

寄件者: luke.yip [REDACTED]
寄件日期: 2024年12月23日星期一 9:45
收件者: tpbpd/PLAND
副本: Andrea Wing Yin YAN/PLAND
主旨: Submission of Further Information (3) for Planning Application No. A/YL-KTN/1037

類別: Internet Email

Your Ref.: TPB/A/YL-KTN/1037

Date: 23 DEC 2024

Dear Sir/Madam,

We are pleased to submit herewith a Cover Letter, a Response-to-Comments Table (Attachment 3) and revised Drainage Impact Assessment (Appendix V) for the subject Planning Application for your consideration.

Should you have any queries, please contact the undersigned. Thank you.

Best regards,

Luke Yip

United Crown Holdings Limited
[REDACTED]

By Email (tpbpd@pland.gov.hk)
Town Planning Board Secretariat
15/F, North Point Government Offices
333 Java Road
North Point
Hong Kong
(Attn: Ms Andrea Yan)

23 DEC 2024

Dear Sir/Madam,

Application for Permission under Section 16 of the Town Planning Ordinance (Cap.131)
Proposed Temporary Warehouse (Excluding Dangerous Goods Godown) and Open Storage with Ancillary Facilities for a Period of 3 Years and Filling of Land (Planning Application No. A/YL-KTN/1037)

3rd Further Information - Responses to Departmental Comments

We refer to the comments received from various Government Departments on 22 November 2024 on the subject Planning Application.

We are pleased to submit herewith a Response-to-Comments Table (Attachment 3) and revised Drainage Impact Assessment (Appendix V) for your consideration.

We sincerely seek for favourable consideration from the Town Planning Board (TPB) for the approval of the subject S.16 Planning Application.

Should you have any queries, please contact the undersigned.

Best regards,

Luke Yip

For and on behalf of

United Crown Holdings Limited




Attachment 3 - Response-to-Comments Table

| No. | Comments | Responses |
|-----|--|---|
| 1 | <p>Drainage Services Department (DSD), dated 22.11.2024</p> <p>(a) The DIA should be signed and certified by a qualified engineer (Registered Professional Engineer in the Civil Engineering discipline) before it is submitted to DSD for comment. Full name of the qualified engineer or register no. should be provided for our reference.</p> <p>(b) Figure 1 is illegible. Please provide a clear version for vetting.</p> <p>(c) Calculations - Velocity should be within 0.7m/s to 3m/s. Please review if any necessary upgrading works at your own cost for public drains due to your development is required.</p> <p>(d) Please provide more cross sections for reference.</p> <p>(e) Catchment area plan should be provided for comment. Please note the external catchment areas should also be considered in the assessment.</p> <p>(f) Channel turning at acute angle should be avoided wherever possible. Please review the proposed u-channel alignment.</p> <p>(g) Calculations - Practically, the utilization of proposed pipe/ channel should not be larger than 85%. Please review.</p> <p>(h) The Registered Professional Engineer should ensure the submitted DIA complying with the requirements set out in DSD Advice Note No. 1, particularly Appendix I and II. Please critically review the submitted DIA.</p> | <p>(a) Noted, followed and amended.</p> <p>(b) The Figure 1 is replaced with a clear version.</p> <p>(c) Noted, followed and amended. Only flow velocity within the existing 750mm dia. pipe between existing Catchpit SCH1028857 and existing Manhole SMH1048223 might be greater than 3m/s due to its existing pipe gradient. The subject development would not disturb the subject drain pipe. To be conservative, the maximum flow velocity of 3m/s is adopted within the existing 750mm dia. pipe in the assessment.</p> <p>(d) Three more cross sections are added.</p> <p>(e) Relevant catchment area plan is incorporated into Figure 3 – ‘Stormwater Drainage Management Plan (Including Catchment Boundaries)’.</p> <p>(f) The proposed u-channel alignment is reviewed and catchpits/manholes are added to eliminate channel turning at acute angle.</p> <p>(g) Noted. The design has been amended accordingly.</p> <p>(h) Noted and followed.</p> |
| 2 | <p>Water Services Department (WSD), dated 22.11.2024</p> <p>(a) It is noted that the maximum headroom will be 16.5 m. Please also advise the minimum headroom.</p> | <p>(a) The minimum headroom will be not less than 13m.</p> |

Drainage Impact Assessment
in support of Planning Application No. A/YL-KTN/1037
for a Proposed Temporary Warehouse (excluding Dangerous Goods
Godown) with Ancillary Facilities and Open Storage of Unlicensed
Vehicles, Construction Machinery and Construction Materials for a
Period of 3 Years and Filling of Land at Various Lots in D.D. 107
and adjoining Government Land, Kam Tin North, Yuen Long, N.T.
(HT24121)

November 2024

| | |
|-------------------------|---|
| Prepared & Approved by: | LEE Kwok Cheung <i>RPE(Civil), MICE, MHKIE</i>  |
|-------------------------|---|

何田顧問工程師有限公司
HO TIN & ASSOCIATES

CONSULTING ENGINEERS LIMITED

香港九龍官塘鴻圖道26號威登中心12樓1201-3室

電話: 2895 2238 傳真: 2890 8872 電郵: admin@hotin.com.hk

Rooms 1201-3, Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Tel: 2895 2238 Fax: 2890 8872 E-mail: admin@hotin.com.hk

CONTENT

1. Introduction
2. General Site Description and the Proposed Development
3. Existing Drainage System of the Area
4. Proposed Drainage Works
5. Hydraulic Calculation
6. Conclusion

FIGURE

| | |
|-----------------|---|
| Figure 1 | Location Plan |
| Figure 2 | Proposed Development Layout |
| Figure 3 | Stormwater Drainage Management Plan (including Catchment Boundaries) |
| Figure 4 | Site Cross Sections (1 of 2) |
| Figure 5 | Site Cross Sections (2 of 2) |

| | |
|-----------------|---|
| APPENDIX | Assessment of Hydraulic Capacities of the Proposed Drainage System |
|-----------------|---|





1. Introduction

- 1.1 Ho Tin & Associates Consulting Engineers Limited (HTA) was appointed by the client to prepare a Drainage Impact Assessment (DIA) in support of the Planning Application No. A/YL-KTN/1037 for a proposed temporary warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities and Open Storage of Unlicensed Vehicles, Construction Machinery and Construction Materials for a period of 3 years and filling of land at Lot 953 S.B, 953 S.C, 953 S.D, 953 S.E, 953 S.F, 953 S.G, 953 S.H, 953 S.I, 953 S.J, 953 S.K, 953 S.L, 960 RP (part), 961 RP (part), 1065, 1072, 1074, 1075, 1076 S.A, 1076 S.B, 1076 S.C, 1077 and 1081 S.A RP in D.D. 107 and adjoining Government Land, Kam Tin North, Yuen Long, N.T (the ‘subject site’).
- 1.2 This report presents the DIA for the proposed temporary uses at the subject site.
- 1.3 The objectives of this DIA are to:-
- indicate any changes/increase in drainage characteristics due to the proposed development;
 - assess any potential drainage impacts of the existing/planned drainage facilities nearby due to the proposed development; and
 - propose mitigation measures and drainage improvement work, if necessary, to minimize any adverse drainage impact.
- 1.4 The scope of this DIA includes:-
- site description and existing land use;
 - identification of stormwater flow pattern before and after proposed development of the Subject site;
 - assessment of impact on the existing drainage facilities due to the proposed development; and
 - proposal of new drainage facilities for the proposed development if found necessary.

2. General Site Description and the Proposed Development

- 2.1 The subject site is currently zoned “Agriculture” on the Approved Kam Tin North Outline Zoning Plan No. S/YL-KTN/11. It is located on the east side of Mei Fung Road (refer to **Plate 1**) and encroaches upon the north side of an existing maintenance access of a DSD’s 6500mm trapezoidal channel (refer to **Plate 2**). The subject site area is about 12,945m²

including about 1,533m² of Government land. The subject site is currently partly occupied for temporary carpark, open storage and temporary structures (refer to **Plate 3**) and partly being fallow agricultural land (refer to **Plate 4**). A Location Plan with the locations of photo taken is shown on **Figure 1**.

| | |
|--|--|
|  |  |
| <p>Plate 1 – The subject site on the east side of Mei Fung Road</p> | <p>Plate 2 – An existing DSD’s 6500 mm trapezoidal channel to the immediate east of the subject site</p> |
|  |  |
| <p>Plate 3 – Part of the subject site is now occupied for temporary carpark, open storage and temporary structures</p> | <p>Plate 4 – Part of the subject site is now being fallow agricultural land</p> |

2.2 It is proposed to construct three temporary structures with a total GFA of about 10,423 m² and heights of not more than 16.5 m within the site for warehouse and ancillary office uses, and open storage area of about 2,039 m². A total of 12 parking and loading/unloading (L/UL) spaces will be provided within the site including five private car parking spaces, three light goods vehicle (LGV), three medium goods vehicle (MGV) and one heavy goods vehicle (HGV) L/UL spaces as shown on **Figure 2**.

2.3 It is proposed to use the subject site for temporary warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities and Open Storage of Unlicensed Vehicles,

Construction Machinery and Construction Materials for a period of 3 years and filling of land. The subject site covers total land area of approximately 12945 m². The proposed use comprises of 3 nos. of structures with total covered area about 5342 m². The remaining area would be used for open storage and open parking spaces.

2.4 As the existing site level ranges from +7.2 mPD to +10.0 mPD, filling of land area will be required for the entire site (about 12,945 m²) to achieve a flat surface. The subject site will be filled with concrete of not more than 1.2 m (i.e., 0.2 m to 1.2 m) in depth. The Proposed Development Layout is shown in **Figure 2**.

3. Existing Drainage System of the Area

3.1 The subject site is located at ground levels gradually declining from about +10.0 mPD at the northern corner to about +7.2 mPD at the southern corner. At present, except some localized drainage provisions, there is no formal engineering drainage provisions serving the area between Mei Fung Road and the existing DSD’s 6500mm trapezoidal channel. Surface runoff of the subject site would follow the ground levels running from the north to the south in general and into the DSD’s 6500mm trapezoidal channel via an existing 750/900mm diameter discharge pipe (refer to **Plate 5** and **6**).



Plate 5 – Existing catchpit in front of the maintenance access of the 6500mm trapezoidal channel receiving runoff from the area between Mei Fung Road and the channel



Plate 6 – Existing 750/900mm diameter discharge pipe at the 6500mm trapezoidal channel near the southern boundary of the subject site (the discharge pipe is currently blocked by vegetation, and the applicant will clear the blockage after this application is approved)

4. Proposed Drainage Works

- 4.1 In order to meet the operation requirements, the subject site will be filled with concrete of not more than 1.2 m (i.e., 0.2 m to 1.2 m) in depth. It is noticed that the proposed development should not obstruct any overland flows and causing ponding, therefore peripheral channels at the lower level will be constructed along the subject site boundary.
- 4.2 In general, the existing flow paths of surface runoff of the area would be maintained after the proposed development, i.e. the surface runoff of the subject area would still flow/be conveyed from the north to the south and be discharged into the existing DSD's 6500mm trapezoidal channel to the south of the subject site.
- 4.3 In order to properly manage surface runoff flowing across the boundary of the subject site and avoid surface runoff flowing outside from the subject site directly onto the surrounding areas, peripheral U-channels will be constructed around the subject site to intercept all surface runoff. The flows inside the channels will be discharged into a proposed terminal manhole (TM1) located at the southern corner of the subject site and from which the flow will be discharged via the existing 750/900mm diameter discharge pipe into the existing DSD's 6500mm trapezoidal channel. However, in order to lessen the loadings inside the existing 750/900mm diameter discharge pipe, surface runoff collected from the eastern portion of the subject site would be discharged directly into the DSD's 6500mm trapezoidal channel via another proposed terminal manhole (TM2) of the subject site and a proposed new 600mm diameter discharge pipe. A Stormwater Drainage Management Plan is shown in **Figure 3** and Site Cross Sections are shown in **Figure 4** and **5**.
- 4.4 No solid fence wall of the subject site will be constructed. Hoarding with 100mm gap at bottom will be erected around the subject site for security reasons. The proposed development will not obstruct any flow paths of the area.
- 4.5 The Applicant is committed to obtain consents from owners of adjacent relevant land/lots prior to commencement of the proposed drainage works outside the subject site and to maintain the completed drainage works to the satisfaction of relevant Government departments.
- 4.6 Details of proposed drainage provisions shall follow relevant details shown in Government departments' Standard Drawings as follows:

| <i>Proposed Drainage Provisions</i> | <i>Standard Drawings</i> | <i>Drawing No. & Title</i> |
|-------------------------------------|--------------------------|--|
| Standard manhole Type D1 | DSD Standard Drawing | DS 1079A – Standard Manhole Type D1 |
| Terminal manhole | | DS 1091A – Terminal Manhole Type T2_1 |
| Catchpit | CEDD Standard Drawings | C 2405/1 to /5 – Standard Catchpit Details |
| Catchpit precast concrete cover | | C 2407B – Precast Concrete Covers for Catchpit and Sand Trap |
| U-channel | | C 2409I – Details of Half-round and U-channels |
| Channel cover | | C 2412E – Cover Slab and Cast Iron Grating for Channels |

5. Hydraulic Calculation

- 5.1 Assessment criteria is based on the recommendation set out in the Stormwater Drainage Manual (Fifth edition, Jan 2018) (SDM) and its Corrigendum Nos. 1/2022, 1/2024 and 2/2024 issued by DSD. Design Return Period of 50 years (recommended for ‘Main Rural Catchment Drainage Channels’ in SDM) is being adopted.
- 5.2 The corresponding runoffs under rainfall intensity for various return period are worked out with reference to Rational Method. Brandy-Williams method is used in calculation of the time of concentration. A uniformly distributed rainfall with an intensity is determined by the Intensity-Duration-Frequency. With referenced to Table 3a - Storm Constants for different return periods of HKO Headquarters from SDM, the rainfall profiles are derived based on the following equation:

$$i = \frac{a}{(t_d + b)^c}$$

- where i = extreme mean intensity in mm/hr,
 t_d = duration in minutes ($t_d \leq 240$), and
 a, b, c = storm constants given in the table below

| Return Period (years) | 50 |
|-----------------------|-------|
| a | 505.5 |
| b | 3.29 |
| c | 0.355 |

A 16.0% rainfall increase is adopted in the hydraulic calculation to cater for effects due to climate change in accordance with the table 28 with projection to End of 21st Century (it is very conservative, as the subject application is only for 3 years) as stipulated in the item (e) and (k) of the SDM - Corrigendum No. 1/2022.

- 5.3 Hydraulic assessment is enclosed in the **Appendix**. 10% reduction in flow area has been incorporated to cater for potential deposition of sediment in stormwater channels and pipes as recommended in the SDM. The proposed channels and underground drainage were designed to cater for the estimated runoff under the designed rainstorms. With respect to the calculation, the proposed stormwater drainage system is capable to cater for the surface runoff without causing any adverse drainage impacts on the subject site and its surroundings.
- 5.4 Since all channels/pipes would have sufficient spare capacity, no water backup will occur at the upstream under rainstorms of 50-year (or lower) return periods.

6. Conclusion

- 6.1 The subject site will be for temporary warehouse (excluding Dangerous Goods Godown) with Ancillary Facilities and Open Storage of Unlicensed Vehicles, Construction Machinery and Construction Materials for a period of 3 years and filling of land only.
- 6.2 Peripheral U-channels will be constructed around the subject site to intercept all surface runoff crossing the boundary. The flows inside the channels will be discharged into two proposed terminal manholes, namely TM1 and TM2. From TM1, the flow will discharge via the existing catchpit SCH1028857 and manhole SMH1048223 into the DSD's 6500mm trapezoidal channel. In order to lessen the flow inside the existing 750mm diameter pipe between the existing catchpit SCH1028857 and manhole SMH1048223, part of the surface runoff from the subject site will discharge via another terminal manhole TM2 into a proposed new 900mm diameter pipe discharging into the DSD's 6500mm trapezoidal channel. There would be no change in principle nor obstruction to the existing flow paths of the area.

- 6.3 The Applicant is committed to obtain consents from owners of adjacent relevant land/lots prior to commencement of the proposed drainage works outside the subject site and to maintain the completed drainage works to the satisfaction of relevant Government departments, and to clear the vegetation at the existing watercourse to which the surface runoff of the subject site would be discharged into.
- 6.4 In conclusion, the Proposed Development would not cause any adverse drainage impact onto the area.

LOCATION OF THE APPLICATION SITE

APPLICATION SITE AREA : 12,945 m² (ABOUT)

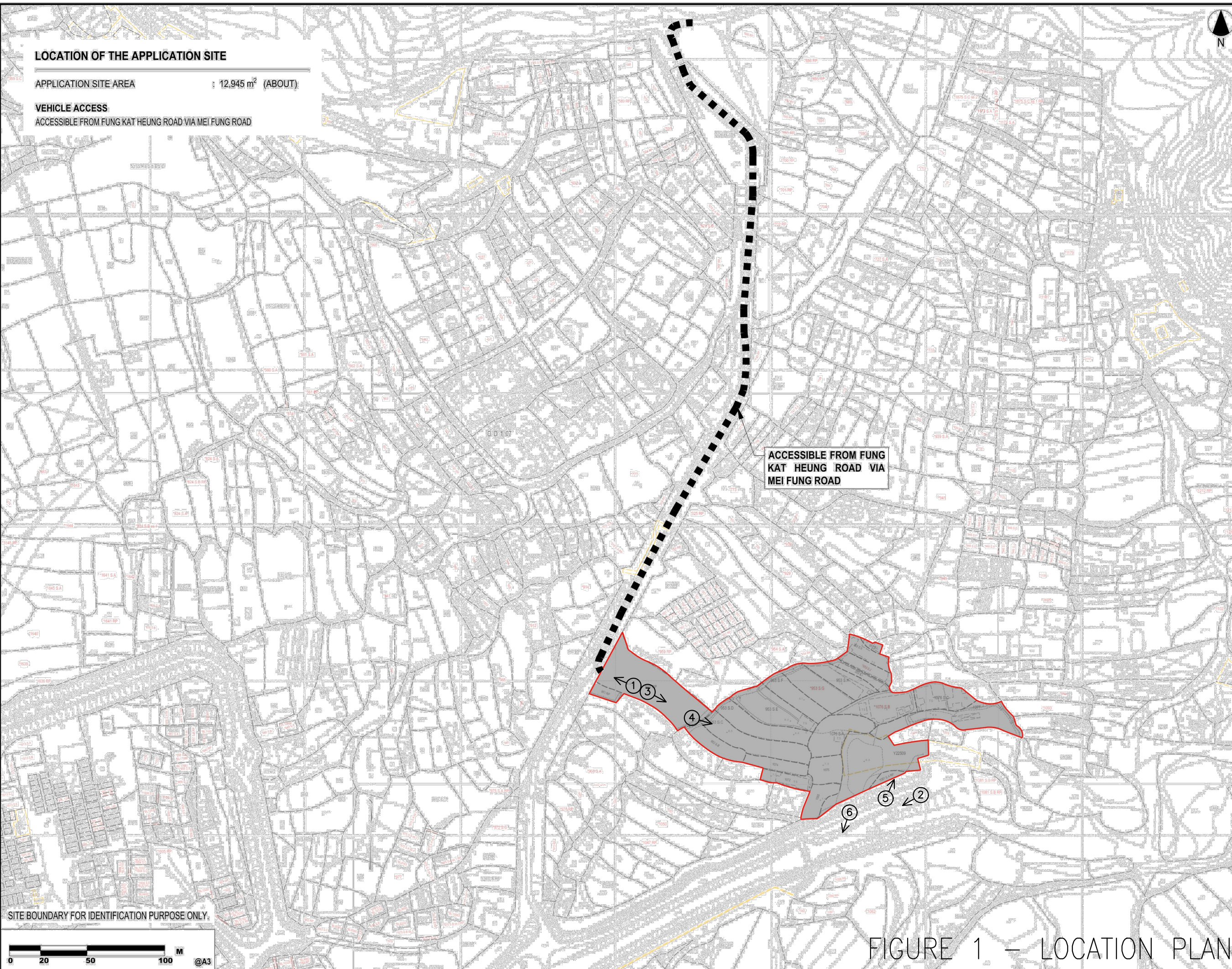
VEHICLE ACCESS
ACCESSIBLE FROM FUNG KAT HEUNG ROAD VIA MEI FUNG ROAD



• ALL DIMENSIONS ARE IN MILLIMETER EXCEPT OTHERWISE NOTED
• DO NOT SCALE DRAWING

LEGEND

- APPLICATION SITE
- ACCESS ROUTE
- N ↗ LOCATION OF PHOTO TAKEN



ACCESSIBLE FROM FUNG
KAT HEUNG ROAD VIA
MEI FUNG ROAD

SITE BOUNDARY FOR IDENTIFICATION PURPOSE ONLY.



LOCATION PLAN 03 JUN 2024

REVISION

| | | | |
|-------|---------|------|-------------|
| drawn | CL & LY | DATE | 03 JUN 2024 |
|-------|---------|------|-------------|

| | | | |
|---------|---|------|--|
| checked | - | DATE | |
|---------|---|------|--|

| | | | |
|----------|---|------|--|
| approved | - | DATE | |
|----------|---|------|--|

contract no. =
project no. =

TITLE :
PROPOSED TEMPORARY WAREHOUSE (EXCLUDING DANGEROUS GOODS GODOWN) WITH ANCILLARY FACILITIES AND OPEN STORAGE OF UNLICENSED VEHICLES, CONSTRUCTION MACHINERY AND CONSTRUCTION MATERIALS FOR A PERIOD OF 3 YEARS AND FILLING OF LAND

SITE LOCATION :
VARIOUS LOTS IN D.D. 107, KAM TIN NORTH, YUEN LONG, NEW TERRITORIES

drawing title:
LOCATION PLAN

| | | |
|-------------|------|-------|
| drawing no. | rev. | scale |
|-------------|------|-------|

| | | |
|--------|---|--------|
| PLAN 4 | - | N.T.S. |
|--------|---|--------|

FIGURE 1 – LOCATION PLAN

H:\24121_MeiFungRoad\DRAWING\24121\FIG1.dwg 6/9/2024 15:47:47 DWG To PDF.pc3

DEVELOPMENT PARAMETERS

| | |
|-----------------------|---------------------------------|
| APPLICATION SITE AREA | : 12,945 m ² (ABOUT) |
| COVERED AREA | : 5,276 m ² (ABOUT) |
| UNCOVERED AREA | : 7,669 m ² (ABOUT) |
| | |
| PLOT RATIO | : 0.78 (ABOUT) |
| SITE COVERAGE | : 41% (ABOUT) |
| | |
| NO. OF STRUCTURE | : 3 |
| DOMESTIC GFA | : NOT APPLICABLE |
| NON-DOMESTIC GFA | : 10,147 m ² (ABOUT) |
| TOTAL GFA | : 10,147 m ² (ABOUT) |
| | |
| BUILDING HEIGHT | : 16.5 m (NOT EXCEEDING) |
| NO. OF STOREY | : 1-2 |

| STRUCTURE | USE | COVERED AREA | GFA | BUILDING HEIGHT |
|--------------|---|------------------------------------|-------------------------------------|-----------------------------------|
| B1 | WAREHOUSE AND ANCILLARY OFFICE | 5,020 m ² (ABOUT) | 9,891 m ² (ABOUT) | 16.5 m (NOT EXCEEDING) (2-STOREY) |
| B2 | RAIN SHELTER FOR LOADING / UNLOADING SPACES | 250 m ² (ABOUT) | 250 m ² (ABOUT) | 7 m (ABOUT) (1-STOREY) |
| B3 | SECURITY ROOM | 6 m ² (ABOUT) | 6 m ² (ABOUT) | 3.2 m (ABOUT) (1-STOREY) |
| TOTAL | | 5,276 m² (ABOUT) | 10,147 m² (ABOUT) | |

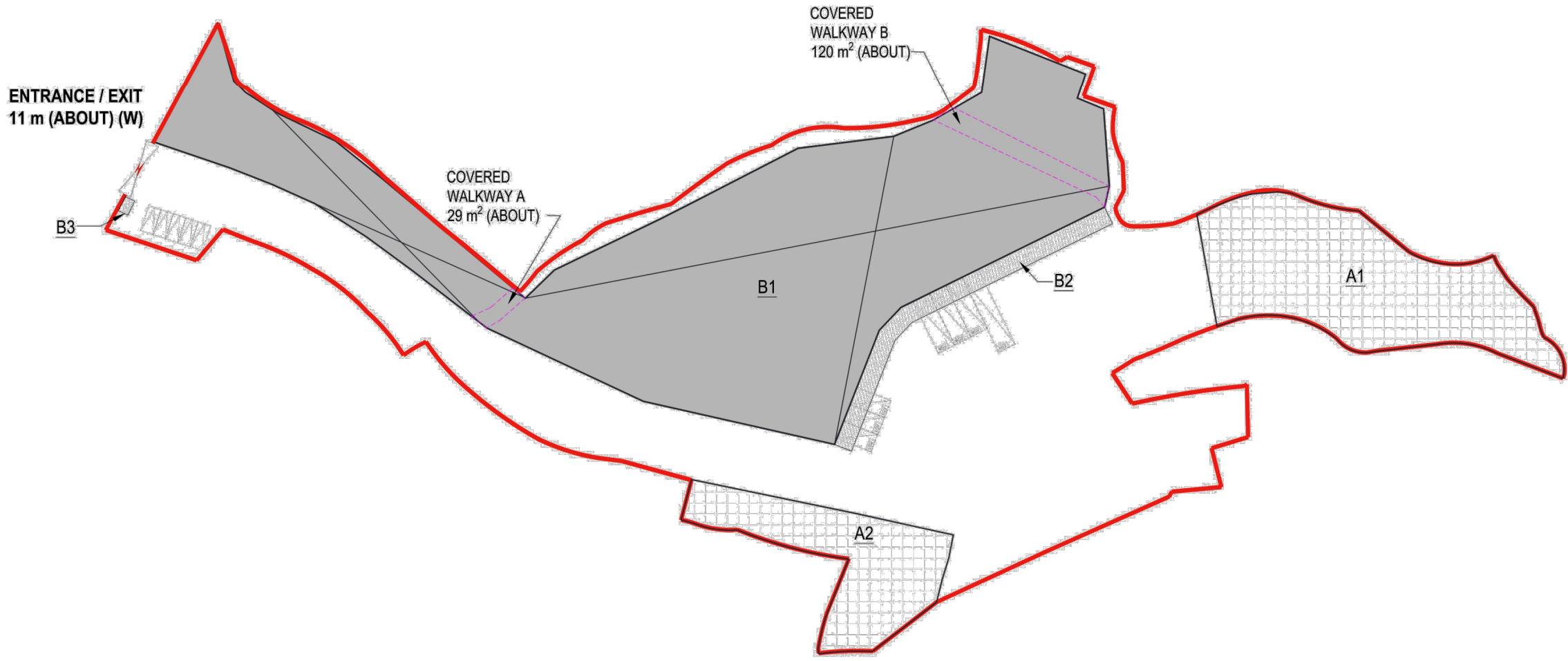
| OPEN STORAGE | UNCOVERED AREA |
|--------------|------------------------------------|
| A1 | 1,323 m ² (ABOUT) |
| A2 | 713 m ² (ABOUT) |
| TOTAL | 2,036 m² (ABOUT) |



• ALL DIMENSIONS ARE IN MILLIMETER EXCEPT OTHERWISE NOTED.
• DO NOT SCALE DRAWING

LEGEND

- APPLICATION SITE
- WAREHOUSE
- OPEN STORAGE
- RAIN SHELTER
- SECURITY ROOM
- PARKING SPACE
2.5 m (W) X 5 m (L)
- L/U/L SPACE (LGV)
3.5 m (W) X 7 m (L)
- L/U/L SPACE (MGV)
3.5 m (W) X 11 m (L)
- L/U/L SPACE (HGV)
3.5 m (W) X 16 m (L)
- ENTRANCE / EXIT



PARKING AND LOADING / UNLOADING PROVISIONS

| | |
|--|------------------------|
| NO. OF PRIVATE CAR PARKING SPACE | : 5 |
| DIMENSIONS OF PARKING SPACE | : 5 m (L) X 2.5 m (W) |
| | |
| NO. OF L/U/L SPACE FOR LIGHT GOODS VEHICLES | : 3 |
| DIMENSIONS OF PARKING SPACE | : 7 m (L) X 3.5 m (W) |
| | |
| NO. OF L/U/L SPACE FOR MEDIUM GOODS VEHICLES | : 3 |
| DIMENSIONS OF PARKING SPACE | : 11 m (L) X 3.5 m (W) |
| | |
| NO. OF L/U/L SPACE FOR HEAVY GOODS VEHICLES | : 1 |
| DIMENSIONS OF PARKING SPACE | : 16 m (L) X 3.5 m (W) |

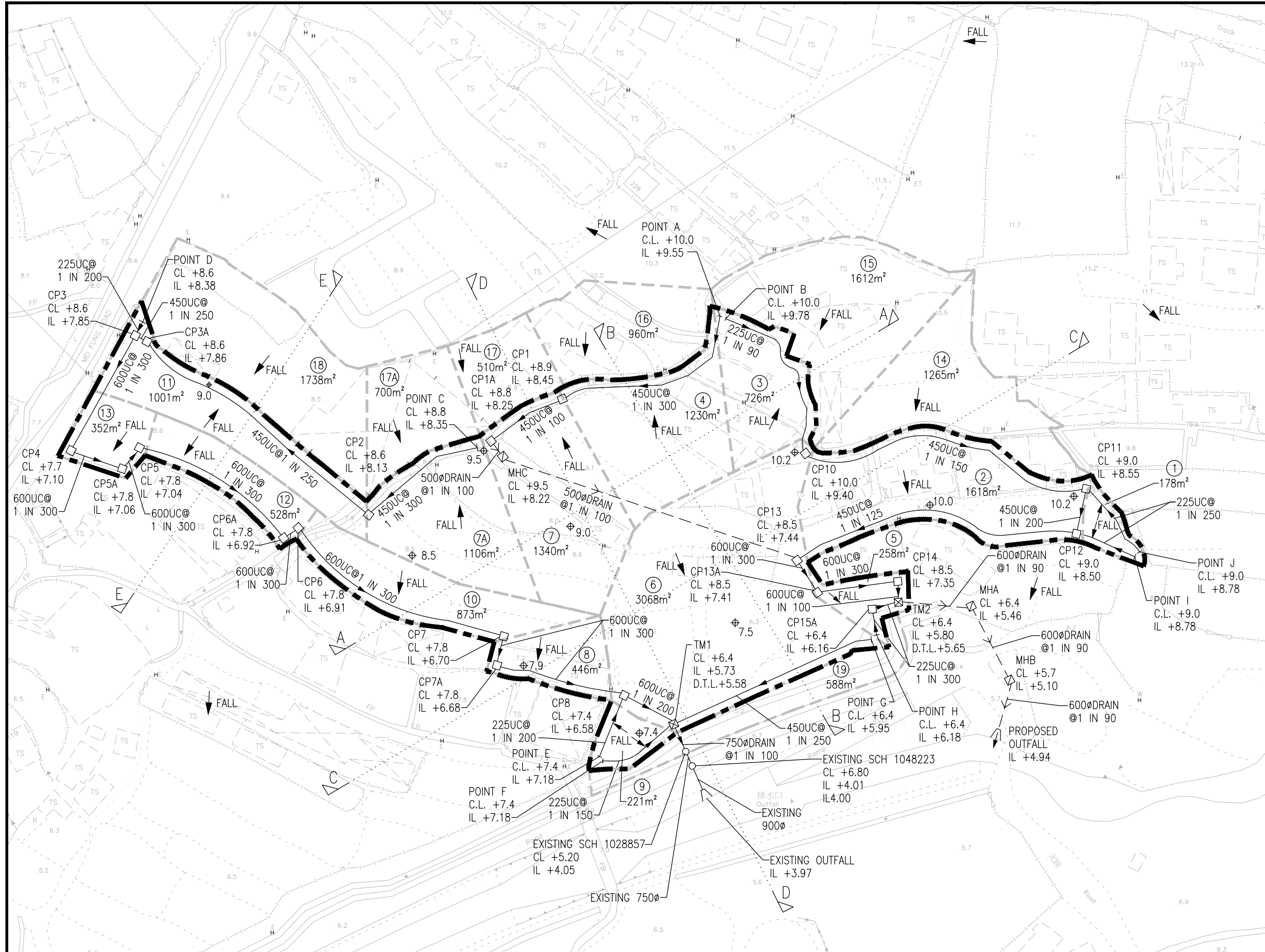
| REVISION | name | DATE |
|----------|------------------------------------|-------------|
| C | REVISED WAREHOUSE BOUNDARY | 13 SEP 2024 |
| B | REVISED WAREHOUSES AND OS BOUNDARY | 15 AUG 2024 |
| A | REVISED USAGE DETAILS & LEGEND | 26 JUN 2024 |
| --- | LAYOUT PLAN | 03 JUN 2024 |

| | | | |
|--|---------|-------|-------------|
| drawn | CL & LY | DATE | 03 JUN 2024 |
| checked | -- | DATE | -- |
| approved | -- | DATE | -- |
| contract no. -- | | | |
| project no. -- | | | |
| TITLE : | | | |
| PROPOSED TEMPORARY WAREHOUSE (EXCLUDING DANGEROUS GOODS GODOWN) WITH ANCILLARY FACILITIES AND OPEN STORAGE OF UNLICENSED VEHICLES, CONSTRUCTION MACHINERY AND CONSTRUCTION MATERIALS FOR A PERIOD OF 3 YEARS AND FILLING OF LAND | | | |
| SITE LOCATION : | | | |
| VARIOUS LOTS IN D.D. 107, KAM TIN NORTH, YUEN LONG, NEW TERRITORIES | | | |
| drawing title: LAYOUT PLAN | | | |
| drawing no. | PLAN 1 | rev. | c |
| | | scale | N.T.S. |

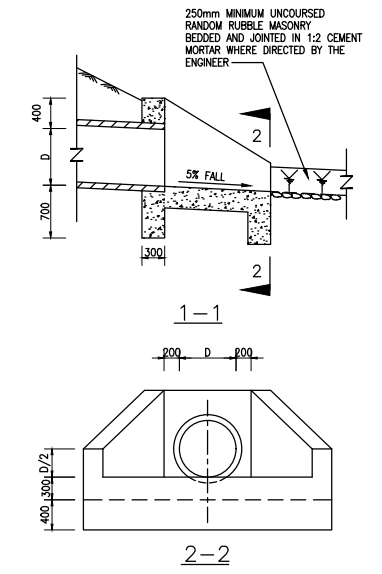


FIGURE 2 – PROPOSED DEVELOPMENT LAYOUT

H:\24121_MelFungRoad\DRAWING\24121\FIG2_01.dwg, 17/10/2024, 11:58:01, DWG To PDF.pc3



- LEGEND**
- ⊕ PROPOSED FINISHED GROUND LEVEL
 - CL COVER LEVEL/EXISTING GROUND LEVEL OF ADJACENT GROUND OUTSIDE THE SUBJECT SITE BOUNDARY
 - IL INVERT LEVEL
 - PROPOSED CATCHPIT WITH SAND TRAP
 - ⊠ PROPOSED MANHOLE
 - PROPOSED U-CHANNEL
 - - - - PROPOSED CONCRETE DRAIN PIPE
 - CATCHMENT BOUNDARY

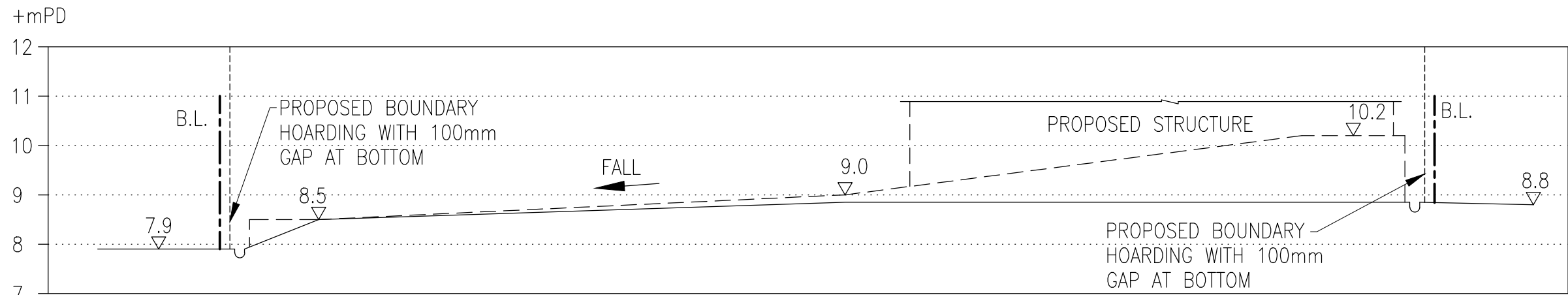


PLAN
PROPOSED OUTFALL DETAIL N.T.S.

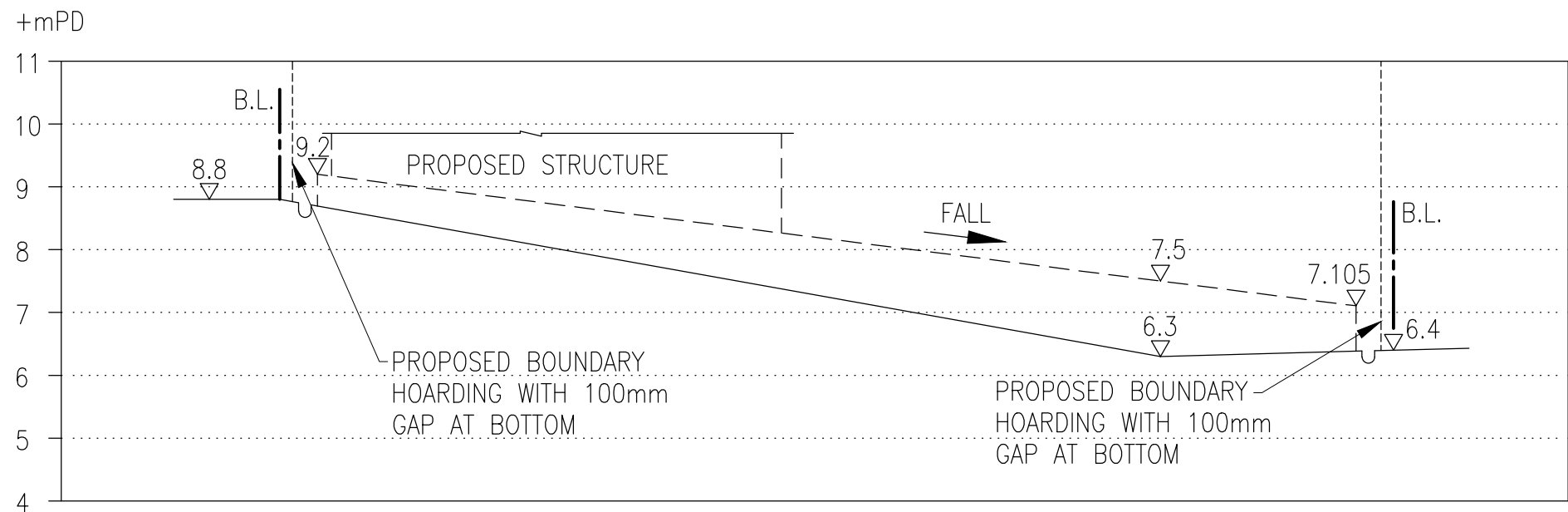
H:\24121_MelFungRoad\DRAWING\24121FIG_03 & FIG_02 & FIG_01.dwg, 2/12/2024 11:27:35, DWG To PDF.ppt3

| | |
|---------|--|
| PROJECT | VARIOUS LOTS IN D.D. 107, KAM TIN NORTH, YUEN LONG, NEW TERRITORIES (PLANNING APPLICATION NO. A/YL-KTN/1037) |
| TITLE | STORMWATER DRAINAGE MANAGEMENT PLAN (INCLUDING CATCHMENT BOUNDARIES) |

| | |
|---|-------------|
| 何田顧問工程師有限公司 HO TIN & ASSOCIATES CONSULTING ENGINEERS LIMITED | |
| SCALE | DRAWING No. |
| 1 : 1000 - A3 | FIGURE 3 |



SECTION A - A
 1 : 100 VERTICAL
 1 : 500 HORIZONTAL



SECTION B - B
 1 : 100 VERTICAL
 1 : 500 HORIZONTAL

PROPOSED FINISHED LEVEL -----
 EXISTING LEVEL _____

H:\24121_MelFungRoad\DRAWING\24121FIG_03 & FIG_02 & FIG_00.dwg, 26/11/2024 14:25:22, DWG To PDF.pc3

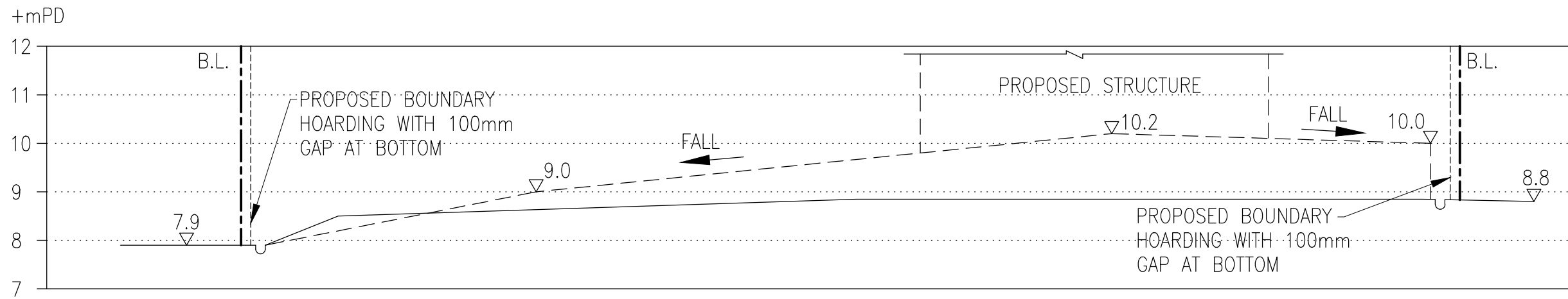
PROJECT
 VARIOUS LOTS IN D.D. 107, KAM TIN NORTH, YUEN LONG,
 NEW TERRITORIES (PLANNING APPLICATION NO. A/YL-KTN/1037)

何田顧問工程師有限公司
HO TIN & ASSOCIATES
 CONSULTING ENGINEERS LIMITED

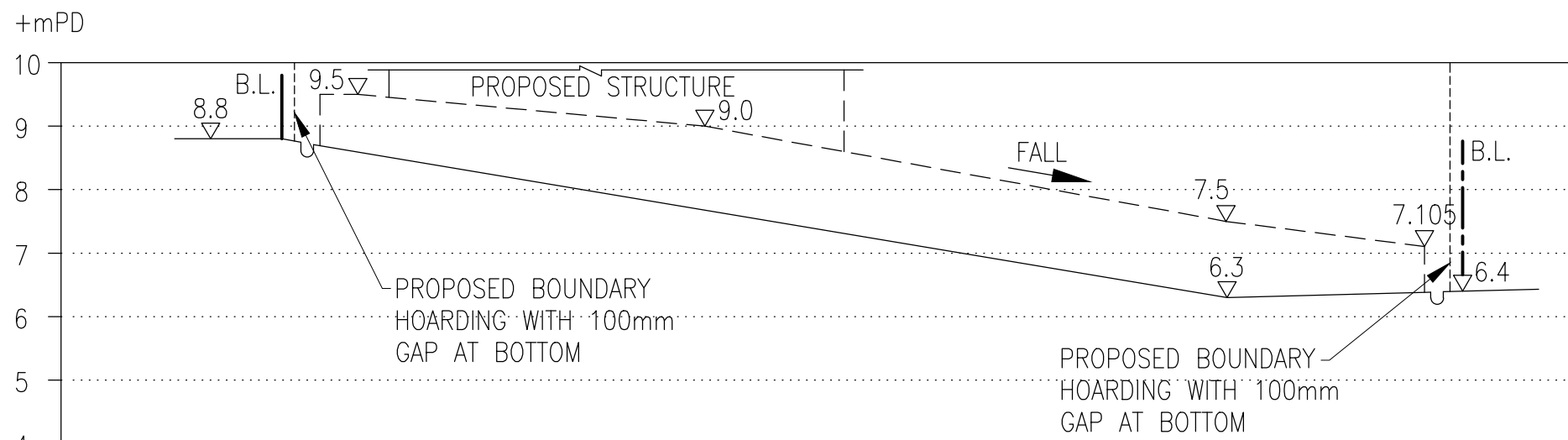
TITLE
 SITE CROSS SECTIONS
 (SHEET 1 OF 2)

SCALE
 AS SHOWN - A3

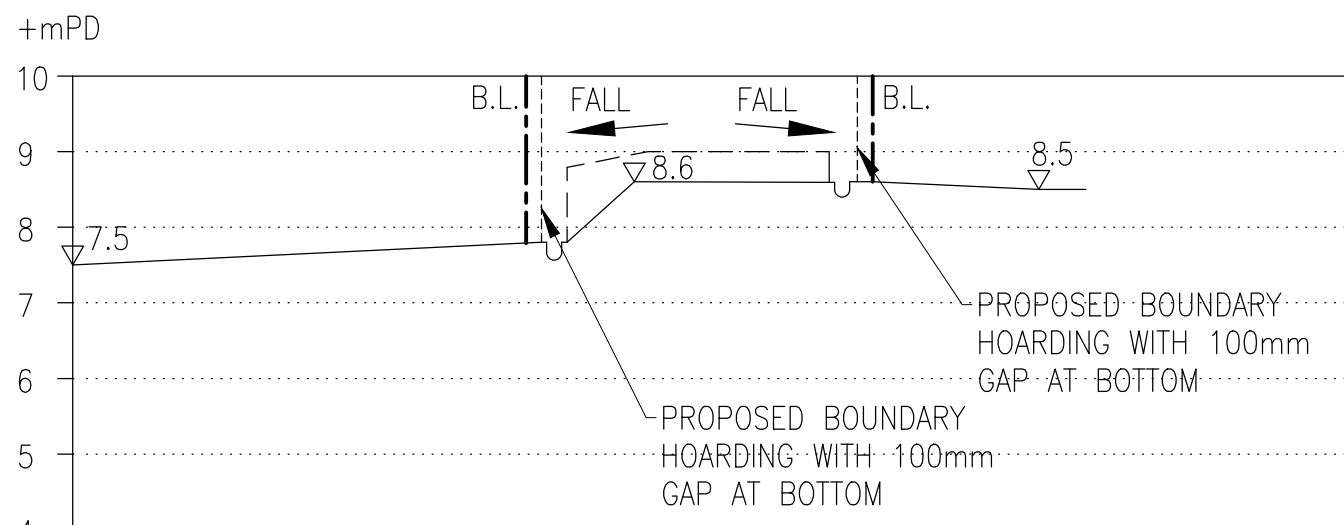
DRAWING No.
 FIGURE 4



SECTION C - C



SECTION D - D



SECTION E - E

PROPOSED FINISHED LEVEL -----
 EXISTING LEVEL _____

PROJECT
 VARIOUS LOTS IN D.D. 107, KAM TIN NORTH, YUEN LONG,
 NEW TERRITORIES (PLANNING APPLICATION NO. A/YL-KTN/1037)

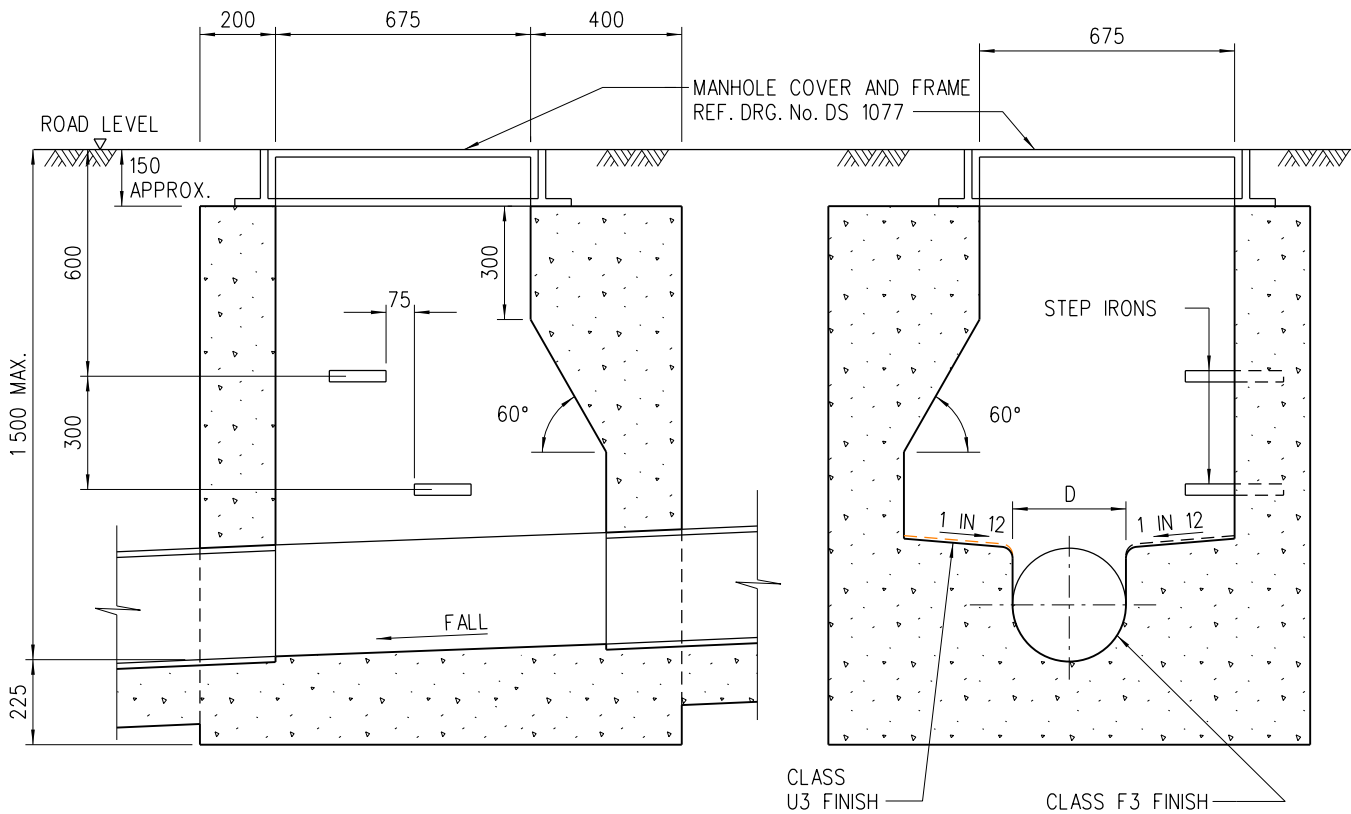
何田顧問工程師有限公司
HO TIN & ASSOCIATES
 CONSULTING ENGINEERS LIMITED

TITLE
 SITE CROSS SECTIONS

SCALE
 AS SHOWN - A3

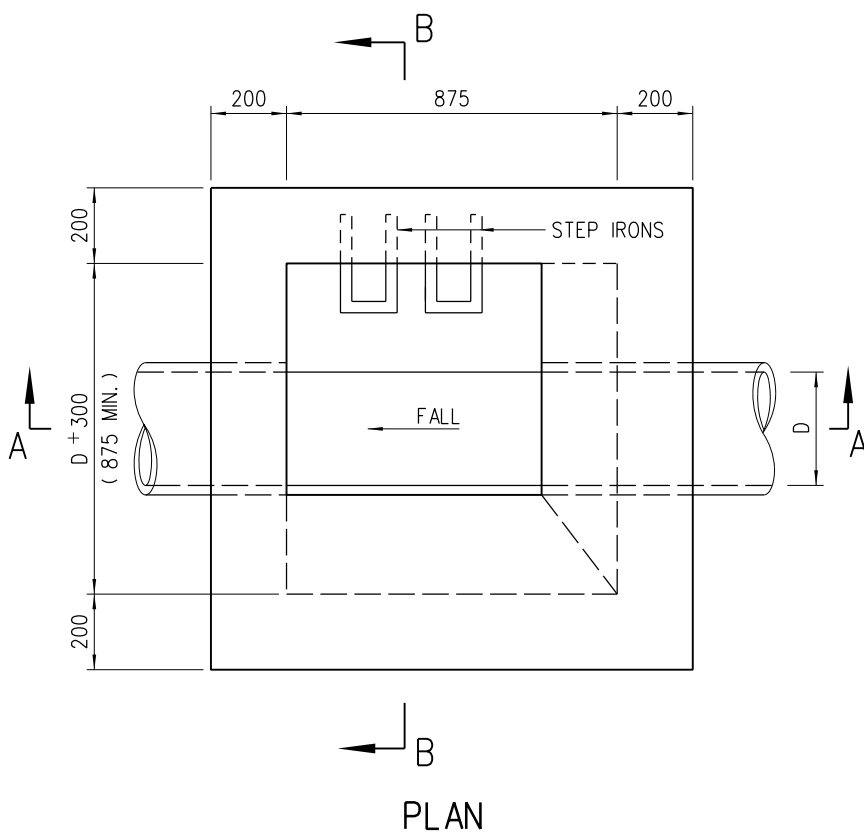
DRAWING No.
 FIGURE 5

(SHEET 2 OF 2)



SECTION A-A

SECTION B-B



PLAN

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. PIPE DIAMETER : 150 TO 675 mm
3. NORMAL RANGE : 1 000 TO 1 500 mm (FROM ROAD LEVEL TO LOWEST INVERT)
4. USED IN : STORMWATER DRAIN AND SEWER
5. JUNCTION : POSITION OF JUNCTION TO BE DETERMINED IN EACH INDIVIDUAL CASE. CHANNELS IMMEDIATELY UNDER ACCESS TO MANHOLE SHOULD BE AVOIDED.
6. TOP TREATMENT: SEE DRG. No. DS 1032
7. FOUNDATION : FOUNDATION OF MANHOLE VARIES WITH SITE CONDITION. THEREFORE, IT SHOULD BE DETERMINED ON SITE BY THE ENGINEER.
8. CONCRETE : GRADE 30/20
9. COVER AND FRAME NOT SHOWN ON PLAN FOR CLARITY.
10. RECESS WITH SQUARE STEEL ROD SHALL BE PROVIDED AT TOP OF MANHOLE CHAMBER FOR INSTALLING MONITORING DEVICE(S). DETAILS REFER TO DSD STANDARD DRAWING NO. DS 1099.

| | | | |
|------|---------------|-----------------|-----------|
| A | NOTE 10 ADDED | ORIGINAL SIGNED | 2.8.2022 |
| | NEW ISSUE | ORIGINAL SIGNED | 15.8.2007 |
| REV. | DESCRIPTION | SIGNATURE | DATE |

STANDARD MANHOLE
TYPE D1

DRAINAGE SERVICES DEPARTMENT

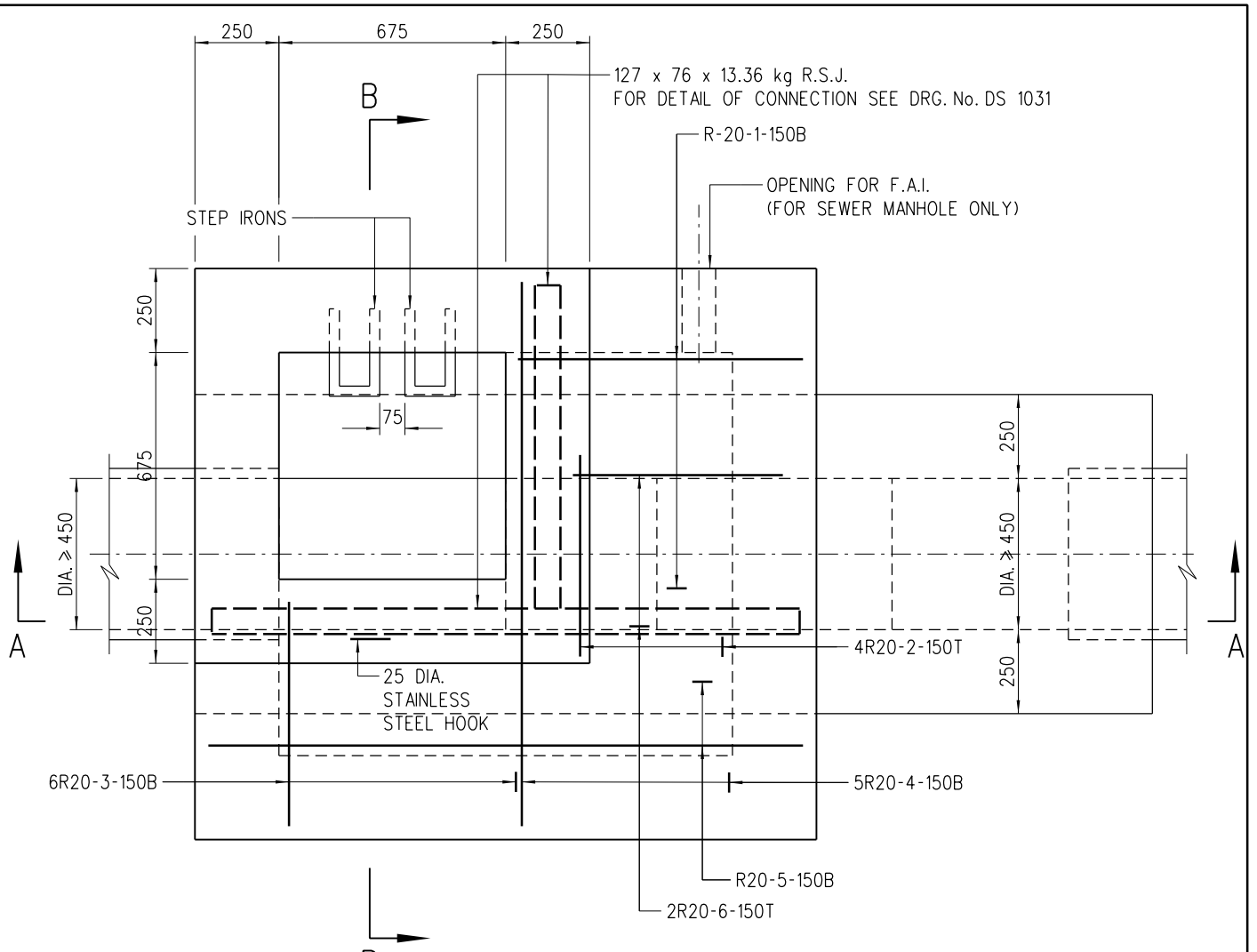
REFERENCE

DRAWING No.

SCALE

1 : 20

DS 1079A



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. NOTATION OF : THE SEQUENCE OF DESCRIPTION OF IDENTIFICATION MARKS ON DRAWINGS FOR STEEL REINFORCING BARS REINFORCEMENT FOR CONCRETE WORK IS AS FOLLOWS (NUMBER, TYPE, SIZE, MARK, SPACING, LOCATION OR COMMENT)
3. B DENOTES GRADE 500B RIBBED REINFORCEMENT.
4. R DENOTES GRADE 250 PLAIN REINFORCEMENT.
5. PIPE DIAMETER : EQUAL OR GREATER THAN 450 mm
6. NORMAL RANGE : 1750 TO 4250 mm (MEASURED FROM ROAD LEVEL TO LOWEST INVERT) OF DEPTH
7. USED IN : STORMWATER DRAIN AND SEWER
8. JUNCTION : POSITION OF JUNCTION TO BE DETERMINED IN EACH INDIVIDUAL CASE. CHANNELS IMMEDIATELY UNDER ACCESS TO MANHOLE SHOULD BE AVOIDED.
9. TOP TREATMENT : SEE DRAWING No. DS 1032
10. STEP IRON : SEE DRAWING No. DS 1043
11. FOUNDATION : FOUNDATION OF MANHOLE VARIES WITH SITE CONDITION. THEREFORE, IT SHOULD BE DETERMINED ON SITE BY THE ENGINEER.
12. CONCRETE MIX : GRADE 30/20
13. DIAMETER OF F.A.I. NORMALLY 100 mm
14. MINIMUM COVER AT END OF BARS 40 mm
15. COVER AND FRAME NOT SHOWN ON PLAN FOR CLARITY.
16. RECESS WITH SQUARE STEEL ROD SHALL BE PROVIDED AT TOP OF MANHOLE CHAMBER FOR INSTALLING MONITORING DEVICE(S). DETAILS REFER TO DSD STANDARD DRAWING NO. DS 1099.

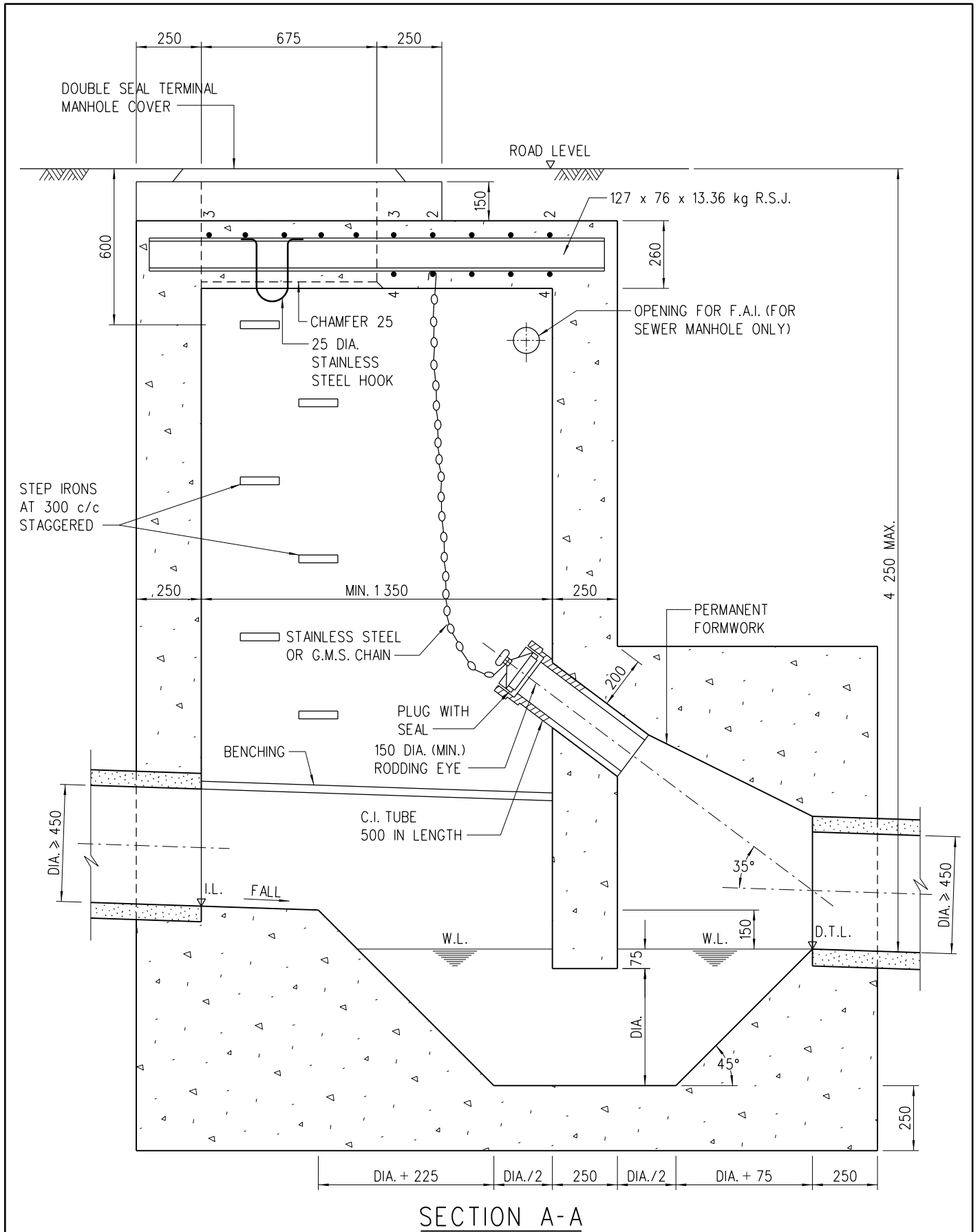
PLAN

| A | NOTE 16 ADDED | ORIGINAL SIGNED | 2.8.2022 |
|------|---------------|-----------------|-----------|
| | NEW ISSUE | ORIGINAL SIGNED | 13.1.2016 |
| REV. | DESCRIPTION | SIGNATURE | DATE |

**TERMINAL MANHOLE
TYPE T2_1**

DRAINAGE SERVICES DEPARTMENT

| | |
|-----------------|-------------------------------------|
| REFERENCE | DRAWING No. |
| SCALE 1 : 20 | DS 1091A (SHEET 1 OF 3) |



| | | | |
|------|---------------|-----------------|-----------|
| A | NOTE 16 ADDED | ORIGINAL SIGNED | 2.8.2022 |
| | NEW ISSUE | ORIGINAL SIGNED | 13.1.2016 |
| REV. | DESCRIPTION | SIGNATURE | DATE |

**TERMINAL MANHOLE
TYPE T2_1**

DRAINAGE SERVICES DEPARTMENT

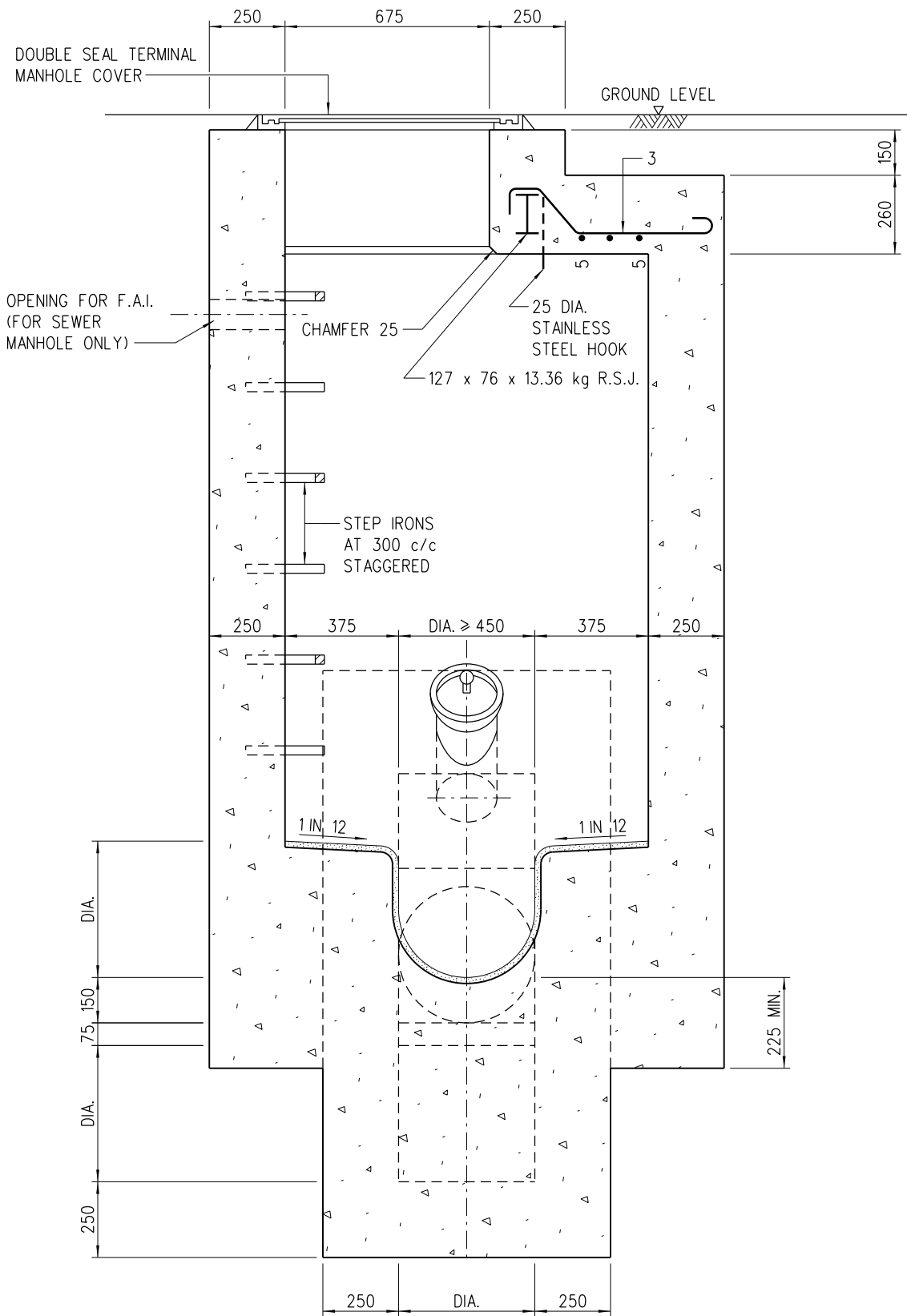
REFERENCE

DRAWING No.

SCALE

1 : 20

DS 1091A
(SHEET 2 OF 3)



SECTION B-B

**TERMINAL MANHOLE
TYPE T2_1**

| | | | |
|------|---------------|-----------------|-----------|
| A | NOTE 16 ADDED | ORIGINAL SIGNED | 2.8.2022 |
| | NEW ISSUE | ORIGINAL SIGNED | 13.1.2016 |
| REV. | DESCRIPTION | SIGNATURE | DATE |

DRAINAGE SERVICES DEPARTMENT

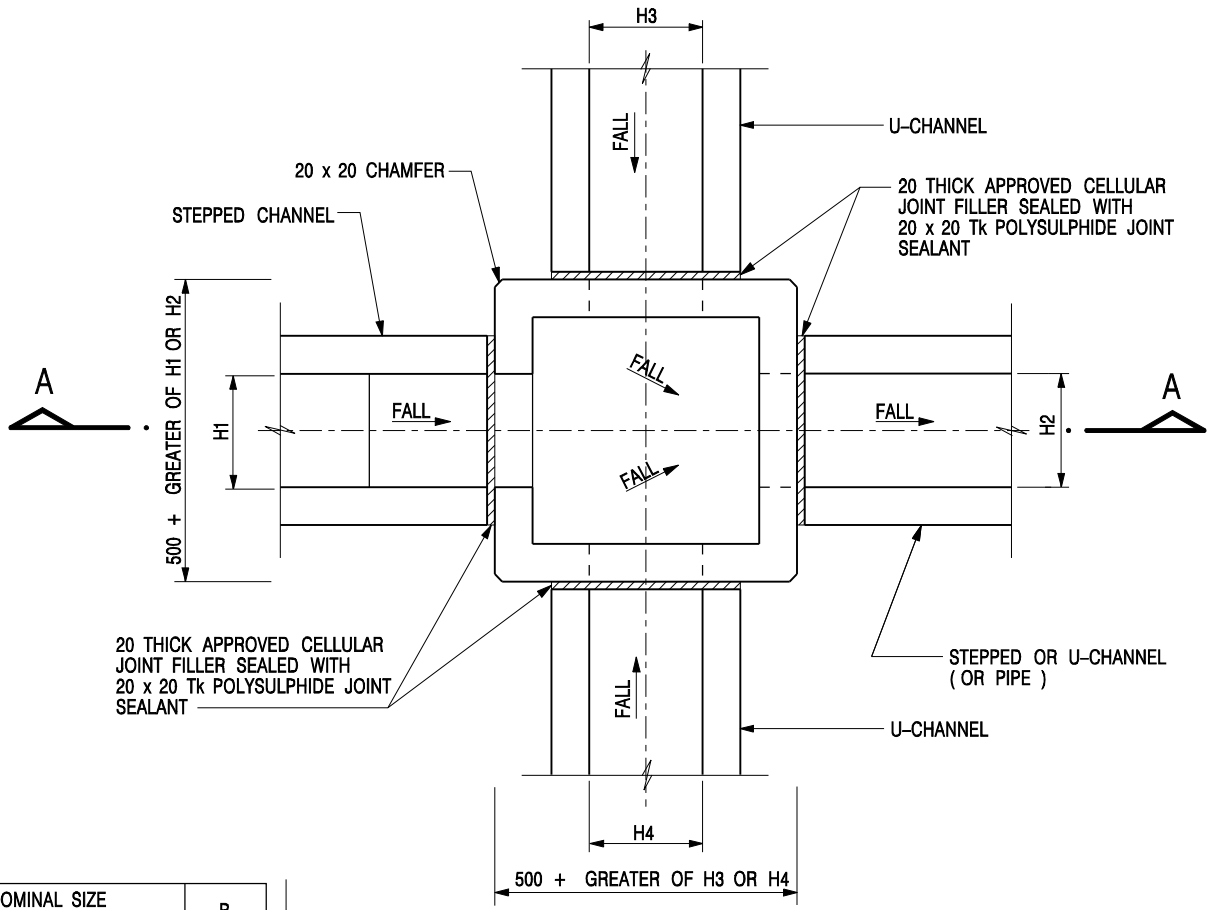
REFERENCE

DRAWING No.

SCALE

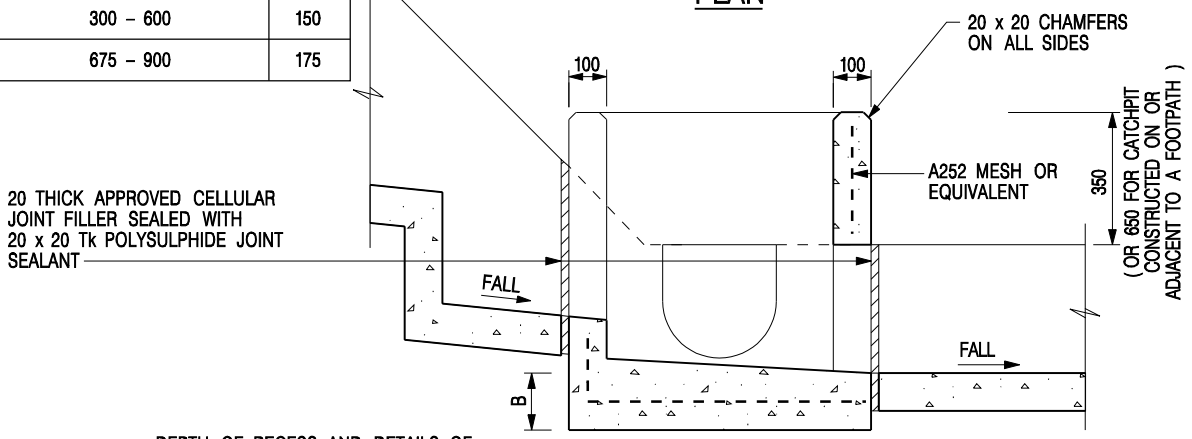
1 : 20

DS 1091A
(SHEET 3 OF 3)

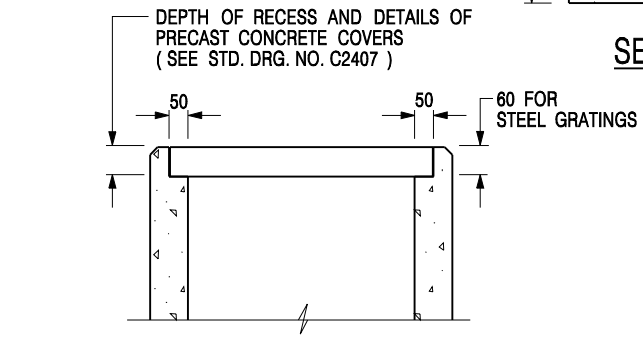


| | |
|--|-----|
| NOMINAL SIZE (LARGEST OF H1, H2, H3 & H4) | B |
| 300 - 600 | 150 |
| 675 - 900 | 175 |

PLAN



SECTION A - A

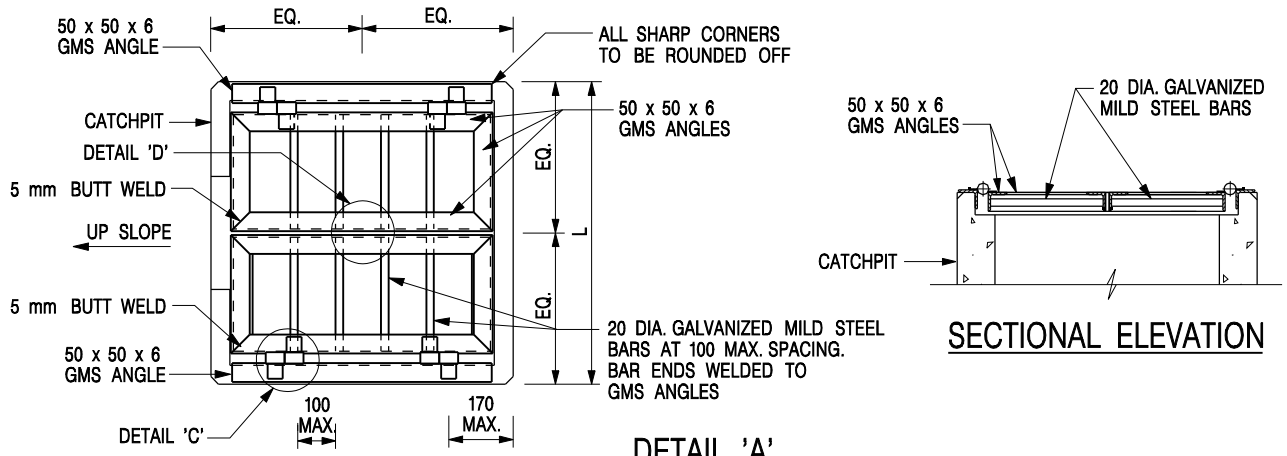


- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETRES.
 2. REFER TO SHEET 5 FOR OTHER NOTES.

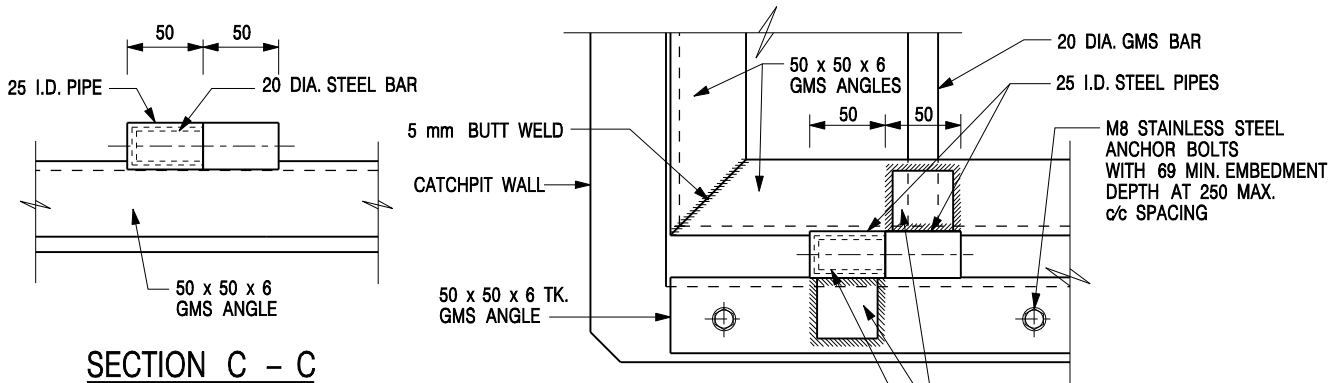
**ALTERNATIVE TOP SECTION FOR
PRECAST CONCRETE COVERS / GRATINGS**

**STANDARD CATCHPIT DETAILS
(SHEET 1 OF 5)**

| | | | |
|---|-------------------------|----------------------------------|-------------|
| - | FORMER DRG. NO. C2405J. | Original Signed | 03.2015 |
| REF. | REVISION | SIGNATURE | DATE |
| CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT | | SCALE 1 : 20 | |
| | | DATE JAN 1991 | |
| | | DRAWING NO. C2405 / 1 | |

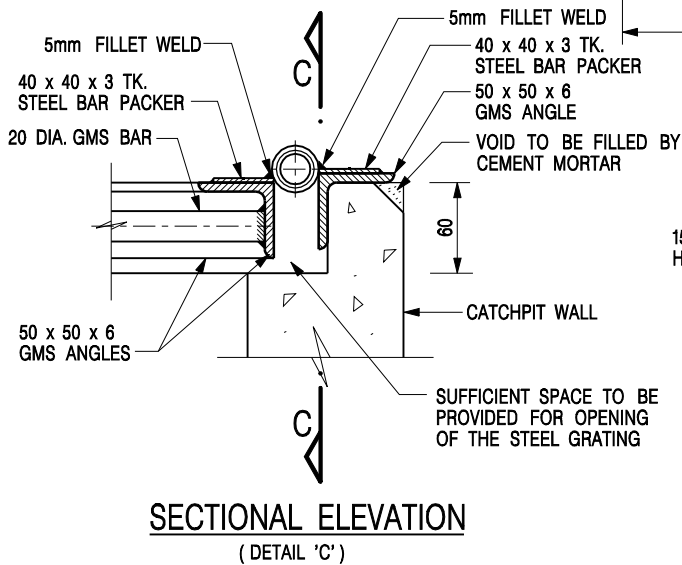


DETAIL 'A'
 (DETAILS OF DOUBLE SIDE OPENING STEEL GRATING FOR L > 900mm)
 SCALE 1 : 20

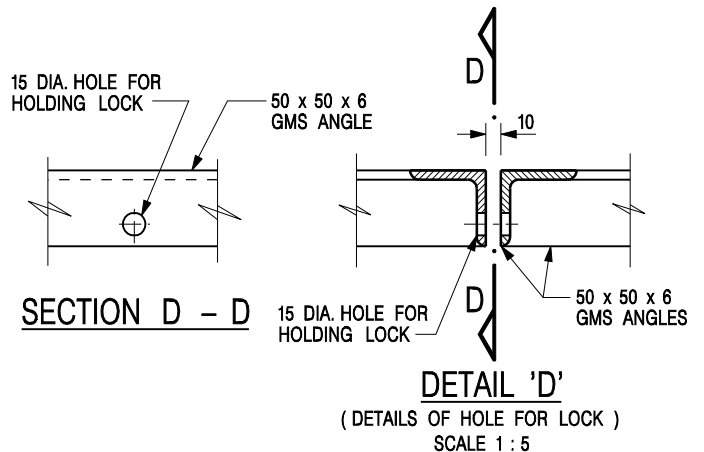


SECTION C - C

DETAIL 'C'
 (DETAILS OF HINGE)
 SCALE 1 : 5



SECTIONAL ELEVATION
 (DETAIL 'C')



SECTION D - D

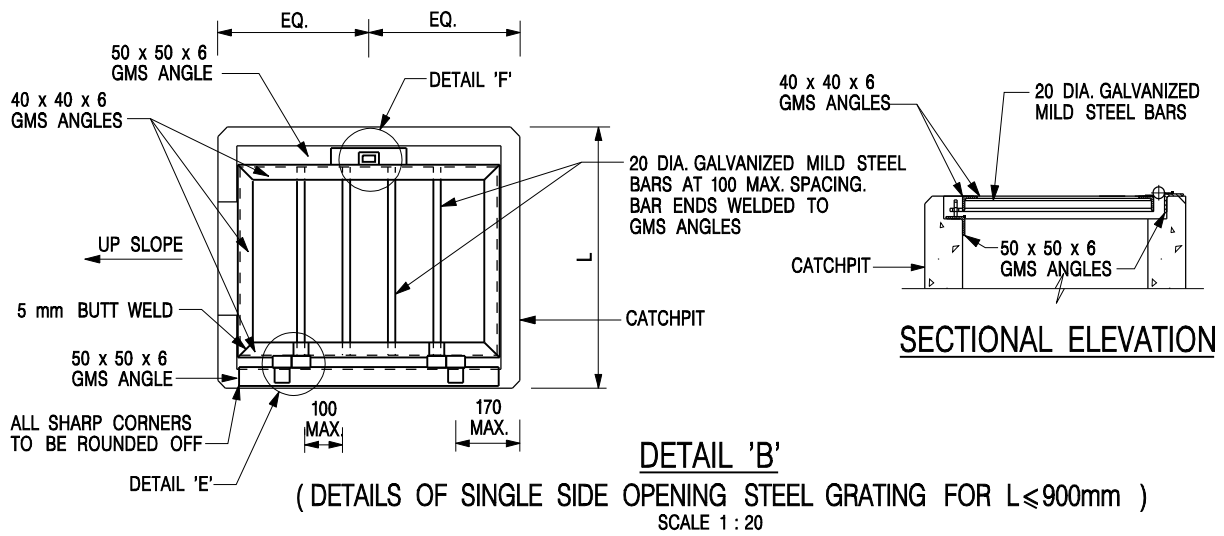
DETAIL 'D'
 (DETAILS OF HOLE FOR LOCK)
 SCALE 1 : 5

NOTES:

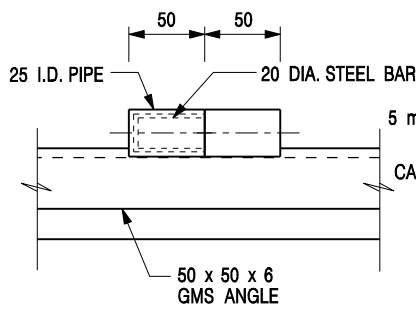
1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SHEET 5 FOR OTHER NOTES.

STANDARD CATCHPIT DETAILS
 (SHEET 2 OF 5)

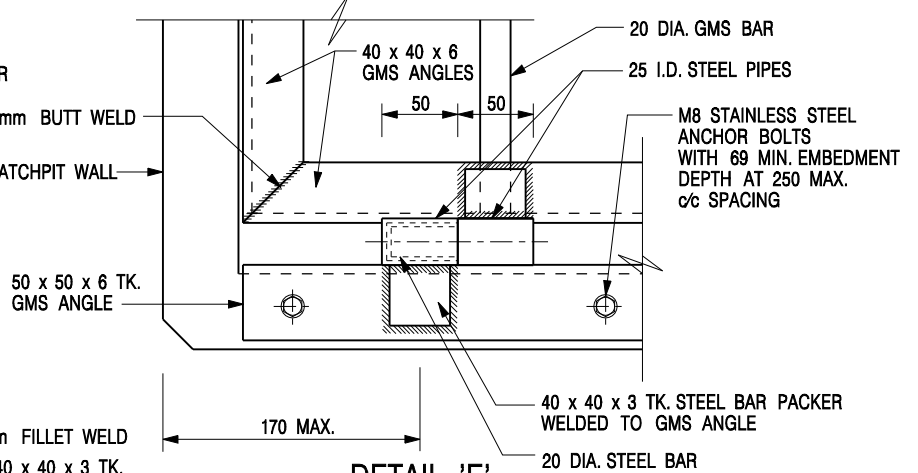
| | | | |
|----------------------|-------------------------|------------------------------|-------------|
| - | FORMER DRG. NO. C2405J. | Original Signed | 03.2015 |
| REF. | REVISION | SIGNATURE | DATE |
| | | SCALE AS SHOWN | |
| | | DRAWING NO. C2405 / 2 | |
| DATE JAN 1991 | | | |



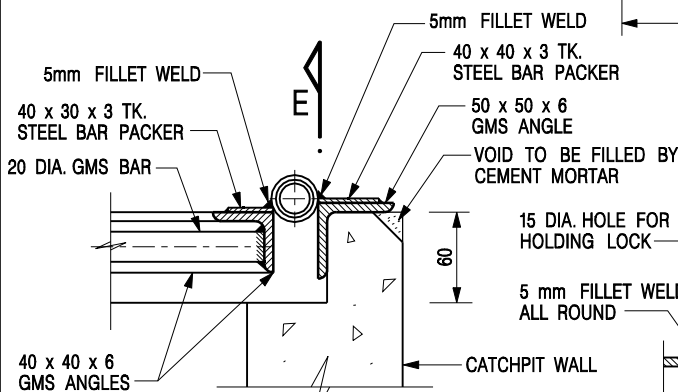
DETAIL 'B'
 (DETAILS OF SINGLE SIDE OPENING STEEL GRATING FOR $L \leq 900\text{mm}$)
 SCALE 1 : 20



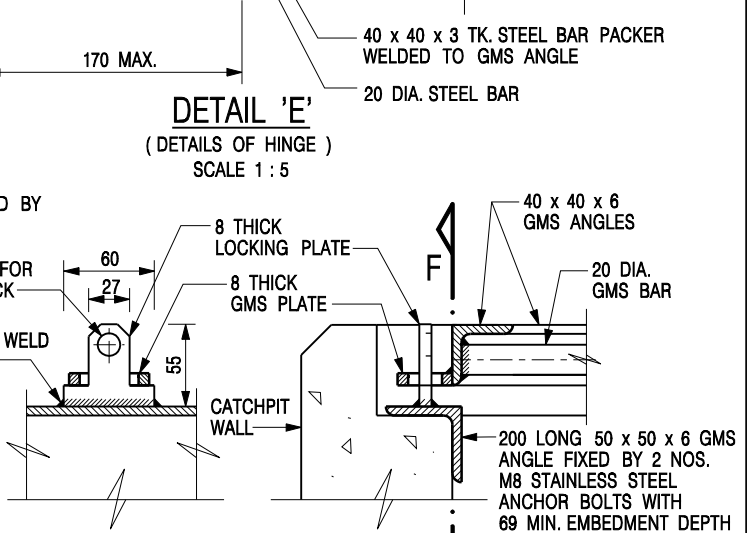
SECTION E - E



DETAIL 'E'
 (DETAILS OF HINGE)
 SCALE 1 : 5



SECTIONAL ELEVATION
 (DETAIL 'E')



SECTION F - F
DETAIL 'F'
 (DETAILS OF LOCKING PLATE)
 SCALE 1 : 5

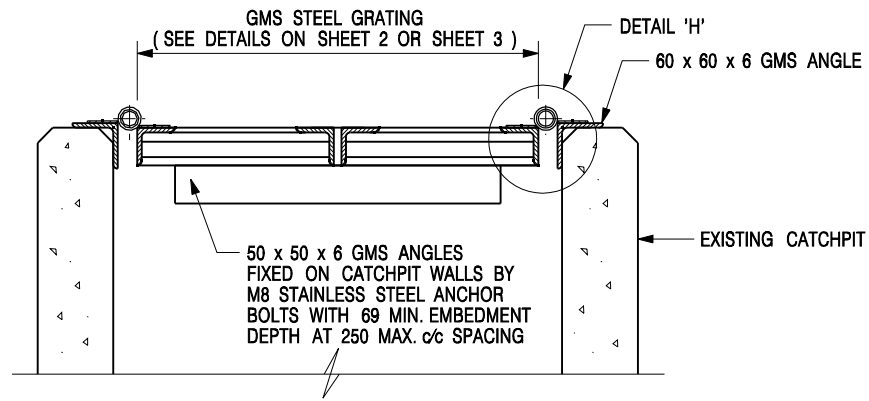
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SHEET 5 FOR OTHER NOTES.

STANDARD CATCHPIT DETAILS
 (SHEET 3 OF 5)

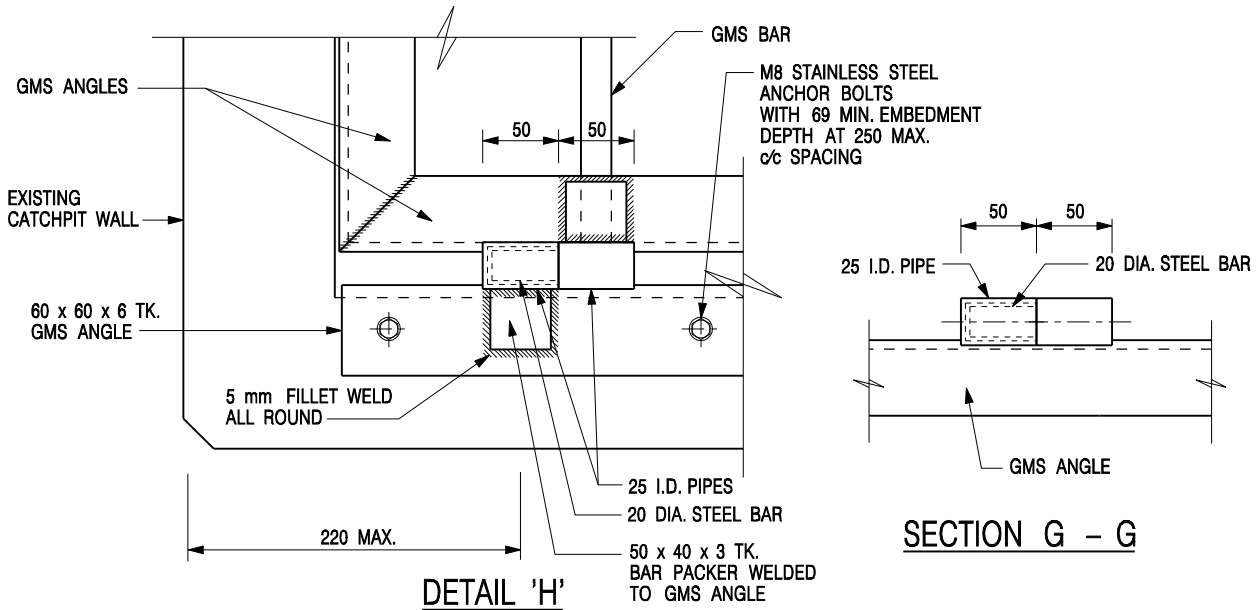
| | | | |
|------|-------------------------|-----------------|---------|
| - | FORMER DRG. NO. C2405J. | Original Signed | 03.2015 |
| REF. | REVISION | SIGNATURE | DATE |

| | | | |
|---|--|------------------------------|--|
| CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT | | SCALE AS SHOWN | |
| | | DATE JAN 1991 | |
| | | DRAWING NO. C2405 / 3 | |

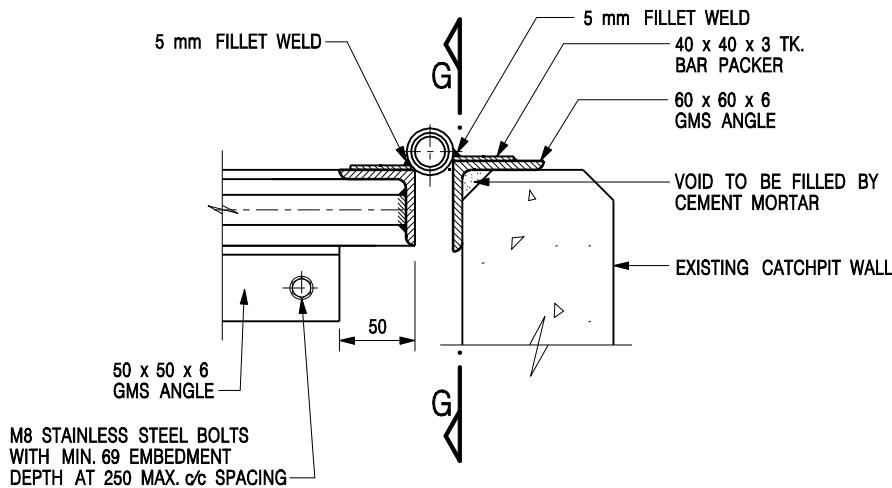


**DETAIL 'G' - DETAILS OF STEEL GRATING
CONSTRUCTED ON EXISTING CATCHPIT**

SCALE 1 : 10



DETAIL 'H'
(DETAILS OF HINGE)
SCALE 1 : 5




SECTIONAL ELEVATION
(DETAIL 'H')

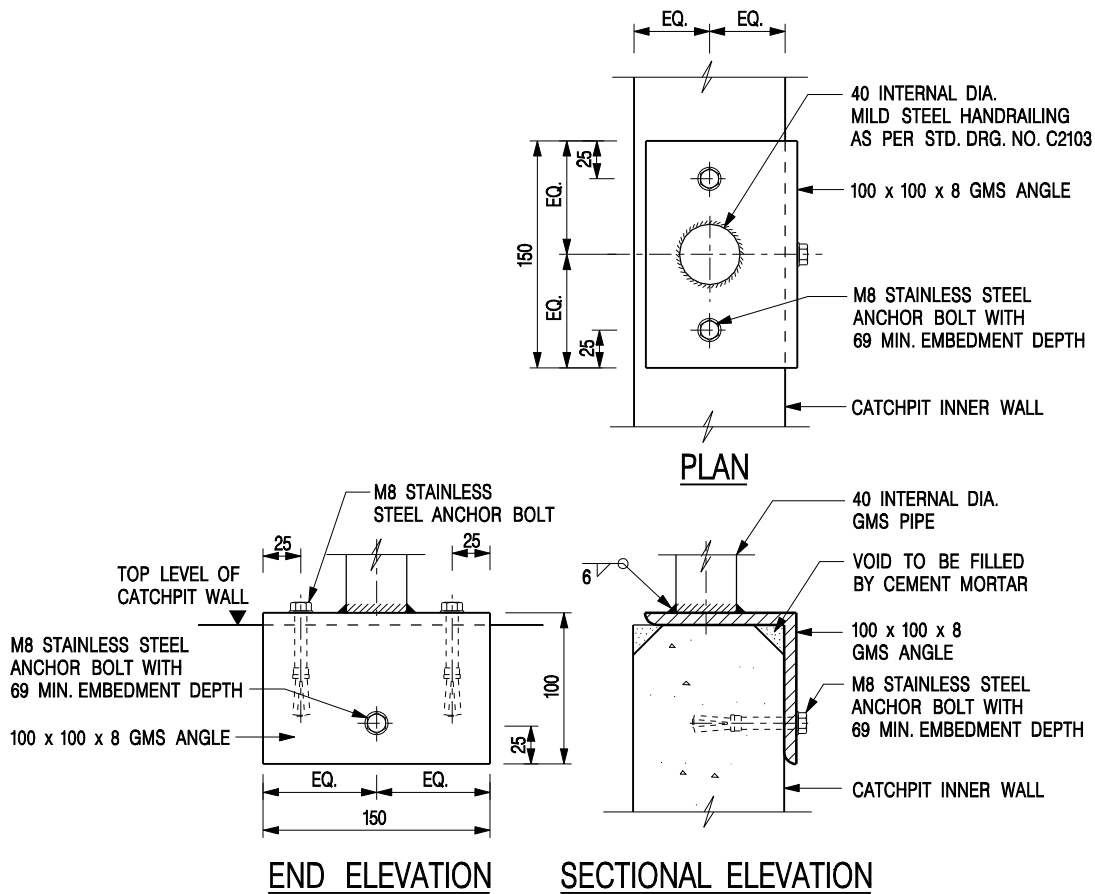
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. REFER TO SHEET 5 FOR OTHER NOTES.

STANDARD CATCHPIT DETAILS
(SHEET 4 OF 5)

| | | | |
|------|-------------------------|-----------------|---------|
| - | FORMER DRG. NO. C2405J. | Original Signed | 03.2015 |
| REF. | REVISION | SIGNATURE | DATE |

| | |
|---|---------------------------------|
|  CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT | |
| SCALE AS SHOWN | DRAWING NO. C2405 / 4 |
| DATE JAN 1991 | |



**DETAIL 'J' – FIXING DETAILS FOR HANDRAILING
ON TOP OF CATCHPIT WALL**


SCALE 1 : 5

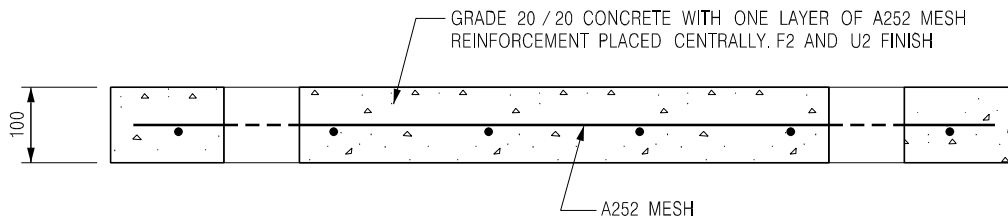
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL CONCRETE SHALL BE GRADE 20 /20.
3. CONCRETE SURFACE FINISH SHALL BE CLASS U2 OR F2 AS APPROPRIATE.
4. FOR DETAILS OF JOINT, REFER TO STD. DRG. NO. C2413.
5. CONCRETE TO BE COLOURED AS SPECIFIED.
6. FOR CATCHPITS CONSTRUCTED ON OR ADJACENT TO A FOOTPATH, STEEL GRATINGS (SEE DETAILS ON SHEET 2 OR SHEET 3) OR CONCRETE COVERS (SEE STD. DRG. NO. C2407) SHALL BE PROVIDED AS DIRECTED BY THE ENGINEER.
7. IF INSTRUCTED BY THE ENGINEER, HANDRAILING (SEE DETAIL 'J' ON SHEET 5; EXCEPT ON THE UPSLOPE SIDE) IN LIEU OF STEEL GRATINGS OR CONCRETE COVERS CAN BE ACCEPTED AS AN ALTERNATIVE SAFETY MEASURE FOR CATCHPITS NOT ON A FOOTPATH NOR ADJACENT TO IT. TOP OF THE HANDRAILING SHALL BE 1 000 mm MIN. MEASURED FROM THE ADJACENT GROUND LEVEL.
8. MINIMUM INTERNAL CATCHPIT WIDTH SHALL BE 1 000 mm FOR CATCHPITS WITH A HEIGHT EXCEEDING 1 000 mm MEASURED FROM THE INVERT LEVEL TO THE ADJACENT GROUND LEVEL. AND, STEP IRONS (SEE DSD STD. DRG. NO. DS1043) AT 300 mm ϕ c STAGGERED SHALL BE PROVIDED. THICKNESS OF CATCHPIT WALL FOR INSTALLATION OF STEP IRONS SHALL BE INCREASED TO 150 mm.
9. FOR RETROFITTING AN EXISTING CATCHPIT WITH STEEL GRATING, SEE DETAIL 'G' ON SHEET 4.
10. ALL STEEL ANGLES SHALL COMPLY WITH BS EN 10025 AND BS EN 10056.
11. UNLESS OTHERWISE SPECIFIED, ALL WELDS SHALL BE 5 mm CONTINUOUS FILLET WELDS.
12. ALL WELDS SHALL BE CHIPPED, GROUND SMOOTH, BRUSHED TO REMOVE SLAG PRIOR TO HOT-DIP GALVANIZATION.
13. ALL STEELWORK SHALL BE HOT-DIP GALVANIZED TO BS EN ISO 1461. ALL EXPOSED STEELWORK SURFACES SHALL BE TREATED AND PAINTED IN ACCORDANCE WITH THE GENERAL SPECIFICATION.
14. SUBJECT TO THE APPROVAL OF THE ENGINEER, OTHER MATERIALS CAN ALSO BE USED AS COVERS / GRATINGS.

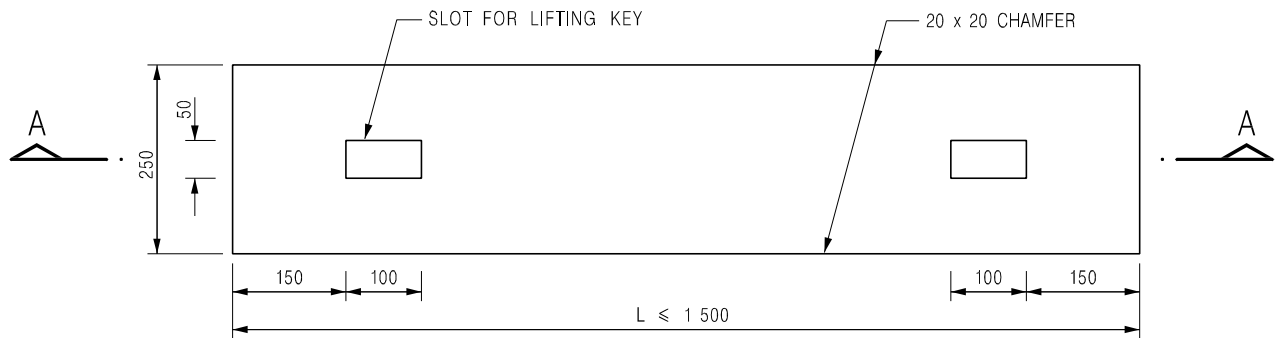
| | | | |
|-------------|-------------------------|------------------|-------------|
| - | FORMER DRG. NO. C2405J. | Original Signed | 03.2015 |
| REF. | REVISION | SIGNATURE | DATE |

**STANDARD CATCHPIT DETAILS
(SHEET 5 OF 5)**

| | |
|---|--------------------|
|  CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT | |
| SCALE AS SHOWN | DRAWING NO. |
| DATE JAN 1991 | C2405 /5 |

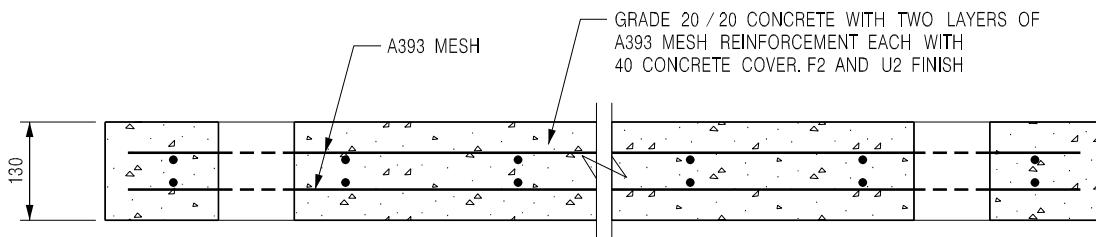


SECTION A - A

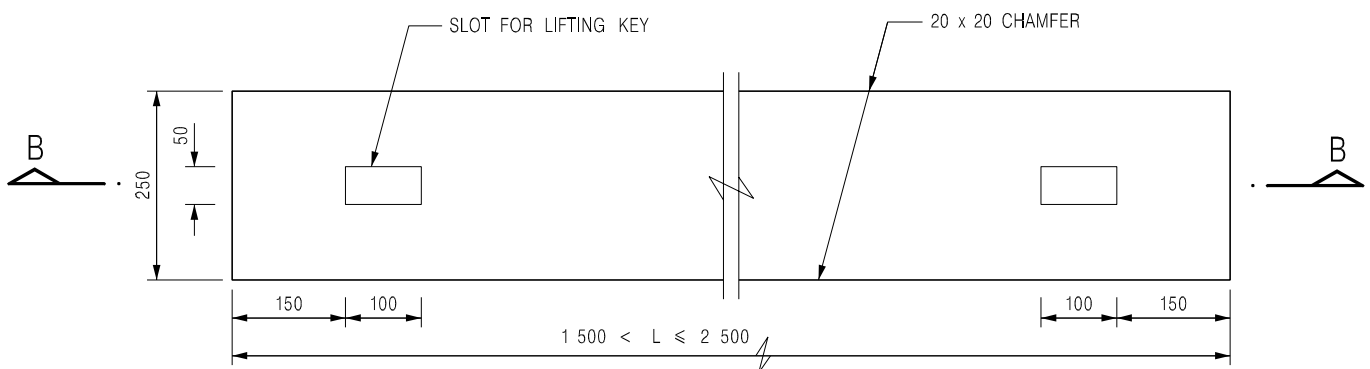


PLAN

TYPE 1 - FOR SPAN UP TO 1.5 m



SECTION B - B



PLAN

TYPE 2 - FOR SPANS 1.5 m TO 2.5 m

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL EXTERNAL EDGES OF THE COVERS SHALL BE 20mm CHAMFERED.

| | | | |
|------|-----------------------------|-----------------|---------|
| B | NAME OF DEPARTMENT AMENDED. | Original Signed | 01.2005 |
| A | GENERAL REVISION | Original Signed | 12.2002 |
| REF. | REVISION | SIGNATURE | DATE |

PRECAST CONCRETE COVERS
FOR CATCHPIT AND SAND TRAP

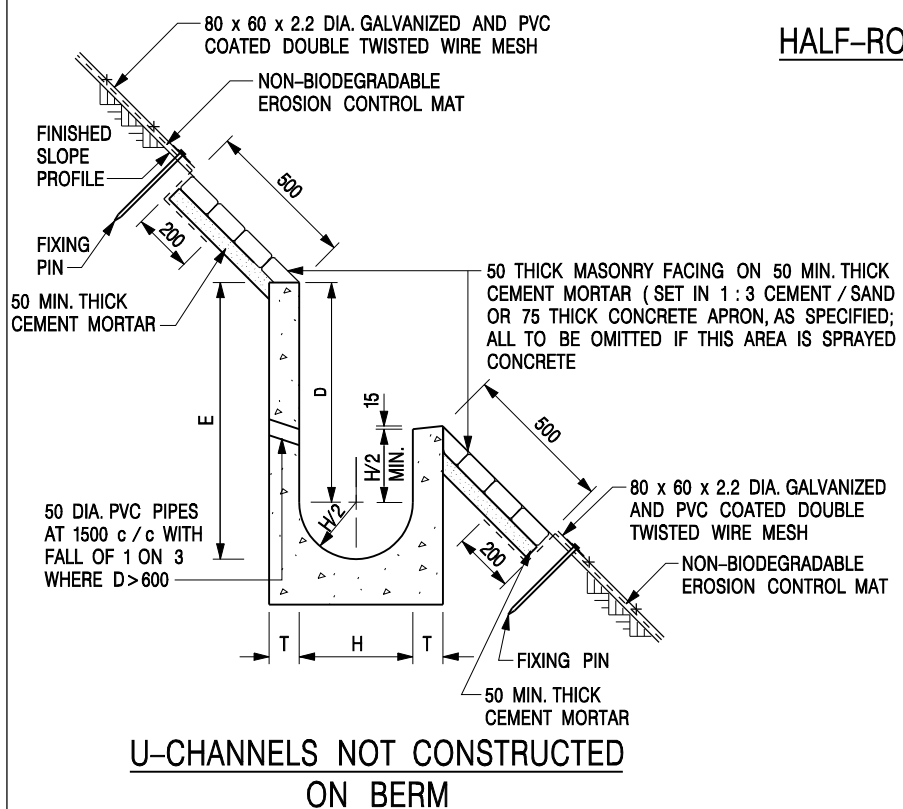
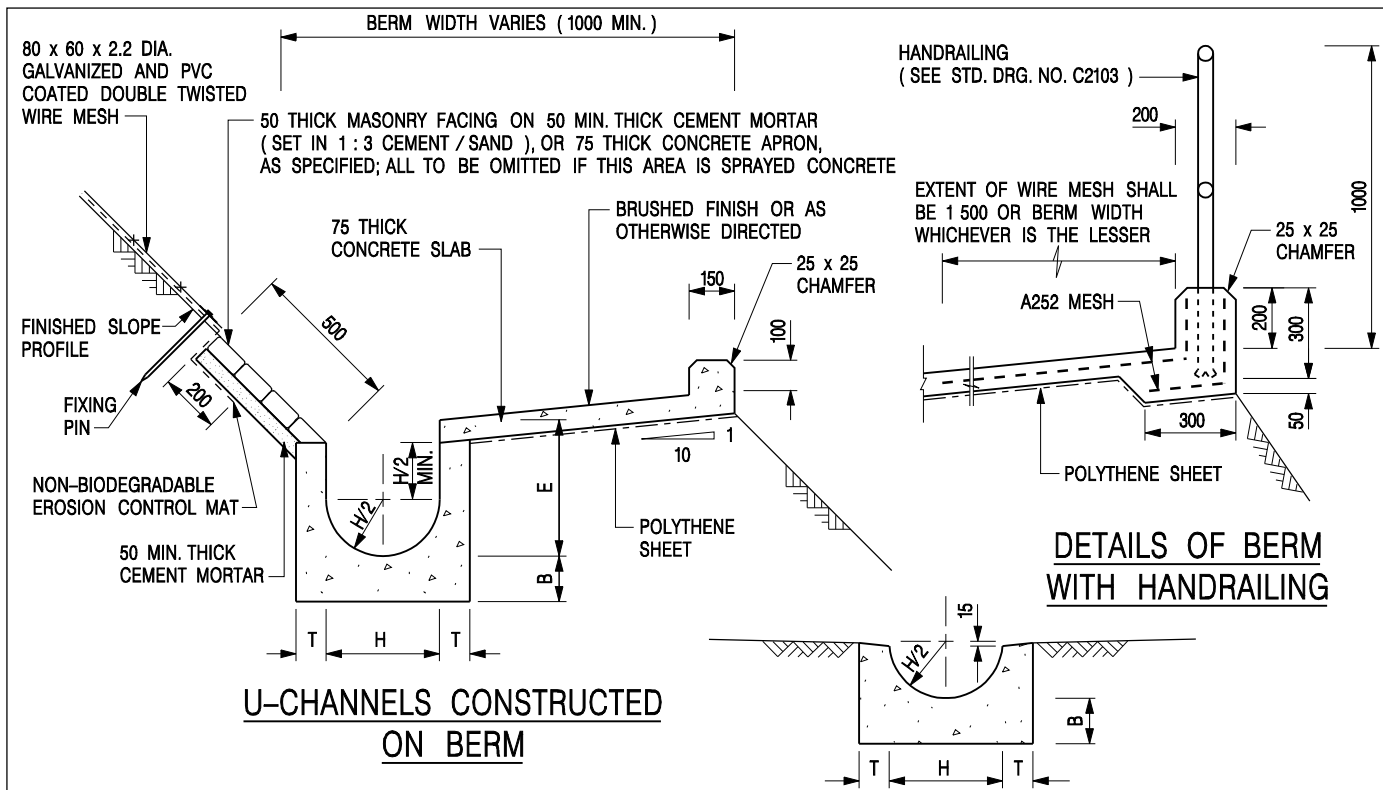


CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT

SCALE 1 : 10

DATE JAN 1991

DRAWING NO.
C2407B



- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETRES.
 2. ALL CONCRETE TO BE GRADE 20 / 20.
 3. CONCRETE SURFACE FINISH SHALL BE CLASS U2, F2 OR BRUSHED FINISH AS DIRECTED.
 4. SPACING OF EXPANSION JOINT IN CHANNELS, BERM SLABS AND APRONS TO BE 10 METRES MAXIMUM, SEE STD. DRG. NO. C2413 FOR DETAILS.
 5. JOINTS FOR CHANNELS, BERM SLABS, APRONS AND WALLS, ETC. TO BE ON THE SAME ALIGNMENT.
 6. FOR DIMENSIONS T, H, & B, SEE TABLE BELOW.
 7. BIODEGRADABLE EROSION CONTROL MAT IF REQUIRED, SEE STD. DRG. NO. C2511/E.
 8. CONCRETE TO BE COLOURED AS SPECIFIED.
 9. CONCRETE U-CHANNEL CAN BE CAST IN-SITU OR PRECAST CONCRETE SUBJECT TO THE ENGINEER'S AGREEMENT ON THE DETAILS.
 10. DETAILS OF EROSION CONTROL MAT AND WESH MESH ON BERM. (SEE STD DRG. NO. C2511/E)

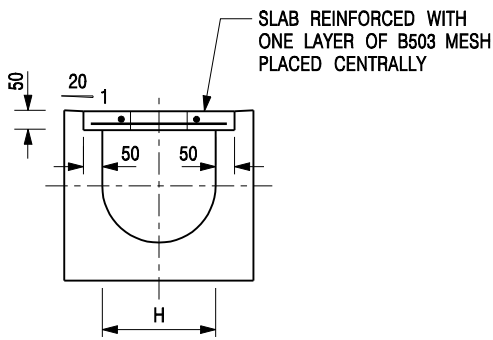
| NOMINAL SIZE H | T | B | REINFORCEMENT |
|----------------|-----|-----|---|
| 300 | 80 | 100 | A252 MESH PLACED CENTRALLY AND T=100 WHEN E>650 |
| 375 - 600 | 100 | 150 | |
| 675 - 900 | 125 | 175 | A252 MESH PLACED CENTRALLY |

| REF. | REVISION | SIGNATURE | DATE |
|------|--------------------------------------|-----------------|---------|
| I | MINOR AMENDMENT. | Original Signed | 07.2018 |
| H | THICKNESS OF MASONRY FACING AMENDED. | Original Signed | 01.2005 |
| G | MINOR AMENDMENT. | Original Signed | 01.2004 |
| F | GENERAL REVISION. | Original Signed | 12.2002 |
| E | DRAWING TITLE AMENDED. | Original Signed | 11.2001 |
| D | MINOR AMENDMENT. | Original Signed | 08.2001 |
| C | 150 x 100 UPSTAND ADDED AT BERM. | Original Signed | 6.99 |
| B | MINOR AMENDMENTS. | Original Signed | 3.94 |

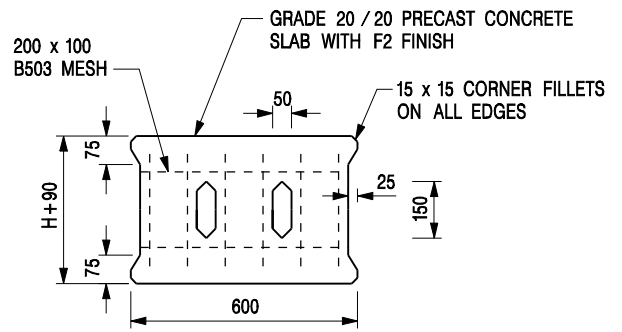
DETAILS OF HALF-ROUND AND U-CHANNELS (TYPE A - WITH MASONRY APRON)

CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

SCALE 1 : 25 **DRAWING NO.** C2409I
DATE JAN 1991



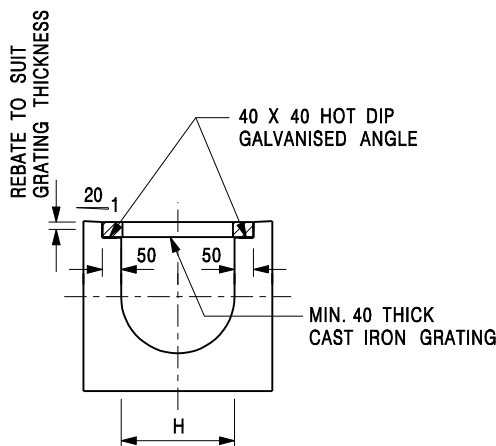
TYPICAL SECTION



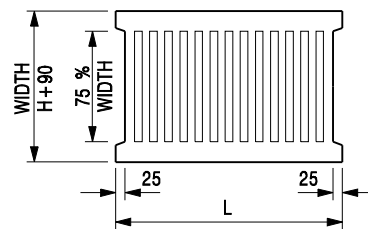
PLAN OF SLAB

U-CHANNELS WITH PRECAST CONCRETE SLABS

(UP TO H OF 525)



TYPICAL SECTION



L = 600mm FOR H ≤ 375mm
L = 400mm FOR H > 375mm

CAST IRON GRATING

(DIMENSIONS ARE FOR GUIDANCE ONLY, CONTRACTOR MAY SUBMIT EQUIVALENT TYPE)

U-CHANNEL WITH CAST IRON GRATING

(UP TO H OF 525)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. H=NOMINAL CHANNEL SIZE.
3. ALL CAST IRON FOR GRATINGS SHALL BE GRADE EN-GJL-150 COMPLYING WITH BS EN 1561.
4. FOR COVERED CHANNELS TO BE HANDED OVER TO HIGHWAYS DEPARTMENT FOR MAINTENANCE, THE GRATING DETAILS SHALL FOLLOW THOSE AS SHOWN ON HyD STD. DRG. NO. H3156.

| | | | |
|-------------|--------------------------------|------------------|-------------|
| E | NOTES 3 & 4 AMENDED. | Original Signed | 12.2014 |
| D | NOTE 4 ADDED. | Original Signed | 06.2008 |
| C | MINOR AMENDMENT. NOTE 3 ADDED. | Original Signed | 12.2005 |
| B | NAME OF DEPARTMENT AMENDED. | Original Signed | 01.2005 |
| A | CAST IRON GRATING AMENDED. | Original Signed | 12.2002 |
| REF. | REVISION | SIGNATURE | DATE |

**COVER SLAB AND CAST IRON
GRATING FOR CHANNELS**



**CIVIL ENGINEERING AND
DEVELOPMENT DEPARTMENT**

SCALE 1 : 20

DRAWING NO.

DATE JAN 1991

C2412E

Assessment of Hydraulic Capacities of the Drainage System for 1 in 50 year design return period

Using Rational Method
 Design Flow = 0.278CIA m³/s for grassland (heavy soil) - steep, C = 0.35 for asphalt/concrete surface, C = 0.95

Using Manning Equation (for channel flow)
 Design Mean Velocity = R^{2/3}/n(RS)^{1/2} and n = 0.015 for concrete channel with fair surface

Using Gumbel Solution in frequency analysis
 Rainfall intensity = a / (t_e+b)^c where a = 805.5, b = 3.29 and c = 0.355 in 50 year design return period
 referenced from Table 3a in SDM Corrigendum No. 1/2022 - Storm Constants for Different Return Periods of HKO Headquarters

Using Bransby William's Equation (for surface water travelling from the catchment boundary to the drainage)
 Inlet time t_e = 0.14465L (h²A^{0.5}) or 2 when the distance is too short

Using Colebrook's White Equation (for pipe flow)
 V = -Sqrt (8gDs) x log [(k_s / 3.7D) + (2.51v / D x Sqrt (2gDs))]

Parameters Input
 k_s (mm) = 0.6
 v (m²/s) = 1.00E-06
 g (m²/s) = 9.81
 k_s (m) = 0.0006

| - conservative, as the subject proposed development is for temporary use for 3 years only - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------------------------|---|------------|------------|------------|------------|------------------|-----------------------------|---------|------------|--|---------------------------------|--|--|----------------------------|--|-----------------|--------------------------------------|-----------------------------|----------------------------------|---------------------------------|-----------|-------------------|------------------|-----------------------------------|--|------------------------------------|--|-----|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) | (22) | (23) | (24) | (25) | (26) | (27) | (28) | (29) | |
| USCP/USMH | DSCP/DSMH | Collected Runoff from Catchment (refer to Figure 3) | USGL (mPD) | DSGL (mPD) | USIL (mPD) | DSIL (mPD) | INVERT DIFF. (m) | LENGTH OF CHANNEL DRAIN (m) | SLOPE % | SLOPE 1 IN | LENGTH FOR CALCULATING OF INLET TIME L (m) | INLET TIME t _e (min) | TIME OF FLOW INSIDE CHANNEL DRAIN = t _v (min) | TIME OF CONCENTRATION = t _c + t _e = t _c (min) | RAINFALL INTENSITY (mm/hr) | RAINFALL INTENSITY INCLUDING EFFECT OF CLIMATE CHANGE (+16.0%) (mm/hr) [refer to item (e) and (k) in SDM Corrigendum No. 1/2022] | RUNOFF COEFF. C | SUB-CATCHMENT AREA (m ²) | EFF. AREA (m ²) | CUM. EFF. AREA (m ²) | DESIGN FLOW (m ³ /s) | SIZE (mm) | CHANNEL TYPE | VELOCITY V (m/s) | FLOW CAPACITY (m ³ /s) | 90% FLOW CAPACITY (m ³ /s) [to cater for effects due to materials deposited on the bed] | SPARE CAPACITY (m ³ /s) | Occupancy of the Proposed Pipe / Channel | |
| Route 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Point C | CP2 | 7A + 17A | 8.80 | 8.60 | 8.35 | 8.13 | 0.22 | 67.00 | 0.003 | 300 | 42.00 | 8.28 | 0.99 | 9.27 | 205.86 | 238.80 | 0.95 | 1,806 | 1,716 | 1,716 | 0.114 | 450 | UC | 1.13 | 0.22 | 0.19 | 0.081 | 58.6% | OK! |
| CP2 | CP3A | 7A + 17A + 11 + 18 | 8.80 | 8.60 | 8.13 | 7.86 | 0.27 | 67.00 | 0.004 | 250 | - | 9.27 | 0.83 | 10.10 | 201.22 | 233.42 | 0.95 | 2,739 | 2,602 | 4,318 | 0.280 | 450 | UC | 1.34 | 0.42 | 0.38 | 0.096 | 74.5% | OK! |
| CP3A | CP3 | ditto | 8.80 | 8.60 | 7.86 | 7.85 | 0.01 | 3.00 | 0.004 | 250 | - | 10.10 | 0.04 | 10.14 | 201.03 | 233.19 | 0.95 | 0 | 0 | 4,318 | 0.280 | 450 | UC | 1.34 | 0.43 | 0.38 | 0.104 | 73.0% | OK! |
| Point D | CP3 | nominal | 8.80 | 8.60 | 8.38 | 8.36 | 0.02 | 3.00 | 0.005 | 200 | - | 2.00 | 0.06 | 2.06 | 278.76 | 323.37 | 0.95 | 0 | 0 | 0 | 0.000 | 225 | UC | 0.87 | 0.04 | 0.04 | 0.038 | 0.0% | OK! |
| CP3 | CP4 | 7A + 17A + 11 + 18 | 8.60 | 7.70 | 7.85 | 7.10 | 0.12 | 36.00 | 0.003 | 300 | - | 10.14 | 0.44 | 10.58 | 198.72 | 230.51 | 0.95 | 0 | 0 | 4,318 | 0.277 | 600 | UC | 1.35 | 0.43 | 0.39 | 0.115 | 70.7% | OK! |
| CP4 | CP5A | 7A + 17A + 11 + 18 + 13 | 7.70 | 7.80 | 7.10 | 7.06 | 0.04 | 12.00 | 0.003 | 300 | - | 10.58 | 0.14 | 10.73 | 198.00 | 229.69 | 0.95 | 352 | 334 | 4,652 | 0.297 | 600 | UC | 1.41 | 0.57 | 0.52 | 0.218 | 57.6% | OK! |
| CP5A | CP5 | ditto | 7.80 | 7.80 | 7.06 | 7.04 | 0.02 | 5.00 | 0.003 | 300 | - | 10.73 | 0.06 | 10.78 | 197.71 | 229.34 | 0.95 | 0 | 0 | 4,652 | 0.297 | 600 | UC | 1.42 | 0.59 | 0.53 | 0.234 | 55.9% | OK! |
| CP5 | CP6A | 7A + 17A + 11 + 18 + 13 + 12 | 7.80 | 7.80 | 7.04 | 6.92 | 0.13 | 38.00 | 0.003 | 300 | - | 10.78 | 0.43 | 11.22 | 195.59 | 226.88 | 0.95 | 528 | 502 | 5,154 | 0.325 | 600 | UC | 1.46 | 0.72 | 0.64 | 0.319 | 50.4% | OK! |
| CP6A | CP6 | ditto | 7.80 | 7.80 | 6.92 | 6.91 | 0.01 | 3.00 | 0.003 | 300 | - | 11.22 | 0.03 | 11.25 | 195.42 | 226.69 | 0.95 | 0 | 0 | 5,154 | 0.325 | 600 | UC | 1.46 | 0.73 | 0.65 | 0.329 | 49.7% | OK! |
| CP6 | CP7 | 7A + 17A + 11 + 18 + 13 + 12 + 10 | 7.80 | 7.80 | 6.91 | 6.70 | 0.20 | 61.00 | 0.003 | 300 | - | 11.25 | 0.68 | 11.93 | 192.30 | 223.07 | 0.95 | 873 | 829 | 5,983 | 0.371 | 600 | UC | 1.50 | 0.93 | 0.84 | 0.467 | 44.3% | OK! |
| CP7 | CP7A | 7A + 17A + 11 + 18 + 13 + 12 + 10 + 8 | 7.80 | 7.80 | 6.70 | 6.68 | 0.02 | 6.00 | 0.003 | 300 | - | 11.93 | 0.07 | 12.00 | 192.00 | 222.72 | 0.95 | 446 | 424 | 6,407 | 0.397 | 600 | UC | 1.51 | 0.95 | 0.86 | 0.460 | 46.3% | OK! |
| CP7A | CP8 | ditto | 7.80 | 7.40 | 6.68 | 6.58 | 0.10 | 30.00 | 0.003 | 300 | - | 12.00 | 0.35 | 12.34 | 180.47 | 220.95 | 0.95 | 0 | 0 | 6,407 | 0.394 | 600 | UC | 1.44 | 0.65 | 0.58 | 0.191 | 67.3% | OK! |
| Point E | CP8 | 0.5 x 9 | 7.40 | 7.40 | 7.18 | 7.10 | 0.08 | 16.00 | 0.005 | 200 | - | 2.00 | 0.29 | 2.29 | 274.56 | 318.48 | 0.95 | 111 | 105 | 105 | 0.009 | 225 | UC | 0.92 | 0.06 | 0.05 | 0.043 | 17.9% | OK! |
| CP8 | TM1 | 7A + 17A + 11 + 18 + 13 + 12 + 10 + 8 + 0.5 x 9 | 7.40 | 6.40 | 6.58 | 5.80 | 0.09 | 17.00 | 0.005 | 200 | - | 12.34 | 0.17 | 12.51 | 189.74 | 220.10 | 0.95 | 0 | 0 | 6,512 | 0.398 | 600 | UC | 1.66 | 0.53 | 0.48 | 0.081 | 83.1% | OK! |
| Point F | TM1 | 0.5 x 9 | 7.40 | 6.40 | 7.18 | 6.18 | 0.13 | 20.00 | 0.007 | 150 | - | 2.00 | 0.34 | 2.34 | 273.80 | 317.60 | 0.95 | 111 | 105 | 105 | 0.009 | 225 | UC | 0.99 | 0.04 | 0.04 | 0.031 | 22.9% | OK! |
| Point G | TM1 | 6 | 6.40 | 6.40 | 5.95 | 5.73 | 0.22 | 55.00 | 0.004 | 250 | - | 2.00 | 0.69 | 2.69 | 267.84 | 310.70 | 0.95 | 3,068 | 2,915 | 2,915 | 0.252 | 450 | UC | 1.32 | 0.37 | 0.33 | 0.081 | 75.7% | OK! |
| External | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TM1 | Existing Catchpit SCH1028857 | 7A + 17A + 11 + 18 + 13 + 12 + 10 + 8 + 9 + 6 | 6.40 | 5.20 | 5.58 | 4.45 | 0.03 | 3.00 | 0.010 | 100 | - | 12.51 | 0.02 | 12.53 | 189.66 | 220.01 | 0.95 | 0 | 0 | 9,531 | 0.583 | 750 | pipe | 2.80 | 1.24 | 1.11 | 0.530 | 52.4% | OK! |
| Existing Catchpit SCH1028857 | Existing Manhole SMH1048223 | 7A + 17A + 11 + 18 + 13 + 12 + 10 + 8 + 9 + 6 + 19 | 5.20 | 6.80 | 4.05 | 4.01 | 0.04 | 3.00 | 0.013 | 75 | - | 12.53 | 0.02 | 12.55 | 189.59 | 219.93 | 0.95 | 588 | 559 | 10,090 | 0.617 | 750 | pipe ^a | 3.00 | 1.33 | 1.19 | 0.576 | 51.7% | OK! |
| Existing Manhole SCH1048223 | Existing outfall | ditto | 6.80 | - | 4.00 | 3.97 | 0.03 | 5.00 | 0.006 | 167 | - | 12.55 | 0.03 | 12.58 | 189.45 | 219.76 | 0.95 | 0 | 0 | 10,090 | 0.616 | 900 | pipe | 2.42 | 1.54 | 1.39 | 0.772 | 44.4% | OK! |
| Route 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Point A | CP1 | 4 + 16 | 10.00 | 8.90 | 9.55 | 8.45 | 0.16 | 49.00 | 0.003 | 300 | 37 | 7.16 | 0.73 | 7.89 | 214.56 | 248.89 | 0.95 | 2,190 | 2,081 | 2,081 | 0.144 | 450 | UC | 1.12 | 0.20 | 0.18 | 0.038 | 79.2% | OK! |
| CP1 | CP1A | 4 + 16 + 7 + 17 | 8.90 | 8.80 | 8.45 | 8.25 | 0.20 | 20.00 | 0.010 | 100 | - | 7.89 | 0.17 | 8.05 | 213.45 | 247.60 | 0.95 | 1,850 | 1,758 | 3,838 | 0.264 | 450 | UC | 2.02 | 0.46 | 0.41 | 0.146 | 64.5% | OK! |
| CP1A | MHC | ditto | 8.80 | 9.50 | 8.25 | 8.22 | 0.03 | 3.00 | 0.010 | 100 | - | 8.05 | 0.02 | 8.08 | 213.30 | 247.42 | 0.95 | 0 | 0 | 3,838 | 0.264 | 500 | pipe | 2.17 | 0.43 | 0.38 | 0.120 | 68.8% | OK! |
| MHC | CP13 | ditto | 8.50 | 8.50 | 8.22 | 7.44 | 0.78 | 78.00 | 0.010 | 100 | - | 8.08 | 0.60 | 8.67 | 209.45 | 242.96 | 0.95 | 0 | 0 | 3,838 | 0.259 | 500 | pipe | 2.17 | 0.43 | 0.38 | 0.125 | 67.5% | OK! |
| Point B | CP10 | 3 + 15 | 10.00 | 10.00 | 9.78 | 9.40 | 0.38 | 34.00 | 0.011 | 90 | 65 | 12.49 | 0.38 | 12.87 | 188.24 | 218.36 | 0.95 | 2,338 | 2,221 | 2,221 | 0.135 | 225 | UC | 1.49 | 0.19 | 0.17 | 0.040 | 77.2% | OK! |
| CP10 | CP11 | 3 + 15 + 14 | 10.00 | 9.00 | 9.40 | 8.55 | 0.49 | 73.00 | 0.007 | 150 | - | 12.87 | 0.77 | 13.64 | 185.16 | 214.78 | 0.95 | 1,265 | 1,202 | 3,423 | 0.204 | 450 | UC | 1.58 | 0.29 | 0.26 | 0.053 | 79.5% | OK! |
| Point J | CP11 | 0.5 x 1 | 9.00 | 9.00 | 8.78 | 8.70 | 0.08 | 20.00 | 0.004 | 250 | - | 2.00 | 0.41 | 2.41 | 272.56 | 316.17 | 0.95 | 89 | 85 | 85 | 0.007 | 225 | UC | 0.82 | 0.05 | 0.05 | 0.039 | 16.0% | OK! |
| CP11 | CP12 | 3 + 15 + 14 + 0.5 x 1 | 9.00 | 9.00 | 8.55 | 8.50 | 0.05 | 10.00 | 0.005 | 200 | - | 13.64 | 0.12 | 13.76 | 184.70 | 214.25 | 0.95 | 0 | 0 | 3,507 | 0.209 | 450 | UC | 1.40 | 0.28 | 0.26 | 0.047 | 81.6% | OK! |
| Point I | CP12 | 0.5 x 1 | 9.00 | 9.00 | 8.78 | 8.73 | 0.05 | 12.00 | 0.004 | 250 | - | 2.00 | 0.25 | 2.25 | 275.29 | 319.34 | 0.95 | 89 | 85 | 85 | 0.008 | 225 | UC | 0.80 | 0.04 | 0.04 | 0.033 | 18.6% | OK! |
| CP12 | CP13 | 3 + 15 + 14 + 1 + 2 | 9.00 | 8.50 | 8.50 | 7.93 | 0.57 | 71.00 | 0.008 | 125 | - | 13.76 | 0.65 | 14.41 | 182.25 | 211.41 | 0.95 | 1,618 | 1,537 | 5,129 | 0.301 | 450 | UC | 1.81 | 0.42 | 0.38 | 0.081 | 78.9% | OK! |
| CP13 | CP13A | 4 + 16 + 7 + 17 + 3 + 15 + 14 + 1 + 2 | 8.50 | 8.50 | 7.44 | 7.41 | 0.03 | 8.00 | 0.003 | 300 | - | 14.41 | 0.09 | 14.50 | 181.93 | 211.04 | 0.95 | 0 | 0 | 8,967 | 0.526 | 600 | UC | 1.50 | 0.92 | 0.83 | 0.303 | 63.4% | OK! |
| CP13A | CP14 | ditto | 8.50 | 8.50 | 7.41 | 7.35 | 0.06 | 18.00 | 0.003 | 300 | - | 14.50 | 0.20 | 14.70 | 181.22 | 210.21 | 0.95 | 0 | 0 | 8,967 | 0.524 | 600 | UC | 1.51 | 0.98 | 0.88 | 0.360 | 59.3% | OK! |
| CP14 | TM2 | ditto | 8.50 | 6.40 | 7.35 | 5.80 | 0.04 | 4.00 | 0.010 | 100 | - | 14.70 | 0.11 | 14.73 | 181.11 | 210.09 | 0.95 | 0 | 0 | 8,967 | 0.524 | 600 | UC | 2.34 | 0.75 | 0.68 | 0.154 | 77.3% | OK! |
| Point H | CP15A | 5 | 6.40 | 6.40 | 6.18 | 6.16 | 0.02 | 5.00 | 0.003 | 300 | - | 2.00 | 0.12 | 2.12 | 277.67 | 322.10 | 0.95 | 258 | 245 | 245 | 0.022 | 225 | UC | 0.71 | 0.03 | 0.03 | 0.010 | 69.7% | OK! |
| CP15A | TM2 | ditto | 6.40 | 6.40 | 6.16 | 6.15 | 0.01 | 4.00 | 0.003 | 300 | - | 2.12 | 0.09 | 2.21 | 276.01 | 320.17 | 0.95 | 0 | 0 | 245 | 0.022 | 225 | UC | 0.72 | 0.04 | 0.03 | 0.012 | 64.6% | OK! |
| External | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TM2 | MHA | 4 + 16 + 7 + 17 + 3 + 15 + 14 + 1 + 2 + 5 | 6.40 | 6.40 | 5.65 | 5.46 | 0.19 | 17.00 | 0.011 | 90 | - | 14.73 | 0.11 | 14.84 | 180.72 | 209.64 | 0.95 | 0 | 0 | 9,212 | 0.537 | 600 | pipe | 2.57 | 0.73 | 0.65 | 0.117 | 82.2% | OK! |
| MHA | MHB | ditto | 6.40 | 5.70 | 5.46 | 5.10 | 0.21 | 18.00 | 0.011 | 90 | - | 1 | | | | | | | | | | | | | | | | | |