Mansfield Engineering Consultant Company

Civil / Geotechnical / Structural Engineering consultant

GEOTECHNICAL INVESTIGATION REPORT

For S16-II Application of NTEH Development

on Lot No. 83 RP,

in D.D. 21,

San Uk Ka,

Tai Po,

New Territories.

DLO Ref. no.: DLO/TP 70/TLT/92

August, 2024
(1st Edition)

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Table of Contents

Appendices

1. Introduction

1.1 Background

Town planning application S16-II for a single detached 3-storey N.T. Exempted Village House (NTEH) on Lot No. 83 RP, in D.D. 21, San Uk Ka, Tai Po, New Territories is proposed. According to the planning decision made by the members of Town Planning Board (TPB) under TPB case no. A/TP/571-2 stated, a geotechnical investigation report should be prepared and submitted to the TPB and to the satisfaction of the board or the GEO/CEDD. Although this application is an individual fresh submission, previous planning conditions should be applicable in view of all the subjective materials with respect to the S16-II application are remain unchanged.

1.2 Scope

The aim of this report is first to review the current site environment. Subsequently, a study of the proposed site formation works as approved by the Buildings Department is performed. Afterward, an assessment of existing slope stability along the critical ground profile in the vicinity of the application site is then carried out. Furthermore, the necessary geotechnical remedial works (if any) identified is recommended at the final part of this report.

2 Site Description

The proposed site area comprises one block of 3-storey NTEH with site area of approximate 122m^2. The subject site is located on an undeveloped leveled ground where located nearly 138m away from the junction of San Uk Ka rural access and Wu Yiu Road, Tai Po.

During site observation, the proposed NTEH will be founded over a leveled ground (Plate 1) with ground level of +56.5mPD. An existing natural slope of about 9.7m is observed at immediate south to west side of the site (Plate 2). Two blocks of detached single NTEH are revealed to the north end of the site where founded on platform levels of +56.5 and +55.1 respectively (Plate 3). During the site observation, there is no trace of filling works encountered near the toe of the existing slope and within the application site (Plate 4). An existing registered slope feature 7NW-D/C 427 was recorded to the existing slope at nearest 16.8m apart from the southern-east direction of the application site (see part plan in Appendix A). Meanwhile, no any building/structure/formation work is discovered neither within the boundary of this registered slope feature (Plate 5) nor at the toe of the slope (Plate 6).

3 Approved Site Formation Proposal

3.1 The Site Formation

Site formation works for the total five blocks of new NTEH were submitted and approved by the Buildings Department on 28 March 2022 under BD reference number BD 6/9062/16. A copy of reduced approval plans is attached in Appendix B for easy reference. From the plan, a series of new R.C./Mass concrete retaining walls are proposed to be erected along the north to east boundaries of the site in order to form an elevated platform for the accommodation of the five blocks of NTEH. On the other hand, several periphery stormwater drains are also proposed to intercept the surface runoff from surrounding of the application site. There is no slope remedial/upgrade work required to the proposed NTEH development in particular to the existing slope where situated to the south and south-east of the application site.

By referring to the Section 7 -7 of the approval plan, the gradient of the existing slope to the south-east bound of the application site is measured about 28^{o} to 30^{o} horizontally. Moreover, according to the part plan of Lot 83 RP and the Section 7' – 7' in Appendix C, a platform within inaccessible premises is situated at the crest of the existing slope and at about 18m away from the south to south-west of the application site.

3.2 Recommendation on Design Parameters

According to approval plan of drawing number SF-02, a set of soil shear strength parameters was accepted and approved by the Buildings Department. The adopted soil parameters were tabulated as following and a part-print of the approval plan is attached in Appendix B for reference.

Soil Type	*c' (kPa)*	*ϕ' (deg)*	*γ (kN/m^3)*
Colluvium	3	35	19
CDT	3	35	19

4. Slope Stability Analysis

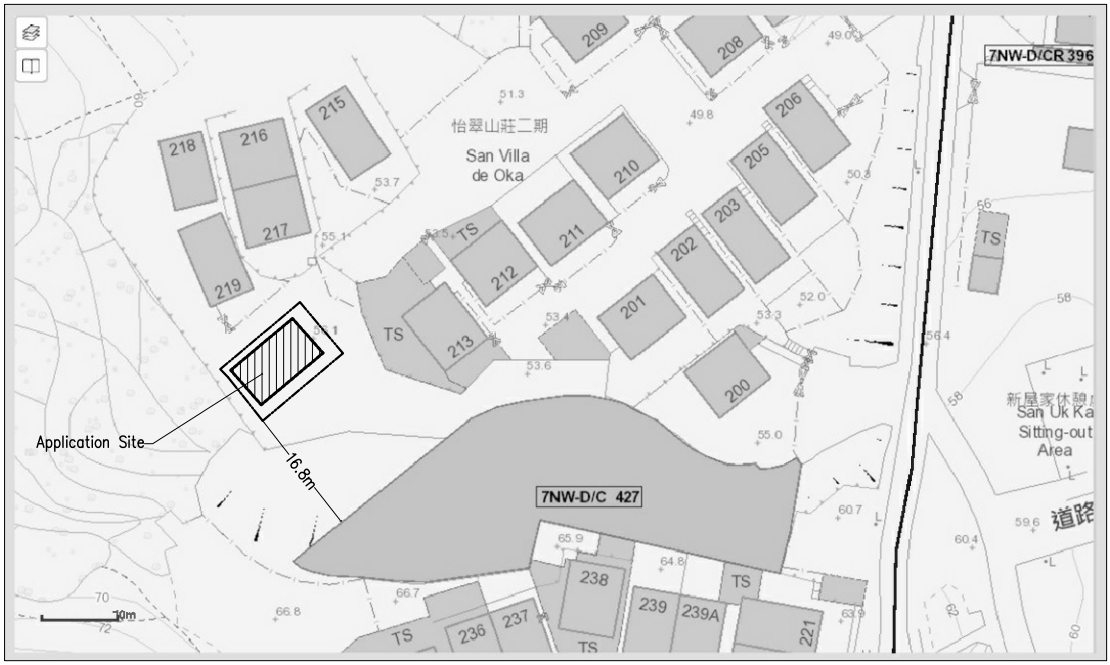
In order to investigate the overall stability of the existing slope to the south-east of the application site, stability analysis by means of BD pre-approved program "SLOPE/W" and the Morgenstern-Price method was adopted to check whether any slope remedial/upgrade works should be made. As from the analysis attached in Appendix D indicates, Grid and Radius method was used and surcharge load of 5kPa was imposed at the platform of existing inaccessible premises at the crest of the study slope. Design ground water table was assumed at two-third of the overall slope height and at one-third of retaining height of the new retaining wall. After the computation, the analyzed lowest FoS value of 1.508 is generated which is far greater than the prescribed safety value of 1.4. Thus, the overall stability of the existing slope is confirmed.

5. Summary and Conclusion

Site observation to the current site environment was carried out and there is no filling works encountered along the toe of the existing slope as well as within the boundary of the application site. The surface and subsurface condition of the proposed site have been investigated and studied through the BD approved site formation plans (BD 6/9062/16) of which a set of design soil strength parameters is adopted. Slope stability analysis for the existing slope along the critical ground profile to the south-west of the application site is carried out by SLOPE/W in associated with Morgenstern-Price method. According to the generated lowest safety factor value indicated, it can be seen that the status of the existing slope is within the safety margin and no remedial/upgrade work is necessary.

APPENDIX A

Part Plan of SIS Feature 7NW-D/C 427

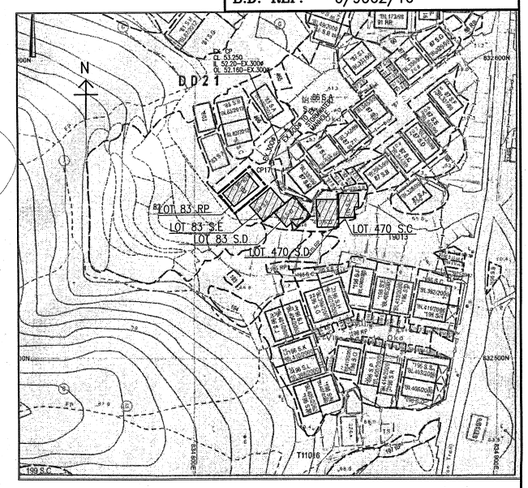


Part Plan of SIS Feature - 7NW-D/C 427

APPENDIX B

Reduced Site Formation Approval Plans

B.D. REF. 6/9062/16



BLOCK PLAN 1 : 1000

LEGENDS : –

- LOT BOUNDARY
- HOUSE BOUNDARY
- EXISTING HOUSE
- FINAL FORMATION LEVEL
- RETAINING WALL TOP LEVEL
- RETAINING WALL BASE LEVEL
- PROPOSED 225/300 U-CHANNEL min fall 1:100
- PROPOSED 225/300 COVERED CHANNEL (REFERS TO CEDD DRG. C2412E) min fall 1:100
- PROPOSED 225 STEP CHANNEL (REFER TO CEDD DRG. C2411G)
- PROPOSED 250ø/300ø CONC. PIPE min fall 1:100
- PROPOSED 150ø PERFORATED PIPE
- PROPOSED CONCRETE STRUCTURE
- PROPOSED DRAINAGE WORK
- PROPOSED CUT
- PROPOSED FILL
- PROPOSED TEMPORARY CUT SLOPE
- PROPOSED CUT SLOPE SURFACE HYDROSEEDED
- PROPOSED CATCHPIT UNDERGROUND – SURFACE FLUSH WITH GROUND (REFER TO CEDD DRG C2407)
- PROPOSED CATCHPIT (CEDD DRG. C2405)
- PROPOSED CATCHPIT WITH TRAP (CEDD DRG C2406)
- PROPOSED CATCHPIT WITH TRAP – SURFACE FLUSH WITH GROUND (REFER TO CEDD DRG C2406 & C2407)
- EXISTING TRIAL PIT
- 1100H RAILING/FENCE
- GATE
- SETTLEMENT MARKER ON (GROUND ADJACENT TO PROPOSED 225U)
- EXTENT OF UNAUTHORIZED SITE FORMATION WORKS TO BE REMOVED

225C*/300C* — PROPOSED 225/300 COVERED CHANNEL WITH BAFFLE WALL 500mm HEIGHT ALONG SLOPE TOE min fall 1:100 (REFER TO CEDD DRG. C2412E & C2413D)

225SC* — PROPOSED 225 STEP CHANNEL WITH BAFFLE WALL 500mm HEIGHT ALONG SLOPE TOE (REFER TO CEDD DRG. C2411G & C2413D)

EXISTING RETAINING WALL TO BE DEMOLISHED AND THE EXISTING FILL WITHIN AND IN THE VICINITY OF THE SITE TO BE REMOVED. TCP T5 (RGE STREAM) TO CONFIRM THE EXTENT OF EXISTING FILL ON SITE AND THE EXISTING FILL TO BE TOTALLY REMOVED. EXISTING RETAINING WALL AND ASSOCIATED STRUCTURES TO BE REMOVED BY THIS SITE FORMATION CONTRACTOR UNDER THIS SUBMISSION.

EXISTING RETAINING WALL TO BE DEMOLISHED AND THE EXISTING FILL WITHIN AND IN THE VICINITY OF THE SITE TO BE REMOVED. TCP T5 (RGE STREAM) TO CONFIRM THE EXTENT OF EXISTING FILL ON SITE AND THE EXISTING FILL TO BE TOTALLY REMOVED. EXISTING RETAINING WALL AND ASSOCIATED STRUCTURES TO BE REMOVED BY THIS SITE FORMATION CONTRACTOR UNDER THIS SUBMISSION.

Note: This plan has been processed on a curtailed check basis under the centralized processing system as promulgated in PNAP ADM-19. The duties of the authorized person, registered structural engineer and/or registered geotechnical engineer concerned as specified under section 4(3)(b) and the provision of section 14(2)(c) of the Buildings Ordinance are of particular relevance in this regard.

Revision	Date	Description	BY	Checked
B	JAN 2022	LOTS 83 sC RP, 83 sF, 83 RP, 470 sC & 470 sD ADDED AND REDRAWN	AT	CSL
A	MAY 2019	MINOR AMENDMENT	AT	CSL

	Name	Initial
Design Checked	C.S.L.	
Designed	S.W.	
Drawn	A.T.	
Date: MAY 2019	Scale: 1 : 100	C.A.D. Ref.: C761SF01

Project

PROPOSED VILLAGE HOUSES, LOTS 83 sC ss1, 83 sC RP, 83 sD, 83 sE, 83 sF, 83 RP, 470 sC, 470 sD & 470 sE, IN DD21, SAN UK KA, TAI PO, N.T.

Title

SITE FORMATION PLAN

Drg. No. SF-01 Rev. B

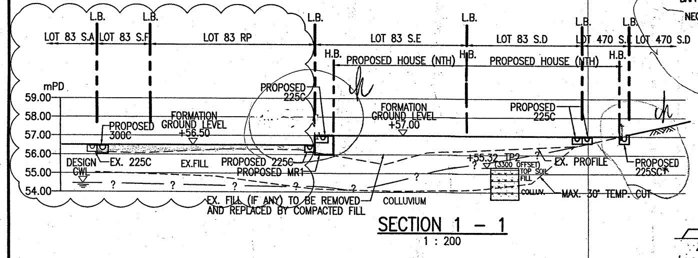
Dr. LAU Chee Sing
BSc PhD CEng MICE MIStructE MHKIE
Authorized Person
Registered Structural Engineer

LAM TAT SHING
BEng MacEng) CEng
MICE MIStructE MHKIE
RPE(CVL, GEL, STL)
Registered Geotechnical Engineer

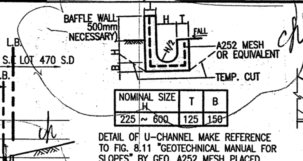
Plan Approved
TSE Kam-ming, Franco
Senior Building Surveyor
for BUILDING AUTHORITY
28 MAR 2022

RECEIVED BY
2022 JAN 31 P 12:05
(R & D Division (HKDs))
BUILDINGS DEPARTMENT

B.D. REF. 6/9062/16

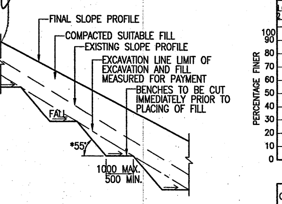


SECTION 1 – 1
1 : 200



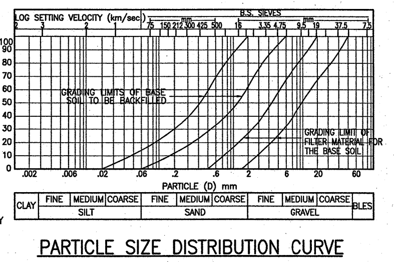
DETAIL OF U-CHANNEL MAKE REFERENCE TO FIG. 8.11 "GEOTECHNICAL MANUAL FOR SLOPES" BY GEO, A252 MESH PLACED CENTRALLY.

DETAIL OF U-CHANNEL
N.T.S.

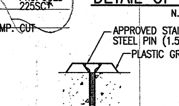


* THE ANGLE WILL BE ADJUSTED TO SUIT STEEPER CUTTING AS NECESSARY

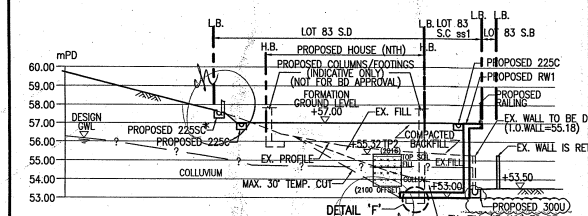
DETAIL OF BENCHING FOR PLACEMENT OF FILL ON EXISTING GROUND
N.T.S.



PARTICLE SIZE DISTRIBUTION CURVE FOR BACKFILLED SOIL AND FILTER MATERIAL



TYPICAL DETAIL OF GROUND SETTLEMENT MARKER
N.T.S.



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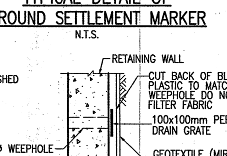
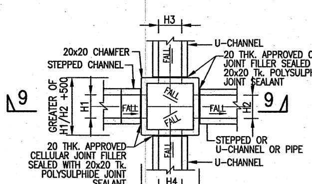
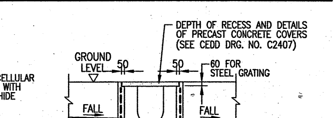


TYPICAL WEEPHOLE DETAILS
N.T.S.

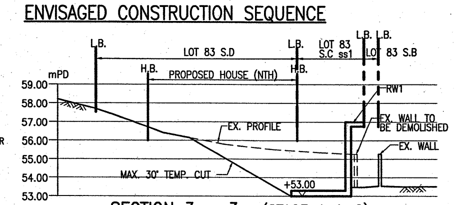


PLAN



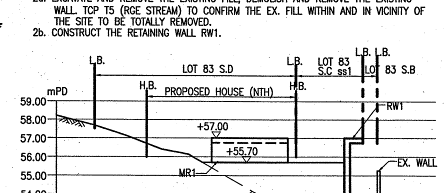
ALTERNATIVE TOP SECTION FOR PRECAST CONCRETE COVERS/GRATINGS (SURFACE FLUSH WITH GROUND)
SECTION 9 – 9

ENVISAGED CONSTRUCTION SEQUENCE



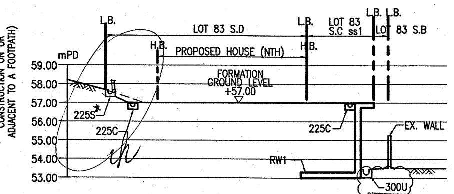
SECTION 3 – 3 (STAGE 1 & 2) 1 : 200

1. CARRY OUT INITIAL SITE CONDITION SURVEY AND INSTALL GROUND SETTLEMENT MONITORING POINTS.
2a. EXCAVATE AND REMOVE THE EXISTING FILL, DEMOLISH AND REMOVE THE EXISTING WALL. TCP T5 (RGE STREAM) TO CONFIRM THE EX. FILL WITHIN AND IN VICINITY OF THE SITE TO BE TOTALLY REMOVED.
2b. CONSTRUCT THE RETAINING WALL RW1.



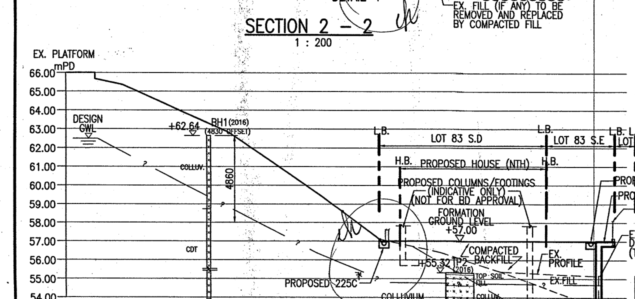
SECTION 3 – 3 (STAGE 3) 1 : 200

3. BACKFILL TO +55.70mPD AND CONSTRUCT MR1.



SECTION 3 – 3 (STAGE 4 & 5) 1 : 200

4. BACKFILL TO +57.00mPD AND FORM CUT SLOP
5. E.CONSTRUCT REMAINING DRAINAGE WORKS.



SECTION 3 – 3
1 : 200

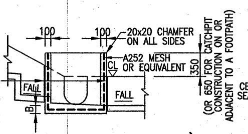
GEO NOTES :

TYPICAL CONTENTS OF THE REGULAR REPORTS PREPARED BY THE TCP T5 SITE SUPERVISION PERSONNEL SHOULD INCLUDE THE FOLLOWING :
(1) PROGRESS OF THE WORKS
(2) INTERPRETATION OF MONITORING RESULTS TAKEN DURING CONSTRUCTION
(3) SITE OBSERVATIONS
(4) INSPECTION RECORDS
(5) REVIEW
(6) COMPLIANCE WITH APPROVAL PLANS

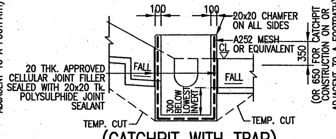
NOTE :
CUMULATIVE MONITORING RESULTS WITH THE AAA AND DESIGN LEVELS (ONLY IN GRAPHICAL FORM) SHOULD BE PROVIDED IN THE APPENDIX.

EACH REPORT SHALL COVER ONE CALENDER MONTH OF SITE ACTIVITIES AND BE COMPLETED WITHIN 2 WEEKS AFTER EACH REPORTING PERIOD. THE REPORTS SHALL BE KEPT AT THE SITE OFFICE FOR INSPECTION OF THE BD/GEO.

UPON INSTALLATION/RE-PROVISION OF THE MONITORING STATIONS, THE TCP T5 SITE SUPERVISION PERSONNEL SHALL CHECK THE LOCATIONS OF ALL MONITORING POINTS AND CONFIRM THAT THEY ARE IN PROPER WORKING CONDITIONS, RECORDS OF SUCH CHECKING SHOULD BE PROVIDED IN THE REGULAR REPORTS PREPARED BY THE TCP T5 SITE SUPERVISION PERSONNEL.

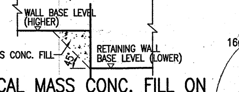


(CATCHPIT WITHOUT TRAP)
SECTION 9 – 9

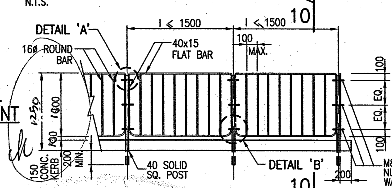


(CATCHPIT WITH TRAP)
SECTION 9 – 9

(REFER TO CEDD DRAWINGS 2405 AND 2406)
DETAIL OF CATCHPIT
N.T.S.

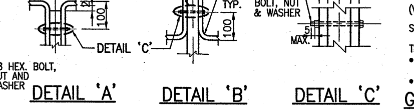


TYPICAL MASS CONC. FILL ON WALL BASE WITH LEVEL DIFFERENT
N.T.S.



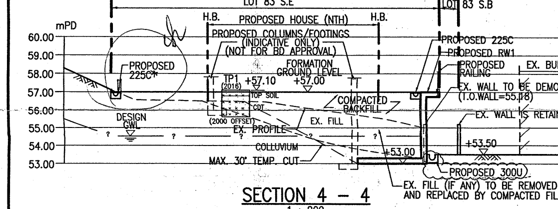
STEEL SCHEDULE OF RAILING : –
– 40 SOLID SQ. POST
– 40x15 FLAT BAR
– 16ø ROUND BAR

ELEVATION



DETAIL 'A' DETAIL 'B' DETAIL 'C'

TYPICAL DETAILS OF RAILING
N.T.S.



SECTION 4 – 4
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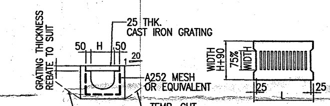
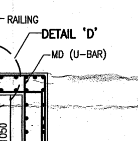
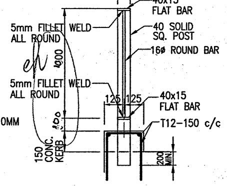


TYPICAL SECTION CAST IRON GRATING
L=600mm FOR H < 375mm
L=400mm FOR H > 375mm

DETAIL OF COVERED U-CHANNEL
N.T.S.



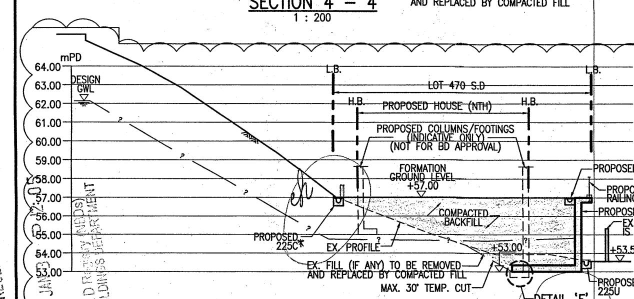
DETAIL 'E'
N.T.S.



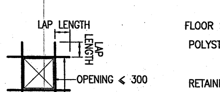
SECTION 10 – 10
DETAIL 'D'
N.T.S.

NOTES ON RAILING : –

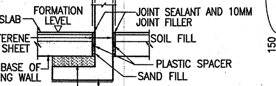
1. STEEL TO BE GRADE S275 JO BS EN10025 2004(CLASS 1) TO COP FOR STRUCTURAL USE OF STEEL 2011.
2. WELDS TO BE SOUND AND CONTINUOUS AVOIDING LOCKED-IN SLAG.
3. WELDING SLAG TO BE REMOVED IMMEDIATELY AFTER WELDING.
4. RAILINGS AFTER FABRICATION AND WELDING, NUTS, BOLTS AND WASHERS ARE TO BE HOT DIP GALVANIZED TO BS EN ISO 1461:2009 TO A COATING THICKNESS OF AT LEAST 500g/m AND THICKNESS 85 um MIN.
5. ~~RAILING DETAILS REFER TO HYD'S DRG. NO. H2130F, H2131B, H2127A & H2134G.~~
6. ~~RAILING TO BE PROVIDED TO RETAINING WALLS AND/OR AT LEVEL DIFFERENT>500mm.~~
7. WELD :
i) ALL WELDING TO BE MANUAL METAL-ARC WELDING AND CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF BS EN 1011-1:2009 & 1011-2:2001.
ii) ALL WELDING SHALL COMPLY WITH BS EN 756:2004
iii) ALL WELDING JOINTS SHALL APPLIED BY 2 COATS OF ZINC-RICHED PRIMER TO BS 4652:1995 CODE OF PRACTICE FOR THE STRUCTURAL USE OF STEEL – 2011.
iv) QUALIFICATION OF WELDER TO BS EN 287-1:2004 AND BS EN ISO 15614-1:2004+A1:2008.
9. BOLT TO BE GRADE ISO 8.8 TO BS 4190:2001.
10. MIN. HORIZONTAL IMPOSED LOADS ON PROTECTIVE BARRIERS TO RESTRICT OR CONTROL MOVEMENT OF PERSONS IN ACCORDANCE WITH TABLE 3.13 COP FOR DEAD AND IMPOSED LOADS 2011. (AREAS WHERE CONGREGATION OF PEOPLE IS NOT EXPECTED)
I) LIVE LOAD AT HEIGHT 1.1m ABOVE FLOOR LEVEL = 0.75kN/m
II) UDL BETWEEN FLOOR AND TOP RAIL = 1.0kPA
III) CONCENTRATED LOAD ON ANY PART OF RAIL = 0.5kN



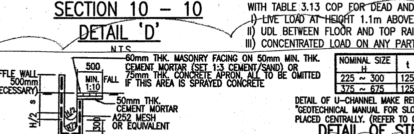
SECTION 5 – 5
1 : 200



TYPICAL TRIMMING BAR DETAIL
N.T.S.

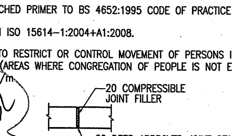


TYPICAL WALL BASE OPENING AND TRIMMING BAR DETAIL
DETAIL 'E'
N.T.S.

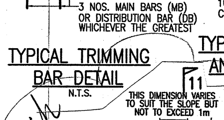


SECTION 11 – 11
STEP CHANNEL DETAILS
N.T.S.

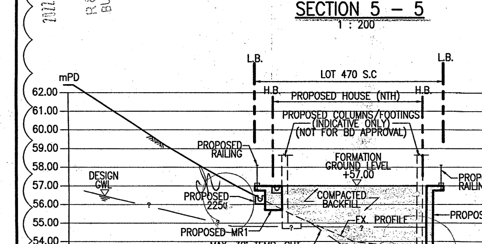
DETAIL OF U-CHANNEL MAKE REFERENCE TO FIG. 8.11 "GEOTECHNICAL MANUAL FOR SLOPES" BY GEO, A252 MESH PLACED CENTRALLY. (REFER TO CEDD DRG. C2411G & 2413D)
DETAIL OF STEP CHANNEL
N.T.S.



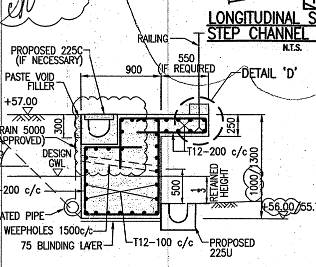
DETAILS OF EXPANSION JOINT
N.T.S.



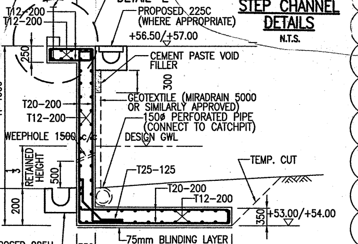
LONGITUDINAL SECTION STEP CHANNEL DETAILS
N.T.S.



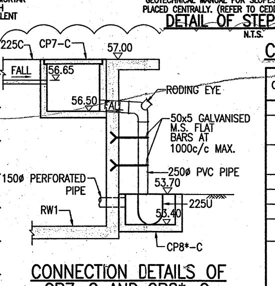
SECTION 6 – 6
1 : 200



MASS CONCRETE FILL MR1 DETAILS
N.T.S.



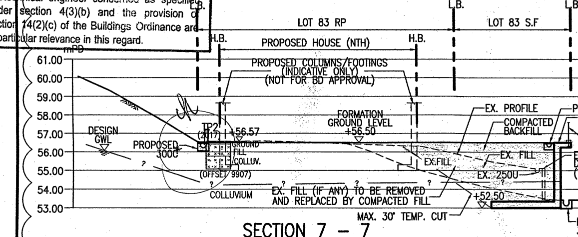
RETAINING WALL RW1 REINFORCEMENT DETAILS (WITH 550mm CANTILEVER SLAB)
N.T.S.



CONNECTION DETAILS OF CP7-C AND CP8*-C, (CP9*-C AND CP10-C, CP11*-C AND CP13-C, CP12*-C AND CP13-C, CP15*-C AND CP16-C, SIMILAR)
N.T.S.

CATCHPIT SCHEDULE

CATCHPIT NO.	COVER LEVEL (mPD)	UPSTREAM CP	DOWNSTREAM CP	INLET CHANNEL /PIPE	INVERT LEVEL (mPD)	OUTLET CHANNEL /PIPE	INVERT LEVEL (mPD)
CP1-C	57.00	–	CP15*-C	225C*	56.65	225C	56.60
CP2-C	57.00	– –	CP3-C	225SC* 225C	56.65 56.65	225C	56.60
CP3-C	57.00	– CP2-C	CP11*-C	225SC* 225C	56.65 56.65	225C*	56.60
CP4-C	57.00	–	CP12*-C	225C*	56.65	225C	56.60
CP5-C	57.00	–	CP6	225C*	56.65	225U	56.25
CP6	56.50	CP5-C	CP8*-C	225U	56.20	225U	56.15
CP7-C	57.00	–	CP8*-C	225C	56.65	250ø DOWNPIPE	56.50
CP8*-C	53.70	CP6 CP7-C –	CP10-C	225U 250ø DOWNPIPE 150ø(RW1)	53.45 53.70 53.45	225U	53.40
CP9*-C	57.00	– –	CP10-C	225C 225C	56.65 56.65	250ø DOWNPIPE	56.50
CP10-C	53.65	CP8*-C CP9*-C –	CP13-C	225U 250ø DOWNPIPE 225U	53.35 53.65 53.40	250ø	53.35
CP11*-C	57.00	– CP3-C	CP13-C	225C 225C	56.65 56.55	250ø DOWNPIPE	56.50
CP12*-C	57.00	CP4-C	CP13-C	225C	56.55	250ø DOWNPIPE	56.50
CP13-C	53.60	CP11*-C CP10-C CP12*-C	CP16-C	250ø DOWNPIPE 250ø 250ø DOWNPIPE	53.60 53.30 53.60	300U	53.25
CP14*-C	56.50	–	CP17-C	225C	56.15	225C	56.10
CP15*-C	57.00	CP1-C –	CP16-C	225C 225C	56.55 56.65	250ø DOWNPIPE	56.50
CP16-C	53.50	CP15*-C CP13-C –	CP18-C	250ø 300U 150ø(RW1)	53.50 53.15 53.40	300U	53.10
CP17-C	56.50	CP14*-C CP20-C CP18-C	EX. 300ø	225C 300C 300ø	56.05 55.80 52.90	EX. 300ø	52.85
CP18-C	53.40	CP16-C	CP17-C	300U 150ø(RW1)	53.00 53.20	300ø	52.95
CP19*-C	56.50	–	CP20-C	300C*	56.10	300C	56.05
CP20-C	56.50	CP19*-C	CP17-C	300C	55.95	300C	55.90



SECTION 7 – 7
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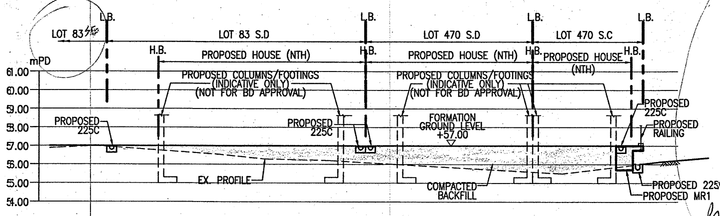

SECTION 8 – 8
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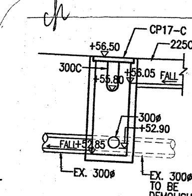


DETAIL OF CATCHPIT CP17-C
1 : 200

EXCAVATION FOR MASS CONCRETE WALL CONSTRUCTION BY PIT-BY-PIT METHOD (NOT FOR BD'S APPROVAL)

1. THE CONTRACTOR SHALL EXCAVATE PITS VERTICALLY BY HAND. THE SIZE OF THE PITS ARE 1500 WIDTH & 1500 MAX. DEPTH. UNLESS OTHERWISE SPECIFIED.
2. POWERED TOOLS SHALL ONLY BE USED WITH THE AGREEMENT OF AP/RSE/RGE.
3. SHORING OR PRODUCTS HAVING EQUIVALENT FUNCTIONS OR PERFORMANCE AS AGREED BY THE AP/RSE/RGE SHALL BE CARRIED OUT OR PROVIDED. HARDWOODS SHALL NOT BE USED FOR SHORING PURPOSES.
4. MATERIAL EXCAVATED FROM PITS SHALL BE SAFELY STOCKPILED.
5. FOR EXCAVATIONS ON SLOPING GROUND THE MATERIAL SHALL BE PROPERLY PROTECTED IN SUCH A MANNER THAT IT DOES NOT FALL OR WASH DOWNHILL OR IN ANY WAY ENTER SURFACE WATER DRAINAGE SYSTEMS.
6. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT THE INGRESS OF SURFACE WATER INTO THE EXCAVATIONS.
7. THE CONTRACTOR SHALL INFORM AP/RSE/RGE IMMEDIATELY UPON REACHING THE SCHEDULED EXCAVATION DEPTH.

NOTES ON SETTLEMENT MONITORING

1. THE CONTRACTOR SHALL INSTALL SETTLEMENT MARKERS AS SHOWN ON THE PLAN.
2. BEFORE COMMENCEMENT OF WORKS, THE CONTRACTOR SHALL TAKE INITIAL READING OF THE SETTLEMENT POINTS AND CARRY OUT PRE-CONSTRUCTION CONDITION SURVEY AND SUBMIT THE RESULTS TO AP/RSE/RGE IMMEDIATELY.
3. THEREAFTER THE CONTRACTOR SHALL TAKE DAILY READINGS DURING EXCAVATION AND SUBMIT THE RESULTS TO THE AP/RSE/RGE WITHIN 24 HOURS AFTER THE READING HAVE BEEN TAKEN.
4. SHOULD UNDUE SETTLEMENT OCCUR OR SURFACE CRACK OR ACCUMULATED SETTLEMENT MORE THAN 25 MM. EXCAVATION SHALL BE CEASED IMMEDIATELY AND THE AP/RSE/RGE SHALL BE INFORMED IMMEDIATELY.
5. PROPOSED ALERT-ALARM-ACTION LEVEL FOR THE EXCAVATION/CONSTRUCTION AS FOLLOWS:

	SETTLEMENT
ALERT LEVEL	7.5mm
ALARM LEVEL	12mm
ACTION LEVEL	25mm

WHEN ALERT LEVEL IS REACHED, THE CONTRACTOR SHOULD REVIEW THE CONSTRUCTION METHOD AND PROPOSE PRECAUTIONARY MEASURES FOR AP/RSE/RGE'S AGREEMENT.
WHEN ALARM LEVEL IS REACHED, THE CONTRACTOR SHOULD FURTHER REVIEW THE CONSTRUCTION METHOD AND FREQUENCY OF MONITORING SHOULD BE INCREASED TO TWICE DAILY. AP/RSE/RGE AND BD/GEO SHOULD BE INFORMED IMMEDIATELY. WHEN ACTION LEVEL IS REACHED, THE WORKS SHOULD BE CEASED. REMEDIAL/MITIGATION PROPOSAL OF THE WALL SHOULD BE SUBMITTED TO AP/RSE/RGE AND BD/GEO FOR AGREEMENT. NO WORKS SHOULD BE RESUMED PRIOR TO AGREEMENT OF THE REMEDIAL WORKS.

NOTE S ON ALERT-ALARM-ACTION LEVEL

"ALERT LEVEL"
RC TO NOTIFY AND SUBMIT WRITTEN REPORT TO RSE/RGE.
(II) RSE/RGE TO ASSESS EFFECT OF MOVEMENTS AND PREDICT FUTURE MOVEMENTS.
(III) RSE/RGE TO AGREE WITH RC ON THE SUITABLE ACTION PLAN WHICH MAY INCLUDE THE INSTALLATION OF ADDITIONAL CHECK POINTS AND/OR INCREASING MONITORING FREQUENCY, AND THE REMEDIAL/MITIGATING MEASURES TO BE TAKEN UPON REACHING THE "ALARM LEVEL".

"ALARM LEVEL"
(I) RC TO NOTIFY AND SUBMIT UPDATED REPORT TO RSE/RGE. THE BD AND THE RELEVANT PARTIES SHOULD BE NOTIFIED IMMEDIATELY
(II) RSE/RGE AND RC TO CONDUCT JOINT SITE INSPECTION TO DETERMINE IF ANY CONSTRUCTION ACTIVITIES SHOULD BE TEMPORARILY SUSPENDED.
(III) RC TO IMPLEMENT THE NECESSARY REMEDIAL/MITIGATING MEASURES IN ACCORDANCE WITH THE AGREED ACTION PLAN.
(IV) RSE/RGE AND RC TO DISCUSS THE INSTRUMENT RESPONSE AND REVIEW THE EFFECTIVENESS OF THE RESPONSE ACTION.
(IV) RSE/RGE AND RC TO DISCUSS THE INSTRUMENT RESPONSE AND REVIEW THE EFFECTIVENESS OF THE RESPONSE ACTION.
(V) RSE/RGE TO AGREE WITH RC ON THE EMERGENCY PLAN DETAILING THE MEASURES TO BE TAKEN UPON REACHING "ACTION LEVEL".
(VI) ANY CONSTRUCTION ACTIVITIES MAY BE SUSPENDED IF THE RESPONSE ACTION HAS BEEN IMPLEMENTED AND ON THE ADVICE OF THE RSE/RGE AS NECESSARY.
(VII) RSE/RGE TO REVIEW THE METHOD STATEMENTS OF SITE FORMATION WORKS TO DETERMINE WHETHER MODIFICATION TO THE CONSTRUCTION METHODS IS REQUIRED TO PREVENT ACTION LEVEL FROM BEING REACHED.

"ACTION LEVEL"
(I) ALL WORKS THAT WILL CAUSE GROUND MOVEMENT ARE TO BE CEASED.
(II) RC TO NOTIFY AND CARRY OUT A JOINT SITE INSPECTION WITH THE RSE/RGE IMMEDIATELY. THE BD AND THE RELEVANT PARTIES SHOULD BE NOTIFIED IMMEDIATELY.
(III) RC TO IMPLEMENT THE NECESSARY EMERGENCY MEASURES IN ACCORDANCE WITH THE AGREED EMERGENCY PLAN.
(IV) RC TO SUBMIT AN INCIDENT REPORT TO RSE/RGE AND THE BD DETAILING THE FULL HISTORY OF THE MOVEMENTS AND REMEDIAL/EMERGENCY MEASURES IMPLEMENTED.
(V) RSE/RGE TO REVIEW THE INCIDENT AND AGREE WITH RC ON FURTHER REMEDIAL AND PREVENTIVE MEASURES TO ENABLE RESUMPTION OF THE SUSPENDED WORKS.
(VI) CONSTRUCTION ACTIVITIES SHOULD NOT BE RESUMED UNTIL THE NECESSARY REMEDIAL AND PREVENTIVE MEASURES HAVE BEEN COMPLETED TO THE SATISFACTION OF THE BD
(VII) IF THE TRIGGER VALUES AND RESPONSE ACTION ARE REVISED, THE AMENDED PLANS SHOULD BE SUBMITTED TO THE BD FOR APPROVAL. THE SUSPENDED CONSTRUCTION ACTIVITIES SHOULD NOT BE RESUMED UNTIL THE AMENDED PLANS ARE APPROVED BY THE BA AND CONSENT IS GIVEN

THE "ACTION LEVEL" RESPONSE ACTION SHOULD BE TAKEN IF ANY OF THE FOLLOWING SITUATION OCCURS:
- UNDUE SETTLEMENT AS INDICATED IN ANY CHECK POINTS (E.G. AN INCREASE OF 5MM BETWEEN TWO CONSECUTIVE DAILY READINGS).
- SIGN OF DISTRESS OR DAMAGES OBSERVED IN ANY ADJACENT STRUCTURES AND/OR UTILITIES.

GENERAL NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN mPD UNLESS OTHERWISE SPECIFIED.
3. THE PROPOSED VILLAGE HOUSE IS N.T. EXEMPTED HOUSE AND IS NOT FOR B.D.'S APPROVAL. SEPTIC TANK AND SOAKAWAY PIT ARE NOT FOR B.D.'S APPROVAL. ALL FOOTINGS OF HOUSE TO BE FOUNDED ON UNDISTURBED GROUND.
4. 75mm THK. PRESCRIBED MIX GRADE 10P BLINDING LAYER TO BE PROVIDED UNDERNEATH CONCRETE BASE.
5. CONCRETE FOR MASS CONCRETE STRUCTURE AND CATCHPIT/CHANNEL TO BE GRADE 30D, TO CS1:2010 EXCEPT CLAUSE 7.1.
6. BENCHING DETAIL TO BE IN ACCORDANCE WITH DETAIL SHOWN IN "GEOTECHNICAL MANUAL FOR SLOPES" BY GEO. DETAIL OF U-CHANNEL TO COMPLY WITH FIG. 8.8 AND FIG. 8.11 "GEOTECHNICAL MANUAL FOR SLOPES" BY GEO. DETAIL OF CATCHPIT SHOULD FOLLOW CEDD'S STANDARD DRAWING NO. C2405. DETAIL OF SANDTRAP TO COMPLY WITH FIG. 8.4 "GEOTECHNICAL MANUAL FOR SLOPES" BY GEO. RETAINING WALL TO COMPLY WITH GEO GUIDE 1 – GUIDE TO RETAINING WALL DESIGN.
7. FOR WORKS TO BE CARRIED OUT OUTSIDE THE LOT BOUNDARIES INCLUDING DRAINAGE WORKS, THE LOT OWNER SHALL BE RESPONSIBLE FOR THE RELOCATION AND MAINTENANCE OF SUCH WORKS AS AND WHEN REQUIRED BY THE GOVERNMENT.
8. ALL DISTURBED NATURAL GROUND TEMPORARY CUT SLOPES ON CONSTRUCTION OF RETAINING WALLS, STEP CHANNEL, SAND TRAPS AND FOOTINGS TO BE REINSTATED, BACKFILLED AND COMPACTED IN ACCORDANCE WITH NOTES STATED AND SURFACES TURFED.
9. THE REACTIVE ALKALI OF CONCRETE EXPRESSED AS THE EQUIVALENT SODIUM OXIDE PER METRE OF CONCRETE SHOULD NOT EXCEED 3.0kg WHEN DETERMINED IN ACCORDANCE WITH THE SPECIFICATION ITEMS GIVEN IN APPENDIX A OF PNAP 180 (APP-74).
10. FOR ALL COMPLETED PERMANENT SLOPES AND RETAINING WALLS FOR WHICH THE OWNERS OF THE DEVELOPMENT HAVE MAINTENANCE RESPONSIBILITY. THE INFORMATION REQUESTED IN PNAP:168 & 189 BE SUBMITTED TOGETHER WITH THE FORM BA14 (ADV-8 & APP-79).
11. A252 MESH TO BE PROVIDED TO ALL MASS CONCRETE FILL WITH 50mm COVER STEEL MESH TO COMPLY WITH CS2 2012 AND SHALL HAVE A LAP OF 300mm MIN.
12. BEFORE CONNECTION OF THE PROPOSED DRAINAGE TO THE EXISTING DRAIN OUTSIDE BOUNDARY, CONDITIONS AND ROUTING OF THE CHANNELS SHOULD BE CONFIRMED TO BE PROPER FOR CONNECTION.
13. DISTURBANCE DUE TO SITE FORMATION WORKS TO THE SURROUNDING LOTS EXISTING FEATURES AND BUILDINGS SHOULD BE AVOIDED.
14. THE R.C. DESIGN SHALL COMPLY WITH HK BUILDING REGULATION AND COP FOR STRUCTURAL USE OF CONCRETE 2013. STEELWORKS DESIGN SHALL COMPLY WITH COP FOR STRUCTURAL USE OF STEEL 2011.
15. FOR WORKS TO BE CARRIED OUT OUTSIDE LOT BOUNDARY, PERMISSION SHOULD BE GIVEN BY LOT OWNERS FOR PRIVATE LOTS AND DLO FOR GOVERNMENT LANDS.
16. FOR U-CHANNELS AND CATCHPITS CLOSE TO FOOTPATHS, CONCRETE COVER OR GRATING SHOULD BE PROVIDED. DETAILS OF COVER FOR CATCHPIT AND U-CHANNEL SHOULD COMPLY WITH CEDD'S STANDARD DRAWING NO. C2405 TO C2407 AND C2412 RESPECTIVELY. COVER SURFACE TO BE FLUSHED WITH GROUND SURFACE. ALL REMOVABLE CATCHPIT COVER ARE INDICATED FOR INFORMATION ONLY. EXPANSION JOINT TO BE PROVIDED TO ALL CHANNELS OF MAXIMUM SPACING OF 10m.
17. NO GAS/WATER MAINS NOR EXISTING BUILDING IN THE PROXIMITY OF THE LOT TO BE AFFECTED. EX. LAMP POST AND FOOTPATH SHOULD BE RELOCATED FOR CONSTURCTION OF RETAINING WALL AND SHOULD BE REINSTATED.
18. ALL TEMPORARY CUT SLOPE FOR OPEN CUT EXCAVATION TO BE LIMITED TO 30° MAXIMUM.
19. THE AP TO MAKE SURE THE EX. DRAIN HAS SPARE CAPACITY AND IN GOOD CONDITIONS FOR THE PROPOSED CONNECTION.
20. THE A.P. SHOULD ENSURE THAT ANY OBSTURCTION OR DISTURBANCE TO THE NEARBY STREAM COURSE AFFECTING THE EMBANKMENT STABILITY IS PROHIBITED AT ANY TIME DURING AND AFTER CONSTRUCTION OF THE SMALL HOUSE.
21. DRAINAGE WORKS OUTSIDE SITE BOUNDARY ARE FOR BUILDING AUTHORITY'S INFORMATION ONLY, BUT NOT FOR BA'S APPROVAL.
22. FOR WORK OUTSIDE LOT BOUNDARY, PERMISSION FROM RELEVANT AUTHORITY'S (INCLUDING DLO/TP)/ PRIVATE LOT OWNERS SHOULD BE OBTAINED BEFORE APPLYING FOR CONSENT FOR COMMENCEMENT OF THE WORKS.

NOTES ON FILLING

1. SURFACES ON WHICH FILL IS TO BE PLACED SHALL BE STRIPPED OFF ALL TOP SOIL AND VEGETATION. THE STRIPPED SURFACES SHALL BE TRIMMED AND BENCHED IN STEPS BEFORE FILL IS PLACED.
2. FILL SHALL BE CLEAN GRANULAR MATERIALS. BOULDERS OR ROCK FRAGMENTS LARGER THAN 75mm SHALL BE REMOVED. FILL SHALL NOT CONTAIN UNSUITABLE MATERIAL SUCH AS TOP SOIL, ROOTS, TREE STUMPS OR RUBBISH IN GENERAL.
3. FILL SHALL BE PLACED AND COMPACTED IN HORIZONTAL LAYERS APPROPRIATE TO THE COMPACTION PLANT. BUT NOT GREATER THAN 300mm THICK. COMPACTION REQUIREMENT TO SECTION 6 OF GS FOR CIVIL ENGINEERING WORKS (2006).
4. FILL AREAS SHALL BE BUILT UP HORIZONTALLY AND EVENLY OVER THE WIDTH AND PLACED SO THAT ROLLED SURFACES SHED WATER.
5. IT MAY BE NECESSARY TO CONSTRUCT THE SLOPE SLIGHTLY OVERSIZE AND TO TRIM BACK AFTERWARDS, IN ORDER TO MEET THE ABOVE COMPACTION REQUIREMENTS AT THE EDGES OF THE SLOPE.
6. WHERE CEMENT STABILISED FILL IS SPECIFIED. THE FILL MATERIAL SHALL BE THOROUGHLY MIXED WITH 12% BY VOLUME OF PORTLAND CEMENT.
7. THE INSITU FIELD DRY DENSITIES OF COMPACTED MATERIALS FORMING THE PERIPHERAL PORTION OF AN EARTH FILL SLOPE SHALL BE NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY DESCRIBED IN ITEM 9 BELOW.
8. THE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT SHALL BE DETERMINED IN ACCORDANCE WITH THE STANDARD GIVEN IN GEOSPEC 3.
9. THE INSITU FIELD DENSITY AND MOISTURE CONTENT SHALL BE DETERMINED IN ACCORDANCE WITH GEOSPEC 3. TO DETERMINE THE RELATIVE COMPACTION ACHIEVED. THE NUMBER OF DETERMINATIONS SHALL BE IN ACCORDANCE WITH PRACTICE NOTE APP15 (PNAP55) APPENDIX A.
10. ALL TESTS SHALL BE CARRIED OUT BY OR UNDER THE DIRECTION OF THE AUTHORISED PERSON OR REGISTERED STRUCTURAL ENGINEER OR BY AN INDEPENDENT TESTING AGENCY.
11. RECORD SHALL BE KEPT IN ACCORDANCE WITH PRACTICE NOTE APP15 (PNAP55) OR GEOSPEC 3.

NOTES ON RETAINING WALL AND REINFORCED CONCRETE STRUCTURE

1. THE MAXIMUM SPACING OF CONSTRUCTION JOINT AND EXPANSION JOINT TO BE 7.5m AND 22.5m RESPECTIVELY. THE CONTRACTOR SHOULD SUBMIT THEIR PROPOSAL TO THE ENGINEER FOR APPROVAL.
2. ALL HORIZONTAL REINFORCEMENT SHALL BE CARRIED THROUGH CONTRACTION JOINTS BUT DISCONTINUED AT EXPANSION JOINTS.
3. CONCRETE COVER TO ALL BARS TO BE 50mm.
4. 75mm THK. PRESCRIBED MIX GRADE 10P BLINDING LAYER TO BE PROVIDED UNDERNEATH CONCRETE BASE.
5. CONCRETE TO BE DESIGNED MIX GRADE C30 (THE SPECIFIED GRADE STRENGTH OF CONCRETE, Uw TO BE 30 MPa AT 28 DAYS) AND COMPLY WITH CS1, 2010 EXCEPT CLAUSE 7.1.
6. MAX SURCHARGE LOAD ON TOP OF MR1=5kPa, RW1 =5kPa

	MR1	RW1
MAX. BEARING PRESSURE (KPa)	83	117
ALLOWABLE BEARING PRESSURE (KPa)	99	212

DESIGN GROUNDWATER LEVEL FOR RETAINING WALL=1/3 OF RETAINING HEIGHT.

7. THE BASE OF WALL SHALL BE FOUND ON INSITU SOILS AND SHOULD BE INSPECTED AND CONFIRMED BY THE ENGINEER BEFORE PLACING OF THE BLINDING LAYER. ANY EXISTING FILL UNDERNEATH WALL BASE SHALL BE REMOVED AND REPLACED BY MASS CONCRETE OR COMPACTED GENERAL FILL.
8. STEEL REINFORCEMENT SHALL COMPLY WITH CONSTRUCTION STANDARD CS2:2012 OF HONG KONG.

TYPE	SYMBOL
T	HIGH YIELD DEFORMED BAR OF GRADE 500B

9. ALL REINFORCEMENT SHALL BE CUT OR BENT TO COMPLY WITH BS8666.
10. NOTATION OF BAR REINFORCEMENT IS AS FOLLOW:
2xT32 – 125
LAYERS OF BARS / TYPE OF BAR / BAR DIAMETER IN mm / BAR SPACING IN mm
PREFIX
T = HOT ROLLED HIGH YIELD TYPE 2 DEFORMED BAR GRADE 500B
11. MINIMUM LAP LENGTH 'L' SHALL BE 52xBAR DIAMETER FOR HIGH YIELD TYPE 2 DEFORMED BARS UNLESS OTHERWISE SPECIFIED. ALL LAP SHALL BE STAGGERED.
12. LAPS OTHER THAN THOSE INDICATED ON THE DRAWINGS SHALL BE MADE ONLY WITH THE APPROVAL FROM THE RSE.
13. STEEL SPACERS OF SAME DIAMETER TO BARS BUT NOT LESS THAN 25mm DIAMETER SHALL BE PROVIDED BETWEEN ADJACENT LAYERS OF PARALLEL REINFORCEMENT AND SPACED AT NOT MORE THAN 60x SMALLER BAR DIAMETER.
14. ALL SPACER BARS SHALL BE THE SAME SIZE AS THE MAIN BAR AND SPACED AT 1000mm c/c UNLESS OTHERWISE STATED.
15. THE ANCHORAGE LENGTH OF THE STARTER BARS SHALL COMPLY WITH COP STRUCTURAL USE OF CONCRETE 2013.
16. RECORDS OF HOUSE FOOTING CONSTRUCTION (UNDERNEATH WALL BASE) TO BE SUBMITTED TO BD/GEO PRIOR TO SUBMISSION OF BA14.
17. DESIGN AND STABILITY CHECK OF RETAINING WALL SHOULD MAKE REFERENCE TO GEOGUIDE 1. MIN. FACTOR OF SAFETY OF RETAINING WALL AGAINST SLIDING=1.5, OVERTURNING=2.0 AND BEARING CAPACITY=3.0.
18. DESIGN SOIL PARAMETERS :

SOIL	COHESION c'	INTERNAL FRICTION ø'	BULK DENSITY
COLLUVIUM	3 kPa	35°	19KN/m³
CDT	3 kPa	35°	19KN/m³

HEAVY RAINFALL PRECAUTIONS

1. SURFACE WATER FLOWING INTO THE SITE FROM UPHILL SHALL BE INTERCEPTED AND DISCHARGED FROM THE SITE TO AN INDICATED SAFE DISCHARGE POINT. AT EACH INTERSECTION AND ABRUPT CHANGE IN DIRECTION OF SURFACE DRAINAGE WORKS SHALL BE KEPT CLEAR OF DEBRIS.
2. WHERE PARTIALLY COMPLETED DRAINAGE WORKS DISCHARGE WITHIN THE SITE A TEMPORARY CONDUIT SHALL BE PROVIDED. ALL DRAINAGE WORKS SHALL BE KEPT CLEAR OF DEBRIS.
3. ALL EARTHWORKS PLATFORMS SHALL BE GRADED (FOR FILL, THE SURFACE SHALL ALSO BE SEALED BY ROLLING OR OTHERWISE) TO ENSURE RUN-OFF AND AVOID PONDING.
4. DURING EXCAVATION, A METHOD OF WORKING SHALL BE ADOPTED IN WHICH THE MINIMUM OF BARE SOIL IS EXPOSED AT ANY TIME. EXCAVATION TO FORM THE FINAL SHALL BE FOLLOWED UP IMMEDIATELY WITH SURFACE PROTECTION AND DRAINAGE WORKS AND THE FACE PANEL SIZE SHALL BE SMALL ENOUGH TO PERMIT THIS.
5. WHERE TEMPORARY BARE EARTH SLOPE FACES ARE UNAVOIDABLE THEY SHALL BE PROTECTED WITH HEAVY DUTY SHEETING ADEQUATELY SECURED AT THE EDGES, SEALED AT CREST, AND LAPPED AT JOINTS. WHERE SLOPE FACES ARE TO BE TEMPORARILY EXPOSED FOR MORE THAN TWO WEEKS TEMPORARY DRAINS SHALL BE INSTALLED IN ADDITION TO SURFACING.
6. TRENCHES ON OR ADJACENT TO SLOPES SHALL BE EXCAVATED WITH EXTREME CARE IN SHORT SECTIONS AT A TIME. PRECAUTIONS SHALL BE TAKEN TO PREVENT WATER ENTERING AND COLLECTING IN THE TRENCH.
7. WATER TABLE INSIDE EXCAVATED TRENCH SHALL NOT BE PUMPED AWAY AND ALL WORKS WITHIN THE EXCAVATED AREA SHOULD BE CEASED UNTIL THE WATER TABLE IS LOWERED NATURALLY.

Revision	Date	Description	BY	Checked

	Name	Initial
Design Checked	C.S.L.	
Designed	S.W.	
Drawn	A.T.	

Date	Scale	CAD. Ref.
DEC. 2021	1 : 100	C761SF02

Project
PROPOSED VILLAGE HOUSES, LOTS 83 sC ss1, 83 sC RP, 83 sD, 83 sE, 83 sF, 83 RP, 470 sC, 470 sD & 470 sE, IN DD21, SAN UK KA, TAI PO, N.T.

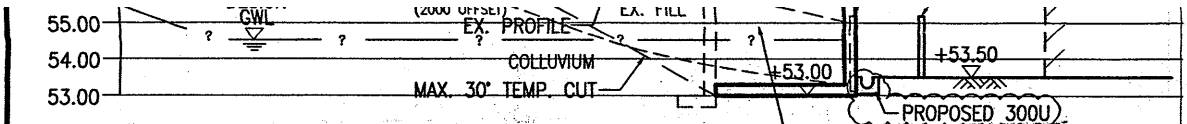
Title
SITE FORMATION PLAN

Drg. No.	Rev.
SF-02	–

Dr. LAU Chee Sing
BSc PhD CEng MICE MIStructE MHKIE
Authorized Person
Registered Structural Engineer

LAM TAT SHING
BEng Msc(Eng) CEng
MICE MIStructE MHKIE
RPE(CVL, GEL, STL)
Registered Geotechnical Engineer

Plan Approved
TSE Kam-ming, Franco
Senior Building Surveyor
for BUILDING AUTHORITY
2 8 MAR 2022



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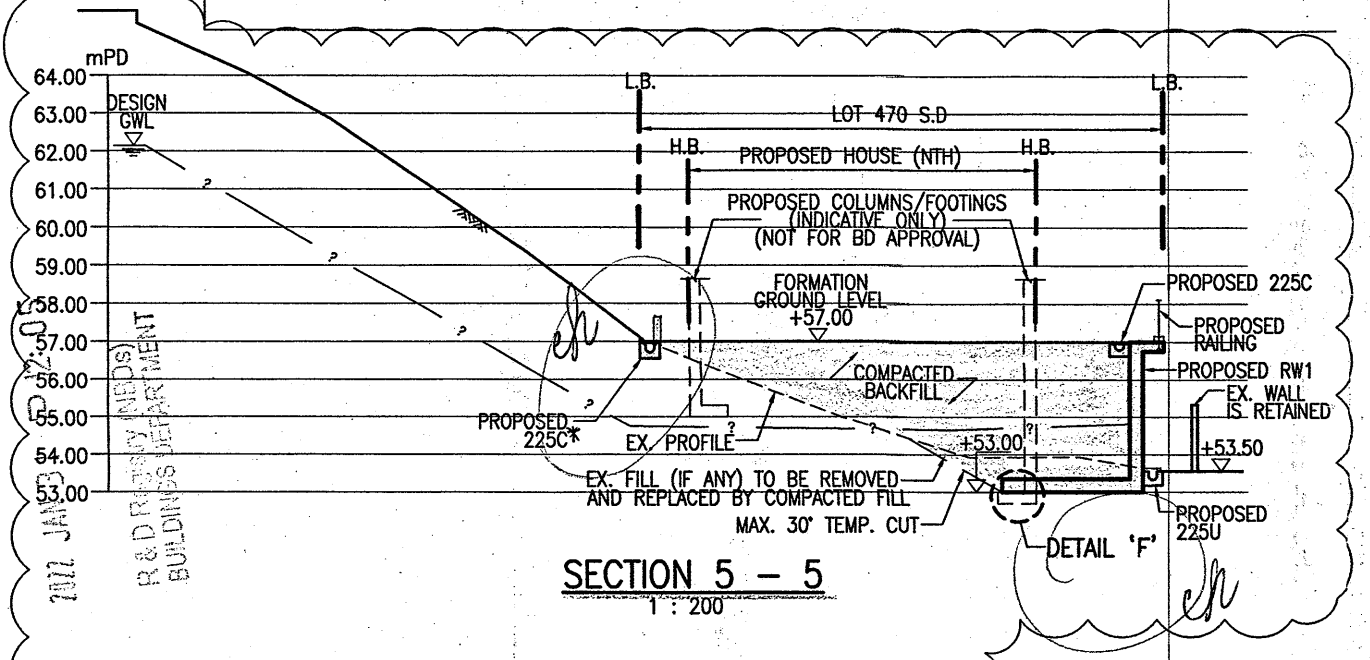

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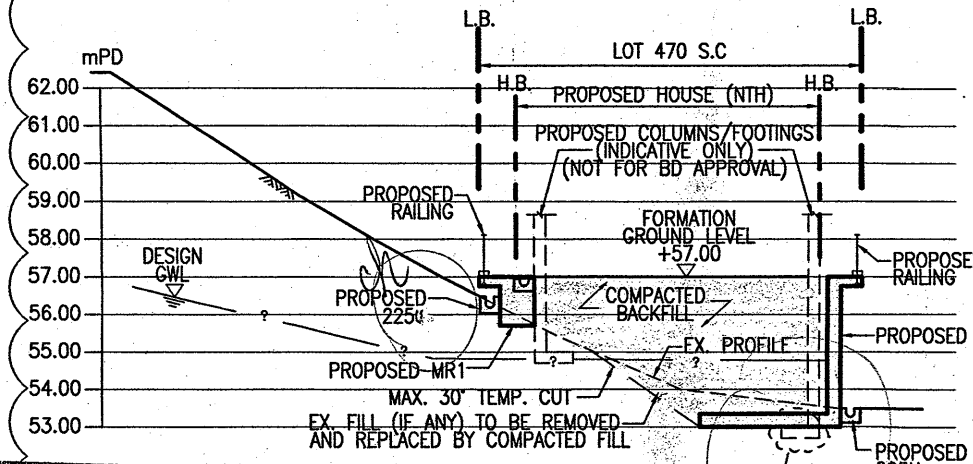

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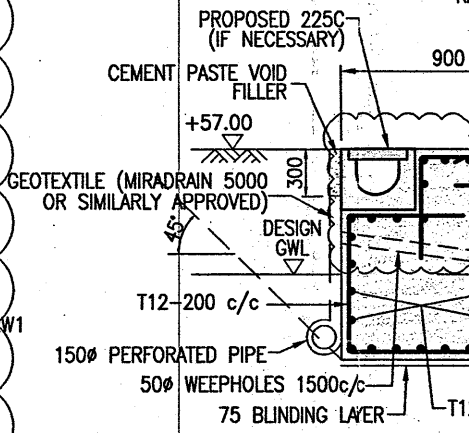
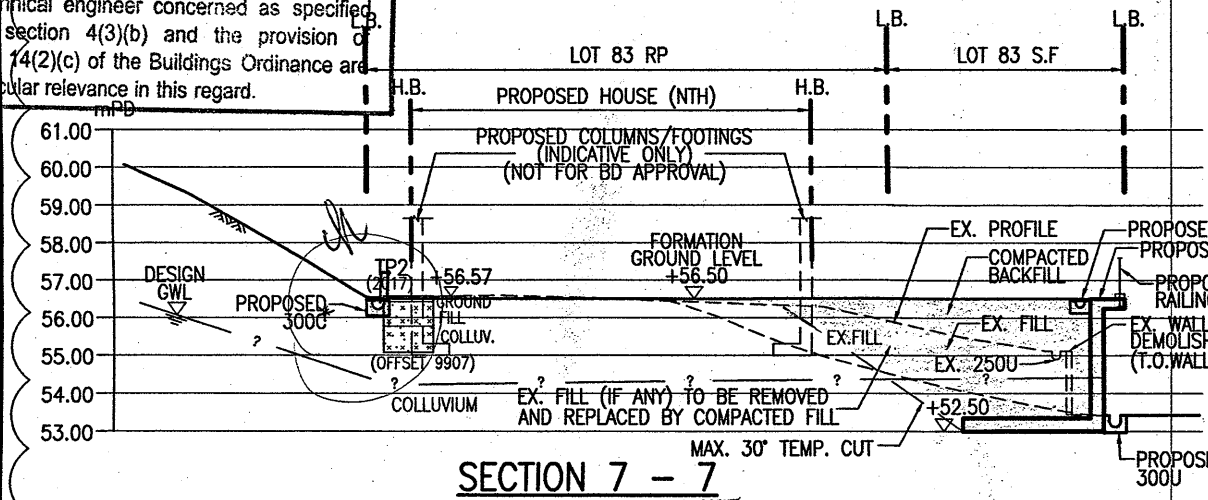


MASS CONCRETE FILL
N.T.S.

Note: This plan has been processed on a curtailed check basis under the centralized processing system as promulgated in PNAP ADM-19. The duties of the authorized person, registered structural engineer and/or registered geotechnical engineer concerned as specified under section 4(3)(b) and the provision of section 14(2)(c) of the Buildings Ordinance are of particular relevance in this regard.



SECTION 7 – 7
1 : 200

(IV) RSE/RGE AND RC TO DISCUSS THE INSTRUMENT RESPONSE AND REVIEW THE EFFECTIVENESS OF THE RESPONSE ACTION.

(IV) RSE/RGE AND RC TO DISCUSS THE INSTRUMENT RESPONSE AND REVIEW THE EFFECTIVENESS OF THE RESPONSE ACTION.

(V) RSE/RGE TO AGREE WITH RC ON THE EMERGENCY PLAN DETAILING THE MEASURES TO BE TAKEN UPON REACHING "ACTION LEVEL".

(VI) ANY CONSTRUCTION ACTIVITIES MAY BE SUSPENDED IF THE RESPONSE ACTION HAS BEEN IMPLEMENTED AND ON THE ADVICE OF THE RSE/RGE AS NECESSARY.

(VII) RSE/RGE TO REVIEW THE METHOD STATEMENTS OF SITE FORMATION WORKS TO DETERMINE WHETHER MODIFICATION TO THE CONSTRUCTION METHODS IS REQUIRED TO PREVENT ACTION LEVEL FROM BEING REACHED.

"ACTION LEVEL"

(I) ALL WORKS THAT WILL CAUSE GROUND MOVEMENT ARE TO BE CEASED.
(II) RC TO NOTIFY AND CARRY OUT A JOINT SITE INSPECTION WITH THE RSE/RGE IMMEDIATELY. THE BD AND THE RELEVANT PARTIES SHOULD BE NOTIFIED IMMEDIATELY.
(III) RC TO IMPLEMENT THE NECESSARY EMERGENCY MEASURES IN ACCORDANCE WITH THE AGREED EMERGENCY PLAN.
(IV) RC TO SUBMIT AN INCIDENT REPORT TO RSE/RGE AND THE BD DETAILING THE FULL HISTORY OF THE MOVEMENTS AND REMEDIAL/EMERGENCY MEASURES IMPLEMENTED.
(V) RSE/RGE TO REVIEW THE INCIDENT AND AGREE WITH RC ON FURTHER REMEDIAL AND PREVENTIVE MEASURES TO ENABLE RESUMPTION OF THE SUSPENDED WORKS.
(VI) CONSTRUCTION ACTIVITIES SHOULD NOT BE RESUMED UNTIL THE NECESSARY REMEDIAL AND PREVENTIVE MEASURES HAVE BEEN COMPLETED TO THE SATISFACTION OF THE BD
(VII) IF THE TRIGGER VALUES AND RESPONSE ACTION ARE REVISED, THE AMENDED PLANS SHOULD BE

SUBMITTED TO THE BD FOR APPROVAL. THE SUSPENDED CONSTRUCTION ACTIVITIES SHOULD NOT BE RESUMED UNTIL THE AMENDED PLANS ARE APPROVED BY THE BA AND CONSENT IS GIVEN

THE "ACTION LEVEL" RESPONSE ACTION SHOULD BE TAKEN IF ANY OF THE FOLLOWING SITUATION OCCURS:

- UNDUE SETTLEMENT AS INDICATED IN ANY CHECK POINTS (E.G. AN INCREASE OF 5MM BETWEEN TWO CONSECUTIVE DAILY READINGS).
- SIGN OF DISTRESS OR DAMAGES OBSERVED IN ANY ADJACENT STRUCTURES AND/OR UTILITIES.

GENERAL NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. ALL LEVELS ARE IN mPD UNLESS OTHERWISE SPECIFIED.
3. THE PROPOSED VILLAGE HOUSE IS N.T. EXEMPTED HOUSE AND IS NOT FOR B.D.'S APPROVAL. SEPTIC TANK AND SOAKAWAY PIT ARE NOT FOR B.D.'S APPROVAL. ALL FOOTINGS OF HOUSE TO BE FOUNDED ON UNDISTURBED GROUND.
4. 75mm THK. PRESCRIBED MIX GRADE 10P BLINDING LAYER TO BE PROVIDED UNDERNEATH CONCRETE BASE.
5. CONCRETE FOR MASS CONCRETE STRUCTURE AND CATCHPIT/CHANNEL TO BE GRADE 30D, TO CS1:2010 EXCEPT CLAUSE 7.1.
6. BENCHING DETAIL TO BE IN ACCORDANCE WITH DETAIL SHOWN IN "GEOTECHNICAL MANUAL FOR SLOPES" BY GEO. DETAIL OF U-CHANNEL TO COMPLY WITH FIG. 8.8 AND FIG. 8.11 "GEOTECHNICAL MANUAL FOR SLOPES" BY GEO. DETAIL OF CATCHPIT SHOULD FOLLOW CEDD'S STANDARD DRAWING NO. C2405. DETAIL OF SANDTRAP TO COMPLY WITH FIG. 8.4 "GEOTECHNICAL MANUAL FOR SLOPES" BY GEO. RETAINING WALL TO COMPLY WITH GEO GUIDE 1 - GUIDE TO RETAINING WALL DESIGN.
7. FOR WORKS TO BE CARRIED OUT OUTSIDE THE LOT BOUNDARIES INCLUDING DRAINAGE WORKS, THE LOT OWNER SHALL BE RESPONSIBLE FOR THE RELOCATION AND MAINTENANCE OF SUCH WORKS AS AND WHEN REQUIRED BY THE GOVERNMENT.
8. ALL DISTURBED NATURAL GROUND TEMPORARY CUT SLOPES ON CONSTRUCTION OF RETAINING WALLS, STEP CHANNEL, SAND TRAPS AND FOOTINGS TO BE REINSTATED, BACKFILLED AND COMPACTED IN ACCORDANCE WITH NOTES STATED AND SURFACES TURFED.
9. THE REACTIVE ALKALI OF CONCRETE EXPRESSED AS THE EQUIVALENT SODIUM OXIDE PER METRE OF CONCRETE SHOULD NOT EXCEED 3.0kg WHEN DETERMINED IN ACCORDANCE WITH THE SPECIFICATION ITEMS GIVEN IN APPENDIX A OF PNAP 180 (APP-74).
10. FOR ALL COMPLETED PERMANENT SLOPES AND RETAINING WALLS FOR WHICH THE OWNERS OF THE DEVELOPMENT HAVE MAINTENANCE RESPONSIBILITY. THE INFORMATION REQUESTED IN PNAP:168 & 189 BE SUBMITTED TOGETHER WITH THE FORM BA14 (ADV-8 & APP-79).
11. A252 MESH TO BE PROVIDED TO ALL MASS CONCRETE FILL WITH 50mm COVER STEEL MESH TO COMPLY WITH CS2 2012 AND SHALL HAVE A LAP OF 300mm MIN.
12. BEFORE CONNECTION OF THE PROPOSED DRAINAGE TO THE EXISTING DRAIN OUTSIDE BOUNDARY, CONDITIONS AND ROUTING OF THE CHANNELS SHOULD BE CONFIRMED TO BE PROPER FOR CONNECTION.
13. DISTURBANCE DUE TO SITE FORMATION WORKS TO THE SURROUNDING LOTS EXISTING FEATURES AND BUILDINGS SHOULD BE AVOIDED.
14. THE R.C. DESIGN SHALL COMPLY WITH HK BUILDING REGULATION AND COP FOR STRUCTURAL USE OF CONCRETE 2013. STEELWORKS DESIGN SHALL COMPLY WITH COP FOR STRUCTURAL USE OF STEEL 2011.
15. FOR WORKS TO BE CARRIED OUT OUTSIDE LOT BOUNDARY, PERMISSION SHOULD BE GIVEN BY LOT OWNERS FOR PRIVATE LOTS AND DLO FOR GOVERNMENT LANDS.
16. FOR U-CHANNELS AND CATCHPITS CLOSE TO FOOTPATHS, CONCRETE COVER OR GRATING SHOULD BE PROVIDED. DETAILS OF COVER FOR CATCHPIT AND U-CHANNEL SHOULD COMPLY WITH CEDD'S STANDARD DRAWING NO. C2405 TO C2407 AND C2412 RESPECTIVELY. COVER SURFACE TO BE FLUSHED WITH GROUND SURFACE. ALL REMOVABLE CATCHPIT COVER ARE INDICATED FOR INFORMATION ONLY. EXPANSION JOINT TO BE PROVIDED TO ALL CHANNELS OF MAXIMUM SPACING OF 10m.
17. NO GAS/WATER MAINS NOR EXISTING BUILDING IN THE PROXIMITY OF THE LOT TO BE AFFECTED. EX. LAMP POST AND FOOTPATH SHOULD BE RELOCATED FOR CONSTURCTION OF RETAINING WALL AND SHOULD BE REINSTATED.
18. ALL TEMPORARY CUT SLOPE FOR OPEN CUT EXCAVATION TO BE LIMITED TO 30° MAXIMUM.
19. THE AP TO MAKE SURE THE EX. DRAIN HAS SPARE CAPACITY AND IN GOOD CONDITIONS FOR THE PROPOSED CONNECTION.
20. THE A.P. SHOULD ENSURE THAT ANY OBSTURCTION OR DISTURBANCE TO THE NEARBY STREAM COURSE AFFECTING THE EMBANKMENT STABILITY IS PROHIBITED AT ANY TIME DURING AND AFTER CONSTRUCTION OF THE SMALL HOUSE.
21. DRAINAGE WORKS OUTSIDE SITE BOUNDARY ARE FOR BUILDING AUTHORITY'S INFORMATION ONLY, BUT NOT FOR BA'S APPROVAL.
22. FOR WORK OUTSIDE LOT BOUNDARY, PERMISSION FROM RELEVANT AUTHORITY'S (INCLUDING DLO/TP)/ PRIVATE LOT OWNERS SHOULD BE OBTAINED BEFORE APPLYING FOR CONSENT FOR COMMENCEMENT OF THE WORKS.

NOTES ON FILLING

1. SURFACES ON WHICH FILL IS TO BE PLACED SHALL BE STRIPPED OFF ALL TOP SOIL AND VEGETATION. THE STRIPPED SURFACES SHALL BE TRIMMED AND BENCHED IN STEPS BEFORE FILL IS PLACED.
2. FILL SHALL BE CLEAN GRANULAR MATERIALS. BOULDERS OR ROCK FRAGMENTS LARGER THAN 75mm SHALL BE REMOVED. FILL SHALL NOT CONTAIN UNSUITABLE MATERIAL SUCH AS TOP SOIL, ROOTS, TREE STUMPS OR RUBBISH IN GENERAL.
3. FILL SHALL BE PLACED AND COMPACTED IN HORIZONTAL LAYERS APPROPRIATE TO THE COMPACTION PLANT. BUT NOT GREATER THAN 300mm THICK. COMPACTION REQUIREMENT TO SECTION 6 OF GS FOR CIVIL ENGINEERING WORKS (2006).
4. FILL AREAS SHALL BE BUILT UP HORIZONTALLY AND EVENLY OVER THE WIDTH AND PLACED SO THAT ROLLED SURFACES SHED WATER.
5. IT MAY BE NECESSARY TO CONSTRUCT THE SLOPE SLIGHTLY OVERSIZE AND TO TRIM BACK AFTERWARDS, IN ORDER TO MEET THE ABOVE COMPACTION REQUIREMENTS AT THE EDGES OF THE SLOPE.
6. WHERE CEMENT STABILISED FILL IS SPECIFIED. THE FILL MATERIAL SHALL BE THOROUGHLY MIXED WITH 12% BY VOLUME OF PORTLAND CEMENT.
7. THE INSITU FIELD DRY DENSITIES OF COMPACTED MATERIALS FORMING THE PERIPHERAL PORTION OF AN EARTH FILL SLOPE SHALL BE NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY DESCRIBED IN ITEM 9 BELOW.
8. THE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT SHALL BE DETERMINED IN ACCORDANCE WITH THE STANDARD GIVEN IN GEOSPEC 3.
9. THE INSITU FIELD DENSITY AND MOISTURE CONTENT SHALL BE DETERMINED IN ACCORDANCE WITH GEOSPEC 3. TO DETERMINE THE RELATIVE COMPACTION ACHIEVED. THE NUMBER OF DETERMINATIONS SHALL BE IN ACCORDANCE WITH PRACTICE NOTE APP15 (PNAP55) APPENDIX A.
10. ALL TESTS SHALL BE CARRIED OUT BY OR UNDER THE DIRECTION OF THE AUTHORISED PERSON OR REGISTERED STRUCTURAL ENGINEER OR BY AN INDEPENDENT TESTING AGENCY.
11. RECORD SHALL BE KEPT IN ACCORDANCE WITH PRACTICE NOTE APP15 (PNAP55) OR GEOSPEC 3.

DIAMETER SHALL BE PROVIDED BETWEEN ADJACENT LAYERS OF PARALLEL REINFORCEMENT AND SPACED AT NOT MORE THAN 60x SMALLER BAR DIAMETER.

14. ALL SPACER BARS SHALL BE THE SAME SIZE AS THE MAIN BAR AND SPACED AT 1000mm c/c UNLESS OTHERWISE STATED.
15. THE ANCHORAGE LENGTH OF THE STARTER BARS SHALL COMPLY WITH COP STRUCTURAL USE OF CONCRETE 2013.
16. RECORDS OF HOUSE FOOTING CONSTRUCTION (UNDERNEATH WALL BASE) TO BE SUBMITTED TO BD/GEO PRIOR TO SUBMISSION OF BA14.
17. DESIGN AND STABILITY CHECK OF RETAINING WALL SHOULD MAKE REFERENCE TO GEOGUIDE 1. MIN. FACTOR OF SAFETY OF RETAINING WALL AGAINST SLIDING=1.5, OVERTURNING=2.0 AND BEARING CAPACITY=3.0.
18. DESIGN SOIL PARAMETERS :

SOIL	COHESION c'	INTERNAL FRICTION ø'	BULK DENSITY
COLLUVIUM	3 kPa	35°	19KN/m³
CDT	3 kPa	35°	19KN/m³

HEAVY RAINFALL PRECAUTIONS

1. SURFACE WATER FLOWING INTO THE SITE FROM UPHILL SHALL BE INTERCEPTED AND DISCHARGED FROM THE SITE TO AN INDICATED SAFE DISCHARGE POINT. AT EACH INTERSECTION AND ABRUPT CHANGE IN DIRECTION OF SURFACE DRAINAGE WORKS SHALL BE KEPT CLEAR OF DEBRIS.
2. WHERE PARTIALLY COMPLETED DRAINAGE WORKS DISCHARGE WITHIN THE SITE A TEMPORARY CONDUIT SHALL BE PROVIDED. ALL DRAINAGE WORKS SHALL BE KEPT CLEAR OF DEBRIS.
3. ALL EARTHWORKS PLATFORMS SHALL BE GRADED (FOR FILL, THE SURFACE SHALL ALSO BE SEALED BY ROLLING OR OTHERWISE) TO ENSURE RUN-OFF AND AVOID PONDING.
4. DURING EXCAVATION, A METHOD OF WORKING SHALL BE ADOPTED IN WHICH THE MINIMUM OF BARE SOIL IS EXPOSED AT ANY TIME. EXCAVATION TO FORM THE FINAL SHALL BE FOLLOWED UP IMMEDIATELY WITH SURFACE PROTECTION AND DRAINAGE WORKS AND THE FACE PANEL SIZE SHALL BE SMALL ENOUGH TO PERMIT THIS.
5. WHERE TEMPORARY BARE EARTH SLOPE FACES ARE UNAVOIDABLE THEY SHALL BE PROTECTED WITH HEAVY DUTY SHEETING ADEQUATELY SECURED AT THE EDGES, SEALED AT CREST, AND LAPPED AT JOINTS. WHERE SLOPE FACES ARE TO BE TEMPORARILY EXPOSED FOR MORE THAN TWO WEEKS TEMPORARY DRAINS SHALL BE INSTALLED IN ADDITION TO SURFACING.
6. TRENCHES ON OR ADJACENT TO SLOPES SHALL BE EXCAVATED WITH EXTREME CARE IN SHORT SECTIONS AT A TIME. PRECAUTIONS SHALL BE TAKEN TO PREVENT WATER ENTERING AND COLLECTING IN THE TRENCH.
7. WATER TABLE INSIDE EXCAVATED TRENCH SHALL NOT BE PUMPED AWAY AND ALL WORKS WITHIN THE EXCAVATED AREA SHOULD BE CEASED UNTIL THE WATER TABLE IS LOWERED NATURALLY.

Revision	Date	Description	BY	Checked

	Name	Initial
Design Checked	C.S.L.	
Designed	S.W.	
Drawn	A.T.	

Date	Scale	CAD. Ref.
DEC. 2021	1 : 100	C761SF02

Project

PROPOSED VILLAGE HOUSES, LOTS 83 sC ss1, 83 sC RP, 83 sD, 83 sE, 83 sF, 83 RP, 470 sC, 470 sD & 470 sE, IN DD21, SAN UK KA, TAI PO, N.T.

Title

SITE FORMATION PLAN

Drg. No. SF-02

Rev. -

Dr. LAU Chee Sing
BSc PhD CEng MICE MIStructE MHKIE
Authorized Person
Registered Structural Engineer

LAM TAT SHING
BEng Msc(Eng) CEng
MICE MIStructE MHKIE
RPE(CVL, GEL, STL)
Registered Geotechnical Engineer

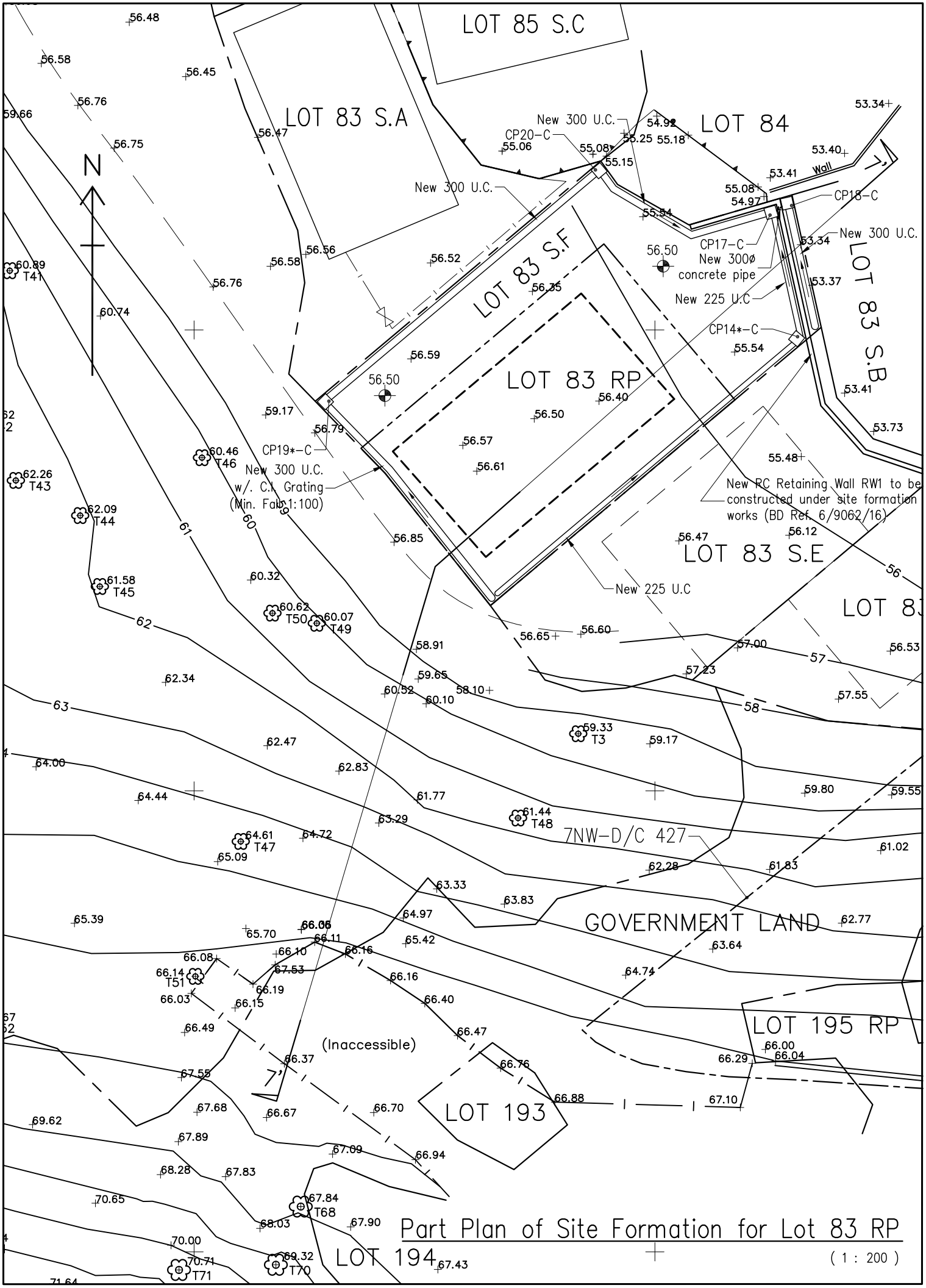
Plan Approved

TSE Kam-ming, Franco
Senior Building Surveyor
for BUILDING AUTHORITY

28 MAR 2022

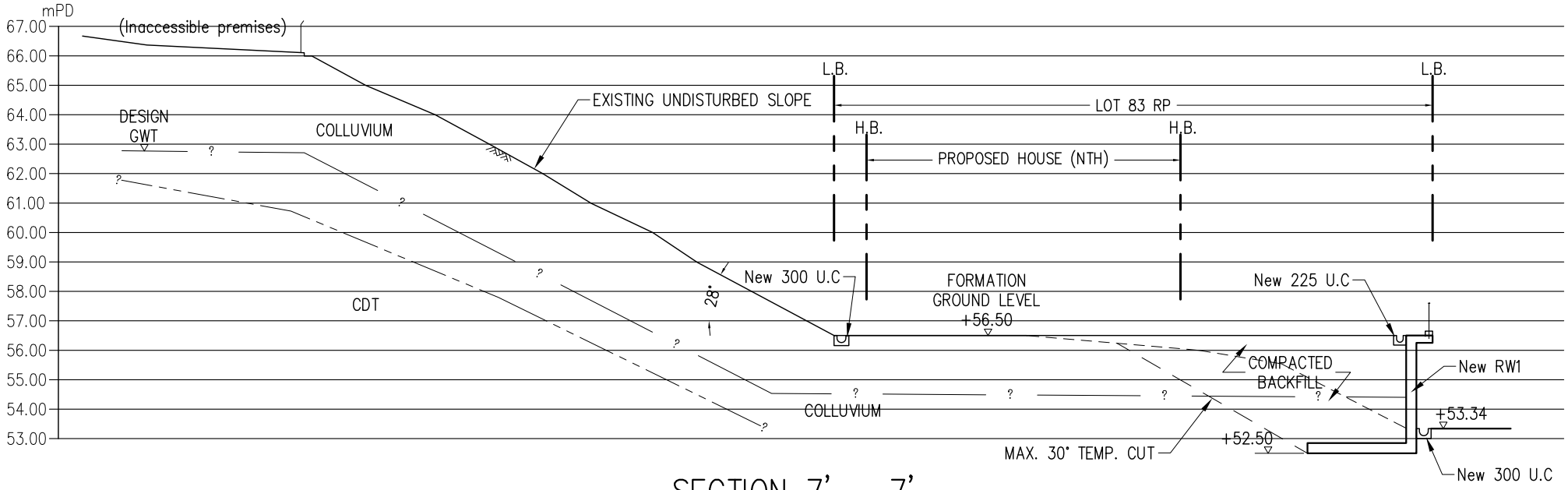
APPENDIX C

Part Plan and Section of Lot No. 83 RP



Part Plan of Site Formation for Lot 83 RP

(1 : 200)



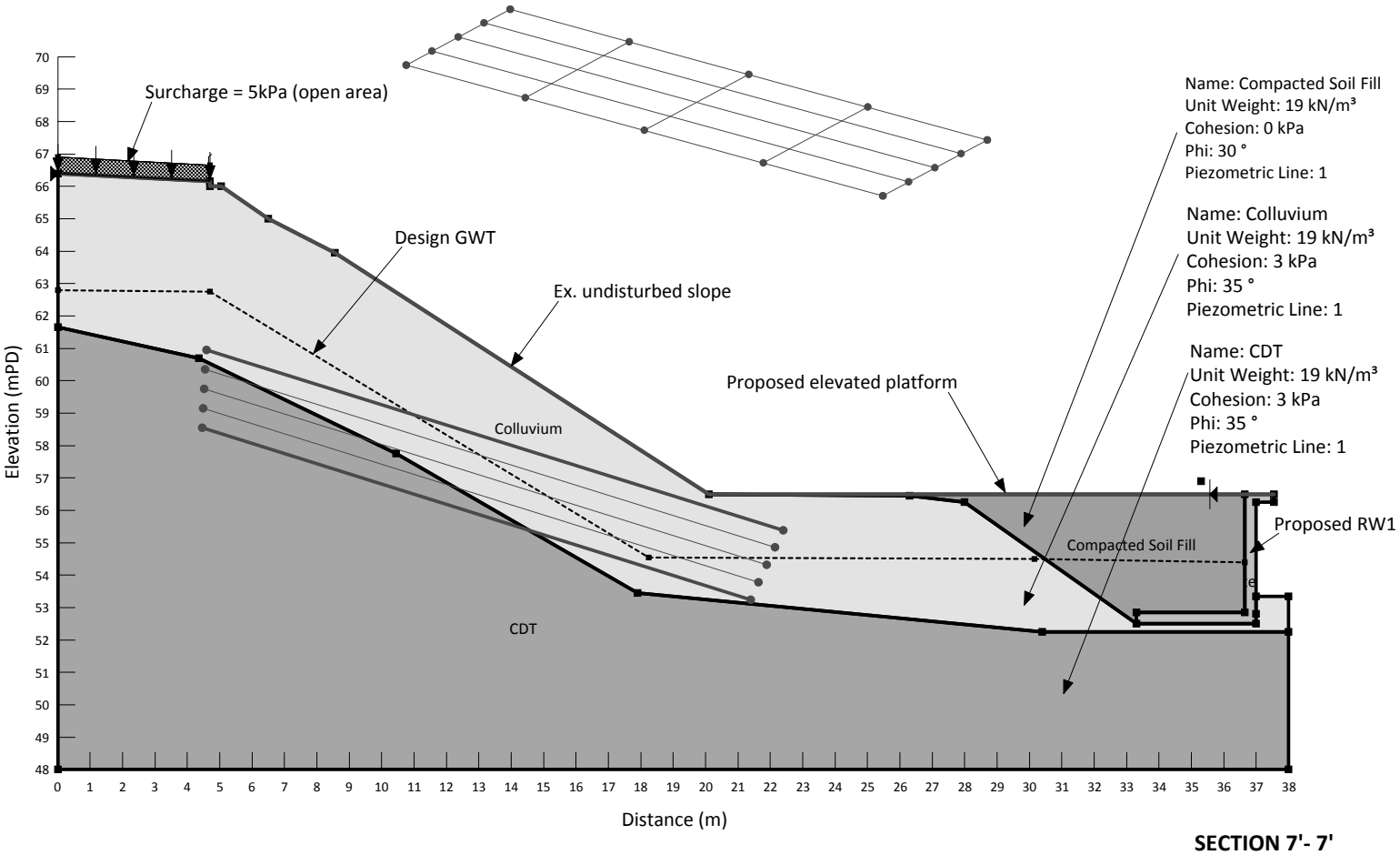
SECTION 7' – 7'

(1 : 200)

APPENDIX D

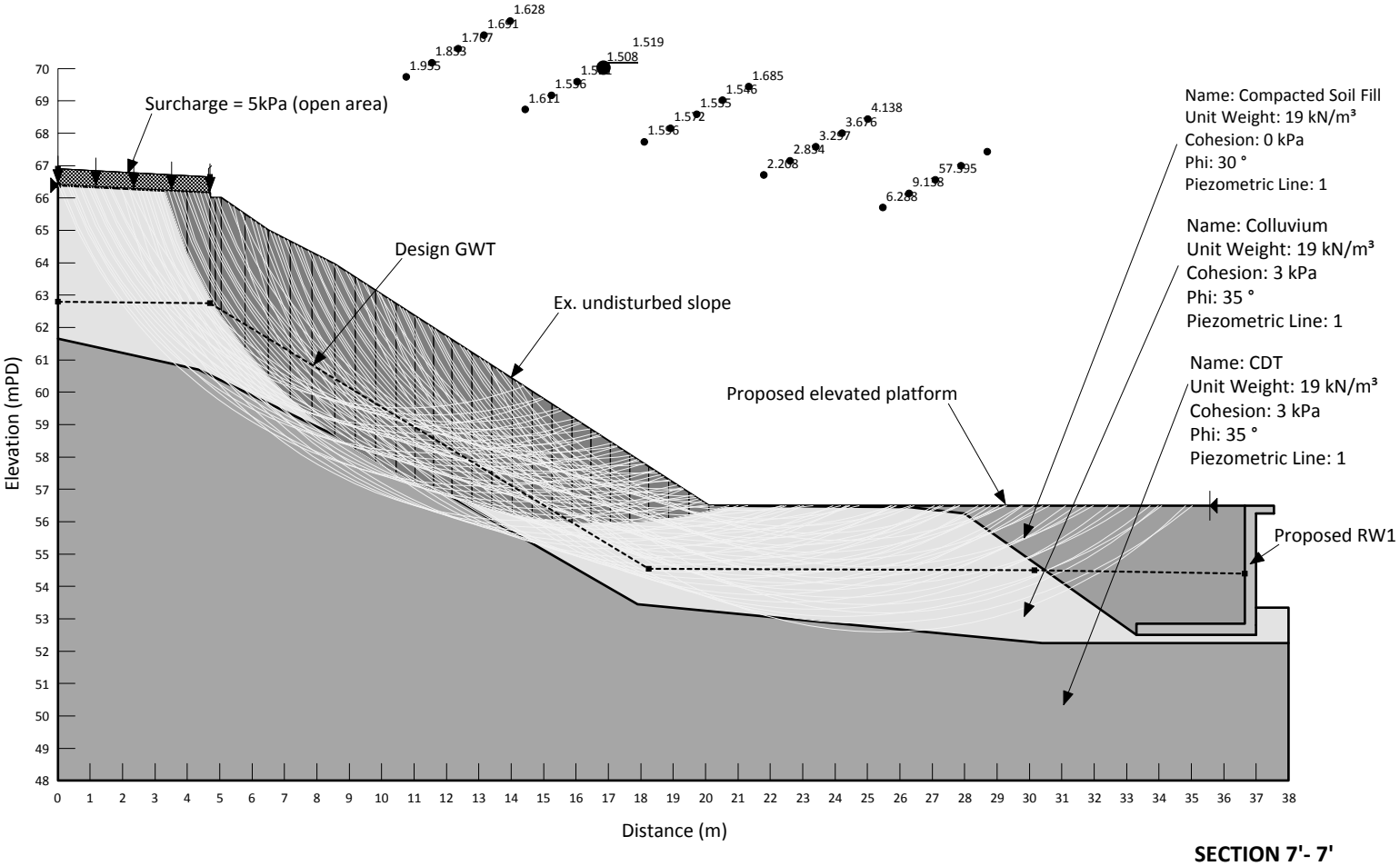
Slope Stability Analysis – Slope/W

Slope Stability Analysis of Existing Slope near Lot No. 83 RP, D.D. 21, San Uk Ka, Tai Po, N.T.



SECTION 7'- 7'

Slope Stability Analysis of Existing Slope near Lot No. 83 RP, D.D. 21, San Uk Ka, Tai Po, N.T.



SECTION 7'- 7'

Slope Stability Analysis near Lot No. 83 RP, D.D. 21, San Uk Ka, Tai Po, N.T.

DATESTAMP 10/8/2024
TIMESTAMP 20:36:22
3=METHOD 125=NO. OF SLIP SURFACES 5=NO. OF RADII 2=SIDE FUNCTION TYPE
19.7253=X-COOR. 68.5854=Y-COOR. COMPUTED AXIS

SLIP NO.	X-COORD.	Y-COORD.	RADIUS	ITERATION NO.	LAMBDA	FACTOR OF SAFETY (MOMENT)	(FORCE)
1	25.481	65.706	10.763	1	0.0000	114.0348749	134.2116459
1	25.481	65.706	10.763	6	0.0000	119.8300450	102.1831718
1	25.481	65.706	10.763	3	0.0232	119.8179459	119.8166221
2	25.481	65.706	11.350	1	0.0000	14.2476853	17.6281323
2	25.481	65.706	11.350	6	0.0000	15.6288804	12.7480719
2	25.481	65.706	11.350	3	0.1309	15.6089021	15.5998547
3	25.481	65.706	11.937	1	0.0000	8.2585168	10.5100782
3	25.481	65.706	11.937	6	0.0000	9.4527010	7.5284284
3	25.481	65.706	11.937	3	0.1731	9.4307143	9.4299755
4	25.481	65.706	12.525	1	0.0000	6.1703430	8.0242035
4	25.481	65.706	12.525	6	0.0000	7.3424888	5.7440049
4	25.481	65.706	12.525	3	0.1926	7.3207926	7.3192745
5	25.481	65.706	13.112	1	0.0000	5.1184679	6.7808821
5	25.481	65.706	13.112	7	0.0000	6.3091830	4.8647466
5	25.481	65.706	13.112	3	0.2032	6.2884793	6.2861225
6	26.285	66.136	11.412	1	0.0000	999.0000000	999.0000000
6	26.285	66.136	11.412	100	0.0000	999.0000000	999.0000000
6	26.285	66.136	11.412	100	0.0000	999.0000000	999.0000000
7	26.285	66.136	12.000	1	0.0000	25.0642000	31.1258665
7	26.285	66.136	12.000	6	0.0000	27.3144457	22.1607009
7	26.285	66.136	12.000	3	0.0807	27.2901851	27.2897151
8	26.285	66.136	12.588	1	0.0000	11.3754816	14.5653236
8	26.285	66.136	12.588	6	0.0000	12.9255796	10.2280306
8	26.285	66.136	12.588	3	0.1352	12.8988292	12.8982746
9	26.285	66.136	13.175	1	0.0000	7.7574486	10.1618438
9	26.285	66.136	13.175	6	0.0000	9.1645762	7.1207564
9	26.285	66.136	13.175	3	0.1634	9.1376121	9.1362635
10	26.285	66.136	13.763	0	0.0000	998.0000000	998.0000000
10	26.285	66.136	13.763	0	0.0000	998.0000000	998.0000000
10	26.285	66.136	13.763	0	0.0000	998.0000000	998.0000000
11	27.089	66.565	12.062	1	0.0000	999.0000000	999.0000000
11	27.089	66.565	12.062	100	0.0000	999.0000000	999.0000000
11	27.089	66.565	12.062	100	0.0000	999.0000000	999.0000000
12	27.089	66.565	12.650	1	0.0000	52.8566120	65.5851384
12	27.089	66.565	12.650	6	0.0000	57.4237510	46.5132935
12	27.089	66.565	12.650	3	0.0393	57.3948709	57.4000967
13	27.089	66.565	13.238	0	0.0000	998.0000000	998.0000000
13	27.089	66.565	13.238	0	0.0000	998.0000000	998.0000000
13	27.089	66.565	13.238	0	0.0000	998.0000000	998.0000000
14	27.089	66.565	13.826	0	0.0000	998.0000000	998.0000000
14	27.089	66.565	13.826	0	0.0000	998.0000000	998.0000000
14	27.089	66.565	13.826	0	0.0000	998.0000000	998.0000000
15	27.089	66.565	14.413	0	0.0000	998.0000000	998.0000000

15	27.089	66.565	14.413	0	0.0000	998.0000000	998.0000000
15	27.089	66.565	14.413	0	0.0000	998.0000000	998.0000000
16	27.893	66.995	12.712	1	0.0000	999.0000000	999.0000000
16	27.893	66.995	12.712	100	0.0000	999.0000000	999.0000000
16	27.893	66.995	12.712	100	0.0000	999.0000000	999.0000000
17	27.893	66.995	13.300	0	0.0000	998.0000000	998.0000000
17	27.893	66.995	13.300	0	0.0000	998.0000000	998.0000000
17	27.893	66.995	13.300	0	0.0000	998.0000000	998.0000000
18	27.893	66.995	13.888	0	0.0000	998.0000000	998.0000000
18	27.893	66.995	13.888	0	0.0000	998.0000000	998.0000000
18	27.893	66.995	13.888	0	0.0000	998.0000000	998.0000000
19	27.893	66.995	14.476	0	0.0000	998.0000000	998.0000000
19	27.893	66.995	14.476	0	0.0000	998.0000000	998.0000000
19	27.893	66.995	14.476	0	0.0000	998.0000000	998.0000000
20	27.893	66.995	15.064	0	0.0000	998.0000000	998.0000000
20	27.893	66.995	15.064	0	0.0000	998.0000000	998.0000000
20	27.893	66.995	15.064	0	0.0000	998.0000000	998.0000000
21	28.697	67.425	13.362	0	0.0000	998.0000000	998.0000000
21	28.697	67.425	13.362	0	0.0000	998.0000000	998.0000000
21	28.697	67.425	13.362	0	0.0000	998.0000000	998.0000000
22	28.697	67.425	13.950	0	0.0000	998.0000000	998.0000000
22	28.697	67.425	13.950	0	0.0000	998.0000000	998.0000000
22	28.697	67.425	13.950	0	0.0000	998.0000000	998.0000000
23	28.697	67.425	14.538	0	0.0000	998.0000000	998.0000000
23	28.697	67.425	14.538	0	0.0000	998.0000000	998.0000000
23	28.697	67.425	14.538	0	0.0000	998.0000000	998.0000000
24	28.697	67.425	15.126	0	0.0000	998.0000000	998.0000000
24	28.697	67.425	15.126	0	0.0000	998.0000000	998.0000000
24	28.697	67.425	15.126	0	0.0000	998.0000000	998.0000000
25	28.697	67.425	15.714	0	0.0000	998.0000000	998.0000000
25	28.697	67.425	15.714	0	0.0000	998.0000000	998.0000000
25	28.697	67.425	15.714	0	0.0000	998.0000000	998.0000000
26	21.799	66.716	10.630	1	0.0000	2.0412957	2.2262439
26	21.799	66.716	10.630	5	0.0000	2.2098698	2.0324306
26	21.799	66.716	10.630	3	0.4567	2.2076903	2.2155872
27	21.799	66.716	11.216	1	0.0000	2.1437810	2.4361710
27	21.799	66.716	11.216	5	0.0000	2.4170121	2.1388505
27	21.799	66.716	11.216	3	0.4024	2.4152290	2.4148563
28	21.799	66.716	11.803	1	0.0000	2.2369171	2.6263729
28	21.799	66.716	11.803	5	0.0000	2.6005946	2.2328786
28	21.799	66.716	11.803	3	0.3820	2.5986900	2.5978695
29	21.799	66.716	12.389	1	0.0000	2.2939034	2.7657183
29	21.799	66.716	12.389	6	0.0000	2.7392580	2.2921664
29	21.799	66.716	12.389	3	0.3632	2.7376526	2.7317342
30	21.799	66.716	12.976	1	0.0000	2.1847368	2.6891155
30	21.799	66.716	12.976	6	0.0000	2.7027511	2.2218564
30	21.799	66.716	12.976	3	0.3426	2.7047423	2.6969661
31	22.603	67.146	11.279	1	0.0000	2.6006721	2.8861987
31	22.603	67.146	11.279	5	0.0000	2.8378612	2.5702594
31	22.603	67.146	11.279	3	0.3757	2.8338607	2.8316173
32	22.603	67.146	11.866	1	0.0000	2.5605819	2.9437768
32	22.603	67.146	11.866	5	0.0000	2.8934374	2.5355972

32	22.603	67.146	11.866	3	0.3605	2.8897054	2.8890907
33	22.603	67.146	12.453	1	0.0000	2.5826264	3.0595306
33	22.603	67.146	12.453	5	0.0000	3.0011002	2.5579757
33	22.603	67.146	12.453	3	0.3498	2.9971093	2.9959205
34	22.603	67.146	13.040	1	0.0000	2.5628777	3.1074276
34	22.603	67.146	13.040	6	0.0000	3.0547220	2.5449962
34	22.603	67.146	13.040	3	0.3372	3.0511507	3.0446570
35	22.603	67.146	13.627	1	0.0000	2.4144701	2.9844085
35	22.603	67.146	13.627	6	0.0000	2.9758998	2.4376732
35	22.603	67.146	13.627	3	0.3220	2.9751082	2.9666128
36	23.407	67.575	11.929	1	0.0000	3.5350074	3.9921333
36	23.407	67.575	11.929	5	0.0000	3.8539693	3.4359728
36	23.407	67.575	11.929	3	0.3303	3.8467900	3.8464220
37	23.407	67.575	12.516	1	0.0000	3.1573466	3.6743980
37	23.407	67.575	12.516	5	0.0000	3.5590916	3.0852780
37	23.407	67.575	12.516	3	0.3250	3.5525499	3.5515133
38	23.407	67.575	13.103	1	0.0000	3.0339198	3.6284031
38	23.407	67.575	13.103	5	0.0000	3.5129886	2.9698522
38	23.407	67.575	13.103	3	0.3211	3.5059318	3.5040693
39	23.407	67.575	13.690	1	0.0000	2.8821707	3.5170169
39	23.407	67.575	13.690	6	0.0000	3.4280081	2.8413608
39	23.407	67.575	13.690	3	0.3120	3.4217167	3.4146882
40	23.407	67.575	14.277	1	0.0000	2.6905130	3.3430653
40	23.407	67.575	14.277	6	0.0000	3.3017458	2.6926002
40	23.407	67.575	14.277	3	0.3022	3.2974295	3.2880140
41	24.211	68.005	12.579	1	0.0000	5.1584527	5.9145635
41	24.211	68.005	12.579	5	0.0000	5.5801591	4.9020269
41	24.211	68.005	12.579	3	0.2819	5.5695184	5.5684234
42	24.211	68.005	13.166	1	0.0000	4.0098438	4.7205883
42	24.211	68.005	13.166	5	0.0000	4.4918438	3.8525065
42	24.211	68.005	13.166	3	0.2901	4.4814396	4.4795501
43	24.211	68.005	13.753	1	0.0000	3.5947576	4.3346230
43	24.211	68.005	13.753	6	0.0000	4.1430791	3.4749117
43	24.211	68.005	13.753	3	0.2906	4.1324029	4.1268103
44	24.211	68.005	14.340	1	0.0000	3.2784599	4.0275735
44	24.211	68.005	14.340	6	0.0000	3.8869029	3.2044314
44	24.211	68.005	14.340	3	0.2871	3.8770599	3.8691697
45	24.211	68.005	14.927	1	0.0000	3.0163166	3.7674261
45	24.211	68.005	14.927	6	0.0000	3.6841647	2.9922102
45	24.211	68.005	14.927	4	0.2817	3.6758883	3.6693448
46	25.016	68.435	13.229	1	0.0000	8.1917351	9.5006138
46	25.016	68.435	13.229	5	0.0000	8.7634369	7.6041264
46	25.016	68.435	13.229	3	0.2237	8.7486224	8.7458768
47	25.016	68.435	13.816	1	0.0000	5.2789005	6.2781449
47	25.016	68.435	13.816	5	0.0000	5.8637020	4.9785947
47	25.016	68.435	13.816	3	0.2526	5.8484573	5.8451209
48	25.016	68.435	14.404	1	0.0000	4.3275248	5.2581540
48	25.016	68.435	14.404	6	0.0000	4.9602189	4.1303558
48	25.016	68.435	14.404	3	0.2608	4.9451347	4.9383469
49	25.016	68.435	14.991	1	0.0000	3.7774309	4.6704324
49	25.016	68.435	14.991	6	0.0000	4.4605224	3.6564586
49	25.016	68.435	14.991	3	0.2624	4.4464347	4.4374768

50	25.016	68.435	15.578	1	0.0000	3.4146455	4.2899201
50	25.016	68.435	15.578	6	0.0000	4.1505635	3.3536909
50	25.016	68.435	15.578	4	0.2614	4.1377534	4.1301842
51	18.117	67.726	10.497	1	0.0000	1.4745206	1.6212200
51	18.117	67.726	10.497	4	0.0000	1.6026082	1.4587337
51	18.117	67.726	10.497	3	0.6586	1.5962996	1.5987657
52	18.117	67.726	11.082	1	0.0000	1.4693969	1.6479309
52	18.117	67.726	11.082	4	0.0000	1.6265320	1.4521972
52	18.117	67.726	11.082	4	0.6598	1.6200080	1.6219743
53	18.117	67.726	11.668	1	0.0000	1.4451537	1.6511709
53	18.117	67.726	11.668	5	0.0000	1.6357398	1.4369788
53	18.117	67.726	11.668	3	0.6055	1.6326593	1.6330089
54	18.117	67.726	12.254	1	0.0000	1.4217288	1.6607068
54	18.117	67.726	12.254	5	0.0000	1.6644367	1.4343536
54	18.117	67.726	12.254	3	0.5368	1.6668436	1.6660493
55	18.117	67.726	12.840	1	0.0000	1.4063756	1.6814260
55	18.117	67.726	12.840	5	0.0000	1.7096640	1.4447618
55	18.117	67.726	12.840	3	0.4863	1.7173322	1.7158139
56	18.921	68.156	11.146	1	0.0000	1.4668692	1.5937691
56	18.921	68.156	11.146	4	0.0000	1.5779048	1.4530183
56	18.921	68.156	11.146	3	0.6574	1.5720668	1.5727745
57	18.921	68.156	11.732	1	0.0000	1.4525225	1.6113348
57	18.921	68.156	11.732	4	0.0000	1.5926970	1.4371789
57	18.921	68.156	11.732	4	0.6633	1.5867410	1.5879632
58	18.921	68.156	12.318	1	0.0000	1.4900384	1.6936846
58	18.921	68.156	12.318	5	0.0000	1.6816266	1.4844032
58	18.921	68.156	12.318	3	0.5759	1.6800740	1.6798988
59	18.921	68.156	12.904	1	0.0000	1.4886407	1.7335824
59	18.921	68.156	12.904	5	0.0000	1.7417767	1.5050625
59	18.921	68.156	12.904	3	0.5054	1.7449904	1.7439711
60	18.921	68.156	13.490	1	0.0000	1.4860516	1.7716674
60	18.921	68.156	13.490	5	0.0000	1.8048600	1.5285595
60	18.921	68.156	13.490	3	0.4579	1.8124708	1.8107984
61	19.725	68.585	11.796	1	0.0000	1.4644803	1.5743560
61	19.725	68.585	11.796	4	0.0000	1.5607441	1.4521802
61	19.725	68.585	11.796	3	0.6553	1.5553176	1.5547333
62	19.725	68.585	12.382	1	0.0000	1.4895443	1.6449896
62	19.725	68.585	12.382	4	0.0000	1.6308927	1.4781550
62	19.725	68.585	12.382	3	0.6291	1.6273736	1.6344658
63	19.725	68.585	12.969	1	0.0000	1.5687627	1.7814873
63	19.725	68.585	12.969	5	0.0000	1.7736489	1.5672586
63	19.725	68.585	12.969	3	0.5331	1.7733138	1.7727826
64	19.725	68.585	13.555	1	0.0000	1.5840465	1.8443726
64	19.725	68.585	13.555	5	0.0000	1.8561752	1.6045273
64	19.725	68.585	13.555	3	0.4712	1.8596959	1.8586392
65	19.725	68.585	14.141	1	0.0000	1.5810005	1.8838029
65	19.725	68.585	14.141	5	0.0000	1.9200282	1.6286231
65	19.725	68.585	14.141	3	0.4291	1.9272907	1.9258385
66	20.530	69.015	12.446	1	0.0000	1.4677620	1.5627404
66	20.530	69.015	12.446	4	0.0000	1.5510072	1.4567395
66	20.530	69.015	12.446	3	0.6513	1.5459283	1.5443699
67	20.530	69.015	13.033	1	0.0000	1.5748354	1.7398507

67	20.530	69.015	13.033	4	0.0000	1.7315651	1.5691766
67	20.530	69.015	13.033	3	0.5703	1.7300082	1.7392041
68	20.530	69.015	13.619	1	0.0000	1.6831869	1.9160919
68	20.530	69.015	13.619	5	0.0000	1.9114058	1.6853109
68	20.530	69.015	13.619	3	0.4884	1.9116766	1.9110016
69	20.530	69.015	14.205	1	0.0000	1.7105468	1.9968753
69	20.530	69.015	14.205	5	0.0000	2.0084399	1.7322950
69	20.530	69.015	14.205	3	0.4404	2.0114607	2.0103473
70	20.530	69.015	14.791	1	0.0000	1.6919366	2.0174754
70	20.530	69.015	14.791	5	0.0000	2.0552532	1.7428478
70	20.530	69.015	14.791	3	0.4038	2.0618671	2.0606228
71	21.334	69.445	13.096	1	0.0000	1.5867863	1.6960542
71	21.334	69.445	13.096	4	0.0000	1.6877914	1.5795278
71	21.334	69.445	13.096	3	0.5791	1.6851519	1.6879532
72	21.334	69.445	13.683	1	0.0000	1.7147122	1.9034406
72	21.334	69.445	13.683	5	0.0000	1.8989471	1.7156921
72	21.334	69.445	13.683	3	0.4793	1.8987067	1.8963470
73	21.334	69.445	14.269	1	0.0000	1.8259892	2.0882636
73	21.334	69.445	14.269	5	0.0000	2.0841102	1.8314156
73	21.334	69.445	14.269	3	0.4452	2.0844510	2.0837894
74	21.334	69.445	14.855	1	0.0000	1.8683704	2.1903961
74	21.334	69.445	14.855	5	0.0000	2.1964586	1.8883656
74	21.334	69.445	14.855	3	0.4120	2.1984285	2.1973396
75	21.334	69.445	15.442	1	0.0000	1.8181567	2.1729354
75	21.334	69.445	15.442	5	0.0000	2.2071116	1.8679205
75	21.334	69.445	15.442	3	0.3832	2.2124966	2.2110330
76	14.435	68.736	10.364	1	0.0000	1.5255154	1.7498549
76	14.435	68.736	10.364	5	0.0000	1.7235079	1.5063049
76	14.435	68.736	10.364	4	0.6529	1.7166925	1.7257383
77	14.435	68.736	10.949	1	0.0000	1.4542488	1.6978024
77	14.435	68.736	10.949	5	0.0000	1.6826897	1.4480647
77	14.435	68.736	10.949	3	0.5989	1.6790375	1.6797361
78	14.435	68.736	11.533	1	0.0000	1.3881623	1.6426127
78	14.435	68.736	11.533	5	0.0000	1.6428757	1.3993234
78	14.435	68.736	11.533	3	0.5647	1.6430833	1.6428750
79	14.435	68.736	12.118	1	0.0000	1.3400963	1.6031694
79	14.435	68.736	12.118	5	0.0000	1.6189181	1.3672389
79	14.435	68.736	12.118	3	0.5369	1.6225907	1.6217374
80	14.435	68.736	12.703	1	0.0000	1.3050241	1.5732038
80	14.435	68.736	12.703	5	0.0000	1.6041358	1.3481708
80	14.435	68.736	12.703	3	0.5108	1.6110474	1.6097132
81	15.239	69.166	11.013	1	0.0000	1.5142843	1.7102226
81	15.239	69.166	11.013	5	0.0000	1.6867192	1.4969638
81	15.239	69.166	11.013	4	0.6507	1.6803704	1.6866135
82	15.239	69.166	11.599	1	0.0000	1.4422137	1.6627943
82	15.239	69.166	11.599	5	0.0000	1.6468214	1.4330637
82	15.239	69.166	11.599	3	0.6181	1.6426550	1.6433790
83	15.239	69.166	12.184	1	0.0000	1.3706906	1.6030385
83	15.239	69.166	12.184	4	0.0000	1.6005854	1.3762892
83	15.239	69.166	12.184	3	0.5833	1.6002381	1.6003347
84	15.239	69.166	12.769	1	0.0000	1.3140703	1.5553905
84	15.239	69.166	12.769	4	0.0000	1.5673483	1.3357172

84	15.239	69.166	12.769	3	0.5539	1.5707349	1.5701207
85	15.239	69.166	13.354	1	0.0000	1.2749823	1.5231466
85	15.239	69.166	13.354	4	0.0000	1.5491532	1.3111330
85	15.239	69.166	13.354	3	0.5293	1.5558046	1.5546927
86	16.044	69.595	11.663	1	0.0000	1.4928691	1.6658927
86	16.044	69.595	11.663	4	0.0000	1.6457544	1.4762466
86	16.044	69.595	11.663	4	0.6468	1.6396378	1.6416939
87	16.044	69.595	12.249	1	0.0000	1.4345413	1.6331174
87	16.044	69.595	12.249	4	0.0000	1.6171953	1.4231992
87	16.044	69.595	12.249	4	0.6503	1.6125697	1.6192086
88	16.044	69.595	12.834	1	0.0000	1.3597489	1.5728371
88	16.044	69.595	12.834	4	0.0000	1.5682815	1.3617901
88	16.044	69.595	12.834	3	0.6008	1.5671469	1.5673316
89	16.044	69.595	13.419	1	0.0000	1.2967989	1.5196104
89	16.044	69.595	13.419	4	0.0000	1.5284214	1.3140668
89	16.044	69.595	13.419	3	0.5712	1.5310308	1.5305205
90	16.044	69.595	14.004	1	0.0000	1.2578672	1.4906850
90	16.044	69.595	14.004	4	0.0000	1.5138917	1.2902413
90	16.044	69.595	14.004	3	0.5362	1.5210591	1.5197544
91	16.848	70.025	12.313	1	0.0000	1.4745127	1.6264436
91	16.848	70.025	12.313	4	0.0000	1.6095138	1.4605699
91	16.848	70.025	12.313	3	0.6461	1.6039066	1.6076906
92	16.848	70.025	12.899	1	0.0000	1.4335097	1.6117321
92	16.848	70.025	12.899	4	0.0000	1.5962565	1.4219622
92	16.848	70.025	12.899	4	0.6513	1.5913957	1.5958438
93	16.848	70.025	13.484	1	0.0000	1.3544503	1.5504407
93	16.848	70.025	13.484	4	0.0000	1.5441460	1.3531976
93	16.848	70.025	13.484	4	0.6486	1.5422130	1.5520993
94	16.848	70.025	14.069	1	0.0000	1.2908999	1.4987475
94	16.848	70.025	14.069	4	0.0000	1.5051528	1.3042395
94	16.848	70.025	14.069	3	0.5803	1.5076607	1.5071033
95	16.848	70.025	14.655	1	0.0000	1.2644259	1.4894032
95	16.848	70.025	14.655	4	0.0000	1.5134978	1.2969523
95	16.848	70.025	14.655	3	0.5282	1.5215935	1.5200700
96	17.652	70.455	12.963	1	0.0000	1.4586726	1.5931435
96	17.652	70.455	12.963	4	0.0000	1.5786540	1.4465641
96	17.652	70.455	12.963	3	0.6481	1.5734871	1.5757456
97	17.652	70.455	13.549	1	0.0000	1.4332044	1.5939045
97	17.652	70.455	13.549	4	0.0000	1.5788636	1.4214551
97	17.652	70.455	13.549	3	0.6543	1.5738441	1.5796280
98	17.652	70.455	14.134	1	0.0000	1.3523266	1.5314949
98	17.652	70.455	14.134	4	0.0000	1.5241373	1.3494516
98	17.652	70.455	14.134	4	0.6542	1.5216468	1.5293480
99	17.652	70.455	14.720	1	0.0000	1.3082170	1.5082837
99	17.652	70.455	14.720	4	0.0000	1.5155036	1.3215630
99	17.652	70.455	14.720	3	0.5675	1.5189734	1.5181466
100	17.652	70.455	15.305	1	0.0000	1.2920874	1.5160867
100	17.652	70.455	15.305	4	0.0000	1.5433554	1.3269901
100	17.652	70.455	15.305	3	0.5116	1.5521168	1.5505087
101	10.753	69.746	10.231	1	0.0000	1.7042643	1.9599717
101	10.753	69.746	10.231	5	0.0000	1.9556965	1.7096203
101	10.753	69.746	10.231	3	0.4725	1.9550252	1.9546549

102	10.753	69.746	10.815	1	0.0000	1.6766975	1.9438590
102	10.753	69.746	10.815	5	0.0000	1.9536171	1.6960273
102	10.753	69.746	10.815	3	0.4488	1.9550098	1.9544443
103	10.753	69.746	11.399	0	0.0000	998.0000000	998.0000000
103	10.753	69.746	11.399	0	0.0000	998.0000000	998.0000000
103	10.753	69.746	11.399	0	0.0000	998.0000000	998.0000000
104	10.753	69.746	11.983	0	0.0000	998.0000000	998.0000000
104	10.753	69.746	11.983	0	0.0000	998.0000000	998.0000000
104	10.753	69.746	11.983	0	0.0000	998.0000000	998.0000000
105	10.753	69.746	12.567	0	0.0000	998.0000000	998.0000000
105	10.753	69.746	12.567	0	0.0000	998.0000000	998.0000000
105	10.753	69.746	12.567	0	0.0000	998.0000000	998.0000000
106	11.557	70.176	10.880	1	0.0000	1.6366296	1.8664630
106	11.557	70.176	10.880	4	0.0000	1.8610524	1.6385566
106	11.557	70.176	10.880	3	0.4915	1.8601179	1.8570827
107	11.557	70.176	11.465	1	0.0000	1.6054245	1.8458704
107	11.557	70.176	11.465	4	0.0000	1.8535694	1.6205553
107	11.557	70.176	11.465	3	0.4659	1.8548312	1.8516208
108	11.557	70.176	12.049	1	0.0000	1.5785701	1.8284550
108	11.557	70.176	12.049	4	0.0000	1.8492395	1.6068371
108	11.557	70.176	12.049	3	0.4449	1.8525410	1.8491840
109	11.557	70.176	12.633	0	0.0000	998.0000000	998.0000000
109	11.557	70.176	12.633	0	0.0000	998.0000000	998.0000000
109	11.557	70.176	12.633	0	0.0000	998.0000000	998.0000000
110	11.557	70.176	13.217	0	0.0000	998.0000000	998.0000000
110	11.557	70.176	13.217	0	0.0000	998.0000000	998.0000000
110	11.557	70.176	13.217	0	0.0000	998.0000000	998.0000000
111	12.362	70.605	11.530	1	0.0000	1.5838318	1.7925889
111	12.362	70.605	11.530	4	0.0000	1.7857524	1.5837190
111	12.362	70.605	11.530	3	0.5156	1.7844449	1.7818716
112	12.362	70.605	12.115	1	0.0000	1.5479899	1.7668135
112	12.362	70.605	12.115	4	0.0000	1.7723488	1.5605099
112	12.362	70.605	12.115	3	0.4876	1.7733312	1.7706028
113	12.362	70.605	12.699	1	0.0000	1.5182116	1.7457902
113	12.362	70.605	12.699	4	0.0000	1.7637758	1.5433735
113	12.362	70.605	12.699	3	0.4645	1.7669006	1.7640368
114	12.362	70.605	13.284	0	0.0000	998.0000000	998.0000000
114	12.362	70.605	13.284	0	0.0000	998.0000000	998.0000000
114	12.362	70.605	13.284	0	0.0000	998.0000000	998.0000000
115	12.362	70.605	13.868	0	0.0000	998.0000000	998.0000000
115	12.362	70.605	13.868	0	0.0000	998.0000000	998.0000000
115	12.362	70.605	13.868	0	0.0000	998.0000000	998.0000000
116	13.166	71.035	12.180	1	0.0000	1.5431804	1.7343533
116	13.166	71.035	12.180	4	0.0000	1.7260803	1.5408665
116	13.166	71.035	12.180	3	0.5390	1.7243282	1.7221160
117	13.166	71.035	12.765	1	0.0000	1.5018819	1.7028248
117	13.166	71.035	12.765	4	0.0000	1.7062345	1.5117328
117	13.166	71.035	12.765	3	0.5087	1.7068591	1.7045110
118	13.166	71.035	13.349	1	0.0000	1.4685527	1.6776715
118	13.166	71.035	13.349	4	0.0000	1.6928829	1.4905695
118	13.166	71.035	13.349	3	0.4839	1.6957296	1.6932571
119	13.166	71.035	13.934	1	0.0000	1.4421428	1.6592102

119	13.166	71.035	13.934	4	0.0000	1.6859450	1.4755026
119	13.166	71.035	13.934	3	0.4644	1.6908124	1.6881796
120	13.166	71.035	14.518	0	0.0000	998.0000000	998.0000000
120	13.166	71.035	14.518	0	0.0000	998.0000000	998.0000000
120	13.166	71.035	14.518	0	0.0000	998.0000000	998.0000000
121	13.970	71.465	12.830	1	0.0000	1.5131597	1.6891595
121	13.970	71.465	12.830	4	0.0000	1.6794419	1.5085896
121	13.970	71.465	12.830	3	0.5898	1.6770924	1.6858147
122	13.970	71.465	13.415	1	0.0000	1.4655277	1.6513319
122	13.970	71.465	13.415	4	0.0000	1.6525834	1.4727433
122	13.970	71.465	13.415	3	0.5294	1.6527607	1.6507231
123	13.970	71.465	14.000	1	0.0000	1.4277818	1.6213915
123	13.970	71.465	14.000	4	0.0000	1.6340067	1.4467255
123	13.970	71.465	14.000	3	0.5027	1.6365117	1.6343547
124	13.970	71.465	14.584	1	0.0000	1.3984081	1.5994774
124	13.970	71.465	14.584	4	0.0000	1.6231143	1.4284089
124	13.970	71.465	14.584	3	0.4816	1.6277295	1.6254243
125	13.970	71.465	15.169	0	0.0000	998.0000000	998.0000000
125	13.970	71.465	15.169	0	0.0000	998.0000000	998.0000000
125	13.970	71.465	15.169	0	0.0000	998.0000000	998.0000000

```
 ----------------------------------------
 | SUMMARY OF MINIMUM FACTORS OF SAFETY |
 ----------------------------------------
 MOMENT EQUILIBRIUM: FELLENIUS OR ORDINARY METHOD
      16.0435=X-COOR.      69.5955=Y-COOR.      14.0043=RADIUS    1.2578672=F.S.     90=SLIP#
 MOMENT EQUILIBRIUM: BISHOP SIMPLIFIED METHOD
      16.8477=X-COOR.      70.0253=Y-COOR.      14.0694=RADIUS    1.5051528=F.S.     94=SLIP#
 FORCE EQUILIBRIUM: JANBU SIMPLIFIED METHOD (NO fo FACTOR)
      16.0435=X-COOR.      69.5955=Y-COOR.      14.0043=RADIUS    1.2902413=F.S.     90=SLIP#
 MOMENT AND FORCE EQUILIBRIUM: MORGENSTERN-PRICE METHOD
      16.8477=X-COOR.      70.0253=Y-COOR.      14.0694=RADIUS    1.5076607=F.S.     94=SLIP#

 NORMAL TERMINATION OF SLOPE

MOST_CRITICAL #       SLIP_SURFACE #
==================================
           1                    94

SLIP_SURFACE #       AUTOTENSIONELEV
==================================
```

Slope Stability Analysis near Lot No. 83 RP, D.D. 21, San Uk Ka, Tai Po, N.T.

DATESTAMP 10/8/2024
TIMESTAMP 20:36:22

Center_X	Center_Y	Radius	Slip_Surface	Method
1.684800e+001	7.002500e+001	1.406942e+001	94	3

SL#	X_Left	Y_L_Top	Y_L_Bottom	X_Right	Y_R_Top	Y_R_Bottom	Mid_Height	Base_Length
1	3.301453e+000	6.622439e+001	6.622439e+001	4.000726e+000	6.618720e+001	6.428917e+001	9.490131e-001	2.057685e+000
2	4.000726e+000	6.618720e+001	6.428917e+001	4.700000e+000	6.615000e+001	6.292731e+001	2.560359e+000	1.530897e+000
3	4.700000e+000	6.600000e+001	6.292731e+001	4.866985e+000	6.600000e+001	6.264895e+001	3.211872e+000	3.246072e-001
4	4.866985e+000	6.600000e+001	6.264895e+001	5.050000e+000	6.600000e+001	6.235963e+001	3.495710e+000	3.423393e-001
5	5.050000e+000	6.600000e+001	6.235963e+001	5.775000e+000	6.550000e+001	6.134523e+001	3.897568e+000	1.246852e+000
6	5.775000e+000	6.550000e+001	6.134523e+001	6.500000e+000	6.500000e+001	6.049254e+001	4.331116e+000	1.119244e+000
7	6.500000e+000	6.500000e+001	6.049254e+001	7.175767e+000	6.465388e+001	5.980756e+001	4.676889e+000	9.622156e-001
8	7.175767e+000	6.465388e+001	5.980756e+001	7.851533e+000	6.430775e+001	5.920783e+001	4.973118e+000	9.035114e-001
9	7.851533e+000	6.430775e+001	5.920783e+001	8.550000e+000	6.395000e+001	5.866322e+001	5.193351e+000	8.856976e-001
10	8.550000e+000	6.395000e+001	5.866322e+001	9.183333e+000	6.354149e+001	5.822673e+001	5.300771e+000	7.691779e-001
11	9.183333e+000	6.354149e+001	5.822673e+001	9.816667e+000	6.313297e+001	5.783869e+001	5.304521e+000	7.427549e-001
12	9.816667e+000	6.313297e+001	5.783869e+001	1.045000e+001	6.272446e+001	5.749460e+001	5.262071e+000	7.207691e-001
13	1.045000e+001	6.272446e+001	5.749460e+001	1.102485e+001	6.235367e+001	5.721735e+001	5.183086e+000	6.382136e-001
14	1.102485e+001	6.235367e+001	5.721735e+001	1.159970e+001	6.198288e+001	5.697127e+001	5.073960e+000	6.253055e-001
15	1.159970e+001	6.198288e+001	5.697127e+001	1.217455e+001	6.161209e+001	5.675462e+001	4.934535e+000	6.143192e-001
16	1.217455e+001	6.161209e+001	5.675462e+001	1.279059e+001	6.121473e+001	5.655351e+001	4.759341e+000	6.480427e-001
17	1.279059e+001	6.121473e+001	5.655351e+001	1.340664e+001	6.081736e+001	5.638314e+001	4.547718e+000	6.391686e-001
18	1.340664e+001	6.081736e+001	5.638314e+001	1.402268e+001	6.042000e+001	5.624239e+001	4.305917e+000	6.319213e-001
19	1.402268e+001	6.042000e+001	5.624239e+001	1.463873e+001	6.002264e+001	5.613034e+001	4.034956e+000	6.261523e-001

 20 1.463873e+001 6.002264e+001 5.613034e+001 1.525477e+001 5.962528e+001 5.604631e+001
3.735631e+000 6.217498e-001
 21 1.525477e+001 5.962528e+001 5.604631e+001 1.587082e+001 5.922791e+001 5.598980e+001
3.408539e+000 6.186322e-001
 22 1.587082e+001 5.922791e+001 5.598980e+001 1.646561e+001 5.884426e+001 5.596103e+001
3.060670e+000 5.954904e-001
 23 1.646561e+001 5.884426e+001 5.596103e+001 1.706041e+001 5.846060e+001 5.595745e+001
2.693189e+000 5.948059e-001
 24 1.706041e+001 5.846060e+001 5.595745e+001 1.765520e+001 5.807695e+001 5.597903e+001
2.300534e+000 5.951865e-001
 25 1.765520e+001 5.807695e+001 5.597903e+001 1.825000e+001 5.769329e+001 5.602590e+001
1.882655e+000 5.966384e-001
 26 1.825000e+001 5.769329e+001 5.602590e+001 1.886667e+001 5.729553e+001 5.610145e+001
1.430736e+000 6.212779e-001
 27 1.886667e+001 5.729553e+001 5.610145e+001 1.948333e+001 5.689776e+001 5.620491e+001
9.434676e-001 6.252846e-001
 28 1.948333e+001 5.689776e+001 5.620491e+001 2.010000e+001 5.650000e+001 5.633689e+001
4.279822e-001 6.306336e-001
 29 2.010000e+001 5.650000e+001 5.633689e+001 2.070569e+001 5.650000e+001 5.649512e+001
8.399541e-002 6.260123e-001
 30 2.070569e+001 5.650000e+001 5.649512e+001 2.072278e+001 5.650000e+001 5.650000e+001
2.442288e-003 1.777405e-002

SL# L_Load_X   L_Load_Y   A_Load_X   A_Load_Y   P_Load_X   P_Load_Y   A_Modifier
AS_Load_X   AS_Load_Y   Combined
==
================================
  1 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 -2.1408e-016 -3.4964e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
  2 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 -2.1408e-016 -3.4964e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
  3 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
  4 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
  5 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
  6 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
  7 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
  8 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
  9 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
 10 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
 11 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
 12 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0

13 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
14 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
15 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
16 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
17 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
18 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
19 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
20 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
21 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
22 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
23 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
24 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
25 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
26 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
27 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
28 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
29 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0
30 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 0.0000e+000 1.0000e+000
0.0000e+000 0.0000e+000 0

SL# Weight Pore_Water Alpha Force Fn. Seismic_F Seismic_Y Pore_Air
Phi_B Liquified
==========
1 1.2609e+001 -5.0361e+001 7.0133e+001 1.2577e-001 0.0000e+000 0.0000e+000 0.0000e+000
0.0000e+000 0
2 3.4017e+001 -1.2829e+001 6.2821e+001 2.4954e-001 0.0000e+000 0.0000e+000 0.0000e+000
0.0000e+000 0
3 1.0190e+001 -2.8222e-001 5.9041e+001 2.7858e-001 0.0000e+000 0.0000e+000 0.0000e+000
0.0000e+000 0
4 1.2156e+001 2.9974e-001 5.7683e+001 3.1012e-001 0.0000e+000 0.0000e+000 0.0000e+000
0.0000e+000 0
5 5.3689e+001 5.7029e+000 5.4446e+001 4.3141e-001 0.0000e+000 0.0000e+000 0.0000e+000
0.0000e+000 0

```
  6  5.9661e+001  1.0550e+001  4.9627e+001  5.4534e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
  7  6.0049e+001  1.2326e+001  4.5388e+001  6.4319e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
  8  6.3853e+001  1.3642e+001  4.1588e+001  7.3150e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
  9  6.8920e+001  1.4731e+001  3.7945e+001  8.1136e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 10  6.3786e+001  1.3454e+001  3.4574e+001  8.7269e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 11  6.3831e+001  1.3203e+001  3.1495e+001  9.2265e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 12  6.3320e+001  1.2690e+001  2.8515e+001  9.6059e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 13  5.6610e+001  1.0893e+001  2.5748e+001  9.8419e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 14  5.5418e+001  1.0144e+001  2.3175e+001  9.9724e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 15  5.3896e+001  9.2638e+000  2.0650e+001  9.9957e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 16  5.5707e+001  8.8097e+000  1.8080e+001  9.9016e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 17  5.3230e+001  7.5165e+000  1.5459e+001  9.6855e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 18  5.0400e+001  6.0849e+000  1.2870e+001  9.3499e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 19  4.7229e+001  4.5162e+000  1.0308e+001  8.8991e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 20  4.3725e+001  2.8090e+000  7.7672e+000  8.3385e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 21  3.9896e+001  9.5948e-001  5.2413e+000  7.6751e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 22  3.4589e+001 -9.6705e-001  2.7690e+000  6.9448e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 23  3.0436e+001 -2.9713e+000  3.4514e-001  6.1346e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 24  2.5999e+001 -5.1267e+000 -2.0781e+000  5.2539e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 25  2.1276e+001 -7.4456e+000 -4.5050e+000  4.3129e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 26  1.6763e+001 -9.2305e+000 -6.9851e+000  3.2850e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 27  1.1054e+001 -9.8548e+000 -9.5236e+000  2.2165e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 28  5.0145e+000 -1.0683e+001 -1.2081e+001  1.1207e-001  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 29  9.6662e-001 -1.1511e+001 -1.4640e+001  3.0818e-003  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0
 30  7.9302e-004 -3.4128e-001 -1.5951e+001  0.0000e+000  0.0000e+000  0.0000e+000  0.0000e+000
0.0000e+000  0

Ordinary_Method_Fm=    1.2908999      Applied_Lambda=  0.0000
```

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion
1	5.4731e+000	-7.7507e+000	3.5000e+001	3.0000e+000
2	1.7135e+001	-1.2852e+001	3.5000e+001	3.0000e+000
3	5.2421e+000	-3.5978e+000	3.5000e+001	3.0000e+000
4	6.4984e+000	-4.1578e+000	3.5000e+001	3.0000e+000
5	3.1218e+001	-1.6738e+001	3.5000e+001	3.0000e+000
6	3.8646e+001	-1.7841e+001	3.5000e+001	3.0000e+000
7	4.2173e+001	-1.8426e+001	3.5000e+001	3.0000e+000
8	4.7758e+001	-2.0605e+001	3.5000e+001	3.0000e+000
9	5.4351e+001	-2.3549e+001	3.5000e+001	3.0000e+000
10	5.2521e+001	-2.2978e+001	3.5000e+001	3.0000e+000
11	5.4428e+001	-2.4087e+001	3.5000e+001	3.0000e+000
12	5.5639e+001	-2.4971e+001	3.5000e+001	3.0000e+000
13	5.0990e+001	-2.3232e+001	3.5000e+001	3.0000e+000
14	5.0947e+001	-2.3585e+001	3.5000e+001	3.0000e+000
15	5.0433e+001	-2.3758e+001	3.5000e+001	3.0000e+000
16	5.2957e+001	-2.5452e+001	3.5000e+001	3.0000e+000
17	5.1305e+001	-2.5237e+001	3.5000e+001	3.0000e+000
18	4.9134e+001	-2.4819e+001	3.5000e+001	3.0000e+000
19	4.6466e+001	-2.4210e+001	3.5000e+001	3.0000e+000
20	4.3324e+001	-2.3421e+001	3.5000e+001	3.0000e+000
21	3.9730e+001	-2.2467e+001	3.5000e+001	3.0000e+000
22	3.4549e+001	-2.0124e+001	3.5000e+001	3.0000e+000
23	3.0435e+001	-1.7891e+001	3.5000e+001	3.0000e+000
24	2.5981e+001	-1.5476e+001	3.5000e+001	3.0000e+000
25	2.1210e+001	-1.2891e+001	3.5000e+001	3.0000e+000
26	1.6639e+001	-1.0469e+001	3.5000e+001	3.0000e+000
27	1.0902e+001	-7.3665e+000	3.5000e+001	3.0000e+000
28	4.9035e+000	-4.1253e+000	3.5000e+001	3.0000e+000
29	9.3524e-001	-1.9621e+000	3.5000e+001	3.0000e+000
30	7.6249e-004	-3.4102e-004	3.0000e+001	0.0000e+000

Bishop_Method_Fm= 1.5051528 Applied_Lambda= 0.0000

SL#	Normal_M	ShearMob	Phi_Angle	Cohesion	SideLeft	ShearLeft	SideRight	ShearRight
1	1.5750e+001	-1.1428e+001	3.5000e+001	3.0000e+000	0.0000e+000	0.0000e+000	-8.5378e+000	0.0000e+000
2	3.9962e+001	-2.1642e+001	3.5000e+001	3.0000e+000	8.5378e+000	0.0000e+000	-3.0227e+001	0.0000e+000
3	1.0547e+001	-5.5537e+000	3.5000e+001	3.0000e+000	3.0227e+001	0.0000e+000	-3.5454e+001	0.0000e+000
4	1.2605e+001	-6.4069e+000	3.5000e+001	3.0000e+000	3.5454e+001	0.0000e+000	-4.1594e+001	0.0000e+000
5	5.6062e+001	-2.5913e+001	3.5000e+001	3.0000e+000	4.1594e+001	0.0000e+000	-6.7932e+001	0.0000e+000
6	6.1559e+001	-2.5960e+001	3.5000e+001	3.0000e+000	6.7932e+001	0.0000e+000	-9.4045e+001	0.0000e+000
7	6.0726e+001	-2.4434e+001	3.5000e+001	3.0000e+000	9.4045e+001	0.0000e+000	-1.1654e+002	0.0000e+000

8 6.3274e+001 -2.4890e+001 3.5000e+001 3.0000e+000 1.1654e+002 0.0000e+000 -1.3641e+002
0.0000e+000
9 6.7037e+001 -2.6098e+001 3.5000e+001 3.0000e+000 1.3641e+002 0.0000e+000 -1.5347e+002
0.0000e+000
10 6.1121e+001 -2.3708e+001 3.5000e+001 3.0000e+000 1.5347e+002 0.0000e+000 -1.6544e+002
0.0000e+000
11 6.0473e+001 -2.3471e+001 3.5000e+001 3.0000e+000 1.6544e+002 0.0000e+000 -1.7391e+002
0.0000e+000
12 5.9456e+001 -2.3193e+001 3.5000e+001 3.0000e+000 1.7391e+002 0.0000e+000 -1.7888e+002
0.0000e+000
13 5.2825e+001 -2.0779e+001 3.5000e+001 3.0000e+000 1.7888e+002 0.0000e+000 -1.8040e+002
0.0000e+000
14 5.1508e+001 -2.0489e+001 3.5000e+001 3.0000e+000 1.8040e+002 0.0000e+000 -1.7917e+002
0.0000e+000
15 4.9991e+001 -2.0171e+001 3.5000e+001 3.0000e+000 1.7917e+002 0.0000e+000 -1.7530e+002
0.0000e+000
16 5.1667e+001 -2.1229e+001 3.5000e+001 3.0000e+000 1.7530e+002 0.0000e+000 -1.6838e+002
0.0000e+000
17 4.9476e+001 -2.0794e+001 3.5000e+001 3.0000e+000 1.6838e+002 0.0000e+000 -1.5878e+002
0.0000e+000
18 4.7055e+001 -2.0319e+001 3.5000e+001 3.0000e+000 1.5878e+002 0.0000e+000 -1.4675e+002
0.0000e+000
19 4.4400e+001 -1.9802e+001 3.5000e+001 3.0000e+000 1.4675e+002 0.0000e+000 -1.3253e+002
0.0000e+000
20 4.1504e+001 -1.9241e+001 3.5000e+001 3.0000e+000 1.3253e+002 0.0000e+000 -1.1643e+002
0.0000e+000
21 3.8354e+001 -1.8629e+001 3.5000e+001 3.0000e+000 1.1643e+002 0.0000e+000 -9.8767e+001
0.0000e+000
22 3.3811e+001 -1.6916e+001 3.5000e+001 3.0000e+000 9.8767e+001 0.0000e+000 -8.1068e+001
0.0000e+000
23 3.0344e+001 -1.5302e+001 3.5000e+001 3.0000e+000 8.1068e+001 0.0000e+000 -6.3686e+001
0.0000e+000
24 2.6506e+001 -1.3517e+001 3.5000e+001 3.0000e+000 6.3686e+001 0.0000e+000 -4.7155e+001
0.0000e+000
25 2.2252e+001 -1.1541e+001 3.5000e+001 3.0000e+000 4.7155e+001 0.0000e+000 -3.2082e+001
0.0000e+000
26 1.8071e+001 -9.6451e+000 3.5000e+001 3.0000e+000 3.2082e+001 0.0000e+000 -1.8731e+001
0.0000e+000
27 1.2385e+001 -7.0079e+000 3.5000e+001 3.0000e+000 1.8731e+001 0.0000e+000 -8.5720e+000
0.0000e+000
28 5.9944e+000 -4.0456e+000 3.5000e+001 3.0000e+000 8.5720e+000 0.0000e+000 -2.6361e+000
0.0000e+000
29 1.5085e+000 -1.9495e+000 3.5000e+001 3.0000e+000 2.6361e+000 0.0000e+000 -6.6263e-004
0.0000e+000
30 9.2639e-004 -3.5535e-004 3.0000e+001 0.0000e+000 6.6263e-004 0.0000e+000 0.0000e+000
0.0000e+000

Janbu_Method_Ff= 1.3042395 Applied_Lambda= 0.0000
SL# Normal_F ShearMob Phi_Angle Cohesion SideLeft ShearLeft SideRight
ShearRight
==========

1 1.3860e+001 -1.2174e+001 3.5000e+001 3.0000e+000 0.0000e+000 0.0000e+000 -8.5378e+000
0.0000e+000
2 3.6903e+001 -2.3333e+001 3.5000e+001 3.0000e+000 8.5378e+000 0.0000e+000 -3.0227e+001
0.0000e+000
3 9.8222e+000 -6.0199e+000 3.5000e+001 3.0000e+000 3.0227e+001 0.0000e+000 -3.5454e+001
0.0000e+000
4 1.1792e+001 -6.9573e+000 3.5000e+001 3.0000e+000 3.5454e+001 0.0000e+000 -4.1594e+001
0.0000e+000
5 5.2990e+001 -2.8255e+001 3.5000e+001 3.0000e+000 4.1594e+001 0.0000e+000 -6.7932e+001
0.0000e+000
6 5.8782e+001 -2.8468e+001 3.5000e+001 3.0000e+000 6.7932e+001 0.0000e+000 -9.4045e+001
0.0000e+000
7 5.8346e+001 -2.6920e+001 3.5000e+001 3.0000e+000 9.4045e+001 0.0000e+000 -1.1654e+002
0.0000e+000
8 6.1054e+001 -2.7533e+001 3.5000e+001 3.0000e+000 1.1654e+002 0.0000e+000 -1.3641e+002
0.0000e+000
9 6.4909e+001 -2.8977e+001 3.5000e+001 3.0000e+000 1.3641e+002 0.0000e+000 -1.5347e+002
0.0000e+000
10 5.9352e+001 -2.6411e+001 3.5000e+001 3.0000e+000 1.5347e+002 0.0000e+000 -1.6544e+002
0.0000e+000
11 5.8868e+001 -2.6225e+001 3.5000e+001 3.0000e+000 1.6544e+002 0.0000e+000 -1.7391e+002
0.0000e+000
12 5.8010e+001 -2.5989e+001 3.5000e+001 3.0000e+000 1.7391e+002 0.0000e+000 -1.7888e+002
0.0000e+000
13 5.1644e+001 -2.3346e+001 3.5000e+001 3.0000e+000 1.7888e+002 0.0000e+000 -1.8040e+002
0.0000e+000
14 5.0451e+001 -2.3078e+001 3.5000e+001 3.0000e+000 1.8040e+002 0.0000e+000 -1.7917e+002
0.0000e+000
15 4.9054e+001 -2.2775e+001 3.5000e+001 3.0000e+000 1.7917e+002 0.0000e+000 -1.7530e+002
0.0000e+000
16 5.0793e+001 -2.4030e+001 3.5000e+001 3.0000e+000 1.7530e+002 0.0000e+000 -1.6838e+002
0.0000e+000
17 4.8734e+001 -2.3598e+001 3.5000e+001 3.0000e+000 1.6838e+002 0.0000e+000 -1.5878e+002
0.0000e+000
18 4.6442e+001 -2.3120e+001 3.5000e+001 3.0000e+000 1.5878e+002 0.0000e+000 -1.4675e+002
0.0000e+000
19 4.3914e+001 -2.2592e+001 3.5000e+001 3.0000e+000 1.4675e+002 0.0000e+000 -1.3253e+002
0.0000e+000
20 4.1142e+001 -2.2010e+001 3.5000e+001 3.0000e+000 1.3253e+002 0.0000e+000 -1.1643e+002
0.0000e+000
21 3.8113e+001 -2.1370e+001 3.5000e+001 3.0000e+000 1.1643e+002 0.0000e+000 -9.8767e+001
0.0000e+000
22 3.3693e+001 -1.9458e+001 3.5000e+001 3.0000e+000 9.8767e+001 0.0000e+000 -8.1068e+001
0.0000e+000
23 3.0331e+001 -1.7652e+001 3.5000e+001 3.0000e+000 8.1068e+001 0.0000e+000 -6.3686e+001
0.0000e+000
24 2.6580e+001 -1.5639e+001 3.5000e+001 3.0000e+000 6.3686e+001 0.0000e+000 -4.7155e+001
0.0000e+000
25 2.2392e+001 -1.3394e+001 3.5000e+001 3.0000e+000 4.7155e+001 0.0000e+000 -3.2082e+001
0.0000e+000
26 1.8258e+001 -1.1231e+001 3.5000e+001 3.0000e+000 3.2082e+001 0.0000e+000 -1.8731e+001
0.0000e+000

27 1.2576e+001 -8.1901e+000 3.5000e+001 3.0000e+000 1.8731e+001 0.0000e+000 -8.5720e+000
0.0000e+000
28 6.1392e+000 -4.7465e+000 3.5000e+001 3.0000e+000 8.5720e+000 0.0000e+000 -2.6361e+000
0.0000e+000
29 1.5962e+000 -2.2969e+000 3.5000e+001 3.0000e+000 2.6361e+000 0.0000e+000 -6.6263e-004
0.0000e+000
30 9.4359e-004 -4.1770e-004 3.0000e+001 0.0000e+000 6.6263e-004 0.0000e+000 0.0000e+000
0.0000e+000

M-P_Method_Fm= 1.5076607 Applied_Lambda= 0.5803
SL# Normal_M ShearMob Phi_Angle Cohesion SideLeft ShearLeft SideRight
ShearRight
==========
1 1.4821e+001 -1.0978e+001 3.5000e+001 3.0000e+000 0.0000e+000 0.0000e+000 -1.0189e+001
7.4364e-001
2 3.5411e+001 -1.9492e+001 3.5000e+001 3.0000e+000 1.0189e+001 -7.4364e-001 -3.2750e+001
4.7426e+000
3 9.0250e+000 -4.8374e+000 3.5000e+001 3.0000e+000 3.2750e+001 -4.7426e+000 -3.7992e+001
6.1421e+000
4 1.0687e+001 -5.5055e+000 3.5000e+001 3.0000e+000 3.7992e+001 -6.1421e+000 -4.4071e+001
7.9314e+000
5 4.6292e+001 -2.1332e+001 3.5000e+001 3.0000e+000 4.4071e+001 -7.9314e+000 -6.9292e+001
1.7348e+001
6 4.9306e+001 -2.0227e+001 3.5000e+001 3.0000e+000 6.9292e+001 -1.7348e+001 -9.3722e+001
2.9661e+001
7 4.7964e+001 -1.8466e+001 3.5000e+001 3.0000e+000 9.3722e+001 -2.9661e+001 -1.1488e+002
4.2879e+001
8 5.0013e+001 -1.8690e+001 3.5000e+001 3.0000e+000 1.1488e+002 -4.2879e+001 -1.3408e+002
5.6919e+001
9 5.3679e+001 -1.9851e+001 3.5000e+001 3.0000e+000 1.3408e+002 -5.6919e+001 -1.5143e+002
7.1300e+001
10 5.0061e+001 -1.8532e+001 3.5000e+001 3.0000e+000 1.5143e+002 -7.1300e+001 -1.6458e+002
8.3350e+001
11 5.1043e+001 -1.9052e+001 3.5000e+001 3.0000e+000 1.6458e+002 -8.3350e+001 -1.7500e+002
9.3704e+001
12 5.2156e+001 -1.9763e+001 3.5000e+001 3.0000e+000 1.7500e+002 -9.3704e+001 -1.8255e+002
1.0176e+002
13 4.8397e+001 -1.8688e+001 3.5000e+001 3.0000e+000 1.8255e+002 -1.0176e+002 -1.8675e+002
1.0666e+002
14 4.9430e+001 -1.9490e+001 3.5000e+001 3.0000e+000 1.8675e+002 -1.0666e+002 -1.8829e+002
1.0897e+002
15 5.0427e+001 -2.0340e+001 3.5000e+001 3.0000e+000 1.8829e+002 -1.0897e+002 -1.8705e+002
1.0850e+002
16 5.4996e+001 -2.2740e+001 3.5000e+001 3.0000e+000 1.8705e+002 -1.0850e+002 -1.8251e+002
1.0487e+002
17 5.5694e+001 -2.3647e+001 3.5000e+001 3.0000e+000 1.8251e+002 -1.0487e+002 -1.7457e+002
9.8120e+001
18 5.5915e+001 -2.4400e+001 3.5000e+001 3.0000e+000 1.7457e+002 -9.8120e+001 -1.6324e+002
8.8575e+001
19 5.5466e+001 -2.4909e+001 3.5000e+001 3.0000e+000 1.6324e+002 -8.8575e+001 -1.4866e+002
7.6775e+001

20	5.4153e+001	-2.5083e+001	3.5000e+001	3.0000e+000	1.4866e+002	-7.6775e+001	-1.3113e+002	6.3454e+001
21	5.1805e+001	-2.4845e+001	3.5000e+001	3.0000e+000	1.3113e+002	-6.3454e+001	-1.1112e+002	4.9493e+001
22	4.6523e+001	-2.2792e+001	3.5000e+001	3.0000e+000	1.1112e+002	-4.9493e+001	-9.0595e+001	3.6512e+001
23	4.1820e+001	-2.0606e+001	3.5000e+001	3.0000e+000	9.0595e+001	-3.6512e+001	-7.0236e+001	2.5004e+001
24	3.6139e+001	-1.7969e+001	3.5000e+001	3.0000e+000	7.0236e+001	-2.5004e+001	-5.0965e+001	1.5539e+001
25	2.9639e+001	-1.4953e+001	3.5000e+001	3.0000e+000	5.0965e+001	-1.5539e+001	-3.3729e+001	8.4418e+000
26	2.3223e+001	-1.2022e+001	3.5000e+001	3.0000e+000	3.3729e+001	-8.4418e+000	-1.8973e+001	3.6170e+000
27	1.5189e+001	-8.2984e+000	3.5000e+001	3.0000e+000	1.8973e+001	-3.6170e+000	-8.2782e+000	1.0648e+000
28	7.0248e+000	-4.5174e+000	3.5000e+001	3.0000e+000	8.2782e+000	-1.0648e+000	-2.3921e+000	1.5557e-001
29	1.6903e+000	-2.0307e+000	3.5000e+001	3.0000e+000	2.3921e+000	-1.5557e-001	-5.9625e-004	1.0664e-006
30	9.2739e-004	-3.5514e-004	3.0000e+001	0.0000e+000	5.9625e-004	-1.0664e-006	0.0000e+000	0.0000e+000

Slip_Surface_Summary

Analysis	Volume	Weight	Res_Moment	Act_Moment	Res_Force	Act_Force	FOS
Ordinary Method	6.1489e+001	1.1683e+003	9.1508e+003	7.0887e+003			1.2908999
Bishop Method	6.1489e+001	1.1683e+003	1.0670e+004	7.0887e+003			1.5051528
Janbu Method	6.1489e+001	1.1683e+003			6.1943e+002	4.7493e+002	1.3042395
M-P Method	6.1489e+001	1.1683e+003	1.0687e+004	7.0887e+003	6.5416e+002	4.3405e+002	1.5076607

APPENDIX E

Plates

Plate 1: Overview of the Application Site

Plate 2: Overview of the Existing Natural Slope

Plate 3: Two Blocks of NTEH to the North End of Application Site

Plate 4: Viewing the toe of the Existing Slope and Application Site

Plate 5: Overview of the Feature Slope 7NW-D/C 427

Plate 6: Overview of the Feature Slope 7NW-D/C 426