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SOLICITATION AMENDMENT MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise
indicated, all other terms and conditions of the Solicitation
remain the same.

Ce document est par la présente révisé; sauf indication contraire,
les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

All enquiries are to be submitted in writing to the
Contracting Authority, Crystal Bysterveldt, either by
facsimile or by e-mail at:
crystal.bysterveldt@pwgsc.gc.ca.

Vendor/Firm Name and Address

Raison sociale et adresse du
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Public Works and Government Services Canada
The Cambridge Building
3 Queen Street/3 rue, Queen
PO Box 1268/CP 1268
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| | |
|---|---|
| Title - Sujet Const. (Phase 2)-Green Gables, PEI | |
| Solicitation No. - N° de l'invitation ED001-181274/A | Amendment No. - N° modif. 004 |
| Client Reference No. - N° de référence du client R.081199.001 | Date 2017-10-11 |
| GETS Reference No. - N° de référence de SEAG PW-SPWC-024-4190 | |
| File No. - N° de dossier PWC-7-40074 (024) | CCC No./N° CCC - FMS No./N° VME |
| Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2017-10-18 | Time Zone Fuseau horaire Atlantic Daylight Saving Time ADT |
| F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/> | |
| Address Enquiries to: - Adresser toutes questions à: Bysterveldt (PWC), Crystal | Buyer Id - Id de l'acheteur pwc024 |
| Telephone No. - N° de téléphone (902) 940-7122 () | FAX No. - N° de FAX (902) 566-7514 |
| Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: | |

Instructions: See Herein

Instructions: Voir aux présentes

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| Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur | |
| Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur | |
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| Signature | Date |

THIS ADDENDUM IS RAISED TO PROVIDE THE FOLLOWING ANSWERS TO QUESTIONS PROVIDED BY BIDDERS.

THE FOLLOWING CHANGES IN THE TENDER DOCUMENTS ARE EFFECTIVE IMMEDIATELY. THIS ADDENDUM WILL FORM PART OF THE CONTRACT DOCUMENTS.

DRAWINGS

1. **Question:** Are the columns to be Glulam or structural timber? Structural detail L/S09 references glulam, Architectural calls for structural timber.

Answer: All structural framing to be as shown on the structural drawings and as specified in Sections 06 18 00 GLUE-LAMINATED CONSTRUCTION.

2. **Question:** At grid G-8 on drawing S03, there is a C2 Column shown. Should this column be a C2 column or should it be a C1 column?

Answer: Drawing S03- Roof Plan. At Grid G/8 revise column from C2 to C1.

3. **Question:** Please advise if the C5 column is a wood column or a steel column. If this column is a wood column, please advise how the column is to be connected to the EP5 embedded plate (detail 20/S11).

Answer: Drawing S03- Roof Plan.

In the Column Schedule revise C5 to read 500 dia. timber.

Drawing S11 – Typical Framing Connection Details. Add C5 base collar and revise Detail 20 per attached SSK-04

4. **Question:** Elevation EL8/S06 – Please provide a detail for the connection of the B8 beam (W530x370) to the C1 column at grids E-8 and G-8.

Answer: Drawing S03- Roof Plan.

To Plan Detail 2 (Service Mezzanine Framing Plan)

- a. Add connection call out at Grid G/8 – TC33. See attached SSK-01 through SSK-03, inclusive.
 - b. Add connection call out at Grid E/8 – TC33 sim. See attached SSK-01 through SSK-03, inclusive.
 - c. Revise B3(L) framing from the south into Grid 8 on Grids E and G to B8(L).
5. **Question:** Detail 32/S12 – Please confirm the connection detail for the B8 beam and the C1 columns at grids E-2 and G-2. We are concerned about this item as the B8 beam connecting to this column is approximately 19.7m long and the beam alone weighs over 16,000 lb.

Answer: Drawing S12 – Typical Framing Connection Details.

Detail 32 – connection TC27

- a. Add call out for 6-19 dia. lag bolts, 150 embedment through the W530 bottom flange into the top of the C1 column.
- b. Add call out for 4-19 dia. through bolts for B4 connection to the W530.

6. **Question:** Please have the structural engineer review the overall foundation design for the area between grids E and G. We have concerns about the following items:
- Is the "tree structure" supposed to be a structural support for the roof, on drawing S02 there is a 3000 x 3000 x 450 mm thick footing under this tree.
 - The B8 beams that run from grid 3 to 8 span 19.7 m (64'-8"), however on the grid 2 end the concrete footing supporting the building is only 1200 mm x 1600 mm x 250 mm thick.

Answer: Drawing S02 – Foundation Plan

Part 1. Revise the footing schedule as follows:

- Delete footing F6
- Revise footing F7 to 2000x2000x250 – reinforcing – 6-25M E.W

Part 2. Revise the Foundation Plan as follows:

- At Grid E and G/ 3 revise footing from F4 to F5
- At Grid E and G/8 revise footing from F5 to F7

7. **Question:** The two free standing canopies between grids 9 and 10 (see elevation A/S06) appear to have very small footings supporting the structure. Please review this item.

Answer: Drawing S02 – Foundation Plan

Revise the Foundation Plan as follows:

- At exterior canopy columns (between Grids 9 and 10 and Grids D and E and G and H) revise footings from F8 to F3.

8. **Question:** Detail A and E on drawing S08 – What is the size and spacing for the anchor bolts in the exterior wood walls?

Answer: Drawing S08 – Foundation Section and Pilaster Details

To Section A and E, add the following anchor bolt call out – 12 dia. anchor rod @1200 o/c, 300 embed, 100 hook.

9. **Question:** For the exterior wood walls, is horizontal blocking required at 48" c/c between the wood studs, and if so is horizontal blocking required for the 2" x 6" studs only, or is it required for both the 2" x 6" and the 2" x 4" studs?

Answer: Drawing S01 – Notes.

Add to Note 8, Provide horizontal blocking at 1200 for both 2x6 (38x140) and 2x4 (38x89) studs.

10. **Question:** Please provide a lintel schedule for this project. On detail 5/A21 Window Header Detail there is a note: See Structural for Wood Lintels, however I cannot find a Lintel Schedule on the structural drawings.

Answer: Drawing S01.

Add Note 13 - Provide 2-2x10 (38x240) lintel at all openings complete with 2x6 (38x140) jack and king posts at each end.

ADDITIONAL NOTES TO DRAWINGS:**1. Drawing S06 – Timber Framing Elevation Sheet 2 of 2**

Section B – Typical Dormer Framing

- a. Revise connection call out TC25 – Detail 30/S12 to TC9 – Detail 9/S11.
- b. Revise connection call out TC26 – Detail 31/S12 to TC22 – Detail 27/S12.

2. Drawing S12 – Typical Framing Connection Details

- a. Detail 29 – connection TC24 – Bolts to be 19 dia. through bolts.

3. Drawing C17 Civil Site Services South

Underground Storm water Storage – All 600mm Pipes are 10m long.

ADDITIONAL NOTES TO SPECIFICATIONS:**1. SECTION 31 23 11 – EXCAVATION, TRENCHING, AND BACKFILL**

Replace entire section with attached Section 31 23 11 below on page 4.

2. SECTION 33 41 00 - STORM UTILITY DRAINAGE PIPING

Page 2, Item 2.01

Add:

- .2 Profile High Density Polyethylene (HDPE) pipe and fittings meeting the requirements of the latest CAN/CSA Standard B182.8,
 - .1 minimum pipe stiffness of 320Kpa
 - .2 Type 1 joints with integrated bells
- .3 Storm Water Storage Pipes
 - .1 Joints to be soil-tight
 - .2 Alternatives to pipe system shown, including open bottom storm water chambers, will be approved provided:
 - .1 System layout, size calculations are provided to Departmental Representative for approval.
 - .2 Volume required is 35 cubic meters.

1 GENERAL

1.01 WORK INCLUDED

- .1 To complete general excavation, trenching, backfilling and site grading of the site as shown, specified, or required but not restricted to:
 - .1 Select demolition, removal, excavations, backfilling, compacting, shoring, dewatering and disposal of materials.
 - .2 Stripping and stockpiling of native topsoil material.
 - .3 Rough grading and preparation of Subgrade for construction of asphalt paving, concrete curbs, unit paver and/or concrete sidewalks, and landscaped areas to indicated depths below finished grade elevations as indicated on Drawings or as specified.
 - .4 Excavation, trenching and backfilling of areas as indicated on Drawings and as specified, including:
 - .1 Storm sewer system and utilities.
 - .2 Sanitary utilities.
 - .3 Water line utilities.
 - .4 Electrical utilities
 - .5 Excavation, filling and site grading for building construction.
 - .6 Preparation of As-Built Survey.

1.02 RELATED WORK

- .1 Section 01 35 43 - Environmental Procedures
- .2 Section 31 15 53 - Erosion Control
- .3 Section 32 12 16 - Asphalt Paving
- .4 Section 32 13 13 - Sitework Concrete
- .5 Section 32 14 13 - Precast Unit Pavers
- .6 Section 32 32 35 - Precast Concrete Unit Masonry Walls
- .7 Section 32 91 19.13 - Topsoil and Finish Grading
- .8 Section 33 11 17 - Water Main
- .9 Section 33 31 13 - Sanitary Sewers
- .10 Section 33 39 00 - Precast Manholes, Catch Basins and Structures

- .11 Section 33 40 00 - Storm Sewers and Culverts
- .12 Electrical Drawings and Specifications
- .13 Architectural & Structural Drawings and Specifications

1.03 REFERENCES

- .1 ASTM C136/C136M-14 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
- .2 ASTM C117-13, Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing.
- .3 ASTM C136-14, Method for Sieve Analysis of Fine and Coarse Aggregates.
- .4 ASTM D698-12e1, Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m³).
- .5 ASTM D1557-12 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))
- .6 ASTM D3776/D3776M-09ae2(2013) Standard Test Methods for Mass Per Unit Area (Weight) of Fabric
- .7 ASTM D3786/D3786M-13 Standard Test Method for Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method
- .8 ASTM D4253-14 Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
- .9 ASTM D4254-14 Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
- .10 ASTM D4355/D4355M-14 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus
- .11 ASTM D4632/D4632M-15 Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
- .12 ASTM 4833/D4833M-07(2013)e1 Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
- .13 Prince Edward Island - Department of Transportation, Infrastructure and Energy - General Provisions and Contract Specifications for Highway Construction - Latest Edition.

1.04 SITE CONDITIONS

- .1 Known underground and surface utility lines and buried objects are indicated on the drawings. Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed. Carry out test digs as required to locate services, etc.
- .2 Establish location of all existing services before commencing work.

1.05 DEFINITIONS

- .1 Excavation: excavation of materials of whatever nature including dense tills, hardpan, frozen materials, boulders, bedrock, debris and all other materials encountered on the site.
- .2 Selected Backfill: excavated on-site material suitable for grading work.
- .3 Unsuitable material: all material which is not suitable for use in work and must be disposed of off-site.
- .4 Contaminated material: soil with exceedances of Provincial and CCME (Canadian Council of Ministers of the Environment) Soil Quality Guidelines and requiring off-site disposal at a soil treatment facility licensed in the Province of Prince Edward Island.
- .5 Invasive Plant Species - Vegetative material not native to nor currently found within the project site and which aggressively spreads, is fast growing and/or is difficult to eradicate, such as Japanese knotweed; purple loosestrife; goutweed, Glossy Buckthorn, Scotch Pine, garlic mustard, etc.
- .6 Native Topsoil: Existing soil capable of supporting good vegetative growth. Native topsoil may not meet specification of topsoil required for sodding and planting activities.
- .7 Common: Excavated soil which is not rock, Unsuitable, or topsoil.
- .8 Surplus Material: excavated material not required for re-use.
- .9 Subgrade: the surface of mass excavation and embankment finished to lines and elevations indicated.
- .10 Excavation classes: two classes of excavation will be recognized;
 - .1 Rock excavation: excavation of rock as defined in 1.05.10

exceeding minimum volume limits.

- .2 Common excavation: excavation of materials of whatever nature including pavements, drainage structures, timber and masonry encountered during excavation or indicated on the drawings, which are not included under definitions of rock excavation. This also includes the excavation of Unsuitable Material.

- .11 Rock: material which requires drilling, ripping or breaking up with power-operated tools for its removal, and boulders and pieces of concrete exceeding volume limits below. Frozen material will not be classified as rock. Minimum volume limits:
 - .1 Mass excavation: 1.0 cubic metres.
 - .2 Trench excavation: 0.5 cubic metres.

1.06 SAMPLES

- .1 When requested submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 At least four (4) weeks prior to commencing work, inform Departmental Representative of proposed source of bedding, backfill and cover materials and provide access for sampling.
- .3 Submit sieve analysis of all granular materials.

1.07 TOLERANCES

- .1 Finish rough grading of site to 25mm +/- or as noted on Drawings.

1.08 PROTECTION OF EXISTING STRUCTURES

- .1 Existing buried utilities and structures:
 - .1 Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.
 - .2 Prior to commencing excavation work, notify applicable owner or authorities having jurisdiction, establish location and state of use of buried utilities and structures. Owners or authorities having jurisdiction to clearly mark such locations to prevent disturbance during work.
 - .3 Confirm locations of buried utilities by careful test excavations.
 - .4 Maintain and protect from damage, water, sewer, gas, electric, telephone, and other utilities and structures encountered.
 - .5 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before removing or re-routing.

- .6 Record location of maintained, re-routed and abandoned underground lines.
- .2 Existing surface features:
 - .1 Conduct, with Departmental Representative, a condition survey of existing service poles, wires, signs, pavement, trees, shrubs, fences, asphalt, concrete, survey benchmarks and monuments, etc. which may be affected by work.
 - .2 Protect existing surface features from damage while work is in progress. In event of damage, immediately make repair to approval of the Departmental Representative.

1.09 SHORING, BRACING & UNDERPINNING

- .1 Comply with Section 01 35 29.06 - Health and Safety Requirements and applicable local regulations.
- .2 Provide shoring and bracing as required to prevent movement, failure or settlement, to safeguard and maintain integrity of structures, utilities, earth, benchmarks, services and adjacent grades.
- .3 Engage services of qualified Professional Engineer registered in the Province of Prince Edward Island to inspect and approve shoring equipment required for work.
- .4 Construct temporary works to depths, heights and locations as indicated or directed by the Professional engineer responsible for the design of the shoring or bracing.
- .5 During backfill operation:
 - .1 Unless otherwise indicated or as directed by Departmental Representative, remove sheeting and shoring from excavations.
 - .2 Do not remove bracing until backfilling has reached that specified by the Professional engineer responsible for the design of the shoring or bracing.
 - .3 Pull sheeting in increments that will ensure compacted backfill is maintained at an elevation at least 500 mm above toe of sheeting.
- .6 When sheeting is required to remain in place, cut off tops at elevations as directed by the Departmental Representative.
- .7 Upon completion of substructure construction:
 - .1 Remove shoring and bracing.
 - .2 Remove excess materials from site and restore conditions indicated or as directed by Departmental Representative.

- .8 Water must not be directly pumped into a watercourse or water body.

2 PRODUCTS

2.01 MATERIALS

- .1 Backfill materials to be free from invasive plant species.
- .2 Fill material: Selected Backfill as specified herein. Obtain approval from Departmental Representative for excavated or graded material to be used as fill for grading work. Protect approved material from contamination.
- .3 Selected Backfill: Common which is free from stumps, trees, roots, sod, organics, rock, boulders, and masonry larger than 100mm in any dimension; and other deleterious materials and meeting criteria for use as determined by Departmental Representative.
- .4 Borrow: well graded material from Contractor's own sources meeting the specification for Selected Backfill.
- .5 Structural Fill: Structural Fill to be to the approval of the Geotechnical engineer.
- .1 Type A Structural Fill:
- .1 Approved inorganic well-graded soil with a maximum particle size of 200mm and maintained at a suitable moisture content to achieve the required compaction of 100% Standard Proctor Maximum Dry Density (ASTM D698).
- .2 Type A Structural Fill is to be placed within the stress zone of site services and the new visitor centre building

2.02 GRANULARS

- .1 Sand: hard, granular, sharp material, well graded from course to fine, free of impurities, chemicals or organic matter, and grades as follows:

| Sieve Designation | Cum. % Passing |
|-------------------|----------------|
| 5 mm | 100 |
| 0.16 mm | 0-5 |

- .2 Gravels: crushed and screened pit gravel or crushed and screened rock. Material shall consist of hard and durable stone particles. Gradation to be dense and well graded and to PEI DOTIE - Latest Edition.

| Passing By Mass (%) | | | | |
|---------------------|------------------|------------------|------------------|------------------|
| Sieve Size | Granular Class A | Granular Class B | Granular Class C | Drainage Class D |
| 50.0mm | - | - | - | 100 |
| 45.0mm | - | - | 100 | - |
| 38.0mm | - | - | - | 60-100 |
| 31.5mm | 100 | 100 | 87-100 | 40-100 |
| 25.0mm | 95-100 | 95-100 | 80-96 | 20-65 |
| 19.0mm | - | - | - | 0-30 |
| 12.5mm | 50-83 | 50-83 | 45-83 | 0-20 |
| 4.75mm | 30-60 | 30-60 | 25-65 | 0-5 |
| 1.18mm | 15-40 | 15-43 | - | - |
| 600um | 10-32 | 10-35 | - | - |
| 300um | 5-22 | 5-26 | 5-22 | - |
| 75um | 3-9 | 3-9 | 3-10 | - |

2.03 MISCELLANEOUS

- .1 Pipe Bedding and backfill: Class A granular.

3 EXECUTION

3.01 GENERAL

- .1 Confirm erosion and sedimentation control measures and other environmental protection measures as specified in Section 01 35 43 are in place prior to beginning work of this Section.
- .2 Remove obstructions, ice and snow, from surfaces to be excavated within limits of contract.
- .3 Verify existing grade elevations prior to beginning work. Report any discrepancies to Departmental Representative.

3.02 GRADING - GENERAL

- .1 Minimize construction traffic over load bearing Subgrade.
- .2 Rough grade to levels, profiles, and contours allowing for surface treatment as to the following depths:
 - .1 150mm maximum for areas to be sodded.
 - .2 As noted on Details for other construction
- .3 Geotechnical engineer to inspect and approve prepared compacted Subgrade prior to placement of fill material.

- .4 Prior to placing fill over existing ground, scarify surface to depth of 150mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.
- .5 Do not disturb soil within branch spread of trees or shrubs to remain.

3.03 STRIPPING OF NATIVE TOPSOIL

- .1 Remove native topsoil from areas to be excavated, paved or regraded. Strip when dry enough to prevent contamination with sub grade material. Strip to minimum 150mm depth. Do not handle wet or frozen topsoil.
- .2 Strip native topsoil after area has been cleared of brush, weeds, grasses or other vegetation.
- .3 Stockpile native topsoil on site in location to approval of Engineer. Stockpile height not to exceed 1830mm. Provide protection of stockpile from erosion.
- .4 Dispose of unused native topsoil off site.
- .5 Native top soil may not meet tolerance requirements of prepared topsoil for planting operations.

3.04 EXCAVATION & EMBANKMENT

- .1 Schedule excavation activities to minimize the exposure of load bearing Subgrade. Minimize construction traffic over load bearing Subgrade.
- .2 Excavate all types of materials to lines, grades, elevations and dimensions as indicated and as necessary for construction.
- .3 Handle material in a manner that will not endanger the public, personnel, property or the work. Do not reduce sight distances or obstruct roadways or utilities. Do not obstruct flow of surface drainage or natural watercourses.
- .4 Notify the Departmental Representative if in doubt as to definition of material.
- .5 Select method of excavation, support, and dewatering unless otherwise indicated or directed. Protect property and structures from damage.
- .6 Remove concrete, masonry, paving, walks, demolished foundations and rubble and other obstructions encountered during excavation.

- .7 Extend excavations sufficient distance from footings and walls to allow placing and removal of forms and for placing backfill materials indicated.
- .8 Excavation must not interfere with normal 45° splay of bearing from bottom of any footing.
- .9 When constructing embankment with Common material place in uniform layers to full width of embankment. Compact to 95% Standard Proctor Density throughout full width and depth. Maximum rock size: 65% of compacted lift thickness.
- .10 Minimize disturbance of soil within branch spread of trees or shrubs that are to remain. If excavating through roots, excavate by hand and cut roots with sharp axe or saw.
- .11 Do not excavate more than 30 metres of trench in advance of pipe laying, unless otherwise directed.
- .12 Do not obstruct flow of surface drainage
- .13 Dispose of surplus and unsuitable excavated material in approved location off site in accordance with PEI Department of Environment regulations.
- .14 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
- .15 Prepare trench bottoms so pipe can be laid to required line and grade.
- .16 Correct unauthorized over-excavation as follows and to the approval of the geotechnical engineer:
 - .1 Fill under bearing surfaces and footings with concrete specified for footings.
 - .2 Fill under other areas with Class A fill compacted to not less than 95% of corrected maximum dry density.

Obtain Department Representatives approval of completed excavation.

Obtain excavation permit prior to starting any on-site excavations.

3.05 EXCAVATION OF UNSUITABLE MATERIAL

- .1 Notify Departmental Representative whenever Unsuitable Materials are encountered in the Subgrade and remove to depth and extent directed. Isolate area to minimize entry of water into excavation.
 - .1 If such work is due to nature of the soil, the Departmental Representative and Contractor will jointly measure work for

payment.

- .2 If such work is due to any fault of the Contractor, remedial work is responsibility of Contractor.
- .2 Remove unsuitable material and material that is deemed contaminated by the Departmental Representative immediately from the site. Do not stockpile.
- .3 Remove and dispose of Unsuitable Materials from trench bottom to extent and depth as required by these specifications and as directed by Departmental Representative. Replace over excavation of trench with selected site material, granular material or concrete as directed by Departmental Representative.

3.06 ROCK REMOVAL

- .1 Blasting not permitted.
- .2 When rock is encountered which was not identified in the geotechnical reports nor could be anticipated from geotechnical reports, notify the Departmental Representative for measurement.
- .3 Break rock to a depth 300mm below Subgrade. Remove loose rock fragments from slopes.
- .4 Remove rock by wedging, drilling and/or mechanical hammer. Conduct rock removal with all possible care to avoid injury to persons and property.

3.07 STOCKPILE

- .1 Stockpiling and protection of fill materials approved for use is the responsibility of the Contractor.
- .2 Do not stockpile materials alongside of excavations in such manner that stockpiling will cause side failure or bottom uplift.
- .3 Protect fill materials from contamination.

3.08 SUPPORT OF EXCAVATION

- .1 Install and be responsible for shoring.
- .2 When shoring is required, engage services of a Professional engineer, registered or licensed in the Province of Prince Edward Island, to design shoring and inspect installation.
- .3 Provide record copy of drawings signed and sealed by Professional engineer responsible for their preparation.

3.09 PLACEMENT OF STRUCTURAL FILL

- .1 Confirm demolitions and removals are completed prior to placement of Structural Fill.
- .2 Geotechnical engineer to review Subgrade prior to placement of Structural Fill.
- .3 Place and compact Structural Fill with equipment and in lift thicknesses to ensure the specified levels of compaction throughout.
- .4 Use fill of types as indicated or specified below. Compaction densities are percentages of maximum densities obtained from ASTM D698.
- .5 Within trenches:
 - .1 For pipes, cables, ducts, fittings and appurtenances, install bedding as follows: Provide min. 150 mm bedding layer of bedding sand under pipes, cables, ducts, fittings and appurtenances. Compact to 100% of Maximum Dry Density. Side fill to top of utility or service manually with beddings and in uniform lifts not exceeding 150 mm. Hand tamp only.
- .6 Backfill: provide min. 300 mm protective backfill cover over bedding cover, hand-place. Compact to 100% of Maximum Dry Density. For remainder of trench backfill to underside of sub-base course or of surface restoration in lifts not to exceed 200 mm. Compact to 100% of Maximum Dry Density.
- .7 Notify the Departmental Representative four hours prior to backfilling of trenches.

3.10 BEDDING

- .1 Place and compact foundation layer of bedding for piping to depth indicated, shaped to provide uniform support to pipe structures. Granular bedding for all underground structures shall be as noted on Drawings.

3.11 BACKFILLING

- .1 Do not proceed with backfilling operations until the Departmental Representative has inspected and approved installation.
- .2 Areas to be backfilled must be free from debris, snow, ice, water and frozen ground.

- .3 Do not use backfill material which is frozen or contains ice, snow or debris.
- .4 Backfilling around installations.
 - .1 Place bedding and surround material as specified elsewhere.
 - .2 Do not backfill around or over cast-in-place concrete within 72 hours after placing of concrete.
 - .3 Exterior side of perimeter walls: use selected backfill material fill within 1m of the wall. Compact to 98 % of maximum dry density.
 - .4 Within building area under concrete slabs on grade: use minimum 200 mm thick base course of Premium Borrow, per section 31 23 13, with a uniform 150 mm thick top course of granular base to underside of floor slabs. Use Premium Borrow if fill is required below subbase course. Compact to 100 % maximum dry density.
 - .5 Subgrade fill in landscaped areas: per Section 31 26 10.
- .5 Place layers simultaneously on both sides of installed work to equalize loading. Difference not to exceed 225 mm.
- .6 Where earth pressures are liable to develop permit concrete to cure for minimum 28 days to withstand earth and compaction pressures. Do not install earth or backfill until concrete has cured completely.
- .7 Place protective material layer under, around and over minor installations until 600 mm of cover is provided. Dumping material directly on installations will not be permitted.
- .8 Place backfill materials of earth fill around structure in uniform layers not exceeding 200 mm compacted thickness up to finish grade. Compact each layer replacing succeeded layer.
- .9 Where new services cross under existing services, compact bedding for existing service pipe to 150 mm below bottom of pipe and provide a cast-in-place cradle for length of unsupported pipe.

3.12 DEWATERING

- .1 Keep excavations free of water while work is in progress.
- .2 Dewater excavation in a manner which will not endanger stability of the work.
- .3 Protect open excavations against flooding and damage due to surface run-off.
- .4 Dispose of water in accordance with Section 01 35 43 - Environmental Procedures and in manner not detrimental to public

and private property, or any portion of work completed or under construction.

- .5 Take precautions to prevent uplift of pipe or structures.
- .6 Provide facilities as required by municipal, provincial or federal regulations to remove suspended solids or other materials before discharging to watercourses or drainage areas.

3.13 COMPACTION

- .1 Compact filled and disturbed areas to 95% Standard Proctor density, with the following exceptions:
 - .1 Type A Structural Fill: 100% Standard Proctor Maximum Dry Density
 - .2 Granular materials in parking area to 98% Standard Proctor Maximum Dry Density.
 - .3 Backfilling around structures to 98% Standard Proctor Maximum Dry Density.
 - .4 Clear stone to 70% Relative Density.
- .2 Density tests: Standard Proctor in accordance with Method B, ASTM D 698. Modified Proctor Density in accordance with ASTM D1557. Relative Density in accordance with ASTM D4253 and D4254.

3.14 TESTING

- .1 Undertake quality control testing of filled and disturbed areas to ensure compliance with these specifications. Bear cost of quality control testing at no additional cost to the Contract.
- .2 At its discretion, the Departmental Representative may undertake inspection and testing of soil compaction. Cost of this testing to be borne by the Departmental Representative.
- .3 If Owner's testing identifies non-compliance with these specifications, Contractor to pay for any additional testing required by the Departmental Representative.

3.15 SURPLUS MATERIAL

- .1 Remove Surplus Material from site.

3.16 RESTORATION

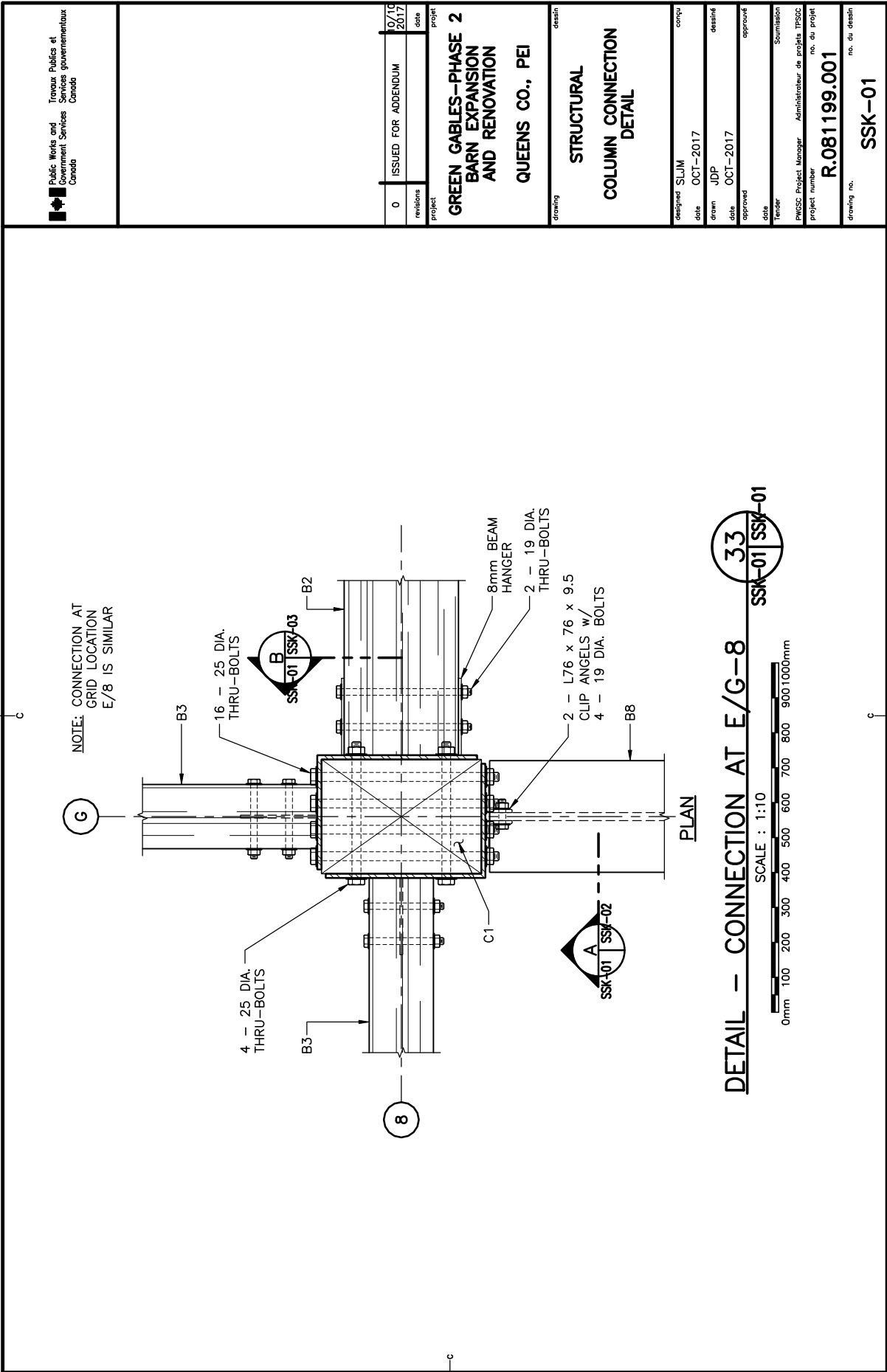
- .1 Upon completion of work, remove waste materials and debris, trim slopes, and correct defects as directed by Departmental Representative.

- .2 Reinstall pavements, lawns or other site features damaged by Work of this section to elevation which existed before excavation.
- .3 Clean and reinstall areas affected by work as directed by Departmental Representative.

3.17 AS-BUILT TOPOGRAPHICAL SURVEY

- .1 Undertake topographical survey of completed work with a minimum of 10m x 10m grid and significant changes in grades or material types.
- .2 Identify location and elevations of newly built work, including:
 - .1 Manholes and catchbasins.
 - .2 Subsurface piping:
 - .1 Storm sewer pipes.
 - .2 Sanitary sewer pipes.
 - .3 Water pipes, thrust blocks, elbows, joints, etc.
 - .4 Subsurface field drainage.
 - .3 Water valves and fire hydrants.
 - .4 Curbing and asphalt areas.
 - .5 Walkways.
- .3 Submit electronic data as an AutoCAD drawing and in tabular format as a requirement of Substantial Performance.

END OF SECTION



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**GREEN GABLES—PHASE 2
BARN EXPANSION
AND RENOVATION**

drawing

dessin

STRUCTURAL

COLUMN CONNECTION

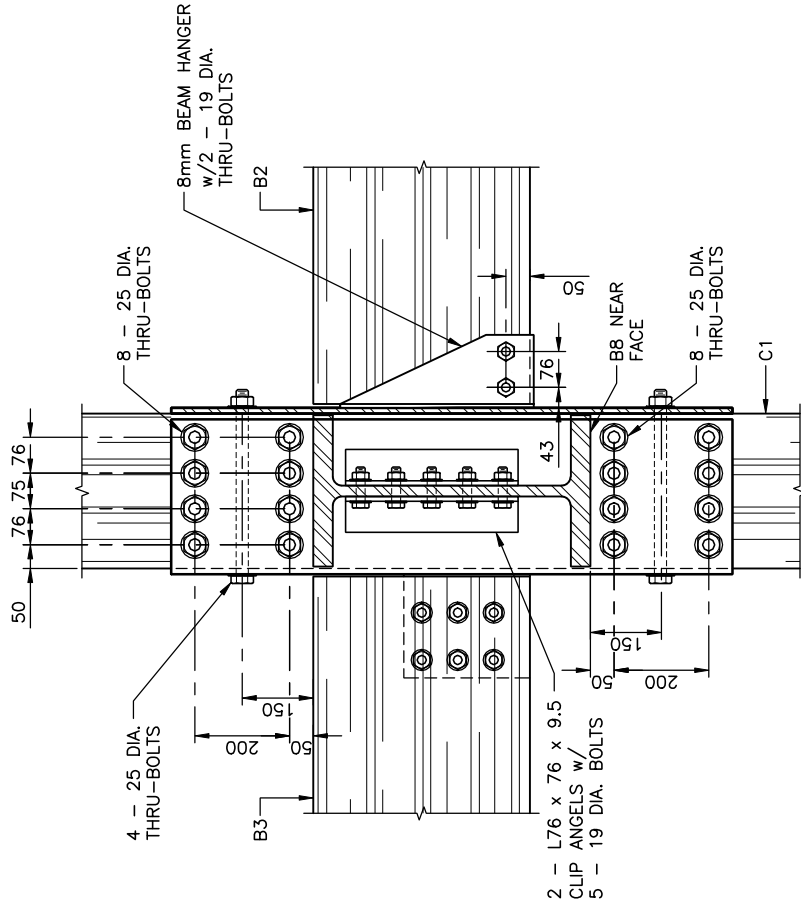
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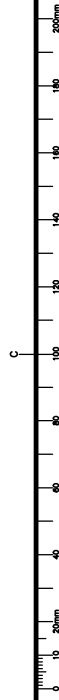
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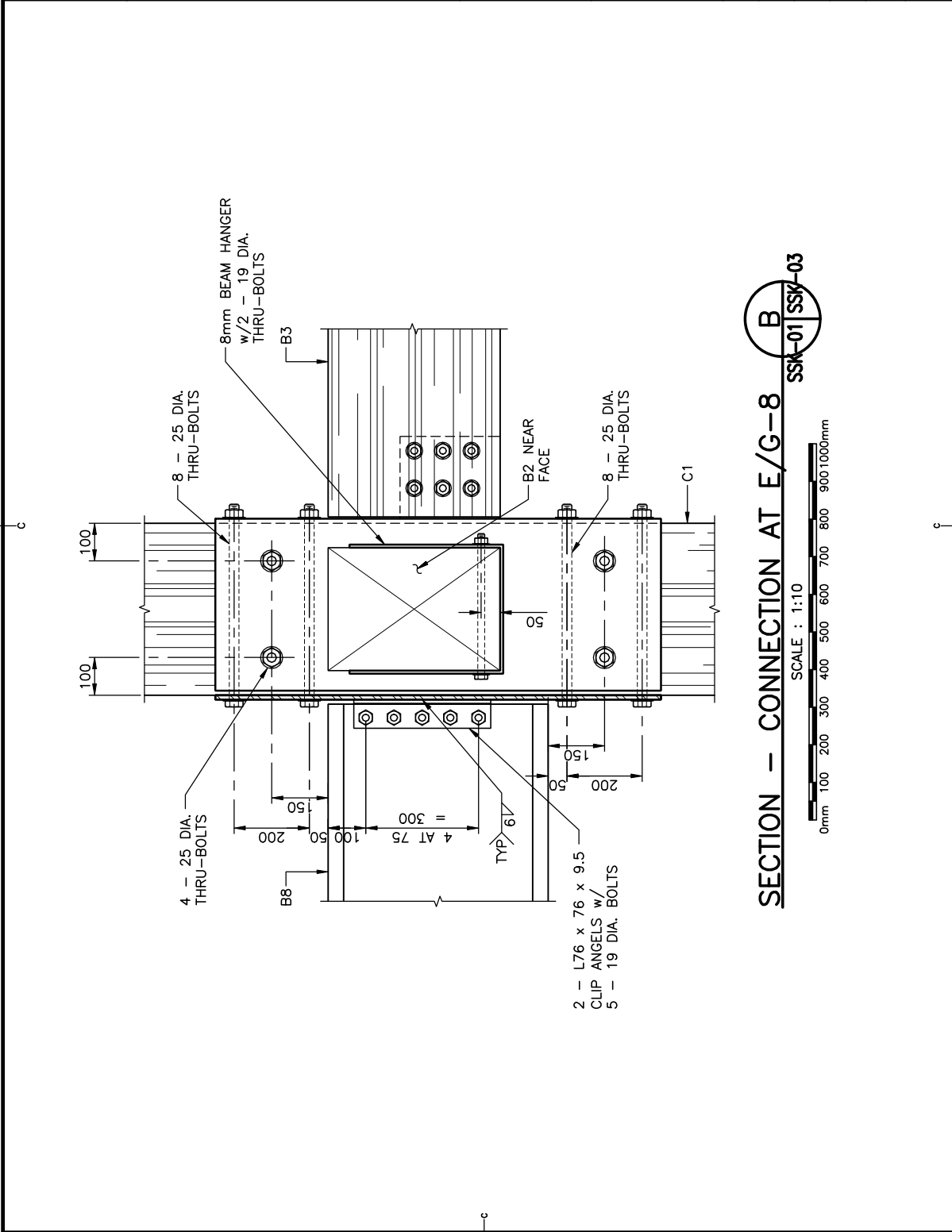
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**GREEN GABLES—PHASE 2
BARN EXPANSION
AND RENOVATION**

drawing

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STRUCTURAL

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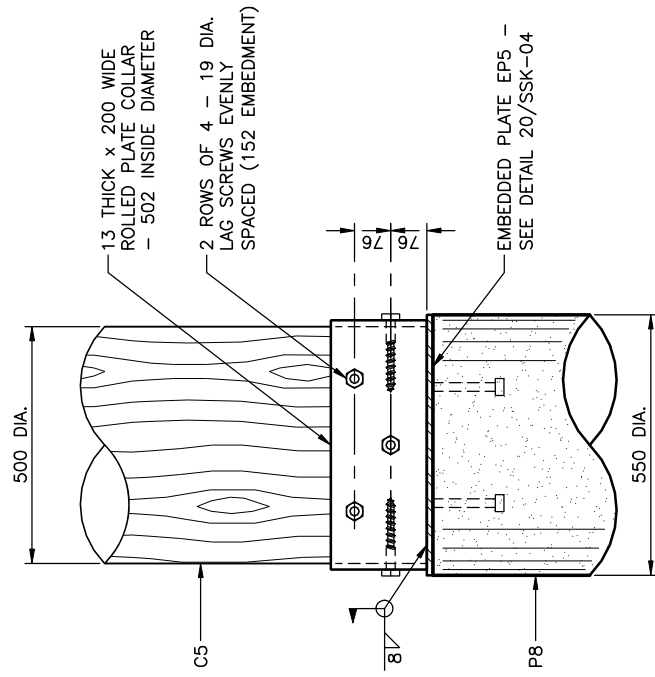
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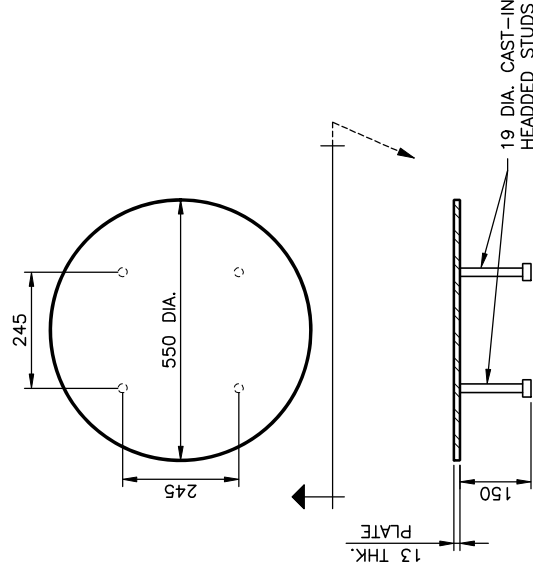
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