



WANT Geotechnics

Site Classification & Bearing Capacity Assessment

For

Stage 3D, Zuccoli Aspire, Northern Territory

Prepared for the Ostoja Pty Ltd

Project NTG20233469 Rev B

29 August 2023

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Project NTG20233469 Rev B

Project: NTG20233469		
Date	Revision	Comments
13 August 2023	0	Draft issued to Client
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29 August 2023	B	Final issued to Client

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Distribution: Ostojic Pty Ltd (1 electronic)

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Site Classification & Bearing Capacity Assessment for Stage 3D, Zuccoli Aspire, Northern Territory

1. Introduction

WANT Geotechnics (WANT) was commissioned to undertake a geotechnical investigation to provide a report covering the site classification and bearing capacity of 49 Lots developed as Stage 3D, Zuccoli in the Northern Territory. The investigation and report was commissioned by the Ostoic Pty Ltd (Ostoic).

The assessment of individual lot site classification has been undertaken in general accordance with Australian Standard AS2870 *Residential Slabs and Footings*. The assessment of bearing capacity has been in accordance with the methodology presented in MJ Stockwell (1977) and titled *Determination of Allowable Bearing Pressure Under Small Structures*.

The geotechnical investigation undertaken comprised:

- Drilling an average 1.5 bores per lot; and
- A dynamic cone penetrometer test adjacent to each excavation.

In addition to the above required scope, additional investigation was undertaken using ground penetrating radar (GPR). During the drilling of the auger holes, shallow refusal in hard strata occurred at a number of locations. So GPR scanning was undertaken to assist with interpretation of the ground conditions. The results of the GPR scanning are included in the appendix.

This report presents the investigation data and certification of the site class and bearing capacity of each lot based on the July 2023 investigation undertaken by WANT Geotechnics Pty Ltd.

In our judgement, the extent of this investigation has been sufficient to correlate the observed soil conditions with the known geology and published information for this area. However, localised variations are very difficult to locate using test holes and boreholes and natural soils can vary greatly over short distances.

2. Zuccoli Stage 3D

Zuccoli Stage 3D comprises 49 individual lots, earthworks to form the lots was undertaken by Ostoic, and Level 2 Inspection and Testing by the appropriate Northern Territory Government Panel Soil Laboratories. A plan showing the lot layout is included in Appendix A.

3. Geology and Land System

The *Extractive Geology of the Outer Darwin Area* 1:100 000 Geological Series map indicates Stage 3D is predominantly underlain by Tertiary age laterite gravel and ferricrete. Reference to NT Government Natural Resource Maps website indicates the site sits on land of the Bustard Land System (plains, rises and plateaux on mostly on sandstone, siltstone, claystone, shale and some limestone; commonly shallow soils with surface stone and rock outcrop and no occurrence of acid sulphate soils).



4. Earthworks and Compaction

The specification for the earthworks was prepared by ADG and titled *Zuccoli Aspire, Zuccoli, Northern Territory Technical Specification* dated 16 September 2022.

Earthworks and associated activities undertaken as part of the construction typically comprised:

- Clearing and grubbing
- Stripping of topsoil
- Cutting and filling
- Preparation of the stripped subgrade surface
- Placement and compaction of Fill layers
- Level 2 inspection and testing

For details of specification requirements for the above activities, reference should be made to the relevant sections of the ADG Specification.

For details of inspections following topsoil stripping and proof rolling, see the appended reports by ADG. All areas of Stage 3D passed proof roll testing.

The specification requires the fill placed on residential lots be compacted to 90% Maximum Modified Dry Density (MMDD).

The earthworks were undertaken by Ostojic, and NATA accredited Northern Territory Government Panel Soils Laboratories carried out Level 2 earthworks inspection and testing for the project. Field and laboratory tests were undertaken in accordance with AS1289 *Methods of Testing Soils for Engineering Purposes* to assess the compaction of fill.

The following test reports were provided to WANT Geotechnics as a record of the compaction achieved during placement of the fill. WANT Geotechnics has reviewed them and found them to conform to the requirements of the Specification, these reports have also been relied upon by WANT Geotechnics in the formation of their opinions and assessment of the earthworks and site classes for each lot:

- Construction Sciences Lot Reports – Dry Density Ratio / Moisture Ratio reports:
21791/R/59254-1 21791/R/59255-1 21791/R/59359-1
- Construction Sciences Lot Reports – Quality of Materials reports:
TR02-21791/R/59255-1 TR02-21791/R/59359-1
- HiQA Lot Reports –Material Test reports:
D23526-9 EWK 08 Lift 2 D23526-10 EWK 08 Lift 1 D23526-11 EWK 08 Lift 2
D23526-12 EWK 08 Lift 1 D23526-13 EWK 08 Lift 3 D23526-15 EWK 05 Lift 2
D23526-18 EWK 05 Lift 1 D23526-24 EWK 05 Lift 3
- HiQA California Bearing Ratio Test Reports:
D23526-14 D23526-39 D23526-44 D23526-51

Copies of the above records and documents are included in Appendix A.



Field density and laboratory compaction tests were carried out to assess the relative compaction and moisture condition of compacted fill in accordance with the frequency stated in the Specification.

The following table summarises the compaction results for the fill placement, in order the test reports were issued. Full results are attached at the end of this report in Appendix A.

Test Data	General Fill				
	EWK-08 Lift 1 Backfill	EWK_08 Lift 2 Backfill	EWK_08 Lift 1 Fill	EWK_08 Lift 2 Fill	EWK_08 Lift 3 Fill
Date	28/04/2023	28/04/2023	28/04/2023	28/04/2023	28/04/2023
No. of Compaction Tests	3	3	3	3	3
Compaction Results Range (MMDD%)	96 to 98.0	97.0 to 98.5	97.5 to 101.0	95.5 to 99.0	100.0 to 101.5
Test Data	General Fill				
	EWK_01 Lift 1 to Lift 4	EWK_LOT 5 Lift 1	EWK_05 Lift 2	EWK_LOT 5 Lift 3	EWK_LOT 5 Lift 4
Date	29/05/2023	05/05/2023	09/05/2023	12/05/2023	06 & 23/06/2023
No. of Compaction Tests	8	3	3	4	5
Compaction Results Range (MMDD%)	96.5 to 102.5	94.0 to 95.0	93.5 to 96.0	95.5 to 99.5	96.0 to 101.0

Table 1: Summarised Compaction Results

5. Assessment of Compaction Results

All the compaction results met the specification requirement for 90%MMDD.

6. Assessment of Site Class and Bearing Capacity

Australian Standard AS 2870 provides a system of site classification as shown in the table below.

Class	Predicted Surface Movement	Foundation
A		Most sand and rock sites with little or no ground movement from moisture changes
S	<20mm	Slightly reactive clay or silt sites with slight ground movement from moisture changes
M	20mm to 40mm	Moderately reactive clay or silt sites which can experience moderate ground movement from moisture changes
H1	40mm to 60mm	Highly reactive clay site, which can experience high ground movement from moisture changes
H2	60mm to 75mm	Highly reactive clay site, which can experience very high ground movement from moisture changes
E	>75mm	Extremely reactive sites, which can experience extreme ground movement from moisture changes
A to P		Filled sites
P		Sites which include soft soils, such as soft clays, silts or organic soils, loose sands, landslip, mine subsidence, collapsing soils, soils subject to erosion, reactive sites subject to abnormal moisture conditions, sites with highly variable conditions such as weathered dolerite dykes, and sites which cannot be classified otherwise.

Table 2: AS2870 Site Classes

The following tables summarise the ground investigation and DCP results and provide an assessment of site class along with the assessed allowable bearing capacity at likely foundation depth (0.30m to 0.50m).



Lot	Summary of Strata			Site Class	Minimum DCP Blow Count per 100mm below 0.30m	Allowable Bearing Capacity at 0.30m to 0.50m (kPa)
	Engineered Fill	GRAVEL / SAND / CLAY	Weathered rock			
14981	0.00-0.10m	-	0.10-0.20m	S	>20	100
14982	0.00-0.10m	-	0.10-0.20m	S	>20	100
14983	0.00-0.05m	-	0.05-0.15m	S	>20	100
14984	0.00-0.10m	-	0.10-0.20m	S	>20	100
14985	0.00-0.10m	-	0.10-0.20m	S	>20	100
14986	0.00-0.10m	-	0.10-0.20m	S	>20	100
14987	0.00-0.30m	-	0.30m	S	>20	100
14988	0.00-0.35m	-	0.35-0.40m	S	>20	100
14989	0.00-0.45m	-	0.45-0.50m	P Equivalent to S	>20	100
14990	0.00-0.45m	-	0.45m	P Equivalent to S	>20	100
14991	0.00-0.50m	-	0.50m	P Equivalent to S	>20	100
14992	0.00-0.25m	-	0.25-0.35m	S	>20	100
14993	0.00-0.10m	-	0.10-0.30m	S	>20	100
14994	0.00-0.10m	-	0.10-0.35m	S	>20	100
14995	0.00-0.25m	-	0.25-0.35m	S	>20	100
14996	0.00-0.60m	-	0.60m	P Equivalent to S	>20	100
14997	0.00-0.60m	-	0.60m	P Equivalent to S	>20	100
14998	0.00-0.30m	-	0.30m	S	>20	100
14999	0.00-0.25m	-	0.25-0.75m	S	>20	100
15000	0.00-0.25m	0.25-0.75m	-	S	>20	100
15001	0.00-0.20m	-	0.20m	S	>20	100
15002	0.00-0.40m	-	0.40-0.50m	S	>20	100

Table 3: Site Classification and Allowable Bearing Capacity for Lots 14981 to 15002

Site Classification & Bearing Capacity Assessment
 Stage 3D, Zuccoli Aspire, Northern Territory



Lot	Summary of Strata			Site Class	Minimum DCP Blow Count per 100mm below 0.30m	Allowable Bearing Capacity at 0.30m to 0.50m (kPa)
	Engineered Fill	GRAVEL / SAND / CLAY	Weathered rock			
15003	0.00-0.10m	-	0.10-0.50m	S	>20	100
15004	0.00-0.10m	-	0.10-0.50m	S	>20	100
15005	0.00-0.20m	-	0.20-0.70m	S	>20	100
15006	0.00-0.20m	-	0.20-0.60m	S	>20	100
15007	0.00-0.20m	-	0.20m	S	>20	100
15008	0.00-0.25m	-	0.25-1.10m	S	>20	100
15009	0.00-0.20m	-	0.20-1.10m	S	>20	100
15010	0.00-0.30m	-	0.30-1.20m	S	>20	100
15011	0.00-0.30m	-	0.30-0.70m	S	>20	100
15012	0.00-0.20m	-	0.20-0.30m	S	>20	100
15013	0.00-0.30m	-	0.30m	S	>20	100
15014	0.00-0.20m	-	0.20m	S	>20	100
15015	0.00-0.15m	-	0.15-1.10m	S	>20	100
15016	0.00-0.20m	-	0.20-1.20m	S	>20	100
15017	0.00-0.10m	-	0.10-0.30m	S	>20	100
15018	0.00-0.05m	-	0.05-1.20m	S	>20	100
15019	0.00-0.05m	-	0.05-0.10m	S	>20	100
15020	0.00-0.10m	-	0.10m	S	>20	100
15021	0.00-0.10m	-	0.10-0.20m	S	>20	100
15022	0.00-0.10m	-	0.10-0.20m	S	>20	100
15023	0.00-0.05m	-	0.05-0.20m	S	>20	100

Table 4: Site Classification and Allowable Bearing Capacity for Lots 15003 to 15023



Lot	Summary of Strata			Site Class	Minimum DCP Blow Count per 100mm below 0.30m	Allowable Bearing Capacity at 0.30m to 0.50m (kPa)
	Engineered Fill	GRAVEL / SAND / CLAY	Weathered rock			
15024	0.00-0.05m	-	0.05-0.25m	S	>20	100
15025	0.00-0.05m	-	0.05-0.10m	S	>20	100
15026	0.00-0.10m	-	0.10-0.30m	S	>20	100
15027	-	-	0.00-0.10m	S	>20	100
15028	0.00-0.10m	-	0.10-0.20m	S	>20	100
15029	0.00-0.15m	-	0.15-0.35m	S	>20	100

Table 5: Site Classification and Allowable Bearing Capacity for Lots 15024 to 15029



7. Foundations

Footing systems for residential dwellings on Class S, and Class P equivalent to S sites can be designed in accordance with standard S class footings as set out in Section 3 of AS 2870.

P equivalent to S class means that in places the site is underlain by more than 0.40m of fill, however because the fill has been engineered (rolled, moisture conditioned and compacted under Level 2 supervision) the fill can be considered equivalent to in situ material, in effect the site is classed as S Class.

8. Certification

Subject to the site preparation set out in Section 5, the data provided, the above review, and utilising Stockwell's method for the determination of bearing capacity, then all 49 Lots making up Zuccoli Stage 3D are certified as having:

- an allowable bearing capacity of at least 100kPa at likely foundation depth (0.30m to 0.50m depth);
- are Class S, or Class P equivalent to S, and
- are considered suitable for the construction of single or double storey masonry buildings.

9. References

1. Northern Territory Geological Survey *Extractive Minerals Within the Outer Darwin Area*
2. Australian Standard AS 2870 *Residential Slabs and Footings*
3. MJ Stockwell, 1977, *Determination of Allowable Bearing Pressure Under Small Structures*



10. Limitations

SCOPE OF SERVICES

This geotechnical report has been prepared in accordance with the scope of services set out in the agreement between WANT Geotechnics and their client and is subject to any qualifications and assumptions set out in the report. In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints. This report is provided for the exclusive use of WANT Geotechnics Client for this project only and for the purposes as described in this report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of WANT Geotechnics, does so entirely at its own risk and without recourse to WANT Geotechnics for any loss or damage.

RELIANCE ON DATA

In preparing the report, WANT Geotechnics has relied upon data, surveys, and plans provided by the client and/or Third parties. WANT Geotechnics has not verified the accuracy or completeness of the data, to the extent that the any statements, opinions, facts, conclusions and/or recommendations in the report (conclusions) are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. WANT Geotechnics will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have not been fully disclosed to WANT Geotechnics.

GEOTECHNICAL INVESTIGATION

Geotechnical engineering reports are prepared to meet the specific scope of the client and may not necessarily be adequate for a construction contractor. This report was prepared expressly for the client and expressly for purposes indicated by the client or his representative. Use by any other persons for any purpose, or by the client for a different purpose, is not recommended. The client should not use this report for other than its intended purpose without seeking additional geotechnical advice.

LIMITATIONS OF SITE INVESTIGATION

The findings contained within this report are the result of limited investigations conducted in accordance with normal practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general conditions of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the site at all points. In assessing a structure from a limited number of exploratory locations there is the possibility that variations may occur that were not encountered. Site exploration identifies specific subsurface conditions only at those points from which samples have been taken. The data derived from the investigation and subsequent laboratory testing have been extrapolated to form an inferred model and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour regarding the structure. Actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies. The exploratory test records are the subjective interpretation of subsurface conditions at a particular location, made by trained personnel. The interpretation may be limited by the method of investigation and cannot always be definitive. For example, inspection of an excavation or test pit allows a greater area of the subsurface profile to be inspected than borehole investigation; however, such methods are limited by depth and site disturbance restrictions. In borehole investigation, the actual interface between materials may be more gradual or abrupt than a report indicates.



SUBSURFACE CONDITIONS ARE TIME DEPENDENT

Subsurface conditions may be modified by changing natural forces or man-made influences. A geotechnical engineering report is based on conditions which existed at the time of subsurface exploration. Construction operations, at or adjacent to the site, and natural events, such as floods or groundwater fluctuations may also affect subsurface conditions and thus the continuing adequacy of a geotechnical report. WANT Geotechnics should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

EXPLORATORY LOGS SHOULD NOT BE SEPARATED FROM THE ENGINEERING REPORT

Final exploratory logs are developed by geotechnical engineers / engineering geologist based upon their interpretation of field logs and laboratory evaluation of field samples. Customarily, only the final exploratory logs are included in geotechnical engineering reports. These logs should not under any circumstances be redrawn for inclusion in architectural or other design drawings. To minimise the likelihood of exploratory log misinterpretation, contractors should be given access to the complete geotechnical engineering report prepared or authorised for their use. Providing the best available information to contractors helps prevent costly construction problems. For further information on this matter reference should be made to 'Guidelines for the Provision of Geotechnical Information in Construction Contracts' published by the Institution of Engineers Australia, National Headquarters, Canberra 1987.

OTHER LIMITATIONS

WANT Geotechnics will not be liable to update or revise the report to consider any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

WANT Geotechnics Pty Ltd

“Unfortunately, soils are made by nature and not by man, and the products of nature are always complex. As soon as we pass from steel and concrete to earth, the omnipotence of theory ceases to exist. Natural soil is never uniform. Its properties change from point to point while our knowledge of its properties is limited to those few spots at which the samples have been collected. In soil mechanics the accuracy of the computed results never exceeds that of a crude estimate and the principal function of theory consists in teaching us what and how to observe in the field”

Karl Terzaghi – Founder of Modern Geotechnology



Appendix A

Lot Layout Plan
Earthworks Lot Location Plan
Borehole Location Plan
Plan of GPR Scans
Explanatory Notes
Borehole Logs and Dynamic Cone Penetrometer Results
Compactions, CBR Results
ADG Inspection Reports
GPR Scans

LEGEND

- 12.0— EXISTING SURFACE CONTOURS
—12.0— DESIGNED SURFACE CONTOURS
- - - - - LIMIT OF WORKS
— SWD — PROPOSED STORMWATER DRAINAGE PIPE
— PROPOSED SIDE ENTRY PIT (REFER LONG SECTION DRAWINGS FOR NO. OF BAYS & CHAMBER SIZE)
— PROPOSED STORMWATER DRAINAGE PIT
— S — PROPOSED SEWER
— W — PROPOSED WATER MAIN
— PROPOSED ROAD CENTRE LINE
— PROPOSED LAYBACK KERB & GUTTER AND UPRIGHT KERB. REFER DETAIL ON DRG. 3D_C300.

REVISION

REV 1 CLOUDS:

- UPDATED LOT NUMBERS (CLOUDS & NO. NOT SHOWN).
- UPDATED LOT BOUNDARIES FOR LOTS 14990, 14991, 14992 & 14993.
- UPDATED CONTOURS AND EARTHWORKS FOR LOT 15009 & 15010.
- UPDATED VERGE GRADING ADJACENT TO POS3.
- UPDATED FOOTPATH ADJACENT TO POS3.

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ROADWORKS AND STORMWATER DRAINAGE

SIGNED _____ DATE _____

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0 10 20 30 40 50m
SCALE 1:1000
AT ORIGINAL SIZE (A1)



Client
COSTOJIC PTY LTD
Project Name
ZUCCOLI ASPIRE
STAGE 3D
CIVIL WORKS

Discipline
CIVIL
Designed By
LL
Project No.
20696
Checked By
JL
Drawn By
AB
Status
CONSTRUCTION
Approved By
SW
Scale at A1
1:1000
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Title
STAGE 3D
OVERALL LAYOUT PLAN

Drawing No.
3D_002
Revision
1

LEGEND

- 12.0 — SITE BOUNDARY
— 12.0 — DESIGN SURFACE CONTOURS
— 12.0 — EXISTING SURFACE CONTOURS
— SWD — EXISTING STORMWATER DRAINAGE
— S — EXISTING STORMWATER STRUCTURE
— S — EXISTING SEWER
— S — EXISTING SEWER PROPERTY CONNECTION
— S — EXISTING SEWER MAINTENANCE HOLE OR ACCESS CHAMBER
— W — EXISTING WATER
— W — EXISTING WATER PROPERTY CONNECTION
— W — EXISTING WATER HYDRANT
— W — EXISTING WATER VALVE
— E — EXISTING UNDERGROUND ELECTRICITY
— EXISTING STREETLIGHT
— LIMIT OF WORKS
— LOT BOUNDARY
— PROPOSED LAYBACK KERB & GUTTER
— PROPOSED UPRIGHT KERB & GUTTER
— SWD — PROPOSED STORMWATER DRAINAGE PIPE
— PROPOSED SIDE ENTRY PIT
— S — PROPOSED SEWER
— S — PROPOSED SEWER MANHOLE
— S — PROPOSED SEWER ACCESS CHAMBER
— S — PROPOSED SEWER PROPERTY CONNECTION AND IO CONCRETE SURROUND
— W — PROPOSED WATER MAIN
— W — PROPOSED WATER PROPERTY CONNECTION
— W — PROPOSED WATER HYDRANT
— W — PROPOSED WATER VALVE
— RWD — PROPOSED STORMWATER PROPERTY CONNECTION DN225
— RWD — PROPOSED STORMWATER PROPERTY CONNECTION DN150
— RWD — PROPOSED ROOFWATER PROPERTY PIT
— E — PROPOSED ELECTRICAL
— PROPOSED ROAD CENTRE LINE
— PROPOSED ELECTRICAL PROPERTY CONNECTION
— PROPOSED NBN PIT
— DRIVEWAY SETOUT POINTS
— PROPOSED STREET SIGN
— PROPOSED STREETLIGHT
— PROPOSED DRIVEWAY LOCATION
— PROPOSED FOOTPATH IN ACCORDANCE WITH CoP. STANDARDS
— PROPOSED ASPHALT PAVEMENT
— INTERSECTION - 40mm ASPHALT PAVEMENT
— PROPOSED KERB RAMP. REFER SDG STD DRG SS1009 FOR DETAILS
— SD — PROPOSED SUBSOIL DRAIN
— SD — PROPOSED SUBSOIL DRAINAGE CLEAN OUT POINT

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NOTE

- WHERE SEWER IO ARE LOCATED IN DRIVEWAYS OR FOOTPATHS THE CONCRETE SURROUND SHALL BE REMOVED AND A GATIC LID CAST INTO THE DRIVEWAY/FOOTPATH SLAB.
- SEWER MAIN LOCATED UNDER WATER MAINS.

0 10 20 30m
SCALE 1:500
AT ORIGINAL SIZE (A1)



Client: COSTOJIC PTY LTD
Project Name: ZUCCOLI ASPIRE
STAGE 3D
CIVIL WORKS

Discipline: CIVIL	Status: CONSTRUCTION
Designed By: JMB	Checked By: JL
Project No: 20696	Drawn By: AB
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ISSUED FOR
CONSTRUCTION

MASTER SERVICES
OVERALL LAYOUT

Drawing No: 3D_700
Revision: 0



Lots 15009 to 15020
Drillholes AH58 to AH77

Lots 15029 to 15021
Drillholes AH1 to AH14

Lots 14981 to 14989
Drillholes AH15 to AH28

Lots 14996 to 15008
Drillholes AH38 to AH57

Lots 14990 to 14995
Drillholes AH29 to AH37



Client: Ostoic		Drillhole Location plan Zuccoli Stage 3D Zuccoli, Northern Territory	Project: NTG20233469	
	Drawn by: SF		Drawing No.	1
Scale: NTS	Date: 8 Aug 2023		Revision:	0



Client: Ostoic

Drawn by: SF

Scale: NTS

Date: 11 Aug 2023

GPR Scan Lines

Zuccoli Stage 3D

Zuccoli, Northern Territory

Project: NTG20233469

Drawing No. 2

Revision: 0

Explanatory Notes - Soil Description

In engineering terms soil includes every type of uncemented or partially cemented inorganic material found in the ground. In practice, if the material can be remoulded by hand in its field condition or in water it is described as a soil. The dominant soil constituent is given in capital letters, with secondary textures in lower case. The dominant feature is assessed from the Unified Soil Classification system and a soil symbol is used to define a soil layer.

METHOD

Method	Description
AS	Auger Screwing
BH	Backhoe
CT	Cable Tool Rig
EE	Existing Excavation/Cutting
EX	Excavator
HA	Hand Auger
HQ	Diamond Core - 63mm
NQ	Diamond Core - 47mm
PQ	Diamond Core - 85mm
JET	Jetting
NMLC	Diamond Core –52mm
PT	Push Tube
RAB	Rotary Air Blast
RB	Rotary Blade
RT	Rotary Tricone Bit
TC	Auger TC Bit
V	Auger V Bit
WB	Washbore

WATER



Not observed: The borehole/test pit was dry soon after excavation. Inflow may have been observed had the borehole/test pit been left open for a longer period.

SAMPLING

Sample	Description
B	Bulk Disturbed Sample
D	Disturbed Sample
Jar	Jar Sample
SPT	Standard Penetration Test
U50	Undisturbed Sample –50mm
U75	Undisturbed Sample –75mm

UNIFIED SOIL CLASSIFICATION

The appropriate symbols are selected on the result of visual examination, field tests and available laboratory tests, such as, sieve analysis, liquid limit and plasticity index.

USC Symbol	Description
GW	Well graded gravel
GP	Poorly graded gravel
GM	Silty gravel
GC	Clayey gravel
SW	Well graded sand
SP	Poorly graded sand
SM	Silty sand
SC	Clayey sand
ML	Silt of low plasticity
CL	Clay of low plasticity
CI	Clay of medium plasticity
OL	Organic soil of low plasticity
MH	Silt of high plasticity
CH	Clay of high plasticity
OH	Organic soil of high plasticity
Pt	Peaty Soil

MOISTURE CONDITION

Dry	- Cohesive soils are friable or powdery Cohesionless soil grains are free-running
Moist	- Soil feels cool, darkened in colour Cohesive soils can be moulded Cohesionless soil grains tend to adhere
Wet	- Cohesive soils usually weakened Free water forms on hands when handling

PLASTICITY

The potential for soil to undergo change in volume with moisture change is assessed from its degree of plasticity. The classification of the degree of plasticity in terms of the Liquid Limit (LL) is as follows:

Description of Plasticity	LL (%)
Low	<35
Medium	35 to 50
High	>50

COHESIVE SOILS - CONSISTENCY

The consistency of a cohesive soil is defined by descriptive terminology such as very soft, soft, firm, stiff, very stiff and hard. These terms are assessed by the shear strength of the soil as observed visually, by pocket penetrometer values and by resistance to deformation to hand moulding.

A Pocket Penetrometer may be used in the field or the laboratory to provide an approximate assessment of the unconfined compressive strength (UCS) of cohesive soils. The undrained shear strength of cohesive soils is approximately half the UCS. The values are recorded in kPa as follows:

Strength	Symbol	Undrained Shear Strength, C_u (kPa)
Very Soft	VS	< 12
Soft	S	12 to 25
Firm	F	25 to 50
Stiff	St	50 to 100
Very Stiff	VSt	100 to 200
Hard	H	> 200

COHESIONLESS SOILS - RELATIVE DENSITY

Relative density terms such as very loose, loose, medium, dense and very dense are used to describe silty and sandy material, and these are usually based on resistance to drilling penetration or the Standard Penetration Test (SPT) 'N' values. Other condition terms, such as friable, powdery or crumbly may also be used.

Term	Symbol	Density Index	N Value (blows/0.3 m)
Very Loose	VL	0 to 15	0 to 4
Loose	L	15 to 35	4 to 10
Medium Dense	MD	35 to 65	10 to 30
Dense	D	65 to 85	30 to 50
Very Dense	VD	>85	>50

COHESIONLESS SOILS PARTICLE SIZE DESCRIPTIVE TERMS

Name	Subdivision	Size
Boulders		>200 mm
Cobbles		63 mm to 200 mm
Gravel	coarse	20 mm to 63 mm
	medium	6 mm to 20 mm
	fine	2.36 mm to 6 mm
Sand	coarse	600 μ m to 2.36 mm
	medium	200 μ m to 600 μ m
	fine	75 μ m to 200 μ m

Rock Description

The rock is described with strength and weathering symbols as shown below. Other features such as bedding and dip angle are given.

METHOD

Refer soil description sheet

WATER

Refer soil description sheet

ROCK QUALITY

The fracture spacing is shown where applicable and the Rock Quality Designation (RQD) or Total Core Recovery (TCR) is given where:

$$\text{TCR (\%)} = \frac{\text{length of core recovered}}{\text{length of core run}}$$

$$\text{SCR (\%)} = \frac{\text{length of core recovered with at least 1 full circumference}}{\text{length of core run}}$$

$$\text{RQD (\%)} = \frac{\text{Sum of Axial lengths of core > 100mm long}}{\text{length of core run}}$$

ROCK MATERIAL WEATHERING

Rock weathering is described using the abbreviations and definitions used in AS1726.

Symbol	Term	Definition
RS	Residual Soil	Soil definition on extremely weathered rock; the mass structure and substance are no longer evident; there is a large change in volume but the soil has not been significantly transported
XW	Extremely Weathered	Rock is weathered to such an extent that it has 'soil' properties, i.e. It either disintegrates or can be remoulded in water
HW	Highly Weathered	The rock substance is affected by weathering to the extent that limonite staining or bleaching affects the whole rock substance and other signs of chemical or physical decomposition are evident. Porosity and strength is usually decreased compared to the fresh rock. The colour and strength of the fresh rock is no longer recognisable.
MW	Moderately Weathered	The whole of the rock substance is discoloured, usually by iron staining or bleaching, to the extent that the colour of the fresh rock is no longer recognisable
SW	Slightly Weathered	Rock is slightly discoloured but shows little or no change of strength from fresh rock
FR	Fresh	Rock shows no sign of decomposition or staining

ROCK STRENGTH

Rock strength is described using AS1726, as follows:

Term	Symbol	Point Load Index Is ₍₅₀₎ (MPa)
Extremely Low	EL	<0.03
Very Low	VL	0.03 to 0.1
Low	L	0.1 to 0.3
Medium	M	0.3 to 1
High	H	1 to 3
Very High	VH	3 to 10
Extremely High	EH	>10

○ Diametral Point Load Index test

● Axial Point Load Index test

DEFECT SPACING/BEDDING THICKNESS

Measured at right angles to defects of same set or bedding.

Term	Defect Spacing	Bedding
Extremely closely spaced	<6 mm	Thinly Laminated
	6 to 20 mm	Laminated
Very closely spaced	20 to 60 mm	Very Thin
Closely spaced	0.06 to 0.2 m	Thin
Moderately widely spaced	0.2 to 0.6 m	Medium
Widely spaced	0.6 to 2 m	Thick
Very widely spaced	>2 m	Very Thick

DEFECT DESCRIPTION

Type:	Definition:
B	Bedding
BP	Bedding Parting
F	Fault
C	Cleavage
J	Joint
SZ	Shear Zone
CZ	Crushed Zone
DB	Drill Break

Planarity:	Roughness:
P – Planar	R – Rough
Ir – Irregular	S – Smooth
St – Stepped	Sl – Slickensides
U – Undulating	Po – Polished

Coating or Infill:	Description
Clean	No visible coating or infilling
Stain	No visible coating or infilling but surfaces are discoloured by mineral staining
Veneer	A visible coating or infilling of soil or mineral substance but usually unable to be measured (<1mm). If discontinuous over the plane, patchy veneer
Coating	A visible coating or infilling of soil or mineral substance, >1mm thick. Describe composition and thickness

The inclinations of defects are measured from perpendicular to the core axis.

**BOREHOLE LOG AH1****LOT 15029**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2			5 10 15 20
	0.15			2			>20
				2			20 for 80mm
				3			
	0.35		None	3			
				4			
FILL: GRAVEL clayey with sand, light brown to yellow brown, very dense					VD	D	
SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered							
End of test hole @ 0.35m, virtual machine refusal							

GROUNDWATER

▼ water level (static)
▽ water level (at excavation)
◀ outflow / inflow

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
└ pocket penetrometer

○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

MOISTURE CONDITION

D=dry M=moist W=wet

**BOREHOLE LOG AH2****LOT 15029/15028**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, light brown to yellow brown, very dense SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered End of test hole @ 0.20m, virtual machine refusal	VD	D	5 10 15 20
	0.10			2				
	0.20		None	3				
				4				>20 20 for 50mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH4****LOT 15027**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			3				5 10 15 20
	0.10		None	4	SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered	VD	D	>20
					End of test hole @ 0.10m, virtual machine refusal			20 for 60mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH6****LOT 15026**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Moisture Condition
							Dynamic Cone Penetrometer Blows per 100mm
							5 10 15 20
	0.00			2	FILL: GRAVEL clayey with sand, light brown to yellow brown, very dense	VD	
	0.10			2			
				3	SILTSTONE light grey streaked brown, extremely low strength, extremely weathered		
	0.25			3			
	0.30		None	4	SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered		
					End of test hole @ 0.30m, virtual machine refusal		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH7****LOT 15025**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
0.05 0.10		None	2 4	FILL: GRAVEL clayey with sand, light brown to yellow brown, very dense SILTSTONE light grey streaked brown, extremely low strength, extremely weathered End of test hole @ 0.10m, virtual machine refusal	VD D	D	5 10 15 20 >20 20 for 50mm

GROUNDWATER

▼ water level (static)
▽ water level (at excavation)
◀ outflow / inflow

PENETRATION

1 - no resistance
ranging to:
4 - refusal

FIELD DATA SYMBOLS

✕ shear vane test
└ pocket penetrometer

○ Permeability Test
■ Undisturbed tube sample
● Disturbed sample
□ Bulk sample

DENSITY

VL (very loose)
L (loose)
MD (medium dense)
D (dense)
VD (very dense)

CONSISTENCY

VS (very soft) <12kPa
S (soft) 12-25
F (firm) 25-50
St (stiff) 50-100
VSt (very stiff) 100-200
H (hard) >200

Weathering

FR - Fresh; SW - Slightly Weathered
MW - Mod Weathered; HW - Highly Weathered
XW - Extremely Weathered; RS - Residual Soil

MOISTURE CONDITION

D=dry M=moist W=wet

**BOREHOLE LOG AH8****LOT 15025/15024**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.05 0.10		None	2 4	FILL: GRAVEL clayey with sand, light brown to yellow brown, very dense SILTSTONE light grey streaked brown, extremely low strength, extremely weathered End of test hole @ 0.10m, virtual machine refusal	VD D	D	5 10 15 20 <

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static) water level (at excavation) outflow / inflow	1 - no resistance ranging to: 4 - refusal	shear vane test pocket penetrometer Permeability Test Undisturbed tube sample Disturbed sample Bulk sample	VL (very loose) L (loose) MD (medium dense) D (dense) VD (very dense)	VS (very soft) <12kPa S (soft) 12-25 F (firm) 25-50 St (stiff) 50-100 VSt (very stiff) 100-200 H (hard) >200
Weathering FR - Fresh; SW - Slightly Weathered MW - Mod Weathered; HW - Highly Weathered XW - Extremely Weathered; RS - Residual Soil			MOISTURE CONDITION D=dry M=moist W=wet	

**BOREHOLE LOG AH9****LOT 15024**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Moisture Condition
							Dynamic Cone Penetrometer Blows per 100mm
							5 10 15 20
	0.05			2	FILL: GRAVEL clayey with sand, light brown to yellow brown, very dense	VD	
	0.20			2	SILTSTONE light grey streaked brown, extremely low strength, extremely weathered		
	0.25		None	4	SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered		
					End of test hole @ 0.25m, virtual machine refusal		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH10****LOT 15023**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.05			2	FILL: GRAVEL clayey with sand, light brown to yellow brown, very dense SILTSTONE light grey streaked brown, extremely low strength, extremely weathered SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered End of test hole @ 0.20m, virtual machine refusal	VD	D	5 10 15 20
	0.15			2				
	0.20		None	4				
								>20 20 for 60mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH11****LOT 15023/15022**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.05			2	FILL: GRAVEL clayey with sand, light brown to yellow brown, very dense	VD	D	5 10 15 20
	0.10			2	SILTSTONE light grey streaked brown, extremely low strength, extremely weathered			>20
	0.15		None	4	SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered			20 for 75mm
					End of test hole @ 0.20m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static) water level (at excavation) outflow / inflow	1 - no resistance ranging to: 4 - refusal	shear vane test pocket penetrometer Permeability Test Undisturbed tube sample Disturbed sample Bulk sample	VL (very loose) L (loose) MD (medium dense) D (dense) VD (very dense)	VS (very soft) <12kPa S (soft) 12-25 F (firm) 25-50 St (stiff) 50-100 VSt (very stiff) 100-200 H (hard) >200
Weathering FR - Fresh; SW - Slightly Weathered MW - Mod Weathered; HW - Highly Weathered XW - Extremely Weathered; RS - Residual Soil			MOISTURE CONDITION D=dry M=moist W=wet	

**BOREHOLE LOG AH12****LOT 15022**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, light brown to yellow brown, very dense	VD	D	5 10 15 20
	0.10			2				>20
	0.20		None	3	SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered			20 for 90mm
				4	End of test hole @ 0.20m, virtual machine refusal			
					</			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH13****LOT 15022/15021**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, light brown to yellow brown, very dense SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered End of test hole @ 0.20m, virtual machine refusal	VD	D	5 10 15 20
	0.10			2				
	0.20		None	3				
				4				>20 20 for 50mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		 Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Undisturbed tube sample	VD (very dense)	Vst (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Disturbed sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil		 Bulk sample		
			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH15****LOT 14989**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
			2				>20
			2				20 for 85mm
			2				
			2				
0.45			2	SILTSTONE, grey brown and yellow, low strength, moderately weathered			
0.50		None	2				
			4				
				End of test hole @ 0.50m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH16****LOT 14989/14988**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2			5 10 15 20
				2			
				2			
				2			
				2			
				2			
				2			
	0.45		None	4			
FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense					VD	D	>20 20 for 60mm
End of test hole @ 0.45m, virtual machine refusal							

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH17****LOT 14988**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm 5 10 15 20
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	
				2				
				2				
				2				
				2				
	0.35			2	SILTSTONE, grey brown and yellow, low strength, moderately weathered			
	0.40		None	2				
				4				
					End of test hole @ 0.40m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH18****LOT 14987**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
				2				>20
				2				20 for 40mm
	0.30		None	2				
				4				
End of test hole @ 0.30m, virtual machine refusal								

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
		 Permeability Test	D (dense)	St (stiff) 50-100
Weathering		 Undisturbed tube sample	VD (very dense)	Vst (very stiff) 100-200
FR - Fresh; SW - Slightly Weathered		 Disturbed sample		H (hard) >200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH20****LOT 14986**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered End of test hole @ 0.20m, virtual machine refusal	VD	D	5 10 15 20
	0.10			2				>20
	0.20		None	3				20 for 50mm
				4				

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH21****LOT 14985**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered End of test hole @ 0.20m, virtual machine refusal	VD	D	5 10 15 20
	0.10			2				>20
	0.20		None	3				20 for 70mm
				4				

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	Vst (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH23****LOT 14984**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered End of test hole @ 0.20m, virtual machine refusal	VD	D	5 10 15 20
	0.10			2				>20
	0.20		None	3				20 for 50mm
				4				

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH24****LOT 14983**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.05			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered End of test hole @ 0.15m, virtual machine refusal	VD	D	5 10 15 20
	0.15		None	3				>20
				4				20 for 50mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal	Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Bulk sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH25****LOT 14983/14982**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
	0.10			2	SILTSTONE, grey brown and yellow, extremely low strength, extremely weathered			>20
	0.30			2				20 for 50mm
	0.35		None	4	SILTSTONE light grey streaked brown and yellow, low strength, moderately weathered			
					End of test hole @ 0.35m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH26****LOT 14982**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, grey brown and yellow, extremely low strength, extremely weathered End of test hole @ 0.20m, virtual machine refusal	VD	D	5 10 15 20
	0.10			2				>20
	0.20		None	4				20 for 60mm
				</				

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH27****LOT 14982/14981**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, grey brown and yellow, extremely low strength, extremely weathered End of test hole @ 0.20m, virtual machine refusal	VD	D	5 10 15 20
	0.10			2				>20
	0.20		None	4				20 for 60mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH28****LOT 14981**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, grey brown and yellow, extremely low strength, extremely weathered End of test hole @ 0.20m, virtual machine refusal	VD	D	5 10 15 20
	0.10			2				>20
	0.20		None	4				20 for 60mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH29****LOT 14990**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2			5 10 15 20
				2			
				2			
				2			
				2			
				2			
				2			
	0.45		None	4			
FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense					VD	D	>20 20 for 80mm
End of test hole @ 0.45m, virtual machine refusal							

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH30****LOT 14990/14991**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
				2				>20
				2				20 for 50mm
				2				
				2				
				2				
				2				
				2				
	0.45		None	4				
								End of test hole @ 0.45m, virtual machine refusal

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH31****LOT 14991**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & exten 0
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
				2				>20
				2				20 for 70mm
				2				
				2				
				2				
				2				
				2				
	0.50		None	4				
								End of test hole @ 0.50m, virtual machine refusal

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH32****LOT 14992**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Dynamic Cone Penetrometer Blows per 100mm
							5 10 15 20
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	>20 20 for 60mm
				2			
	0.25			2			
				2			
	0.35		None	4	SILTSTONE, grey brown and yellow, extremely low strength, extremely weathered End of test hole @ 0.35m, virtual machine refusal		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH33****LOT 14993/14992**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, grey brown and yellow, extremely low strength, extremely weathered	VD	D	5 10 15 20
	0.10			2				>20
				2				20 for 90mm
				2				
	0.30		None	4	End of test hole @ 0.30m, virtual machine refusal			
							</	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH34****LOT 14993**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, grey brown and yellow, extremely low strength, extremely weathered	VD	D	5 10 15 20
	0.10			2				>20
				2				20 for 50mm
				2				
	0.30		None	4	End of test hole @ 0.30m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal	Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Bulk sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH35****LOT 14994**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00 0.10			2 2 2 2 2 2 4	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, grey brown and yellow, extremely low strength, extremely weathered	VD	D	5 10 15 20 20 for 60mm
	0.35		None		End of test hole @ 0.35m, virtual machine refusal			
	</							

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH37****LOT 14995**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Dynamic Cone Penetrometer Blows per 100mm
							5 10 15 20
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	>20 20 for 80mm
				2			
	0.25			2			
				2			
	0.35		None	4	SILTSTONE, grey brown and yellow, extremely low strength, extremely weathered End of test hole @ 0.35m, virtual machine refusal		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH38****LOT 14996**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, light brown, very dense	VD	D	5 10 15 20
				2				>20
				2				20 for 70mm
				2				
				2				
				2				
				2				
				2				
	0.60		None	2				
				4				
					End of test hole @ 0.60m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH38****LOT 14996/14997**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
0.00			2	FILL: GRAVEL clayey with sand, light brown, very dense	VD	D	5 10 15 20
			2				>20
			2				20 for 80mm
			2				
			2				
			2				
			2				
			2				
0.60		None	4				
				End of test hole @ 0.60m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH40****LOT 14997**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
0.00			2	FILL: GRAVEL clayey with sand, light brown, very dense	VD	D	5 10 15 20
			2				>20
			2				20 for 90mm
			2				
			2				
			2				
			2				
			2				
			2				
0.60		None	4				
				End of test hole @ 0.60m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH41****LOT 14998**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Moisture Condition
							Dynamic Cone Penetrometer Blows per 100mm 5 10 15 20
	0.00			2	FILL: GRAVEL clayey with sand, light brown, very dense	VD	D
				2			>20
				2			20 for 60mm
	0.30		None	2			
				4	End of test hole @ 0.30m, virtual machine refusal		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH43****LOT 14999**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
	0.25			2				
	0.50			2				
	0.75		None	4				
					GRAVEL with clay and sand, brown to red brown, dense		M	
					End of test hole @ 0.75m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal	Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Bulk sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH44****LOT 15000**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
	0.25			2				>20 20 for 40mm
				2				
				2				
				2				
	0.75		None	2	GRAVEL with clay and sand, brown to red brown, dense		M	
				2				
				2				
				2				
				2				
				2				
				2				
				2				
	0.75		None	3	End of test hole @ 0.75m, virtual machine refusal			
			4					

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH46****LOT 15001**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2			5 10 15 20
	0.20		None	2 2 3 4	FILL: GRAVEL clayey with sand, light brown, very dense	VD	>20 20 for 80mm
					End of test hole @ 0.20m, virtual machine refusal		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH47****LOT 15002**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469










Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
			2				>20
			2				20 for 80mm
			2				
			2				
0.40			2	SILTSTONE, grey brown spotted red purple and grey, extremely low strength, extremely weathered			
			3				
0.50		None	4				
				End of test hole @ 0.50m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
		 Permeability Test	D (dense)	St (stiff) 50-100
Weathering		 Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
FR - Fresh; SW - Slightly Weathered		 Disturbed sample		H (hard) >200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH50****LOT 15004**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
	0.10			2				16
				2	SILTSTONE, brown to orange brown, extremely low strength, extremely weathered			>20
				2				20 for 75mm
				2				
				2				
	0.50		None	3				
				4	End of test hole @ 0.50m, virtual machine refusal			
						</		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH51****LOT 15004/15005**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00 0.10			2 2 2 2 2 2 2 4	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, brown to orange brown, extremely low strength, extremely weathered	VD	D	5 10 15 20 16 >20 20 for 50mm
	0.40		None		End of test hole @ 0.40m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH52****LOT 15005**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	VD	D	5 10 15 20
	0.20			2			17
				2			>20
				2			20 for 70mm
				2			
				2			
				2			
				2			
				2			
	0.70		None	4			
End of test hole @ 0.70m, virtual machine refusal							

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH53****LOT 15006**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
	0.20			2				20
				2				>20
				2				20 for 70mm
				2				
	0.60		None	2	End of test hole @ 0.60m, virtual machine refusal			
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH54****LOT 15006/15007**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
				2				
				2				
	0.25			2				
				2	SILTSTONE, brown to orange brown, extremely low strength, extremely weathered			
				2				
				2				
	0.50		None	3				
				4	End of test hole @ 0.50m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH55****LOT 15007**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2			5 10 15 20
	0.20		None	2 2 2 4	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	>20 20 for 50mm
					End of test hole @ 0.20m, virtual machine refusal		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH56****LOT 15007/15008**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, brown to orange brown, extremely low strength, extremely weathered	VD	D	5 10 15 20
	0.20			2				>20
				2				20 for 30mm
				2				
				2				
				2				
				2				
				2				
				2				
				2				
	1.10		None	3	End of test hole @ 1.10m, virtual machine refusal			
				4				

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH57****LOT 15008**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL with clay and sand, trace cobbles, light grey and light brown, very dense.	VD	D	5 10 15 20
	0.25			2				16
				2				>20
				2				20 for 90mm
				2				
				2				
				2				
				2				
				2				
				2				
				2				
	1.10			2	SILTSTONE, brown to orange brown, extremely low strength, extremely weathered			
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				3				
				4				
		None		End of test hole @ 1.10m, virtual machine refusal				

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH58****LOT 15010**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	5 10 15 20
				2			
				2			
				2			
				2			
	0.30			2			
				2			
				2			
				2			
				2			
				2	SILTSTONE, light grey and light brown streaked orange, extremely low strength, extremely weathered	D	>20 20 for 80mm
				2			
				2			
				2			
				2			
				2			
				2			
				2			
				2			
				2			
	1.20		None	3	End of test hole @ 1.20m, virtual machine refusal		
				4			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH59****LOT 15009/15010**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS	
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm	
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20	
				2					
				2					
				2					
				2					
	0.30			2					
				2				SILTSTONE, light grey and light brown streaked orange, extremely low strength, extremely weathered	
				2					
				2					
				2					
				2					
				2					
				2					
				2					
				2					
				2					
	1.20		None	4	End of test hole @ 1.20m, virtual machine refusal				

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH60****LOT 15009**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
	0.20			2				>20 20 for 75mm
				2	SILTSTONE, brown to orange brown, extremely low strength, extremely weathered			
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
	1.10		None	3				
				4	End of test hole @ 1.10m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH61****LOT 15011**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20
				2				
				2				
				2				
				2				
	0.30			2	SILTSTONE, light grey and light brown streaked orange, extremely low strength, extremely weathered			
				2				
				2				
				2				
				2				
	0.70		None	3				
				4	End of test hole @ 0.70m, virtual machine refusal			>20 20 for 65mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH62****LOT 15011/15012**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Dynamic Cone Penetrometer Blows per 100mm
							5 10 15 20
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	>20
	0.20			2			20 for 60mm
	0.30		None	4	SILTSTONE, brown to orange brown, extremely low strength, extremely weathered		
					End of test hole @ 0.30m, virtual machine refusal		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH63****LOT 15012**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Moisture Condition
							Dynamic Cone Penetrometer Blows per 100mm 5 10 15 20
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D
	0.20			2			
	0.30		None	4	SILTSTONE, brown to orange brown, extremely low strength, extremely weathered End of test hole @ 0.30m, virtual machine refusal		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH64****LOT 15013**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2			5 10 15 20
				2			
				2			
				2			
	0.30		None	4			
FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense					VD	D	>20 20 for 60mm
End of test hole @ 0.30m, virtual machine refusal							

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH65****LOT 15013/15014**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, brown to orange brown, extremely low strength, extremely weathered	VD	D	5 10 15 20
	0.15			2				>20
				2				20 for 80mm
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
				2				
	1.10		None	3	End of test hole @ 1.10m, virtual machine refusal			
				4				

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH66****LOT 15014**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Dynamic Cone Penetrometer Blows per 100mm
	0.00			2			5 10 15 20
	0.20		None	2 2 2 4	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	>20 20 for 60mm
					End of test hole @ 0.20m, virtual machine refusal on obstruction		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VS _t (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH68****LOT 15015/15016**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00 0.10			2 2 2 2 2 2 2 2 3 4	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, light brown to yellow brown, extremely low strength, extremely weathered (some fine to coarse fragments of low to medium strength, moderately weathered siltstone)	VD	D	5 10 15 20 <div>>20 20 for 95mm</div>
	0.60		None		End of test hole @ 0.60m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH70****LOT 15016B**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
0.00			2	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	5 10 15 20 >20 20 for 75mm
0.20			2				
			2	SILTSTONE, brown to orange brown, extremely low strength, extremely weathered			
			2				
			2				
			2				
			2				
			2				
			2				
			2				
			3				
			4				
0.90		None		End of test hole @ 0.90m, virtual machine refusal			

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH71****LOT 15016/15017**

Sheet 1 of 1










Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469










Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance		Strength / Consistency	Moisture Condition
	0.00 0.10			2 2 2 2 2 2 2 2 3 4	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components		
	0.60		None	4	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, light brown to yellow brown, extremely low strength, extremely weathered (some fine to coarse fragments of low to medium strength, moderately weathered siltstone)	VD	D
					End of test hole @ 0.60m, virtual machine refusal		

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
 water level (static)	1 - no resistance	 shear vane test	VL (very loose)	VS (very soft) <12kPa
 water level (at excavation)	ranging to:	 pocket penetrometer	L (loose)	S (soft) 12-25
 outflow / inflow	4 - refusal	 Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		 Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		 Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		 Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH74****LOT 15018/15019**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostoic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA				MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.05			2 2 2 2 2 2 2 2 2 2 3 4	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, light brown to yellow brown, extremely low strength, extremely weathered (some fine to coarse fragments of low to medium strength, moderately weathered siltstone)	VD D	5 10 15 20 >20 20 for 60mm
	0.70		None				
End of test hole @ 0.70m, virtual machine refusal							

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static) water level (at excavation) outflow / inflow	1 - no resistance ranging to: 4 - refusal	shear vane test pocket penetrometer Permeability Test Undisturbed tube sample Disturbed sample Bulk sample	VL (very loose) L (loose) MD (medium dense) D (dense) VD (very dense)	VS (very soft) <12kPa S (soft) 12-25 F (firm) 25-50 St (stiff) 50-100 VSt (very stiff) 100-200 H (hard) >200
Weathering FR - Fresh; SW - Slightly Weathered MW - Mod Weathered; HW - Highly Weathered XW - Extremely Weathered; RS - Residual Soil			MOISTURE CONDITION D=dry M=moist W=wet	

**BOREHOLE LOG AH75****LOT 15019**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.05 0.10		None	3 4	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense SILTSTONE, light brown to yellow brown, extremely low strength, extremely weathered End of test hole @ 0.10m, virtual machine refusal	VD	D	5 10 15 20 20 for 45mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal	Permeability Test	MD (medium dense)	F (firm) 25-50
Weathering		Undisturbed tube sample	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Disturbed sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Bulk sample		H (hard) >200
XW - Xtremely Weathered; RS - Residual Soil			MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH76****LOT 15019/15020**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			3	SILTSTONE, light brown to yellow brown, extremely low strength, extremely weathered End of test hole @ 0.10m, virtual machine refusal	VD	D	5 10 15 20
	0.10		None	4				>20 20 for 50mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

**BOREHOLE LOG AH77****LOT 15020**

Sheet 1 of 1

Project: Subdivision Stage 3D
Location: Zuccoli
Job No. NTG20233469

Client: Ostojic
Equipment: Kanga 150mm Auger & extension
Ground: Engineered Fill

Date 21/7/2023
Logged: SF
Checked: MF

FIELD DATA					MATERIAL SUBSTANCE	SOIL CONDITION		COMMENTS
	Depth (m)	Samples and tests	Groundwater	Penetration Resistance	SOIL TYPE: unified soils classification, colour, structure, particle characteristics, geological origin and minor components	Strength / Consistency	Moisture Condition	Dynamic Cone Penetrometer Blows per 100mm
	0.00			3				5 10 15 20
	0.10		None	4	FILL: GRAVEL clayey with sand, trace cobbles, yellow brown, very dense	VD	D	>20
					End of test hole @ 0.10m, virtual machine refusal on rock			20 for 60mm

GROUNDWATER	PENETRATION	FIELD DATA SYMBOLS	DENSITY	CONSISTENCY
water level (static)	1 - no resistance	shear vane test	VL (very loose)	VS (very soft) <12kPa
water level (at excavation)	ranging to:	pocket penetrometer	L (loose)	S (soft) 12-25
outflow / inflow	4 - refusal		MD (medium dense)	F (firm) 25-50
Weathering		Permeability Test	D (dense)	St (stiff) 50-100
FR - Fresh; SW - Slightly Weathered		Undisturbed tube sample	VD (very dense)	VSt (very stiff) 100-200
MW - Mod Weathered; HW - Highly Weathered		Disturbed sample		H (hard) >200
XW - Extremely Weathered; RS - Residual Soil		Bulk sample	MOISTURE CONDITION	
			D=dry M=moist W=wet	

DRY DENSITY RATIO / MOISTURE RATIO REPORT


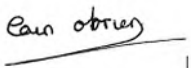
Client:	Ostojic Group PTY LTD	Report Number:	21791/R/59254-1
Client Address:	Lot 4723 Tivendale Road, Berrimah	Project Number:	21791/P/1124
Project:	OST2209-Zuccoli Stage 3D & POS3	Lot Number:	OST-2209-EWK-08
Location:	NT	Internal Test Request:	21791/T/25162
Component:	Field Density Testing	Client Reference/s:	TR2
Area Description:	Zuccoli	Report Date / Page:	13/02/2023

Page 1 of 1

Test Procedures:	AS1289.5.4.1, AS1289.5.2.1, AS1289.5.8.1, AS1289.2.1.1
------------------	--

Sample Number	21791/S/136702			
ID / Client ID	-			
Lot Number	OST-2209-EWK-08			
Date / Time Tested	8/02/2023 09:00			
Material Source	Client			
Material Type	General Fill			
Sampling Method	AS1289.1.2.1 Cl 6.4b			
Depths: Test / Nom / Actual (mm)	250 / - / -			
Standard or Modified	Modified			
Stabilised Material Curing Time	-			
Ch:	35			
O/S	8.2			
R.L				
Other Reference				
Test Fraction (mm)	< 19.0 mm			
Sample Oversize Wet / Dry (%)	19 / 19			
MDR Sample Number	21791/S/136702			
MDR Sample Date / Update	8/02/2023			
Assigned MDR (Yes / No)	No			
Moisture Test Results:				
Field Moisture Content (%)	10.1			
Optimum Moisture Content (%)	8.0			
Variation from OMC (%)	2.0% Wetter than OMC			
Moisture Ratio (%)	124.5			
Density Test Results:				
Field Wet Density (t/m³)	2.28			
Field Dry Density (t/m³)	2.07			
Maximum Dry Density (t/m³)	2.14			
Dry Density Ratio Required (%)	95			
Dry Density Ratio (%)	96.5			

Remarks

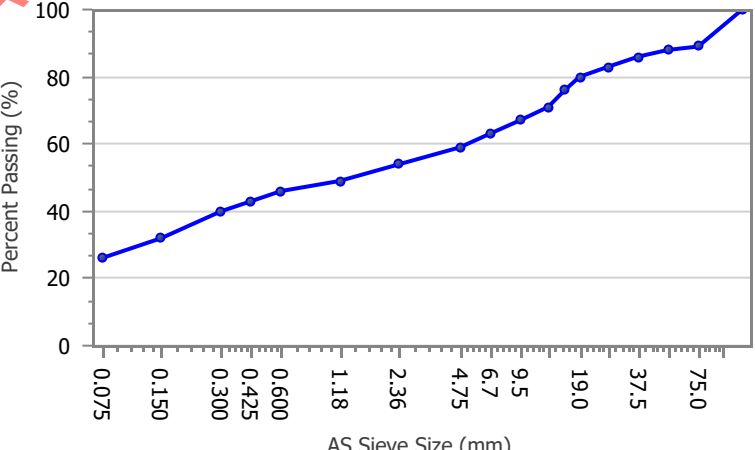
	Accredited for compliance with ISO/IEC 17025 – Testing Accreditation Number: 1986 Corporate Site Number: 21791	 Approved Signatory: Eoin O'Brien Form ID: W27ASRep Rev 1
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QUALITY OF MATERIALS REPORT


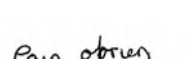
Client:	Ostojic Group PTY LTD	Report Number:	21791/R/59255-1
Client Address:	Lot 4723 Tivendale Road, Berrimah	Project Number:	21791/P/1124
Project:	OST2209-Zuccoli Stage 3D & POS3	Lot Number:	OST-2209-EWK-08
Location:	NT	Internal Test Request:	21791/T/25162
Component:	Field Density Testing	Client Reference/s:	TR2
Area Description:	Zuccoli	Report Date / Page:	13/02/2023

Page 1 of 1

Test Procedures	AS1289.3.6.1, AS1289.3.1.1, AS1289.3.2.1, AS1289.3.4.1, AS1289.2.1.1, AS1289.3.3.1		
Sample Number	21791/S/136702	Ch:	35
Sampling Method	AS1289.1.2.1 CI 6.4b	O/S	8.2
Date Sampled	8/02/2023	R.L	
Sampled By	Eoin O'Brien	Other Reference	
Date Tested	8/02/2023	Material Source	Client
PSD Preparation		Material Type	General Fill
Atterberg Preparation	Wet Sieved / Air Dried	Material Description	Clayley Gravel

AS Sieve (mm)	Specification Minimum (%)	Percent Passing (%)	Specification Maximum (%)	PARTICLE SIZE DISTRIBUTION GRAPH			
125.0		100					
75.0		89					
53.0		88					
37.5		86					
26.5		83					
19.0		80					
16.0		76					
13.2		71					
9.5		67					
6.7		63					
4.75		59					
2.36		54					
1.18		49					
0.600		46					
0.425		43					
0.300		40					
0.150		32					
0.075		26					
				Test Result	Specification Minimum (%)	Result	Specification Maximum (%)
				Liquid Limit (%)		22	
				Plastic Limit (%)		17	
				Plastic Index (%)		5	
				Linear Shrinkage (%)		2.5	
				0.075/0.425 Fines Ratio		0.60	
				PI x 0.425 Ratio (%)		216.3	
				LS x 0.425 Ratio (%)		108.2	
				Linear Shrinkage Defects	N/A		

Remarks

		Accredited for compliance with ISO/IEC 17025 – Testing		
Accreditation Number:	1986			
Corporate Site Number:	21791			
		Approved Signatory: Eoin O'Brien		
		Form ID: W85LRep Rev1		

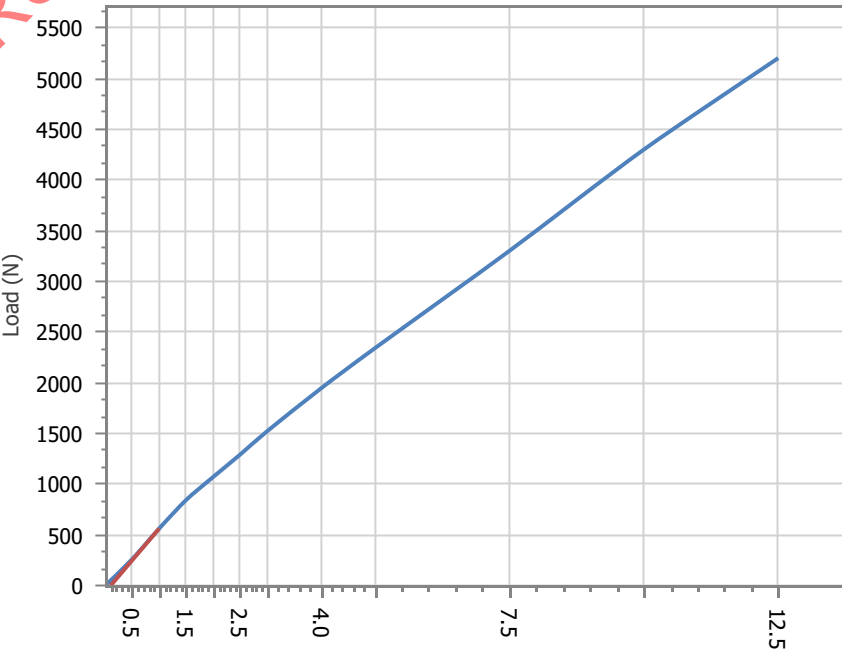
CALIFORNIA BEARING RATIO REPORT

Client:	Ostojic Group PTY LTD	Report Number:	21791/R/59359-1
Client Address:	Lot 4723 Tivendale Road, Berrimah	Project Number:	21791/P/1124
Project:	OST2209-Zuccoli Stage 3D & POS3	Lot Number:	OST-2209-EWK-08
Location:	NT	Internal Test Request:	21791/T/25162
Component:	Field Density Testing	Client Reference/s:	TR2
Area Description:	Zuccoli	Report Date / Page:	16/02/2023

Page 1 of 1

Test Procedures	AS1289.6.1.1, AS1289.5.2.1, AS1289.2.1.1		
Sample Number	21791/S/136702	Ch:	35
Sampling Method	AS1289.1.2.1 CI 6.4b	O/S	8.2
Date Sampled	8/02/2023	R.L	
Sampled By	Eoin O'Brien	Other Reference	
Date Tested	15/02/2023	Prep Material > 53mm (%)	1
Material Source	Client	Material Limit Start	-
Material Type	General Fill	Material Limit End	-
Client Reference	-	Compactive Effort	Modified

Material Description	Clayley Gravel
----------------------	----------------

Maximum Dry Density (t/m³):	2.10	<div> CBR PENETRATION PLOT  </div>
Optimum Moisture Content (%):	10.0	
Field Moisture Content (%):	11.1	
Sample Percent Oversize (%):	19.0	
Oversize Included / Excluded	Excluded	
Target Density Ratio (%):	95	
Target Moisture Ratio (%):	100	
Placement Dry Density (t/m³):	1.99	
Placement Dry Density Ratio (%):	95.0	
Placement Moisture Content (%):	10.1	
Placement Moisture Ratio (%):	100.0	
Test Condition / Soaking Period:	Soaked / 4 Days	
CBR Surcharge (kg)	4.5	
Dry Density After Soak (t/m³):	1.98	
Total Curing Time (hrs)	24	
Liquid Limit Method	Estimation	
Moisture (top 30mm) After Soak (%)	12.7	
Moisture (remainder) After Soak (%)	12.9	
CBR Swell (%):	0.5	
Minimum CBR Specification (%):	-	
CBR Value @ 5.0mm (%):	12	

Remarks

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 Accreditation Number: 1986
 Corporate Site Number: 21791



 Approved Signatory: Tejinder Singh Thandi
 Form ID: W2ASRep Rev 3

Material Test Report

Report Number: D23526-9
Issue Number: 1
Date Issued: 10/05/2023
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0006
Work Request: 6474
Date Sampled: 28/04/2023 10:00
Dates Tested: 28/04/2023 - 09/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_08 - Lift 2
Lot Number: OST2209_EWK_08
Material: Fill

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Approved Signatory: Aldrin Bravo
 Darwin Laboratory Branch Leader
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6474A	D23-6474B	D23-6474C
Date Tested	28/04/2023	28/04/2023	28/04/2023
Time Tested	**	**	**
Test Request #/Location	TR 0006 Lot OST2209_EWK_08	TR 0006 Lot OST2209_EWK_08	TR 0006 Lot OST2209_EWK_08
Easting	3560.266	3572.263	3572.368
Northing	1813.608	1801.318	1801.070
Layer / Reduced Level	Lift 2	Lift 2	Lift 2
Soil Description	Fill	Fill	Fill
Test Depth (mm)	300	300	300
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	17	19	9
Oversize (dry basis) %	18	19	10
Curing Hours	2.3	1.6	3.9
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.36	2.32	2.24
Field Moisture Content %	7.7	8.0	7.4
Field Dry Density t/m ³	2.19	2.15	2.09
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.21	2.19	2.19
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	6.0	7.0	6.5
Moisture Variation %	-1.5	-1.0	-0.5
Moisture Ratio %	125.0	115.0	111.0
Density Ratio %	99.0	98.0	95.5
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D23526-10
Issue Number: 1
Date Issued: 10/05/2023
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0008
Work Request: 6476
Date Sampled: 28/04/2023 10:00
Dates Tested: 28/04/2023 - 09/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_US_08 - Lift 1
Lot Number: OST2209_EWK_US_08
Material: Backfill

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 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6476A	D23-6476B	D23-6476C
Date Tested	28/04/2023	28/04/2023	28/04/2023
Time Tested	14:35	14:43	14:55
Test Request #/Location	TR 0008 Lot OST2209_EWK_US_08	TR 0008 Lot OST2209_EWK_US_08	TR 0008 Lot OST2209_EWK_US_08
Easting	3541.090	3539.755	3542.800
Northing	1831.980	1821.363	1830.806
Layer / Reduced Level	Lift 1	Lift 1	Lift 1
Soil Description	Backfill	Backfill	Backfill
Test Depth (mm)	300	300	300
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	14	9	17
Oversize (dry basis) %	15	9	18
Curing Hours	3.0	3.1	3.8
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.28	2.30	2.33
Field Moisture Content %	7.9	8.3	7.1
Field Dry Density t/m ³	2.11	2.12	2.17
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.20	2.19	2.21
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.0	7.5	6.5
Moisture Variation %	-1.0	-1.0	-0.5
Moisture Ratio %	111.0	110.5	108.5
Density Ratio %	96.0	97.0	98.0
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D23526-11
Issue Number: 1
Date Issued: 10/05/2023
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0009
Work Request: 6477
Date Sampled: 28/04/2023 10:00
Dates Tested: 28/04/2023 - 09/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_US_08 - Lift 2
Lot Number: OST2209_EWK_US_08
Material: Backfill

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Approved Signatory: Aldrin Bravo
 Darwin Laboratory Branch Leader
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6477A	D23-6477B	D23-6477C
Date Tested	28/04/2023	28/04/2023	28/04/2023
Time Tested	13:40	13:50	13:59
Test Request #/Location	TR 0009 Lot OST2209_EWK_US_08	TR 0009 Lot OST2209_EWK_US_08	TR 0009 Lot OST2209_EWK_US_08
Easting	3541.987	3539.180	3558.873
Northing	1831.772	1821.408	1814.634
Layer / Reduced Level	Lift 2	Lift 2	Lift 2
Soil Description	Backfill	Backfill	Backfill
Test Depth (mm)	300	300	300
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	14	20	14
Oversize (dry basis) %	14	20	14
Curing Hours	2.6	2.0	2.2
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.31	2.37	2.30
Field Moisture Content %	8.5	7.6	6.8
Field Dry Density t/m ³	2.13	2.21	2.15
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.18	2.23	2.21
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.5	6.0	5.5
Moisture Variation %	-1.0	-1.5	-1.0
Moisture Ratio %	110.5	124.0	120.5
Density Ratio %	97.5	98.5	97.0
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D23526-12
Issue Number: 1
Date Issued: 11/05/2023
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0005
Work Request: 6473
Date Sampled: 28/04/2023 10:00
Dates Tested: 28/04/2023 - 09/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_08 - Lift 1
Lot Number: OST2209_EWK_08
Material: Fill

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 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6473A	D23-6473B	D23-6473C
Date Tested	28/04/2023	28/04/2023	28/04/2023
Time Tested	**	**	**
Test Request #/Location	TR 0005 Lot OST2209_EWK_08 - Earthwork	TR 0005 Lot OST2209_EWK_08 - Earthwork	TR 0005 Lot OST2209_EWK_08 - Earthwork
Easting	3559.060	3559.970	3543.178
Northing	1814.564	1813.808	1830.574
Layer / Reduced Level	Lift 1	Lift 1	Lift 1
Soil Description	Fill	Fill	Fill
Test Depth (mm)	300	300	300
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	12	7	11
Oversize (dry basis) %	13	8	12
Curing Hours	1.7	2.2	2.6
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.36	2.29	2.36
Field Moisture Content %	7.1	7.4	10.5
Field Dry Density t/m ³	2.20	2.13	2.14
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.22	2.19	2.12
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.5	7.0	9.0
Moisture Variation %	0.0	0.0	-1.5
Moisture Ratio %	97.0	103.5	115.5
Density Ratio %	99.5	97.5	101.0
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: D23526-13
Issue Number: 1
Date Issued: 11/05/2023
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0007
Work Request: 6475
Date Sampled: 28/04/2023 10:00
Dates Tested: 28/04/2023 - 09/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_08 - Lift 3
Lot Number: OST2209_EWK_08
Material: Fill

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Approved Signatory: Aldrin Bravo
 Darwin Laboratory Branch Leader
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6475A	D23-6475B	D23-6475C
Date Tested	28/04/2023	28/04/2023	28/04/2023
Time Tested	12:39	12:53	13:09
Test Request #/Location	TR 0007 Lot OST2209_EWK_08	TR 0007 Lot OST2209_EWK_08	TR 0007 Lot OST2209_EWK_08
Easting	3596.367	3566.995	3554.190
Northing	1790.990	1804.905	1826.249
Layer / Reduced Level	Lift 3	Lift 3	Lift 3
Soil Description	Fill	Fill	Fill
Test Depth (mm)	300	300	300
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	8	7	12
Oversize (dry basis) %	8	7	12
Curing Hours	7.0	2.1	30.2
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.37	2.33	2.34
Field Moisture Content %	5.7	7.3	6.6
Field Dry Density t/m ³	2.24	2.17	2.19
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.21	2.17	2.17
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	6.5	7.5	6.5
Moisture Variation %	1.0	0.0	0.0
Moisture Ratio %	85.5	97.0	99.0
Density Ratio %	101.5	100.0	101.0
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D23526-14
Issue Number: 2 - This version supersedes all previous issues
Reissue Reason: PI and PSD Added
Date Issued: 23/05/2023
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0016
Work Request: 6487
Sample Number: D23-6487B
Date Sampled: 03/05/2023
Dates Tested: 03/05/2023 - 23/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Sample Location: Process Test #2 E: 3570.796m,
Material: General Fill

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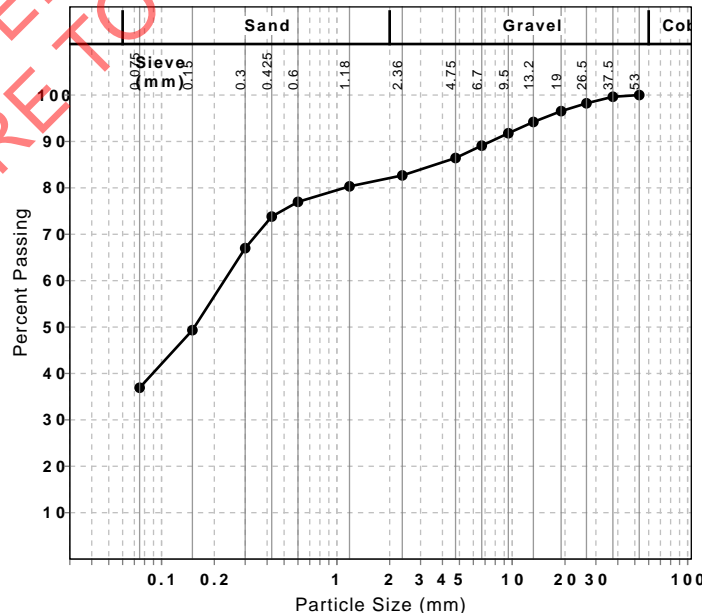
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Approved Signatory: Nicholous DeBeer
 Darwin Testing Co-ordinator
 NATA Accredited Laboratory Number: 13121

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	60		
Method of Compactive Effort	Modified		
Method used to Determine MDD	AS 1289.5.2.1		
Method used to Determine Plasticity	Visual/Tactile Assessment		
Additive Type	N/A		
Maximum Dry Density (t/m ³)	2.16		
Optimum Moisture Content (%)	7.5		
Laboratory Density Ratio (%)	95.5		
Laboratory Moisture Ratio (%)	97.5		
Dry Density after Soaking (t/m ³)	2.03		
Field Moisture Content (%)	11.3		
Moisture Content at Placement (%)	7.4		
Moisture Content Top 30mm (%)	10.7		
Moisture Content Rest of Sample (%)	9.5		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	25.1		
Swell (%)	1.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)	3		

Particle Size Distribution



Particle Size Distribution (AS1289 3.6.1)

Sieve	Passed %	Passing Limits
53 mm	100	
37.5 mm	100	
26.5 mm	98	
19 mm	97	
13.2 mm	94	
9.5 mm	92	
6.7 mm	89	
4.75 mm	86	
2.36 mm	83	
1.18 mm	80	
0.6 mm	77	
0.425 mm	74	
0.3 mm	67	
0.15 mm	49	
0.075 mm	37	

Material Test Report

Report Number: D23526-14
Issue Number: 2 - This version supersedes all previous issues
Reissue Reason: PI and PSD Added
Date Issued: 23/05/2023
Client: Ostojic Group Pty Ltd
PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0016
Work Request: 6487
Sample Number: D23-6487B
Date Sampled: 03/05/2023
Dates Tested: 03/05/2023 - 23/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Sample Location: Process Test #2 E: 3570.796m,
Material: General Fill

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Approved Signatory: Nicholous DeBeer
Darwin Testing Co-ordinator
NATA Accredited Laboratory Number: 13121

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Air Dried		
Preparation Method	Wet Sieve		
Liquid Limit (%)	21		
Plastic Limit (%)	14		
Plasticity Index (%)	7		
Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1 / AS 1289.3.1.2 / AS 1289.3.9.1 / AS 1289.3.9.2		
Linear Shrinkage (%)	2.0		
Cracking Crumbling Curling	Cracking		

Material Test Report

Report Number: D23526-14
Issue Number: 2 - This version supersedes all previous issues
Reissue Reason: PI and PSD Added
Date Issued: 23/05/2023
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0016
Work Request: 6487
Date Sampled: 03/05/2023 12:00
Dates Tested: 03/05/2023 - 12/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Test Pad (Process Testing) - Sandy Material 4:1
Material: General Fill

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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Nicholous DeBeer
 Darwin Testing Co-ordinator
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6487A	D23-6487B	
Date Tested	03/05/2023	03/05/2023	
Time Tested	12:11	12:19	
Test Request #/Location	TR 0016 Process Test #1	TR 0016 Process Test #2	
Easting	3555.889m	3570.796m	
Northing	**	**	
Elevation (m)	18.923	19.418	
Soil Description	General Fill	General Fill	
Test Depth (mm)	300	300	
Fraction Tested (mm)	19.0	19.0	
Oversize (wet basis) %	2	3	
Oversize (dry basis) %	3	3	
Curing Hours	22.4	1.7	
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	
Field Wet Density t/m ³	2.26	2.27	
Field Moisture Content %	9.8	10.7	
Field Dry Density t/m ³	2.06	2.05	
Maximum Dry Density t/m ³	**	**	
Adjusted Maximum Dry Density t/m ³	2.17	2.16	
Optimum Moisture Content (OMC) %	**	**	
Adjusted Optimum Moisture Content (OMC) %	7.0	7.5	
Moisture Variation %	-2.5	-3.5	
Moisture Ratio %	136.0	144.0	
Density Ratio %	95.0	95.0	
Compaction Method	Modified	Modified	

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D23526-39
Issue Number: 2 - This version supersedes all previous issues
Reissue Reason: CBR Added
Date Issued: 14/06/2023
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0039
Work Request: 6605
Sample Number: D23-6605B
Date Sampled: 29/05/2023
Dates Tested: 29/05/2023 - 13/06/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Sample Location: OST2209_EWK_01 - See Map
Lot No: OST2209_EWK_01
Material: General Fill

HiQA

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 HiQa Geotechnical
 Darwin Laboratory
 1/6 Wedding Road Tivendale NT 822
 Phone: (08) 8947 4802
 Email: n.debeer@hiqa.com.au

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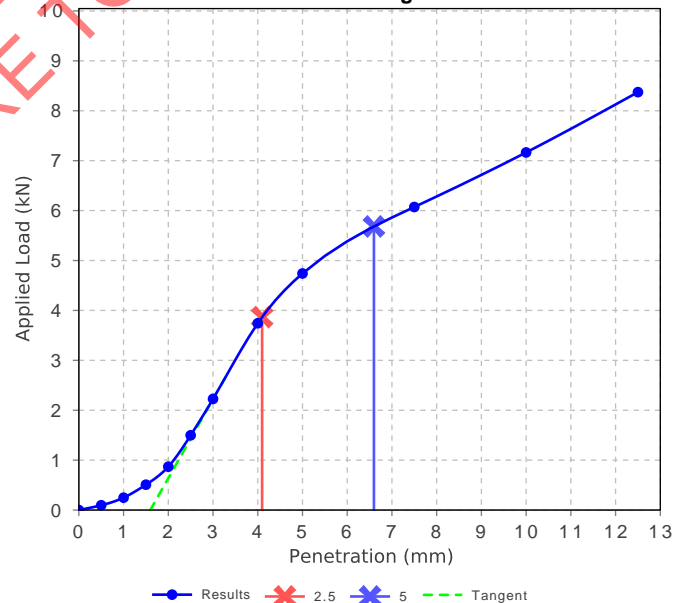
Approved Signatory: Nicholous DeBeer
 Darwin Testing Co-ordinator
 NATA Accredited Laboratory Number: 13121

California Bearing Ratio (AS 1289 6.1.1 & 2.1.1)		Min	Max
CBR taken at	2.5 mm		
CBR %	30		
Method of Compactive Effort	Modified		
Method used to Determine MDD	AS 1289.5.2.1		
Method used to Determine Plasticity	Visual/Tactile Assessment		
Additive Type	N/A		
Maximum Dry Density (t/m ³)	2.13		
Optimum Moisture Content (%)	7.5		
Laboratory Density Ratio (%)	95.5		
Laboratory Moisture Ratio (%)	99.5		
Dry Density after Soaking (t/m ³)	2.00		
Field Moisture Content (%)	9.4		
Moisture Content at Placement (%)	7.7		
Moisture Content Top 30mm (%)	15.0		
Moisture Content Rest of Sample (%)	12.3		
Mass Surcharge (kg)	4.5		
Soaking Period (days)	4		
Curing Hours	25.5		
Swell (%)	2.0		
Oversize Material (mm)	19		
Oversize Material Included	Excluded		
Oversize Material (%)			

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Air Dried		
Preparation Method	Wet Sieve		
Liquid Limit (%)	28		
Plastic Limit (%)	21		
Plasticity Index (%)	7		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.1 / AS 1289.3.1.2 / AS 1289.3.9.1 / AS 1289.3.9.2		
Linear Shrinkage (%)	3.0		
Cracking Crumbling Curling	Cracking & Crumbling		

California Bearing Ratio



Material Test Report

Report Number: D23526-39
Issue Number: 2 - This version supersedes all previous issues
Reissue Reason: CBR Added
Date Issued: 14/06/2023
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0039
Work Request: 6605
Date Sampled: 29/05/2023 13:00
Dates Tested: 29/05/2023 - 08/06/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_01 - Earthworks
Lot Number: OST2209_EWK_01
Material: General Fill

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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Nicholous DeBeer
 Darwin Testing Co-ordinator
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6605A	D23-6605B	D23-6605C	D23-6605D
Date Tested	29/05/2023	29/05/2023	29/05/2023	29/05/2023
Time Tested	13:30	13:32	13:34	13:35
Test Request #/Location	TR 0039 OST2209_EWK_01- See Map	TR 0039 OST2209_EWK_01- See Map	TR 0039 OST2209_EWK_01- See Map	TR 0039 OST2209_EWK_01- See Map
Layer / Reduced Level	4	3	2	1
Soil Description	General Fill	General Fill	General Fill	General Fill
Test Depth (mm)	300	300	300	300
Fraction Tested (mm)	19.0	19.0	19.0	19.0
Oversize (wet basis) %	13	15	10	11
Oversize (dry basis) %	13	15	10	11
Curing Hours	21.2	2.2	4.4	22.9
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.29	2.34	2.31	2.34
Field Moisture Content %	9.2	9.3	8.2	9.8
Field Dry Density t/m ³	2.10	2.14	2.14	2.13
Maximum Dry Density t/m ³	**	**	**	**
Adjusted Maximum Dry Density t/m ³	2.16	2.15	2.19	2.14
Optimum Moisture Content (OMC) %	**	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.5	6.5	7.0	7.5
Moisture Variation %	-1.5	-3.0	-1.5	-2.5
Moisture Ratio %	119.0	143.0	121.0	130.0
Density Ratio %	97.0	99.5	97.5	99.5
Compaction Method	Modified	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D23526-39
Issue Number: 2 - This version supersedes all previous issues
Reissue Reason: CBR Added
Date Issued: 14/06/2023
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0039
Work Request: 6605
Date Sampled: 29/05/2023 13:00
Dates Tested: 29/05/2023 - 09/06/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_01 - Earthworks
Lot Number: OST2209_EWK_01
Material: General Fill

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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Nicholous DeBeer
 Darwin Testing Co-ordinator
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

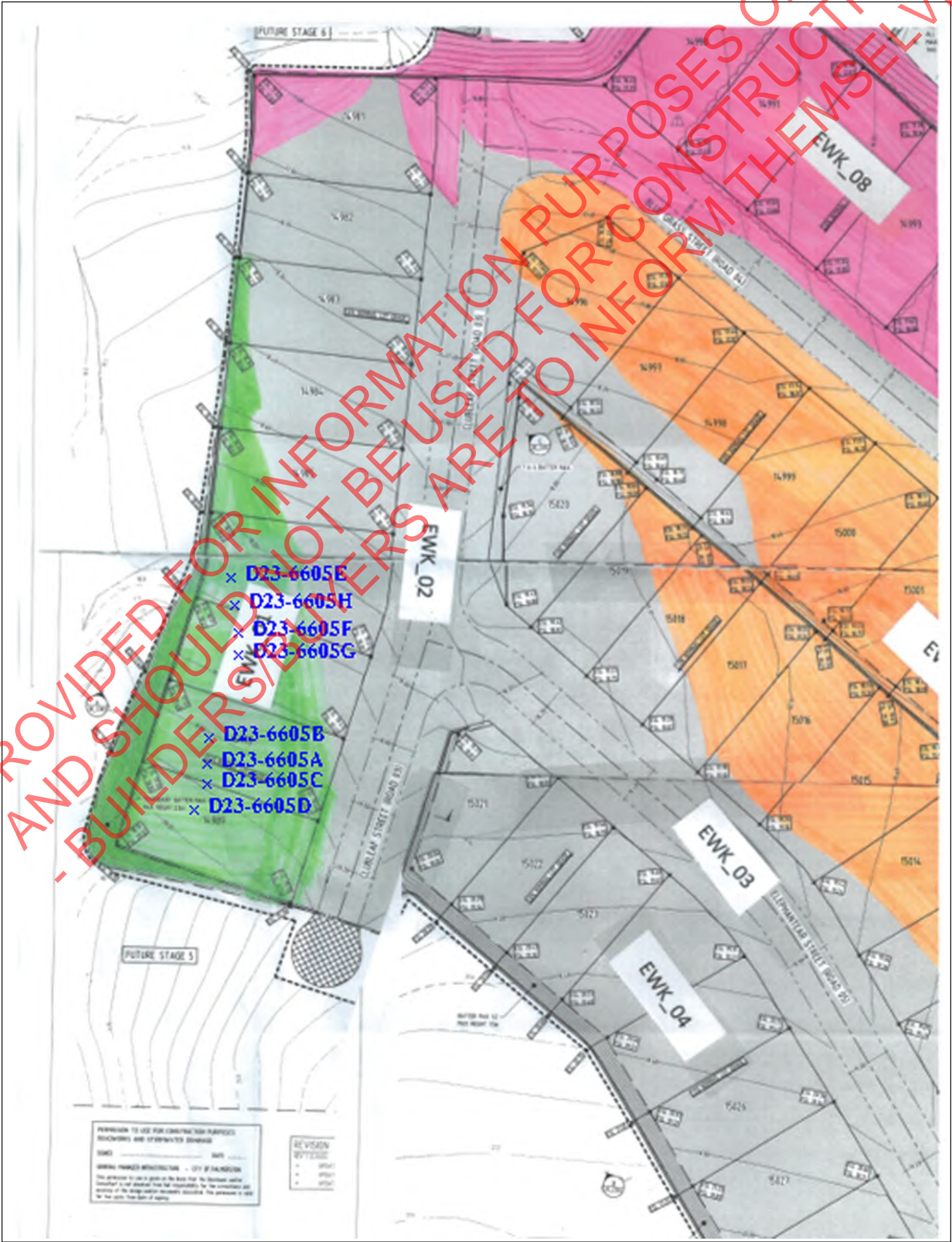
Sample Number	D23-6605E	D23-6605F	D23-6605G	D23-6605H
Date Tested	29/05/2023	29/05/2023	29/05/2023	29/05/2023
Time Tested	13:48	13:50	13:51	13:53
Test Request #/Location	TR 0039 OST2209_EWK_01- See Map	TR 0039 OST2209_EWK_01- See Map	TR 0039 OST2209_EWK_01- See Map	TR 0039 OST2209_EWK_01- See Map
Layer / Reduced Level	4	3	2	4
Soil Description	General Fill	General Fill	General Fill	General Fill
Test Depth (mm)	300	300	300	300
Fraction Tested (mm)	19.0	19.0	19.0	19.0
Oversize (wet basis) %	10	10	12	7
Oversize (dry basis) %	10	10	12	7
Curing Hours	44.4	27.8	28.7	29.0
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.31	2.24	2.27	2.39
Field Moisture Content %	6.4	7.8	10.2	5.7
Field Dry Density t/m ³	2.17	2.08	2.06	2.26
Maximum Dry Density t/m ³	**	**	**	**
Adjusted Maximum Dry Density t/m ³	2.23	2.16	2.13	2.21
Optimum Moisture Content (OMC) %	**	**	**	**
Adjusted Optimum Moisture Content (OMC) %	6.5	8.0	8.5	7.0
Moisture Variation %	0.0	0.0	-1.5	1.5
Moisture Ratio %	101.0	100.5	118.0	81.0
Density Ratio %	97.5	96.5	97.0	102.5
Compaction Method	Modified	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Sample Locations Plan

x - approximate test location



Material Test Report

Report Number: D23526-44
Issue Number: 1
Date Issued: 19/06/2023
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0045
Work Request: 6627
Date Sampled: 06/06/2023 14:00
Dates Tested: 06/06/2023 - 15/06/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209-EWK_05 - Lift 4
Lot Number: OST2209_EWK_05
Material: General Fill

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 Email: n.debeer@hiqa.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Nicholous DeBeer
 Darwin Testing Co-ordinator
 NATA Accredited Laboratory Number: 13121

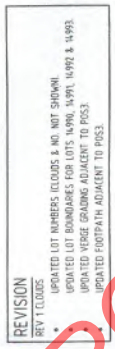
Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6627A	D23-6627B	D23-6627C	D23-6627D
Date Tested	06/06/2023	06/06/2023	06/06/2023	06/06/2023
Time Tested	14:29	14:39	14:49	14:58
Test Request #/Location	TR 0045 Lot OST2209_EWK_05- See Map	TR 0045 Lot OST2209_EWK_05- See Map	TR 0045 Lot OST2209_EWK_05- See Map	TR 0045 Lot OST2209_EWK_05- See Map
Easting	**	**	**	**
Northing	**	**	**	**
Layer / Reduced Level	**	**	**	**
Thickness of Layer (mm)	300	300	300	300
Soil Description	General Fill	General Fill	General Fill	General Fill
Test Depth (mm)	300	300	300	300
Fraction Tested (mm)	19.0	19.0	19.0	19.0
Oversize (wet basis) %	6	18	4	4
Oversize (dry basis) %	6	18	4	4
Curing Hours	145.2	29.8	29.4	29.4
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.36	2.40	2.34	2.33
Field Moisture Content %	8.0	8.8	8.7	9.5
Field Dry Density t/m ³	2.19	2.21	2.16	2.13
Maximum Dry Density t/m ³	**	**	**	**
Adjusted Maximum Dry Density t/m ³	2.23	2.19	2.18	2.22
Optimum Moisture Content (OMC) %	**	**	**	**
Adjusted Optimum Moisture Content (OMC) %	6.0	5.5	6.5	7.0
Moisture Variation %	-2.0	-3.5	-2.0	-2.5
Moisture Ratio %	135.5	160.0	133.5	139.5
Density Ratio %	98.0	101.0	99.0	96.0
Compaction Method	Modified	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

1. FOR GENERAL NOTES REFER TO DRAW NO. 30-01, WHICH IS TO BE REQUESTED AND ISSUED PRIOR TO COMMENCEMENT OF CONSTRUCTION IF NOT SUPPLIED.
2. GRASS AND TOPSOIL SHALL BE STRIPPED TO A DEPTH OF 5mm OVER THE EXTENT OF THE WORKS UNLESS DIRECTED OTHERWISE AND STOOPED FOR FUTURE USE AS NON-STRUCTURAL FILL IF REQUIRED.
3. UTILISE THE PROPERTY BOUNDARY OF THE SUBJECT SITE INCLUDING REAR OF RETAINING WALL DRAINAGE INFRASTRUCTURE FOR RETAINING WALLS IN CUT.
4. ALL NEW WORKS TO MATCH TO EXISTING.
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REVISION	
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CONSTRUCTION PURPOSES
WATER DRAINAGE

DATE _____

TURE - CITY OF PALMERSTON

the basis that the Developer and/or
all responsibility for the correctness and
statements associated. This permission is valid

Material Test Report

Report Number: D23526-51
Issue Number: 1
Date Issued: 04/07/2023
Client: Ostoic Group Pty Ltd
PO Box 38915, WINNELLIE NT 0821
Contact: Dipendra Mainali
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0051
Work Request: 6739
Date Sampled: 23/06/2023 14:00
Dates Tested: 23/06/2023 - 29/06/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_05 - Lift 4
Lot Number: OST2209_EWK_05
Material: Fill

HiQA

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Darwin Laboratory
1/6 Wedding Road Tivendale NT 822
Phone: (08) 8947 4802
Email: a.bravo@hiqa.com.au

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Aldrin Bravo

Approved Signatory: Aldrin Bravo
Darwin Laboratory Branch Leader
NATA Accredited Laboratory Number: 13121

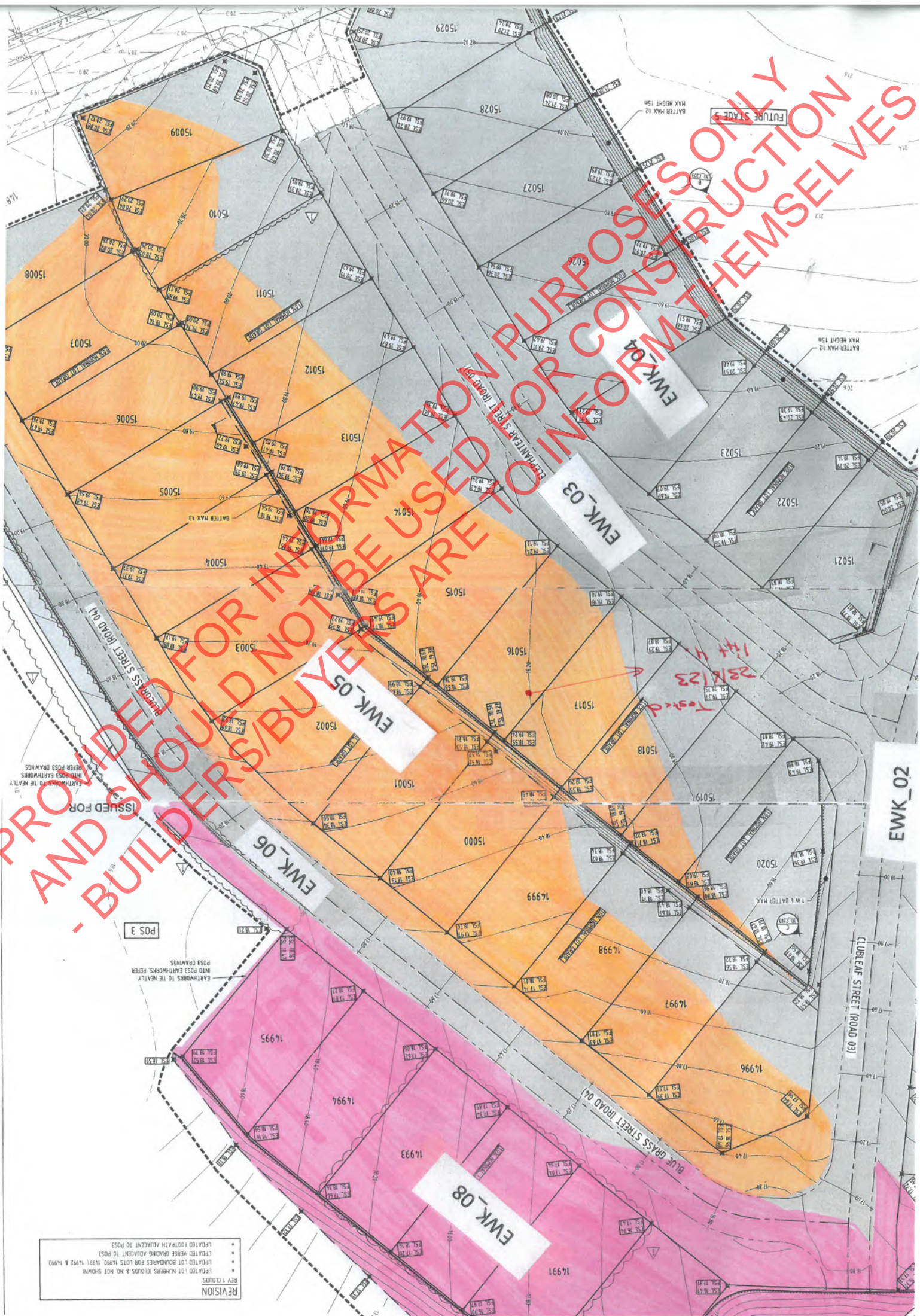
Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6739A		
Date Tested	23/06/2023		
Time Tested	12:09		
Test Request #/Location	TR 0051 OST2209_EWK_05		
Easting	717741		
Northing	8615837		
Layer / Reduced Level	**		
Thickness of Layer (mm)	250		
Soil Description	Fill		
Test Depth (mm)	250		
Fraction Tested (mm)	19.0		
Oversize (wet basis) %	4		
Oversize (dry basis) %	4		
Curing Hours	76.8		
Method used to Determine Plasticity	Visual/Tactile Assessment		
Field Wet Density t/m ³	2.35		
Field Moisture Content %	7.5		
Field Dry Density t/m ³	2.19		
Maximum Dry Density t/m ³	**		
Adjusted Maximum Dry Density t/m ³	2.24		
Optimum Moisture Content (OMC) %	**		
Adjusted Optimum Moisture Content (OMC) %	5.0		
Moisture Variation %	-2.5		
Moisture Ratio %	145.0		
Density Ratio %	97.5		
Compaction Method	Modified		

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

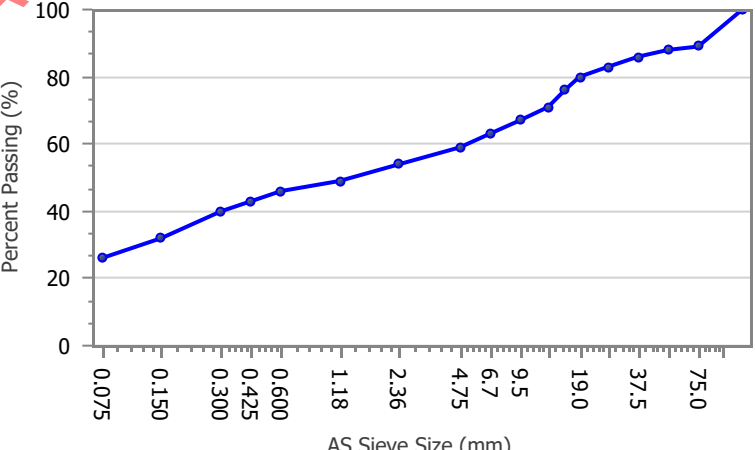


QUALITY OF MATERIALS REPORT


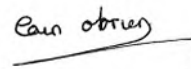
Client:	Ostojic Group PTY LTD	Report Number:	21791/R/59255-1
Client Address:	Lot 4723 Tivendale Road, Berrimah	Project Number:	21791/P/1124
Project:	OST2209-Zuccoli Stage 3D & POS3	Lot Number:	OST-2209-EWK-08
Location:	NT	Internal Test Request:	21791/T/25162
Component:	Field Density Testing	Client Reference/s:	TR2
Area Description:	Zuccoli	Report Date / Page:	13/02/2023

Page 1 of 1

Test Procedures	AS1289.3.6.1, AS1289.3.1.1, AS1289.3.2.1, AS1289.3.4.1, AS1289.2.1.1, AS1289.3.3.1		
Sample Number	21791/S/136702	Ch:	35
Sampling Method	AS1289.1.2.1 CI 6.4b	O/S	8.2
Date Sampled	8/02/2023	R.L	
Sampled By	Eoin O'Brien	Other Reference	
Date Tested	8/02/2023	Material Source	Client
PSD Preparation		Material Type	General Fill
Atterberg Preparation	Wet Sieved / Air Dried	Material Description	Clayley Gravel

AS Sieve (mm)	Specification Minimum (%)	Percent Passing (%)	Specification Maximum (%)	PARTICLE SIZE DISTRIBUTION GRAPH			
125.0		100					
75.0		89					
53.0		88					
37.5		86					
26.5		83					
19.0		80					
16.0		76					
13.2		71					
9.5		67					
6.7		63					
4.75		59					
2.36		54					
1.18		49					
0.600		46					
0.425		43					
0.300		40					
0.150		32					
0.075		26					
				Test Result	Specification Minimum (%)	Result	Specification Maximum (%)
				Liquid Limit (%)		22	
				Plastic Limit (%)		17	
				Plastic Index (%)		5	
				Linear Shrinkage (%)		2.5	
				0.075/0.425 Fines Ratio		0.60	
				PI x 0.425 Ratio (%)		216.3	
				LS x 0.425 Ratio (%)		108.2	
				Linear Shrinkage Defects	N/A		

Remarks

Accredited for compliance with ISO/IEC 17025 – Testing			
Accreditation Number:	1986		
Corporate Site Number:	21791		
		Approved Signatory: Eoin O'Brien Form ID: W85LRep Rev1	

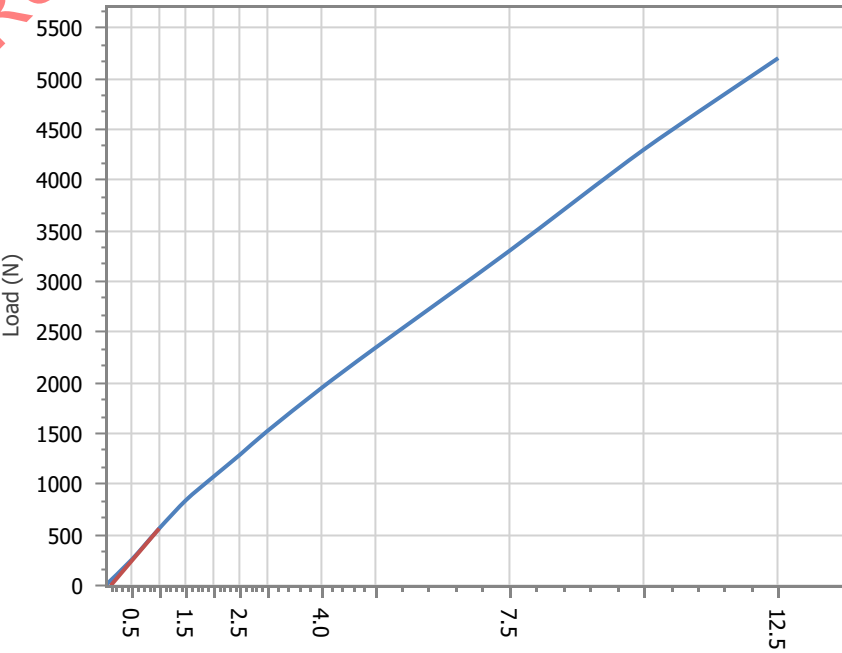
CALIFORNIA BEARING RATIO REPORT

Client:	Ostojic Group PTY LTD	Report Number:	21791/R/59359-1
Client Address:	Lot 4723 Tivendale Road, Berrimah	Project Number:	21791/P/1124
Project:	OST2209-Zuccoli Stage 3D & POS3	Lot Number:	OST-2209-EWK-08
Location:	NT	Internal Test Request:	21791/T/25162
Component:	Field Density Testing	Client Reference/s:	TR2
Area Description:	Zuccoli	Report Date / Page:	16/02/2023

Page 1 of 1

Test Procedures	AS1289.6.1.1, AS1289.5.2.1, AS1289.2.1.1		
Sample Number	21791/S/136702	Ch:	35
Sampling Method	AS1289.1.2.1 CI 6.4b	O/S	8.2
Date Sampled	8/02/2023	R.L	
Sampled By	Eoin O'Brien	Other Reference	
Date Tested	15/02/2023	Prep Material > 53mm (%)	1
Material Source	Client	Material Limit Start	-
Material Type	General Fill	Material Limit End	-
Client Reference	-	Compactive Effort	Modified

Material Description	Clayley Gravel
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Maximum Dry Density (t/m³):	2.10	<div> CBR PENETRATION PLOT  </div>
Optimum Moisture Content (%):	10.0	
Field Moisture Content (%):	11.1	
Sample Percent Oversize (%):	19.0	
Oversize Included / Excluded	Excluded	
Target Density Ratio (%):	95	
Target Moisture Ratio (%):	100	
Placement Dry Density (t/m³):	1.99	
Placement Dry Density Ratio (%):	95.0	
Placement Moisture Content (%):	10.1	
Placement Moisture Ratio (%):	100.0	
Test Condition / Soaking Period:	Soaked / 4 Days	
CBR Surcharge (kg)	4.5	
Dry Density After Soak (t/m³):	1.98	
Total Curing Time (hrs)	24	
Liquid Limit Method	Estimation	
Moisture (top 30mm) After Soak (%)	12.7	
Moisture (remainder) After Soak (%)	12.9	
CBR Swell (%):	0.5	
Minimum CBR Specification (%):	-	
CBR Value @ 5.0mm (%):	12	

Remarks

Accredited for compliance with ISO/IEC 17025 – Testing


 Accreditation Number: 1986
 Corporate Site Number: 21791



 Approved Signatory: Tejinder Singh Thandi
 Form ID: W2ASRep Rev 3

Material Test Report

Report Number: D23526-15
Issue Number: 1
Date Issued: 15/05/2023
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0020
Work Request: 6494
Date Sampled: 09/05/2023 14:00
Dates Tested: 09/05/2023 - 11/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_05 CH 60.0m - CH 190.0m - Lift 2
Lot Number: OST2209_EWK_05
Material: General Fill

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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo
 Darwin Laboratory Branch Leader
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6494A	D23-6494B	D23-6494C
Date Tested	09/05/2023	09/05/2023	09/05/2023
Time Tested	14:28	14:35	14:52
Test Request #/Location	TR 0020 CH 60.0m - CH 190.0m	TR 0020 CH 60.0m - CH 190.0m	TR 0020 CH 60.0m - CH 190.0m
Easting	3609.440m	3578.091m	3563.585m
Northing	**	**	**
Elevation (m)	19.464m	18.286m	19.054m
Layer / Reduced Level	Lift 2	Lift 2	Lift 2
Thickness of Layer (mm)	150	150	150
Soil Description	General Fill	General Fill	General Fill
Test Depth (mm)	150	150	150
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	4	4	5
Oversize (dry basis) %	4	4	5
Curing Hours	3.7	22.8	23.8
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.23	2.20	2.21
Field Moisture Content %	7.1	8.9	7.6
Field Dry Density t/m ³	2.08	2.02	2.06
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.17	2.16	2.20
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.0	7.5	7.0
Moisture Variation %	-0.5	-1.5	-0.5
Moisture Ratio %	105.5	121.0	107.0
Density Ratio %	96.0	93.5	93.5
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D23526-18
Issue Number: 1
Date Issued: 15/05/2023
Client: Ostojic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0019
Work Request: 6493
Date Sampled: 05/05/2023 14:00
Dates Tested: 05/05/2023 - 11/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_05 CH 60.0m - CH 190.0m - Lift 1
Lot Number: OST2209_EWK_05
Material: General Fill

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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Aldrin Bravo
 Darwin Laboratory Branch Leader
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6493A	D23-6493B	D23-6493C
Date Tested	05/05/2023	05/05/2023	05/05/2023
Time Tested	13:14	13:20	13:21
Test Request #/Location	TR 0019 CH 60.0m - CH 190.0m	TR 0019 CH 60.0m - CH 190.0m	TR 0019 CH 60.0m - CH 190.0m
Chainage (m)	6	49	70
Location Offset (m)	25.83 from LEL	19.84 from LEL	22.05 from LEL
Layer / Reduced Level	Lift 1	Lift 1	Lift 1
Soil Description	General Fill	General Fill	General Fill
Test Depth (mm)	150	150	150
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	6	6	5
Oversize (dry basis) %	6	7	5
Curing Hours	3.8	4.6	24.6
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.22	2.22	2.26
Field Moisture Content %	9.3	9.4	9.0
Field Dry Density t/m ³	2.03	2.02	2.07
Maximum Dry Density t/m ³	**	**	**
Adjusted Maximum Dry Density t/m ³	2.16	2.16	2.18
Optimum Moisture Content (OMC) %	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.0	7.0	7.5
Moisture Variation %	-2.5	-2.5	-1.5
Moisture Ratio %	137.5	137.0	118.5
Density Ratio %	94.0	94.0	95.0
Compaction Method	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D23526-24
Issue Number: 1
Date Issued: 22/05/2023
Client: Ostoic Group Pty Ltd
 PO Box 38915, WINNELLIE NT 0821
Contact: Tanver Ahmed
Project Number: D23526
Project Name: OST2209 Zuccoli 3D
Project Location: Zuccoli 3D
Client Reference: TR 0026
Work Request: 6508
Date Sampled: 12/05/2023 11:30
Dates Tested: 12/05/2023 - 18/05/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Location: Lot OST2209_EWK_05 - Earthworks - Lift 3
Lot Number: OST2209_EWK_05
Material: General Fill

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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Nicholous DeBeer
 Darwin Testing Co-ordinator
 NATA Accredited Laboratory Number: 13121

Compaction Control AS 1289 5.2.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	D23-6508A	D23-6508B	D23-6508C	D23-6508D
Date Tested	12/05/2023	12/05/2023	12/05/2023	12/05/2023
Time Tested	10:48	10:56	11:05	11:16
Test Request #/Location	TR 0026 Lot OST2209_EWK_05	TR 0026 Lot OST2209_EWK_05	TR 0026 Lot OST2209_EWK_05	TR 0026 Lot OST2209_EWK_05
Easting	3600.290m	3567.720m	3524.744m	3576.179m
Northing	1703.205m	1738.240m	1749.093m	1690.542m
Elevation (m)	19.171m	18.345m	18.525m	19.540m
Layer / Reduced Level	Lift 3	Lift 3	Lift 3	Lift 3
Thickness of Layer (mm)	250	250	250	250
Soil Description	General Fill	General Fill	General Fill	General Fill
Test Depth (mm)	250	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0	19.0
Oversize (wet basis) %	16	18	9	9
Oversize (dry basis) %	16	18	10	9
Curing Hours	23.2	24.4	23.9	22.0
Method used to Determine Plasticity	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment	Visual/Tactile Assessment
Field Wet Density t/m ³	2.25	2.23	2.33	2.35
Field Moisture Content %	8.9	7.3	7.4	7.8
Field Dry Density t/m ³	2.07	2.08	2.17	2.18
Maximum Dry Density t/m ³	**	**	**	**
Adjusted Maximum Dry Density t/m ³	2.16	2.09	2.19	2.19
Optimum Moisture Content (OMC) %	**	**	**	**
Adjusted Optimum Moisture Content (OMC) %	7.0	5.5	6.5	7.0
Moisture Variation %	-2.0	-1.5	-1.0	-1.0
Moisture Ratio %	128.5	128.5	113.0	112.0
Density Ratio %	95.5	99.5	99.5	99.5
Compaction Method	Modified	Modified	Modified	Modified

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC