

2023-T-117 - City of Niagara Falls GO/VIA Station – Interior Alterations and Upgrades

Date Issued: Thursday, March 21st, 2024

Addendum No. 4

No. of Addenda pages: 9

Attachments:

Appendix M - Section 09 30 26 Detectable Warning Safety Edge Tiles (4 pages)

Appendix N – Section 10 26 00 Wall Protection (5 pages)

Appendix O - Section 09 30 00 Tiling (10 pages)

Clarifications

Clarification 1: General

The Successful Bidder will be responsible for the storage of existing waiting room bench seating (to be re-used) for the duration of Phase 1 & Phase 2 of the interior renovations. An onsite storage container will be permitted for the storage of these benches.

The Successful Bidder is to assume that a temporary generator will be required through the duration of the electrical upgrades to the facility. The generator shall be sized to ensure power for the entirety to the facility. The required shut down will be coordinated with Region PM, NPC, and the Successful Bidder; as to mitigate the duration of the shut down.

Clarification 2: Addendum 3, Answer 9

Please refer to Appendix M - Section 09 30 26 Detectable Warning Safety Edge Tiles, attached.

Revisions

Revision 1: Appendix D - NF Station Tender Drawings, Sheet A1601

Add –

Provide new sump pit and pump to existing crawl space. Contractor to provide new sump – Liberty Crawl Space System Kit 1/2HP, 115V – Model CSP-457 or approved equivalent. Contractor is to allow for all associated scope to install new pit and sump, including power and piping to allow water to be redirected to exterior grade.

Revision 2: Appendix E - NF Station Tender Specifications, Section 06 20

00, 1.7 QUALITY ASSURANCE

Remove any reference to "AWMAC membership requirement".

Questions and Answers

Question 1:

Drawing A1601 - note replace sump pit and pumps. We require a specification on new pit and pumps and information on the construction and size of the existing pit for removal.

Answer 1:

Refer to Revision 1.

Question 2:

07 31 13 item 3.1.3 states to remove any damaged roof sheathing, what area of new sheathing are we to include in base bid if any?

Answer 2:

The Successful Bidder shall allow within their base bid new sheathing for 10% of the total roof area; should replacement sheathing exceed this amount; a Change Order through the Region PM shall address any extra costs.

Question 3:

Please clarify if samples required for the roofing are 3 colours of roof shingles or 3 different styles as per A1302 note 3.

Answer 3:

Refer to specification section 07 31 13 for the Shingle. Samples that meet the specs to be provided to Niagara Region to approve the colour.

Question 4:

Please clarify extent of walls and floor tiles to be removed in the washrooms on the east and west ends of the lobby?

Answer 4:

Refer to drawings A1600, A1601, A2102 & A2104. West end washrooms at main floor will be new construction and washroom 111 will be renovated with new finishes and plumbing fixtures.

Question 5:

Building condition assessment shows fire damage. Are we required to include repair of any fire damaged wood trusses/decking as part of base bid?

Answer 5:

Wood truss repair is not part of scope.

Question 6:

Please provide HPL Wall panel spec. 06 20 00 2.7 has a HDPL spec is this the intended product?

Answer 6:

It is referred to as "HDPL" in specs. Refer to specification section 06 20 00, for HPL products.

Question 7:

Please provide a spec for the 25mm HPL RAIL SYSTEM as per A0050.

Answer 7:

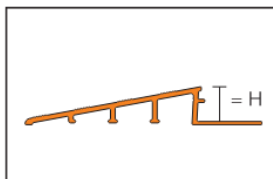
HPL rail system and brackets as recommended by manufacturer for secure installation.

Question 8:

What is the thickness of existing terrazzo flooring? 1/A1200 states to remove existing floor tiling not existing terrazzo.

Answer 8:

Existing terrazzo flooring to be removed as needed to allow for installation of new noted underground plumbing. New floor tiles to be installed on the terrazzo flooring. Install AODA compliant Reno ramp for the door threshold and floor transition where required (see below). Refer to Appendix O - Section 09 30 00 Tiling, attached.



1.8 Schluter®-RENO-RAMP

		Item No.
H = mm - in.		Satin anodized aluminum (AE)
B = 50 mm - 2"		
6	- 1/4	AERP 60 B50
B = 64 mm - 2-1/2"		
10	- 3/8	AERP 100 B65
12.5	- 1/2	AERP 125 B65
B = 89 mm - 3-1/2"		
12.5	- 1/2	AERP 125 B90
15	- 9/16	AERP 150 B90
20	- 3/4	AERP 200 B90

Length supplied: 8' 2-1/2" – 2.5 m



ADA-Compliant

Note: RENO-RAMP sizes 3/4" - 20 mm and 9/16" - 15 mm are not ADA-compliant.

Question 9:

Please provide a spec for the FRP shown in wall types W11, W12, W13.

Answer 9:

- .1 **(FRP) Wall Protection - Fibreglass Reinforced Panels:**
 - .1 Description of Panel:
 - .1 High strength polyester resin combined with fiberglass reinforcement.
 - .2 Standard 1220 mm (4'-0") width panels x length to suit condition without seams.
 - .3 Thickness: 23 mm (15/16")
 - .4 Colour: As selected by Niagara Region from Manufacturers full range.
 - .5 Texture: As selected by Niagara Region from Manufacturers full range.
 - .2 Provide wall panels in locations as noted on the documents.
 - .3 Ensure all fasteners are recessed and all edges are provided with splines.

Question 10:

Is the AWMAC membership required as per Section 06 20 00, Quality Assurance 1.7.3?

Answer 10:

AWMAC membership is not required. Refer to Revision 2.

Question 11:

There are some new lintels that are called out in the architectural drawings with a note stating See structural (see note in detail 3/A4000 for example). Will there be a structural package issued for this tender? If not, then can you provide details for these lintels?

Answer 11:

Please refer to Appendix D - NF Station Tender Drawings, detail 3/A5000 for the Lintel section and notes. There is no structural drawing for this project.

Question 12:

Could you please provide a hardware schedule for doors #D200 and #D208?

Answer 12:

D200 & D208 remains as existing and are not included in the scope of work.

Question 13:

Could you please provide specifications for these items: GB-3 - Swing Up Grab Bar and RH-4 - 4 Hook Coat Rack? They are shown on drawing A1603 but are missing from the spec.

Answer 13:

GB-3 Swing up grab bar:

B-4998.99: 1-1/4" (32mm) diameter tubing., satin finish slip-resistant surface stainless steel grab bar for bath/shower/toilet compartment by Bobrick.

Universal washroom:

Bobrick B-76717: Coat Hook: Stainless steel with satin finish and 75 mm projection, rectangular hook approximately 40 mm x 20 mm by Bobrick

Washroom 107 & 108:

B985-Satin-finish stainless steel, Vandal-resistant Hook Strip, by Bobrick.

Question 14:

Please clarify the manufacturer information of existing fire alarm panel at site.

Answer 14:

The manufacturer is Notifier by Honeywell – model SFP-5UD. Please see image below in relation to existing fire alarm panel.



Question 15:

Please provide contact information of the base building BAS for this facility.

Answer 15:

There is no BAS (Building Automation System) systems in the existing facility and a new one is not being added.

Question 16:

What is the spec. for stair finish/covering?

Answer 16:

Refer to Appendix E - NF Station Tender Specifications, section 09 65 00, item 2.2.

Question 17:

Answer 9 on Addendum 3 is not clear for pricing by supplier, please indicate full spec.

Answer 17:

Refer to Appendix M - Section 09 30 26 Detectable Warning Safety Edge Tiles and Appendix N – Section 10 26 00 Wall Protection, attached.

Question 18:

Section 093000 (2.5) asked for cove base or bullnose top, cove base and bullnose are not available in the specified material.

Answer 18:

The Successful Bidder is to match flooring finish and colour as indicated in the specs. Bullnose type is the type of tile edge.

End of Addenda

Appendix M - Section 09 30 26 Detectable Warning Safety Edge Tiles

Section 09 30 26

Detectable Warning Safety Edge Tiles

Part 1 General

1.1 SECTION INCLUDES

- .1 Labour, Products, equipment, and services necessary for detectable warning safety edge tiles Work.

1.2 REFERENCES

- .1 Accessibility for Ontarians with Disabilities Act (AODA)
- .2 CSA B651-12 23 – Accessible Design for the Built Environment, published in 2023.
- .3 ISO 23599:2012 Assistive Products for Blind and Vision Impaired Persons – Tactile Walking Surface Indicators
- .4 Ontario Building Code and Accessibility Amendments to Ontario's building code
- .5 ASTM C501, Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.
- .6 ASTM C1028, Standard Test Method for Determining Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by Horizontal Dynamometer Pull Meter Method.
- .7 ASTM D543, Standard Practices for Evaluating Resistance of Plastics to Chemical Reagents.
- .8 ASTM D570, Standard Test Method for Water Absorption of Plastic.
- .9 ASTM D638, Standard Test Method for Tensile Properties of Plastics.
- .10 ASTM D695, Standard Test Method for Compressive Properties of Rigid Plastics.
- .11 ASTM D790, Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- .12 ASTM D5420, Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impact by Falling Weight (Gardner Impact).
- .13 ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.
- .14 ASTM F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
- .15 ASTM G155, Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.
- .16 CAN/CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
- .17 CAN/CSA A3000, Cementitious Materials Compendium.
- .18 Metrolinx Design Standards, DS-02 Universal Design Standard, Version 1.1, dated July 2019.
- .19 Metrolinx Design Standards, DS-04 Go Station Architecture Design Standard, Version 1.0, dated July 2019.
- .20 GO Design Requirements Manual, GO-DRM-STD-2017-Rev 4, dated September 2021.

1.3 RELATED SECTIONS

- .1 07 92 00 Sealants
- .2 03 50 00 Concrete Repair

1.4 SUBMITTALS

- .1 Shop Drawing(s):
 - .1 Submit shop drawings indicating:
 - .1 Drawings and technical data.
 - .2 Fabrication details, tile surface profile, fastener locations, and types of fasteners.
 - .3 Expansion joint details, control joint details, and sealant joint details.

- .4 Installation layout drawings for entire length of platform.
- .5 Manufacturer's installation guidelines.
- .6 Manufacturer's maintenance instructions specifying maintenance practices for type of tile being used.
- .7 Requirements for transportation, storage, and handling of Products and materials.
- .8 Maintenance Instructions: Submit copies of manufacturer's specified maintenance practices for each type of tactile walking surface indicator tile and accessory as required.
- .2 Sample(s):
 - .1 Submit sample of detectable warning safety edge tile.
 - .2

1.5 QUALITY ASSURANCE

- .1 Installers' qualifications:
 - .1 Trained and certified by tile manufacturer.
 - .2 Minimum of 3 years installation experience with similar types of tiles and similar type of installation.
 - .3 Provide manufacturer's written approval of substrate.
 - .4 Provide surface applied tactile walking surface indicator tiles which are in compliance with the following standards:
 - .5 ISO 23599:2012(E): Assistive Products for Blind and Vision Impaired Persons – Tactile Walking Surface Indicators.
 - .6 CSA B651-12: Accessible Design for the Built Environment Standard
 - .7 Integrated Accessibility Standards Regulation 191/11 – Sections 80.25 to 80.29
 - .8 Accessibility for Ontarians with Disabilities Act (AODA)
- .2 Mock-up:
 - .1 Prepare mock-up using approved methods and procedures at one end of platform for one station. Mock-up to include minimum four platform edge safety tiles.
 - .2 Do not start Work until mock-up has been accepted by Niagara Region. Same installation, after approval can be employed at other stations.
- .3 DELIVERY, STORAGE, AND HANDLING
- .4 Pack or crate tiles to prevent damage during shipment or handling. Protect finished surfaces with damage preventive wrapping.
- .5 Store sealants, adhesive, fasteners, and tile in a dry area and within recommended temperature limits, and secure from theft and vandalism.

1.6 SITE CONDITIONS

- .1 Install detectable warning safety edge tiles when temperature of substrate and materials can be maintained above 5°C for not less than 48 hour period.

Part 2 Products

2.1 MATERIALS

- .1 Demarcation Strip (DWA) Tile: 10 mm thick composite tile with parallel flat topped elongated bars parallel to principal direction of travel and in accordance with ISO 23599; as manufactured by Kinesk Engineered Products, Protectolite Inc. or approved alternative in sizes and colours to be selected.
- .2 Complies with AODA

- .3 All materials under work of this Section, including but not limited to, sealants and adhesives are to have low VOC content limits.
- .4 Fasteners: Colour-matched, corrosion resistant, flat head drive anchor as recommended by tile Manufacturer.
- .5 Adhesive: Product as recommended by tile manufacturer for secure installation.
- .6 Sealant and/or grout: As recommended by tile manufacturer.

Part 3 Execution

3.1 CLEANING

- .1 The Contractor will protect tiles against damage during construction period to comply with surface applied detectable/tactile warning tile Supplier's specification.
- .2 The Contractor will protect surface applied detectable/tactile warning tiles against damage from rolling loads following installation by covering with plywood.
- .3
- .4 The Contractor will clean surface applied detectable/tactile warning tiles not more than four days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean surface applied detectable/tactile tiles by method specified by tile Supplier.
- .5

END OF SECTION

Appendix N - Section 10 26 00 Wall Protection

PART 1 - GENERAL**1.1 SUMMARY OF SECTION**

- .1 As summarized and described, but not restricted to the following:
 - Provide sheet wall protection
 - Provide Fibreglass Reinforced Panels

1.2 REFERENCES

- .1 Canadian Standards Association (CSA):
 - CAN/CSA B651-12, Accessible Design for the Built Environment

1.3 SUBMITTALS

- .1 Product Data:
 - Submit manufacturer's printed product literature, including installation instructions, MSDS sheets, specifications and data sheets in accordance with Division 01, Submittal Procedures.
- .2 Samples:
 - Submit two sections of bumper rail, corridor handrail, corner guard, 610 mm (24") long, illustrating component design, configuration, colour and finish.
- .3 Shop Drawings:
 - Submit shop drawings to indicate materials, details, and accessories in accordance with Section 01 33 00 Submittal Procedures including but limited to the following:
 - Submit a layout diagram indicating the location of each wall protection panel and joining method.
- .4 Closeout Submittals:
 - Operation and Maintenance Data: Operation and maintenance data for installed products in accordance with Division 1 Closeout Submittals (Maintenance Data and Operation Data) Section. Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.4 ENVIRONMENTAL CONDITIONS

- .1 Wall Protection Temperature Requirements: If storage temperature is below 65F (18C), the Altro Whiterock wall panel must be moved to a warmer place and allowed to reach this temperature before installation. For further information, refer to current Installation Guide.
-

- .2 Maintain air temperature and structural base temperature at installation area between 65F (18C) and 80F (26C) for 48 hours before, during and 24 hours after installation.]

1.5 MOCK-UP

- .1 Refer to Division 01, Quality Control for requirements of mock-up.
- .2 Locate where directed by Consultant.
- .3 Allow 48 hours for field review of mock-up by Consultant.
- .4 Contractor only to proceed once the testing is complete and written approval has been received by the Consultant.
- .5 When accepted, mock-up will demonstrate minimum standard for this work. Approved mock-up may [may not] remain as part of the Work.]

1.6 QUALITY ASSURANCE

- .1 Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project with a minimum of 3 years experience.

Training: Installer who has attended an installation training clinic and has received their certificate of course completion.

1.7 WASTE MANAGEMENT

- .1 Separate and recycle waste materials in accordance with Division 01, Construction Waste Management and Disposal .

1.8 PERFORMANCE CRITERIA

- .1 Installed wall rail component assembly: support vertical live load of 1400 lb/lineal ft. with deflection not to exceed 1/50 of span between supports.
 - .2 Installed Component Assembly: Resist lateral force of 34 kg (75 lbs) at any point without damage or permanent set.
 - .3 Corner Guards: Resist lateral impact force of 45 kg (100 lbs) at any point without damage or permanent set.
-

1.9 DELIVERY, STORAGE AND PROTECTION OF PRODUCT

- .1 Deliver and store materials in compliance with Division 01, Common Product Requirements.
- .2 Comply with manufacturer's recommendations for handling, storage and protection during installation.
- .3 Protect and store materials off the ground, away from physical damage and from becoming wet, soiled or covered with ice or snow before, during and after installation.
- .4 Label packages to include material name, production date and/or product code.

1.10 QUALITY CONTROL

- .1 Perform work in accordance with CAN/CSA B651 requirements for the physically handicapped.

1.11 EXTENDED WARRANTY

- .1 Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.
Warranty Period for wall protection shall be 20 years commencing on Date of Substantial Completion.

PART 2 - PRODUCTS**2.1 MATERIALS**

- .1 **(FRP) Wall Protection - Fibreglass Reinforced Panels:**
Description of Panel:
High strength polyester resin combined with fiberglass reinforcement.
Standard 1220 mm (4'-0") width panels x length to suit condition without seams.
Thickness: 23 mm (15/16")
Colour: As selected by Niagara Region from Manufacturers full range.
Texture: As selected by Niagara Region from Manufacturers full range.
Provide wall panels in locations as noted on the documents.
Ensure all fasteners are recessed and all edges are provided with splines.

2.2 ACCESSORIES

- .1 Mounting Brackets and Attachment Hardware: Appropriate to component and substrate.
 - .2 Wall Protection (Whiterock) Accessories:
-

Vinyl Welding Rod: manufacturer's weld rod, colour to match panel.
Joint Strips: 1-Part Joint Strip, Length 98.5", colour to match panel.
Cut-Tile Transition Strips: 1-Part Transition Strip, 98.5" length, colour to match panel.
Start and Edge Trim:
manufacturer's standard 1-part start and edge trim, 98.5" length, colour to match panel.
manufacturer's standard 2-part start and edge trim, 98.5" length, colour to match panel.
Adhesive: Acrylic Adhesive for dry, climate controlled areas, one-part, water-based, acrylic adhesive as recommended by manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions
- .2 Verify that rough in for components are correctly sized and located.
- .3 Coordinate wall framing and solid blocking to suit installation requirements.

3.2 SUBSTRATE PREPARATION

- .1 Walls should be smooth and level. High points must be removed and low points filled with filler intended for the substrate and environmental conditions.
- .2 Surfaces must be permanently dry and free from all substances that may contribute to adhesive bond failure.
- .3 Remove loose paint and conduct an adhesive bond test with paint.
- .4 Dry wall substrates should be paint ready.

3.3 PREPARATION - WALL PROTECTION

- .1 All surfaces must be free from dust and cleaned prior to wall protection installation. The working environment must also be dust free. Failure to comply with these conditions will reduce the bond strength between the adhesive and substrate, and may cause the wall protection panels to debond.
 - .2 Very absorbent / porous substrates (particularly plaster finishes and unprimed sheetrock) must have a proprietary sealer e.g. PVA primer or similar, applied to the surface a minimum of 12 hours prior to the installation.
-

- .3 All electrical switches, power points etc., should be in a first fix / installation state. All electrical equipment should only be moved or altered by a qualified electrician.
- .4 All plumbing should have pipe-work removed to a first fix or installation state and “tails” left protruding from the substrate. Wall protection panels can then be drilled and slid over the pipe tails. All holes should be drilled 1/8" oversize to allow for expansion, then sealed with manufacturer's sanitary sealant.

3.4 INSTALLATION

- .1 Install components in accordance with manufacturer's written instructions, level and plumb, secured rigidly in position to wall framing members or blocking only.

3.5 CLEANING

- .1 Remove all packaging and construction debris from the site and dispose of in accordance with Division 01 Waste Management and Disposal.

END OF SECTION

Appendix O - Section 09 30 00 Tiling

Section 09 30 00 Tiling

Part 1 General

1.1 SECTION INCLUDES

- .1 Labour, Products, equipment, and services necessary for tiling Work in accordance with Contract Documents.
- .2 Porcelain tiles.
- .3 Tile accessories.
- .4 Mortar and Grout.
- .5 Floor levelling.

1.2 RELATED REQUIREMENTS

- .1 Section 01 33 00 - Submittal procedures
- .2 Section 01 43 39 - Mock Ups
- .3 Section 01 61 00 - Common product requirements
- .4 Section 01 74 00 - Cleaning and Waste management
- .5 Section 01 78 00 - Closeout submittals
- .6 Section 07 92 00 - Joint Sealants
- .7 Section 09 23 00 - Gypsum Plastering: Scratch and brown coats for tile finish.
- .8 Section 09 21 16 - Gypsum Board Assemblies: Gypsum board wall substrate.
- .9 Section 10 28 13 - Toilet Accessories

1.3 REFERENCE STANDARDS

- .1 [STD A108/A118/A136.1:2021 American National specifications for the installation of ceramic tile](#)
- .2 [STD A137.1:2021 American National standard specifications for ceramic tile](#)
- .3 [ASTM C144-18 Standard specification for aggregate for masonry mortar](#)
- .4 [ASTM C171-20 Standard specification for sheet materials for curing concrete](#)
- .5 [ASTM C207-18 Standard specification for hydrated lime for masonry purposes](#)
- .6 [ASTM C241/C241M-21 Standard test method for abrasion resistance of stone subjected to foot traffic](#)
- .7 [ASTM C373-18 Standard test methods for determination of water absorption and associated properties by vacuum method for pressed ceramic tiles and glass tiles and boil method for extruded ceramic tiles and non-tile fired ceramic whiteware products](#)
- .8 [ASTM C503/C503M-15 Standard specification for marble dimension stone](#)
- .9 [ASTM C568/C568M-15 Standard specification for limestone dimension stone](#)
- .10 [ASTM C615/C615M-18e1 Standard specification for granite dimension stone](#)
- .11 [ASTM C627-18 Standard test method for evaluating ceramic floor tile installation systems using the Robinson-type floor tester](#)
- .12 [ASTM C629/C629M-15 Standard specification for slate dimension stone](#)
- .13 [ASTM C847-18 Standard specification for metal lath](#)
- .14 [ASTM C1353/C1353M-20e1 Standard test method for abrasion resistance of dimension stone subjected to foot traffic using a rotary platform abraser](#)
- .15 [ASTM C1527/C1527M-11\(2018\) Standard specification for travertine dimension stone](#)
- .16 [CAN/CGSB 51.34-M86 Vapor barrier, polyethylene sheet for use in building construction](#)
- .17 [CAN/CGSB 25.20-95 Surface sealer for floors](#)
- .18 [STD A3000-18 Cementitious materials compendium](#)
- .19 [STD A123.3-05 Asphalt saturated organic roofing felt](#)

- .20 TTMAC, Terrazzo, Tile and Marble Association of Canada, Specification Guide 09 30 00 Tile Installation Manual.
- .21 TTMAC, Terrazzo, Tile and Marble Association of Canada, Hard Surface Maintenance Guide.
- .22 [DIN 51130:2014 Testing of floor coverings. Determination of anti-slip property. Workrooms and fields of activities with slip danger, walking method. Ramp test](#)
- .23 ISO 10545 Series - Ceramic Tiles, Standards for Testing.
- .24 [ISO 13006:2018 Ceramic tiles - Definitions, classification, characteristics and marking](#)
- .25 [Handbook for ceramic, glass, and stone tile installation](#)
- .26 [2019-2021 Specifications guide 09 30 00 tile installation manual](#)

1.4 ADMINISTRATIVE REQUIREMENTS

- .1 Coordination:
 - .1 Coordinate with other work having a direct bearing on work of this section.
 - .2 Coordinate requirements for floor recesses, accounting for mortar bed, bond coat and tile thickness where finished tile surfaces are installed flush with adjacent floor finishes.
- .2 Pre-installation Meetings: Convene one (1) week before starting work of this section.
 - .1 Attendance required by tile installer and Constructor to discuss site conditions.

1.5 ACTION SUBMITTALS

- .1 Section 01 33 00: Submission procedures.
- .2 Product Data: Submit manufacturer's product data for each type of product specified.
- .3 Shop Drawing(s):
 - .1 Catalogue cut sheets and technical data.
 - .2 Manufacturer's installation and instruction guidelines.
 - .3 Design data and test report.
 - .4 Requirements for transportation, storage, and handling of Products.
 - .5 Tile layout, patterns, colour arrangement, and control joint locations.
 - .6 Perimeter conditions, junctions with dissimilar materials.
 - .7 Setting details.
 - .8 Ventilation Plan
- .4 Samples for Initial Selection: Submit the following samples for initial selection:
 - .1 Tile: Submit samples of actual tiles or sections of tiles showing manufacturer's full range of colours, textures, and patterns available for each type and composition of tile indicated. Include samples of accessories involving colour selection.
 - .2 Grout: Manufacturer's standard colours using actual sections of grout showing full range of colours available for each type of grout indicated.
- .5 Samples for Verification: Submit the following samples for final verification, including full range of colour and texture variations expected.
 - .1 Tiles: Submit one (1) pieces of each tile selected.
 - .2 Trims: Submit full size units of each type of trim and accessory in each colour required for installation; minimum 150 mm lengths.

1.6 INFORMATIONAL SUBMITTALS

- .1 Section 01 33 00: Submission procedures.
- .2 Manufacturer's Certificate: Certify that Products meet or exceed the requirements of ANSI A137.1.
- .3 Installation Data:
 - .1 Manufacturer's recommended and special installation requirements.
 - .2 Written instructions for using adhesives and grouts.

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- .4 Quality Assurance Submittal(s):
 - .1 Submit installer's proof of membership in good standing with TTMAC.
 - .2 Submit certification for each type of floor tile that DCOF is minimum 0.42 tested in accordance with ANSI A137.1.

1.7 CLOSEOUT SUBMITTALS

- .1 Section 01 78 00: Submission procedures.
- .2 Operation and Maintenance Data: Submit two (2) copies of TTMAC Maintenance Guide and additional information as follows.
 - .1 Manufacturer's maintenance data sheets for floor sealers and other non-tile maintenance materials and accessories.
 - .2 Warning of maintenance practices or materials that may damage or disfigure finished Work.
 - .3 Copy of full set of reviewed Shop Drawings and, if applicable, Marked-up Shop Drawings.
 - .4 Submit field quality control inspection reports.
 - .5 Extra stock materials list in accordance with Article .
 - .6 Warranty information.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- .1 Section 01 78 23: Maintenance and extra material requirements.
- .2 Extra Stock Materials: Provide 3 sq m of each size, colour, and surface finish of tile specified.
 - .1 Store in original containers, clearly marked to identify the following:
 - .1 Manufacturer, stone quarry and distributor's name.
 - .2 Material series name and stocking number.
 - .3 Material description, including colour and pattern.
- .3 Maintenance material to be of same production run as installed material.

1.9 QUALITY ASSURANCE

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.
- .2 Conform to TTMAC Tile Installation Manual.
- .3 Maintain one (1) copy of document on site.
- .4 Quality Assurance Program: Provide specifications and material compatibility submissions to TTMAC as required for Verispec Program; include costs for Verispec Program as part of submitted Bid.
- .5 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three (3) years documented experience.
- .6 Installer Qualifications: Company specializing in performing the work of this section with minimum five (5) years documented experience and having completed tile installations similar in material, design and extent to this Project and be a member in good standing with TTMAC at time of bidding.
- .7 Provide certificate of quality compliance from tile manufacturer.
- .8 Provide certificate of quality compliance from tile installer upon satisfactory completion of installation.

1.10 MOCK-UPS

- .1 Section 01 43 00: Provide mock-up of tile.
- .2 Dry lay sample installation for each form of construction and finish required.
- .3 Provide 2 m mock-up for washroom, with waterproofing.
- .4 Locate where directed by Consultant.
- .5 Accepted mock-ups will form the standard of acceptance for the remainder of the Work.
- .6 Approved mock-up may remain as part of the Work.

1.11 DELIVERY, STORAGE, AND HANDLING

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Deliver and store packaged materials in original containers with seals unbroken and labels intact.
- .3 Store materials to prevent damage or contamination to materials by water, freezing, foreign matter, and other causes; store cementitious materials in a dry area, and raised off floor and ground surfaces.
- .4 Have materials delivered to job site prior to installation.
- .5 Keep boxes dry and protect from vandalism and away from heavy traffic area.
- .6 Store boxes in upright position.

1.12 SITE CONDITIONS

- .1 Ambient Conditions:
 - .1 Apply tile after completion of Work by other sections, to dry, clean, firm, level and plumb surfaces, free from oil or wax or any other material detrimental to tile adhesion.
 - .2 Do not install Work of this Section outside of the following environmental ranges without Region's and Product manufacturer's written acceptance:
 - .1 Ambient air and surface temperature: 12°C to 38°C.
 - .2 Precipitation for exterior tiling work: No Work to be done in rain or snow.
 - .3 Install epoxy mortar and grout between 18°C and 35°C in accordance with manufacturer's recommendations.
 - .3 Maintain temperature range for minimum forty-eight (48) hours before and during installation and until materials are fully set and cured to manufacturer's recommendations.
 - .4 Curing time: Maintain temperature range for 48 hours before, during, and after installation.
 - .5 Install temporary protection and facilities to maintain Product manufacturer's specified environmental requirements for 7 Days before, during, and 7 Days after installation.
 - .6 Maintain adequate ventilation where Work generates toxic gases or where there is a risk of raising relative humidity to levels detrimental to building finishes and assemblies.

Part 2 Products

2.1 MANUFACTURERS

- .1 Porcelain Tile(s) FLOOR tiles acceptable manufacturers:
 - .1 Porcelanosa
 - .2 Soho
 - .3 Stone Tile
 - .4 Ciot
 - .5 Emerson
 - .6 RODA
 - .7 TileSolutions
- .2 Porcelain Tile(s) FLOOR tiles acceptable manufacturers:
 - .1 Porcelanosa
 - .2 Soho
 - .3 Stone Tile
- .3 Trim Shapes acceptable manufacturers:
 - .1 Schluter
 - .2 Profilitec

- .3 EMAC
- .4 Mortar and Grout acceptable manufacturers:
 - .1 Mapei Corporation
 - .2 Laticrete International Inc.
 - .3 Ardex Americas
 - .4 Flextile Ltd
 - .5 Marcal Products

2.2 DESCRIPTION

- .1 System Description:
 - .1 Porcelain tile, installed on walls and floors, including base and using thinset mortar bed application method.

2.3 PERFORMANCE / DESIGN CRITERIA

- .1 Tile products manufactured and tested to ANSI A137.1.
- .2 Slip Resistance: Minimum dynamic coefficient of friction (DCOF) 0.42 dry/wet in accordance with ANSI A137.1 when tested to BOT 3000 Digital Tribometer..
- .3 Floor Traffic Load Bearing Performance: ASTM C627, with the following load rating:
 - .1 Extra Heavy, passing cycles 1 through 14.
- .4 Frost Resistance: Maximum water absorption rating of 0.5% or less when measured to ASTM C373 for ceramic materials. Submit proof of freeze-thaw stability for tile materials having water absorption higher than 0.5%.
- .5 Surface Flatness Tolerances:
 - .1 Large Format Floor Tile (400 x 600 mm and larger): Floor flatness measured to a minimum of FF50; equivalent to 3 mm with maximum 2 gaps under 3 m straightedge measurement.
 - .2 Wall Tiles: Wall levelling similar to floors tiles having similar sizes listed above.

2.4 PORCELAIN TILE MATERIALS

- .1 See Schedules at the end of the section

2.5 TRIMS AND EDGING

- .1 Trims: Shapes and profiles to match colour and finish of adjoining field tile; coordinate with size and coursing of adjoining flat tile where applicable.
 - .1 Base: Coved, to match flooring for surface finish and colour:
 - .1 Length of units: wall length
 - .2 Height: wall height.
 - .3 Top Edge: Bull nosed.
 - .4 Internal corners coved.
 - .5 External corner bullnosed.
 - .2 Wainscot caps.
 - .3 Tapered transitions.
 - .4 Stair Nosings: Slip resistant, textured nosings.
- .2 Flexible Trims: Aluminum flexible trim Type Schluter JOLLY Wall Radius Aluminum Matte White 8mm or approved alternative. To use in tiled walls cutouts with existing openings.
- .3 Reducer Strips: Purpose made metal extrusion; anodized aluminium type; maximum slope of 1:2.

2.6 MORTAR AND GROUT MATERIALS

- .1 Self-Levelling Underlayment: Latex-modified, portland cement-based, as recommended by tile-setting manufacturer.
 - .1 Product: self-leveler Plus, manufactured by Mapei.
- .2 Wall Tile Mortar: ANSI A108/A118/A136.

- .1 Dry-Set Portland Cement (interior thin set): Fast-setting, non-sagging water retentive Portland cement mortar.
 - .1 Product: Ultralite S2, manufactured by Mapei.
- .3 Floor Tile Mortar: ANSI A108/A118/A136.
 - .1 Dry-Set Portland Cement (interior thin set): Fast setting water retentive Portland cement mortar, rated for floor traffic load bearing performance as indicated.
 - .1 Product: Ultraflex LFT, manufactured by Mapei.
- .4 Tile Grout: ANSI A108/A118/A136.
 - .1 Portland Cement Grout - Unsanded: Factory blended latex-portland cement grout, specifically formulated for joints maximum 3 mm wide.
 - .1 Colour: white.
 - .2 Product: Ultracolor Plus, manufactured by Mapei.

2.7 ADHESIVE MATERIALS

- .1 Carpet adhesive
 - .1 Product: Ultrabond ECO 811, manufactured by Mapei
- .2 Porcelain Tile adhesive (horizontal and vertical surfaces)
 - .1 Product: Ultrabond ECO GPT, manufactured by Mapei
- .3 Vinyl Tile adhesive (horizontal and vertical surfaces)
 - .1 Product: Ultrabond ECO 560, manufactured by Mapei
- .4 Primer:
 - .1 Provide as recommended by manufacturer to apply on existing Terrazzo surface and prepare for Tiling

2.8 ACCESSORIES

- .1 Crack Isolation: ANSI A108/A118/A136, liquid applied, lightweight fabric reinforced membrane system, thickness as recommended by manufacturer to accommodate in-plane substrate movement.
 - .1 Product: Mapelastix CI, manufactured by Mapei.
- .2 Joint Sealant: As specified in Section 07 92 00.
- .3 Sealer: Meeting or exceeding requirements of CAN/CGSB 25.20, Type 1, as recommended by tile manufacturer.

Part 3 Execution

3.1 EXAMINATION

- .1 Section 01 71 00: Verify existing conditions before starting work.
- .2 Examine surfaces and verify that surfaces are ready to receive tile installation.
 - .1 Substrates are dry; clean; free from oil, waxy films, and curing compounds; and within starting flatness tolerances as specified in Section 03 35 00, and are ready for application of levelling materials.
 - .2 Grounds, anchors, recessed frames, electrical and mechanical units of Work in or behind tile have been installed.
 - .3 Joints and cracks in tile substrates are coordinated with tile joint locations.
- .3 Verify tile subject to colour variations has been factory blended and packaged. If not factory blended, blend tiles at site before installing.

3.2 PREPARATION

- .1 Protect surrounding work from damage or disfiguration.
- .2 Vacuum clean surfaces and damp clean.
- .3 Seal substrate surface cracks with filler. Level existing substrate surfaces to flatness tolerances specified.

- .4 Install backing board over metal studs to board manufacturer's written instructions. Tape joints and corners.
- .5 Shot blast existing concrete surface floors, except where new, wood float or broom finished concrete.
- .6 Clean and dry surfaces thoroughly. Remove oil, wax, grease, dust, dirt, paint, tar, primers, form release agents, curing compound, and other foreign material from substrate surfaces which may prevent or reduce adhesion.
 - .1 Where necessary, grind or shot blast surfaces to remove curing compounds and other deleterious matters detrimental to positive bond.
- .7 Neutralize trace of strong acids or alkali from substrate.
- .8 Where indicated or required, provide sloped-to-drain mortar bed prior to application of tile and waterproofing system. On concrete and masonry walls where tiles and bases are required, apply levelling coat prior to application of thinset mortar.
- .9 Other than slabs where waterproofing system is required on existing concrete slabs where existing flooring finishes are demolished and where new tile Work is required, apply levelling coat as required to ensure level substrate prior to mortar application.
- .10 Thoroughly clean back of tiles immediately prior to installation.

3.3 INSTALLATION

- .1 Install tile to manufacturer's written instructions.
- .2 Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
- .3 Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions:
- .4 Cut and fit tile tight to penetrations through tile. Form corners neatly. Align floor and wall joints.
- .5 Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar or grout.
- .6 Adjust tile layout to minimize tile cutting. Maintain minimum tile width of one-third unit size unless indicated otherwise on Drawings.
- .7 Form internal angles square and external angles bullnosed.
- .8 Sound tile after setting. Replace hollow sounding units.
- .9 Keep control joints free of adhesive or grout. Apply sealant to joints.
- .10 Allow tile to set for a minimum of forty-eight (48) hours prior to grouting.
- .11 Install grout to TTMAC Tile Installation Manual and manufacturer's written instructions.
- .12 Apply sealant to junction of tile and dissimilar materials and planes.
- .13 Install prefabricated edge strips and movement joints at locations indicated or where exposed edge of floor tile meets different flooring materials and exposed substrates.
- .14 Protect exposed edges of floor tile with properly sized transition strips; at uneven transitions between 6 mm and 13 mm, use sloped reducer strips.

3.4 INSTALLATION - ACCESSORIES

- .1 Membranes:
 - .1 Install membrane to ANSI A108/A118/A136 and manufacturer's written instructions; lap and seal watertight edges and ends.
- .2 Movement Joints: Install control joints where indicated on Drawings, to TTMAC Detail 301MJ-2012/2013; keep control and expansion joints free of setting and grouting materials.

3.5 LIPPAGE TOLERANCES

- .1 Field Verification of Finished Installation: To TTMAC Tile Installation Manual lippage limits as follows:
- .2

TILE TYPE	TILE SIZE	JOINT WIDTH	ALLOWABLE LIPPAGE
Pressed Floor/Porcelain	All	1.5 mm to less than 6 mm	.78 mm

3.6 FIELD QUALITY CONTROL

- .1 Inspection and Testing:
 - .1 Section 01 45 00: Field inspection.
 - .2 Provide inspection of the following:
 - .1 Tiles are set flush and level with adjacent tiles, meeting lippage requirements.
 - .2 Identify broken, cracked, damaged or hollow sounding tiles.
 - .3 Accessories are correctly installed.
 - .4 Grouting and sealant are correctly installed.
 - .5 Installation is complete to TTMAC.

3.7 CLEANING

- .1 Section 01 74 00: Cleaning installed work.
- .2 Clean tile and grout surfaces with manufacturer's recommended cleaning methods.
- .3 Clean and polish floor and wall tile after grout has cured in accordance with TTMAC recommendations in Hard Surface Maintenance Guide. Do not use acid for cleaning.
- .4 Repoint joints after cleaning as required to eliminate imperfections, repeat cleaning as required. Avoid scratching tile surfaces.

3.8 PROTECTION

- .1 Section 01 78 23: Protecting installed work.
- .2 Protect finished areas from traffic until setting materials have sufficiently cured to TTMAC requirements.
- .3 Protect finished floor areas from foot and wheel traffic from floors for a minimum of forty eight (48) hours after completion of grouting.
- .4 Prevent direct impact, vibration, and heavy hammering on adjacent and opposite walls for minimum twenty four (24) hours after final installation.

3.9 SCHEDULES

.1

PORCELAIN FLOOR TILES	Manufacturer	Type	Size	Notes
PFT1	1-Porcelanosa	Berna Caliza	600x600mm	
	2-SOHO	Prima colored Warm White	"	
	3-Stone Tile	Architecture - Dark Ivory	"	
PFT2	1-Porcelanosa	Ascot Arce	300x1200mm	Wood texturized
	2-CIOT	Melange	"	
	3-Emerson	Wood Butter Pecan	"	
PFT4	1-Porcelanosa	Toscana caliza	600x600mm	
	2-SOHO	Prima Colored True White	"	
	3-Stone Tile	Architecture White	"	

.2

VINYL FLOOR TILES	Manufacturer	Type	Size	Notes
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VFT6	1-Kraus	4111 Shoal Bay II - Rosen	178mmx1220mm	wood texturized
	2-Dura	Fusion 5.5	180mmx1524mm	"
	3-Coretec	Pro Plus XL 7"	180mmx1850mm	"

.3

PORCELAIN WALL TILES	Manufacturer	Type	Size	Notes
PWT4	1-Porcelanosa	Toscana Caliza	600x600mm	to match RAL 9010
	2-SOHO	Prima Colored	"	
	3-Stone Tile	Architecture	"	

- .4 Floor tile installation: in accordance with TTMAC detail 311F-A, Tile Bonded to Concrete Slab -Thin-Set Method.
- .5 Wall Tile installation concrete block substrate: in accordance with TTMAC detail 303W, Tile Installed Over Masonry or Concrete Walls -Thin-Set Method.
- .6 Wall Tile installation backer board substrate: in accordance with TTMAC detail 305W- Tile Installed on Coated Glass Mat Backer Board - Thin-Set Method/Walls.

END OF SECTION