

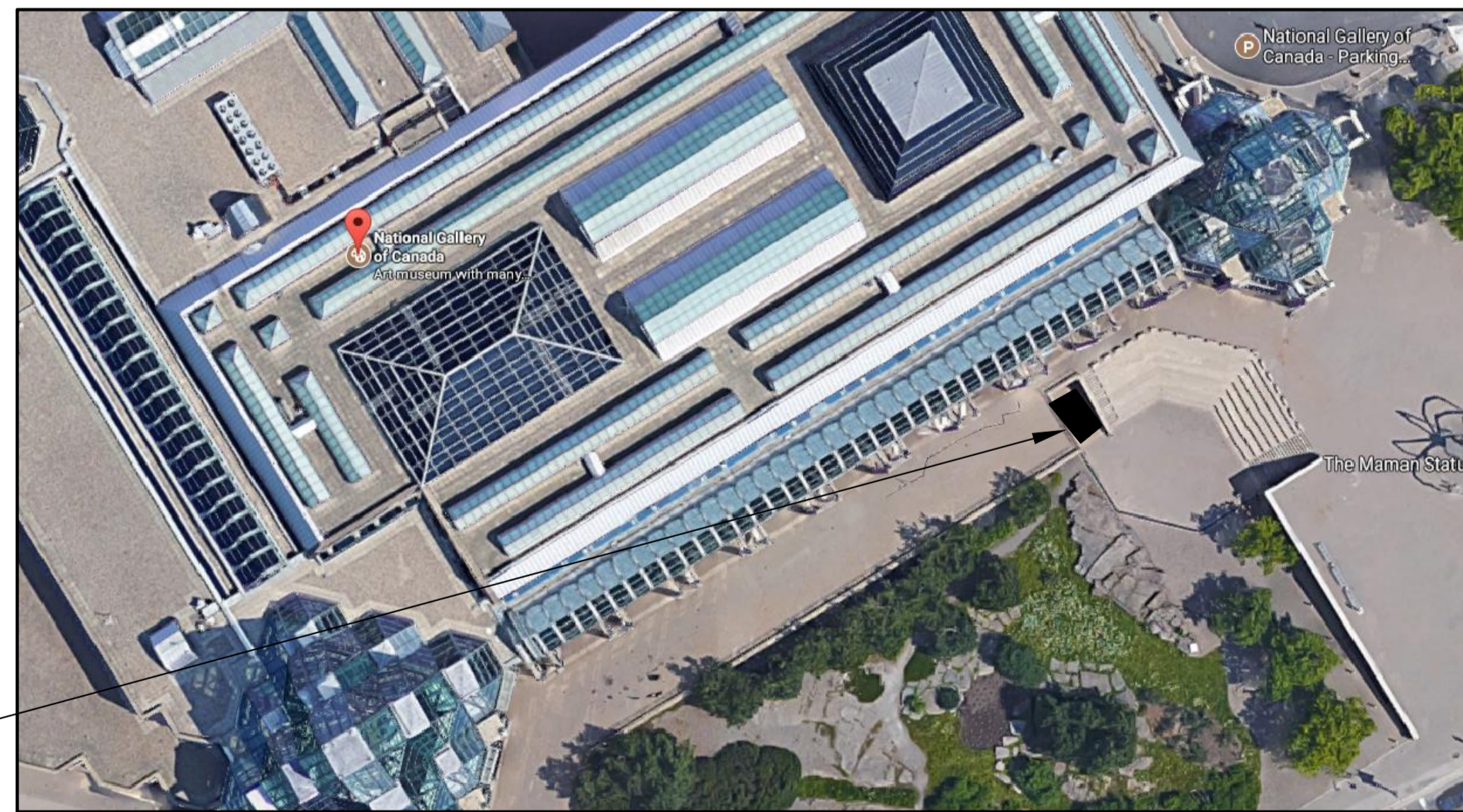
**PARTIAL GROUND FLOOR PLAN – TEMPORARY POWER DISTRIBUTION**

SCALE 1:250

**DRAWING NOTES:**

- ① PROVIDE NEW TEMPORARY PANEL SET-UP FOR DIRECT CONNECTION TO SERVICE PANELS AS REQUIRED. THESE PANELS ARE LOCATED OUTDOORS BELOW AT OUTDOOR THEATRE ENTRANCE. PROVIDE TEMPORARY SET UP c/w 60AMP PANEL, 3PH-4 WIRE, 18CCT PANEL, SURFACE MOUNTED, PRIMARY DISCONNECT, STEP DOWN TRANSFORMER IF REQUIRED AND LOCKABLE ENCLOSURE AS REQUIRED BY ESA. PANEL LABEL TO READ: TEMPORARY PANEL "T1". PROVIDE HINGED, WEATHER PROOF ENCLOSURE ENSURE THERE IS NO ACCESS BY PUBLIC. PROVIDE STRUCTURE c/w BALLAST ENGINEERED SUCH THAT TIP OVER IS NOT POSSIBLE.
- ② TYPICAL: PROVIDE NEW 5-20R RECEPTACLE AS INDICATED c/w ALL ASSOCIATED CONDUIT, WIRING, HARDWARE, FASTENERS AND FITTINGS BACK TO NEW PANEL. PROVIDE NEW BREAKER IN NEAREST EXISTING PANEL FOR EACH CIRCUIT SHOWN. ELECTRICAL CONTRACTOR SHALL PROVIDE UPDATED PANEL SCHEDULES FOR ALL PANEL EFFECTED BY THIS UPGRADE.
- ③ TYPICAL: PROVIDE NEW 5-15R RECEPTACLE AS INDICATED c/w ALL ASSOCIATED CONDUIT, WIRING, HARDWARE, FASTENERS AND FITTINGS BACK TO EXISTING EM, CIRCUIT. PROVIDE UPDATED PANEL SCHEDULES FOR ALL PANEL EFFECTED BY THIS UPGRADE.

SERVICE PANEL LOCATION



**KEY PLAN – APPROXIMATE SERVICE PANEL LOCATION**

ELECTRICAL LEGEND	
ITEM	DESCRIPTION
	ELECTRICAL PANEL
	JUNCTION BOX (12"x12"x6")
	FIRE ALARM PULL STATION
	FIRE ALARM SMOKE DETECTOR CEILING MOUNTED
	FIRE ALARM BELL
	10"x10"x3" PULL BOX, SECURE SIDE
	10"x10"x3" PULL BOX, SECURE SIDE
	SINGLE GANG BOX (2"x4"), NON SECURE SIDE
	SINGLE GANG BOX (2"x4"), SECURE SIDE
	SINGLE PHASE MOTOR
	DIRECT CONNECTION
	DISCONNECT SWITCH
	BASEBOARD HEATER (BASE BUILDING)
	DIMMER SWITCH
	EMERGENCY EXIT SIGN c/w INTERGAL BATTERY PACK
	5-20R GFCI DUPLEX RECEPTACLE c/w WEATHER PROOF BOX AND COVER.
	EMERGENCY LIGHT c/w INTERGAL BATTERY PACK

NOT ALL SYMBOLS SHOWN IN LEGEND SET ARE NECESSARILY USED IN DRAWING SET.

**GENERAL NOTES:**

- ① ALL ELECTRICAL EQUIPMENT SHOWN IN THIN SOLID LINES IS EXISTING TO REMAIN.
- ② ALL ELECTRICAL EQUIPMENT SHOWN IN THICK SOLID LINES IS NEW TO BE PROVIDED UNDER THIS CONTRACT, TOGETHER WITH ALL ASSOCIATED CONDUITS AND WIRING.
- ③ ALL ELECTRICAL EQUIPMENT SHOWN IN THICK DASHED LINES WITH LETTER 'R' IS EXISTING TO BE RELOCATED AS SHOWN. EXTEND ALL CONDUITS AND WIRING TO SUIT.
- ④ ALL ELECTRICAL EQUIPMENT SHOWN IN THICK DASHED LINES WITH LETTER 'X' IS EXISTING TO BE REMOVED c/w ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE BACK TO NEAREST J/B.
- ⑤ FOR ANY REQUIRED SHUT DOWN, CONTRACTOR TO COORDINATE WITH SITE MANAGER AND OBTAIN APPROVAL BEFORE SHUT DOWN CAN BE PERFORMED.
- ⑥ PROVIDE NEW BREAKERS AS REQUIRED IN EXISTING ELECTRICAL PANELS TO ACCOMMODATE NEW CONNECTIONS; ALSO PROVIDE BLANK PLATES WHERE CIRCUIT BREAKERS ARE NOT INSTALLED. PROVIDE NEW TYPED PANEL LEGEND TYPICAL FOR ALL PANELS TOUCHED BY THIS CONTRACT. TURN OVER TO THE OWNER ALL BREAKERS REMOVED UNDER THIS CONTRACT.
- ⑦ ALL EXISTING AND NEW CONDUITS AND WIRING PASSING THRU FLOOR AND FIRE RATED WALLS TO BE FIRE STOP USING 3M FIRE RETARDANT MASTIC SEALANT NO EQUIVALENT.
- ⑧ ALL WIRING TO BE R/RW90, MINIMUM SIZE #12AWG COPPER, IN EMT CONDUIT UNLESS OTHERWISE NOTED.
- ⑨ ALL ELECTRICAL CIRCUITS ARE SHOWN FOR GROUPING PURPOSES ONLY; CONTRACTOR TO USE AVAILABLE CIRCUITS IN EXISTING ELECTRICAL PANELS. REUSE EXISTING AND/OR PROVIDE NEW ELECTRICAL BREAKERS AS REQUIRED.
- ⑩ REGROUP CIRCUITS AS REQUIRED.
- ⑪ COORDINATE ALL WORK WITH ARCHITECTURAL AND MECHANICAL CONTRACTORS.
- ⑫ THIS DRAWING WAS BASED ON PARTIAL SITE REVIEW ONLY. ALL EQUIPMENT, ACCESSORIES, SIZES, LOCATIONS AND DETAILS OF INSTALLATIONS TO BE CONFIRMED ON SITE.
- ⑬ THE ELECTRICAL CONTRACTOR SHALL REFEED ALL EXISTING ELECTRICAL EQUIPMENT IN THE NEW SPACE FROM THE NEW PANELS (A & B) INSTALLED UNDER THIS CONTRACT. VERIFY ALL CIRCUITING AND PROVIDE NEW BREAKERS IN THE NEW PANELS AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. (SUITABLE FOR ALL EXISTING EQUIPMENT THAT IS NOT FED FROM THE BUILDINGS BASE BUILDING ELECTRICAL SYSTEM).
- ⑭ THESE GENERAL NOTES APPLY TO ALL ELECTRICAL DRAWINGS IN THE DRAWING PACKAGE.
- ⑮ COORDINATE DRAWING PACKAGE WITH ARCHITECTURAL AND MECHANICAL DRAWINGS.
- ⑯ CONTRACTOR IS TO PROVIDE TEMPORARY/ CONSTRUCTION LIGHTING FOR DURATION OF THE PROJECT.
- ⑰ REFER TO ARCHITECTURAL DRAWINGS FOR LIGHTING PLACEMENT. ALL FIXTURES TO BE HUNG STRAIGHT AND TRUE.

**JRP ENGINEERING**  
Professional Engineers

9 Holgate Court, Kanata, ON K2K 1B4  
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No	DESCRIPTION	DATE
2	ISSUED FOR ADDENDUM E1	AUG. 29 2017
1	ISSUED FOR TENDER	AUG. 18 2017

REVISIONS		

client:  
**NATIONAL GALLERY OF CANADA**

project:  
**TEMPORARY WORK FOR COLONNADE & MAIN ENTRANCE WINDOW/ROOF REPLACEMENTS**  
380 SUSSEX DR.  
OTTAWA, ONTARIO

drawing title:  
**TEMPORARY POWER DISTRIBUTION AND DETAILS**

scale:	AS SHOWN	drawn by:	C.M.
designed by:	C.M.	reviewed by:	J.R.P.
approved by:	J.R.P.	date:	AUG. 2017

project no.:	100-17S	drawing no.:	E-1
revision:	<0>		1 of 3

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**DRAWING NOTES:**

- ① TYPICAL: PROVIDE NEW LIGHTING AS INDICATED. CIRCUIT AS NOTED. PROVIDE PHOTOCELL FOR CONTROL OF EACH LIGHTING CIRCUIT.
- ② UN-USED.
- ③ TYPICAL: PROVIDE EMERGENCY POWER CIRCUIT FROM NEAREST AVAILABLE PANEL.
- ④ TYPICAL: THE CONTRACTOR SHALL PROVIDE TEMPORARY EXTERIOR LIGHTING IN THE MAIN ENTRANCE AND PARKING GARAGE COVERED WALKWAYS AS INDICATED ON DRAWINGS, ALSO SHOWN IN THE TIM DAVIS DESIGN DRAWINGS PACKAGE, SHEET NO.11. PROVIDE ADDITIONAL CIRCUITS FROM TEMPORARY PANEL C/W ALL ASSOCIATED PHOTOCELLS, CONDUIT, WIRING, BREAKERS, FASTENERS AND FITTINGS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. ALLOW FOR WALL SCONCE FIXTURES TO BE INSTALLED IN THE COVERED WALKWAYS SHOWN.

No	DESCRIPTION	DATE
2	ISSUED FOR ADDENDUM E1	AUG. 29 2017
1	ISSUED FOR TENDER	AUG. 18 2017

REVISIONS	

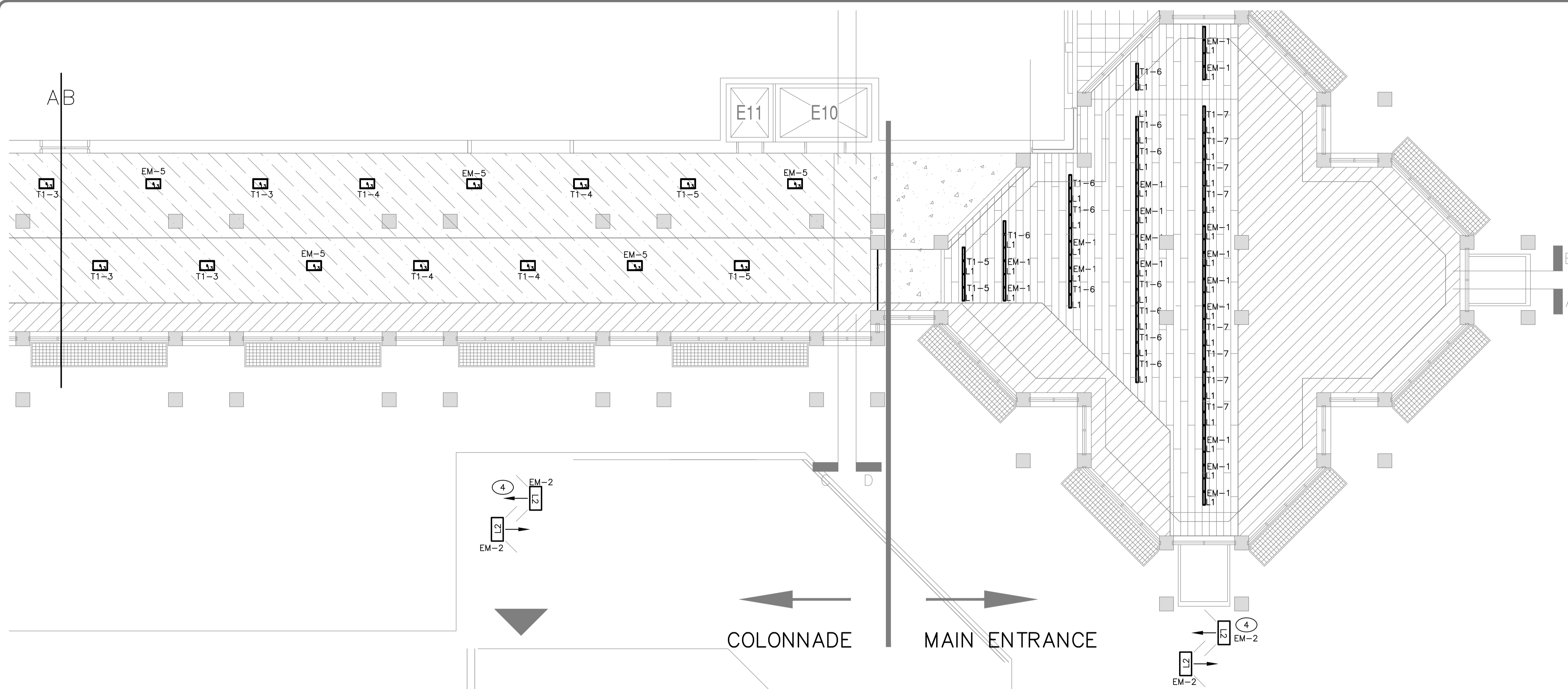
client:  
**NATIONAL GALLERY OF CANADA**

project:  
**TEMPORARY WORK FOR COLONNADE & MAIN ENTRANCE WINDOW/ROOF REPLACEMENTS**  
380 SUSSEX DR.  
OTTAWA, ONTARIO

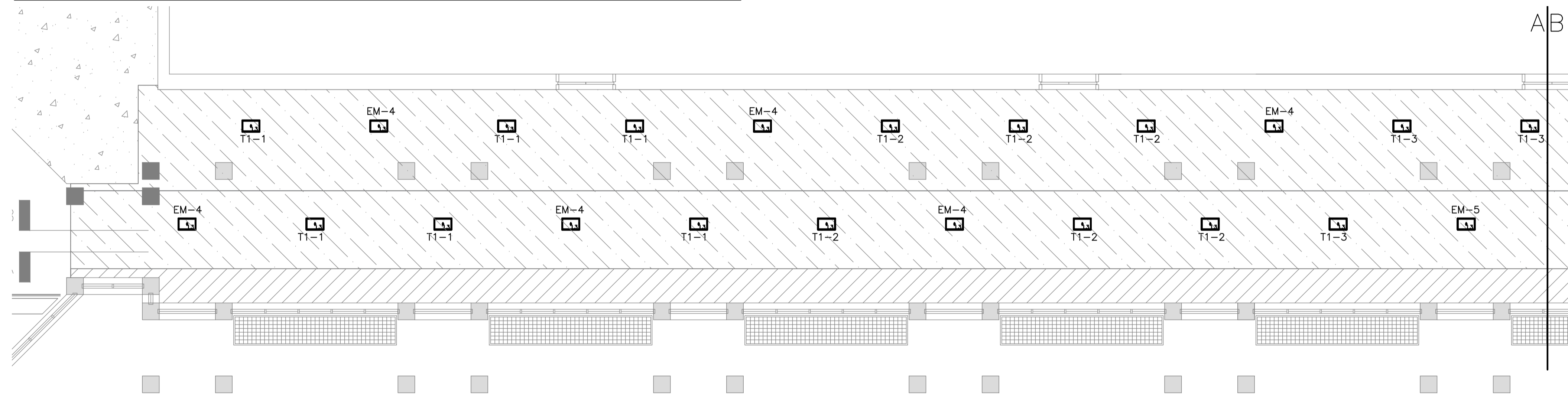
drawing title:  
**ELECTRICAL TEMPORARY LIGHTING**

scale:	AS SHOWN	drawn by:	C.M.
designed by:	C.M.	reviewed by:	J.R.P.
approved by:	J.R.P.	date:	AUG. 2017

project no.:	100-17S	drawing no.:	E-2
revision:	<0>		2 of 3



PARTIAL GROUND FLOOR PLAN - TEMPORARY LIGHTING SCALE 1:100



PARTIAL GROUND FLOOR PLAN - TEMPORARY LIGHTING CONTINUED. SCALE 1:100

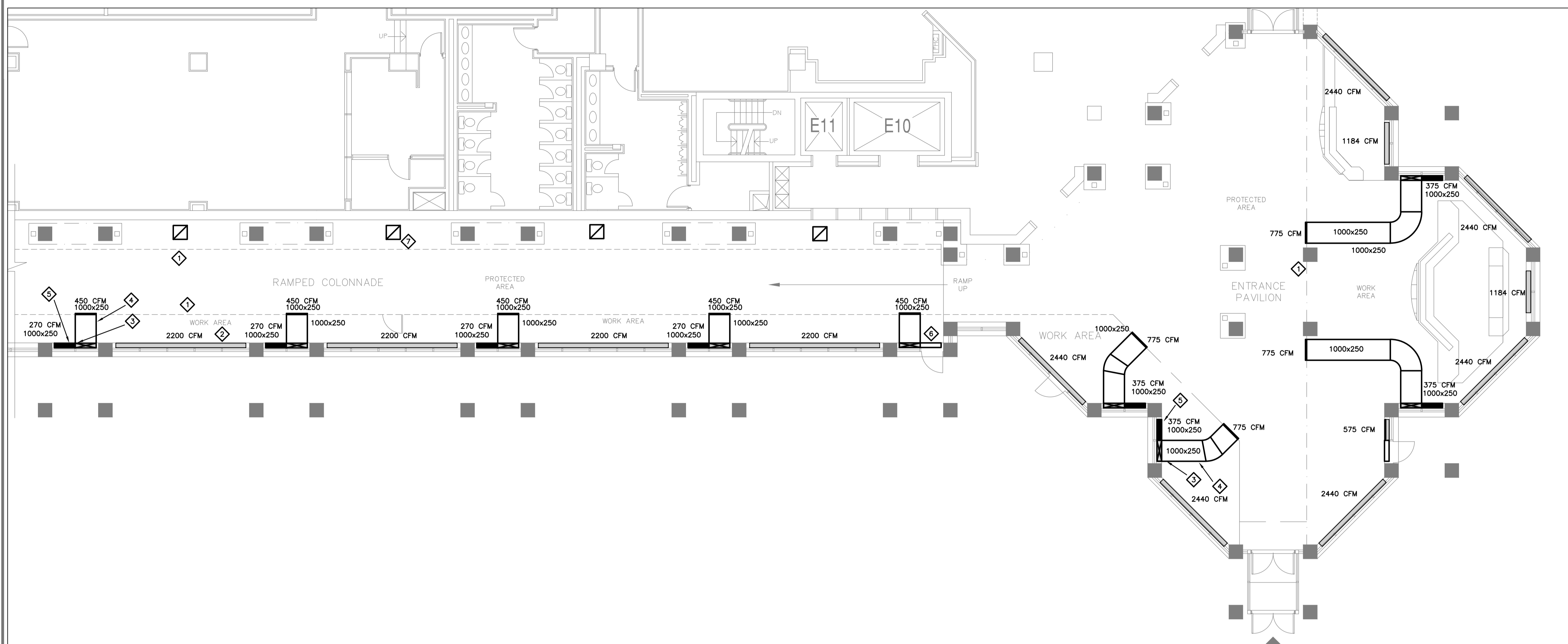
**LIGHTING FIXTURE SCHEDULE**

SYM	FIXTURE MANUFACTURER	MODEL	MOUNT	LAMPS	NOTES
L1	COLUMBIA LIGHTING OR APPROVED EQUIVALENT	LED STRIP FIXTURE #LCL8-30ML-EU / LCL4-30ML-EU	CEILING/CHAIN HUNG	LED	3000K, 80+CRI
L2	LIGHT CULTURE OR APPROVED EQUIVALENT	WALL MOUNTED #WE-EF QLS420 LED (131-9444)	WALL MOUNT	LED	3000K
L3	COLUMBIA LIGHTING OR APPROVED EQUIVALENT	HIGH BAY #LWS-30XL-AD-EU	CEILING/CHAIN HUNG	LED	3000K, 83CRI



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**PARTIAL GROUND FLOOR PLAN – TEMPORARY H.V.A.C.**  
SCALE 1:100

**DRAWING NOTES:**

- ① TYPICAL: BOUNDARY OF WORK AND PROTECTED AREAS.
- ② TYPICAL: EXISTING LINEAR DIFFUSER TO REMAIN AND BE BALANCED AS INDICATED.
- ③ TYPICAL: REMOVE EXISTING LINEAR GRILLE, PROVIDE DUCTWORK PLENUM BOX AND CONNECT TO EXISTING PLENUM, BOX IN WORK AREA, EXACT SIZE TO BE CONFIRMED ON-SITE AND COORDINATED WITH SCAFFOLDING LOCATION.
- ④ TYPICAL: PROVIDE DUCTWORK BRANCH FROM PLENUM IN WORK AREA TO PROTECTED AREA, SIZE AS INDICATED. CONTRACTOR TO COORDINATE DUCTWORK LOCATION WITH PROPOSED SCAFFOLDING LOCATION AND CLIENT. PROVIDE DOUBLE DEFLECTION LINEAR GRILLE IN PROTECTED AREA C/W INTEGRAL BALANCING DAMPER. BALANCE AS INDICATED. REFER TO DETAIL ON DRAWING M-2.
- ⑤ TYPICAL: PROVIDE 500 DUCTWORK BRANCH FROM PLENUM IN WORK AREA, SIZE AS INDICATED. CONTRACTOR TO COORDINATE DUCTWORK LOCATION WITH PROPOSED SCAFFOLDING LOCATION. PROVIDE DOUBLE DEFLECTION LINEAR GRILLE C/W INTEGRAL BALANCING DAMPER. BALANCE AS INDICATED. REFER TO DETAIL ON DRAWING M-2.
- ⑥ TYPICAL: EXISTING SEGMENT OF LINEAR GRILLE TO BE BLANKED, CONTRACTOR TO COORDINATE LOCATION WITH ACCESS DOORS.
- ⑦ TYPICAL: PROVIDE 600X600 RETURN AIR OPENING IN HORIZONTAL HOARDING CEILING C/W 25MM FILTER AND FRAME.

**GENERAL NOTES:**

- ① ALL MECHANICAL EQUIPMENT SHOWN IN THIN SOLID LINES IS EXISTING TO REMAIN.
- ② ALL MECHANICAL EQUIPMENT SHOWN IN THICK SOLID LINES IS NEW TO BE PROVIDED UNDER THIS CONTRACT.
- ③ ALL MECHANICAL EQUIPMENT SHOWN IN DASHED LINES WITH LETTER 'R' IS EXISTING TO BE RELOCATED AS SHOWN.
- ④ ALL MECHANICAL EQUIPMENT SHOWN IN DASHED LINES WITH LETTER 'X' IS EXISTING TO BE REMOVED BACK TO SOURCE.
- ⑤ THIS DRAWING WAS BASED ON PARTIAL SITE REVIEW. ALL EQUIPMENT, DUCTS, PIPING AND ALL ACCESSORIES' SIZES, LOCATIONS AND DETAILS OF INSTALLATIONS TO BE CONFIRMED BY MECHANICAL CONTRACTOR ON SITE.
- ⑥ MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ROOF, WALL AND BUILDING ENVELOPE CUTTING, PATCHING AND REPAIRS, AS REQUIRED FOR EXECUTION OF WORK INCLUDED IN THIS CONTRACT.
- ⑦ PROVIDE ALL NEW EQUIPMENT, CONTROLS, DUCTWORK, PIPING, VALVES AND ACCESSORIES AS SHOWN AND NOTED ON DETAILS AND AS REQUIRED FOR COMPLETE FUNCTIONING SYSTEMS.
- ⑧ PROVIDE ADDITIONAL DUCTWORK, PIPING, FITTINGS AND OFFSETS WHERE REQUIRED TO SUIT EXISTING CONDITIONS AND TO AVOID COLLISIONS WITH EXISTING SYSTEMS AND BUILDING STRUCTURE.
- ⑨ SEISMIC RESTRAINT SYSTEM (SRS) – PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ONTARIO BUILDING CODE LATEST EDITION. LETTER TO BE PROVIDED BY SEISMIC ENGINEER REGISTERED WITH PROFESSIONAL ENGINEER'S ONTARIO (PEO).
- ⑩ CONTRACTOR TO CARRY FOR COMPLETE PROFESSIONAL DUCT CLEANING IN WORK AREA.

LEGEND	
SYMBOL	DESCRIPTION
⓪	THERMOSTAT
—	NEW DUCTWORK
-X-X-	DUCT OR MATERIAL TO BE REMOVED
—	ACOUSTICALLY INSULATED DUCT
—	THERMALLY INSULATED DUCT
110 CFM	S/A BALANCING INFORMATION
⊠	SQUARE S/A DIFFUSER
—	LINEAR GRILLE
⊠	RETURN AIR GRILLE
⊠	NEW CONICAL SIDE TAKE-OFF C/W BALANCING DAMPER
⊠	NOTE ID TAG
#	GRILLE OR DIFFUSER TYPE – REFER
NOT ALL SYMBOLS SHOWN IN LEGEND ARE NECESSARILY USED IN THE DRAWING SET.	

No	DESCRIPTION	DATE
0	ISSUED FOR TENDER	AUG. 18 2017

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client:  
**NATIONAL GALLERY OF CANADA**

project:  
**TEMPORARY WORK FOR COLONNADE & MAIN ENTRANCE WINDOW/ROOF REPLACEMENT**  
380 SUSSEX DR.  
OTTAWA, ONTARIO

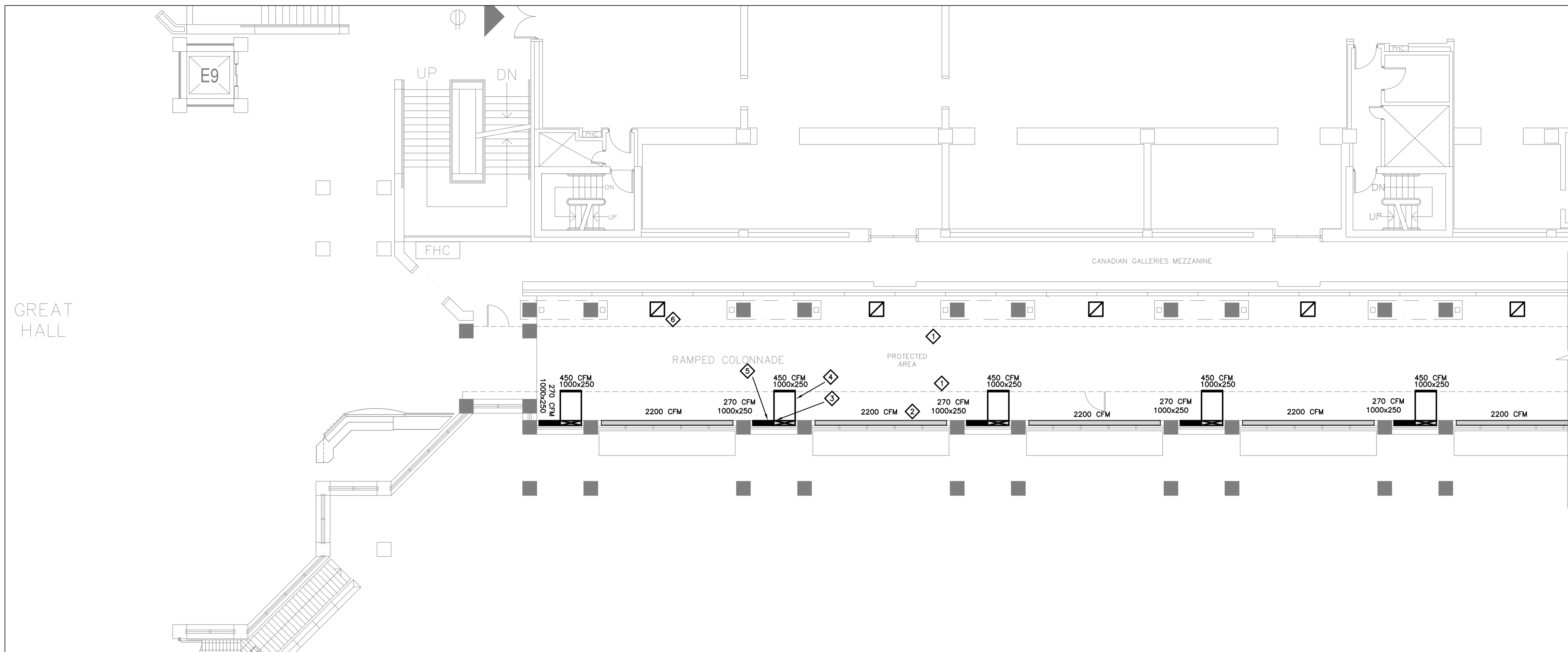
drawing title:  
**LEVEL 3000**

scale:	AS SHOWN	drawn by:	M.M.K.
designed by:	M.M.K.	reviewed by:	J.R.P.
approved by:	J.R.P.	date:	MAR. 2017

project no.:	100-17S	drawing no.:	M-1
revision:	<0>		of 3

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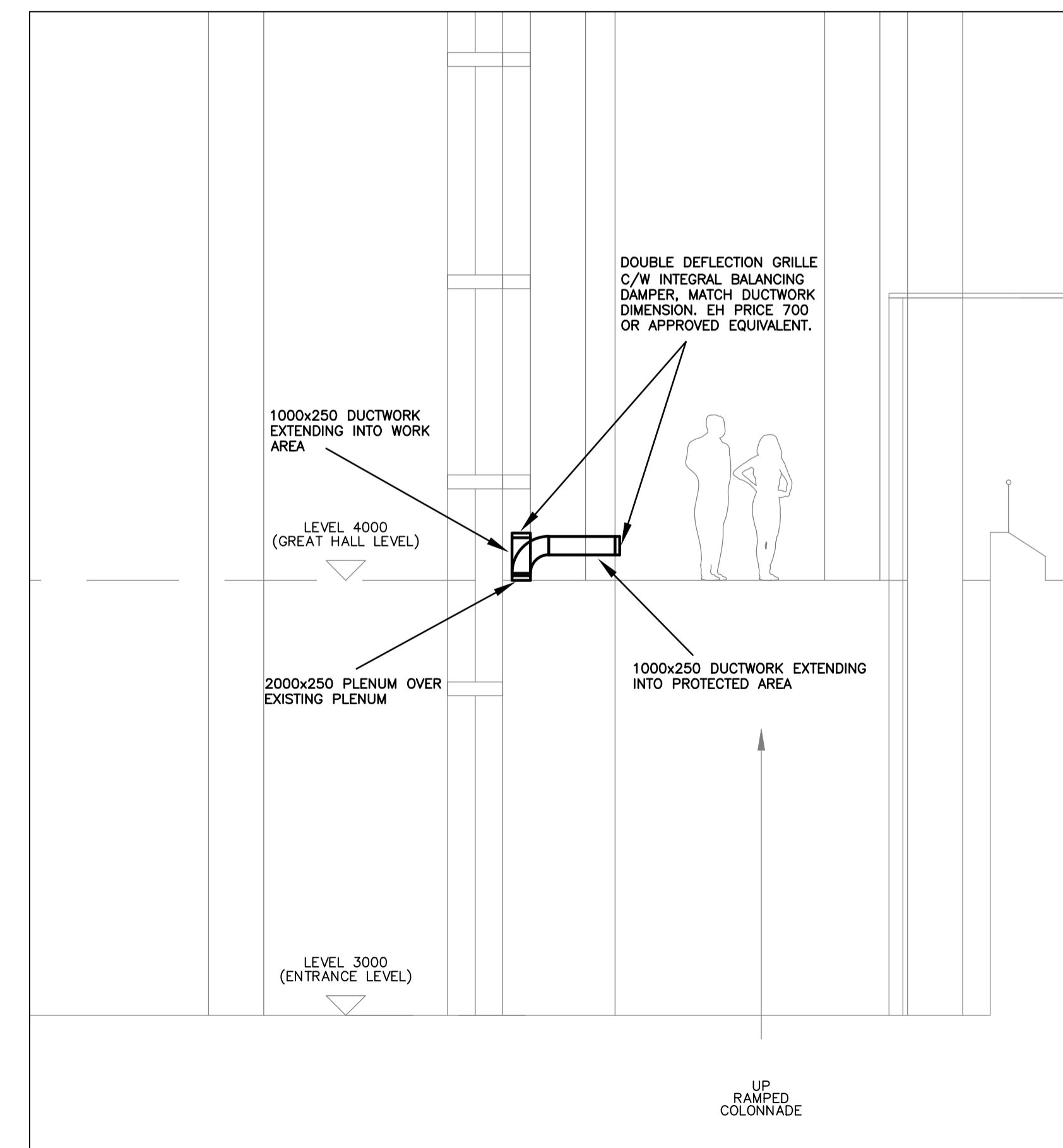
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**PARTIAL GROUND FLOOR PLAN – TEMPORARY H.V.A.C.**  
SCALE 1:100

**DRAWING NOTES:**

- 1 TYPICAL: BOUNDARY OF WORK AND PROTECTED AREAS.
- 2 TYPICAL: EXISTING LINEAR DIFFUSER TO REMAIN AND BE BALANCED AS INDICATED.
- 3 TYPICAL: REMOVE EXISTING LINEAR GRILLE, PROVIDE DUCTWORK PLENUM BOX AND CONNECT TO EXISTING PLENUM, BOX IN WORK AREA, EXACT SIZE TO BE CONFIRMED ON-SITE AND COORDINATED WITH SCAFFOLDING LOCATION.
- 4 TYPICAL: PROVIDE DUCTWORK BRANCH FROM PLENUM IN WORK AREA TO PROTECTED AREA, SIZE AS INDICATED. CONTRACTOR TO COORDINATE DUCTWORK LOCATION WITH PROPOSED SCAFFOLDING LOCATION AND CLIENT. PROVIDE DOUBLE DEFLECTION LINEAR GRILLE IN PROTECTED AREA C/W INTEGRAL BALANCING DAMPER, BALANCE AS INDICATED. REFER TO DETAIL ON THIS DRAWING.
- 5 TYPICAL: PROVIDE 500 DUCTWORK BRANCH FROM PLENUM IN WORK AREA, SIZE AS INDICATED. CONTRACTOR TO COORDINATE DUCTWORK LOCATION WITH PROPOSED SCAFFOLDING LOCATION. PROVIDE DOUBLE DEFLECTION LINEAR GRILLE C/W INTEGRAL BALANCING DAMPER, BALANCE AS INDICATED. REFER TO DETAIL ON THIS DRAWING.
- 6 TYPICAL: PROVIDE 600X600 RETURN AIR OPENING IN HORIZONTAL HOARDING CEILING C/W 25MM FILTER AND FRAME.



**TEMPORARY H.V.A.C. TYPICAL DETAIL**  
SCALE 1:50

No	DESCRIPTION	DATE
0	ISSUED FOR TENDER	AUG. 18 2017

**REVISIONS**

client:  
**NATIONAL GALLERY OF CANADA**

project:  
**TEMPORARY WORK FOR COLONNADE & MAIN ENTRANCE WINDOW/ROOF REPLACEMENT**  
380 SUSSEX DR.  
OTTAWA, ONTARIO

drawing title:  
**LEVEL 4000**

scale:	AS SHOWN	drawn by:	M.M.K.
designed by:	M.M.K.	reviewed by:	J.R.P.
approved by:	J.R.P.	date:	MAR. 2017

project no.:	100-17S	drawing no.:	M-2
revision:	<0>		of 3

**GENERAL**

**Conditions of Contract**

The instructions to Bidders and the General Conditions are an integral part of this Division and shall be read in conjunction herewith. These instructions to Bidders and General Conditions shall be fully binding on the General Contractor and his sub-contractors to the full satisfaction of the Engineer and Owner.

The responsibility and scope of each sub-trade rest solely with the Mechanical Contractor. Extras will not be considered based on the grounds of difference in interpretation of specifications and drawings as to which trade involved shall provide certain specialties or materials.

**Examination of Work**

Examine the site and local conditions likely to affect work indicated and specified prior to submitting final price.

This project involves changes to the building, which is presently occupied. Therefore examine the site and local conditions to determine the difficulties in carrying out the work indicated and specified prior to submitting final price.

**Liability**

This contractor shall assume full responsibility for laying out his work and for any damage caused to the Owner and other contractor by improper location or carrying out of this work. Carry all necessary insurance coverage.

This contractor shall protect all finished and unfinished work of his own and other contractors including existing from damage due to the carrying out of his work.

**Intent**

It is the intent of this specification and drawings to provide for a complete and fully operating system in complete accord with all applicable codes. These specifications may not cover each and every item required for the complete mechanical installation; therefore, the Contractor shall make provisions for all labour, material and equipment deemed necessary to complete the mechanical system.

**Certificates, Fees, etc.**

Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates. Furnish inspection certificates as evidence that work conforms with requirements of authority having jurisdiction.

**Cutting and Patching**

The Mechanical Contractor will confer with the General Contractor in regards to this work and shall give locations for all holes for pipes, ducts through floors and roof, etc., and provide sleeves required to execute the mechanical installation.

**Pipe Hangers, Supports and Sleeves**

Hangers and supports shall secure pipes in place, prevent vibration, maintain grade by adjustment, provide for expansion and contraction and shall be directly supported from the structure.

Perforated strap hangers are not acceptable.

**Testing**

Test all equipment and material where required by specifications or authorities having jurisdiction to demonstrate its proper operation to the Owner's representative. Test procedures shall be in accordance with the applicable portions of the ASME, ASHRAE, and other recognized test codes as far as field conditions permit.

Perform the following test and upon completion of the mechanical installation, turn over to the Owner a certification of the test with the detailed data as required by each. Test shall be itemized as to the time performed and personnel responsible for the test. Hydraulic tests shall be carried out for a period of 8 hours and pressure maintained with no appreciable pressure drop. Where leakage occurs, repairs shall be made and the entire system retested. All tests to be made before backfilling and furring.

- .1 All low and high velocity duct systems, including supply shall be checked for tightness. All leaks shall be repaired before ducts are furred in to ensure total outlet capacity is within 5% of the quantity being supplied by the air system.
- .2 Hydraulically test on hydronic piping systems at 1-1/2 times system operating pressure or minimum 860 kPa, whichever is greater.

**Record "As-Built" Drawings**

Keep in the job office an extra set of white prints and specifications on which all changes and deviations shall be recorded daily. At completion of the project, turn over to the Engineer two sets of neat "as-built" record drawings and specifications. These extra sets of white prints and specifications will be provided by the Engineer.

**Shop Drawings**

Before fabrication of major equipment and materials, submit through the General Contractor a minimum of 6 complete sets of shop drawings and data sheets covering all items of equipment furnished and installed under this Contract for approval by the Engineer.

**Temporary and Trial Usage**

Any permanent equipment used temporarily for temporary heat or otherwise will be completely repaired or replaced to the full satisfaction of the Owner.

**Equipment Clean-up**

Ducts and equipment shall be thoroughly cleaned of dirt, cuttings and other foreign substances. Disconnect, clean and reconnect whenever necessary for the purpose of locating and removing obstructions. Repair work damaged in the course of removing obstructions. Ducts shall be power vacuum cleaned before being turned over to the Owner.

**Guarantee**

The Mechanical Contractor, as a condition precedent to final payment after completion of this work, shall give the Owner a written guarantee warranting all apparatus furnished under the contract to remain in perfect serviceable condition for a period of one year from the date of final acceptance of his work by the Owner and Engineer.

**Installation**

Install equipment in accordance to manufacturer's instructions.

**Operating and Maintenance Data**

Furnish three sets of operating and maintenance data for all equipment and systems. Data shall be assembled in booklet form with soft cover and index. Identify front cover with name and location of the project, Consulting Engineer and Contractor. Submit one copy to the Engineer for approval.

**Materials**

Replace material and workmanship below specified quality and relocate work wrongly placed to the satisfaction of the Engineer.

Materials and equipment installed shall be new, full weight and of best quality specified. Use same brand of manufacturer for each specific application. Statically and dynamically balance rotating equipment for minimum vibration and low operating noise level.

**Approvals**

The price submitted for this Contract shall be based on the use of materials and equipment as specified. If this contractor wishes to quote on equivalent materials and equipment, he must quote on products approved by the Engineer in writing, as an equivalent to the product specified. Manufacturers listed in specifications do not have to request approval but must meet all performance requirements.

This Contractor shall be fully responsible for any additional work or materials required by the mechanical trade or other Contractors to accommodate approved equivalent materials or equipment. Extras will not be approved to cover such work.

**VENTILATION AND AIR CONDITIONING**

**Ductwork**

Ductwork shall be of galvanized steel and shall be lock forming quality. All ductwork shall be constructed, braced, connected and jointed as recommended in the latest issue of ASHRAE Guide and the Duct Construction Standards issued by the Sheet Metal National Association Inc. (SMACNA). All ductwork shall be installed to conform to the National Building Code, the CFIA Pamphlets 90A and 91 and in accordance with applicable codes. The minimum sheet metal thickness for ducts shall be as follows:

Rectangular Ducts Maximum Width	Gauge
Up to 300mm	26 USga
325mm to 750mm	24 USga
775mm to 1350mm	22 USga

Round ductwork shall be suspended by band iron hangers.

Rectangular ductwork shall be supported at maximum 2.4m (8 ft.) spacing.

Sheet Metal screws will be acceptable for ducting.

Flexible duct to be triple lock aluminum, maximum length 3.0m (10 feet).

**Seal Classification as follows:**

Maximum Pressure (Pa)	SMACNA Seal Class
1000 and over	A
750	B
500	C

**Seal Classification**

Class A: longitudinal seams, transverse joints, duct wall penetrations and connections made airtight with sealant and tape.

Class B: longitudinal seams, transverse joints and connections made airtight with sealant, tape or combination thereof.

Class C: transverse joints and connections made air tight with gaskets, sealant, tape or combination thereof. Longitudinal seams unsealed.

**Volume Dampers**

Install at each take-off from main as noted on drawing; single blade with locking quadrant, equal to Duro-Dyne k-9.

**Air Outlets and Inlets**

All new supply diffusers and return grilles as indicated on drawing.

**Air System Testing and Balancing**

Contractor to measure airflow of existing system prior to construction and report results.

Balance systems for rated air flow, room temperature control and current draw after installation is complete and in full working order. Adjust controls for continuous air circulation and minimum energy consumption. Adjust fan speeds as required to obtain specific performance. Balancing work to be performed by independent balancing contractor. Electronic copy of report to be issued to engineers for review.

**SEISMIC RESTRAINT SYSTEM (SRS)**

Provide design, supply and installation of complete SRS for all systems, equipment specified for installation on this project as per Ontario Building Code latest edition and NFPA13.

Design to be by professional engineer specializing in design of SRS and registered in the province of Ontario. Mechanical contractor to include costs associated with this work as it relates to mechanical contractor installations. Submit design sketches/drawings prior to start of installations, c/w installation requirements.

Provide letter from seismic engineer stating all mechanical installations have been installed in conformance with seismic restraint requirements as per Ontario Building Code.

**JRP ENGINEERING**  
Professional Engineers

9 Holgate Court, Kanata, ON K2K 1B4  
Tel: (613) 266-8226 Email: admin@jrpeng.com

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No	DESCRIPTION	DATE
0	ISSUED FOR TENDER	AUG. 18 2017
<b>REVISIONS</b>		

client:  
**NATIONAL GALLERY OF CANADA**

project:  
**TEMPORARY WORK FOR COLONNADE & MAIN ENTRANCE WINDOW/ROOF REPLACEMENT**  
**380 SUSSEX DR. OTTAWA, ONTARIO**

drawing title:  
**SPECIFICATIONS**

scale:	AS SHOWN	drawn by:	M.M.K.
designed by:	M.M.K.	reviewed by:	J.R.P.
approved by:	J.R.P.	date:	MAR. 2017

project no.:	100-17S	drawing no.:	M-3
revision:	<0>		of 3