

## APPENDIX-5

(Records, Layouts, Certificates for EIA, SIA and Action Plans, Prevention Plans, Checklists, Preparedness for HIA and Emergency Risks)

## JOB CARD AND REPORT

Work Order No. 1237		Equip. No. TR-15	
Type of Maintenance- 50 Hr		Make & Model	
Date 23/4/19	Time	Start : 9:30 AM Comp: 10:30 AM	Assign to : Kyan... SMR 733.3 hrs Done by : KWN & WMT

50 Hr. Maintenance (Planned)

Items	Loc.	Action	Qty.	Condition
Cab Pivot Bush	1	Lubricate		Lubricated, OK.
Fr. Axle King Pins	5	"		Lubricated, OK.
Spring Shackle	15	"		Lubricated, OK.
Throttle Linkage	17	"		Lubricated, OK.
Boom Pivot	21	"		Lubricated, OK.
Cylinder Bearing	22	"		Lubricated, OK.
5 <sup>th</sup> Wheel Pivot	23	"		Lubricated, OK.
5 <sup>th</sup> Wheel Top Plate	24	"		Lubricated, OK.
5 <sup>th</sup> Wheel Jaws	25	"		Lubricated, OK.

Truck Wash

3.26. &lt; 3 kg

Washed.

(Assigned by).....

## JOB CARD AND REPORT

Work Order No. <b>2033</b>	Equip. No. <b>TR-15</b>
Type of Maintenance-	Make & Model: <b>CUMMINS, QSB6.7-C220</b>
Date <b>2/6/19</b>	Assign to: <b>Amey N...</b>
Time Start: <b>13:00</b>	SMR <b>1283.7</b>
Time Completed: <b>16:00</b>	Done by: <b>[Signature]</b>

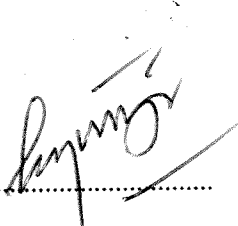
## 250 Hr. Maintenance (Planned)

Items	Action	Qty	Condition
<b>CAB-INTERIOR</b>			
Neutral Start	Check		Good
All Gauges	Check		u
Low Air Buzzer And Light	Check		u
Wiper & Washer	Check		u
Accelerator For Free Operation	Check		u
Horn	Check		u
Air Pressure Maximum (120 psi)	Check		u
Air System Leak Down	Check		u
Back Up Alarm	Check		u
Shift Lock Out	Check		u
<b>HVAC System</b>			
Blower Motor Operation	Check		u
Temperature Control	Check		u
A/C Operation	Check		u
5th Wheel Unlatch Control	Check		u
Operation Of Boom	Check		u
Seat Belt Operation	Check		u
Side Door Latch Operation	Check		u
Rear Door Latch Operation	Check		u
Dome Light Operation	Check		u
All Glass And Mirrors	Check		u
Operation Of Windows	Check		u
<b>CAB Down - Exterior</b>			
Cab Access Steps And Handles	Check		u
Rear Door Roller / Slide Adjustment	Check		u
Gladhand Seals And Trailer Air	Check		u
Trailer Light Cord	Check		u
Headlights / Marker Lights	Check		u
Turn Signals	Check		u
Strobe Light	Check		u
Spotlights	Check		u
Wiper Blades	Check		u
Windshield Washer Fluid Level	Check		u
<b>CAB UP</b>			
Operation Of Cab Tilt Pump	Check		u
Cab Safety Prop	Check		u

Items	Action	Qty	Condition
Cab Suspension And Latch	Check		<i>Good</i>
Intake Ducting For Leaks	Check		u
Radiator For Leaks	Check		u
Radiator Mounts	Check		u
Coolant Level And Concentration	Check		u
<i>Change Engine Coolant</i>	<i>As needed</i>		u
Coolant Hoses And Clamps	Check		u
Engine Cooling Fan For Cracks	Check		u
Engine Belt(S) And Tensioner	Check		u
<i>Change Air Filter</i>	<i>As needed</i>		<i>Cleaned</i>
<i>Change Air Dryer Desiccant</i>	<i>As needed</i>		<i>Good</i>
Exhaust System	Check		u
Transmission Fluid Level	Check		u
Clean Transmission Breather	Clean		u
<b>Under Vehicle</b>			
Steering Gear	Check		u
Brake Linings And Drums	Check		u
Springs	Check		u
Shock Absorbers	Check		u
Power Steering Pump	Check		u
Hydraulic Pump	Check		u
Starter Mounting And Connections	Check		u
Engine And Transmission For Leaks	Check		u
Engine And Transmission Mounts	Check		u
Wheel Seals For Leaks	Check		u
Clean Rear Axle Breather	Clean		u
Differential For Leaks	Check		u
Differential Oil Level	Check		u
Lift Cylinders For Leaks	Check		u
OTTO-Ride Rubber Isolator	Check		u
<b>CHASSIS</b>			
Battery Cabels & Holddowns	Check		u
Battery Box Cover Holddowns	Check		u
Batteries For Cracks Or Acid Damage	Check		u
Clean Battery Cable Connections	Check		u
Drain Water From Air Tanks	Check		u
Torque All Wheel Nuts	Check		u
Wheels	Check		u
Tire Air Pressure & Tread Depth	Check		u
Rear Axle Planetary Fluid Level	Check		u
Catwalk	Check		u
Frame For Cracks	Check		u
Mud Flaps / Fenders	Check		u
<b>Lubrication</b>			
Side Door Hinges	Lubricate/Check		<i>Lubricated</i>
Rear Door Rollers	Lubricate/Check		u



Items	Action	Qty	Condition
Cab Hinge Pins	Lubricate/Check		<i>Lubricated</i>
Hood Hinges	Lubricate/Check		u
Steering Slip Joint	Lubricate/Check		u
Steering U-Joints	Lubricate/Check		u
King Pins And Tie Rod Ends	Lubricate/Check		u
Traction Rod	Lubricate/Check		u
Slack Adjusters	Lubricate/Check		u
Spring Pins And Bushings	Lubricate/Check		u
Driveline U-Joints	Lubricate/Check		u
Lower Boom Cylinder Bearing	Lubricate/Check		u
Clean, Adjust And Lube 5th Wheel Jaws	Lubricate/Check		u
5th Wheel Top Plate	Lubricate/Check		u
5th Wheel Pivot Pins	Lubricate/Check		u
Boom Pivot Bearings	Lubricate/Check		u
Upper Boom Cylinder Bearing	Lubricate/Check		u
Test Drive			
Drive Vehicle To Check For Overall Operation	Drive Vehicle		<i>ok</i>

Assigned By ..... 

## JOB CARD AND REPORT

Work Order No. <u>2855</u>	Equip. No. <u>TR - 15</u>
Type of Maintenance- <u>500 - 500</u>	Make & Model: <u>CUMMINS, QSB6.7-C220</u>
Date <u>29/8/19</u>	Assign to: <u>Amy Nong + V/MET</u>
Time Start: <u>09:00</u>	SMR <u>18107</u>
Time Completed: <u>12:00</u>	Done by: <u>[Signature]</u>

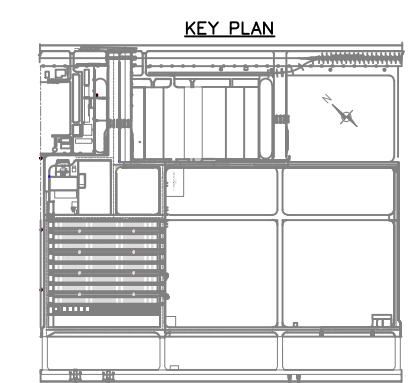
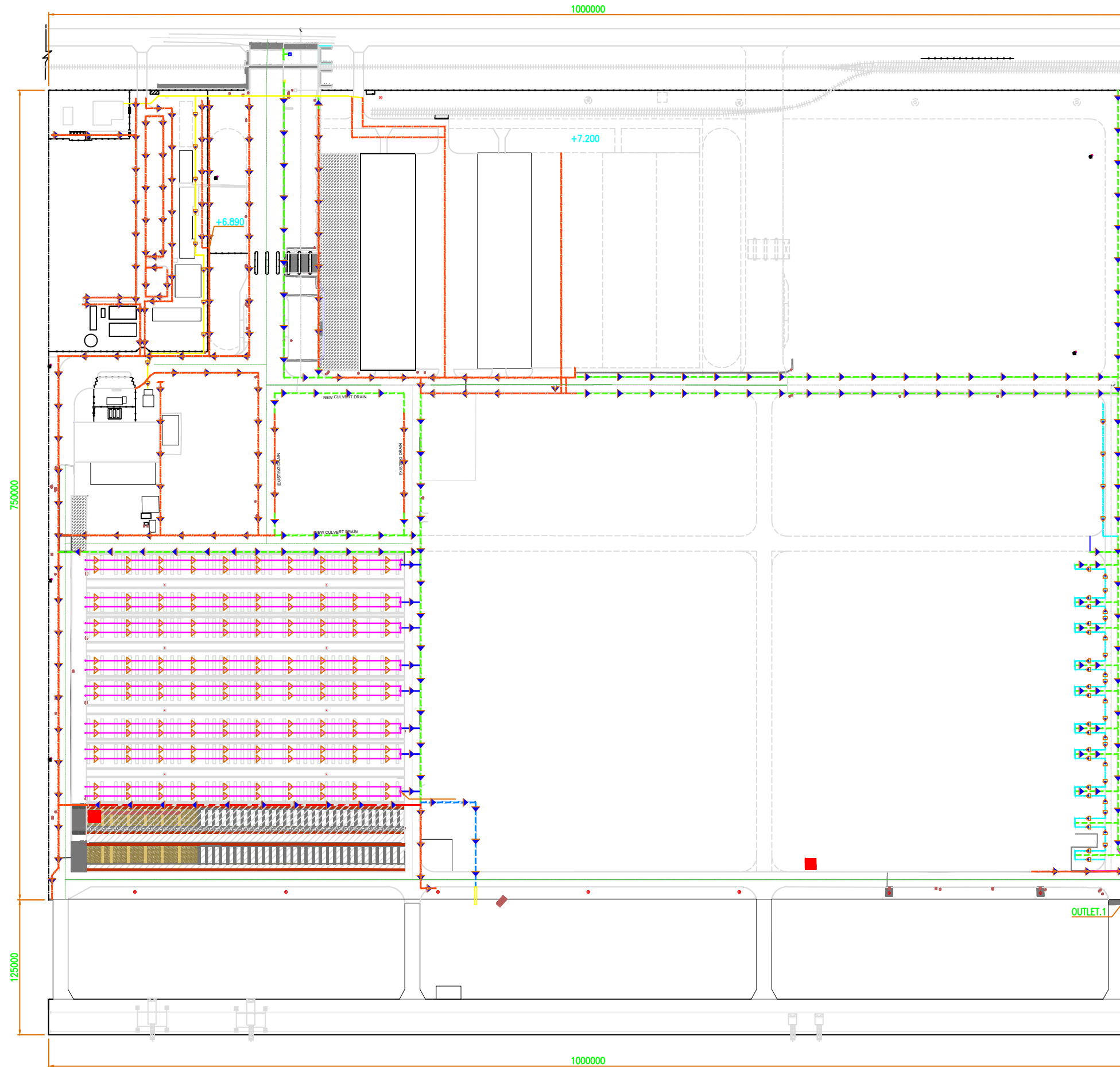
## 500 Hr. Maintenance (Planned)

Items	Action	Qty	Condition
<b>CAB-INTERIOR</b>			
Neutral Start	Check		Good
All Gauges	Check		u
Low Air Buzzer And Light	Check		u
Wiper & Washer	Check		u
Accelerator For Free Operation	Check		u
Horn	Check		u
Air Pressure Maximum (120 psi)	Check		u
Air System Leak Down	Check		u
Back Up Alarm	Check		u
Shift Lock Out	Check		u
<b>HVAC System</b>			
Blower Motor Operation	Check		u
Temperature Control	Check		u
A/C Operation	Check		u
5th Wheel Unlatch Control	Check		u
Operation Of Boom	Check		u
Seat Belt Operation	Check		u
Side Door Latch Operation	Check		u
Rear Door Latch Operation	Check		u
Dome Light Operation	Check		u
All Glass And Mirrors	Check		u
Operation Of Windows	Check		u
<b>CAB Down - Exterior</b>			
Cab Access Steps And Handles	Check		u
Rear Door Roller / Slide Adjustment	Check		u
Gladhand Seals And Trailer Air	Check		u
Trailer Light Cord	Check		u
Headlights / Marker Lights	Check		u
Turn Signals	Check		u
Strobe Light	Check		u
Spotlights	Check		u
Wiper Blades	Check		u
Windshield Washer Fluid Level	Check		u
<b>CAB UP</b>			
Operation Of Cab Tilt Pump	Check		u
Cab Safety Prop	Check		u

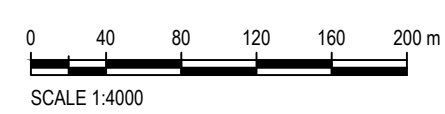
Items	Action	Qty	Condition
Cab Suspension And Latch	Check		Good
Intake Ducting For Leaks	Check		u
Radiator For Leaks	Check		u
Radiator Mounts	Check		u
Coolant Level And Concentration	Check		u
Change Engine Coolant	As Needed		u
Coolant Hoses And Clamps	Check		u
Engine Cooling Fan For Cracks	Check		u
Engine Belt(S) And Tensioner	Check		u
Engine And Transmission For Leaks	Check		u
Drain Fuel Water Separator	Drain	110.66	u
Fuel Filter / Fuel Water Separator	Change	110.66	Changed
Change Air Filter	As Needed	13.33	Cleaned
Change Air Dryer Desiccant	As Needed		Good
Exhaust System	Check		u
Transmission Fluid Level	Check		u
Clean Transmission Breather	Clean		u
Torque Cab To Deck Mountng Bolts	Check		u
Under Vehicle			
Steerng Gear	Check		u
Brake Linings And Drums	Check		u
Springs	Check		u
Shock Absorbers	Check		u
Torque Front Axle Mounting Bolts	Check		u
Torque King Pins Draw Key Nut	Check		u
Power Steering Pump	Check		u
Hydraulic Pump	Check		u
Starter Mounting And Connections	Check		u
Engine And Transmission For Leaks	Check		u
Engine Oil And Filter	Change	11.72 15 Ltrs	Changed
Engine And Transmission Mounts	Check	110.66	Good
Wheel Seals For Leaks	Check		u
Clean Rear Axle Breather	Check		u
Differential For Leaks	Check		u
Differential Oil Level	Check		u
Lift Cylinders For Leaks	Check		u
OTTO-Ride Rubber Isolator	Check		u
CHASSIS			
Battery Cabels & Holddowns	Check		u
Battery Box Cover Holddowns	Check		u
Batteries For Cracks Or Acid Damage	Check		u
Clean Battery Cable Connections	Check		u
Drain Water From Air Tanks	Check		u
Torque All Wheel Nuts	Check		u
Wheels	Check		u
Tire Air Pressure & Tread Depth	Check		u

Items	Action	Qty	Condition
Rear Axle Planetary Fluid Level	Check		<i>Good</i>
Inspect Catwalk	Check		"
Frame For Cracks	Check		"
Mud Flaps / Fenders	Check		"
<b>Lubrication</b>			
Side Door Hinges	Lubricate/Check		<i>Lubricated</i>
Rear Door Rollers	Lubricate/Check		"
Cab Hinge Pins	Lubricate/Check		"
Hood Hinges	Lubricate/Check		"
Steering Slip Joint	Lubricate/Check		"
Steering U-Joints	Lubricate/Check		"
King Pins And Tie Rod Ends	Lubricate/Check		"
Traction Rod	Lubricate/Check		"
Slack Adjusters	Lubricate/Check		"
Spring Pins And Bushings	Lubricate/Check		"
Driveline U-Joints	Lubricate/Check		"
Lower Boom Cylinder Bearing	Lubricate/Check		"
Clean, Adjust And Lube 5th Wheel Jaws	Lubricate/Check		"
5th Wheel Top Plate	Lubricate/Check		"
5th Wheel Pivot Pins	Lubricate/Check		"
Boom Pivot Bearings	Lubricate/Check		"
Upper Boom Cylinder Bearing	Lubricate/Check		"
<b>Test Drive</b>			
Drive Vehicle To Check For Overall Operation	Drive Vehicle		<i>ok</i>

Assigned by ..... *[Signature]* .....



- LEGEND/NOTES:
- NEW DRAINAGE
  - EXISTING DRAINAGE
  - NEW SUB-SOIL DRAINAGE PIPE
  - NEW TEMPORARY DRAINAGE
  - DRAIN DIVERSION



GENERAL PLAN DRAINAGE NETWORK  
SCALE 1:4000



# The Republic of the Union of Myanmar

Ministry of Natural Resources and Environmental Conservation

## Department of Mines

Fax & Phone .067409376

### "K" – Licence

#### (ARTICLE 4 OF SCHEDULE 1)

Licence to store petroleum in a tank or tanks in connection with a pump outfit for fuelling motor conveyances.

Licence No. 221 / 1 / 581 K

Dated 8<sup>th</sup> March, 2018

Licence is hereby granted to Myanmar International Terminals Thilawa Limited valid only for the Storage of 11000 gallons of petroleum in a tank (tanks) in the licensed premises described below and shown on the plan hereto attached subject to the provisions of the Petroleum Act, 1934, and the rules made there under and to the further conditions on the attached of this licence.

This licence shall be renewable for one year in the absence of contravention of the provision of the Petroleum Act, 1934, or of the rules framed there under or of any condition of this licence.

This licence shall remain in force till the **31st day of December 2018.**

Sr.	Description	Capacity in Gallons
1.	Dangerous petroleum in bulk ( M.S )/(Octane)	-
2.	Non- Dangerous petroleum in bulk(H.S.D)	( 2200 x 1 )+ ( 4400 x 2 )
	Total	11000

*Khin Latt Gyi*  
3/13/2018

Khin Latt Gyi

Director General

Chief Inspector of Explosives

Plan No. 455/ 221 /Approval / 1998 , dated 2.4.1998

ID-3.6.1998







# The Republic of the Union of Myanmar

Ministry of Natural Resources and Environmental Conservation

## Department of Mines

Fax & Phone .067409376

### "L" - Licence

#### (ARTICLE 5 OF SCHEDULE 1)

### License to import dangerous petroleum and to store Petroleum in Installations

Licence No. 221 / 1 / 704 L

Dated 9<sup>th</sup> March, 2018

License is hereby to Myanmar International Terminals Thilawa Limited valid only for the importation of 21000 gallons of petroleum in the place described below and shown on the plan attached here to subject to the provisions to the Petroleum Act, 1934 and the rules made there under and to the further condition to the attached of this license.

This licence shall be renewable for one year in the absence of contravention of the provision of the Petroleum Act, 1934, or of the rules framed there under or of any condition of this licence.

This license shall remain in force till the **31<sup>st</sup> day of December 2018.**

Sr.	Description	Capacity in Gallons
1.	Dangerous petroleum in bulk ( M.S)	-
2.	Non- Dangerous petroleum in bulk (H.S.D)	( 7000 x 3 )
	Total	21000

Khin Latt Gyi

Director General

Chief Inspector of Explosives

Plan No. 1327/ 221 /Approval / 2002 , dated 8.5.2002

ID-29.5.2002



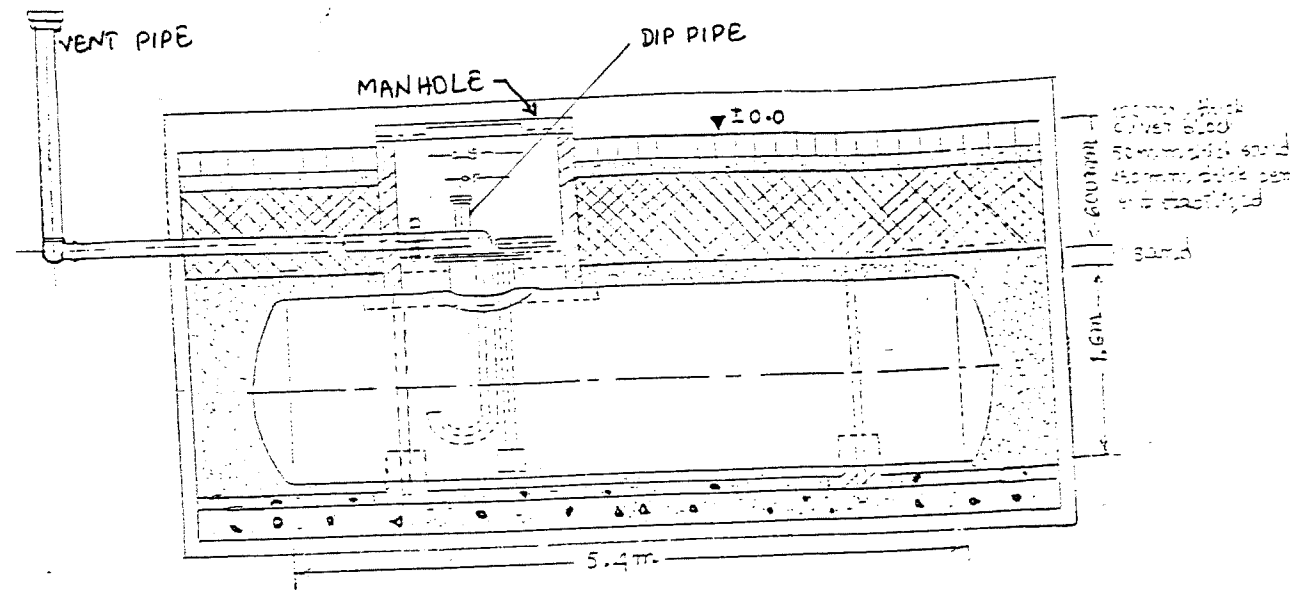
N.B\_ Petroleum Rule 107 requires that a copy of the conditions on the back of this license together with a copy of Rules 90 to 106 relating to storage of petroleum shall be exhibited in a conspicuous place in every licensed installation or storage shed. A copy of the above rules and of the conditions is issued free with this license for the above purpose.

This licence is liable to be cancelled if the licensed premises when inspected are not found conforming to the description and conditions attached hereto and contravention of any of the rules and conditions under which this licence is granted is also punishable with may extend from a minimum of five hundred thousand kyats to maximum of five million kyats for a first offence and which may extend from a minimum of one million kyats to a maximum of ten million kyats for any subsequent offence.

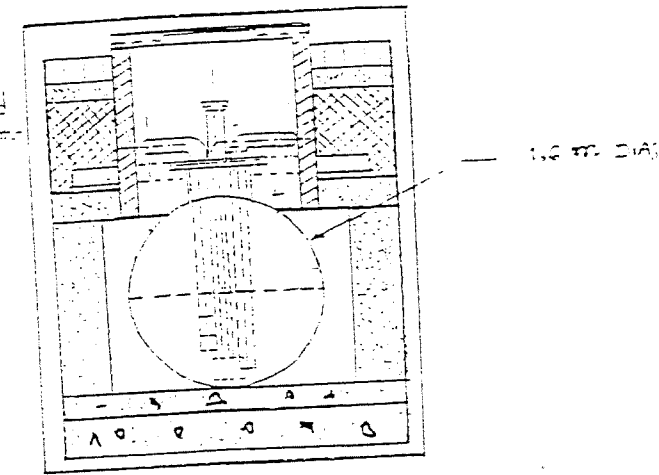
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(Note - Conditions are attached.)

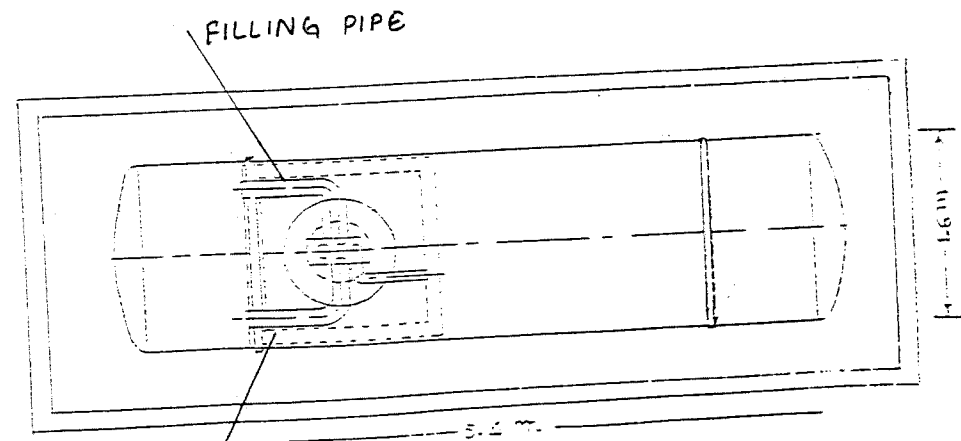
DETAILS DRAWING



LONGITUDINAL SECTION



CROSS SECTION



PLAN

PETROL TANK

VOLUME =  $10 \text{ m}^3$  . 2200 GAL.

DIAMETER = 1.6 m.

LENGTH = 5.4 m.

SCALE

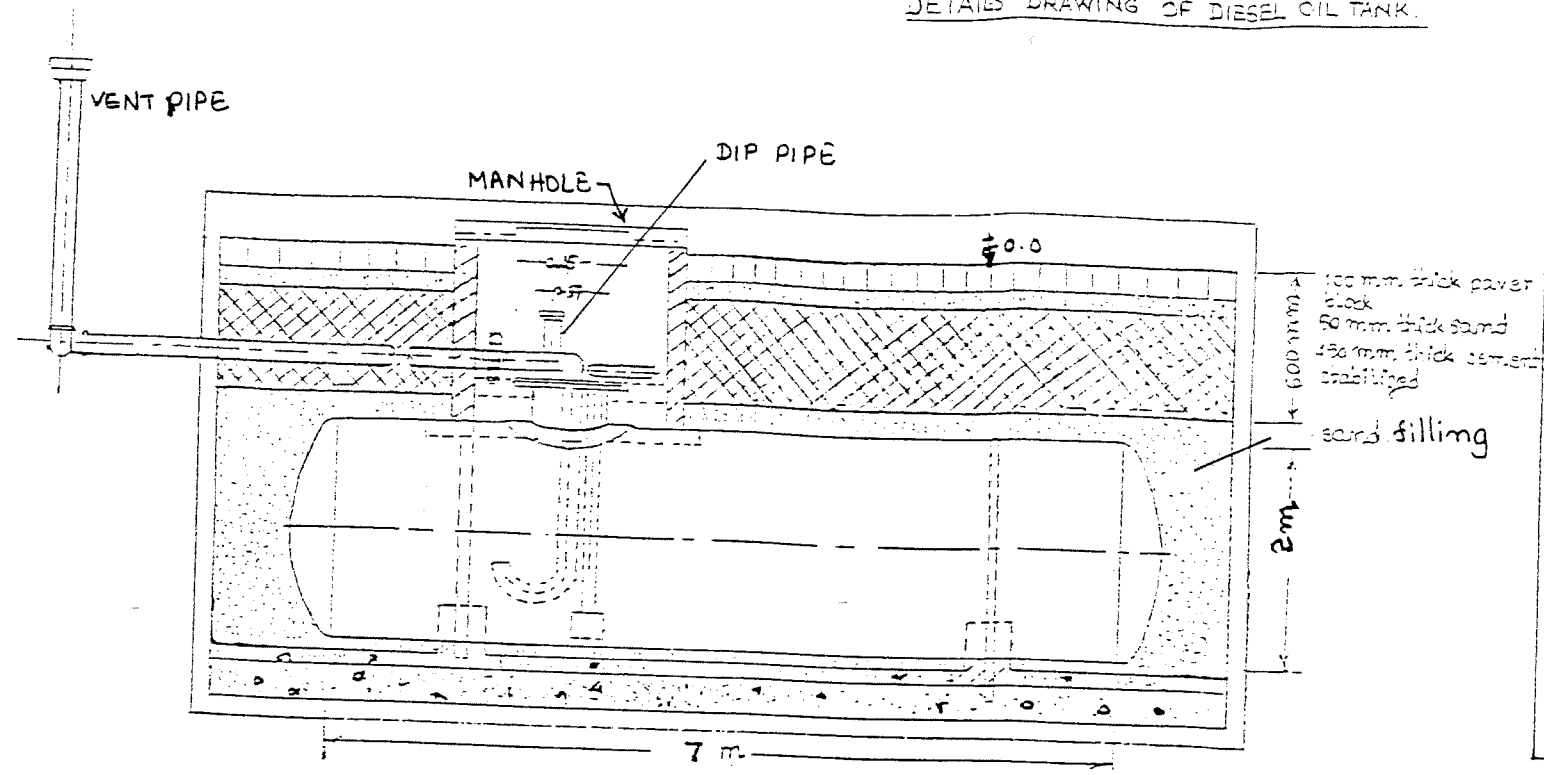
1" = 1.5 m



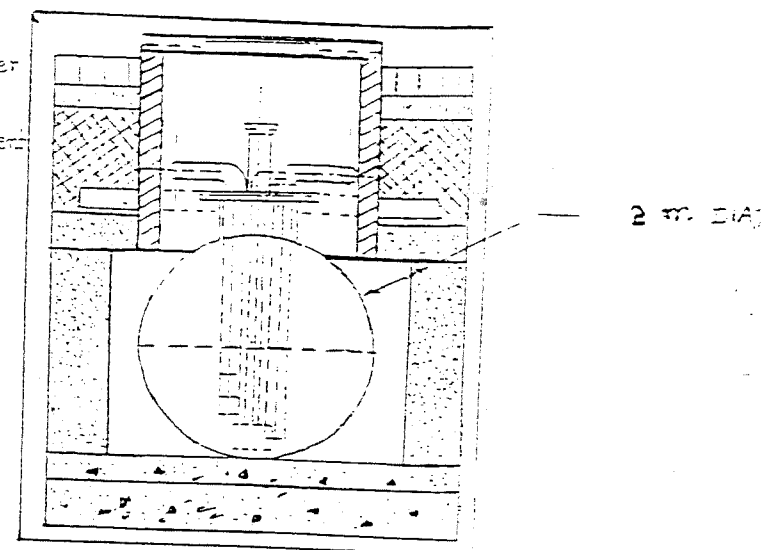
ပြည်ထောင်စု  
သယံဇာတနှင့် သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး ဝန်ကြီးဌာန  
ပြည်ထောင်စု ဝန်ကြီးရုံး  
နေပြည်တော်

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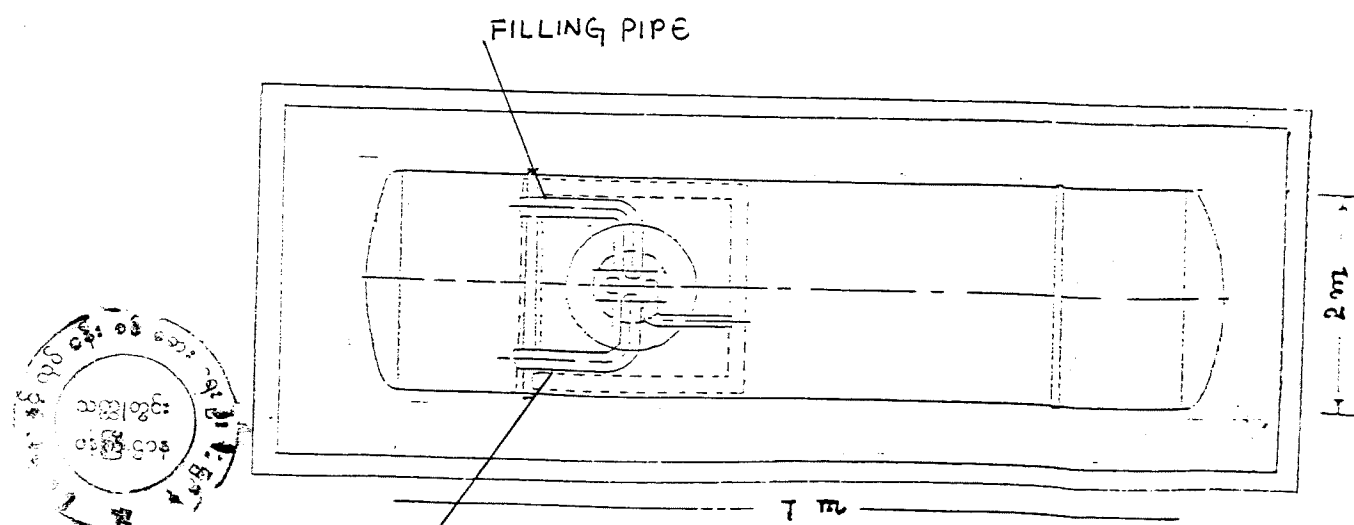
# DETAILS DRAWING OF DIESEL OIL TANK.



LONGITUDINAL SECTION



CROSS SECTION



OUTLET PIPE

PLAN

Handwritten notes in Burmese script, including a signature and date.

## DIESEL TANK

VOLUME =  $20 \text{ m}^3$  = 4400 GAL.

DIAMETER = 2 m

LENGTH = 7 m

SCALE

1" : 1.6 m

Monetary support to MMU *Myanmar Maritime University*

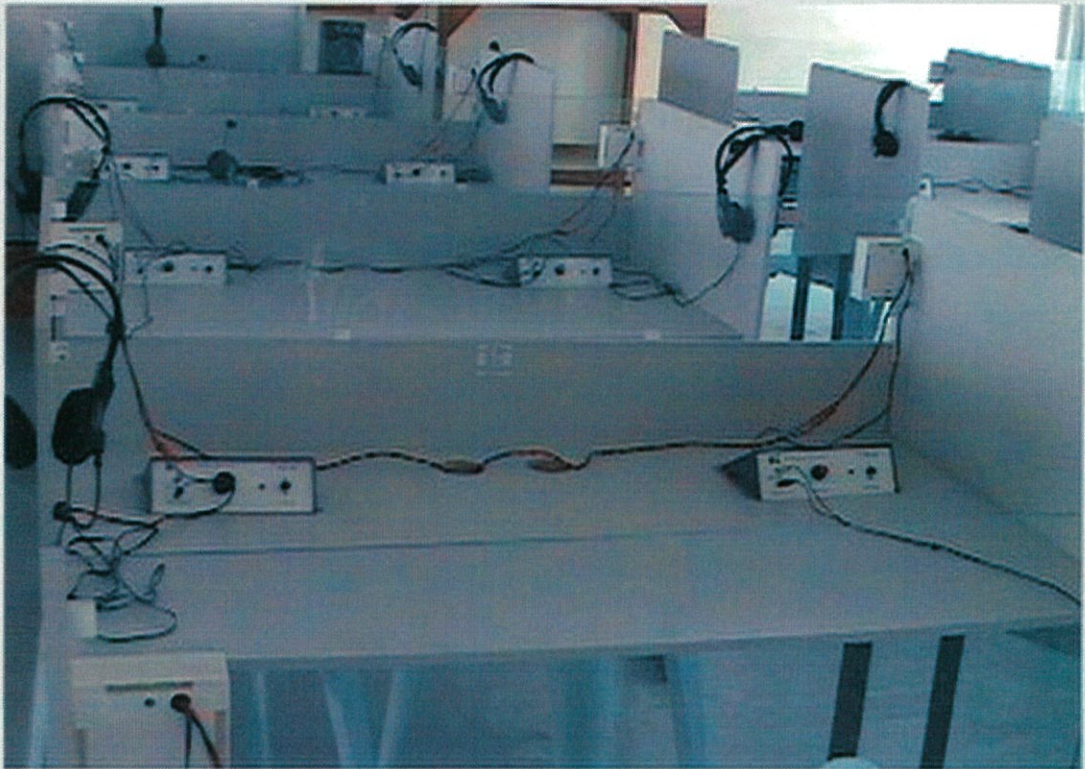
(in USD)

Year	HPH Gold Medal Award	Scholarship Award	Dock School Assistance		Fun Fair (Kyat)	Internship	Miscellaneous	
2002	-	-	6,000	English Language Lab	-	-	-	-
2003	-	-	10,000	Teaching Aid & Computer purchase	-	-	-	-
2004	-	-	3,000	Teaching Aid	-	-	-	-
2005	-	-	8,000	Reference books & Teaching Aid	-	-	240	Ceremony expenses & others
2006	1,500	1,000	8,000	Bench/ Chart Table/ Lecture Stage/ White board	-	-	465	"
2007	1,500	1,000	20,000	GMDSS Training Station	-	-	200	"
2008	1,500	1,000	12,540	Reference books/ Teaching Aid/ Survey Instrument	-	-	526	"
2009	1,500	1,000	782	MMU Monument Pile Erecting	-	-	208	"
2010	1,500	1,000	-	-	-	-	200	"
2011	1500	1000	-	-	-	-	200	"
2012	1500	2000	-	-	-	-	200	"
2013	1500	2000	-	-	-	-	200	"
2014	1500	2000	6500	Project Researches	-	-	200	"
2015	1500	2000	5500	Project Assistance	500000	-	200	"
2016	1500	2000	6000	Furniture and Equipment for Multimedia room	500000	-	200	"
2017	1500	2000	4500	Computer Sets/ Desks	500000	3300	200	"
2018	1500	2000	6000	TV/Air Conditioner and Computer sets for GIS Lab	500000	-	200	"
2019	1500	2000	6000	Computer Sets/ Desks	500000	-	200	"
21,000		22,000	102,822		2500000	3300	3,639	









16-6-2003 (Teaching Aid and Computer for Multimedia Room)



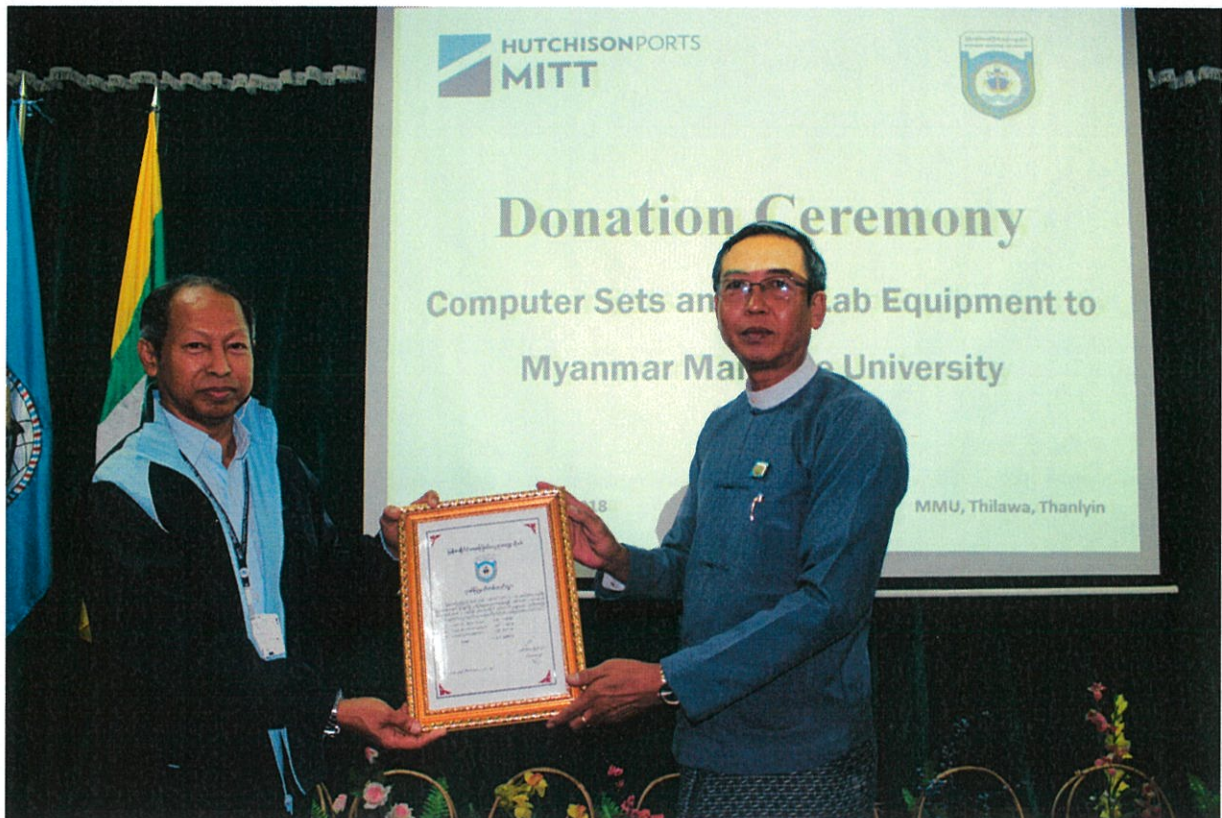






























Hutchison Port Holdings  
Top Student of the Year 2008-09  
SOE PYAE AUNG  
of  
B.E. (Port & Harbour Engineering)  
Myanmar Maritime University



# GOLD MEDAL CERTIFICATE

This is to certify that  
**SOE PYAE AUNG**  
has been awarded the  
**HPH Gold Medal**  
as the Top Student of the 2008-2009  
in B.E. (Port & Harbour Engineering )  
Myanmar Maritime University

Chin Yee Jang  
Director, HPH's Education  
Hutchison Port Holdings

© Hutchison Port Holdings

16 February 2010































2007 MMU Scholarship









































2011 BEPS Kyeikkamaut



2013 BEPS Shan Su



2016 BEPS Nyaung Wine















Summary of Donation

(in Kyat)

Sr	Year	Month	School Name	Items	Amount
1	2010	August	Phan Chat	Playground, Equipment and Stationery	3,003,685.00
2	2011	May	Adduttaw	Stationery, Water Purification System, Toilet	6,300,000.00
3	2011	December	Kyeik Kamawt	Stationery, Electricity installation, School Fence, Water Tank	8,000,000.00
4	2012	June	San Chain Mhe	Stationery, school building, Water supply System, Desks	8,000,000.00
5	2013	January	Thida Myaing	School building, Water supply System and Ground Water Tank	9,000,000.00
6	2013	August	Shan Su	Stationery, renovation of school building, Ground Water Tank and School gate	6,500,000.00
7	2015	July	Shwe Pyi Tharyar 1	Stationery, Desks and Tables	1,948,370.00
8	"	"	Shwe Pyi Tharyar 2	Stationery, Desks, Tables, Ground Water Tank	2,884,070.00
9	"	"	Shwe Pyi Tharyar 3	Stationery, Desks, Tables, Tube well and Ground Water Tank	5,188,570.00
10	2016	October	Nyaung Wine	Stationery, Water Purification System, Classroom Partitioning and Laminated Floor	6,300,000.00
11	"	"	Gway Pin	KG Room Flooring, Water Purification & Storage and sanitation System	5,700,000.00
12	2017	November	Banbwe Kone	Stationery, Water System, KG Room Flooring and Sanitation system	4,845,341.00
13	"	"	Thayet Kone	Stationery, Water System, KG Room Flooring and Sanitation system	8,735,159.00
14	2018	October	Aung Thukha	KG Room Flooring and Class Room Repair	2,185,966.00
15	"	"	Banbwe 2	Stationery, Water System, KG Room Flooring and Sanitation system	12,731,117.00
16	2019	30/09/2019	Kyar Kan Hteik	Stationery, Class Room Partitioning, Ground Water Tanks, KG Room Flooring and Library Room	11,312,200.00
17	"	"	Kone Tan	KG Room Flooring, Tube Well and Basin	2,631,800.00
18	"	"	Gway Pin	KG Room Flooring	1,056,000.00

106,322,278.00













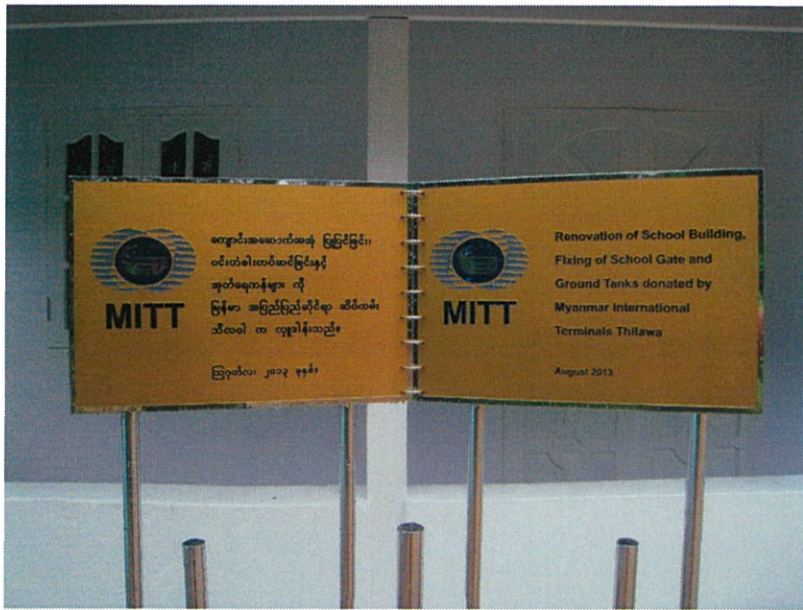




























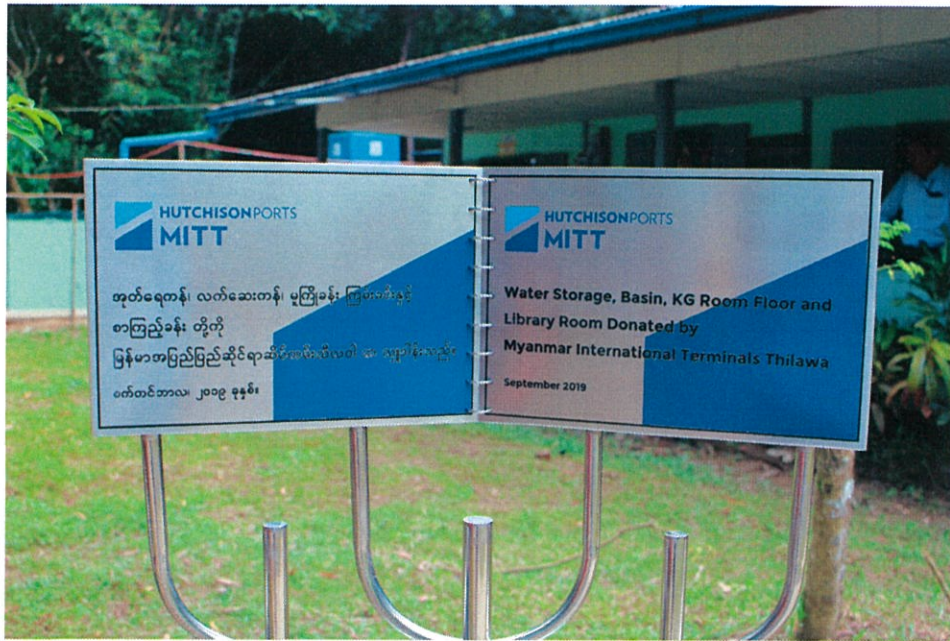














## MITT ဆိပ်ကမ်းဝင်းအတွင်း Contractor များ လုပ်ငန်းဆောင်ရွက်ရာတွင် လိုက်နာရမည့် စည်းကမ်းချက်များ

### Rules and Regulations to be followed by the Contractor engaging a business in MITT premises

MITT (Eng/Ops/Adm) ဌာန၏ ညွှန်ကြားခွင့်ပြုချက်အရ ဆိပ်ကမ်းဝင်းအတွင်းလုပ်ငန်းဆောင်ရွက်ရာတွင်အောက်ပါစည်းကမ်းများကိုလိုက်နာဆောင်ရွက်ရပါမည်။

A contractor going to engage a business in MITT premises in accordance with the requirement/agreement of MITT shall abide following rules and regulations.

၁။ ဘေးအန္တရာယ်ကင်းရှင်းရေး၊ ကျန်းမာရေးနှင့်သဘာဝပတ်ဝန်းကျင်ထိန်းသိမ်းရေးလုပ်ထုံးလုပ်နည်းစည်းကမ်းချက်များ-

Responsibility of the Contractor with respect to the rules and regulations of Safety, Health and Environment

(က) အလုပ်သမားတိုင်းသည် ဘေးအန္တရာယ်ကင်းရှင်းအောင် စနစ်တကျဆောင်ရွက်ရမည်။ ကန်ထရိုက်တာ (သို့) တာဝန်ခံသည် မိမိအလုပ်သမားများ၏ ဆောင်ရွက်ချက်များမှာ ဘေးအန္တရာယ်ကင်းရှင်းရေး၊ ကျန်းမာရေးနှင့်သဘာဝပတ်ဝန်းကျင် ထိန်းသိမ်းရေး လုပ်ထုံးလုပ်နည်း စည်းကမ်းချက်များနှင့်အညီ ဖြစ်စေရန်တာဝန်ယူရမည်။

The responsibility of the Contractor includes, but not limited to, the assurance of proper safety measures to be in place in every work site that are under operation of the contractor and every labour engaged must be in line with the safety, health and environmental standard of MITT.

(ခ) လုပ်ငန်းခွင်ထိခိုက်မှုဖြစ်ပေါ်ပါက ကန်ထရိုက်တာ (သို့) တာဝန်ခံသည် ၎င်း၏အလုပ်သမားများအတွက်သော်လည်းကောင်း၊ အခြားပုဂ္ဂိုလ်များအတွက်သော်လည်းကောင်း၊ ပျက်စီးသည့်ပစ္စည်းများအတွက်သော်လည်းကောင်း (လုံးဝ) တာဝန်ယူရမည်။ မြန်မာအပြည်ပြည်ဆိုင်ရာဆိပ်ကမ်းသီလဝါတွင် တာဝန်မရှိစေရ။

The Contractor is totally liable for any type of accident/incident occurred in his contracted scope of work. This includes, but not limited to, the damage of MITT properties and third parties' properties on terminal and/or accident to the contractor's labours, MITT staff and port users officially presence on the terminal premises. Under no circumstances MITT is liable for any consequence of accident and/or incident happened in the Contractor's scope of work.

(ဂ) လုပ်ငန်းလုပ်ကိုင်ရန် လိုအပ်သောငြိမ်းများ၊ လှေခါးဆင်မှုများကို တတ်ကျွမ်းနားလည်သူများမှ ဘေးအန္တရာယ်ကင်းရှင်းရေး ဦးစားပေးဆောင်ရွက်ရမည်။

Fixing of scaffolding and other preparation prior to commencement of work shall be agreed by the MITT. This must be supervised by respective professionals engaged by the Contractor throughout the process and shall be in line with the safety standard of MITT.



- (ဃ) အမြင့်တက်လုပ်ငန်းများ၊ အန္တရာယ်ရှိလုပ်ငန်းများ ဆောင်ရွက်ရာတွင် လိုအပ်သော (PPE) များကို ပြည့်စုံစွာ ဝတ်ဆင်ရမည်။

The Contractor is responsible for providing necessary PPE (Personal Protective Equipment) to his labours appropriate to the nature of work scope. (i.e Working at height, Hazardous to health..)

- (င) Hot Work လုပ်ငန်းများဆောင်ရွက်ရာတွင် မီးဘေးအန္တရာယ်ကာကွယ်ရေးအတွက်လိုအပ်သော မီးသတ်ဆေး ဗူး၊ ပိုက်လိပ်၊ ပိုက်ခေါင်းများကို အရန်သင့်ထားရှိရမည်။

Doing hot work shall be agreed by the MITT prior to commencement of work and necessary fire extinguishers shall be ready in hand throughout the hot work process.

- (စ) အန္တရာယ်ရှိနိုင်သောလုပ်ငန်း (သို့) ကန့်သတ်ထားသောနေရာများတွင် လုပ်ငန်းဆောင်ရွက်ရန်ရှိပါက မဆောင်ရွက်မီ သက်ဆိုင်ရာဌာနတာဝန်ခံ၏ သဘောတူခွင့်ပြုချက်ကို ကြိုတင်ရယူရမည်။

If the contracted work scope is hazardous to health and/or to be carried out at the restricted areas, the Contractor shall obtain the permission of respective department prior to commencement.

- (ဆ) သတ်မှတ်ထားသောနေရာများတွင်သာ အမှိုက်များကို စနစ်တကျ စွန့်ပစ် ရမည်။

Dispose garbage properly in the given garbage bins and/or temporarily designated area permitted by the MITT.

- (ဇ) လုပ်ငန်းပြီးစီးပါက ပစ္စည်းများကို စနစ်တကျ ပြန်လည်သိမ်းဆည်း ရှင်းလင်းခဲ့ရမည်။

The Contractor shall ensure that working area shall be properly cleaned and settled at the end of the work process.

## ၂။ လုံခြုံရေး

### SECURITY

- (က) မြန်မာအပြည်ပြည်ဆိုင်ရာဆိပ်ကမ်းသိလဂ်၏ လုံခြုံရေးဆိုင်ရာလုပ်ထုံးလုပ်နည်းများကို လိုက်နာရမည်။

The Contractor shall follow the Security Procedures of MITT.

- (ခ) အလုပ်သမားများအား သတ်မှတ်ထားသည့်နေရာတွင်သာ နေထိုင်လုပ်ကိုင်စေရမည်။ မိမိလုပ်ငန်းနှင့် မသက်ဆိုင်သောနေရာ၊ ကန့်သတ်ထားသောနေရာများသို့ မသွားရပါ။

Contractor shall ensure that his staff/labours are being engaged in the contracted work place without going to non-responsible areas across the terminal.

- (ဂ) မိမိအားညွှန်ကြားထားသော ဆောင်ရွက်ရန်ကိစ္စမှအပ အခြားလုပ်ငန်းများကို မိမိသဘောဖြင့်မလုပ်ရပါ။

Doing jobs out of contracted work scope shall result in termination of contract terms.

(ဃ) MITTပိုင်စက်ကရိယာများကို တာဝန်ရှိသူ၏ခွင့်ပြုချက်ရရှိမှသာ အသုံးပြုရမည်။

Use of MITT Equipment as a part of contracted work scope shall require prior agreement from the MITT.

(င) မြန်မာအပြည်ပြည်ဆိုင်ရာဆိပ်ကမ်းသီလဝါပိုင်ပစ္စည်းများ၊ ပုဂ္ဂလိကပိုင်ပစ္စည်းနှင့် အခြားမည်သည့်ပစ္စည်းကို

မဆို ခိုးယူခြင်း၊ အလွဲသုံးစားပြုခြင်း၊ ဖျက်စီးခြင်းများကို တွေ့ရှိပါက ဥပဒေအရ အရေးယူခြင်းခံရမည်။

Staff /Labours engaged by the Contractor found in connection with theft cases and/or abuse of MITT's properties (or) third parties' properties on terminal shall be dealt with a law suit.

အထက်ပါစည်းကမ်းချက်များကို ဖတ်ရှုသိရှိပြီး လိုက်နာဆောင်ရွက်ရန် သဘောတူပါသည်။

Above rules and regulation has been read and agreed to follow by signing below.

Contractor's Seal/Stamp

လက်မှတ် (Signature) -

ကန်ထရိုက်တာအမည် (Contractor) -

မှတ်ပုံတင်အမှတ် (NRC No.) -



## Safety Risk Assessment

<u>Area of Assessment</u>	<u>Section / Department</u>	<u>Date</u>	<u>Ref. No.</u>
---------------------------	-----------------------------	-------------	-----------------

Severity		Likelihood		
Catastrophic	5	Fatality, Fatal Disease, Multiple Major Injuries, Permanent Disability, Damage of key company's assets (Jetty/QC/YC/Equipment)	5	Almost Certain (Continual/Repeating Experience)
Major	4	Serious Injury, Loss of Body Part or Vision, More than 48 hrs Hospitalization, Damage of company properties, Damage of value cargo	4	Commonly occur / Frequently happen
Moderate	3	Minor Fracture, Minor Broken, Dis-location, Less than 24 hrs Hospitalization, Minor damage of cargoes/company's properties	3	Possible to occur/ Sensible to happen
Minor	2	Minor Injury, Bruises, Swollen, Temporary Discomfort, Minor Cut, Minor Stitches, Cargo related accident without major damage	2	Less possibility to occur / Rare to happen
Negligible	1	Not likely to cause injury or health problem Not likely to damage cargoes	1	Very rare to happen

Risk Level (Severity x Likelihood)	
<b>Acceptable – ( 1 to 8 )</b>	<b>Tolerable – ( 9 to 12 )</b>
Require frequent review in order to ensure that the risk level does not increase over time.	Require interim risk control measures in order to ensure that the risk level is as low as minimum within the defined period.
	<b>Unacceptable – ( 15 to 25 )</b>
	Require to reduce risk level as reasonable as minimum at least to Medium Risk Level before work commence. Need Management attention.

Assessment Done By		Assessment Approved By	
Name		Name	
Position		Position	
Signature		Signature	

[illegible]



# Emergency Response Team Action Plan

In case of emergency situation to be responded by the ERT, all duty Security Staff are to be organized as per following action plan to muster the staff and port users on terminal according to designated Assembly Points for evacuation process.

During ERT action plan, the priority is to be set out for the safe evacuation of human life and under no circumstances properties are considered as priority.

## Action Plan # 1

### Safeguarding of Access Points

During an emergency, all roadside access points are to be safeguarded by following strength of Security Staff and keep posting of manpower to better serve the evacuation process. Depending on the specific emergency situation, such access points are also to be considered as temporary closures (if necessary) to prevent unauthorized access of looters during an emergency. Should there be necessary to close the access points, the PFSO will decide to do so with the consultation of Management Team.

Location	Office Gate		Main Gate		CFS Gate		Document Gate	
Status	Normal	ERT	Normal	ERT	Normal	ERT	Normal	ERT
Security Staff	1	1	5	3	0	1	1	Close

## Action Plan # 2

### Shuffling Security Staff

PFSO/Security Supervisor is responsible for shuffling Security Staff strength to respective Assembly Points in order to help muster the public and make announcement of evacuation as needed.

From		To	
Location	No. of security	Location	No. of security
Document Gate	1	Assembly Point No.1	1
Trestle-1	1		1
Main Cargo Gate	5	Assembly Point No.2	2
Toyofuji-1	3		1
ECL-1	4		2
Onboard Ships	10	Assembly Point No.3	5
RTG	1		1
ECY	1	Assembly Point No.4	1
RA2	1		1
Toyofuji-2	1		1
QC	1		1

### Announcing Public and Mustering at Assembly Point No.1

During an emergency, following number of security staff are to be shuffled and made available at the **Assembly Point No.1 (In Front of MITT Main Office Building)**

Location / Staff	Normal	ERT
Trestle-1	0	1
Document Gate	1	1
Asst Supervisor	In Office	1
Supervisor	In Office	1
PFSO	In Office	1
<b>Total Available Strength</b>		<b>5</b>

Mustering for:

**Office Staff/M&R Staff**

**Canteen Staff**

**Port Users/Visitors**



**Commander of AP No.1: PFSO/Security Supervisor**

### Announcing Public and Mustering at Assembly Point No.2

During an emergency, following number of security staff are to be shuffled and made available at the **Assembly Point No.2 (In Front of MITT CFS Office inside CFS-2)**

Location / Staff	Normal	ERT
CFS Security	1	1
From <b>Main Gate</b> (Shuffled security)	0	2
From <b>Toyofuji-1</b> (Shuffled security)	0	1
From <b>ECL-1</b> (Shuffled security)	0	2
<b>Total Available Strength</b>		<b>5</b>

Mustering for:

**CFS Staff/CFS Canteen**

**Customs Officers**

**Port Users/Visitors**



**Commander of AP No.2: Senior Security Guard (Gate)**

### Announcing Public and Mustering at Assembly Point No.3

During an emergency, following number of security staff are to be shuffled and made available at the **Assembly Point No.3 (In Front of MITT Berth Office on Jetty)**

Location / Staff	Normal	ERT
Onboard Security	10	5
From <b>RTG</b> (Shuffled security)	0	1
<b>Total Available Strength</b>		<b>6</b>

Mustering for:

**Berth Staff / Stevedore**

**Shipping Lines Staff**

**Port Users/Truckers**



**Commander of AP No.3: Senior Security Guard (RTG)**



### Announcing Public and Mustering at Assembly Point No.4

During an emergency, following number of security staff are to be shuffled and made available at the **Assembly Point No.4 (In Front of MITT Yard Office)**

Location / Staff	Normal	ERT
Trestle-4	1	1
From <b>ECY</b> (Shuffled security)	0	1
From <b>Toyofuji-2</b> (Shuffled security)	0	1
From <b>RA-2</b> (Shuffled security)	0	1
From <b>QC</b> (Shuffled security)	0	1
<b>Total Available Strength</b>		<b>5</b>

Mustering for:

**Operators / Checkers**

**Shipping Lines Staff**

**Port Users/Truckers**



**Commander of AP No.4: Senior Security Guard (ECY)**

### Action Plan # 3

#### Communication

An emergency situation incurring on the terminal is to be informed to External Security Authorities such as Thanlyin and Kyauktan Administration Offices, Police stations and Fire brigades.

In addition, any emergency situation must be reported right away to the Myanmar Port Authority (MPA) and Department of Marine Administration (DMA).

Under the supervision of PFSO/Security Supervisor, duty CCTV Security Staff in the CCTV Main Control Room is to make phone calls to the above external authorities while ERT Members are in preparation of mustering.

Detailed contact numbers are available in the PFSO Room and CCTV Room.

#### Cooperation with external security authorities

Security staff assigned at the rest of individual locations are to work out closely with external authorities as soon as they are on terminal to help handle emergency.

## **Evacuation**

Under the supervision of PFSO/Security Supervisor, all ERT Members respectively assigned as area-wise commanders are to work out closely each other and to announce public to muster at the designated Assembly Points.

PFOS/Security Supervisor is to check for available MITT Drivers with Admin and Operations Departments through sectional supervisors.

With regard to the degree of urgency and depending on the situation of emergency, it is to prevail up on a common sense approach to consider effective evacuation routes and process to be carried out while performing evacuation. (i.e Trestle 2 road to Main Gate, Trestle 1 road to Office Gate)

ERT Members are to carry out step by step evacuation as per emergency situation incurring over the terminal areas which Assembly Point nearest to the emergency situation is considered as a priority evacuation point.

Remember! Safety of human life is paramount during an emergency and ERT Members are to advise public not to bring along bulky properties/unnecessary items during evacuation process.

Area-wise commanders of security staff are to conduct headcount for ensuring no one is left during evacuation.

### **Equipment/ Resources Utilized**

Siren (To alert staff and public on terminal about emergency situation)

Channel 16 Radios (To communicate with MPA Port Tower , DMA and Ships berthing alongside)

Walki-Talki Radios (To communicate among the MITT Security Staff/Supervision)

Fire Extinguishers , Fire Hoses and Pipes (For firefighting in case of fire emergency)

Terminal Suzuki Light Truck 2 units (For movement of emergency resources/evacuation)

MITT Office Ferry Buses x 4 units (For evacuation)

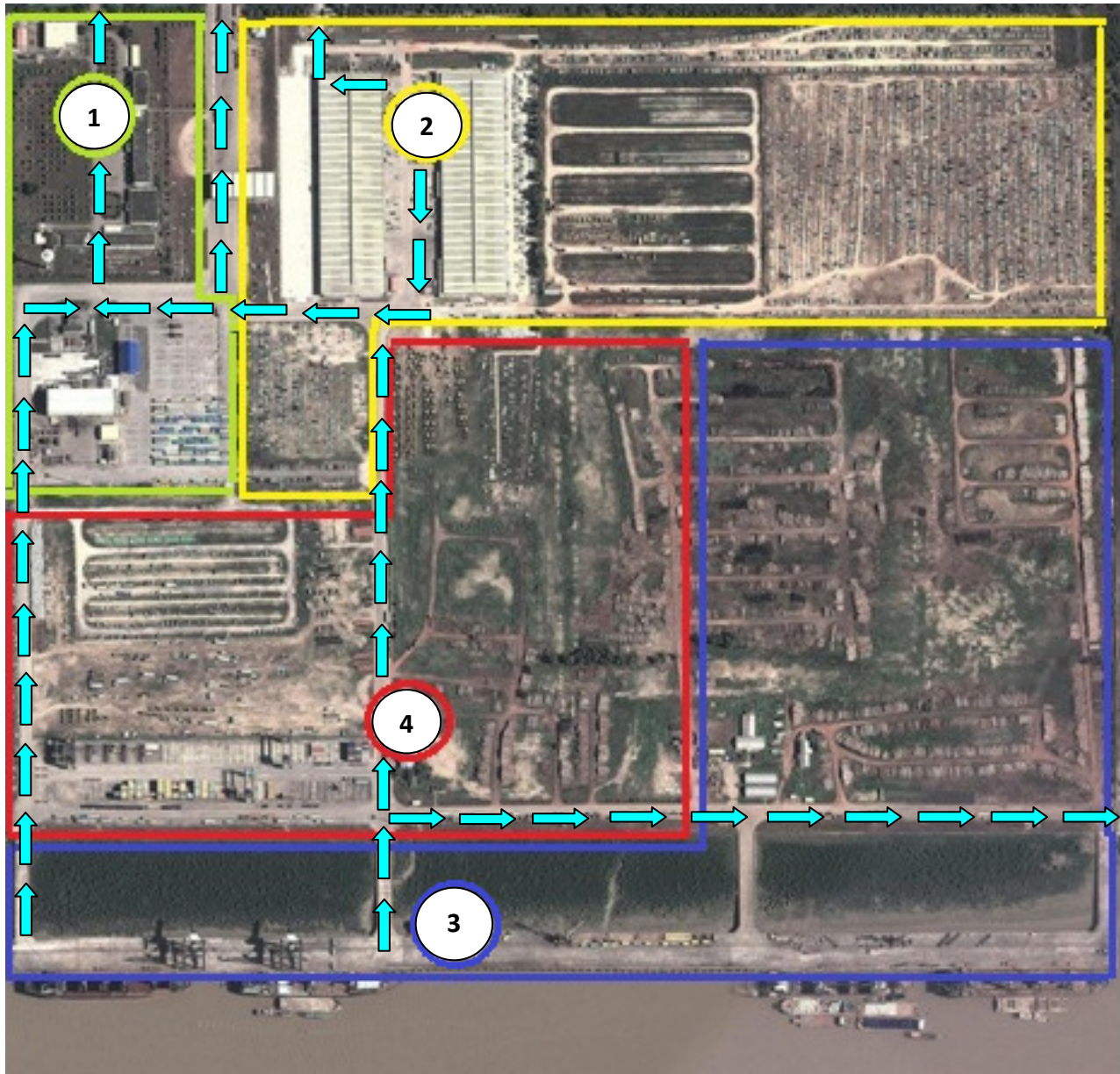
MITT Office Cars (Minimum 4 units to maximum all available cars during emergency)

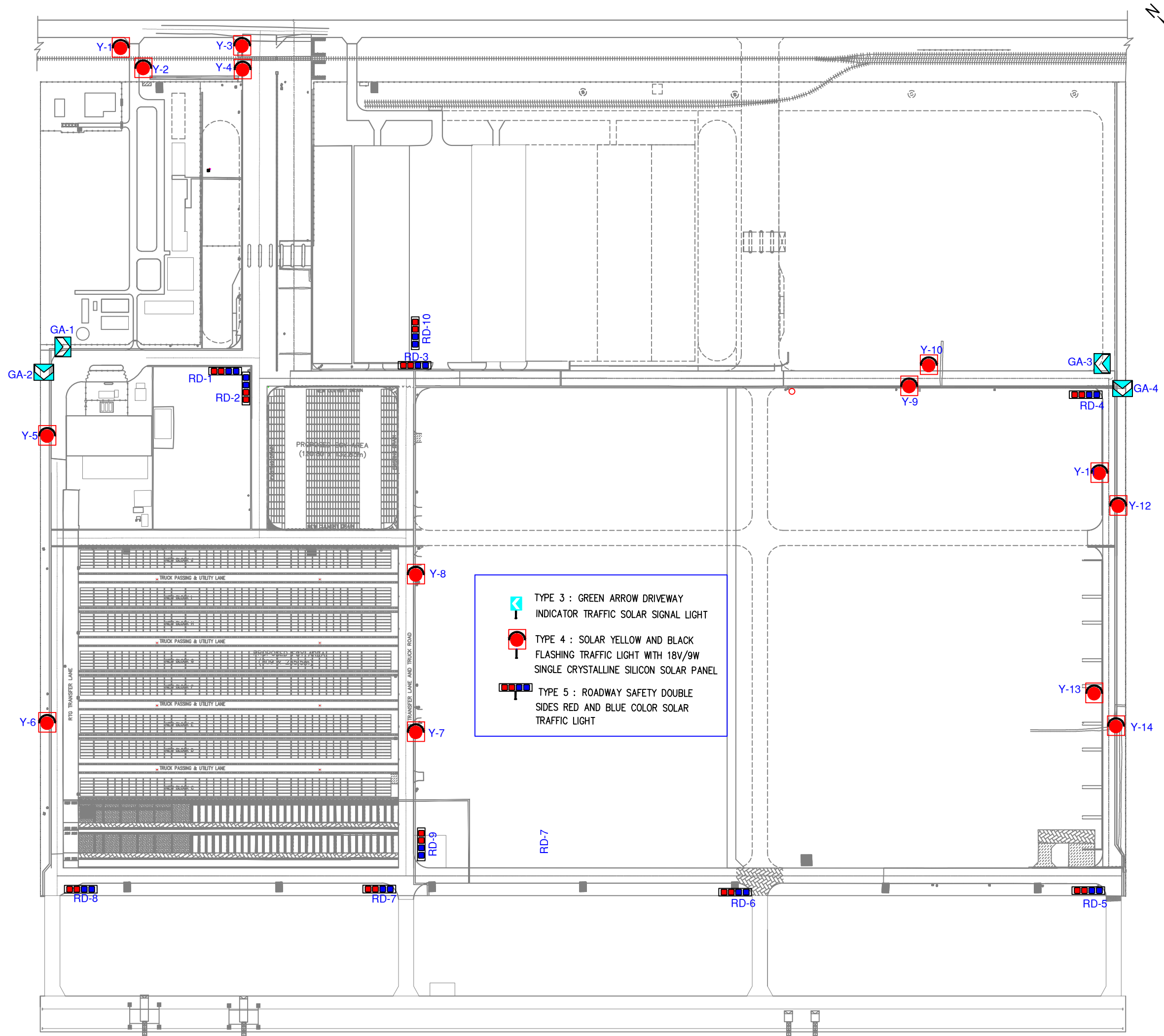
Low-bed Trailer x 3 units (For massive movement of resources/crowd movement)

Megaphones (For Public Announcement)



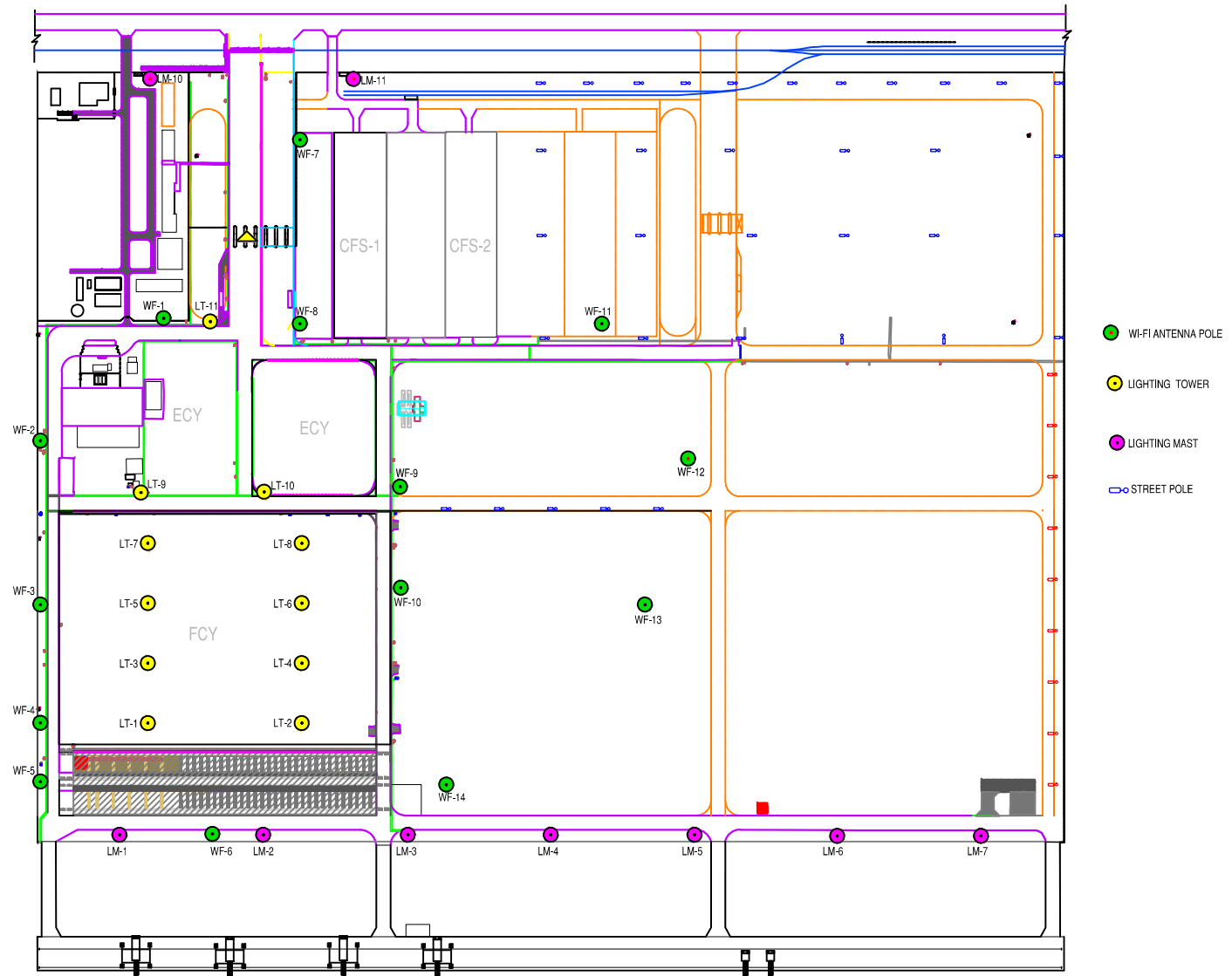
Assembly Points and Evacuation Routes



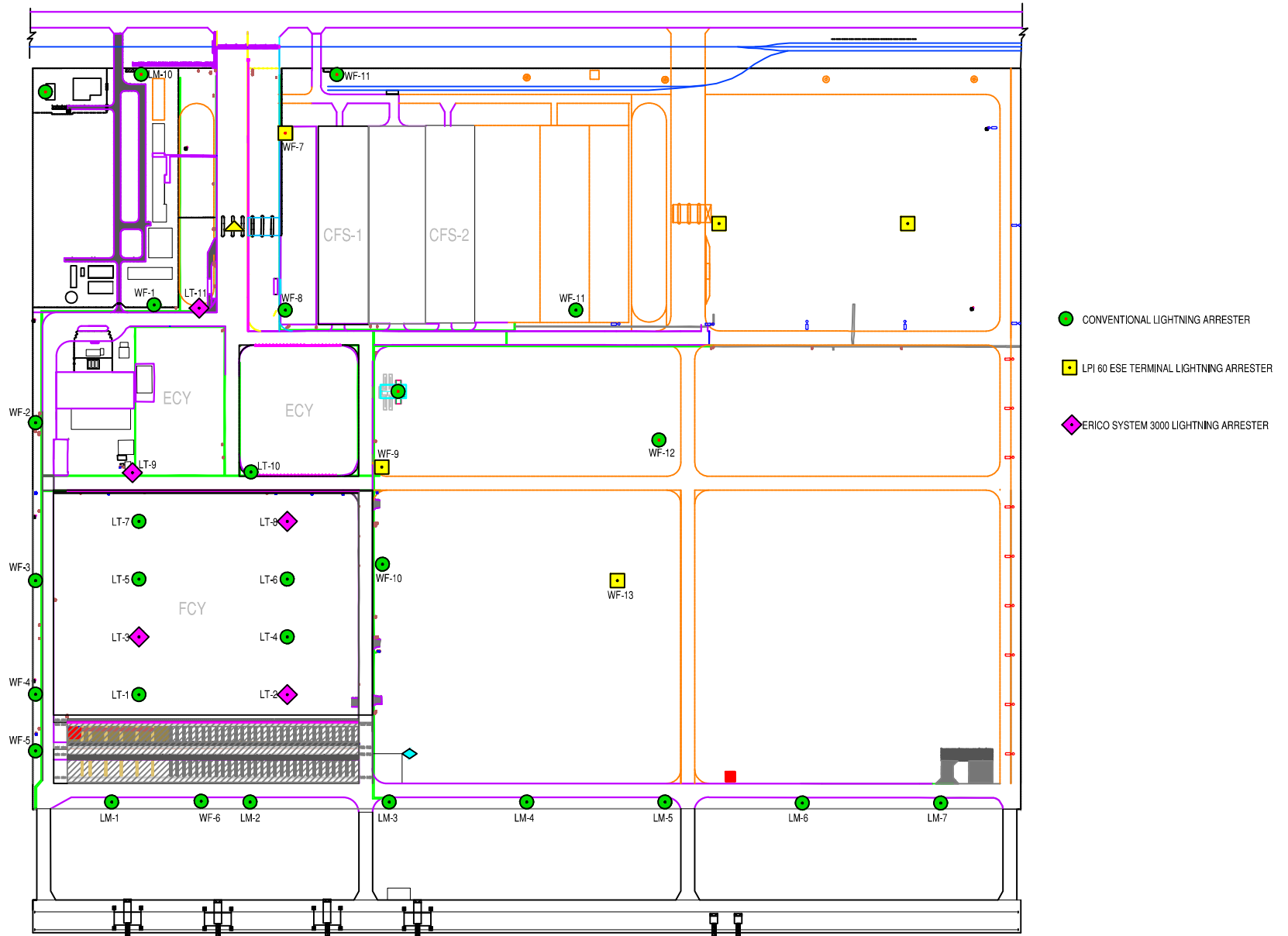


TRAFFIC SIGN AND SIGNAL PLAN



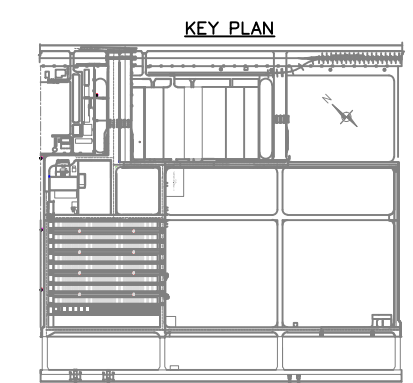
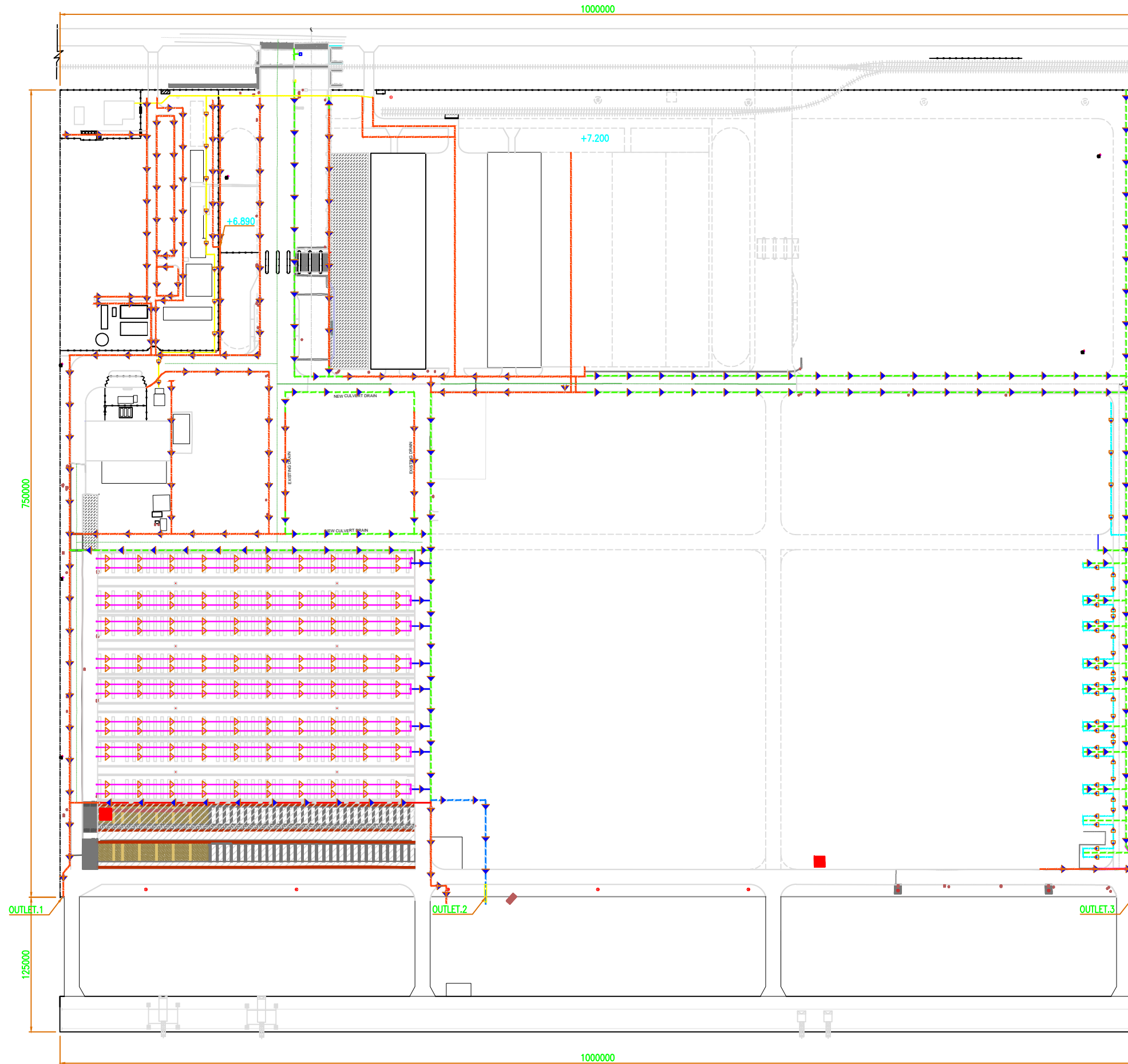


LIGHTING LAYOUT PLAN

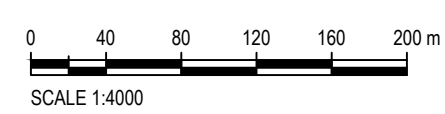


LIGHTNING ARRESTER INSTALLATION LAYOUT PLAN

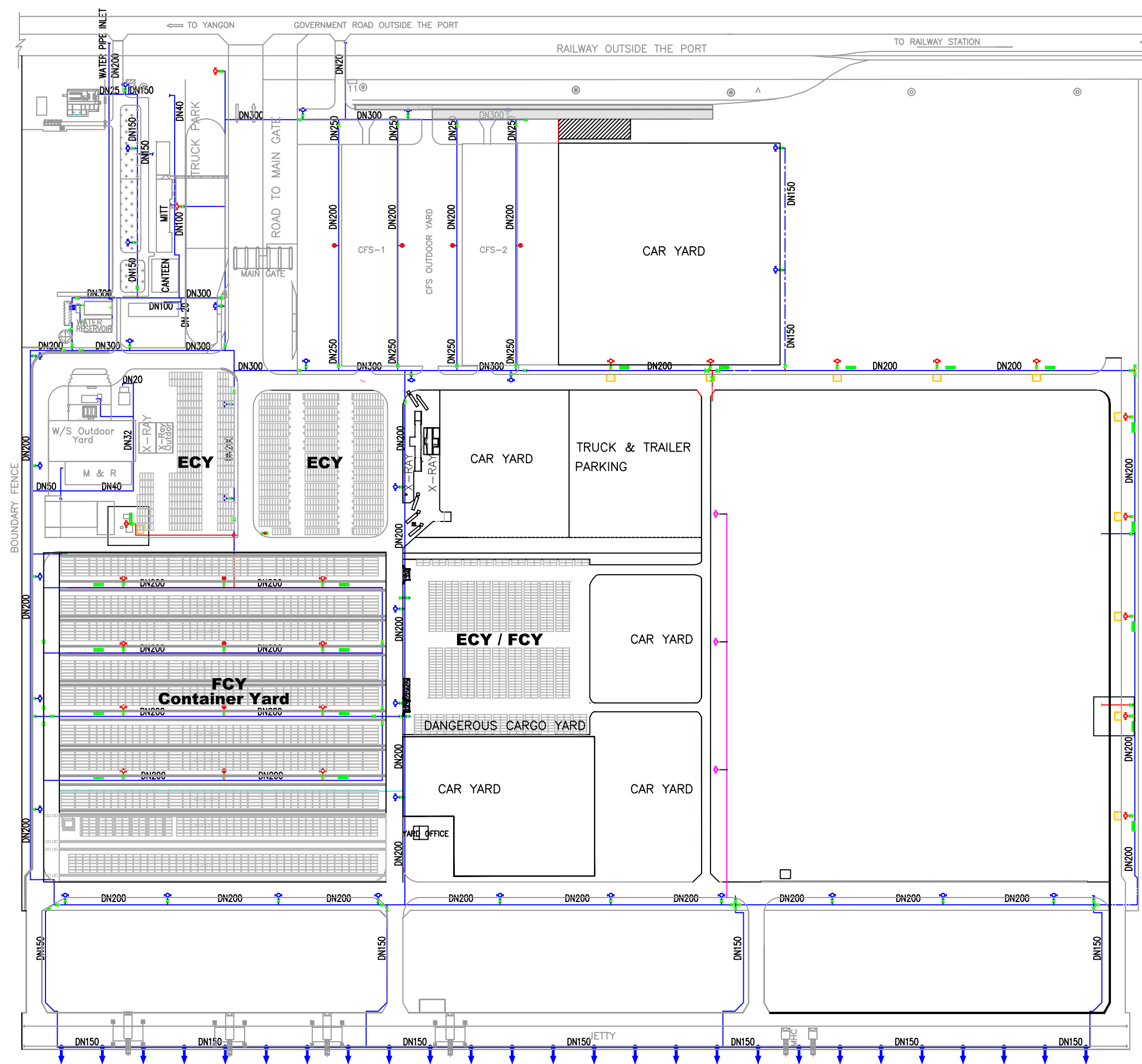














- LEGEND/NOTES:
- NEW DRAINAGE
  - EXISTING DRAINAGE
  - NEW SUB-SOIL DRAINAGE PIPE
  - NEW TEMPORARY DRAINAGE
  - DRAIN DIVERSION



GENERAL PLAN DRAINAGE NETWORK  
SCALE 1:4000



# LEGEND/NOTES:

-  : GATE VALVE
-  : HYDRANT W/ GATE VALVE
-  : TWO WAY CONTROL PILLAR HYDRANT C/W 2 nos LANDING VALVE
-  : HYDRANT UNDERGROUND TYPE
-  : TEMPORARY FIRE HYDRANT
-  : SHIP WATER SUPPLY & FIRE HYDRANT
-  : FIRE FIGHTING LINE
-  : TEMPORARY FIRE FIGHTING LINE
-  : FIRE HOSE CABINET (COMPLETE WITH 3 NOS. TYPE 1 HOSE NOZZLE AND T-VALVE KEY.)
-  : FIRE HOSE CABINET (COMPLETE WITH 3 NOS. TYPE 2 HOSE NOZZLE AND ONE DIFFERENT TYPE T-VALVE KEY FOR UNDERGROUND TYPE HYDRANT )

FIRE HYDRANT SYSTEM LAYOUT PLAN



# **MITT Flood Preparedness Checklist**

This guide allows to prepare for a flood and keep MITT Staff and Important Documents to be safe when the waters rise.

It is important to note that natural disasters can strike with a little warning time. Floods are NOT the common disaster in MITT since the original design level of MITT is safely higher than chart datum in terms of 7.5m high on quay deck and 8m high on landside CY storage yard and warehouses.

This guide helps MITT Staff preparing a “To-Go Kit” and safeguarding MITT Staff and important office documents by way of evacuate safely in case of flood.

## **1. Watch for Flood Emergency Alerts**

It is to be aware and ensure that every staff doesn't miss a flash flood warning. Upon a flood news and warning issued by the authority concerned, MITT Safety Committee (and/or) SHE Officer shall communicate such information to all staff by email or hard copy prints.

Note: A flood watch means that a flood is possible, while a flood warning means the natural disaster is already occurring or is imminent.

## **2. Purchase an Emergency Weather Radio and Torch Lights**

Flooding natural disaster may disrupt normal communication channels and knock out the power. In this circumstance, it is helpful to have an emergency weather radio (portable size with AA batteries) on hand. Such emergency weather radios can be active up-to-date flood news in case of loss of communication through normal communication channels. Handy torch lights are also be taken into account for ready-to-use condition as and when necessary.

MITT Safety Committee/SHE Officer shall be responsible to ensure the availability of above requirements of emergency weather radio and torch lights as soon as flood warning issued by the government for Thilawa Port.

## **3. Secure Important Documents in Your Emergency Bag**

It is necessary to make available Emergency Bags in every department.

It is recommended that individual department shall organize their vital/important papers keeping in a fireproof lockbox or any means of safe box that can survive severe weather or travel with the staff. If any staff do not have time to gather all of the documents in one spot, at least take inventory so the Department Heads know where the most important files are. The vital documents of the company are shown below, but not limited to –

MITT Company Registration, BOT Contracts and other administrative papers – Admin Dept

MITT Financial and Insurance Policy Papers – Finance Dept

MITT Customer Contracts/Agreement - Commercial Dept

Documents contain high level information for BU Head – GM Office

Company Tax records and Cash in hand – Finance Dept

It is recommended to proactively digitize important documents and upload them to a cloud-based storage system (or) keeping them at a secured off-site location where there is an integrity for information security.

#### **4. Vital Supplies for Emergency Flood Kits**

It is recommended having to-go kits filled with medicines, asthma inhalers, nonperishable/dried food such as biscuits and cookies, a multipurpose knife, a flashlight with extra batteries, bottled water, first-aid kit and a whistle or noisemaker.

Upon receiving flood warning, MITT Safety Committee shall advise MITT Canteen to pack dried food and bottled water into individual plastic bags.

#### **5. Use Landscaping to Improve Drainage**

Protect drainage against flooding wherever possible by implementing design techniques that promote effective drainage. MITT engineering department shall ensure that the drainage systems are maintained properly causing slope away from MITT Landside to river-side in all directions.

It is also recommended to have submersible pumps under engineering department's control in order to quickly remove waters where it is necessary to maintain some important areas less flooded such as Data Server Room, New Car Yard, Reefer Station Area, DG Storage area..etc.

#### **6. Prepare an Emergency Plan for Desktop Computers**

It is recommended to have an emergency plan to raise up “system units of desktop computers” in case of any flooding condition.

#### **7. Consider a Flood Insurance Policy**

It is good to purchase a flood insurance policy despite there is less possibility at MITT. This will ensure MITT to have less burden in case of any flood hits MITT, Thilawa Port.

#### **8. Create an Evacuation Route (Think ahead of Flood)**

It is recommended that MITT Safety Committee shall consider an effective evacuation route for the staff once flood warning/news issued by the authority. If there is possible flooding situation,



all staff shall leave the terminal before flood comes. Only key responding staff should be stationed on terminal if the flood is not life threatening situation.

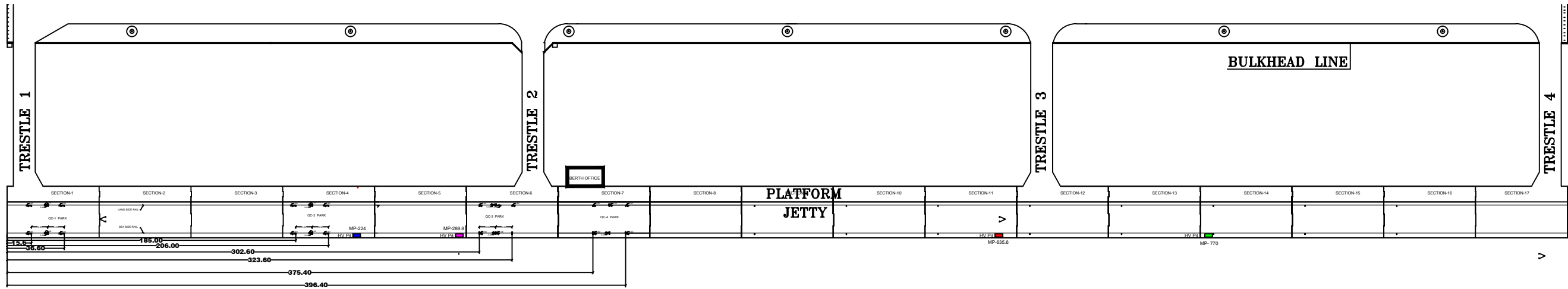
## **9. Setup a Communication Network with Local Authorities**

During flood disasters, it is recommended to have a communication network with local authorities for better assistance in creation of evacuation routes and saving lives of MITT staff.

MITT Safety Committee shall ensure emergency contacts in case of flooding situation and setting up a communication network using mobile phone's application such as "Messenger" so that the real flood information can be communicated each other during the flood in order to get assistance for Medicine and transportation devices in case of emergency. CH16 Walki-talki can be also used to communicate with Port Authority during emergency.

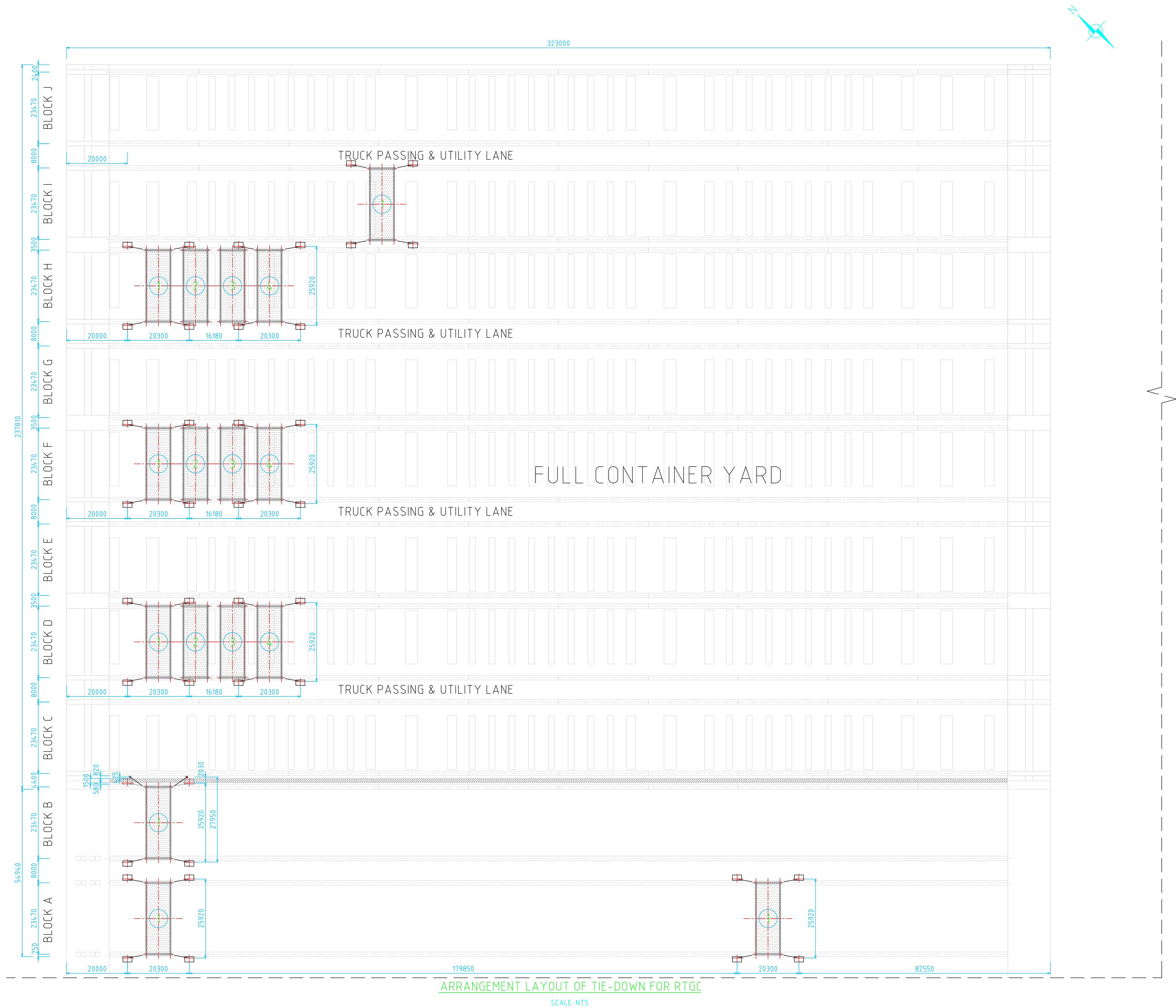
With these flood preparation steps, MITT will be able to assure that its staff shall be in safety during (and/or) before the flood comes.

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YANGON RIVER





ARRANGEMENT LAYOUT OF TIE-DOWN FOR RTGC

SCALE: NTS

Myanmar International Terminals Thilawa

## Storm Protection Plan



## Storm Protection Plan at MITT

### Purpose

Previously we have no evident of strong wind speed of over 33m/s (78 mile/hr) at the area of Yangon. But Nargis Cyclone devastated Yangon and Delta Area in 2<sup>nd</sup> May 2008 and it highlighted that Yangon area has the threat of storms in rainy season. Nargis Cyclone stormed at Yangon with windspeed about 120 miles per hrs. Therefore MITT needs to prepare for protection of storms as far as we can.

The last experience of Nargis cyclone that devastated MITT, showed that some properties can be protected from strong wind although majorities are not. All MITT's civil structures were designed and constructed based on the historical data of maximum wind speed of 33 m/s. Anyway we believed that some properties of MITT can be protected to reduce damages.

The purpose of the Storm Protection Plan is to reduce the damages and personal injuries.

### Plan for Protection, Evacuation and Resettlement

It is necessary to be considered for storm protection, evacuation and resettlement in three stages which are "Before Storm", "During Storm" and "After Storm".

#### (1) Before Storm :-

- Getting Storm warning:-
  - a. Information and warning from authorities will come to Administration Department. Administration Department collected the information from Ministry of Transport, MPA and Department of Meteorology & Hydrology and internet weather reports.
  - b. According to The Myanmar Port Authority's storm protection plan, various strong wind (Storm) stages will be indicated by color.
    - i. Yellow Stage – Storm start form the Bay of Bengal and Adman Sea
    - ii. Orange Stage – Storm Moving toward the Myanmar coastal
    - iii. Red Stage - Storm approaching to the coastal.
    - iv. Brown Stage – Storm hitting
    - v. Green – After Storm
- Confirmation of warning and taking action:-
  - a. When it was confirmed on dangerous storm approaching to Yangon that suppose to be hit MITT, AGM will order to take necessary action in right timing.
  - b. The announcement regarding to the storm shall be issued to Staffs from Administration Dept.

- Evacuation :-

- a. All persons except the staff who assigned and responsible person, should leave MITT after announcement of storm.
- b. The transportation of staff will be arranged by Administration Department as possible.

- Protections

- a. **Equipments:-**

- i. The **RTG** will be parked at parking places of FCY and fasten at tie down hooks.
- ii. The **HMC** will be parked at the middle of the Jetty (parking place that was specified), Jack up, Boom down and fasten as required.
- iii. The **Reach Stackers** are placed at flat yard such as between CFS keeping away from Container Boxes and falling objects.
- iv. **Vehicles, Forklifts, office cars** are kept inside CFS and Workshop. The **Trailers** are placed on the main road approaching Trestle No-2.
- v. **Rosa Buses** are parked in Parking of MITT Buildings.

- b. **Buildings:-**

- i. Building Door Glass will be covered by Ply woods and fastened. The Plywood with timber to cover at the Main Large Entrance 4 Nos and Entrance 4 Nos.
- ii. Some Important Rooms – The window Glasses of CCTV room, IT room, GM, AGM, FM rooms will be covered with Plywood and timber.
- iii. Each Departments and Individuals are taking care of their important Documents and Computers, Safes and others to protect storm. The Safes are recommended to put on the wooden stacks permanently.  
  
Eg. Put the Computers and Electrical appliances are put on the table or high place and secure place. Important Documents are covered with plastic sheets, etc.
- iv. Although the CFSs withstand for wind speed 120 KM/ hrs, we can not have means to do special protection above that wind speed. But the CFS Rollers doors will be fastened and blocked with laden Containers as far as possible.
- v. Most of the MITT radio receivers (Satellite Receivers, Internet Receivers, etc.) except one which will be left for information receipt are dismantle and keep in secure placed.
- vi. Collection fresh water from Thilawa Reservior and reserve at Tank as possible.



**c. Operation:-**

- i. The Container boxes especially Empty containers are lower down from the high stacking and fasten securely.
- ii. Management will give instruction when the operation will cease because the preparation for storm protection will take some time.
- iii. The Vessel berthed at MITT should sail out from MITT before Storm by order of Myanmar Port Authority.

**d. Security Arrangement:-**

- i. The minimum strength of responsible persons and staff are assigned to take care of MITT during Storm. At least the following persons will require to assign.
  1. Security team - 1 Team
  2. Engineering Staff - 1 or 2 Person
  3. Operation Staff - 1 or 2 Person
- ii. Management will assign Duty Officers (one or two persons) to take responsibility during Storm and specify his duties.
- iii. To arrange for Communication system during Storm. Administration and IT Department will arrange for WCDMA or Radio Wireless or suitable phones.
- iv. To arrange for foods, water, torch lights and necessities for the persons who assigned to stay at MITT.

**(2) During Storm**

During the storm passing through MITT, it is necessary to protect the personal safety and damages of the properties as possible.

• *Duty and responsibility of Duty Officers*

Duty Officer will be in-charge to take care of safety and security of MITT and assigned staff. The safety of assigned Staff should be priority. MITT Management will give detail instruction of his duties during storm as follow.

- i. Duty Officers will be leaders of the team who assigned to stay at MITT according to the above security arrangement.
- ii. Continuous contacts and communicate with Management with appropriate ways
- iii. Act as coordinator to communicate between Authorities and Vessels.
- iv. Main Duty is to do Safety of the persons assigned in MITT and Security of MITT properties with full strength.

- v. To help the customers and other persons at MITT to stay at a safe place.
- vi. To shut down the Computer servers, CCTV System and electric power supplies when they are necessary to in conjunction together with the responsible persons.
- vii. To get necessary assistance from other parties (if required). For example-Thanlyin Naval Command office and Marine Police Force.
- viii. etc.

- The Electric Power

- a. Engineering Staff assigned, has to discuss with Duty Officers and decide when electric power will shut down.
- b. It is necessary to consider the consequent of the effects of electric power shut down. (For example:- the sewage treatment plants, MITT office building securities, etc.)

### (3) After Storm

As soon as the storm calm down the following tasks need to be carried out so that we can rescue properties and persons from damages and injuries.

- Inspection all buildings, civil structure and equipments if there have damages due to storm
- Inspection and fixing for Electric Power and Water Supply supplies.
- Reporting the Damages condition to Head Office, Authorities and Insurance (If necessary)
- Remedy the damages

## Conclusion

We hope that well preparation to protect storms according to this storm protection plan; it will reduce damages and personal injuries avoiding fatal cases.

-end-

(Updated according to the resolution of Storm Protection Plan meeting on 29 April 2010.)



## **Quay Crane Tie-down Systems**

Severe wind loads have caused the collapse of many cranes. The initial failure usually occurs in the wharf hardware.

If there is more than one tie-down at a crane corner, the crane deflection may cause one tie-down to carry significantly more than its share of the load. If the tie-down system is not ductile, it may fail before the load is shared by the other corner tie-downs. This results in a progressive failure of the tie-downs and crane collapse.

### **Introduction**

Scientists are observing that the intensity of tropical cyclones (specifically hurricanes and typhoons) is increasing due to global warming. More hurricanes are reaching land, and quay cranes in hurricane-prone regions face an increasing risk. Recently, a number of cranes collapsed when subjected to hurricane forces.

These catastrophic collapses typically stem from failures in the crane tie-down system or wharf hardware, or both. In hurricane regions, two or more independent tie-down links are frequently used at each corner of a crane. The turnbuckles cannot be tightened in a way that creates equal tension between both tiedowns.

Because cranes rotate and shift laterally during a hurricane, the uplift forces in the links are neither equal nor vertical. Often the entire uplift force of two tie-downs at a corner is transferred to one tie-down, causing the more highly loaded tie-down to fail at a fraction of the design corner load. As a result, the remaining tie-down at the same corner fails before the intended load is reached, and the crane collapses.

## **Quay Crane Tie-down Drill Step**

- |        |                                               |
|--------|-----------------------------------------------|
| Step-1 | Drill explanation by SHE Officer              |
| Step-2 | Tie down Step explanation by Berth Supervisor |
| Step-3 | Drill announcement                            |
| Step-4 | Collection of lashing materials               |
| Step-5 | Moving QC to lashing place                    |
| Step-6 | Lashing and tie down QC                       |
| Step-7 | Berth supervisor conducted inspection         |
| Step-8 | Reviewing and discussion                      |