

January 27th, 2020

Ms. Claudia Mibelli,
Structures Section,
Ministry of Public Works,
3rd Floor, 56 Church Street,
Hamilton HM12,
Bermuda

Via Email: cmibelli@gov.bm

Geotechnical Investigation Prospect Communication Tower, Pembroke

Dear Claudia,

On 27th January 2020 Brunel Ltd undertook a geotechnical investigation at the site of the proposed communications tower, Pembroke. The investigation comprised three trial holes excavated to 10 feet in depth to determine the soil profile and ground information required for design of the proposed tower foundations. Please refer to attached drawing GE.01 for test pit locations and logs.

Trial Hole #1

Trial Hole 1 was excavated to the western edge of the proposed site. The surface ground level is approximately 203 ft AOD.

The soil comprised a 18" layer of topsoil overlying poorly compacted general fill material. The general fill was a well graded non cohesive granular material with particle size from approximately 12" down to a fine sand.

At a depth of 5'-0" a PVC pipe was encountered which is believed to be a well water supply to the mechanical building on the periphery of the site. Clean graded sand was imported to bed around the water pipe when the trial hole was backfilled.

At a depth of 6'-0" a second layer of topsoil was encountered, this is possibly the original ground level correlating fairly with likely building footing levels to the south and west of the site. This topsoil gave way to a further narrow band of fractured calcarenite limestone overlying a consistent weak calcarenite limestone at 7'-0" depth.

Excavation was continued to 10'-0" to prove the consistency of the limestone. The limestone was cut cleanly with the excavator bucket and fractured when removed but was generally sound in situ.

Trial Hole #2

Trial Hole 2 was excavated to the eastern edge of the proposed site the ground level is approximately 205.5 ft AOD.

The soil comprised a 9" layer of topsoil overlying poorly compacted general fill material. The general fill was a well graded non cohesive granular material with particle size from approximately 12" down to a fine sand.

At a depth of 8'-6" a second layer of topsoil was encountered. This is possibly the original ground level. This topsoil gave way to a further narrow band of weak rock overlying a consistent weak calcarenite limestone at 9'-0" depth.

Excavation was continued to 11'-0" to prove the consistency of the limestone. The limestone was cut cleanly with the excavator bucket and fractured when removed but was generally sound in situ.

Trial Hole # 3

Trial Hole 3 was excavated to the northern edge of the proposed site the ground level is approximately 203.5 ft AOD.

The soil comprised a 9" layer of topsoil overlying poorly compacted general fill material adjacent to an asphalt track. The general fill was a well graded non cohesive granular material with particle size from approximately 12" down to a fine sand.

At a depth of 3'-6" a second layer of topsoil was encountered, this is possibly the original ground level. This topsoil gave way to a further narrow band of weak calcarenite limestone overlying a consistent calcarenite limestone at 4'-0" depth.

Excavation was continued to 8'-0" to prove the consistency of the limestone. The limestone was cut cleanly with the excavator bucket and fractured when removed but was generally sound in situ.

Summary

The site appears to comprise well graded granular general fill material, placed directly on the original ground. The original profile is that of an approximately 6" thick layer of topsoil over a consistent weak calcarenite limestone.

The Bermuda Geological Map indicates that this area of Bermuda has the Rocky Bay Formation as the primary geological founding material which is a lightly cemented aeolianite limestone rock which matches well with the material excavated.

This material was observed as a weak to very weak limestone which is poorly cemented and fractured easily when excavated.

We would recommend that a value of 4000 lb/ft² or 200 kN/m² allowable bearing capacity is adopted for the design of the communications tower foundations.

If you have any questions, please feel free to call our office at 297-6191.

Sincerely,

A handwritten signature in blue ink, appearing to read 'R. Crossley', written in a cursive style.

Richard Crossley, P. Eng., C.Eng., PMP,
for BRUNEL Ltd.

Copy: Mike Kirkos

Photographs



Trial Hole #1



Trial Hole #1



Trial Hole #1 – Rock Level



Trial Hole #1 – Excavation to prove rock



Trial Hole #1 - Arisings



Trial Hole #2 – General fill material



Trial Hole #2 – Arisings



Trial Hole #2 – General Fill



Trial Hole #2 – Rock level



Trial Hole #2 – General fill down to rock



Trial Hole #2 – Excavation to prove rock



Trial Hole #3 – Rock level



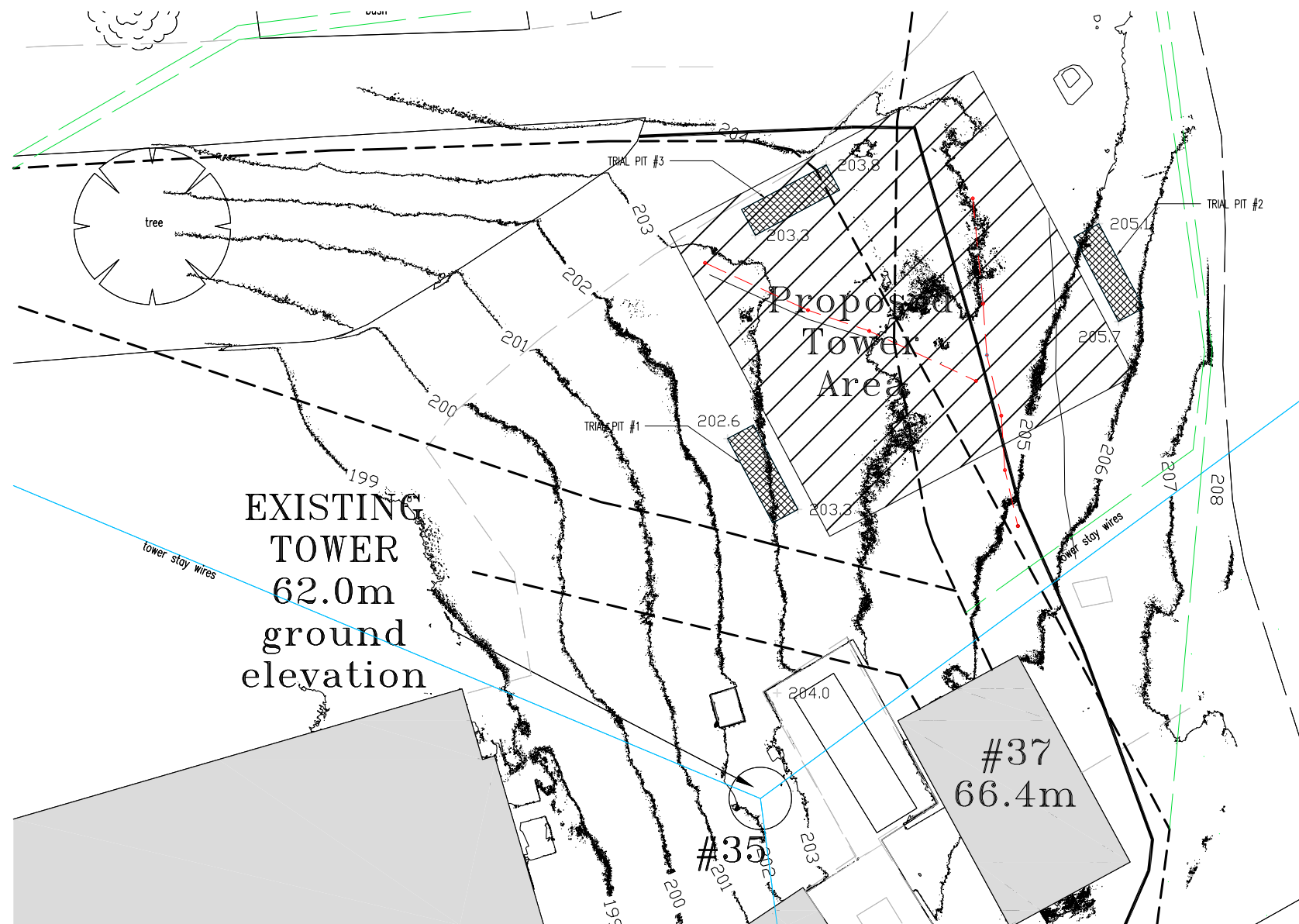
Trial Hole #3 – Topsoil and general fill



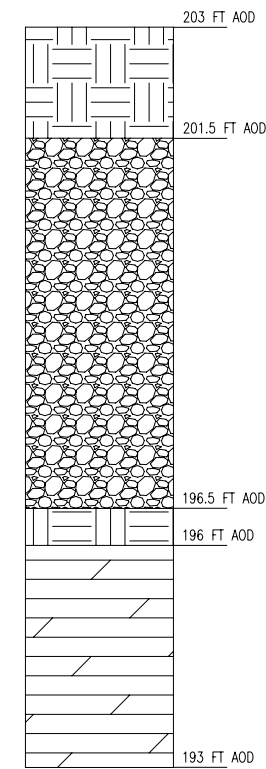
Trial Hole #3 – General Fill



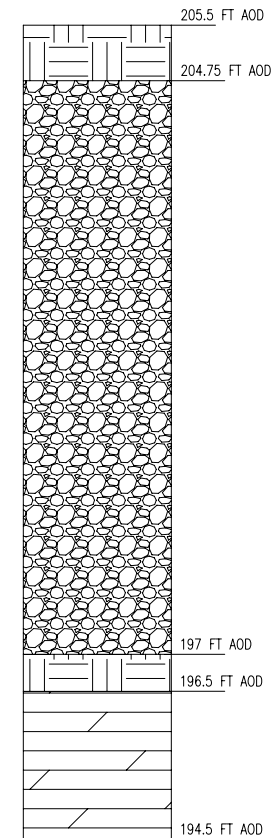
Trial Hole #3 – Excavation to prove rock



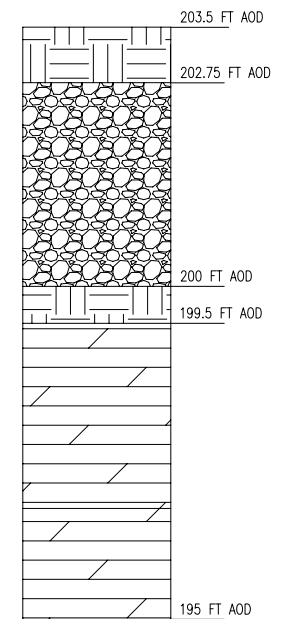
01 TRIAL PIT LOCATIONS
SCALE: 1/8" = 1'-0"



02 TRIAL PIT #1
SCALE: 3/4" = 1'-0"



03 TRIAL PIT #2
SCALE: 3/4" = 1'-0"



04 TRIAL PIT #3
SCALE: 3/4" = 1'-0"

LEGEND	
	TOPSOIL
	FILL
	CALCARENITE LIMESTONE

RC	-	ISSUED FOR REPORT
DATE	NO:	REVISION
 <small>t: 441.297.6191 • info@brunel.bm • www.brunel.bm</small>		
PROJECT: PROSPECT TELECOMMUNICATION TOWER REPLACEMENT		
TITLE: GEOTECHNICAL SURVEY TRIAL PITS		
SCALE:	AS SHOWN	JOB NO: 19-103
DRAWN BY:	RC	DRAWING #: GE.01
DATE:	DECEMBER 2019	
DRAWING SCALE SHOWN IS FOR FULL-SIZE DRAWINGS. DRAWINGS PLOTTED ON 11"x17" SHEETS ARE HALF SCALE SHOWN (1/4"=1'-0" ON 24"x36" SHEET = 1/8"=1'-0" ON 11"x17" SHEET)		