
St. Elizabeth's East Existing Infrastructure Condition Review Report

Prepared for
District of Columbia
Office of Deputy Mayor
For Planning & Economic Development

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CH2MHILL®

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Executive Summary

DMPED hired the CH2M HILL team in 2011 to prepare an overall conceptual infrastructure master plan that would support the East Campus Master Plan recently completed by ASG. As the initial step in completing this conceptual infrastructure plan, the CH2M HILL team has conducted extensive data collection efforts to locate existing utility infrastructure records for the East Campus and field surveys and observations including CCTV videotaping of trunk utility systems. Seven major infrastructure systems were evaluated and the detailed condition assessments are included in the main body of this report. All systems found in usable or repairable condition are subject to future capacity analysis to verify acceptability for use in the master infrastructure system planned to serve the redeveloped East Campus. In summary the following was determined:

- **Water Systems** – the entire area suffers from low pressure and flow issues. Temporary modifications to the East Campus system have been completed by the District to allow fire flows to be met for the existing vacant and leased buildings. However, the water mains removed during this process clearly illustrated that the existing water mains on East Campus are in poor condition and all existing system components within the East Campus will need to be replaced with a new system. Integral to that effort will be the separate but parallel effort by DC Water to install new transmission mains and a new 2 MGD elevated storage tank within the East Campus.
- **Sanitary Sewer Systems** – the only salvageable portion of the system may be the 18 inch diameter trunk sewer line running down the ravine and connecting to the DC Water manhole near the Suitland Parkway. It could be rehabilitated with industry standard trenchless methods. Any rehabilitation efforts would need to be coordinated with DC Water to insure the repairs meet DC Water standards and allow future operation and maintenance by that utility.
- **Storm Sewer System** – the only salvageable portions of the system may be the dual outfall pipes (54 inch and 42 inch diameter) running down the ravine towards Suitland Parkway. These lines would also need rehabilitation with trenchless technologies and would be subject to the same DC Water standards and conditions to allow future operation and maintenance of the systems by that utility.
- **Electrical systems** – except for the new service to the hospital, all the facilities on site were constructed as private system and as such is not considered reusable by the utility company. An entire new system will be required to support redevelopment of the East Campus.
- **Telecom Systems** – all existing telecom (Verizon data, entertainment TV and CCTV systems) facilities are deemed obsolete and unsuitable for future use and will need to be removed or abandoned in the future. An entire new system will be required to support redevelopment of the East Campus.
- **Natural Gas** – piping on East Campus is old, but in reasonable condition and may be used in the initial stages of development. Supply lines are located south and west of the site and in good condition with acceptable pressure and flows to supply the East Campus redevelopment according to Washington Gas.
- **Steam Tunnels** – were deemed to be hazardous materials and not located in acceptable areas for any type of reuse. Recommendation is removal of the 20% impacted by the new roadway configuration and selective future remediation and removal of tunnels or abandonment in place of tunnels as required for each specific development pad. No part of the system was deemed in the proper location or condition to facilitate reuse when the East Campus is redeveloped.

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Acronyms and Abbreviations

CCTV	closed-circuit television
CIPP	cured in place pipe
CMP	corrugated metal pipe
DDOT	District Department of Transportation
DHS	Department of Homeland Security
DMPED	Deputy Mayor for Planning and Economic Development
FEMA	Federal Emergency Management Agency
gpm	gallons per minute
GSA	General Services Administration
KV	kilo volt
LF	linear foot
MGD	million gallons per day
MVA	mega volt amps
NASSCO	National Association of Sewer Service Companies
O&M	Operation & Maintenance
PACP	Pipeline Assessment & Certification Program
RCP	Reinforce Concrete Pipe
ROW	right-of-way
VCP	vitrified clay pipe
WMATA	Washington Metropolitan Area Transit Authority

SECTION 1

Introduction

In 2008, the Mayor in partnership with the Deputy Mayor for Planning and Economic Development (DMPED), initiated an update to the initial Framework Plan for the East Campus of St. Elizabeths. The relocation of the U.S. Department of Homeland Security (DHS) to the West Campus of St. Elizabeths, as well as a significant level of planned development in the area, presented a new opportunity to catalyze development on the East Campus and stimulate economic resurgence throughout Ward 8. The *St. Elizabeths East Redevelopment Framework Plan* (“framework plan”) was approved by Council on December 16, 2008. This plan guides the development process, which includes the following steps:

- Identifying the first phase of development within a master plan that defines community preferences for uses and amenities (*Final Environmental Impact Statement on St. Elizabeths Campus Master Plan for the Consolidated Headquarters of the Department of Homeland Security*, or “master plan”)
- Finalizing the system of roads that will support the East Campus, connect to surrounding neighborhoods, and meet projected area growth over the next 20 years (*St. Elizabeths East Transportation Network Environmental Assessment*, or “transportation environmental assessment”)
- Developing a comprehensive economic development strategy that identifies ways to connect residents with employment, small business, entrepreneurship, and education opportunities on campus

DMPED hired the CH2M HILL team in 2011 to assist in its efforts to further the master plan and achieve the following goals for the project:

- Create an overall conceptual infrastructure and utility master plan that supports the *Master Plan Amendment: St. Elizabeths East Campus North Parcel Draft Environmental Impact Statement* (“East Campus master plan”), and includes a feasible approach to the first phase of development. The concept infrastructure plan should be financially feasible given the physical and economical constraints on the site.
- Work closely with the infrastructure financing consultant (being procured under separate task order) to develop the concept infrastructure plan for the campus.
- Coordinate with ongoing East Campus transportation feasibility study led by the District Department of Transportation (DDOT) to incorporate streetscape and transportation recommendations that support the development and land use goals of the master plan.
- Examine the impacts of development on historic resources and provide recommendations that mitigate these impacts to the greatest extent possible.
- Identify sustainable infrastructure features that will complement development on the East Campus through sustainable infrastructure.

This report on the condition of the existing utility infrastructure systems on the East Campus is one of the deliverables provided by the CH2M HILL team under its contract with DMPED. Appendix 1 is an exhibit of the proposed master plan for development of the East Campus with the Phase 1 area highlighted.

Data Collection and Condition Assessment of Utility Systems

The data collection efforts involved field surveys and observations and research and review of available records and reports of the existing utility systems. The systems evaluated are limited to those critical for future development (not service laterals and minor systems) and/or those not disturbed by the proposed development. The assessments and associated salvage evaluations take into account that proposed utility systems will be built to utility company standards and within the proposed public roadways. The infrastructure systems would then be turned over to the utility companies to be maintained as public systems.

The planned roadways for the first phase of development for the East Campus as well as the current development plan are contained in Appendix 1. Seven existing utility systems descriptions and review and condition assessments are described and characterized by type and function. These descriptions are summary in nature. Detailed mapping and field reports/status reports are included in the attached appendixes or are available from the project files.

2.1 Water System

All existing water systems on East Campus are private and master metered at offsite connections by DC Water. During the construction of the new St. Elizabeths Hospital, it was noted that aging and brittle piping, valves, and hydrants, filled with tuberculation combined with neglectful maintenance, has resulted in a system unable to produce the required fire demand volume and pressure. Fire protection work was completed on the East Campus between November 2010 and August 2011 so the requirement of 750 gallons per minute (gpm) at each hydrant could be met. Pressure testing was performed and recorded for all hydrants with 100 percent compliance above 750 gpm. A 100,000-gallon private elevated tank is located on the East Campus. A map of the system improvements, the results of the hydrant testing, and pictures of typical tuberculation encountered are contained in Appendix 2.

DC Water is planning to construct a new 2 million gallons per day (MGD) elevated water storage tank (public system) on the East Campus near the new hospital site. The tank site is fixed, but there are several options available on the routing of the 24- and 30-inch-diameter transmission main between Martin Luther King Jr. Boulevard and the tank site and the three options for routing the transmission main east of the tank back to the offsite system connection points. This tank and transmission main improvements will substantially raise the water pressure and volumes in Ward 8 at the top of the hill where the East Campus is located. The present schedule is for construction of the tank and transmission mains to start in mid-2013. Once this public tank is in service, the private tank (100,000 gallons) is anticipated to be removed.

Due to public ownership requirements, roadway alignments, and increased system flow requirements, most of the water system (potable water, fire supply, hydrants, and pumps) will need to be replaced; some portions of the recently constructed system may potentially be reused (see existing system map, Appendix 2), but only in very limited areas.

The interface between the new water tank, transmission mains, and hospital will need to be coordinated as follows to ensure fire protection and continuity of service:

- Keep existing 14-inch water main from West Campus/Martin Luther King Jr. Boulevard in service during Phase 1 of East Campus development as a supply to the hospital and existing private water storage tank
- Keep fire pump and 8-inch line from Alabama Avenue SE to hospital in service until after Phase 1 of East Campus development is completed and elevated storage tank and transmission mains are built by DC Water
- Keep new hospital supply 8-inch line installed in steam tunnel that connects hospital to private storage tank and 14-inch main in service

- Allow DC Water to build 24-inch transmission main in Pecan Street right-of-way (ROW) as well as elevated tank and East Campus Phase 1 development will not be impacted.

2.2 Storm Sewer System

All existing storm water inlets, drain pipes and outfall pipes on East Campus are private and not maintained by any public utility company. Portions of the storm sewer systems were photographed by closed-circuit television (CCTV) to detect damage or obstructions not visible from the surface. The videoing included the trunk line portions of the existing storm sewer as shown on the CCTV map and structure index table contained in Appendix 3. Approximately 3,600 linear feet (LF) varying in diameter from 24 to 48 inches was videoed, and pictures of the conditions are included in Appendix 3. All the media files and inspection reports gathered as shown in the index can be provided electronically upon request. The reports and data conform to National Association of Sewer Service Companies (NASSCO's) Pipeline Assessment & Certification Program (PACP).

In general, the trunk portions of the existing system inspected are all in repairable condition utilizing trenchless methods. Utilizing these portions wherever possible will provide cost saving to the overall infrastructure development cost. Other general observations include:

- Large portions of the trunk storm drain system were constructed in the early 1970's, replacing an older system
- Four doghouse manholes were encountered inline that were not visible from the surface nor documented on as-built drawings.
- The 42-inch reinforced concrete pipe (RCP) line segment under the hospital access road has been lined with cured-in-place pipe (CIPP), and additional manhole (doghouse) structures were incorporated for CIPP installation and connection of the hospital drainage pipes to the existing outfall line.
- The bulk of the remaining storm drain outfall is RCP pipe utilizing bitumastic gasket material which shows signs of deterioration. A significant amount of groundwater infiltration has been CCTV documented at the crown of the pipes. Some joints have documented deposits and several locations have joint separation
- The 42-inch segment designated as D2301 to D1803 is corrugated metal pipe (CMP) pipe. See Exhibit B, Appendix 3. This segment will likely require further evaluation with regard to rehabilitation if the system is to be incorporated with future development needs. Typical deficiencies found included missing bituminous coating and subsequent pipe deterioration along the bottom of the pipe. The pipe can be rehabilitated utilizing trenchless methods condition. Open cut repair may not be economically feasible given cover depth and vicinity proximity to Metro Transit Authority ventilation shaft

The existing drainage facilities exhibit contained in Appendix 3 indicates how new development may be served by existing facilities as follows:

- North Parcel (Farm) drains west to Martin Luther King Jr. Boulevard
- Proposed Federal Emergency Management Agency (FEMA) parcel has 54-inch usable separate outfall in ravine. Condition yet to be determined due to delay in field work at this location
- The other existing storm drain trunk outfall (48 inch) runs down the ravine and is available to serve all of Phase 1 development with no changes, subject to capacity limitations
- Portions of the 48-inch and 42-inch outfall will need to be relocated to accommodate Phase 2 development parcels as presently configured in the master plan for development

Use of the existing system is also predicated upon DC Water's acceptance of the existing system for operation & maintenance (O&M) as rehabilitated, and that adequate capacity currently exists for future development. All 12-inch and smaller storm pipe within the proposed roadways will have to be abandoned as they do not meet DDOT minimum pipe size requirements.

2.3 Sanitary Sewer System

All existing sanitary sewer lines, manholes, and services are private on the East Campus and not maintained by any public utility company. The system connects to the DC Water sanitary sewer system at manhole 54 near the north boundary of the East Campus adjacent to Suitland Parkway. Similar to the storm drain system, trunk line portions of the existing sewer system were inspected and assessed utilizing CCTV inspection methods and reporting which conforms to the NASSCO PACP. The videoing included portions of the existing sanitary sewer as shown on the CCTV map and structure index table contained in Appendix 4. This sanitary sewer system that was videoed is approximately 3,300 LF and varies in diameter from 12 to 18 inches. Sample pictures of the conditions are included in Appendix 4. All the media files and inspection reports data gathered shown in the index can be provided electronically upon request.

In general, the inspected trunk portions of the existing systems are all in repairable condition utilizing trenchless methods. Utilizing these portions of the existing infrastructure wherever possible will provide cost savings to the overall infrastructure development cost. This assumes that DC Water will accept the existing system after rehabilitation for O&M and that adequate capacity currently exists for future development. Other general observations include:

- The trunk system inspected was constructed in the early 1970's to replace an older system.
- Given the age of the vitrified clay pipe (VCP): the system is in acceptable operational condition.
- As anticipated, there are root issues, location specific structural deficiencies and varying degrees of joint infiltration.
- The access (manhole) structures observed to date are generally structurally sound; however will need rehabilitation if continued future use is desired.

The existing facilities map, Exhibit C of Appendix 4, indicates how new development may be served by existing trunk facilities as follows:

- Five existing 8 inch and 10 inch sanitary sewer services in Martin Luther King Jr. Boulevard, adjacent streets and Alabama Avenue SE are available to serve the south part of east campus, subject to capacity analysis.
- 18-inch VCP trunk line running down the ravine to Suitland Parkway is in good condition, needs slip lining and agreement that DC Water will operate and maintain if slip lined. Subject to capacity of the DC Water sanitary sewer line downstream under Suitland Parkway, this line could handle some or all of East Campus sanitary sewer flows.
- An existing 8 inch sanitary sewer line flowing to southeast to a 15 inch outfall line in the ravine could serve the north parcel (farm parcel), subject to capacity analysis.
- Remainder of site sanitary sewer mains are in poor locations relative to future roadways and buildings and will need to be removed or abandoned in place in accordance with DC Water regulations.

2.4 Dry Utilities

Dry utilities are typically electrical, natural gas, and data/communications. All these systems were field reviewed on the East Campus.

2.4.1 Electric—PEPCO

A meeting with PEPCO regarding service to the East Campus was held on December 12, 2011. The following items are noted concerning existing service and future electrical service:

- The existing electrical system on the East Campus, including old cables and transformers was installed privately, not by PEPCO, and thus is not considered reusable by PEPCO; nor will PEPCO remove it. Old cables and transformers must be removed. Old cables and transformers can be valued as salvage for scrap.

- Existing manholes are known to contain hazardous materials and will require abatement if retained
- PEPCO has a substation on Alabama Avenue SE about a mile east of the East Campus. This substation has 140 mega volt amps (MVA) capacity. Several 13 kilo volt (KV) feeders go by the campus on Alabama, but have very limited capacity available to tap into for the future and present needs of the East Campus.
- A new 12 duct underground duct bank was constructed with 4 feeders (8 available for future needs of others) and going along Alabama Avenue SE and up Martin Luther King Jr. Boulevard via 8th Street and Malcolm X Boulevard to the main gate (tunnel) at the West Campus.
- Exhibit A of Appendix 5 shows the system and coordination with the new hospital power service. Relocating and retaining portions of that system will be necessary to avoid service interruptions for construction of the ultimate system and the new roadway configuration. Switch gear may also need to be relocated in Phase 2 of the East Campus development.

The existing facilities exhibit contained in Appendix 5 indicates where the PEPCO owned facilities are located. The lines servicing the new hospital, Washington Metropolitan Area Transit Authority (WMATA), and other existing users on campus will need to remain in service and any abandonment of service for development coordinated with PEPCO.

2.4.2 Natural Gas—Washington Gas

Natural gas on the site is provided by Washington Gas. They provide natural gas directly to each building and meters/measures usage at each building. The infrastructure on site is owned and maintained by Washington Gas. Existing gas lines are of sufficient pressure and capacity to service all present loads on the East Campus. Existing structures including services, meters and regulators are anticipated to be adequate for future use. Washington Gas may elect to upgrade as development plans progress. Future capacity analysis will be made to insure capacity sufficient for the East Campus development program.

Existing Washington Gas supply piping within the East Campus should be replaced with any long term major infrastructure reconfiguration. Piping is old but in reasonably good condition. Should other infrastructure construction occur in proximity to existing Washington Gas lines, replacement is recommended. Current technologies relative to piping installation procedures will assure long term use.

The existing facilities exhibit contained in Appendix 6 indicates the locations of Washington Gas owned facilities.

2.4.3 Telecom Systems—Verizon

Nearly all telecomm wiring on the site is/was hospital owned (i.e., private). Verizon was the telecommunication infrastructure owner up to the main telecom building. All existing cables are deemed obsolete and unsuitable for future use and would need to be removed and or abandoned depending upon conflicts with planned development.

Verizon conduit records indicate existing ductbanks along the West side of Martin Luther King Jr. Ave SE and the North side of Alabama Ave. SE for the for the entire length of these roadways adjacent to the East Campus. A connection from the ductbank in Alabama Ave to the East Campus is indicated in the vicinity of the congressional Heights Metro Station. A much older 12 way duct bank is shown going into the East Campus from MLK south of Pomery Rd. Future conduit and cable connections will need to be obtained through Verizon and sized with sufficient capacity for the East Campus development program.

The existing facilities exhibit contained in Appendix 7 indicates existing locations of the Telecom Systems.

2.4.4 Entertainment TV and CCTV

Existing entertainment TV wiring (cable) infrastructure is out dated and technologically unsuitable for reuse.

The new hospital is currently being served entertainment TV by Verizon FIOS. Other commercial vendors are available for said services. Future infrastructure will be installed within the street will be by one vendor, while other vendors may offer services using such infrastructure consistent with regulation and local agreements.

Any existing security systems infrastructure on the East Campus are remnants of St. Elizabeth's and thus of little value to new development. All such security systems should be scheduled for removal

2.5 Steam Tunnels

A portion of the existing steam tunnel crossing the Metro Green Line tunnel was abated of hazardous materials and the roof of the tunnel replaced. A new 8-inch water main was installed within this section as well as some dry utilities. Based upon experiences with this construction and similar challenges encountered within the west Campus by General Services Administration (GSA) in development for DHS, existing tunnels should be abandoned and/or removed as determined by a site evaluation. All existing steam piping is deemed unsuitable for reuse and any remediation is ill advised.

The existing facilities exhibit contained in Appendix 8 indicates existing steam system facilities. Approximately 20 percent of the total system will be directly impacted by roadway and utility construction in the development of the East Campus and this portion of the system will be require removal, abatement of debris and sealing of the tunnels at eh edge of the ROW. Other sections of the tunnels may be abandoned in place and filled to decrease chances of collapse, but some tunnels may be in conflict with site or building development and may need to be removed or abated during development.

SECTION 3

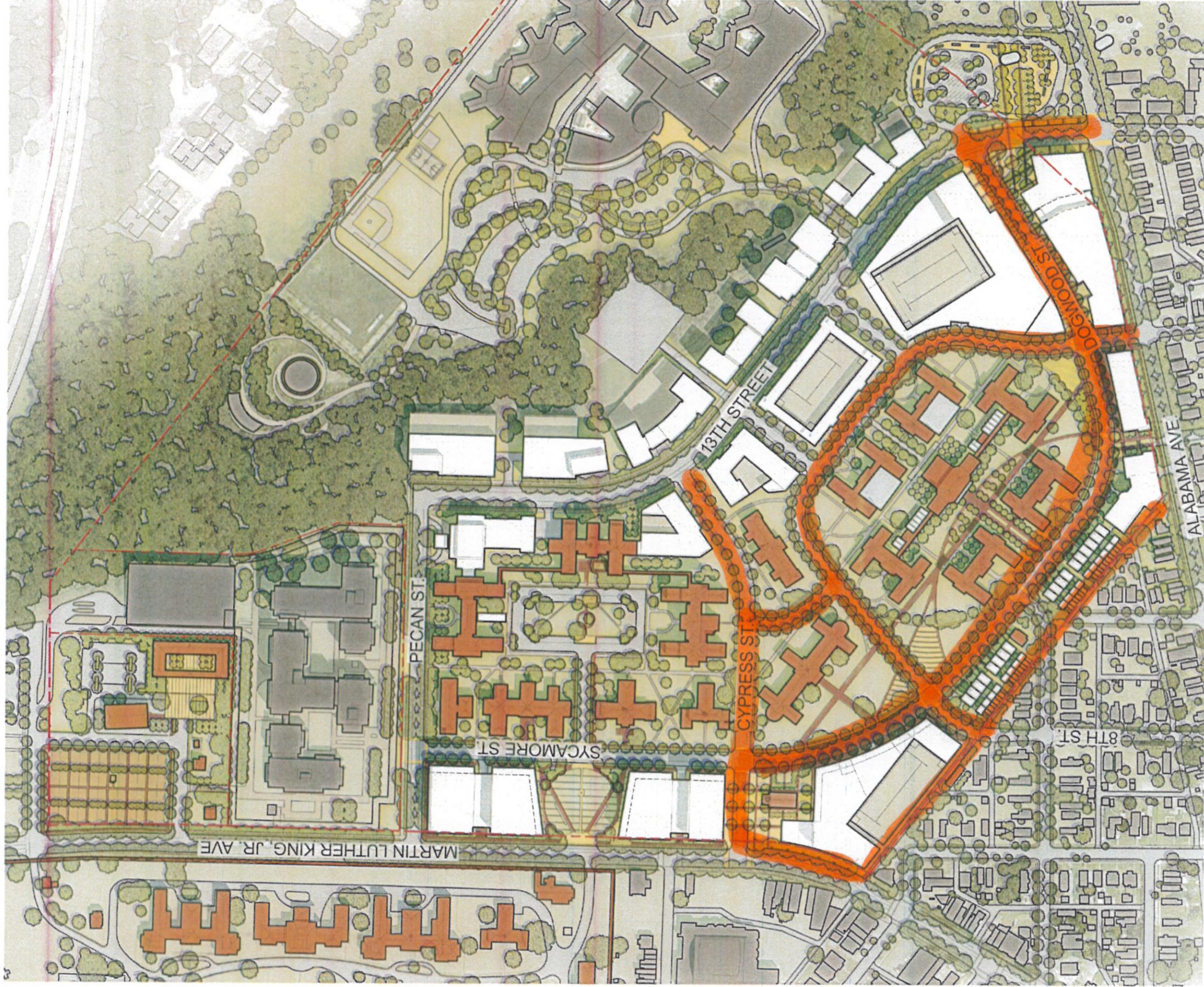
Recommendations for Next Steps in Process

It is recommended to move forward with the following tasks:

- Interface with utility companies on design standards and acceptance procedures for any rehabilitated private utility systems slated for public O&M.
- Prepare the conceptual infrastructure concept plan once information is available regarding central plant configurations (or lack of them) from ARUP
- Get typical sections for all roadways from DDOT to help align conceptual utility plan for those items within the ROW
- Prepare a detailed phasing plan for existing and concept systems after the concept plan is completed and detailed development phasing plan is prepared as a future task order or modification to the existing task order for the East Campus infrastructure planning.

Appendix 1
Phased Development Plan for East Campus

ALTERNATIVE 2



Appendix 2
Water System

2A

Typical Tuberculation Pictures



Ex. Pipe at Tie-In Near FH #65



Ex. Branch Line (North) Near FH #71

Figure 1 of 2
Typical Tuberculation Pictures



Ex. Branch Line (South) Near FH #76

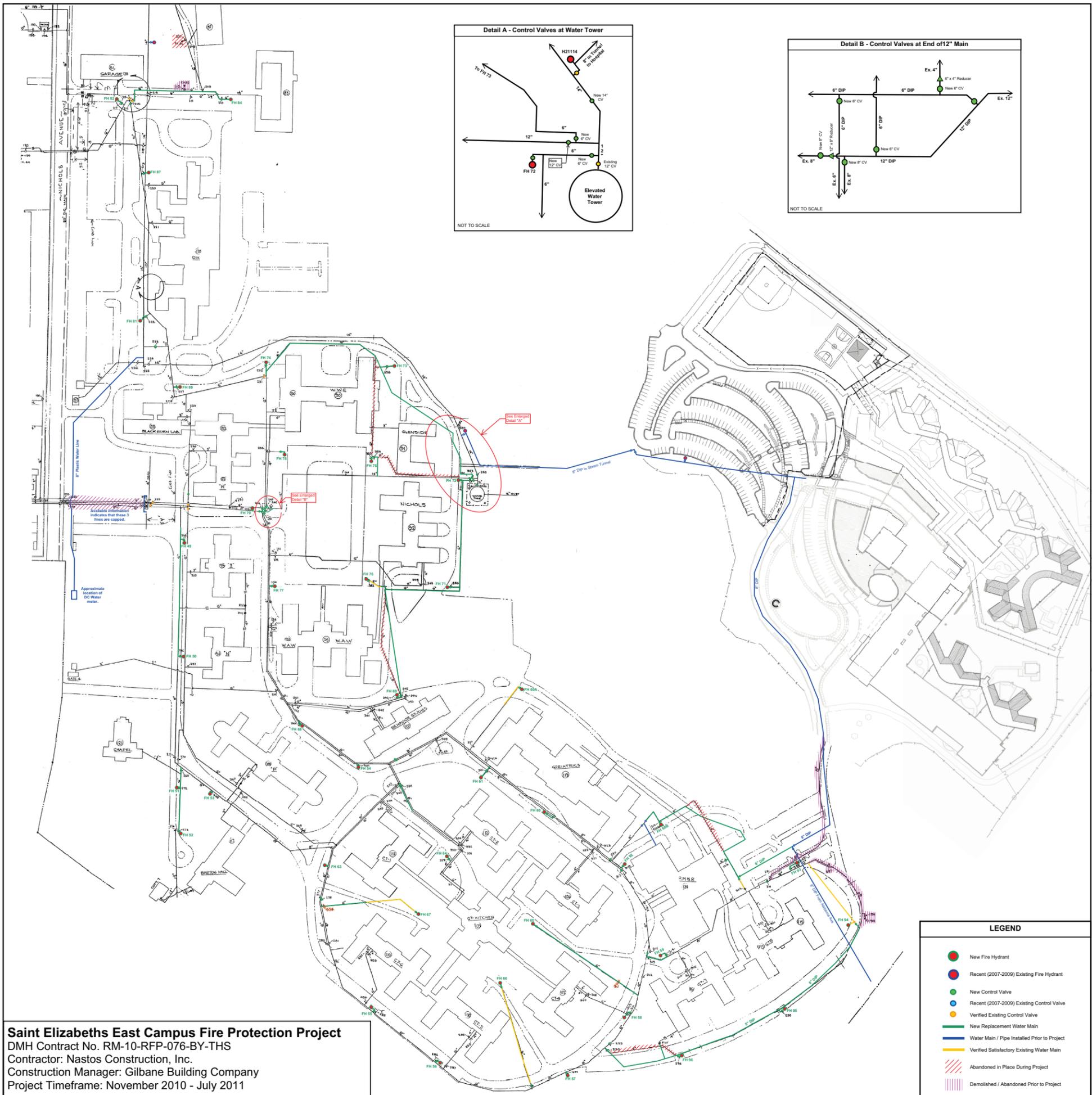


Ex. Feeder Line Near FH #96

Figure 2 of 2
Typical Tuberculation Pictures

2B

Fire Protection Project Map and Test Results



Saint Elizabeths East Campus Fire Protection Project
 DMH Contract No. RM-10-RFP-076-BY-THS
 Contractor: Nastos Construction, Inc.
 Construction Manager: Gilbane Building Company
 Project Timeframe: November 2010 - July 2011

LEGEND	
●	New Fire Hydrant
●	Recent (2007-2009) Existing Fire Hydrant
●	New Control Valve
●	Recent (2007-2009) Existing Control Valve
●	Verified Existing Control Valve
—	New Replacement Water Main
—	Water Main / Pipe Installed Prior to Project
—	Verified Satisfactory Existing Water Main
/ / /	Abandoned in Place During Project
/ / /	Demolished / Abandoned Prior to Project

SAINT ELIZABETH'S CAMPUS FIRE HYDRANT FLOW TEST LIST

OLD CAMPUS FACTS: (43 FH)

- 1- 100 % Compliance (Above 750 GPM)**
- 2- From 41 FH, 22 FH Above Orange**
- 3- 20 FH Orange (500 TO 999 GPM)**
- 4- 13 FH Yellow (1000 TO 1499 GPM)**
- 5- 10 FH Blue (Above 1500 GPM)**

Note: OLD FH #86 Was abandoned on 6/3/11

NEW HOSPITAL FACTS: (11 FH)

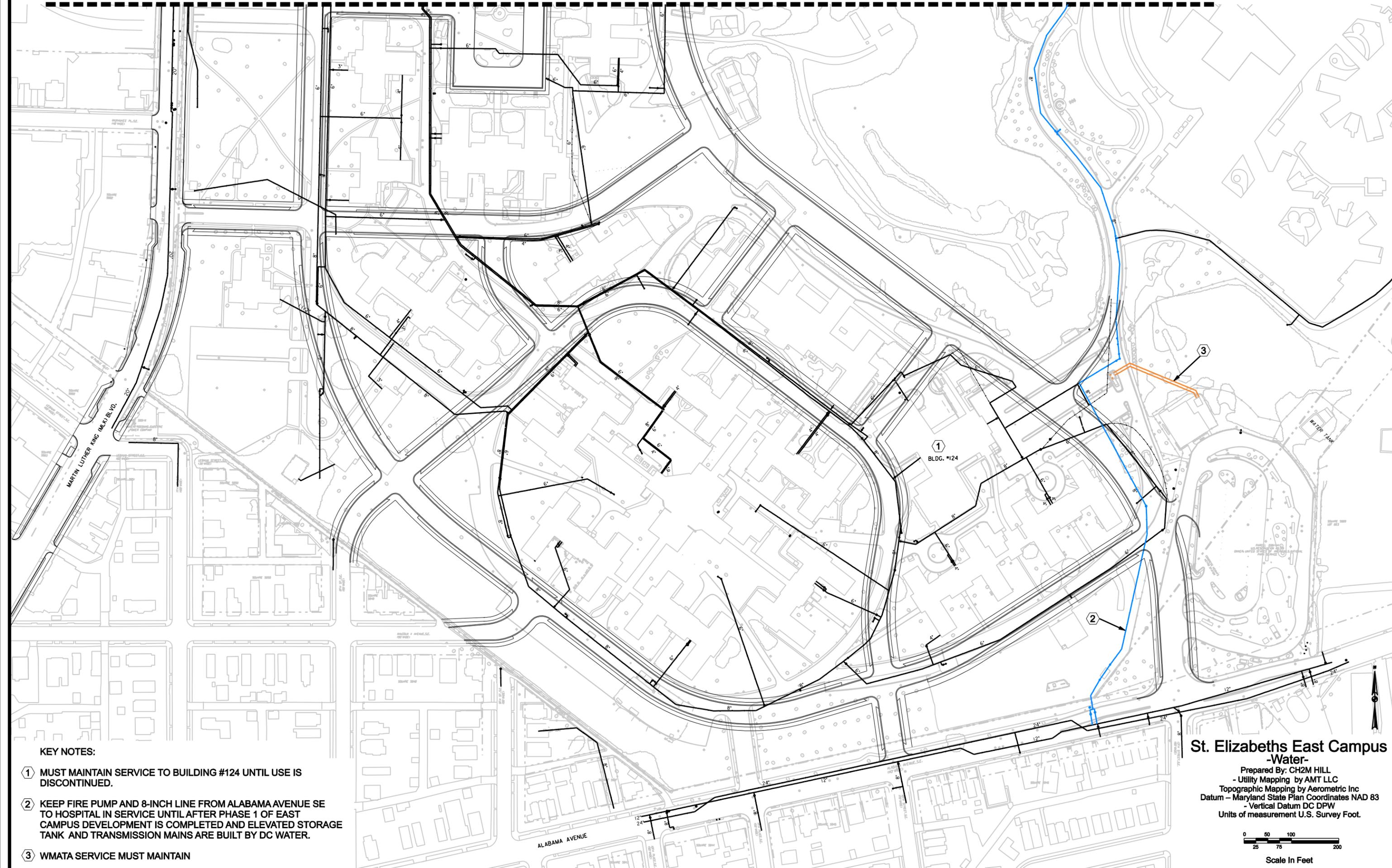
- 1- 100 % Compliance (Above 750 GPM)**
- 2- From 11 FH, 11 FH Above Orange**
- 3- 4 FH Yellow (1000 TO 1499 GPM)**
- 4- 7 FH Blue (Above 1500 GPM)**

TOTAL FH: 54

LIST#	ST. E. FH#	DC WASA F.H.#	DATE INSTALED	DATE FLOW TESTED	STATIC PRESSURE	GALLONS PER MINUTE	COLOR BAND
1	49	H20021	4/20/2011	5/31/2011	40 PSI	1592 GPM	Blue
2	50	H20020	4/22/2011	8/4/2011	55 PSI	819 GPM	Orange
3	51	H20023	1/25/2011	8/4/2011	54 PSI	789 GPM	Orange
4	52	H20022	1/25/2011	8/4/2011	54 PSI	777 GPM	Orange
5	53	H20024	3/29/2011	8/4/2011	54 PSI	789 GPM	Orange
6	54	H20052	4/20/2011	6/1/2011	39 PSI	853 GPM	Orange
7	55	H20027	1/28/2011	6/23/2011	40 PSI	877 GPM	Orange
8	56	H20028	6/13/2011	6/23/2011	40 PSI	920 GPM	Orange
9	57	H20030	6/6/2011	6/23/2011	41 PSI	922 GPM	Orange
10	58	H20033	1/11/2011	6/3/2011	40 PSI	987 GPM	Orange
11	59	H20034	5/25/2011	6/3/2011	41 PSI	1020 GPM	Yellow
12	60	H20048	4/26/2011	6/3/2011	41 PSI	1036 GPM	Yellow
13	60 A	H20050	1/31/2011	6/23/2011	44 PSI	1038 GPM	Yellow
14	60 B	H20036	4/15/2001	6/2/2011	46 PSI	2028 GPM	Blue
15	61	H20049	4/27/2011	6/1/2011	42 PSI	819 GPM	Orange
16	63	H20025	4/18/2011	6/1/2011	40 PSI	920 GPM	Orange
17	64	H20051	4/25/2011	6/3/2011	40 PSI	1104 GPM	Yellow
18	65	H20037	1/18/2011	6/3/2011	40 PSI	899 GPM	Orange
19	66	H20029	1/24/2011	6/23/2011	42 PSI	851 GPM	Orange
20	67	H20026	1/20/2011	6/3/2011	41 PSI	1090 GPM	Yellow
21	68	H01007	4/18/2011	5/26/2011	34 PSI	774 GPM	Orange
22	69	H20053	3/15/2011	8/4/2011	54 PSI	1225 GPM	Yellow
23	71	H20054	2/1/2011	5/25/2011	44 PSI	1913 GPM	Blue
24	72	H20055	2/8/2011	5/25/2011	48 PSI	2131 GPM	Blue
25	73	H20057	1/31/2011	5/25/2011	46 PSI	1673 GPM	Blue
26	74	H20056	2/8/2011	5/25/2011	43 PSI	1633 GPM	Blue
27	75	H20061	3/24/2011	5/26/2011	38 PSI	1454 GPM	Yellow
28	76	H20060	2/1/2011	5/26/2011	34 PSI	894 GPM	Orange
29	77	H20058	4/15/2011	5/26/2011	34 PSI	1146 GPM	Yellow
30	78	H20062	2/4/2011	5/26/2011	36 PSI	1357 GPM	Yellow
31	79	H20059	4/15/2011	5/31/2011	40 PSI	1464 GPM	Yellow
32	80	H20064	3/23/2011	5/31/2011	46 PSI	2839 GPM	Blue
33	81	H20065	3/16/2011	5/31/2011	42 PSI	1971 GPM	Blue
34	82	H20076	3/23/2011	5/31/2011	43 PSI	864 GPM	Orange
35	84	H20068	4/11/2011	7/27/2011	48 PSI	878 GPM	Orange
36	87	H20066	3/16/2011	5/31/2011	42 PSI	1303 GPM	Yellow
37	92	H20035	4/29/2011	6/3/2011	42 PSI	1203 GPM	Yellow
38	93	H20039	4/20/2011	6/2/2011	43 PSI	1066 GPM	Yellow
39	94	H20038	5/16/2011	6/3/2011	38 PSI	815 GPM	Orange
40	95	H20032	5/7/2011	6/2/2011	40 PSI	920 GPM	Orange
41	96	H20031	1/14/2011	6/3/2011	38 PSI	782 GPM	Orange
42	14" Main	H21113	2009	8/4/2011	65 PSI	1752 GPM	Blue
43	W. Tank	H21114	2009	6/23/2011	53 PSI	1633 GPM	Blue
44	New H.	H20041	2007	6/24/2011	46 PSI	1951 GPM	Blue
45	New H.	H20042	2007	6/24/2011	46 PSI	2123 GPM	Blue
46	New H.	H20043	2007	6/24/2011	46 PSI	2193 GPM	Blue
47	New H.	H20044	2007	6/24/2011	47 PSI	2214 GPM	Blue
48	New H.	H20045	2007	6/24/2011	47 PSI	2623 GPM	Blue
49	New H.	H20072	2007	6/24/2011	40 PSI	1276 GPM	Yellow
50	New H.	H20073	2007	6/24/2011	40 PSI	1094 GPM	Yellow
51	New H.	H20074	2007	6/24/2011	44 PSI	1104 GPM	Yellow
52	New H.	H20075	2007	6/24/2011	44 PSI	1104 GPM	Yellow
53	New H.	H20076	2007	6/24/2011	45 PSI	1638 GPM	Blue
54	New H.	H21167	2007	6/24/2011	47 PSI	2216 GPM	Blue

2C
Existing Facilities Exhibits

MATCH LINE

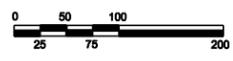


KEY NOTES:

- ① MUST MAINTAIN SERVICE TO BUILDING #124 UNTIL USE IS DISCONTINUED.
- ② KEEP FIRE PUMP AND 8-INCH LINE FROM ALABAMA AVENUE SE TO HOSPITAL IN SERVICE UNTIL AFTER PHASE 1 OF EAST CAMPUS DEVELOPMENT IS COMPLETED AND ELEVATED STORAGE TANK AND TRANSMISSION MAINS ARE BUILT BY DC WATER.
- ③ WMATA SERVICE MUST MAINTAIN

St. Elizabeths East Campus
-Water-

Prepared By: CH2M HILL
 - Utility Mapping by AMT LLC
 Topographic Mapping by Aerometric Inc
 Datum - Maryland State Plan Coordinates NAD 83
 - Vertical Datum DC DPW
 Units of measurement U.S. Survey Foot.

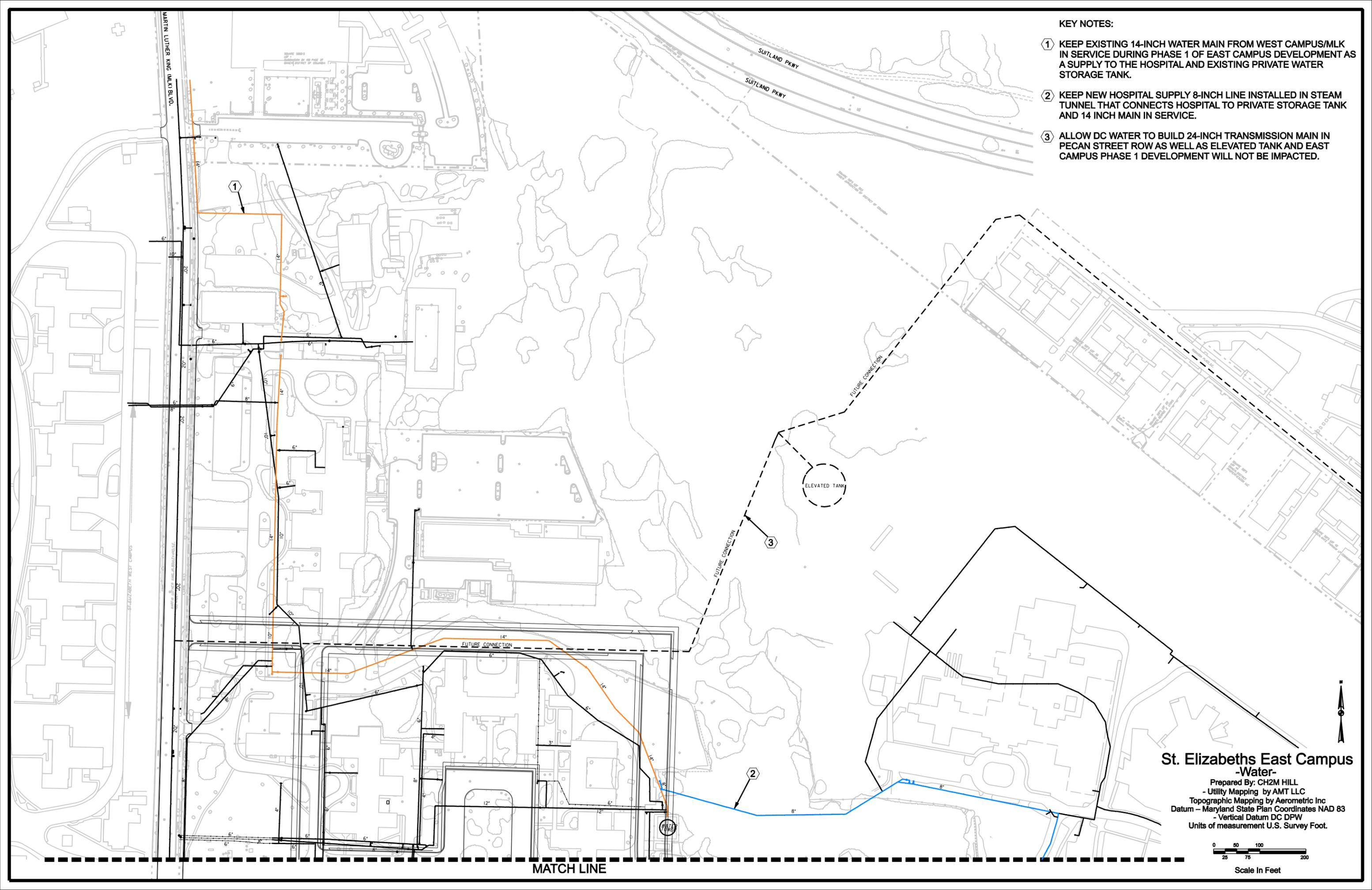


Scale In Feet



KEY NOTES:

- ① KEEP EXISTING 14-INCH WATER MAIN FROM WEST CAMPUS/MLK IN SERVICE DURING PHASE 1 OF EAST CAMPUS DEVELOPMENT AS A SUPPLY TO THE HOSPITAL AND EXISTING PRIVATE WATER STORAGE TANK.
- ② KEEP NEW HOSPITAL SUPPLY 8-INCH LINE INSTALLED IN STEAM TUNNEL THAT CONNECTS HOSPITAL TO PRIVATE STORAGE TANK AND 14 INCH MAIN IN SERVICE.
- ③ ALLOW DC WATER TO BUILD 24-INCH TRANSMISSION MAIN IN PECAN STREET ROW AS WELL AS ELEVATED TANK AND EAST CAMPUS PHASE 1 DEVELOPMENT WILL NOT BE IMPACTED.



**St. Elizabeths East Campus
-Water-**

Prepared By: CH2M HILL
- Utility Mapping by AMT LLC
Topographic Mapping by Aerometric Inc
Datum - Maryland State Plan Coordinates NAD 83
- Vertical Datum DC DPW
Units of measurement U.S. Survey Foot.



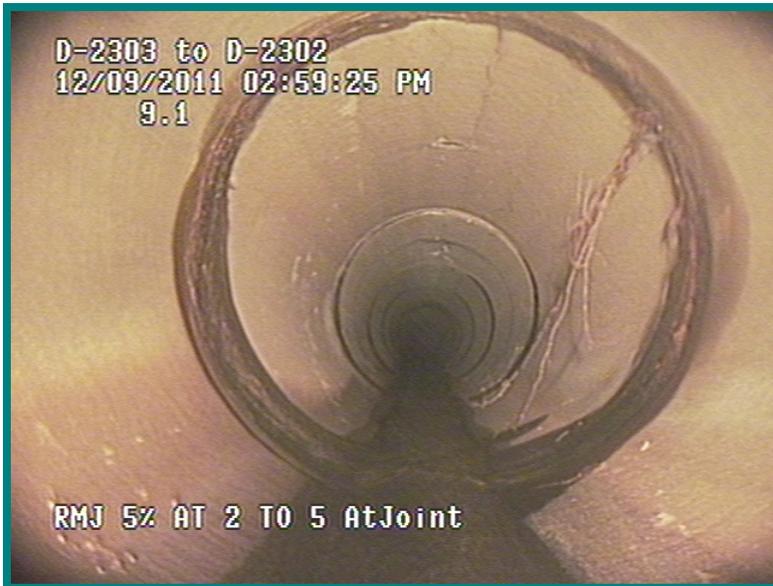
Scale In Feet

Appendix 3
Storm Drain System

3A
Typical Condition Pictures

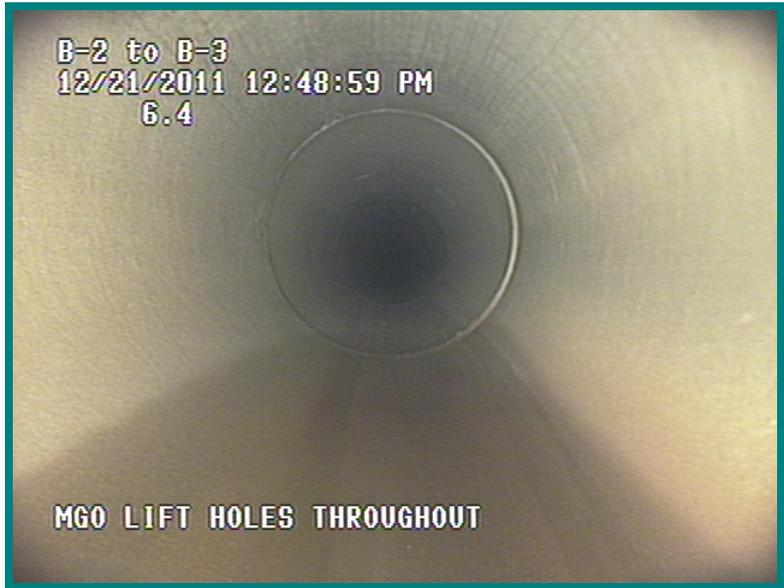


Pipe Segment Between D-2307 & D-2402 – CIPP Lined

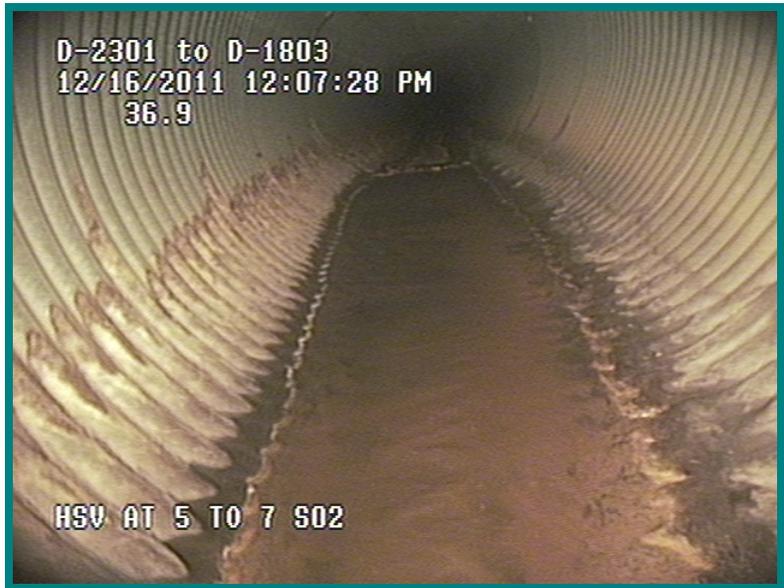


Pipe Segment Between D-2303 & D-2302

Figure 1 of 2
Typical Condition Pictures
Storm Drain



Pipe Segment Between B-2 & B-3

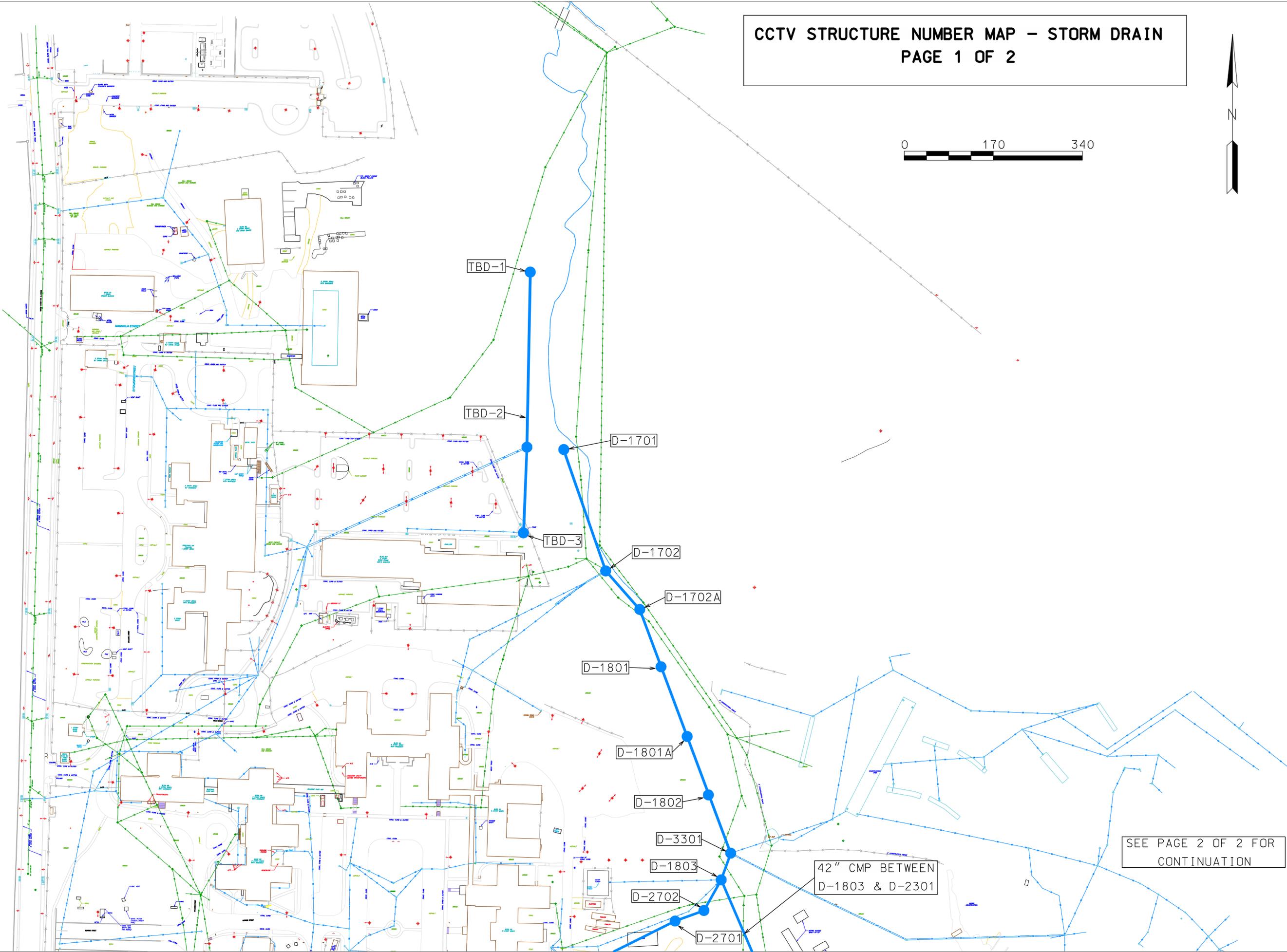
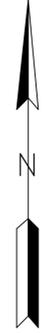


Pipe Segment Between D-2301 & D-1803 - CMP

Figure 2 of 2
Typical Condition Pictures
Storm Drain

3B
CCTV Structure Map and Index

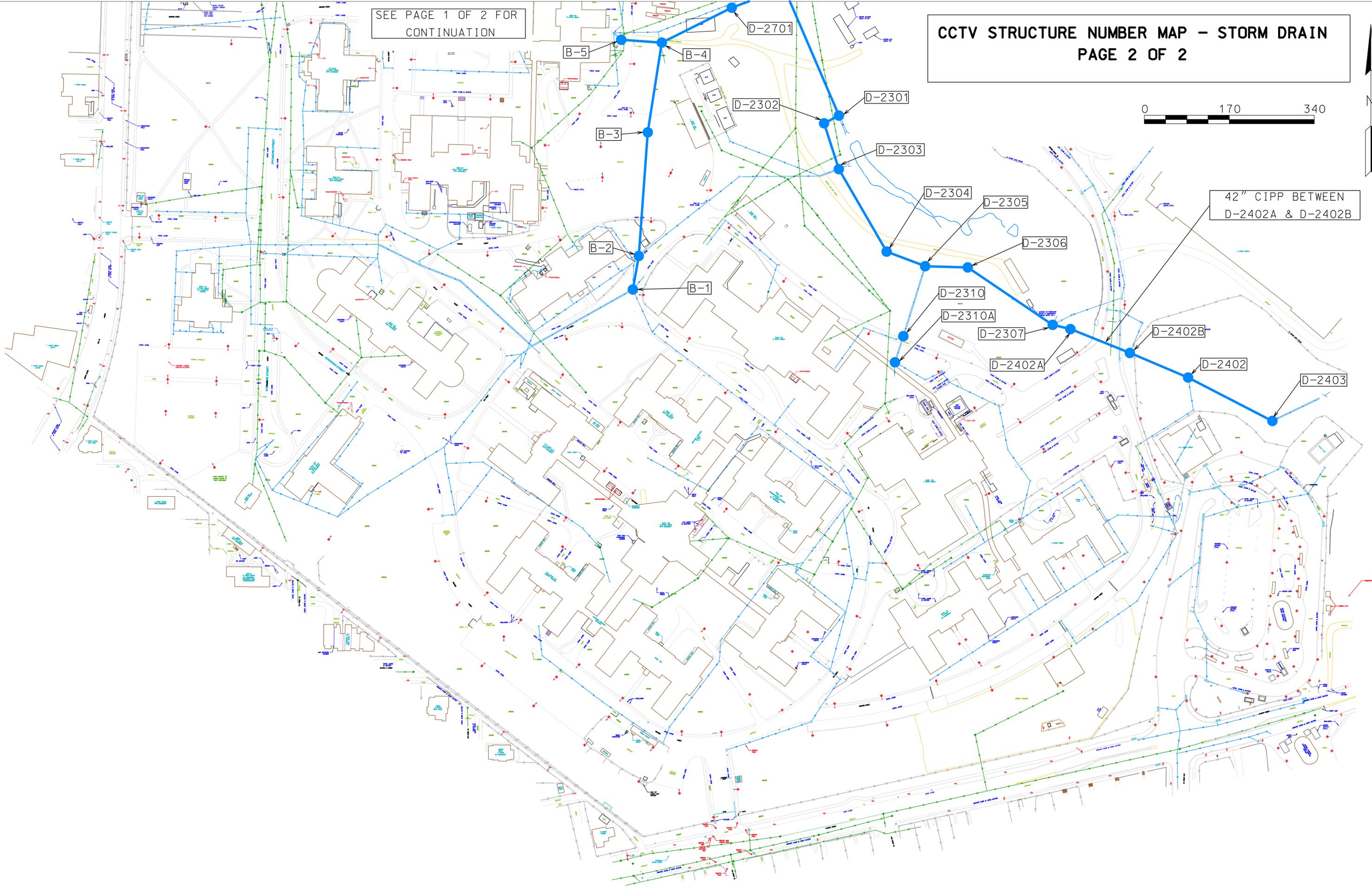
CCTV STRUCTURE NUMBER MAP – STORM DRAIN
PAGE 1 OF 2



SEE PAGE 2 OF 2 FOR CONTINUATION

SEE PAGE 1 OF 2 FOR
CONTINUATION

CCTV STRUCTURE NUMBER MAP – STORM DRAIN
PAGE 2 OF 2



CCTV Structure Number Report Index - Storm Drain

From	Depth	To	Pipe Size	Length (ft)	Folder Name	Picture Index (Link)	Movie Index (Link)
D-2307	15.1	D-2306	42	207.6	Inspection Date - 12-9-2011	Inspection Date - 12-9-2011\D-2306 TO D-2307.ppt	Inspection Date - 12-9-2011\MH D-2307 TO MH D-2306_2_1292011.mpg
D-2402	7.1	D-2307	48	293	Inspection Date - 12-9-2011	Inspection Date - 12-9-2011\D-2307 TO D-2402.ppt	Inspection Date - 12-9-2011\MH D-2402 TO MH D-2307_3_1292011.mpg
D-2306	9.4	D-2305	42	84.3	Inspection Date - 12-9-2011	Inspection Date - 12-9-2011\D-2306 TO D-2305.ppt	Inspection Date - 12-9-2011\MH D-2306 TO MH D-2305_6_1292011.mpg
D-2305	13.5	D-2304	42	84.6	Inspection Date - 12-9-2011	Inspection Date - 12-9-2011\D-2305 TO D-2304.ppt	Inspection Date - 12-9-2011\MH D-2305 TO MH D-2304_7_1292011.mpg
D-2304	13.8	D-2303	42	192	Inspection Date - 12-9-2011	Inspection Date - 12-9-2011\D-2304 TO D-2303.ppt	Inspection Date - 12-9-2011\MH D-2304 TO MH D-2303_8_1292011.mpg
D-2303	14.1	D-2302	42	97.5	Inspection Date - 12-9-2011	Inspection Date - 12-9-2011\D-2303 TO D-2302.ppt	Inspection Date - 12-9-2011\MH D-2303 TO MH D-2302_9_1292011.mpg
D-2302	21.3	D-2301	42	27.2	Inspection Date - 12-9-2011	Inspection Date - 12-9-2011\D-2302 to D-2301.ppt	Inspection Date - 12-9-2011\MH D-2302 TO MH D-2301_10_1292011.mpg

Total Lenth 986.2

From	Depth	To	Pipe Size	Length (ft)	Folder Name	Picture Index (Link)	Movie Index (Link)
D1702A	-	D-1702	42	102.9	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\D-1702A TO D-1702.ppt	Inspection Date - 12-16&19-2011\MH D-1702A TO MH D-1702_20_12162011.mpg
D-1801	20	D-1702	42	129.6	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\D-1801 TO D-1702.ppt	Inspection Date - 12-16&19-2011\MH D-1801 TO MH D-1702A_19_12162011.mpg
D-1801A	-	D-1801	42	172.1	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\D-1801A TO D-1801.ppt	Inspection Date - 12-16&19-2011\MH D-1801A TO MH D-1801_18_12162011.mpg
D-1802	16.1	D-1801	48	121	Inspection Date - 12-16&19-2011	Currently Unavailable	Inspection Date - 12-16&19-2011\MH D-1802 TO MH D-1801A_14_12162011.mpg
D-1803	-	D-3301	42	54.1	Inspection Date - 12-16&19-2011	Currently Unavailable	Inspection Date - 12-16&19-2011\MH D-1803 TO MH D-3301_12_12162011.mpg
D-2301	21.3	D-1803	42	330.9	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\D-2301 TO D-1803.ppt	Inspection Date - 12-16&19-2011\MH D-2301 TO MH D-1803_11_12162011.mpg
D-2403	5.7	D-2402	24	193.1	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\D-2402 TO D-2403.ppt	Inspection Date - 12-16&19-2011\MH D-2301 TO MH D-1803_17_12162011.mpg
D-3301	-	D-1802	48	121.6	Inspection Date - 12-16&19-2011	Currently Unavailable	Inspection Date - 12-16&19-2011\MH D-3301 TO MH D-1802_13_12162011.mpg

Total Lenth 1225.3

From	Depth	To	Pipe Size	Length (ft)	Folder Name	Picture Index (Link)	Movie Index (Link)
B-1	-	B-2	24	69.2	Inspection Date - 12-20&21-2011	Currently Unavailable	Inspection Date - 12-20&21-2011\MH B-1 TO MH B-2_55_12212011.mpg
B-2	-	B-3	24	250.5	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\B-2 TO B-3.ppt	Inspection Date - 12-20&21-2011\MH B-2 TO MH B-3_56_12212011.mpg
B-3	-	B-4	24	182.5	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\B-4 TO B-3.ppt	Inspection Date - 12-20&21-2011\MH B-3 TO MH B-4_57_12212011.mpg
B-4	19.8	D-2701	36	159.6	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\B-4 TO 2701.ppt	Inspection Date - 12-20&21-2011\MH B-4 TO MH 2701_62_12212011.mpg
B-5	-	B-4	24	79	Inspection Date - 12-20&21-2011	Currently Unavailable	Inspection Date - 12-20&21-2011\MH B-5 TO MH B-4_66_12212011.mpg
D-2305A		D-2305	36	59	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\D-2305A TO D-2305.ppt	Inspection Date - 12-20&21-2011\MH D-2305A TO MH D-2305_52_12202011.mpg
D-2310	23	D-2305	24	147	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\D-2310 TO D-2305.ppt	Inspection Date - 12-20&21-2011\MH D-2310 TO MH D-2305_68_12212011.mpg
D-2310	23	D-2305	36	158	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\D-2310 TO D2305A.ppt	Inspection Date - 12-20&21-2011\MH D-2310 TO MH D-2305A_43_12202011.mpg
D-2310A	-	D-2310	24	55.1	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\D-2310A TO D-2310.ppt	Inspection Date - 12-20&21-2011\MH D-2310A TO MH D-2310_70_12212011.mpg
D-2310A	-	D-2310	24	81.2	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\D-2310A TO D-2310_1.ppt	Inspection Date - 12-20&21-2011\MH D-2310A TO MH D-2310_51_12202011.mpg
D-2701	19.3	D-2702	36	58.9	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\D-2701 TO D-2702.ppt	Inspection Date - 12-20&21-2011\MH D-2701 TO MH D-2702_63_12212011.mpg
D-2702	13.8	D-3301	36	70	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\D-2702 TO D-3301.ppt	Inspection Date - 12-20&21-2011\MH D-2702 TO MH D-3301_67_12212011.mpg

Total Lenth 1370

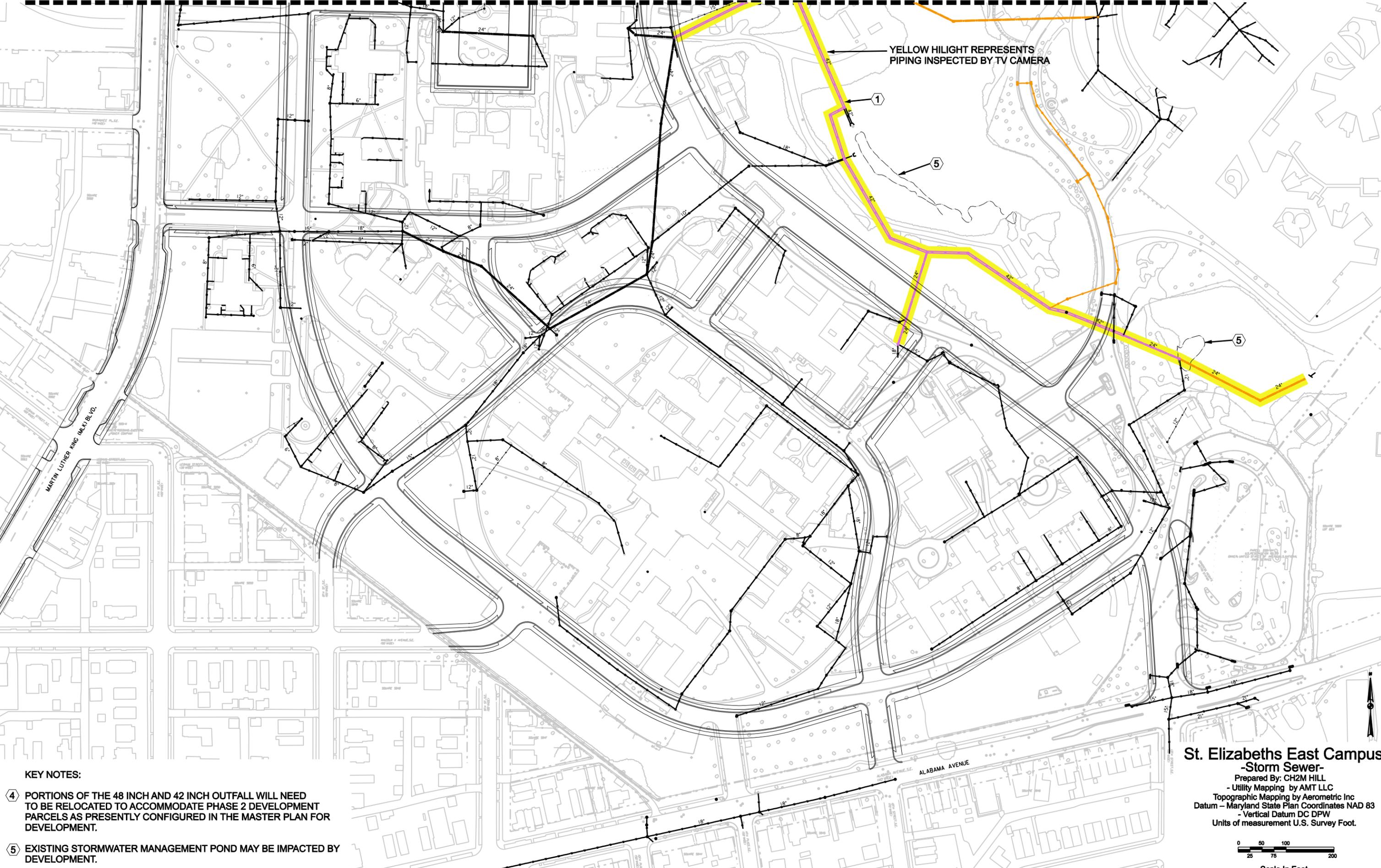
From	Depth	To	Pipe Size	Length (ft)	Folder Name	Picture Index (Link)	Movie Index (Link)
TBD-1	-	TBD-2	54			Currently Unavailable	Currently Unavailable
TBD-2	23.5	TBD-3	48			Currently Unavailable	Currently Unavailable

OVERALL TOTAL LENGTH 3581.5

3C
Existing Facilities Exhibits

MATCH LINE

YELLOW HIGHLIGHT REPRESENTS PIPING INSPECTED BY TV CAMERA



KEY NOTES:

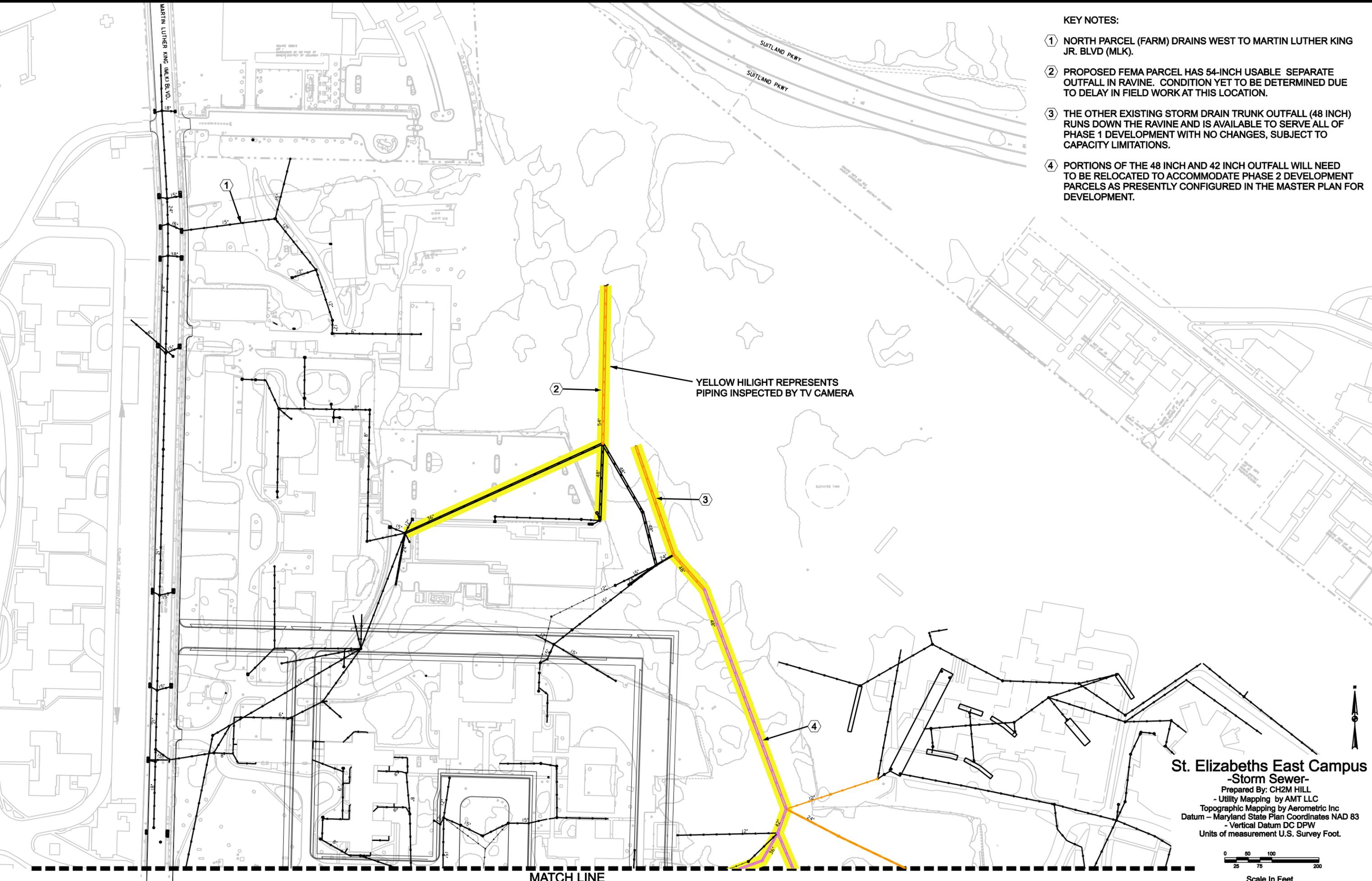
- ④ PORTIONS OF THE 48 INCH AND 42 INCH OUTFALL WILL NEED TO BE RELOCATED TO ACCOMMODATE PHASE 2 DEVELOPMENT PARCELS AS PRESENTLY CONFIGURED IN THE MASTER PLAN FOR DEVELOPMENT.
- ⑤ EXISTING STORMWATER MANAGEMENT POND MAY BE IMPACTED BY DEVELOPMENT.

St. Elizabeths East Campus
 -Storm Sewer-
 Prepared By: CH2M HILL
 - Utility Mapping by AMT LLC
 Topographic Mapping by Aerometric Inc
 Datum - Maryland State Plane Coordinates NAD 83
 - Vertical Datum DC DPW
 Units of measurement U.S. Survey Foot.



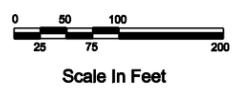
KEY NOTES:

- ① NORTH PARCEL (FARM) DRAINS WEST TO MARTIN LUTHER KING JR. BLVD (MLK).
- ② PROPOSED FEMA PARCEL HAS 54-INCH USABLE SEPARATE OUTFALL IN RAVINE. CONDITION YET TO BE DETERMINED DUE TO DELAY IN FIELD WORK AT THIS LOCATION.
- ③ THE OTHER EXISTING STORM DRAIN TRUNK OUTFALL (48 INCH) RUNS DOWN THE RAVINE AND IS AVAILABLE TO SERVE ALL OF PHASE 1 DEVELOPMENT WITH NO CHANGES, SUBJECT TO CAPACITY LIMITATIONS.
- ④ PORTIONS OF THE 48 INCH AND 42 INCH OUTFALL WILL NEED TO BE RELOCATED TO ACCOMMODATE PHASE 2 DEVELOPMENT PARCELS AS PRESENTLY CONFIGURED IN THE MASTER PLAN FOR DEVELOPMENT.



YELLOW HIGHLIGHT REPRESENTS PIPING INSPECTED BY TV CAMERA

St. Elizabeths East Campus
-Storm Sewer-
Prepared By: CH2M HILL
- Utility Mapping by AMT LLC
Topographic Mapping by Aerometric Inc
Datum - Maryland State Plan Coordinates NAD 83
- Vertical Datum DC DPW
Units of measurement U.S. Survey Foot.



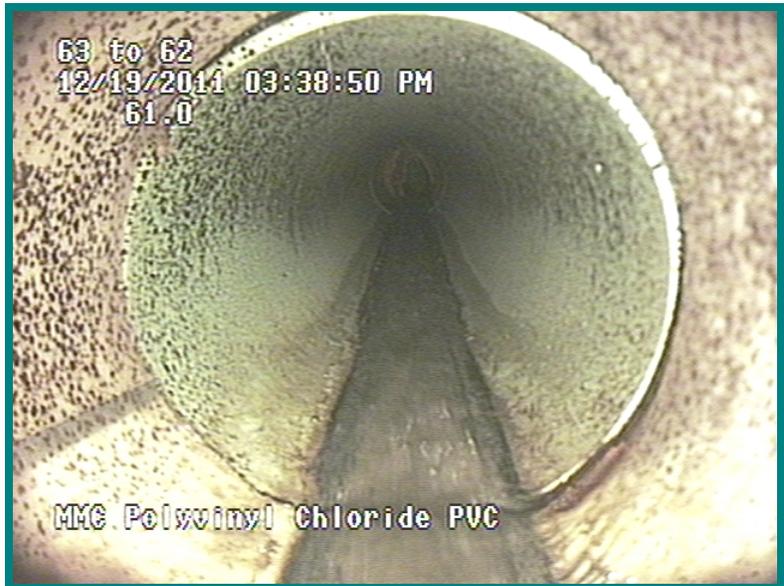
MATCH LINE

Appendix 4
Sanitary Sewer System

4A
Typical Condition Pictures

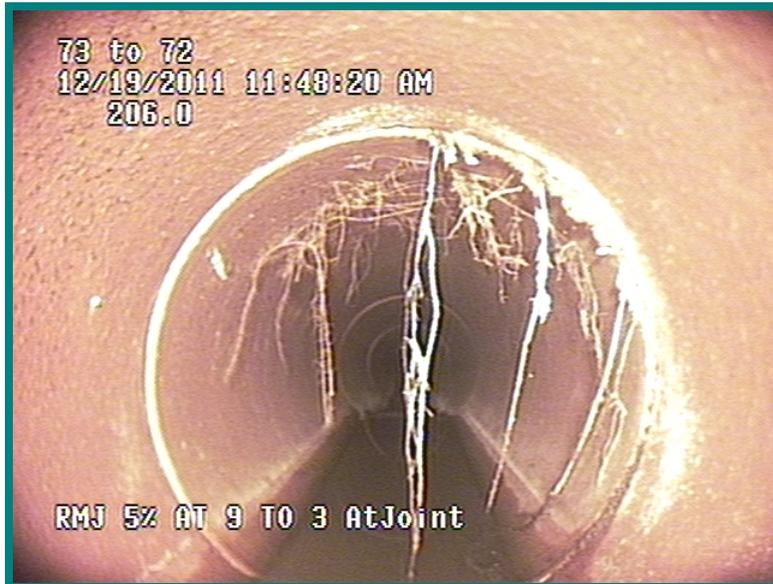


Pipe Segment Between 61 & 54

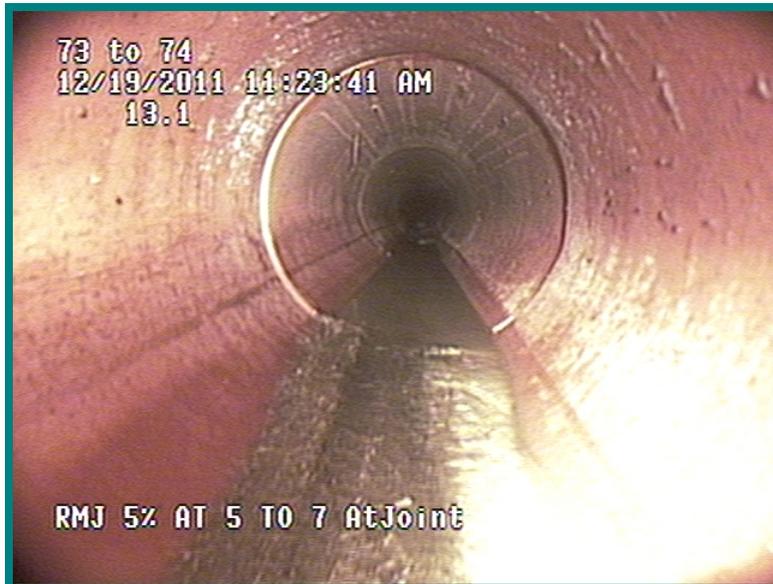


Pipe Segment Between 63 & 62 - PVC

Figure 1 of 2
Typical Condition Pictures
Sanitary



Pipe Segment Between 73 & 72 – Root Damage

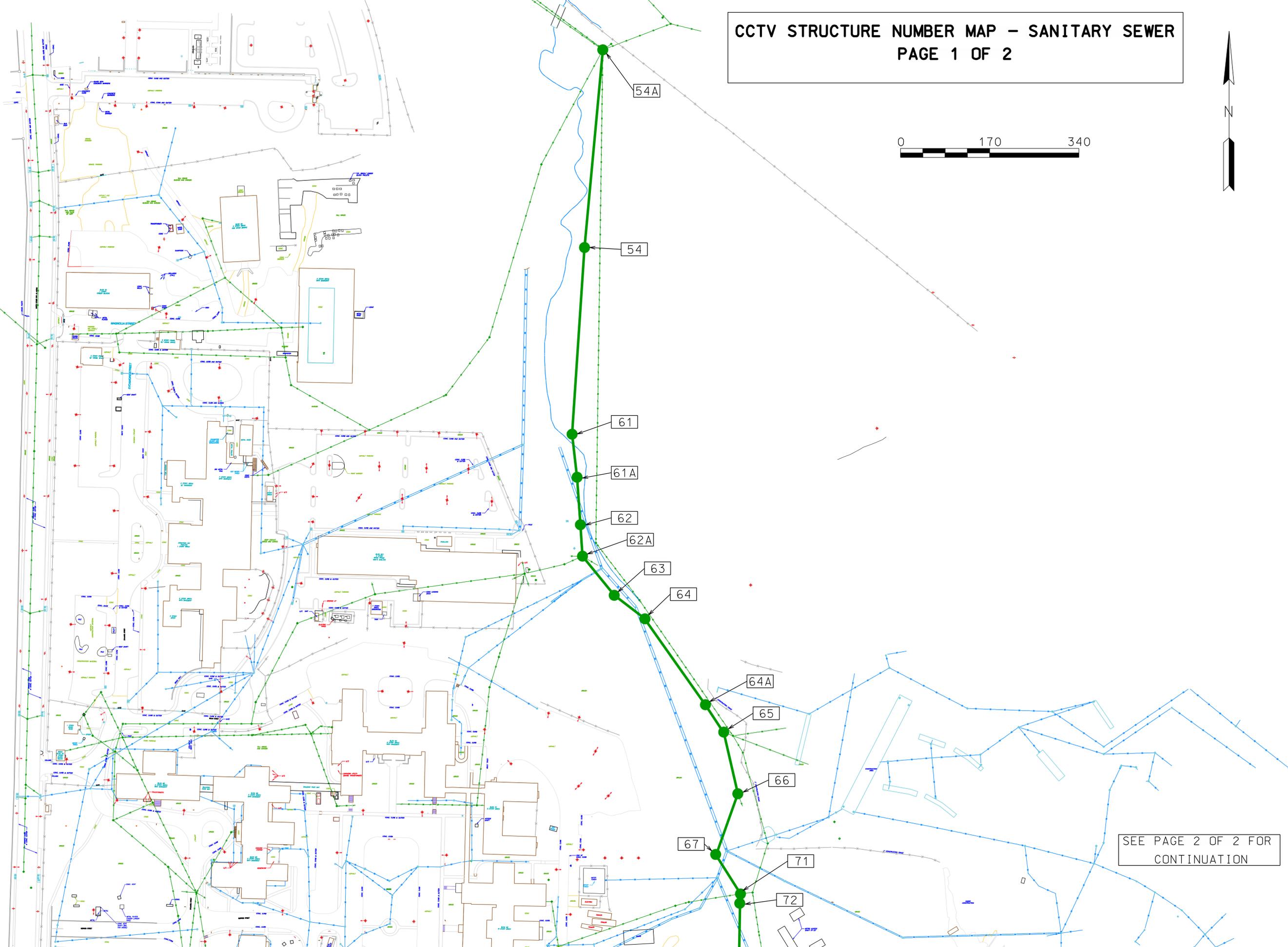
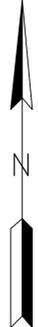


Pipe Segment Between 73 & 74

Figure 2 of 2
Typical Condition Pictures
Sanitary

4B
CCTV Structure Map and Index

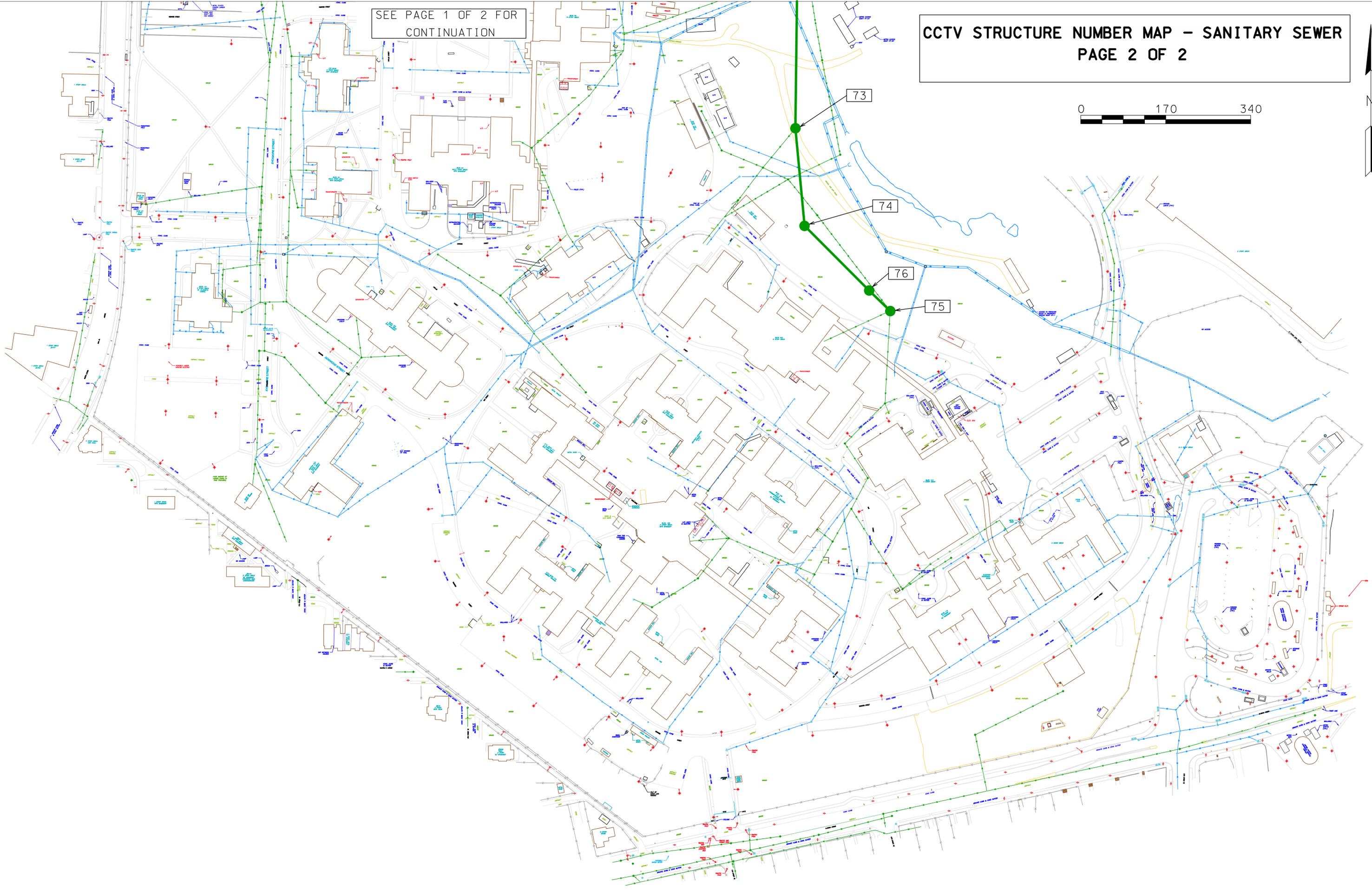
CCTV STRUCTURE NUMBER MAP – SANITARY SEWER
PAGE 1 OF 2



SEE PAGE 2 OF 2 FOR
CONTINUATION

SEE PAGE 1 OF 2 FOR
CONTINUATION

CCTV STRUCTURE NUMBER MAP – SANITARY SEWER
PAGE 2 OF 2



CCTV Structure Number Report Index - Sanitary Sewer

From	Depth	To	Pipe Size	Length (ft)	Folder Name	Picture Index (Link)	Movie Index (Link)
62A	-	62	18	106	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\62A TO 62.ppt	Inspection Date - 12-16&19-2011\MH 62A TO MH 62_40_12192011.mpg
63	15.1	62A	18	82.2	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\63 TO 62A.ppt	Inspection Date - 12-16&19-2011\MH 63 TO MH 62_35_12192011.mpg
64	21.8	63	18	104.6	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\64 TO 63.ppt	Inspection Date - 12-16&19-2011\MH 64 TO MH 63_34_12192011.mpg
64A	18.1	64	18	109.8	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\64A TO 64.ppt	Inspection Date - 12-16&19-2011\MH 64A TO MH 64_39_12192011.mpg
65	17.1	64A	18	76.5	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\64A TO 64.ppt	Inspection Date - 12-16&19-2011\MH 65 TO MH 64A_33_12192011.mpg
66	16.8	65	18	119.1	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\65 TO 66.ppt	Inspection Date - 12-16&19-2011\MH 66 TO MH 65_38_12192011.mpg
67	14.5	66	18	121.2	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\67 TO 66.ppt	Inspection Date - 12-16&19-2011\MH 67 TO MH 66_30_12192011.mpg
71	17.5	67	18	93.1	Inspection Date - 12-16&19-2011	Currently Unavailable	Inspection Date - 12-16&19-2011\MH 71 TO MH 67_31_12192011.mpg
72	15.4	71	18	21	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\72 TO 71.ppt	Inspection Date - 12-16&19-2011\MH 72 TO MH 71_29_12192011.mpg
73	10.3	72	18	274	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\73 TO 72.ppt	Inspection Date - 12-16&19-2011\MH 73 TO MH 72_27_12192011.mpg
74	10	73	18	199.8	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\73 TO 74.ppt	Currently Unavailable
76	14.3	74	18	153.8	Inspection Date - 12-16&19-2011	Inspection Date - 12-16&19-2011\74 TO 76.ppt	Inspection Date - 12-16&19-2011\MH 76 TO MH 74_28_12192011.mpg

Total Length **1461.1**

From	Depth	To	Pipe Size	Length (ft)	Folder Name	Picture Index (Link)	Movie Index (Link)
54A	9.9	54	18	353.3	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\54A TO 54.ppt	Inspection Date - 12-20&21-2011\MH 54A TO MH 54_54_12202011.mpg
61	-	54	18	365	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\61 TO 54.ppt	Inspection Date - 12-20&21-2011\MH 61 TO MH 54A_42_12202011.mpg
61A	19.3	61	18	86	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\61A TO 61.ppt	Inspection Date - 12-20&21-2011\MH 61A TO MH 61_53_12202011.mpg
62	15	61	18	97.7	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\61 TO 62.ppt	Inspection Date - 12-20&21-2011\MH 62 TO MH 61_41_12202011.mpg
75	12.2	76	18	62	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\76 TO 75.ppt	Inspection Date - 12-20&21-2011\MH 75 TO MH 76_49_12202011.mpg
76	14.3	74	18	188.1	Inspection Date - 12-20&21-2011	Inspection Date - 12-20&21-2011\76 TO 74.ppt	Inspection Date - 12-20&21-2011\MH 76 TO MH 74_50_12202011.mpg
76	14.3	74	18	166.4	Inspection Date - 12-20&21-2011	Currently Unavailable	Currently Unavailable

Total Length **1318.5**

From	Depth	To	Pipe Size	Length (ft)	Folder Name	Picture Index (Link)	Movie Index (Link)
C-1	-	C-2	-	222	Inspection Date - 12-23-2011	Inspection Date - 12-23-2011\C-1 TO C-2.ppt	Inspection Date - 12-23-2011\MH C-2 TO MH C-1_72_12232011.mpg
D-1	-	D-2402	12	144.9	Inspection Date - 12-23-2011	Inspection Date - 12-23-2011\D-1 TO D-2402.ppt	Inspection Date - 12-23-2011\MH D-1 TO MH D-2402_73_12232011.mpg
D-2	-	D-1	12	127.9	Inspection Date - 12-23-2011	Inspection Date - 12-23-2011\D-2 TO D-1.ppt	Inspection Date - 12-23-2011\MH D-2 TO MH D-1_75_12232011.mpg
D-2303	-	C-1	12	34.7	Inspection Date - 12-23-2011	Inspection Date - 12-23-2011\D-2303 TO C-1.ppt	Currently Unavailable

Total Length **529.5**

OVERALL TOTAL LENGTH **3309.1**

4C
Existing Facilities Exhibits

MATCH LINE

YELLOW HILIGHT REPRESENTS PIPING INSPECTED BY TV CAMERA

BLDG. #124

MARTIN LUTHER KING JR BLVD.

ALABAMA AVENUE

- KEY NOTES:**
- ① EXISTING 8 INCH AND 10 INCH SANITARY SEWER SERVICES IN MARTIN LUTHER KING JR BOULEVARD , ADJACENT STREETS AND ALABAMA AVENUE SE ARE AVAILABLE TO SERVE THE SOUTH PART OF EAST CAMPUS, SUBJECT TO CAPACITY ANALYSIS.
 - ② 18-INCH VCP TRUNK LINE RUNNING DOWN THE RAVINE TO SUITLAND PARKWAY IS IN GOOD CONDITION, NEEDS SLIP LINING AND AGREEMENT THAT DC WATER WILL OPERATE AND MAINTAIN IF SLIP LINED. SUBJECT TO CAPACITY OF THE DC WATER SANITARY SEWER LINE DOWNSTREAM UNDER SUITLAND PARKWAY, THIS LINE COULD HANDLE SOME OR ALL OF EAST CAMPUS SANITARY SEWER FLOWS.
 - ③ MUST MAINTAIN SERVICE TO BUILDING #124 UNTIL USE IS DISCONTINUED.

St. Elizabeths East Campus
 -Sanitary Sewer-
 Prepared By: CH2M HILL
 - Utility Mapping by AMT LLC
 Topographic Mapping by Aerometric Inc
 Datum - Maryland State Plan Coordinates NAD 83
 - Vertical Datum DC DPW
 Units of measurement U.S. Survey Foot.



KEY NOTES:

- ① AN EXISTING 8 INCH SANITARY SEWER LINE FLOWING TO SOUTHEAST TO A 15 INCH OUTFALL LINE IN THE RAVINE COULD SERVE THE NORTH PARCEL (FARM PARCEL), SUBJECT TO CAPACITY ANALYSIS.

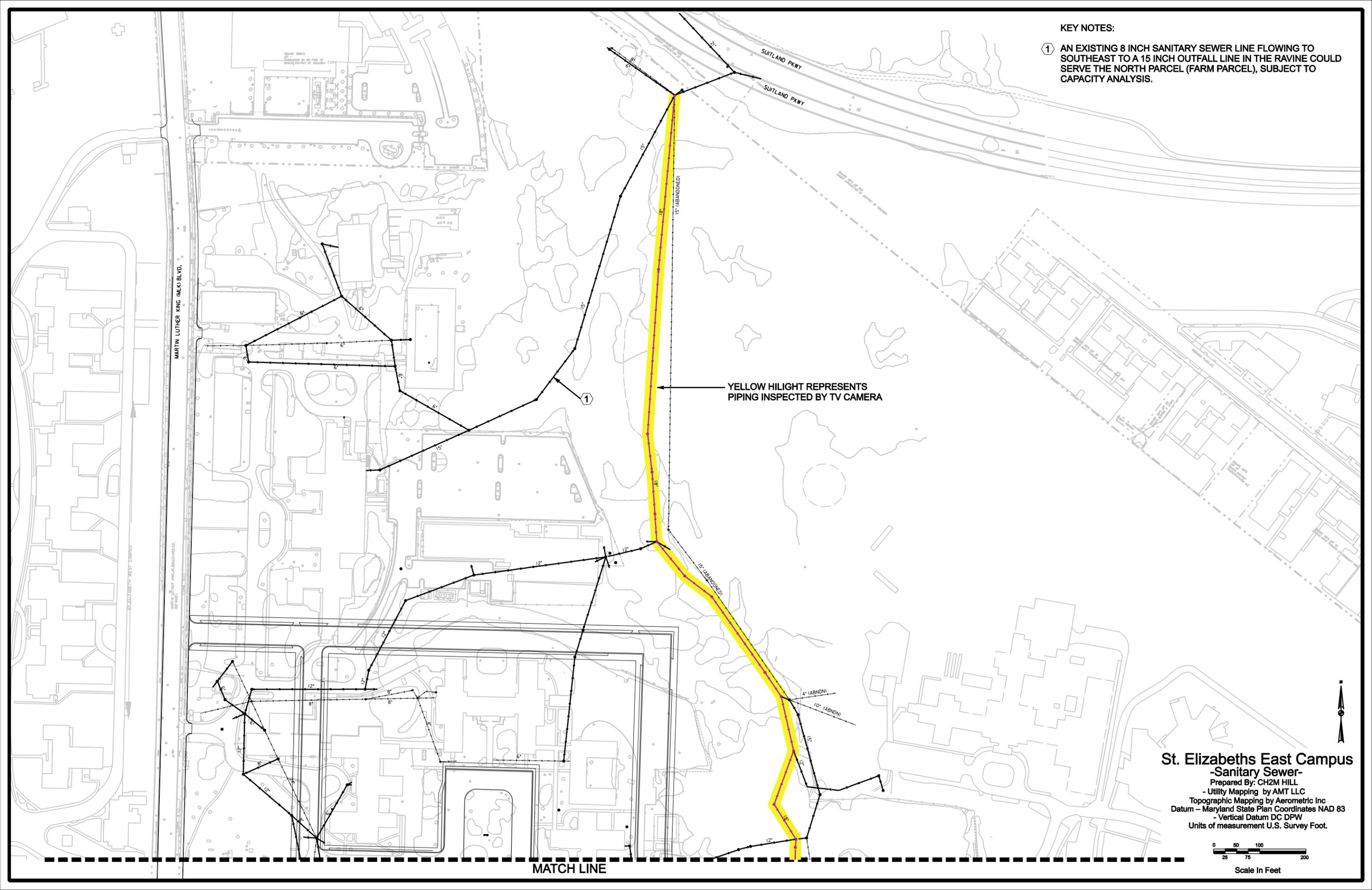
YELLOW HIGHLIGHT REPRESENTS PIPING INSPECTED BY TV CAMERA

MATCH LINE

St. Elizabeths East Campus
-Sanitary Sewer-
Prepared By: CH2M HILL
- Utility Mapping by AMT LLC
Topographic Mapping by Aerometric Inc
Datum - Maryland State Plan Coordinates NAD 83
- Vertical Datum DC DPW
Units of measurement U.S. Survey Foot.



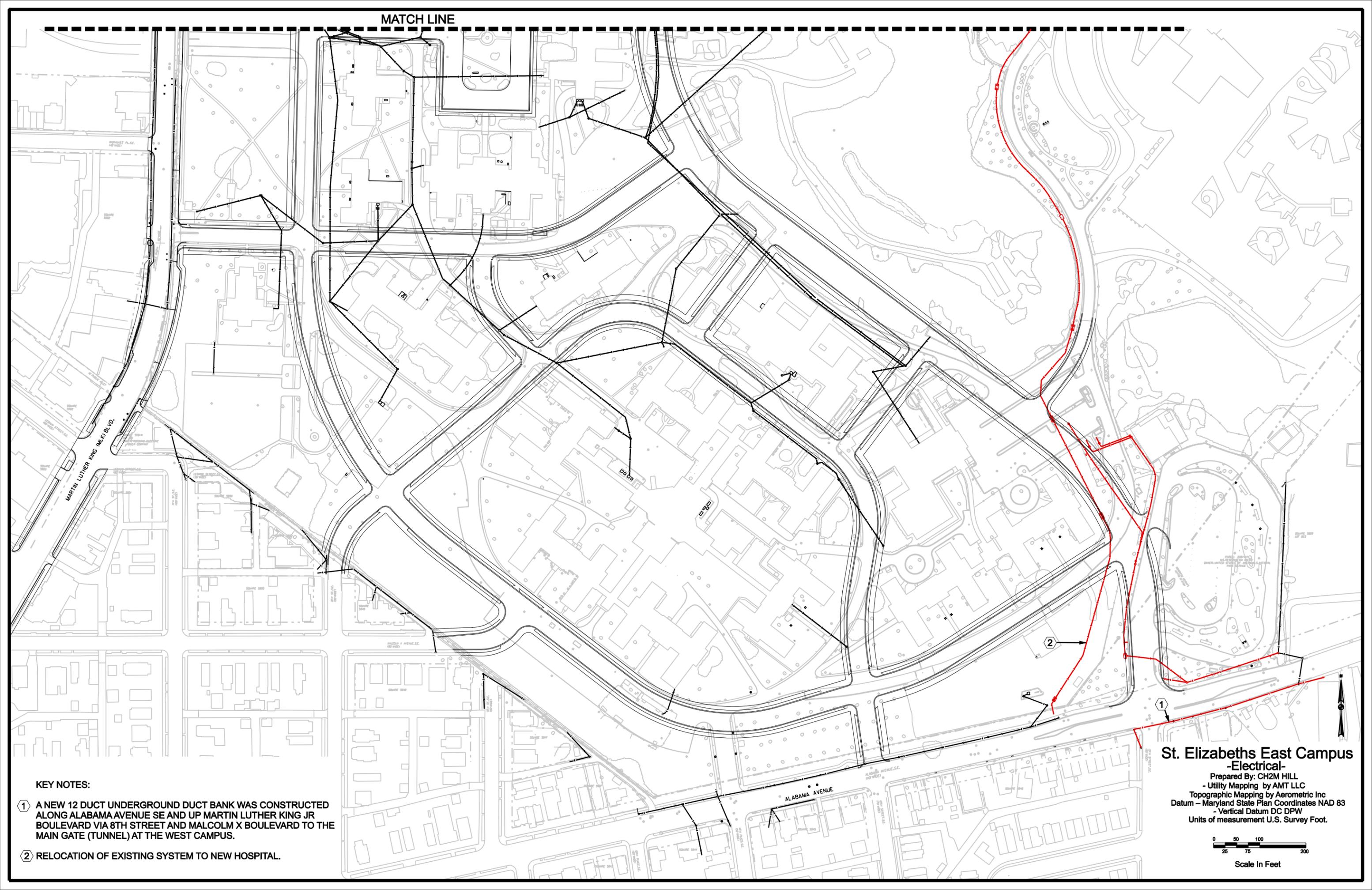
Scale In Feet



Appendix 5
Electrical Distribution System

5A
Existing Facilities Exhibits

MATCH LINE



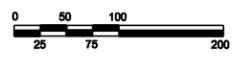
KEY NOTES:

① A NEW 12 DUCT UNDERGROUND DUCT BANK WAS CONSTRUCTED ALONG ALABAMA AVENUE SE AND UP MARTIN LUTHER KING JR BOULEVARD VIA 8TH STREET AND MALCOLM X BOULEVARD TO THE MAIN GATE (TUNNEL) AT THE WEST CAMPUS.

② RELOCATION OF EXISTING SYSTEM TO NEW HOSPITAL.

St. Elizabeths East Campus -Electrical-

Prepared By: CH2M HILL
 - Utility Mapping by AMT LLC
 Topographic Mapping by Aerometric Inc
 Datum - Maryland State Plan Coordinates NAD 83
 - Vertical Datum DC DPW
 Units of measurement U.S. Survey Foot.



Scale In Feet



KEY NOTES:

- ① RELOCATION OF EXISTING SYSTEM TO NEW HOSPITAL.

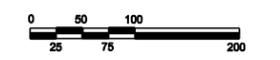
MARTIN LUTHER KING (MLK) BLVD.

SUITLAND PKWY

ELEVATED TANK

MATCH LINE

St. Elizabeths East Campus
-Electrical-
Prepared By: CH2M HILL
- Utility Mapping by AMT LLC
Topographic Mapping by Aerometric Inc
Datum - Maryland State Plane Coordinates NAD 83
- Vertical Datum DC DPW
Units of measurement U.S. Survey Foot.



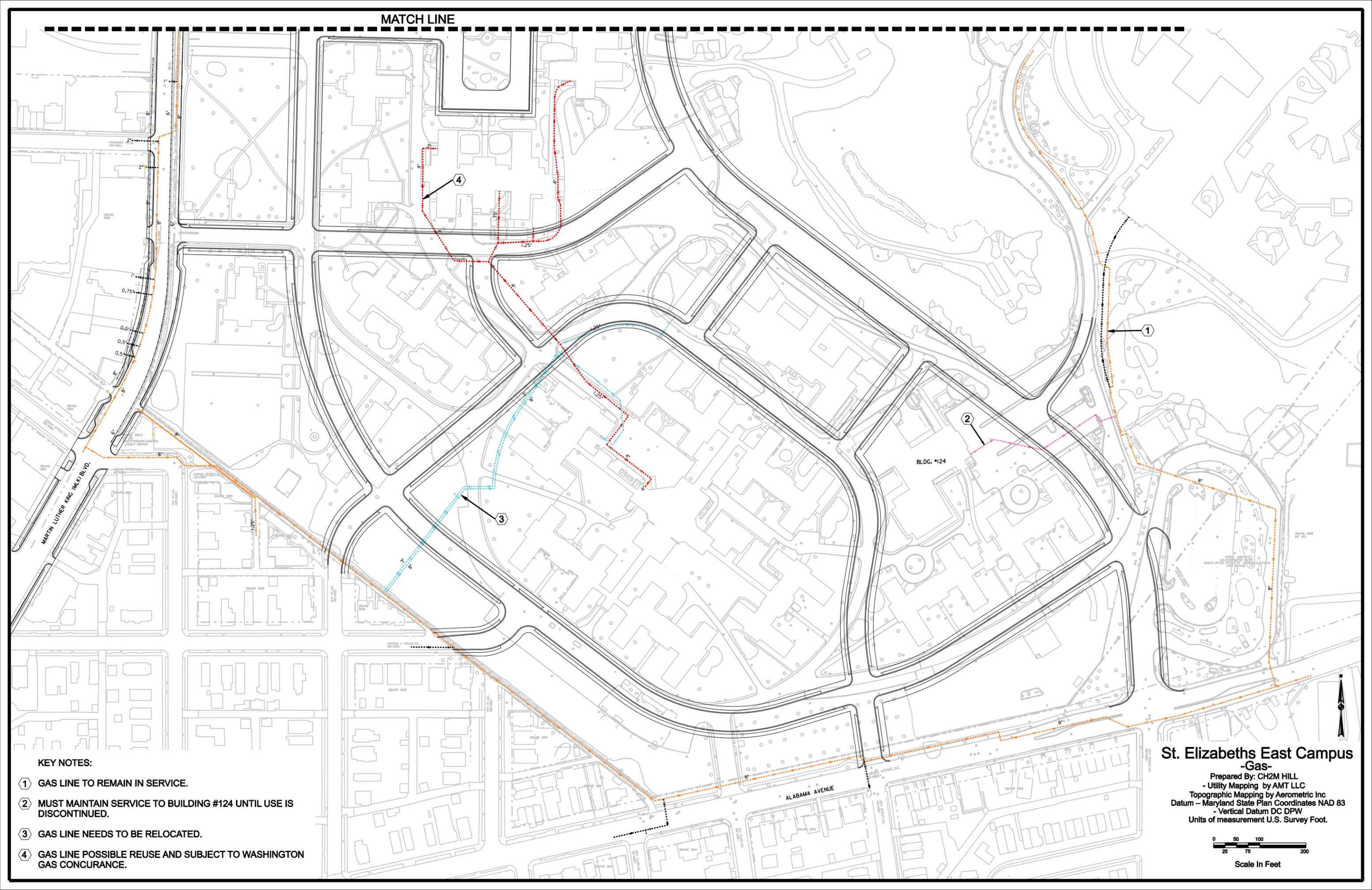
Scale In Feet



Appendix 6
Natural Gas Distribution System

6A
Existing Facilities Exhibits

MATCH LINE

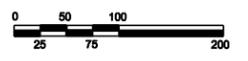


KEY NOTES:

- ① GAS LINE TO REMAIN IN SERVICE.
- ② MUST MAINTAIN SERVICE TO BUILDING #124 UNTIL USE IS DISCONTINUED.
- ③ GAS LINE NEEDS TO BE RELOCATED.
- ④ GAS LINE POSSIBLE REUSE AND SUBJECT TO WASHINGTON GAS CONCURRENCE.

St. Elizabeths East Campus

-Gas-
 Prepared By: CH2M HILL
 - Utility Mapping by AMT LLC
 Topographic Mapping by Aerometric Inc
 Datum - Maryland State Plan Coordinates NAD 83
 - Vertical Datum DC DPW
 Units of measurement U.S. Survey Foot.



Scale In Feet



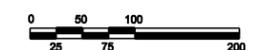
KEY NOTES:

- ③ MUST MAINTAIN SERVICE TO BUILDING UNTIL USE IS DISCONTINUED.



St. Elizabeths East Campus
-Gas-

Prepared By: CH2M HILL
- Utility Mapping by AMT LLC
Topographic Mapping by Aerometric Inc
Datum - Maryland State Plane Coordinates NAD 83
- Vertical Datum DC DPW
Units of measurement U.S. Survey Foot.



Scale In Feet

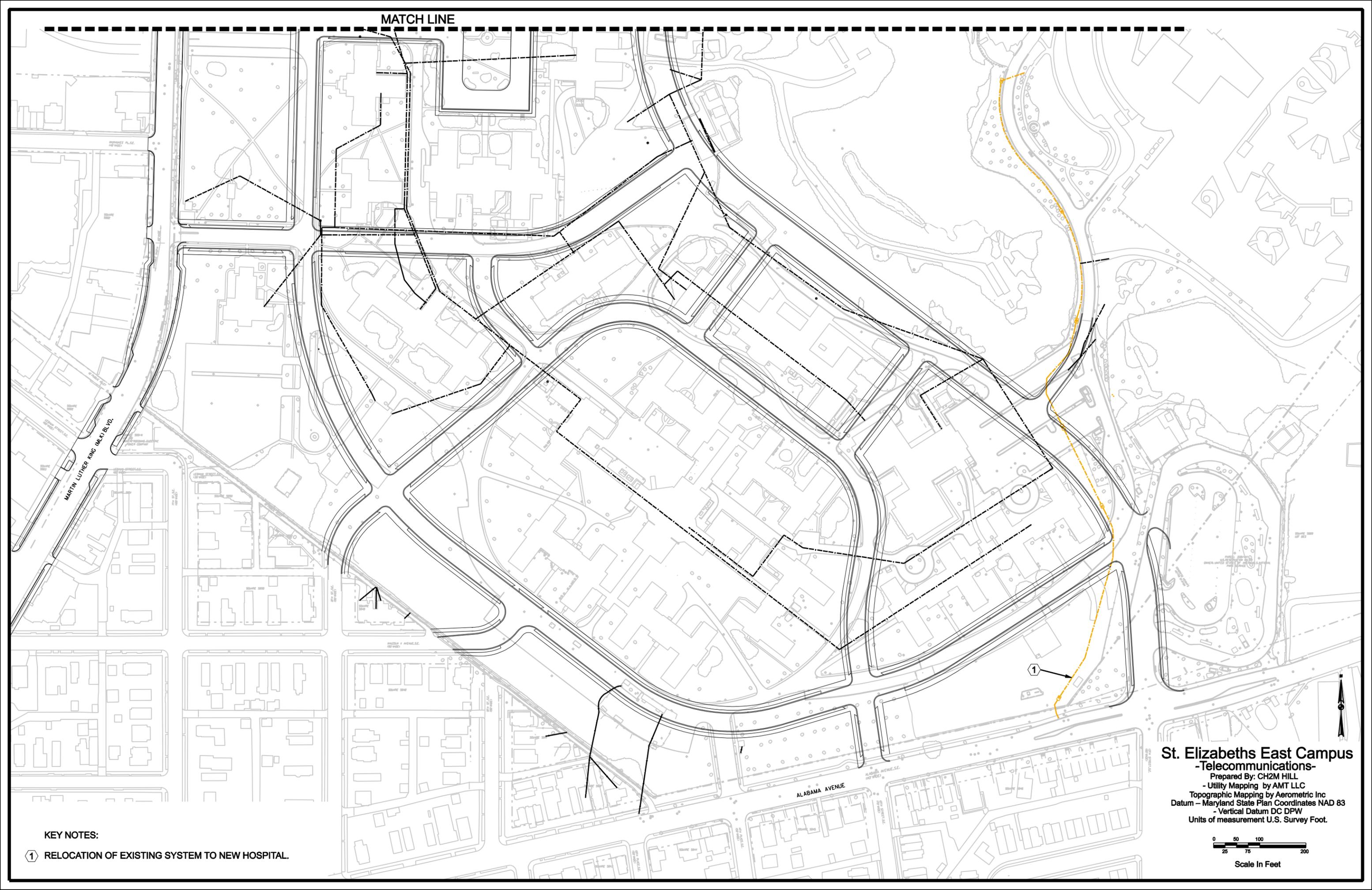


MATCH LINE

Appendix 7
Telecom Systems

7A
Existing Facilities Exhibits

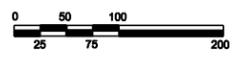
MATCH LINE



KEY NOTES:

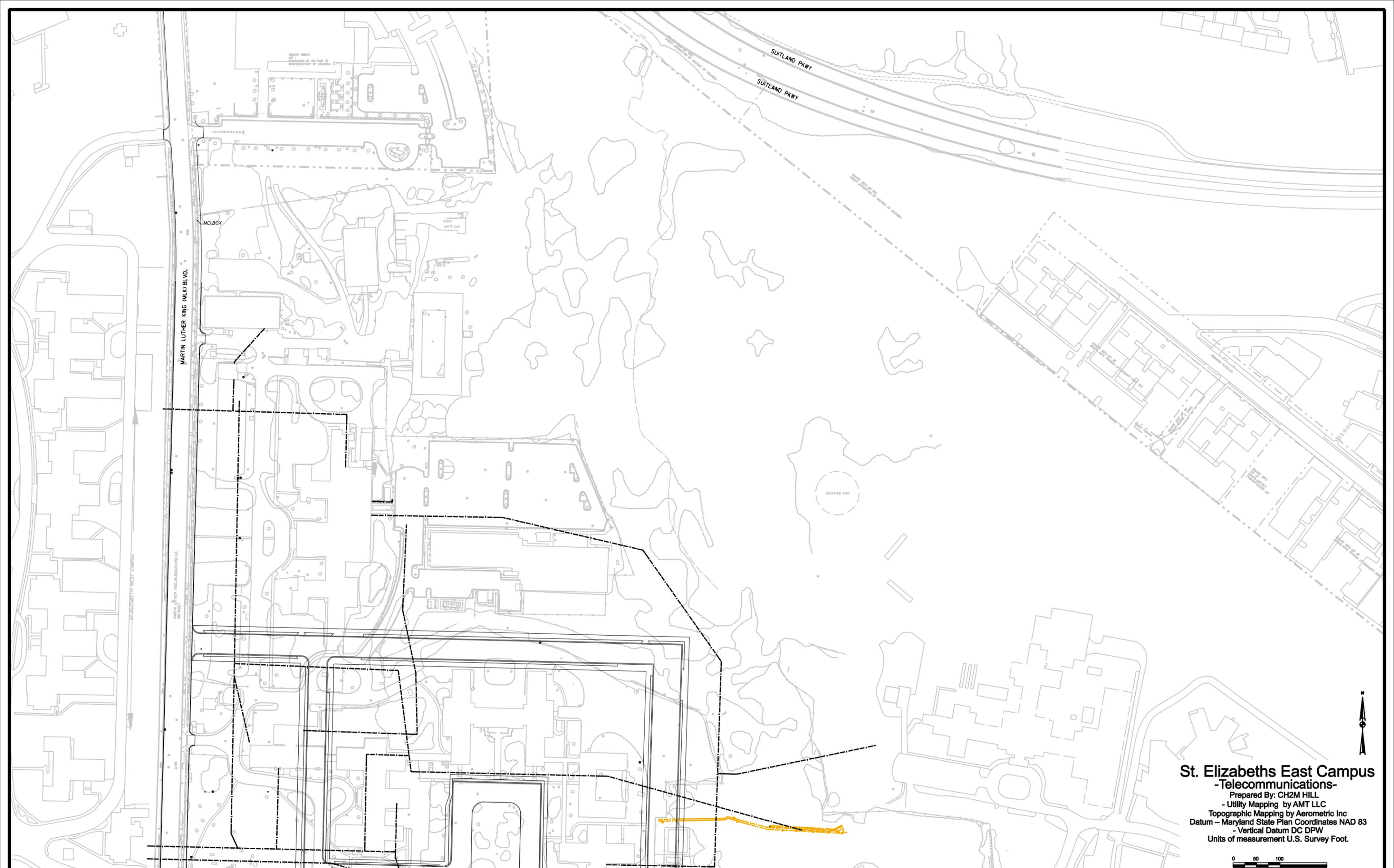
1 RELOCATION OF EXISTING SYSTEM TO NEW HOSPITAL.

St. Elizabeths East Campus
 -Telecommunications-
 Prepared By: CH2M HILL
 - Utility Mapping by AMT LLC
 Topographic Mapping by Aerometric Inc
 Datum - Maryland State Plan Coordinates NAD 83
 - Vertical Datum DC DPW
 Units of measurement U.S. Survey Foot.



Scale In Feet





MARTIN LUTHER KING (M.L.K.) BLVD.

SUITLAND PKWY

MCI BOX

ELEVATED TANK

St. Elizabeths East Campus
-Telecommunications-
 Prepared By: CH2M HILL
 - Utility Mapping by AMT LLC
 Topographic Mapping by Aerometric Inc
 Datum - Maryland State Plane Coordinates NAD 83
 - Vertical Datum DC DPW
 Units of measurement U.S. Survey Foot.



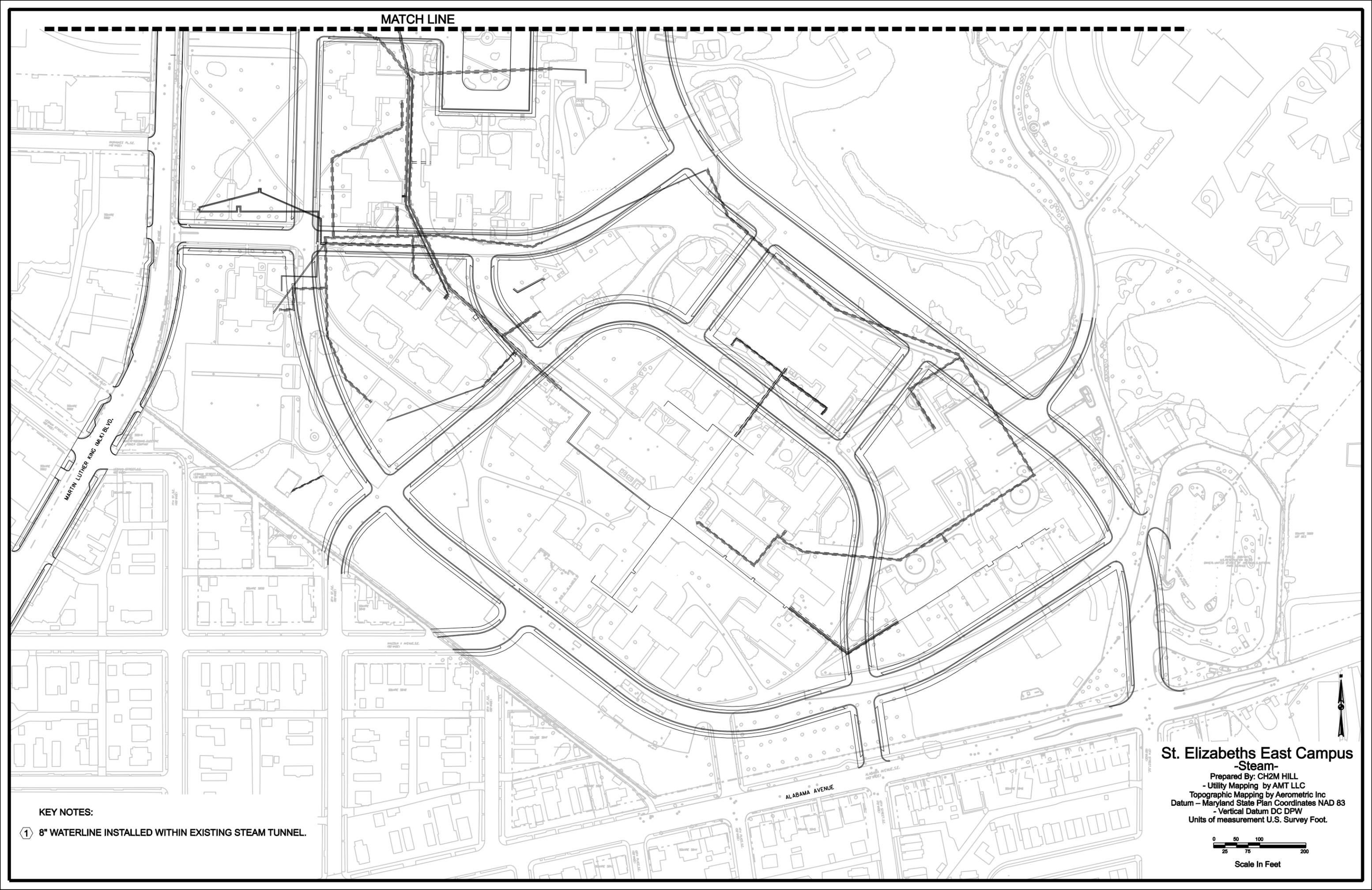
Scale In Feet

MATCH LINE

Appendix 8
Steam Tunnels

8A
Existing Facilities Exhibits

MATCH LINE

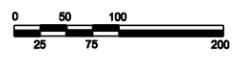


KEY NOTES:

- ① 8" WATERLINE INSTALLED WITHIN EXISTING STEAM TUNNEL.

St. Elizabeths East Campus
-Steam-

Prepared By: CH2M HILL
 - Utility Mapping by AMT LLC
 Topographic Mapping by Aerometric Inc
 Datum - Maryland State Plan Coordinates NAD 83
 - Vertical Datum DC DPW
 Units of measurement U.S. Survey Foot.

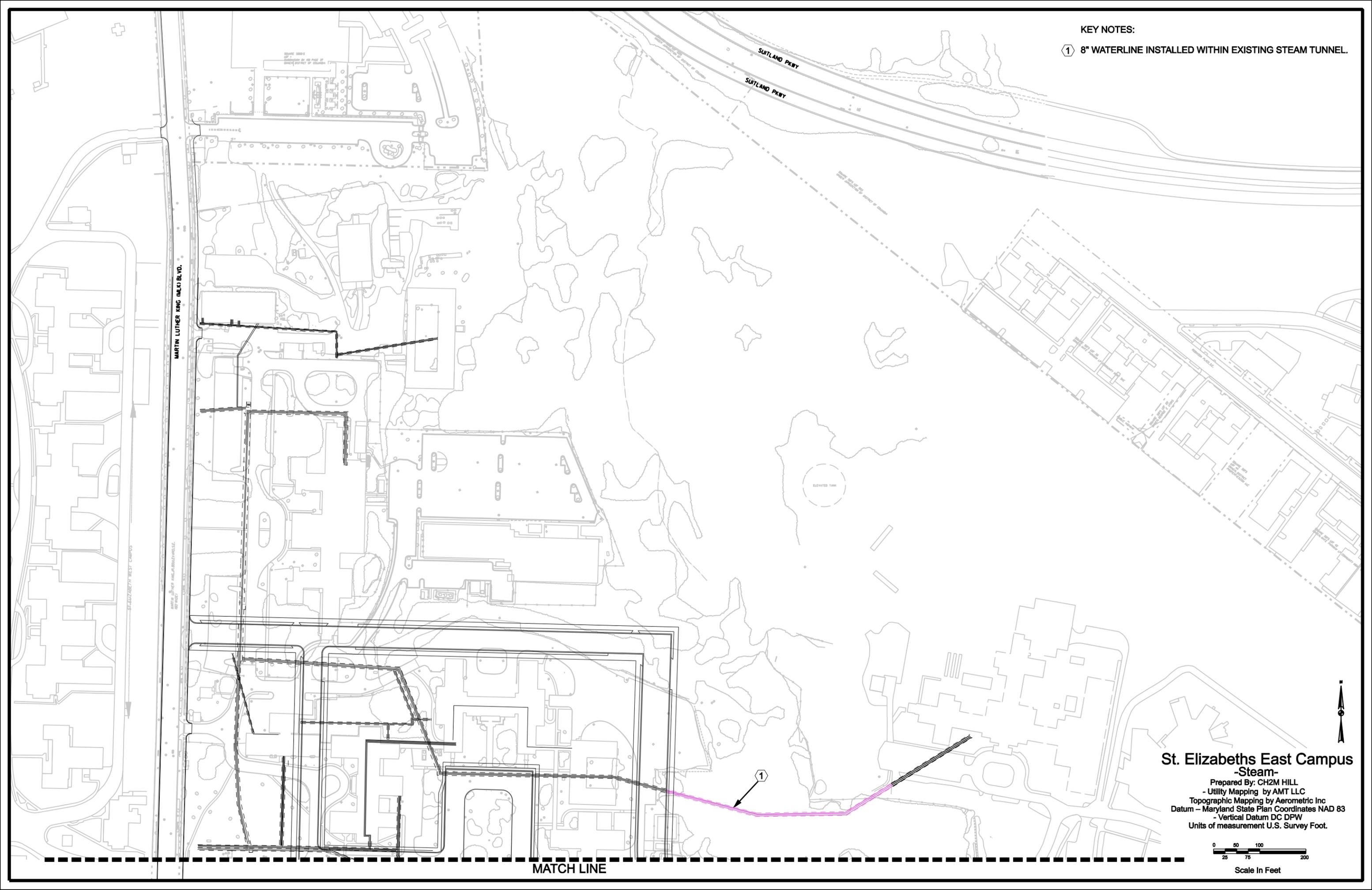


Scale In Feet



KEY NOTES:

① 8" WATERLINE INSTALLED WITHIN EXISTING STEAM TUNNEL.



**St. Elizabeths East Campus
-Steam-**

Prepared By: CH2M HILL
- Utility Mapping by AMT LLC
Topographic Mapping by Aerometric Inc
Datum - Maryland State Plane Coordinates NAD 83
- Vertical Datum DC DPW
Units of measurement U.S. Survey Foot.



Scale In Feet

MATCH LINE