

APPENDIX 'A'

GEOTECHNICAL REPORT

**GEOTECHNICAL STREET TESTING PROGRAM
WINGHAM AVE. / BAYFIELD AVE. ALLEY
POPLARWOOD AVE. / BERRYDALE AVE. ALLEY
FERNWOOD AVE. / LENNOX AVE. ALLEY
STRANMILLIS AVE. / IMPERIAL AVE. ALLEY
KITSON ST. / HANBURY ST. ALLEY
WINNIPEG, MANITOBA**

Prepared for:

**City of Winnipeg
Public Works Department**

**Project No: 151 13889 00
May 24, 2016**



**WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB R3T 6B8
Phone: (204) 477-6650~ Fax: (204) 474-2864**

www.wspgroup.com

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1.0 SUMMARY

A geotechnical investigation was conducted for the proposed back lane upgrade projects in Winnipeg, Manitoba. The purpose of this investigation was to assess the general subsurface conditions with respect to identifying the existing pavement structure and the underlying soil profile.

Five Alleys (Wingham Ave. /Bayfield Ave. Alley from Clayton Drive to St. Anne's Road, Poplarwood Ave. /Berrydale Ave. Alley from St. David Road to St. Mary's Road, Fernwood Ave. /Lennox Ave. Alley from St. Andrew Road to St. Anne's Road, Stranmillis Ave. /Imperial Ave. Alley from St. Anne's Road to Rue Des Meurons and Kitson St. /Hanbury St. Alley from Tache Ave. to Kenny St.) were drilled to at least 2.13m depth in conjunction with City of Winnipeg (COW) geotechnical investigation guideline.

The subsurface conditions under the investigated alleys are summarized in Appendix A to E consisting of a Table, Site Plan and Testhole Logs. Note that no photographs were taken since there is no asphalt or concrete layer on these alleys

2.0 INTRODUCTION

2.1 SCOPE OF WORK/ BACKGROUND

WSP Inc. was retained to undertake a soils investigation for a proposed alley reconstruction and upgrade in Winnipeg, Manitoba. The purpose of this work was to establish the soil and groundwater conditions at the sites, of which the pavement structure is identified and soil stratigraphy is profiled using the City of Winnipeg (COW) geotechnical investigation guideline. Authorization to proceed with the work was provided by City of Winnipeg.

2.2 PROPOSED ALLEY RECONSTRUCTION AND UPGRADES

The proposed alleys are from Wingham Ave. /Bayfield Ave. Alley (Clayton Drive to St. Anne's Road), Poplarwood Ave. /Berrydale Ave. Alley (St. David Road to St. Mary's Road), Fernwood Ave. /Lennox Ave. Alley (St. Andrew Road to St. Anne's Road), Stranmillis Ave. /Imperial Ave. Alley (St. Anne's Road to Rue Des Meurons) and Kitson St. /Hanbury St. Alley (Tache Ave. to Kenny St.).

3.0 FIELD METHODOLOGY

The subsoils encountered were visually classified to the full extent in the testhole and representative soil samples were recovered at regular depth intervals (every 300mm down to 2.13m). For confirmation, all of the soil samples are tested for moisture contents and selected soil samples (minimum one per street) between the depth of 0.3m and 0.9m were either submitted for Atterberg Limit test or Particle Size Analysis test (PSA). Since there is no asphalt and concrete cores present on the back alleys, no photographs were taken during our investigation. Any groundwater seepage and sloughing encountered in the testholes were noted.

4.0 FIELD TESTING

The field investigation was undertaken between April 19 and April 20, 2016. A total of 16 testholes (TH45 to TH61) were drilled down to 2.13m depth using a truck-mounted CME rig equipped with 125mm auger. All testholes were backfilled with auger cuttings/bentonite and capped with cold mix asphalt after completion of drilling. The testhole locations and ground elevations were surveyed using a GPS and are shown on the site plan, attached with the Testhole Logs for every alleys.

Detailed descriptions of the soil profiles in each testhole are shown on the attached logs

5.0 TEST RESULTS

The subsurface conditions under the investigated streets are summarized using a Table, Site Plan and Testhole Logs. The test results which include a Table, Site Plan and Testhole Logs for each alley are arranged using Appendices A to E.

6.0 CLOSURE

The findings and recommendations provided in this report were prepared by WSP Inc. (the

Consultant) in accordance with generally accepted professional engineering principles and practices. The recommendations are based on the results of field and laboratory investigations and are reflective only of the actual testhole(s) and/or excavation(s) examined.

If conditions encountered during construction appear to be different than those shown by the testhole(s) and/or excavation(s) at this site, the Consultant should be notified immediately in order that the recommendations can be reviewed and modified as necessary to address actual site conditions.

This report is limited in scope to only those items that are specifically referenced in this report. There may be existing conditions that were not recorded in this report. Such conditions were not apparent to the Consultant due to the limitations imposed by the scope of work. The Consultant, therefore, accepts no liability for any costs incurred by the Client for subsequent discovery, manifestation or rectification of such conditions.

This report is intended solely for the Client named as a general indication of the visible or reported physical condition of the items addressed in the report at the time of the geotechnical investigation. The material in this report reflects the Consultant's best judgment in light of the information available to it at the time of preparation.

This report and the information and data contained herein are to be treated as confidential and may be used only by the Client and its officers and employees in relation to the specific project that it was prepared for. Any use a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. The Consultant accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

The report has been written to be read in its entirety, do not use any part of this report as a separate entity.

All files, notes, source data, test results and master files are retained by the Consultant and remain the property of the Consultant.

Prepared by: Silvestre S. Urbano Jr., P.Eng.

Reviewed by: Scott Minty, P.Eng.



Certificate of Authorization

WSP Canada Inc.

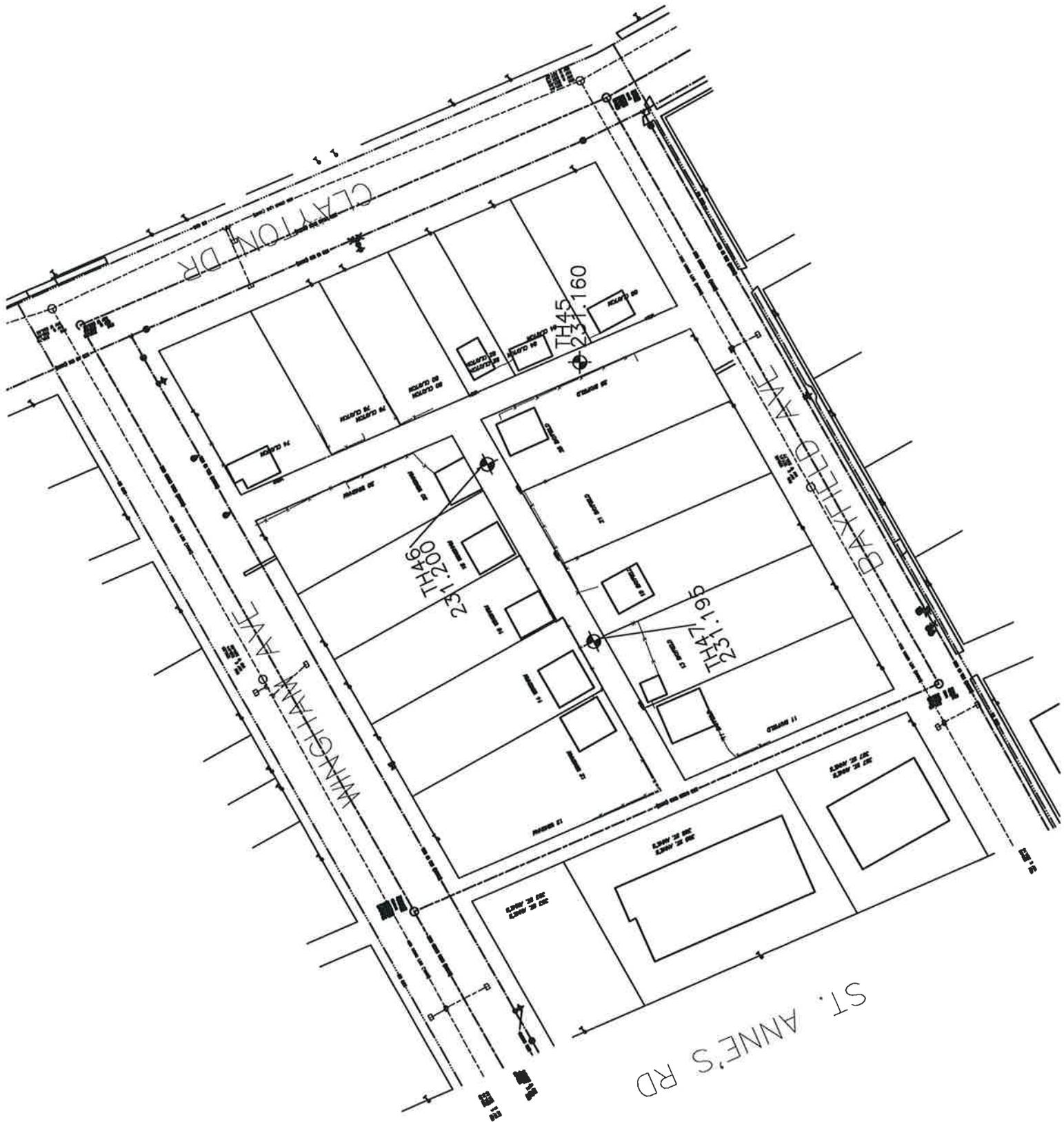
No. 5750

Date:

MAY 24, 2016

APPENDIX A

Wingham Avenue / Bayfield Avenue Alley



CLAYTON DR

WINGHAM AVE

PARKFIELD AVE

ST. ANNE'S RD

TH45
231,160

TH49
231,200

TH47
231,179

TH48

Project No: 151-13889-00

Client: City of Winnipeg

TH45

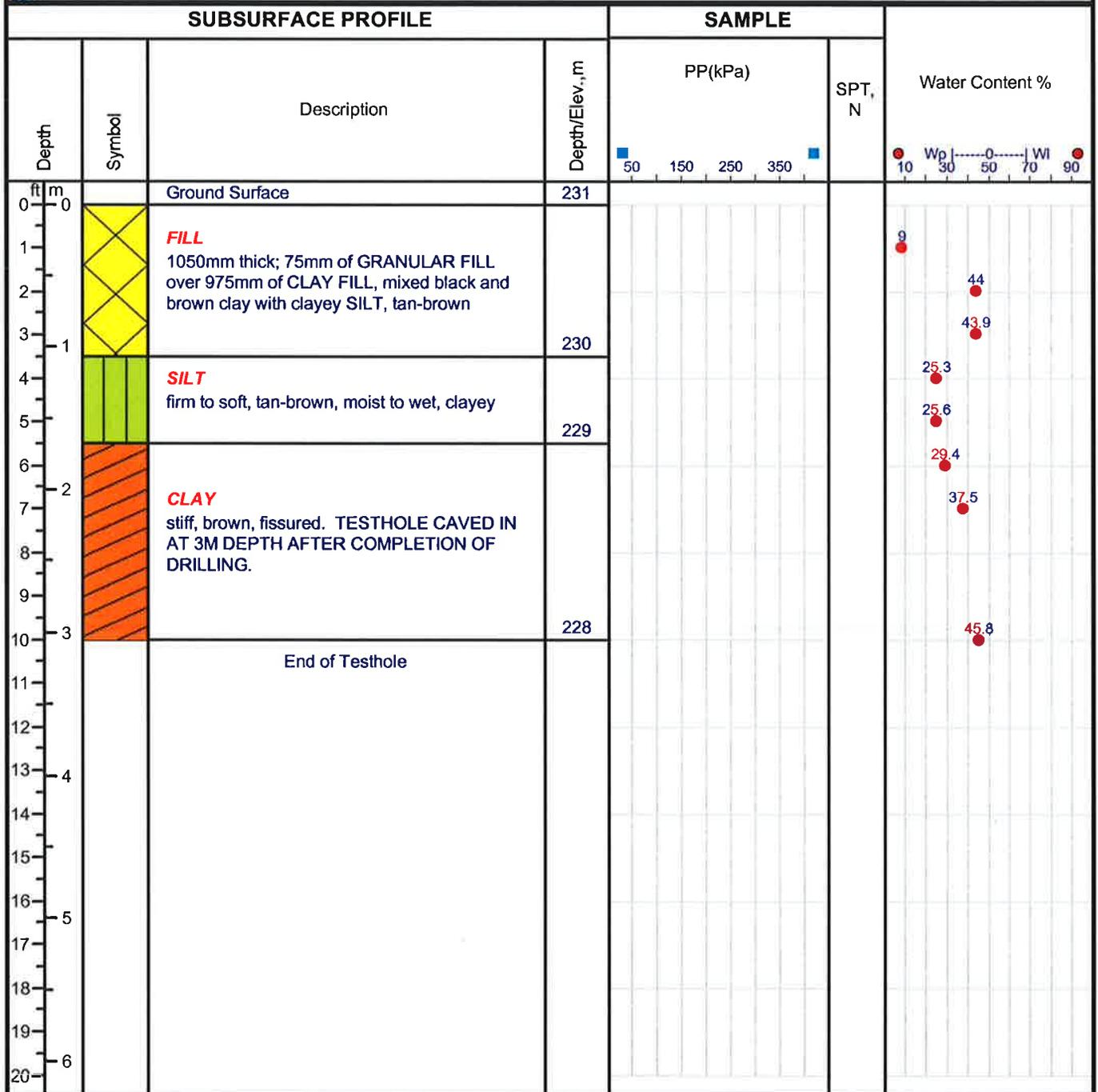
Project: Back Alley Renewal, 2016

Location: Between Wingham Ave. and Bayfield Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 231.16 m

Drill Date: 04/19/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH46

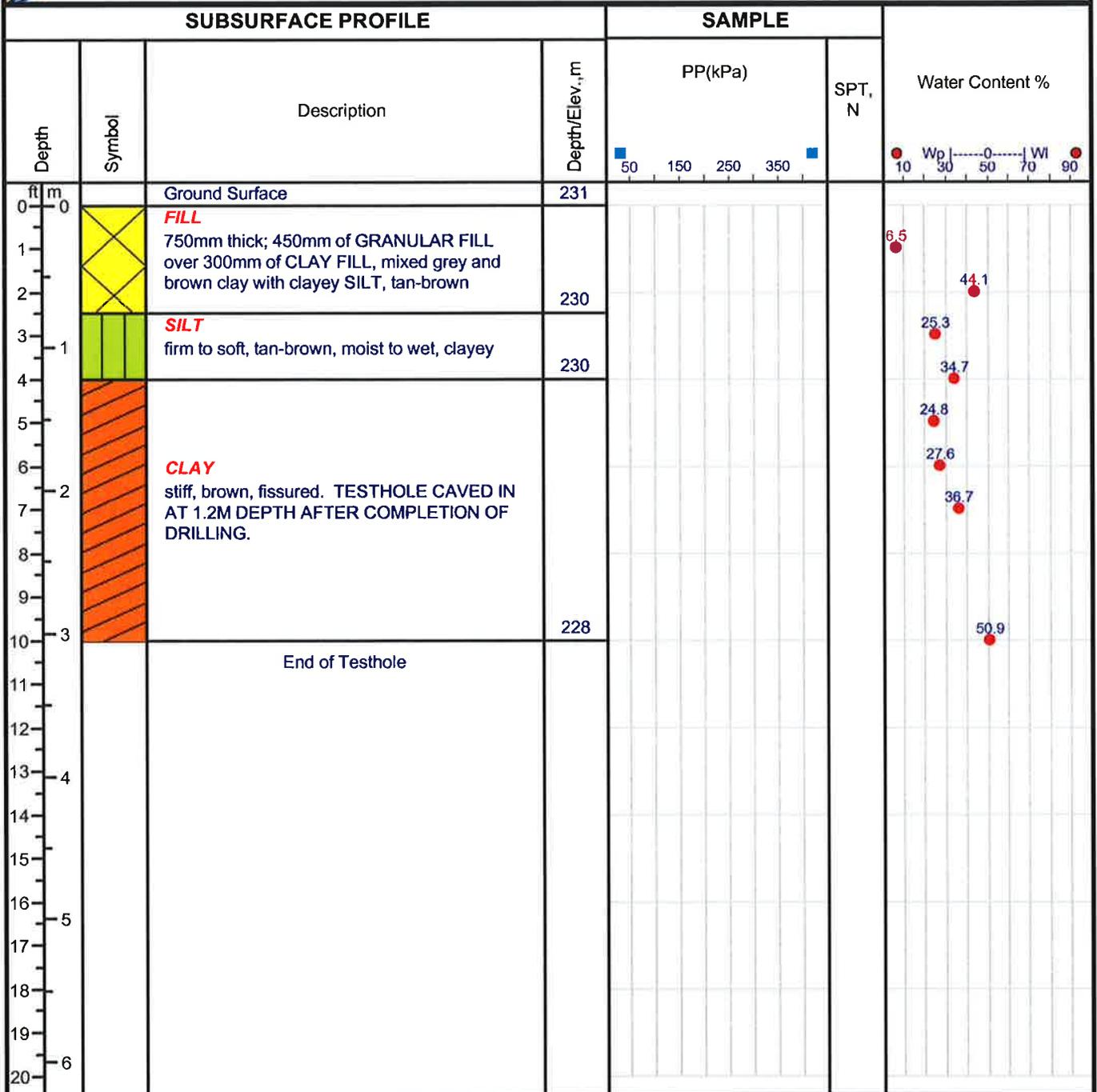
Project: Back Alley Renewal, 2016

Location: Between Wingham Ave. and Bayfield Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 231.20 m

Drill Date: 04/19/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH47

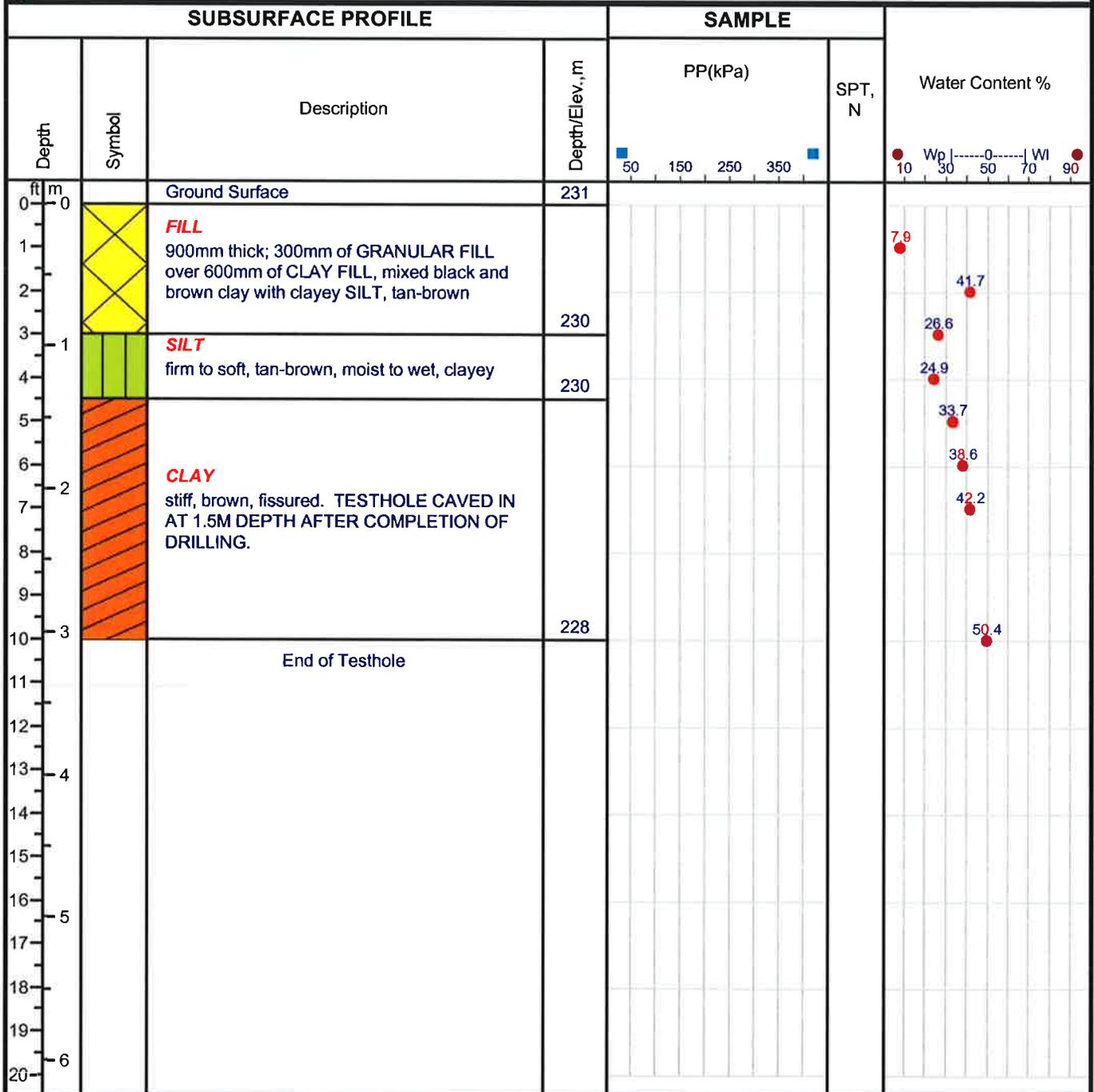
Project: Back Alley Renewal, 2016

Location: Between Wingham Ave. and Bayfield Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 231.19 m

Drill Date: 04/19/16

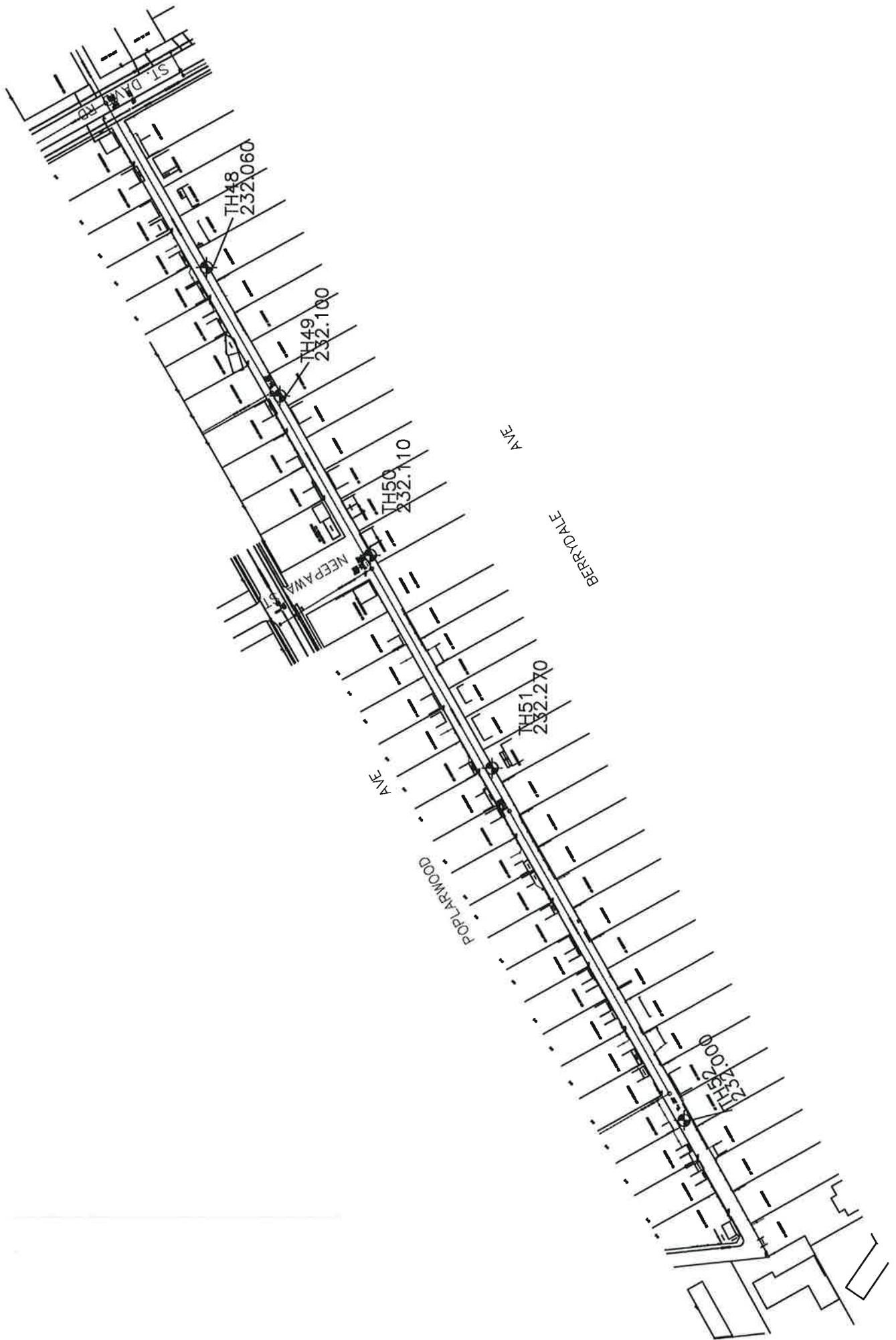
Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

APPENDIX B

Poplarwood Avenue / Berrydale Avenue Alley



Project No: 151-13889-00

Client: City of Winnipeg

TH48

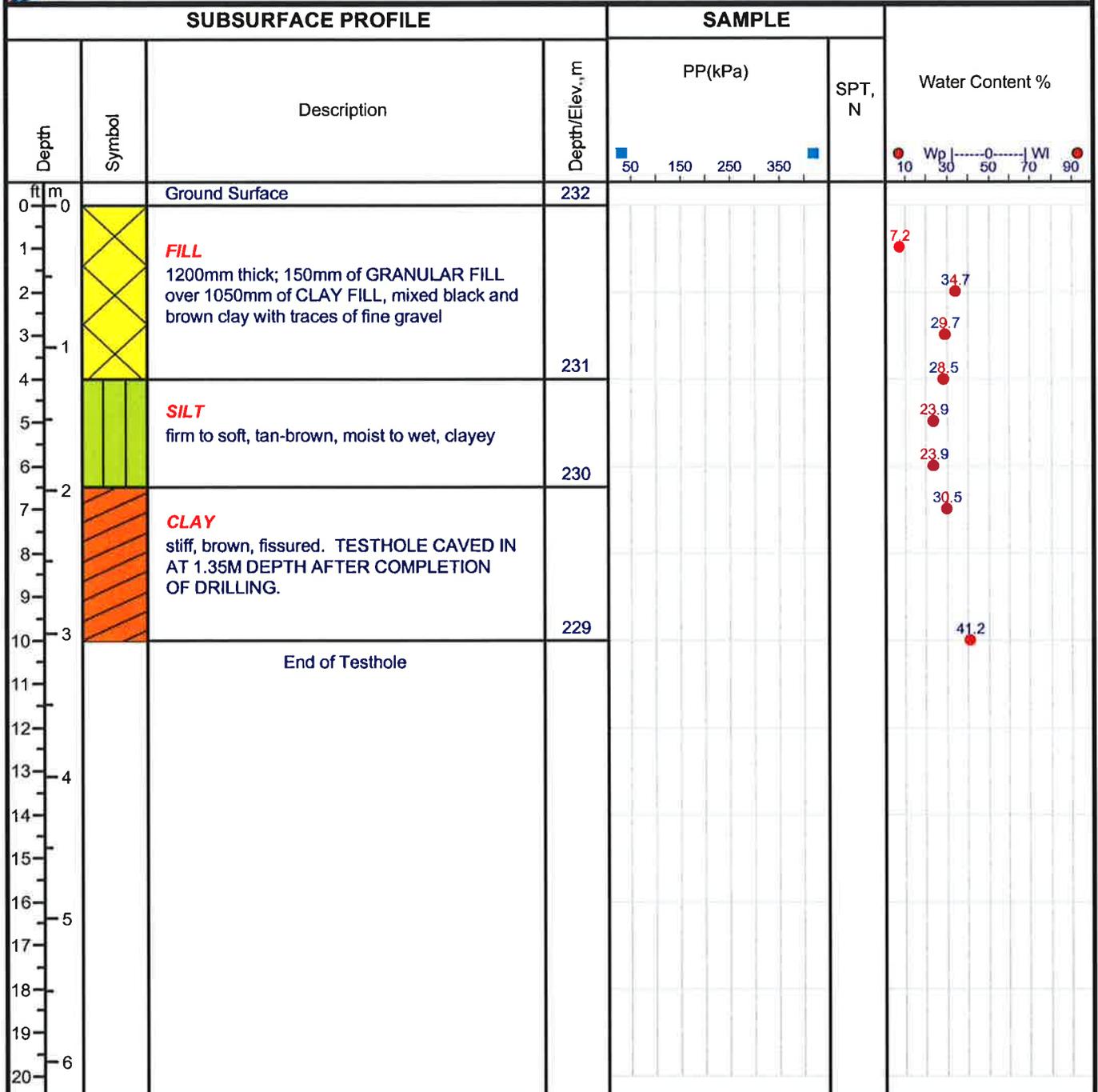
Project: Back Alley Renewal, 2016

Location: Between Poplarwood and Berrydale Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 232.06 m

Drill Date: 04/19/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH49

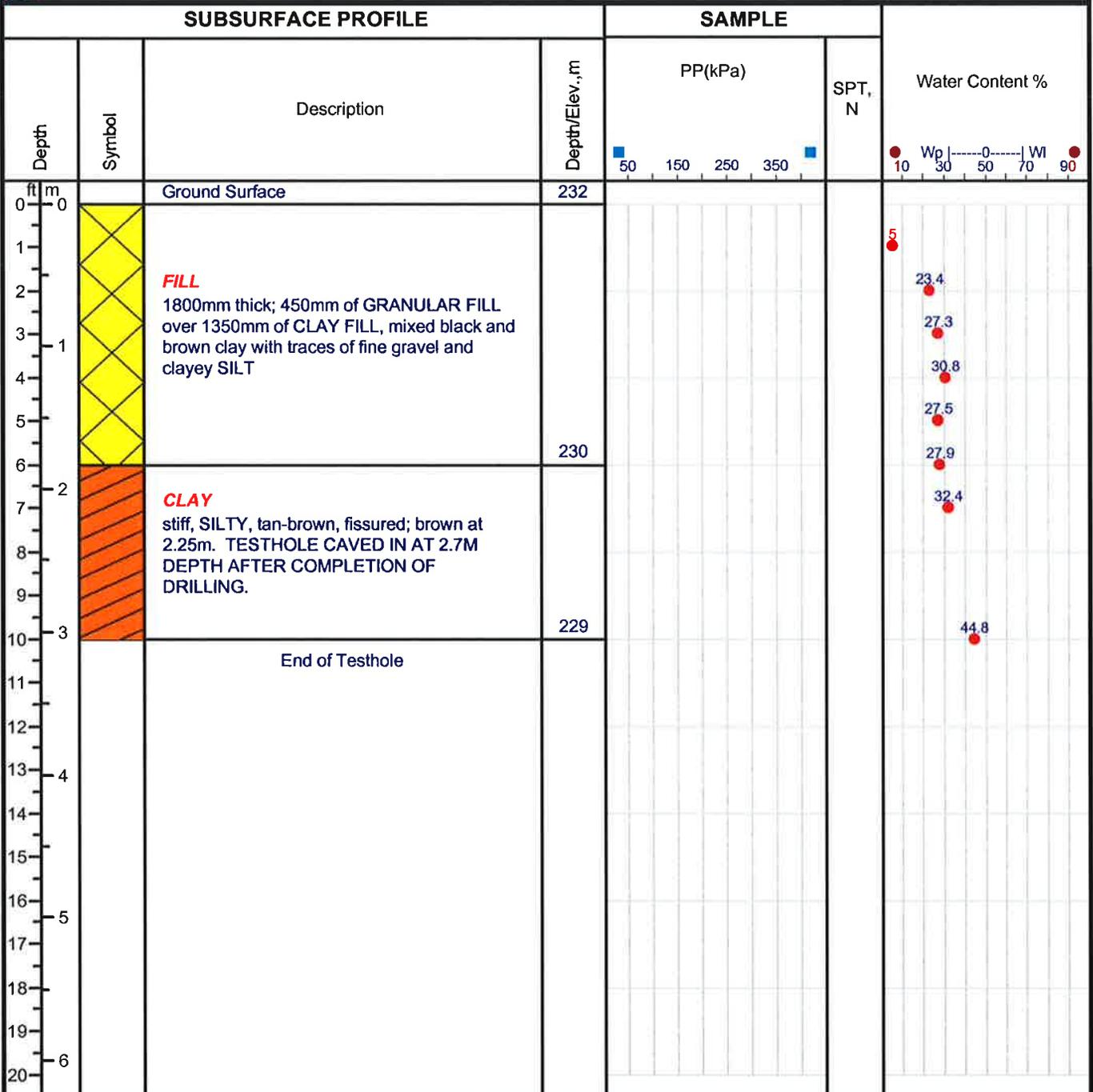
Project: Back Alley Renewal, 2016

Location: Between Poplarwood and Berrydale Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 232.10 m

Drill Date: 04/19/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH50

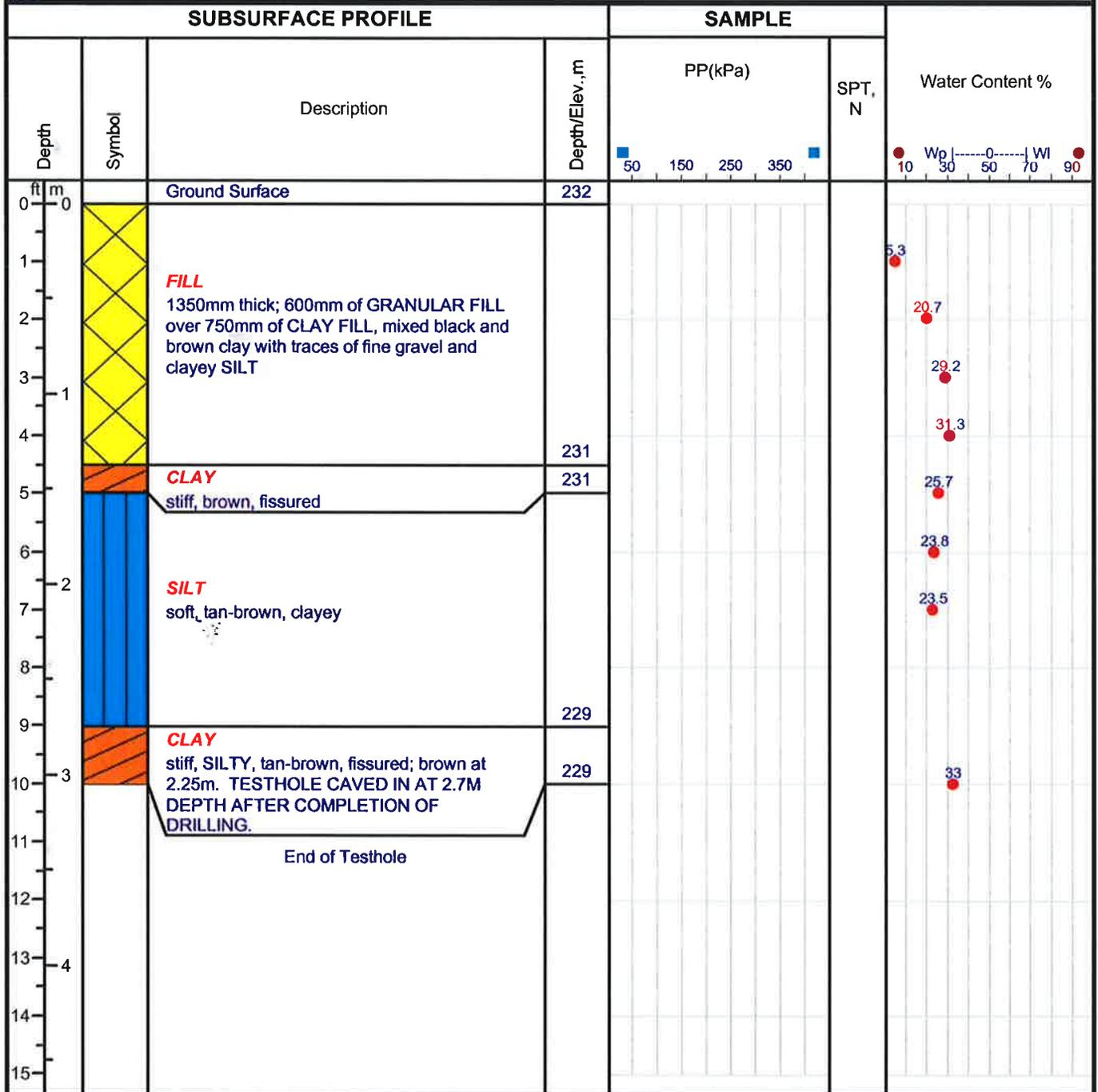
Project: Back Alley Renewal, 2016

Location: Between Poplarwood and Berrydale Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 232.11 m

Drill Date: 04/19/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH51

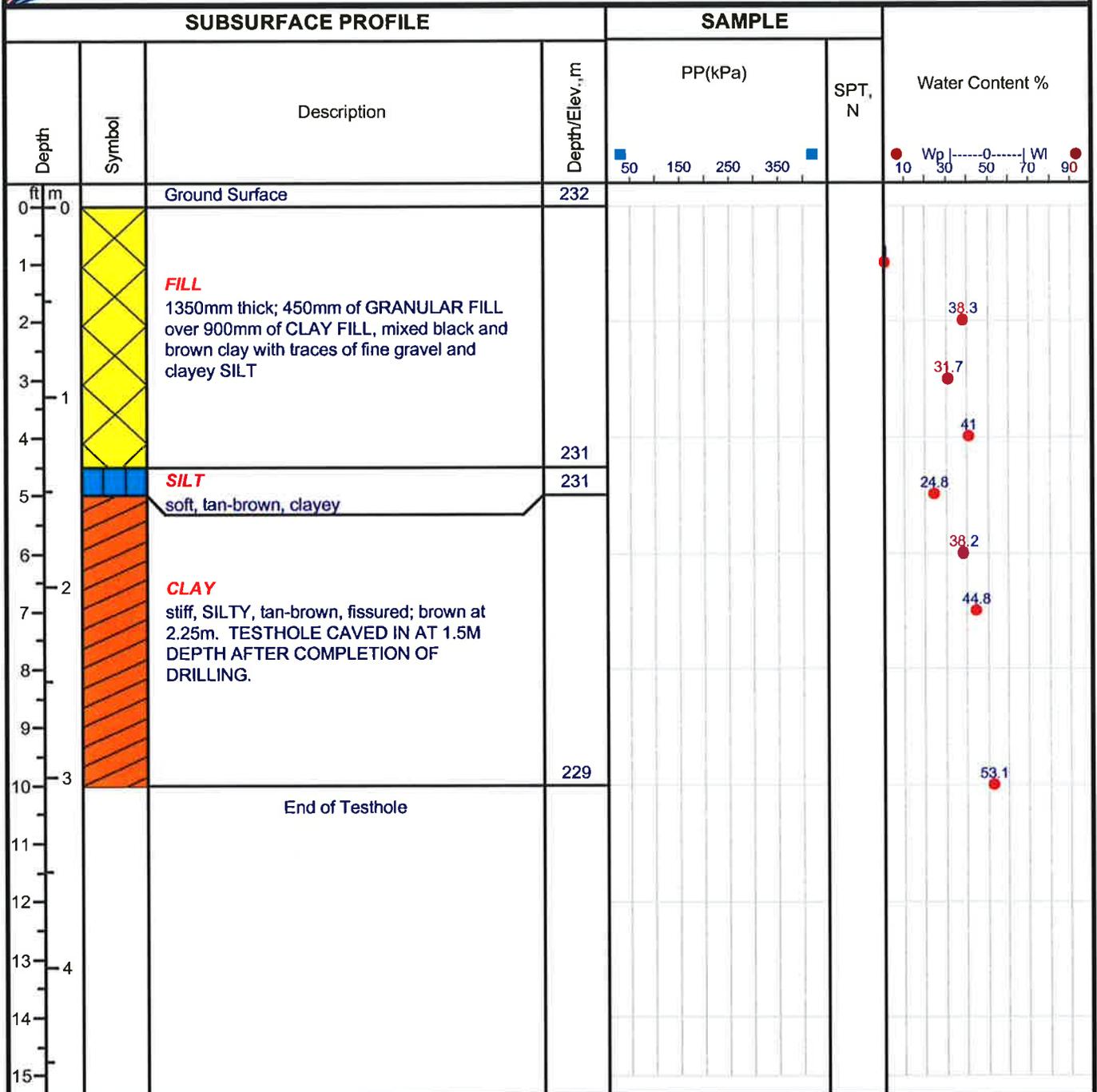
Project: Back Alley Renewal, 2016

Location: Between Poplarwood and Berrydale Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 232.27m

Drill Date: 04/19/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH52

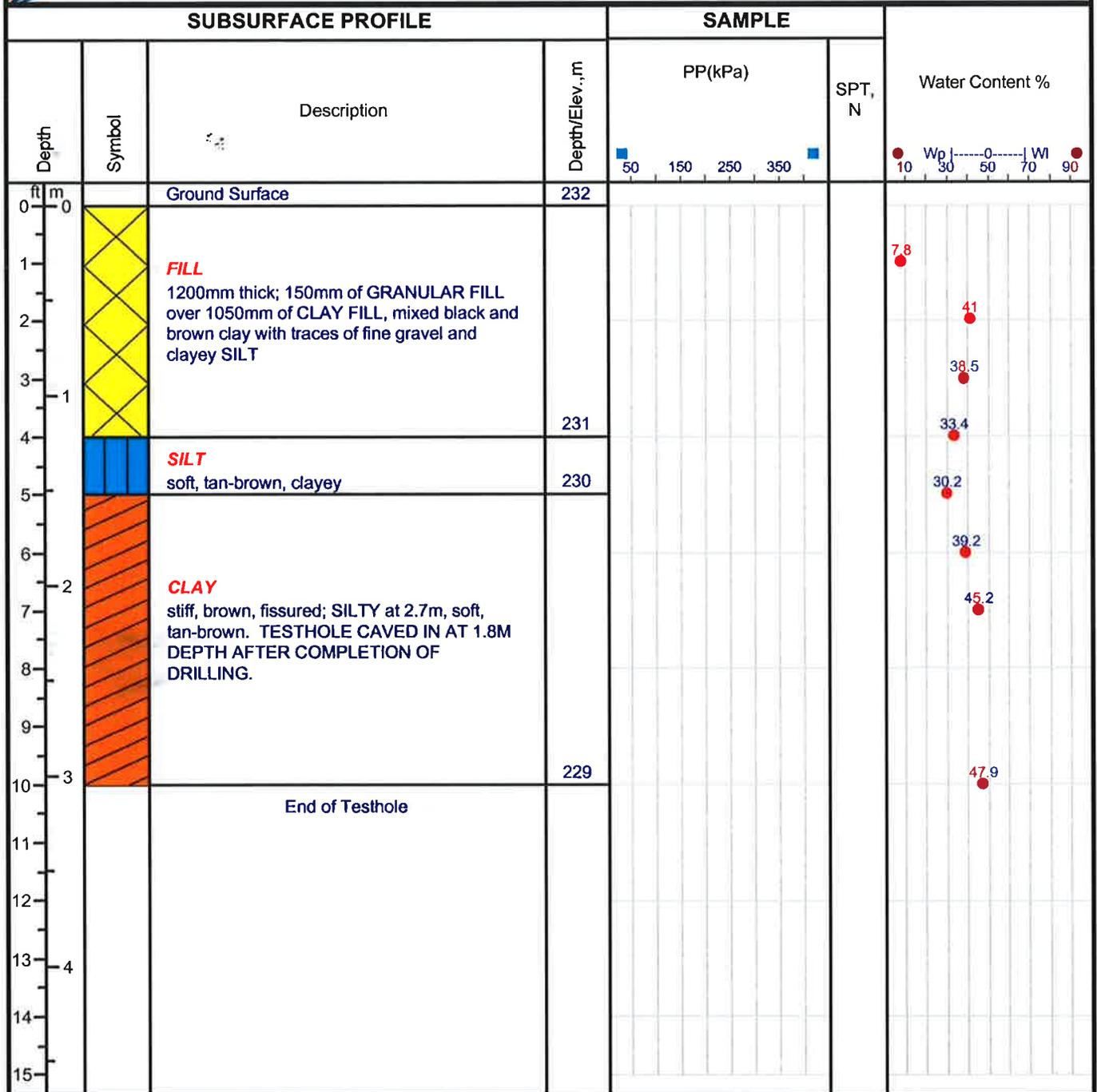
Project: Back Alley Renewal, 2016

Location: Between Poplarwood and Berrydale Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 232.00m

Drill Date: 04/19/16

Checked by: SSU

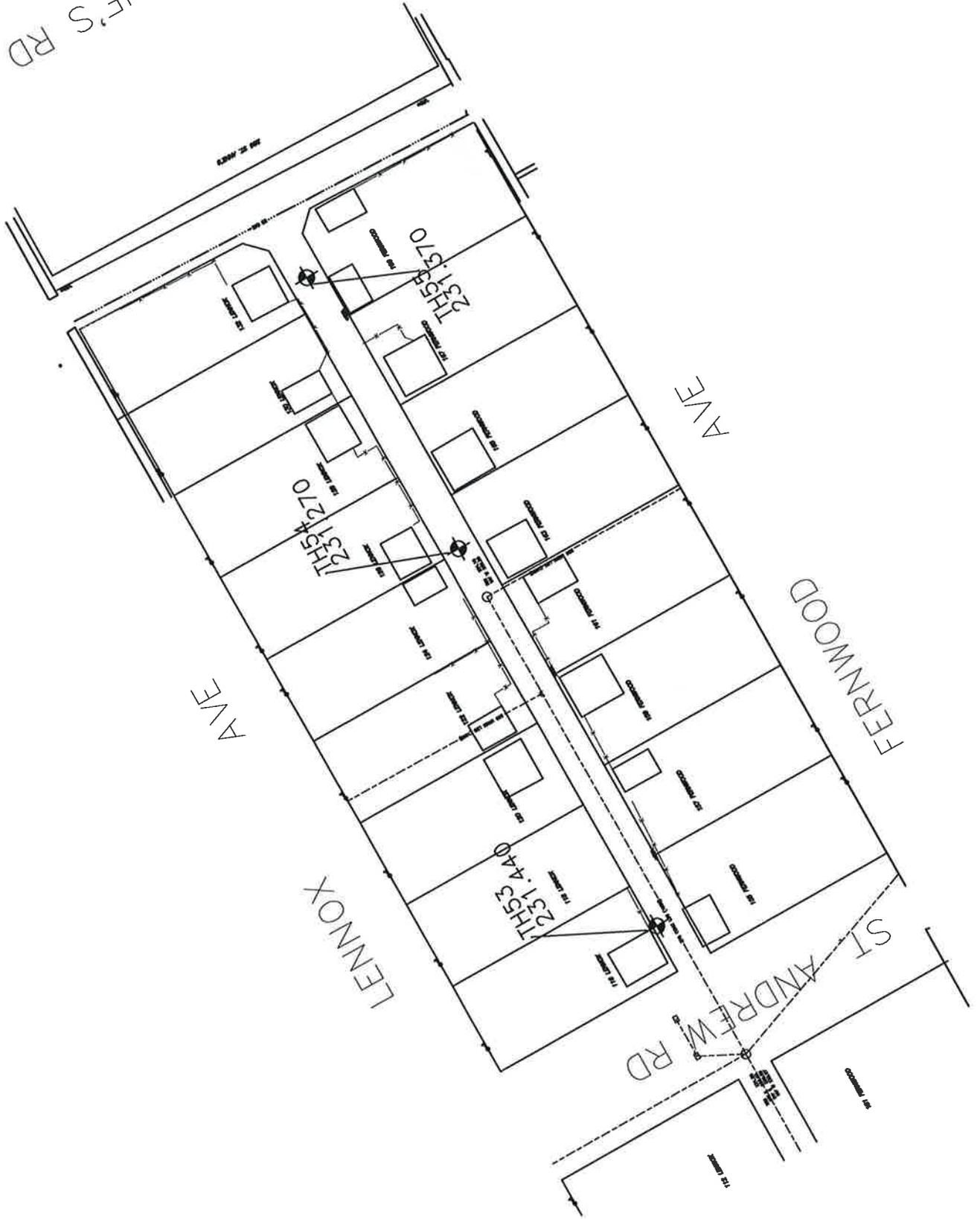
Hole Size: 125mm

Sheet: 1 of 1

APPENDIX C

Fernwood Avenue / Lennox Avenue Alley

ST. ANNE'S RD



AVE

AVE

FERNWOOD

LENNOX

ST ANDREW RD

Project No: 151-13889-00

Client: City of Winnipeg

TH53

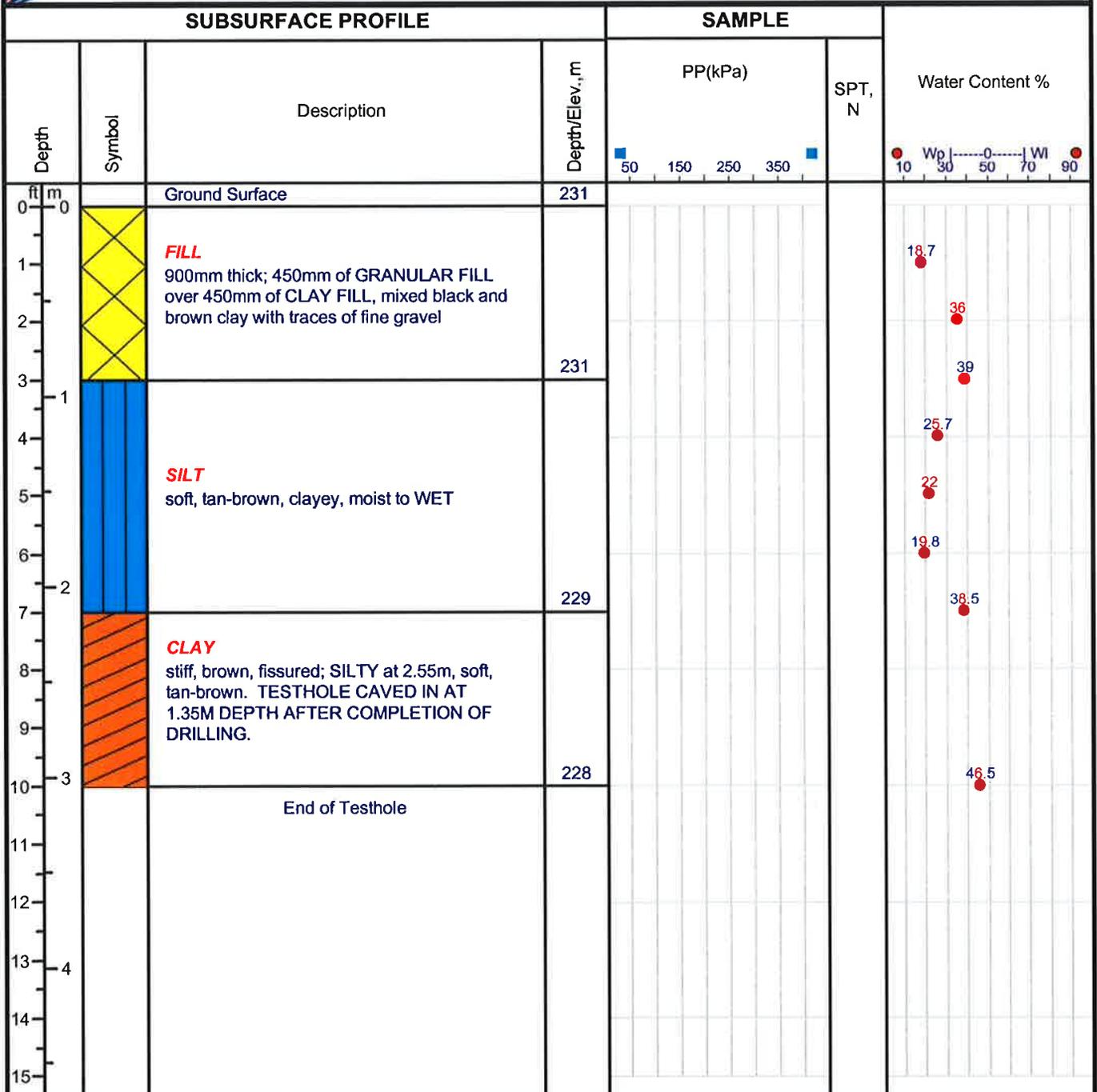
Project: Back Alley Renewal, 2016

Location: Between Fernwood and Lennox Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 231.44m

Drill Date: 04/19/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH54

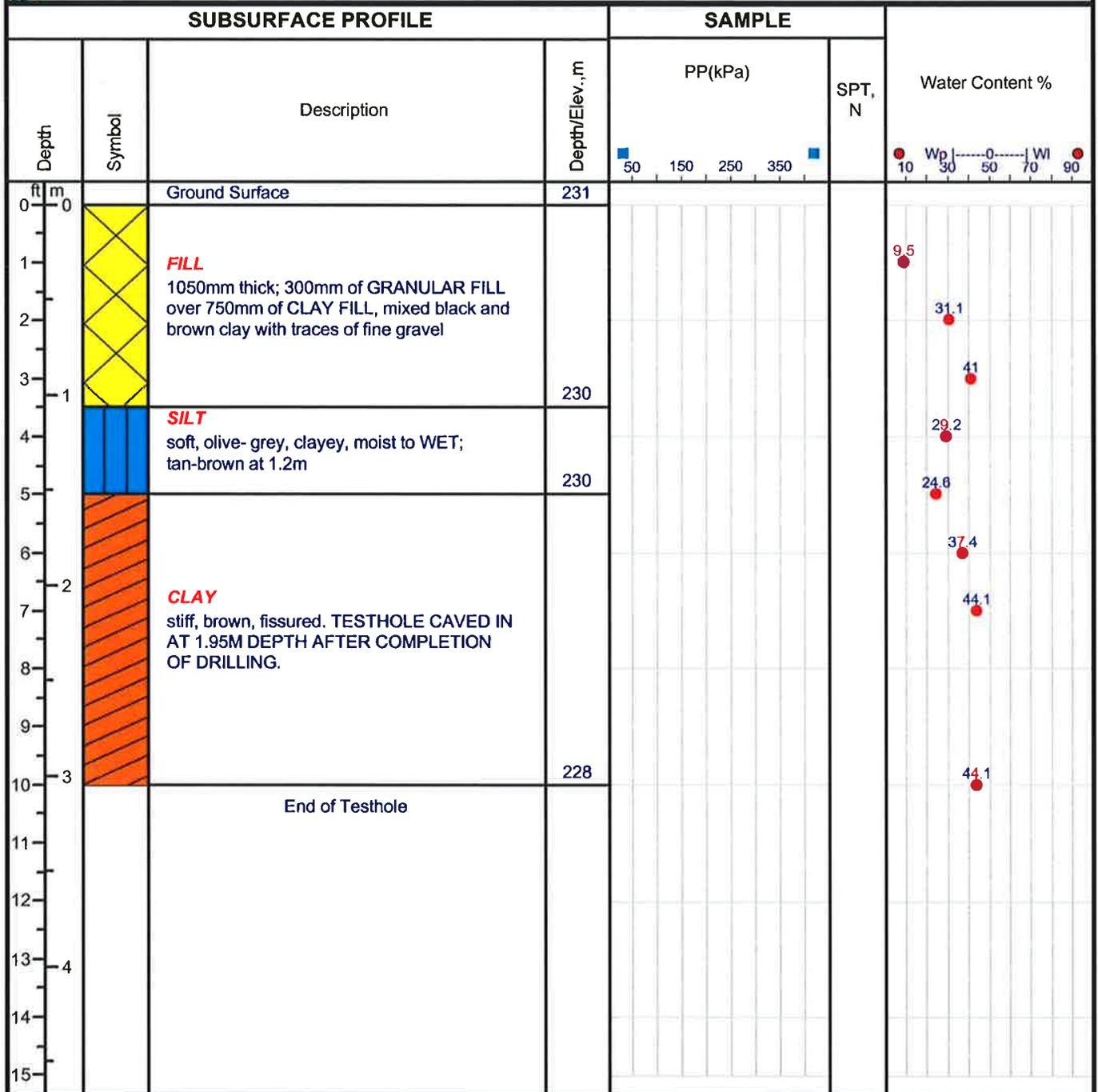
Project: Back Alley Renewal, 2016

Location: Between Fernwood and Lennox Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 231.27m

Drill Date: 04/20/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH55

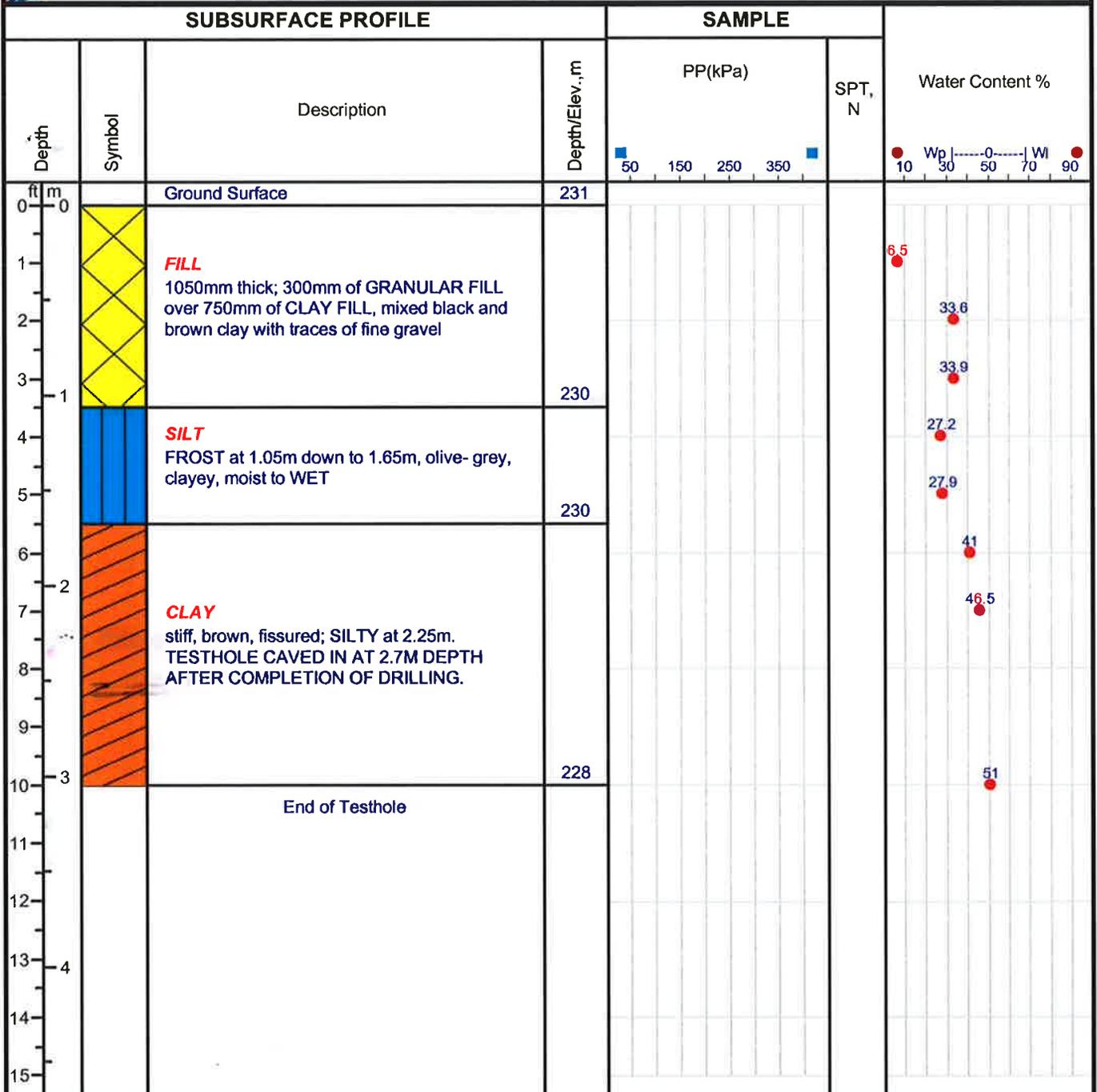
Project: Back Alley Renewal, 2016

Location: Between Fernwood and Lennox Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 231.37m

Drill Date: 04/20/16

Checked by: SSU

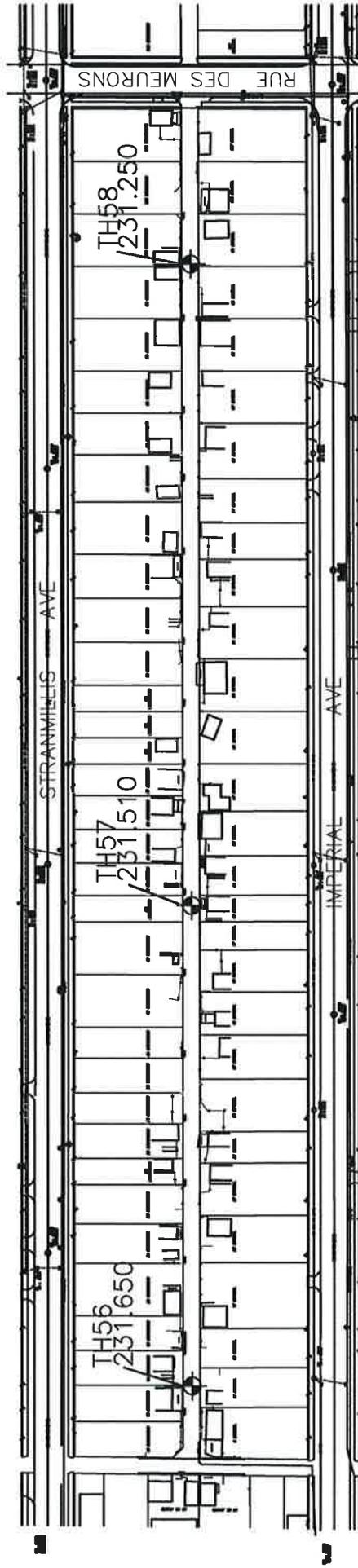
Hole Size: 125mm

Sheet: 1 of 1

APPENDIX D

Stranmillis Avenue / Imperial Avenue Alley

ST. ANNE'S ROAD



Project No: 151-13889-00

Client: City of Winnipeg

TH56

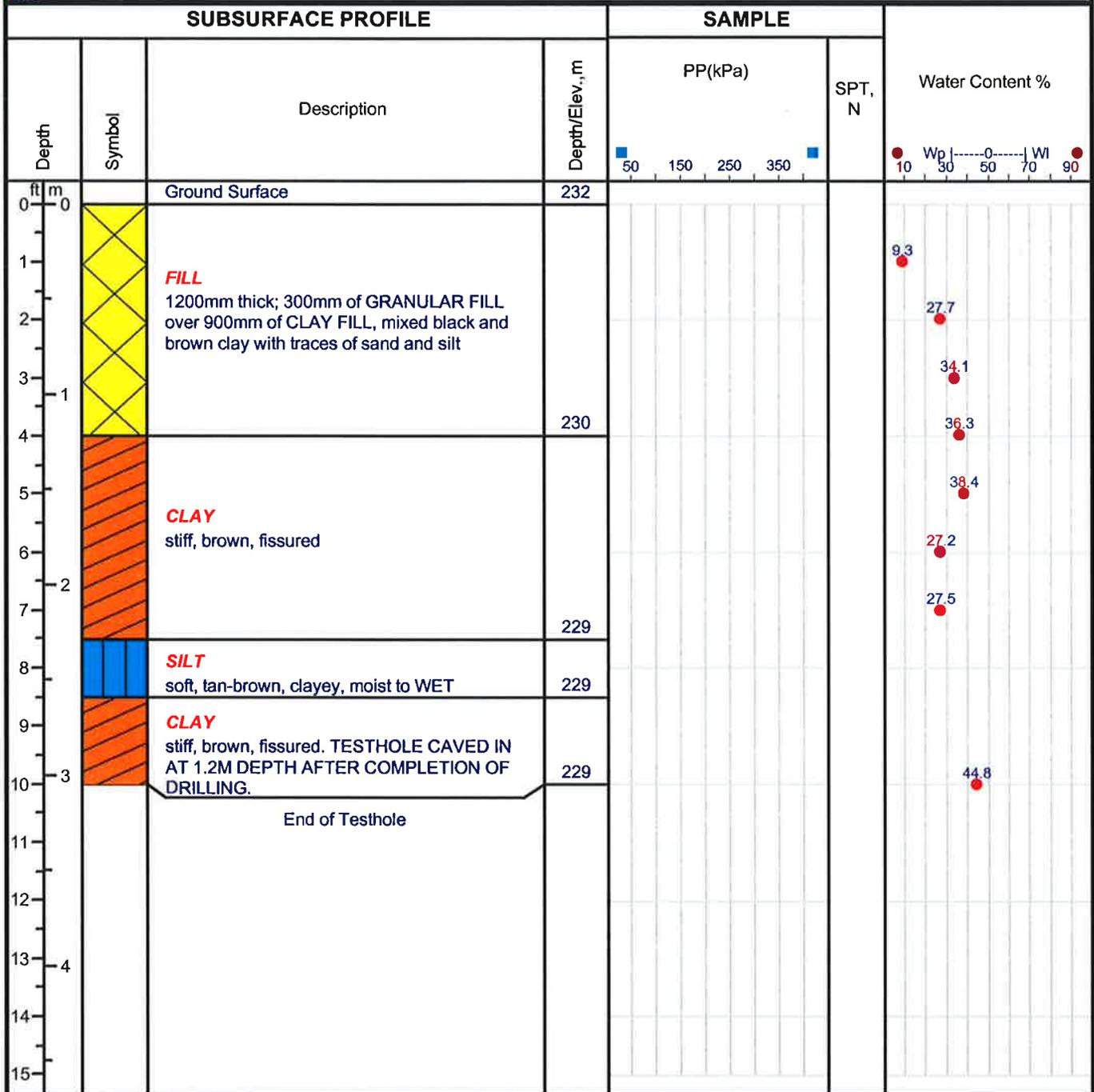
Project: Back Alley Renewal, 2016

Location: Between Stranmillis and Imperial Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 231.65m

Drill Date: 04/20/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH57

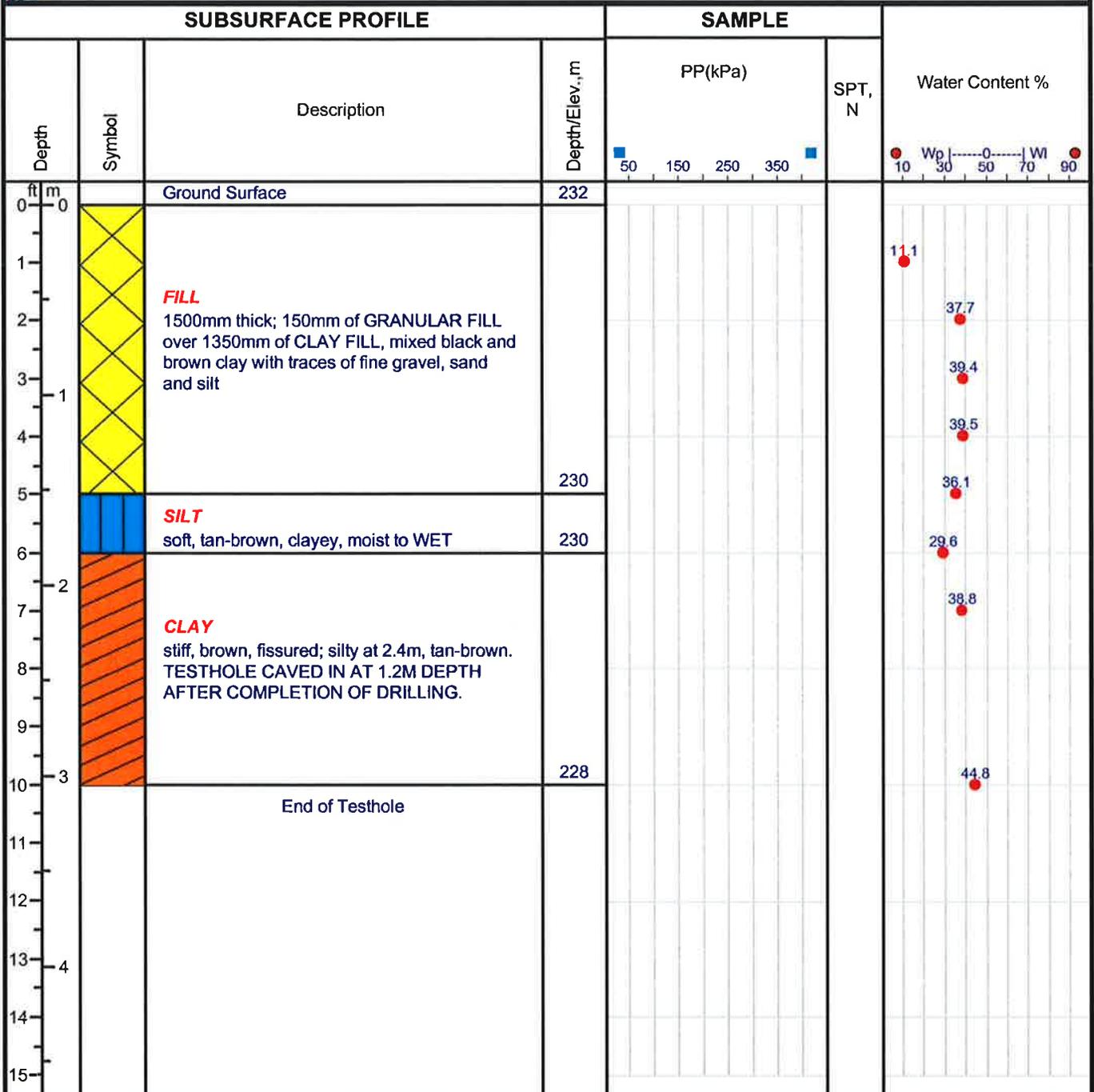
Project: Back Alley Renewal, 2016

Location: Between Stranmillis and Imperial Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 231.51m

Drill Date: 04/20/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH58

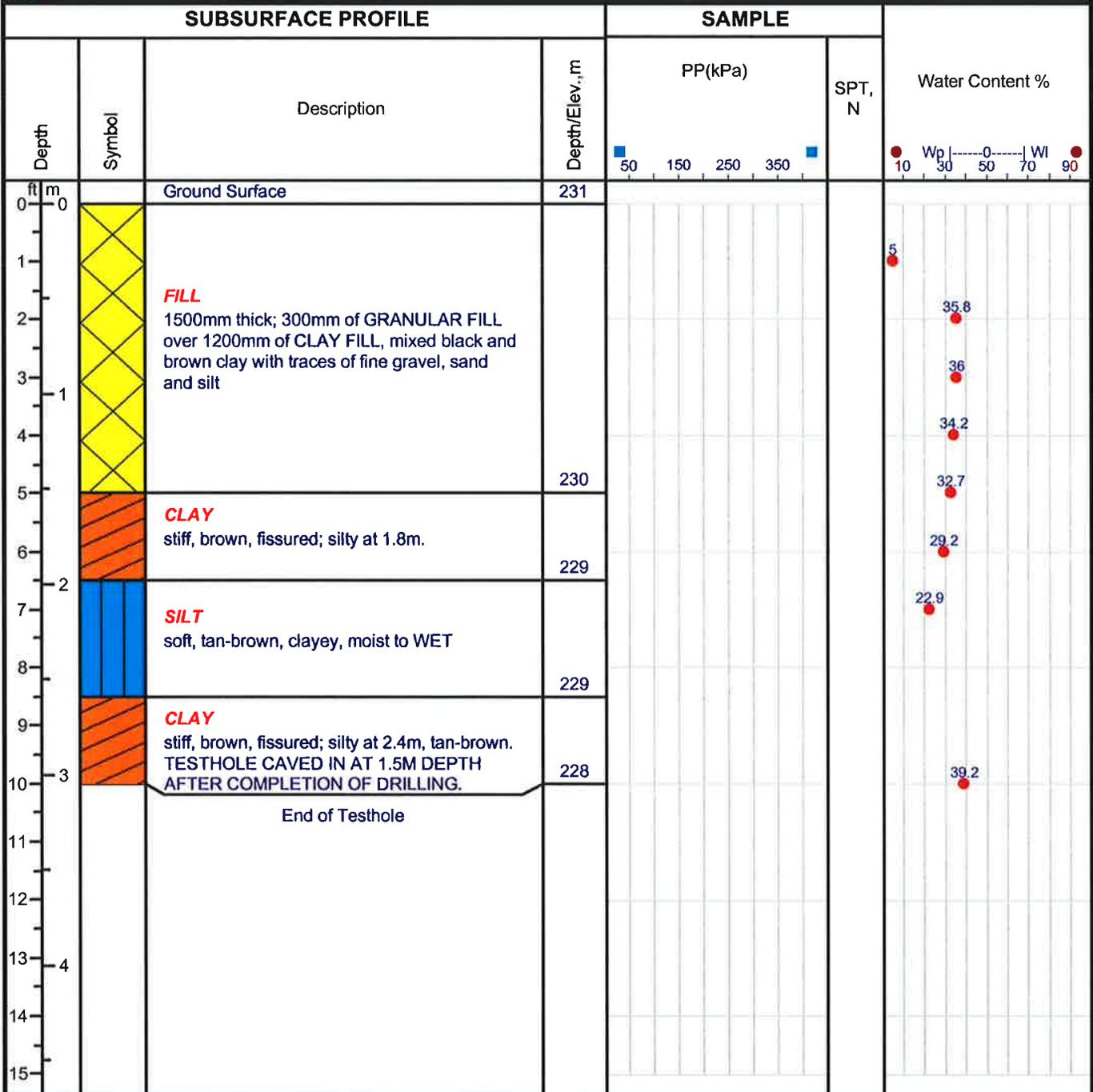
Project: Back Alley Renewal, 2016

Location: Between Stranmillis and Imperial Ave.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
 1600 Buffalo Place
 Winnipeg, MB.
 R3T 6B8

Elevation: 231.25m

Drill Date: 04/20/16

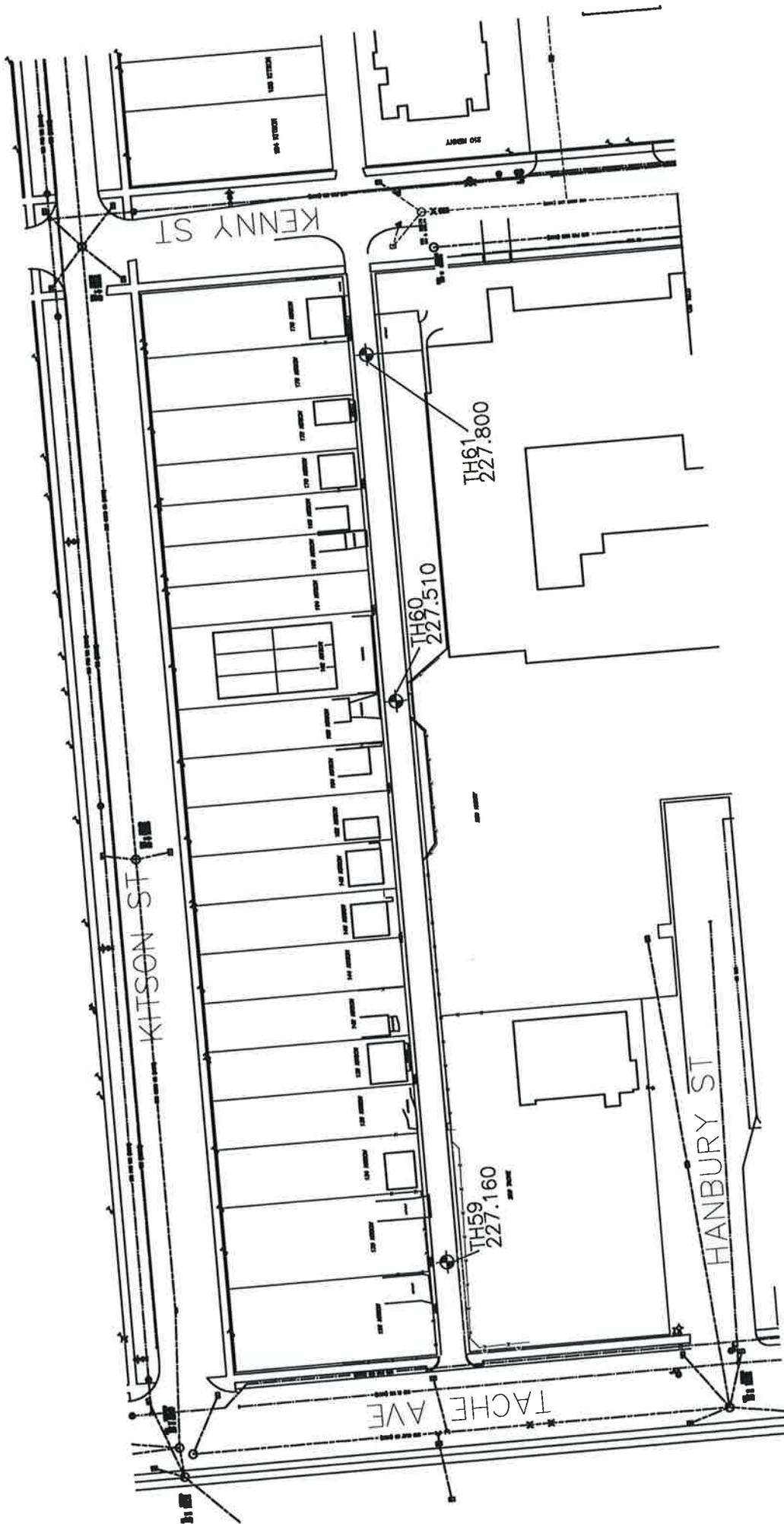
Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

APPENDIX E

Kitson Street / Hanbury Street Alley



Project No: 151-13889-00

Client: City of Winnipeg

TH59

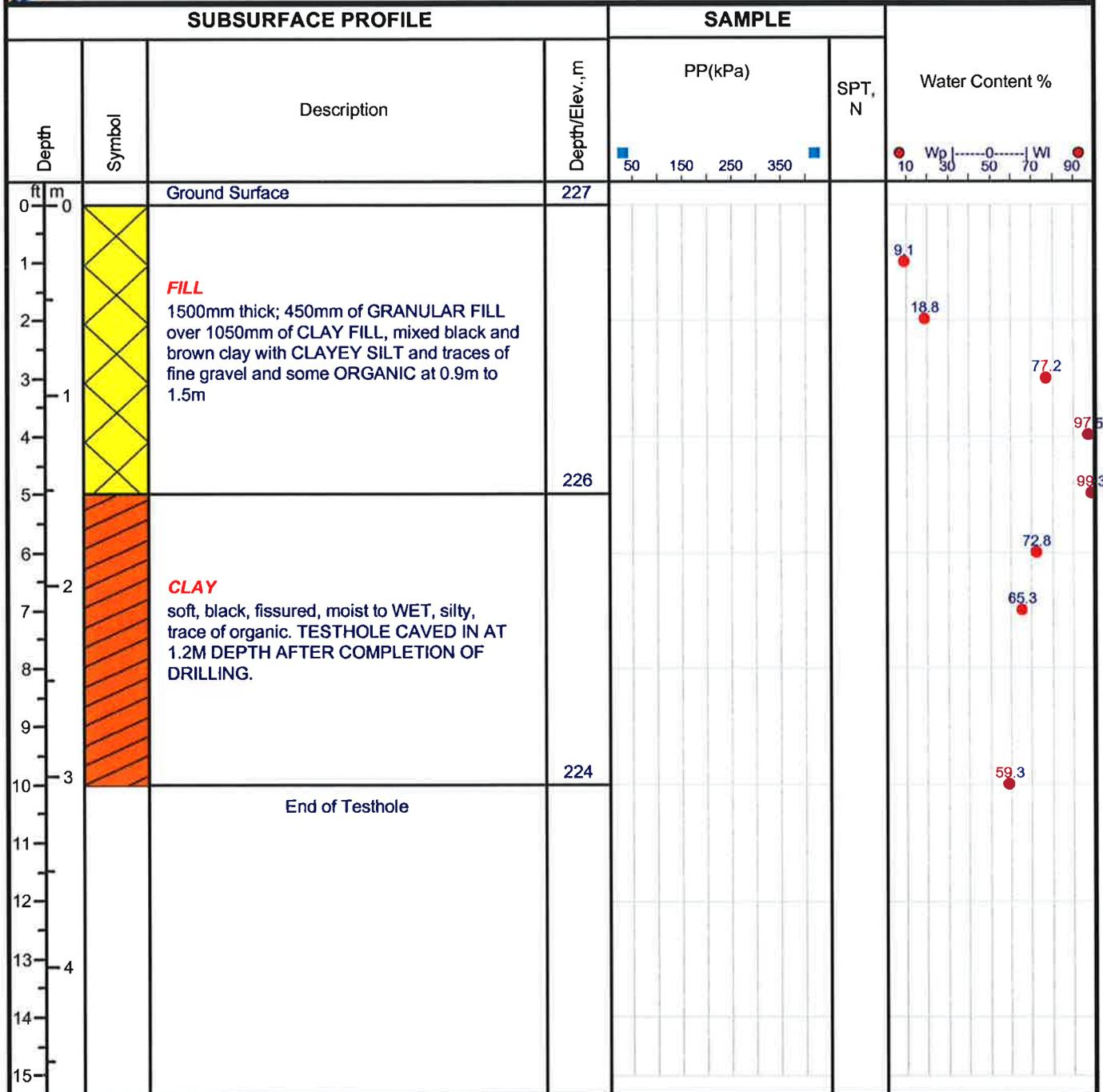
Project: Back Alley Renewal, 2016

Location: Between Kitson St. and Hanbury St.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 227.16m

Drill Date: 04/20/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH60

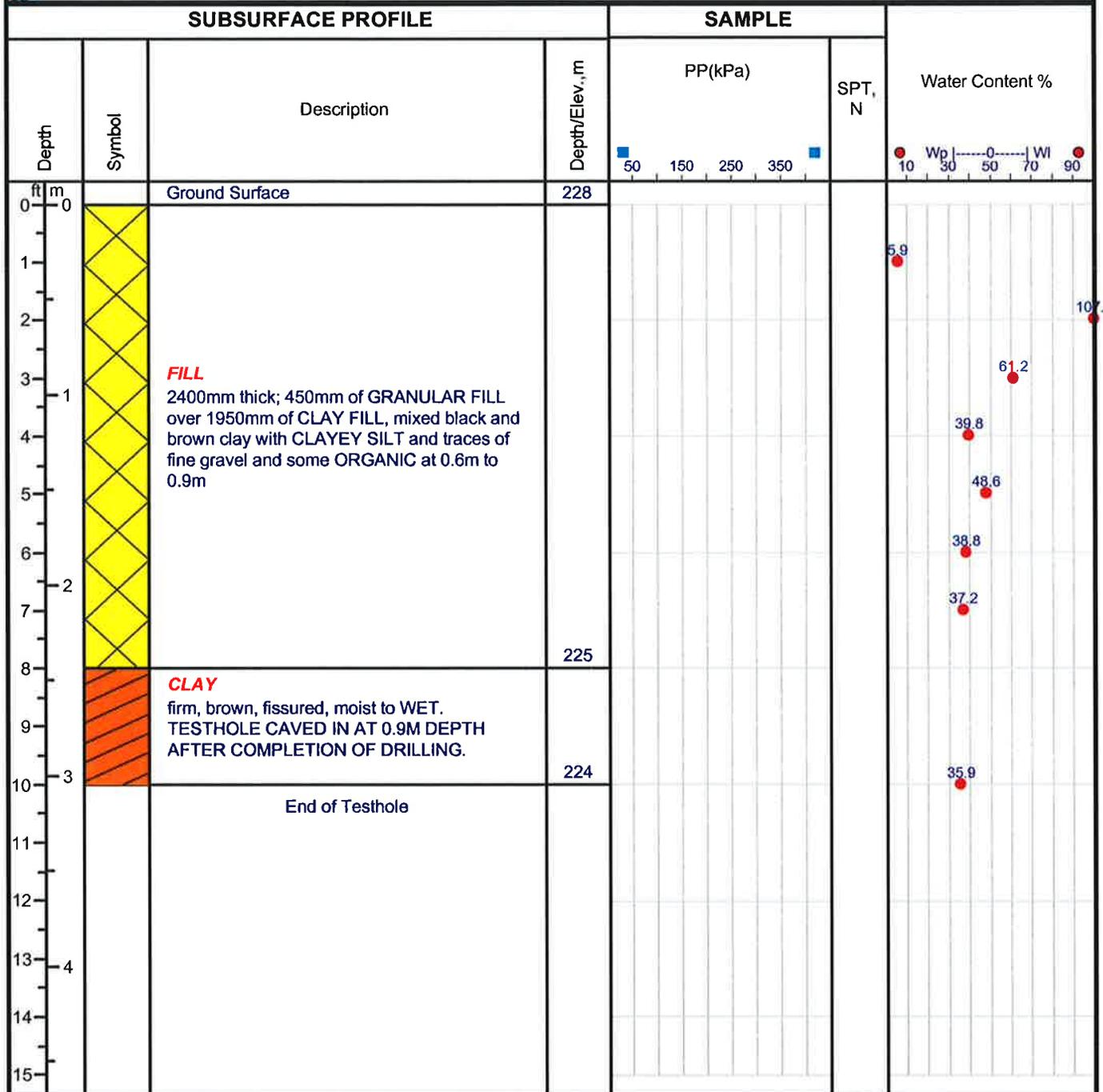
Project: Back Alley Renewal, 2016

Location: Between Kitson St. and Hanbury St.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
 1600 Buffalo Place
 Winnipeg, MB.
 R3T 6B8

Elevation: 227.51m

Drill Date: 04/20/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1

Project No: 151-13889-00

Client: City of Winnipeg

TH61

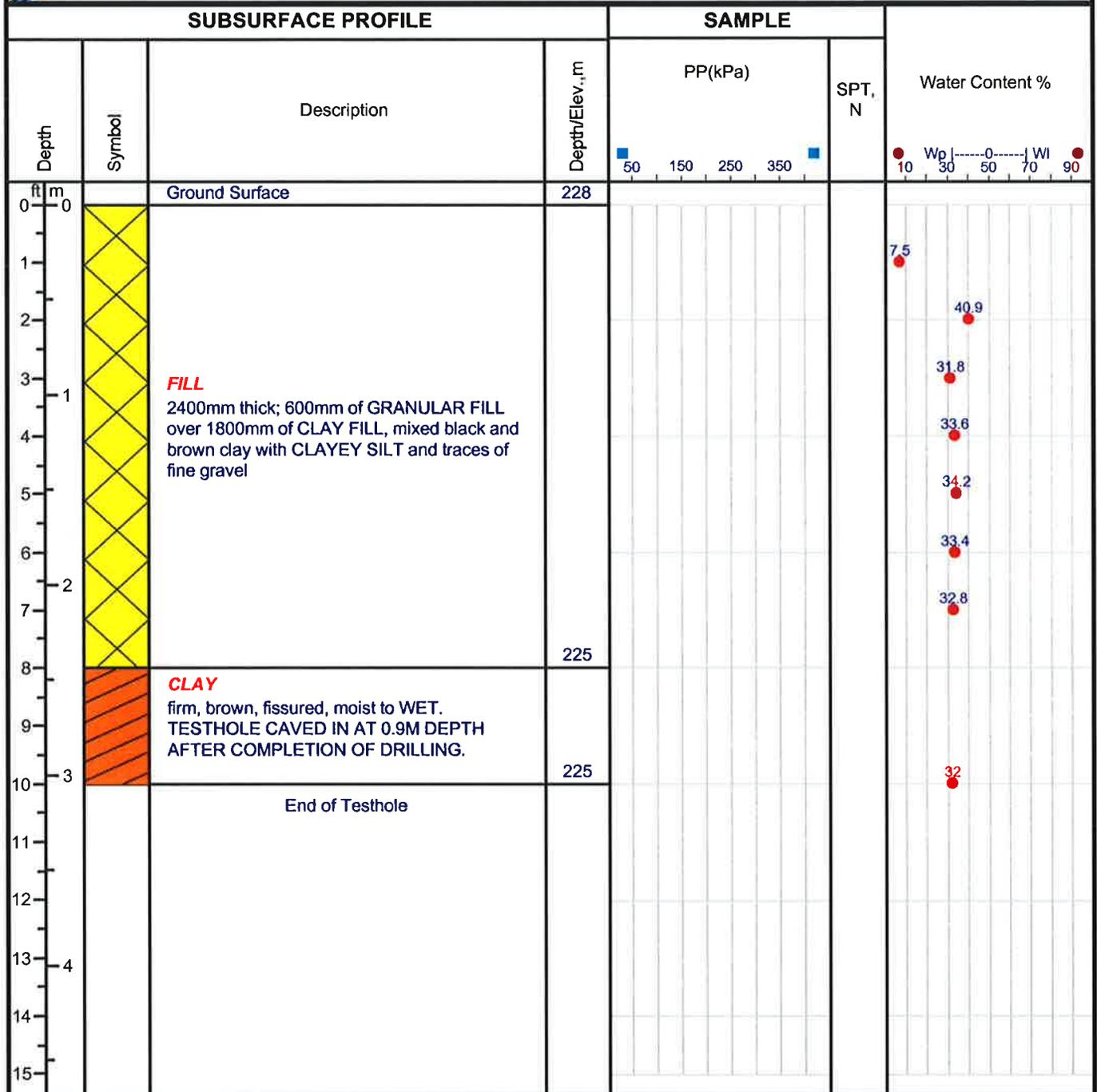
Project: Back Alley Renewal, 2016

Location: Between Kitson St. and Hanbury St.



Enclosure:

Engineer: DR



Drill Method: S/S Auger

WSP Canada Inc.
1600 Buffalo Place
Winnipeg, MB.
R3T 6B8

Elevation: 227.80m

Drill Date: 04/20/16

Checked by: SSU

Hole Size: 125mm

Sheet: 1 of 1