOT WEATHER REQUIREMENTS

- .1 When the air temperature exceeds 30°C, hot weather requirements shall be applicable.
- .2 Time of initial mixing to complete discharge shall not exceed one hour and fifteen minutes and concrete placed shall not exceed 30°C.
- .3 Concrete forming surfaces and reinforcing steel shall be sprinkled with cool water just prior to placing concrete. Standing water or puddles shall be removed prior to concrete placement.
- .4 Special wind protection will be required as directed by the Consultant.
- .5 Columns, walls, beams and slabs shall be kept continuously damp for twenty-four (24) hours by normal curing procedures as outlined by this Specification. Slabs cured by the application of curing compound applied immediately after finishing of the slab but before evaporation of surface moisture.
- .6 The use of water reducing agents shall be subject to the approval of the Consultant when hot weather conditions prevail.

3.7 CONSTRUCTION JOINTS

- .1 The location and detail of all construction joints not detailed on the structural drawings shall be approved by the Consultant.
- .2 Where fresh concrete is to be placed against concrete which has set or has partially set, the surface of the set or partially set concrete shall be roughened, cleaned of all laitance, and thoroughly soaked with water prior to the placement of fresh concrete.
- .3 In general, construction joints shall be located in the middle of the spans of suspended slabs, beams and girders. Proper key and dowels or extensions of reinforcing shall be provided at all construction joints.
- .4 Concrete placed in wall and column forms shall be struck off flush with the underside of the floor and roof systems.
- .5 Vertical construction joints in foundation walls shall be properly keyed and dowelled and construction with an approved water stop, properly anchored against displacement during the placement of the concrete and properly sealed at all of the intersections. Splices and intersections of waterstop shall be joined by heat fusion in accordance with approved manufacturer's instructions.

3.8 PATCHING CONCRETE

- .1 After the removal of the forms, concrete surfaces may be subject to inspection by the Consultant.
- .2 All exposed metal for ties, nails, wires, shall be removed, fins broken off and all loose concrete removed.

- .3 Form tie pockets shall be thoroughly wetted and patched with patching concrete followed by proper curing.
- .4 Honeycombed and other defective surfaces at the discretion of the Engineer ,shall be chipped away to a depth of not less than 25 mm with the edges perpendicular to the surface, thoroughly wetted and patched with patching concrete followed by proper curing. Patching to be completed at the discretion of the Consultant.
- .5 Patching concrete shall be thoroughly compacted into place and finished in such a manner as to match the adjoining concrete. The design mix of the patching concrete shall be approved by the Consultant.

3.9 DEFECTIVE CONCRETE

- .1 Concrete not meeting the requirements of the Specifications and Drawings shall be considered defective concrete at the discretion of the Engineer.
- .2 Concrete not conforming to the lines, details and grade specified herein or as shown on the drawings shall be modified or replaced at the Contractor's expense and to the satisfaction of the Consultant. Finished lines, dimensions and surfaces shall be correct and true within tolerances specified in the Formwork Section of these Specifications.
- .3 Concrete not properly placed resulting in excessive honeycombing and all honeycombing and other defects in critical areas of stress, shall be repaired or replaced at the Contractor's expense and to the satisfaction of the Consultant.
- .4 Concrete of insufficient strength if improper consistency shall be, as required by the Consultant, subject to one or more of the following:
 - .1 Changes in mix proportions for the remainder of the work.
 - .2 Cores drilled and tested from the areas in question as directed by the Consultant and in accordance with CAN/CSA-A23.2-04. The test results shall be indicative of the in-place concrete.
 - .3 Load testing of the structural elements in accordance with CAN/CSA-A23.3-04.
 - .4 The changes in the mix proportions and the testing shall be at the Contractor's expense.
 - .5 Concrete failing to meet the strength requirements of this Specification shall be strengthened or replaced at the Contractor's expense and to the satisfaction of the Consultant.

3.10 FINISHING OF FORMED SURFACES

- .1 All formed surfaces noted in Consultant's Room Finish Schedule as exposed concrete shall, unless noted otherwise, be finished with a smooth rubbed finish in accordance CAN/CSA-A23.1-04, Clause 24, and to Consultant's approval.

- .2 All formed surfaces noted in Consultant Roof Finish Schedule as receiving a paint, vinyl or other applied finish shall be final finished to remove all protrusions, ridges and other irregularities. All voids and pinholes are to be filled. Finished surface is to be smooth, straight and true, ready to receive Architectural Finish as noted.
- .3 On all other exposed formed concrete surfaces, except at unfinished areas: remove blemishes, formwork joint marks by rubbing with carborundum block and water. Leave finished surfaces smooth, unmarred. Complete rubbing within twenty-four (24) hours of stripping formwork.

3.11 ANCHOR BOLTS, ROBS, DOWELS AND WELDMENTS

- .1 Set anchor bolts, dowels and weldments to the following tolerances. All anchor bolts and dowels to be set by use of templates.
 - .1 Alignment: $\pm 3\text{mm}$ of location, plumb and true
 - .2 Projection: $\pm 6\text{mm}$ of elevations called for.

3.12 BASE PLATES GROUTING

- .1 Mix and place as per manufacturer's specifications. Grout base plates with grout boxes. Neatly finish edges and trim edges adjacent to masonry.

3.13 EQUIPMENT PADS

- .1 Provide concrete pads for equipment where and as indicated on drawings. Adjust dimensions of pads to reviewed shop drawings.
- .2 Insert bolts and sleeves and pack solidly with non-shrink grout, in accordance with setting details and templates.
- .3 Steel trowel top surfaces smooth. Bullnose edges to smooth radius.

3.14 CONCRETE TOPPING

- .1 All concrete toppings indicated on drawings are to be bonded toppings.
- .2 Concrete toppings are to be bonded by the following method.
 - .1 Application of approved bonding agent to prepared base course.

END OF SECTION

Part 1 GENERAL**1.1 Related Work**

- .1 Poured and prepared concrete slabs, toppings
and floors ready to receive finish Section 03300
- .2 Formed expansion and control joints Section 03300

2 PRODUCTS**2.1 Compounds/Hardeners/Sealers**

- .1 Curing Compound: chlorinated liquid rubber to CGSB 90-GP-1a, Type 1
- .2 Non-metallic Surface Sealer: premixed natural mineral type; "Eurocure 700", by Elsro Ltd, "Flor Seal" by Sternson Ltd, "Master Seal: by Master Builders or approved equal. Sealer to be liquid floors. Sealer to be supplied in colour that is recommended for, and compatible with, colour of dry shake hardener. Sealer and hardener are not used on floor receiving polishing). No sealer permitted on floors receiving GFC finish.
- .3 Hardener, functional filler additive, not a chemical admixture, to prepackaged, factory-mixed product containing crushed, washed and graded non-metallic aggregate, Portland cement, colouring pigments where noted and other proprietary components.

Acceptable Products or approved equal:

Hardener - HARD-CEM by Cementec Industries Inc.
Sealer - Hydrozo Silane 40 by Chemrex
- .4 Joint Sealer: Three Component, chemically curing, self-levelling polyurethane joint sealant, RC 270-Sikaflex 22 as manufactured by Tremco, colour selection by Consultant. Install strictly in accordance with manufacturer's recommendations.
- .5 Bonding Agent: Approved high polymer polyvinyl acetate emulsion applied in strict accordance with manufacturer's recommendations for proposed application. Daraweld - C or approved equal.

3 EXECUTION**3.1 Floor Finishing**

- .1 Finish concrete floor surfaces in accordance with CAN/CSA-A23.1-09 or latest edition as well as ACI 302 - Guide to Concrete Floors and Slab Construction.
- .2 Uniformly spread, screed and float concrete. Do not use grate tampers or mesh rollers. Do not spread concrete by vibration. Bring surfaces to levels indicated on Drawings.
- .3 Apply Plain or Coloured Hardener and Sealer to concrete floors noted in Architects' Room Finish Schedule as receiving sealer/hardener. Colour selection by Architect. Mix integral hardener with concrete mix at a rate of 40 kg/m³ (67.4 lb/yd³) or as recommended by manufacturer for Normal Traffic Conditions. After concrete curing completed, apply minimum one coat of sealer. Hardener and sealer usage is to be strictly in accordance with manufacturer's recommendations.
- .4 All concrete slabs noted in Architect's Room Finish Schedule as receiving thin-set quarry tile finish are to be final finished with a swirl trowel finish plus fine hair brooming to give a surface with a smooth appearance with some non-slip properties. Final finish to

minimum Class A tolerances in accordance with CSA-A23.1 Clause 22 maintaining surface flatness with maximum variation of 5 mm in 3 meters and absolute maximum of + 6 mm.

- .5 Unless otherwise noted, all concrete floors noted in Architect's Room Finish Schedule as exposed concrete or receiving carpeting, resilient flooring or wood flooring are to be final finished to a hard, smooth dense trowelled surface free from blemishes. Final finish to minimum Class A tolerances in accordance with CSA-A23.1-09, Clause 22, Table 18 to produce floor surface of pleasing appearance, easily cleaned and maintained with high wear-resistance characteristics. Maintain surface flatness with maximum variation of 5 mm in 3 m and absolute maximum of + 6 mm.
- .6 Apply concrete Surface Sealer on floor surfaces noted in Room Finish Schedule as exposed concrete surfaces. Apply strictly in accordance with manufacturer's recommendations.
- .7 In areas with floor drains, maintain floor level at walls and pitch surfaces uniformly to drain at 5 mm/m nominal unless indicated otherwise on drawings.

3.2 Toppings

- .1 All concrete slabs which are to receive topping are to be screeded and mechanically floated to achieve surface flatness with maximum variation of 8 mm in 3 m. Depress slabs to accommodate finish where required. Provide a scratch finish in accordance with CSA-A23.1, Clause 22 to all concrete slabs receiving topping.
- .2 All concrete slabs which are to receive a concrete topping shall be cleaned free of oil and loose material.
- .3 Place dividers, edge strips, reinforcing, expansion joint assemblies and other cast-in items shown.
- .4 All concrete toppings are to be constructed with sawcuts or alternate approved crack control joints at maximum 6000mm spacing. Contractor to submit proposed control joint layout to Architect for review 2 weeks prior to commencing this work.
- .5 Just prior to placing topping, apply approved bonding agent to base slab.
- .6 All concrete toppings to serve as floor surfaces are to be final finished in accordance with applicable sections of Clause 3.1 Floor Finishing.

3.3 Curing and Protection

- .1 All equipment needed for the curing and protection of the concrete shall be on hand and ready for use before actual placing is started.
- .2 All exposed non-formed surfaces shall be kept continuously moist for a minimum of seven (7) consecutive days after placement of the concrete. The water for curing shall be clean and free from any materials that will cause staining or discolouration of the concrete. A liquid, membrane forming, curing compound shall be used under circumstances where the application of moisture is impracticable and where such compounds will not jeopardize the appearance of the concrete nor the bonding of future floor finishes. It is critical for floors receiving GFC finish to be moisture cured for the full 7 days, no curing compound is permitted on these floors.
- .3 Special curing techniques shall be employed with the concrete is subject to drying conditions such as high temperatures, low relative humidity and high winds. Concrete wall and column forms shall be kept continuously moist.

- .4 Freshly placed concrete shall be protected from the effects of direct sunshine, drying winds, cold, excessive heat and running water by the use of adequate tarpaulins or other suitable material to cover completely or enclose all freshly finished surfaces until the end of the curing period specified.

END OF SECTION

1. GENERAL**1.1 WORK DESCRIPTION**

- .1 Custom Fabricate ferrous metal items 16 gauge and heavier, including galvanized and prime painted finishes.

1.3 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01220.
- .2 Clearly indicate profiles, sizes, connection attachments, reinforcing, anchorage size and type of fasteners and accessories.

2. PRODUCTS**2.1 MATERIALS**

- .1 Steel - conforming to requirements of CSA G40.21.
- .2 Bolts, Nuts and Washers - high strength type recommended for structural steel joints conforming to requirements of ASTM A325.

2.2 FABRICATION

- .1 Fabricate items in accordance with size and profiles indicated on drawings, with joints neatly fitted and properly secured. Verify site dimensions prior to shop fabrication.
- .2 Fit and shop assemble in largest practical sections for delivery to site. Grind all exposed welds smooth and flush with adjacent finished surfaces. All exposed joints shall be flush butt type hairline joints where mechanically fastened.
- .3 Supply all components required for proper anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication. All exposed mechanical fastening shall be flush countersunk screws or bolts unobtrusively located, consistent with the design of the structure; except where specifically noted otherwise.
- .4 Shop prime paint ferrous metal items. Do not shop prime surfaces in contact with or embedded in concrete, or requiring field welding. Thoroughly clean all surfaces of rust, scale, grease and foreign matter prior to prime painting.

3. EXECUTION**3.1 INSTALLATION**

- .1 Install items square and level, accurately fitted and free from distortion of defects detrimental to appearance and performance. Make provisions for temporary support and bracing. Keep work in alignment at all times. Perform required field welding. Obtain Architect's permission prior to site cutting or making adjustments which are not part of scheduled work.
- .2 Replace items damaged in course of installation. After installation, touch-up field welds and scratched and damaged prime painted and galvanized surfaces. Use a primer consistent with that used to provide shop coat and as recommended for galvanized surfaces.
- .3 Supply to appropriate sections, items requiring to be cast into concrete or otherwise built-in, complete with necessary setting templates.

3.2 SCHEDULE OF ITEMS

- .1 Supply and install metal fabrications, complete with anchorage and fitments necessary to installation, including but not necessarily limited to:
 - .1 Miscellaneous Anchor Bolts and Connectors.
 - .2 Drainage Trench Grillage and Support Angles
 - .3 Sump Pit Frame and Checker Plate Lid
 - .4 Replacement Bollards
 - .5 Galvanized Guard Rail and HSS Posts

END OF SECTION 05500

1. GENERAL

1.1 Related Work

.1 Flashing and Sheet Metal

Section 07600

2. PRODUCTS

2.1 Materials

.1 Primer: as recommended by sealant manufacturer.

.2 Caulking Compound (exterior): One component, acrylic base, solvent curing conforming to CGSB 19-GP-5M. Colour to match adjacent finishes.

.3 Silicone: One Component, Silicone Base, Chemical Curing conforming to CGSB CAN2-19.13-M82- translucent.

3. EXECUTION

3.1 Application

.1 Clean joints in accordance with manufacturer's recommendations, thoroughly removing dust, paint, soil, grease, concrete, or other coatings from non ferrous metals with solvents.

.2 Contacting surface shall have a gap 6 mm wide minimum.

.3 The depth of the sealant and the width of the sealant shall be equal at dimensions up to 12 mm.

.4 At widths from 12 mm to 25 mm, the depth shall remain 12 mm.

.5 Where necessary, mask adjoining surfaces with tape prior to priming and filling.

.6 Prime sides of joints in accordance with manufacturer's directions immediately prior to filling.

.7 Apply caulking with gun fitted with proper sized nozzle to suit joint. Use sufficient pressure to fill joint solid without superficial pointing.

.8 Apply sealant within recommended temperature range. Consult manufacturer when sealant cannot be applied within recommended temperature ranges.

.9 Form surface smooth and free from wrinkles, sags, air pockets or other defects. Tool surface to concave joint.

.10 Clean adjacent surfaces and remove masking tape upon completion.

END OF SECTION 07920

1 General**1.1 RELATED SECTIONS**

- .1 Section 07900 - Joint Sealers: Caulking of joints between frames and other building components.
- .2 Section 08700 - Door Hardware: Supply of finish hardware, including weatherstripping and mounting heights.
- .3 Section 09900 - Painting.

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM).
 - .1 ASTM A 653M-95, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-1.181-92, Ready-Mixed Organic Zinc-Rich Coating.
 - .2 CAN/CGSB-51.20-M87, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .3 CGSB 51-GP-21M-78, Thermal Insulation, Urethane and Isocyanurate, Unfaced.
- .3 Canadian Steel Door and Frame Manufacturers' Association, (CSDFMA).
 - .1 CSDFMA, Specifications for Commercial Steel Doors and Frames, 1990.
 - .2 CSDFMA, Recommended Selection and Usage Guide for Commercial Steel Doors, 1990.
- .4 National Fire Protection Association (NFPA).
 - .1 NFPA 80-1992, Fire Doors and Windows.
 - .2 NFPA 252-1990, Door Assemblies, Fire Tests of.
- .5 Underwriters' Laboratories of Canada (ULC).
 - .1 CAN4-S104M- M80(R1985), Fire Tests of Door Assemblies.
 - .2 CAN4-S105M-M85, Fire Door Frames.

1.3 DESIGN REQUIREMENTS

- .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of - 35EC to 35EC.

1.4 SHOP DRAWINGS

- .1 Submit shop drawings, 4 sets plus as many as required by installer.
- .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazing, arrangement of hardware and fire rating and finishes.
- .3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and reinforcing, fire rating, finishes.
- .4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.5 REQUIREMENTS OF REGULATORY AGENCIES

- .1 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104M, NFPA 252 for ratings specified or indicated.

- .2 Provide fire labelled frame products for those openings requiring fire protection ratings, as scheduled. Test products in strict conformance with CAN4-S104, ASTM E 152 or NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

2 Products

2.1 MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75, minimum base steel thickness in accordance with CSDFMA Table 1 - Thickness for Component Parts.
- .2 Reinforcement channel: to CAN/CSA-G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.

2.2 DOOR CORE MATERIALS

- .1 Stiffened: face sheets welded, honeycomb, uninsulated and insulated core.
 - .1 Polyurethane: to CGSB 51-GP-21M rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m3.
- .2 Thermal insulation material must:
 - .1 not require being labelled as poisonous, corrosive, flammable or explosive under the Consumer Chemical and Container Regulations of the Hazardous Products Act;
 - .2 be manufactured using a process that uses chemical compounds with the minimum ozone depletion potential (ODP) available.

2.3 ADHESIVES

- .1 Select Adhesives which:
 - .1 do not contain volatile organic compounds in excess of 5% by weight as measured by EPA Method 24-24A, 40 C.F.R., Part 60, Appendix A (1991),
 - .2 are accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance;
 - .3 are accompanied by information describing proper disposal methods for containers.
- .2 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
- .3 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.
- .4 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.4 PRIMERS

- .1 Touch-up prime CAN/CGSB-1.181.

2.5 PAINT

- .1 Steel doors and frames shall be field painted in accordance with Sections 09900, . Weatherstrips shall be protected from paint. Finish shall be free of scratches or other blemishes.

2.6 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Exterior and interior top and bottom caps: steel.
- .3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
- .4 Door bottom seal: as scheduled.
- .5 Metallic paste filler: to manufacturer's standard.
- .6 Fire labels: metal riveted.
- .7 Sealant: as per Section 07900.
- .8 Glazing: as per Section 08800.

2.7 FRAMES FABRICATION GENERAL

- .1 Fabricate frames in accordance with CSDFMA specifications.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
- .3 Exterior frames: 1.6 mm welded type construction.
- .4 Blank, reinforce, drill and tap frames for mortised, templated hardware, using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- .5 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
- .6 Manufacturer's nameplates on frames and screens are not permitted.
- .7 Conceal fastenings except where exposed fastenings are indicated.
- .8 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- .9 Insulate exterior frame components with polyurethane insulation.

2.8 FRAME ANCHORAGE

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.
- .4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm o.c. maximum.

2.9 FRAMES: WELDED TYPE

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.

- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.10 DOOR FABRICATION GENERAL

- .1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.
- .2 Exterior doors: insulated hollow steel construction. Interior doors: hollow steel construction.
- .3 Fabricate doors with longitudinal edges locked seam, adhesive assisted. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.
- .4 Blank, reinforce, drill doors and tap for mortised, template hardware
- .5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- .6 Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
- .7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

2.11 HOLLOW STEEL CONSTRUCTION

- .1 Form each face sheet for exterior doors from 1.2 mm sheet steel.
- .2 Form each face sheet for interior doors from 1.2 sheet steel.
- .3 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.
- .4 Fill voids between stiffeners of exterior doors with polyurethane core.

3 Execution

3.1 INSTALLATION GENERAL

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- .2 Install doors and frames to CSDFMA Installation Guide.

3.2 FRAME INSTALLATION

- .1 Set frames plumb, square, level and at correct elevation.
- .2 Secure anchorages and connections to adjacent construction.
- .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support

at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .5 Caulk perimeter of frames between frame and adjacent material.
- .6 Maintain continuity of air barrier and vapour retarder.

2.12 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08700 - Door Hardware.
- .2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
 - .1 Hinge side: 3.0 mm.
 - .2 Latch side and head: 3.0 mm.
 - .3 Finished floor, noncombustible sill and thresholds: 13 mm.
- .3 Adjust operable parts for correct function.

2.13 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

END OF SECTION

1 General**1.1 SCOPE OF WORK**

- .1 Provide all labour, equipment and materials to supply, fabricate, deliver, install and make operational two overhead doors as specified, complete with hardware, operator and ancillary items.
- .2 Supply two Sectional Overhead Door with Electric Operators and two Remote Opening Controllers for each door capable of opening either Door.
- .3 Electrical shall be extended from the location of two existing doors being removed. If existing conduit and wire size are sufficient, they may be re-used. If not adequate, run new conduit and wire to the Electric Service Panel.
- .4 Provide all new metal framing as may be required to fabricate the new head trim and support structure for the mounting of the Electric Operators.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CSA G164-M92 Hot Dip Galvanizing of Irregularly Shaped Articles.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.105-M91 Quick-Drying Primer.
 - .2 CGSB 1-GP-181M-77 Coating, Zinc-Rich, Organic, Ready Mixed.
- .3 American Society for Testing and Materials (ASTM)
 - .1 ASTM A 526M-[90] Specification for Steel Sheet, Zinc-coated (Galvanized) by the Hot-Dip Process, Commercial Quality.
 - .2 ASTM D 523-89 Test Method for Specular Gloss.
 - .3 ASTM D 822-89 Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.
- .4 The Aluminum Association Inc. (AA)
 - .1 Aluminum Association Designation System for Aluminum Finishes-[1980].

1.3 DESIGN REQUIREMENTS

- .1 Design door panel assemblies with thermal insulation factor R-15.

1.4 SHOP DRAWINGS

- .1 Submit shop drawings for review prior to installation.
- .2 Indicate sizes, service rating, types, materials, operating mechanisms, glazing locations and details, hardware and accessories, required clearances and electrical connections.

1.5 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data for overhead door hardware for incorporation into manual. Provide 3 copies of Operating and Maintenance Manuals.

2 Products**2.1 MATERIALS**

- .1 Galvanized steel sheet: commercial quality to ASTM A 526M with Z275 zinc coating.
- .2 Steel sheet: commercial quality to ASTM A 366M, exposed(E), with galvanized finish.
- .3 Aluminum extrusions: Aluminum Association alloy AA6063-T5.

- .4 Primer: to CAN/CGSB-1.105 for steel for galvanized steel surfaces.
- .5 Insulation: to meet design requirements.
- .6 Glazing: to manufacturer's standards.
- .7 Cable: multi-strand galvanized steel aircraft cable.
- .8 Finish ferrous hardware items with minimum zinc coating of 300 g/m² to CSA G164.

2.2 STANDARD OF REFERENCE

- .1 The following manufacturers doors that meet the standards herein include:
 - 1. Thermalite 175 by Richards-Wilcox
 - 2. Steelcraft TD134
 - 3. Garaga G-5000

2.2 DOORS

- .1 Fabricate 45 mm thick insulated panel doors of roll formed steel sections as indicated.
- .2 Insulated sections fabricated from pre-painted, hot-dip galvanized steel sheet with polyurethane. Insulation core to be CFC-II free, face sheet stucco embossed and rib reinforced. Steel sandwich formed by continuous process, sections formed with ship lapped joint. Each section to be fitted with 2 14 ga. Galvanized steel end caps. End caps to overlap the face of the door by 25 mm.
- .3 Bottom section to have U-shaped PVC extrusion fitted with a semi-circular EPDM rubber tubing. This will form the weatherstripping between the door and floor.
- .4 Install glazing vision panels. Sizes and number of vision panels three per panel as shown. Units to be double pane sealed units, acrylic glazing material.
- .5 Assemble components by means of spot or arc welding or coated rivet system or adhesive and self tapping screws to manufacturer's recommendations.

2.3 HEAVY DUTY INDUSTRIAL HARDWARE

- .1 Track: standard hardware with 75 mm size 2.66 mm core thickness galvanized steel track.
- .2 Track Supports: 2.3 mm core thickness continuous galvanized steel angle track supports.
- .3 Spring counter balance: heavy duty oil tempered torsion spring with manufacturers standard brackets.
 - .1 Drum: 200 mm diameter die cast aluminum.
 - .2 Shaft: 32 mm diameter galvanized steel.
- .4 Top roller carrier: galvanized Steel 3.04 mm thick adjustable.
- .5 Rollers: full floating grease packed hardened steel, ball bearing 75 mm diameter solid steel tire.
- .6 Roller brackets: adjustable, minimum 2.5 mm galvanized steel.
- .7 Hinges: heavy duty, 3.04 mm thick galvanized as recommended by manufacturer.
- .8 Cable: 6 mm diameter galvanized steel aircraft cable.
- .9 Reinforcement Struts:
 - .1 For all but the top section provide and install new separately mounted, heavy duty galvanized steel reinforcement strut on each panel section. Install adjustable strut on the top sections of the door.
 - .2 For the top section provide the required reinforcement for center mount application. Include proposed details in the Shop Drawings.

2.4 ACCESSORIES

- .1 Overhead horizontal track and operator supports: galvanized steel, type and size to suit installation.
- .2 Track guards: 5 mm thick formed sheet 1500 mm high track guards.
- .3 Pusher springs.
- .4 Handles
 - .1 Flat bar door latch with night latch and electric interlock switch
 - .2 Handles: handle operated from inside.
- .5 Weather stripping
 - .1 Sills: bulb type full width extruded neoprene weatherstrip.
 - .2 Jambs and head: extruded aluminum and arctic grade vinyl weatherstrip to manufacturer's standard.
- .6 Finish ferrous hardware items with minimum zinc coating of 300 g/m² to CSA G164.

2.5 ELECTRICAL OPERATOR

- .1 Electrical Draw Bar type operator. **Overhead Door Type L**
- .2 Electrical motors, controller units, remote pushbutton stations, relays and other electrical components: to CSA approval with CSA enclosure to Electrical Code.
- .3 Power supply: 240 V, 1 phase, 60 Hz. (Confirm on site) Extend existing wiring where suitable.
 - .1 Motor: 3/4 HP.
- .4 Controller units with integral motor reversing starter, solenoid operated brake, 3 heater elements for overload protection, including One set pushbuttons and control relays as applicable for each door.
- .5 Operation:
 - .1 Remote pushbutton stations: surface mounted, left side when facing door from inside, with
 - .2 "OPEN-STOP-CLOSE" designations on pushbuttons in English.
- .6 Safety switch: combination roll rubber with limit switches for full length of bottom rail of bottom section of door, to reverse door to open position when coming in contact with object on closing cycle.
- .7 For jack shaft operators:
 - .1 Provide floor level disconnect device to allow for manual operation in event of power failure.
 - .2 Equip Operator with:
 - .1 Electrical interlock switch to disconnect power to operator when in manual operation.
 - .2 Built-in chain hoist for manual operation in event of power failure.
- .8 Automatic illumination complete with time delay, self extinguishing.
- .9 Door speed: 200 to 300 mm per second.
- .10 Control transformer: for 24 V AC control voltage.
- .11 Mounting brackets: galvanized steel, size and gauge to suit conditions.
- .12 Provide **4 Remote Opening Controllers**, each capable of opening the Overhead Doors.
- .13 Re-mount the existing exterior Key Switch to operate the Overhead Doors in the new locations.

3 Execution

3.1 INSTALLATION

- .1 Install doors and hardware in accordance with manufacturer's instructions.
- .2 Rigidly support rail and operator and secure to supporting structure.
- .3 Touch-up steel doors with primer where galvanized finish damaged during fabrication.
- .4 Install operator including electrical motors, controller units, pushbutton stations, relays and other electrical equipment required for door operation.
- .5 Lubricate and adjust door operating components to ensure smooth opening and closing of doors.
- .6 Adjust weatherstripping to form a weathertight seal.

END OF SECTION

-
1. GENERAL
 - 1.1 WORK DESCRIPTION
 - .1 Hardware for interior and exterior doors other than specified in specific door sections.
 - 1.2 RELATED WORK
 - .1 Steel Doors and Frames Section 08110
 - 1.3 KEYING
 - .1 Keying - all keys shall be master keyed to an existing MASTERKEY SYSTEM.
 - 1.4 MAINTENANCE
 - .1 Provide the manufacturer's parts list and maintenance instructions for each type of hardware supplied and all necessary wrenches and tools required for the proper maintenance of hardware.
 - 1.5 ULC RATING
 - .1 Where ULC rating is called for, all hardware shall be ULC listed for the class of opening required.
 2. PRODUCTS
 - 2.1 GENERAL HARDWARE
 - .1 The quantities of hardware required shall be ascertained from the drawings and specifications and shall be such as to provide proper fastening and trim for all doors. Supply all finish hardware, complete with all parts, screws, fasteners and other accessories necessary for a complete hardware installation. Provide to the manufacturer of metal doors and frames, all templates required for preparation to receive hardware. Package hardware separately for each opening; with all necessary fasteners, fittings and installation instructions; labeled by opening.
 - .2 Finishes - supply hardware in 626 Dull chrome, unless specifically noted otherwise.
 - .4 Locksets and Latchsets: SCHLAGE "A" Series, Lever design as scheduled.
 - .1 ENTRANCE LOCKSET Outside knob unlocked and locked by key. Inside knob always unlocked.
 - .5 MISCELLANEOUS HARDWARE:
 - .1 DOOR STOPS: Glynn-Johnson GJ70M Series
 - .2 127mm THRESHOLD: standard extruded fluted aluminum 12.7mm in height: mill finish.
 - .3 WEATHERSTRIPPING: Krowder W-13 for jambs and head
Krowder W-11 at sill.
 - .6 DOOR HINGES:
 - .1 Butt Hinges: to CGSM 69-GP-1; full mortise template hinges, heavy weight non-rising pins: 1 1/2 pair per door unless specifically noted otherwise; two permanently lubricated non-detachable ball bearings each butt or alternate bearings: equal to:

STANLEY HAGER MONTHARD DORMA

- .2 Exterior Butts: plated wrought brass; stainless steel pins.
- .3 Fixed pins - all out swinging corridor and building entrance doors: other doors as scheduled.
- .4 Butts shall be 114 mm x 114 mm for metal doors

.7 DOOR CLOSERS

- .1 LCN Series Smoothee 4010: Surface type with back check feature. All Closers shall be the product of one manufacturer conforming to the manufacturer's published selection and sizing recommendations. All closers shall be suitable for the required service. Provide such door brackets, assemblies and accessories as required to accommodate the various type of installation; consistent with approved manufacturer's recommendations and good hardware practice. No closer shall function in an exterior weather conditions.
- .2 Door closers must bear the manufacturer's standard five (5) year guarantee against mechanical failure.

3. EXECUTION
3.1 INSTALLATION

- .1 Install all hardware except as noted in accordance with approved manufacturer's recommendations and standard placement; using proper templates. Maintain the following approximate mounting heights, from floor to centre line of hardware item; heights may be varied slightly to suit doors:
 - .1 Locksets, Latchset 1067mm
 - .2 Deadbolts: 200 above Lock or Latch sets.

3.2 SCHEDULE OF ITEMS

- .1 See Drawing for Door and Hardware Schedule and List of Hardware Items.

END OF SECTION 08700

1. GENERAL**1.1 Work Description**

- .1 Prepare and finish surfaces scheduled and/or specified to receive finishing.

1.2 Colour Schedule

- .1 Apply 14 days in advance for a schedule of colours and finishes; indicating products required to be used. the Architect will furnish three (3) copies of colour schedule.

1.3 Delivery

- .1 Deliver paint materials in sealed, original, labelled, containers; bearing manufacturer's name, type of paint, brand name, colour designation and instructions for mixing an/or reducing.

1.4 Storage

- .1 Store paint materials at a minimum ambient temperature of 7°C, and in an adequate, well ventilated area. Avoid fire hazard and spontaneous combustion conditions.
- .2 Containers are to be tightly sealed and clearly labelled for identification.

1.5 Environmental Conditions

- .1 Minimum surface temperature and surrounding air temperature for paint finishing is 5°C, for varnish finishes 18°C.
- .2 Maintain: adequate continuous ventilation: temperatures above 7°C, for 24 hours before, during and 48 hours after application of finishes: 25 foot candles of lighting on surfaces to be finished.

1.6 Protection

- .1 Protect other surfaces from paint and damage: make good any damage as a result of inadequate or unsuitable protection. Furnish sufficient drop cloths, shields, and protective equipment to prevent spray droppings from fouling surfaces not being painted. Place waste material which may constitute a fire hazard in closed metal containers, and remove daily from site.
- .2 Remove all electrical plates, surface hardware, fittings and fastenings, prior to painting operations. These items are to be carefully stored, cleaned and replaced on completion of work in each area. Do not use solvent, to clean hardware, that may remove the permanent lacquer finish.

2. PRODUCTS**2.1 Materials**

- .1 Paint, varnish, stain, enamel, lacquer and fillers of type and brand listed under "Paint Product Recommendations" indicated in the CPCA Specification Manual. Products must exceed the applicable 1-GP series of CGSB Specification and be first line products. Second line paint materials may not be brought to this construction site or be used in the work. Product lines are subject to prior approval by the Architect.
- The following "NAME" manufacturer's are approved:
BAPCO GLIDDEN BENJAMIN MOORE GENERAL PAINT C.I.L
INTERNATIONAL PAINT CANADIAN PITTSBURGH NORTHER PAINT
CLOVERDALE
- .2 Paint Accessory Material: linseed oil, shellac, turpentine and other materials not specifically indicated herein but required to achieve the finishes specified of high quality and approved manufacture.

3. EXECUTION

3.1 Conditions of surfaces

- .1 Thoroughly examine all surfaces scheduled to be painted, prior to commencement of work: report in writing, any condition that may potentially affect proper application. Do not commence until all such defects have been corrected.

3.2 Surface Sheen

- .1 Surface Sheen for finishes shall conform to:
 - .1 HIGH GLOSS - finish having pronounced glossy sheen; reflecting bright highlights from reflected illumination.
 - .2 SEMI-GLOSS - finish having a moderate sheen; reflecting diffused highlights from reflected illumination.
 - .3 SATIN - finish free from pronounced sheen; producing no noticeable highlights from reflected illumination.

3.3 Preparation of Surfaces

- .1 Surfaces must be clean and prepared by the responsible trades to obtain satisfactory finishes. Remove marks, dust, dirt, grease, oil, rust, scale and extraneous matter from surfaces to be finished; and in addition:
 - .1 Solvent wash copper, aluminum and galvanized surfaces: apply etching primer.
 - .2 Prime gypsum board surfaces, repair, prime exposed defects.
 - .3 Remove any heavy coating of scale, loose primer, or rust from ferrous metals: feather out edges to make touch-up inconspicuous.
 - .4 Clean un-primed steel surfaces, weld joints, bolts and nuts with solvent and treatment with phosphoric acid solution.
- .2 Spot coat knots, pitch streaks and sappy sections in miscellaneous wood items and millwork with sealer prior to priming. Fill nail holes and cracks after primer has dried. Back prime interior and exterior woodwork.
- .3 Sand surface lightly before and after priming, and between each coat, to achieve required finish.

3.4 Application

- .1 Do all painting for this project, items not specifically listed or excluded and normally painted, shall be finished in accordance with general standards of the specification.
- .2 Mix and apply materials in accordance with good trade practice and the manufacturer's published recommendations. Method of application (brush, roller or spray) may be subject to approval, do not use spray or roller application where it may damage other materials or finishes. cut in neatly, brushing at trim and abutting surfaces. Finish shall be free from runs, sags, crawls and defects. Finish all four edges of doors, concealed ledges, etc., whether exposed to view or not. Do not apply finishes on surfaces that are not sufficiently dry. Allow each coat of finish to dry before a following coat is applied, unless directed by manufacturer.
- .3 Primer: each surface shall receive one (1) application of sealer primer and/or filler to thoroughly fill all pores and voids, to provide a firm, sealed base for finishes. Primers must be compatible with finishing materials to approved manufacturer's recommendations.
- .4 Finish: each surface shall receive a minimum of two (2) finish coats: and additional coats and surface touch-up as required to obtain high quality finish of uniform colour, texture and coverage.

3.5 Mechanical

- .1 Refer to Mechanical and Electrical Sections with respect to painting and finishing requirements included under those Sections. Colour coding of equipment, piping, conduit and exposed ductwork in accordance with requirements indicated in division 15 and 16, and all colour banding and identification (flows, arrows, naming, numbering, etc. will be performed under Division 15 and 16.
- .2 Remove grilles, covers and access panels for mechanical and electrical systems from locations and paint separately.
Finish paint primed equipment stands, hangers, and similar items.
- .3 Prime and paint insulated and bare pipes, conduits, boxes, insulated and bare ducts, hangers, brackets, collars and supports, occurring in finished area; except where items are plated or covered with prefinished cladding paint interior surfaces or air ducts, convactor and baseboard heating cabinets that are visible through grilles and louvres with one coat of lat paint to limit of site line. Paint dampers exposed immediately behind louvre, grilles, convactor and base board cabinets to match face panels.
- .4 Paint exposed conduit and electrical equipment occurring in finished areas to match adjacent surfaces. Paint both sides and edges of plywood backboards for electrical equipment before installing backboards and mounting equipment on them.

3.6 Cleaning

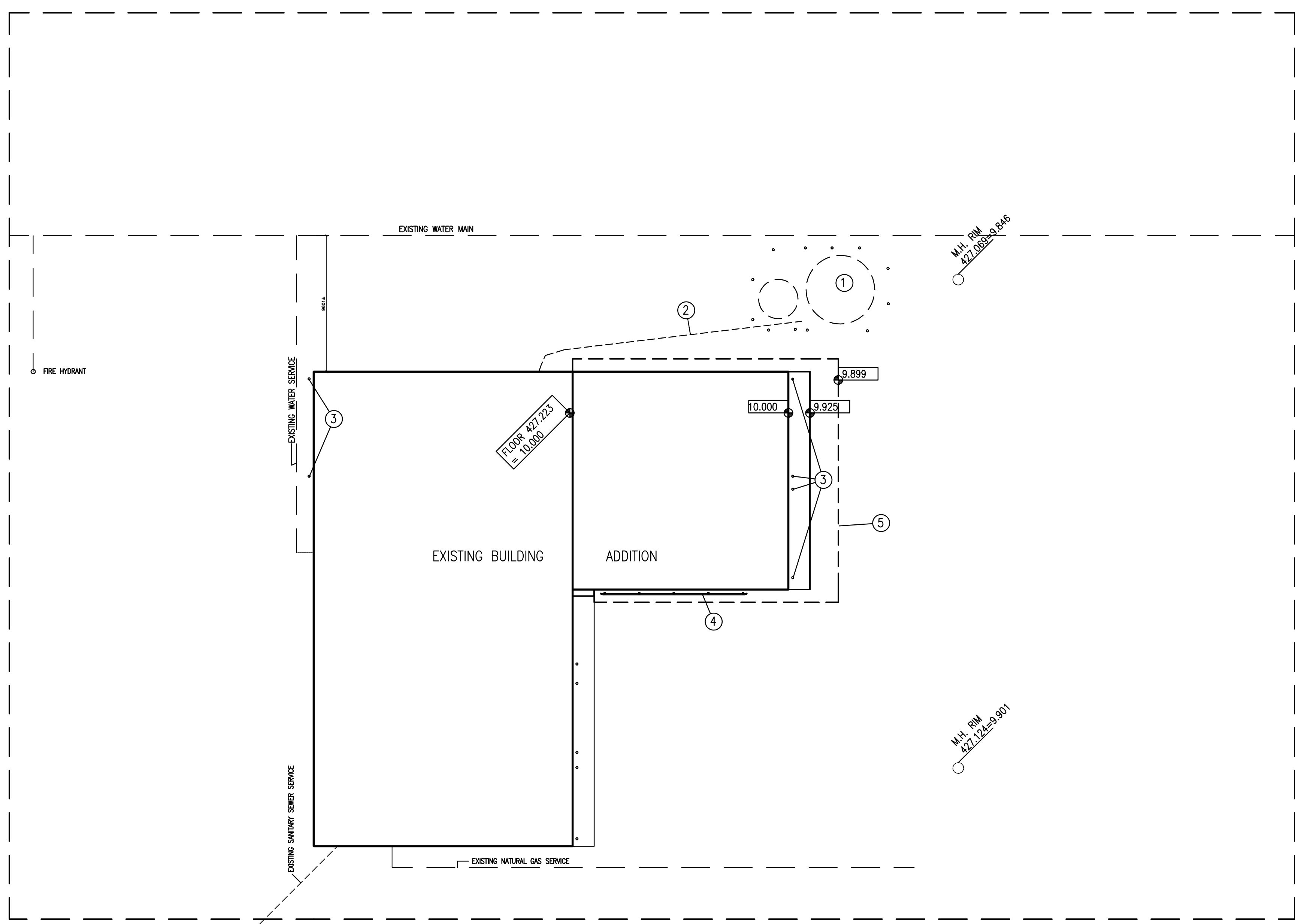
- .1 As the work proceeds and upon completion, promptly remove all paint where spilled, splashed or spattered. During the progress of work keep the premises free from any unnecessary accumulation of tools, equipment, surplus materials and debris. Leave work area clean.

3.7 Painting and Finishing Schedule

- .1 Exterior Painting and finishing
 - .1 Exterior Metal
Primer - rust-inhibiting (or shop) primer
Finish - exterior alkyd enamel: semi-gloss
 - .2 Exterior Wood - New
Primer - Exterior Alkyd Undercoater
Finish - Exterior Alkyd House Paint, match existing.
- .3 Interior Painting and Finishing
 - .1 Interior Wood/Paint
Primer - interior alkyd - sealer/primer
Finish - interior alkyd enamel: semi-gloss

END OF SECTION 09900

- NOTES A1.1
- EXISTING FUEL TANKS AND PUMPING STATION TO BE RE-LOCATED (DETAILS TO COME IN ADDENDUM)
 - EXISTING UNDERGROUND POWER TO FUEL PUMPING STATION. (APPROXIMATE LOCATION)
 - NEW BOLLARDS (SEE DETAILS 4/A2.1)
 - NEW GUARD RAIL (SEE DETAIL 5/A2.1)
 - ASPHALT PAVEMENT REPAIR. SAWCUT EDGE. JOIN TO EXISTING



1 SITE PLAN
A1.1 1:200

LIST OF DRAWINGS

ARCHITECTURAL	STRUCTURAL	MECHANICAL	ELECTRICAL	CODE REVIEW
<p>A1.1 SITE PLAN, NOTES</p> <p>A2.1 FLOOR PLAN, DETAILS</p> <p>A3.1 ELEVATIONS, SECTIONS, WALL SECTIONS</p>	<p>S1 FOUNDATION PLAN, FRAMING PLAN DETAILS</p> <p>S2 GRADE BEAMS, REINFORCING STEEL, SLAB DETAILS</p>			<p>National Building Code of Canada - 2005</p> <p>Occupancy Category F-2 Repair Garage</p> <p>Size: Existing Building = 613.1 m2 (6,600 s.f.) Addition = 236.9 m2 (2,550 s.f.) TOTAL = 850.0 m2 (9,150 s.f.) Second floor in Existing Building is 79.8 m2 (859 s.f.)</p> <p>Article 3.2.2.71 for up to 2 storeys Facing 3 Streets Limiting Area is 900 m2 (One street with Sideyards equal to streets for access)</p> <p>3.2.2.71 2) Permitted to be COMBUSTIBLE CONSTRUCTION or NON-COMBUSTIBLE used singly or in combination,</p> <p>a) Floor assemblies to have Fire Resistive Rating of 45 min. if combustible</p> <p>b) Load Bearing Walls, Columns, & Arches supporting</p> <p>i) assembly required to have FRR shall have 45 min. FRR or</p> <p>ii) be of non-combustible construction</p> <p>ROOF not required to have a FRR. WALLS are not Load Bearing</p>

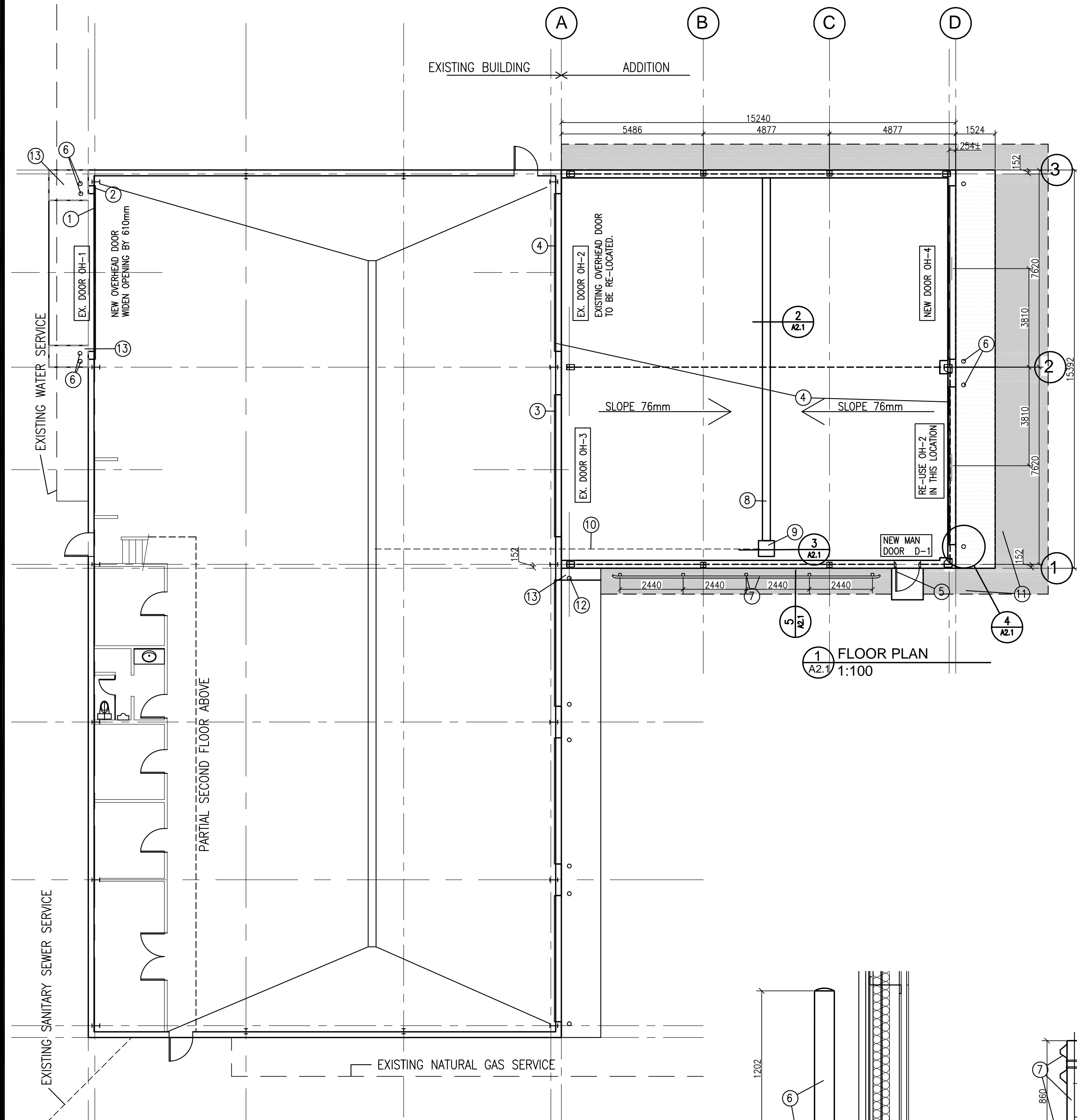
revisions	
draw	f.w.m.
check	
date	2010-07-28

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A1.1

EXISTING WATER MAIN



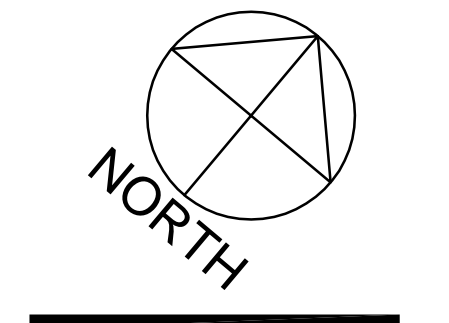
NOTES A2.1

- REMOVE EXISTING OVERHEAD DOOR OH-1 INCLUDING OPERATOR AND ALL ACCESSORIES. TURN OVER TO OWNER, EXCEPT FOR PARTS TO BE RE-USED.
- INSTALL NEW LARGER OVERHEAD DOOR AT LOCATION OF OH-1. ENLARGE EXISTING OPENING TO RECEIVE NEW 22' x 13' OVERHEAD DOOR. CUT OUT EXISTING STEEL DOOR FRAME, GIRTS, EXTERIOR AND INTERIOR CLADDING AND WALL CONSTRUCTION. RE-BUILD STEEL DOOR FRAME FROM SALVAGED PARTS FROM REMOVAL OF OH-3.
- REMOVE EXISTING OH-3 COMPLETELY AND TURN OVER TO OWNER.
- REMOVE EXISTING DOOR OH-2 COMPLETE WITH OPERATOR. ALL ACCESSORIES INCLUDING STEEL FRAME. RE-INSTALL AT OH-5 LOCATION.
- NEW MAN-DOOR D-1
Size: 914x2134x45
Hollow Metal, Urethane Insulation
Pressed steel frame 172 mm wide
Weather Strip
Threshold
1.5 pr. Hinges, 114x114 Heavy Duty, C26
Carbin Lockset, Heavy Duty, Office Entrance Function
Door Closer
Key to match existing Masterkey system.
- BOLLARDS
152 diam PIPE, CONCRETE FILLED. SET IN CONCRETE BASE 406 diam. X 1000 deep. PAINT PIPE.
- GUARD RAIL WITH CURVED END PIECES. GALVANIZED STEEL POSTS FROM 101x101x6 H.S.S. SET IN CONCRETE BASE 400 diam X1000mm DEEP. GALVANIZED BOLTS 2 PER POST.
- DRAINAGE TRENCH
LEDGE SUPPORT FROM ANGLE IRON 38x38x6.4 GRATES AND FRAME FROM 32x6.4 STRAP IRON AT 38mm o.c. UNIT LENGTH TO BE APPROX. 914mm. PAINT FINISH.
- SUMP PIT
100 Gallon Capacity 762x762x914 INSIDE DIMENSION.
WALLS AND FLOOR 152mm THICK.
REINFORCING 10M @200mm o.c. E.W.
LID FROM 6.4 thick CHECKER PLATE SUPPORTED ON ANGLE IRON FRAME. PROVIDE LIFT HOLES.
(SUMP PUMP AND DISCHARGE PIPE TO BE IN MECHANICAL CONTRACT.)
- INSTALL 51 mm diam. PVC CONDUIT UNDER NEW SLAB AND EXISTING SLAB TO OPEN INTO EXISTING DRAINAGE TRENCH. CORE DRILL THROUGH EXISTING GRADE BEAM AND EXISTING TRENCH SIDE WALL.
- ASPHALT REPAIR AFTER BACKFILL.
- REMOVE EXISTING BOLLARDS.
- REPLACE APPROX PORTION WHERE BOLLARDS REMOVED.

- PRE-ENGINEERED METAL BUILDING
- DESIGN BY BUILDING MANUFACTURER TO MEET REQUIREMENTS OF "National Building Code of Canada 2005" and "Saskatchewan Uniform Building and Accessibility Standards Act". HANDICAP ACCESSIBILITY TO THIS BUILDING IS NOT REQUIRED.
 - THE PRE-ENGINEERED BUILDING MANUFACTURER IS TO PROVIDE THE DESIGN LOADS TO THE ARCHITECT FOR CONFIRMATION OF PILE DESIGN.
 - THE PRE-ENGINEERED BUILDING MANUFACTURER IS TO PROVIDE ALL ANCHORING BOLTS AND CAGES THAT ARE TO BE CAST IN THE CONCRETE IN ADVANCE OF DELIVERY OF THE BUILDING COMPONENTS.
 - THE BUILDING NOMINAL SIZE IS 15.240m x 15.392m x 4.720m LOW EAVE HEIGHT (50' x 50.5' x 15.5') 25' BAY. ROOF SLOPE 1:12
 - RIGID FRAME AT CENTER OF BUILDING AND SOUTH END (TO FACILITATE FUTURE EXPANSION) COLUMNS AND GIRTS IN-FILL UNDER RIGID FRAME FOR SOUTH END. COLUMN END FRAMING WITH CABLE BEAMS AT NORTH END WALL.
 - PROVIDE WALL GIRTS AND ALL STRUTS FOR OPENING FRAMING IN EXTERIOR WALLS. STRUTS AND DOOR FRAMES TO MATCH GIRT DIMENSION. PROVIDE END WALL BRACING, ROOF BRACING AND PORTAL FRAME(S) AS REQUIRED TO MEET CODE REQUIREMENTS.
 - STANDARD OF REFERENCE USED IN DEVELOPING DRAWINGS IS "Butler Manufacturing Company" OWNER WILL MAKE SELECTION OF BUILDING MANUFACTURER TO BE USED FOR THIS PROJECT.
 - PROVIDE ROOF PURLINS OF "C" OR "Z" SHAPE. EAVE PURLIN "C" SHAPE.
 - ROOF AND WALL INSULATION TO BE ROLL BLANKET TYPE SPECIALLY MADE FOR PRE-ENGINEERED BUILDINGS WITH REINFORCED VAPOUR BARRIER INTERIOR FINISH. THICKNESS TO PROVIDE FOR MINIMUM R-15 HEAT LOSS RESISTANCE VALUE.
 - ROOF CLADDING TO BE PRE-FINISHED STANDING SEAM "MR-24" PROFILE, MAXIMUM LENGTH PIECES, CONCEALED CLIP ATTACHMENT TO ROOF STRUCTURE TO PERMIT EXPANSION AND CONTRACTION. STANDING SEAM RIB TO BE MECHANICALLY INTERLOCKED.
 - WALL CLADDING TO BE PRE-FINISHED METAL RIBBED PANEL WITH MAJOR RIBS AT 305 mm o.c. MINIMUM 24 ga. COLOUR SELECTION FROM MANUFACTURER'S STANDARD COLOURS.
 - PROVIDE ALL TRIM SHAPES, HEAD, JAMB AND SILL FLASHINGS, BASE FLASHING, CELL CLOSURES, CAP FLASHINGS, 'J' MOLDS AS MAY BE REQUIRED TO ACHIEVE A TOTAL WEATHERPROOF ENCLOSURE. COLOUR TO MATCH ADJACENT CLADDING.
 - INTERIOR OF EXTERIOR WALLS TO BE FRAMED WITH 42mm (1 7/8") STEEL STUDS @ 406 mm o.c. THE WALLS ARE TO BE CLAD WITH PRE-FINISHED METAL LINER PANELS (24 ga.) SCREW ATTACHED TO THE STEEL STUDS. BUTT JOINTS TO HAVE COVER STRIP APPLIED. METAL TO BE MINIMUM 24 ga. UNDERSIDE OF ROOF TO BE CLAD WITH PRE-FINISHED LINER METAL RIBBED PANELS (24 ga.) ATTACHED TO THE PURLINS.

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ADDITION TO MAINTENANCE GARAGE
Municipal Airport
Prince Albert, Saskatchewan
for
CITY OF PRINCE ALBERT Project No. 130/10

FLOOR PLAN
DETAILS

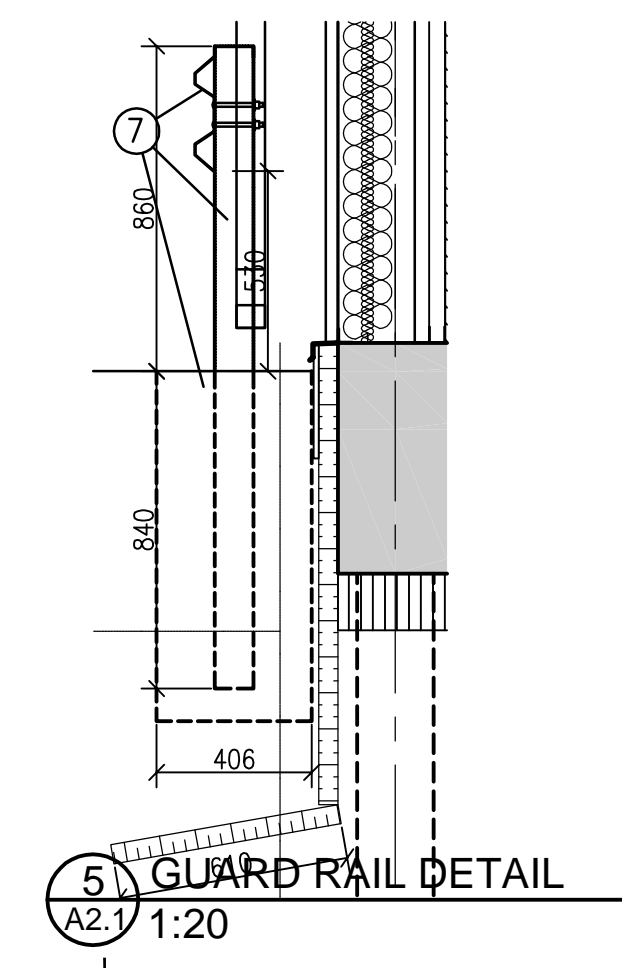
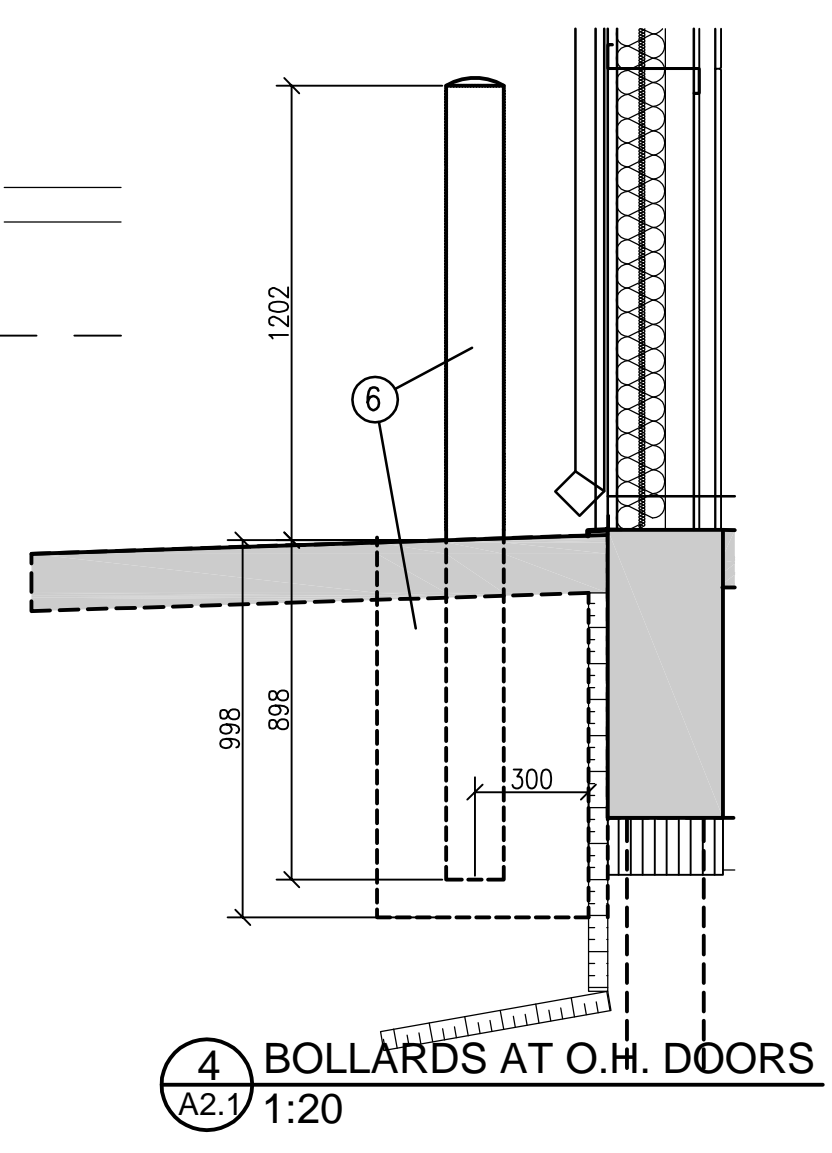
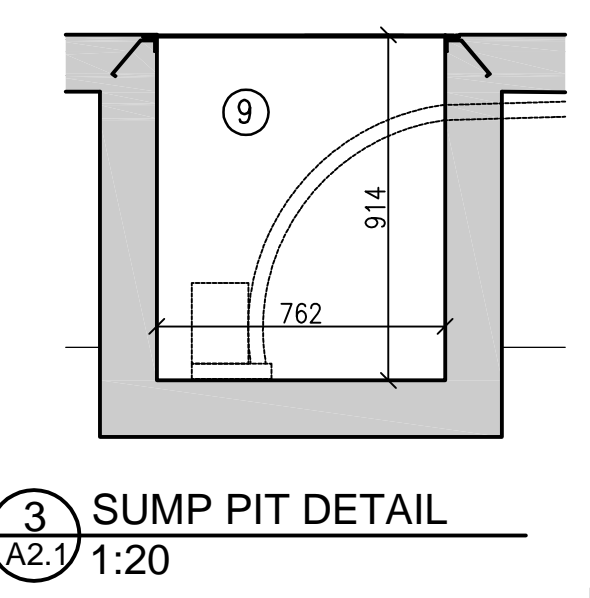
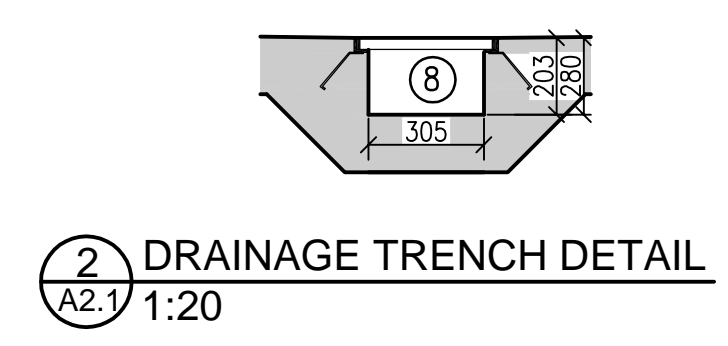
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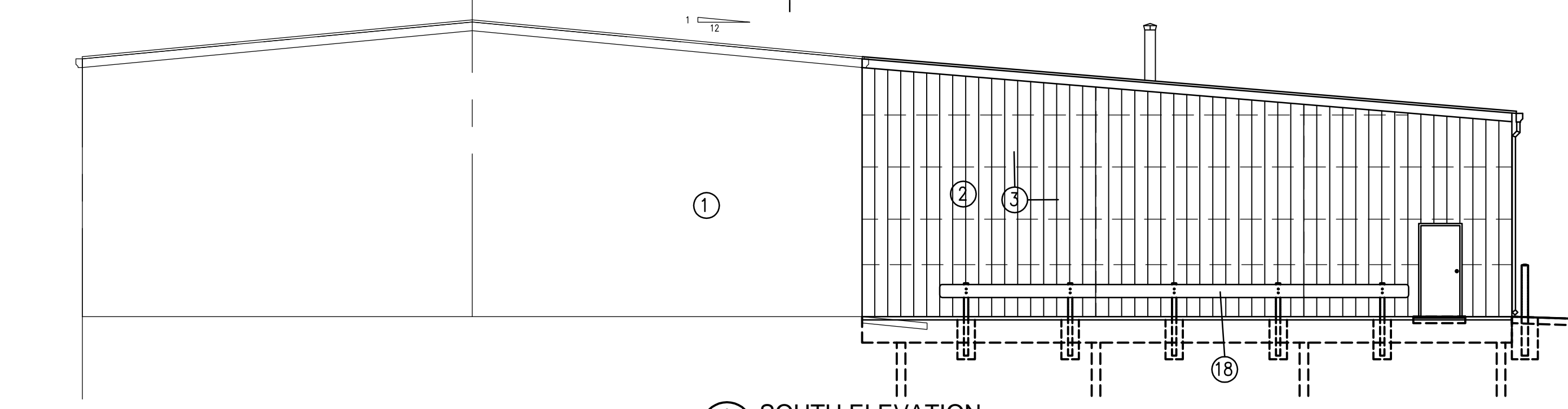
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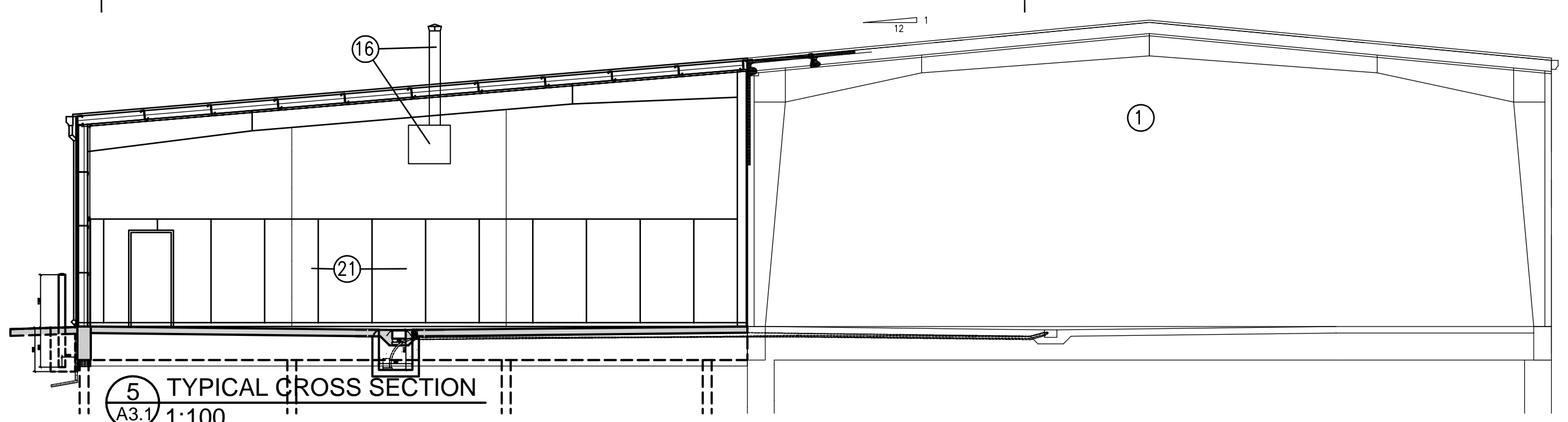
SEE STRUCTURAL DRAWINGS
FOR FOUNDATION, GRADE BEAM,
FLOOR SLAB DETAILS

A2.1

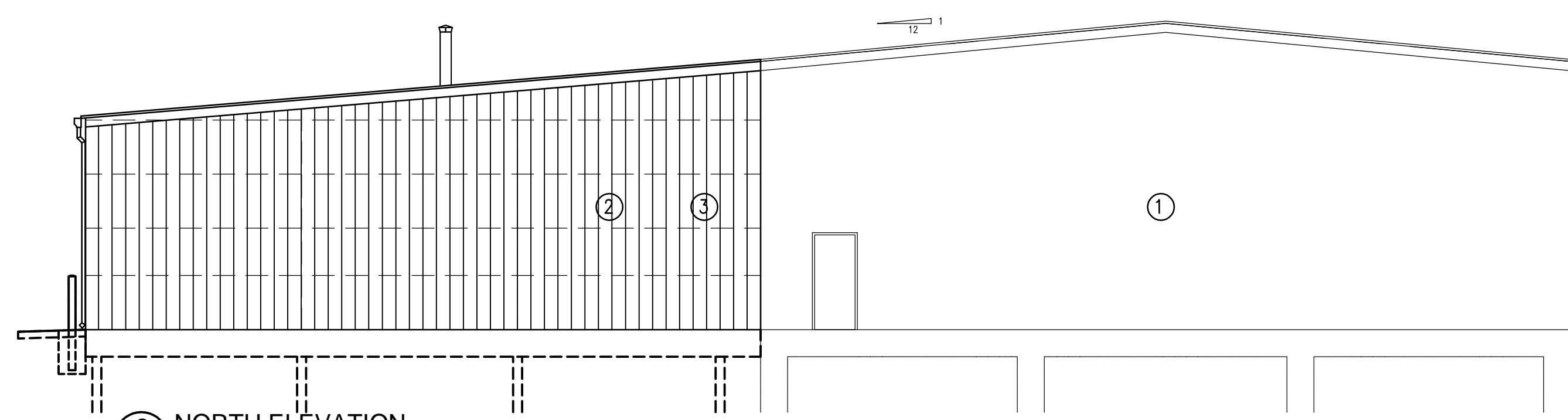




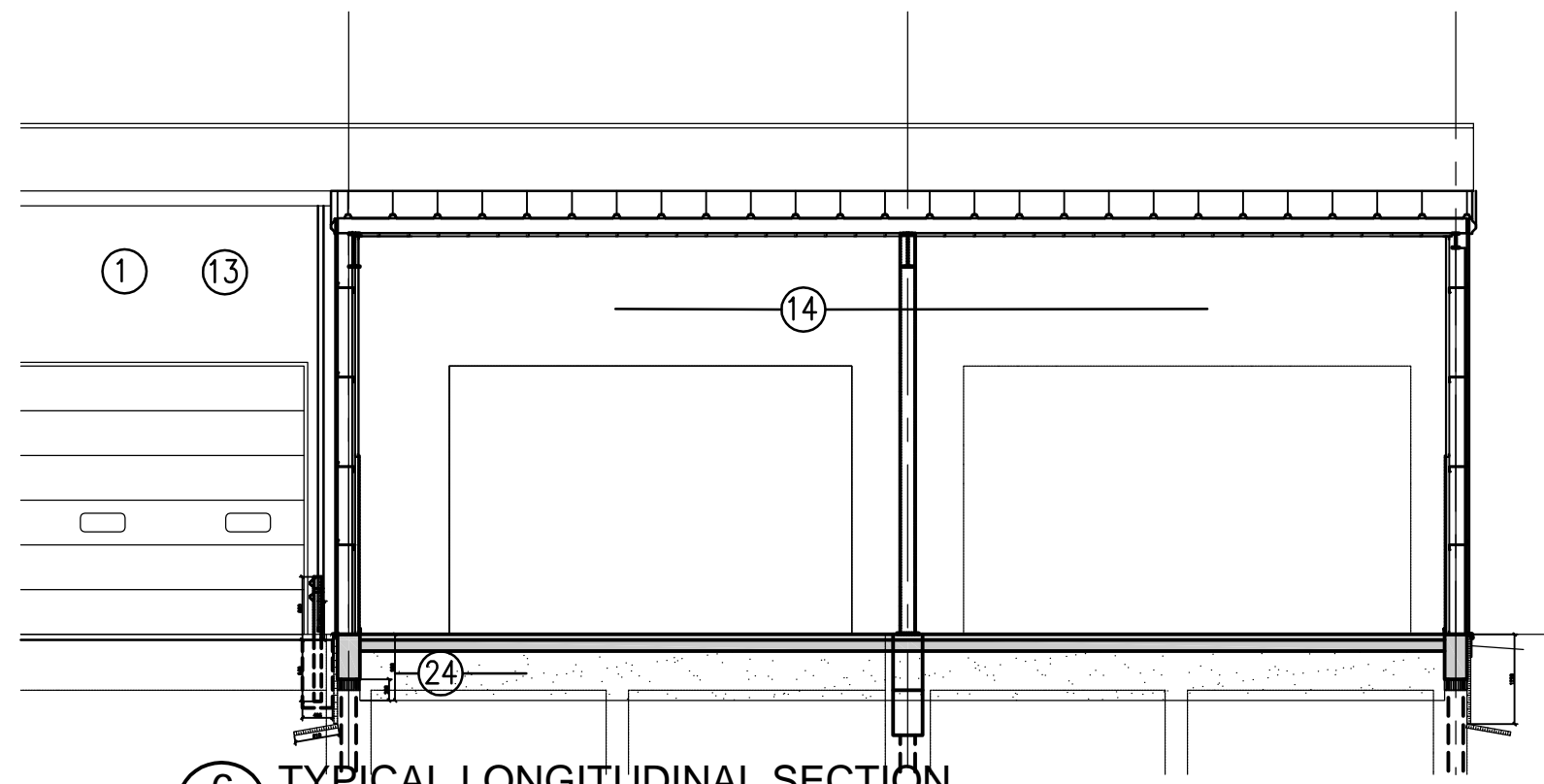
1 SOUTH ELEVATION
A3.1 1:100



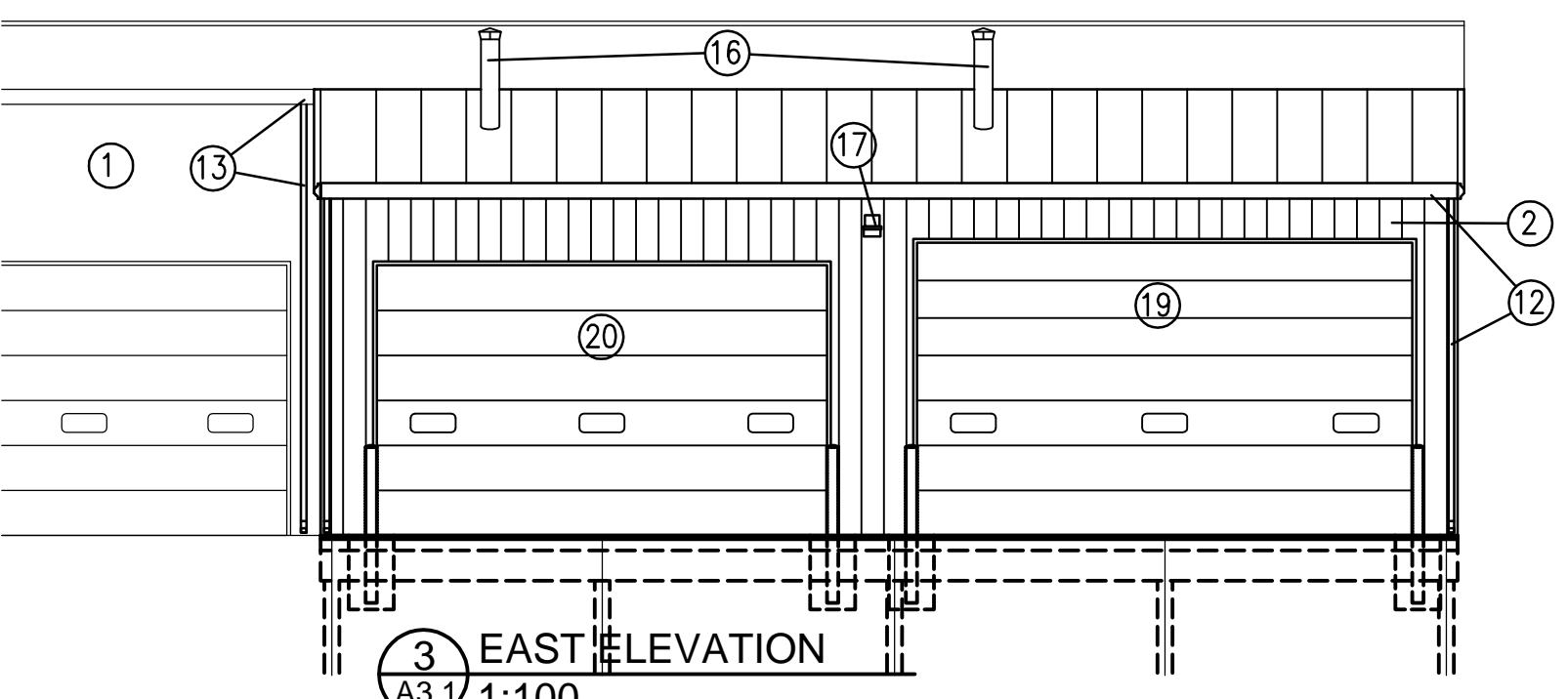
5 TYPICAL CROSS SECTION
A3.1 1:100



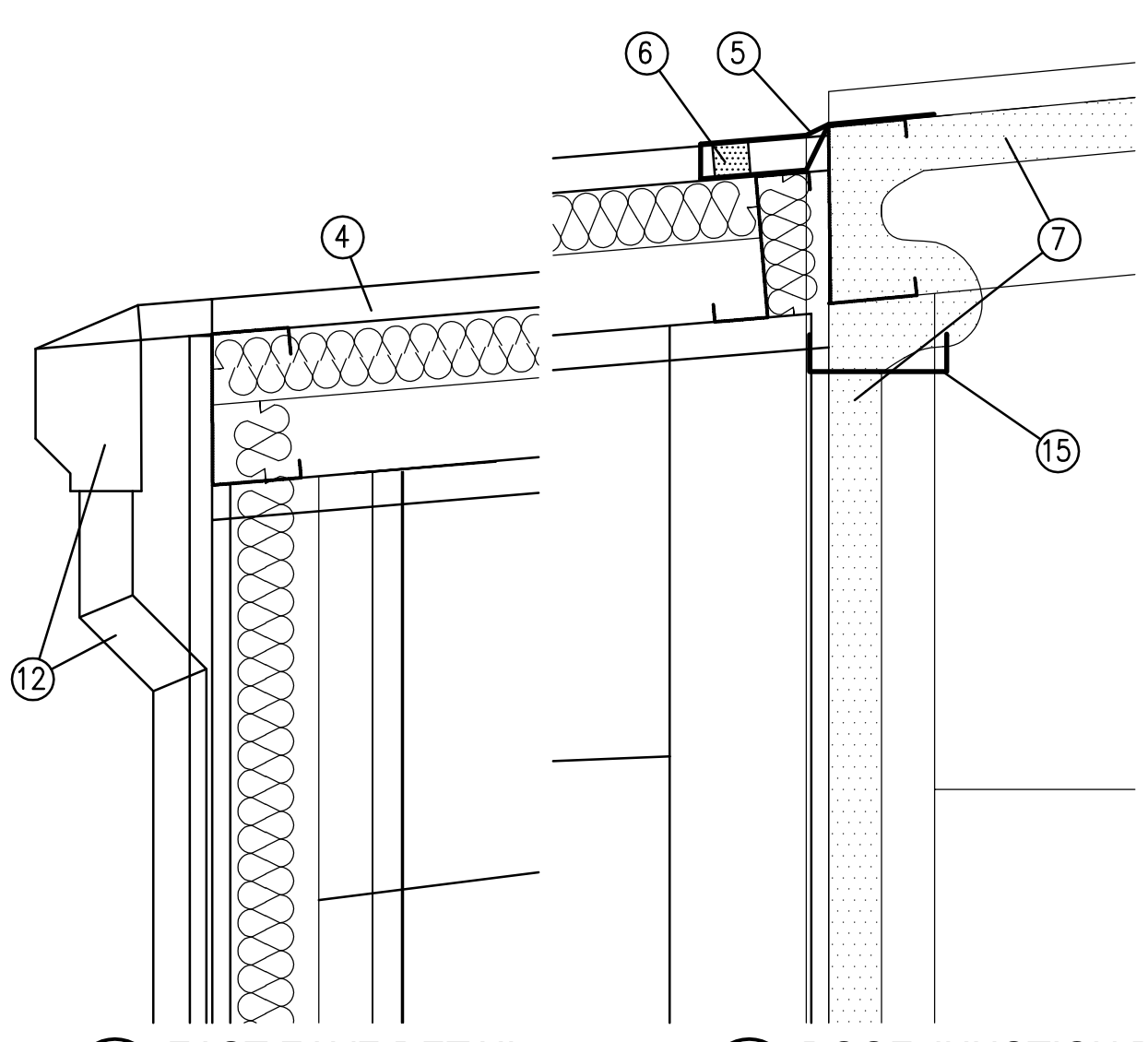
2 NORTH ELEVATION
A3.1 1:100



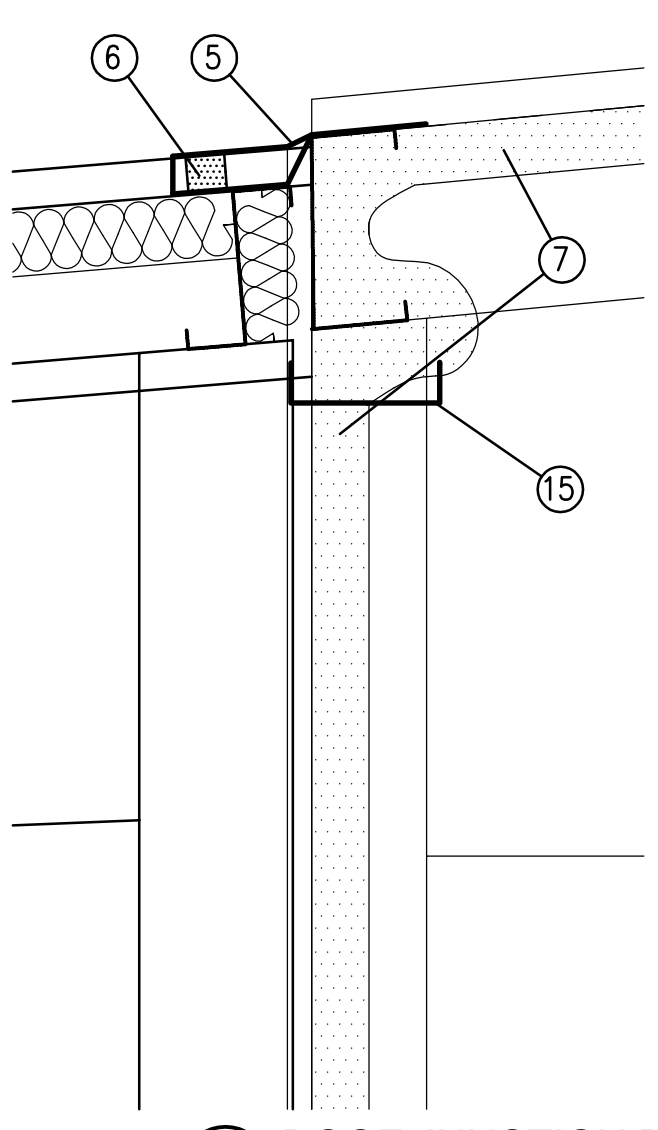
6 TYPICAL LONGITUDINAL SECTION
A3.1 1:100



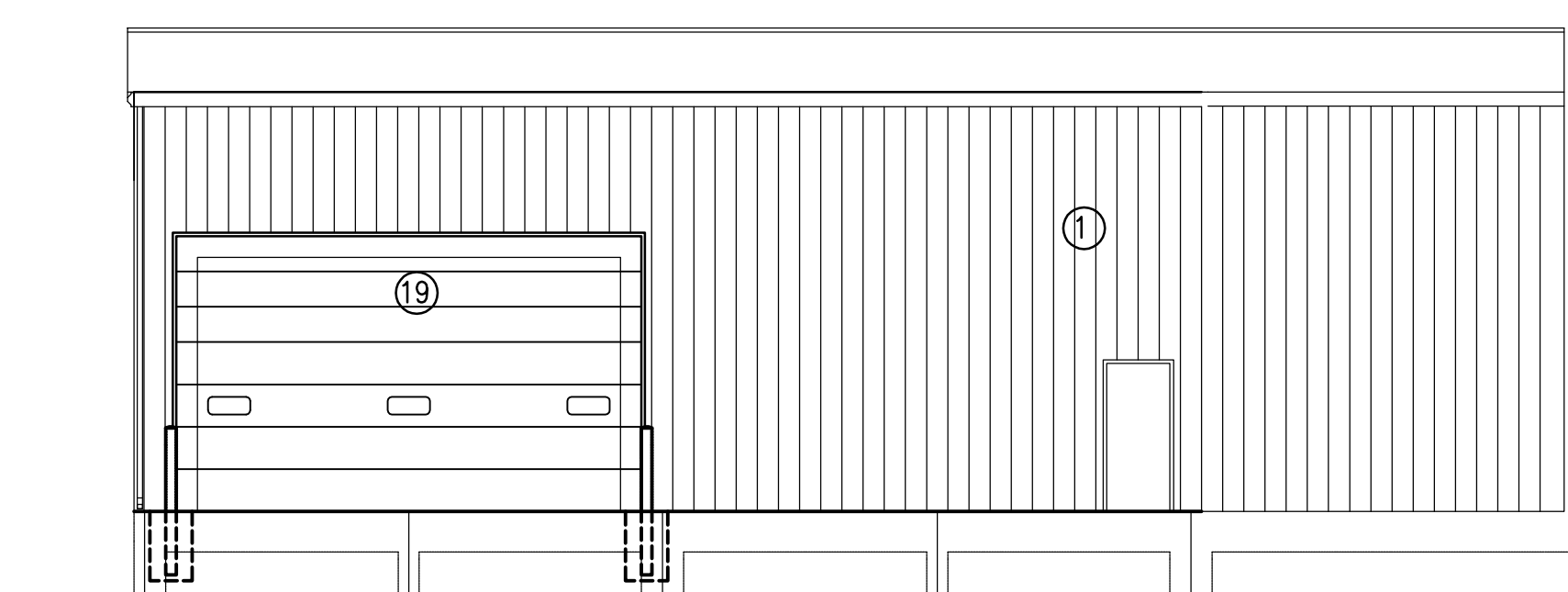
3 EAST ELEVATION
A3.1 1:100



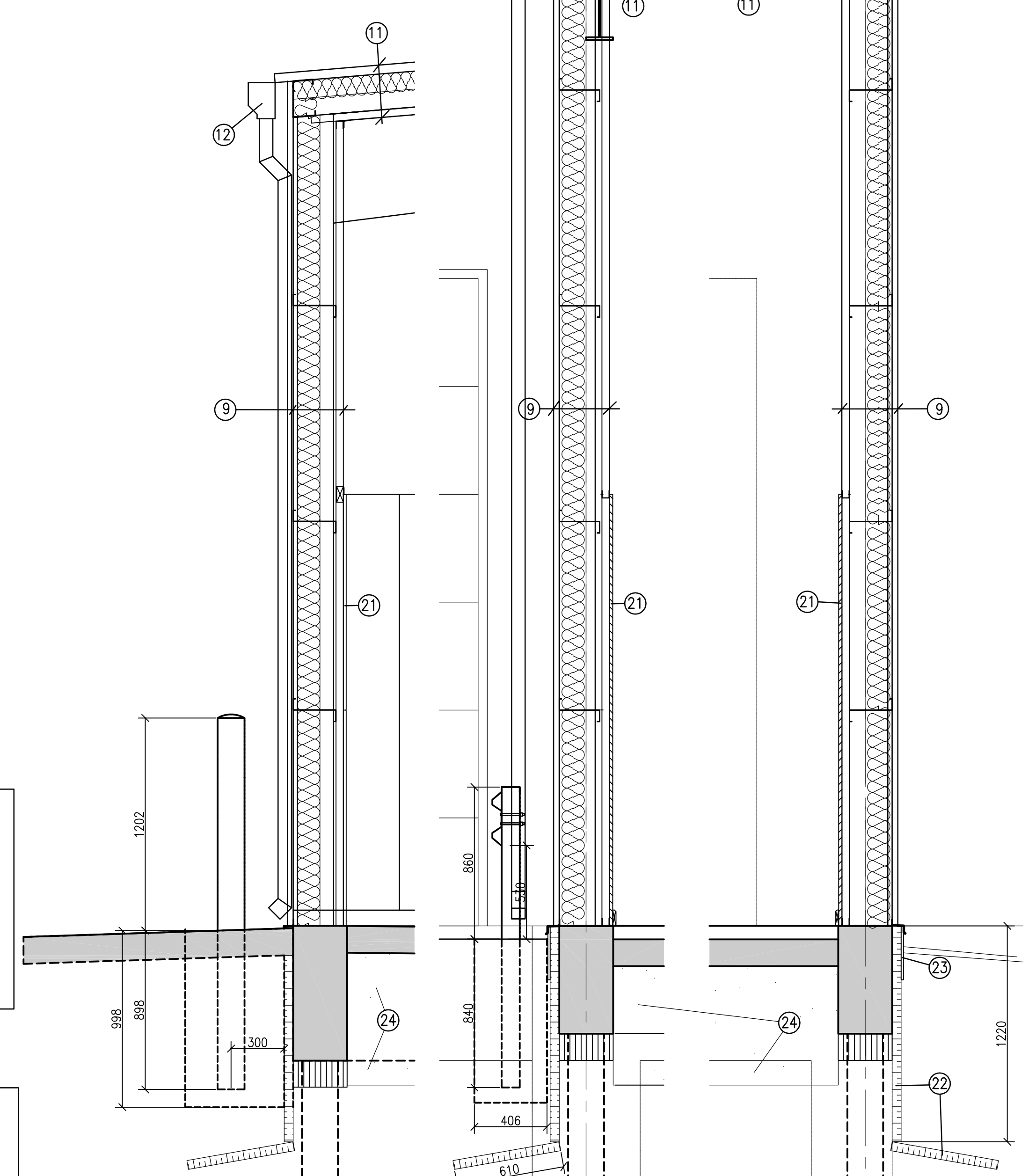
7 EAST EAVE DETAIL
A3.1 1:10



8 ROOF JUNCTION DETAIL
A3.1 1:10



4 WEST ELEVATION
A3.1 1:100



9 EAST WALL SECTION
A3.1 1:20

10 SOUTH WALL SECTION
A3.1 1:20

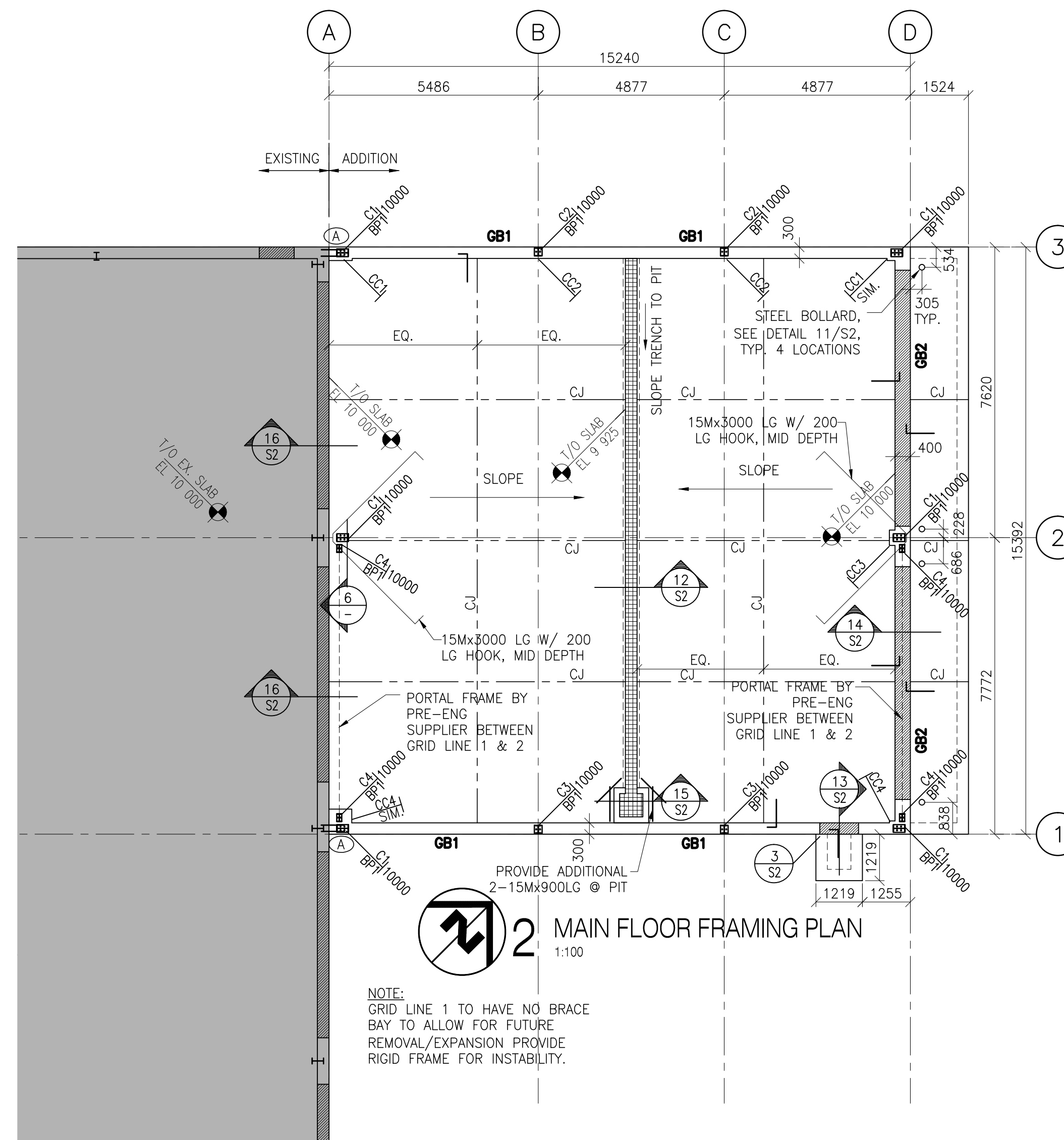
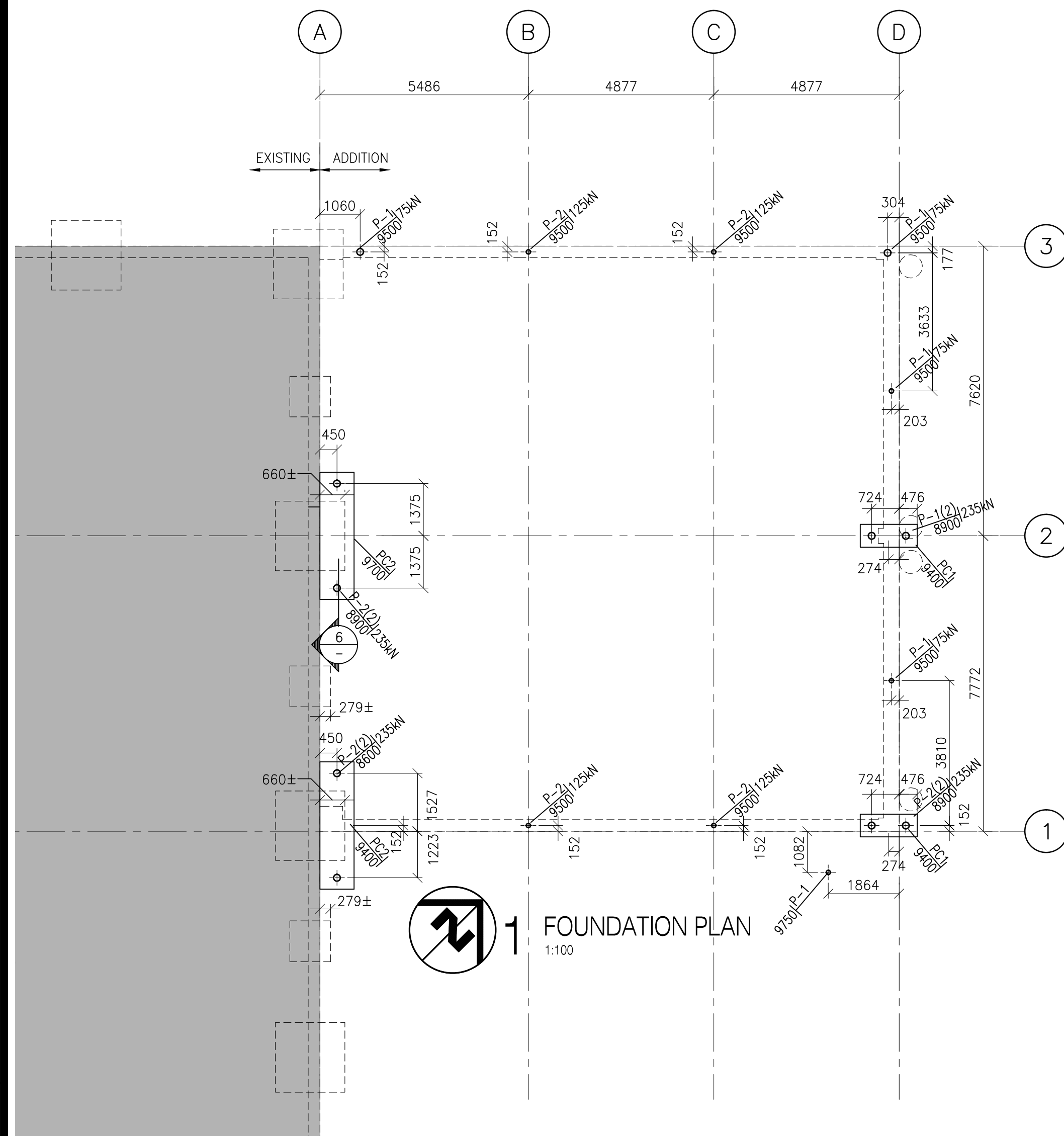
11 NORTH WALL SECTION
A3.1 1:20

PROVIDE ALTERNATE PRICE FOR
76mm OF SPRAYED-ON
URETHANE FOAM INSULATION IN
PLACE OF THE FIBERGLASS
BLANKET INSULATION FOR
WALLS AND ROOF.

SEE STRUCTURAL DRAWINGS
FOR FOUNDATION, GRADE BEAM,
FLOOR SLAB DETAILS

NOTES A3.1

1. EXISTING BUILDING
2. ADDITION TO EXISTING BUILDING.
3. PRE-FINISHED STEEL CLADDING TO MATCH EXISTING.
4. ROOF PANELS Butler MR-24 SYSTEM.
5. ADAPTER FLASHING TO JOIN EXISTING ROOF TO NEW ROOF. ATTACH TO EXISTING BUILDING.
6. FOAM AND METAL GAP CLOSURE.
7. EXISTING BUILDING IS INSULATED WITH 76mm SPRAYED ON URETHANE FOAM INSULATION.
8. EXISTING GYPSUM WALLBOARD FINISH.
9. TYPICAL WALL SECTION
-Pre-Finished Steel Wall Cladding, 24 ga.
-Fiberglass Blanket Insulation with integral Vapour Barrier
-Girts by Building Manufacturer
-42mm Steel Studs @ 406
-Interior Pre-finished Liner Panels 24 ga.
10. STRUCTURAL FRAME BY BUILDING MANUFACTURER.
11. ROOF SECTION
-MR-24 Pre-finished Steel Roof Panels 24 ga.
-Fiberglass Blanket Insulation with integral Vapour Barrier
-42mm Steel Studs @ 406
-Interior Pre-finished Steel Liner Panels 24 ga.
12. NEW GUTTER WITH TWO DOWN PIPES, COMPLETE WITH OFFSETS AND SPILL ELBOWS. DOWN PIPES TO BE 101x76. MATCH WALL COLOUR.
13. CUT OFF EXISTING GUTTER, PLACE END CAP. RE-LOCATED DOWN PIPE.
14. REMOVE EXISTING EAST WALL FOR THE TWO BAYS WHERE OVERHEAD DOORS BEING REMOVED.
15. CUT OFF EXISTING WALL SYSTEM BELOW EAVE STRUT (PURLIN). APPLY METAL COVER TO TRIM OUT AT CUT-OFF LINE.
16. VENTS FOR GAS FIRED UNIT HEATERS. (BY MECHANICAL CONTRACTOR.)
17. RE-LOCATE EXISTING LIGHT FIXTURE. (BY ELECTRICAL CONTRACTOR)
18. GUARD RAIL SEE DETAIL 4/A2.1
19. NEW OVERHEAD DOOR (22x13)
20. EXISTING OH-2 RE-LOCATED TO THIS LOCATION (20X12)
21. 19mm FIR PLYWOOD G.I.S. PAINT FINISH
22. STYROFOAM INSULATION 51 mm thick ADHERE TO GRADE BEAM.
23. PRESSURE TREATED PLYWOOD STRIP (13x305) ANCHORED TO GRADE BEAM.
24. COMPACTED GRAVEL BACKFILL UNDER FLOOR SLAB.

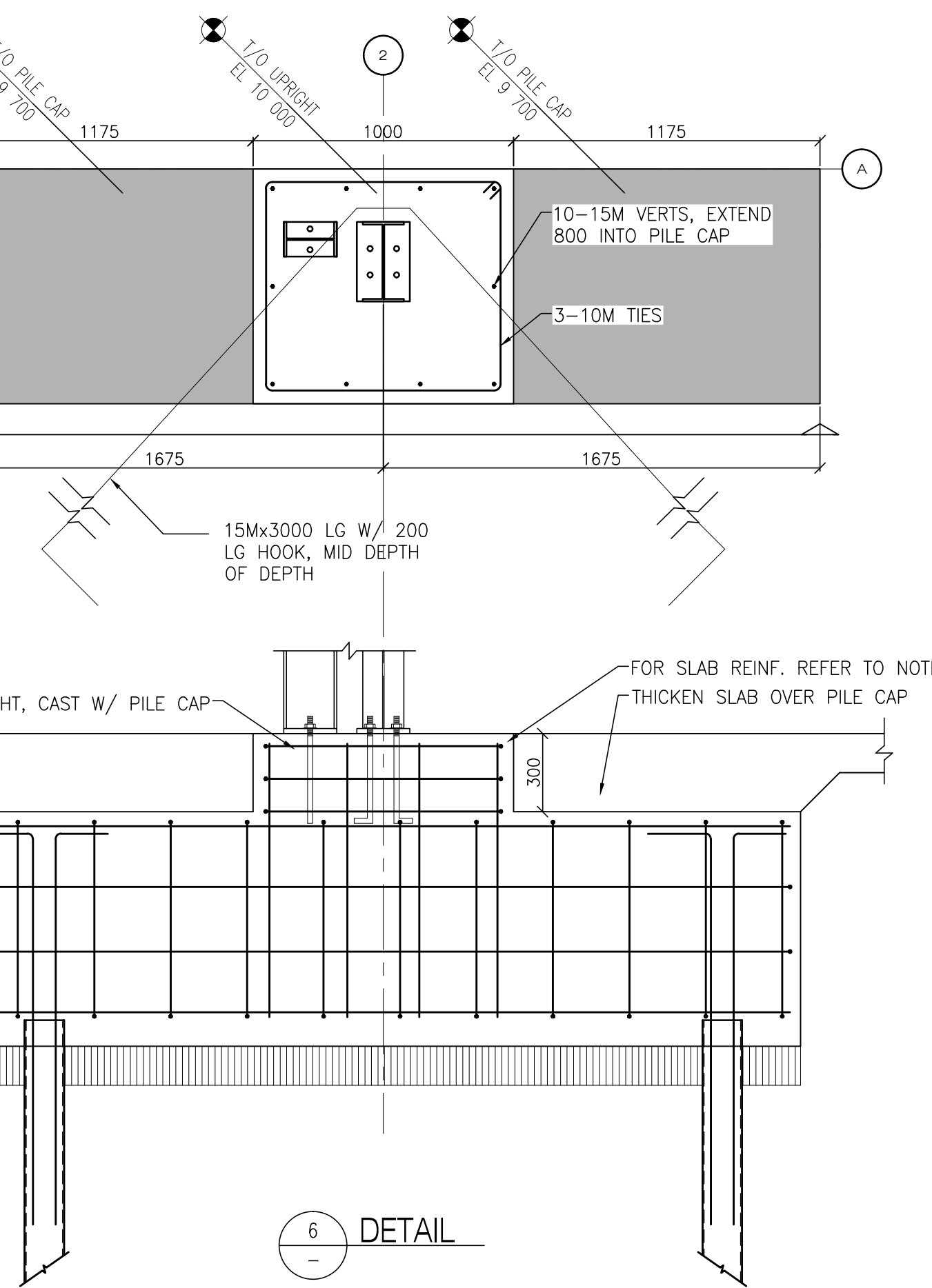
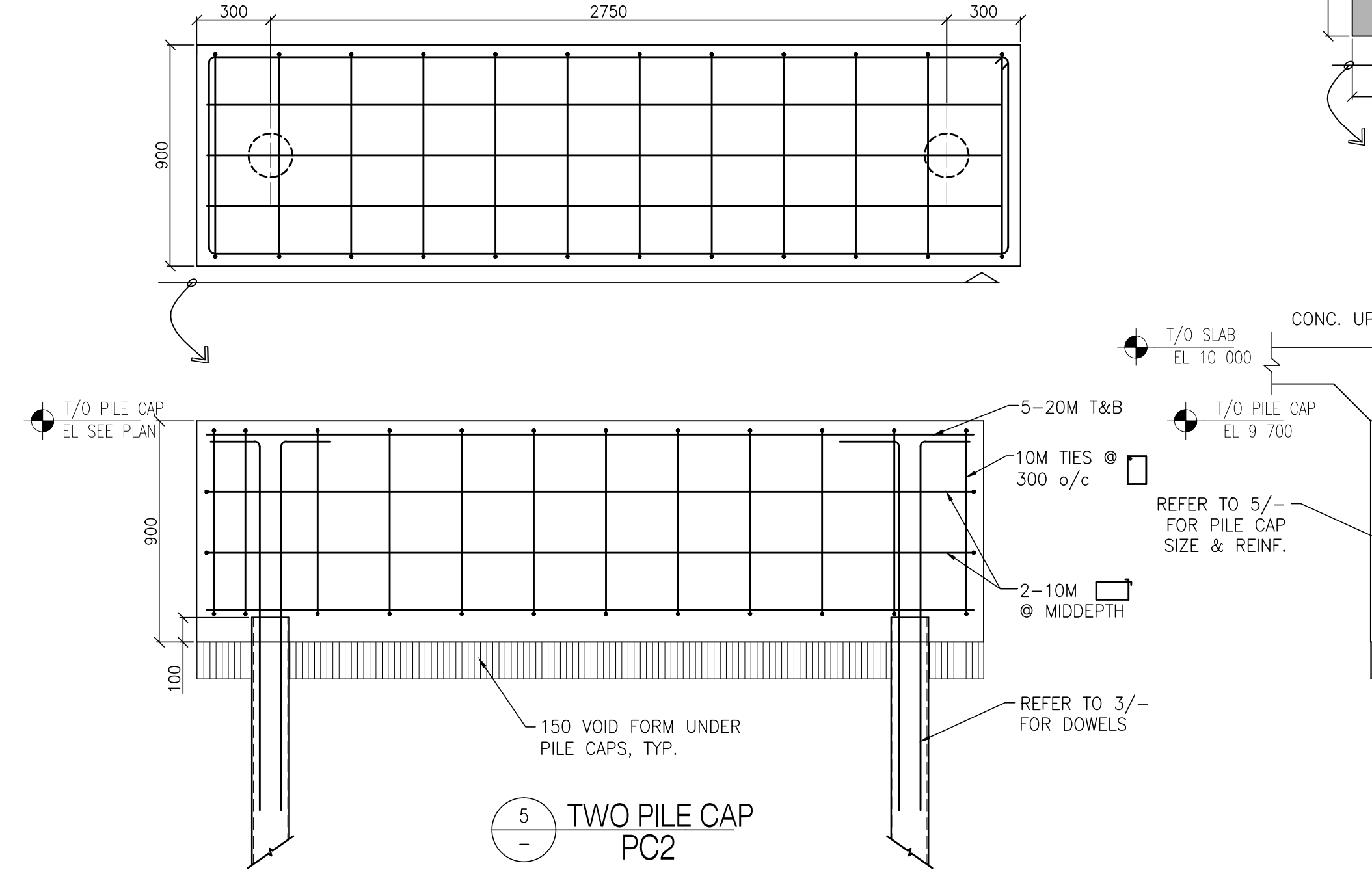
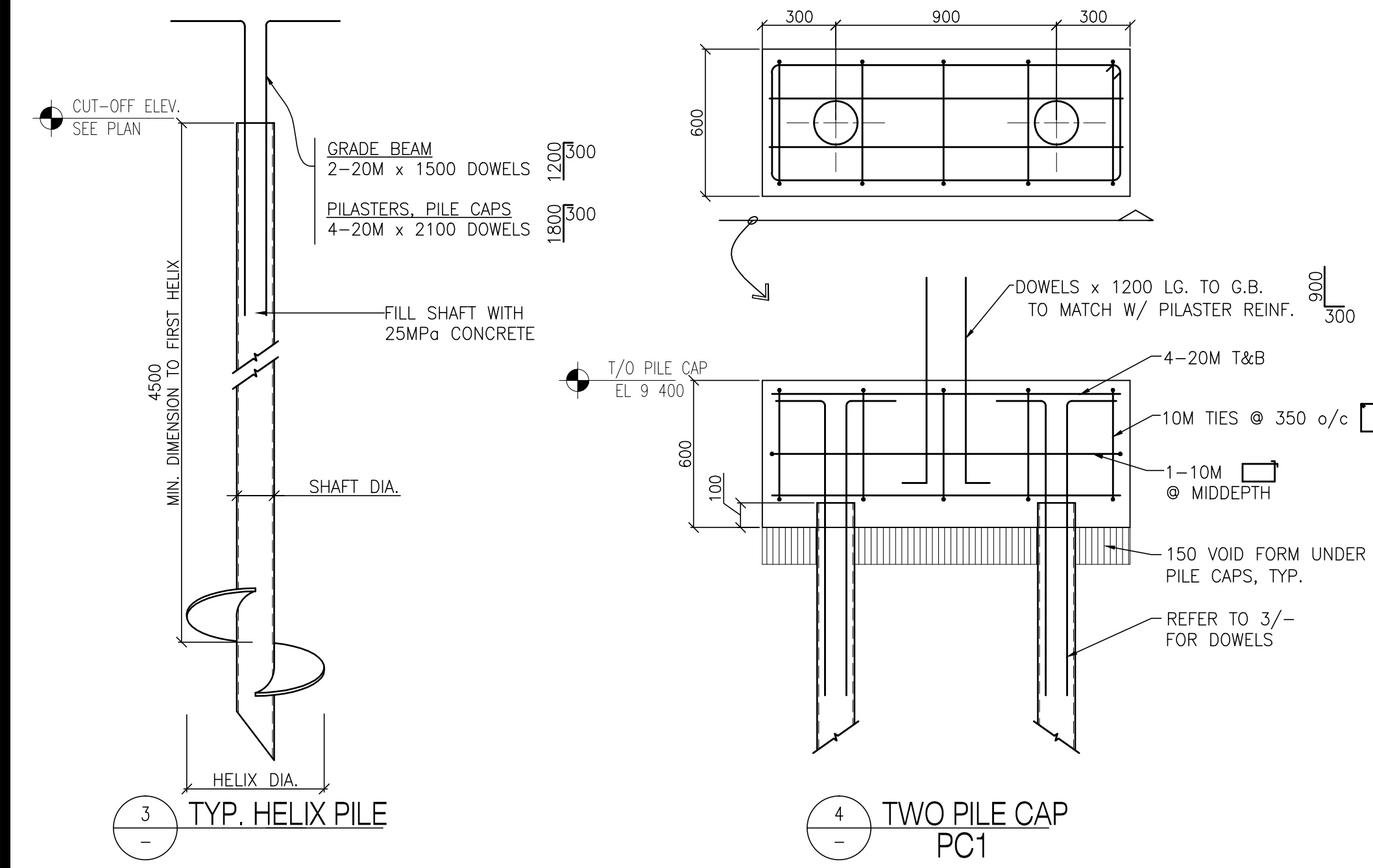
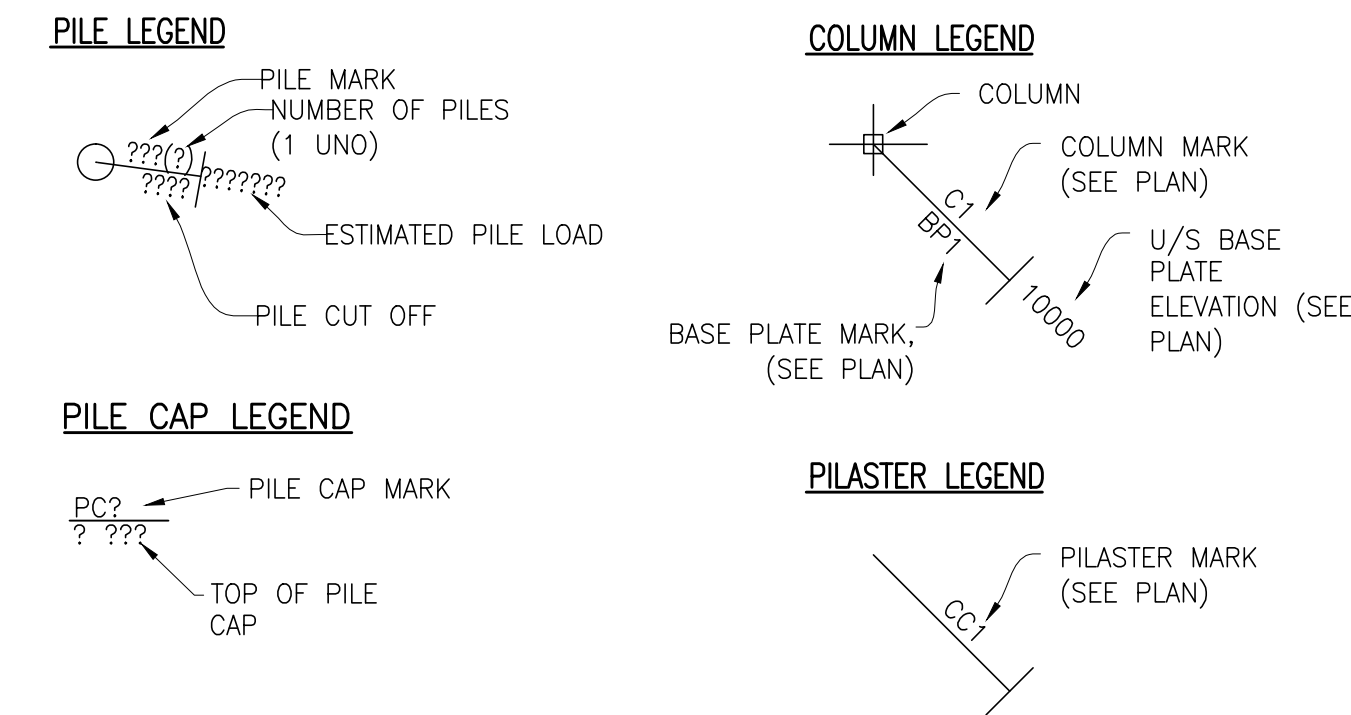


HELIX PILE SCHEDULE					
MARK NO.	SHAFT DIAM.(mm)	THICK.(mm)	HELIX DIAM.(mm)	THICK.(mm)	EMBEDDED LENGTH(mm)
P-1	114	8.0	650	19	4500
P-2	178	9.5	850	25	4500

COLUMN SCHEDULE		
COL. MARK	COL. TYPE	BASE PLATE
C1	PRE-ENG MAIN FRAME	BP1, TYP. - COORD. W/ PRE-ENG SUPPLIER, GENERAL CONTRACTOR TO COORD. A.BOLT SIZE & LAYOUT W/ PRE-ENG SUPPLIER & GB REINF.
C2	PRE-ENG END WALL	
C3	PRE-ENG INFILL	
C4	PRE-ENG PORTAL FRAME	

- MAIN FLOOR - NOTES**
- TOP OF FINISHED MAIN FLOOR & GRADE BEAM TO BE AT ELEV 10000 UNO, TO MATCH EXISTING SLAB ELEVATION
 - 150 SLAB ON GRADE
-15M @ 300 o/c E.W MIDDEPTH
-0.15mm POLY
-150 CRUSHED GRANULAR BASE COMPACT TO 98% SPD, REFER TO GEOTECHNICAL REPORT S10-7413 BY P. MACHIBRODA ENGINEERING LTD.
 - TYP. POUR BREAK IN GRADE BEAM SEE 1/S2
 - SEE GRADE BEAM CORNER SEE 2/S2
 - CONTROL JOINTS AS PER 4/S2
 - REFER TO ARCH DWGS FOR ALL PIT & TRENCH LOCATIONS

- LEGEND**
- RECESSED GRADE BEAM @ MAN DOORS & OVERHEAD DOORS, SEE 3,13&14/S2
 - PROVIDE 2-20Mx600 LG. T&B. DOWEL & EPOXY 200 INTO EXISTING FOUNDATION



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922-2101 Fax 7630212

PROFESSIONAL ENGINEER
R. PRAKASH
PRINCE ALBERT
SASKATCHEWAN

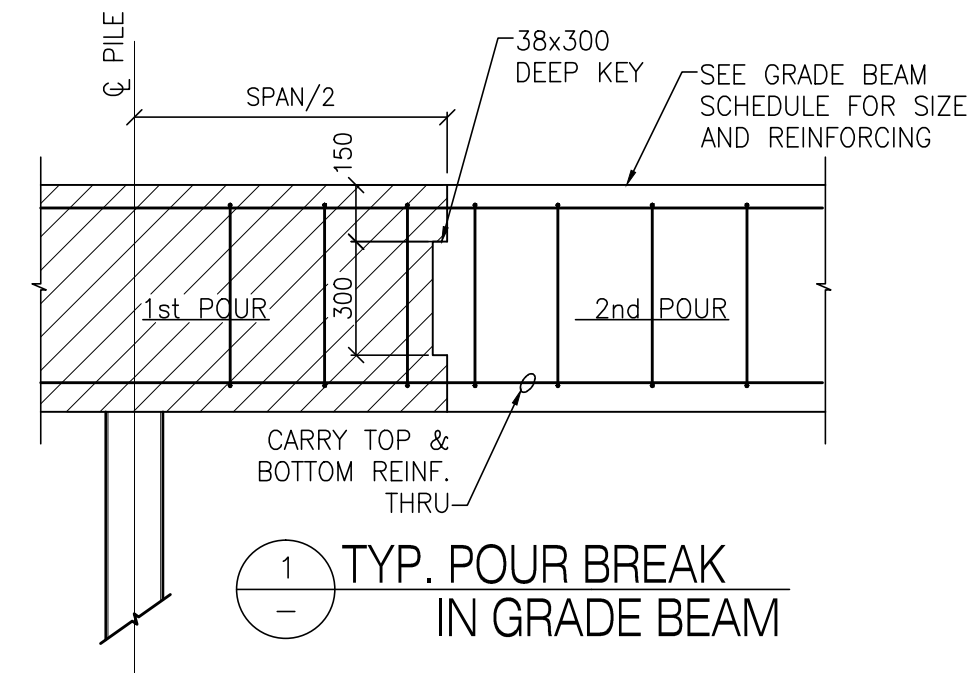
ADDITION TO MAINTENANCE GARAGE
Municipal Airport
Prince Albert, Saskatchewan
for
CITY OF PRINCE ALBERT Project No. 130/10

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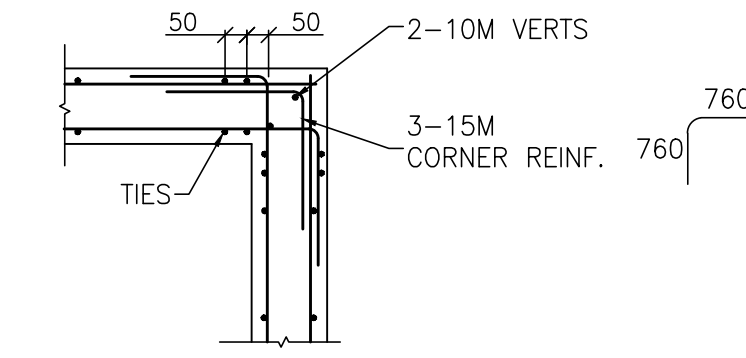
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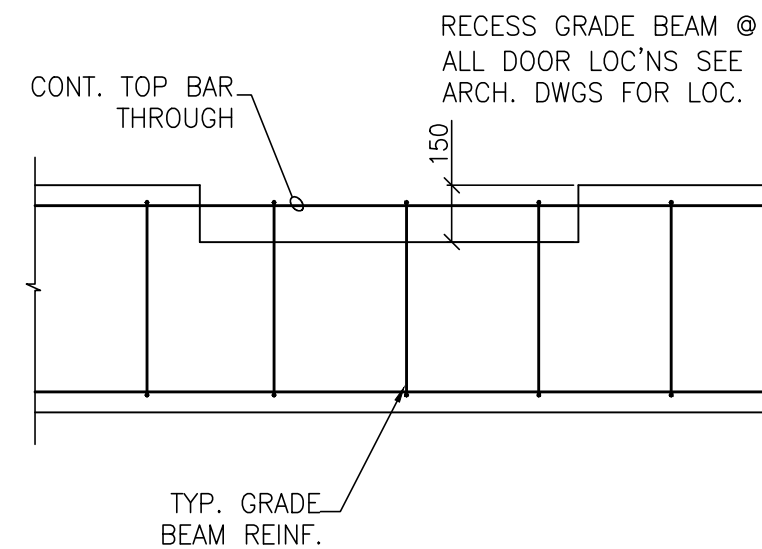
S1



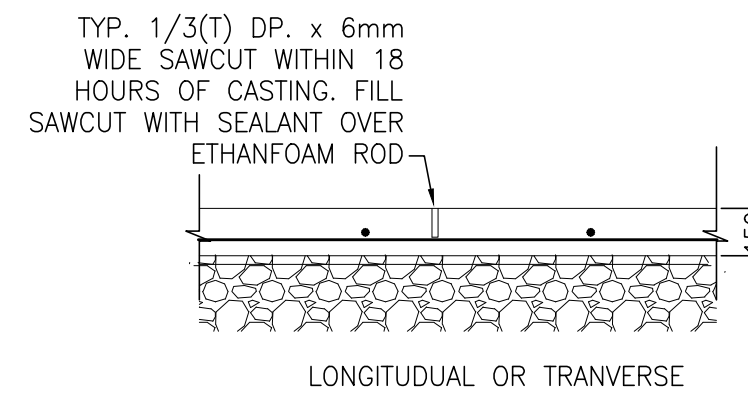
1 TYP. POUR BREAK IN GRADE BEAM



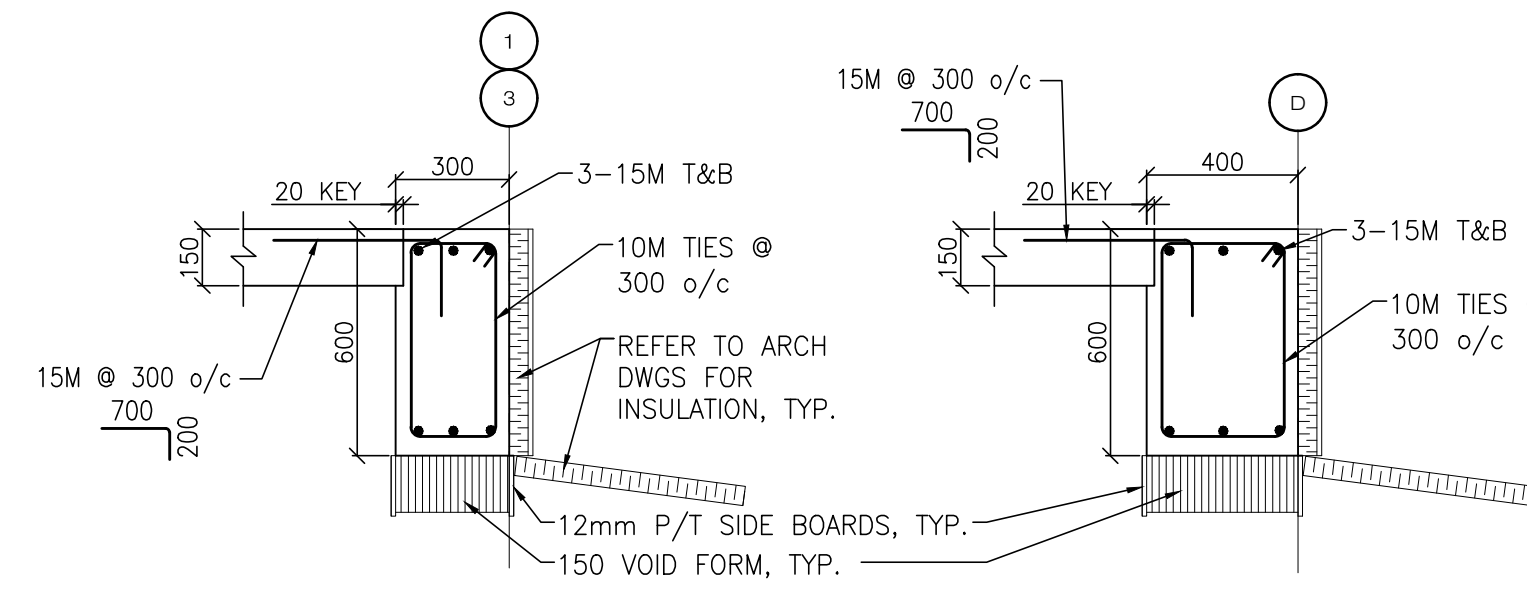
2 'L' G.B INTERSECTIONS CORNER BARS



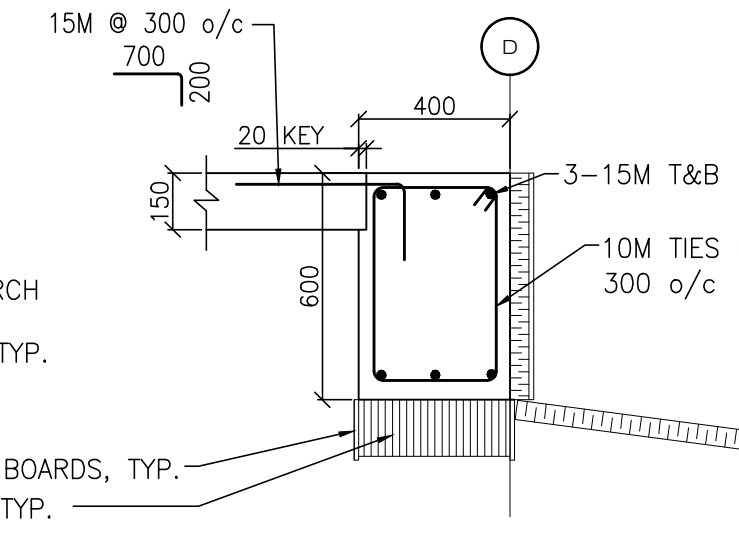
3 TYP. @ DOORWAYS



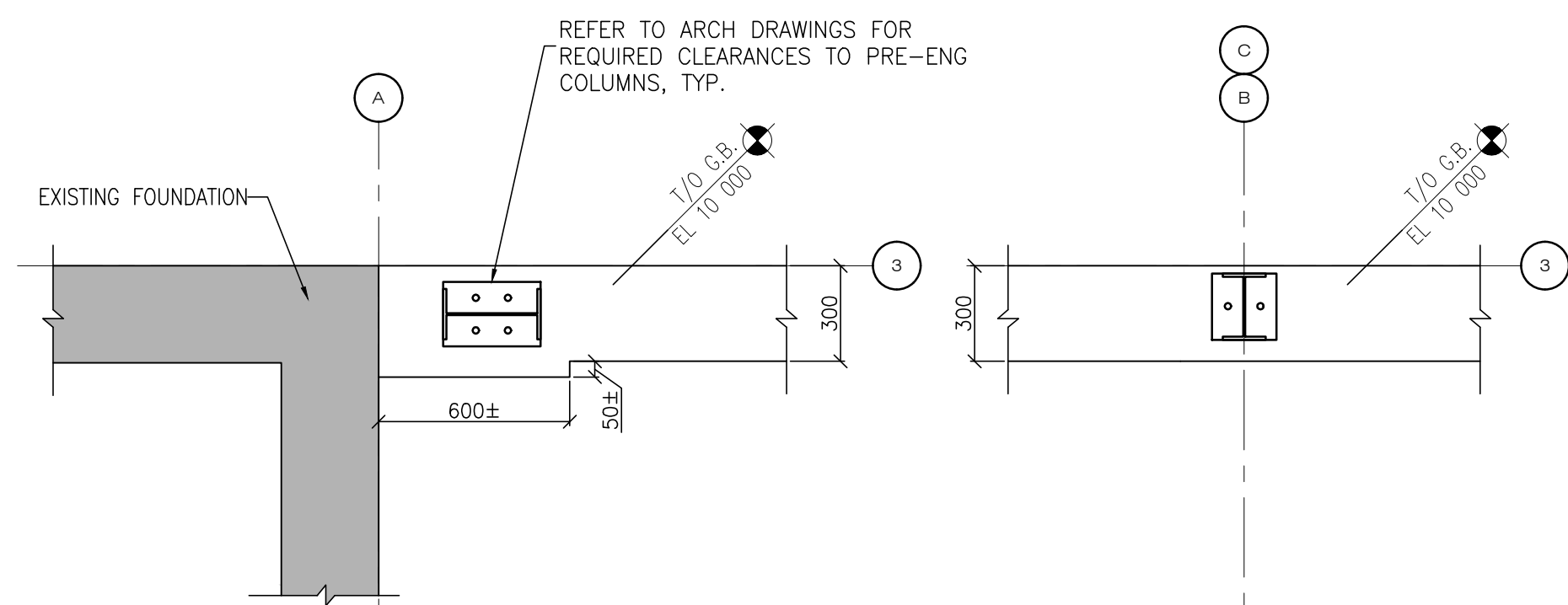
4 TYPICAL CONTROL JOINT DETAIL (c.j.)



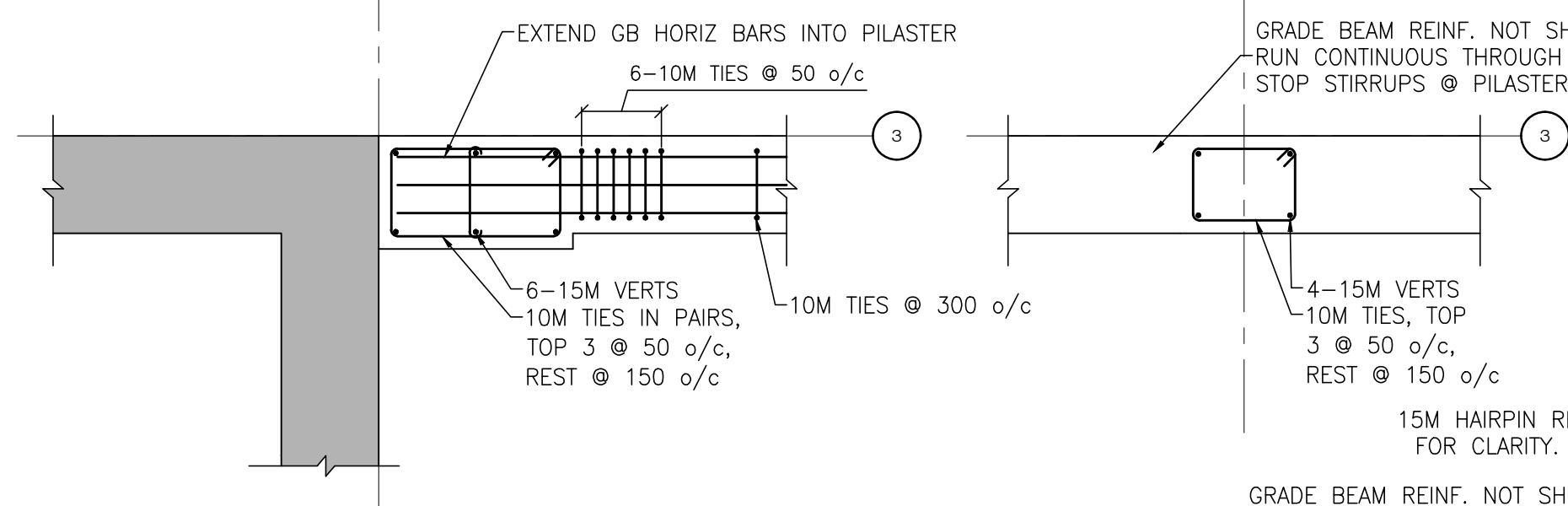
5 GB1 DETAIL 300 WIDE



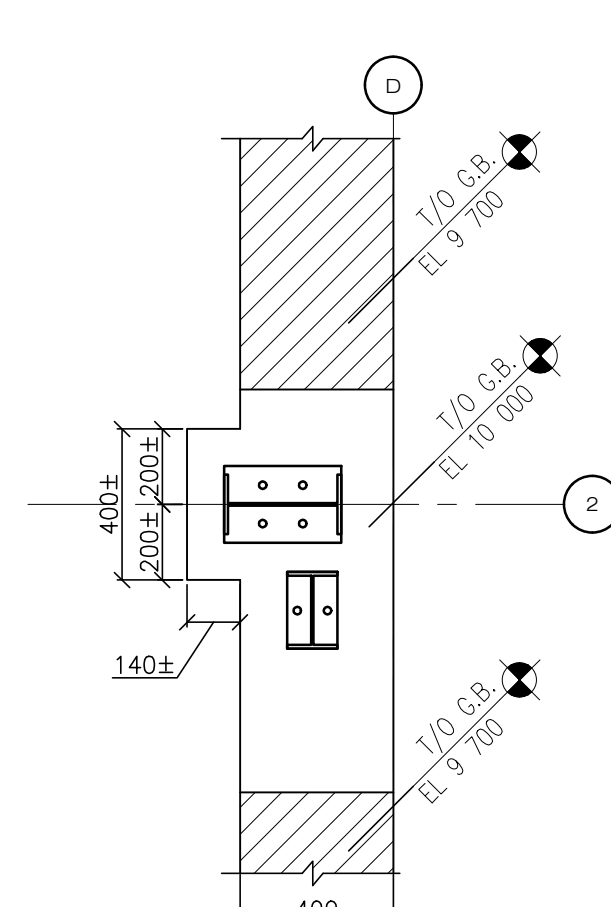
6 GB2 DETAIL 400 WIDE



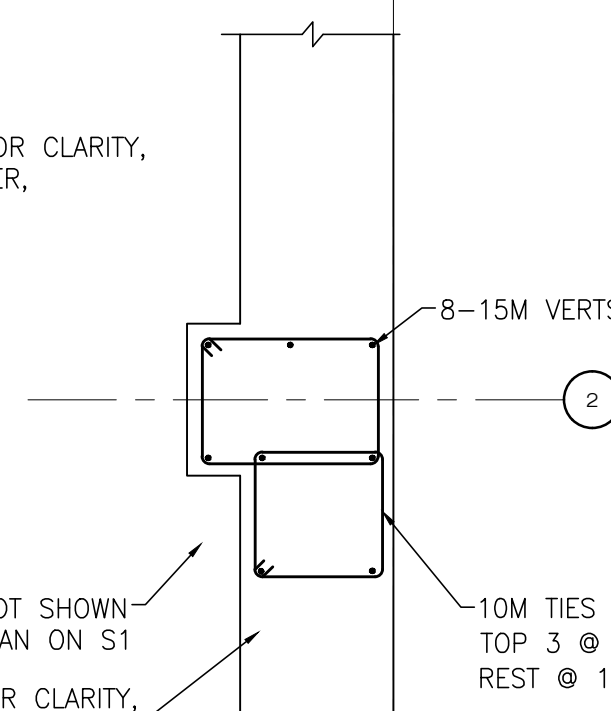
7 PILASTER PLAN CC1



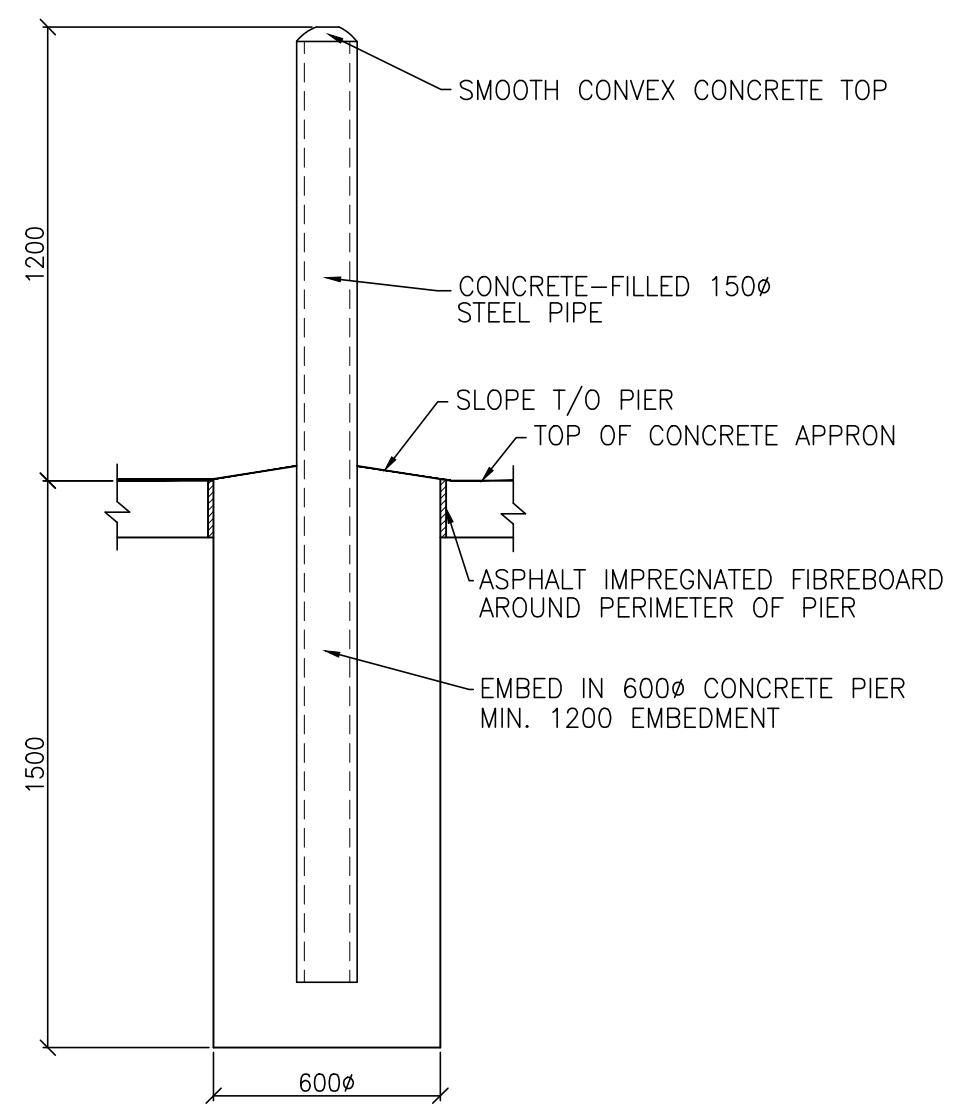
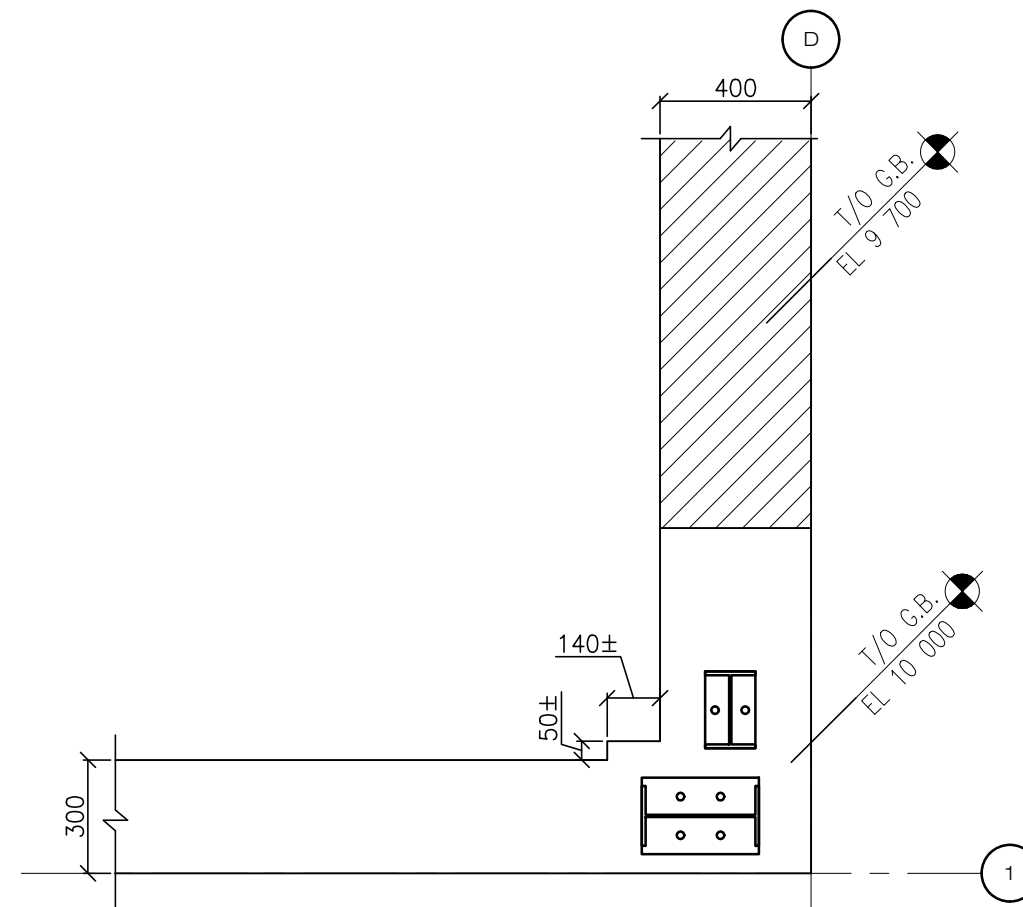
8 PILASTER PLAN CC2



9 PILASTER PLAN CC3

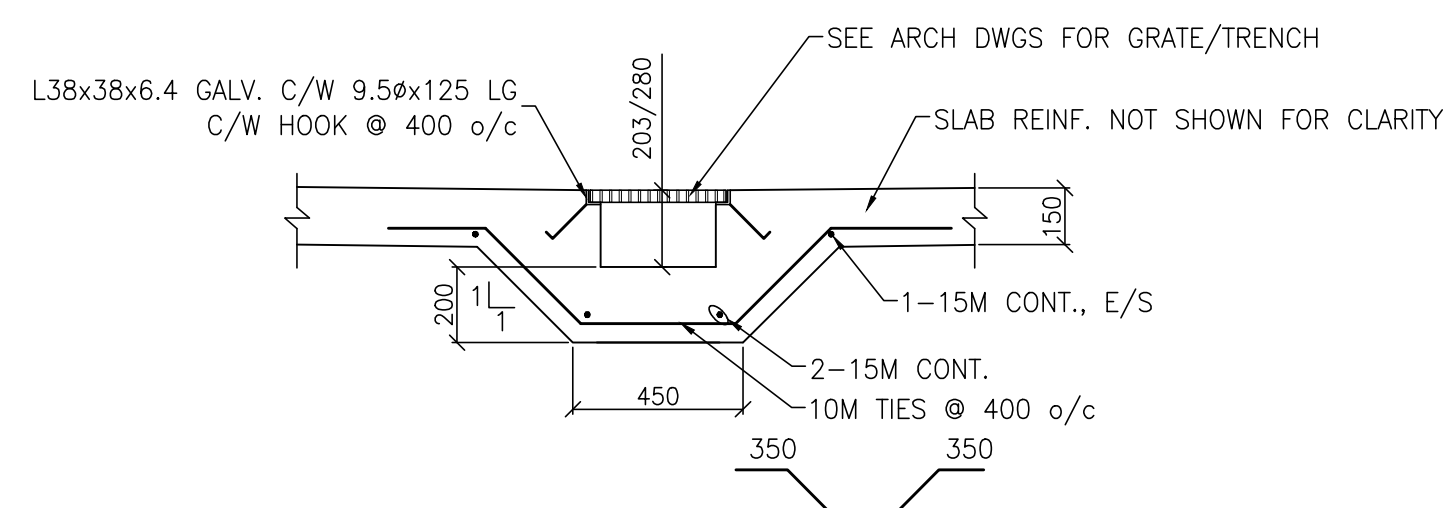


10 PILASTER PLAN CC4

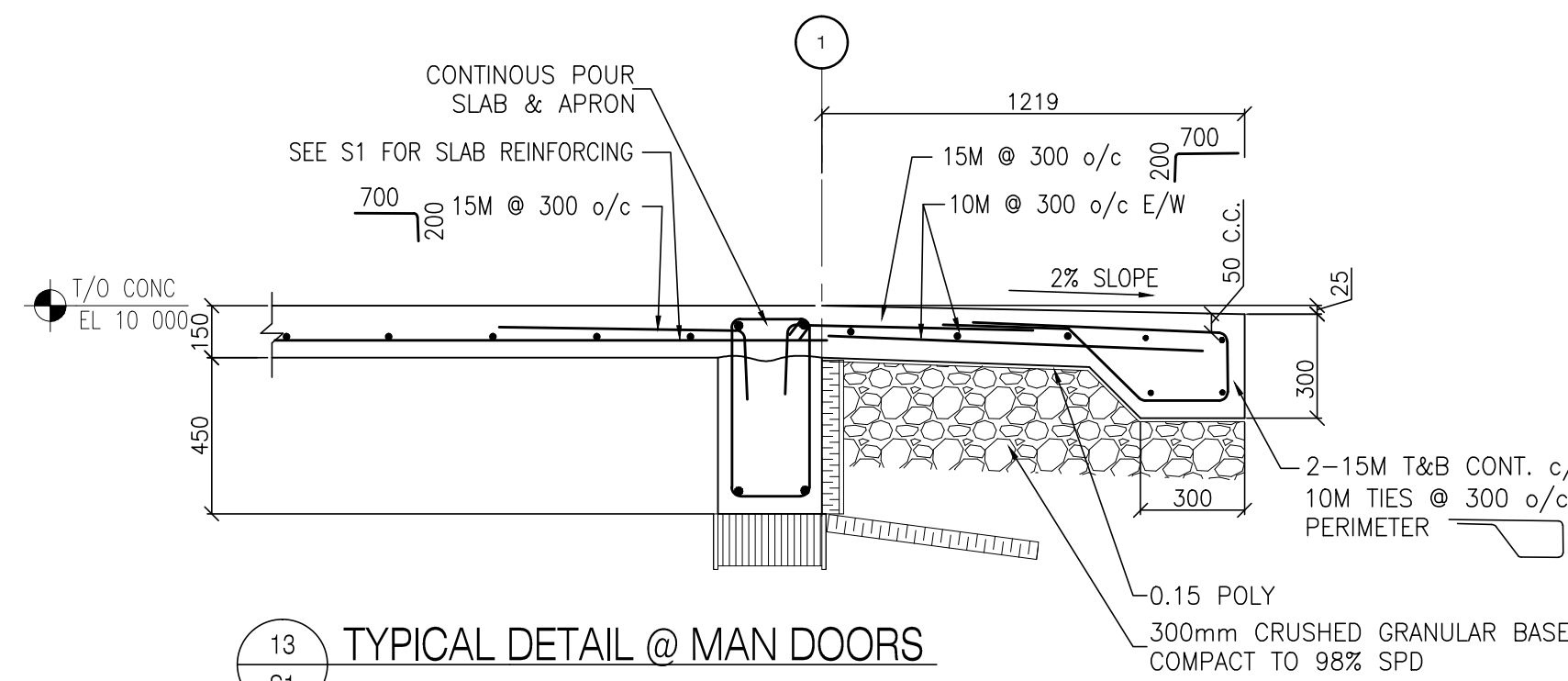


11 BOLLARD DETAIL

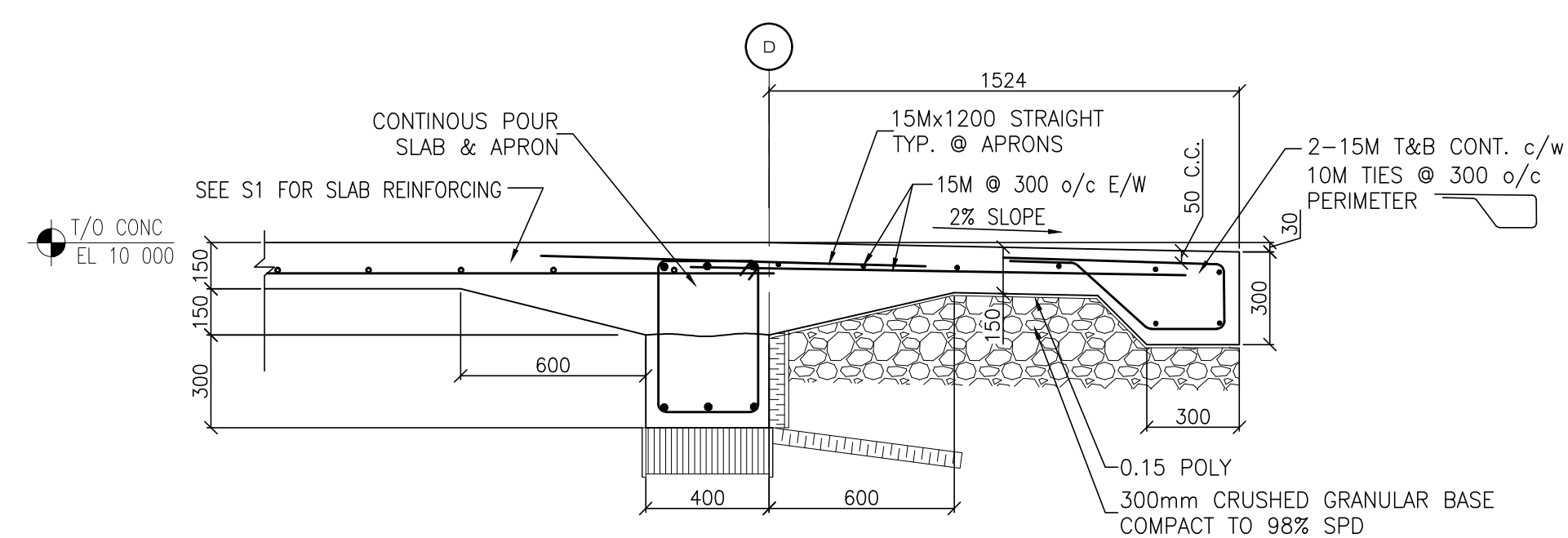
NOTE: DETAILS MARKED * MAY REQUIRE MODIFICATION TO SUIT PRE-ENG BUILDING SUPPLIER BASEPLATE & COLUMN SIZES



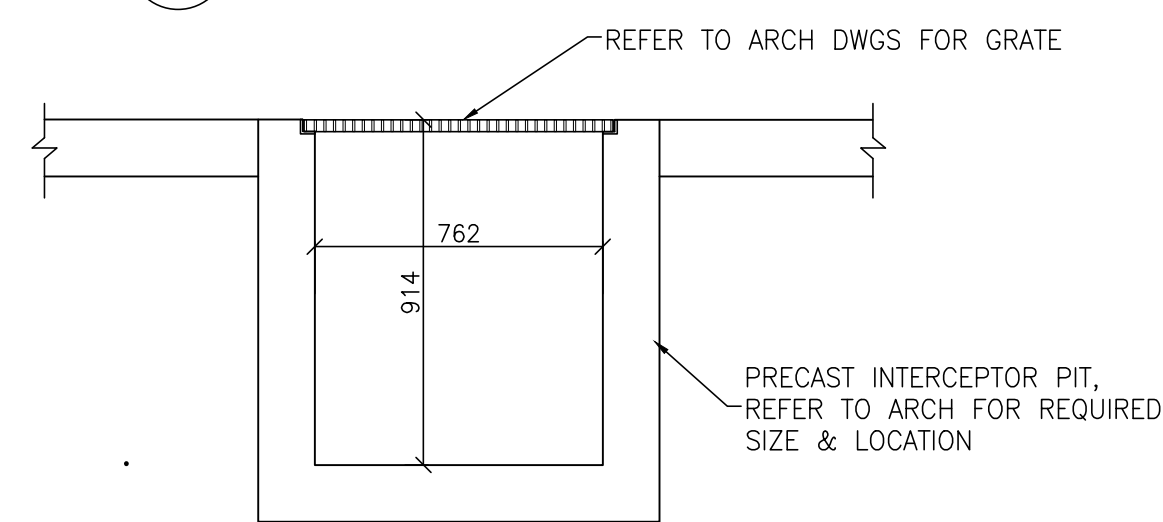
12 TYPICAL TRENCH DETAIL



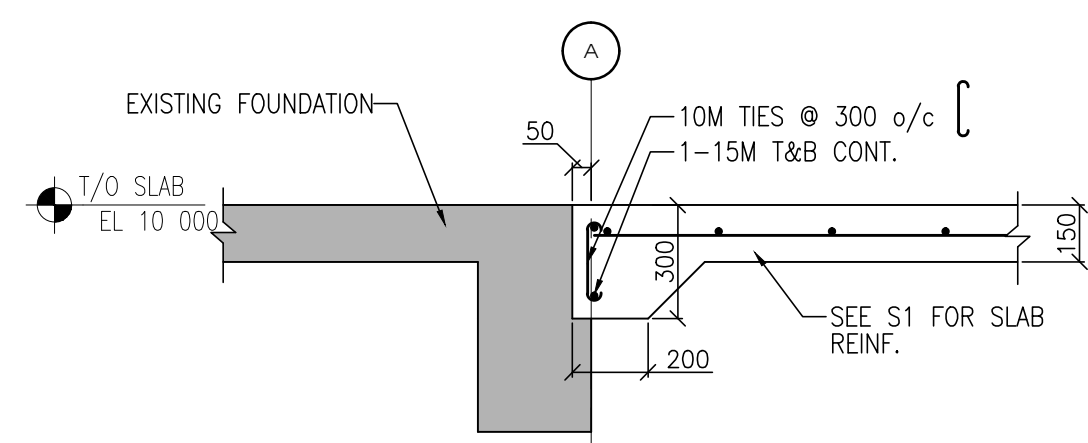
13 TYPICAL DETAIL @ MAN DOORS



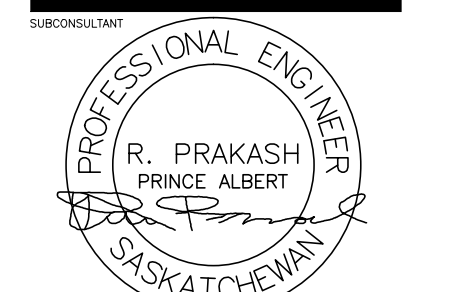
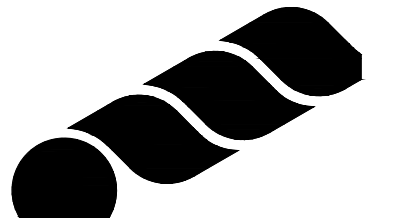
14 TYPICAL DETAIL @ OVERHEAD DOORS



15 TYPICAL PIT DETAIL



16 DETAIL



revisions	draw	ALB
	check	BKJ
	date	AUG 2010

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S2