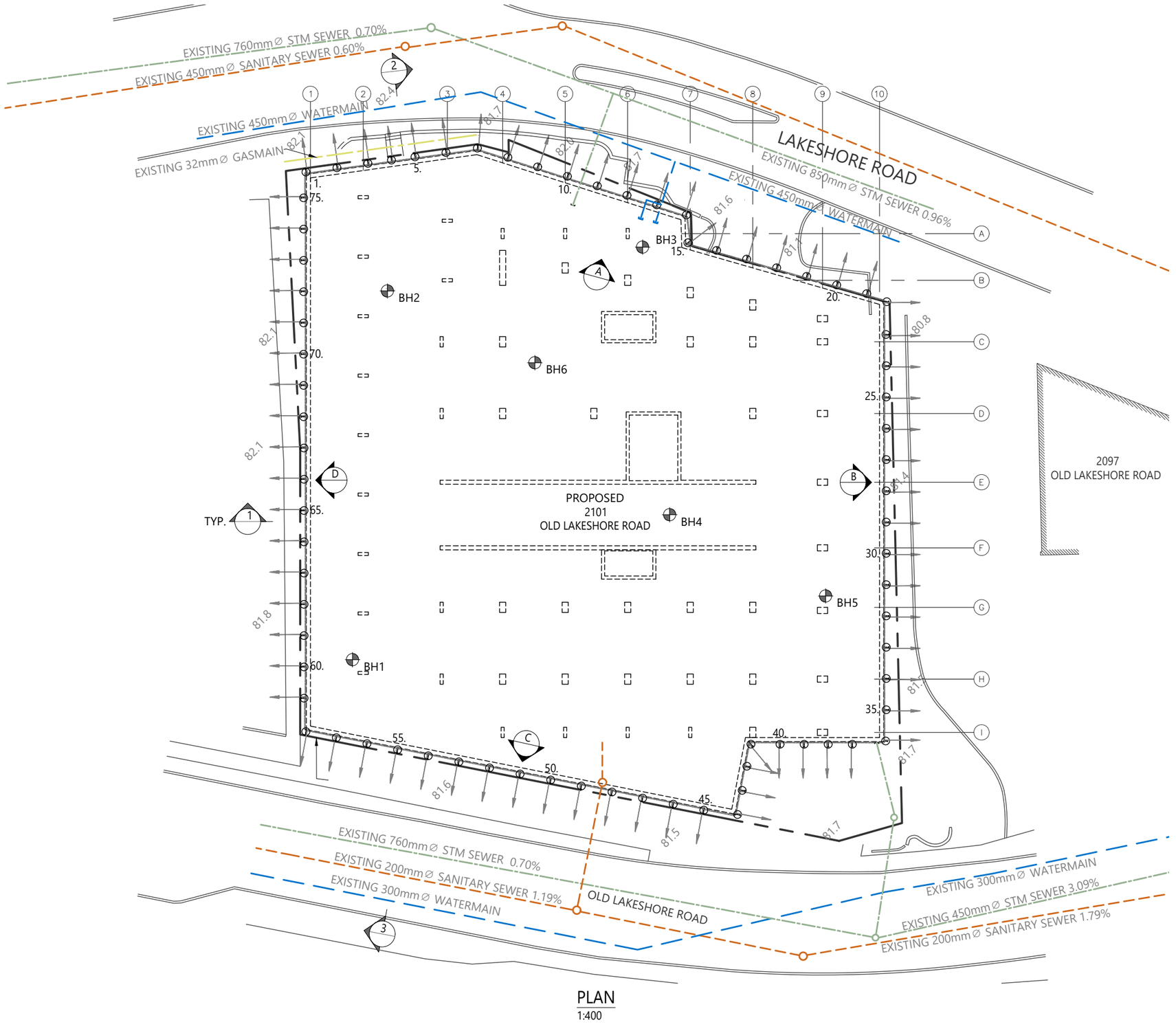

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NO	DATE	REMARKS
1	12 SEP 2019	RE-ISSUED FOR PERMIT
	5 JUL 2019	ISSUED FOR PERMIT

REVISIONS

turnkey SITE SOLUTIONS
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Client

STUDIO JCI
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Sheet Title

TEMPORARY EXCAVATION SHORING PLAN

Project Title

2101 OLD LAKESHORE ROAD,
TORONTO, ON

Seal

LICENSED PROFESSIONAL ENGINEER
34891507
T.H. O'ROURKE
12-SEP-19
PROVINCE OF ONTARIO

North

CONSTRUCTION NORTH

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Scale: 1:400	Review: TOR
Revision: 1	Drawn: D.H.
Project: T19-020	Sheet: SH1

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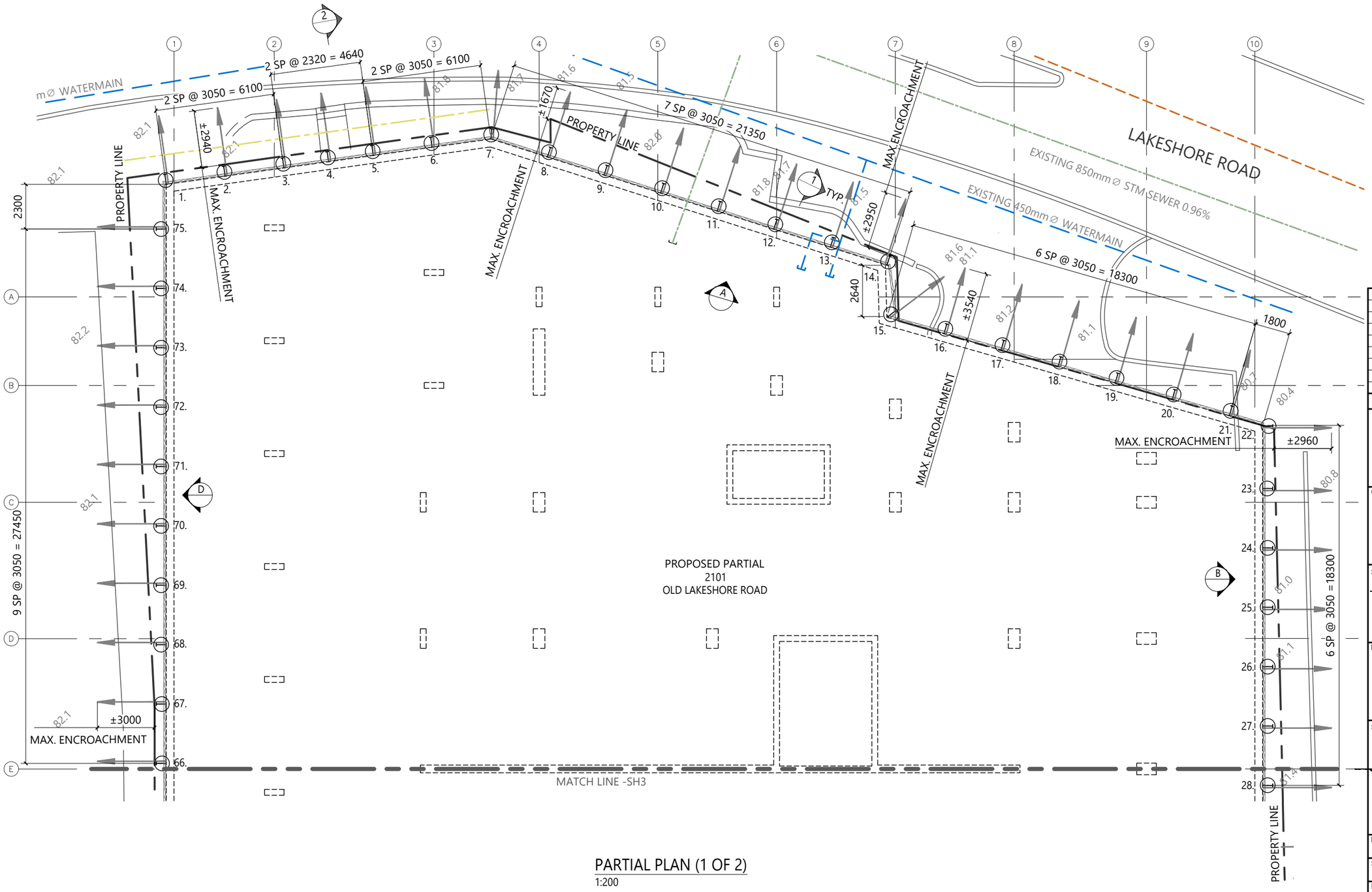

PARTIAL PLAN (1 OF 2)

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NO	DATE	REMARKS
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Sheet Title

TEMPORARY EXCAVATION SHORING PARTIAL PLAN

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2101 OLD LAKESHORE ROAD,
TORONTO, ON

Seal

LICENSED PROFESSIONAL ENGINEER
34891507
T.H. O'ROURKE
12-SEP-19
PROVINCE OF ONTARIO

North

CONSTRUCTION NORTH

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Revision: 1	Drawn: D.H.
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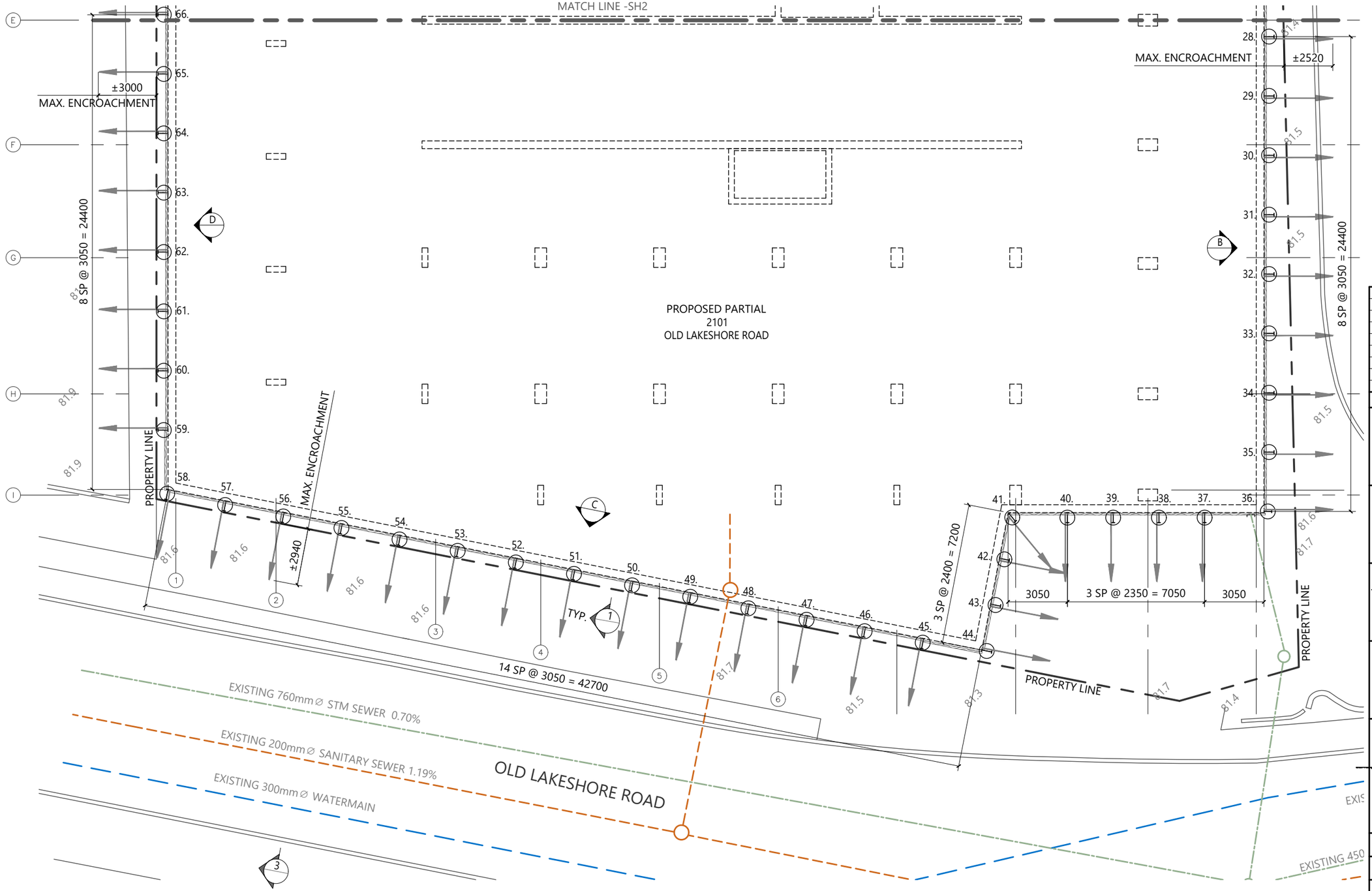

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Sheet Title

TEMPORARY EXCAVATION SHORING PARTIAL PLAN

Project Title

2101 OLD LAKESHORE ROAD,
TORONTO, ON

Seal

LICENSED PROFESSIONAL ENGINEER
34891507
T.H. O'ROURKE
12-SEP-19
PROVINCE OF ONTARIO

North

CONSTRUCTION NORTH

Plot: 9/12/2019 5:07 PM	Design: TOR
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Revision: 1	Drawn: D.H.
Project: T19-020	Sheet: SH3

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A.1 REFERENCES, CODES & STANDARDS

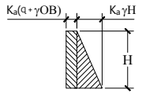
1. Drawings received via email:
   1.1. Survey Drawing ref. No:17-24-12787-00 prepared by Aksan Piller Corporation LTD (OLS) dated MAY 7 , 2019
   1.2. Drawings A3.00, A6.00 (2 sheets) prepared by Studio JCI dated JUNE 3 , 2019
   1.3. Updated plans and utility information as per email received SEP 11, 2019 from Core Development Group.
2. Preliminary Geotechnical Investigation Project no.FE-P17-8421 prepared by Fisher Environmental Ltd. dated November 1 , 2017
3. CSA G40.20-04 General Requirements for Rolled or Welded Structural Quality Steel.
4. CSA G40.21-04 Structural Quality Steel.
5. CSA A23.1-09/A23.2-09 Concrete Materials and Methods and Standard Practices for Concrete.
6. CSA W59-03 Welded Steel Construction (Metal Arc Welding).
7. CSA W47.1-09 Certification of Companies for Fusion Welding of Steel.
8. Segments of the National Building Code of Canada (NBC).
9. Segments of the Ontario Building Code (OBC).
10. Segments of the Canadian Highway Bridge Design Code CAN/CSA - S6/S6.1-00 (CHBDC).
11. PTI DC35.1-04 Post-Tensioning Institute (PTI) Recommendations for Prestressed Rock and Soil Anchors.

A.2 DESIGN ASSUMPTIONS

1. The current design scheme illustrates a temporary shoring system capable of supporting between 2.9m and 4.2m of overburden material.
2. The current design is based upon the assumption that the existing structure foundation configurations, elevations, locations and loads indicated on the shoring drawings are correct. Should any or all of these assumptions change, re-design of the shoring may be required. See General Notes.
3. All excavation cut slopes are to be verified for project suitability and stability by a geotechnical engineer engaged by the Owner or Owner's representative.

B. DESIGN PARAMETERS

1. Triangular earth pressure distribution
   k_a - 0.3, where there is no building influence
   k_a - 0.4, where there is building influence
   k_p - 3.6
   γ - 21 kN/m^3 for overburden material
   OB - overburden depth
2. Soil bearing capacity at base of excavation - N/A
3. The Shoring Contractor achieving a minimum tieback working adhesion of 100 kN/m over the tieback bond length. This shall be confirmed by testing. Perform four 200% tests on this project.
4. No hydrostatic pressure on the shoring wall.
5. Triangular surcharge pressure distribution (for single level tieback and cantilever systems):



   5.1. 12 kPa - where vehicular traffic is possible
   5.2. 4.8 kPa - where vehicular traffic is not possible
6. Abnormal surcharge loads applied on the shoring, other than indicated on these drawings, are subject to review by the shoring engineer prior to application.
7. Design complies with the requirement of the OBC.

C. MATERIALS

1. Structural steel sections grade 350W new or sound used material conforming to CSA G40.20-04 and G40.21-04.
2. Structural steel plate grade 300W new or sound used material conforming to CSA G40.20-04 and G40.21-04.
3. Alternative grades or sections of equivalent strength may be substituted subject to written approval from the Shoring Engineer.
4. Soldier pile and lagging concrete :
   - Braced piles toes 20 MPa / above toes 0.4 MPa
5. Lagging to be construction grade timber of full thickness indicated.
6. All welding to comply with CSA W59-03 and be carried out by competent CWB certified welders in accordance with CSA W47.1-09 Division 2.
7. All welds shown or implied 12mm fillet all around, continuous and both sides u.n.o.

D. GENERAL NOTES - GENERAL CONTRACTOR / PROJECT MANAGER / OWNER

1. General Contractor to verify the configuration and elevation of all existing and adjacent structure foundations prior to execution of pile installation. Report same, prior to start of shoring construction, to the Shoring Engineer.
2. Secure all municipal permits before shoring is installed. Secure encroachment agreements with neighboring Owners where shoring components will be installed outside of property limits.
3. Reduce grade to top of shoring. Provide and maintain a level stable working platform for shoring construction equipment and workers.
4. Excavate in advance to remove any underground obstructions, backfill and compact with on site materials or controlled engineered backfill.
5. Locate and identify all existing underground and/or overhead services and structures in the proximity of the shoring system, protect and/or relocate as necessary. Do not drill before all services and structures have been located.
6. Advise Shoring Engineer of any potential interference with any elements of the excavation system and of any discrepancies from information presented on the shoring drawings before shoring construction begins.
7. Layout pile locations and check all dimensions. Report any discrepancies to the Shoring Engineer. Do not use the shoring drawings for setting out. Refer to project legal survey and architectural drawings for setting out.
8. Dewater in advance as necessary to at least 1.0m below the lowest excavation elevation. All dewatering systems shall be designed by a Professional Engineer having demonstrated experience in the design of dewatering systems. Dewatering systems must assure that the stability and security of the excavation shoring and structures in the vicinity of the shoring works are maintained and not compromised.

E. PROCEDURE

1. Drill holes for piles utilizing temporary liners, mud drilling and/or other methods as necessary to prevent groundwater inflow or loss of soil into the pile holes.
2. Provide pile holes large enough that piles may be set plumb despite misalignment of holes.
3. Set piles, wedge and fill holes with concrete specified. Withdraw liners if used.
4. Excavate in stages to suit shoring work.
5. Excavation contractor to excavate soil neat to front face (or rear face if applicable) of piles for lagging installation.
6. Install lagging in maximum 1500 lifts. Should caving or ravelling occur, reduce lift height. Fill all voids behind lagging with granular on site material or imported granular fill rammed in place. Leave no excavation without lagging overnight.
7. In wet ground assure that groundwater may migrate from behind lagging boards without loss of soil fines. Install filter material behind lagging to prevent loss of fines as required.
8. Do not excavate more than 500mm below brace elevations until bracing is installed and stressed.
9. The design of tiebacks (where present) is based on:
   9.1. Selection of the tieback system, diameter, grouting pressure and number of grout cycles required to achieve the required working adhesion in Section B are to be the discretion of the Shoring Contractor.
   9.2. Anchor alternatives are subject to review by the Shoring Engineer. Anchor capacity to be confirmed by performance test tiebacks as noted on drawing.
   9.3. Shoring Contractor to provide strand anchors and required pile reinforcement of adequate capacity for all 200% performance test. Provide one test per side of the project unless noted otherwise. Test anchors must withstand 200% of the working load with less than 2mm creep over 10 minutes.
   9.4. Shoring Contractor to provide calibrated hydraulic test jacks and all assistance required by the Shoring Engineer to carry out all tieback testing.
   9.5. Tiebacks are to be installed without delay to minimize ground movements. All tieback free lengths are to be completely filled with bentonite-cement fill.
   9.6. All production anchors are to be tested to 133% of working load. Creep must be less than 2mm when maintained for 10 minutes. Lock production anchors off at 50% of working load.
10. Braces and/or rakers are to be installed without delay to minimize ground movements.

F. FIELD REVIEW BY SHORING ENGINEER

10. Field review and monitoring, as noted below, are integral to the shoring design process. They are required elements of the shoring design presented within these drawings and are necessary to ensure that the shoring system is performing in accordance with the shoring design assumptions.
11. In accordance with the Ontario Building Code the Shoring Engineer (or designate approved by same) shall provide field review to verify that the shoring works are constructed and are performing in general conformance with the design drawings. Shoring Engineer shall be informed in advance of shoring construction start. Field review must be requested in writing by the Shoring Contractor. All field review is to be reported upon in writing after each site visit.

G. TESTING AND MONITORING BY GENERAL CONTRACTOR / PROJECT MANAGER / OWNER

1. All testing, monitoring and surveys are to be paid for by the Owner or Owner's representative.
2. Performance testing and proof testing of all anchors and/or rakers are to be witnessed and reported upon by a third party testing laboratory engaged by the Owner.
3. Carry out a pre-construction condition survey of all neighboring properties within the influence of the shored excavations before any construction begins. Provide a copy of the pre-construction condition survey to the Shoring Engineer before construction begins.
4. Precision level surveying of adjacent structures is to be carried out on a weekly basis until new construction reaches street elevation. Increase monitoring frequency as directed by the Shoring Engineer.
5. Monitor all piles for horizontal and vertical movements at their tops and at all anchor points at least weekly. Increase monitoring frequency as directed by the Shoring Engineer.
6. Install inclinometers at locations indicated on the shoring drawings and provide weekly readings until new construction reaches street elevation. Owner to provide safe access for weekly reading of inclinometers.
7. All inclinometers and their installation to be supplied by others. Shoring contractor shall coordinate and aid with the installation of inclinometers during pile installation.
8. All monitoring reports to be distributed within 2 working days to the Shoring Engineer. All tieback testing reports are to be provided within 2 working days of completion to the Shoring Engineer. If monitoring or testing results indicate a problematic condition, the Shoring Engineer shall be contacted immediately without delay.

H. PROTECTION BY GENERAL CONTRACTOR

1. Protect all excavations, shoring and surfaces around the perimeter of the shoring from the actions of all weather.

I. HEALTH AND SAFETY

1. All work is to be carried out in accordance with the Ontario Health and Safety Act, latest revision.

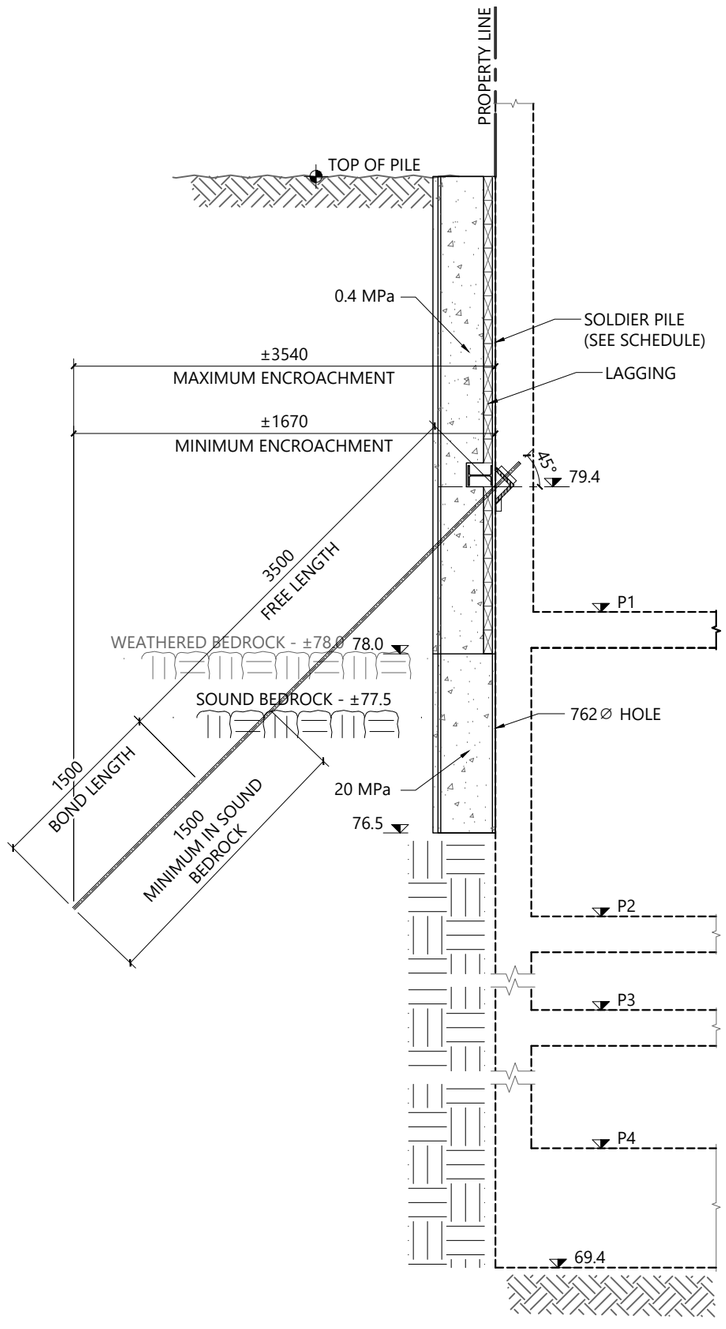
J. These drawings have been prepared by Turnkey Site Solutions Ltd. solely for the use by the Property Owner and/or the Property Owner's Representative in securing a permit for temporary excavation shoring construction. These drawings are not to be used for any other purpose. These drawings have been prepared under the joint understanding that Turnkey Site Solutions Ltd. and the Property Owner have and/or will have a contractual agreement for construction of the temporary excavation shoring works for this project. Use of these drawings by the Property Owner and/or Owner's Representative in securing a permit for temporary excavation shoring construction constitutes acceptance of the aforementioned terms. These drawings and the concepts presented within them are and remain the sole property of Turnkey Site Solutions Ltd.

K. Service locations indicated on shoring drawings are provided for coordination purposes only. Other services not indicated on this drawing may exist. The Owner / General Contractor / Project Manager shall ensure that all the underground and overhead services be identified, protected and/or relocated, prior to proceeding with any drilling or excavation work. Do not excavate or drill before all services have been located.

L. All dimensions are in millimeters unless stated otherwise. Prints shall not be scaled. Unsigned drawings are not for construction, shall be construed as incomplete, and are for information purposes only. Solely ink signed original drawings or electronically encrypted digitally signed constitute a true original drawing.

LEGEND

- APPROXIMATE BOREHOLE LOCATION
- APPROXIMATE TEST PIT LOCATION
- BUILDING MONITORING TARGET
- INCLINOMETER



1 SECTION
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Sheet Title

TEMPORARY EXCAVATION SHORING NOTES, SECTION

Project Title

2101 OLD LAKESHORE ROAD,

TORONTO, ON

Seal

LICENSED PROFESSIONAL ENGINEER
34891507
T.H. O'ROURKE
12-SEP-19
PROVINCE OF ONTARIO

North

Plot: 9/12/2019 5:07 PM	Design: TOR
Scale: 1:50	Review: TOR
Revision: 1	Drawn: D.H.
Project: T19-020	Sheet: SH6

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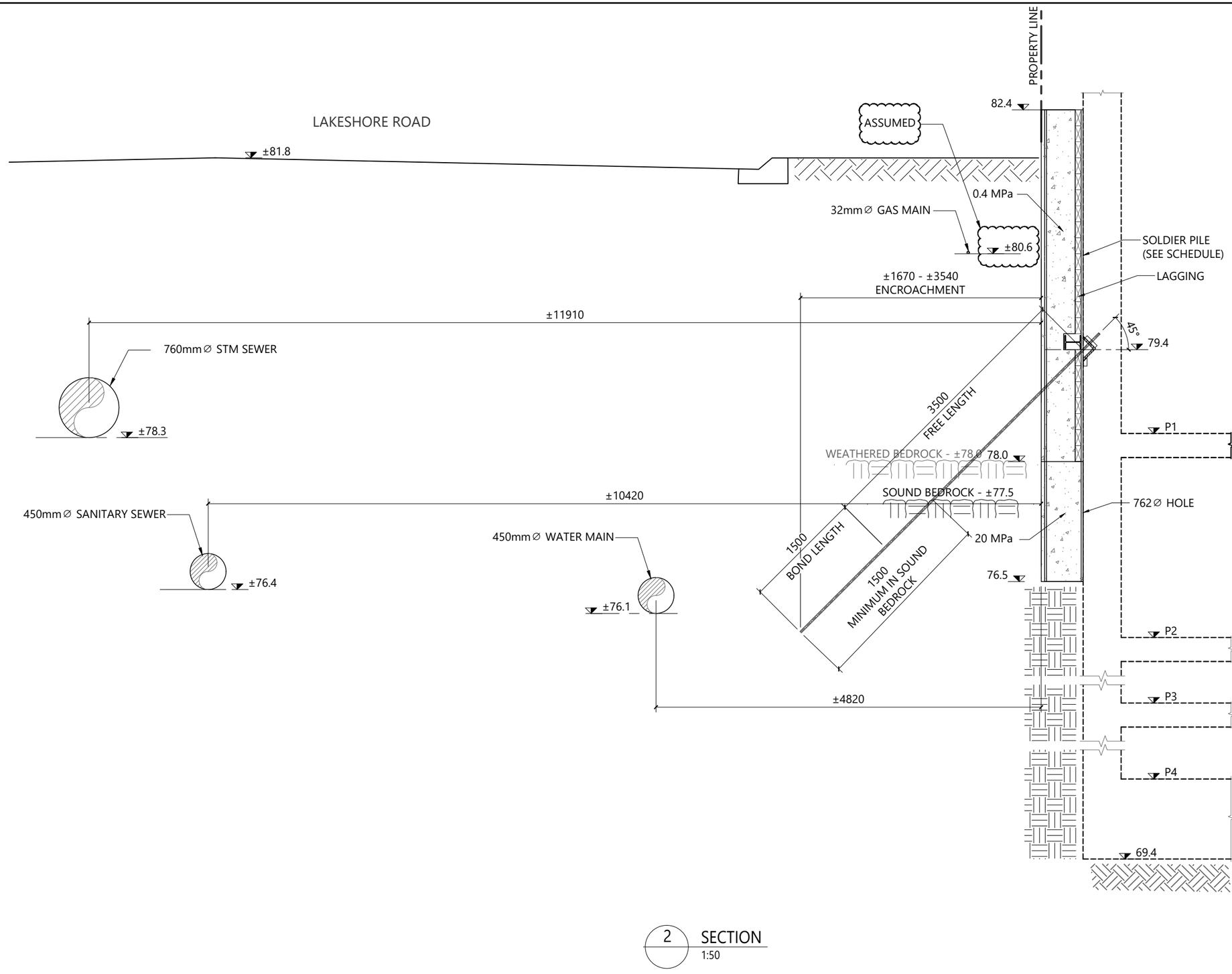

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T.H. O'ROURKE
12-SEP-19
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North

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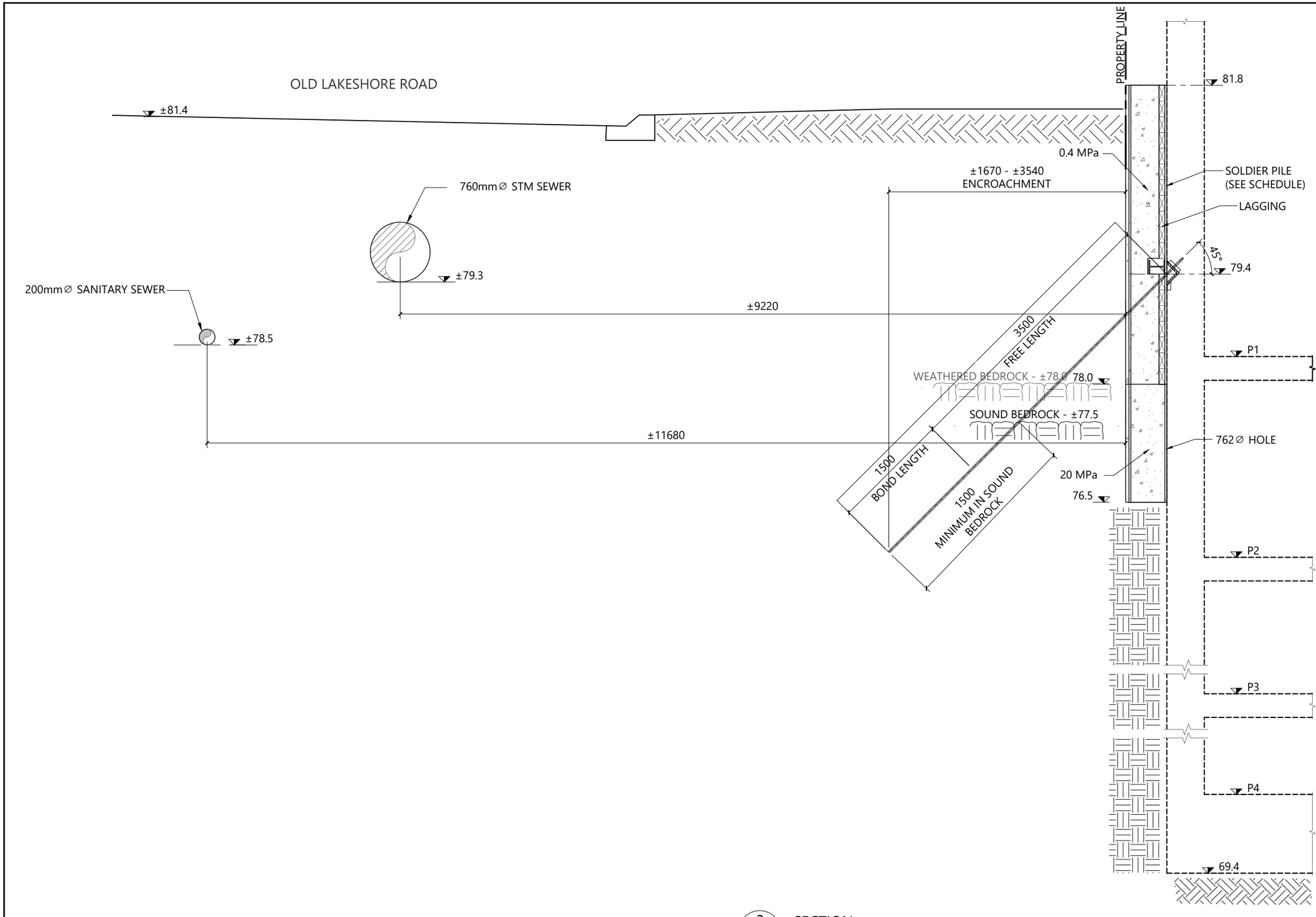

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