



MINUTES OF MEETING

Project Name: Port Lands Flood Protection and Enabling Infrastructure Project
Meeting Number: 1
Subject: Enbridge Team 20" Line Relocation EA
Minutes Prepared By: Maher Al-Huq
Date of Meeting: April 3, 2018
Date of Next Meeting: TBD

Location: Waterfront Toronto Offices

Attendees:	Initials	Copies to:	Initials
Simon Karam, WT	SK	Julius Gombos, WT	JG
Pina Mallozzi, WT	PM	Zachary Ellis, ED	ZE
Shannon Baker, WT	SB		
Aaron MacLean, ED	AM		
Nick Iozzo, DPM	NI		
Jim Arnott, Enbridge	JA		
Mark Cairns, Enbridge	MC		
Melany Afara, Enbridge	MA		
Chris McGivern, Enbridge	CM		
Tony To, TRCA	TT		
Robert Chan, TRCA	RC		
Ken Dion, TRCA (<i>phone</i>)	KD		
Maher Al-Huq, Colliers	MAH		
Leonard Ng, Colliers	LN		

Item		Action	Due
1	Introductions		
	NI briefly introduced the purpose of the meeting is to have information exchange between Waterfront Toronto and TRCA of their respective projects.		
2	Updates on PLFPEI project		
	PM summarized PLFPEI work to date with a PowerPoint Presentation. The Flood Protection project includes three major components: Earthwork – extension of the Don River with provision of overflow routes Roads and Bridges – four bridges and three roads Parks – creation of aquatic, terrestrial and wetland habitats Developable lands will be made available once the flood protection work is complete. Construction will start June 2018 and expected to complete by 2023.	Info	
3	Updates on Enbridge EA		

	MA explained the two projects that Enbridge has ongoing. The proposed new mains will facilitate the abandonment of the existing mains.		
4	Removal of Mains		
a)	20" main on Lake Shore bridge abutments – sits on the existing rail bridge.		
	Start near end of 2019 or early 2020 with an 8-12 month duration. The 20" could be decommissioned at the end of 2020 (earliest case)		
	New station may conflict with Gardiner East EA – alignment of Gardiner will have to go around proposed location of station. Enbridge coordinating with Mike Noble and Easton Gordon at the City.		
	Open house of the proposed work is planned for the end of May. Notice of commencement will be issued beginning of May.		
b)	30" Main North of Lake Shore		
	Currently exists on Enbridge's bridge adjacent to the bailey bridge. This main has been identified as an asset risk - to be relocated to cross under the river.		
	The work will start at the beginning of 2019 and finish at end of 2019. Bell, Water and Hydro are also located on the same bridge. Enbridge has notified owners of these utilities about relocation/decommission. Bell fibre relocation could take longer than a year.		
5	Next Steps		
	PM requested that routing be discussed ahead of the open house	MA	
	SB will provide contact information at WT of who should receive notices. Shannon Baker and Mira Shenker identified as WT contacts for NPS 20 Replacement EA.	PM, SB	
	Enbridge will share this presentation with their Planning Department as well as the existing plans.	MA	
	WT/DPM will provide Enbridge with population statistics.	PM, SB, NI	
	NI indicated that design of the new gas mains should include future demand to avoid expensive additional installation.		
	TPUCC meeting will be arranged soon regarding other utilities.	SB	
	30% package of the Road Design will be sent to Mark-Ups Department at Enbridge.	SB	
	Enbridge will advise if there is a dedicated liaison/contact for the PLFPEI Project Confirmed as Jim Arnott	MA	

These minutes are considered an accurate reflection of discussions, agreements and decisions made. Should participants disagree with minute items carried, they are to request changes as may be applicable at the following meeting. If no changes are made, minutes are considered as an accurate record of the meeting held.

[REDACTED]

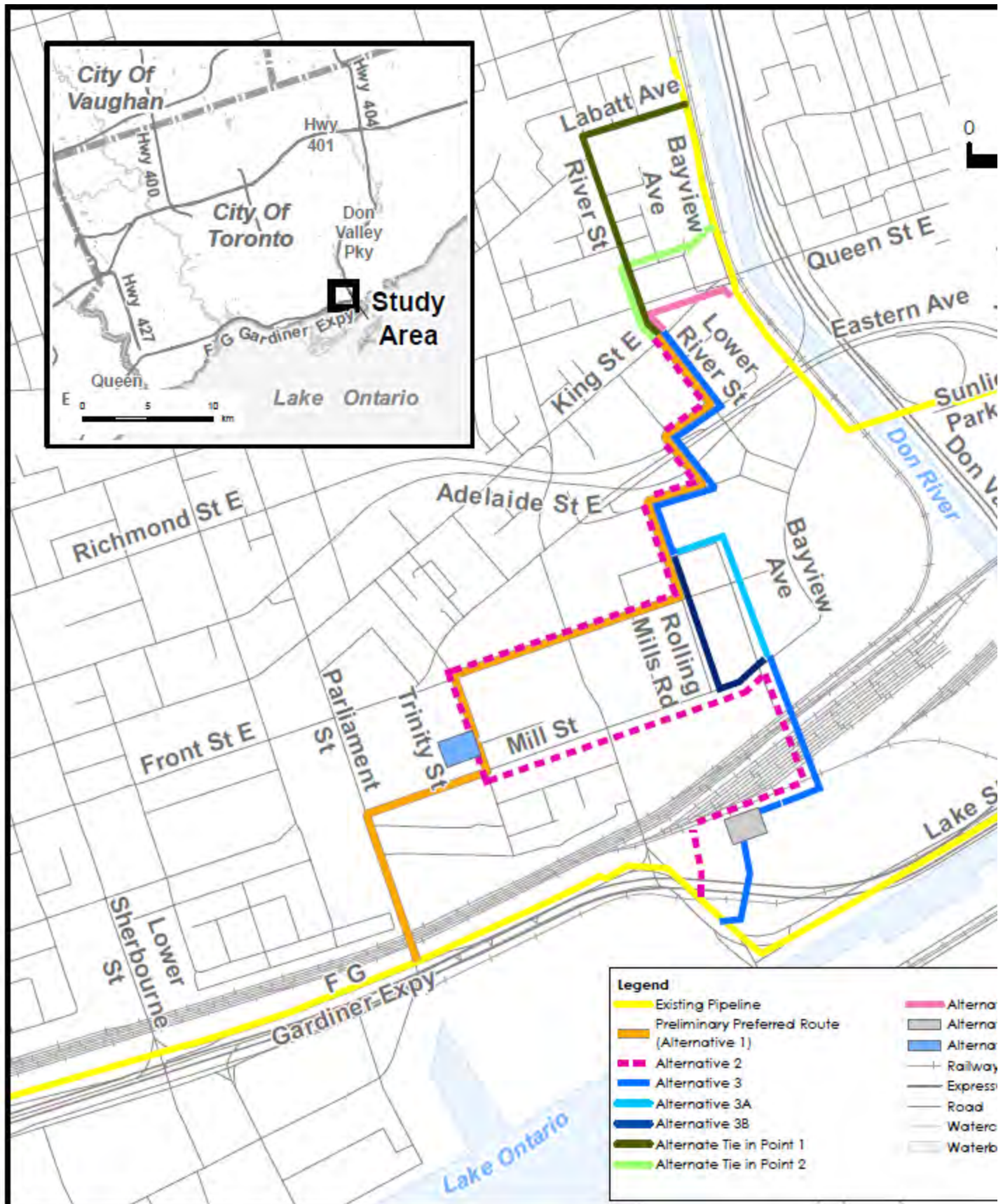
From: [REDACTED]
Sent: Friday, August 3, 2018 10:08 AM
To: [REDACTED]
Subject: Enbridge Gas Distribution - NPS 20 Replacement Project - UPDATE

Hello,

Enbridge recently completed additional investigative work on a segment of **NPS 20 inch** Lakeshore natural gas pipeline east of Cherry Street. As a result of this work and the findings, there is no near term requirement for replacement of the pipeline. As Enbridge continues to further evaluate the pipeline, the project timing will be reassessed and updated accordingly.

The Leave to Construct application will be put on hold until a new timeline is determined at which time Enbridge will be in touch to provide an update.

Please contact me if you have any questions or concerns.



Thank you,

Melany Afara, P. Eng.
Sr. Advisor Planning

Planning & Design

ENBRIDGE GAS DISTRIBUTION

TEL: 905-704-3791 | CELL: 437-991-7872
3401 Schmon Pky Thorold, ON


enbridgegas.com

Integrity. Safety. Respect.

From: [REDACTED]
Sent: Friday, August 24, 2018 9:18 PM
To: Melany Afara
Cc: Simon Karam; Shannon Baker; Maher Al-Huq; Leonard Ng; Leonard Borgdorff; Julius Gombos; Sean Decloux; Garry Cariveau; Jim.Arnett@enbridge.com; Mark.Cairns@enbridge.com; Byron.Madrid@enbridge.com
Subject: PLFP - Lake Shore Bridge Construction Staging Plans
Attachments: Lake_Shore_Bridge_Construction_Staging_Plan_Enbridge_20180824 - Option A.pdf;
Lake_Shore_Bridge_Construction_Staging_Plan_Enbridge_20180824 - Option B.pdf

Good Afternoon Melany,

Please find attached the construction staging plans for the Lake Shore Bridge works to be performed by Waterfront Toronto. As discussed during our call, we are currently evaluating two staging options with the City of Toronto. They are both attached for your reference. Each file also includes the utility information that our team has collected to date for the Lake Shore Bridge for your reference.

Our current construction schedule for the Lake Shore Bridge works is July 2020 to November 2022.

If you have any questions or comments please let us know.

We look forward to coordinating the Lake Shore Bridge works with your team moving forward.

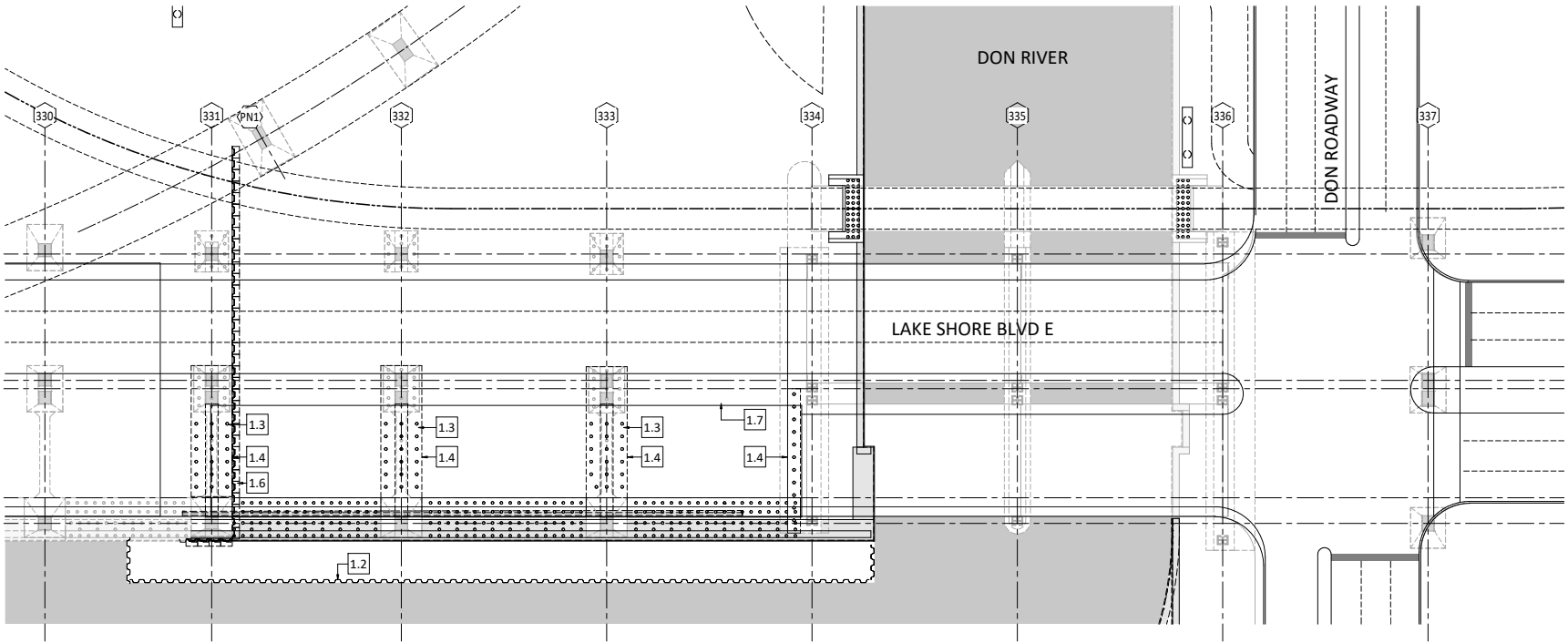
Regards,

[REDACTED] PMP, LEED Green Assoc.
Project Manager | Bridges and Marine Structures | PLFP Program Management Team
[COLLIERS PROJECT LEADERS](#)
Mobile 647 588 8719
[REDACTED]

Video [Who We Are](#) | Video [Why Hire a PM?](#) | colliersprojectleaders.com

Vacation Notice: August 27th to September 7th Inclusive.

If you would like to stop receiving commercial electronic messages from Colliers Project Leaders, please [unsubscribe](#).
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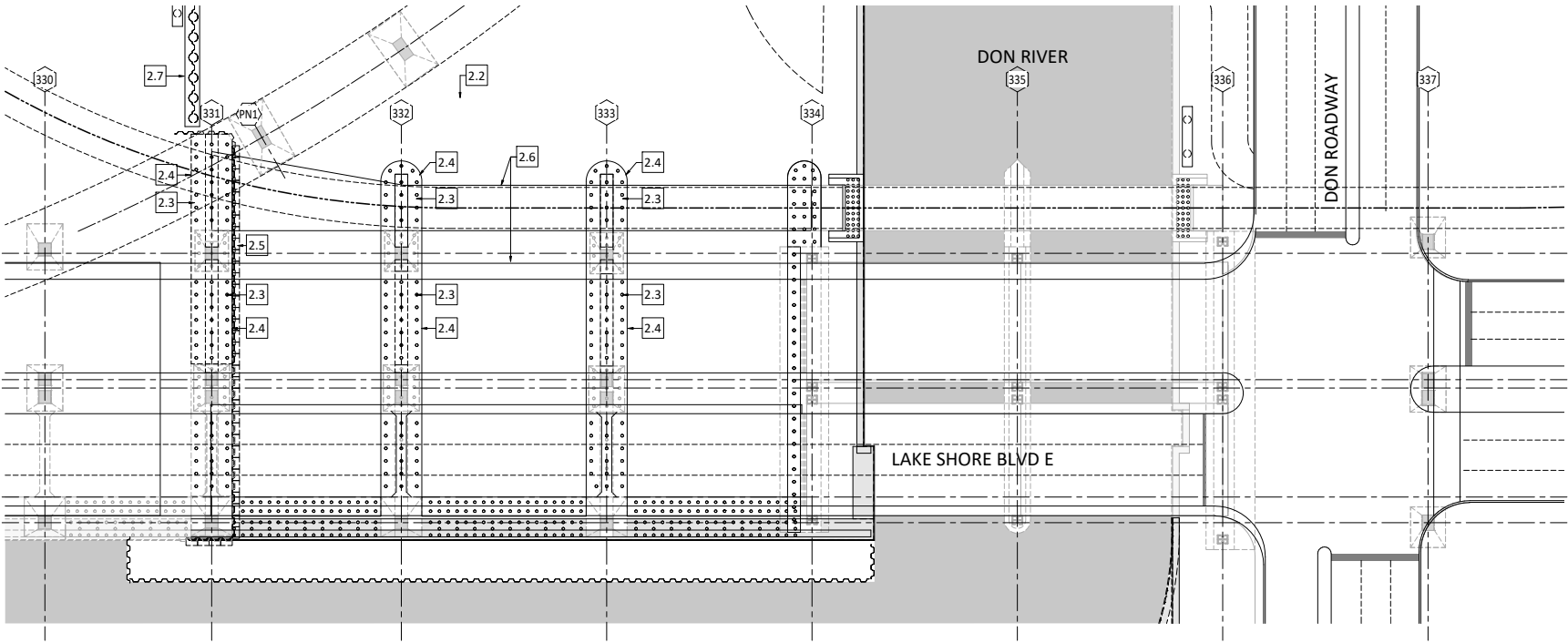


CONSTRUCTION STAGE A1
1:250

CONSTRUCTION STAGE A1

CONSTRUCTION OF THE EASTBOUND LAKE SHORE BRIDGE EXTENSION

- 1.1 REFER TO **TRAFFIC STAGE A1** FOR TRAFFIC MANAGEMENT PLAN
- 1.2 SOUTH SIDE STEEL SHEET PILE (COFFERDAM) FOR CONSTRUCTION
- 1.3 NEW MICROPILE FOUNDATIONS BETWEEN EXISTING GARDINER RAMP PIER FOUNDATIONS
- 1.4 NEW FOUNDATION CAP BEAMS BETWEEN EXISTING GARDINER RAMP PIER FOUNDATION CAPS. DRILL AND EPOXY DOWELS TO CONNECT NEW AND EXISTING STRUCTURES
- 1.5 NEW DOCK WALL TO REPLACE EXISTING DOCK WALL BETWEEN EXISTING FOUNDATION CAPS AT BENT 330 AND BENT 331 (NOT IN SCOPE)
- 1.6 NEW STEEL SHEET PILE AND TIE BACK ALONG PIER AT BENT 331
- 1.7 NEW EASTBOUND LAKE SHORE BRIDGE DECK, CURB AND GUARDRAIL ETC.



CONSTRUCTION STAGE A2
1:250

CONSTRUCTION STAGE A2

CONSTRUCTION OF THE WESTBOUND LAKE SHORE BRIDGE AND RAILWAY BRIDGE EXTENSION

- 2.1 REFER TO **TRAFFIC STAGE A2** FOR TRAFFIC MANAGEMENT PLAN
- 2.2 NORTH SIDE STEEL SHEET PILE (COFFERDAM) FOR CONSTRUCTION TO BE COORDINATED
- 2.3 NEW BORE PILE FOUNDATIONS BETWEEN EXISTING GARDINER RAMP PIER FOUNDATIONS AND NEW NORTH EXPANSION
- 2.4 NEW FOUNDATION CAP BEAMS BETWEEN EXISTING GARDINER RAMP PIER FOUNDATION CAPS AND NEW NORTH EXPANSION DRILL AND EPOXY DOWELS TO CONNECT NEW AND EXISTING STRUCTURES
- 2.5 NEW STEEL SHEET PILE AND TIE BACK ALONG NEW AND EXISTING PIER FOUNDATIONS AT BENT 331
- 2.6 NEW WESTBOUND LAKE SHORE BRIDGE AND RAIL BRIDGE DECK, CURB AND GUARDRAIL
- 2.7 NEW DOCK WALL RUNNING NORTH BEYOND BRIDGE FOUNDATION AT BENT 331 (NOT IN SCOPE)

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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

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REPORT

PHASE

INTERIM

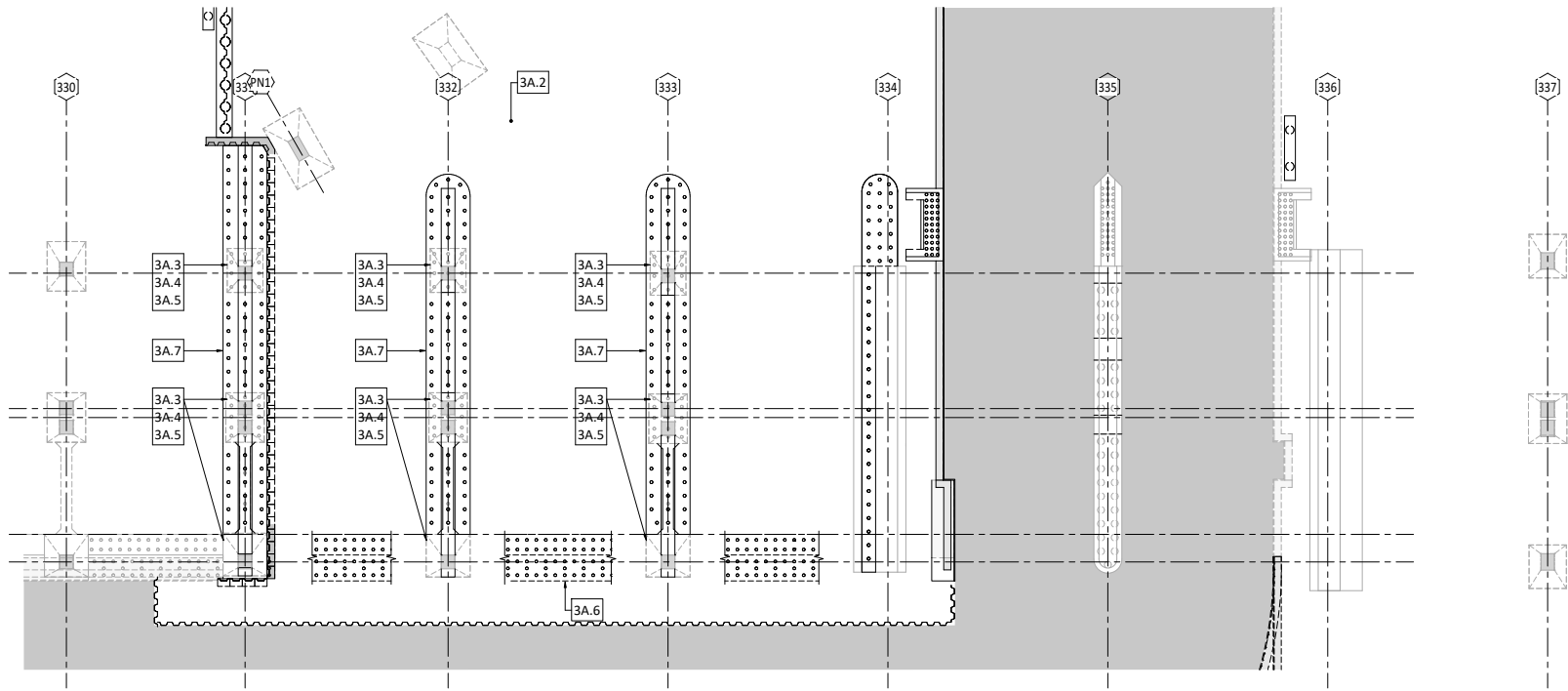
DRAWING TITLE

CONSTRUCTION STAGE
SEQUENCE PLANS

JOB NUMBER: C017-1665
DATE: 2018/07/11
SCALE: 1:250
DESIGNED BY: TH
DRAWN BY: GWA
CHECKED BY: MM

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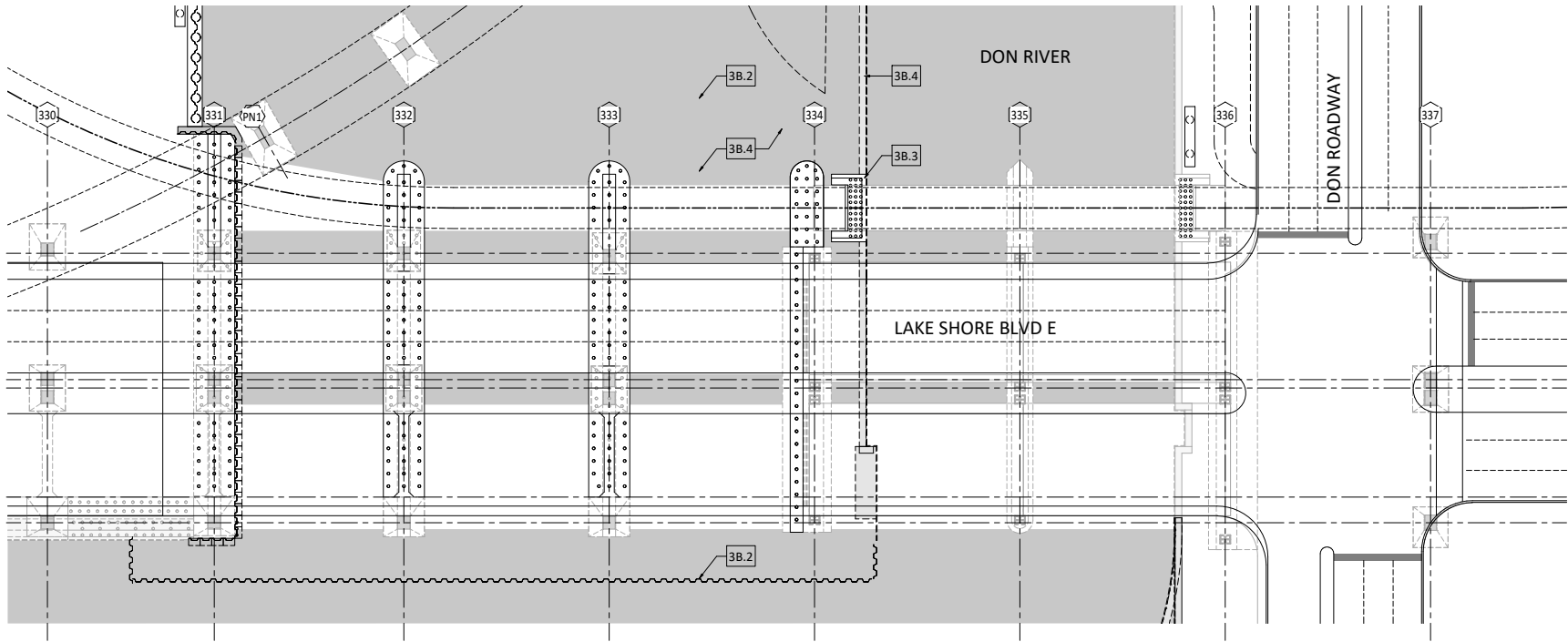


CONSTRUCTION STAGE A3a
1:250

CONSTRUCTION STAGE A3a

COMPLETION OF INTERIM CONDITION - CONSTRUCTION OF PERMANENT BRIDGE FOUNDATIONS

- 3A.1 NO TRAFFIC MANAGEMENT PLAN IS APPLICABLE
- 3A.2 DIG RIVER FIRST LIFT
- 3A.3 INSPECT CONDITION OF EXISTING PILES
- 3A.4 BRACE EXISTING PILES THEN DIG NEXT LIFT
- 3A.5 REPEAT STAGE 3.3 AND 3.4 UNTIL EXCAVATION REACHES APPROXIMATELY 1m BELOW FUTURE RIVER BED
- 3A.6 DEMOLISH EXISTING DOCK WALL BETWEEN BENT 331 TO 334
- 3A.7 CONSTRUCT CONCRETE ENCASEMENT OF BRIDGE PIERS AS NOTED



CONSTRUCTION STAGE A3b
1:250

CONSTRUCTION STAGE A3b

COMPLETION OF INTERIM CONDITION - WIDENING THE MOUTH OF THE DON RIVER (NOT IN SCOPE)

- 3B.1 NO TRAFFIC MANAGEMENT PLAN IS APPLICABLE
- 3B.2 DEMOLISH COFFERDAM
- 3B.3 DEMOLISH RAILWAY BRIDGE EXISTING WEST ABUTMENT
- 3B.4 DEMOLISH EXISTING DOCK WALL ALONG EXISTING WEST EDGE OF DON RIVER
- 3B.5 EXCAVATE PERMANENT RIVER BED
- 3B.6 CONSTRUCT SECOND ESTUARY ALONG DON ROADWAY AND COMMISSIONERS STREET

PORT LANDS FLOOD
PROTECTION AND ENABLING
INFRASTRUCTURE PROJECT

BRIDGE DESIGN AND
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Toronto, ON

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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

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PHASE

INTERIM

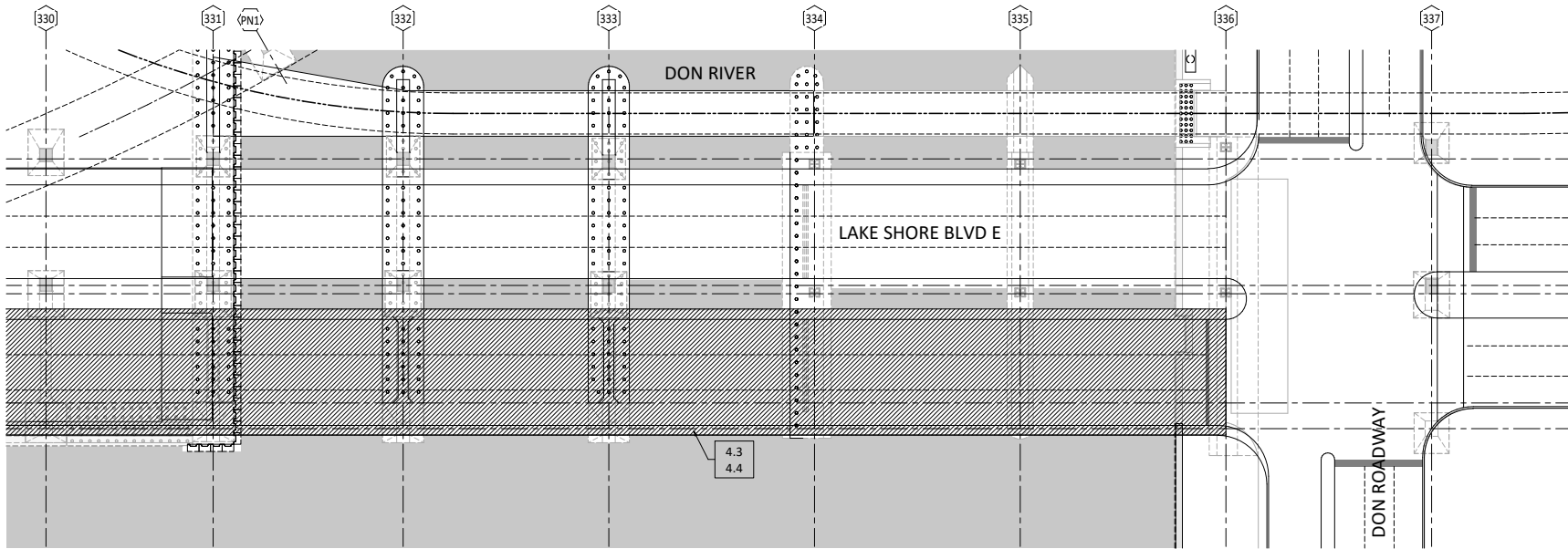
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CONSTRUCTION STAGE
SEQUENCE PLANS

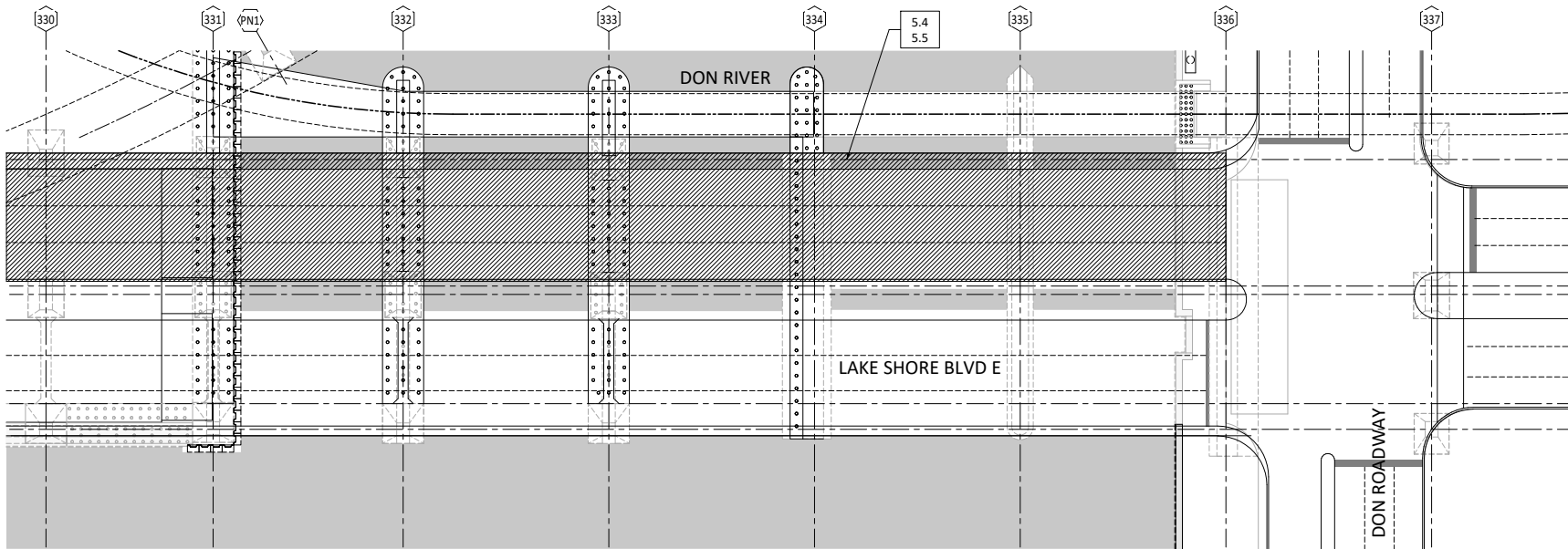
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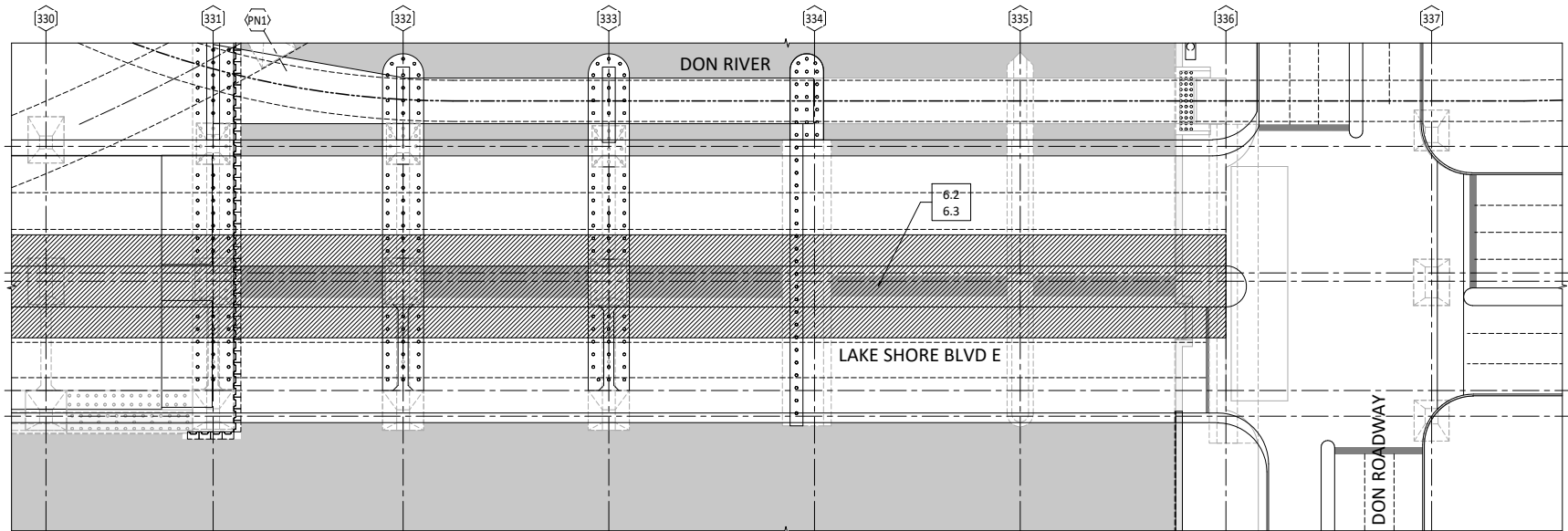




CONSTRUCTION STAGE 4
1:250



CONSTRUCTION STAGE 5
1:250



CONSTRUCTION STAGE 6 (INFILL OF INTERIOR BRIDGE DECK)
1:250

CONSTRUCTION STAGE 4

DEMOLITION OF EASTBOUND GARDINER RAMP AND WIDENING OF EASTBOUND LAKE SHORE BRIDGE TO SOUTH

- 4.1 REFER TO **TRAFFIC STAGE 3** FOR TRAFFIC MANAGEMENT PLAN
- 4.2 DEMOLISH EASTBOUND GARDINER RAMP
- 4.3 DEMOLISH SOUTH CURB AND GUARDRAIL OF EASTBOUND LAKE SHORE BRIDGE
- 4.4 WIDEN EASTBOUND LAKE SHORE BRIDGE DECK TO SOUTH. CONSTRUCT NEW SOUTH CURB AND GUARDRAIL

CONSTRUCTION STAGE 5

DEMOLITION OF WESTBOUND GARDINER RAMP AND WIDENING OF WESTBOUND LAKE SHORE BRIDGE TO NORTH

- 5.1 REFER TO **TRAFFIC STAGE 4** FOR TRAFFIC MANAGEMENT PLAN
- 5.2 DEMOLISH WESTBOUND GARDINER RAMP
- 5.3 DEMOLISH NORTH CURB AND GUARDRAIL OF WESTBOUND LAKE SHORE BRIDGE
- 5.4 WIDEN WESTBOUND LAKE SHORE BRIDGE DECK TO NORTH. CONSTRUCT NEW NORTH CURB AND GUARD.

CONSTRUCTION STAGE 6

CONSTRUCTION OF DECK INFILL BETWEEN EASTBOUND AND WESTBOUND LAKE SHORE BRIDGES

- 6.1 REFER TO **TRAFFIC STAGE 5** FOR TRAFFIC MANAGEMENT PLAN
- 6.2 DEMOLISH MIDDLE CURB AND GUARDRAIL OF LAKE SHORE BRIDGE
- 6.3 INFILL NEW DECK IN CENTRAL ZONE OF LAKE SHORE BRIDGE. CONSTRUCT NEW CENTRAL CURB

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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

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PHASE

PERMANENT

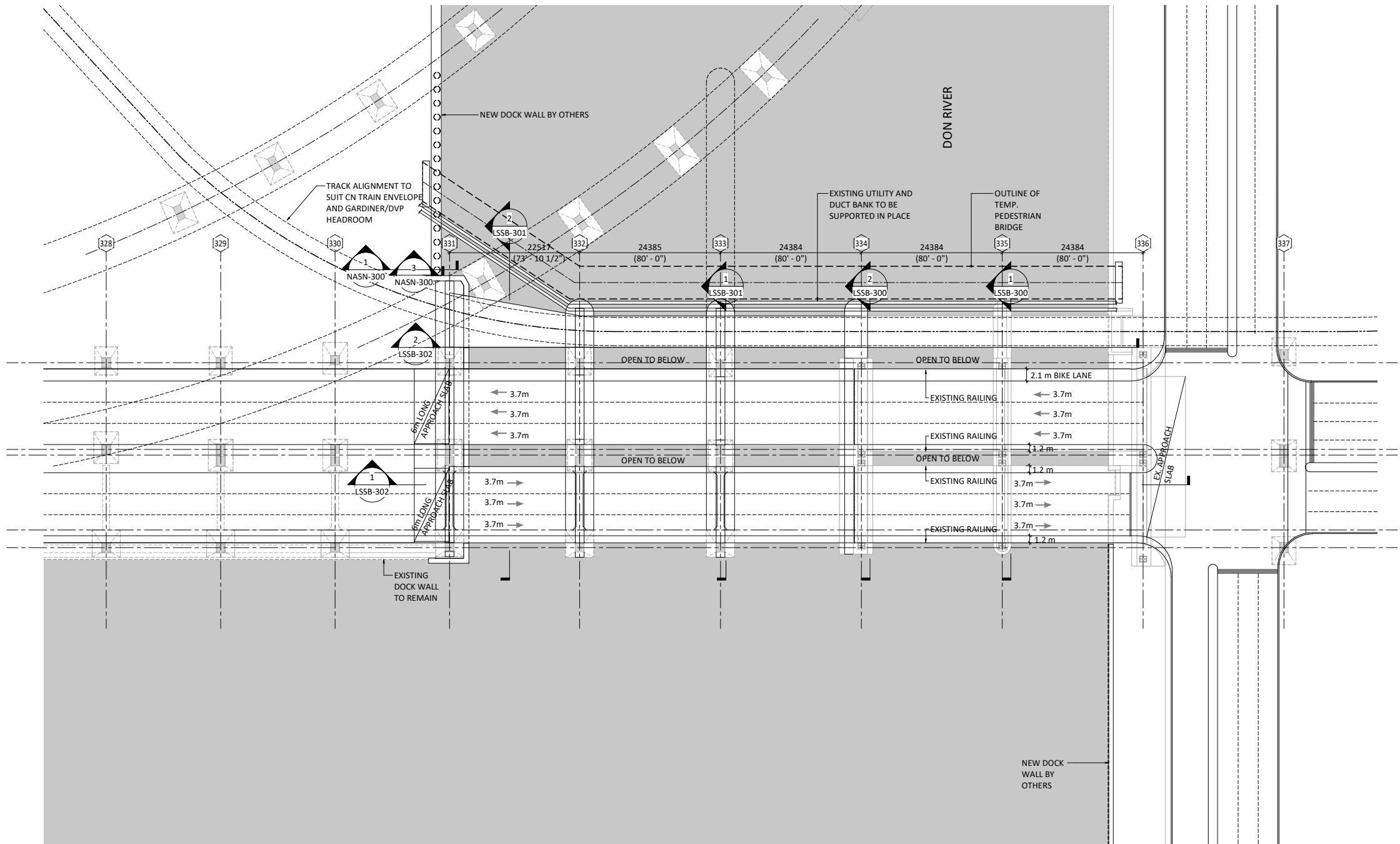
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SEQUENCE PLANS

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LAKE SHORE BRIDGE INTERIM
1:250



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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

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REPORT

PHASE

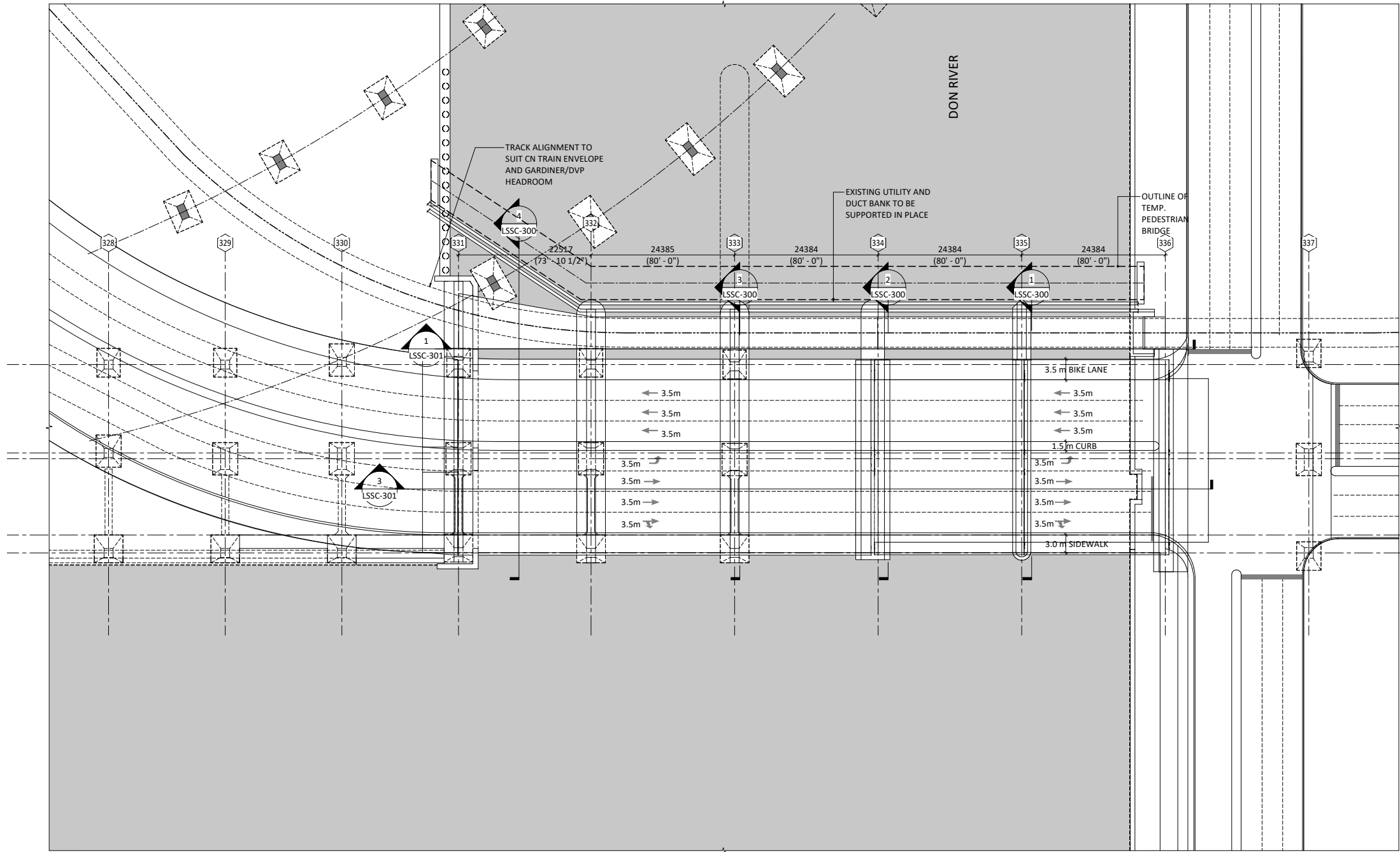
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INTERIM CONDITION TRAFFIC
LAYOUT

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LAKESHORE BRIDGE FINAL
1 : 250



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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

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PHASE

PERMANENT

DRAWING TITLE

PERMANENT CONDITION TRAFFIC
LAYOUT

JOB NUMBER: C017-1665

DATE: 2018/07/11

SCALE: 1 : 250

DESIGNED BY: TH

DRAWN BY: GWA

CHECKED BY: MM

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**BRIDGE DESIGN AND
ENGINEERING**
Toronto, ON



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BRIDGE NAME

Lake Shore Blvd E Bridge

STATUS

PHASE	INTERIM
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DRAWING TITLE

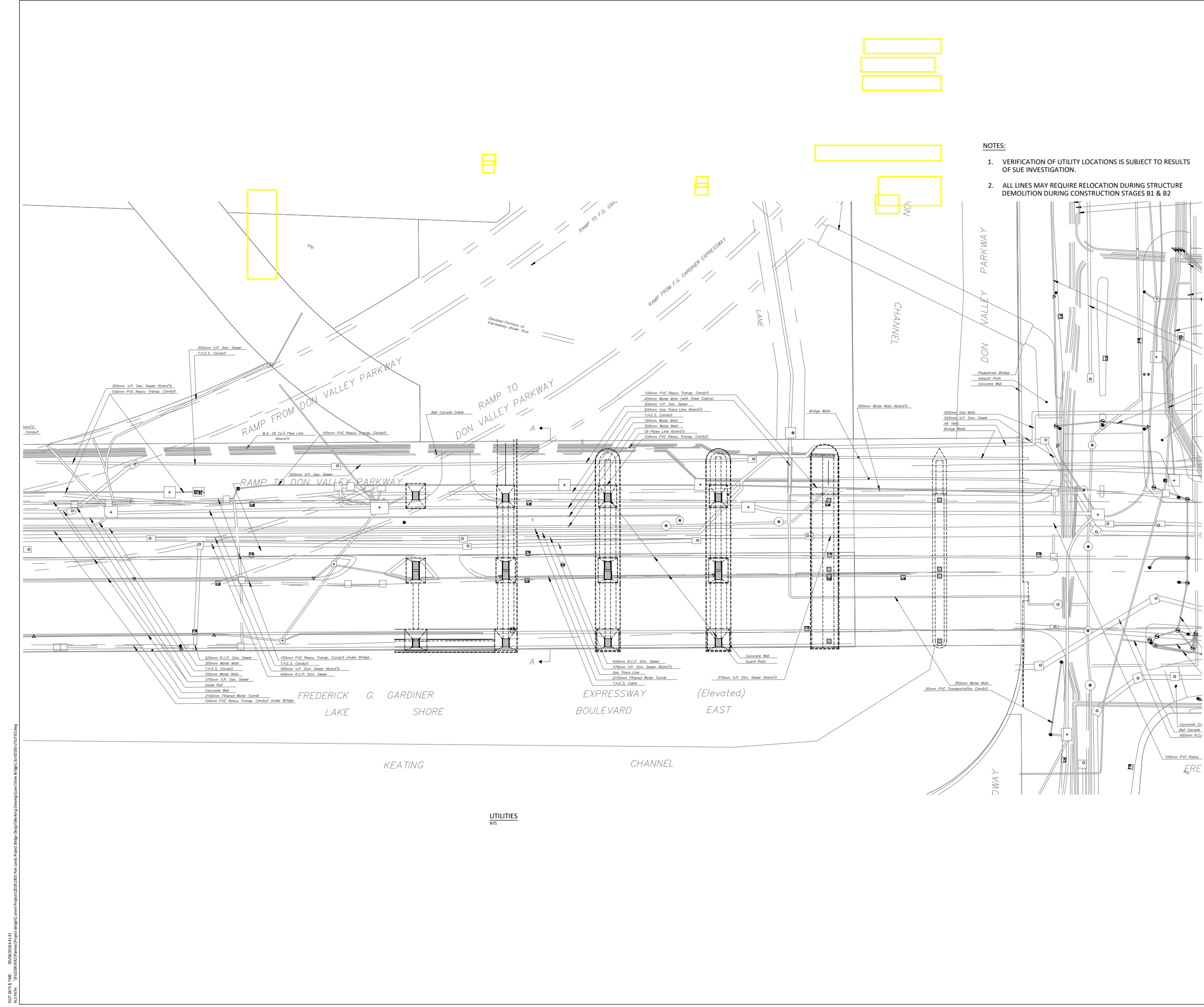
JOB NUMBER: T011-0000

DATE: 10 MAY 201

DESIGNED BY: MN

DRAWN BY: PF

LSUN-200



LOT DATE & TIME: 10/08/2018 4:41:42
FILE PATH: \\VESBER\ER\Projects\Current Projects\2018\1803 Port Lands Project Bridge Design\Working Drawings\Lake Shore Bridge\1_SU\00100-UTILITIES.dwg

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Toronto, ON

**Project Lead**

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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS	
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PHASE	PERMANENT
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DRAWING TITLE

TRAFFIC LAYOUT

JOB NUMBER: C017-1665

DATE: 2018/07/11

DESIGNED BY: TH LCSD 101

DRAWN BY: GWA
CHECKED BY: MM



1 : 250

PLOT DATE & TIME: 8/2/2018 7:25:52 PM
FILE PATH: C:\Users\graeme.anderson\Documents\C017-1665_PLBD_R19_graeme.anderson@entuitive.com.rvt

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BRIDGE NAME

STATUS

DRAWING TITLE

UTILITIES

JOB NUMBER: T011-0000

DATE: 10 MAY 2018

DESIGNED BY: MN

DRAWN BY: PF

LSUN-200



PLOT DATE & TIME: DD/08/2018 4:41:42
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David Kusturin

From: [REDACTED]
Sent: Monday, October 15, 2018 12:28 PM
To: Tara Kuuskman; Mark Cairns; Byron Madrid; Chris McGivery; Jim Arnott; Dimitri Koutsoukis (dkoutsoukis@waterfrontoronto.ca); Dimitri Koutsoukis (dkoutsoukis@waterfrontoronto.ca)
Cc: Bhabha, Ahmed; Julius Gombos; zellis@ellisdon.com; Shannon Baker; Leonard Borgdorff; Sean Decloux; Michael Noble; Townhall 14; khenderson@ellisdon.com; Ken Dion; Michael Meschino
Subject: NPS 20 Waterfront Toronto conflict - draft minutes
Attachments: Waterfront Toronto Draft minutes - Oct 10 2018 - All comments.docx

Good Morning,

Please see attached the draft meeting minutes from our meeting last week. Please let me know of any changes to the minutes by Friday Oct. 19, 2018.

Thank you,

[REDACTED]
Sr. Advisor Planning
Planning & Design

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Conflict with Existing NPS 20 Gas main Waterfront Toronto

TYPE OF MEETING	Discuss conflict of existing NPS 20 with Waterfront Toronto
LOCATION	20 Bay Street, 13 th Floor, Townhall 14
DATE	October 9, 2018 2:00 pm – 3:00 pm
ATTENDEES	In person: Mark Cairns, Chris McGivern, Jim Arnott, Byron Madrid, Melany Afara, Michael Machismo, Ken Henderson, Zach Ellis, Shannon Baker, Ahmed Bhabha, Marc Kramer, Simon, Demetri Koutsoukis; Julius Gombos, Ken Dion Phone: Mike Noble, Tara Kuuskman

Agenda topics

1. Review of Conflict with Existing Enbridge NPS 20 Gas main

DISCUSSION	- Waterfront Toronto gave an over view of their project. - Enbridge explained the existing conflict with the proposed work - Two existing spans with current bridge in place, 5 spans to be constructed (additional abutments and footings) which will be in conflict with Enbridge's existing NPS 20 gas main. This NPS 20 pipeline is the main natural gas supply to the downtown Toronto area with the immediate gas supply coming from the station on the east side of the Don River off Eastern Ave.
ACTION ITEMS	N/A

2. Relocation Options that were Considered – Not Viable

DISCUSSION	- Enbridge reviewed the concepts that were considered and are not viable. These options included: - Keeping the main in place during the construction of the new bridge. Not viable due to EGD Operations and Engineering concerns and risks to the vital main. Suggestions from Waterfront to make this option work included widening the roadway (Lakeshore) or taking down the Gardiner first. Enbridge explained they would not take the risk of this work taking place around the Vital NPS 20 Gas Main. - Going on the south side of the bridge; Not a viable option due to poor to no support options and no cover crossing back under Lakeshore both sides of the River (east & west) for the tie-in to the existing main (depth of cover issues). Also, City of Toronto does not support permitting pipelines on bridges. 2 micro-tunneling alignments (under the Don River). Not viable due to 3rd party construction projects happening in the near future in the immediate vicinity
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	(First Gulf, Villiers, Gardiner, Don Mouth and Coxwell Bypass, etc.). Also this method of construction would not be executed on time to address the conflict.
ACTION ITEMS	N/A

3. Viable Solution – High Level Concept

DISCUSSION	- Only one viable solution was determined to be constructible and feasible to isolate the existing 20" main on either side of the river. This can only be done by installing a new station on the west side of the Don River to maintain the supply to the Vital NPS 20 pipeline. - Similar to the Option presented at the Enbridge Open House (May 2018) for the NPS 20 Replacement Project (same study area). However, differs based on the length of EGD's current asset being isolated/abandoned to accommodate the proposed Waterfront Toronto scope of work. - Project Requires a LTC application to be filed with the OEB. Since project study area and proposed routes for new pipes are the same an additional EA is not required. Can continue with draft EA from NPS 20 replacement. - Cost sharing is required - Waterfront had concerns regarding the cost of the project as currently no money has been budgeted for the Keating Railway Bridge and relocation of existing utilities. Waterfront would like Enbridge to relook at any and all concepts that will be viable for this relocation. - Waterfront suggested Enbridge establish a cost and schedule and then they will discuss with other third party utilities regarding contributing the overall costs for this relocation. - Driver and timing for this project is relocation based on conflict with Waterfront. - High level construction schedule - February 2020 start and December 2020 completion is the soonest we would be able to execute. - Enbridge had a question regarding the Labatt north tie-in location on this route. City will address this comment but does not see a concern as it is currently ROW. - Enbridge's current schedule is partly based on available temporary working space. Enbridge is currently in discussions with DKT regarding availability of Temporary working space near the station.
ACTION ITEMS	Enbridge to determine more refined cost estimate for the project

4. Next Steps/ Confirmation to proceed

DISCUSSION	- It was determined that Enbridge and Waterfront would proceed with the project but will stop the project if necessary i.e. (if funding cannot be obtained by Waterfront Toronto). - Waterfront wanted to understand if the schedule included both design and construction – the Feb 2020 to Dec 2020 (with required abandonment to follow) only considered the construction schedule. The design schedule would begin immediately in parallel with the Leave to construct application (LTC) filing to the Ontario Energy Board (OEB) (i.e. 130 day oral hearing or 210 day written hearing from date of filing).
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	• Enbridge indicated that filing the application with the OEB could not be done until cost sharing was sorted out, as it is included in the application.
ACTION ITEMS	• Enbridge to send high level schedule to Waterfront to execute the viable option • Enbridge to send cost sharing agreement to Waterfront • Enbridge and Waterfront to re-group in a week to discuss next steps further. • Enbridge to send slide deck to Waterfront

[REDACTED]

From: [REDACTED]
To: [REDACTED] March 28, 2019 6:00 PM
David Kusturin; Julius Gombos; Srinivas Ravulaparthi; Demitri Koutsoukis; Ken Dion; Shannon Baker; ahmed bhabha; Melany Afara; Byron Madrid; Stephen Mckenna; Jim Arnott; mnoble@toronto.ca; Tara Kuuskman; Tracey Browne
Cc: Simon Karam; Sean Decloux; Michael Meschino; Zachary Ellis
Subject: PLFP - NPS-20 Rerouting Follow Up Meeting - Minutes and Background Documents
Attachments: 2019 03 13_Minutes_PLFP Enbridge NPS-20 Re-Routing Follow Up_Final.pdf

Hi All,

Please find attached the minutes from our meeting with Enbridge on March 13th, 2019.

The background information requested can be accessed at the following link:

<https://we.tl/t-Y7nuA2meur>

Note: the link will expire in 1 week. If you have any trouble accessing the link please contact Srinivas Ravulaparthi (Cc'd).

We are planning on populating the Study Table included in the background information during the workshop scheduled for April 9th.

We are currently coordinating with external stakeholders with respect to providing third party information to Enbridge.

Regards,

[REDACTED]
[REDACTED]
Project Manager | Bridges | PLFP Program Management Team
COLLIERS PROJECT LEADERS
Mobile 647 588 8719
[REDACTED]

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Please consider the environment before printing this e-mail.

Minutes of Meeting

Project Name: Port Lands Flood Protection Project
Meeting Number: 2
Subject: Enbridge NPS-20 Re-Routing Follow-Up Meeting
Minutes Prepared By: Simon Karam
Date of Meeting: March 13, 2019
Date of Next Meeting: TBD

Location: Waterfront Toronto Offices
 1-866-488-8972, Conference code 269

Attendees:	Initials	Copies to:	Initials
Simon Karam, WT	SK	David Kusturin, WT	DK
Julius Gombos, WT	JG	Jennifer Ogradnick, WT	JO
Ken Dion, WT	KD	Sasha Jurak, WT	SJ
Shannon Baker, WT	SB	Maher Al-Huq, Colliers	MAH
Ahmed Bhabha, WT	AB	John McKee, Colliers	JM
Stephen McKenna, CoT	SM	Sean Decloux, Colliers	SD
Michael Noble, CoT	MN		
Melany Afara, Enbridge	MA		
Byron Madrid, Enbridge	BM		
Jim Arnott, Enbridge	JA		
Tara Kuuksman, Enbridge	TK		
Chris McGivern, Enbridge	CM		
Srinivas Ravulaparthi, Colliers	SR		
Demitri Koutsoukis, Colliers	DK1		
Ahmed Bhabha, Colliers	AB		
Michael Meschino, Entuitive	MM		
Zach Ellis, EllisDon	ZE		

Item		Action	Due
	INTRODUCTION		
	[no items]		
	DISCUSSION		
1.1	SK briefed the team on past meetings and coordination to date.	Info	
1.2	Enbridge requested they be made aware of other third party works in the vicinity of Lake Shore Bridge.	WT	Mar 27
1.3	WT to send Enbridge design drawings of PLFP works in the vicinity of Lake Shore Bridge.	WT	Mar 27
1.4	The team acknowledged that the cost sharing mechanism needs to be finalized, however, in the meantime the team is willing to move forward on a technical solution.	WT/Enbridge	Mar 31
1.5	Enbridge advised that a typical vital main project would take 12-18 months of planning and 8 months of construction.	Info	
1.6	Enbridge requested WT's assistance in obtaining permits, approvals, and land acquisitions/easements where required.	Info	
1.7	Enbridge advised that prior to isolating and removing the existing NPS-20 Gas Main, an alternate feed is required; work on the existing NPS-20 vital main cannot be performed without an alternate line in place.	Info	
1.8	The team will analyze the viability of the following three options including an estimated schedule and cost: - <u>Option 1</u>: Temporary relocation on the west side of the Don River (as per the option presented Oct 9, 2018) - <u>Option 2</u>: Microtunnel under the Don River near the existing crossing alignment - <u>Option 3</u>: Temporary relocation on the existing (or a new) pedestrian bridge crossing the Don River (gas main to be moved back on the Lake Shore Bridge in the final condition)	Enbridge	Mar 31
1.9	WT will schedule a workshop in approximately two weeks. The attached draft study table will be completed at this time.	WT	Mar 27
1.10	A Leave to Construct application will be required if Enbridge needs to acquire additional property for the proposed relocation. These timelines are 130 day for an oral hearing or 210 day for a written hearing from the date of filing.	Info	
1.11	Enbridge to verify if a Leave to Construct application is required in the event WT provides Enbridge with the land.	Enbridge	Mar 27
1.12	Enbridge verified that the \$54M cost for the viable option presented on October 9 th includes contingency.	Info	
1.13	The Leave to Construct process may not be required for Option 1 because it is proposed to be built in the ROW.	Info	
1.14	WT to coordinate the interruption of rail traffic during Enbridge work with CreateTO.	WT	Mar 31
1.15	Enbridge noted that any option near the Hydro One tower will be subject to Hydro One criteria such as requiring 15m separation from their towers.	Info	
1.16	Enbridge noted tie-ins are typically done April – October.	Info	
1.17	Coordination with the City Gardiner team will be required when working around the Gardiner Expressway.	Info	

Item		Action	Due
1.18	Enbridge noted that in the microtunneling option the eastern shaft location will need to be coordinated with the First Gulf plans which have not yet been received.	Info	
1.19	Enbridge asked about WT's relationship to the three orders of government. Information is available on https://waterfrontoronto.ca/nbe/portal/waterfront/Home/waterfronthome/about-us . Any additional information should be requested in writing.	Info	
1.20	Enbridge requested the following information from WT: - Gardiner Expressway As-Built Drawings - Design drawings for the PLFP project (Sediment and Debris Management Area and Lake Shore Bridge Modifications). - Hydro One Tower information and contacts. <i>Post Meeting Note: WT main contact is Matey Matev (matey.matev@hydroone.com). He is currently on leave, during his absence our contact is Erfan Hajian (erfan.hajian@hydroone.com). No information relating to the tower east of the Don Roadway has been obtained by WT.</i> - WT Team Organizational Chart - PLFP Program Schedule - SUE data - Geotechnical data in the vicinity of the Enbridge main at the Lake Shore Bridge All information relating to the Cherry Street Re-Alignment - Lake Shore Boulevard East intersection has been coordinated with Enbridge through the PLFP Roads and Services team with Jim Arnott of Enbridge.	WT	Mar 27
OTHER BUSINESS			
	[no items]		
These minutes are considered an accurate reflection of discussions, agreements and decisions made. Should participants disagree with minute items carried, they are to request changes as may be applicable at the following meeting. If no changes are made, minutes are considered as an accurate record of the meeting held.			

From: [REDACTED]
Sent: Friday, May 3, 2019 11:45 AM
To: Shannon Baker; Ken Dion; Ahmed Bhabha; Srinivas Ravulaparthi; jacruz@ellisdon.com; khenderson@ellisdon.com; mnoble@toronto.ca; Melany.Afara@enbridge.com; Byron.Madrid@enbridge.com; Jim.Arnett@enbridge.com; Tracey.Browne@enbridge.com; aron.murdoch@enbridge.com; Tara.Kuuskman@enbridge.com; Chris.MGivery@enbridge.com; Michael Meschino; Mike McDonald; Mike Neumann; David Kusturin; Julius Gombos; Jennifer Ogrodnick; Sasha Jurak; Maher Al-Huq; John McKee; Stephen Mckenna; mnoble@toronto.ca
Cc: Simon Karam
Subject: PLFP - Enbridge NPS-20 Relocation - April 23 2019
Attachments: 2019 04 23_Minutes_PLFP Enbridge NPS-20 Re-Routing Follow Up.pdf; Draft Enbridge Relocation Study - April 23 Meeting.pdf; Enbridge Options 1 - 2 - 3.pdf
Categories: TWRC, Red Category

All,

Further to the April 23rd Enbridge NPS-20 Relocation Meeting, please see attached for the following documents:

- Minutes from the 4/23 Meeting
- Study Table that compares relocation options (as populated during the meeting)
- Conceptual plan of each option

In addition, please see below for a response regarding Waterfront Toronto's responsibility in management and delivery of PLFP:

The legislated corporate objects of Waterfront Toronto under the Toronto Waterfront Revitalization Corporation Act, 2002, include the requirement to implement a plan that enhances the economic, social and cultural value of the land in the designated waterfront area and creates an accessible and active waterfront for living, working and recreation, and to do so in a fiscally and environmentally responsible manner.

As part of the plan for the redevelopment of the Port Lands the City, Ontario and Canada have approved the Port Lands Flood Protection and Enabling Infrastructure Project and have entered into an agreement with Waterfront Toronto to fund the implementation and completion of that project by Waterfront Toronto.

The City of Toronto is the Road Authority for the purposes of the Public Service Works on Highways Act, (PSWHA) which governs the relocation of public service works during road re-development. Pursuant to the letter dated February 1, 2019 addressed to the TPUCC the City advised the TPUCC board that Waterfront Toronto will manage and deliver the Cherry Street Storm water and Lake filling Project and the broader Port Lands Flood Protection project, funded by the Governments of Canada, Ontario and Toronto.

Regards,

[REDACTED] EIT
 Assistant Project Manager | Parks & Public Realm, Marine Structures | PLFP Program Management Team
COLLIERS PROJECT LEADERS
 Mobile 437 213 9803
 Email [S \[REDACTED\]](#)



Minutes of Meeting

Project Name: Port Lands Flood Protection Project
Meeting Number: 3
Subject: Enbridge NPS-20 Re-Routing Follow-Up Meeting
Minutes Prepared By: Sean Decloux
Date of Meeting: April 23, 2019
Date of Next Meeting: TBD

Location: Waterfront Toronto Offices
 1-866-488-8972, Conference code 269

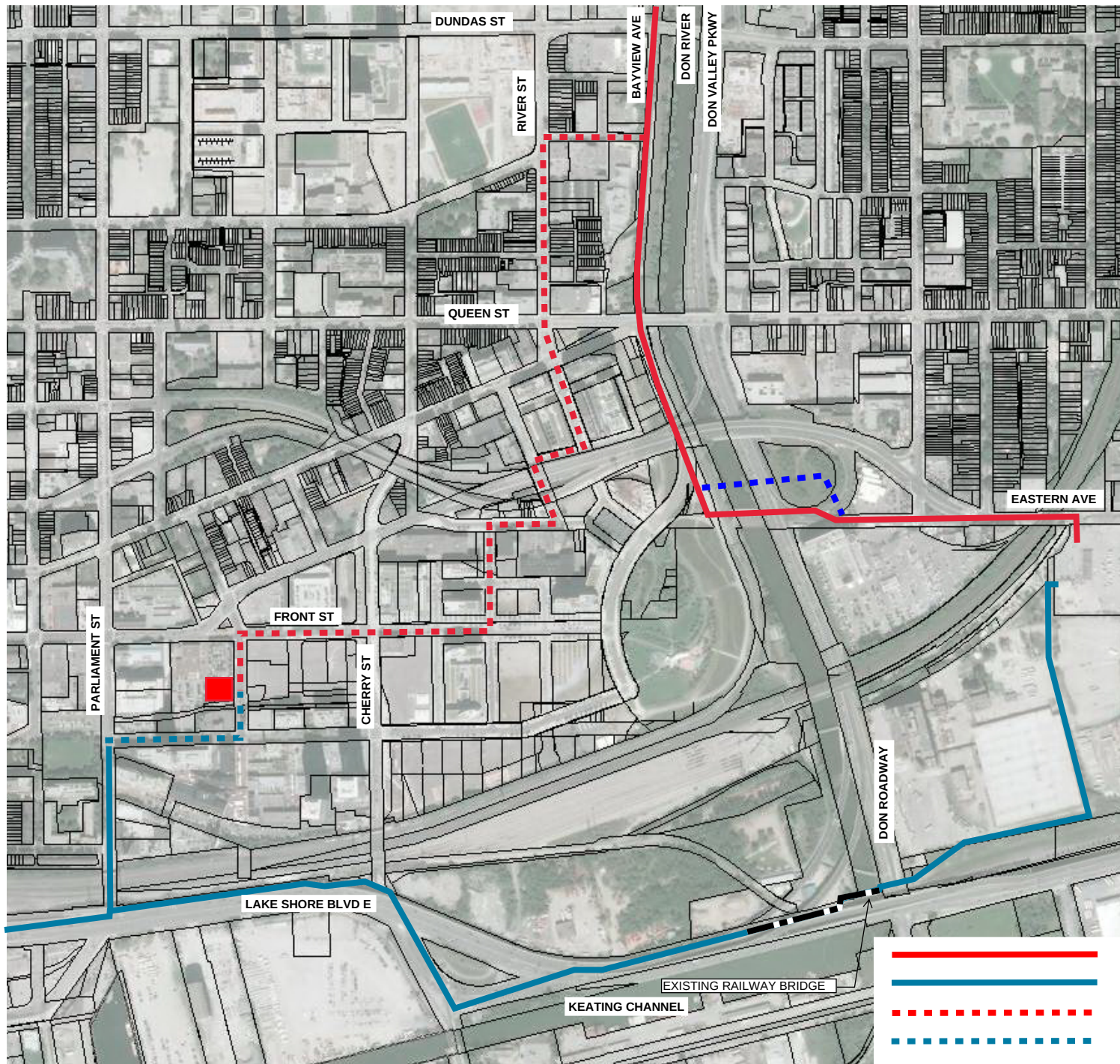
Attendees:	Initials	Copies to:	Initials
Simon Karam, WT	SK	David Kusturin, WT	DK
Shannon Baker, WT	SB	Julius Gombos, WT	JG
Ken Dion, WT	KD	Jennifer Ogrodnick, WT	JO
Ahmed Bhabha, WT	AB	Sasha Jurak, WT	SJ
Srinivas Ravulaparthi, Colliers	SR	Maher Al-Huq, Colliers	MAH
Sean Decloux, Colliers	SD	John McKee, Colliers	JM
Ahmed Bhabha, Colliers	AB	Stephen McKenna, CoT	SM
Jose Cruz, EllisDon	JC		
Ken Henderson, EllisDon	KH		
Michael Noble, CoT	MN		
Melany Afara, Enbridge	MA		
Byron Madrid, Enbridge	BM		
Jim Arnott, Enbridge	JA		
Tracey Browne, Enbridge	TB		
Aron Murdoch, Enbridge	AM		
Tara Kuuksman, Enbridge	TK		
Chris McGivern, Enbridge	CM		
Michael Meschino, Entuitive	MM		
Mike MacDonald, Planmac	MM2		

Item		Action	Due
	INTRODUCTION		
	[no items]		
	UPDATES ON PREVIOUS MEETING ACTION ITEMS		
	[no items]		
	ENBRIDGE REROUTING OPTIONS REVIEW MATRIX		
1.1	Team (Enbridge, Waterfront Toronto, EllisDon, Planmac, Entuitive, City) filled out the Draft Study Table. The table will continue to be advanced as options are reviewed and refined. The table will be circulated alongside these minutes. Parties to review table and provide any missing info.	Info All	 May 6
	NEXT STEPS		
1.2	Enbridge to send email to SK regarding further clarifications for Agreement.	Enbridge	April 25
1.3	WT to respond to 1.2.	WT	May 3
1.4	Enbridge to promptly provide Cost Breakdowns associated with each option following completion of 1.3. Cost Breakdown information is required for review by team and to determine next steps.	Enbridge	May 3
1.5	Enbridge (JA) to provide sketches that outline each of the three options in a plan view of the site. Post meeting note: Complete.	JA	May 3
1.6	Entuitive / Planmac to review Cost Breakdowns referred to in 1.4.	Entu / Planmac	May 10
1.7	Agreement aiming to be executed by May 10.	WT / Enbridge	May 10
	OTHER BUSINESS		
1.8	WT stated that the earliest date to commence Lake Shore Bridge Construction is: - August 2020 for Base Case (ramps in place) - January 2021 for Alternative Case (ramps removed)	Info	
These minutes are considered an accurate reflection of discussions, agreements and decisions made. Should participants disagree with minute items carried, they are to request changes as may be applicable at the following meeting. If no changes are made, minutes are considered as an accurate record of the meeting held.			

Option 1

Relocation of NPS 20 Gas Main and Regulation Station

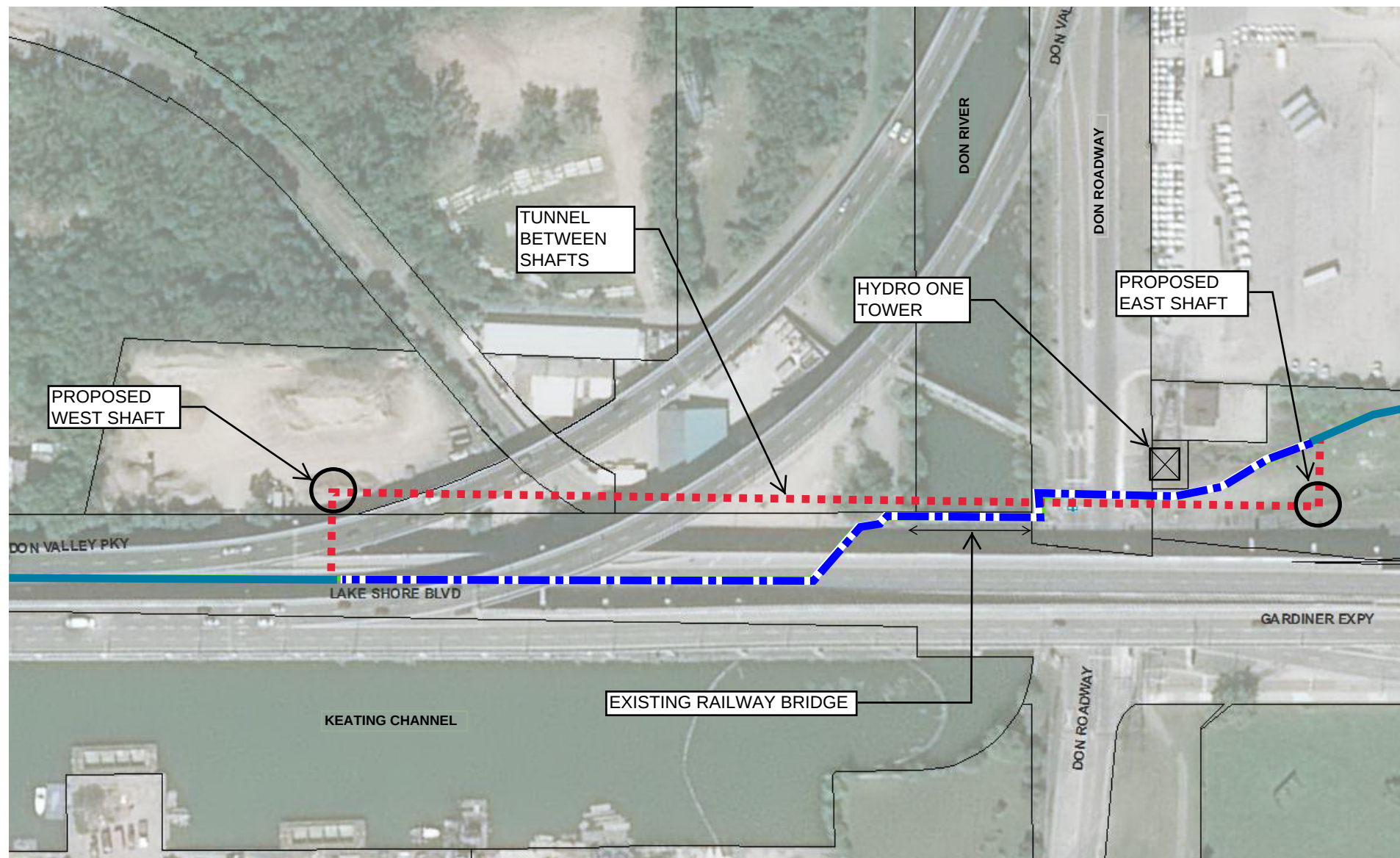
Attachment #12



- Existing NPS 30 XHP Gas Main
- Existing NPS 20 HP Gas Main
- - - Proposed NPS 20 XHP Gas Main
- - - Proposed NPS 20 HP Gas Main
- . . . Proposed NPS 30 XHP Gas Main
- - - Abandoned NPS 20 HP Gas Main
- Proposed Regulation Station

Option 2 - Not viable

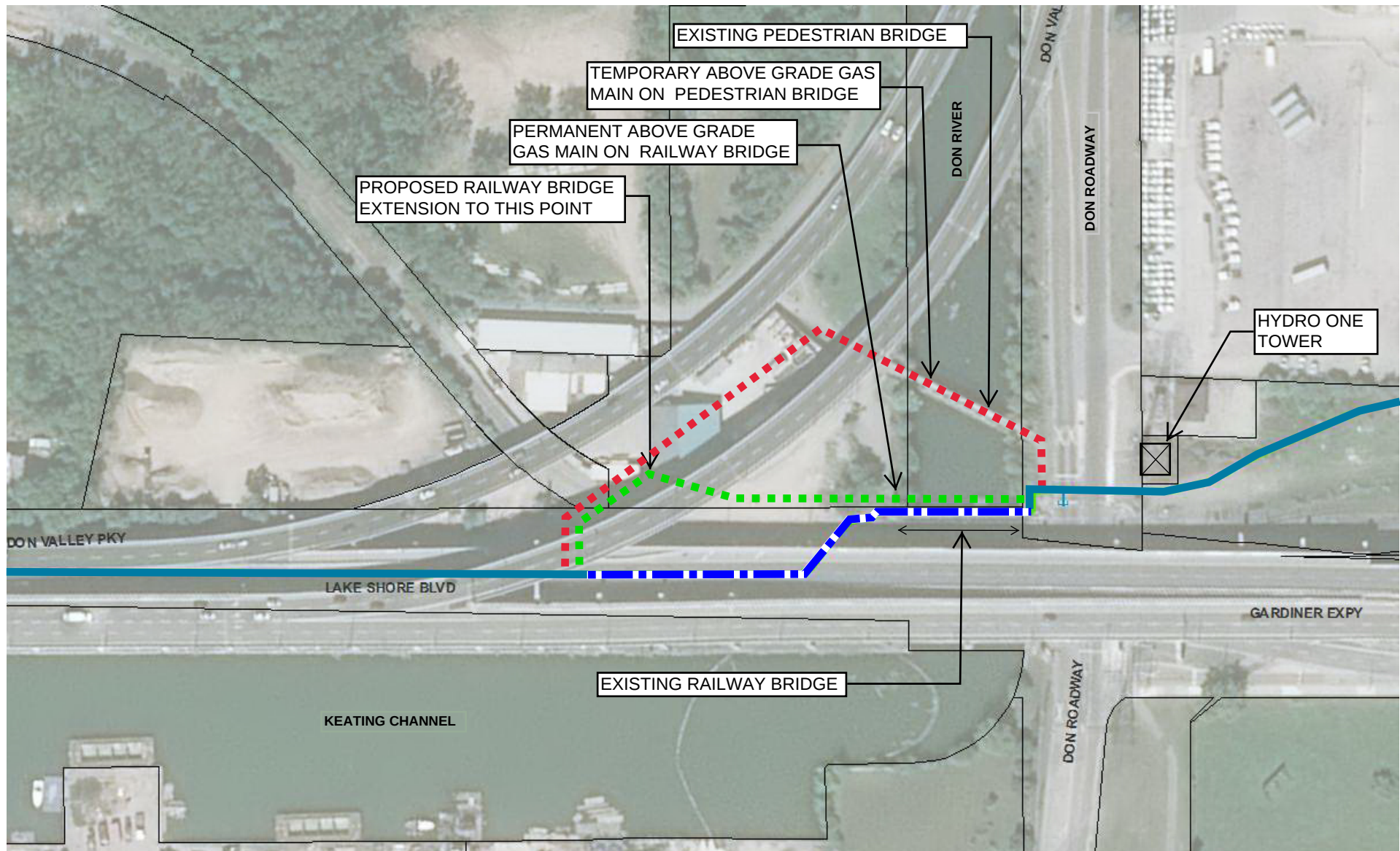
Tunnel Under Don River



- Existing NPS 20 HP Gas Main
- Proposed NPS 20 HP Gas Main
- Abandoned NPS 20 HP Gas Main

Option 3 - Not viable

Temporary use of pedestrian bridge



- Existing NPS 20 HP Gas Main
- Temporary NPS 20 HP Gas Main Relocation
- Permanent NPS 20 HP Gas Main Relocation
- - - - Abandoned NPS 20 HP Gas Main

Enbridge Relocation Study Table (Draft for Discussion)

Populated based on April 23, 2019 Meeting

Attachment #13

Option and Description	Enbridge Cost Estimate*	Schedule	Risks	Constructability	Remarks
1. Relocation on the west side of the Don River (as per the option presented Oct 9, 2018)	\$54M	If agreed to proceed by May 10: - Planning: 12-18months (8-12months from approval for piping) - Piping Construction start Nov 2019 and finish Aug 2020 - Station Construction start Jan 2020 and finish Feb 2021 - Abandonment in March / April 2021	- If LTC not required (just for pipe portion) - Minor schedule improvement if not required. Station is driver - Lake Shore Bridge delay - Coordination of adjacent works - Concurrent works - risk to Enbridge project (can coordinate to mitigate) - North Tie in at ~Labatt Ave	- Enbridge would like to abandon in place and decommission 1920m of new 20" pipe ~300m of abandoned 20" pipe - EllisDon is not constructing anything in this scenario other than removing pipe	- Zoning Permit for station site Required. - City approval required for road moratorium - Station required
2. Microtunnel under the Don River near the existing crossing alignment	\$47M	If agreed to proceed by May 10: - Planning: 18-20months - Construction is 8-10months - Submit LTC Feb 2020. Approval by OEB Aug 2020. - Construction Start Jan 2021 and finish Dec 2021 - Abandonment in Jan / Feb 2022	- Impact on existing structures - Third party projects in vicinity - Damages to new structures (pipeline) - Future development concerns - Difficulty associated with deep scheme construction (~10 - 20m below grade)	- Geology may not be favourable for construction - Enbridge engineering department not favourable based on third party requirements and additional risks 375m of new 20" pipe ~320m of abandoned 20" pipe	20m down for micro tunneling - Hydro One, City, IO, TRCA approvals - LTC planning wouldn't limit schedule like in Option 1 due to previous work done - LTC required for land easement. - LTC requires EA report, documentation to MOE, Open house, etc. - Station not required
3. Temporary relocation on the existing (or a new) pedestrian bridge crossing the Don River (gas main to be moved back on the Lake Shore Bridge in the final condition)	\$45M	If agreed to proceed by May 10: - Enbridge engineering studies will be expansive and timely - Same LTC requirements as Option 2	Construction in vicinity of exposed Enbridge line	12.2m clearance from base of rail required - New temporary crossing by EllisDon - Provide permanent support for when pipe is relocated - Enbridge engineering department not favourable based on third party requirements and additional risks	- City exemption required - Enbridge has no interest due to risk in this option - lack of internal support due to high risk and costly construction.

*Cost estimate breakdown to be provided by Enbridge for review.

Sent: Friday, August 2, 2019 11:04 AM
To: Byron Madrid; Aron Murdoch; 'Melany Afara'; Jim Arnott; David Kusturin; Simon Karam; Srinivas Ravulaparthi; Sean Decloux; Christian Giles; Chris Loader; michael.catalano@toronto.ca; Michael (Legal) Smith; Jonathan Ho; Brad Kalus; bsamulewitsch@ellisdon.com; jcruz@ellisdon.com; mvandyck@ellisdon.com; khenderson@ellisdon.com
Cc: Julius Gombos; Shannon Baker; Ken Dion; Don Forbes; Sameer Akhtar; John McKee; David.Stonehouse@toronto.ca; Stephen McKenna; Steve McKenna (smckenna@toronto.ca); Andrea Broughton (andrea.broughton@toronto.ca); Greg.Horgan@toronto.ca; Avi Bachar
Subject: PLFP Enbridge Re-Routing Options Workshop-follow up_Meeting Minutes & document Package_July 29 2019
Attachments: 2019 07 29_Minutes_Enbridge Lake Shore bridge design Coordination_R1.pdf; Enbridge Meeting_July 29 2019.zip

Hi All,

Please find attached minutes and requested document to above captioned meeting held July 29, 2019.

Document Package includes following:

- Meeting Presentation_July 29 2019
- Utility relocation support & section details
- Lake Shore bridge schematic design
- Staging plan
- Schedule

Please let us know if you have any comments.

Thanks & Regards

EIT | PMP | PMI-RMP | PMI-ACP | ENV-SP
Assistant Project Manager | Bridges Structures | PLFP Program Management Team
COLLIERS PROJECT LEADERS
Mobile 647 248 4497
Email [REDACTED]



Minutes of Meeting

Project Name: Port Lands Flood Protection and Enabling Infrastructure Project
Meeting Number: 04
Subject: PLFP Enbridge Re-Routing Options Workshop Follow Up
Minutes Prepared By: Ishan Garg
Date of Meeting: July 29, 2019
Date of Next Meeting: TBD

Location: Waterfront Toronto Offices
 1-866-488-8972, Conference code 269

Attendees:	Initials	Copies to:	Initials
David Kusturin, WT	DK	Julius Gombos, WT	JG
Simon Karam, WT	SK	Shannon Baker, WT	SB
Srinivas Ravulaparthi, Colliers [WT]	SR	Ken Dion, WT	KD
Ishan Garg, Colliers [WT]	IG	Don Forbes, WT	DF
Sean Decloux, Colliers [WT]	SD	Sameer Akhtar, WT	SA
Christian Giles, WT Secretariat	CG	John McKee, Colliers [WT]	JM
Christopher Loader, CoT	CL	David Stonehouse, CoT	DS
Michael Catalano, CoT	MC	Stephen McKenna, CoT	SM
Michael Smith, CoT	MS	Andrea Broughton, CoT	AB
Jonathan Werner, Entuitive	JW	Greg Horgan, CoT	GH
Jonathan Ho, Entuitive	JH	Avi Bachar, CoT	AV
Brad Kalus, Planmac	BK		
Brian Samulewitsch, ED	BS		
Jose Cruz, ED	JC		
Matt Van Dyke, ED	MV		
Ken Henderson, ED	KH		
Byron Madrid, Enbridge	BM		
Aron Murdoch, Enbridge	AM		
Melany Afara, Enbridge	MA		
Jim Arnott, Enbridge	JA		

Item		Action	Due
1.0	INTRODUCTION		
1.1	The Meeting was attended by Waterfront Toronto (WT), City of Toronto (CoT), Enbridge, Entuitive, Planmac and EllisDon. The purpose of the meeting was to discuss the relocation of the NPS20 under Lake Shore bridge.		
2.0	BACKGROUND INFO		
2.1	WT briefed team on relocation needs of the NPS20 gas line for Lake Shore bridge construction and also on outcomes from previous communication with Enbridge.	Info	
2.2	WT explained both the design scenarios for Lake Shore bridge design i.e. Base case (with Gardiner ramps in place) and Alternative case (with Ramps Gardiner down). WT clarified that the project team is working simultaneously on both the design scenarios until further instruction from CoT.	Info	
2.3	Enbridge acknowledged the receipt of CoT's letter and confirmed that their legal team is reviewing the same.	Info	
3.0	DESIGN BRIEF ON PROPOSED OPTION		
3.1	Gas Line Background – Enbridge mentioned that the gas line was installed in 1950s under agreement with Harbor Commission.		
3.2	Enbridge Comments (C) and WT Responses(R): C Spacing of pipeline from rail line R Existing gas line current spacing with Rail line and latest spacing requirements will be confirmed. C Proposed option is not a permanent option as the pipe will be exposed after relocation R Enbridge is advised to further explore the relocation options during future development in the vicinity as stated in the letter from CoT.		
3.3	Enbridge also expressed the risk of exposed pressure line during the extended period of construction.	Info	
3.4	Enbridge informed that their technical team will review the proposed relocation option and will confirm the feasibility.	Enbridge	
3.5	Enbridge confirmed that the tie-ins can be made during summer and time span required for the same will be approx. 2 months.	Info	

Item		Action	Due
4.0	STAGING PLAN FOR PROPOSED OPTION		
4.1	Enbridge Comments (C) and WT Responses (R): C Construction sequencing for relocation R Proposed construction sequencing will be issued with the meeting minutes. C Interference of relocated gas main with sheet pile wall tie-backs near new west abutment. R Construction will be staged to avoid gas main interference with sheet pile wall tie-backs as described in staging plan. C Enbridge requested WT to share the schedule for utility relocation and construction of the bridge. R Proposed schedule will be issued with the meeting minutes. Construction will start in 2021 C Will the rail bridge be operational during utility relocation and construction? R WT confirmed that rail bridge will not be operational during the utility relocation and construction phase. C Vertical clearance for barge under bridge during relocation in 2021. R Existing Bridge Soffit level is 77.5m at the lowest point and water levels can be accessed at http://www.waterlevels.gc.ca/eng to determine clearances.		
5.0	OTHER BUSSINESS		
5.1	Enbridge enquired about WT's action plan on abandoned Oil line under Lake Shore bridge. WT will advise status.		
6.0	NEXT STEPS		
6.1	WT will share the presentation, proposed design, detailed staging plan, schedule along with meeting minutes and the presentation.	WT	Aug 2
6.2	Enbridge technical team will review the provided documents and demand extra document (if any) by August 09 and provide feedback on feasibility of the option by August 16. This will include Legal and Technical Feedback	Enbridge	Aug 16
6.3	Follow up meeting will be scheduled in the week of August 19	WT / Enbridge	
These minutes are considered an accurate reflection of discussions, agreements and decisions made. Should participants disagree with minute items carried, they are to request changes as may be applicable at the following meeting. If no changes are made, minutes are considered as an accurate record of the meeting held.			



July 29, 2019

Port Lands Flood Protection

PLFP Enbridge Re-Routing Options Workshop Follow Up

Waterfront Toronto



All text information and images are confidential and cannot be shared.

Presentation Overview

- Background
- Previous Coordination
- Design Brief for Proposed Option
- Overview and Sections
- Staging Plan for Proposed Option



Background



- Enbridge NPS-20 Gas Main requires relocation along Lake Shore Bridge



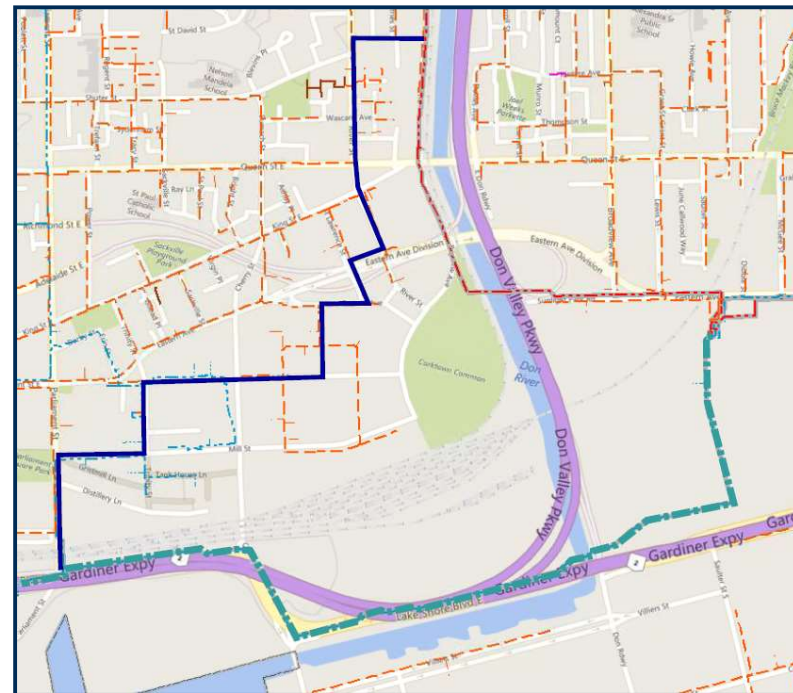
-
- Widened Channel
- Existing Channel
- NEW DOCK WALL BY OTHERS
- TRACK ALIGNMENT TO SUIT ON TRAIN ENVELOPE AND ENGINEERING HEADROOM
- EXISTING UTILITY AND DUCT BANKS TO BE SUPPORTED IN PLACE
- OUTLINE OF TRAIN PROFILES AND BEDS
- OPEN TO RAIL
- EXISTING RAILING
- NEW DOCK WALL BY OTHERS
- 3 new piers and sheet piles

4

Previous Coordination NPS-20 Rerouting Follow Up Meeting – March 13, 2019



- Outcome of Meeting on March 13, 2019:
 - Discussed cost sharing
 - Considered permit and approval timelines
 - Discussed three possible relocation options



Preferred Option Figure – Prepared by Enbridge

Previous Coordination NPS-20 Rerouting Follow Up Meeting 2 – April 23, 2019

- Outcome of Meeting on April 23, 2019:
 - Populated [Study Table](#) for three options (Cost, Schedule, Risks, Constructability)
 - Enbridge requested legal clarification in regard to WT's relationship to the City
 - Discussed Base vs Alternative Case Lake Shore Bridge schedules

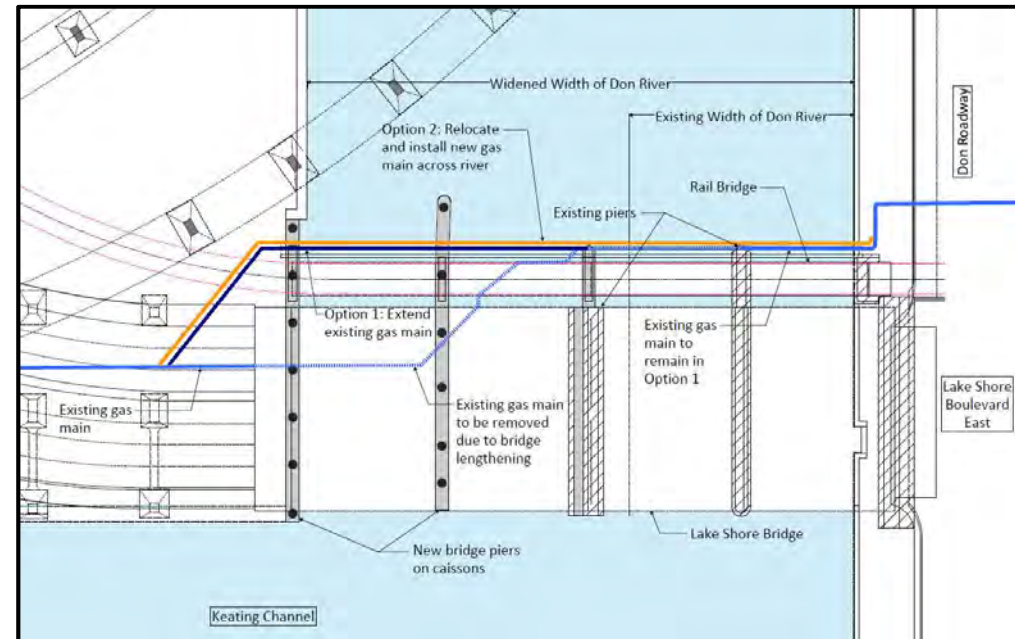
Option and Description	Enbridge Cost Estimate*	Schedule	Risks	Constructability	Remarks
1. Relocation on the west side of the Don River (as per the option presented Oct 9, 2018)	\$54M	If agreed to proceed by May 30: • Planning: 12-18months (8-12months from approval for piling) • Piling Construction start Nov 2019 and finish Aug 2020 • Station Construction start Jan 2020 and finish Feb 2021 • Abandonment in March / April 2021	• If LTC not required (just for pipe portion) ◦ Minor schedule improvement if not required. Station is driver • Lake Shore Bridge delay • Coordination of adjacent works • Concurrent works - risk to Enbridge project (can coordinate to mitigate) - North Tie in at Labatt Ave	• Enbridge would like to abandon in place and decommission • 1300m of new 20" pipe • ~300m of abandoned 20" pipe • Ebi/Don is not constructing anything in this scenario other than removing pipe	• Zoning Permit for station site Required. • City approval required for road restoration • Station required
2. Microtunnel under the Don River near the existing crossing alignment	\$47M	If agreed to proceed by May 30: • Planning: 18-20months • Construction is 8-10months • Submit LTC Feb 2020. Approval by COB Aug 2020. • Construction Start Jan 2021 and finish Dec 2021 • Abandonment in Jan / Feb 2022	• Impact on existing structures • Third party projects in vicinity • Damages to new structures (pipeline) • Future development concerns • Difficulty associated with deep scheme construction (~10 - 20m below grade)	• Geology may not be favourable for construction • Enbridge engineering department not favourable based on third party requirements and additional risks • 375m of new 20" pipe • ~320m of abandoned 20" pipe	• 20m down for micro tunneling • Hydens One, City, IO, TRCA approvals • LTC planning wouldn't limit schedule like in Option 1 due to previous work done • LTC required for land easement • LTC requires EA report, documentation to MOE, Open houses, etc. • Station not required
3. Temporary relocation on the existing (or a new) pedestrian bridge crossing the Don River (gas main to be moved back on the Lake Shore Bridge in the final condition)	\$45M	If agreed to proceed by May 30: • Enbridge engineering studies will be expensive and timely • Same LTC requirements as Option 2	• Construction in vicinity of exposed Enbridge line	• 12.2m clearance from base of rail required • New temporary crossing by Ebi/Don • Provide permanent support for when pipe is relocated • Enbridge engineering department not favourable based on third party requirements and additional risks	• City exemption required • Enbridge has no interest due to risk in this option - lack of lateral support due to high risk and costly construction

Relocation Option Table – Prepared by Team during Meeting

Previous Coordination City Letter – July 19, 2019



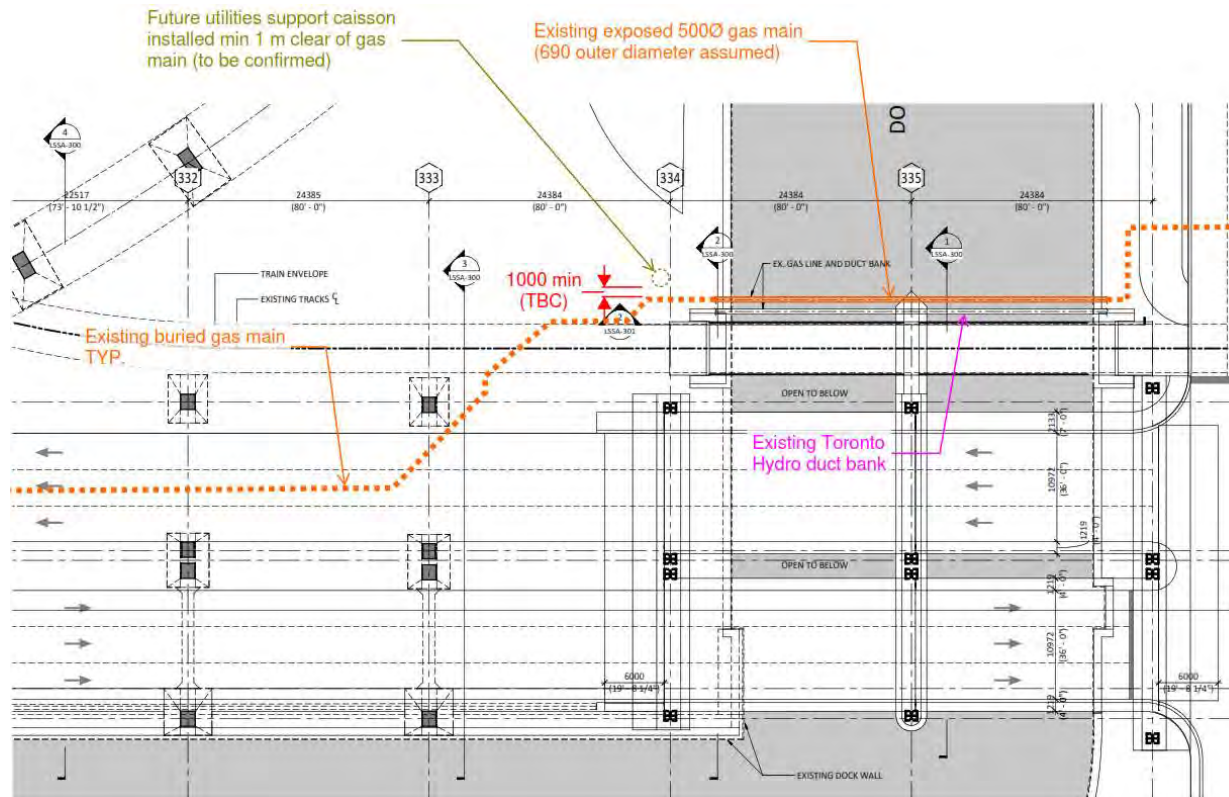
- City provided [letter](#) to Enbridge outlining WT's relationship to the City in pursuit of PLFP works



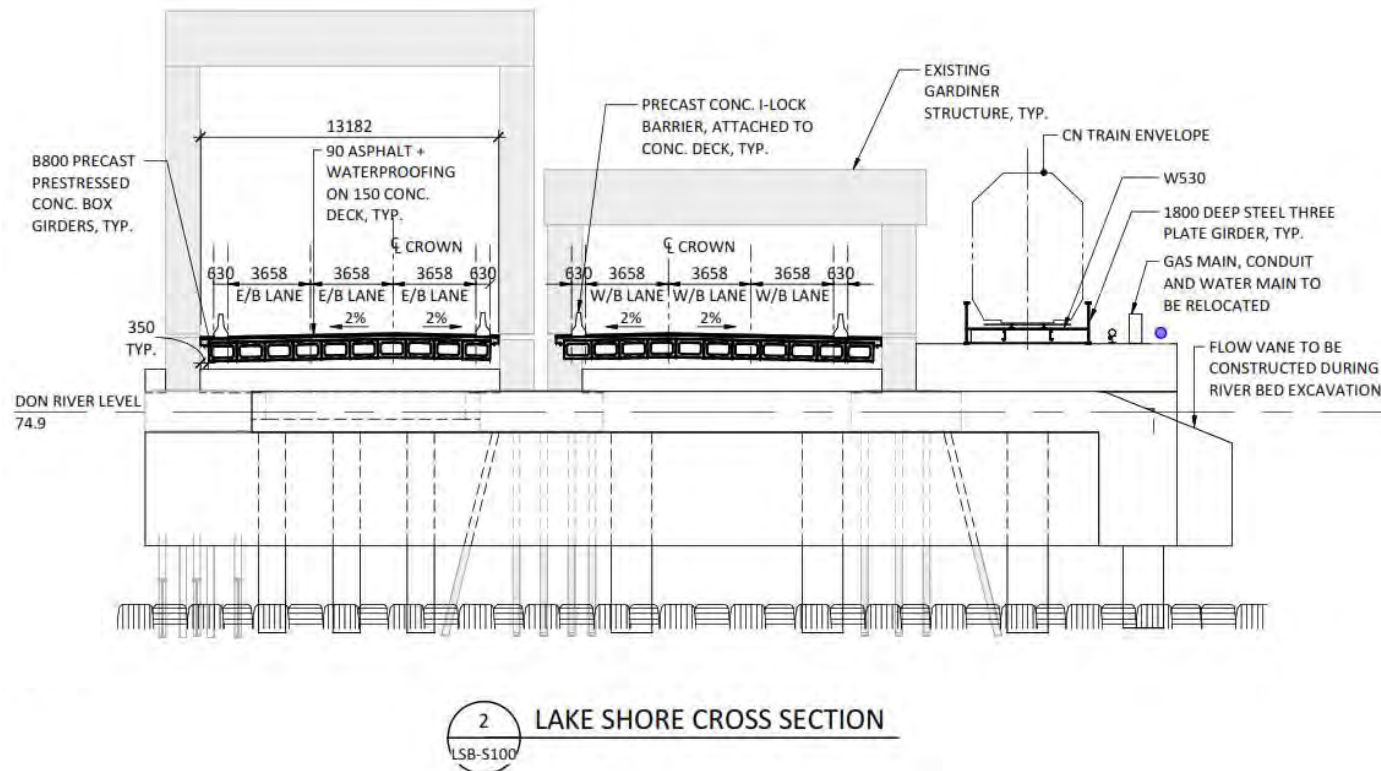
Relocation Option Appended to Letter

Design Brief for Proposed Option

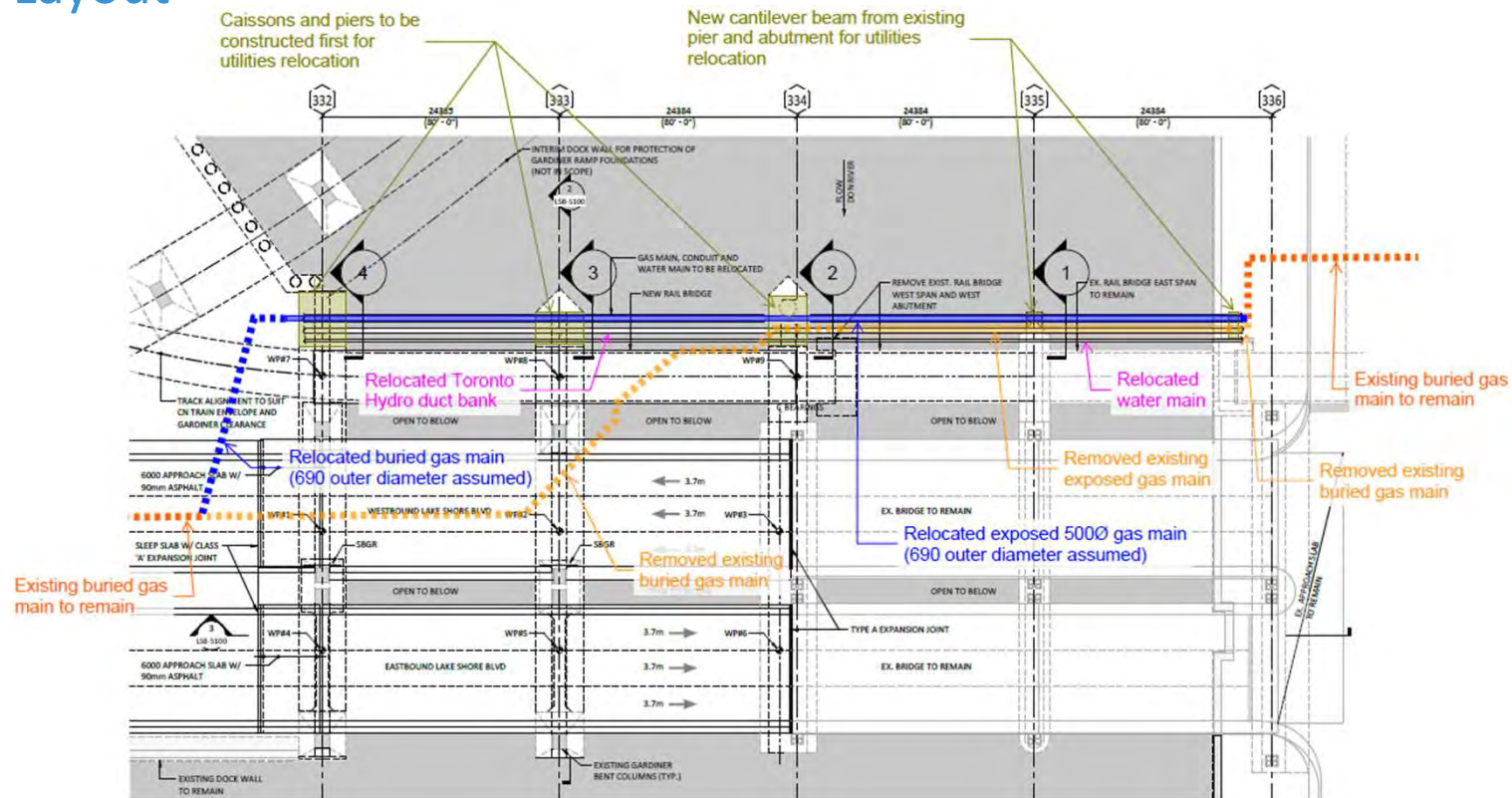
Existing Layout



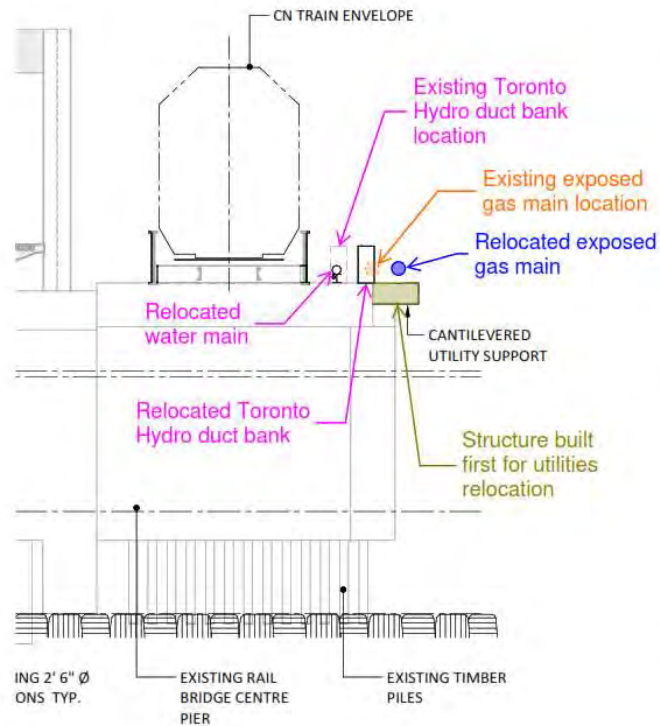
Design Brief for Proposed Option Existing Section



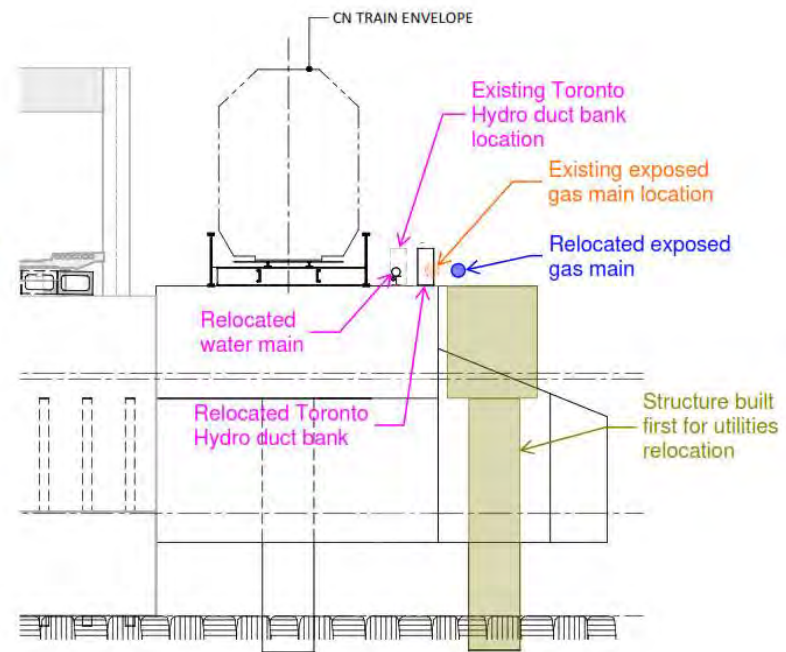
Design Brief for Proposed Option Final Layout



Design Brief for Proposed Option Proposed Sections (1+2)

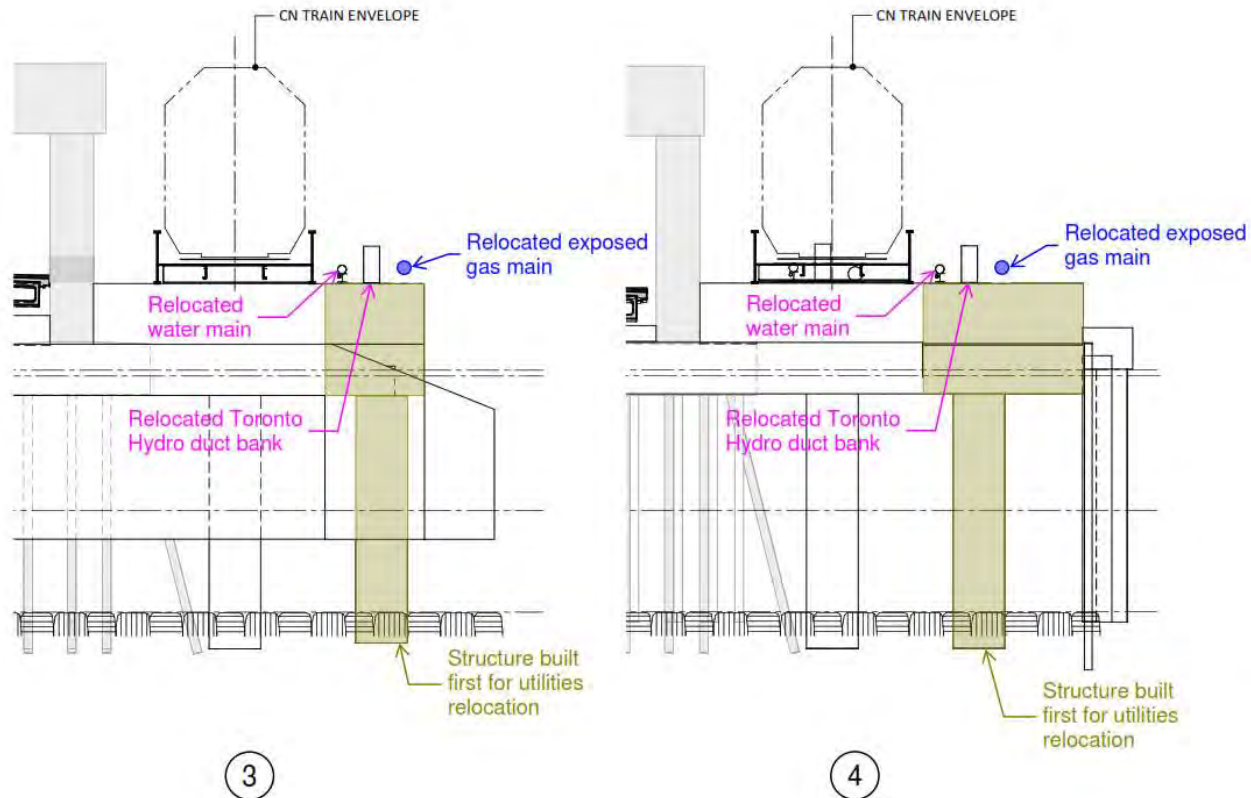


1

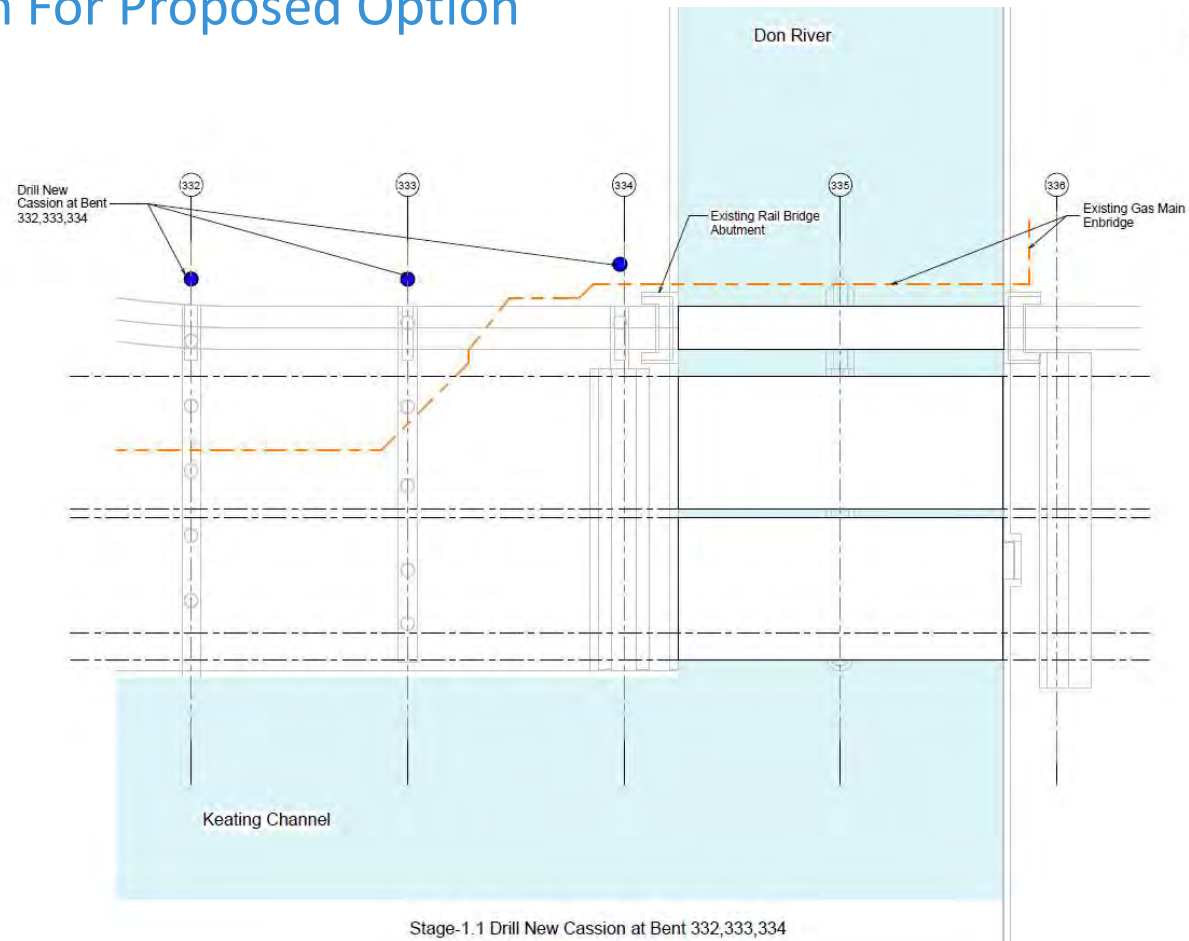


2

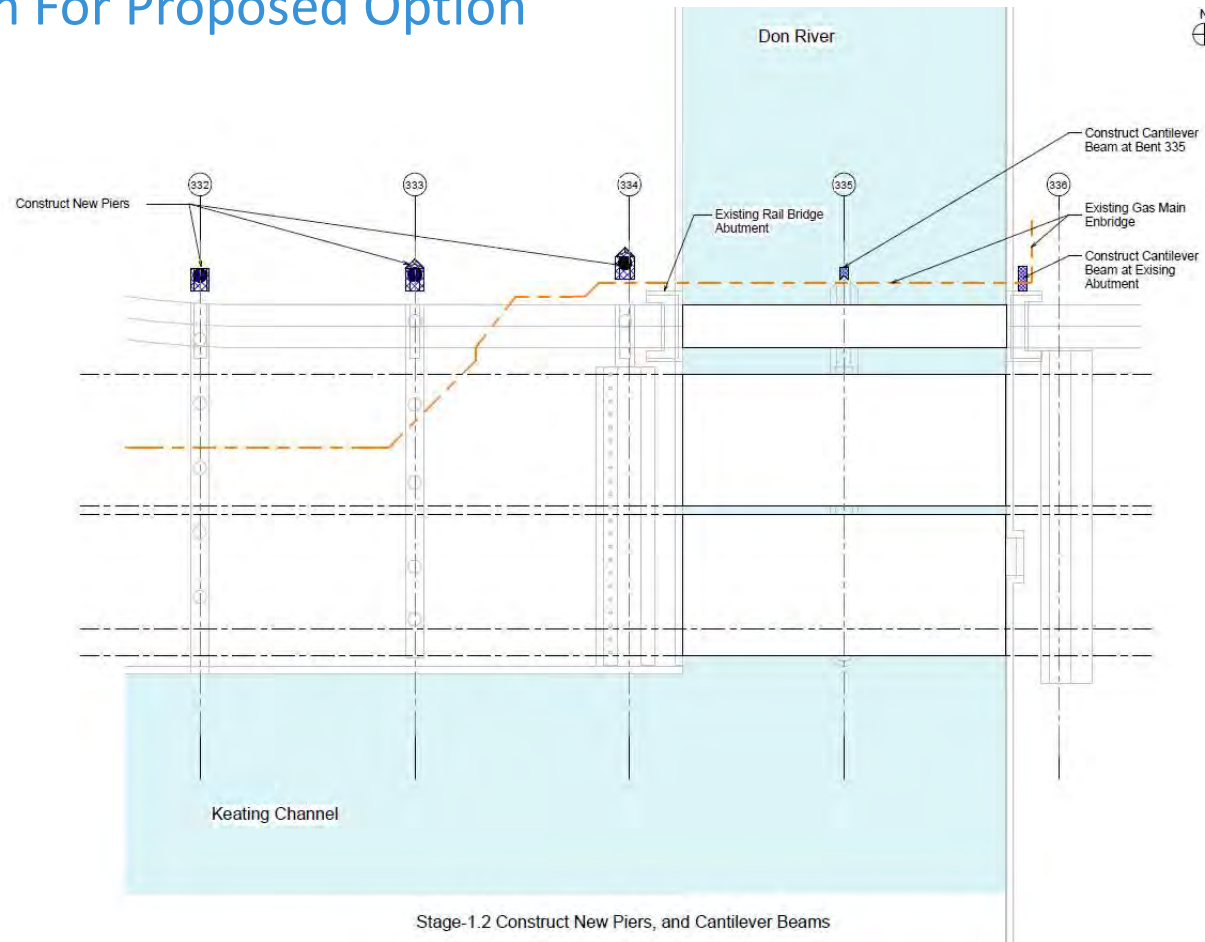
Design Brief for Proposed Option Proposed Section (3+4)



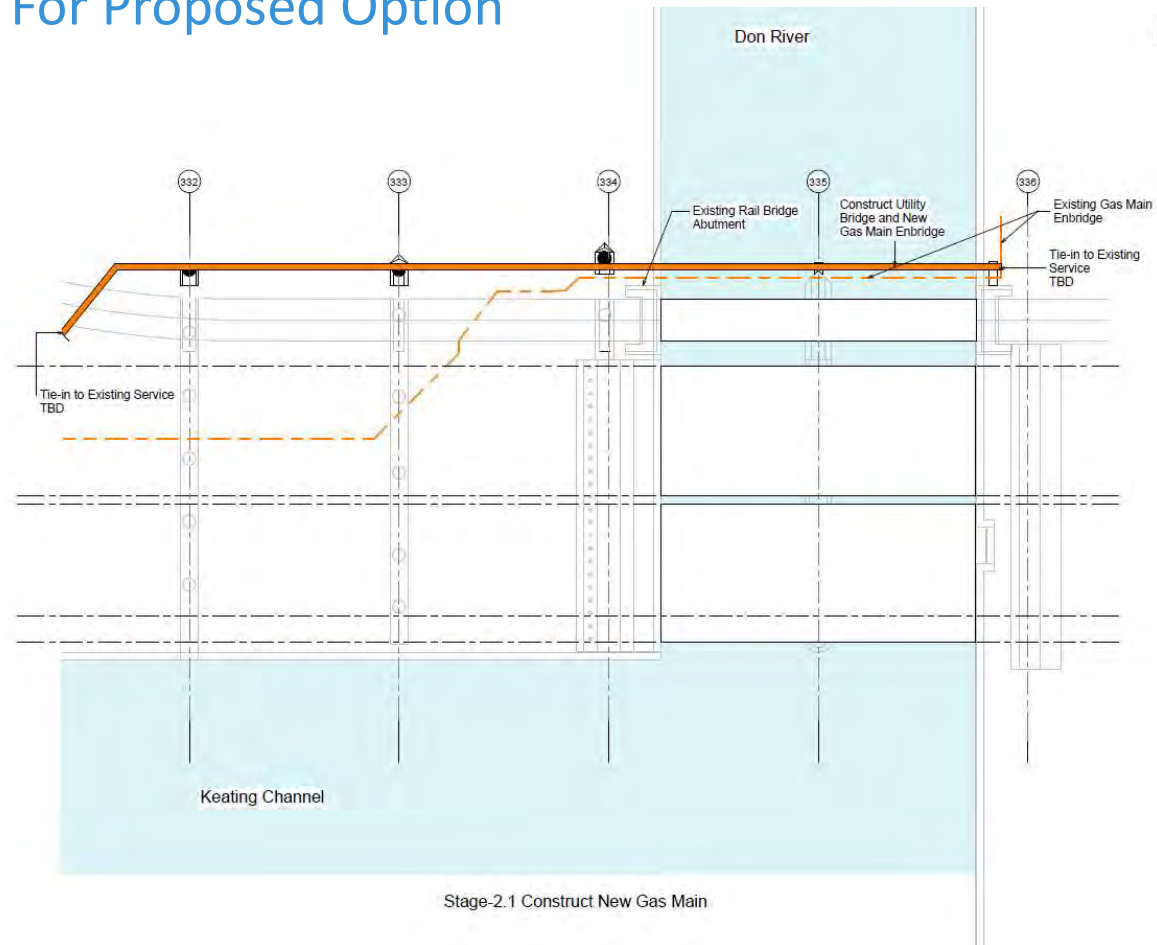
Staging Plan For Proposed Option Stage 1.1



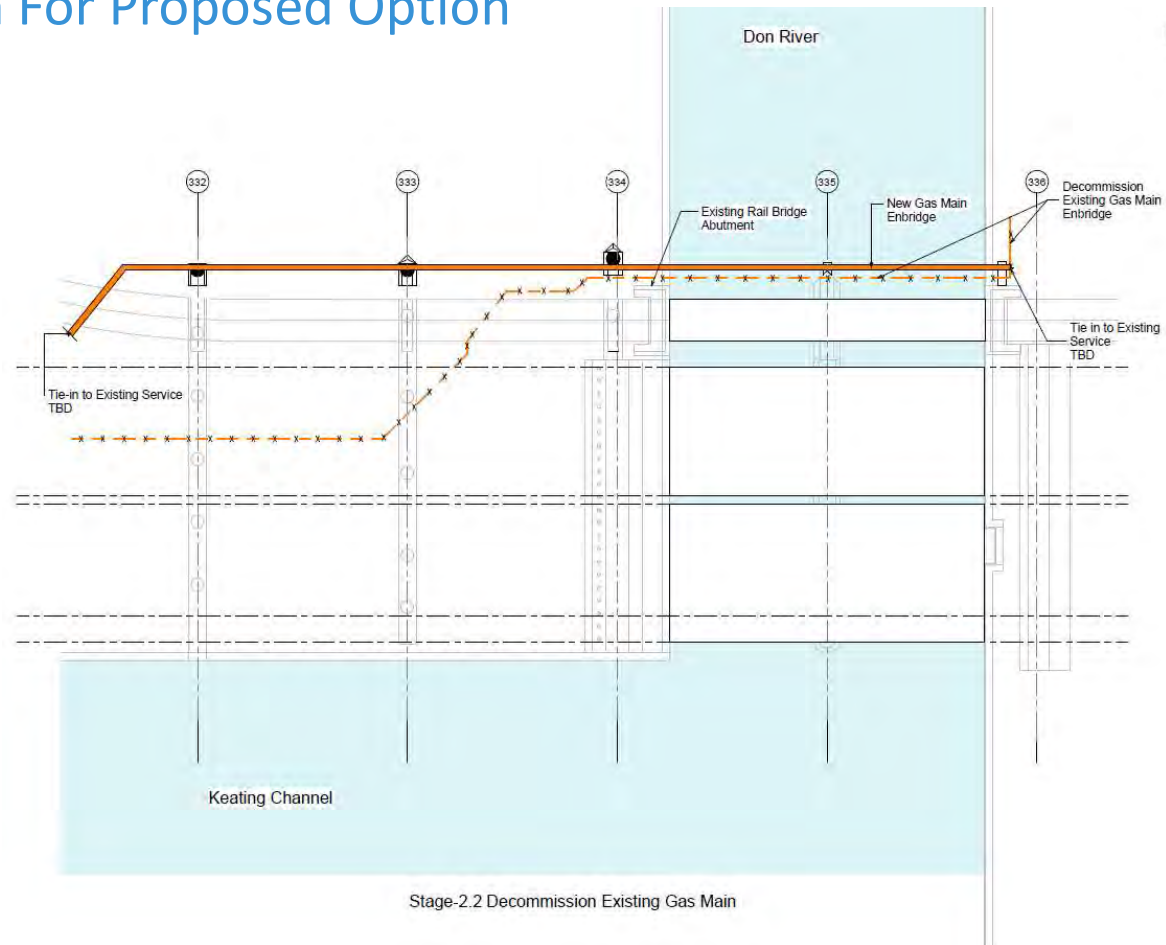
Staging Plan For Proposed Option Stage 1.2



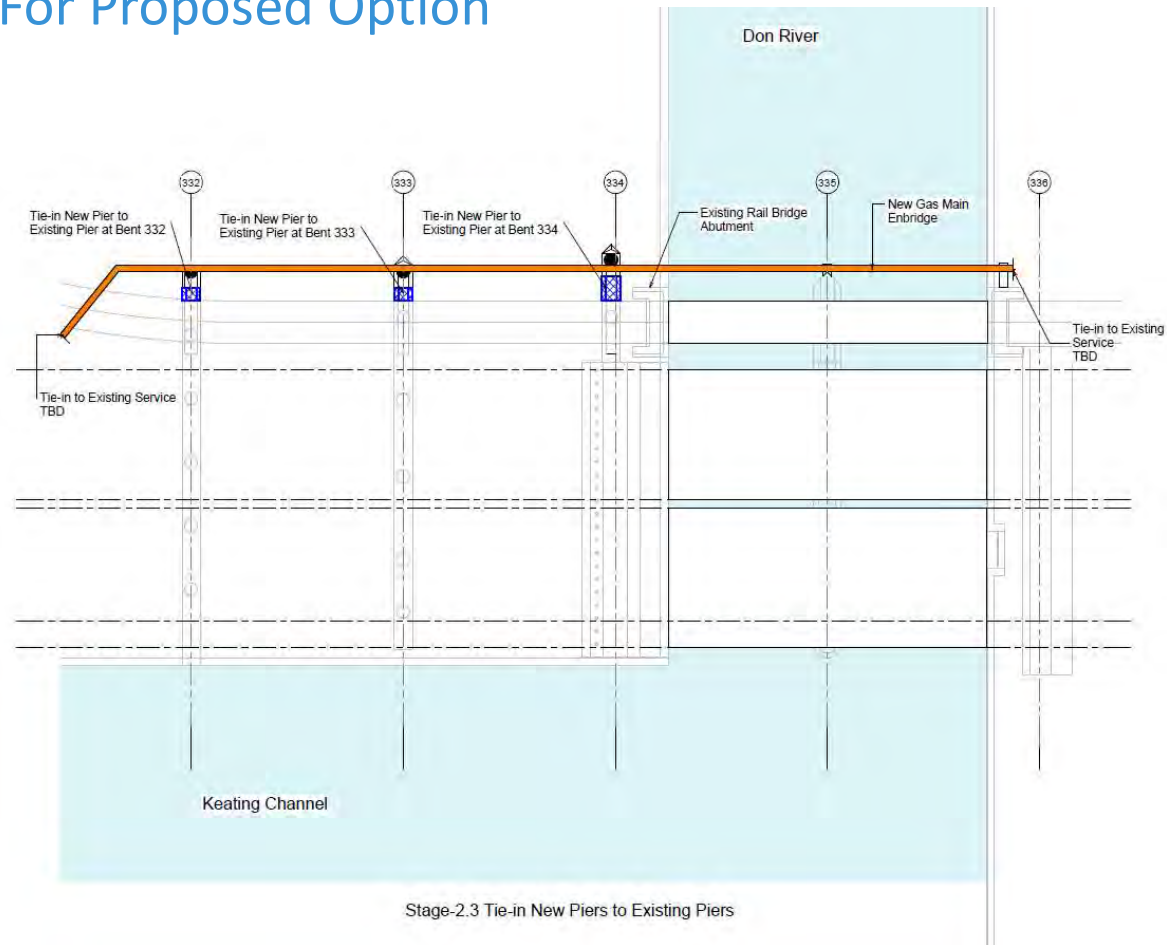
Staging Plan For Proposed Option Stage 2.1



Staging Plan For Proposed Option Stage 2.2



Staging Plan For Proposed Option Stage 2.3



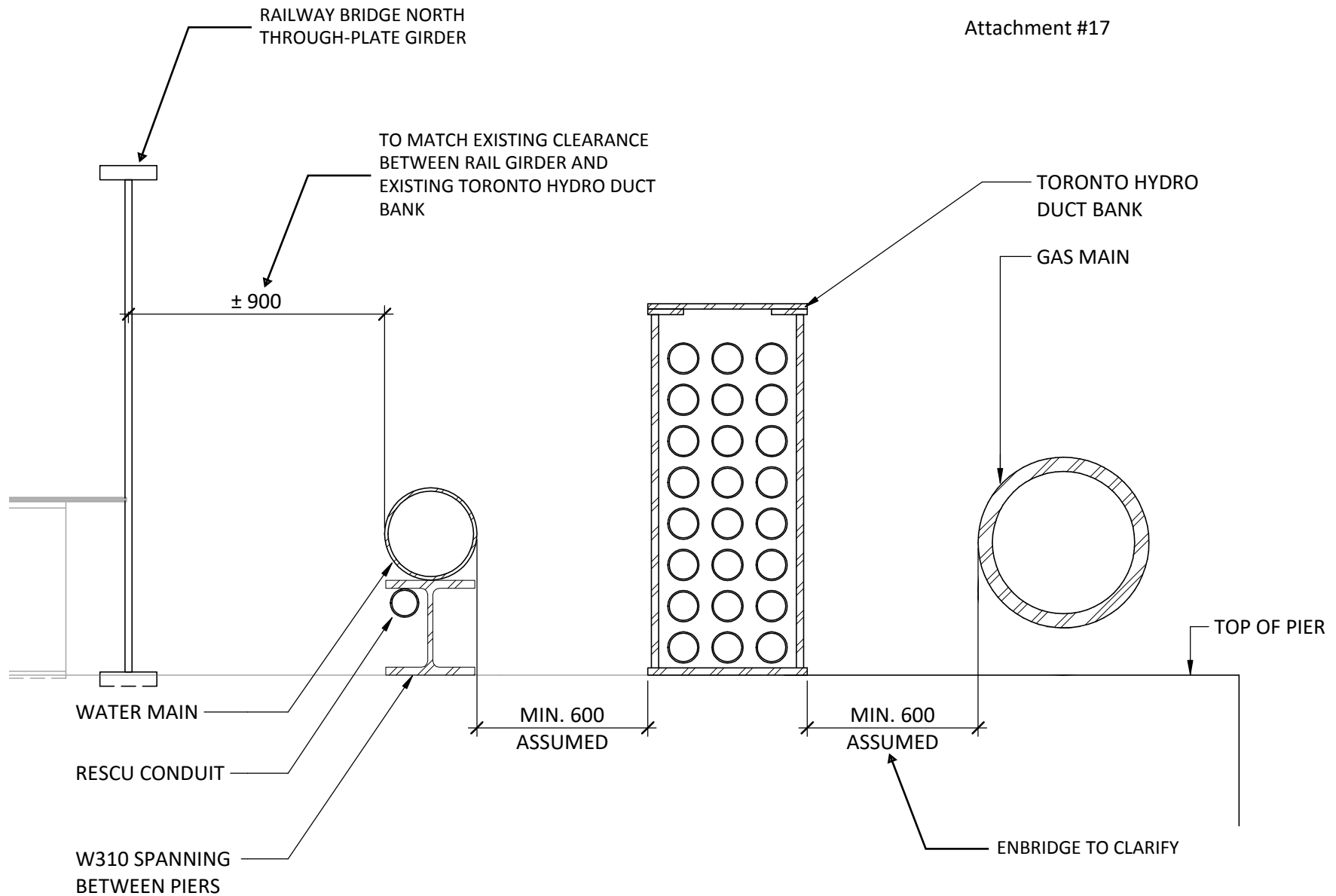
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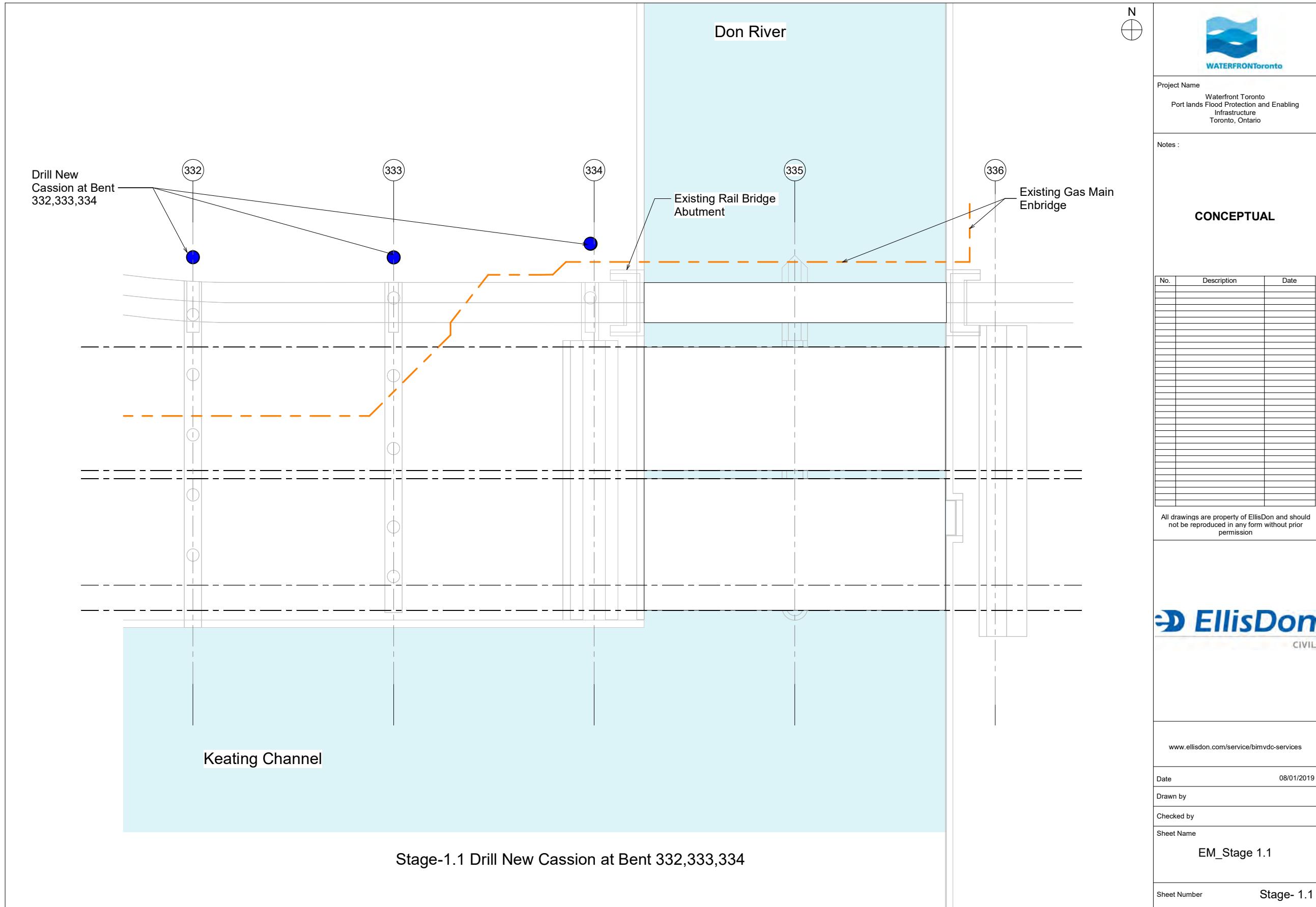




UTILITY SECTION DETAIL

NOTES:

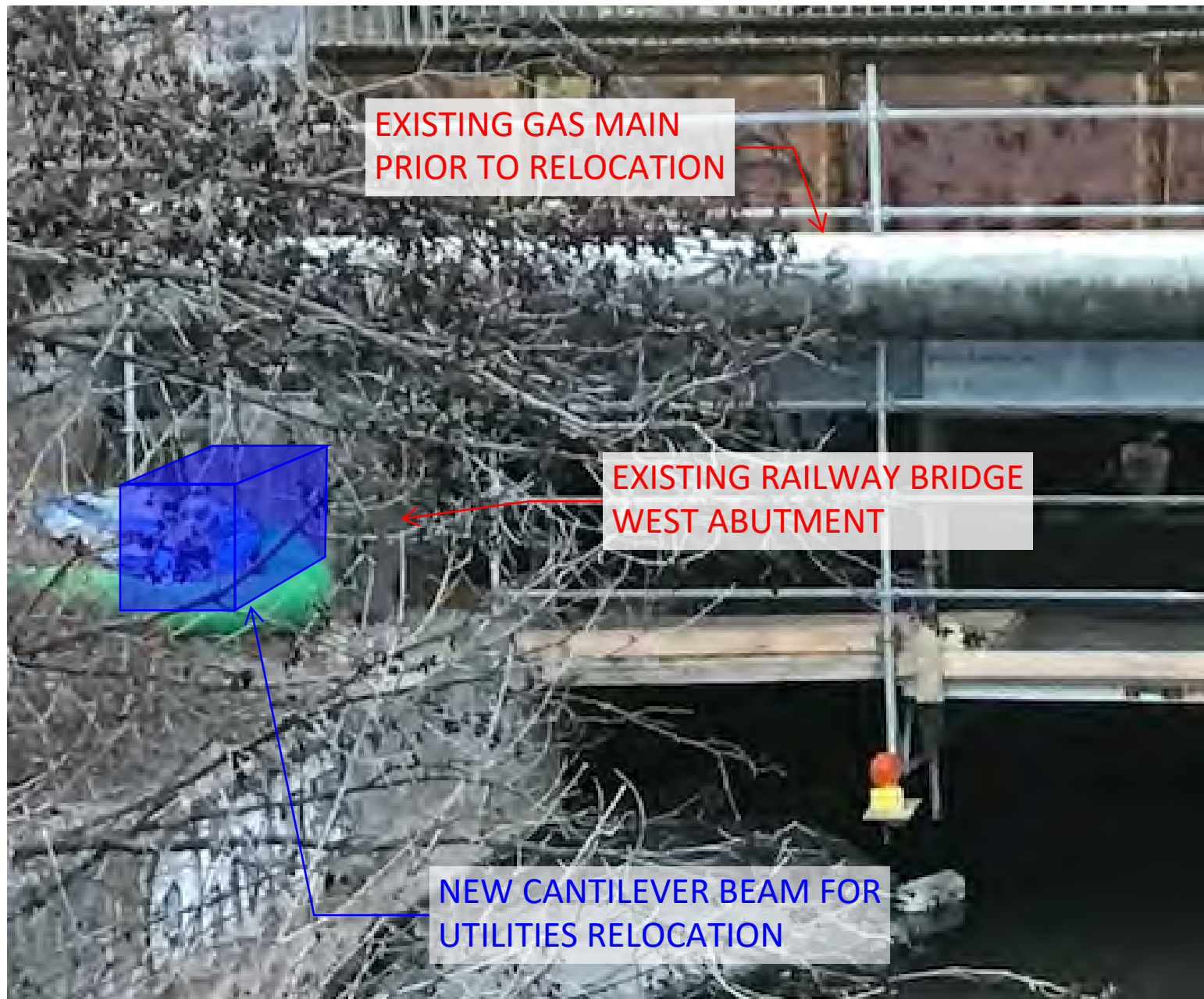
1. CLEARANCES TO RAILWAY BRIDGE AND ADJACENT UTILITIES TO BE COORDINATED WITH STAKEHOLDER OF EACH UTILITY.
2. UTILITY ELEVATIONS AT DON RIVER CROSSING ARE TO BE COORDINATED.



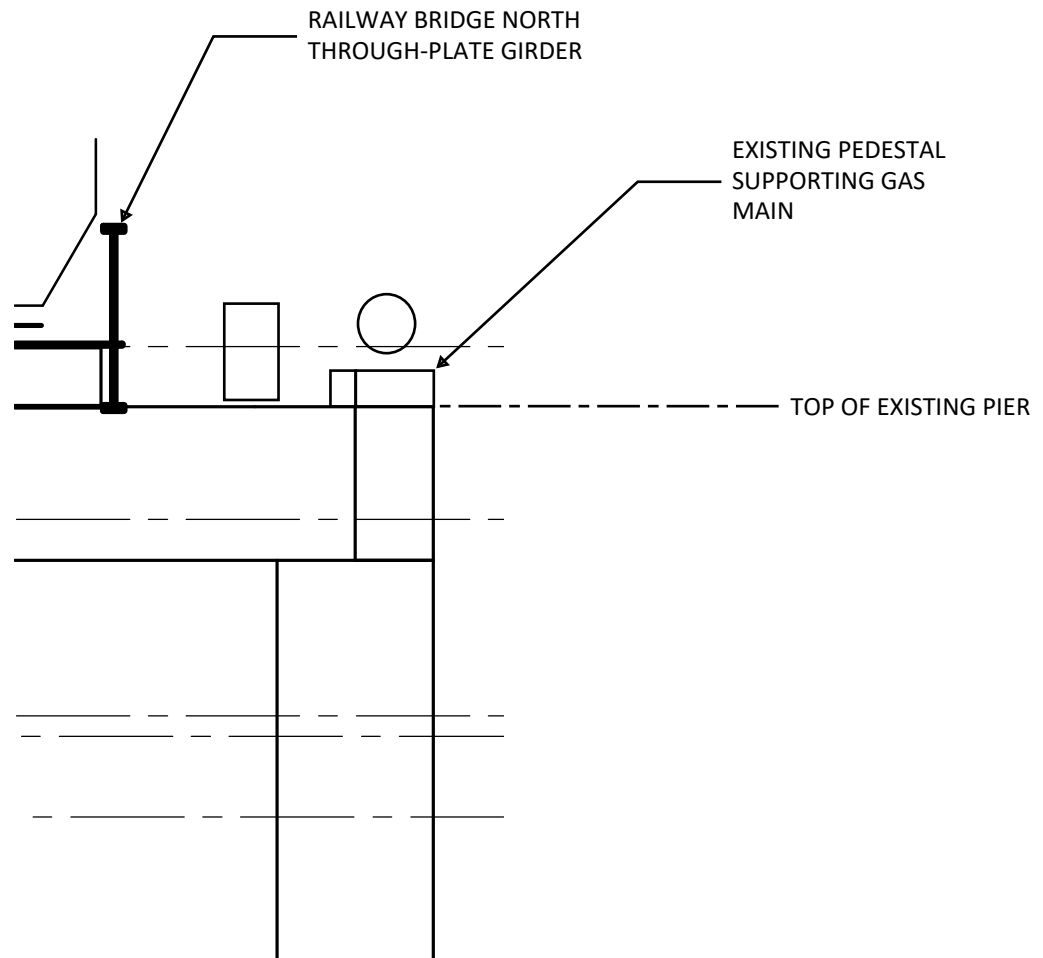


EXISTING BRIDGES CENTRE PIER

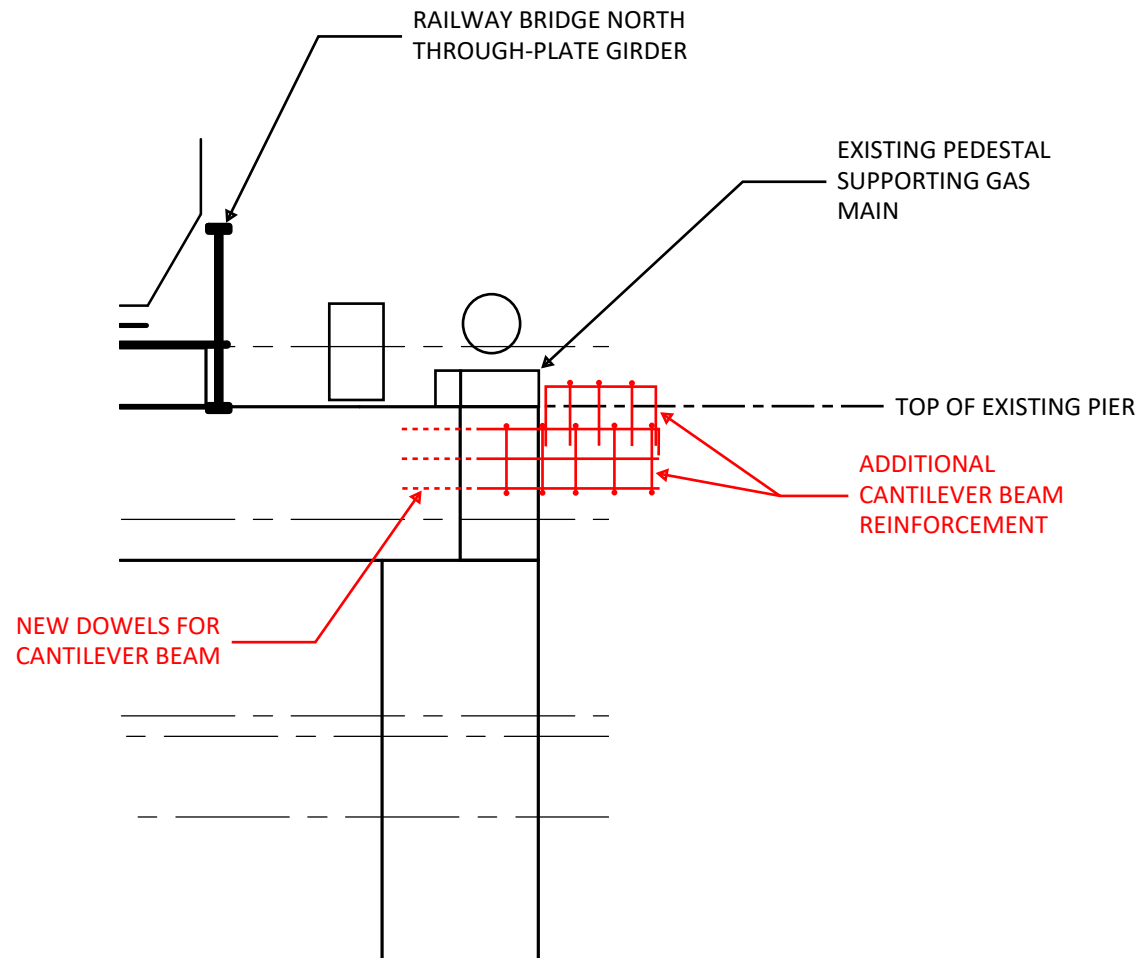
Attachment #19



EXISTING RAILWAY BRIDGE WEST ABUTMENT

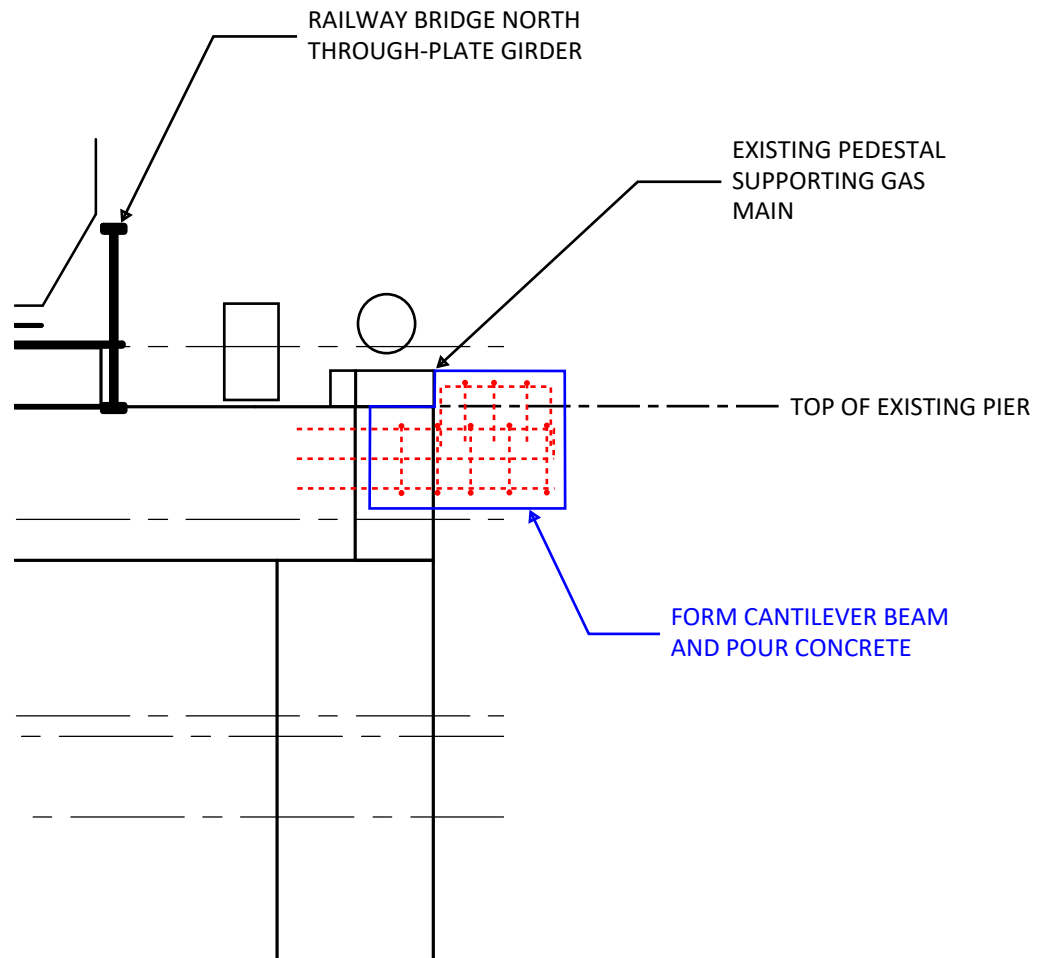


EXISTING CENTRE PIER SECTION

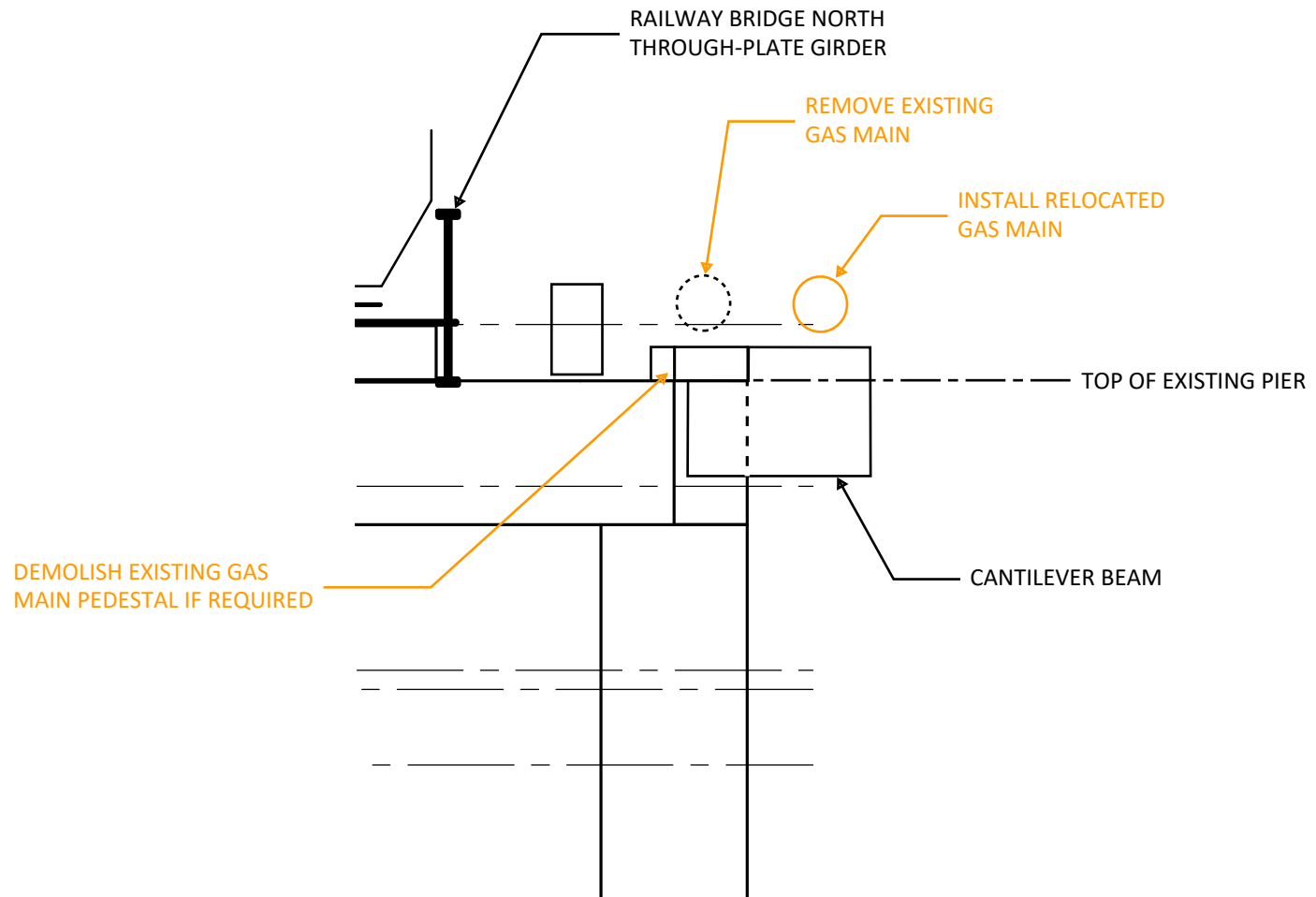


EXISTING CENTRE PIER SECTION

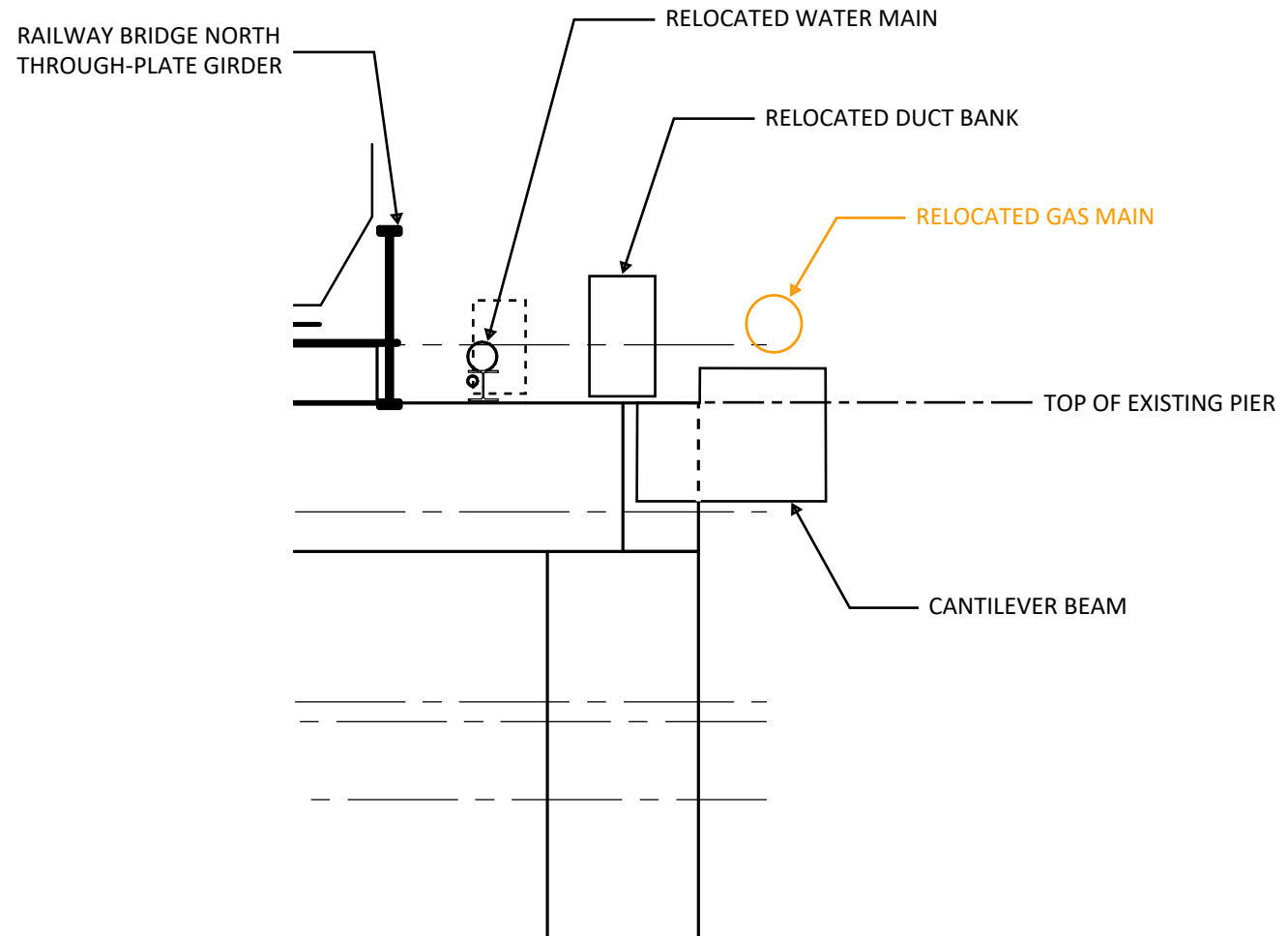
- NEW DOWELS FOR CANTILEVER BEAM



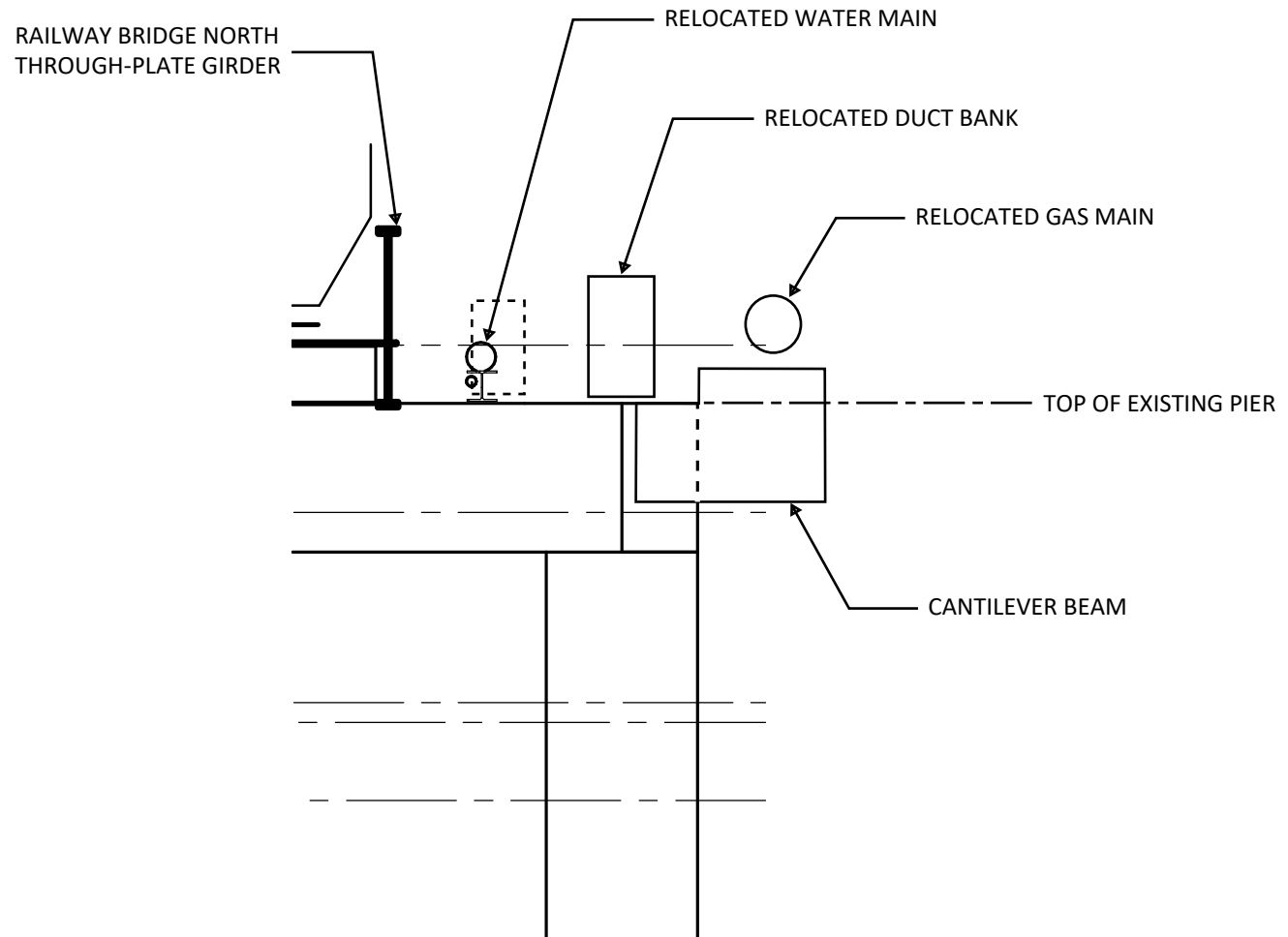
EXISTING CENTRE PIER SECTION - FORM AND POUR CANTILEVER BEAM



EXISTING CENTRE PIER SECTION - RELOCATE GAS MAIN



EXISTING CENTRE PIER SECTION - RELOCATE REMAINING UTILITIES



EXISTING CENTRE PIER SECTION - FINAL CONDITION

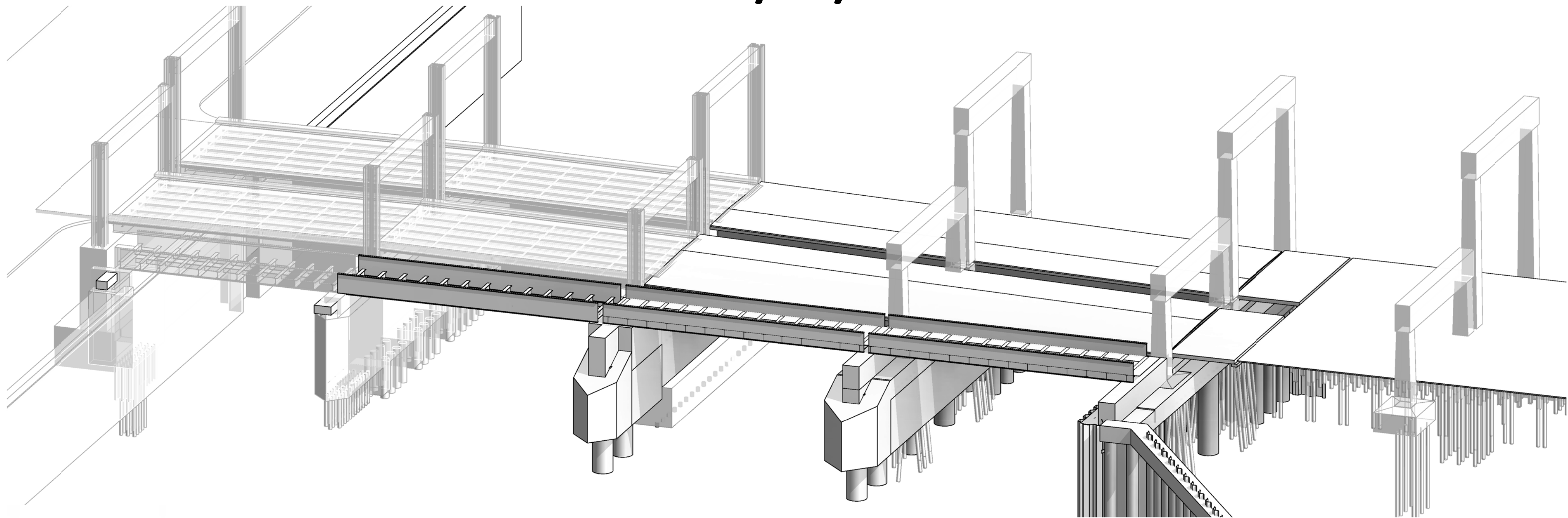
PORT LANDS FLOOD PROTECTION AND ENABLING INFRASTRUCTURE PROJECT

BRIDGE DESIGN AND ENGINEERING
Toronto, ON

LAKE SHORE BOULEVARD EAST BRIDGE EXTENSION

SCHEMATIC DESIGN

2019/07/24



DRAWING LIST			
DRAWING NO.	DRAWING TITLE	REVISION	DATE
1-SCHEMATIC DESIGN			
LSB-G001	GENERAL NOTES	0	2019/07/24
LSB-S100	GENERAL ARRANGEMENT	0	2019/07/24
LSB-S101	CONSTRUCTION STAGE SEQUENCE PLANS - STAGES A1	0	2019/07/24
LSB-S102	CONSTRUCTION STAGE SEQUENCE PLANS - STAGES A2+A3	0	2019/07/24
LSB-S103	CONSTRUCTION STAGE SEQUENCE PLANS - STAGES A4a+b	0	2019/07/24
LSB-S201	ABUTMENT AND PIER LAYOUT 1	0	2019/07/24
LSB-S202	ABUTMENT AND PIER LAYOUT 2	0	2019/07/24
LSB-S600	PRESTRESSED BOX GIRDER DETAILS	0	2019/07/24
LSB-S601	PRESTRESSED BOX GIRDER AND BEARINGS	0	2019/07/24
2-LST-000 - TRAFFIC MANAGEMENT			
LST-00200	TRAFFIC MANAGEMENT PLAN STAGE A1 EASTBOUND STRUCTURE CLOSED	0	2019/07/24
LST-00201	TRAFFIC MANAGEMENT PLAN STAGE A1 EASTBOUND STRUCTURE CLOSED	0	2019/07/24
LST-00202	TRAFFIC MANAGEMENT PLAN STAGE A2 WESTBOUND STRUCTURE CLOSED	0	2019/07/24
LST-00203	TRAFFIC MANAGEMENT PLAN STAGE A2 WESTBOUND STRUCTURE CLOSED	0	2019/07/24
LST-00205	TRAFFIC MANAGEMENT PLAN DETOUR ROUTE 1	0	2019/07/24
LST-00206	TRAFFIC MANAGEMENT PLAN DETOUR ROUTE 2	0	2019/07/24
3-LSUN-000 - UTILITIES			
LSUN-100	UTILITIES EXISTING PLAN	0	2019/07/24
LSUN-101	UTILITIES INTERIM PLAN	0	2019/07/24
LSUN-102	UTILITIES FINAL PLAN	0	2019/07/24



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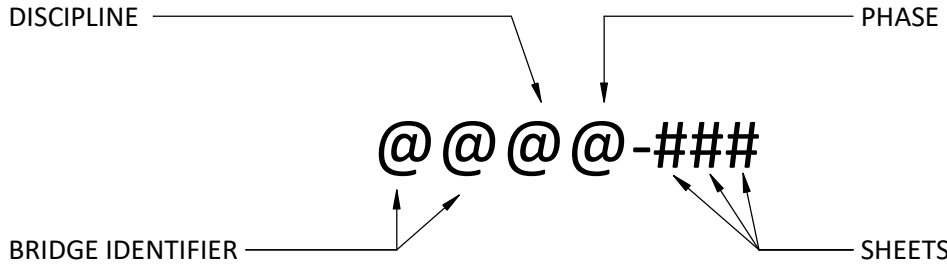
Attachment # 20

1. GENERAL NOTES
1.

ELEVATIONS SHOWN ARE REFERENCED TO THE CGVD-1928:Pre-1978' VERTICAL DATUM AND GIVEN IN METRES (m) UNLESS NOTED.
2.

DIMENSIONS SHOWN, EXCEPT ELEVATIONS, ARE GIVEN IN MILLIMETRES (mm) UNLESS NOTED.

DRAWING NUMBER CONVENTION



BRIDGE IDENTIFIER - FIRST AND SECOND CHARACTERS ARE LETTERS REPRESENTING THE BRIDGE:

LS – LAKE SHORE

DISCIPLINE- THIRD CHARACTER IS A LETTER REPRESENTING THE DISCIPLINE:

A - ARCHITECTURAL
C - CIVIL
G - GENERAL (FOR NOTES, TYPICAL DETAILS AND COVER PAGE)
L - LIGHTING
S - STRUCTURAL
T - TRAFFIC MANAGEMENT
U - UTILITIES
X - CONSTRUCTION SEQUENCE

PHASE – THIRD CHARACTER IS A LETTER REPRESENTING THE PHASE OF WORK:

A – EXISTING
B – INTERIM
C – PERMANENT
N– NOT APPLICABLE

SHEET - SIXTH TO EIGHTH CHARACTER IS A NUMBER REPRESENTING THE TYPICAL DRAWING SERIES:

0-SERIES – COVER PAGE AND NOTES
1-SERIES – GENERAL ARRANGEMENTS
2-SERIES – FOUNDATION AND SUBSTRUCTURE
3-SERIES – SUPERSTRUCTURE
4-SERIES – MISCELLANEOUS DETAILS
5-8 SERIES - TYPICAL DETAILS

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BRIDGE DESIGN AND ENGINEERING Toronto, ON



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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

SCHEMATIC
DESIGN

PHASE

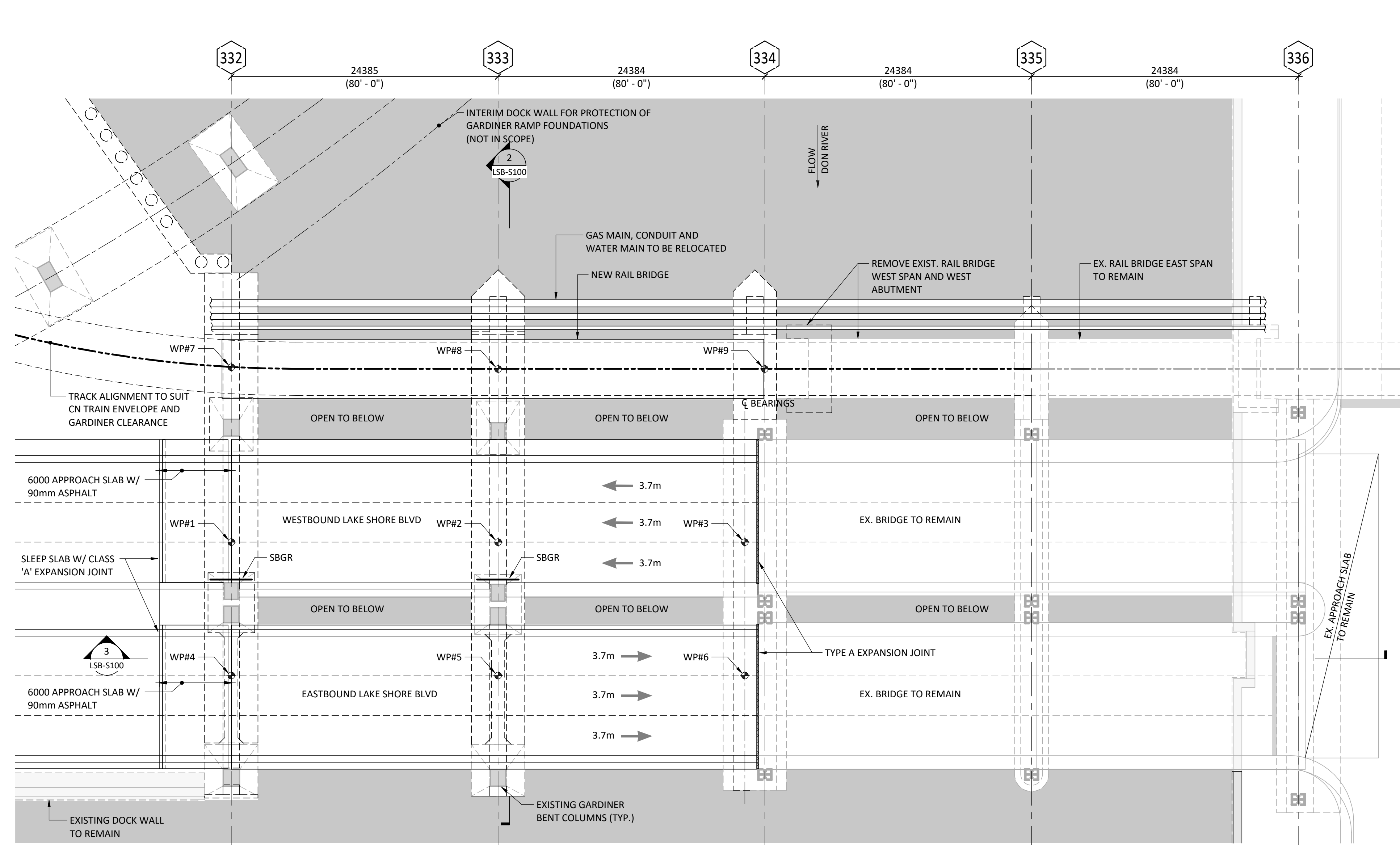
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GENERAL NOTES

JOB NUMBER: C017-1665
DATE: 2018/07/11
SCALE: 1 : 1
DESIGNED BY: JH
DRAWN BY: GWA
CHECKED BY: MM

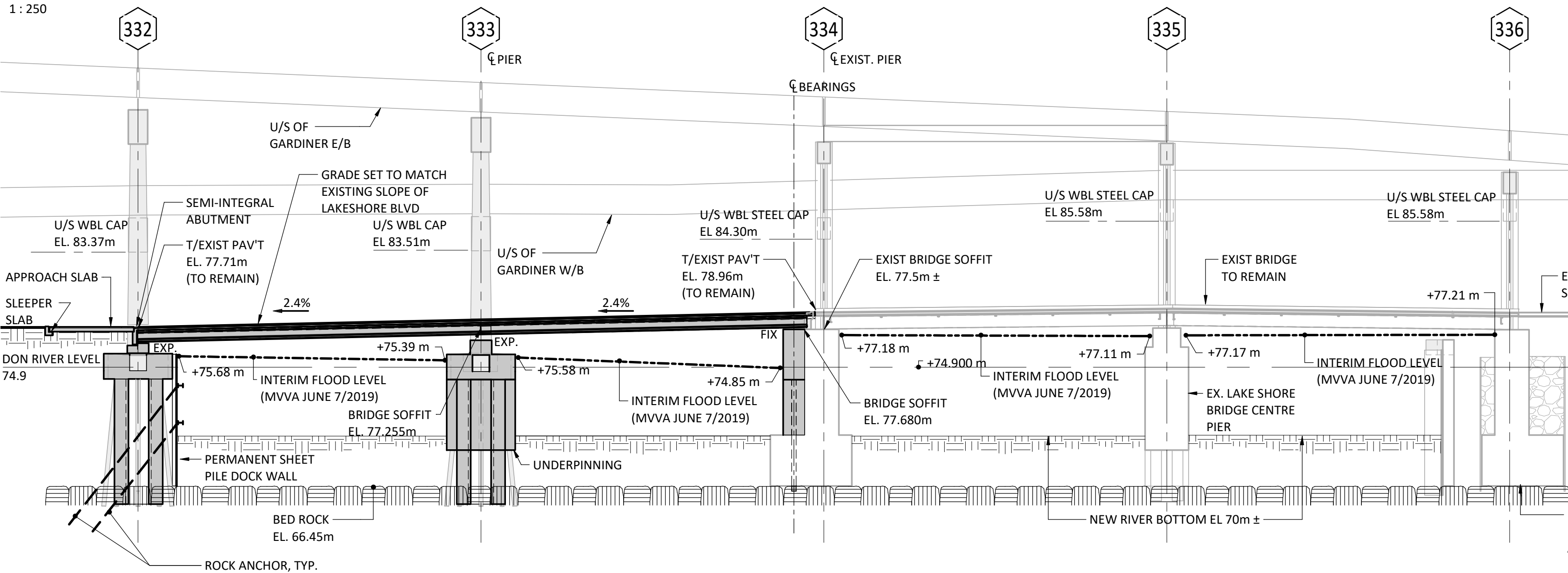
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PLOT DATE & TIME: 2019-07-24 10:00:54 PM
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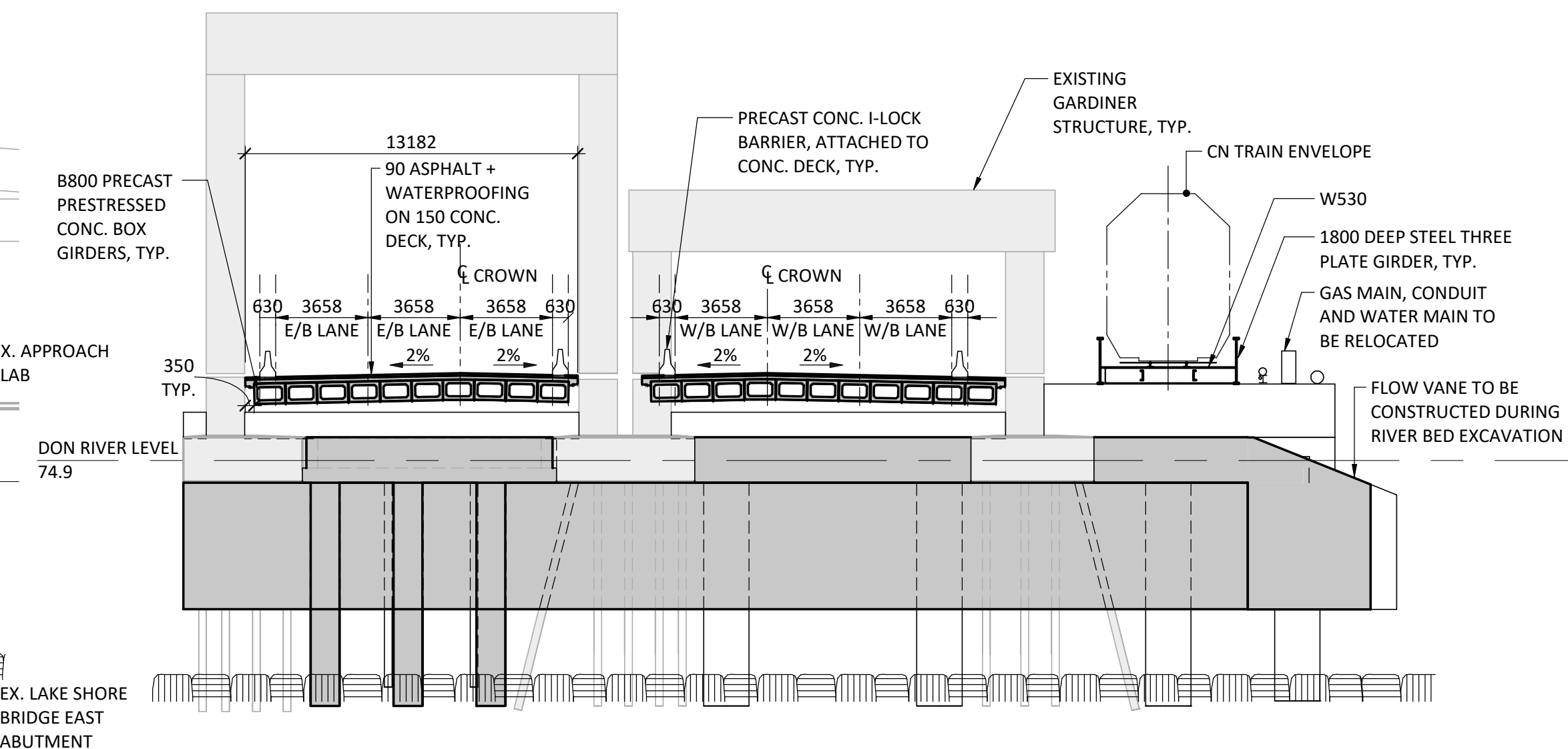
LAKE SHORE BRIDGE INTERIM PLAN

1 : 250



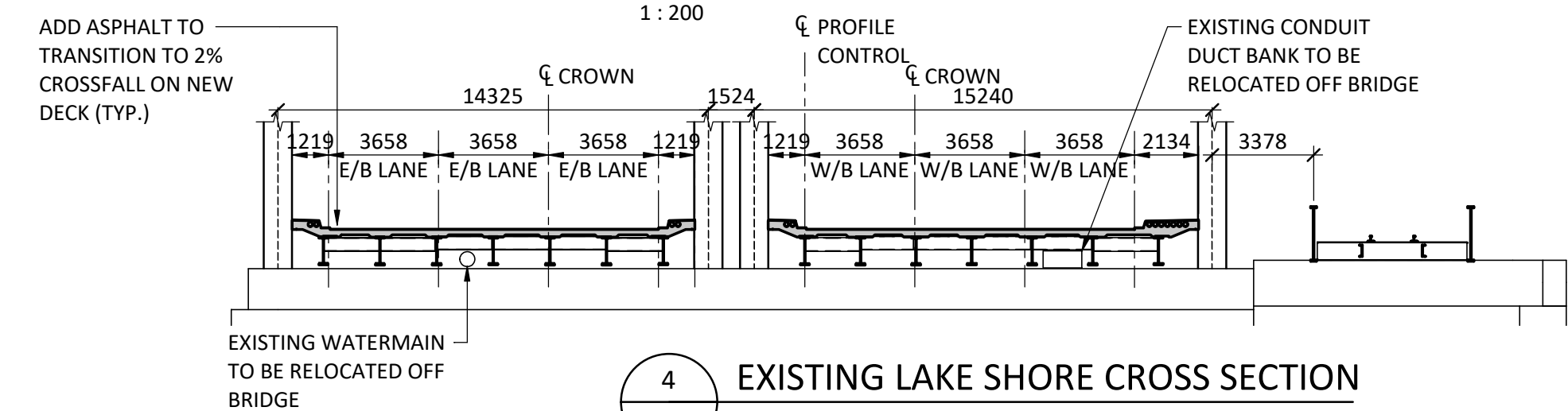
LAKE SHORE ELEVATION

1 : 250



LAKE SHORE CROSS SECTION

1 : 200



EXISTING LAKE SHORE CROSS SECTION

1 : 200

APPLICABLE STANDARD DRAWINGS

OPSD 911.140 CONCRETE BARRIER - PRECAST I-LOCK

GENERAL NOTES:

1. CLASS OF CONCRETE

30MPa

CLASS CONCRETE FOR PRECAST GIRDERS ARE GIVEN ON PRESTRESSED GIRDER DRAWINGS

2. CLEAR COVER TO REINFORCING STEEL

FOOTINGS/CAISSONS	100 ± 25
DECK TOP	70 ± 20
DECK BOTTOM	40 ± 10
PIER CAPS	70 ± 10
REMAINDER	70 ± 20 UNO

3. REINFORCING STEEL

REINFORCING STEEL SHALL BE GRADE 400W.

UNLESS SHOWN OTHERWISE, TENSION LAP SPLICES FOR REINFORCING STEEL BARS SHALL BE CLASS B

STAINLESS REINFORCING STEEL SHALL BE TYPE 316LN OR DUPLEX 2205 AND HAVE A MINIMUM YIELD STRENGTH OF 500 MPa, UNLESS OTHERWISE SPECIFIED.

BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.

BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE A MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN SS12-1, UNLESS INDICATED OTHERWISE.

4. CONSTRUCTION NOTES

THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESSES FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESSES ARE DIFFERENT FROM THOSE GIVEN WITH THE BEARING DESIGN DATA, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL TO SUIT.

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF NEARBY EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK SHOWN ON THE DRAWINGS PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONTRACT ADMINISTRATOR AND THE PROPOSED ADJUSTMENT OF THE WORK REQUIRED TO MATCH THE EXISTING STRUCTURE SHALL BE SUBMITTED FOR APPROVAL.

SHEET PILING INDICATED ON THE CONTRACT IS REQUIRED AS A PERMANENT PART OF THE STRUCTURE. IT IS NOT INTENDED TO REPRESENT A COMPLETE SHORING SCHEME

ALL ELEVATIONS ARE TO GEODETIC DATUM.

5. DESIGN

DESIGN CODE: CAN/CSA-S6-14 CANADIAN HIGHWAY BRIDGE DESIGN CODE.
LIVE LOAD: CL-625-ONT
SEISMIC DESIGN: CAN/CSA-S6-14 WITH SITE SPECIFIC DESIGN CRITERIA
SEISMIC DESIGN CATEGORY: OTHER BRIDGE

PORT LANDS FLOOD PROTECTION AND ENABLING INFRASTRUCTURE PROJECT

BRIDGE DESIGN AND ENGINEERING
Toronto, ON



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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

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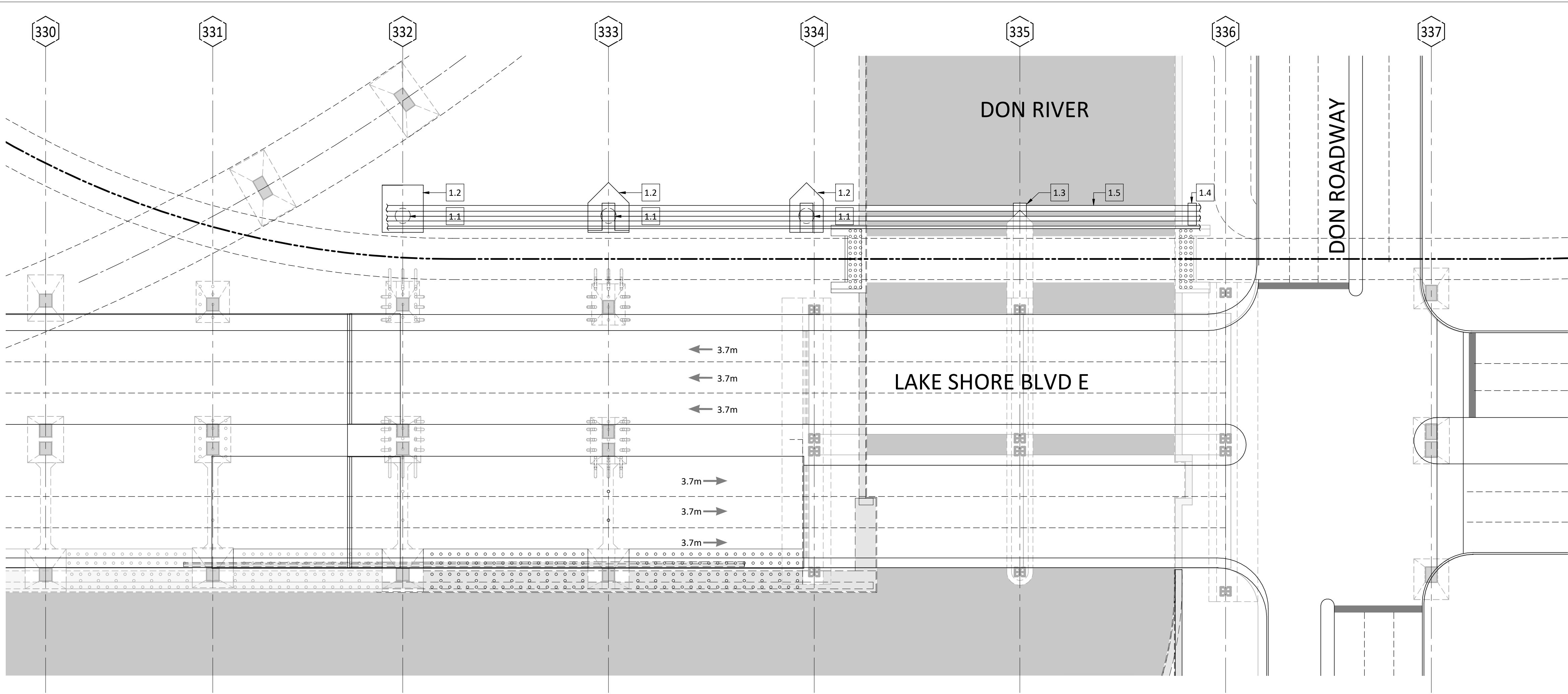
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GENERAL ARRANGEMENT

JOB NUMBER: C017-1665
DATE: 2018/07/11
SCALE: As indicated
DESIGNED BY: TH
DRAWN BY: GWA
CHECKED BY: MM

LSB-S100

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CONSTRUCTION STAGE A1
1 : 300

- CONSTRUCTION STAGE A1**
CONSTRUCTION OF THE UTILITIES RELOCATION SUPPORTS
- 1.1 NEW CAISSON FOUNDATIONS NORTH OF THE EXISTING RAIL BRIDGE
 - 1.2 NEW FOUNDATION CAP BEAMS NORTH OF THE EXISTING RAIL BRIDGE
 - 1.3 NEW CANTILEVER BEAM OFF OF EXISTING BRIDGE PIER
 - 1.4 NEW EAST ABUTMENT
 - 1.5 RELOCATE UTILITIES

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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

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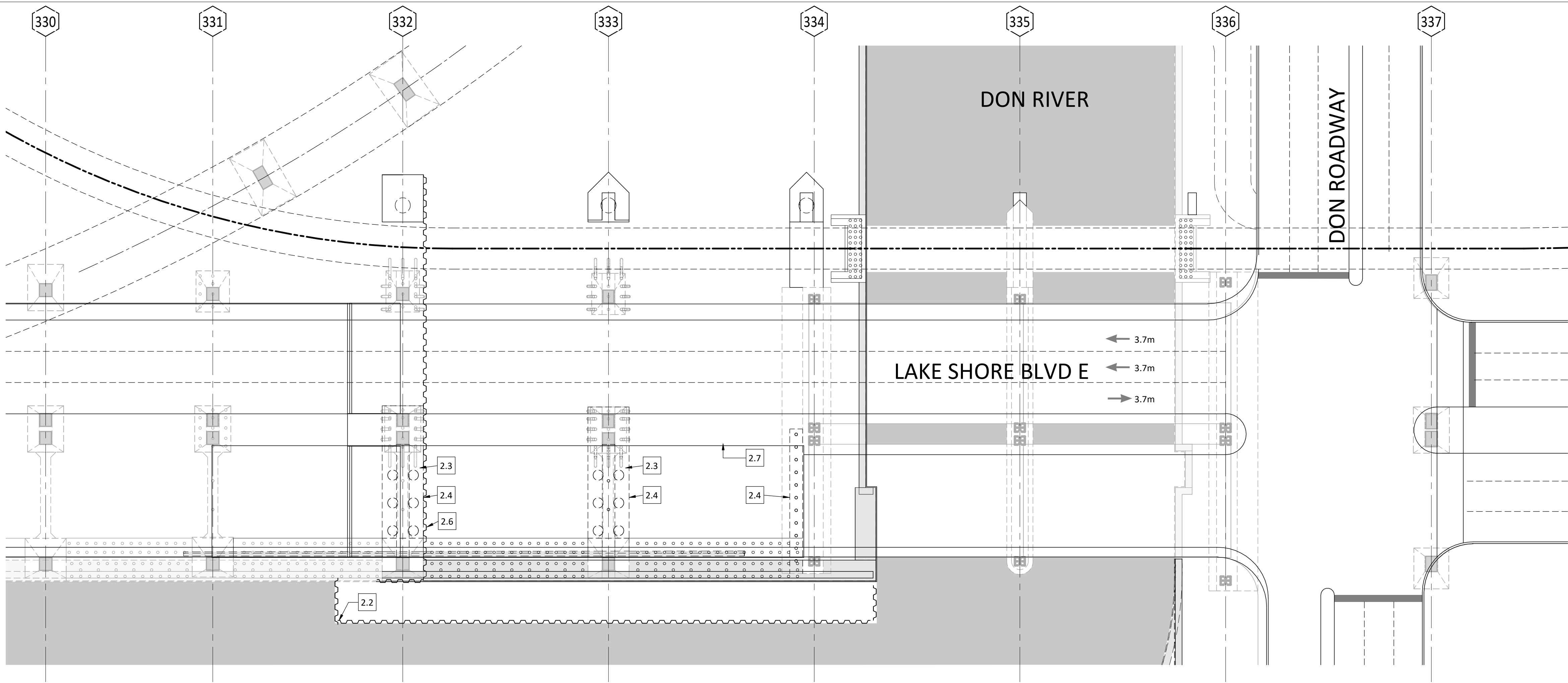
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CONSTRUCTION STAGE
SEQUENCE PLANS - STAGES A1

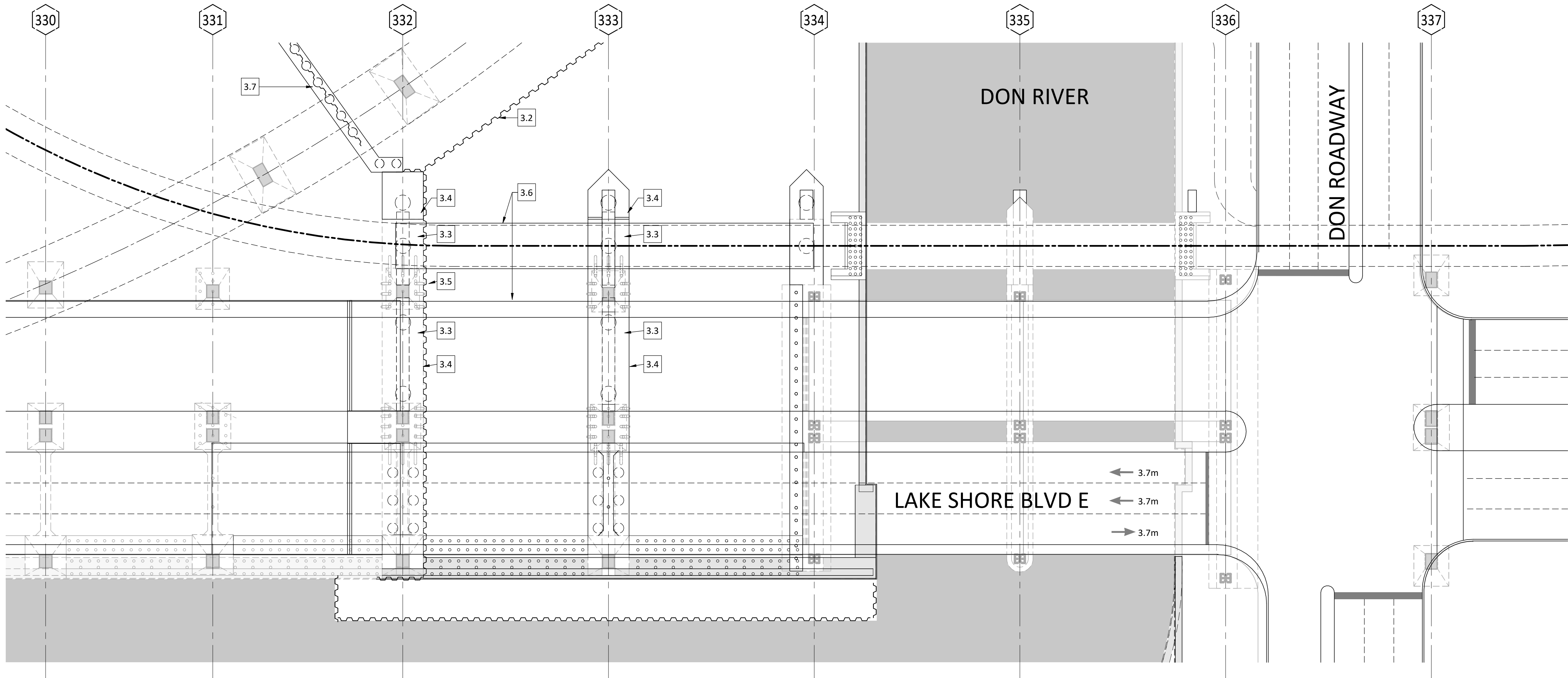
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DATE: 2018/07/11
SCALE: 1 : 300
DESIGNED BY: JH
DRAWN BY: GWA
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CONSTRUCTION STAGE A2
1 : 300



CONSTRUCTION STAGE A3
1 : 300

- CONSTRUCTION STAGE A2**
CONSTRUCTION OF THE EASTBOUND LAKE SHORE BRIDGE EXTENSION
- 2.1 REFER TO **TRAFFIC STAGE A1** FOR TRAFFIC MANAGEMENT PLAN
 - 2.2 SOUTH SIDE STEEL SHEET PILE (COFFERDAM) FOR CONSTRUCTION
 - 2.3 NEW CAISSON FOUNDATIONS BETWEEN EXISTING GARDINER RAMP PIER FOUNDATIONS
 - 2.4 NEW FOUNDATION CAP BEAMS BETWEEN EXISTING GARDINER RAMP PIER FOUNDATION CAPS. DRILL AND EPOXY DOWELS TO CONNECT NEW AND EXISTING STRUCTURES
 - 2.5 NEW DOCK WALL TO REPLACE EXISTING DOCK WALL BETWEEN EXISTING FOUNDATION CAPS AT BENT 330 AND BENT 331 (NOT IN SCOPE)
 - 2.6 NEW STEEL SHEET PILE AND TIE BACK ALONG PIER AT BENT 331
 - 2.7 NEW EASTBOUND LAKE SHORE BRIDGE DECK, CURB AND GUARDRAIL ETC.

- CONSTRUCTION STAGE A3**
CONSTRUCTION OF THE WESTBOUND LAKE SHORE BRIDGE AND RAILWAY BRIDGE EXTENSION
- 3.1 REFER TO **TRAFFIC STAGE A2** FOR TRAFFIC MANAGEMENT PLAN
 - 3.2 NORTH SIDE STEEL SHEET PILE (COFFERDAM) FOR CONSTRUCTION TO BE COORDINATED (NOT IN SCOPE)
 - 3.3 NEW CAISSON FOUNDATIONS BETWEEN EXISTING GARDINER RAMP PIER FOUNDATIONS AND NEW NORTH EXPANSION
 - 3.4 NEW FOUNDATION CAP BEAMS BETWEEN EXISTING GARDINER RAMP PIER FOUNDATION CAPS AND NEW NORTH EXPANSION DRILL AND EPOXY DOWELS TO CONNECT NEW AND EXISTING STRUCTURES
 - 3.5 NEW STEEL SHEET PILE AND TIE BACK ALONG NEW AND EXISTING PIER FOUNDATIONS AT BENT 331
 - 3.6 NEW WESTBOUND LAKE SHORE BRIDGE AND RAIL BRIDGE DECK, CURB AND GUARDRAIL
 - 3.7 NEW DOCK WALL RUNNING NORTH BEYOND BRIDGE FOUNDATION AT BENT 331 (NOT IN SCOPE)

PORT LANDS FLOOD
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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

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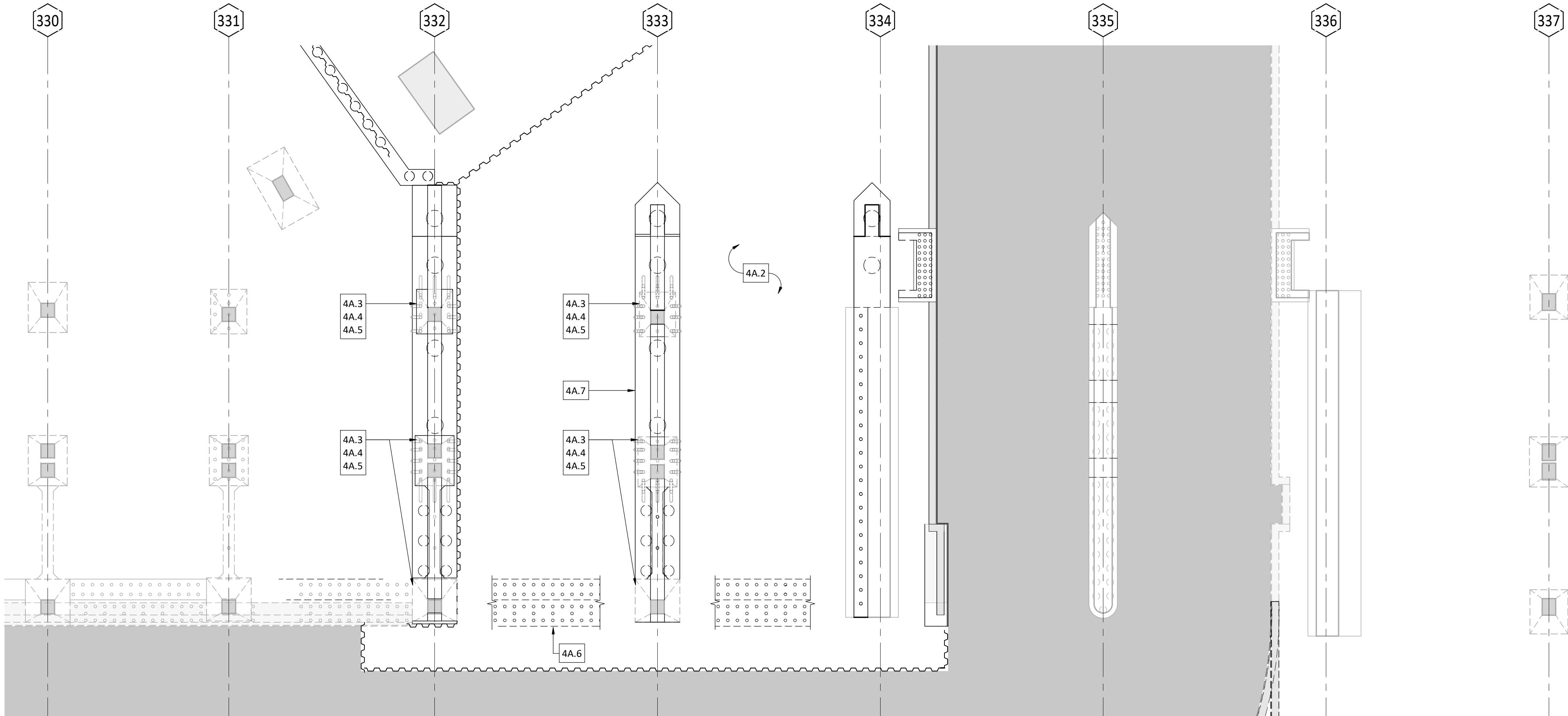
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CONSTRUCTION STAGE
SEQUENCE PLANS - STAGES
A2+A3

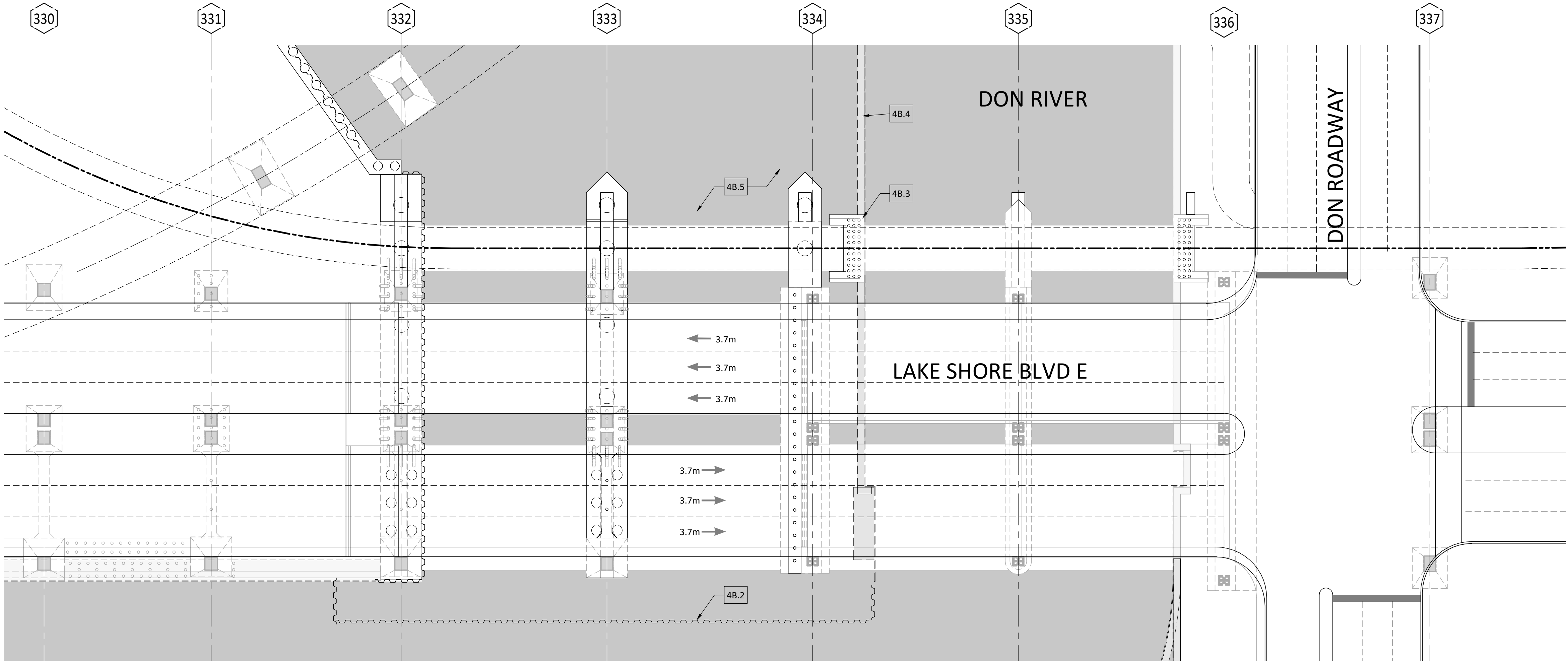
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DRAWN BY: GWA
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CONSTRUCTION STAGE A4a
1 : 300



CONSTRUCTION STAGE A4b
1 : 300

- CONSTRUCTION STAGE A4a**
COMPLETION OF INTERIM CONDITION - CONSTRUCTION OF PERMANENT BRIDGE FOUNDATIONS
- 4A.1 NO TRAFFIC MANAGEMENT PLAN IS APPLICABLE
 - 4A.2 DIG RIVER FIRST LIFT
 - 4A.3 INSPECT CONDITION OF EXISTING PILES
 - 4A.4 BRACE EXISTING PILES THEN DIG NEXT LIFT
 - 4A.5 REPEAT STAGE 4A.3 AND 4A.4 UNTIL EXCAVATION REACHES APPROXIMATELY 1m BELOW FUTURE RIVER BED
 - 4A.6 DEMOLISH EXISTING DOCK WALL BETWEEN BENT 332 TO 334
 - 4A.7 CONSTRUCT CONCRETE ENCASEMENT OF BRIDGE PIERS AS NOTED

- CONSTRUCTION STAGE A4b**
COMPLETION OF INTERIM CONDITION - WIDENING THE MOUTH OF THE DON RIVER (NOT IN SCOPE)
- 4B.1 NO TRAFFIC MANAGEMENT PLAN IS APPLICABLE
 - 4B.2 DEMOLISH COFFERDAM
 - 4B.3 DEMOLISH RAILWAY BRIDGE EXISTING WEST ABUTMENT
 - 4B.4 DEMOLISH EXISTING DOCK WALL ALONG EXISTING WEST EDGE OF DON RIVER
 - 4B.5 EXCAVATE PERMANENT RIVER BED
 - 4B.6 CONSTRUCT SECOND ESTUARY ALONG DON ROADWAY AND COMMISSIONERS STREET

PORT LANDS FLOOD
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EAST BRIDGE

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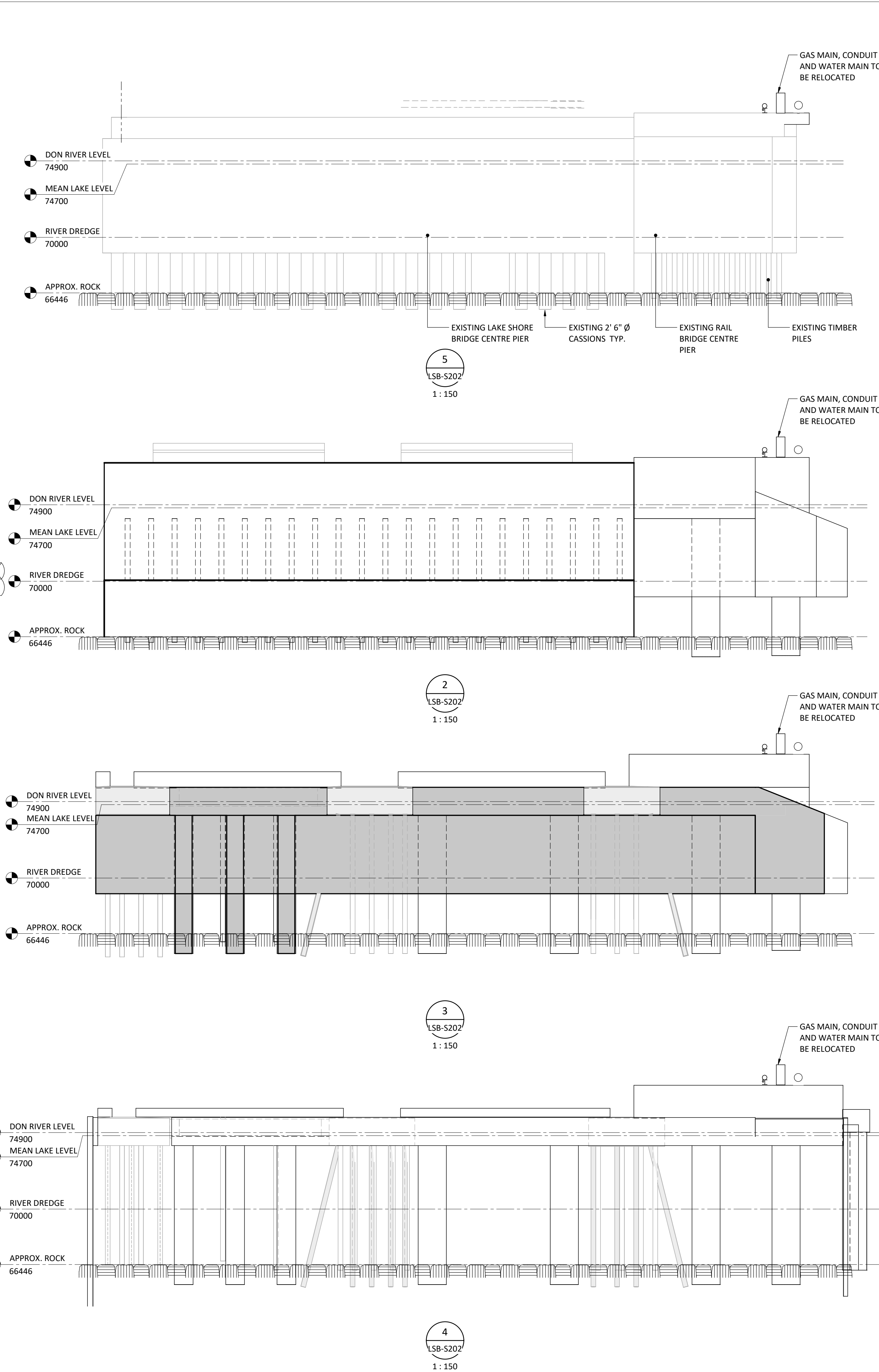
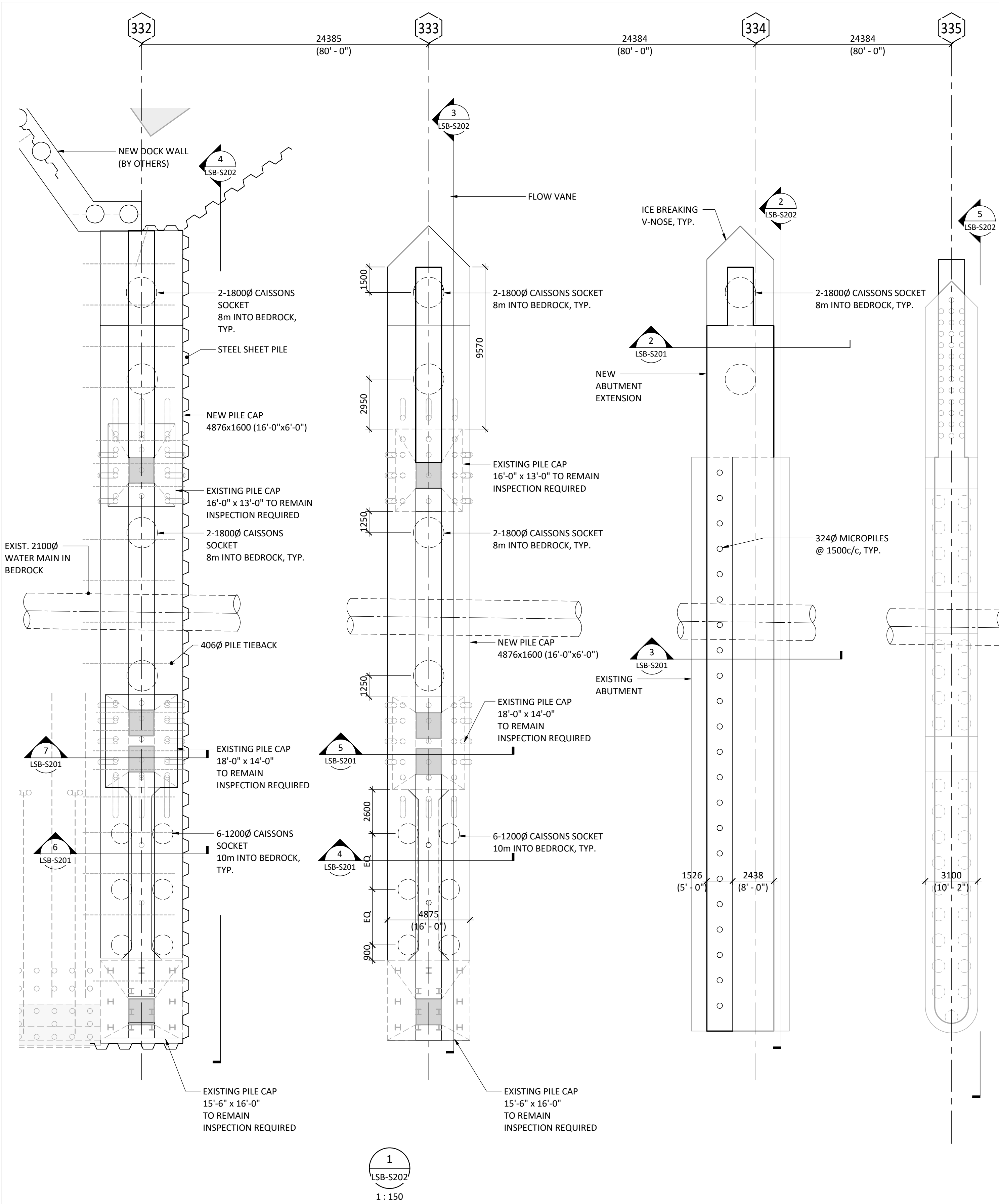
SCHEMATIC
DESIGN

PHASE

DRAWING TITLE
CONSTRUCTION STAGE
SEQUENCE PLANS - STAGES
A4a+b

JOB NUMBER: C017-1665
DATE: 2018/07/11
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LAKE SHORE BOULEVARD EAST BRIDGE

STATUS

SCHEMATIC DESIGN

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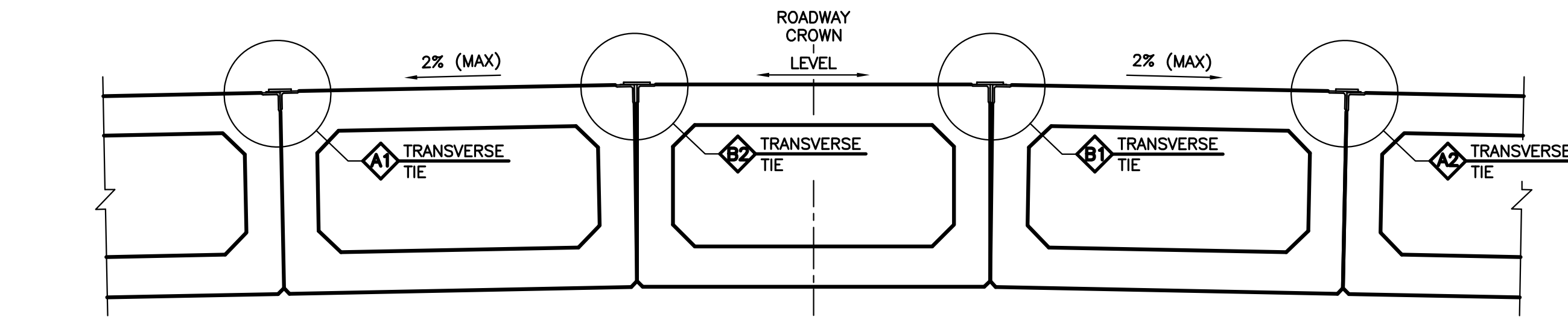
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ABUTMENT AND PIER LAYOUT 2

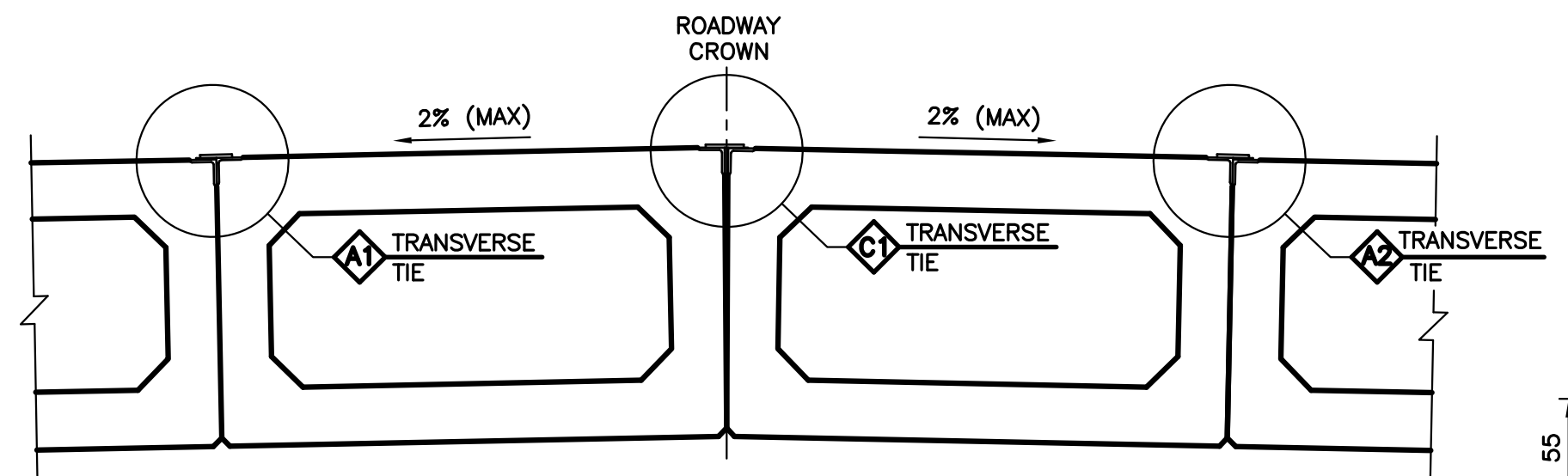
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CHECKED BY: MM

LSB-S202

PLOT DATE & TIME: 2019-07-24 10:58:51 AM
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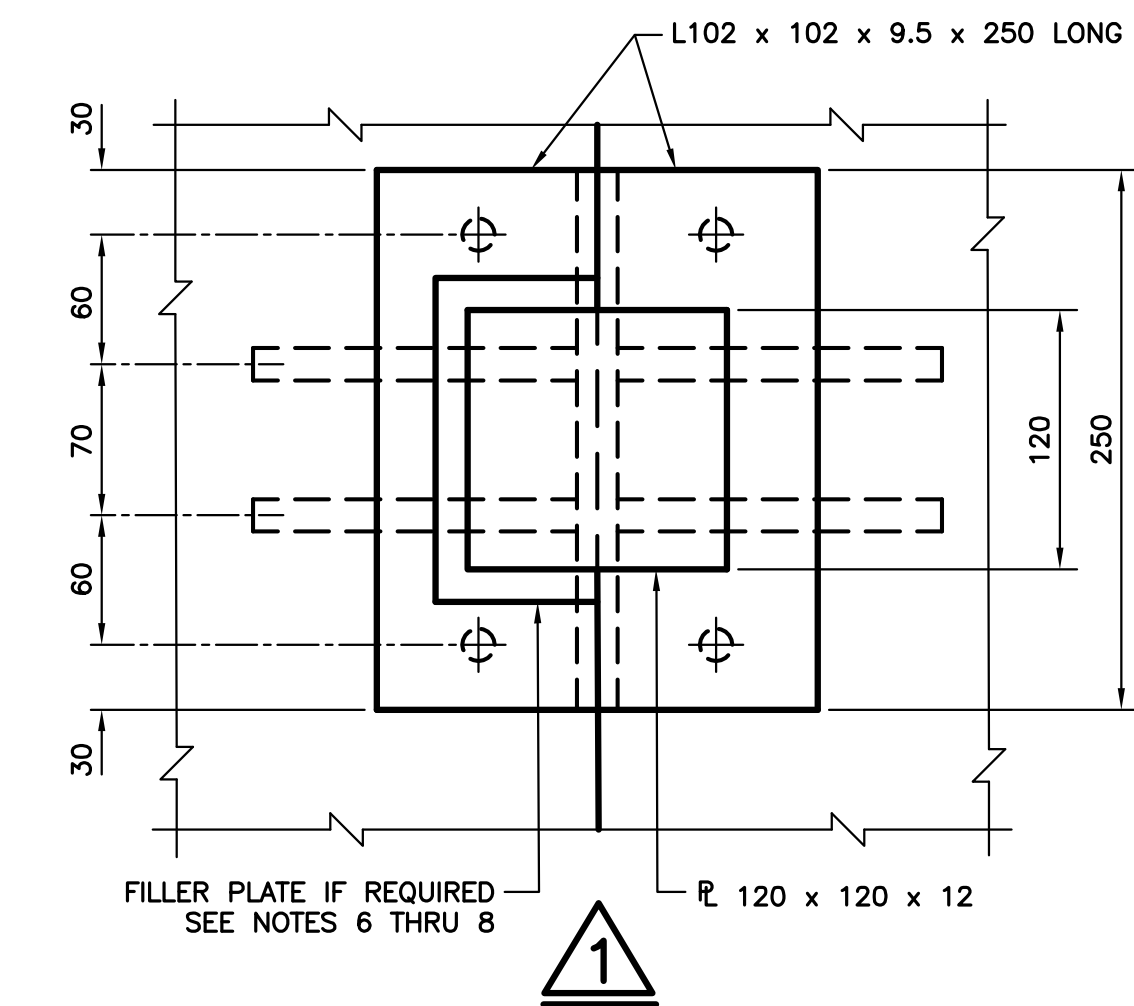
JOINT OFFSET FROM ROADWAY CROWN



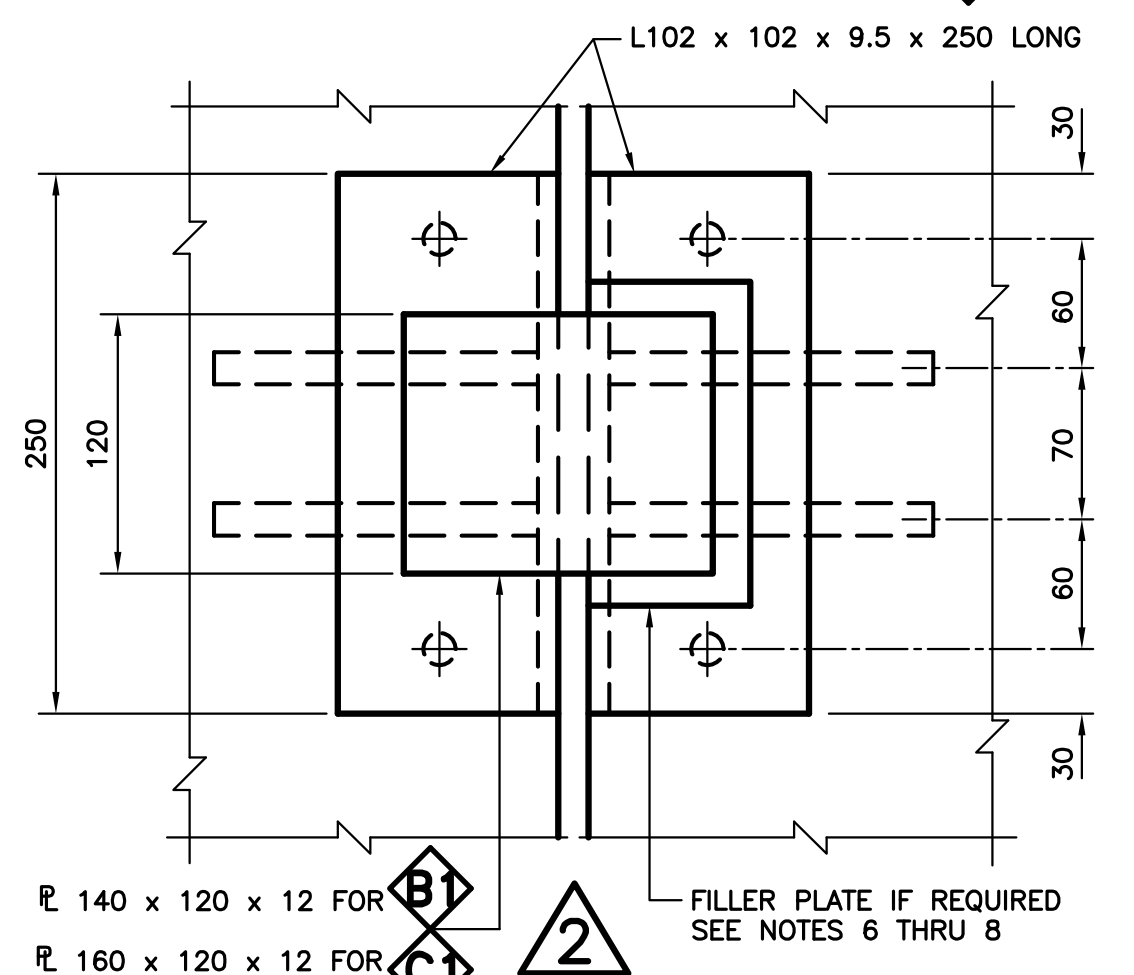
JOINT AT ROADWAY CROWN

TRANSVERSE TIE LOCATIONS

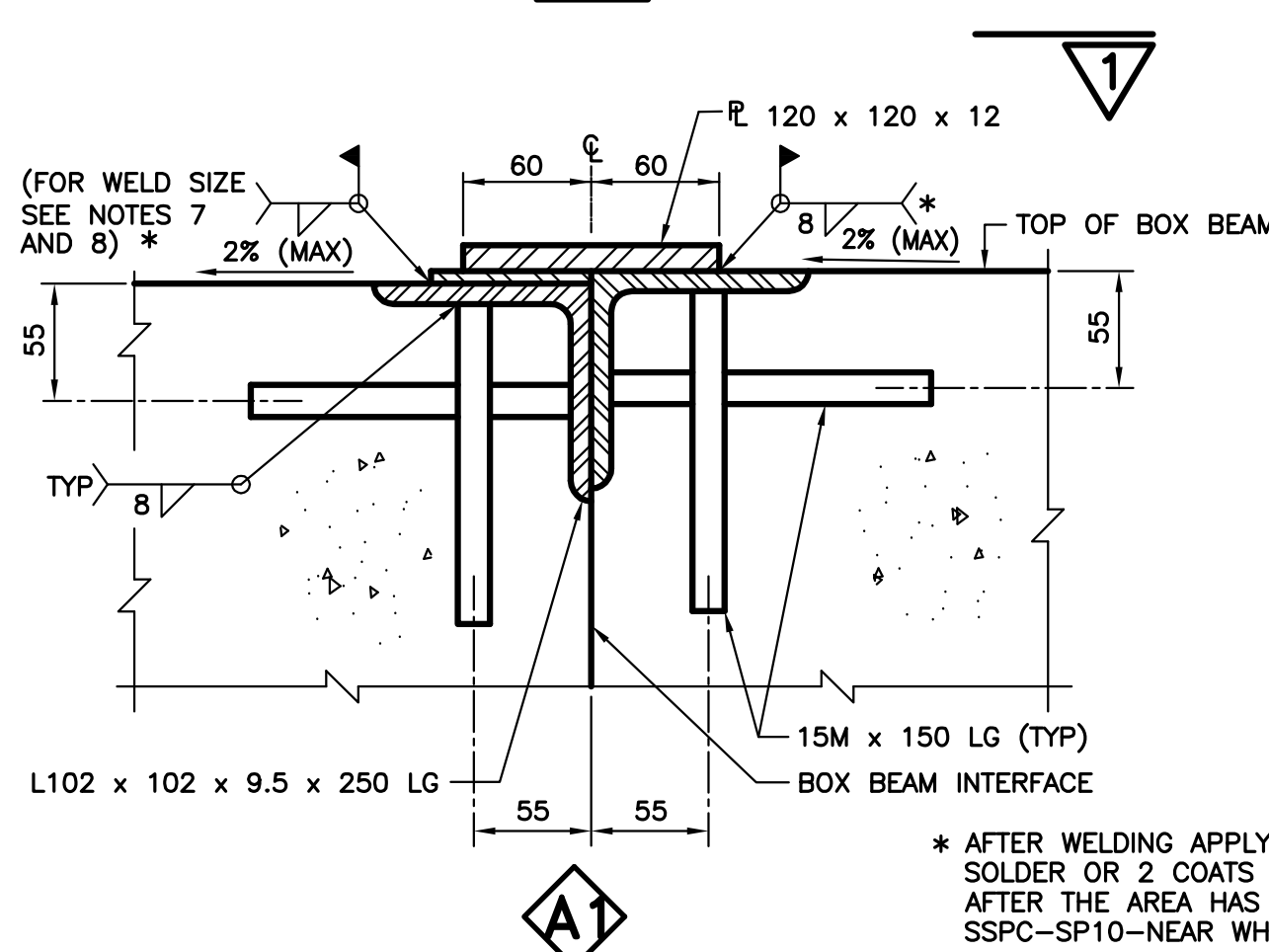
SPAN LENGTH	TIE LOCATIONS AT		
	1/4 SPAN	1/3 SPAN	MIDSPAN
≤24M	—	X	—
>24M	X	—	X



1

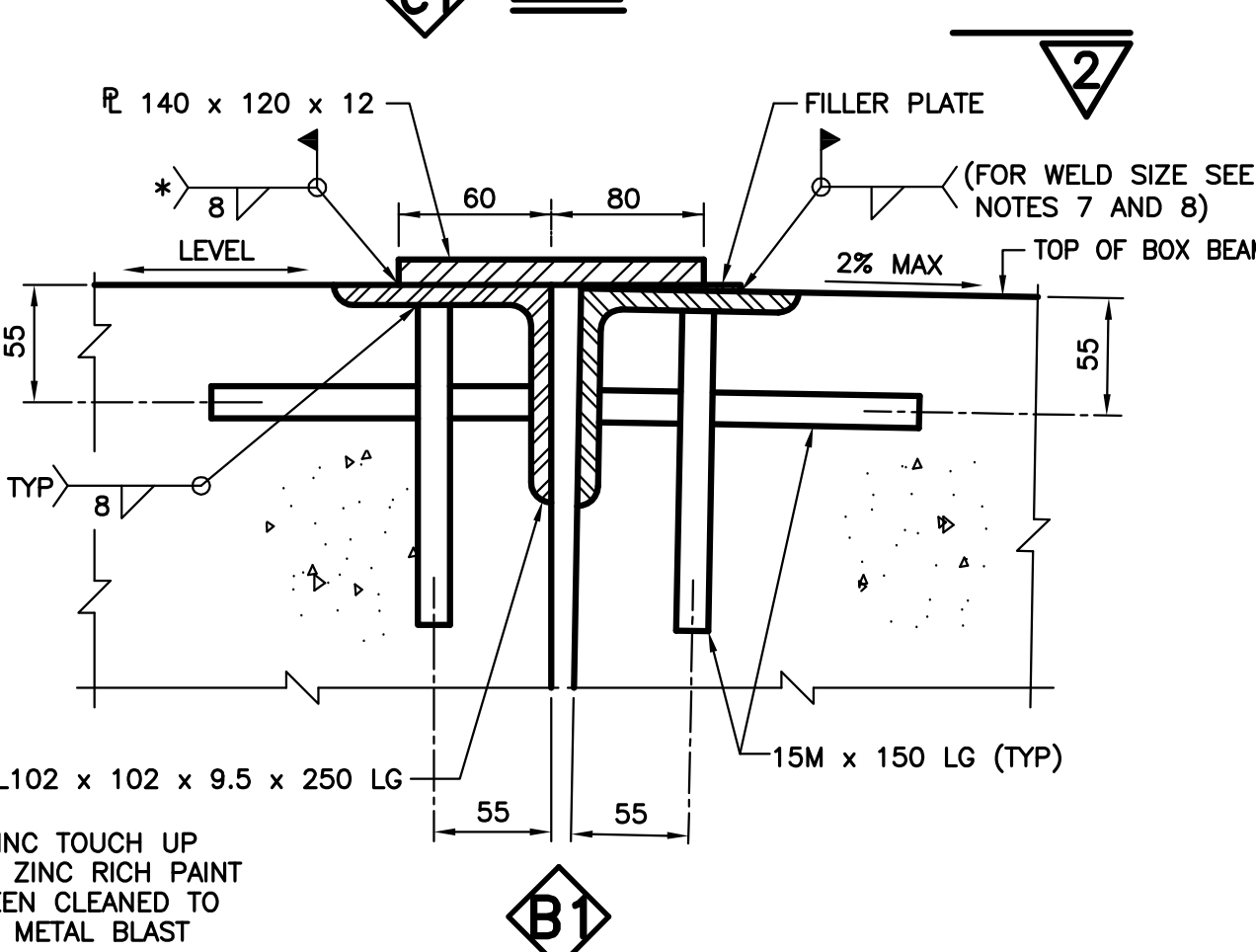


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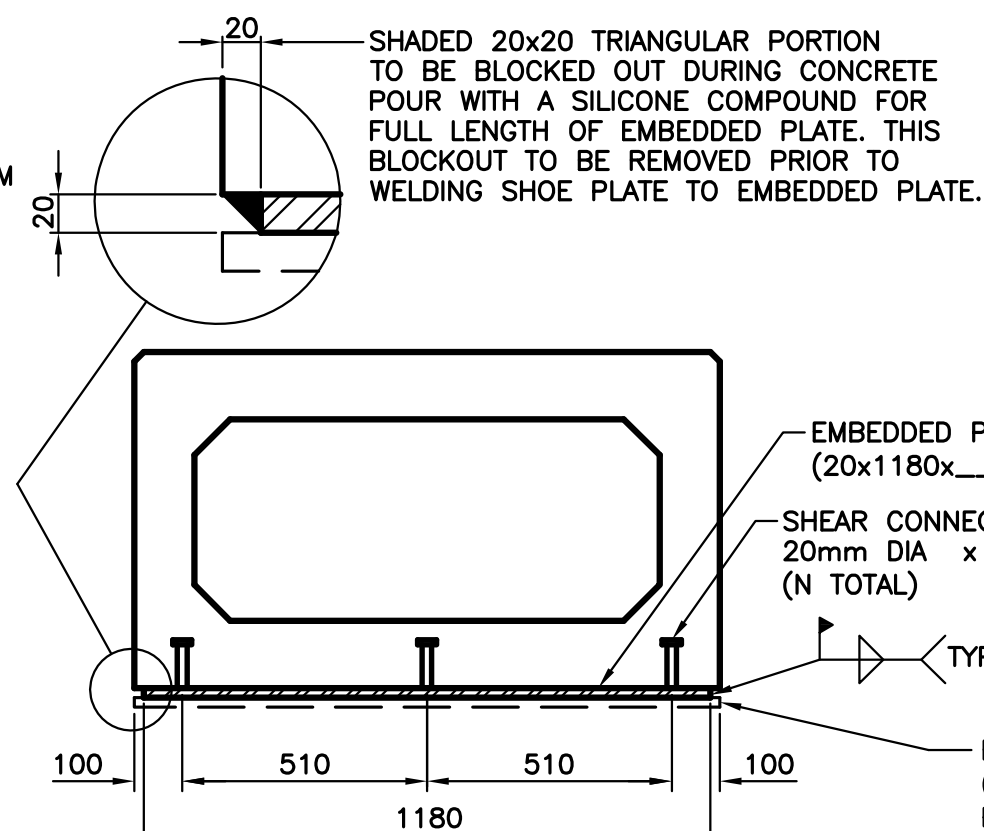
A1

(A2) SIMILAR BUT OPPOSITE HAND



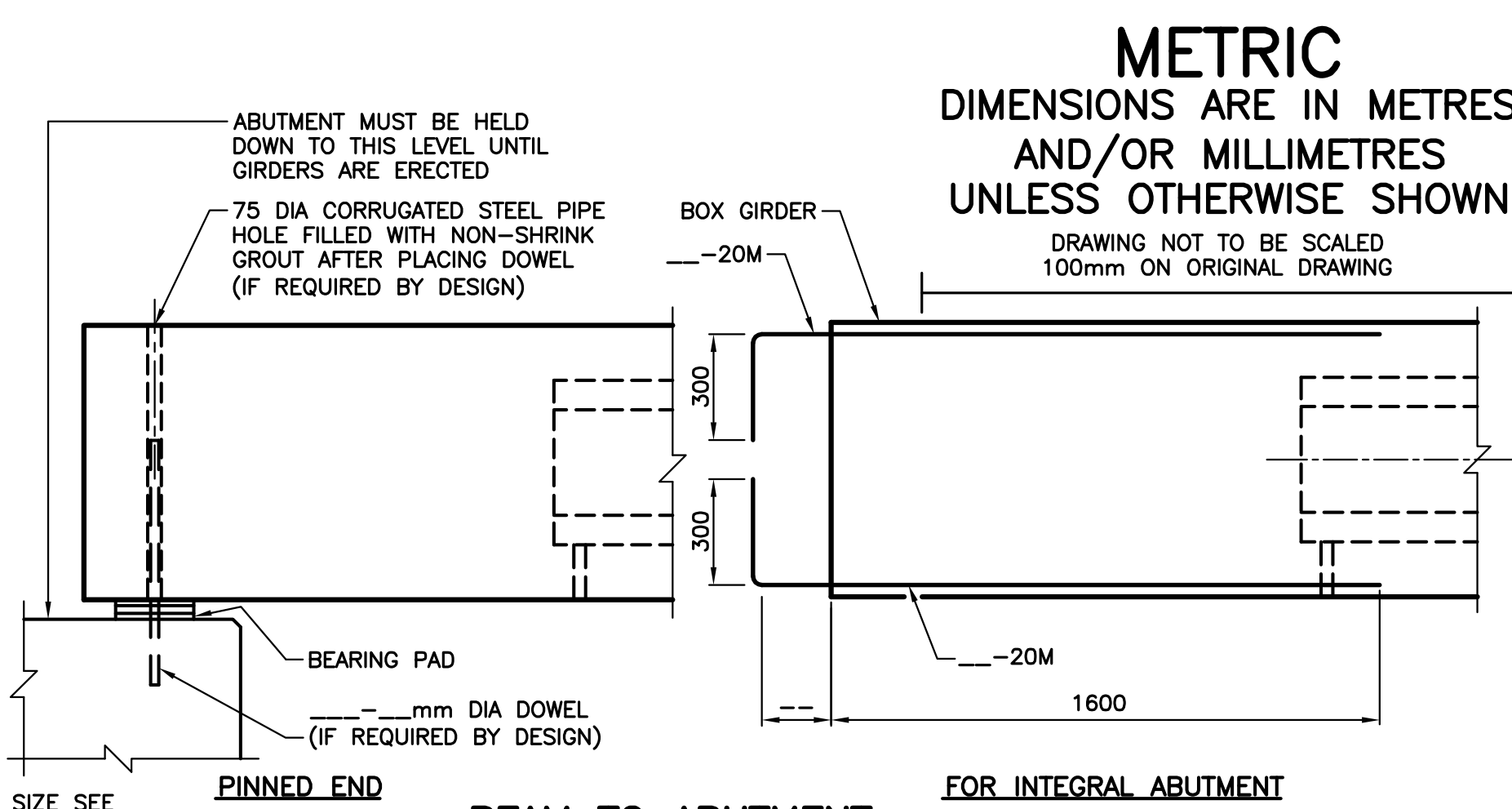
B1

(B2) SIMILAR BUT OPPOSITE HAND



4

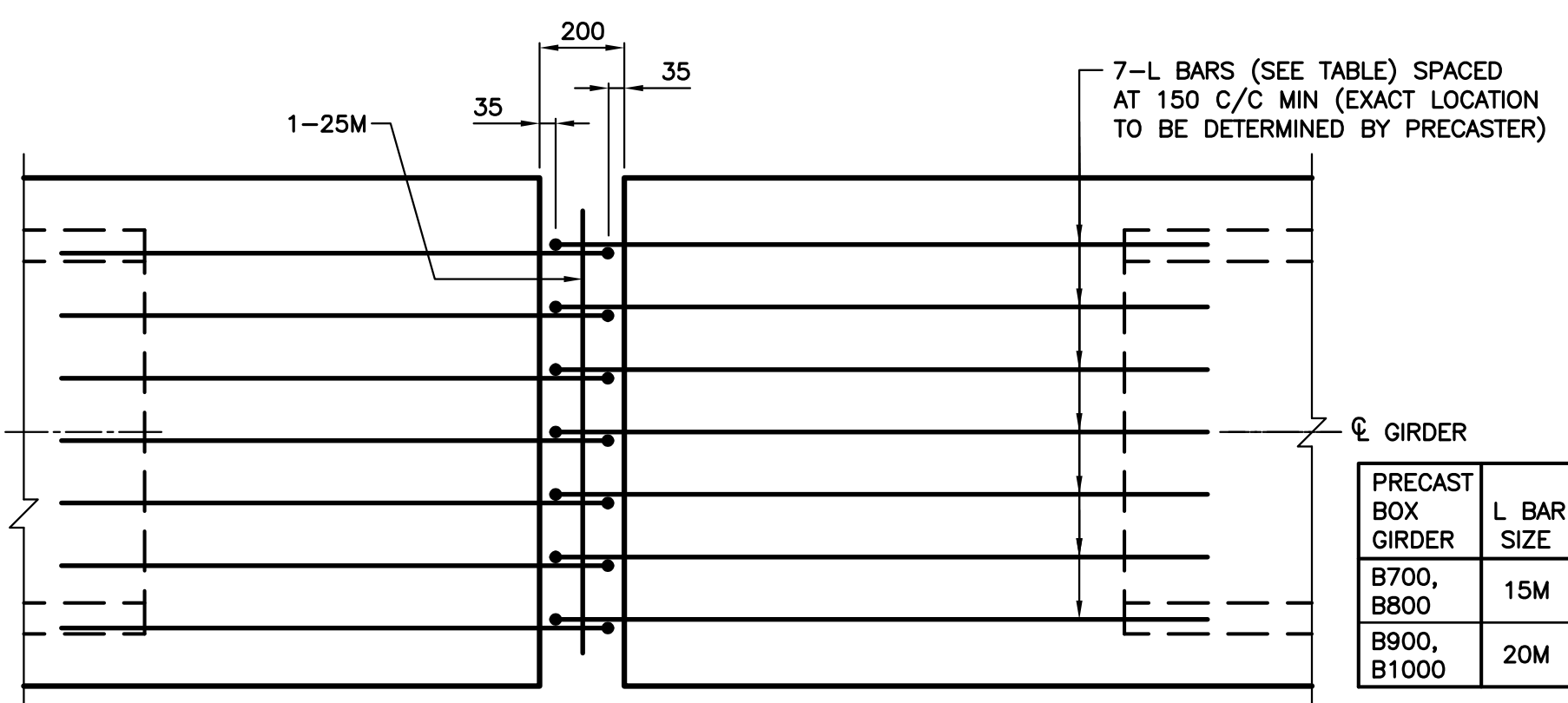
EMBEDDED BEARING PLATE DETAIL
(NON INTEGRAL ABUTMENT ENDS ONLY)



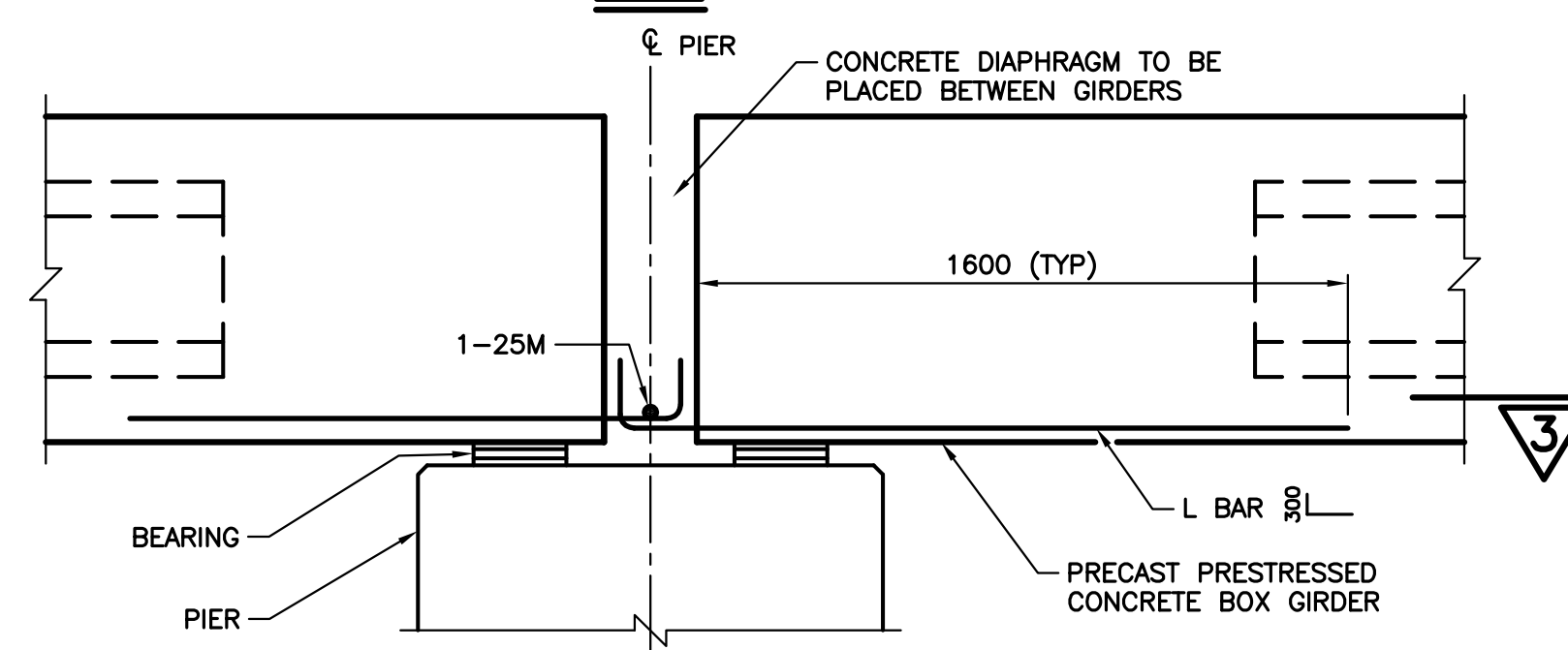
PINNED END

BEAM TO ABUTMENT

FOR INTEGRAL ABUTMENT



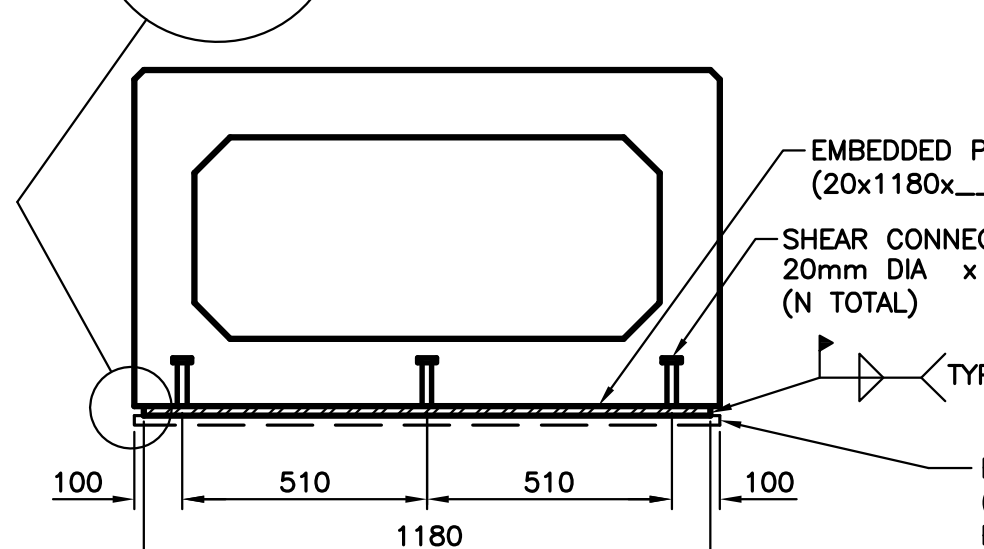
3



ELEVATION

POSITIVE MOMENT CONNECTION AT PIERS

EMBEDDED PLATE LENGTH (B)	NO. OF ROWS OF SHEAR CONNECTOR (R)	TOTAL NO. OF SHEAR CONNECTOR (N)
B<450mm	2	6
450mm≤B<750mm	3	9
750mm≤B<1050mm	4	12



4

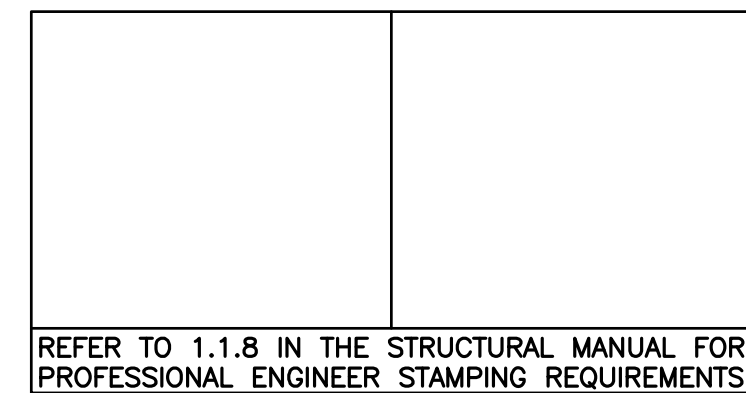
ELEVATION

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN
DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

NOTES:

- THIS DRAWING SHOWS TYPICAL DETAILS FOR PRECAST CONCRETE BOX GIRDERS AND IS TO BE READ IN CONJUNCTION WITH DRAWING SS107-15.
- STEEL PLATES AND ANGLES SHALL BE ACCORDING TO CSA G40.20-13/G40.21-13, GRADE 300W.
- STEEL PLATES AND ANGLES SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- IF ANCHORED EMBEDDED STEEL BEARING PLATES ARE REQUIRED AT GIRDER ENDS, THEY SHALL HAVE A THICKNESS OF 20mm. THEY SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION. ALL DAMAGED GALVANIZED SURFACES SHALL BE COATED WITH TWO COATS OF ZINC-RICH PAINT.
- AT ENDS OF GIRDERS WHICH ARE NOT TO BE ENCASED IN CONCRETE, STRAND ENDS SHALL BE RECESSED AND GROUTED, AND GIRDER END FACE SHALL BE PAINTED WITH TWO COATS OF ASPHALTIC PAINT.
- STEEL FILLER PLATES SHALL BE PROVIDED WHENEVER THE TOP OF BOX ELEVATIONS, AT THE TRANSVERSE TIE LOCATIONS, DIFFER MORE THAN 2mm.
- IF THE THICKNESS OF THE REQUIRED STEEL FILLER PLATE, t^f , IS LESS THAN OR EQUAL TO 5mm, THE FILLER PLATE SIZE SHALL BE 120x60x t^f . THE SIZE OF THE WELD CONNECTING THE COMBINATION OF PLATES TO THE ANGLE SHALL BE INCREASED BY THE THICKNESS OF THE FILLER PLATE.
- IF THE THICKNESS OF THE REQUIRED STEEL FILLER PLATE, t^f , IS GREATER THAN 5mm, THE FILLER PLATE SIZE SHALL BE 150x75x t^f , AND SHALL BE WELDED TO THE ANGLE WITH A WELD SIZE OF 2mm LESS THAN THE THICKNESS OF THE PLATE BUT NOT LESS THAN 6mm. THE 120x120x12mm PLATE SHALL BE WELDED ALL AROUND WITH AN 8mm WELD AS SHOWN.
- IF ANCHORED EMBEDDED STEEL BEARING PLATES ARE REQUIRED THE REINFORCING MAY BE ADJUSTED SLIGHTLY TO ACCOMMODATE THE SHEAR CONNECTORS.

PRECAST BOX GIRDER	L BAR SIZE
B700, B800	15M
B900, B1000	20M



STANDARD DRAWING SEPTEMBER 2016	SS107-15 PRESTRESSED BOX GIRDERS DETAILS
------------------------------------	--

PORT LANDS FLOOD
PROTECTION AND ENABLING
INFRASTRUCTURE PROJECT

BRIDGE DESIGN AND
ENGINEERING
Toronto, ON



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Tel: 416.214.1344

ENTUITIVE

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Toronto, ON M5H 3C6 Canada
Tel: 416-477-5832
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NO.	DATE	DESCRIPTION
1	2019/07/24	ISSUED FOR SCHEMATIC DESIGN

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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

SCHEMATIC
DESIGN

PHASE

DRAWING TITLE

PRESTRESSED BOX GIRDER
DETAILS

JOB NUMBER: C017-1665

DATE: 2018/07/11

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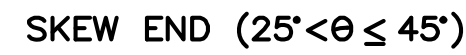
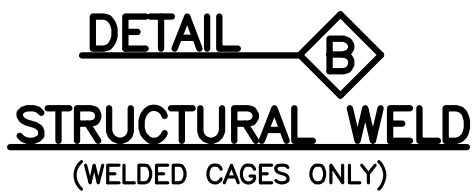
DESIGNED BY: JH

DRAWN BY: GWA

CHECKED BY: MM

LSB-S600

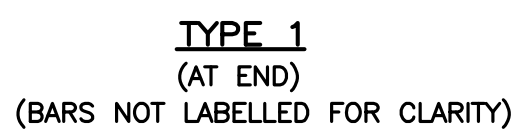
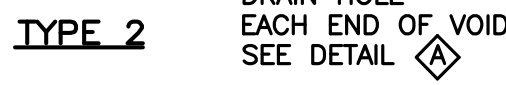
BEARING DATA



1. PRESTRESSING STEEL SHALL BE LOW-RELAXATION SEVEN WIRE STRANDS, SIZE DESIGNATION ____, GRADE 1860.
2. MINIMUM BREAKING STRENGTH OF STRAND ____ KN.
3. JACKING FORCE PER STRAND ____ KN.
4. FORCE PER STRAND AFTER ALL LOSSES ____ KN.
5. THE ELAPSED TIME INTERVAL BETWEEN JACKING OF STRANDS AND TRANSFER SHALL NOT BE LESS THAN 15 HOURS.
6. THE VERTICAL SPACING OF PRESTRESSING STRANDS IN THE WEB BETWEEN LOCATIONS OF HOLD-DOWN POINTS SHOWN ON THIS DRAWING MAY BE INCREASED TO SUIT THE FABRICATOR'S WELDING CAPABILITIES TO A MAXIMUM OF 50mm. IF THE SPECIFIED STRAND SPACING IS CHANGED, THE FABRICATOR SHALL BE RESPONSIBLE FOR ADJUSTING THE NUMBER OF STRANDS TO ENSURE THAT THE SAME FORCE EFFECT IS PRODUCED AS REQUIRED BY THE DESIGN.
7. CLASS OF CONCRETE:
PRECAST GIRDER ____ MPa.
PRECAST GIRDER ____ MPa. (CONCRETE CONTAINING SILICA FUME)
8. CONCRETE STRENGTH AT TRANSFER ____ MPa.
9. REINFORCING STEEL SHALL BE GRADE 400W.
STAINLESS STEEL BARS SHALL BE TYPE 316 LN OR
DUPLEX 2205 WITH A MINIMUM YIELD STRENGTH OF 500 MPa.
10. CLEAR COVER TO REINFORCING STEEL:
SOFFIT OF BOTTOM SLAB (EXCEPT UNDERCUT) 48 +15mm/-5mm
UNDERCUT AND ELSEWHERE 30 +15mm/-5mm
11. ALL STIRRUPS, DOWELS INTO DECK AND BURSTING/SPLITTING REINFORCEMENT WITHIN 1000mm FROM THE GIRDER END WITH EXPANSION JOINT SHALL BE STAINLESS.
12. FOR BRIDGES ON GRADES EXCEEDING 3%, THE ENDS OF GIRDERS SHALL BE CAST SO THAT THEY ARE VERTICAL WHEN ERECTED.
13. THE TOP OF PRECAST BEAM SHALL BE GIVEN ROUGH FINISH OF ABOUT 5mm AMPLITUDE ACROSS THE WIDTH.
14. DRAWING TO BE READ IN CONJUNCTION WITH SS107-15.
15. NO WELDING SHALL BE PERMITTED EXCEPT AS SPECIFIED OR APPROVED BY THE OWNER.



NOTE: DIMENSIONS b AND c = 9, 12, 15 OR 18mm, AS REQUIRED BY THE DESIGN



DRAWING NOT TO BE SCALED
100mm ON ORIGINAL DRAWING

REFER TO 1.1.8 IN THE STRUCTURAL MANUAL FOR
PROFESSIONAL ENGINEER STAMPING REQUIREMENTS

SS107-12

PRESTRESSED BOX GIRDERS AND BEARINGS (B800)

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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

SCHEMATIC DESIGN

PHASE

DRAWING TITLE

PRESTRESSED BOX GIRDER AND BEARINGS

JOB NUMBER: C017-1665

DATE: 2018/07/11

SCALE:

DESIGNED BY: JH

DRAWN BY: GWA

LSB-S601



LSUN-100

NOTE: REFER TO DRAWING LSUN-101 FOR
CITY OF TORONTO EXISTING UTILITY SERVICES



LSUN-101

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LAKE SHORE BLVD E. BRIDGE

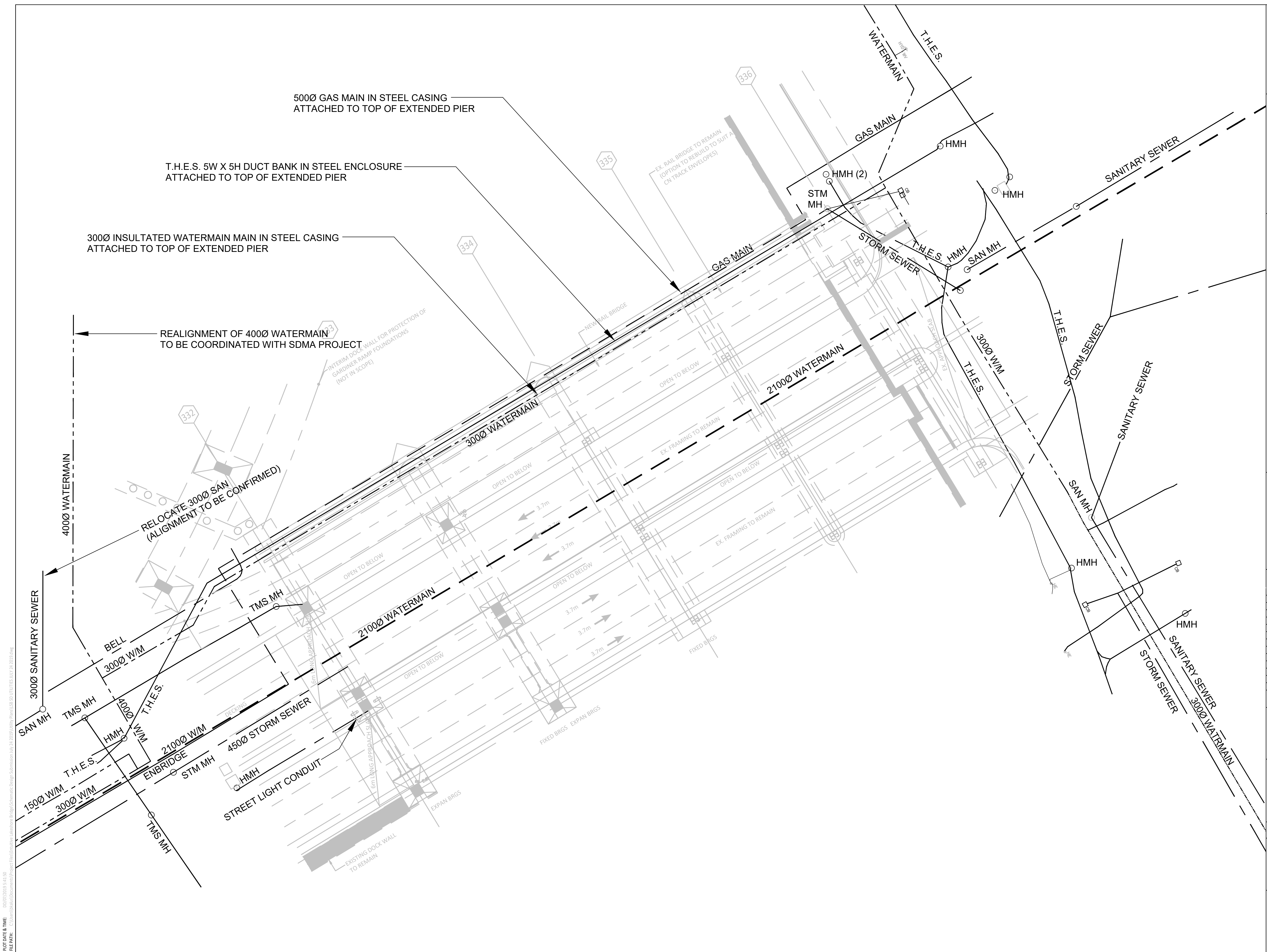
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DRAWING TITLE

UTILITIES AND SERVICES
FINAL CONDITION

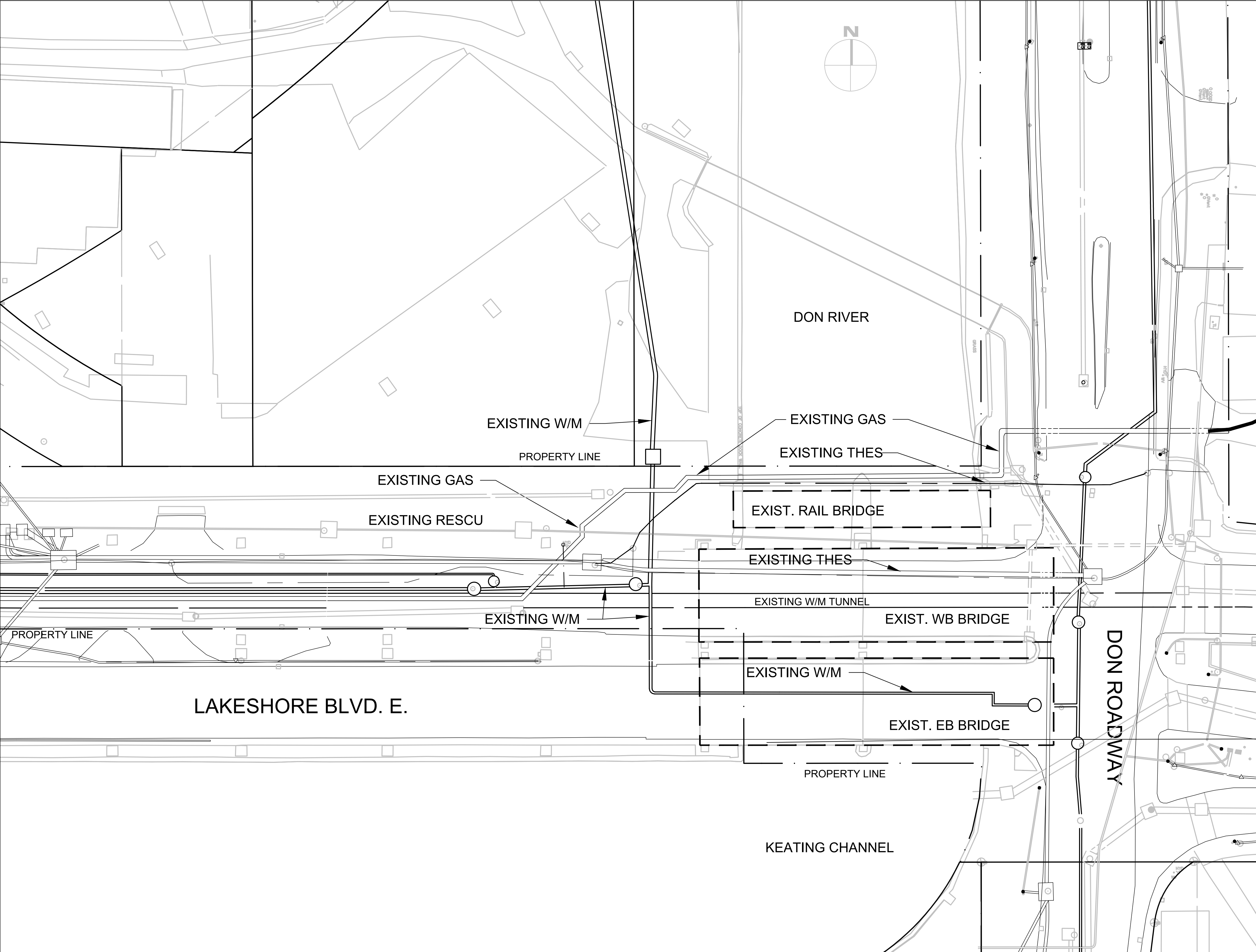
JOB NUMBER: T011-0000
DATE: JULY 24 2019
SCALE: 1:500
DESIGNED BY: BK
DRAWN BY: MS
CHECKED BY: MN

LSUN-102



Attachment 21

LSB Bridge Existing Utilities Plan



PORT LANDS FLOOD PROTECTION AND ENABLING INFRASTRUCTURE PROJECT

BRIDGE DESIGN AND ENGINEERING
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Planmac Engineering Inc.
80 North Queen St, Suite 302
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REVISIONS

NO.	DATE	DESCRIPTION
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12		
13		

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BRIDGE NAME

LAKESHORE BOULEVARD

STATUS

ISSUED FOR INFORMATION

PHASE ALTERNATIVE BASE CASE

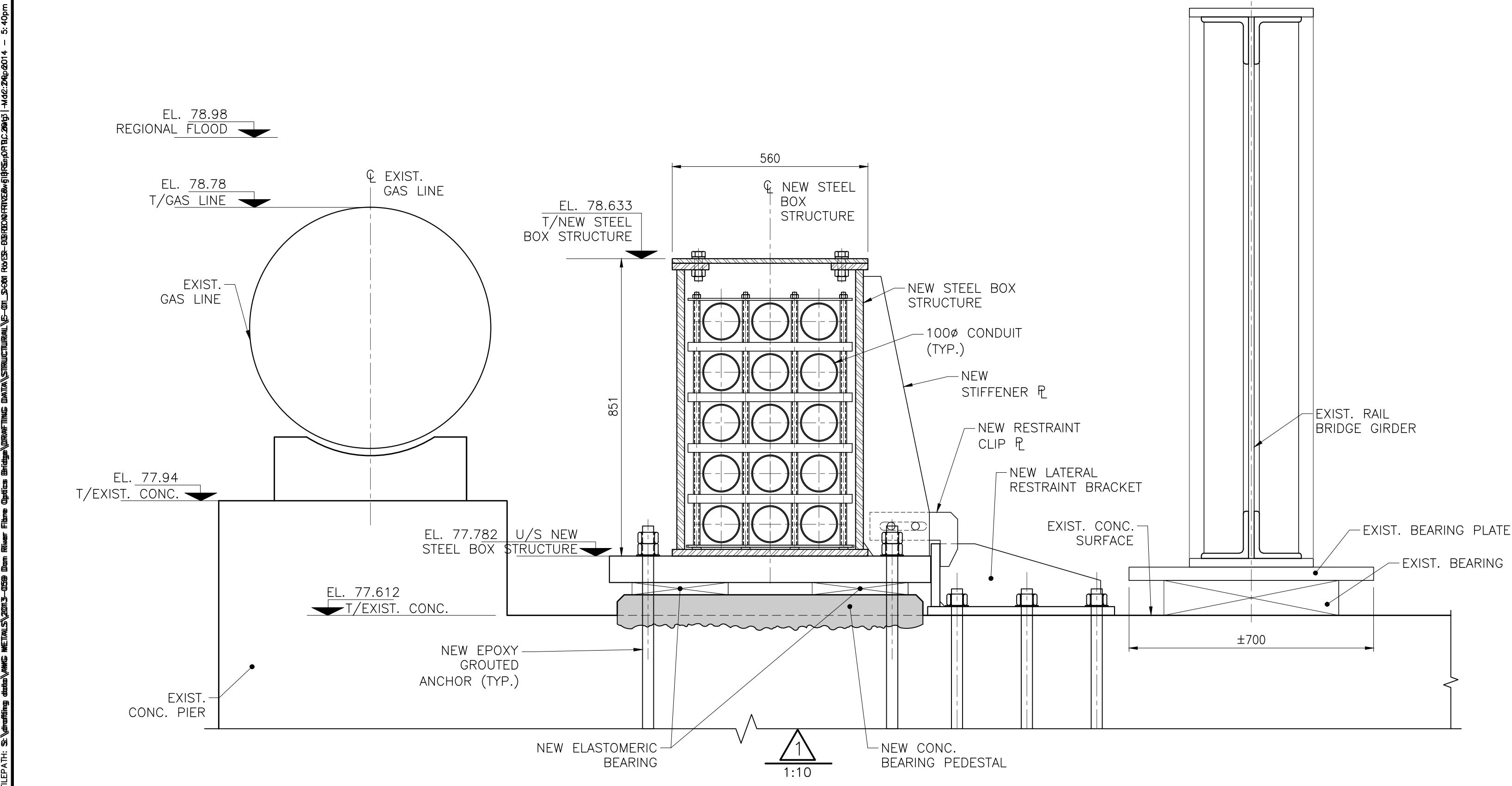
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EXISTING BRIDGE - UTILITIES
EXISTING CONDITION

JOB NUMBER: T011-0000
DATE: 1/4/2021
SCALE: 1 : 250
DESIGNED BY: ##
DRAWN BY: ##
CHECKED BY: ##

LSA-X-UTIL

LSB Bridge Existing Toronto Hydro Feeder Crossing Plan



OPSS 1202 MATERIAL SPECIFICATION FOR BEARINGS – ELASTOMERIC PLAIN AND STEEL LAMINATED

DES	J.L./J.J.	04 NOV 2013	FILE NAME:		JOB	DRAWING	REV
DRW	B.U./G.D.	04 NOV 2013					
CHK	J.J.	04 NOV 2013	SCALE	AS INDICATED	2013-059A	S-01	2

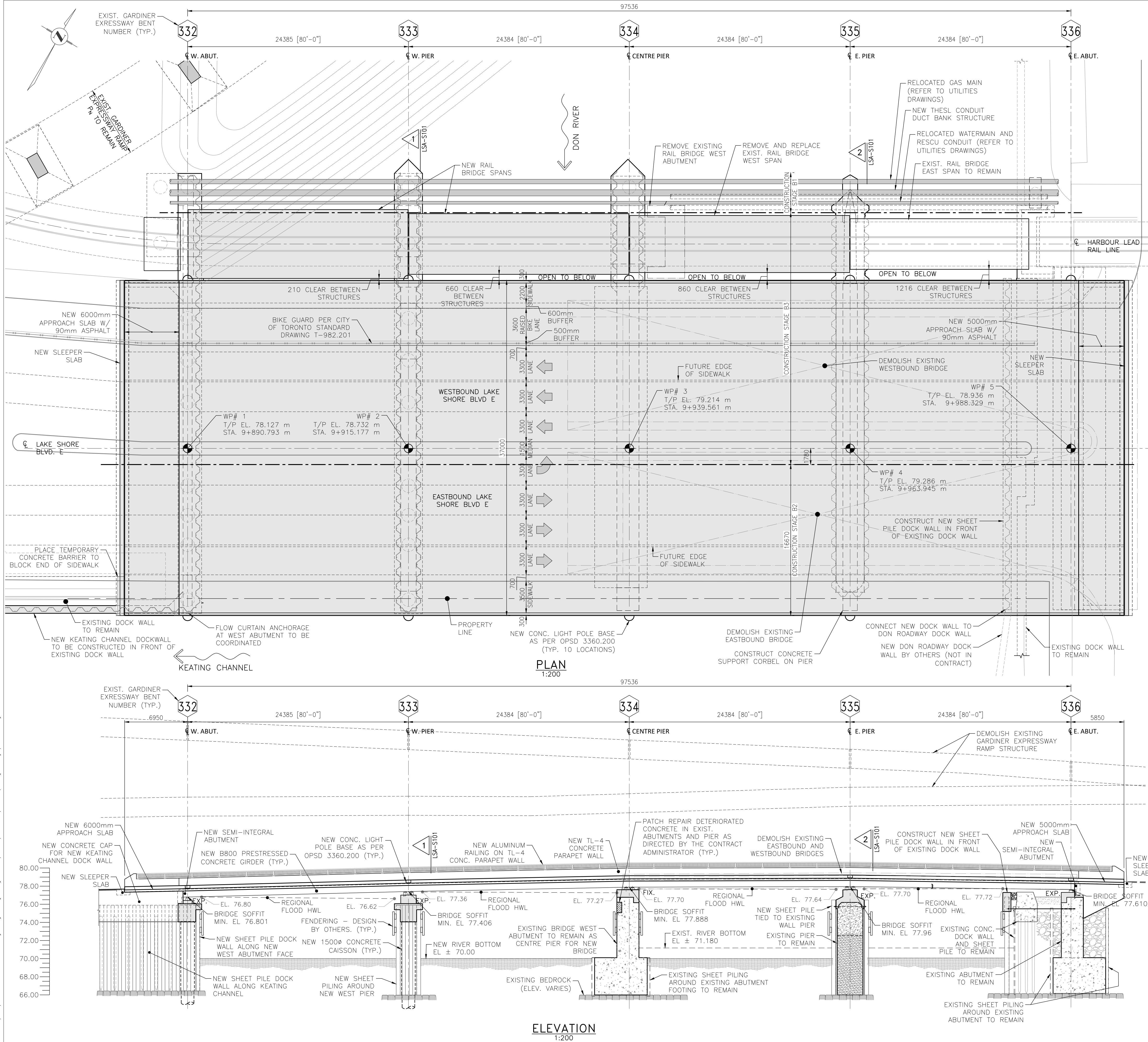
NOTE:
ALL DIMENSION SHOWN ARE IN
METRES AND/OR MILLIMETRES
UNLESS NOTED OTHERWISE.

\\FPA\H:\S:\Workflow\Auto\NAME METAL\S\2013-0159\Dem Project\Frame Outlets\Bridging\TRANSFORMING DATA\STRUCTUREM\15-011 9-001 HVSR-00000000020-61050-0R1C 2003\1402-200-0014 - 5-40cm

Attachment 22

LSB Alt Case IFT Structural-Bridge Drawings

PLOT DATE & TIME: Dec 17, 2020 - 6:23am
FILE PATH: P:\2017\0017-1665 - Port Lands Bridge Design & Engineering Services\3 Draft\310 Struct\311 C40 Working Drawings\LSA-S100.dwg



GENERAL NOTES

1. CLASS OF CONCRETE

ALL CONCRETE U.N.O. 35MPa (CLASS C-1)

CLASS CONCRETE FOR PRECAST GIRDERS ARE GIVEN ON PRESTRESSED GIRDER DRAWINGS

2. CLEAR COVER TO REINFORCING STEEL

FOOTINGS/CAISSONS	100 ± 25
DECK TOP	70 ± 20
DECK BOTTOM	40 ± 10
PIER CAPS	70 ± 10
REMAINDER	70 ± 20 U.N.O.

3. REINFORCING STEEL

REINFORCING STEEL SHALL BE GRADE 400W.

UNLESS SHOWN OTHERWISE, TENSION LAP SPLICES FOR REINFORCING STEEL BARS SHALL BE CLASS B.

STAINLESS REINFORCING STEEL SHALL BE TYPE 316LN OR DUPLEX 2205 AND HAVE A MINIMUM YIELD STRENGTH OF 500 MPa, UNLESS OTHERWISE SPECIFIED.

BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.

BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS, WHILE STIRRUPS AND TIES SHALL HAVE A MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH STRUCTURAL STANDARD DRAWING SS12-1, UNLESS INDICATED OTHERWISE.

4. CONSTRUCTION NOTES

THE CONTRACTOR SHALL ESTABLISH THE BEARING SEAT ELEVATIONS BY DEDUCTING THE ACTUAL BEARING THICKNESSES FROM THE TOP OF BEARING ELEVATIONS. IF THE ACTUAL BEARING THICKNESSES ARE DIFFERENT FROM THOSE GIVEN WITH THE BEARING DESIGN DATA, THE CONTRACTOR SHALL ADJUST THE REINFORCING STEEL TO SUIT.

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF NEARBY EXISTING STRUCTURES THAT ARE RELEVANT TO THE WORK SHOWN ON THE DRAWINGS PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONTRACT ADMINISTRATOR AND THE PROPOSED ADJUSTMENT OF THE WORK REQUIRED TO MATCH THE EXISTING STRUCTURE SHALL BE SUBMITTED FOR APPROVAL.

BACKFILL SHALL NOT BE PLACED BEHIND THE SEMI-INTEGRAL DECK ENDS UNTIL THE CONCRETE IN THE DECK ENDS HAS REACHED 75% OF ITS DESIGN STRENGTH.

BACKFILL SHALL BE PLACED SIMULTANEOUSLY BEHIND BOTH SEMI-INTEGRAL DECK ENDS, KEEPING THE HEIGHT OF THE BACKFILL APPROXIMATELY THE SAME. AT NO TIME SHALL THE DIFFERENCE IN BACKFILL ELEVATION BE GREATER THAN 500mm.

SHEET PILING INDICATED ON THE CONTRACT IS REQUIRED AS A PERMANENT PART OF THE STRUCTURE. IT IS NOT INTENDED TO REPRESENT A COMPLETE SHORING SCHEME.

ALL ELEVATIONS ARE TO GEODETIC DATUM.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR ADEQUATE PROTECTION OF ALL UTILITIES, SERVICES, STRUCTURES, ROADWAYS, WATERWAYS, ETC. DURING CONSTRUCTION OPERATIONS.

ROUGHEN CONSTRUCTION JOINTS TO AN AVERAGE SURFACE ROUGHNESS AMPLITUDE OF 5mm @15mm C/C

LOCATE AND AVOID EXISTING REINFORCING STEEL WHEN DRILLING INTO EXISTING CONCRETE ELEMENTS.

USE HILTI HIT-RE 500 OR APPROVED EQUIVALENT FROM THE MTO DSM FOR EPOXY GROUTED ANCHORS AND DOWELS.

PROTECTION SYSTEMS, INCLUDING THE TEMPORARY DOCK WALL, SHALL MEET THE REQUIREMENTS FOR PERFORMANCE LEVEL 2.

5. DESIGN

DESIGN CODE: CAN/CSA-S6-19 CANADIAN HIGHWAY BRIDGE DESIGN CODE & MTO STRUCTURAL MANUAL
LIVE LOAD: CL-625-ONT
SEISMIC DESIGN: CAN/CSA-S6-19 WITH SITE SPECIFIC DESIGN CRITERIA
SEISMIC DESIGN CATEGORY: MAJOR ROUTE BRIDGE

APPLICABLE STANDARD DRAWINGS

OPSD 911.160	GUIDE RAIL SYSTEM, CONCRETE BARRIER, TYPE M CONNECTION, INSTALLATION - TEMPORARY 1
OPSD 911.164	GUIDE RAIL SYSTEM, CONCRETE BARRIER, TYPE M CONNECTION, INSTALLATION - TEMPORARY RESTRAINT SYSTEM, STRAPPED INTO CONCRETE WITH ASPHALT
OPSD 911.171	GUIDE RAIL SYSTEM, CONCRETE BARRIER, TYPE M CONNECTION, INSTALLATION - TEMPORARY RESTRAINT SYSTEM, TRANSITION TO STRAPPED TCB OPSD 3002.200 FOUNDATION, PILES, SHEET PILE STEEL ANCHORAGE
OPSD 3329.100	DECK, REINFORCEMENT SUPPORTS FOR SLAB DEPTHS 300mm OR LESS
OPSD 3370.100	DECK, WATERPROOFING, HOT APPLIED ASPHALT MEMBRANE WITH PROTECTION BOARD
OPSD 3370.101	DECK, WATERPROOFING, HOT APPLIED ASPHALT MEMBRANE AT ACTIVE CRACKS GREATER THAN 2mm WIDE CONSTRUCTION JOINTS
OPSD 3390.100	DECK, DRIP CHANNEL
OPSD 3941.200	FIGURES IN CONCRETE, SITE NUMBER AND DATE, LAYOUT
OPSD 3950.100	JOINTS, CONCRETE EXPANSION AND CONSTRUCTION ON STRUCTURE

LIST OF ABBREVIATIONS

ABUT.	- DENOTES ABUTMENT	N.T.S.	- DENOTES NOT TO SCALE
BLL	- DENOTES BOTTOM LOWER LAYER	O.F.	- DENOTES OUTSIDE FACE
BUL	- DENOTES BOTTOM UPPER LAYER	SBGR	- DENOTES STEEL BEAM GUIDE RAIL
BROS.	- DENOTES BEARINGS		
CONC.	- DENOTES CONCRETE	STA.	- DENOTES STATION
C.J.	- DENOTES CONSTRUCTION JOINT	T/C	- DENOTES TOP OF CONCRETE
DIA.	- DENOTES DIAMETER	T/FTG	- DENOTES TOP OF FOOTING
DWG.	- DENOTES DRAWING	TLL	- DENOTES TOP LOWER LAYER
E.F.	- DENOTES EACH FACE	T/P	- DENOTES TOP OF PAVEMENT
E/B	- DENOTES EASTBOUND	TUL	- DENOTES TOP UPPER LAYER
E/L	- DENOTES ELEVATION	TYP.	- DENOTES TYPICAL
EXP.	- DENOTES EXPANSION	U.N.O.	- DENOTES UNLESS NOTED OTHERWISE
EXP.	- DENOTES EXPANSION BEARINGS	U/S	- DENOTES UNDERSIDE
I.F.	- DENOTES INSIDE FACE	W/B	- DENOTES WESTBOUND
FIX.	- DENOTES FIXED BEARINGS	WP	- DENOTES WORKING POINT
MAX.	- DENOTES MAXIMUM		
MIN.	- DENOTES MINIMUM		

PORT LANDS FLOOD PROTECTION AND ENABLING INFRASTRUCTURE PROJECT

BRIDGE DESIGN AND ENGINEERING Toronto, ON



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Tel: 416.214.1344

Project Lead

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REVISIONS

NO.	DATE	DESCRIPTION
0	2019/09/13	ISSUED FOR SCHEMATIC DESIGN
1	2020/01/30	ISSUED FOR 60% DESIGN REVIEW
2	2020/08/28	ISSUED FOR 90% DESIGN REVIEW
3	2020/12/17	ISSUED FOR TENDER

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BRIDGE NAME

LAKE SHORE BOULEVARD
EAST BRIDGE

STATUS

ISSUED FOR TENDER

PHASE

DRAWING TITLE

GENERAL ARRANGEMENT
ROADWAY BRIDGE I

JOB NUMBER: C017-1665

DATE: 2018/07/11

SCALE: 1:200

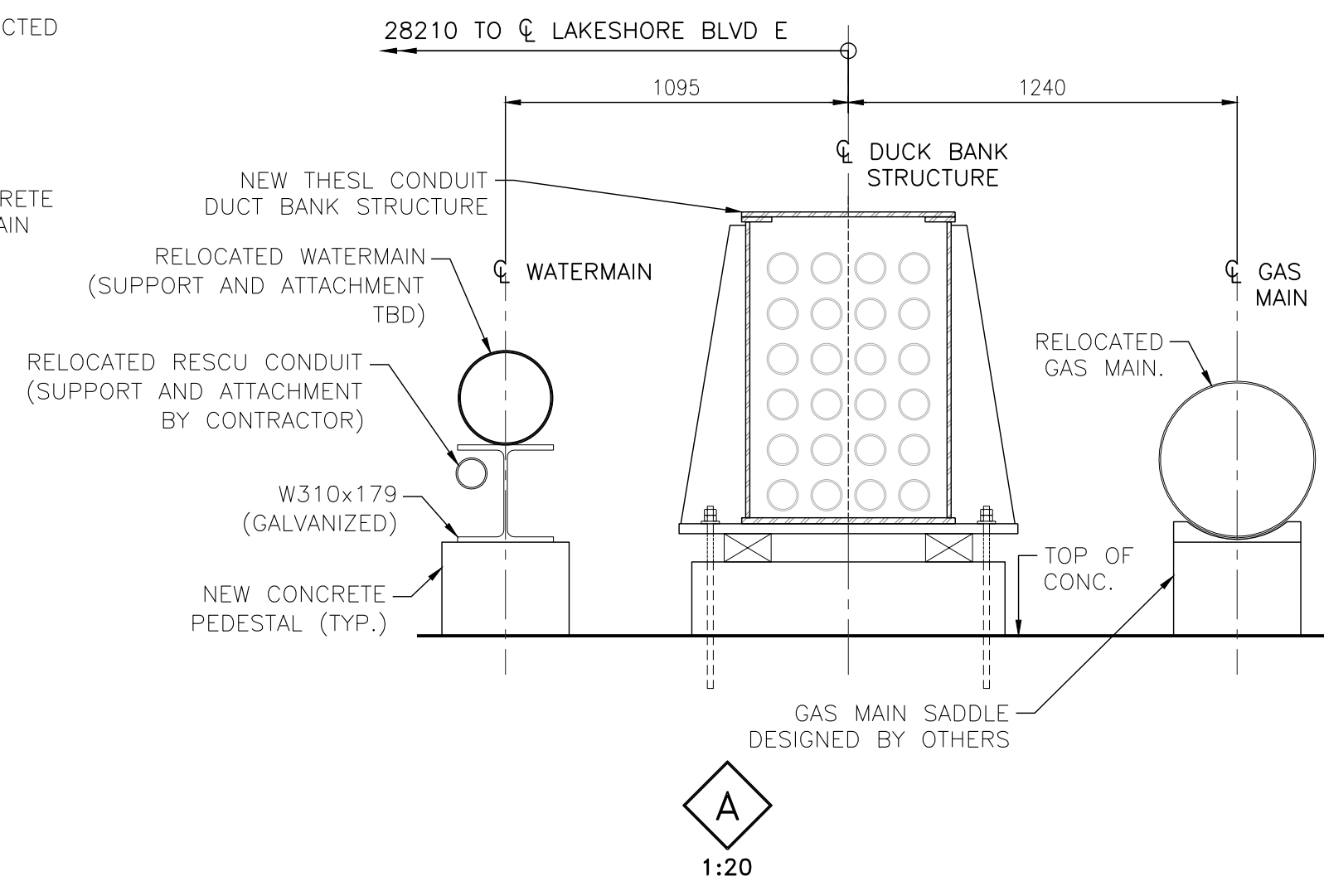
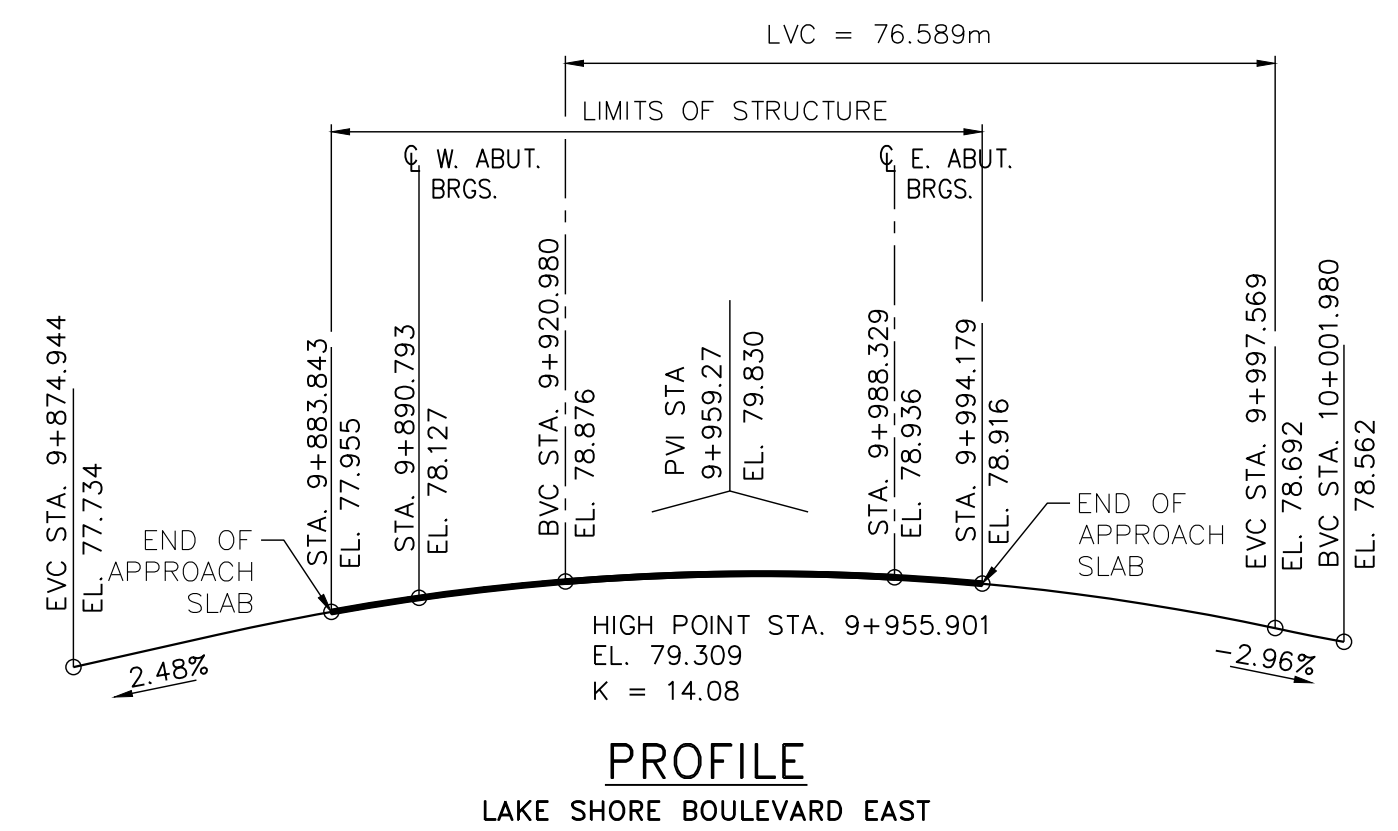
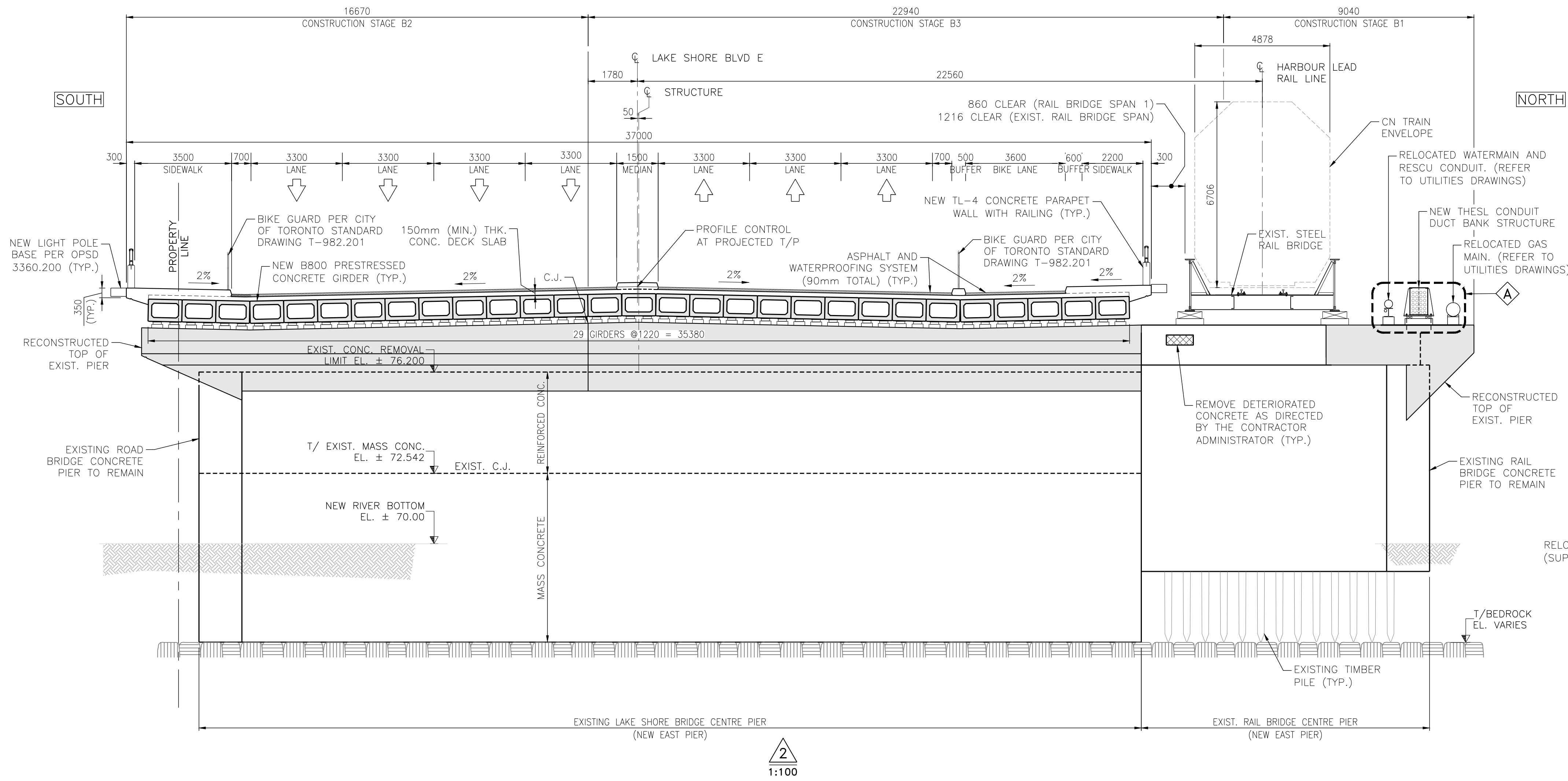
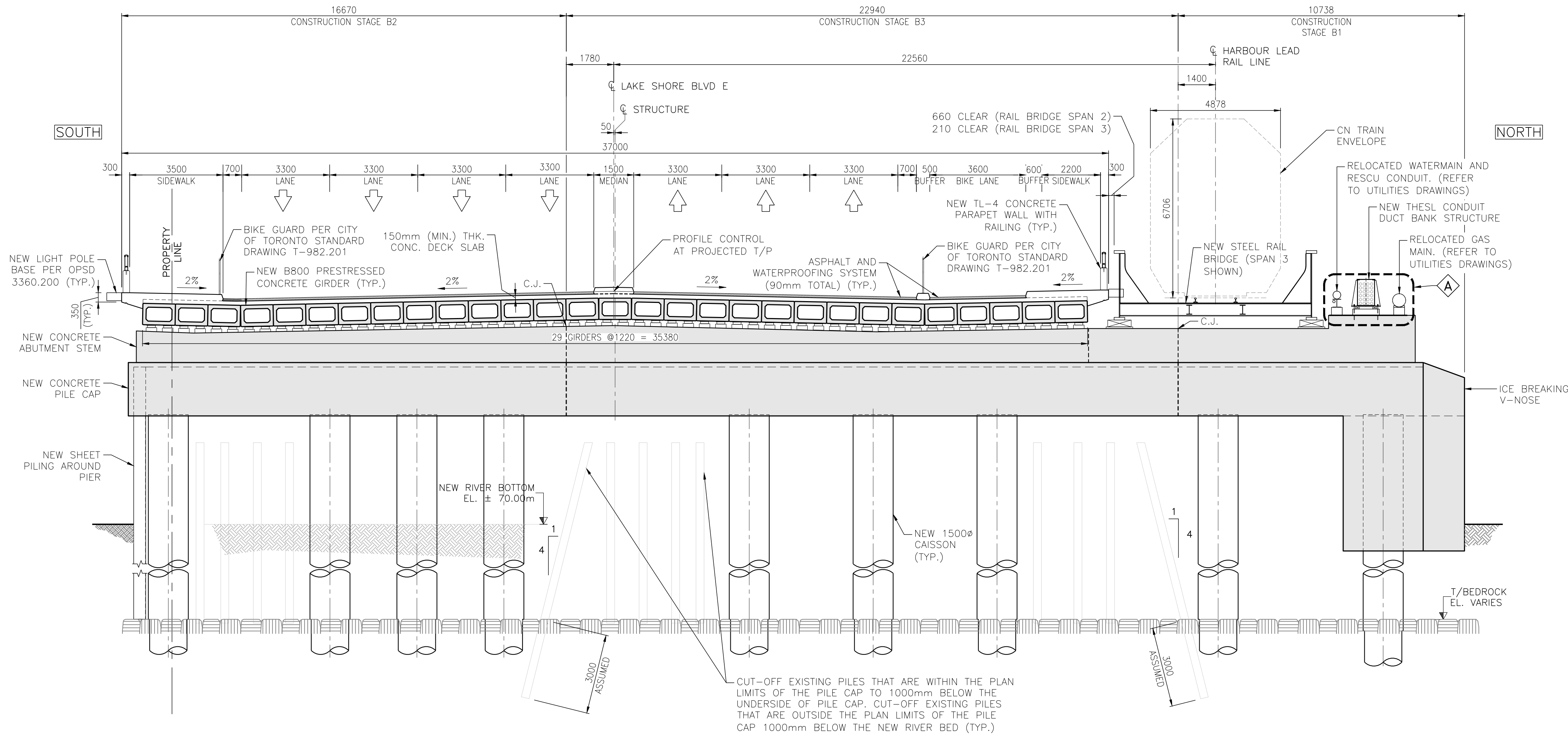
DESIGNED BY: AL

DRAWN BY: GWA/GD

CHECKED BY: JW

LSA-S100

PLOT DATE & TIME: Dec 17, 2020 - 6:24pm
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PORT LANDS FLOOD PROTECTION AND ENABLING INFRASTRUCTURE PROJECT

BRIDGE DESIGN AND ENGINEERING Toronto, ON



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Project Lead

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NO.	DATE	DESCRIPTION
0	2020/01/30	ISSUED FOR 60% DESIGN REVIEW
1	2020/08/28	ISSUED FOR 90% DESIGN REVIEW
2	2020/12/17	ISSUED FOR TENDER

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BRIDGE NAME

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EAST BRIDGE

STATUS

ISSUED FOR TENDER

PHASE

DRAWING TITLE

GENERAL ARRANGEMENT
ROADWAY BRIDGE II

JOB NUMBER: C017-1665

DATE: 2018/07/11

SCALE: 1:250

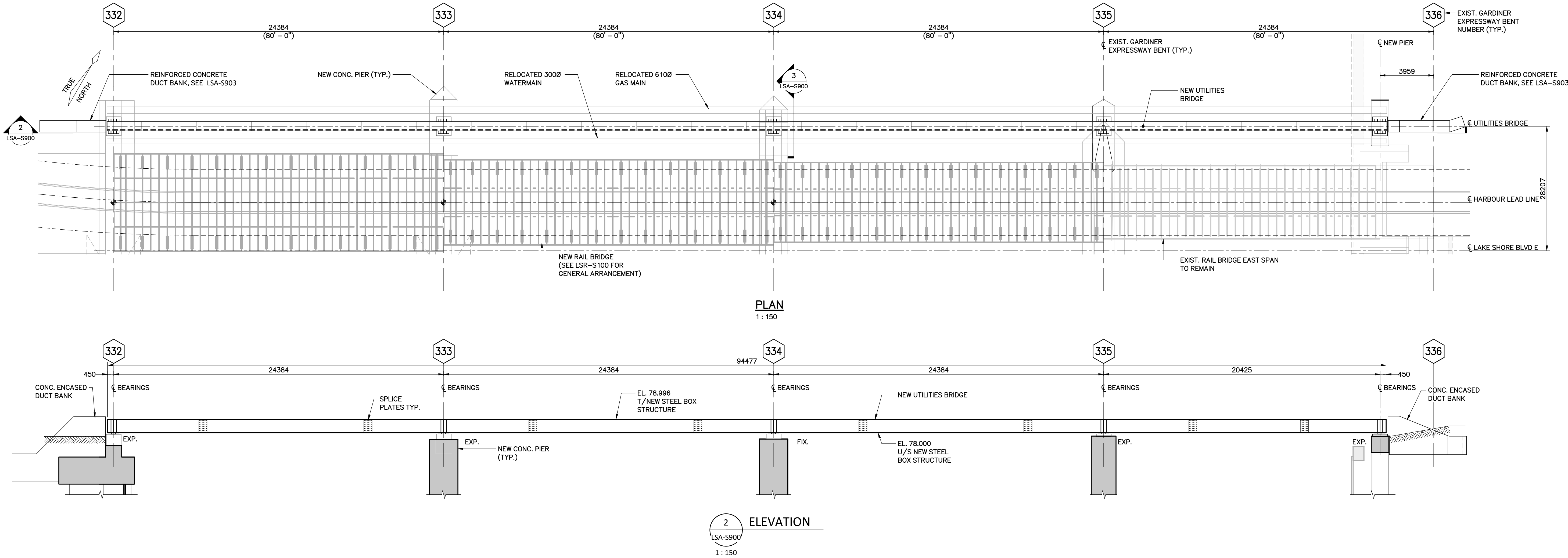
DESIGNED BY: AL

DRAWN BY: GWA/GD

CHECKED BY: JW

LSA-S101

PLOT DATE & TIME: 2020-12-17 11:27:36 AM
FILE PATH: C:\Users\graeeme.anderson\Documents\017-1665_PIBD_R19_Lake Shore Utilities_graeeme.anderson@entuitive.com.rvt



GENERAL NOTES:

- NEW STEEL BOX STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH CAN/CSA-S6-19.
- USE ONLY THE LATEST ISSUES OF ANY GOVERNMENT CODES, STANDARDS, OR REGULATIONS MENTIONED IN THE FOLLOWING NOTES.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS, AND ELEVATIONS OF THE EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK SHOWN ON THE DRAWINGS PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO THE CONSULTANT.
- DIMENSIONS ARE IN mm UNLESS NOTED OTHERWISE. DO NOT SCALE THESE DRAWINGS.
- THE CONTRACTOR IS FULLY RESPONSIBLE FOR ADEQUATE PROTECTION OF ALL UTILITIES, SERVICES, STRUCTURES, ROADWAYS, ETC. WHICH MAY BE AFFECTED BY THIS CONSTRUCTION.
- THE CONTRACTOR SHALL ENSURE THE STABILITY OF ALL COMPONENTS DURING HANDLING, TRANSPORTATION, ERECTION, AND UNTIL THE NEW STEEL BOX STRUCTURE IS FULLY ASSEMBLED AND ANCHORED IN ITS FINAL LOCATION.

STRUCTURAL STEEL NOTES:

- FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO CAN/CSA-S6.
- ALL LENGTHS SHOWN ARE IN THE HORIZONTAL PLANE AND MEASURED AT 15°C.
- STRUCTURAL STEEL FOR PLATE SECTIONS SHALL CONFORM TO CAN/CSA 40.21 GRADE 300W.
- ALL STEEL COMPONENTS ARE TO BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH CAN/CSA G164.
- ALL WELDING IS TO BE COMPLETED IN ACCORDANCE WITH CAN/CSA W59 BY A FABRICATOR QUALIFIED IN ACCORDANCE WITH CAN/CSA W47.1. E49XX ELECTRODES (OR EQUIVALENT) SHALL BE USED.
- LOCALLY REMOVE GALVANIZING FROM NEW STEEL BOX STRUCTURE AT ALL FIELD WELDING LOCATIONS. ALL GALVANIZING DAMAGED AT FIELD WELDING LOCATIONS SHALL BE RESTORED USING AN APPROVED METALIZING PROCEDURE.
- ALL BOLTS CONNECTING STEEL SECTION TO STEEL SECTION TO BE HIGH TENSILE STEEL CONFORMING TO ASTM A325. ALL BOLTS SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153. THREADS ARE TO BE EXCLUDED FROM THE SHEAR PLANE. WASHERS SHALL BE HOT DIPPED GALVANIZED AND SHALL CONFORM TO ASTM F436 TYPE 1. NUTS SHALL BE HOT DIPPED GALVANIZED AND SHALL CONFORM TO ASTM A563, GRADE DH.
- ALL ANCHORS TO SECURE NEW STRUCTURE INTO CONCRETE SHALL BE THREADED RODS IN ACCORDANCE WITH ASTM A193 GRADE B7. ALL ANCHORS SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A153. WASHERS SHALL BE HOT DIPPED GALVANIZED AND SHALL CONFORM TO ASTM F436 TYPE 1. NUTS SHALL BE HOT DIPPED GALVANIZED AND SHALL CONFORM TO ASTM A194, GRADE 2H, HEAVY.
- PLATE COMPONENTS SHALL NOT BE SHEAR CUT.

CONSTRUCTION NOTES:

- THE TOP OF ALL NEW BEARING PEDESTALS SHALL BE FINISHED LEVEL TO WITHIN A 500H:1V SLOPE IN ANY DIRECTION.
- THE TOP OF ALL NEW BEARING PEDESTALS SHALL BE FINISHED SMOOTH AND NOT VARY MORE THAN 1 mm ALONG A STRAIGHT EDGE PLACED IN ANY DIRECTION ACROSS AN AREA THAT EXTENDS 25 mm BEYOND THE OUTSIDE LIMITS OF THE NEW BEARING.

DESIGN NOTES:

- LOCATION: TORONTO, ON

- DEAD LOAD:

SELF WEIGHT OF STEEL 77 kN/m³
FRE CONDUIT 0.015 kN/m PER CONDUIT, 24 MAX.
TRIPLEX CABLE 0.100 kN/m PER CABLE, 24 MAX.

- LIVE LOAD:

1.2 kPa

- SNOW LOAD:

S_s 0.9 kPa
S_r 0.4 kPa

- ICE ACCRETION:

31 mm

- WIND LOAD:

q₅₀ 0.52 kPa

BEARING DATA TABLE					
LOCATION		G/L 332	G/L 333	G/L 334	G/L 335
TYPE		LAMINATED ELASTOMETRIC BEARING	LAMINATED ELASTOMETRIC BEARING	LAMINATED ELASTOMETRIC BEARING	LAMINATED ELASTOMETRIC BEARING
SIZE (mm)		300x200x80	300x200x60	300x200x50	300x200x60
NUMBER REQUIRED		2	2	2	2
SERVICEABILITY LIMIT STATES	DEAD LOAD (kN)	35	95	80	85
	TOTAL LOAD (kN)	40	105	90	95
	MOVEMENT (mm)	±24.5	±12.5	0	±12.4
	ROTATION (RADIAN)	0.002	0	0	0
	MAX. SHEAR RATE (kN/mm)	0.82	1.08	1.39	1.08
ULTIMATE LIMIT STATES	DEAD LOAD (kN)	50	130	110	115
	TOTAL LOAD (kN)	105	200	180	185

PORT LANDS FLOOD PROTECTION AND ENABLING INFRASTRUCTURE PROJECT

BRIDGE DESIGN AND ENGINEERING Toronto, ON



Client
Waterfront Toronto
20 Bay St
Toronto ON, M5J 2N8
Canada
Tel: 416-477-5832

Project Lead

ENTUITIVE

200 University Avenue, 7th Floor
Toronto, ON M5H 3C6 Canada
Tel: 416-477-5832
entuitive.com

NOT FOR CONSTRUCTION

STAMP

REVISIONS

NO.	DATE	DESCRIPTION
0	2020/08/28	ISSUED FOR 90% DESIGN

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BRIDGE NAME

LAKE SHORE BOULEVARD EAST BRIDGE

STATUS

ISSUED FOR TENDER

PHASE

DRAWING TITLE

UTILITIES BRIDGE - GENERAL ARRANGEMENT

JOB NUMBER: C017-1665

DATE: 2018/07/11

SCALE: As indicated

DESIGNED BY: NG

DRAWN BY: GWA

CHECKED BY: JW

LSA-S900

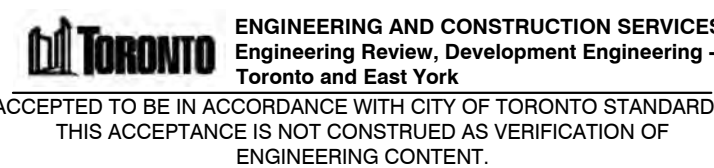
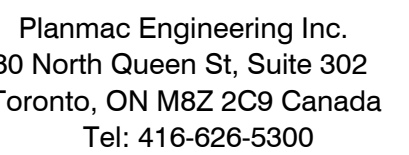
LSB Alt Case IFT Civil Drawings

BRIDGE DESIGN AND
ENGINEERING
Toronto, ON



Project Lead

200 University Avenue, 7th Floor
Toronto, ON M5H 3C6 Canada
Tel: 416-477-5832
entuitive.com



MANAGER, DEVELOPMENT ENGINEERING, CITY OF TORONTO

DATE _____

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RIDGE NAME

LAKESHORE BOULEVARD

TATUS

ISSUED FOR TENDER

ALTERNATIVE BASE CASE

REMOVALS UTILITY SERVICES
STA. 9+830 TO STA. 9+935

JOB NUMBER: T011-0000
DATE: 12/12/2020
CALE: 1 : 250
ESIGNED BY: BK
RAWN BY: MS
HECKED BY: BK

LSA-C100

LSA-C100

LIMIT OF UTILITY REMOVALS

STA. 9+850

LAKESHORE BOULEVARD EAST

LAKE

LEGEND:

 REMOVAL FEATURE
 REMOVE EXISTING STRUCTURE
 REMOVE EXISTING FIRE HYDRANT

REMOVAL NOTES:

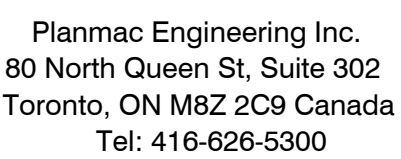
1. RESCU REMOVALS NOT SHOWN FOR CLARITY. REFER TO RESCU REMOVAL DRAWINGS.
2. TORONTO HYDRO REMOVALS NOT SHOWN FOR CLARITY. REFER TO THES REMOVAL DRAWINGS.
3. ENBRIDGE GAS TO BE RELOCATED BY OTHERS.
4. TRAFFIC SIGNAL ELECTRICAL REMOVALS NOT SHOWN FOR CLARITY. REFER TO ELECTRICAL REMOVAL DRAWINGS.
5. STREET LIGHT POLE REMOVALS NOT SHOWN FOR CLARITY. REFER TO ELECTRICAL STREET LIGHTING REMOVAL DRAWINGS.
6. UNDERGROUND UTILITIES (BELL, FIBRE, UNITEL, THES) TO BE RELOCATED BY OTHERS.

BRIDGE DESIGN AND
ENGINEERING
Toronto, ON



Project Lead

200 University Avenue, 7th Floor
Toronto, ON M5H 3C6 Canada
Tel: 416-477-5832
entuitive.com



MANAGER, DEVELOPMENT ENGINEERING, CITY OF TORONTO

DATE _____

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RIDGE NAME

STATUS

ALTERNATIVE BASE CASE

JOB NUMBER: T011-0000
 DATE: 12/12/2020
 SCALE: 1 : 250
 DESIGNED BY: BK
 DRAWN BY: MS
 CHECKED BY: BK

LSA-C101

LSA-C101

PLOT DATE & TIME: 12/12/2020 5:26:51 PM
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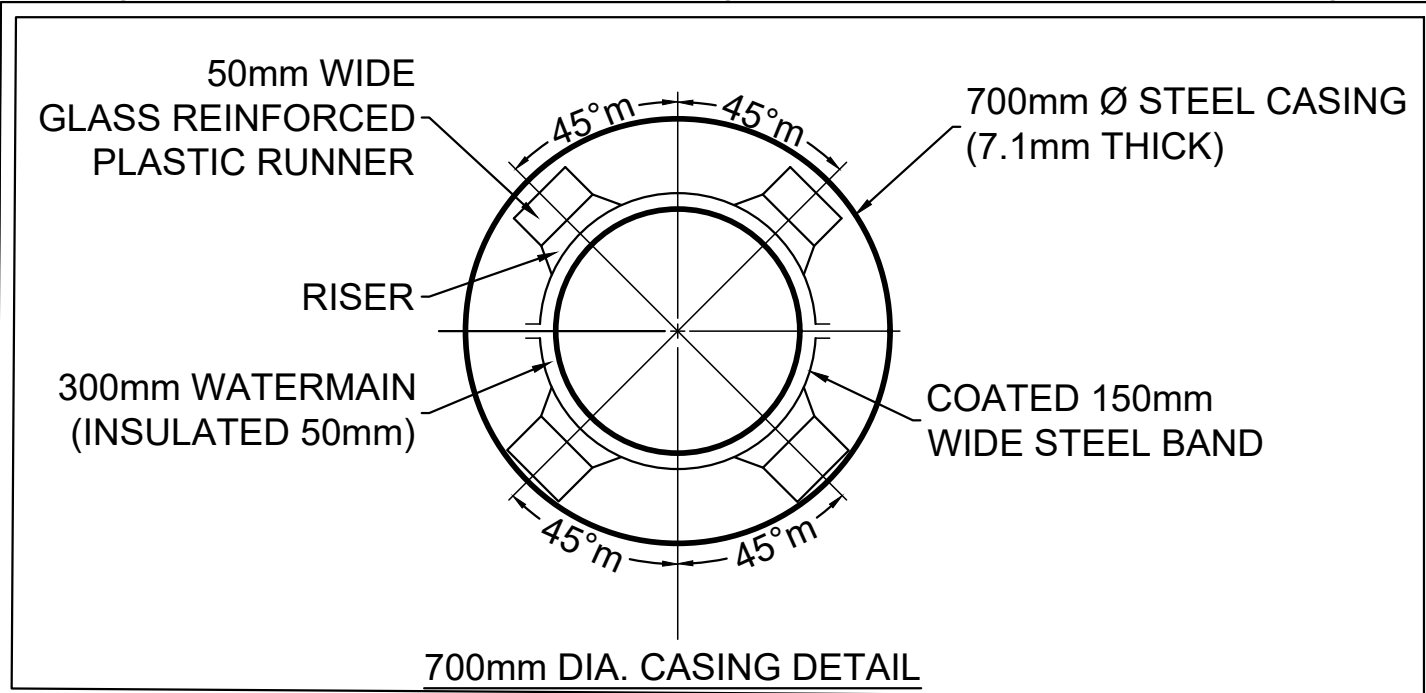
 REMOVAL FEATURE
 REMOVE EXISTING STRUCTURE
 REMOVE EXISTING FIRE HYDRANT

1. RESCU REMOVALS NOT SHOWN FOR CLARITY. REFER TO RESCU REMOVAL DRAWINGS.
2. TORONTO HYDRO REMOVALS NOT SHOWN FOR CLARITY. REFER TO THES REMOVAL DRAWINGS.
3. ENBRIDGE GAS TO BE RELOCATED BY OTHERS.
4. TRAFFIC SIGNAL ELECTRICAL REMOVALS NOT SHOWN FOR CLARITY. REFER TO ELECTRICAL REMOVAL DRAWINGS.
5. STREET LIGHT POLE REMOVALS NOT SHOWN FOR CLARITY. REFER TO ELECTRICAL STREET LIGHTING REMOVAL DRAWINGS.
6. UNDERGROUND UTILITIES (BELL, FIBRE, UNITEL, THES) TO BE RELOCATED BY OTHERS.



1. ALL NEW WATER VALVES TO BE AS PER COST STANDARD DRAWING T-1101.02-2
2. ALL WATERMAIN JOINTS MECHANICALLY RESTRAINED WITH UNI FLANGE BELL CLAMPS AND RETAINING GLANDS WITH THREADED ROD AS PER UNI-B-13-92.
3. EXISTING WATERMAIN TO REMAIN DURING CONSTRUCTION. PROPOSED WATERMAIN TO BE CONNECTED ONLY ONCE ALL APPROPRIATE TESTS AND APPROVALS ARE OBTAINED.
4. ALL EXISTING WATER SERVICES TO BE CONFIRMED BY THE CONTRACTOR AND REPLACED TO THE PROPERTY LINE WITH CONNECTION TO THE NEW WATERMAIN.

1. CONTRACTOR TO VERIFY ALL UTILITY SERVICES AND PROTECT FROM DAMAGE.
2. THESE RELOCATION NOT SHOWN FOR CLARITY. REFER TO THESE ELECTRICAL DRAWINGS.
3. EXISTING AND PROPOSED RAIL TRACK SHOWN FOR INFORMATION PURPOSES. REFER TO RAIL ENGINEERING DRAWINGS.
4. SIDEWALK AND TRAIL DETAILS SHOWN FOR INFORMATION PURPOSES. REFER TO PUBLIC REALM LANDSCAPE DRAWINGS.
5. FOR DETAILS RELATING TO THE ARRANGEMENT OF UTILITIES ON THE CONCRETE PLATFORM LOCATED ON THE NORTH SIDE OF THE RAIL BRIDGE AND ACROSS THE DON RIVER, REFER TO STRUCTURAL DRAWINGS.
6. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH CITY OF TORONTO STANDARDS.
7. ANY ASPHALT PAVING MUST BE DONE IN ACCORDANCE WITH CITY OF TORONTO SUPERPAVE SPECIFICATIONS.



**Professional Engineers
Ontario**

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 Number: 100023527
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 Limitations:
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LSA-C200

BRIDGE DESIGN AND
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Toronto, ON

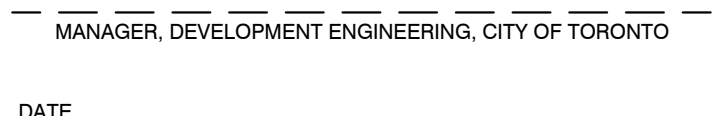


ENTUITIVE



PLANMAC
ENGINEERING INC.

Planmac Engineering Inc.
80 North Queen St, Suite 302
Toronto, ON M8Z 2C9 Canada
Tel: 416-626-5300



STAMP

Professional Engineers
Ontario

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Number: 000013527
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RIDGE NAME

STATUS

ALTERNATIVE BASE CASE

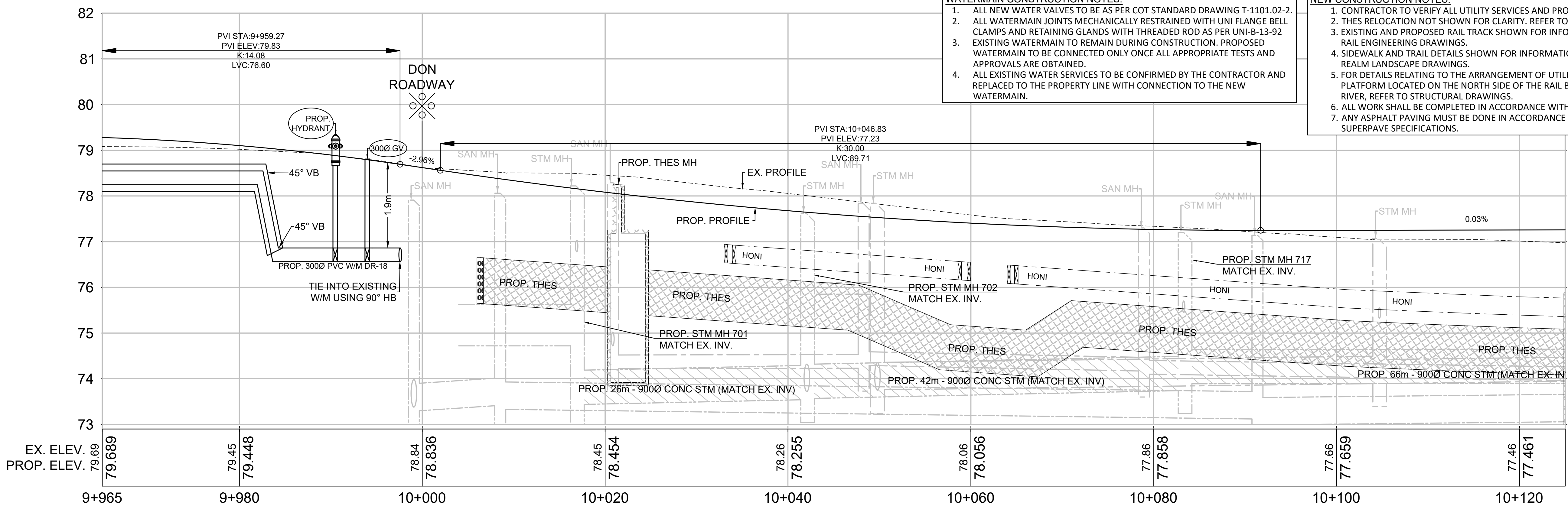
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 DESIGNED BY: BK
 DRAWN BY: MS
 CHECKED BY: BK

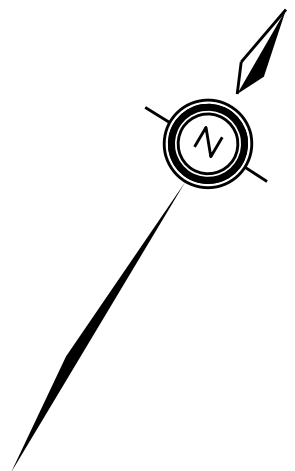
LSA-C201



- NEW CONSTRUCTION NOTES:**
1. CONTRACTOR TO VERIFY ALL UTILITY SERVICES AND PROTECT FROM DAMAGE.
 2. THES RELOCATION NOT SHOWN FOR CLARITY. REFER TO THES ELECTRICAL DRAWINGS.
 3. EXISTING AND PROPOSED RAIL TRACK SHOWN FOR INFORMATION PURPOSES. REFER TO RAIL ENGINEERING DRAWINGS.
 4. SIDEWALK AND TRAIL DETAILS SHOWN FOR INFORMATION PURPOSES. REFER TO PUBLIC REALM LANDSCAPE DRAWINGS.
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 6. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH CITY OF TORONTO STANDARDS.
 7. ANY ASPHALT PAVING MUST BE DONE IN ACCORDANCE WITH CITY OF TORONTO SUPERPAVE SPECIFICATIONS.



LSB Alt Case Toronto Hydro
Feeder Relocation Drawing
(October 14, 2020)



TORONTO HYDRO

DON ROADWAY & LAKE SHORE BLVD E

PORT LANDS BRIDGE

THIS DRAWING SET REFLECTS THE LATEST CUSTOMER NOTIFICATION LIST DATED: (MM/DD/YYYY)
DRAWING REVISION #: _____
APPROVED BY: _____

DESCRIPTION OF WORK

THE PURPOSE OF THIS PROJECT IS TO RELOCATE ALL FEEDERS BETWEEN CHAMBERS CC15521 AND CC15523 TO NEW UTILITY BRIDGE OVER THE KEATING CHANNEL. NEW UTILITY BRIDGE TO BE DESIGNED BY OTHERS. EXISTING CHAMBER CC15522 TO BE REMOVED. ALL WORK IS TO SUPPORT THE PORT LANDS BRIDGE WORK AND EXPANSION OF THE KEATING CHANNEL AT LAKE SHORE BLVD. EAST AND THE DON ROADWAY.

CONTACT INFORMATION

FOR EMERGENCY ACCESS TO PORT LANDS BRIDGE
DON RIVER SITE CONTACT XXX AT XXXXXX.

FEEDER NUMBERS: A-9-BN, A-22-BN, A-35-BN, A-37-BN, A-50-BN, A-51-BN, A-52-BN, A-203-BN, A-240-GD.

UTILITY SOLUTIONS CORPORATION

61 ADVANCE ROAD

TORONTO, ONTARIO, M8Z 2S6

PHONE: (416) 766 5925

PROFESSIONAL ENGINEERS SEAL

THIS WORK INSTRUCTION HAS BEEN ASSEMBLED UTILIZING ONLY CERTIFIED CONSTRUCTION STANDARDS, SPECIFICATIONS AND APPROVED EQUIPMENT AND MEETS THE SAFETY REQUIREMENTS OF SECTION 4 OF ONTARIO REGULATION 22/04.

B4 B3 B2 B1 B0		2010/14 2009/03 2007/09 2005/06	SUBMITTED FOR THESL REVIEW SUBMITTED FOR THESL REVIEW SUBMITTED FOR THESL REVIEW SUBMITTED FOR THESL REVIEW	FG FG FG FG	DC DC DC DC
rev.		date yy/mm/dd	description	by	appd.

REVIEWED BY
Department: MEP
Contract Administrator: JEY GULASEKARAM
Signature: _____
Date: yyyy/mm/dd

project reference #	civil design	date
C-180671-X19102-HR008	KEVIN SUN print name & signature	2020/10/14 yyy/mm/dd
drawn by	civil approval	date
FARHAD GHANBARI	FRANK SYER print name & signature	2020/10/14 yyy/mm/dd
department/division	electrical design	date
MEP	FARHAD GHANBARI print name & signature	2020/10/14 yyy/mm/dd
district	electrical approval	date
TORONTO	DALJIT CHEEMA print name & signature	2020/10/14 yyy/mm/dd
scale	sheet size	construction approval
N.T.S	D	date print name & signature / / yyy/mm/dd

location:
DON ROADWAY & LAKE SHORE BLVD E

project title:
PORT LANDS BRIDGE EXPANSION AND FEEDER RELOCATION

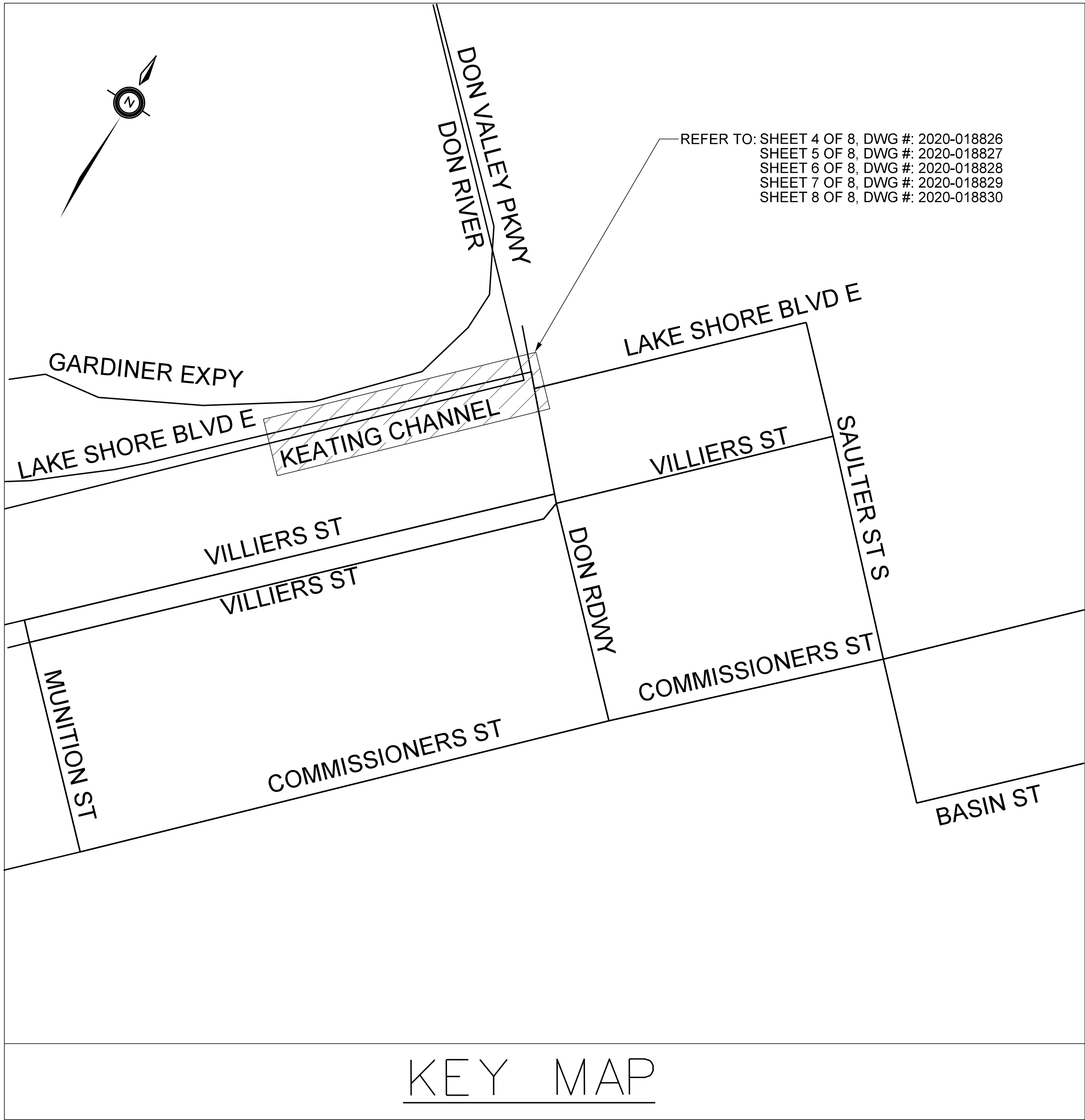
dwg. type:
TITLE PAGE

dwg. no. 2020-018823

sheet no. 1 Of 8

rev. no. B4

TABLE OF CONTENTS			
SHEET	DWG NO.	DESCRIPTION	REV
1	2020-018823	TITLE PAGE	B3
2	2020-018824	GENERAL NOTES & DETAILS - ELECTRICAL	B3
3	2020-018825	GENERAL NOTES & DETAILS - CIVIL	B3
4	2020-018826	PRIMARY SCHEMATIC	B3
5	2020-018827	CABLE AND DUCT LAYOUT - 1	B3
6	2020-018828	CABLE AND DUCT LAYOUT - 2	B3
7	2020-018829	CIVIL PLAN 1 OF 2	B3
8	2020-018830	CIVIL PLAN 2 OF 2	B3



KEY MAP

CROSS REFERENCE PROJECTS	
PROJECT NO.	DESCRIPTION
C-180671-X19102-HR003	THE DON ROADWAY FEEDER RELOCATIONS

STREET LIGHTING CHANGES					
ADD	DELETE	SIZE (WATTS)	LUMINAIRE TYPE (HPS, MH, etc.)	STREET NAME	LOCATION OF LUMINAIRE (Municipal Address, Pole #, etc.)
0	0	N/A	N/A	N/A	N/A

CUT PERMIT INFORMATION				
APPLICATION #	PERMIT #	FROM	TO	STREET
		-	-	LAKE SHORE BLVD E

AS CONSTRUCTED ROAD CUT							PERMIT #: -
COMPLETED BY:	STREET: -		FROM: -		TO: -		
SIGNATURE:	RATED DEPTH (RD) (mm)	DEPTH (D) (mm)	WIDTH (W) (m)	LENGTH (L) (m)	PRO RATED FACTOR (F-FDRD)	TOTAL (WxLxP) (sq. ft.)	
ASPHALT							
BOULEVARD (DRIVEWAY)							
LOCAL ROAD							
ARTERIAL AND COLLECTOR ROADS							
GRIND AND PAVE							
CONCRETE							
SIDEWALK							
MONOLITHIC CURB AND SIDEWALK							
ROAD BASE							

APPROXIMATE CUT REPAIRS		
ROADWAYS	_____	m ² +/-
CONCRETE	_____	m ² +/-
SIDEWALK	_____	m ² +/-
CURB	_____	m ² +/-
OTHER	_____	m ² +/-

PRELIMINARY
DO NOT CIRCULATE

This site has been left in a condition that presents no undue hazard to the public (as defined in the Technical Guidelines approved by the ESA under Ontario Regulation 22/04) and approved equipment has been used in the repair or replacement.

AS CONSTRUCTED

ELECTRICAL CIVIL

WITH CHANGES AS SHOWN ON THIS DRAWING.

Marked By

Approved by Toronto Hydro

CONTRACTOR

COMPANY NAME

PRINT NAME

SIGNATURE

POSITION

PRINT NAME

SIGNATURE

POSITION

PRINT NAME

SIGNATURE

PRINT NAME

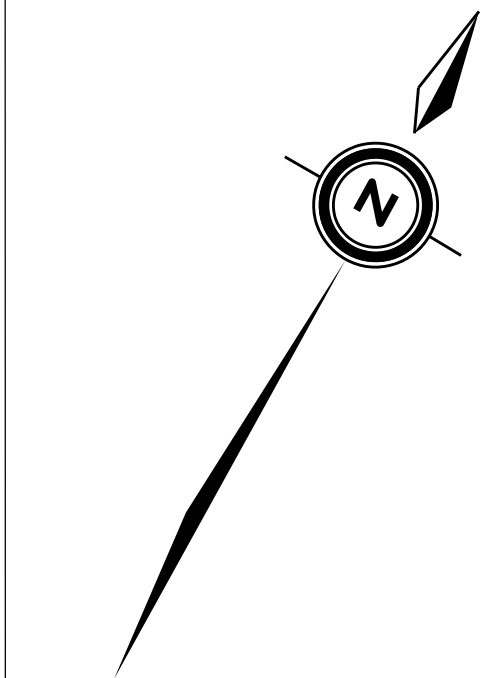
SIGNATURE

Municipality: ET WY TO SC

EY YK SC

Date

This is to certify that the construction as recorded in this drawing is consistent with the approved plan, Standard Designs, or work instruction and that approved equipment has been used



PROPOSED THESL DUC TBANK
(BRIDGE CROSSING, DESIGNED BY OTHERS)

PROPOSED ABANDONED THESL DUCTBANK

OIL PIPES ABAND'D

PROPOSED SIDE WALK

PROPOSED CURB

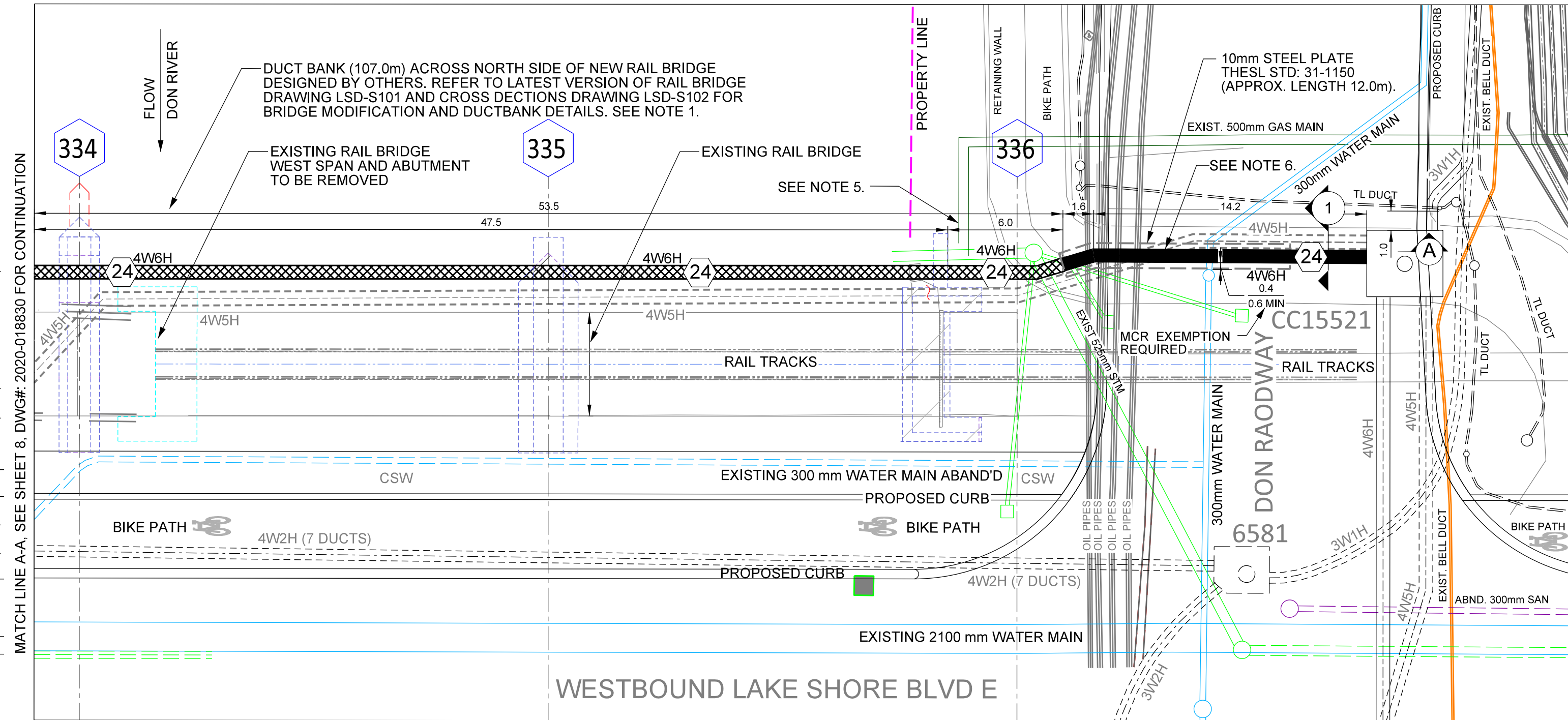
EXISTING 300 mm WATER MAIN ABAND'D

EXISTING ABANDONED THESL DUCT BANK

PROPOSED CURB

EXISTING 2100 mm WATER MAIN

EXISTING 375 mm STM ABAND'D



EXISTING 500 mm GAS MAIN

EXISTING OIL PIPES

EXISTING THESL DUCT BANK

RAIL TRACKS

PROPOSED CURB

EXISTING TL DUCT TO BE REMOVED

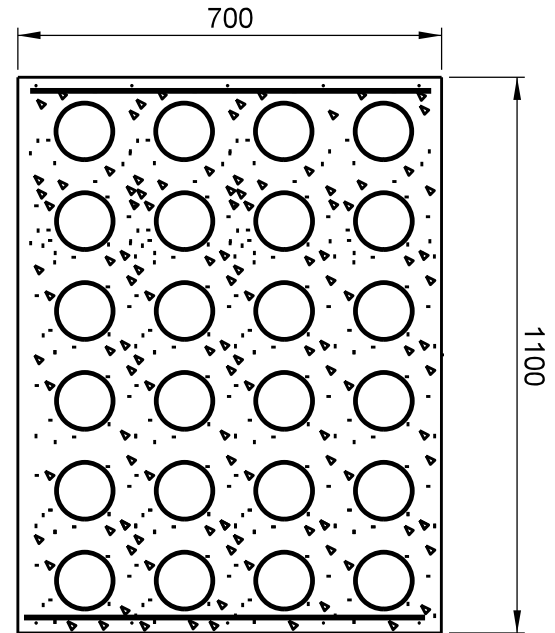
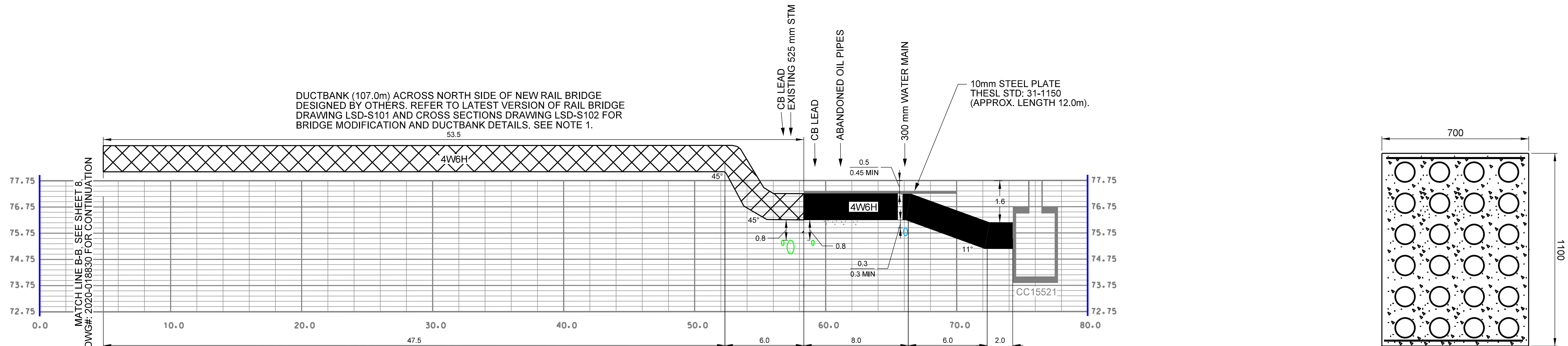
PROPOSED CURB

EXISTING 300 mm SAN ABAND'D

EXISTING 2100 mm WATER MAIN

EXIST 525mm STM ABAND'D

EXISTING THESL DUCT BANK



REINFORCED DUCT BANK
(PER THESL STD 31-1120)
4W6H
SECTION 1
N.T.S

LEGEND

PROPOSED

	CONCRETE ENCASED DUCTBANK (SIZE AS NOTED)
	PROPOSED BRIDGE CROSSING DUCTBANK (DESIGN BY OTHERS)
	INDICATES NUMBER OF DUCTS

RECOVER/ABANDONED

	CONCRETE ENCASED DUCTBANK (TO BE ABANDONED)
--	---

EXISTING

	CABLE CHAMBER
	CONCRETE ENCASED DUCTBANK (SIZE AS NOTED)
	CONCRETE ENCASED DUCTBANK (EXISTING ABANDONED)
	BRIDGE BENT NUMBER
	PROPERTY LINE
	CSW
	CATCH BASIN
	STORM SEWER
	SANITARY SEWER
	WATER MAIN
	BELL
	GAS MAIN
	OIL PIPES ABAND'D

NOTES:

- DISCLAIMER: BRIDGE CROSSING ENGINEERING DESIGN (109.0m) PERFORMED BY OTHERS. DRAWINGS TO BE STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER OF ONTARIO. UTILITY SOLUTIONS CORPORATION DOES NOT ASSUME ANY RESPONSIBILITY FOR THIS PORTION OF THE DESIGN OR ASSOCIATED ENGINEERING.
- THE LOCATION OF EXISTING POLE LINES, CONDUITS, CABLES, WATERMAINS, SEWER/ GAS/ WATER SERVICE LINES, OTHER DUCTS AND OTHER UNDERGROUND AND ABOVE GROUND UTILITIES, STRUCTURES AND APPURTENANCES IS NOT NECESSARILY SHOWN AND WHERE SHOWN, THE ACCURACY OF THE LOCATION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. THE CONTRACTOR SHALL INFORM AND SATISFY HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM DURING THE COURSE OF CONSTRUCTION.
- PROPOSED DUCT BANK TO BE CONSTRUCTED AT A MINIMUM COVER OF 1.0m UNLESS OTHERWISE SHOWN.
- ALL CONDUIT BENDS TO BE A MINIMUM RADIUS OF 3.0 m.
- EXISTING GAS MAIN RUNNING WEST ON PEIR TO BE REMOVED PRIOR TO INSTALLATION OF THESL DUCT BANK.
- PROPOSED THESL DUCT BANK TO BE INSTALLED OVER EXISTING THESL DUCT BANK.

REFERENCE:

- CABLE AND DUCT LAYOUT SHEET 5, DWG#: 2020-018827
CABLE AND DUCT LAYOUT SHEET 6, DWG#: 2020-018828

CITY MCR CLEARANCE EXEMPTIONS

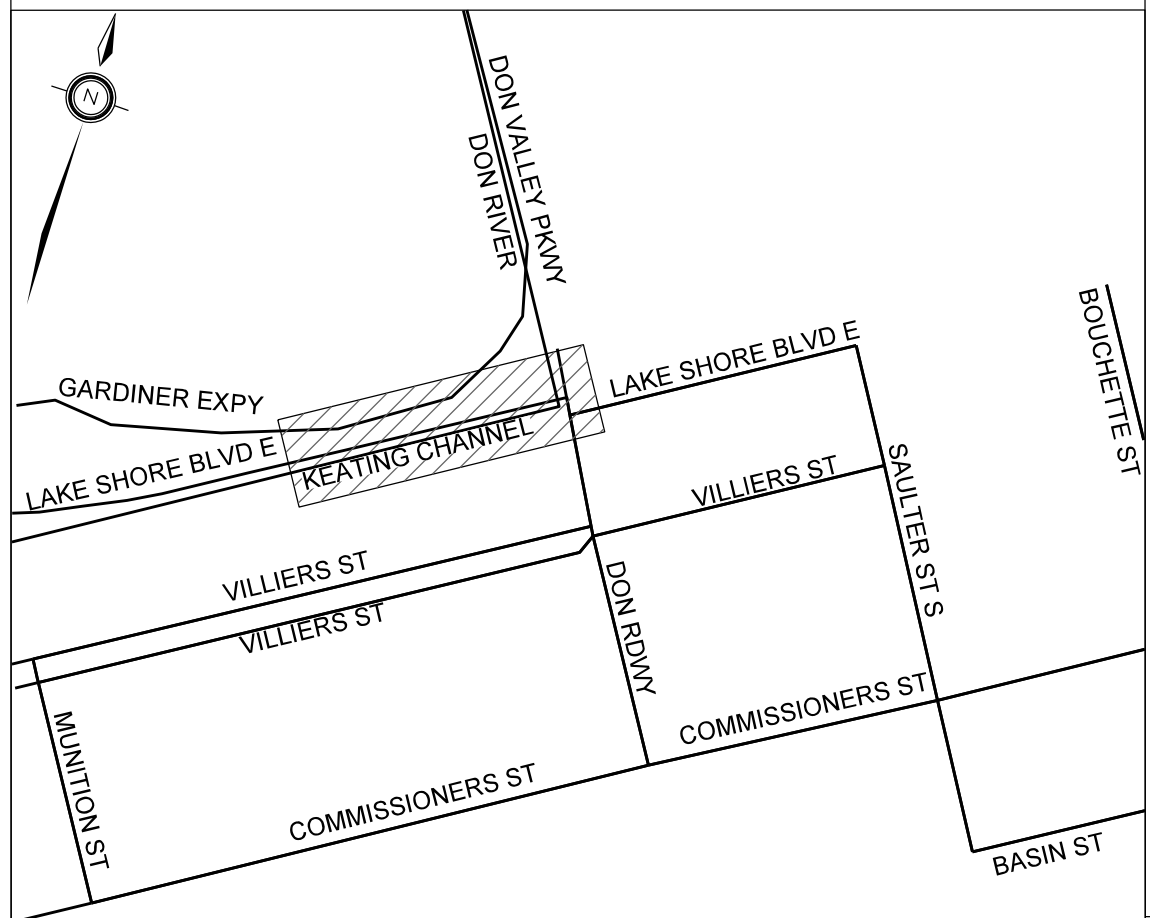
ADDRESS	NOTES
8.0m WEST OF CC15521	HORIZONTAL CLEARANCE BETWEEN PROPOSED THESL DUCT BANK AND EXISTING WATER MANHOLE IS 0.4m (0.6m MIN).

PRELIMINARY
DO NOT CIRCULATE

This site has been left in a condition that presents no undue hazard to the public (as defined in the Technical Guidelines approved by the ESA under Ontario Regulation 220/04) and approved equipment has been used in the repair or replacement.

AS CONSTRUCTED		Municipality	
☒ ELECTRICAL	☒ CIVIL	☒ E	☒ C
WITH CHANGES AS SHOWN ON THIS DRAWING.		☒ N	☒ S
Marked By:		Date:	
Approved by:		Date:	
CONTRACTOR:		Date:	
COMPANY NAME:		Date:	
☒ This is to certify that the construction as recorded in this drawing is consistent with the approved plan, Standard Designs, or work instruction and that approved equipment has been used.			

REFER TO TITLE SHEET DRAWING 2020-018823 FOR ACCOMPANYING PROJECT DRAWINGS.



KEY MAP

FEEDER NUMBERS: A-9-BN, A-22-BN, A-50-BN, A-51-BN, A-52-BN, A-203-BN, A-240-GD

CONTACT INFORMATION

FOR EMERGENCY ACCESS TO PORT LANDS BRIDGE
DON RIVER SITE CONTACT XXX AT XXXXXX.

UTILITY SOLUTIONS CORPORATION

61 ADVANCE ROAD
TORONTO, ONTARIO, M8Z 2S6
PHONE: (416) 766 5925

PROFESSIONAL ENGINEERS SEAL

THIS WORK INSTRUCTION HAS BEEN ASSEMBLED UTILIZING ONLY CERTIFIED CONSTRUCTION STANDARDS, SPECIFICATIONS AND APPROVED EQUIPMENT AND MEETS THE SAFETY REQUIREMENTS OF SECTION 4 OF ONTARIO REGULATION 22/04.

B4 B3 B2 B1 B0	201014 200903 200729 200709 200506	SUBMITTED FOR THESL REVIEW SUBMITTED FOR THESL REVIEW SUBMITTED FOR THESL REVIEW SUBMITTED FOR THESL REVIEW SUBMITTED FOR THESL REVIEW	KS KS KS KS KS	FS FS FS FS FS
rev.	date yy/mm/dd	description	by	appd.

TORONTO HYDRO

TORONTO HYDRO		REVIEWED BY	
Department:	MEP	Signature:	
Contract Administrator:	JEY GULASEKARAM	Date:	

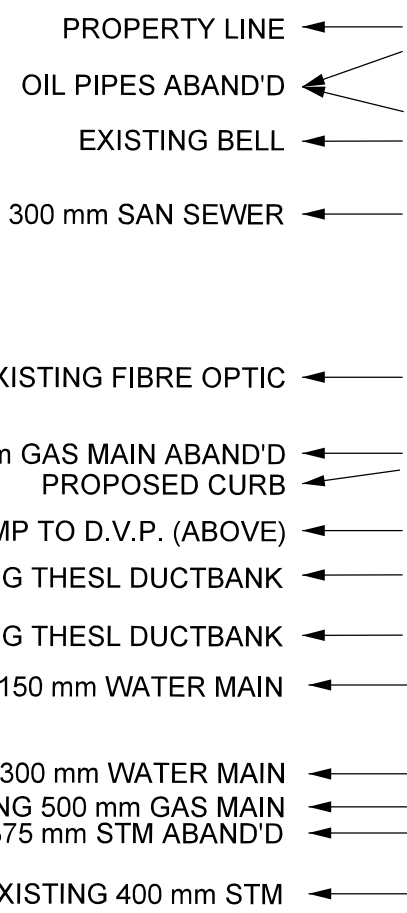
project reference #	C-180671-X19102-HR008	civil design	KEVIN SUN	date	2020/10/14
drawn by	KEVIN SUN	civil approval	FRANK SYER	date	2020/10/14
department/division	MEP	electrical design		date	/ /
district	TORONTO	electrical approval		date	/ /
scale	1:200	sheet size	D	construction approval	date
				date	/ /

location:
DON ROADWAY & LAKE SHORE BLVD E

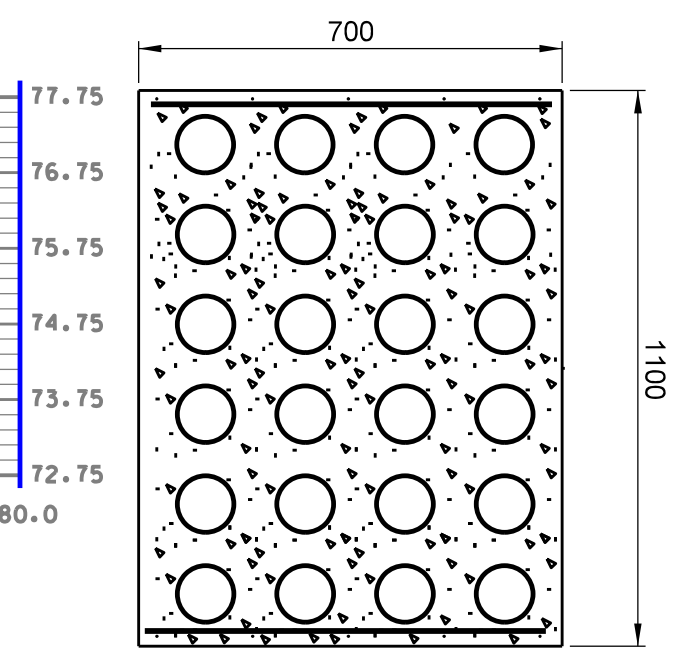
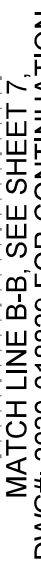
project title:
PORT LANDS BRIDGE EXPANSION AND FEEDER RELOCATION

dwg. type:
CIVIL PLAN 1 OF 2

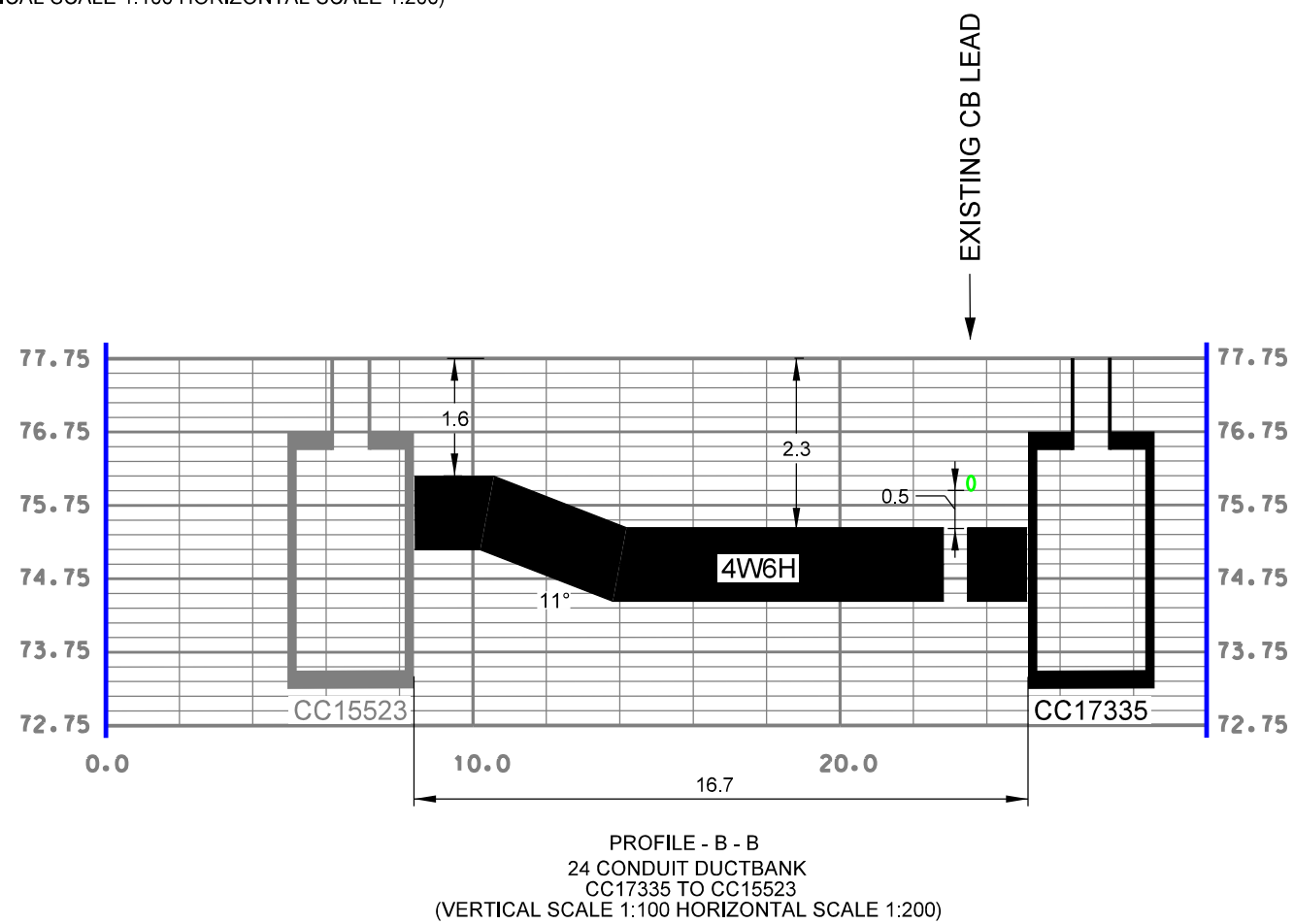
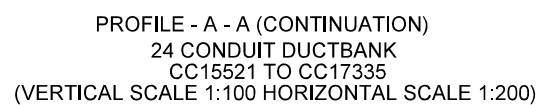
dwg. no.	2020-018829	sheet no.	7 of 8	rev. no.	B4
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- PROPOSED THESL DUCTBANK
(BRIDGE CROSSING, DESIGNED BY OTHERS)
- OIL PIPES ABAND'D
- PROPOSED ABANDONED THESL DUCTBANK
- OIL PIPES ABAND'D
- PROPOSED SIDEWALK
- PROPOSED CURB
- EXISTING 300 mm WATER MAIN ABAND'D
- EXISTING ABANDONED THESL DUCTBANK
- PROPOSED CURB
- EXISTING 2100 mm WATER MAIN
- EXISTING 375 mm STM ABAND'D

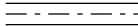


REINFORCED DUCT BANK
(PER THESL STD 31-1120)
4W6H
SECTION 2
N.T.S



PROFILE - B - B
24 CONDUIT DUCTBANK
CC17335 TO CC15523
(VERTICAL SCALE 1:100 HORIZONTAL SCALE 1:200)

CABLE CHAMBER SCHEDULE								
C.C.#	SIZE	HEAD ROOM	NECK	FLOOR/WALL REINFORCEMENT	DRAIN	BWW	SUMP HOLE	REMARKS
CC17335	3.0 X 4.0	3.0	1.25	PER STD. 31-2130	SOAKAWAY PIT	NO	YES	CAST IN PLACE

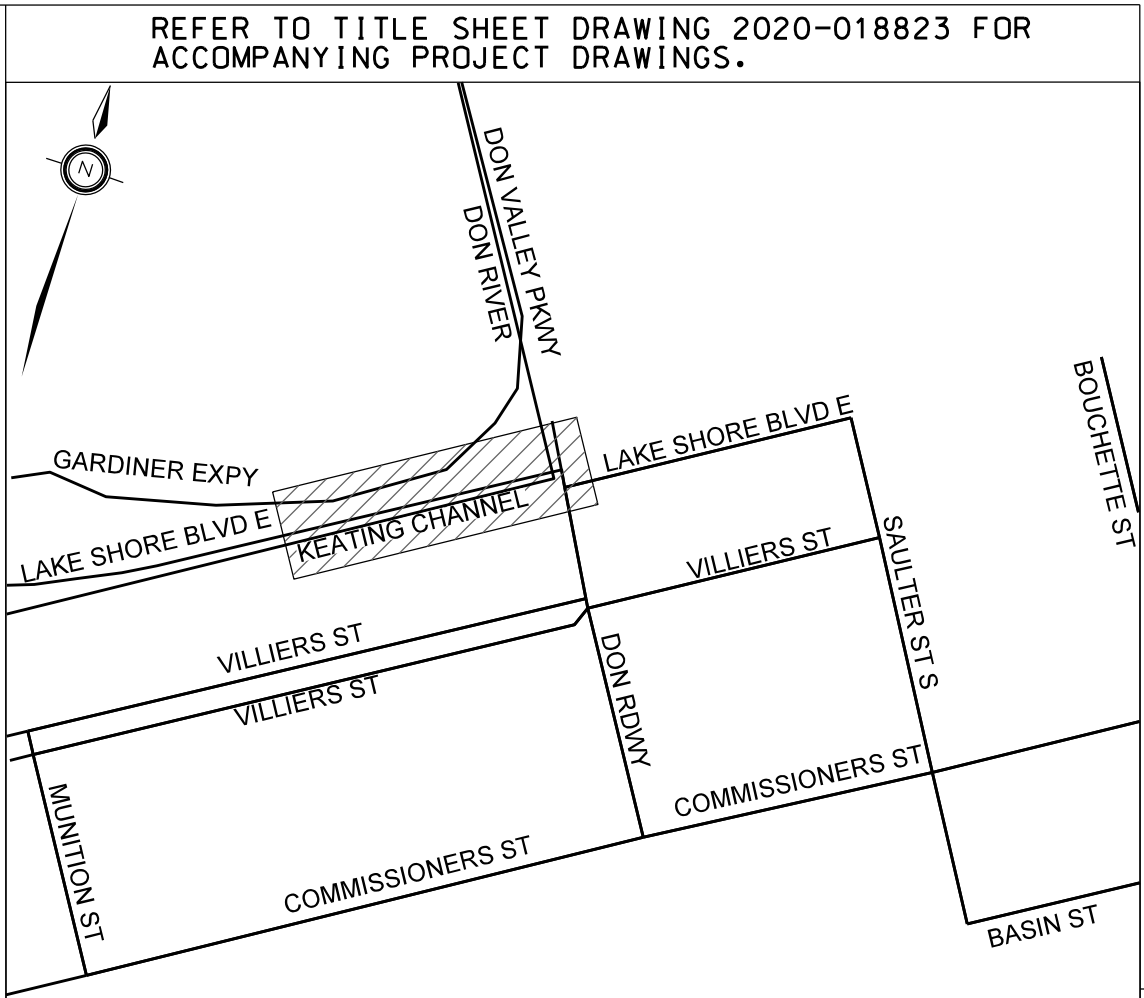
PROPOSED	
	CABLE CHAMBER
	CONCRETE ENCASED DUCTBANK (SIZE AS NOTED)
	PROPOSED BRIDGE CROSSING DUCTBANK (DESIGN BY OTHERS)
	INDICATES NUMBER OF DUCTS
RECOVER/ABANDONED	
	CABLE CHAMBER (TO BE ABANDONED)
	CONCRETE ENCASED DUCTBANK (TO BE ABANDONED)
EXISTING	
	CABLE CHAMBER
	CONCRETE ENCASED DUCTBANK (SIZE AS NOTED)
	BRIDGE BENT NUMBER
	PROPERTY LINE
	CONCRETE SIDE WALK
	CATCH BASIN
	FIRE HYDRANT
	STORM SEWER
	SANITARY SEWER
	WATER MAIN
	BELL
	FIBRE OPTIC
	GAS MAIN
	OIL PIPES ABAND'D

NOTES:

1. **DISCLAIMER: BRIDGE CROSSING ENGINEERING DESIGN (109.0m) PERFORMED BY OTHERS. DRAWINGS TO BE STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER OF ONTARIO. UTILITY SOLUTIONS CORPORATION DOES NOT ASSUME ANY RESPONSIBILITY FOR THIS PORTION OF THE DESIGN OR ASSOCIATED ENGINEERING.**
2. **THE LOCATION OF EXISTING POLE LINES, CONDUITS, CABLES, WATERMAINS, SEWER/ GAS/ SERVICE LINES, OTHER DUCTS AND OTHER UNDERGROUND AND ABOVE GROUND UTILITIES, STRUCTURES AND APPURTENANCES IS NOT NECESSARILY SHOWN AND WHERE SHOWN, THE ACCURACY OF THE LOCATION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. THE CONTRACTOR SHALL INFORM AND SATISFY HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM DURING THE COURSE OF CONSTRUCTION.**
3. **PROPOSED DUCT BANK TO BE CONSTRUCTED AT A MINIMUM COVER OF 1.0m UNLESS OTHERWISE SHOWN.**
4. **ALL CONDUIT BENDS TO BE A MINIMUM RADIUS OF 3.0 m.**
5. **EXISTING GAS MAIN RUNNING EAST ON PEIR TO BE REMOVED PRIOR TO INSTALLATION OF THESE DUCT BANK.**

AS CONSTRUCTED			Municipality	
☐ ELECTRICAL	☐ CIVIL		☐ ET	☐ EY
WITH CHANGES AS SHOWN ON THIS DRAWING			☐ NY	☐ BK
			☐ TO	☐ SC
Marked By	FIRST NAME		Date	
	SIGNATURE			
	POSITION			
Approved by Toronto Hydro	FIRST NAME			
	SIGNATURE			
	POSITION			
CONTRACTOR	FIRST NAME			
COMPANY NAME	SIGNATURE			

☐ This is to certify that the construction as recorded in this drawing is consistent with the approved name. Standard Designs, or work instruction and that appropriate equipment has been used.



KEY MAP

FEEDER NUMBERS: A-9-BN, A-22-BN, A-50-BN,
A-51-BN, A-52-BN, A-203-BN, A-240-GD

CONTACT INFORMATION

FOR EMERGENCY ACCESS TO PORT LANDS BRIDGE
DON RIVER SITE CONTACT XXX AT XXXXXX.

 UTILITY SOLUTIONS CORPORATION	PROFESSIONAL ENGINEERS SEAL
61 ADVANCE ROAD TORONTO, ONTARIO, M8Z 256 PHONE: (416) 766 5925	

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B4		201014	SUBMITTED FOR TRESL REVIEW	KS	FS
B3		200903	SUBMITTED FOR TRESL REVIEW	KS	FS
B2		200729	SUBMITTED FOR TRESL REVIEW	KS	FS
B1		200709	SUBMITTED FOR TRESL REVIEW	KS	FS
B0		200506	SUBMITTED FOR TRESL REVIEW	KS	FS
rev.		date yy/mm/dd	description	by	appd.

		REVIEWED BY _____
	Department: _____	MEP _____
	Contract Administrator: _____	JEY GULASEKARAM (print name)
	Signature: _____	_____
	Date: _____	yyyy / mm / dd

project reference # C-180671-X19102-HR008		civil design KEVIN SUN print name & signature	date 2020/10/14 yy/mm/dd
drawn by KEVIN SUN		civil approval FRANK SYER print name & signature	date 2020/10/14 yy/mm/dd
department/division MEP		electrical design	date / / yy/mm/dd
district TORONTO		electrical approval print name & signature	date / / yy/mm/dd
scale 1:200	sheet size D	construction approval print name & signature	date / / yy/mm/dd

DON ROADWAY & LAKE SHORE BLVD E

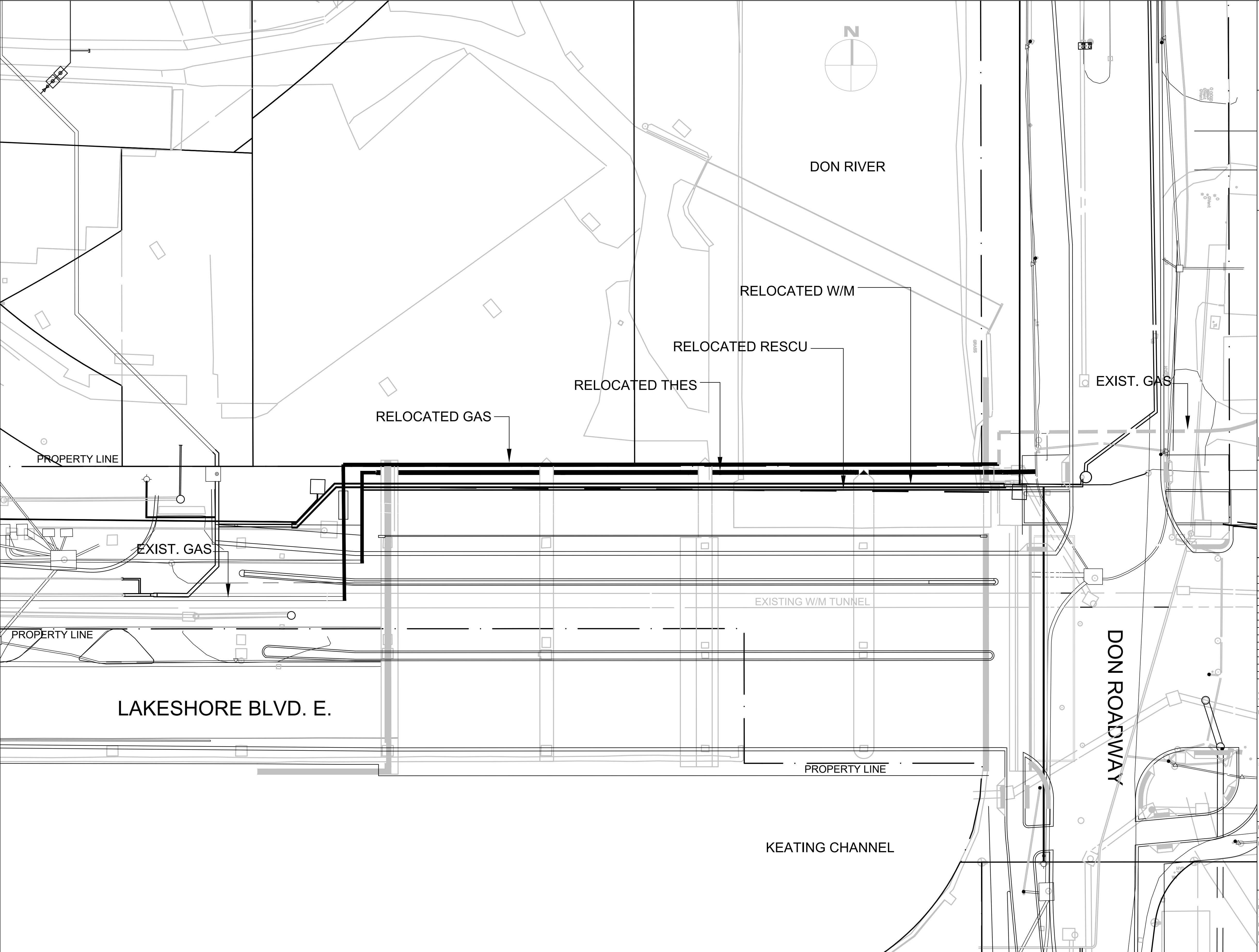
Project title: PORT LANDS BRIDGE EXPANSION AND FEEDER RELOCATION

CIVIL PLAN 2 OF 2

dwg. no.	2020-018830	sheet no.	8 of 8	rev. no.	B4
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Attachment 23

LSB Bridge Alt Case Relocated Utilities Plan



PORT LANDS FLOOD PROTECTION AND ENABLING INFRASTRUCTURE PROJECT

BRIDGE DESIGN AND ENGINEERING
Toronto, ON



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Project Lead



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entuitive.com



PLANMAC
ENGINEERING INC.
Planmac Engineering Inc.
80 North Queen St, Suite 302
Toronto, ON M8Z 2C9 Canada
Tel: 416-626-5300

NOT FOR CONSTRUCTION

STAMP

REVISIONS

NO.	DATE	DESCRIPTION
1	2021/01/04	ISSUED FOR INFORMATION
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		

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BRIDGE NAME

LAKESHORE BOULEVARD

STATUS

ISSUED FOR INFORMATION

PHASE

ALTERNATIVE BASE CASE

DRAWING TITLE

PROPOSED BRIDGE - UTILITIES
PROPOSED CONDITION

JOB NUMBER: T011-0000
DATE: 1/4/2021
SCALE: 1 : 250
DESIGNED BY: ##
DRAWN BY: ##
CHECKED BY: ##

LSA-P-UTIL