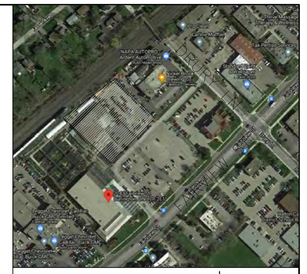
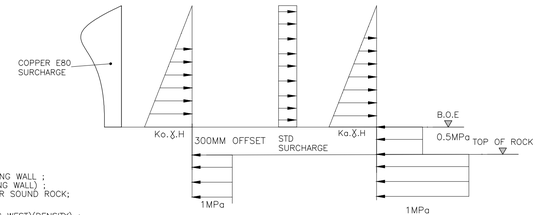
SHORING DRAWING FOR 2243 FAIRVEIW STREET



KEY PLAN



GENERAL NOTES

A. DESIGN

1. GEOTECHNICAL DESIGN PARAMETERS :

   Ko = 0.53 NORTH SHORING WALL ;
   Ko = 0.36 (WEST SHORING WALL) ;
   TOE RESISTANCE: 1MPa FOR SOUND ROCK;

   d = 19.0 kN/m^3 (ALONG WEST)(DENSITY) ;
   d = 21.0 kN/m^3 (NORTH SHORING WALL);
   q = 12.5 kN/m^2 (SURCHARGE)

   ROCK ANCHOR ALLOWABLE BOND VALUE = 600 kPa (TO BE VERIFIED BY FIELD TEST).
2. RAILWAY TRACK SURCHARGE: COOPER-E80 AS PER AREMA
3. FOR SOIL INFORMATION REFER TO FINAL GEOTECHNICAL INVESTIGATION PHASE 1 FAIRVIEW ST SURLINGTON ON, FILE #225780.003, DATED AUGUST 12, 2021
4. ALL SOIL PARAMETERS SHOWN ABOVE ARE TO BE CONFIRMED IN WRITING BY THE GEOTECHNICAL CONSULTANT PRIOR TO THE INSTALLATION OF SHORING.
5. DESIGN IS IN ACCORDANCE WITH THE ONTARIO BUILDING CODE THE LATEST EDITION.
6. LOCATIONS AND DEPTHS OF ALL EXISTING SERVICES MUST BE CONFIRMED PRIOR TO THE START OF SHORING OPERATIONS.
7. DESIGNED IN ACCORDANCE WITH AREMA MRE2014 VOLUME 2 CHAPTER 15 STEEL STRUCTURES
8. THE DESIGN OF SHORING WALL, (i.e. DRAWINGS, CALCULATIONS, MONITORING, ETC.) AND MONITORING GROUND & TRACK MOVEMENT SHALL BE IN COMPLIANCE WITH METROLINX – GENERAL GUIDELINES FOR DESIGN OF RAILWAY BRIDGES AND STRUCTURES – RC-0506-04STR, NOVEMBER 15, 2018 REV 1.1

B. MATERIALS

1. STRUCTURAL STEEL TO BE NEW OR SOUND USED MATERIAL CONFORMING WITH C.S.A. G40.21, GRADE 350W. WELDING TO CONFORM TO C.S.A. W59 DONE BY WELDERS QUALIFIED TO C.S.A. W47.
2. TIMBER LAGGAGINS IS SPF (SELECT STRUCTURE), THE ALLOWABLE BENDING STRESSES SHALL BE 13.6 MPa (INCLUDING ALL MODIFICATION FACTORS) AS PER METROLINX REQUIREMENTS CLAUSES 7.2
3. ALTERNATIVE SECTIONS OR GRADES OF EQUIVALENT STRENGTH MAY BE SUBSTITUTED SUBJECT TO APPROVAL BY TARRA ENGINEERING INC.
4. CONCRETE STRENGTHS TO BE AS FOLLOWS:
5. –STRAND TIEBACK ANCHORS SHALL CONSIST OF 0.6: DIA. 7–WIRE GRADE 1861 MPa (270K) STRAND CONFORMING TO ASTM A416 (BARE STRAND).
   –THREADBAR ANCHORS SHALL CONSIST OF GRADE 550 MPa CONFORMING TO CSA G30.18 AND ASTM A615

TYPE	STRENGTH
NORTH WALL TIEBACKED PILES :	
SOLDIER PILE + LAGGING	
BACKFILL TO GRADE	0.4 MPa
TOE	30 MPa
REGROUTABLE ANCHORS	35 MPa
TIEBACKED PILES :	
SOLDIER PILE + LAGGING	
BACKFILL TO GRADE	0.4 MPa
TOE	20 MPa
REGROUTABLE ANCHORS	35 MPa

NOTE
TIEBACKS ALONG NORTH SIDE TO BE DESTRESSED AFTER COMPLETION OF GROUND FLOOR

6. LAGGING : – NORTH WALL – 150MM (6") LAGGING UPPER 2M FROM THE TOP, AND 200MM (8") LAGGING BELOW 2M TO THE BASE OF EXCAVATION ;
   – OTHER AREAS – 75mm MIN. HARDWOOD .

C. TIEBACK INSTALLATION PROCEDURE

IMPORTANT NOTE FOR GENERAL CONTRACTOR :

PRIOR TO DRILL TIEBACKS PREPARE A MINIMUM OF 5% OF THE TOTAL NUMBER OF ANCHORS ON A TRACK SUPPORTING WALL TO BE PERFORMANCE TESTED TO BE VERIFIED BY FIELD TEST TO 2 TIMES DESIGN LOAD TO VERIFY ASSUMED DESIGN BOND STRESS IN SOIL. TIEBACKS ANCHOR ZONE LENGTHS TO BE ADJUSTED BASED ON THESE TESTS IF REQUIRED.

(SOLDIER PILE + LAGGING + TIEBACK)

1. CONTRACTOR TO LAY OUT STAKES FOR ALL PILES. CHECK OF ALL DIMENSIONS WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS PRIOR TO THE COMMENCEMENT OF ANY SHORING OPERATIONS.
2. DRILL HOLES TO SIZES AND DEPTHS INDICATED EMPLOYING LINERS, MUD DRILLING, ETC. AS REQUIRED TO AVOID THE INGRESS OF LOOSE SOIL OR WATER. INSTALL PILES PLUMB AND TO LINE. PLACE CONCRETE TOES WHERE SPECIFIED AND BACKFILL TO GRADE WITH LEAN MIX.
3. EXCAVATE AT SOLDIER PILES IN 1200 MAX. LIFTS INSTALLING LAGGING AS EXCAVATION PROCEEDS. CUT SOIL FACE NEATLY TO ENSURE TIGHT FIT FOR LAGGING. WEDGE AT PILES WHERE NECESSARY. FILL ALL VOIDS BEHIND LAGGING WITH EXCAVATED MATERIAL RAMMED IN PLACE. IN WET GROUND PROVIDE SUITABLE DRAINAGE SYSTEM BETWEEN LAGGING BOARDS WITH FILTER MEMBRANE TO REDUCE THE MIGRATION OF FINES.
4. AT TIED–BACK PILES, WHEN EXCAVATION REACHES 300mm MAX. BELOW TIEBACK ELEVATION, DRILL AND INSTALL TIE–BACKS.
5. DO NOT CONTINUE EXCAVATION UNTIL TIEBACK INSTALLATION IS COMPLETE AND DESIGN LOAD LOCKED IN.
6. PROOF TEST ALL WORKING TIEBACKS TO 1.33 TIMES DESIGN LOAD.
7. CONTINUE EXCAVATION TO REQUIRED ELEVATIONS.
8. IT IS THE SHORING SUBCONTRACTORS RESPONSIBILITY TO REVIEW AND UNDERSTAND THE EXISTING SITE CONDITIONS PRIOR TO TENDERING OR COMMENCEMENT OF WORK.
9. TIEBACK DESTRESSING FOR PILE N1 TO N52, IS REQUIRED. TARRA MUST BE ON–SITE TO CONFIRM TIEBACK DESTRESSING AT THESE PILE LOCATIONS IS COMPLETE.

D. GENERAL CONTRACTOR

1. GENERAL CONTRACTOR TO PROVIDE THE FOLLOWING:
   A. CONDITION SURVEY OF EXISTING ADJACENT STRUCTURES WITHIN THE INFLUENCE AREA OF THE EXCAVATION. MONITOR ADJACENT BUILDINGS FREQUENTLY DURING SHORING OPERATIONS AND REPORT ANY MOVEMENTS OR DETERIORATION TO SHORING ENGINEER IMMEDIATELY.
   B. MONITORING OF ALL PILES FOR HORIZONTAL AND VERTICAL MOVEMENTS. REPORT IMMEDIATELY ANY MOVEMENT IN EXCESS OF 12mm FOR PILE+LAGGING AND 6mm FOR CAISSON WALL TO TARRA ENGINEERING INC.
   B. DEWATERING MIN. 1m BELOW THE BASE OF EXCAVATION AS REQUIRED .
   C. PROVIDE ADEQUATE PROTECTION FOR SHORING SYSTEM AGAINST THE EFFECTS OF WEATHER AND WATER. TARP SLOPES TO AVOID EROSION WHERE NECESSARY.
   D. PROVIDE ACCESS FOR ALL SHORING EQUIPMENT.
   E. COORDINATE SITE SERVICES WITH PROPOSED SHORING AND SHORING EQUIPMENT TO AVOID CONFLICT.
2. THE CONTRACTOR IS REQUIRED TO SUBMIT THE FOLLOWING FOR REVIEW AND ACCEPTANCE (BY AECOM / METROLINX) PRIOR TO CONSTRUCTION:
   A. DETAILED WORK PLAN METHODOLOGY FOR THE PROPOSED WORK;
   B. METHODOLOGY FOR ANY TEMPORARY EXCAVATION PROTECTION, IF REQUIRED;
   C. ANY DE–WATERING SCHEMES ON OR ADJACENT TO METROLINX PROPERTY, IF REQUIRED;
3. SPOILS AND / OR DEBRIS WILL NOT BE DIRECTED TOWARD OR WITHIN THE METROLINX PROPERTY;
4. MATERIALS (OF ANY KIND) WILL NOT BE STORED / STOCKPILED WITHIN THE METROLINX PROPERTY;
5. METROLINX PROPERTY WILL BE RESTORED TO ORIGINAL OR BETTER CONDITIONS UPON COMPLETION OF THE WORK;
6. PRE–CONDITION PICTURES, PRIOR TO THE ONSET OF CONSTRUCTION, AND POST–CONDITION PICTURES, WITHIN 24 HRS. OF COMPLETION OF RESTORATION, TO BE PROVIDED TO AECOM / METROLINX;
7. ALL DRAINAGE, DURING THE ENTIRE PROPOSED WORK, WILL BE DIRECTED AWAY FROM THE METROLINX DRAINAGE DITCHES AND PROPERTY. THE PROJECT AND ITS CONSTRUCTION WILL HAVE NO ADVERSE AFFECTS ON THE EXISTING METROLINX DRAINAGE FACILITIES OR DITCHES;
8. THE CONTRACTOR WILL BE FULLY RESPONSIBLE FOR THE ADEQUATE PROTECTION OF ALL EXISTING INFRASTRUCTURE (I.E. UTILITIES, SERVICES, STRUCTURES, ROADWAYS, ETC.) DURING CONSTRUCTION OPERATIONS;
9. THE CONTRACTOR WILL NOT STORE ANY HAZARDOUS MATERIALS WITHIN CLOSE PROXIMITY OF THE METROLINX PROPERTY;
10. THE CONTRACTOR WILL INSTALL PROTECTIVE MEASURES (SCAFFOLDING, PLATFORMS, HEAVY POLYETHYLENE SHEETS, ETC.), ENGINEERED WHERE APPLICABLE, TO PREVENT ANY DEBRIS, CUTTING WATER / SLURRY AND FINE DEBRIS FALLING ONTO METROLINX PROPERTY. CONTRACTOR TO SUBMIT PROPOSAL FOR PROTECTIVE MEASURES TO AECOM / METROLINX FOR REVIEW AND ACCEPTANCE;
11. AS–BUILT DRAWINGS WILL BE IN GEOREFERENCED CAD FILE – NAD 83 MTM 10 FORMAT AND SUBMITTED TO AECOM / METROLINX WITHIN 30 DAYS AFTER COMPLETION OF THE PROPOSED WORK;
12. THE CONTRACTOR INSTALLING THE TIEBACKS MUST SUBMIT THE TIEBACK AS–BUILT DRAWINGS TO AECOM / METROLINX WITHIN 30 DAYS OF INSTALLING THE TIEBACKS;
13. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT.
14. UNDER NO CIRCUMSTANCES SHALL THE GENERAL CONTRACTOR ALLOW ANY COMPONENT OF THE SHORING SYSTEM TO BE REMOVED WITHOUT FIRST NOTIFYING TARRA ENGINEERIGN INC.

E. TIEBACKS TEST

1. PERFORMANCE BOND TEST(S) (2.0 TIMES THE TIEBACK DESIGN LOAD) SHALL BE PERFORMED TO VALIDATE THE ASSUMED ALLOWABLE BOND STRESS BETWEEN THE SOIL/ROCK AND TIEBACK.
   – THE DURATION OF THE PORTION OF THE TEST – AS PART OF THE CREEP TEST – WHILE HOLDING THE LOAD EQUAL TO 2.0 TIMES THE TIEBACK DESIGN LOAD, SHALL NOT BE LESS THAN 30 MINUTES.
   – SPECIAL ATTENTION SHALL BE TAKEN FOR THE TESTING OF THE TOP ANCHORS IN ORDER TO AVOID TRACK HEAVE FOR PASSIVE WEDGE FAILURE.
   – THE LOADING OF THE ANCHOR SHALL BE LESS THAN THE PASSIVE RESISTANCE BEHIND THE WALL (TOWARD THE TRACKS).
2. PROOF TEST(S) (1.33 TIMES OF THE TIEBACK DESIGN LOAD) SHALL BE PERFORMED TO VALIDATE THE PROOF OF ACTUAL OVERALL BOND CAPACITY BETWEEN THE SOIL/ROCK AND TIEBACK.
   – THE DURATION OF THE PORTION OF THE TEST – AS PART OF CREEP TEST – WHILE HOLDING THE LOAD EQUAL TO 1.33 TIMES THE TIEBACK DESIGN LOAD, SHALL NOT BE LESS THAN 30 MINUTES.

E1. PROOF TEST AND PERFORMANCE TEST OF TIEBACKS

E.1.2. PROOF TEST

E.1.2.1. THE PROOF TEST SHALL BE PERFORMED BY LOADING THE ANCHOR WITH THE FOLLOWING INCREMENTS OF THE DESIGN LOAD AND MEASURING THE ANCHOR MOVEMENT AT THE END OF EACH LOAD INCREMENT:

5% INITIAL SEATING LOAD
25%
50%
75%
100%
133% HELD FOR CREEP TEST
100%
LOCK–IN LOAD AT 110% OF DESIGN LOAD.

E.1.2.2. EACH INCREMENT SHALL BE HELD FOR A MINIMUM OF 2 MINUTES EXCEPT THE MAXIMUM LOAD (200% OF DESIGN LOAD) SHALL BE HELD FOR A MINIMUM OF 30 MINUTES.

E.1.2.3. INITIAL SEATING LOAD INCREMENT WILL NOT BE INCLUDED IN THE CALCULATION OF ELASTIC MOVEMENT OF THE ANCHOR.

E.1.2.4. THE MIN NUMBER OF ANCHORS REQUIRED FOR PERFORMANCE TASTING OF 200 % OF THE DESIGN LOAD SHALL BE THE MAX OF 2 ANCHORS OR 5 % OF THE TOTAL NUMBER OF ANCHORS. HOWEVER, ADDITIONAL PERFORMANCE TESTING OF ANCHORS MAY BE REQUIRED BY THE GEOTECHNICAL ENGINEER TO CONFIRM SOIL SUBSTRATE CONDITIONS ON SITE. THE METROLINX PROJECT MANAGER WILL SELECT THE ANCHORS TO BE TESTED.

E.2. TIEBACKS TEST PROCEDURE

E.2.1. PERFORMANCE TESTING OF GROUND ANCHORS/TIEBACKS WOULD BE IN ACCORDANCE WITH OPSS 942.

E.2.1.1. PRE–PRODUCTION TEST ARE CARRIED OUT BEFORE THE INSTALLATION OF WORKING ANCHORS. ONE PERFORMANCE TIEBACK TEST IS CARRIED OUT ON EACH SET OF WALLS, TO BE TESTED TO 200% OF THE DESIGN LOAD. THE PRE–PRODUCTION TEST OF THE TIEBACKS IS TO VERIFY THE BOND STRENGTH OF THE SOIL AND IF THE CAPACITY OF THE TIEBACK ASSUMED IS SUFFICIENT. THE PRE–PRODUCTION TEST SHALL BE CONDUCTED BY CYCLICALLY AND INCREMENTALLY LOADING AND UNLOADING THE ANCHOR ACCORDING TO "OPSS. MUNI 942" THE SCHEDULE BELOW.

Load	Minimum Hold Time(Minutes)
AL	–
0.250L	15
AL	1
0.250L	15
0.500L	15
AL	1
0.250L	15
0.501L	15
0.750L	15
AL	1
0.250L	15
0.500L	15
0.750L	15
1.000L	15
AL	1
0.250L	15
0.500L	15
0.750L	15
1.000L	15
1.250L	15
AL	1
0.250L	15
0.500L	15
0.750L	15
1.000L	15
1.250L	15
1.500L	15
AL	1
0.250L	15
0.500L	15
0.750L	15
1.000L	15
1.250L	15
1.500L	15
1.750L	15
AL	1
0.250L	15
0.500L	15
0.750L	15
1.000L	15
1.250L	15
1.500L	15
1.750L	15
2.000L	24 HOURS
AL	1
0.000L	–

AL= Alignment Load
DL= Design Load

MAINTAIN EACH LOAD INCREMENT MINIMUM DURATION INDICATED OR UNTIL THE RATE OF DISPLACEMENT IS NOT GREATER THAN 0.25 MM PER HOUR. DURING THE LOAD HOLD PERIODS, THE ANCHOR LOAD SHALL NOT BE ALLOWED TO DEVIATE FROM THE TEST PRESSURE BY MORE THAN 0.35MPA. THE LOAD SHALL ALWAYS BE RETURNED TO THE SPECIFIED TEST LOAD PRIOR TO TAKING THE MOVEMENT READING AT THE SPECIFIED INTERVAL. THE TEST LOAD SHALL NOT BE EXCEED DURING THE PERIOD OF OBSERVATION.

E.3. TEST ACCEPTANCE CRITERIA

E.3.1. THE ACCEPTANCE OF ANCHORS WILL BE BASED ON THREE CRITERIA AS FOLLOWS;

– THE TOTAL ELASTIC MOVEMENT OF THE ANCHOR HEAD OBTAINED FROM THE PROOF TEST SHALL EXCEED 80% OF THE THEORETICAL FREE LENGTH ELONGATION FOR ANY TEST LOAD.
– THE MINIMUM ACCEPTABLE MOVEMENT (D) SHALL BE COMPUTED AS FOLLOWS: D = (0.8 PL/AE) WHERE:
  P= TOTAL APPLIED TEST LOAD MINUS INITIAL SEATING LOAD
  L= LENGTH FROM JACK TO THE BOTTOM OF THE FREE LENGTH SPECIFIED
  A= CROSS SECTIONAL AREA OF STEEL TENDON
  E= YOUNG'S MODULUS OF THE STEEL
– THE TOTAL ELASTIC MOVEMENT OF THE ANCHOR HEAD OBTAINED FROM THE TEST AT THE MAXIMUM TEST LOAD SHALL BE LESS THAN THE THEORETICAL ELASTIC ELONGATION OF THE TENDON LENGTH MEASURED FROM THE JACK TO THE CENTER OF THE BOND LENGTH.

E.3.2. THE CREEP MOVEMENT BETWEEN 2 AND 30 MINUTES OF LOADING SHALL NOT EXCEED 1 MM (0.04 IN) PER LOG CYCLE OF TIME OR THE CREEP MOVEMENT BETWEEN 10 AND 60 MINUTES OF LOADING SHALL NOT EXCEED 2 MM (0.08 IN) PER LOG CYCLE OF TIME.

F. REFERENCE DRAWINGS

ARCHITECTURAL DRAWINGS

COMPANY NAME	DWG. #	DWG. TITLE	REV.	ISSUED FOR	DATE RECEIVED
CORE ARCHITECTS	1. A160	CODE COMPLIANCE DIAGRAM LEVEL P2A	--	---	FEB 28/22
	2. A161	CODE COMPLIANCE DIAGRAM LEVEL P2	--	---	FEB 28/22
	3. A162	CODE COMPLIANCE DIAGRAM LEVEL P1	--	---	FEB 28/22
	4.				

STRUCTURAL DRAWINGS

COMPANY NAME	DWG. #	DWG. TITLE	REV.	ISSUED FOR	DATE
ENTUITIVE	1. S198	FOUNDATION/LEVEL P2	12	CONSULTANT COORDINATION 08	MAR 22/22
	2. S199	LEVEL P1 FRAMING	12	CONSULTANT COORDINATION 08	MAR 22/22
	3. S201	LEVEL 1 FRAMING	12	CONSULTANT COORDINATION 08	MAR 22/22
	4. S400	FOUNDATION SECTIONS	12	CONSULTANT COORDINATION 08	MAR 22/22
	5.				

SITE SURVICING & SURVEY DRAWINGS

COMPANY NAME	DWG. #	DWG. TITLE	REV.	ISSUED FOR	DATE
---	C 103A	GENERAL SERVICING PLAN	01	ISSUED FOR SPA SUBMISSION	JAN 08/20
RADY–PENTECK & EDWARD SURVEYING LTD.	18–199–TOPO	PLAN OF SURVEY	02	REVISED PER NEW SITE PLAN	JAN 29/19
J.H.GELBLOOM SRUVEYINGLIMITED	---	TOPOGRAPHIC SURVEY	--	---	APR 28/21

No.	DESCRIPTION	Date
	REVISION	
8	REVISED FOR PERMIT AND TENDER	AUG–04–2022
7	REVISED FOR TENDER (AS PER METROLINX COMMENTS)	JUN–03–2022
6	REVISED FOR PERMIT AND TENDER	MAR–16–2022
5	REISSUED FOR PERMIT AND TENDER	FEB–23–2022
4	ISSUED FOR PERMIT AND TENDER	OCT–08–2021
3	ISSUED FOR PERMIT	AUG–31–2021
2	RE–ISSUED FOR COORDINATION	JUL–23–2021
1	RE–ISSUED FOR COORDINATION	JUN–30–2021
0	ISSUED FOR COORDINATION	MAY–11–2021

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Stamp



Client

Brookfield Properties

TORONTO ONTARIO

Consultant

Tarra Engineering & Structural Consultants Inc.
8977 Woodbine Ave.
Markham,ON L3R 0J9
Tel: (905) 470-6952
Fax: (905) 470-5126

Project

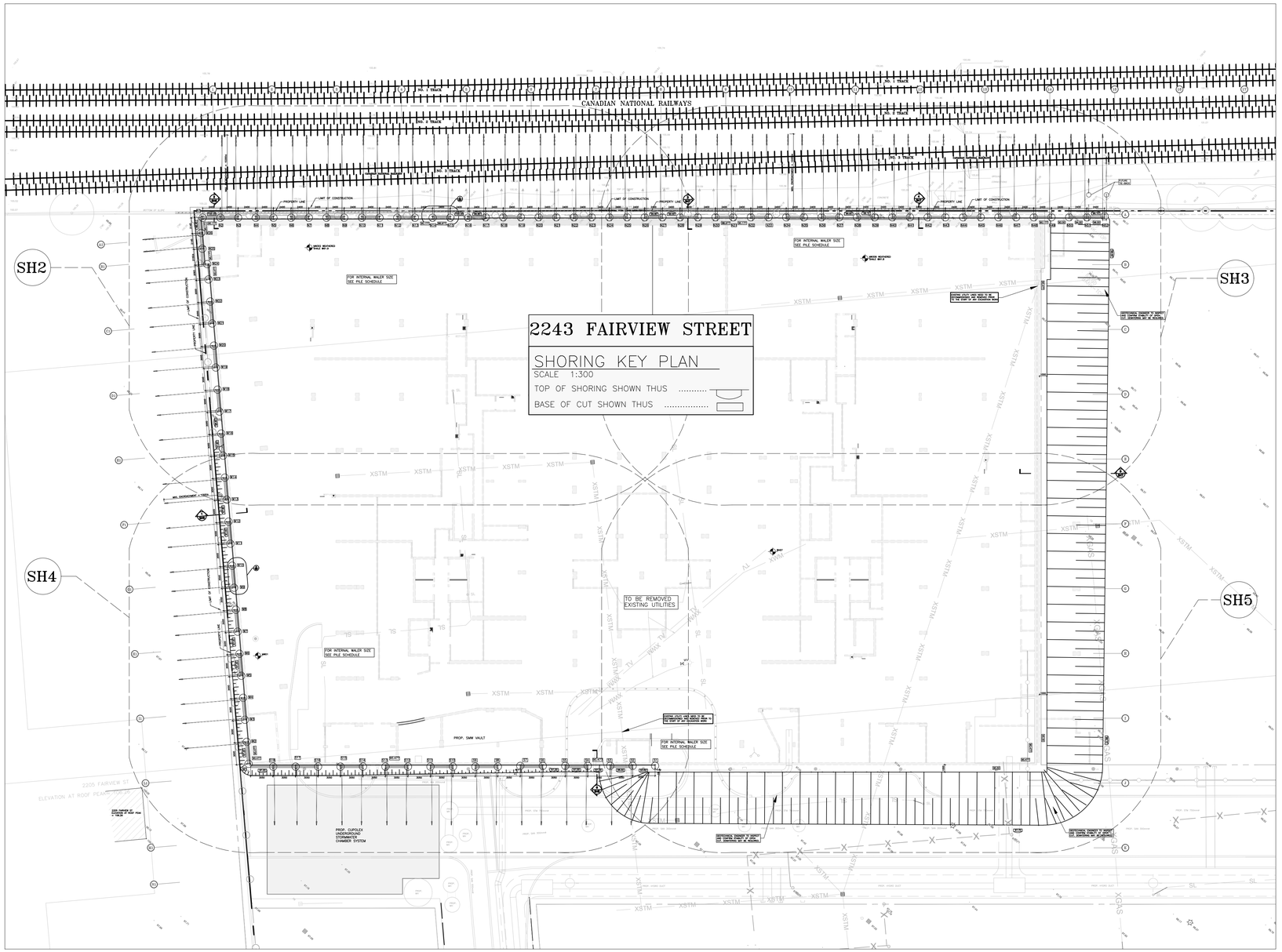
2243 FAIRVIEW STREET

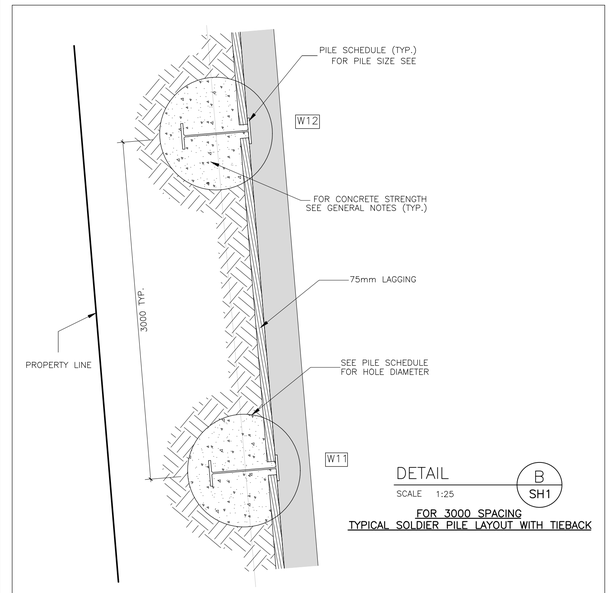
BURNINGTON ONTARIO

Drawing Title

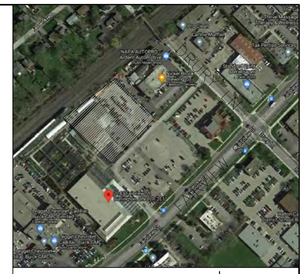
GENERAL NOTE

Drawn: W.L.	Scale AS NOTED
Checked: S.H./G.G.	Date MAY 2021
Project NO. 20130	Drawing NO. SH0 8





DETAIL B SH1
SCALE 1:25
FOR 3000 SPACING
TYPICAL SOLDIER PILE LAYOUT WITH TIEBACK



KEY PLAN

TARRA LEGENDS

179.00	TOP OF SHORING/ GRADE
160.50	BASE OF EXCAVATION/ FOUNDATION
	SHORING PILES & CAISSONS
INCLINOMETER #.	INCLINOMETER LOCATIONS
	EXISTING BUILDING
BH11	BORE HOLE LOCATIONS

No.	DESCRIPTION	Date
13		
12		
11		
10		
9		
8		
7		
6		
5		
4		
3		
2		
1		
0		
9	REVISED FOR PERMIT AND TENDER	AUG-04-2022
8	REVISED FOR TENDER (AS PER METROLINX COMMENTS)	JUN-03-2022
7	REVISED FOR PERMIT AND TENDER	MAR-16-2022
6	REISSUED FOR PERMIT AND TENDER	FEB-23-2022
5	ISSUED FOR PERMIT AND TENDER	OCT-08-2021
4	ISSUED FOR PERMIT	AUG-31-2021
3	RE-ISSUED FOR COORDINATION	JUL-23-2021
2	RE-ISSUED FOR COORDINATION	JUN-30-2021
1	ISSUED FOR COORDINATION	MAY-11-2021

REVISION

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Stamp: LICENSED PROFESSIONAL ENGINEER S. HEIDARI AUG-04-2022 PROVINCE OF ONTARIO

Client: Brookfield Properties
TORONTO ONTARIO

Consultant: tarra Engineering & Structural Consultants Inc.
Tarra Engineering & Structural Consultants Inc.
8977 Woodbine Ave.
Markham,ON L3R 0J9
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Fax: (905) 470-5126

Project: 2243 FAIRVIEW STREET
BURNINGTON ONTARIO

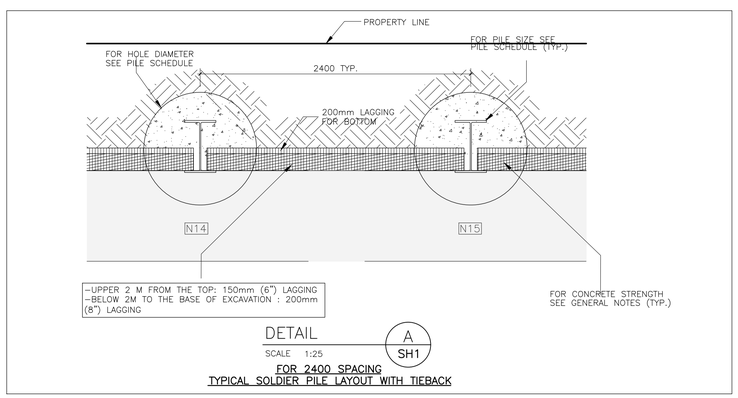
Drawing Title: KEY PLAN, PILE SCHEDULE & DETAILS

Drawn:	W.L.	Scale	AS NOTED
Checked:	S.H./G.G.	Date	MAY 2021
Project NO.	20130	Drawing NO.	SH1 (9)

ROCK PIN SCHEDULE

Pile No.	ELEVATION	FORCE (KN)	A.Z. (mm)	F.Z. (mm)	Angle (°)	ϕ (mm)
NORTH						
N14 - N31	90.8	250.00	4600.00	-	35.00	43

NOTE: 1. DEFLECTION CONTROL PINS
2. DYWIDAG THREADBAR, #14 DSI BAR OR EQUIVALENT DIAMETER = 43mm
3. ALL ROCK PINS TO BE AT SOUND ROCK ELEVATION.

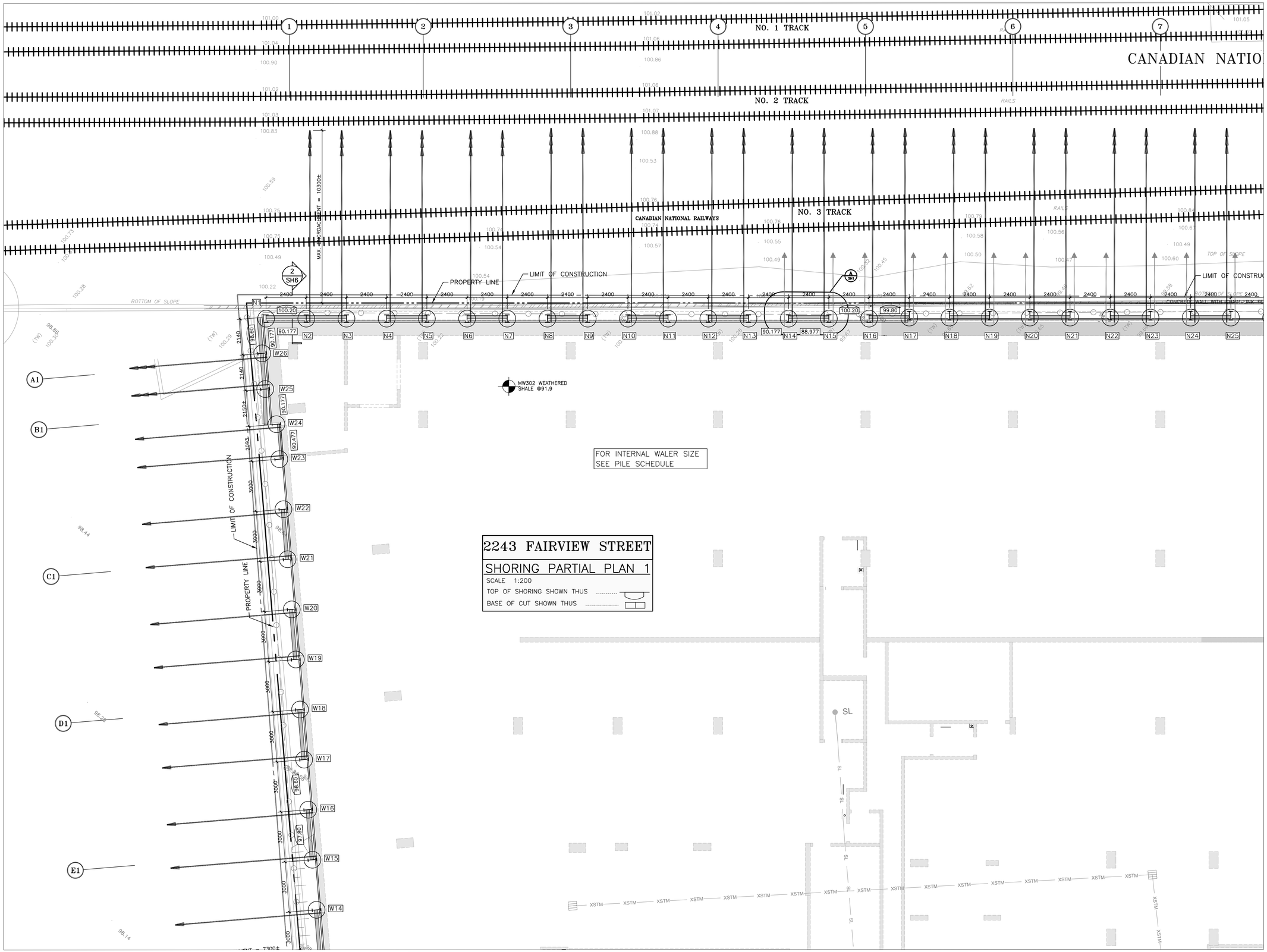


DETAIL A SH1
SCALE 1:25
FOR 2400 SPACING
TYPICAL SOLDIER PILE LAYOUT WITH TIEBACK

Pile Schedule						1st Level Tieback						2nd Level Tieback						3rd Level Tieback					
Pile No.	Pile Size	T/Pile (m)	Bottom of Pile (m)	Pile Length (m)	ϕ (mm)	INTERNAL WALER SIZE	Elev. (m)	Force (kN)	A.Z. (mm)	F.Z. (mm)	Angle (°)	INTERNAL WALER SIZE	Elev. (m)	Force (kN)	A.Z. (mm)	F.Z. (mm)	Angle (°)	INTERNAL WALER SIZE	Elev. (m)	Force (kN)	A.Z. (mm)	F.Z. (mm)	Angle (°)
NORTH																							
N1	W460X113	100.20	88.30	11.90	1000																		
N2 - N13	W460X113	100.20	88.30	11.90	1000		98.80	540	4,600	11,800	45.0		95.80	800	4,600	7,500	45.0		92.80	850	4,600	3,600	45.0
N14 - N16	W460X113	100.20	87.10	13.10	1000		98.80	540	4,600	11,800	45.0		95.80	800	4,600	7,500	45.0		92.80	850	4,600	3,600	45.0
N17 - N27	W530X109	99.80	87.10	12.70	1000		98.80	540	4,600	11,800	45.0		95.80	800	4,600	7,500	45.0		92.80	850	4,600	3,600	45.0
N28 - N31	W530X109	99.60	87.10	12.50	1000	W250X73	98.80	540	4,600	11,800	45.0	W250X101	95.80	800	4,600	7,500	45.0	W250X101	92.80	850	4,600	3,600	45.0
N32 - N38	W530X109	99.60	88.30	11.30	1000		98.80	540	4,600	11,800	45.0		95.80	800	4,600	7,500	45.0		92.80	850	4,600	3,600	45.0
N39 - N50	W530X109	99.10	88.30	10.80	1000		98.80	540	4,600	11,800	45.0		95.80	800	4,600	7,500	45.0		92.80	850	4,600	3,600	45.0
N51	W530X109	99.10	88.70	10.40	1000		98.80	540	4,600	11,800	45.0		95.80	800	4,600	7,500	45.0						
N52	W530X109	99.10	88.30	10.80	1000		98.80	540	4,600	11,800	45.0												
WEST																							
W1	W530X82	97.20	88.00	9.20	1000																		
W2 - W5	W530X82	97.20	88.00	9.20	1000		95.50	750	3,750	8,600	45.0												
W6 - W11	W530X82	97.50	88.00	9.50	1000		95.50	750	3,750	8,600	45.0												
W12 - W15	W530X82	97.80	88.00	9.80	1000	W250X89	95.50	750	3,750	8,600	45.0	W250X89						W250X89					
W16 - W23	W530X82	98.60	88.00	10.60	1000		95.50	750	3,750	8,600	45.0												
W24	W530X82	98.60	88.70	9.90	1000		95.50	750	3,750	8,600	45.0												
W25 - W26	W530X82	98.60	88.70	9.90	1000		95.50	750	3,750	8,600	45.0		95.80	750	3,750	7,500	45.0		92.80	750	3,750	3,600	45.0
SOUTH																							
S1	W530X74	93.00	88.00	5.00	1000																		
S2	W530X74	96.00	88.00	8.00	1000	W250X73	95.50	600	3,000	8,600	45.0												
S3-S4	W530X74	97.00	88.00	9.00	1000		95.50	600	3,000	8,600	45.0												
S5-S18	W530X74	97.20	88.00	9.20	1000		95.50	800	4,000	8,600	45.0												

NOTE: 1. ALL PILES ARE 350W GRADE NEW STEEL
2. ALL TIEBACKS ARE 115mmø ROCK ANCHORS WITH 200kN/m CAPACITY (TO BE VERIFIED BY FIELD TEST)

REGROUTABLE TIEBACK BOND CAPACITY IS AT BEST AN ESTIMATION OF TIEBACK INSTALLED UNDER CONTROLLED CONDITION AND GROUND CONDITION. THE TIEBACK BOND CAPACITY MUST BE VERIFIED BY FIELD TEST. TARRA ENGINEERING & STRUCTURAL CONSULTANTS INC. WILL NOT ACCEPT ANY RESPONSIBILITY IF THE ESTIMATED RESULT COULD NOT BE CONFIRMED.



2243 FAIRVIEW STREET

SHORING PARTIAL PLAN 1

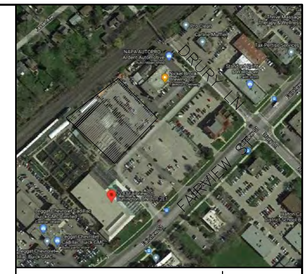
SCALE 1:200

TOP OF SHORING SHOWN THUS .....

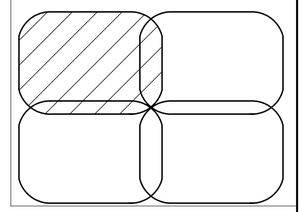
BASE OF CUT SHOWN THUS .....

FOR CONTINUATION, SEE DRAWING SH2

FOR CONTINUATION, SEE DRAWING SH3



KEY PLAN



No.	DESCRIPTION	Date
9	REVISED FOR PERMIT AND TENDER	AUG-04-2022
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1	ISSUED FOR COORDINATION	MAY-11-2021

REVISION

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Stamp

LICENSED PROFESSIONAL ENGINEER S. HEIDARI AUG-04-2022 PROVINCE OF ONTARIO

Client

Brookfield Properties

TORONTO ONTARIO

Consultant

tarra Engineering & Structural Consultants Inc.

Tarra Engineering & Structural Consultants Inc.
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Markham,ON L3R 0J9
Tel: (905) 470-6952
Fax: (905) 470-5126

Project

2243 FAIRVIEW STREET

BURNINGTON ONTARIO

Drawing Title

SHORING PARTIAL PLAN 1

Drawn:	W.L.	Scale	AS NOTED
Checked:	S.H./G.G.	Date	MAY 2021
Project NO.	20130	Drawing NO.	SH2 9

FOR CONTINUATION, SEE DRAWING SH1

NATIONAL RAILWAYS

NO. 1 TRACK

NO. 2 TRACK

NO. 3 TRACK

CANADIAN NATIONAL RAILWAYS

8 9 10 11 12 13 14 15

MAX. ENCROACHMENT 10.0m

T OF CONSTRUCTION

PROPERTY LINE

3 SH7

4 SH7

LIMIT OF CONSTRUCTION

FUTURE TIE-BACK

CONCRETE WALL

GROUND CONNECTIONS

N25 N26 N27 N28 N29 N30 N31 N32 N33 N34 N35 N36 N37 N38 N39 N40 N41 N42 N43 N44 N45 N46 N47 N48 N49 N50 N51 N52

99.80 99.60 99.10 88.977 90.177 92.00 94.00 96.00

A B C D E

FOR INTERNAL WALER SIZE SEE PILE SCHEDULE

MW306 WEATHERED SHALE @91.8

EXISTING UTILITY LINES NEED TO BE DECOMMISSIONED AND REMOVED PRIOR TO THE START OF ANY EXCAVATION WORK

GEOTECHNICAL ENGINEER TO INSPECT AND CONFIRM STABILITY OF OPEN CUT. DEWATERING MAY BE REQUIRED.

5 SH7

SL

XSTM

XLSX

2243 FAIRVIEW STREET

SHORING PARTIAL PLAN 2

SCALE 1:200

TOP OF SHORING SHOWN THUS .....

BASE OF CUT SHOWN THUS .....

FOR CONTINUATION, SEE DRAWING SH4

KEY PLAN

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Client: Brookfield Properties

TORONTO ONTARIO

Consultant: tarra Engineering & Structural Consultants Inc.

Tarra Engineering & Structural Consultants Inc.
8977 Woodbine Ave.
Markham,ON L3R 0J9
Tel: (905) 470-6952
Fax: (905) 470-5126

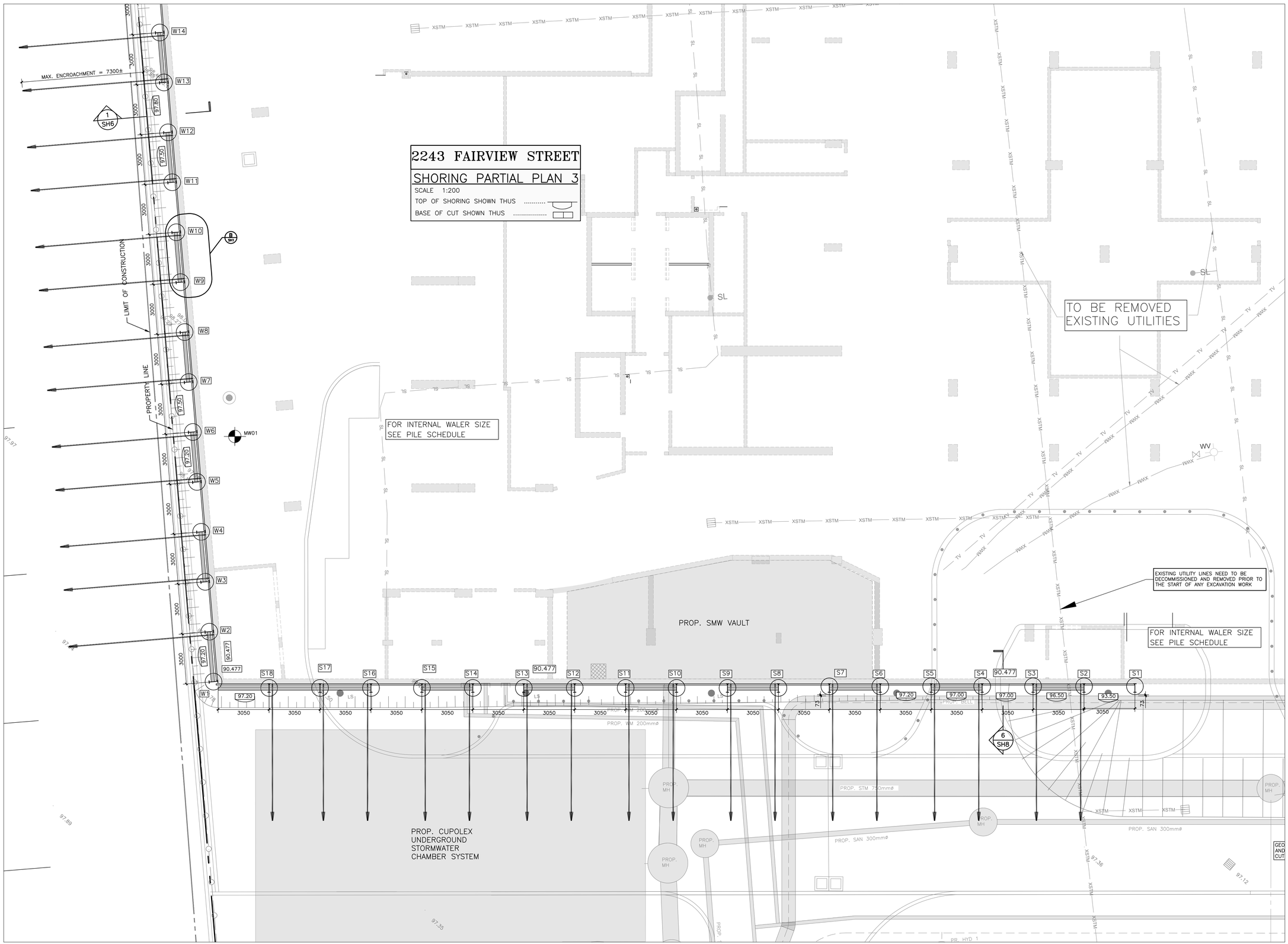
Project: 2243 FAIRVIEW STREET

BURNINGTON ONTARIO

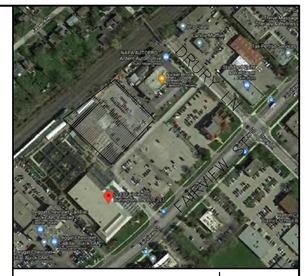
Drawing Title: SHORING PARTIAL PLAN2

Drawn: W.L.	Scale: AS NOTED
Checked: S.H./G.G.	Date: MAY 2021
Project NO.: 20130	Drawing NO.: SH3 8

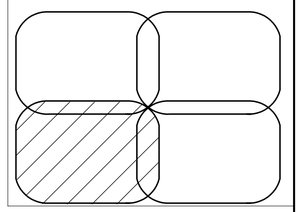
FOR CONTINUATION, SEE DRAWING SH1



FOR CONTINUATION, SEE DRAWING SH4



KEY PLAN



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REVISION

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LICENSED PROFESSIONAL ENGINEER
S. HEIDARI
AUG-04-2022
PROVINCE OF ONTARIO

Client

Brookfield Properties

TORONTO ONTARIO

Consultant

tarra Engineering & Structural Consultants Inc.
Tarra Engineering & Structural Consultants Inc.
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Project

2243 FAIRVIEW STREET

BURNINGTON ONTARIO

Drawing Title

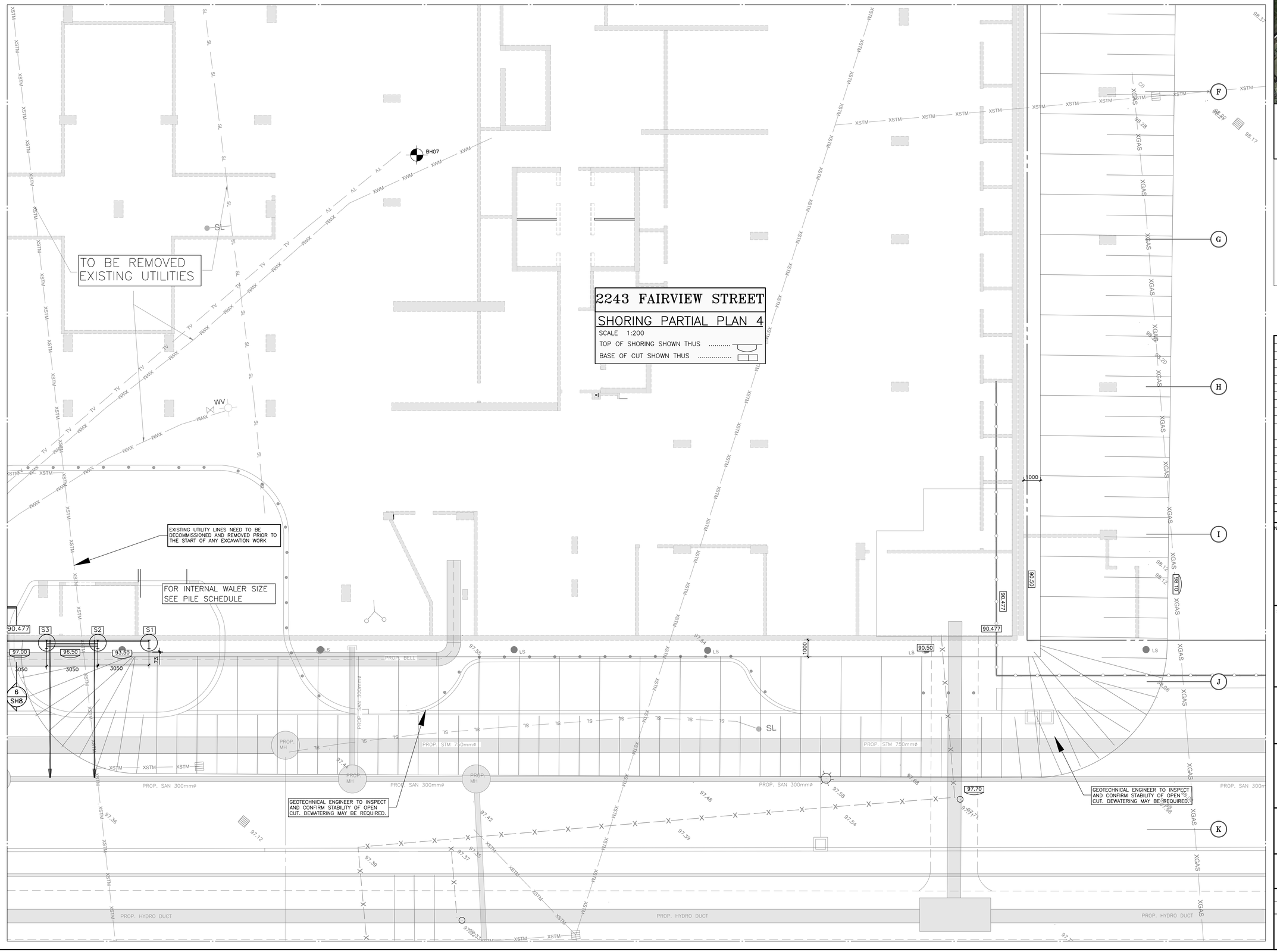
SHORING PARTIAL PLAN 3

Drawn:	W.L.	Scale	AS NOTED
Checked:	S.H./G.G.	Date	MAY 2021
Project NO.	20130	Drawing NO.	SH4

8

FOR CONTINUATION, SEE DRAWING SH4

FOR CONTINUATION, SEE DRAWING SH3



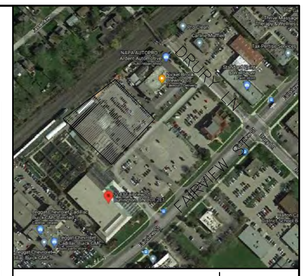
2243 FAIRVIEW STREET

SHORING PARTIAL PLAN 4

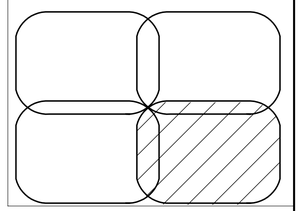
SCALE 1:200

TOP OF SHORING SHOWN THUS .....

BASE OF CUT SHOWN THUS .....



KEY PLAN



No.	DESCRIPTION	Date
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Stamp

LICENSED PROFESSIONAL ENGINEER
S. HEIDARI
AUG-04-2022
PROVINCE OF ONTARIO

Client

Brookfield Properties

TORONTO ONTARIO

Consultant

Tarra Engineering & Structural Consultants Inc.
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Fax: (905) 470-5126

Project

2243 FAIRVIEW STREET

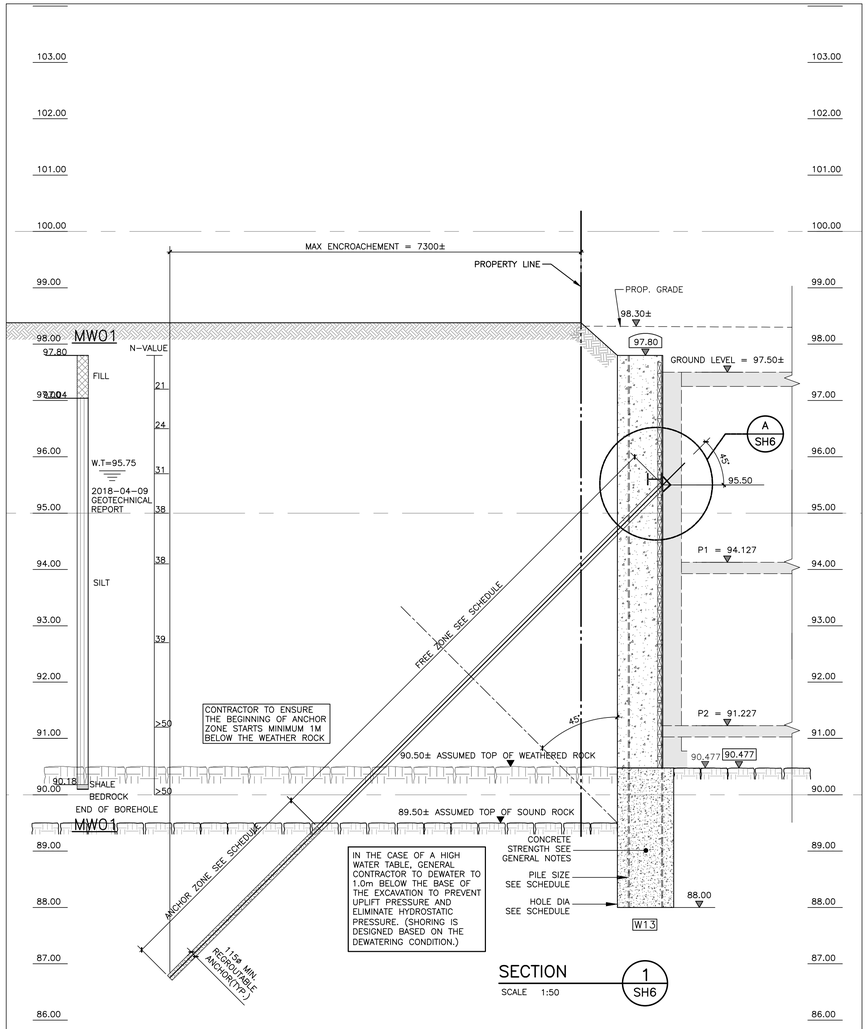
BURNINGTON ONTARIO

Drawing Title

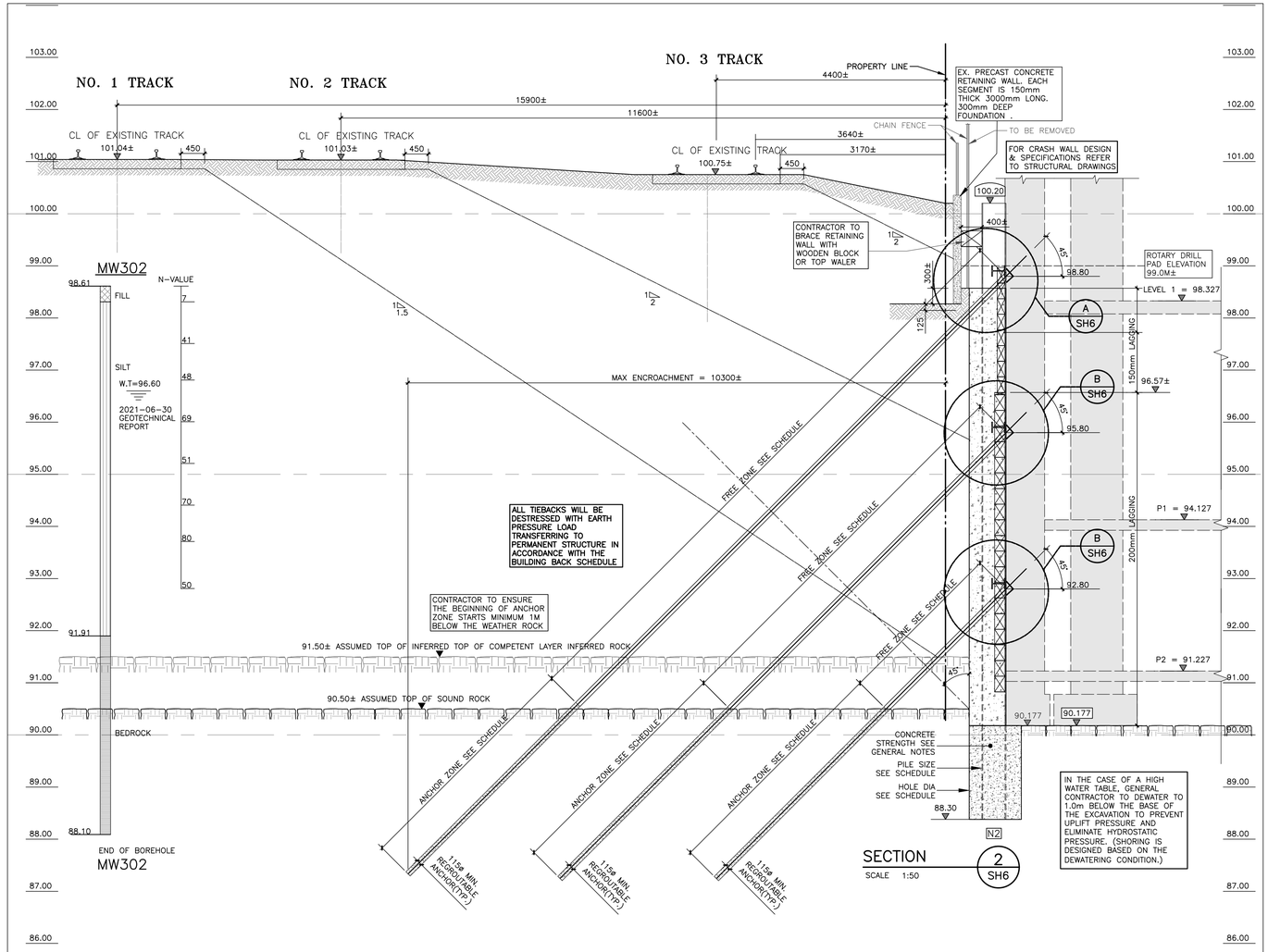
SHORING PARTIAL PLAN 4

Drawn:	W.L.	Scale	AS NOTED
Checked:	S.H./G.G.	Date	MAY 2021
Project NO.	20130	Drawing NO.	SH5

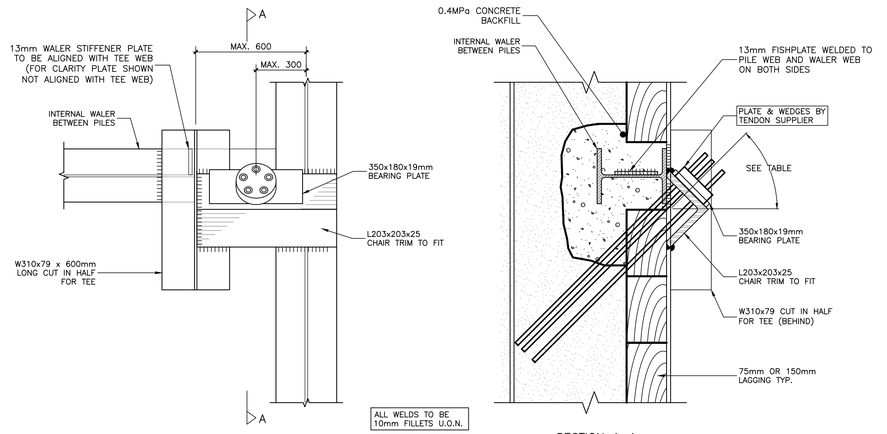
9



SECTION 1 / SH6
SCALE 1:50



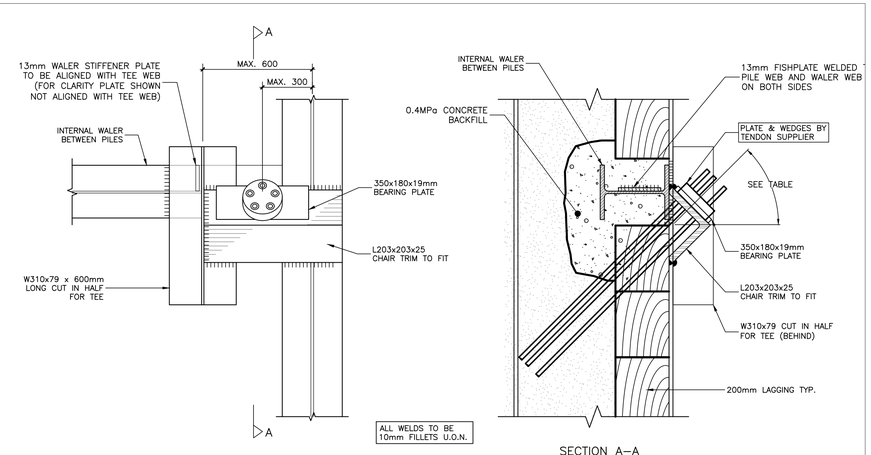
SECTION 2 / SH6
SCALE 1:50



SECTION A–A

TYPICAL TIEBACK CONNECTION DETAIL FOR S.P.L.
FOR LOAD LESS THAN OR EQUAL TO 750kN

DETAIL/SECTION A / SH6
SCALE N.T.S.



SECTION A–A

TYPICAL TIEBACK CONNECTION DETAIL FOR S.P.L.
FOR LOAD BETWEEN 760kN AND 850kN

DETAIL/SECTION B / SH6
SCALE N.T.S.

No.	DESCRIPTION	Date
9		
8		
7		
6		
5		
4		
3		
2		
1		
10		
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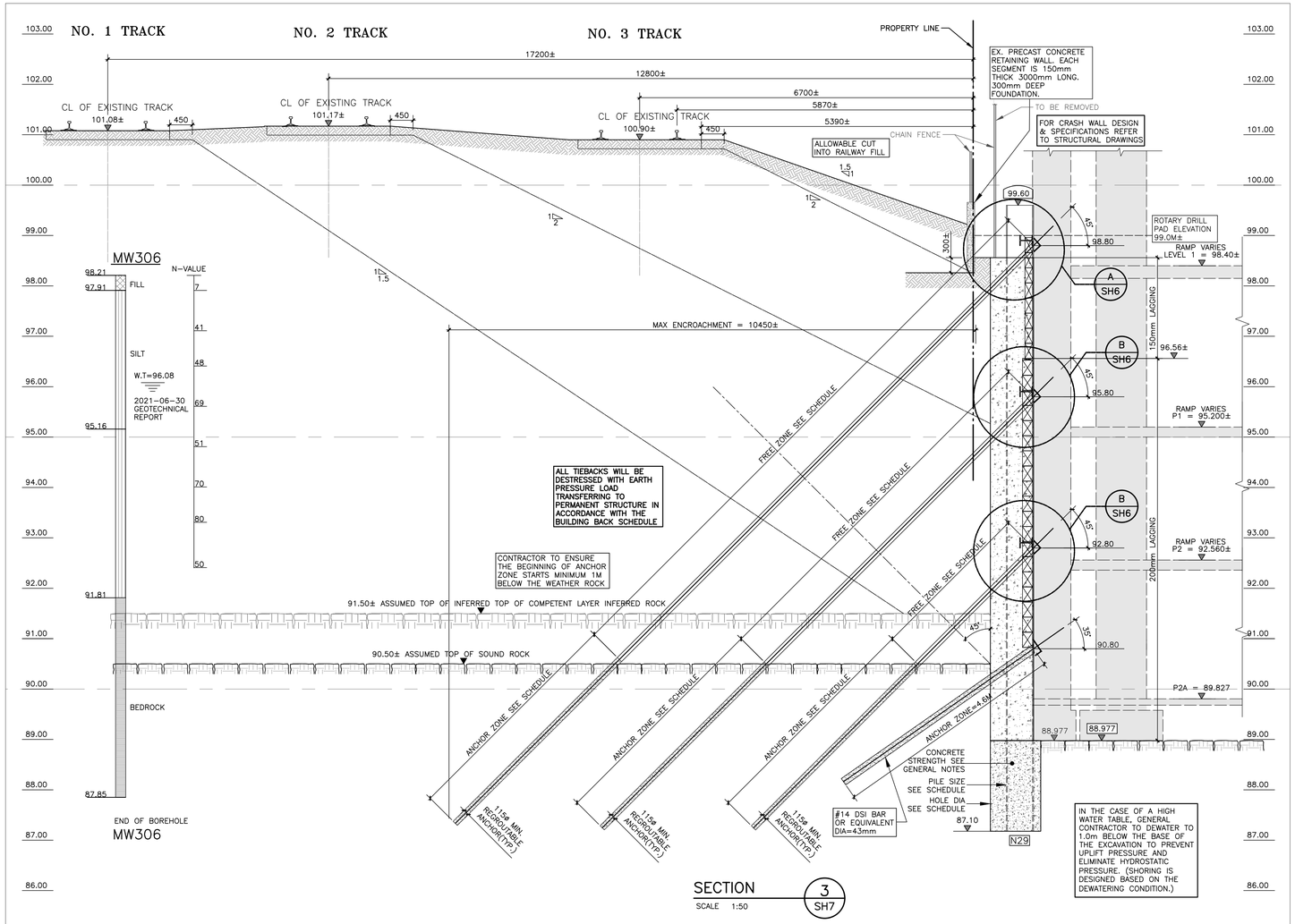
2243 FAIRVIEW STREET

BURLINGTON ONTARIO

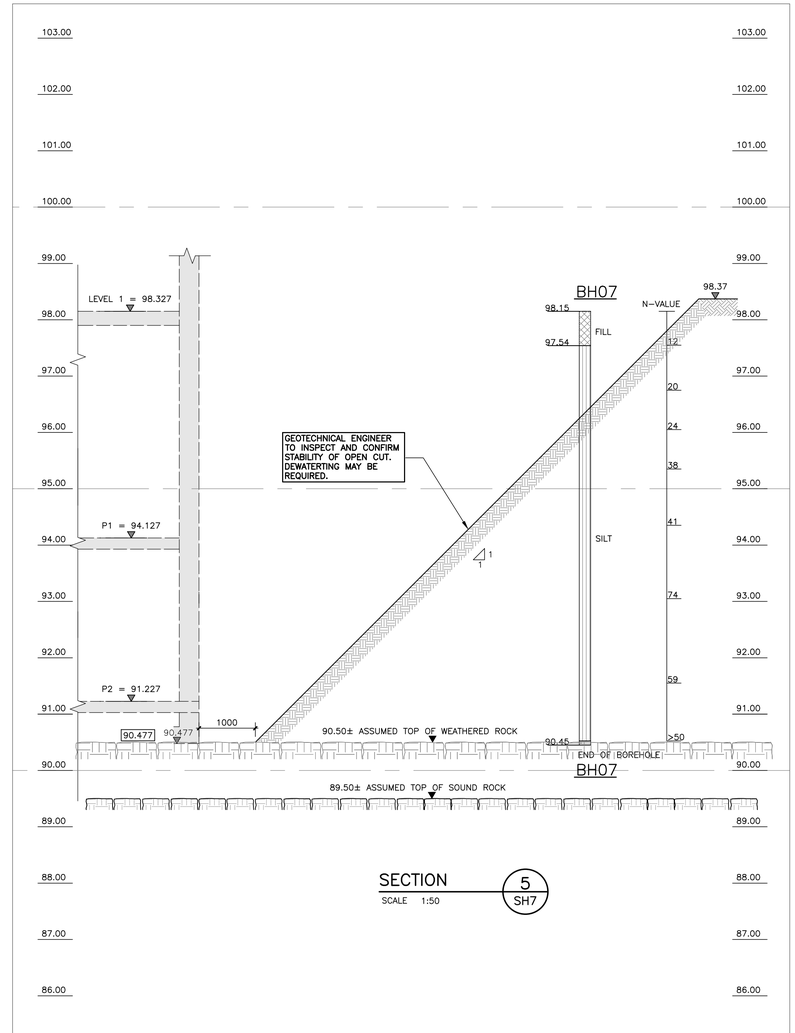
Drawing Title

SHORING SECTIONS AND DETAILS

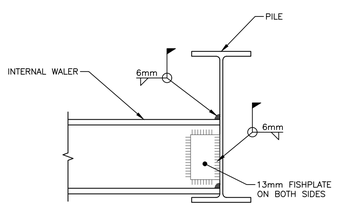
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Checked:	S.H./G.G.	Date	MAY 2021
Project NO.	20130	Drawing NO.	SH6 9



SECTION 3 / SH7
SCALE 1:50



SECTION 5 / SH7
SCALE 1:50



TYPICAL WALER TO PILE CONNECTION DETAIL

DETAIL/SECTION C / SH7
SCALE N.T.S.

No.	DESCRIPTION	Date
19		
18		
17		
16		
15		
14		
13		
12		
11		
10		
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AUG.-04-2022
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Client

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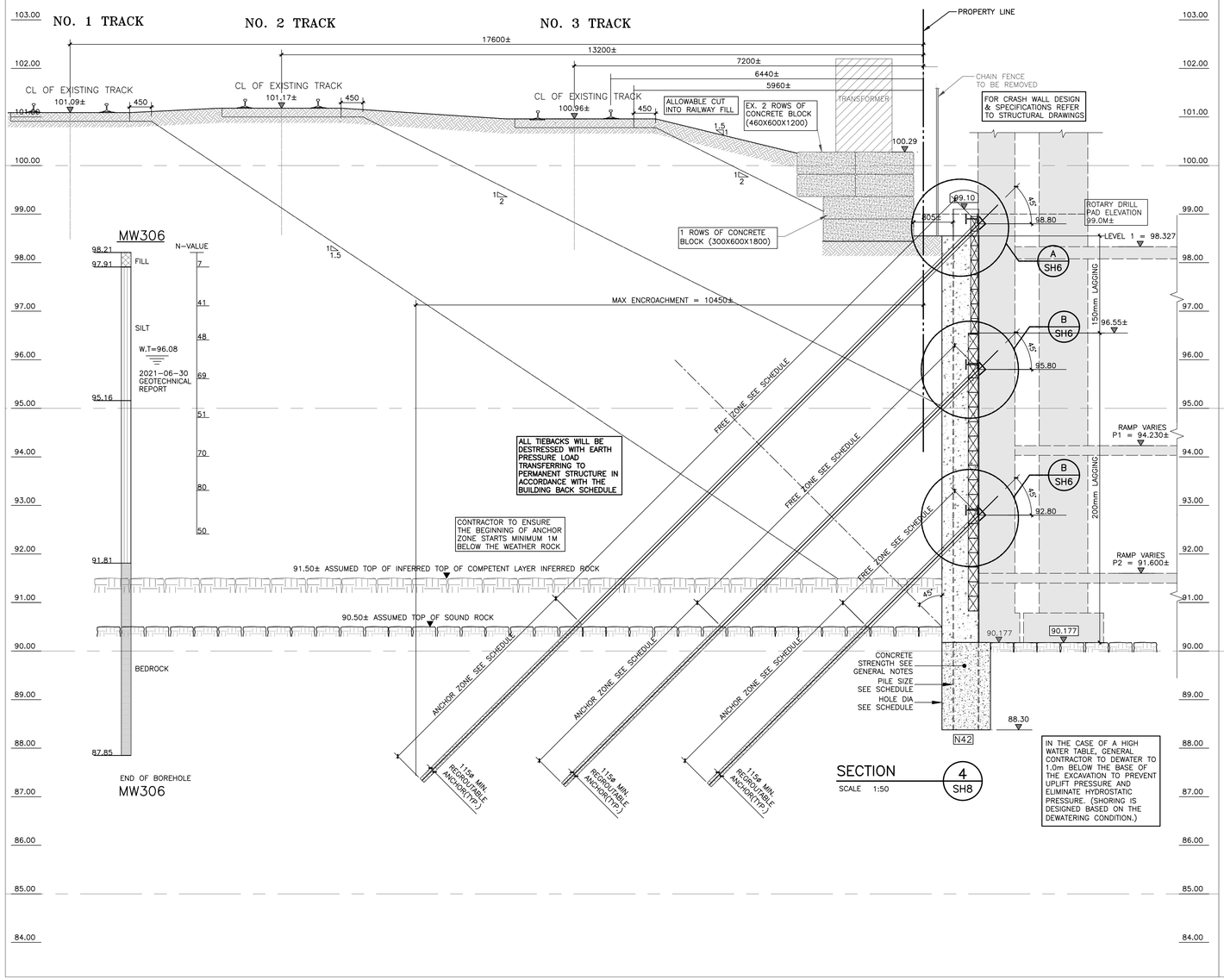
2243 FAIRVIEW STREET

BURLINGTON ONTARIO

Drawing Title

SHORING SECTIONS & DETAIL

Drawn: W.L.	Scale: AS NOTED
Checked: S.H./G.G.	Date: MAY 2021
Project NO.: 20130	Drawing NO.: SH7 9



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Project

2243 FAIRVIEW STREET

BURLINGTON ONTARIO

Drawing Title

SHORING SECTIONS

Drawn:	W.L.	Scale	AS NOTED
Checked:	S.H./G.G.	Date	MAY 2021
Project NO.	20130	Drawing NO.	SH8 9