Royal HaskoningDHV
Enhancing Society Together

VERSION 7A
16 August 2018

PROPOSED EDIBLE OIL PIPELINE

for

Wilmar SA (Pty) Ltd

FROM BERTH 706 / 707 / 708
TO
RB IDZ PHASE 1A

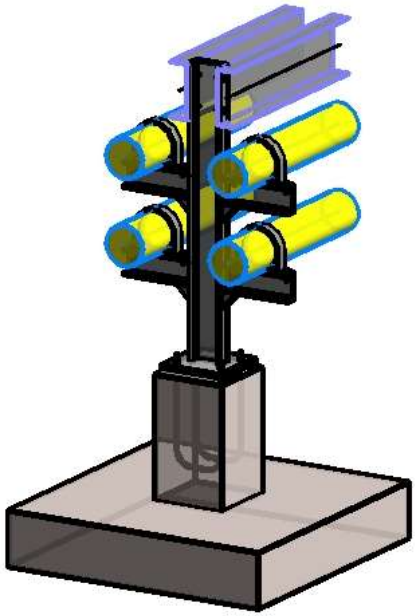
wilmar

TRANSNET
national ports authority

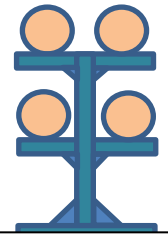
RICHARDS BAY
INDUSTRIAL DEVELOPMENT ZONE

City of uMHLATHUZE
Vision into Action

Transfer Pipe Information

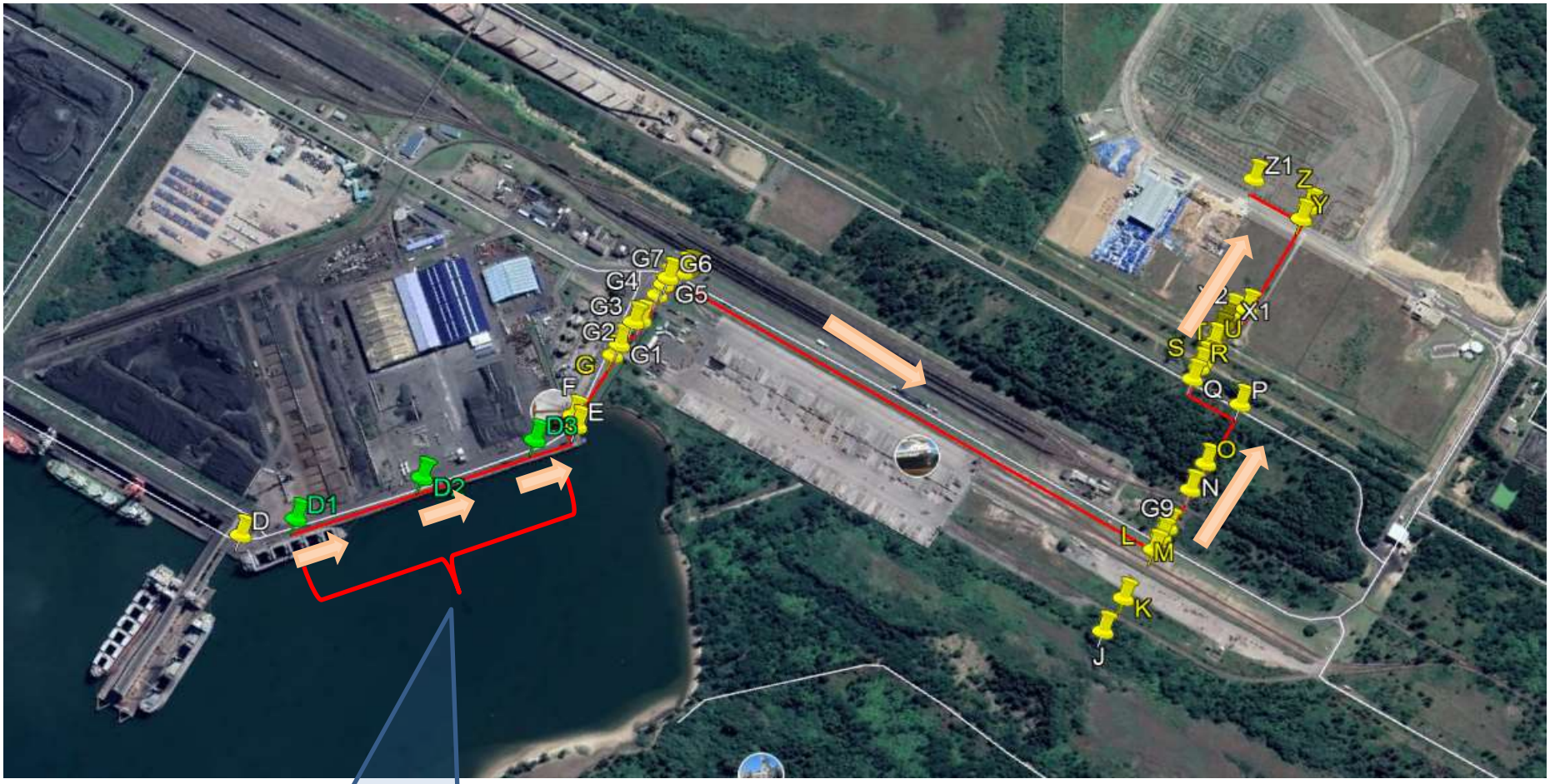


4 No pipes	DN 200 Schedule 40 OD 216mm Insulation + Pipe 316mm Weight per pipe 28,5 kg/m Filled Pipe Weight 74,6 kg/m Maximum Unsupported Span 5,79 M.
Possible pipe arrangements:	Stacked vertically, Stacked in double rows Run side by side - depends on use of existing supports and space restrictions
Preferred configuration	2 x 2
Pipe + Support Width	1 100 mm
Pipe & Support Height	1 100 mm
Low elevation runs	500 mm above ground (to keep area clean, allow mair



VIEWING BACKWARD

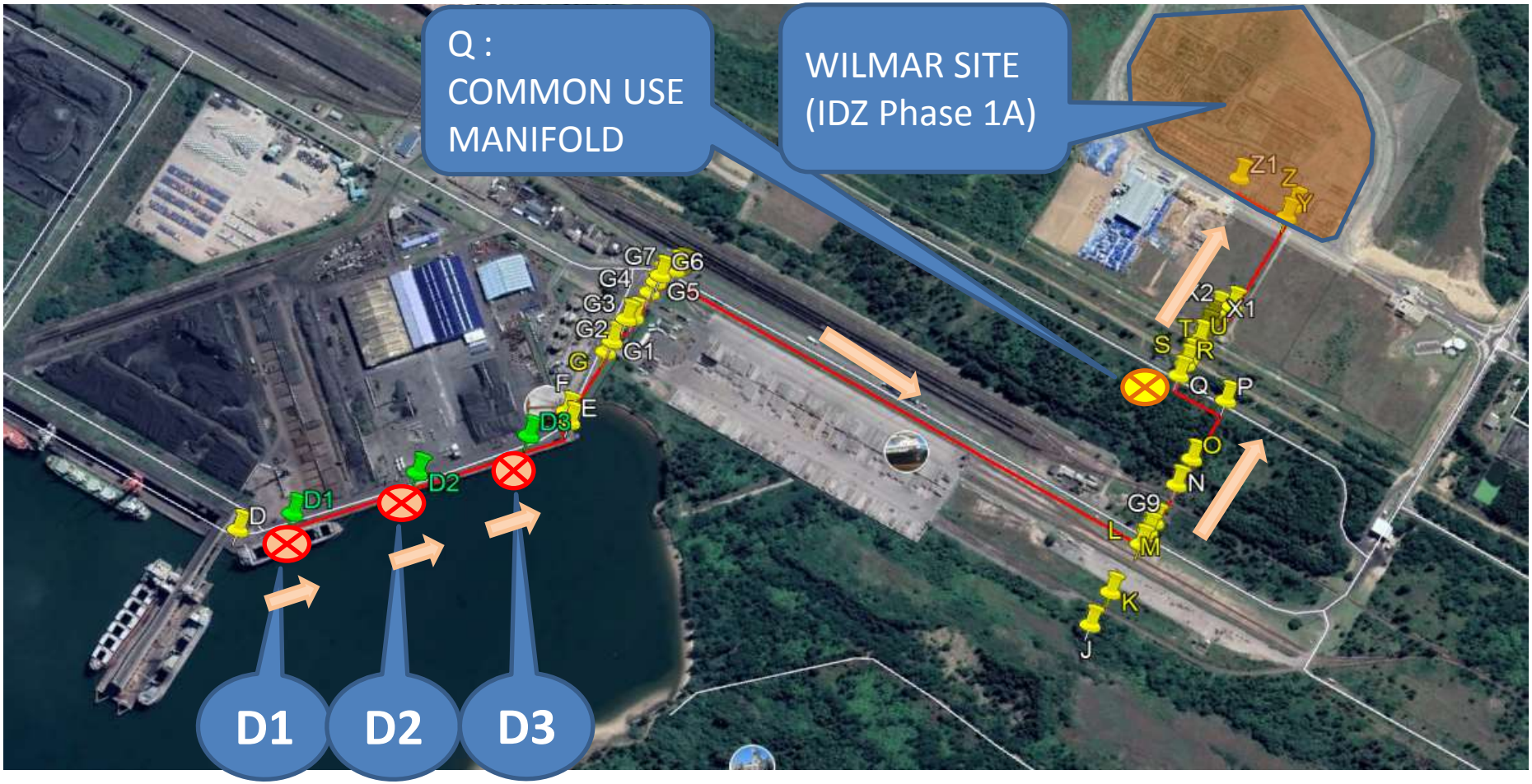

Break Bulk-606 to 608
DBT-Import
(609,701, 702)
DBT-Export
(703,704)
Break Bulk-705 to 708
DBT – Woodchips
(801,804)
Repair Quay
Liquid Bulk – Berth 209
Coal Terminal-301 to 305



Berth 706 / 707 / 708

PROPOSED PIPE ROUTE

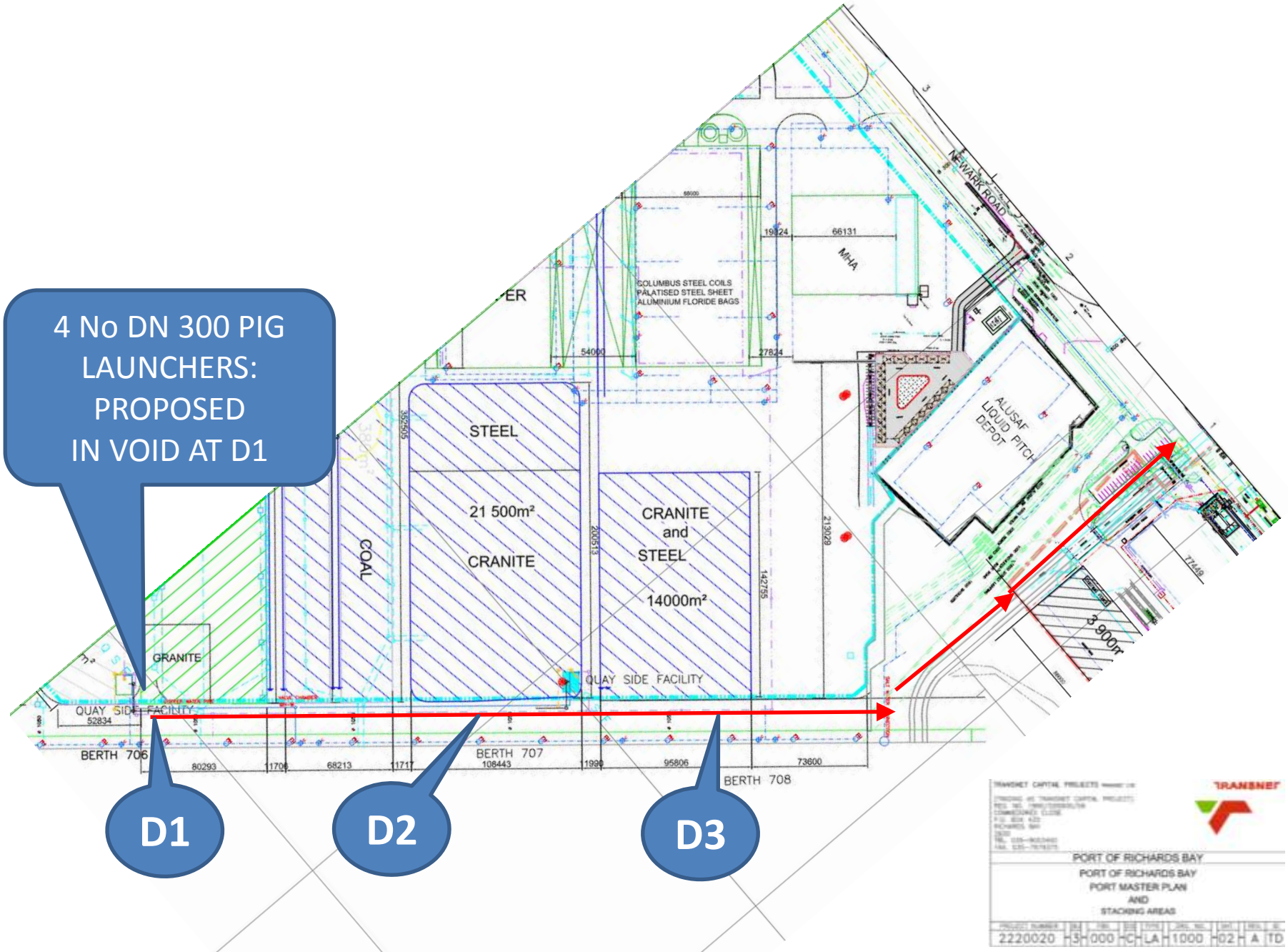
FROM
BERTH 706 / 707 / 708
TO
RB IDZ Phase 1A

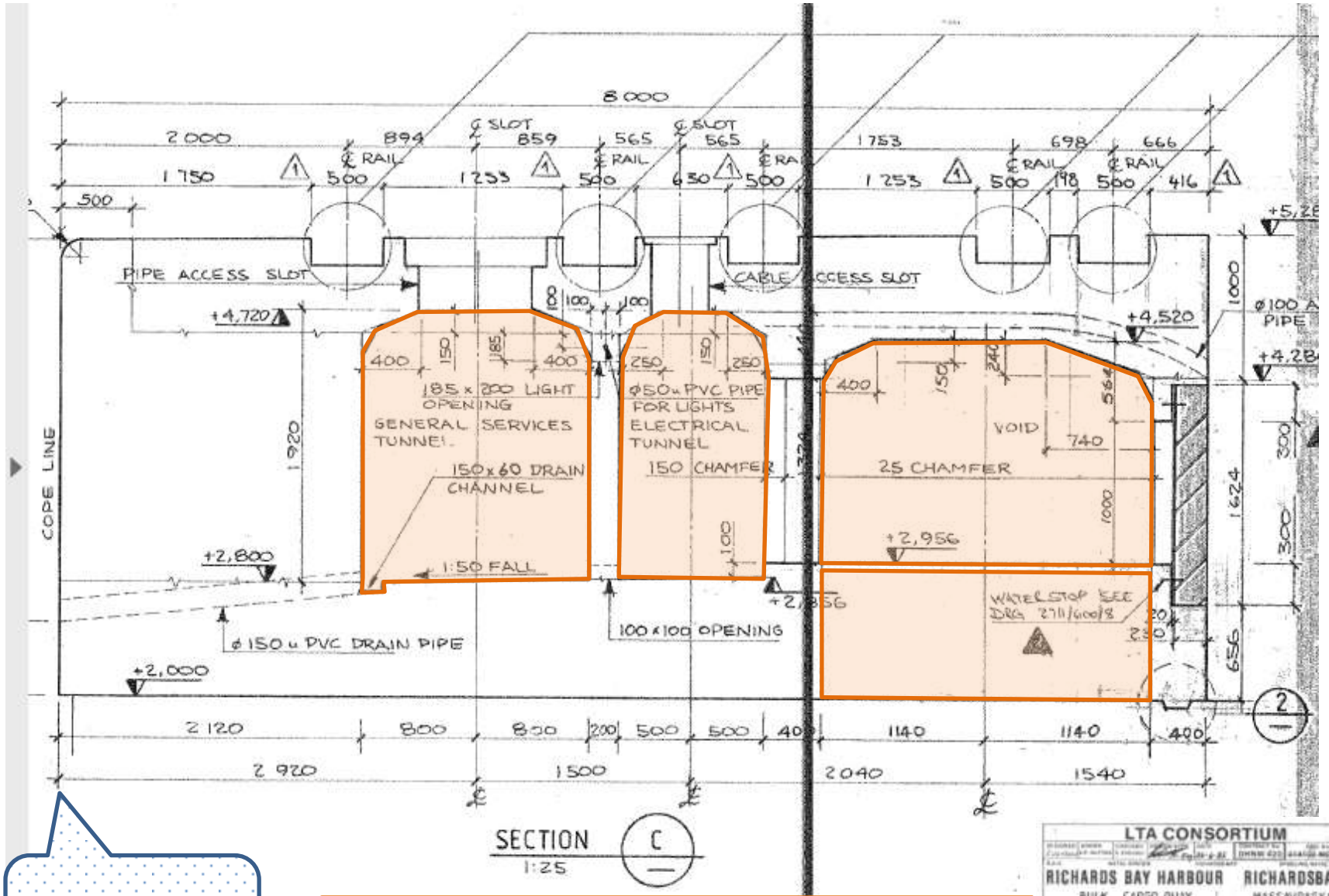


PROPOSED OFFLOADING CONNECTION POINTS

At Points D1, D2, D3

(To facilitate alternate use of open berths)

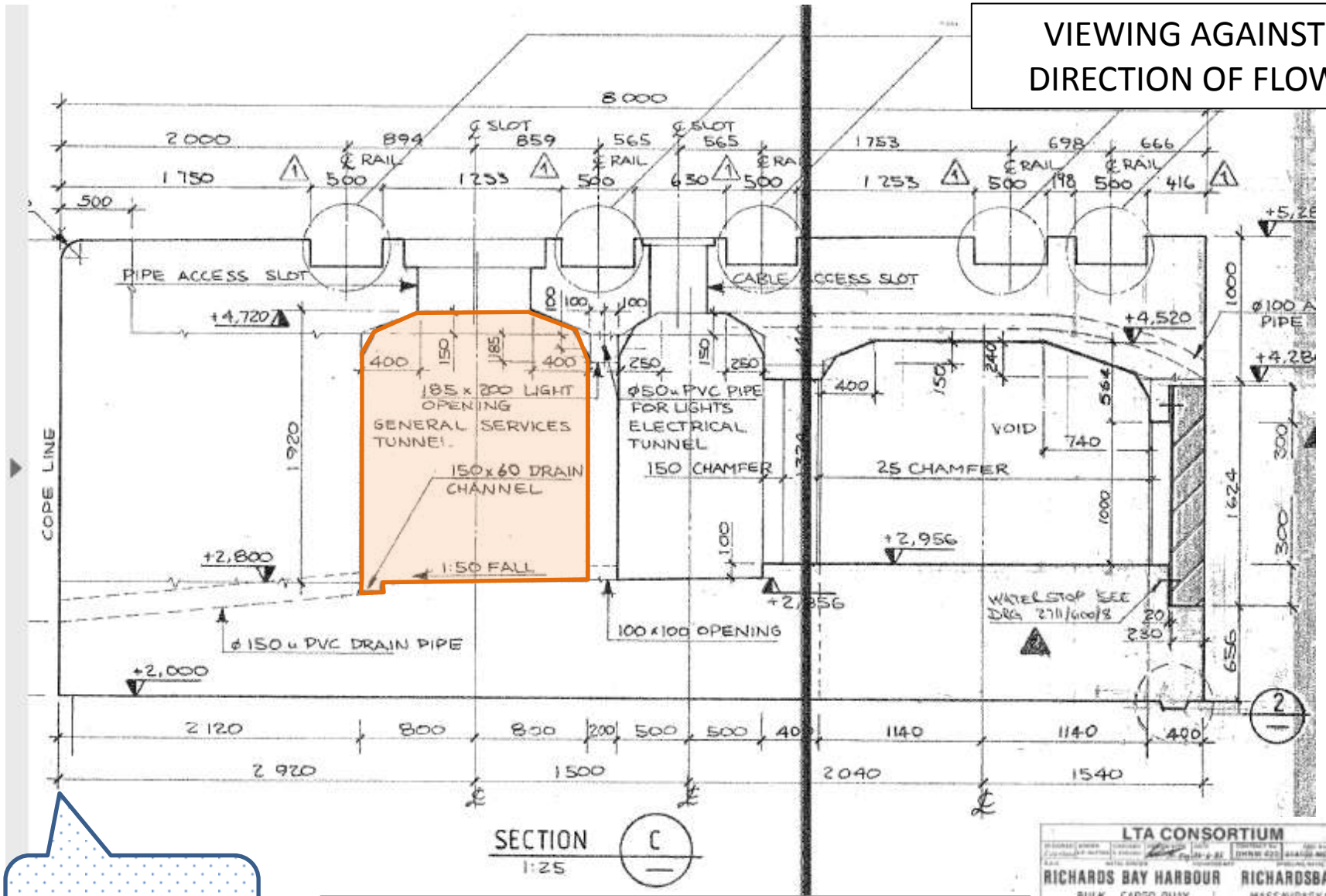

4 No DN 300 PIG LAUNCHERS: PROPOSED IN VOID AT D1
D1
D2
D3
STEEL
21 500m²
CRANITE
COAL
CRANITE and STEEL
14000m²
GRANITE
QUAY SIDE FACILITY
QUAY SIDE FACILITY
52834
BERTH 706
BERTH 707
108443
BERTH 708
73600
95806
80293
68213
COLUMBUS STEEL COILS
PALATISED STEEL SHEET
ALUMINIUM FLORIDE BAGS
MHA
66131
NEWARK ROAD
ALUSAF LIQUID PITCH DEPOT
3 900m²
PORT OF RICHARDS BAY
PORT OF RICHARDS BAY
PORT MASTER PLAN
AND
STACKING AREAS
2220020



COPE LINE

3 TUNNELS
(Berths 708 / 707 / 706)

VIEWING AGAINST DIRECTION OF FLOW

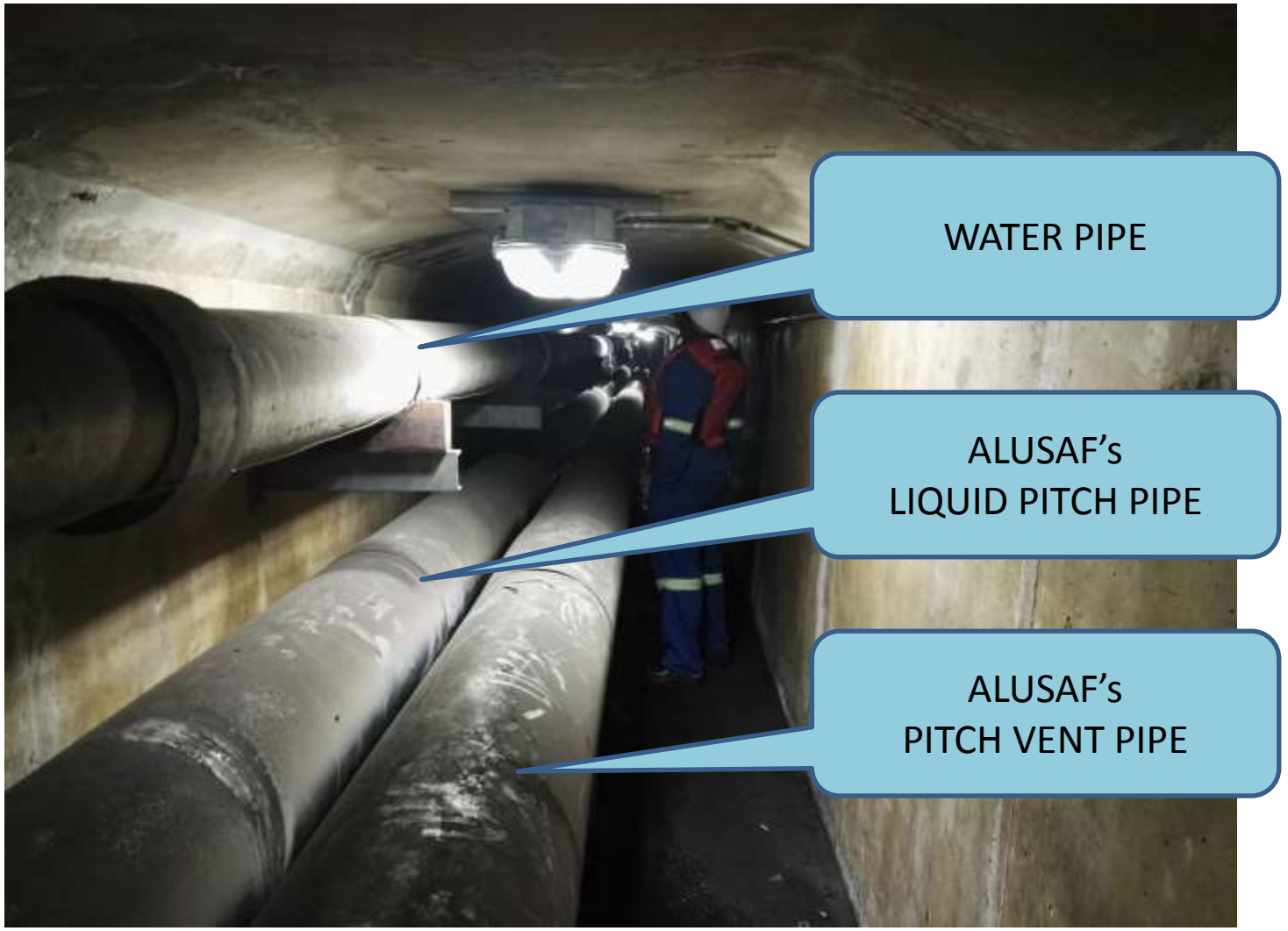


COPE LINE

GENERAL SERVICES TUNNEL
(Berths 708 / 707 / 706)

LTA CONSORTIUM
RICHARDS BAY HARBOUR
BULK CARGO QUAY
BERTH 704, 705, 706
MASS CAPPING
SECTIONS & DETAILS
RICHARDSBAAIHAWE
MASSAVRAGKAAI
AANLÊPLEK 704, 705, 706
MASSADEKSTUK
SNITTE & DETAILS

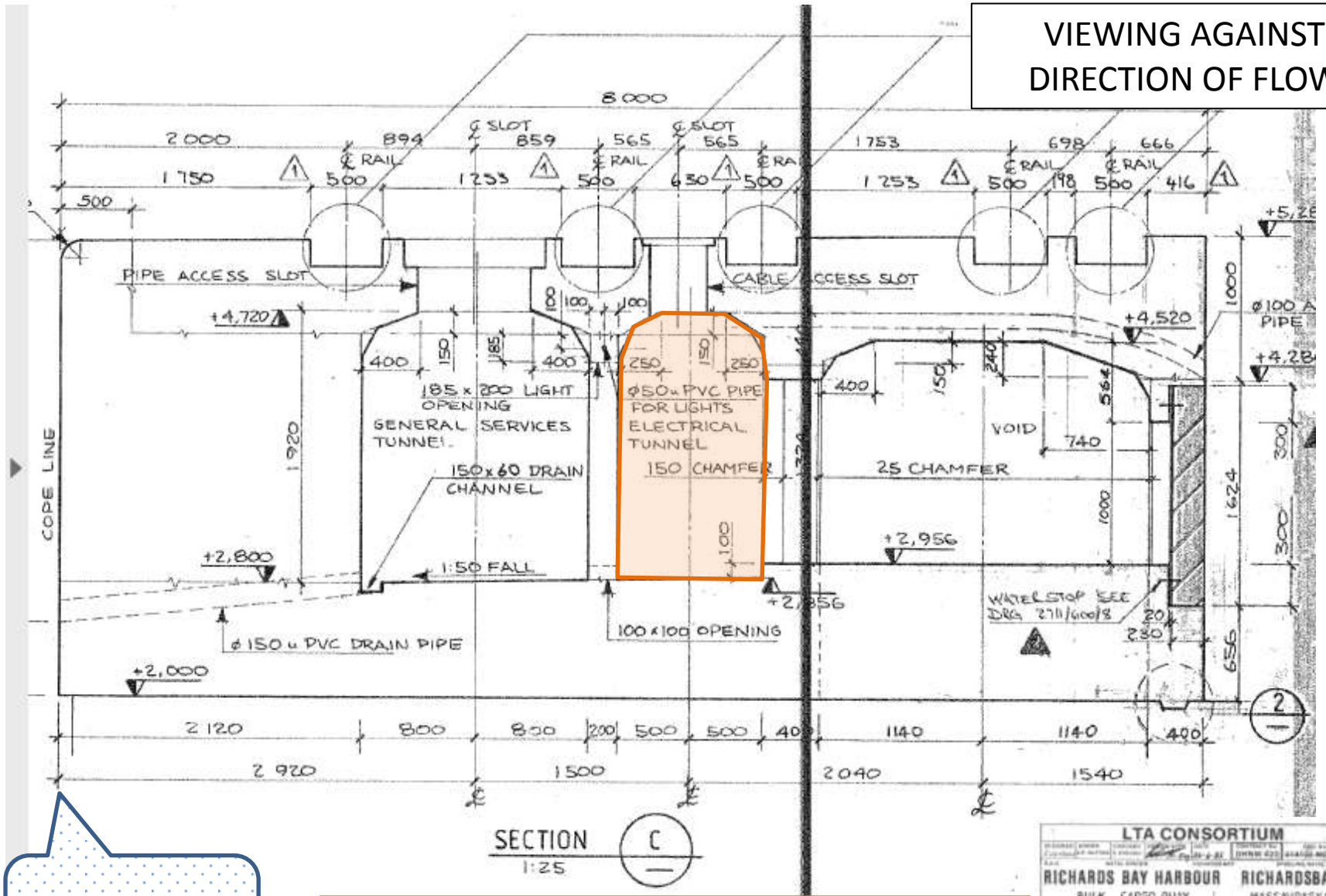
2018/08/16



GENERAL SERVICES TUNNEL
(Berths 708 / 707 / 706)

Note: Congested conditions,
no space for additional 4 x DN200 pipes

VIEWING AGAINST DIRECTION OF FLOW



COPE LINE

ELECTRICAL SERVICES TUNNEL
(Berths 708 / 707 / 706)

LTA CONSORTIUM
RICHARDS BAY HARBOUR
BULK CARGO QUAY
BERTH 704, 705, 706
MASS CAPPING
SECTIONS & DETAILS
RICHARDSBAAIHAWE
MASSAVRAGKAAI
AANLÊPLEK 704, 705, 706
MASSADEKSTUK
SNITTE & DETAILS

ELECTRICAL SERVICES TUNNEL
(Berths 708 / 707 / 706)

Note: 4 x DN 200 pipes could be positioned below cable rack, but not preferred

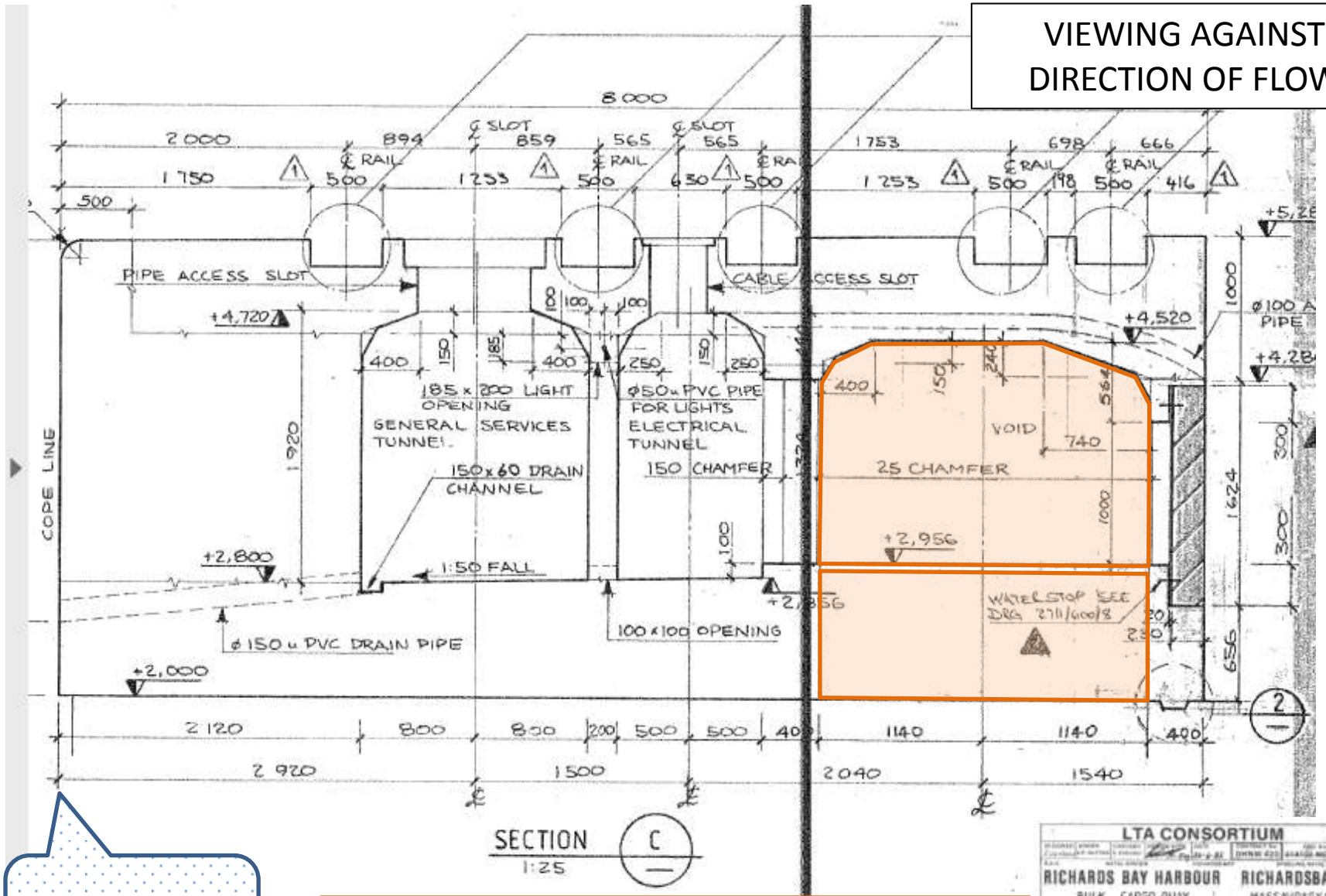
(constrained movement; possible future electrical power and signal / control cables)

ELECTRICAL CABLE RACKS

ELECTRICAL POWER CABLE

WATER PIPE

VIEWING AGAINST DIRECTION OF FLOW



COPE LINE

UNUSED VOID
(Berths 708 / 707 / 706)

LTA CONSORTIUM
RICHARDS BAY HARBOUR
BULK CARGO QUAY
BERTH 704, 705, 706
MASS CAPPING
SECTIONS & DETAILS
RICHARDSBAAIHAWE
MASSAVRAGKAAI
AANLÊPLEK 704, 705, 706
MASSADEKSTUK
SNITTE & DETAILS

GENERAL SERVICES TUNNEL

ELECTRICAL SERVICES TUNNEL

UNUSED VOID (end bricked up)

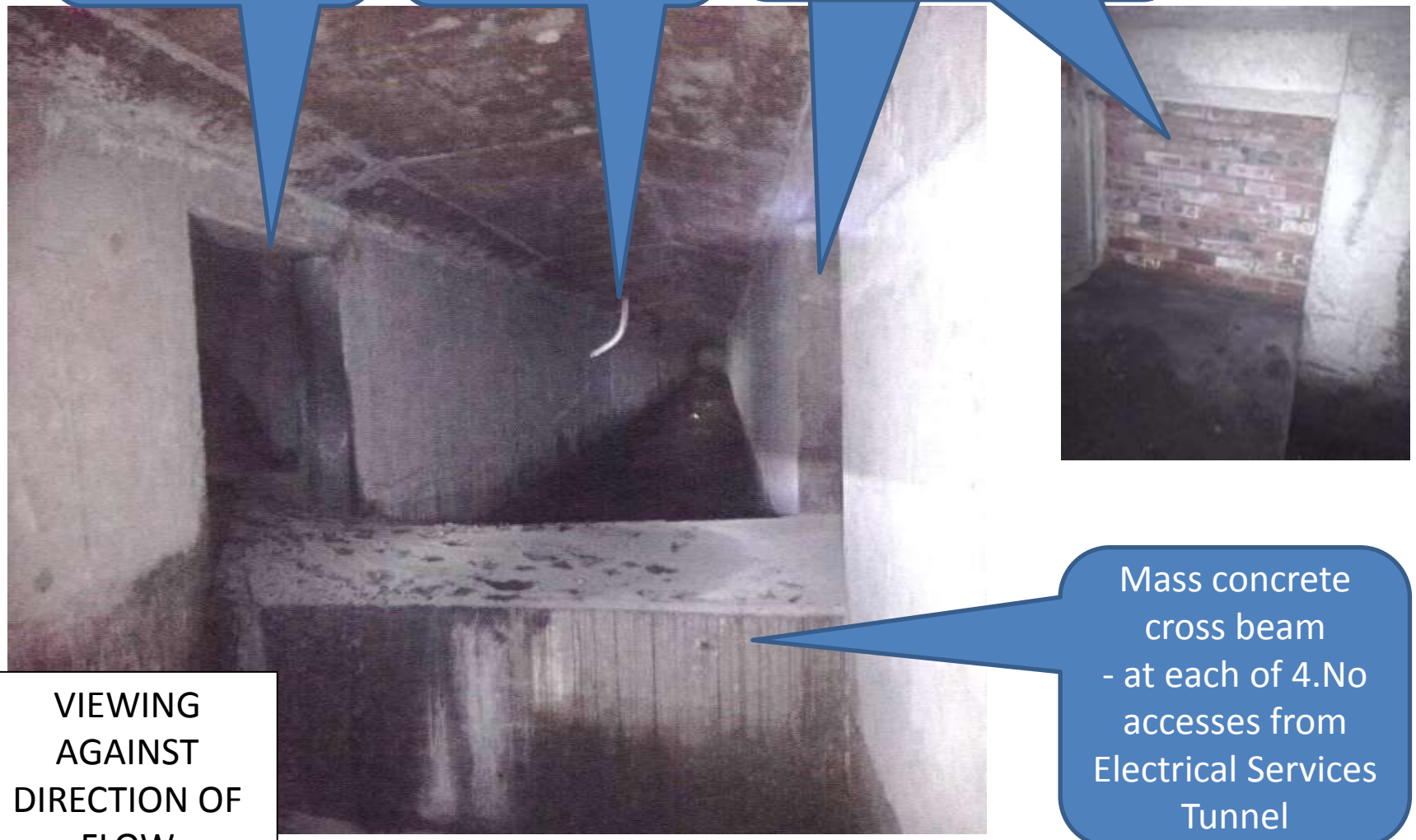
ALUSAF's TUNNEL (LIQUID PITCH and PITCH VENT RETURN PIPES)

(Viewed in direction away from the water)

POINT 'E':
NOTE HIGHLY CONGESTED CONDITIONS AT END OF ALL 3 TUNNELS

2018/07/09 13

Slides 8 to 17:
Photos taken inside unused duct along
“Series 7 Berth” (600 m long)


Access from Electrical Services Tunnel
Note DN 110 PVC x 90 deg duct
Transverse Duct (Some open and empty, some bricked up)
Mass concrete cross beam - at each of 4.No accesses from Electrical Services Tunnel
VIEWING AGAINST DIRECTION OF FLOW

Loose material
Mainly at entrances from
Electrical Services tunnel

Change of section - Precast concrete culvert

Not same as typical section at Northern and Southern ends.
Not part of original Void / 3rd Tunnel

Joints in floor - 1 every 4 m
2 m wide, ‘diamond’ shaped depressions in the concrete floor
Depressions appeared to be filled with "no fines concrete"
Some filled with loose stone
Others partially filled with concrete
Some ‘depressions’ appeared to have subsided below the mass cappping horizontal joint (up to 100 mm ‘subsidence’)

Joints in Floor

Up to 50 mm wide, some partly filled with detritus, some indicated water below
No clear indications of significant goundwater seepage / leakage into the tunnel.

HDPE pipe
Only one observed
Water? Sewage? Cable duct?

Drain pipe:

Floor was broken away at one point (approx. 150 m from northern end)

- rectangular hole cut into circular pipe below
- moving water could be seen in the pipe
- smelled of sewage, but could have been unclean harbour water

Bottom of tunnel corner (on “water” side)
Note: No drain / outlet observed

Southern end of tunnel

30° bend to the right

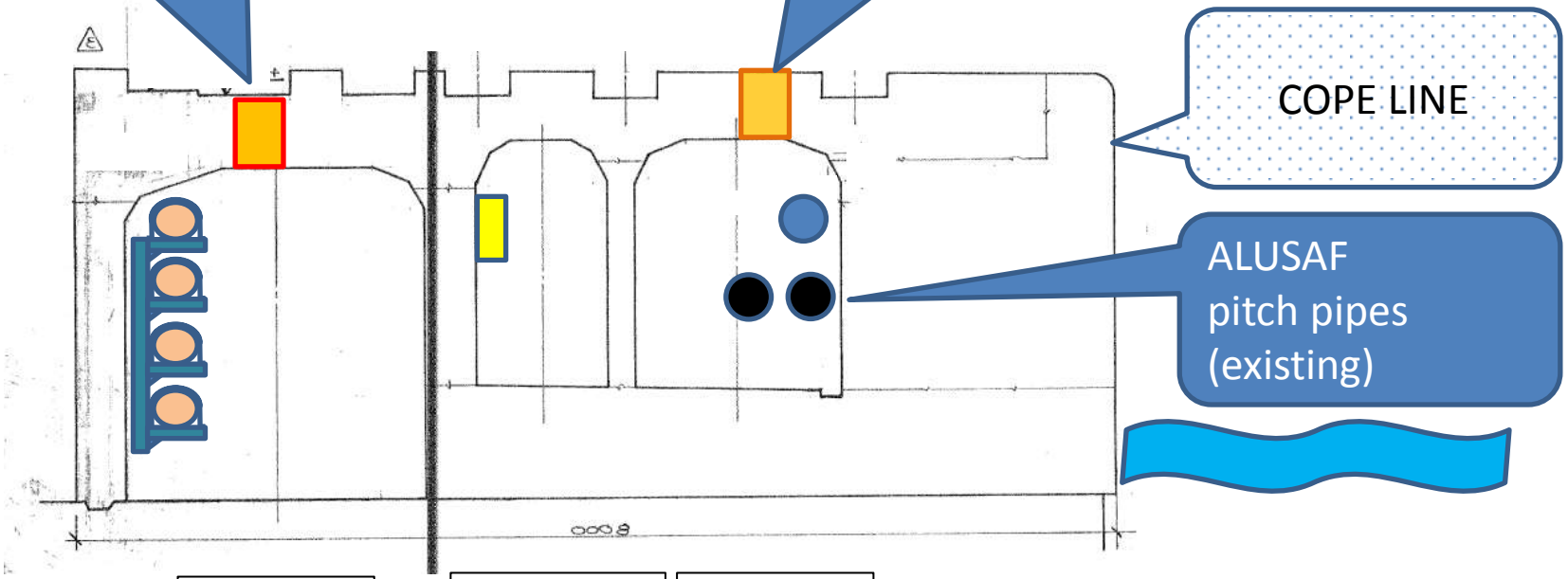
Void continues along berths 704 – 703 – 702 – 701 (not inspected), but appeared to be in a similar condition as along berths 708 – 707 - 706

Note step in floor near the bend

Proposal:
- Cut hole in concrete
- Provide access cover (similar to ALUSAF pitch pipe connections)

Existing cover for ALUSAF pitch pipe connections

VIEWING IN DIRECTION OF FLOW



UNUSED VOID

ELECTRICAL SERVICES TUNNEL

GENERAL SERVICES TUNNEL

VIEWING IN DIRECTION OF FLOW

From SAR&H Dwg No. RBH87 - B - 16 - Sh 4 (1986)

View of Alusaf connection point on Quayside

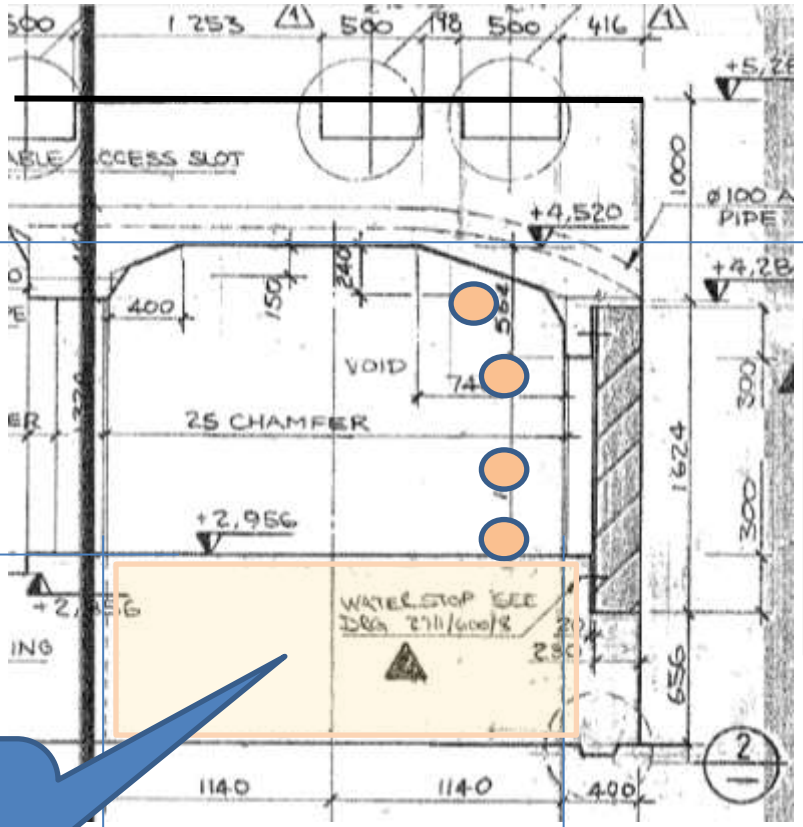
Note - heavy machinery for loading dry bulk

View of Alusaf connection point from inside of General Services Tunnel

PROPOSED ACCESS COVER AND FRAME
(similar to details used for Alusaf's 2 No. openings)

HOLE TO BE CUT THROUGH 700 mm THK MASS CONCRETE

FLEXIBLE HOSES - EX SHIP

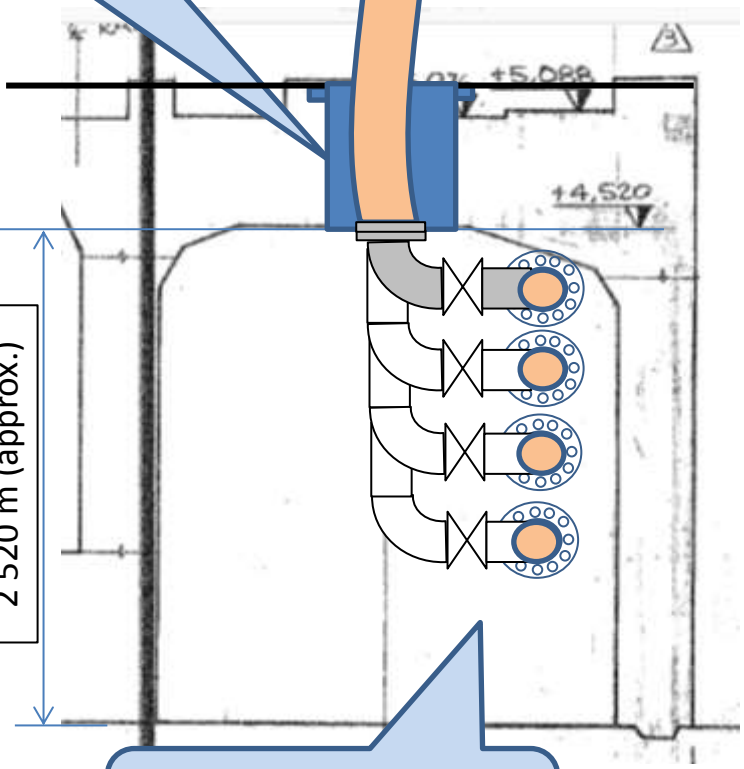


1 564 m

Mass concrete cross beams (4 No)

2 280

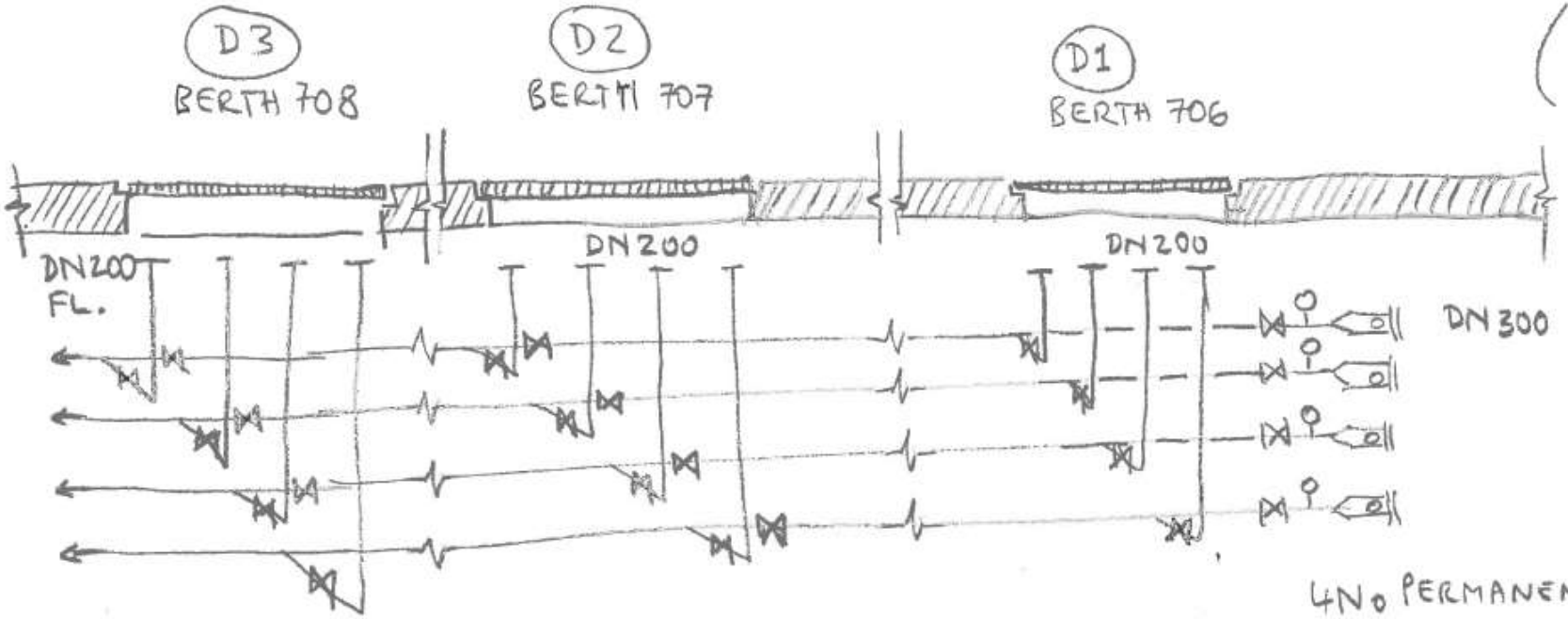
TYPICAL SECTION AT MASS CONCRETE BEAMS (4 No.)



2 520 m (approx.)

PIG LAUNCHERS IN BACKGROUND

TYPICAL SECTION AT D1, D2, D3



(1 of 3)

4 No PERMANENT PIG LAUNCHERS AT (D1)

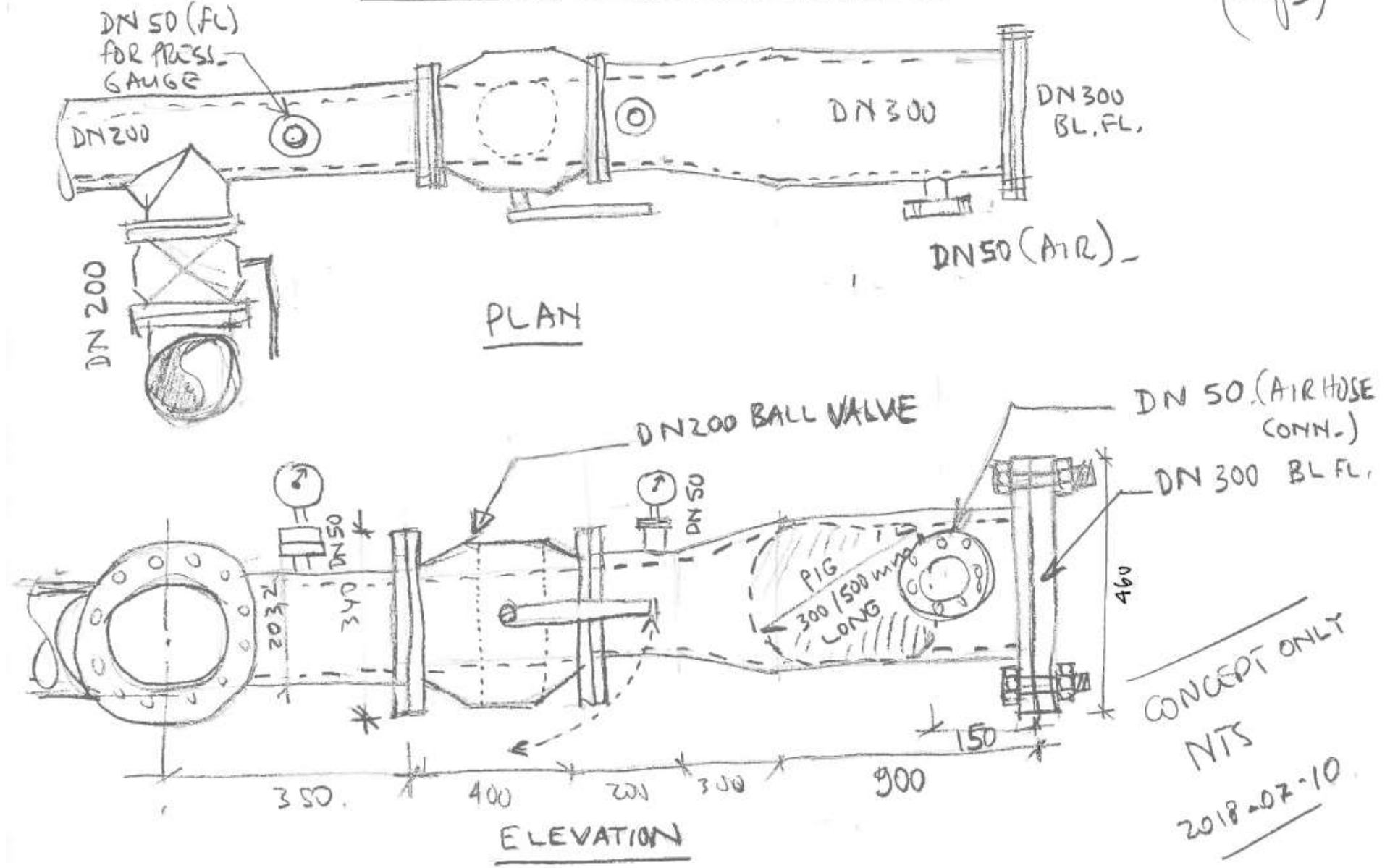
SCHEMATIC PIPE ARRANGEMENT AT "7-SERIES" BERTH

(Semi-Isometric)

CONCEPT ONLY
NTS
2018-07-10

4 x PIG LAUNCHERS @ POINT D1

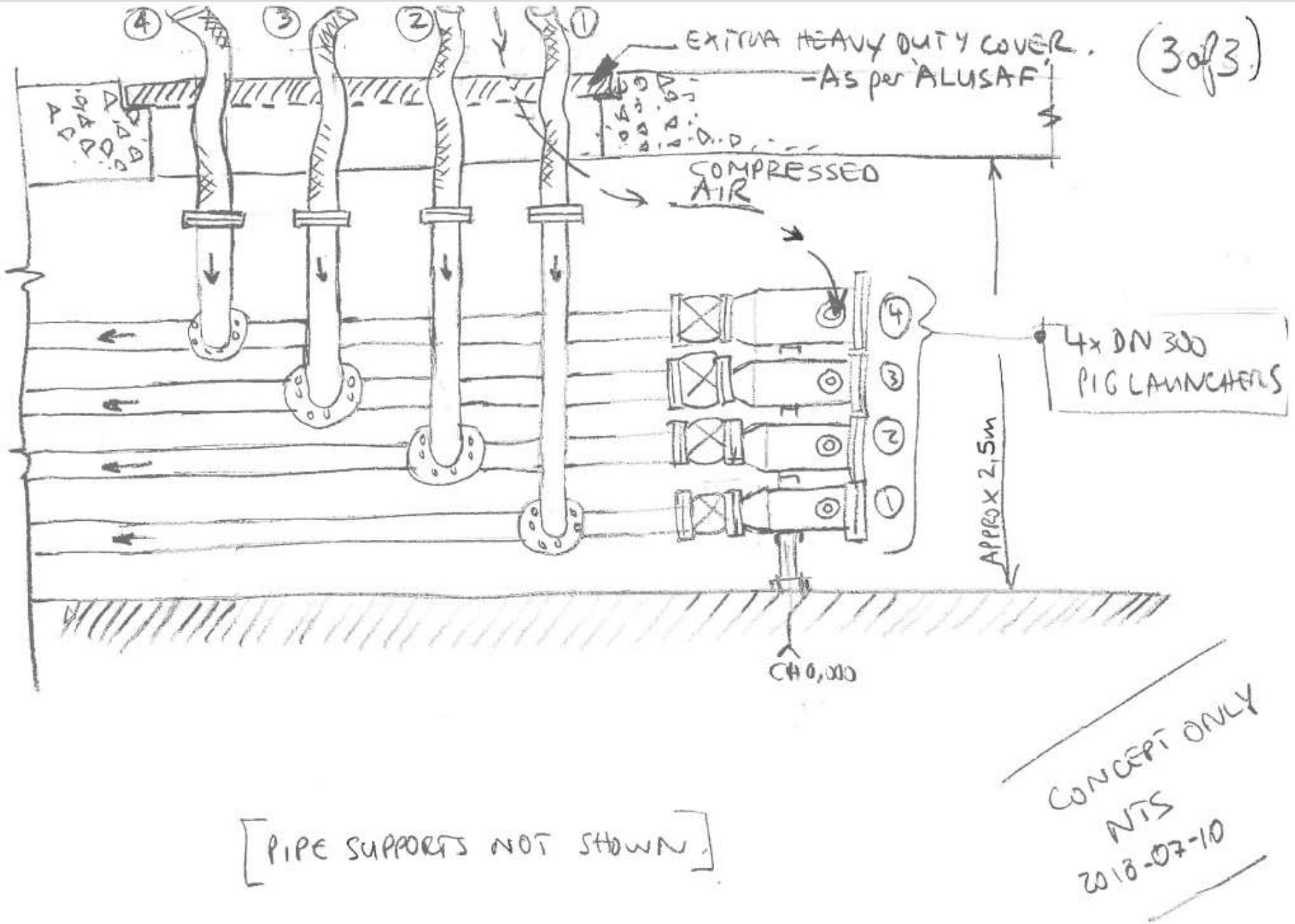
(2 of 3)

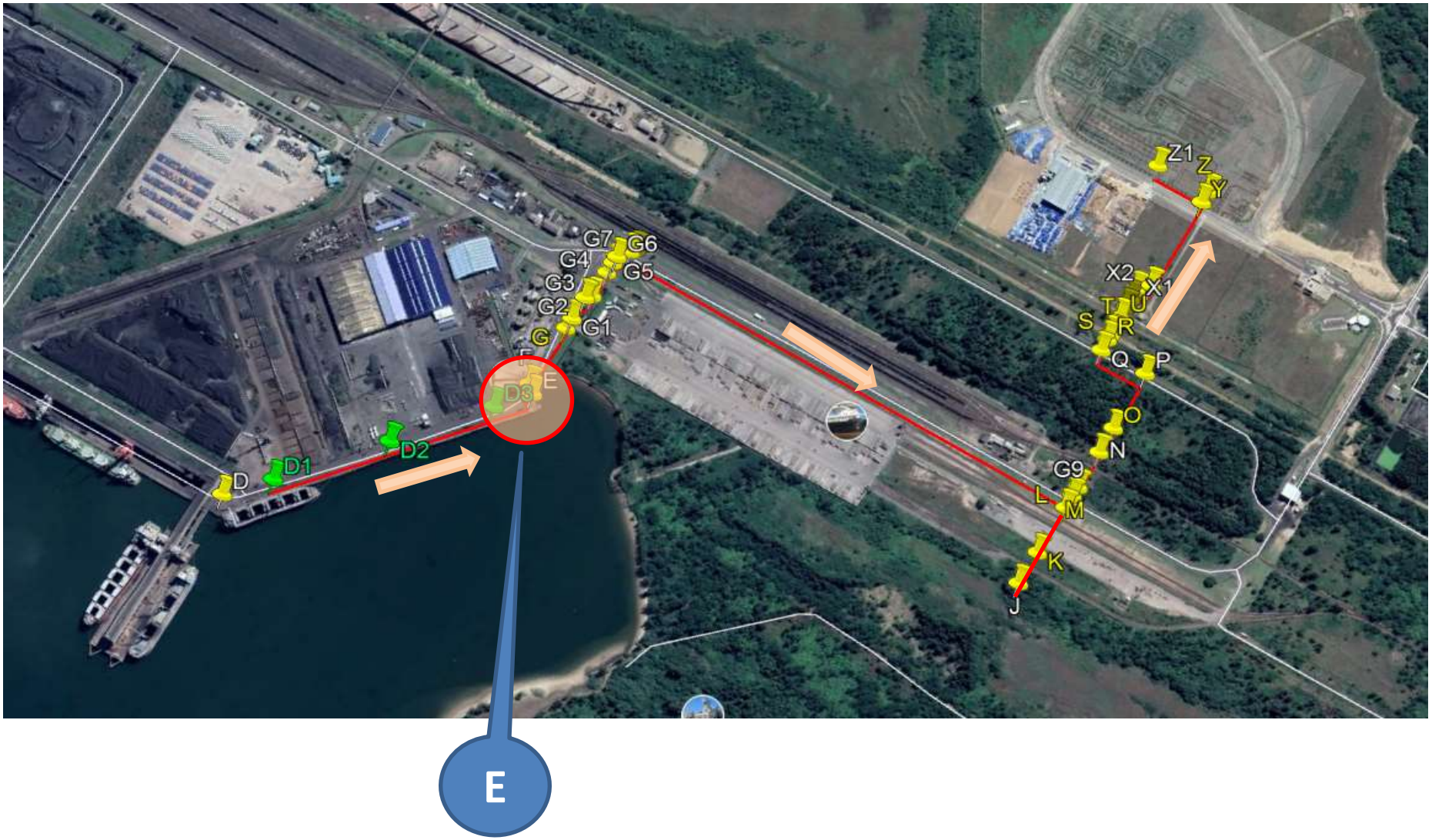


CONCEPT ONLY

NTS

2018-07-10

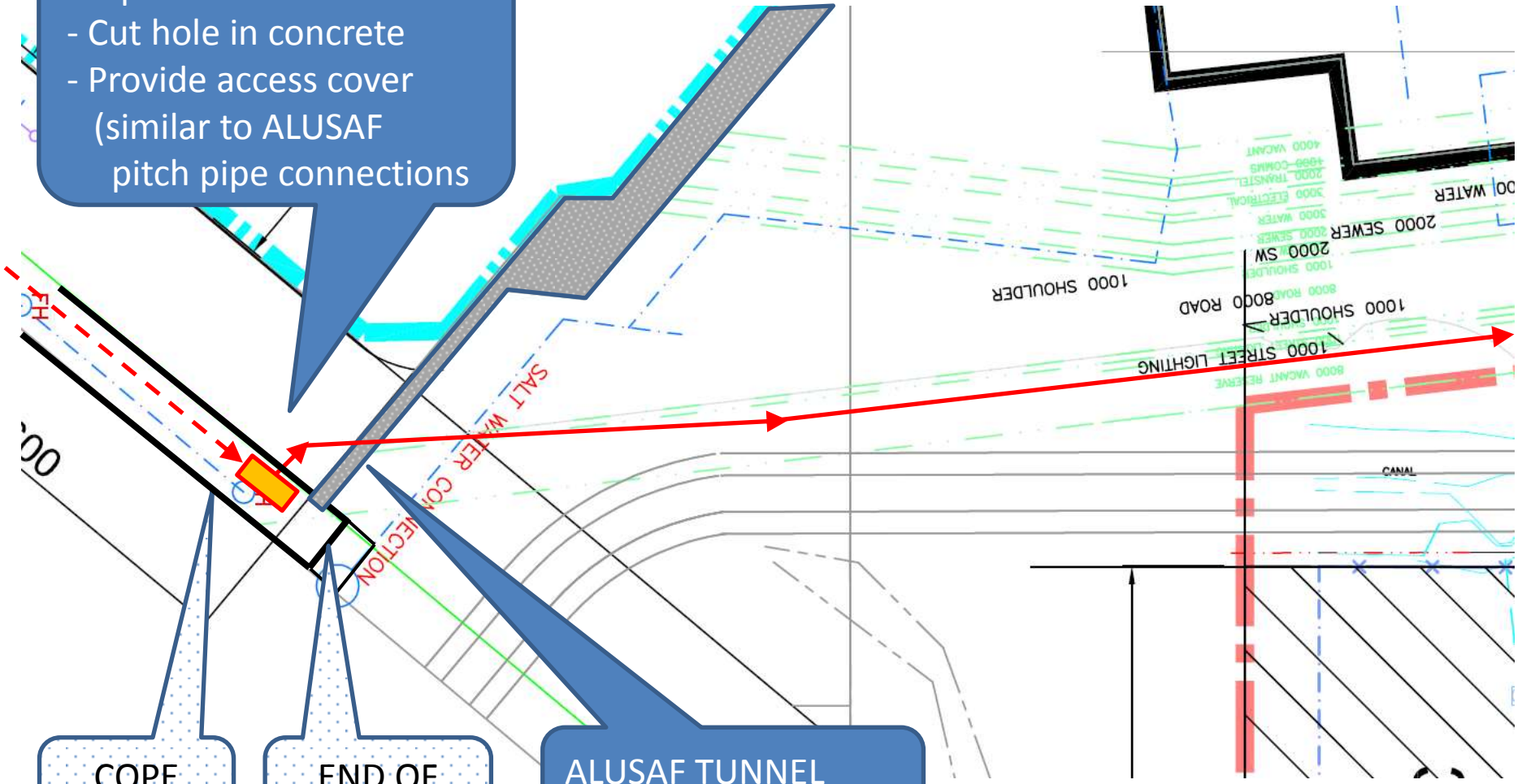

(3 of 3)
EXTRA HEAVY DUTY COVER.
-As per 'ALUSAF'
COMPRESSED AIR
4x DN 300
PIG LAUNCHERS
APPROX 2,5m
CH 0,000
CONCEPT ONLY
NTS
2018-07-10
[PIPE SUPPORTS NOT SHOWN]



E

EXIT FROM UNUSED VOID

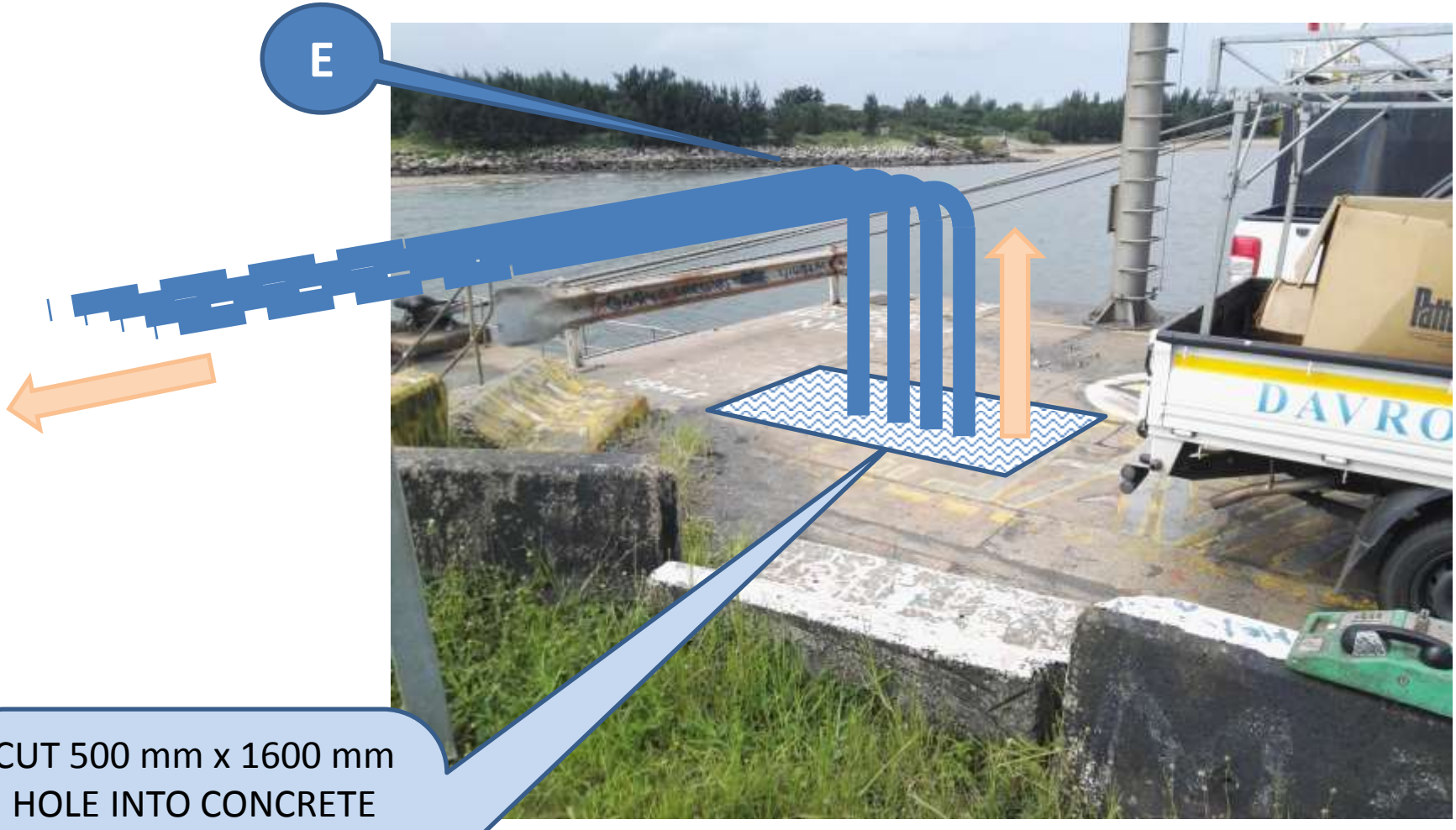
Proposal:
- Cut hole in concrete
- Provide access cover (similar to ALUSAF pitch pipe connections



COPE LINE

END OF MASS CAP

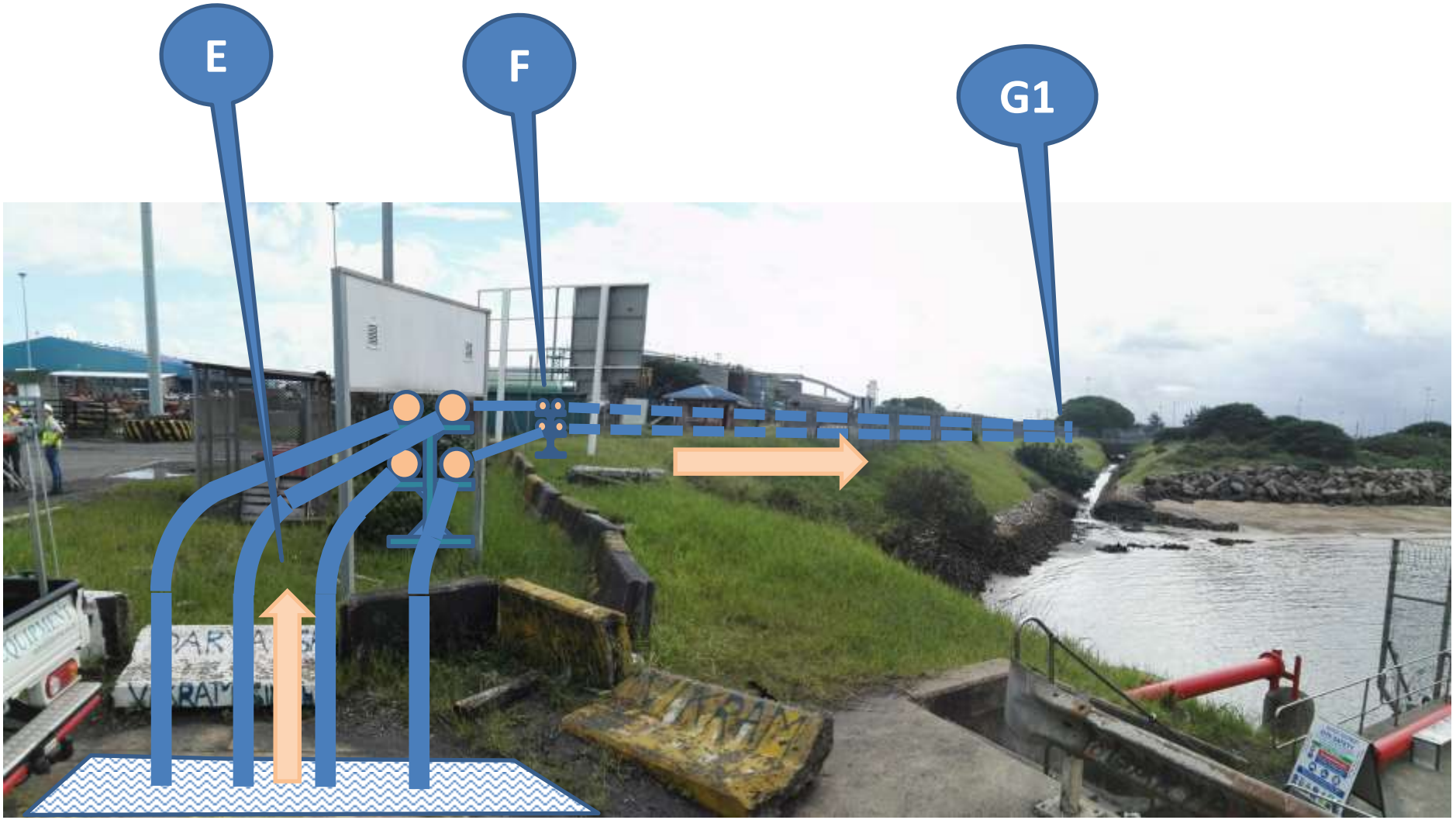
ALUSAF TUNNEL (for 2 x Pitch Pipes)



CUT 500 mm x 1600 mm HOLE INTO CONCRETE ABOVE TUNNEL / VOID AND PROVIDE COVER

(Details similar to Alusaf covers)

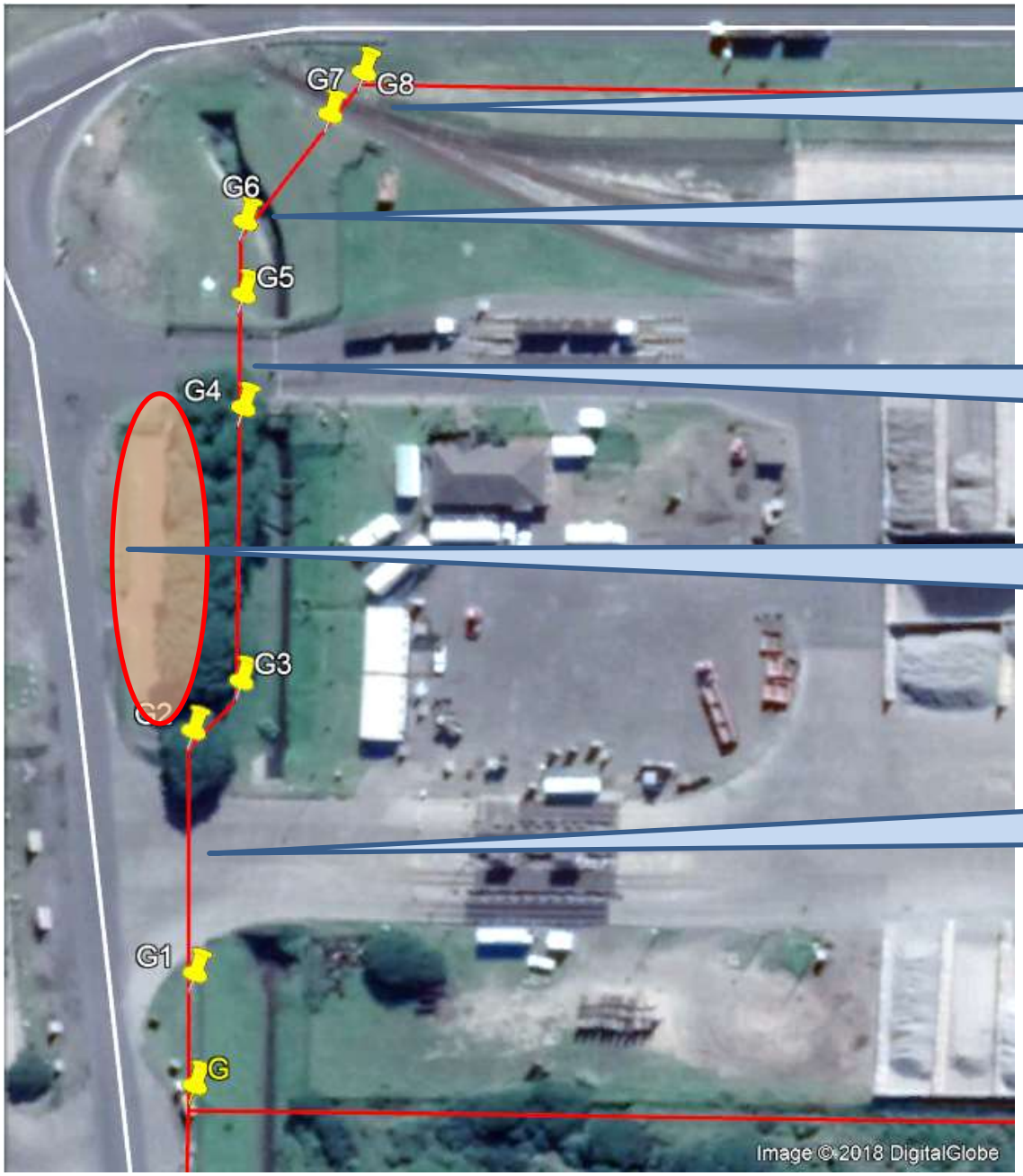
TO BE SIMILAR TO SS COVER AND HANDLES AS USED FOR ALUSAF LIQUID PITCH OFFLOADING CONNECTION (VERTICAL PENETRATION INTO GENERAL SERVICES TUNNEL BELOW)



ABOVE-GROUND PIPES

F – G1

ABOVE-GROUND PIPES



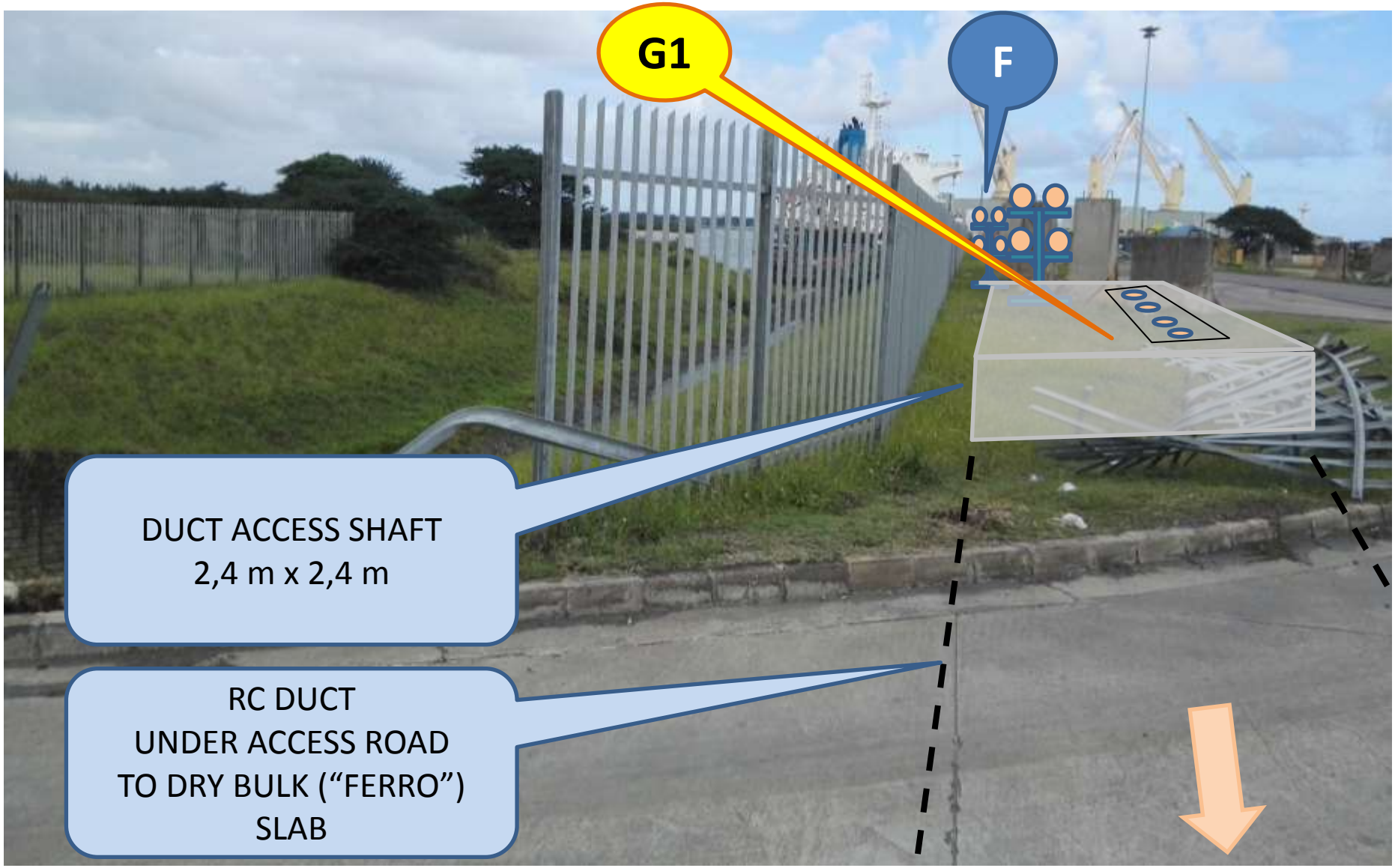
RAIL LINE
(SINGLE TRACK)

OPEN CHANNEL DRAIN

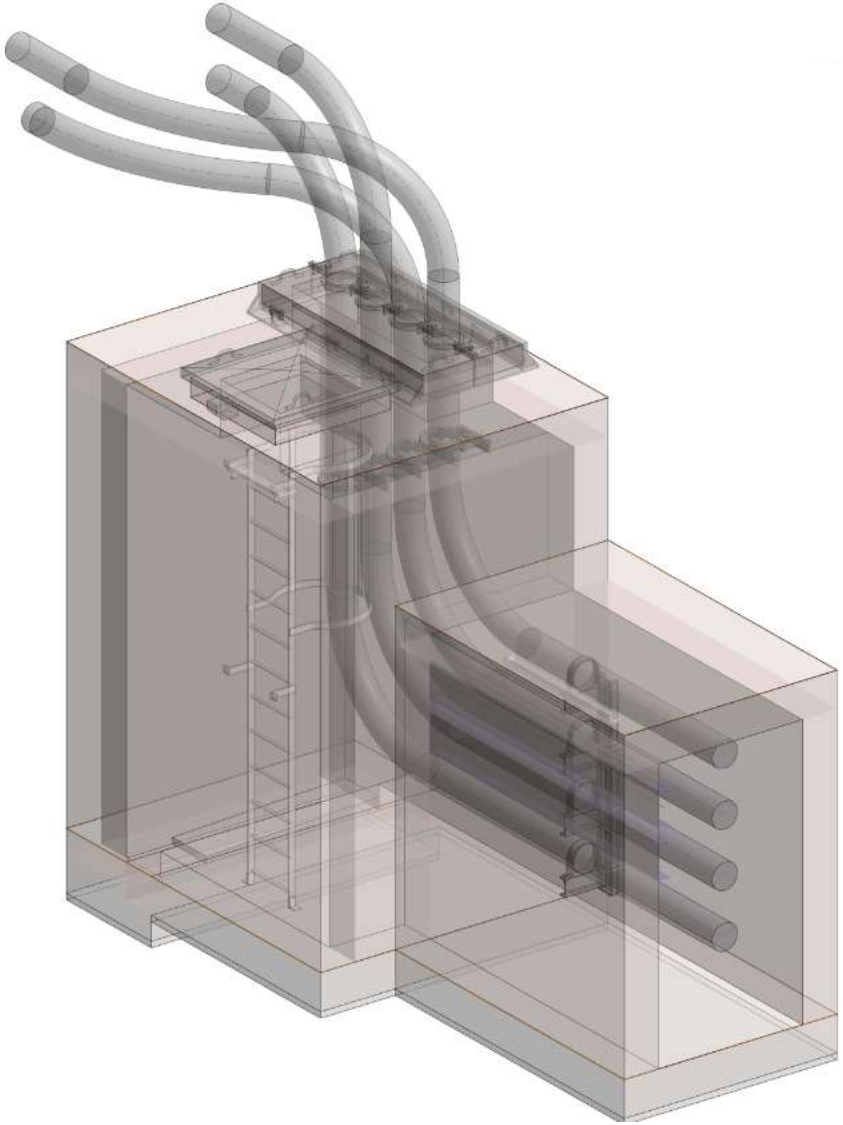
NORTHERN ACCESS ROAD
TO DRY BULK SLAB

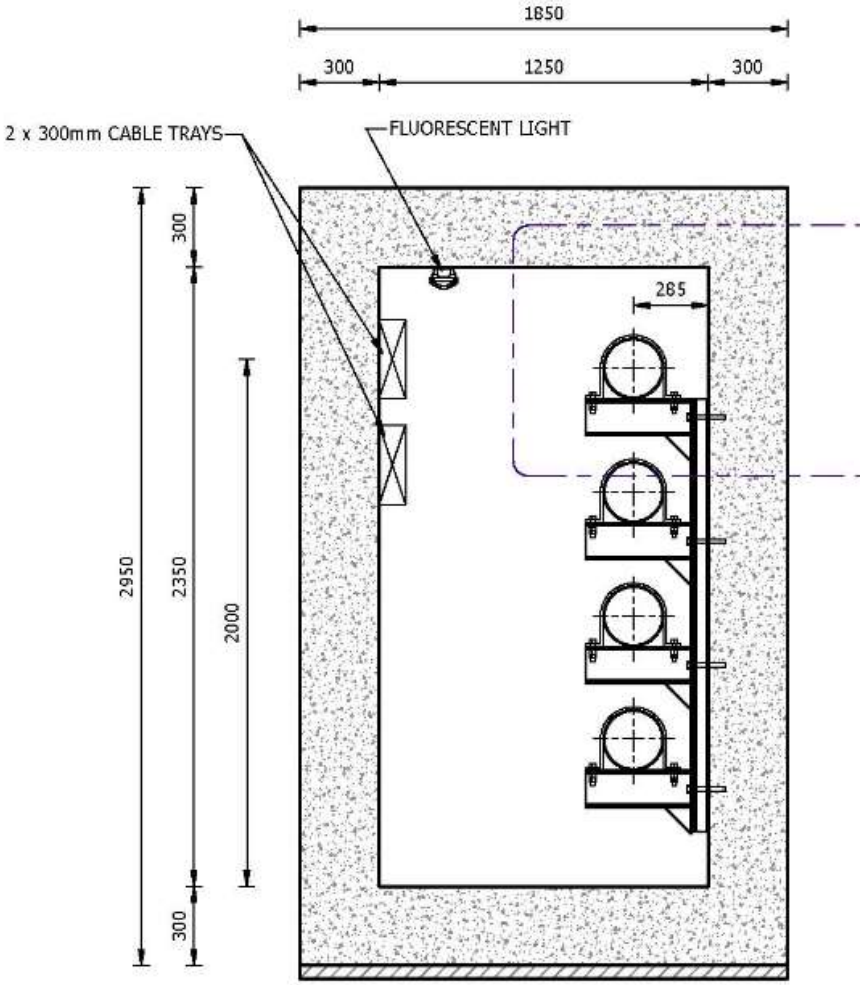
ASPHALT SURFACED
PARKING AREA WITH STEEL
FENCE SURROUND

SOUTHERN ACCESS ROAD
TO DRY BULK SLAB



SOUTHERN ACCESS ROAD CROSSING:
VIEWED BACKWARDS,
ALONG FENCE LINE

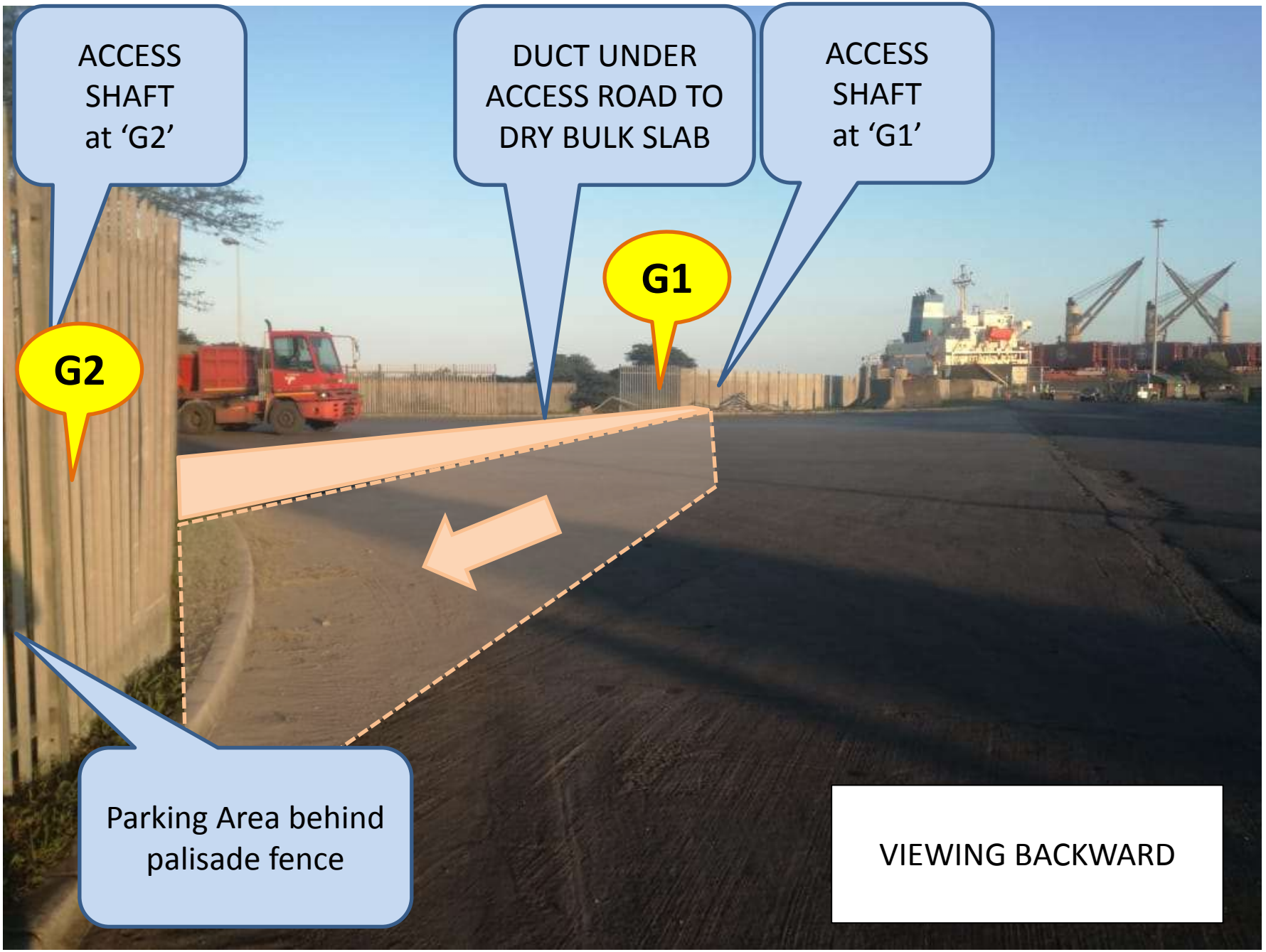


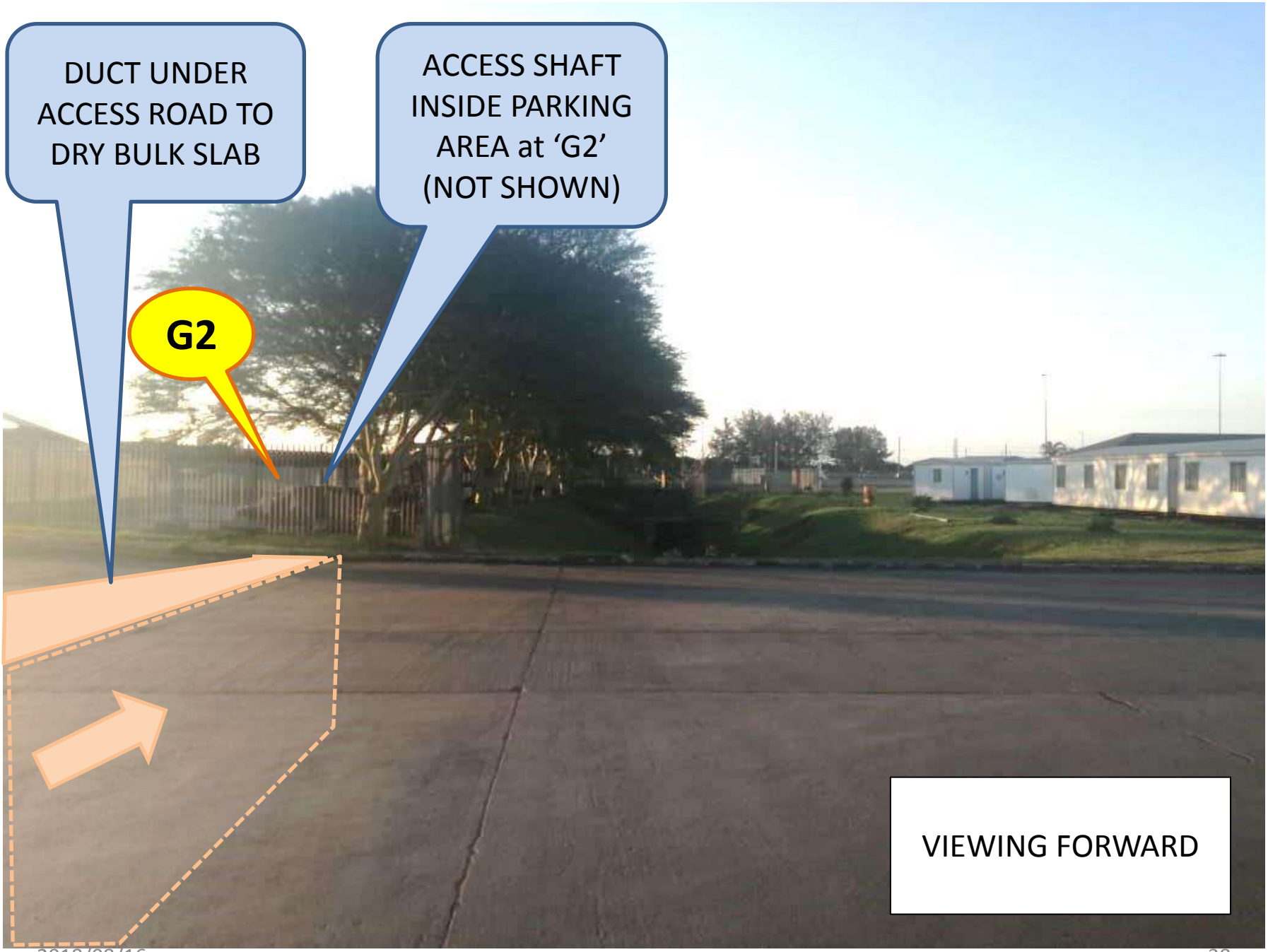


TYPICAL ACCESS SHAFT AND
DUCT UNDER ROADS

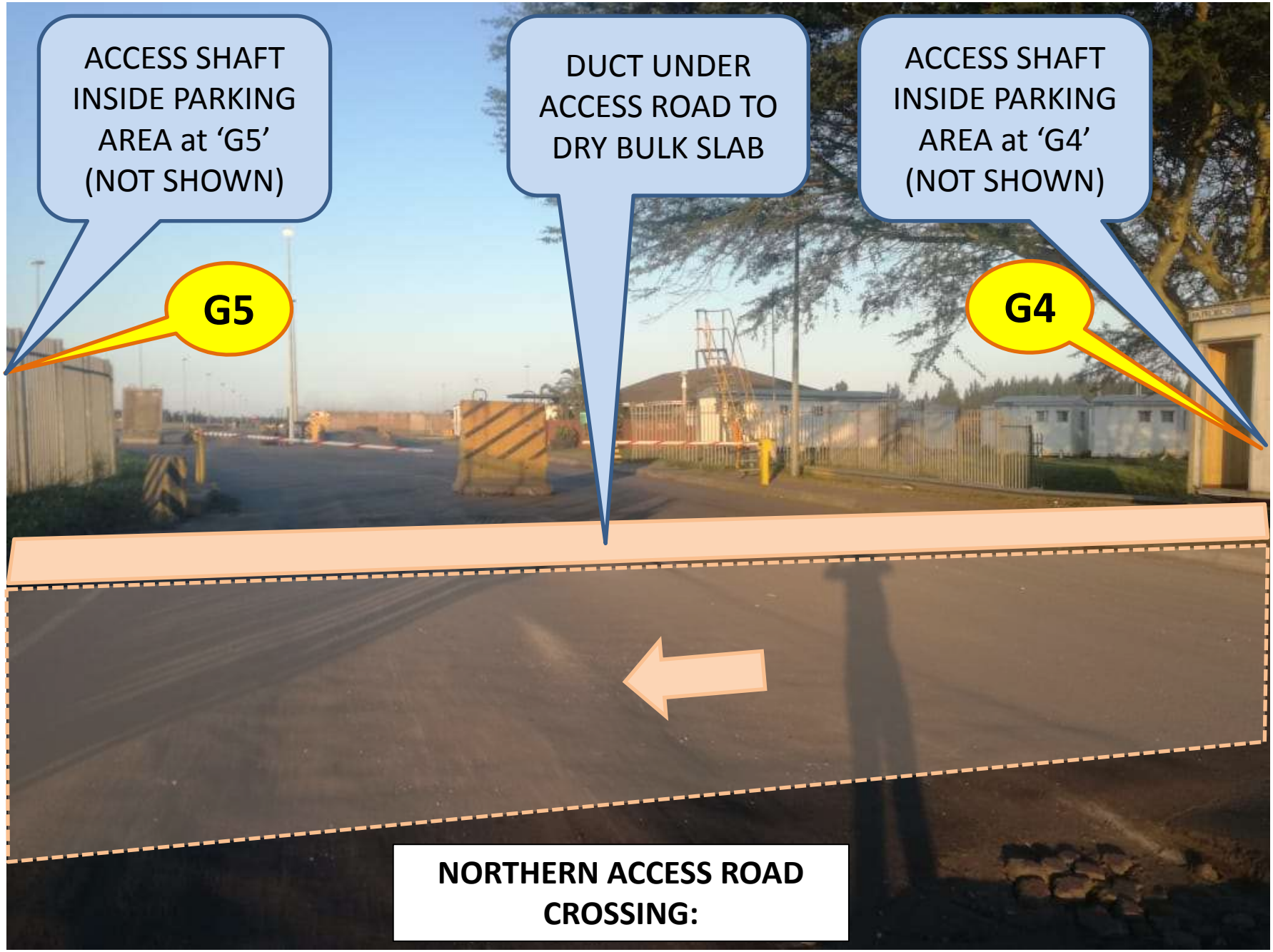
- 1 No at each end of tunnel
- above-ground pipe supports not shown

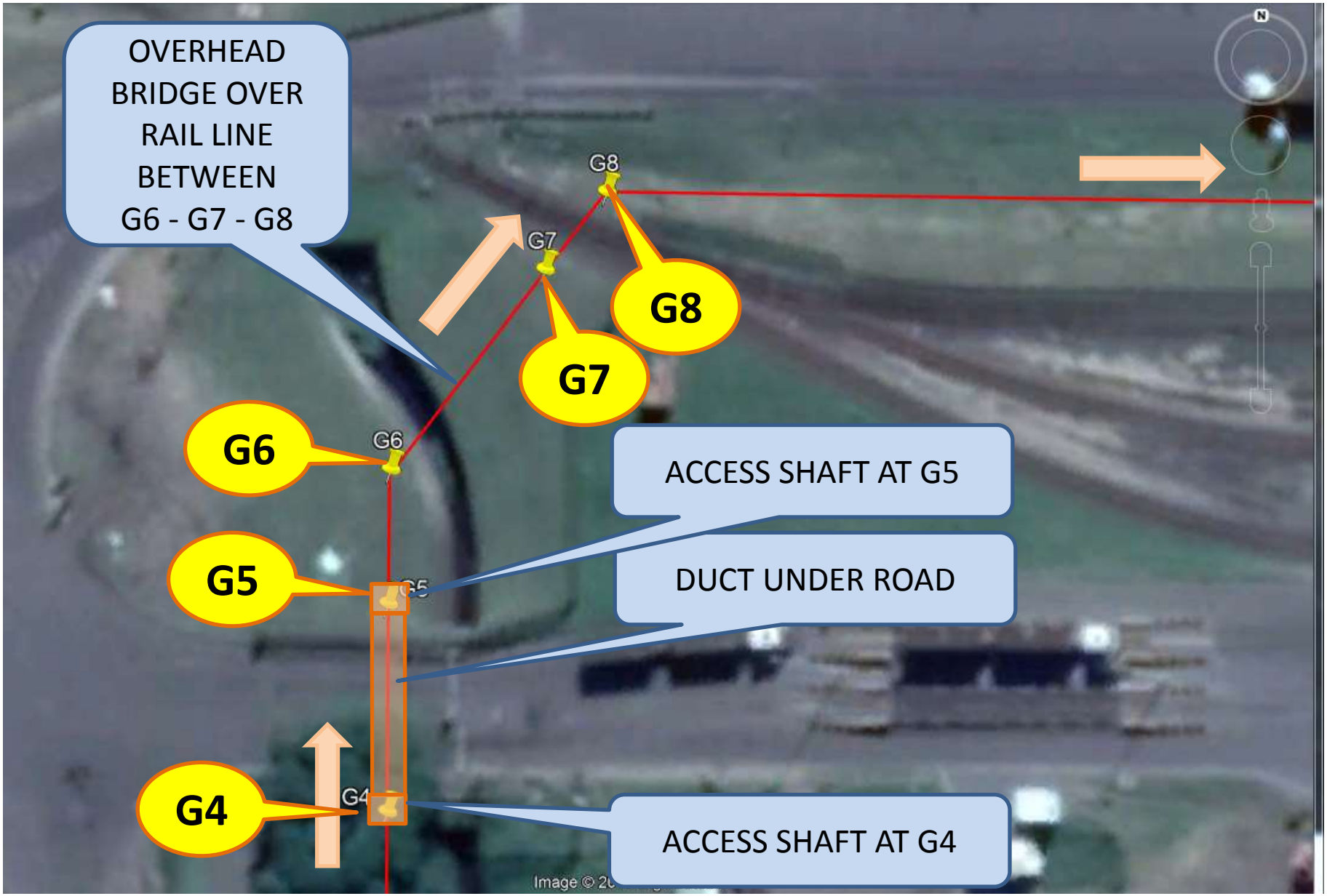
TYPICAL SECTION THROUGH
DUCT UNDER ROADS

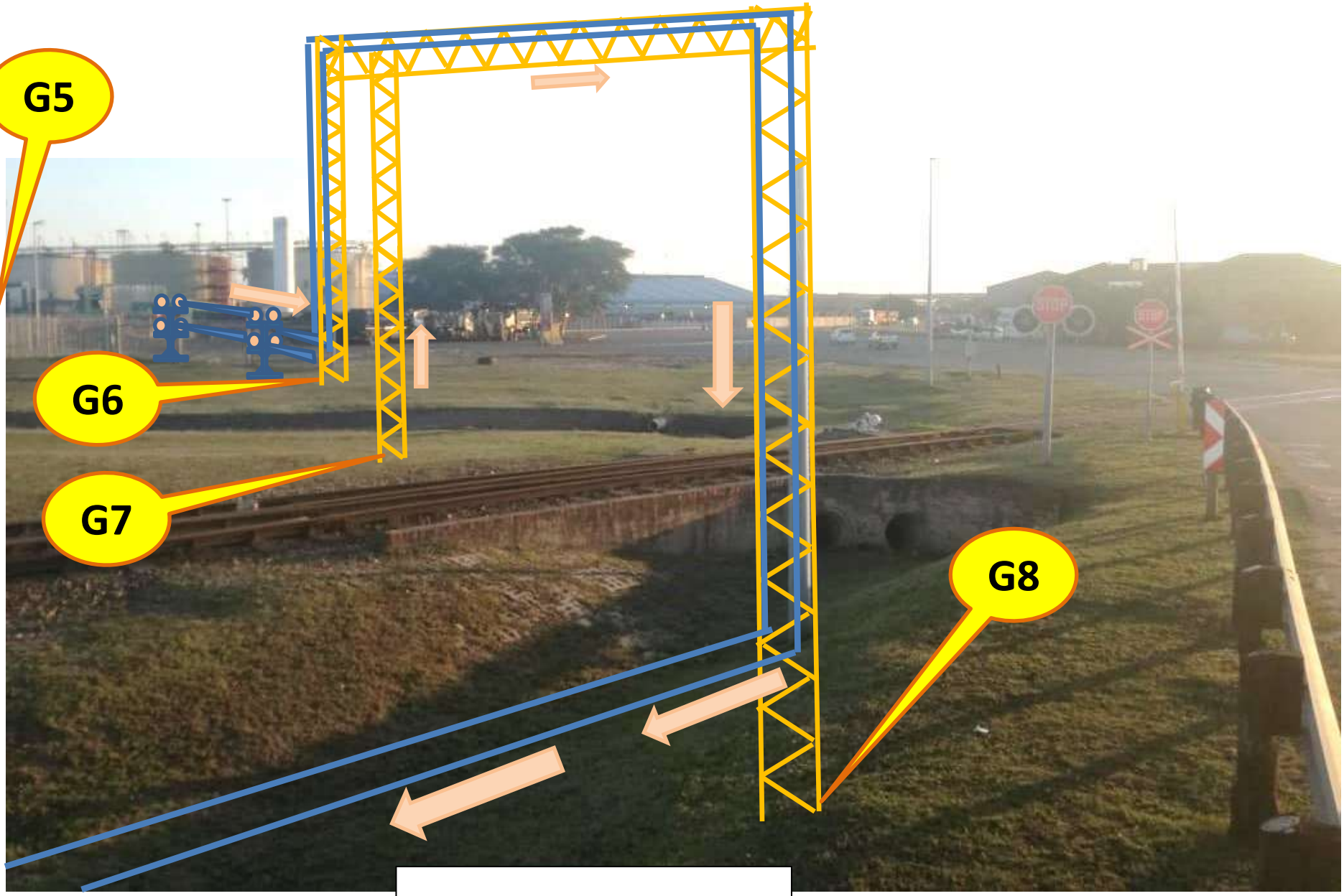

ACCESS SHAFT at 'G2'
DUCT UNDER ACCESS ROAD TO DRY BULK SLAB
ACCESS SHAFT at 'G1'
G1
G2
Parking Area behind palisade fence
VIEWING BACKWARD


DUCT UNDER ACCESS ROAD TO DRY BULK SLAB
ACCESS SHAFT INSIDE PARKING AREA at 'G2' (NOT SHOWN)
G2
VIEWING FORWARD

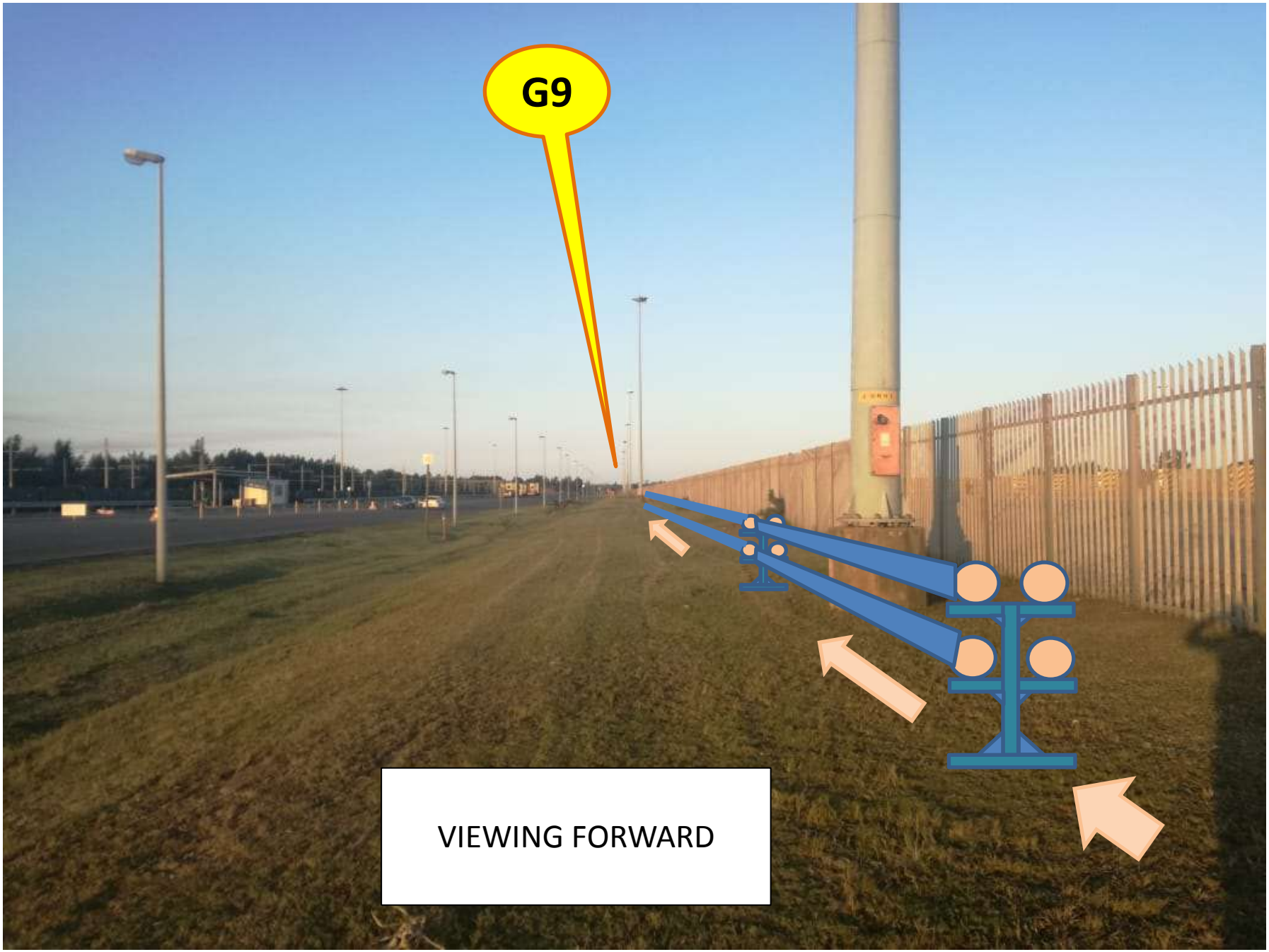
VIEWING FORWARD

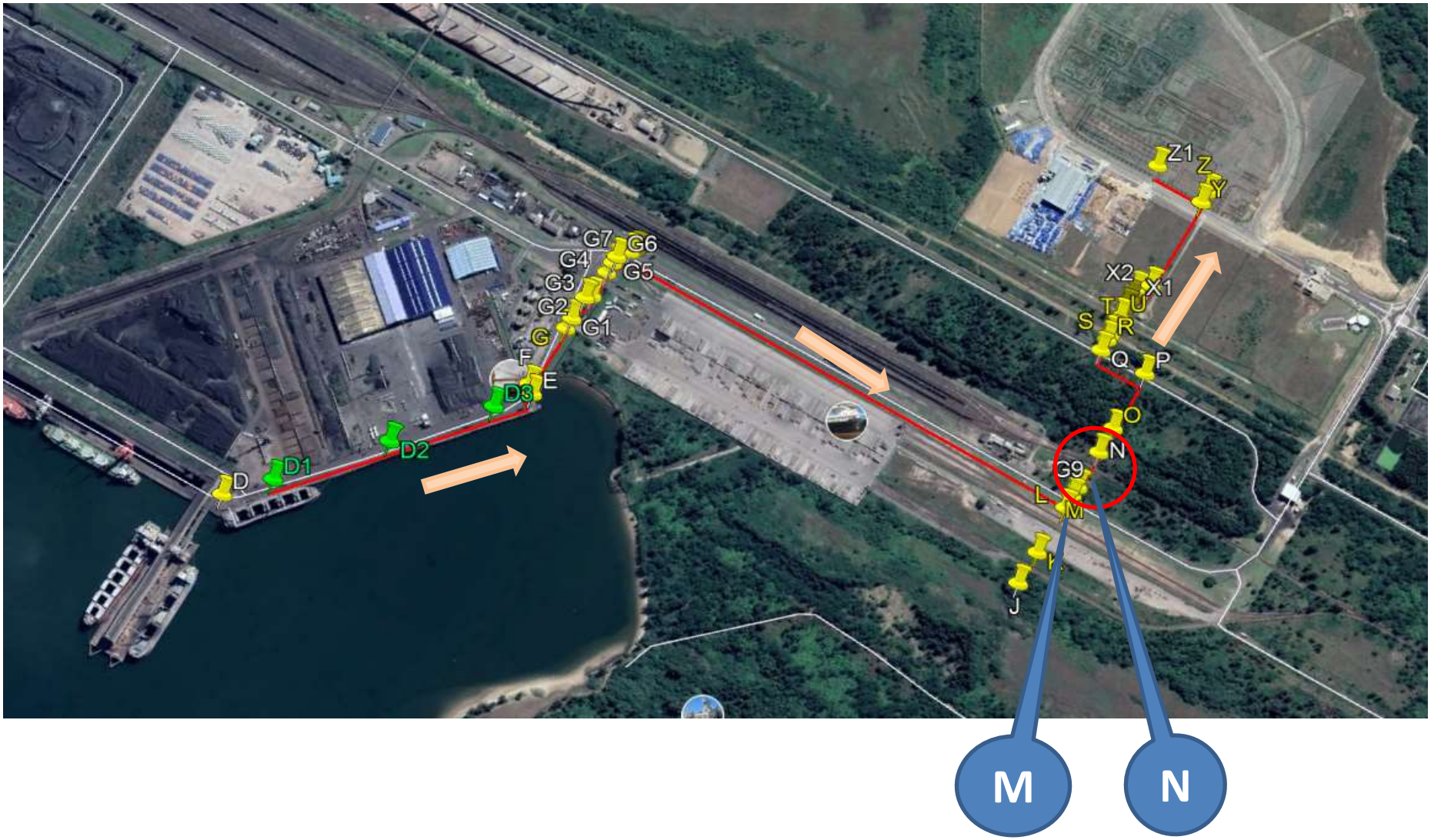

ACCESS SHAFT INSIDE PARKING AREA at 'G5' (NOT SHOWN)
DUCT UNDER ACCESS ROAD TO DRY BULK SLAB
ACCESS SHAFT INSIDE PARKING AREA at 'G4' (NOT SHOWN)
G5
G4
NORTHERN ACCESS ROAD CROSSING:


OVERHEAD BRIDGE OVER RAIL LINE BETWEEN G6 - G7 - G8
G8
G7
G6
G5
G4
G8
G7
G6
G5
G4
ACCESS SHAFT AT G5
DUCT UNDER ROAD
ACCESS SHAFT AT G4

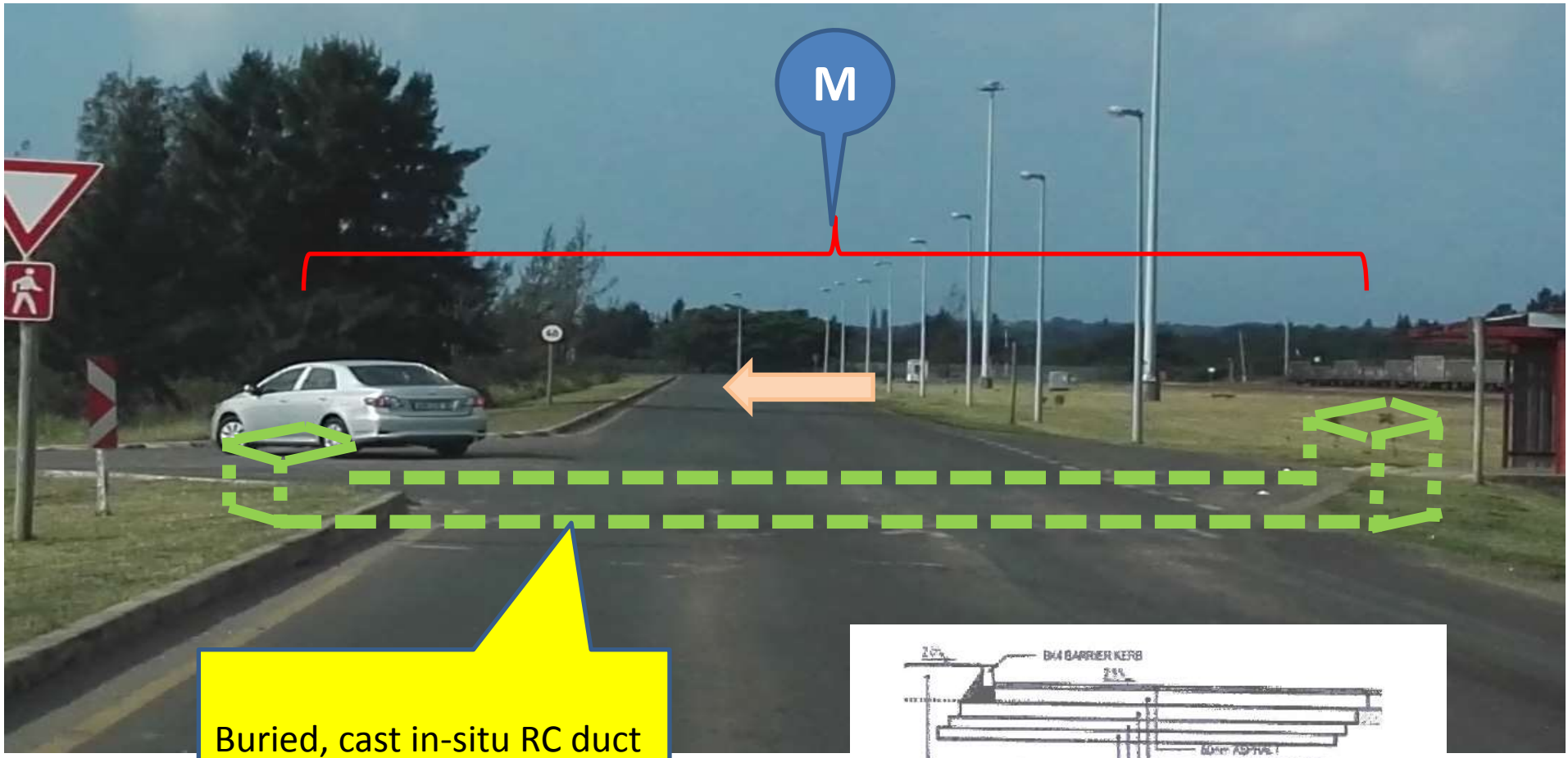


VIEWING BACKWARD

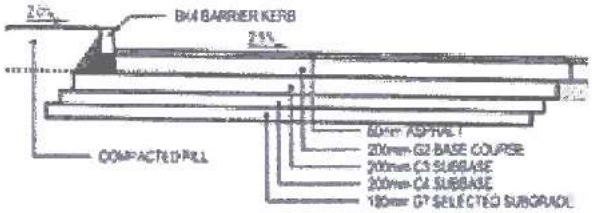

G9
VIEWING FORWARD



M : ROAD CROSSING (BELOW GROUND DUCT)
N : RAIL CROSSING



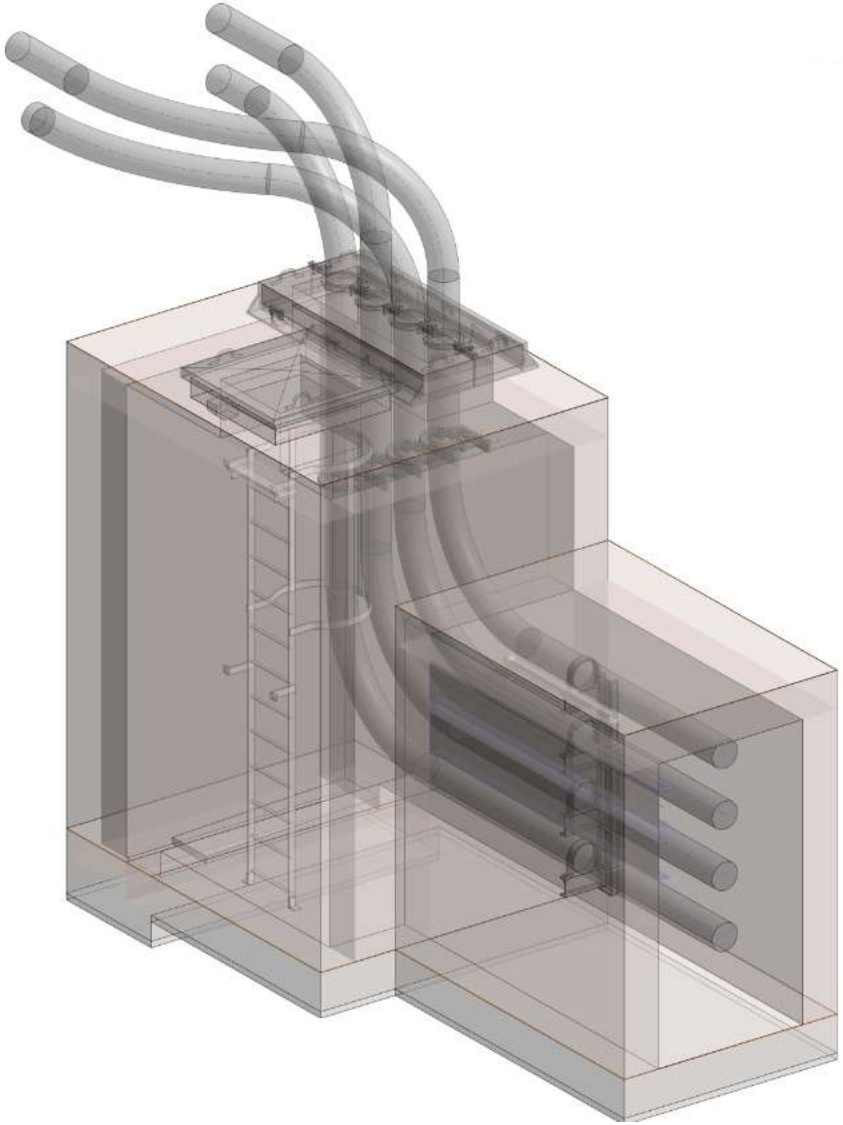
Buried, cast in-situ RC duct with accessible manholes at each end

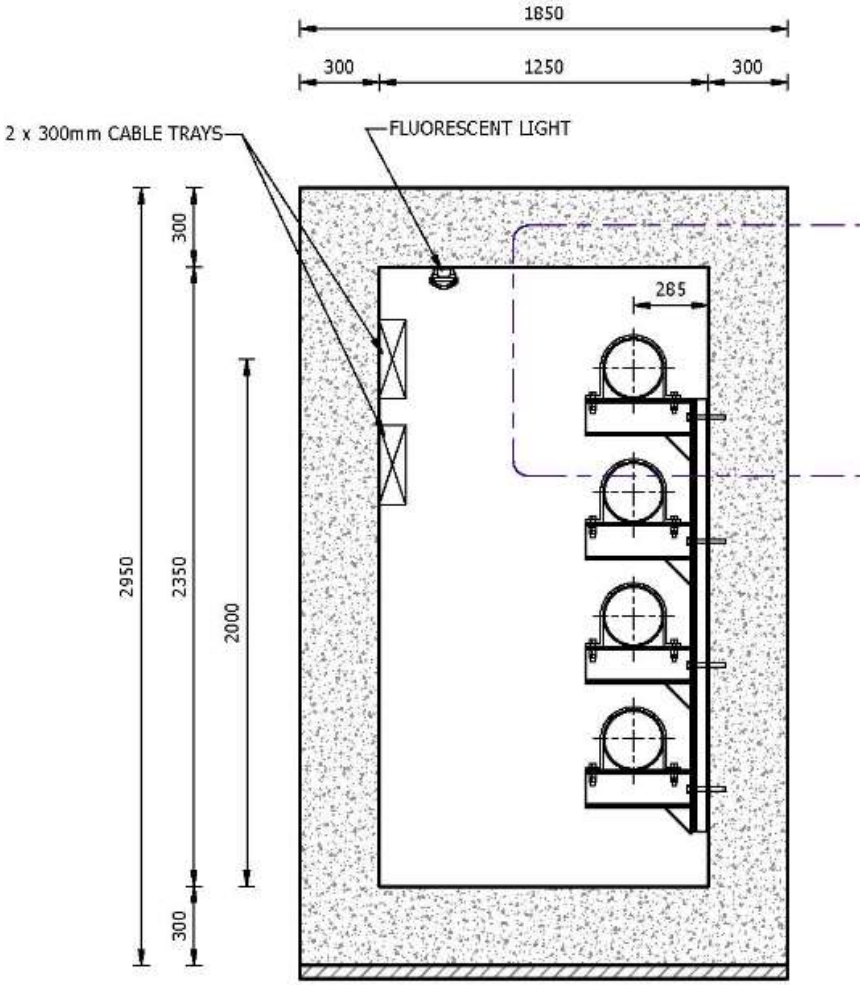


Road layerworks above top of duct to match TNPA design for “abnormal staging areas”

VIEWING FORWARD

M : NEWARK ROAD CROSSING

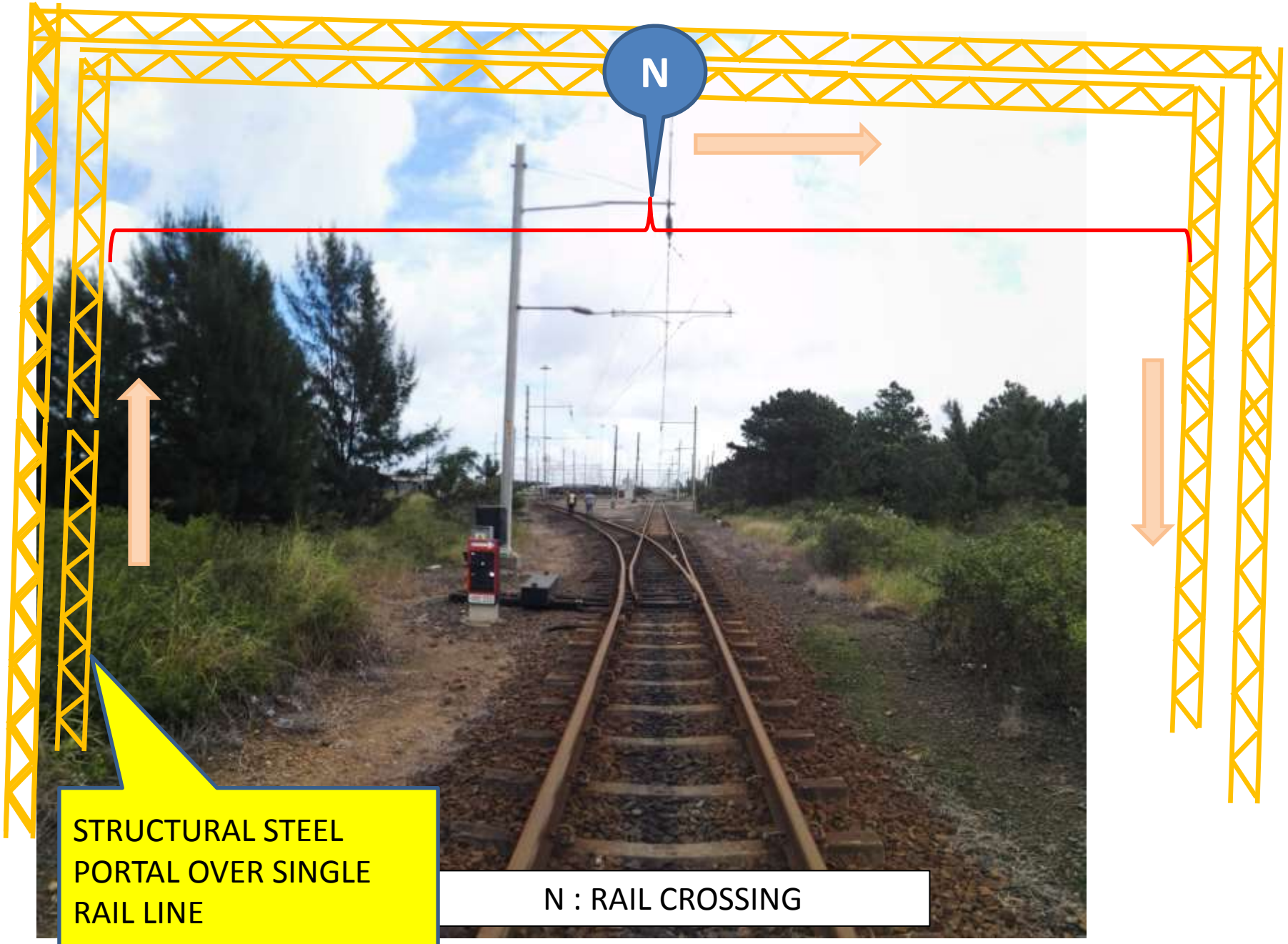


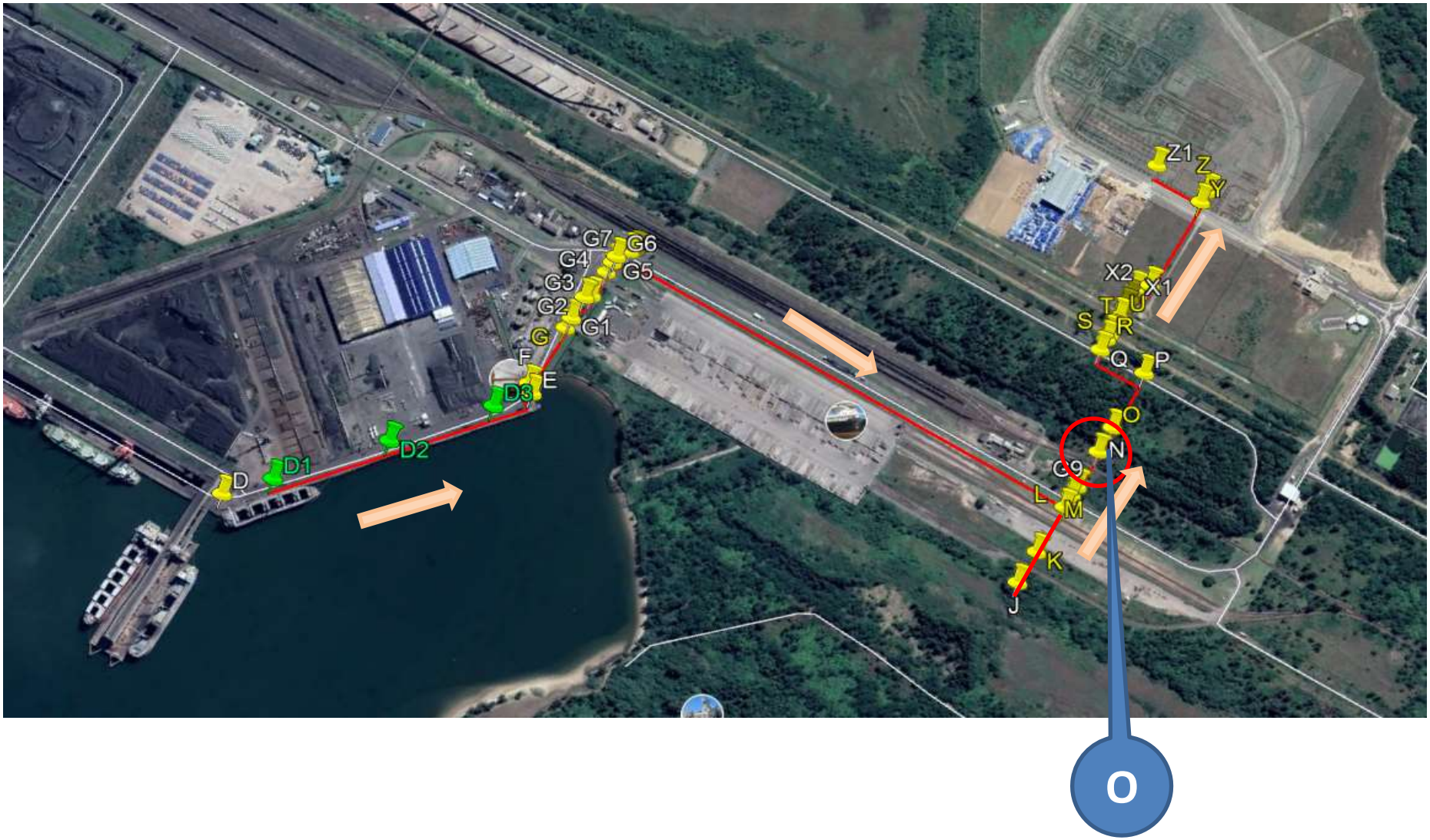


TYPICAL ACCESS SHAFT AND
DUCT UNDER ROADS

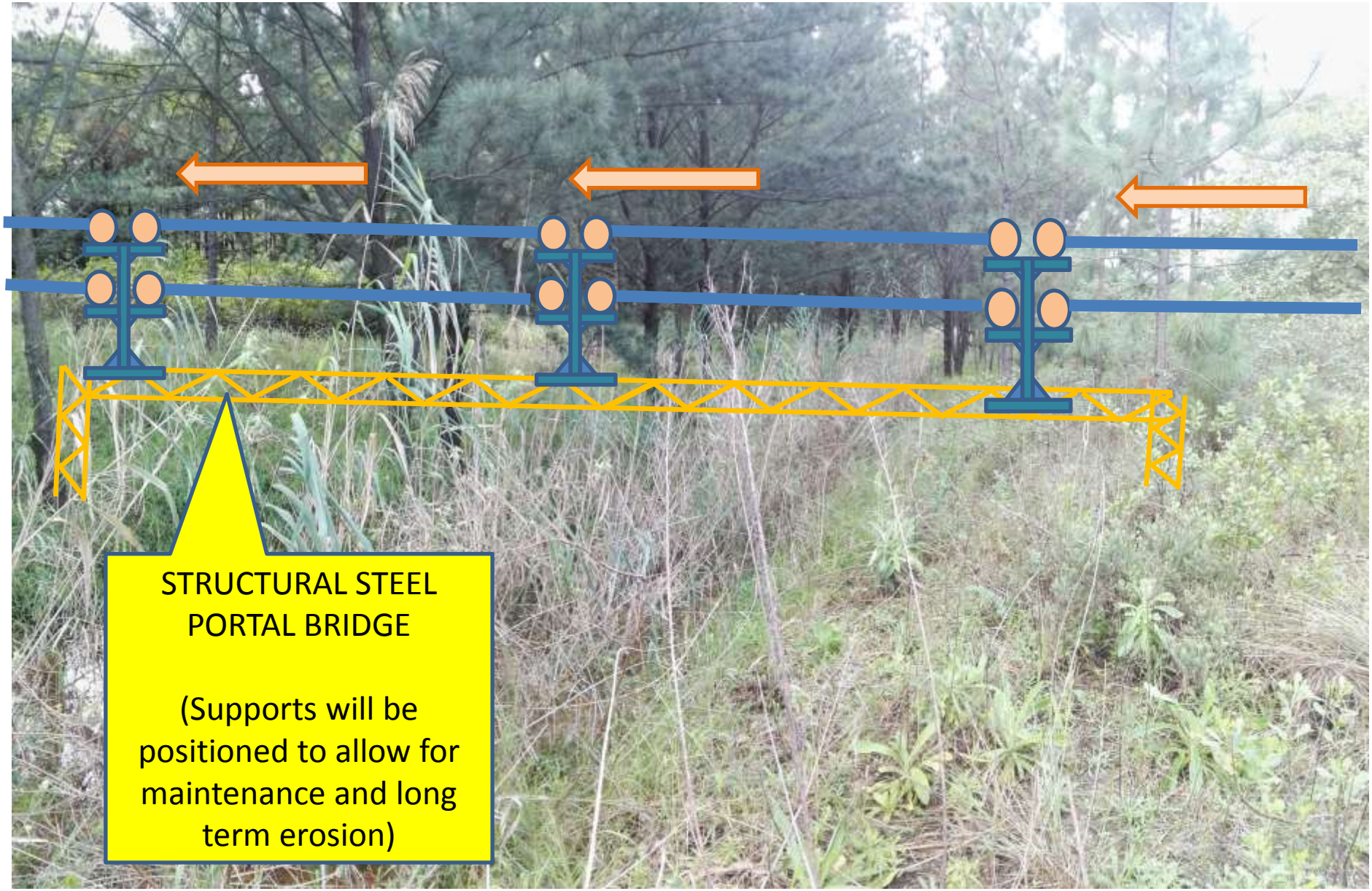
- 1 No at each end of tunnel
- above-ground pipe supports not shown

TYPICAL SECTION THROUGH
DUCT UNDER ROADS


N
STRUCTURAL STEEL PORTAL OVER SINGLE RAIL LINE
N : RAIL CROSSING



O : UNLINED DRAINAGE CHANNEL



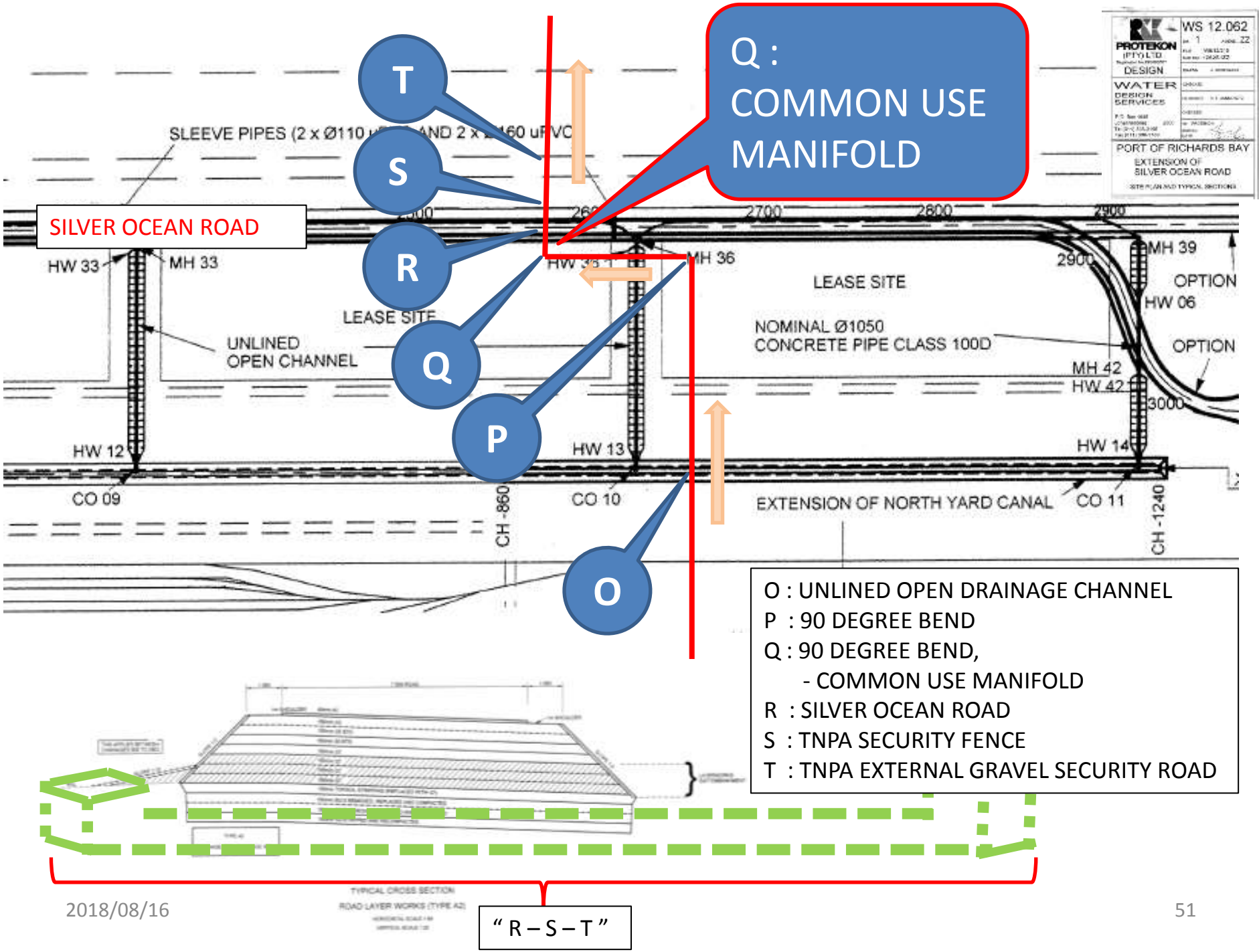
O : UNLINED OPEN DRAINAGE CHANNEL CROSSING

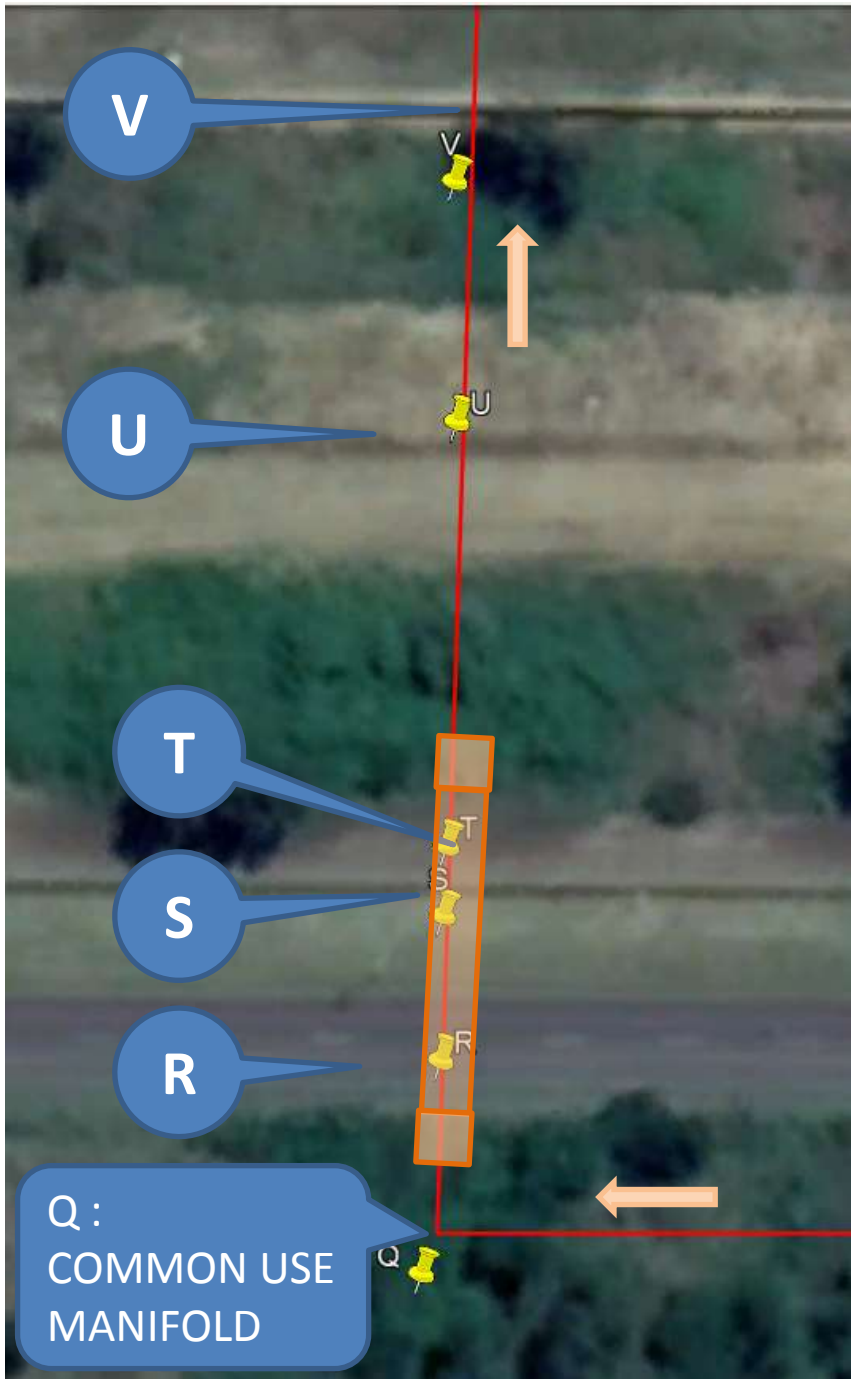
P : 90 DEGREE BEND
Q : 90 DEGREE BEND
R : SILVER OCEAN ROAD
S : TNPA SECURITY FENCE
T : TNPA EXTERNAL GRAVEL SECURITY ROAD

NOTE:

POINT "Q" TO BE OFFTAKE POINT FOR OTHER FUTURE USERS

D1 TO Q = "COMMON USE PIPE"


T
S
R
Q
P
O
Q :
COMMON USE
MANIFOLD
SLEEVE PIPES (2 x Ø110 uPVC AND 2 x Ø160 uPVC
SILVER OCEAN ROAD
HW 33
MH 33
UNLINED
OPEN CHANNEL
LEASE SITE
HW 12
CO 09
CH -860
HW 13
CO 10
MH 36
LEASE SITE
NOMINAL Ø1050
CONCRETE PIPE CLASS 100D
EXTENSION OF NORTH YARD CANAL
CO 11
CH -1240
MH 39
OPTION
HW 06
OPTION
MH 42
HW 42
HW 14
3000
2700
2800
2900
PROTEKON (PTY) LTD
DESIGN
WATER
DESIGN SERVICES
WS 12.062
PORT OF RICHARDS BAY
EXTENSION OF
SILVER OCEAN ROAD
O : UNLINED OPEN DRAINAGE CHANNEL
P : 90 DEGREE BEND
Q : 90 DEGREE BEND,
- COMMON USE MANIFOLD
R : SILVER OCEAN ROAD
S : TNPA SECURITY FENCE
T : TNPA EXTERNAL GRAVEL SECURITY ROAD
TYPICAL CROSS SECTION
ROAD LAYER WORKS (TYPE A2)
" R – S – T "

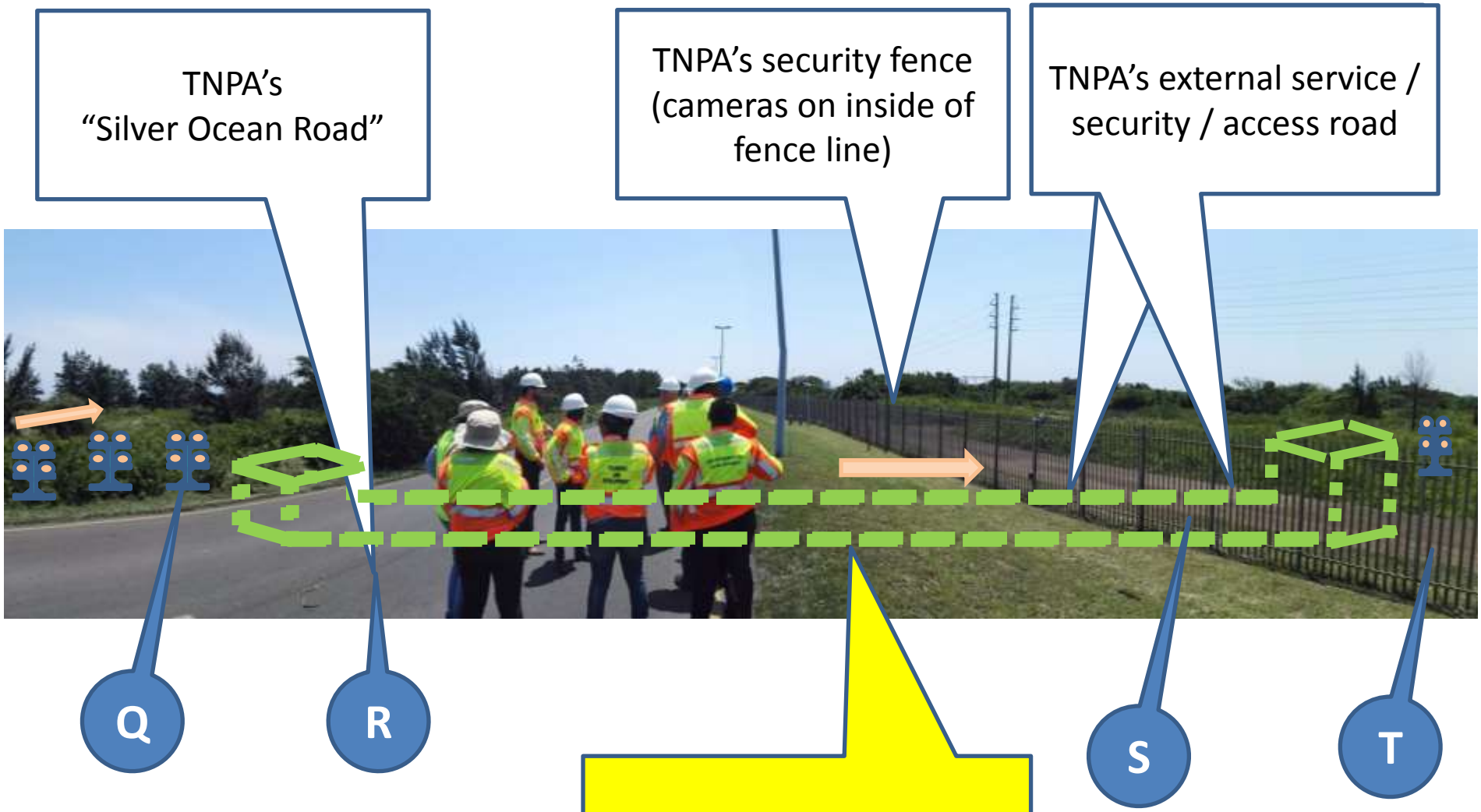


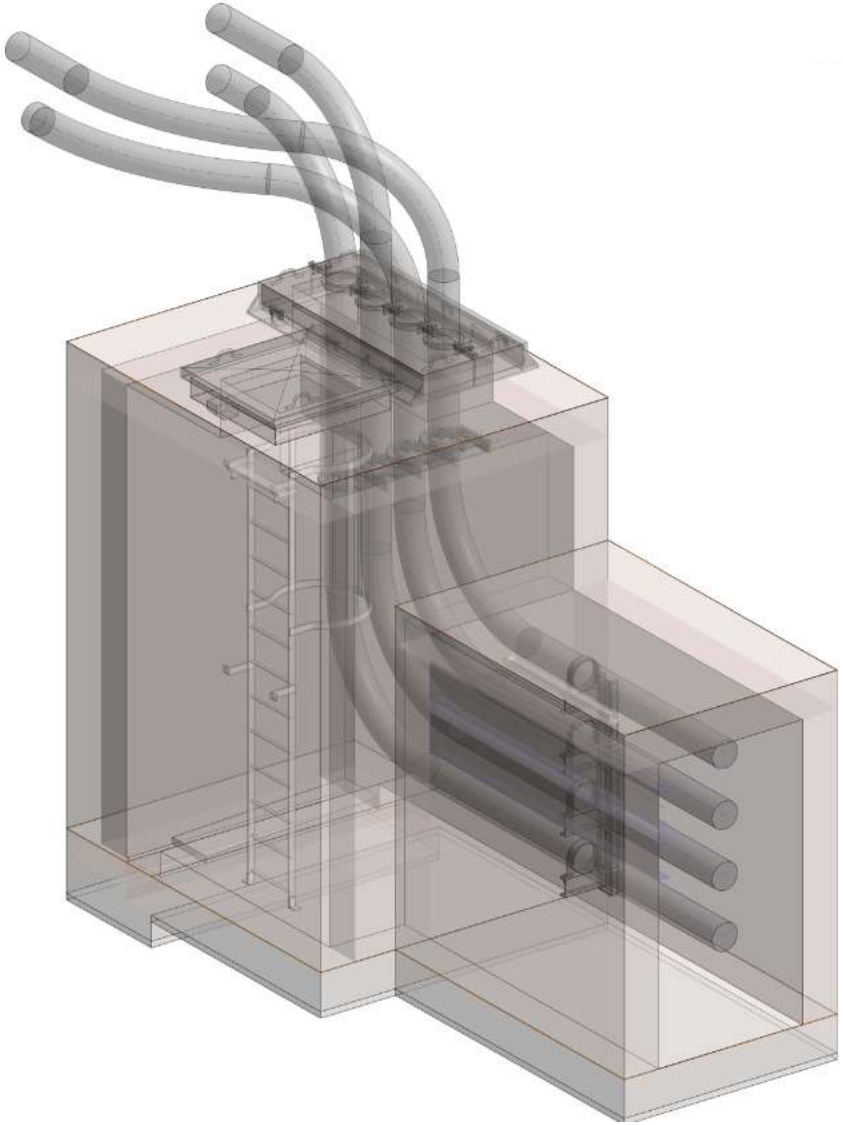
R : SILVER OCEAN ROAD
S : TNPA SECURITY FENCE
T : TNPA EXTERNAL GRAVEL SECURITY ROAD
U : OVERHEAD HIGH VOLTAGE LINE AND MAINTENANCE / ACCESS ROAD
V : IDZ SECURITY FENCE

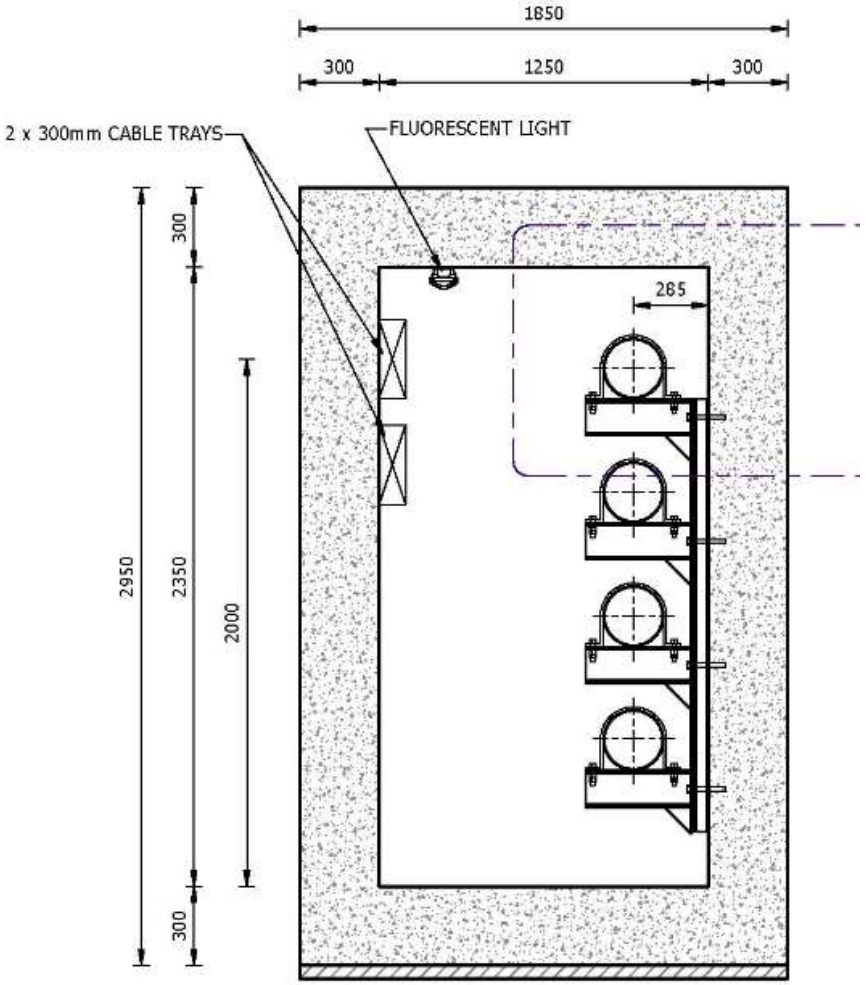
R – S – T : Below-ground, continuous, reinforced concrete duct:
- under TNPA's peripheral "Silver Ocean" Road (constructed in half-road widths)
- under TNPA security fence
- under TNPA external gravel security / access road

Accessible manholes provided at each end of duct; Lower manhole to be provided with sump for pumping out water and / or oil

T – U – V : Above-ground pipe on steel supports, penetrating IDZ Boundary Fence at V
-- RB IDZ to provide requirements and specifications for fence penetration


TNPA's
"Silver Ocean Road"
TNPA's security fence
(cameras on inside of
fence line)
TNPA's external service /
security / access road
Q
R
S
T
Buried, cast in-situ RC duct
with accessible manholes
at each end

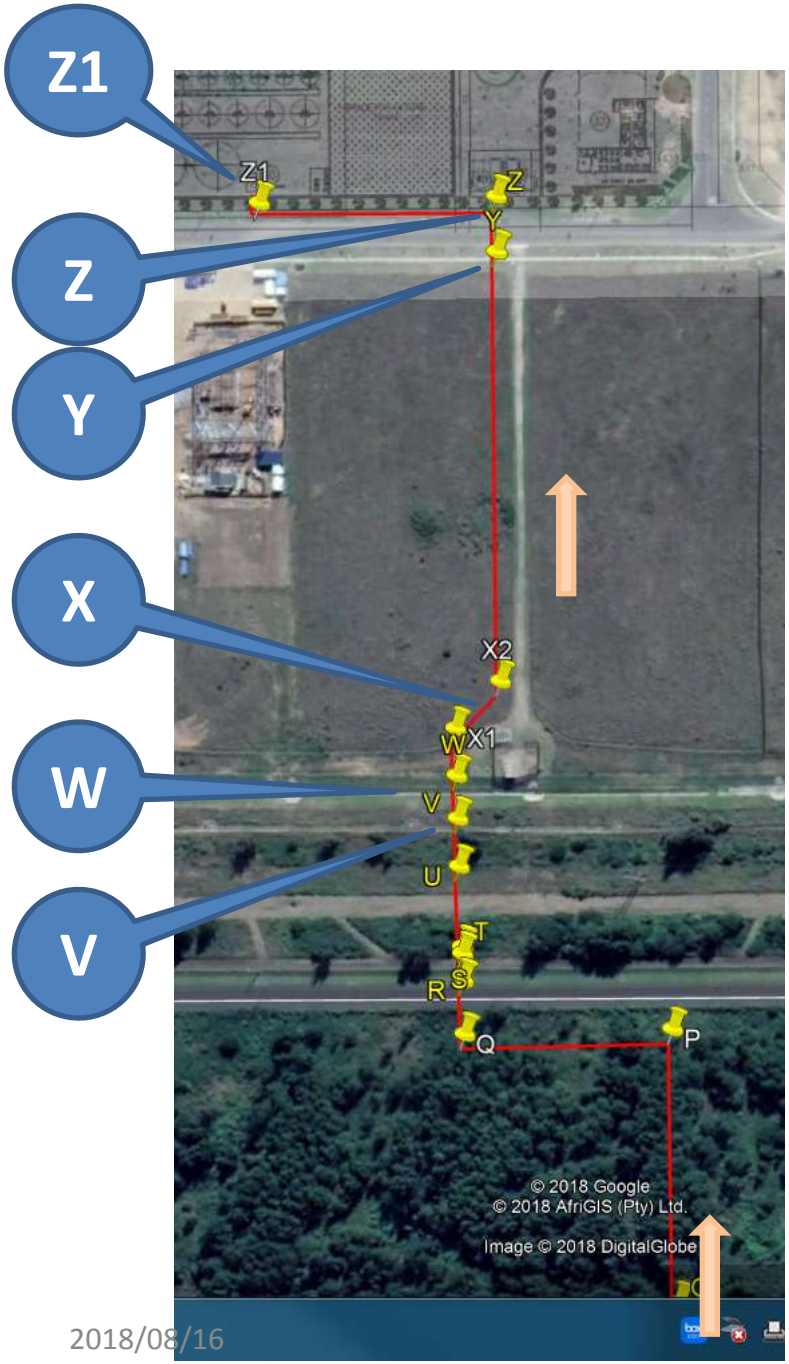




TYPICAL ACCESS SHAFT AND
DUCT UNDER ROADS

- 1 No at each end of tunnel
- above-ground pipe supports not shown

TYPICAL SECTION THROUGH
DUCT UNDER ROADS



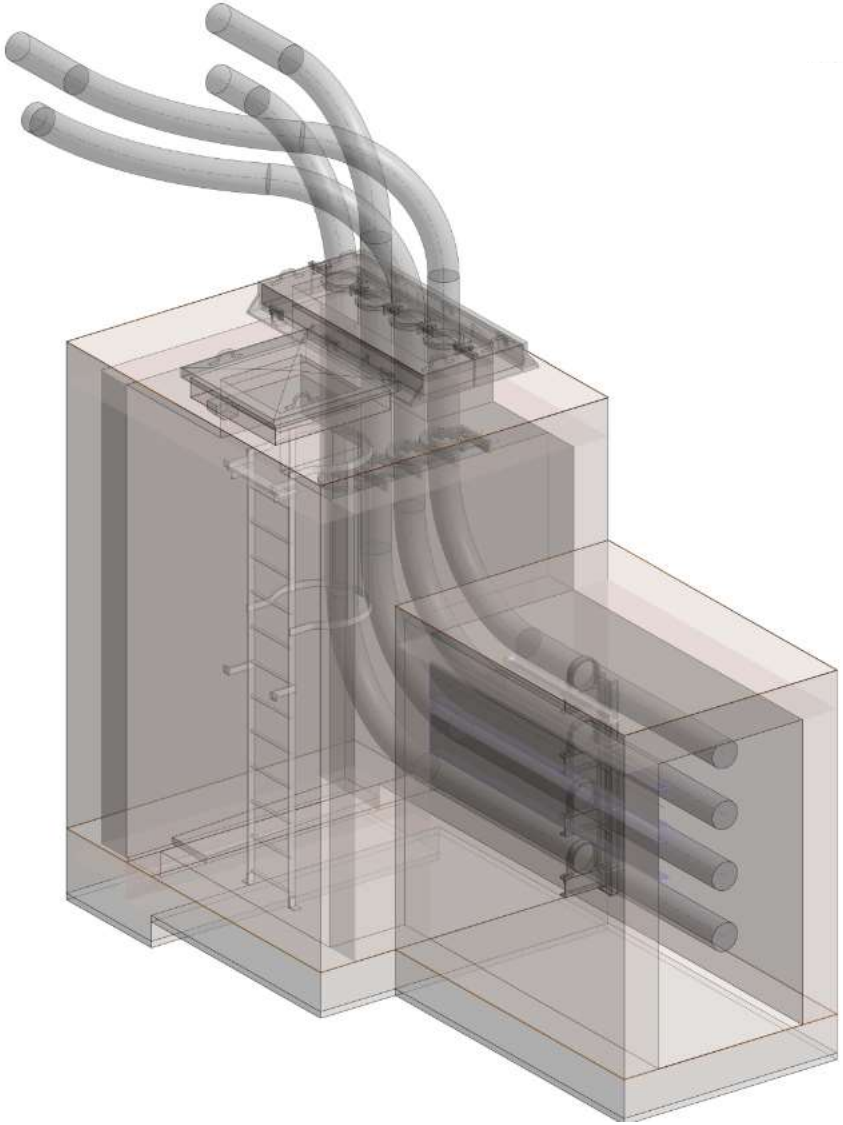
V – W – X – Y : Above-ground pipe on steel supports, penetrating RB IDZ Ph 1A Boundary Fence at V

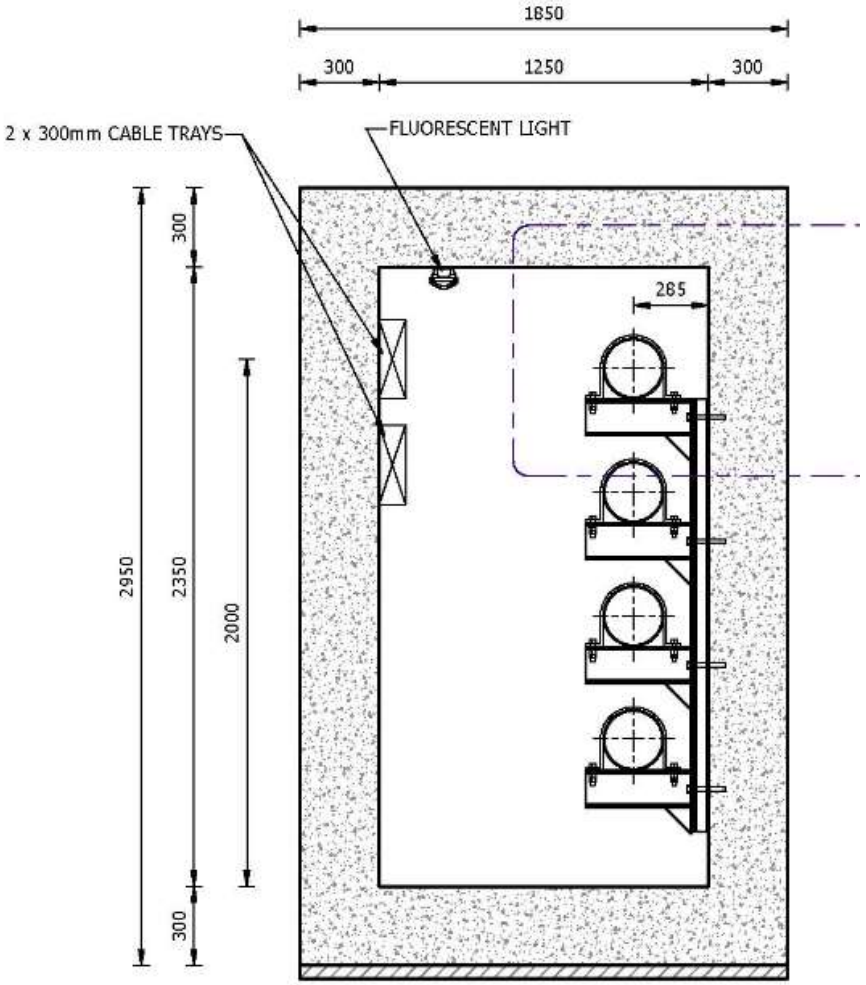
-- RB IDZ to provide requirements and specifications for fence penetration

Y – Z : Below-ground, reinforced concrete duct; accessible manholes provided at each end of duct; Lower manhole to be provided with sump for pumping out water and / or oil

Z – Z1: Above-ground pipe on steel supports

V : IDZ SECURITY FENCE
W : UNLINED OPEN DRAINAGE CHANNEL
X : 2 x 45 DEG BENDS
Y : ROAD CROSSING
Z : 90 DEGREE BEND
Z1 : 90 DEGREE BEND, WILMAR SITE BOUNDARY

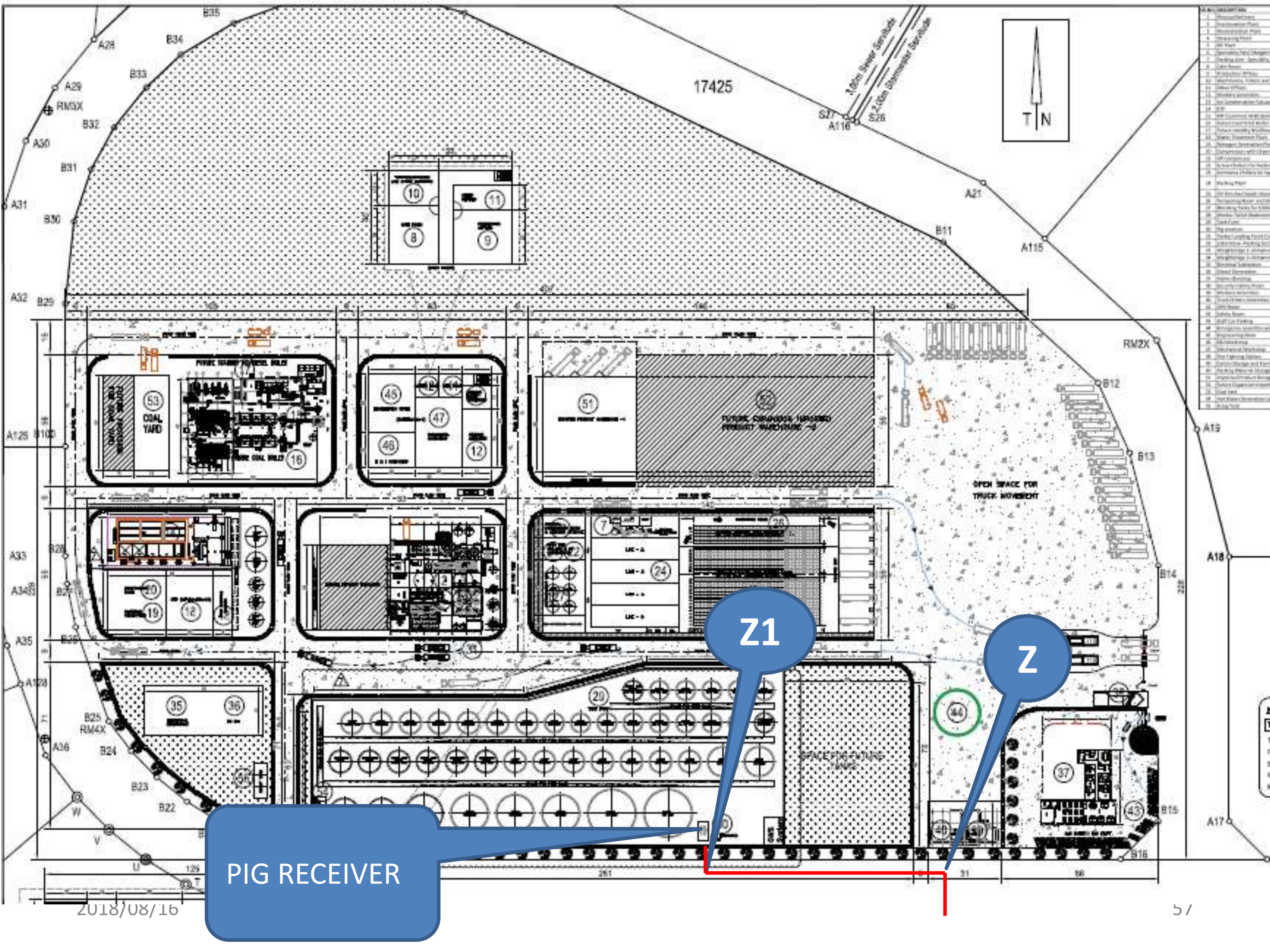




TYPICAL ACCESS SHAFT AND
DUCT UNDER ROADS

- 1 No at each end of tunnel
- above-ground pipe supports not shown

TYPICAL SECTION THROUGH
DUCT UNDER ROADS


Z1
Z
PIG RECEIVER
17425
COAL YARD
OPEN SPACE FOR TRUCK MOVEMENT
T N

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