US Army Corps
of Engineers®
Pittsburgh District

Planning and Environmental Branch
William S. Moorhead Federal Building
1000 Liberty Avenue
Pittsburgh, Pennsylvania 15222

Public Notice Date: 12 December 2023
Expiration Date: 26 December 2023

NOTICE OF AVAILABILITY

Draft Environmental Assessment

City of Chester Water System Improvements – Hancock County, West Virginia

The U.S. Army Corps of Engineers, Pittsburgh District (USACE) is evaluating a request for Federal funding for proposed upgrades to the water distribution system and treatment plant located in the city of Chester, Hancock County, West Virginia.

The USACE invites submission of comments on the environmental impact of the approval of the request. The USACE will consider all submissions received before the expiration date of the public comment period. The nature or scope of the proposal may be changed upon consideration of the comments received.

The draft Environmental Assessment and draft Finding of No Significant Impact are available electronically at:

http://www.lrp.usace.army.mil/Missions/Planning-Programs-Project-Management/

and then by clicking on the “DRAFT PUBLIC NOTICES” tab.

Comments can be submitted to the address posted at the top of this notice or to Madison.Duke@usace.army.mil. Comments must be received by 26 December 2023 to ensure consideration.

FINDING OF NO SIGNIFICANT IMPACT

Section 219 City of Chester Water System Improvements
Hancock County, West Virginia

The U.S. Army Corps of Engineers, Pittsburgh District (Corps) is presenting an environmental analysis in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended. The Environmental Assessment (EA), dated October 2023, for the Section 219 Project in the City of Chester in Hancock County, West Virginia evaluates potential environmental impacts associated with Chester's water treatment plant and distribution system improvements. The Water Resources Development Act (WRDA) of 1999 (Public Law 102-580), Section 219 allows the Corps to consider reimbursement for design and/or construction of environmental infrastructure in Pennsylvania.

The Draft EA, incorporated herein by reference, evaluated alternatives to provide reliable access to clean, potable water to the City of Chester. The preferred alternative, ultimately the Proposed Action consists of those proposed water treatment plant and water distribution system improvements including a waterline replacement and valve replacements. Further details are provided in the Draft Environmental Assessment for the Section 219, City of Chester Water System Improvements Project.

In addition to the preferred alternative, a "no action" alternative was evaluated. For both alternatives, the potential effects to the following resources were evaluated:

Table 1: Summary of Potential Effects

	No Action Alternative		Preferred Alternative	
	Minor Effect	No Effect	Minor Effect	No Effect
Land Use	☐	☒	☐	☒
Climate	☒	☐	☒	☐
Terrestrial Habitat	☒	☐	☒	☐
Vegetation	☒	☐	☒	☐
Invasive Species	☒	☐	☒	☐
Prime and Unique Farmland	☐	☒	☐	☒
Soils	☐	☒	☐	☒
Aquatic Habitat/Water Quality	☐	☒	☐	☒
Wetlands	☐	☒	☐	☒
Wild and Scenic Rivers	☐	☒	☐	☒
Hazardous, Toxic, and Radioactive Wastes	☐	☒	☐	☒
Cultural Resources	☐	☒	☐	☒
Tribal Trust Resources	☐	☒	☐	☒
Threatened and Endangered Species	☐	☒	☐	☒
Air Quality	☒	☐	☒	☐
Noise	☒	☐	☒	☐
Environmental Justice and Protection of Children	☒	☐	☒	☐

Aesthetic Resources	☒	☐	☒	☐
Health and Safety	☒	☐	☒	☐
Transportation and Traffic	☒	☐	☒	☐
Public Infrastructure	☒	☐	☒	☐
Floodplains	☐	☒	☐	☒
Recreational Resources	☐	☒	☐	☒

Since the preferred alternative will not discharge dredge or fill material into any Waters of the United States (WOTUS), a permit under section 404 of the Clean Water Act (CWA) (33 USC § 1344) and Water Quality Certification from the state in accordance with Section 401 of the CWA (33 USC § 1341) will not be necessary. The total proposed project area, including all proposed ground disturbance area, is less than one acre so a National Pollutant Discharge Elimination System (NPDES) permit under Section 402 of the CWA is not required. Erosion and sediment control best management practices will be used during construction activities.

Pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended, the U.S. Army Corps of Engineers determined that the portion of the Proposed Federal Action analyzed within this Environmental Assessment will have no effect on federally listed species or their designated critical habitat. The proposed project is within the range of the northern long-eared *(Myotis septentrionalis*) and the Indiana bat (*Myotis sodalis*). Both bats are currently listed as federally endangered species, although the northern long-eared bat was listed as threatened when the Draft EA was written. The Final EA will be updated to reflect this change. No tree cutting or removal will occur, so the proposed alteration will not impact the bat species.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that no historic properties will be affected (i.e., no effect) by the Proposed Federal Action, as specified in 36 CFR § 800.4(d)(1). Consultation with the WV State Historic Preservation Office (SHPO) was initiated on January 30, 2023. In a response dated February 22, 2023 the WV SHPO concurred with USACE's no effect determination.

A 15-day public notice period for the proposed Section 219 Project was initiated on December 12, 2023. Comments will be addressed after the public notice period is completed.

After having carefully evaluated all aspects of the Proposed Federal Action and based on the EA, I have reasonably concluded that the Proposed Federal Action does not constitute a major federal action significantly affecting the quality of the human environment. Therefore, an environmental impact statement is not required and will not be prepared.

Date

NICHOLAS O. MELIN
COLONEL, Corps of Engineers
District Commander

DRAFT ENVIRONMENTAL ASSESSMENT

CITY OF CHESTER
WATER SYSTEM IMPROVEMENTS
HANCOCK COUNTY, WEST VIRGINIA

October 2023

Prepared for:

US Army Corps of Engineers

Pittsburgh District
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Table of Contents

SECTION 1 – PROJECT DESCRIPTION

1.1 Project Background

This Environmental Assessment (EA) is being prepared for the U.S. Army Corps of Engineers, Pittsburgh District (Corps) in compliance with the National Environmental Policy Act (NEPA) of 1969 and in accordance with the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA, 40 Code of Federal Regulations (CFR), Part 1500-1508, and with the Corps' NEPA implementing regulations, Engineer Regulation (ER) 200-2-2 (33 CFR 230). The objective of the EA is to evaluate the City of Chester Water System Improvements (Phase I) Project in Hancock County, West Virginia (Figures 1 and 2, Appendix A).

The City of Chester operates a water treatment plant and is currently permitted to treat 0.47 MGD (WVDEP Permit No. WV0021768). The system is designed to serve 1,447 persons or equivalents in the City of Chester and discharge treated wastewater to the Ohio River and the Project Area includes the service area of the City of Chester Water System (Figures 1, 2, and 3, Appendix A). The entirety of the City of Chester Water System service area is depicted in Figure 3.1.

The proposed project is located within Hancock County in and around Chester. It consists of those areas as identified and depicted on Figure 2 from 1st Street to 11th Street and 6th Street to Alaska Street to the Ohio Rive plus the Water Treatment Plant and the Liberty Avenue water tank on the north-east side of the town (Figures 1 and 2, Appendix A).

An action area, as defined in 50 CFR §402-02, includes all areas that may be affected directly or indirectly by the Federal action and located wholly within the project area. The action area is located within and adjacent to the City of Chester Water System Improvements project and within the areas where the construction is proposed to take place. Unless otherwise defined, the action area included an additional 25-foot buffer on either side of the proposed water system improvement project construction limits and was considered when evaluating the environmental effects. The location of the action area is depicted in Figures 2, 3 and 3.1.

The proposed project includes water system improvements to the existing water treatment plant, distribution system valve replacements, waterline replacements on Indiana Avenue between 3rd and 4th Streets, and other general water system maintenance such as erosion control, and drainage. The water system improvements are needed to provide safe and clean drinking water to the residents of the City of Chester and to facilitate and ensure the safety of children.

1.2 Purpose, Need, and Authorization

The purpose of the proposed project is to ensure that the residents in the area have an adequate drinking supply. The infrastructure of the City of Chester's water system is in need of maintenance and repair to keep providing clean drinking water to residents and appropriate water treatment.

1.3 Authority

Section 219 of the Water Resources Development Act (WRDA) of 1992 (PL 1020-580) as amended through Public Law 110-114 authorizes the U.S. Army Corps of Engineers (USACE) to provide assistance to non-Federal interests for carrying out water-related environmental infrastructure and resource protection projects. Section 219(f) states that the Secretary may provide assistance for design and construction in addition to the assistance provided under Section 219(a). Section 5158 of WRDA 2007 further amends Section 219 of WRDA 1992, as amended. Section 219(f)(272) specifies that Northern West Virginia, specifically Hancock County, in authorized for water and wastewater-related infrastructure.

SECTION 2 – ALTERNATIVES

2.1 Introduction

Under NEPA, a reasonable range of alternatives must be considered prior to undertaking an action. Alternatives considered must include, at a minimum, the proposed action and the "No-Action" Alternative, which provides a baseline from which to compare other alternatives. The alternatives identified below were evaluated to determine if they satisfy the purpose and need of the project.

2.2 Alternatives

2.2.1 No-Action Alternative

Under the No-Action Alternative, the City of Chester would construct the proposed project with all of the same improvements listed below for the preferred Alternative but without the use of Section 219 federal funds.

2.2.2 Water System Improvements (preferred Alternative)

Under the Preferred Alternative, the City of Chester proposes the following Improvements:

Proposed Water Treatment Plant Improvements:

- Remove & Replace Filter Tank Access Manway
- Removal & Disposal of Existing Filter Media Within Filter Tank
- Structural Testing, Filter Tank
- Contingency Repair, Filter Tank
- Interior Filter Tank Cleaning, Surface Preparation, and Surface Coating
- Installation Of New Filter Media Within Filter Tanks
- Surface Preparation and Surface Coating on Exterior of Filter Tanks
- Surface Preparation and Surface Coating on Filter Tank Piping
- Remove & Replace 8" Actuated Butterfly Valves Including all Incidentals
- Remove & Replace 10" Actuated Butterfly Valves Including all Incidentals
- Remove & Replace 8" Manual Butterfly Valves Including all Incidentals
- Remove & Replace 10" Manual Butterfly Valves Including all Incidentals
- Remove & Replace 12" Manual Butterfly Valves Including all Incidentals
- Remove & Replace Potassium Permanganate Feed System, Including all Incidentals
- Remove & Replace Exterior Backwash Tank, Including all Incidentals
- Contingency Unsuitable Foundation Soils
- Remove & Replace Lighting, Including all Incidentals
- Remove & Replace Access Doors/Frames for Clearwell
- Interior & Exterior Door/Frame Removal & Replacement
- Exterior Building Brick Repair

- Built-Up Roof Material Removal & Replacement, including all Incidentals (Not Including Decking)
- Roof Decking (Only) Removal & Replacement, Including all Incidentals
- Remove & Replace Exterior Sanitary Lift Station
- Exterior Entrance Drive Improvements
- Cleaning & Video Inspection of Existing Raw Water Piping/Structure

Proposed Water Distribution System Improvements:

- Remove & replace three (3) existing gate valves located at the Liberty Avenue Water Storage Tank.
- Installation of Single New (6") Gate Valve & Valve Box, Including all Incidentals (along with the corresponding pavement removal/replacement); twelve (12) total locations.
- Installation of Single New (8") Gate Valve & Valve Box, Including all Incidentals (along with the corresponding pavement removal/replacement); one (1) total location.
- Installation of (2) New (6") Gate Valves & Valve Boxes, Including Tee and all Incidentals (along with the corresponding pavement removal/replacement); two (2) total locations.
- Installation of (3) New Gate Valves & Valve Boxes, Including Tee and all Incidentals (along with the corresponding pavement removal/replacement); eight (8) total locations.
- Installation of (4) New Gate Valves & Valve Boxes, Including Cross and all Incidentals (along with the corresponding pavement removal/replacement); three (3) total locations.
- Waterline replacement along Indiana Avenue between 3rd Street and 4th Street including the installation of approximately 800 feet of 8" PVC-C900, DR 14 waterline along with the installation of the corresponding valves, hydrants, water services, pavement removal/replacement, asphalt overlay, sidewalk removal/replacement, and other corresponding incidentals.

SECTION 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This section describes the existing environment (existing condition of resources relevant to the alternatives being considered) and evaluates potential environmental effects on those resources. Since the No-Action alternative will result in the completion of the proposed project without the use of federal funds by the City of Chester, the environmental consequences section addresses both alternatives. The proposed project will be completed by the City of Chester if the No-Action alternative is selected and no federal funds are provided, only it will be completed on a delayed time schedule when funding becomes available through the City. The project area considered was that area identified as “Project Area” on Figure 3 Aerial Map included in Appendix A.

3.2 Resources and Analyses Not Considered in Detail

Based on the nature of the proposed project and specific resources located within the project area, the No-Action and Preferred Alternatives would not be expected to affect the resources identified in the following sections.

3.2.1 Hydrology

The hydrology of the action area consists primarily of surface water runoff into the stormwater system. The areas within the action area are primarily within pavement and developed areas without the presence of surface water features.

3.2.2 Tribal Trust Resources

There are no Tribal Trust Resources associated with this proposed project due to no archaeological material being recovered or observed during the Phase I Cultural Resources Management Survey (Survey) of the proposed City of Chester Water System Improvements using both subsurface testing and visual inspection. Additionally, the summary of the Survey indicates a high degree of disturbance throughout the project area resulting from the earthmoving activities resulting in the road, water distribution infrastructure, level yards and the development of ditches and utilities.

3.2.3 Navigation

The proposed project is not expected to impact navigation because the proposed project is primarily on land and all work associated with the inspection and maintenance of the intake structure will occur using a manhole on land to access the area. The portion of the project area and Water Treatment Plant Action Area within the Ohio River is not expected to impact navigation as no work will take place in the river or impact navigation.

3.3 Land Use

3.3.1 Affected Environment

The entirety of the proposed project is within the City of Chester, Hancock County, West Virginia. The project area is included in the Weirton-Steubenville Metropolitan Area Statistical Area, a census designated place. As of 2020, the population of this area is 116,903.

Construction/installation activities for the proposed project are all located entirely within existing public rights-of-way and within the City of Chester Water Treatment Plant and water tank properties. and the land use adjacent to the public rights-of-way consists of residential and commercial uses. The Hancock County Auditor website indicates many of the properties within the project area are zoned residential or commercial. Current land use in the project area within the existing water treatment plant and water tank property is public land. Rights-of-way within private residential properties are in the area of the water line replacements and the majority of the valve replacement locations. The public rights-of-way will be impacted by the construction and installation of the water system infrastructure.

3.3.2 Environmental Consequences

Changes in land use will not occur. Additionally, community facilities would not be impacted. The proposed project is entirely within public existing roadway public rights-of-way and within the City of Chester Water Treatment Plant and water tank properties. The proposed project will have no effect on land use.

3.4 Climate

3.4.1 Affected Environment

The Upper Ohio watershed's geographic location makes it susceptible to highly variable weather throughout the year. The watershed experiences seasonal weather patterns throughout the year, with a large range of temperatures. The temperature in Hancock County ranges from an 18-degree Fahrenheit low during the winter months to an 82-degree Fahrenheit high during the summer months. The annual rainfall in the county is approximately 40 inches, with most falling in May and July. Average snowfall is about 26 inches, with most falling in February (Best Places, 2022). The Köppen Climate Classification for the area is Dfa, characterized by humid continental hot summer and yearlong precipitation.

3.4.2 Environmental Consequences

Only short duration, minor discharges of carbon-based pollutants that could contribute to greenhouse gases would occur during construction activities. Neither alternative would involve any activity that could significantly affect the environment regarding climate

change. Therefore, no significant adverse impacts to climate or climate change would occur because of the proposed project.

3.5 Terrestrial Habitat

3.5.1 Affected Environment

The action area is within existing public rights-of-way, water tank and water treatment plant properties. Within the project area, the habitat is maintained turf composed of common lawn species. The action area also includes moderate coverage of impervious surfaces such as asphalt paved roadways and concrete driveway aprons. No direct wildlife observations were observed during field reconnaissance activities. However, due to the urban nature of the project area wildlife is presumed to be limited to small ubiquitous mammals and transient birds.

3.5.2 Environmental Consequences

The proposed project may have a temporary adverse impact during construction on terrestrial habitat and some forms of fauna. These animals may be displaced to outlying areas during the construction of the proposed water system improvement project due to increased human presence and noise levels. However, the construction is adjacent to residential properties and these animals are likely accustomed to noise so are likely to return after the construction activities are complete. The terrestrial habitats temporarily affected by the proposed project will be returned to their original contours and reseeded. There would be a minimal effect to terrestrial resources/wildlife.

Below is specific information on the extent of earthwork associated with the action areas shown on the plan set included as Appendix C. Any areas not repaved after construction will be reseeded:

- The raw water intake pipe/structure video inspection and cleanout is shown on Sheets 56 and 57 of the plans included in Appendix C.
- Information on Earthwork/Excavation work related to the Exterior Backwash Tank removal & replacement at the Water Treatment Plant is as further shown on Sheets 26-37 of the construction plans (more specifically on Sheets 26-29).
- Information on Earthwork/Excavation/Embankment work related to the Driveway removal & replacement at the Water Treatment Plant will be minimal and is as further shown on Sheets 54-55 of the construction plans.
- Information regarding the Excavation, Bedding, Backfill, Pavement Replacement, etc. for both the waterline replacement along Indiana Avenue and for the Valve Installations throughout the water distribution system is included in the “Typical Waterline/Valve Replacement – Pavement Replacement and Trench Detail” on Sheet 79 of the attached plans and sheets 58-81 for all water distribution improvements.)

3.6 Vegetation

3.6.1 Affected Environment

The vegetation of the action area primarily consists of lawn grass species in the areas not covered in pavement.

3.6.2 Environmental Consequences

A portion of the vegetation adjacent to the existing driveway accessing the Water Treatment Plant will be removed to provide room for the explanation of the driveway. Due to the of the nature of the proposed project of maintaining and replacing existing infrastructure, it is expected that minimal impacts to vegetation will take place.

3.7 Invasive Species

3.7.1 Affected Environment

Executive Order 13112 of February 3, 1999, created a coordinating body -- the Invasive Species Council, also referred to as the National Invasive Species Council -- to oversee implementation of the order, encourage proactive planning and action, develop recommendations for international cooperation, and take other steps to improve the Federal response to invasive species. Executive Order 13751 of December 8, 2016, maintained the National Invasive Species Council and the Invasive Species Advisory Committee; expanded the membership of the Council; clarified the operations of the Council; incorporated considerations of human and environmental health, climate change, technological innovation, and other emerging priorities into Federal efforts to address invasive species; and strengthened coordinated, cost-efficient Federal action. The action area is entirely within existing public rights-of-way, utility easements, or located within or adjacent to existing facilities. Within the project area, the habitat is maintained turf composed of common lawn species. Contractor activities are to not disturb areas where invasive species are present, nor will they track invasive species into the project area.

3.7.2 Environmental Consequences

No terrestrial or aquatic invasive species were documented within the project area during the field visit. The proposed project would have a temporary adverse impact on terrestrial habitat present during construction. Due to the location of the proposed project being near the Ohio River, it is expected that non-native invasive plant species are present along the banks of the river and in the vicinity of the proposed project including, narrowleaf cattail (*Typha angustifolia*), purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), and Japanese knotweed (*Fallopia japonica* s.l). Given the existing condition of the action area and with proper seeding of any exposed soil after construction, there should be no long-term impact to the communities present.

3.8 Prime and Unique Farmland

3.8.1 Affected Environment

The purpose of the Farmland Policy Protection Act (FPPA) (7 U.S.C. 4201 et seq, implementing regulations 7 CFR Part 658, of the Agriculture and Food Act of 1981, as amended) is to minimize the impact of Federal programs on prime farmland, unique farmland, and land of statewide or local importance.

Specific soils within and near the action area are described in **Table 1**.

TABLE 1: SOILS WITHIN PROJECT AREA

Soil Symbol	Soil Name	Farmland Status	Acres within Project area
AhB	Allegheny silty loam, 3 to 8 percent slopes	Farmland of statewide importance	3.4
AhC	Allegheny silt loam, 8 to 15 percent slopes	Farmland of statewide importance	1.3
BeC	Berks channery silt loam, 8 to 15 percent slopes	Not prime farmland	8.7
BeD	Berks channery silt loam, 15 to 25 percent slopes	Not prime farmland	1.2
BkF	Berks soils, 35 to 65 percent slopes	Not prime farmland	2.0
Uu	Urban land-Udorthents complex	Not prime farmland	248

Source: USDA NRCS Soil Survey

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey of Hancock County, the only soil type indicative of farmland of statewide importance that are present within the project area is Allegheny silt loam (AhB and AhC), of which less than five acres are present (Appendix A). The Allegheny silt loam is located in the eastern portion of the project area near the water tower area (Figure 6).

3.7.2 Environmental Consequences

Given the relatively small acreage of soils considered as farmland of statewide importance and that these soils are located mostly outside of the action area, there are no anticipated impacts to prime farmland. Any impacts to farmland of statewide importance will be short term, and areas will be returned to their original state after construction.

3.9 Soils

3.9.1 Affected Environment

The soils of the action area are primarily previously disturbed by the original construction of the water system. A Soils Table exhibiting the soil types within the action area is presented as Table 1 in Section 3.8 of this report.

3.9.2 Environmental Consequences

Areas Because of the nature of the proposed project of maintaining and replacing existing infrastructure, it is not expected that any additional impacts to soils will take place beyond ground disturbance. Neither alternative would impact soils.

3.10 Aquatic Habitat/Water Quality

3.10.1 Affected Environment

A desktop analysis was performed by Lawhon & Associates, Inc. (L&A) to determine the presence of streams, wetlands, and regulated water bodies within the project area. The USFWS National Wetlands Inventory (NWI) database was used to locate potential wetland areas and the United States Geological Survey (USGS) National Hydrography Dataset (NHD) was used to locate streams within the project area.

During the NWI analysis, no wetlands or other water bodies were identified within the project area. Middle Run and an unnamed tributary of the Ohio River have been identified within the northwestern portion of the project area on the NHD dataset. The project area is located within the Upper Ohio North watershed (8-Digit HUC: 05030101).

3.10.2 Environmental Consequences

Impacts to all jurisdictional features (streams, wetlands and other water bodies) will be avoided by the proposed project. The two streams identified in the vicinity of the project area are located outside of the action area.

No wetlands, lakes, ponds, or other potential Waters of the US (WOTUS) or state were documented within the action area, beyond a portion of the water treatment area below the river bottom of the Ohio River (not within the river channel). Additionally, any temporary sediment runoff that may impact water quality will be negated using storm water pollution prevention measures. Neither alternative would impact aquatic habitats, water quality, or wetlands. The USFWS NWI Map is included as Figure 4 in Appendix

Primarily, all of the water distribution work (i.e. valve replacements, waterline replacement along Indiana Avenue, etc.) will be performed within asphalt paved areas, where all of the material excavated from the trench will be immediately loaded into a truck & will be immediately disposed of (i.e. not permitted to be stockpiled) at an approved facility in accordance with all local, state, and federal regulations. Any temporary pollution control

items for this work will be as directed by the engineer and include catch basin/inlet protection. Please see Sheet 3 of the attached plan set in Appendix C for more information.

Relative to the exterior work at the Water Treatment Plant (i.e. backwash tank replacement, sanitary lift station replacement, and driveway replacement), any Temporary Pollution Control items for this work will be as directed by the engineer and will amount to filter fabric fence along the top of embankment located along the southwest, northwest, and northeast sides of the Water Treatment Plant site. The material excavated for this work will be immediately loaded into a truck & will be immediately disposed of (i.e. not permitted to be stockpiled). Please see Sheets 3 & 8 of the attached plan set in Appendix C for additional information. Clean-out work for the intake from the Ohio River will not include any in-stream work and all work will take place from land.

3.11 Wetlands

3.11.1 Affected Environment

The USFWS National Wetland Inventory Maps (NWI) were reviewed for the project area and identified no wetland resources within the boundaries of the City of Chester Water Improvements Project.

3.11.2 Environmental Consequences

The action area is entirely within existing road public rights-of-way, utility easement, water treatment plant and the water tank properties. Impacts to all jurisdictional features will be avoided by the proposed project. No wetlands, lakes, ponds, retention/detention basins, or reservoirs were observed or documented within the action area. Additionally, any temporary sediment runoff that may impact water quality will be negated using storm water pollution prevention measures described in Section 3.8.2. Neither alternative would impact aquatic habitats, water quality, or wetlands. The USFWS NWI Map is included as Figure 4 in Appendix A.

3.12 Wild and Scenic Rivers

3.12.1 Affected Environment

The Wild and Scenic Rivers System was established through the National Wild and Scenic Rivers Act (Public Law 90- 542; 16 U.S.C. 1271 et seq.) passed by Congress in October 1968. The purpose of these acts is to preserve rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. A review of the state and national Wild and Scenic River inventory lists indicates that there are no listed rivers near the City of Chester Water Improvements Area.

3.12.2 Environmental Consequences

The action area is entirely within existing public rights-of-way, utility easements or within the properties of the water treatment plant and water tank. Additionally, any temporary sediment runoff that may impact water quality will be negated using storm water pollution prevention measures described in Section 3.8.2. The nearest river listed as a state or national scenic and/or wild river is Little Beaver Creek, located approximately 2.5 miles across the Ohio River, in Columbiana County, Ohio. Little Beaver Creek generally flows west to east into Pennsylvania, before discharging into the Ohio River. Neither alternative would impact State and National Wild or Scenic Rivers.

3.13 Hazardous, Toxic, and Radioactive Wastes

3.13.1 Affected Environment

A Phase I Environmental Site Assessment (Phase I ESA) was conducted by L&A in support of the proposed project in May 2023 and enclosed as Attachment D. During the Phase I ESA, the project area and adjacent properties were inspected/observed to determine what, if any, adverse environmental conditions and/or hazardous materials may be present within and adjacent to the project area.

The project area for the Phase I ESA extended 10 feet from the proposed work locations throughout the city and included linear corridors (i.e. roadway pavement, sidewalks, grassy areas) of neighboring residential properties. No hazardous substances or petroleum products were observed during an on-site inspection, nor were above ground storage tanks or evidence of underground storage tanks observed in the project area. Containers of hazardous substances, petroleum products, or unidentified substances were not observed within the project area.

The Phase I ESA also included a review of information provided by the client, a review of environmental records assembled by Environmental Data Resources, Inc. (EDR), local and regional environmental records, and historical research. The Phase I ESA revealed no evidence of recognized environmental conditions (RECs), controlled recognized environmental conditions (CRECs) or historical recognized environmental conditions (HRECs) in connection with the project area. A complete copy of the Phase I ESA is included in Appendix D.

3.13.2 Environmental Consequences

There are no known hazardous substances, storage tanks, or petroleum products evident within the action area and no evidence of any of these features was observed during the Phase I ESA activities. No hazardous materials or waste would be generated by construction and subsequent operation of the proposed project. The proposed project is unlikely to result in short or long-term impacts regarding hazardous materials and waste. The proposed project will have no effect on hazardous materials and wastes. The Phase I ESA was submitted to the Corps for review and an addendum to this report will be issued

if any of the report conclusions are changed and are elevated to an environmental consequence.

3.14 Cultural Resources

3.14.1 Affected Environment

The National Historic Preservation Act (NHPA) of 1966, as amended in 1992, U.S.C 470f and with West Virginia Code § 29-1-8A directs federal agencies to assume responsibility for all cultural resources under their jurisdiction. Section 106 of NHPA requires agencies to consider the potential effect of their actions on properties that are listed, or are eligible for listing, on the National Register of Historic Places (NRHP). The NHPA implementing regulations, 36 CFR Part 800, requires that the federal agency consult with the State Historic Preservation Office (SHPO), Native American tribes, and interested parties to ensure that all historic properties are adequately identified, evaluated, and considered in planning for proposed undertakings.

A Phase I Cultural Resource Management Survey which includes an archaeological and history architecture investigation was conducted by L&A for the proposed project in July and December 2022. The archaeological testing revealed a high degree of disturbance throughout the proposed system improvements from road building and other earthmoving related to infrastructure development. There is no indication that significant archaeological sites may have been present within the Area of Potential Effect (APE) for this project. No further archaeological studies should be required for this project.

L&A historians evaluated the proposed construction of the water system improvements and determined as the finished project will result in no visible change of setting and no significant alteration of any existing historic-age resources, there will be no visual effects for this proposed project and thus no effect to above ground historic resources. The proposed undertaking will have no effect on historic properties, and no further cultural resources studies are recommended for the project.

3.14.2 Environmental Consequences

Neither alternative will result in adverse impacts to any known cultural resources. No further work is recommended regarding compliance with Section 106 of the NHPA. The proposed project will have no effect on cultural resources and historic properties.

If previously unidentified archaeological or historic properties or unanticipated effects are discovered after completion of Section 106 review, work in the direct vicinity of the findings will stop immediately until the proper course of action can be coordinated with the SHPO. No further construction in the discovery area will proceed until the requirements of 36 CFR Section 800.13 have been satisfied, including consultation with federally recognized Native American tribes that may attach traditional cultural and religious significance to the discovered property. The Corps will consult with the SHPO and Native American tribes, as appropriate, to record, document, and evaluate NRHP eligibility of the property and

the project's effect on the property, and to design a plan for avoiding, minimizing, or mitigating adverse effects on the eligible property. If neither the SHPO nor a federally recognized Native American tribe files a timely objection to the Corps' plan for addressing the discovery, the Corps may carry out the requirements of 36 CFR Section 800.13 and the Advisory Council on Historic Preservation need not be notified.

3.15 Threatened and Endangered Species

3.15.1 Affected Environment

The Endangered Species Act established a national program for the conservation of threatened and endangered fish, wildlife and plants and the habitat upon which they depend. Section 7(a)(2) of the Endangered Species Act requires Federal agencies to consult with the United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their critical habitats.

There are two Endangered Species Act listed species in Hancock County, West Virginia. The Indiana bat (*Myotis sodalis*) is listed as an endangered species and the northern long-eared bat (*Myotis septentrionalis*) is listed as threatened.

According to the USFWS, no records of threatened and endangered (T&E) species or critical habitat are found within the project area, nor are any federal-listed T&E species known to occur within a one-mile radius of the project area. Summer habitat for the Indiana bat and northern long-eared bat consist of a wide variety of forested/wooded habitats where they roost, forage, and travel, and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields, and pastures. This includes forests and woodlots containing potential roosts such as live trees and/or snags, greater than three inches in diameter that have exfoliating bark, cracks, crevices, hollows, and/or cavities. Suitable summer roost habitat for the Indiana bat and northern long-eared bat is not present within the project area (USFWS, 2022).

3.15.2 Environmental Consequences

The action area is entirely within existing public rights-of-way or utility easement, water tank and water treatment facility. No tree clearing is proposed for the action area. The in-water work proposed includes the video inspection and cleaning of the raw water intake structure within the Ohio River. Neither alternative would impact terrestrial or aquatic federal and state listed threatened and endangered species. Additionally, no records of bald eagle nests were identified, and no bald eagle nests were located during the field visit.

3.16 Air Quality

3.16.1 Affected Environment

According to the USEPA website, Hancock County is classified as in “nonattainment” for Ozone 8-hr (1997), PM 2.5 24-hr. (2006), and PM 2.5 annual (1997) and is classified as “in attainment” (maintaining applicable standards) for the remaining criteria pollutants. Additionally, an active SO_2 monitoring site is located at the Chester-Allison Elementary School. Emission sources include diesel exhaust and fuel odors associated with operation of heavy equipment, engine emissions associated with construction, and construction activities.

Construction activities of the proposed project would have the potential to cause localized temporary, nuisance air quality impacts which include particulate emissions from construction equipment and fugitive dust from excavation.

3.16.2 Environmental Consequences

The proposed project is exempted by 40 CFR Part 93.153(c)(1) from making a conformity determination, since estimated emissions from construction equipment would not be expected to exceed de minimis levels, direct emissions of a criteria pollutant, or its precursors. Any impacts would be localized and would occur only during construction phase activities. During construction, the contractor shall meet all existing federal and state regulations regarding equipment emissions. Impacts to air quality under the proposed project would be minor and temporary during construction and would not have significant long-term adverse impacts. Either alternative will have a minimal effect on air quality.

3.17 Noise

3.17.1 Affected Environment

The Noise Control Act of 1972 directs Federal agencies to comply with Federal, State, interstate, and local requirements respecting control and abatement of environmental noise.

Noise-sensitive receptors include sensitive land uses and those individuals and/or wildlife that could be affected by changes in noise sources or levels due to the project. Noise sensitive land uses in the project area include residential areas, businesses, and schools. Sensitive receptors in the project area include residents, employees and customers of businesses, and students.

3.17.2 Environmental Consequences

There will be temporary increases in noise levels within the project area during construction of the proposed project. No permanent noise impacts are anticipated because of the proposed action. Either alternative will have a minimal effect on noise.

3.18 Environmental Justice and Protection of Children

3.18.1 Affected Environment

Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs Federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law.

According to the census data, the 2020 population estimate is 29,095 individuals within Hancock County. The 2020 US Census population estimate for Chester is 2,208 individuals. The median household income for Hancock County in 2020 was $48,140 (USCB, 2020).

The USEPA EJScreen Mapper tool was used to review demographic data to identify environmental justice populations in the project area. There are two census block groups in the project area and one block group only within the service area of the water treatment plant. In block group 540290215004 low income makes up 37% of the total population, 29% of the population is over the age of 64, 6% of the population is under the age of 5, and people of color make up 3% of the total population. In block group 540290215003 low income makes up 43% of the total population, 25% of the population is over the age of 64, 7% of the population is under the age of 5, and people of color make up 2% of the total population. In block group 540290215003 (within the service area of the water treatment plant) low income makes up 40% of the total population, 29% of the population is over the age of 64, 3% of the population is under the age of 5, and people of color make up 2% of the total population. According to the United States Census, in 2020 the average population percentages for the United States is comprised of 11% low-income individuals, 16.8% people over the age of 64, and 24.2% people of color. The low-income population and percentage of individuals over the age of 64 in the Project area is greater than the national average and the percentage of people of color is lower than the national average. Additionally, the low-income population and the number of individuals over the age of 64 is greater than the percentage for West Virginia and percentage of people of color is less than the state average.

See Underserved Populations Figures are included as Figures 7.2.a-c in Appendix A.

The Council on Environmental Quality's (CEQ) Climate and Economic Justice Screening Tool was used to compare the demographic statistics of the project area with the statistics of the Unites States. The project area is in the 71st percentile for low-income populations in the nation 95th percentile for heart disease and 90th percentile for low life expectancy. A non-upgraded water system will increase hardships on EJ populations and children by not providing clean and safe drinking water to the community. Providing clean water to a community supports healthy growth and development of children.

The CEQ's EJ Mapper Figures and demographic information is provided as Figures 7.1.a-b in Appendix A.

3.18.2 Environmental Consequences

The action area is limited to existing public rights-of-way and the water tank and water treatment plant properties. No changes in land use are anticipated because of the proposed project. There would be no residential displacements because of the proposed project. No impacts to community facilities are anticipated and the proposed project would not result in impacts to community cohesion. No disproportionate adverse impacts to environmental justice populations are anticipated because of the proposed project. All community members, including environmental justice populations, would be expected to benefit from the proposed project. Neither alternative would have a negative effect on socioeconomic conditions, and it is expected to have a positive effect. The access to clean and reliable drinking water is essential for the community to attract and retain residents and to keep those residents healthy. Benefits to drinking water improvements include human health improvements, enhanced authentic qualities, avoided costs of averting behavior and finding clean water, avoided materials damages, and avoided costs of market production. Additionally, economic benefits come with the ability to attract and retain quality businesses that rely on clean water and these benefits extend beyond the service area into the community at large. All community members (within the study area and water treatment plant service area), including environmental justice populations, would be expected to benefit from the proposed project.

3.18.2.1 No-Action Alternative

The No-Action Alternative includes the completion of the proposed water system improvements through funding the proposed project by the City of Chester. The timeline for completing the proposed project would be impacted by the amount of time it takes the city to raise the required funds. The longer it takes to provide reliable safe and clean drinking water to the community the greater the impacts are on the residents.

3.18.2.2 Preferred Alternative

The Preferred Alternative includes the completion of the proposed project as proposed and on an accelerated timetable benefiting residents over the no-action alternative. The need for clean and safe drinking water in the community is great and the sooner the project can be implemented the alleviation of the impacts the better.

3.19 Aesthetic Resources

3.19.1 Affected Environment

The project area is situated in an urban setting, located entirely within existing public rights-of-way or utility easements or within the existing water treatment plant and water

tank properties. Minor temporary disturbance of local aesthetics would be anticipated during construction of the proposed project due to the installation of the waterline, necessary valves, and upgrades to the water treatment plant and the water tank.

The proposed action consists primarily of subsurface water system improvements. Permanent aesthetic changes above ground would be minor if present. As a result, no permanent adverse aesthetic impacts are anticipated because of the proposed action.

3.19.2 Environmental Consequences

Due to the temporary nature of these impacts, following construction, there would be no long-term impacts to aesthetics. Therefore, neither alternative will have any adverse impacts to aesthetics and only temporary impacts would occur.

3.20 Health and Safety

3.20.1 Affected Environment

The proposed project has been designed to upgrade the current water system to provide safe and reliable drinking water for residents, particularly children, by addressing necessary repairs. Upgrading the system will positively impact the health and safety of the community by ensuring access to reliable, clean, and safe drinking water.

3.20.2 Environmental Consequences

Neither alternative for the proposed project will have a negative impact on health and safety. The proposed project for water system improvements in Chester is expected to have a positive impact on health and safety for residents and children in the project area, as it will provide them with reliable water. If federal funding is not provided for this project, it will be delayed and completed by the City of Chester when funds become available.

3.20.2.1 No-Action Alternative

The No-Action Alternative includes the completion of the proposed water system improvements through funding the proposed project by the City of Chester. The timeline for completing the proposed project would be impacted by the amount of time it takes the city to raise the required funds. The longer it takes to provide reliable safe and clean drinking water to the community the greater the impacts are on the residents.

3.20.2.2 Preferred Alternative

The Preferred Alternative includes the completion of the proposed project as proposed and on an accelerated timetable benefiting residents over the no-action alternative. The need for clean and safe drinking water in the community is great and the sooner the project can be implemented the alleviation of the impacts the better.

3.21 Transportation and Traffic

3.21.1 Affected Environment

The proposed project includes water system improvements throughout the City of Chester. The project will replace water valves throughout the town, make improvements to the existing water treatment plant near the Ohio River and the water tank on Liberty Avenue, as well as repair and improve a water line along Indiana avenue between 3rd and 4th Streets.

3.21.2 Environmental Consequences

The proposed action would be constructed entirely within the existing public rights-of-way or utility easement. Temporary lane closures will be required for the construction of the project, but the contractor will be required to always keep one lane of roadways open. Following construction, the transportation system would return to its existing condition. No permanent impacts to traffic or transportation are anticipated because of the proposed project. Either alternative will have a minimal effect on transportation and traffic.

3.22 Public Infrastructure

3.22.1 Affected Environment

This proposed project includes the maintenance and upgrading of the City of Chester's water system. The current system is in need of upgrade to provide reliable clean water to the community.

3.22.2 Environmental Consequences

This water system is a part of the public infrastructure and will experience upgrades to provide clean and safe drinking water to residents. These upgrades provide benefits for the residents within the service area because they will have access to reliable clean drinking water.

3.23 Floodplains

3.23.1 Affected Environment

The Federal Emergency Management Agency (FEMA) Flood Information Rate Map (FIRM) panels 54029C0056E and 54029C0052E were reviewed for the presence of flood hazard zones (FEMA, 2020).

3.23.2 Environmental Consequences

Portions of the project area near the Ohio River are located within Flood Hazard Zones AE. All action areas shown on the FEMA FIRM maps lie outside of the Flood Hazard Zones AE except for the portion of the Water Treatment Plant that is adjacent to the Ohio

River and the intake are within the river and approximately 20-square feet of the southern portion of the action area containing valve location VR 13. The Water Treatment Plant action area within the floodplain includes the existing raw water intake, an old water intake structure and old water treatment plant. The old intake structure and old water treatment plant will not be impacted by this project. The work proposed to the currently used raw water intake area in the Ohio River is limited to cleaning out the intake and video inspection of the existing raw water piping and includes no additional fill. The debris cleaned out of the structure will be collected and properly disposed of off-site. The work expected in the action area around valve location VR 13 includes the replacement of the existing valve. The work will be performed within asphalt paved areas, where all of the material excavated from the trench will be immediately loaded into a truck & will be immediately disposed of and no additional fill will be placed in the floodplain. The amount of work to be conducted within the floodplain is minimal and no fill will be placed within the floodplain. This proposed project is not expected to have any effect on the floodplain. The FEMA Floodplain of the project area and action areas is included as Figure 5 in Appendix A.

3.24 Recreational Resources

3.24.1 Affected Environment

Two parks are located within the project area, Chester City Park and the Chester 3rd Street Playground. The Chester City Park is located along the Ohio River and Middle Run in the central portion of the City of Chester, west of Louella Avenue, northeast of Adolphus Street, and northwest of West Carolina Avenue. The Chester 3rd Street Playground is situated adjacent to southwest of the proposed waterline and hydrant replacement action area along Indiana Ave. between, 3rd and 4th Street.

3.24.2 Environmental Consequences

It is not expected that the proposed project will have an impact on the recreational use of the park or playground because the proposed work will take place within the public rights-of-way and outside these recreational properties. Temporary indirect impacts such as noise, exhaust fumes, and rogue dust from the construction equipment within the proposed action area will be present as a result of the construction activities themselves. Additional information on the temporary impact of the proposed project on air quality and noise are provided in Sections 3.14 Air Quality and 3.15 Noise.

SECTION 4 – COORDINATION, CONSULTATION, AND PUBLIC INVOLVEMENT

4.1 Federal Agency Coordination

Consultation with federal agencies has been completed throughout the design and development of the proposed project. Response letters from agencies are provided in Appendix B.

4.1.1 United States Fish and Wildlife Service

The USFWS was consulted via a the USFWS Information for Planning and Consultation (IPaC version 6.78.0-rc6) system which created a Biological Assessment to determine the potential for effects on the proposed project regarding Section 7(a)(2) of the Endangered Species Act. All projects in the State of West Virginia lie within the range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*). In West Virginia, presence of the Indiana bat and northern long-eared bat is assumed wherever suitable habitat occurs. No suitable habitat occurs within the project area. The USFWS Species List indicated there are no other records of T&E species or critical habitat found within the project area, nor are there any other federal listed T&E species known to occur within a one-mile radius of the (USFWS, 2022).

4.1.2 United States Environmental Protection Agency

The Chester Water Department is listed by the USEPA on the Federal EPA Water System Search database having a Public Water System Identification Number of WV3301504 and the water system consisting of nine facilities (USEPA, 2022). According to the records in the database, The Chester Water Department is listed as having violations that have not achieved compliance listed in **Table 2**.

TABLE 2: CHESTER WATER DEPARTMENT USEPA ENVIROFACTS DRINKING WATER VIOLATION DATA

Type of Violation	Compliance Period	Drinking Water Rule or Contaminant
Monitoring and Reporting (DBP)	April 1 – June 30, 2021	Carbon, Total
Monitoring, Regular	January 1 - December 31, 2021	-Toluene -Styrene -1,1-Dichloroethylene -Trans-1,2-Dichloroethylene -Carbon tetrachloride -Dichloromethane -Trichloroethylene -Benzene -Vinyl chloride

		-1,1,1-Trichloroethane -1,2-Dichloropropane -cis-1,2-Dichloroethylene -Tetrachloroethylene -Ethylbenzene -o-Dichlorobenzene -Xylenes, Total -Chlorobenzene -1,1,2-Trichloroethene -p-Dichlorobenzene -1,2-Dichloroethane
Treatment Technique- No Certified Operator	April 1, 2020	DBP Stage 1

The intention of the water system improvements proposed in this proposed project is to alleviate these drinking water violations and achieve compliance. The purpose of the proposed project is to ensure that the residents in the area have an adequate drinking supply.

4.2 State Agency Consultation

Consultation with state agencies has been completed throughout the completion of the Phase I Environmental Site Assessment. Response letters from agencies have not yet been received and an addendum to the report will be issued if a response includes a possible environmental condition that would impact the project. Consultation letters were sent to the West Virginia Department of Environmental Protection (WVDEP) and the Local Health Department sent on June 8, 2022, are provided in the Phase I Environmental Site Assessment Report included as Appendix D.

The Phase I Cultural Resources Management Survey completed for the proposed project on July 18, 2022 and revised in January 2023, was submitted to the Corps and is to be submitted to the West Virginia SHPO for concurrence with a “no effect determination”. An addendum to this report will be issued if the coordination with SHPO results in a determination other than a “no effect determination.”

4.3 Public Involvement

The Corps published a News Release on their website on December 16, 2020, detailing their partnership agreement with the City of Chester for upgrades to the water treatment system. The article includes information on the partnership to improve the raw water intake system, the installation of new electrical control equipment, and rehabilitation of portions of the water distribution system. There are no additional public meetings or public hearings planned for this proposed project prior to construction.

SECTION 5 – CONCLUSION

Based on the information presented in this EA, the proposed project would result in no significant adverse impacts to the human or natural environment. A summary of the resources evaluated is provided in **Table 3**. Therefore, it is anticipated that the proposed project meets the requirements for issuance of a Finding of No Significant Impacts (FONSI) per 40 CFR 1508.13

TABLE 3: RESOURCES EVALUATED AND DETERMINATION OF POTENTIAL EFFECTS

Environmental Parameter	No Effect	Minimal Effect	Significant Effect	Basis for Determination
Land Use	X			No changes in land use.
Climate		X		Temporary impacts from minor discharges of carbon-based pollutants would occur during construction activities.
Terrestrial Resources/Wildlife		X		Terrestrial habitats temporarily affected will be returned to their original contours and reseeded.
Invasive Species		X		Minimal potential for invasive species introduction.
Prime & Unique Farmland		X		No conversion of farmland for the project. Temporarily affected prime farmland will be returned to the original contours and reseeded.
Streams, Other Water Bodies, and Water Quality	X			No resources identified in the project area.
Floodplains & Wetlands		X		The floodplain is within the project area, and work will minimally be completed within the project area.
Aquatic Life/ Fisheries	X			No streams identified in the project area.
Hazardous Materials & Wastes	X			No evidence of recognized environmental conditions in connection with the project area.
Cultural Resources & Historic Properties	X			No cultural or historic resources identified.
T&E Species	X			No habitat identified within the project area.
Air Quality		X		Impacts to air quality would be minor and temporary during construction.
Noise		X		Temporary increases in noise levels during construction.
Socioeconomic Conditions	X			No changes in land use anticipated. No displacements, no impacts to community facilities, no disproportionate impacts to environmental justice populations.
Transportation & Traffic		X		Temporary disruptions to traffic during construction. No permanent impacts to transportation & traffic.

SECTION 6 – REFERENCES

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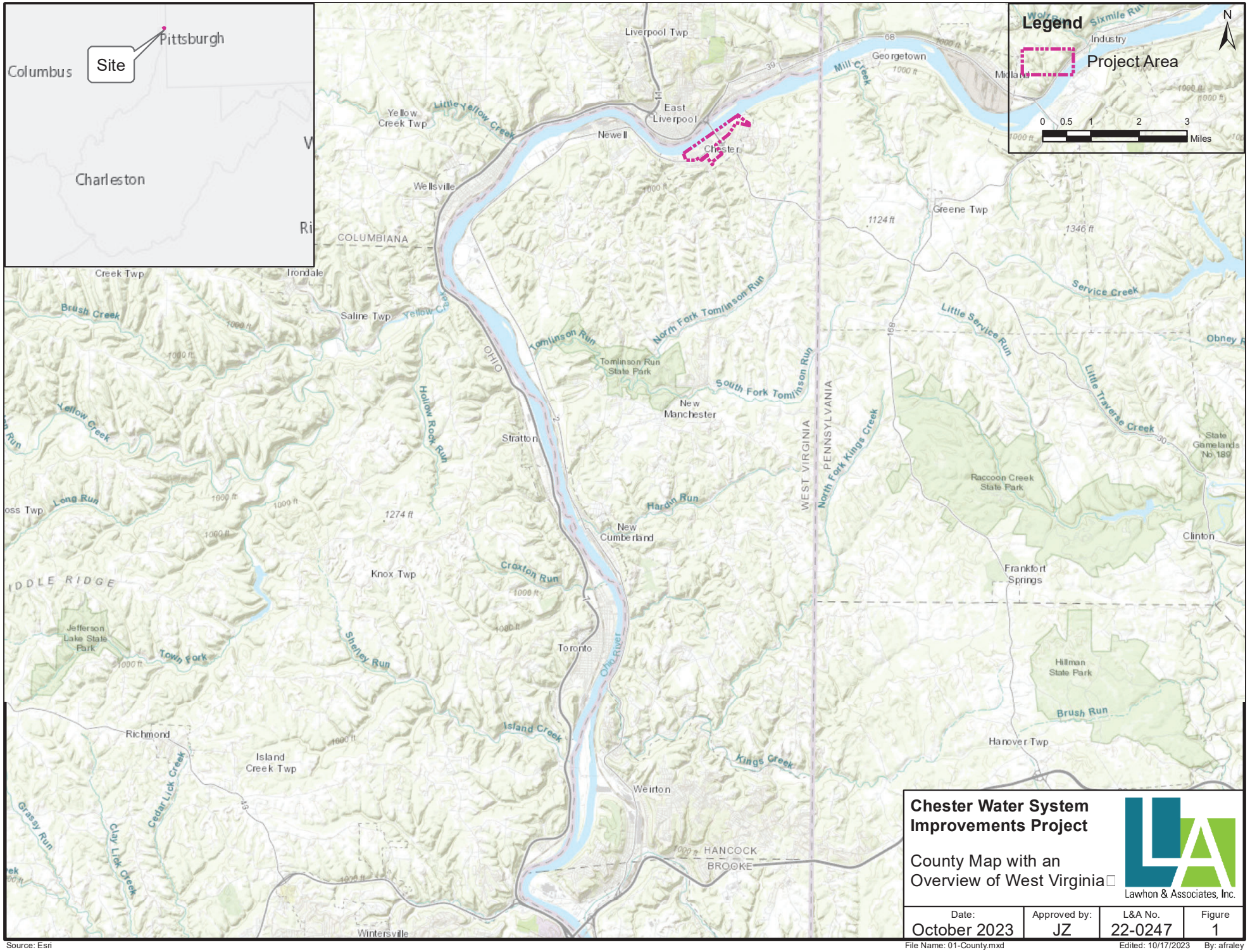
APPENDIX A – FIGURES

- **Figure 1. County Overview Map**
- **Figure 2. USGS Topographic Map**
- **Figure 3. Aerial Location Map**
- **Figure 3.1. Aerial Location Map with Water Treatment Plant Service Area**
- **Figure 4. USFWS National Wetlands Inventory Map**
- **Figure 5. FEMA Floodplain Map**
- **Figure 6. USDA NRCS Soil Survey Map**
- **Figure 7.1 EJ Screening Maps and Report**
- **Figure 7.2 Underserved Populations Maps**



Chester Water System Improvements Project

County Map with an Overview of West Virginia

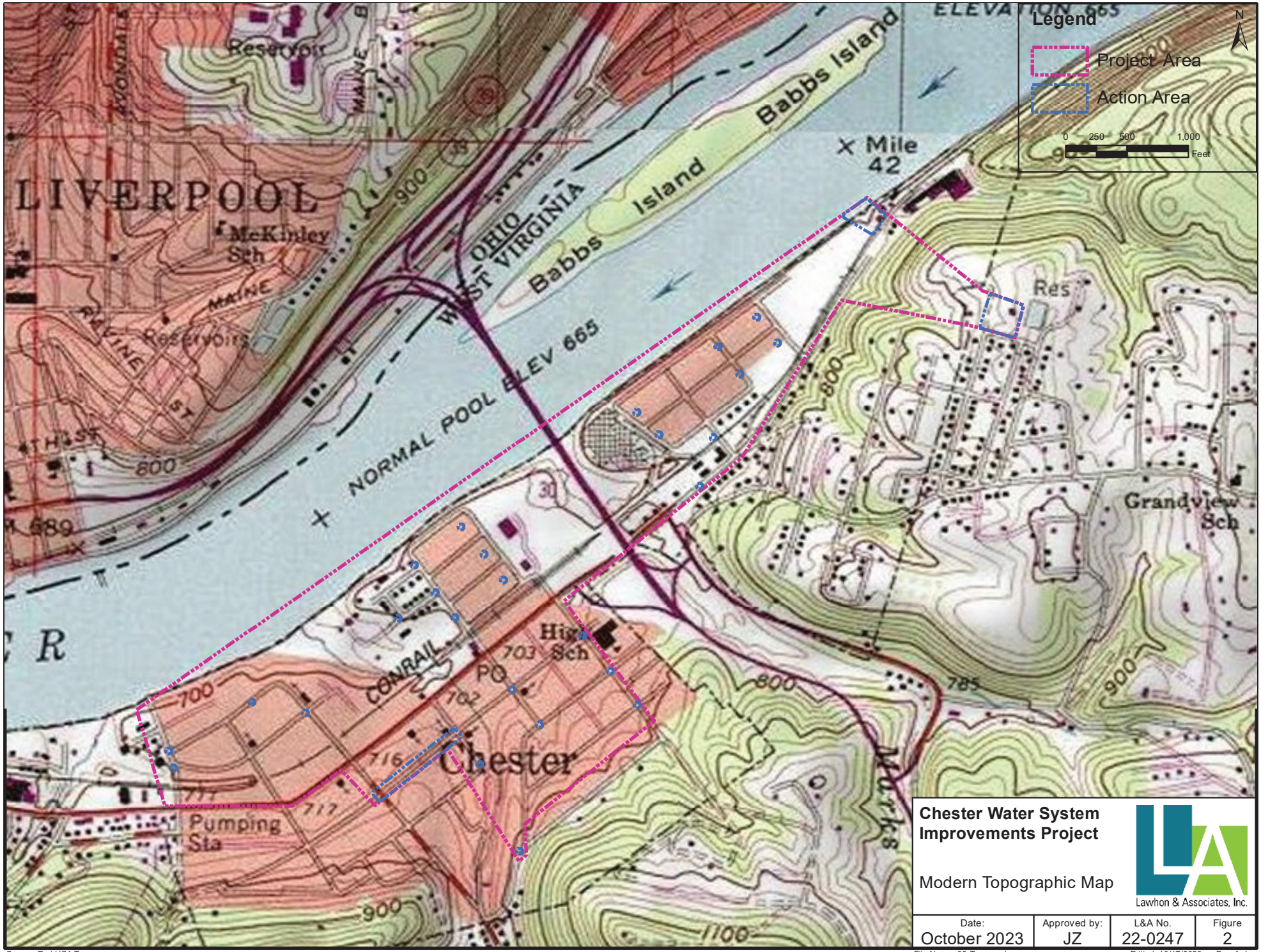
Lawhon & Associates, Inc.

Date:	Approved by:	L&A No.	Figure
October 2023	JZ	22-0247	1

Source: Esri

File Name: 01-County.mxd

Edited: 10/17/2023 By: afraley



Chester Water System Improvements Project

Modern Topographic Map

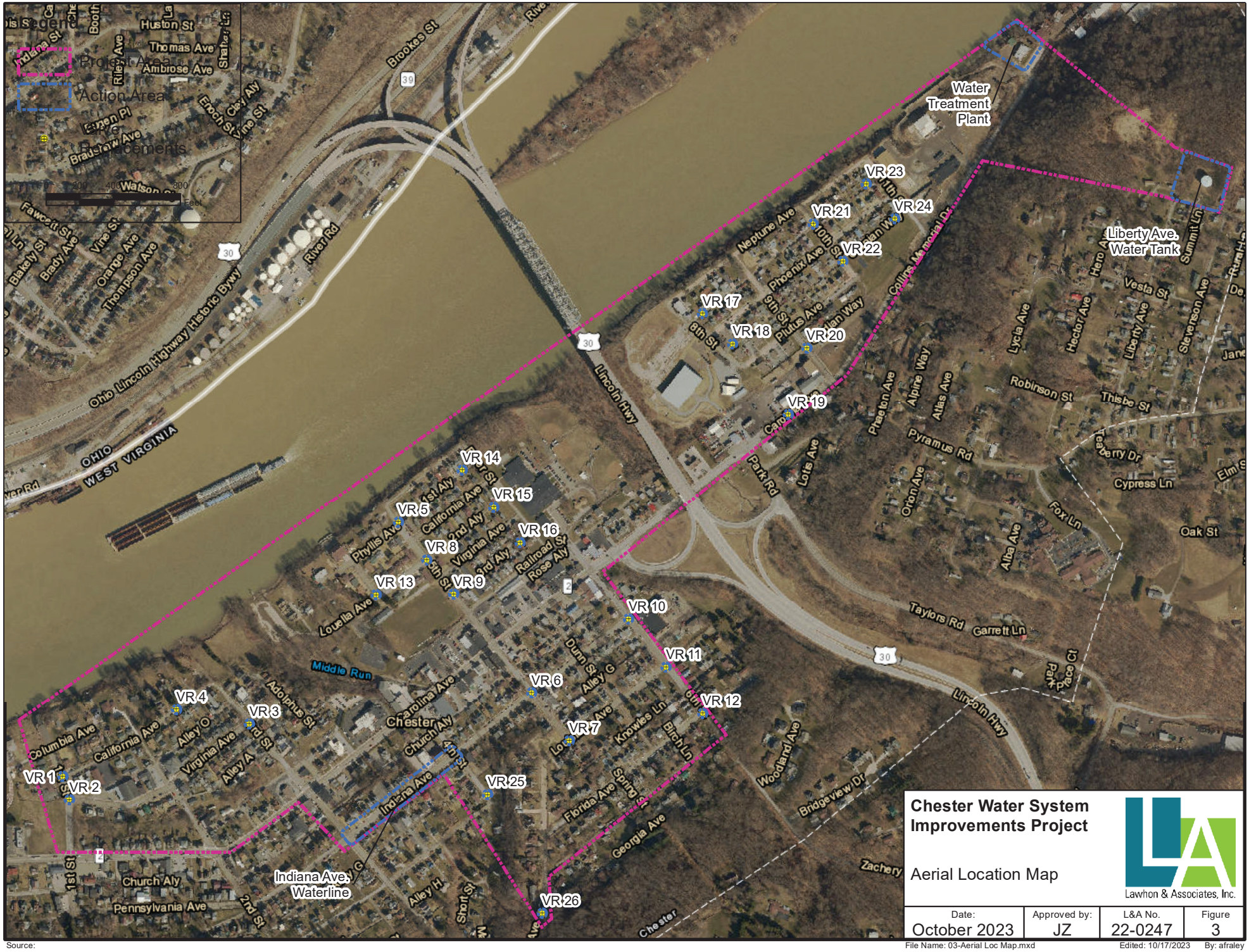
Lawhon & Associates, Inc.

Date:	Approved by:	L&A No.	Figure
October 2023	JZ	22-0247	2

Source: Esri USA Topo

File Name: 02-Topo.mxd

Edited: 10/17/2023 By: afraley



Chester Water System Improvements Project

Aerial Location Map

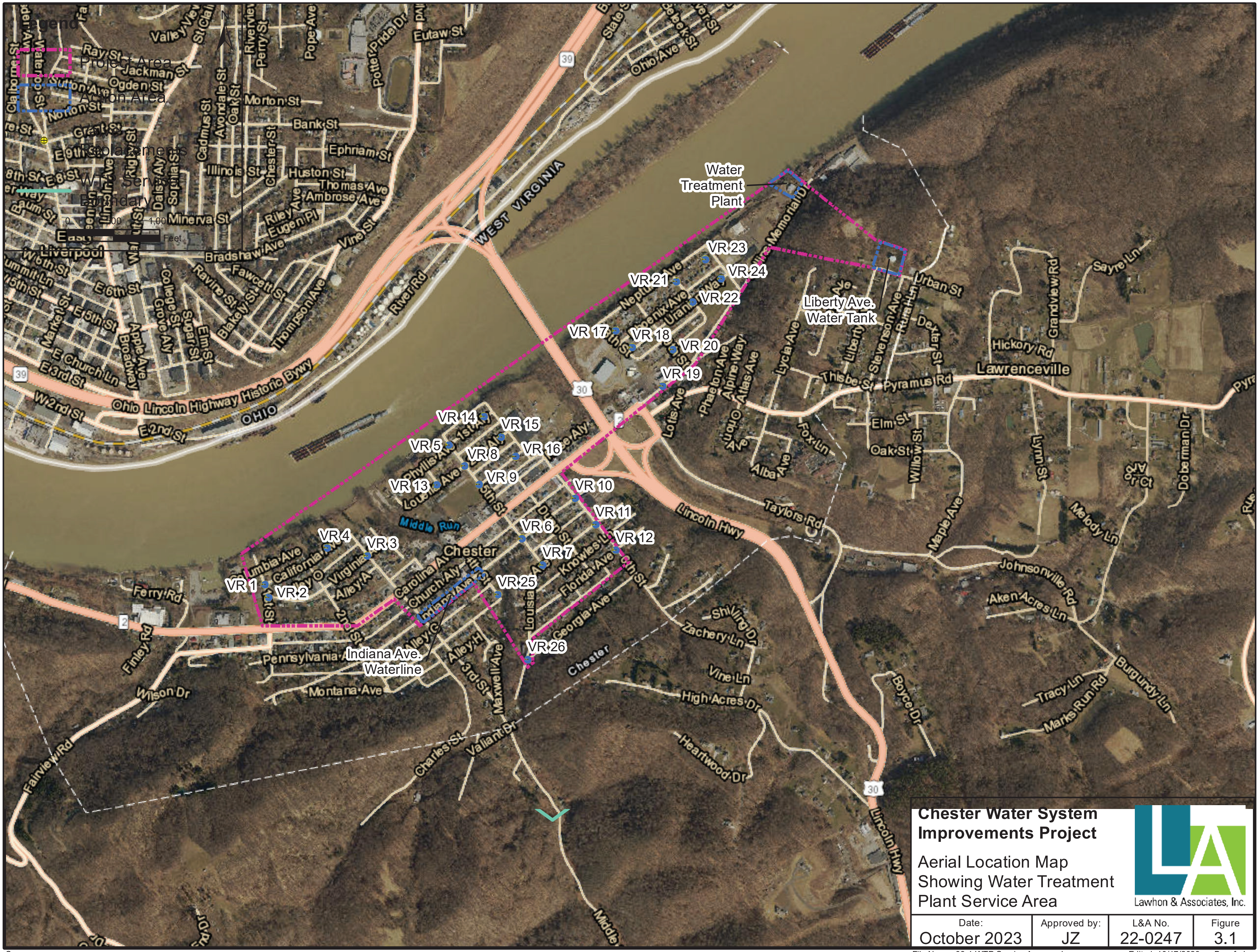
Lawhon & Associates, Inc.

Date:	Approved by:	L&A No.	Figure
October 2023	JZ	22-0247	3

Source:

File Name: 03-Aerial Loc Map.mxd

Edited: 10/17/2023 By: afraley



Chester Water System Improvements Project

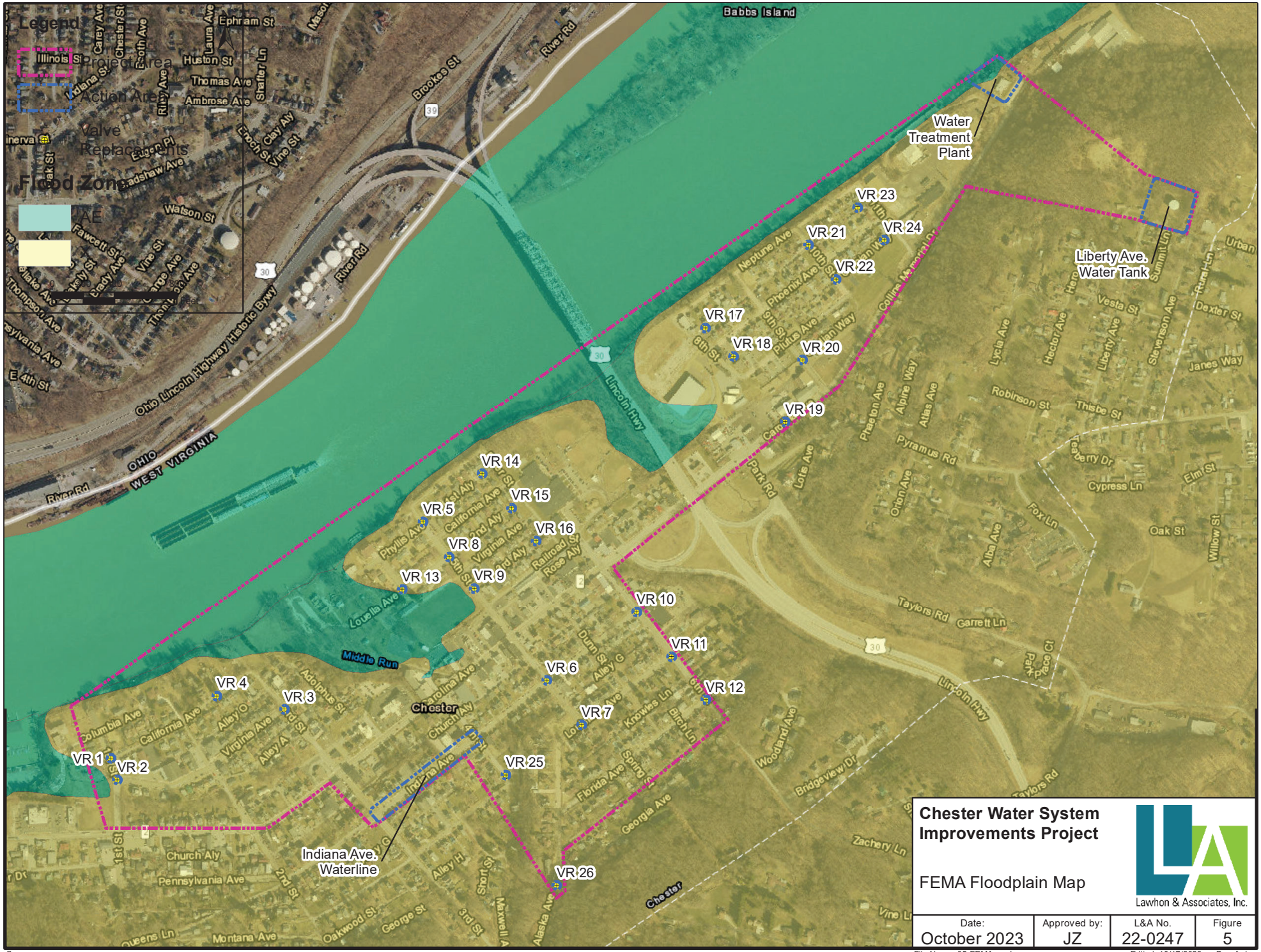
Aerial Location Map Showing Water Treatment Plant Service Area

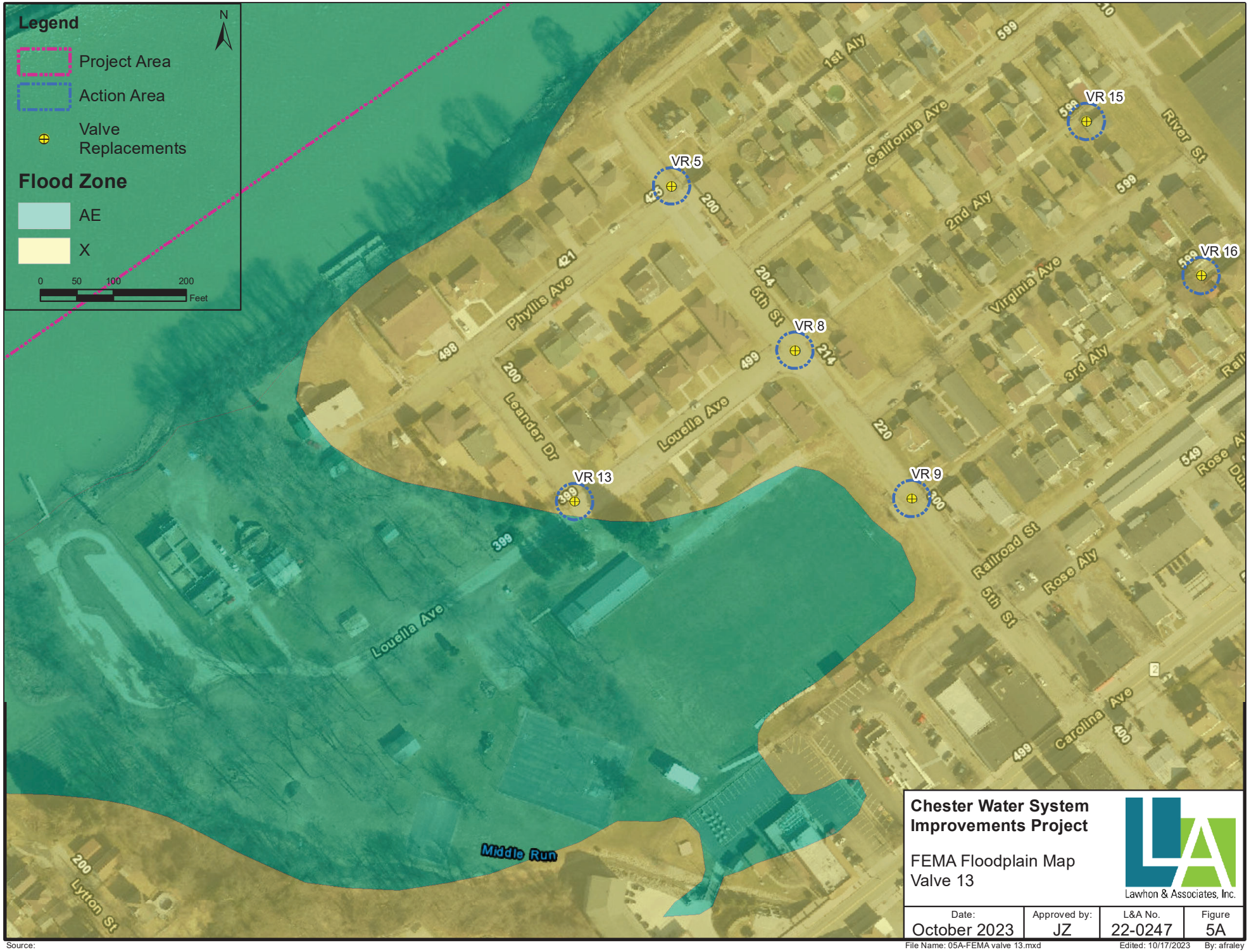
Lawhon & Associates, Inc.

Date:	Approved by:	L&A No.	Figure
October 2023	JZ	22-0247	3.1

Source:

File Name: 03.1-WTP Service Area.mxd Edited: 10/17/2023 By: afraley


Legend
Project Area
Action Area
Valve Replacements
Flood Zone
AE
Babbs Island
Water Treatment Plant
Liberty Ave. Water Tank
Indiana Ave. Waterline
VR 1
VR 2
VR 3
VR 4
VR 5
VR 6
VR 7
VR 8
VR 9
VR 10
VR 11
VR 12
VR 13
VR 14
VR 15
VR 16
VR 17
VR 18
VR 19
VR 20
VR 21
VR 22
VR 23
VR 24
VR 25
VR 26
Middle Run
Chester
OHIO
WEST VIRGINIA
Ohio Lincoln Highway Historic Byway
Lincoln Hwy
River Rd
Brookes St
Ephram St
Huston St
Thomas Ave
Ambrose Ave
Watson St
Fawcett St
Vine St
Oak St
Indiana St
Illinois St
Carey Ave
Chester St
Booth Ave
Laura Ave
Riley Ave
Shaffer Ln
Enoch St
Clay Aly
Edgar Pl
Meadshaw Ave
Thompson Ave
Pennsylvania Ave
E 4th St
Columbia Ave
California Ave
Virginia Ave
Adolphus St
Alley O
Alley A
Alley G
Alley H
1st St
2nd St
3rd St
Short St
Maxwell Ave
Church Aly
Church Ave
Indiana Ave
Florida Ave
Georgia Ave
Spring Ave
Knowles Ln
Birch Ln
Woodland Ave
Bridgeview Dr
Zachery Ln
Taylors Rd
Garrett Ln
Park Place Ct
Lincoln Hwy
Park Rd
Pyramus Rd
Robinson St
Thisbe St
Cypress Ln
Elm St
Oak St
Willow St
Fox Ln
Alba Ave
Orion Ave
Lotis Ave
Phaeton Ave
Alpine Way
Atlas Ave
Lycia Ave
Hector Ave
Liberty Ave
Stevenson Ave
Vesta St
Dexter St
James Way
Summit Ln
Rural Ln
Urban
Neptune Ave
Phoenix Ave
Plutus Ave
Collins Memorial Dr
Louella Ave
Phyllis Ave
Railroad St
Rose Aly
Dunn St
Montana Ave
Oakwood St
George St
Queens Ln
Alaska Ave
Chester
Chester Water System Improvements Project
FEMA Floodplain Map
Lawhon & Associates, Inc.
Date: October 2023
Approved by: JZ
L&A No. 22-0247
Figure 5
Source:
File Name: 05-FEMA.mxd
Edited: 10/17/2023
By: afraley



Chester Water System Improvements Project

FEMA Floodplain Map
Valve 13

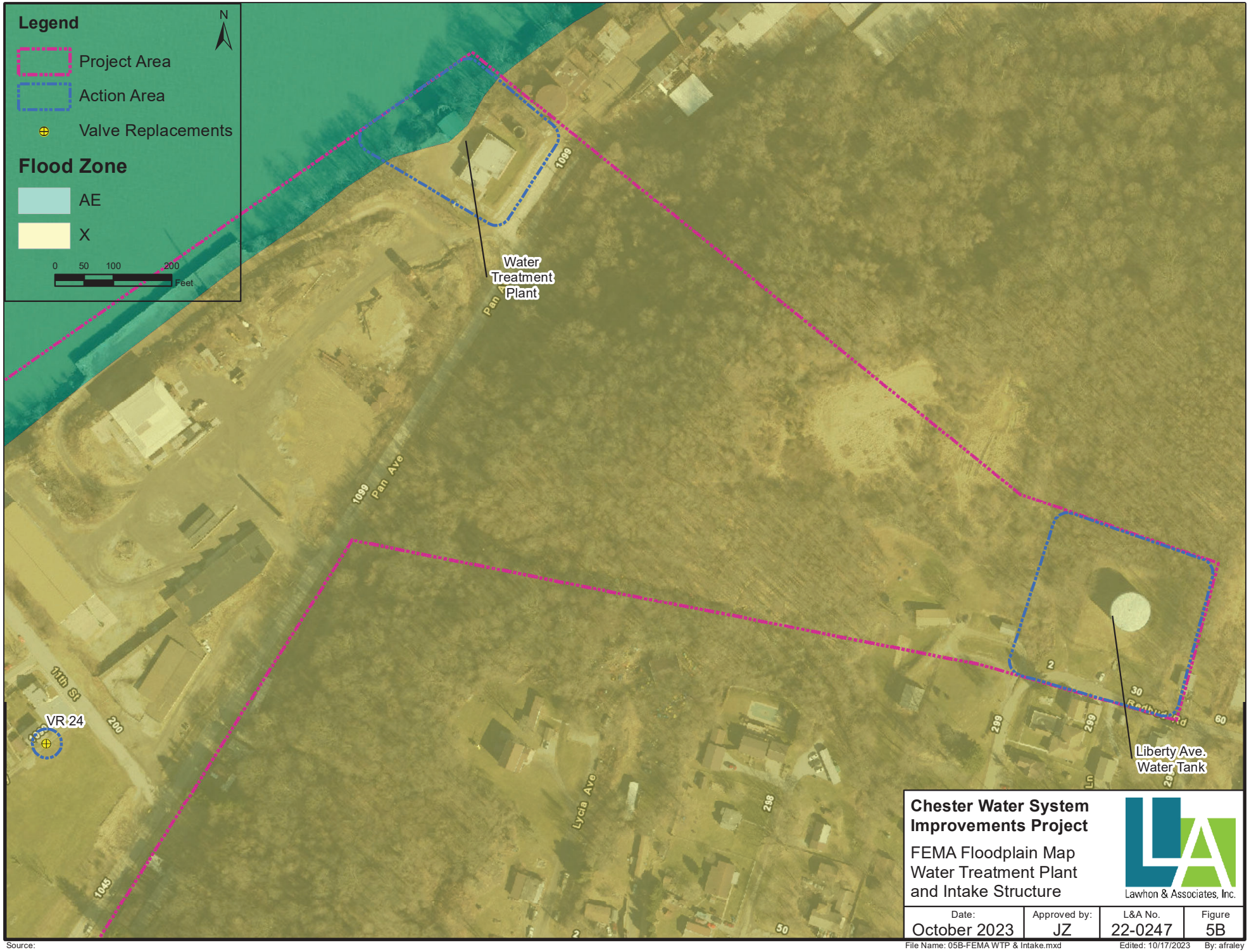
Lawhon & Associates, Inc.

Date:	Approved by:	L&A No.	Figure
October 2023	JZ	22-0247	5A

Source:

File Name: 05A-FEMA valve 13.mxd

Edited: 10/17/2023 By: afraley

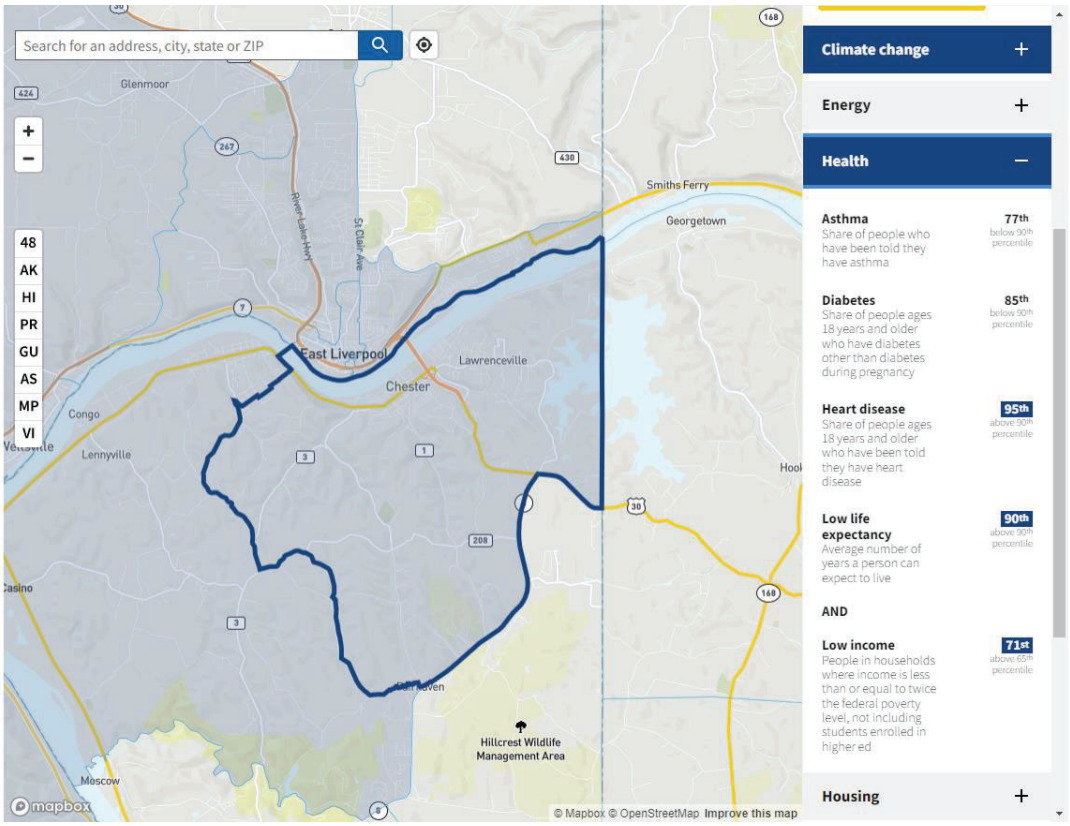


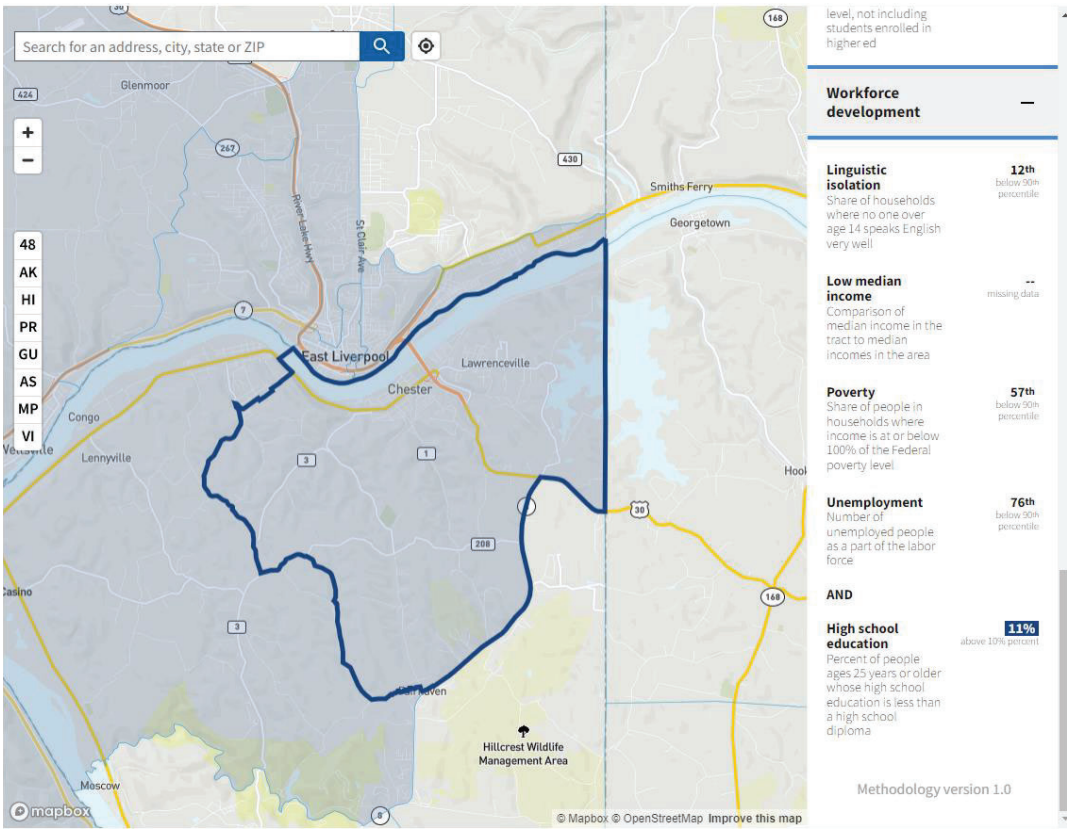
Source:

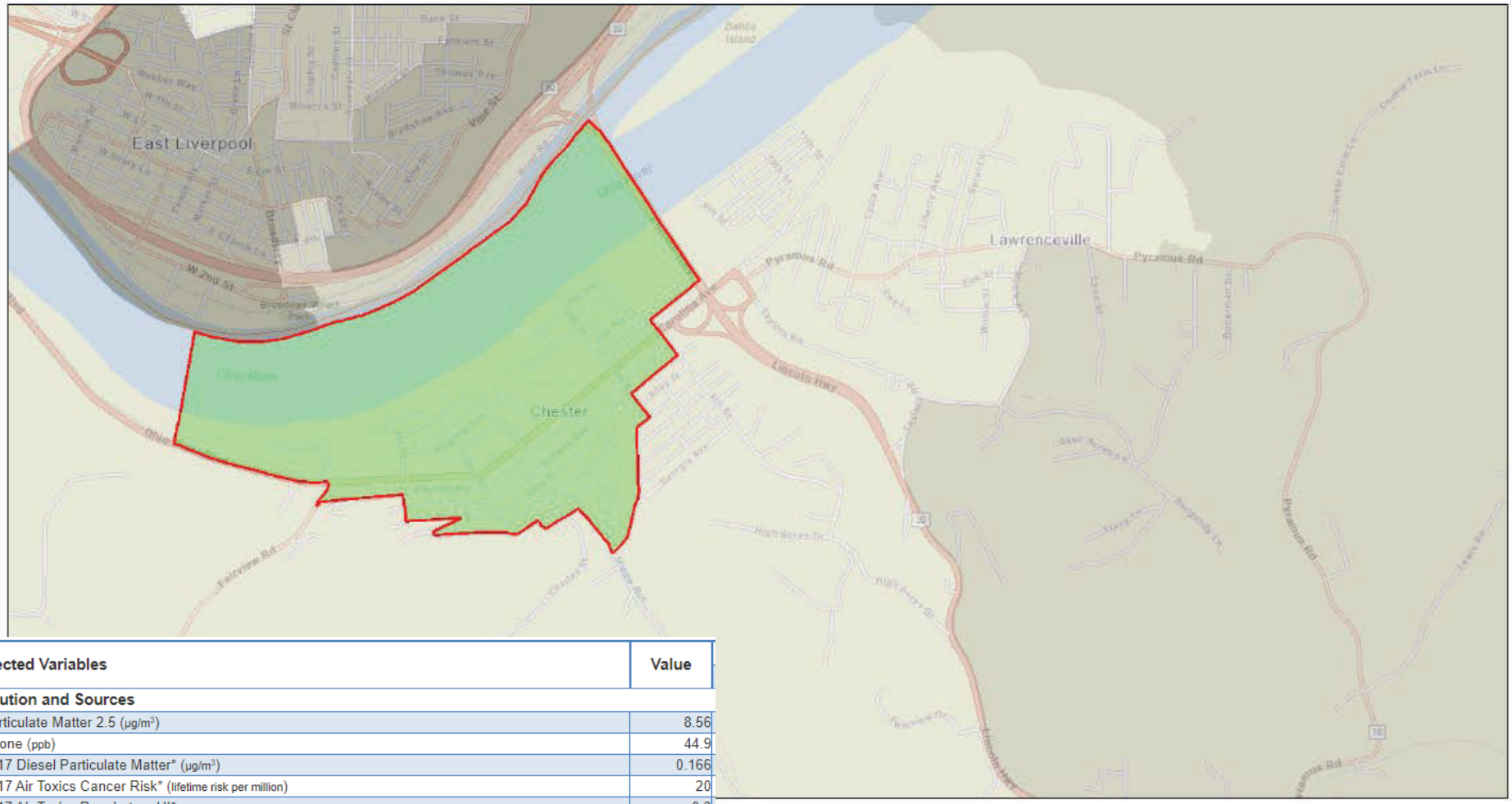
File Name: 05B-FEMA WTP & Intake.mxd Edited: 10/17/2023 By: afraley

Figures 7.1a and 7.1b

CEQ's EJ Screening Tool - Demographic Information Chester, WV

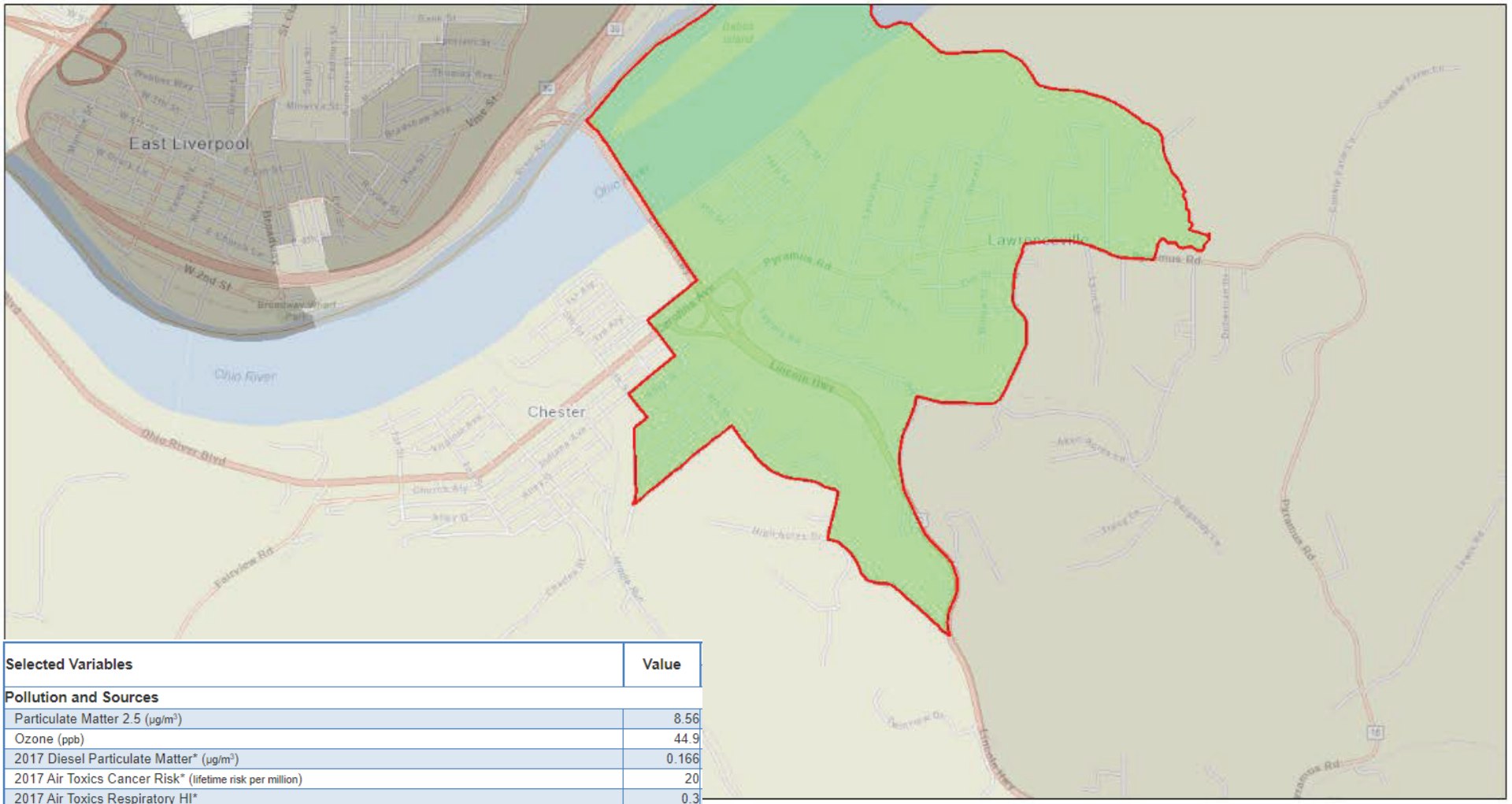






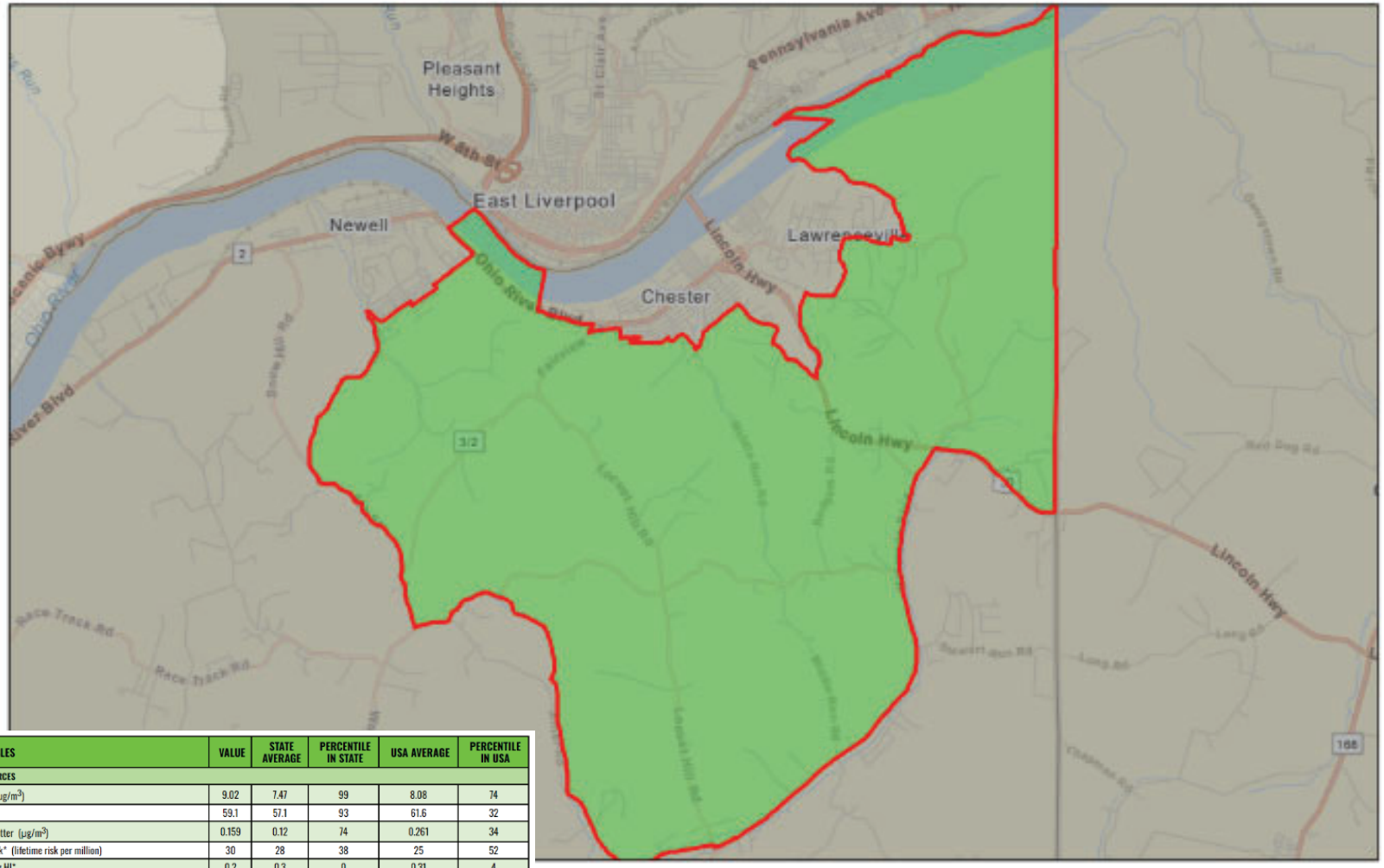
Selected Variables	Value
Pollution and Sources	
Particulate Matter 2.5 (µg/m³)	8.56
Ozone (ppb)	44.9
2017 Diesel Particulate Matter* (µg/m³)	0.166
2017 Air Toxics Cancer Risk* (lifetime risk per million)	20
2017 Air Toxics Respiratory HI*	0.3
Traffic Proximity (daily traffic count/distance to road)	480
Lead Paint (% Pre-1960 Housing)	0.84
Superfund Proximity (site count/km distance)	0.027
RMP Facility Proximity (facility count/km distance)	0.55
Hazardous Waste Proximity (facility count/km distance)	0.41
Underground Storage Tanks (count/km²)	3.8
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.23
Socioeconomic Indicators	
Demographic Index	20%
People of Color	3%
Low Income	37%
Unemployment Rate	13%
Linguistically Isolated	0%
Less Than High School Education	5%
Under Age 5	6%
Over Age 64	29%

Figure 7.2a- Undeserved Populations Map



Selected Variables	Value
Pollution and Sources	
Particulate Matter 2.5 (µg/m³)	8.56
Ozone (ppb)	44.9
2017 Diesel Particulate Matter* (µg/m³)	0.166
2017 Air Toxics Cancer Risk* (lifetime risk per million)	20
2017 Air Toxics Respiratory HI*	0.3
Traffic Proximity (daily traffic count/distance to road)	330
Lead Paint (% Pre-1960 Housing)	0.68
Superfund Proximity (site count/km distance)	0.028
RMP Facility Proximity (facility count/km distance)	0.85
Hazardous Waste Proximity (facility count/km distance)	0.57
Underground Storage Tanks (count/km²)	1.4
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.018
Socioeconomic Indicators	
Demographic Index	23%
People of Color	2%
Low Income	43%
Unemployment Rate	2%
Linguistically Isolated	0%
Less Than High School Education	14%
Under Age 5	7%
Over Age 64	25%

Figure 7.2b- Undeserved Populations Map



SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (µg/m³)	9.02	7.47	99	8.08	74
Ozone (ppb)	59.1	57.1	93	61.6	32
Diesel Particulate Matter (µg/m³)	0.159	0.12	74	0.261	34
Air Toxics Cancer Risk* (lifetime risk per million)	30	28	38	25	52
Air Toxics Respiratory HI*	0.2	0.3	0	0.31	4
Toxic Releases to Air	31,000	5,200	96	4,600	97
Traffic Proximity (daily traffic count/distance to road)	12	56	43	210	18
Lead Paint (% Pre-1960 Housing)	0.24	0.36	37	0.3	52
Superfund Proximity (site count/km distance)	0.028	0.092	33	0.13	26
RMP Facility Proximity (facility count/km distance)	0.31	0.35	77	0.43	68
Hazardous Waste Proximity (facility count/km distance)	0.37	0.6	75	1.9	45
Underground Storage Tanks (count/km²)	0.58	2	55	3.9	41
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.39	3.3	82	22	88
SOCIOECONOMIC INDICATORS					
Demographic Index	21%	23%	46	35%	34
Supplemental Demographic Index	15%	16%	46	14%	61
People of Color	2%	9%	35	39%	6
Low Income	40%	38%	55	31%	69
Unemployment Rate	0%	7%	0	6%	0
Limited English Speaking Households	0%	0%	0	5%	0
Less Than High School Education	10%	12%	47	12%	57
Under Age 5	3%	5%	39	6%	32
Over Age 64	29%	21%	81	17%	87
Low Life Expectancy	25%	22%	83	20%	91

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

Figure 7.2c- Underserved Populations Map

APPENDIX B - AGENCY COORDINATION AND CONSULTATION

United States Department of the Interior

FISH AND WILDLIFE SERVICE
West Virginia Ecological Services Field Office
6263 Appalachian Highway
Davis, WV 26260-8061
Phone: (304) 866-3858 Fax: (304) 866-3852

In Reply Refer To: January 23, 2023
Project Code: 2022-0067030
Project Name: City of Chester Water System Improvements

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

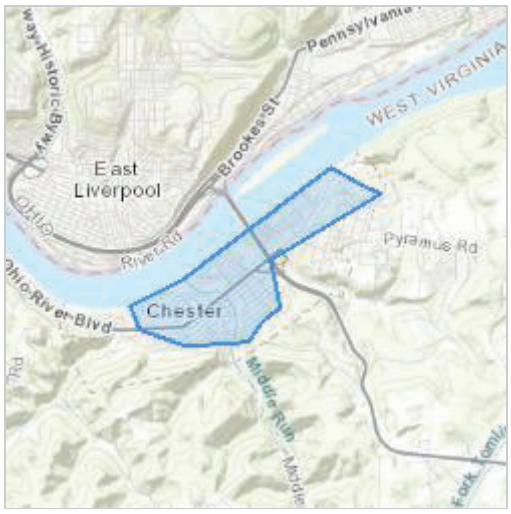
West Virginia Ecological Services Field Office
6263 Appalachian Highway
Davis, WV 26260-8061
(304) 866-3858

Project Summary

Project Code: 2022-0067030
Project Name: City of Chester Water System Improvements
Project Type: Water Supply Facility - Maintenance / Modification
Project Description: Valve replacements and renovation work on the water tower and City of Chester Water Treatment Plant. Additionally, clean-out of intake system.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.61576545,-80.56124981526293,14z



Counties: Hancock County, West Virginia

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. This species only needs to be considered under the following conditions: ▪ All activities in this location should consider potential effects to this species. This project is not within a known-use area, but potentially occupied habitat may exist. Please contact the WVFO for additional consultation. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Aug 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10

NAME	BREEDING SEASON
Black-capped Chickadee *Poecile atricapillus practicus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 10 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability Of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

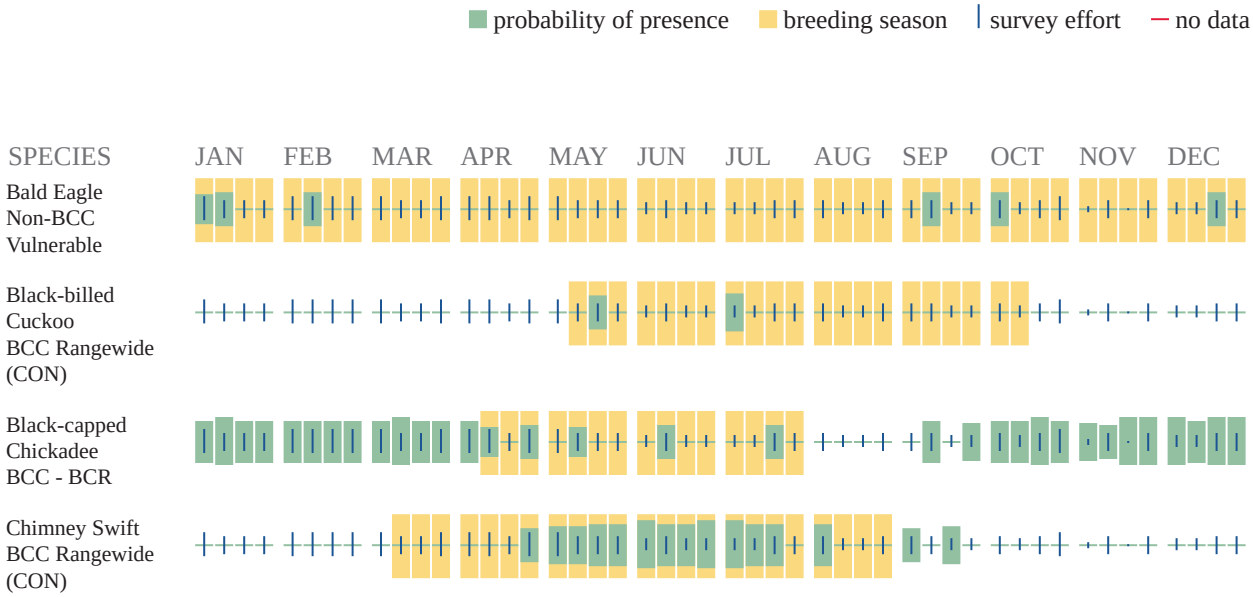
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

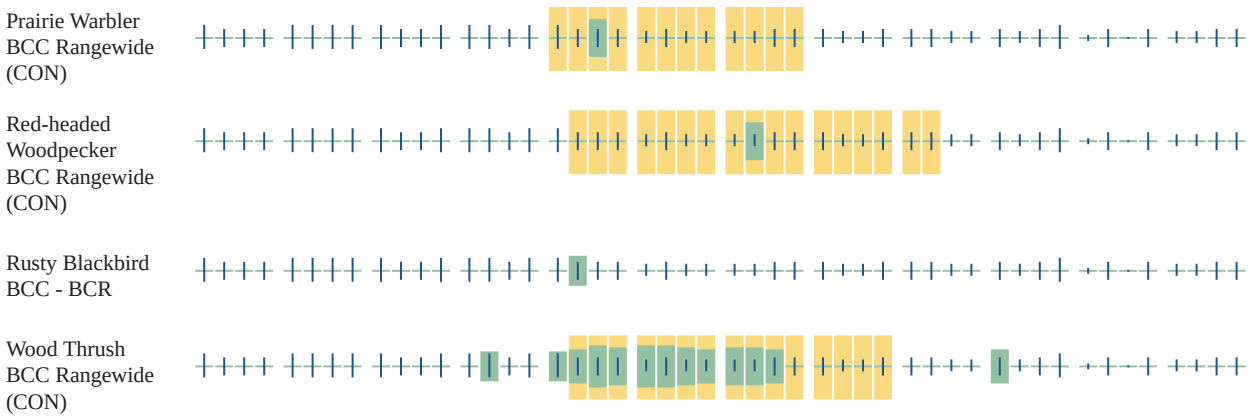
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides

birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

RIVERINE

- R5UBH
- R2UBH

FRESHWATER POND

- PUBKx

IPaC User Contact Information

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Lead Agency Contact Information

Lead Agency: Army Corps of Engineers

APPENDIX C- PLAN SET

CITY OF CHESTER

WATER SYSTEM IMPROVEMENTS

HANCOCK COUNTY
STATE OF WEST VIRGINIA

LOCATION MAP

WATER TREATMENT PLANT
LATITUDE: 40° 37' 23" LONGITUDE: 80° 33' 05"

INDIANA AVENUE
LATITUDE: 40° 36' 39" LONGITUDE: 80° 33' 52"

SCALE IN MILES±
0 1/4 1/2 3/4 1

INDEX OF SHEETS:

PROJECT DESCRIPTION

AT THE WATER TREATMENT PLANT FACILITY, REMOVAL/REPLACEMENT AND/OR IMPROVEMENTS TO THE VARIOUS COMPONENTS AS LISTED IN THE INDEX OF SHEETS TO THE LEFT.

FOR THE WATER DISTRIBUTION SYSTEM, VALVE INSTALLATIONS AT (26) LOCATIONS THROUGHOUT THE CITY; VALVE REMOVAL AND REPLACEMENT AT THE LIBERTY AVENUE STORAGE TANK; AND WATERLINE IMPROVEMENTS ALONG INDIANA AVENUE BETWEEN THIRD STREET AND FOURTH STREET, ALL AS FURTHER LISTED IN THE INDEX OF SHEETS TO THE LEFT.

SPECIFICATIONS

THE STANDARD NOTES, DETAILS, & SPECIFICATIONS AS SHOWN IN THE CONSTRUCTION DRAWINGS; THE WEST VIRGINIA DEPARTMENT OF HEALTH AND HUMAN RESOURCES REGULATIONS; THE PERTINENT ARMY CORPS OF ENGINEERS' SPECIFICATIONS REFERENCED IN THE CONTRACT DOCUMENTS; AND THE 2017 SPECIFICATIONS OF THE STATE OF WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS, INCLUDING ANY CHANGES AS REFERENCED IN THE CONSTRUCTION DRAWINGS, SHALL GOVERN THIS IMPROVEMENT.

WVDHHR SUBMITTAL PLANS

FEDERAL PROJECT NO. NONE

PID NO. NONE

CONSTRUCTION PROJECT NO. NONE

RAILROAD INVOLVEMENT NONE

CITY OF CHESTER WATER SYSTEM IMPROVE.

1 / 81

UNDERGROUND UTILITIES
2 WORKING DAYS
BEFORE YOU DIG
CALL 800-245-4848 OR 811
MISS UTILITY OF WEST VIRGINIA, INC.
NON-MEMBERS
MUST BE CALLED DIRECTLY

PLAN PREPARED BY:
Dallis Dawson & Associates
CIVIL ENGINEERS AND LAND SURVEYORS
48745 Calcutta Smith Ferry Rd.
East Liverpool, OH 43920
(330) 385-7836

ENGINEERS SEAL:

SIGNED: _____
DATE: _____

WVDOT DOH STANDARD DETAILS SHOWN AT END OF SET					SUPPLEMENTAL SPECIFICATIONS
					SPECIAL PROVISIONS

APPROVED _____

DATE _____ MAYOR
CITY OF CHESTER

APPROVED _____

DATE _____ CITY OF CHESTER
WATER AND SEWER BOARD

UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

CITY OF CHESTER
WATER AND SEWER GENERAL MANAGER
600 INDIANA AVENUE
CHESTER, WEST VIRGINIA 26034
ATTN: MR. JIM WHITE
(304) 604-2323

COMCAST
15 SUMMER SCHOOL ROAD
MORGANTOWN, WEST VIRGINIA 26508
ATTN. CHRIS MCKAHAN
(412) 491 3798

COLUMBIA GAS TRANSMISSION
4115 CORK BOCKTOWN ROAD
CLINTON, PA. 15026
ATTN. CARMEN CAMPAGNE
(412) 485 9698

FRONTIER COMMUNICATIONS
1108 NORTH MILDRED ST.
RANSON, WV 25438-5571
ATTN. CHRIS BLAINE
(304) 724 1184

MOUNTAINEER GAS COMPANY
P.O. BOX 2455, 1346 COVE ROAD
WEIRTON, WEST VIRGINIA 26062
ATTN. JEFFREY R. HICKS
OFFICE: (888) 420 4427
MOBILE: (304) 479 1318

FIRST ENERGY CORP (MONPOWER)
(800) 686 0022

MISS UTILITY OF WEST VIRGINIA, INC. (MUWV) SHALL BE NOTIFIED AT 1-800-245-4848, AT LEAST TWO WORKING DAYS BEFORE COMMENCING THIS WORK. NON-MEMBER UTILITIES MUST BE CONTACTED DIRECTLY. EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE LOCATION ONLY. NEITHER THE OWNER NOR THE CONSULTING ENGINEER WARRANT OR REPRESENT THE INFORMATION SHOWN TO BE COMPLETE OR ACCURATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INVESTIGATION AND LOCATION OF ALL EXISTING UTILITIES PRIOR TO AND DURING CONSTRUCTION.

ROADWAY

THE SUCCESSFUL BIDDER WILL BE REQUIRED TO OBTAIN A BUILDERS LICENSE FROM THE CITY OF CHESTER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. (CONTACT INFORMATION LISTED BELOW). IN ADDITION, PRIOR TO WORKING WITHIN ANY CITY RIGHT-OF-WAY, THE CONTRACTOR SHALL COORDINATE THE WORK WITH THE CITY OF CHESTER (CONTACT INFORMATION LISTED BELOW).

CITY OF CHESTER
600 INDIANA AVENUE
CHESTER, WEST VIRGINIA 26034
ATTN: MR. STEVE SHUMAN, SUPERINTENDENT OF STREETS
(304) 387-2820

W. VA. LICENSE & FEDERAL REGISTRATION REQUIREMENTS

EACH BIDDER SHALL BE LICENSED IN THE STATE OF WEST VIRGINIA PRIOR TO BIDDING AND SHALL SUBMIT A COPY OF THEIR LICENSE WITH THEIR BID, AND EACH BIDDER SHALL BE REGISTERED WITH THE FEDERAL GOVERNMENT ON "SAMS.GOV" PRIOR TO BIDDING AND SHALL SUBMIT A COPY OF THEIR REGISTRATION WITH THEIR BID.

ELEVATION DATUM

ALL ELEVATIONS ARE BASED ON THE WEST VIRGINIA STATE PLANE COORDINATE SYSTEM NORTH ZONE (4701); NAD83(1986); NAVD88.

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

CLEARING AND GRUBBING

PROPOSED IMPROVEMENTS ON THE INTERIOR OF THE PROPOSED WATER TREATMENT PLANT WILL NOT REQUIRE CLEARING & GRUBBING.

PROPOSED IMPROVEMENTS ON THE EXTERIOR OF THE WATER TREATMENT PLANT WILL BE PERFORMED WITHIN AREAS ALREADY CLEARED, WILL NOT REQUIRE TREE REMOVAL, AND WILL REQUIRE MINIMAL CLEARING & GRUBBING OPERATIONS.

PROPOSED IMPROVEMENTS TO BE PERFORMED FOR THE WATER DISTRIBUTION SYSTEM (I.E. INDIANA AVENUE WATERLINE REPLACEMENT AND VARIOUS VALVE REPLACEMENTS) WILL BE PERFORMED PRIMARILY WITHIN ROADWAY PAVEMENT AREAS, SIDEWALK AREAS, AND/OR WITHIN THE LAWN STRIP BETWEEN THE ROADWAY PAVEMENT & SIDEWALK, WHICH WILL NOT REQUIRE TREE REMOVAL, AND WILL ONLY REQUIRE MINIMAL CLEARING & GRUBBING.

IF NECESSARY, UNDER THIS ITEM, THE CONTRACTOR SHALL CLEAR ANY NECESSARY BUSHES, BRUSH, STUMPS, LARGE ROCKS, ETC. AND ANY OTHER WORK REQUIRED TO MAKE THE SITE SUITABLE FOR THE CONSTRUCTION TO BE DONE ON THE SITE AND FOR THE OPERATION OF THE CONSTRUCTION EQUIPMENT. ALL PROVISIONS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATIONS AND SHALL BE INCLUDED IN THE PERTINENT VARIOUS UNIT OR LUMP SUM PRICES BID IN THE PROPOSAL.

CONSTRUCTION IN CITY RIGHT-OF-WAYS

ALL CONSTRUCTION INSIDE CITY RIGHT-OF-WAYS SHALL BE DONE SO IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPROPRIATE LOCAL AGENCIES AND OWNERS. ALL PERMITS FOR CONSTRUCTION SHALL BE ADHERED TO BY THE CONTRACTOR. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY CLAIMS OF DAMAGES FROM OPERATIONS PERFORMED OUTSIDE OF THE WORK AREA.

CONSTRUCTION NOISE

ACTIVITIES AND LAND USE ADJACENT TO THIS PROJECT MAY BE AFFECTED BY CONSTRUCTION NOISE. IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, DO NOT OPERATE POWER-OPERATED CONSTRUCTION-TYPE DEVICES BETWEEN THE HOURS OF 8:00 PM AND 7:00 AM. IN ADDITION, DO NOT OPERATE AT ANY TIME ANY DEVICE IN SUCH A MANNER THAT THE NOISE CREATED SUBSTANTIALLY EXCEEDS THE NOISE CUSTOMARILY AND NECESSARILY ATTENDANT TO THE REASONABLE AND EFFICIENT PERFORMANCE OF SUCH EQUIPMENT.

REVIEW AND SITE VISIT

THE SUBMISSION OF A BID SHALL BE CONSIDERED AS EVIDENCE THAT THE BIDDER HAS REVIEWED THE PLANS AND HAS EXAMINED THE SITE OF THE PROPOSED WORK AND IS SATISFIED AS TO THE CONDITIONS TO BE ENCOUNTERED, PER THE PROJECT MANUAL.

PROPERTY MARKERS

ANY PROPERTY MARKERS DISTURBED BY THE CONTRACTORS OPERATION SHALL BE RESET OR REPLACED AS DIRECTED BY THE ENGINEER AT THE CONTRACTORS' EXPENSE, BY A PROFESSIONAL SURVEYOR REGISTERED IN THE STATE OF WEST VIRGINIA.

SOIL CONDITIONS

FOR THE EXTERIOR BACKWASH TANK AT THE WATER TREATMENT PLANT, ONE (1) PRELIMINARY SOIL BORING WITHIN THE GENERAL VICINITY OF THE PROJECT SITE WAS PREVIOUSLY PERFORMED BY OTHERS AND WAS PROVIDED TO THE ENGINEER IN ORDER TO OBTAIN SOME GENERAL/PRELIMINARY INFORMATION ON THE EXISTING SOIL STRATA/SUBSURFACE CONDITIONS. SEE SHEET 34 FOR ADDITIONAL NOTES.

FOR ALL OTHER AREAS OF THE PROJECT, A SOILS REPORT HAS NOT BEEN PERFORMED. THE CONTRACTOR SHALL SATISFY HIMSELF BY TAKING HIS OWN SOIL BORINGS AND TEST PITS IN ORDER TO DETERMINE THE NATURE OF THE SOIL STRATA, THE PRESENCE OF ANY ROCK, AND ANY DIFFICULTIES TO BE ENCOUNTERED. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID IN THE PROPOSAL. SEE "TRENCH EXCAVATION FOR WATERLINES" NOTE IN THE WATERLINE GENERAL NOTES FOR ADDITIONAL INFORMATION.

DAILY CLEANUP

THE CONTRACTOR SHALL DAILY REMOVE ALL DIRT, MUD, SOIL, DEBRIS, AND FOREIGN MATTER THAT MAY BE TRACKED ONTO EXISTING ROADWAYS, STREETS, DRIVES OR WALKS BY ANY PROJECT EQUIPMENT OR SUPPLIER EQUIPMENT. THE CONTRACTOR SHALL PROVIDE A POWER BROOM FOR THIS TASK.

SAFETY REQUIREMENTS

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS (EM385-1-1), AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

CONSTRUCTION EQUIPMENT & VEHICLES

IN ADDITION TO THE NOISE REQUIREMENTS DESCRIBED ABOVE, THE EQUIPMENT & VEHICLES USED BY THE CONTRACTOR AND ANY SUB-CONTRACTORS SHALL BE IN PROPER WORKING ORDER. THIS INCLUDES BUT IS NOT LIMITED TO: NO EXCESSIVE LEAKING; PROPERLY WORKING SAFETY FEATURES (I.E. BACK UP ALARMS). PROPER TYPE AND CORRECT INSTALLATION OF SAFETY COTTER PINS (IE. WHEN CHANGING BUCKETS); ANY EQUIPMENT FAILURE DURING CONSTRUCTION SHALL BE IMMEDIATELY RECTIFIED OR CAUSE THE FAILED EQUIPMENT TO BE REMOVED FROM THE SITE.

PROTECTION AND RESTORATION OF PROPERTY

THE CONTRACTOR SHALL ADHERE TO SECTION 107.12 OF THE WVDOH SPECIFICATIONS FOR THE PROTECTION AND RESTORATION OF PROPERTY. ANY RETAINING WALLS, STEPS, LANDSCAPE ITEMS, MAIL BOXES, STREET SIGNS, ROAD SIGNS, ETC. DISTURBED OR DAMAGED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL OR BETTER CONDITION AT THE EXPENSE OF THE CONTRACTOR. WHERE APPLICABLE THE CONTRACTOR SHALL USE THE NECESSARY SHEETING AND SHORING TO SUPPORT ANY TRENCHES AND/OR STRUCTURES DURING CONSTRUCTION. ALL COSTS ASSOCIATED WITH SHEETING AND SHORING OF TRENCHES AND/OR STRUCTURES SHALL BE INCLUDED IN THE VARIOUS PERTINENT UNIT PRICES BID.

CONSTRUCTION LAYOUT STAKES AND SURVEYING:

THE CONTRACTOR SHALL UTILIZE THE SERVICES OF A PROFESSIONAL SURVEYOR TO PERFORM THIS ITEM AS PER ITEM 639 OF THE WVDOH SPECIFICATIONS.

CONTRACTOR SHALL VERIFY ALL EXISTING ALIGNMENTS BEFORE STARTING THE PROJECT AND SHALL INFORM THE ENGINEER OF ANY DISCREPANCIES. ALL COSTS FOR THIS WORK SHALL BE INCLUDED IN THE PERTINENT LUMP SUM PRICE BID.

AS-BUILT DRAWINGS:

UPON COMPLETION OF THE PROJECT THE CONTRACTOR SHALL PROVIDE COMPLETE AS-BUILT DRAWINGS SHOWING EXACT LOCATION AND DEPTH OF ALL WATER LINES, ALL SERVICE LINES & SERVICE TAPS, VALVES & HYDRANTS, ETC. ALL COSTS ASSOCIATED WITH PROVIDING AS-BUILT DRAWINGS SHALL BE INCLUDED IN THE VARIOUS PERTINENT UNIT PRICES BID.

QUANTITIES

AT THE APPROVAL OF THE ARMY CORPS OF ENGINEERS AND IN COORDINATION WITH THE CITY'S CONSTRUCTION ENGINEER, THE CITY OF CHESTER HEREBY RESERVES THE RIGHT TO ADD OR DELETE ANY WORK OR PART THEREOF OF THIS WORK, OR CHANGE THE RATE OF APPLICATION OF MATERIALS, AND TO EITHER USE THE RESULTING MATERIALS ELSEWHERE OR DEDUCT THE SAME FROM THE FINAL ESTIMATE.

THE CONTRACTOR SHALL ACCEPT PAYMENT IN FULL AT THE CONTRACT UNIT PRICE BID FOR ACTUAL QUANTITIES OF MATERIALS DELIVERED AND ACCEPTED. NO ALLOWANCES WILL BE MADE FOR ANY INCREASED EXPENSES, LOSS OF EXPECTED REIMBURSEMENT, OR LOSS OF ANTICIPATED PROFITS SUFFERED OR CLAIMED BY THE CONTRACTOR RESULTING EITHER DIRECTLY OR INDIRECTLY FROM THE ALTERATION OF ESTIMATED QUANTITIES OR DELETION OF ANY PART OF THIS WORK. PAYMENT SHALL BE IN ACCORDANCE WITH THE PROJECT MANUAL. ANY EXTRA QUANTITIES WILL BE PAID FOR AT THE UNIT PRICE BID BUT IN ACCORDANCE WITH THE PROJECT MANUAL.

CONTINGENCY QUANTITIES:

THE CONTRACTOR SHALL NOT ORDER MATERIALS, OR PERFORM WORK, FOR THOSE ITEMS DESIGNATED BY PLAN NOTE TO BE USED, "AS DIRECTED BY THE ENGINEER", UNLESS AUTHORIZED BY THE ENGINEER. THE ACTUAL WORK LOCATIONS AND QUANTITIES USED FOR SUCH ITEMS SHALL BE INCORPORATED INTO THE FINAL CHANGE ORDER GOVERNING COMPLETION OF THE PROJECT.

FINAL PAYMENT OF CONTRACT

FINAL PAYMENT WILL NOT BE AUTHORIZED UNTIL THE CONTRACTOR HAS REMOVED ALL MATERIALS, EQUIPMENT AND ANY OTHER DEBRIS FROM THE SITE. THE CONTRACTOR SHALL LEAVE THE WORK SITE AND ADJACENT STREETS IN A NEAT AND PRESENTABLE CONDITION. THE CONTRACTOR SHALL ALSO HAVE ON FILE WITH THE ENGINEER ALL PAPERWORK (i.e. MATERIAL SLIPS, PREVAILING WAGE REPORTS, TEST RESULTS, ETC.).

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE CITY, REPRESENTATIVES OF THE CITY, THE CONTRACTOR, THE CITY'S CONSTRUCTION ENGINEER, AND THE USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE, SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCES SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE CITY.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE RESIDENT ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID.

CROSSINGS AND CONNECTIONS TO EXISTING PIPES AND UTILITIES

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO LAY THE PROPOSED CONDUIT.

IF IT IS DETERMINED THAT THE ELEVATION OF THE EXISTING CONDUIT, OR EXISTING APPURTENANCE TO BE CONNECTED, DIFFERS FROM THE PLAN ELEVATION OR RESULTS IN A CHANGE IN THE PLAN CONDUIT SLOPE, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WILL BE AFFECTED BY THE VARIANCE IN THE EXISTING ELEVATIONS.

IF IT IS DETERMINED THAT THE PROPOSED CONDUIT WILL INTERSECT AN EXISTING SEWER OR UNDERGROUND UTILITY IF CONSTRUCTED AS SHOWN ON THE PLAN, THE ENGINEER SHALL BE NOTIFIED BEFORE STARTING CONSTRUCTION OF ANY PORTION OF THE PROPOSED CONDUIT WHICH WOULD BE AFFECTED BY THE INTERFERENCE WITH AN EXISTING FACILITY.

PAYMENT FOR ALL THE OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID.

CAD: J.F.B.
BY: J.F.B.
DATE: 12/22
CHKD: D.C.D.
BY: D.C.D.
DATE: 12/22

GENERAL NOTES

CITY OF CHESTER
WATER SYSTEM IMPROVE.

UNRECORDED STORM WATER DRAINAGE

FURNISH A CONTINUANCE FOR ALL UNRECORDED STORM WATER DRAINAGE, SUCH AS ROOF DRAINS, FOOTER DRAINS, YARD DRAINS, STORM SEWER CONDUITS, ETC., DISTURBED BY THE WORK. FURNISH AN UNOBSTRUCTED CONTINUANCE BY CONNECTING A NEW CONDUIT (OF THE SAME SIZE AND ACCEPTABLE MATERIAL PROPERTIES) TO THE EXISTING CONDUIT. THE CONNECTION OF THE PROPOSED CONDUIT TO THE EXISTING CONDUIT SHALL BE MADE WITH FLEXIBLE COUPLINGS. THE CONNECTIONS SHALL BE ENCASED WITH 6" OF 4,000 PSI, 28-DAY STRENGTH, PLANT MIX CONCRETE AROUND THE ENTIRE CONNECTION AND TO (1) FOOT MINIMUM ON EITHER SIDE OF THE CONNECTION. THE LOCATION, TYPE, SIZE AND GRADE OF THE NEEDED CONDUIT TO REPLACE AN EXISTING DRAIN WILL BE AS DETERMINED BY THE CONSTRUCTION ENGINEER.

THE FOLLOWING CONDUIT TYPES MAY BE USED AS DEFINED IN THE WVDOH SPECIFICATIONS BUT SHOULD BE COORDINATED WITH THE RESIDENT ENGINEER: 714.19, 714.2, AND 714.22.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE WORK NOTED ABOVE AND SHOULD INCLUDE ALL OF THE NECESSARY LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS FOR A COMPLETE RECONNECTION.

ITEM 604 – 6" CONDUIT	100	FOOT
ITEM 604 – 8" CONDUIT	100	FOOT
ITEM 604 – 12" CONDUIT	100	FOOT
ITEM 604 – 15" CONDUIT	100	FOOT

WVDOH APPROVED PAVEMENT JOB MIX FORMULA(S)

THE CONTRACTOR SHALL SUBMIT A WVDOH APPROVED JOB MIX FORMULA (JMF) FOR THE ASPHALT PAVEMENT AND AGGREGATE BASE COURSE, CLASS 1, AS PER PLAN TO BE USED ON THE PROJECT. THE AFOREMENTIONED PAVEMENT MATERIALS SHALL BE FROM APPROVED WVDOH SUPPLIERS.

AGGREGATE BASE COURSE, CLASS 1, AS PER PLAN

ALL AGGREGATE BASE COURSE, CLASS 1 USED ON THIS PROJECT (INCLUDING BACKFILL MATERIAL) SHALL BE IN ACCORDANCE WITH ITEM 307 OF THE WVDOH SPECIFICATIONS EXCEPT THAT "CRUSHED CARBONATE STONE" AND "CRUSHED GRAVEL" WILL BE THE ONLY PERMITTED MATERIALS USED. AGGREGATE BASE USED AS BACKFILL MATERIAL SHALL BE INCLUDED IN THE VARIOUS PERTINENT UNIT PRICES BID.

ASPHALT PAVING

THE PRIME CONTRACTOR AND/OR SUBCONTRACTOR WILL BE REQUIRED TO BE PRE-QUALIFIED WITH THE WEST VIRGINIA DEPARTMENT OF TRANSPORTATION FOR PAVING. IN THE LOCATIONS WHERE AN ASPHALT OVERLAY IS REQUIRED, THE CONTRACTOR SHALL ENSURE PROCEDURES FOR THE PLACEMENT, COMPACTION, ETC. OF THE ASPHALT CONCRETE IS DONE SO IN ACCORDANCE WITH THE WVDOH SPECIFICATIONS (I.E. USE OF A PAVING MACHINE, SPREADER BOX, ROLLERS, ETC.). PLACEMENT OF THE ASPHALT BY HAND METHODS WILL NOT BE ACCEPTED.

TACK COAT

PRIOR TO THE PLACEMENT OF THE ASPHALT OVERLAY WITHIN THE WATERLINE AND SANITARY SEWER TRENCHES, THE CONTRACTOR SHALL APPLY TACK COAT ON TOP OF THE AGGREGATE BASE OR RIGID PAVEMENT AS WELL AS ON THE SIDES OF THE EXISTING ASPHALT BUTT JOINTS AT THE RATE OF 0.055 GAL./S.Y. TACK COAT SHALL BE IN ACCORDANCE WITH THE PERTINENT SECTIONS OF WVDOH SPECIFICATION ITEM 408.

TEMPORARY POLLUTION CONTROL

THE CONTRACTOR SHALL PROVIDE THE NECESSARY TEMPORARY POLLUTION CONTROL ITEMS DURING CONSTRUCTION AND SHALL BE IN ACCORDANCE WITH THE PERTINENT SECTIONS OF WVDOH SPECIFICATION ITEM 642, THE PERTINENT WVDOH STANDARD DETAILS, AND THE WVDOH EROSION AND SEDIMENT CONTROL MANUAL. ROCK OF A STABLE NATURE SHALL NOT BE REMOVED TO PLACE ANY OF THESE ITEMS.

FOR THE IMPROVEMENTS ON THE EXTERIOR OF THE WATER TREATMENT PLANT (I.E. SANITARY LIFT STATION REPLACEMENT, ACCESS DRIVE REPLACEMENT, BACKWASH TANK REPLACEMENT, ETC.), THE CONTRACTOR SHALL PROVIDE FILTER FABRIC FENCE IN THE LOCATIONS SHOWN ON SHEET 8 OF THE CONSTRUCTION PLANS.

FOR THE VALVE INSTALLATION AT THE VARIOUS LOCATIONS WITHIN THE WATER DISTRIBUTION SYSTEM AND FOR THE WATERLINE REPLACEMENT ALONG INDIANA AVENUE, ALL AS SHOWN ON SHEETS 58-81 OF THE CONSTRUCTION PLANS, THE CONTRACTOR SHALL PROVIDE ANY NECESSARY CATCH BASIN/INLET PROTECTION FOR ANY EXISTING CATCH BASINS/INLETS LOCATED IMMEDIATELY ADJACENT TO THE WORK BEING PERFORMED.

TEMPORARY POLLUTION CONTROL SHALL BE AS DIRECTED BY THE CONSTRUCTION ENGINEER. ALL COSTS FOR TEMPORARY POLLUTION CONTROL SHALL BE INCLUDED IN THE LUMP SUM BID FOR ITEM SPECIAL-TEMPORARY POLLUTION CONTROL. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – TEMPORARY POLLUTION CONTROL	LUMP SUM

SEEDING AND MULCHING, AS PER PLAN

TOPSOIL, SEEDING & MULCHING, COMMERCIAL FERTILIZER, AND WATER SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT OF WAY LINES, AND FOR AREAS OUTSIDE THE RIGHT OF WAY LINES COVERED BY WORK AGREEMENT OR UTILITY EASEMENT. NO WORK SHALL BE PERFORMED OUTSIDE THE EXISTING ROAD RIGHT-OF-WAY EXCEPT WHERE A WORK AGREEMENT HAS BEEN OBTAINED BY THE CONTRACTOR. ALL OF THE AFOREMENTIONED SHALL BE PERFORMED IN ACCORDANCE WITH ITEM 652 OF THE WVDOH SPECIFICATIONS.

TOPSOIL SHALL BE PLACED AT A MINIMUM OF 4" IN ALL SEEDING AREAS AND SHALL BE IN ACCORDANCE WITH ITEM 651 OF THE WVDOH SPECIFICATIONS.

AREAS REQUIRING PLACEMENT OF SEEDING & MULCHING WILL BE AS DIRECTED BY THE CONSTRUCTION ENGINEER. ALL OF THE AFOREMENTIONED SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL-SEEDING AND MULCHING, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – SEEDING AND MULCHING, AS PER PLAN	LUMP SUM

CAD: J.F.B.
BY:
DATE: 12/22

CHKD: D.G.D.
BY:
DATE: 12/22

GENERAL NOTES

CITY OF CHESTER
WATER SYSTEM IMPROVE.

SURVEY 1

OBJECT	SYMBOL
AERIAL TARGET (MAIN LINE)	
AERIAL TARGET (OFF MAIN LINE)	
BENCH MARK	
BENCH MARK (CHISELED FOUND)	
BENCH MARK (CHISELED SET)	
DRILL HOLE (FOUND)	D.H.F.
DRILL HOLE (SET)	D.H.S.
GOVT. DISK (FOUND)	
GOVT. DISK (SET)	
P. K. NAIL (FOUND)	P.K.F.
P. K. NAIL (SET)	P.K.S.
RR SPIKE (FOUND)	
RR SPIKE (SET)	
HUB (TACKED) (FOUND)	
HUB (TACKED) (SET)	

SURVEY 2

OBJECT	SYMBOL
IRON PIN I.D. CAPPED FOUND	I.P.F.
IRON PIN FOUND	I.P.F.
IRON PIN I.D. CAPPED SET	I.P.S.
IRON PIPE (FOUND)	P.F.
IRON PIPE (SET)	P.S.
MINE SPIKE (FOUND)	
MINE SPIKE (SET)	
STONE (CORNER FOUND)	

DIVISIONS

OBJECT	SYMBOL
OWNERSHIP HOOK	
PROPERTY LINE MARK	
SECTION CORNER	
SECTION HALF	

GEOMETRY

OBJECT	SYMBOL
C.S., P.C., P.C.C., P.O.C., P.O.T., P.R.C., P.T., P.V.T., S.C., S.T. & T.S. EXISTING	
C.S., P.C., P.C.C., P.O.C., P.O.T., P.R.C., P.T., P.V.T., S.C., S.T. & T.S. PROPOSED	
P.I. & P.V.I. EXISTING	
P.I. & P.V.I. PROPOSED	

RIGHT OF WAY

OBJECT	SYMBOL
MONUMENT (CONC) (FOUND)	
MONUMENT BOX (FOUND)	M

ROADWAY

OBJECT	SYMBOL
LARGE ROCK	
POST EXISTING	
RR CROSSING	
RR GATE	
RR SIGNAL	

MISCELLANEOUS

OBJECT	SYMBOL
BARBEQUE GRILL	
FLAG POLE	
HEADSTONE	
MAIL BOX EXISTING	MB
PAPER BOX EXISTING	PB
PARKING METER EXISTING	PM
SATELLITE DISH EXISTING	
SOIL BORING	
SPRINKLER HEAD EXISTING	
ELEVATION SHOT EXISTING/PROPOSED	
GRID AND/OR TICK MARK EXISTING/PROPOSED	

MISCELLANEOUS

OBJECT	SYMBOL
TOWER EXISTING	
YARD LIGHT (LOW TO GROUND) EXISTING	
PROPOSED FLOW ARROW	
EXISTING FLOW ARROW	

TREES

OBJECT	SYMBOL
EVERGREEN TREE (PINE) EXISTING	
OVERLAY FOR TREE OR STUMP TO BE REMOVED	
SHRUB EXISTING	
STUMP	
TREE EXISTING	

UTILITIES

OBJECT	SYMBOL
CABLE TV AMPLIFIER	TV
CABLE TV POLE	
ELECTRIC BOX EXISTING	
ELECTRIC MANHOLE EXISTING	E
ELECTRIC METER	
ELECTRIC VAULT EXISTING	EV
FILTER BED	FB
FIRE HYDRANT EXISTING	
FIRE HYDRANT PROPOSED	
FLOOR DRAIN EXISTING	D
GAS LINE MARKER EXISTING	G
GAS LINE VENT EXISTING	G
GAS MANHOLE EXISTING	G
GAS METER	
GASOLINE PUMP EXISTING	PMP

UTILITIES

OBJECT	SYMBOL
GAS VALVE EXISTING	G
GAS WELL EXISTING	G WELL
GUY WIRE (DEAD MAN)	
MONITORING WELL EXISTING	M WELL
OIL TANK EXISTING	OT
OIL WELL EXISTING	O WELL
POWER POLE EXISTING	
POWER LIGHT POLE EXISTING	
POWER LINE MARKER EXISTING	P
SAN. SEWER MARKER EXISTING	SA
SAN. SEWER VENT EXISTING	SA
SAN. SEWER MANHOLE EXISTING	SA
SAN. SEWER VALVE EXISTING	SA
SEPTIC TANK EXISTING	SEP TNK
TANK FILLER CAP	
TELE. LINE MARKER EXISTING	TEL
TELE. MANHOLE EXISTING	T
TELE. POLE EXISTING	
TELE. & LIGHT POLE EXISTING	
TELE., POWER & LIGHT POLE EXISTING	
TELE. & POWER POLE EXISTING	
TELE. VAULT EXISTING	TV
TELE. BOOTH	TEL BTH
TELE. (PAY)	
TELE. PEDESTAL EXISTING	

UTILITIES

OBJECT	SYMBOL
UNKNOWN MANHOLE EXISTING	UM
UNKNOWN OBJECT EXISTING	?
UNKNOWN POLE EXISTING	
UNKNOWN VALVE EXISTING	U
UNKNOWN WELL EXISTING	U WELL
WATER GATE VALVE EXISTING	W
WATER GATE VALVE PROPOSED	W
WATER LINE VENT EXISTING	W
WATER MANHOLE EXISTING	W
WATER MANHOLE PROPOSED	W
WATER METER EXISTING	W
WATER METER PROPOSED	W
WATER SERVICE STOP EXISTING	WS
WATER SERVICE STOP PROPOSED	WS
WATER WELL EXISTING	W WELL

SIGNING

OBJECT	SYMBOL
1-POST SIGN EXISTING	
2-POST SIGN EXISTING	
3-POST SIGN EXISTING	
1-POST SIGN BACK TO BACK EXISTING	H
2-POST SIGN BACK TO BACK EXISTING	H
4 SIGNS ON ONE SUPPORT EXISTING	#
4 SIGNS ON TWO SUPPORTS EXISTING	#
SIGN LUMINAIRE EXISTING	

LIGHTING

OBJECT	SYMBOL
CONVENTIONAL GROUND MOUNTED LUMINAIRE EXISTING	
CONVENTIONAL STRUCTURE MOUNTED LUMINAIRE EXISTING	
HIGH MAST LUMINAIRE ASYMMETRIC EXISTING	
HIGH MAST LUMINAIRE LONG AND NARROW EXISTING	
HIGH MAST LUMINAIRE SYMMETRIC EXISTING	
LIGHT POLE EXISTING	
LOW MAST LUMINAIRE ASYMMETRIC EXISTING	
LOW MAST LUMINAIRE LONG AND NARROW EXISTING	
LOW MAST LUMINAIRE SYMMETRIC EXISTING	
POST TOP LUMINAIRE EXISTING	
PULL BOX/JUNCTION BOX EXISTING	
UNDERPASS LUMINAIRE EXISTING	

DRAINAGE

OBJECT	SYMBOL
CATCH BASIN (2'x2' BOX) EXISTING	
CATCH BASIN (3'x3' BOX) EXISTING	
CATCH BASIN (4'x4' BOX) EXISTING	
CATCH BASIN (5'x5' BOX) EXISTING	
CATCH BASIN (6'x6' BOX) EXISTING	
CATCH BASIN (CURB INLET W/ DOUBLE GRATE) EXISTING	
CATCH BASIN (CURB INLET W/ SINGLE GRATE) EXISTING	
GENERIC CATCH BASIN EXISTING	CB
INSPECTION WELL EXISTING	IW
ROUND INLET EXISTING	CB
SEWER PUMPING STATION EXISTING	S PMP
SIDE DITCH INLET I-1 EXISTING	
STORM SEWER MANHOLE EXISTING	ST
TRENCH DRAIN EXISTING	

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CONSTRUCTION PLAN SYMBOL LEGEND

CITY OF CHESTER
WATER SYSTEM IMPROVE.

SHEET NUMBER																														ITEM	GRAND TOTAL	UNIT	DESCRIPTION
																11	12	13	17	22	27	34	39	41	44	47	48	55	57				
																																	PROPOSED WATER TREATMENT PLANT IMPROVEMENTS
																6														SPECIAL	6	EACH	REMOVE & REPLACE FILTER TANK ACCESS MANWAY, AS PER PLAN
																3														SPECIAL	3	EACH	REMOVAL & DISPOSAL OF EXISTING FILTER MEDIA WITHIN FILTER TANK, AS PER PLAN
																	3													SPECIAL	3	EACH	STRUCTURAL TESTING, FILTER TANK, AS PER PLAN
																	30													SPECIAL	30	SQ. FT.	CONTINGENCY REPAIR, FILTER TANK, AS PER PLAN
																	3													SPECIAL	3	EACH	INTERIOR FILTER TANK CLEANING, SURFACE PREPARATION, AND SURFACE COATING, AS PER PLAN.
																		3												SPECIAL	3	EACH	INSTALLATION OF NEW FILTER MEDIA WITHIN FILTER TANKS, AS PER PLAN
																		3000												SPECIAL	3,000	SQ. FT.	SURFACE PREPARATION AND SURFACE COATING ON EXTERIOR OF FILTER TANKS, AS PER PLAN
																		800												SPECIAL	800	SQ. FT.	SURFACE PREPARATION AND SURFACE COATING ON FILTER TANK PIPING, AS PER PLAN
																			6											SPECIAL	6	EACH	REMOVE & REPLACE 8" ACTUATED BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN
																			12											SPECIAL	12	EACH	REMOVE & REPLACE 10" ACTUATED BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN
																			9											SPECIAL	9	EACH	REMOVE & REPLACE 8" MANUAL BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN
																			3											SPECIAL	3	EACH	REMOVE & REPLACE 10" MANUAL BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN
																			3											SPECIAL	3	EACH	REMOVE & REPLACE 12" MANUAL BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN
																				LUMP										SPECIAL	LUMP	SUM	REMOVE & REPLACE POTASSIUM PERMANGANATE FEED SYSTEM, INCLUDING ALL INCIDENTALS, AS PER PLAN
																					LUMP									SPECIAL	LUMP	SUM	REMOVE & REPLACE EXTERIOR BACKWASH TANK, INCLUDING ALL INCIDENTALS, AS PER PLAN
																						46								SPECIAL	46	CU. YD.	CONTINGENCY UNSUITABLE FOUNDATION SOILS
																							LUMP							SPECIAL	LUMP	SUM	REMOVE & REPLACE LIGHTING, INCLUDING ALL INCIDENTALS, AS PER PLAN
																								2						SPECIAL	2	EACH	REMOVE & REPLACE ACCESS DOORS/FRAMES FOR CLEARWELL, AS PER PLAN
																								LUMP						SPECIAL	LUMP	SUM	INTERIOR & EXTERIOR DOOR/FRAME REMOVAL & REPLACEMENT, AS PER PLAN
																									200					SPECIAL	200	SQ. FT.	EXTERIOR BUILDING BRICK REPAIR, AS PER PLAN
																										4710				SPECIAL	4,710	SQ. FT.	BUILT-UP ROOF MATERIAL REMOVAL & REPLACEMENT, INCLUDING ALL INCIDENTALS (NOT INCLUDING DECKING), AS PER PLAN
																										3325				SPECIAL	3,325	SQ. FT.	ROOF DECKING (ONLY) REMOVAL & REPLACEMENT, INCLUDING ALL INCIDENTALS, AS PER PLAN
																											LUMP			SPECIAL	LUMP	SUM	REMOVE & REPLACE EXTERIOR SANITARY LIFT STATION, AS PER PLAN
																												LUMP		SPECIAL	LUMP	SUM	EXTERIOR ENTRANCE DRIVE IMPROVEMENTS, AS PER PLAN
																													LUMP	SPECIAL	LUMP	SUM	CLEANING & VIDEO INSPECTION OF EXISTING RAW WATER PIPING/STRUCTURE, AS PER PLAN

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GENERAL SUMMARY

CITY OF CHESTER
WATER SYSTEM IMPROVE.

2	3	60	65	66	67	68	69	70	72	74	75	81	ITEM	GRAND TOTAL	UNIT	DESCRIPTION
																DISTRIBUTION SYSTEM VALVE REPLACEMENT
			12										SPECIAL	12	EACH	INSTALLATION OF SINGLE NEW (6") GATE VALVE & VALVE BOX, INCLUDING ALL INCIDENTALS, AS PER PLAN
			1										SPECIAL	1	EACH	INSTALLATION OF SINGLE NEW (8") GATE VALVE & VALVE BOX, INCLUDING ALL INCIDENTALS, AS PER PLAN
				2									SPECIAL	2	EACH	INSTALLATION OF (2) NEW 6" GATE VALVES & VALVE BOXES, INCLUDING TEE AND ALL INCIDENTALS, AS PER PLAN
					8								SPECIAL	8	EACH	INSTALLATION OF (3) NEW GATE VALVES & VALVE BOXES, INCLUDING TEE AND ALL INCIDENTALS, AS PER PLAN
						3							SPECIAL	3	EACH	INSTALLATION OF (4) NEW GATE VALVES & VALVE BOXES, INCLUDING CROSS AND ALL INCIDENTALS, AS PER PLAN
							LUMP						SPECIAL	LUMP	SUM	VALVE ABANDONMENT (FIRST/CAROLINA), INCLUDING ALL INCIDENTALS, AS PER PLAN
								1					SPECIAL	1	EACH	WORK INVOLVING SOLID WASTE (SINGLE VALVE), AS PER PLAN
								1					SPECIAL	1	EACH	WORK INVOLVING SOLID WASTE (TWO–VALVE), AS PER PLAN
								1					SPECIAL	1	EACH	WORK INVOLVING SOLID WASTE (THREE–VALVE), AS PER PLAN
								1					SPECIAL	1	EACH	WORK INVOLVING SOLID WASTE (FOUR–VALVE), AS PER PLAN
									LUMP				SPECIAL	LUMP	SUM	REMOVE & REPLACE EXISTING GATE VALVES AT THE LIBERTY AVENUE STORAGE TANK, AS PER PLAN
																INDIANA AVENUE WATERLINE REPLACEMENT
																ROADWAY
LUMP													201	LUMP	SUM	CLEARING AND GRUBBING
										265	282	396	401	943	SQ. YD.	PAVEMENT REMOVED
										5	3	198	609	8	SQ. YD.	4" CONCRETE WALK, AS PER PLAN
										5	10		610	15	FOOT	CURB REMOVED
										5	10		610	15	FOOT	PLAIN CONCRETE CURBING, TYPE 1, AS PER PLAN
																EROSION CONTROL
	LUMP												642	LUMP	SUM	TEMPORARY POLLUTION CONTROL
	LUMP												652	LUMP	SUM	SEEDING AND MULCHING, AS PER PLAN
																DRAINAGE
	100												604	100	FOOT	6" CONDUIT
	100												604	100	FOOT	8" CONDUIT
	100												604	100	FOOT	12" CONDUIT
	100												604	100	FOOT	15" CONDUIT
																PAVEMENT
										884	982	1320	401	3,186	FOOT	FULL DEPTH PAVEMENT SAWING
										75	75	33	401	183	CU. YD.	MARSHALL ASPHALT WEARING COURSE, STONE AND GRAVEL, TYPE 1
										12	13		401	25	CU. YD.	MARSHALL ASPHALT INTERMEDIATE COURSE, STONE AND GRAVEL, TYPE 1
										98	100		408	198	GALLON	TACK COAT
										1700	1700		415	3,400	SQ. YD.	ASPHALT PAVEMENT PLANING, AS PER PLAN
																WATER WORK
										10	46		670	56	FOOT	6" PVC–C900, DR 14, PR 305, WL & APPURT., AS PER PLAN
										389	421		670	810	FOOT	8" PVC–C900, DR 14, PR 305, WL & APPURT., AS PER PLAN
											2		670	2	EACH	6" GATE VALVE AND VALVE BOX, AS PER PLAN
										1	2		670	3	EACH	8" GATE VALVE AND VALVE BOX, AS PER PLAN
										1			670	1	EACH	6" HYDRANT ASSEMBLY, AS PER PLAN
												1	670	1	EACH	FIRE HYDRANT REMOVED AND DISPOSED OF, AS PER PLAN
												1	670	1	EACH	VALVE BOX REMOVED AND DISPOSED OF, AS PER PLAN
												1080	670	1,080	FOOT	3/4" K–COPPER WATER SERVICE LINE, AS PER PLAN
												30	670	30	FOOT	2" SDR–9, PE WATER SERVICE LINE, AS PER PLAN
												32	670	32	EACH	2–1/2" CURB BOX WITH 3/4" CURB VALVE, AS PER PLAN
												1	670	1	EACH	2–1/2" CURB BOX WITH 2" CURB VALVE, AS PER PLAN
												32	670	32	EACH	3/4" CORPORATION STOP WITH TAPPING SADDLE, AS PER PLAN
												1	670	1	EACH	2" CORPORATION STOP WITH TAPPING SADDLE, AS PER PLAN
																SANITARY SEWER
												50	675	50	FOOT	6" SANITARY LATERAL REPAIR, AS PER PLAN
																MAINTENANCE OF TRAFFIC
		5											637	5	TH. GAL.	WATER FOR DUST PALLIATIVE
		31											SPECIAL	31	SQ. YD.	PLACEMENT, REMOVAL, AND DISPOSAL OF AGGREGATE BASE FOR MAINTAINING PAVEMENT SURFACE, AS PER PLAN
																MISCELLANEOUS
														LUMP	SUM	CONTINGENCY FOR EXPLORATORY EXCAVATION
													204	LUMP		MOBILIZATION
													636	LUMP		MAINTAINING TRAFFIC
													639	LUMP		CONSTRUCTION SURVEYING

(Column header group: SHEET NUMBER)

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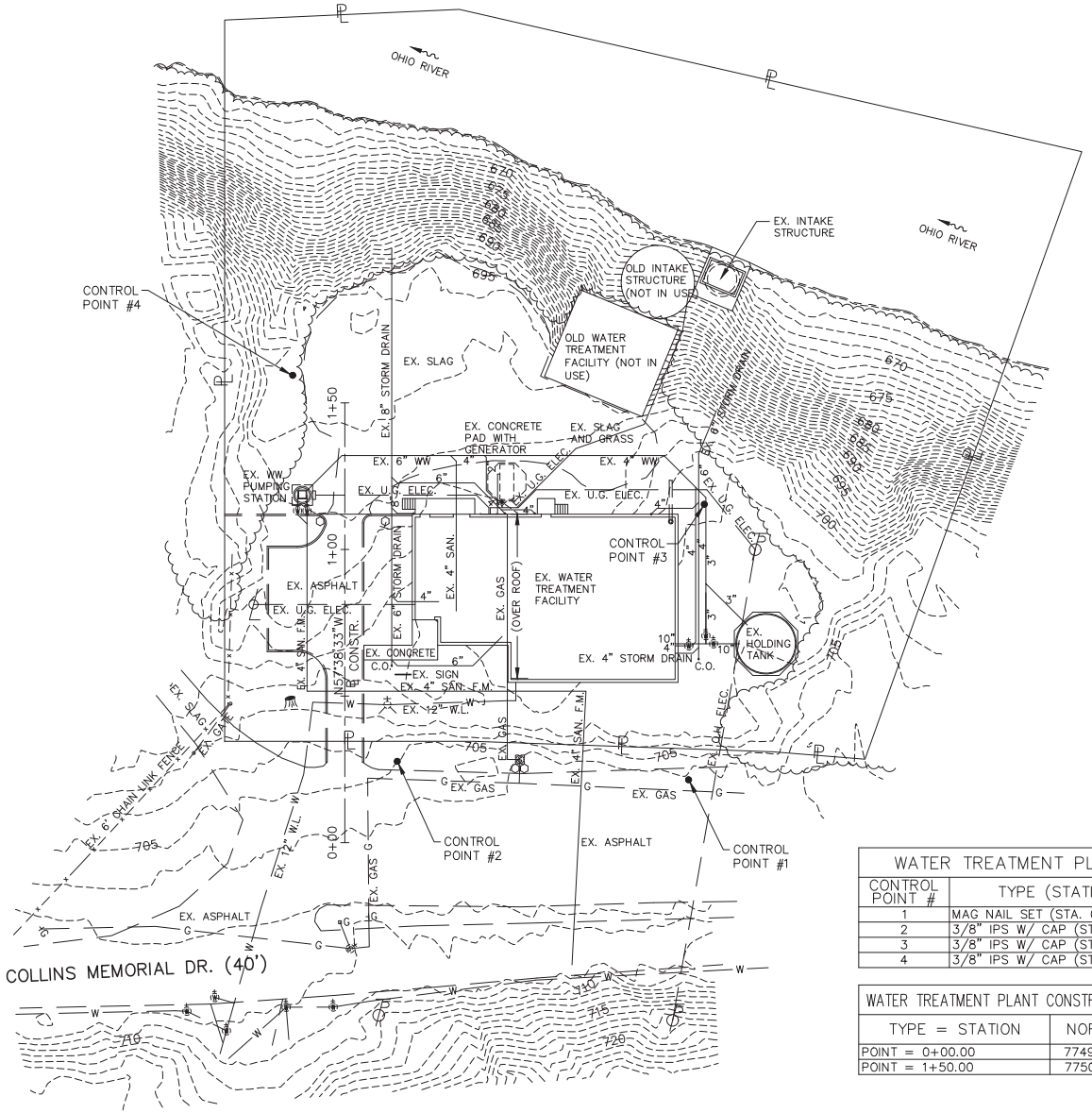
GENERAL SUMMARY

CITY OF CHESTER
WATER SYSTEM IMPROVE.



WATER TREATMENT PLANT CONTROL POINT REFERENCE COORDINATES				
CONTROL POINT #	TYPE (STATION, OFFSET)	NORTHING	EASTING	ELEVATION
1	MAG NAIL SET (STA. 0+21.46, 117.24' RT.)	775040.8458	1676711.1894	705.98
2	3/8" IPS W/ CAP (STA. 0+27.73, 17.85' RT.)	774960.2452	1676652.6911	705.13
3	3/8" IPS W/ CAP (STA. 1+15.41, 122.60' RT.)	775095.6600	1676634.6903	701.97
4	3/8" IPS W/ CAP (STA. 1+59.42, 17.81' LT.)	775000.6060	1676522.3722	696.15

WATER TREATMENT PLANT CONSTR. BASELINE COORDINATES		
TYPE = STATION	NORTHING	EASTING
POINT = 0+00.00	774930.3275	1676666.5667
POINT = 1+50.00	775010.6073	1676539.8578

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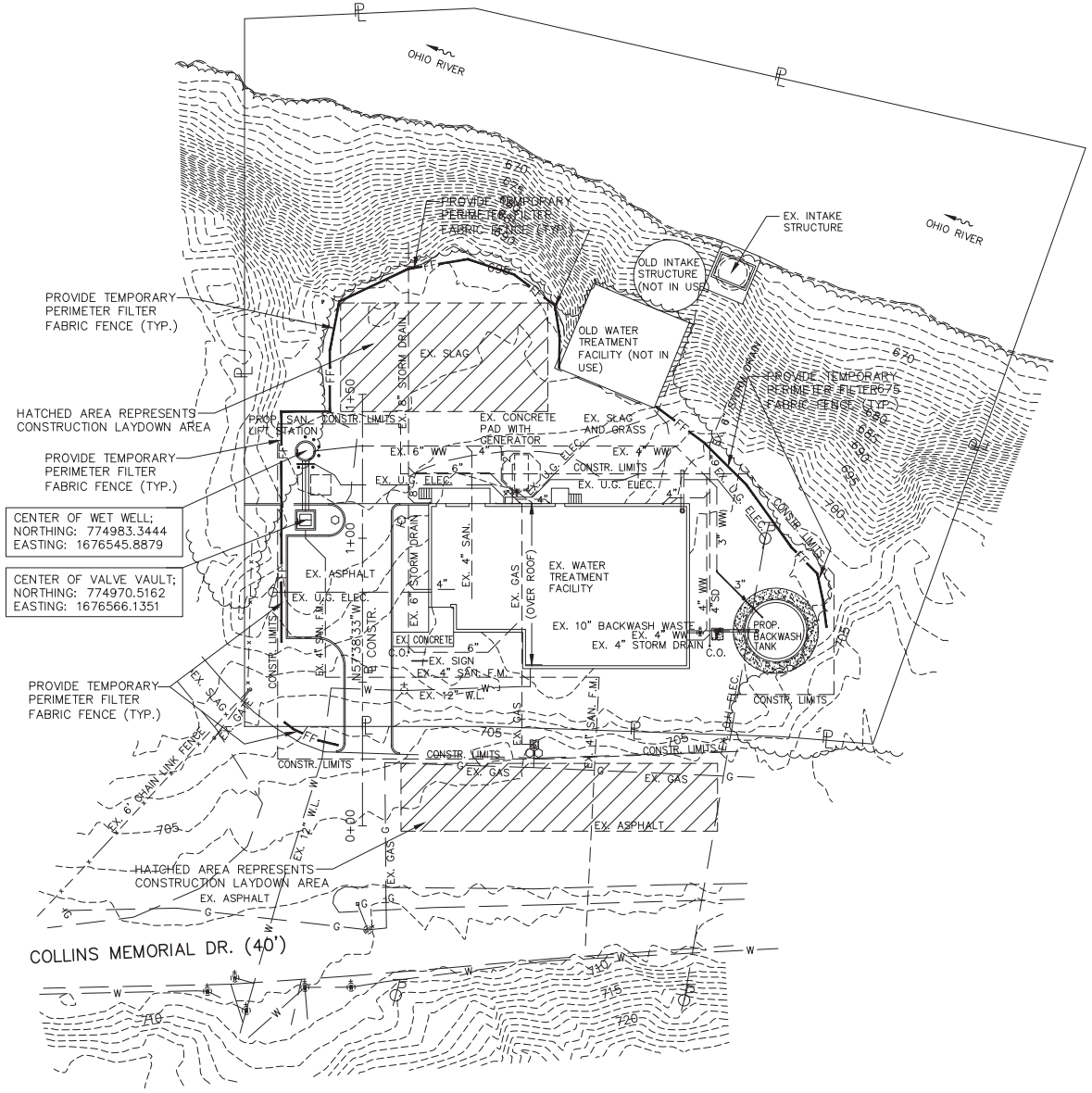
0 10 20 40
HORIZONTAL SCALE IN FEET

WATER TREATMENT PLANT
EXISTING SITE & SCHEMATIC PLAN

CITY OF CHESTER
WATER SYSTEM IMPROVE.



CITY OF CHESTER
WATER SYSTEM IMPROVE.

WATER TREATMENT PLANT
PROPOSED SITE PLAN

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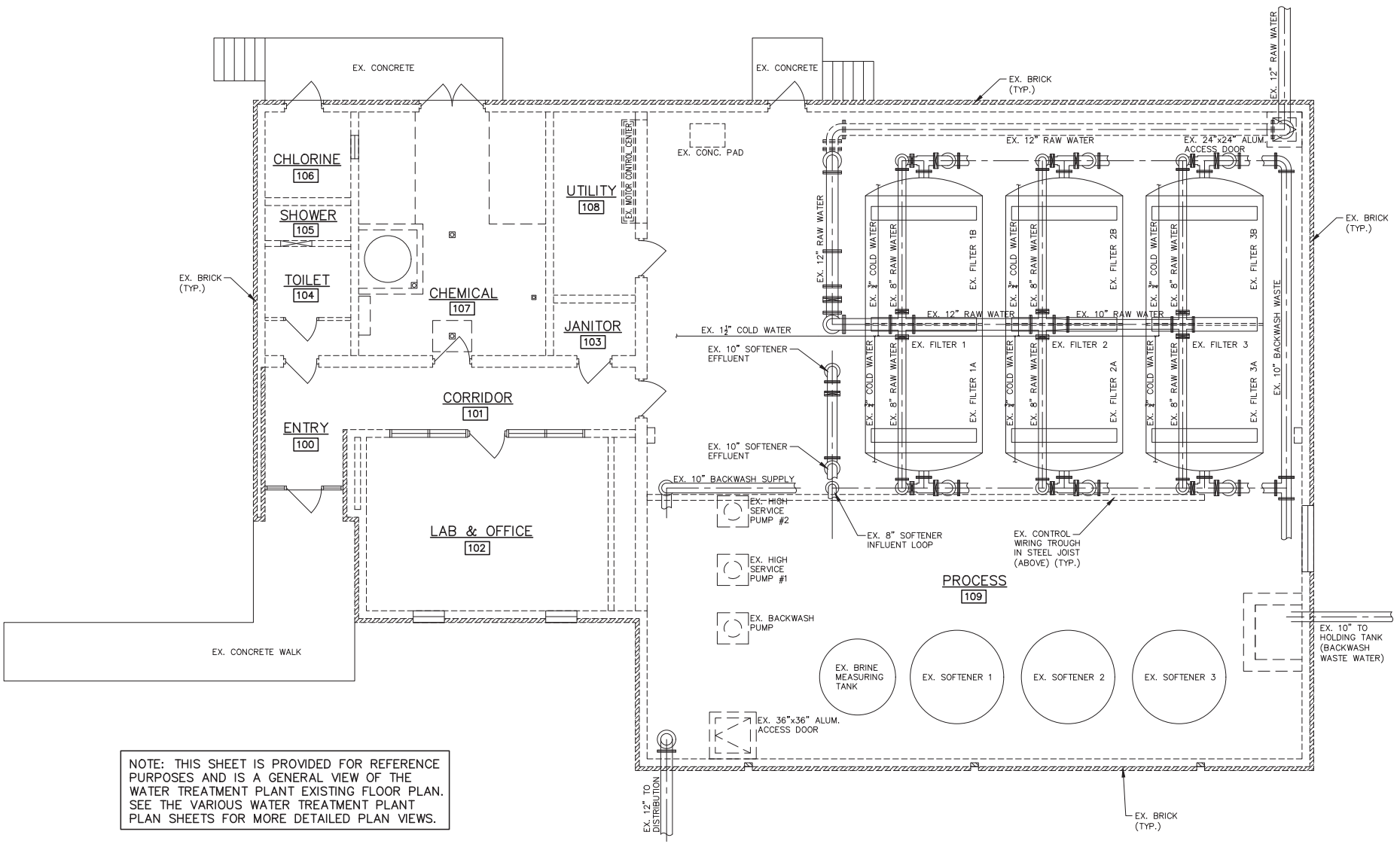
DATE: 12/22

HORIZONTAL SCALE IN FEET
0 10 20 40

8
81



NOTE: THIS SHEET IS PROVIDED FOR REFERENCE PURPOSES AND IS A GENERAL VIEW OF THE WATER TREATMENT PLANT EXISTING FLOOR PLAN. SEE THE VARIOUS WATER TREATMENT PLANT PLAN SHEETS FOR MORE DETAILED PLAN VIEWS.

EXISTING FLOOR PLAN
NOT TO SCALE

HORIZONTAL SCALE IN FEET
0 2 4 8

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WATER TREATMENT PLANT
EXISTING FLOOR PLAN

CITY OF CHESTER
WATER SYSTEM IMPROVE.

9
81

SEE SHEET 11 FOR FILTER TANK SEQUENCE OF CONSTRUCTION NOTES

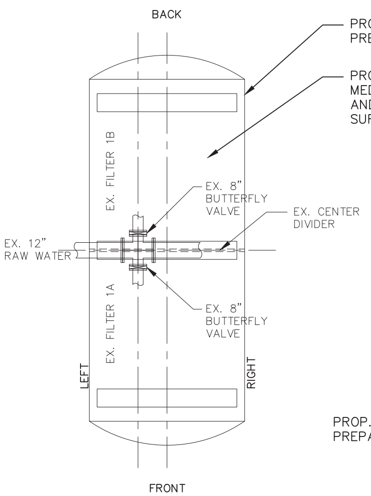
SEE SHEET 11 FOR EXISTING FILTER TANK MANWAY REMOVAL & REPLACEMENT NOTES

SEE SHEETS 11–13 FOR FILTER TANK FILTER MEDIA REMOVAL & REPLACEMENT NOTES

SEE SHEET 12 FOR STRUCTURAL TANK TESTING AND CONTINGENCY TANK REPAIR NOTES

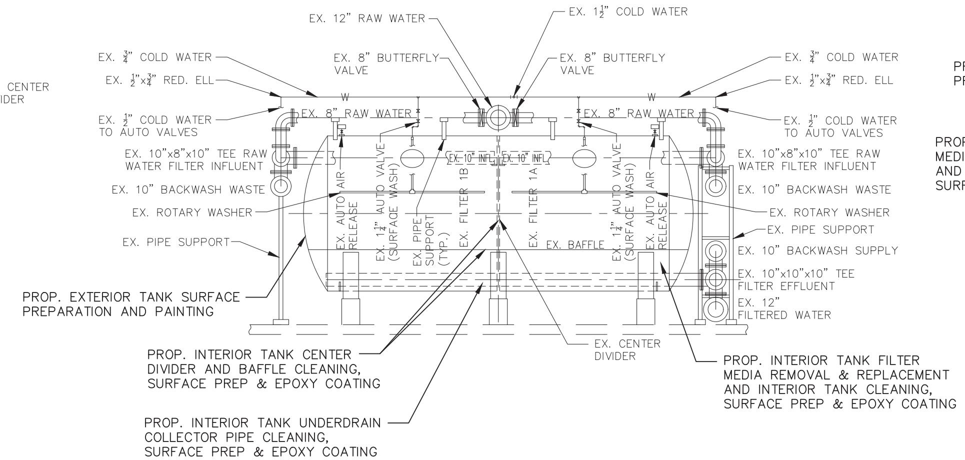
SEE SHEET 12 FOR FILTER TANK INTERIOR CLEANING, SURFACE PREPARATION & SURFACE COATING NOTES

SEE SHEET 13 FOR FILTER TANK EXTERIOR & FILTER TANK PIPING SURFACE PREPARATION & SURFACE COATING NOTES



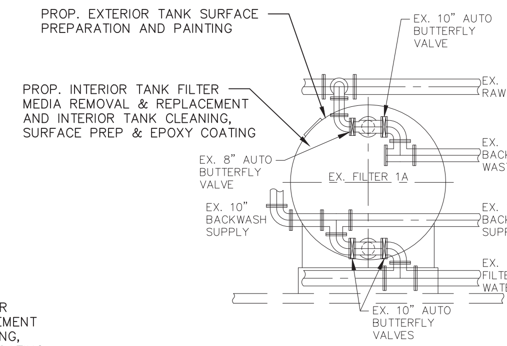
TYPICAL TOP VIEW

NOT TO SCALE



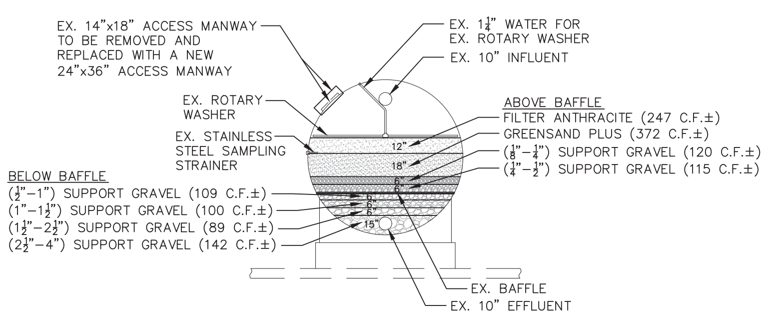
TYPICAL SIDE VIEW

NOT TO SCALE



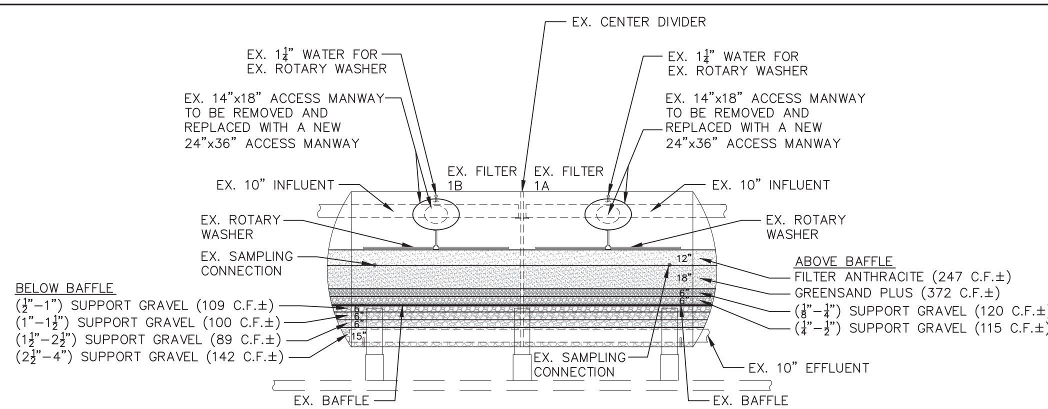
TYPICAL FRONT VIEW

NOT TO SCALE



TYPICAL FILTER MEDIA FOR EACH FILTER FRONT VIEW

NOT TO SCALE



TYPICAL FILTER MEDIA FOR EACH FILTER SIDE VIEW

NOT TO SCALE

0 2 4 8 HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22

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FILTER TANK IMPROVEMENTS

FILTER MEDIA/INTERIOR TANK WORK/EXTERIOR TANK WORK

CITY OF CHESTER

WATER SYSTEM IMPROVE.

SEQUENCE OF CONSTRUCTION – FILTER TANK IMPROVEMENTS

THE FOLLOWING IS A GENERAL LIST OF THE SEQUENCE OF CONSTRUCTION FOR THE FILTER TANK IMPROVEMENTS. THE CONTRACTOR MAY SUBMIT AN ALTERNATE SEQUENCE OF CONSTRUCTION BUT IT MUST BE FIRST APPROVED BY THE CONSTRUCTION ENGINEER PRIOR TO INCORPORATING IT INTO THE WORK.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

NOTE: SINCE FILTER TANK #3 IS CURRENTLY NOT IN OPERATION, THE FILTER TANK IMPROVEMENT WORK SHALL BEGIN WITH FILTER TANK #3. AFTER ALL WORK IS COMPLETED FOR FILTER TANK #3, THE CONTRACTOR SHALL THEN PROCEED WITH WORK ON FILTER TANK #2, AND THEN ON FILTER TANK #1.

1.) THE FOLLOWING SHALL PERTAIN TO ALL (3) FILTER TANKS.

2.) AFTER DRAINING THE WATER FROM THE TANK, REMOVE AND REPLACE THE EXISTING TANK ACCESS MANWAYS IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEET 11 OF THE PLANS.

3.) REMOVE EXISTING FILTER MEDIA IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEET 11 OF THE PLANS.

4.) PERFORM STRUCTURAL TANK TESTING AND MAKE ANY NECESSARY CONTINGENCY TANK REPAIRS IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEET 12 OF THE PLANS.

5.) CLEAN INTERIOR OF FILTER TANK INCLUDING WALLS, FLOOR, CEILING, UNDERDRAIN COLLECTOR PIPE, BOTTOM HORIZONTAL BAFFLE, COMPARTMENT WALL, AND ROTARY WASHER UNIT IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEET 12 OF THE PLANS.

6.) ON THE INTERIOR OF THE TANK, PROVIDE ANY NECESSARY TANK REPAIRS, SURFACE PREPARATION, AND SURFACE COATING OF THE FOLLOWING: WALLS, FLOOR, CEILING, UNDERDRAIN COLLECTOR PIPE, BOTTOM HORIZONTAL BAFFLE, COMPARTMENT WALL, ROTARY WASHER UNIT, SUPPORTS, ETC. ALL SHALL BE IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEET 12 OF THE PLANS.

7.) INSTALL NEW FILTER MEDIA IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEETS 12–13 OF THE PLANS.

8.) ON THE EXTERIOR OF THE TANK AND FOR ALL FILTER TANK PIPING, PROVIDE SURFACE PREPARATION AND SURFACE COATING IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEET 13 OF THE PLANS.

9.) REMOVE AND REPLACE THE EXISTING ACTUATED & MANUAL FILTER TANK BUTTERFLY VALVES IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEET 10 OF THE PLANS.
- AS PART OF THE REMOVAL AND REPLACEMENT OF THE ACTUATED BUTTERFLY VALVES FOR TANK #3 ONLY, THE CONTRACTOR SHALL INSTALL THE MAIN CONTROL PANEL FOR THE ACTUATED BUTTERFLY VALVES AS WELL AS ALL NECESSARY ELECTRIC CONDUIT, ELECTRICAL WIRING, CONTROL WIRING, AND INCIDENTALS IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEETS 24 TO 25 OF THE PLANS.

10.) COORDINATE THE BACKWASHING/RINSING OF THE COMPLETED TANK WITH THE WATER TREATMENT PLANT OPERATOR AND RETURN THE FILTER TANK TO SERVICE.

PAYMENT FOR THE AFOREMENTIONED SEQUENCING SHALL BE INCLUDED IN THE VARIOUS UNIT OR LUMP SUM PRICES BID IN THE PROPOSAL.

REMOVAL & REPLACEMENT OF EXISTING TANK ACCESS MANWAYS

THE FOLLOWING IS RELATIVE TO THE REMOVAL OF THE EXISTING TANK ACCESS MANWAYS AND SHALL PERTAIN TO ALL (3) FILTER TANKS. THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE METHOD OF REMOVAL FOR APPROVAL BY THE CONSTRUCTION ENGINEER PRIOR TO PERFORMING THE REMOVAL WORK.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING REMOVAL AND INSTALLATION OPERATIONS, THE CONTRACTOR SHALL PROTECT THE EXISTING FILTER TANK STRUCTURE AND ALL FILTER TANK APPURTENANCES. ANY DAMAGE TO THE FILTER TANKS AND THEIR APPURTENANCES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

THERE TWO (2) ACCESS MANWAYS FOR EACH TANK (6 TOTAL).

EACH EXISTING ACCESS MANWAY SHALL BE REMOVED BY WAY OF A CUTTING TORCH. THE TORCHING PERFORMED FOR REMOVAL SHALL ALSO BE LARGE ENOUGH TO ACCOMMODATE THE SIZE OF THE NEW ACCESS MANWAY WHICH WILL ULTIMATELY BE WELDED TO THE EXISTING TANK.

EACH NEW ACCESS MANWAY SHALL BE 24"x36" OVAL-SHAPED AND COMPRISED OF A MINIMUM OF 3/8" THICK, A36 STEEL; AND SHALL HAVE A LOCKABLE, HINGED, OUT-SWING ACCESS DOOR.

THE ACCESS OPENING SHALL BE RAISED APPROXIMATELY 6" ABOVE THE EXTERIOR TANK SURFACE, AND SHALL BE DESCENDED APPROXIMATELY 1/2" INSIDE THE TANK.

ALL NUTS, BOLTS, AND WASHERS FOR THE NEW ACCESS MANWAY SHALL BE A36 STEEL AND SHALL HAVE PROPER SURFACE PREPARATION TO RECEIVE THE SPECIFIC INTERIOR OR EXTERIOR SURFACE COATING APPLICATION.

EACH NEW ACCESS MANWAY SHALL HAVE THE NECESSARY GASKET(S) TO ENSURE A WATER-TIGHT FIT WHEN IN THE CLOSED POSITION, AND SHALL ACCOMMODATE THE CORRESPONDING NORMAL OPERATING PRESSURE OF THE FILTER TANK (A MINIMUM OF X PSI).

WELDING OF EACH NEW ACCESS MANWAY TO THE EXISTING TANK SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. WELDS SHALL BE FULL PENETRATION ON THE INSIDE AND OUTSIDE OF THE TANK.

PRIOR TO APPLYING THE SURFACE COATING ON THE INTERIOR OF THE FILTER TANK AND PRIOR TO APPLYING THE SURFACE COATING ON THE EXTERIOR OF THE FILTER TANK, THE CONTRACTOR SHALL ENSURE ALL WELDS ARE PROPERLY PREPARED IN ORDER TO RECEIVE THE MATERIAL BEING APPLIED. ALL WELD SPATTER SHOULD BE REMOVED ALONG WELD SEAMS, ROUGH WELDS SHOULD BE GROUND SMOOTH, ALL SHARP EDGES SHOULD BE GROUND TO A SMOOTH RADIUS, ETC.

ALL STEEL FOR THE NEW ACCESS MANWAYS SHALL BE HAVE PROPER SURFACE PREPARATION TO RECEIVE THE SPECIFIC COATING APPLICATION. ALL INTERIOR COMPONENTS OF THE NEW ACCESS MANWAY SHALL RECEIVE THE SAME SURFACE COATING THAT WILL BE APPLIED ON THE INTERIOR OF THE FILTER TANK. ALL EXTERIOR COMPONENTS OF THE NEW ACCESS MANWAY SHALL RECEIVE THE SAME SURFACE COATING THAT WILL BE APPLIED ON THE EXTERIOR OF THE FILTER TANK.

FOR EACH EXISTING FILTER TANK, THE CONTRACTOR SHALL FIELD VERIFY ALL PERTINENT TANK DIMENSIONS; ALL PERTINENT TANK MATERIAL PROPERTIES; AND ANY OTHER NECESSARY PERTINENT INFORMATION FOR THE MANUFACTURER PRIOR TO ORDERING THE ACCESS MANWAYS.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & DISPOSAL AND FOR THE COMPLETE INSTALLATION OF THE NEW ACCESS MANWAYS FOR THE FILTER TANKS AS DESCRIBED IN THE NOTES ABOVE, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE PER EACH UNIT PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE FILTER TANK ACCESS MANWAYS, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – REMOVE & REPLACE FILTER TANK ACCESS MANWAY, AS PER PLAN	6 EACH

REMOVAL & DISPOSAL OF EXISTING FILTER MEDIA WITHIN FILTER TANKS

THE FOLLOWING IS RELATIVE TO THE REMOVAL OF THE EXISTING FILTER MEDIA AND SHALL PERTAIN TO ALL (3) FILTER TANKS. THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE METHOD OF REMOVAL FOR APPROVAL BY THE CONSTRUCTION ENGINEER PRIOR TO PERFORMING THE REMOVAL WORK.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING REMOVAL OPERATIONS, THE CONTRACTOR SHALL PROTECT THE EXISTING FILTER TANK STRUCTURE AND ALL FILTER TANK APPURTENANCES. ANY DAMAGE TO THE FILTER TANKS AND THEIR APPURTENANCES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE CONTRACTOR SHALL PROVIDE ALL PERTINENT EQUIPMENT NECESSARY FOR THE REMOVAL OF THE FILTER MEDIA (I.E. SCAFFOLDING; VACUUM TRUCK WITH CORRESPONDING PIPING/HOSES; HYDROBLASTING AND/OR HAND-HAMMERING TOOLS FOR HARDENED MATERIAL; ETC.) AND ANY OTHER EQUIPMENT DEEMED NECESSARY BY THE CONTRACTOR.

ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

APPROXIMATE VOLUMES OF EXISTING FILTER MEDIA PER TANK ARE AS SHOWN ON SHEET 10 OF THE CONSTRUCTION PLANS.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & DISPOSAL OF THE EXISTING FILTER MEDIA AS DESCRIBED IN THE NOTES ABOVE, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE PER EACH UNIT PRICE BID FOR ITEM SPECIAL – REMOVAL & DISPOSAL OF EXISTING FILTER MEDIA WITHIN FILTER TANK, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – REMOVAL & DISPOSAL OF EXISTING FILTER MEDIA WITHIN FILTER TANK, AS PER PLAN	3 EACH

STRUCTURAL TANK TESTING AND CONTINGENCY TANK REPAIR

THE FOLLOWING IS RELATIVE TO THE STRUCTURAL TANK TESTING OF THE EXISTING FILTER TANKS ALONG WITH ANY NECESSARY CONTINGENCY TANK REPAIR WORK, AND SHALL PERTAIN TO ALL (3) FILTER TANKS.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING STRUCTURAL TANK TESTING AND DURING ANY NECESSARY TANK REPAIRS, THE CONTRACTOR SHALL PROTECT THE EXISTING FILTER TANK STRUCTURE AND ALL FILTER TANK APPURTENANCES. ANY DAMAGE TO THE FILTER TANKS AND THEIR APPURTENANCES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

STRUCTURAL TANK TESTING SHALL BE PERFORMED VIA AN ULTRASONIC TESTING OF EACH TANK WHICH SHALL BE CONDUCTED BY AN "NACE CIP LEVEL–3 CERTIFIED INSPECTOR" TO CONFIRM THAT THE TANK IS STRUCTURALLY SOUND. STRUCTURAL TANK TESTING SHALL BE PERFORMED PRIOR TO THE TANK CLEANING. FOR EACH TANK, ANY AREAS OF STRUCTURAL DEFICIENCIES SHALL BE ADEQUATELY MARKED BY THE TANK INSPECTOR FOR REPAIR BY THE CONTRACTOR. FOR FILING PURPOSES, THE TANK INSPECTOR SHALL PROVIDE A BRIEF INSPECTION REPORT & RECOMMENDATIONS TO THE CITY AND THE CONSTRUCTION ENGINEER.

IF IT IS DETERMINED THAT A SECTION OF THE TANK IS IN NEED OF REPAIR THE CONTRACTOR SHALL PERFORM THE FOLLOWING, AS DIRECTED BY THE CONSTRUCTION ENGINEER:

- –REMOVE THE DEFECTIVE SECTION OF THE TANK VIA A CUTTING TORCH.
- –REPLACE THE REMOVED SECTION OF THE TANK WITH AN APPROPRIATE FABRICATED SIZE OF STEEL MATCHING THE EXISTING MATERIAL PROPERTIES, THICKNESS, ETC. OF THE EXISTING FILTER TANK.
- –REPAIR SECTIONS OF THE TANK SHALL BE WELDED, FULL PENETRATION ON BOTH THE INSIDE AND OUTSIDE OF THE TANK.
- –ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

PRIOR TO APPLYING THE SURFACE COATING ON THE INTERIOR OF THE FILTER TANK AND PRIOR TO APPLYING THE SURFACE COATING ON THE EXTERIOR OF THE FILTER TANK, THE CONTRACTOR SHALL ENSURE ALL WELDS ARE PROPERLY PREPARED IN ORDER TO RECEIVE THE MATERIAL BEING APPLIED. ALL WELD SPATTER SHOULD BE REMOVED ALONG WELD SEAMS, ROUGH WELDS SHOULD BE GROUND SMOOTH, ALL SHARP EDGES SHOULD BE GROUND TO A SMOOTH RADIUS, ETC.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE STRUCTURAL TANK TESTING OF THE EXISTING FILTER TANKS AS DESCRIBED IN THE NOTES ABOVE, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE PER EACH UNIT PRICE BID FOR ITEM SPECIAL – STRUCTURAL TESTING, FILTER TANK, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – STRUCTURAL TESTING, FILTER TANK, AS PER PLAN — 3 EACH

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR ANY NECESSARY CONTINGENCY REPAIR TO THE FILTER TANKS AS DESCRIBED IN THE NOTES ABOVE, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE PER SQUARE FOOT UNIT PRICE BID FOR ITEM SPECIAL – CONTINGENCY REPAIR, FILTER TANK, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

ITEM SPECIAL – CONTINGENCY REPAIR, FILTER TANK, AS PER PLAN — 30 SQ. FT.

INTERIOR FILTER TANK CLEANING, SURFACE PREPARATION, AND SURFACE COATING

THE FOLLOWING IS RELATIVE TO THE CLEANING, SURFACE PREPARATION, AND SURFACE COATING ON THE INTERIOR OF THE EXISTING FILTER TANKS AND SHALL PERTAIN TO ALL (3) FILTER TANKS. THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE METHOD OF CLEANING, SURFACE PREPARATION, AND SURFACE COATING FOR APPROVAL BY THE RESIDENT CONSTRUCTION ENGINEER PRIOR TO PERFORMING THE WORK.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

(CONT'D ON THIS SHEET IN NEXT COLUMN)

INTERIOR FILTER TANK CLEANING, SURFACE PREPARATION, AND SURFACE COATING (CONT'D)

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING CLEANING, SURFACE PREPARATION, AND SURFACE COATING OPERATIONS, THE CONTRACTOR SHALL PROTECT THE EXISTING FILTER TANK STRUCTURE AND ALL FILTER TANK APPURTENANCES. ANY DAMAGE TO THE FILTER TANKS AND THEIR APPURTENANCES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS/DEBRIS REMOVED, WATER USED, ABRASIVES USED, ETC. DURING CLEANING AND SURFACE PREPARATION OPERATIONS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

INTERIOR TANK CLEANING:
CLEANING OF THE ENTIRE INTERIOR OF THE TANKS SHALL INCLUDE THE WALLS, FLOOR, CEILING, UNDERDRAIN COLLECTOR PIPE, BOTTOM HORIZONTAL BAFFLE, COMPARTMENT WALL, ROTARY WASHER UNIT, AND ALL OTHER INTERIOR COMPONENTS. WATER FOR CLEANING SHALL BE OF AN ADEQUATE PRESSURE IN ORDER TO ALLOW FOR THE PROPER COLLECTION & REMOVAL OF ANY SCALE DEPOSITS, REMAINING DEBRIS FROM FILTER MEDIA REMOVAL, ETC.

THE CONTRACTOR SHALL PROVIDE A VIDEO INSPECTION OF THE INTERIOR OF THE TANK UPON COMPLETION OF THE CLEANING FOR REVIEW BY THE CITY AND THE CONSTRUCTION ENGINEER.

INTERIOR SURFACE PREPARATION:
SURFACE PREPARATION SHALL BE PERFORMED VIA ABRASIVE BLASTING (I.E. NEAR WHITE METAL BLAST CLEANING PER SSPC–SP10/NACE 2) WITH THE PERTINENT ABRASIVE BLASTING EQUIPMENT (I.E. BLAST POTS, AIR COMPRESSOR, DUST COLLECTOR, VACUUM TRUCK, ETC.) ALONG WITH THE CORRESPONDING SHARP/ANGULAR ABRASIVE MEDIA BLAST MATERIAL (I.E. SILICA SAND, ETC.). MEDIA BLAST MATERIAL SHALL BE ACCEPTABLE FOR USE IN TREATED/DRINKING WATER APPLICATIONS. ALL INTERIOR SURFACE PREPARATION SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR THE REINFORCED EPOXY SURFACE COATING BEING APPLIED.

SURFACE PREPARATION OF THE ENTIRE INTERIOR OF THE TANKS SHALL INCLUDE THE WALLS, FLOOR, CEILING, UNDERDRAIN COLLECTOR PIPE, BOTTOM HORIZONTAL BAFFLE, COMPARTMENT WALL, ROTARY WASHER UNIT, AND ALL OTHER INTERIOR COMPONENTS.

THE CONTRACTOR SHALL PROVIDE A VIDEO INSPECTION OF THE INTERIOR OF THE TANK UPON COMPLETION OF THE SURFACE PREPARATION FOR REVIEW BY THE CITY AND THE CONSTRUCTION ENGINEER.

INTERIOR SURFACE COATING:
THE SURFACE COATING SHALL BE AN NSF/ANSI 600 COMPLIANT, REINFORCED EPOXY, TWO–COMPONENT, MATERIAL FOR USE IN TREATED/DRINKING WATER APPLICATIONS; SHALL BE APPLIED IN (2) COATS, WITH A MINIMUM FINISHED (20) MIL THICKNESS PER COAT (MINIMUM FINISHED TOTAL THICKNESS OF (40) MILS); AND SHALL BE APPLIED WITH THE PERTINENT EQUIPMENT PER THE MANUFACTURER'S RECOMMENDATIONS (I.E. AIRLESS SPRAYER, ETC.).

SURFACE COATING OF THE ENTIRE INTERIOR OF THE TANKS SHALL INCLUDE THE WALLS, FLOOR, CEILING, UNDERDRAIN COLLECTOR PIPE, BOTTOM HORIZONTAL BAFFLE, COMPARTMENT WALL, ROTARY WASHER UNIT, AND ALL OTHER INTERIOR COMPONENTS.

THE CONTRACTOR SHALL PROVIDE A VIDEO INSPECTION OF THE INTERIOR OF THE TANK UPON COMPLETION OF THE SURFACE COATING FOR REVIEW BY THE CITY AND THE CONSTRUCTION ENGINEER.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE CLEANING, SURFACE PREPARATION, AND SURFACE COATING ON THE INTERIOR OF THE EXISTING FILTER TANKS, INCLUDING ALL REMOVAL & DISPOSAL AS DESCRIBED IN THE NOTES ABOVE, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE PER EACH UNIT PRICE BID FOR ITEM SPECIAL – INTERIOR FILTER TANK CLEANING, SURFACE PREPARATION, AND SURFACE COATING, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – INTERIOR FILTER TANK CLEANING, SURFACE PREPARATION, AND SURFACE COATING, AS PER PLAN. — 3 EACH

APPROXIMATE INTERIOR SURFACE AREAS FOR CLEANING, SURFACE PREPARATION, AND SURFACE COATING (TOTALS PER TANK):

–TANK INTERIOR SURFACE AREA	=	943 SQ. FT.
–10" UNDERDRAIN EXTERIOR SURFACE AREA	=	66 SQ. FT.
–COMPARTMENT WALL (2 SIDES)	=	157 SQ. FT.
–BOTTOM HORIZONTAL BAFFLE (2 SIDES)	=	450 SQ. FT.
–ROTARY WASHER UNITS (2 EACH)	=	11 SQ. FT.
–APPROXIMATE TOTAL AREA (PER TANK)	=	1,627 SQ. FT.

INSTALLATION OF NEW FILTER MEDIA WITHIN FILTER TANKS

THE FOLLOWING IS RELATIVE TO THE REMOVAL OF THE EXISTING FILTER MEDIA AND SHALL PERTAIN TO ALL (3) FILTER TANKS.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING FILTER MEDIA INSTALLATION OPERATIONS, THE CONTRACTOR SHALL PROTECT THE EXISTING FILTER TANK STRUCTURE, ALL FILTER TANK APPURTENANCES, AND INTERIOR TANK COATINGS. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE CONTRACTOR SHALL PROVIDE ALL PERTINENT EQUIPMENT NECESSARY FOR THE PROPER INSTALLATION OF THE NEW FILTER MEDIA.

PER THE ORIGINAL WATER TREATMENT PLANT CONSTRUCTION PLANS AND THE CORRESPONDING ORIGINAL OPERATION & MAINTENANCE MANUAL, THE CONTRACTOR SHALL PROVIDE THE FOLLOWING FILTER MEDIA MATERIALS:

SUPPORT GRAVEL:
THE SUPPORT GRAVEL SHALL CONSIST OF CLEAN, HARD, DURABLE, ROUNDED PARTICLES OF HIGH QUALITY, WHICH SHALL EXCEED AWWA B100–16. THE AVERAGE SPECIFIC GRAVITY SHALL NOT BE LESS THAN 2.5 FOR SILICA GRAVEL. THE ACID SOLUBILITY SHALL BE AS SPECIFIED IN B100–16. THE SUPPORT GRAVEL GRADATION, CORRESPONDING INSTALLATION DEPTHS, AND APPROXIMATE VOLUMES PER TANK ARE AS SHOWN ON SHEET 10 OF THESE CONSTRUCTION PLANS.

MANGANESE GREENSAND:
MANGANESE GREENSAND (MORE COMMONLY REFERRED TO AS GREENSAND PLUS) SHALL BE COMPOSED OF HARD, DURABLE, CLEAN SILICEOUS PARTICLES, FREE OF ALL MICA, WITH AN AVERAGE SPECIFIC GRAVITY OF 2.40 (OR MORE), COATED WITH A MANGANESE DIOZIDE, AND SHALL BE IN STRICT ACCORDANCE WITH AWWA B100–16. THE EFFECTIVE SIZE SHALL BE 0.30–0.35 MM, WITH A UNIFORMITY COEFFICIENT OF 1.60 OR LESS. THE CORRESPONDING MANGANESE GREENSAND INSTALLATION DEPTH AND APPROXIMATE VOLUME PER TANK ARE AS SHOWN ON SHEET 10 OF THESE CONSTRUCTION PLANS.

ANTHRACITE COAL:
ANTHRACITE COAL SHALL HAVE AN AVERAGE SPECIFIC GRAVITY OF 1.60 (OR MORE), WITH HARDNESS (MOH SCALE) OF 3.00 OR MORE, AND SHALL BE ESSENTIALLY FREE OF IRON, SULPHIDES, CLAY, SHALE, EXTRANEOUS DIRT, AND EXCESSIVE DUST AND SHALL BE IN STRICT ACCORDANCE WITH AWWA B100–16. CARBON CONTENT SHALL BE A MINIMUM OF 80 PERCENT ON A DRY–WEIGHT BASIS. ASH CONTENT SHALL BE A MAXIMUM OF 15 PERCENT. VOLATILE MATTER SHALL BE 7 PERCENT MAXIMUM ON DRY–WEIGHT BASIS. THE EFFECTIVE SIZE SHALL BE 0.60–0.80 MM, WITH A UNIFORMITY COEFFICIENT OF LESS THAN 1.70. THERE SHALL BE NOT MORE THAN 3% FLOAT WHEN PLACED IN A FLUID OF SPECIFIC GRAVITY OF 1.45, AND NOT MORE THAN 3% SINK WHEN PLACED IN A FLUID OF SPECIFIC GRAVITY OF 1.95, WHEN TESTED IN ACCORDANCE WITH ASTM D4371–84, METHODS FOR DETERMINING THE WASHABILITY CHARACTERISTICS OF COAL. THE FILTER ANTHRACITE SHALL BE PROCESSED WITH WET WASHING, SCREENING, AND BIOLOGICAL NEUTRALIZATION. THE CORRESPONDING ANTHRACITE COAL INSTALLATION DEPTH AND APPROXIMATE VOLUME PER TANK ARE AS SHOWN ON SHEET 10 OF THESE CONSTRUCTION PLANS.

MATERIAL DELIVERY:
THE FOLLOWING MATERIAL DELIVERY METHODS WILL BE AT THE DISCRETION OF THE CONTRACTOR:

- –DELIVER SUPPORT GRAVEL AND FILTER MEDIA IN ONE–CUBIC FOOT BAGS AND PALLETIZED, OR
- –DELIVER SUPPORT GRAVEL AND FILTER MEDIA IN "SEMI–BULK" CONTAINERS HAVING LIFTING SLEEVES AND BOTTOM DISCHARGE SPOUT, WEIGHING APPROXIMATELY 2,000–4,000 POUNDS EACH
- –NOTE: DELIVERY OF "BULK" SHIPMENTS WILL NOT BE PERMITTED.

(CONT'D ON NEXT SHEET)

CITY OF CHESTER
WATER SYSTEM IMPROVE.

FILTER TANK IMPROVEMENTS
FILTER MEDIA/INTERIOR TANK WORK/EXTERIOR TANK WORK

CAD: J.F.B. DATE: 12/22
CHKD: BY: D.G.O. DATE: 12/22

0 4 8
2 HORIZONTAL SCALE IN FEET

INSTALLATION OF NEW FILTER MEDIA WITHIN FILTER TANKS (CONT'D)

INSTALLATION:

INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL SUBMIT THE MANUFACTURER'S PLAN FOR THE METHOD OF INSTALLATION FOR APPROVAL BY THE CONSTRUCTION ENGINEER PRIOR TO PERFORMING THE INSTALLATION WORK.

THE MANUFACTURER SHALL PROVIDE AN ON-SITE TECHNICAL REPRESENTATIVE DURING THE INSTALLATION PROCESS FOR EACH FILTER TANK. UPON COMPLETION OF THE INSTALLATION FOR EACH FILTER TANK, THE MANUFACTURER SHALL FURNISH A CERTIFICATE OF INSTALLATION DETAILING THAT THE FILTERING MATERIALS WERE INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

FOR BIDDING PURPOSES, THE FOLLOWING IS A GENERAL DESCRIPTION OF THE TENTATIVE INSTALLATION PROCESS, WHICH MAY VARY BY MANUFACTURER.

- –PLACE FILTER MATERIAL DIRECTLY IN THE FILTERS FROM THE BAGS THROUGH A WATER SLURRY METHOD UTILIZING AN EJECTOR SYSTEM AND AN ENERGY DIFFUSER. WATER TO BE FURNISHED BY THE OWNER AT APPROXIMATELY 450–500 GPM DURING HYDRAULIC INSTALLATION PROCESS.
- –OBTAIN CORRECT THICKNESS OF EACH LAYER BY MARKING A LEVEL LINE ON THE SIDE OF THE TANK. THEN LEVEL THE LAYER AGAINST A WATER SURFACE HELD AT THE APPROPRIATE MARK.
- –CAREFULLY PLACE MATERIAL SO AS NOT TO DISTURB THE PREVIOUS LAYERS.
- –DO NOT STAND OR WALK DIRECTLY UPON THE FILTERING MATERIALS, BUT ON BOARDS, WHICH WILL SUSTAIN THE WEIGHT OF THE WORKMEN WITHOUT DISPLACING THE GRAVEL AND MEDIA.
- –MEASURE DEPTH OF LAYER OF MEDIA AFTER MEDIA HAS BEEN BACKWASHED AND SKIMMED AND ADD ADDITIONAL MEDIA AS RECOMMENDED BY THE MANUFACTURER.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE NEW FILTER MEDIA AS DESCRIBED IN THE NOTES ABOVE, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE PER EACH UNIT PRICE BID FOR ITEM SPECIAL – INSTALLATION OF NEW FILTER MEDIA WITHIN FILTER TANKS, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – INSTALLATION OF NEW FILTER MEDIA WITHIN FILTER TANKS, AS PER PLAN	3 EACH

SURFACE PREPARATION & SURFACE COATING ON EXTERIOR OF FILTER TANKS

THE FOLLOWING IS RELATIVE TO THE SURFACE PREPARATION AND SURFACE COATING ON THE EXTERIOR OF THE EXISTING FILTER TANKS AND SHALL PERTAIN TO ALL (3) FILTER TANKS.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING SURFACE PREPARATION & SURFACE COATING OPERATIONS, THE CONTRACTOR SHALL PROTECT THE EXISTING FILTER TANK STRUCTURE AND ALL FILTER TANK APPURTENANCES. ANY DAMAGE TO THE FILTER TANKS AND THEIR APPURTENANCES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

SURFACE PREPARATION SHALL BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE URETHANE MASTIC COATING BEING PROVIDED. THE CONTRACTOR SHALL SUBMIT AN EXACT PLAN FOR THE METHOD OF SURFACE PREPARATION AND CORRESPONDING DUST/DEBRIS/PAINT CONTAINMENT & DISPOSAL, WASHWATER CONTAINMENT & DISPOSAL, ETC. FOR APPROVAL BY THE CONSTRUCTION ENGINEER PRIOR TO PERFORMING THE SURFACE PREPARATION WORK. THE PLAN SHALL ALSO INCLUDE A METHOD FOR TEMPORARY VENTILATION. ALL REMOVED DUST/DEBRIS/PAINT SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

SURFACE PREPARATION METHODS FOR THE PLACEMENT OF A URETHANE MASTIC COATING SHOULD INCLUDE THE FOLLOWING AT A MINIMUM:

- –STEEL SURFACES: HAND TOOL OR POWER TOOL CLEAN TO REMOVE LOOSE RUST, SCALE, AND DETERIORATED PREVIOUS COATINGS TO OBTAIN A SOUND RUSTED SURFACE. ALL WELD SPATTER SHOULD BE REMOVED ALONG WELD SEAMS, ROUGH WELDS SHOULD BE GROUND SMOOTH, AND ALL SHARP EDGES SHOULD BE GROUND TO A SMOOTH RADIUS.
- –PREVIOUSLY COATED SURFACES: PREVIOUSLY COATED SURFACES MUST BE SOUND AND IN GOOD CONDITION. SMOOTH, HARD, GLOSSY OR AGED TWO-COMPONENT EPOXY COATINGS SHOULD BE SCARIFIED BY SANDING OR SWEEP BLASTING TO CREATE A SURFACE PROFILE.
- –ALL SURFACES: REMOVE ALL DIRT, GREASE, OIL, SALT AND CHEMICAL CONTAMINANTS BY PRESSURE WASHING THE SURFACE WITH CLEANER/ DEGREASER, NON-RINSE DETERGENT, OR OTHER SUITABLE CLEANER. MOLD AND MILDEW AREAS MUST BE CLEANED WITH A CHLORINATED CLEANER OR BLEACH SOLUTION; RINSE WITH FRESH WATER AND ALLOW TO DRY.

THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE METHOD OF APPLYING THE EXTERIOR SURFACE COATING AND CORRESPONDING COATING CONTAINMENT, ETC. FOR APPROVAL BY THE CONSTRUCTION ENGINEER PRIOR TO PERFORMING THE SURFACE COATING WORK. THE PLAN SHALL ALSO INCLUDE A METHOD FOR TEMPORARY VENTILATION AND PROTECTION OF AREAS/EQUIPMENT NOT TO BE COATED.

- –THE EXTERIOR SURFACE COATING SHALL BE A URETHANE MASTIC COATING, TWO-COMPONENT (BASE/ACTIVATOR), HIGH SOLIDS, HIGH BUILD, DIRECT TO METAL, ALIPHATIC ACRYLIC POLYURETHANE.
- –THE COATING SHALL BE ABLE TO BE USED DIRECTLY ON SOUND RUSTED STEEL WITH MINIMUM SURFACE PREPARATION AND SHALL ALSO BE ABLE TO BE USED ON CLEAN STEEL AND PREVIOUSLY COATED SURFACES WITH PROPER SURFACE PREPARATION.
- –A TEST PATCH OF THE SURFACE COATING SHALL BE PERFORMED PRIOR TO APPLYING THE SURFACE COATING TO THE ENTIRE TANK.
- –A DRY FILM THICKNESS OF (3–5) MILS PER COAT; A MINIMUM OF TWO COATS TOTAL SHALL BE PROVIDED (6–10 MILS TOTAL).
- –COLOR SHALL BE BLUE (I.E. MATCH EXISTING EXTERIOR TANK PAINT COLOR AS CLOSELY AS POSSIBLE).
- –APPLICATION BY AIR SPRAYING IS PREFERRED; HOWEVER, APPLICATION BY BRUSH/ROLLER MAY BE PERFORMED WHERE NECESSARY (I.E. IN TIGHT SPACES, ETC.).

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE SURFACE PREPARATION & SURFACE COATING OF THE EXISTING FILTER TANKS AS DESCRIBED IN THE NOTES ABOVE, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE PER SQUARE FOOT UNIT PRICE BID FOR ITEM SPECIAL – SURFACE PREPARATION AND SURFACE COATING ON EXTERIOR OF FILTER TANKS, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY WHICH IS THE APPROXIMATE TOTAL SQUARE FOOTAGE FOR ALL (3) TANKS COMBINED.

ITEM SPECIAL – SURFACE PREPARATION AND SURFACE COATING ON EXTERIOR OF FILTER TANKS, AS PER PLAN	3,000 SQ. FT.

SURFACE PREPARATION & SURFACE COATING ON FILTER TANK PIPING

THE FOLLOWING IS RELATIVE TO THE SURFACE PREPARATION AND SURFACE COATING OF THE EXISTING FILTER TANK PIPING FOR ALL (3) FILTER TANKS.

ALL COORDINATION REQUIREMENTS, EQUIPMENT PROTECTION REQUIREMENTS, SURFACE PREPARATION PROCEDURES, SURFACE COATING PROCEDURES, ETC. DESCRIBED IN THE NOTES TO THE LEFT FOR THE "SURFACE PREPARATION & SURFACE COATING ON EXTERIOR OF FILTER TANKS" SHALL ALSO APPLY TO THE SURFACE PREPARATION AND SURFACE COATING OF THE FILTER TANK PIPING.

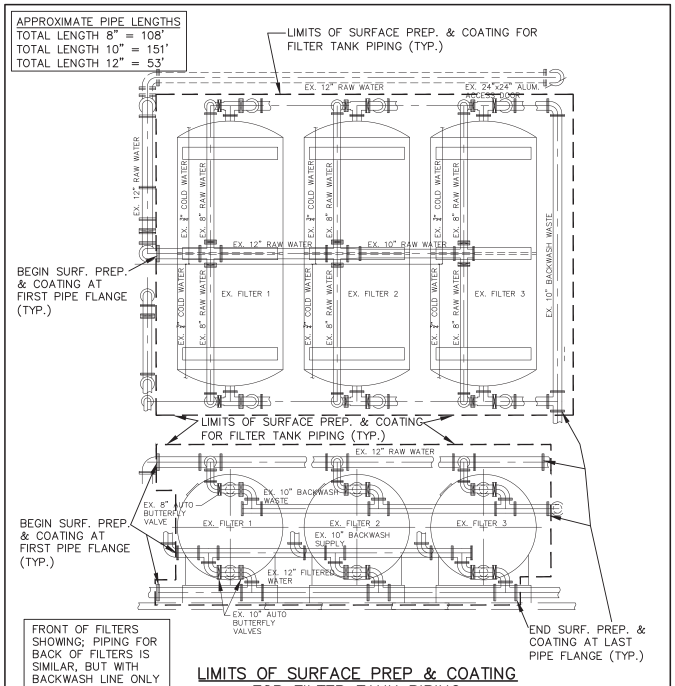
SURFACE PREPARATION & SURFACE COATING OF THE FILTER TANK PIPING SHALL BE COORDINATED WITH THE SURFACE PREPARATION & SURFACE COATING OF THE FILTER TANKS, AND SHALL ALSO BE COORDINATED WITH THE REMOVAL & REPLACEMENT OF THE FILTER TANK BUTTERFLY VALVES.

APPLICATION OF THE SURFACE COATING MAY BE PERFORMED BY AIR SPRAYING, BRUSH, OR ROLLER METHODS.

SEE DETAIL BELOW FOR THE LIMITS OF THE FILTER TANK PIPING REQUIRING SURFACE PREPARATION AND SURFACE COATING.

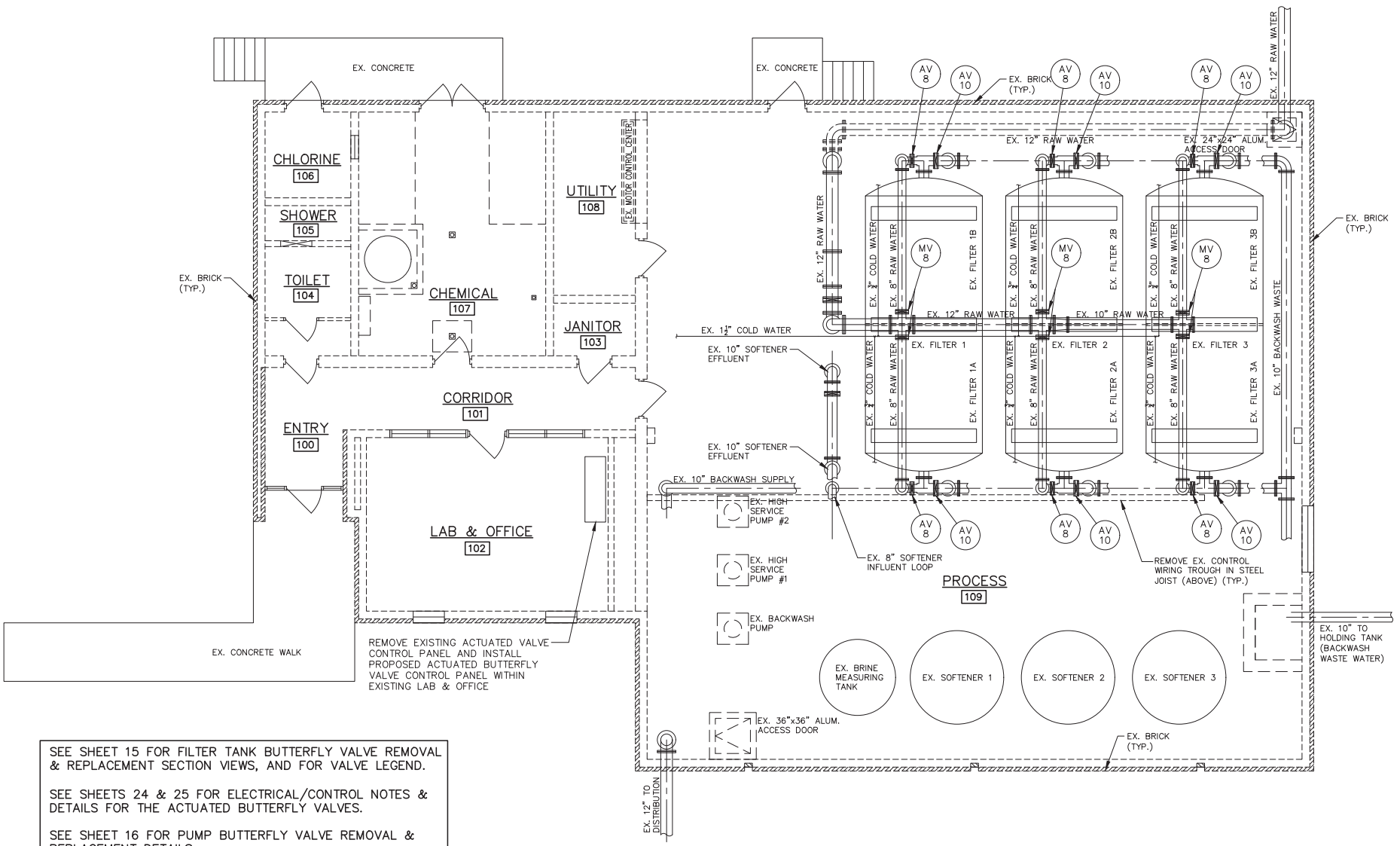
ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE SURFACE PREPARATION & SURFACE COATING OF THE EXISTING FILTER TANK PIPING (INCLUDING ALL FLANGES) AS DESCRIBED IN THE NOTES ABOVE, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE PER SQUARE FOOT UNIT PRICE BID FOR ITEM SPECIAL – SURFACE PREPARATION AND SURFACE COATING ON FILTER TANK PIPING, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY WHICH IS THE APPROXIMATE TOTAL SQUARE FOOTAGE FOR ALL FILTER TANK PIPING COMBINED.

ITEM SPECIAL – SURFACE PREPARATION AND SURFACE COATING ON FILTER TANK PIPING, AS PER PLAN	800 SQ. FT.



LIMITS OF SURFACE PREP & COATING FOR FILTER TANK PIPING

NOT TO SCALE



EXISTING FLOOR PLAN
NOT TO SCALE

SEE SHEET 15 FOR FILTER TANK BUTTERFLY VALVE REMOVAL & REPLACEMENT SECTION VIEWS, AND FOR VALVE LEGEND.

SEE SHEETS 24 & 25 FOR ELECTRICAL/CONTROL NOTES & DETAILS FOR THE ACTUATED BUTTERFLY VALVES.

SEE SHEET 16 FOR PUMP BUTTERFLY VALVE REMOVAL & REPLACEMENT DETAILS.

SEE SHEETS 17 & 18 FOR BOTH ACTUATED AND MANUAL BUTTERFLY VALVE GENERAL NOTES.

HORIZONTAL SCALE IN FEET
0 2 4 8

CAD: J.F.B.
DES: 12/22
CHK: D.G.D.
BY: D.G.D.
DATE: 12/22

EXISTING FILTER TANKS – FLOOR PLAN
BUTTERFLY VALVE REPLACEMENTS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

14
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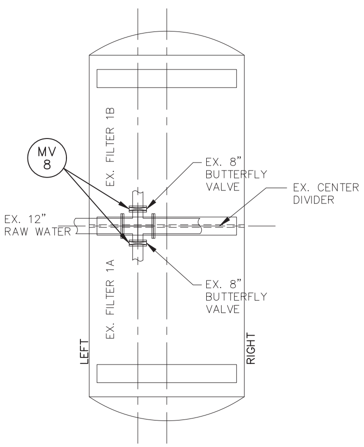
SEE SHEET 14 FOR FILTER TANK BUTTERFLY VALVE REMOVAL & REPLACEMENT FLOOR PLAN.

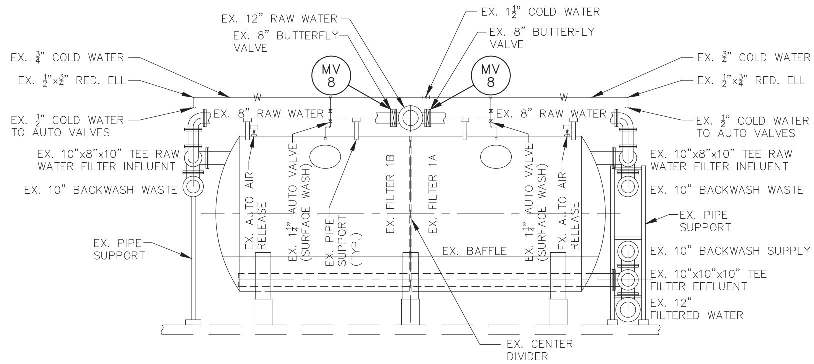
SEE SHEETS 24 & 25 FOR ELECTRICAL/CONTROL NOTES & DETAILS FOR THE ACTUATED BUTTERFLY VALVES.

SEE SHEET 16 FOR PUMP BUTTERFLY VALVE REMOVAL & REPLACEMENT DETAILS.

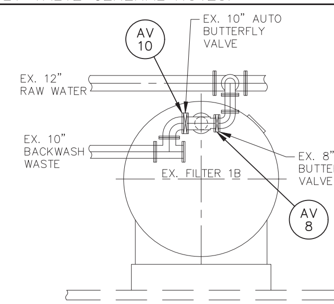
SEE SHEETS 17 & 18 FOR BOTH ACTUATED AND MANUAL BUTTERFLY VALVE GENERAL NOTES.



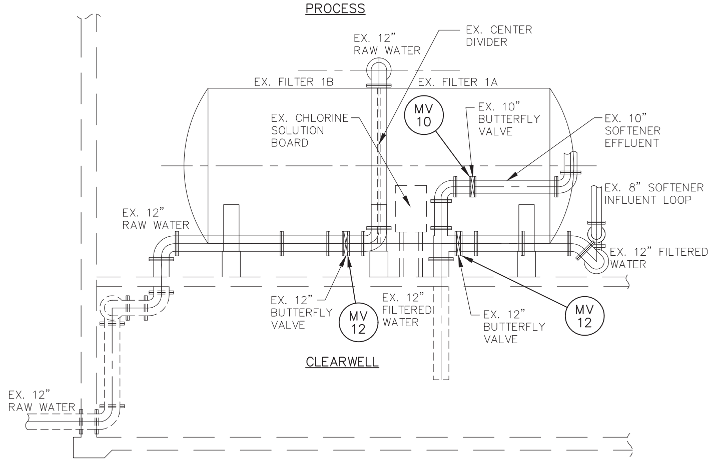
TOP VIEW
NOT TO SCALE



SIDE VIEW (TOP)
NOT TO SCALE



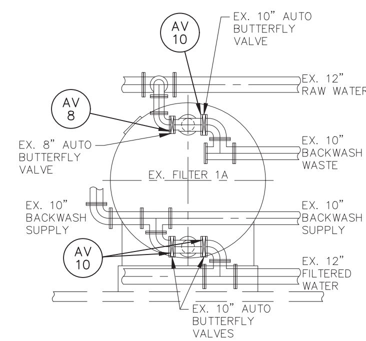
BACK VIEW
NOT TO SCALE



PIPING SECTION
(LEFT SIDE OF FILTER 1)
NOT TO SCALE

PROPOSED VALVE LEGEND

AV 8	PROPOSED 8" ACTUATED BUTTERFLY VALVE (2 EACH FILTER)
AV 10	PROPOSED 10" ACTUATED BUTTERFLY VALVE (4 EACH FILTER)
MV 8	PROPOSED 8" MANUAL BUTTERFLY VALVE (2 EACH FILTER)
MV 10	PROPOSED 10" MANUAL BUTTERFLY VALVE
MV 12	PROPOSED 12" MANUAL BUTTERFLY VALVE



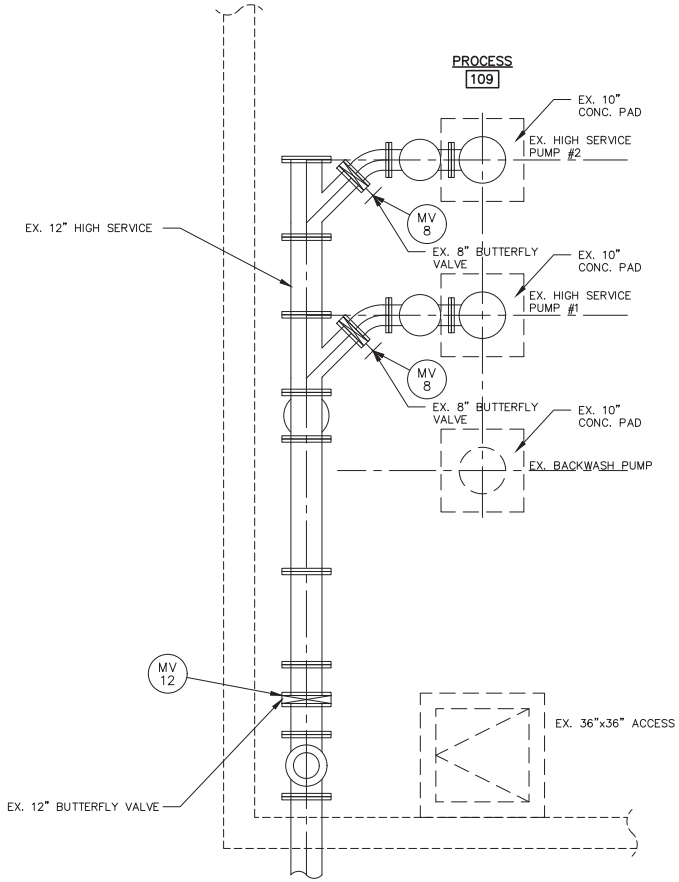
FRONT VIEW
NOT TO SCALE

0 2 4 8
HORIZONTAL SCALE IN FEET

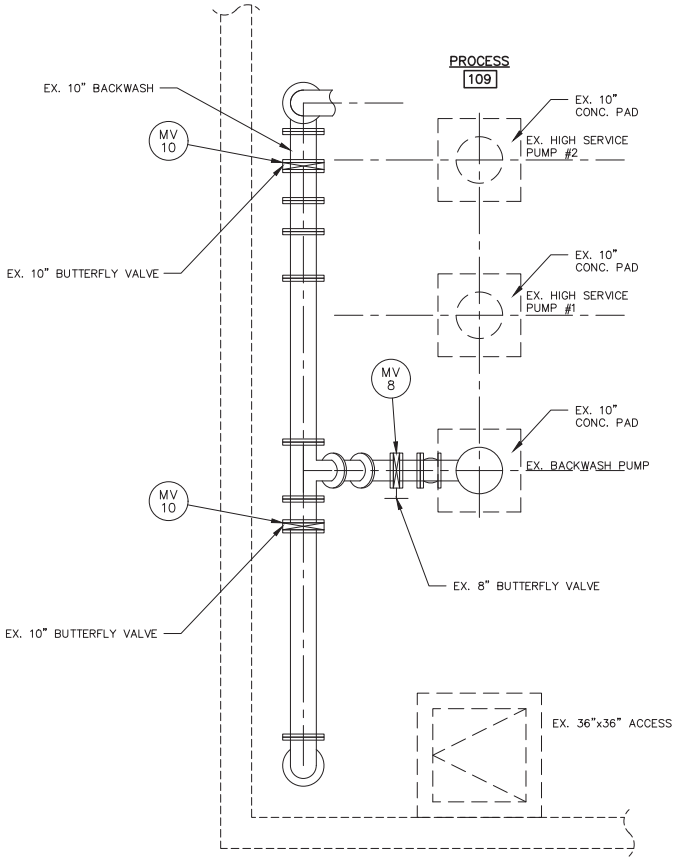
CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

EXISTING FILTER TANKS – SECTION VIEWS
BUTTERFLY VALVE REPLACEMENTS

CITY OF CHESTER
WATER SYSTEM IMPROVE.



HIGH SERVICE PUMPS
PLAN VIEW
NOT TO SCALE



BACKWASH PUMP
PLAN VIEW
NOT TO SCALE

PROPOSED VALVE LEGEND

- MV 8 — PROPOSED 8" MANUAL BUTTERFLY VALVE
- MV 10 — PROPOSED 10" MANUAL BUTTERFLY VALVE
- MV 12 — PROPOSED 12" MANUAL BUTTERFLY VALVE

SEE SHEETS 14 & 15 FOR FILTER TANK BUTTERFLY VALVE REMOVAL & REPLACEMENT DETAILS.

SEE SHEETS 24 & 25 FOR ELECTRICAL/CONTROL NOTES & DETAILS FOR THE ACTUATED BUTTERFLY VALVES.

SEE SHEETS 17 & 18 FOR BOTH ACTUATED AND MANUAL BUTTERFLY VALVE GENERAL NOTES.

HORIZONTAL SCALE IN FEET
0 1 2 4

CAD: J.F.B.
DES: 12/22
CHKD: D.G.D.
BY:
DATE:12/22

EXISTING PUMPS
BUTTERFLY VALVE REPLACEMENTS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

16
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REMOVAL & REPLACEMENT OF ACTUATED BUTTERFLY VALVES

THE FOLLOWING IS RELATIVE TO THE REMOVAL & REPLACEMENT OF THE EXISTING ACTUATED BUTTERFLY VALVES AND SHALL PERTAIN TO ALL (3) FILTER TANKS AS FURTHER SHOWN IN THE LOCATIONS DEFINED IN THE CONSTRUCTION PLANS.

THE REMOVAL & REPLACEMENT OF THE ACTUATED BUTTERFLY VALVES FOR THE FILTER TANKS SHALL BE COORDINATED WITH AND PERFORMED IN SEQUENCE WITH THE INTERIOR & EXTERIOR FILTER TANK IMPROVEMENTS SHOWN ON SHEETS 10–13 OF THE CONSTRUCTION PLANS. SEE SHEET 11 FOR THE SEQUENCE OF OPERATIONS.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING REMOVAL & REPLACEMENT OPERATIONS, THE CONTRACTOR SHALL PROTECT THE EXISTING FILTER TANK STRUCTURE, ALL FILTER TANK APPURTENANCES, AND ANY NEW EXTERIOR SURFACE COATINGS PLACED ON THE FILTER TANKS/PIPING. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE REMOVAL WORK FOR EACH ACTUATED BUTTERFLY VALVE SHALL INCLUDE THE REMOVAL OF ALL FLANGE CONNECTION NUTS & BOLTS; BUTTERFLY VALVE, ACTUATOR, & APPURTENANCES. ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY. ANY VOIDS LEFT IN THE EXISTING WALLS/FLOORS AS A RESULT OF THE REMOVAL OF ANCHORS OR OTHER MATERIALS SHALL BE FILLED WITH HIGH STRENGTH, NON-SHRINK GROUT BY THE CONTRACTOR.

THE FLANGED ENDS OF THE EXISTING PIPES THAT THE PROPOSED ACTUATED BUTTERFLY VALVES WILL BE CONNECTED TO SHALL BE THOROUGHLY CLEANED PRIOR TO THE INSTALLATION OF THE NEW VALVES.

ALL EQUIPMENT/MATERIALS FOR THE ACTUATED BUTTERFLY VALVES SHALL BE PROVIDED BY THE CONTRACTOR. ALL EQUIPMENT/MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT EQUIPMENT/MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

- THE CONTRACTOR SHALL COORDINATE ALL NECESSARY MATERIALS WITH THE VARIOUS SUPPLIERS/MANUFACTURERS.
- ALL MATERIALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE ACTUATED BUTTERFLY VALVES AS FURTHER DEFINED IN THE NOTES AND DETAILS IN THE CONSTRUCTION PLANS AND SPECIFICATIONS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: BUTTERFLY VALVES, ACTUATORS & ALL NECESSARY APPURTENANCES; FLANGE NUTS & BOLTS; AND ALL OTHER NECESSARY INCIDENTALS FOR A COMPLETE INSTALLATION.

ALL NUTS AND BOLTS FOR THE FLANGED CONNECTIONS SHALL BE STAINLESS STEEL.

ALL ANCHORING HARDWARE, HANGERS, SUPPORTS, ETC. SHALL BE STAINLESS STEEL.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING FIELD MEASUREMENTS PRIOR TO ORDERING, REMOVING & INSTALLING ANY MATERIALS.

SEE NEW BUTTERFLY VALVE (ACTUATED AND MANUAL) NOTES ON THIS SHEET.

SEE NEW BUTTERFLY VALVE ELECTRIC ACTUATORS NOTES ON SHEET 18.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & REPLACEMENT OF THE EXISTING ACTUATED BUTTERFLY VALVES AS DESCRIBED IN THE NOTES ABOVE, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE PER EACH UNIT PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE 8"/10" ACTUATED BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN. THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – REMOVE & REPLACE 8" ACTUATED BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN	6 EACH
ITEM SPECIAL – REMOVE & REPLACE 10" ACTUATED BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN	12 EACH

NOTE: THE REMOVAL OF ALL ELECTRICAL/CONTROL CONDUIT, WIRING, & WIRING TROUGH; ALL HYDRAULIC CONTROL CONDUITS & APPURTENANCES; VALVE CONTROL PANEL & APPURTENANCES; HANGERS, SUPPORTS, ANCHORING HARDWARE, & APPURTENANCES; AND ALL OTHER PERTINENT INCIDENTALS RELATED TO THE REMOVAL OF THE EXISTING BUTTERFLY VALVES & ACTUATORS WILL BE PAID FOR SEPARATELY. SEE ELECTRICAL & CONTROLS/CONTROL PANEL REMOVAL NOTES & DETAILS ON SHEETS 24 & 25.

NOTE: ALL NEW ELECTRICAL WIRING & CONDUIT; NEW CONTROL WIRING & CONDUIT; ELECTRICAL & CONTROL WIRING TROUGHS, HANGERS, SUPPORTS, ANCHORING HARDWARE, & INCIDENTALS; NEW VALVE CONTROL PANEL INCLUDING ALL SUPPORTS, BRACKETS, ANCHORS & INCIDENTALS; ETC. FOR THE PROPER OPERATION OF THE BUTTERFLY VALVE ACTUATORS WILL BE PAID FOR SEPARATELY. SEE NEW ELECTRICAL & CONTROLS/CONTROL PANEL NOTES & DETAILS ON SHEETS 24 & 25.

REMOVAL & REPLACEMENT OF MANUAL BUTTERFLY VALVES

THE FOLLOWING IS RELATIVE TO THE REMOVAL & REPLACEMENT OF THE EXISTING MANUALLY OPERATED BUTTERFLY VALVES AS FURTHER SHOWN IN THE LOCATIONS DEFINED IN THE CONSTRUCTION PLANS.

THE REMOVAL & REPLACEMENT OF THE MANUAL BUTTERFLY VALVES, SPECIFICALLY FOR THE FILTER TANKS, SHALL BE COORDINATED WITH AND PERFORMED IN SEQUENCE WITH THE INTERIOR & EXTERIOR FILTER TANK IMPROVEMENTS SHOWN ON SHEETS 10–13 OF THE CONSTRUCTION PLANS. SEE SHEET 11 FOR THE SEQUENCE OF OPERATIONS.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING REMOVAL & REPLACEMENT OPERATIONS, THE CONTRACTOR SHALL PROTECT THE EXISTING EQUIPMENT & APPURTENANCES (I.E. FILTER TANKS, PUMPS, CONTROL VALVES, PIPING, NEW TANK/PIPING COATINGS, ETC.). ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE REMOVAL WORK FOR EACH MANUAL BUTTERFLY VALVE SHALL INCLUDE THE REMOVAL OF ALL FLANGE CONNECTION NUTS & BOLTS; MANUAL VALVE & APPURTENANCES; AND ALL OTHER PERTINENT INCIDENTALS. ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

THE FLANGED ENDS OF THE EXISTING APPURTENANCES THAT THE PROPOSED MANUAL BUTTERFLY VALVES WILL BE CONNECTED TO SHALL BE THOROUGHLY CLEANED PRIOR TO THE INSTALLATION OF THE NEW VALVES.

ALL EQUIPMENT/MATERIALS FOR THE MANUAL BUTTERFLY VALVES SHALL BE PROVIDED BY THE CONTRACTOR. ALL EQUIPMENT/MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT EQUIPMENT/MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

- THE CONTRACTOR SHALL COORDINATE ALL NECESSARY MATERIALS WITH THE VARIOUS SUPPLIERS/MANUFACTURERS.
- ALL MATERIALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE MANUAL BUTTERFLY VALVES AS FURTHER DEFINED IN THE NOTES AND DETAILS IN THE CONSTRUCTION PLANS AND SPECIFICATIONS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: BUTTERFLY VALVES & ALL NECESSARY APPURTENANCES; FLANGE NUTS & BOLTS; SUPPORTS, ANCHORING HARDWARE, & INCIDENTALS; AND ALL OTHER NECESSARY INCIDENTALS FOR A COMPLETE INSTALLATION.

ALL NUTS AND BOLTS FOR THE FLANGED CONNECTIONS SHALL BE STAINLESS STEEL.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING FIELD MEASUREMENTS PRIOR TO ORDERING, REMOVING & INSTALLING ANY MATERIALS.

SEE NEW BUTTERFLY VALVE (ACTUATED AND MANUAL) NOTES ON THIS SHEET.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & REPLACEMENT OF THE EXISTING MANUAL BUTTERFLY VALVES AS DESCRIBED IN THE NOTES ABOVE, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE PER EACH UNIT PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE 8"/10"/12" MANUAL BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN. THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – REMOVE & REPLACE 8" MANUAL BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN	9 EACH
ITEM SPECIAL – REMOVE & REPLACE 10" MANUAL BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN	3 EACH
ITEM SPECIAL – REMOVE & REPLACE 12" MANUAL BUTTERFLY VALVES INCLUDING ALL INCIDENTALS, AS PER PLAN	3 EACH

NEW BUTTERFLY VALVES (ACTUATED AND MANUAL)

8", 10" AND 12" BUTTERFLY VALVES SHALL BE RESILIENT SEATED, SHALL HAVE A SINGLE-OFFSET DISC, AND SHALL BE OF THE LUGGED STYLE IN ORDER TO MATCH THE DIMENSIONS OF THE EXISTING BUTTERFLY VALVES. ALL VALVES SHALL BE SUITABLE FOR USE WITH ASME CLASS 125/150 FLANGES. VALVES SHALL PROVIDE BI-DIRECTIONAL BUBBLE-TIGHT SHUTOFF AT PRESSURES TO A MINIMUM OF 250 PSI (1380 KPA) WITH A 316 STAINLESS STEEL DISC/SHAFT. VALVES SHALL CONFORM WITH AWWA C504 (LATEST REVISIONS), SHALL BE NSF/ANSI 372 CERTIFIED LEAD-FREE, AND SHALL BE NSF/ANSI 600 CERTIFIED FOR DRINKING WATER.

DISCS SHALL BE OFFSET TO PROVIDE AN UNINTERRUPTED 360 DEGREE SEATING EDGE AND SHALL BE 316 STAINLESS STEEL. THE DISC/SHAFT CONNECTION SHALL BE SPLINED.

BODIES SHALL BE DUCTILE IRON CONFORMING TO ASTM A536, SHALL BE LUGGED IN ORDER TO MATCH THE DIMENSIONS OF THE EXISTING VALVES, AND SHALL PROVIDE BUBBLE-TIGHT SHUTOFF UP TO THE FULL VALVE RATING ON DEAD-END SERVICE WITHOUT THE USE OF DOWNSTREAM FLANGES.

ELASTOMER SEATS SHALL FULLY LINE AND BE PERMANENTLY BONDED TO THE VALVE BODY. SEATS SHALL BE EPDM. SEATS SHALL HAVE INTEGRAL FLANGE SEALS SO FLANGE GASKETS ARE NOT REQUIRED.

SHAFTS SHALL BE ONE-PIECE 316 STAINLESS STEEL. SHAFT DIAMETERS SHALL MEET THE AWWA C504, CLASS 75B STANDARD. MULTIPLE EPDM SHAFT SEALS SHALL BE PROVIDED TO PREVENT LEAKAGE.

THREE SHAFT BEARINGS MADE OF HEAVY-DUTY ALUMINUM BRONZE SHALL BE PROVIDED TO ENSURE SMOOTH, RELIABLE VALVE OPERATION. BEARINGS ARE LOCATED ADJACENT TO THE TOP AND BOTTOM OF THE DISC, AND A THIRD BEARING AT THE TOP OF THE VALVE NECK TO SUPPORT LOADING FROM ACTUATORS.

FERROUS SURFACES OF THE VALVE BODY AND DISC SHALL BE FACTORY COATED WITH NSF-600 CERTIFIED EPOXY.

EXTERNAL FASTENERS FOR THE VALVE SHALL BE TYPE 316 STAINLESS STEEL.

MANUALLY OPERATED EXPOSED VALVES SHALL HAVE A WORM GEAR ACTUATOR WITH A HANDWHEEL. GEAR ACTUATORS SHALL HAVE CAST IRON WEATHERPROOF OR BURIABLE CONSTRUCTION, AND SHALL HAVE ADJUSTABLE OPEN AND CLOSED POSITION STOPS. OPERATING SHAFT TO BE SUPPORTED AXIALLY AND RADIALLY AT THE INPUT END BY PERMANENTLY LUBRICATED THRUST AND SLEEVE BEARINGS.

ACTUATORS FOR THE ELECTRIC ACTUATED VALVES SHALL BE IN ACCORDANCE WITH THE NOTES ON SHEET 18.

SEE SHEETS 14 & 15 FOR FILTER TANK BUTTERFLY VALVE REMOVAL & REPLACEMENT DETAILS.

SEE SHEETS 24 & 25 FOR ELECTRICAL/CONTROL NOTES & DETAILS FOR THE ACTUATED BUTTERFLY VALVES.

SEE SHEET 16 FOR PUMP BUTTERFLY VALVE REMOVAL & REPLACEMENT DETAILS.

SEE SHEET 18 FOR ADDITIONAL ACTUATED BUTTERFLY VALVE GENERAL NOTES.

0 1 2 4 HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22 CHKD. BY: D.G.D. DATE: 12/22

GENERAL NOTES
BUTTERFLY VALVE REPLACEMENTS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

NEW BUTTERFLY VALVE ELECTRIC ACTUATORS

GENERAL EQUIPMENT REQUIREMENTS:
ACTUATORS SHALL BE ELECTRIC AND SHALL BE SUITABLE FOR USE ON A 120 VOLT, 1-PHASE, 60 HZ POWER SUPPLY AND MUST INCLUDE MOTOR, INTEGRAL REVERSING STARTERS, LOCAL CONTROLS AND TERMINALS FOR REMOTE CONTROL AND INDICATION HOUSED WITHIN A SELF-CONTAINED, SEALED ENCLOSURE.

SIZING:
THE ACTUATOR SHALL BE SIZED TO GUARANTEE VALVE CLOSURE AT THE SPECIFIED TORQUE AND/OR THRUST REQUIREMENT AS INDICATED BY THE VALVE MANUFACTURER OR SUPPLIER. THE ACTUATOR MUST BE ADEQUATELY SIZED TO PROVIDE THE TORQUE REQUIRED TO OPERATE THE VALVE AT 90% OF THE NOMINAL VOLTAGE. THE OPERATING SPEED SHALL PROVIDE VALVE CLOSING AND OPENING AS INDICATED IN THE VALVE LIST FOR QUARTER TURN VALVES. QUARTERTURN VALVES SHALL BE FURNISHED WITH MECHANICAL STOPS THAT RESTRICT THE VALVE/ACTUATOR TRAVEL. ONE ACTUATOR SIZE (SAME OUTSIDE DIMENSIONS) SHALL BE AVAILABLE COVERING OUTPUT SPEEDS FROM 4.8 TO 216 RPM FOR A GIVEN TORQUE RANGE, TO AVOID OVER SIZING AND UNNECESSARY WEIGHT LOAD ON VALVE STEM, FLANGE AND YOKE. AN INCREASE OF ACTUATOR SIZE CAUSED BY HIGHER ACTUATOR OUTPUT SPEED IS NOT ACCEPTABLE.

LOCATION OF USE:
ACTUATORS SHALL BE SUITABLE FOR INDOOR AND OUTDOOR USE. THE ACTUATOR SHALL BE CAPABLE OF FUNCTIONING IN AN AMBIENT TEMPERATURE RANGING FROM 40°F TO +160°F IN OPEN/CLOSE SERVICE AND -40°F TO +140°F IN MODULATING SERVICE, UP TO 100% RELATIVE HUMIDITY.

ENCLOSURE:
ACTUATORS SHALL BE O-RING SEALED AND WATERTIGHT TO NEMA 4X/6. THE ENCLOSURE MUST ALLOW FOR TEMPORARY SITE STORAGE WITHOUT THE NEED FOR ELECTRICAL SUPPLY CONNECTION. ALL EXTERNAL FASTENERS SHALL BE OF STAINLESS STEEL. GEAR CASE SHALL BE CAST IRON. IN ORDER TO PREVENT CONDENSATION, A HEATER MUST BE INSTALLED INSIDE THE ACTUATOR, SUITABLE FOR CONTINUOUS OPERATION. THE ACTUATOR MUST PROVIDE AN ALARM SIGNAL IN CASE OF FAILURE OF ANTI-CONDENSATION HEATER.

MOTOR:
THE ELECTRIC MOTOR SHALL BE CLASS F INSULATED, WITH A DUTY RATING OF AT LEAST 15 MINUTES AT 104°F (40°C) AMBIENT TEMPERATURE AT AN AVERAGE LOAD OF AT LEAST 35% OF RATED ACTUATOR TORQUE. MOTOR SHALL BE SPECIFICALLY DESIGNED AND BUILT BY THE ACTUATOR MANUFACTURER FOR ELECTRIC ACTUATOR SERVICE CHARACTERIZED BY HIGH STARTING TORQUE, LOW STALL TORQUE AND LOW INERTIA. COMMERCIALLY AVAILABLE MOTORS SHALL NOT BE ACCEPTABLE. ELECTRICAL DISCONNECTION OF THE MOTOR SHALL BE BY MEANS OF A PLUG AND SOCKET, AND MOTOR REMOVAL SHALL BE POSSIBLE WITHOUT LOSS OF LUBRICANT. THE ACTUATOR MUST INCLUDE A DEVICE TO ENSURE THAT THE MOTOR RUNS WITH THE CORRECT ROTATION FOR THE REQUIRED DIRECTION OF VALVE TRAVEL REGARDLESS OF THE CONNECTION SEQUENCE OF THE POWER SUPPLY.

MOTOR PROTECTION:
THE FOLLOWING CRITERIA SHALL BE PROVIDED FOR MOTOR PROTECTION:
- THE MOTOR SHALL BE DE-ENERGIZED WITHOUT DAMAGE IN THE EVENT OF A STALL CONDITION WHEN ATTEMPTING TO MOVE A JAMMED VALVE.
- THE MOTOR SHALL BE DE-ENERGIZED IN THE EVENT OF AN OVERTORQUE CONDITION.
- A MINIMUM OF THREE THERMAL DEVICES IMBEDDED IN THE MOTOR WINDINGS SHALL BE PROVIDED TO DE-ENERGIZE THE MOTOR IN CASE OF OVERHEATING.
- LOST PHASE PROTECTION.

GEARING:
THE ACTUATOR GEARING SHALL BE TOTALLY ENCLOSED IN A GREASE-FILLED CAST IRON GEARCASE SUITABLE FOR OPERATION IN ANY ORIENTATION. ACTUATOR GEARING SHALL BE HARDENED STEEL WITH ALLOY BRONZE WORM WHEEL. THE DESIGN SHOULD PERMIT THE OPENING OF THE GEARCASE FOR INSPECTION OR DISASSEMBLY WITHOUT RELEASING THE STEM THRUST OR TAKING THE VALVE OUT OF SERVICE.

MANUAL OPERATION:
MANUAL OPERATION SHALL BE BY HANDWHEEL WHICH SHALL NOT ROTATE DURING MOTOR OPERATION. HANDWHEEL DECLUTCH MECHANISM SHALL INCLUDE AN OUTPUT CONTACT TO INDICATE ACTUATOR MANUAL OPERATION. MANUAL OPERATION SHALL UTILIZE THE ACTUATOR WORM SHAFT/WORM WHEEL TO MAINTAIN SELF-LOCKING GEARING AND TO FACILITATE CHANGEOVER FROM MOTOR TO MANUAL OPERATION WHEN THE ACTUATOR IS UNDER LOAD. THE DECLUTCHING FROM MOTOR OPERATION SHALL BE AT THE MOTOR SHAFT TO MINIMIZE DECLUTCHING EFFORT. THE AMOUNT OF FORCE REQUIRED TO DECLUTCH THE ACTUATOR SHALL BE THE SAME REGARDLESS OF THE SIZE OF THE ACTUATOR. RETURN FROM MANUAL TO ELECTRIC MODE OF OPERATION WILL BE AUTOMATIC UPON MOTOR OPERATION. A SEIZED OR INOPERABLE MOTOR SHALL NOT PREVENT MANUAL OPERATION.

(CONT'D ON THIS SHEET IN NEXT COLUMN)

NEW BUTTERFLY VALVE ELECTRIC ACTUATORS (CONT'D)

VALVE POSITION AND TORQUE CALIBRATION:
LIMIT SWITCHES SHALL BE FURNISHED AT EACH END OF TRAVEL. LIMIT SWITCH ADJUSTMENT SHALL NOT BE ALTERED BY MANUAL OPERATION. LIMIT SWITCH DRIVE SHALL BE BY COUNTER GEAR. LIMIT SWITCHES MUST BE CAPABLE OF QUICK ADJUSTMENT REQUIRING NO MORE THAN FIVE (5) TURNS OF THE LIMIT SWITCH ADJUSTMENT SPINDLE. ONE SET OF NORMALLY OPEN AND ONE SET OF NORMALLY CLOSED CONTACTS WILL BE FURNISHED AT EACH END OF TRAVEL WHERE INDICATED. CONTACTS SHALL BE OF SILVER AND CAPABLE OF RELIABLY SWITCHING LOW VOLTAGE DC SOURCE FROM THE CONTROL SYSTEM.

MECHANICALLY OPERATED TORQUE SWITCHES SHALL BE FURNISHED AT EACH END OF TRAVEL. TORQUE SWITCHES SHALL TRIP WHEN THE VALVE LOAD EXCEEDS THE TORQUE SWITCH SETTING. THE TORQUE SWITCH ADJUSTMENT DEVICE MUST BE CALIBRATED DIRECTLY IN ENGINEERING UNITS OF TORQUE.

WIRING AND TERMINALS:
INTERNAL WIRING SHALL BE TROPICAL GRADE INSULATED STRANDED CABLE OF APPROPRIATE SIZE FOR THE CONTROL AND 1-PHASE POWER.

ALL EXTERNAL WIRING SHALL TERMINATE IN A REMOVABLE PLUG AND SOCKET HEAD, WHICH ALLOWS EASY DISCONNECTION OF ALL POWER AND CONTROL VOLTAGES. ACTUATORS FURNISHED WITHOUT PLUG AND SOCKET TERMINAL CONNECTIONS MUST HAVE POWER AND CONTROL DISCONNECT SWITCHES FOR EASE OF MAINTENANCE AND SAFETY.

ELECTRIC ACTUATOR CONTROL (CONTACT CLOSURE/DISCRETE SIGNALS OR ANALOG SIGNAL):
CONTROLS-ALL ACTUATORS WILL BE FURNISHED WITH INTEGRAL ACTUATORS/MOTOR CONTROLS. THE INTEGRAL CONTROLS SHALL BE ELECTRICALLY CONNECTED TO THE ACTUATOR VIA A PLUG AND SOCKET CONNECTION. IT SHALL BE POSSIBLE TO RE-POSITION THE INTEGRAL CONTROLS AT 90° INCREMENTS, SO THAT THE PUSH BUTTONS AND INDICATION LIGHTS WILL FACE THE OPERATOR. IN CASE THE ACTUATORS HAVE TO BE MOUNTED IN UN-ACCESSIBLE POSITIONS, IT SHALL BE POSSIBLE TO SEPARATE THE INTEGRAL CONTROLS INCLUDING ALL THE ELECTRONIC CONTROL ELEMENTS FROM THE ACTUATOR. A WALL BRACKET SHALL BE AVAILABLE AS AN OPTION TO MOUNT THE CONTROLS AT A CONVENIENT POSITION NEAR THE ACTUATOR.

CONTROL COMPONENTS-THE FOLLOWING COMPONENTS/FEATURES SHALL BE INCLUDED WITH THE INTEGRAL CONTROLS:
- REVERSING CONTACTORS (MECHANICALLY AND ELECTRICALLY INTERLOCKED).
- INTERNAL POWER SUPPLY / TRANSFORMER FOR CONTROL POWER.
- CONTROL AND SIGNAL VOLTAGE SHALL BE 110 V AS INDICATED, INTERNALLY OR EXTERNALLY SUPPLIED.
- PROGRAMMABLE CONTROL LOGIC
- AUTOMATIC PHASE CORRECTION
- CONTROL SYSTEM INTERFACE AS FOLLOWS: CONTROL BY CONTACT CLOSURE/ DISCRETE INPUT SIGNALS VIA OPEN-STOP-CLOSE SIGNALS 115 V POTENTIALLY SEPARATED FROM ACTUATOR CONTROLS BY OPTO-ISOLATORS.

LOCAL CONTROLS-LOCAL CONTROLS WITH 'OPEN/STOP/CLOSE' PUSHBUTTON TYPE CONTROLS AND A LOCKABLE SELECTOR SWITCH WITH 'LOCAL/OFF/REMOTE' FUNCTION. LOCAL CONTROLS SHALL BE SUPPLIED WITH INDICATING LIGHTS RED FOR 'OPEN', YELLOW FOR 'FAULT' AND GREEN FOR 'CLOSED'.

OUTPUT SIGNALS AND FOR REMOTE INDICATION-THE FOLLOWING OUTPUT SIGNALS SHALL BE FURNISHED FOR REMOTE INDICATION:
- OUTPUT SIGNALS FROM SELECTOR SWITCH WHEN SWITCH IS IN LOCAL OR REMOTE POSITIONS VIA POTENTIAL-FREE CONTACTS.
- SIGNALS FOR END-OF-TRAVEL POSITIONS OPEN AND CLOSED SHALL BE VIA POTENTIAL-FREE CONTACTS.
- MONITOR RELAY FOR COLLECTIVE FAULT SIGNAL (POWER FAILURE, PHASE FAILURE, THERMAL SWITCH TRIPPED AND TORQUE SWITCH TRIPPED IN MID TRAVEL) SHALL BE PROVIDED.

COMMISSIONING KIT-EACH ACTUATOR WILL BE PROVIDED WITH A COMMISSIONING KIT CONSISTING OF A WIRING DIAGRAM AND INSTALLATION AND OPERATION MANUAL. NO SPECIAL COMMISSIONING TOOLS OR PARTS WILL BE REQUIRED FOR START-UP. IN ORDER TO PREVENT LOSS OF SCREWS DURING COMMISSIONING OR MAINTENANCE, ALL COVERS SHALL BE FIXED WITH CAPTIVE SCREWS. IN ORDER TO MINIMIZE THE AMOUNT OF SPARE PARTS REQUIRED, PARTS SUCH AS COVERS, PLUG AND SOCKETS, PARTS MUST BE INTERCHANGEABLE THROUGHOUT ALL MODEL SIZES.

PERFORMANCE TEST DOCUMENTATION-EACH ACTUATOR SHALL BE PERFORMANCE TESTED. TEST DOCUMENTATION MUST BE PROVIDED IF REQUESTED INDICATING THE FOLLOWING:
- TORQUE SENSING TRIPPING POINTS IN BOTH THE OPEN AND CLOSED DIRECTIONS OF TRAVEL.
- CURRENT AT THE MAXIMUM TORQUE TRIPPING POINT.
- ACTUATOR OUTPUT SPEED.
- HIGH VOLTAGE TEST.

SEE SHEETS 14 & 15 FOR FILTER TANK BUTTERFLY VALVE REMOVAL & REPLACEMENT DETAILS.

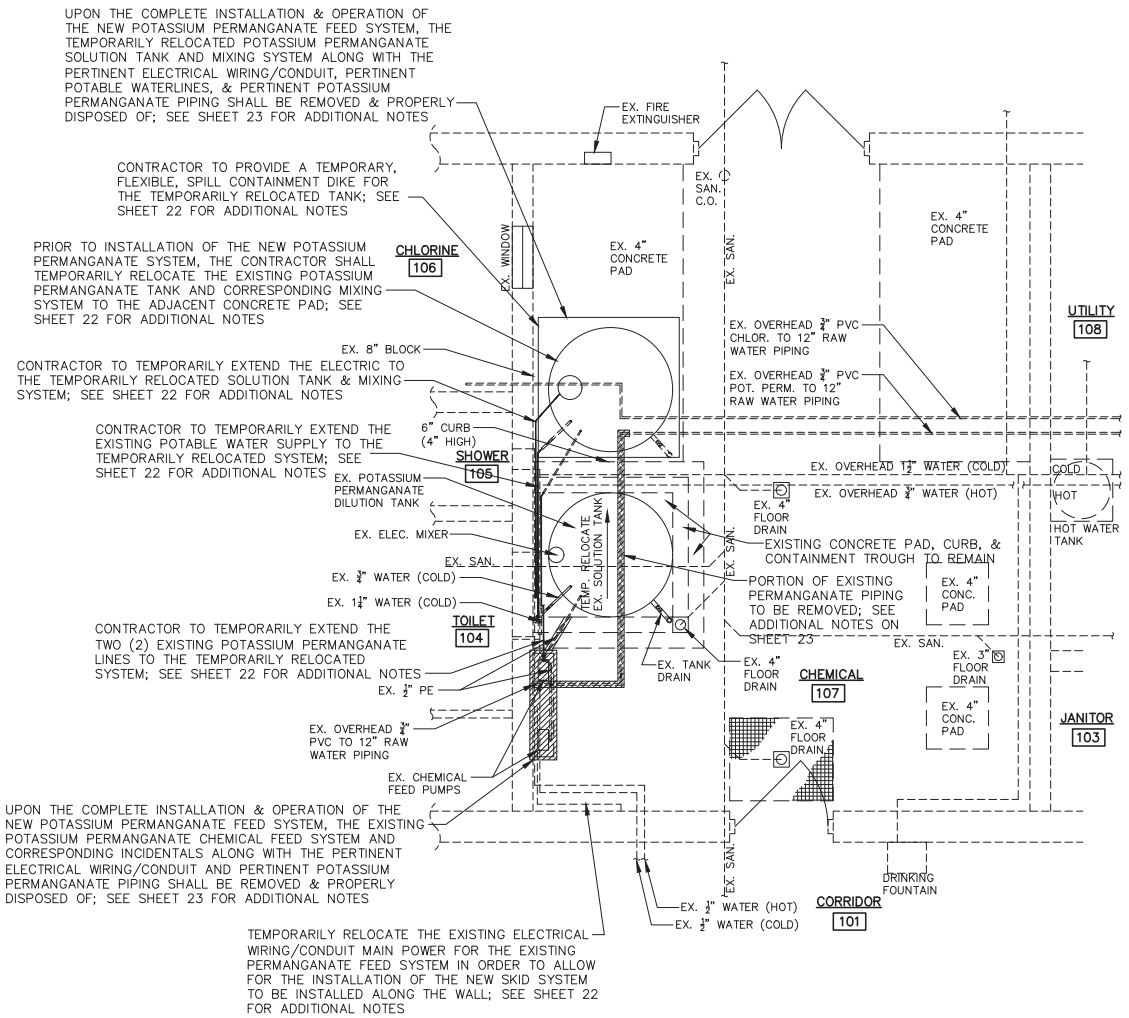
SEE SHEETS 24 & 25 FOR ELECTRICAL/CONTROL NOTES & DETAILS FOR THE ACTUATED BUTTERFLY VALVES.

SEE SHEET 16 FOR PUMP BUTTERFLY VALVE REMOVAL & REPLACEMENT DETAILS.

SEE SHEET 17 FOR ADDITIONAL BUTTERFLY VALVE GENERAL NOTES.

SEE SHEETS 22–23 FOR ADDITIONAL TEMPORARY RELOCATION NOTES AND FOR ADDITIONAL REMOVAL & DISPOSAL NOTES

SEE SHEETS 20–23 FOR NEW POTASSIUM PERMANGANATE FEED SYSTEM NOTES & DETAILS



PLAN VIEW
NOT TO SCALE

NOTE: THE EXISTING POTASSIUM PERMANGANATE SYSTEM SHALL REMAIN IN OPERATION UNTIL THE PROPOSED POTASSIUM PERMANGANATE SYSTEM IS FULLY INSTALLED AND IN COMPLETE OPERATION, AFTER WHICH THE EXISTING PERMANGANATE SYSTEM SHALL BE ENTIRELY REMOVED.

HORIZONTAL SCALE IN FEET
0 1 2 4

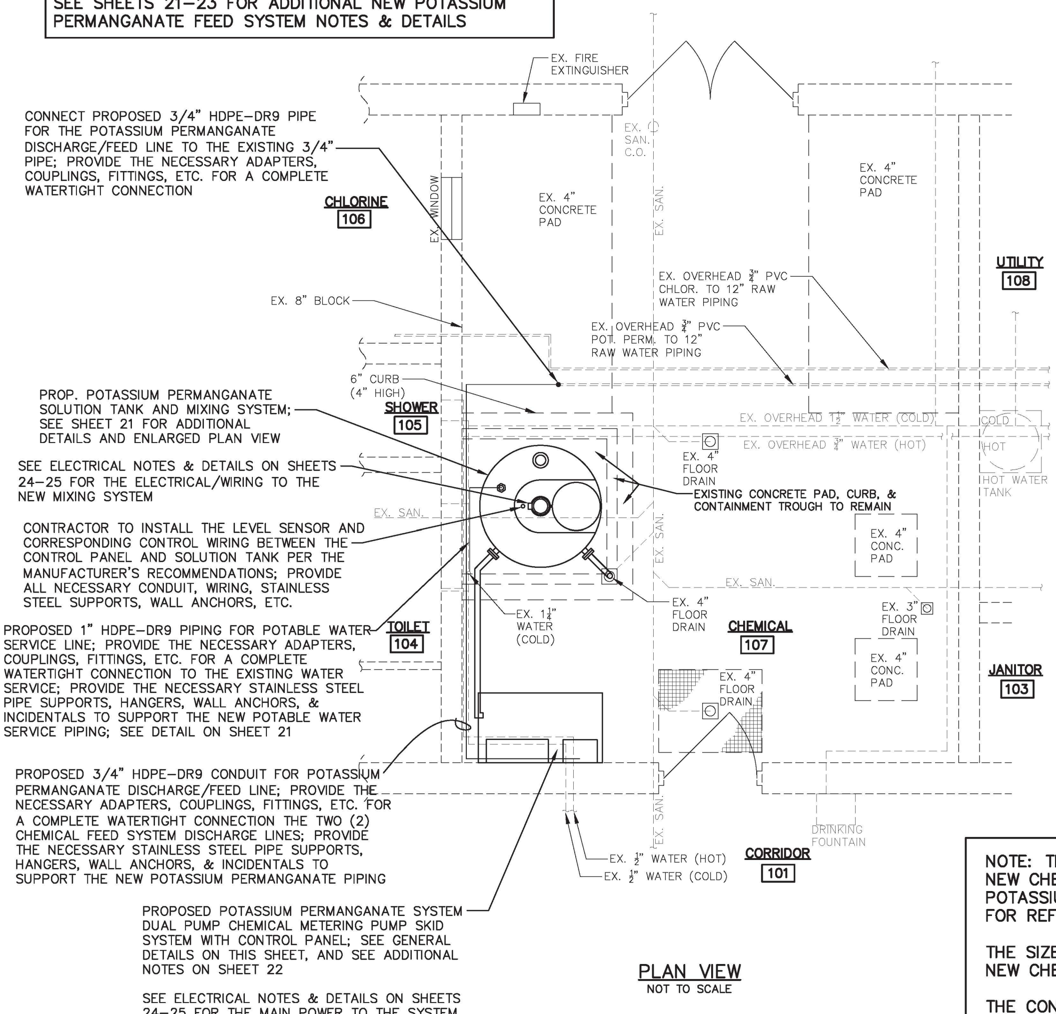
CHK'D: D.G.D.
DATE: 12/22

CITY OF CHESTER
WATER SYSTEM IMPROVE.

EXISTING POTASSIUM PERMANGANATE SYSTEM
TEMPORARY RELOCATION & PERMANENT REMOVAL PLAN

SEE SHEETS 19 & 22–23 FOR TEMPORARY RELOCATION NOTES & DETAILS AND FOR REMOVAL & DISPOSAL NOTES & DETAILS RELATED TO THE EXISTING POTASSIUM PERMANGANATE FEED SYSTEM

SEE SHEETS 21–23 FOR ADDITIONAL NEW POTASSIUM PERMANGANATE FEED SYSTEM NOTES & DETAILS



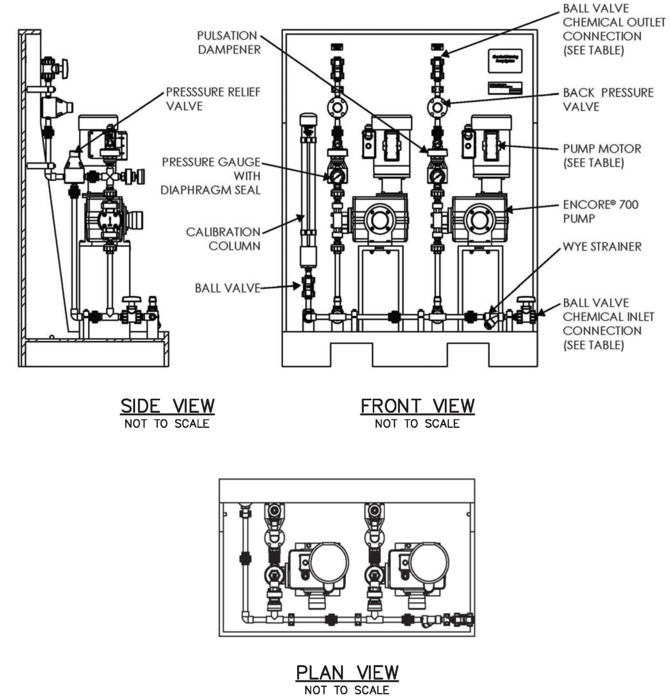
PLAN VIEW
NOT TO SCALE

NOTE: THE EXISTING POTASSIUM PERMANGANATE SYSTEM SHALL REMAIN IN OPERATION UNTIL THE PROPOSED POTASSIUM PERMANGANATE SYSTEM IS FULLY INSTALLED AND IN COMPLETE OPERATION, AFTER WHICH THE EXISTING PERMANGANATE SYSTEM SHALL BE ENTIRELY REMOVED.

NOTE: SKID SYSTEM SHALL ALSO ACCOMMODATE THE CHEMICAL FEED SYSTEM CONTROL PANEL AND SAFETY SWITCH

INLET & OUTLET CONNECTION SIZES

PUMP HEAD SIZE	CONNECTION SIZE
1", 2", 3"	1/2" NPT



NEW CHEMICAL FEED SKID SYSTEM GENERAL DETAILS
NOT TO SCALE

NOTE: THE SIZES OF THE PIPING CONNECTIONS ON THE NEW SOLUTION TANK AND FOR THE NEW CHEMICAL FEED SKID SYSTEM AS WELL AS THE OVERALL DIMENSIONS OF THE NEW POTASSIUM PERMANGANATE FEED SYSTEM MAY VARY BY MANUFACTURER AND ARE SHOWN FOR REFERENCE PURPOSES.

THE SIZES OF ALL NEW PIPING TO BE CONNECTED TO THE NEW SOLUTION TANK AND TO THE NEW CHEMICAL FEED SKID SYSTEM ARE ALSO SHOWN FOR REFERENCE PURPOSES.

THE CONTRACTOR WILL BE RESPONSIBLE FOR VERIFYING WITH THE MANUFACTURER ALL NEW SOLUTION TANK CONNECTION SIZES AND ALL NEW CHEMICAL FEED SKID SYSTEM CONNECTION SIZES PRIOR TO ORDERING ANY NEW PIPING MATERIALS & APPURTENANCES.

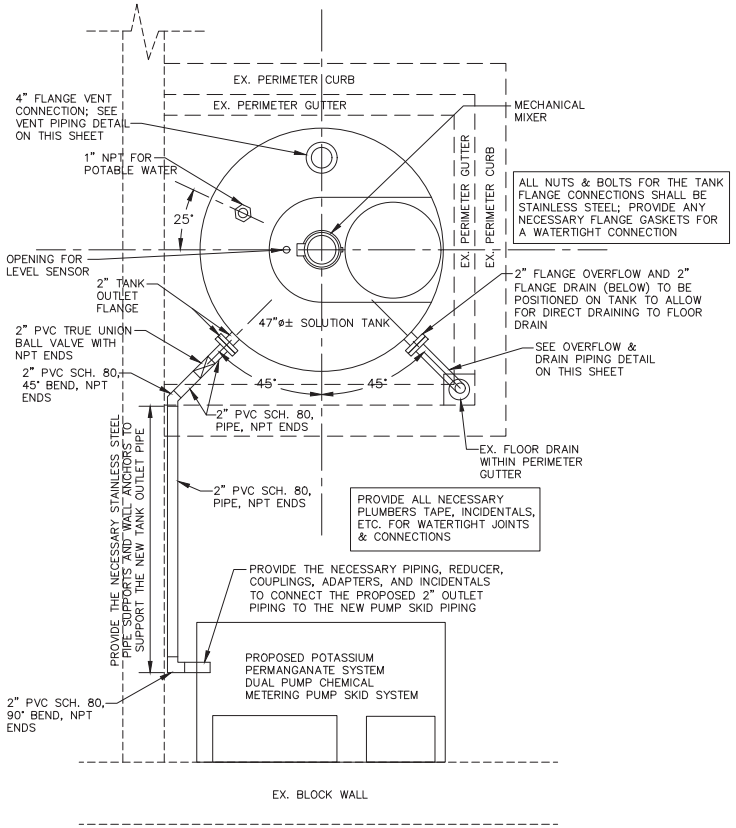
IN ADDITION, THE CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING DIMENSIONS (I.E. EXISTING PAD DIMENSIONS, EXISTING WALL DIMENSIONS, EXISTING SUPPLY LINE DIMENSIONS, ETC.) AND SHALL COORDINATE ALL DIMENSIONS WITH THE MANUFACTURER PRIOR TO & DURING THEIR PREPARATION OF THE SHOP DRAWINGS, AND PRIOR TO MANUFACTURER'S FABRICATION OF THE NEW EQUIPMENT.

0 2 4
HORIZONTAL SCALE IN FEET

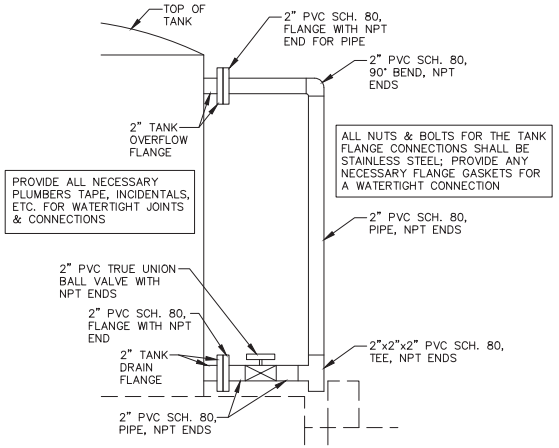
CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

NEW POTASSIUM PERMANGANATE SYSTEM
PROPOSED PLAN VIEW AND NOTES & DETAILS

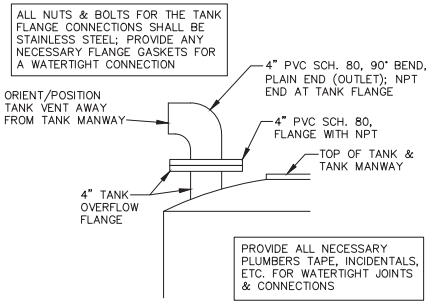
CITY OF CHESTER
WATER SYSTEM IMPROVE.



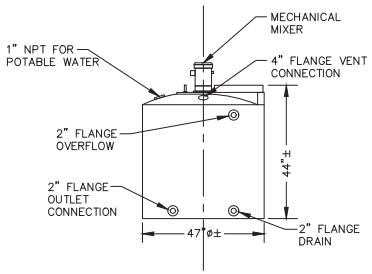
NEW POTASSIUM PERMANGANATE SOLUTION TANK
ENLARGED PLAN VIEW
NOT TO SCALE



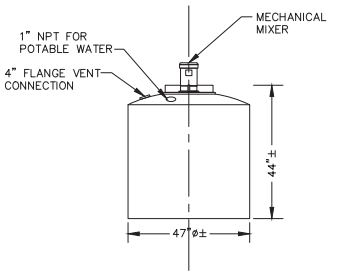
TANK OVERFLOW & DRAIN PIPING DETAIL
NOT TO SCALE



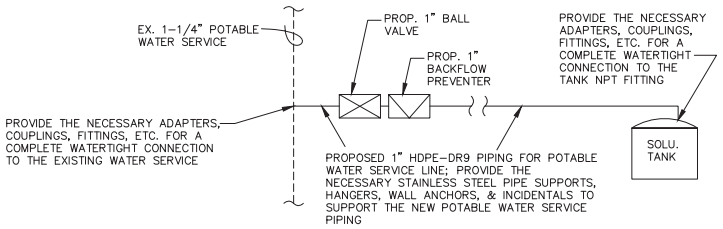
TANK VENT PIPING DETAIL
NOT TO SCALE



NEW POTASSIUM PERMANGANATE
SOLUTION TANK – SIDE VIEW
NOT TO SCALE



NEW POTASSIUM PERMANGANATE
SOLUTION TANK – BACK VIEW
NOT TO SCALE



NEW POTASSIUM PERMANGANATE SYSTEM
POTABLE WATER SUPPLY DETAIL
NOT TO SCALE

NOTE: THE SIZES OF THE PIPING CONNECTIONS ON THE NEW SOLUTION TANK AND FOR THE NEW CHEMICAL FEED SKID SYSTEM AS WELL AS THE OVERALL DIMENSIONS OF THE NEW POTASSIUM PERMANGANATE FEED SYSTEM MAY VARY BY MANUFACTURER AND ARE SHOWN FOR REFERENCE PURPOSES.

THE SIZES OF ALL NEW PIPING TO BE CONNECTED TO THE NEW SOLUTION TANK AND TO THE NEW CHEMICAL FEED SKID SYSTEM ARE ALSO SHOWN FOR REFERENCE PURPOSES.

THE CONTRACTOR WILL BE RESPONSIBLE FOR VERIFYING WITH THE MANUFACTURER ALL NEW SOLUTION TANK CONNECTION SIZES AND ALL NEW CHEMICAL FEED SKID SYSTEM CONNECTION SIZES PRIOR TO ORDERING ANY NEW PIPING MATERIALS & APPURTENANCES.

IN ADDITION, THE CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING DIMENSIONS (I.E. EXISTING PAD DIMENSIONS, EXISTING WALL DIMENSIONS, EXISTING SUPPLY LINE DIMENSIONS, ETC.) AND SHALL COORDINATE ALL DIMENSIONS WITH THE MANUFACTURER PRIOR TO & DURING THEIR PREPARATION OF THE SHOP DRAWINGS, AND PRIOR TO MANUFACTURER'S FABRICATION OF THE NEW EQUIPMENT.

HORIZONTAL SCALE IN FEET
0 1 2 4
CAD: J.F.B.
DES: J.F.B.
DATE: 12/22
CHKD: J.F.B.
BY: D.G.D.
DATE: 12/22

NEW POTASSIUM PERMANGANATE FEED SYSTEM
NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

TEMPORARY RELOCATION OF EXISTING POTASSIUM PERMANGANATE SOLUTION TANK AND MIXING SYSTEM

PRIOR TO BEGINNING THE INSTALLATION OF THE NEW POTASSIUM PERMANGANATE FEED SYSTEM, THE CONTRACTOR SHALL RELOCATE THE EXISTING POTASSIUM PERMANGANATE SOLUTION TANK AND MIXING SYSTEM TO THE EXISTING CONCRETE PAD LOCATED IMMEDIATELY ADJACENT TO CURRENT CONCRETE PAD. THE FOLLOWING IS RELATIVE TO THIS RELOCATION WORK.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING RELOCATION OF THE EXISTING EQUIPMENT, THE CONTRACTOR SHALL PROTECT THE EXISTING SYSTEM AND CORRESPONDING ADJACENT WATER TREATMENT PLANT APPURTENANCES (I.E. PIPING, ELECTRICAL, BUILDING STRUCTURE, ETC.). ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

WORK FOR THE RELOCATION SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

1.) COORDINATE WITH THE WTP OPERATOR FOR THE DRAINING OF THE EXISTING SOLUTION TANK.

2.) DISCONNECT THE EXISTING ELECTRICAL SUPPLY FROM THE MIXING SYSTEM; DISCONNECT THE EXISTING POTABLE WATER SUPPLY FROM THE SOLUTION TANK; DISCONNECT THE EXISTING PERMANGANATE PIPING FROM THE SOLUTION TANK; AND DISCONNECT ANY OTHER PERTINENT INCIDENTALS FROM THE SOLUTION TANK TO ALLOW THE TANK TO BE RELOCATED.

3.) INSTALL A TEMPORARY, FLEXIBLE, SPILL CONTAINMENT DIKE ON THE ADJACENT CONCRETE PAD, AND CAREFULLY MOVE/RELOCATE THE EXISTING SOLUTION TANK INTO THE CONTAINMENT DIKE.
- –IF NECESSARY, MODIFY THE EXISTING SOLUTION TANK DRAIN AND/OR REMOVE THE TANK DRAIN AND PROVIDE A BLIND FLANGE TO ENSURE THAT THE EXISTING SOLUTION TANK WILL FIT WITHIN THE TEMPORARY CONTAINMENT DIKE.

4.) PROVIDE ALL NECESSARY MATERIALS TO TEMPORARILY EXTEND THE EXISTING ELECTRICAL SUPPLY TO THE RELOCATED MIXING SYSTEM; TEMPORARILY EXTEND THE EXISTING POTABLE WATER SUPPLY TO THE RELOCATED SOLUTION TANK; TEMPORARILY EXTEND THE EXISTING PERMANGANATE PIPING TO THE RELOCATED SOLUTION TANK; AND TEMPORARILY RE–CONNECT ANY OTHER PERTINENT INCIDENTALS TO THE RELOCATED SOLUTION TANK.

5.) TEMPORARILY RELOCATE THE PERTINENT PORTION OF THE EXISTING ELECTRICAL WIRING/CONDUIT LOCATED ON THE WALL WHERE THE NEW CHEMICAL FEED SKID SYSTEM WILL BE INSTALLED.

6.) ONCE THE SOLUTION TANK HAS BEEN RELOCATED AND ALL OTHER PERTINENT TEMPORARY RELOCATIONS/CONNECTIONS ARE COMPLETED, COORDINATE WITH THE WTP OPERATOR FOR THE RE–FILLING AND RE–STARTING OF THE EXISTING POTASSIUM PERMANGANATE FEED SYSTEM.

7.) CLEANING: PRIOR TO INSTALLATION OF THE NEW POTASSIUM PERMANGANATE FEED SYSTEM, THE EXISTING CONCRETE PAD, EXISTING PERIMETER GUTTER/CURB, IMMEDIATELY ADJACENT FLOOR/WALL, AND THE WALL WHERE THE NEW CHEMICAL FEED SKID SYSTEM WILL BE INSTALLED SHALL BE CLEANED (I.E. WITH CLEANING SOLVENTS, MEDIUM PRESSURE WATER, ETC.). THE CONTRACTOR SHALL PROTECT THE EXISTING POTASSIUM PERMANGANATE FEED SYSTEM DURING CLEANING (I.E. TEMPORARILY COVER WITH PLASTIC, ETC.). ANY DAMAGE TO THE EXISTING POTASSIUM PERMANGANATE FEED SYSTEM DURING CLEANING SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.
- –THE CONTRACTOR SHALL DISPOSE OF ALL WASH WATER ASSOCIATED WITH THE REMOVAL OF THE EXISTING POTASSIUM PERMANGANATE FEED SYSTEM IN COMPLIANCE WITH ANY/ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS. SINCE THE EXISTING BUILDING FLOOR DRAINS LEAD TO SITE SANITARY SEWER TRUNK, THEN TO THE SITE SANITARY SEWER LIFT STATION, THEN TO THE CITY'S SANITARY SEWER COLLECTION SYSTEM, AND THEN WILL ULTIMATELY BE TREATED AT THE CITY'S WASTE WATER TREATMENT PLANT, ALL WASH WATER SHALL BE DISPOSED OF VIA THE EXISTING BUILDING FLOOR DRAINS.

SEE SHEET 19 FOR ADDITIONAL RELOCATION NOTES & DETAILS.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE RELOCATION OF THE EXISTING POTASSIUM PERMANGANATE SOLUTION TANK AND MIXING SYSTEM AND CORRESPONDING CLEANING AS DESCRIBED IN THE NOTES ON THIS SHEET, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE POTASSIUM PERMANGANATE FEED SYSTEM, INCLUDING ALL INCIDENTALS, AS PER PLAN.

NEW POTASSIUM PERMANGANATE FEED SYSTEM

THE FOLLOWING IS RELATIVE TO THE PROVIDING OF ALL MATERIALS AND INSTALLATION OF THE NEW POTASSIUM PERMANGANATE FEED SYSTEM.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

THE EXISTING SYSTEM SHALL REMAIN IN SERVICE UNTIL THE NEW POTASSIUM PERMANGANATE FEED SYSTEM IS FULLY OPERATIONAL.

DURING INSTALLATION OF THE NEW EQUIPMENT, THE CONTRACTOR SHALL PROTECT THE EXISTING SYSTEM AND CORRESPONDING ADJACENT WATER TREATMENT PLANT APPURTENANCES (I.E. PIPING, ELECTRICAL, BUILDING STRUCTURE, ETC.). ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE NEW POTASSIUM PERMANGANATE FEED SYSTEM SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR WILL NOT BE PERMITTED TO FABRICATE THEIR OWN POTASSIUM PERMANGANATE FEED SYSTEM. ALL EQUIPMENT/MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM A SINGLE MANUFACTURER WITH EXPERIENCE IN MANUFACTURING THE PERTINENT EQUIPMENT/MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED. THE CONTRACTOR SHALL COORDINATE ALL NECESSARY MATERIALS WITH THE MANUFACTURER OF THE POTASSIUM PERMANGANATE FEED SYSTEM.

MAJOR COMPONENTS OF THE POTASSIUM PERMANGANATE FEED SYSTEM TO BE SUPPLIED UNDER THIS SECTION SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:
- –SOLUTION TANK AND MIXING SYSTEM
- –CONTROL SYSTEM
- –DUAL PUMP CHEMICAL METERING PUMP SKID SYSTEM
- –NOTE: SINCE THE CITY PREFERS TO WEIGH THE DRY PERMANGANATE CHEMICALS BY HAND AND PREFERS TO ADD THEM TO THE SOLUTION TANK BY HAND, A WATER EDUCTOR SYSTEM FOR AUTOMATICALLY ADDING THE CHEMICALS TO THE SOLUTION TANK WILL NOT BE NECESSARY.

SOLUTION TANK AND MIXING SYSTEM:
- –APPX. DIMEN. 47" DIAM x 44" HIGH (APPX. NOMINAL CAPACITY 300 GALLONS BASED UPON DIMENSIONS)
- –CONSTRUCTION: DOUBLE WALLED, FLAT BOTTOM, DOME TOP, POLYETHYLENE TANK
- –TANK CONNECTIONS:
  - –7" MANWAY, TOP
  - –VENT: 4" FLANGE, TOP
  - –FILL: 1" NPT, TOP
  - –MIXER: 2" NPT, TOP, CENTER
  - –LEVEL MEASUREMENT: 2" FLANGE, BOTTOM, SIDE
  - –DISCHARGE: 2" FLANGE, BOTTOM, SIDE
  - –TANK DRAIN: 2" FLANGE, BOTTOM, SIDE
  - –OVERFLOW: 2" FLANGE, TOP, SIDE (SAME SIDE AS TANK DRAIN)
- –A MECHANICAL MIXER SHALL BE PROVIDED WITH 316 STAINLESS STEEL SHAFT AND PROPELLER, A 3/4 HP, 115/230 V, 1 PH, 60 HZ TENV MOTOR WITH A SEPARATE, STAND–ALONE MIXER SUPPORT STAND
- –TANK LEVEL CONTROL SHALL BE PROVIDED BY A PRESSURE TRANSDUCER LEVEL MONITORING AND CONTROL DEVICE.
- –LEAK DETECTOR FOR INTERSTITIAL SPACE.

CONTROL SYSTEM:
A CONTROL PANEL AFFIXED TO THE PUMP SYSTEM'S FRAME SHALL BE PROVIDED, RATED NEMA 4X AND CONSTRUCTED OF STAINLESS STEEL. THE CONTROL PANEL SHALL CONSIST OF ALL SWITCHES, RELAYS, INDICATOR LIGHTS, DIGITAL DISPLAYS, AND CONTROLLERS AS REQUIRED HEREIN. THE CONTROL PANEL COMPONENTS SHALL BE NEMA 4X. ALL SKID–MOUNTED ELECTRICAL COMPONENTS INTERCONNECTED TO CONTROL PANEL SHALL TERMINATE ON TERMINAL BLOCKS. TERMINAL BLOCKS SHALL BE SIZED FOR 14 GA. WIRE WITH TERMINAL BLOCK NUMBERS AND A LEGEND. WIRES SHALL BE NEATLY RUN THROUGH WIRE RACEWAY AND NUMBERED WITH ADHESIVE TYPE LABELS. THE FOLLOWING CONTROL DEVICES SHALL BE PROVIDED:
- –H–O–A SWITCH FOR TANK MIXER
- –VFD FOR TANK MIXER SPEED CONTROL
- –TANK LEVEL INDICATION
- –FLOW TOTALIZER DISPLAY WITH SET POINT & RESET ADJUSTMENTS
- –LIGHTS SHALL INCLUDE THE FOLLOWING:
  - –TANK MIXER "RUNNING", (GREEN)
  - –SOLENOID VALVE "OPEN", (GREEN)
  - –LOW WATER ALARM, (AMBER)
  - –HIGH–HIGH TANK LEVEL ALARM (AMBER)
  - –LOW–LOW TANK LEVEL ALARM (AMBER)
- –PUSHBUTTON FOR MANUAL TANK REFILL
- –EMERGENCY STOP PUSHBUTTON
- –120 VAC POWER INPUT

NEW POTASSIUM PERMANGANATE FEED SYSTEM (CONT'D)

DUAL PUMP CHEMICAL METERING PUMP SKID SYSTEM:
- –PUMP SKID SHALL BE GRADE 316 STAINLESS STEEL CAPABLE OF SUPPORTING THE CHEMICAL METERING PUMPS & APPURTENANCES AS WELL AS THE CONTROL PANEL & APPURTENANCES
- –TWO (2) SIMPLEX METERING PUMPS, OPERATED IN A DUTY/STANDBY FASHION WITH THE FOLLOWING MINIMUM DESIGN CHARACTERISTICS:
  - –50 GPH MAX FLOW RATE
  - –144 STROKES PER MINUTE (SPM)
  - –150 PSI DISCHARGE PRESSURE
  - –CLEAR PVC RETAINERS/SEATS
  - –PVC HEAD
  - –SINGLE BALL CARTRIDGE (TFE BALL)
  - –CHLOROSULFONATED POLYETHYLENE (CSM) O–RINGS
  - –1/2" FNPT INLET AND OUTLET CONNECTIONS
  - –MANUAL STROKE LENGTH ADJUSTMENT
  - –HP INVERTER DUTY MOTOR, 1750 RPM, 56C FRAME
- –MOTOR DRIVE:
  - –VFD DRIVE, 120 VAC, 4–20 MA PUMP SPEED INPUT SIGNAL
- –PIPING & APPURTENANCES:
  - –1/2" PIPING, VALVES & FITTING
  - –MATERIALS OF CONSTRUCTION, PVC, SCHEDULE 80, AND FLUOROELASTOMER SEALS
  - –INLET PIPING WITH ONE (1) WYE–STRAINER AND ONE (1) CALIBRATION COLUMN
  - –OUTLET PIPING WITH THE FOLLOWING APPURTENANCES:
    - –TWO (2) PULSATION DAMPENERS, ONE FOR EACH PUMP
    - –TWO (2) PRESSURE RELIEF VALVES, ONE FOR EACH PUMP
    - –TWO (2) BACK PRESSURE VALVES, ONE FOR EACH PUMP
    - –TWO (2) PRESSURE GAUGE WITH DIAPHRAGM SEAL, ONE FOR EACH PUMP

WATER SERVICE (SUPPLY) & POTASSIUM PERMANGANATE (DISCHARGE) PIPING:
ALL PIPING FROM THE TIE–IN LOCATION AT THE WATER TREATMENT PLANT WATER SERVICE PIPING AND TO THE CONNECTION AT THE NEW SOLUTION TANK SHALL BE HPDE–DR9. ALL PIPING FOR THE TIE–IN AT THE WATER TREATMENT PLANT POTASSIUM PERMANGANATE PIPING AND TO THE CONNECTIONS AT THE PIPING FOR THE CHEMICAL FEED SKID SYSTEM SHALL BE HPDE–DR9.
- –THE CONTRACTOR SHALL PROVIDE ALL NECESSARY FITTINGS, VALVES, ADAPTERS, COUPLINGS, ETC. FOR A COMPLETE INSTALLATION OF THE PROPOSED WATER SERVICE/PERMANGANATE PIPING, FOR A COMPLETE WATERTIGHT CONNECTION OF THE PROPOSED PIPING TO THE EXISTING PIPING, AND FOR A COMPLETE WATERTIGHT CONNECTION OF THE PROPOSED PIPING TO THE PROPOSED EQUIPMENT/PIPING.
- –THE CONTRACTOR SHALL PROVIDE ALL SUPPORTS, HANGERS, ANCHORING HARDWARE, ETC. TO SUPPORT THE PROPOSED WATER SERVICE PIPING AND THE POTASSIUM PERMANGANATE PIPING. ALL HARDWARE SHALL BE 304 GRADE STAINLESS STEEL (MINIMUM).
- –SEE SHEETS 20–21 FOR ADDITIONAL NOTES & DETAILS RELATIVE TO THE WATER SERVICE PIPING AND POTASSIUM PERMANGANATE PIPING.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING FIELD MEASUREMENTS PRIOR TO ORDERING ANY MATERIALS.

SEE SHEETS 20–21 FOR ADDITIONAL NOTES & DETAILS FOR THE NEW POTASSIUM PERMANGANATE FEED SYSTEM.

SEE SHEETS 24–25 FOR ELECTRICAL NOTES & DETAILS FOR THE MAIN POWER SUPPLY TO THE NEW POTASSIUM PERMANGANATE FEED SYSTEM.

SEE SHEET 23 FOR NOTES & DETAILS RELATING TO THE INSTALLATION OF THE NEW PORTABLE ACCESS STAIRS.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE NEW POTASSIUM PERMANGANATE FEED SYSTEM AS DESCRIBED IN THE NOTES ON THIS SHEET, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE POTASSIUM PERMANGANATE FEED SYSTEM, INCLUDING ALL INCIDENTALS, AS PER PLAN.

REMOVAL & DISPOSAL OF EXISTING POTASSIUM PERMANGANATE FEED SYSTEM

DURING REMOVAL OF THE EXISTING EQUIPMENT, THE CONTRACTOR SHALL PROTECT THE NEWLY INSTALLED POTASSIUM PERMANGANATE FEED SYSTEM AND CORRESPONDING ADJACENT WATER TREATMENT PLANT APPURTENANCES (I.E. PIPING, ELECTRICAL, BUILDING STRUCTURE, ETC.). ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

UPON THE COMPLETE INSTALLATION AND OPERATION OF THE NEW POTASSIUM PERMANGANATE FEED SYSTEM, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COMPLETE REMOVAL & DISPOSAL OF THE ENTIRE EXISTING POTASSIUM PERMANGANATE FEED SYSTEM AS FURTHER DEFINED IN THE CONSTRUCTION PLANS WHICH SHALL INCLUDE BUT NOT BE LIMITED TO THE REMOVAL & DISPOSAL OF THE FOLLOWING EXISTING ITEMS: CONTROL PANEL; DOSING PUMPS; SOLUTION TANK & MIXING SYSTEM INCLUDING TANK DRAIN PIPING; PERTINENT WATER SERVICE LINE & POTASSIUM PERMANGANATE LINE PIPING, FITTINGS, VALVES, ADAPTERS, COUPLINGS, ETC.; PERTINENT ELECTRICAL/CONTROL WIRING & CONDUIT; SUPPORTS, HANGERS, BRACKETS & ANCHORS; ACCESS STAIRS & INCIDENTALS; AND ALL OTHER NECESSARY INCIDENTALS FOR A COMPLETE REMOVAL & DISPOSAL. ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

- THE EXISTING SOLUTION TANK AND CORRESPONDING MIXING EQUIPMENT SHALL BE THOROUGHLY CLEANED (I.E. WITH CLEANING SOLVENTS, LOW PRESSURE WATER, ETC.) PRIOR TO DISPOSAL; SEE NOTES BELOW FOR WASH WATER DISPOSAL.
- ANY VOIDS LEFT IN THE EXISTING WALLS/FLOORS AS A RESULT OF THE REMOVAL OF ANCHORS OR OTHER MATERIALS SHALL BE FILLED WITH HIGH STRENGTH, NON-SHRINK GROUT BY THE CONTRACTOR.

UPON THE COMPLETE REMOVAL OF THE EXISTING POTASSIUM PERMANGANATE FEED SYSTEM, THE EXISTING CONCRETE PAD AND ADJACENT FLOOR/WALLS SHALL BE CLEANED (I.E. WITH CLEANING SOLVENTS, LOW PRESSURE WATER, ETC.). THE CONTRACTOR SHALL PROTECT THE NEWLY INSTALLED POTASSIUM PERMANGANATE FEED SYSTEM DURING CLEANING. ANY DAMAGE TO THE NEWLY INSTALLED POTASSIUM PERMANGANATE FEED SYSTEM DURING CLEANING SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

- THE CONTRACTOR SHALL DISPOSE OF ALL WASH WATER ASSOCIATED WITH THE REMOVAL OF THE EXISTING POTASSIUM PERMANGANATE FEED SYSTEM IN COMPLIANCE WITH ANY/ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS. SINCE THE EXISTING BUILDING FLOOR DRAINS LEAD TO SITE SANITARY SEWER TRUNK, THEN TO THE SITE SANITARY SEWER LIFT STATION, THEN TO THE CITY'S SANITARY SEWER COLLECTION SYSTEM, AND THEN WILL ULTIMATELY BE TREATED AT THE CITY'S WASTE WATER TREATMENT PLANT, ALL WASH WATER SHALL BE DISPOSED OF VIA THE EXISTING BUILDING FLOOR DRAINS.

SEE SHEET 19 FOR ADDITIONAL REMOVAL NOTES & DETAILS.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & DISPOSAL OF THE EXISTING POTASSIUM PERMANGANATE FEED SYSTEM AS DESCRIBED IN THE NOTES ON THIS SHEET, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE POTASSIUM PERMANGANATE FEED SYSTEM, INCLUDING ALL INCIDENTALS, AS PER PLAN.

NEW PORTABLE ACCESS STAIRS & PLATFORM (FOR NEW POTASSIUM PERMANGANATE FEED SYSTEM SOLUTION TANK)

THE FOLLOWING IS RELATIVE TO THE PROVIDING OF ALL MATERIALS OF THE PORTABLE ACCESS STAIRS & PLATFORM FOR ACCESS TO THE TOP OF THE SOLUTION TANK AND MIXING SYSTEM FOR THE NEW POTASSIUM PERMANGANATE FEED SYSTEM.

ALL MATERIALS SHALL BE FULLY ASSEMBLED AT THE FACTORY AND DELIVERED TO THE SITE FULLY ASSEMBLED. THE CONTRACTOR WILL NOT BE PERMITTED TO FABRICATE THEIR OWN PORTABLE ACCESS STAIRS & PLATFORM. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM A SINGLE MANUFACTURER WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED. THE CONTRACTOR SHALL COORDINATE ALL NECESSARY MATERIALS WITH THE MANUFACTURER OF THE PORTABLE ACCESS STAIRS & PLATFORM.

THE NEW ACCESS STAIRS AND PLATFORM SHALL BE IN COMPLIANCE WITH THE CURRENT OSHA REGULATIONS (OSHA 29 CFR 1910, SUBPART D) AND SHALL BE IN GENERAL CONFORMANCE WITH THE FOLLOWING:

STAIR TREADS:

- 26" WIDE STAIR TREADS (MINIMUM)
- 9" RISE FROM CONCRETE FLOOR TO FIRST STAIR TREAD; 9" RISE BETWEEN STAIR TREADS (27" TOTAL RISE FROM CONCRETE FLOOR TO THE TOP OF THE WALK PLATFORM)
- 9" WIDE STEP RUN
- AGGRESSIVE NON-SLIP SURFACE FOR TREADS
- HEAVY-DUTY, STEEL CONSTRUCTION, HOT-DIPPED GALVANIZED AFTER FABRICATION
- STAIR TREADS SHALL BE DESIGNED FOR A 1,000 POUND CONCENTRATED LOAD AND 50 PSF DISTRIBUTED LOAD, MINIMUM, OR AS REQUIRED BY THE MANUFACTURER TO MEET SAFETY GUIDELINES.

PLATFORM:

- DIRECT APPROACH ENTRY STYLE SYSTEM
- AGGRESSIVE NON-SLIP SURFACE; DIMENSIONS 36"x36"
- PLATFORM TO BE HEAVY-DUTY, STEEL CONSTRUCTION, HOT-DIPPED GALVANIZED AFTER FABRICATION
- PLATFORM SHALL BE DESIGNED FOR A 1,000 POUND CONCENTRATED LOAD AND 50 PSF DISTRIBUTED LOAD, MINIMUM, OR AS REQUIRED BY THE MANUFACTURER TO MEET SAFETY GUIDELINES.

STAIR & PLATFORM RAILINGS:

- 3'-6" RAIL HEIGHT (STAIRS & SIDES OF PLATFORM)
- BALUSTERS (SPACING PER MANUFACTURER)
- HEAVY-DUTY STEEL CONSTRUCTION WITH SAFETY-YELLOW, DURABLE, POWDER-COAT FINISH
- RAILS TO BE DESIGNED TO RESIST THE FOLLOWING WITHOUT DAMAGE OR PERMANENT SET (AT A MINIMUM): 50 POUNDS PER LINEAR FOOT APPLIED IN ANY DIRECTION AT THE TOP OF RAILING, AND A CONCENTRATED 200 POUND LOAD APPLIED IN ANY DIRECTION AT ANY POINT ALONG THE TOP OF RAILING, OR AS REQUIRED BY THE MANUFACTURER TO MEET SAFETY GUIDELINES.

SUPPORTS:

- A MINIMUM OF FOUR (4) LOCKING, HEAVY-DUTY, CASTER WHEELS (TWO OF WHICH SHALL BE SWIVEL CASTERS TO ALLOW TURNING/ROTATION MOVEMENTS) SHALL BE PROVIDED; THE NUMBER WILL BE PER THE MANUFACTURER'S RECOMMENDATIONS.
- ALL FRAMEWORK SHALL BE HEAVY-DUTY, STEEL CONSTRUCTION, HOT-DIPPED GALVANIZED AFTER FABRICATION.

ALL BOLTS, NUTS, WASHERS, ETC. FOR THE CONNECTIONS OF THE STAIRS, RAILING, PLATFORM, LEGS, ETC. SHALL BE CARBON STEEL, HOT DIP GALVANIZED AFTER FABRICATION AND/OR PER THE REQUIREMENTS OF THE MANUFACTURER.

SINCE DIMENSIONS OF THE NEW POTASSIUM PERMANGANATE FEED SYSTEM MAY VARY BY MANUFACTURER, THE CONTRACTOR SHALL COORDINATE THE FINAL DIMENSIONS OF THE PORTABLE ACCESS STAIRS & PLATFORM WITH THE FINAL DIMENSIONS OF THE SOLUTION TANK SIZE FOR THE NEW POTASSIUM PERMANGANATE FEED SYSTEM.

NOTE: THE CONTRACTOR SHALL REMOVE & DISPOSE OF THE EXISTING WOODEN ACCESS STEPS.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE PROVIDING OF THE NEW PORTABLE ACCESS STAIRS & PLATFORM AS DESCRIBED IN THE NOTES ON THIS SHEET, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE POTASSIUM PERMANGANATE FEED SYSTEM, INCLUDING ALL INCIDENTALS, AS PER PLAN.

CHK: J.F.B.
DATE: 12/22
CHK'D:
BY: D.S.G.
DATE: 12/22

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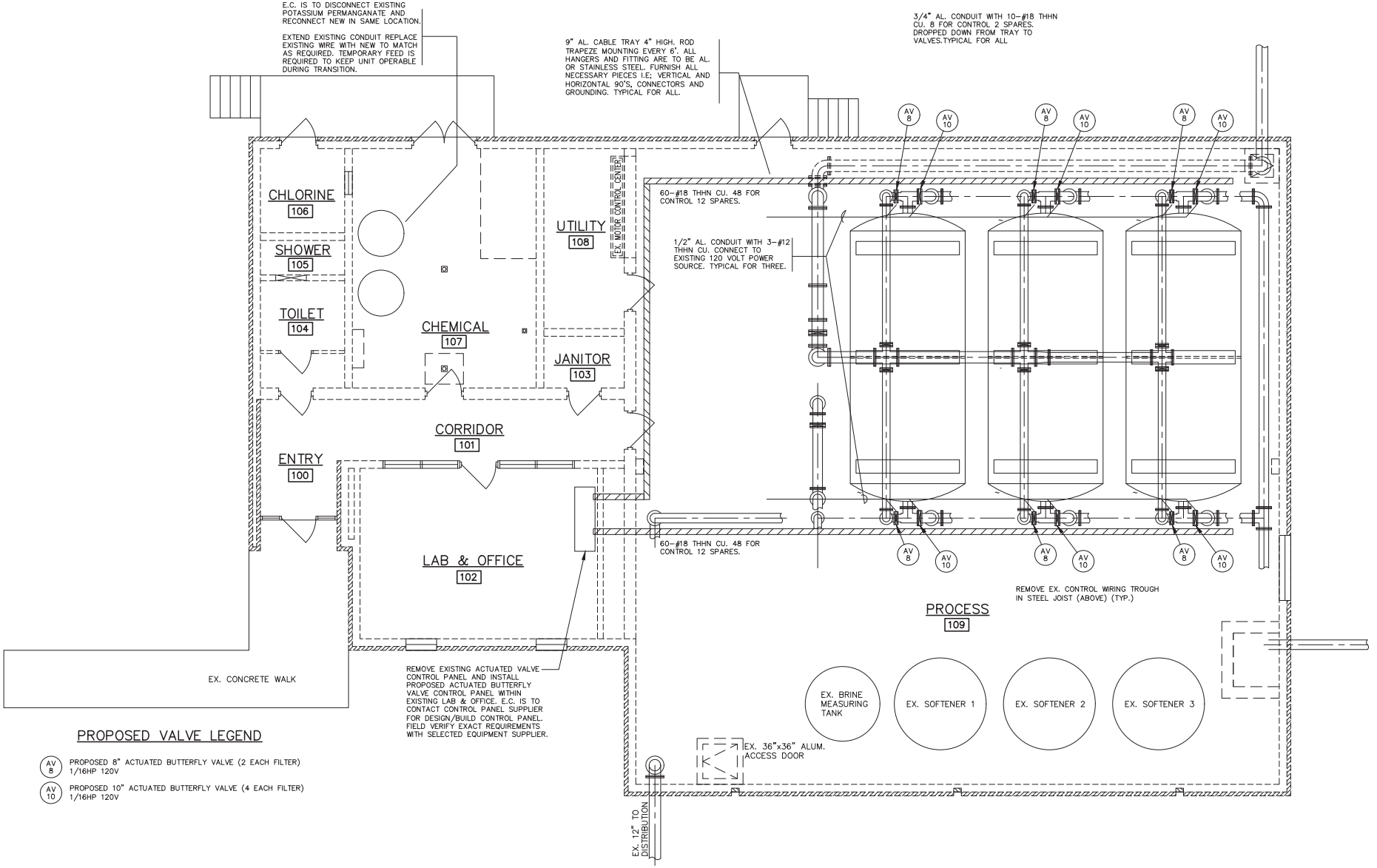
HORIZONTAL SCALE IN FEET

EXISTING POTASSIUM PERMANGANATE REMOVAL & REPLACEMENT

CITY OF CHESTER
WATER SYSTEM IMPROVE.



PROPOSED VALVE LEGEND

(AV 8) PROPOSED 8" ACTUATED BUTTERFLY VALVE (2 EACH FILTER) 1/16HP 120V

(AV 10) PROPOSED 10" ACTUATED BUTTERFLY VALVE (4 EACH FILTER) 1/16HP 120V

POWER PLAN

NOT TO SCALE

HORIZONTAL SCALE IN FEET: 0, 2, 4, 8

CAD: J.F.B.
DES:
DATE: 12/22
CHKD: D.G.D.
BY:
DATE: 12/22

ELECTRICAL NOTES & DETAILS
VALVE ACTUATORS & PERMANGANATE FEED SYSTEM

CITY OF CHESTER
WATER SYSTEM IMPROVE.

SA Engineering
29 East Front Street
Youngstown, OH 44406
Tel. (330) 533-4983
www.saengineeringinc.com

GENERAL ELECTRICAL SPECIFICATIONS:

GENERAL:

1. ALL ELECTRICAL WORK IS TO BE IN ACCORDANCE WITH NFPA 70–2017 AND ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES.
2. ALL WORK IS TO BE DONE IN A WORKMAN LIKE MANNER.
3. IF APPLICABLE, ELECTRICAL DEMOLITION IS TO BE BY E.C.
4. IF APPLICABLE, CUTTING AND PATCHING FOR ELECTRICAL WORK IS TO BE BY E.C.
5. IF APPLICABLE, TEMPORARY POWER AND LIGHTING IS TO BE BY E.C.
6. ELECTRICAL PERMITS AND ASSOCIATED COST ARE TO BE BY E.C.
7. ALL ELECTRICAL WORK, EXCEPT LAMPS, IS TO BE GUARANTEED FOR THE PERIOD OF ONE YEAR AFTER ACCEPTANCE.
8. THE E.C. IS TO MAKE A SITE VISIT TO DETERMINE EXISTING CONDITIONS. IF EXISTING CONDITIONS ARE NOT AS REPRESENTED ON THE DRAWINGS THE E.C. IS TO NOTIFY THE ENGINEER PRIOR TO BIDDING.
9. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INDICATE ONLY THE GENERAL ARRANGEMENT. SEE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
10. COORDINATE ALL WORK WITH ALL OTHER TRADES.

DEVICES AND MECHANICAL:

1. FURNISH DISCONNECTS FOR ALL MECHANICAL EQUIPMENT, FUSE AS PER MANUFACTURER'S REQUIREMENTS.
2. LOW VOLTAGE CONTROL WIRING IS TO BE BY M.C.
3. LINE VOLTAGE CONTROLS ARE TO BE WIRED BY E.C.
4. LOCATIONS ON DRAWINGS ARE APPROXIMATE, FIELD VERIFY EXACT LOCATIONS.

MATERIALS:

1. ALL MATERIAL IS TO BE UL LISTED AND USED ONLY FOR THE PURPOSE FOR WHICH IT IS LISTED.
2. ALL WIRE IS TO BE THWN COPPER RATED FOR 600V UNLESS OTHERWISE NOTED.
3. ALL WIRE IS TO BE #12 MINIMUM.
4. NO FEEDER SHALL EXCEED 2% VOLTAGE DROP. NO BRANCH CIRCUIT SHALL EXCEED 3% VOLTAGE DROP AT THE FARTHEST OUTLET.
5. WHEN A 20A CIRCUIT EXCEEDS 100 FEET FROM THE PANEL THE CONDUCTORS ARE TO BE INCREASED TO #10 THWN.
6. PVC IS TO BE USED UNDERGROUND ONLY, MINIMUM SCHEDULE 40. ALL ELBOWS ARE TO BE SCHEDULE 80 OR GRMC.
7. EXTERIOR EXPOSED CONDUITS ARE TO BE RIGID METALLIC CONDUIT.
8. SERVICE ENTRANCE CONDUITS ARE TO BE RIGID METALLIC CONDUIT.
9. ALL CONDUITS ARE TO BE RUN CONCEALED WHERE POSSIBLE. ALL NEW CONSTRUCTION CONDUITS ARE TO BE RUN IN THE WALLS INCLUDING BRICK AND BLOCK.
10. PROVIDE A PULL WIRE IN ALL EMPTY CONDUITS.
11. ALL CONDUITS, HANGERS AND FITTINGS IN PUMP AREA ARE TO BE ALUMINUM OR STAINLESS STEEL.

CABLE TRAY;

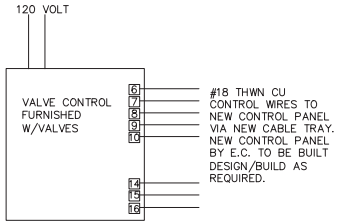
1. ALL CABLE TRAY IS TO BE ALUMINUM OR STAINLESS STEEL. ALL HANGERS AND FITTINGS ARE ALSO TO BE ALUMINUM OR STAINLESS STEEL.
2. TRAY IS TO BE HUNG BELOW THE JOIST.
3. TRAY IS TO BE HUNG BY TRAPEZE WITH STRUT AND ROD, SIZE AS REQUIRED.

FIRE STOPPING:

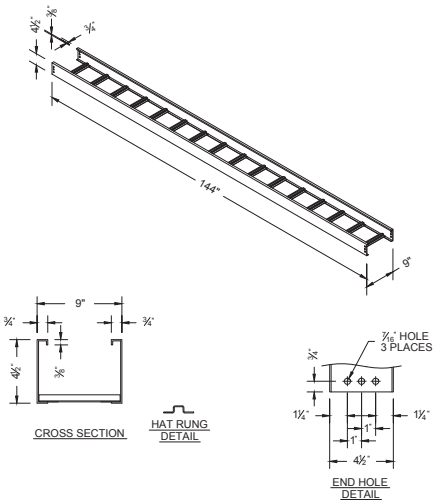
1. WHERE PENETRATIONS ARE MADE THROUGH A REQUIRED FIRE–RESISTANCE RATED WALL, FLOOR, CEILING, OR PARTITION FOR THE PURPOSE OF RUNNING A WIRE OR RACEWAY, THE OPENING AROUND THE WIRE OR RACEWAY SHALL BE FIRE STOPPED TO RETAIN THE INTEGRITY OF THE FIRE–RESISTANCE CONSTRUCTION.

GROUNDING AND BONDING:

1. ALL GROUNDING IS TO BE AS PER NEC 250.
2. MINIMUM GROUNDING IS TO BE TWO GROUND RODS AND GROUND WIRE TO WATER MAIN.
3. ELECTRICAL CONTRACTOR IS TO USE ALL AVAILABLE GROUNDS.
4. FOR STEEL BUILDINGS, STEEL SIDING IS TO BE GROUNDED.
5. BOND ALL METAL RACEWAYS TO PANELS USING LISTED FITTINGS OR OTHER APPROVED METHOD PER NEC 250.92.



VALVE CONTROL MODULE



CABLE TRAY DETAIL

SA Engineering
29 East Front Street
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Tel. (330) 533-4983
www.saengineeringinc.com

CITY OF CHESTER
WATER SYSTEM IMPROVE.

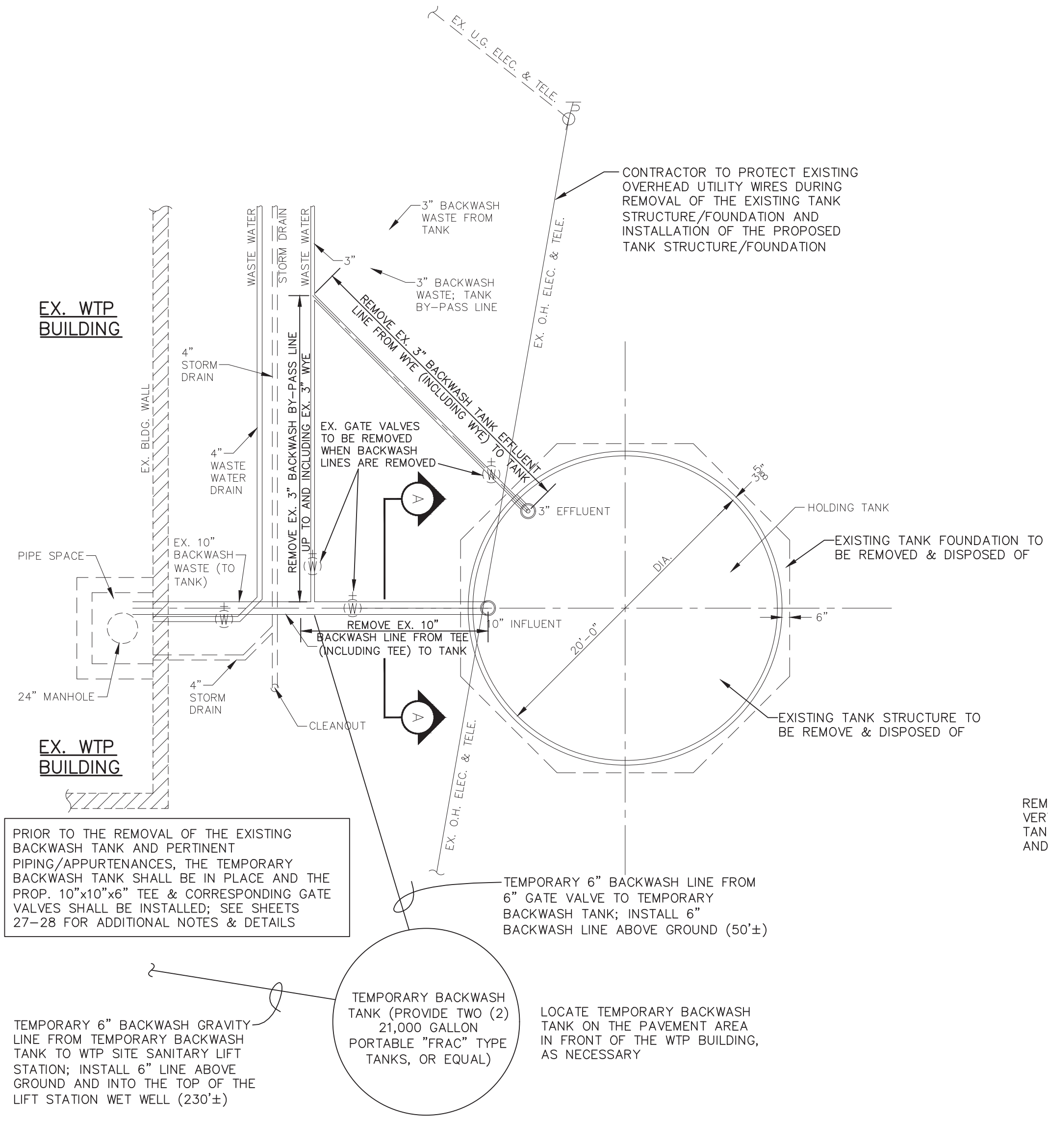
ELECTRICAL NOTES & DETAILS
VALVE ACTUATORS & PERMANGANATE FEED SYSTEM

HORIZONTAL SCALE IN FEET
0

CALC: J.F.B. DATE:12/22
CHKD: D.G.D. DATE:12/22

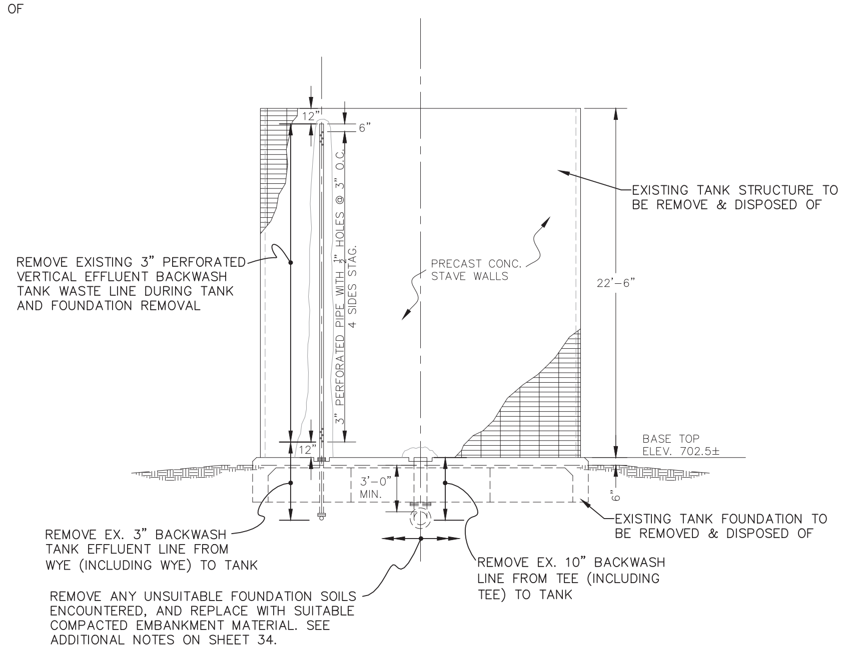
SEE SHEET 27 FOR ADDITIONAL EXISTING EXTERIOR BACKWASH TANK REMOVAL NOTES AND FOR TEMPORARY BACKWASH TANK SYSTEM NOTES.

SEE SHEETS 28–37 FOR NEW EXTERIOR BACKWASH TANK NOTES & DETAILS.



EXISTING EXTERIOR BACKWASH TANK – SITE PLAN/PLAN VIEW

NOT TO SCALE



EXISTING EXTERIOR BACKWASH TANK – SECTION A

NOT TO SCALE

HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22

CHKD. BY: D.G.D. DATE: 12/22

EXISTING EXTERIOR BACKWASH TANK REMOVAL PLAN VIEW AND SECTION VIEW

CITY OF CHESTER WATER SYSTEM IMPROVE.

REMOVAL & DISPOSAL OF EXISTING EXTERIOR BACKWASH TANK AND PERTINENT PIPING & APPURTENANCES

THE FOLLOWING IS RELATIVE TO THE REMOVAL & DISPOSAL OF THE EXISTING EXTERIOR BACKWASH TANK ALONG WITH THE PERTINENT PIPING AND APPURTENANCES AT THE WATER TREATMENT PLANT SITE.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING REMOVAL OF THE EXISTING EXTERIOR BACKWASH TANK AND PERTINENT PIPING & APPURTENANCES, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, WATER TREATMENT PLANT BUILDING, AND ANY OTHER WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

TYPICAL DAILY BACKWASH RATES ARE 25,000 GALLONS IN A 30 MINUTE PERIOD WITH A MAXIMUM BACKWASH FLOW RATE OF APPROXIMATELY 1,250 GPM. SINCE THE EXISTING PUMPS AND CORRESPONDING EXISTING SANITARY FORCE MAIN PIPING FOR THE EXISTING ON-SITE SANITARY LIFT STATION ARE DESIGNED FOR A RANGE OF APPROXIMATELY 100 GPM TO 200 GPM FLOW RATE, A TEMPORARY BACKWASH TANK SHALL BE INSTALLED PRIOR TO THE REMOVAL OF THE EXISTING BACKWASH TANK.

- THE TEMPORARY BACKWASH TANK SHALL REMAIN IN PLACE UNTIL THE EXISTING BACKWASH TANK IS REMOVED AND UNTIL THE NEW BACKWASH TANK IS INSTALLED.
- SEE TEMPORARY BACKWASH TANK NOTES ON THIS SHEET FOR ADDITIONAL INFORMATION.

THE CONTRACTOR SHALL ENTIRELY REMOVE & PROPERLY DISPOSE OF THE EXISTING BACKWASH TANK STRUCTURE; ALL INTERIOR TANK PIPING & INCIDENTALS; EXISTING CONCRETE TANK FOUNDATION & FLOOR; AND THE PERTINENT PORTIONS OF THE EXISTING 10" BACKWASH/TANK INFLUENT PIPING, 3" BACKWASH BY-PASS PIPING, & 3" EFFLUENT TANK PIPING. ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & DISPOSAL OF THE EXISTING EXTERIOR BACKWASH TANK AS DESCRIBED IN THE NOTES ON THIS SHEET, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE EXTERIOR BACKWASH TANK, INCLUDING ALL INCIDENTALS, AS PER PLAN.

NOTE: SEE ADDITIONAL EXISTING EXTERIOR BACKWASH TANK REMOVAL NOTES & DETAILS ON SHEET 26.

NOTE: SEE TEMPORARY BACKWASH TANK NOTES ON THIS SHEET.

NOTE: SEE NEW EXTERIOR BACKWASH TANK NOTES AND DETAILS ON SHEETS 28-37.

TEMPORARY BACKWASH TANK SYSTEM

IN COORDINATION WITH THE REMOVAL & REPLACEMENT OF THE EXTERIOR BACKWASH TANK AT THE WATER TREATMENT PLANT SITE, THE FOLLOWING IS RELATIVE TO THE PROVIDING OF ALL MATERIALS AND INSTALLATION OF A TEMPORARY BACKWASH TANK SYSTEM ALONG WITH THE CORRESPONDING REMOVAL OF THE TEMPORARY BACKWASH TANK SYSTEM ONCE THE EXISTING EXTERIOR BACKWASH TANK IS REMOVED & REPLACED.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

THE TEMPORARY BACKWASH TANK SHALL REMAIN IN SERVICE PRIOR TO REMOVAL OF THE EXISTING TANK AND UNTIL THE NEW EXTERIOR BACKWASH TANK IS FULLY OPERATIONAL.

DURING INSTALLATION OF THE TEMPORARY BACKWASH TANK, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, WATER TREATMENT PLANT BUILDING, AND ANY OTHER WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

PRIOR TO REMOVAL OF THE EXISTING EXTERIOR BACKWASH TANK, THE FOLLOWING WORK SHALL BE PERFORMED:

- THE CONTRACTOR SHALL HAVE ON-SITE A TEMPORARY BACKWASH TANK IN ORDER TO ACCOMMODATE AN AVERAGE 25,000 GALLONS OF BACKWASH WATER; SEE REMOVAL & REPLACEMENT NOTES TO THE LEFT ON THIS SHEET RELATIVE TO THE ADJUSTMENT OF THE BACKWASH FLOW RATE BY THE WTP OPERATOR.
- THE TYPE OF TEMPORARY BACKWASH TANK WILL BE AT THE CONTRACTOR'S DISCRETION; HOWEVER, IT IS ANTICIPATED THAT RENTING TWO (2), 21,000 GALLON CLOSED TOP/PORTABLE/"FRAC" TYPE TANKS SHOULD BE SUFFICIENT.
- THE TEMPORARY BACKWASH TANK (I.E. "FRAC" TYPE TANK) SHALL HAVE AT LEAST ONE (1) INLET CONNECTION TO ACCOMMODATE THE BACKWASH WATER FROM THE WTP, AND AT LEAST ONE (1) OUTLET CONNECTION NEAR THE BOTTOM OF THE TANK TO ALLOW THE BACKWASH WATER TO GRAVITY FLOW FROM THE TANK TO THE EXISTING SANITARY LIFT STATION WET WELL. BOTH TANKS SHALL UTILIZE THE SAME TEMPORARY GRAVITY PIPE.
- THE TEMPORARY BACKWASH TANK SHALL BE WATERTIGHT AND SHALL BE EQUIPPED WITH A ROOF-MOUNTED VENT.
- THE TEMPORARY BACKWASH TANK SHALL BE INSTALLED IN A SECURE & STABLE MANNER TO PREVENT MOVEMENT.
- THE CONTRACTOR SHALL REMOVE THE PERTINENT PORTIONS OF THE EXISTING 10" BACKWASH LINE AND 3" BY-PASS LINE, AND SHALL INSTALL THE PROPOSED 10"x10"x6" TEE, CORRESPONDING 6" & 10" GATE VALVES, AND 6" BACKWASH TANK BY-PASS CONNECTION AS FURTHER DETAILED ON SHEETS 26 & 28.
- THE CONTRACTOR SHALL INSTALL THE 6" TEMPORARY BACKWASH INFLUENT LINE FROM THE NEW 6" BY-PASS CONNECTION TO THE TEMPORARY BACKWASH TANK, AND THE 6" TEMPORARY BACKWASH GRAVITY EFFLUENT LINE FROM THE TEMPORARY BACKWASH TANK TO THE EXISTING WTP SANITARY LIFT STATION WET WELL AS FURTHER DESCRIBED ON SHEETS 26 & 28

THE MATERIAL FOR THE TEMPORARY INFLUENT & EFFLUENT LINES WILL BE AT THE CONTRACTOR'S DISCRETION (I.E. HDPE PIPE, FIRE HOSES WITH QUICK CONNECTS, ETC.), BUT SHALL BE INSTALLED IN A SECURE MANNER, WITHOUT LEAKS, ETC. THE TEMPORARY INFLUENT & EFFLUENT LINES WILL BE PERMITTED TO BE INSTALLED ABOVE GROUND.

THE TEMPORARY BACKWASH TANK SHALL BE DRAINED DURING THE FILLING WITH BACKWASH WATER. THE RELEASE RATE OF THE BACKWASH WATER FROM THE TEMPORARY TANK SHALL NOT EXCEED 150 GPM SO THAT THE SANITARY LIFT STATION IS NOT OVERWHELMED. BASED UPON APPROXIMATELY 25,000 GALLONS OF BACKWASH WATER AT 150 GPM, IT SHOULD TAKE APPROXIMATELY 2.5 TO 3 HOURS HOURS TO DRAIN THE TEMPORARY BACKWASH TANK.

ONCE THE EXISTING EXTERIOR TANK IS REMOVED AND THE NEW EXTERIOR BACKWASH TANK IS FULLY OPERATIONAL, THE CONTRACTOR SHALL ENTIRELY REMOVE THE TEMPORARY BACKWASH TANK SYSTEM FROM THE WTP SITE AND PERFORM ANY PERTINENT SITE CLEAN-UP (I.E. DEBRIS REMOVAL, SEEDING & MULCHING, ETC.). ANY MATERIAL REQUIRING DISPOSAL SHALL BE TAKEN TO AN APPROVED DISPOSAL FACILITY.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE INSTALLATION & REMOVAL OF THE TEMPORARY BACKWASH SYSTEM AS DESCRIBED IN THE NOTES ON THIS SHEET, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE EXTERIOR BACKWASH TANK, INCLUDING ALL INCIDENTALS, AS PER PLAN.

NOTE: SEE EXISTING EXTERIOR BACKWASH TANK REMOVAL NOTES & DETAILS ON THIS SHEET AND ON SHEET 26.

NOTE: SEE NEW EXTERIOR BACKWASH TANK NOTES AND DETAILS ON SHEETS 28-37.

CHK: J.F.B.
DATE: 12/22
CHK'D:
BY: D.S.G.
DATE: 12/22

0
HORIZONTAL
SCALE IN FEET

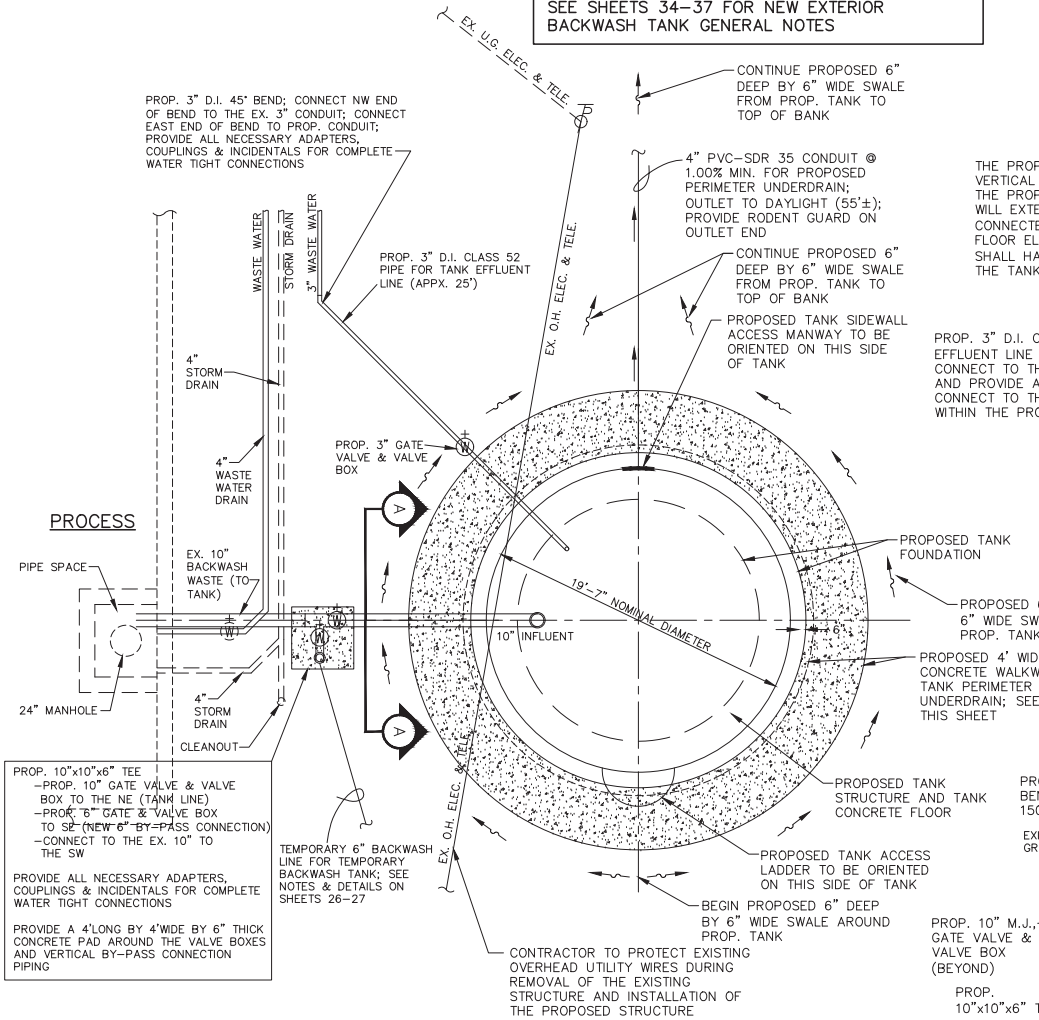
CITY OF CHESTER
WATER SYSTEM IMPROVE.

BACKWASH TANK
REMOVAL & REPLACEMENT GENERAL NOTES

SEE SHEETS 26–27 FOR EXISTING EXTERIOR BACKWASH TANK REMOVAL NOTES & DETAILS AND FOR TEMPORARY BACKWASH SYSTEM NOTES & DETAILS.

SEE SHEETS 29–33 FOR ADDITIONAL NEW EXTERIOR BACKWASH TANK NOTES & DETAILS.

SEE SHEETS 34–37 FOR NEW EXTERIOR BACKWASH TANK GENERAL NOTES

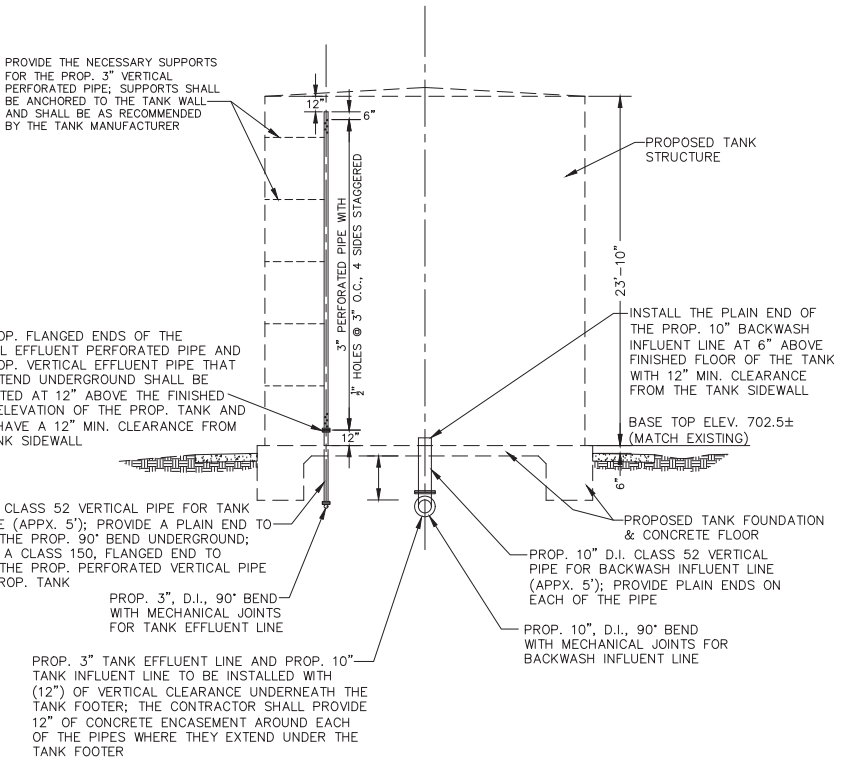


PROP. 10"x10"x6" TEE
–PROP. 10" GATE VALVE & VALVE BOX TO THE NE (TANK LINE)
–PROP. 6" GATE & VALVE BOX TO SE (NEW 6" BY–PASS CONNECTION)
–CONNECT TO THE EX. 10" TO THE SW

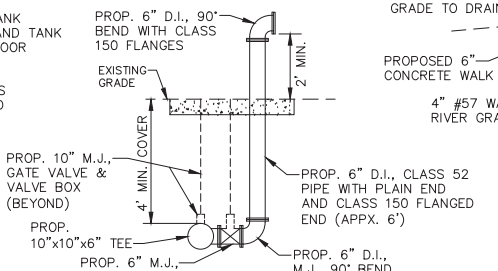
PROVIDE ALL NECESSARY ADAPTERS, COUPLINGS & INCIDENTALS FOR COMPLETE WATER TIGHT CONNECTIONS

PROVIDE A 4'LONG BY 4'WIDE BY 6" THICK CONCRETE PAD AROUND THE VALVE BOXES AND VERTICAL BY–PASS CONNECTION PIPING

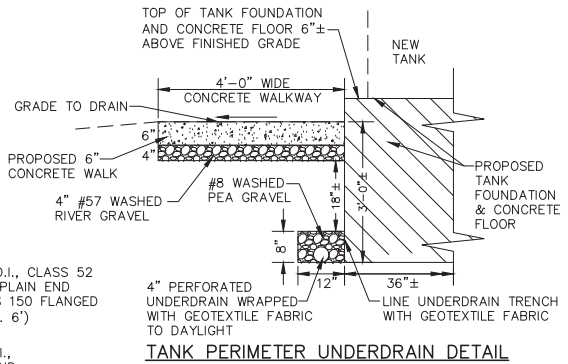
NEW EXTERIOR BACKWASH TANK – SITE PLAN & TANK PLAN VIEW
NOT TO SCALE



NEW EXTERIOR BACKWASH TANK – SECTION A
NOT TO SCALE



NEW BACKWASH TANK BY–PASS CONNECTION DETAIL
NOT TO SCALE



TANK PERIMETER UNDERDRAIN DETAIL
NOT TO SCALE

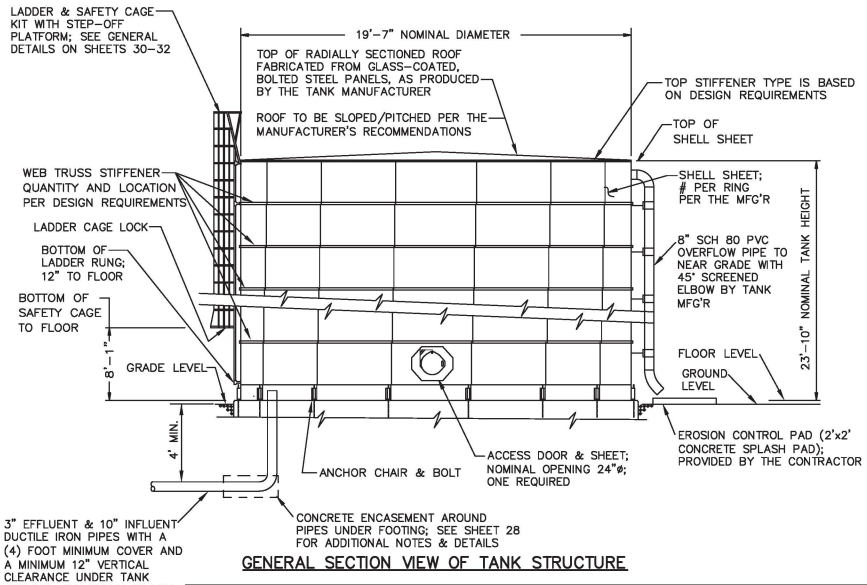
HORIZONTAL SCALE IN FEET
0 2 4 8

CAD: J.F.B.
DES: 12/22
CHKD:
BY: D.G.D.
DATE: 12/22

NEW EXTERIOR BACKWASH TANK
PLAN VIEW AND SECTION VIEW

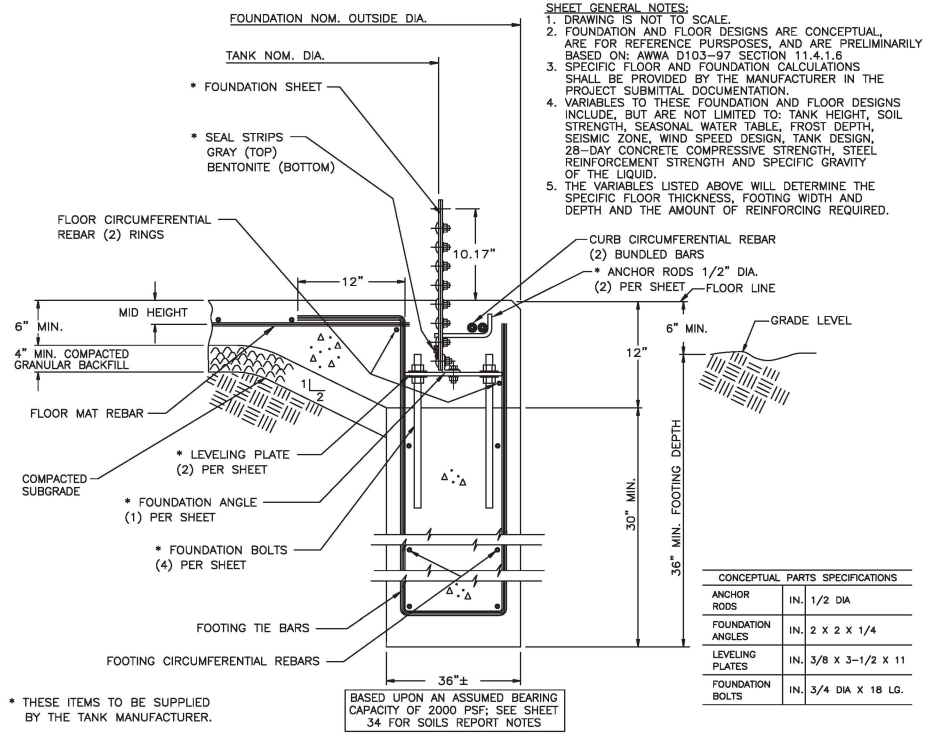
CITY OF CHESTER
WATER SYSTEM IMPROVE.

28
81



GENERAL SECTION VIEW OF TANK STRUCTURE

THE CONCEPTUAL TANK DETAILS AND DIMENSIONS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES ONLY; FINAL DETAILS AND DIMENSIONS ARE TO BE PROVIDED BY THE TANK MANUFACTURER AND SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF WEST VIRGINIA; SEE TANK GENERAL NOTES FOR ADDITIONAL INFORMATION.



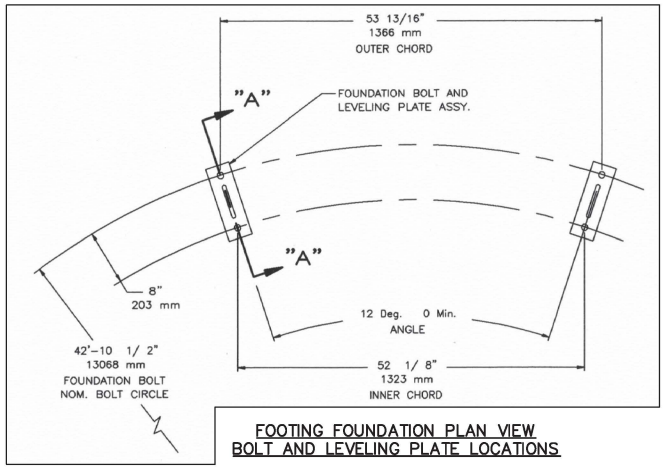
SHEET GENERAL NOTES:
1. DRAWING IS NOT TO SCALE.
2. FOUNDATION AND FLOOR DESIGNS ARE CONCEPTUAL, ARE FOR REFERENCE PURSPOSES, AND ARE PRELIMINARILY BASED ON: AWWA D103-97 SECTION 11.4.1.6.
3. SPECIFIC FLOOR AND FOUNDATION CALCULATIONS SHALL BE PROVIDED BY THE MANUFACTURER IN THE PROJECT SUBMITTAL DOCUMENTATION.
4. VARIABLES TO THESE FOUNDATION AND FLOOR DESIGNS INCLUDE, BUT ARE NOT LIMITED TO: TANK HEIGHT, SOIL STRENGTH, SEASONAL WATER TABLE, FROST DEPTH, SEISMIC ZONE, WIND SPEED DESIGN, TANK DESIGN, 28-DAY CONCRETE COMPRESSIVE STRENGTH, STEEL REINFORCEMENT STRENGTH AND SPECIFIC GRAVITY OF THE LIQUID.
5. THE VARIABLES LISTED ABOVE WILL DETERMINE THE SPECIFIC FLOOR THICKNESS, FOOTING WIDTH AND DEPTH AND THE AMOUNT OF REINFORCING REQUIRED.

* THESE ITEMS TO BE SUPPLIED BY THE TANK MANUFACTURER.

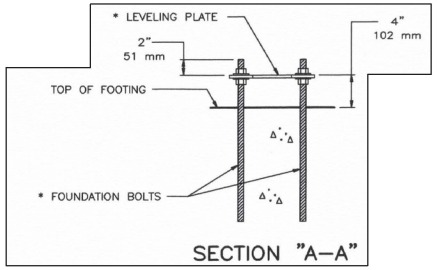
BASED UPON AN ASSUMED BEARING CAPACITY OF 2000 PSF; SEE SHEET 34 FOR SOILS REPORT NOTES

CONCEPTUAL PARTS SPECIFICATIONS		
ANCHOR RODS	IN.	1/2 DIA
FOUNDATION ANGLES	IN.	2 X 2 X 1/4
LEVELING PLATES	IN.	3/8 X 3-1/2 X 11
FOUNDATION BOLTS	IN.	3/4 DIA X 18 LG.

GENERAL SECTION VIEW THROUGH FOOTING FOUNDATION



FOOTING FOUNDATION PLAN VIEW
BOLT AND LEVELING PLATE LOCATIONS



SECTION "A-A"

THE CONCEPTUAL FOOTING FOUNDATION DETAILS AND DIMENSIONS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES ONLY; FINAL FOOTING FOUNDATION DESIGN SHALL BE PERFORMED BY THE TANK MANUFACTURER AND COORDINATED WITH THE SOILS REPORT PROVIDED IN THE CONSTRUCTION PLANS; FINAL FOOTING FOUNDATION DETAILS AND DIMENSIONS ARE TO BE PROVIDED BY THE TANK MANUFACTURER AND SHALL BE STAMPED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF WEST VIRGINIA; SEE TANK GENERAL FOR ADDITIONAL INFORMATION.

SEE SHEET 28 FOR NEW EXTERIOR BACKWASH TANK FOR ADDITIONAL NOTES & DETAILS (PLAN VIEW AND SECTION VIEW)

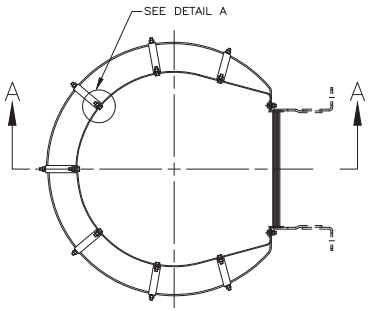
SEE SHEETS 30-33 FOR ADDITIONAL NEW EXTERIOR BACKWASH TANK DETAILS.

SEE SHEETS 34-37 FOR NEW EXTERIOR BACKWASH TANK GENERAL NOTES

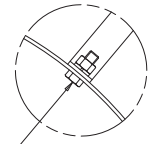
DRAWN: J.F.B. DATE: 12/22
CHKD: D.D.C. BY: D.D.C. DATE: 12/22

CONCEPTUAL TANK DETAILS: TANK STRUCTURE AND FOUNDATION

CITY OF CHESTER
WATER SYSTEM IMPROVE.

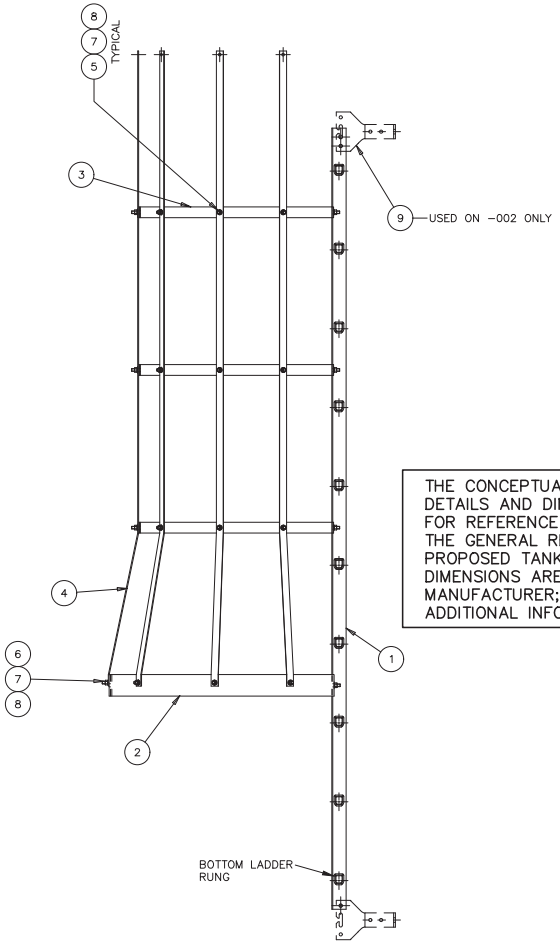


PLAN VIEW
LOWER LADDER SECTION



DETAIL "A"

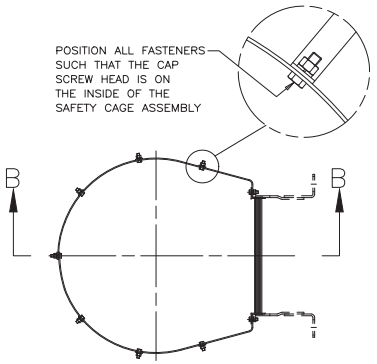
NOTES:
1. "Y" LADDER BRACKET ASSEMBLIES ARE SHOWN FOR REFERENCE ONLY. FASTENERS REQUIRED TO MOUNT THE LADDER TO THE BRACKETS ARE INCLUDED IN THE BRACKET ASSEMBLIES.



SECTION A–A
LOWER LADDER SECTION

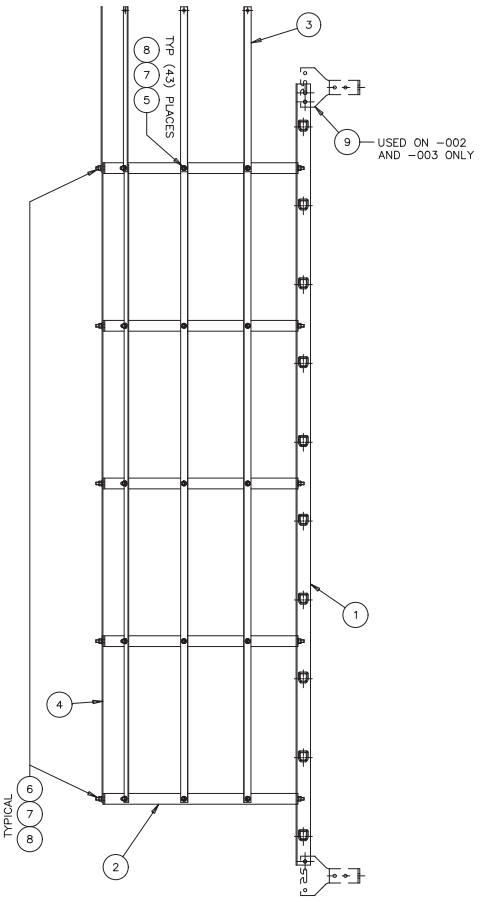
DESCRIPTION	ITEM
"Y" BRACKET ASSEMBLY (SET)	9
NUT, HEX, 3/8"	8
WASHER, LOCK, 3/8"	7
SCREW, HEX HD CAP, 3/8" x 1 1/4"	6
SCREW, HEX HD CAP, 3/8" x 1"	5
STRINGER, 1/8" x 1" x 89"	4
CAGE RING HALF, 1/8" x 1–1/2" x 13–1/2" R.	3
CAGE RING HALF, 3/16" x 3" x 17–1/2" R.	2
LADDER ASSEMBLY, INTERMEDIATE	1
LONG BOTTOM LADDER & SAFETY CAGE KIT	--

THE CONCEPTUAL ACCESS LADDER AND SAFETY CAGE DETAILS AND DIMENSIONS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES ONLY AND ARE TO DETAIL THE GENERAL REQUIREMENTS AND INCIDENTALS FOR THE PROPOSED TANK ACCESS LADDER; FINAL DETAILS AND DIMENSIONS ARE TO BE PROVIDED BY THE TANK MANUFACTURER; SEE TANK GENERAL NOTES FOR ADDITIONAL INFORMATION.



PLAN VIEW
INTERMEDIATE LADDER SECTION

NOTES:
1. "Y" LADDER BRACKET ASSEMBLIES ARE SHOWN FOR REFERENCE ONLY. FASTENERS REQUIRED TO MOUNT THE LADDER TO THE BRACKETS TO BE INCLUDED IN THE BRACKET ASSEMBLIES.



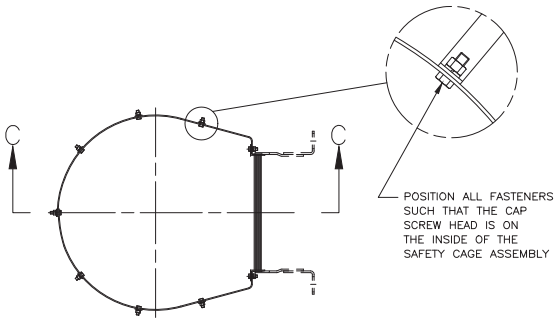
SECTION B–B
INTERMEDIATE LADDER SECTION

DESCRIPTION	ITEM
"Y" LADDER BRACKET ASSEMBLY (SET)	9
NUT, HEX, 3/8"	8
WASHER, LOCK, 3/8"	7
SCREW, HEX HD CAP, 3/8" x 1 1/4"	6
SCREW, HEX HD CAP, 3/8" x 1"	5
STRINGER, 1/8" x 1" x 89"	4
STRINGER, 1/8" x 1" x 23"	3
CAGE RING HALF, 1/8" x 1–1/2" x 13–1/2" R.	2
LADDER ASSEMBLY, INTERMEDIATE	1

CAD: J.F.B.
DATE: 12/22
CHKD: D.C.D.
DATE: 12/22

CONCEPTUAL TANK DETAILS: ACCESS LADDER AND SAFETY CAGE

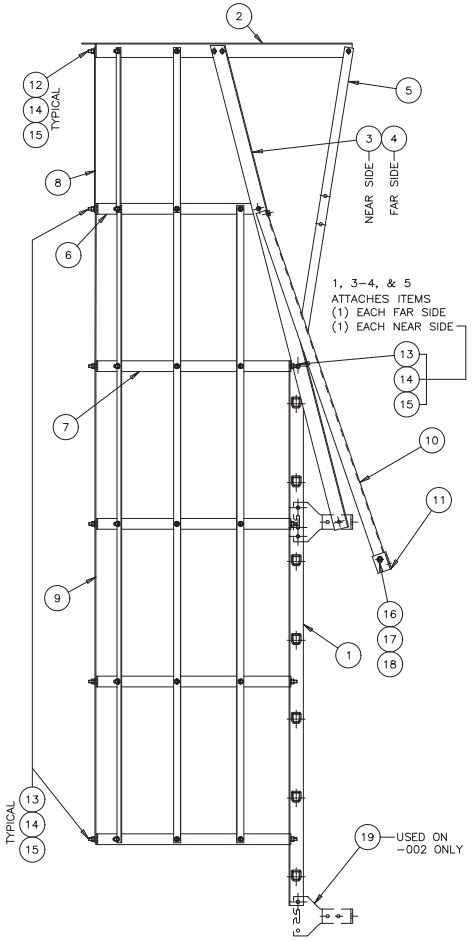
CITY OF CHESTER
WATER SYSTEM IMPROVE.



PLAN VIEW
TOP LADDER SECTION

DESCRIPTION	ITEM
"Y" LADDER BRACKET ASSEMBLY (SET)	19
NUT, HEX, 1/2"	18
WASHER, LOCK, 1/2"	17
SCREW, HEX HD CAP, 1/2" x 1"	16
NUT, HEX, 3/8"	15
WASHER, LOCK, 3/8"	14
SCREW, HEX HD CAP, 3/8" x 1 1/4"	13
SCREW, HEX HD CAP, 3/8" x 1"	12
CLIP ANGLE, 2" x 2" x 3/16" x 2-1/2"	11
LADDER BRACE, 1-1/2"x 1-1/2"x 1/8"x 52-1/4"	10
STRINGER, 1/8" x 1" x 89"	9
STRINGER, 1/8" x 1" x 23"	8
CAGE RING HALF, 1/8" x 1-1/2" x 13-1/2" R.	7
CAGE RING HALF, 1/8" x 1-1/2" x 13-1/2" R.	6
CAGE BRACE, 3/16" x 1-1/4" x 45-15/16"	5
KING POST, LH, 2" x 2" x 1/8" x 69-7/8"	4
KING POST, RH, 2" x 2" x 1/8" x 69-7/8"	3
SUPPORT, 2" x 2" x 1/8" FORMED ANGLE	2
LADDER ASSEMBLY, TOP	1

NOTES:
1. "Y" LADDER BRACKET ASSEMBLIES ARE SHOWN FOR REFERENCE ONLY. FASTENERS REQUIRED TO MOUNT THE LADDER TO THE BRACKETS TO BE INCLUDED IN THE BRACKET ASSEMBLIES.



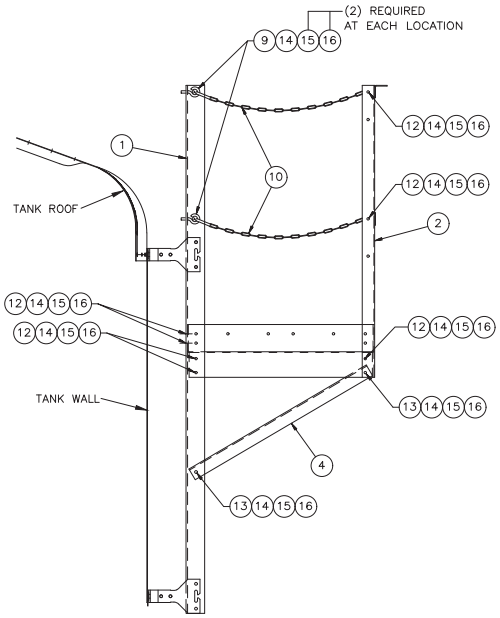
SECTION C-C
TOP LADDER SECTION

THE CONCEPTUAL ACCESS LADDER AND SAFETY CAGE DETAILS AND DIMENSIONS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES ONLY AND ARE TO DETAIL THE GENERAL REQUIREMENTS AND INCIDENTALS FOR THE PROPOSED TANK ACCESS LADDER; FINAL DETAILS AND DIMENSIONS ARE TO BE PROVIDED BY THE TANK MANUFACTURER; SEE TANK GENERAL NOTES FOR ADDITIONAL INFORMATION.

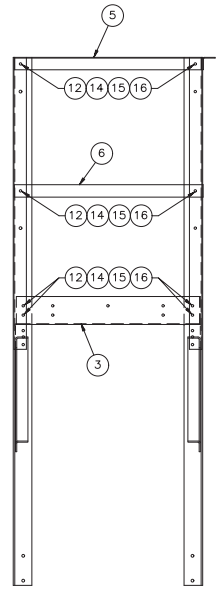
CAD: J.F.B.
DATE: 12/22
CHKD: D.C.D.
DATE: 12/22

CONCEPTUAL TANK DETAILS: ACCESS LADDER AND SAFETY CAGE

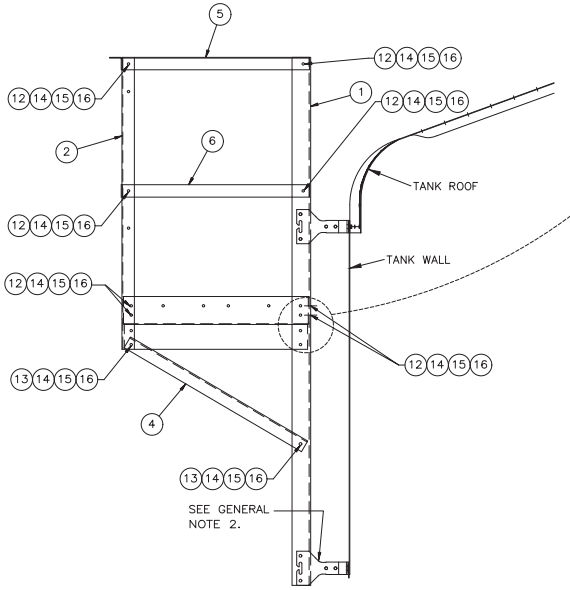
CITY OF CHESTER
WATER SYSTEM IMPROVE.



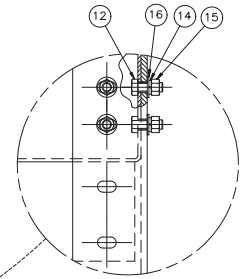
PLATFORM LEFT SIDE ELEVATION
(LADDER AND SAFETY CAGE
REMOVED FOR CLARITY)



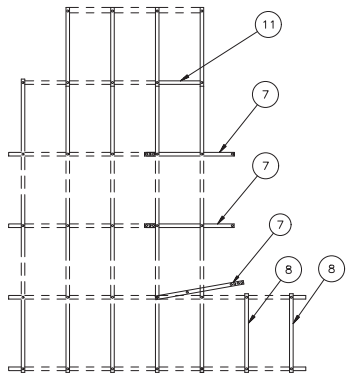
PLATFORM FRONT ELEVATION



PLATFORM RIGHT SIDE ELEVATION
(LADDER AND SAFETY CAGE
REMOVED FOR CLARITY)



GENERAL NOTES:
1. RIGHT HAND PLATFORM MOUNT IS SHOWN. DEPENDENT SITE REQUIREMENTS, THE PLATFORM MAY BE MOUNTED ON THE LEFT SIDE OF THE LADDER.
2. PLATFORM BRACKET ASSEMBLIES ARE SHOWN FOR REFERENCE ONLY. FASTENERS REQUIRED TO MOUNT THE MANWAY PLATFORM TO THE BRACKET TO BE INCLUDED IN THE BRACKET ASSEMBLIES. SEE PROJECT SUBMITTAL DOCUMENTATION FOR SPECIFIC BRACKET TYPES AND RING LOCATIONS.
3. POSITION ALL FASTENER SETS SUCH THE CAP SCREW HEAD IS ON THE INSIDE OF THE LADDER PLATFORM AND SAFETY CAGE ASSEMBLY.



CAGE STRINGER PLACEMENT
DEVELOPED VIEW
STRINGERS, CAGE BANDS, AND FASTENERS NOT INDICATED WITH ITEM BALLOONS ARE SUPPLIED WITH THE LADDER AND SAFETY CAGE ASSEMBLY.

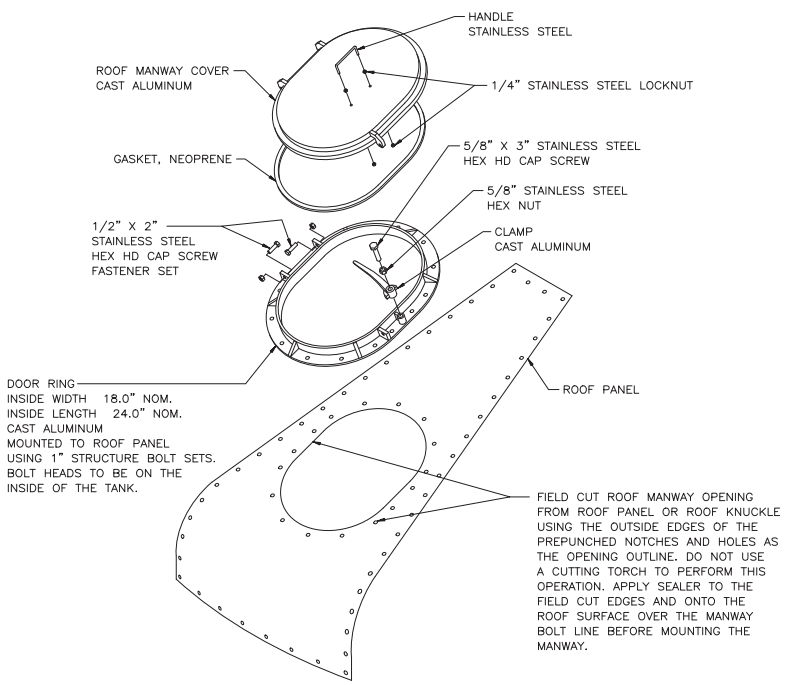
THE CONCEPTUAL ACCESS LADDER AND SAFETY CAGE DETAILS AND DIMENSIONS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES ONLY AND ARE TO DETAIL THE GENERAL REQUIREMENTS AND INCIDENTALS FOR THE PROPOSED TANK ACCESS LADDER; FINAL DETAILS AND DIMENSIONS ARE TO BE PROVIDED BY THE TANK MANUFACTURER; SEE TANK GENERAL NOTES FOR ADDITIONAL INFORMATION.

DESCRIPTION	ITEM
WASHER, FLAT, 3/8"	16
NUT, HEX., 3/8"	15
WASHER, LOCK, 3/8"	14
SCREW, HHC, 3/8" x 1-1/4"	13
SCREW, HHC, 3/8" x 1"	12
CAGE BAND, SHORT, 1/8" x 1-1/2" x 11"	11
CHAIN ASSEMBLY	10
EYE BOLT, 3/8"	9
STRINGER, 1/8" x 1" x 23"	8
CAGE BAND, 1/8" x 1-1/2" x 22-1/2"	7
STRAP, 1/8" x 2" x 30-1/8"	6
RAIL, 2"x 2"x 1/8" x 30-1/8" LG.	5
GUSSET ANGLE, 2"x 2"x 1/8" x 33-1/8" LG.	4
PLATFORM, 30" x 30"	3
POST, 2"x 2"x 1/8" x 47" LG.	2
MOUNTING ANGLE, 3"x 3" x1/4" x 85" LG.	1

CALC: J.F.B. DATE: 12/22
CHKD: D.C.D. DATE: 12/22

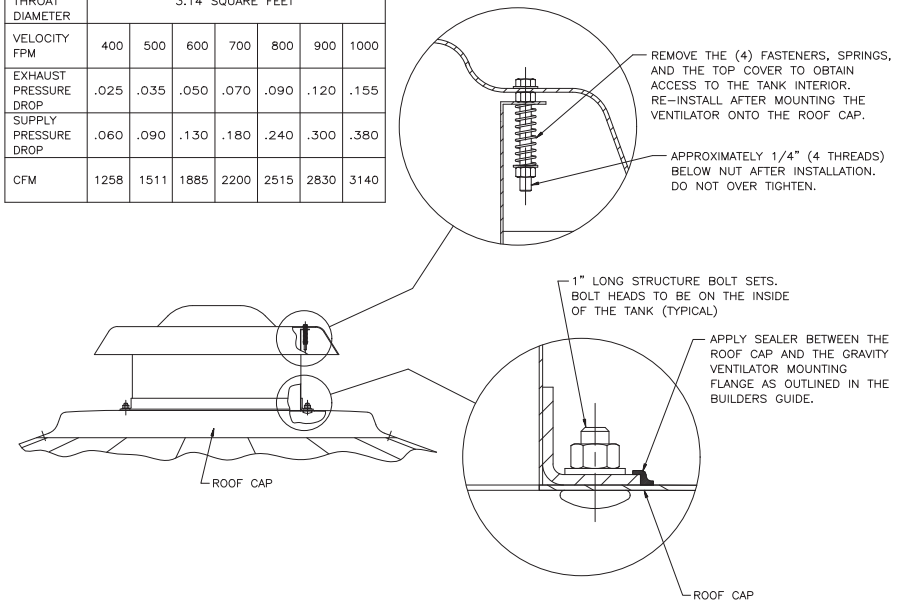
CONCEPTUAL TANK DETAILS: ACCESS LADDER AND SAFETY CAGE

CITY OF CHESTER
WATER SYSTEM IMPROVE.



THE CONCEPTUAL ROOF VENT AND ROOF ACCESS MANWAY DETAILS AND DIMENSIONS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES ONLY AND ARE TO DETAIL THE GENERAL REQUIREMENTS AND INCIDENTALS FOR THE PROPOSED ROOF VENT, SAFETY EYEBOLT, AND ROOF ACCESS MANWAY; FINAL DETAILS AND DIMENSIONS ARE TO BE PROVIDED BY THE TANK MANUFACTURER; SEE TANK GENERAL NOTES FOR ADDITIONAL INFORMATION.

VENT CAPACITY CHART							
VENT THROAT DIAMETER	3.14 SQUARE FEET						
VELOCITY FPM	400	500	600	700	800	900	1000
EXHAUST PRESSURE DROP	.025	.035	.050	.070	.090	.120	.155
SUPPLY PRESSURE DROP	.060	.090	.130	.180	.240	.300	.380
CFM	1258	1511	1885	2200	2515	2830	3140



GRAVITY VENTILATOR GENERAL CONSTRUCTION
HOUSING COVER AND SUPPORT MEMBERS – ALUMINUM
INSECT SCREEN – 23 TO 25 MESH .0135"/.0145" DIA. POLYESTER MONOFILAMENT WIRE
BIRD SCREEN – .063 THICK ALUMINUM, .5 X .75 EXPANDED MESH

CAD: J.F.B.
DATE: 12/22
CHK'D: D.C.D.
DATE: 12/22

CONCEPTUAL TANK DETAILS: ROOF ACCESS MANWAY AND ROOF VENT

CITY OF CHESTER
WATER SYSTEM IMPROVE.

NEW BACKWASH PIPING, VALVE, AND INCIDENTAL MATERIALS AND INSTALLATION

THE FOLLOWING IS RELATIVE TO THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS ALONG WITH THE CORRESPONDING INSTALLATION FOR THE NEW EXTERIOR BACKWASH TANK.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING INSTALLATION THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS FOR THE NEW EXTERIOR BACKWASH TANK, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, WATER TREATMENT PLANT BUILDING, AND ANY OTHER WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS FOR THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR WILL NOT BE PERMITTED TO FABRICATE THEIR OWN MATERIALS. ALL EQUIPMENT/MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT EQUIPMENT/MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

GATE VALVES & VALVE BOXES:
THE 3", 6", 10" GATE VALVES SHALL BE RESILIENT SEATED/WEDGE, NON-RISING STEM GATE VALVE; MECHANICAL JOINT ENDS; ALL EXTERIOR STAINLESS STEEL NUTS & BOLTS; AND SHALL BE IN COMPLIANCE WITH ANSI/AWWA C509-94; VALVES TO OPEN COUNTER-CLOCKWISE.

VALVE BOXES SHALL BE CAST IRON, 3-PIECE ADJUSTABLE SCREW TYPE AND SHALL BE ADJUSTED TO BE FLUSH WITH FINISHED GRADE. VALVE BOX LIDS SHALL READ "SANITARY" OR "WASTE".

GATE VALVES AND VALVE BOXES SHALL BE INSTALLED IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEET 80 OF THE CONSTRUCTION PLANS AND WITH THE PERTINENT SPECIFICATIONS AS FURTHER GENERALLY DESCRIBED BELOW.
- GATE VALVES ARE TO BE WRAPPED IN 6mm PLASTIC; SHALL BE INSTALLED ON A 4"X8"X16" SOLID CONCRETE BLOCK; ETC.
- THE BONNET OF THE VALVES BOXES IS TO REST ON 4"x8"x16" CONCRETE BLOCKS PLACED 90° TO THE CL OF PIPE SO AS NOT TO REST ON THE PIPE; ETC.
- BEDDING AND BACKFILL AROUND THE VALVES/VALVE BOXES SHALL BE #57 WASHED RIVER GRAVEL.

BACKWASH AND BY-PASS UNDERGROUND PIPING & FITTINGS:
THE 3" TANK EFFLUENT PIPING, 6" BY-PASS CONNECTION PIPING & 10" BACKWASH PIPING SHALL BE DUCTILE IRON, CLASS 52, BELL & SPIGOT, PUSH-ON JOINTS WITH INTERNAL RESTRAINT GASKETS CONFORMING TO ASTM D-3139/AWWA C111.
- NOTE: THE 3" VERTICAL TANK EFFLUENT PIPING THAT EXTENDS FROM THE TANK TO UNDERGROUND SHALL HAVE (1) END WITH A CLASS 150 FLANGE ALONG WITH THE NECESSARY FLANGE GASKET (TO CONNECT TO THE VERTICAL PERFORATED PIPE WITHIN THE TANK), AND THE OTHER END SHALL BE A PLAIN END TO CONNECT TO THE 90° MECHANICAL JOINT, VERTICAL BEND UNDERGROUND. ALL NUTS & BOLTS FOR THE FLANGED END SHALL BE STAINLESS STEEL.

FITTINGS SHALL BE DUCTILE IRON AWWA C153 (MIN. P.R. 250 PSI) WITH MECHANICAL JOINTS CONFORMING TO AWWA C111. ALL NUTS & BOLTS FOR THE FITTINGS SHALL BE STAINLESS STEEL. ALL FITTINGS SHALL BE WRAPPED IN 6mm PLASTIC.

THE DUCTILE IRON PIPE & FITTINGS SHALL HAVE AN INTERIOR ASPHALTIC COATING WITH NO CEMENT MORTAR LINING.

ALL UNDERGROUND DUCTILE IRON PIPE SHALL BE WRAPPED WITH POLYWRAP.

CONCRETE THRUST BLOCKING SHALL BE PROVIDED AT ALL FITTINGS IN ACCORDANCE WITH THE NOTES & DETAILS ON SHEET 79 OF THE CONSTRUCTION PLANS.
- CONCRETE FOR THE PIPE ENCASEMENT AROUND BOTH THE 3" AND 10" PIPES WHERE THEY CROSS UNDER THE TANK FOUNDATION SHALL BE THE SAME CONCRETE MATERIAL USED FOR THE THRUST BLOCKING.
- THE CONCRETE ENCASEMENT SHALL BE 12" THICK AROUND THE PIPES AND SHALL EXTEND ALONG THE PIPES FOR (2) FEET IN EACH DIRECTION WHEN MEASURED FROM THE CENTER OF THE TANK FOOTING.

BEDDING FOR THE PIPE & FITTINGS SHALL BE COMPACTED #57 WASHED RIVER GRAVEL, AND BACKFILL SHALL BE COMPACTED EXCAVATED MATERIAL FROM THE TRENCH. SEE SHEET 79 FOR ADDITIONAL TRENCH NOTES & DETAILS.

NEW BACKWASH PIPING, VALVE, AND INCIDENTAL MATERIALS AND INSTALLATION (CONT'D)

BACKWASH TANK INTERIOR 3" VERTICAL PERFORATED PIPING:
THE 3" VERTICAL PERFORATED PIPE WITHIN THE NEW BACKWASH TANK SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
- PIPE MATERIAL SHALL BE CARBON STEEL, HOT DIPPED GALVANIZED AFTER FABRICATION.
- HOLES/PERFORATIONS SHALL BE 1/2" DIAMETER, 3" ON-CENTER, (4) SIDES STAGGERED.
- PROVIDE THE NECESSARY SUPPORTS FOR THE PROP. 3" VERTICAL PERFORATED PIPE; SUPPORTS SHALL BE ANCHORED TO THE TANK WALL AND SHALL BE AS RECOMMENDED BY THE TANK MANUFACTURER.
- ONE SECTION OF PIPE SHALL BE PROVIDED (NO JOINTS); APPROXIMATE LENGTH WILL BE 21'-10".
- THE END OF THE VERTICAL PIPE TOWARD THE BOTTOM OF THE TANK SHALL HAVE A CLASS 150 FLANGE SO THAT IT CAN BE BOLTED TO THE 3" DUCTILE IRON VERTICAL UNDERGROUND PIPE (SEE PREVIOUS NOTES ABOVE).
- THE END OF THE VERTICAL PIPE TOWARD THE TOP OF THE TANK SHALL BE PLAIN END AND OPEN.

TANK PERIMETER UNDERDRAIN AND INCIDENTALS:
THE 4" PERFORATED UNDERDRAIN SHALL BE CORRUGATED POLYETHYLENE DRAINAGE TUBING (AASHTO M252, TYPE CP).
- THE UNDERDRAIN SHALL BE WRAPPED WITH GEOTEXTILE FABRIC (ASTM D6707).
- THE UNDERDRAIN TRENCH SHALL BE LINED WITH GEOTEXTILE FABRIC (ASTM D6707).
- THE UNDERDRAIN TRENCH SHALL BE BEDDED & BACKFILLED WITH (2) FEET OF #8 WASHED PEA GRAVEL.
- THE TOP 6"-12" OF THE TRENCH SHALL BE A (3) FOOT WIDE WALKWAY CONSISTING OF #57 WASHED RIVER GRAVEL.

THE 4" UNDERDRAIN OUTLET PIPE SHALL BE PVC-SDR 35 (ASTM D3034), PUSH-ON JOINTS, WITH GASKETS CONFORMING TO ASTM D3212. BEDDING FOR THE PIPE SHALL BE COMPACTED #57 WASHED RIVER GRAVEL, AND BACKFILL SHALL BE COMPACTED EXCAVATED TRENCH MATERIAL.
- A RODENT GUARD SHALL BE PROVIDED ON THE OUTLET END OF THE PIPE.

FOR ADDITIONAL UNDERDRAIN NOTES & DETAILS, SEE SHEET 28.

CONCRETE FOR VALVE BOX & BY-PASS CONNECTION:
CONCRETE FOR THE 4' LONG BY 4' WIDE BY 6" THICK PAD TO BE PLACED AT GRADE AROUND THE VALVE BOXES AND THE VERTICAL BY-PASS CONNECTION PIPE SHALL BE PLANT MIX, 4,000 PSI 28-DAY-STRENGTH, AND SHALL BE REINFORCED WITH WIRE MESH. ALL MATERIALS SHALL BE IN ACCORDANCE WITH THE WEST VIRGINIA DEPARTMENT OF HIGHWAYS SPECIFICATIONS AND/OR THE PROJECT SPECIFICATIONS.

ALL NEW BACKWASH PIPING, VALVE, AND INCIDENTAL MATERIALS AND ALL EQUIPMENT, LABOR, AND INCIDENTALS FOR THE COMPLETE INSTALLATION OF THE MATERIALS (INCLUDING EXCAVATION, BEDDING, BACKFILL, SUPPORTS, ETC.) AS DESCRIBED IN THE NOTES ON THIS SHEET, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE EXTERIOR BACKWASH TANK, INCLUDING ALL INCIDENTALS, AS PER PLAN.

UNSUITABLE FOUNDATION SOILS

AFTER THE COMPLETE REMOVAL OF THE EXISTING BACKWASH TANK AND CORRESPONDING TANK FOUNDATION AND PRIOR TO THE INSTALLATION OF THE NEW TANK FOUNDATION, IF UNSUITABLE FOUNDATION SOILS ARE ENCOUNTERED, THE CONTRACTOR SHALL REMOVE THE UNSUITABLE MATERIAL, AND IT SHALL BE REPLACED WITH SUITABLE COMPACTED EMBANKMENT MATERIAL MEETING THE REQUIREMENTS OF ITEM 207 OF THE WEST VIRGINIA DEPARTMENT OF HIGHWAYS SPECIFICATIONS AND WITH THE PROJECT SPECIFICATIONS. THE LOCATIONS AND DIMENSIONS WILL BE AS DETERMINED BY THE CONSTRUCTION ENGINEER.
- ALL REMOVED UNSUITABLE MATERIAL SHALL BE PROPERLY DISPOSED OF.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & DISPOSAL OF ANY UNSUITABLE FOUNDATION SOILS AND FOR THE COMPLETE PROVIDING, PLACEMENT, & COMPACTION OF SUITABLE EMBANKMENT MATERIAL TO REPLACE THE REMOVED MATERIAL AS DESCRIBED IN THE NOTES ON THIS SHEET, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE CONTINGENCY QUANTITY BELOW, AS DIRECTED BY THE ENGINEER.

ITEM SPECIAL – CONTINGENCY UNSUITABLE FOUNDATION SOILS 46 CU. YD.

APPROXIMATE ELEVATION OF THE SOIL BORING TAKEN AT THE PARK SITE IS APPROXIMATELY 6" BELOW THE WTP SITE ELEVATION AT THE BACKWASH TANK.

Layne
WATER · MINERAL · ENERGY

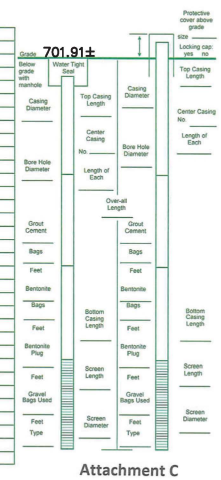
Daily Log

Job No. 1131626
Test Hole : Chester TH-1
TH Depth 58 ft
Size of Casing n/a Type n/a Slot n/a
Length of Screen n/a I.D. n/a
I.D. of Augers Used
Number of Split Spoons Taken
Development Time ___ hrs.
Steam Cleaning Time ___ hrs.
Class Level A B C D
Stand-By Time ___ hrs.
Misc: Test hole drilled by Mark and Alex Duncan of HD Sonic. Test hole drilled in Chester Upper End Park and Playground (see attached map)

Date 08/26/2021

Depth	Formation Log
0'-8'	Brown clayey topsoil with sand.
10'-13'	Gray clay, soft, not much sand.
13'-18'	Gray clay, soft, with sand stringers.
18'-18.5'	Medium to fine gray sand with silt
18.5'-24'	Gray clay, soft, with sand.
24'-29'	Fine gray sand, with interbeds of gray clay.
29'-35'	Gray, stiff, gravelly clay. Gravel is angular.
35'-41'	Gray clay, soft.
41'-48'	Fine gray sand with silt.
48'-53'	Gray-brown clay with gravel.
53'-58'	Weathered shale and limestone. (dry)
	End of testhole.

Depth	Formation Log



Attachment C

SOILS REPORT FOR NEW BACKWASH TANK FOUNDATION

ONE (1) PRELIMINARY SOIL BORING WITHIN THE GENERAL VICINITY OF THE PROJECT SITE WAS PREVIOUSLY PERFORMED BY OTHERS AND WAS PROVIDED TO THE ENGINEER IN ORDER TO OBTAIN SOME GENERAL/PRELIMINARY INFORMATION ON THE EXISTING SOIL STRATA/SUBSURFACE CONDITIONS.
- BASED UPON THE PRELIMINARY INFORMATION PROVIDED IN THE PRELIMINARY SOIL BORING LOG, A SOIL BEARING CAPACITY OF 2000 PSF HAS BEEN PRELIMINARILY ASSUMED.
- A COPY OF THE PRELIMINARY SOIL BORING LOG IS SHOWN ABOVE AND IS FOR REFERENCE PURPOSES ONLY.

ALTHOUGH ONE (1) PRELIMINARY SOIL BORING LOG HAS BEEN PROVIDED FOR REFERENCE PURPOSES AS STATED ABOVE, THE ENGINEER MAKES NO GUARANTEE OF THE EXISTING SOIL STRATA/SUBSURFACE CONDITIONS WITHIN THE PERTINENT PORTION OF THE WTP PROPERTY FOR THE DESIGN OF THE FOUNDATION FOR THE NEW BACKWASH TANK. THE CONTRACTOR WILL BE REQUIRED TO PERFORM THE FOLLOWING IN ORDER FOR THE TANK MANUFACTURER TO HAVE THE RELEVANT INFORMATION FOR THE DESIGN OF THE FOUNDATION FOR THE NEW BACKWASH TANK.
- A LICENSED, QUALIFIED GEOTECHNICAL ENGINEER (HIRED BY THE CONTRACTOR) SHALL PERFORM THE NECESSARY SUBSURFACE INVESTIGATIONS WITHIN THE PERTINENT PORTION OF THE WTP PROPERTY IN ORDER TO OBTAIN AN ACCURATE REPRESENTATION OF THE SUBSURFACE CONDITIONS. THE LOCATION AND NUMBER OF SUBSURFACE INVESTIGATIONS SHALL BE IN THE PROFESSIONAL JUDGMENT OF THE LICENSED, QUALIFIED GEOTECHNICAL ENGINEER.
- THE CONTRACTOR'S LICENSED, QUALIFIED GEOTECHNICAL ENGINEER SHALL PERFORM THE NECESSARY MATERIAL TESTS & ASSESSMENTS INCLUDING CLASSIFICATION, GRADATION, ETC. IN ORDER TO PROPERLY CLASSIFY THE MATERIALS AND TO DETERMINE THE BEARING CAPACITY OF THE SOIL.
- A SOILS REPORT SHALL BE PREPARED & PROVIDED TO THE CONSTRUCTION ENGINEER FOR REVIEW PRIOR TO SUBMITTING IT TO THE MANUFACTURER FOR THEIR DESIGN OF THE FOUNDATION FOR THE NEW BACKWASH TANK.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE NECESSARY SUBSURFACE INVESTIGATIONS AS DESCRIBED IN THE NOTES ON THIS SHEET, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE EXTERIOR BACKWASH TANK, INCLUDING ALL INCIDENTALS, AS PER PLAN.

0 HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

NEW EXTERIOR BACKWASH TANK
GENERAL NOTES

CITY OF CHESTER
WATER SYSTEM IMPROVE.

NEW EXTERIOR BACKWASH TANK

THE FOLLOWING IS RELATIVE TO THE PROVIDING OF ALL MATERIALS AND INSTALLATION OF THE NEW EXTERIOR BACKWASH TANK AT THE WATER TREATMENT PLANT SITE.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

THE TEMPORARY BACKWASH TANK SYSTEM SHALL REMAIN IN SERVICE UNTIL THE NEW EXTERIOR BACKWASH TANK IS FULLY OPERATIONAL.

DURING INSTALLATION THE NEW EXTERIOR BACKWASH TANK, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, WATER TREATMENT PLANT BUILDING, AND ANY OTHER WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS FOR THE NEW EXTERIOR BACKWASH TANK SHALL BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR WILL NOT BE PERMITTED TO FABRICATE THEIR OWN EXTERIOR BACKWASH TANK. ALL EQUIPMENT/MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT EQUIPMENT/MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED. THE CONTRACTOR SHALL COORDINATE ALL NECESSARY MATERIALS WITH THE MANUFACTURER NEW EXTERIOR BACKWASH TANK.

GENERAL:

SCOPE OF WORK: THE TYPE OF TANK DETAILED IN THE CONSTRUCTION PLANS AND SPECIFICATIONS IS A PRE-FABRICATED, FACTORY APPLIED GLASS-FUSED-TO-STEEL, BOLT TOGETHER, CARBON STEEL, ABOVE GROUND, WATER STORAGE TANK WITH A RADIALLY SECTIONED ROOF FABRICATED FROM GLASS-COATED, BOLTED STEEL PANELS AND CORRESPONDING REINFORCED CONCRETE FOUNDATION. NOTE: THE NOTES, DETAILS, AND SPECIFICATIONS ARE PROVIDED FOR REFERENCE PURPOSES ONLY AND MAY VARY DEPENDING ON THE MANUFACTURER.

ALL REQUIRED LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS SHALL BE INCLUDED FOR A COMPLETE INSTALLATION.

QUALIFICATIONS OF TANK SUPPLIER:
THE REFERENCE INFORMATION PROVIDED IN THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS ARE BASED UPON AN ABOVE GROUND, FACTORY APPLIED GLASS-FUSED-TO-STEEL BOLT TOGETHER CARBON STEEL WATER STORAGE TANK FOR THIS FACILITY WHICH HAS BEEN PREDICATED UPON THE DESIGN CRITERIA, CONSTRUCTION METHODS SPECIFIED, AND OPTIMUM COATING FOR RESISTANCE TO INTERNAL AND EXTERNAL TANK SURFACE CORROSION.

THE BIDDER SHALL OFFER A NEW TANK STRUCTURE FROM A MANUFACTURER SPECIALIZING IN THE DESIGN, FABRICATION, AND ERECTION OF AN APPLICABLE TANK SYSTEM.

MANUFACTURERS WILL BE REQUIRED TO MEET THE EXPERIENCE REQUIREMENTS DESCRIBED IN SECTION 1.2.5.

ADHERENCE TO THE STANDARDS OF DESIGN; FABRICATION; ERECTION; PRODUCT QUALITY; AND LONG TERM PERFORMANCE, ESTABLISHED BY WVDHHR, ANSI, AWWA, ETC. SPECIFICATIONS WILL BE REQUIRED BY THE OWNER AND ENGINEER.

- THE TANK INSTALLATION AS SHOWN ON THE PLANS AND SPECIFIED HEREIN, IS BASED ON THE EQUIPMENT FURNISHED BY ONE MANUFACTURER. A TANK WHICH IS OFFERED AS A SUBSTITUTE TO THE SPECIFIC REQUIREMENTS OF THESE SPECIFICATIONS AND WHICH DIFFERS IN DETAIL AND ARRANGEMENT FROM THAT SHOWN MAY REQUIRE CHANGES IN DESIGN AND CONSTRUCTION. ALL COSTS WHICH RESULT FROM SUCH CHANGES IN DESIGN AND CONSTRUCTION ARE TO BE BORNE ENTIRELY AND UNCONDITIONALLY BY THE MANUFACTURER; SAID COSTS TO INCLUDE BUT NOT BE LIMITED TO STRUCTURAL, PIPING, MECHANICAL CHANGES, ETC.

TO DEMONSTRATE BIDDER'S QUALIFICATIONS TO PERFORM THE WORK, AFTER SUBMITTING ITS BID AND WITHIN (14) DAYS OF OWNER'S REQUEST, THE BIDDER SHALL SUBMIT THE FOLLOWING INFORMATION:

- TYPICAL STRUCTURE AND FOUNDATION DRAWING(S).
- LIST OF TANK MATERIALS, APPURTENANCES AND TANK COATING SPECS.
- LIST OF FIVE (5) TANKS (FROM SEPARATE PROJECTS) PRESENTLY IN POTABLE WATER SERVICE, OF SIZE AND CHARACTER SPECIFIED HEREIN, OPERATING SATISFACTORILY FOR A MINIMUM OF FIVE (5) YEARS, INCLUDING THE NAME AND TELEPHONE NUMBER OF OWNER AND ENGINEER. THE TANKS LISTED SHALL HAVE BEEN MANUFACTURED IN THE PRESENT PRODUCTION FACILITY; NOT BY A PREDECESSOR COMPANY IN A DIFFERENT FACILITY.
- CERTIFICATION FROM TANK MANUFACTURER THAT THE TANK MEETS ALL APPLICABLE AND PERTINENT DESIGN STANDARDS.
- ANY OTHER PERTINENT INFORMATION REQUESTED.

NEW EXTERIOR BACKWASH TANK (CONT'D)

GENERAL (CONT'D):

SUBMITTAL DRAWINGS AND SPECIFICATIONS:
CONSTRUCTION SHALL BE GOVERNED BY THE DRAWINGS AND SPECIFICATIONS PROVIDED BY THE TANK MANUFACTURER, AFTER WRITTEN APPROVAL BY THE ENGINEER. THERE SHALL BE NO DEVIATION FROM THE TANK MANUFACTURER'S DRAWINGS AND SPECIFICATIONS, EXCEPT UPON WRITTEN ORDER FROM THE ENGINEER.

THE BIDDER IS REQUIRED TO FURNISH, FOR THE APPROVAL OF THE ENGINEER AND AT NO INCREASE IN CONTRACT PRICE, AN ELECTRONIC FILE OF COMPLETE SPECIFICATIONS AND CONSTRUCTION DRAWINGS REQUIRED FOR A COMPLETE MANUFACTURING AND CONSTRUCTION FOR ALL TANK INCIDENTALS (TANK STRUCTURE, ROOF STRUCTURE, FOUNDATION, ETC.). A COMPLETE SET OF STRUCTURAL CALCULATIONS SHALL BE PROVIDED FOR THE TANK STRUCTURE, ROOF STRUCTURE, AND FOUNDATION. ALL SUCH SUBMISSIONS SHALL BE STAMPED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF WEST VIRGINIA, AS WELL AS, BY A REGISTERED PROFESSIONAL ENGINEER EMPLOYED ON THE TANK MANUFACTURER'S ENGINEERING STAFF.

IN ADDITION TO THE AFOREMENTIONED INFORMATION, THE SHOP DRAWINGS SHOULD ALSO INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING INFORMATION:

- TANK FOUNDATION: DETAILED FOUNDATION CONSTRUCTION DRAWINGS (I.E. GENERAL NOTES, FOUNDATION SCHEMATIC/PLAN/SECTION VIEWS, ANCHOR BOLT & LEVELING PLATE PLACEMENT, ETC.); MATERIALS SCHEDULE; FASTENER SCHEDULE; PARTS LIST; AND ANY OTHER ADDITIONAL INFORMATION NECESSARY FOR THE COMPLETE CONSTRUCTION OF THE TANK FOUNDATION.
- PRE-FABRICATED TANK AND ROOF STRUCTURE: DETAILED TANK AND ROOF CONSTRUCTION DRAWINGS (I.E. GENERAL NOTES, TANK & ROOF SCHEMATIC/PLAN/SECTION VIEWS, ACCESS LADDER DETAILS, ACCESS DOOR(S) DETAILS, OVERFLOW PIPE DETAILS, TANK WATERLINE DETAILS, FASTENER DETAILS, ANCHOR DETAILS, COATING/PAINT/CATHODIC PROTECTION DETAILS, ETC.); MATERIALS SCHEDULE; FASTENER SCHEDULE; ANCHORING SCHEDULE; PARTS LIST; AND ANY OTHER ADDITIONAL INFORMATION NECESSARY FOR THE COMPLETE CONSTRUCTION OF THE TANK & ROOF.

WHEN ACCEPTED, SUBMITTAL INFORMATION WILL BE RETURNED TO THE BIDDER ELECTRONICALLY, AND THESE DRAWINGS WILL THEN GOVERN FOR THE WORK DETAILED THEREON. THE ACCEPTANCE BY THE ENGINEER OF THE TANK SUPPLIER'S DRAWINGS SHALL BE AN ACCEPTANCE RELATING ONLY TO THEIR GENERAL CONFORMITY WITH THE BIDDING DRAWINGS AND SPECIFICATIONS AND SHALL NOT GUARANTEE DETAIL DIMENSIONS AND QUANTITIES, WHICH REMAINS THE BIDDER'S RESPONSIBILITY.

THE TANK MANUFACTURER'S AND INSTALLING CONTRACTOR'S STANDARD PUBLISHED WARRANTY SHALL BE INCLUDED WITH SUBMITTAL INFORMATION.

DESIGN CRITERIA:

TANK SIZE:
THE FACTORY COATED GLASS-FUSED-TO-STEEL, BOLT TOGETHER TANK SHALL HAVE A NOMINAL DIAMETER OF 19'-7"±, WITH A NOMINAL SIDEWALL HEIGHT OF 23'-10"±.

TANK CAPACITY:
TANK CAPACITY SHALL BE 53,000± GALLONS (NOMINAL, U.S. GALLONS).

FLOOR ELEVATION:
FINISHED FLOOR ELEVATION SHALL BE SET AT THE ELEVATION DESIGNATED ON THE CONSTRUCTION DRAWINGS AND SHALL MATCH THE FINISHED FLOOR ELEVATION OF THE EXISTING TANK.

TANK DESIGN STANDARDS:
THE MATERIALS, DESIGN, FABRICATION AND ERECTION OF THE BOLT TOGETHER TANK SHALL CONFORM TO THE AWWA STANDARD FOR "FACTORY COATED BOLTED STEEL TANKS FOR WATER STORAGE" - ANSI/AWWA D103, LATEST REVISION.

THE TANK COATING SYSTEM SHALL CONFORM SOLELY TO SECTION 12.4 OF ANSI/AWWA D103. NOTE: BAKED-ON EPOXY PAINTED, GALVANIZED, OR STAINLESS STEEL BOLT-TOGETHER TANKS ARE NOT CONSIDERED EQUAL.

THE VITREOUS COATING ON THE TANK, BOLT HEAD ENCAPSULATION MATERIAL, AND JOINT SEALANT SHALL HAVE BEEN APPROVED FOR LISTING UNDER ANSI/NSF STANDARD 600 FOR INDIRECT ADDITIVES.

THE TANK MANUFACTURER SHALL BE ISO-9001 CERTIFIED TO ASSURE PRODUCT QUALITY.

THE TANK MANUFACTURER SHALL UNDERGO AN ANNUAL FM (FACTORY MUTUAL) INSPECTION OF THEIR GLASS-COATED, BOLTED-STEEL TANK FACTORY & PROVIDE WRITTEN PROOF THEREOF TO ASSURE QUALITY.

FOR REFERENCE PURPOSES, EXHIBIT DRAWINGS OF THE PRE-FABRICATED ABOVE GROUND STORAGE TANK; OF THE PRE-FABRICATED RADIALLY SECTIONED ROOF; AND OF THE REINFORCED CONCRETE FOUNDATION ARE SHOWN IN THE CONSTRUCTION DRAWINGS IN ORDER TO IDENTIFY TYPICAL TANK CONSTRUCTION COMPONENTS. THE PRE-FABRICATED ABOVE GROUND STORAGE TANK; PRE-FABRICATED RADIALLY SECTIONED ROOF; AND OF THE REINFORCED CONCRETE FOUNDATION SHALL BE SIMILAR IN CONSTRUCTION TO THE EXAMPLES WITH THE ACKNOWLEDGMENT THAT COMPONENTS MAY VARY DEPENDING ON THE MANUFACTURER'S ACTUAL DESIGN.

NEW EXTERIOR BACKWASH TANK (CONT'D)

DESIGN CRITERIA (CONT'D):

FOUNDATION DESIGN:
THE TANK FOUNDATION DESIGN SHALL BE BASED UPON A SOILS EXPLORATION REPORT PROVIDED BY THE CONTRACTOR. SEE SHEET 34 FOR SOILS INVESTIGATIONS REQUIREMENTS. ONE (1) PRELIMINARY SOIL BORING WITHIN THE GENERAL VICINITY OF THE PROJECT SITE WAS PREVIOUSLY PERFORMED BY OTHERS AND WAS PROVIDED TO THE ENGINEER IN ORDER TO OBTAIN SOME GENERAL/PRELIMINARY INFORMATION ON THE EXISTING SOIL STRATA/SUBSURFACE CONDITIONS.

- BASED UPON THE PRELIMINARY INFORMATION PROVIDED IN THE PRELIMINARY SOIL BORING LOG, A SOIL BEARING CAPACITY OF 2000 PSF HAS BEEN PRELIMINARILY ASSUMED.
- A COPY OF THE PRELIMINARY SOIL BORING LOG IS SHOWN ON SHEET 34 AND IS FOR REFERENCE PURPOSES ONLY.

ALL CONCRETE, REINFORCING STEEL, AND ALL OTHER INCIDENTALS NECESSARY FOR THE DESIGN AND COMPLETE INSTALLATION OF THE TANK FOUNDATION SHALL BE IN ACCORDANCE WITH THE PERTINENT WEST VIRGINIA DOH SPECIFICATIONS AND/OR PROJECT SPECIFICATIONS.

FOR REFERENCE PURPOSES, GENERAL TANK FOUNDATION DRAWINGS ARE SHOWN IN THE CONSTRUCTION DRAWINGS ON SHEET 29 IN ORDER TO IDENTIFY POSSIBLE FOUNDATION COMPONENTS WITH THE ACKNOWLEDGMENT THAT THE ACTUAL TANK FOUNDATION DESIGN MAY BE DIFFERENT BASED UPON FINAL CALCULATIONS BY THE MANUFACTURER.

FOUNDATION PLANS ARE TO BE PREPARED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF WEST VIRGINIA, AS WELL AS, BY A REGISTERED PROFESSIONAL ENGINEER EMPLOYED ON THE TANK MANUFACTURER'S ENGINEERING STAFF.

DESIGN LOADS:

- SPECIFIC GRAVITY (DETERMINED BY THE MANUFACTURER)
- WIND VELOCITY (PER STATE OF WEST VIRGINIA REQUIREMENTS)
- SHAPE FACTOR (DETERMINED BY THE MANUFACTURER)
- ALLOWABLE SOIL BEARING (REFER TO GEOTECHNICAL REPORT)
- ROOF SNOW LOAD (PER STATE OF WEST VIRGINIA REQUIREMENTS)
- SEISMIC (PER STATE OF WEST VIRGINIA REQUIREMENTS)
- THE ABOVE GROUND TANK STORAGE TANK SHALL BE DESIGNED TO SUPPORT ALL ATTACHMENTS, APPURTENANCES, AND INCIDENTALS TO BE PROVIDED AND INSTALLED BY THE TANK MANUFACTURER. IT IS ANTICIPATED THAT THE TANK'S INTERIOR, VERTICAL, PERFORATED EFFLUENT PIPE WILL NEED TO BE SECURED TO THE INTERIOR TANK WALL WITH THE NECESSARY BRACKETS AS PART OF THIS PROJECT. PER AWWA D103, ALL ATTACHMENTS MADE TO THE TANK SHALL BE DESIGNED SO THAT NO SIGNIFICANT LOAD IS IMPARTED ON THE TANK WALL.

WVDHHR STANDARDS:
THE DESIGN, MANUFACTURING, AND CONSTRUCTION OF THE TANK SHALL BE IN ACCORDANCE WITH THE PERTINENT CURRENT WEST VIRGINIA DEPARTMENT OF HEALTH AND HUMAN RESOURCES (WVDHHR) STANDARDS AS IT RELATES TO THE MANUFACTURING AND INSTALLATION OF THE ABOVE GROUND STEEL WATER STORAGE TANK.

MATERIALS SPECIFICATIONS:

PLATES AND SHEETS:
NOTE: ALL STEEL SHALL BE SMELTED AND PRODUCED IN THE U.S.A.

PLATES AND SHEETS USED IN THE CONSTRUCTION OF THE TANK SHELL, TANK FLOOR (OPTIONAL) OR TANK ROOF (OPTIONAL), SHALL COMPLY WITH THE MINIMUM STANDARDS OF AWWA D103, SECTION 4.4.

DESIGN REQUIREMENTS FOR MILD STRENGTH STEEL SHALL BE ASTM A1011 GRADE 30 WITH A MAXIMUM ALLOWABLE TENSILE STRESS OF 18,000 PSI.

DESIGN REQUIREMENTS FOR HIGH STRENGTH STEEL SHALL BE ASTM A1011 GRADE 50 WITH A MAXIMUM ALLOWABLE TENSILE STRESS OF 30,000 PSI.

THE ANNEALING EFFECT CREATED FROM THE GLASS COATED FIRING PROCESS SHALL BE CONSIDERED IN DETERMINING ULTIMATE STEEL STRENGTH. IN NO EVENT SHALL A YIELD STRENGTH GREATER THAN 50,000 PSI BE UTILIZED FOR CALCULATIONS DETAILED IN AWWA D103, SECTION 5.3.

MULTIPLE VERTICAL BOLT LINE SHEETS AND PLATES OF ASTM A1011 GRADE 50 ONLY SHALL BE MANUFACTURED SUCH THAT HOLES ARE STAGGERED IN THE VERTICAL BOLT LINES AND THAT NO TWO ADJOINING HOLES ARE IN-LINE HORIZONTALLY, EXCEPT AT THE CENTER OF THE SHEET OR PLATE.

- BOLT SEAM DESIGN SHALL GENERALLY BE IN ACCORDANCE WITH THE REQUIREMENTS OF AWWA D103 SECTION 5.5.2; BOLT SPACING MAY BE ADJUSTED IN THE VERTICAL BOLT LINES TO INCREASE THE NET SECTION AND IMPROVE JOINT EFFICIENCY TO A MAXIMUM OF 85%.
- DOUBLE SHEETING OF TANK PANELS SHALL NOT BE PERMITTED TO ACHIEVE STRUCTURAL SIDEWALL THICKNESS REQUIREMENTS.

ROLLED STRUCTURAL SHAPES:
MATERIAL SHALL CONFORM TO MINIMUM STANDARDS OF ASTM A36 OR ASTM A992.

0 HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

NEW EXTERIOR BACKWASH TANK
GENERAL NOTES

CITY OF CHESTER
WATER SYSTEM IMPROVE.

NEW EXTERIOR BACKWASH TANK (CONT'D)

MATERIALS SPECIFICATIONS (CONT'D):

HORIZONTAL WIND STIFFENERS:
DESIGN REQUIREMENTS FOR INTERMEDIATE HORIZONTAL WIND STIFFENERS SHALL BE OF THE "WEB TRUSS" DESIGN WITH EXTENDED TAIL TO CREATE MULTIPLE LAYERS OF STIFFENER, PERMITTING WIND LOAD TO TRANSFER AROUND TANK.

WEB TRUSS STIFFENERS SHALL BE OF STEEL WITH HOT DIPPED GALVANIZED COATING.

ROLLED STEEL ANGLE STIFFENERS ARE NOT PERMITTED FOR INTERMEDIATE STIFFENERS.

BOLT FASTENERS:
BOLTS USED IN TANK LAP JOINTS SHALL BE 1/2" – 13 UNC– 2A ROLLED THREAD, AND SHALL MEET THE MINIMUM REQUIREMENTS OF AWWA D103, SECTION 4.2.

BOLT MATERIAL
- –SAE J429 (1" AND 1–1/4" BOLT LENGTH) HEAT TREATED TO:
  - –TENSILE STRENGTH – 120,000 PSI MIN.
  - –PROOF LOAD – 85,000 PSI MIN.
  - –ALLOWABLE SHEAR STRESS – 29,454 PSI.
- –SAE J429 (>1–1/4" BOLT LENGTH) HEAT TREATED TO:
  - –TENSILE STRENGTH – 150,000 PSI MIN.
  - –PROOF LOAD – 120,000 PSI MIN.
  - –ALLOWABLE SHEAR STRESS – 36,818 PSI.

BOLT FINISH – ZINC, MECHANICALLY DEPOSITED.
- –2.0 MILS MINIMUM – UNDER BOLT HEAD, ON SHANK AND THREADS

BOLT HEAD ENCAPSULATION
- –HIGH IMPACT POLYPROPYLENE CO–POLYMER ENCAPSULATION OF ENTIRE BOLT HEAD UP TO THE SPLINES ON THE SHANK.
- –NATURAL RESIN WITH UV (ULTRAVIOLET) LIGHT INHIBITOR. COLOR TO BE BLACK.

ALL TANK SHELL BOLTS SHALL BE INSTALLED SUCH THAT THE HEAD PORTION IS LOCATED INSIDE THE TANK, AND THE WASHER AND NUT ARE ON THE EXTERIOR.

ALL LAP JOINT BOLTS SHALL BE PROPERLY SELECTED SUCH THAT THREADED PORTIONS WILL NOT BE EXPOSED IN THE "SHEAR PLANE" BETWEEN TANK SHEETS. ALSO, BOLT LENGTHS SHALL BE SIZED AS TO ACHIEVE A NEAT AND UNIFORM APPEARANCE. EXCESSIVE THREADS EXTENDING BEYOND THE NUT AFTER TORQUING WILL NOT BE PERMITTED.

ALL LAP JOINT BOLTS SHALL INCLUDE A MINIMUM OF FOUR (4) SPLINES ON THE UNDERSIDE OF THE BOLT HEAD AT THE SHANK IN ORDER TO RESIST ROTATION DURING TORQUING.

ALL EXTERIOR NUTS, WASHERS, AND BOLT THREADS WILL BE COVERED WITH A SEALER–FILLED PROTECTIVE PLASTIC COVER. COLOR TO MATCH TANK SHELL.

SEALANTS:
THE LAP JOINT SEALANT SHALL BE A ONE COMPONENT, MOISTURE CURED, POLYURETHANE COMPOUND. THE SEALANT SHALL BE SUITABLE FOR CONTACT WITH POTABLE WATER AND MEET APPLICABLE FDA TITLE 21 REGULATIONS, AS WELL AS, ANSI/NSF ADDITIVES STANDARD 600.

THE SEALANT SHALL BE USED TO SEAL LAP JOINTS, BOLT CONNECTIONS AND SHEET EDGES. THE SEALANT SHALL CURE TO A RUBBER LIKE CONSISTENCY, HAVE EXCELLENT ADHESION TO THE GLASS COATING, HAVE LOW SHRINKAGE, AND BE SUITABLE FOR INTERIOR AND EXTERIOR EXPOSURE.

SEALANT CURING RATE AT 73°F AND 50% RH
- –TACK–FREE TIME: 6 TO 8 HOURS.
- –FINAL CURE TIME: 10 TO 12 DAYS.

THE SEALANT SHALL BE ESPC SYSTEM SEALER NO. 98.

NEOPRENE GASKETS AND TAPE TYPE SEALER SHALL NOT BE USED.

GLASS COATING SPECIFICATION:

SURFACE PREPARATION:
FOLLOWING THE DECOILING AND SHEARING PROCESS, SHEETS SHALL BE STEEL GRIT–BLASTED ON BOTH SIDES TO THE EQUIVALENT OF SSPC–10. SAND BLASTING AND CHEMICAL PICKLING OF STEEL SHEETS IS NOT ACCEPTABLE.

THE SURFACE ANCHOR PATTERN SHALL BE NOT LESS THAN 1.0 MIL.

THESE SHEETS SHALL BE EVENLY OILED ON BOTH SIDES TO PROTECT THEM FROM CORROSION DURING FABRICATION.

NEW EXTERIOR BACKWASH TANK (CONT'D)

GLASS COATING SPECIFICATION (CONT'D):

CLEANING:
PRIOR TO INITIAL PREPARATION ALL FOUR (4) EXPOSED RECTANGULAR CONTINUOUS SHEET EDGES, INCLUDING STARTER SHEETS, FOR EACH SPECIFIC SHEET RADII SHALL BE MECHANICALLY ROUNDED IN PROFILE AND ADHERE TO THE PORCELAIN ENAMELING INSTITUTE'S TECHNICAL MANUAL PEI–101. ALL FOUR (4) EXPOSED SHEET EDGES WILL THEN BE COATED WITH THE SAME VITREOUS ENAMEL AS THE GLASS COATING OF THE SHEETS. SHEET EDGE ENCAPSULATION WILL HAVE A MINIMUM 5 MILS THICKNESS ENAMEL COATING. ROUNDED SHEET EDGE ENCAPSULATION WILL HAVE ZERO EXPOSED UNCOATED STEEL. SEALER OR GLASS OVERSPRAY AS EDGE COATING SHALL NOT BE ACCEPTABLE.

AFTER EDGECOATING AND PRIOR TO APPLICATION OF THE COATING SYSTEM, ALL SHEETS SHALL BE THOROUGHLY CLEANED BY A CAUSTIC WASH AND HOT RINSE PROCESS FOLLOWED IMMEDIATELY BY HOT AIR DRYING.

INSPECTION OF THE SHEETS SHALL BE MADE FOR TRACES OF FOREIGN MATTER OR RUST. ANY SUCH SHEETS SHALL BE RE–CLEANED OR GRIT–BLASTED TO AN ACCEPTABLE LEVEL OF QUALITY.

COATING:
ALL SHEETS SHALL RECEIVE ONE COAT OF A CATALYTIC NICKEL–OXIDE GLASS PRECOAT TO BOTH SIDES AND THEN AIR DRIED.

ANOTHER COAT OF MILLED COBALT BLUE GLASS SHALL BE APPLIED TO BOTH SIDES OF THE SHEETS AND THEN DRIED.

A THIRD COAT OF MILLED TITANIUM DIOXIDE WHITE GLASS SHALL BE APPLIED TO ALL WETTED SURFACES WHICH MUST BE AN 18 TO 22 PERCENT TITANIUM DIOXIDE REINFORCED MIXTURE. AN ACCEPTABLE ALTERNATE THREE COAT TWO FIRE SYSTEM MUST BE SUBMITTED WITH THE BID INFORMATION.

THE SHEETS SHALL THEN BE FIRED AT A MINIMUM TEMPERATURE OF 1500° F IN STRICT ACCORDANCE WITH THE MANUFACTURER'S ISO 9001 QUALITY PROCESS CONTROL PROCEDURES, INCLUDING FIRING TIME, FURNACE HUMIDITY, TEMPERATURE CONTROL, ETC.

THE DRY FILM INTERIOR COATING THICKNESS SHALL BE 10.0 TO 18.0 MILS MINIMUM. THE FINISHED INSIDE COLOR SHALL BE WHITE (OR AS APPROVED BY THE OWNER).

THE DRY FILM EXTERIOR COATING THICKNESS SHALL BE 7.0 TO 15.0 MILS MINIMUM. THE FINISHED EXTERIOR COLOR SHALL BE COBALT BLUE (OR AS APPROVED BY THE OWNER).

THE SAME GLASS COATING AS APPLIED TO THE SHEET SURFACES SHALL BE APPLIED TO THE EXPOSED EDGES.

FACTORY INSPECTION:
THE MANUFACTURER'S QUALITY SYSTEM SHALL BE ISO 9001 CERTIFIED.

CHEMICAL RESISTANCE OF GLASS COATING
- –EVERY BATCH OF COMPONENT FRITS SHALL BE INDIVIDUALLY TESTED IN ACCORDANCE WITH PEI TEST T–21 (CITRIC ACID AT ROOM TEMPERATURE).

FACTORY HOLIDAY TEST
- –A DRY VOLT TEST USING A MINIMUM OF 1100 VOLTS IS REQUIRED.
- –FREQUENCY OF THE TEST SHALL BE EVERY SHEET. ANY SHEET REGISTERING A DISCONTINUITY SHALL BE REJECTED
- –ALL INSIDE SHEET SURFACES SHALL BE HOLIDAY FREE.

MEASUREMENT OF GLASS THICKNESS
- –GLASS THICKNESS SHALL BE MEASURED USING AN ELECTRONIC DRY FILM THICKNESS GAGE (MAGNETIC INDUCTION TYPE). THE THICKNESS GAGE SHALL HAVE A VALID CALIBRATION RECORD.
- –FREQUENCY OF THE TEST SHALL BE EVERY TENTH SHEET. THE THICKNESS OF THE GLASS SHALL BE BETWEEN 10.0 AND 18.0 MILS.

MEASUREMENT OF COLOR
- –THE EXTERIOR COLOR OF THE SHEETS SHALL BE MEASURED USING A COLORIMETER. THE COLORIMETER SHALL HAVE A VALID CALIBRATION RECORD.
- –FREQUENCY OF THE TEST SHALL BE EVERY TENTH SHEET. THE COLOR MUST FALL WITHIN THE TOLERANCE SPECIFIED BY THE MANUFACTURER, ELSE THE PANEL SHALL BE REJECTED.

IMPACT ADHERENCE TEST
- –THE ADHERENCE OF THE GLASS COATING TO THE STEEL SHALL BE TESTED IN ACCORDANCE WITH ASTM B916–01. ANY SHEET THAT HAS POOR ADHERENCE SHALL BE REJECTED.
- –FREQUENCY OF THIS TEST SHALL BE ONE SHEET PER GAGE LOT RUN MINIMUM.

NEW EXTERIOR BACKWASH TANK (CONT'D)

GLASS COATING SPECIFICATION (CONT'D):

FISHSCALE TEST
- –THE GLASS COATING SHALL BE TESTED FOR FISHSCALE BY PLACING THE FULL SIZE PRODUCTION SHEETS IN AN OVEN AT 400° F FOR ONE HOUR. THE SHEETS WILL THEN BE EXAMINED FOR SIGNS OF FISHSCALE. ANY SHEET EXHIBITING FISHSCALE SHALL BE REJECTED AND ALL SHEETS FROM THAT GAGE LOT WILL BE SIMILARLY TESTED.
- –FREQUENCY OF THIS TEST SHALL BE ONE SHEET PER GAGE LOT RUN MINIMUM.

PACKAGING:
ALL APPROVED SHEETS SHALL BE PROTECTED FROM DAMAGE PRIOR TO PACKING FOR SHIPMENT.

HEAVY PAPER OR PLASTIC FOAM SHEETS SHALL BE PLACED BETWEEN EACH PANEL TO ELIMINATE SHEET–TO–SHEET ABRASION DURING SHIPMENT.

INDIVIDUAL STACKS OF PANELS WILL BE WRAPPED IN HEAVY MIL BLACK PLASTIC AND STEEL BANDED TO SPECIAL WOOD PALLETS BUILT TO THE ROLL–RADIUS OF THE TANK PANELS. THIS PROCEDURE ELIMINATES CONTACT OR MOVEMENT OF FINISHED PANELS DURING SHIPMENT.

SHIPMENT FROM THE FACTORY TO THE JOB SITE WILL BE BY TRUCK, HAULING THE TANK COMPONENTS EXCLUSIVELY. NO COMMON CARRIER, DROP, OR TRANSFER SHIPMENTS.

ERECTION:

FOUNDATION:
THE TANK FOUNDATION SHALL BE DESIGNED BY THE MANUFACTURER TO SAFELY SUSTAIN THE STRUCTURE AND ITS LIVE LOADS.

THE TANK FOUNDATION DESIGN SHALL BE BASED UPON A SOILS EXPLORATION REPORT PROVIDED BY THE CONTRACTOR. SEE SHEET 34 FOR SOILS INVESTIGATIONS REQUIREMENTS. ONE (1) PRELIMINARY SOIL BORING WITHIN THE GENERAL VICINITY OF THE PROJECT SITE WAS PREVIOUSLY PERFORMED BY OTHERS AND WAS PROVIDED TO THE ENGINEER IN ORDER TO OBTAIN SOME GENERAL/PRELIMINARY INFORMATION ON THE EXISTING SOIL STRATA/SUBSURFACE CONDITIONS.
- –BASED UPON THE PRELIMINARY INFORMATION PROVIDED IN THE PRELIMINARY SOIL BORING LOG, A SOIL BEARING CAPACITY OF 2000 PSF HAS BEEN PRELIMINARILY ASSUMED.
- –A COPY OF THE PRELIMINARY SOIL BORING LOG IS SHOWN ON SHEET 34 AND IS FOR REFERENCE PURPOSES ONLY.
- –ALSO, SEE GENERAL TANK DETAILS ON SHEET 29.

FOUNDATION PLANS ARE TO BE PREPARED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF WEST VIRGINIA, AS WELL AS, BY A REGISTERED PROFESSIONAL ENGINEER EMPLOYED ON THE TANK MANUFACTURER'S ENGINEERING STAFF.

PRIOR TO PLACEMENT OF THE TANK FOUNDATION AND CONCRETE TANK FLOOR, THE CONTRACTOR SHALL PERFORM ANY NECESSARY UNSUITABLE FOUNDATION SOIL REMOVAL & REPLACEMENT PER THE NOTES ON SHEET 34 AND AS DIRECTED BY THE ENGINEER. IN ADDITION, ALL SUBGRADES SHALL BE PROPERLY COMPACTED.

CONCRETE TANK FLOOR:
THE FLOOR DESIGN IS OF REINFORCED CONCRETE WITH AN EMBEDDED GLASS COATED STEEL STARTER SHEET PER AWWA D103–09 SECTION 13.4.6 AND THE MANUFACTURER'S DESIGN, AND IS AN INTEGRAL ELEMENT OF THE TANK ASSEMBLY; THEREFORE THE TANK FOUNDATION AND FLOOR SLAB (PERFORMED IN TWO SEPARATE POURS) WITH EMBEDDED STARTER SHEET SHALL BE CONSTRUCTED BY THE TANK SUPPLIER USING MANUFACTURER TRAINED PERSONNEL REGULARLY ENGAGED IN THIS TYPE OF TANK CONSTRUCTION. SEE TANK DETAILS ON SHEET 29.

PRIOR TO PLACEMENT OF THE CONCRETE TANK FLOOR, THE SUBGRADE SHALL BE PROPERLY COMPACTED, AND THE CONTRACTOR SHALL PLACE 4" MINIMUM OF COMPACTED GRANULAR BACKFILL. SEE TANK DETAILS ON SHEET 29.

LEVELING OF THE STARTER RING SHALL BE REQUIRED AND THE MAXIMUM DIFFERENTIAL ELEVATION WITHIN THE RING SHALL NOT EXCEED ONE–EIGHTH (1/8) INCH, NOR EXCEED ONE–SIXTEENTH (1/16) INCH WITHIN ANY TEN (10) FEET OF LENGTH.

A LEVELING PLATE ASSEMBLY, CONSISTING OF TWO 18" ANCHOR RODS (3/4" DIA.) AND A SLOTTED PLATE (3 1/2" X 11" X 3/8" THK) SHALL BE USED TO SECURE THE STARTER RING, PRIOR TO ENCASEMENT IN CONCRETE. INSTALLATION OF THE STARTER RING ON CONCRETE BLOCKS OR BRICKS, USING SHIMS FOR ADJUSTMENT, IS NOT PERMITTED. THE FOUNDATION WITH ANCHOR BOLTS/LEVELING PLATES SHALL BE A SEPARATE POUR FROM THE CONCRETE FLOOR.

TWO WATER STOP SEALS MADE OF A BUTYL RUBBER ELASTOMER SPECIAL FOR THIS APPLICATION SHALL BE PLACED ON THE INSIDE SURFACE OF THE STARTER RING BELOW THE CONCRETE FLOOR LINE. THESE MATERIALS SHALL BE INSTALLED AS SPECIFIED BY THE TANK MANUFACTURER.

SIDEWALL STRUCTURE:
FIELD ERECTION OF THE GLASS–COATED, BOLTED–STEEL TANK SHALL BE IN STRICT ACCORDANCE WITH THE PROCEDURES OUTLINED IN THE MANUFACTURER'S ERECTION MANUAL, AND PERFORMED BY AN AUTHORIZED DEALER OF THE TANK MANUFACTURER, REGULARLY ENGAGED IN ERECTION OF THESE TANKS.

HORIZONTAL SCALE IN FEET 0

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

NEW EXTERIOR BACKWASH TANK
GENERAL NOTES

CITY OF CHESTER
WATER SYSTEM IMPROVE.

NEW EXTERIOR BACKWASH TANK (CONT'D)

ERECTION (CONT'D):

SPECIALIZED ERECTION JACKS AND BUILDING EQUIPMENT DEVELOPED AND MANUFACTURED BY THE TANK MANUFACTURER SHALL BE USED TO ERECT THE TANKS.

PARTICULAR CARE SHALL BE TAKEN IN HANDLING AND BOLTING OF THE TANK PANELS AND MEMBERS TO AVOID ABRASION OF THE COATING SYSTEM. PRIOR TO LIQUID TEST, ALL SURFACE AREAS SHALL BE VISUALLY INSPECTED BY THE ENGINEER.

AN ELECTRICAL HOLIDAY TEST SHALL BE PERFORMED DURING ERECTION USING A NINE (9) VOLT LEAK DETECTION DEVICE. ALL ELECTRICAL LEAK POINTS FOUND ON THE INSIDE SURFACE SHALL BE REPAIRED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TOUCH UP PROCEDURE USING URETHANE SEALER.

THE PLACEMENT OF SEALANT ON EACH PANEL MAY BE INSPECTED PRIOR TO PLACEMENT OF ADJACENT PANELS. HOWEVER, THE ENGINEER'S INSPECTION SHALL NOT RELIEVE THE BIDDER FROM HIS RESPONSIBILITY FOR LIQUID TIGHTNESS.

NO BACKFILL SHALL BE PLACED AGAINST THE TANK SIDEWALL WITHOUT PRIOR WRITTEN APPROVAL AND DESIGN REVIEW OF THE TANK MANUFACTURER. ANY BACKFILL SHALL BE PLACED ACCORDING TO THE STRICT INSTRUCTIONS OF THE TANK MANUFACTURER.

ROOF:

THE TANK SHALL INCLUDE A RADIALLY SECTIONED ROOF FABRICATED FROM GLASS-COATED, BOLTED STEEL PANELS, AS PRODUCED BY THE TANK MANUFACTURER, AND SHALL BE ASSEMBLED IN A SIMILAR MANNER AS THE SIDEWALL PANELS UTILIZING THE SAME SEALANT AND BOLTING TECHNIQUES, SO AS TO ASSURE A WATER/AIR TIGHT ASSEMBLY. THE ROOF SHALL BE CLEAR SPAN AND SELF-SUPPORTING. BOTH LIVE AND DEAD LOADS SHALL BE CARRIED BY THE TANK WALLS. THE EXTERIOR COATING FINISH SHALL BE COBALT BLUE GLASS.

- THE MANUFACTURER SHALL FURNISH THE NECESSARY OPENING FOR THE ROOF VENT. SEE ROOF VENT NOTES BELOW.
- THE MANUFACTURER SHALL FURNISH A MINIMUM (24"x18") ROOF CLEAR OPENING FOR THE ROOF ACCESS MANWAY WHICH SHALL BE POSITIONED NEAR THE OUTSIDE TANK LADDER. SEE ROOF ACCESS MANWAY NOTES BELOW.
- THE ROOF SHALL BE SLOPED/PITCHED PER THE MANUFACTURER'S RECOMMENDATIONS

ROOF VENT – A PROPERLY SIZED VENT ASSEMBLY IN ACCORDANCE WITH AWWA D103 SHALL BE FURNISHED AND INSTALLED ABOVE THE MAXIMUM WATER LEVEL OF SUFFICIENT CAPACITY SO THAT AT MAXIMUM POSSIBLE RATE OF WATER FILL OR WITHDRAWAL, THE RESULTING INTERIOR PRESSURE OR VACUUM WILL NOT EXCEED 0.5" WATER COLUMN.

- NOTE: THE OVERFLOW PIPE SHALL NOT BE CONSIDERED TO BE A TANK VENT.
- THE VENT SHALL BE CONSTRUCTED OF ALUMINUM.
- THE VENT SHALL BE SO DESIGNED IN CONSTRUCTION AS TO PREVENT THE ENTRANCE OF BIRDS AND/OR ANIMALS BY INCLUDING AN EXPANDED ALUMINUM SCREEN (1/2 INCH) OPENING. AN INSECT SCREEN OF 23 TO 25 MESH POLYESTER MONOFILAMENT SHALL BE PROVIDED AND DESIGNED TO OPEN SHOULD THE SCREEN BECOME PLUGGED BY ICE FORMATION.

ROOF ACCESS MANWAY – THE TANK MANUFACTURER SHALL PROVIDE ONE ELLIPTICAL-SHAPED ROOF ACCESS MANWAY (MINIMUM 24"X18" OPENING) WITH ACCESS DOOR & FRAME WITHIN THE TANK ROOF STRUCTURE. THE ROOF ACCESS MANWAY SHALL BE ACCESSIBLE BY THE LADDER SYSTEM. THE ACCESS DOOR & FRAME SHALL BE IN ACCORDANCE WITH THE PERTINENT AWWA, ASTM, AND/OR ANSI STANDARDS AND SHALL BE PROVIDED WITH A HINGED COVER AND A HASP FOR LOCKING. THE OPENING SHALL HAVE A GASKETED WEATHER-TIGHT COVER.

APPURTENANCES (PER AWWA D103, SECTION 7):

PENETRATIONS THROUGH TANK SHEETING: ALL OPENINGS THROUGH THE TANK SIDE WALL GREATER THAN 2 INCHES (51 MM) IN DIAMETER SHALL BE REINFORCED IN ACCORDANCE WITH AWWA D103-09, SECTION 5.10. ALL OPENINGS THROUGH SHEETS HAVING LESS THAN 24 INCHES (610 MM) BETWEEN HORIZONTAL BOLT LINES, OR HAVING LESS THAN 24 INCHES (610 MM) OF AVAILABLE SHEET SPACE FROM THE FLOOR SURFACE UP TO THE FIRST HORIZONTAL BOLT LINE SHALL NOT EXCEED A DIAMETER OF 2 INCHES (51MM). OPENINGS OF 2 INCHES (51 MM) AND LESS SHALL BE REINFORCED IN ACCORDANCE WITH AWWA D103-09, SECTION 5.10.

FIELD PIPE CONNECTIONS – WHERE PIPE CONNECTIONS ARE SHOWN TO PASS THROUGH TANK PANELS, THEY SHALL BE FIELD LOCATED, SAW CUT, (ACETYLENE TORCH CUTTING OR WELDING IS NOT PERMITTED), AND UTILIZE AN INTERIOR AND EXTERIOR FLANGE ASSEMBLY. ESPC SEALER NO. 98 SHALL BE APPLIED ON ANY CUT PANEL EDGES OR BOLT CONNECTIONS.

OVERFLOW PIPING – THE TANK MANUFACTURER SHALL PROVIDE A COMPLETE OVERFLOW PIPING SYSTEM. THE OVERFLOW PIPING SHALL BE 8" SCHEDULE 80 PVC CONDUIT WITH SUPPORT BRACKETS. A 45° BEND SHALL BE PROVIDED AT THE OUTLET END OF THE OVERFLOW PIPE WHERE THE OVERFLOW WILL DISCHARGE AT THE FINISHED GROUND ELEVATION ONTO A CONCRETE SPLASH PAD. THE CONCRETE SPLASH PAD WILL BE PROVIDED BY OTHERS. A STAINLESS STEEL BIRD SCREEN AND INSECT SCREEN SHALL BE PROVIDED AT THE OUTLET OF THE 45° BEND.

NEW EXTERIOR BACKWASH TANK (CONT'D)

ERECTION (CONT'D):

OUTSIDE TANK LADDER – THE TANK MANUFACTURER SHALL PROVIDE A COMPLETE OUTSIDE TANK LADDER SYSTEM IN ORDER TO PROVIDE ACCESS TO THE ACCESS HATCH LOCATED AT THE TOP OF THE TANK STRUCTURE. THE LADDER SYSTEM SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA D103-09, SECTION 7.4 AND SHALL MEET MINIMUM OSHA REQUIREMENTS.

- LADDERS SHALL BE FABRICATED OF ALUMINUM AND UTILIZE GROOVED, SKID-RESISTANT RUNGS.
- SAFETY CAGE AND STEP-OFF PLATFORMS SHALL BE FABRICATED OF GALVANIZED STEEL. THE EXTERIOR LADDER WILL BE EQUIPPED WITH AN OSHA APPROVED SAFETY RAIL/CABLE.
- A HINGED, LOCKABLE GATE SHALL BE INSTALLED AT THE BASE OF THE LADDER SAFETY CAGE TO DETER UNAUTHORIZED ACCESS TO THE TOP OF THE TANK. THE OWNER SHALL PROVIDE AND INSTALL THE LOCK.

SIDEWALL ACCESS MANWAY – ONE SIDEWALL ACCESS MANWAY SHALL BE PROVIDED AS SHOWN ON THE CONTRACT DRAWINGS IN ACCORDANCE WITH AWWA D-103.

- THE SIDEWALL ACCESS MANWAY SHALL BE A MINIMUM OF 24 INCHES IN DIAMETER AND SHALL INCLUDE A PROPERLY DESIGNED REINFORCING FRAME AND COVER PLATE.

IDENTIFICATION PLATE – A MANUFACTURER'S NAMEPLATE SHALL LIST THE TANK SERIAL NUMBER, TANK DIAMETER AND HEIGHT, AND MAXIMUM DESIGN CAPACITY. THE NAMEPLATE SHALL BE AFFIXED TO THE TANK EXTERIOR SIDEWALL AT A LOCATION APPROXIMATELY FIVE (5') FEET FROM GRADE ELEVATION IN A POSITION OF UNOBSTRUCTED VIEW.

CATHODIC PROTECTION – THE CATHODIC PROTECTION SYSTEM SHALL CONFORM TO NACE SP0196-2011. THE CATHODIC PROTECTION SYSTEM SHALL BE SUITABLE FOR USE IN LIQUID WITH THE SPECIFIC RESISTIVITY OF THE TREATED WATER TO BE STORED. FIELD VERIFICATION OF THE LIQUID RESISTIVITY WILL THE RESPONSIBILITY OF THE TANK MANUFACTURER. THE CATHODIC PROTECTION SYSTEM SHALL BE DESIGNED TO PROTECT THE ENTIRE SUBMERGED PORTION OF TANK SIDEWALL AND FLOOR AREA INCLUDING APPURTENANCES SUPPLIED BY THE TANK MANUFACTURER AND FOR THE PROTECTION OF UNCOATED STEEL SURFACES IN THE PRODUCT ZONE, INCLUDING REBAR WITHIN AN UNCOATED CONCRETE TANK FLOOR.

- THE MANUFACTURER WILL PROVIDE A CATHODIC PROTECTION SYSTEM CONSISTING OF SACRIFICIAL MAGNESIUM ANODES WHICH PROVIDE CORROSION PROTECTION FOR THE PORTIONS OF THE STRUCTURE IMMERSED IN LIQUID. THE ANODES ARE EQUALLY SPACED (TO THE NEAREST VERTICAL BOLT LINE) AROUND THE STRUCTURE, ATTACHED TO THE FLOOR, AND BOLTED THROUGH EXISTING SHELL SHEET BOLT HOLES. IN SPECIAL CASES WHERE ANODES MAY BE SPACED DIFFERENTLY, A LAYOUT PLAN WILL BE PROVIDED AS PART OF THE SUBMITTAL PACKAGE. LEAD WIRES AND BUSS BARS ARE USED TO ENSURE CONTINUITY BETWEEN ANODES AND STRUCTURE SHELL SHEETS.
- ELECTRICAL CONTINUITY BETWEEN ALL TANK SIDEWALL PANELS SHALL BE THE RESPONSIBILITY OF THE TANK MANUFACTURER.
- THE DESIGN LIFE SHALL BE CALCULATED AT A MINIMUM OF 10 YEARS. THE CATHODIC PROTECTION SYSTEM SHALL BE DESIGNED FOR PROTECTION OF UNCOATED STEEL SURFACES IN THE PRODUCT ZONE, INCLUDING REBAR WITHIN AN UNCOATED CONCRETE TANK FLOOR. THE TANK MANUFACTURER SHALL PROVIDE INSTRUCTION FOR THE CATHODIC PROTECTION SYSTEM.

FIELD TESTING:

HYDROSTATIC TESTING – FOLLOWING COMPLETION OF ERECTION AND CLEANING OF THE TANK, THE STRUCTURE SHALL BE TESTED FOR LIQUID TIGHTNESS BY FILLING TANK TO ITS OVERFLOW ELEVATION.

- ANY LEAKS DISCLOSED BY THIS TEST SHALL BE CORRECTED BY THE ERECTOR IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- WATER REQUIRED FOR TESTING SHALL BE FURNISHED BY THE OWNER AT THE TIME OF TANK ERECTION COMPLETION, AND AT NO CHARGE TO THE TANK ERECTOR. DISPOSAL OF TEST WATER SHALL BE THE RESPONSIBILITY OF THE TANK ERECTOR.
- NOTE: SINCE THE TANK WILL BE USED FOR BACKWASH/WASTE PURPOSES ONLY (I.E. NOT FOR POTABLE/TREATED WATER), DISINFECTION OF THE TANK STRUCTURE WILL NOT BE REQUIRED; HOWEVER, PRIOR TO PLACING THE TANK INTO SERVICE, ALL DEBRIS ON THE INTERIOR OF THE TANK SHALL BE REMOVED, AND THE INTERIOR OF THE TANK SHALL BE ADEQUATELY CLEANED/FLUSHED.

WARRANTY:

THE TANK MANUFACTURER SHALL WARRANTY THEIR PRODUCT FOR A MINIMUM OF FIVE (5) YEARS AFTER CONSTRUCTION IS COMPLETED.

PAYMENT:

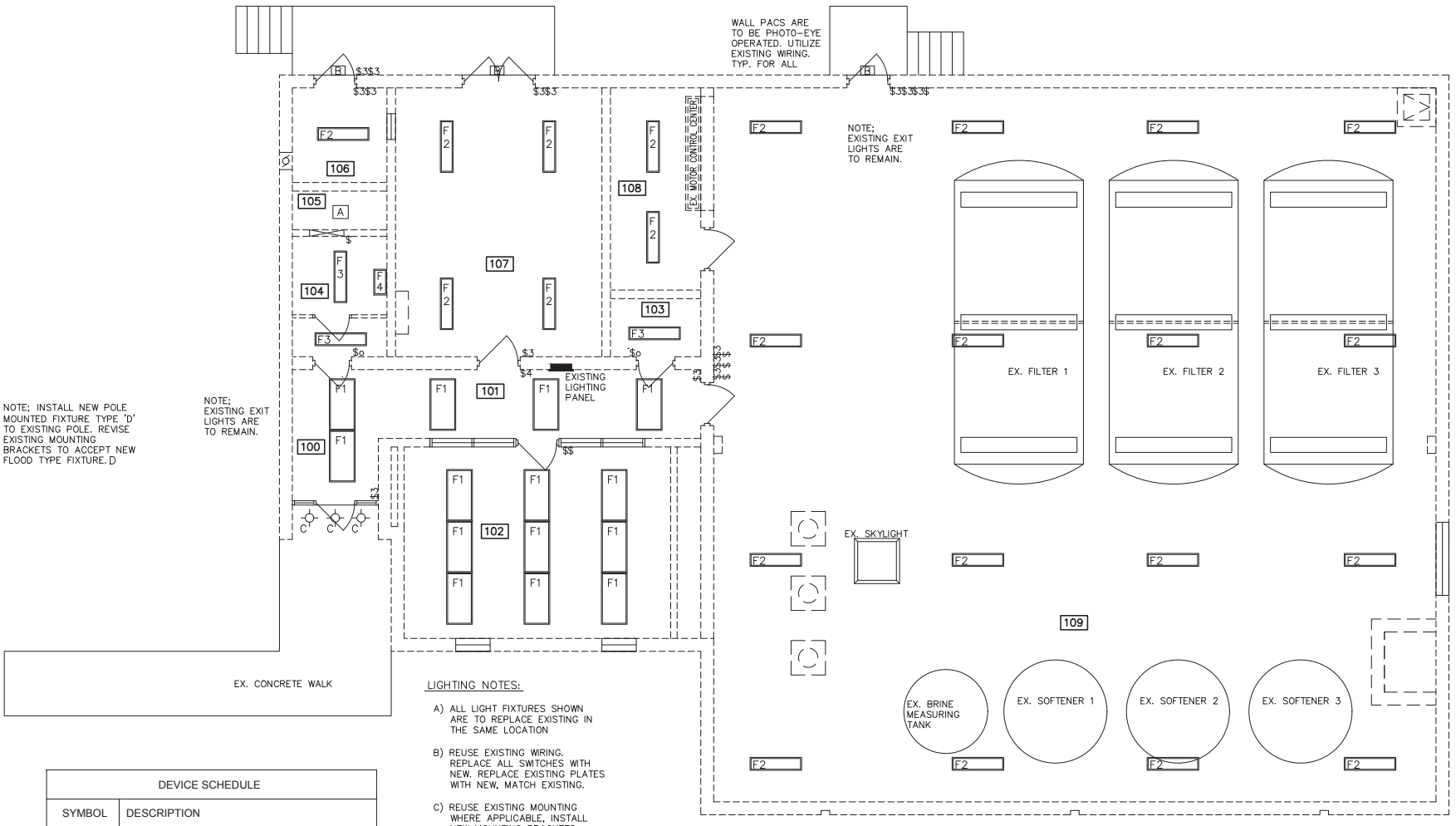
ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE OF THE NEW EXTERIOR BACKWASH TANK AS DESCRIBED IN THE NOTES & DETAILS ON SHEETS 28-37 IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE EXTERIOR BACKWASH TANK, INCLUDING ALL INCIDENTALS, AS PER PLAN.

HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

NEW EXTERIOR BACKWASH TANK
GENERAL NOTES

CITY OF CHESTER
WATER SYSTEM IMPROVE.



DEVICE SCHEDULE	
SYMBOL	DESCRIPTION
$	20A 120/277V SINGLE-POLE SWITCH SPECIFICATION GRADE
$3	20A 120/277V SINGLE-POLE SWITCH, 3-WAY SPECIFICATION GRADE
$4	20A 120/277V SINGLE-POLE SWITCH, 4-WAY SPECIFICATION GRADE
$O	WALL SWITCH OCCUPANCY SENSOR SPECIFICATION GRADE

LIGHTING NOTES:

A) ALL LIGHT FIXTURES SHOWN ARE TO REPLACE EXISTING IN THE SAME LOCATION

B) REUSE EXISTING WIRING. REPLACE ALL SWITCHES WITH NEW. REPLACE EXISTING PLATES WITH NEW, MATCH EXISTING.

C) REUSE EXISTING MOUNTING WHERE APPLICABLE, INSTALL NEW MOUNTING BRACKETS WHERE NEEDED. TYPE F2 FIXTURES ARE TO BE HUNG BY AIRCRAFT CABLE.

D) FIXTURES TYPE 'C' ARE RECESSED FIELD DETERMINE THE DIAMETER OF THE FIXTURE REQUIRED. ENLARGE EXISTING HOLE IF REQUIRED.

PROPOSED LIGHTING PLAN

NOT TO SCALE

SA Engineering
29 East Front Street
Youngstown, OH 44406
Tel. (330) 533-4983
www.saengineeringinc.com

HORIZONTAL SCALE IN FEET
0 2 4 8

CAD: J.F.B.
BY:
DATE: 12/22
CHKD: D.G.D.
BY:
DATE: 12/22

WTP BUILDING LIGHTING REMOVAL & REPLACEMENT
ELECTRICAL NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

GENERAL ELECTRICAL SPECIFICATIONS:

GENERAL:

1. ALL ELECTRICAL WORK IS TO BE IN ACCORDANCE WITH NFPA 70–2017 AND ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES.
2. ALL WORK IS TO BE DONE IN A WORKMAN LIKE MANNER.
3. IF APPLICABLE, ELECTRICAL DEMOLITION IS TO BE BY E.C.
4. IF APPLICABLE, CUTTING AND PATCHING FOR ELECTRICAL WORK IS TO BE BY E.C.
5. IF APPLICABLE, TEMPORARY POWER AND LIGHTING IS TO BE BY E.C.
6. ELECTRICAL PERMITS AND ASSOCIATED COST ARE TO BE BY E.C.
7. ALL ELECTRICAL WORK, EXCEPT LAMPS, IS TO BE GUARANTEED FOR THE PERIOD OF ONE YEAR AFTER ACCEPTANCE.
8. THE E.C. IS TO MAKE A SITE VISIT TO DETERMINE EXISTING CONDITIONS. IF EXISTING CONDITIONS ARE NOT AS REPRESENTED ON THE DRAWINGS THE E.C. IS TO NOTIFY THE ENGINEER PRIOR TO BIDDING.
9. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INDICATE ONLY THE GENERAL ARRANGEMENT. SEE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
10. COORDINATE ALL WORK WITH ALL OTHER TRADES.

LIGHTING:

1. ALL LIGHT FIXTURES ARE TO BE NEW UNLESS OTHERWISE NOTED.
2. ALL LIGHT FIXTURES AND LAMPS ARE TO BE IN GOOD WORKING CONDITION WHEN TURNED OVER TO OWNER.
3. SECURELY MOUNT LIGHT FIXTURES AS REQUIRED BY CODE AND LOCAL INSPECTORS AS PER NEC 410–36.
4. MAINTAIN FIRE RATING OF ALL CEILINGS. TENT FIXTURES IF REQUIRED.

MATERIALS:

1. ALL MATERIAL IS TO BE UL LISTED AND USED ONLY FOR THE PURPOSE FOR WHICH IT IS LISTED.
2. ALL WIRE IS TO BE THWN COPPER RATED FOR 600V UNLESS OTHERWISE NOTED.
3. ALL WIRE IS TO BE #12 MINIMUM.
4. NO FEEDER SHALL EXCEED 2% VOLTAGE DROP. NO BRANCH CIRCUIT SHALL EXCEED 3% VOLTAGE DROP AT THE FARTHEST OUTLET.
5. WHEN A 20A CIRCUIT EXCEEDS 100 FEET FROM THE PANEL THE CONDUCTORS ARE TO BE INCREASED TO #10 THWN.
6. PVC IS TO BE USED UNDERGROUND ONLY, MINIMUM SCHEDULE 40. ALL ELBOWS ARE TO BE SCHEDULE 80 OR GRMC.
7. EXTERIOR EXPOSED CONDUITS ARE TO BE RIGID METALLIC CONDUIT.
8. SERVICE ENTRANCE CONDUITS ARE TO BE RIGID METALLIC CONDUIT.
9. ALL CONDUITS ARE TO BE RUN CONCEALED WHERE POSSIBLE. ALL NEW CONSTRUCTION CONDUITS ARE TO BE RUN IN THE WALLS INCLUDING BRICK AND BLOCK.
10. PROVIDE A PULL WIRE IN ALL EMPTY CONDUITS.
11. ALL CONDUITS, HANGERS AND FITTINGS IN PUMP AREA ARE TO BE ALUMINUM OR STAINLESS STEEL.

FIRE STOPPING:

1. WHERE PENETRATIONS ARE MADE THROUGH A REQUIRED FIRE–RESISTANCE RATED WALL, FLOOR, CEILING, OR PARTITION FOR THE PURPOSE OF RUNNING A WIRE OR RACEWAY, THE OPENING AROUND THE WIRE OR RACEWAY SHALL BE FIRE STOPPED TO RETAIN THE INTEGRITY OF THE FIRE–RESISTANCE CONSTRUCTION.

GROUNDING AND BONDING:

1. ALL GROUNDING IS TO BE AS PER NEC 250.
2. MINIMUM GROUNDING IS TO BE TWO GROUND RODS AND GROUND WIRE TO WATER MAIN.
3. ELECTRICAL CONTRACTOR IS TO USE ALL AVAILABLE GROUNDS.
4. FOR STEEL BUILDINGS, STEEL SIDING IS TO BE GROUNDED.
5. BOND ALL METAL RACEWAYS TO PANELS USING LISTED FITTINGS OR OTHER APPROVED METHOD PER NEC 250.92.

LIGHTING REMOVAL AND REPLACEMENT

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING LIGHTING REMOVAL & REPLACEMENT OPERATIONS, THE CONTRACTOR SHALL PROTECT ALL EXISTING WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE CONTRACTOR WILL NOT BE PERMITTED TO FABRICATE THEIR OWN LIGHTING APPURTENANCES. ALL MATERIALS FOR THE LIGHTING SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS & PROJECT SPECIFICATIONS AND SHALL INCLUDE ALL NECESSARY INCIDENTALS FOR A COMPLETE INSTALLATION. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL FIELD VERIFY ALL LIGHTING DIMENSIONS, LOCATIONS, ETC. PRIOR TO ORDERING ANY MATERIALS.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & REPLACEMENT OF THE LIGHTING AS DESCRIBED IN THE NOTES & DETAILS ON SHEETS 38–39 OF THE CONSTRUCTION PLANS AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE LIGHTING, INCLUDING ALL INCIDENTALS, AS PER PLAN.

FIXTURE SCHEDULE

MARK	DESCRIPTION	NO. OF LAMPS	LAMP TYPE	VOLT	WATTS	REMARKS
F1	2'X4' LED LAY-IN TROFFER FLAT PANEL	N/A	INCLUDED	MULTI	40	3500K, 4300 LUMENS 0-10V DIMMING
F2	4' LED VAPORTITE FIXTURE 7086 LUMENS W/SS HARDWARE SURFACE MOUNTED	N/A	INCLUDED	MULTI	62	3500K, 7086 LUMENS
F3	4' LED LOW-PROFILE WRAPAROUND SURFACE MOUNTED	N/A	INCLUDED	MULTI	48	3500K, 4700 LUMENS -EDU FOR 0-10V DIMMING
F4	2' - LED WALL BRACKET FROSTED LENS W/ ALUMINUM END CAPS	N/A	INCLUDED	MULTI	21	3500K, 2402 LUMENS
A	6" SURFACE MOUNTED LED DRUM FIXTURE WET LOCATION SHOWER FIXTURE	N/A	INCLUDED	MULTI	13	3000K 1100 LUMEN
B	LED GLASS WALL PAC	N/A	INCLUDED	MULTI	18	18W 4000K WITH INTERNAL PHOTOCELL
C	6" LED RECESSED DOWNLIGHT	N/A	INCLUDED	MULTI	12	3500K, 1100 LUMENS 0-10 DIMMING
D	LED POLE MTD. FLOOD LIGHT	N/A	INCLUDED	MULTI	80	10256 LUMENS

SA Engineering
29 East Front Street
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Tel. (330) 533-4983
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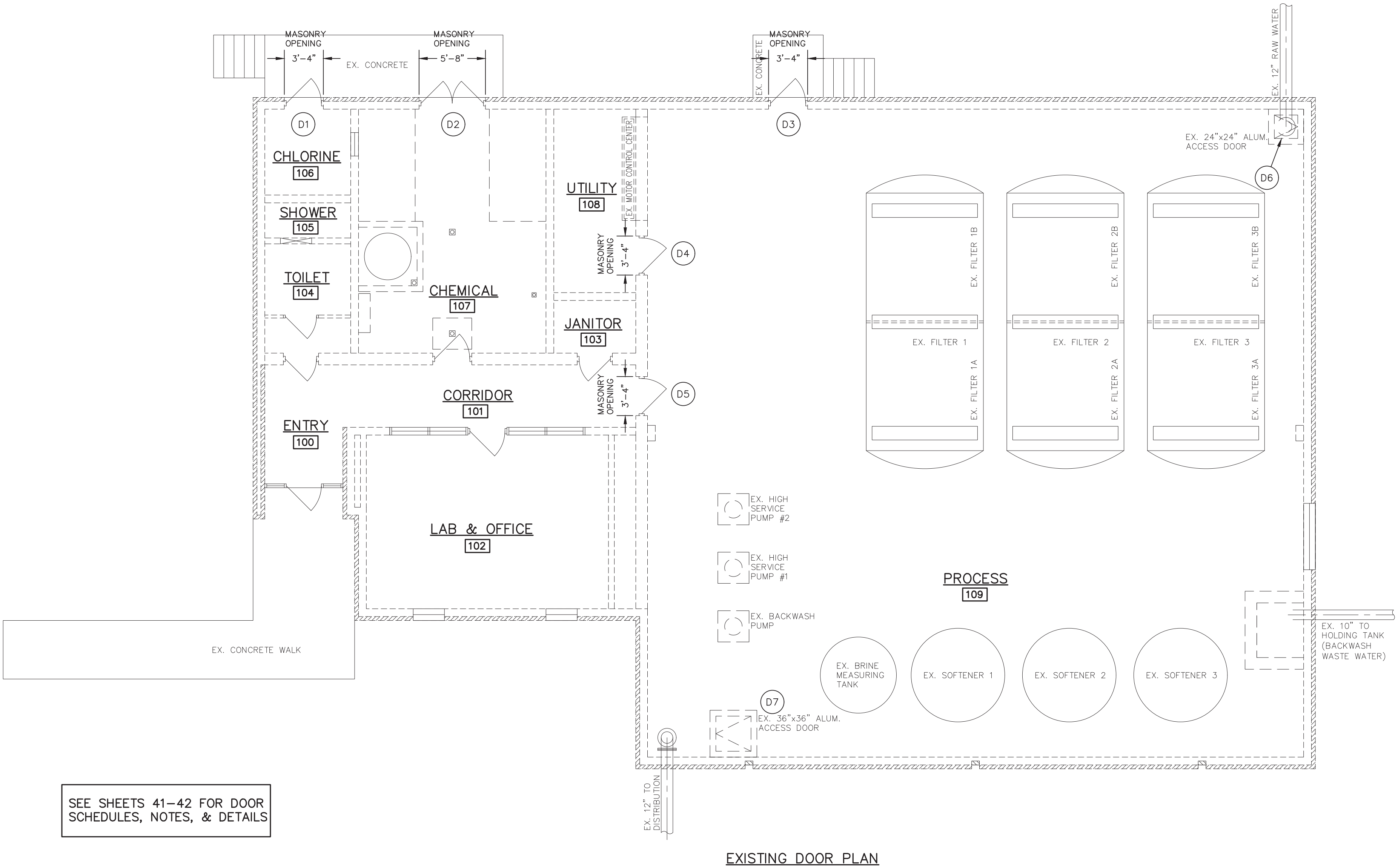
HORIZONTAL SCALE IN FEET
0

CAD: J.F.B.
DATE: 12/22
CHKD: D.G.D.
DATE: 12/22

WTP BUILDING LIGHTING REMOVAL & REPLACEMENT
ELECTRICAL NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.



EXISTING DOOR PLAN

NOT TO SCALE

0 2 4 8

HORIZONTAL SCALE IN FEET

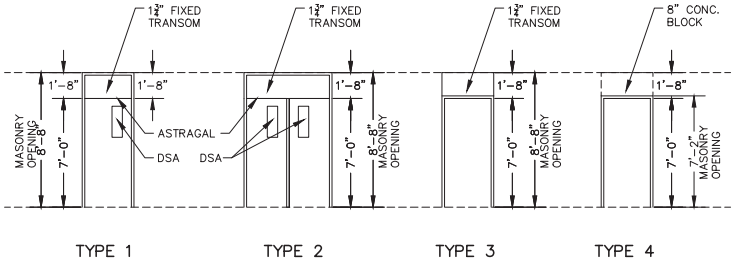
CALC. BY: J.F.B. DATE: 12/22

CHKD. BY: D.G.D. DATE: 12/22

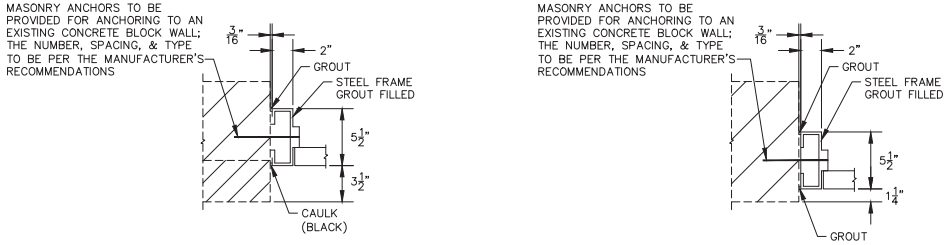
EXISTING WTP BUILDING DOOR & CLEARWELL ACCESS DOOR PLAN VIEW

CITY OF CHESTER WATER SYSTEM IMPROVE.

WTP BUILDING DOOR SCHEDULE						
MARK	DOOR SIZE (MASONRY OPENING)	DOOR TYPE & MATERIAL	FINISH	HARDWARE	WINDOW	FRAME
D1	3'-0"x7'-0" (3'-4"x8'-8")	TYPE 1; INSULATED METAL DOOR WITH 2" SIDE FRAME & 4" TOP FRAME; SEE SPECIFICATIONS ON SHEET 42	PAINTED TAN (MATCH EXISTING)	SEE SPECIFICATIONS ON SHEET 42	TEMPERED GLASS	F1
D2	2'-8"x7'-0" (5'-8"x8'-8")	TYPE 2; INSULATED METAL DOUBLE DOOR WITH 2" SIDE FRAME & 4" TOP FRAME; SEE SPECIFICATIONS ON SHEET 42	PAINTED TAN (MATCH EXISTING)	SEE SPECIFICATIONS ON SHEET 42	TEMPERED GLASS	F1
D3	3'-0"x7'-0" (3'-4"x7'-2")	TYPE 4; INSULATED METAL DOOR WITH 2" SIDE FRAME & 2" TOP FRAME; SEE SPECIFICATIONS ON SHEET 42	PAINTED TAN (MATCH EXISTING)	SEE SPECIFICATIONS ON SHEET 42	TEMPERED GLASS	F1
D4	3'-0"x7'-0" (3'-4"x8'-8")	TYPE 3; INSULATED METAL DOOR WITH 2" SIDE FRAME & 4" TOP FRAME; SEE SPECIFICATIONS ON SHEET 42	PAINTED TAN (MATCH EXISTING)	SEE SPECIFICATIONS ON SHEET 42	NONE	F2
D5	3'-0"x7'-0" (3'-4"x8'-8")	TYPE 1; INSULATED METAL DOOR WITH 2" SIDE FRAME & 4" TOP FRAME; SEE SPECIFICATIONS ON SHEET 42	PAINTED TAN (MATCH EXISTING)	SEE SPECIFICATIONS ON SHEET 42	TEMPERED GLASS	F2



WTP BUILDING DOOR TYPES
NOT TO SCALE



WTP BUILDING DOOR– GENERAL FRAME TYPES
NOT TO SCALE

CLEARWELL ACCESS DOOR SCHEDULE			
MARK	ACCESS DOORS		REMARKS
	SIZE	MATERIAL	
D6	24" x 24"	ALUMINUM	ACCESS TO CLEARWELL
D7	36" x 36"	ALUMINUM	ACCESS TO CLEARWELL

REMOVAL & REPLACEMENT OF ACCESS DOORS/FRAMES FOR CLEARWELL

THE FOLLOWING IS RELATIVE TO THE REMOVAL OF THE EXISTING ACCESS DOORS FOR THE CLEARWELL.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING DOOR/FRAME REMOVAL & REPLACEMENT OPERATIONS, THE CONTRACTOR SHALL PROTECT ALL EXISTING WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE CONTRACTOR WILL NOT BE PERMITTED TO FABRICATE THEIR OWN ACCESS DOORS/FRAMES. ALL MATERIALS FOR THE NEW ACCESS DOORS/FRAMES SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS & PROJECT SPECIFICATIONS AND SHALL INCLUDE ALL NECESSARY INCIDENTALS FOR A COMPLETE, WATERTIGHT INSTALLATION. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL FIELD VERIFY ALL DOOR/FRAME DIMENSIONS PRIOR TO ORDERING ANY MATERIALS.

SEE SHEET 40 FOR ADDITIONAL INFORMATION.

THE EXISTING ACCESS DOORS, FRAMES, CORRESPONDING ANCHORING HARDWARE AND ALL OTHER PERTINENT EXISTING ACCESS DOOR INCIDENTALS SHALL BE REMOVED, AND ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY. ANY VOIDS LEFT IN THE EXISTING CONCRETE AS A RESULT OF THE REMOVAL OF ANCHORS OR OTHER MATERIALS SHALL BE FILLED WITH HIGH STRENGTH, NON–SHRINK GROUT BY THE CONTRACTOR.

–NOTE: THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT DEBRIS FROM ENTERING THE CLEARWELL DURING REMOVAL AND INSTALLATION OPERATIONS IN ORDER TO PROTECT THE FINISHED TREATED WATER WITHIN THE EXISTING CLEARWELL. WORK SHALL BE PERFORMED IN CLOSE COORDINATION WITH THE WTP SUPERINTENDENT.

SINGLE ALUMINUM FLOOR DOOR, FRAME, & CORRESPONDING ANCHORING HARDWARE; LOCK–UP MECHANISM & HARDWARE; HANDLE/LOCK HASPS & HARDWARE, AND ALL OTHER NECESSARY INCIDENTALS FOR A COMPLETE INSTALLATION. ALL WORK SHALL BE WATERTIGHT.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & DISPOSAL OF THE EXISTING ACCESS DOORS AND FRAMES AND FOR THE COMPLETE INSTALLATION OF THE NEW ACCESS DOORS AND FRAMES SHALL BE INCLUDED THE PER EACH UNIT PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE ACCESS DOORS/FRAMES FOR CLEARWELL, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – REMOVE & REPLACE ACCESS DOORS/FRAMES FOR CLEARWELL, AS PER PLAN — 2 EACH

HORIZONTAL SCALE IN FEET

CAE: J.F.B. DATE: 12/22
CHKD: BY: D.G.D. DATE: 12/22

EXISTING WTP BUILDING DOOR & CLEARWELL ACCESS DOOR DOOR SCHEDULES, NOTES, AND DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

REMOVAL & REPLACEMENT OF INTERIOR & EXTERIOR DOORS/FRAMES

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING DOOR/FRAME REMOVAL & REPLACEMENT OPERATIONS, THE CONTRACTOR SHALL PROTECT ALL EXISTING WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE CONTRACTOR WILL NOT BE PERMITTED TO FABRICATE THEIR OWN DOORS/FRAMES. ALL MATERIALS FOR THE NEW DOORS/FRAMES SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS & PROJECT SPECIFICATIONS AND SHALL INCLUDE ALL NECESSARY INCIDENTALS FOR A COMPLETE, WEATHER TIGHT INSTALLATION. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL FIELD VERIFY ALL DOOR/FRAME DIMENSIONS PRIOR TO ORDERING ANY MATERIALS.

EXISTING EXTERIOR/INTERIOR BUILDING DOORS/FRAMES REMOVAL & DISPOSAL:
THE EXISTING DOORS, FRAMES, THRESHOLD, CORRESPONDING ANCHORING HARDWARE AND ALL OTHER PERTINENT EXISTING DOOR/FRAME INCIDENTALS SHALL BE REMOVED, AND ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY. ANY VOIDS LEFT IN THE EXISTING CONCRETE BLOCK AS A RESULT OF THE REMOVAL OF ANCHORS OR OTHER MATERIALS SHALL BE FILLED WITH HIGH STRENGTH, NON-SHRINK GROUT BY THE CONTRACTOR.

-NOTE: THE EXISTING CONCRETE BLOCK AND/OR BRICK SHALL REMAIN IN PLACE AND SHALL BE PROTECTED DURING REMOVAL OF THE EXISTING DOORS, FRAMES, AND CORRESPONDING ANCHORING HARDWARE. ANY DAMAGE TO THE AFOREMENTIONED EXISTING CONCRETE BLOCK AND/OR BRICK SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE FOLLOWING IS A LIST OF DOORS/FRAMES TO BE REMOVED ALONG WITH A GENERAL DESCRIPTION OF EACH AS FURTHER DETAILED ON SHEETS 40 & 41:
D1 (EXTERIOR DOOR) – (3'-4") WIDE X (8'-8") HIGH MASONRY OPENING; (1)~(3' W X 7' H) DOOR WITH
(1)~(1'-6") HIGH FIXED/SOLID TRANSOM (NO WINDOW); 18 GAUGE STEEL DOOR & FRAME

D2 (EXTERIOR DOOR) – (5'-8") WIDE X (8'-8") HIGH MASONRY OPENING; (2)~(2'-8" W X 7' H) DOORS & ASTRAGAL WITH (1)~(1'-6") HIGH FIXED/SOLID TRANSOM (NO WINDOW); 18 GAUGE STEEL DOOR & FRAME

D3 (EXTERIOR DOOR) – (3'-4") WIDE X (7'-2") HIGH MASONRY OPENING; (1)~(3' W X 7' H) DOOR WITH NO TRANSOM (CONCRETE BLOCK ABOVE); 18 GAUGE STEEL DOOR & FRAME

D4 (INTERIOR DOOR) – (3'-4") WIDE X (8'-8") HIGH MASONRY OPENING; (1)~(3' W X 7' H) DOOR WITH
(1)~(1'-6") HIGH FIXED/SOLID TRANSOM (NO WINDOW); 18 GAUGE STEEL DOOR & FRAME

D5 (INTERIOR DOOR) – (3'-4") WIDE X (8'-8") HIGH MASONRY OPENING; (1)~(3' W X 7' H) DOOR WITH
(1)~(1'-6") HIGH FIXED/SOLID TRANSOM (NO WINDOW); 18 GAUGE STEEL DOOR & FRAME

REMOVAL & REPLACEMENT OF INTERIOR & EXTERIOR DOORS/FRAMES (CONT'D)

NEW EXTERIOR/INTERIOR BUILDING DOORS/FRAMES:
THE FOLLOWING IS A LIST OF DOORS/FRAMES TO BE INSTALLED ALONG WITH THEIR CORRESPONDING DIMENSIONS & INCIDENTALS AS FURTHER DETAILED ON SHEETS 40 & 41:

D1 (EXTERIOR DOOR) – TYPE 1; (3'-4") WIDE X (8'-8") HIGH OPENING; (1)~(3' W X 7' H) DOOR WITH (1)~(1'-4") HIGH FIXED/SOLID TRANSOM (NO WINDOW).

DOOR:
-18 GAUGE GALVANIZED FLUSH DOOR WITH TEMPERED GLASS WINDOW; 1-3/4" THICK WITH MORTISE BLANK FACE 14 GAUGE REINFORCEMENT; 16 GAUGE FLUSH TOP CHANNEL; 16 GAUGE INVERTED BOTTOM CHANNEL; 12 GAUGE DOOR CLOSER REINFORCEMENT; 10 GAUGE HINGE REINFORCEMENT; TEMPERED GLASS WINDOW (1.5 HR. FIRE RATED); POLYSTYRENE CORE; APARTMENT STYLE, HEAVY DUTY, STAINLESS STEEL, MORTISE DOOR LOCK WITH 3/4" LATCHBOLT / 1" DEADBOLT & KEYS; HEAVY DUTY, STAINLESS STEEL HINGES; AND STAINLESS STEEL KICKPLATE.

FRAME:
-16 GAUGE GALVANIZED, KNOCK-DOWN TYPE FRAME WITH MITERED FRAME CORNER; 9/32" SILENCER PREP; UNEQUAL RABBIT; 2" SIDE FRAMES; 4" HEADER; 4-7/8" UNIVERSAL STRIKE PREP; 10 GAUGE STEEL TEMPLATE HINGE REINFORCEMENTS WITH 4-1/2" HINGE PREP; 14 GAUGE STRIKE REINFORCEMENT; 5/8" STOP ON 7/16 RETURN WITH FLOOR ANCHORS; STAINLESS STEEL MASONRY ANCHORS; THRESHOLD.

TRANSOM:
-18 GAUGE GALVANIZED, FIXED, SOLID TRANSOM (NO WINDOW) WITH ASTRAGAL.

D2 (EXTERIOR DOOR) – TYPE 2; (5'-8") WIDE X (8'-10") HIGH OPENING; (2)~(2'-6" W X 7' H) DOORS WITH (1)~(1'-4") HIGH FIXED/SOLID TRANSOM (NO WINDOW) & ASTRAGAL

ACTIVE DOOR:
-18 GAUGE GALVANIZED FLUSH DOOR WITH TEMPERED GLASS WINDOW; 1-3/4" THICK WITH MORTISE BLANK FACE 14 GAUGE REINFORCEMENT; 16 GAUGE FLUSH TOP CHANNEL; 16 GAUGE INVERTED BOTTOM CHANNEL; 12 GAUGE DOOR CLOSER REINFORCEMENT; 10 GAUGE HINGE REINFORCEMENT; TEMPERED GLASS WINDOW (1.5 HR. FIRE RATED); POLYSTYRENE CORE; APARTMENT STYLE, HEAVY DUTY, STAINLESS STEEL, MORTISE DOOR LOCK WITH 3/4" LATCHBOLT / 1" DEADBOLT & KEYS; HEAVY DUTY, STAINLESS STEEL HINGES; AND STAINLESS STEEL KICKPLATE.

INACTIVE DOOR:
-18 GAUGE GALVANIZED FLUSH DOOR WITH TEMPERED GLASS WINDOW AND ASTRAGAL; 1-3/4" THICK WITH UNIVERSAL STRIKE 14 GAUGE REINFORCEMENT; 16 GAUGE FLUSH TOP CHANNEL; 16 GAUGE INVERTED BOTTOM CHANNEL; 12 GAUGE DOOR CLOSER REINFORCEMENT; 10 GAUGE HINGE REINFORCEMENT; TEMPERED GLASS WINDOW (1.5 HR. FIRE RATED); POLYSTYRENE CORE; HEAVY DUTY, STAINLESS STEEL, UNIVERSAL STRIKE FOR MORTISE DOOR LOCK; HEAVY DUTY, STAINLESS STEEL HINGES; AND STAINLESS STEEL KICKPLATE.

FRAME:
-16 GAUGE GALVANIZED, KNOCK-DOWN TYPE FRAME WITH MITERED FRAME CORNER; 9/32" SILENCER PREP; UNEQUAL RABBIT; 2" SIDE FRAMES; 4" HEADER; 10 GAUGE STEEL TEMPLATE HINGE REINFORCEMENTS WITH 4-1/2" HINGE PREP; 5/8" STOP ON 7/16 RETURN WITH FLOOR ANCHORS; STAINLESS STEEL MASONRY ANCHORS; THRESHOLD.

TRANSOM:
-18 GAUGE GALVANIZED, FIXED, SOLID TRANSOM (NO WINDOW) WITH ASTRAGAL.

D3 (EXTERIOR DOOR) – TYPE 4; (3'-4") WIDE X (7'-2") HIGH OPENING; (1)~(3' W X 7' H) DOOR WITH NO TRANSOM

DOOR:
-18 GAUGE GALVANIZED FLUSH DOOR WITH TEMPERED GLASS WINDOW; 1-3/4" THICK WITH MORTISE BLANK FACE 14 GAUGE REINFORCEMENT; 16 GAUGE FLUSH TOP CHANNEL; 16 GAUGE INVERTED BOTTOM CHANNEL; 12 GAUGE DOOR CLOSER REINFORCEMENT; 10 GAUGE HINGE REINFORCEMENT; TEMPERED GLASS WINDOW (1.5 HR. FIRE RATED); POLYSTYRENE CORE; APARTMENT STYLE, HEAVY DUTY, STAINLESS STEEL, MORTISE DOOR LOCK WITH 3/4" LATCHBOLT / 1" DEADBOLT & KEYS; HEAVY DUTY, STAINLESS STEEL HINGES; AND STAINLESS STEEL KICKPLATE.

FRAME:
-16 GAUGE GALVANIZED, KNOCK-DOWN TYPE FRAME WITH MITERED FRAME CORNER; 9/32" SILENCER PREP; UNEQUAL RABBIT; 2" SIDE FRAMES; 2" HEADER; 4-7/8" UNIVERSAL STRIKE PREP; 10 GAUGE STEEL TEMPLATE HINGE REINFORCEMENTS WITH 4-1/2" HINGE PREP; 14 GAUGE STRIKE REINFORCEMENT; 5/8" STOP ON 7/16 RETURN WITH FLOOR ANCHORS; STAINLESS STEEL MASONRY ANCHORS; THRESHOLD.

REMOVAL & REPLACEMENT OF INTERIOR & EXTERIOR DOORS/FRAMES (CONT'D)

NEW EXTERIOR/INTERIOR BUILDING DOORS/FRAMES (CONT'D):
D4 (INTERIOR DOOR) – TYPE 3; (3'-4") WIDE X (8'-8") HIGH OPENING; (1)~(3' W X 7' H) DOOR WITH (1)~(1'-4") HIGH FIXED/SOLID TRANSOM (NO WINDOW).

DOOR:
-18 GAUGE GALVANIZED FLUSH DOOR (NO WINDOW); 1-3/4" THICK WITH MORTISE BLANK FACE 14 GAUGE REINFORCEMENT; 16 GAUGE FLUSH TOP CHANNEL; 16 GAUGE INVERTED BOTTOM CHANNEL; 12 GAUGE DOOR CLOSER REINFORCEMENT; 10 GAUGE HINGE REINFORCEMENT; POLYSTYRENE CORE; APARTMENT STYLE, HEAVY DUTY, STAINLESS STEEL, MORTISE DOOR LOCK WITH 3/4" LATCHBOLT (NO DEADBOLT & NO KEYS); HEAVY DUTY, STAINLESS STEEL HINGES; AND STAINLESS STEEL KICKPLATE.

FRAME:
-16 GAUGE GALVANIZED, KNOCK-DOWN TYPE FRAME WITH MITERED FRAME CORNER; 9/32" SILENCER PREP; UNEQUAL RABBIT; 2" SIDE FRAMES; 4" HEADER; 4-7/8" UNIVERSAL STRIKE PREP; 10 GAUGE STEEL TEMPLATE HINGE REINFORCEMENTS WITH 4-1/2" HINGE PREP; 14 GAUGE STRIKE REINFORCEMENT; 5/8" STOP ON 7/16 RETURN WITH FLOOR ANCHORS; STAINLESS STEEL MASONRY ANCHORS.

TRANSOM:
-18 GAUGE GALVANIZED, FIXED, SOLID TRANSOM (NO WINDOW) WITH ASTRAGAL.

D5 (INTERIOR DOOR) – TYPE 1; (3'-4") WIDE X (8'-8") HIGH OPENING; (1)~(3' W X 7' H) DOOR WITH (1)~(1'-4") HIGH FIXED/SOLID TRANSOM (NO WINDOW).

DOOR:
-18 GAUGE GALVANIZED FLUSH DOOR WITH TEMPERED GLASS WINDOW; 1-3/4" THICK WITH MORTISE BLANK FACE 14 GAUGE REINFORCEMENT; 16 GAUGE FLUSH TOP CHANNEL; 16 GAUGE INVERTED BOTTOM CHANNEL; 12 GAUGE DOOR CLOSER REINFORCEMENT; 10 GAUGE HINGE REINFORCEMENT; TEMPERED GLASS WINDOW (1.5 HR. FIRE RATED); POLYSTYRENE CORE; APARTMENT STYLE, HEAVY DUTY, STAINLESS STEEL, MORTISE DOOR LOCK WITH 3/4" LATCHBOLT (NO DEADBOLT & NO KEYS); HEAVY DUTY, STAINLESS STEEL HINGES; AND STAINLESS STEEL KICKPLATE.

FRAME:
-16 GAUGE GALVANIZED, KNOCK-DOWN TYPE FRAME WITH MITERED FRAME CORNER; 9/32" SILENCER PREP; UNEQUAL RABBIT; 2" SIDE FRAMES; 4" HEADER; 4-7/8" UNIVERSAL STRIKE PREP; 10 GAUGE STEEL TEMPLATE HINGE REINFORCEMENTS WITH 4-1/2" HINGE PREP; 14 GAUGE STRIKE REINFORCEMENT; 5/8" STOP ON 7/16 RETURN WITH FLOOR ANCHORS; STAINLESS STEEL MASONRY ANCHORS.

TRANSOM:
-18 GAUGE GALVANIZED, FIXED, SOLID TRANSOM (NO WINDOW) WITH ASTRAGAL.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & DISPOSAL OF THE EXISTING EXTERIOR DOORS/FRAMES AND FOR THE COMPLETE INSTALLATION OF THE NEW DOORS/FRAMES AS DESCRIBED IN THE CONSTRUCTION PLANS ON SHEETS 40-42 AND IN THE PERTINENT PROJECT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – INTERIOR & EXTERIOR DOOR/FRAME REMOVAL & REPLACEMENT, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

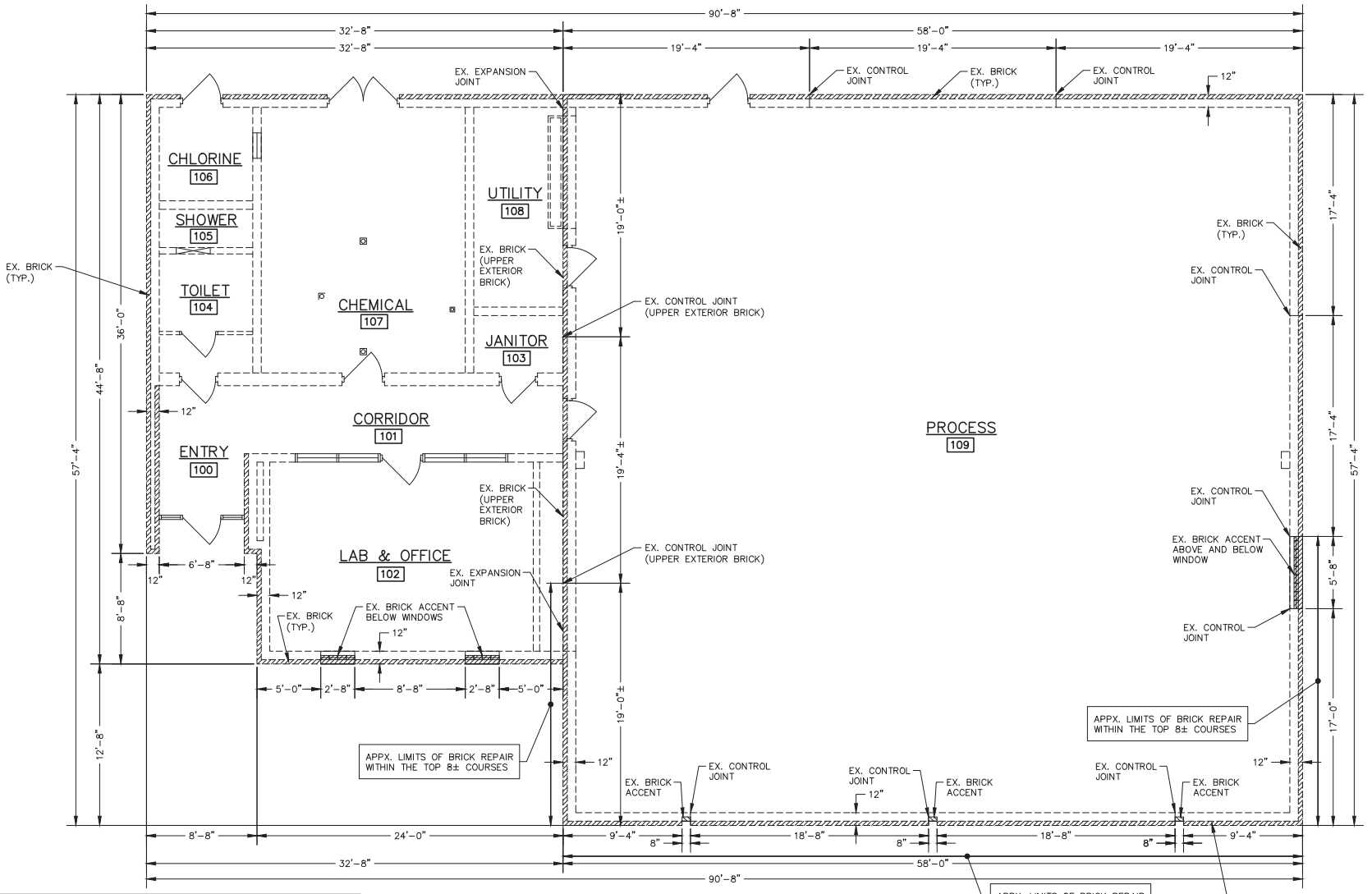
ITEM SPECIAL – INTERIOR & EXTERIOR DOOR/FRAME REMOVAL & REPLACEMENT, AS PER PLAN	LUMP SUM

HORIZONTAL SCALE IN FEET 0

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

EXISTING WTP BUILDING DOOR & CLEARWELL ACCESS DOOR
DOOR SCHEDULES, NOTES, AND DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.



DIMENSIONS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES; THE CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS PRIOR TO ORDERING ANY MATERIALS AND DURING REPAIRS.

SEE SHEET 44 FOR ADDITIONAL BRICK REPAIR NOTES & DETAILS.

EXISTING EXTERIOR BRICK REPAIR PLAN

NOT TO SCALE

HORIZONTAL SCALE IN FEET: 0, 2, 4, 8

CAD: J.F.B. DATE:12/22
CHKD: BY:D.G.D. DATE:12/22

EXISTING EXTERIOR BUILDING
BRICK REPAIRS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

EXTERIOR BUILDING BRICK REPAIR

THE FOLLOWING IS RELATIVE TO THE REPAIR OF PORTIONS OF THE EXISTING EXTERIOR BRICK FACADE. THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE METHOD OF REMOVAL FOR APPROVAL BY THE RESIDENT CONSTRUCTION ENGINEER PRIOR TO PERFORMING THE REMOVAL WORK. THE PLAN SHALL INCLUDE THE INTENDED METHODS FOR THE PROTECTION OF THE INTERIOR OF THE WTP BUILDING FROM WEATHER ELEMENTS.

THE BRICK REPAIR SHALL BE COORDINATED WITH THE ROOF REMOVAL & REPLACEMENT AS FURTHER DETAILED ON SHEETS 45–47.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING THE REPAIR OF THE EXISTING EXTERIOR BUILDING BRICKS, THE CONTRACTOR SHALL PROTECT THE OTHER EXISTING BUILDING BRICKS NOT BEING REPAIRED AS WELL AS ALL OTHER PORTIONS OF THE EXISTING WATER TREATMENT PLANT BUILDING; ABOVE & BELOW GROUND SITE UTILITY FACILITIES; AND ANY OTHER WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL PERTINENT MATERIALS NECESSARY FOR THE REPAIR OF THE EXISTING EXTERIOR BUILDING BRICKS SHALL BE PROVIDED BY THE CONTRACTOR.

THE FOLLOWING SHALL BE PERFORMED IN THE LOOSE BRICK AREAS:

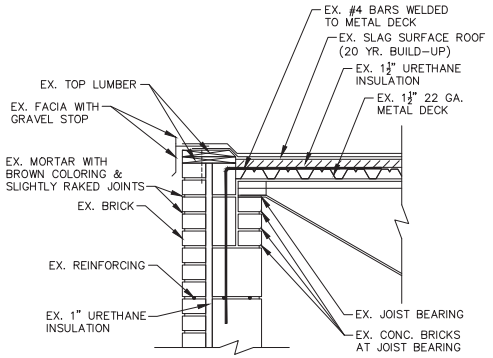
- –CAREFULLY CHIP OUT THE EXISTING MORTAR WITH A HAMMER & CHISEL.
- –LIFT OUT THE LOOSE BRICKS.
- –CAREFULLY REMOVE ANY REMAINING MORTAR FROM THE BRICKS AND STORE THE BRICKS ON A PALLET IN A DESIGNATED LOCATION FOR RE–USE.
- –CAREFULLY REMOVE ANY REMAINING MORTAR FROM THE BRICK COURSES THAT ARE TO REMAIN IN PLACE.
- –RE–SET BRICKS UTILIZING NEW MORTAR. THE NEW MORTAR SHALL BE OF THE SAME COLOR AS THE EXISTING MORTAR (WITH BROWN COLORING), AND THE JOINTS SHALL BE SLIGHTLY RAKED.
- –ALL EXISTING BRICKS SHALL BE REUSED, IF NOT PREVIOUSLY DAMAGED. THE CONTRACTOR SHALL PROVIDE NEW BRICKS OF THE SAME COLOR, SIZE, AND MATERIAL MAKE–UP TO REPLACE ANY PREVIOUSLY DAMAGED BRICKS.
- –ANY DAMAGE TO THE EXISTING BRICKS (I.E. NOT PREVIOUSLY DAMAGED) SHALL BE REPLACED IN–KIND BY THE CONTRACTOR AT THEIR OWN EXPENSE. ANY DAMAGE TO THE EXISTING BUILDING STRUCTURE OR ANY OTHER INCIDENTALS SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS FOR AREAS TO BE REPAIRED.

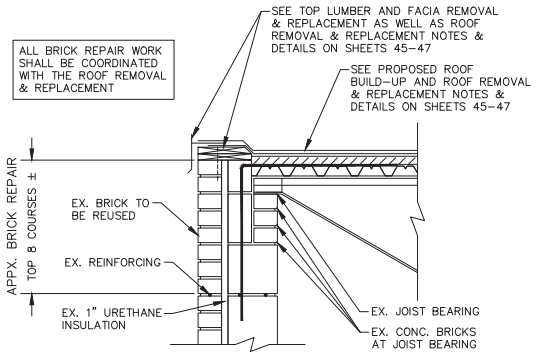
SEE SHEET 44 FOR THE APPROXIMATE LIMITS OF THE BRICK REPAIR LOCATIONS, AND SEE DETAILS ON THIS SHEET FOR ADDITIONAL BRICK REPAIR INFORMATION.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REPAIR OF THE EXISTING EXTERIOR BUILDING BRICKS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL – EXTERIOR BUILDING BRICK REPAIR, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – EXTERIOR BUILDING BRICK REPAIR, AS PER PLAN	200 SQ. FT.



EXISTING BRICK DETAIL
NOT TO SCALE



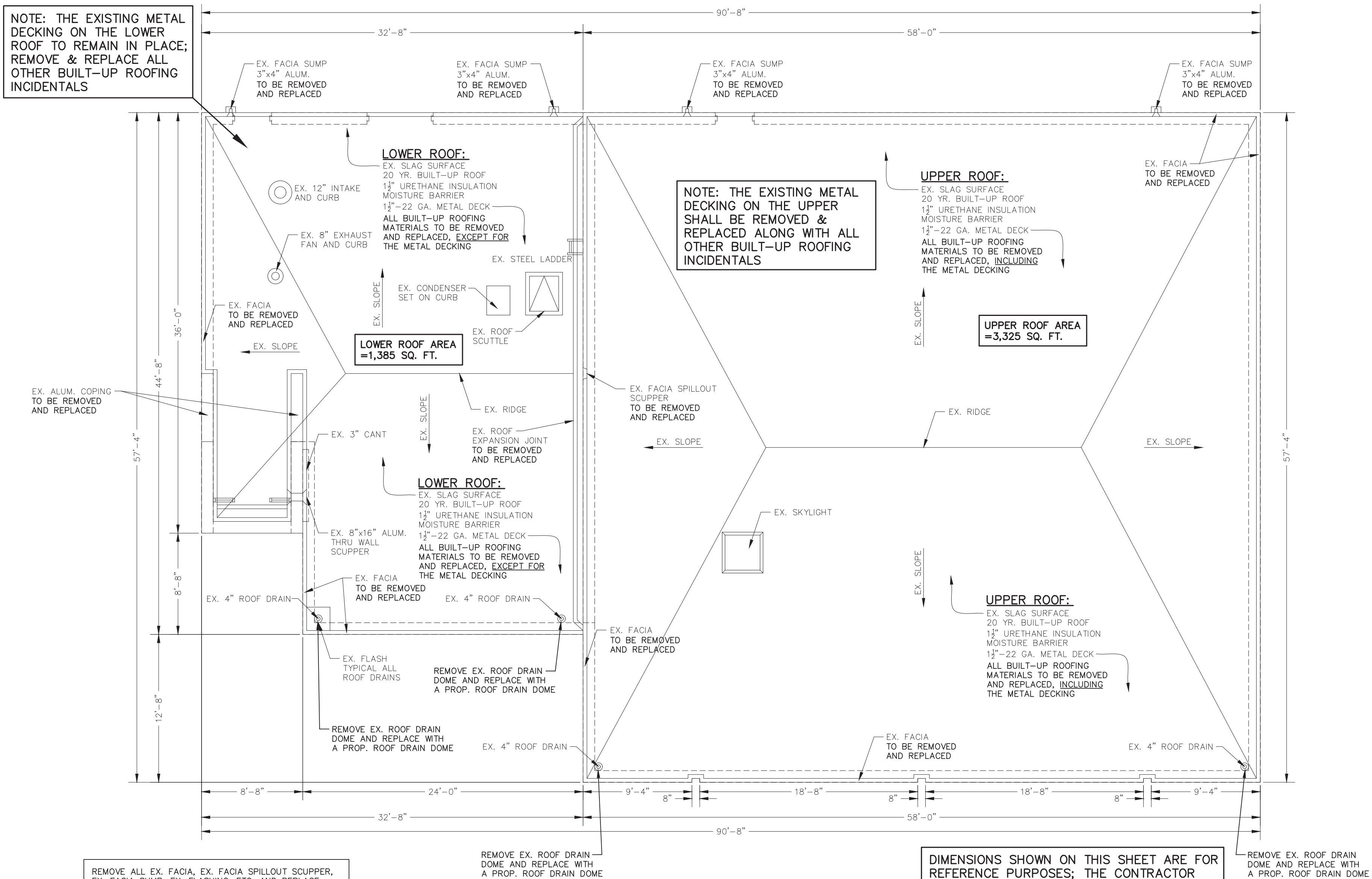
PROPOSED BRICK DETAIL
NOT TO SCALE

HORIZONTAL SCALE IN FEET
0

CAD: J.F.B.
BY: D.G.O.
DATE: 12/22
CHKD: J.F.B.
BY: D.G.O.
DATE: 12/22

EXISTING EXTERIOR BUILDING BRICK REPAIRS

CITY OF CHESTER
WATER SYSTEM IMPROVE.



REMOVE ALL EX. FACIA, EX. FACIA SPILLOUT SCUPPER, EX. FACIA SUMP, EX. FLASHING, ETC. AND REPLACE WITH NEW FACIA, FACIA SPILLOUT SCUPPER, FACIA SUMP, FLASHING, ETC.

EXISTING ROOF REMOVAL & REPLACEMENT PLAN

NOT TO SCALE

DIMENSIONS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES; THE CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS PRIOR TO ORDERING ANY MATERIALS AND DURING INSTALLATION.

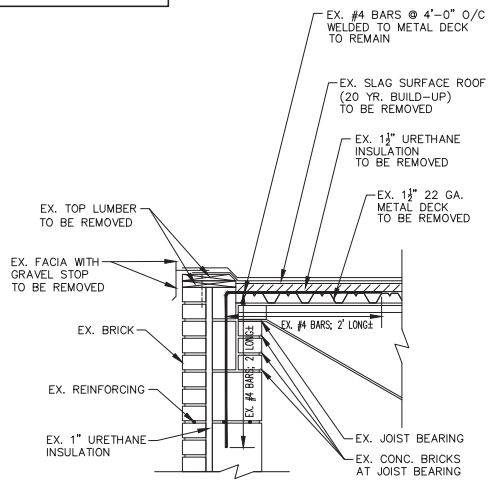
0 2 4 8 HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

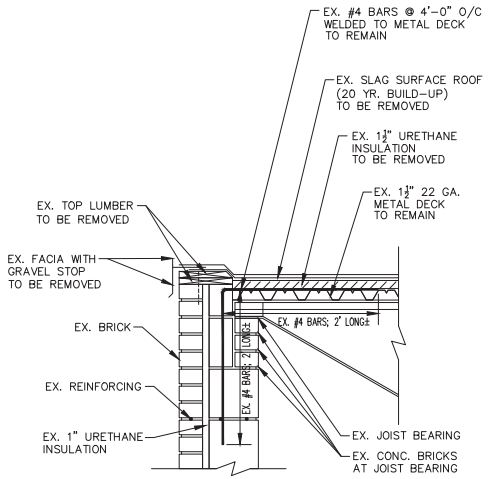
WTP BUILDING ROOF
REMOVAL & REPLACEMENT NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

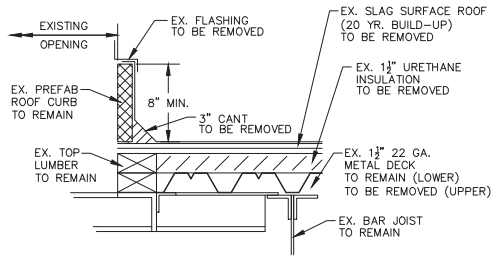
SEE ADDITIONAL ROOF DETAILS ON SHEET 47



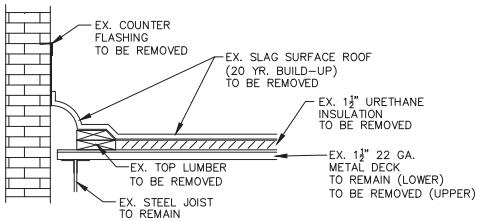
EXISTING ROOF TYPICAL BUILDUP (UPPER ROOF)
NOT TO SCALE



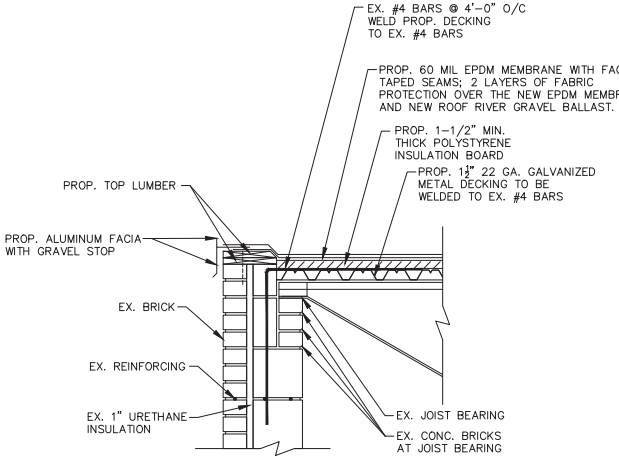
EXISTING ROOF TYPICAL BUILDUP (LOWER ROOF)
NOT TO SCALE



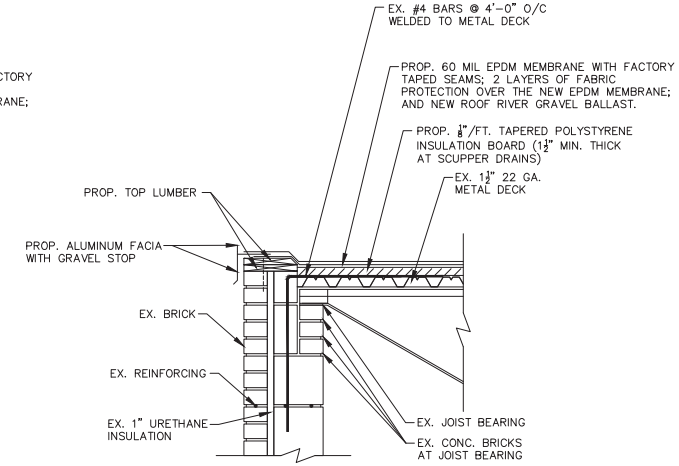
EXISTING ROOF CURB DETAIL
NOT TO SCALE



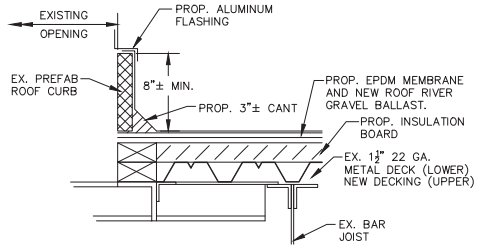
EXISTING ROOF EXPANSION JOINT DETAIL (LOWER ROOF)
NOT TO SCALE



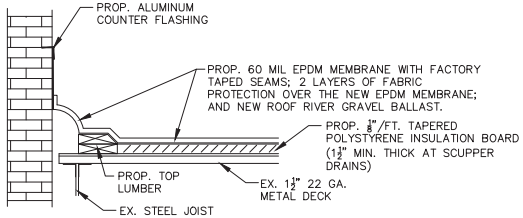
PROPOSED ROOF TYPICAL BUILDUP (UPPER ROOF)
NOT TO SCALE



PROPOSED ROOF TYPICAL BUILDUP (LOWER ROOF)
NOT TO SCALE



PROPOSED ROOF CURB DETAIL
NOT TO SCALE



PROPOSED ROOF EXPANSION JOINT DETAIL (LOWER ROOF)
NOT TO SCALE

HORIZONTAL SCALE IN FEET
0

CAD: J.F.B.
BY:
DATE: 12/22
CHKD: D.S.O.
BY:
DATE: 12/22

WTP BUILDING ROOF
REMOVAL & REPLACEMENT NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

WTP BUILDING ROOF REMOVAL & REPLACEMENT

THE FOLLOWING IS RELATIVE TO THE EXISTING WTP BUILDING ROOF REMOVAL & REPLACEMENT. THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE METHOD OF REMOVAL FOR APPROVAL BY THE RESIDENT CONSTRUCTION ENGINEER PRIOR TO PERFORMING THE REMOVAL WORK. THE PLAN SHALL INCLUDE THE INTENDED METHODS FOR THE PROTECTION OF THE INTERIOR OF THE WTP BUILDING FROM WEATHER ELEMENTS.

THE ROOF REMOVAL & REPLACEMENT SHALL BE COORDINATED WITH THE BRICK REPAIR AS FURTHER DETAILED ON SHEETS 43–44.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING THE REMOVAL & REPLACEMENT OF THE EXISTING UPPER AND LOWER ROOFS, THE CONTRACTOR SHALL PROTECT THE OTHER EXISTING BUILDING BRICK FACADE & STRUCTURE, EXISTING ROOF TRUSSES TO REMAIN, EXISTING WTP ROOF EQUIPMENT & APPURTENANCES TO REMAIN, AS WELL AS ALL OTHER PORTIONS OF THE EXISTING WATER TREATMENT PLANT BUILDING; EQUIPMENT WITHIN THE INTERIOR OF THE WTP BUILDING; ABOVE & BELOW GROUND SITE UTILITY FACILITIES; AND ANY OTHER WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

- THE INTERIOR OF THE WTP BUILDING SHALL REMAIN DRY AT ALL TIMES. THE CONTRACTOR SHALL PROVIDE ANY NECESSARY TEMPORARY ROOF COVERINGS, AND/OR SHALL REMOVE ONLY THE AMOUNT OF ROOF THAT CAN BE REPLACED IN ONE (1) WORKING DAY.

ALL PERTINENT MATERIALS NECESSARY FOR THE REMOVAL & REPLACEMENT OF THE EXISTING UPPER AND LOWER ROOFS SHALL BE PROVIDED BY THE CONTRACTOR.

UPPER ROOF REMOVAL:
(APPX. AREA = 3,325 S.F.) THE EXISTING BUILT–UP ROOF, URETHANE INSULATION, METAL DECK, FACIA, FACIA SUMP, FACIA SPILLOUT SCUPPER, FLASHING, TOP LUMBER, AND ALL OTHER PERTINENT EXISTING ROOF INCIDENTALS SHALL BE REMOVED. THE EXISTING METAL DECKING SHALL BE CAREFULLY REMOVED FROM THE EXISTING STEEL REINFORCING BARS THAT ARE TO REMAIN. IT IS ANTICIPATED THAT THE EXISTING METAL DECKING CAN BE CUT (WITH A GRINDER, ETC.) FROM THE EXISTING STEEL REINFORCING BARS FROM THE INSIDE OF THE WTP BUILDING. ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

LOWER ROOF REMOVAL:
(APPX. AREA = 1,385 S.F.) THE EXISTING BUILT–UP ROOF, URETHANE INSULATION, FACIA, FACIA SUMP, FACIA SPILLOUT SCUPPER, FLASHING, TOP LUMBER, AND ALL OTHER PERTINENT EXISTING ROOF INCIDENTALS SHALL BE REMOVED. THE EXISTING METAL DECKING SHALL REMAIN AND ALL DEBRIS SHALL BE REMOVED FROM THE TOP OF THE EXISTING DECKING PRIOR TO PLACEMENT OF THE NEW ROOF INCIDENTALS. ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

REMOVAL REQUIREMENTS (BOTH UPPER & LOWER ROOFS):

- DURING ALL ROOF REMOVAL AND REPLACEMENT OPERATIONS, THE CONTRACTOR SHALL PROTECT THE EXISTING STEEL REINFORCING, STEEL JOISTS, JOIST BEARINGS, ANY METAL DECKING TO REMAIN, ALL OTHER PERTINENT INCIDENTALS, AND THE INTERIOR OF THE WATER PLANT. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.
- A DUMPSTER FOR ALL REMOVED MATERIALS SHALL BE PROVIDED. THE CONTRACTOR SHALL COORDINATE THE DUMPSTER LOCATION WITH THE CITY WTP OPERATOR. THE LOADING AND UNLOADING LOCATION WILL BE DETERMINED BY THE GENERAL CONTRACTOR IN CONFORMANCE TO THE CONSTRUCTION PLANS & PROJECT SPECIFICATIONS.
- ALL ROOFING MATERIALS ABOVE THE METAL DECKING SHALL BE ASSUMED TO CONTAIN ASBESTOS.
  - UNLESS SAMPLING (IF THE CONTRACTOR ELECTS TO PERFORM) PROVES OTHERWISE.
  - THE CONTRACTOR MAY ELECT TO PERFORM ASBESTOS SAMPLING IN ORDER TO TO VERIFY WHETHER OR NOT ANY OF THE EXISTING MATERIALS TO BE REMOVED CONTAIN ASBESTOS, AND IN ORDER TO MINIMIZE THE REMOVAL METHODS/PROCEDURES THAT WILL BE NECESSARY.
  - ANY TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ANY PERTINENT U.S. EPA, WEST VIRGINIA DEP, OSHA, AND/OR ARMY CORPS OF ENGINEER REGULATIONS.
  - THE CONTRACTOR SHALL SUBMIT A REPORT OF ALL FINDINGS RELATED TO THE ASBESTOS TESTING TO THE CITY, CITY'S CONSTRUCTION ENGINEER, AND USACE FOR REVIEW & APPROVAL.
  - ALL COSTS FOR ASBESTOS TESTING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- SINCE IT IS ANTICIPATED THAT ROOFING REMOVAL METHODS FOR MATERIALS ABOVE THE EXISTING METAL DECKING MAY LIKELY CREATE & SPREAD RACMs (ASBESTOS CONTAINING MATERIALS), UNLESS THE CONTRACTOR CAN PROVIDE ACCEPTABLE METHODS WHICH DO NOT CREATE & SPREAD RACMs, THE REMOVAL OF THE PERTINENT EXISTING BUILT–UP ROOFING MATERIALS MUST BE CONDUCTED BY APPROPRIATELY TRAINED & LICENSED CONTRACTOR/PERSONNEL.
- THE REMOVAL OF THE PERTINENT EXISTING ROOFING ITEMS ABOVE THE EXISTING METAL DECKING SHALL BE PERFORMED IN ACCORDANCE WITH ANY PERTINENT U.S. EPA, WEST VIRGINIA DEP, OSHA, AND/OR ARMY CORPS OF ENGINEER REGULATIONS.
- ANY AREAS WHICH BECOME CONTAMINATED BY SUSPECT ASBESTOS CONTAINING MATERIALS MUST BE DECONTAMINATED BY CONTRACTOR.
- ALL ASBESTOS RELATED REMOVAL WORK SHALL BE INCLUDED IN THE BASE BID PRICING FOR THE BUILT–UP ROOF REMOVAL & REPLACEMENT.

ALL MATERIALS FOR THE PROPOSED ROOF SHALL BE PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS. FOR THE UPPER ROOF, THE PROPOSED ROOF METAL DECKING SHALL BE WELDED TO THE EXISTING STEEL REINFORCING. MATERIALS FOR BOTH THE UPPER & LOWER ROOFS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: EPDM SURFACE WITH BALLAST; POLYSTYRENE INSULATION; FACIA; FACIA SUMP; FACIA SPILLOUT SCUPPER; FLASHING; TOP LUMBER; CANTS; ROOF DRAIN DOMES; AND ALL OTHER NECESSARY INCIDENTALS FOR A COMPLETE INSTALLATION. ALL WORK SHALL BE WEATHER TIGHT.

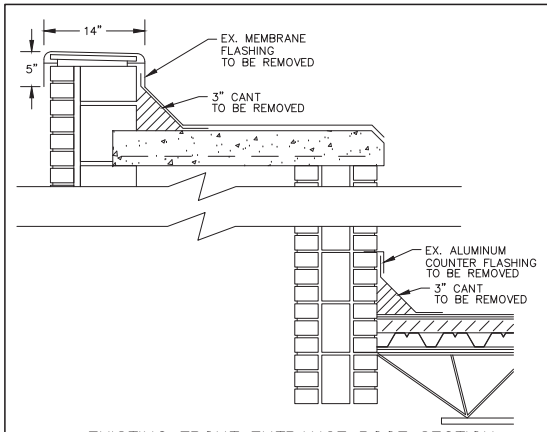
SEE SHEETS 45–46 FOR ADDITIONAL ROOF NOTES & DETAILS.

(NOTES CONT'D IN NEXT COLUMN)

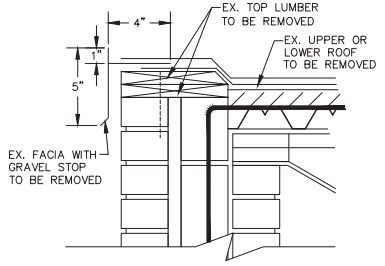
WTP BUILDING ROOF REMOVAL & REPLACEMENT (CONT'D)

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & REPLACEMENT OF THE EXISTING WTP BUILDING UPPER & LOWER ROOFS SHALL BE INCLUDED IN THE UNIT PRICES BID FOR ITEM SPECIAL – BUILT–UP ROOF MATERIAL REMOVAL & REPLACEMENT, INCLUDING ALL INCIDENTALS (NOT INCLUDING DECKING), AS PER PLAN, AND FOR ITEM SPECIAL – ROOF DECKING (ONLY) REMOVAL & REPLACEMENT, INCLUDING ALL INCIDENTALS, AS PER PLAN. THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

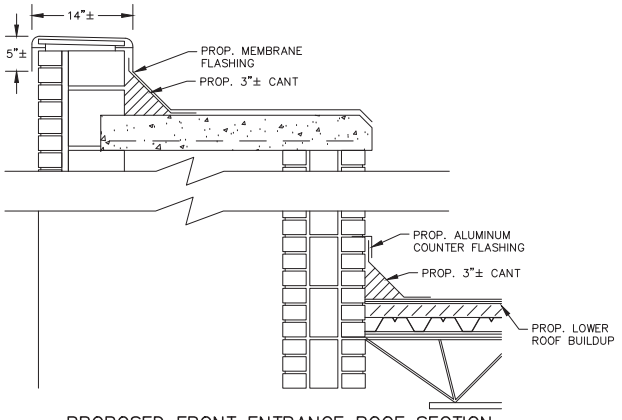
ITEM SPECIAL – BUILT–UP ROOF MATERIAL REMOVAL & REPLACEMENT, INCLUDING ALL INCIDENTALS (NOT INCLUDING DECKING), AS PER PLAN	4,710 SQ. FT.
ITEM SPECIAL – ROOF DECKING (ONLY) REMOVAL & REPLACEMENT, INCLUDING ALL INCIDENTALS, AS PER PLAN	3,325 SQ. FT.



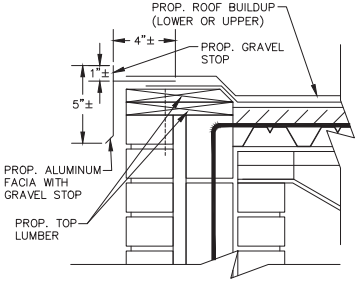
EXISTING FRONT ENTRANCE ROOF SECTION
NOT TO SCALE



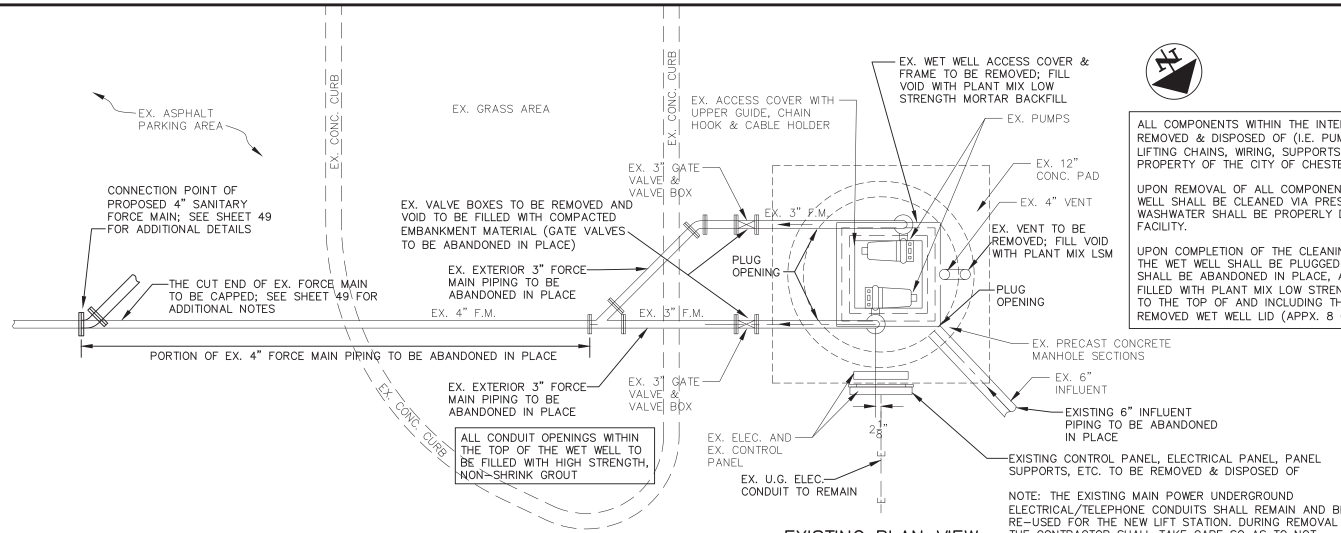
EXISTING FACIA DETAIL
NOT TO SCALE



PROPOSED FRONT ENTRANCE ROOF SECTION
NOT TO SCALE



PROPOSED FACIA DETAIL
NOT TO SCALE

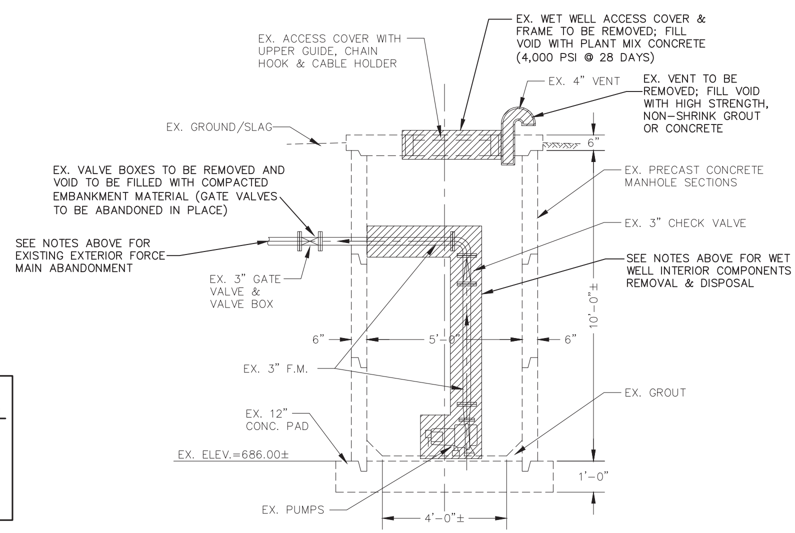


EXISTING PLAN VIEW
NOT TO SCALE

ALL COMPONENTS WITHIN THE INTERIOR OF THE WET WELL SHALL BE REMOVED & DISPOSED OF (I.E. PUMP RAILS, PIPING, CHECK VALVES LIFTING CHAINS, WIRING, SUPPORTS, ETC.). PUMPS SHALL BECOME PROPERTY OF THE CITY OF CHESTER.

UPON REMOVAL OF ALL COMPONENTS, THE ENTIRE CONCRETE WET WELL SHALL BE CLEANED VIA PRESSURE WASHING AND ALL DEBRIS WASHWATER SHALL BE PROPERLY DISPOSED OF AT AN APPROVED FACILITY.

UPON COMPLETION OF THE CLEANING ALL PIPE OPENINGS WITHIN THE WET WELL SHALL BE PLUGGED WITH GROUT, THE WET WELL SHALL BE ABANDONED IN PLACE, AND THE WET WELL SHALL BE FILLED WITH PLANT MIX LOW STRENGTH MORTAR (LSM) BACKFILL UP TO THE TOP OF AND INCLUDING THE VOID SPACE FROM THE REMOVED WET WELL LID (APPX. 8 C.Y.)



EXISTING SECTION VIEW
NOT TO SCALE

DIMENSIONS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES; THE CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING DIMENSIONS.

SEE SHEETS 49-53 FOR NEW SANITARY LIFT STATION NOTES & DETAILS.

REMOVAL OF EXTERIOR SANITARY LIFT STATION

THE FOLLOWING IS RELATIVE TO THE REMOVAL & DISPOSAL AND ABANDONMENT OF THE PERTINENT PORTIONS OF THE EXISTING SANITARY LIFT STATION AND APPURTENANCES AT THE WATER TREATMENT PLANT SITE.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING REMOVAL OF THE EXISTING SANITARY LIFT STATION COMPONENTS, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, WATER TREATMENT PLANT BUILDING, ANY OTHER WATER TREATMENT PLANT APPURTENANCES, AS WELL AS THE NEWLY INSTALLED SANITARY LIFT STATION. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE EXISTING SANITARY SEWER LIFT STATION SHALL REMAIN IN SERVICE UNTIL THE NEW SANITARY SEWER LIFT STATION HAS BEEN COMPLETELY INSTALLED AND IS IN FULL OPERATION.

THE REMOVED PUMPS SHALL BECOME PROPERTY OF THE CITY OF CHESTER AND SHALL BE STORED AT A LOCATION DESIGNATED BY THE CITY. ALL OTHER REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

SEE REMOVAL NOTES & DETAILS ON THIS SHEET.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE REMOVAL & DISPOSAL AND ABANDONMENTS OF THE EXISTING SANITARY LIFT STATION AS DESCRIBED IN THE NOTES & DETAILS ON THIS SHEET, IN THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE EXTERIOR SANITARY LIFT STATION, AS PER PLAN.

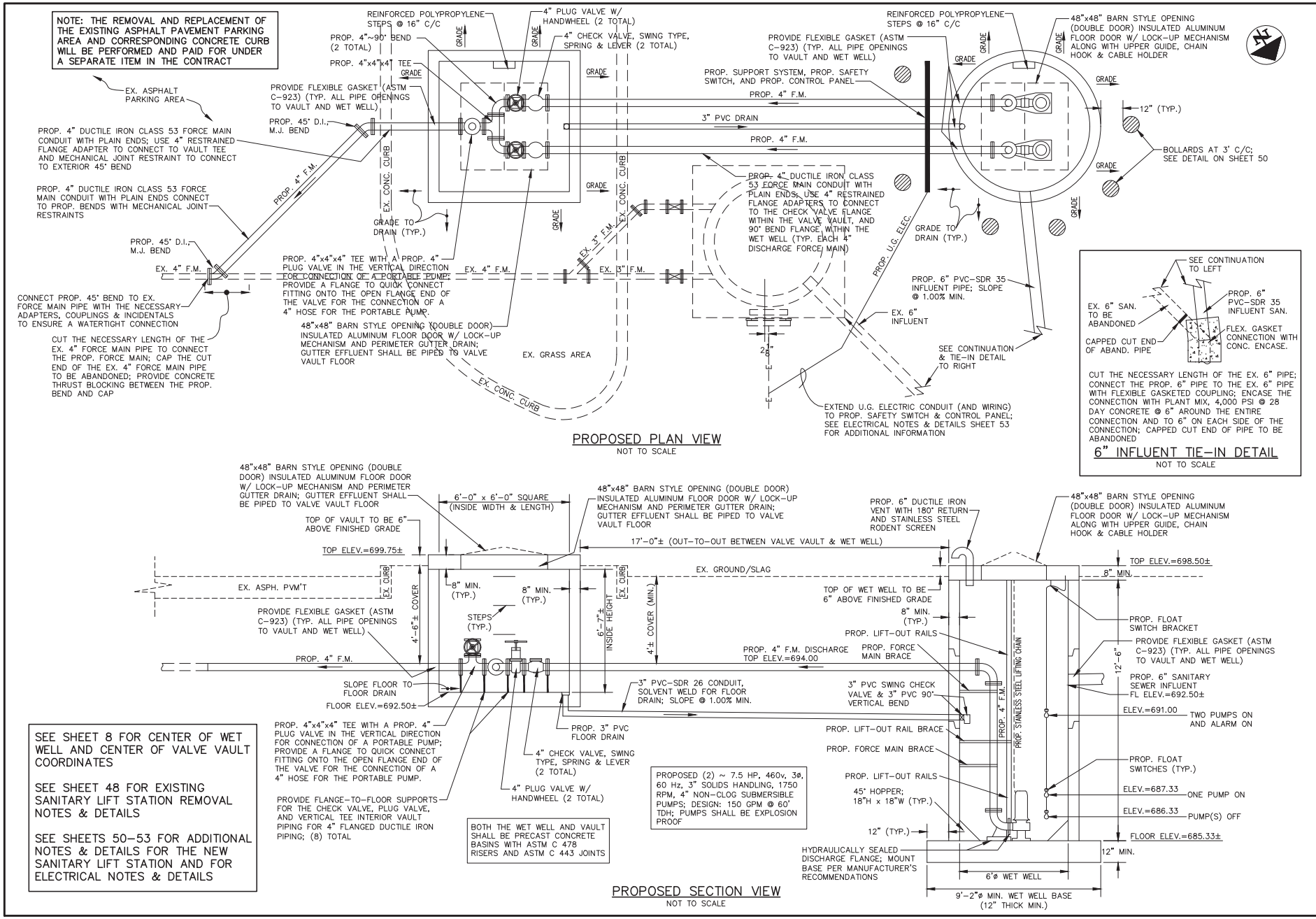
NOTE: SEE NEW EXTERIOR SANITARY LIFT STATION NOTES AND DETAILS ON SHEETS 49-53.

EXTERIOR SANITARY LIFT STATION
REMOVAL & DISPOSAL NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

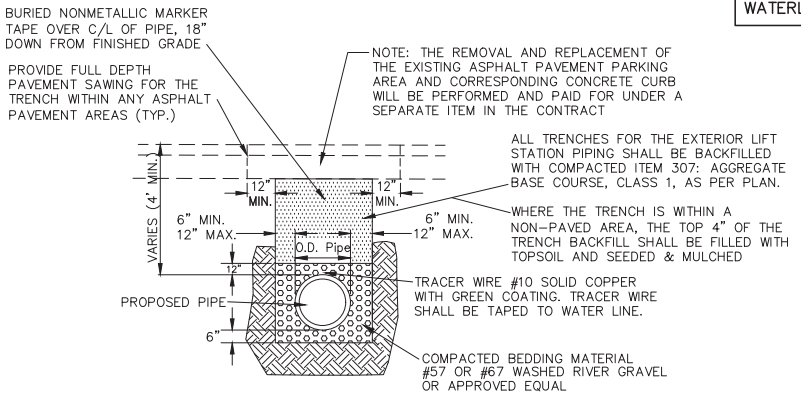
CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

0 2 4
HORIZONTAL SCALE IN FEET

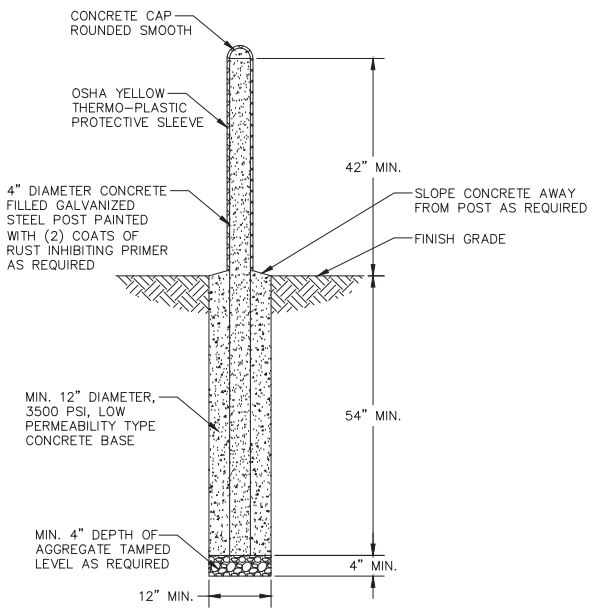

NOTE: THE REMOVAL AND REPLACEMENT OF THE EXISTING ASPHALT PAVEMENT PARKING AREA AND CORRESPONDING CONCRETE CURB WILL BE PERFORMED AND PAID FOR UNDER A SEPARATE ITEM IN THE CONTRACT
EX. ASPHALT PARKING AREA
PROP. 4" DUCTILE IRON CLASS 53 FORCE MAIN CONDUIT WITH PLAIN ENDS; USE 4" RESTRAINED FLANGE ADAPTER TO CONNECT TO VAULT TEE AND MECHANICAL JOINT RESTRAINT TO CONNECT TO EXTERIOR 45° BEND
PROP. 4" DUCTILE IRON CLASS 53 FORCE MAIN CONDUIT WITH PLAIN ENDS CONNECT TO PROP. BENDS WITH MECHANICAL JOINT RESTRAINTS
PROP. 45° D.I., M.J. BEND
EX. 4" F.M.
CONNECT PROP. 45° BEND TO EX. FORCE MAIN PIPE WITH THE NECESSARY ADAPTERS, COUPLINGS & INCIDENTALS TO ENSURE A WATERTIGHT CONNECTION
CUT THE NECESSARY LENGTH OF THE EX. 4" FORCE MAIN PIPE TO CONNECT THE PROP. FORCE MAIN; CAP THE CUT END OF THE EX. 4" FORCE MAIN PIPE TO BE ABANDONED; PROVIDE CONCRETE THRUST BLOCKING BETWEEN THE PROP. BEND AND CAP
REINFORCED POLYPROPYLENE STEPS @ 16" C/C
PROP. 4"~90° BEND (2 TOTAL)
PROP. 4"x4"x4" TEE
PROVIDE FLEXIBLE GASKET (ASTM C-923) (TYP. ALL PIPE OPENINGS TO VAULT AND WET WELL)
PROP. 45° D.I., M.J. BEND
PROP. 4" PLUG VALVE W/ HANDWHEEL (2 TOTAL)
4" CHECK VALVE, SWING TYPE, SPRING & LEVER (2 TOTAL)
GRADE
EX. CONC. CURB
GRADE TO DRAIN (TYP.)
PROP. 4"x4"x4" TEE WITH A PROP. 4" PLUG VALVE IN THE VERTICAL DIRECTION FOR CONNECTION OF A PORTABLE PUMP; PROVIDE A FLANGE TO QUICK CONNECT FITTING ONTO THE OPEN FLANGE END OF THE VALVE FOR THE CONNECTION OF A 4" HOSE FOR THE PORTABLE PUMP.
48"x48" BARN STYLE OPENING (DOUBLE DOOR) INSULATED ALUMINUM FLOOR DOOR W/ LOCK-UP MECHANISM AND PERIMETER GUTTER DRAIN; GUTTER EFFLUENT SHALL BE PIPED TO VALVE VAULT FLOOR
EX. GRASS AREA
EX. CONC. CURB
EX. 4" F.M.
EX. 3" F.M.
PROP. 4" F.M.
3" PVC DRAIN
PROP. SUPPORT SYSTEM, PROP. SAFETY SWITCH, AND PROP. CONTROL PANEL
PROP. 4" DUCTILE IRON CLASS 53 FORCE MAIN CONDUIT WITH PLAIN ENDS; USE 4" RESTRAINED FLANGE ADAPTERS TO CONNECT TO THE CHECK VALVE FLANGE WITHIN THE VALVE VAULT, AND 90° BEND FLANGE, WITHIN THE WET WELL (TYP. EACH 4" DISCHARGE FORCE MAIN)
PROP. U.G. ELEC.
PROP. 6" PVC-SDR 35 INFLUENT PIPE; SLOPE @ 1.00% MIN.
EX. 6" INFLUENT
SEE CONTINUATION & TIE-IN DETAIL TO RIGHT
EXTEND U.G. ELECTRIC CONDUIT (AND WIRING) TO PROP. SAFETY SWITCH & CONTROL PANEL; SEE ELECTRICAL NOTES & DETAILS SHEET 53 FOR ADDITIONAL INFORMATION
REINFORCED POLYPROPYLENE STEPS @ 16" C/C
PROVIDE FLEXIBLE GASKET (ASTM C-923) (TYP. ALL PIPE OPENINGS TO VAULT AND WET WELL)
48"x48" BARN STYLE OPENING (DOUBLE DOOR) INSULATED ALUMINUM FLOOR DOOR W/ LOCK-UP MECHANISM ALONG WITH UPPER GUIDE, CHAIN HOOK & CABLE HOLDER
12" (TYP.)
BOLLARDS AT 3' C/C; SEE DETAIL ON SHEET 50
PROP. 4" F.M.
3" PVC DRAIN
PROP. 4" F.M.
GRADE TO DRAIN (TYP.)
PROPOSED PLAN VIEW
NOT TO SCALE
SEE CONTINUATION TO LEFT
PROP. 6" PVC-SDR 35 INFLUENT SAN.
EX. 6" SAN. TO BE ABANDONED
FLEX. GASKET CONNECTION WITH CONC. ENCASE.
CAPPED CUT END OF ABAND. PIPE
CUT THE NECESSARY LENGTH OF THE EX. 6" PIPE; CONNECT THE PROP. 6" PIPE TO THE EX. 6" PIPE WITH FLEXIBLE GASKETED COUPLING; ENCASE THE CONNECTION WITH PLANT MIX, 4,000 PSI @ 28 DAY CONCRETE @ 6" AROUND THE ENTIRE CONNECTION AND TO 6" ON EACH SIDE OF THE CONNECTION; CAPPED CUT END OF PIPE TO BE ABANDONED
6" INFLUENT TIE-IN DETAIL
NOT TO SCALE
48"x48" BARN STYLE OPENING (DOUBLE DOOR) INSULATED ALUMINUM FLOOR DOOR W/ LOCK-UP MECHANISM AND PERIMETER GUTTER DRAIN; GUTTER EFFLUENT SHALL BE PIPED TO VALVE VAULT FLOOR
6'-0" x 6'-0" SQUARE (INSIDE WIDTH & LENGTH)
TOP OF VAULT TO BE 6" ABOVE FINISHED GRADE
TOP ELEV.=699.75±
EX. ASPH. PVM'T
EX. CURB
4'-6"± COVER
8" MIN. (TYP.)
STEPS (TYP.)
PROVIDE FLEXIBLE GASKET (ASTM C-923) (TYP. ALL PIPE OPENINGS TO VAULT AND WET WELL)
PROP. 4" F.M.
SLOPE FLOOR TO FLOOR DRAIN
FLOOR ELEV.=692.50±
PROP. 4"x4"x4" TEE WITH A PROP. 4" PLUG VALVE IN THE VERTICAL DIRECTION FOR CONNECTION OF A PORTABLE PUMP; PROVIDE A FLANGE TO QUICK CONNECT FITTING ONTO THE OPEN FLANGE END OF THE VALVE FOR THE CONNECTION OF A 4" HOSE FOR THE PORTABLE PUMP.
PROVIDE FLANGE-TO-FLOOR SUPPORTS FOR THE CHECK VALVE, PLUG VALVE, AND VERTICAL TEE INTERIOR VAULT PIPING FOR 4" FLANGED DUCTILE IRON PIPING; (8) TOTAL
PROP. 3" PVC FLOOR DRAIN
4" CHECK VALVE, SWING TYPE, SPRING & LEVER (2 TOTAL)
4" PLUG VALVE W/ HANDWHEEL (2 TOTAL)
BOTH THE WET WELL AND VAULT SHALL BE PRECAST CONCRETE BASINS WITH ASTM C 478 RISERS AND ASTM C 443 JOINTS
6'-7"± INSIDE HEIGHT
4'± COVER (MIN.)
48"x48" BARN STYLE OPENING (DOUBLE DOOR) INSULATED ALUMINUM FLOOR DOOR W/ LOCK-UP MECHANISM AND PERIMETER GUTTER DRAIN; GUTTER EFFLUENT SHALL BE PIPED TO VALVE VAULT FLOOR
17'-0"± (OUT-TO-OUT BETWEEN VALVE VAULT & WET WELL)
EX. GROUND/SLAG
8" MIN. (TYP.)
3" PVC-SDR 26 CONDUIT, SOLVENT WELD FOR FLOOR DRAIN; SLOPE @ 1.00% MIN.
PROPOSED (2) ~ 7.5 HP, 460v, 3ø, 60 Hz, 3" SOLIDS HANDLING, 1750 RPM, 4" NON-CLOG SUBMERSIBLE PUMPS; DESIGN: 150 GPM @ 60' TDH; PUMPS SHALL BE EXPLOSION PROOF
PROP. 6" DUCTILE IRON VENT WITH 180° RETURN AND STAINLESS STEEL RODENT SCREEN
48"x48" BARN STYLE OPENING (DOUBLE DOOR) INSULATED ALUMINUM FLOOR DOOR W/ LOCK-UP MECHANISM ALONG WITH UPPER GUIDE, CHAIN HOOK & CABLE HOLDER
TOP ELEV.=698.50±
8" MIN.
TOP OF WET WELL TO BE 6" ABOVE FINISHED GRADE
8" MIN. (TYP.)
PROP. LIFT-OUT RAILS
PROP. 4" F.M. DISCHARGE TOP ELEV.=694.00
PROP. FORCE MAIN BRACE
PROP. FLOAT SWITCH BRACKET
PROVIDE FLEXIBLE GASKET (ASTM C-923) (TYP. ALL PIPE OPENINGS TO VAULT AND WET WELL)
12'-6"
PROP. 6" SANITARY SEWER INFLUENT FL ELEV.=692.50±
3" PVC SWING CHECK VALVE & 3" PVC 90° VERTICAL BEND
PROP. 4" F.M.
PROP. STAINLESS STEEL LIFTING CHAIN
ELEV.=691.00
TWO PUMPS ON AND ALARM ON
PROP. LIFT-OUT RAIL BRACE
PROP. FORCE MAIN BRACE
PROP. FLOAT SWITCHES (TYP.)
PROP. LIFT-OUT RAILS
45° HOPPER; 18"H x 18"W (TYP.)
ELEV.=687.33
ONE PUMP ON
ELEV.=686.33
PUMP(S) OFF
12" (TYP.)
FLOOR ELEV.=685.33±
HYDRAULICALLY SEALED DISCHARGE FLANGE; MOUNT BASE PER MANUFACTURER'S RECOMMENDATIONS
12" MIN.
6'ø WET WELL
9'-2"ø MIN. WET WELL BASE (12" THICK MIN.)
PROPOSED SECTION VIEW
NOT TO SCALE
SEE SHEET 8 FOR CENTER OF WET WELL AND CENTER OF VALVE VAULT COORDINATES
SEE SHEET 48 FOR EXISTING SANITARY LIFT STATION REMOVAL NOTES & DETAILS
SEE SHEETS 50-53 FOR ADDITIONAL NOTES & DETAILS FOR THE NEW SANITARY LIFT STATION AND FOR ELECTRICAL NOTES & DETAILS
HORIZONTAL SCALE IN FEET
0 1 2 4
CAD: J.F.B. DATE: 12/22
CHKD: D.G.D. DATE: 12/22
EXTERIOR SANITARY LIFT STATION
NEW SANITARY LIFT STATION NOTES & DETAILS
CITY OF CHESTER
WATER SYSTEM IMPROVE.
49
81

EXCAVATION, BEDDING, BACKFILL, AND OTHER INCIDENTALS NECESSARY FOR THE INSTALLATION OF THE PROPOSED SANITARY LIFT STATION EXTERIOR PIPING SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR THE LIFT STATION.

FOR CONCRETE THRUST BLOCK DETAILS, SEE SHEET 79 OF THE WATERLINE DETAILS



TYPICAL FORCE MAIN/GRAVITY SEWER TRENCH DETAIL



TYPICAL BOLLARD DETAIL (FIXED TYPE)
NOT TO SCALE

HORIZONTAL SCALE IN FEET
0 1 2 4

CAD: J.F.B. DATE:12/22
CHKD: BY:D.G.D. DATE:12/22

EXTERIOR SANITARY LIFT STATION
NEW SANITARY LIFT STATION NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

NEW EXTERIOR SANITARY LIFT STATION

THE FOLLOWING IS RELATIVE TO THE PROVIDING OF ALL MATERIALS AND INSTALLATION OF THE NEW SANITARY LIFT STATION AT THE WATER TREATMENT PLANT SITE.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

THE EXISTING SANITARY LIFT STATION SHALL REMAIN IN SERVICE UNTIL THE NEW SANITARY LIFT STATION IS FULLY OPERATIONAL.

DURING INSTALLATION OF THE NEW SANITARY LIFT STATION, THE CONTRACTOR SHALL PROTECT THE EXISTING SANITARY LIFT STATION AND ALL ABOVE & BELOW GROUND UTILITY FACILITIES, WATER TREATMENT PLANT BUILDING, AND ANY OTHER WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL EQUIPMENT/MATERIALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE NEW SANITARY LIFT STATION SHALL BE PROVIDED BY THE CONTRACTOR. THE LIFT STATION COMPONENTS SHALL MEET INDUSTRY STANDARDS. ALL EQUIPMENT/MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT EQUIPMENT/MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED. THE CONTRACTOR SHALL COORDINATE ALL NECESSARY MATERIALS WITH THE VARIOUS MANUFACTURERS.

- WORKMANSHIP SHALL BE FIRST CLASS IN EVERY RESPECT AND A NEAT AND WORKMANLIKE APPEARANCE OF THE FINISHED WORK WILL BE REQUIRED. WORK MUST BE DONE BY MEN SKILLED IN THE TRADES REQUIRED, ACCORDING TO THE BEST CUSTOMS AND PRACTICES, AND IN COMPLIANCE WITH ALL APPLICABLE CODES. PROPER PROVISIONS MUST BE MADE FOR DRAINAGE, EXPANSION AND CONTRACTION, AND FOR DISMANTLING.

GENERAL:

MAJOR COMPONENTS AND WORK ITEMS FOR THE NEW SANITARY LIFT STATION TO BE SUPPLIED/PERFORMED SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

- PRE-CAST REINFORCED CONCRETE WET WELL WITH A SEPARATE PRECAST REINFORCED CONCRETE VALVE VAULT INCLUDING ACCESS DOORS WITH LOCKS, WET WELL VENT, VALVE VAULT FLOOR DRAIN, ETC.
- TWO (2) SUBMERSIBLE SEWAGE PUMPS WITH HYDRAULIC SEALING FLANGES, PUMP MOUNTING BASE, DISCHARGE ELBOW, AND PUMP LIFTING CHAINS
- PUMP LIFT-OUT/GUIDE RAILS.
- SEALED MERCURY TUBE LEVEL SWITCHES.
- ALL INTERNAL PIPING, VALVES, TEES, BENDS, FLOOR STAND FLANGE SUPPORTS, WALL SUPPORTS, AND INCIDENTALS.
- ALL EXTERNAL PIPING BETWEEN THE VALVE VAULT AND WET WELL INCLUDING THE VALVE VAULT FLOOR DRAIN PIPING DRAINAGE PIPING; ALL EXTERNAL PIPING BETWEEN THE EXISTING FORCE MAIN AND THE VALVE VAULT; ALL GRAVITY PIPING BETWEEN THE EXISTING GRAVITY SANITARY SEWER & THE WET WELL; ALL CONCRETE FOR PIPE ENCASEMENT & THRUST BLOCKING;
- CONTROL PANEL INCLUDING THE NECESSARY VARIABLE FREQUENCY DRIVES (VFD'S) FOR SOFT STARTING OF THE PUMPS, TELEPHONE DIALER, AND ALL OTHER APPURTENANCES DESCRIBED IN THE SPECIFICATIONS.
- ALL ELECTRICAL WORK ASSOCIATED WITH THE LIFT STATION INCLUDING INSTALLATION OF THE UNDERGROUND CONDUIT & MAIN POWER WIRING FROM THE BUILDING MAIN POWER, UNDERGROUND TELEPHONE CONDUIT & WIRING, AND ALL ELECTRICAL WORK AS REQUIRED BY THE MANUFACTURER.
- CLEARING & GRUBBING; EXCAVATION; DEWATERING EXCAVATED AREAS; EXCAVATION AND EMBANKMENT FOR UNSUITABLE SOILS; REMOVAL & DISPOSAL OF ALL UNUSED EXCAVATED MATERIALS; ROCK EXCAVATION; ALL BEDDING & BACKFILL; SUBGRADE COMPACTION; BOLLARDS; TOPSOIL, SEEDING & MULCHING; AND GRADING FOR PROPER DRAINAGE.
- ALL OTHER APPURTENANCES AND INCIDENTALS AS SHOWN ON THE CONSTRUCTION PLANS, PROJECT SPECIFICATIONS, OR AS REQUIRED BY THE MANUFACTURERS FOR A COMPLETE INSTALLATION OF THE NEW SANITARY LIFT STATION.

NEW EXTERIOR SANITARY LIFT STATION (CONT'D)

SUBMITTALS:

THE CONTRACTOR SHALL OBTAIN SHOP DRAWINGS FROM THE MANUFACTURERS FOR ALL OF THE NECESSARY MATERIALS, EQUIPMENT, AND INCIDENTALS FOR A COMPLETE INSTALLATION OF THE NEW SANITARY LIFT STATION AND SHALL SUBMIT THE SHOP DRAWINGS TO THE CONSTRUCTION ENGINEER FOR REVIEW AND ACCEPTANCE. ALL EQUIPMENT/MATERIAL SHOP DRAWINGS SHALL BE DETAILED AND SHALL INCLUDE INFORMATION SUCH AS: PUMP DATA, PUMP CURVES, MOTOR DATA, ELECTRICAL DATA, WIRING DIAGRAMS, EQUIPMENT MATERIALS & COMPONENTS, MOUNTING DETAILS, ANCHOR DETAILS, INSTALLATION DETAILS, WET WELL/VALVE VAULT STRUCTURAL CALCULATIONS, AND ALL OTHER NECESSARY INCIDENTAL DETAILS AND INFORMATION IN ORDER FOR THE CONSTRUCTION ENGINEER TO MAKE AN ACCURATE DETERMINATION AS TO WHETHER OR NOT THE DESIGN OF THE EQUIPMENT/MATERIALS COMPLY WITH THE SPECIFICATIONS AND WHETHER OR NOT THE EQUIPMENT/MATERIALS ARE ACCEPTABLE FOR THE USE FOR WHICH THEY ARE INTENDED.

- THE CONTRACTOR SHALL SUBMIT TO THE OWNER TWO (2) COPIES OF COMPLETE INSTRUCTION MANUALS WITH DETAILED OPERATION, MAINTENANCE, & INSTALLATION DATA FOR EACH COMPONENT PROVIDED FOR THE LIFT STATION.

EQUIPMENT/MATERIALS:

PRE-CAST REINFORCED CONCRETE WET WELL:

- A PRE-CAST REINFORCED CONCRETE WET WELL SHALL BE PROVIDED. THE INSIDE DIMENSIONS OF THE WET WELL SHALL BE (6) FEET DIAMETER BY (12) FEET DEEP WITH A MINIMUM WALL THICKNESS OF (8) INCHES.
- THE WET WELL BASE SHALL HAVE A MINIMUM THICKNESS OF (12) INCHES AND SHALL EXTEND (12) INCHES BEYOND THE VERTICAL WALL SECTION OF THE WET WELL. THE BASE SHALL BE MONOLITHICALLY POURED WITH THE WALL SECTION.
- A ONE PIECE PRE-CAST REINFORCED MONOLITHIC CONCRETE LID WITH A MINIMUM THICKNESS OF (8) INCHES SHALL COVER THE WET WELL.
- THE CONCRETE BASE, BARREL AND LID/TOP SECTION SHALL CONFORM TO ASTM SPEC. C-478 FOR THICKNESS, STRENGTH AND REINFORCING, AND HAVE JOINTS WHICH CONFORMING TO ASTM SPEC. C-443.
- THE WET WELL LID SHALL HAVE A FULL ACCESS OPENING TO PROVIDE ACCESS TO THE PUMPS. ONE (1)~48"X48" DOUBLE DOOR ACCESS FRAME SHALL BE MOUNTED IN THE LID OF THE WET WELL TO PROVIDE ACCESS TO THE PUMPS. THE ACCESS FRAME SHALL BE FABRICATED OF STEEL OR ALUMINUM. THE FRAME SHALL SUPPORT THE GUIDE RAILS. TWO (2) SEPARATE HINGED COVERS SHALL BE PROVIDED FOR THE ACCESS FRAME AND SHALL BE FABRICATED OF STEEL OR ALUMINUM DESIGNED FOR A MINIMUM LIVE LOAD OF 150 POUNDS PER SQUARE FOOT. EACH COVER SHALL BE PROVIDED WITH A LIFTING HANDLE, LOCKING HASP, AND SAFETY LATCH TO HOLD THE COVERS IN THE OPEN POSITION. ALL FABRICATED FRAMES AND COVERS FOR THE WET WELL SHALL BE COATED INSIDE AND OUTSIDE WITH TAR BASE EPOXY PAINT.
- A WET WELL VENT SHALL BE PROVIDED AND SHALL CONSIST OF A MINIMUM 4" DUCTILE IRON VENT WITH 180° RETURN AND STAINLESS STEEL RODENT SCREEN.
- PROVIDE FLEXIBLE GASKETS (ASTM C-923) FOR ALL PIPE OPENINGS.

PRE-CAST REINFORCED CONCRETE VALVE VAULT:

- A PRE-CAST REINFORCED CONCRETE VALVE VAULT (SEPARATE FROM THE EXISTING WET WELL) SHALL BE PROVIDED. THE INSIDE DIMENSIONS OF THE VALVE VAULT SHALL BE (6) FEET BY (6) FEET (SQUARE) AND 5'-10" DEEP WITH A MINIMUM WALL THICKNESS OF (8) INCHES.
- THE VALVE VAULT BASE SHALL HAVE A MINIMUM THICKNESS OF (8) INCHES, AND SHALL BE MONOLITHICALLY POURED WITH THE WALL SECTION.
- A ONE PIECE PRE-CAST REINFORCED MONOLITHIC CONCRETE LID WITH A MINIMUM THICKNESS OF (8) INCHES SHALL COVER THE VALVE VAULT.
- THE CONCRETE BASE, BARREL AND LID/TOP SECTION SHALL CONFORM TO ASTM SPEC. C-478 FOR THICKNESS, STRENGTH AND REINFORCING, AND HAVE JOINTS WHICH CONFORMING TO ASTM SPEC. C-443.
- THE VALVE VAULT LID SHALL HAVE A FULL ACCESS OPENING TO PROVIDE ACCESS TO THE VALVES. ONE (1) 48"X48" DOUBLE DOOR ACCESS FRAME SHALL BE MOUNTED IN THE LID OF THE VALVE VAULT TO PROVIDE ACCESS TO THE VALVES AND PORTABLE PUMP CONNECTION. THE ACCESS FRAME AND COVERS SHALL BE FABRICATED OF STEEL OR ALUMINUM. TWO (2) HINGED COVERS SHALL BE PROVIDED AND SHALL BE FABRICATED OF STEEL OR ALUMINUM DESIGNED FOR A MINIMUM LIVE LOAD OF 150 POUNDS PER SQUARE FOOT. EACH COVER SHALL BE PROVIDED WITH A LIFTING HANDLE, LOCKING HASP, AND SAFETY LATCH TO HOLD THE COVERS IN THE OPEN POSITION. ALL FABRICATED FRAMES AND COVERS FOR THE VALVE VAULT SHALL BE COATED INSIDE AND OUTSIDE WITH TAR BASE EPOXY PAINT.
- PROVIDE FLEXIBLE GASKETS (ASTM C-923) FOR ALL PIPE OPENINGS.

NEW EXTERIOR SANITARY LIFT STATION (CONT'D)

EQUIPMENT/MATERIALS (CONT'D):

PUMPS, MOTORS, & PUMP APPURTENANCES:

- PUMP OPERATING CONDITIONS: EACH PUMP SHALL HAVE A MINIMUM CAPACITY OF 150 GPM MINIMUM AT A TOTAL MINIMUM HEAD OF 60.0 FEET WHEN OPERATING AT 1750 RPM. PUMP MOTORS SHALL BE 7.50 HP, 460 VOLT, 3 PHASE, 60 HZ. THE PUMPS SHALL HAVE THE CAPABILITY OF RUNNING DRY FOR EXTENDED PERIODS WITHOUT DAMAGE TO MOTOR AND/OR SEAL. THE PUMPS SHALL BE OF THE 4 INCH NON-CLOG SEALED SUBMERSIBLE TYPE. PUMPS SHALL BE CAPABLE OF HANDLING 3 INCH SPHERICAL SOLIDS.
- PUMP MOTOR CONSTRUCTION:
  - ALL METAL PARTS OF THE SEAL INCLUDING THE SPRING AND ALL PUMP FASTENERS SHALL BE STAINLESS STEEL.
  - PUMPS SHALL BE EXPLOSION PROOF.
  - PUMP MOTOR SHALL BE OF THE SEALED SUBMERSIBLE TYPE WITH STANDARD INSULATION. MOTOR STATOR SHALL BE HELD IN PLACE WITH REMOVABLE END RING SO THAT IT CAN BE REMOVED FOR REPAIR WITHOUT HEATING THE OUTER SHELL OR USING A PRESS. THE PUMP MOTOR-SHAFT SHALL BE STAINLESS STEEL.
  - PUMP SHALL BE A STANDARD PRODUCTION PUMP WITH ATTACHED RAIL GUIDES AND DISCHARGE ELBOW. RAIL GUIDES SHALL BE FASTENED TO PUMP SO THAT ALL LIFTING LOADS WILL COME ON THE GUIDE SUPPORTS AND NOT ON THE PUMP OR MOTOR HOUSING.
- PUMP MOUNTING BASES: A SEPARATE MOUNTING PLATE SHALL BE FURNISHED FOR EACH PUMP. THE PLATES SHALL INCLUDE ADJUSTABLE GUIDE RAIL SUPPORTS AND A DUCTILE IRON DISCHARGE ELBOW WITH FLANGE TO ALIGN WITH PUMP HYDRAULIC SEALING FLANGE. THE DISCHARGE ELBOW SHALL HAVE A CLASS 150 STANDARD FLANGE PIPE SIZE RELATIVE TO THE DISCHARGE PIPE DIAMETER CALLED FOR IN THE PLANS. PLATES AND FITTINGS SHALL BE COATED WITH BASE EPOXY PAINT.
- HYDRAULIC SEALING FLANGE: THE DISCHARGE OF EACH PUMP SHALL BE FITTED WITH A DIAPHRAGM-TYPE HYDRAULICALLY OPERATED SEALING FLANGE. WHEN THE PUMP IS IN OPERATION, PRESSURE SHALL FORCE DIAPHRAGM AGAINST DISCHARGE ELBOW FLANGE PROVIDING A LEAK-PROOF SEAL. WHEN THE PUMP IS IDLE, PRESSURE SHALL BE REMOVED FROM THE DIAPHRAGM SO THAT PUMP CAN BE REMOVED FROM SUMP WITH NO MECHANICAL CONTACT OF SEALING FLANGES. COMPLETE WEIGHT OF PUMP TO REST ON BOTTOM SUPPORT PLATE. NO WEIGHT IS TO BE SUPPORTED ON GUIDE RAILS OR DISCHARGE ELBOW. THE SEALING DIAPHRAGM IS TO BE REMOVABLE AND IS TO BE MOUNTED ON THE PUMP DISCHARGE FLANGE. THE DIAPHRAGM MATERIAL TO BE BUNA-N RUBBER MATERIAL, OR EQUAL.
- LIFT-OUT RAILS: TWO LIFT-OUT RAIL PIPES SHALL BE PROVIDED FOR EACH PUMP AND SHALL BE USED TO GUIDE THE PUMP FROM THE SURFACE TO THE DISCHARGE BASE CONNECTION. THE GUIDE RAILS SHALL BE A MINIMUM OF 1-1/2" STAINLESS STEEL PIPE. THE WEIGHT OF THE PUMP SHALL BEAR SOLELY ON THE DISCHARGE BASE AND NOT ON THE GUIDE RAILS. THE GUIDE RAILS SHALL BE FIRMLY ATTACHED TO THE ACCESS HATCH FRAME.
- A STAINLESS STEEL LIFTING CABLE OF SUFFICIENT LENGTH SHALL BE SUPPLIED FOR EACH PUMP FOR PUMP REMOVAL. THE CABLES SHALL INCLUDE AN ADEQUATE NUMBER OF LIFTING RINGS FOR EASY REMOVAL.

WET WELL AND VALVE VAULT INTERIOR PIPING AND FITTINGS:

- ALL PIPE SEGMENTS WITHIN THE WET WELL AND VALVE VAULT SHALL BE DUCTILE IRON CLASS 53 WITH CLASS 150 FLANGED ENDS AND THE INTERIOR SHALL BE LINED WITH AN ASPHALTIC COATING PER AWWA C110, C115 OR C151, AT A MINIMUM.
- ALL FITTINGS WITHIN THE WET WELL AND VALVE VAULT SHALL BE DUCTILE IRON WITH CLASS 150 FLANGED ENDS (AWWA C110), AND THE INTERIOR SHALL BE LINED WITH AN ASPHALTIC COATING PER AWWA C110, C115 OR C151, AT A MINIMUM.
- PLUG VALVES SHALL BE THE NON-LUBRICATED ECCENTRIC TYPE WITH AN ELASTOMER COVERING THE ENTIRE PLUG SEATING SURFACES, BOTH FRONT AND BACK AND WITH THE FOLLOWING ADDITIONAL GENERAL REQUIREMENTS:
  - ROUND-PORTED IN FULL COMPLIANCE WITH AWWA C517 WITH CLASS 150 FLANGED ENDS AND SHALL BE IN ACCORDANCE WITH ANSI B16.1.
  - THE BODY SHALL BE DUCTILE IRON IN ACCORDANCE WITH ASTM A536, GRADE 65-45-12.
  - SEAT SHALL BE 99% WELDED NICKEL, OR EQUAL IN ACCORDANCE WITH AWWA C-517-09, SECTION 4.3.3.4.
  - PORT SHALL BE A ROUND PORT WITH FULL FLOW
  - PLUG SHALL BE DUCTILE IRON IN ACCORDANCE WITH ASTM A536, GRADE 65-45-12 WITH FULLY MOLDED BUNA-N SEAL, OR EQUAL.
  - BEARINGS SHALL BE IN ACCORDANCE WITH ASTM A276 & SHALL BE GRADE 316 STAINLESS STEEL
  - NUTS & BOLTS SHALL BE 304 STAINLESS STEEL (MINIMUM).
  - AN OPERATING NUT WITH HANDWHEEL SHALL BE PROVIDED.
  - THE INSIDE AND OUTSIDE OF ALL VALVES, TOGETHER WITH THE WORKING PARTS EXCEPT BRONZE AND MACHINED SURFACES, SHALL BE COATED IN ACCORDANCE WITH AWWA STANDARDS AND WITH THE APPROPRIATE MATERIALS FOR THE CONDITIONS FOR WHICH THE VALVE WILL BE SUBJECTED TO.

HORIZONTAL SCALE IN FEET
0

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

EXTERIOR SANITARY LIFT STATION
NEW SANITARY LIFT STATION NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

NEW EXTERIOR SANITARY LIFT STATION (CONT'D)

EQUIPMENT/MATERIALS (CONT'D):

- CHECK VALVES SHALL BE LEVER & SPRING TYPE AND MANUFACTURED IN ACCORDANCE WITH ANSI/AWWA C512 AND SHALL COMPLY WITH AWWA STANDARD C-508, LATEST REVISION.
  - CHECK VALVES SHALL HAVE A DUCTILE IRON BODY AND SHALL BE STAINLESS MOUNTED, FULL OPENING SWING TYPE WITH CLASS 150 FLANGED ENDS AND SHALL BE IN ACCORDANCE WITH ANSI B16.1. ALL DUCTILE IRON SHALL CONFORM TO ASTM-A-536, GR 65-45-12.
  - VALVE BODY SHALL BE ENLARGED TO ALLOW DISC TO SWING IN THE WATERWAY.
  - WHEN VALVE IS FULL OPEN, BODY DESIGN SHALL PERMIT A FULL FLOW THRU THE VALVE EQUAL TO THE NOMINAL PIPE DIAMETER.
  - NUTS & BOLTS SHALL BE 304 STAINLESS STEEL (MINIMUM).
  - THE INSIDE AND OUTSIDE OF ALL VALVES, TOGETHER WITH THE WORKING PARTS EXCEPT BRONZE AND MACHINED SURFACES, SHALL BE COATED IN ACCORDANCE WITH AWWA STANDARDS AND WITH THE APPROPRIATE MATERIALS FOR THE CONDITIONS FOR WHICH THE VALVE WILL BE SUBJECTED TO.
- FLOOR STAND FLANGE SUPPORTS: THE FLOOR STAND FLANGE SUPPORTS FOR THE VALVES/PIPING WITHIN THE INTERIOR OF THE VALVE VAULT SHALL BE AS FOLLOWS:
  - FLANGE SUPPORTS SHALL ACCOMMODATE A CLASS 150 FLANGE AND BOLT PATTERN.
  - ALL COMPONENTS OF THE FLANGE SUPPORTS SHALL BE 304 GRADE STAINLESS STEEL (MINIMUM).
  - ANCHORING HARDWARE SHALL BE 304 GRADE STAINLESS STEEL (MINIMUM) AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
  - PROVIDE STAINLESS STEEL SHIMS, AS NECESSARY, TO ACCOUNT FOR THE SLOPING VAULT FLOOR.

WET WELL AND VALVE VAULT EXTERNAL PIPING AND FITTINGS:

- THE PIPING BETWEEN THE WET WELL AND VALVE VAULT SHALL BE PLAIN END DUCTILE IRON CLASS 53; THE INTERIOR SHALL BE LINED WITH AN ASPHALTIC COATING PER AWWA C110, C115 OR C151, AT A MINIMUM; AND THE EXTERIOR SHALL HAVE AN ASPHALTIC COATING IN ACCORDANCE WITH ANSI/AWWA C151/A21.51.
  - THERE SHALL BE NO FITTINGS OR JOINTS IN BETWEEN THE VAULT & WET WELL, AND THE PLAIN ENDS SHALL CONNECT TO THE EXISTING FLANGED CHECK VALVES WITHIN THE VALVE VAULT AND TO THE FLANGED END VERTICAL BENDS WITHIN THE WET WELL WITH RESTRAINED FLANGE ADAPTERS.
  - GASKETS SHALL BE PROVIDED FOR ALL JOINTS TO ENSURE A WATERTIGHT FIT.
  - ALL NUTS & BOLTS FOR THE FLANGED JOINTS SHALL BE STAINLESS STEEL.
- ALL EXTERNAL/BURIED PIPE SEGMENTS BETWEEN THE VALVE VAULT AND THE EXISTING FORCE MAIN SHALL BE PLAIN END DUCTILE IRON CLASS 53; THE INTERIOR SHALL BE LINED WITH AN ASPHALTIC COATING PER AWWA C110, C115 OR C151, AT A MINIMUM; THE EXTERIOR OF THE PIPING SHALL HAVE AN ASPHALTIC COATING IN ACCORDANCE WITH ANSI/AWWA C151/A21.51; AND SHALL BE POLYWRAPPED.
- ALL EXTERIOR FITTINGS SHALL BE DUCTILE IRON AWWA C153 (MIN. P.R. 250 PSI) WITH MECHANICAL JOINTS CONFORMING TO AWWA C111; THE INTERIOR SHALL BE LINED WITH AN ASPHALTIC COATING PER AWWA C110, C115 OR C151, AT A MINIMUM; AND THE EXTERIOR OF THE PIPING SHALL HAVE AN ASPHALTIC COATING IN ACCORDANCE WITH ANSI/AWWA C151/A21.51.
  - ALL NUTS & BOLTS FOR THE FITTINGS SHALL BE STAINLESS STEEL.
  - ALL FITTINGS SHALL BE WRAPPED IN 6MM PLASTIC. PLAIN END PIPE SHALL BE JOINED TO THE MECHANICAL JOINT FITTINGS WITH THE PERTINENT MECHANICAL JOINT RESTRAINTS.
  - CONCRETE THRUST BLOCK SHALL BE PROVIDED FOR ALL FITTINGS IN ACCORDANCE WITH THE THRUST BLOCKING DETAILS ON SHEET 79.

NEW EXTERIOR SANITARY LIFT STATION (CONT'D)

EQUIPMENT/MATERIALS (CONT'D):

CONTROLS:

- PUMP CONTROL PANEL: THE PUMP CONTROL PANEL SHALL HAVE A NEMA 4 STAINLESS STEEL WEATHERPROOF ENCLOSURE AND SOLID STATE CONTROL CIRCUITRY LOGIC. A LOCK HASP SHALL BE PROVIDED ON THE OUTSIDE DOOR. A CIRCUIT BREAKER SHALL BE PROVIDED FOR EACH PUMP AND A MAGNETIC STARTER WITH 2 LEG OVERLOAD PROTECTION SHALL BE SUPPLIED FOR EACH PUMP. THE CONTROL PANEL SHALL ALSO INCLUDE THE FOLLOWING, AT A MINIMUM:
  - TWO (2)~(20) AMP ADDITIONAL CIRCUIT BREAKERS SHALL BE PROVIDED FOR THE GFI RECEPTACLE, AND DUSK TO DAWN LIGHT FIXTURE.
  - AN ALTERNATING RELAY SHALL BE PROVIDED TO ALTERNATE PUMPS ON EACH SUCCESSIVE CYCLE OF OPERATION, AND A FIFTEEN SECOND TIME DELAY RELAY SHALL BE PROVIDED FOR THE STARTING OF THE SECOND PUMP DURING DUAL USE.
  - STARTERS SHALL HAVE AUXILIARY CONTACTS TO OPERATE BOTH PUMPS ON AN OVERRIDE CONDITION.
  - AN INTERLOCK RELAY SHALL BE PROVIDED TO AUTOMATICALLY RECONNECT THE CONTROL CIRCUIT IN CASE OF CIRCUIT BREAKER TRIP ON ONE PUMP.
  - H-O-A SWITCHES AND RUN LIGHTS SHALL BE PROVIDED FOR EACH PUMP.
  - A TERMINAL STRIP SHALL BE PROVIDED FOR CONNECTING PUMP AND CONTROL WIRES. ADDITIONAL TERMINALS SHALL BE PROVIDED TO CONNECT THE ALARM, HEAT SENSORS AND SEAL FAILURE WIRES. THE CONTROL CIRCUIT SHALL BE 110 VOLTS, OR LESS.
  - ELAPSED TIME METERS FOR EACH PUMP SHALL BE SUPPLIED.
  - A TELEPHONE DIALER SHALL BE LOCATED IN THE PUMP CONTROL PANEL.
  - THE CONTROL PANEL SHALL ALSO INCLUDE A VARIABLE FREQUENCY DRIVE (VFD) FOR EACH PUMP TO PROVIDE SOFT STARTING OF THE PUMPS.
  - ALL NECESSARY CONTROL WIRING FROM THE TELEPHONE DIALER TO THE WATER TREATMENT PLANT'S EXISTING TELEPHONE SYSTEM SHALL BE PROVIDED.
- SUMP LEVEL CONTROLS: SEALED FLOAT TYPE MERCURY SWITCHES SHALL BE SUPPLIED TO CONTROL SUMP LEVELS AND THE ALARM SIGNAL.
  - THE MERCURY TUBE SWITCHES SHALL BE SEALED IN A SOLID POLYURETHANE FLOAT FOR CORROSION AND SHOCK RESISTANCE.
  - THE SUPPORT WIRE SHALL HAVE HEAVY NEOPRENE JACKET AND A WEIGHT SHALL BE ATTACHED TO CORD ABOVE THE FLOAT TO HOLD THE SWITCH IN PLACE IN THE SUMP. THE WEIGHT SHALL BE ABOVE THE FLOAT TO PREVENT SHARP BENDS IN THE CORD WHEN THE FLOAT OPERATES UNDER WATER. THE FLOAT SWITCHES SHALL HANG IN THE SUMP SUPPORTED ONLY BY THE CORD THAT IS HELD TO THE WIRING CHANNEL.
  - THREE FLOAT SWITCHES SHALL BE USED TO CONTROL THE LEVELS. ONE FOR PUMP TURN-ON, ONE FOR PUMP TURN-OFF, AND ONE FOR BOTH PUMPS TURN ON AND ALARM CONTROL. THE LEVEL SWITCHES SHALL BE HUNG FROM A WALL MOUNTED BRACKET.
- ALARM: A VISUAL HIGH WATER ALARM SHALL BE PROVIDED. THE ALARM SHALL INCLUDE A WEATHERPROOF FIXTURE WITH A RED GLOBE AND A GUARD AND SHALL BE TELEMETERED. THE ALARM SHALL BE INCORPORATED IN THE CONTROL PANEL. THE LIGHT SHALL FLASH ON HIGH WATER CONDITIONS.
- PUMP CONTROL PANEL MOUNTING: MOUNTING OF THE CONTROL PANEL AND ALL ELECTRICAL PANELS SHALL BE AS DETAILED IN THE CONSTRUCTION DRAWINGS (I.E. PUMP CONTROL PANEL, SAFETY SWITCH, ETC.).
- ELECTRICAL WORK: ALL ELECTRICAL WORK SHALL BE AS DETAILED IN THE CONSTRUCTION DRAWINGS AND SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE.

NEW EXTERIOR SANITARY LIFT STATION (CONT'D)

MISCELLANEOUS:

PERFORMANCE GUARANTEE: THE MANUFACTURERS OF THE LIFT STATION COMPONENTS SHALL GUARANTEE AT A MINIMUM FOR ONE YEAR FROM THE DATE OF START-UP THAT ALL EQUIPMENT SHALL BE FREE FROM FAULTS IN DESIGN, MATERIALS AND WORKMANSHIP. THE VARIOUS MANUFACTURERS SHALL FURNISH REPLACEMENT PARTS FOR ANY COMPONENT PROVEN DEFECTIVE DURING THE GUARANTEE PERIOD.

START UP: THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS FOR A FULL COMPLETE START-UP OF THE NEW SANITARY LIFT STATION WHICH SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

- PROVIDE THE NECESSARY WATER FOR THE CONTINUOUS FILLING OF THE WET WELL IN ORDER TO VERIFY THAT ALL VARIOUS AUTOMATED SCENARIOS ARE OPERATING PROPERLY (I.E. ONE PUMP ON, TWO PUMPS ON & ALARM ON, PUMP OFF, LEAD/LAG, ETC.).
- AFTER THE INITIAL SIMULATION RUN, ADJUSTMENTS SHALL BE MADE TO THE CONTROLS SYSTEM, PUMPS, ETC., AS NECESSARY, AND A SECOND SIMULATION RUN SHALL BE PERFORMED, AS NECESSARY. SIMULATIONS & ADJUSTMENTS SHALL CONTINUE UNTIL ALL COMPONENTS ARE OPERATING PROPERLY AND UNTIL OPERATIONS ARE TO THE SATISFACTION OF AND ACCEPTED BY THE CITY.
- REPRESENTATIVES OF THE MAJOR SUPPLIERS FOR SHALL MEET WITH A REPRESENTATIVE OF THE OWNER AT THE TIME OF FINAL ACCEPTANCE TESTS AND SHALL REVIEW THE OPERATION AND PARTS BOOKS, CORRECT STARTING AND CONTROL METHODS, AND RECOMMEND PREVENTIVE MAINTENANCE PROCEDURES.

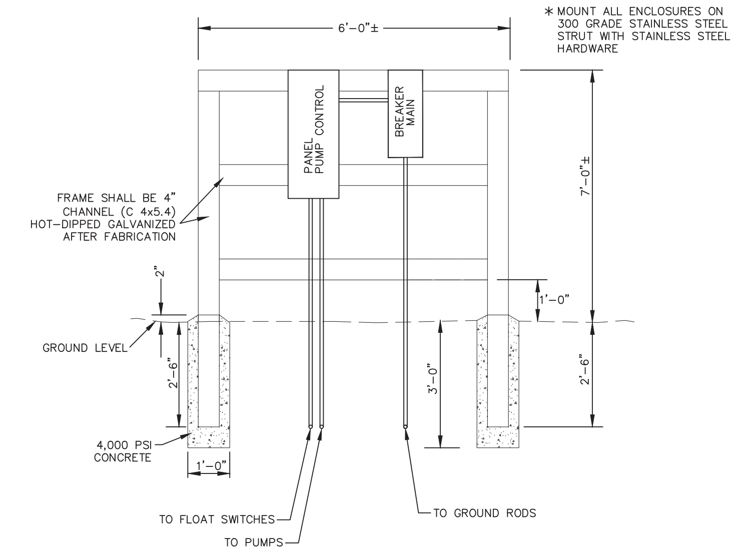
ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE NEW SANITARY LIFT STATION AS DESCRIBED IN THE NOTES & DETAILS IN THE CONSTRUCTION PLANS ON SHEETS 49-53, AND IN THE PERTINENT PROJECT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL - REMOVE & REPLACE EXTERIOR SANITARY LIFT STATION, AS PER PLAN.

0 HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

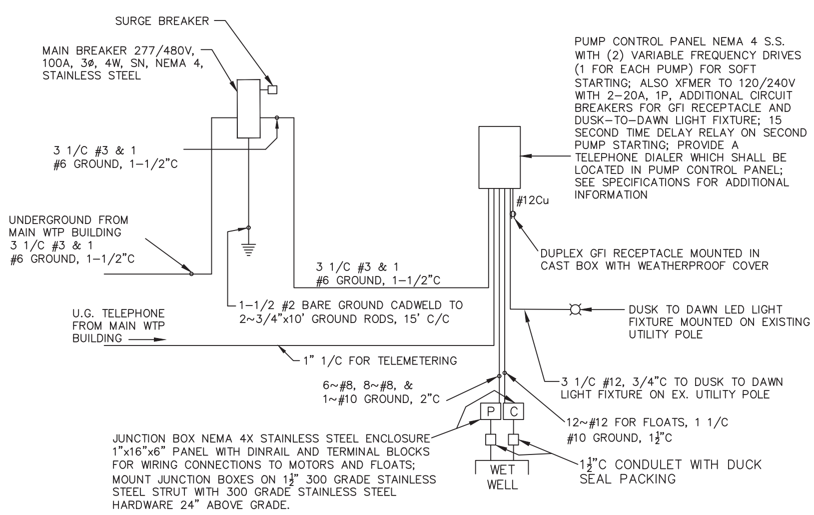
EXTERIOR SANITARY LIFT STATION
NEW SANITARY LIFT STATION NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.



ELECTRICAL RISER SUPPORT DETAIL

NOT TO SCALE



ELECTRICAL RISER

NOT TO SCALE

GENERAL ELECTRICAL SPECIFICATIONS:

GENERAL:

1. ALL ELECTRICAL WORK IS TO BE IN ACCORDANCE WITH NFPA 70–2017 AND ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES.
2. ALL WORK IS TO BE DONE IN A WORKMAN LIKE MANNER.
3. IF APPLICABLE, ELECTRICAL DEMOLITION IS TO BE BY E.C.
4. IF APPLICABLE, CUTTING AND PATCHING FOR ELECTRICAL WORK IS TO BE BY E.C.
5. IF APPLICABLE, TEMPORARY POWER AND LIGHTING IS TO BE BY E.C.
6. ELECTRICAL PERMITS AND ASSOCIATED COST ARE TO BE BY E.C.
7. ALL ELECTRICAL WORK, EXCEPT LAMPS, IS TO BE GUARANTEED FOR THE PERIOD OF ONE YEAR AFTER ACCEPTANCE.
8. THE E.C. IS TO MAKE A SITE VISIT TO DETERMINE EXISTING CONDITIONS. IF EXISTING CONDITIONS ARE NOT AS REPRESENTED ON THE DRAWINGS THE E.C. IS TO NOTIFY THE ENGINEER PRIOR TO BIDDING.
9. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND INDICATE ONLY THE GENERAL ARRANGEMENT. SEE ARCHITECTURAL DRAWINGS FOR EXACT DIMENSIONS.
10. COORDINATE ALL WORK WITH ALL OTHER TRADES.

DEVICES AND MECHANICAL:

5. FURNISH DISCONNECTS FOR ALL MECHANICAL EQUIPMENT, FUSE AS PER MANUFACTURER'S REQUIREMENTS.
6. LOW VOLTAGE CONTROL WIRING IS TO BE BY M.C.
7. LINE VOLTAGE CONTROLS ARE TO BE WIRED BY E.C.
8. LOCATIONS ON DRAWINGS ARE APPROXIMATE, FIELD VERIFY EXACT LOCATIONS.

MATERIALS:

1. ALL MATERIAL IS TO BE UL LISTED AND USED ONLY FOR THE PURPOSE FOR WHICH IT IS LISTED.
2. ALL WIRE IS TO BE THWN COPPER RATED FOR 600V UNLESS OTHERWISE NOTED.
3. ALL WIRE IS TO BE #12 MINIMUM.
4. NO FEEDER SHALL EXCEED 2% VOLTAGE DROP. NO BRANCH CIRCUIT SHALL EXCEED 3% VOLTAGE DROP AT THE FARTHEST OUTLET.
5. WHEN A 20A CIRCUIT EXCEEDS 100 FEET FROM THE PANEL THE CONDUCTORS ARE TO BE INCREASED TO #10 THWN.
6. PVC IS TO BE USED UNDERGROUND ONLY, MINIMUM SCHEDULE 40. ALL ELBOWS ARE TO BE SCHEDULE 80 OR GRMC.
7. EXTERIOR EXPOSED CONDUITS ARE TO BE RIGID METALLIC CONDUIT.
8. SERVICE ENTRANCE CONDUITS ARE TO BE RIGID METALLIC CONDUIT.
9. ALL CONDUITS ARE TO BE RUN CONCEALED WHERE POSSIBLE. ALL NEW CONSTRUCTION CONDUITS ARE TO BE RUN IN THE WALLS INCLUDING BRICK AND BLOCK.
10. PROVIDE A PULL WIRE IN ALL EMPTY CONDUITS.
11. ALL CONDUITS, HANGERS AND FITTINGS IN PUMP AREA ARE TO BE ALUMINUM OR STAINLESS STEEL.

GROUNDING AND BONDING:

1. ALL GROUNDING IS TO BE AS PER NEC 250.
2. MINIMUM GROUNDING IS TO BE TWO GROUND RODS AND GROUND WIRE TO WATER MAIN.
3. ELECTRICAL CONTRACTOR IS TO USE ALL AVAILABLE GROUNDS.
4. FOR STEEL BUILDINGS, STEEL SIDING IS TO BE GROUNDED.
5. BOND ALL METAL RACEWAYS TO PANELS USING LISTED FITTINGS OR OTHER APPROVED METHOD PER NEC 250.92.

SEE SHEET 49 FOR ADDITIONAL SANITARY LIFT STATION NOTES.

SA Engineering
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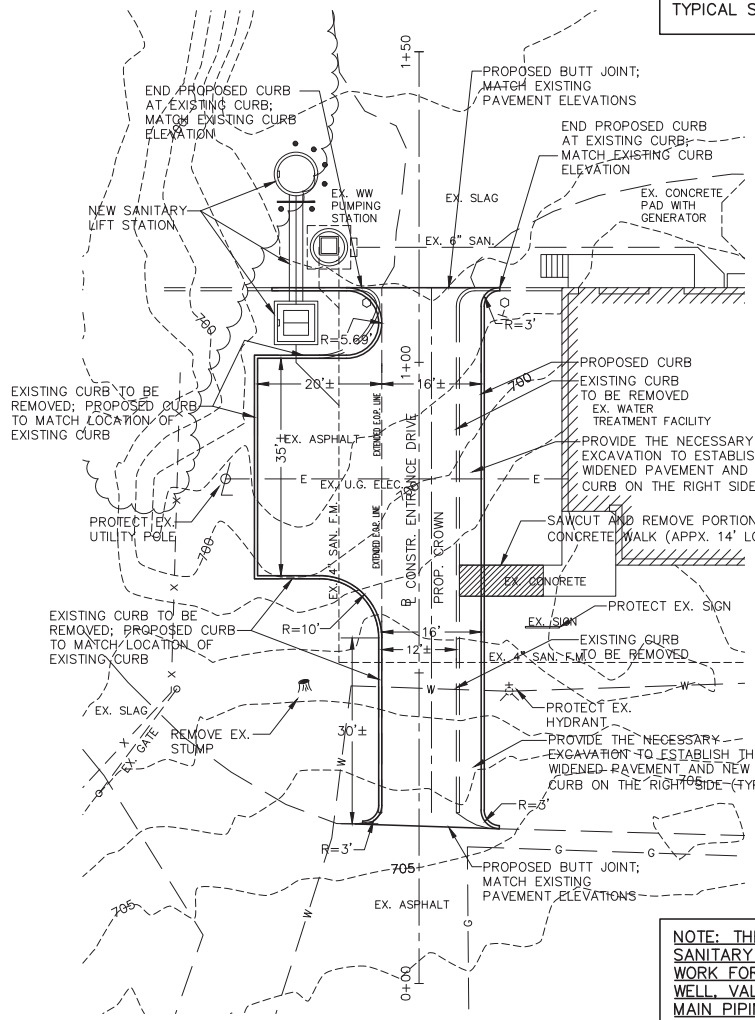
CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

HORIZONTAL SCALE IN FEET 0 1 2 4

EXTERIOR SANITARY LIFT STATION
NEW SANITARY LIFT STATION NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

FOR ADDITIONAL NOTES, DETAILS, AND TYPICAL SECTIONS, SEE SHEET 55



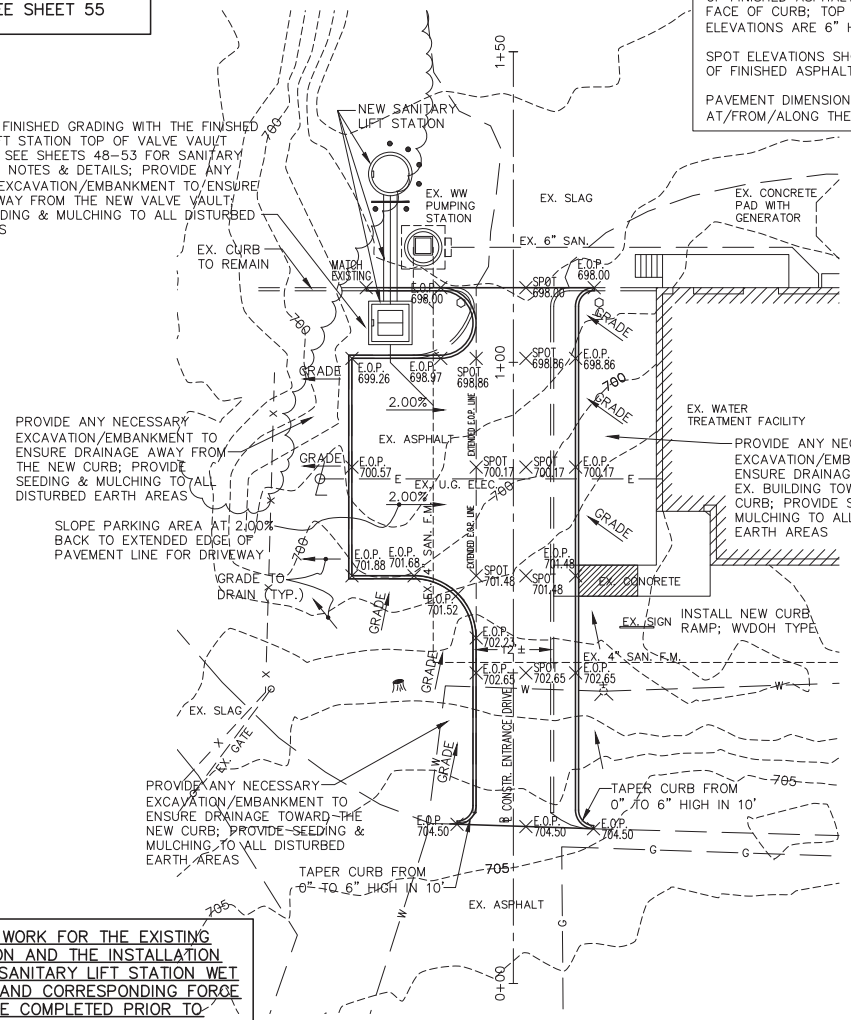
PROPOSED ENTRANCE DRIVE PLAN VIEW (DIMENSIONS)
SCALE: 1"=10'

COORDINATE FINISHED GRADING WITH THE FINISHED SANITARY LIFT STATION TOP OF VALVE VAULT ELEVATIONS; SEE SHEETS 48-53 FOR SANITARY LIFT STATION NOTES & DETAILS; PROVIDE ANY NECESSARY EXCAVATION/EMBANKMENT TO ENSURE DRAINAGE AWAY FROM THE NEW VALVE VAULT; PROVIDE SEEDING & MULCHING TO ALL DISTURBED EARTH AREAS

E.O.P. ELEVATIONS SHOWN ARE THE TOP OF FINISHED ASPHALT PAVEMENT AT THE FACE OF CURB; TOP OF CURB ELEVATIONS ARE 6" HIGHER.

SPOT ELEVATIONS SHOWN ARE THE TOP OF FINISHED ASPHALT PAVEMENT.

PAVEMENT DIMENSIONS SHOWN ARE AT/FROM/ALONG THE FACE OF CURB.



PROPOSED ENTRANCE DRIVE PLAN VIEW (ELEVATIONS)
SCALE: 1"=10'

NOTE: THE REMOVAL WORK FOR THE EXISTING SANITARY LIFT STATION AND THE INSTALLATION WORK FOR THE NEW SANITARY LIFT STATION WET WELL, VALVE VAULT, AND CORRESPONDING FORCE MAIN PIPING SHALL BE COMPLETED PRIOR TO ANY DRIVEWAY PAVEMENT/CURB IMPROVEMENTS

SEE SHEET 7 FOR WTP SITE CONTROL POINT REFERENCE COORDINATES AND FOR CONSTRUCTION BASELINE COORDINATES

HORIZONTAL SCALE IN FEET
0 5 10 20

CAD: J.F.B.
DES: 12/22
CHKD:
BY: D.G.O.
DATE: 12/22

WTP EXTERIOR ENTRANCE DRIVE PLAN
PLAN VIEWS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

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EXTERIOR ENTRANCE DRIVE IMPROVEMENTS

THE FOLLOWING IS RELATIVE TO THE IMPROVEMENTS TO THE EXISTING EXTERIOR ENTRANCE DRIVE FOR THE WTP SITE.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER DEPARTMENT, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING CONSTRUCTION OF THE DRIVEWAY IMPROVEMENTS, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, THE EXISTING WTP BUILDING, AND ANY OTHER WTP APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE CONTRACTOR SHALL FIELD VERIFY ALL CURB & PAVEMENT ELEVATIONS PRIOR TO CONSTRUCTION.

THE FOLLOWING IS THE GENERAL SEQUENCE OF OPERATIONS FOR THE EXTERIOR ENTRANCE DRIVE IMPROVEMENTS:

- REMOVE THE PORTION OF THE EXISTING CONCRETE WALK, EXISTING STUMP, OTHER INCIDENTAL ITEMS, AND PERFORM ANY NECESSARY CLEARING & GRUBBING AS SHOWN ON THE PREVIOUS SHEET.
- REMOVE THE EXISTING CURB TO THE LIMITS SHOWN ON THE PREVIOUS SHEET.
- REMOVE THE EXISTING PAVEMENT TO THE LIMITS SHOWN ON THE PREVIOUS SHEET AND IN ACCORDANCE WITH THE TYPICAL SECTIONS.
- THE ENTRANCE DRIVE WILL BE WIDENED (4) FEET ON THE RIGHT SIDE (WTP BUILDING SIDE) AS SHOWN ON THE PREVIOUS SHEET. PROVIDE ALL NECESSARY EXCAVATION TO ESTABLISH THE WIDTH/DEPTH OF THE WIDENED PORTION OF THE ENTRANCE DRIVE.
- PROVIDE ALL NECESSARY EXCAVATION TO ESTABLISH THE SUBGRADE FOR THE PROPOSED CURBS AND FOR THE PROPOSED PAVEMENT.
- INSTALL THE PROPOSED CURBS TO THE LIMITS SHOWN ON THE PREVIOUS SHEET, IN ACCORDANCE WITH THE TYPICAL SECTIONS SHOWN ON THIS SHEET, AND IN ACCORDANCE WITH THE WVDOH CURB, TYPE 1 STANDARD CONSTRUCTION DRAWINGS.
- INSTALL THE PROPOSED ENTRANCE DRIVE PAVEMENT IN ACCORDANCE WITH THE TYPICAL SECTIONS SHOWN ON THIS SHEET.
- INSTALL THE PROPOSED CURB RAMP IN ACCORDANCE WITH THE NOTES SHOWN ON THE PREVIOUS SHEET AND WITH THE DETAIL SHOWN ON THIS SHEET.
- PROVIDE ALL NECESSARY GRADING BEHIND THE PROPOSED BACK OF CURB IN ORDER TO TIE BACK INTO THE EXISTING EARTH GRADES AS SHOWN ON THE PREVIOUS SHEET.
- PROVIDE SEEDING & MULCHING, ETC. TO ALL DISTURBED AREAS OF SOIL.

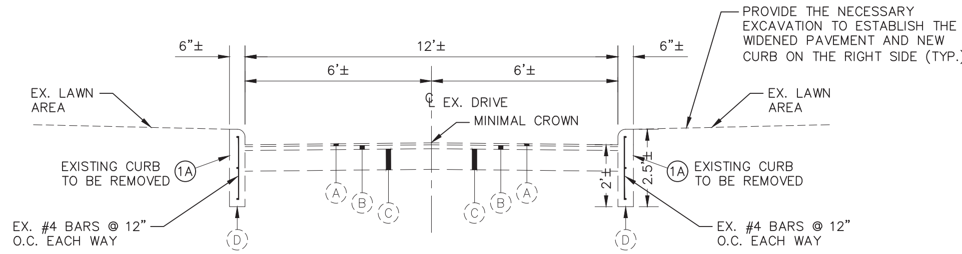
ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY FOR THE COMPLETE IMPROVEMENTS TO THE EXTERIOR ENTRANCE DRIVE AS DESCRIBED IN THE CONSTRUCTION PLANS AND PROJECT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – EXTERIOR ENTRANCE DRIVE IMPROVEMENTS, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

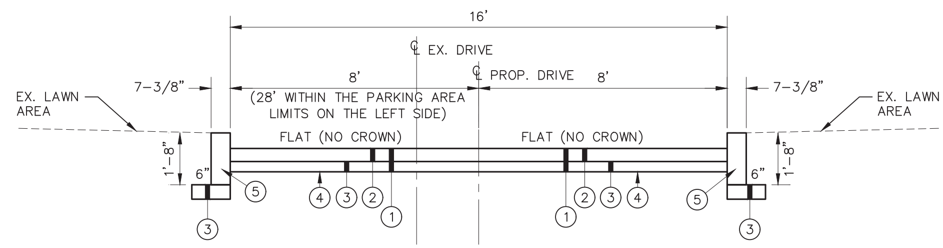
ITEM SPECIAL – EXTERIOR ENTRANCE DRIVE IMPROVEMENTS, AS PER PLAN	LUMP SUM

NOTE: THE FOLLOWING ARE APPROXIMATE QUANTITIES ASSOCIATED WITH THE ENTRANCE DRIVE IMPROVEMENTS AND ARE SHOWN FOR REFERENCE PURPOSES FOR USE IN DETERMINING COSTS FOR THE AFOREMENTIONED LUMP SUM PRICE BID.

ITEM 207 – UNCLASSIFIED EXCAVATION (FOR PAVEMENT WIDENING)	33 CU. YD.
ITEM 207 – UNCLASSIFIED EXCAVATION (PAVEMENT REMOVAL, 14" DEEP)	200 SQ. YD.
ITEM 207 – UNCLASSIFIED EXCAVATION (CURB REMOVAL)	230 FOOT
ITEM 501 – 8" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT, (MESH REINFORCED, CLASS MS CONCRETE)	237 SQ. YD.
ITEM 307 – 6" AGGREGATE BASE COURSE, CLASS 1, AS PER PLAN	44 CU. YD.
ITEM 228 – SUBGRADE PREPARATION	261 SQ. YD.
ITEM 610 – PLAIN CONCRETE CURBING, TYPE 1, AS PER PLAN	225 FOOT
ITEM 652 – SEEDING & MULCHING, AS PER PLAN	350 SQ. YD.



EXISTING ENTRANCE DRIVE TYPICAL SECTION
NOT TO SCALE



PROPOSED ENTRANCE DRIVE TYPICAL SECTION
NOT TO SCALE

LEGEND (PROPOSED)

- (1) ITEM 207 – UNCLASSIFIED EXCAVATION (PAVEMENT REMOVAL, 14" DEEP)
- (1A) ITEM 207 – UNCLASSIFIED EXCAVATION (CURB REMOVAL)
- (2) ITEM 501 – 8" REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT, (MESH REINFORCED, CLASS MS CONCRETE)
- (3) ITEM 307 – 6" AGGREGATE BASE COURSE, CLASS 1, AS PER PLAN
- (4) ITEM 228 – SUBGRADE PREPARATION
- (5) ITEM 610 – PLAIN CONCRETE CURBING, TYPE 1, AS PER PLAN
- (6) ITEM 401 – FULL DEPTH PAVEMENT SAWING

LEGEND (EXISTING)

- (A) 3/4" – 25 SEAL COAT
  16 – #8 STONE
- (B) 1 1/2" – 35 RS 2 SEALER
  20 – #67 STONE
- (C) 8" – 1/2 GAL. PRIMER 100
  8" – 1 1/4" CRUSHER RUN
- (D) EXISTING REINFORCED CONCRETE CURB

NOTE: ITEM NUMBERS SHOWN ON THIS SHEET ARE REFERENCES TO THE WVDOH SPECIFICATIONS AND ITS CORRESPONDING ITEM NUMBERS

HORIZONTAL SCALE IN FEET
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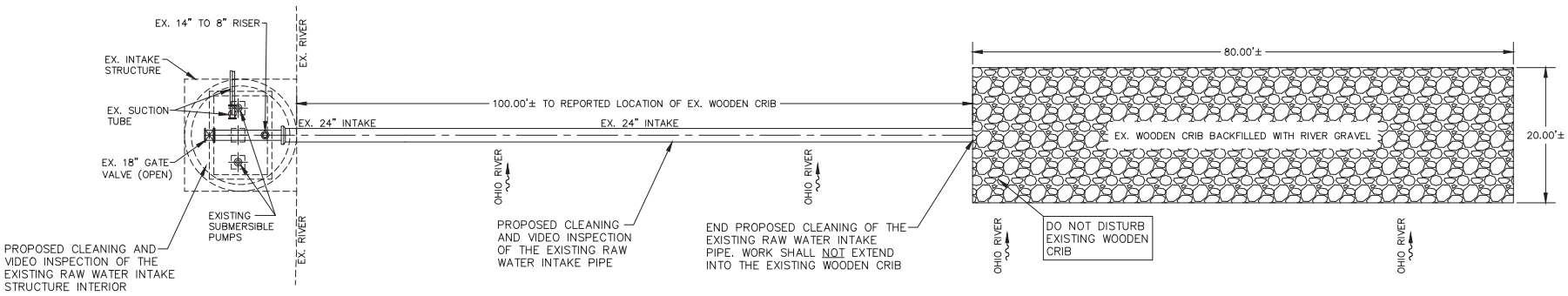
CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

WTP EXTERIOR ENTRANCE DRIVE PLAN
TYPICAL SECTIONS AND NOTES

CITY OF CHESTER
WATER SYSTEM IMPROVE.

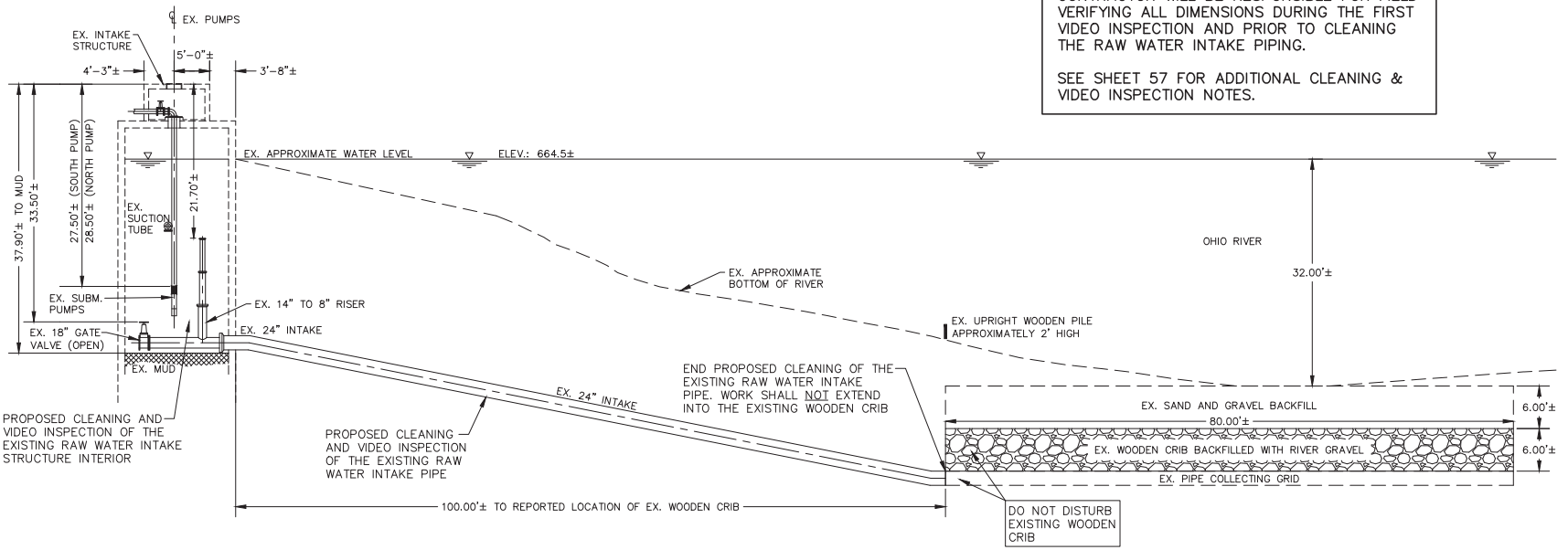


EXISTING INTAKE STRUCTURE & EXISTING WOODEN CRIB PLAN VIEW

NOT TO SCALE

THE PLAN & PROFILE VIEWS SHOWN ON THIS SHEET ARE FOR REFERENCE PURPOSES ONLY. DIMENSIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS DURING THE FIRST VIDEO INSPECTION AND PRIOR TO CLEANING THE RAW WATER INTAKE PIPING.

SEE SHEET 57 FOR ADDITIONAL CLEANING & VIDEO INSPECTION NOTES.



EXISTING INTAKE STRUCTURE & EXISTING WOODEN CRIB SECTION VIEW

NOT TO SCALE

HORIZONTAL SCALE IN FEET
0 4 8 16

CAD: J.F.B. DATE: 12/22
CHKD: D.G.D. DATE: 12/22

EXISTING INTAKE STRUCTURE & RAW WATER INTAKE PIPING CLEANING AND VIDEO INSPECTION

CITY OF CHESTER WATER SYSTEM IMPROVE.

56
81

CLEANING & VIDEO INSPECTION OF EXISTING RAW WATER PIPING/STRUCTURE

THE FOLLOWING IS RELATIVE TO THE CLEANING & VIDEO INSPECTION OF THE EXISTING RAW WATER INTAKE PIPING FROM THE EXISTING RAW WATER INTAKE STRUCTURE TO THE EXISTING WOODEN CRIB LOCATED WITHIN THE OHIO RIVER AS WELL AS FOR THE CLEANING & VIDEO INSPECTION OF THE INTERIOR OF THE EXISTING RAW WATER INTAKE STRUCTURE AFTER PIPE CLEANING IF PERFORMED.

- THE CONTRACTOR SHALL SUBMIT A PLAN FOR THE METHOD OF CLEANING AND VIDEO INSPECTION FOR APPROVAL BY THE RESIDENT CONSTRUCTION ENGINEER PRIOR TO PERFORMING THE CLEANING AND VIDEO INSPECTION WORK.
- THE CONTRACTOR SHALL ALSO INCLUDE IN THE AFOREMENTIONED PLAN, THE METHOD TO BE UTILIZED FOR ENSURING THAT NO DEBRIS IS PUSHED INTO THE EXISTING WOODEN CRIB, AND TO ENSURE THAT ALL DEBRIS IS DIRECTED BACK TO THE EXISTING INTAKE STRUCTURE TO ALLOW FOR THE PROPER REMOVAL & DISPOSAL.
- REGARDLESS OF THE CLEANING METHOD THAT IS UTILIZED, ALL WORK SHALL BE PERFORMED CAREFULLY SO AS NOT TO DAMAGE THE EXISTING INTAKE STRUCTURE, INTAKE PIPE, AND/OR WOODEN CRIB.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL EQUIPMENT, VALVES, CONTROLS, ETC. SHALL ONLY BE PERFORMED BY THE WATER TREATMENT PLANT OPERATOR.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

THE CONTRACTOR SHALL PROTECT THE FOLLOWING DURING VIDEO AND CLEANING OPERATIONS: THE EXISTING RAW WATER INTAKE STRUCTURE & CORRESPONDING EXISTING INCIDENTALS INCLUDING THE PUMPS, PIPING, VALVES, ETC.; THE EXISTING RAW WATER INTAKE PIPE; THE EXISTING WOODEN CRIB STRUCTURE; AND ANY OTHER ASSOCIATED WATER TREATMENT PLANT APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

THE EXISTING RAW WATER INTAKE PIPING AS WELL AS THE INTERIOR OF THE EXISTING RAW WATER INTAKE STRUCTURE SHALL BE VIDEOED, BOTH PRIOR TO AND AFTER THE CLEANING IS PERFORMED.

- NOTE: VIDEO INSPECTION WITHIN THE RAW WATER INTAKE PIPING PRIOR TO ITS CLEANING WILL BE DEPENDENT UPON THE AMOUNT OF DEBRIS/BUILD-UP WITHIN THE EXISTING RAW WATER INTAKE PIPE, AND SHALL BE AS DIRECTED BY THE CITY, THE CITY'S CONSTRUCTION ENGINEER, AND THE USACE REPRESENTATIVE.

CLEANING OF THE EXISTING RAW WATER INTAKE PIPE MAY INCLUDE HIGH PRESSURE HYDRO LASER, WATER JETTING, OR OTHER SIMILAR METHODS. THE CLEANING METHOD SHALL BE COMBINED WITH A METHOD FOR ENSURING THAT ALL DEBRIS IS DIRECTED BACK TO THE EXISTING INTAKE STRUCTURE AND NOT INTO THE EXISTING WOODEN CRIB.

- CLEANING METHODS WILL BE AT THE DISCRETION OF THE CONTRACTOR; HOWEVER, THE CLEANING METHOD SHALL FIRST BE APPROVED BY THE CITY, THE CITY'S CONSTRUCTION ENGINEER, AND THE USACE REPRESENTATIVE PRIOR TO PERFORMING THE CLEANING WORK, AS PREVIOUSLY STATED ABOVE.
- METHODS UTILIZED FOR CLEANING SHALL NOT FORCE WATER/DEBRIS TOWARD THE EXISTING WOODEN CRIB. ALL WATER/DEBRIS FROM THE CLEANING SHALL BE DIRECTED BACK TOWARD THE EXISTING RAW WATER INTAKE STRUCTURE TO ALLOW FOR PROPER REMOVAL & DISPOSAL. IT IS ANTICIPATED THAT AN ARTIFICIAL FLOW MAY NEED TO BE CREATED WHICH MAY INCLUDE DIRECTING THE STREAM OF THE HYDRO LASER/WATER JETTING BACK TOWARD INTAKE STRUCTURE, PUMPING, VACUUMING, A COMBINATION OF THE AFOREMENTIONED OR OTHER APPROVED METHODS.

CLEANING OF THE WALLS, FLOOR, PIPING, ETC. WITHIN THE INTERIOR OF THE EXISTING RAW WATER INTAKE STRUCTURE MAY INCLUDE HIGH PRESSURE HYDRO LASER, WATER JETTING, OR OTHER SIMILAR METHODS.

- CLEANING METHODS WILL BE AT THE DISCRETION OF THE CONTRACTOR; HOWEVER, THE CLEANING METHOD SHALL FIRST BE APPROVED BY THE CITY, THE CITY'S CONSTRUCTION ENGINEER, AND THE USACE REPRESENTATIVE PRIOR TO PERFORMING THE CLEANING WORK, AS PREVIOUSLY STATED ABOVE.

ONCE CLEANING OF THE EXISTING RAW WATER INTAKE PIPING AND INTERIOR OF THE EXISTING RAW WATER INTAKE STRUCTURE IS COMPLETED, ALL SEDIMENT, DEBRIS, ETC. SHALL BE REMOVED FROM THE EXISTING RAW WATER INTAKE STRUCTURE AND DISPOSED OF AT AN APPROVED DISPOSAL FACILITY.

ALL VIDEO AND CLEANING OPERATIONS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS AND/OR SUBCONTRACTORS WITH EXPERIENCE IN PERFORMING AND WITH THE RELEVANT EQUIPMENT CAPABLE OF PERFORMING THE TYPE OF WORK INVOLVED (I.E. RIVER EXPERIENCE, CERTIFIED DIVERS, PERTINENT VIDEO EQUIPMENT, PERTINENT CLEANING EQUIPMENT, ETC.).

UPON COMPLETION OF THE FINAL VIDEO INSPECTION, THE CONTRACTOR SHALL PREPARE & SUBMIT A CONDITION ASSESSMENT REPORT WHICH DETAILS THE CURRENT CONDITION OF THE EXISTING RAW WATER INTAKE PIPE AND THE CURRENT CONDITION OF THE INTERIOR OF THE EXISTING RAW WATER INTAKE STRUCTURE BASED UPON THE VIDEO OBSERVATIONS.

ALL MATERIALS, EQUIPMENT, LABOR, AND INCIDENTALS NECESSARY TO PERFORM THE AFOREMENTIONED AS FURTHER DETAILED IN THE NOTES & DETAILS ON SHEET 56 SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – CLEANING & VIDEO INSPECTION OF EXISTING RAW WATER PIPING/STRUCTURE, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – CLEANING & VIDEO INSPECTION OF EXISTING RAW WATER PIPING/STRUCTURE, AS PER PLAN	LUMP SUM

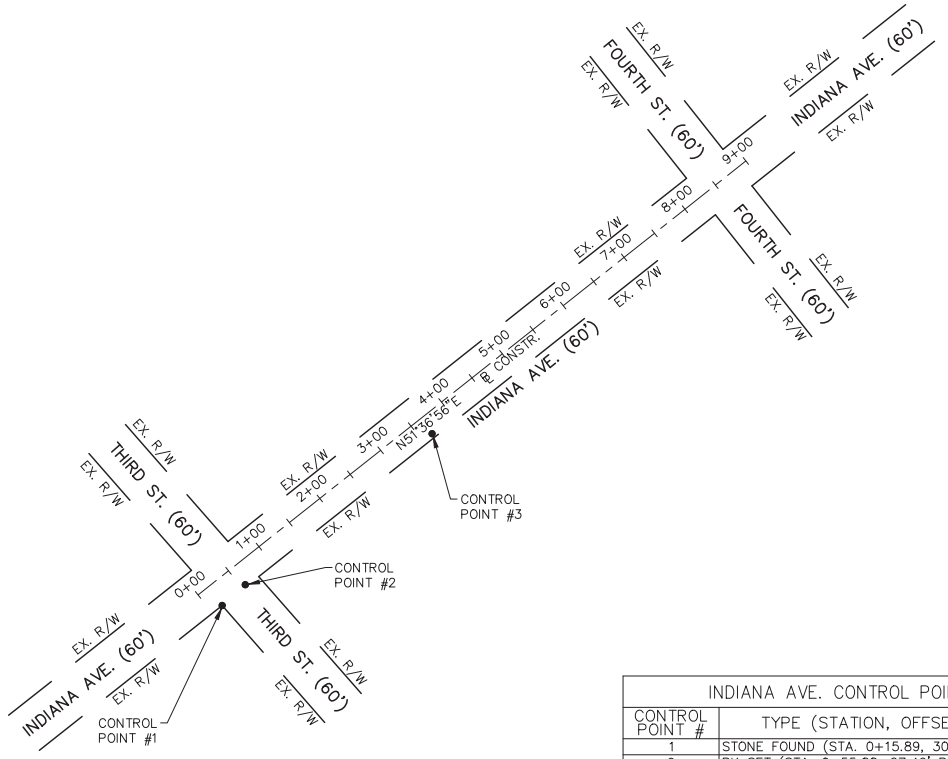
MONITORING OF WEATHER FORECAST AND RIVER LEVELS

THE CONTRACTOR WILL BE REQUIRED TO MONITOR THE DAILY AND WEEKLY WEATHER FORECASTS AS IT RELATES TO THE POTENTIAL FOR HEAVY PRECIPITATION THAT MAY CAUSE ELEVATED RIVER LEVELS, WHICH COULD IMPACT THE CLEANING AND VIDEO INSPECTION WORK.

MONITORING OF THE WEATHER FORECASTS AND RIVER ELEVATIONS SHALL BE COORDINATED BY THE CONTRACTOR WITH THE WATER TREATMENT PLANT OPERATOR, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE ON A DAILY BASIS.

THE CONTRACTOR SHALL BE AWARE OF THE LARGE UPSTREAM DRAINAGE AREA THAT CONTRIBUTES TO THE OHIO RIVER AND SHOULD NOT JUST MONITOR IMMEDIATE AREA LOCAL WEATHER FORECASTS, BUT SHOULD MONITOR WEATHER FORECASTS FOR THE ENTIRE UPSTREAM DRAINAGE AREA.

ALL COSTS FOR THE AFOREMENTIONED MONITORING SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR THE CLEANING & VIDEO INSPECTION.



INDIANA AVE. CONTROL POINT REFERENCE COORDINATES				
CONTROL POINT #	TYPE (STATION, OFFSET)	NORTHING	EASTING	ELEVATION
1	STONE FOUND (STA. 0+15.89, 30.00' RT.)	770306.3032	1672616.7433	751.97
2	PK SET (STA. 0+55.88, 27.46' RT.)	770333.1251	1672646.5050	752.22
3	NAIL SET (STA. 3+65.15, 24.41' RT.)	770527.5496	1672887.0402	753.83

INDIANA AVE. CONSTR. BASELINE COORDINATES		
TYPE = STATION	NORTHING	EASTING
POINT = 0+00.00	770319.9511	1672585.6580
POINT = 9+00.00	770878.7937	1673291.1330

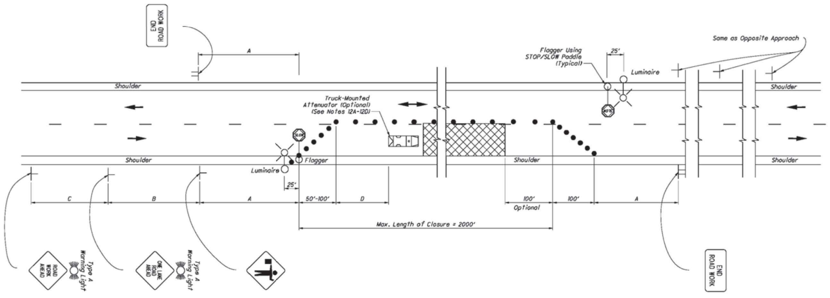
0 80 40 160
HORIZONTAL SCALE IN FEET

CAD: J.F.B.
DATE: 12/22
CHKD: D.G.D.
DATE: 12/22

INDIANA AVE. SCHEMATIC PLAN AND CONTROL REFERENCE

CITY OF CHESTER
WATER SYSTEM IMPROVE.

MAINTENANCE OF TRAFFIC FOR STATIONARY OPERATIONS



LEGEND

WORK AREA	(crosshatch)
DRUMS/CONES	● ● ●
DIRECTION OF TRAVEL	→
SHADOW VEHICLE	(vehicle symbol)

TABLE I (SIGN SPACING)

ROAD TYPE	DISTANCE BETWEEN SIGNS (FT)		
	A	B	C
Two-Lane (≤ 40 MPH)	100	100	100
Two-Lane (45-50 MPH)	350	350	350
Two-Lane (55-60 MPH)	500	500	500

TABLE II

SPEED LIMIT (MPH)	BUFFER (D) (FT) MIN.
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570

ALL MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE DIVISION OF HIGHWAYS' CURRENT MANUAL "TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS"

NOTES:

FLAGGERS

1. Flaggers, one for each direction, shall be used to control traffic continuously for as long as a one lane operation is in effect. The flaggers shall be able to communicate with each other at all times.

LENGTH OF CLOSURE

2. Several small work areas close together should be combined into one work zone. However, the closure shall not be more than 2000' long unless approved by the Engineer. The minimum length between closures shall be 2000'. Only one side of the road shall be closed in any one work zone.

SIGN LOCATION AND SPACING

3A. The minimum spacing between work zone signs is shown in Table I. Maximum spacing should not be greater than 1.5 times the distances shown in Table I.

3B. Sign spacing should be adjusted to avoid conflict with existing signs. Minimum spacing to existing signs shall be 200' for speeds of 45 mph or less and a minimum of 400' for speeds of 50 mph or greater.

3C. The location of the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.

ADJUSTMENTS FOR SIGHT DISTANCE

4. The location of the flagger station and the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.

BASIC SIGNING

5A. ROAD WORK AHEAD signs shall be provided on entrance ramps or roadways entering the work limits.

5B. END ROAD WORK signs are only required for lane closures of more than 1 day. It is intended that these signs be placed on the mainline, on all exit ramps, and on roadways exiting the work limits.

5C. Overlapping of signing for adjacent projects should be avoided where the messages could be confusing. Any ROAD WORK AHEAD or END ROAD WORK sign which falls within the limits of another traffic control zone shall be omitted or covered during the period when both projects are active.

SIGNING DETAILS

6A. The Advisory Speed plaque shall be used when specified in the plan.

6B. 36" warning signs may be used when the approach speed limit is 40 mph or less.

FLASHING WARNING LIGHTS

7. Type A flashing warning lights shown on the ROAD WORK AHEAD signs and on the LANE CLOSED AHEAD signs are required whenever a night lane closure is necessary.

DRUMS / CONES

8A. Drum spacing shall be as follows:

a) Spacing along the closure shall be 40' center-to-center.
b) Spacing along the approach taper shall be 10' center-to-center.

8B. Cones may be substituted for drums as follows:

a) Cones used for daytime traffic control shall have a minimum height of 28".
b) Cones used for nighttime traffic control shall have a minimum height of 42".
c) Use of cones at night shall be prohibited along tapers.

8C. Provisions shall be made to stabilize the cones and drums to prevent them from blowing over.

8D. A minimum of two drums shall be used to close the paved shoulder.

AREA ILLUMINATION

10A. Adequate area illumination of each flagger station shall be provided at night. Use of portable flood lighting is acceptable. Luminaires shall be located adjacent to each flagger station.

10B. To ensure the adequacy of floodlight placement and the elimination of glare, the Contractor and the Engineer shall drive through the worksite each night when the lighting is in place. Light placement and shielding shall be adjusted to the satisfaction of the Engineer.

INTERSECTION / DRIVEWAY ACCESS

11. Within the length of closure, provision shall be made to control traffic entering from intersecting streets and major drives as necessary to prevent wrong-way movements and to keep vehicles off of new pavement not ready for traffic. The Contractor shall:

a) Place across the closed lane, either three drums (cones) or barricades, and/or
b) Provide an additional flagger at every public street intersection and major driveway.

Drums (cones) placed across the closed lane shall be located 25' beyond the projected pavement edges of the driveway or cross highway.

Existing STOP signs shall be relocated as necessary to assure proper location for the traffic conditions.

The method of control shall be subject to the approval of the Engineer.

SHADOW VEHICLE

12A. The shadow vehicle shall be in place and unoccupied whenever workers are in the work area. This vehicle shall be removed from the pavement whenver workers are not in the work area.

12B. The shadow vehicle shall be equipped with a high-intensity yellow rotating, flashing, oscillating, or strobe light(s).

12C. The vehicle shall be equipped with a truck-mounted attenuator when called for in the plans.

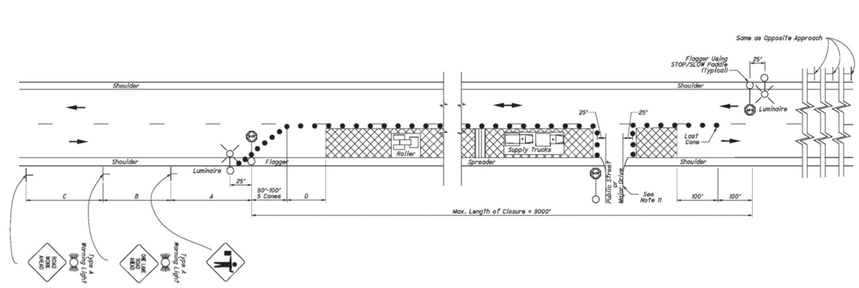
12D. Other protective devices may be used in lieu of the shadow vehicle shown when approved by the Engineer.

CHIP SEAL OPERATIONS

13. For chip seal operations, additional signing shall be incorporated in the advanced warning area.

a) The LOOSE GRAVEL and FRESH TAR signs shall both be used in advance of the chip seal operation.
b) Repeat the LOOSE GRAVEL sign with a 35 mph Advisory Speed plaque every half mile
c) The FRESH TAR and the LOOSE GRAVEL signs shall both be used for signing of side roads intersecting the work area.

MAINTENANCE OF TRAFFIC FOR PAVING OPERATIONS



LEGEND

WORK AREA	(crosshatch)
CONES	● ● ●
DIRECTION OF TRAVEL	→

TABLE I (SIGN SPACING)

ROAD TYPE	DISTANCE BETWEEN SIGNS (FT)		
	A	B	C
Two-Lane (≤ 40 MPH)	100	100	100
Two-Lane (45-50 MPH)	350	350	350
Two-Lane (55-60 MPH)	500	500	500

TABLE II

SPEED LIMIT (MPH)	BUFFER (D) (FT) MIN.
25	155
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45	360
50	425
55	495
60	570

ALL MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE DIVISION OF HIGHWAYS' CURRENT MANUAL "TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS"

NOTES:

FLAGGERS

1. Flaggers, one for each direction, shall be used to control traffic continuously for as long as a one lane operation is in effect. The flaggers shall be able to communicate with each other at all times.

LENGTH OF CLOSURE

2. It is required that the length of closure be kept to a minimum at all times, as directed by the Engineer, with a maximum allowable length of 9000'.

When the ambient temperature exceeds 80 degrees Fahrenheit the Engineer may increase the maximum allowable length of closure to allow for sufficient cooling of new pavement.

The Engineer may shorten the maximum allowable length of closure to relieve excessive traffic backups or to improve traffic operation.

SIGN LOCATION AND SPACING

3A. The minimum spacing between work zone signs is shown in Table I. Maximum spacing should not be greater than 1.5 times the distances shown in Table I.

3B. Sign spacing should be adjusted to avoid conflict with existing signs. Minimum spacing to existing signs shall be 200' for speeds of 45 mph or less and a minimum of 400' for speeds of 50 mph or greater.

3C. The location of the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.

ADJUSTMENTS FOR SIGHT DISTANCE

4. The location of the flagger station and the advance warning signs should be adjusted to provide for adequate sight distance for the existing vertical and horizontal roadway alignment.

BASIC SIGNING

5A. ROAD WORK AHEAD signs shall be provided on entrance ramps or roadways entering the work limits.

5B. END ROAD WORK signs are only required for lane closures of more than 1 day. It is intended that these signs be placed on the mainline, on all exit ramps, and on roadways exiting the work limits.

5C. Overlapping of signing for adjacent projects should be avoided where the messages could be confusing. Any ROAD WORK AHEAD or END ROAD WORK sign which falls within the limits of another traffic control zone shall be omitted or covered during the period when both projects are active.

SIGNING DETAILS

6A. The Advisory Speed plaque shall be used when specified in the plan.

6B. 36" warning signs may be used when the approach speed limit is 40 mph or less.

FLASHING WARNING LIGHTS

7. Type A flashing warning lights shown on the ROAD WORK AHEAD signs and on the LANE CLOSED AHEAD signs are required whenever a night lane closure is necessary.

CONES

8A. Cone spacing shall be as follows:

a) Spacing along the buffer and along the work space (entire closed length beyond the buffer) shall be 40' center-to-center.
b) Spacing along the approach taper shall be 10' center-to-center.

8B. Cone sizes shall be as follows:

a) Cones used for daytime traffic control shall have a minimum height of 28".
b) Cones used for nighttime traffic control shall have a minimum height of 42".

8C. Provisions shall be made to stabilize the cones to prevent them from blowing over.

8D. A minimum of two cones shall be used to close the paved shoulder.

AREA ILLUMINATION

10A. Adequate area illumination of each flagger station shall be provided at night. Use of portable flood lighting is acceptable.

10B. To ensure the adequacy of floodlight placement and the elimination of glare, the Contractor and the Engineer shall drive through the worksite each night when the lighting is in place. Light placement and shielding shall be adjusted to the satisfaction of the Engineer.

INTERSECTION / DRIVEWAY ACCESS

11. Within the length of closure, provision shall be made to control traffic entering from intersecting streets and major drives as necessary to prevent wrong-way movements and to keep vehicles off of new pavement not ready for traffic. The Contractor shall:

a) Place across the closed lane, either three cones or barricades, and/or
b) Provide an additional flagger at every public street intersection and major driveway.

Cones placed across the closed lane shall be located 25' beyond the projected pavement edges of the driveway or cross highway.

Existing STOP signs shall be relocated as necessary to assure proper location for the traffic conditions.

The method of control shall be subject to the approval of the Engineer.

CHIP SEAL OPERATIONS

12. For chip seal operations, additional signing shall be incorporated

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

MAINTENANCE OF TRAFFIC

CITY OF CHESTER
WATER SYSTEM IMPROVE.

GENERAL NOTES

SEVEN (7) DAYS PRIOR TO THE COMMENCEMENT OF THE PROJECT, THE CONTRACTOR SHALL CONTACT IN WRITING THE CITY SOLICITOR OF THE CITY OF CHESTER SO THE LOCAL TRAVELING PUBLIC CAN BE INFORMED OF THE IMPENDING WORK. THE CONTRACTOR SHALL ALSO NOTIFY THE CITY WATER AND SEWER DEPARTMENT, AND CITY POLICE DEPARTMENT.

DURING WATERLINE DISTRIBUTION IMPROVEMENTS WITHIN ROAD RIGHT OF WAYS, THE CONTRACTOR SHALL ZONE OFF THE AMOUNT OF WORK THAT CAN BE COMPLETED IN ONE DAYS TIME.

THE CONTRACTOR IS PERMITTED TO PERFORM WORK SIMULTANEOUSLY IN DIFFERENT WORK ZONES. EACH DAY, ALL M.O.T. SIGNING, DRUMS, ETC. MUST BE SET UP BASED UPON THE SPECIFIC LOCATION(S) WHERE WORK WILL BE PERFORMED FOR THAT DAY (I.E. ROAD WORK AHEAD SIGNS, FLAGGER AHEAD SIGNS, ETC. SHOULD BE WITHIN THE DISTANCE CALLED FOR IN THE WVDOT MANUAL ON TEMPORARY TRAFFIC CONTROL FOR STREETS AND HIGHWAYS. BY THE END OF EACH WORKING DAY, ALL M.O.T. AND EQUIPMENT SHALL BE REMOVED FROM THE ROADWAY AND/OR ROAD RIGHT-OF-WAY, ALL TRENCHES SHALL BE PROPERLY BACKFILLED, AND THE ROADWAY SHALL BE RE-OPENED TO TWO-WAY TRAFFIC. ALL TRENCHES LOCATED WITHIN ROADWAY PAVEMENT OR DRIVEWAYS SHALL BE MAINTAINED IN ACCORDANCE WITH THE MAINTAINING ROADWAY AND DRIVEWAY PAVEMENT SURFACES NOTES ON THIS SHEET.

THE CONTRACTOR SHALL PROVIDE A MINIMUM OF TWO (2) FLAGGERS AT ALL TIMES DURING CONSTRUCTION ALONG THE ROADWAYS IN ACCORDANCE WITH THE WVDOT SPECIFICATIONS AND WVDOT MANUAL ON TEMPORARY TRAFFIC CONTROL FOR STREETS AND HIGHWAYS.

A MINIMUM OF ONE LANE TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES BY THE USE OF THE EXISTING PAVEMENT.

ACCESS TO RESIDENTIAL PROPERTIES SHALL BE MAINTAINED AT ALL TIMES.

LENGTH AND DURATION OF LANE CLOSURES AND RESTRICTIONS SHALL BE AT THE APPROVAL OF THE RESIDENT ENGINEER. IT IS THE INTENT TO MINIMIZE THE IMPACT TO THE LOCAL TRAVELING PUBLIC. LANE CLOSURES OR RESTRICTIONS OVER SEGMENTS OF THE PROJECT IN WHICH NO WORK IS ANTICIPATED WITHIN A REASONABLE TIME FRAME, AS DETERMINED BY THE RESIDENT ENGINEER, SHALL NOT BE PERMITTED. THE LEVEL OF UTILIZATION OF MAINTENANCE OF TRAFFIC DEVICES SHALL BE COMMENSURATE WITH THE WORK IN PROGRESS.

THE CONTRACTOR SHALL DESIGNATE A QUALIFIED INDIVIDUAL, OTHER THAN THE SUPERINTENDENT AND SUBJECT TO THE APPROVAL OF THE RESIDENT ENGINEER, TO PERIODICALLY INSPECT, DOCUMENT, REPAIR AND/OR REPLACE DAMAGED OR MISSING TRAFFIC CONTROL DEVICES WHENEVER CONSTRUCTION WORK IS BEING PERFORMED WITHIN THE WORK LIMITS OF THE PROJECT. THE DESIGNATED INDIVIDUAL SHALL INSPECT, DOCUMENT, REPAIR AND/OR REPLACE ALL TRAFFIC CONTROL DEVICES AT THE BEGINNING AND END OF EACH WORK DAY, AND AT LEAST ONCE DURING THE DAY WHILE WORK IS BEING CONDUCTED ON THE PROJECT.

ALL WORK AND TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH ITEM 636 OF THE WVDOT SPECIFICATIONS AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS AND THE PERTINENT "CASE DETAILS" IN THE WVDOT MANUAL ON TEMPORARY TRAFFIC CONTROL FOR STREETS AND HIGHWAYS. PAYMENT FOR ALL LABOR, EQUIPMENT, AND MATERIALS SHALL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 636, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

ALTERNATE METHODS

IF THE CONTRACTOR SO ELECTS, THEY MAY SUBMIT ALTERNATE METHODS FOR THE MAINTENANCE OF TRAFFIC, PROVIDED THE ABOVE PROVISIONS ARE FOLLOWED AND NO ADDITIONAL INCONVENIENCE TO THE TRAVELING PUBLIC RESULTS THEREFROM. NO ALTERNATE PLAN WILL BE PUT INTO EFFECT UNTIL THE APPROVAL HAS BEEN GRANTED, IN WRITING, BY THE RESIDENT ENGINEER AND THE CITY OF CHESTER.

CONTRACTOR'S EQUIPMENT – OPERATION AND STORAGE

IN ADDITION TO THE REQUIREMENTS OF ITEM 636 OF THE WVDOT SPECIFICATIONS, THE FOLLOWING SHALL APPLY: THE CONTRACTOR'S EQUIPMENT SHALL BE OPERATED IN THE DIRECTION OF TRAFFIC WHERE PRACTICAL. A FLAGGER SHALL BE USED WHERE THE CONTRACTOR'S EQUIPMENT MUST MERGE WITH THE TRAFFIC STREAM. THE CONTRACTOR'S VEHICLES AND EQUIPMENT SHALL BE EQUIPPED WITH AT LEAST ONE AMBER FLASHING LIGHT.

AFTER EACH WORK DAY, ON WEEKENDS, OR OTHER TIMES OF SUSPENSION OF WORK, THE EQUIPMENT SHALL BE STORED AT A STORAGE AREA REMOVED FROM THE RIGHT-OF-WAY. THE LOCATION SHALL HAVE PRIOR APPROVAL OF THE RESIDENT ENGINEER AND THE CITY OF CHESTER.

MAINTAINING ROADWAY PAVEMENT SURFACES

AS NOTED IN THE TYPICAL PAVEMENT REPLACEMENT AND TRENCH DETAIL SHOWN ON THE WATERLINE NOTES AND DETAIL SHEETS, ALL TRENCHES WITHIN ROADWAY AND DRIVEWAY PAVEMENT AREAS ARE TO BE BACKFILLED WITH ITEM 307: AGGREGATE BASE COURSE, CLASS 1, AS PER PLAN AND THE PAVEMENT REPLACEMENT IS TO CONSIST OF EITHER 3" OF ASPHALT OVERLAY ON TOP OF THE TRENCH BACKFILL (IN VALVE REPLACEMENT AREAS) OR WILL BE MILLED 1-1/2" WITH 1-1/2" OF ASPHALT ON TOP OF THE TRENCH BACKFILL. UPON COMPLETION OF EACH DAYS WORK, THE REMAINING PORTION OF THE TRENCH WHICH IS TO RECEIVE THE PROPOSED PAVEMENT REPLACEMENT AND/OR MILLING WITH PAVEMENT REPLACEMENT SHALL BE BACKFILLED WITH ITEM 307: AGGREGATE BASE COURSE, CLASS 1, AS PER PLAN TO THE TOP OF THE EXISTING ROADWAY PAVEMENT SURFACE TO BE USED AS TEMPORARY PAVEMENT IN ORDER TO MAINTAIN TRAFFIC WITHIN THE TRENCH UNTIL THE PROPOSED WATERLINE FACILITIES HAVE BEEN TESTED AND DISINFECTED AND/OR ACCEPTED BY THE CITY.

THE USE OF STEEL PLATES FOR THE MAINTAINING OF ROADWAY PAVEMENT TRAFFIC DURING CONSTRUCTION WILL BE PERMITTED BUT SHALL BE COORDINATED WITH THE RESIDENT ENGINEER. NO SEPARATE PAYMENT WILL BE MADE FOR THE USE OF STEEL PLATES. ANY COSTS ASSOCIATED WITH THE USE OF STEEL PLATES SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID.

UPON COMPLETION OF THE TESTING/DISINFECTION AND/OR ACCEPTANCE OF THE PROPOSED WATERLINE FACILITIES, THE CONTRACTOR SHALL EXCAVATE THE TEMPORARY AGGREGATE BASE OUT OF THE TRENCH TO THE BOTTOM OF THE PROPOSED PAVEMENT REPLACEMENT DEPTH (VARIES 1-1/2" OR 3"). THE REMAINING BACKFILL BASE SHALL BE PROPERLY COMPACTED, AND THE PROPOSED PAVEMENT REPLACEMENT SHALL BE PERFORMED IN ACCORDANCE WITH THE PLAN NOTES, DETAILS, AND SPECIFICATIONS.

IN ORDER TO PREVENT INADEQUATE PAVEMENT DROP-OFFS IN ALL TRENCH LOCATIONS, THE CONTRACTOR WILL NOT BE PERMITTED TO EXCAVATE THE TEMPORARY AGGREGATE BASE OUT OF THE TRENCH AND LEAVE THE TRENCH OPEN TO TRAFFIC OVERNIGHT WITH A 1-1/2" OR 3" DROP-OFF. THE CONTRACTOR SHALL ONLY EXCAVATE THE AMOUNT OF TEMPORARY AGGREGATE BASE THAT CAN BE REPLACED WITH THE 1-1/2" OR 3" OF ASPHALT OVERLAY WITHIN THE SAME WORKING DAY.

PRIOR TO THE PLACEMENT OF THE ASPHALT OVERLAY WITHIN THE ROADWAY PAVEMENT REPLACEMENT AREAS, THE CONTRACTOR SHALL ENSURE THAT PROPER BUTT JOINTS ARE PROVIDED FOR THE TRENCHES BY WAY OF HANDMILLING, SAWCUTTING, OR OTHER METHODS APPROVED BY THE ENGINEER AND THAT THE TRENCH IS ADEQUATELY CLEANED. THE CONTRACTOR SHALL PLACE THE SPECIFIED AMOUNT OF TACK COAT ON THE CONCRETE PAVEMENT OR AGGREGATE BASE AND UP AGAINST THE EXISTING ASPHALT PAVEMENT AT THE BUTT JOINT. ALL BUTT JOINTS ARE TO BE SEALED UPON COMPLETION OF THE ASPHALT OVERLAY.

THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING ALL TRENCHES UNTIL THE PROPOSED PAVEMENT REPLACEMENT HAS BEEN COMPLETED, AND ACCESS TO ALL DRIVEWAYS SHALL BE MAINTAINED AT ALL TIMES DURING THE PROJECT.

ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY FOR THE PROPER PLACEMENT, REMOVAL, AND DISPOSAL OF THE TEMPORARY ITEM 307: AGGREGATE BASE COURSE, CLASS 1, AS PER PLAN SHALL BE INCLUDED IN THE UNIT PRICE BID BELOW. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER.

ITEM SPECIAL: PLACEMENT, REMOVAL, AND DISPOSAL OF AGGREGATE BASE FOR MAINTAINING PAVEMENT SURFACE, AS PER PLAN — 31 C.Y.

WATER FOR DUST PALLIATIVE

THE CONTRACTOR SHALL FURNISH AND APPLY WATER DURING CONSTRUCTION FOR DUST CONTROL IN AREAS AS DIRECTED BY THE ENGINEER AND WHICH SHALL BE IN ACCORDANCE WITH ITEM 637 OF THE WVDOT SPECIFICATIONS. THE FOLLOWING CONTINGENCY QUANTITY FOR DUST CONTROL HAS BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER:

ITEM 637 WATER FOR DUST PALLIATIVE — 5 THOU. GAL.

SEQUENCE OF OPERATIONS

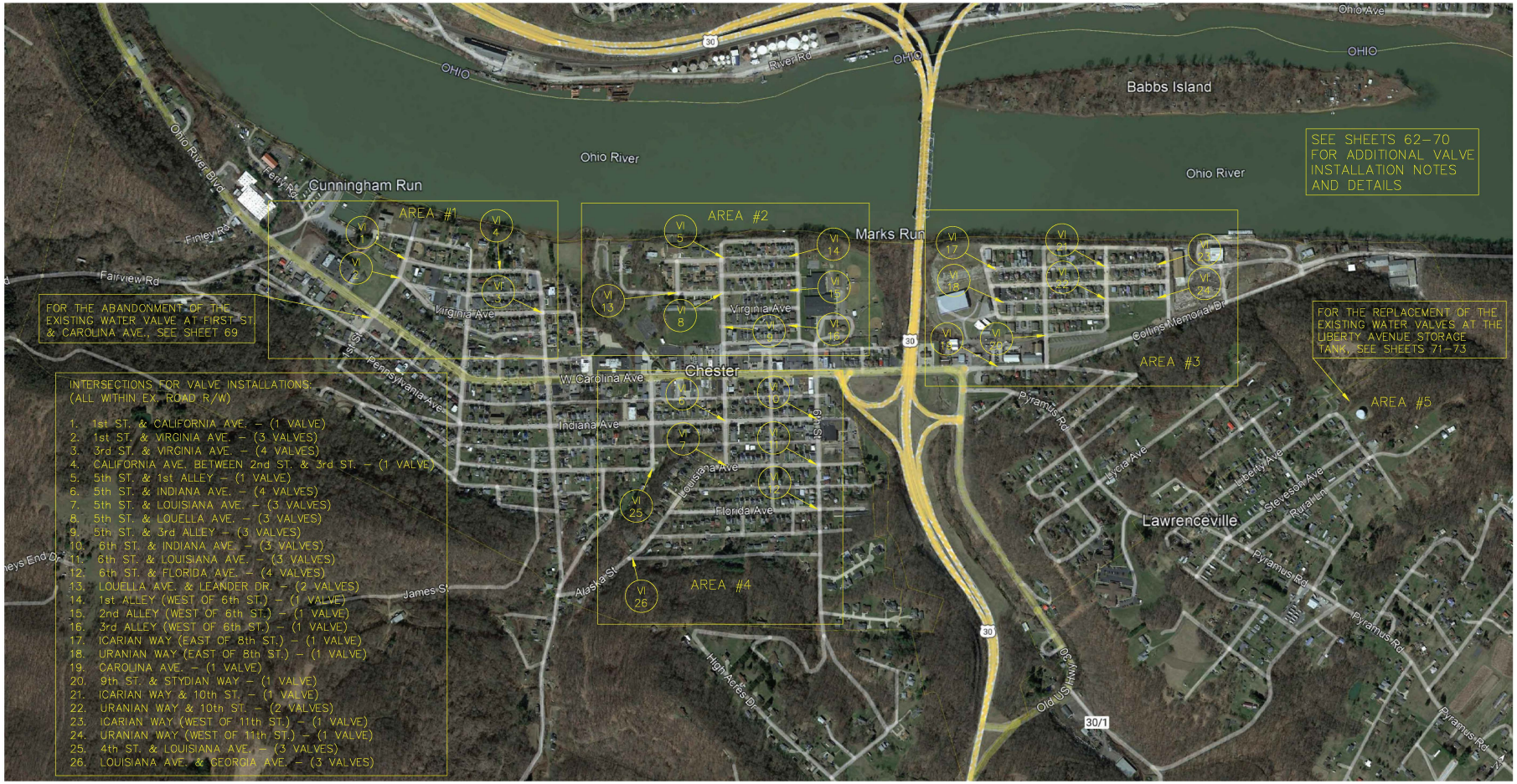
THE CONTRACTOR SHALL SUBMIT, IN WRITING, A SCHEDULE TO THE RESIDENT ENGINEER AND RECEIVE APPROVAL BEFORE WORK IS STARTED ON THE PROJECT. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL NOTIFY ALL OF THE AFOREMENTIONED AGENCIES LISTED IN THE MOT GENERAL NOTES ON THIS SHEET.

ONCE WATERLINE WORK HAS COMMENCED ALONG A SPECIFIC STREET, ALL WORK INCLUDING SERVICES, PAVEMENT REPLACEMENT, ETC. SHALL BE COMPLETED IN ITS ENTIRETY. THE CONTRACTOR WILL NOT BE PERMITTED TO WAIT UNTIL WATERLINE WORK ALONG OTHER STREETS IS COMPLETED PRIOR TO PAVING (I.E. CONTRACTOR CANNOT WAIT UNTIL THE END OF THE PROJECT TO PERFORM PAVEMENT REPLACEMENT).

CAD: J.F.B. DATE: 12/22
CHKD: D.C.D. DATE: 12/22

MAINTENANCE OF TRAFFIC GENERAL NOTES

CITY OF CHESTER
WATER SYSTEM IMPROVE.



VALVE INSTALLATION SEQUENCING NOTES

THE FOLLOWING PERTAINS TO AREA #1, AREA #2, AREA #3, AND AREA #4.

- IT IS ANTICIPATED THAT THE WATER TREATMENT PLANT (WTP) AND THE LIBERTY AVENUE STORAGE TANK WILL NEED TO BE SHUT–DOWN TO PERFORM THE INSTALLATION OF SPECIFIC VALVES WITHIN EACH PERTINENT AREA.
- IT IS ALSO ANTICIPATED THAT THE INSTALLATION OF SPECIFIC VALVES MAY NEED TO BE PERFORMED DURING NIGHTTIME HOURS.
- ONCE THESE SPECIFIC VALVES ARE INSTALLED, IT IS ANTICIPATED THAT THE OTHER VALVES WITHIN THE PERTINENT AREA CAN BE INSTALLED WITHOUT THE NEED TO SHUT–DOWN THE WTP AND THE LIBERTY AVENUE STORAGE TANK.
- IN ORDER TO MINIMIZE THE SHUT–DOWN TIME OF THE WTP AND THE LIBERTY AVENUE STORAGE TANK DURING THE INSTALLATION OF THE INITIAL SPECIFIC VALVES, AND/OR IN ORDER TO MINIMIZE CUSTOMER SERVICE DOWNTIME DURING THE INSTALLATION OF THE OTHER VALVES WITHIN AN AREA, THE CONTRACTOR SHALL PERFORM ALL NECESSARY PAVEMENT REMOVAL AND EXCAVATION WORK IN ORDER TO EXPOSE THE PERTINENT SECTION OF EXISTING WATERLINE TO RECEIVE THE NEW VALVE(S). THE EXCAVATED AREA SHALL BE PLATED UNTIL THE VALVE INSTALLATION WORK COMMENCES. FOR THE VALVES TO BE REPLACED DURING THE NIGHTTIME HOURS, THE EXPOSING OF THE EXISTING WATERLINE WILL BE PERMITTED TO BE PERFORMED DURING THE DAYTIME.
- ALTHOUGH THE APPROXIMATE LOCATIONS OF THE EXISTING WATERLINES (AS WELL AS FOR OTHER EXISTING UNDERGROUND UTILITIES) FOR ALL OF THE VALVE INSTALLATION LOCATIONS ARE SHOWN ON SHEETS 62–64, IT MAY BE NECESSARY FOR THE CONTRACTOR TO PERFORM EXPLORATORY EXCAVATION IN ORDER TO IDENTIFY THE EXACT LOCATIONS OF THE EXISTING WATERLINES. WEST VIRGINIA 811 (MISS UTILITY) SHALL BE CONTACTED FOR EXISTING UNDERGROUND UTILITY LOCATIONS, AND THE CONTRACTOR SHALL COORDINATE ALL EXISTING WATERLINE LOCATIONS WITH THE CITY WATER DEPARTMENT.

VALVE INSTALLATION SEQUENCING NOTES (CONT'D)

FOR ADDITIONAL SEQUENCING NOTES, SEE THE NOTES BELOW FOR EACH PERTINENT VALVE INSTALLATION AREA.

AREA #1 (VI1–VI4, & VALVE ABANDONMENT AT FIRST/CAROLINA) – INSTALL VI2 & VI3 FIRST (I.E. REQUIRES WTP/TANK SHUT–DOWN & NIGHTTIME WORK). THEN INSTALL VI1 & VI4 BY SHUTTING OFF THE PERTINENT VI2 & VI3 VALVES (I.E. NO WTP/TANK SHUT–DOWN & NO NIGHTTIME WORK). ALSO THE EXISTING VALVE AT FIRST/CAROLINA SHALL BE ABANDONED DURING THE SHUT–DOWN FOR VI2 & VI3 VALVE INSTALLATIONS.

AREA #2 (VI5/VI8/VI9/VI13–VI16) – INSTALL VI9, VI14, VI15 & VI16 FIRST (I.E. REQUIRES WTP/TANK SHUT–DOWN & NIGHTTIME WORK). THEN INSTALL VI5, VI8 & VI13 BY SHUTTING OFF THE PERTINENT VI9, VI14, VI15 & VI16 VALVES (I.E. NO WTP/TANK SHUT–DOWN & NO NIGHTTIME WORK).

AREA #3 (VI17–VI24) – INSTALL VI19, VI23, & VI24 FIRST (I.E. REQUIRES WTP/TANK SHUT–DOWN & NIGHTTIME WORK). THEN INSTALL VI17, VI18 & VI20–VI22 BY SHUTTING OFF THE PERTINENT VI19, VI23, & VI24 VALVES (I.E. NO WTP/TANK SHUT–DOWN & NO NIGHTTIME WORK).

AREA #4 (VI6/VI7/VI10–VI12/VI25/VI26) – INSTALL THE VALVES AT 4TH/INDIANA, VI6, & VI10 FIRST (I.E. REQUIRES WTP/TANK SHUT–DOWN & NIGHTTIME WORK). THEN INSTALL VI7/VI11/VI12/VI25/VI26 BY SHUTTING OFF THE PERTINENT 4TH/INDIANA, VI6, VI10, & OTHER EXISTING VALVES ALONG 3RD STREET (I.E. NO WTP/TANK SHUT–DOWN & NO NIGHTTIME WORK).

AREA #5 (VALVE REPLACEMENTS AT THE LIBERTY AVENUE STORAGE TANK) – REQUIRES WTP/TANK SHUT–DOWN & NIGHTTIME WORK; MAY BE COORDINATED WITH OTHER SHUT–DOWNS.

ALL COSTS ASSOCIATED WITH THE VALVE INSTALLATION SEQUENCING AS DESCRIBED IN THE NOTES ON THIS SHEET SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID FOR THE VALVE INSTALLATIONS.

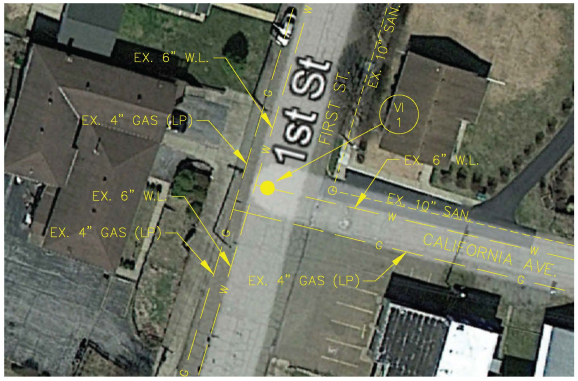
HORIZONTAL SCALE IN FEET
0

CADD: J.F.B. DATE: 12/22
CHKD: B.D.S.D. DATE: 12/22

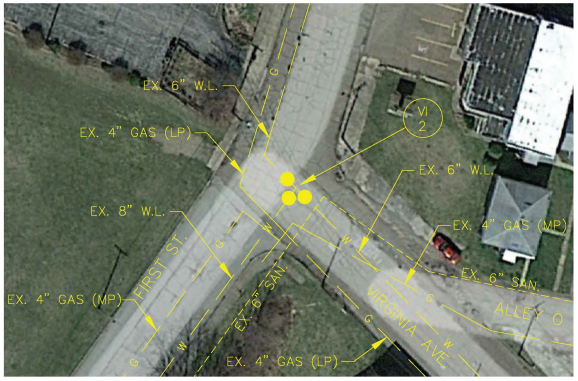
WATER DISTRIBUTION SYSTEM IMPROVEMENTS
VALVE INSTALLATIONS – LOCATION MAP

CITY OF CHESTER
WATER SYSTEM IMPROVE.

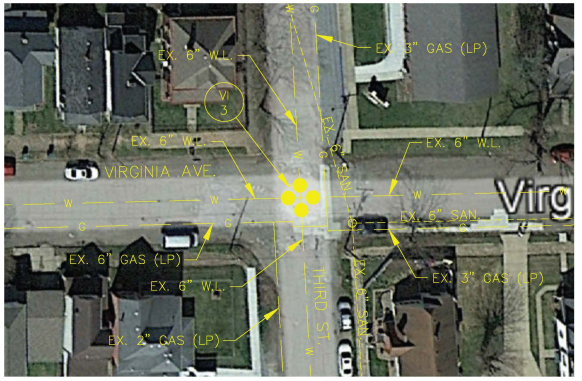
61
81



VI–1 DETAIL

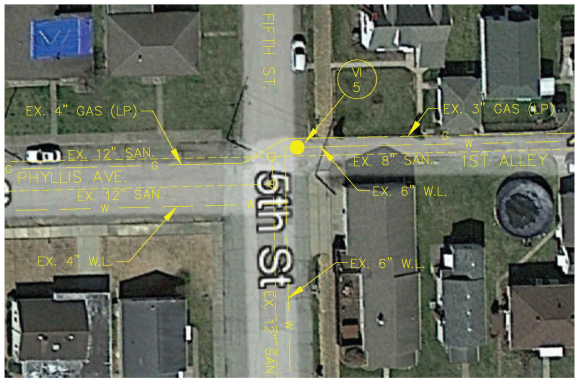


VI–2 DETAIL

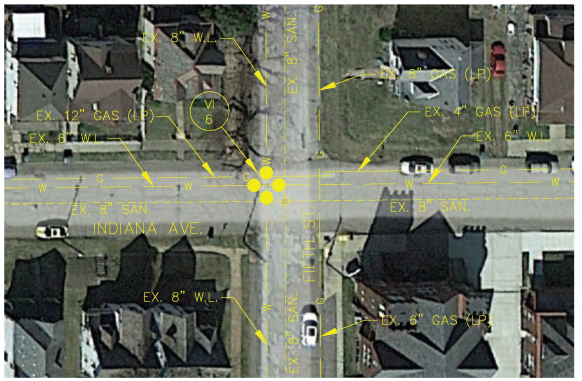


VI–3 DETAIL

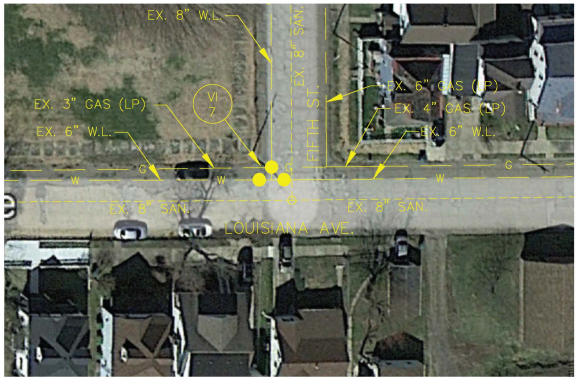
VI–4 DETAIL



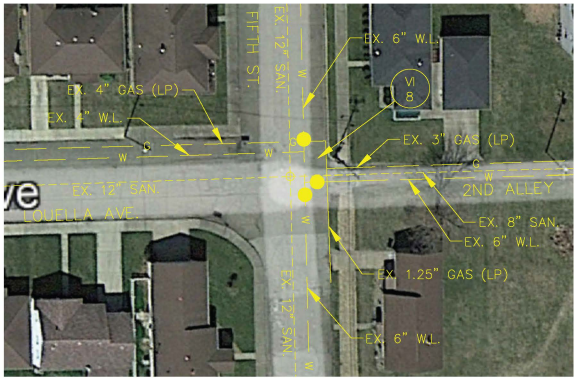
VI–5 DETAIL



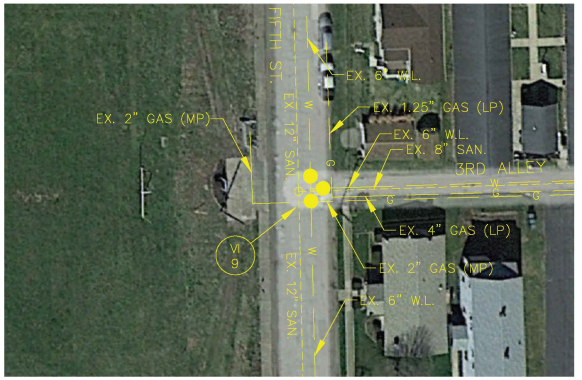
VI–6 DETAIL



VI–7 DETAIL



VI–8 DETAIL



VI–9 DETAIL

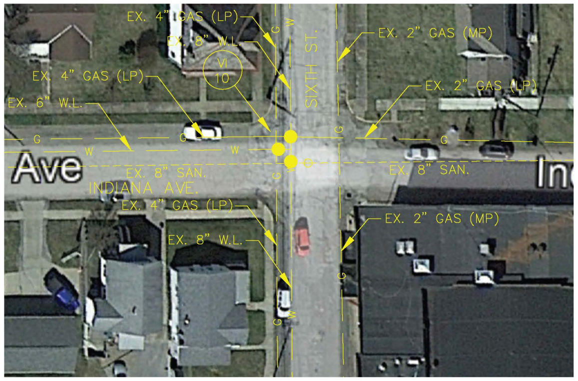
WATER DISTRIBUTION SYSTEM IMPROVEMENTS
INDIVIDUAL VALVE INSTALLATION PLAN VIEWS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

HORIZONTAL SCALE IN FEET
0

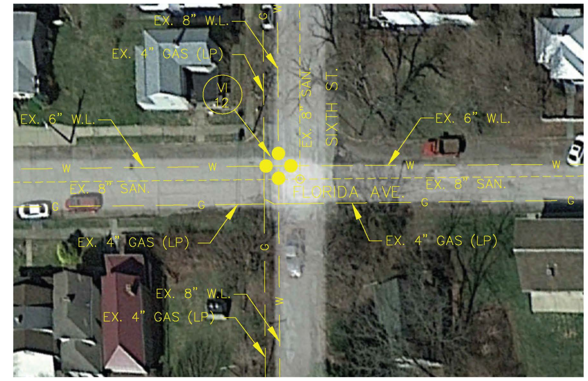
CADD: J.F.B. DATE: 12/22
DWG. BY: D.S.D. DATE: 1/22

62
81

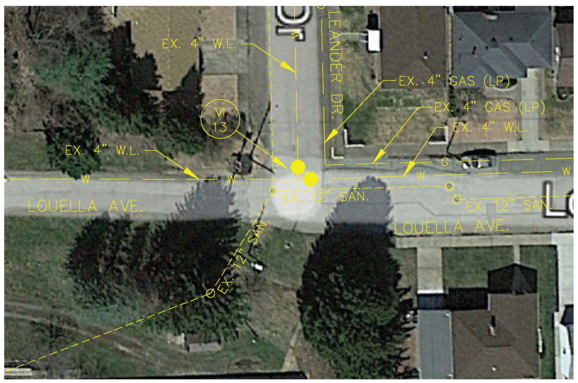


VI–10 DETAIL

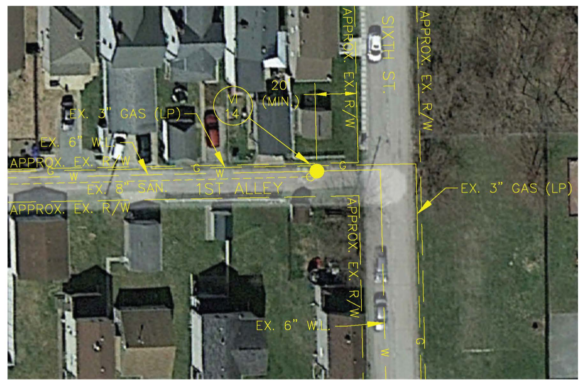
VI–11 DETAIL



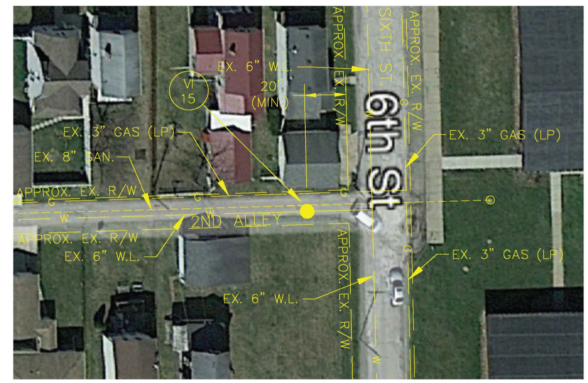
VI–12 DETAIL



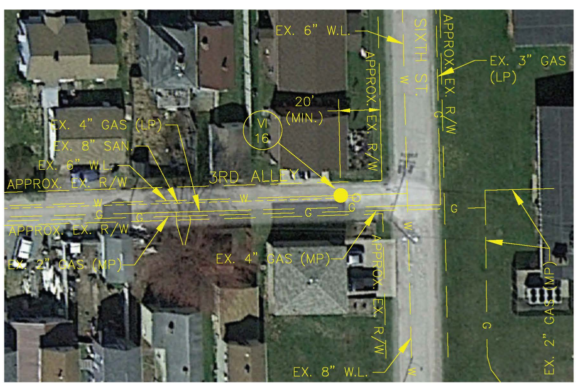
VI–13 DETAIL



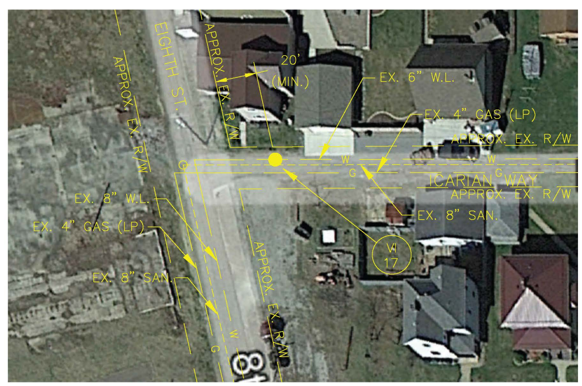
VI–14 DETAIL



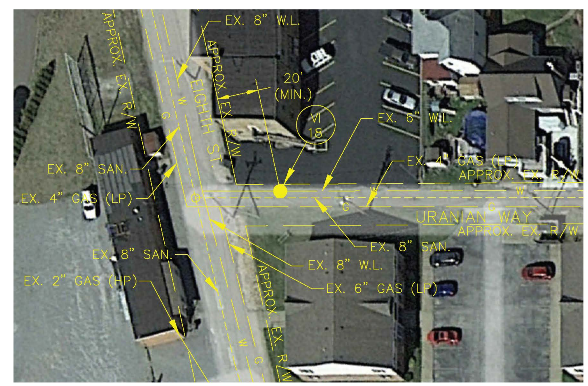
VI–15 DETAIL



VI–16 DETAIL



VI–17 DETAIL



VI–18 DETAIL

HORIZONTAL SCALE IN FEET

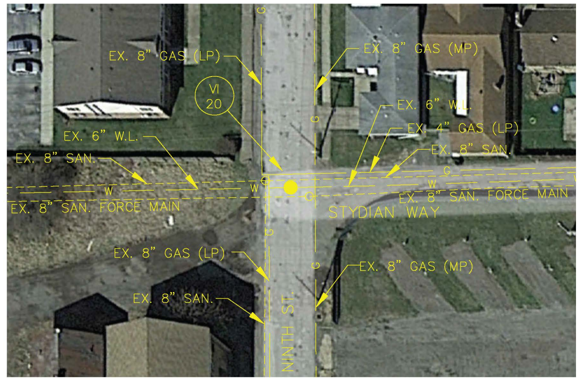
CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

WATER DISTRIBUTION SYSTEM IMPROVEMENTS
INDIVIDUAL VALVE INSTALLATION PLAN VIEWS

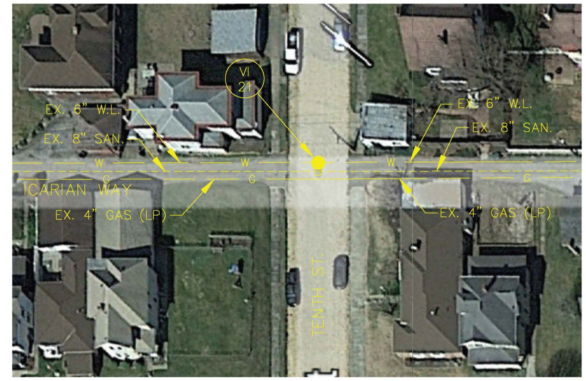
CITY OF CHESTER
WATER SYSTEM IMPROVE.

63
81

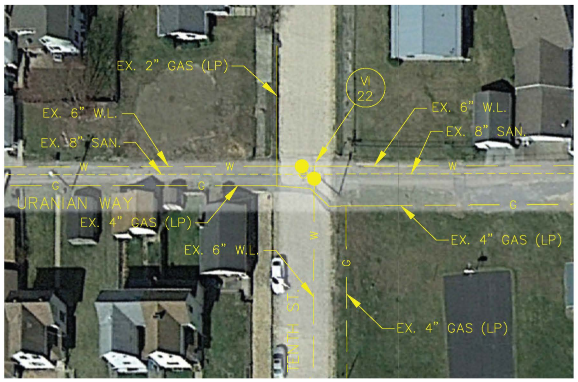
VI–19 DETAIL



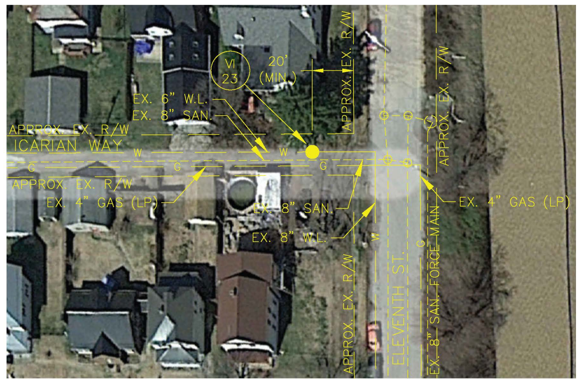
VI–20 DETAIL



VI–21 DETAIL

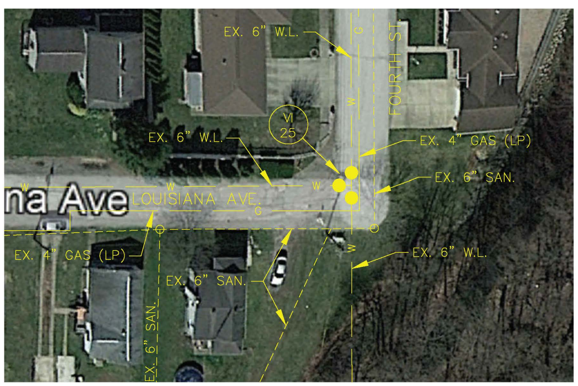


VI–22 DETAIL

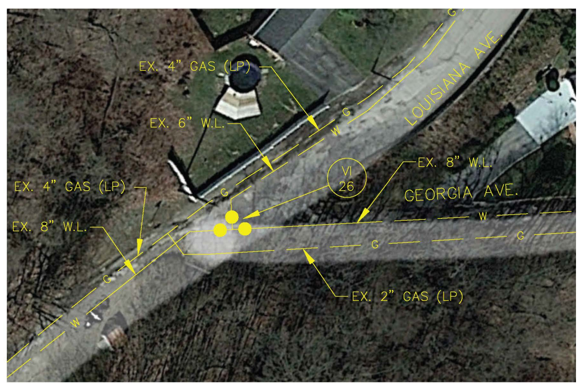


VI–23 DETAIL

VI–24 DETAIL



VI–25 DETAIL



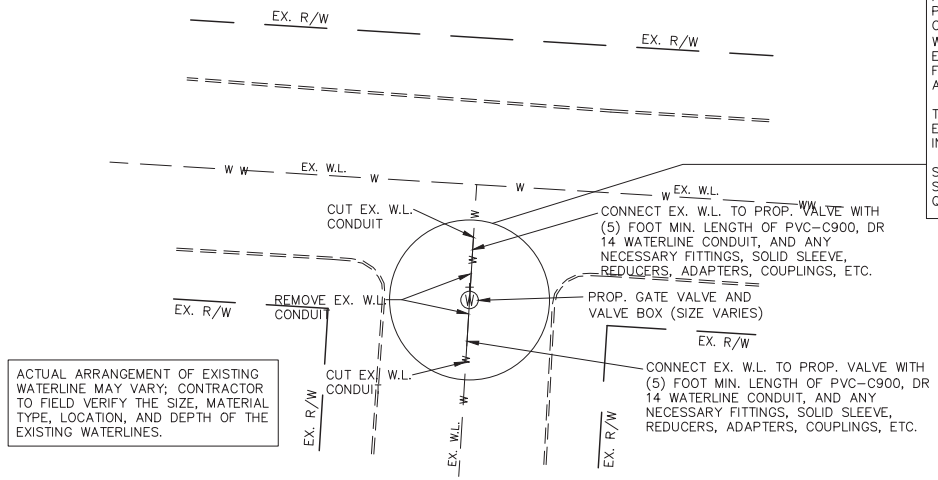
VI–26 DETAIL

0
HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

WATER DISTRIBUTION SYSTEM IMPROVEMENTS
INDIVIDUAL VALVE INSTALLATION PLAN VIEWS

CITY OF CHESTER
WATER SYSTEM IMPROVE.



ACTUAL ARRANGEMENT OF EXISTING WATERLINE MAY VARY; CONTRACTOR TO FIELD VERIFY THE SIZE, MATERIAL TYPE, LOCATION, AND DEPTH OF THE EXISTING WATERLINES.

CUT A SUFFICIENT LENGTH OF THE EXISTING WATERLINE CONDUIT IN ORDER TO REMOVE THE CORRESPONDING EXISTING WATERLINE CONDUIT AND ANY ASSOCIATED EXISTING VALVES, AND IN ORDER TO INSTALL A PROPOSED GATE VALVE & VALVE BOX AND THE PERTINENT INCIDENTALS; CONNECT THE EXISTING WATERLINES TO THE PROPOSED GATE VALVE WITH A (5) FOOT MINIMUM LENGTH OF PVC-C900, DR 14 CONDUIT ON EACH SIDE OF THE NEW GATE VALVE AND WITH THE APPROPRIATE FITTINGS, SOLID SLEEVES, REDUCERS, ADAPTERS, COUPLINGS, ETC. FOR A COMPLETE WATERTIGHT CONNECTION.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PAVEMENT REMOVAL, EXCAVATION, BEDDING, COMPACTED BACKFILL, ETC. WHICH SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE VALVE INSTALLATIONS.

SEE THE WATERLINE VALVE INSTALLATION NOTES AND DETAILS ON THIS SHEET FOR ADDITIONAL INFORMATION AND ASSOCIATED ESTIMATED QUANTITIES.

TYPICAL SINGLE VALVE INSTALLATION PLAN VIEW

WATERLINE SINGLE VALVE INSTALLATION NOTES (TYPICAL FOR ALL)

SEE SHEET 61 FOR VALVE INSTALLATION SEQUENCING NOTES.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER DEPARTMENT, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL VALVES, HYDRANTS, ETC. SHALL ONLY BE PERFORMED BY THE CITY WATER DEPARTMENT.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING INSTALLATION THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, AND ANY OTHER WATER DISTRIBUTION APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS FOR THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL LOCATIONS, DEPTHS, SIZES, AND MATERIAL TYPES OF THE EXISTING WATERLINES AND ANY OTHER PERTINENT EXISTING UTILITY FACILITIES PRIOR TO CONSTRUCTION.

BEDDING & BACKFILL FOR THE TRENCHES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEETS 79-80 AND WITH THE PROJECT SPECIFICATIONS.

PAVEMENT REPLACEMENT FOR THE TRENCHES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

GATE VALVES AND VALVE BOXES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 80 AND WITH THE PROJECT SPECIFICATIONS.

THRUST BLOCKING SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

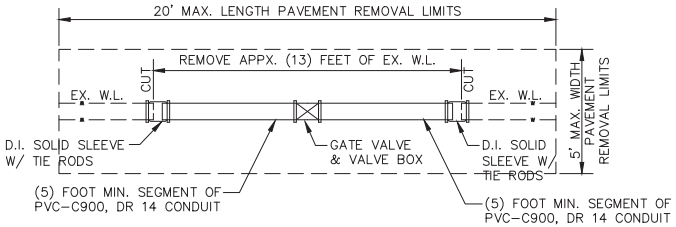
THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL & VERTICAL BENDS, FITTINGS, REDUCERS, SOLID SLEEVES, ADAPTERS, COUPLINGS, WATERLINE CONDUIT, CONCRETE THRUST BLOCKING, AND INCIDENTALS FOR A COMPLETE WATERTIGHT CONNECTION OF THE PROPOSED GATE VALVE TO THE EXISTING WATERLINES.

ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE VALVE AS DESCRIBED IN THE NOTES & DETAILS ON SHEETS 61-64 IN THE CONSTRUCTION PLANS AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL – INSTALLATION OF SINGLE NEW GATE VALVE & VALVE BOX, INCLUDING ALL INCIDENTALS, AS PER PLAN. THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

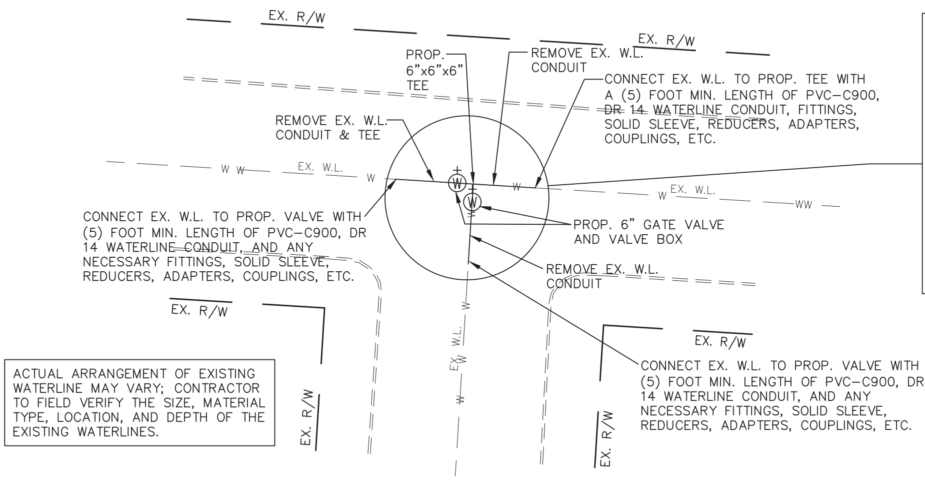
ITEM SPECIAL – INSTALLATION OF SINGLE NEW (6") GATE VALVE & VALVE BOX, INCLUDING ALL INCIDENTALS, AS PER PLAN	12 EACH
ITEM SPECIAL – INSTALLATION OF SINGLE NEW (8") GATE VALVE & VALVE BOX, INCLUDING ALL INCIDENTALS, AS PER PLAN	1 EACH

NOTE: THE FOLLOWING ARE APPROXIMATE QUANTITIES ASSOCIATED WITH EACH VALVE INSTALLATION AND ARE SHOWN FOR REFERENCE PURPOSES FOR USE IN DETERMINING THE COSTS FOR THE AFOREMENTIONED PER EACH UNIT PRICE BID.

SAWCUTTING	50 FEET
PAVEMENT REMOVED	12 SQ. YD.
NUMBER OF CUTS FOR EXISTING WATERLINE	2 EACH
LENGTH OF WATERLINE REMOVED	13 FEET
PVC-C900, DR 14 WATERLINE CONDUIT (SIZE VARIES)	10 FEET
GATE VALVE & VALVE BOX (SIZE VARIES)	1 EACH
COMPACTED BEDDING	5 CU. YD.
COMPACTED BACKFILL	7 CU. YD.
3" MARSHALL ASPHALT WEARING COURSE, STONE AND GRAVEL, TYPE 1	1 CU. YD.



GENERAL TYPICAL SINGLE VALVE INSTALLATION DETAIL



TYPICAL TWO-VALVE INSTALLATION PLAN VIEW

CUT A SUFFICIENT LENGTH OF THE EXISTING WATERLINE CONDUITS IN ORDER TO REMOVE THE CORRESPONDING EXISTING TEE, EXISTING WATERLINE CONDUIT, AND ANY ASSOCIATED EXISTING VALVES, AND IN ORDER TO INSTALL A PROPOSED 6"x6"x6" TEE, THE NECESSARY PROPOSED 6" GATE VALVES & VALVE BOXES ON (2) SIDES OF THE TEE, AND THE PERTINENT INCIDENTALS; CONNECT THE EXISTING WATERLINES TO THE PROPOSED GATE VALVES AND TEE WITH A (5) FOOT MINIMUM LENGTH OF PVC-C900, DR 14 CONDUIT AND WITH THE APPROPRIATE FITTINGS, SOLID SLEEVES, REDUCERS, ADAPTERS, COUPLINGS, ETC. FOR A COMPLETE WATERTIGHT CONNECTION.

PROVIDE ALL NECESSARY THRUST BLOCKING FOR THE NEW TEES.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PAVEMENT REMOVAL, EXCAVATION, BEDDING, COMPACTED BACKFILL, ETC. WHICH SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE VALVE INSTALLATIONS.

SEE THE WATERLINE VALVE INSTALLATION NOTES AND DETAILS ON THIS SHEET FOR ADDITIONAL INFORMATION.

WATERLINE TWO-VALVE INSTALLATION NOTES (TYPICAL FOR ALL)

SEE SHEET 61 FOR VALVE INSTALLATION SEQUENCING NOTES.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER DEPARTMENT, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL VALVES, HYDRANTS, ETC. SHALL ONLY BE PERFORMED BY THE CITY WATER DEPARTMENT.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING INSTALLATION THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, AND ANY OTHER WATER DISTRIBUTION APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS FOR THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL LOCATIONS, DEPTHS, SIZES, AND MATERIAL TYPES OF THE EXISTING WATERLINES AND ANY OTHER PERTINENT EXISTING UTILITY FACILITIES PRIOR TO CONSTRUCTION.

BEDDING & BACKFILL FOR THE TRENCHES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEETS 79-80 AND WITH THE PROJECT SPECIFICATIONS.

PAVEMENT REPLACEMENT FOR THE TRENCHES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

GATE VALVES AND VALVE BOXES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 80 AND WITH THE PROJECT SPECIFICATIONS.

THRUST BLOCKING SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL & VERTICAL BENDS, FITTINGS, REDUCERS, SOLID SLEEVES, ADAPTERS, COUPLINGS, WATERLINE CONDUIT, CONCRETE THRUST BLOCKING, AND INCIDENTALS FOR A COMPLETE WATERTIGHT CONNECTION OF THE PROPOSED TEE AND GATE VALVES TO THE EXISTING WATERLINES.

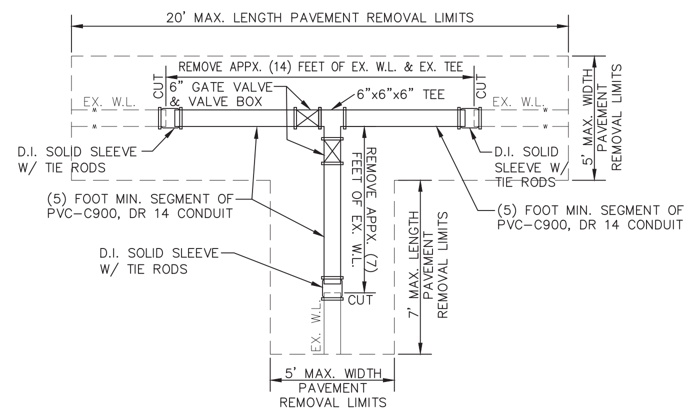
ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE VALVES AS DESCRIBED IN THE NOTES & DETAILS ON SHEETS 61-64 IN THE CONSTRUCTION PLANS AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL - INSTALLATION OF (2) NEW 6" GATE VALVES & VALVE BOXES, INCLUDING TEE AND ALL INCIDENTALS, AS PER PLAN. THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL - INSTALLATION OF (2) NEW 6" GATE VALVES & VALVE BOXES, INCLUDING TEE AND ALL INCIDENTALS, AS PER PLAN	2 EACH

NOTE: THE FOLLOWING ARE APPROXIMATE QUANTITIES ASSOCIATED WITH EACH VALVE INSTALLATION AND ARE SHOWN FOR REFERENCE PURPOSES FOR USE IN DETERMINING THE COSTS FOR THE AFOREMENTIONED PER EACH UNIT PRICE BID.

SAWCUTTING	64 FEET
PAVEMENT REMOVED	15 SQ. YD.
NUMBER OF CUTS FOR EXISTING WATERLINE	3 EACH
LENGTH OF WATERLINE REMOVED	21 FEET
6"X6"x6" TEE	1 EACH
6" PVC-C900, DR 14 WATERLINE CONDUIT	15 FEET
6" GATE VALVE & VALVE BOX	2 EACH
COMPACTED BEDDING	8 CU. YD.
COMPACTED BACKFILL	11 CU. YD.
3" MARSHALL ASPHALT WEARING COURSE, STONE AND GRAVEL, TYPE 1	1 CU. YD.

NOTE: ONE OF THE VALVE INSTALLATIONS WILL BE AT AN EXISTING 4" WATERLINE AND WILL REQUIRE (3)~6"x4" D.I. REDUCERS



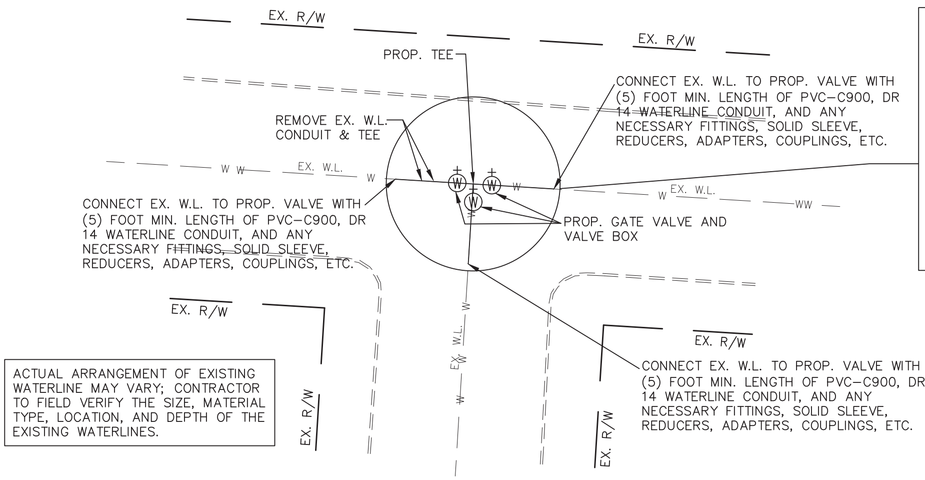
GENERAL TWO-VALVE INSTALLATION DETAIL

0 2.5 5 10
HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

WATER DISTRIBUTION SYSTEM IMPROVEMENTS
TWO-VALVE INSTALLATION NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.



TYPICAL THREE–VALVE INSTALLATION PLAN VIEW

CUT A SUFFICIENT LENGTH OF THE EXISTING WATERLINE CONDUITS IN ORDER TO REMOVE THE CORRESPONDING EXISTING TEE, EXISTING WATERLINE CONDUIT, AND ANY ASSOCIATED EXISTING VALVES, AND IN ORDER TO INSTALL A PROPOSED TEE, THE NECESSARY PROPOSED GATE VALVES & VALVE BOXES TO THE TEE, AND THE PERTINENT INCIDENTALS; CONNECT THE EXISTING WATERLINES TO THE PROPOSED GATE VALVES WITH A (5) FOOT MINIMUM LENGTH OF PVC–C900, DR 14 CONDUIT AND WITH THE APPROPRIATE FITTINGS, SOLID SLEEVES, REDUCERS, ADAPTERS, COUPLINGS, ETC. FOR A COMPLETE WATERTIGHT CONNECTION.

PROVIDE ALL NECESSARY THRUST BLOCKING FOR THE NEW TEES.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PAVEMENT REMOVAL, EXCAVATION, BEDDING, COMPACTED BACKFILL, ETC. WHICH SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE VALVE INSTALLATIONS.

SEE THE WATERLINE VALVE INSTALLATION NOTES AND DETAILS ON THIS SHEET FOR ADDITIONAL INFORMATION.

WATERLINE THREE–VALVE INSTALLATION NOTES (TYPICAL FOR ALL)

SEE SHEET 61 FOR VALVE INSTALLATION SEQUENCING NOTES.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER DEPARTMENT, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL VALVES, HYDRANTS, ETC. SHALL ONLY BE PERFORMED BY THE CITY WATER DEPARTMENT.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING INSTALLATION THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, AND ANY OTHER WATER DISTRIBUTION APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS FOR THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL LOCATIONS, DEPTHS, SIZES, AND MATERIAL TYPES OF THE EXISTING WATERLINES AND ANY OTHER PERTINENT EXISTING UTILITY FACILITIES PRIOR TO CONSTRUCTION.

BEDDING & BACKFILL FOR THE TRENCHES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEETS 79–80 AND WITH THE PROJECT SPECIFICATIONS.

PAVEMENT REPLACEMENT FOR THE TRENCHES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

GATE VALVES AND VALVE BOXES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 80 AND WITH THE PROJECT SPECIFICATIONS.

THRUST BLOCKING SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL & VERTICAL BENDS, FITTINGS, REDUCERS, SOLID SLEEVES, ADAPTERS, COUPLINGS, WATERLINE CONDUIT, CONCRETE THRUST BLOCKING, AND INCIDENTALS FOR A COMPLETE WATERTIGHT CONNECTION OF THE PROPOSED GATE VALVES TO THE EXISTING WATERLINES AND PROPOSED CROSS.

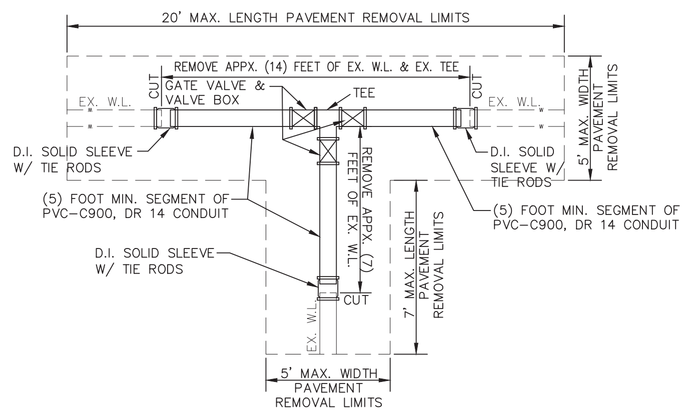
ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE VALVES AS DESCRIBED IN THE NOTES & DETAILS ON SHEETS 61–64 IN THE CONSTRUCTION PLANS AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL – INSTALLATION OF (3) NEW GATE VALVES & VALVE BOXES, INCLUDING TEE AND ALL INCIDENTALS, AS PER PLAN. THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – INSTALLATION OF (3) NEW GATE VALVES & VALVE BOXES, INCLUDING TEE AND ALL INCIDENTALS, AS PER PLAN	8 EACH

NOTE: THE FOLLOWING ARE APPROXIMATE QUANTITIES ASSOCIATED WITH EACH VALVE INSTALLATION AND ARE SHOWN FOR REFERENCE PURPOSES FOR USE IN DETERMINING THE COSTS FOR THE AFOREMENTIONED PER EACH UNIT PRICE BID.

SAWCUTTING	64 FEET
PAVEMENT REMOVED	15 SQ. YD.
NUMBER OF CUTS FOR EXISTING WATERLINE	3 EACH
LENGTH OF WATERLINE REMOVED	21 FEET
TEE (SIZE VARIES, 6" MIN.)	1 EACH
PVC–C900, DR 14 WATERLINE CONDUIT (SIZE VARIES, 6" MIN.)	15 FEET
GATE VALVE & VALVE BOX (SIZE VARIES, 6" MIN.)	3 EACH
COMPACTED BEDDING	8 CU. YD.
COMPACTED BACKFILL	11 CU. YD.
3" MARSHALL ASPHALT WEARING COURSE, STONE AND GRAVEL, TYPE 1	1 CU. YD.

NOTE: SEE BELOW FOR ANTICIPATED NUMBER OF LOCATIONS AND THE CORRESPONDING ANTICIPATED GATE VALVE & TEE SIZES.
- –(3) LOCATIONS; (1)~6"x6"x6" TEE WITH (3)~6" GATE VALVES
- –(2) LOCATIONS; (1)~8"x6"x6" TEE WITH (1)~8" & (2)~6" GATE VALVES
- –(3) LOCATIONS; (1)~8"x8"x6" TEE WITH (2)~8" & (1)~6" GATE VALVES



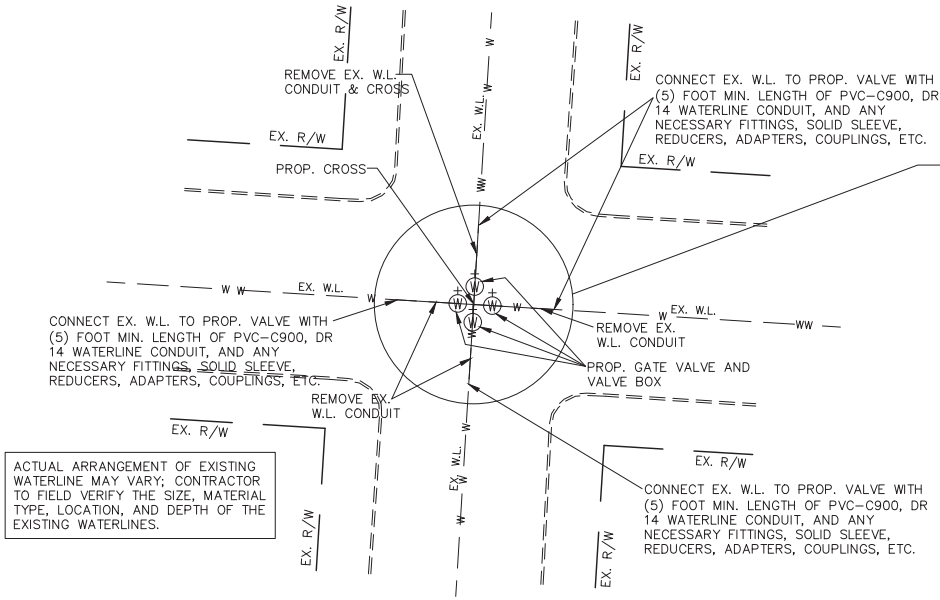
GENERAL THREE–VALVE INSTALLATION DETAIL

WATER DISTRIBUTION SYSTEM IMPROVEMENTS
THREE–VALVE INSTALLATION NOTES & DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

HORIZONTAL SCALE IN FEET 0 2.5 5 10



ACTUAL ARRANGEMENT OF EXISTING WATERLINE MAY VARY; CONTRACTOR TO FIELD VERIFY THE SIZE, MATERIAL TYPE, LOCATION, AND DEPTH OF THE EXISTING WATERLINES.

TYPICAL FOUR-VALVE INSTALLATION PLAN VIEW

CUT A SUFFICIENT LENGTH OF THE EXISTING WATERLINE CONDUITS IN ORDER TO REMOVE THE CORRESPONDING EXISTING CROSS, EXISTING WATERLINE CONDUIT, AND ANY ASSOCIATED EXISTING VALVES, AND IN ORDER TO INSTALL A PROPOSED CROSS, THE NECESSARY PROPOSED GATE VALVES & VALVE BOXES TO THE CROSS, AND THE PERTINENT INCIDENTALS; CONNECT THE EXISTING WATERLINES TO THE PROPOSED GATE VALVES WITH A (5) FOOT MINIMUM LENGTH OF PVC-C900, DR 14 CONDUIT AND WITH THE APPROPRIATE FITTINGS, SOLID SLEEVES, REDUCERS, ADAPTERS, COUPLINGS, ETC. FOR A COMPLETE WATERTIGHT CONNECTION.

PROVIDE ALL NECESSARY THRUST BLOCKING FOR THE NEW TEES.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PAVEMENT REMOVAL, EXCAVATION, BEDDING, COMPACTED BACKFILL, ETC. WHICH SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE VALVE INSTALLATIONS.

SEE THE WATERLINE VALVE INSTALLATION NOTES AND DETAILS ON THIS SHEET FOR ADDITIONAL INFORMATION.

NOTE: THE FOLLOWING ARE APPROXIMATE QUANTITIES ASSOCIATED WITH EACH VALVE INSTALLATION AND ARE SHOWN FOR REFERENCE PURPOSES FOR USE IN DETERMINING THE COSTS FOR THE AFOREMENTIONED PER EACH UNIT PRICE BID.

SAWCUTTING	76 FEET
PAVEMENT REMOVED	19 SQ. YD.
NUMBER OF CUTS FOR EXISTING WATERLINE	4 EACH
LENGTH OF WATERLINE REMOVED	28 FEET
CROSS (SIZE VARIES)	1 EACH
PVC-C900, DR 14 WATERLINE CONDUIT (SIZE VARIES, 6" MIN.)	20 FEET
GATE VALVE & VALVE BOX (SIZE VARIES, 6" MIN.)	4 EACH
COMPACTED BEDDING	10 CU. YD.
COMPACTED BACKFILL	14 CU. YD.
3" MARSHALL ASPHALT WEARING COURSE, STONE AND GRAVEL, TYPE 1	2 CU. YD.

NOTE: SEE BELOW FOR ANTICIPATED NUMBER OF LOCATIONS AND THE CORRESPONDING ANTICIPATED GATE VALVE & TEE SIZES.
- (2) LOCATIONS; (1)~8"x8"x6"x6" CROSS WITH (2)~8" & (2)~6" GATE VALVES
- (1) LOCATION; (1)~6"x6"x6"x6" CROSS WITH (4)~6" GATE VALVES

WATERLINE FOUR-VALVE INSTALLATION NOTES (TYPICAL FOR ALL)

SEE SHEET 61 FOR VALVE INSTALLATION SEQUENCING NOTES.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER DEPARTMENT, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL VALVES, HYDRANTS, ETC. SHALL ONLY BE PERFORMED BY THE CITY WATER DEPARTMENT.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING INSTALLATION THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, AND ANY OTHER WATER DISTRIBUTION APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS FOR THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL LOCATIONS, DEPTHS, SIZES, AND MATERIAL TYPES OF THE EXISTING WATERLINES AND ANY OTHER PERTINENT EXISTING UTILITY FACILITIES PRIOR TO CONSTRUCTION.

BEDDING & BACKFILL FOR THE TRENCHES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEETS 79-80 AND WITH THE PROJECT SPECIFICATIONS.

PAVEMENT REPLACEMENT FOR THE TRENCHES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

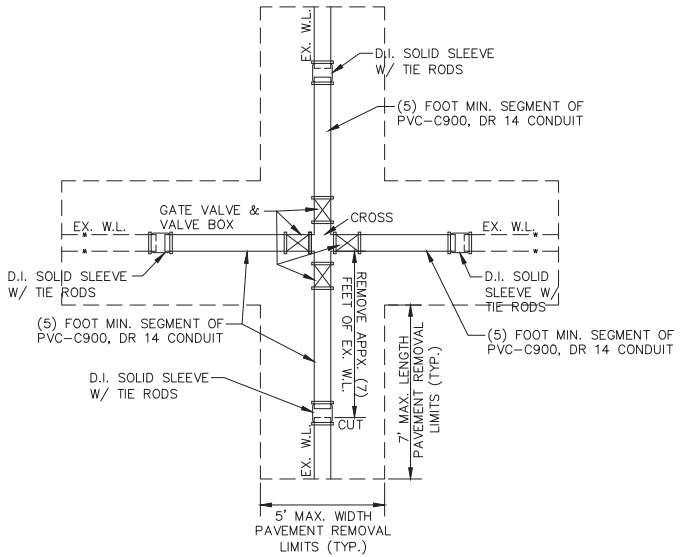
GATE VALVES AND VALVE BOXES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 80 AND WITH THE PROJECT SPECIFICATIONS.

THRUST BLOCKING SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL & VERTICAL BENDS, FITTINGS, REDUCERS, SOLID SLEEVES, ADAPTERS, COUPLINGS, WATERLINE CONDUIT, CONCRETE THRUST BLOCKING, AND INCIDENTALS FOR A COMPLETE WATERTIGHT CONNECTION OF THE PROPOSED GATE VALVES TO THE EXISTING WATERLINES AND PROPOSED CROSS.

ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE VALVES AS DESCRIBED IN THE NOTES & DETAILS ON SHEETS 61-64 IN THE CONSTRUCTION PLANS AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM SPECIAL – INSTALLATION OF (4) NEW GATE VALVES & VALVE BOXES, INCLUDING CROSS AND ALL INCIDENTALS, AS PER PLAN. THE FOLLOWING QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – INSTALLATION OF (4) NEW GATE VALVES & VALVE BOXES, INCLUDING CROSS AND ALL INCIDENTALS, AS PER PLAN	3 EACH



GENERAL FOUR-VALVE INSTALLATION DETAIL

VALVE ABANDONMENT NOTES (AT FIRST ST. & CAROLINA AVE.)

SEE SHEET 61 FOR VALVE INSTALLATION SEQUENCING NOTES.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER DEPARTMENT, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL VALVES, HYDRANTS, ETC. SHALL ONLY BE PERFORMED BY THE CITY WATER DEPARTMENT.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING THE VALVE ABANDONMENT, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, AND ANY OTHER WATER DISTRIBUTION APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS INCLUDING THE DUCTILE IRON CAPS AND INCIDENTAL MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL LOCATION, DEPTH, SIZE, AND MATERIAL TYPE OF THE EXISTING WATERLINE AND ANY OTHER PERTINENT EXISTING UTILITY FACILITIES PRIOR TO CONSTRUCTION.

BEDDING & BACKFILL FOR THE TRENCH SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

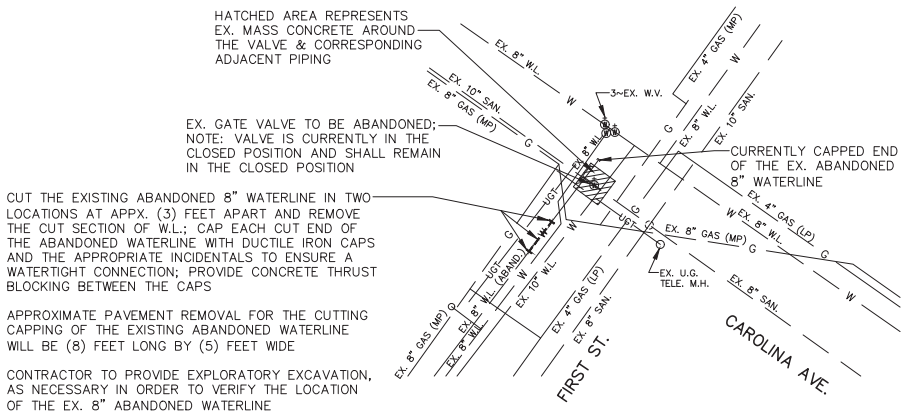
PAVEMENT REPLACEMENT FOR THE TRENCH SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

THRUST BLOCKING SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY FITTINGS, ADAPTERS, COUPLINGS, CONCRETE THRUST BLOCKING, AND INCIDENTALS FOR A COMPLETE WATERTIGHT CONNECTION OF THE PROPOSED CAPS TO THE EXISTING WATERLINES.

ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY FOR THE COMPLETE ABANDONMENT OF THE THE EXISTING GATE VALVE AT FIRST STREET AND CAROLINA AVENUE AS DESCRIBED IN THE NOTES & DETAILS ON THIS SHEET, ON SHEET 61 OF THE CONSTRUCTION PLANS, AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – VALVE ABANDONMENT (FIRST/CAROLINA), INCLUDING ALL INCIDENTALS, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – VALVE ABANDONMENT (FIRST/CAROLINA), INCLUDING ALL INCIDENTALS, AS PER PLAN	LUMP SUM



VALVE ABANDONMENT DETAIL (AT FIRST ST. & CAROLINA AVE.)

NOTE: THE FOLLOWING ARE APPROXIMATE QUANTITIES ASSOCIATED WITH THE VALVE ABANDONMENT AND ARE SHOWN FOR REFERENCE PURPOSES FOR USE IN DETERMINING THE COSTS FOR THE AFOREMENTIONED LUMP SUM PRICE BID.

SAWCUTTING	26 FEET
PAVEMENT REMOVED	5 SQ. YD.
NUMBER OF CUTS FOR EXISTING WATERLINE	2 EACH
LENGTH OF WATERLINE REMOVED	3 FEET
8" DUCTILE IRON CAPS (AND INCIDENTALS)	2 EACH
COMPACTED BEDDING	2 CU. YD.
COMPACTED BACKFILL	4 CU. YD.
3" MARSHALL ASPHALT WEARING COURSE, STONE AND GRAVEL, TYPE 1	0.50 CU. YD.

HORIZONTAL SCALE IN FEET: 0, 2.5, 5, 10

CAD: J.F.B. DATE: 12/22
CHKD: DATE: 12/22
BY: D.G.D.

WATER DISTRIBUTION SYSTEM IMPROVEMENTS
VALVE ABANDONMENT (AT FIRST/CAROLINA)

CITY OF CHESTER
WATER SYSTEM IMPROVE.

69
81

CONTINGENCY FOR POTENTIALLY CONTAMINATED SOILS

ALTHOUGH THE ENVIRONMENTAL STUDIES INDICATE THAT THERE IS NOT A POTENTIAL OF ENCOUNTERING PETROLEUM CONTAMINATED SOILS (PCS) AND/OR OTHER REGULATED SUBSTANCES DURING EXCAVATIONS FOR CONSTRUCTION ACTIVITIES BASED UPON THE VALVE INSTALLATION LOCATIONS SHOWN ON THE CONSTRUCTION PLANS, THE FOLLOWING PROCEDURE SHALL BE FOLLOWED IF PCS AND/OR OTHER REGULATED SUBSTANCES ARE ENCOUNTERED.

THE RESIDENT CONSTRUCTION ENGINEER WILL INITIALLY DETERMINE IF THE MATERIAL APPEARS TO BE A PCS AND/OR OTHER REGULATED SUBSTANCE BASED ON THE MATERIAL'S APPEARANCE, ODOR, AND THE RESIDENT CONSTRUCTION ENGINEER'S PAST EXPERIENCE. IF DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL UTILIZE A "SNIFFER" TO CONFIRM ANY VAPORS AS WELL AS FOR ANY TESTING NECESSARY TO DETERMINE IF THE MATERIAL IS IN FACT A PCS AND/OR OTHER REGULATED SUBSTANCE. ANY POTENTIAL CONTAMINATED SOIL SHALL BE TESTED FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENE (BTEX) USING USEPA SW-846, METHOD 8021; TOTAL PETROLEUM HYDROCARBONS (TPH) USING USEPA SW-846, METHOD 8015, PER WVDEP (UST) GUIDELINES; AND/OR ANY OTHER APPLICABLE TESTING. ONCE LAB ANALYSIS RESULTS ARE RECEIVED FOR THE MATERIAL, THEY SHALL BE COMPARED TO WVDEP'S (UST) CLOSURE ACTION LEVELS TO DETERMINE IF THE MATERIAL IS INDEED A CONTAMINATED SOIL. THIS FINAL DETERMINATION SHALL BE MADE BY THE RESIDENT CONSTRUCTION ENGINEER.

IN THE EVENT PCS AND/OR OTHER REGULATED SUBSTANCES ARE ENCOUNTERED (BASED ON THE MATERIAL'S APPEARANCE, ODOR, AND THE RESIDENT CONSTRUCTION ENGINEER'S PAST EXPERIENCE), THE CONTRACTOR SHALL MANAGE THIS MATERIAL ACCORDING TO THE FOLLOWING GUIDELINES.

ALL MATERIAL EXCAVATED WITHIN A SPECIFIC VALVE INSTALLATION LOCATION SHALL BE STOCKPILED IN AN AREA PROVIDED BY THE CONTRACTOR AND APPROVED BY THE RESIDENT CONSTRUCTION ENGINEER.

- THE RESIDENT CONSTRUCTION ENGINEER MAY PERMIT TEMPORARY STORAGE OF THE EXCAVATED MATERIAL IN A LINED AND COVERED ROLL-OFF BOX.
- THE RESIDENT CONSTRUCTION ENGINEER MAY PERMIT TEMPORARY STORAGE OF THE EXCAVATED MATERIAL ON AN IMPERMEABLE MEMBRANE. THE MEMBRANE SHALL BE SURROUNDED BY BALES OF STRAW TO PREVENT THE SUSPECTED SOILS FROM COMING IN CONTACT WITH THE ORIGINAL SOILS. AN IMPERMEABLE MEMBRANE SHALL BE PLACED OVER THE STOCKPILE TO PREVENT CONTACT WITH PRECIPITATION AND/OR SURFACE RUN-OFF.
- THE RESIDENT CONSTRUCTION ENGINEER MAY PERMIT THE CONTRACTOR TO DIRECT LOAD THE EXCAVATED CONTAMINATED MATERIAL INTO TRUCKS.

THIS MATERIAL SHALL BE PROPERLY TESTED, TRANSPORTED, AND DISPOSED OF IN A LICENSED AND PERMITTED (BY THE WVDEP AND/OR LOCAL HEALTH DEPARTMENT) SOLID WASTE DISPOSAL FACILITY.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS AND TO TRANSPORT THE MATERIAL TO A LICENSED AND PERMITTED SOLID WASTE DISPOSAL FACILITY. THE CONTRACTOR SHALL CONTACT THE FACILITY TO DETERMINE IF ANY ADDITIONAL TESTING IS REQUIRED FOR DISPOSAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING AND ADDITIONAL SAMPLING AND ANALYSIS OF THIS MATERIAL.

THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS NECESSARY TO PROPERLY HANDLE, STORE (IF NECESSARY), TEST FOR DISPOSAL, TRANSPORT, AND DISPOSE OF REGULATED MATERIALS, INCLUDING ANY REQUIRED PERMITS, APPROVALS, OR FEES WITHIN THE LIMITS IDENTIFIED ABOVE.

PAYMENT FOR THIS WORK SHALL BE MADE AT THE UNIT PRICE BID PER EACH AND SHALL BE BASED UPON THE SPECIFIC VALVE INSTALLATION TYPE.

- QUANTITIES FOR THE AMOUNT OF MATERIAL TO BE HANDLED IN ACCORDANCE WITH THE NOTES ABOVE IS BASED UPON THE COMBINED TOTAL APPROXIMATE VOLUME OF BEDDING & BACKFILL TO BE PLACED BACK INTO THE TRENCH FOR ONE VALVE INSTALLATION ONLY AND IS AS FOLLOWS:
  - SINGLE VALVE INSTALLATION = APPX. 12 C.Y.
  - TWO-VALVE INSTALLATION = APPX. 19 C.Y.
  - THREE-VALVE INSTALLATION = APPX. 19 C.Y.
  - FOUR-VALVE INSTALLATION = APPX. 24 C.Y.

THE ACTUAL VALVE INSTALLATION AND ALL OTHER INCIDENTAL WORK WILL BE PAID FOR SEPARATELY AT THE UNIT PRICE BID FOR THE SPECIFIC VALVE INSTALLATION.

THE FOLLOWING CONTINGENCY QUANTITIES HAVE BEEN CARRIED TO THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER:

ITEM SPECIAL – WORK INVOLVING SOLID WASTE (SINGLE VALVE), AS PER PLAN	1 EACH
ITEM SPECIAL – WORK INVOLVING SOLID WASTE (TWO-VALVE), AS PER PLAN	1 EACH
ITEM SPECIAL – WORK INVOLVING SOLID WASTE (THREE-VALVE), AS PER PLAN	1 EACH
ITEM SPECIAL – WORK INVOLVING SOLID WASTE (FOUR-VALVE), AS PER PLAN	1 EACH

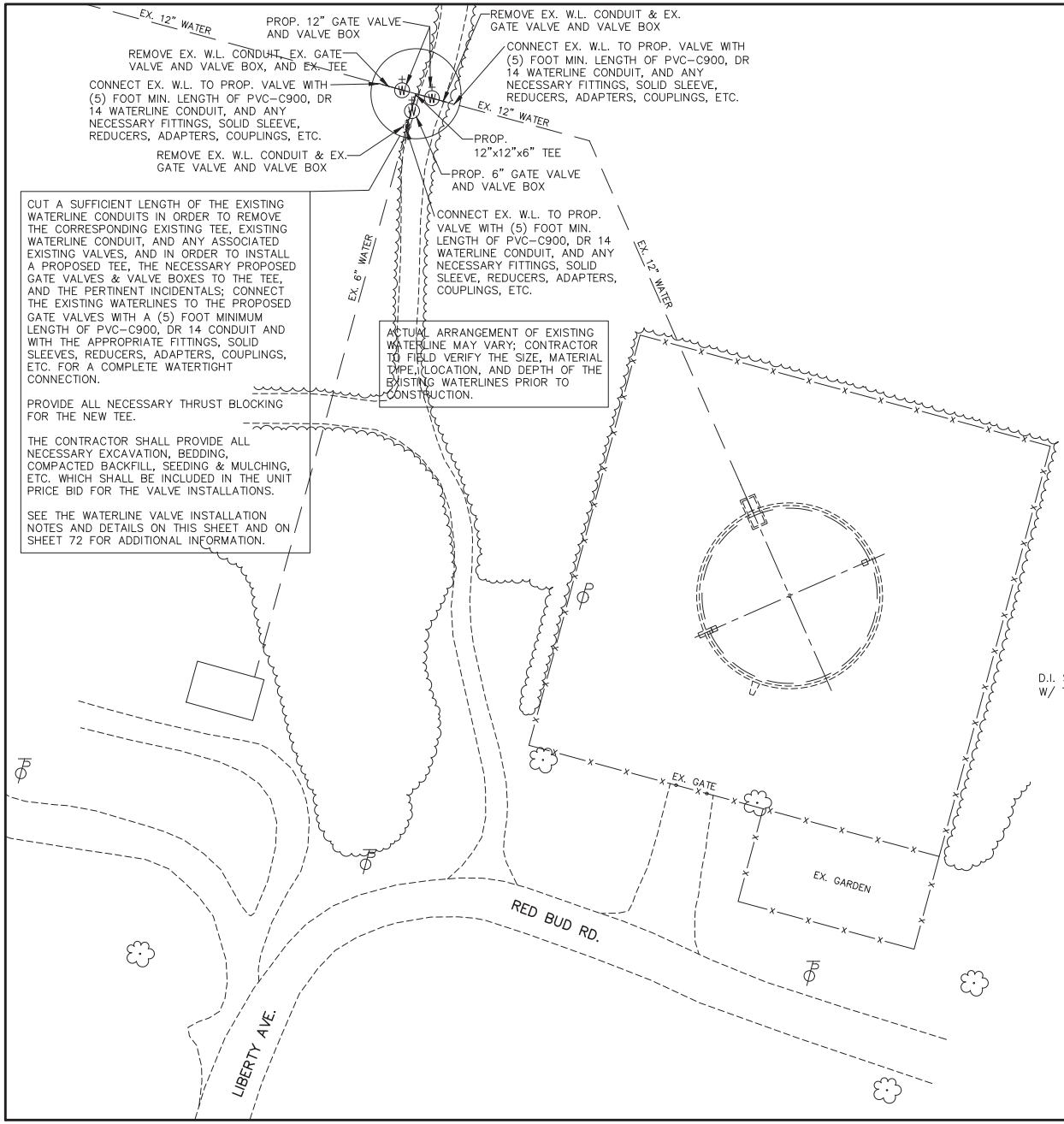
0 2.5 5 10
HORIZONTAL SCALE IN FEET

CAD: J.F.B.
BY:
DATE:12/22
CHKD:
BY: D.S.D.
DATE:12/22

WATER DISTRIBUTION SYSTEM IMPROVEMENTS
VALVE INSTALLATION CONTINGENCY

CITY OF CHESTER
WATER SYSTEM IMPROVE.

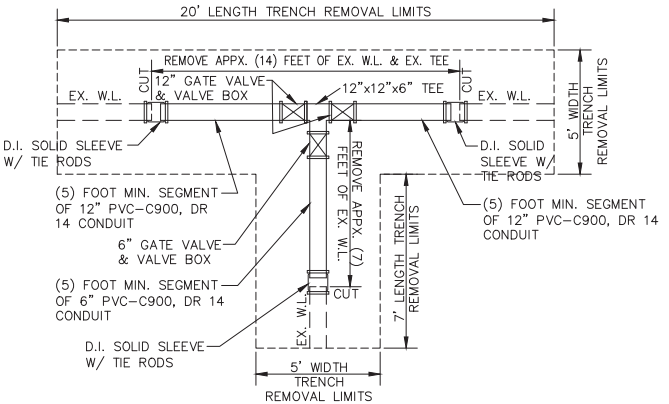
70
81



NOTE: THE FOLLOWING ARE APPROXIMATE QUANTITIES ASSOCIATED WITH EACH VALVE REPLACEMENT AND ARE SHOWN FOR REFERENCE PURPOSES FOR USE IN DETERMINING THE COSTS FOR THE AFOREMENTIONED PER EACH UNIT PRICE BID.

NUMBER OF CUTS FOR EXISTING WATERLINE	3 EACH
LENGTH OF WATERLINE REMOVED	21 FEET
12"X12"x6" TEE	1 EACH
6" PVC-C900, DR 14 WATERLINE CONDUIT	5 FEET
12" PVC-C900, DR 14 WATERLINE CONDUIT	10 FEET
6" GATE VALVE & VALVE BOX	1 EACH
12" GATE VALVE & VALVE BOX	2 EACH
COMPACTED BEDDING	8 CU. YD.
COMPACTED BACKFILL	11 CU. YD.
TOPSOIL, SEEDING & MULCHING	30 SQ. YD.
CONCRETE FOR CONCRETE PAD	0.67 C.Y.
AGGREGATE BASE FOR FENCED AREA	2 CU. YD.
PERIMETER FENCE	30 FEET
10' DOUBLE SWING GATE (2~5' WIDE GATES)	1 EACH

SEE CONCRETE PAD AND PERIMETER FENCE NOTES & DETAILS ON SHEETS 72-73



GENERAL VALVE INSTALLATION DETAIL

SEE ADDITIONAL NOTES & DETAILS ON SHEETS 72-73

LIBERTY TANK THREE–VALVE REPLACEMENT NOTES

SEE SHEET 61 FOR VALVE INSTALLATION SEQUENCING NOTES.

THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE CITY OF CHESTER WATER DEPARTMENT, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL VALVES, HYDRANTS, ETC. SHALL ONLY BE PERFORMED BY THE CITY WATER DEPARTMENT.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING INSTALLATION THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, AND ANY OTHER WATER DISTRIBUTION APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS FOR THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL LOCATIONS, DEPTHS, SIZES, AND MATERIAL TYPES OF THE EXISTING WATERLINES AND ANY OTHER PERTINENT EXISTING UTILITY FACILITIES PRIOR TO CONSTRUCTION.

ALL REMOVED MATERIALS SHALL BE PROPERLY DISPOSED OF.

BEDDING & BACKFILL FOR THE TRENCHES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEETS 79–80 AND WITH THE PROJECT SPECIFICATIONS.

GATE VALVES AND VALVE BOXES SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 80 AND WITH THE PROJECT SPECIFICATIONS EXCEPT THAT THE VALVE BOXES SHALL HAVE LOCKING LIDS.

THRUST BLOCKING SHALL BE IN ACCORDANCE WITH THE NOTES AND DETAILS ON SHEET 79 AND WITH THE PROJECT SPECIFICATIONS.

A (6) FEET LONG BY (6) FEET WIDE BY 6" THICK CONCRETE PAD SHALL BE PROVIDED AND SHALL BE CENTERED ABOUT THE VALVE BOXES; THE TOP OF THE CONCRETE PAD SHALL BE FLUSH WITH FINISHED GRADE. THE CONCRETE FOR THE PAD SHALL BE PLANT MIX, 4,000 PSI, AT 28 DAYS STRENGTH. PROVIDE ALL NECESSARY EXCAVATION, SUBGRADE COMPACTION, AND REMOVAL & DISPOSAL OF SPOILS.

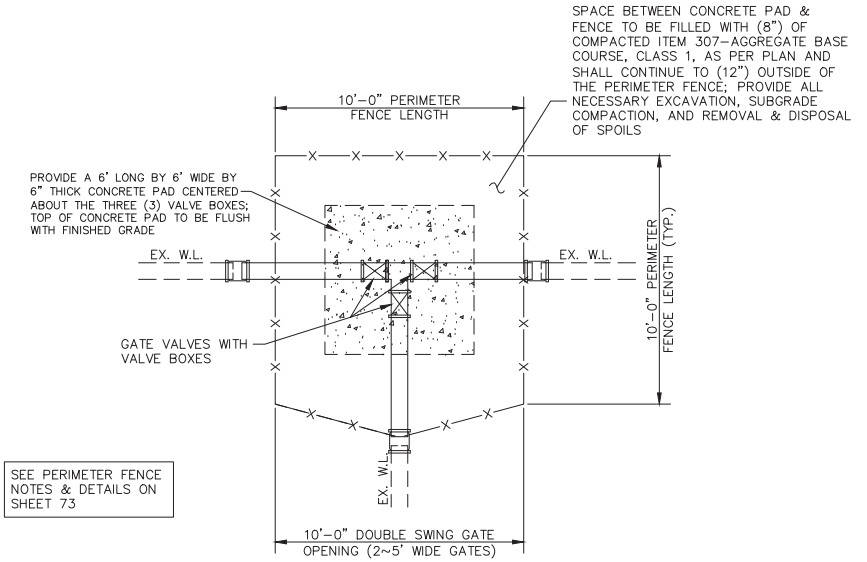
A (10) FEET LONG BY (10) FEET WIDE BY (6) FEET HIGH CHAIN LINK FENCE WITH A (10) FEET WIDE DOUBLE SWING GATE OPENING (2~5' WIDE GATES), ALL WITH BARB ARMS & (3) ROWS OF BARB WIRE ALONG THE TOP OF THE FENCE SHALL BE PROVIDED AROUND AND CENTERED ABOUT THE CONCRETE PAD. SEE DETAILS ON THIS SHEET AND ON SHEET 73.

THE SPACE BETWEEN THE CONCRETE PAD & FENCE SHALL BE FILLED WITH (8") OF COMPACTED ITEM 307–AGGREGATE BASE COURSE, CLASS 1, AS PER PLAN AND SHALL CONTINUE TO (12") OUTSIDE OF THE PERIMETER FENCE; PROVIDE ALL NECESSARY EXCAVATION, SUBGRADE COMPACTION, AND REMOVAL & DISPOSAL OF SPOILS. SEE NOTES & DETAIL ON THIS SHEET.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL & VERTICAL BENDS, FITTINGS, REDUCERS, SOLID SLEEVES, ADAPTERS, COUPLINGS, WATERLINE CONDUIT, CONCRETE THRUST BLOCKING, AND INCIDENTALS FOR A COMPLETE WATERTIGHT CONNECTION OF THE PROPOSED GATE VALVES TO THE EXISTING WATERLINES AND PROPOSED CROSS.

ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE VALVES AS DESCRIBED IN THE NOTES & DETAILS ON SHEETS 71–73 IN THE CONSTRUCTION PLANS AND IN THE PERTINENT SPECIFICATIONS SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM SPECIAL – REMOVE & REPLACE EXISTING GATE VALVES AT THE LIBERTY AVENUE STORAGE TANK, AS PER PLAN. THE FOLLOWING QUANTITY HAS BEEN CARRIED TO THE GENERAL SUMMARY.

ITEM SPECIAL – REMOVE & REPLACE EXISTING GATE VALVES AT THE LIBERTY AVENUE STORAGE TANK, AS PER PLAN	LUMP SUM



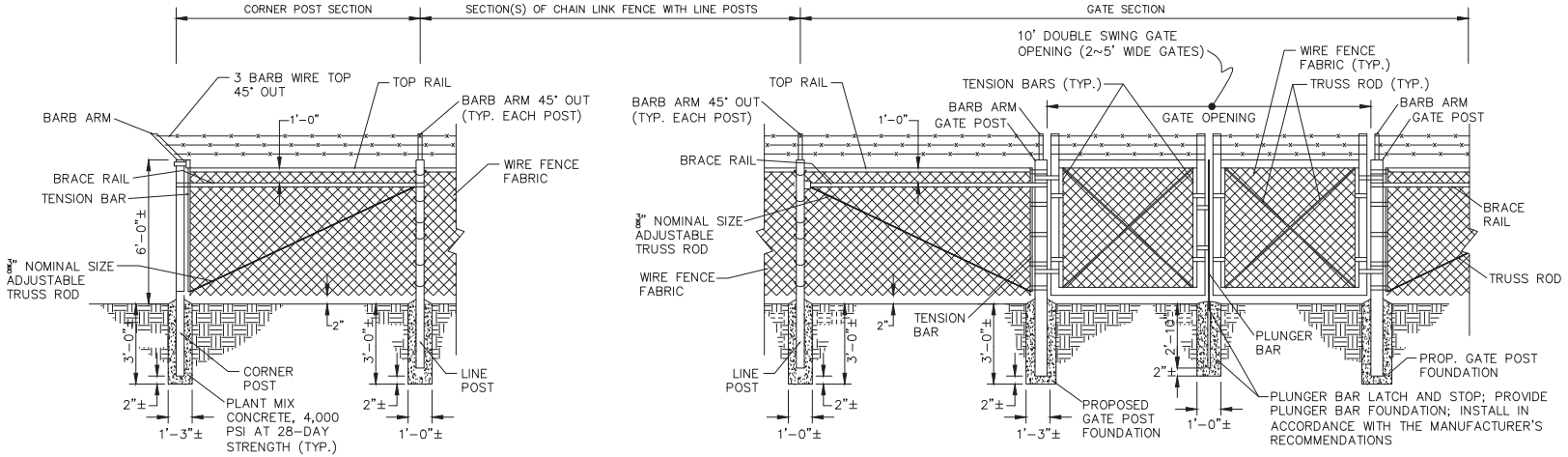
VALVE BOX CONCRETE PAD & PERIMETER FENCE PLAN VIEW

0
HORIZONTAL SCALE IN FEET

CAD: J.F.B.
DATE: 12/22
CHKD:
BY: D.S.D.
DATE: 12/22

WATER DISTRIBUTION SYSTEM IMPROVEMENTS
LIBERTY AVE. STORAGE TANK VALVE REPLACEMENTS

CITY OF CHESTER
WATER SYSTEM IMPROVE.



PERIMETER CHAIN LINK FENCE AND GATE DETAIL
(NOT TO SCALE)

PERIMETER FENCE GENERAL NOTES:

FENCE AND GATE FOR THE PERIMETER FENCE SHALL BE IN ACCORDANCE WITH WVDOH ITEM 608 AND AS MODIFIED BY THE NOTES AND DETAILS ON THIS SHEET. FENCE MATERIALS SHALL BE FROM WVDOH CERTIFIED SUPPLIERS. NOTE: A TOP RAIL SHALL BE PROVIDED INSTEAD OF CABLE.

THE GATE SHALL BE (6) FOOT HIGH, DOUBLE SWING GATES, AND SHALL INCLUDE POST EXTENSIONS FOR THE BARB ARMS FOR THREE ROWS OF BARB WIRE AT THE TOP OF THE GATE.

THE INSTALLATION OF THE PERIMETER FENCE/GATES SHALL INCLUDE ALL NECESSARY INCIDENTALS FOR A COMPLETE INSTALLATION.

CONCRETE FOR THE POST AND PLUNGER BAR FOUNDATIONS SHALL BE PLANT MIX, 4,000 PSI AT 28-DAYS STRENGTH.

THE CONTRACTOR WILL BE RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS PRIOR TO ORDERING ANY MATERIALS.

THE CONTRACTOR MUST VERIFY THE LOCATION OF ALL SUBSURFACE UTILITIES PRIOR TO ANY EXCAVATION AND/OR POST INSTALLATION.

THE FOLLOWING ARE THE APPROXIMATE QUANTITIES FOR THE PERIMETER FENCE:
- PERIMETER FENCE (30' FOOT)
- 10' WIDE DOUBLE SWING GATE (1 EACH)

ALL LABOR, EQUIPMENT, MATERIALS, AND INCIDENTALS NECESSARY FOR THE COMPLETE INSTALLATION OF THE PROPOSED PERIMETER FENCE AND WALK GATE AS SHOWN IN THE NOTES & DETAILS ON SHEETS 71-73 SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR LIBERTY TANK VALVE REPLACEMENT.

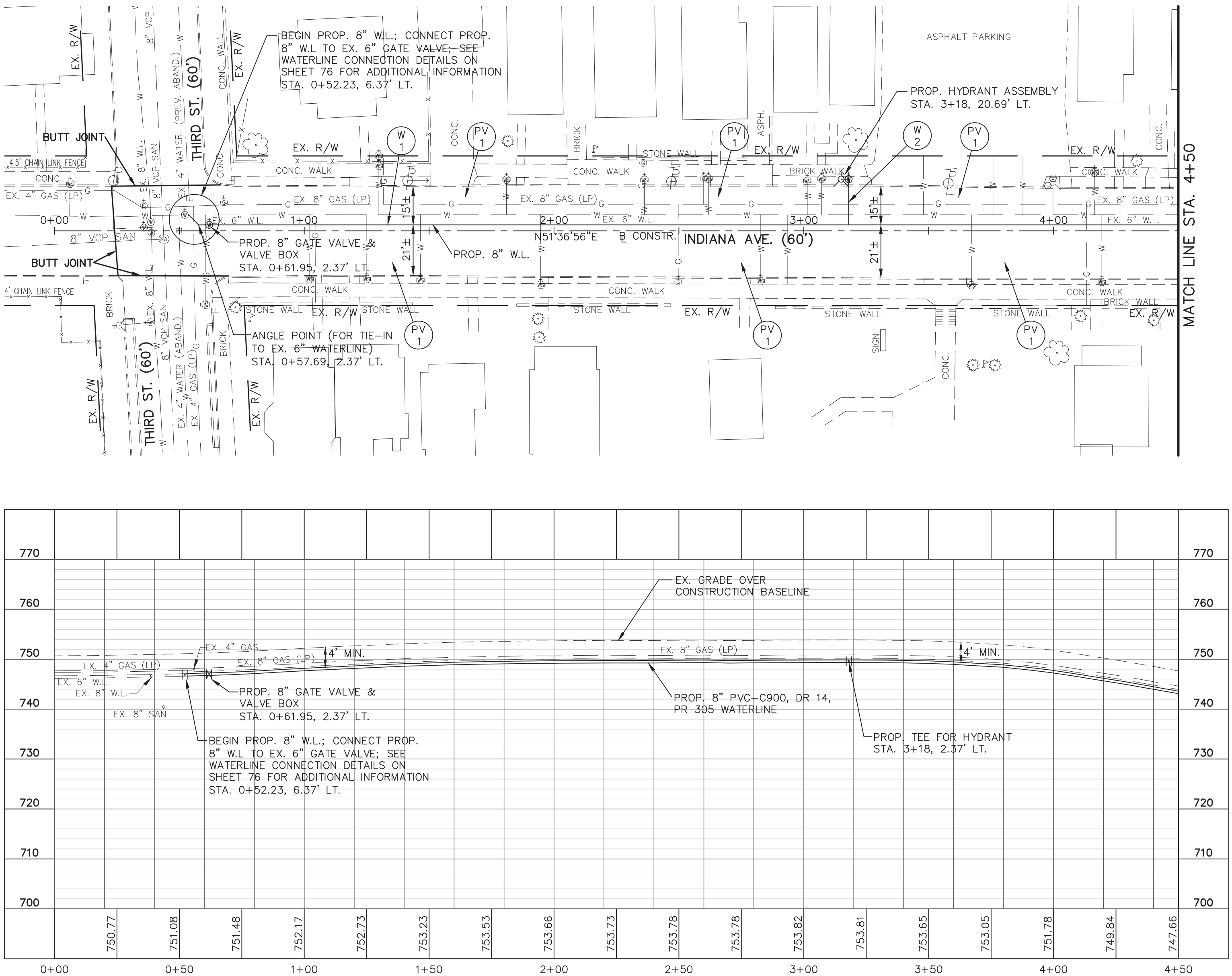
HORIZONTAL SCALE IN FEET
0

CAD: J.F.B.
DATE: 12/22
CHKD: B.D.G.D.
DATE: 12/22

WATER DISTRIBUTION SYSTEM IMPROVEMENTS
LIBERTY AVE. STORAGE TANK VALVE REPLACEMENTS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

73
81



ESTIMATED QUANTITIES

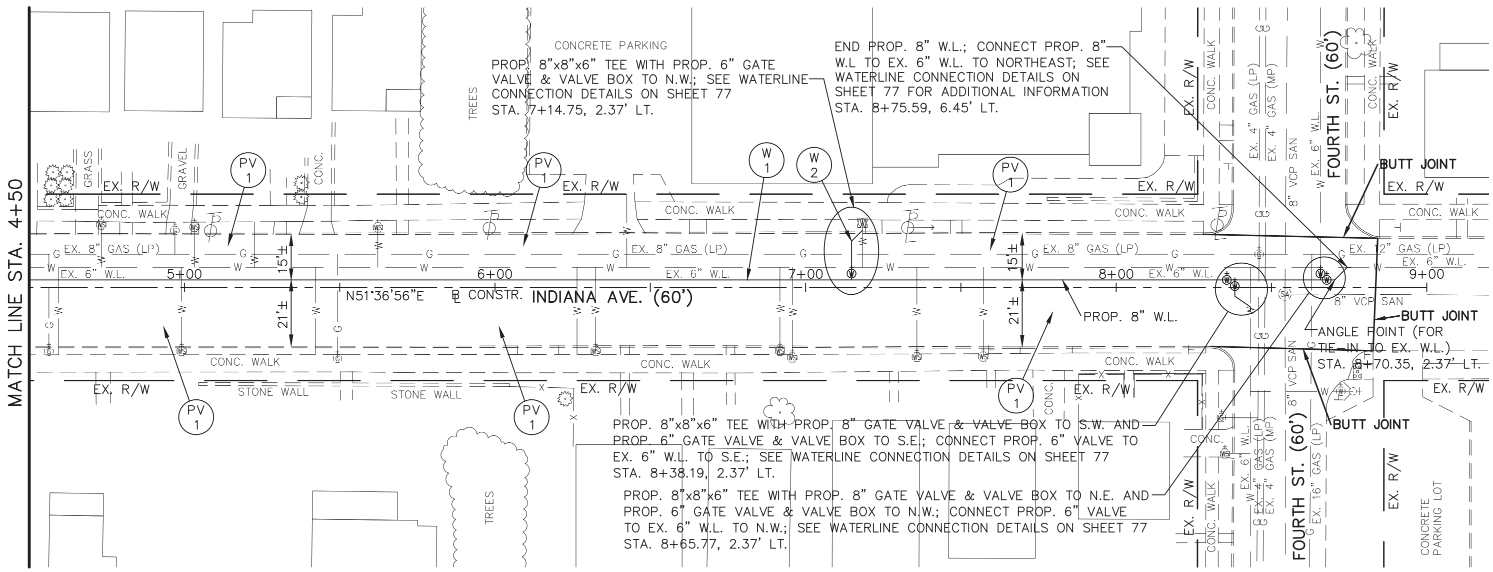
REF. NO.	STATION TO STATION	SIDE	401 PAVEMENT REMOVED (S.Y.)	401 FULL DEPTH PAVEMENT SAWING (FOOT)	401 1.5" MARSHALL ASPHALT INTERMEDIATE COURSE, STONE AND GRAVEL, TYPE 1 (C.Y.)	401 1.5" MARSHALL ASPHALT WEARING COURSE, STONE AND GRAVEL, TYPE 1 (C.Y.)	408 TACK COAT (GAL.)	415 ASPHALT PAVEMENT PLANING, A.P.P. (S.Y.)	609 4" CONCRETE WALK, AS PER PLAN (S.Y.)	610 CURB REMOVED (FOOT)	610 PLAIN CONCRETE CURBING, TYPE 1, AS PER PLAN (FOOT)	670 6" PVC-C900, DR 14, PR 305, WL & APPURT., AS PER PLAN (FOOT)	670 8" PVC-C900, DR 14, PR 305, WL & APPURT., AS PER PLAN (FOOT)	670 8" GATE VALVE AND VALVE BOX, AS PER PLAN (EACH)	670 6" HYDRANT ASSEMBLY, AS PER PLAN (EACH)	SEE SHT. NO.
W1	0+38.71~4+50	LT.	250	848	11							10	389	1		
W2	3+18	LT.	15	36	1				5	5	5				1	
PV1	0+24~4+50	L/R				75	98	1700								79,80
TOTALS CARRIED TO GENERAL SUMMARY			265	884	12	75	98	1700	5	5	5	10	389	1	1	

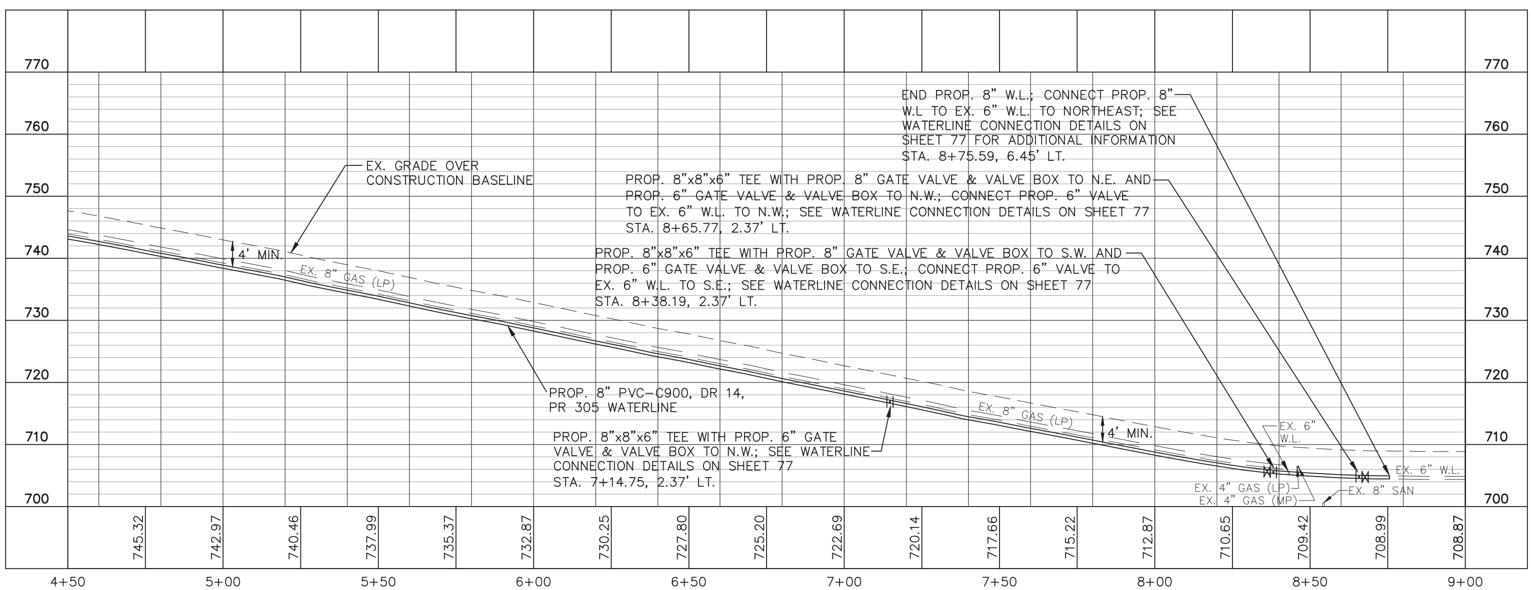
0 10 20 40
HORIZONTAL SCALE IN FEET

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

INDIANA AVENUE WATERLINE REPLACEMENT
PLAN & PROFILE – STA. 0+00 TO STA. 4+50

CITY OF CHESTER
WATER SYSTEM IMPROVE.





ESTIMATED QUANTITIES

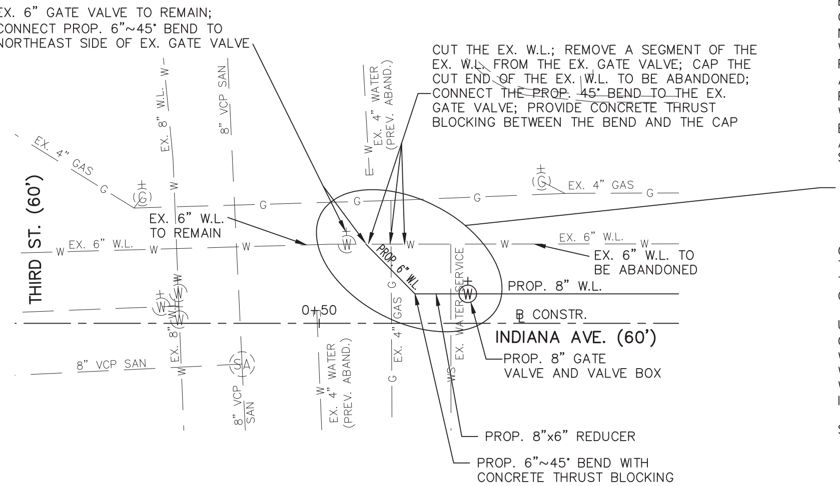
REF. NO.	STATION TO STATION	SIDE	401 PAVEMENT REMOVED (S.Y.)	401 FULL DEPTH PAVEMENT SAWING (FOOT)	401 1.5" MARSHALL ASPHALT INTERMEDIATE COURSE, STONE AND GRAVEL, TYPE 1 (C.Y.)	401 1.5" MARSHALL ASPHALT WEARING COURSE, STONE AND GRAVEL, TYPE 1 (C.Y.)	408 TACK COAT (GAL.)	415 ASPHALT PAVEMENT PLANING, A.P.P. (S.Y.)	609 4" CONCRETE WALK, AS PER PLAN (S.Y.)	610 CURB REMOVED (FOOT)	610 PLAIN CONCRETE CURBING, TYPE 1, AS PER PLAN (FOOT)	670 6" PVC-C900, DR 14, PR 305, WL & APPURT., AS PER PLAN (FOOT)	670 8" PVC-C900, DR 14, PR 305, WL & APPURT., AS PER PLAN (FOOT)	670 6" GATE VALVE AND VALVE BOX, AS PER PLAN (EACH)	670 8" GATE VALVE AND VALVE BOX, AS PER PLAN (EACH)					SEE SHT. NO.
W1	4+50~8+51.85	LT.	270	950	12							30	421	2	2					
W2	7+14.75	LT.	12	32	1				3	10	10	16		1						
PV1	4+50~8–83.50	L/R				75	100	1700												79,80
TOTALS CARRIED TO GENERAL SUMMARY			282	982	13	75	100	1700	3	10	10	46	421	2	2					

HORIZONTAL SCALE IN FEET
0 10 20 40

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

INDIANA AVENUE WATERLINE REPLACEMENT
PLAN & PROFILE – STA. 4+50 TO STA. 9+00

CITY OF CHESTER
WATER SYSTEM IMPROVE.



WATERLINE CONNECTION DETAILS
INDIANA AVENUE AT THIRD STREET (STA. 0+52.23)

BEGIN INSTALLATION OF THE PROPOSED 8" WATERLINE AT THE INTERSECTION OF THIRD STREET; CUT A SUFFICIENT LENGTH OF THE EXISTING 6" WATERLINE CONDUIT AND REMOVE IT FROM THE NORTHEAST SIDE OF THE EXISTING GATE VALVE; CAP THE CUT END OF THE EXISTING 6" WATERLINE CONDUIT TO BE ABANDONED TO THE NORTHEAST ALONG INDIANA AVENUE; INSTALL A PROPOSED 6"~45° BEND ON THE NORTHEAST SIDE OF THE EXISTING 6" GATE VALVE, APPROXIMATELY (5) FEET OF 6" PVC-C900, DR 14 WATERLINE CONDUIT, A 6"~45° BEND, A PROPOSED 8"x6" REDUCER, AND A PROPOSED 8" GATE VALVE TO CONNECT THE PROPOSED 8" WATERLINE TO THE EXISTING 6" GATE VALVE. PROVIDE THE NECESSARY CONCRETE THRUST BLOCKING BETWEEN THE 45° BEND (AT THE EXISTING 6" GATE VALVE) AND THE CAP ON THE ABANDONED WATERLINE, AND PROVIDE THE NECESSARY CONCRETE THRUST BLOCKING AT THE SECOND 45° BEND.

- NOTE: THE EXISTING 6" WATERLINE TO BE ABANDONED WILL STILL BE LIVE UNTIL ALL OF THE WATER SERVICES ARE CONNECTED TO THE NEW 8" WATERLINE.
- NOTE: KEEP THE PROPOSED 8" GATE VALVE CLOSED UNTIL THE PROPOSED 8" WATERLINE IS INSTALLED, TESTED, DISINFECTED, AND FLUSHED.

CONTINUE INSTALLATION OF THE PROPOSED 8" WATERLINE TOWARDS FOURTH STREET; A TEMPORARY BLOW-OFF SHALL BE PROVIDED AT THE FOURTH STREET INTERSECTION FOR THE TESTING, DISINFECTING, FLUSHING, ETC. OF THE PROPOSED 8" WATERLINE; SEE WATERLINE CONNECTION DETAILS AT THE INTERSECTION OF FOURTH STREET ON SHEET 77.

UPON ACCEPTANCE OF THE PROPOSED WATERLINE BY THE CITY WATER DEPARTMENT, THE CONTRACTOR SHALL PERFORM THE CONNECTION OF ALL WATER SERVICES TO THE PROPOSED 8" WATERLINE. UPON COMPLETION OF ALL WATER SERVICE CONNECTIONS TO THE PROPOSED 8" WATERLINE, THE FINAL CONNECTIONS AT THE FOURTH STREET INTERSECTION AND ALL PERTINENT WATERLINE ABANDONMENTS SHALL BE PERFORMED; SEE WATERLINE CONNECTION DETAILS AT THE INTERSECTION OF FOURTH STREET ON SHEET 77.

SEE PLAN & PROFILE SHEET ON SHEET 74 FOR ADDITIONAL INFORMATION.

WATERLINE CONNECTION AND DISCONNECTION NOTES:

THE CONTRACTOR SHALL COORDINATE ALL CONNECTION/DISCONNECTION WORK WITH THE CITY OF CHESTER WATER DEPARTMENT, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL VALVES, HYDRANTS, ETC. SHALL ONLY BE PERFORMED BY THE CITY WATER DEPARTMENT.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING INSTALLATION THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, AND ANY OTHER WATER DISTRIBUTION APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

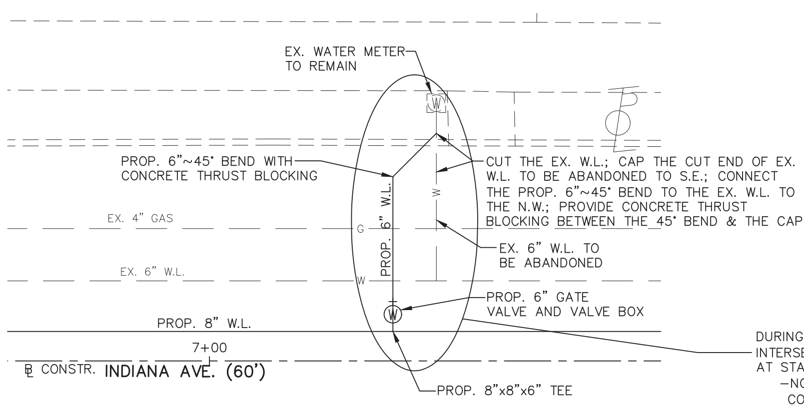
ALL MATERIALS FOR THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL & VERTICAL BENDS, FITTINGS, ADAPTERS, COUPLINGS, WATERLINE CONDUIT, CONCRETE THRUST BLOCKING, AND INCIDENTALS FOR COMPLETE WATERTIGHT CONNECTION OF THE PROPOSED WATERLINES TO THE EXISTING WATERLINES AND FOR THE CAPPING AND CONCRETE THRUST BLOCKING OF ANY WATERLINES RELATIVE TO THE DISCONNECTION.

THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL LOCATIONS, DEPTHS, SIZES, AND MATERIAL TYPES OF THE EXISTING WATERLINES AND ANY OTHER PERTINENT EXISTING UTILITY FACILITIES.

ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY FOR THE COMPLETE CONNECTION OF THE PROPOSED WATERLINES TO THE EXISTING WATERLINES AND FOR THE COMPLETE DISCONNECTION OF THE EXISTING WATERLINES SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID FOR THE PERTINENT WATERLINE ITEMS UNLESS SEPARATELY ITEMIZED IN THE CONSTRUCTION DRAWINGS.

ALL GATE VALVES & VALVE BOXES WILL BE PAID FOR SEPARATELY.



WATERLINE CONNECTION DETAILS
INDIANA AVENUE - CHURCH FIRE LINE (STA. 7+14.75)

DURING INSTALLATION OF THE PROPOSED 8" WATERLINE FROM THE THIRD STREET INTERSECTION, INSTALL A PROPOSED 8"x8"x6" TEE WITH A 6" GATE VALVE TO THE NORTHWEST AT STA. 7+14.75 FOR THE CHURCH FIRE LINE.

- NOTE: THE PROP. 6" GATE VALVE SHALL REMAIN CLOSED UNTIL THE FINAL CONNECTION IS MADE TO THE EXISTING 6" CHURCH FIRE LINE.

UPON ACCEPTANCE OF THE PROPOSED WATERLINE BY THE CITY WATER DEPARTMENT AND UPON COMPLETION OF THE CONNECTION OF ALL OF THE EXISTING WATER SERVICES TO THE PROPOSED 8" WATERLINE, CUT THE NECESSARY LENGTH OF THE EXISTING 6" WATERLINE; CAP THE CUT END OF THE EXISTING 6" WATERLINE TO BE ABANDONED TO THE SOUTHEAST; FROM THE NEW 6" GATE VALVE, INSTALL, APPROXIMATELY (5) FEET OF 6" PVC-C900, DR 14 WATERLINE CONDUIT, A 6"~45° BEND, APPROXIMATELY (3) FEET OF 6" PVC-C900, DR 14 WATERLINE CONDUIT, AND A 6"~45° BEND TO MAKE THE FINAL CONNECTION TO THE EXISTING 6" WATERLINE (JUST IN FRONT OF THE EXISTING WATER METER; PROVIDE CONCRETE THRUST BLOCKING AT THE FIRST 45° BEND AND BETWEEN THE CAPPED END OF THE WATERLINE TO BE ABANDONED AND THE SECOND 45° BEND.

SEE PLAN & PROFILE SHEET ON SHEET 75 FOR ADDITIONAL INFORMATION.

INDIANA AVENUE WATERLINE REPLACEMENT
WATERLINE CONNECTION DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

HORIZONTAL SCALE IN FEET: 0 2.5 5 10

CALC. BY: J.F.B. DATE: 12/22
CHKD. BY: D.G.D. DATE: 12/22

CONTINUE INSTALLATION OF THE PROPOSED 8" WATERLINE FROM THE THIRD STREET INTERSECTION (SEE SHEET 76) UP TO AND INCLUDING THE PROPOSED 8"x8"x6" TEE & 8"/6" GATE VALVES AT AT STA. 8+65.77. THE INSTALLATION SHALL ALSO INCLUDE THE PROPOSED 8"x8"x6" TEE & 8"/6" GATE VALVES AT STA. 8+38.19.

–NOTE: BOTH PROP. 6" GATE VALVES SHALL REMAIN CLOSED UNTIL THE FINAL CONNECTIONS ARE MADE TO THE EXISTING 6" WATERLINES.

A TEMPORARY BLOW–OFF SHALL BE PROVIDED ON THE NORTHEAST END OF THE PROPOSED 8" GATE VALVE AT STA. 8+65.77 FOR THE TESTING, DISINFECTING, FLUSHING, ETC. OF THE PROPOSED 8" WATERLINE.

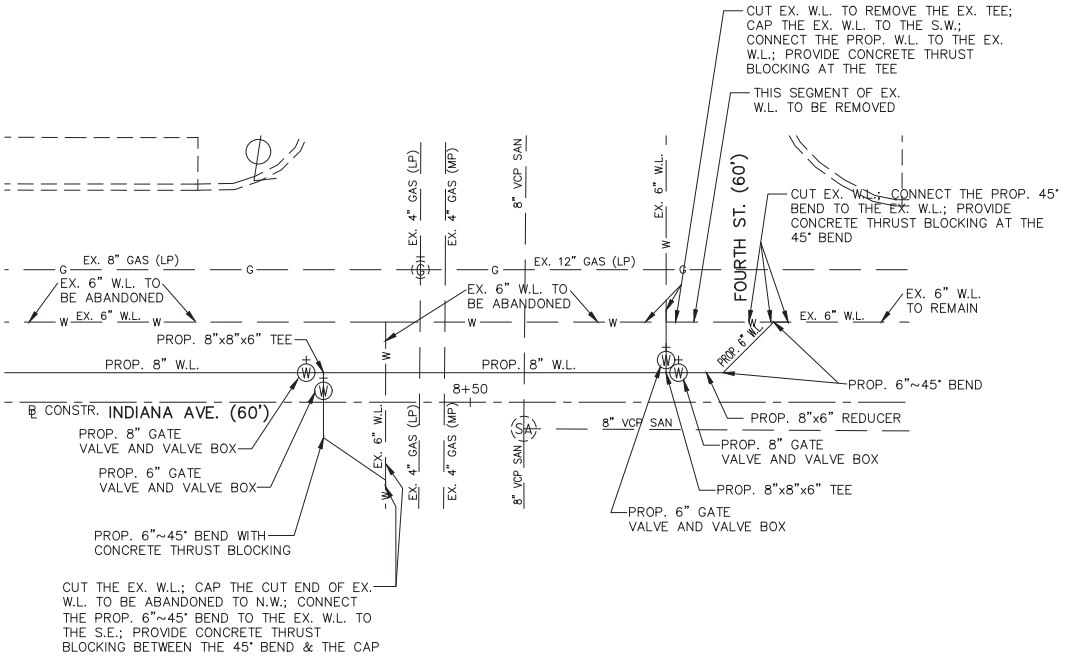
UPON ACCEPTANCE OF THE PROPOSED WATERLINE BY THE CITY WATER DEPARTMENT AND UPON COMPLETION OF THE CONNECTION OF ALL OF THE EXISTING WATER SERVICES TO THE PROPOSED 8" WATERLINE, THE FOLLOWING SHALL BE PERFORMED:

–FOR THE EXISTING 6" WATERLINE TO THE SOUTHEAST ALONG FOURTH STREET AT STA. 8+38.19, CUT THE NECESSARY LENGTH OF THE EXISTING 6" WATERLINE; CAP THE CUT END OF THE EXISTING 6" WATERLINE TO BE ABANDONED (TO THE NORTHWEST); FROM THE NEW 6" GATE VALVE, INSTALL A 6"~45° BEND, APPROXIMATELY (5) FEET OF 6" PVC–C900, DR 14 WATERLINE CONDUIT, AND A 6"~45° BEND TO MAKE THE FINAL CONNECTION TO THE EXISTING 6" WATERLINE TO THE SOUTHEAST ALONG FOURTH STREET; PROVIDE CONCRETE THRUST BLOCKING AT THE FIRST 45° BEND AND BETWEEN THE CAPPED END OF THE WATERLINE TO BE ABANDONED AND THE SECOND 45° BEND.

–FOR THE EXISTING 6" WATERLINE TO THE NORTHWEST ALONG FOURTH STREET AT STA. 8+65.77, CUT THE NECESSARY LENGTH OF THE EXISTING 6" WATERLINE ON ALL SIDES OF THE EXISTING TEE AND REMOVE THE EXISTING TEE; CAP THE THE CUT END OF THE EXISTING 6" WATERLINE TO BE ABANDONED TO THE SOUTHWEST OF THE EXISTING TEE (NOTE: THE SEGMENT OF WATERLINE TO THE NORTHEAST OF THE EXISTING TEE WILL BE REMOVED); INSTALL THE NECESSARY FITTINGS AND NECESSARY LENGTH OF 6" PVC–C900, DR 14 WATERLINE CONDUIT TO MAKE THE FINAL CONNECTION TO THE EXISTING 6" WATERLINE TO THE NORTHWEST; PROVIDE CONCRETE THRUST BLOCKING FOR THE NEW TEE.

–AT STA. 8+75.59, CUT THE NECESSARY LENGTH OF THE EXISTING 6" WATERLINE TO MAKE THE FINAL CONNECTION; REMOVE THE SEGMENT OF EXISTING 6" WATERLINE TO THE SOUTHWEST OF THE CUT (NOTE: THE OTHER END OF THIS SEGMENT WILL HAVE ALREADY BEEN CUT FOR THE 6" CONNECTION TO THE NORTHWEST; SEE NOTE ABOVE); REMOVE THE TEMPORARY BLOW–OFF FROM THE NEW 8" GATE VALVE, INSTALL AN 8"x6" REDUCER, A 6"~45° BEND, APPROXIMATELY (5) FEET OF 6" PVC–C900, DR 14 WATERLINE CONDUIT, AND A 6"~45° BEND TO MAKE THE FINAL CONNECTION TO THE EXISTING 6" WATERLINE TO THE NORTHEAST ALONG INDIANA AVENUE; PROVIDE CONCRETE THRUST BLOCKING AT THE BOTH 45° BENDS.

SEE PLAN & PROFILE SHEET ON SHEET 75 FOR ADDITIONAL INFORMATION.



WATERLINE CONNECTION DETAILS
INDIANA AVENUE AT FOURTH STREET (STA. 8+38.19 TO STA. 8+75.59)

WATERLINE CONNECTION AND DISCONNECTION NOTES:

THE CONTRACTOR SHALL COORDINATE ALL CONNECTION/DISCONNECTION WORK WITH THE CITY OF CHESTER WATER DEPARTMENT, THE CITY'S CONSTRUCTION ENGINEER, AND USACE CONTRACTING OFFICER OR THEIR REPRESENTATIVE. THE OPERATION OF ALL VALVES, HYDRANTS, ETC. SHALL ONLY BE PERFORMED BY THE CITY WATER DEPARTMENT.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH OSHA REGULATIONS, ARMY CORPS OF ENGINEERS' REGULATIONS, AND ANY OTHER APPLICABLE FEDERAL, STATE, AND LOCAL SAFETY REGULATIONS.

DURING INSTALLATION THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS, THE CONTRACTOR SHALL PROTECT ALL ABOVE & BELOW GROUND UTILITY FACILITIES, AND ANY OTHER WATER DISTRIBUTION APPURTENANCES. ANY DAMAGE TO THE AFOREMENTIONED SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR OWN EXPENSE.

ALL MATERIALS FOR THE NEW PIPING, VALVES, AND INCIDENTAL MATERIALS SHALL BE PROVIDED BY THE CONTRACTOR. ALL MATERIALS PROVIDED SHALL BE ENTIRELY NEW AND SHALL BE OBTAINED FROM MANUFACTURERS WITH EXPERIENCE IN MANUFACTURING THE PERTINENT MATERIALS. PREVIOUSLY USED MATERIALS WILL NOT BE ACCEPTED.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL & VERTICAL BENDS, FITTINGS, ADAPTERS, COUPLINGS, WATERLINE CONDUIT, CONCRETE THRUST BLOCKING, AND INCIDENTALS FOR COMPLETE WATERTIGHT CONNECTION OF THE PROPOSED WATERLINES TO THE EXISTING WATERLINES AND FOR THE CAPPING AND CONCRETE THRUST BLOCKING OF ANY WATERLINES RELATIVE TO THE DISCONNECTION.

THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL LOCATIONS, DEPTHS, SIZES, AND MATERIAL TYPES OF THE EXISTING WATERLINES AND ANY OTHER PERTINENT EXISTING UTILITY FACILITIES.

ALL EQUIPMENT, LABOR, MATERIALS, AND INCIDENTALS NECESSARY FOR THE COMPLETE CONNECTION OF THE PROPOSED WATERLINES TO THE EXISTING WATERLINES AND FOR THE COMPLETE DISCONNECTION OF THE EXISTING WATERLINES SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID FOR THE PERTINENT WATERLINE ITEMS UNLESS SEPARATELY ITEMIZED IN THE CONSTRUCTION DRAWINGS.

ALL GATE VALVES & VALVE BOXES WILL BE PAID FOR SEPARATELY.

HORIZONTAL SCALE IN FEET
0 2.5 5 10
CAD: J.F.B.
BY: 12/22
CHKD:
BY: D.S.O.
DATE: 12/22

INDIANA AVENUE WATERLINE REPLACEMENT
WATERLINE CONNECTION DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

WATERLINE GENERAL NOTES

1.) THE CONTRACTOR SHALL NOTIFY THE CITY OF CHESTER WATER DEPARTMENT (48) HOURS BEFORE STARTING CONSTRUCTION OF THE WATER LINE.

2.) ONLY THE CITY OF CHESTER WATER DEPARTMENT EMPLOYEES MAY OPERATE WATER VALVES OR HYDRANTS. CONTACT THE CITY OF CHESTER (48) HOURS IN ADVANCE TO SCHEDULE VALVE OR HYDRANT OPERATIONS.

3.) THE CITY OF CHESTER WATER DEPARTMENT SHALL APPROVE THE LOCATION OF ALL VALVES AND HYDRANTS PRIOR TO THEIR INSTALLATION AND RESERVES THE RIGHT TO RELOCATE THESE ITEMS.

4.) WHERE THE CONTRACTOR IS REQUIRED TO TAP AN EXISTING WATER MAIN, THE WORK SHALL BE DONE ONLY WHEN APPROVED BY THE CITY OF CHESTER WATER DEPARTMENT.

5.) MINIMUM GROUND COVER OVER WATER MAIN & SERVICES SHALL BE (48) INCHES (4 FEET), UNLESS OTHERWISE INDICATED ON THE CONSTRUCTION DRAWINGS.

6.) THERE SHALL BE 18 INCHES VERTICAL CLEARANCE (OUT TO OUT) BETWEEN THE WATER MAIN AND ANY GRAVITY/FORCE MAIN SANITARY SEWER OR STORM SEWER CROSSING; THE CROSSING SHALL BE MADE WITH ONE FULL LENGTH OF PIPE SO THAT THE JOINTS OF THE WATERLINE CONDUIT ARE AS FAR AWAY FROM THE CROSSING AS POSSIBLE. THERE SHALL BE 4 FEET HORIZONTAL CLEARANCE (OUT TO OUT) BETWEEN WATER MAINS & DRAINAGE DITCHES AND 10 FEET HORIZONTAL (OUT TO OUT) DISTANCE BETWEEN WATER MAINS AND ANY GRAVITY/FORCE MAIN SANITARY SEWER OR STORM SEWER; FIRE HYDRANTS SHALL BE INSTALLED SUCH THAT THE MINIMUM VERTICAL AND HORIZONTAL DISTANCES ARE MAINTAINED.

7.) WHEN CROSSING A SANITARY SEWER WITH THE NEW WATER MAIN, MAKE SURE TO CROSS WITH A FULL LENGTH OF PIPE, NO JOINTS SHALL BE IN THE AREA OF THIS CROSSING.

8.) WATER MAIN MATERIALS:
WATER MAIN MATERIALS SHALL BE POLYVINYL CHLORIDE (PVC) AWWA, C900, PR 305, DR 14, WITH JOINTS CONFORMING TO ASTM D-3139. FITTINGS SHALL BE DUCTILE IRON AWWA C153 (MIN. P.R. 350 PSI) WITH MECHANICAL JOINTS CONFORMING TO AWWA C111. WATER SERVICE MATERIALS SHALL BE AS SHOWN ON THE WATER SERVICE DETAILS IN THE PLANS AND AS LISTED IN THE PROJECT SPECIFICATIONS.

9.) WHENEVER POSSIBLE, A 45 DEGREE BEND SHALL BE THE MAXIMUM ALLOWABLE WHEN ESTABLISHING THE VERTICAL GRADE UNLESS OTHERWISE SHOWN IN THE PLANS.

10.) WHEN USING BENDS TO ESTABLISH HORIZONTAL LINE AND/OR VERTICAL GRADE OF THE PROPOSED WATER MAIN AND ALL OTHER FITTINGS THE CONTRACTOR SHALL FURNISH AND INSTALL CONCRETE SUPPORTS OR CONCRETE THRUST BLOCKS AND JOINT RESTRAINTS AS REQUIRED OR DIRECTED BY THE ENGINEER. THE COST OF THE BENDS, CONCRETE, RESTRAINTS, & ALL INCIDENTALS SHALL BE INCLUDED IN THE UNIT OR LUMP SUM PRICES BID FOR THE VARIOUS ITEMS OF THE PROPOSAL.

11.) ALL WYES, TEES, CROSSES, STUBS, PLUGS, REDUCERS, HORIZONTAL AND VERTICAL BENDS, CONCRETE TRUST BLOCKS, TIE-RODS OR RESTRAINED JOINTS, ANY NECESSARY MATERIALS TO CONNECT PROPOSED PIPE TO EXISTING PIPE, AND ALL INCIDENTALS AS REQUIRED OR DIRECTED BY THE ENGINEER SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID FOR THE WATERLINE PIPE AND FITTINGS AND NO OTHER PAYMENT SHALL BE MADE FOR THIS WORK UNLESS STIPULATED IN THE PROPOSAL.

12.) INSTALLATION AND PRESSURE TESTING OF THE WATER MAIN SHALL CONFORM WITH AWWA C-605 AND THE CITY OF CHESTER'S SPECIFICATIONS.

13.) DISINFECTION OF THE WATER MAINS SHALL CONFORM TO AWWA C-651.

14.) THE PROPOSED FACILITIES WILL MAINTAIN A MINIMUM 35 PSI PRESSURE DELIVERED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS.

15.) THE SYSTEM SHALL BE DESIGNED TO MAINTAIN A MINIMUM PRESSURE OF 20 PSI (140 KPA) AT GROUND LEVEL AT ALL POINTS IN THE DISTRIBUTION SYSTEM UNDER ALL CONDITIONS OF FLOW.

16.) BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.

17.) ALL DRAIN MANHOLES, VALVE BOXES, AND AIR COCK ASSEMBLY BOXES SHALL BE INSTALLED TO BE FLUSH WITH FINISHED GRADE.

MISCELLANEOUS

ALL WORK PERFORMED ON THIS PROJECT SHALL CONFORM TO ALL APPLICABLE OSHAA REGULATIONS.

IF AS THE RESULT OF ANY INSPECTION BEFORE FINAL ACCEPTANCE OF THE WORK IT IS FOUND THAT ANY SECTION OF THE CONDUITS HAS UNDULY SETTLED OR DEFLECTED BEYOND ALLOWABLE LIMITS, THAT JOINTS HAVE OPENED UP OR IF PIPE IS FOUND CRACKED, BROKEN OR MISSHAPEN, THE CONTRACTOR SHALL CAUSE SUCH DEFECTIVE OR INFERIOR WORK TO BE REMOVED AND REPLACED OR SATISFACTORILY REPAIRED BY PROPER MATERIAL AND WORKMANSHIP WITHOUT ANY EXTRA COMPENSATION FOR LABOR, EQUIPMENT, AND MATERIALS REQUIRED.

ANY EXISTING PIPE, CONDUIT, DRIVEWAY CULVERT, SIGN, YARD LIGHT, MAILBOX, PAPER BOX, SPRINKLER, FENCE, OR LANDSCAPE ITEM ETC. DISTURBED OR DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN A WORKMANLIKE MANNER SUCH THAT THE ITEM IS RESTORED TO BE EQUAL OR BETTER THAN WHEN ENCOUNTERED.

ALL ITEMS SUCH AS ROAD SIGNS, DRAINAGE ITEMS, DRIVEWAY CULVERTS, MAILBOXES, PAPER BOXES, GUARDRAIL, FENCE, ETC. SHALL BE REPLACED IMMEDIATELY UPON COMPLETION OF THE WORK IN THE AREA OF THE DISTURBED OR DAMAGED ITEM ON THE SAME DAY THAT THE ITEM WAS REMOVED. UNLESS OTHERWISE ITEMIZED IN THE CONSTRUCTION DRAWINGS, THE REMOVAL AND REPLACEMENT OF ALL ITEMS NECESSARY FOR THE INSTALLATION OF THE PROPOSED WATERLINE, APPURTENANCES, AND/OR OTHER INCIDENTAL ITEMS SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID IN THE PROPOSAL.

ALL ROAD SIGNS DISTURBED SHALL BE REPLACED TO THEIR ORIGINAL LOCATION. THE CONTRACTOR SHALL REFER TO THE PERTINENT WVDOT SPECIFICATIONS AND/OR STANDARD CONSTRUCTION DRAWINGS FOR THE PLACEMENT OF ROAD SIGNS RELATIVE TO THE EXISTING EDGE OF PAVEMENT. ALL WORK SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID IN THE PROPOSAL.

SAFETY OF ADJACENT STRUCTURES:

THE CONTRACTOR SHALL TAKE EVERY PRECAUTION TO ENSURE THE SAFETY OF EXISTING STRUCTURES AND SHALL NOT CAUSE EXCESSIVE VIBRATIONS. IF ANY DAMAGE IS DONE DUE TO HIS OPERATION THE CONTRACTOR IS SOLELY AND FULLY RESPONSIBLE FOR DAMAGES AND SHALL REPLACE OR REPAIR SUCH DAMAGES AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

SLAG BEDDING PROHIBITED:

GRANULATED SLAG OR AIR COOLED BLAST FURNACE SLAG SHALL NOT BE PERMITTED FOR USE AS GRANULAR MATERIAL. PIPE SHALL BE BEDDED WITH A COMPACTED, WASHED #57 OR #67 RIVER GRAVEL, OR APPROVED EQUAL.

SHEETING, SHORING AND DEWATERING:

ALL NECESSARY SHEETING, SHORING AND DEWATERING FOR CONSTRUCTION OF THE PROPOSED WATERLINES SHALL BE IN ACCORDANCE WITH O.S.H.A. AND/OR WVDOT SPECIFICATIONS. ALL MATERIAL, EQUIPMENT, LABOR AND INCIDENTALS NECESSARY FOR THE AFOREMENTIONED WORK SHALL BE INCLUDED IN THE UNIT OR LUMP SUM PRICES BID FOR THE VARIOUS ITEMS OF THE PROPOSAL.

TRENCH EXCAVATION FOR WATERLINES:

ALL SOIL, SHALE, AND ROCK TRENCH EXCAVATION SHALL BE PERFORMED IN ACCORDANCE WITH WVDOT SPECIFICATIONS, WITHIN THE LINES AND GRADES GIVEN, OR AS OTHERWISE REQUIRED. THE FURNISHING OF ALL EQUIPMENT, TOOLS, APPLIANCES, SUPERINTENDENCE AND LABOR NECESSARY TO COMPLETE THE TRENCH EXCAVATION WORK AS SHOWN OR SPECIFIED, REGARDLESS OF THE SUBSURFACE STRATA MATERIAL, SHALL BE INCLUDED IN THE UNIT OR LUMP SUM PRICES BID FOR THE VARIOUS ITEMS OF THE PROPOSAL. NO EXTRA PAYMENT WILL BE MADE FOR ANY SHALE OR ROCK EXCAVATION.

A SOILS REPORT FOR THE WATER DISTRIBUTION SYSTEM IMPROVEMENTS HAS NOT BEEN PERFORMED AND IS NOT INCLUDED WITH THE BID DOCUMENTS. THE CONTRACTOR SHALL SATISFY HIMSELF BY TAKING HIS OWN SOIL BORINGS OR DIGGING TEST PITS TO DETERMINE THE NATURE OF THE SUBSURFACE STRATA, THE PRESENCE OF ANY ROCK AND ANY DIFFICULTIES TO BE ENCOUNTERED. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN THE UNIT OR LUMP SUM PRICES BID FOR THE VARIOUS ITEMS OF THE PROPOSAL. EXPLORATION OF THE SITE PRIOR TO BIDDING MUST BE COORDINATED WITH THE CITY OF CHESTER BOARD OF PUBLIC UTILITIES.

SEE "SOIL CONDITIONS" NOTE ON SHEET 2 FOR ADDITIONAL INFORMATION.

TRENCH OPENINGS FOR WATERLINES:

THE LENGTH OF TRENCH OPENED, OR THE AREA OF THE SURFACE DISTURBED AT ANY ONE TIME SHALL BE LIMITED. ADDITIONAL TRENCHES SHALL NOT BE OPENED WHEN OPEN TRENCHES NEED TO BE BACKFILLED OR WHEN LABOR IS NEEDED TO RESTORE THE SURFACE OF STREETS TO A SAFE AND PROPER CONDITION.

IN NO CASE SHALL MORE THAN FIFTY (50) FEET OF TRENCH BE OPENED IN ADVANCE OF THE COMPLETED WORK. THE CONTRACTOR SHALL NOT STORE EXCAVATED MATERIALS ALONG THE LINE OF WORK.

IF FOR ANY REASON, ATTRIBUTABLE TO THE CONTRACTOR, WORK IS STOPPED ON THE WHOLE OR ANY PART OF THE EXCAVATION, AND THE SAME IS LEFT OPEN FOR AN UNREASONABLE LENGTH OF TIME IN ADVANCE OF CONSTRUCTION OF THE WATER MAIN, OR OTHER ITEMS AS DETERMINED BY THE OWNER, THE CONTRACTOR SHALL REFILL SUCH EXCAVATION, OR ANY PART THEREOF AS DIRECTED, UNTIL HE IS READY TO PROCEED WITH THE CONSTRUCTION OF THE WORK, AT NO ADDITIONAL COST TO THE OWNER.

THE CONTRACTOR SHALL MAINTAIN ALL TRENCHES AFTER PIPELINE INSTALLATION AND PRIOR TO ANY NECESSARY PAVING TO THE SATISFACTION OF THE CITY OF CHESTER. MAINTENANCE SHALL INCLUDE DAILY INSPECTION AND INSTALLATION OF TRENCH AGGREGATE AND/OR PLACEMENT OF STEEL PLATES AS NECESSARY. THE CONTRACTOR SHALL INCLUDE THE COST TO PERFORM THIS SERVICE IN THE BASE BID. IF POOR TRENCH CONDITION IS REPORTED TO THE CITY, THEY SHALL NOTIFY THE CONTRACTOR AND THE CONTRACTOR SHALL HAVE 24 HOURS TO RESPOND AND CORRECT THE SITUATION. IF THE CONTRACTOR HAS NOT RESPONDED AFTER 24 HOURS AND THE CITY IS REQUIRED TO SERVICE THE TRENCH, THE CONTRACTOR WILL BE INVOICED TO COVER TIME AND MATERIALS EXPENDED BY THE CITY.

THE CONTRACTOR SHALL NOT LEAVE ANY PORTION OF A TRENCH OR PIT OPEN OVER NIGHT. THE CONTRACTOR IS REQUIRED TO MAKE EVERY EFFORT TO BACKFILL A TRENCH OR PIT AT THE END OF EACH WORKDAY. WHEN CIRCUMSTANCES EXIST THAT WILL NOT PERMIT THIS TO HAPPEN (WEATHER, ETC.) THEN THE CONTRACTOR AT THE CITY'S DIRECTION SHALL PLATE OR PROTECT THE EXCAVATION WITH CONCRETE BARRIER. IN NO CASE SHALL EQUIPMENT BE USED TO PROTECT THE EXCAVATION. ALL EQUIPMENT, VEHICLES AND MATERIALS ARE TO BE PARKED OR STORED IN A LOCATION OFF OF THE EXISTING ROAD RIGHT-OF-WAY(S) AND SUBJECT TO APPROVAL BY THE CITY.

ALL EXCAVATED MATERIAL SHALL BE STORED IN A MANNER THAT WILL NOT ENDANGER THE WORK NOR OBSTRUCT WALKS & DRIVEWAYS, ACTIVE HYDRANTS, VALVE PITS, VALVE BOXES, MANHOLE COVERS, INLETS, OR FIRE AND POLICE CALL BOXES. ALL UTILITIES SHALL BE UNOBSTRUCTED AND ACCESSIBLE AT ALL TIMES. GUTTERS AND DRAINAGE DITCHES SHALL BE KEPT CLEAR SUCH THAT STREET DRAINAGE AND NATURAL WATER COURSES WILL NOT BE OBSTRUCTED.

ITEM 670: VALVE BOX REMOVED AND DISPOSED OF, AS PER PLAN

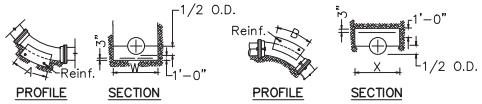
AFTER THE PROPOSED WATER MAIN IS COMPLETE AND OPERATIONAL ALL MARKED EXISTING WATER VALVE BOXES FOR THE ABANDONED WATERLINES AND HYDRANTS SHALL BE PULLED FROM THE PAVEMENT AND THE RESULTING VOID SHALL BE FILLED WITH 4,000 PSI, 28-DAY STRENGTH, PLANT MIX CONCRETE TO THE EXISTING ASPHALT PAVEMENT SURFACE. FOR VALVES LOCATED OUTSIDE OF THE PAVEMENT THEY SHALL BE BACKFILLED WITH PROPER EMBANKMENT MATERIAL, AND SHALL BE PROPERLY TOPSOILED, SEEDED AND MULCHED. ALL COSTS ASSOCIATED WITH THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 670-VALVE BOX REMOVED AND DISPOSED OF, AS PER PLAN.

ITEM 670-FIRE HYDRANT REMOVED AND DISPOSED OF, AS PER PLAN

ALL FIRE HYDRANTS SHALL BE CAREFULLY REMOVED AND STORED WITHIN THE RIGHT OF WAY FOR SALVAGE BY CITY OF CHESTER FORCES. THE EXISTING VERTICAL CONDUIT FOR THE HYDRANT SHALL BE REMOVED TO BELOW GRADE AND CAPPED. THE REMAINING VOID SHALL BE BACKFILLED WITH PROPER EMBANKMENT MATERIAL, AND SHALL BE PROPERLY TOPSOILED, SEEDED AND MULCHED.

PAYMENT FOR ALL OF THE ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR ITEM 670-FIRE HYDRANT REMOVED AND DISPOSED OF, AS PER PLAN.

CAD: J.F.B. DATE: 12/22
CHK'D: D.G.D. DATE: 12/22



REINFORCING FOR SAG AND CREST BENDS

11 1/4° Bend – #4 @ 8 1/2" c/c
22 1/2° Bend – #4 @ 5 1/4" c/c
45° Bend – #6 @ 6" c/c

THRUST BLOCKING DETAILS

FOR BENDS IN VERTICAL PLANE
WORKING PRESSURE UP TO 350 PSI

TABLE OF MINIMUM DIMENSIONS

SAG BENDS

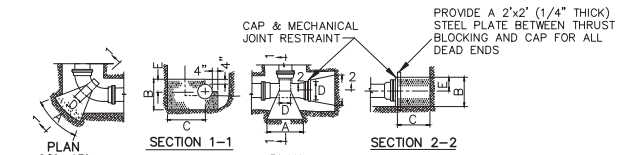
DIA.	11 1/4° Bend			22 1/2° Bend			45° Bend		
	A	W	C.Y.	A	W	C.Y.	A	W	C.Y.
4"							1'-0"	1'-4"	.06
6"				1'-0"	1'-3"	.06	1'-0"	2'-8"	.12
8"	1'-0"	1'-0"	.05	1'-0"	2'-4"	.12	1'-8"	3'-3"	.27
10"	1'-0"	1'-3"	.07	1'-3"	3'-0"	.20	2'-3"	3'-6"	.41
12"	1'-0"	2'-0"	.11	1'-4"	3'-8"	.27	3'-0"	4'-0"	.67
16"	2'-0"	2'-0"	.25	2'-3"	4'-3"	.59	4'-8"	4'-6"	1.30
20"	2'-3"	2'-3"	.36	2'-11"	4'-11"	1.02	5'-6"	5'-0"	1.95

OVER BENDS

DIA.	11 1/4° Bend			22 1/2° Bend			45° Bend		
	B	X	C.Y.	B	X	C.Y.	B	X	C.Y.
4"							1'-0"	1'-4"	.06
6"				1'-0"	1'-3"	.06	1'-0"	2'-8"	.12
8"	1'-0"	1'-0"	.05	1'-0"	2'-4"	.12	1'-8"	3'-3"	.27
10"	1'-0"	1'-3"	.07	1'-3"	3'-0"	.20	2'-3"	3'-6"	.41
12"	1'-0"	2'-0"	.11	1'-4"	3'-8"	.27	3'-0"	4'-0"	.67
16"	2'-0"	2'-0"	.25	2'-3"	4'-3"	.59	4'-8"	4'-6"	1.30
20"	2'-3"	2'-3"	.36	2'-11"	4'-11"	1.02	5'-6"	5'-0"	1.95

NOTE: Blocking designs based on working pressure 350 psi and 100 psi water hammer and soil bearing 3000 psf.
All Mechanical joints shall be wrapped with 6 mil plastic prior to placing concrete.
Concrete shall be plant mix, 4,000 psi at 28–day strength; All thrust blocks to be formed
Quantity shown is for each thrust block
ADDITIONAL BLOCKING AS DIRECTED BY ENGINEER

ALL FITTINGS SHALL BE RESTRAINED WITH MECHANICAL JOINT RESTRAINTS AS DEFINED IN THE PROJECT SPECIFICATIONS IN ADDITION TO THE CONCRETE THRUST BLOCKING SHOWN ON THIS SHEET. JOINT RESTRAINTS SHALL ALSO BE USED ON (1) PIPE JOINT BEFORE AND AFTER ALL FITTINGS; INCLUDING BUT NOT LIMITED TO ALL VALVES, TEES AND BENDS. ALL JOINTS WITHIN CASING PIPES SHALL BE RESTRAINED AS NOTED IN THE CASING ASSEMBLY DETAIL PLUS (2) PIPE JOINTS ON EACH SIDE OUTSIDE OF THE CASING.



Note: All concrete blocking must have its entire face (A+B) bearing against undisturbed soil.

THRUST BLOCKING DETAILS

FOR BENDS IN HORIZONTAL PLANES
WORKING PRESSURE UP TO 350 PSI

TABLE OF MINIMUM DIMENSIONS

DIA.	11 1/4° Bend			22 1/2° Bend			45° Bend			90° Bend			Tee–Dead End		
	A	B	C.Y.	A	B	C.Y.	A	B	C.Y.	A	B	C.Y.	A	B	C.Y.
4"							1'-4"	1'-4"	.19	2'-0"	1'-4"	.25	1'-6"	1'-4"	.19
6"				1'-4"	1'-4"	.19	2'-2"	1'-8"	.31	3'-4"	1'-10"	.44	2'-6"	2'-10"	.54
8"	1'-4"	1'-4"	.18	2'-0"	1'-8"	.29	3'-3"	1'-10"	.43	3'-6"	2'-3"	.56	3'-4"	2'-3"	.52
10"	1'-8"	1'-8"	.26	2'-8"	1'-10"	.38	4'-0"	2'-3"	.61	5'-8"	3'-0"	1.07	4'-6"	2'-8"	.77
12"	2'-0"	1'-9"	.42	3'-4"	2'-0"	.91	5'-0"	2'-8"	1.52	6'-8"	3'-4"	2.38	5'-6"	3'-2"	1.92
16"	2'-8"	2'-3"	.90	4'-6"	2'-8"	1.44	6'-6"	3'-8"	2.57	9'-2"	4'-8"	4.22	7'-6"	4'-0"	3.01
20"	3'-6"	2'-7"	1.34	5'-8"	3'-2"	2.66	7'-8"	5'-0"	5.68	10'-6"	6'-0"	9.33	8'-6"	5'-2"	6.51

DIMENSION C
4"–10" Dia.=2'–0"
12"–16" Dia.=3'–0"
18"–20" Dia.=4'–0"
24" Dia.=5'–0"

DIMENSION D
4"–10" Dia.=1'–0"
12"–24" Dia.=2'–0"

DIMENSION E
For all Diameters
E=D/2+4"

NOTE: Blocking designs based on working pressure 350 psi and 100 psi water hammer and soil bearing 3000 psf.
All Mechanical joints shall be wrapped with 6 mil plastic prior to placing concrete.
Concrete shall be plant mix, 4,000 psi at 28–day strength; All thrust blocks to be formed
Quantity shown is for each thrust block
ADDITIONAL BLOCKING AS DIRECTED BY ENGINEER

PLACEMENT OF WATERLINE/VALVE REPLACEMENT TRENCH PAVEMENT

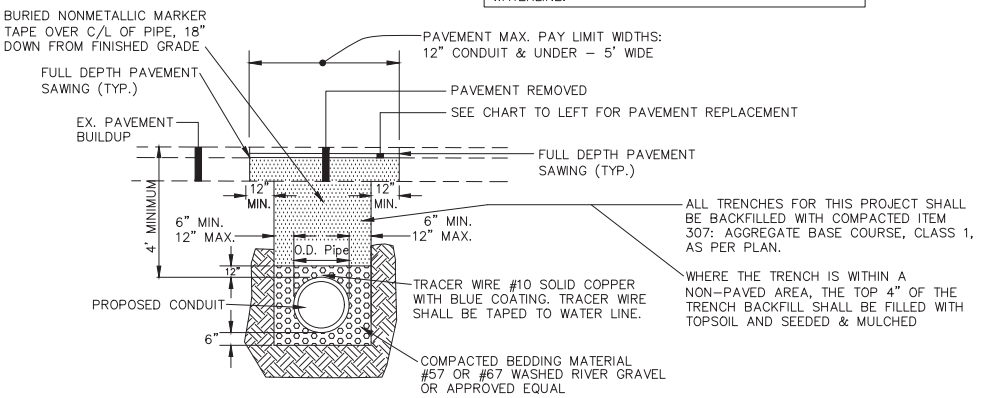
THE PLACEMENT OF THE 1–1/2" ASPHALT INTERMEDIATE COURSE WITHIN THE WATERLINE TRENCHES ALONG INDIANA AVENUE SHALL BE IN ACCORDANCE WITH ITEM 401 OF THE WVDOH SPECIFICATIONS, AND SHALL BE PLACED WITH A PAVEMENT SPREADER BOX (AT A MINIMUM) AND COMPACTED WITH THE NECESSARY ROLLERS.

THE PLACEMENT OF THE 3" ASPHALT WEARING COURSE WITHIN THE VALVE REPLACEMENT TRENCHES WILL BE PERMITTED TO BE PLACED BY HAND METHODS; HOWEVER, THE ASPHALT SHALL BE COMPACTED WITH THE NECESSARY ROLLERS IN ACCORDANCE WITH ITEM 401 OF THE WVDOH SPECIFICATIONS.

LOCATION	PAVEMENT REPLACEMENT
VALVE REPLACEMENTS ASPHALT PAVEMENT WITHIN TRENCH LIMITS	ITEM 401–3" MARSHALL ASPH. WEARING COARSE, STONE AND GRAVEL, TYPE 1 ITEM 408–TACK COAT ITEM 307–6" AGGREGATE BASE COURSE, CLASS 1, A.P.P. (CONTINUATION OF BACKFILL) NOTE: DURING BACKFILLING OPERATIONS, THE TOP THREE (3) INCHES OF THE TRENCH WILL RECEIVE TEMPORARY 307 MATERIAL TO BE UTILIZED, THEN WILL BE REMOVED FOR THE PLACEMENT OF THE PAVEMENT.
INDIANA AVENUE ASPHALT PAVEMENT WITHIN ROADWAY TRENCH LIMITS	ITEM 401–1–1/2" MARSHALL ASPH. INTERMED. COARSE, STONE AND GRAVEL, TYPE 1 ITEM 408–TACK COAT ITEM 307–6" AGGREGATE BASE COURSE, CLASS 1, A.P.P. (CONTINUATION OF BACKFILL) NOTE: DURING BACKFILLING OPERATIONS, THE TOP THREE (3) INCHES OF THE TRENCH WILL RECEIVE TEMPORARY 307 MATERIAL TO BE UTILIZED UNTIL THE WATERLINE HAS BEEN ACCEPTED, THEN WILL BE REMOVED FOR THE PLACEMENT OF THE PAVEMENT.
INDIANA AVENUE PAVING SEQUENCING NOTES	FULL WIDTH MILLING, WATERLINE TRENCH PAVING, & FULL WIDTH ROADWAY PAVING SEQUENCING NOTES: UPON COMPLETION OF ALL WATERLINE WORK AND PRIOR TO THE PLACEMENT OF THE ASPHALT INTERMEDIATE COURSE WITHIN THE TRENCH, THE ENTIRE WIDTH AND LENGTH OF INDIANA AVENUE BETWEEN THIRD & FOURTH STREET SHALL BE MILLED WITH AN AVERAGE 1–1/2" THICKNESS, AND 1–1/2" TO 4–1/2" THICK IN (6) FEET TO THE FACE OF CURB. UPON COMPLETION OF THE MILLING, THE CONTRACTOR SHALL REMOVE 1–1/2" OF TEMPORARY 307 AGGREGATE BASE FROM ALL WATERLINE ROADWAY TRENCHES AND PLACE 1–1/2" OF COMPACTED ASPHALT INTERMEDIATE COURSE WITHIN ALL WATERLINE ROADWAY TRENCHES. UPON COMPLETION OF THE WATERLINE ROADWAY TRENCH PAVING, THE CONTRACTOR SHALL PLACE 1–1/2" OF ASPHALT WEARING COURSE ON TOP OF THE ENTIRE MILLED PAVEMENT AREA. SEE FULL WIDTH MILLING & PAVING NOTES & DETAILS ON SHEET 80.

ITEM 307: AGGREGATE BASE COURSE, CLASS 1, AS PER PLAN FOR ROADWAY PAVEMENT REPLACEMENT WITHIN THE WATERLINE TRENCHES SHALL BE A CONTINUATION OF THE TRENCH BACKFILL AND WILL NOT BE PAID FOR SEPARATELY. ALL COSTS FOR ITEM 307: AGGREGATE BASE COURSE, CLASS 1, AS PER PLAN SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID FOR THE PROPOSED WATERLINE.

EXCAVATION, BEDDING, BACKFILL, AND OTHER INCIDENTALS NECESSARY FOR THE INSTALLATION OF THE PROPOSED WATERLINE FACILITIES SHALL BE INCLUDED IN THE VARIOUS UNIT PRICES BID FOR THE WATERLINE.



TYPICAL WATERLINE/VALVE REPLACEMENT – PAVEMENT REPLACEMENT AND TRENCH DETAIL

CAD: J.F.B.
BY:
DATE: 12/22
CHK'D: D.C.D.
BY:
DATE: 12/22

WATERLINE NOTES AND DETAILS

CITY OF CHESTER
WATER SYSTEM IMPROVE.

79
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