



2024-06-19

Dear City of Oakville Permit Office:

Subject: 2220 & 2222 Lakeshore Rd. W., Oakville – Make-Up Air Unit Replacement – Structural Letter on the usage of MUA Unit Screens

WSP's Structural group has been engaged to support the larger team's efforts to replace and upgrade rooftop mechanical units at 2220 & 2222 Lakeshore Rd. West in Oakville. Due to the increased size and weight of the units, it was determined necessary to place the larger units on beams bearing on load-bearing walls extending down below the roof (less than 5m from the perimeter roof edge).

Through the permit application process, the plans examiners indicated retroactive application of bylaw requirements to provide screens around the proposed replacement units is required due to the increased heights and size of the units and placement.

WSP has explored screening options, with the involvement of a 3rd party screen designer/engineer. It was determined the only screen solution that would meet the spatial constraints would be to mount and integrate the screens to the mechanical unit's steel framing. However, upon completion of the screen design, it was found that the forces induced on the existing roof structure from the wind loads on the screens created new vertical forces that far exceed the weight of the mechanical units they are meant to conceal. With that, it has been determined that the existing roof structure cannot withstand the loads from the screens.

On the basis that that the screening requirement is architectural in nature only providing no functional benefit and given the structural limitations of the existing building, it is our strong recommendation that a variance be granted to permit the mechanical unit installations without complying to the property standards by-law to allow the project to proceed and to achieve the owner's goals of improving the building's efficiency and the quality of air for its senior tenants.

Please reach out should you have any questions,

Regards,

Brant Oldershaw, M.A.Sc., P.Eng Director, Structures



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GENERAL

THIS IS A METRICPROJECT. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE IN MILLIMETERS (MM) AND ALL FORCES ARE IN KILONEWTONS (KN).

1."WSP-S" REFERS TO WSP CANADA STRUCTURAL CONSULTANT.

2. PROVIDE ALL MATERIAL AND LABOUR REQUIRED FOR COMPLETION OF THE WORK.

3.PRIOR TO CONSTRUCTION, REVIEW STRUCTURAL DRAWINGS IN CONJUNCTION WITH DRAWINGS PROVIDED BY ALL OTHER CONSULTANTS, AND WITH EXISTING CONDITIONS.

4.REPORT DISCREPANCIES TO THE CONSULTANT BEFORE PROCEEDING WITH THE WORK.

5 VERIEV EXISTING DIMENSIONS AND CONDITIONS ON SITE PRIOR TO CONSTRUCTION

6.USE THESE DRAWINGS ONLY FOR THE PURPOSE IDENTIFIED IN THE REVISIONS COLUMN. DO NOT CONSTRUCT FROM THESE DRAWINGS UNLESS MARKED "ISSUED FOR CONSTRUCTION"

7 DO NOT USE INFORMATION ON THESE DRAWINGS FOR ANY OTHER PROJECT OR WORKS

8.DO NOT SCALE THESE DRAWINGS

9.ALL SECTIONS, DETAILS, AND STATEMENTS NOTED AS "TYPICAL" APPLY TO LIKE/SIMILAR CONDITIONS IN THE STRUCTURE.

10.SEE ARCHITECTURAL DRAWINGS FOR FIRE RATING AND FIREPROOFING REQUIREMENTS.

11.DRAWINGS SHOW COMPLETED STRUCTURE ONLY. THEY DO NOT SHOW TEMPORARY WORKS FOR WHICH THE CONTRACTOR IS RESPONSIBLE AND WHICH MAY BE REQUIRED FOR EXECUTION OF THE PROJECT. THE CONTRACTOR TO ESTABLISH CONSTRUCTION PROCEDURE AND SEQUENCE TO ENSURE SAFETY OF THE WHOLE STRUCTURE AND ALL ITS COMPONENTS DURING ERECTION.

12.DESIGN AND CONSTRUCTION REVIEW OF ALL TEMPORARY WORKS TO BE CARRIED OUT BY A PROFESSIONAL ENGINEER RETAINED BY THE CONTRACTOR, LICENSED IN THE PLACE WHERE THE PROJECT IS LOCATED.

13.DESIGN OF NON-STRUCTURAL AND SECONDARY STRUCTURAL ELEMENTS (SUCH AS MISCELLANEOUS STEEL STAIRS, RAILINGS AND GUARDRAILS, PARTITIONS, CLADDING, BULKHEADS, ETC.) IS THE RESPONSIBILITY OF SPECIALTY PROFESSIONAL ENGINEERS ENGAGED BY THE CONTRACTOR OR THE SUPPLIERS; IT IS NOT WITHIN THE SCOPE OF SERVICES PROVIDED BY WSP-S AND WILL NOT BE REVIEWED BY WSP-S.

14.CONSTRUCTION LOADS ON COMPLETED STRUCTURE NOT TO EXCEED DESIGN LOADS INDICATED ON DRAWINGS. FULL DESIGN LOADS MAY ONLY BE APPLIED AFTER THE CONCRETE REACHES ITS DESIGN STRENGTH

DESIGN CRITERIA

1.STRUCTURAL DESIGN IS IN ACCORDANCE WITH THE 2015 ONTARIO BUILDING CODE (OBC), SUPPLEMENTED BY THE USER'S GUIDE – NBC 2020 STRUCTURAL COMMENTARIES.

2.ALL REFERENCED STANDARDS SHALL BE THE CURRENT EDITION UNLESS DIFFERENT EDITION IS REFERENCED BY THE APPLICABLE 3.CHECK THE WORK PRIOR TO FIELD REVIEW TO CONFIRM IT IS COMPLETED AND IN ACCORDANCE WITH CONTRACT DOCUMENTS. BUILDING CODE NOTED ABOVE.

3.THE VALUES FOR CLIMATIC DATA USED IN THE DETERMINATION OF DESIGN LOADS HAVE BEEN OBTAINED FROM THE 2015 OBC FOR THE SPECIFIC LOCATION OF OAKVILLE.

4.BASED ON THE USE AND OCCUPANCY. THE BUILDING IS DESIGNED TO THE REQUIREMENTS OF A NORMAL IMPORTANCE CATEGORY

5.UNLESS OTHERWISE NOTED. DESIGN LOADS SHOWN ON DRAWINGS ARE SPECIFIED (UNFACTORED) LOADS. TO BE USED FOR ULS DESIGN. FOR SLS DESIGN. THESE LOADS CAN BE REDUCED BY MULTIPLYING WITH THE RATIO OF APPROPRIATE IMPORTANCE FACTORS Ix(SLS) / Ix(ULS) GIVEN BELOW

6.SNOW: Ss = 1.1 kPa; Sr = 0.4 kPa; Is (ULS) = 1.0; Is (SLS) = 0.9 MINIMUM UNFACTORED SNOW LOAD = 1.28 kPa x ls

7.RAIN: 24 HOUR RAINFALL = 97 mm

8.LATERAL LOADS IN THIS STRUCTURE ARE RESISTED BY BRACED FRAMES, AND ARE DETERMINED BASED ON THE WIND AND SEISMIC DATA BELOW

9.WIND: g50 = 0.47 kPa; lw (ULS) = 1.0; lw (SLS) = 0.75 TERRAIN TYPE: OPEN INTERNAL PRESSURE CATEGORY: 2 13 SEISMIC Sa (0.2) = 0.26 PGA = 0.134 leFaSa(0.2) = 0.31 Sa (0.5) = 0.129 Rd = 1.5 Sa (1.0) = 0.062 Ro = 1.3 Sa(20) = 0.029 le = 10 Sa (5.0) = 0.007 SITE CLASSIFICATION = D () Sa (10.0) = 0.0027

SEISMIC FORCE RESISTING SYSTEM (SFRS): CONVENTIONAL CONSTRUCTION (SHEAR WALLS)

SHOP DRAWINGS

1.SUBMIT 4 HARD COPIES OR PDF'S OF SHOP DRAWINGS FOR REVIEW BEFORE START OF WORK. PACKAGES TO BE SUBMITTED ARE NOTED IN THE RELEVANT SECTIONS BELOW.

2.ALL SHOP DRAWINGS ARE TO BE REVIEWED AND STAMPED BY THE CONTRACTOR AND THEIR CONNECTION ENGINEER PRIOR TO DISTRIBUTION TO CONSULTANTS. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. 3.REVIEW OF SHOP DRAWINGS BY WSP-S IS ON A SAMPLING BASIS, FOR GENERAL CONFORMITY WITH STRUCTURAL CONTRACT DOCUMENTS. IT IS NOT A DETAILED CHECK AND MUST NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF THE CONTRACTOR'S RESPONSIBILITY TO MAKE THE WORK ACCURATE AND IN CONFORMITY WITH ALL THE CONTRACT DOCUMENTS, TO REVIEW SHOP DRAWINGS AND TO COORDINATE WORK OF INTERFACING TRADES AND MANUFACTURE OF INTERFACING PRODUCTS.

4.REVIEW OF SHOP DRAWINGS DOES NOT IMPLY ANY CHANGE IN ANY OTHER CONSULTANTS' OR PROFESSIONALS' RESPONSIBILITIES RELATED TO DESIGN OF SPECIFIC ITEMS AS OUTLINED BY THESE DRAWINGS.

5.ALLOW A MINIMUM OF 10 WORKING DAYS FOR REVIEW OF EACH SUBMISSION OF SHOP DRAWINGS IN THE WSP-S OFFICE. ALLOW MORE TIME WHEN LARGE QUANTITIES OF SHOP DRAWINGS ARE SUBMITTED. SUBMIT IN GENERAL CONFORMITY WITH THE SEQUENCE OF CONSTRUCTION INTENDED.

6.AFTER REVIEW, SHOP DRAWINGS WILL BE STAMPED AND RETURNED. DO NOT COMMENCE FABRICATION UNTIL RETURNED SHOP DRAWINGS HAVE BEEN EXAMINED, IF FABRICATION BEGINS PRIOR TO EXAMINATION OF RETURNED SHOP DRAWINGS, THE COST ASSOCIATED WITH ANY REQUIRED REPLACEMENT OR REWORK OF FABRICATED ELEMENTS IS THE RESPONSIBILITY OF THE CONTRACTOR

7.SHOP DRAWINGS MARKED "REVIEWED" CAN BE USED FOR FABRICATION. DO NOT MAKE ANY CHANGES OR ADDITIONS TO THESE DRAWINGS WITHOUT NOTIFYING THE CONSULTANT.

8.SHOP DRAWINGS MARKED "REVIEWED AS NOTED" CAN BE USED FOR FABRICATION AFTER THE REVISIONS NOTED ARE IMPLEMENTED. DO NOT MAKE ANY FURTHER CHANGES OR ADDITIONS TO THESE DRAWINGS WITHOUT NOTIFYING THE CONSULTANT.

9.SHOP DRAWINGS MARKED "REVISE AND RESUBMIT" REQUIRE SUBSTANTIAL REVISIONS AND MUST BE RESUBMITTED FOR ADDITIONAL REVIEW PRIOR TO FABRICATION. ALL CHANGES AND ADDITIONS TO THE PREVIOUS SUBMISSION TO BE CLEARLY IDENTIFIED ON THE RESUBMITTED DRAWINGS. ONLY THE IDENTIFIED CHANGES WILL BE REVIEWED ON RE-SUBMISSION.

10.SHOP DRAWINGS MARKED "REVIEWED FOR IMPACT ON BASE STRUCTURE ONLY" SHOW WORKS WHICH ARE NOT WITHIN THE SCOPE OF STRUCTURAL CONSULTING SERVICES BUT AFFECT BEHAVIOUR OF THE BASE STRUCTURE. WSP-S WILL NOT REVIEW THESE WORKS AND ASSUMES THAT THE INDICATED WEIGHTS AND ALL OTHER LOADS IMPOSED ON THE BASE STRUCTURE ARE CORRECTLY IDENTIFIED BY THE DESIGNER / SUPPLIER OF THESE ELEMENTS.

11.DRAWINGS MARKED "NOT REVIEWED" SHOW WORKS WHICH ARE NOT WITHIN THE SCOPE OF STRUCTURAL CONSULTING SERVICES

12.DO NOT USE SHOP DRAWINGS AS A MEANS TO PROPOSE SUBSTITUTIONS OR ALTERNATIVES TO THE MATERIALS, PRODUCTS OR DETAILS INDICATED IN CONTRACT DOCUMENTS. SUCH SHOP DRAWINGS WILL BE MARKED "REVISE AND RESUBMIT

FIELD REVIEW

1.WSP-S WILL PROVIDE PERIODIC FIELD REVIEW OF A REPRESENTATIVE SAMPLE OF THE STRUCTURAL WORKS DETAILED ON THESE DRAWINGS FOR GENERAL CONFORMANCE WITH CONTRACT DOCUMENTS. THESE REVIEWS DO NOT REPLACE THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT AND MAINTAIN A QUALITY CONTROL PROGRAM, AND DO NOT MAKE WSP-S A GUARANTOR OF THE CONTRACTOR'S WORK.

2.ASSIST WSP-S DURING FIELD REVIEW AND PROVIDE SAFE ACCESS TO WORK AREAS AS REQUIRED.

4.NOTIFY WSP-S 48 HOURS PRIOR TO CONCRETE POURS, BACKFILLING, AND COVERING UP THE STRUCTURE WITH FINISHES.

EXISTING STRUCTURE

1.EXISTING STRUCTURAL INFORMATION IS BASED UPON DRAWINGS PREPARED BY DUNLOP WARDELL MATSUI AITKEN. DATED 6/4/1971

2.DESIGN OF STRUCTURAL WORKS RELATED TO THE EXISTING BUILDING HAS BEEN CARRIED OUT AS FAR AS PRACTICAL. GIVEN LIMITED AVAILABILITY OF THE EXISTING DRAWINGS AND LIMITED RECORDS OF THE STRUCTURAL MODIFICATIONS LIKELY TO HAVE BEEN MADE THROUGH THE LIFE OF THE BUILDING. MODIFICATIONS TO THE PROPOSED STRUCTURAL FRAMING AND / OR DETAILS MAY BE REQUIRED IF EXISTING CONDITIONS ARE FOUND TO BE DIFFERENT FROM THOSE ASSUMED AND SHOWN ON DRAWINGS.

3.EXISTING CONDITIONS ARE ASSUMED. SURVEY THE EXISTING STRUCTURE AFTER REMOVING FINISHES AND REPORT ANY VARIATIONS TO WSP-S BEFORE PROCEEDING WITH THE WORK.

4. TAKE ALL PRECAUTIONS NECESSARY TO PROTECT THE EXISTING STRUCTURE DURING CONSTRUCTION.

5.SCHEDULE WORK TO MINIMIZE EFFECT ON THE EXISTING BUILDING OPERATION. USE EQUIPMENT AND PROCEDURES TO MINIMIZE NOISE, DUST AND VIBRATIONS. SUBMIT PROPOSED SCHEDULE FOR REVIEW BY THE CONSULTANT AND THE OWNER.

6.ALL DEMOLITION, SHORING, AND OTHER TEMPORARY WORKS TO BE DESIGNED BY A PROFESSIONAL ENGINEER RETAINED BY THE CONTRACTOR, LICENSED IN THE PLACE WHERE THE PROJECT IS LOCATED. PREPARE DRAWINGS SIGNED AND SEALED BY THAT ENGINEER SHOWING DEMOLITION PROCEDURE AND SEQUENCE AND ALL THE NECESSARY SHORING.

STRUCTURAL STEEL

1.CONFORM TO CSA S16 "DESIGN OF STEEL STRUCTURES".

2.FABRICATOR TO BE CERTIFIED BY THE CANADIAN WELDING BUREAU UNDER REQUIREMENTS OF CSA W47.1, DIVISION 1 OR 2, AND/OR CSA W55.3.

	SEAL: PROFESSIONAL 2024.03.28 B.E. OLDERSHAW	PROJECT: 2220-2222 LAKI SENIORS RESIDI	ESHORE RD, OAKVILLE - ENCE MAU REPLACEMENT	ISSUED FOR: PERMIT & TENDER
		TITLE: GEN	NERAL NOTES	REFERENCE DRAWING: 1/S7 (JUNE 1971 STRUC. SET)
4 Hughson Street South Suite 300	100146362	DRAWN BY: JDS/HA/BEO	SCALE: NTS	DATE: 2023 / 03 / 28
Hamilton, ON, Canada L8N 3Z1 T 905-529-4414 wsp.com	TOWINCE OF OWTAN	CHECKED BY: BEO	PROJECT NO: 221-09660-00	SKETCH NO: S-1

3.WELDERS TO BE CWB CERTIFIED. WELDING TO BE IN ACCORDANCE WITH CSA W59.

4.MATERIALS (TO CSA G40.21 UNLESS NOTED OTHERWISE) -WIDE FLANGE SECTIONS, CHANNELS AND ANGLES: GRADE 350W -PLATES, BARS; GRADE 300W -HOLLOW STRUCTURAL SECTIONS (HSS): 350W CLASS C; OR ASTM A500 GRADE C -GALVANIZED HSS: 350W CLASS H; OTHER GRADES TO BE STRESS RELIEVED PRIOR TO GALVANIZING -BOLTS, NUTS AND WASHERS: ASTM F3125, GRADE A325 -ZINC-RICH PAINT (ZRP) COATING: SSPC PAINT SPECIFICATION NO. 20 -HOT DIP GALVANIZING: ASTM A123/A123M WELDING MATERIALS: CSA W48 AND CSA W59

5.SHOP DRAWINGS FOR STRUCTURAL STEEL, STEEL CONNECTIONS, AND STEEL JOISTS TO BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER RESPONSIBLE FOR THEIR DESIGN. RETAINED BY THE CONTRACTOR AND REGISTERED IN THE PLACE THE PROJECT IS LOCATED. ENGINEER TO CARRY MINIMUM \$1,000,000 IN LIABILITY INSURANCE

6.CONNECT BEAMS FOR THE FORCES SHOWN ON DRAWINGS USING THE CISC "HANDBOOK OF STEEL CONSTRUCTION".

7 DO NOT SPLICE SECTIONS WITHOUT PRIOR ACCEPTANCE BY THE CONSULTANT AND SUBMISSION OF PERTINENT SHOP DRAWINGS. ACCEPTED SPLICES TO DEVELOP THE FULL MOMENT CAPACITY OF THE SECTION.

8.DO NOT CUT HOLES OR OTHERWISE MODIFY STRUCTURAL MEMBERS ON SITE.

9.DO NOT OVERSIZE ANCHOR ROD HOLES FOR SITE TOLERANCES. USE HOLE SIZES SUGGESTED IN THE CISC "HANDBOOK OF STEEL CONSTRUCTION"

10.PROTECT COMBUSTIBLE MATERIALS AND FINISHES DURING WELDING OPERATIONS.

11.DO NOT WELD IN AMBIENT TEMPERATURES BELOW -18°C. PREHEAT MATERIAL ADJACENT TO WELDING AREAS WHEN WELDING TEMPERATURE IS BETWEEN -18°C AND 0°C.

12.UNLESS OTHERWISE NOTED, CLEAN STEEL TO SSPC SP1 (SOLVENT CLEANING) AND APPLY ONE COAT OF SHOP PAINT.

13.ALL STEEL LOCATED OUTSIDE THE BUILDING ENVELOP'S VAPOUR BARRIER TO BE HOT DIPPED GALVANIZED.

14.CLEAN SURFACES DOWN TO BARE METAL AND APPLY TWO COATS OF TOUCH-UP ZRP TO ANY GALVANIZED OR ZRP SURFACE THAT HAS BEEN DAMAGED OR FIELD WELDED

15. PROVIDE VENT HOLES IN HSS SECTIONS WHERE REQUIRED FOR GALVANIZING PROCESS. MAXIMUM SIZE 16 (5/8") DIAMETER, FILL WITH VENT HOLE PLUGS AFTER GALVANIZING

POST-INSTALLED ANCHORS

MANUFACTURER.

2.WHERE ADHESIVE CONCRETE ANCHORS (ACA) ARE NOTED ON DRAWINGS, PROVIDE HILTI HIT-HY 200 ADHESIVE ANCHORING SYSTEM WITH HILTI HIT-Z ANCHOR RODS OR APPROVED EQUIVALENT.

3.ANCHORS LOCATED OUTSIDE THE BUILDING ENVELOPE'S VAPOUR BARRIER TO BE STAINLESS STEEL.

4.USE DRILLING AND INSTALLATION TOOLS AND PROCEDURES PER MANUFACTURER'S RECOMMENDATIONS. DO NOT CORE DRILL UNLESS SPECIFICALLY NOTED ON DRAWINGS. HOLE DIAMETERS NOT TO EXCEED THOSE REQUIRED BY MANUFACTURER.

CONCRETE ANCHORS

REJECTED WORK

1.DO NOT DELIVER MATERIALS WHICH ARE KNOWN NOT TO MEET THE REQUIREMENTS OF THE SPECIFICATIONS. IF REJECTED AFTER DELIVERY, REMOVE IMMEDIATELY FROM SITE.

EXPENSE.

1.WHERE DRILLED CONCRETE ANCHORS (DCA) OR DRILLED MASONRY ANCHORS (DMA) ARE NOTED ON DRAWINGS, PROVIDE HILTI KWIK BOLT – TZ2 EXPANSION ANCHORS OR APPROVED EQUIVALENT. TIGHTEN USING THE TORQUE SPECIFIED BY THE

5. EMBEDMENT LENGTH FOR POST-INSTALLED HILTI ANCHORS SHALL BE 83mm (3.25") FOR 12mm (1/2") DIAMETER DRILLED

2.ALL WORK NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED AT THE CONTRACTOR'S



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JDS/HA/BEO CHECKED BY: BEO

AKESHORE RD. OAKVILLE -		ISSUED FOR:
SIDENCE MAU REPLACEMENT		PERMIT & TENDER
RC	OF PLANS	REFERENCE DRAWING: 1/S7 (JUNE 1971 STRUC. SET)
	SCALE:	DATE:
	NTS	2023 / 03 / 28
	PROJECT NO:	SKETCH NO:
	221-09660-00	S-2



AKESHORE RD. OAKVILLE -	ISSUED FOR:	
SIDENCE MAU REPLACEMENT	PERMIT & TENDER	
DETAILS	REFERENCE DRAWING:	
	1/37 (JUNE 19/1 STRUC. SET)	
SCALE:	DATE:	
NTS	2023 / 03 / 28	
PROJECT NO:	SKETCH NO:	
221-09660-00	S-3	