ADDENDUM 1: SUPPLEMENTAL PHASE IA ARCHAEOLOGICAL STUDY

FREDERICK DOUGLASS TUNNEL B&P TUNNEL REPLACEMENT PROGRAM INTERMEDIATE VENTILATION FACILITY

Baltimore, Maryland



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INTERMEDIATE VENTILATION FACILITY

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REPORT MAPPING AND TEXT REDACTED TO PROTECT SENSITIVE ARCHAEOLOGICAL SITE INFORMATION

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ABSTRACT

On behalf of Amtrak, WSP USA Inc. (WSP) has prepared an addendum to the supplemental Phase IA archaeological study for the Frederick Douglass Tunnel, B&P Tunnel Replacement Program (Program) in Baltimore, Maryland. This addendum has been prepared to assess the archaeological sensitivity of additional areas that have been added to the program limits of disturbance (LOD) since the completion of the supplemental Phase IA archaeological study in 2023. This addendum report focuses on the construction of belowground utilities located outside the Program's previously defined Archaeological Area of Potential Effects (APE-Archaeology) in the vicinity of the Intermediate Ventilation Facility.

The proposed Program will replace the 1.4-mile-long rail tunnel located along the Northeast Corridor in Baltimore. The B&P (Baltimore & Potomac) Tunnel is owned by Amtrak and used for regional and Acela intercity passenger trains, Maryland Area Rail Commuter passenger trains, and Norfolk Southern Railway freight trains. The Program extends between and does not include Baltimore Pennsylvania Station (B-3727) and North Franklintown Road and consists of a tunnel extending along a gradual arc for approximately 2 miles.

To satisfy its responsibilities for the Program under Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations (36 C.F.R. Part 800), including completing archaeological historic property identification and resolution of adverse effects on historic properties, the Federal Railroad Administration, in consultation with the other signatories and consulting parties, executed a Programmatic Agreement (PA) on March 2, 2017—Project Programmatic Agreement Among the Federal Railroad Administration, Maryland State Historic Preservation Officer, National Railroad Passenger Corporation, and Preservation Maryland Regarding the Baltimore & Potomac Tunnel Program, Baltimore City, Maryland—that requires identification and assessment of Program effects on archaeological historic properties.

The initial Phase IA archaeological study was completed in 2015; however, the Project designs had not been sufficiently developed at that time to establish an APE-Archaeology. That study was therefore limited to the centerline of the alignments of each of the design alternatives. The 2015 Phase IA study concluded that although large portions of the alignment alternatives have been disturbed, there was the potential for the presence of both precontact and historic archaeological sites within the alignments of each of the build alternatives. The 2015 study recommended that a supplemental Phase IA archaeological study be conducted once the Preferred Alternative was determined and the extent of anticipated ground-disturbing activities ascertained.

In accordance with Program PA stipulations VI.B, VI.C.1 and VI.C.2, WSP completed a supplemental Phase IA archaeological study to determine the sensitivity for the presence of precontact and historic archaeological resources in the APE-Archaeology for the Selected Alternative for the Program. In addition, the supplemental Phase IA study included recommendations for further survey to identify archaeological resources in the APE-Archaeology. The supplemental Phase IA archaeological study was submitted to the Maryland Historical Trust (MHT) and the consulting parties for review on October 19, 2023. In an email dated November 20, 2023, the MHT concurred with the report's findings and recommendations.

Since the submission of the supplemental Phase IA archaeological study, the Project design continues to advance and certain new elements that require ground-disturbing activities extend outside the previously defined APE-Archaeology. For the purpose of this addendum to the supplemental Phase IA archaeological study, the LOD has been expanded in the vicinity of the proposed Intermediate Ventilation Facility by approximately 2 acres along North Avenue, Jordan Street, and Ducatel Street. WSP completed this addendum to the supplemental Phase IA archaeological study to incorporate the expanded APE-Archaeology and assess the sensitivity for the presence of precontact and historic archaeological resources in this expanded APE-Archaeology, i.e., the additional areas where additional ground-disturbing activities are now proposed in the vicinity of the Intermediate Ventilation Facility.

The review of available environmental and soil data, historical background research, the results of the Geographic Information System topographical analysis, and geotechnical survey data indicates that there is a low sensitivity for encountering precontact and/or historic archaeological resources in the expanded APE-Archaeology. The prior modification of the landscape within the expanded APE-Archaeology at the Intermediate Ventilation Facility consisted of substantial ground disturbance associated with urban development, transportation improvements, and construction of buried utilities. As a result of the extent of previous ground disturbance, there is a low potential for the presence of intact archaeological resources. No further archaeological survey is recommended for the expanded APE-Archaeology at the Intermediate Ventilation Facility.

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I. INTRODUCTION

A. PROJECT BACKGROUND

On behalf of Amtrak, WSP USA Inc. (WSP) prepared an addendum to the supplemental Phase IA archaeological study for the Frederick Douglass Tunnel, B&P Tunnel Replacement Program (Program) in Baltimore, Maryland. This addendum has been prepared to assess the archaeological sensitivity of additional areas that have been added to the Program limits of disturbance (LOD) since the completion of the supplemental Phase IA archaeological study. This addendum report focuses on the construction of belowground utilities located outside the Program's previously defined Archaeological Area of Potential Effects (APE-Archaeology) in the vicinity of the Intermediate Ventilation Facility (Figure 1).

In accordance with National Environmental Policy Act (NEPA), the Federal Railroad Administration (FRA), as the lead federal agency, issued a Draft Environmental Impact Statement (DEIS) in December 2015 that evaluated the environmental impacts of three build alternatives (Alternatives 3A, 3B, and 3C) in comparison with the No-Build Alternative. The FRA issued a Final Environmental Impact Statement (FEIS) on November 25, 2016. A Phase IA archaeological study for the B&P Tunnel Replacement Program's three build alternatives was completed in 2015 in support of the DEIS (Shellenhamer and Kodlick 2015). The study found that areas with potential for both precontact and historic archaeological resources are present in the approximate alignments of each of the three alternatives but that the designs were not sufficiently advanced at that time to identify specific areas for archaeological survey or determine the effects on archaeological resources as a result of the undertaking.

Based on the analysis of the Program's potential environmental effects in the DEIS and public and agency comments, the FRA and the Maryland Department of Transportation (MDOT) identified Alternative 3B as the Preferred Alternative for the Program in the FEIS. The FRA issued the Record of Decision (ROD) in March 2017 for the Program, in which the FRA determined that the Preferred Alternative is the Selected Alternative for the B&P Tunnel Replacement Program. The FRA found that the Preferred Alternative, including the preferred Intermediate Ventilation Facility site, best fulfills the Purpose and Need for the Program while balancing impacts on the natural and human environment. In reaching this decision, the FRA considered the physical and operational characteristics and potential environmental consequences associated with the alternatives.

To satisfy its responsibilities for the Program under Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations (36 C.F.R. Part 800), the FRA

¹ B&P = Baltimore & Potomac. Since the execution on March 2, 2017, of the *Project Programmatic Agreement Among the Federal Railroad Administration, Maryland State Historic Preservation Officer, National Railroad Passenger Corporation, and Preservation Maryland Regarding the Baltimore & Potomac Tunnel Project, Baltimore City, Maryland, Amtrak has renamed the project the "B&P Tunnel Replacement Program." The change to the term <i>Program* reflects that the undertaking requires execution of multiple individual projects throughout the approximately 4-mile corridor to complete the envisioned scope of improvements. Therefore, the term *Program* will be used in future correspondence. Individual projects under the Program will be referred to as projects. This does not affect the validity of the Programmatic Agreement.

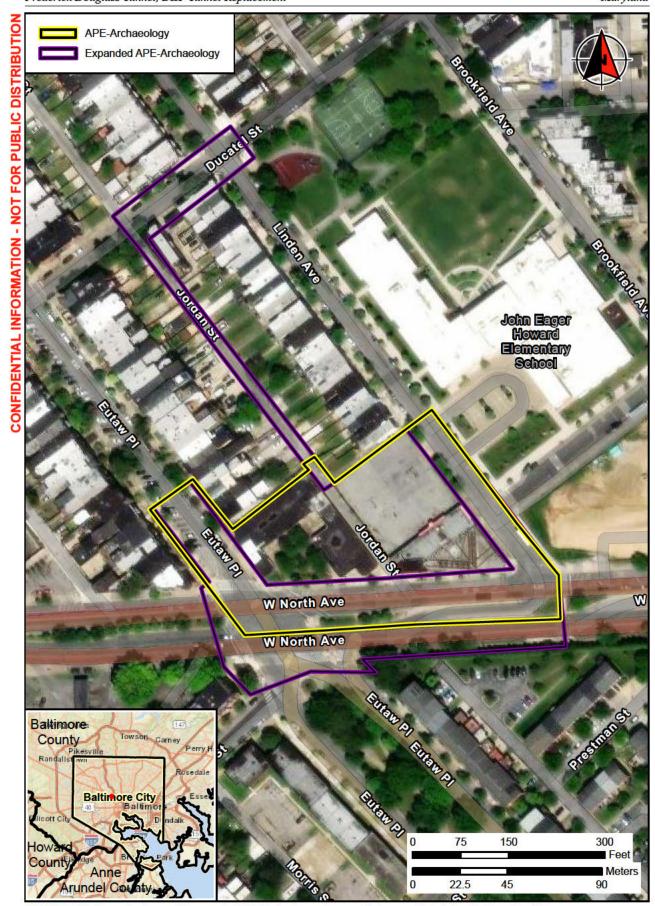


FIGURE 1: Boundaries of Expanded APE-Archaeology at Intermediate Ventilation Facility (ESRI World Imagery 2023)

executed a legally binding Section 106 Programmatic Agreement (PA) for this Program on March 2, 2017, entitled *Project Programmatic Agreement Among the Federal Railroad Administration, Maryland State Historic Preservation Officer, National Railroad Passenger Corporation, and Preservation Maryland Regarding the Baltimore & Potomac Tunnel Program, Baltimore City, Maryland.* The Program PA documents the detailed compliance process agreed upon by the signatories and invited signatories—the FRA, Amtrak, the Maryland State Historic Preservation Officer (Maryland Historical Trust or MHT), and Preservation Maryland—to satisfy the FRA's responsibilities under Section 106 and to resolve adverse effects on historic properties in accordance with Section 106 for the Program. In accordance with the Program PA, Amtrak, in consultation with the signatories and other consulting parties, is required to identify and assess Program effects on archaeological historic properties.

In accordance with Program PA stipulations VI.B, VI.C.1, and VI.C.2, WSP completed a supplemental Phase IA archaeological study to determine the sensitivity for the presence of precontact and historic archaeological resources in the APE-Archaeology for the Selected Alternative for the Program (Shellenhamer and Ward 2023). In addition, the supplemental Phase IA study included recommendations for further survey to identify archaeological resources in the APE-Archaeology. The supplemental Phase IA archaeological study was submitted to the MHT and the Consulting Parties for review on October 19, 2023. In an email dated November 20, 2023, the MHT concurred with the report's findings and recommendations for the completion of a geomorphology study in the vicinity of the south approach and a Phase IB/II archaeological study in the defined section of the proposed Intermediate Ventilation Facility.

Since the submission of the supplemental Phase IA archaeological study, the Project design continues to advance, and certain new elements that require ground-disturbing activities extend outside the previously defined APE-Archaeology. WSP completed this addendum to the supplemental Phase IA archaeological study to determine the sensitivity for the presence of precontact and historic archaeological resources in the expanded APE-Archaeology located in the vicinity of the Intermediate Ventilation Facility, described below (see Figure 1; Figure 2).

B. UPDATE TO THE AREA OF POTENTIAL EFFECTS

During the supplemental Phase IA archaeological study, the APE-Archaeology was defined as approximately 150 acres comprising discontiguous areas of the proposed LOD, in which Program activities include open-cut excavation, construction staging areas, temporary access roads, and utility and stormwater management sites (Shellenhamer and Ward 2023). This included approximately 6 acres at 900-940 West North Avenue, where the construction of the Intermediate Ventilation Facility is proposed (see Figure 1). For a summary of the Program description, please refer to Chapters I and II of the supplemental Phase IA archaeological study report (Shellenhamer and Ward 2023).

The LOD within the roadway right-of-way (ROW) surrounding the Intermediate Ventilation Facility's proposed location will be expanded for electric and storm sewer utility relocations and roadway improvements. The proposed streets in the expanded LOD include the following.

- Ducatel Street (from Linden Avenue to Jordan Street);
- Jordan Street (from Ducatel Street to West North Avenue);
- West North Avenue (from Eutaw Place to Linden Avenue); and
- Linden Avenue (from West North Avenue to 2014 Linden Avenue).

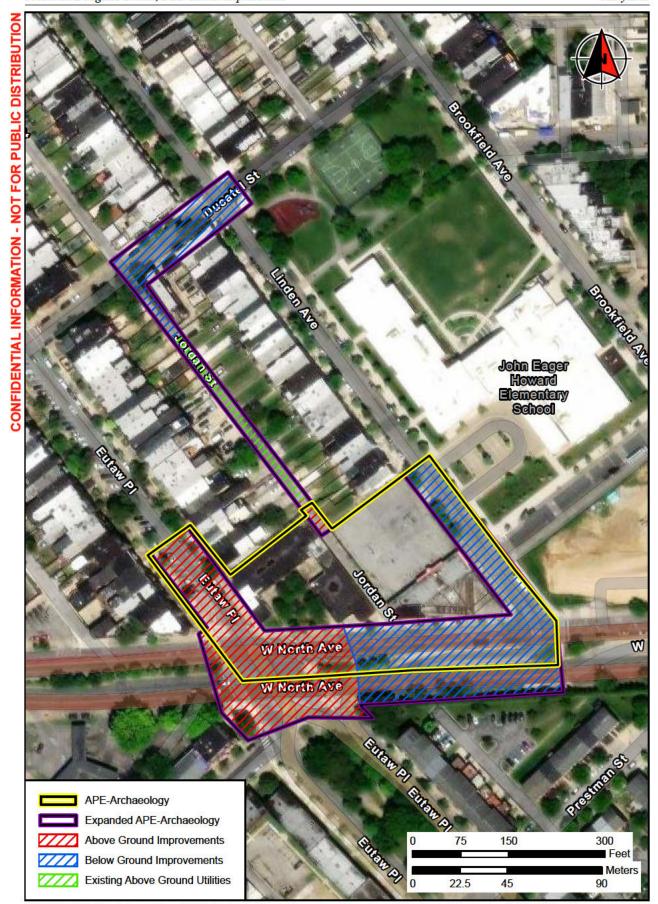


FIGURE 2: Update to the APE-Archaeology Showing Proposed Project Elements (ESRI World Imagery 2023)

At the intersection of Eutaw Place and West North Avenue, the proposed work includes utility relocations for storm sewer, sanitary sewer, and electric as well as intersection upgrades. The proposed upgrades at this intersection consist of the installation of new Maryland State Highway Administration standard mast arm traffic signals and a standard traffic signal box installed at grade, sidewalk and crosswalk improvements, new accessible pedestrian signal poles, new traffic signage, and modifications to the island within W. North Avenue.

Elsewhere within the expanded LOD, storm sewer relocations are proposed on Linden Avenue and in the remainder of West North Avenue, and electric utility relocations on Ducatel and Jordan streets. The majority of the relocations on Jordan Street will be aboveground on newly constructed utility poles or will use existing poles. Buried electric utilities are proposed within the ROW of Ducatel Street and underneath approximately 150 feet of Jordan Street starting at its intersection with Ducatel Street.

The areas located within Linden Avenue and portions of West North Avenue and Jordan Street were previously assessed as part of the APE-Archaeology in the supplemental Phase IA study; however, approximately 2 acres are situated outside the previously delineated APE-Archaeology. These areas where additional ground-disturbing activities are now proposed constitute the expanded APE-Archaeology for this addendum report.

C. PERSONNEL

The Principal Investigator for the addendum study was Jason Shellenhamer (Registered Professional Archaeologist [RPA] 17875). Henry Ward (RPA 12205) served as Project Manager (see Appendix A). Historical research was carried out by Mr. Shellenhamer, and the Geographic Information System (GIS) cut-and-fill analysis and graphics production were performed by Jacqueline Horsford and Rose Micke. Mr. Shellenhamer prepared this document with assistance from Mr. Ward. Anne Moiseev served as technical editor. Mr. Shellenhamer and Mr. Ward meet the standards set out in the Secretary of the Interior's Professional Qualification Standards for Archaeology (48 Federal Register 44738-44739, 36 C.F.R. Part 61) (United States Department of the Interior 1983).

II. METHODOLOGY

This addendum to the supplemental Phase IA archaeological study serves to examine the expanded APE-Archaeology, which incorporates the expanded LOD that has been identified as the design of the Program has progressed. The study assesses the sensitivity for the presence of significant precontact and/or historic archaeological historic properties in the expanded APE-Archaeology and provides recommendations for further survey, if appropriate.

A. DOCUMENTARY RESEARCH

As part of the supplemental Phase IA archaeological study, research was conducted to establish precontact and historic contexts for the APE-Archaeology and to determine the existence of any previously recorded archaeological sites or historic properties in or adjacent to the APE-Archaeology. Files available through the MHT's Cultural Resource Information System (Medusa) were checked for the presence of recorded archaeological sites and historic properties within a 1.6-kilometer (1-mile) radius around the APE-Archaeology. Additional background research for this addendum consisted of a review of pertinent primary and secondary sources, including land records, historical maps and atlases, and local and county histories available online and at the Maryland State Archives in Annapolis. Previous survey reports for archaeological investigations conducted in or near the APE-Archaeology were also obtained from the MHT Library, including Shellenhamer and Kodlick (2015), Ward et al. (2006), and Ward et al. (2013). Additional archival research was carried out at the Library of Congress in Washington, DC, and the Sheridan Libraries at Johns Hopkins University in Baltimore. The review of historical maps was a key component of the analysis of historic archaeological potential.

This report does not include a historic context. The goal of this study was not to develop a historical and cultural synthesis of the APE-Archaeology but to provide an addendum planning document as the Program design advances. The reader is referred to the historical synthesis of the entire Program in WSP's supplemental Phase IA archaeological study (Shellenhamer and Ward 2023).

B. TOPOGRAPHIC ANALYSIS

An updated elevation change analysis was conducted to include the expanded APE-Archaeology at the proposed location of the Intermediate Ventilation Facility. As in the supplemental Phase IA study, the analysis of the historical elevation in the APE was obtained from the *Atlas of the City of Baltimore* (Duncan 1897). The 1897 map was created by the Topographical Survey Commission of the City of Baltimore and consists of 39 separate topographic maps, with 5-foot contours, covering individual quadrants of a pre-defined grid system covering all the areas within the boundaries of the City of Baltimore prior to the city's expansion in 1918. Each map was drawn based on individual surveys conducted over the five-year period from 1893 to 1897.

By digitizing the contour lines from the 1897 atlas in the APE-Archaeology, the data were used to create a triangulated irregular network (TIN). The TIN was then used to create a digital elevation model (DEM) of the ground surface elevation in the APE-Archaeology prior to 1900. To account for the vertical datum shift since the creation of the atlas, 1.6 feet were subtracted from the 1897 elevation values. A similar procedure was used for the modern (2021) elevation data, which are available through Baltimore City GIS Open Data as 2-foot interval contours. The difference

between the two DEMs was calculated, highlighting the topographic changes between the historical and modern maps. The modern elevations used in the analysis were an elevation dataset from the Baltimore City Department of Planning (Open Baltimore), published in 2021. The 2021 dataset was derived using light detection and ranging (LiDAR) to support 2-foot contours and has an accuracy under 1.0 foot. The results of the comparative analysis of historic and modern elevation change was depicted on color-coded mapping and served as an aid in determining the likelihood of encountering intact cultural deposits within the expanded APE-Archaeology at the Intermediate Ventilation Facility.

C. REVIEW OF GEOTECHNICAL DATA

Boring logs from the 2017 *B&P Tunnel Preliminary Engineering Geotechnical Data Report* were reviewed to assess the potential subsurface integrity of the expanded APE-Archaeology (Appendix B). The geotechnical borings were completed as part of the Phase 1 and Phase 2 Preliminary Design Subsurface Investigation Program conducted by WSP/Parsons Brinckerhoff/Parsons Joint Venture (PB/P JV). All borings were drilled vertically using truck-mounted drill rigs as well as all-terrain vehicle drill rigs. All borings were soft dug to a minimum depth of about 6 feet and a maximum depth of 10.5 feet to clear existing utilities by means of vacuum extraction. Phase 1 borings were typically advanced through overburden by means of 8-inch outside diameter (OD) hollow-stem augers. Phase 2 borings were typically advanced first with 7.6-inch or 8.25-inch OD hollow-stem augers to a depth less than or equal to 30 feet, then 6.5-inch OD steel casing was installed and drilling continued using the mud rotary method. Borings conducted during both Phase 1 and Phase 2 were sampled at 5-foot intervals between the ground surface and top of rock using a standard split-barrel sampler with 2-inch OD and 1-3/8-inch inside diameter.

As continuous samples were not taken, the data presented in the boring logs were not sufficient to determine accurately whether buried ground surfaces are present in the APE-Archaeology that have potential for containing intact archaeological resources. The data presented in the boring logs do provide useful information to ascertain the location and approximate depth of fill and other ground disturbance in the APE-Archaeology.

III. ENVIRONMENTAL SETTING

A. PHYSIOGRAPHY AND GEOLOGY

The expanded APE-Archaeology at the Intermediate Ventilation Facility is located in the Piedmont Plateau Province (Figure 3). The Piedmont Plateau Province is an area of varied topography, ranging from lowlands to ridges of moderate altitude and relief. The province is underlain by metamorphic and igneous rocks that range from Precambrian to Paleozoic in age. These rocks have been sheared, fractured, and folded by tectonic activity. The Fall Line, which is where the Piedmont Plateau Province descends steeply to the Coastal Plain, runs along the boundary for the Maryland Archaeology Research Units 7 and 14 (Figure 4). At the point where rivers and streams cross the Fall Line, falls and rapids are typically encountered.

The expanded APE-Archaeology lies within the Potomac Group (Kp) formation (Figure 5). The Potomac Group consists of inter-bedded quartzose gravels, argillaceous sands, and white, dark gray, and multicolored silts and clays. These deposits date to the Cretaceous era. Overall, the Potomac Group reaches a thickness of 0 to 240 meters (0 to 800 feet).

B. SOILS

General soil mapping for Baltimore City (Figure 6) places the expanded APE-Archaeology at the Intermediate Ventilation Facility within the Urban Land Association (44UC) and Urban Land-Joppa-Sassafras Association (14UB, 31UB) (Levin and Griffin 1998; United States Department of Agriculture-Natural Resources Conservation Service [USDA-NRCS] 2021).

Urban Land Association soils are located in nearly level to moderately sloping areas of urban settings where more than 80 percent of the surface is covered by asphalt, concrete, buildings, or other impervious surfaces. This soil association represents approximately 20 percent of the land area in the city. Urban Land can be identified on all landscape positions of the Coastal Plain and the Piedmont Plateau and generally ranges from 2 to more than 1,000 acres in size. Typically, large areas are mostly composed of miscellaneous artificial fill. In some areas several feet of fill have been placed over streams, swamps, floodplains, and tidal marshes and are now almost completely covered by roads, buildings, or other structures.

Urban Land-Joppa-Sassafras Association soils are very deep and excessively to well-drained soils that overlie sandy and/or gravelly sediments on the uplands of the city's Coastal Plain. This association consists of 40 percent Urban Land, 15 percent Joppa soils, 10 percent Sassafras soils, and 35 percent minor soils. Joppa soils are excessively well drained, very deep, gravelly soils. Sassafras soils are very deep, well-drained, loamy soils. Both are generally found on rolling or hilly dissected sideslopes. The minor soils in this association include somewhat excessively drained Brandywine and Manot soils on steep sideslopes near major drainages; well-drained Chester soils on gentle slopes near drainages; moderately well-drained Mattapex, Beltsville, and Woodstown soils in upland depressions; Udorthents; and fluvents.

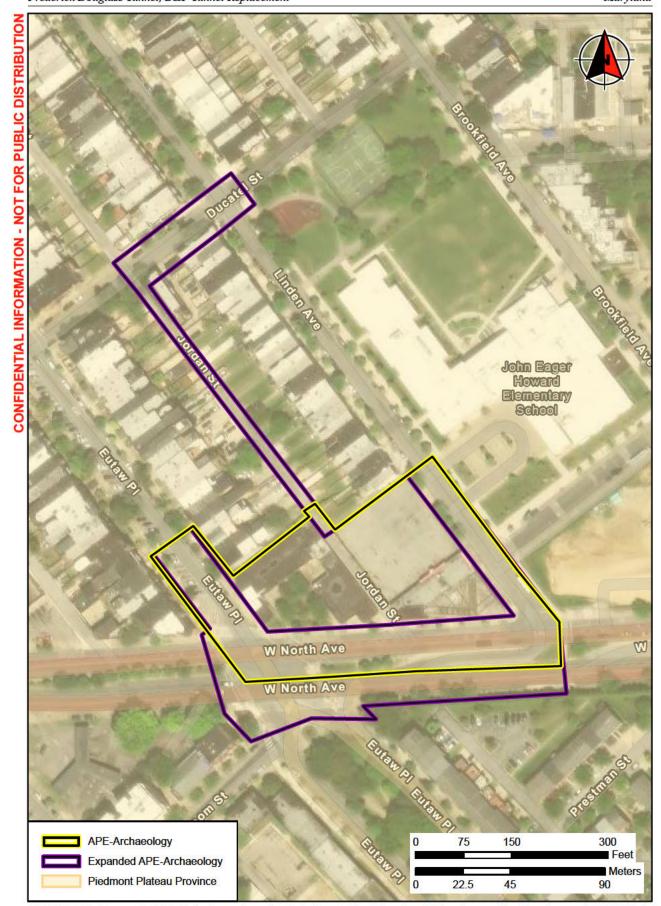


FIGURE 3: Expanded APE-Archaeology in Relation to the Maryland Physiographic Provinces (ESRI World Imagery 2023)

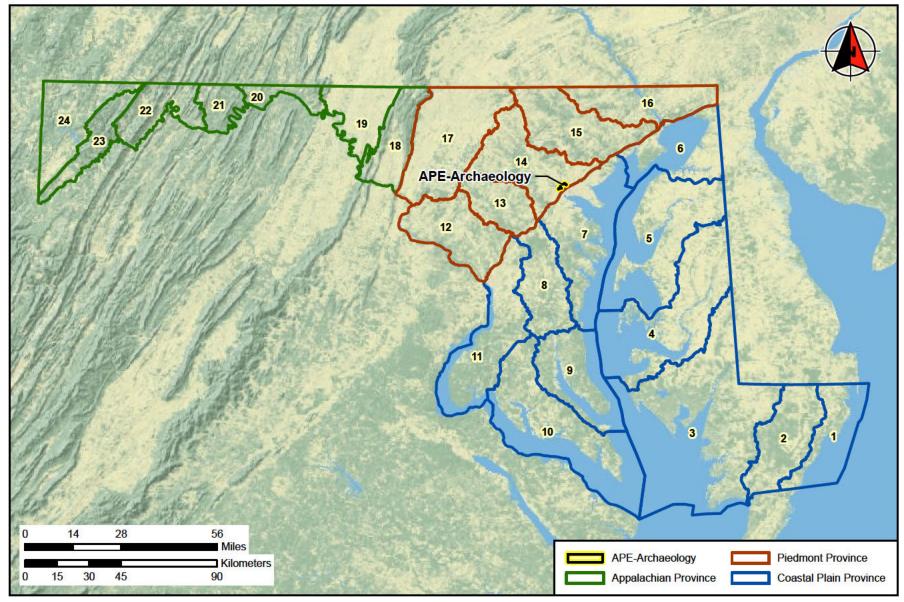


FIGURE 4: Maryland Archaeological Research Units (ESRI USA Topo Maps 2019; Shaffer and Cole 1994)



FIGURE 5: Expanded APE-Archaeology in Relation to Geological Formations (ESRI World Imagery 2020)

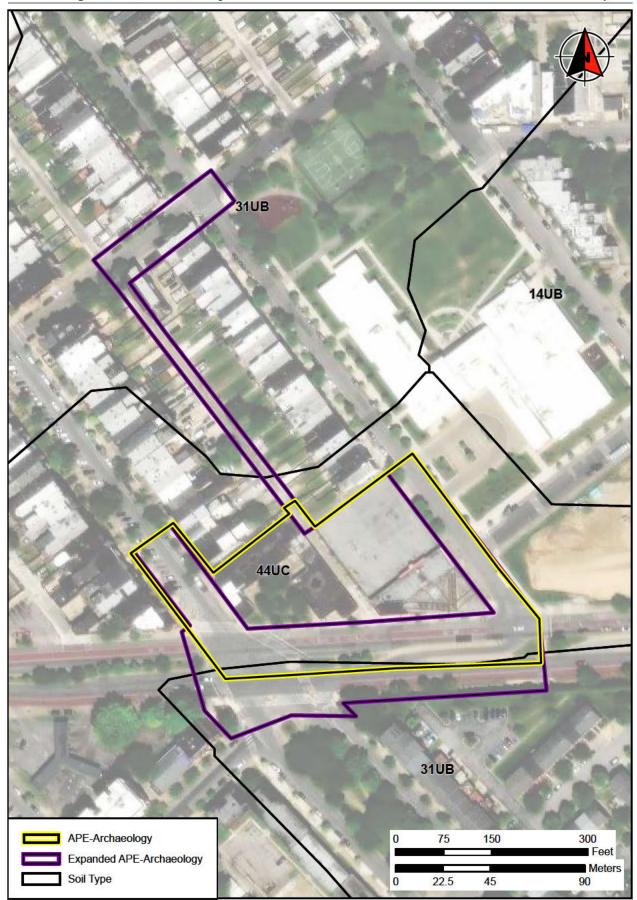


FIGURE 6: Soil Series in Expanded APE-Archaeology (ESRI World Imagery, 2020; NRCS 2020)

C. HYDROLOGY

The expanded APE-Archaeology for the Intermediate Ventilation Facility is located in the Jones Falls watershed. Until the mid-nineteenth century a branch of an unnamed tributary of the Jones Falls was located south of the APE-Archaeology. The tributary extended east from that location, along the approximate alignment of present-day West North Avenue, and emptied into the Jones Falls in the vicinity of where the North Avenue Bridge crosses the stream. The Jones Falls stream is 28.8 kilometers (17.9 miles) in length (Baltimore County n.d.b.). It flows aboveground through Baltimore County but is channelized through much of the city in either a concrete-lined streambed or tunnel. The stream enters a tunnel beneath the Jones Falls Expressway (I-83) at North Avenue and flows into the Inner Harbor area of the Patapsco River near the intersection of Pratt Street and President Street. The Patapsco River has a watershed of 1,760 square kilometers (679 square miles). The last 16 kilometers (10 miles) of the river is a tidal estuary inlet of the Chesapeake Bay. The tidal area of the river is composed of the Northwest Harbor and Middle Branch of the Patapsco River (Baltimore County n.d.a).

IV. PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS AND HISTORIC PROPERTIES

A. PREVIOUS ARCHAEOLOGICAL STUDIES

Review of cultural resources survey data maintained by the MHT on Medusa revealed that 13 previous archaeological studies have been conducted within a 1.6-kilometer (1-mile) radius of the APE-Archaeology of the full Program (Figure 7; Table 1). Of those, five studies were located close to or within the expanded APE-Archaeology at the Intermediate Ventilation Facility.

TABLE 1: PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS WITHIN 1-MILE RADIUS OF PROGRAM APE-ARCHAEOLOGY

STUDY	No.	REFERENCE
Phase I Reconnaissance Survey of the Archeological Resources in the Proposed I-595 Corridor Between I-95 and I-170, Baltimore City, Maryland	BC 6	Dinnel 1982*
Preliminary Reconnaissance Survey of the Archaeological Resources in the Proposed I-70 Alignment Through Leakin and Gwynns Falls Park	BC 26	Harrison 1977
Orchard Street Church Archeological Monitoring	BC 33	Weber 1984a
Phase I/Phase II Archeological Reconnaissance Survey for the Gwynns Falls Sewer Interceptor, Baltimore, Maryland	BC 34C	Weber 1984b
Phase I Archeological Survey of the Proposed 3.03-mile Phase 2 Gwynn Fall's Pathway	BC 126	Hill 2000
Phase I Archeological Investigations of the proposed UMAB† Health Sciences Research Park, 800-900 West Baltimore Street, Baltimore, Maryland	BC 151	Williams 2005
Stage 1 Phase IB Archeology Technical Report, Red Line Light Rail Transit Project, City of Baltimore and Baltimore County, Maryland	BC 184	Ward et al. 2013*
Stage 1 Phase IB Archeology Interim Technical Report, Red Line Light Rail Transit Project, City of Baltimore and Baltimore County, Maryland	BC 194	Ward et al. 2015*
Phase IA Archeological Study, B&P Tunnel Project, Baltimore, Maryland [note: no location data available on Medusa, not shown on Figure 7]	BC 195	Shellenhamer and Kodlick 2015*
Phase I Archaeological Survey for the Remington Avenue Bridge Replacement Project, City of Baltimore, Maryland	BC 209	Hatch et al. 2018
Supplemental Phase IA Archaeological Study Baltimore & Potomac Tunnel Replacement Program, Baltimore, Maryland [no location data available on Medusa, not shown on Figure 7]	Number Pending	Shellenhamer and Ward 2023*

^{*} Study includes portions of the APE-Archaeology

†University of Maryland, Baltimore

An initial Phase IA archaeological study for the B&P Tunnel Replacement Program was completed in 2015 in support of the DEIS. At that time several alignment alternatives were under consideration. As designs had not been sufficiently developed at the time of the Phase IA study, the APE at that time was limited to the centerline of the alignments of each of the design alternatives. Given their cumulative linear extent and the stage of the Program at the time of the survey, it was deemed prudent to conduct an archaeological assessment study to acquire a comprehensive understanding of the archaeological sensitivity of all the proposed alternatives. The high-level survey was also performed

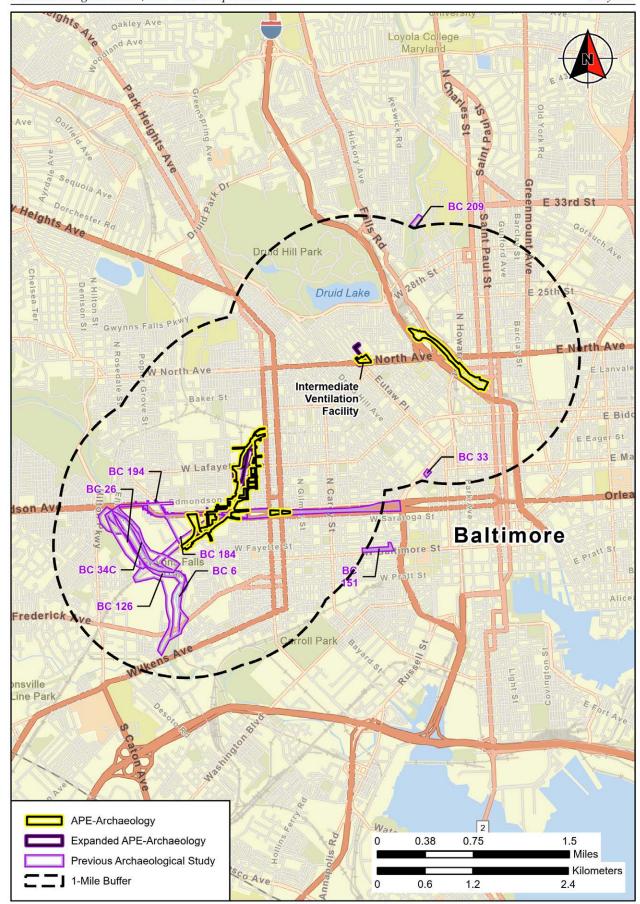


FIGURE 7: Previous Archaeological Studies Within 1-Mile Radius of APE-Archaeology for the Program (ESRI World Street Map 2021)

to provide information that could assist with planning activities. The Phase IA study concluded that although large portions of the alignment alternatives have been disturbed, potential remained for the presence of both precontact and historic archaeological sites within the alignments of each of the build alternatives. The study recommended that a supplemental Phase IA archaeological study be conducted once the Preferred Alternative was determined and the extent of anticipated ground-disturbing activities ascertained.

The supplemental Phase IA archaeological study completed for the B&P Tunnel Replacement Program included the approximately 6-acre area at 900-940 West North Avenue where the Intermediate Ventilation Facility is proposed (Shellenhamer and Ward 2023). The APE-Archaeology defined for the Intermediate Ventilation Facility at that time was assessed as having a low sensitivity for the presence of precontact archaeological resources. The majority of the APE-Archaeology was also assessed as having low sensitivity for the presence of historic archaeological resources; the exception was the parking lot along Linden Avenue. That area was assessed with a moderate to high sensitivity for the presence of historic archaeological resources dating from the late nineteenth century and a Phase IB/II archaeological survey was recommended.

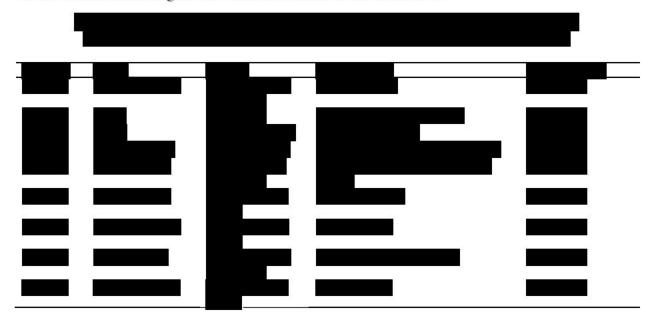
B. PREVIOUSLY IDENTIFIED ARCHAEOLOGICAL SITES

According to the archaeological site files maintained by the MHT, no previously recorded archaeological sites are situated within the expanded APE-Archaeology for the Intermediate Ventilation Facility.

Eight of the sites date from the eighteenth to twentieth centuries.

Two others are associated with mill workers' housing and date to the nineteenth century. Four additional sites represent domestic residences (two brick mansions and two brick rowhouses). Another site, dating from the mid-nineteenth century,

Civil War encampment that included barracks and a hospital. The final site is a multi-component resource consisting of a precontact-period lithic scatter of unknown temporal affiliation and a historic domestic artifact scatter associated with a mid-nineteenth-century mill worker's house. None of the nine recorded archaeological sites has been evaluated for the NRHP.



1. Previously Identified Historic Architectural Resources

A review of the Maryland Inventory of Historic Properties (MIHP) forms on file at the MHT indicates that the expanded APE-Archaeology for the Intermediate Ventilation Facility primarily lies within the southwest corner of the Reservoir Hill Historic District (B-1379) (Figure 8). The Reservoir Hill Historic District (B-1379) was listed in the NRHP on December 23, 2004, and consists of 32 city blocks bounded by North Avenue, Mount Royal Avenue, Druid Park Lake Drive, and Madison Avenue. The majority of the properties are late nineteenth to early twentieth-century rowhouses. The district includes other building types, such as mansions, multi-story apartment buildings, religious and commercial buildings, and public monuments.

In addition to the historic district, the expanded APE-Archaeology extends within the boundaries of the Madison Park Medical Center (B-1379-6). Although the medical center building was constructed after the period of significance for the Reservoir Hill Historic District (1790 to 1941), it was determined individually eligible for listing in the NRHP on March 31, 2022.

The expanded APE-Archaeology for the Intermediate Ventilation Facility also extends south of the original delineated APE boundary and crosses West North Avenue. As a result the new southern boundary of the expanded APE-Archaeology extends into the Bolton Hill Historic District (B-64). Listed in the NRHP on September 17, 1971, the Bolton Hill Historic District (B-64) comprises 20 blocks bound by North Avenue, Mount Royal Avenue, Cathedral Street, Dolphin Street, and Madison Avenue. The historic district primarily consists of three-story brick rowhouses as well as several detached houses and religious buildings dating from the mid-nineteenth century to the years preceding World War I.

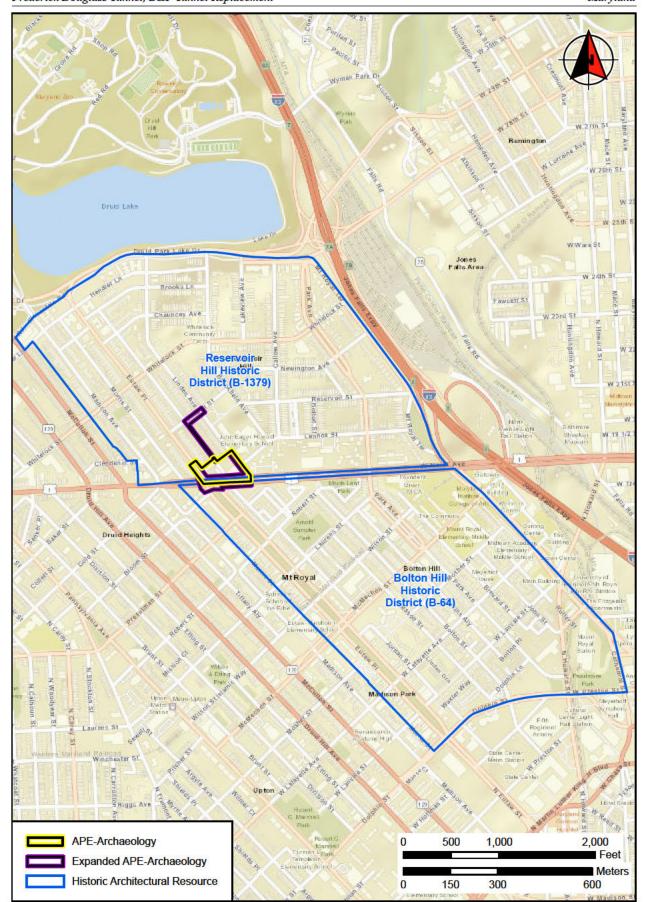


FIGURE 8: Historic Architectural Resources in Expanded APE-Archaeology (ESRI World Street Map 2021) $18\,$

V. STUDY RESULTS

A. CARTOGRAPHIC REVIEW

Maps of Baltimore spanning the nineteenth and early twentieth centuries were selected to understand the history of development in the area and to assess the APE's archaeological sensitivity. For the purposes of this study, the selected historical maps were imported and georeferenced into GIS. The locations of buildings, roads, and other improvements are approximate because historical maps are imprecise relative to modern coordinate systems; however, the historical information presented on the maps is useful in identifying the likelihood that historic archaeological resources may be present.

Maps consulted include those listed below, selected based on their levels of detail, their estimated level of accuracy, their compatibility with one another and modern landmarks, and relevance to the developmental history in the APE-Archaeology.

- *Approaches to Baltimore, Maryland* (Bache 1849/1865)
- *City Atlas of Baltimore, Maryland and Environs* (Hopkins 1876)
- Atlas of the City of Baltimore, MD (Duncan 1897)
- Atlas of the City of Baltimore, Maryland (Topographical Survey Commission 1914)

The cartographic review indicates that the area comprising the expanded APE-Archaeology at the Intermediate Ventilation Facility consisted of an undeveloped woodlot and pastureland outside the City of Baltimore until the early nineteenth century. The first evidence of development in the area does not appear on until the mid-nineteenth century. In 1849 three buildings are mapped within the boundary of the original APE-Archaeology at the Intermediate Ventilation Facility (Figure 9). In addition, an unnamed road is depicted extending northeast to southwest through the expanded APE-Archaeology along the approximate alignment of present-day Bloom Street. All three buildings are depicted in the southeast corner of the original APE-Archaeology, with the footprint of the largest extending into the expanded portion of the APE-Archaeology to the south, within present-day North Avenue. No additional buildings depicted on the 1849 map are located in the expanded APE-Archaeology.

The vicinity of the proposed location of the Intermediate Ventilation Facility was part of the Reservoir Hill neighborhood by 1876 (Figure 10). The part of Bloom Street that previously bisected this portion of the APE-Archaeology was replaced by a city block owned by E. Whitman and is bound by North Avenue, Garden Street (now Lindon Avenue), Eutaw Street (now Eutaw Place) and Ducatel Street. Jordan Street, which currently bisects the city block, had not been constructed by 1876. The Hopkins map depicts a single wood-frame building in the APE-Archaeology near the corner of Eutaw Street and North Avenue. The southern segment of the expanded portion of the APE-Archaeology was located entirely within North Avenue. The northern segment of the expanded APE-Archaeology extends through the center of the former Whitman block, bisecting a circular driveway and a portion of one small building that was present at the center of the block. The only area depicted as developed by 1876 is in the northernmost portion of the expanded APE-Archaeology at Ducatel Street. A portion of a building belonging to George W. Grail is depicted as extending into the APE-Archaeology within Ducatel Street;

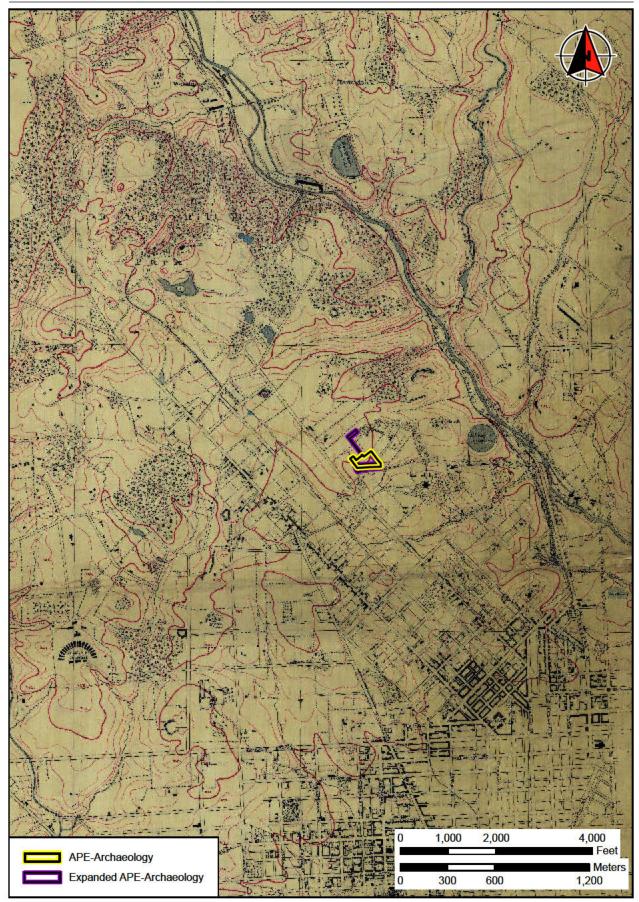


FIGURE 9: Expanded APE-Archaeology in 1849 (Bache 1849/1865) $20\,$

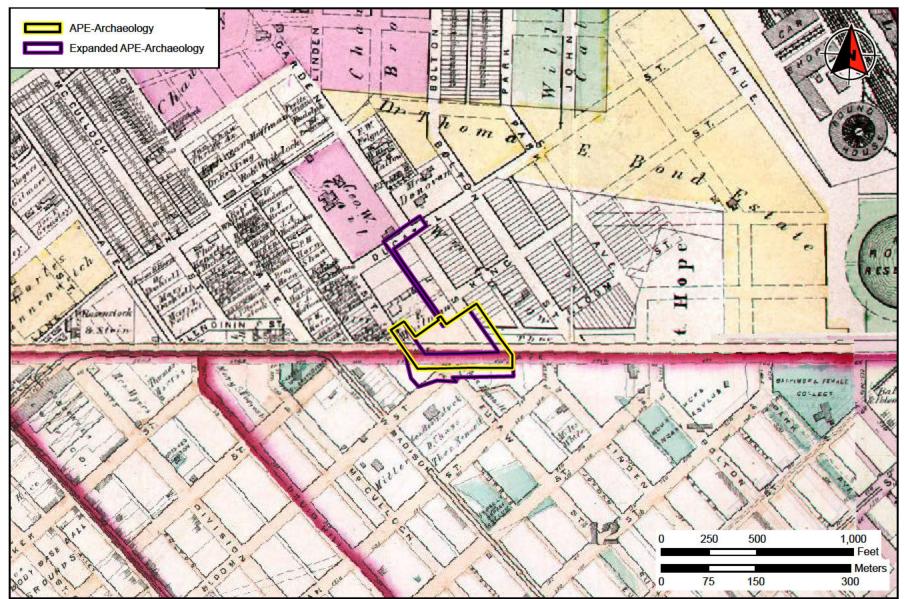


FIGURE 10: Expanded APE-Archaeology in 1876 (Hopkins 1876)

however, its presence may be an unavoidable georeferencing error resulting from the level of accuracy inherent in historical maps. As currently planned, the expanded APE-Archaeology at Ducatel Street does not extend beyond the street ROW.

Jordan Street was constructed by the time of the Duncan (1897) atlas (Figure 11). On the atlas map, the northern portion of the expanded APE-Archaeology extends north along Jordan Street and turns east where it meets Ducatel Street. The southern portion of the expanded APE-Archaeology remains within North Avenue and its intersection with Eutaw Place. The atlas depicts the rail line for the city omnibus line extending through the center of North Avenue, and a wide landscaped median with gardens and pedestrian walkways in Eutaw Street, south of North Avenue. No buildings or other structures are shown in the expanded portion of the APE-Archaeology; however, four outbuildings are located adjacent to the alignment on Jordan Street.

The Topographical Survey Commission (1914) map shows the expanded APE-Archaeology as unchanged from its depiction in 1897 (Figure 12). The expanded area to the north consisted of the paved Jordan and Ducatel streets. To the south, the expanded APE-Archaeology remains within the ROW for North Avenue, and portions of Eutaw Place with both the rail line and landscaped medians are still depicted. No additional improvements are shown in the expanded APE-Archaeology in 1914.

B. GIS TOPOGRAPHIC ANALYSIS

The APE-Archaeology comprising the Intermediate Ventilation Facility was previously subjected to GIS topographic analysis as part of the Supplemental Phase IA study (Shellenhamer and Ward 2023). The analysis was enlarged to the north and south for this addendum study to include the expanded APE-Archaeology. The analysis was conducted using 1897 and 2021 elevation data (see Chapter II.B).

Figure 13 shows the results of the analysis. As the supplemental Phase IA archaeological study indicated, the model shows the modern elevation within the previously delineated APE-Archaeology at the Intermediate Ventilation Facility as 3 or more feet lower in elevation than it was in 1897 (Shellenhamer and Ward 2023). The same decrease in elevation is present in the expanded APE-Archaeology to the south within North Avenue and its intersection with Eutaw Place, suggesting that this area was graded as the result of construction that occurred throughout the twentieth century. The expanded APE-Archaeology to the north along Jordan and Ducatel streets is depicted at the same or slightly higher elevation as in 1897. Although the model depicts some change in elevation in the expanded APE-Archaeology, the changes are within the margin of error in any cartographic analysis of this type.

The analysis shows that the modern elevation has likely varied little since 1897, during which time the Reservoir Hill neighborhood was already well established.

C. REVIEW OF GEOTECHNICAL DATA

The logs for two previous geotechnical borings in the vicinity of the proposed expanded APE-Archaeology at the Intermediate Ventilation Facility (Figure 14) were reviewed. Boring IVF-P2-4 was located at approximately 920 West North Avenue, just west of Jordan Street. Boring IVF-P2-6 was located on Ducatel Street, just east of its intersection with Jordan Street.

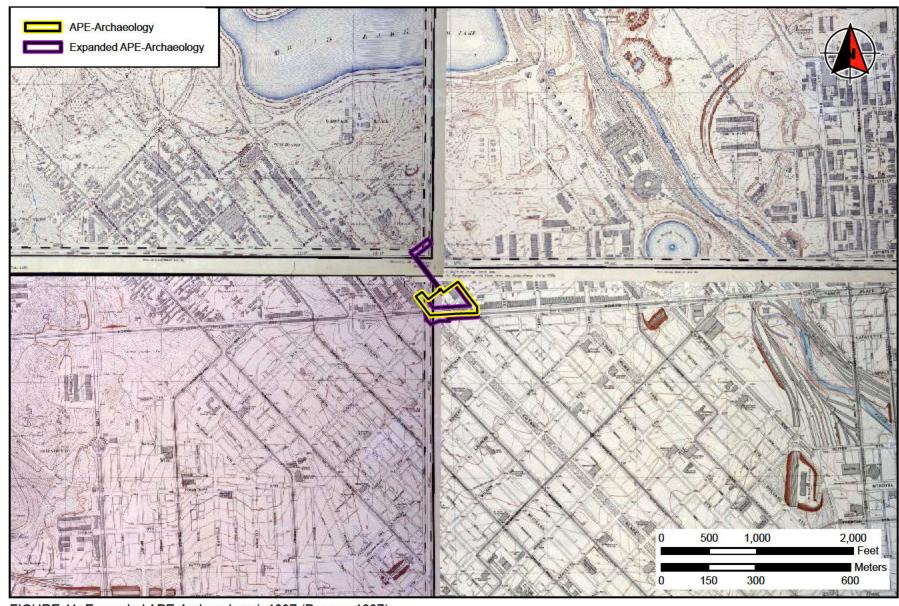


FIGURE 11: Expanded APE-Archaeology in1897 (Duncan 1897)

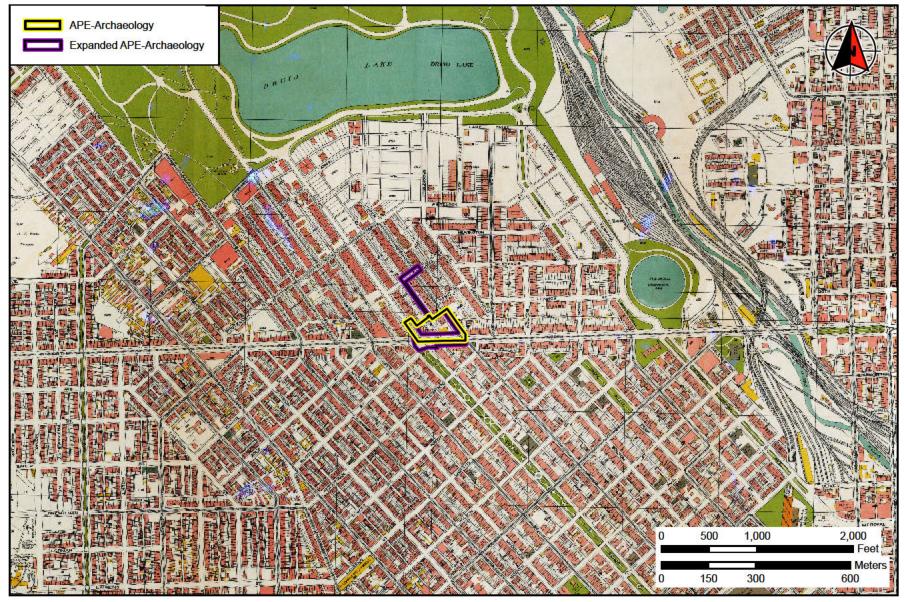


FIGURE 12: Expanded APE-Archaeology in 1914 (Topographic Survey Commission 1914)

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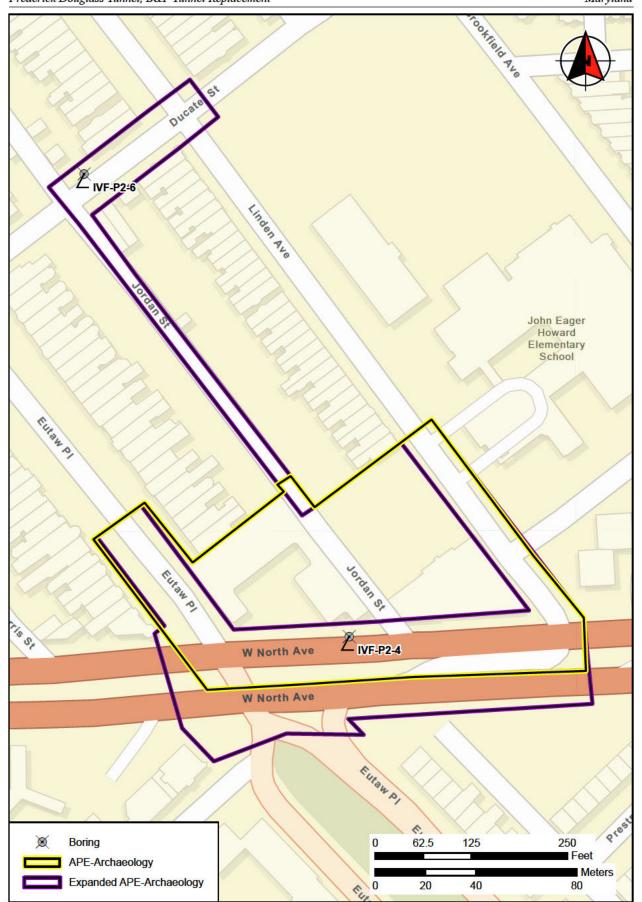


FIGURE 14: Geotechnical Boring Locations in Expanded APE-Archaeology at Intermediate Ventilation Facility (ESRI World Street Map 2021)

The logs indicate that beneath the top 2 feet of pavement and roadway base material, Boring IVF-P2-4 encountered fine sand and silt to approximately 10 feet below ground surface (bgs), at which point the sand and silt became dense and mixed with gravel.

Boring IVF-P2-6 encountered a similar mix of fine sand and silt soil to approximately 6.5 feet bgs. Below that point, clay subsoil with small amounts of silt were encountered to 12.5 feet bgs. The underlying soils were similar to those encountered at the same depth for Boring IVF-P2-4 and consisted of dense sand and silt with mixed gravels. The boring log documents no brick fragments or trace amounts of any other cultural material.

D. SENSITIVITY ASSESSMENT

Archaeological sensitivity is ranked as high, moderate, or low based on the correlation of a location with various favorable environmental characteristics and documented factors. From an environmental perspective, the factors contributing to precontact archaeological sensitivity often also apply to early historic archaeological sensitivity.

In general, analysis of precontact site sensitivity for the Program considers landscape characteristics in or near the APE-Archaeology that are associated with documented precontact sites in the region and locally. Variables can include topography, proximity to water and resource catchment areas over time, soil characteristics, proximity to documented Native American trails or other areas of local and regional communication and exchange (e.g., navigable waterways), presence of natural landscape features (e.g., prominent ridges or hilltops), and proximity to lithic or clay source areas.

High-sensitivity zones for precontact archaeological resources include level to gently sloping, well-drained, upland areas within 500 feet of surface water or wetlands and areas within 500 feet of previously recorded archaeological sites. Moderate-sensitivity zones for precontact archaeological resources are generally more than 500 feet from a freshwater source and characterized by moderately sloping topography and/or somewhat poorly drained soils. Poorly drained soils and steeply sloping topography are negatively correlated with precontact habitation and indicate low sensitivity for precontact archaeological resources. Previous ground disturbance, such as that related to construction, ground clearing, and grading, also lowers the sensitivity for archaeological resources.

Historic site sensitivity depends on the relationship of the APE-Archaeology to local community development over time; historic transportation routes (e.g., roads, railroads, canals, rivers, etc.); the documentary record of residential, commercial, and institutional buildings; and the proximity to target historic resource areas (e.g., fall lines on rivers and streams where mills were established, quarry locations).

Historic archaeological sensitivity is ranked as high in areas near the location of documented historic development and within 300 feet of early transportation routes and as low in areas with little record of historic land development. The presence of standing historic structures indicates a high probability for associated historic archaeological sites. Information obtained from cartographic evidence also contributes to assessments of historic archaeological sensitivity. Although early historical maps do not depict historic structures with accuracy, nineteenth-century

maps often record accurate details of settlement pattern, ownership, and occupation. The likelihood for historic archaeological resources to exist within the APE-Archaeology is high in areas that are in proximity to historic houses and outbuildings or in areas near early roads.

1. Precontact Archaeological Site Sensitivity

As discussed in the supplemental Phase IA study report, the APE-Archaeology at the Intermediate Ventilation Facility was assessed as having a low sensitivity for the presence of precontact archaeological resources (Figure 15). Although the geographical setting of this location near a springhead of the Jones Falls may have been an attractive location for Native Americans prior to the period of European colonization, the development of the Reservoir Hill neighborhood during the late nineteenth and twentieth centuries dramatically altered the former landscape and reduced the likelihood for the presence of intact precontact-period archaeological resources. Furthermore, the expanded APE-Archaeology lies entirely within the road ROW, and these locations were subjected to successive ground-disturbing activities since their construction in the nineteenth century. The construction of underground utilities, installation and removal of street car rail systems, and annual road and utility maintenance resulted in further ground disturbance. These disturbances were illustrated by the fill soils encountered during prior geotechnical testing in the area. As a result, the expanded APE-Archaeology at North Avenue, Ducatel Street, and Jordan Street is assessed as having a low sensitivity for precontact archaeological resources.

2. Historic Archaeological Site Sensitivity

Historical maps and atlases indicate that portions of the APE-Archaeology, including the expanded portion, were occupied by at least the mid-nineteenth century. Three buildings were mapped in this area in 1849 but were razed years later as a result of the construction of North Avenue. By 1876 a new structure was located within the current alignment of Jordan Street, but it was also razed as urban development extended above North Avenue and new streets and alleyways were constructed to support the growth of the Reservoir Hill neighborhood. In the decades that followed, the areas in the expanded APE-Archaeology have remained paved roadways. The construction and maintenance of the roadways along with the construction of buried utilities in the ROW likely diminished any potential to encounter intact cultural deposits or features associated with the early to mid-nineteenth-century residences that were once located in these areas. As a result, the expanded APE-Archaeology at the Intermediate Ventilation Facility is assessed as having a low sensitivity for historic archaeological resources (see Figure 15).

Figure 15 has been redacted

VI. RECOMMENDATIONS

The review of available environmental and soil data, historical background research, the results of the GIS topographical analysis, and geotechnical survey data indicates that there is a low sensitivity for encountering precontact and historic archaeological resources in the expanded APE-Archaeology. The prior modification of the landscape within the expanded APE-Archaeology at the Intermediate Ventilation Facility resulted in substantial ground disturbance associated with urban development, transportation improvements, and construction of buried utilities. As a result of the extent of previous ground disturbance, there is a low potential for the presence of intact archaeological resources. No further archaeological survey is recommended for the expanded APE-Archaeology at the Intermediate Ventilation Facility.

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VIII.LIST OF ABBREVIATIONS AND ACRONYMS

APE Area of Potential Effects

APE-Archaeology Archaeological Area of Potential Effects

B&P Baltimore & Potomac

DEIS Draft Environmental Impact Statement

DEM Digital Elevation Model

GIS Geographic Information System

FEIS Final Environmental Impact Statement

FRA Federal Railroad Administration
LiDAR Light Detection and Ranging

LOD Limits of Disturbance

MDOT Maryland Department of Transportation

MHT Maryland Historical Trust

MIHP Maryland Inventory of Historic Properties

NEPA National Environmental Policy Act

NRCS Natural Resources Conservation Service
NRHP National Register of Historic Places

TVALIONAL REGISTER OF THIS TOTAL

OD Outside diameter

PA Programmatic Agreement

PB/P JV Parsons Brinckerhoff/Parsons Joint Venture

Program Frederick Douglass Tunnel, B&P Tunnel Replacement Program

RPA Register of Professional Archaeologists

ROD Record of Decision

ROW Right-of-way

Section 106 Section 106 of the National Historic Preservation Act, as amended

TIN Triangulated Irregular Network

USDA United States Department of Agriculture

UMAB University of Maryland, Baltimore

WSP USA Inc.

APPENDIX A: QUALIFICATIONS OF THE INVESTIGATORS

QUALIFICATIONS OF THE INVESTIGATORS

JASON SHELLENHAMER

Master of Applied Archaeology, Historical Archaeology, University of Maryland, 2004 B.A., Anthropology, Minor in History, Franklin and Marshall College, 2001

Mr. Shellenhamer is a senior archaeologist with the Heritage Resource Practice in WSP's Southeast Region. His experience includes management of a wide range of cultural resource studies for federal, state, and municipal clients in the Middle Atlantic, Southeast and Northeast regions. His experience includes the design and direction of Phase I through Phase III studies, development of alternative mitigation strategies, consultation and agency coordination, National Register of Historic Places evaluations, historic property reviews, preservation easement property evaluations, and design and implementation of public outreach programs.

HENRY WARD

M.S.A., Graduate Fellowship, Department of Anthropology, University of Delaware, Newark, 1985

B.A., Department of Anthropology/Sociology, Ohio Wesleyan/Ohio State University, Delaware, Ohio, 1981

Mr. Ward is the cultural resources project manager and WSP archaeologist with over 42 years of experience as a professional archaeologist and cultural resources manager and he exceeds the Secretary of the Interior's Professional Qualification Standards for Archaeology. Mr. Ward possesses specific technical knowledge with the archaeological resources of the Chesapeake Region and has also had over a decade's general experience in overseeing comprehensive cultural resources programs that integrate the full range of archaeology and historic architectural disciplines.

APPENDIX B: 2017 B&P TUNNEL PRELIMINARY ENGINEERING GEOTECHNICAL DATA BORING LOGS

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ANDT-				Н											a a
PJ B&F		-													я
8&P BORING LOG (FINAL) B&P TUNNEL PHASE1_160531 PH1.GPJ B&P TUNNEL - 150528 WITHOUT LOGO PH1.GLB 1/19/17															e-
60531															3
SE1_1		t													0
EL PH/				1											
INNDI 40															8
40															-
FINAL															
9079															
BORIN															
B&P Note:														<u> </u>	. N. N. O. A. A. A. A.

Note:

Boring No. NP-1 Sheet 2 of 2

SHEET NUMBER: 1 of 2															BORING	NUMBER	R: NP-2		
PROJECT: B&P Tunnel Replacement Project LOCATION: Baltimore, MD CLIENT: AMTRAK CONTRACTOR: EZCR, Inc. SURFACE ELEV: 97.5 feet SURFACE E	6	3						R	OP	INC	: 1 0	C			SHEET	NUMBER:	1	of	2
PROJECT NUMBER: 18-301-31-31-31-31-31-31-31-31-31-31-31-31-31	P	lo D	TUNN	EL				D		IIV							7		
LOCATION: Baltimore, MD				Till											The second second second		_1 \.		
COORD:: N: 599,652.6 E. 1,418,879.1									ent Pr	oject					LOCATION	ON: McMe	chen Stree	et	
SURFACE ELEV.: 97.5 feet DATUM: Horizontal NAD 83/91							e, N	MD							COORD	N. 500 A	52.6 1	E- 1 418 8	79 1
DRILLIER: S. Lyons INSPECTOR: L. Sepulveda DRILLING METHOD: HSA; Diamond Coring START DATE: 5/6/15 TIME: 1:15 am FINISH DATE: 5/6/15 TIME: 4:01 am Type/Symbol HSA S	100000000000000000000000000000000000000						R. I	Inc.											77.1
NSPECTOR: L. Sepulveda DRILLING METHOD: HSA; Diamond Coring START DATE: 5/6/15 TIME: 1:15 am FINISH DATE: 5/7/15 TIME: 4:01 am FINIS																Horizonta	al: NAD	83/91	
RIG TYPE: CME-75, Truck Mounted FINISH DATE: S/7/15 TIME: 4:01 am	INS	SPE	CTOF	R: L	. Se	pu													-
Auger Spitt Spoon Casing Dennison Grab Core Barrel GROUNDWATER DATA										ring									
Type/Symbol HSA S	RIC	ίTΥ	PE: (CMI			$\overline{}$	CONTRACTOR CONTRACTOR		na -	Don-ir	0-1		ro Dere-I	FINISH				Laill
I.D.	Tre	00/0	ımh-	, -	100000				-			1 1000000000000000000000000000000000000	1500			GROUN			Hole
O.D. S.25" 2" 3.50" n/a 3.375" n/a 5/7/15 9.05 pm 21.4 33.0 56.1	1000000	Mary Property St.	ymbo)I			_		(5)(5)(5)	9260					- D-1	T	Depth	Depth	Depth
Length Hammer Wt. 1/4 140 bs Drill Rod Size AW (SPT sampling)	1			-			-	7.79.72			33				9-8570	0.000		200000	1000
Hammer Fall n/a 140lbs Drill Rod Size AW (SPT sampling) 1.219" (1.75")				-	15.00	1000000		275,0900	1007.00		30	10000		0000000	3///13	9:05 pm	21.4	33.0	30.1
Hammer Fall				-	3(7)	676		1200	- 55		200000000000000000000000000000000000000		(SPT or	(1000000000000000000000000000000000000					
SAMPLE SOIL (Blows/6 in.) O/6 6/12 12/18 18/24 REC. (in.) CORING	25547625			-				37.63.255.56						10 SCT-9733					7
S S S S S S S S S S	T Ia	ши	or ra		T		٠.				- Silveria - 1		.217 (1	1	L				
RUN, REC. (in.) % (in.		£	90	5	L	_	SA	MPLE		SOI	L (Blows/	6 in.)		1					
RUN, REC. (in.) % (in.		(tee	210	ws/ft				6	0/6	6/12	12/18	18/24	15257 37						
RUN, REC. (in.) % (in.		J. T	4PHI(3 (Blo		R.	٦	(feet			CORING	6	(111.)	1	FIELD C	LASSIFICAT	ION AND F	REMARKS	
G 1 2.0 - 2.5 G R A B 6 1 2.0 - 2.5 G R A B 6 2.5 ft bgs. Dark yellow-brown coarse to fine SAND, little coarse to fine Gravel, very dense, dry (SM, possible FILL) S 1 4.0 - 5.5 24 33 50/6" 18 Yellow-brown coarse to fine SAND and SILT, little coarse to fine Gravel, very dense, dry (SM, possible FILL) 7.3' 90.2' S 2 9.0 - 11.0 5 13 13 13 24 Light yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 14.0 - 15.0 21 50/5.5" 11.5 Light yellow, brown and white SILT and white SILT and Soil Silt yellow, brown and white SILT and S	'	<u> </u>	GR	SASING	TYPE	UMBE	SYMBC	ЭЕРТН	200000000000000000000000000000000000000		REC.	L>4"		1					
G 1 2.0 - 2.5 G R A B 6 S7.0° Note: Hand excavated for utility clearance, depth 0.0 - 2.5's soil very dense, unable to progress beyond 2.5 ft bgs. Dark yellow-brown coarse to fine SAND, little coarse to fine Gravel, stone fragments, dry (FILL) Yellow-brown coarse to fine SAND and SILT, little coarse to fine Gravel, very dense, dry (SM, possible FILL) 7.3' 90.2' Light yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 14.0 - 15.0 21 50/5.5" 11.5 Light yellow, yellow, brown and white SILT and Light yellow, yellow, brown and white SILT and Soil)	<u> </u>			٦	十	_	0)		(111.)	(111.)	70	(111.)	70						
G 1 2.0 - 2.5 G R A B 6 2.5 ft bgs. Dark yellow-brown coarse to fine SAND, little coarse to fine Gravel, stone fragments, dry (FILL) Yellow-brown coarse to fine SAND and SILT, little coarse to fine Gravel, very dense, dry (SM, possible FILL) 7.3' 90.2' Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) Light yellow, yellow, brown and white SILT and Soil	-		*\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\											97.0'	Note: Hand	excavated for	r utility clea	arance, depth	ı –
S 1 4.0 - 5.5 24 33 50/6" 18 Dark yellow-brown coarse to fine SAND, little coarse to fine Gravel, stone fragments, dry (FILL) Yellow-brown coarse to fine SAND and SILT, little coarse to fine Gravel, very dense, dry (SM, possible FILL) 7.3' 90.2' Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 14.0 - 15.0 21 50/5.5" 11.5 Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil)	- 25		কাদ ন নাই		G	ī		2.0 - 2.5	G	R	A	В	6		2.5 ft bgs.				622
S 1 4.0 - 5.5 24 33 50/6" S 2 9.0 - 11.0 5 13 13 13 24 Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 14.0 - 15.0 21 50/5.5" Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil)			2 4 0 A				X		c (Till)			_	2/7/2		Dark yellow to fine Grav	-brown coars el, stone frag	se to fine Sa ments, dry	AND, little c (FILL)	oarse
S 2 9.0 - 11.0 5 13 13 13 24 Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 14.0 - 15.0 21 50/5.5" Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil)	3		*:0		1			100 E-201		81/200 MAN - 111111							, ,		
FILL) 7.3' 90.2' Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 = 14.0 - 15.0 21 50/5.5" Light yellow, yellow, brown and white SILT and Light yellow, brown and white SILT and Silvertic Silver	3		来/		S	1		4.0 - 5.5	24	33	50/6"		18		Yellow-brov	vn coarse to	fine SAND	and SILT, li	ttle
S 2 9.0 - 11.0 5 13 13 24 Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 14.0 - 15.0 21 50/5.5" 11.5 Light yellow, yellow, brown and white SILT and	- 5		1 D. 1		+											e Gravel, ver	y dense, dr	y (SM, poss	sible
S 2 9.0 - 11.0 5 13 13 13 24 Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 14.0 - 15.0 21 50/5.5" 11.5 Light yellow, yellow, brown and white SILT and Light yellow, yellow, brown and white SILT and	-		4,04	_	+										-				2-
S 2 9.0 - 11.0 5 13 13 13 24 Light yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 14.0 - 15.0 21 50/5.5" 11.5 Light yellow, yellow, brown and white SILT and Light yellow, yellow, brown and white SILT and	-		. p4 . k											7.3'					-
Eight yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 — 14.0 - 15.0 21 50/5.5" Light yellow, yellow, brown and white SILT and Light yellow, yellow, brown and white SILT and Silt yellow, yellow, yellow, brown and white SILT and Silt yellow, yellow, brown and white SILT and Silt yellow, yellow, yellow, brown and white SILT and Silt yellow, yellow, yellow, brown and white SILT and Silt yellow,			1003																253
Eight yellow, yellow, brown and white SILT and medium to fine SAND, very stiff, dry (ML, Residual Soil) S 3 — 14.0 - 15.0 21 50/5.5" Light yellow, yellow, brown and white SILT and Light yellow, yellow, brown and white SILT and Silt yellow, yellow, yellow, brown and white SILT and Silt yellow, yellow, brown and white SILT and Silt yellow, yellow, yellow, brown and white SILT and Silt yellow, yellow, yellow, brown and white SILT and Silt yellow,	2				gae	120		9000 00 to	2008	5000000	886	737.25	8336						-
Soil) Soil) Light yellow, yellow, brown and white SILT and SILT	5				S	2		9.0 - 11.0	5	13	13	13	24						
S 3 — 14.0 - 15.0 21 50/5.5" 11.5 Light yellow, yellow, brown and white SILT and SIL	- 1	0		-	+											ine SAND, v	ery stiff, dr	y (ML, Resi	dual
Light yellow, brown and white SILT and	-			1/	4										married (C)				0_
Light yellow, brown and white SILT and	2																		84
Light yellow, brown and white SILT and																			
Light yellow, brown and white SILT and					1														£
2 C CAND 1 1 1 Off D 11 1 C 10	-				S	3		14.0 - 15.0	21	50/5.5"			11.5						
	1	5		_	-														
<u></u>	<u>.</u>			_															2-
	3																		3 17
	-				1														() <u>—</u>
S 4 19.0 - 20.4 25 41 50/5" 17 Light yellow, yellow, brown and white SILT and	-				S	4		19.0 - 20.4	25	41	50/5"		17						
Mote: medium to fine SAND, hard, dry (ML, Residual Soil) Note: Boring No. NP-2 Sheet 1 of 2	Nota	3													medium to f	ine SAND, h	ard, dry (N	IL, Residual	Soil)

PROJE LOCAT	CT:	B&l	Mec	he		Replacen	28	ontinue		OG			BORING NUMBER: NP-2 SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A CONTRACTOR: E2CR, Inc. DRILLER: S. Lyons INSPECTOR: L. Sepulveda
	9	,		S	SAN	MPLE		SOIL	(Blows/	6 in.)			
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)				et)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD OF ACCIDINATION AND DEMARKS
EPT	SAPH	NG (BI		3ER	30	DEPTH (feet)			CORING]	FIELD CLASSIFICATION AND REMARKS
	5	CASIN	TYPE	NUMBER	SYME	DEPT	RUN (in.)	REC. (in.)	RQD %	1			
25 - 25 - 30						22.5 - 22.6			%	(in.)	1	22.6' 74.9	Light gray and gray fine GRAVEL and coarse to fine Sand sized bedrock fragments, very dense, dry (GP, Highly fractured bedrock) (Auger refusal at 22.6 ft bgs, see Coring Log)
130 ATT 1													
828 BORING LOG (FINAL) B&P TUNNEL PHASE! 160531 PHT.GPJ B&P TUNNEL - 15028													
Note:												Bori	ing No. NP-2 Sheet 2 of 2

													BORING	NUMBER	R: NP-3	ow	
2	TINN	EI				В	OR	NG	LC	G			SHEET	NUMBER:	1	of _	1
B84	PROJE	ĊŤ											PROJEC	T NUMBE	ER: 1	185615A	
	IECT:					Replacem /ID	ent Pr	oject					LOCATION	ON: McMe	chen Stree	et	
	NT: AN													.: N: 599,3			80.0
	TRAC1				R ,]	Inc.								E ELEV.: Horizonta			
	LER: S				lvo	do							DATOW.	Vertical:			
						A; Diamo	nd Cor	ing					START	DATE: 5/1	1/15 T	IME: 11:	30 pm
						ck Mount		8		-57	70		FINISH [DATE: 5/1	3/15 T	IME: 4:2	5 am
			Au	iger	3	Split Spoon	Casi	ng [Dennison	Grat	53 576	ore Barrel		GROUN	NDWATER	TO THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS	
CONTRACTOR OF STREET	Symbo	ol	Н	SA		S	NV	V	D	G		С			Water Depth	Auger Depth	Hole Depth
I.D.				25"		1.375"	3.00		n/a	3.25		n/a	Date	Time	(ft)	(ft)	(ft)
O.D.			0.000	25"		2"	3.50)"	n/a	3.375	5"	n/a	5/13/15	1:40 am	11.8	12.0	84.3
Lengtl			3(3)	0"		24"	60'		n/a	6"		n/a	5/14/15	9:00 pm	12.2	12.0	84.3
2554766557745555	ner Wi	× -		/a		140lbs		rill Rod		_	1000	ampling)					
Hamn	ner Fa	Ш	n	/a		30"		I.D. (O.I	D.)	1	.219" (1.75")	l.			p.	
) (F)	90	(H)	L		SA	MPLE		SOI	L (Blows/	6 in.)	REC.	4					
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)				eet)	0/6	6/12	12/18	18/24	(in.)	1	FIELD CI	LASSIFICAT	ION AND F	REMARKS	
DEP.	GRAP	SING (Ä	NUMBER	SYMBOL	DEPTH (feet)	RUN	DEC	CORING	L>4"	RQD	-					
	1850	CAS	TYPE	N	SYI		(in.)	REC. (in.)	REC.	(in.)	%						
			Т			0.0 - 0.8						0.0'	10" Asphalt	slab			
- - - - - - - - - 15	魚		1									100.7'					ă.
±0	전 기급 기급	-	G	1	X	2.0 - 2.5	G	R	A	В			Yellow-brov	vn coarse to	fine SAND.	some coars	e to
-0	- A	_	-			2.5 - 4.0						3.4'	fine Gravel, Note: Hand	some Clay (S	SC. possible	e FILL)	
-	CA.		S	1		4.0 - 5.8	38	33	34	50/4"	22	98.1	0.00'-2.75'.	Soil very den	se, unable t	to progress	" /
_ 5	1.1											4.8'	beyond 2.75 S-1A: 4.0'-4	.75': Light ye			lium
- 5												96.8'	SAND, trace	Silt, very de 5.8': Light-ye	ense, dry (S	P)	_/ -
-			1										brown medi	um to fine SA	AND and S	ILT, little co	arse
. 8			+									7.0' 94.5'	Gravel, dry,	very dense (SM, Decon	iposed Rock	.)
- "		1	s	2		8.0 - 9.3	26	43	50/3"		15		Light-yellow	brown whi	te and brow	on SII T and	
-8						0.0							coarse to fin	e SAND, trac	ce to little c		
- 10			S	3		9.3 - 9.3	50/0				0		hard, dry (N	iL, Decompo	sed Kock)		~-
10																	
												12.0					
	+		+		+							12.0' 89.5'	(Auger refus	sal at 12 ft bg	gs, see Cori	ng Log)	
-0			+										d die				65
-																	76
– 15																	0.1
13																	
-0																	£.
-			+														
-		<u> </u>	-														٠.
-0		47 17.7	-														
Note:												Boi	ring No.	NP-3	Shee	t 1 c	of 1

													BORING	NUMBER	R: SP-1		
3						R	ORI	INC	LC	C			SHEET	NUMBER:	1	of	2
B ₈ P	TUNNI	EH				יט		1140	, _(PROJEC	CT NUMBE	ER: 1	185615A	
PROJE	ECT:	B&F	T	unr	ıel	Replacem	ent Pr	oject					200 1000 0000 0000	ON: 1938 F	1911/1997	ue	
LOCAT	TION:	Bal	tim	ore				•					COORD	: N: 595,3	370.7	E: 1.411.5	53.2
CONT					R, I	Inc.								CE ELEV.:			
DRILLI	ER: S	. Ly	ons	Ÿ.									DATUM:	Horizonta			
INSPE						V2183.6V		_					OTABT	Vertical: DATE: 4/6			0
						A: Diamor		ing						DATE: 4/9		IME: 9:50 IME: 9:40	
			Au	iger		Split Spoon	Casi		Dennison	100000000000000000000000000000000000000	1700	ore Barrel		GROUN	NDWATER		
Type/S	Symbo	ol _		SA		S	NV	200	D	G	-	С	_		Water Depth	Auger Depth	Hole Depth
I.D.			-	25"		1.375"	3.00		n/a	3.25		n/a	Date	Time	(ft)	(ft)	(ft)
O.D.			100000	25"		2"	3.50		n/a	3.375	5"	n/a	4/6/15	2:25 pm	10.0	10.0	10.0
Length		-	3(3)	0"		24"	60'		n/a	6"	(022	n/a	4/9/15	9:10 am	9.2	33.0	91.0
Hamm		-		/a		140lbs	_	rill Rod		_	5050	ampling)	4/10/15	9:00 am	9.0	33.0	96.2
Hamm	er Fa	II	n	/a		30"		I.D. (O.	D.)	1	.219" (1	1.75")	4/13/15	10:00 am	10.1	33.0	96.2
t t	90	t	L		SAI	MPLE		SO	L (Blows/	6 in.)		1					
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	l			et)	0/6	6/12	12/18	18/24	REC. (in.)]	FIFI D.C	LASSIFICAT	ION AND F	REMARKS	
DEPTI	RAPH	NG (B	<u> </u>	NUMBER	BOL	DEPTH (feet)			CORING	6			11225 01	L/10011 10/11	1011711101		
	g	CASI	TYPE	NOM	SYMBOL	DEP.	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %]					
			T			0.0 - 0.8			100000		100000	0.0' 0.8'	10" Layer of	f asphalt, brid	ck and cond	crete	
-	渝。											161.3'					3.5
-0	의다. 기다		_			25.55			to gre								0.
- 0	Δ 4 ₀		\int_{-G}^{G}	1	X	2.5 - 3.0	G	R	A	В	6			fine to coars			
	****												fragments, c	el, trace to lit lry (SP-SM, l	FILL)	ck, coal, stor	ie -
_				_		50.55		D		D							222
- 5			G	2	\times	5.0 - 5.5	G	R	A	В	6		Light brown	fine to coars	se SAND, to	race to little	dry
-	* 04		1										(FILL)	ei, ont, oriek	, coai, stoll	nagments (ury -
-	,殊: 9		G	3	X	7.0 - 7.5	G	R	A	В	6		Light brown	fine to coars	se SAND, t	race to little	12 -
_==	49.4		1										coarse Grav	el, Silt, brick	, coal, stone	e fragments	dry
-													3	d with air kn	ife to = 0.6	denth for ut	lity -
– 10	₩D.		S	1		10.0 - 12.0	1	1	WOH	1	0		clearance		ne to ~9 It	deput for uti	шу _
10	□ 45 7**		ľ	1		10.0 - 12.0	118	1	WOII	1			No recovery				
	の り 。																-
-	*A 1 0 →		1														8-
-0	% c.		-			12.5	Worr		_	_	10						0
-	4 49 104		S	2		13.5 - 15.5	WOH	2	2	1	10			coarse to fin			
- 15	* ::\ a													el, brick, coa se, moist (SM		gments, very	5
13	*4																
-	4. O□ → C		1									17.0					0
-												17.0' 145.1'					
-							1940	****		******	9191	10000000000000000000000000000000000000					\ <u></u>
-			S	3		18.5 - 20.5	1	WOH	1	WOH	16			Clayey SILT,			onal _
	=		L										plant noers,	micaccous, \	cry son, III	OBI (OL)	
Note:												Po	ring No	SP-1	Shee	1 1 0	f 2

Boring No.

OJE	ION:	B&1	8 F	Rigg		l Replacen	(co	ontinue	GLC	OG			SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A CONTRACTOR: E2CR, Inc. DRILLER: S. Lyons INSPECTOR: L. Sepulveda
<u>.</u>	90	Q	L		SAI	MPLE		SOIL	(Blows/	6 in.)			
H (fee	HC LC	lows/fi				eet)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CLASSIFICATION AND REMARKS
DEPI	SRAPI	ING (B	Ä	ABER	MBOL	тн (fe							
	J	CAS	TYP	Š	SYN	DEF	RUN (in.)	REC. (in.)	RQD %				
5			s	5		23.5 - 25.5 28.5 - 29.2	46	50/2"	23	16	8	22.0' 140.1'	S-4A (23.5'-25.0' and 25.3'-25.5'): Reddish brown fine to medium SAND, some Silt, trace decomposed medium to fine Gravel, micaceous, dense, moist (SM, Residual Soil) S-4B (25.0'-25.3'): Light gray and black medium to fine SAND, some Silt, trace medium to fine Gravel, micaceous, dense, moist (SM, Decomposed Rock) Dark green-gray medium to fine SAND, some Silt, little medium to fine Gravel (bedrock fragments), very dense, moist (SM, Decomposed Rock)
5												129.1'	ring No. SP-1 Sheet 2 of 2
	CAT IEN (jeel) H I dag 5	CATION: A IENT: A O O O O O O O O O O O O O	CATION: 193 IENT: AMTH (seaphic log CASING (Blows/#) 193 193 194 195 195 195 195 195 195 195	CATION: 1938 F IENT: AMTRA GRAPHIC LOG S S O	IENT: AMTRAK OPENHIC LOG OPENHIC LOG S S 5 O OPENHIC LOG OPENHIC LOG S S 5 OPENHIC LOG OPENHIC LOG OPENHIC LOG OPENHIC LOG OPENHIC LOG S S 5	CATION: 1938 Riggs A	CATION: 1938 Riggs Avenue IENT: AMTRAK SAMPLE GRAPHIC LOG SAMPLE SAMBOL SAMBOL	SAMPLE O/6 O	SAMPLE SOIL SAMPLE SAMPLE SOIL SAMPLE SOIL SAMPLE SAMPLE SOIL SAMPLE SAMPLE SOIL SAMPLE SAMPLE SOIL SAMPLE SAMPLE SOIL SAMPLE S	SAMPLE SOIL (Blows/Green Corning Corni	SAMPLE SOIL (Blows/6 in.) O/6 6/12 12/18 18/24	SAMPLE SOIL (Blows/6 in.) O/6 6/12 12/18 18/24 REC. (in.) CORING	SAMPLE SOIL (Blows/6 in.) CORING RUN REC. (in.) REC.

													BORING	NUMBE	R: CSX-A	4	
2						R	NRI	NG	LC	C			SHEET	NUMBER	:1_	of	2
B ₈ P	TUNNE	+				Β,		140					PROJEC	T NUMB	ER: ¹	185615A	
PROJE	ECT: I	B&F	Tı	unn	el	Replacem	ent Pr	oject					LOCATION	ON: AMT	RAK 1800	Falls Rd.; C	harles
LOCA					, N	1D							00000			CSX bridge	
CLIEN																E: 1,419,49	98.4
CONT														E ELEV. Horizont			
DRILL INSPE														Vertical:			
						ow Stem Au	gers: D	iamond	Coring.				START	DATE: 6/	16/16 T	IME: 10:2	20 am
						ber Track	500			er			FINISH D	DATE: 6/	16/16 T	IME: 12:0	00 pm
			Au	ger		Split Spoon	Casi	ng	Pitcher	Grab	Co	re Barrel		GROU	NDWATER	DATA	
Type/S	Symbo	ı	n	/a		S	NV	/	L	GX		С			Water	Casing Depth	Hole Depth
I.D.			n	/a		1.375"	3.00	"	n/a	3.25	"	1.875"	Date	Time	Depth (ft)	(ft)	(ft)
O.D.			n	/a		2"	3.50	,,,	n/a	3.375	;"	2.980"					
Length	1		n	/a		24"	60'		n/a	6"		60"					
Hamm	er Wt.		n	/a		140lbs	D	rill Rod S	Size		A						
Hamm	er Fal		n	/a		30"	1	.75")									
1		J/ft)	Γ		SAI	MPLE											
(ef	90.	mj.	\vdash		-	eterne PEGESTON	rogatories	1									
1 (fe	IC L	ATE				et)	0/6		EIEI D CI	_ASSIFICAT	TION AND E	SEMARKS					
DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)	ļ.,	NUMBER	BOL	DEPTH (feet)			FIELD CL	-ASSII TOAT	TION AND P	KLIVIANNO					
-	١٠	SOR	TYPE	NUM	SYM	DEP	RUN (in.)										
	Â		f				()	0.0'	Note: Hand	excavated for	or utility clea	arance, depth	i				
	10 D								0.0'-10.5'				02				
5	**																
9 3/2	**.		G	1		2.0 - 2.5	G	R	A	В	6		Dark gray ar	nd vellowich	hrown coa	rse to fine	÷.
D.G	Δ Δ Σ												GRAVEL (u	p to 2") and	coarse to f	ine Sand, tra	ce
B&P BOKING ONLY (SOIL AND KOCK COMB) B&P TONNEL 8-10-10 PTIZ.GPJ B&P TONNEL 8-10-10 AD.GLB 3/2/17	*A. (g,)												Clayey Silt,	trace cinders	s, moist (Gl	, FIII)	9
-0-	3 ₩ □		G	2		4.0 - 4.5	G	R	A	В	6					a a	
Jack Control of the C	д4.			885	X	1999 (1999) 10	857	8555	5%	3855	(353)		Gray and yell coarse to find				
5 – 5	4 OD 3												moist (SP, F		, ,		5
D. C.	梨山							_		_							
25			G	3	X	6.0 - 6.5	G	R	Α	В	6		Light brown	coarse to fi	ne SAND, s	ome coarse t	0
E L	> % 0 49												fine Gravel, roots, moist		ace mica, tr	ace shell, tra	ce .
1-01-	***																
-	4 7 19014		G	4	V	8.0 - 8.5	G	R	A	В	6		Brown, black	k and orang	e CLAY &	SILT, little	
NO	*∆. 1 □ }												coarse to fine	e Sand, trac			anic
N N N N N N N N N N N N N N N N N N N	¥ o.												odor (ML, F	111)			89
- 10	Ø. 43		G	5		10.0 - 10.5	G	R	A	В	6				Carrier Description	- 10	_
3	***************************************		S	1	X	10.5 - 12.5	6	4	3	3	11.5	10.5'	Black coarse Gravel, trace				
-												53.8	trace glass fr Fill)				
AND												_	Brown, dark				
						Sc.							SAND, some loose, moist		to little coar	se to fine Gra	avel,
¥-													noist	,			
9																	
200																	3.
T N																	
Note:												Bor	ing No	CSX-A	Shee	t_1_ o	of 2

												BORING NUMBER: CSX-A
6					R	ORI	NG	10	C			SHEET NUMBER: 2 of 2
B	8 PTUNI PRO	NE.					ontinue					105(15)
	11100					<u> </u>		<u> </u>				PROJECT NUMBER: 185615A
PR	OJECT:	В&	P T	Tunne	el Replacer	nent Pi	roject					CONTRACTOR: FSD, Inc.
LO	CATION	l: Ba	ltin	iore,	MD							DRILLER: J. Scribellito Jr.
CLI	ENT: A	AMT	RA]	K								INSPECTOR: L. Sepulveda
	, o	nin/ft)		SA	MPLE		SOIL	_ (Blows	/6 in.)			
DEPTH (faet)	GRAPHIC LOG	TE (r			£	0/6	6/12	12/18	18/24	REC. (in.)		
I di	APHI	G RA	ı	R =	(fee			CORING	5	, ,	1	FIELD CLASSIFICATION AND REMARKS
	g 8	CORING RATE (min/ft)	TYPE	NUMBER	DEPTH (feet)	RUN (in.)	REC. (in.)	RQD %				
-68			S	2	15.5 - 17.5	4	2		Brown coarse to fine SAND and coarse to fine Gravel, some Silt, very loose, wet (SM)			
			ı									Chaver, some sin, very loose, wet (sivi)
ŀ			ı								17.01	
- 0		Í	S C	3	18.0 - 18.2 18.2 - 19.2		12	100	5.0	2	17.8' 48.3'	Dark green, gray medium to fine SAND, some coarse
L		0.3	ŝ 📗			12	12	100	5.0	42	46.1	to fine Gravel (bedrock fragments), trace to little Silt, very dense, moist (SP-SM, Decomposed Rock)
		0.3	С	2	19.2 - 24.2	60	60	100	36.6	61		Dark, bluish gray with streaks of white AMPHIBOLITE; medium to fine grains of
- 20)			100 100 100 100								amphibole and feldspar; close to very close fracture spacing; except extremely close fracture spacing at
- -		0.9									l	18.20-18.45'; slightly weathered; medium strong to strong; foliation not discernable at core scale.
		0.3										Dark, bluish gray with streaks of white AMPHIBOLITE; medium to fine grains of
5		0.8										amphibole and feldspar; close to very close fracture spacing; slightly weathered; strong to medium
-		0.0										strong; foliation not discernable at core scale.
-		0.5	C	3	24.2 - 28.2		300.00					
	-	0.5		3	24.2 - 20.2	48	48	100	20.6	43	25.0'	24.20'-25.00': Dark, bluish gray with streaks of white AMPHIBOLITE; medium to fine grains of
25		0.0		100							39.3	amphibole and feldspar; close to very close fracture spacing; slightly weathered; strong to medium
_		0.6									_	strong; foliation not discernable at core scale. 25.00'-28.20': Light gray with streaks of black
		0.4										GRANITIC GNEISS; medium to fine grains of feldspar quartz and amphibole; close to very close
5	SI SIS UUU II	1.0		5.5								fracture spacing; except extremely close fracture spacing at 25.90'-26.10'; slightly weathered; medium
		4	+								36.1	strong to strong; gneissic banding dips ~40°-45°; quartz bands up to 4.5" thick.
-												(End of boring at 28.2 ft bgs)
- 30			ı									
-												
-												-
8			L									
Note:											Bori	ing No. CSX-A Sheet 2 of 2

Boring No. CSX-A Sheet 2 of 2

													BORING	NUMBE	R: CSX-I	?	
3						R	DI	NC	LC	C			SHEET	NUMBER	:_1	of _	2
Roll	TUNN	EL				D		ING	L								
DO	PROJE	CT											PROJEC	T NUMB	ER: 1	185615A	
						Replacem	ent Pr	oject					LOCATION	ON: AMT	RAK 1800	Falls Rd.; C en CSX and	harles
LOCA					, N	AD .							COORD			idges E: 1,419,4	
CLIEN					In	c								CE ELEV.			02.3
DRILL														Horizont		77	
INSPE													1	Vertical:			
						low Stem Au				E .				DATE: 6/		IME: 7:00	
RIG T	YPE:	CM	100		Ruk	ber Track	C-011 0		CONTACTOR	20,525 (60			FINISH	CALABORATION CONTROL		IME: 9:20) am
			100000	iger		Split Spoon	Casi		Pitcher	Grat	1700	ore Barrel		GROU	NDWATER Water	DATA Casing	Hole
Type/S	Symbo	ol		ı/a		S	NV	800	L [G		C			Depth	Depth	Depth
I.D.				ı/a	-	1.375"	3.00	//	n/a	3.25		1.875"	Date	Time	(ft)	(ft)	(ft)
O.D.		-	-	ı/a	_	2"	3.50	_	n/a	3.375	<u>''</u>	2.980"					
Length			- 20	ı/a ı/a	-	24"	60'	rill Rod S	n/a	6"	A	60"	1				
Hamm		337		/a /a		140lbs											
namm	Ter Fa				2/20	30"	- 1	.D. (O.D		5-10-10-10-10-10-10-10-10-10-10-10-10-10-	.219" (1	.75")				i.	
	SAMPLE SOIL (Blows/6 in.) 90 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9																
(feet	(b)																
PTH	T P FIELD CLASSIFICATION AND REMARKS																
-21	0.0' Note: Hand excavated for utility clearance, depth																
2/17	2 4 0 4																
8 L	$**^{\circ \circ}_{\cdot}$		G	1	X	2.0 - 2.5	G	R	A	В	6		Black mediu	m to fine G	RAVEL (so	me gravel pi	eces
AD.G	D . 4												are porous a trace Silt, tra	nd lightweig	ght) and coa	rse to fine Sa	and,
- 8-16-16 AD.GLB 3/2/17													, ,	700)	,,	and the same of th	
	* 17		G	2	X	4.0 - 4.5	G	R	A	В	6		Dark gray, li	ight grav an	d orange co	arse to fine	0.
	. ₽¤ 												SAND, little cinders, moi	medium to	fine Gravel,	trace Silt, tr	ace
5 − 5	4 OD												emders, mor	sı (SF, FIII)			-
2	来 ₄ .]		G	3		6.0 - 6.5	G	R	A	В	6		Dlast	:11			
HZ.G	\$ ₩				X								Black, orang SAND, little	Silty Clay,	trace mediu		
191	0 4 ₀												trace cinders	s, moist (SM	l, Fill)		
8-10	卷点		G	4		8.0 - 8.5	G	R	A	В	6						0.0
NN	***************************************			1	X	0.0 - 0.3	J	K	Α	ъ	0		Grayish brow SAND, trace				
<u></u>	n □. Ri					20000 200 0				200			cinders, trac				
89 60	2 4 Dx		G		X	9.5 - 10.0	G	R	A	В	6		Fill) Grayish brow	wn, orange a	and black, c	oarse to fine	
<u>₹</u> 10		9	S	1		10.0 - 12.0	3	4	3	4	16	10.3' 55.7	SAND, little cinders, trac	coarse to fi	ne Gravel, ti	race Silt, trac	e
) -												33.7	(up to 1.5"), S-1A: 10.00	moist (SP,	Fill)	-	/
ON THE												\	some Silt, tra	ace fine Gra			
												\	loose, moist S-1B: 10.25		ht brown an	d brown SII	
<u> </u>													trace to little	medium to	fine Gravel,	trace mediu	m to
0 0													mic band, III	culum Sun,	moist, II -	1.0-2.3 (31)	(1111)
B&P BORING ONLY (SOIL AND ROCK COMB) B&P TUNNEL 8-16-16 PH2.GPJ B&P TUNNEL 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1																	-
Ø Ø			\perp														
Note:	Б. І.				C - L	toet reading			f			Bor	ing No.	CSX-P	Shee	t 1 c	of 2

PROJE LOCAT	ION:	Bal	tin	ore		Replacen	(co	ontinue	G LC	OG		BORING NUMBER: CSX-P SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A CONTRACTOR: FSD, Inc. DRILLER: J. Scribellito Jr. INSPECTOR: L. Sepulveda
Ð	9	min/ft)	L		SAN	MPLE		SOIL	_ (Blows/	6 in.)		
DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)				et)	0/6	6/12	12/18	18/24	REC. (in.)	FIELD CLASSIFICATION AND REMARKS
DEPT	SRAPI	ING R	Ш	NUMBER	SYMBOL	DEPTH (feet)			CORING			
	0	COR	TYPE	NC	SYN	14	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	
			S	2		15.0 - 17.0	6	11	11	12	24	Brown, light brown and light gray Clayey SILT, little to some medium to fine Sand, trace to little fine Gravel, very stiff, moist; PP = 3.75-4.00 tsf (ML)
- - - 20			S	3		20.0 - 22.0	13	15	13	29	14	Reddish brown and gray medium to fine SAND, some Silt, trace medium to fine Gravel, medium dense, wet (SM, Decomposed Rock)
-:: -::		0.5	S C	4		22.3 - 22.4 22.4 - 25.4	50/1" 36	32	89	4.0	1 11	Dark gray and reddish brown coarse to fine GRAVEL (bedrock fragments), very dense, moist (GP, Decomposed Rock)
- - 25 - -		0.4 0.7 0.1 0.1	С	2		25.4 - 30.4	60	52	87	20.0	33	22.40'-22.75': Assumed recovery loss. Dark, bluish gray amphibole SCHIST; medium to fine grains of amphibole and feldspar; close to very close fractures spacing; except extremely close at 22.75'-22.95'; slightly weathered; medium strong; foliation dips ~50°; GRANITIC GNEISS band at 25.20'-25.40'. 28.55'-29.25': Assumed recovery loss. Dark, bluish gray amphibole SCHIST, interlayered with GRANITIC GNEISS; medium to fine grains of amphibole and feldspar; close to extremely close fracture spacing; moderately weathered; medium strong to strong; except weak at 25.75'-26.08'; foliation dips ~40°.
- - 30 - -		0.1 0.6 0.9 0.0	С	3		30.4 - 33.4	36	36	100	11.0	31	30.4' 35.6' Dark, bluish gray amphibole SCHIST with quartz-feldspar and PEGMATITE bands up to 5" thick; coarse to fine grains of amphibole, feldspar, mica and minor garnet; close to extremely close fracture spacing; moderately weathered; medium strong to strong; foliation dips ~40°-45°. (End of boring at 33.4 ft bgs)

	-												BORING	NUMBER	R: IVF-P	2-7A	
2	-					R	ORI	NG	LC	C			SHEET N	NUMBER:	1	of _	3
B ₈ P	TUNNE	-				ים		1140	LC						2	0=4=1	
														T NUMBI	_1 \.	85615A	
PROJE LOCAT						Replacem	ent Pro	oject					LOCATIO	ON: 2018 I	inden Ave	nue	
CLIENT					, 1	ID							COORD.	: N: 599,	203.9	E: 1.416.1	01.4
CONTR					2, 1	Inc.								E ELEV.:			
DRILLE						* ************************************								Horizont			
INSPEC						7.000							1	Vertical:			10
Company of the Compan						ow Stem Au	-							DATE: 11 DATE: 11			
KIG I I	PE. (IVIE	Au		ru	Split Spoon	Casir		Pitcher	Gral	Co	re Barrel	THUCTTE	CALLERY OF STREET	NDWATER		o pin
Type/Sy	vmhol		HS			S	NV		L	G	1500	C		GROOM	Water	Auger	Hole
I.D.	yiiiboi	-		25"		1.375"	n/a	80.	n/a	3.25		n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.			8.2	200		2"	n/a	-	n/a	3.375	0.07	n/a	11/15/16	11:50 am	18.0	-	20.0
Length		-	60	0000		24"	n/a	_	n/a	6"		n/a	11/16/16	8:06 am	17.2	-	54.1
Hamme			n	<u> </u>		140lbs	120000	rill Rod S			A		11/17/16	7:47 am	17.6	-	125.4
Hamme			n			30"		I.D. (O.E		1	.219" (1	.75")					
			Г		SAI	MPLE		SOII	L (Blows/	200 20			•			I	
et)	90	(H)	\vdash		-	etweetPEDCSCS0	615				REC.	1					
DEPTH (feet)	GRAPHIC LOG	(Blows/ft)				eet)	0/6	6/12	12/18	18/24	(in.)		FIELD CL	ASSIFICAT	ION AND F	REMARKS	
EPI	SAP	26 (8		3ER	30	J. H.			CORING	;							
	9	CASING	TYPE	NUMBER	SYME	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
				_	-		(111.)	(111.)	,,,	(111.)	,,,	parament at water t	3" Asphalt; 9	" Subbase (Gravel)		
-	\$0. △											1.0'	Note: Hand	excavated fo	r utility clea	rance, dept	h
-	70 J		G	1	\sim	2.0 - 2.5	G	R	A	В	6		0.0'-10.0' Light brown		2000 CO		63
_	* 4					6							medium to fi	ne Gravel, to	race mediur	n to fine Sai	nd,
- - - - 5	****		G	2		4.0 - 4.5	G	R	A	В	6		moist (CL, F Note: Cobble and 3.1' fron		depth. Uti	lity at 3.6' d	epth
_	Ø [□] . A		9		X	7.0 - 4.3	U	K	A	Б	0		and 3.1' from		et hole 1' No	orth and to 1	.5'
- 5	*/*/*/												Brown and to	an coarse to	fine SAND	, trace medi	um _
-	* c		G	3	X	6.0 - 6.5	G	R	A	В	6		Brown and to	an coarse to	fine SAND		ım to
-	14 H												fine Gravel,				9.5
	\$ Co.5		G	4		8.0 - 8.5	G	R	A	В	6		ъ .		C C		
L	架A. F			11/11/20	X								Brown and to fine Gravel,	trace Silt, we	et (SP, Fill)		27
	. □ <u>[</u>]												Note: Could high Gravel	not take a sa	ample at 9.5		
- 10	45 0 45		S	1		10.5 - 12.5	11	11	11	15	17		knife. End of	f soft dig at	10.0'.		
	**						n.**	100 ti					Light brown medium Gra				e .
- 1	\$0H												medium den			May 78	8.
L	1 0 3																£.
	柴 b. 今:4		S	2		13.5 - 15.5	8	11	12	14	17		Light brown	coarse to fir	ne SAND, s	ome coarse	to
	** **												fine Gravel, possible Fill)	little Silt, me			
- 15	4 4												***************************************		999 N 974	e. 1	-
-	0 0d } 1 0d }											16.8'	Note: Encour Hole abando				
-												168.3'	location IVF				
<u> </u>			S	1		18.0 - 20.0	13	12	10	10	14	STATE OF STA				•	
L							5.50	×	7.65	3-5-di			Light brown Gravel, little				fine
10 - 10 - 15																	8.5

5	
B&PTUNNEL PROJECT	

BORING LOG

(continued)

BORING NUMBER: IVF-P2-7A

SHEET NUMBER: 2 of

PROJECT NUMBER:

185615A

PROJECT: B&P Tunnel Replacement Project

LOCATION: Baltimore, MD

CLIENT: AMTRAK

CONTRACTOR: E2CR, Inc.

DRILLER: S. Lyons

INSPECTOR: L. Sepulveda

£	၅	æ	L		SAI	MPLE		SOIL	(Blows/	6 in.)		
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)				et)	0/6	6/12	12/18	18/24	REC. (in.)	FIELD CLASSIFICATION AND REMARKS
EPTI	RAPH	NG (B		BER	30L	DEPTH (feet)			CORING			TIELD GENESITION THE TREMPANE
	ō	CASII	TYPE	NUMBER	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	
25			S	2		23.0 - 25.0	8	13	11	8	16	Light brown coarse to fine SAND and coarse to fine Gravel, little Silt, medium dense, wet (SM)
20												26.5' 158.6'
30			S	3		28.0 - 30.0	9	7	9	10	14	Light yellow, orange and brown Clayey SILT, little coarse to medium Sand, very stiff, moist (MH, Residual Soil)
		6										31.5' 153.6'
35			S	4		33.0 - 35.0	8	8	9	9	7	Light gray medium to fine SAND and Silty Clay trace coarse to fine Gravel, very stiff, moist (SC, Residual Soil)
00												36.5' 148.6'
40			S	5		38.0 - 40.0	6	6	8	7	18	Light gray and gray Silty CLAY and medium to fine Sand, trace medium Gravel, stiff, moist (CL, Residual Soil)
-10												41.5' 143.6'
			S	6		43.0 - 45.0	6	8	10	10	24	Light gray-green and green Clayey SILT, little to some medium to fine Sand, very stiff, moist, subhorizontal relict fractures observed, no

														BORING NUMBER: IVF-P2-7A
	R ₈ P	TUNNE	A L				В		ING ontinue	LC	G			SHEET NUMBER: 3 of 3
ŀ	Lica	PROJEC	-1					(0.	Jitaliac	,u)				PROJECT NUMBER: 185615A
	PROJE	CT:	B&1	PΤ	un	ne	l Replacen	nent P	roject					CONTRACTOR: E2CR, Inc.
1	LOCAT	ION:	Bal	tim	or	e, I	MD							DRILLER: S. Lyons
	CLIENT	Γ: A l	MTF	RAI	K									INSPECTOR: L. Sepulveda
		77020		Γ		SAI	MPLE		SOIL	_(Blows/	6 in.)			
1	(feet)	GRAPHIC LOG	ws/ft)	h				0/6	6/12	12/18	18/24	REC.		
	DEPTH (feet)	APHIC	G (Blo		ER	70	I (feet			CORING	3	(111.)		FIELD CLASSIFICATION AND REMARKS
	D	GR	CASING (Blows/ft)	TYPE	NUMBER	SYMB	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
İ	-60	Ш		T				, , ,					00.44.7400	
	-0												46.5' 138.6'	,-
	-			S	7		48.0 - 50.0	13	25	23	20	24		Light gray and light green with speckles of dark and
ŀ	<u>-</u> 0													Light gray and light green with speckles of dark and white medium to fine SAND, some Clayey Silt, trace medium to fine Gravel (quartz), dense, moist, no discernable relict foliation (SM, Decomposed Rock)
ł	- 50													discernable relict foliation (SM, Decomposed Rock)
ı	-		<i>5</i>											
117				S	8		53.0 - 53.1	50/1"				1	52.5' 132.6'	
LB 1/19	-			S	9		54.0 - 54.0	795 MAG 1753				0.5	54.1'	Light gray and light green with speckles of black and white medium to fine SAND, some Silt, trace fine
E2CR.GLB 1/19/17	- 55												131.0'	Gravel, very dense, moist (SM, Decomposed Rock) White and light gray medium to fine SAND, little medium to fine Gravel, trace Silt, very dense, moist
	-0												_	(SP, Decomposed Rock) (Spoon refusal at 54.1 ft bgs, see Coring Log)
-9-16-	3 8		8											
TUNNE	28													
J B&P	- - 60													_
2CR.GP	-													
PH2 E	-0													1-
8-16-16	5 0													-
UNNEL														5
1 B&P 1	- 65 -													
(FINAL	_													
NG LOG	20													-
B&P BORING LOG (FINAL) B&P TUNNEL 8-16-16 PH2 E2CR.GPJ B&P TUNNEL - 8-16-16 AD	-0													-
B&			8										S	

													BORING	NUMBE	R: NA-P2	2-1 OW	
2	TINN	2				В	OR	ING	LC	G			SHEET N	NUMBER	:1	of	3
B84	PROJE	ĊŤ								PROJEC	T NUMB	ER: 1	185615A				
PROJE LOCAT						Replacem AD	ent Pr	oject					LOCATIO	ON: AMT Interl	RAK 1800 l ock; Next t	Falls Rd.; C o equipmen	Charles it shed
CLIEN.					-, -	1200-1							COORD.				96.0
CONT															: 68.8 fe		
DRILLE															al: NAD NAVD 8		
INSPE						aa ary Wash; D	liamond	Coring	1				START			IME: 7:3	0 am
						ober Tracl		FINISH D									
				ger	8	Split Spoon	Casi		Pitcher	Grat	Co	re Barrel		GROU	NDWATER	DATA	
Type/S	Symbo	ol	n	/a		S	NV	V	L	G		С			Water	Casing	Hole
I.D.			n	/a		1.375"	3.00)"	n/a	3.25	"	1.875"	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.			n	/a		2"	3.50)"	n/a	3.375	5" 2	2.980"					
Length	1		n	/a		24"	60'		n/a	6"		60"					
Hamm	er Wt	i.	n	/a		140lbs	D	rill Rod	Size		Α						
Hamm	er Fa	-	n	/a		30"		I.D. (O.I	D.)	1	.219" (1	.75")					
Đ	90	CORING RATE (min/ft)	L		SA	MPLE		SOI	L (Blows/	6 in.)							
DEPTH (feet)	GRAPHIC LOG	ATE (for			eet)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CL	_ASSIFICAT	TION AND F	REMARKS	
DEPT	SRAPI	ING	u u	NUMBER	SYMBOL	DEPTH (feet)			CORING								
15e09		COR	TYPE	S	SYN	DEP	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %						
	*		Т									0.0'	Note: Hand (excavated for	or utility clea	arance, dept	h
-	% - □[:		ı														8-
	- 4 - A			1		2.0 - 2.5	G	D		В							
3	*:3		10	1	\times	2.0 - 2.3	G	R	A	В	6		Black coarse Sand, trace S				
5	3.4		ı										pieces are po	orous and lig	ghtweight (C	GP, Fill)	
	ans to		ı														
	77 □ 2. 45		ı														0.5
– 5	**************************************		G	2		5.0 - 5.5	G	R	A	В	6		T. 1.1		г с	CAND II	
3	架.4				X		20002	1082001	5939		2682	5.8'	Light brown Clayey Silt,	trace coarse			
5			G	3	X	6.0 - 6.5	G	R	A	В	6	63.0'	moist (SM, I Brown and g	ray coarse	to fine SAN	D, little Silty	, -
			ı										Clay, trace f	ine Gravel, i	moist (SC)		
			ı									1000000000					
-			G	4	\searrow	8.0 - 8.5	G	R	A	В	6	8.0' 60.8'	Brown and o	orangish bro	own Silty CI	AY, little	
			ı									00.0	medium to fi	ine Sand, tra	ace medium	to fine Grav	vel,
3			G	5		9.5 - 10.0	G	R	A	В	6	9.5'					
– 10	100		S		X	10.0 - 12.0	15	26	33	54	14	59.8	Brown coars Sand, trace S			ne coarse to	fine
			ı									58.8'	S-1A: 10.0'-	10.9': Dark	brown, gree		<i>c</i>
			ı										medium to fi Gravel, very	dense, mois	st (SM, Deco	omposed Ro	ock)
-													S-1B: 10.9'-1 fine SAND,	11.2': Light some Silt, tr	gray and gra ace coarse t	ay medium to fine Grave	to el, -
3													very dense, r				8 7
-																	-
																	32

												BORING NUMBER: NA-P2-1 OW
2						В	OR	ING	LC)G		SHEET NUMBER: 2 of 3
B ₈ F	PROJE	E					(ce	ontinue	ed)			PROJECT NUMBER: 185615A
PROJ	ECT:	B&:	PΊ	Cur	ne	l Replacer	nent P	roject				CONTRACTOR: FSD, Inc.
LOCA	TION:	Bal	tin	10r	e, I	MD						DRILLER: J. Scribellito Jr.
CLIEN	T: A	MTF	RA	K								INSPECTOR: L. Sepulveda
	(0	in/ft)	Γ		SA	MPLE		SOIL	_ (Blows/			
DEPTH (feet)	SRAPHIC LOG	CORING RATE (min/ft)	r			£	0/6	6/12	12/18	18/24	REC. (in.)	
EPTH	SAPHI	IG RA		XER.	70	H (fee			CORING	6		FIELD CLASSIFICATION AND REMARKS
	9	CORIN	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	
			S	2		15.0 - 15.8	72	100/3.5			9.5	Light gray, gray and yellow-brown coarse to fine SAND, some Silt, trace fine Gravel, very dense, moist (SM, Decomposed Rock)
- - - 20 - -	- 20 2. - 20 2. - 2. - 3.			3 1 2		18.0 - 18.1 18.1 - 20.1 20.1 - 25.1	100/1" 24 60	60	100	15.0 57.5	1 63 96	Light gray, gray and yellow-brown coarse to fine SAND, some Silt, some coarse to fine Gravel, very dense, moist (SM, Decomposed Rock) 18.10'-18.25': Rock fragments; possibly wash. 18.25'-20.10': Gray and yellow-brown SCHISTOSE GNEISS; medium to fine grains of feldspar, quartz, amphibole and mica; close fracture spacing; slightly weathered; medium strong; gneissic banding dips ~50°. 20.1'-25.1': Gray and yellow-brown SCHISTOSE GNEISS; medium to fine grains of feldspar, quartz, amphibole and mica; moderate to close fracture spacing; slightly weathered; strong to medium strong; gneissic banding dips ~50°; quartz-feldspar rich band at 23.80'-24.60'.
- 25 -	25	3.7 3.0 4.0	С	3		25.1 - 30.1	60	60	100	60.0	100	medium to fine grains of feldspar, quartz and amphibole; moderate to close fracture spacing; unweathered; strong; gneissic banding, where visible, dips ~45°.
L		2.1										27.5' 41.4' PEGMATITE band at 27.45'-28.96'.
_		0.2										29.0' 39.8'
- 30 - -		0.1	С	4		30.1 - 35.2	61.2	61	100	49.0	80	Light gray and white with streaks of black GNEISS; medium to fine grains of feldspar, quartz and amphibole; moderate to very close fracture spacing; except extremely close fracture spacing at 31.10'-31.30'; slightly weathered; strong to medium strong; gneissic banding, where visible, dips ~50°; PEGMATITE band at 31.45'-31.95'.

PROJE LOCAT	TION:	Bal	tin	10r		Replacer		ontinue		OG		BORING NUMBER: NA-P2-1 OW SHEET NUMBER: 3 of 3 PROJECT NUMBER: 185615A CONTRACTOR: FSD, Inc. DRILLER: J. Scribellito Jr. INSPECTOR: L. Sepulveda	
	g	nin/ft)			SAN	//PLE							
DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)	Г			et)	0/6	6/12	12/18	REC. (in.)	FIELD CLASSIFICATION AND REMARKS		
DEPTI	RAPE	ING R	ш	NUMBER	SYMBOL	DEPTH (feet)							
	0	COR	TYPE	NON	SYM	DEP	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
- 35 -	0.5							59	100	44.5	75	Light gray and white with streaks of black GNEISS; medium to fine grains of feldspar, quartz and amphibole; unweathered to slightly weathered; strong; gneissic banding dips ~45°; amphibole-rich band at 38.95'-40.10'.	
P TUNNEL - 8-16-16 AD GLB 3/2/17		2.7 3.0 2.0 1.9 2.9	С	6		40.1 - 45.1	60	60	100	44.5	74	Light gray and white with black streaks GRANITIC GNEISS; medium to fine grains of feldspar, quartz, amphibole and minor magnetite and garnet; moderate to close fracture spacing; unweathered; strong; except very close fracture spacing; slightly weathered; medium strong at 40.40'-41.10'; gneissic banding dips ~40°; amphibole-rich band at 40.10'-41.10'; quartz vein at 44.85'-45.10'.	
B&P BORING ONLY (SOIL AND ROCK COMB) B&P TUNNEL 8-16-16 PH2.GPJ B&P TUNNEL 1	2.9 3.0 3.7					45.1 - 48.2	37.2	37	99	27.0	73	Light gray and white with black streaks GRANITIC GNEISS; medium to fine grains of feldspar, quartz, amphibole and minor magnetite and garnet; moderate to close fracture spacing; except very close fracture spacing at 47.30'-47.65'; slightly weathered; strong to medium strong.	
B&P BORING ONLY (SOIL AND ROCK												20.6' (End of boring at 48.2 ft bgs)	3

													BORING	NUMBER	R: SA-P2	-1 OW	
<u>a</u>						R	OR	NG	LC	C			SHEET N	NUMBER	1	of _	2
Rel	TUNNI	1				ים		1140								0=4=1	
		Till												T NUMB		185615A	
						Replacem	ent Pr	oject					LOCATION	ON: Mosho Street		nd N Payson	n
LOCA					, IV	ID							COORD.	: N: 594,	925.9	E: 1.411.1	65.6
CONT					In	c.								E ELEV.			
DRILL														Horizont			
INSPE			_										1	Vertical:		San Control of the Co	0
						ary Wash; D ck Mount		-		ner				DATE: 2/2			
1401				ger	_	Split Spoon	Casi		Pitcher	Grat	Co	re Barrel		Decomposition of the Control of the	NDWATER		•
Type/S	Symbo	ol		SA	T	s 🔳	Н۷	С			Water	Casing	Hole				
I.D.			3.2	25"		1.375"	4.00)"	n/a	3.25	11	n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.			7.2	25"		2"	4.50)"	n/a	3.375	5"	n/a	2/17/16	9:00 am	10.0	-	10.0
Length	n		6	0"		24"	60'		n/a	6"		n/a	2/25/16	7:27 am	7.3	23.0	28.3
Hamm	ner Wt		n	/a		140lbs	D	rill Rod S	Size		A		2/26/16	7:40 am	13.5	29.0	57.0
Hamm	ner Fa	1	n	/a		30"		I.D. (O.E	D.)	1	.219" (1	.75")					
	(0		l	5	SAN	MPLE		SOII	_ (Blows/	6 in.)							
(feet)	CLOC	ws/ft)	Γ			(1	0/6	6/12	12/18	18/24	REC. (in.)	1					
DEPTH (feet)	GRAPHIC LOG	G (Blo	l	ER	ОГ	H (fee			CORING	3	()	1	FIELD CL	_ASSIFICAT	TON AND F	REMARKS	
	GR	CASING (Blows/ft)	TYPE	NUMBER	SYMB	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
	0.40.40		Ť	_		0.0 - 0.4	(111.)	(111.)	70	(111.)	,,,	0.4'	Asphalt slab	5"			
-	- XQ .		ł									162.9'	Note: Hand	excavated fo	r utility clea	arance, dept	h / -
-	**		G	1	$\overline{}$	2.0 - 2.5	G	R	A	В	6		0.0'-10.0' White and g			© 5	/
L					\triangle								Sand, trace a	reen Clayey isphalt fragr	nents, mois	t (Fill)	ne -
L	△D		G	2		4.0 - 4.5	G	R	A	В	6						
_	***		ľ	2	\times	4.0 - 4.3	G	K	A	В	0		Light brown some coarse	coarse to fin	ne SAND, s	ome Clayey M. Fill)	Silt,
- 5	₩			10.0		dange server	645 YES	Lockey o		1,40000	2.27			Jane Ola (., (0	,,	
25.	ф. ф. Д4		G	3	X	6.0 - 6.5	G	R	A	В	6		Light brown				Silt,
- P	360 S		1										some coarse	to fine Grav	el, moist (S	M, Fill)	-
-0-1-0	梨山		G	4	\vee	8.0 - 8.5	G	R	A	В	6		Light brown	coarea to fi	ne SAND ~	ome Claver	Silt
- N			1		\triangle	8							some coarse				JII., -
	→ 45 □ _ A=		G S	5	X	9.5 - 10.0 10.0 - 12.0	G 3	R 6	A 7	B 7	6 24	10.0'	Light brown				Silt,
10			1	1		10.0 - 12.0	3	0		,	24	153.3	some coarse Reddish bro	to fine Grav	el, moist (S	M, Fill)	
25.7			1										stiff, moist (gray CLA	, truce light	, _
-			1			S.											-
-			S	2		13.0 - 15.0	4	7	9	8	24		S-2A: 13.0'-	14.5': Reddie	sh brown ar	nd light grav	o
- NEL												14.5'	CLAY, stiff,			ngm gray	-
				,								148.8'	S-2B: 14.5'-				
l B&r													medium to fi Soil)	ine Sand, ve	ry stiff, moi	st (CL, Resi	dual
INAL			1									16.5'	20				X) -
B&P BORING LOG (FINAL) B&P TUNNEL 8-16-16 PH2.GFJ B&P TUNNEL 8-16-16 AD.GLB 1			1									146.8'					-
NG -			S	3A		18.0 - 20.0	10	7	5	8	20	18.5'	S-3A: 18.0'-	18.5': Light	brown and i	reddish brov	vn -
BOR -		61. 62	1									144.8	SILT & CLA (MH, Residu	Y, trace coa			
N N N			L										S-3B: 18.5'-2		to olive gre	en Clavev S	ILT

ſ														BORING NUMBER: SA-P2-1 OW
	PoD	TUNNI	EL				В		ING ontinue	LC	G			SHEET NUMBER: 2 of 2
	DO	PROJE	ст					(00	Jilliue	u)				PROJECT NUMBER: 185615A
	PROJE LOCAT						l Replacen	nent Pi	roject					CONTRACTOR: FSD, Inc.
	LUCAI	ION.	Dai	um	ЮГ	e, I	VID							DRILLER: J. Scribellito Jr.
	CLIENT	Г: А	MTF	RAI	K									INSPECTOR: L. Sepulveda
		(2)		Г		SAI	MPLE		SOIL	(Blows/	6 in.)			
	DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	Γ			t)	0/6	6/12	12/18	18/24	REC. (in.)		
	EPTH	APHI	IG (Bk		ER	70	DEPTH (feet)			CORING			1	FIELD CLASSIFICATION AND REMARKS
	۵	R	SASIN	TYPE	NOME	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
Ì					_	0,		(111.)	(111.)	70	(111.)	70		and medium to fine Sand, medium dense, moist (ML, Decomposed Rock)
													21.5'	
	_			S	4*		23.0 - 25.0	37	54	74	91	0		
	-			ľ			25.0 - 25.0	57	34	7.4	71			Note: No recovery with 2" split spoon, sample recovered using 3" split spoon.
	- 25									8				Olive green, dark green and light green fine SAND, some Silt, trace fine Gravel, very dense, moist, relict gneissic banding dips ~30°-50° (SM, Decomposed
	-													gneissic banding dips ~30°-50° (SM, Decomposed Rock)
ŀ	-0													-
ŀ				S	5		27.7 - 28.0	100/3"				3	28.0'	Black to dark green fine SAND and Clayey Silt, very dense, moist (SC-SM, Decomposed Rock)
ł	71			l										(Spoon refusal at 28 ft bgs, see Coring Log)
3/2/17	- 30			1										-
D.GLB	-:			l										-
6-16 A	3 8													
EL - 8-1	20			1										
TUNN	- - 35													
J B&F	-													
PH2.G														
3-16-16	7 0			-										
NNEL 8	-		_	l										-
3&P TU	- 40													-
NAL) E	-8			l										·-
-0G (F	-													-
B&P BORING LOG (FINAL) B&P TUNNEL 8-16-16 PH2.GPJ B&P TUNNEL - 8-16-16 AD.GLB	-0			1										, and the second se
B&P BC	-													

													BORING	NUMBE	R: S-P2-I	33A	
2						R	OR	ING	LC	G			SHEET	NUMBER	1_	of	3
B ₈ P	TUNN	EL.				D		1140					300-00000000000000000000000000000000000			1056151	
		Till	\ T	7855500	2.00	D 1	. D	•		The second secon	T NUMB	L1 V.	185615A				
LOCAT						Replacem	ent Pr	oject					LOCATION	ON: Lafay Street	ette Avenu	e and Brinc	e
CLIEN					, 1	ii)							COORD	.: N: 594,	509.4	E: 1,411,3	99.7
CONTI					In	c.							SURFAC	CE ELEV.	150.2 f	eet	
DRILLE													DATUM:	Horizont			
INSPE						VOID OV							CTARTI	Vertical: 7/2		ю IME: 7:4 :	5 am
						low Stem Au ck Mount					oring.			DATE: 7/2		IME: 10:	
			100	ger		Split Spoon	Casi	>>	Pitcher	Gral	o Co	ore Barrel		GROU	NDWATER	DATA	
Type/S	Symbo	ol	Н	SA		S	NV	V	L	G		С			Water Depth	Casing Depth	Hole Depth
I.D.			4.2	25"		1.375"	3.00	0"	n/a	3.25	_	1.875"	Date	Time	(ft)	(ft)	(ft)
O.D.			0.00	25"		2"	3.50		n/a	3.375	5"	2.980"					
Length			170	0"		24"	60'		n/a	6"		60"				7	
Hamm		~		/a		140lbs		rill Rod S			A	7510	-				
Hamm	er ⊦a ⊺	_	I	/a	2725	30"		I.D. (O.E	- Silvania - 1		.219" (I.75")					
(90	(min/f	L		SA	MPLE		SOI		1							
– (fee	DEPTH (feet) NG RATE (in.) O/6 6/12 12/18 18/24 REC. (in.) CORING CORING											FIFLD C	LASSIFICAT	TON AND F	REMARKS		
EPTI	SAMPLE SOIL (Blows/6 in.) SAMPLE SOIL (Blows/6 in.) O/6 6/12 12/18 18/24 REC. (in.) CORING CORING RUN REC. REC. L>4" RQD (in.) % (in.) % (in.) %											TILLE OF	LACOII IOAI	IONANDI	(LIVI/AI (ICO		
	ច	CORI	TYPE	NOM	SYME	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	1					
			T								0000	0.0'	Concrete/As	phalt 11"			
	Â.		l									0.9'	Note: Hand	excavated fo	or utility clea	arance, deptl	1
	00 OC			١.		20.25		D.					0.0'-10.5'		(8	14	_/
	** · ·		G	1	X	2.0 - 2.5	G	R	A	В	6		Brown, gray little medium	and light gr	ray coarse to	o fine SAND	, oist
	**************************************		l										(SP, Fill)				
	7.4		G	2		4.0 - 4.5	G	R	A	В	6						
2000	TO S				X	1.0			**				Brown coars coarse to fin	se to fine SA e Gravel, mo	ND, trace S oist (SP, Fill	Silty Clay, tra l)	ice
- 5	14 14 14 14		l										Note: utility 12.7' WEST		l at depth 6.	.0'. Hole offs	et
_	□ (OL)		G	3	X	6.0 - 6.5	G	R	A	В	6		Brown coars				ice .
													Note: ground				
-	%0 40 40		G	4		8.0 - 8.5	G	R	A	В	6		Yellowish-b	POUR COSTS	to fine CAN	JD and Site	
	* 13									, , , , , , , , , , , , , , , , , , , ,			Clay, trace r				
	*A		l														
- 10			G		X	10.0 - 10.5	G	R	A	В	6	10.5'	Reddish-bro		AY, trace n	nedium to fir	ne –
			S	1		10.5 - 12.5	4	3	3	4	1	139.7	Sand, wet (C		ne SAND e	ome Silt tra	00
\$0°.													coarse Grave			one ont, tra	
			S	2		12.5 - 14.5	3	2	1	1	14	12.5'					0
-0				-		12.5 - 14.5		-	(45)		1.7	137.7'	Gray and lig Silty Clay, to				
407													(SC)			yaz, 1880 T.)	
																	•
a.	1///																

Note:

Boring No. S-P2-B3A Sheet 1 of 3

_													
6							_						RING NUMBER: S-P2-B3A EET NUMBER: 2 of 3
2		2				B	OR	ING	LC)G		SHE	EET NUMBER: 2 of 3
B ₈ F	PROJE	ET.					(Co	ontinue	ed)			PRO	DJECT NUMBER: 185615A
PROJE	ECT:	В&	PΊ	un	nel	Replacen	nent P	roject				cor	NTRACTOR: FSD, Inc.
LOCA	TION:	Ral	tin	or	e. N	MD						DBI	LLER: J. Scribellito Jr.
	11011.	Dai		101	, 1								LLEN. 3. Scribento 31.
CLIEN	T: A	MTI	RA	K								INS	PECTOR: L. Sepulveda
	(D	in/ft)	Γ		SAI	MPLE		SOIL	_ (Blows/	6 in.)			
DEPTH (feet)	SRAPHIC LOG	CORING RATE (min/ft)	r			_	0/6	6/12	12/18	18/24	REC.		
PT	APHIC	3 RA	l	H.	7	DEPTH (feet)			CORING		(111.)	FIE	ELD CLASSIFICATION AND REMARKS
	GR/	ORIN	TYPE	NUMBER	SYMBOL	EPTH	RUN	REC.	REC.	L>4"	RQD		
7.	11/1	ŏ	т		Ś	_	(in.)	(in.)	%	(in.)	%	<i>j</i>	
-			S	3		15.5 - 17.5	4	8	8	6	15	Gray i	medium to fine SAND and Silty Clay, medium , wet (SC)
L			l									,	
			l			Sc.						10.01	
- 00			l									18.0' 132.2'	
-			l						1				
= 20			l										
			S	4		20.5 - 22.5	10	22	18	74	15		20.5'-21.5': Reddish brown fine SAND, some ace medium to fine Gravel, dense, moist (SM)
			l									S-4B: SANT	21.5'-21.75": Gray-green medium to fine 0, some clayey Silt, thin reddish brown Silty
			l			e e							layers, dense, moist (SM)
			l										
-		1.7	S C	5		24.1 - 24.2 24.2 - 25.7	50/1" 18	18	100	18.0	100		-gray medium to fine SAND, little to some Silt, medium Gravel, very dense, moist (SM)
– 25			C	2		25.7 - 30.7						25.7' to fine	and light gray SCHISTOSE GNEISS; medium grains of feldspar, quartz and amphibole; very
2		1.5		2		23.7 - 30.7	60	57	95	57.0	95	weath	o extremely close fracture spacing; slightly ered; medium strong; except weak; moderately
		1.5	l									\ ~20°-3	1000000
<u> </u>			l									Gray a	-25.95': Assumed recovery loss. and light gray-green GNEISS; medium to fine
		2.1	l									moder	of feldspar, amphibole, quartz and pyrite; rate to very close fracture spacing; except nely close fracture spacing at 25.95'-26.15',
-		1.9	l									28.20	-28.30' and 30.50'-30.70'; slightly weathered; gneissic banding dips ~30°-40°.
30		1.9	l										,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
_		4.1	C	3		30.7 - 35.7	60	60	100	56.5	94	30.7' 119.5' Gray a	and light gray-green GNEISS, interlayered with
	0	4.1										amphi	MATITE; medium to fine grains of feldspar, bole, quartz and pyrite; moderate to close
		2.3										extren	re spacing; unweathered; strong; except nely close fracture spacing; moderately ered; extremely weak at 30.92'-31.00'; gneissic
-		2.8											ng dips ~35°-40°.

													BORING NUMBER: S-P2-B3A
2						R	OP	ING	LC			SHEET NUMBER: 3 of 3	
ReD	TUNNI	EL				D		ontinue				8.44	
Lica	PKOJE	CI					(0.	oritiriae	,u)				PROJECT NUMBER: 185615A
PROJE	CT:	В&	PΊ	un	nel	Replacer	nent P	roject					CONTRACTOR: FSD, Inc.
LOCAT	TION:	Bal	tin	ore	e, N	/ID							DRILLER: J. Scribellito Jr.
CLIEN	T · A	МТЕ) A 1	V									INCRECTOR: I Complicado
CLILIN	і. д	IVIII		ı.						INSPECTOR: L. Sepulveda			
	(D	in/ft)	Γ		SAN	MPLE			•				
DEPTH (feet)	GRAPHIC LOG	TE (m	Γ			t)	0/6	6/12	REC. (in.)	1			
EPTH	MAN	IG RA		SER	OL	H (fee				1	FIELD CLASSIFICATION AND REMARKS		
	O E S S G (in.) (in.) % (in.) %												
	2.8												9
– 35													::=
-			t							114.5'	(End of boring at 35.7 ft bgs)		
			l										.,
L			l										
			l										
-			l										
40			l										:-
			l										
			l										
			l										
			l										
-			l										3
– 45													
(a)													-
													ð
-													19
– 50													:-
ă			L									5.	

I														BORING	NUMBE	R: S-P2-I	34	
l	2						R	OR	INIC		SHEET N	NUMBER	1	of _	3			
l	B ₈ P	TUNN	EL				D		IIAC									
l	DO	PROJE	ст								PROJEC	T NUMB	ER: 1	185615A				
ſ							Replacem	ent Pr	oject		LOCATION	ON: Pulasl Street		d W Lanva	le			
l	LOCAT CLIENT					, I	AD .							COORD			E: 1,411,1	77.1
l	CONTE					In	C.								CE ELEV.			, , . .
ł	DRILLE													The state of the s	Horizont			
l	INSPEC					yar	ov							1	Vertical:			
Ì	DRILLII	NG N	/ETH	OH	D: I	Iol	low Stem Au	gers; Re	otary W	ash; Dia	mond C	oring.			DATE: 7/2		IME: 7:30	
ļ	RIG TY	PE:	CMI		_	luk	ber Track	500	1	1/18/EASTA 11	2000			FINISH	201-00000000000000000000000000000000000	And the second second	IME: 12:	15 pm
l			. -		ger		Split Spoon	Casi	0.007	Pitcher	Gral	1000	re Barrel		GROU	NDWATER		Hala
l	Type/S	ymbo	ol		SA		S	NV	200	L	G		С	-		Water Depth	Casing Depth	Hole Depth
l	I.D.		-		25"		1.375"	3.00		n/a	3.25		1.875"	Date	Time	(ft)	(ft)	(ft)
l	O.D.	ength 60" 24" 60" n/a 6" 60" ammer Wt. n/a 140lbs Drill Rod Size A ammer Fall n/a 30" I.D. (O.D.) 1.219" (1.75")																
l	Length																-	
l																		
ŀ	Hamme																N.	
l		()	nin/ft)			SA	MPLE		SOI									
l	(feet)	CORING C																
l	EPTH													FIELD CL	LASSIFICAT	TON AND F	REMARKS	
l	ō	GR	ORIN	rype	NUMB	SYMB	DEPT	RUN	REC.	REC.	L>4"	RQD	1					
ŀ				۲	_	0,		(111.)	(111.)	0.0'	Concrete/As	phalt 12"						
l		Max 140lbs Drill Rod Size A															1 1	
1	-	0.0' 1.0' 147.8													excavated to	r utility clea	arance, deptl	` /
-	- (. □(Ś		G	1		2.0 - 2.5	G	R	6		Brown, black	k and grav c	coarse to fin	e SAND. litt	le -		
5		a 4		ı										Clayey Silt,	trace coarse	to fine Grav	vel, moist (S	M,
		*		ı										Fill)				
	-	录 点		G	2		4.0 - 4.5	G	R	A	В	6		G 011 G				
		1 10 P			8878	X	1000	853	1975	3.5	1,50			Gray Silty C (CL, Fill)	LAY, trace	medium to	fine Sand, m	oist
-	- 5	* 04		ı														S-
8		· 4.																
		4 OD 3		G	3	X	6.0 - 6.5	G	R	A	В	6		Dark gray co				
	_	#4.T		ı										coarse to fine fragments, n			iragments,	oone -
		\$ 4 0.		ı														
1		45 40		G	4	\vee	8.0 - 8.5	G	R	A	В	6		Dark gray Si	ilty CLAY. 1	ittle coarse	to fine Sand	
		*		ı										trace Gravel				
3	-	300		ı										Fill)		00 500		-
í n	- 10	4 ⊖ 3		G	5		10.0 - 10.5	G	R	A	В	6		Note: ground				_
3		* o.		S		X	10.5 - 12.5	4	5	4	7	18	10.5'	Grayish-broy Clayey SILT				, _
3	-			ı									138.1	Fill)	Marco-2017.			_/ -
				ı										Orangish-bro Sand, trace of				
							le.							Residual Soi				0-
1	-												13.3'					8-
			1										135.4'					
3	20			S	2		14.0 - 16.0	3	8	9	7	19		Orangish-bro	own and gra	yish-brown	SILT, little	-
3														coarse to fin				ery
-																100000000000000000000000000000000000000	A	

Note:
PP = Pocket Penetrometer field test reading, in tons per square foot (tsf)

Boring No. S-P2-B4 Sheet 1 of 3

													BORING NUMBER: S-P2-B4			
2						B	ORI	NG	10	G			SHEET NUMBER: 2 of 3			
BaP	TUNNI	EL.				D		ontinue					105(15)			
	111002	· ·						20.000	ess (PROJECT NUMBER: 185615A			
PROJE	PROJECT: B&P Tunnel Replacement Project												CONTRACTOR: FSD, Inc.			
LOCAT	LOCATION: Baltimore, MD												DRILLER: R. Stidham			
CLIEN.	T: A	MTF	RAI	K					INSPECTOR: A. Daniyarov							
	g	nin/ft)			SAI	MPLE		SOIL	_(Blows/	6 in.)						
DEPTH (feet)	GRAPHIC LOG	TE (r	Г			t)	0/6	6/12	12/18	18/24	REC. (in.)					
PTH	APHI	G RA	l	쏦	7	eej) l	CORING					1	FIELD CLASSIFICATION AND REMARKS			
<u>a</u>	GR	CORING RATE (min/ft)	TYPE	NUMB	SYMBOL	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %					
			Γ				8						stiff, moist, slightly micaceous (ML, Residual Soil); PP = 2.0 tsf			
			l													
- 0			l													
			l									17.5' 131.1'				
<u>-</u> 0			l													
			S	3		19.0 - 21.0	7	10	14	22	24		S-3A: 19.0'-20.5': Light gray and light			
- 20			l										orangish-brown coarse to fine SAND, little Silt, medium dense, dry, relict foliation dips ~45° (SM,			
_ Z0			l									20.5'	Decomposed Rock).			
-			l			ē.						128.1'	S-3B: 20.5'-21.0': Gray, dark orangish brown and black coarse to fine SAND, trace Silt, medium dense,			
			l										dry, relict foliation dips ~30° (SP, Decomposed Rock)			
			l													
-			l													
-			S	4		24.0 - 24.5	100/6"				6		Light yellowish-brown, brown and dark gray coarse			
25			l										of fine SAND, trace Silt, trace medium to fine Gravel, very dense, dry, slightly micaceous (SP,			
- 25			l										Decomposed Rock)			
- 2			l										No recovery. Spoon refusal.			
_		1.7	S C	5		26.7 - 26.7 26.7 - 28.7	100/0" 24	18	75	5.5	23	26.7' 121.9'	Light gray, dark gray and light yellow-brown,			
		1.7											GRANITIC GNEISS; coarse to fine grains of quartz and feldspar; close to extremely close fracture			
		2.3	_			20 7 53 5							spacing; slightly to moderately weathered; medium strong to weak; gneissic banding dips ~30°-40°;			
-		2.1	С	2		28.7 - 33.7	60	52	87	11.0	18		where visible. 28.20'-28.70': Assumed recovery loss.			
– 30													28.70'-29.50': Assumed recovery loss. 29.50'-31.45': Light gray, dark gray and light			
		1.9											yellow-brown, GRANITIC GNEISS; coarse to fine grains of quartz and feldspar; slightly to locally			
		2.4											moderately weathered, medium strong to locally weak; amphibole-rich at 31.45'-33.70'; gneissic			
-		2.2											banding, where visible, dips ~30°-40°.			
		2.2														
		2.2														
Note:	D - 1 .				C - I					,		Bor	ring No. S-P2-B4 Sheet 2 of 3			

						BORING NUMBER: S-P2-B4						
2					В	SHEET NUMBER:3 of3						
BaP	TUNNI	4					ontinue					105(15)
	rnood	-1				<u> </u>		<u>/</u>				PROJECT NUMBER: 185615A
					el Replacei		CONTRACTOR: FSD, Inc.					
LOCAT	IION:	Bal	tın	iore,	MD		DRILLER: R. Stidham					
CLIEN.	T: A	МТЬ	RA]	K				INSPECTOR: A. Daniyarov				
	(0	in/ft)		SA	MPLE		SOIL	(Blows	6 in.)			
DEPTH (feet)	GRAPHIC LOG	TE (m	r			0/6	6/12	12/18	18/24	REC.	1	
Ŧ	PHC	CORING RATE (min/ft)	l	œ _	(feet			CORING		(111.)	1	FIELD CLASSIFICATION AND REMARKS
l iii	GRA		TYPE	NUMBER	DEPTH (feet)	RUN (in.)	REC.	REC.	L>4" (in.)	RQD %		
-		2.1	C	3	33.7 - 38.7	60	58	97	19.8	33	<i>y</i>	33.70'-33.90': Assumed recovery loss.
– 35			l	1000 1000 1000 1000								Light gray, dark gray and light yellow-brown, GRANITIC GNEISS; coarse to fine grains of quartz and feldspar; slightly to locally moderately
		2.2	l									and feldspar; slightly to locally moderately weathered, medium strong to locally weak; amphibole-rich at 33.90'-34.50'; gneissic banding,
F		2.2	l	100								where visible, dips ~30°-40°.
		1.7	l									
-			l	100								
		2.5	С	4	38.7 - 43.7				20.5			
-		2.6	500-51			60	60	100	30.5	51		Light gray, dark gray and light yellow-brown, GRANITIC GNEISS; coarse to fine grains of quartz
– 40		1.9	l									and feldspar; moderately close to very close fracture spacing; except extremely close fracture spacing at 39.67'-39.73'; slightly weathered; medium strong to locally weak; amphibole-rich at 38.70'-40.15' and
			l	1000 1000 1000 1000								locally weak; amphibole-rich at 38.70'-40.15' and 41.65'-42.30'; quartz-feldspar band, 2.5" thick, at
		1.9	l									42.35'; gneissic banding, where visible, dips ~30°-40°.
-		2.4	l	100								~30 -40 .
<u> </u>		2.4	l									
			С	5	43.7 - 48.9	62.4	62.4	100	37.0	60		Light gray, dark gray and light yellow-brown,
		2.1	l			9, 109, 110	1590340901		(manual de 1) 150 de	45.000		GRANITIC GNEISS; coarse to fine grains of quartz and feldspar; moderately close to extremely close
- 45		1.9	l									fracture spacing; slightly weathered; strong to locally weak; amphibole-rich at 44.95'-45.45';
-		2.3	l									PEGMATITE band, 4" thick, at 44.10'; gneissic banding dips ~30°.
3		0.5	l	-00-0 -00-0 -00-0 -00-0								
		2.5	l									
		2.1	l									
-	VII		+	-							99.7'	(End of boring at 48.9 ft bgs)
– 50												
00												
-												
Note:	D				1						Boi	ring No. S-P2-B4 Sheet 3 of 3

													BORING	NUMBE	R: S-P2-I	B5			
3	BORING LOG													SHEET NUMBER: 1 of 4					
ReD	TUNNI	타				ט		1140											
	2 1 5	Till			501.7 FT			107 a 100 to 100°					PROJECT NUMBER: 185615A LOCATION: Harlem Avenue and N Pulaski						
PROJE LOCAT						Replacem	ent Pr	oject					LOCATION	ON: Harle Street		and N Pulas	ki		
CLIEN.					c, 1	TD.							COORD	: N: 593,	676.8	E: 1,411,1	23.4		
CONTI					, In	ic.							SURFAC	E ELEV.	: 146.2 f	eet			
DRILLI														Horizont Vertical:					
INSPE			_			N. 7-1-2-5-7		. 4 **	lack D'					verticai: DATE: 10		68 TME: 7:0) am		
	DIVIDLING WILLINGS, Hollow Stell Augers, Rotting Wash, Diamond Cornig.															IME: 10:			
1				iger		Split Spoon	Casi		Pitcher	Grat	Co	re Barrel	ON ADDRESS SALVEN	GROU	NDWATER	DATA			
Type/S	Symbo	ol	Н	SA		S	NV	V	L	G		С			Water	Casing	Hole		
I.D.			3.	25"		1.375"	3.00)"	n/a	3.25	"	1.875"	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)		
O.D.			7.	25"		2"	3.50)"	n/a	3.375	5"	2.980"							
Length			6	0"		24"	60'	'	n/a	6"		60"							
Hamm				/a		140lbs	Drill Rod Size			A									
Hamm	er Fa		n	/a		30"	I.D. (O.D.) 1.219"				.219" (1	.75")				10			
_	U	nin/ft			SA	MPLE		SOI	L (Blows/	6 in.)									
(feet)	CLO	TE (n	Γ				0/6	6/12	12/18	18/24	REC. (in.)]							
DEPTH (feet)	DEPTH (feet) GRAPHIC LOG			R.	۲	DEPTH (feet)	C.772	1000000	CORING		(111.)	1	FIELD CL	_ASSIFICAT	TION AND F	REMARKS			
"	GR	CORING RATE (min/ft)	TYPE	NUMBER	SYMBOL	PTH	RUN	REC.	REC.	L>4"	RQD	1							
<u> </u>		S	ř	ž	S	DE	(in.)	(in.)	%	(in.)	%	0.0'	12 5" 4 1	1t/C					
												eronean)	13.5" Aspha	ii/Concrete					
-	Â											1.1'	Note: Hand (0.0'-11.0'	excavated for	or utility clea	arance, deptl	1		
-	. □[**		G	G 1 >		2.0 - 2.5	G	R	A	В	6	`	Black and gr	ray coarse to	fine SANI	and mediu	n to		
3													fine Gravel, (SP, Fill)	trace Silt, w	ire and shel	I fragments,	dry -		
	本:0			7 4789		SAN SAN BERSON	pasarar	\$10.500.00°	- 897										
-	杂户		G	2	X	4.0 - 4.5	G	R	A	В	6		Light orangi	sh brown ar	nd dark gray	coarse to fi	ne C'it		
<u> </u>	# n												SAND, little Clay, shell fi				Silty —		
100	2. 49 114																		
	Ø O□.}		G	3	X	6.0 - 6.5	G	R	A	В	6		Gray, light g	ray and whi	ite coarse to	fine SAND,			
	集.												some coarse fragments, d	ry (SP, Fill)		t, shell and g	lass -		
5													Note: Groun	dwater at de	epth \sim 8'.				
-	∆ 45 45		G	4	X	8.0 - 8.5	G	R	A	В	6		Gray, light g	ray and whi	ite coarse to	fine SAND,	-		
5	**:3												some coarse fragments, w	to fine Grav	vel, little Silt	t, frequent sh	ell -		
08	\$0i4													,,					
- 10	g □ → Qia																_		
3	A : 45	1	G S		1X	10.5 - 11.0	G 1	R 1	A 1	B WOH	6 10		Gray, light g						
ž P	* CL		1	1		11.0 - 13.0	1	1	1	WOH	10	11.7'	some coarse fragments, w	vet (SM, Fill	1)				
3												134.5'	S-1A: 11.0'- fine SAND,						
5			6	_		12.0 15.0	2		2		17	133.8'	rubber, meta wet (SM, Fil	al, shell and					
			S	2		13.0 - 15.0	2	1	3	4	17	/ /	S-1B: 11.7-	11.8'Light g			D, /		
												\	Some Silty C	rown and bi	rown Silty C	CLAY, trace			
, s													little fine Sar	na (brown p	artings), so	it, moist (CL)		
Note:			_									Bor	ring No	S-P2-B5	Shee	t 1 c	of 4		

Boring No. S-P2-B5 Sheet 1 of 4

PROJE LOCAT	ΓΙΟN:	B&	tin	ior		l Replacen	ORI (co	BORING NUMBER: S-P2-B5 SHEET NUMBER: 2 of4 PROJECT NUMBER: 185615A CONTRACTOR: FSD, Inc. DRILLER: J. Scribellito Jr. INSPECTOR: L. Sepulveda					
	U	nin/ft)			SAI	MPLE		SOIL	_(Blows/	6 in.)			
H (feet)	IIC LO	ATE (r	Γ			et)	0/6	6/12	12/18	18/24	REC. (in.)	FIELD CLASSIFICATION AND REMARKS	
DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)	Ш	NUMBER	SYMBOL	DEPTH (feet)	CORING					FIELD CLASSIFICATION AND REMARKS	
	U	COR	TYPE	N	SYN	DEP	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
- - - - 20			s	3		18.0 - 20.0	3	4	7	5	11.5	Light reddish-brown and light gray Silty CLAY, trace to little fine Sand, trace fine Gravel (quartz nodules), stiff, moist (CL, Residual Soil)	
- 25			S	4		23.0 - 25.0	17	14	16	22	21	Reddish-brown and dark greenish-gray medium to fine SAND, some Silt, trace medium to fine Gravel, medium to dense, moist, subhorizontal relict layering (SM, Decomposed Rock)	-
30			S			28.0 - 29.4	32 10/0" 36	51	73/5"		13	Dark greenish-gray and reddish-brown medium to fine SAND, some Silt, trace fine Gravel, very dense, moist; subhorizontal relict layering (SM, Decomposed Rock) 32.9' Spoon refusal. No recovery	- - -
3		2.0	0	1		32.9 - 35.9	50	27	75	0.0		Spoon refusal. No recovery 32.90'-33.78': Dark gray with white streaks	1000

Boring No. S-P2-B5 Sheet 2 of 4

Note:

PRO.	JECT: ATION: NT: A	B& Bal	tim	ore		Replacen	(00	ING ontinue roject	BORING NUMBER: S-P2-B5 SHEET NUMBER: 3 of _ PROJECT NUMBER: 185615A CONTRACTOR: FSD, Inc. DRILLER: J. Scribellito Jr. INSPECTOR: L. Sepulveda	4			
<u>ਦ</u>	90	min/ft	L		SAN	//PLE		SOIL	(Blows/	6 in.)			
DEPTH (feet)	GRAPHIC LOG	ATE (et)	0/6	6/12	12/18	18/24	REC. (in.)	FIELD CLASSIFICATION AND REMARKS	
EPTI	RAP	CORING RATE (min/ft)		BER	30L	DEPTH (feet)	CORING					TIELD GENOMINO, MICHAELIA MAC	
"	Ō		TYPE	NUMBER	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
- 35 40		1.2 1.2 1.7 1.8 1.3 1.2	С	2		35.9 - 40.9	60	59	98	17.5	29	amphibole GNEISS; coarse to fine grains of amphibole, feldspar and minor mica and quartz; close to very close fracture spacing; slightly weathered; medium strong; gneissic banding dip ~20°. 35.9' 33.78'-35.90': Light gray, light green-gray and li reddish-brown GRANITIC GNEISS; coarse to fi grains of feldspar, quartz, mica and minor amphibole; close to extremely close fracture spamoderately weathered; weak to extremely weak; gneissic banding dips ~20°-25°. 34.15'-34.90': Assumed recovery loss. Light gray, light green-gray and light reddish-br GRANITIC GNEISS with thin amphibole-rich be coarse to fine grains of feldspar, quartz, mica an minor amphibole; close to extremely close fractures spacing; slightly weathered; medium strong to we gneissic banding dips ~20°-25°. 36.65'-36.75': Assumed recovery loss.	ght ine cing; - own ands; d
45 – 45		1.2 1.5 1.3 1.4 1.8	С	3		40.9 - 45.9 45.9 - 50.9	60	42.5	71	6.0	30	Light gray, light green-gray and light reddish-br GRANITIC GNEISS interlayered with GNEISS; coarse to fine grains of feldspar, quartz, mica an minor amphibole; close to extremely close fractu spacing; moderately weathered; strong to extrem weak; gneissic banding dips ~20°-25°. 42.10'-43.50': Assumed recovery loss.	d _ rre nely _
		1.7 1.6 1.6 1.6 1.6 2.3	С	5		50.9 - 56.0	61.2	61	100	52.0	85	AMPHIBOLITE; medium to fine grains of amphibole, feldspar, and minor mica; close to extremely close fracture spacing; slightly weather strong to locally weak; faint foliation dips ~25°; quartz-feldspar band at 45.90'-46.10'. Dark greenish gray to black with few white street AMPHIBOLITE interlayered with amphibole GNEISS; medium to fine grains of amphibole, feldspar, and minor mica; moderate to close fractions.	

2	BORING LOG												BORING NUMBER: S-P2-B5 SHEET NUMBER: 4 of 4
B ₈ P	TUNNI	E						ontinue					PROJECT NUMBER: 185615A
PROJE LOCAT	ΓΙΟΝ:	Bal	tin	iore		Replacen	nent P		CONTRACTOR: FSD, Inc. DRILLER: J. Scribellito Jr. INSPECTOR: L. Sepulveda				
	(0	in/ft)	Γ		SAN	//PLE		SOIL	(Blows/	6 in.)			•
DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)	Γ	ř.		£	0/6	6/12	12/18	18/24	REC. (in.)	1	
EPTH	RAPH	NG RA		BER	30L	DEPTH (feet)	CORING					1	FIELD CLASSIFICATION AND REMARKS
	G.R.	CORII	TYPE	NOM	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
- - - 55		2.3 2.1 2.3 2.1											spacing; except very close fracture spacing at 51.10'-51.25'; unweathered; strong; faint foliation dips ~20°.
			H									90.2'	(End of boring at 56 ft bgs)
-			l										
- 0			l										e
_			l										9
— 60			l										=
			l										
			l										
			l										· ·
			l										
			l										a
- 65			l										=
			l										
_			l										a
_													2
_													
- 70 -													n -

Note:

Boring No. S-P2-B5 Sheet 4 of 4

													BORING	NUMBE	R: S-P2-I	B6	
<u></u>						D/)DI	INIC	LC	2			SHEET	NUMBER	1	of _	4
P _o D	TUNNI	EL				D	JN	IIAC	L	JG							
DO	PROJE	ст											PROJEC	T NUMB	ER: ¹	185615A	
						Replacem	ent Pr	oject					LOCATION	ON: 2140 I	Edmondsor	Avenue	
LOCAT					e, N	/ID							COOPD	· N. 503	100 9 1	E: 1,410,7	00.3
CLIEN'					In	c								CE ELEV.			00.3
DRILLE						·.								Horizont			
INSPE						da							1	Vertical:			
DRILLI	ING N	1ETH	OH	Ď: 1	Hol	low Stem Au										IME: 7:4	
RIG TY	PE:	CMI	E-5:	5, F	Ruk	ber Track	5560 0		1/10/03/03/03/03	2000		777 SA	FINISH	ENGINEER TO SECURE		IME: 12:	15 pm
		.		ger		Split Spoon	Casi	0.00	Pitcher	Gral	1500	ore Barrel		GROU	NDWATER	1	II-I-
Type/S	Symbo	ol		SA		S	NV	200	L	G		С	-		Water Depth	Casing Depth	Hole Depth
I.D.		-	-	25"		1.375"	3.00	575	n/a	3.25		1.875"	Date	Time	(ft)	(ft)	(ft)
O.D.		_	0.00	25"		2"	3.50		n/a	3.375	5"	2.980"					
Length			585	0"		24"	60'		n/a	6"		60"	1			7	
Hamm		24		/a		140lbs		rill Rod			A						
Hamm	er Fa		n	/a		30"		I.D. (O.I	70 11 Sunasus 11	Section 18	.219" (1	1.75")					
	(2)	CORING RATE (min/ft)			SA	MPLE		SOI	L (Blows/	6 in.)							
DEPTH (feet)	GRAPHIC LOG	E (n	Г				0/6	6/12	12/18	18/24	REC.	1					
E E	일	RAT	ı			eet)				355	(in.)	4	FIELD CL	_ASSIFICAT	TON AND F	REMARKS	
Eb.	RAP	NG	I.,	BER	BOL	H.			CORING								
"	ြိ	ORI	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN	REC.	REC.	L>4"	RQD %	1					
<u> </u>		0	╀	_	0)		(in.)	(in.)	70	(in.)	70	0.0'	Concrete/As	phalt 10"			
L	4.4											0.8'	0	500			
5	. <u>A</u> €.											170.7	Note: Hand 0.0'-10.5'. Re	excavated fo ock fragmen	its at 1.0'-2.	arance, depti 0' depth.	
-	**		G	1		2.0 - 2.5	G	R	A	В	6		Brown and o	lark grov co	arse to fine	SAND little	
5	. Ob												Silty Clay, li	ttle coarse to	o fine Grave	el, dry (SC, I	Fill)
2	4P . 5																S.
5	急網		G	2		4.0 - 4.5	G	R	A	В	6					===	0-
	ENT.		[1855 1855	X			100					Brown coars Gravel, little				•
5	A □4													,		1	S.
Š	光.华			_				ъ									
	24.4		G	3	X	6.0 - 6.5	G	R	A	В	6		Brown, coar				ne
-													Sand, trace S	omy Ciay, n	ioist (GP, F	ш)	95
	₩ 4											0.01					
-	<u></u> 45.		G	4	X	8.0 - 8.5	G	R	A	В	6	8.0' 163.5'	Tan and yell		n medium t	o fine SAND),
													trace Silt, me				gr <u>=</u>
8																	
<u> </u>	7777		G	5		10.0 - 10.5	G	R	A	В	6	10.0'	Light brown	coarse to fi	ne SAND o	ome Silty Cl	lav
5			S	1		10.5 - 12.5	1	1	3	2	17	161.0	moist (SC)		190	0.59	
[151.5	Reddish-bro to fine Sand,				
													(CL); $PP = 1$		to mic C		-
5						le:											
-												13.3'					
				_		140 160	_		2040	_	10	158.3'					
			S	2		14.0 - 16.0	2	2	1	2	19		Light brown some Silt, tra				
<u> </u>			L		7								CONTRACTOR PORTOR CONTRACTOR				
Note:	5	-			C - L	r. v			f -1 (1-f)			Bor	ing No.	S-P2-B6	Shee	t 1 c	of 4

													BORING NUMBER: S-P2-B6
2						B	OR	ING	110	G		3	SHEET NUMBER: 2 of 4
B ₈ P	TUNNE	H						ontinue				I.	PROJECT NUMBER: 185615A
												- 	FROJECT NOWIBER.
PROJE	ECT:	В&	PΊ	un	ne	l Replacen	nent P	roject				,	CONTRACTOR: FSD, Inc.
LOCA	TION:	Bal	ltin	or	e, I	MD							DRILLER: R. Stidham
CLIEN	T: Al	MTI	RA]	K									INSPECTOR: L. Sepulveda
	U	nin/ft)	Γ		SA	MPLE		SOIL	_(Blows/	6 in.)			
DEPTH (feet)	GRAPHIC LOG	TE (n	Γ			t)	0/6	6/12	12/18	18/24	REC. (in.)		
PT	APHI	G RA	l	E	7	l (fee			CORING	6		1	FIELD CLASSIFICATION AND REMARKS
90	GR	CORING RATE (min/ft)	TYPE	NUMB	SYMBOL	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
		š	Γ										
		88	l										
-			l									17.5'	
-:		te.	l									154.0'	
_			s	3		19.0 - 21.0	9	8	13	10	14	١.	
00		6.										n	hight gray and light brown coarse to fine SAND and nedium to fine Gravel, trace to little Silt, medium lense, wet (SP)
- 20		ę.	l									l a	ense, wet (Sr)
-			l										
-			l									22.5'	
		6	l									149.0'	
		6				210 260					1.0		
		8	S	4		24.0 - 26.0	2	2	3	3	16	b	ight yellow-brown and light gray with streaks of rown coarse to fine SAND, some Clayey Silt, loose,
– 25		85	l									n	noist (SM, Residual Soil)
-			l										
			l										
		Si G	l									27.5' 144.0'	
			l										
-			S	5		29.0 - 31.0	3	4	5	6	24	L	hight yellow-brown with streaks of brown Clayey
- 30			l									R	SILT and coarse to fine Sand, stiff, moist (ML, Residual Soil)
	(A):(1):4											32.5' 139.0'	
3												139.0	
Note:	<u>icucial</u>	_	_									Borin	g No. S-P2-B6 Sheet 2 of 4

													BORING NUMBER: S-P2-B6
2							R	ORI	NG	110	G		SHEET NUMBER: 3 of 4
B 8	PTUNN	EL							ontinue				PROJECT NUMBER: 185615A
		5101						- 25		8			PROJECT NUMBER: 185615A
PRO.	JECT:	B&1	PΤ	un	ne	l Rej	placen	nent Pı	roject				CONTRACTOR: FSD, Inc.
LOC	ATION	: Bal	tim	or	e, N	MD							DRILLER: R. Stidham
CLIE	NT: A	MTF	RAI	K									INSPECTOR: L. Sepulveda
	$\overline{}$	/ft)	Г		SAI	MPLE	:	Π	SOII	_ (Blows/	6 in)		
et)	90	min (m	H		JAI	VII LL				h i	10.5	REC.	
H (fe	일						eet)	0/6	6/12	12/18	18/24	(in.)	FIELD CLASSIFICATION AND REMARKS
DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)	,,,,	BER	SYMBOL		DEPTH (feet)			CORING	3		
	٥	CORI	TYPE	NOM	SYM		DEP	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	
- 35			S	_			- 36.0	8	9	11	14	24	Light gray and light yellow-brown coarse to fine SAND and Clayey Silt, medium dense, wet (SM, Residual Soil)
													C0044000001400346
_										8			
11			C	,		20.0	41.0		10	10	11	24	
3 1/19			S	7		39.0	- 41.0	6	10	10	11	24	Brown and light gray coarse to fine SAND and Clayey Silt, medium dense, moist (SM, Residual
- 8-16-16 AD.GLB 1/19/17													Soil) —
16-16 /													
NNO NNO NNO NNO NNO NNO NNO NNO NNO NNO													1
В&Р													-
2.GPJ			S	8		44.0	- 45.2	76	80	100/2"		14	
16 PH			ľ										Light green-gray and reddish-brown with gray bands medium to fine SAND, some Silt, very dense, moist,
45													relict foliation dips subhorizontally (SM, Decomposed Rock)
ONNE -													-
B&P T													
OMB)													
OK O													-
- ND RC		:	S	9				60/1.5"	50 5	00	10.5	1.5 98	49.1' Green-gray with speckles of black and white medium
V 50 - 50		1.2	С	1		49.1	- 54.1	60	58.5	98	40.5	98	Green-gray with speckles of black and white medium to fine SAND, little Silt, very dense, moist (SM, Decomposed Rock)
) JULY		2.3											49.10'-49.22': Assumed recovery loss. Light green and dark green with streaks of white
RING													AMPHIBOLE GNEISS; medium to fine grains of feldspar, amphibole, chlorite and quartz; moderate to
B&P BORING ONLY (SOIL AND ROCK COMB) B&P TUNNEL 8-16-16 PH2.GPJ B&P TUNNEL 8-16-16 PH2.GPJ B&P TUNNEL 9-16-16 PH2.GPJ B&P TUNNEL 9-16-16 PH2.GPJ B&P TUNNEL 9-16-16 PH2.GPJ B&P TUNNEL 8-16-16 PH2.GPJ B&P TUNNEL		3.3											very close fracture spacing; except extremely close fracture spacing at 51.60'-51.85'; slightly weathered;
Note:	17.57.	4	_			1	Local Maria Salta						Boring No. S-P2-B6 Sheet 3 of 4

													BORING NUMBER: S-P2-B6
2						R	ORI	NG	LC	C			SHEET NUMBER: 4 of 4
ReP	TUNNI	EL.				D		ontinue					10747
	PROJE						(0.	Jiiiiii GC	,,				PROJECT NUMBER: 185615A
						Replacen	nent Pi	roject					CONTRACTOR: FSD, Inc.
LOCAT	TION:	Bal	tim	ore	, M	D							DRILLER: R. Stidham
CLIEN	T: A	MTI	RAI	K									INSPECTOR: L. Sepulveda
	151241	n/ft)	Γ	S	SAM	PLE		SOIL	(Blows/	6 in.)			
DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)	r			- CI	0/6	6/12	12/18	18/24	REC.		
EPTH	APHIC	IG RA		ER	7	H (feet			CORING	6	()	1	FIELD CLASSIFICATION AND REMARKS
	GR	CORIN	TYPE	NUMBER	CORING RUN REC. REC. L>4" RQD (in.) % (in.) %							1	
-		3.0 3.0 2.4	С			54.1 - 59.1	60	60	100	43.0	72		medium strong to strong; except moderately weathered; extremely weak at 49.22'-49.37'; gneissic banding dips ~35°. Light green and dark green with streaks of white AMPHIBOLE GNEISS; medium to fine grains of feldspar, amphibole, chlorite and quartz; moderate to very close fracture spacing; slightly weathered;
55 - -		2.2											feldspar, amphibole, chlorite and quartz; moderate to very close fracture spacing; slightly weathered; strong to medium strong; except extremely close fracture spacing; moderately weathered; extremely weak at 56.14'-56.20' and 57.97'-58.10'; gneissic banding dips ~30°.
		2.3 1.5											
60												112.4'	(End of boring at 59.1 ft bgs)
60			l										_
-			l										a a
-			l										
			l										
			l										
– 65													-
-													
-													
-													
– 70													n-
3													
Note:	Deeler	Dani	-	oto-C	ء ادا د		n tor-		foot /t-f			Bor	ing No. S-P2-B6 Sheet 4 of 4

-[BORING	NUMBE	R: S-P2-I	36A OW	
١	2						R	OP	NG	LC)C			SHEET N	NUMBER	:_1	of _	4
١	B ₈ P	TUNNE	L				D		146	L								
ı	DOS	PROJE	CT											PROJEC	T NUMB	ER: 1	185615A	
							Replacem	ent Pr	oject					LOCATIO	ON: 2235 I	Edmondson	Avenue	
١	LOCAT					, N	1D							COOPD	· N. 503	142.0 1	E: 1,410,6	76.2
١	CLIENT					In								SURFAC				/0.2
ł	DRILLE													DATUM:			Account to the second s	
١	INSPEC														Vertical:			
ı							ow Stem Au	gers; Ro	otary W	ash; Dia	mond C	oring.					IME: 7:4	
ļ	RIG TY	PE: (CMI	E-55	5, R	ub	ber Track	k Mour	ited, A	utoma	tic Ha	_		FINISH D	OATE: 7/	26/16 T	IME: 12:	30 pm
١					ger		Split Spoon	Casi		Pitcher	Gral	2000	re Barrel		GROU	NDWATER		
١	Type/S	ymbo	l	HS	SA	4	S	NV	V	L	G 🛭	1	С			Water Depth	Casing Depth	Hole Depth
١	I.D.				25"	4	1.375"	3.00		n/a	3.25		1.875"	Date	Time	(ft)	(ft)	(ft)
١	O.D.			8.2	1070	4	2"	3.50		n/a	3.375	5" :	2.980"					
١	Length			60		4	24"	60'		n/a	6"		60"					
	Hamme		~ -	n			140lbs		rill Rod S			A						
ŀ	Hamme	er Fal		n	a		30"		I.D. (O.E	0.)	1	.219" (1	.75")				N.	
-	æ	9	min/ft	L		SAN	MPLE		SOI	_ (Blows/	6 in.)							
	DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)				et)	0/6	6/12	12/18	18/24	REC. (in.)		FIFI D.CI	.ASSIFICAT	TION AND F	PEMARKS	
	DEPTI	RAPH	NG R		BER	BOL	DEPTH (feet)			CORING	6			TILLED OL	LAOOII IOA	TON AND I	CLIVIAITO	
	J	O	CORI	TYPE	NUMBER	SYM	DEP.	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %						
1				Г									0.0'	Concrete/Asj	phalt 11"			
	±0.	\$ A.		l									170.3	Note: Hand	excavated for	or utility clea	arance, depth	ı /-
119/17		70°A		l									170.5	0.0'-11.0'		ē.	A	_/
3LB 1	_	**		G	1	X	2.0 - 2.5	G	R	A	В	6		Dark brown fine Sand, tra	and gray Si	lty CLAY, l	ittle medium	to
S AD.C	-	***		l										line Sand, tra	ace fine Gra	vei, dry (Ci	., FIII)	
16-16		Δ <u>Π</u>)		l														
F- 8	-0	*4.5		G	2	X	4.0 - 4.5	G	R	A	В	6		Dark gray C	layey SILT	and coarse t	to fine Sand,	1. 1
SNR	- 5	94 _G		l	Ì		X							trace mediun	n to fine Gra	avel, moist (ML, Fill)	·
&P T	- 5	φ		l														
PJ B	_0	Ø(00.)		G	3	\forall	6.0 - 6.5	G	R	A	В	6		Dark gray ar	nd light gray	Clavey SII	T little coar	se to
PH2.G		樂山		l		\triangle								fine Sand, tra				
8-16 F	-			l										Fill)				9 .
L 8-1	_	70 45 0 45		G	4		8.0 - 8.5	G	R	A	В	6			2 20			
JNNE		**: 4				X	2020 1024	828	1055	88	10.77			Brown coars medium to fi				ce
SP T	-0	300		l														2 -
B) B	10	7 D 7		l														
COM	- 10	梨 o.		G	5		10.5 - 11.0	G	R	A	В	6						
OCK	-	PDA .		S	1	X	11.0 - 13.0	3	4	2	2	23		Brown coars coarse to fine				le _
ND		4		l										S-1A: 11.0'-1 fine Gravel,	11.7': Brown	n, Silty CLA	Y, little coar	
SOILA	-0													moist (CL, F	ill)		ST.	NESS DE
ILY (S	_	樂												S-1B: 11.7'-1 some coarse	to fine Sand	l, trace coar	se to fine Gr	avel, _
IG ON		6 A		S	2		13.5 - 15.5	3	4	5	5	24	13.5'	medium stiff Fill)				
ORIN	_			-	1000					V-5,25			157.7	Gray and lig				e -
B&P BORING ONLY (SOIL AND ROCK COMB) B&P TUNNEL 8-16-16 PH2.GPJ B&P TUNNEL - 8-16-16 AD.GLB 1/19/17														medium to fi				

LO	CAT	ION:	Bal	tin	ior		l Replacei	(c	ontinue	G LC	OG			BORING NUMBER: S-P2-B6A OW SHEET NUMBER: 2 of 4 PROJECT NUMBER: 185615A CONTRACTOR: FSD, Inc. DRILLER: J. Scribellito Jr.
CLI	IEIN	Г: А		(A)	<u> </u>								T-7	INSPECTOR: A. Daniyarov
	(1	9	min/ft)	L		SAI	MPLE		SOIL	_ (Blows/	6 in.)			
(foot)	eel) L	GRAPHIC LOG	CORING RATE (min/ft)				et)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CLASSIFICATION AND REMARKS
TGE	DEF	RAPI	ING R	l _w	NUMBER	SYMBOL	DEPTH (feet)			CORING				,,
		O	COR	TYPE	NUN	SYM	DEP	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
AD.GLB 1/19/17	0			S	3		18.5 - 20.5	6	8	10	10	17	17.0' 154.2' 22.0'	Grayish brown and light gray coarse to fine SAND, trace coarse to fine Gravel (pure quartz), trace Silty Clay, medium dense, wet, slight petrochemical odor (SP); PID = 5.0 ppm
8-16-16 PH2.GPJ B&P TUNNEL - 8-16-16	5			S	4		23.5 - 25.5	3	4	6	9	24	149.2'	Light gray and light reddish brown, CLAY & SILT, trace medium to fine Sand, stiff, dry, slight petrochemical odor (CL); PID = 4.6 ppm
8&P BORING ONLY (SOIL AND ROCK COMB) B&P TUNNEL 8-16-16 PH2.GPJ B&P TUNNEL - 8-16-16 AD.GLB 1/19/17	0			S	5		28.5 - 30.5	6	6	7	8	24		Orangish-brown interlayered with white Silty, CLAY, little coarse to fine Sand, stiff, dry, no petrochemical odor (CL, Residual Soil)
3&P BOR				s	6		33.5 - 35.5	3	4	6	9	24		

20													BORING NUMBER: S-P2-B6A OW
	2						R	ORI	NG	10	C		SHEET NUMBER: 3 of 4
	B ₈ P	TUNNI	4				D		ontinue				195(15 A
		111002	-					· ·		· · · · ·			PROJECT NUMBER: 185615A
	PROJE	CT:	B&1	PΤ	un	ne	l Replacer	nent Pi	roject				CONTRACTOR: FSD, Inc.
	LOCAT	TION:	Bal	tim	or	e, N	MD						DRILLER: J. Scribellito Jr.
	100 to												<u> </u>
	CLIEN	T: A	MTR	RAI	K								INSPECTOR: A. Daniyarov
		U	nin/ft)			SAI	MPLE		SOIL	. (Blows/	6 in.)		<u>'</u>
	DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)	Г			et)	0/6	6/12	12/18	18/24	REC. (in.)	FIELD CLASSIFICATION AND DEMARKS
	EPTH	SAPH	JG R/		SER	OL	н (бее			CORING	5		FIELD CLASSIFICATION AND REMARKS
	۵	G.	SORIN	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	1
	-		0					()	(,	70	()	70	Orangish-brown interlayered with white, Silty CLAY, little coarse to fine Sand, stiff, dry (CL,
	– 35												Residual Soil)
	56												
	. ×												
	-9												
17				S	7		38.5 - 40.5	8	12	14	19	24	Orangish-brown interlayered with white, Silty
- 8-16-16 AD.GLB 1/19/17	-												CLAY, some coarse to fine Sand, very stiff, dry, relict foliation dips subhorizontally (CL,
D.GLB	- 4 0												Decomposed Rock); PP = 3.5 tsf
6-16 A													
													42.01
UNNE		/////	E E										129.2'
B&P T	-		ii.										
GPJ.				S	8		43.5 - 45.5	22	30	36	47	24	Interlayered dark gray, orangish brown, black and
6 PH2	T-0		0										white, coarse to fine SAND, trace fine Gravel, trace Silt (SP, Decomposed Rock)
8-16-1	- 45		ji.										a
INNEL			e										
&P TU													
MB) B													
CK CO	-												48.5' Samuel Name
ID ROC	-			S	9		48.5 - 48.5	100/0"				0	Spoon refusal. No recovery
OIL AN	4.87	13	3.4	С	1		49.2 - 50.2	12	12	100	0.0	0	Light greenish gray and light reddish brown GRANITE; medium to fine grains of quartz, feldspar
LY (SC	- 50		SOCOME	С	2		50.2 - 55.2	60	60	100	47.0	78	and amphibole; very close fracture spacing; except extremely close fracture spacing at 49.40'-49.70';
NG ON	-0		5.5										slightly weathered; medium strong. Light greenish-gray, light gray and dark gray
B&P BORING ONLY (SOIL AND ROCK COMB) B&P TUNNEL 8-16-16 PH2.GPJ B&P TUNNEL			5.5										GRANITE; medium to fine grains of quartz, feldspar, amphibole and minor mica and garnet; moderate to
B&P				L									very close fracture spacing; slightly weathered;

	ΓΙΟΝ:	B&	tim	iore		Replacen	(ce	ING ontinue roject		OG		BORING NUMBER: S-P2-B6A OW SHEET NUMBER: 4 of 4 PROJECT NUMBER: 185615A CONTRACTOR: FSD, Inc. DRILLER: J. Scribellito Jr. INSPECTOR: A. Daniyarov	
	ŋ	nin/ft)		Ş	SAN	MPLE		SOIL	L (Blows/	/6 in.)			
DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)	Г			et)	0/6	6/12	12/18	18/24	REC. (in.)		
)EPT	RAPH	NG R		BER	30L	DEPTH (feet)			CORING	9		FIELD CLASSIFICATION AND REMARKS	
"	Ō	CORI	TYPE	NUMBER	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
- - 55 - - - - 60		4.1 4.6 3.6 1.7 2.1 2.6 1.8	С	3		55.2 - 60.2	60	60	100	38.0	63	strong to locally medium strong; PEGMATITE band, 0.75" thick, at 53.35'; several healed fractures observed dipping at 0°-60°. 55.5' 55.20'-55.50': Light greenish-gray, light gray and dark gray GRANITE; medium to fine grains of quartz, feldspar, amphibole and minor mica and garnet; moderate to very close fracture spacing; slightly weathered; strong to locally medium strong 55.50'-60.20': Light greenish gray, dark greenish gray and gray-light yellow AMPHIBOLE GNEISS; medium to fine grains of quartz, feldspar, amphibole and minor garnet; moderate to close fracture spacing; slightly weathered; strong to medium strong; except extremely close fracture spacing; moderately weathered; extremely weak at 57.40'-57.50', 58.65'-58.83' and 59.40'-59.53'; gneissic banding dips 30°; subvertical healed fractures at	
- - - 65 - - - 70												111.0 59.40'-60.20'. (End of boring at 60.2 ft bgs)	

													BORING	NUMBE	R: S-P2-I	38	
<u>a</u>						R		NG	LC	C			SHEET N	NUMBER	:_1	of _	2
RoD	TUNNI	EL				D	UIN	INC	L								
DOS	PROJE	ст											PROJEC	T NUMB	ER: ¹	185615A	
PROJE LOCA						Replacem	ent Pr	oject					LOCATIO	ON: MAR W Fra	C Station - anklin Stree	West Baltir et	nore;
CLIEN					, 11	110							COORD.	: N: 592,	709.4	E: 1,410,4	33.1
CONT	RACT	OR:	F	SD,	In	c.							THE STATE OF THE S	E ELEV.			
DRILLI														Horizont Vertical:			
INSPE						10000							I			o IME: 9:30	0 am
the state of the s						low Stem Au ck Mount				ner						IME: 12:	
TKIO I			177	ger	1 (1	Split Spoon	Casi		Pitcher	Grat	Co	re Barrel	SE SOUTH THE DATE	DATE OF THE PARTY	NDWATER		
Type/S	Symbo			SA		S■	NV		L	GX	1	С			Water	Casing	Hole
I.D.	, , , ,			25"		1.375"	3.00	200	n/a	3.25		1.875"	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.			7.2	25"		2"	3.50)"	n/a	3.375	;" ;	2.980"					
Length	1		6	0"		24"	60'		n/a	6"		60"					
Hamm		. –	n	/a		140lbs	D	rill Rod	Size	-	Α	SECULA					
Hamm	er Fa	II –	n	/a		30"		I.D. (O.I	D.)	1	.219" (1	.75")					
		n/ft)	Γ		SAI	MPLE		SOI	L (Blows/	6 in.)							
feet)	507:	E (mi	H				0/6	6/12	12/18	18/24	REC.	1					
DEPTH (feet)	GRAPHIC LOG	CORING RATE (min/ft)	l	2	با	DEPTH (feet)		200000	CORING		(in.)	ł	FIELD CL	ASSIFICAT	TION AND F	REMARKS	
DE	GRA	RING	TYPE	NUMBER	SYMBOL	PTH	RUN	REC.	REC.	L>4"	RQD	ł					
		8	≱	ž	S	DE	(in.)	(in.)	%	(in.)	%	0.01					
			l									0.0	13" Asphalt/	Concrete			
_	4. 4.		l									1.1'	Note: Hand 6 0.0'- 9.5'. So	excavated fo	or utility clea	arance, depth	1
8	/世 /四 /四 /四 /四 /四 /四 /四 /四 /四 /四 /四 /四 /			,		20.25		n		ъ	_	127.0	bedrock ence	ountered.	lated at 7.5	ogs, possioi	_/
95	% 4. 4.		G	1	X	2.0 - 2.5	G	R	A	В	6	100	Grayish brow some Silty C	wn and dark	gray coarse	Gravel mois	ND,
	1 A A		l										faint petroch	emical odor	, cobbles ar	ound sample	-
0	du .}						100000	20.500000					(Fill)				
	染产		G	2	X	4.0 - 4.5	G	R	A	В	6		Yellowish br	rown and lig	ht gray Silt	y CLAY, tra	ce -
<u> </u>	D K		l										coarse to fine moist (Fill)	e Sand, trac	e medium to	o fine Gravel	, _
180	Δ. ^G 4)		l										Note: Groun	dwater at de	epth ~6'.		
2	*::		G	3	\vee	6.0 - 6.5	G	R	A	В	6	6.0' 122.1'	Brown SILT	little coars	e to fine Gr	avel. little co	arse
L			l									122.1	to fine Sand,			area, mine co	
0			G	4		7.5 - 8.0	G	R	A	В	6		D 1		CH T 1:44	1	c
-			l		X	8.							Brown and g Sand, trace (le coarse to	ine –
			l									9.0'					
-			l									119.1'					
<u> </u>			S	1		9.7 - 9.9 10.0 - 11.0	50/2.5"		100	0.0	2.5	10.0'	Light gray, r				
3		3.4					12	12	100	0.0	0	118.1	SAND, little Rock, SM)	Silt, very de	ense, moist	(Decompose	d /
<u> </u>			C	2		11.0 - 16.0	60	60	100	40.0	67	\	Note: Auger encountered.		0.0', possibl	e bedrock	/ -
N. C.		2.7					assas	Parameter.			Allers (\	Light gray, o	lark gray, re			
SOI		1.6											GRANITIC quartz, felds	par, biotite a	and minor g	arnet; close t	to
-													very close fra medium stro	acture spaci ng.	ng; slightly	weathered;	8-
SAL		1.8											Light gray, of	lark gray, re	ddish brow	n and white	ands
		1.7											up to 1.25" t	hick; mediu	m to fine gr	ains of quart	z,
Do			L										feldspar, bio	me and min	or garnet; n	ioderate to c	iose

Note: Boring No. S-P2-B8 Sheet 1 of 2

PROJE LOCAT	TION:	Bal	tim	ore		Replacen	(Co	ontinue	G LC	OG			SHEET NUMBER: S-P2-B8 SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A CONTRACTOR: FSD, Inc. DRILLER: J. Scribellito Jr. INSPECTOR: A. Daniyarov
	2220	in/ft)	Γ		SAN	//PLE		SOIL	_(Blows/	6 in.)			
(feet)	GRAPHIC LOG	TE (mi	h				0/6	6/12	12/18	18/24	REC. (in.)		
DEPTH (feet)	APHIC	G RA		ER	<mark>о</mark> г	I (feet			CORING	<u> </u>	(111.)		FIELD CLASSIFICATION AND REMARKS
B	GR	CORING RATE (min/ft)	TYPE	NUMB	SYMBOL	DEPTH (feet)	RUN	REC.	REC.	L>4"	RQD %		
- 20		1.7 1.7 2.2 1.5 2.5 2.5	С	3		16.0 - 21.0	(in.) 60	(in.)	90	34.0	57		fracture spacing; slightly weathered; strong to medium strong; except close to extremely close fracture spacing; moderately weathered; medium strong to weak at 11.00'-12.00' and 14.65'-14.90'. Light gray, dark gray, reddish brown and white GRANITIC GNEISS; medium to fine grains of quartz, feldspar, biotite and minor garnet; moderate to extremely close fracture spacing; slightly weathered; medium strong to weak; except completely weathered; extremely weak at 20.50'-20.60'. 20.10'-20.60': Assumed recovery loss.
8&P BORING ONLY (SOIL AND ROCK COMB) B&P TUNNEL 8-16-16 PH2.GPJ B&P TUNNEL -8-16-16 AD.GLB 1/19/17 C												107.1'	(End of boring at 21 ft bgs)

Boring No. S-P2-B8 Sheet 2 of 2

													BORING	NUMBER	R: TA-P 2	2-1 OW	
2						B	ORI	NG	LC	G			SHEET	NUMBER	1_	of _	2
B ₈ P	TUNNE	T											PROJEC	T NUMBI	ER: 1	85615A	
						Replacem	ent Pr	oject					LOCATIO	ON: Prestr		and N Mon	roe
LOCAT CLIEN					N	ID							COORD	Street : N: 596,8		F• 1 411 0	01 1
CONT					Ind	c.								E ELEV.:			71.1
DRILLI	ER: J.	Scr	ibe	llito	J	r .								Horizont Vertical:			
						ow Stem Au	gers; Ro	tary W	ash; Dia	mond C	oring.		START	DATE: 7/		IME: 9:4	
						ck Mount		-					FINISH D	DATE: 7/	14/16 T	IME: 8:1	0 am
			Au			Split Spoon	Casir		Pitcher	Grab	1505	re Barrel		GROU	NDWATER		11-1-
Type/S	Symbo	I _	HS		4	S	NV	(0)	L	GX		С			Water Depth	Casing Depth	Hole Depth
I.D.		-	3.2	200	4	1.375"	3.00	//	n/a	3.25	200	n/a	Date	Time	(ft)	(ft)	(ft)
O.D.			7.2	000	+	2"	3.50		n/a	3.375	<u> </u>	n/a	7/13/16	7:34 am	7.7	43.2	43.0
Length Hamm			60 n/	-		24" 140lbs	60"	rill Rod	n/a Sizo	6.,	A	n/a	7/14/16	7:30 am 7:30 am	7.6	43.2	119.5 126.8
Hamm		· -	n/		+	30"	_	.D. (O.[1	.219" (1	75")	//13/10	7.30 am	7.0	43.2	120.8
Hamili			1		SAN	MPLE			L (Blows/		.217 (1						
(feet)	GRAPHIC LOG	ws/ft)	H			G	0/6	6/12	12/18	18/24	REC.						
DEPTH (feet)	APHIC	CASING (Blows/ft)		ER	OL	DEPTH (feet)			CORING		\)	1	FIELD CL	ASSIFICAT	TON AND F	REMARKS	
	R _P	CASIN	TYPE	NUMBER	SYMB	DEPTI	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
	**************************************		T			0.0 - 0.3						0.3' 171.8'	4" Asphalt/C				
-	10 J											17110	Note: Hand 6 0.0'-10.5'	excavated fo	r utility clea	arance, depti	n
-0	**: 4		G	1	X	2.0 - 2.5	G	R	A	В	6		Light brown SAND, little	, gray and li	ght gray me	edium to fine	•
	** 'S		G	2		4.0 - 4.5	G	R	A	В	6		Gravel, mois	t (Fill)			
_ _ 5			J	2	X	4.0 - 4.3	G	K	A	Б	O		Light gray, g medium to fi (Fill)	ray, brown ine Sand, tra	and black S ice Gravel (cinders), mo	trace ist
-	* G		G	3	X	6.0 - 6.5	G	R	A	В	6			m grav and	brown SII	T (mica ara)	ne)
-	#. E					1000000							Yellow-brow little coarse t moist; coarse	o fine Sand,	trace coars	e to fine Gra	avel,
-	架 ₄ 1		G	4		8.0 - 8.5	G	R	A	В	6		(Fill)				
-	** **				\triangle								Dark gray co Sand, trace S	Silt, moist; s	GRAVEL a lightly mica	ind coarse to ceous (Fill)	ine
– 10	45		G	5		10.0 - 10.5	G	R	A	В	6		D .				
	* 4 0		S	1*	X	10.5 - 12.5	3	1	1	2	8		Dark gray, b (pure quartz	and feldspa	r), little coa		
	₩ Δ	E.											trace Clayey Dark gray, b	Silt, moist (Fill)		
- 5 - - - 10 - - 15 - -	900												Silt, little coa fragments, ve	arse to fine (Gravel; brick		
	(5)((4)		C	2*		140 160	4	2	,	1	20		Note: No rec			on, sample	
	4 0.3 2k 00		18	2*		14.0 - 16.0	4	2	2	1	20		recovered us Dark gray, b	ing 3" split s rown and lis	spoon. ght brown n	nedium to fi	ne
- 15													SAND and C brick and pla	Clayey Silt, I	ittle coarse	to fine Grave	el, -
	架 76					ė.							Note: No rec				
-	口 47.7 7.4	i c										17.5'	recovered us			,	3
-												154.6'					
-			S	3*		19.0 - 21.0	3	4	5	6	16		Olive-green of Silt, trace Cla				

PROJE LOCAT	ΓΙΟΝ:	Bal	tin	ıor		I Replacen		ontinue	11 No. 10 10 10 10 10 10 10 10 10 10 10 10 10)G		BORING NUMBER: TA-P2-1 OW SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A CONTRACTOR: FSD, Inc. DRILLER: J. Scribellito Jr. INSPECTOR: L. Sepulveda
			Γ		SA	MPLE		SOIL	_(Blows/	6 in.)		
(feet)	507	vs/ft)	r				0/6	6/12	12/18	18/24	REC.	
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	l	H.	٦	DEPTH (feet)			CORING		(111.)	FIELD CLASSIFICATION AND REMARKS
	GRA	ASING	TYPE	NUMBER	SYMBOL	EPTH	RUN	REC.	REC.	L>4"	RQD	
er Ve		O	F	z	S	Δ	(in.)	(in.)	%	(in.)	%	(SM, Residual Soil)
-0 -0												Note: 1" recovery with 2" split spoon, sample recovered using 3" split spoon.
- - - 25 -			S	4		24.0 - 26.0	7	8	8	13	14	Note: Switched from Augers to Rotary Wash at depth 24.0'. Dark gray, green-gray and reddish brown coarse to fine SAND (predominantly mica grains), little Clayey Silt, medium dense, moist (SM, Residual Soil)
- 30			S	5		28.0 - 30.0	7	8	10	15	10	Bluish-green and brown coarse to fine SAND (mica rich) and Silt, trace Clay, trace fine Gravel, very dense, moist (SM, Residual Soil)
B&P TUNNEL - 8-16-16 AD.GLB 10			S	6		33.0 - 35.0	10	19	49	84	17	Green-gray and yellow-white coarse to fine SAND (mica rich), some Silt, very dense, moist (SM, Residual Soil)
8&P BORING LOG (FINAL) B&P TUNNEL 8-16-16 PHZ.GPJ B&P TUNNEL - 8-16-16 AD.GLB 1/19/17			S	7		38.0 - 38.3	100/3"				2.5	Gray with speckles of white, medium to fine SAND (feldspar, quartz and garnet grains), some Silt, trace Clay, very dense, moist, no apparent foliation (SM, Decomposed Rock)
I&P BORING LOG (FINA)			S	8		• 43.0 - 43.1	_70/1"				1	43.1' Black with speckles of white coarse to fine SAND (predominantly mica), little Silt, very dense, moist (SM, Decomposed Rock) (Spoon refusal at 43.1 ft bgs, see Coring Log)

													BORING	NUMBER	R: IVF-P	3-4	
<u>a</u>						B)DI	NG	LC	C			SHEET	NUMBER	:_1	of	3
B ₈ P	TUNNE	T				D	JKI	INC	LC	JG			PROJEC	T NUMB	ER: 1	85615A	
						Replacem	ent Pr	oject					LOCATIO	ON: 2205 I	Eutaw Plac	e	
LOCAT					, N	/ID							COORD	· N. 500	0140 I	E: 1,415,8	206.1
CONT					R. 1	Inc.								E ELEV.			
DRILLI					-, -									Horizont			
INSPE			_											Vertical:			
						low Stem Au	100	-			oring.					IME: 10: IME: 8:1	
NG I	r L.		Au		Tu	Split Spoon	Casir		Pitcher	Gral	Co	re Barrel			NDWATER		7.020707
Type/S	Symbo		HS	_		S 🛮	NV		LΠ	G	30 1200	С			Water	Casing	Hole
I.D.			4.2	25		1.375"	3.0'		2.86	3.25	_	n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.			7.6	525		2"	3.5'		3	3.375	5"	n/a	2/14/18	7:52 am	17.0	39.0	39.0
Length	l		6	0		24"	60"		24	6"		n/a	2/15/18	7:49 am	16.5	49.0	80.0
Hamm	er Wt		n	/a		140lbs	Di	rill Rod S	Size		A		2/20/18	9:45 am	17.5	49.0	125.0
Hamm	er Fal	I	n	/a		30"	- 1	I.D. (O.I	D.)	1	.219" (1	.75")	2/21/18	7:50 am	16.0	49.0	160.2
	_o		L		SAI	MPLE		SOI	L (Blows/	6 in.)							
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)				et)	0/6	6/12	12/18	18/24	REC. (in.)		EIEI D CI	ASSIFICAT	TON AND E	DEMADKS	
DEPTI	RAPH	NG (B		NUMBER	BOL	DEPTH (feet)			CORING	i			I ILLD CL	ASSII ICA I	ION AND I	CLIVIAINO	
	O	CASI	TYPE	NOM	SYMBOL	DEP	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
	₩ . P		Г									185.7'	5" Asphalt; 8	3" Concrete			
-	***	0	1			10 % Page 10 may						185.0'	Note: Hand	excavated fo	or utility clea	arance, dept	n –
			G	1	\times	2.0 - 2.5	G	R	A	В	6		0.0'-8.0' Brown Silty	CLAY, trac	e medium to	o fine Sand,	(-
-0	** 4		┨										moist (CL, F				10 -1
	*		G	2	×	4.0 - 4.5	G	R	A	В	6		Brown Silty	CLAY, trac	e medium to	o fine Sand,	<u></u>
- 5	***		$\ $										moist (CL, F	ill)			8
6/22	# B		G	3	\times	6.0 - 6.5	G	R	A	В	6		Brown coars	e to fine SA	ND, little C	layey Silt, n	noist
3LB 3/1	光 2		G	4		7.5 - 8.0	G	R	A	В	6		(SM, Fill) Brown coars	a ta fina SA	ND little C	lavov Silt m	-
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/16/22	架4		_			00 110	10			10		9.0'	(SM, Fill)	e to line SA	ND, Ilule C	iayey Siit, ii	ioist _
의 길 — 10		9.	S	1		9.0 - 11.0	19	11	11	13	24	177.1'	Orange-brow medium den			, little Silt,	
DI IO]											50 50000 3			
B&P		ii T	1														_
3.GPJ			1														-
EH3			1														£
NA -			S	2		14.0 - 16.0	3	2	2	3	14		Orange-brow				race -
		2	1										coarse to fine	e Gravel, ver	ry loose, we	t (SM)	n-
NAL)			1			k											0.
) 9G (FI			1														120 200
NGLC		8															(<u>)</u>
- BOR		\ 	s	3		19.0 - 21.0	3	5	8	7	24		Orange-brow	n and tan e	oarse to fine	SAND litt	le -
В&Р			L									S	Silt, medium			57 H 1D, IIII	

2						В	ORI	ING	LC	G			BORING NUMBER: IVF-P3-4 SHEET NUMBER: 2 of 3
B 8	PROJE	CT					(co	ontinue	ed)				PROJECT NUMBER: 185615A
PROJ	JECT:	В&	PΤ	Tun	ne	l Replacen	nent P	roject					CONTRACTOR: E2CR, Inc.
LOCA	ATION	Bal	tin	or	e, I	MD							DRILLER: S. Lyons
CLIEN	NT: A	MTI	RA	K									INSPECTOR: A. Daniyarov
			Τ		SA	MPLE		SOIL	_ (Blows/	6 in.)			
(feet)	9070	ws/ft)	r				0/6	6/12	12/18	18/24	REC. (in.)	1	
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)		ER	OL	DEPTH (feet)			CORING	6	(111.)	1	FIELD CLASSIFICATION AND REMARKS
ă	GR	CASIN	TYPE	NUMBER	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	1	
7:			Ť				()	()		()		į.	
			s	4		24.0 - 26.0	8	6	2	12	11	24.0'	
- 25			ľ	4		24.0 - 20.0	0	0	2	12	11	161.8	24.00'-24.50': Tan and light brown coarse to fine Quartz GRAVEL, little coarse to fine Sand, trace
													Silt, loose, wet (GP) 24.50'-24.92': Light orange-brown and white coarse to fine SAND, little Silty Clay, trace coarse to fine Gravel, loose, dry (SC, Residual Soil)
-			s	5		29.0 - 31.0	9	10	8	7	24	29.0' 157.1'	Orange and green-white, tan and yellow Clayey
30													SILT, trace coarse to fine Gravel (mica and quartz), trace Sand, very stiff, dry, slightly micaceous (ML, Residual Soil); PP = 2.0 tsf
70100			-										
-		ss	\mathbf{I}										
- LIBRA			s	6		34.0 - 36.0	5	6	7	7	24		White, gray and yellow-brown Silty CLAY, and coarse to fine Sand, stiff, dry, relict layering observed
d − 35			1										(CL, Residual Soil); PP = 2.0 tsf
886]										
H3.GPJ													
			s	7		39.0 - 41.0	6	7	7	9	24		Light gray-white Silty CLAY, little coarse to fine
40		_	$\left\{ \right.$										Sand, stiff, dry (CL, Residual Soil); PP = 3.5 tsf
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/16/22		_	$\frac{1}{1}$										
500			1										
- SKING				1		grange engine	27-207		220		210	44.0'	
287			S	8		44.0 - 46.0	10	18	20	36	24		Dark green and light green-gray medium to fine SAND, and Silt, dense, dry, relict foliation observed

Note:

BORING LOG (continued) SHEET NUMBER: 3 of 3 PROJECT NUMBER: 185615A PROJECT: B&P Tunnel Replacement Project LOCATION: Baltimore, MD CLIENT: AMTRAK SOIL (Blowse in) SAMPLE SOIL	Γ														BORING NUMBER: IVF-P3-4
PROJECT: B&P Tunnel Replacement Project LOCATION: Baltimore, MD CLIENT: AMTRAK SAMPLE SOIL (Blows/6 in.) O/6 6/12 12/18 18/24 REC. (in.) CORING CORING RUN REC. REC. L>4* ROD (in.) %		Po D	TUNN	EL				В				G			
CLIENT: AMTRAK INSPECTOR: A. Daniyarov	L	DOF	PROJE	ст					(0	Jillilue	a)				PROJECT NUMBER: 185615A
CLIENT: AMTRAK INSPECTOR: A. Daniyarov INSPECTOR: A. Daniyarov	F	PROJE	ECT:	B&1	PΤ	un	nel	Replace	ment P	roject					CONTRACTOR: E2CR, Inc.
SAMPLE SOIL (Blows/6 in.) O/6 6/12 12/18 18/24 REC. (In.)	L	OCAT	TION:	Bal	tim	or	e, N	MD							DRILLER: S. Lyons
SAMPLE SOIL (Blows/6 in.) O/6 6/12 12/18 18/24 REC. (In.)															2.55
10 10 10 10 10 10 10 10		CLIEN ⁻	T: A	MTF	RAI	K									INSPECTOR: A. Daniyarov
No recovery, spoon refusal. (Spoon retusal at 49 ft bgs, see Coring Log) Spoon refusal at 49 ft bgs, see Corin	Γ		(1)		Γ		SAI	MPLE		SOIL	_(Blows/	6 in.)			
S S S S S S S S S S	1	0/6 6/12 12/18 18/24 REC. (in.)													
No recovery, spoon refusal. (Spoon retusal at 49 ft bgs, see Coring Log) Spoon refusal at 49 ft bgs, see Corin	1	CORING RAPHIC GRAPHIC GRAPHIC GRAPHIC GRAPHIC GRAPHIC GRAPHIC REC. L>4" RQD												1	FIELD CLASSIFICATION AND REMARKS
S 9 49.0 49.0 100/0" No recovery, spoon refusal. (Spoon refusal at 49 It bgs, see Coring Log) - 55	1	□	GR	SASIN	rype	NUMB	SYMB	DEPTI	RUN		REC.	L>4"	RQD		
- 50 137.1 No recovery, spoon refusal. (Spoon refusal at 49 ft bgs, see Coring Log)	h					_	0,		(111.)	(111.)	70	(111.)	70		(SM, Decomposed Rock)
No recovery, spoon refusal. (Spoon refusal at 49 ft bgs, see Coring Log)	ŀ				1			8							
- 50 137.1 No recovery, spoon refusal. (Spoon refusal at 49 ft bgs, see Coring Log)					1										
- 50 137.1 No recovery, spoon refusal. (Spoon refusal at 49 ft bgs, see Coring Log)					c	0		40.0 - 40.0	100/0"						_
- 55	L	50				•		15.0 15.0	100/0					137.1	No recovery, spoon refusal. (Spoon refusal at 49 ft bgs, see Coring Log)
	ŀ														
	ŀ				$\ $										
	ŀ				$\ $										
	ŀ				$\ $										
880 BORING LOG (FINAL) B&P TUNNEE PH3 GPD 188 TUNNEE - LIBRARY G1B 31/16/22	\vdash	55			$\ $										
60	16/22				1										
60 60 60 60 60 60 60 60	3LB 3/				1										
981 - 600	RARY.				1										
26 PORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL	II-LIB	60]										
98P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P 629	TUNN	00													
98P BORING LOG (FINAL) B&P TUNNEL PH3.GF	J B&P														
98P BORING LOG (FINAL) B&P TUNNEL	PH3.GP														
- 65	NNEL				$\ \ $										
B&P BORING LOG (FINAL)	B&P TU	65			$\ $										
B&P BORING LOG (F	INAL)			5.	$\ $										
B&B BORING	LOG (F														
	RING														
	B&P BC							98 <u></u>							

20													BORING	NUMBER	R: JFW-1	[
6	-					D		NIC		10			SHEET	NUMBER	. 1	of	2
P _o D	TUNNE	Z.				В	JKI	NG	LC	JG							
D&P	PROJEC	T											PROJEC	T NUMB	ER: 1	85615A	
						Replacem	ent Pr	oject					LOCATION	ON: AMTI		Falls Road; k; 620' W fr	
LOCAT					, N	1D							COORD	.: N: 5995		E: 1,418,8	27504750
CLIEN					2 1	ne								CE ELEV.			33.1
DRILLI					٠, ١	iic.								Horizont			
INSPE				aniy	yar	ov								Vertical:			
-						ow Stem Au			-					DATE: 8/			
RIG TY	/PE: (CMF	19.1		ru	ck Mount			ASSAULT CON	1994: W	-	522 01	FINISH	DATE: 8/2		IME: 11:	38 am
		. H	Au		4	Split Spoon	Casir		Pitcher	Grat		re Barrel		GROU	NDWATER		Llele
Type/S	Symbo	' -	HS		4	S	NV	**	L	G		С	-		Water Depth	Casing Depth	Hole Depth
I.D.		-	6 6	25"	-	1.375"	n/a	-	n/a	3.25	300	n/a	Date	Time	(ft)	(ft)	(ft)
O.D.		\vdash		25"	-	2"	n/a	_	n/a	3.375	5"	n/a	8/2/17	9:36 am	27.4	29.0	30.0
Length			60		-	24"	n/a		n/a	6"		n/a	ļ			i d	
Hamm				/a	4	140lbs		rill Rod			A	M.S.P.	-				
Hamm	er Fal	I	n	/a		30"		I.D. (O.I	0.)	1	.219" (1	.75")	L				
	(n)		l		SAI	MPLE		SOI	L (Blows/	6 in.)							
feet)	Ď	/s/ft)	Г				0/6	6/12	12/18	18/24	REC.	1					
DEPTH (feet)	GRAPHIC LOG	(Blow	l	~		feet)		20.00		100.000.000	(in.)	1	FIELD CL	ASSIFICAT	ION AND F	REMARKS	
)EP	RAF	NG	l m	BEF	BOL	H.			CORING								
-	٥	CASING (Blows/ft)	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN (in.)	REC.	REC.	L>4" (in.)	RQD %	0.0'					
	*\dag{\alpha}			20 20			()	()	,,,	()	,,,	0.0	Note: Hand	excavated fo	r utility clea	rance, deptl	ı
-	10 03		ł										0.0'-7.5'				
-0	**		G	1	$\overline{}$	2.0 - 2.5	G	R	A	В	6		Black, coars	a to fina CP	AVEL and	coarse to fir	-
-	*												Sand, little S	Silt, dry (GM	I, Fill)	coarse to m	-
	Δ		G	2		4.0 - 4.5	G	R	A	В	6						
	1 to 3	2	16		\boxtimes	4.0 - 4.3	G	K	A	В	0		Black, coars Gravel, little			oarse to fine	
- 5	*		1										Gravei, intic	Sit, moist (Sivi, I'iii)		-
- 125	. بەن 1. ياد		G	3	\times	6.0 - 6.5	G	R	A	В	6		Black and ta	n, coarse to	fine SAND	little coarse	to -
3/14	[⊿] , On S		G	4		7.0 - 7.5	G	R	A	В	6		fine Gravel,	little Silt, mo	oist (SM, Fi	11)	
:GLB	梁山		S	1		8.0 - 10.0	4	1	2	2	8		Black and ta fine Gravel,	little Silt, mo	oist (SM, Fi	ll)	32 <u>-</u>
RARY	· · · · · · · · · · · · · · · · · · ·			٠		0.0 - 10.0	ATTEN		-	_			Black, gray, little coarse				
9	**************************************	ÿ	1										(GP, Fill)				
틸 - 10	* 3		1			<u> </u>											0-
E	\$0;d1		┨														-
- B&	1 0 3																2=
3.GP,	柴 o.			•		120 150	-	_		_							
	604		S	2		13.0 - 15.0	7	2	1	5	12		Light gray, r				
NN-	4		1										fine Sand, tr (GP, Fill)	ace Silt, root	iragments,	very loose,	dry _
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22			1			à.											: —
()- B	***																2-
FIN	公 .49																
907	* 12			8		gg p some	ria.	ric.			0000						Alexander (
SING	* 121	\$	S	3		18.0 - 20.0	2	1	1	1	16		Black and gr				
<u>8</u>			1										to fine Grave Fill)	el, trace Silt,	very loose,	dry (SP-SM	, _
a B	₩D¤:																

														BORING NUMBER: JFW-1
-	2						R	ORI	NG	10	C			SHEET NUMBER: 2 of 2
1	B ₈ P	TUNNI	H				D		ontinue					195(15 A
ŀ			-:			_				/				PROJECT NUMBER: 185615A
	PROJE	CT:	B&1	PΤ	un	ne	l Replacen	nent P	roject					CONTRACTOR: E2CR, Inc.
1	LOCAT	ION:	Bal	tim	or	e, I	MD							DRILLER: E. Hill
	CLIENT	Г: А	MTF	RAI	K									INSPECTOR: A. Daniyarov
Γ		40		Γ		SA	MPLE		SOIL	(Blows/	6 in.)			
	OEPTH (feet) ORAPHIC LOG CASING (Blows/ft) COSING COSING												FIELD CLASSIFICATION AND REMARKS	
1	CORING RUN REC. REC. L>4" RQD (in.) % (in.) %												FIELD CLASSIFICATION AND REMARKS	
1											1			
ŀ		****		۲	Z	S		(in.)	(in.)	%	(in.)	%		
ŀ				$\ \ $										
ŀ				$\ \ $										-
ŀ		****	_	S	4		23.0 - 24.8	8	5	5	50/3"	21		S-4A: 23.0'-24.4': Black and brown, coarse to fine
ŀ		3 4												SAND, little Clayey Silt, little medium to fine Gravel,
ļ	- 25	**************************************		S	5	E	25.0 - 27.0	5	8	13	24	14		SAND, little Clayey Silt, little medium to fine Gravel, loose to medium dense, moist (SM, Fill) S-4B: 24.4'-24.8': Brown, gray, and white, coarse to fine GRAVEL, little coarse to fine Sand, trace Silt,
	20	# 14			Ĭ		20.0 27.0			10		***		loose to medium dense, moist (GP, Fill) S-5: Gray, coarse to fine GRAVEL, some coarse to
		**************************************											1,000/00/00/00	fine Sand, trace Clayey Silt, medium dense, wet (GP,
ſ		4					20.0.20.0	50/011					27.5' 48.3'	Fill)
Ī				S	6		28.0 - 28.0	50/0"				0	40.5	No Recovery. Spoon refusal at 28' bgs.; start coring at 29' bgs.
ı	120.000	× × × × × × × × × × × × × × × × × × ×		T										(Spoon refusal at 29 ft bgs, see Coring Log)
ı	- 30			1										-
4/22			_	1										
B 3/1				┨										-
RY.GI				┨										-
LIBRA			_	$\ \ $:-
NEL.	- 35			ł										_
NOT -			10	$\ \ $										-
J B&														-
H3.GF														·-
NEL P														-
NDT P	- 40													<u></u>
L) B&														
(FINA														
9075														
ORING														·
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22							<i>y</i>							

												BORING	NUMBER	R: JFW-2	2	
					R()DI	NG	LC	C			SHEET N	NUMBER:	1	of	2
Re DTUNNEL	-				D		INC	LC	J							
PROJECT												PROJEC	T NUMBI	ER: 1	85615A	
PROJECT: B&						ent Pr	oject					LOCATIO			Falls Road; k; 103' E fro	
LOCATION: B				M	1D							COORD			E: 1,419,2	2000
CLIENT: AMT				I	ne								E ELEV.:			02.3
DRILLER: E. H			CI	, 1	iic.								Horizont			
INSPECTOR:)a	niy	ar	ov							1	Vertical:	STOCKED BUILDING	8	
DRILLING ME					and the state of t								DATE: 8/2		IME: 12:	
RIG TYPE: CN	15.0	_		_	0007 (010037 m			Cocco Vintos	mer		5009 64	FINISH	COLUMN TO THE TAXABLE		IME: 9:14	4 am
		lug		-	Split Spoon	Casir	-	Pitcher	Grab	1 12.000	re Barrel		GROUI	NDWATER		Llele
Type/Symbol	_	HS.		4	S	NV	20.	L	G∑	_	С	-		Water Depth	Casing Depth	Hole Depth
I.D.		3.2:		4	1.375"	n/a	-	n/a	3.25	-	n/a	Date	Time	(ft)	(ft)	(ft)
O.D.	1300	.62	-00000 501	4	2"	n/a	_	n/a	3.375	"	n/a	8/3/17	8:45 am	19.9	30.0	50.0
Length		60		+	24"	n/a		n/a	6"		n/a					
Hammer Wt.	_	n/a		+	140lbs	, 50	rill Rod S			A	7511					
Hammer Fall	Ь.	n/a		_	30"	- 1	.D. (O.E).)	1	.219" (1	.75")	l,				
	_ L		S	AN	MPLE		SOII	L (Blows/6	6 in.)							
(feet)	VS/II	T				0/6	6/12	12/18	18/24	REC.						
DEPTH (feet)	(Blov		2	ای	(feet)			CORING		(in.)		FIELD CL	ASSIFICAT	ION AND F	REMARKS	
DEPTH (feet) GRAPHIC LOC	ASING	YPE	NUMBER	YMBC	DEPTH (feet)	RUN	REC.	REC.	L>4"	RQD						
	١	+	z	S	Ω	(in.)	(in.)	%	(in.)	%	0.0'	Note: Hand	excavated fo	r utility cles	rance denti	,
	_											0.0'-10.0'.	excavated to	d dillity cice	rance, depu	-
**		G	1 8		2.0 - 2.5	G	R	A	В	6						
, ob. "	T)	J	1	X	2.0 - 2.3	G	K	A	Б	0		Brown, tan, little coarse t	gray, coarse	to fine SAN	ND, some Sil	lt,
	ヿ											ntile coarse t	o mie Grave	i, moist (bi	vi, i iii)	20 1
	\dashv	G	2	X	4.0 - 4.5	G	R	A	В	6		Tan, brown,	yellow, Silty	y CLAY, so	me coarse to	fine
-5 J	-											Sand, dry (C	L, Fill)			::
2- 24	_ ,	G	3		6.0 - 6.5	G	R	A	В	6			105	-		
27472 200.8			-	$\stackrel{\times}{\rightarrow}$	A STATE OF THE PARTY OF THE PAR	600		5.05		1978		Tan, brown a				
₩4. ₽															ve 1503 V	- 12 - 1 2
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22	7	G	4	X	8.0 - 8.5	G	R	A	В	6		Black, coarse Gravel, trace				SID -
9 44	\neg	G	5		9.5 - 10.0	G	R	A	В	6	10.0'					,
型 10	-	S	1	X.	10.0 - 12.0	8	9	10	13	16	59.9'	Black, coarse Gravel, trace				ill)
N Co	\dashv											Orange brow	n and gray,	coarse to fi	ne GRAVEI	_, _
# 15d	_										12.51	little coarse t dense, dry, s				
3.6P			2		12.0 15.0	9	0	,	2	4.3	12.5' 57.4'		SS 130			
E	1	S	2		13.0 - 15.0	4	8	7	6	14	37.4	Orange brow				
	\dashv											fine Gravel, micaceous (S			, ury, stight	.y _
FINAL) B&P TUNNEL PH3.GF	\dashv															R
\$ BB	_										16.5'					8-
											53.4'					92
000			3		52 B 98500	Ge.	23			122						47
	7	S	3		18.0 - 20.0	3	9	3	9	17		Orange brow				
B S S S S S S S S S S S S S S S S S S S	\dashv											to fine Sand, slightly mica				oist,
Note:	\perp									V						

Boring No. __JFW-2__ Sheet _1_ of _2_

												BOR	ING NUMBER: JFW-2
2						D		NG	10)C			ET NUMBER: 2 of 2
B ₈ F	TUNNI	EL				D		ontinue				200	JECT NUMBER: 185615A
							- 5		0			PRO	JECT NUMBER: 185615A
PROJ	ECT:	В&	PΊ	Cun	nel	Replacen	nent P	roject				CON	TRACTOR: E2CR, Inc.
LOCA	TION:	Bal	tin	10r	e, N	MD						DRIL	LER: E. Hill
CLIEN	IT: A	MTI	RA	K								INSP	ECTOR: A. Daniyarov
	40		Γ		SAI	MPLE		SOIL	(Blows/	6 in.)			
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	r			t)	0/6	6/12	12/18	18/24	REC.		
EPTH	MAN	IG (Blo		ER	OL	н (fee			CORING	5	(122)	FIEL	D CLASSIFICATION AND REMARKS
	G. B.	CASIN	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
- 25 - 30			S	4		23.0 - 25.0 28.0 - 28.5 30.0 - 30.0	4 50/6"	9	13	28	6	Dark br Sand, tr (GP, Do	rown and gray, GRAVEL, little coarse to fine race Silt, medium dense, wet, slightly bus (GP, Decomposed Rock) rown and gray, GRAVEL, little coarse to fine race Silt, very dense, dry, slightly micaceous ecomposed Rock) very refusal at 30 ft bgs, see Coring Log)
- 40 -		j-											2—
-			$\left\{ \right.$										
		4	$\left\{ \right.$										
-													
Note:			_			g.							

													BORING	NUMBE	R. JFW-	3	
6	-					-	~ ~ ~ ~						SHEET	2 1 1 1 1 1 1 1 1 1		33	2
	TIME	2				B	UK	INC	3 LC)G				. C.IIDEI			
B84	PROJE	כד											PROJEC	*** **********************************	_, ,	85615A	
						Replacem	ent Pr	oject					LOCATION			Falls Road; k; next to N	
LOCA					e, I	VID							COORD			th Avenue 1	
CONT					R.	Inc.							SURFAC				
DRILL					7								DATUM:	Horizont	al: NAD	83/91	
INSPE	CTOF	R: B.	G		_									Vertical:			0
						low Stem Au	_						Particular and Assessment			IME: 1:0	
RIG T	YPE: (CMI	74.1	_	ru	Split Speen			10x0397436	100.00		ro Por!	FINISH		WAS TRANSPORTED TO A TRANSPORT	IME: 12:	ro hin
T. m a /6	C. maha	, -		iger		Split Spoon	Casi		Pitcher	Grat	30 1235	re Barrel		GROU	NDWATER Water	Casing	Hole
Type/S	symbo			SA 25"	-	S	NV	90.	L []	G 🛭		C 🗏	- D-4-	Tierre	Depth	Depth	Depth
I.D. O.D.				25"		1.375"	n/a n/a	-	n/a n/a	3.25	200	n/a n/a	Date	Time	(ft)	(ft)	(ft)
Length	,		100	0"		24"	n/a n/a	-	n/a n/a	6"		n/a n/a					
Hamm			- 83	/a	-	140lbs	100000	rill Rod	(60)(60)	0	A	ша					
Hamm		12		/a	-	30"		I.D. (O.		1	.219" (1	.75")					7
Hamil	T	<u> </u>	T							300 30	(1	.,,,	1		L		l.
et)	90	/ft)	F		SA	MPLE			IL (Blows/		REC.	-					
H (fe	HC L	3lows/				et)	0/6	6/12	12/18	18/24	(in.)	1	FIELD CI	_ASSIFICAT	TON AND F	REMARKS	
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	101	NUMBER	SYMBOL	DEPTH (feet)			CORING								
	100	CASI	TYPE	NOM	SYM	DEP	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
-	*		Γ										Note: Hand (0.0'-8.0'	excavated for	or utility clea	arance, deptl	h -
	**		G	ï		2.0 - 2.5	G	R	A	В	6						5335. p(23)
	" ob		ا	1	\times	2.0 - 2.3	G	K	A	В	6		Black, coars Gravel (cind	e to fine SA	ND, and coat, moist (SN	arse to fine	
	A		1										ozurer (emu	, mue on	., (51	-,)	-
-	**		G	2	\times	4.0 - 4.5	G	R	A	В	6		Gray brown	and gray, co	oarse to fine	SAND, littl	e -
- 5	₩		1										medium to fi Fill)	ine Gravel, l	ittle Silty C	lay, moist (S	SC, _
-	4. 45 		G	3	$\overline{}$	6.0 - 6.5	G	R	A	В	6		Brown and o	ranca ass	en to fine C	ND some	5-
<u>†</u>	4 OD 3						5000	CARTON			224		medium to fi				l) _
25.	梨山		G S	4	\times	7.5 - 8.0 8.0 - 8.3	G 50/3"	R	A	В	6 2		Brown, coar			nedium to fi	ne _
Y Y	₩ o:			*		2.5 0.5	2013				-		Gravel, little Gray, coarse	to fine GRA	AVEL (boul	der fragmen	its),
	45		1										little Sand, to Note: Rig ch	race Silt, ver	y dense, dr	y (GM, Fill)	
10	* 3		1										rote. Mg cli	accing at ~	0.0-2.0.		0=
-	*		1														02
	1 0 3		-														-
5.2	* D.		s	2		13.0 - 15.0	4	2	1	ī	8		9930 - 2000		333	1200 20 CON	, <u> </u>
	194 ¹¹ 5		ľ			15.0 - 15.0	3			•			Brown, black fine Gravel,			o fine Sand,	trace
	47.4		1											,(-,,		-
<u> </u>	1. OD		1														·
1	**		1									16.5'					X.
		_	-									47.9'					
			s	3		18.0 - 20.0	4	7	5	5	6						V-
			ľ			20.0	50.85	"			~		Tan, coarse t moist (SM, I			medium der	ise,
Š D			1												75		4. -
Note:	1.1.1.1.		_	_													

PROJE LOCAT	TION:	B&	ltin	nor		l Replacen	(Co	ING ontinue roject		OG			BORING NUMBER: JFW-3 SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A CONTRACTOR: E2CR, Inc. DRILLER: E. Hill INSPECTOR: B. Godfrey
₽ D	90	t c	L		SAI	MPLE		SOIL	_(Blows/	'6 in.)			
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)				set)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CLASSIFICATION AND REMARKS
DEPT	SRAPI	ING (B	Ш	NUMBER	SYMBOL	DEPTH (feet)			,,				
	O N N N N N N N N N N N N N N N N N N N												
- - - 25 - - - 30			S			23.0 - 23.9 26.5 - 26.7		50/5"			2	25.2' 39.2' 26.7' 37.7	Tan, coarse to fine SAND, some Silt, very dense, moist (SM, Residual Soil) Light gray, tan, coarse to fine GRAVEL, little coarse to fine Sand, little Silt, very dense, moist (GM, Decomposed Rock) (Spoon refusal at 26.67 ft bgs, see Coring Log)
- - 35 - - - - - 40													
Note:													2 2 6

												BORING	NUMBER	R: JFW-	1	
2					R)RI	NG	LC	G			SHEET N	NUMBER:	. 1	of	2
B&PTUNN PROJE	EF.				Β,		140	L				PROJEC	T NUMBI	ER: 1	85615A	
PROJECT:						ent Pr	oject					LOCATIO	ON: AMTI			
LOCATION CLIENT: A				, N	AD .							COORD	: N: 598		c; in front o	
CONTRACT				R.]	Inc.								E ELEV.:			23.2
DRILLER: I				-								medical comments of the property	Horizont			
INSPECTO			_										Vertical:			20
DRILLING N RIG TYPE:						-		0					DATE: 8/3 DATE: 8/3		IME: 10:	
NO TITE.	D- 3(10.1	ger	<u> </u>	Split Spoon	Casir		Pitcher	Grab	Co	re Barrel	1 11.11-11.1		NDWATER		
Type/Symb	ol	- 15000	SA		s 🛮	NV		L	GX		СП			Water	Casing	Hole
I.D.		3.2	25"		1.375"	n/a		n/a	3.25	_	n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.		6.6	25"		2"	n/a		n/a	3.375	"	n/a	8/3/17	11:00 am	13.3	13.0	13.0
Length		6	0"		24"	n/a		n/a	6"		n/a					
Hammer W	53%	n	/a		140lbs	Di	rill Rod S	Size		A						
Hammer Fa	all	n	/a		30"		.D. (O.D).)	1	.219" (1	.75")					
و ا		L		SA	MPLE		SOIL	(Blows/6	6 in.)							
DEPTH (feet) GRAPHIC LOG	CASING (Blows/ft)				et)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CL	ASSIFICAT	ION AND F	REMARKS	
DEPT	ING (B	u u	NUMBER	SYMBOL	DEPTH (feet)			CORING	9				2 10011 10711			
100	173	TYPE	N	SYN	DEP	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
- 1º 0		-										Note: Hand 6 0.0'-6.0'	excavated fo	r utility clea	rance, deptl	n -
- % ob		G	ī	\times	2.0 - 2.5	G	R	A	В	6		Tan, brown,				· ·
- **	7	1				~			_			coarse to fine	e Sand, little	Silt, moist	(GM, Fill)	9-
- 5 suc		G	2	\times	4.0 - 4.5	G	R	A	В	6		Tan, light br	to fine round	arse to fine led to subro	SAND, little unded Grave	e Silt, el,
发 型		G S	3	X	5.5 - 6.0 6.0 - 8.0	G 9	R 6	A 9	B 6	6 16		moist (SM, I Note: Assum ground surfa	ned boulder		6.0' below	£-
3/14 4 OB		4										Tan, coarse t	to fine SANI	D, some Silt	, little coars	e to
8&P BORING LOG (FINAL) 8&P TUNNEL PH3.GPJ 8&P TUNNEL - LIBRARY.GLB 3/4/22		s	2		8.0 - 10.0	2	4	5	5	0		Orange and to fine Sand,	tan, coarse to trace Silt, n	o fine GRA		
LIBRA T	15	+										No Recovery				33 4
型 10 港	2	+														0-0
N	9	4									11.5'					-
8 6											52.5'					8-
13.GP		s	3		13.0 - 13.9	20	50/5"			11	13.3'					
Ŧ		ľ	3		13.0 - 13.9	20	30/3			11	50.7	S-3A: 13.0'-1 fine SAND,				
		1									/	Gravel, very	dense, dry (SM, Residu	al Soil)	_/
15 m		1										S-3B: 13.3'-1 and coarse to				
(Tyl)	1	+										Soil)				0-
E -	1	+														-
ST S	_	s	4		18.0 - 20.0	2	2	3	4	10		Gray and bro	ONE COORCE	to fine Silts	CLAV and	(-
P BORII	_	-										coarse to fine medium stiff	e Sand, trace	e medium to	fine Gravel	
Note:	<u>a</u>	L				-										

Boring No. __JFW-4_ Sheet _1_ of _2_

													BORING NUMBER: JFW-4
Ro D	TUNN	EL.				В		ING ontinue		G			SHEET NUMBER: 2 of 2
DO	PROJE	ст					(00	onunue	;u)				PROJECT NUMBER: 185615A
PROJE	ECT:	В&	PΊ	ſun	ne	Replacen	nent P	roject					CONTRACTOR: E2CR, Inc.
LOCAT	ΓΙΟN:	Bal	tin	nor	e, I	MD							DRILLER: E. Hill
CLIEN.	T: A	MTI	RA	K									INSPECTOR: A. Daniyarov
	U	22			SA	MPLE		SOIL	_(Blows/	6 in.)			
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	Γ			et)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CLASSIFICATION AND REMARKS
EPT	RAPH	NG (B	ļ.,	BER	30L	DEPTH (feet)			CORING	6			FIELD CLASSIFICATION AND REMARKS
"	Ū	CASII	TYPE	NUMBER	SYME	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
- - - - 25 - - - - 30			- S	5		23.0 - 25.0 28.0 - 28.9	8	13	18	31	22		S-5A: 23.0'-23.2': Gray and brown, coarse to fine Silty CLAY, and coarse to fine Sand, hard, wet (CL, Residual Soil) S-5B: 23.2'-24.8': Light gray and gray, coarse to fine SAND, little Silt, trace medium to fine Gravel, dense, dry, micaceous (SM, Decomposed Rock) Yellow gray and light gray, coarse to fine SAND, little Silt, trace fine Gravel, very dense, dry, micaceous (SM, Decomposed Rock)
			S S			33.0 - 33.8 33.8 - 33.8		50/3"			9	l	Yellow gray, light gray, and orange, coarse to fine SAND, little Silt, trace fine Gravel, very dense, dry, micaceous (SM, Decomposed Rock)
- 35 - 40												l	No recovery (Spoon refusal at 34.3 ft bgs, see Coring Log)

													BORING	NUMBER	R: SA-P3	-1	
2						R	ORI	NG	LC	C			SHEET	NUMBER	1	of	2
Bel	PROJEC	-				ים	OIN	NG	LC	JG			NO. 221-241-241-241-241-241-241-241-241-241-			056151	
			T		1	D 1	, D	•					PROJEC	neso humane e concarre so	_, ,	85615A	
	TION:					Replacem	ent Pr	oject					LOCATIO	ON: SW co Payso		sher St. an	d N.
	NT: AM				,											E: 1,411,4	78.7
	TRACT				2, 1	Inc.							SURFAC				
	LER: S.													Horizont Vertical:			
	ECTOR ING M					ow Stem Au	gers: Di	amond (Coring.							IME: 1:4:	5 pm
and the second second						ck Mount	_			mer						IME: 4:10	
			Au	ger		Split Spoon	Casir	ng	Pitcher	Grab	0 1298	re Barrel		GROU	NDWATER	DATA	
Type/	Symbo	L	HS	SA		S	NV	22.	L	G		С			Water Depth	Casing Depth	Hole Depth
I.D.			3.2	!5"		1.375"	3.0'	'	n/a	3.25	'	n/a	Date	Time	(ft)	(ft)	(ft)
O.D.			6.6		_	2"	3.5'	_	n/a	3.375	"	n/a	8/23/17	7:15 am	9.9	37.5	66.0
Lengt			60		4	24"	60"		n/a	6"	Т.	n/a	-				
250000000000000000000000000000000000000	ner Wt. ner Fal	2	n/		+	140lbs 30"	. ==	rill Rod S		-	A .219" (1	75"					
патт	ner Fai		I		2000		- 1	l.D. (O.D			.219 (1	./5")					
	ပ္ခ	0	L		SAI	MPLE		SOIL	. (Blows/	6 in.)							
(fee	070	ws/ft	П			G.	0/6	6/12	12/18	18/24	REC. (in.)						
DEPTH (feet)	GRAPHIC LOG	G (Blo		ER	or	1 (feet			CORING	<u> </u>	()	i	FIELD CL	ASSIFICAT	ION AND F	REMARKS	
	GR	CASING (Blows/ft)	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN (in.)	REC.	REC.	L>4" (in.)	RQD %	0.0'					
				-						,	50.00	1.0'	4" Asphalt; 8	3" Concrete			
-	***		1									157.6'	Note: Hand	excavated fo	r utility clea	arance, depth	ı
-	70 DI		G	1	\times	2.0 - 2.5	G	R	A	В	6		0.0'-10.0' Dark gray co	arse to fine	GRAVEL,	little coarse	to –
-	**************************************		$\ \ $			Nê							fine Sand, tra	ace Silty Cla	y, moist (G	P, Fill)	a -
	*		G	2	X	4.0 - 4.5	G	R	A	В	6		Black and da	nek aray coa	rse to fine S	AND trace	
- 5	***					0							medium to fi	ne Gravel, l	ittle Silt, roo	ot fragments	, <u> </u>
	7 10 1		G	3		6.0 - 6.5	G	R	A	В	6		moist (SM, F				
3/14/2	* 4		J	-	X	0.0 - 0.5		1.	4.5				Brown and I fine Sand, lit				
GLB	***												Fill)				
YARY.	24.4		G	4	X	8.0 - 8.5	G	R	A	В	6		Gray, light g				
		3	G	5		9.5 - 10.0	G	R	A	В	6		fine GRAVE Clay (in pocl	kets), moist,	trace cinde	rs (GP, Fill)	
<u>च</u> – 10	% 45		S	1	X	10.0 - 12.0	2	3	2	2	17		Black and da coarse to fine	e Sand, little	Silt, wet, to		
DT-	**************************************		$ \cdot $										plastic fragm Gray-brown,	nents (GM, I	Fill)		42
- B&	304		1										SAND, little (in pockets),	medium to	fine Gravel,	little Silty C	lay
13.GF	4 O A	9	S	2		13.0 - 15.0	1	WOH	WOH	1	18		loose, wet (S	C, Fill)	Ter 1000		
EL P	¥ c.		آ	-		15.0	*				10		Dark gray, li GRAVEL, so				ne
NOT	**************************************												Sand, very lo				_
15	4 4		1			dia											-
NAL)	1 00											16.5'					0 .1
) SG (F)			1									142.1'					-
NGLC			s	3		18.0 - 20.0	WOH	WOH	WOH	WOH	18		Gray and yel	llow-brown	CLAY little	e medium to	-
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22													fine Sand, ve			- medium to	
В&Р																	
Note:																	

Boring No. SA-P3-1 Sheet 1 of 2

B&P	TUNNI			9		Notice and the second	ORI (co		BORING NUMBER: SA-P3-1 SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A				
						Replacen	nent P	roject					CONTRACTOR: E2CR, Inc.
LOCAT	ΓΙΟΝ:	Bal	ltin	or	e, I	MD							DRILLER: S. Lyons
CLIEN	T: A	MTI	RA	K									INSPECTOR: A. Daniyarov
G G	90	G	L		SAI	MPLE		SOIL	(Blows/	6 in.)			
DEPTH (feet)	GRAPHIC LOG	3lows/ft				set)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CLASSIFICATION AND REMARKS
DEPT													
	/////	CAS	TYP	N	SYN	DEF	RUN (in.)	REC. (in.)	REC. %	L>4" (in.)	RQD %		
-0 -0						23.0. 25.0		12	12			21.5'	
- - - 25			S	4		23.0 - 25.0	11	13	13	10	14		Dark gray and orange-brown coarse to fine GRAVEL (pure quartz), little medium to fine Sand, little Silt, medium dense, moist (GM)
- - - - 30			S	5		28.0 - 28.4	100/5"				5	26.5' 132.1'	Gray and light gray with speckles of black medium to fine SAND, little Silt, very dense, moist (SM, Decomposed Rock)
- - - - - 35			S	6		33.0 - 33.1	100/1"				1		Gray and light gray with speckles of black medium to fine SAND, little Silt, very dense, moist (SM, Decomposed Rock)
-			S	7		37.5 - 37.5	100/0"				0	37.5' 121.1	No recovery, spoon refusal.
- - 40 - - -												121.1	(Spoon refusal at 37.5 ft bgs, see Coring Log)
Note:			Ь			9							

													BORING	NUMBER	R: SA-P3	-3	
	-					R)DI	NG	LC	C			SHEET	NUMBER	:1	of	2
B ₈ P	TUNNE	L				D		NG	LC	JG			PROJEC	T NUMB	ER: 1	85615A	
						Replacem	ent Pr	oject					LOCATION	ON: Alley	of 1030 N. l	Payson Stre	et
LOCAT					, N	/ID							COORD	· N. 595	215.7 I	E: 1,411,5	24.5
CONT					R. 1	Inc.								E ELEV.			24.5
DRILLI					,									Horizont			
INSPE			_											Vertical:			-
						low Stem Au ick Mount	100				oring.		Control of the party of the par			IME: 7:4:	
KIG I I	FE. C	IVIE	Aug		Tu	Split Spoon	Casir		Pitcher	Grab	Co	re Barrel	T II (III)	1222722314	NDWATER		
Type/S	Symbol		HS		7	S	NV		L	G	() 100,000	С			Water	Casing	Hole
I.D.			4.2	:5"		1.375"	3.0'	•6	2.86	3.25		n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.			7.62	25"		2"	3.5'	•	3	3.375	;"	n/a	1/11/18	7:45 am	10.3	31.0	60.0
Length	Į.		60)"		24"	60"		24	6"		n/a					
Hamm	er Wt.		n/	a		140lbs	D	rill Rod S	Size		A						
Hamm	er Fall		n/	a		30"	- 1	.D. (O.D).)	1	.219" (1	.75")	<u> </u>				
	၂ ၂		L		SAI	MPLE		SOIL	(Blows/	6 in.)							
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	П			et)	0/6	6/12	12/18	18/24	REC. (in.)		EIEI D CI	ASSIFICAT	TON AND E	DEMARKS	
DEPT	RAPH	NG (BI		NUMBER	BOL	DEPTH (feet)			CORING	6	9		FIELD CL	ASSIFICAT	ION AND F	KEIVIARKS	
	100	CASI	TYPE	NOM	SYMBOL	DEP.	RUN (in.)	REC. (in.)	REC. %	L>4" (in.)	RQD %	0.0'					
-	****												0'-2' Brick Fr Note: Hand of 0.0'-10'	ragments excavated for	r utility clea	arance, deptl	n -
-7	** ·		G	1	X	2.0 - 2.5	G	R	A	В	6		Brown coars Gravel, trace	e to fine SA	ND, some o	coarse to fine	- e
-	1		1										Fill)	tenimodii neludelo			1487
	*月		G	2	\times	4.0 - 4.5	G	R	A	В	6		Note: Timbe Brown and I coarse to fine	r fragments	at 3.5 bgs.	SAND, som	е -
- 5	* 04					2000 A 200	bachus				128		fragments ar	e Gravel, litt id cinders, d	le Silty Clay lry (SC, Fill	y, brick)	3 <u>33</u>
3/14/22	74 3003		G	3	X	6.0 - 6.5	G	R	A	В	6		Brown and I coarse to fine				e -
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22	架 4.		G	4		8.0 - 8.5	G	R	A	В	6		fragments ar	nd cinders, n	noist (SC, F	ill)	_
LIBRAR	***				\triangle	V							Brown, light some coarse fragments ar	to fine Grav	el, little Silt	y Clay, brick	
- - - 10	* 4		s	1		10.0 - 12.0	3	1	2	2	11		Dark gray ar	Management by	- 1000		0-
AND -	**************************************		$\ $										coarse to fine moist, brick,	e Gravel, litt	le Silty Clay	y, very loose	
SPJ BS	* · · · · · · · · · · · · · · · · · · ·		$\ \ $														10 TE
PH3.0	米 D.		$ \cdot $														A rt
NNEL -	# u		s	2		14.0 - 16.0	3	WOH	1	1	1		Black and lig	oht grav med	dium to fine	GRAVEI	little _
를 는 15	***		$ \cdot $										medium to fi	ne Sand, tra	ice Silt, very	loose, wet,	
AL) B	**												Janes, Chicke	, mood and	omos nagin	(01,11	/
NH.	AJ.																_
010	** C																
SORIN	***		S	3		19.0 - 21.0	WOH	1	3	1	1						,
В&Р	₩O¤.		,	,		15.0 21.0		*		*			Dark gray ar medium to fi				,

-												BORING NUMBER: SA-P3-3
					B	ORI	NG	LC	G		1	SHEET NUMBER: 2 of 2
PROJE	EL CT										,	PROJECT NUMBER: 185615A
TION:	Bal	tin	or		170	nent Pi	roject					CONTRACTOR: E2CR, Inc. DRILLER: S. Lyons INSPECTOR: A. Daniyarov
1000		Γ		SAI	MPLE		SOIL	_ (Blows/	6 in.)			
5070	ws/ft)	H	į.			0/6	6/12	12/18	18/24	REC.		
APHIC	3 (Blo		H.	7	l (feet)	- 10		CORING		(111.)		FIELD CLASSIFICATION AND REMARKS
GR/	ASING	YPE	UMBE	YMBC	ЕРТН	RUN	REC.	REC.	L>4"	RQD		
***		-	2	0)		(In.)	(in.)	%	(in.)	%	ci	inder and brick fragments (SM, Fill)
***************************************		- S	4		24.0 - 26.0	10	14	24	63	9	fi S	orange-brown and light orange-brown medium to ne SAND, some coarse to fine Quartz Gravel, some lit, dense, dry, relict layering observed, slightly nicaceous (SM, Residual Soil)
		S	5							2	129.0 R N	Gray and light gray with speckles of black and dark end coarse to fine SAND, some coarse to fine Quartz Gravel, little Silt, very dense, wet, relict layering beserved, slightly micaceous (SM, Decomposed lock) To recovery, spoon refusal. Spoon refusal at 31 ft bgs, see Coring Log)
	ECT: TI	TION: Bal	ECT: B&PT TION: Baltim T: AMTRA CASING (Blows/ft) S S	TION: Baltimore TION: Baltimore CASING (Blows/ft) S 4 S 5	ECT: B&P Tunne TION: Baltimore, INT: AMTRAK SAMURER SAM	ECT: B&P Tunnel Replacent TION: Baltimore, MD T: AMTRAK SAMPLE SAMP	ECT: B&P Tunnel Replacement Provided in the pr	ECT: B&P Tunnel Replacement Project TION: Baltimore, MD IT: AMTRAK SAMPLE SOIL O/6 6/12 RUN REC. (in.) S 4 24.0 - 26.0 10 14	ECT: B&P Tunnel Replacement Project TION: Baltimore, MD TT: AMTRAK SAMPLE SOIL (Blows/ 10/6 6/12 12/18 CORING RUN REC. REC. (in.) % RUN (in.) % SAMPLE SOIL (Blows/ 10/6 6/12 12/18 CORING RUN REC. REC. (in.) %	ECT: B&P Tunnel Replacement Project TION: Baltimore, MD TT: AMTRAK SAMPLE SOIL (Blows/6 in.) O/6 6/12 12/18 18/24 CORING RUN REC. REC. L>4" (in.) SS 4 24.0 - 26.0 10 14 24 63	SAMPLE SOIL (Blows/6 in.)	CONTINUED CONT

													BORING	NUMBER	R: S-P3-I	312	
6						D		NIC		10			100000000000000000000000000000000000000	NUMBER	CONTRACT CONTRACTOR		2
B ₈ F	TUNNI	E				B	UKI	NG	LC	JG				T NUMB		85615A	
PROJ	ECT:	B&F	T	unr	iel	Replacem	ent Pr	oiect					Jan Made Control Control		_1 \.	N. Warwick	k Ave.
LOCA								oject									
CLIEN					35 /0											E: 1,409,6	41.0
CONT					₹,]	lnc.								E ELEV.: Horizont			
DRILL INSPE						****								Vertical:			
				-		low Stem Au	gers: Di	amond	Coring.							IME: 8:0	0 am
						ick Mount	100		-0	mer			FINISH D	DATE: 9/2	21/17 T	IME: 12:	22 pm
			Au	ger	2	Split Spoon	Casir	ng	Pitcher	Gral	Со	re Barrel		GROU	NDWATER	DATA	
Type/S	Symbo	ol [HS	SA		S	NV	V	L	G]	С			Water Depth	Casing Depth	Hole Depth
I.D.			3.2	25"		1.375"	n/a		n/a	3.25	"	n/a	Date	Time	(ft)	(ft)	(ft)
O.D.			6.6	25"		2"	n/a		n/a	3.375	5"	n/a	9/21/17	8:30 am	14.0	14.0	14.0
Length			60	0"		24"	n/a		n/a	6"		n/a					
Hamm		12		/a		140lbs	D	rill Rod S	Size		A						
Hamm	ner Fa	II	n	/a		30"		I.D. (O.E	0.)	1	.219" (1	.75")					
	ပ္		L		SA	MPLE		SOII	L (Blows/6	6 in.)							
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)				et)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CI	ACCIFICAT	TON AND F	DEMARKS	
EPT	RAPH	NG (B)		BER	30L	DEPTH (feet)			CORING				FIELD CL	ASSIFICAT	ION AND F	KEIVIARKS	
"	5	CASII	TYPE	NUMBER	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC. %	L>4" (in.)	RQD %	0.0'					
			Γ									1.21	7" Asphalt; 7	7" Concrete			
	₩		1					7,000			1.7	1.2'	Note: Hand 6	excavated fo	r utility clea	arance, deptl	h /
-			G	1	\times	2.0 - 2.5	G	R	A	В	6	_	Tan, green a	nd orange co	oarse to fine	e SAND, sor	ne -
-	***		G	2		3.5 - 4.0	G	R	A	В	6	3.3' 110.3'	Silt, trace co	+10+110+14V0 -1950			V 10-
-			S	ĩ	X	4.0 - 6.0	8	5	5	6	12	110.5	Brown and b	olack, coarse to fine Grave	to fine SAl	ND, some Sigments), mo	lt, _ ist
- 5		_	1										(SM, Residu Note: soft di	al Soil)	Sugar Perina San		1946) 19 <u>44</u>
2													bedrock ence	ountered	\$50	550	-
3/14/2			l										Light orange fine SAND,				
I'B			1										ments), little relict layerin				
ARY.C			1										,	(,		-
- LIBR			S	2		9.0 - 11.0	4	5	6	7	10		Light orange	-brown, tan	and light g	ray coarse to)
ᇦ_ 10			-										fine SAND, ments), little	little coarse	to fine Grav	el (rock frag	g
ND L			1										ing observed	(SM, Resid	ual Soil)	y, renct taye	u- _
В&Р																	
.GPJ			1														-
PH3			1														6 1
- NNET			S	3		14.0 - 16.0	1	1	1	1	24		Brown and d	lark brown	coarse to fin	e SAND. lit	tle _
<u>a</u> – 15			-										Silt, trace me	edium to fine			
L) B8													(SM, Residu	ai SUII)			×-
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22																	10.0
907	11111		1									17.5'					Sec.
RING			1									96.0'					()
P B0			S	4		19.0 - 21.0	1	1	2	2	24		Dark gray Si	ilty CLAY, s	oft, dry (Cl	L, Residual S	Soil)
88	/////		\perp									S				and the second s	

Γ															BORING NUMBER: S-P3-B12
1	2			•				В	OR	NG	LC)G			SHEET NUMBER: 2 of 2
	B ₈ P	PRO.	NEL							ontinue					PROJECT NUMBER: 185615A
-								l Replacen	nent P	roject					CONTRACTOR: E2CR, Inc.
1	LOCAT	ION	1: E	Balt	im	or	e, I	MD							DRILLER: S. Lyons
	CLIENT	Γ: Δ	AM	TR	AI	K									INSPECTOR: A. Daniyarov
		(7)					SA	MPLE		SOIL	(Blows/	6 in.)			
1	DEPTH (feet)	GRAPHIC LOG	1	CASING (Blows/ft)				et)	0/6	6/12	12/18	18/24	REC. (in.)	1	FIFLD OF ADDIFICATION AND DEMARKS
1	EPT	RAPH		NG (BI		BER	30L	DEPTH (feet)			CORING	6			FIELD CLASSIFICATION AND REMARKS
1	_	9		CASII	TYPE	NOM	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
	- - - 25				S	5		24.0 - 24.8	100.00	100/4"			10	22.5' 91.0'	Orange-brown and tan coarse to fine SAND, little Silt, trace fine Gravel, slightly micaceous, very dense, dry, relict layering observed (SM, Residual Soil)
	50 50	iaja			S	6		26.5 - 26.5	100/0"				0	87.0	No recovery; spoon refusal; rock fragments in spoon tip (Spoon refusal at 26.5 ft bgs, see Coring Log)
ARY.GLB 3/14/22	- 30														- - - -
B&P TUNNEL - LIBRA	- 35 -														-
TUNNEL PH3.GPJ	- - - 40														 :-
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22	70														

													BORING	NUMBER	R TA-P3	3-1	
6	-	_					~ ~ ~							NUMBER			2
	TIMBU	2				B	OK	ING	i LC)G				TOMBLIT		0	
111111111111111111111111111111111111111	PROJE	18											July Month County Conty	T NUMB	_, ,,	85615A	
						Replacem	ent Pr	oject					LOCATION	ON: NE co	rner of 209	9 Mosher S	St.
LOCA.					, 1	ID							COORD	: N: 595.	079.5	E: 1,411,3	63.0
CONT					2, I	nc.								E ELEV.			2022
DRILL					,									Horizont			
INSPE			_											Vertical:			
100000000000000000000000000000000000000						ow Stem Au	_				oring.		Particular and Assessment			IME: 10:	
RIG I	YPE: (161		ru	ck Mount			Coaco Unicoa			Dawel	FINISH		Water and the same of the same of		23 am
Type/S	Symbo	. -	Au		+	Split Spoon	Casi	0	Pitcher	Grat	() (///////	re Barrel		GROU	NDWATER Water	Casing	Hole
Type/S	Symbo	" -	HS		+	1.375"	NV 3.0	90.	L I	G 🛭		C 🖺	-	T:	Depth	Depth	Depth
		\vdash			+	2"			n/a	3.375		n/a	Date	Time	(ft)	(ft)	(ft)
O.D.		-	7.6	50-000H	+	24"	3.5 60'		n/a	6"	,	n/a	9/28/17	8:09 am	10.2	30.5	50.0
Length		8	n	8	+	- Table	865		n/a	6,		n/a				i d	
Hamm		2	n		+	140lbs 30"	. 3	rill Rod S			A .219" (1	75!!\					
патт	ler Fa	1	T		2000			I.D. (O.D	No.	200 0	.219 (1	./5")	I.				
	ဖွ		L		SAI	MPLE		SOIL	_ (Blows/	6 in.)							
(feet	O LO	ws/ft				_	0/6	6/12	12/18	18/24	REC. (in.)						
DEPTH (feet)	GRAPHIC LOG	3 (Blo		H.	٦	l (feet			CORING		(111.)	1	FIELD CL	ASSIFICAT	ION AND F	REMARKS	
	GR	CASING (Blows/ft) TYPE NUMBER		NUMB	SYMBOL	DEPTH (feet)	RUN	REC.	REC.	L>4"	RQD						
-	*	_	┢	_	0)		(in.)	(in.)	%	(in.)	%	0.0'	0.0'-2.0': Dar	rk gray and	light gray c	oarse to fine	
-			┨										GRAVEL, li (GM, Fill)	ttle coarse to	fine Sand,	little Silt, dr	у _
-0	**		G	1		2.0 - 2.5	G	R	A	В	6		Note: 10" co	bble at ~1.0	depth; Har	nd excavated	for
	***				X		27.55	2.7.51	5.8	2. 41 .51	20752		utility cleara Dark gray co	parse to fine	SAND and	coarse to fir	ne
	Ø . 4								1.700				Gravel (cind	ers), little Si	lt, dry (SM.	, Fill)	
-	*A	4	G	2	X	4.0 - 4.5	G	R	A	В	6		Gray, black	and orange-	brown Silty	CLAY and	95
- 5	*		1										coarse to fin- slight organi			ine, moist,	
- 55			G	3	\vee	6.0 - 6.5	G	R	A	В	6		6.0'-6.3': Dai	rk gray and	light gray S	ilty CLAV s	-
3/14	*,00.3 **		1		\hookrightarrow								coarse to fine				
.GLB	架 4		G	1	6 60	8.0 - 8.5	G	R		В	6		(CL, Fill); 6.3'-6.5': Wh	ite and light	brown Silt	y CLAY, dry	y
¥RΥ.	AND DE	9	ľ	4	X	0.0 - 0.3	G	K	A	ь	6		(CL, Fill) Beige, orang	e-brown and	l black Silty	CLAY, littl	le
	% 0.45	į.	G	5		9.5 - 10.0	G	R	A	В	6		coarse to fin	e Sand, dry	(CL, Fill)		
፱ - 10	** 3		S	1	A	10.0 - 12.0	1	1	1	2	19		Brown coars coarse to fine			ilty Clay, tra	ce _
Él-	±30,d√		┨										10.0'-11.5': I very loose, w			ND, little Silt	t, _
B	1 0 3	è				5							11.5'-12.0': I	Brown coars	e to fine SA		
3.GP	柴 o.												very loose, w	vet, renet lay	ering obser	veu (SIVI, FI	ш)
T. P.	***																6 .5
NN -	47.4		S	2		14.0 - 16.0	1	1	2	1	4		Black and w				
			1										Clay, little co screw, very l			a tragments	and _
AL)	樂:		$\left \cdot \right $			į.											1.00
E .	Δ.		1														<u>.</u>
3100	A C																· -
ORIN	***					100 100	6	100 2"				19.2'					
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22	16		S	3		19.0 - 19.8	8	100/3"			9	141.6	19.0'-19.2': I little Silty Cl				

Γ														BORING NUMBER: TA-P3-1
	R _o D	TUNNI	EL				В		NG ontinue	LC	G			SHEET NUMBER: 2 of 2
F	DO	PROJE	CI					(00	Jillilde	iu)				PROJECT NUMBER: 185615A
	PROJE	CT:	B&l	PΤ	un	ne	l Replacen	nent Pi	roject					CONTRACTOR: E2CR, Inc.
ļ	LOCAT	ION:	Bal	tim	ore	e, I	MD							DRILLER: S. Lyons
(CLIENT	Γ: A l	MTF	RAI	K									INSPECTOR: A. Daniyarov
ľ		(D		Γ		SAI	MPLE		SOIL	(Blows/	6 in.)			
1	DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	П			£	0/6	6/12	12/18	18/24	REC. (in.)		
1	EPTH	APHI	IG (Bk		SER	70	н (fee			CORING			1	FIELD CLASSIFICATION AND REMARKS
	٥	GF	CASIN	TYPE	NUMBER	SYMB	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	1	
h				ľ	_	0,		(111.)	(111.)	70	(111.)	70		dry (SM, Fill)
ŀ														19.2'-19.8': Gray and orange-brown coarse to fine SAND, little Silt, very dense, dry, relict layering
t													'	observed (SM, Decomposed Rock)
ŀ				50 h			500 00 0000000	200						-
T				S	4		24.0 - 24.8	12	100/4"			7		Orange, light orange and light gray coarse to fine SAND, some Silt, little coarse to fine Gravel (rock
İ	- 25												l :	fragments), very dense, dry, relict layering observed (SM, Decomposed Rock)
Ī														_
Ī			e e											\ <u></u>
ſ				S	-		29.0 - 29.2	100/2"				ر ا	l .	Gray with speckles of black coarse to fine SAND, some coarse to fine Gravel, little Silt, very dense, dry
	- 30			3	5		29.0 - 29.2	100/2				2		(SM, Decomposed Rock)
	- 30			S	6		30.5 - 30.5	100/0"				0	130.8'	No recovery, spoon refusal. Material from the spoon tip: Light gray, gray and white with speckles of black
3/14/2														coarse to fine SAND and medium to fine Gravel, little silt, very dense, dry (SM, Decomposed Rock)
GLB														(Spoon refusal at 30.5 ft bgs, see Coring Log)
BRARY	2.													,
EL-LI	- 35													<u></u>
TUNN			le le											
J B&P	Q.													
H3.GP	0													c=
INEL P	ă ă													:-
ND TUN	- 40		2:											-
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22	ß		i.											4
G (FIN)	8													H
NGLO	Ü													4
BORI	SI .		-											-
B&F				L			12							

													BORING	NUMBER	R: TA-P3	-3	
	-					R	∩RI	NG	LC	C			SHEET	NUMBER	:1_	of	1
B ₈ P	TUNNE	T				Ο.	OIXI	140					PROJEC	T NUMBI	ER: 1	85615A	
						Replacem	ent Pr	oject					LOCATION	ON: MTA	Maryland, perations	Central Lig	ght
LOCAT					, N	1D							COORD	: N: 599,		E: 1,418,3	98.4
CONTI					R, I	nc.							SURFAC	E ELEV.	100.7 f	eet	5.45.165.
DRILLE					9									Horizont Vertical:			
INSPE		_	_			OV ow Stem Au	gore: De	tory W	ach: Dia	mond C	oring			DATE: 11			0 am
						ck Mount					ormg.		SALES SALES AND THE PARTY OF THE	DATE: 11			2253
			Au		_	Split Spoon	Casir		Pitcher	Grab	Co	re Barrel		GROU	NDWATER	DATA	
Type/S	ymbo	l	HS	SA		S	NV	22.	L	G		С			Water Depth	Casing Depth	Hole Depth
I.D.		\perp	4.2		1	1.375"	3.0'	-	n/a	3.25		n/a	Date	Time	(ft)	(ft)	(ft)
O.D.		-	7.6	Grand Control	+	2"	3.5'	-	n/a	3.375	"	n/a	11/28/17	7:38 am	19.4	10.5	45.0
Length Hamm		8	60)" /a	+	24" 140lbs	60"	rill Rod S	n/a	6"	A	n/a	11/29/17	11:40 am	19.4	10.5	115.0
Hamm		9	n		+	30"	1	I.D. (O.E		1	.219" (1	75")					
T IGITITI	T		T	127	SAN	MPLE			_ (Blows/	SEC. 10		<u> </u>	l.				
et)	90	(#)	H		SAI	WIFEE		3011			REC.						
DEPTH (feet)	GRAPHIC LOG	lows/	l			et)	0/6	6/12	12/18	18/24	(in.)		EIELD CI	_ASSIFICAT	ION AND F	PEMARKS	
EPT	3APH	1G (B	l	3ER	2 Sol	H (fe			CORING	i			11220 01	z toon Torti	1011741211		
		CASING (Blows/ft)	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
_													Note: Hand (0.0'-6.5'	excavated fo	r utility clea	rance, depth	1 -
	***		G	1	\vee	2.0 - 2.5	G	R	A	В	6		D .		C C.N.		-
	*				A		C STA		STJ.Prod	7.000	339		Brown and t fine Gravel,				e to –
	\$₽		G	1	\bigvee	4.0 - 4.5	G	R	A	В	6		Note: utility north.	encountered	at 3' bgs; o	ffset boring	-
– 5	1 60 亿												Tan and oran	nge, coarse t little Silt, mo	to fine SAN	D, little coar ll)	se to
- 55	Δ. Δ. ΔΔ.		G	2	\forall	6.0 - 6.5	G	R	A	В	6	6.01	Tan and oran	nge coarse t	o fine SAN	D some coa	rse -
3/14/			S	1		7.0 - 8.3	40	32	100/4"		16	6.8' 94.0	to fine Grave				/-
Y.GLB			1										Note: Soft di natural, mate			due to dens	e, / _
BRAR			S	2		9.0 - 9.0	100/0"				0	9.0'	Gray, tan an	d orange-bro	own with sp		
- ⊒ – 10	600			255								91.7	medium to fi	dry, relict lay			ei, / _
	a D		\vdash		Н		-					10.5'	Note: rig cha		7.5-9.0'.		_/
88P]									\	Note: spoon Brown, whit				
GP.			1									\	medium to fi fragments (C				rock
LPH3			1									\	Note: advance (Casing refu	ce casing to	10.5' bgs.		_/ 1
NA -		-	1										(Casing retu	sar at 10.5 f	i ogs, see Ci	oring Log)	-
15			1														:
(AAL)			1														S.
1E) 50		-	1														ā
NGLC			$\ \ $														(-
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22																	-
8&P		V.	L			42											

													BORING	NUMBER	R· T-P3-1		
6	-					D		NIC		10			107-12-52-5-001-001-001-0	2 () () () () ()		of	2
D. F	TUNNI	K				B	JKI	NG	LC	JG							
1000	PROJE	18											Jac Batter attended to	T NUMBI	_1 \.	85615A	
PROJI LOCA						Replacem	ent Pr	oject					LOCATION	ON: Riggs Street		d N. Payson	
CLIEN					, 1	Ш							COORD	: N: 595,	438.7 I	E: 1,411,54	11.8
CONT					R , I	nc.							SURFAC	E ELEV.	162.3 f	eet	
DRILL			100											Horizont			
INSPE		_			-									Vertical: DATE: 2/8		8 IME: 8:3 0	am
						ow Stem Au Mounted,	-		The second second		oring.		Sand Mary Mary Transfer of	DATE: 2/8		IME: 3:3 0	
ING I	I F L. J	D-30	Au		_	Split Spoon	Casi		Pitcher	Grat	Co	re Barrel	1		NDWATER		P
Type/S	Symbo		- 150,00	SA	\dashv	S	NV		L 🔲	G		СП			Water	Casing	Hole
I.D.	J111100	" -	4.2		1	1.375"	3.0		n/a	3.25		n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.			7.6	25"	7	2"	3.5		n/a	3.375	5"	n/a	2/9/18	8:00 am	13.1	33.0	85.0
Length	1		60	0"	\dashv	24"	60'		n/a	6"		n/a		11.00 to 10.00 to 10.	9000 F1150	300,000,000,000	ere per s 2000-0
Hamm			n	/a		140lbs	D	rill Rod S	Size	200	A	# 50 m 50 m 50 m					
Hamm	ner Fa		n	/a	7	30"		I.D. (O.E	D.)	1	.219" (1	.75")					
			Τ	,	SAI	MPLE		SOI	L (Blows/	SBM 10			•				
et)	90	,/ft)	\vdash				0.10			2010201	REC.	1					
DEPTH (feet)	GRAPHIC LOG	Slows	l			et)	0/6	6/12	12/18	18/24	(in.)		FIELD CL	ASSIFICAT	ION AND F	EMARKS	
EPT	SAP	NG (E		3ER	30	H. (fe			CORING								
	9	CASING (Blows/ft)	TYPE	NUMBER	SYME	DEPTH (feet)	RUN (in.)	REC.	REC.	L>4" (in.)	RQD %	0.0'					
	*					10.00	()	()		(1111)			Note: Hand (excavated fo	r utility clea	rance, depth	8
	₩. 44		1										0.0 0.5				A.
	- di		G	1	\times	2.0 - 2.5	G	R	A	В	6		Black, white	, tan, coarse	to fine SAN	ND, some Silt	y -
-	* 1		┨			is:							Clay, trace n	nedium to fir	ne Gravel, n	noist (SM, Fi	ll) _
-8	***	li V	G	2	\vee	4.0 - 4.5	G	R	A	В	6		Black, white	tan coarse	to fine SAN	JD some Silt	-
- 5	1 (D) 12		1			(1)							Clay, little co				
-	10 d		G	3		6.0 - 6.5	G	R	A	В	6						-
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22	* OD 3		٦	,	\times	0.0 - 0.5	J	K	A	L)			Orange-tan, coarse to fine			AND, some , moist (SM,	
SIB	架4		G	4	X	7.5 - 8.0	G	R	A	В	6		Fill)				N 25
ARY.0		j	S	1		8.0 - 10.0	2	2	1	2	0		Black, white coarse to fine	e Gravel, litt	le Silty Clay		8 3 <u>-</u>
- LIBR	**************************************		┨										fragments, n No recovery:			ss in spoon ti	р -
ᇦ_ 10	**************************************		┨			4							(Fill)				
	300		1														0.0
B&P	1 0 3																200
GPJ	¥ a.		1	5,7350		er to view . The treatment		0.0	1370	1000	1987						-
표	1204 .		S	2		13.0 - 15.0	1	1	1	2	13					lty Clay, trac	e -
NN-	Ø □3		1										coarse to fine (SM, Fill)	e Gravel, ver	y loose, we	t, trace roots	- E
² ሗ — 15	₩ _Δ 9		-										ST - 10 - 10				n —
()- B	架合																
FINA	d 45 4□																
907	* 15 T			- 33		12 p 3000	. 2	6	00	120	9/98						
RING	**		S	3		18.0 - 20.0	4	4	7	6	15					ND, some co	
<u>8</u> -			1										Fill)	a, nitte Silt,	medium dei	ise, wet (SM	, _
88	7 4																

LOCA	JECT: ATION:	Bal	tin	ıor		l Replacer		ontinue)G			BORING NUMBER: T-P3-1 SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A CONTRACTOR: E2CR, Inc. DRILLER: E. Hill INSPECTOR: B. Godfrey
	O	22.	Γ		SA	MPLE		SOIL	_(Blows/	6 in.)			
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	Γ			et)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CLASSIFICATION AND REMARKS
EPT!	RAPH	NG (BI	ļ	BER	30L	DEPTH (feet)			CORING				FIELD CLASSIFICATION AND REMARKS
"	ō	CASII	TYPE	NOM	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
- 255 - 300 - 300			- S	5		23.0 - 25.0	18	3 28	5	50	17	23.0' 139.3' 28.0' 134.3'	Red-brown, gray, SILT, some medium to fine Sand, medium stiff, moist, relict layering (MH, Residual Soil) Dark gray, streaks of orange, medium to fine SAND, some Clayey Silt, very dense, mosit, relict layering (SM, Decomposed Rock) Dark gray, streaks of orange, medium to fine SAND, and Clayey Silt, very dense, mosit, relict layering (SM, Decomposed Rock)
B&P BORING LOG (FINAL) B&P TUNNEL PH3.GPJ B&P TUNNEL - LIBRARY.GLB 3/14/22													(Spoon refusal at 33.1 ft bgs, see Coring Log)
B&P BORING LOG (FINAL) B&P TUI													

													BORING	NUMBE	R:SA-P4	-01	
<u>a</u>						B()RI	NG	LC	C			SHEET	NUMBER	R:1	of	2
Bel	TUNNI	1				D	JIXI	140	,(
	S			Table 200				•					PROJEC	resid in a mention of the end of	LIV.	85615A	
	ECT:					Replacen	ient Pi	roject					LOCATIO	ON: 2020 N	Mosher St		
12,700,000,000,000	NT: AN				C, 1								COORD	: N: 594,	950.7 I	E: 1,411,2	219.8
100000000000000000000000000000000000000	TRACT				R,]	Inc.							SURFAC				160000000000000000000000000000000000000
	ER: S													Horizont			
	ECTO		_										1	Vertical:		ъъ IME: 10:	30 am
	ING N YPE:]			D: I	loll	ow Stem Au	gers; Ro	otary W	ash; Dia	mond C	oring.					IME: 3:0	
1			N/I	ger		Split Spoon	Casir	ng	Pitcher	Gral	o Co	re Barrel	,	GROU	NDWATER	DATA	
Type/	Symbo	ol _	HS	SA		S 📕			L	G		С			Water Depth	Casing Depth	Hole Depth
I.D.			3.	25		1.375"	3.0'	E .	2.86	3.25	"	n/a	Date	Time	(ft)	(ft)	(ft)
O.D.			6.6	525		2"	3.5'		3	3.375	5"	n/a	7/18/18	1:45 pm	9.6	0.0	10.0
Lengt	h		6	0		24"	60"		24	6"		n/a	7/20/18	7:30 am	9.4	25.5	45.5
Hamn	ner Wt	: _	n	/a		140lbs	Dr	ill Rod	Size		"A"	ŧ.	7/23/18	7:48 am	7.2	-	86.0
Hamn	ner Fa	II _	n	/a		30"	1	.D. (O.	D.)	1	.219" (1	.75")					
	(2)				SAI	MPLE		SOII	L (Blows/	6 in.)							
feet)	l loc	vs/ft)	Г				0/6	6/12	12/18	18/24	REC.	1					
DEPTH (feet)	SRAPHIC LOG	CASING (Blows/ft)	l	~	_	DEPTH (feet)			CODING		(in.)	1	FIELD CL	ASSIFICAT	TION AND F	REMARKS	
l H	3RAI	SING	ш	NUMBER	/BOI	TT			CORING								
		CAS	TYPE	N	SYN	DEF	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
			Γ									0.8'	9" asphalt				
	***		1									161.2'					9 5
- x	**		G	1	\times	2.0 - 2.5	G	R	A	В	6		Orange, brow	vn coarse to	fine SAND	, and Silty C	Clay,
122			┨										trace coarse	to fine Grav	el, moist (So	C, Fill)	
ARY.GLB 4/6/22	* 2		G	2	\times	4.0 - 4.5	G	R	A	В	6		Red-brown o	oarse to fine	e SAND an	d Silty Clay	
চ _ 5	***		l). 							trace coarse	to fine Grav	el, moist (SC	C, Fill)	·
IBRAI	1 10 12 10 12		G	3		6.0 - 6.5	G	R	A	В	6	6.0'					
E-1		į.			X	,	100	1000	2.5	-		155.9'	Orange, light some Silt &				
N						00.05		D.		ъ			(SM)				
88P			G	4	\times	8.0 - 8.5	G	R	A	В	6		Green-gray, a		ium to fine	SAND, and	
.GPJ			G	5	\times	9.0 - 9.5	G	R	A	В	6	10.0	Orange, and	tan coarse to			&
<u>§</u> 10	////		S	1		10.0 - 12.0	7	4	7	8	17	10.0'	Clay, trace c	oarse to fine	Gravel, mo	ost (SM)	
- REAL			ł										Brown, oran	ge, grav, wh	ite coarse to	fine SAND).
WELL			-										some Silty C dense, moist	lay, little co	arse to fine		
¥ -													dense, moist	(SC, Residi	iai)		
핍			C	2		140 160	7	11	0	10	10	14.0'					
NN		2	S	2		14.0 - 16.0	7	11	9	10	19	147.9'	Note: falling 14'-15': Oran			arse to fine	
			1										SAND, and dense, moist	Clayey Silt,	little coarse		lium
NAL)		7	1			1							15'-16': Brov	vn, orange c	oarse to fine		
)SG (F)		eg Çü	1										Clayey Silt,	nedium den	se, moist (S	ivi, Kesidual	· -
NGLC		×) <u>-</u>
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIBR 1			s	3		19.0 - 21.0	5	5	13	15	24		Cross	opera to f	SAND	ma Claver C	2314
8&P						The second section of the section of the sect	1000	×5+	1000	~ 0/80			Green-gray c medium dens				

Note:

Boring No. SA-P4-01 Sheet 1 of 2

														BORING NUMBER: SA-P4-01
	2						B	ORI	NG	LC	OG			SHEET NUMBER: 2 of 2
	B ₈ P	PROJE	Et						ontinue					PROJECT NUMBER: 185615A
	PROJE	CT:	B&1	P T	Cun	ne	l Replace	ment F	roject					CONTRACTOR: E2CR, Inc.
	LOCAT	ION:	Bal	tin	nor	e, l	MD							DRILLER: S. Lyons
	CLIEN	T: A	MTF	RA	K									INSPECTOR: A. Fragoso
				_									_	
	t)	90	_	L	- 1	SAI	MPLE		SOIL	(Blows/	6 in.)			
	DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)				et)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CLASSIFICATION AND REMARKS
	EPT	SAPH	NG (B)		BER	30L	DEPTH (feet)		(CORING	3			FIELD CLASSIFICATION AND REMARKS
		5	CASII	TYPE	NUMBER	SYME	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
				Γ									δj.	
	_													_
	_			S	4	_	24.0 - 24.1	75/1"				1		Note: falling head test at 24'
	- 25												l	Gray and white coarse to fine SAND, and Clayey Silt, little fine Gravel, very dense, moist (SM,
	-	1.l.1.F 1	,	T		Γ							136.4	Decomposed Rock) (Spoon refusal at 25.5 ft bgs, see Coring Log)
	<u>-</u> x													-
6/22	-8			1										9-
GLB 4/			5.2 · · · · ·											-
RARY.	– 30			1										_
EL - LIB	- 35			1										:-
TUNNE	20			1										
J B&P	_													
IGS.GP	– 35													
READIN	_													:-
WELL	<u>-</u> 00													-
PH4 W	-0			ł										(-
JNNEL	-													-
B&P TL	- 40			1										· –
INAL)	-01			1										⁶
LOG (F	7		1/3	1										7
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIBRARY.GLB 4/6/22	-X			1										[]
B&P B(- 84													5-

														BORING	NUMBE	R:SA-P4	-02	
6		-					B(PI	NG	LC	20			SHEET	NUMBER	1_	of	2
Be	P	TUNNEL	Ť				D	JNI	NG		JG			PROJEC	T NUMB	FR· 1	85615A	
PRO	JE	CT: B	&P	T	unr	ıel	Replacen	nent P	roject						ON: Inside	discourage a	ier St prope	ertv
LOC	CAT	ION:	Bal	tim	ore				Jeer						(NE co	rner)	ia (a)	1.50
1555		RACT				R.	Inc.								E ELEV.			47.0
		R: S.				-,									Horizont			
		CTOR				ose	0								Vertical:			
		NG M PE: D			D:I	Iol	low Stem Au	gers; Ro	otary W	ash; Dia	mond C	oring.			DATE: 7/2 DATE: 7/2			
				Au	ger		Split Spoon	Casir	ng	Pitcher	Grah	Co	re Barrel		GROUN	IDWATER	DATA	
Тур	e/Sy	ymbol	į.	HS	SA		S			L	G]	С			Water	Casing	Hole
I.D.				3.	25	ŝ	1.375"	3.0'		2.86	3.25	"	n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D				6.6	25		2"	3.5'		3	3.375	<u>"</u>	n/a	7/27/18	10:00 am	7.8	-	65.8
Leng	gth			6	0		24"	60"		24	6"		n/a	7/30/18	7:30 am	7.7	2	86.1
		er Wt.		n	/a		140lbs	Dr	ill Rod S	Size		"A"	(7/31/18	7:50 am	7.4	-	86.1
Han	nme	r Fall		n	/a	5	30"	- 1	.D. (O.D	0.)	1	.219" (1	.75")					
		G				SA	MPLE		SOIL	. (Blows/	'6 in.)							
DEPTH (feet)		SRAPHIC LOG	CASING (Blows/ft)	Γ			et)	0/6	6/12	12/18	18/24	REC. (in.)]	FIELD OI	ACCIFICAT	ION AND I	DEMARKS	
EPT		RAPH	NG (BI		BER	BOL	DEPTH (feet)			CORING	6]	FIELD CL	ASSIFICAT	ION AND I	KEWAKKS	
		Ö	CASII	TYPE	NUMBER	SYM	DEP	RUN (in.)	REC. (in.)	REC. %	L>4" (in.)	RQD %	0.0'					
		***************************************																_
	- 1	*		G	1		2.0 - 2.5	G	R	A	В	6						
		***			*	\times	2.0 - 2.3	J	K	A	Ь			Brown, tan, Clayey Silt,	and beige co	arse to fine	SAND, and vel. moist, tr	ace
6/22				1										glass (SM, F	ill)	o me om	. • 1, 1110101, 11	-
RARY.GLB 4/6/22	į	*4		G	2	\times	4.0 - 4.5	G	R	A	В	6		Brown, black	c, tan coarse	to fine SAl	ND, and med	dium
° − 5		# B		ł										to fine Grave (SM, Fill)	el, some Clay	ey Silt, we	t, trace glass	
				G	3		6.0 - 6.5	G	R	A	В	6						
1-1	ľ	# 0□ }				\times		520	1.77.51	215	33750	425		Brown, tan, Sand, little c	orange Claye oarse to fine	y SILT, so Gravel, we	me coarse to t (SM, Fill)	fine
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIB 1		梨山					00.00	~	-		-							3.5
B&P	E	0		G	4	X	8.0 - 8.5	G	R	A	В	6		Brown, black				
g-		**************************************		S	1		9.0 - 11.0	2	7	7	3	18		little fine to (Fill)				
- 10	- 1	* 5												Dark brown, fine Sand, lit				
EADI	-	****												Fill)	tic coarse to	Title Grave	, still, wet (·····.
IL R		* ∆		l														
N N		* 4		1														· -
¥-	ŀ	67V		┨														0
NEL-		* 4		S	2		14.0 - 16.0	WOH	WOH	WOH	WOH	7		Ton Classes	OH T Bed	some to C	· Cord	
] - 15	ŀ	* 4												Tan Clayey S wet (ML, Fil		parse to fine	e Sand, very	soit,
13 13		. 003																
NAL)	İ	**		1														
JG (F		地 口		1														95
NG LC	-	8 7																12
SORII		***		S	3		19.0 - 21.0	6	11	40	53	19	19.0'					
В&Р					352			1870	055				141.6'					
				•									-					

79														BORING NUMBER: SA-P4-02
	2						В	ORI	NG	LC)G			SHEET NUMBER: 2 of 2
	B ₈ P	TUNN PROJE	타						ontinue					PROJECT NUMBER: 185615A
							l Replace	ment F	Project					CONTRACTOR: E2CR, Inc.
	LOCAT	ION:	Bal	tin	or	e,	MD							DRILLER: S. Lyons
	CLIEN	Г: А	MTF	RA	K									INSPECTOR: A. Fragoso
		Ŋ		Γ	9	SAI	MPLE		SOIL	. (Blows	'6 in.)			
	DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	Γ			()	0/6	6/12	12/18	18/24	REC. (in.)	1	FIELD OF ADDIEDATION AND DEMARKS
	EPTH	SAPHI	NG (BK	e e v	3ER	30	DEPTH (feet)			CORING	3		1	FIELD CLASSIFICATION AND REMARKS
	Ω	G	CASIN	TYPE	NUMBER	SYME	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	1	
	_			Γ										Brown, orange, gray coarse to fine SAND, some Silt & Clay, little fine Gravel, very dense, wet (SM,
	-													Residual)
	-			-										
	-			S	4	-	24.0 - 24.2	100/2"				2	24.0'	Gray, black, tan coarse to fine GRAVEL, little
	– 25			1										Clayey Silt, trace fine Sand, wet (GM, Decomposed rock)
	-			1										
2		000												
8 4/6/2	_	900		S	5		29.0 - 29.2	100/2"				2	V 1000 VP	Gray coarse to fine GRAVEL, little coarse to fine
ARY.GLB 4/6/22	- 30	· D°		┝									29.8'	Sand, trace Clayey Silt, very dense, wet (GM, Decomposed rock)
-LIBRA	-													(Spoon refusal at 29.8 ft bgs, see Coring Log)
UNNEL	=::			1										,-
B&P T	_			1										
GS.GP.	_ _ 35													
READIN	-													
WELL	-0													-
PH4 W	-			1										-
LUNNEL				1										-
1 B&P 1	- 40			1										
(FINAL														
1G LOG														-
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIBR														-
B&P				L										

													BORING	NUMBE	R: S-P4- 0	01	
2						R)RI	NC	S LC	C			SHEET	NUMBER	:1	of	2
B ₈ P	TUNNI	Et				D.		1110	<i>,</i> L(PROJEC	T NUMB	ER: 1	85615A	
						Replacen	nent P	roject	t				LOCATI	ON; N. Pul	aski St		
LOCAT					e, I	MD							COORD	.: N: 594,	537.2 I	E: 1.411.3	220.9
CONTI					R,	Inc.								CE ELEV.			220.7
DRILLI	ER: E	. Hi	11										DATUM:	Horizont			
INSPE				_	_								LOTABT I	Vertical:			0 am
RIG TY						low Stem Au	igers; R	otary V	Vash; Dia	mond C	oring.			DATE: 8/2			
TKIO I			VV.	ger	_	Split Spoon	Casi	ng	Pitcher	Gral	o Co	re Barrel		00.000.000.000.000	NDWATER	THE PROPERTY AND ADDRESS OF THE PARTY AND ADDR	
Type/S	Symbo	ol	0.000	SA		S			L 🔲	G		СП			Water	Casing	Hole
I.D.			3.	25		1.375"	3.0	"	2.86	3.25		n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.			6.0	525		2"	3.5	"	3	3.375	5"	n/a	8/14/18	10:38 am	20.6	24.0	24.0
Length			6	50		24"			24	6"		n/a					
Hamm		2		/a		140lbs		rill Rod			"A"						
Hamm	er Fa	II	n	/a	1.0	30"	1	I.D. (O.	D.)	1	.219" (1	.75")				a.	
	ပ္		L	- 1	SA	MPLE		SO	IL (Blows/	'6 in.)							
(feet	CLO	ws/ft	Г			t)	0/6	6/12	12/18	18/24	REC.						
DEPTH (feet)	GRAPHIC LOG	G (Blo	l	ER	OL OL	H (fee			CORING	3	(111.)	1	FIELD CL	ASSIFICAT	TON AND F	REMARKS	
ă	GR	CASING (Blows/ft)	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
	A		Т														
	# I	le le	1														95
Local Control	****		G	1	\times	2.0 - 2.5	G	R	A	В	6		Orange, brow	wn coarse to	fine SAND	, and Claye	y Silt,
-	* 2		┨										trace coarse	to fine Grave	el, moist (Sl	M, FILL)	9.
É	*4		G	2	\times	4.0 - 4.5	G	R	A	В	6		Orange, brow	vn coarse to	fine SAND), and Clave	v Silt.
- 5	***		┨										trace coarse	to fine Grave	el, moist (SI	M, FILL)	_
-	- Δ		G	3	\times	6.0 - 6.5	G	R	A	В	6		Orange, brow	wn coarse to	fine SAND), and Clave	v Silt.
-	******	_	1										trace coarse	to fine Grave	el, moist (Sl	M, FILL)	
	梨山		G	3		8.0 - 8.5	G	R	A	В	6	8.0'	Greenish gra		to C	CAND and	
2 -			s	1		9.0 - 11.0	3	3	6	12	24	147.1' 9.0'	Clayey Silt,	trace coarse	to fine Grav	el, moist (S	M)
_ 10			_	500		(90,007900) 7079V900	250		31.675		000	146.1'	Tan orange-	es), some Cla	e to fine SA ay, loose, m	ND, little G oist (SC)	ravel _
																	74
			1														ν-
-			1														25
-			S	2		14.0 - 16.0	5	6	8	11	24		Bands of tan	and orange	medium to	fine SAND,	,
- 15			1										some Silty C	lay, medium	dense, mo	ist (SC)	10-
<u>}</u>			+														
-			+														
-			1														22
-			s	3		19.0 - 21.0	32	57	27	39	24	19.0'	Tan, red-bro	wn orange n	redium to fi	ine SAND	little
136.1									136.1	Silt & Clay,	very dense,	moist, relict	layering,	intic			

ı	PROJECT: B&P Tunnel Repl LOCATION: Baltimore, MD CLIENT: AMTRAK								ontinue	ed))G			BORING NUMBER: \$-P4-01 SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A CONTRACTOR: E2CR, Inc. DRILLER: E. Hill
ľ	CLIEN	1: A.	MIT	(A	K									INSPECTOR: B. Godfrey
1	et)	90	t)	L	- 1	SA	MPLE		SOIL	(Blows/	6 in.)			
1	DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)				eet)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CLASSIFICATION AND REMARKS
1	DEPT	SRAPI	ING (E	ш	ABER	1BOL	DEPTH (feet)			CORING				Secret And Allerda Control Secret And Annual Process of the Annual
L			CAS	ТҮР	S	SYN	DEF	RUN (in.)	REC. (in.)	REC. %	L>4" (in.)	RQD %		
BRARY.GLB 4/6/22	AS NU N						24.0 - 24.4	100/5"				5	24.5' 130.7	Brown, gray, and red coarse to fine SAND, little Gravel (rock fragments), very dense, dry (SM, decomposed rock) (Spoon refusal at 24.4 ft bgs, see Coring Log)
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIBRARY.GLB 4/6/22	- 30 - 35 - 40													

								BORING			273 200			
6	2			8		D	ING LOG	SHEET	NUME	BER:	1		of	1
R	8PI	INNEL		10		ıκ	ING LOG	satisfied and and						
	- 5	Carrier III						PROJEC	NO. 10 COMPANY					
			&P Tunnel I		eme	nt Pi	roject	LOCATION	ON: In	front	of 2124	Edmon	ison A	ve
			Baltimore, M TRAK	W				COORD	.: N: 5	93.2	26.2	E: 1.4	10.99	91.4
100000000000000000000000000000000000000			OR: E2CR, I	nc.				SURFAC						
	ILLEF							DATUM:	Horiz	onta	l: NAI	83/9	1	
0.000			B. Godfrey								NAVD			
				w Stem	Auge	rs; Ro	otary Wash; Diamond Coring.	START						
RIG	TYP	E: C	ME-55, Truc	ck Mo	unte	d, Aı	utomatic Hammer	FINISH [DATE:	7/31	/18 T	IME:	3:50	pm
co	RE B	ARRE	EL DATA:		NO	TES:			GR	OUNE	WATER		100	
TYF	PE: D	ouble [Tube/ Swivel		Struc	ture b	oring, discontinuity data is not obtained				Water Depth	Cas		Hole Depth
		C - 122 - 1						Date	Tim	е	(ft)	(fi	t)	(ft)
CO	RE S	IZE:	NQ2					7/31/18	11:13	am	26.7			51.0
200000000000000000000000000000000000000).: 2.9	1000 1000 1000												
A30 0 1000	: 1.87													
AUC	GER S		.D. (O.D.): 3.2:	5 (6.625) (CASI	NG SIZE I.D. (O.D.): 3.0" (3.5")							
	(0	CORING RATE (min/ft)	nantrone	<u> </u>	č				45		DIS	CONTI	NUITY	DATA
eet)	GRAPHIC LOG	m) =	Ŏ.€	RECOVERY (in)	RECOVERY (%)	9			WEATHERING	王	<u></u>			÷
DEPTH (feet)	을	\\	CORE RUN NO. AND DEPTH (ft)	/ER	/ER	RQD (%)	DESCRIPTION AND REMARK (Color, Lithology, Grain Size, Fract	urina.	<u> </u>	STRENGTH	ANGLE (deg)			DEPTH (feet)
EPT	API	GR	E R DEI	8	000	RQI	Weathering, Strength, Structure	e)	ATI	TRE	3LE	J	- Pa	F
	GR	N N	SON	R	RE	.00.000			W	S	ANG			
\vdash	3 51111	8	- 04				54 00! 54 70!· A		11/11/1	DO	1,000			/3-36
							51.00'-51.70': Assume recovery loss 51.70'-54.60': Light gray, gray, white, tan wi		II/III	R3				
							of black amphibole GNEISS; medium to fine amphibole, quartz, feldspar, minor mica and	garnet;						75-
100			C-1 51.0 - 54.6	35	80	72	close to extremely close fracture spacing; s moderately weathered; medium strong; ban	lightly to						24.0
122			31.0 - 34.0	. * Online	200000000000000000000000000000000000000	1920100 10	~20-25°	and albo						"
3 4/6														
B&P CORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIBRARY.GLB 4/6/22							E7 20! E7 90! A	otok	II AII	Do				
-55 -55		2.7					57.30'-57.80': Assume recovery loss; complete weathered; extremely weak	Table Comment	11/111	R3				s -
- LB							Light gray, gray, white, tan with speckles of amphibole GNEISS; medium to fine grains	of						pate
NNE		2.7					amphibole, quartz, feldspar, minor mica and close to extremely close fracture spacing; s	d garnet;						
P TU		2.7	C-2	54	90	32	moderately weathered; medium strong; ban							
J B&		2.1	54.6 - 59.6	54	30	52	~20-25° Few feldspar bands less than 0.5" thick							
S.GP		2.7					905		٧	R0				-
OING														
REAL		2.7												0
60 KELL		2.7	0.3			£	60.67'-61.0': Assume recovery loss; comple	tely	11/111	R3	1			0-
\$ \$		2.1	C-3 59.6 - 61.0	13	76	0	weatheredl extremely weak Light gray, gray, white, tan with speckles of		2007					
Ĭ.	5500						amphibole GNEISS; medium to fine grains		V	R0	1			-
NN							extremely close fracture spacing; slightly to weathered; medium strong; banding dips ~2	moderately						
₽ 1							End of Boring at 61 ft bgs.	.0-20						-
L) B&														/-
FINA														
000														82
INGL														
65														-
В&Р														
Note:	* foliatio	n joint					Bor	ing No.	S-P4-	03	Shee	t 1	of	1

													BORING	NUMBE	R: S-P4-0)4	
2						R)RI	NG	LC	C			SHEET	NUMBER	:1	of _	2
Bel	TUNNE	-				D		140								0=<4=1	
	S. Linear	1		Will the Man		D 1		• .					PROJEC	resid in American and the American		85615A	Marcouro Marcouro
	IECT: I					Replacen	nent P	roject					LOCATIO	ON: In from	nt of 2135 I	Edmonson A	lve
	NT: AM				C, 1	VID							COORD	: N: 593,	173.6 I	E: 1,410,9	97.0
100000000000000000000000000000000000000	FRACT				R,]	Inc.							SURFAC	CE ELEV.	: 166.1 f	eet	0.0000
	ER: S.													Horizont Vertical:			
	ECTOF					ow Stem Au	gana, D.	stam: W	aah. Dia	mand C	anin a					IME: 2:0	0 nm
	YPE: I			U.I	1011	low Stem Au	gers; K	otary w	asn; Dia	mona C	oring.					IME: 11:	
				ger		Split Spoon	Casi	ng	Pitcher	Gral	Co	re Barrel		GROU	NDWATER	DATA	
Type/	Symbo	1	HS	SA		S			L	G]	С			Water Depth	Casing Depth	Hole Depth
I.D.			3.2	25	8	1.375"	3.0	•	2.86	3.25	"	n/a	Date	Time	(ft)	(ft)	(ft)
O.D.			6.6	25		2"	3.5		3	3.375	3"	n/a	7/18/18	8:45 am	36.0	E	45.0
Lengt			1000	0		24"			24	6"		n/a					
ALC: Vertical Const	ner Wt.	-	n			140lbs		ill Rod S			"A"						
Hamn	ner Fal		n	/a	5	30"	- 1	.D. (O.E	0.)	1	.219" (1	.75")					
⊊	၂ ၂	_	L	3	SAI	MPLE		SOIL	. (Blows/	6 in.)							
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)				set)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD CL	ASSIFICAT	ION AND F	REMARKS	
DEPT	RAPI	ING (B	ш	NUMBER	BOL	DEPTH (feet)			CORING	3							
	9	CAS	TYPE	NON	SYM	DEP	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
	· A· · A·											0.8'	9" Asphalt				
	***		1									165.3'					9.5
	* 4		G	1	\times	2.0 - 2.5	G	R	Α	В	6		Brown, black	k, tan, coarse	e to fine SA	ND, some co	oarse
6/22	**		1										to fine Grave	ei, little Clay	ey Siit, moi:	st (SM, FIII)	-
ARY.GLB 4/6/22	A 4		G	2	\times	4.0 - 4.5	G	R	Α	В	6		Brown CLA	Y & SILT, s	some coarse	to fine Sand	l, -
<u>ق</u> – 5	1 to 3		┨										little coarse t fragments (C	o fine Grave	el, moist, tra	ce brick	_
	* 4		G	3		6.0 - 6.5	G	R	Α	В	6			5).		NID	-
1	: 🗗 🗘 .				\cap	O CONTRACTOR OF THE PARTY OF TH	0.0	7.050	X-855	7.0000	10.002		Brown, tan, & Silt, trace	coarse to fin	e to fine SA ie Gravel, m	noist (SC, Fil	l) _
NDT.	******			и		8.0 - 8.5	C	D		ъ	6						
B&P	果山		G	4	\times		G	R	A	В	6		Brown, tan, & Silt, trace				
.GPJ			S	1		9.0 - 11.0	2	WOH	1	1	16		End soft dig Brown, gray	at 8.5'			., _
<u>§</u> 10	**************************************	_	1										Sand, trace c	coarse Grave	l, very soft,	moist (ML,	Fill) —
- REAL	** 6		ł														-
WELL	***																:=
¥ -	h - 3																0-
급	* 0.49		S	2		14.0 - 16.0	1	2	2	2	13						
NN	* 5		3	2		14.0 - 10.0	1	2	2	2	13		Brown coras coarse to fine				race
15	40 4° 3€∆ 9		1										fragments (N		, 5011, 111	vilva	-
NAL)	1.003																60
JS (FI	₩ 49																9.
NGLC	1 186 13																:-
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIBR C C C C C C C C C C C C C C C C C C C	***		s	3		19.0 - 21.0	1	2	2	2	14		D	Clares CH	Γ	mata 6 - C	and -
В&Р	1 E						*250/	822	I Section 1	69797	post!		Brown, gray some coarse				

B&PTUNNEL PROJECT	BORING (continued
PROJECT: B&P Tun	nel Replacement Project

BORING NUMBER: S-P4-04 SHEET NUMBER: 2 of _

PROJECT NUMBER:

185615A

CONTRACTOR: E2CR, Inc.

LOCATION: Baltimore, MD

DRILLER: S. Lyons

CLIENT: AMTRAK

INSPECTOR: A. Fragoso

	(D		Γ	ij.	SAN	MPLE		SOIL	(Blows/	6 in.)			
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	П			et)	0/6	6/12	12/18	18/24	REC. (in.)	FIELD OF ACCIDIOATION AND DEMARKS	
EPT	RAPH	NG (B)		BER	30L	DEPTH (feet)			CORING	3		FIELD CLASSIFICATION AND REMARKS	
П	9	CASI	TYPE	NUMBER	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
	***		Г									(ML, Fill)	

	***		1										
	***		١	್ಷಾ		240 260	2		_		20		
05	DO		S	4		24.0 - 26.0	2	1	2	3	20	Black, gray coarse to fine SAND, some Silt, little coarse to fine Gravel, soft, moist, trace burnt	
25	* - 4 - 14		1									fragments (SM, Fill)	
	*****					X.							
	梨山		1										
	L UKI			_									
	***************************************		S	5		29.0 - 31.0	2	2	2	2	23	Brown, gray Clayey SILT, some coarse to fine Sand, little coarse Gravel, soft, moist, trace burnt fragments	
30	* 1		1									(ML, Fill)	
			1		П	ii .							
	* -		1										
	* □ C			35		6970 FB \$800270050				0.000	puls.	34.0'	
			S	6		34.0 - 36.0	WOH	WOH	WOH	29	20	Brown Silty CLAY, trace fine Sand, very soft, moist (CL)	
35												(CL)	
			1										
			1										
			1									39.0'	
			S	7		39.8 - 40.5	6	50/3"			9	127.1'	
40			3	,		39.8 - 40.3	0	30/3			9	Brown, orange, gray coarse to fine SAND, little Clayey Silt, little coarse to fine Gravel, very dense,	
												moist (SM, decomposed rock)	
		×										Brown, orange, gray coarse to fine SAND, little	
	S 8 44.0 - 44.3 50/4"	4	Clayey Silt, little coarse to fine Gravel, very dense, moist (SM, decomposed rock)										

LOG

(Auger refusal at 45 ft bgs, see Coring Log)

Γ															BORING	NUMBE	R: S-P4-0)5a	
-	2							R)RI	NG	LC	C			SHEET	NUMBER	:1	of	1
-	B ₈ P	עַן	NNE	_				D		140	, _(223327	
ļ		8		ii .											PROJEC	resident in a section of the section	LI V.	85615A	
								Replacen	nent P	roject					LOCATIO		C West Bal r on Frank	timore Trai lin St	nsfer
	LOCAT						e, r	VID							COORD	: N: 592,	706.1 I	E: 1,410,6	43.4
	CONTR						R,]	Inc.								E ELEV.			0.35/3/2
	DRILLE															Horizont Vertical:			
-	INSPE	_			_							1.0			1	ALLOTTON STATE OF SOME		oo IME: 12:	30 nm
								ow Stem Au ick Moun					oring.					IME: 11:	
ŀ	TAIO I I		\		Au			Split Spoon			Pitcher	Gral	Co	re Barrel	10. 00.000.000.000		NDWATER		
-	Type/S	yn	nbo	1	HS	SA		S	2		L	G	1	С			Water	Casing	Hole
-	I.D.				3.2	25		1.375"	3.0'		2.86	3.25		n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
-	O.D.				6.6	25		2"	3.5'		3	3.375	"	n/a	8/20/18	9:45 am	3.5	. 8	20.4
-	Length				6	0		24"			24	6"		n/a					
- 1	Hamm				n			140lbs		ill Rod			"A"						
ļ	Hamm	er	Fal	I L	n	/a		30"	- 1	.D. (O.I	D.)	1	.219" (1	.75")					
	SAMPLE SOIL (Blows/6 in.)																		
1	l (feet	-	ט	ows/ft)	П			et)	0/6	6/12	12/18	18/24	REC. (in.)		EIELD OL	ACCIFICAT	ION AND I	DEMARKS	
1	HT H B B CORING CORING]	FIELD CL	ASSIFICAT	ION AND I	KEWAKKS		
1		(5	CASII	TYPE	NOM	SYME	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
ı			Δ.		Г									0.4' 12#.7'	5" Asphalt; 8	8" concrete			
ı		1	П		1									124.0'					-
ŀ	88		╟		G	1	\times	2.0 - 2.5	G	R	A	В	6		Brown, gray trace coarse	Clayey SIL	Γ, and coars	se to fine Sar	nd,
22					$\ \ $										trace coarse	to fine Grave	el (ML)		
ARY.GLB 4/6/22	20				$ \cdot $														-
Y.GL	- 5																		
BRAR															Very dense n	naterial, beg	in rock cori	ng at 7.1 fee	t
L-LIBR														7.1'					
NN		H	++		H									118.0'	(Auger refus	al at 7.1 ft b	gs, see Cori	ing Log)	
3&P T			ŀ																-
GPJ (-																8-
NGS.	- 10		-																9-
EADI																			-
ELLR	60																		<u> </u>
8					П														
L PH4	e:		Ī		1														25
JNNE																			1 -
&P TI	- 15		-		1														-
AL) B	50		-																<i>i</i> -
FIN	T.		-																9.7
3100																			
ORIN																,			
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL	- Sel																		
ш					_														

														BORING	NUMBE	R: S-P4-0	06 OW	
<u>a</u>							R)RI	NG	LC	G			SHEET	NUMBER	:1	of	2
B 8	PΙ	INNE	L				ים		140	LC								
	- Cq				State State			_						the second of the second second	T NUMB	LIV.	85615A	
LOC/							Replacen	nent Pi	roject					LOCATION	ON: MARO W Fra	C southbou inklin St	nd entranc	e, on
CLIE						, 1	·IID							COORD	.: N: 592,	692.0 I	E: 1,410,4	02.9
CON	TRA	CT	OR:	E2	2CI	R,]	Inc.								CE ELEV.		979797	SALT NA CURTE II
DRIL						Willed.									Horizont Vertical:			
INSP						_	ow Stem Au	n		l D'	1.0	Parties • Automation		1	DATE: 8/		IME: 9:0	0 am
							ick Moun	-	otary w	asn; Dia	mona C	oring.			DATE: 8/1			
				Au			Split Spoon	_	ng	Pitcher	Grab	Co	re Barrel		GROUN	NDWATER	DATA	
Type	/Syr	nbo	ol _	HS	SA		S	5		L	GX]	С			Water	Casing	Hole
I.D.				3.	25		1.375"	3.0'		2.86	3.25	"	n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.				6.6	25		2"	3.5'		3	3.375	; <u>"</u>	n/a	8/1/18	10:45 am	8.9		23.0
Lengt	th			6	0		24"	60"		24	6"		n/a					
Hamr	mer	Wt	•	n	/a		140lbs	Dr	ill Rod S	Size		"A"						
Hamr	mer	Fa	I	n	/a		30"	1	.D. (O.E).)	1	.219" (1	.75")					
		()				SAI	MPLE		SOIL	(Blows/	6 in.)							
feet)		Š	/s/ft)	П				0/6	6/12	12/18	18/24	REC.	1					
DEPTH (feet)		읦	(Blov	П	~		DEPTH (feet)				35500000	(in.)	1	FIELD CL	ASSIFICAT	ION AND I	REMARKS	
DEP	GRAPHIC LOG CASING (Blows/ft) TYPE NUMBER						Ŧ			CORING								
		ا	CAS	TYP	NON	SYN	DEP	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
							2000		, ,		,	-	0.8'	9" asphalt; 9	" concrete			
-	D		i i	1									128.0					9.
28	30			G	1	X	2.0 - 2.5	G	R	A	В	6	127.3'	Dark gray co	parse to fine	SAND, son	ne coarse to	fine
2	Ø) V			$\ \ $			8.							Gravel, little	Clayey Silt,	moist (SM,	FILL)	£-
ARY.GLB 4/6/22				G	2		4.0 - 4.5	G	R	A	В	6	4.0'	T.			CAND	
5 – 3							X.						124.8'	Tan, orange, Clayey Silt,	and brown of moist (SM)	coarse to fir	ie SAND, so	ome _
				G	3	X	5.5 - 6.0	G	R	A	В	6		Tan, orange,	and brown	SILT & CL	AY, some co	oarse
1				1			2							to fine Sand,			,	-
NNO P				1										Note: Termin				11 11
78P T			č.	S	1		8.0 - 10.0	9	7	9	9	19		Note: Water Tan, brown,	and red coar	rse to fine S		
<u> </u>				$\ \ $										Clayey Silt, I dense, moist		to fine Grav	el, medium	-
— 10																		9-
EADII																		7-
II.				П														200-5
×				1														
PH4			s	2		13.5 - 15.0	25	32	34		18		T.	(2,500,5 4 0,005, 4 00,400 = 0.00		AND .	0 -	
NNET -				2000		AND STREET WEST, LOCAL		1.75.ml)	50.00		50,000		Tan, orange, Clayey Silt,	trace fine Gr			relict -	
ੂ – 15							l.							layering (SM		per source totale to		:
AL) B																		-
H.			8															
FLOG																		500
ORING				S	3		18.5 - 19.8	74	69	100/4"		16		Tan, orange,	and red coa	rse to fine S	SAND some	
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIBR 1				S	4		19.8 - 20.1	100/3"				3		Clayey Silt,	very dense, r	noist, relict	layering,	-

LOCAT	PROJECT: B&P Tunnel Replacement II LOCATION: Baltimore, MD CLIENT: AMTRAK SAMPLE SYMBOL SY									ed))G			BORING NUMBER: S-P4-06 OW SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A CONTRACTOR: E2CR, Inc. DRILLER: E. Hill INSPECTOR: B. Godfrey
			Τ	į.	SAI	MPLE	Т		SOIL	. (Blows/	6 in.)			1
(feet)	C LOG	ws/ft)	r			t t	†	0/6	6/12	12/18	18/24	REC.		
EPTH	SAPHI	IG (Blo	200	3ER	30L	H (fee	İ		(CORING	3	()		FIELD CLASSIFICATION AND REMARKS
	GF	CASIN	TYPE	NUME	SYME	DEPT	İ	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIBRARY.GLB 4/6/22													23.5' 105.3'	Gray and tan coarse to fine SAND, and coarse to fine Gravel (rock fragments), little Clayey Silt, very dense, dry (SM, Decomposed Rock) (Spoon refusal at 23.5 ft bgs, see Coring Log)

	BORING LOG												BORING	NUMBE	R: S-P4- 0	07	
2						R)RI	NG	: 10	C			SHEET	NUMBER	:1	of	1
RoD	TUNN	EL				ים		140	L								
DO	PROJE	CI											and management and other trans-	T NUMB	LIX.	85615A	
PROJE LOCAT						Replacen	nent P	roject					LOCATION	ON: On W. of buil	Franklin ding #2335	St, approx.	40 ft E
CLIEN					, .								COORD	.: N: 592,	556.4	E: 1,410,2	211.1
CONTI					2,]	Inc.								CE ELEV.		NB (550)	
DRILLI														Horizont			
INSPE		_											1	Vertical: DATE: 8/1			20 am
						low Stem Au ICK Moun	-	-			oring.			DATE: 8/			
			Au	ger		Split Spoon	Casi	ng	Pitcher	Gral	10000	re Barrel		GROUN	NDWATER	DATA	
Type/S	Symbo	ol _	H	SA		S			L	G]	С			Water Depth	Casing Depth	Hole Depth
I.D.			3.	25		1.375"	3.0	"	2.86	3.25	"	n/a	Date	Time	(ft)	(ft)	(ft)
O.D.		L	6.6	525		2"	3.5	"	3	3.375	3"	n/a	8/15/18	1:00 pm	14.0	. 8	14.0
Length	i		6	0		24"	60'	·	24	6"		n/a					
Hamm	er Wi	t	n	/a		140lbs	Di	rill Rod	Size		"A"	6					
Hamm	Hammer Fall n/a 30" I.D. (O.D.) 1.219" (1.75") SAMPLE SOIL (Blows/6 in.)																
_	ပ္ခ		L		SAI	MPLE											
DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)				et)		EIELD CL	ASSIFICAT	ION AND I	DEMARKS						
EPT	SAPH	NG (BI	<u> </u>	BER	30L	DEPTH (feet)			FIELD CL	ASSIFICAT	ION AND I	KEWAKKS					
	5	CASII	TYPE	NUMBER	SYMBOL	DEPT	RUN (in.)	0.0'									
	· · · · · ·		T					0.3' 036'.2'	4" Asphalt;	7" concrete							
	*		┨									131.9'					
Local Control	**		G	1	X	2.0 - 2.5	G	R	A	В	6		Brown, oran	ge, grav and	white coars	se to fine SA	ND -
	***		-			P.							Brown, oran and Clayey S	Silt, trace fir	ne Gravel, n	noist (SM, F	ill)
_	* 3		G	2		4.0 - 4.5	G	R	A	В	6	4.0'		11.			
_ 5					X	(%						128.5'	Gray, green- Silt, trace co	gray coarse t arse to fine (o fine SAN Gravel, moi	ID, and Clay st (SM)	rey
- 5				-		8000 8990	200		27				•				
			G	3	\times	6.0 - 6.5	G	R	A	В	6		Gray, green-				rey
-			┨										Silt, trace co	arse to fine (Gravel, moi	st (SM)	1.5
-			G	4	\times	8.0 - 8.5	G	R	Α	В	6		Dark, gray-g	reen coarse	to fine SAN	ID and Clay	ievi
			S	1	\sim	9.0 - 11.0	4	7	9	11	24	9.0'	Silt, trace co	ase to fine G	ravel, mois	t (SM)	,cy
_ 10				500		E HOUSEPHING TO THE SUPPLIES					-	123.5'					
10			1										Green-gray C very stiff, me	Clayey SILT	and coarse	to fine San	d,
-			1										very stiff, in	oist, illicacce	ous (IVIL, IX	csiddai)	-
-		2	1														25 2
		55	-														0.5
	Ш		S	2		14.0 - 16.0	13	25	33	60	20	14.0'					
						14.0 - 10.0	13	23	33	00	20	118.5'	Green-gray o				ilt,
- 15			1										very dense, i	noist (Sivi, E	recomposed	. Hock)	\ <u></u>
<u>}</u>																	-
17.5'											17.5'					9	
											115.0'	(Auger refus	al at 17.5 ft	bgs, see Co	ring Log)	22	
													25			a 8	
5			1														-
Note:	1		_														

Boring No. <u>S-P4-07</u> Sheet <u>1</u> of <u>1</u>

													BORING	NUMBE	R: S-P4-0	08 OW	
<u></u>						R	ORI	NG	LC	C			SHEET	NUMBER	:_1	of	1
Bel	TUNNE	1				D	OIN	IVC								0=4=1	
19/41				UN 1875 0 2 0									PROJEC		L1 X.	85615A	
	ECT: I					Replacem	ent Pr	oject					LOCATION	ON: NE sid over V	le of MARO V Mulberry	C/Amtrak b y St	ridge
	IT: AN				9 1	ID.							COORD.	: N: 592,	502.2 I	E: 1,410,4	84.7
	RACT		E2	2CF	R , I	nc.								E ELEV.			1
	ER: Jo													Horizont Vertical:			
	ING M					ow Stem Au	gore: De	tory W	ach: Dia	mond C	oring					IME: 9:0	0 am
						ck Mount					ormg.					IME: 2:0	2021
			Au		_	Split Spoon	Casir	-	Pitcher	Grab	Co	re Barrel		GROU	NDWATER	DATA	
Type/S	Symbo	I _	HS	SA		S			L	G]	С≣			Water Depth	Casing Depth	Hole Depth
I.D.			3.2	25		1.375"	3.0'	•	2.86	3.25	"	n/a	Date	Time	(ft)	(ft)	(ft)
O.D.			6.6	Anna A	_	2"	3.5'	Y. 1	3	3.375	3"	n/a	8/16/18	1:35 pm	0.4	-	25.0
Length			6	77.	_	24"	* gross		24	6"	bet en me	n/a					
1600-000-0000	ner Wt	-	n		4	140lbs		rill Rod S			"A"	7.510					
Hamm	ner Fal	I	n/			30"	- 3	.D. (O.D			.219" (1	.75")	l,				
	ပ	_	L		SAI	MPLE		SOIL	_(Blows/	6 in.)							
(feet	O C	ws/ft				()	0/6	6/12	12/18	18/24	REC. (in.)						
DEPTH (feet)	GRAPHIC LOG	G (Blo		ER	7	1 (feet	1.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2	100000000000000000000000000000000000000	CORING	·	(111.)		FIELD CL	ASSIFICAT	TON AND F	REMARKS	
	GR	CASING (Blows/ft)	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
	D . 7		Г				, , , ,		3.22			0.3'	4" Asphalt;	10" concrete			
F	***		1									125.3'					-
-	₩	<u> </u>	G	1	\times	2.0 - 2.5	G	R	A	В	6		Tan, gray, w	hite coarse	to fine SAN	D, little coar	se to
6/22	** 4		$\ \ $			ic						(0)4.650	fine Gravel,	some Clayey	Silt, moist	(SM, Fill)	
- 44 -	* 1		G	2	\vee	4.0 - 4.5	G	R	Α	В	6	4.0' 122.2'	Gray, white,	tan mediun	to fine SA	ND and Cla	Vev
[⊙] – 5						29						122.2	Silt, trace me	edium to fin	e Gravel, me	oist (SM)	
IBRA		9											Soft dig term	unated at 4.	5'		_
E-1			П														
NO.			1														-
B&P			s	1		8.5 - 8.5	100/0.5"				0.5	8.5'	Brown, whit	e coarse to f	ine SAND	and coarse t	ہ ہ
.GPJ			1									117.7	fine Gravel,	little Clayey			~ / -
<u>§</u> – 10			ł									_	(Auger refus		gs, see Cor	ing Log)	_/ _
ZEAD															E 12		-
ELL																	
> >			П														
됩			1														0
NN-			1														-
			1														:
AL) E		6															-
AFIN C																	-
0100																	
ORIN																	
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIBRARY.GLB 4/6/22						u.	5.				- V						

													BORING	NUMBE	R: UT-02	,	
						BO	RI	NG	LC	C			SHEET	NUMBER	:1_	of	2
Bal	TUNNE	L.				D.		110								05/154	
	S		T		-1	D 1	D	٠.,					PROJEC	NOTE TO SERVICE STREET	LIX.	85615A	
	TION:					Replacen	ient P	roject					LOCATIO	JN: Behin	d 700 N. Pu	ılaski St bu	ilding
	IT: AM				, .											E: 1,411,0	34.7
_	RACT				١,]	Inc.								E ELEV			
Mark Control of the Control	ER: S.	•												Horizont Vertical:			
	ING M		_			ow Stem Au	gers: Re	otary W	ash: Dia	mond C	oring.		1			IME: 12:	10 pm
	YPE: I				0.00		8,	•	,				FINISH [DATE: 8/	29/18 T	IME: 11:	33 am
			Au	ger		Split Spoon	Casii	ng	Pitcher	Gral	10000	re Barrel		GROU	NDWATER		
	Symbo	1	HS	SA		S			L	G		C∏			Water Depth	Casing Depth	Hole Depth
I.D.			3.		-	1.375"	3.0'		2.86	3.25		n/a	Date	Time	(ft)	(ft)	(ft)
O.D.	¥8		6.6	200	-	2"	3.5'	<u> </u>	3	3.375	5"	n/a	8/29/18	8:45 am	13.6		26.0
Lengtl		\vdash	6	0 /a	-	24"		ill De d	24	6"	 "A"	n/a					
2007/03/03/03/03	ner Wt. ner Fal		n			140lbs 30"		ill Rod : .D. (O.I		1	"A" .219" (1						
Паппп	lei Fai		T.		241						.219 (1	./5)					
₽ E	9	£	L		SAI	MPLE		SOII	L (Blows	6 in.)							
l (fee	CLC	ows/f	П			et)	0/6	6/12	12/18	18/24	REC. (in.)		FIELD OI	ACCIFICAT	TION AND	DEMARKS	
DEPTH (feet)	SRAPHIC LOG	CASING (Blows/ft)		3ER	3OL	DEPTH (feet)			CORING	}		1	FIELD CL	ASSIFICAT	ION AND I	KEWAKKS	
	J5	CASII	TYPE	NUMBER	SYME	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
	*A C																_
180	* 4		G			20.25		n		D							500
	**		9		X	2.0 - 2.5	G	R	A	В	6		Brown coars Gravel, little				
6/22	\$ A		1										Graver, nuic	Clayey Sin,	dry (Sivi, I	111)	S -
ARY.GLB 4/6/22	***		G		X	4.0 - 4.5	G	R	A	В	6		Brown coars	e to fine GR	AVEL, son	ne Clayey Si	lt,
- 5	* 4		1										little coarse t	o fine Sand,	dry (GM, F	fill)	· -
	****		$\ $										Increase in n	naterial dens	itv.		3 4
- NE			-										End soft dig				· -
N N	梨山																-
B&F	***		S	1		9.0 - 11.0	2	4	5	7	11						
88.GP	1		5	1		5.0 - 11.0	2	7		,	11		Brown, gray Silt, little coa				
ĎNIO 10	**		1										brick fragme			, ,	
LRE																	_
WEL	**		ı														2 1
¥4-	EDA _		ł														2-
- NEL	* 17		S	2		14.0 - 16.0	2	2	2	1	7	14.0'	Dorl-	oraș ta C	CDAME	some Cl	. Cilt
N 15	600											139.1'	Dark gray co little coarse t				/ SIII,
B&P BORING LOG (FINAL) B&P TUNNEL PH4 W WELL READINGS.GPJ B&P TUNNEL - LIBR C C C C C C C C C C C C C C C C C C C	300																,
FINAL	900																
907	D.G.		1														S-
RING	B H		1									19.0'					12
- B			S	3		19.0 - 21.0	2	2	3	4	2	134.1'	Dark gray co				, little
88	11/1												coarse to fine				

PROJI LOCA'	TION	B&	ltin	nor		l Replace	(cc	ontinue	8)G		BORING NUMBER: UT-02 SHEET NUMBER: 2 of 2 PROJECT NUMBER: 185615A CONTRACTOR: E2CR, Inc. DRILLER: S. Lyons INSPECTOR: A. Fragoso	
et)	98	£	L	9	SAI	MPLE		SOIL	(Blows/	6 in.)	DEO	_	
DEPTH (feet)	HICL	3lows/f				eet)	0/6	6/12	12/18	18/24	REC. (in.)	FIELD CLASSIFICATION AND REMARKS	
DEPT	GRAPHIC LOG	CASING (Blows/ft)	Ĕ	MBER	SYMBOL	DEPTH (feet)	DUN		CORING		DOD	_	
	1/2/2/	CAS	TYPE	Š	SYI	DEF	RUN (in.)	REC. (in.)	REC. %	L>4" (in.)	RQD %	1	
- - - 25 - - - 30			S	5		24.0 - 26.0 29.0 - 30.3	3 10	6 34	7 100/4"	7	14	24.0' Tan, orange, coarse to fine SAND, and Clayey Silt, medium dense, moist (SM, Residual) Falling head test at 26 ft. Tan, orange, coarse to fine SAND, and Clayey Silt, very dense, moist (SM, Decomposed rock)	
- - 35 - - - - - 40			S	7		34.0 - 34.4					1	Orange, brown, black coarse to fine SAND, little Clayey Silt, trace fine Gravel, very dense, dry (SM, Decomposed rock) Orange, brown, black coarse to fine SAND, little Clayey Silt, trace fine Gravel, very dense, dry (SM, Decomposed rock) (Auger refusal at 40 ft bgs, see Coring Log)	
Note:					i.								9

												BORING	NUMBE	R·IIT-05		
6					_	~ D	NIC					NUMBER			2	
	2				В	UKI	INC	i LC	JG				TOMBER			
B&P PROJE	כה											24 A1080 F 1028 11 - 40	T NUMB	LIV.	85615A	
PROJECT: LOCATION:						nent P	roject					LOCATION	ON: NE Co Payson		osher and N	l.
CLIENT: AN				10,	WID							COORD	.: N: 595,	026.7	E: 1,411,5	593.4
CONTRACT				CR,	Inc.								CE ELEV.			
DRILLER: E													Horizont			
INSPECTO			_		(4) (1) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4								Vertical: DATE: 8/2			30 am
DRILLING N										oring.			DATE: 8/			
KIG TIFE.	CIVI	VV.	uge		Split Spoor	_		Pitcher	Gra	o Co	re Barrel			NDWATER		P
Type/Symbo	ol		ISA		S		9	L \blacksquare	G		СП	1		Water	Casing	Hole
I.D.		100	.25	-	1.375"	3.0	"	2.86	3.25		n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.		6.	62:	5	2"	3.5	"	3	3.375	5"	n/a	8/15/18	10:00 am	10.1	-	26.0
Length			60		24"			24	6"		n/a					
Hammer Wi	t. T	1	n/a		140lbs	Di	rill Rod	Size		"A"	9					
Hammer Fa	II	j	n/a		30"		I.D. (O.	D.)	1	.219" (1	.75")					
		T		SA	MPLE		SOI	L (Blows/	'6 in.)							
(feet)	vs/ft)	F	T	T		0/6	6/12	12/18	18/24	REC.	1					
DEPTH (feet) GRAPHIC LOG) (Blov		ç	<u>د</u> ا	l (feet			CORING	}	(in.)	ł	FIELD CL	ASSIFICAT	ION AND I	REMARKS	
R S	CASING (Blows/ft)	TYPE		SYMBOI	DEPTH (feet)	RUN	REC.	REC.	L>4" (in.)	RQD %	0.0'					
***		╁	1	_ 0		(in.)	(in.)	70	(111.)	/0	0.0					
		+														· ·
_ 3		-G	ì	1	2.0 - 2.5	G	R	Α	В	6		Tan and bro		C. CANE	•	
- ************************************		4										fine Gravel,				se to
* A		G		2	4.0 - 4.5	G	R	A	В	6						_
1 10 3		ľ	Τ	* >	4.0 - 4.5	"	10		"			Tan and brog				to
5 × 4								107							,,	-
	_	G	1	$^3 \geq$	6.0 - 6.5	G	R	A	В	6		Brown coars				
	_	+										Gravel, little	Clay & Silt,	dry, trace of	coal (SM, Fi	ll) _
*A !		4														02
45 - 45		-s		1 _	9.0 - 11.0	2	1	1	3	8.5						_
10 1*				502	1900009000 T05000000	8200	100	5770	155	LOCALIZATION CO.		Orange, brow	e Gravel (lar	ge brick fra	gments, 1" i	n
10 *												diameter), so Fill)	ome Clay &	Silt, very lo	ose, moist (S	SC,
**A		1)				-
***		1														% -
₹ PA .		\dashv														1.
	_	S		2	14.0 - 16.0	WOH	WOH	2	2	16	14.0'	***			C!	
5 - 15											144.5'	Light gray, of SILT, little S	Sand, very so	oft, moist (N	c gray Claye IL)	у
		1														-
3	6	+														9 .7
		-														72
77.77		s		3	19.0 - 21.0	1	3	9	6	12	19.0'	Brown, oran	ga opovos t-	fine CANID	come com	se to
					0						139.5'	fine Gravel,				

e:
Boring No. UT-05 Sheet 1 of 2

	TION:	B&	ltin	nor		l Replace	(cc	ING ontinue Project	ed)	OG		BORING NUMBER: UT-05 SHEET NUMBER: 2 0 PROJECT NUMBER: 18561 CONTRACTOR: E2CR, Inc. DRILLER: E. Hill INSPECTOR: A. Fragoso	of 25A
	(0		Γ	Ì	SAI	MPLE		SOIL	. (Blows	/6 in.)		'	
DEPTH (feet)	GRAPHIC LOG	ws/ft)	r			£	0/6	6/12	12/18	18/24	REC. (in.)		
EPTH	SAPHI	CASING (Blows/ft)	07702	3ER	SOL	DEPTH (feet)		FIELD CLASSIFICATION AND REMAI	RKS				
	9	CASIN	TYPE	NUMBER	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
- - - 25 - - -			- S			24.0 - 26.0	1100/2"	13	21	23	2	24.0' 134.5' Orange, light gray, tan coarse to fine SANI Silt, trace coarse to fine Gravel (quartz), de relict layering (SM, Residual) Falling head test at 26 ft. Light gray, brown, tan coarse to fine SANI Clayey Silt, little Gravel, very dense, moist Decomposed rock) (Spoon refusal at 30 ft bgs, see Coring Log	D, little (SM,
- - - 35 - - - - - - - - - -												(Spool) fetusal at 50 ft ogs, see Colling Log	,

Boring No. UT-05 Sheet 2 of 2

														BORING	NUMBE	R: IVF-P	5-6	
6							R	ADI	NG	LC		SHEET N	NUMBER	:_1	of	3		
R	o D	TUNNE					D	JKI	INC	י בכ	JG							
			18											PROJEC	1000 1000000000000000000000000000000000	L1 X.	85615A	
							Replacem	ent Pr	oject					LOCATIO	ON: 2000 I	Linden Ave		
		ΊΟΝ: Γ: A M				, 1	ID							COORD.	: N: 598.	969.0 I	E: 1,416,1	12.7
A CONTRACTOR OF THE PARTY OF TH		RACT				R , I	nc.								E ELEV.			
DR	ILLE	R: S.	Lyo	ns											Horizont			
		CTOR										-			Vertical: DATE: 8/0			50 mm
		NG M PE: (Ioll	ow Stem Au	gers; Ro	otary W	ash; Dia	mond C	oring.					IME: 12:	
IXIC	, , ,	1 L. C	1711	19.1	ger		Split Spoon	Casir	ng	Pitcher	Grat	Co	re Barrel	in management	COLUMN TO THE RESERVE	NDWATER		
Тур	e/Sy	ymbol		HS	SA	1	S			L	G		СП		21, 37, 35, 35, 35, 35	Water	Casing	Hole
I.D.				4.	25		1.375"	"3.0	n.	2.86	3.25	_	n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
0.0).			7.6	25		2"	"3.5	"	3	3.375	5"	n/a	8/9/19	7:45 am	10.9	-	151.1
Len	igth			6	0		24"			24	6"		n/a	8/12/19	8:00 am	12.6	2	181.1
5/20/03/03/03		er Wt.	-	n	/a		140lbs	D	rill Rod	Size		"A"	ii .	8/13/19	7:45 am	12.6	-	181.1
Har	nme	er Fall		n	/a		30"		I.D. (O.I	D.)	1	.219" (1	.75")					
		ر س				SAI	MPLE		SOI	L (Blows/	6 in.)							
(foot	(1001)	CLO	ows/ft)	Γ			it)	0/6	6/12	12/18	18/24	REC. (in.)						
OFPTH (feet)	: ;	GRAPHIC LOG	CASING (Blows/ft)		3ER	SOL	DEPTH (feet)			CORING	6		1	FIELD CL	.ASSIFICAT	ION AND F	REMARKS	
	נ	9	CASIN	TYPE	NUME	SYME	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	0.0'					
	RUN REC. REC. L>4" RQD % 0.0'																	
7.3		**		1			0 5 500		065		220	8						A-7
-		- 6b		G	1	X	2.0 - 2.5	G	R	A	В	6		Brown, dark	gray, and ta	an SILT & O	CLAY, little	fine
-		***		1										Sand, moist	(ML, Fill)			-
-81		*		G	2	\times	4.0 - 4.5	G	R	A	В	6		Light brown	and orange	-brown med	lium to fine	:
- 5		東 山					,e							SAND, little	Silt, moist (SM, Fill)		
		α α μΔ.		G	3	X	6.0 - 6.5	G	R	A	В	6		Light brown	and orange	-brown med	ium to fine	-
B&P BORING LOG (FINAL) COPY B&P TUNNEL PH5.GPJ B&P TUNNEL - LIBRARY.GLB 3/1		400.4					AS							SAND, trace (SM, Fill)				t _
LIBRA		*4 E		G	4	X	8.0 - 8.5	G	R	A	В	6		Orange-brow	vn brown a	and gray me	dium to fine	
NEL-		\$ ₩.					×							SAND, trace				
<u></u>	0	**************************************		GS	5	X	9.5 - 10.0 10.0 - 12.0	G 5	R 3	A 5	B 6	6 22		Tan-brown a				ce _
B&P		10 A												Silt, trace fin Light brown	e Gravel, m , orange-bro	oist (SM, Fi	ill) i fine SAND	,
5.GPJ		* ∆ 1 □ :}												little Silt, dry	(SM, Fill)			
H		* 0.4		1			3											-
NN-		604		1														C ==
3&P T		* 4																3
8 − 15	5	Α. Α. Καο 1		S	2		15.0 - 17.0	5	7	7	8	24		Brown, light	brown gray	v oranga he	rown and to	n –
) (1)		(100g) (200g) (4)												coarse to fine				
FIN		A 49																_
907 s		*6. C											18.0'					2502
DRING													158.3'					ν.—
&P BC				1														-
m		0 4 0					4											

Γ														BORING NUMBER: IVF-P5-6
	Po D	TUNN	EL				В	the second of the second of the second	ING ontinue	LC	G			SHEET NUMBER: 2 of 3
L	DO	PROJE	ст					(0	Jillilue	a)				PROJECT NUMBER: 185615A
F	PROJE	CT:	В&	PΤ	un	ne	l Replacer	nent P	roject					CONTRACTOR: E2CR, Inc.
L	OCAT	ION:	Bal	tim	or	e, I	MD							DRILLER: S. Lyons
c	CLIEN	Г: А	МТІ	RAI	K									INSPECTOR: G. Hanger
Г		C				SA	MPLE		SOIL	(Blows/	6 in.)			
ı	DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	Γ			£	0/6	6/12	12/18	18/24	REC. (in.)	1	
1	EPTH	MAN	IG (Bic		SER	70	DEPTH (feet)			CORING	;		1	FIELD CLASSIFICATION AND REMARKS
		<u>R</u>	CASIN	TYPE	NOME	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %	1	
r			J	S	3	0,	20.0 - 22.0	6	4	4	5	22	<i>i</i>	Brown, light brown, tan, and dark gray coarse to fine SAND, and medium to fine Gravel, little Silt, wet
				1										(SW-SM)
L	25			S	4		25.0 - 27.0	7	12	14	13	0		N
-					381						2000	5565		No recovery
-														
ŀ			<u> </u>											
-			\vdash											
16/22	30			S	5		30.0 - 32.0	5	7	8	5	24		Top 18": Brown, dark brown, tan, and gray medium
3LB 3/														to fine SAND, some medium to fine Gravel, some CLAY & SILT pockets, moist (SM) Bottom 6": White, tan, light brown with bands of
RARY.				1									32.5' 143.8'	yellow fine SAND and Clayey Silt, trace fine Gravel, relict banding present, micaceous, moist (SM,
II - LIBI				1									143.8	residual)
TUNNE	35				6		35.0 - 37.0	16	15	11	9	24		
J B&P	- 35 S 6 -						33.0 - 37.0	10	13	11	9	24		Light gray, dark gray, interlayered with brown and orange-brown SILT, some fine Sand, relict banding
H5.GP													37.5'	present, micaceous, moist (ML, residual)
- NEL P	13/20												138.8'	
&P TUI			5											
SOPY B	40		<u> </u>	s	7		40.0 - 42.0	22	19	18	24	16		Dark orange-brown, dark brown, and tan medium to
NAL) (52											fine SAND, little Silt & Clay, trace fine Gravel, relict banding present, micaceous, moist (SM, residual)
-0G (F			-										42.5'	
RING													133.8'	
B&P BORING LOG (FINAL) COPY B&P TUNNEL PH5.GPJ B&P TUNNEL - LIBRARY.GLB 3/														
_						_		_	_	_	_	_	_	

ſ														BORING NUMBER: IVF-P5-6
1	2		2				B	ORI)G			SHEET NUMBER: 3 of 3
ļ	B ₈ P	PROJE	ਨਿੱ					(cc	ontinue	ed)				PROJECT NUMBER: 185615A
	PROJE	CT:	B&1	PΤ	un	ne	Replacer	nent Pi	oject					CONTRACTOR: E2CR, Inc.
	LOCAT	ION:	Bal	tin	or	e, I	MD							DRILLER: S. Lyons
	CLIENT	T: A	MTF	RAI	K									INSPECTOR: G. Hanger
Ī		Ŋ		Γ		SAI	MPLE		SOIL	(Blows/	6 in.)			•
1	DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft)	Г			et)	0/6	6/12	12/18	18/24	REC. (in.)		FIFE D. CLASSIFICATION AND DEMARKS
1	DEPTH	RAPH	NG (BI		BER	BOL	DEPTH (feet)			CORING				FIELD CLASSIFICATION AND REMARKS
L	_	ŋ	CASI	TYPE		SYMBOL		RUN (in.)	REC. (in.)	REC. %	L>4" (in.)	RQD %	e.	
	0)			S	8		45.0 - 47.0	8	9	13	18	24		White and light blue-gray fine SAND, little Silt, micaceous, moist (SM, Residual)
	- 50	S 8 45.0 - 4						9	12	14	20	24		Light green-gray, white, and green-gray fine SAND, little Silt, micaceous, moist (SM, Residual)
6/22	- 55			S	10	_	55.0 - 55.2	100/2"				2		Green-gray, light green-gray with speckles of black
B&P BORING LOG (FINAL) COPY B&P TUNNEL PH5.GPJ B&P TUNNEL - LIBRARY.GLB 3/16	93 81													medium to fine SAND, trace Silt, relict banding present, moist (SM, decomposed rock)
-LIBRA	ii .			S	11		58.0 - 58.1	100/1"				1	58.1' 118.2'	Light green-gray, gray with speckles of black
TUNNEL	60			1										medium to fine SAND, trace Silt, moist (SM, decomposed rock) (Spoon Refusal at 58.1 ft bgs, see Coring Log)
J B&P	- 60													
PH5.GP	ĐI													-
JNNEL	-													-
B&P TI														
COPY	- 65													
(FINAL														
1G LOG	0 U													-
P BORIN	84													-
B&I				L										

													BORING	NUMBER	R: IVF-P	5-8A	
<u>a</u>						R		NG	LC	C			SHEET	NUMBER	:1	of	3
Rel	TUNNI	1				D	UNI	IVC		JG							
LOC6	PROJE												PROJEC	TOTAL PUBLICACIONALIZATIONS	_	85615A	
	ECT:					Replacem	ent Pr	oject					LOCATIO	ON: 2000 I	Linden Ave		
	IT: AN				, IV	ID							COORD.	: N: 599,	043.1 I	E: 1,416,0	53.5
100000000000000000000000000000000000000	RACT				, I	nc.								E ELEV.			87,5000
	ER: S													Horizont			
	CTOF		_											Vertical:			0
	.ING M YPE: (loll	ow Stem Au	gers; Ro	otary W	ash; Dia	mond C	oring.		FINISH			IME: 9:3 IME: 2:1	
1	.,		Au			Split Spoon	Casir	ng	Pitcher	Gral	o Co	re Barrel	OR ISSUED PROPERTY.	GROU	NDWATER	DATA	
Type/S	Symbo	ol	HS	SA		S		-	L	G		С			Water	Casing	Hole
I.D.			4.2	25		1.375"	"3.0	"	2.86	3.25	"	n/a	Date	Time	Depth (ft)	Depth (ft)	Depth (ft)
O.D.			7.6	25		2"	"3.5	"	3	3.375	5"	n/a	7/1/19	8:00 am	14.0	-	76.4
Length	n		6	0		24"			24	6"		n/a	7/2/19	2:15 pm	11.0	-	146.4
Hamn	ner Wt	. 🗆	n	a			D	rill Rod S	Size		"A"	62	7/3/19	7:45 am	13.5	-	181.4
Hamn	ner Fa	II _	n	/a				I.D. (O.I	D.)	1	.219" (1	.75")					
	(0			5	SAN	MPLE		SOII	L (Blows/	6 in.)							
(feet)	CLOC	ws/ft)	П			_	0/6	6/12	12/18	18/24	REC.	1					
DEPTH (feet)	GRAPHIC LOG	3 (Blo	П	R.	٦	l (feet			CORING	<u> </u>	(111.)	1	FIELD CL	ASSIFICAT	TON AND F	REMARKS	
	GRA	CASING (Blows/ft)	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN	REC.	REC.	L>4"	RQD						
	***	173	-	2	တ		(in.)	(in.)	%	(in.)	%	0.0'					
-	10.00		┨														_
-0	*** ********		G	1		2.0 - 2.5	G	R	A	В	6		D 11.			•	VI
L	**				$\stackrel{\wedge}{}$		0.55		15/45	J. 38333			Brown, light red-brown co	parse to fine	SAND, son	ne Silt, little	_
	□ Q . Δ						-	_					medium to fi coarse to fine	ne subround brick fragr	ded/subangt nents, mois	ular Gravel, t (SM, Fill)	little
-	* * * *		G	2	X	4.0 - 4.5	G	R	A	В	6		Brown, dark	brown, red-	-brown SIL'	T & CLAY,	little
- 5	* 0		1										fine Sand, tra	ace brick fra	igments, mo	DIST (ML, FII	
122			G	3	\forall	6.0 - 6.5	G	R	A	В	6		Brown, dark	brown red	-brown SII	T & CLAY	little -
B&P BORING LOG (FINAL) B&P TUNNEL PH5.GPJ B&P TUNNEL - LIBRARY.GLB 3/16/22	4.003		$ \cdot $	ľ		86							fine Sand, tra	ace fine Gra	vel, moist (ML)	-
Y.GLB	¾ ∆		G	4		8.0 - 8.5	G	R	A	В	6					•	_
3RAR	***				$\stackrel{\sim}{}$								Orange-brow SILT & CLA				
1	40	ğ	G	5	\forall	9.5 - 10.0	G	R	A	В	6	10.0'	(ML) Red-brown,	dark grav-h	rown CLAY	FY SILT s	ome
- 10			S	1		10.0 - 12.0	7	4	6	7	12	169.8	medium to fi	ne Sand, me	oist (ML)		
A L		in C	1										Orange-brow black medium	m to fine SA	ND, some		_
2			$\ \ $		٩								medium den	se, moist (S	M)		8-
H5.G												13.5'					6. c.
A P												166.3'					7
15 4 – 15	SAK		s	2		15.0 - 17.0	4	5	6	0	24						A.2.—
B88 - 12	2		3	2		13.0 - 17.0	4	3	0	8	24		Orange, red- coarse to fine				nd.
INAL	9		1										little Clayey				
900 (F	000		1			V.											
NG L	Political																(C
BOR	.00																-
B&P	0					2.2	-					20.0'					

Ba.	P	UNNI	Ect				В	ORI (co	ING ontinue	The second secon	G			BORING NUMBER: IVF-P5-8A SHEET NUMBER: 2 of 3 PROJECT NUMBER: 185615A
PROJ							l Replacer	nent P	roject					CONTRACTOR: E2CR, Inc. DRILLER: S. Lyons
CLIEN	ΝT	: A	MTR	RA	K									INSPECTOR: G. Hanger
		NYSS		Γ		SA	MPLE		SOIL	_(Blows/	6 in.)			•
(feet)		GRAPHIC LOG	ws/ft)	H				0/6	6/12	12/18	18/24	REC.		
DEPTH (feet)		SAPHIC	CASING (Blows/ft)		3ER	SOL	DEPTH (feet)			CORING	;	()		FIELD CLASSIFICATION AND REMARKS
		G.	CASIN	TYPE	NUMBER	SYMBOL	DEPT	RUN (in.)	REC. (in.)	REC.	L>4" (in.)	RQD %		
-				S	3		20.0 - 22.0	8	·9′	8	6	8	159.8'	Light brown, gray, black, and tan coarse to fine SAND, little Clayey Silt, little coarse to fine Gravel, medium dense, wet (SM)
- 25 -	S 4 - 25.0 - 2				25.0 - 27.0	6	7	7	9	10		Light brown, light gray, and dark gray coarse to fine SAND, some coarse to fine Gravel, trace Clayey Silt, medium dense (SM)		
- - - 30				S	5		30.0 - 32.0	28	5	6	5	18		Top 10": Orange, light brown, light purple-gray, and light gray coarse to fine SAND and coarse to fine Gravel, trace Silt, medium dense, wet (SM) Bottom 8": White and light orange fine SAND, little Silt, trace fine Gravel, micaceous, medium dense, wet (SM, Residual Soil)
- 35 -				S	6		35.0 - 37.0	5	6	9	9	18	33.5' 146.3'	Light gray, orange, black, red-brown, and dark gray SILT, some fine Sand, micaceous, medium dense, moist (ML, Residual Soil)
35 40				S	7		40.0 - 42.0	15	18	22	30	24	38.5' 141.3'	Gray, light gray with streaks of orange-brown SILT, some fine Sand, micaceous, dense (CL, Residual Soil)

													BORING NUMBER: IVF-P5-8A
2						В	OR	ING	LC	G			SHEET NUMBER: 3 of 3
B ₈ P	TUNN	EL CT						ontinue					PROJECT NUMBER: 185615A
PROJE LOCA	TION:	Bal	tin	10r		l Replacer	nent P	roject					CONTRACTOR: E2CR, Inc. DRILLER: S. Lyons INSPECTOR: G. Hanger
			Т		SAI	MPLE		SOIL	_ (Blows/	(6 in)			
(feet)	GRAPHIC LOG	vs/ft)	H		SAI		0/6	6/12	12/18	18/24	REC.		
DEPTH (feet)	PHIC	(Blov	l	2	7	(feet)			CORING		(in.)		FIELD CLASSIFICATION AND REMARKS
H	GR/	CASING (Blows/ft)	TYPE	NUMBER	SYMBOL	DEPTH (feet)	RUN	REC.	REC.	L>4"	RQD		
		O O	S	_		45.0 - 47.0	(in.)	(in.)	% 15	(in.)	% 24		Dark green-gray, black, and gray SILT, some fine
- - - - 50 - - - -			S	9		50.0 - 52.0 55.0 - 56.0	27	40	62	60	24	48.5' 131.3'	Sand, highly micaceous, medium dense (CL, Residual Soil) Dark green-gray to gray, light gray, tan, and black medium to fine SAND and Silt, trace medium to fine Gravel (quartz), relict banding observed, very dense (SM, Decomposed Rock)
J 55			ľ	10		33.0 - 30.0	23	100/0			12	56.4'	Dark green-gray, black, and silver fine SAND and Silt, micaceous, relict banding observed, very dense (SM, Decomposed Rock)
60 65												123.4'	(Spoon Refusal at 56.4 ft bgs, see Coring Log)

Γ														BORING	NUMBE	R:IVF-P	5-8B	
	2						R()RI	NG	LC	C			SHEET	NUMBER	R:1	of	1
	B ₈ P	TUNNE	1				D	JIN	140									
L					Same Sec.			_	•					PROJEC	COST THE PARTY OF STREET	LIX.	85615A	
	PROJE OCAT						Replacen	nent Pi	roject					LOCATION	ON: 2000 I	Linden Ave		
	CLIEN'					, 1	·ID							COORD	: N: 599,	044.7 I	E: 1,416,0	76.0
	CONTR	RACT	OR:	E2	CF	2, 1	Inc.							SURFAC			979797	
	PRILLE														Horizont Vertical:			
_	NSPE						ow Stem Au	gove, D	stany W	ach. Dia	mond C	owing		1			IME: 1:4	5 pm
	RIG TY					1011	ow Stell Au	gers, Ro	mary w	asii, Dia	mona C	oring.					IME: 9:4	
Г				Aug			Split Spoon	Casir	ng	Pitcher	Grah	Co	re Barrel		GROU	NDWATER	DATA	
- [1	ype/S	ymbo	ol _	HS	SA		S			L	G]	с≣			Water Depth	Casing Depth	Hole Depth
- 1	.D.			4.2	25		1.375"	"3.0	"	2.86	3.25	"	n/a	Date	Time	(ft)	(ft)	(ft)
	D.D.			7.6	enes ex		2"	"3.5	"	3	3.375	3"	n/a	7/11/19	7:30 am	14.4	-	91.4
	.ength			6	200	_	24"	2002		24	6"		n/a	7/15/19	8:00 am	14.1	-	166.4
- 1	lamm		~	n/			140lbs		ill Rod S			"A"						2
ᆙ	lamm	er Fa		n/			30"		.D. (O.E			.219" (1	.75")					
1	æ	စ္ခ		L	5	SAN	MPLE		SOIL	_(Blows/	6 in.)							
1	(feel	CLC	ws/ft				t)	0/6	6/12	12/18	18/24	REC.						
	DEPTH (feet)	SRAPHIC LOG	G (Blo	П	ER	or	н (fee			CORING	3	()	1	FIELD CL	ASSIFICAT	TION AND F	REMARKS	
		GR	CASING (Blows/ft)	TYPE	NUMBER	SYMB	DEPTH (feet)	RUN (in.)	REC.	REC.	L>4" (in.)	RQD %	0.0'					
r		* 4	3			2000	224.32	, Company	()		()			Note: Blind	soil drilling	to top of roc	k	
-		A		1														9.7
-		**		G	1	X	2.0 - 2.5	G	R	A	В	6		Brown, light	brown, oraș	nge-brown,	and tan coar	se to
-		**************************************		$\ \ $			2.							Brown, light fine SAND, trace brick fr	some Silt, tr	race medium	to fine Gra	vel,
-		**		G	2		4.0 - 4.5	G	R	A	В	6		Dark brown				
	5	4 10 1			1	\cap	5							Silty Clay, tr	ace very fin	e brick fragi	ments, moist	(SC, _
	-10	***		G	3		6.0 - 6.5	G	R	A	В	6		Fill)				_
110/22		80米6				X	0.0 0.0			2.5				Brown, light and Clayey S	brown, and Silt, moist (S	tan mediun M)	n to fine SA	ND _
GLB 3		¾ Δ 5			,		90 95	G	D	Α	D	6						
B&P BORING LOG (FINAL) B&P TUNNEL PH5.GPJ B&P TUNNEL - PHASE 6.GLB 3/10/22		10.88 O		G	4	X	8.0 - 8.5	G	R	A	В	6		Brown, light fine Sand, m		tan SILT &	CLAY, litt	le _
II - PH	10	1 40 Y		G	5	X	9.5 - 10.0	G	R	A	В	6		Red-brown,				AY,
UNN													169.7	some medium (at 10 ft bgs			1L)	_/
B&P				П														200-0
.GPJ				$ \cdot $														
LPH6			i.	1														20-
UNNE				1														-
3&P T	15																	:-
AL) B																		(-
(FIN	.																	9.5
0 100				1														-
ORIN																		
B&P B																		3.7