

A large teal graphic element on the left side of the page, consisting of a triangle at the top and a trapezoid below it, forming a shape that resembles a stylized 'M' or a building facade.

TDK Metro Terminals Ltd. Fire Safety Plan

Annacis Island Distribution Hub

April 2023

This page left intentionally blank for pagination.

Mott MacDonald
Suite 1888
Bentall 5
550 Burrard Street
Vancouver BC V6C 2B5
Canada

T +1 604 681 4400
mottmac.com

TDK Metro Terminals Ltd.
#10 - 480 Audley Blvd.
Delta, BC
V3M 5S4

TDK Metro Terminals Ltd. Fire Safety Plan

Annacis Island Distribution Hub

April 2023

Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
A	2023-Jan-31	R. Zwierzchowski / A. Wells	I. Bowman	S. Riddick	DRAFT FOR PERMIT
B	2023-Mar-14	A. Wells	I. Bowman	S. Riddick	For Permitting
C	2023-Apr-14	A. Wells	I. Bowman	S. Riddick	Minor Edit

Document reference: 514100592 | MMD-00-P0-PL-FS-0001

Information class: Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

Contents

Executive summary	1
1 Introduction	2
2 Legislation, Standards & Guidance	3
2.1 Legislation	3
2.2 Standards	3
2.3 Guidance	3
2.4 References	3
3 Facility Description	4
3.1 Site Description	4
3.1.1 Facility location	4
3.1.2 Design Summary	5
3.1.3 Fire Safety Design	5
3.1.4 Operational Procedures	6
3.2 Facility Safety Information	6
3.3 Training	6
3.4 Emergency Response Plan	6
4 Risk Management	7
4.1 Risk Assessment	7
4.2 Risk Mitigation	8
4.2.1 Area: Rail (Hazards 1 to 3)	8
4.2.2 Area: Container Yard (Hazards 4 to 11)	8
4.2.3 Area: Maintenance Area (Hazards 12 to 13)	8
4.2.4 Area: Grain Conveyor (Hazards 14 to 17)	9
4.2.5 Area: Other (Hazard 18)	9
5 Fire Life Safety During Construction	10
5.1 Construction Fire Safety Plan	10
5.2 Construction Plan	11
A. Existing Facility Emergency Response Plan	13
B. Proposed Site Plan with Fire Hydrant Locations 21-098-GA-002	14

Tables

Table 4.1: Acceptability of Likelihood Score	7
Table 4.2: Possible Risks of Fire	7

Figures

Figure 4.1: Risk Assessment Scoring Matrix	7
--------------------------------------------	---

Executive summary

TDK Metro Terminals Ltd. (TDK) is developing an advanced import and export distribution hub within the Vancouver Fraser Port Authorities' (VFPA) jurisdiction on Annacis Island, Delta, British Columbia. This Fire Safety Plan has been developed to support TDK's Project and Environmental Review application required by VFPA. This document specifies the fire safety provisions that will be implemented for the distribution hub. It states the applicable standards and regulations governing facility operations, summarizes the fire life safety design, hazard analysis, risk assessment details and risk mitigation measures to assure an acceptable level of fire safety.

1 Introduction

TDK Metro Terminals Ltd. (TDK) is developing an advanced import and export distribution hub within the Vancouver Fraser Port Authorities' (VFPA) jurisdiction on Annacis Island, Delta, British Columbia. This Fire Safety Plan has been developed to support TDK's Project and Environmental Review application required by VFPA.

TDK are proposing an import and export distribution hub with annual throughput of approximately 150,000 Standard 20' Container (TEU).

The proposed project will expand the site's existing container yard operation. The anticipated truck volume will increase from 65,000 gate transactions annually currently to an estimated 80,000 gate transactions annual upon project completion. The proposed site layout consists of two components:

1. Trackwork: four new stacked tracks at the end of the Southern Railway of British Columbia (SRY) spur and a new pullback track. Each stacked track can accommodate 10 cars (for a total of 40). The existing SRY spur can accommodate 8 cars, for a total of 48 rail cars on site. Demolition of 33 m of track is also proposed.
2. Reconfiguration of the existing container yard: demolition of one (1) existing warehouse building at 480 Audley Blvd., reconfigured truck gate, four (4) new truck queuing lanes to accommodate up to twenty (20) trucks within the site, but outside the gate.

The hours of operation will remain the same (Monday to Friday, 7:00 AM to 11:00 PM and Saturday and Sunday by appointment).

This is a live document, subject to review and update throughout the course of the project. Following project completion this document will be reviewed and updated whenever necessary and, in any event, not less than annually as per the requirements of NFC Clause 2.8.2.

This document supersedes TDK's Fire Evacuation Procedure.

2 Legislation, Standards & Guidance

2.1 Legislation

Canada Marine Act
Impact Assessment Act
Canadian Environmental Assessment Act, 2012
Canadian Environmental Protection Act
Fisheries Act
Canada Occupational Health and Safety Regulations

2.2 Standards

National Building Code of Canada 2020 (NBC)
National Fire Code of Canada 2020 (NFC)
Canadian Standards Authority (CSA), 22.1-12 Canadian Electrical Code, Part 1, 2012

2.3 Guidance

British Columbia Fire Code 2018 (BCFC)
British Columbia Fire Services Act
British Columbia Building Code 2018 (BCBC)
The Corporation of Delta, Bylaw No. 7162 Schedule A – Delta Design Criteria
The Corporation of Delta, Delta Fire Regulation Bylaw No. 5855, 2001
National Fire Protection Association (NFPA) 10, “Portable Fire Extinguishers”, 2022 Edition
NFPA 13, “Installation of Sprinkler Systems”, 2022 Edition
NFPA 14, “Standard for the Installation of Standpipe and Hose Systems”, 2019 Edition
NFPA 72, “National Fire Alarm and Signaling Code”, 2022 Edition
NFPA 230 “Standard for the Fire Protection of Storage”, 2003 Edition

2.4 References

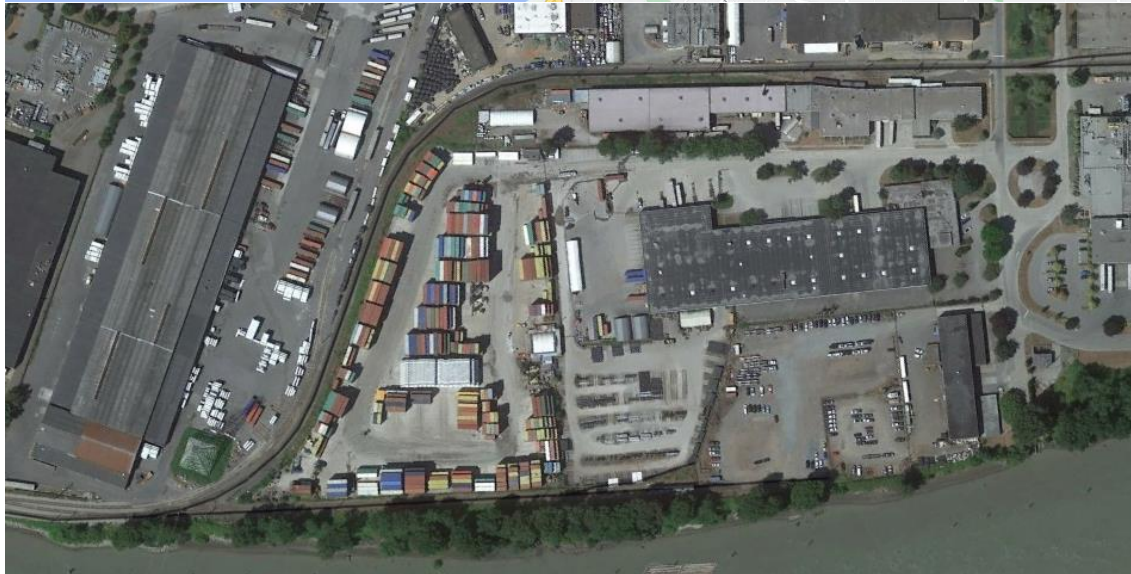
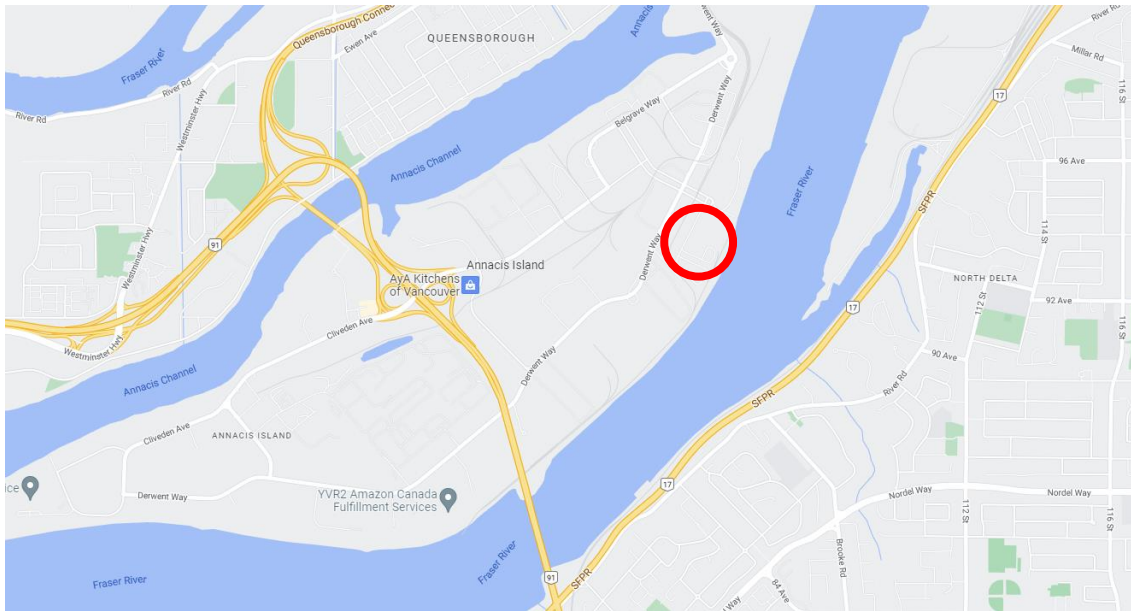
References to be added as needed.

3 Facility Description

3.1 Site Description

3.1.1 Facility location

The existing TDK import and export distribution hub is located on Annacis Island within the Vancouver Fraser Port Authorities' (VFPA) jurisdiction in the city of Delta, British Columbia. The site covers 6.06 hectares. The facility's civil address is 480 Audley Boulevard, Delta, British Columbia, V3M 5S2.



3.1.2 Design Summary

The proposed site layout is designed to expand TDK current operations in a cohesive manner within the assumed leasehold.

The proposed rail configuration takes advantage of the existing SRY rail spur entering from the southwestern extent of TDK's current leasehold. The proposed trackwork includes two new parallel rail stub tracks with approximate length of 220 m. These tracks will come off the existing SRY AS 280 stub track. There is a second turnout within the facility shared between the two proposed tracks. The ends of the two parallel stub tracks will be protected by standard bumping posts. The entire site, including the proposed rail area, is planned to be regraded and paved. The trackwork will be embedded track.

A reconfigured truck gate is proposed near the same area as the current truck entrance at the northwestern edge of TDK's current leasehold. Four new truck entry queuing lanes will increase the overall capacity, minimizing the queuing that is currently observed on the local road network. The orientation of the gates and the proposed container yard configuration enabled the addition of an unauthorized turnaround exit lane for trucks that have entered the site but do not have permission to drop off their container.

The proposed layout assumes that the existing warehouse will be demolished and not replaced within this parcel.

The container yard is reconfigured for access from both sides of each stack, allowing for more efficient and effective handling within the yard. Container stacks were organized to allow single-direction truck circulation with consideration for the maneuvering of container handlers, truck transfer lane access, and truck bay access. The proposed container yard will have dedicated ground slots for TDK's operation. An area is set aside for reefer storage and the supporting equipment to access and power the refrigeration units.

SRY will arrive at the facility from the west of the site to pick up and deliver cars during the graveyard shift (23:00 to 07:00) to allow the cars to be unloaded or loaded during the terminal operating hours Monday through Friday. Cars delivered during the graveyard shift are expected to complete unloading or loading by the end of the day for SRY to pick up the processed cars in the following graveyard shift.

For the container operations, each of the two proposed tracks will have capacity for two Maxi-Stack® I Cars¹, totaling 10 well cars per track. The total capacity of the site is thus four Maxi-Stack® I Cars or 20 well cars.

Currently, 16 to 20 cars are expected to be delivered per day, pending confirmation with SRY closer to the opening day of the facility. These cars are assumed to be a mix of both well cars and grain cars for both container and grain operations. The proposed capacity is not expected to change in the future without a reconfiguration of the rail yard.

This parcel will include agricultural operations limited to mobile grain conveyors at this time.

Specific design measures regarding fire safety are presented in the following section. Operational and maintenance strategies for fire protection will be included in Section 3.1.4 as they are developed.

3.1.3 Fire Safety Design

The TDK distribution hub has been designed to comply with the applicable standards and guidance referenced in Section 2.

Fire Detection and Alarm

An automatic smoke detector shall be at the location of each control unit, notification appliance circuit power extender and supervising station transmitting equipment.

A manual pull station will be provided in each of the Britco facilities near the exit door for ease of access in the event of a fire and according to the NBC code Section A-3.2.4.16. Manual pull stations will also be installed in various locations throughout the container yard as required.

All fire alarms are linked to the automated fire signal which will alert the fire department in the event of a fire.

Loudspeakers will be placed in locations such that they can be heard from all areas of the site.

Fire-Fighting Systems

Each Britco facility and the tented maintenance area will be provided with portable extinguishers as per the BC Fire Code Section 3.3.2.10. Location will be based travel distance users will need to walk to access the portable extinguishers, as well as easy accessibility considering doorways, machinery and storage.

Each reach stacker will also be equipped with one portable extinguisher with a minimum rating of 2-A:30-B:C as per the BC Fire Code Section 3.3.2.10. Portable extinguishers shall also be placed in well-marked strategic points throughout the container storage areas such that one or more portable extinguisher can be quickly made available at any point.

Fire extinguishers shall be inspected, tested and maintained in accordance with NFPA 10.

Hydrants will be located throughout the site in accordance with BC Fire Code Section 3.3.2.7 as illustrated in drawing 21-098-GA-002.

3.1.4 Operational Procedures

Maintenance Management Processes and Planned Inspection of fire detection, fire alarms and fire-fighting systems to be developed by operators prior to facility opening after expansion.

3.2 Facility Safety Information

Incident and Maintenance Logs to be compiled and provided by operator once facility begins operation.

3.3 Training

Operator fire life safety training documents to be developed by operator prior to facility opening after expansion.

3.4 Emergency Response Plan

Emergency Response Plan for existing facility is included in Appendix A. Plan for proposed facility to be developed by operator prior to facility opening after expansion.

4 Risk Management

4.1 Risk Assessment

A qualitative risk assessment was completed to review the possible hazards that could result in a fire at the project site. A score was calculated using the matrix shown in Figure 4.1, based on two factors, likelihood and severity. Each factor was given a score of 1 to 5 and multiplied to give a risk factor.

Figure 4.1: Risk Assessment Scoring Matrix

		Likelihood				
		1 Remote	2 Unlikely	3 Possible	4 Likely	5 Certain
Severity	1 Trivial	1	2	3	4	5
	2 Minor	2	4	6	8	10
	3 Lost Time	3	6	9	12	15
	4 Major	4	8	12	16	20
	5 Fatal	5	10	15	20	25

The color coding of the scores is explained in the following table:

Table 4.1: Acceptability of Likelihood Score

Color	Score	Risk Level	Required Action
Green	1-5	Acceptable Risk	Requires no intervention.
Yellow	6-12	Moderate Risk	May require intervention.
Red	15-25	High Risk	Requires intervention to mitigate the hazard.

The possible hazards are tabulated in Table 4.2 below along with the fire hazard, severity, likelihood and the calculated score based on the above matrix.

Table 4.2: Possible Risks of Fire

#	Area	Hazard	Fire Hazard	Severity	Likelihood	Score
1	Rail	Train derailment	Spark / ignition source	4	1	4
2	Rail	Spark from rail cars moving on site	Spark / ignition source	1	1	1
3	Rail	Unloading equipment conflicting with overhead wires	Spark / ignition source	3	1	3
4	Container Yard	Truck crash or accident with containers, light poles, fencing or trailer buildings	Gas spill, dust Spark / ignition source	3	1	3
5	Container Yard	Reach stackers crash or accident with containers, light poles, fencing or trailer buildings	Gas spill, dust Spark / ignition source	3	1	3
6	Container Yard	Hydraulic oil of reach stacker spraying or leaking	Ignition source	1	3	3

#	Area	Hazard	Fire Hazard	Severity	Likelihood	Score
7	Container Yard	Reefer container explosion while being charged	Ignition source	4	1	4
8	Container Yard	Electric fault with lighting works	Spark / ignition source	5	1	5
9	Container Yard	Entry/exit gate failure, resulting in collision with trucks or staff vehicles	Spark / ignition source	2	1	2
10	Container Yard	Containers falling off of storage stacks	Spark / ignition source	3	1	3
11	Container Yard	Cutting or burning jammed twist locks of containers	Spark / ignition source	1	1	1
12	Maintenance Area	Reefer power and wash down equipment heat up or failure	Heat source	3	1	3
13	Maintenance Area	Propane or diesel tanks spillage when refuelling	Gas spill / ignition source	3	1	3
14	Grain conveyor	Slippage between transfer conveyor and grain	Frictional heat buildup	2	1	2
15	Grain conveyor	Drive pulley of transfer conveyor slips on belt	Heating from belt	2	1	2
16	Grain conveyor	Drive of transfer conveyor heats up	Heat source	3	1	3
17	Grain Conveyor	Grain spill during unloading process	Dust	1	3	3
18	Other	Persons smoking in proximity	Ignition source	5	1	5

4.2 Risk Mitigation

In addition to the fire safety design criteria outlined in Section 3.1.3, additional mitigation methods as listed in the following subsections can be utilized to address the hazards in Table 4.2. Although the scores of each hazard are rated as acceptable, the provided mitigations should yield a lower post-mitigation score that can ensure the optimal scenario for the fire safety at the site.

4.2.1 Area: Rail (Hazards 1 to 3)

Possible mitigations for the fire risks associated with the rail include:

- Optimize the track geometry to reduce the train speeds (Hazard 1);
- Regular maintenance of track (Hazard 1);
- Implementing markings and fencing to prevent equipment from being able to approach the overhead power wires (Hazard 3);
- Include section on overhead power wires as a part of staff safety training (Hazard 3).

4.2.2 Area: Container Yard (Hazards 4 to 11)

Possible mitigations for the fire risks associated with the container yard include:

- Regular maintenance of reach stackers and reefer equipment (Hazards 6 & 7);
- Regular training for staff to maintain best practices and safety for daily operations (Hazards 10 & 11)

4.2.3 Area: Maintenance Area (Hazards 12 to 13)

Possible mitigations for the fire risks associated with the maintenance area include:

- Regular maintenance of equipment (Hazard 12)

4.2.4 Area: Grain Conveyor (Hazards 14 to 17)

Possible mitigations for the fire risks associated with the grain conveyor include:

- Regular maintenance of equipment (Hazards 14 to 16);
- Regular training for staff to maintain best practices and notice safety concerns with the equipment (Hazards 14 to 17)

4.2.5 Area: Other (Hazard 18)

- Implement signage and site policies to prohibit smoking on site (Hazard 18).

5 Fire Life Safety During Construction

5.1 Construction Fire Safety Plan

The contractor will be responsible to provide a detailed construction safety plan that demonstrates conformance to Part 8 of Division B of the National Building Code, as well as adhering to any conditions imposed by the Delta Fire and Emergency Services department. Also, they will be responsible to provide a detailed construction fire life safety plan.

Access points to the site during construction will depend on the phasing of construction and access points for the building will change during the sequencing of demolition works. The contractor will need to note access and internal routing within their phasing plans.

The contractor will provide a construction fire safety plan to the City of Delta Fire and Emergency Services for review and approval-as per Delta Fire Bylaw 5855.

The Construction Fire Safety Plan is expected to contain the following information for all phases of work:

- Designation and organization of site personnel who will carry out fire safety duties including 24-hours emergency contact persons, names and telephone numbers
- Emergency procedures to be used in case of fire including:
 - Fire alarm
 - Notification of fire department
 - Firefighting procedures
 - Training procedures for instructing personnel to follow procedures when fire alarms sound
 - The training of supervisory staff and other occupants in their responsibilities for fire safety.
- Diagrams supporting the Plan by showing the following information:
 - Existing buildings and proposed construction,
 - Contractor's hoarding and fences,
 - Fire access routes and driveways,
 - Firefighting equipment such as fire hydrants, and fire dept connections to sprinklers or standpipes,
 - Temporary exiting from existing building where existing exits are obstructed, and
 - Storage of flammables/propane.
- Site and floor plans shall be provided, indicating:
 - Emergency access points to the construction site and building(s).
 - The location of special keys or devices required to access the site or building.
 - The location of functioning fire department connection(s), fire alarm panel(s) or annunciator(s).
 - Approved areas used for the storage of hazardous materials and portable fire extinguishers.
 - The location, area or phase of the construction or alterations in relation to the existing building.

- General floor plans, showing layout, stairs, elevators, shafts, roof access points, etc.
- The maintenance or modifications of exit facilities to ensure rapid egress of building occupants.
- Where a construction or demolition site is fenced so as to prevent general entry, provisions shall be made for access by fire department equipment and personnel.
- Posting of site address numbers visible from the street.
- Control of fire hazards in and around construction site including but no limited to:
 - The installation, inspection, testing and maintenance of fire fighting and life safety equipment, such as, but not limited to:
 - Fire alarm or acceptable equivalent,
 - Sprinkler or standpipe systems,
 - Acceptable levels of emergency lighting,
 - Acceptable fire-rated separations,
 - Acceptable routes of emergency access,
 - Records of all inspections, tests and maintenance shall be kept on site for review by the Fire Department.
- In addition to extinguishers required by the BC Fire Code, portable extinguishers shall be provided:
 - Adjacent to cutting or welding operations,
 - In areas where combustibles are stored
 - Near or on any internal combustion engines,
 - Adjacent to areas where flammable liquids or gasses are stored or handled,
 - Adjacent to temporary oil-fired or gas-fired equipment. and
 - Adjacent to bitumen heating equipment.
- Procedures to ensure unobstructed access to fire protection equipment, such as fire hydrants, fire department connections, fire hose stations (NFPA-14) and portable fire extinguishers (NFPA-10), and procedures to ensure clear access routes onto the building site for fire department vehicles.
- Guard Service
The requirements for guard service should be based on: but not limited to, the hazards of the site, the size of the risk, the difficulty of the fire-fighting situation, the exposure risk, and the physical security of the site.

5.2 Construction Plan

The Project involves the demolition of one existing warehouse building currently used by TDK and two other tenants. Demolition of this building is required to provide space for the expansion of the TDK container yard operations. Demolition entails the dismantling and removal of the building, including appropriate on-site management of construction demolition materials and appropriate handling and disposal of hazardous wastes.

Demolition shall be undertaken by a qualified Contractor and shall generally consist of removal of hazardous materials and recyclable materials, dismantling the existing building structures and cladding, building floor slabs and foundations, and appropriate disposal of the materials

(construction demolition materials, hazardous materials, recyclable materials, and domestic waste).

In addition to the demolition of the existing building, the Project will include utilities relocation; site grading and paving and rail works that will need to be completed in a phased approach to ensure continuing operations during the construction period.

A. Existing Facility Emergency Response Plan

Fire Evacuation Procedure

If we must leave the workplace in an event of a fire, we will then follow this evacuation procedure:

Primary contact will be responsible for:

Notify all staff via internal radio communications that there is a need to evacuate

Notify emergency response authorities

Ensure the first aid kit is collected during evacuation

Ensure all employees gather at muster station

Conduct role call as per staff and visitor sign in sheets

Contact and notify non present staff of emergency at workplace

Contact customers via email and advise of emergency and to stay clear of TDK roadways to better assist emergency personal

Issue all clear once advised by emergency personal

Employees will be responsible for:

Safely parking all equipment

Calmly and maturely evacuating the workplace

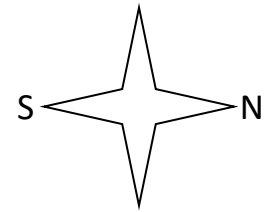
Assist and cooperate with management and emergency personal as needed

Primary contacts

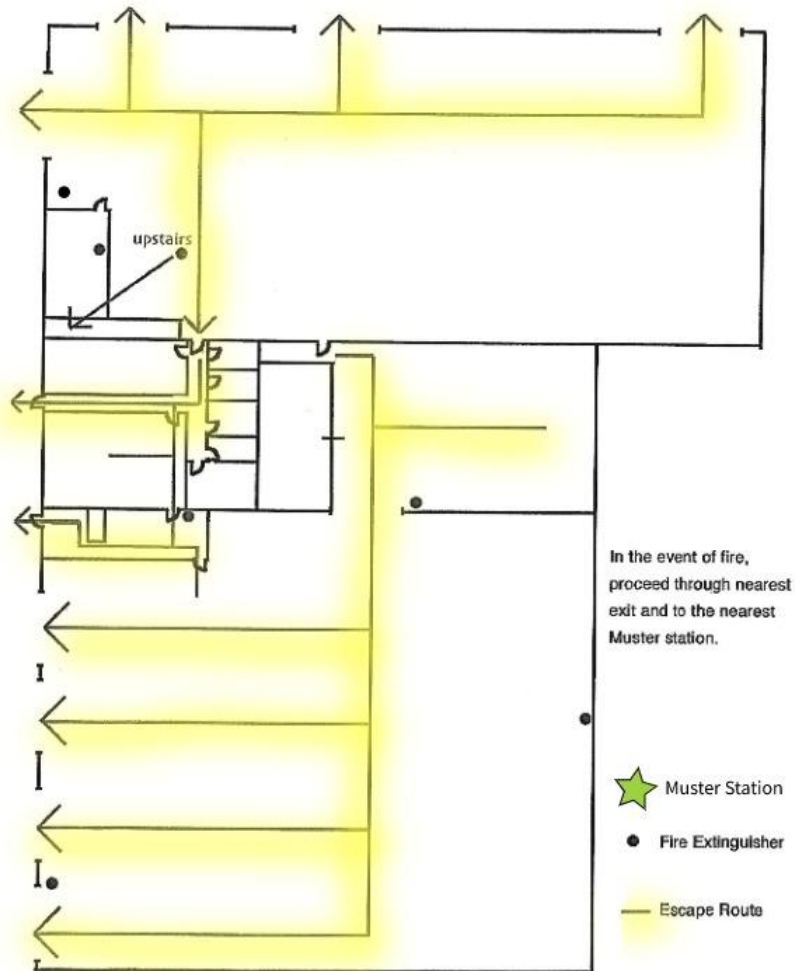
Tish Kumar- 604 250 9267

Neil Kumar- 778 385 6319

Fire Evacuation Procedure



Warehouse floor plan



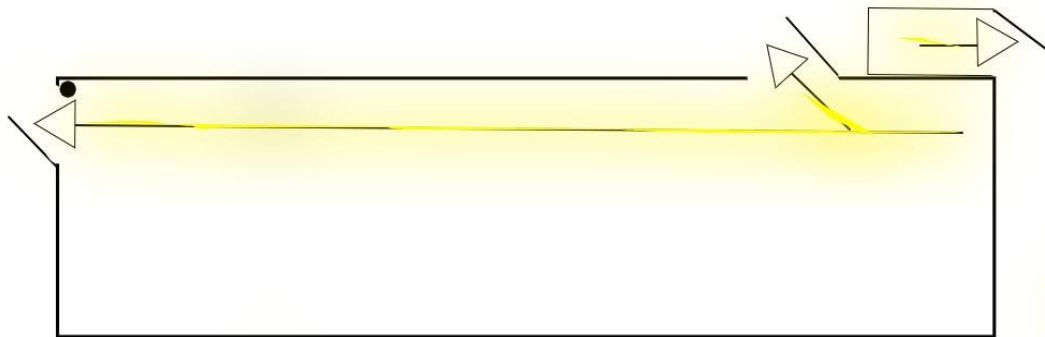
Site Address:
Unit 10- 480 Audley BLVD
Delta BC, V3M5S4

Owner Contact Info:
Tish Kumar

Fire Evacuation Procedure

604-250-9267

Container Yard Office Floor Plan



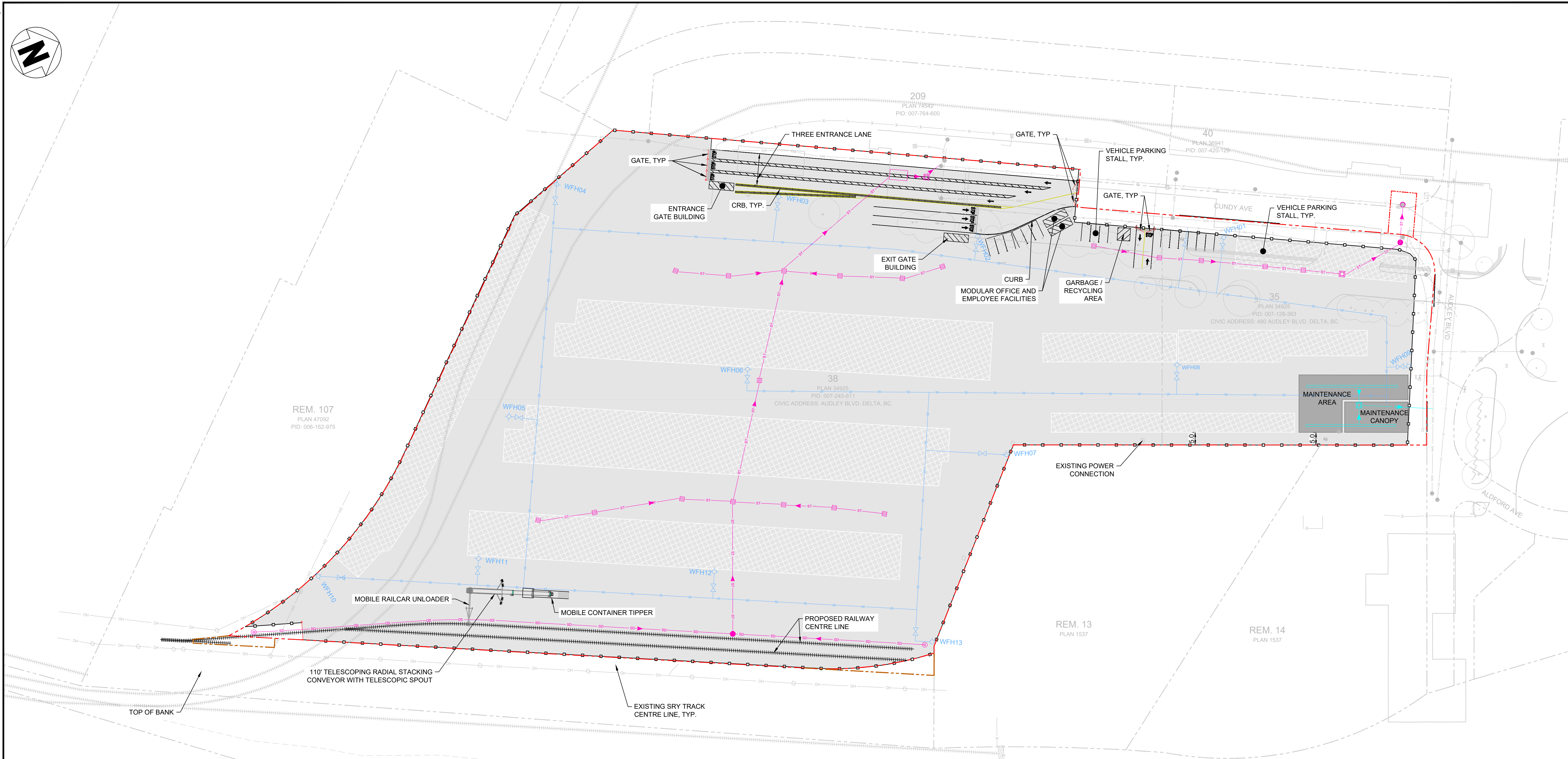
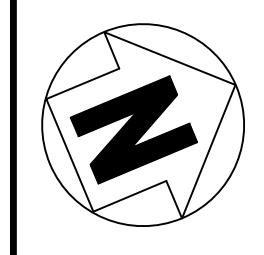
- ★ Muster Station
- Fire Extinguisher
- Escape Route

Site Address:
Unit 10- 480 Audley BLVD
Delta BC, V3M5S4

Owner Contact Info:
Tish Kumar
604-250-9267

B. Proposed Site Plan with Fire Hydrant Locations 21-098-GA-002

TITLE BLOCK CL-TB.rwg



FOR PERMITTING
NOT FOR CONSTRUCTION

LEGEND:

- PROPOSED WORK LIMIT/ LIMIT OF VFP JURISDICTION
- PROPOSED WORK LIMIT/ LIMIT OF DELTA JURISDICTION
- PROPOSED WORK LIMIT/ LIMIT OF SRY LAND JURISDICTION
- PROPOSED FENCE
- PROPOSED RAILWAY CENTRE LINE
- PROPOSED STORM PIPE
- PROPOSED SANITARY
- PROPERTY LINE
- PROPOSED WATER LINE
- EX. FENCE
- EX. RAILWAY CENTRE LINE
- PROPOSED STORM MANHOLE
- PROPOSED CATCH BASIN
- ⊗ PROPOSED WATER VALVE
- EX. MONITORING WELL
- ⊗ PROPOSED SEWER OIL WATER SEPARATOR
- ⊗ PROPOSED STORM OIL WATER SEPARATOR
- ⊗ PROPOSED FIRE HYDRANT
- PROPOSED CONTAINER AREA
- PROPOSED PAVING AREA
- EX. BUILDING
- EX. TREE

10 m 0 1:750 40 m

DATE: 2023/03/08 - 3:54pm
PATH: C:\pwworking\mottmac_at02510\0163238\514100592-MMD-00-PO-DR-CA-0002.dwg

Ref. No.	REFERENCE
----------	-----------

<p>M MOTT MACDONALD ENGINEERS AND GEOSCIENTISTS BRITISH COLUMBIA PERMIT TO PRACTICE NUMBER: 1001591</p>	<p>Suite 1888, Bentall 5 550 Burrard Street Vancouver, BC, V6C 2B5 Canada T 604.681.4400 W www.mottmac.com</p>
------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------

No.	Date	REVISION	Dr'n	Ch'd
B	2023/03/10	ISSUED FOR PERMIT	KW	AL
A	2023/01/31	ISSUED FOR PERMIT	KW	AL

PORT of vancouver
Vancouver Fraser Port Authority
ENGINEERING DEPARTMENT

DESIGN BY	A. L.
DRAWN BY	K. W.
APPROVED	A. K.
DATE	2023-JAN-31
SCALE	AS SHOWN
VFPA SITE	CNVXXX

VANCOUVER FRASER PORT AUTHORITY
TDK METRO TERMINALS EXPANSION

PROPOSED SITE PLAN

DWG. 21-098-GA-002	SHEET 1 of 1	REV B
--------------------	--------------	-------

