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: 20 September 2021
Expiration Date: 4 October 2021

NOTICE OF AVAILABILITY

Draft Environmental Assessment

City of Steubenville Secondary Aeration Project in Jefferson County, OH

The U.S. Army Corps of Engineers, Pittsburgh District (USACE) is evaluating a Federal funding request for proposed facility and equipment upgrades at the Steubenville Wastewater Treatment Plant located in the city of Steubenville, Jefferson County, Ohio.

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/

Comments can be submitted to the address posted at the top of this notice or to Gabriella.Sykora@usace.army.mil. Comments must be received by 4 October 2021 to ensure consideration.

DRAFT FINDING OF NO SIGNIFICANT IMPACT

City of Steubenville Secondary Aeration Project
Steubenville, Jefferson County, Ohio

The U.S. Army Corps of Engineers, Pittsburgh District (Corps) has prepared an environmental assessment (EA) in accordance with the National Environmental Policy Act of 1969, as amended. The Draft EA, dated 13 August 2021 evaluates potential environmental impacts associated with wastewater treatment plant upgrades proposed for federal funding under the Section 594 program for the City of Steubenville Secondary Aeration Project in Jefferson County, Ohio. The Water Resources Development Act (WRDA) of 1999 (Public Law 102-580), Section 594 allows the Corps to consider reimbursement for design and/or construction of environmental infrastructure in Ohio.

The Draft EA, incorporated herein by reference, evaluated equipment upgrades to improve wastewater discharge from the wastewater treatment plant to meet consent orders issued by Ohio EPA. The preferred alternative, ultimately the Proposed Action is the proposed upgrade/replacement of outdated and failing equipment at the wastewater treatment plant and includes:

- Replacement and upgrading of the secondary aeration system and failing blower equipment that has exceeded the end of its useful service life

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

Environmental Resource	Minor Effect	No Effect
Aesthetics	☒ (temporary during construction)	☐
Air quality	☒ (temporary during construction)	☐
Aquatic resources/wetlands	☐	☒
Invasive species	☐	☒
Fish and wildlife habitat	☐	☒
Threatened/Endangered species	☐	☒
Historic properties	☐	☒
Other cultural resources	☐	☒
Floodplains	☐	☒
Hazardous, toxic & radioactive waste	☐	☒
Hydrology	☐	☒
Land use	☐	☒
Navigation	☐	☒
Noise levels	☒ (temporary during construction)	☐
Public infrastructure	☒ (beneficial)	☐
Socioeconomics/environmental justice	☒ (beneficial)	☐

Soils	☐	☒
Tribal trust resources	☐	☒
Water quality	☒ (beneficial)	☐
Climate change	☒ (beneficial)	☐
Child health and safety	☐	☒

All practical means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) during construction as detailed in the EA will be implemented to minimize impacts. Wetland and stream impacts have been avoided. No compensatory mitigation is required.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan will have no effect on federally listed species or their designated critical habitat.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommended plan has no potential to cause effects on historic properties.

Pursuant to the Clean Water Act of 1972, as amended, no discharge of dredged or fill material will occur, therefore the recommended plan has been found to be compliant with section 404(b)(1) Guidelines (40 CFR 230). Construction/upgrades will be provided within the property boundary of the existing wastewater treatment facility, avoiding all impacts to waters of the U.S.

A 15-day public comment period will occur from 20 September to 4 October 2021. 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. If significant effects on the quality of the human environment are identified during public comment which cannot be mitigated, the USACE will initiate an Environmental Impact Statement, and afford all of the appropriate public participation opportunities attendant to an EIS.

Technical, environmental, and economic criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives.

Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not significantly affect the human environment; therefore, preparation of an Environmental Impact Statement is not required.

_____
Date

_____
ADAM J. CZEKANSKI
COLONEL, Corps of Engineers
District Commander

Environmental Assessment

The City of Steubenville

Secondary Aeration Project

Steubenville, Jefferson County, Ohio

August 13, 2021

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers, Pittsburgh District (Corps) is proposing to provide federal funding for the City of Steubenville Secondary Aeration project (Project) for facility and equipment upgrades to the Steubenville Wastewater Treatment Plant's (WWTP) Secondary Aeration System in Steubenville, Jefferson County, Ohio.

This document provides an evaluation of anticipated environmental impacts associated with the WWTP upgrades proposed under the draft Sewer System Overflow Long-Term Control Plan (LTCP) that are under negotiations between the City of Steubenville and the Ohio Environmental Protection Agency (EPA). This EA focuses on the component of Steubenville WWTP project that is being federally funded (i.e. the Proposed Action), under Section 594 of the Water Resources Development Act of 1999 (Public Law 106-53). The Proposed Action consists of the demolition and replacement of existing secondary aeration equipment within the blower building and aeration tanks, demolition of existing chemical storage tanks, tank pad, and associated pumps, pipes, valves, and appurtenances, and the installation of electrical systems, instrumentation, and control systems related to secondary aeration systems.

Based on the analysis conducted to date, the City of Steubenville has determined that the Proposed Action best meets the purpose and need for the project with the least environmental impact. The No-Action Alternative is also considered. The key impacts of the Proposed Action analyzed in this NEPA document are identified in Table 5-1.

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers, Pittsburgh District (Corps) is proposing to provide federal funding for the Project for proposed facility and equipment upgrades to the WWTP's Secondary Aeration System in Steubenville, Jefferson County, Ohio. The upgrade plans are provided in Appendix A.

1.1 PROJECT AUTHORITY

Section 594 of the Water Resources Development Act of 1999 (Public Law 106-53) as amended, provides design and construction assistance to non-federal interests for carrying out water-related environmental infrastructure and resource protection and development projects in the State of Ohio. Prior to providing design and construction assistance for a project, the Corps requires a Project Partnership Agreement, which is executed by the Corps and the non-federal sponsor. The Section 594 Program is a reimbursement program, whereby 75 percent of the total project costs are borne by the government and 25 percent of the costs are borne by the non-federal sponsor, for this project the City of Steubenville. The non-federal sponsor will remain responsible for operation and maintenance cost at 100 percent.

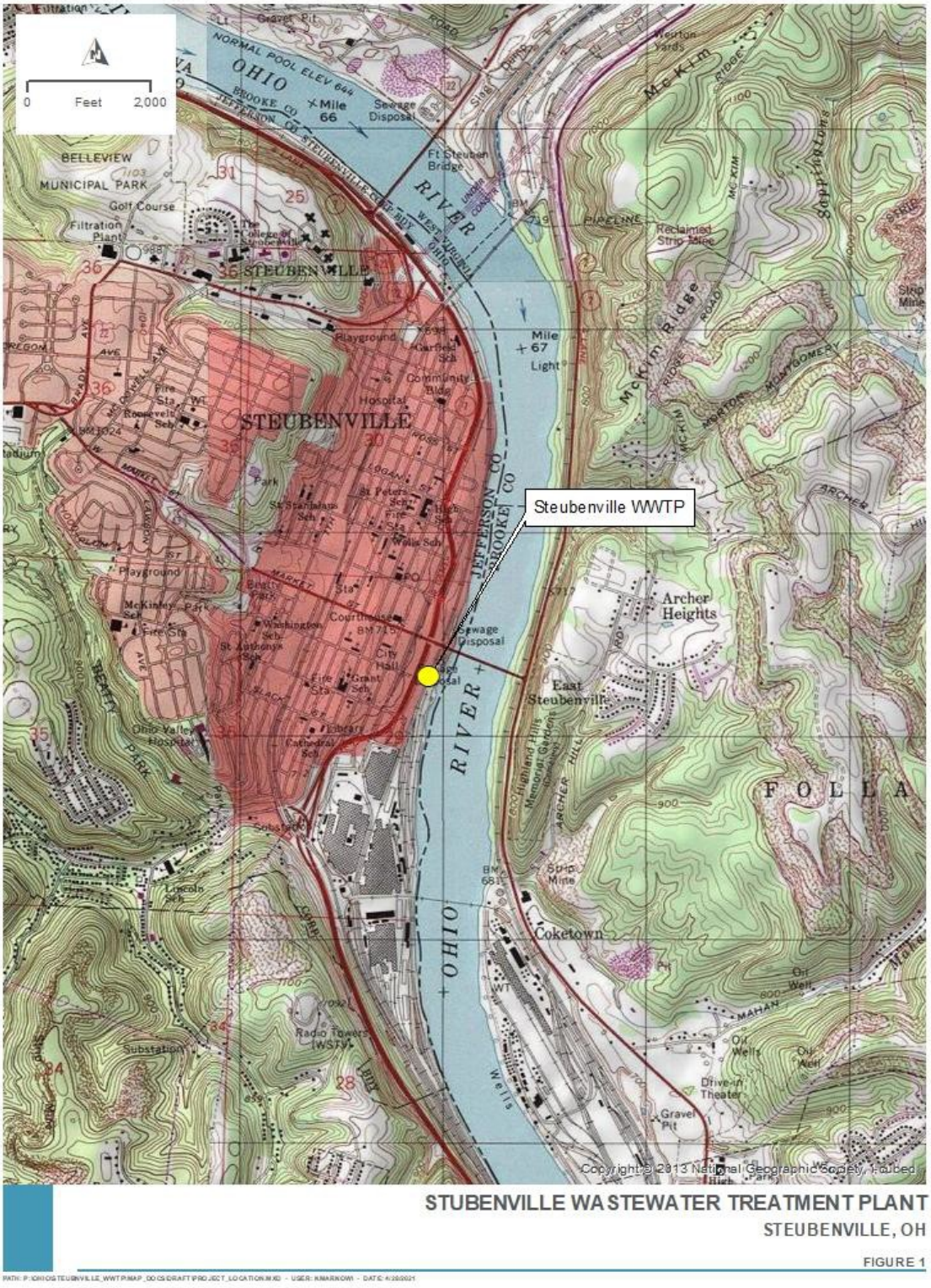
1.2 PROJECT BACKGROUND

The existing Steubenville WWTP is located at 100 North Water Street, Steubenville, Ohio (40°21'34.74", 80°36'48.132"). The original treatment plant was constructed in 1956. The facility is an activated sludge plant with design average daily flow of 6.0 million gallons per day (MGD). The actual average dry weather flow is 4.0 MGD. The treatment plant is capable of treating up to 43 MGD, with all flows up to 22 MGD receiving both primary and secondary treatment and flows from 22 MGD up to 43 MGD receiving primary treatment only. The City of Steubenville entered into a Consent Order with Ohio EPA on May 27, 1998 to address its sewer overflows and an Amended Consent Order was filed on September 16, 2004 (Case No. 97-CV-383). Steubenville was required to develop and submit an approvable Sewer System Overflow Long-Term Control Plan to Ohio EPA. The Long-Term Control Plan was submitted to the Ohio EPA on June 30, 2009; however, it was never approved by the Ohio EPA. Following subsequent discussions with the Ohio EPA, the City performed a No Feasible Alternatives Study and developed a Wet Weather Capacity Increase Report in 2015 and 2016 that evaluated the hydraulic capacity and condition assessment of the WWTP. This report outlined system capacity and what projects need to be completed in order to treat additional flows from the Collection System and subsequently reduce overflows in the collection system. The results of the No Feasible Alternatives Study and the Wet Weather Capacity Increase Report are being used as part of current second amended consent decree negotiations with the Ohio EPA. The second amended consent decree is currently under negotiation for the development of a Long-Term Control Plan and the execution of several projects at the WWTP and Collection System to address known deficiencies.

The proposed secondary treatment upgrades as part of the Project were identified as necessary to continue secondary treatment at the WWTP and were included as a project the City needs to complete in the draft second amended consent decree. The improvements to the Secondary Aeration System outlined in the draft second amended

consent decree are limited to the aeration tanks and blower building of the WWTP. The non-federal sponsor of the proposed project is the City of Steubenville. The Project Location is shown on Figure 1.

Figure 1: Project Location



1.3 PURPOSE AND NEED

The goal of the City of Steubenville's Long-Term Control Plan is to reduce the number of overflows in the collection system and treat as much flow at the WWTP prior to discharge into the Ohio River. It was determined as part of the Wet Weather Capacity Increase Report that the current WWTP cannot adequately treat combined sanitary sewer flows during wet weather events. In accordance with Consent Orders issued by Ohio EPA, the City of Steubenville must address sewer overflows, develop a Long-Term Control Plan, and address deficiencies at the WWTP.

Deficiencies at the WWTP include outdated and inefficient blower equipment and secondary aeration system components. The Proposed Action includes replacement and upgrading of the secondary aeration system and failing blower equipment that has exceeded the end of its useful service life. Currently, only two of the existing three blowers are in operation due to equipment failure; in 2019 there was a fire in one of the motor control centers which permanently removed one of the blower units from service. The secondary aeration piping and diffusers in the aeration tanks are failing, causing inefficient aeration in the wastewater treatment process. Additionally, there are structural failures in the aeration tanks that need to be addressed to stop leakage from the tanks. The lack of blower redundancy and failure of the aeration equipment puts the WWTP at significant risk of not meeting discharge permit requirements due to catastrophic failure of the system. The Proposed Action will address these deficiencies and failures by replacing and upgrading components of the secondary aeriation system and blower equipment.

1.4 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

As authorized by Section 594, the Corps proposes to fund the federal share of the construction cost of the Proposed Action. Under the requirements of Section 102 of the National Environmental Policy Act (NEPA), this proposed funding constitutes a major federal action, and an Environmental Assessment (EA) is required.

This EA has been prepared pursuant to NEPA and the regulations for implementing NEPA promulgated by the Council of Environmental Quality (40 CFR 1500-1508) and USACE (33 CFR 230). This EA evaluates the potential environmental and socioeconomic impacts from construction and operation of the Steubenville WWTP Improvements and focuses on the federally funded component of the Steubenville WWTP project (i.e. the Proposed Action).

The Proposed Action includes demolition and replacement of existing secondary aeration equipment within the blower building and aeration tanks, demolition of existing chemical storage tanks, tank pad, and associatedpumps, pipes, valves, and appurtenances, and the installation of electrical systems, instrumentation, and control systems related to secondary aeration systems.

1.5 PUBLIC INVOLVEMENT

The Corps will provide a draft copy of this report to the appropriate agencies during a 15-day public comment period. The Corps 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.

2.0 PROPOSED ACTION

The Proposed Action includes replacement and upgrades to components of the secondary aeriation system located within the existing blower building and aeration tanks. The Proposed Action includes demolition and replacement of existing secondary aeration diffusers and blowers, existing aeration piping and appurtenances from the blower building to the diffusers in the secondary aeration tanks, existing chemical storage tanks and tank pad, and all associated pumps, valves, and appurtenances. The tank expansion joints will be repaired. Secondary aeriation tanks will be drained and cleaned prior to installation of new diffuser equipment, aeration piping, and repair of tank expansion joints. The HVAC system in the blower building will be replaced. Electrical systems and instrumentation/Supervisory Control and Data Acquisition (SCADA) systems related to the secondary aeration system will be installed. The location of the Proposed Action is within the property boundaries of the WWTP, shown in Figure 2 and details of the Proposed Action are provided in Appendix A.

3.0 ALTERNATIVES TO THE PROPOSED ACTION

NEPA requires that an EA evaluate all reasonable alternatives, including the No-Action Alternative. Alternatives identified include the Proposed Action (federal funding under Section 594) and No-Action (no federal funding). The Proposed Action is described in Section 2.0.

3.1 NO-ACTION ALTERNATIVE

NEPA's implementing regulations require consideration of a No-Action Alternative (40 CFR 1502.14c). Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. The Steubenville WWTP would not perform necessary upgrades to the secondary aeration system that are required as part of the process for the City of Steubenville to be in compliance with the second Amended Consent Order with Ohio EPA to address its sewer overflows and failing system.

4.0 EXISTING CONDITIONS AND ENVIRONMENTAL SETTING

4.1 INTRODUCTION

This section describes the existing environment at the Steubenville WWTP and serves as a baseline from which to identify and evaluate potential impacts associated with implementation of the Proposed Action. The description of the existing conditions focuses on those resource areas that may present constraints to the project.

The Proposed Action includes the demolition and replacement of wastewater treatment equipment within the existing blower building and aeration tanks. The Proposed Action also includes the removal of impervious surfaces and walkways between the aeration tanks. No ground disturbance or impacts to environmental resources will occur during construction of the Proposed Action. For the purpose of describing existing conditions and environmental effects of the proposed work at the

WWTP in Sections 4 and 5 of this EA,the Project Area is defined as the area directly affected by construction of the Proposed Action at the existing WWTP, as shown in Figure 2.

4.2 AESTHETICS

The Project Area is located within the property boundary of the existing Steubenville WWTP. The WWTP is comprised of a blower building, aeration tanks, maintenance building, sedimentation tanks, an administrative building, two digesters, screw pump building aeration tanks, three settling tanks, and an access road. The WWTP is surrounded by a primarily urban area, including the City of Steubenville to the north, south and west. A railroad and Ohio State Route 7 (Ohio River Scenic Byway) are located adjacent to the WWTP to the west and the Ohio River is located directly adjacent to the site to the east.

4.3 AIR QUALITY

According to the U.S. Environmental Protection Agency (USEPA) and the Ohio EPA, the Ohio portion of the Steubenville area was re-designated from nonattainment to attainment in November 2019. The area now meets the National Ambient Air Quality Standard (NAAQS) for all federal air quality standards set to protect public health (USEPA, 2019).

4.4 FISH AND WILDLIFE HABITAT

The Proposed Action is located within the footprint of the existing Steubenville WWTP, which is enclosed by fencing. Construction activities will occur in areas that are currently developed and paved. The WWTP is surrounded by industrial and developed land, with the City of Steubenville to the north, south and west. No suitable wildlife habitat is in the Project Area or surrounding area.

4.5 THREATENED AND ENDANGERED SPECIES

The Ohio Division of Wildlife (DOW) listed multiple threatened or endangered musseland fish species that are within range of the project. According to the Ohio DOW and the United States Fish and Wildlife Service Information for Planning and Consultation report, the Indiana Bat (*Myotis sodalis*), the northern long-eared bat (*Myotis septentrionalis)*, and the little brown bat (*Myotis lucifugus)* are listed threatened or endangered species that can potentially be affected by activities within the Project Area (Appendix B). However, no suitable habitat for any of these species, including trees, crevices, and cavities, exist within the Project Area.

4.6 INVASIVE SPECIES

All work associated with the Proposed Action take place primarily inside of the blower building and aeration tanks within the existing WWTP. A minor amount of disturbance will occur outside during the removal of impervious surfaces and walkways between the tanks. No invasive species are known to occur within the Project Area.

Figure 2: Project Area

4.7 AQUATIC RESOURCES, WETLANDS, AND FLOODPLAINS

The location of the Proposed Action is limited to the footprint of an existing WWTP and no in-water work is proposed. The limit of disturbance of the Project Area is 5,600 square feet. No aquatic resources or wetlands are present within the Project Area.

The Ohio River is adjacent to the WWTP and outside of the Project Area. According to the National Park Service (NPS), the Ohio River is not listed as a Historic, Recreational, or Scenic River (NPS, 2016). According to the United States Department of Homeland Security, Federal Emergency Management Agency (FEMA) Flood Map Service Center, the Project Area is within the 100-year flood zone of the adjacent Ohio River, and is labeled as a Zone AE Regulatory Floodway (FEMA, 2021).

4.8 HYDROLOGY AND WATER QUALITY

No water sources are present within the Project Area. Treated effluent from the WWTP is discharged into the Ohio River.

4.9 NAVIGATION

Navigable waters are not located within the Project Area. According to the Corps, the section of Ohio River adjacent to the WWTP is navigable and controlled by six locks and dams from Pittsburgh, Pennsylvania to New Martinsville, West Virginia. The Ohio River is used for commercial commerce including the shipping of raw materials and bulk goods (USACE, 2008).

4.10 LAND USE AND SOILS

Land use within the Project Area consists of the WWTP and is zoned as a River Conservation District and Heavy Industrial District (City of Steubenville, 2017). According to the United States Department of Agriculture Custom Soil Resource Report, the only soil type present in the Project Area is urban land.

4.11 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

A Phase I Environmental Site Assessment (ESA) was conducted for the Steubenville WWTP in November 2020. The Phase I concluded that there are no recognized environmental concerns, including hazardous, toxic, or radioactive waste, present within the Steubenville WWTP and the Project Area (HDR, 2020).

4.12 CLIMATE CHANGE

A search of the Ohio EPA Issued Permits Database was conducted for the WWTP (Ohio EPA, 2021). There are no known air quality permits for monitoring of greenhouse gas emissions for the WWTP facility.

4.13 HISTORIC PROPERTIES AND CULTURAL RESOURCES

Background research, including review of the Ohio Historic Preservation Office (OHPO) Online Mapping System, determined there are no previously recorded archaeological sites or aboveground resources within the Project Area. Additionally, no historic properties are present in the Project Area. The OHPO review of the Project Area on March 4, 2021 concurred with this finding (Appendix B).

4.14 TRIBAL TRUST LAND

According to the United States Department of the Interior (USDOI) Bureau of Indian Affairs, no tribal trust land exists within or adjacent to the Project Area (USDOI, 2016).

4.15 NOISE LEVELS

Noises within the Project Area involve typical noise generated by the operation of the existing WWTP, along with some noise generated by passing traffic along Water Street and the adjacent Market Street Bridge.

4.16 PUBLIC INFRASTRUCTURE

Public infrastructure in the area includes the existing WWTP, which provides sewer and wastewater services to the City of Steubenville. The City of Steubenville is located to the north, south, and west of the WWTP. The WWTP is located off Water Street, which is parallel to a railroad and Ohio State Route 7 (Ohio River Scenic Byway) to the west.

4.17 SOCIO-ECONOMICS

The WWTP is located within Census Tract 2 in Jefferson County, OH. It is closely surrounded by Census Tracts 4, 8, and 17, which encompass the City of Steubenville which the WWTP services. Since the WWTP services these areas, these census tracts were included in the socio-economic analysis.

All census tracts have significantly larger minority populations compared to Jefferson County and the State of Ohio. Minority populations within the City of Steubenville census tracts range from 14.09 to 61.58%, compared to Jefferson County and the State of Ohio with minority populations of 9.67% and 8.02%, respectively (Table 4-1).

Table 4-1: 2015 – 2019 Age and Race Data

	Population	≥ 18 Years of Age	≥ 65 Years of Age	Non-minority	Minority
Ohio	11,655,397	9,050,387	1,941,294	9,197,115	2,458,282
		77.65%	16.66%	78.91%	8.02%
Jefferson County	66,371	53,539	13,950	59,955	6,416
		80.67%	21.02%	90.33%	9.67%
Census Tract 2*	2,844	2,648	248	2,078	766
		93.11%	8.72%	73.07%	16.93%
Census Tract 4	2,845	2,383	411	1,875	970
		83.76%	14.45%	65.91%	14.09%
Census Tract 8	708	460	44	272	436
		64.97%	6.21%	38.42%	61.58%
Census Tract 17	2,311	1,545	281	1,367	944
		66.85%	12.16%	59.15%	40.85%

Source: USCB 2015-2019XXX

* Census Tract where project work is proposed to occur

The population of Jefferson County is 66,371, with 17.49% of the population below poverty level and a median household income of $46,581. All census tracts analyzed have significantly larger populations below the poverty level and lower median household incomes than Jefferson County and the State of Ohio (Table 4-2).

Table 4-2: 2015 – 2019 Economic Data

	Persons	
	Median Household Income	Below Poverty Level
Ohio	$56,602	1,588,343
		14.02%
Jefferson County	$46,581	11,207
		17.49%
Census Tract 2*	$10,503	856
		65.29%
Census Tract 4	$25,547	1,006
		35.50%
Census Tract 8	$10,417	478
		67.51%
Census Tract 17	$34,732	660
		29.35%

Source: USCB 2015-2019XXX

* Census Tract where project work is proposed to occur

4.18 ENVIRONMENTAL JUSTICE

Executive Order (EO) 12898, Environmental Justice, requires federal agencies to identify and address, as appropriate, "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

The Council on Environmental Quality (CEQ) has oversight of the federal government's compliance with EO 12898 and the National Environmental Policy Act (NEPA). CEQ, in consultation with the USEPA and other affected agencies, developed NEPA guidance foraddressing requirements of the EO.

Minority populations exist when the percentage of minorities in an affected area exceeds 50 percent or when the minority population percentage of the affected area is meaningfully greater than in the general population. According to the U.S Census Bureau data, the census tracts around the proposed Project Area contain meaningfully higher minority populations compared to Jefferson County and the State of Ohio. Population data is listed in Table 4-1 above.

The U.S. Census Bureau defines poverty areas as census tracts or block numbering areas where at least 20 percent of residents are below the poverty level. Based on this definition, the census tracts around the proposed Project Area contain populations below the poverty, with percentages ranging from 29.35 to 67.51%, as seen on Table 4-2 above.

4.19 CHILD HEALTH AND SAFETY

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks was signed on April 23, 1997. It requires federal agencies to (1) make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children and (2) ensure that its policies, programs, activities,

and standards address disproportionate risks to children that result from environmental health risks and safety risks. The Project Area is located within a fenced in existing wastewater treatment plant. Children are not present, nor are they impacted by activities at the existing facility.

5.0 ENVIRONMENTAL EFFECTS

This section of the EA contains the background research, impacts, and mitigation required to determine the environmental impacts associated with the Proposed Action and No-Action Alternatives.

5.1 DETERMINATION OF ENVIRONMENTAL EFFECTS AND SUMMARY

Environmental effects of the Proposed Action were determined from previous project documentation, agency coordination, and analysis of construction activities necessary to implement the Proposed Action. Operation of the Proposed Action was also considered to determine potential long-term impacts after construction is completed. For assessment of environmental effects of the No-Action Alternative (no federal funding), it was assumed that the non-federal sponsor would not proceed with the proposed project without federal funding.

5.2 AESTHETICS

Proposed Action: Minor temporary effects to aesthetics may occur during project construction. However, as the construction is limited to improvement of wastewater treatment equipment within the existing WWTP, no permanent impacts will occur.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. There would be no change to aesthetics under the No-Action Alternative.

5.3 AIR QUALITY

Proposed Action: Minor temporary, localized, increases in dust and emissions may occur during construction activities. However, emissions will be de minimus. No permanent impacts to air quality are expected with operation of the WWTP with new equipment and infrastructure.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. The No-Action Alternative would not result in impacts to air quality.

5.4 FISH AND WILDLIFE HABITAT

Proposed Action: Due to the proposed work occurring within the existing footprint of the WWTP and lack of proposed in-water work, no aquatic or wildlife habitat would be impacted by the Proposed Action.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. No impact to fish and wildlife habitat would occur under the No-Action Alternative.

5.5 THREATENED AND ENDANGERED SPECIES

Proposed Action: Given the proposed project design and location within the existing WWTP and lack of in-water work, no impact to threatened or endangered wildlife, mussel, or fish species are anticipated. No suitable habitat for bat species, including trees, crevices, and cavities exist within the Project Area. Thus, these species are not anticipated to be affected by the proposed project. Agency coordination is located in Appendix B.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. No impact to threatened and endangered species would occur.

5.6 INVASIVE SPECIES

Proposed Action: Given the proposed project design, location within the existing WWTP, and lack of in-water work, no impact to invasive species are anticipated.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. No impact to invasive species would occur.

5.7 AQUATIC RESOURCES, WETLANDS, AND FLOODPLAINS

Proposed Action: Given the lack of aquatic resources and wetlands within the existing WWTP, no impacts are anticipated. While the Project Area is within a FEMA 100-year floodplain, the limit of disturbance of the Project Area is 5,600 square feet. This is below the one acre threshold that would require a floodplain permit through the Ohio Department of Natural Resource (ODNR) Division of Water Resources. The ODNR review of the Project Area on April 6, 2021 is attached in Appendix B. No impacts to the floodplains are anticipated due to the design and nature of the project within the existing WWTP facility.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. No impact to aquatic resources, wetlands, and floodplains would occur.

5.8 HYDROLOGY AND WATER QUALITY

Proposed Action: Given the lack of water sources within the existing WWTP, no impacts to hydrology are anticipated. The proposed project will upgrade the efficiency of the WWTP secondary aeration system which may result in beneficial impacts to the water quality of the effluent that is discharged to the Ohio River.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. No impact to hydrology would occur. Minor negative water quality impacts may occur under the No-Action Alternative when the outdated facilities and equipment at the WWTP reach or exceed the end of their useful service life and begin to fail.

5.9 NAVIGATION

Proposed Action: Given the proposed project design and location within the existing WWTP facility, no impacts to navigation of the Ohio River are anticipated.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. No impact to navigation would occur.

5.10 LAND USE AND SOILS

Proposed Action: Given the proposed project design and location within the existing WWTP facility, no earth disturbance or impact to land use and soils are expected for the Proposed Action. No change in land use is proposed.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. No impact to soils would occur.

5.11 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

The Phase I ESA conducted in November 2020 for the Steubenville WWTP concluded that there is no hazardous, toxic, and radioactive waste within the Project Area. Thus, there will be no impact under the Proposed Action or the No-Action Alternative.

5.12 CLIMATE CHANGE

Proposed Action: The proposed project design, which includes upgrades within the existing WWTP, will not have a significant effect on greenhouse gas emissions or climate change. There are currently no known air quality permits for monitoring of greenhouse gas emissions for the WWTP facility and based on the nature of the project, no air emission permits will be required. Minor beneficial impacts to climate change may occur if the upgrades make the WWTP facility more energy efficient.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. The facility would continue to operate with less efficient equipment which may over time contribute to climate change.

5.13 HISTORIC PROPERTIES AND CULTURAL RESOURCES

Proposed Action: As no ground disturbance is anticipated, there is no potential to encounter or impact subsurface archaeological resources. Due to the nature of the project and existing aboveground infrastructure and industrial development in the area, indirect effects from the project are not anticipated. The OHPO review of the Project Area on March 4, 2021 is attached in Appendix B. The OHPO states that the proposed project will have no effect on properties listed in or eligible for listing in the National Register of Historic Places as there are no historic properties present in the Project Area.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. No impact to historic properties or cultural resources would occur.

5.14 TRIBAL TRUST LAND

Given that no tribal trust land exists within or adjacent to the Project Area, no impacts to tribal trust lands are anticipated under the Proposed Action or the No-Action Alternative.

5.15 NOISE LEVELS

Proposed Action: Minor temporary and localized increases in noise levels will occur during project construction from truck deliveries of supplies, construction activities and operation of heavy construction equipment. The proposed work is located in the blower building and aeration tanks within the existing wastewater treatment facility so no significant impacts from noise levels are expected. No change in noise levels resulting from operation of the existing plant is expected with the Proposed Action.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. No impact to noise levels would occur.

5.16 PUBLIC INFRASTRUCTURE

Proposed Action: The Proposed Action will contribute to an improvement in public infrastructure with the upgrades to the wastewater treatment plant. Minor beneficial effects will occur with the plant upgrades as the blower and secondary aeration equipment at the facility needs to be replaced to continue reliable service to the City of Steubenville.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. The existing WWTP facility would continue to inadequately accommodate infiltration and inflow during heavy rains and would continue to operate with equipment that has reached or exceeded the end of its useful service life and is at risk of failure. The facility would continue to degrade, resulting in potential negative impacts to public infrastructure.

5.17 SOCIO-ECONOMICS

Proposed Action: The project is expected to have short-term minor benefits during project construction that results from a temporary increase in the construction workforce. There is a minor benefit that the proposed upgrades may increase the tax base for the City of Steubenville due to more reliable services of their sewer systems.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. The No-Action Alternative would result in potential negative impacts to service from failing WWTP equipment.

5.18 ENVIRONMENTAL JUSTICE

Proposed Action: Although the area contains minority populations and populations below the poverty level compared to Jefferson County and the State of Ohio, the Proposed Action will not cause a disproportionately high or adverse human health or environmental effects to minority or low-income populations given that the project is located within the current footprint of the existing WWTP. The proposed upgrades will have a minor beneficial impact as they are necessary for the WWTP to maintain reliable service to the areas where Environmental Justice populations reside.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be

provided, and construction associated with the Proposed Action would not proceed. Minor negative impacts to environmental justice populations may occur when the outdated facilities and equipment at the WWTP reach or exceed the end of its useful service life and begin to fail, which can result in service interruptions.

5.19 CHILD HEALTH AND SAFETY

Proposed Action: There are no schools, daycares, or other locations where children would be present within the project area. The proposed construction will occur within the footprint of the existing wastewater treatment plant, which is enclosed within fencing. No impacts to child health and safety will occur.

No-Action Alternative: Under the No-Action Alternative, federal funding would not be provided, and construction associated with the Proposed Action would not proceed. No impact to child health and safety would occur.

Table 5-1: Impacts Summary Resulting from the Action Alternative

Environmental Resource Category	Proposed Action	No-Action Alternative
Aesthetics and Visual Resources	No permanent effect, minor temporary effects during construction.	No effect.
Air Quality	No permanent effect; minor temporary effect as a result of increased air emissions during construction activities.	No effect.
Fish and Wildlife (migratory birds, terrestrial and aquatic wildlife)	No effect.	No effect.
Rare, Threatened, and Endangered Species	No effect.	No effect.
Invasive Species	No effect.	No effect.
Aquatic Resources, Wetlands, and Floodplains	No effect.	No effect.
Hydrology	No effect.	No effect.
Water Quality	Beneficial effects to water quality of effluent discharged into Ohio River from upgraded equipment.	Minor negative effect to water quality of effluent if equipment fails.
Navigation	No effect.	No effect.
Land Use and Soils	No effect.	No effect.
Hazardous, Toxic and Radioactive Waste	No effect.	No effect.
Climate Change	Minor beneficial effect.	Minor negative effect.
Historic Properties and Cultural Resources	No effect.	No effect.
Tribal Trust Land	No effect.	No effect.
Noise Levels	No permanent effect; Minor temporary effect associated with construction activities.	No effect.
Public Infrastructure	Minor beneficial effect.	Negative effect due to failing WWTP infrastructure.
Socio-Economic	Minor beneficial effect.	Negative effect due to potential service impacts from failing WWTP equipment.
Environmental Justice	Minor beneficial effect	Minor negative effect to environmental justice populations may occur when outdated facilities and equipment at the WWTP reach or exceed the end of its useful service life and begin to fail, which can result in service interruptions.
Child Health and Safety	No effect.	No effect.

5.20 PRINCIPAL ENVIRONMENTAL LAWS AND EXECUTIVE ORDERS CONSIDERED, WHERE APPLICABLE, IN CONJUNCTION WITH NEPA

Public Laws:
American Indian Religious Freedom Act, 42 U.S.C. 1996 et seq.
Archeological and Historic Preservation Act, 16 U.S.C. 469 et seq.
Archeological Resources Protection Act, 16 U.S.C. 470aa-11, et seq.
Bald and Golden Eagle Protection Act, 16 U.S.C. 668, et seq.
Clean Air Act, as amended, 42 U.S.C. 1857h-7, et seq.
Clean Water Act, 33 U.S.C 1251 et seq.
Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. 9601 – 9675.
Endangered Species Act, 16 U.S.C. 1531 et seq.
Farmland Protection Policy Act, 7 U.S.C. 4201, et seq.
Fish and Wildlife Conservation Act, 16 U.S.C. 2901-2911, et seq.
Fish and Wildlife Coordination Act, 16 U.S.C. 661, et seq.
Historic Sites Act, 16 U.S.C. 461-467, et seq.
Land and Water Conservation Fund Act, 16 U.S.C. 460/-460/-11, et seq.
National Environmental Policy Act, 42 U.S.C. 4321, et seq.
National Historic Preservation Act, 16 U.S.C. 470a, et seq.
Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001 et seq.
Noise Control Act of 1972, 42 U.S.C. 4901-4918.
Resource Conservation and Recovery Act, 42 U.S.C. 6901 et seq.
Rivers and Harbors Act 33, U.S.C. 401 et seq.
Safe Drinking Water Act 42 U.S.C. 300 et seq.
Toxic Substances Control Act, 15 U.S.C. 2601 – 2671.
Wild and Scenic Rivers Act, 16 U.S.C. 1271, et seq.

Executive Orders:

- 11514 Protection and Enhancement of Environmental Quality
- 11593 Protection and Enhancement of the Cultural Environment
- 11988 Floodplain Management
- 11990 Protection of Wetlands
- 12088 Federal Compliance with Pollution Control Standards
- 12114, Environmental Effects Abroad of Major Federal Actions
- 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- 134045 Protection of Children from Environmental Health Risks and Safety Risks

Regulations:
Advisory Council on Historic Properties, Protection of Historic and Cultural Properties (36 CFR Part 800 et seq.).
Council on Environmental Quality, Regulation for Implementing the Procedural

Provisions of the National Environmental Policy Act (40 CFR Parts 1500-1508).
U.S. Army Corps of Engineers, ER 200-2-2, Procedures for Implementing NEPA (33 CFR 230).
U.S. Army Corps of Engineers, EC 1165-2-220, Water Resources Policies and Authorities, Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects, Pursuant to 33 USC 408.
U.S. Department of Agriculture, Regulations for Implementing the Farmland Protection Policy Act (7 CFR 658).
U.S Environmental Protection Agency, Clean Air Act Implementing Regulations (40 CFR Part 50 et seq.).
U.S. Environmental Protection Agency, Criteria and Standards for the National Pollutant Discharge Elimination System (40 CFR Part 125).

6.0 CONCLUSION

HDR, Inc. prepared this EA in support of federal funding of the City of Steubenville Secondary Aeration Project in Jefferson County, Ohio, as authorized under Section 594 of the Water Resources Development Act of 1999. Under the Proposed Action, the Corps would provide 75 percent of construction costs of the demolition and replacement of existing secondary aeration diffusers and blowers, existing aeration piping and appurtenances from the blower building to the diffusers in the secondary aeration tanks, existing chemical storage tanks and tank pad, and all associated pumps, valves, and appurtenances.

Benefits that reasonably may be expected to accrue from the proposed project were balanced against its reasonably foreseeable detriments. All natural and social environmental factors that may be relevant to the Proposed Action were considered.

Short-term minor impacts during construction of the Proposed Action include aesthetics, air quality, and noise from construction activities. Minor beneficial effects to water quality, climate change, socio-economics, public infrastructure, and environmental justice are anticipated with implementation of the Proposed Action.

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Appendix A

Upgrade Plans

Contract Drawings For

CITY OF STEUBENVILLE

CONTRACT A: SECONDARY AERATION SYSTEM UPGRADE

CONTRACT B: PERACETIC ACID (PAA) DISINFECTION SYSTEM REPLACEMENT

Civil/Structural/Mechanical/
Electrical/Instrumentation/HVAC

Project Nos.
Secondary Aeration System Upgrade: 10125749
Peracetic Acid Disinfection System Replacement: 10094459

Steubenville, Ohio
December 08, 2020

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G-05	WET WEATHER FLOW DIAGRAM
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DM-03	BLOWER BUILDING DEMOLITION SECTIONS
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DM-05	AERATION TANK DEMOLITION SECTIONS
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Y-13	BYPASS DISINFECTION P & ID CONTINUED

Drawings Specific to Work in Contract B - Peracetic Acid Disinfection System Replacement have been removed from this drawing set.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	SPR
DRAWN BY	GAU
APPROVED BY	MJW
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

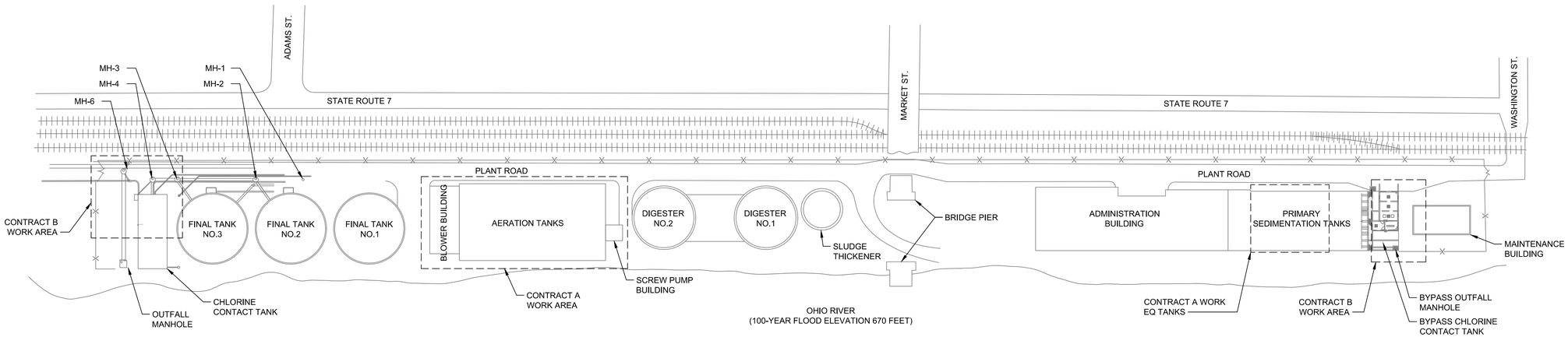
SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

DRAWING INDEX

FILENAME G-02.DWG

SCALE NOT TO SCALE

SHEET G-02



OVERALL PLAN

1/64"=1'-0"

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	SPR
DRAWN BY	VKN
APPROVED BY	MJW
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

OVERALL SITE PLAN

FILENAME	G-03.DWG
SCALE	AS NOTED

SHEET **G-03**

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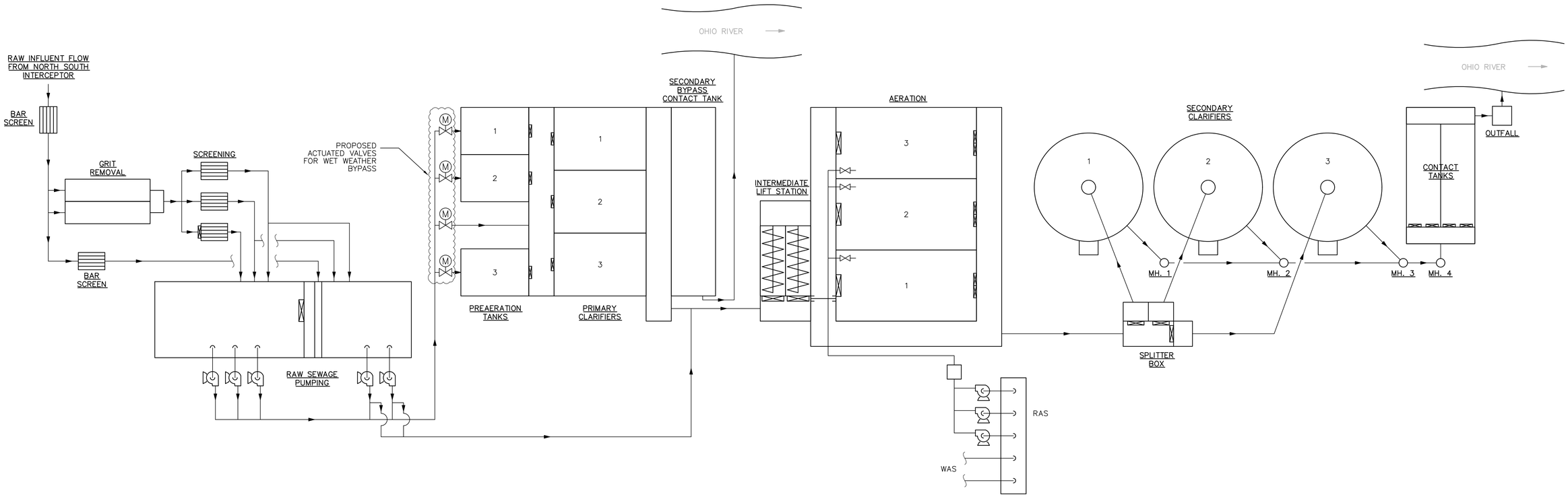
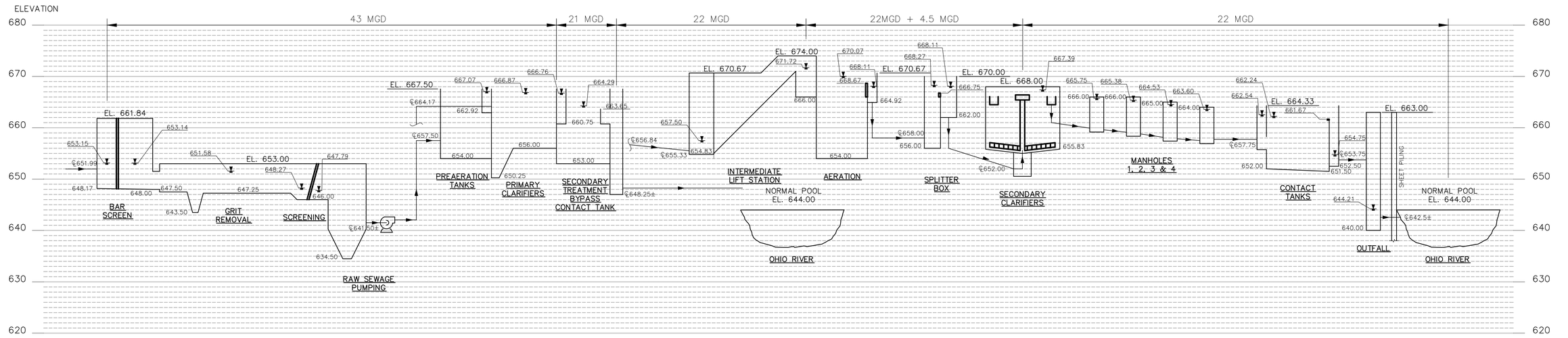


PROCESS FLOW DIAGRAM



HYDRAULIC PROFILE

SCALE: NONE

		PROJECT MANAGER	MEREDITH WELLE
		DESIGN BY	JTB
		DRAWN BY	CMC
		APPROVED BY	MJW
0	12/08/20	ISSUED FOR CONSTRUCTION	
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER 10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

PLANT PROCESS FLOW DIAGRAM

FILENAME G-04.DWG

SCALE NOT TO SCALE

SHEET G-04

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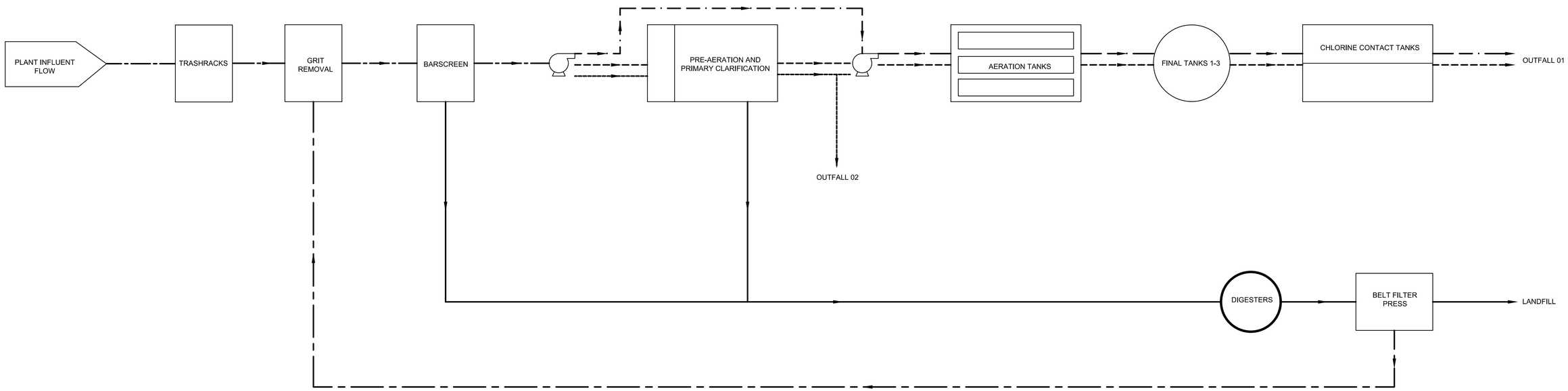

LEGEND

- ALL FLOW INFLUENT
- 6 MGD AND BELOW
- 6-22 MGD
- 22-43 MGD
- SOLIDS
- BFP EFFLUENT WATER

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JTB
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

WET WEATHER FLOW DIAGRAM

FILENAME	G-05.DWG
SCALE	NOT TO SCALE
SHEET	G-05

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A/C	AIR CONDITIONING
A/E	ARCHITECT/ENGINEER
A	AMPERE
AB	ANCHOR BOLT
ABAN	ABANDON
ABC	AGGREGATE BASE COURSE
ABT	ABOUT
AC	ALTERNATING CURRENT
ACK	ACKNOWLEDGE
ACP	ACOUSTIC CEILING PANEL, ASPHALTIC CONCRETE PAVEMENT
ACST	ACOUSTIC
AD	ADDENDUM, AREA DRAIN
ADDL	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE, ADJACENT
AF	AMP FRAME, AMP FUSE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AGGR	AGGREGATE
AI	AREA INLET, ANALOG INPUT
AIR	AERATION PIPING
AIC	AMPS INTERRUPTING CAPACITY
ALIG	ALIGNMENT
ALT	ALTERNATE, ALTITUDE
ALUM	ALUMINUM
AM	ACOUSTICAL MATERIAL
AMB	AMBIENT
ANC	ANCHOR
AO	ANALOG OUTPUT
AP	ACCESS PANEL
APRX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
AT	ACOUSTICAL TILE, AMP TRIP
ATC	ACOUSTICAL TILE CEILING
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AUX	AUXILIARY
AVE	AVENUE
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
AWT	ACOUSTICAL WALL TILE
B TO B	BACK TO BACK
BAL	BALANCE
BBD	BULLETIN BOARD
BC	BASE CABINET, BOTTOM CHORD, BOLT CENTER, BOLT CIRCLE
BD	BOARD
BE	BOTH ENDS, BELL END
BF	BOTH FACES, BOTTOM FACE, BLIND FLANGE, BOARD FEET
BITUM	BITUMINOUS
BKG	BACKING
BL	BASE LINE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BENCHMARK, BEAM
BOC	BACK OF CURB
BOD	BOTTOM OF DUCT
BOG	BOTTOM OF GRILLE
BOL	BOTTOM OF LOUVER, BOLLARD
BOP	BOTTOM OF PIPE
BOR	BOTTOM OF REGISTER
BOT	BOTTOM
BOU	BOTTOM OF UNIT
BP	BASE PLATE
BRG	BEARING
BRGP	BEARING PLATE
BRKT	BRACKET
BS	BOTH SIDES
BTU	BRITISH THERMAL UNIT
BTW	BETWEEN
BTWLD	BUTT WELD
BU	BELL UP, BUILT-UP
BUR	BUILT-UP ROOFING
BW	BOTH WAYS
BYP	BYPASS
C TO C	CENTER TO CENTER
C&G	CURB AND GUTTER
C	CHANNEL SHAPE, CENTIGRADE, CONDUIT
CAB	CABINET
CAP	CAPACITY
CAT	CATALOG, CATEGORY
CAV	CAVITY
CB	CATCH BASIN
CCB	CONCRETE BLOCK
CCW	COUNTER CLOCKWISE
CDF	CONTROLLED-DENSITY FILL
CE	CONCRETE EDGE
CER	CERAMIC
CF	CUBIC FEET (FOOT)
CFL	COUNTER FLASHING
CHBD	CHALKBOARD
CHD	CHORD
CHFR	CHAMFER
CHH	COMMUNICATION HANDHOLE
CI	CURB INLET
CIP	CAST-IN-PLACE
CIPB	CONCRETE INTERLOCKING PAVER BALLAST
CIRC	CIRCULATION, CIRCULAR
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTERLINE, CLASS, CLOSE
CLG	CEILING
CLKG	CAULKING
CLR	CLEAR
CMH	COMMUNICATION MANHOLE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT, CONCRETE OPENING
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMM	COMMUNICATION
COMP	COMPOSITION, COMPRESSIBLE, COMPOSITE
CON	CONCENTRIC
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COOR	COORDINATE
CORR	CORROSIVE, CORRUGATED
CP	CHECKER PLATE, CONTROL POINT
CPLG	COUPLING
CRL	CORROSION-RESISTANT LINING
CSC	COMPRESSION SLEEVE COUPLING
CSK	COUNTERSINK
CSS	CLINIC SERVICE SINK
CT	CERAMIC TILE
CTJ	CONTRACTION JOINT
CTR	CENTER
CTRL	CONTROL
CVT	CULVERT
CU	COPPER, CUBIC
CW	CLOCKWISE
CY	CUBIC YARD
d	PENNY (NAIL MEASURE)
D	DEEP, DIFFUSER, DRAIN
DB	DUCT BANK, DECIBEL, DRY BULB
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DEG C	DEGREE CENTIGRADE
DEG F	DEGREE FAHRENHEIT
DEMO	DEMOLITION
DEP	DEPRESSED
DEPT	DEPARTMENT
DET	DETAIL
DI	DROP INLET, DUCTILE IRON, DIGITAL INPUT
DIA	DIAMETER
DIAG	DIAGONAL, DIAGRAM
DIFF	DIFFERENTIAL, DIFFERENCE
DIM	DIMENSION
DISCH	DISCHARGE
DIST	DISTANCE, DISTRIBUTION
DIV	DIVISION
DL	DEAD LOAD
DMJ	DOUBLE MECHANICAL JOINT
DMPF	DAMP PROOFING
DN	DOWN
DO	DISSOLVED OXYGEN, DIGITAL OUTPUT, DITTO
DP	DEPTH
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DS	DOWN SPOUT
DT	DOUBLE TEE, DRIP TRAP ASSEMBLY
DUP	DUPLICATE
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
E	EAST
EA	EACH, EXHAUST AIR
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
ED	EQUIPMENT DRAIN
EDB	ELECTRICAL DUCT BANK
EE	EACH END
EF	EACH FACE
EFF	EFFLUENT, EFFICIENCY
EHH	ELECTRICAL HANDHOLE
EIFS	EXTERIOR INSULATION & FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELBOW, ELEVATION
ELEC	ELECTRICAL
EMBD	EMBEDDED
EMER	EMERGENCY
EMH	ELECTRICAL MANHOLE
ENCL	ENCLOSURE
ENGR	ENGINEER
ENTR	ENTRANCE
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	EACH SIDE, EQUAL SPACE, EMERGENCY SHOWER
ESEW	EMERGENCY SHOWER AND EYE WASH
EST	ESTIMATE
EW	EACH WAY, EMERGENCY, EYE/FACE WASH
EWC	ELECTRIC WATER COOLER
EWEF	EACH WAY, EACH FACE
EWTB	EACH WAY, TOP AND BOTTOM
EXC	EXCAVATION
EXH	EXHAUST
EXP	EXPANSION, EXPOSED
EXST	EXISTING
EXT	EXTERIOR, EXTERNAL, EXTENSION
F TO F	FACE TO FACE
F&B	FACE AND BYPASS
FAB	FABRICATE
FB	FLOOR BEAM
FBD	FIBERBOARD
FBG	FIBERGLASS
FBM	BOARD FOOT MEASURE
FBO	FURNISHED BY OWNER
FC	FLUSHING CONNECTION
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDC	FLEXIBLE DUCT CONNECTION
FDR	FEEDER
FDTN	FOUNDATION
FE	FLANGED END
FEC	FIRE EXTINGUISHER CABINET
FES	FLARED END SECTION
FEXT	FIRE EXTINGUISHER
FF	FAR FACE, FACTORY FINISH, FLAT FACE
FG	FINISHED GRADE
FH	FIRE HYDRANT
FIG	FIGURE
FIN	FINISH
FJT	FLUSH JOINT
FL	FLOW, FLOW LINE
FLEX	FLEXIBLE
FLG	FLANGE
FLOR	FLUORESCENT
FLR	FLOOR
FLS	FLASHING, FLUSH
FN	FENCE
FO	FINISHED OPENING, FIBER OPTIC
FOB	FLAT ON BOTTOM
FOC	FACE OF CONCRETE, FACE OF CURB
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOT	FLAT ON TOP
FPT	FEMALE PIPE THREAD
FR	FRAME
FRP	FIBERGLASS REINFORCED PLASTIC
FRTM	FIRE RETARDANT TREATED MATERIAL
FS	FLOOR SINK, FAR SIDE
FT	FEET, FOOT
FTG	FOOTING, FITTING
FUR	FURRED, FURRING
FURN	FURNITURE, FURNISH
FUT	FUTURE
FV	FACE VELOCITY
FW	FIELD WELD, FIRE WALL
FWD	FORWARD
FWE	FURNISHED WITH EQUIPMENT
FXTR	FIXTURE
G	GRILLE, GROUND
GA	GAGE (METAL THICKNESS)
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR, GRADE BREAK
GC	GROOVED COUPLING
GD	GUARD
GEN	GENERAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFMU	GROUND FACE MASONRY UNIT
GG	GUTTER GRADE
GJ	GROOVED JOINT
GL	GLASS
GLB	GLASS BLOCK, GLULAM BEAM
GND	GROUND
GP	GUY POLE
GR	GRADE
GRTG	GRATING
GSB	GYPSUM SHEATHING BOARD
GT	GREASE TRAP
GVL	GRAVEL
GW	GUY WIRE
GWB	GYPSUM WALLBOARD
GYP	GYPSUM HARDBOARD
H	HIGH
HB	HOSE BIBB
HBD	HARDBOARD
HC	HANDICAPPED, HOLLOW CORE, HORIZONTAL, CURVE, HORIZONTAL CENTERLINE
HD	HEAD, HOT DIP
HDR	HEADER
HDW	HARDWARE
HEX	HEXAGONAL
HGR	HANGER
HH	HANDHOLE
HID	HIGH-INTENSITY DISCHARGE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT, HORSEPOWER
HPC	HORIZONTAL POINT OF CURVATURE
HPS	HIGH-PRESSURE SODIUM
HPT	HORIZONTAL POINT OF TANGENCY
HR	HOSE REEL, HOUR
HS	HEADED STUD, HIGH STRENGTH
HSS	HOLLOW STRUCTURAL SHAPE
HT	HEIGHT
HTG	HEATING
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWD	HARDWOOD
HWL	HIGH WATER LEVEL
HYD	HYDRAULIC
HZ	HERTZ, CYCLES PER SECOND
ID	INSIDE DIAMETER, INTERIOR DIMENSION
IE	INVERT ELEVATION, FOR EXAMPLE
IF	INSIDE FACE
IH	INTAKE HOOD
IMP	IMPACT
IN	INCH
INC	INCLUDE, INCANDESCENT
INF	INFLUENT
INSTR	INSTRUMENTATION
INSUL	INSULATION
INT	INTERIOR, INTERSECTION
INTR	INTERMEDIATE, INTERIOR
INV	INVERT
IPS	IRON PIPE SIZE
IPT	INTERNAL PIPE THREAD
IR	INSIDE RADIUS, IRON ROD
IRR	IRRIGATION
ISO	ISOMETRIC
JB	JUNCTION BOX
JCT	JUNCTION
JF	JOINT FILLER
JST	JOIST
JT	JOINT
K	KIP
KB	KNEE BRACE
KCMIL	THOUSAND CIRCULAR MILS
KD	KNOCK DOWN
KO	KNOCK OUT
KSI	KIPS PER SQUARE INCH
KW	KILOWATT
L	ANGLE, LENGTH, LAVATORY, LINTEL
LAD	LADDER
LAM	LAMINATE
LATL	LATERAL
LB	LAG BOLT, POUND
LCTB	LIQUID CHALK AND TACK BOARD
LDG	LANDING
LDR	LEADER
LE	LIFTING EYE
LF	LINEAR FOOT
LG	LONG
LH	LEFT HAND
LIN	LINEAR
LIQ	LIQUID
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LMLU	LIQUID MARKER LECTURE UNIT
LNG	LONGITUDINAL
LOC	LOCATION
LP	LOW POINT
LPS	LOW-PRESSURE SODIUM
LR	LONG RADIUS
LT	LEFT
LTD	LIMITED
LTG	LIGHTING
LTL	LINTEL
LTNG	LIGHTNING
LV	LOW VOLTAGE
LVL	LAMINATED VENEER LUMBER
LVR	LOUVER
LW	LIGHTWEIGHT
LWC	LIGHTWEIGHT CONCRETE
LWL	LOW WATER LEVEL
MA	MIXED AIR
MACH	MACHINED
MAINT	MAINTENANCE
MAN	MANUAL
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBR	MEMBER
MC	MECHANICAL CONTRACTOR, MECHANICAL COUPLING, MOMENT CONNECTION
MCB	METAL CORNER BEAD
MCJ	MASONRY CONTROL JOINT
MDMJ	MODIFIED DOUBLE MECHANICAL JOINT
MECH	MECHANICAL
MED	MEDIUM
MFR	MANUFACTURER
MH	MANHOLE, METAL HALIDE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
ML	MASONRY LINTEL
MLO	MAIN LUGS ONLY
MMB	MEMBRANE
MO	MASONRY OPENING
MOD	MODULAR, MODIFY
MON	MONUMENT
MPT	MALE PIPE THREAD
MRGWB	MOISTURE-RESISTANT GYPSUM WALLBOARD
MS	MOP SINK
MSL	MEAN SEA LEVEL
MT	MOUNT
MU	MASONRY UNIT
MULL	MULLION
MV	MEDIUM VOLTAGE
MW	MONITORING WELL
N	NORTH, NEUTRAL
NA	NOT APPLICABLE
NAT	NATURAL, NATIONAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NF	NEAR FACE, NON-FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN, NUMBER
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
NS	NEAR SIDE
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL
O TO O	OUT TO OUT
OA	OUTSIDE AIR, OVERALL
OC	ON CENTER
OCPD	OVER CURRENT PROTECTION DEVICE
OD	OUTSIDE DIAMETER
OED	OPEN END DUCT
OF	OUTSIDE FACE, OFFICE FURNISHING
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED OWNER INSTALLED
OG	ORIGINAL GROUND
OH	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
OPT	OPTIONAL
OR	OUTSIDE RADIUS
ORD	OVERFLOW ROOF DRAIN
ORIG	ORIGINAL
OVFL	OVERFLOW
OVHG	OVERHANG
OZ	OUNCE
P	PAINT
PA	PUBLIC ADDRESS
PAA	PERACETIC ACID
PAL	LOW PRESSURE PROCESS AIR
PAR	PARALLEL, PARAPET
PB	PANIC BAR, PULL BOX
PBD	PARTICLE BOARD
PC	POINT OF CURVE, PIECE, PRECAST
PCC	POINT OF COMPOUND CURVATURE
PCF	POUNDS PER CUBIC FOOT
PCT	PERCENT
PE	PLAIN END
PED	PEDESTAL
PEN	PENETRATION
PERF	PERFORATED
PERM	PERMANENT
PERP	PERPENDICULAR
PF	POWER FACTOR
PFMU	PREFACED MASONRY UNIT
PH	PHASE
PI	POINT OF INTERSECTION
PKG	PACKAGE
PL	PLATE, PROPERTY LINE, PRECAST LINTEL
PLAS	PLASTER
PLAT	PLATFORM
PLBG	PLUMBING
PLF	POUNDS PER LINEAR FOOT
PNEU	PNEUMATIC
POL	POLISH
POS	POSITIVE, POSITION
PP	POLYPROPYLENE, POWER POLE
PRC	POINT OF REVERSE CURVATURE
PREF	PREFINISHED
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PREP	PREPARE
PRES	PRESSURE
PRI	PRIMARY
PROP	PROPERTY, PROPOSED
PROT	PROTECTION
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PST	PRESTRESSED
PT	POINT, POINT OF TANGENCY
PTN	PARTITION
PVC	POLYVINYL CHLORIDE, POINT OF VERTICAL CURVE
PVC-RGS	PVC COATED RGS
PVMT	PAVEMENT
PWD	PLYWOOD
PWJ	PLYWOOD WEB JOIST
PZ	PIEZOMETER
Q	RATE OF FLOW
QT	QUARRY TILE
QTR	QUARTER
QTY	QUANTITY
QUAL	QUALITY
R&R	REMOVE AND REPLACE
R&S	REMOVE AND SALVAGE
R	RADIUS, REGISTER, RISER
RA	RETURN AIR
RAS	RETURN ACTIVATED SLUDGE
RB	RESILIENT BASE, ROCK BERM
RCPT	RECEPTACLE
RD	ROOF DRAIN
REC	RECESS
RECD	RECEIVED
RECT	RECTANGULAR
RED	REDUCER
REF	REFERENCE
REINF	REINFORCING
REM	REMOVE
REQD	REQUIRED
RESIL	RESILIENT
RET	RETAINING, RETURN
REV	REVISION, REVERSE
RF	RESILIENT FLOORING
RFG	ROOFING
RFL	REFLECTED, REFLECTOR
RGH	ROUGH
RGS	RIGID GALVANIZED STEEL
RH	RELIEF HOOD, RIGHT HAND, RELATIVE HUMIDITY
RL	REQUIRED LAP
RLFA	RELIEF AIR
RND	ROUND
RNG	RUNNING
RO	ROUGH OPENING
ROW	RIGHT-OF-WAY
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION
RT	RIGHT
RVT	RESILIENT VINYL TILE
RY	READY
S	SOUTH, SINK
SA	SUPPLY AIR
SAMU	SOUND-ABSORBING MASONRY UNIT
SAN	SANITARY
SB	SPLASH BLOCK
SC	SOLID CORE
SCH	SCHEDULE
SCHEM	SCHEMATIC
SCN	SCREEN
SE	STEEL/ALUMINUM EDGE
SEC	SECONDARY, SECONDS
SECT	SECTION
SEP	SEPARATE
SF	SQUARE FOOT, SILT FENCE
SG	SHEET GLASS, SEALANT GROOVE
SH	SHOWER
SHT	SHEET
SHTG	SHEATHING
SIL	SILENCE
SIM	SIMILAR
SJ	SLAB JOINT
SL	SLOPE, STEEL LINTEL
SLTD	SLOTTED
SLV	SLEEVE
SMLS	SEAMLESS
SOG	SLAB ON GRADE
SP	SOUNDPROOF, STANDPIPE
SPA	SPACING
SPEC	SPECIFICATION
SPLY	SUPPLY
SPST	SINGLE POLE SINGLE THROW
SPT	SET POINT
SQ	SQUARE
SR	SHORT RADIUS
SS	SERVICE SINK
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STIF	STIFFENER
STIR	STIRRUP
STL	STEEL
STOR	STORAGE
STR	STRUCTURAL, STRAIGHT
SUB	SUBSTITUTE
SUC	SUCTION
SUSP	SUSPENDED
SY	SQUARE YARD
SYM	SYMBOL
SYMM	SYMMETRICAL
SYN	SYNTHETIC
SYS	SYSTEM
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T	TILE, TREAD
TA	TOILET ACCESSORY, TEMPERED AIR
TAN	TANGENT
TBM	TEMPORARY BENCHMARK
TCE	TEMPORARY CONSTRUCTION EASEMENT
TEF	TROWELED EPOXY FLOORING
TEMP	TEMPORARY, TEMPERATURE
THD	THREAD
THK	THICK
THRESH	THRESHOLD
TKBD	TACK BOARD
TOB	TOP OF BOLT, TOP OF BANK, TOP OF BEAM, TOP OF BERM
TOC	TOP OF CURB, TOP OF CONCRETE
TOD	TOP OF DUCT
TOF	TOP OF FOOTING
TOG	TOP OF GRATING
TOL	TOLERANCE, TOP OF LEDGER
TOM	TOP OF MASONRY
TOP	TOP OF PLATE
TOPO	TOPOGRAPHY
TOS	TOP OF SLAB, TOP OF STEEL, TOE OF SLOPE
TOW	TOP OF WALL
TP	TOILET PARTITION, TELEPHONE POLE, TOE PLATE, TRAP PRIMER
TPD	TOILET PAPER DISPENSER
TPG	TOPPING, THROUGH PLATE GIRDER
TR	TRANSOM
TRANS	TRANSITION
TRD	TRENCH DRAIN
TYP	TYPICAL
U	URINAL
UG	UNDERGROUND
ULT	ULTIMATE
UNFN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
V	VENT, VELOCITY, VOLT
VA	VOLT AMPERE
VAC	VACUUM
VAR	VARNISH, VARIABLE, VOLT AMPERES REACTIVE
VB	VAPOR BARRIER, VINYL BASE, VALVE BOX
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VCT	VINYL COMPOSITION TILE, VERTICAL CENTERLINE
VEL	VELOCITY
VENT	VENTILATION
VERT	VERTICAL
VERTS	VERTICAL REINFORCING
VG	VERTICAL GRAIN
VIF	VERIFY IN FIELD
VIN	VINYL
VOL	VOLUME
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPT	VERTICAL POINT OF TANGENCY
VS	VERSUS, VAPOR SEAL
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
WAS	WASTE ACTIVATED SLUDGE
W/	WITH
W/O	WITHOUT
W	WATT, WEST, WIDE, WINDOW, WIRE, WIDE FLANGE BEAM
WB	WOOD BASE
WC	WATER CLOSET, WATER COLUMN
WD	WOOD, WIDTH
WF	WIDE FLANGE, WASH FOUNTAIN
WG	WIRE GLASS, WATER GAGE
WH	WALL HYDRANT, WEEP HOLE
WI	WROUGHT IRON
WL	WATER LEVEL
WLD	WELDED
WM	WIRE MESH
WP	WEATHERPROOF
WS	WATERSTOP, WATER SURFACE
WSCT	WAINSCOT
WT	WEIGHT, WATER TIGHT
WTHP	WATERPROOF, WORKING POINT
WWF	WELDED WIRE FABRIC
XP	EXPLOSION-PROOF
XS	EXTRA STRONG
XSECT	CROSS SECTION
XXS	DOUBLE EXTRA STRONG
YH	YARD HYDRANT
YS	YIELD STRENGTH

GENERAL NOTES:

1. THESE ABBREVIATIONS APPLY TO THE ENTIRE SET OF CONTRACT DRAWINGS.
2. LISTING OF ABBREVIATIONS DOES NOT IMPLY THAT ALL ABBREVIATIONS ARE USED IN THE CONTRACT DRAWINGS.
3. ABBREVIATIONS SHOWN ON THIS SHEET INCLUDE VARIATIONS OF A WORD. FOR EXAMPLE, "MOD" MAY MEAN MODIFY OR MODIFICATION; "INC" MAY MEAN INCLUDED OR INCLUDING AND "REINF" MAY MEAN EITHER REINFORCE OR REINFORCING.
4. SEE INSTRUMENTATION LEGEND SHEET FOR PROJECT-SPECIFIC EQUIPMENT SYMBOLS, EQUIPMENT ABBREVIATIONS, AND PIPING SYSTEM ABBREVIATIONS.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JTB
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

ABBREVIATIONS

FILENAME G-06.DWG

SCALE NOT TO SCALE

SHEET G-06

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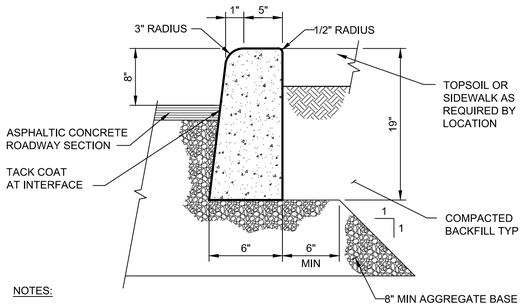


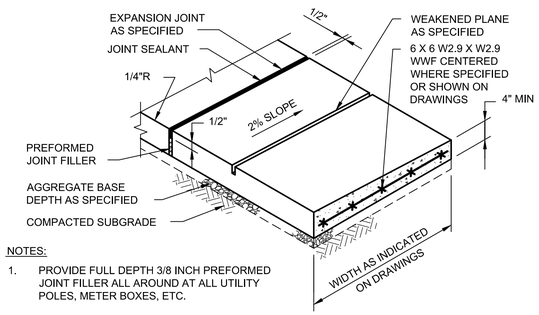
NOTES:

1. PROVIDE EXPANSION AND CONTRACTION JOINTS AS SPECIFIED.
2. PLACE FULL DEPTH EXPANSION JOINTS W/ 1/2" X 6" PREFORMED JOINT FILLER AT POINTS OF TANGENCY.

VERTICAL CURB

NOT TO SCALE

1 / -



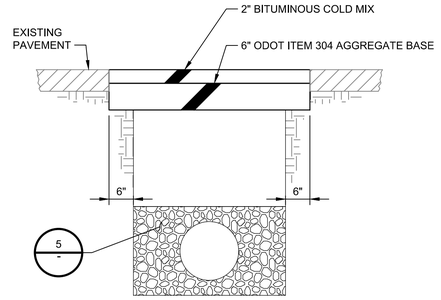
NOTES:

1. PROVIDE FULL DEPTH 3/8 INCH PREFORMED JOINT FILLER ALL AROUND AT ALL UTILITY POLES, METER BOXES, ETC.
2. PLACE PREFORMED JOINT FILLER FULL DEPTH THRU JOINTS AT POINT OF TANGENCY AND AT MINIMUM 25 FOOT INTERVALS.
3. THICKNESS OF CONCRETE AS SHOWN ON DRAWINGS.

CONCRETE WALKWAY/SIDEWALK

NOT TO SCALE

2 / -



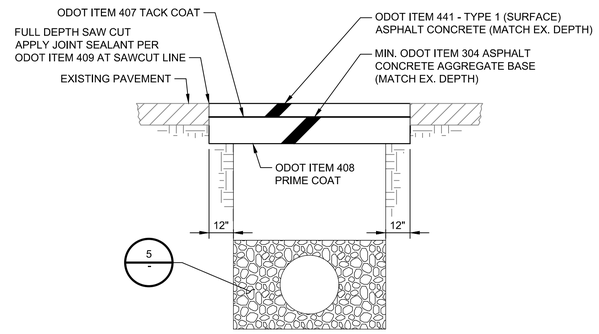
NOTES:

1. BEDDING AND BACKFILL PER DETAIL XX ON SHEET XX.
2. TEMPORARY PAVEMENT IS TO BE PLACED THE SAME DAY THE EXISTING PAVEMENT IS REMOVED.
3. ANY DAMAGE TO AREAS OUTSIDE OF LIMITS SHOWN IN THE DETAIL SHALL BE REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE.
4. THE THICKNESS OF THE PAVEMENT MATERIALS SHALL BE AS SHOWN IN THE DETAIL OR MATCH EXISTING THICKNESSS, WHICHEVER IS GREATER.

TEMPORARY PAVEMENT REPLACEMENT

NOT TO SCALE

3 / -



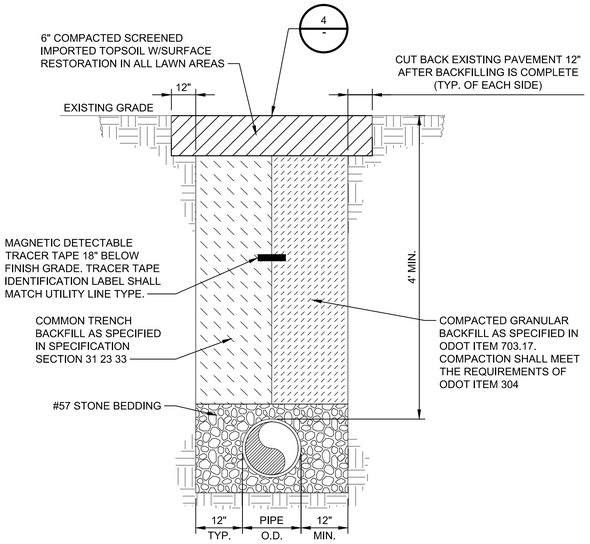
NOTES:

1. BEDDING AND BACKFILL PER DETAIL XX ON SHEET XX.
2. ANY DAMAGE TO AREAS OUTSIDE OF LIMITS SHOWN IN THE DETAIL SHALL BE REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE.

PAVEMENT REPLACEMENT

NOT TO SCALE

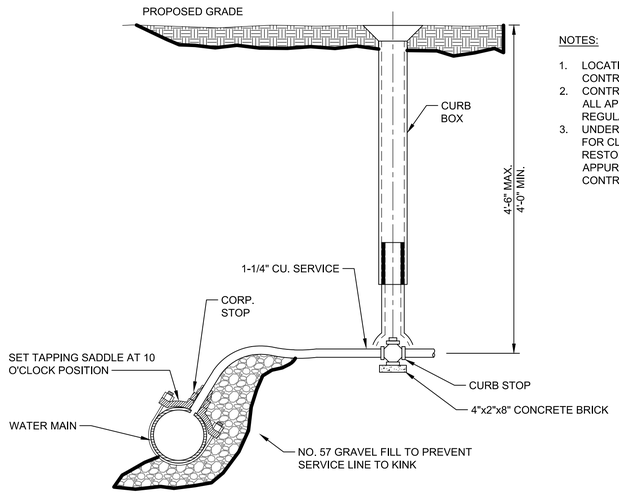
4 / -



TRENCH BACKFILL DETAIL FOR FLEXIBLE PIPE

NOT TO SCALE

5 / -



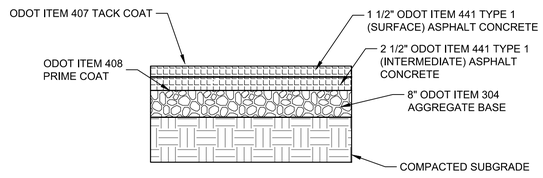
NOTES:

1. LOCATION OF EXISTING WATER LINE IS APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ACTUAL LOCATION.
2. CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS.
3. UNDERGROUND AND OVERHEAD UTILITIES ARE NOT SHOWN FOR CLARITY. LOCATION, SUPPORT, PROTECTION AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

TAP SETTING

NOT TO SCALE

6 / -



NEW ASPHALT PAVEMENT

NOT TO SCALE

7 / -

		PROJECT MANAGER	MEREDITH WELLE
		DESIGN BY	SPR
		DRAWN BY	VKN
		APPROVED BY	MJW
0	12/08/20	ISSUE FOR CONSTRUCTION	
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER 10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

CIVIL STANDARD DETAILS

FILENAME GC-01.DWG | SCALE AS NOTED | SHEET **GC-01**

STRUCTURAL GENERAL NOTES:

G1 APPLICABLE SPECIFICATIONS AND CODES:

ALL NEW STRUCTURES HAVE BEEN DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:
A. OHIO BUILDING CODE - 2015 EDITION AND APPLICABLE AMENDMENTS.

1. ACI 318-14
2. ASCE 7-10
3. AISC 360-10

1. MINIMUM VERTICAL LIVE LOADS:

   A. UNIFORM LIVE LOAD = 100 PSF

   B. ROOF LIVE LOADS = 20 PSF

2. WIND LOADS:
   A. OCCUPANCY CATEGORY: III
   B. BASIC WIND SPEED: 120 MPH
   C. WIND EXPOSURE: C
   D. WIND IMPORTANCE FACTOR (Iw): 1.00

3. SEISMIC:
   A. SITE CLASS: D
   B. OCCUPANCY CATEGORY: III
   C. SEISMIC IMPORTANCE FACTOR (Ie): 1.25
   D. SPECTRAL RESPONSE COEFF: SDS=0.115, SD1=0.085
   E. SEISMIC DESIGN CATEGORY: B

4. SNOW LOAD:
   A. GROUND SNOW (PG): 25 PSF
   B. OCCUPANCY CATEGORY: III
   C. SNOW IMPORTANCE FACTOR Is: 1.10

5. FUTURE LOADS:
   UNLESS SPECIFICALLY NOTED, THERE ARE NO PROVISIONS MADE FOR FUTURE FLOOR, ROOF, OR OTHER LOADS.

G2 SITEWORK/EXCAVATION:

1. FOR EXCAVATION AND BACKFILL REQUIREMENTS SEE SPECIFICATION 31 23 33.

2. FOR UTILITY TRENCHING REQUIREMENTS SEE SPECIFICATION 31 23 33.

3. SUBGRADE PREPARATION: PRIOR TO FILL PLACEMENT, FOUNDATION, AND SLAB-ON-GROUND CONSTRUCTION THE EXPOSED SUBGRADE SOILS SHALL BE EVALUATED BY GEOTECHNICAL ENGINEER. ALL STRUCTURE SUBGRADES SHALL BE PROOF ROLLED PRIOR TO PLACEMENT OF STONE SUBBASE. SUITABLE PROOF ROLLING EQUIPMENT SHALL BE DETERMINED BY GEOTECHNICAL ENGINEER. AREAS REQUIRING SUBGRADE REMEDIATION AS WELL METHODS FOR REMEDIATION SHALL BE DETERMINED BY GEOTECHNICAL ENGINEER.

G3 SAFETY:
SAFETY AND STRUCTURE STABILITY DURING CONSTRUCTION ARE THE SOLE RESPONSIBILITY OF THE DESIGN-BUILDER. STRUCTURES HAVE BEEN DESIGNED TO RESIST THE DESIGN LIVE LOADS ONLY AS A COMPLETED STRUCTURE.

G4 STANDARD DETAILS:
THE STANDARD DETAILS DEPICT TYPICAL DETAILING TO BE USED ON THIS PROJECT. IF CONDITIONS ARE NOT EXPLICITLY SHOWN ON THE DRAWINGS THEY SHALL BE MADE SIMILAR TO THE STANDARD DETAILS. OBTAIN ENGINEER APPROVAL IN WRITING FOR SIMILAR CONDITIONS PRIOR TO CONSTRUCTION.

G5 CONFLICTS:
IF THERE ARE CONFLICTS BETWEEN CONTRACT DRAWINGS AND SPECIFICATIONS, THE MORE STRINGENT INTERPRETATION SHALL CONTROL.

G6 SPECIAL INSPECTIONS:
SPECIAL INSPECTIONS ARE REQUIRED FOR THIS PROJECT.

STEEL

S1 STRUCTURAL STEEL (CARBON) DESIGN PROPERTIES (UNO):
WIDE FLANGE AND TEES: Fy=50 KSI
PIPES: Fy=35 KSI
HSS SECTIONS: Fy=42 KSI
ALL OTHER PLATES AND SHAPES: Fy=36 KSI

S2 DIMENSIONS:
TO CENTERLINES OF COLUMNS AND BEAMS, TOP SURFACES OF BEAMS AND TUBES AND BACKS OF CHANNELS AND ANGLES UNLESS NOTED OTHERWISE.

S3 ELEVATIONS:
REFER TO TOP SURFACE OF MEMBER OR FLANGE UNLESS NOTED OTHERWISE.

S4 UNLESS OTHERWISE NOTED, BOLTED BEAM CONNECTIONS SHALL BE SIMPLE FRAMED SHEAR CONNECTIONS. BOLTED STEEL CONNECTIONS SHALL BE IN ACCORDANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION LATEST EDITION USING ASTM A325 GALVANIZED BOLTS. USE ASTM A593 FOR STAINLESS STEEL CONNECTIONS WHERE REQUIRED. ALL BOLTED STRUCTURAL CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS UNLESS OTHERWISE INDICATED TO BE SLIP-CRITICAL.

S5 UNLESS OTHERWISE SHOWN ON THE DRAWINGS, CONNECTIONS SHALL BE DESIGNED FOR THE REACTIONS, AXIAL LOADS, AND MOMENTS AS PER THE FOLLOWING CRITERIA:

1. WHERE BEAM REACTIONS ARE NOT SHOWN, BEAM CONNECTIONS SHALL BE DESIGNED TO 50 PERCENT OF THE TOTAL UNIFORM LOAD CAPACITY OF THE LATERALLY-BRACED BEAM.
2. CONNECTIONS SHALL BE DESIGNED FOR AXIAL LOADS WHERE INDICATED THUS (+- 60) AS KIPS, (+) INDICATES TENSION IN MEMBER AND (-) INDICATES COMPRESSION.
3. MOMENT CONNECTIONS (MC) SHALL BE DESIGNED FOR THE MOMENT INDICATED ON THE DRAWINGS IN FOOT-KIPS. WHERE MOMENTS ARE NOT SHOWN, CONNECTIONS SHALL BE DESIGNED TO DEVELOP THE ALLOWABLE FLEXURAL STRENGTH OF THE SMALLER MEMBER.
4. UNLESS OTHERWISE NOTED, BRACING MEMBER CONNECTIONS SHALL BE DESIGNED FOR THE MAXIMUM ALLOWABLE CAPACITY OF THE BRACING MEMBER.
5. CONNECTIONS THAT ARE NOT COMPLETELY DETAILED ARE SCHEMATIC IN NATURE ONLY. ADDITIONAL COMPONENTS, SUCH AS REINFORCING MAY BE REQUIRED BASED ON LOADING CRITERIA PROVIDED OR LISTED ABOVE.

S6 WHEN FILLET WELD SIZE IS NOT INDICATED, PROVIDE MAXIMUM WELD SIZE IN ACCORDANCE WITH AISC SPECIFICATIONS.

S7 GROUT UNDER COLUMN/POST BASE SHALL NOT EXTEND ABOVE BOTTOM OF BASE PLATE. CHAMFER GROUT AT 45 DEGREES.

S8 ALL STEEL AND GRATING USED AT THE PAA PLATFORM SHALL BE STAINLESS STEEL, TYPE 304.
STAINLESS STEEL SHAPES AND PLATES: Fy=30 KSI
STAINLESS STEEL GRATING: Fy=30 KSI
SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

CONCRETE

C1 CONCRETE DESIGN PROPERTIES:
f'c = 4,500 PSI (UNO)
Fy = 60,000 PSI

REINFORCED CONCRETE SHALL COMPLY WITH ACI 318.

C2 CONCRETE COVER UNLESS OTHERWISE NOTED, PROVIDE CONCRETE COVER FOR REINFORCING AS FOLLOWS:

CONCRETE DEPOSITED AGAINST EARTH: 3"
UNDER WATERSTOPS (WALL TO SLAB): 3"
ALL OTHER: 2"
SEE DRAWINGS FOR EXCEPTIONS.

C3 SEE SPECIFICATIONS FOR REINFORCING PLACEMENT REQUIREMENTS.

C4 REINFORCING STEEL SHALL BE NEW BILLET STEEL, ASTM A615, GRADE 60.

C5 REINFORCING STEEL FABRICATION SHALL BE IN COMPLIANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE.

C6 PROVIDE 3/4" CHAMFERS AT ALL EXPOSED EDGES AND 1/2" CHAMFERS AT JOINTS AS SHOWN. NOT ALL CHAMFERS MAY BE SHOWN ON DRAWINGS.

C7 FIELD ADJUST REINFORCING AT OPENINGS AND EMBEDDED ITEMS AS SPECIFIED OR AS REQUIRED BY STANDARD DETAILS.

C8 ANCHOR BOLTS NOT SPECIFIED BY ENGINEER SHALL BE DESIGNED BY DESIGN-BUILDER IN ACCORDANCE WITH APPLICABLE PROJECT CODE REQUIREMENTS. COORDINATE LOCATION, SIZE AND EMBEDMENT PRIOR TO CASTING CONCRETE.

C9 ABSOLUTELY NO WELDING OF REINFORCING BARS OR TORCHING TO BEND REINFORCING BARS SHALL BE ALLOWED WITHOUT WRITTEN SPECIFIC APPROVAL FROM THE STRUCTURAL ENGINEER.

C10 SEE SPECIFICATIONS FOR CONCRETE TESTING REQUIREMENTS.

LAP SPLICE AND EMBEDMENT LENGTHS f'c =4.0 ksi fy = 60 ksi

BAR	BARS SPACED GREATER THAN 4"	BARS SPACED LESS THAN OR EQUAL TO 4"
#3	14"	14"
#4	19"	19"
#5	24"	30"
#6	29"	43"
#7	46"	74"
#8	60"	96"
#9	76"	122"
#10	97"	155"
#11	120"	191"

1. PROVIDE MINIMUM LAP SPLICE LENGTHS AND EMBEDMENTS PER TABLE UNLESS NOTED OTHERWISE. EMBEDMENT LENGTH EQUALS THE LAP SPLICE LENGTH UNLESS OTHERWISE NOTED.
2. BAR SPACING AT LAP SPLICE IS THE MINIMUM CLEAR DISTANCE BETWEEN LAPPED BARS PLUS ONE BAR DIAMETER.
3. ALL SPLICES TO BE CONTACT SPLICES AND WIRED TOGETHER UNLESS OTHERWISE APPROVED BY ENGINEER.
4. REQUIREMENTS FOR SPACING 4 INCHES OR LESS SHALL NOT APPLY TO "ADD" BARS AROUND OPENINGS.

REINFORCING LAP AND EMBEDMENT SCHEDULE
NTS

3
-

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	MAP
DRAWN BY	VKN
APPROVED BY	MAP
PROJECT NUMBER	10125749,10094459

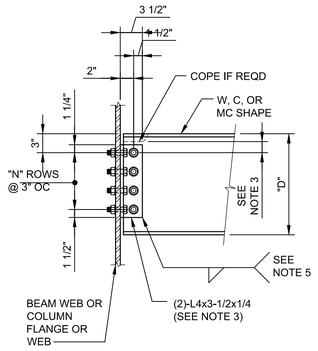
CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

STRUCTURAL NOTES AND DETAILS

FILENAME GS-01.DWG
SCALE N.T.S
SHEET GS-01

C:\pwworking\east01\d0438298\GS-01.dwg, S-01, 12/8/2020 11:00:08 AM, CCENCI

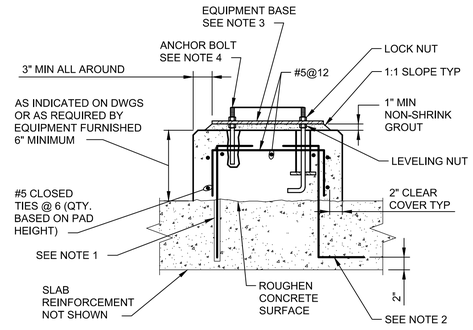


STANDARD BOLTED CONNECTION SCHEDULE		
NOMINAL BEAM SIZE "D"	NUMBER OF BOLT ROWS "N"	WELD SIZE
W8 / C8	2	3/16
W10 / C10	2	3/16
W12 / C12	3	3/16
W14	3	3/16
W16	3	1/4
W18	4	1/4

NOTES:

1. ALL BOLTS SHALL BE 3/4"Ø A325-N FOR STEEL CONSTRUCTION. ALL BOLTS SHALL BE 3/4"Ø SST FOR ALL OTHER CONSTRUCTION.
2. PROVIDE MINIMUM NUMBER OF BOLT ROWS "N" SHOWN AS THE TYPICAL CONN. INCREASE NUMBER OF ROWS AND / OR BOLT DIA. IF INDICATED ON PLANS.
3. MIN. DISTANCE FROM ℄ OF TOP BOLT TO A COPE SHALL BE 1-1/2". WHERE DEEP COPES ARE REQD., INCREASE DISTANCE FROM TOP OF BEAM TO ℄ OF TOP BOLT.
4. USE STANDARD OR SHORT HORIZONTAL SLOTTED HOLES.
5. WELD DOUBLE ANGLES TO BEAM WEB (THREE SIDES OF ANGLE) IN LIEU OF BOLTING AT CONTRACTOR'S OPTION.

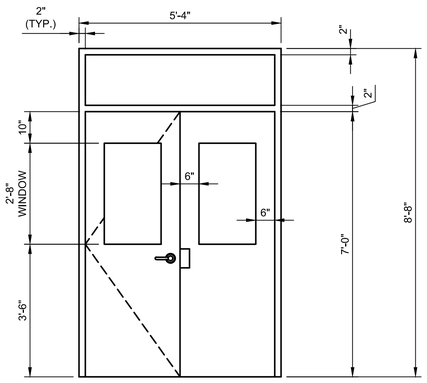
TYPICAL BEAM CONNECTION
NTS — 1 / -



NOTES:

1. FOR NEW EQUIPMENT BASES ON EXISTING SLABS, DRILL INTO EXISTING SLAB AT 12" CENTERS AROUND PERIMETER OF EQUIPMENT BASE AND SET #5 HOOKED DOWELS IN EPOXY ANCHOR. EMBEDMENT DEPTH PER EPOXY ANCHOR MANUFACTURER RECOMMENDATION TO DEVELOP REINFORCING STRENGTH.
2. FOR EQUIPMENT BASES ON NEW SLABS, PROVIDE #5 DOWELS HAVING TWO HOOKED ENDS AT 12" CENTERS AROUND PERIMETER OF EQUIPMENT BASE.
3. PAD DIMENSIONS SHALL BE AS REQUIRED BY THE APPROVED EQUIPMENT SHOP DRAWINGS. TOP OF PAD ELEVATION SHALL BE ADJUSTED AS REQUIRED FOR LEVELING GROUT.
4. ANCHOR BOLTS, SIZE AND LOCATION, AS RECOMMENDED BY THE EQUIPMENT MANUFACTURER.
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL.

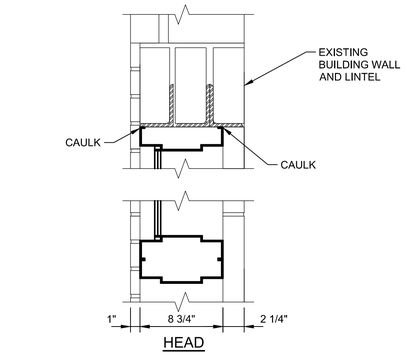
EQUIPMENT PAD DETAIL
NTS — 3 / -



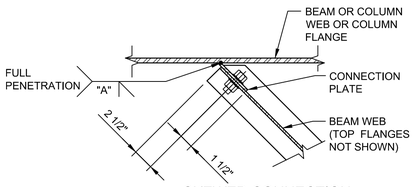
NOTES:

1. INSULATED METAL DOUBLE DOOR WITH TRANSOM. DOOR SHALL FIT EXISTING OPENING.
2. REMOVE EXISTING DOOR FRAME IF PRESENT.
3. SEE DETAIL 5 THIS SHEET FOR HEADER AND SILL DETAILS.

EXTERIOR DOOR ELEVATION
NTS — 4 / -



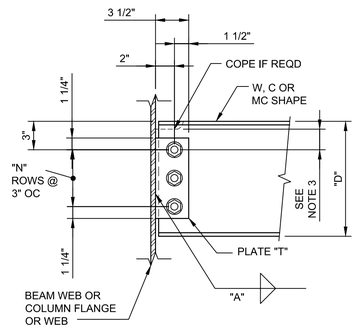
DOOR HEAD, JAMB AND SILL DETAILS
NTS — 5 / -



SKEWED CONNECTION
(IF APPLICABLE)

NOTES:

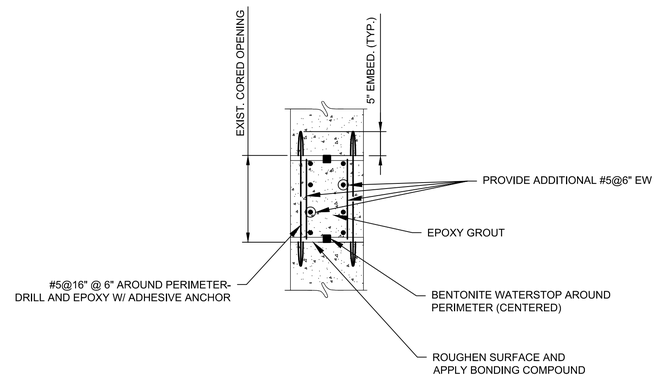
1. ALL BOLTS SHALL BE 3/4" DIA A325-N UNLESS NOTED OTHERWISE.
2. PROVIDE MINIMUM NUMBER OF BOLT ROWS "N" SHOWN AS THE TYPICAL CONN. INCREASE NUMBER OF ROWS AND / OR BOLT DIA IF INDICATED ON PLANS.
3. MIN. DISTANCE FROM ℄ OF TOP BOLT TO A COPE SHALL BE 1 1/2". WHERE DEEP COPES ARE REQD, INCREASE DISTANCE FROM TOP OF BEAM TO ℄ OF TOP BOLT.
4. USE STANDARD OR SHORT HORIZONTAL SLOTTED HOLES.



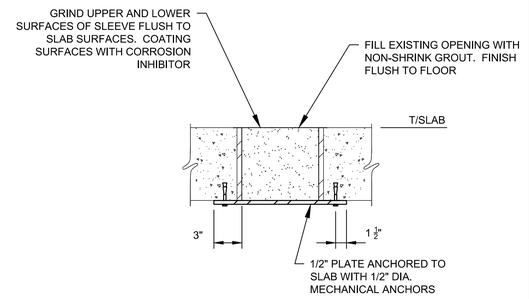
PERPENDICULAR CONNECTION

SINGLE PLATE BEAM CONNECTION SCHEDULE 3/4" DIA BOLTS			
NOMINAL BEAM DEPTH "D"	NUMBER OF BOLT ROWS "N"	PLATE THICKNESS "T"	WELD SIZE "A"
W8	2	5/16"	1/4"
W10	2	5/16"	1/4"
W12	3	5/16"	1/4"
W14	3	5/16"	1/4"
W16	4	5/16"	1/4"
W18	5	5/16"	1/4"

SINGLE PLATE BEAM CONNECTION
NTS — 2 / -



CONCRETE PATCH DETAIL
NTS — 6 / -



PIPE SLEEVE CLOSURE DETAIL
NTS — 7 / -

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

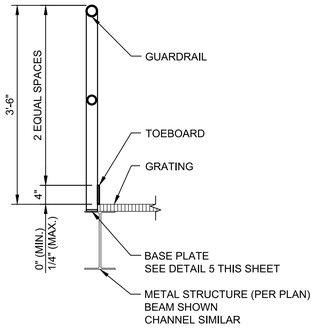
PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	MAP
DRAWN BY	VKN
APPROVED BY	MAP
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

STRUCTURAL STANDARD DETAIL

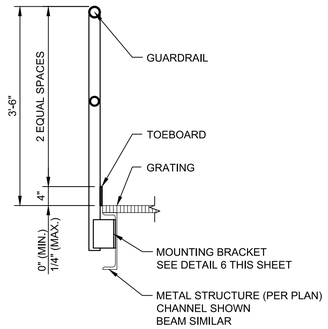
FILENAME: GS-02.DWG
SCALE: N.T.S
SHEET: GS-02



GUARDRAIL DETAIL - TOP MOUNTED ON METAL STRUCTURE BEAM

1

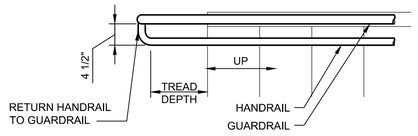
3/4"=1'-0"



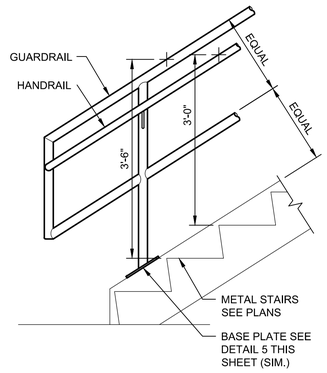
GUARDRAIL DETAIL - SIDE MOUNTED ON METAL STRUCTURE BEAM

2

3/4"=1'-0"



PLAN

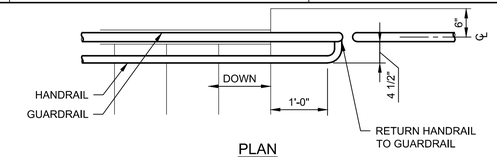


ELEVATION

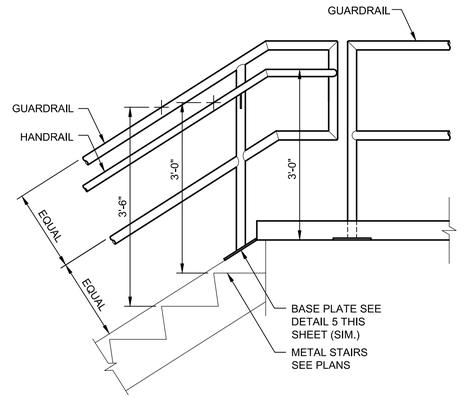
STAIR RAIL DETAIL - BOTTOM CONDITION ON METAL STAIRS

3

3/4"=1'-0"



PLAN

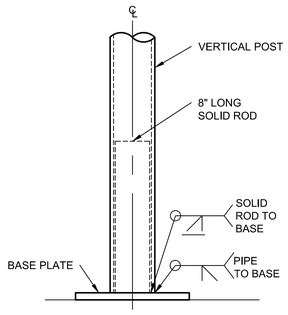


ELEVATION

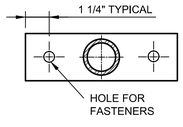
STAIR RAIL DETAIL - TOP CONDITION ON METAL STAIRS

4

3/4"=1'-0"



TYPICAL VERTICAL POST

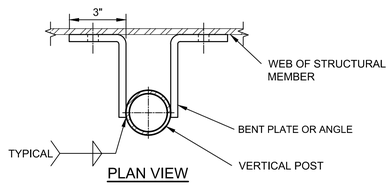


BASE PLATE FOR MOUNTING TO STEEL STRUCTURE

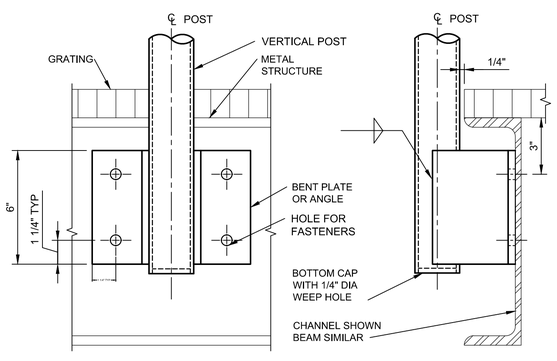
POST BASE PLATE DETAIL

5

3"=1'-0"



PLAN VIEW



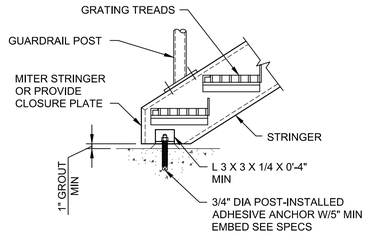
FRONT VIEW SIDE VIEW

NOTE:
1. TOEBOARD NOT SHOWN.

GUARDRAIL POST-SIDE MOUNTED ON METAL STRUCTURE

6

3"=1'-0"



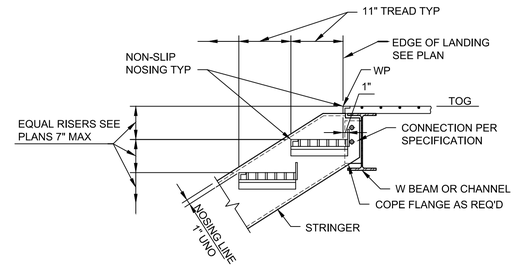
NOTES:

1. ALL STAIRS AND APPURTENANT ITEMS SHOWN ON DRAWINGS SHALL BE STAINLESS STEEL TYPE 304. ALL FASTENERS SHALL BE STAINLESS STEEL TYPE 304.

STAIR BOTTOM CONNECTION

7

3/4"=1'-0"



NOTES:

1. SEE CONTRACT DRAWINGS FOR MATERIAL TYPE.
2. FASTENER MATERIAL SHALL MATCH STAIR MATERIAL.
3. SEE SPECIFICATION 05 50 00 FOR DESIGN REQUIREMENTS.

STAIR TOP CONNECTION AT BEAM

8

3/4"=1'-0"

		PROJECT MANAGER	MEREDITH WELLE
		DESIGN BY	MAP
		DRAWN BY	VKN
		APPROVED BY	MAP
0	12/08/20	ISSUE FOR CONSTRUCTION	
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER 10125749,10094459

CITY OF STEUBENVILLE, OHIO

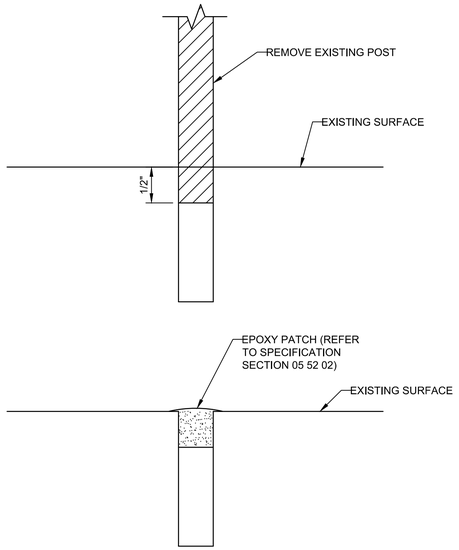
SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

STRUCTURAL STANDARD DETAILS

FILENAME GS-03.DWG

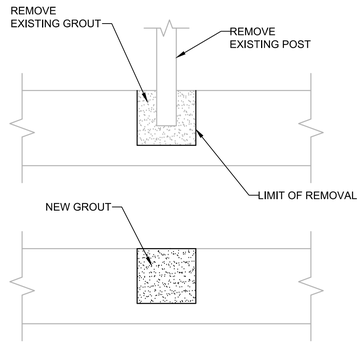
SCALE AS NOTED

SHEET GS-03



PARTIAL-DEPTH POST DEMOLITION

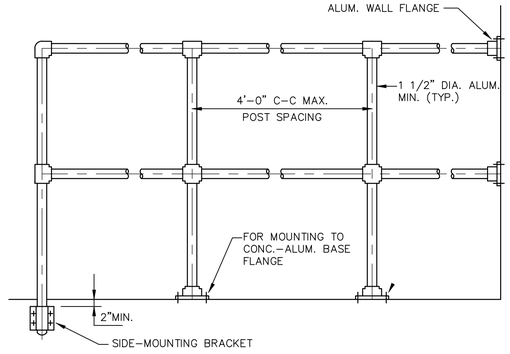
NOT TO SCALE



NOTES:
1. PROVIDE A SOUND BOND BETWEEN EXISTING CONCRETE AND NEW GROUT.
2. APPLY BONDING AGENT BETWEEN THE EXISTING CONCRETE AND THE NEW GROUT.
3. NEW GROUT TO BE NON-SHRINKING TYPE.
4. PERFORM ONLY WHEN REQUIRED.

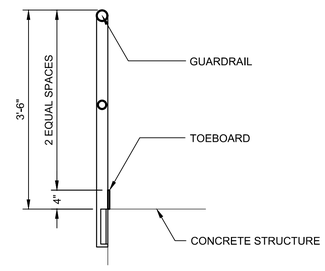
FULL-DEPTH RAILING DEMOLITION

NOT TO SCALE



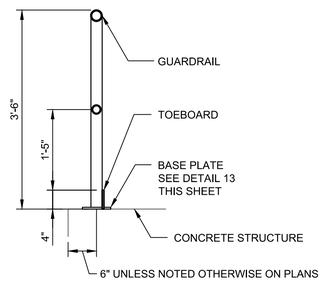
ALUMINUM GUARDRAIL DETAILS

NOT TO SCALE



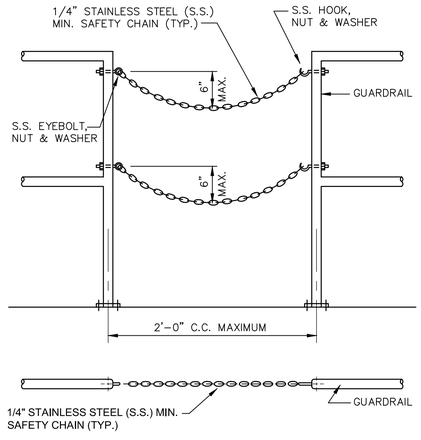
GUARDRAIL DETAIL - SIDE MOUNTED TO CONCRETE SURFACE

NOT TO SCALE



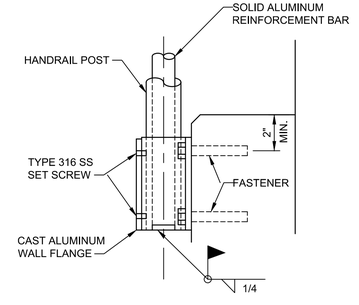
GUARDRAIL DETAIL - TOP MOUNTED TO CONCRETE SURFACE

NOT TO SCALE



SAFETY CHAIN DETAIL

NOT TO SCALE



GUARDRAIL POST - SIDE MOUNTED TO CONCRETE SURFACE

NOT TO SCALE

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

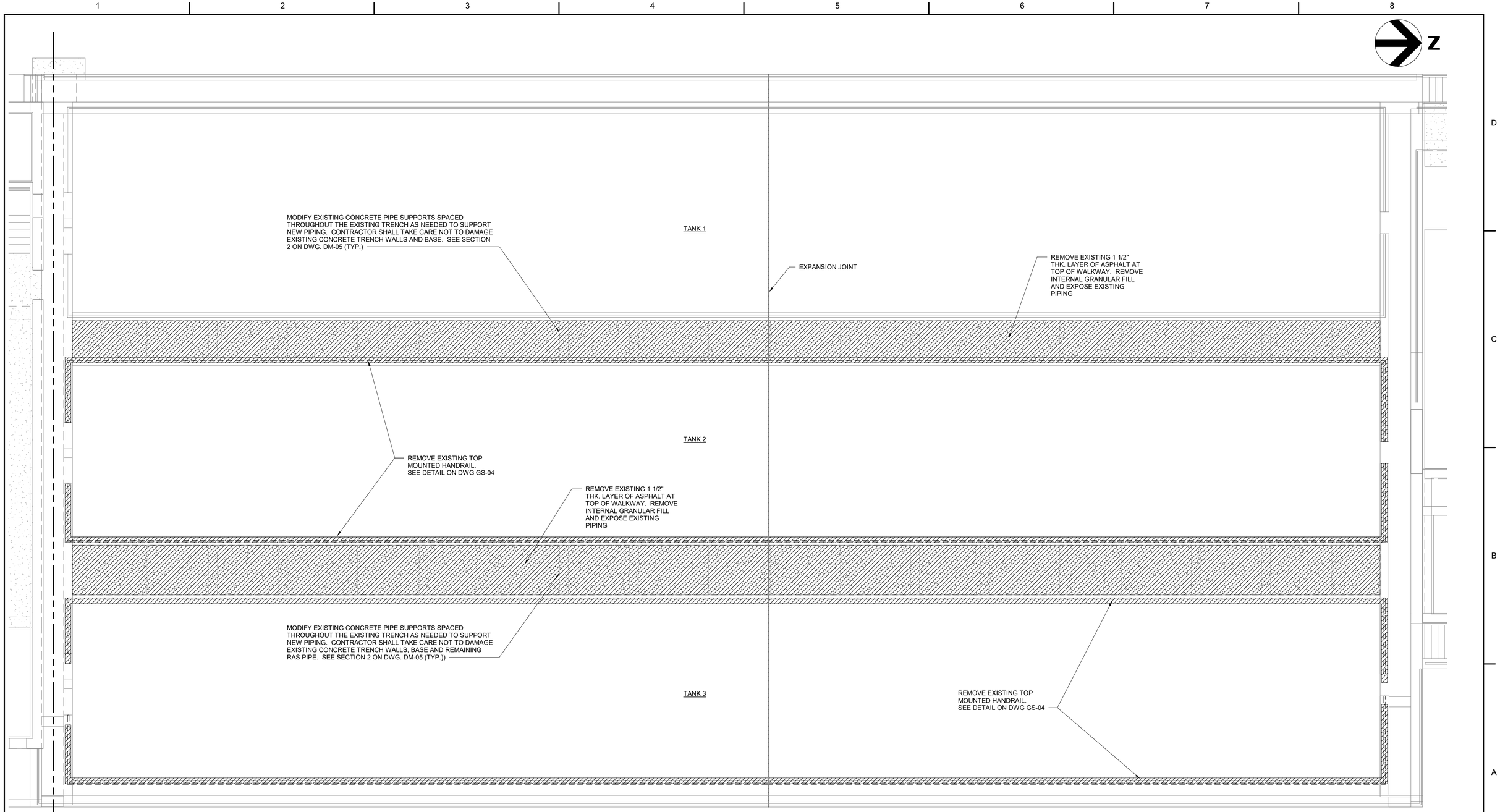
PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	MAP
DRAWN BY	VKN
APPROVED BY	MAP
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

STRUCTURAL STANDARD DETAILS

FILENAME	GS-04.DWG
SCALE	AS NOTED
SHEET	GS-04



AERATION TANK DEMOLITION PLAN @ EL. 665.00

3/16" = 1'-0"

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	MAP
DRAWN BY	JC
APPROVED BY	MAP
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

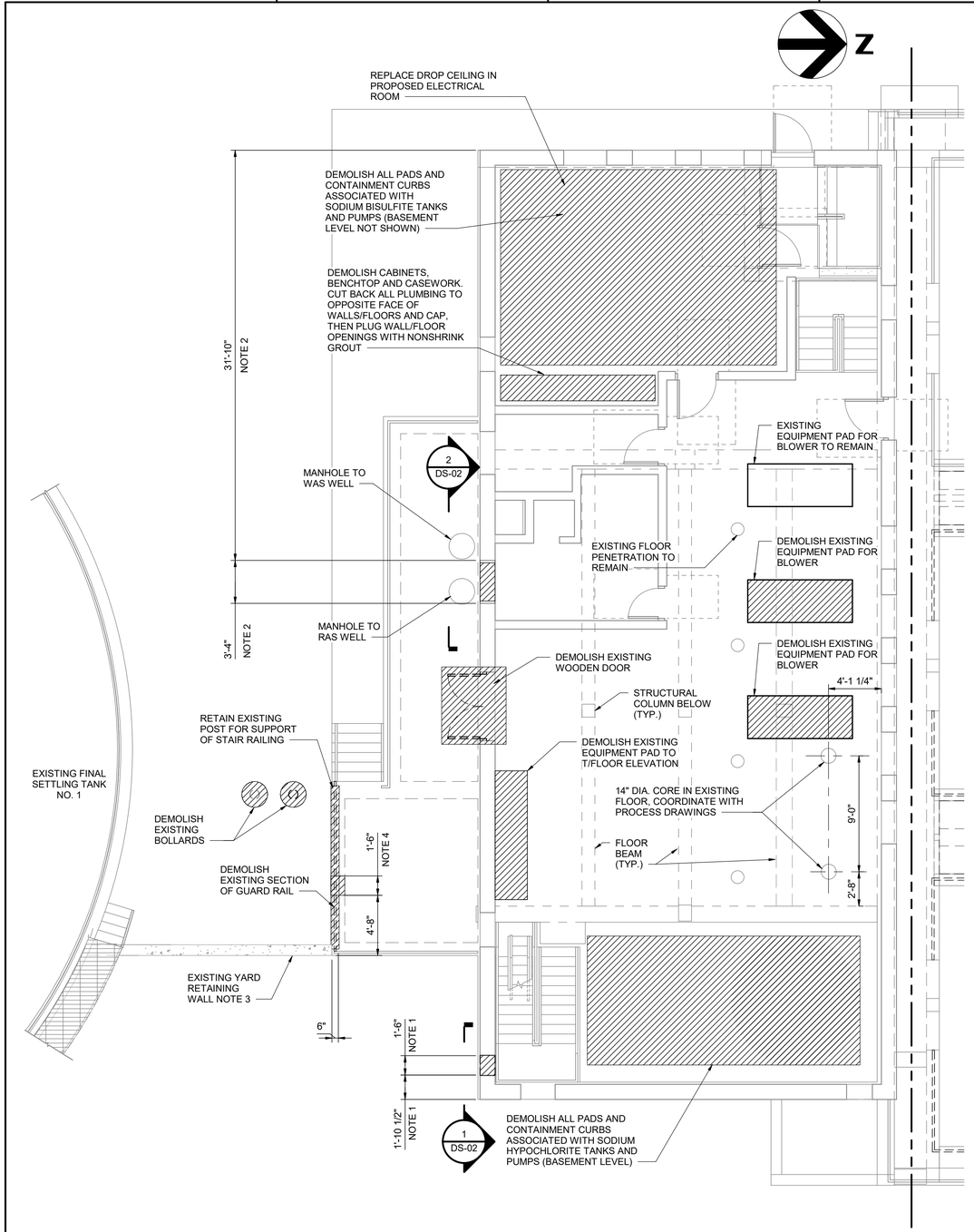
SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

AERATION TANK DEMOLITION PLAN

0 1" 2"

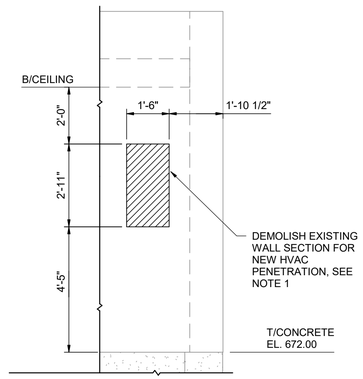
FILENAME	HDRE_ALL_DISCIPLINES.rte
SCALE	NONE

SHEET DS-01

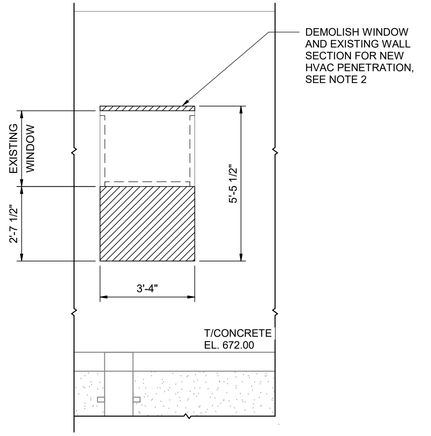


BLOWER BUILDING DEMOLITION PLAN @ EL. 672.00

3/16" = 1'-0"



1 DS-02 SECTION 3/8" = 1'-0"



2 DS-02 SECTION 3/8" = 1'-0"

NOTES:

1. CUT OPENING FOR 18" x 34" HVAC DUCT. INSTALL 3/8" x 11" PLATE IN JOINT ABOVE OPENING. EXTEND 4" MINIMUM BEYOND EACH SIDE OF OPENING. FINISH SURFACES SMOOTH FOR CAULKING AROUND DUCT. COORDINATE WALL DEMOLITION SIZE AND LOCATION WITH HVAC DRAWINGS AND HVAC MANUFACTURER DRAWINGS. PROVIDE OPENING SIZE REQUIRED.
2. REMOVE EXISTING WINDOW. CUT NOMINAL 3'-4" WIDE x 2'-8" HIGH OPENING THROUGH WALL BELOW WINDOW OPENING. FINISH SURFACES SMOOTH FOR INSTALLING 2'-10" x 5'-4" LOUVER. COORDINATE WALL DEMOLITION SIZE AND LOCATION WITH HVAC DRAWINGS AND HVAC MANUFACTURER DRAWINGS. PROVIDE OPENING SIZE REQUIRED.
3. IF APPLICABLE, ANY EXPOSED EXISTING REBAR SHALL BE CUT TO 1" BELOW CONCRETE SURFACE AND COATED WITH A CORROSION INHIBITING AGENT. FILL DEPRESSION WITH A NON-SHRINK GROUT AND MATCH TO EXISTING CONCRETE SURFACE.
4. CUT 18" WIDE BY 12" HIGH OPENING FOR ELECTRICAL CONDUITS. OPENING INVERT AT EL. 666.50. PERFORM CUTTING PER SPECIFICATION 01 73 29.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	MAP
DRAWN BY	JC
APPROVED BY	MAP
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

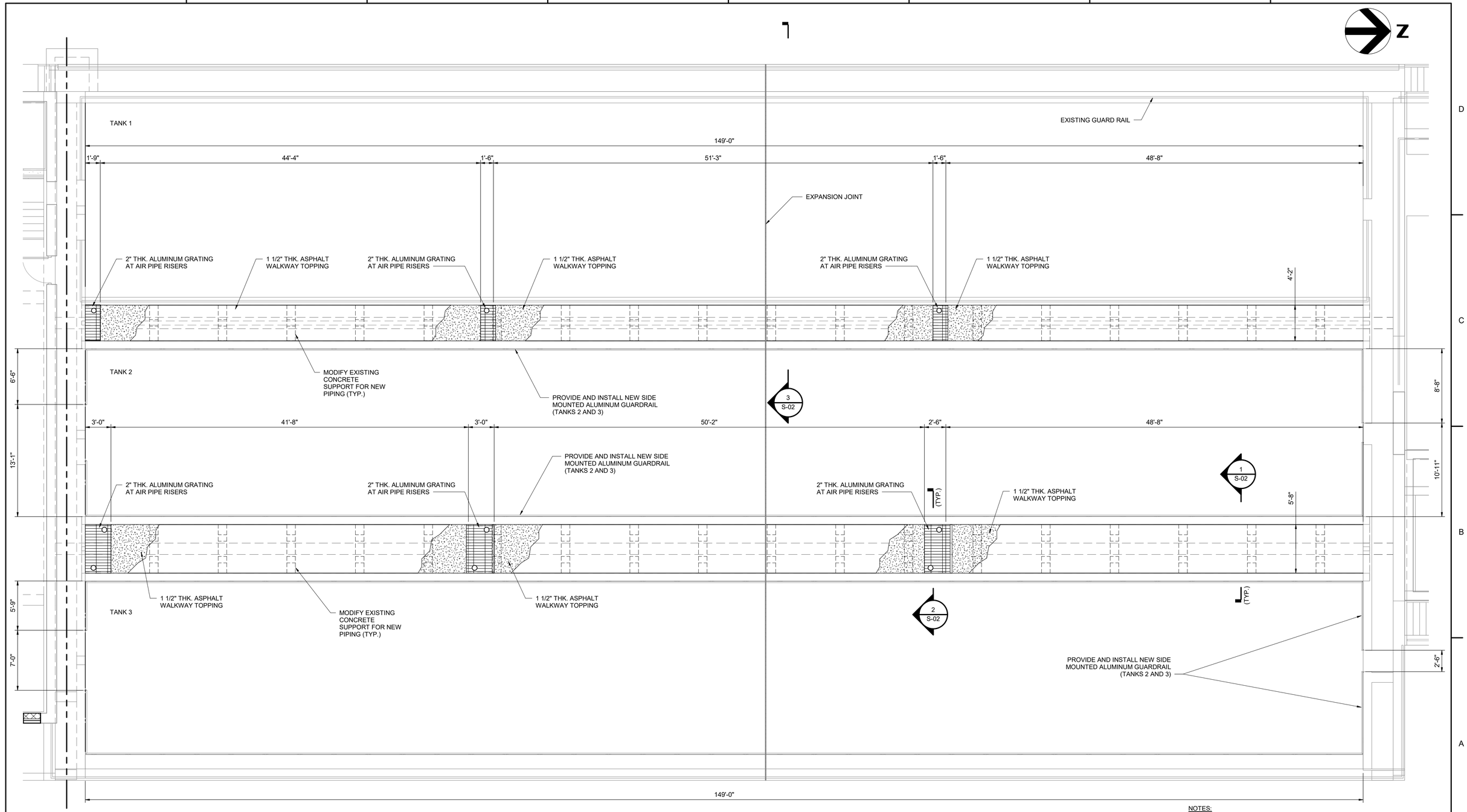
BLOWER BUILDING DEMOLITION PLAN

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET DS-02



AERATION TANK PLAN @ EL. 665.00

3/16" = 1'-0"

NOTES:

1. FOR STRUCTURAL GENERAL NOTES SEE DWG. GS-01.
2. FOR STANDARD STRUCTURAL DETAILS SEE DRAWING GS-02 TO GS-04.

ISSUE	DATE	DESCRIPTION
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APPROVED BY	MAP
PROJECT NUMBER	10125749, 10094459

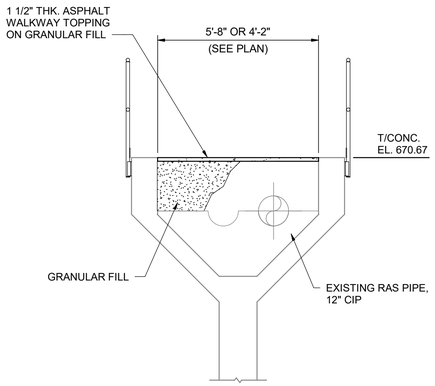
CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

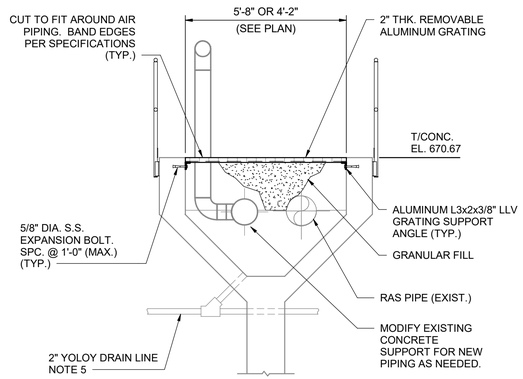
AERATION TANK MODIFICATION PLAN

0 1" 2"

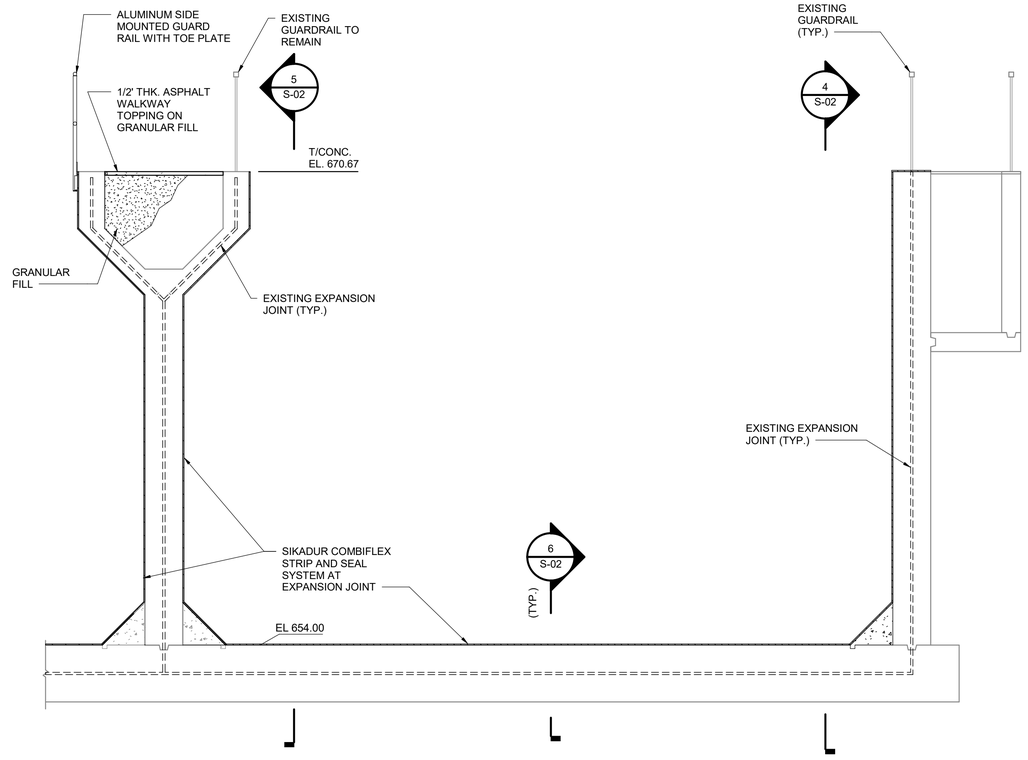
FILENAME	HDRE_ALL_DISCIPLINES.rte
SCALE	NONE
SHEET	S-01



1 S-01 SECTION 3/8" = 1'-0"



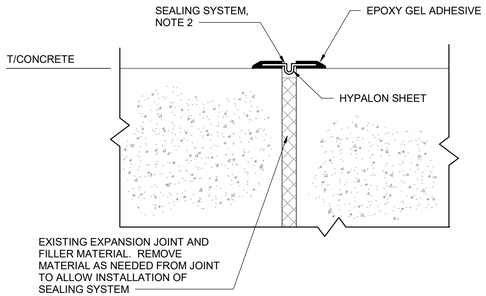
2 S-01 SECTION 3/8" = 1'-0"



3 S-01 SECTION 3/8" = 1'-0"

4 S-02 SECTION 3/8" = 1'-0"

5 S-02 SECTION 3/8" = 1'-0"



6 S-02 SECTION 1 1/2" = 1'-0"

NOTES:

1. FOR STRUCTURAL GENERAL NOTES SEE DWG. GS-01.
2. FOR STANDARD STRUCTURAL DETAILS SEE DRAWING GS-02 TO GS-04.
3. PROVIDE SIKADUR COMBIFLEX JOINT SEAL SYSTEM OR EQUAL OVER EXISTING EXPANSION JOINT. PREPARE SURFACE AREA AROUND JOINT AS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE CONTINUOUS SEAL OVER ENTIRE JOINT INSIDE OF TANK. EXTEND SIKADUR COMBIFLEX FROM BASE SLAB TO TOP OF WALL.
4. CONTRACTOR TO DESIGN AND PROVIDE A TEMPORARY COFFERDAM IF REQUIRED FOR INSTALLATION ON THE ACTIVE SIDE OF DIVIDING WALLS TO ALLOW FOR INSTALLATION OF THE COMBIFLEX SYSTEM ON THE DRY SIDE (EMPTY TANK).
5. EXISTING TRENCH DRAIN SYSTEM (TYP. AT BOTH TRENCHES). CONTRACTOR, DURING INSTALLATION OF NEW ITEMS, SHALL VERIFY ISOLATED DRAIN SYSTEM IS INTACT AND FUNCTIONING, DRAINING WATER FROM TRENCH TO OUTSIDE OF TANK. DRAIN SYSTEM SHALL BE REPAIRED IF DAMAGED OR NON-FUNCTIONING.

ISSUE	DATE	DESCRIPTION
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PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

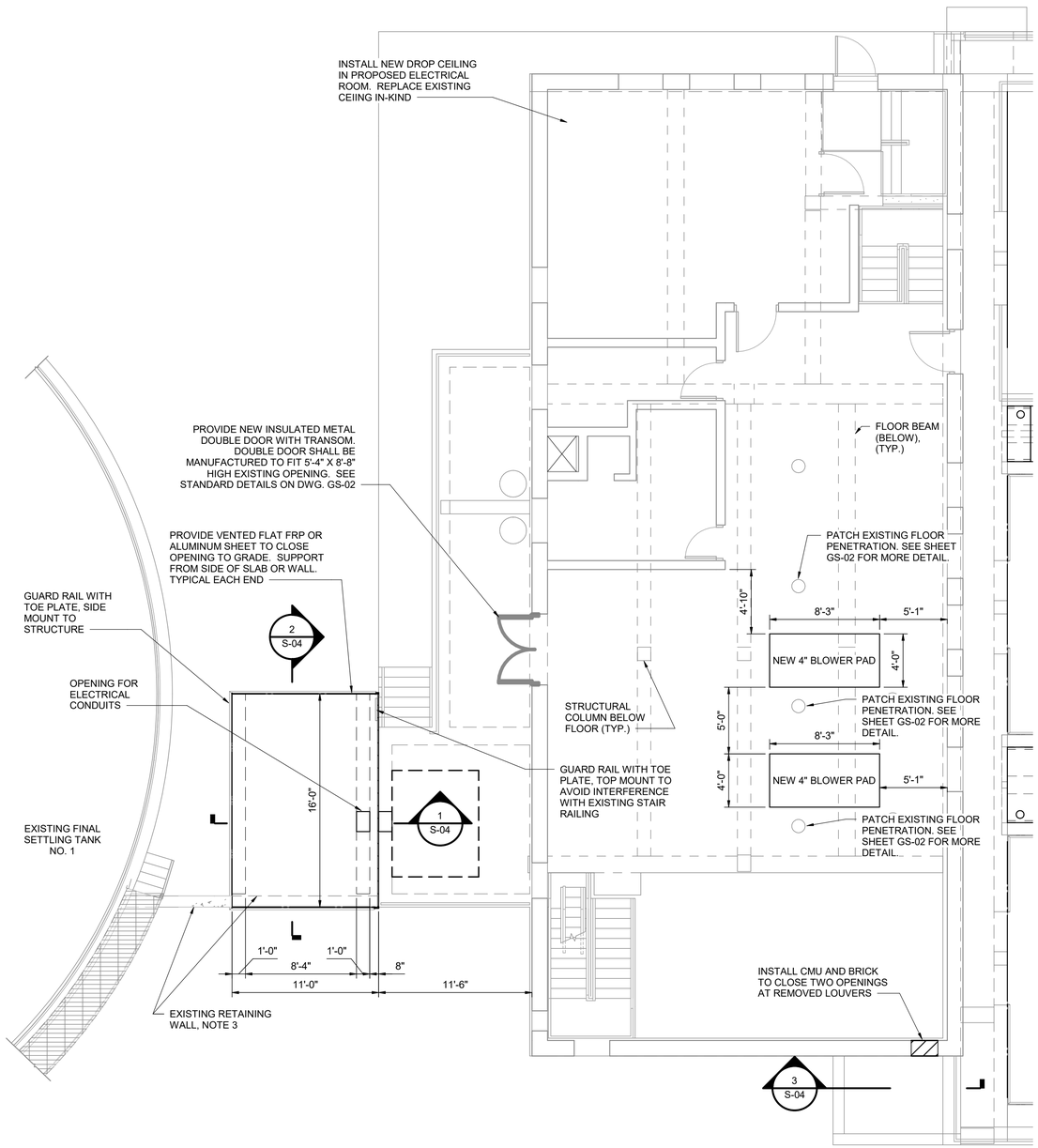
AERATION TANK MODIFICATION SECTIONS

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

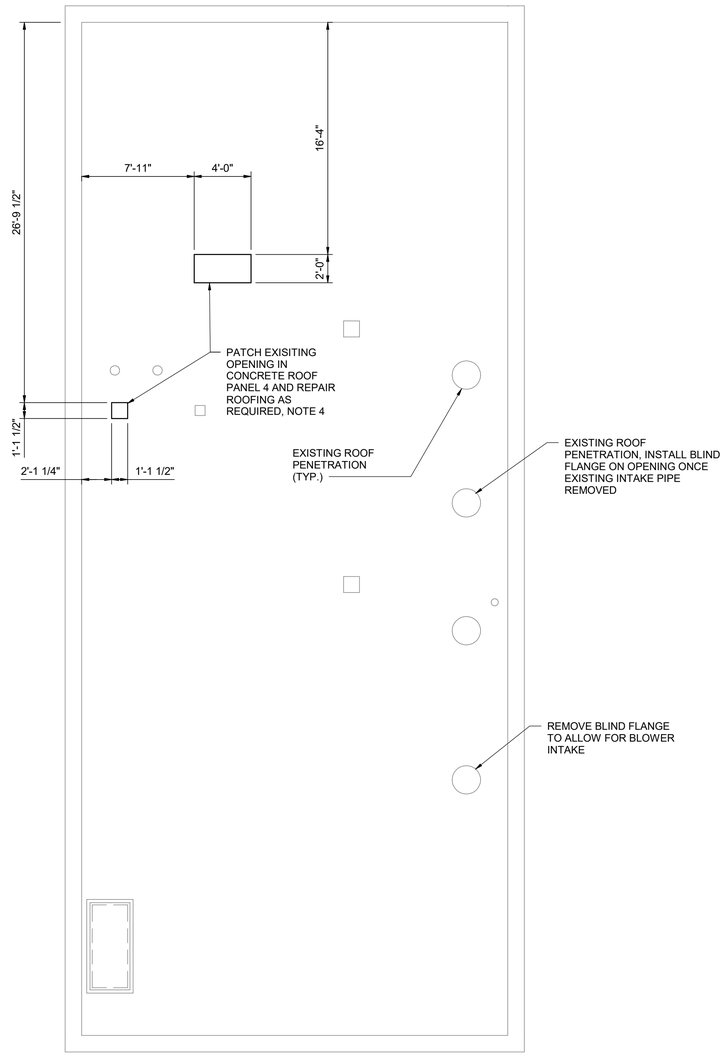
SCALE NONE

SHEET S-02



BLOWER BUILDING PLAN @ EL. 672.00

3/16" = 1'-0"



BLOWER BUILDING ROOF

3/16" = 1'-0"

NOTES:

1. FOR STRUCTURAL GENERAL NOTES SEE DWG. GS-01.
2. FOR STANDARD STRUCTURAL DETAILS SEE DRAWING GS-02 TO GS-04.
3. EXISTING YARD RETAINING WALL, FINAL SETTLING TANK NO. 1 AND PLATFORM. CONSTRUCT NEW FOUNDATION AROUND EXISTING STRUCTURES, TAKING CARE NOT TO DAMAGE OR UNDERMINE EXISTING RETAINING WALL, FINAL SETTLING TANK AND METAL ACCESS PLATFORM. PROVIDE EXPANSION MATERIAL BETWEEN NEW AND EXISTING CONCRETE SURFACES THAT ARE IN CONTACT.
4. FIELD VERIFY EXISTING ROOF PENETRATION LOCATIONS.

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PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

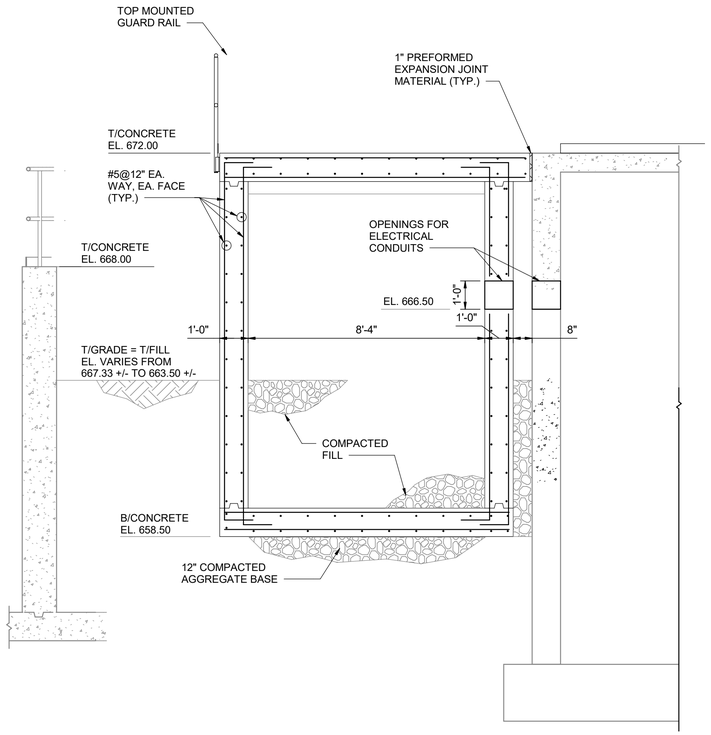
BLOWER BUILDING MODIFICATION PLAN

0 1" 2"

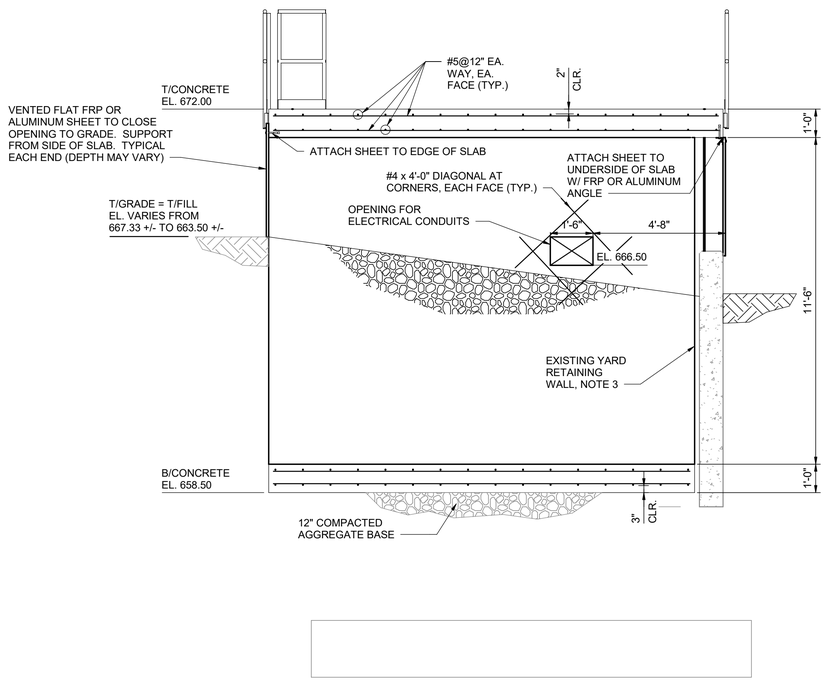
FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

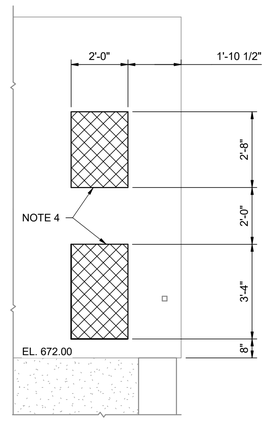
SHEET S-03



1 S-03 SECTION
3/8" = 1'-0"



2 S-03 SECTION
3/8" = 1'-0"



3 S-03 SECTION
3/8" = 1'-0"

NOTES:

1. FOR STRUCTURAL GENERAL NOTES SEE DWG. GS-01.
2. FOR STANDARD STRUCTURAL DETAILS SEE DRAWING GS-02 TO GS-04.
3. CONSTRUCT NEW FOUNDATION STRUCTURE ADJACENT TO EXISTING RETAINING WALL AND EXISTING FINAL TANK NO. 1. VERIY EXISTING CONDITIONS AND EXTENT OF EXISTING WALL. PROTECT AND SUPPORT EXISTING WALL AS REQUIRED.
4. PATCH EXISITNG WALL OPENING WITH BRICK AND SOLID CONCRETE BLOCK. NEW EXTERIOR BRICK TO MATCH EXISTING EXTERIOR WALL IN COLOR AND TEXTURE. NEW SOLID CONCRETE BLOCK TO MATCH EXISTING.

ISSUE	DATE	DESCRIPTION
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DRAWN BY	JC
APPROVED BY	MAP
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

BLOWER BUILDING SECTIONS

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET S-04

PIPING SYMBOLOGY

VALVES

SINGLE LINE	DOUBLE LINE	ISOLATION
		BALL VALVE
		BUTTERFLY VALVE
		DIAPHRAGM VALVE
		GATE VALVE
		GLOBE VALVE
		KNIFE GATE VALVE
		NEEDLE VALVE
		PINCH VALVE
		PLUG VALVE
		THREE-WAY BALL VALVE
		THREE-WAY PLUG VALVE
		CONTROL
		BALL CHECK VALVE
		CHECK VALVE
		DOUBLE-DISK CHECK VALVE
		CONE VALVE
OR	OR	PRESSURE RELIEF VALVE
		PRESSURE-REDUCING VALVE
X	X	AIR RELEASE VACUUM VALVE A = AIR RELEASE VAC = VACUUM
		PRESSURE-REGULATING VALVE
		3-WAY CONTROL VALVE

MISCELLANEOUS

- PIPE JOINT (SEE SPECS FOR REQUIREMENTS)
- COMPRESSION SLEEVE TYPE COUPLING
- FLANGED COUPLING ADAPTER (FCA)
- FLEXIBLE CONNECTION
- HARNESSED MECHANICAL COUPLING
- PRESSURE GAGE (W/COCK)
- TRAP
- QUICK DISCONNECT CAM & GROOVE COUPLING
- CAP OR PLUG
- CO — INTERIOR CLEANOUT
- HB-X — HOSE VALVE, HOSE BIBB, OR FLUSHING CONNECTION
- HR-X — HOSE RACK
- FD-X — FLOOR DRAIN

X = TYPE DESIGNATED IN SPECIFICATIONS

- PIPE IN SECTION
- BU — BELL UP (PLAN)
- BU — BELL UP (SECTION OR SCHEMATIC)
- D — DRAIN (SECTION OR SCHEMATIC)
- ATA — AIR TOOL ASSEMBLY
- AVS — AUTOMATIC VALVE STATION
- PRS — PRESSURE-REDUCING STATION

MISCELLANEOUS

- BACKFLOW PREVENTER
- M — WATER METER
- VARIABLE AREA METER
- UNION
- WYE-STRAINER
- PENETRATION THROUGH STRUCTURE
- FLEXIBLE HOSE OR TUBING
- FLEXIBLE PIPING CONNECTION
- LINE SIZE CHANGE (CONCENTRIC REDUCER)
- LINE SIZE CHANGE (ECCENTRIC REDUCER)
- LINE TURNING DOWN
- LINE TURNING UP
- BLIND FLANGE
- PIPE BREAK

NOTE:
MISCELLANEOUS SYMBOLOGY SHOWN IS FOR SINGLE-LINE PIPING. DOUBLE-LINE PIPING SYMBOLS ARE SIMILAR.

PLUMBING SYMBOLOGY

- VT — VENT (VT)
- POTABLE WATER, COLD (PWC)
- POTABLE WATER, HOT (PWH)

HVAC SYMBOLOGY

- 24x18 — SUPPLY AIR OR OUTSIDE AIR DUCT UP (SECTION CUT, FIRST DIMENSION DUCT WIDTH)
- SUPPLY AIR OR OUTSIDE AIR DUCT DOWN (NO SECTION CUT)
- RETURN AIR DUCT UP (SECTION CUT)
- RETURN AIR DUCT DOWN (NO SECTION CUT)
- EXHAUST AIR DUCT UP (NO SECTION CUT)
- EXHAUST AIR DUCT DOWN (NO SECTION CUT)
- ROUND ELBOW UP
- ROUND ELBOW DOWN
- TRANSITION - DOUBLE SIDED
- TRANSITION - ONE SIDED
- TRANSITION - RECTANGULAR TO ROUND DUCT
- STANDARD BRANCH - FOR SUPPLY AIR W/EXTRACTOR AND RETURN AIR W/O EXTRACTOR
- ELBOW - W/TURNING VANE (RECTANGULAR)
- ELBOW - W/TURNING VANES (RECTANGULAR), SMOOTH RADIUS
- GOOSENECK HOOD (COWL)
- 18x24 — RECTANGULAR DUCT OR OPENING SIZE - FIRST NUMBER INDICATES SIZE OF SIDE SHOWN
- 18" DIA — ROUND DUCT SIZE
- R OR D — RECTANGULAR DUCT INCLINE - RISE OR DROP IN RESPECT TO THE AIR FLOW
- R OR D — ROUND DUCT INCLINE - RISE OR DROP IN RESPECT TO THE AIR FLOW
- 18x24 — HIDDEN DUCT
- T 9'-10" / B 9'-0" / 18x10 — DUCT ELEVATION TAG ABOVE FINISH FLOOR
- PRESSURE/TEMPERATURE TEST PLUG (PETE PLUG OR EQUAL)
- SA — SOUND ATTENUATOR
- SD SD — SPLITTER DAMPER
- VD, BDD — VD = VOLUME DAMPER; BDD = BACKDRAFT DAMPER
- M — MOTOR OPERATED DAMPER
- FIRE DAMPER
- SMOKE DAMPER
- SMOKE AND FIRE DAMPER

- FLEXIBLE CONNECTION
- FLEXIBLE DUCT
- ACOUSTICAL LINING - DUCT DIMENSIONS FOR NET FREE AREA
- SIZE / CFM — SUPPLY AIR REGISTER OR GRILLE - W/DUCT-MOUNTED EXTRACTOR
- SIZE / CFM — EXHAUST AIR OR RETURN AIR REGISTER OR GRILLE
- SIZE / CFM — EXHAUST AIR OR RETURN AIR REGISTER OR GRILLE
- SIZE / CFM — SUPPLY AIR ASSEMBLY SQUARE DIFFUSER
- SIZE / CFM — SUPPLY AIR ASSEMBLY ROUND DIFFUSER
- WALL LOUVER
- AD PLAN / AD SECTION — ACCESS DOOR
- UC 3/4" — UNDERCUT DOOR 3/4"
- AD — ACCESS DOOR OR ACCESS PANEL IN DUCTWORK
- INTAKE OR RELIEF HOOD
- DOOR GRILLE
- AIR FLOW — BACKDRAFT DAMPER
- EXHAUST ROOF VENTILATOR PROPELLER OR CENTRIFUGAL TYPE
- PROPELLER WALL FAN
- ROOM AIR CONDITIONING UNIT
- INTAKE/EXHAUST LOUVER
- SUPPLY, RETURN OR EXHAUST FAN
- AIR FILTER

HVAC CONTROL SYMBOLOGY

TC	TEMPERATURE CONTROLLER
TT	TEMPERATURE TRANSMITTER
TS	TEMPERATURE SWITCH
T	THERMOSTAT
TI	TEMPERATURE INDICATOR
%	PERCENTAGE TIMER
RC	RECEIVER CONTROLLER
HOA	HAND-OFF-AUTO
MS	MOTOR STARTER
M	DAMPER ACTUATOR
PI	PRESSURE INDICATOR
FRZ	FREEZE STAT
FS	FIRE STAT
DPS	DIFFERENTIAL PRESSURE SWITCH
SD	SMOKE DETECTOR
FS	FLOW SWITCH
PS	PRESSURE SWITCH
— — D — —	TIME DELAY
M	MINIMUM POSITION RELAY
S	SIGNAL
AO	ANALOG OUTPUT
AI	ANALOG INPUT
DO	DIGITAL OUTPUT
DI	DIGITAL INPUT
C	COMMON PORT
S	SIGNAL PORT
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
	BALANCING VALVE
RHC	RESISTANCE HEATING CONTACTOR
TA	TEST-AUTO
TOA	TEST-OFF-AUTO
	ELECTRIC SIGNAL
	PIPING
	BULB-TYPE THERMOSTAT

AIR FLOW SCHEMATIC AND TEMPERATURE CONTROL DIAGRAM SYMBOLOGY

- C / C — CHILLED WATER COOLING COIL
- H / C — HOT WATER HEATING COIL
- EP / R — DIRECT EVAPORATIVE COOLER
- D / X — DIRECT EXPANSION COOLING COIL
- EH / C — ELECTRIC HEATING COIL
- VFD — VFD (VARIABLE FREQUENCY DRIVE)
- H / C CAV — CONSTANT AIR VOLUME BOX WITH REHEAT COIL
- H / C VAV — VARIABLE AIR VOLUME BOX WITH REHEAT COIL

MISCELLANEOUS SYMBOLOGY

- MIST ELIMINATOR
- ACTIVATED CARBON OR CHEMICAL FILTER
- CENTRIFUGAL PUMP
- SPRAY NOZZLE/HUMIDIFIER

GENERAL NOTES:

1. THIS IS A STANDARD PROCESS, MECHANICAL AND PLUMBING SYMBOLOGY SHEET. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
3. SEE INSTRUMENTATION LEGEND SHEET FOR PROJECT-SPECIFIC EQUIPMENT SYMBOLS, EQUIPMENT ABBREVIATIONS, AND PIPING SYSTEM ABBREVIATIONS.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JTB
DRAWN BY	VKN
APPROVED BY	MJW
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

MECHANICAL LEGEND

FILENAME	GM-01.DWG
SCALE	NOT TO SCALE
SHEET	GM-01

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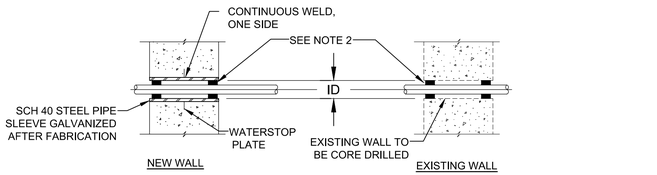
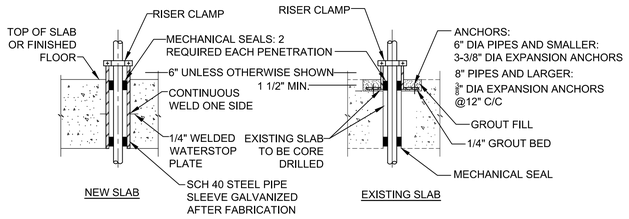


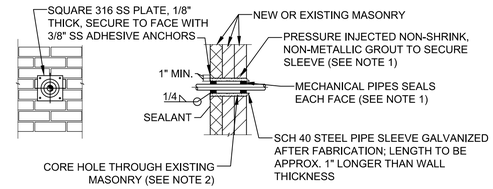


NOTES:

1. SLEEVE ID (UNLESS NOTED OTHERWISE)
   - A. FOR FLANGE PIPE: FLANGE OD PLUS 2.0 INCHES
   - B. FOR OTHER PIPES:
     - A. WHERE MECHANICAL SEALS ARE CALLED FOR: AS RECOMMENDED BY SEAL MFGR.
     - B. OTHER LOCATIONS: PIPE OD PLUS 4.0 INCHES.
     - C. FOR INSULATED PIPE: USE OD OF INSULATION TUBE AS PIPE OD.
2. PROVIDE MECHANICAL SEALS AT EACH PENETRATION.

TYPE 1 PIPE PENETRATION DETAIL (THROUGH CONCRETE) 1

SCALE: NTS

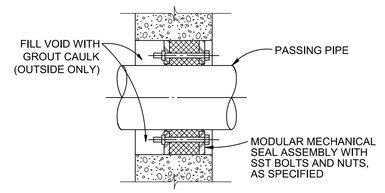


NOTES:

1. MECHANICALLY SEAL PIPE TO SLEEVE PRIOR TO SECURING AND GROUTING SLEEVE TO EXISTING WALL TO ASSURE CORRECT PIPE ALIGNMENT AND ELEVATION.
2. MAINTAIN A MINIMUM 2 INCHES CLEARANCE BETWEEN OUTSIDE DIAMETERS OF CORED HOLES FOR ADJACENT PIPING.

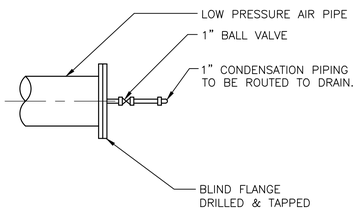
TYPE 2 PIPE PENETRATION DETAIL (THROUGH MASONRY) 2

SCALE: NTS



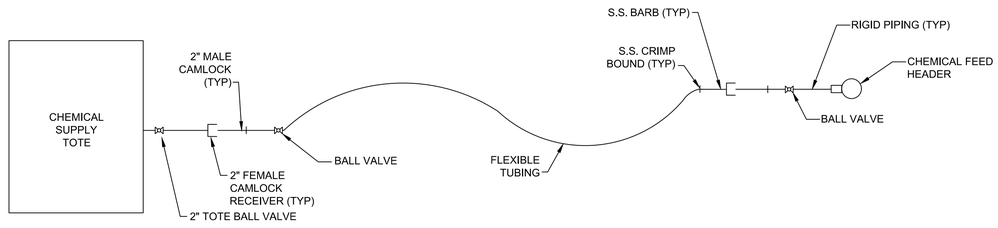
WALL PENETRATION SEAL DETAIL 3

SCALE: NTS



CONDENSATE DRAIN DETAIL 4

SCALE: NTS



CHEMICAL TOTE CONNECTION TO CHEMICAL FEED DETAIL 5

SCALE: NTS

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0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JTB
DRAWN BY	VKN
APPROVED BY	MJW
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

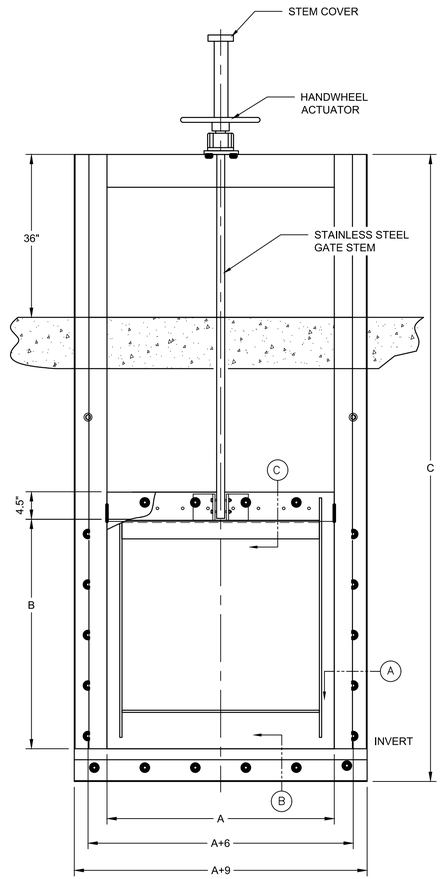
SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

MECHANICAL DETAILS

FILENAME	GM-02.DWG
SCALE	NOT TO SCALE
SHEET	GM-02

C:\pwworking\east01\d0945228\GM-02.dwg, Plot, 12/8/2020 2:49:09 PM, CCENCI

SLIDE GATE DIMENSIONS			
GATE NAME	A (GATE WIDTH)	B (GATE HEIGHT)	C (FRAME HEIGHT)
INFLUENT GATES	30"	52"	101"
EFFLUENT GATES	36"	44"	92"

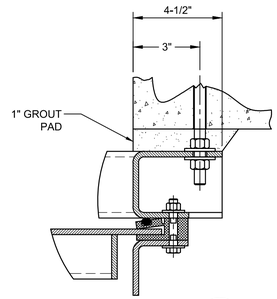


NOTE:

1. MATCH GATE DIMENSIONS WITH EXISTING SLIDE GATES. SIZES SHOWN PER RECORD DRAWINGS, FIELD VERIFY.

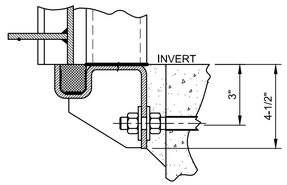
WALL-MOUNTED SELF-CONTAINED RISING STEM STAINLESS STEEL SLIDE GATE 1

SCALE: NTS



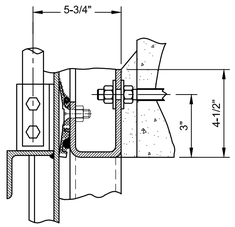
SECTION A

SCALE: NTS



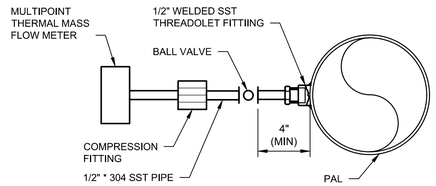
SECTION B

SCALE: NTS



SECTION C

SCALE: NTS

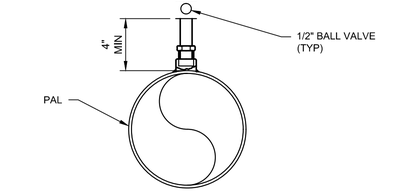


NOTE:

1. COORDINATE DIMENSIONS IDENTIFIED WITH AN ASTERISK (*) WITH THE FLOW METER MANUFACTURER'S INSTALLATION REQUIREMENTS.

FLOW METER 2

SCALE: NTS

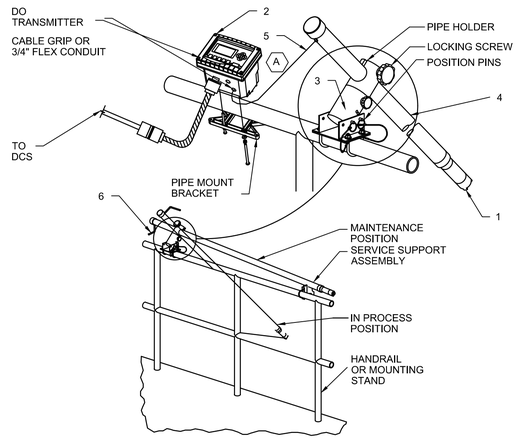


NOTE:

1. PROVIDE GOAL-POST CONFIGURATION WHERE PRESSURE TRANSMITTER IS REQUIRED.

PRESSURE INSTRUMENTS 3

SCALE: NTS



INSITU MOUNT

GENERAL NOTES:

1. INSTRUMENT ENCLOSURE RATING SHALL CONFIRM TO SECTION 16050 TABLE 1.3.
2. ALL MOUNTING HARDWARE SUPPLIED BY INSTRUMENT MANUFACTURER.
3. PROVIDE TRANSMITTER SUN SHIELD.

KEYNOTES:

A. INSTEAD OF CABLE ARRANGEMENT A CONDUIT MAY BE SUBSTITUTED.

BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	SUPPLY	MATERIAL/RATING (WATER)	MATERIAL/RATING (CHEMICAL)
1	1	SENSOR	MANF	PVC	PVC
2	1	DO TRANSMITTER	MANF	EPOXY COATED ALUMINIUM	EPOXY COATED ALUMINIUM
3	1	PIPE & SWIVEL LOCKING SCREWS	MANF	316 SS	316 SS
4	1	1 1/2" EXTENSION PIPE, LENGTH AS REQUIRED	MANF	PVC	PVC
5	1	FLOAT	MANF	PVC	PVC
6	1	SENSOR CABLE	MANF	PER VENDOR	PER VENDOR

DO SENSOR INSTALLATION 4

SCALE: NTS

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

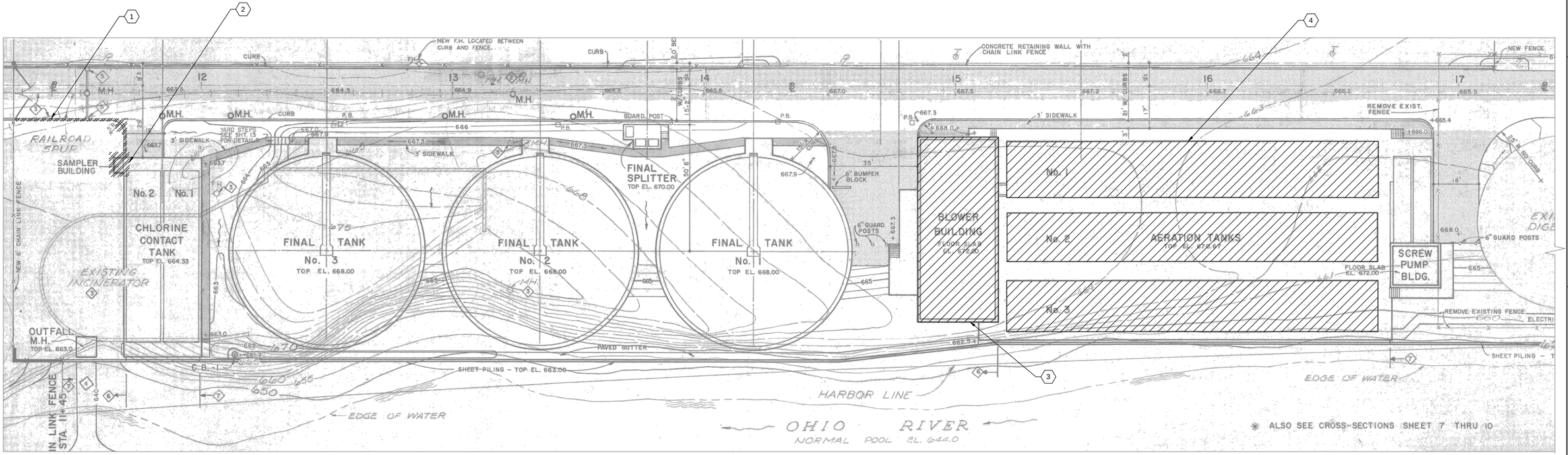
PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JTB
DRAWN BY	VKN
APPROVED BY	MJW
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

MECHANICAL DETAILS

FILENAME GM-03.DWG | SCALE NOT TO SCALE | SHEET GM-03



SITE DEMOLITION PLAN

NTS

GENERAL NOTES

1. THE BACKGROUND DRAWING IS A SCANNED RECORD DRAWING BY BURGESS & NIPLE, LIMITED AND W.E. QUICKSALL & ASSOC. INC. HDR IS NOT RESPONSIBLE FOR THE ACCURACY OF THIS DRAWING. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS AND CONDITIONS RELATED TO EXISTING CONSTRUCTION AND MAKE MINOR ADJUSTMENTS AS REQUIRED. CONTRACTOR SHALL REPORT SIGNIFICANT VARIATIONS TO THE ENGINEER.
2. THE SCANNED DRAWING IS NOT TO SCALE.

KEY NOTES

1. REMOVE CONCRETE CURB.
2. REMOVE SAMPLER BUILDING. SEE SHEET DM-06.
3. REMOVE EXISTING BLOWER BUILDING EQUIPMENT, TANKS, AND PIPING AS SHOWN ON SHEET DM-02.
4. REMOVE EXISTING AERATION TANK PIPING AS SHOWN ON SHEET DM-03.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	SPR
DRAWN BY	VKN
APPROVED BY	MJW
PROJECT NUMBER	10125749,10094459

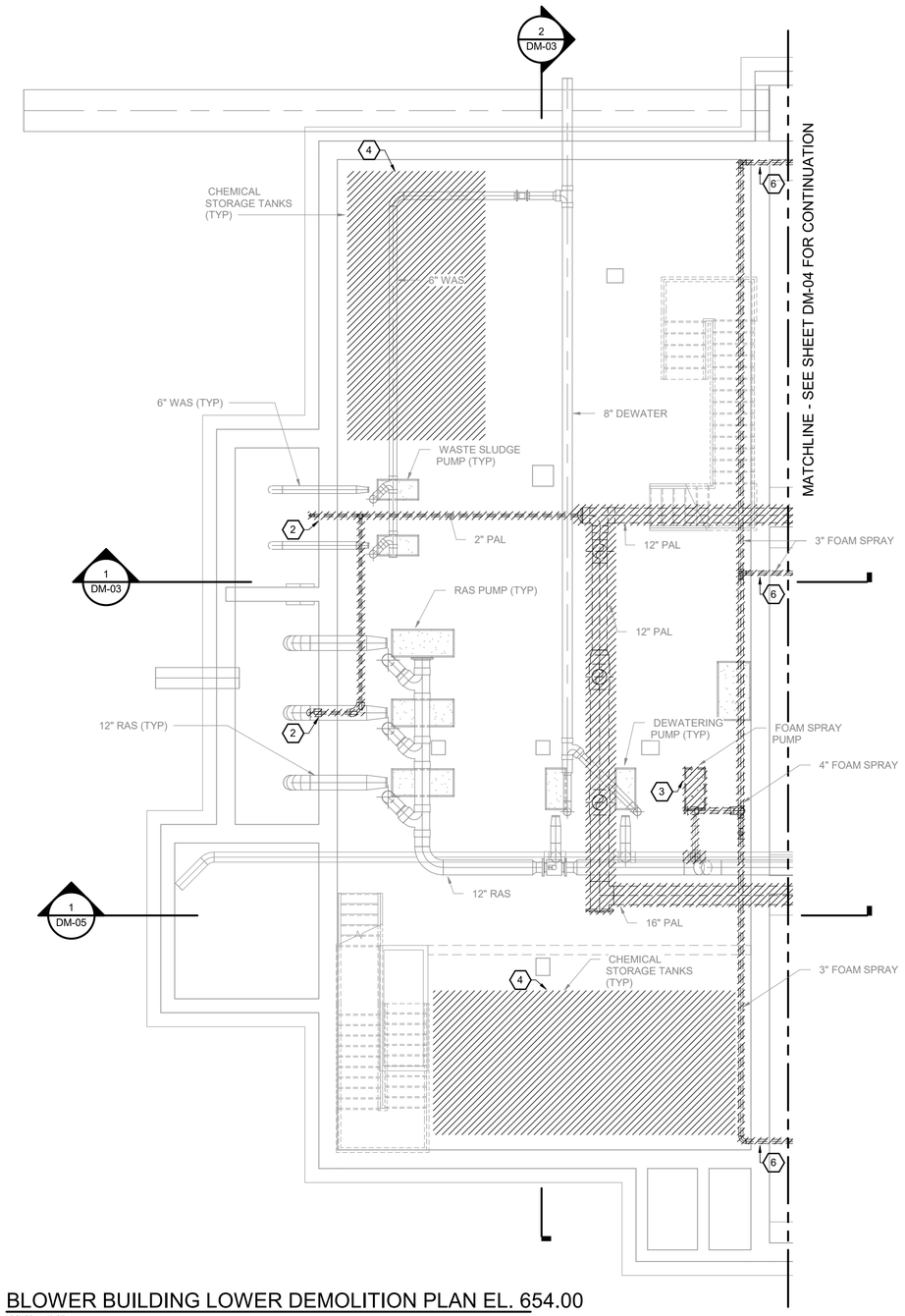
CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

OVERALL SITE DEMOLITION PLAN

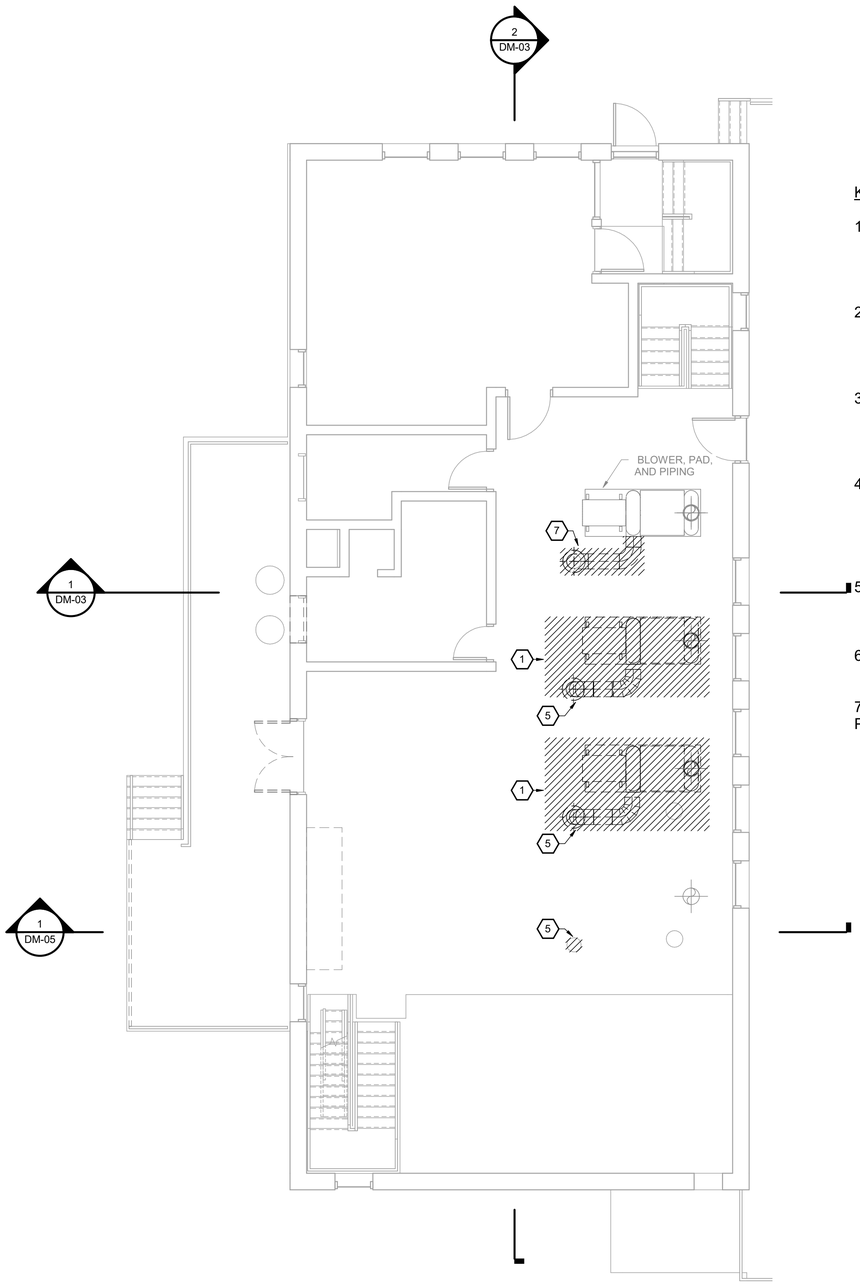
FILENAME	DM-01.DWG
SCALE	AS NOTED
SHEET	DM-01

C:\pwworking\esa01\d0438298\DM-01.dwg, X-01, 12/8/2020 9:25:00 AM, CCENCI



BLOWER BUILDING LOWER DEMOLITION PLAN EL. 654.00

3/16" = 1'-0"



BLOWER BUILDING UPPER DEMOLITION PLAN EL. 672.00

3/16" = 1'-0"

KEYNOTES:

1. DEMOLISH EXISTING BLOWER AND BLOWER PAD, INCLUDING ALL PIPING, VALVES AND APPURTENANCES.
2. PATCH AND SEAL EXISTING OPENINGS TO THE RAS AND WAS WETWELLS. SEE STRUCTURAL DETAIL.
3. DEMOLISH EXISTING FOAM SPRAY PUMP AND PUMP PAD, INCLUDING ALL PIPING, VALVES AND APPURTENANCES.
4. DEMOLISH EXISTING CHEMICAL STORAGE TANKS AND TANK PAD. ALL ASSOCIATED PUMPS, PIPES, VALVES AND APPURTENANCES SHALL BE REMOVED ALSO.
5. SEAL EXISTING FLOOR PENETRATIONS. SEE STRUCTURAL DETAIL.
6. SEAL EXISTING WALL PENETRATION. SEE STRUCTURAL DETAIL.
7. DEMO AND REPLACE DISCHARGE PIPING FOR BLOWER #1.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

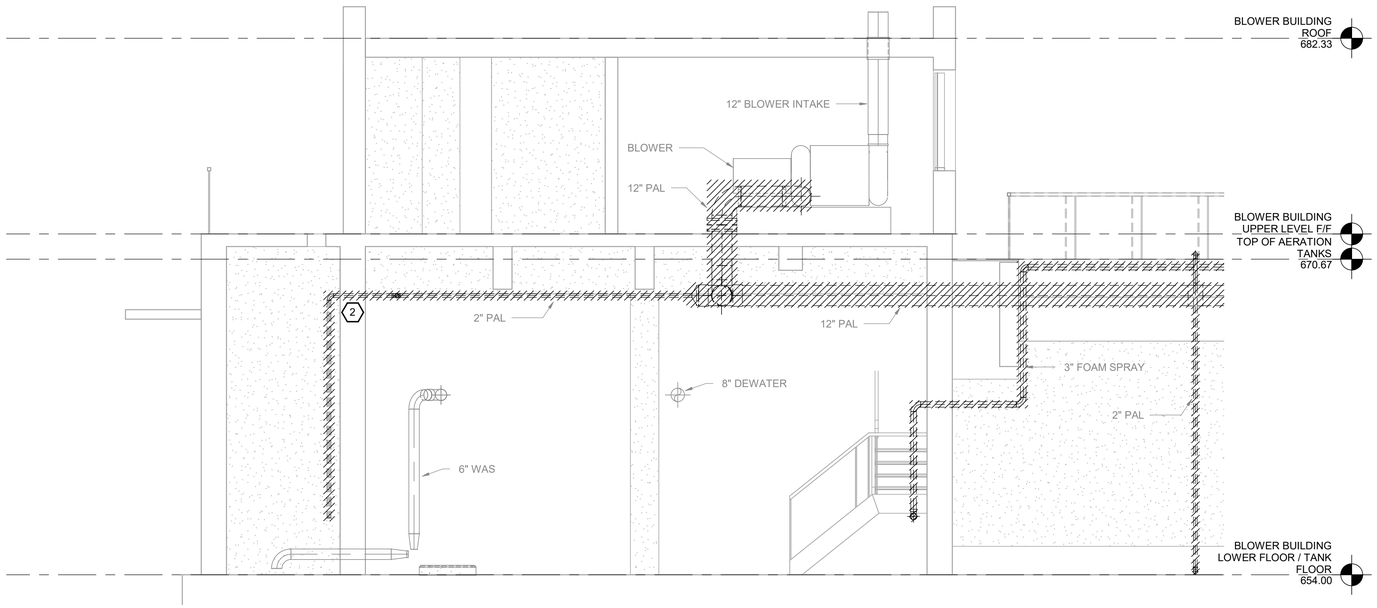
BLOWER BUILDING DEMOLITION PLANS

0 1" 2"

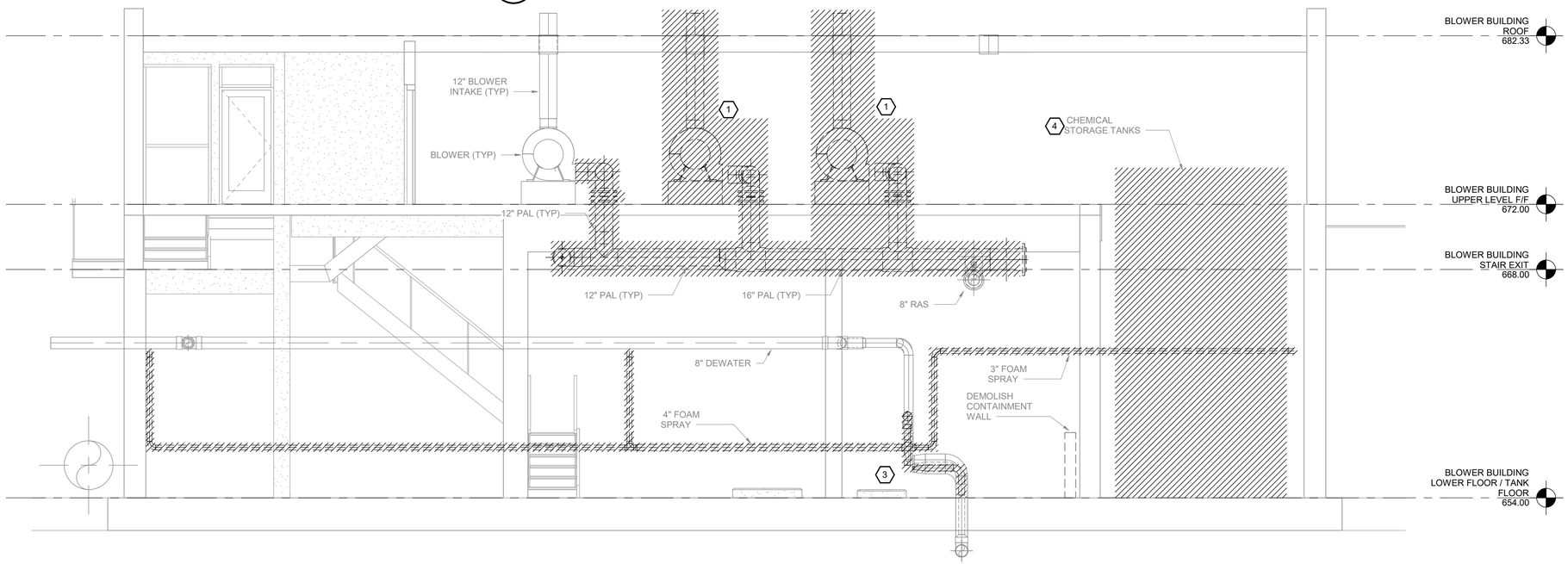
FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE 3/16" = 1'-0"

SHEET DM-02



1 DM-02 BLOWER BUILDING NS DEMOLITION SECTION
1/4" = 1'-0"



2 DM-02 BLOWER BUILDING EW DEMOLITION SECTION
1/4" = 1'-0"

KEYNOTES:

1. DEMOLISH EXISTING BLOWER AND BLOWER PAD, INCLUDING ALL PIPING, VALVES AND APPURTENANCES.
2. PATCH AND SEAL EXISTING OPENINGS TO THE RAS AND WAS WETWELLS.
3. DEMOLISH EXISTING FOAM SPRAY PUMP AND PUMP PAD, INCLUDING ALL PIPING, VALVES AND APPURTENANCES.
4. DEMOLISH EXISTING CHEMICAL STORAGE TANKS AND TANK PAD. ALL ASSOCIATED PUMPS, PIPES, VALVES AND APPURTENANCES SHALL BE REMOVED ALSO.
5. REMOVE EXISTING MANUAL BUTTERFLY VALVE.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

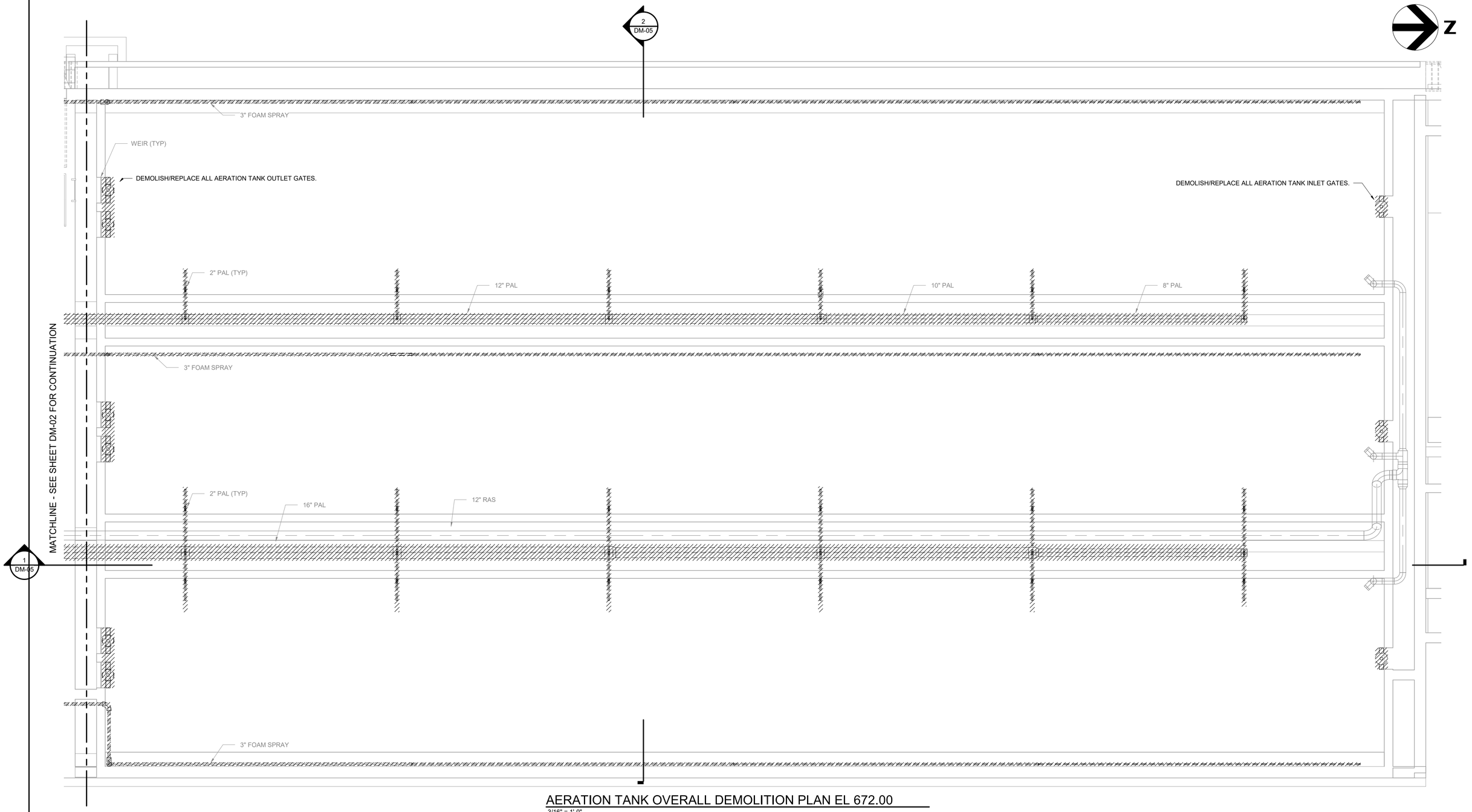
BLOWER BUILDING DEMOLITION SECTIONS

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET DM-03



AERATION TANK OVERALL DEMOLITION PLAN EL 672.00

3/16" = 1'-0"

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

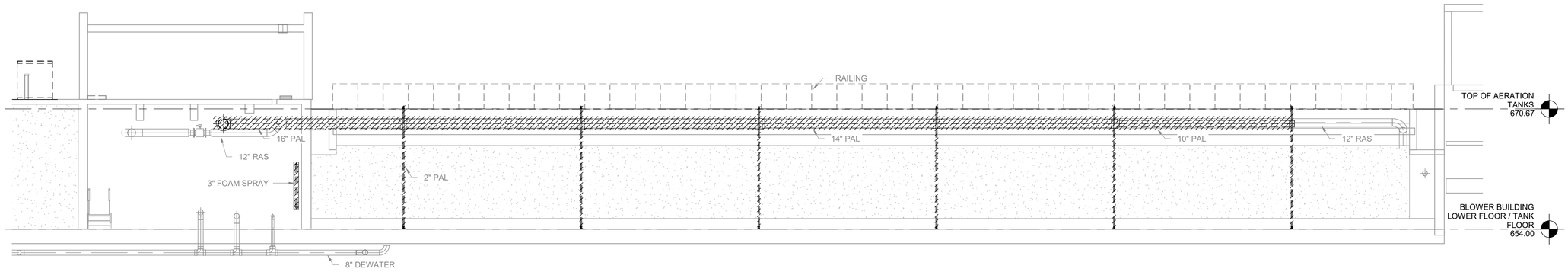
SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

AERATION TANK DEMOLITION PLAN

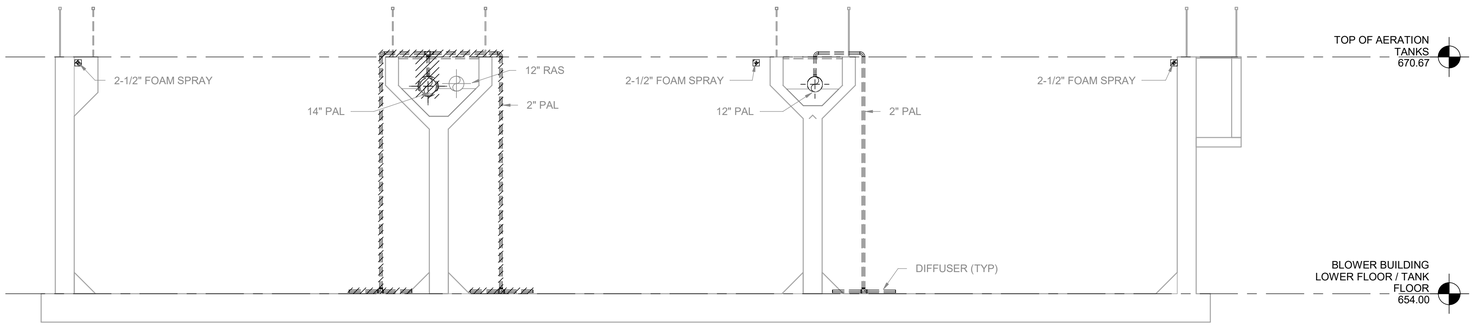
0 1" 2"

FILENAME	HDRE_ALL_DISCIPLINES.rte
SCALE	NONE

SHEET **DM-04**



1 DM-02 OVERALL DEMOLITION SECTION
1/8" = 1'-0"



2 DM-04 DIFFUSER DEMOLITION SECTION
3/16" = 1'-0"

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

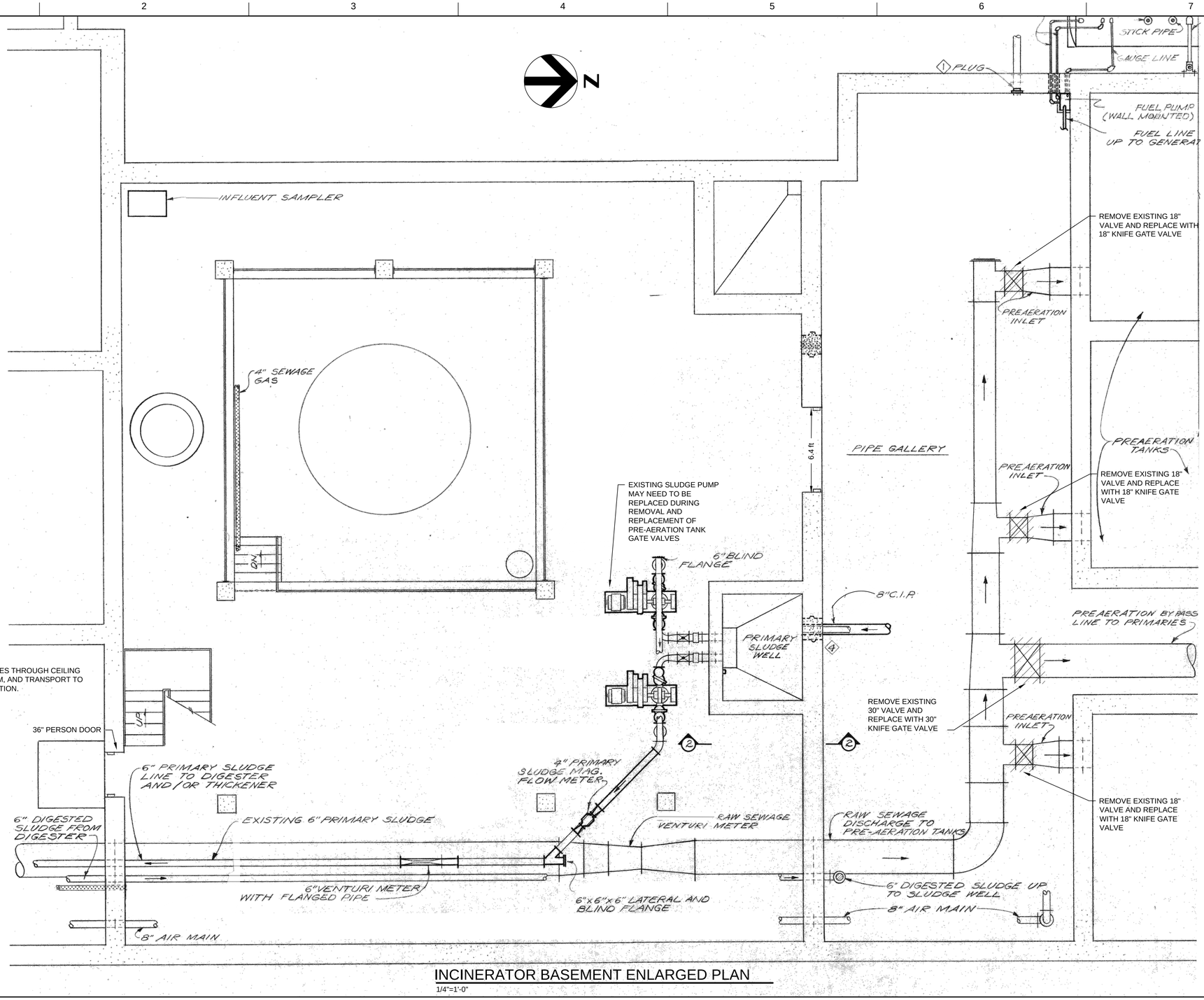
AERATION TANK DEMOLITION SECTIONS

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET DM-05



NOTES:

1. EXISTING GATES MAY BE HOISTED FROM INCINERATOR BASEMENT FOR REMOVAL FROM BUILDING.

INCINERATOR BASEMENT ENLARGED PLAN

1/4"=1'-0"

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	SPR
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749,10094459

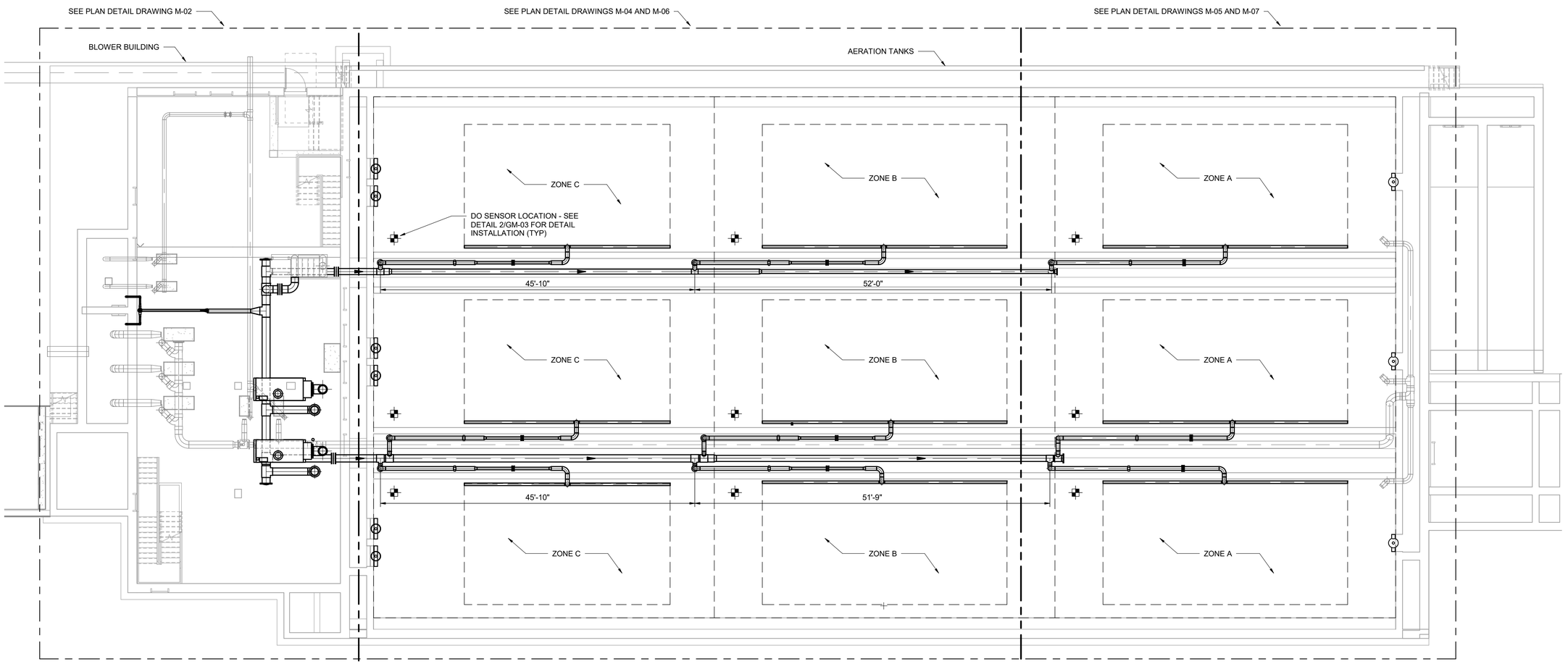
CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

DEMOLITION
INCINERATOR BASEMENT BUILDING

FILENAME	DM-08.DWG
SCALE	1/4" = 1' - 0"
SHEET	DM-08

C:\pwworkings\east01\d0438298\DM-08.dwg, Layout: 12/8/2020 9:41:49 AM, CCENCI



OVERALL PLAN

1/8" = 1'-0"

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

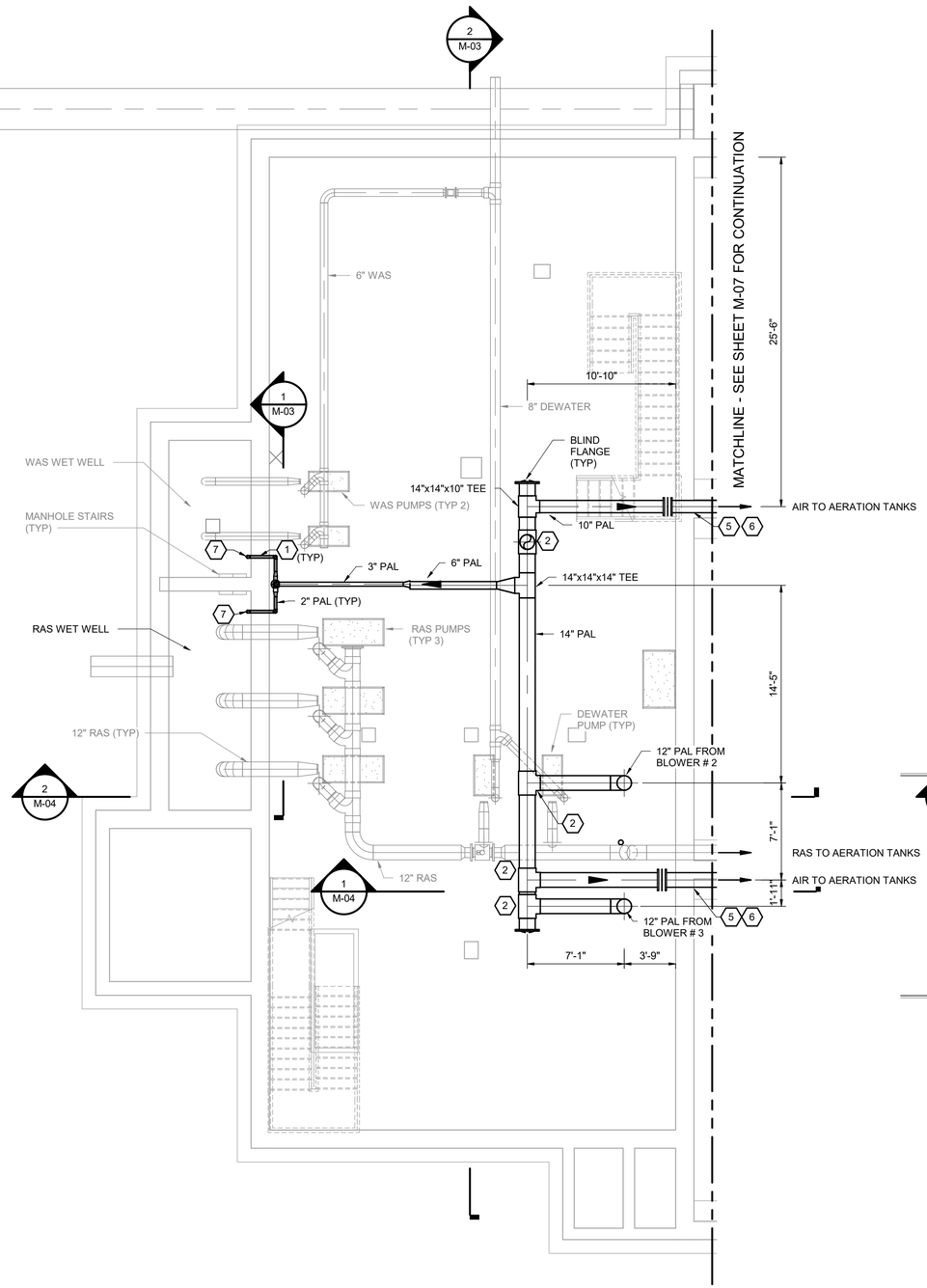
SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

OVERALL AERATION PLAN

0 1" 2"

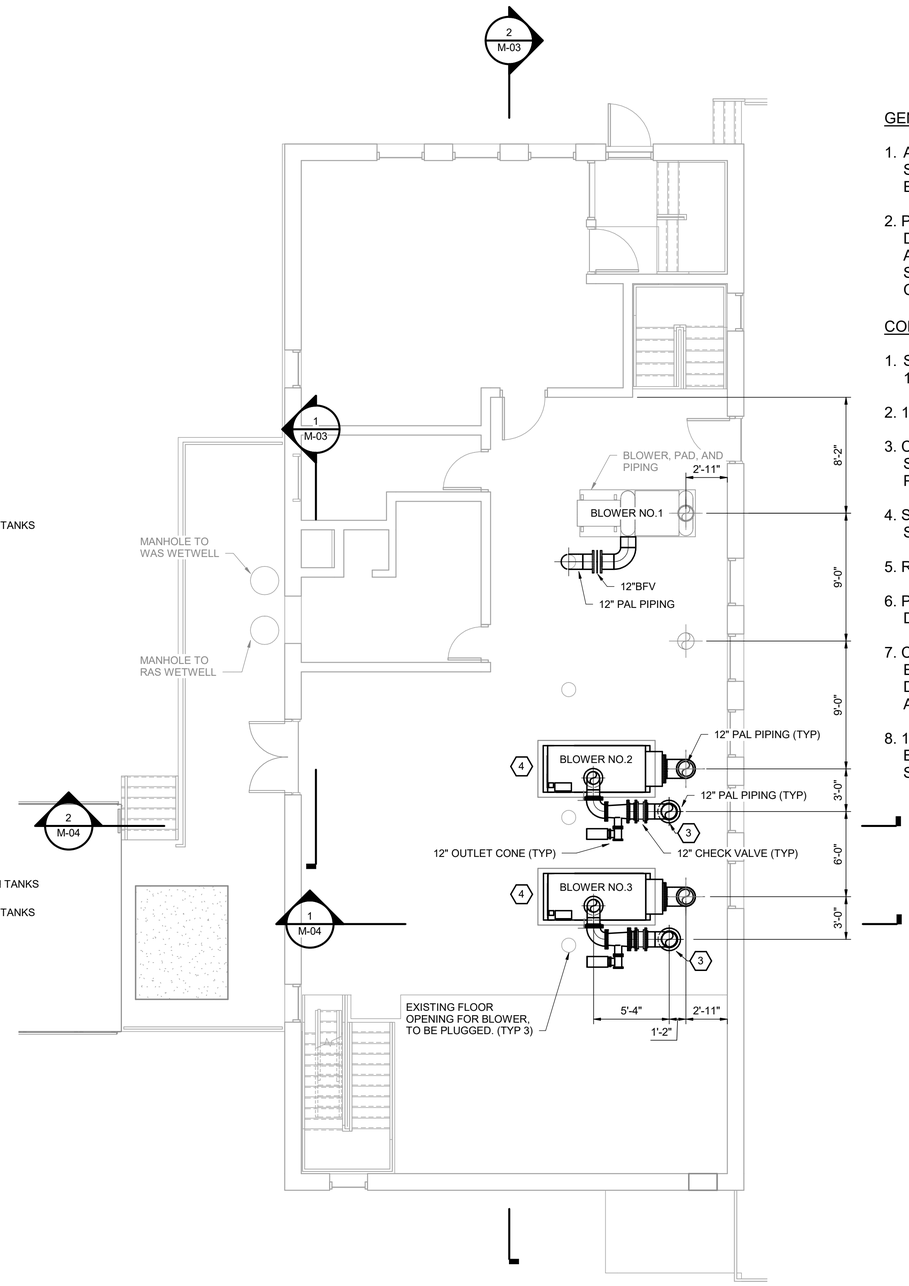
FILENAME	HDRE_ALL_DISCIPLINES.rte
SCALE	NONE

SHEET M-01



BLOWER BUILDING LOWER PLAN EL. 654.00

3/16" = 1'-0"



BLOWER BUILDING UPPER PLAN EL. 672.00

3/16" = 1'-0"

GENERAL NOTES:

1. ALL STAINLESS STEEL ELBOWS SHALL BE LONG RADIUS TYPE, EXCEPT WHERE NOTED.
2. PAL PIPE SUPPORT TO BE DESIGNED BY THE CONTRACTOR. ALL PIPING SHALL BE SUPPORTED FROM EXISTING CONCRETE STRUCTURES.

CODED NOTES: ⬡

1. SEE PIPE PENETRATION DETAIL 1/GM-02
2. 14"x14"x12" TEE.
3. CORE DRILL THROUGH EXISTING SLAB. PROVIDE PIPE PENETRATION PER DETAIL 1/GM-02.
4. SEE EQUIPMENT PAD DETAIL ON STRUCTURAL SHEETS.
5. REUSE EXISTING PENETRATIONS.
6. PROVIDE PIPE PENETRATION PER DETAIL 2/GM-02.
7. CONTRACTOR PROVIDED PIPING ENDS AND MANUFACTURER DIFFUSER AND DROP LEG ASSEMBLY BEGINS.
8. 12" EXPANSION JOINT AND 12" BUTTEFLY VALVE IN VERTICAL. SEE SHEET M-03 FOR MORE DETAIL.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

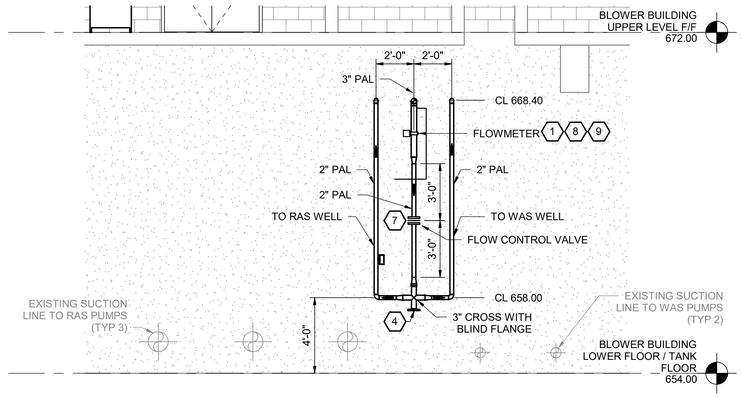
BLOWER BUILDING PLANS

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

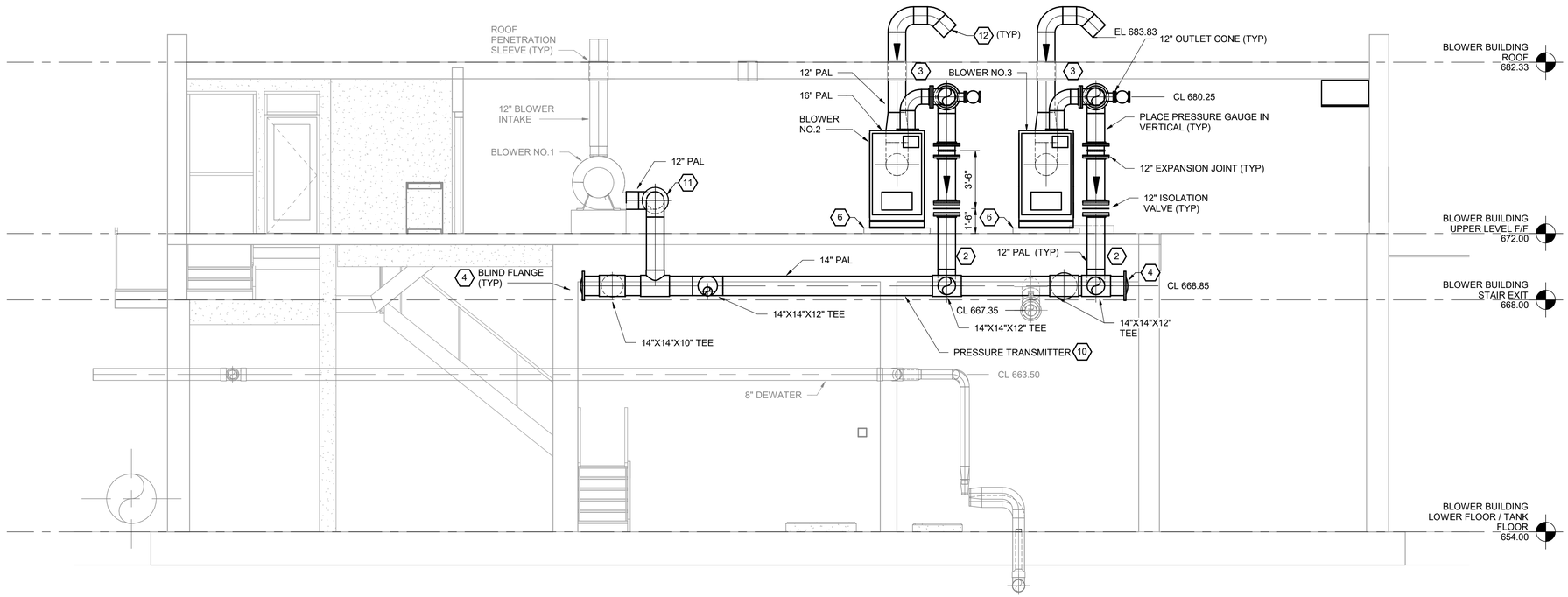
SCALE NONE

SHEET M-02



1 M-02 BLOWER BUILDING EW SECTION 2

1/4" = 1'-0"



2 M-02 BLOWER BUILDING EW SECTION

1/4" = 1'-0"

GENERAL NOTES:

1. ALL STAINLESS STEEL ELBOWS SHALL BE LONG RADIUS TYPE, EXCEPT WHERE NOTED.
2. PAL PIPE SUPPORT TO BE DESIGNED BY THE CONTRACTOR. ALL PIPING SHALL BE SUPPORTED FROM EXISTING CONCRETE STRUCTURES.

KEYNOTES: ⬡

1. INSTALL FLOW CONDITIONING PLATES UPSTREAM OF THE FLOWMETER AS REQUIRED.
2. CORE DRILL NEW PIPE PENETRATION. SEE PIPE PENETRATION DETAIL 1/GM-02.
3. USE EXISTING 12" ROOF PENETRATION.
4. ADD CONDENSATE DRAIN PER DETAIL 4/GM-02.
5. NOT USED
6. SEE STRUCTURAL FOR EQUIPMENT PAD DETAIL.
7. BFV-MOV-010
8. FE/FIT 010
9. SEE FLOWMETER DETAIL 1/GM-03
10. SEE PRESSURE INSTRUMENT DETAIL 2/GM-03.
11. BFV-MOV-001
12. INSTALL STAINLESS STEEL MESH BIRD SCREEN.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

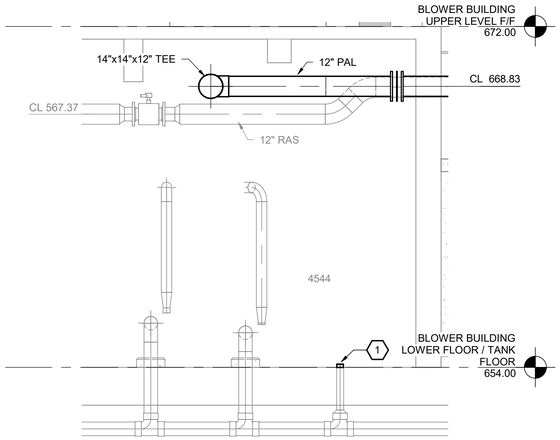
SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

BLOWER BUILDING SECTIONS

0 1" 2"

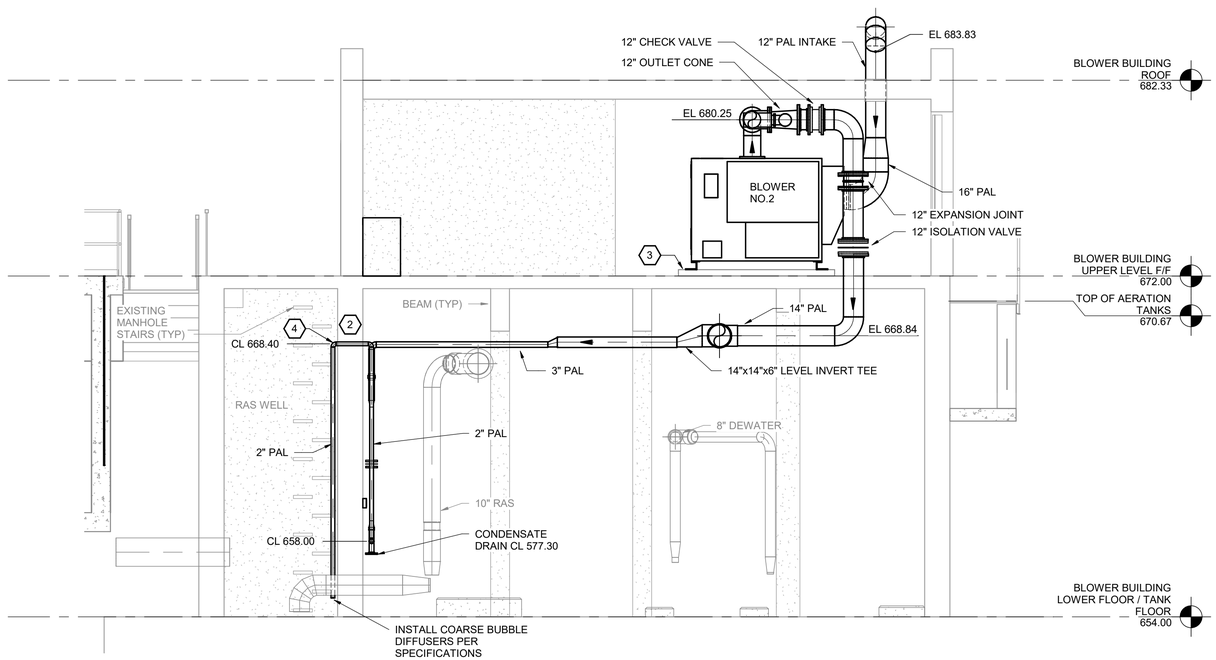
FILENAME	HDRE_ALL_DISCIPLINES.rte
SCALE	NONE

SHEET M-03



1 / M-02 BLOWER BUILDING NS SECTION 2

1/4" = 1'-0"



2 / M-02 BLOWER BUILDING NS SECTION

1/4" = 1'-0"

GENERAL NOTES:

1. ALL STAINLESS STEEL ELBOWS SHALL BE LONG RADIUS TYPE, EXCEPT WHERE NOTED.
2. PAL PIPE SUPPORT TO BE DESIGNED BY THE CONTRACTOR. ALL PIPING SHALL BE SUPPORTED FROM EXISTING CONCRETE STRUCTURES.

KEYNOTES: ⬡

1. CAP EXISTING PIPING AT SLAB. CAP SHALL BE FLUSH WITH FINISHED FLOOR.
2. CORE DRILL NEW PIPE PENETRATION. SEE PIPE PENETRATION DETAIL 1/GM-02.
3. SEE STRUCTURAL FOR EQUIPMENT PAD DETAIL.
4. CONTRACTOR PROVIDED PIPING ENDS AND MANUFACTURER DIFFUSER AND DROP LEG ASSEMBLY BEGINS.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

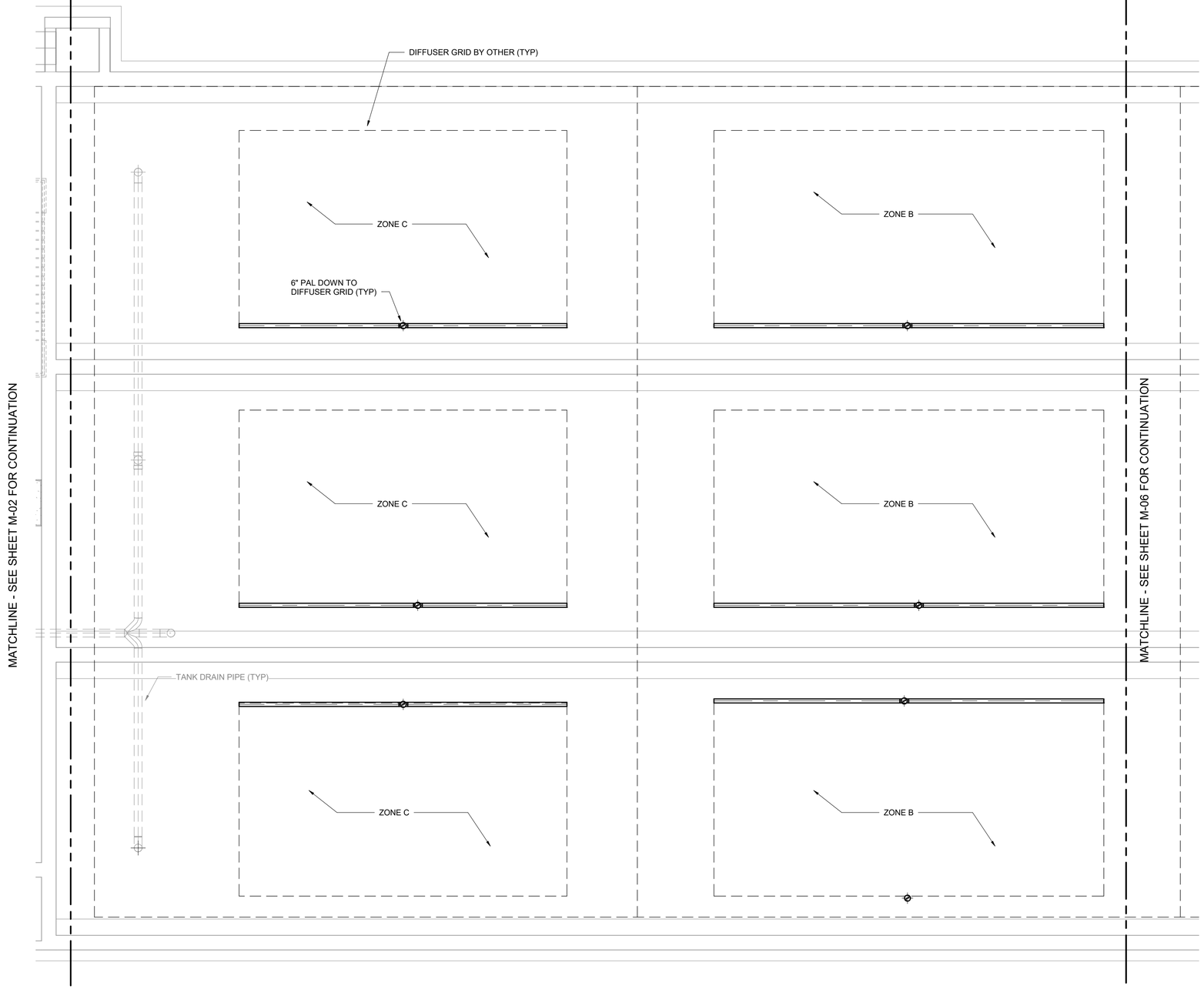
BLOWER BUILDING SECTIONS

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET M-04



GENERAL NOTES:

1. ALL STAINLESS STEEL ELBOWS SHALL BE LONG RADIUS TYPE, EXCEPT WHERE NOTED OTHERWISE.
2. PAL PIPE SUPPORT TO BE DESIGNED BY THE CONTRACTOR. ALL PIPING SHALL BE SUPPORTED FROM EXISTING CONCRETE STRUCTURES.

AERATION TANK LOWER PLAN I EL. 654.0

3/16" = 1'-0"

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

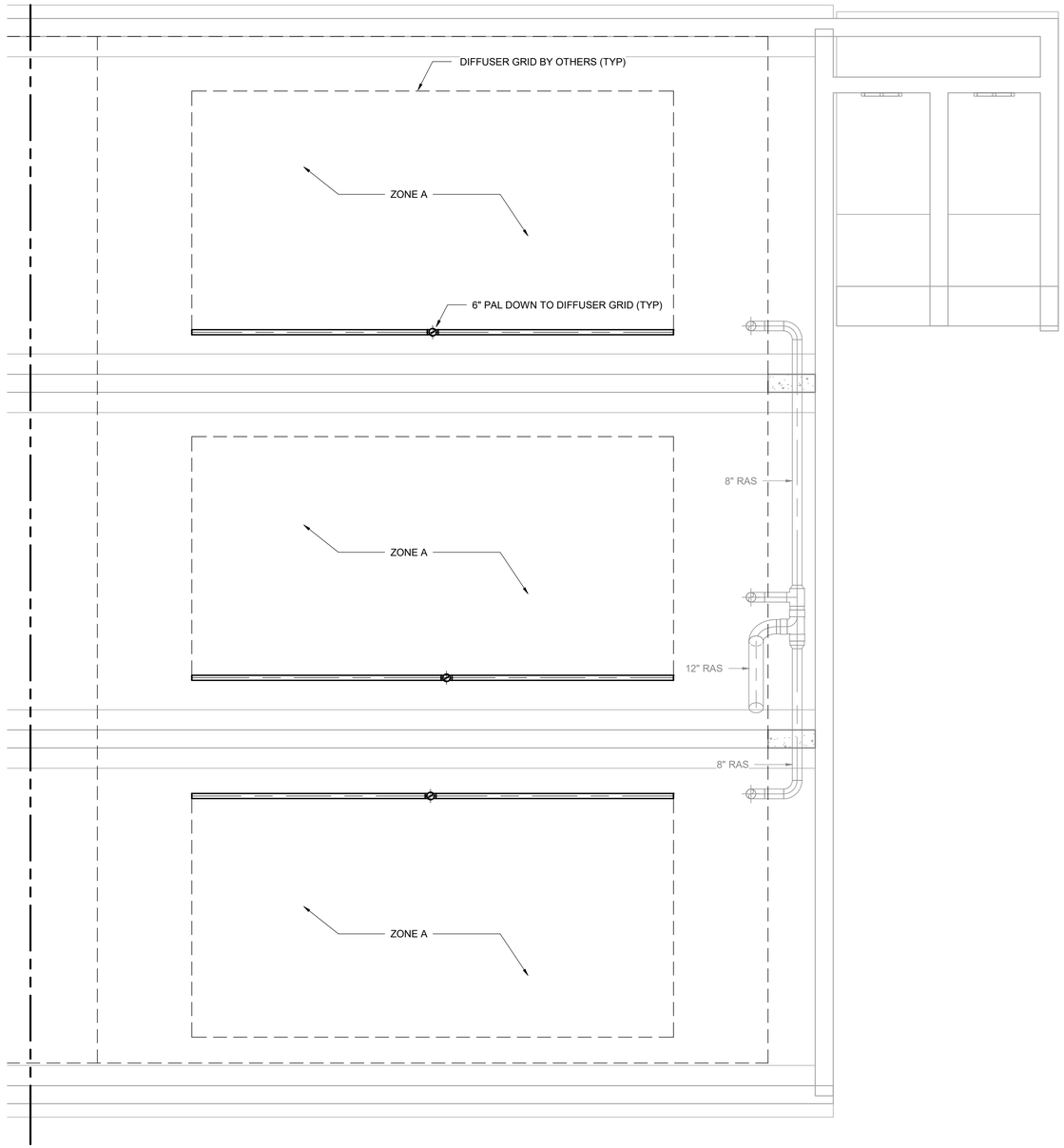
AERATION TANK LOWER PLAN I

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET M-05



GENERAL NOTES:

1. ALL STAINLESS STEEL ELBOWS SHALL BE LONG RADIUS TYPE, EXCEPT WHERE NOTED OTHERWISE.
2. PAL PIPE SUPPORT TO BE DESIGNED BY THE CONTRACTOR. ALL PIPING SHALL BE SUPPORTED FROM EXISTING CONCRETE STRUCTURES.

AERATION TANK LOWER PLAN II EL. 654.0

3/16" = 1'-0"

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

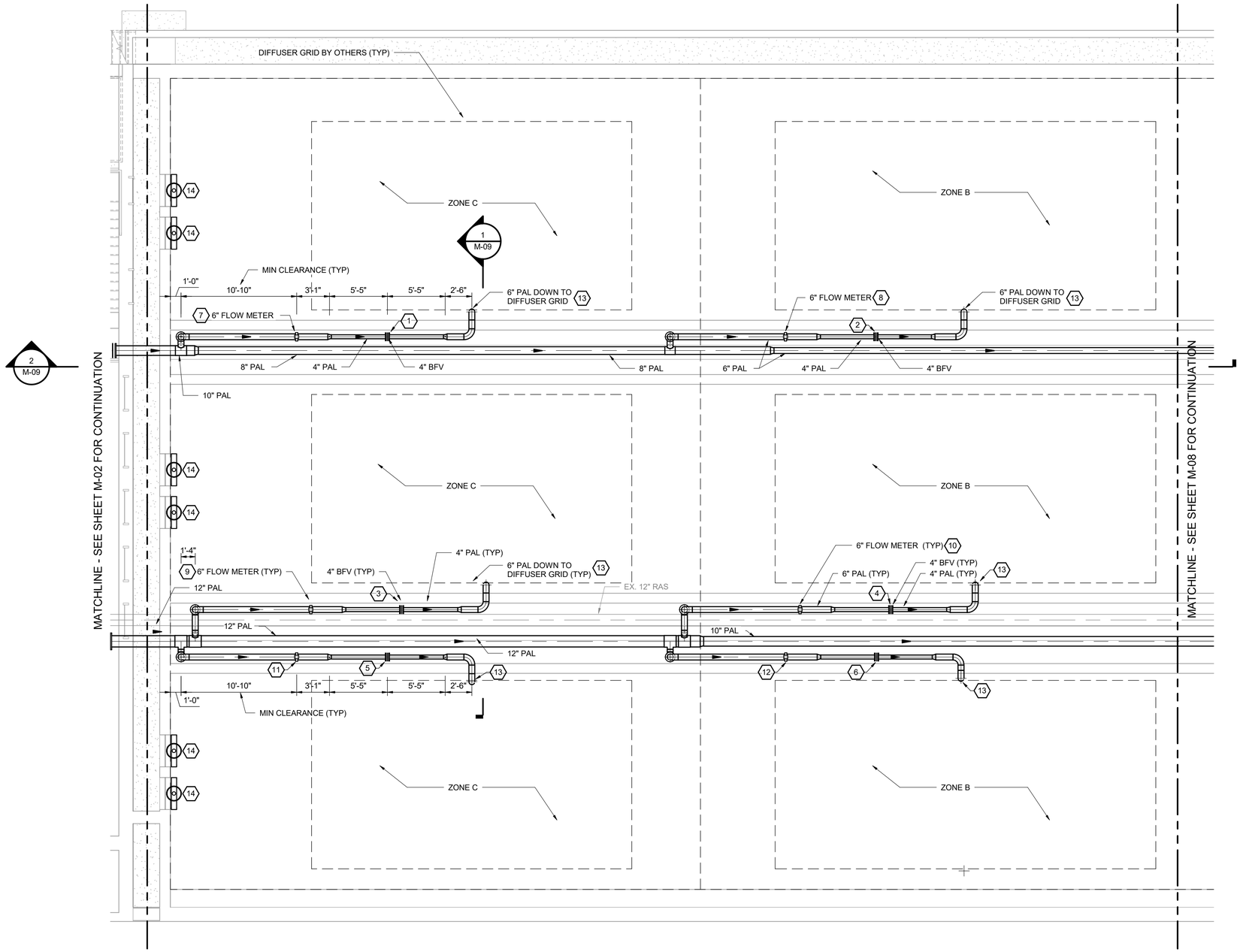
AERATION TANK LOWER PLAN II

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET M-06



AERATION TANK UPPER PLAN I EL. 665.0

3/16" = 1'-0"

GENERAL NOTES:

1. ALL STAINLESS STEEL ELBOWS SHALL BE LONG RADIUS TYPE, EXCEPT WHERE NOTED OTHERWISE.
2. PAL PIPE SUPPORT TO BE DESIGNED BY THE CONTRACTOR. ALL PIPING SHALL BE SUPPORTED FROM EXISTING CONCRETE STRUCTURES.
3. DIMENSIONING AND MINIMUM CLEARANCES SHALL APPLY TO ALL PIPING IN AERATION TANK.

CODED NOTES:

1. BFV-MOV-013
2. BFV-MOV-012
3. BFV-MOV-023
4. BFV-MOV-022
5. BFV-MOV-033
6. BFV-MOV-032
7. FE/FIT PAL013
8. FE/FIT PAL012
9. FE/FIT PAL023
10. FE/FIT PAL022
11. FE/FIT PAL033
12. FE/FIT PAL032
13. CONTRACTOR PROVIDED PIPING ENDS AND MANUFACTURER DIFFUSER AND DROP LEG ASSEMBLY BEGINS.
14. REPLACE OUTLET GATE FOR EACH AERATION TANK. SEE SHEET GM-03 FOR DETAIL.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	AJW
DRAWN BY	CMC
APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

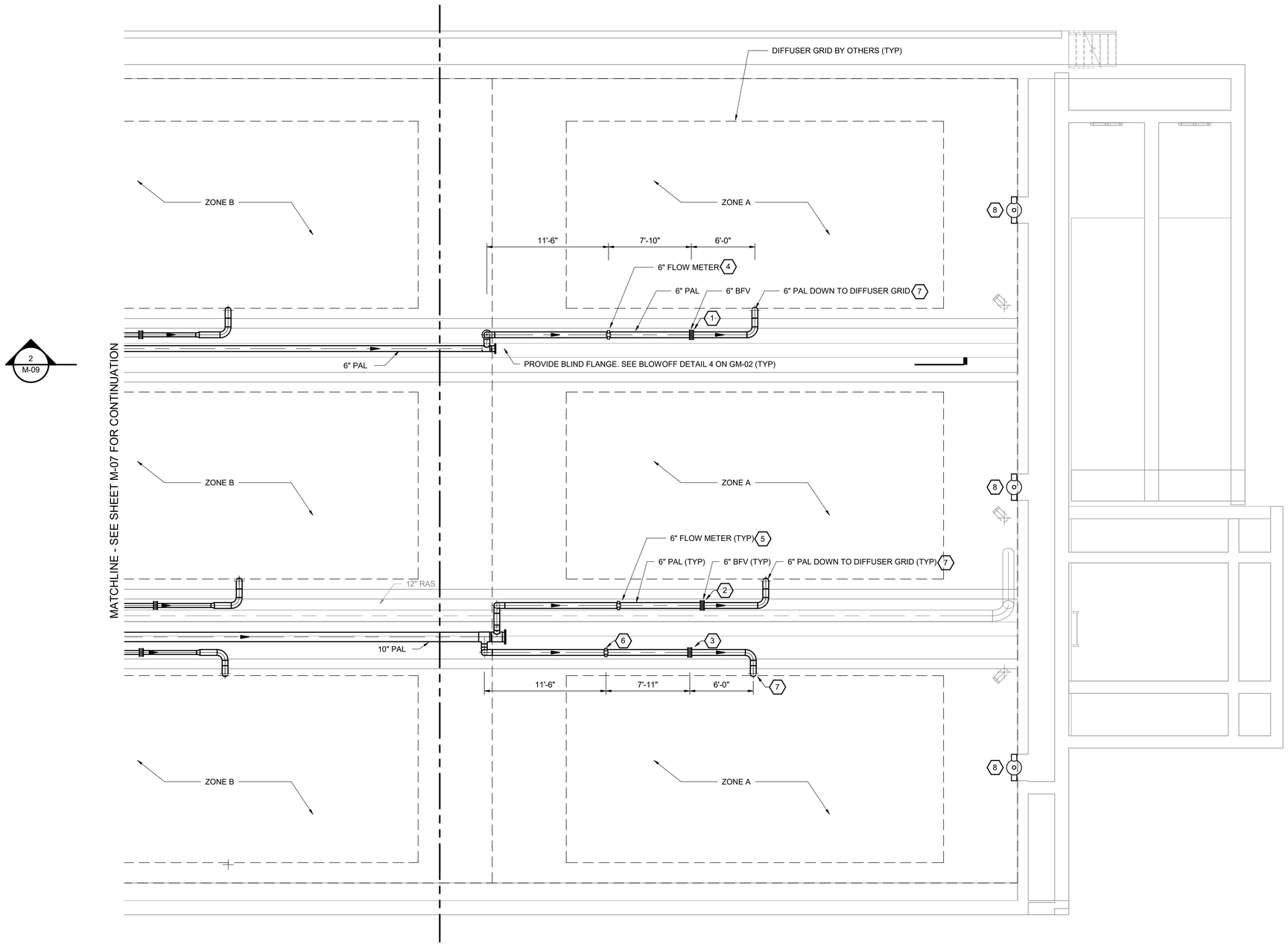
AERATION TANK UPPER PLAN I

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET M-07



AERATION TANK UPPER PLAN II EL. 665.0

3/16" = 1'-0"

GENERAL NOTES:

1. ALL STAINLESS STEEL ELBOWS SHALL BE LONG RADIUS TYPE, EXCEPT WHERE NOTED OTHERWISE.
2. PAL PIPE SUPPORT TO BE DESIGNED BY THE CONTRACTOR. ALL PIPING SHALL BE SUPPORTED FROM EXISTING CONCRETE STRUCTURES.
3. DIMENSIONING AND MINIMUM CLEARANCES SHALL APPLY TO ALL PIPING IN AERATION TANK.

CODED NOTES: ⬡

1. BFV-MOV-011
2. BFV-MOV-021
3. BFV-MOV-031
4. FE/FIT PAL011
5. FE/FIT PAL021
6. FE/FIT PAL031
7. CONTRACTOR PROVIDED PIPING ENDS AND MANUFACTURER DIFFUSER AND DROP LEG ASSEMBLY BEGINS.
8. REPLACE INLET GATE FOR EACH AERATION TANK. SEE SHEET GM-03 FOR DETAIL.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
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CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

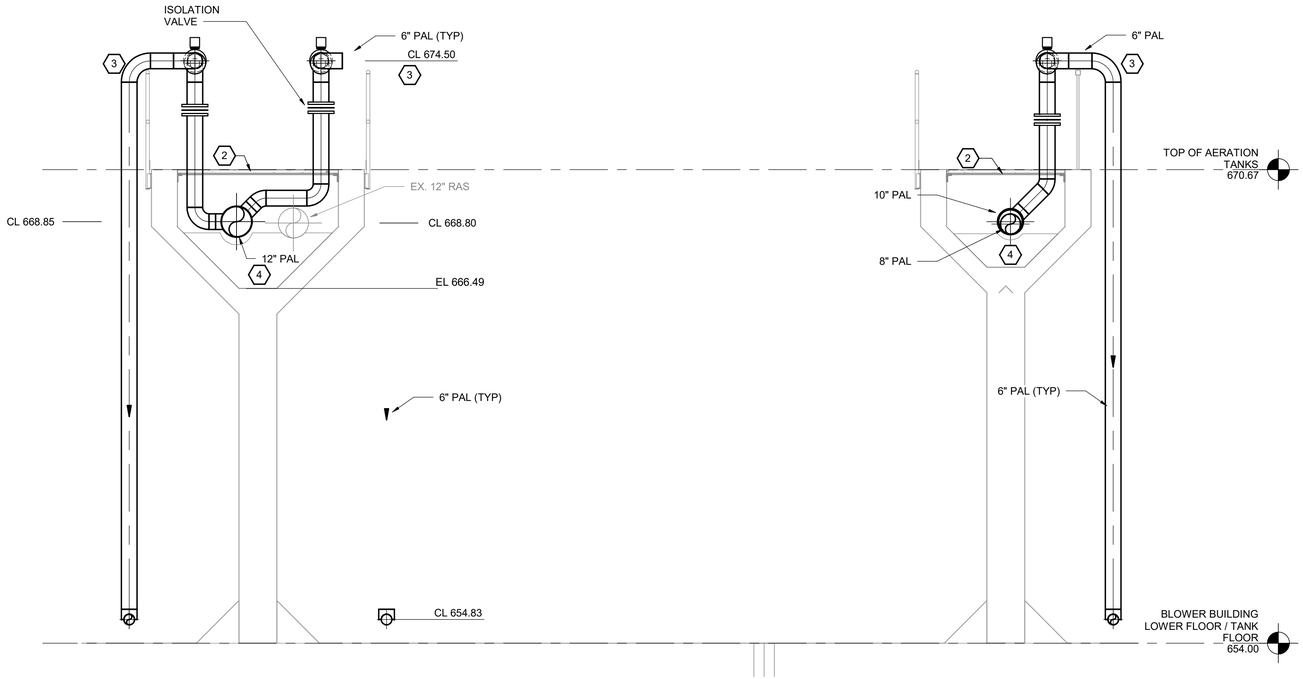
AERATION TANK UPPER PLAN II

0 1" 2"

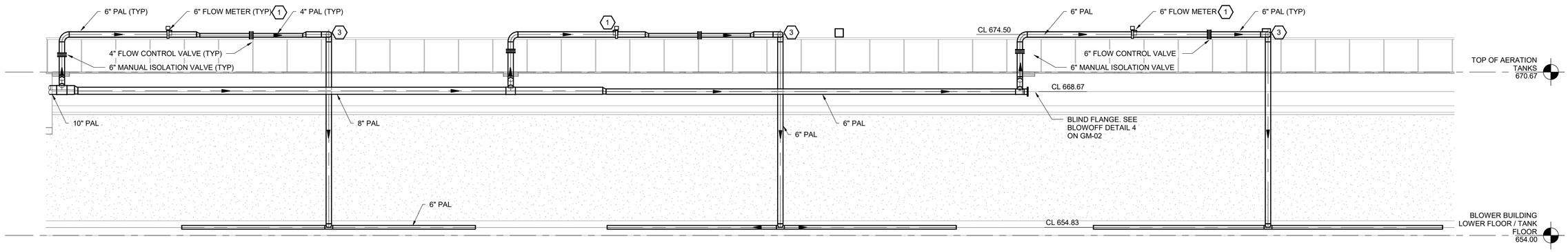
FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET M-08



1 M-07 DIFFUSER SECTION
3/8" = 1'-0"



2 M-07 OVERALL SECTION
3/16" = 1'-0"

GENERAL NOTES:

1. ALL STAINLESS STEEL ELBOWS SHALL BE LONG RADIUS TYPE, EXCEPT WHERE NOTED OTHERWISE.
2. PAL PIPE SUPPORT TO BE DESIGNED BY THE CONTRACTOR. ALL PIPING SHALL BE SUPPORTED FROM EXISTING CONCRETE STRUCTURES.

CODED NOTES: ⬡

1. SEE FLOWMETER DETAIL 1/GM-03
2. METAL GRATING FOR PIPE PENETRATIONS. SEE STRUCTURAL DETAILS.
3. CONTRACTOR PROVIDED PIPING ENDS AND MANUFACTURER DIFFUSER AND DROP LEG ASSEMBLY BEGINS.
4. EXISTING CONCRETE SUPPORT. PROVIDE GROUTING UNDER NEW AIR PIPING AS NECESSARY.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
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APPROVED BY	MJW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

AERATION TANK SECTIONS

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET M-09

MAKE-UP AIR SCHEDULE

MARK	LOCATION	SERVES	CONFIGURATION	HEATING TYPE	SUPPLY		FAN DATA				ELECTRICAL HEATING				FILTERS		ELECTRICAL DATA			DISCONNECT BY	WEIGHT (LBS.)	BASIS OF DESIGN		NOTES
					AIRFLOW (CFM)	E.S.P. (IN. WG.)	TYPE	FAN RPM	BHP	HP	INPUT (KW)	E.A.T. (°F)	L.A.T. (°F)	DELTA T. (°F)	TYPE	THK (IN)	MCA	MOCP	VOLTS/PH/HZ			MANUFACTURER	MODEL	
MAU-1	BLOWER BUILDING	BLOWER BUILDING	HORIZONTAL (HR-1)	ELECTRIC	5750	1.5	PLENUM	910		3	94	5	55	50	MERV 8	1	148		460/3/60		1300	HASTINGS	SBEM-115-6-109	

SPLIT SYSTEM INDOOR UNIT SCHEDULE

MARK	SERVES	TYPE	NOMINAL AIRFLOW (CFM)	MINIMUM OA (CFM)	FANS			COOLING COIL				ELECTRICAL			MATCHING OUTDOOR UNIT	BASIS OF DESIGN		NOTES
					HP (WATTS)	ESP (IWC)	RPM MAX	EAT		TOTAL (BTU/HR)	SEN (BTU/HR)	MCA	MOCP	VOLTS/PH/HZ		MANUFACTURER	MODEL	
								DB (°F)	WB (°F)									
SSI-1	BLOWER BUILDING	CEILING SUSPENDED	850	700		0		80	67	40500	28200	1.4	15	208-230/60/1	RZQ42TAVJU	DAIKIN	FHQ42MVJU	

SPLIT SYSTEM OUTDOOR UNIT SCHEDULE

MARK	LOCATION	COOLING		EFFICIENCY		COMPRESSOR DATA					ELECTRICAL DATA			DISCONNECT BY	SOUND POWER DBA	OPERATING WEIGHT (LBS)	BASIS OF DESIGN		NOTES
		NORMAL CAPACITY (BTU/HR)	AMBIENT (°F)	SEER (EER)	COP (HSPF)	TYPE	REFRIG. TYPE	NO OF COMPS	CAP. CTRL RANGE (%)	MAX INDOOR UNITS	MCA	MOCP	VOLT/PH/Hz				MANUFACTURER	MODEL	
SSO-1	BLOWER BUILDING	40500	95	14.0/8.80	8.2	INVERTER	R-410A	1	14-100	1	29.1	35	208-230/60/1		57	225	DAKIN	RZQ42TAVJU	

FAN SCHEDULE

MARK	LOCATION	SERVES	TYPE	MOUNT	RECOMMENDED ROOF OPENING (IN.x IN.)	AIRFLOW (CFM)	ESP (IN WG)	FAN SPEED (RPM)	DRIVE	MOTOR			DISCONNECT BY	STARTER BY	WEIGHT (LBS)	BASIS OF DESIGN		NOTES
										BHP	HP	VOLT/PH/HZ				MANUFACTURER	MODEL	
INLINE EXHAUST FAN																		
EF-03	SOUTH WALL IN LOWER LEVEL	LOWER LEVEL	INLINE CENTRIFUGAL	HORIZONTAL	-	4000	0.5	1512	DIRECT	1.15	2	208/60/1	SWITCH		174	GREENHECK	SQ-160-VG	
ROOF MOUNTED EXHAUST FAN																		
EF-01	ROOF	UPPER LEVEL	UPBLAST CENTRIFUGAL	ROOF	12.5 x 12.5	500	0.5	1588	DIRECT	0.095	1/10	208/60/1	SWITCH		48	GREENHECK	CUE-090-VG	
EF-02	ROOF	UPPER LEVEL	UPBLAST CENTRIFUGAL	ROOF	12.5 x 12.5	500	0.5	1588	DIRECT	0.095	1/10	208/60/1	SWITCH		48	GREENHECK	CUE-090-VG	

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	CMC
DRAWN BY	LRG
APPROVED BY	CSW
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

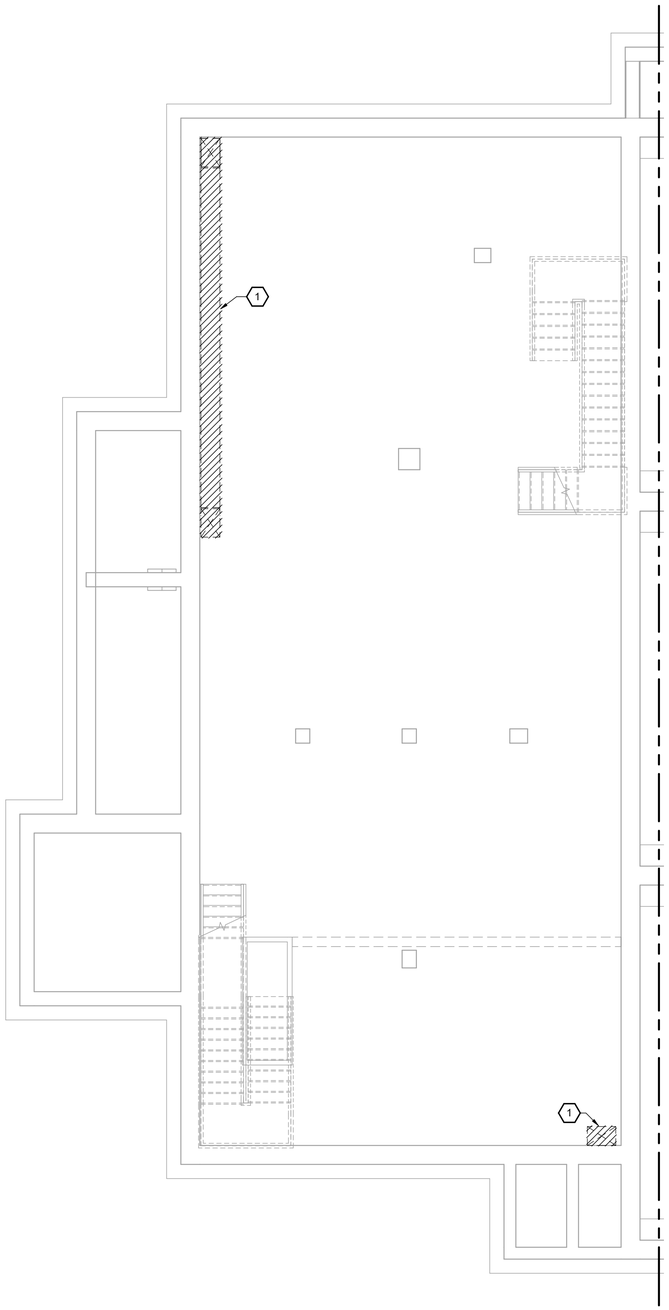
SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

HVAC LEGEND AND SYMBOLS

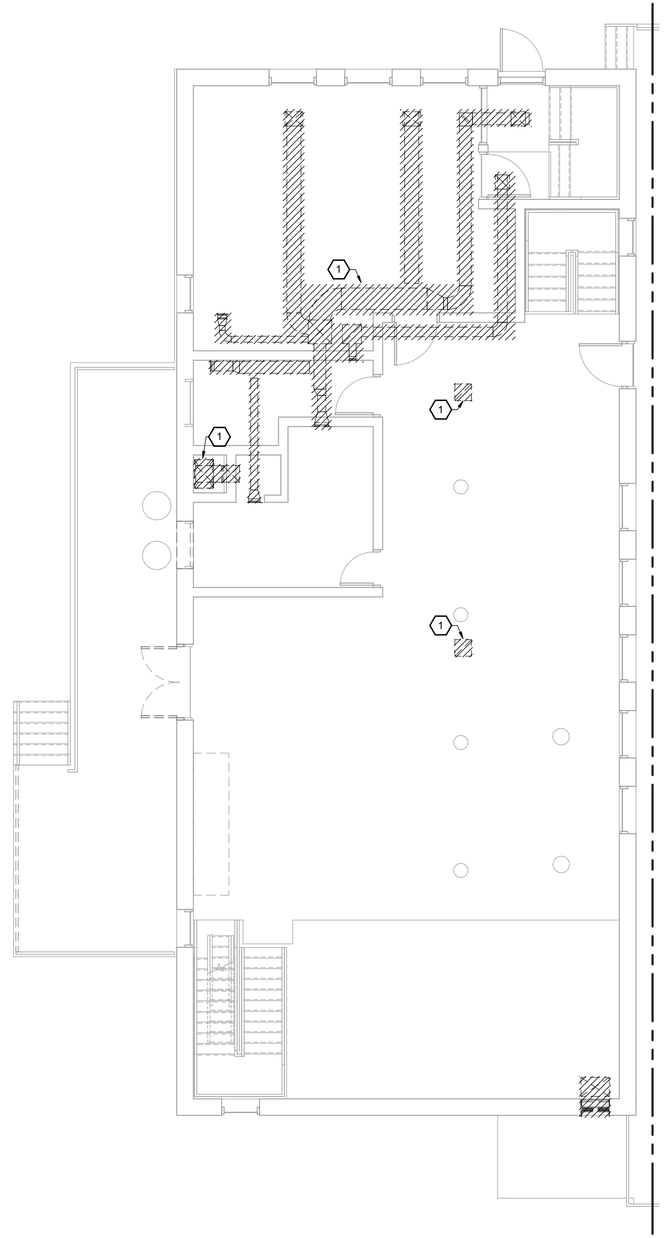
FILENAME GH-01.DWG

SCALE NOT TO SCALE

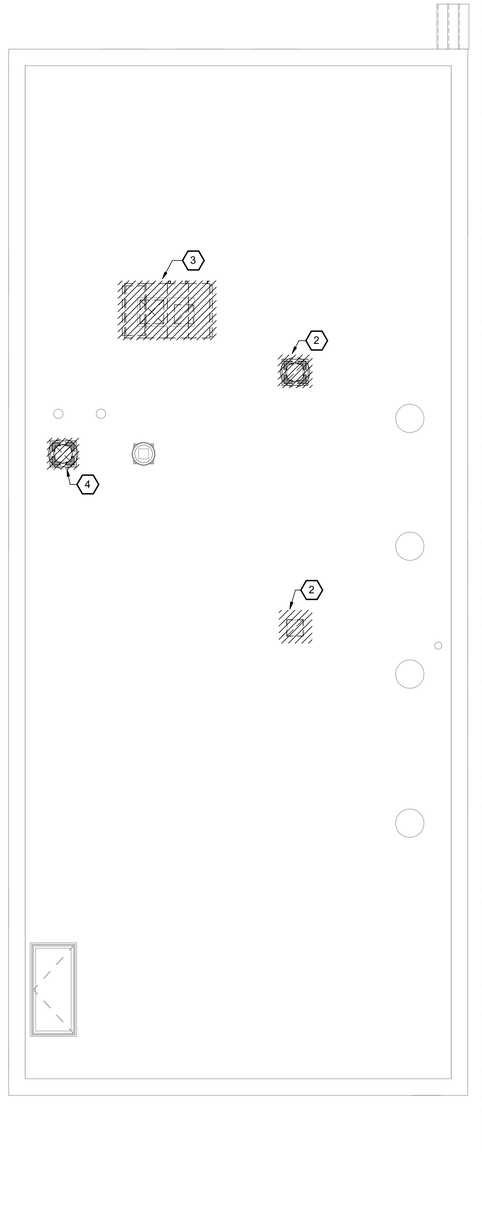
SHEET GH-01



BLOWER BUILDING HVAC LOWER DEMOLITION PLAN EL. 654.00
3/16" = 1'-0"



BLOWER BUILDING HVAC UPPER DEMOLITION PLAN EL. 672.00
3/16" = 1'-0"



BLOWER BUILDING HVAC ROOF DEMOLITION
3/16" = 1'-0"

KEYNOTES: (X)

1. DEMOLISH EXISTING HVAC DUCTWORK AND APPURTENANCES.
2. DEMOLISH EXISTING ROOF MOUNTED HVAC EQUIPMENT. EXISTING ROOF PENETRATION TO REMAIN FOR USE WITH NEW EQUIPMENT.
3. DEMOLISH EXISTING ROOF MOUNTED HVAC EQUIPMENT. SEAL ROOF PENETRATION. SEE STRUCTURAL DETAILS
4. DEMOLISH EXISTING ROOF MOUNTED HVAC EQUIPMENT. SEAL EXISTING ROOF PENETRATIONS.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	CMC
DRAWN BY	LRG
APPROVED BY	CSW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

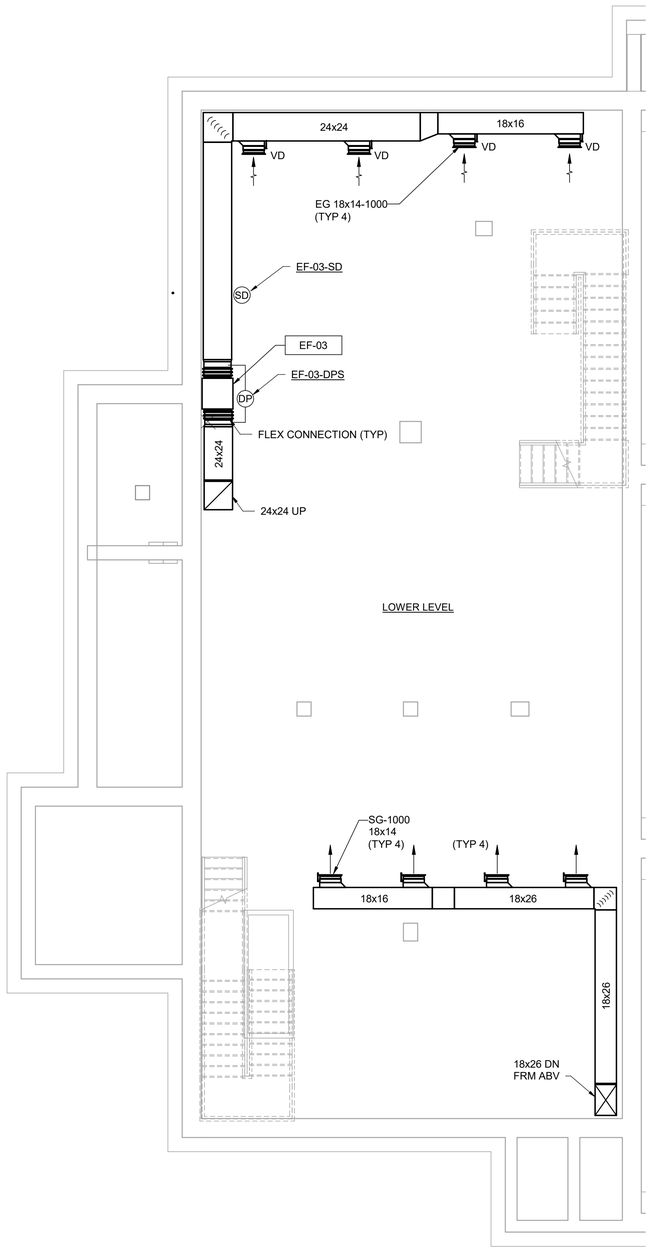
MECHANICAL DEMOLITION PLAN

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

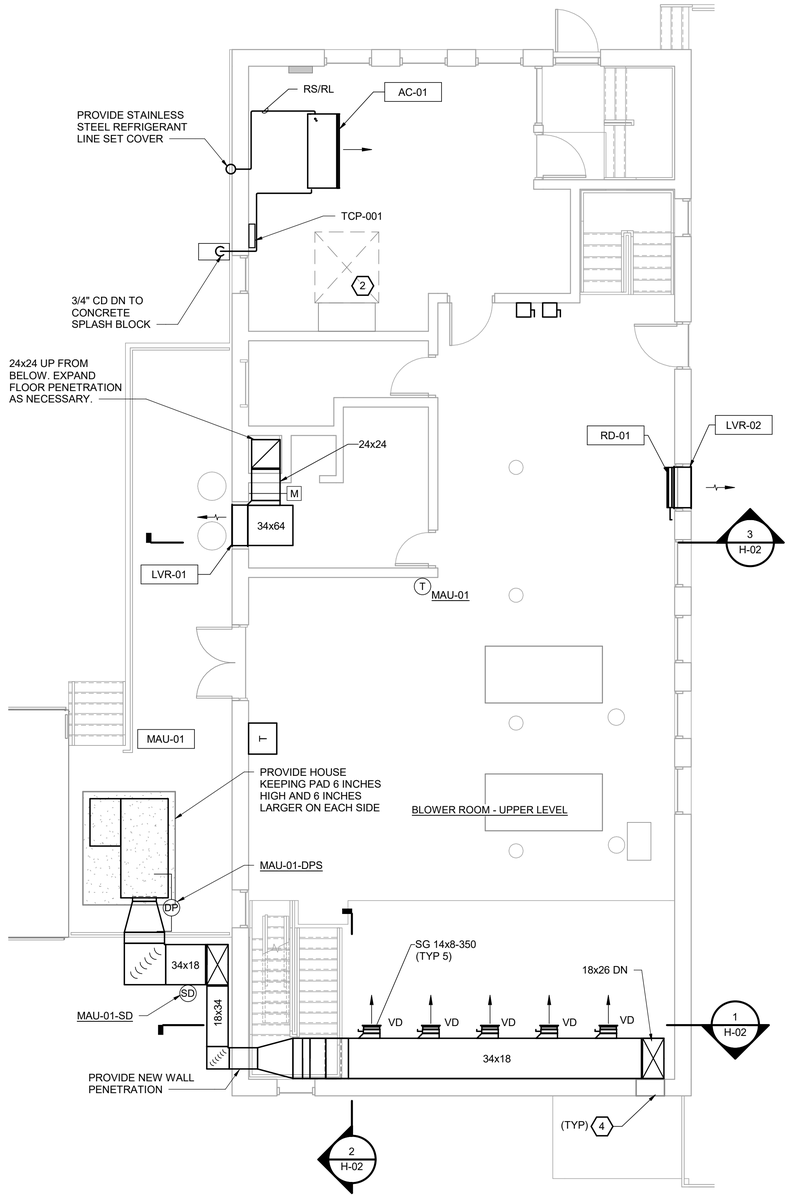
SCALE NONE

SHEET DH-01



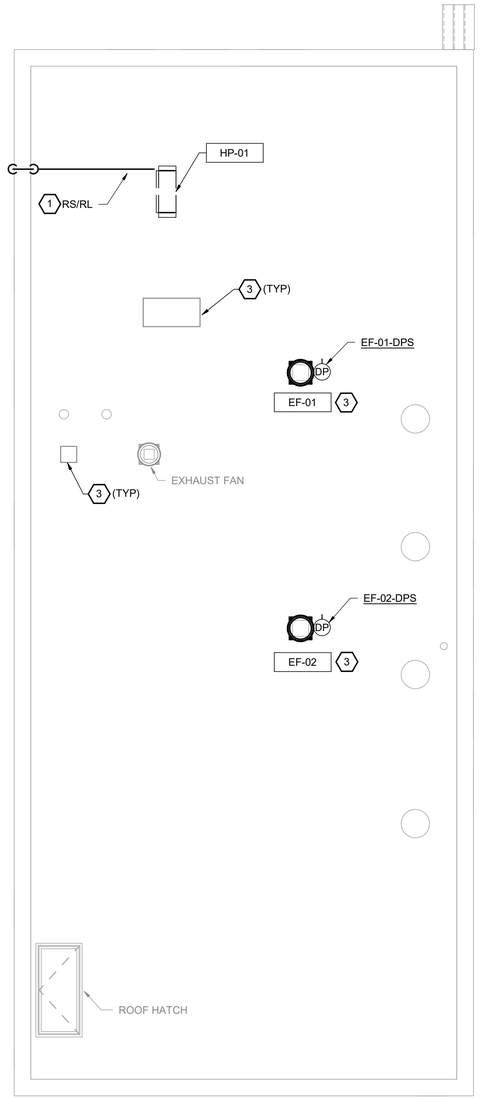
BLOWER BUILDING HVAC LOWER PLAN EL. 654.00

3/16" = 1'-0"



BLOWER BUILDING HVAC UPPER PLAN EL. 672.00

3/16" = 1'-0"



BLOWER BUILDING HVAC ROOF

3/16" = 1'-0"

KEYNOTES: (X)

1. SIZE REFRIGERANT PIPING PER MANUFACTURERS RECOMMENDATIONS.
2. ROUTE CONDENSATE PIPING OUTDOORS AND TERMINATE 6" ABOVE GROUND ON CONCRETE SPLASH BLOCK.
3. PATCH ALL EXISTING ROOF OPENINGS.
4. PATCH ALL EXISITNG WALL OPENING.
5. REUSE EXISITNG ROOF OPENING IN PLACE.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

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CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

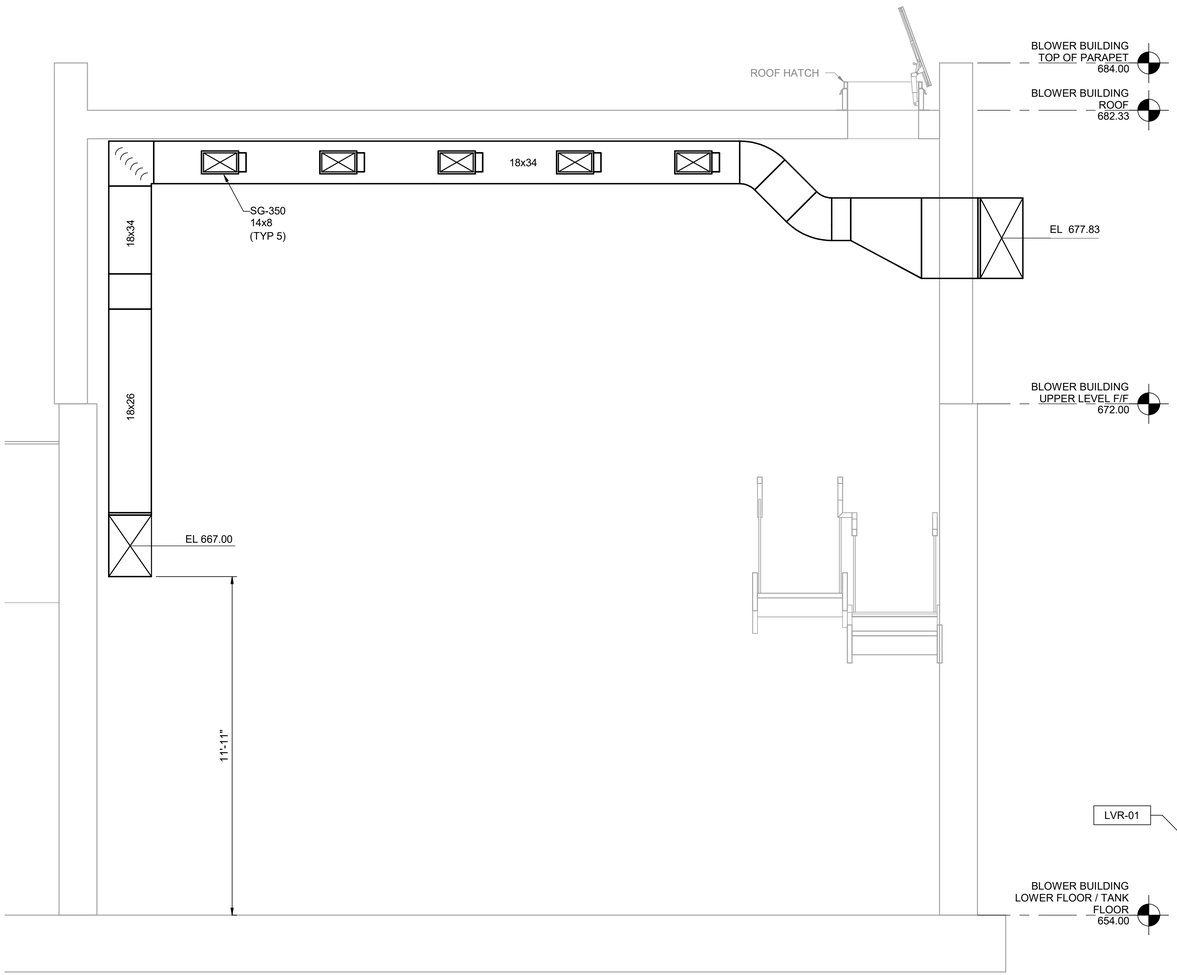
MECHANICAL FLOOR PLAN

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

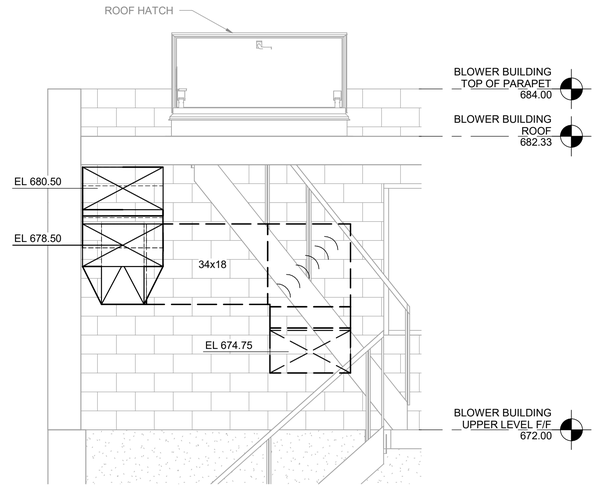
SCALE NONE

SHEET H-01



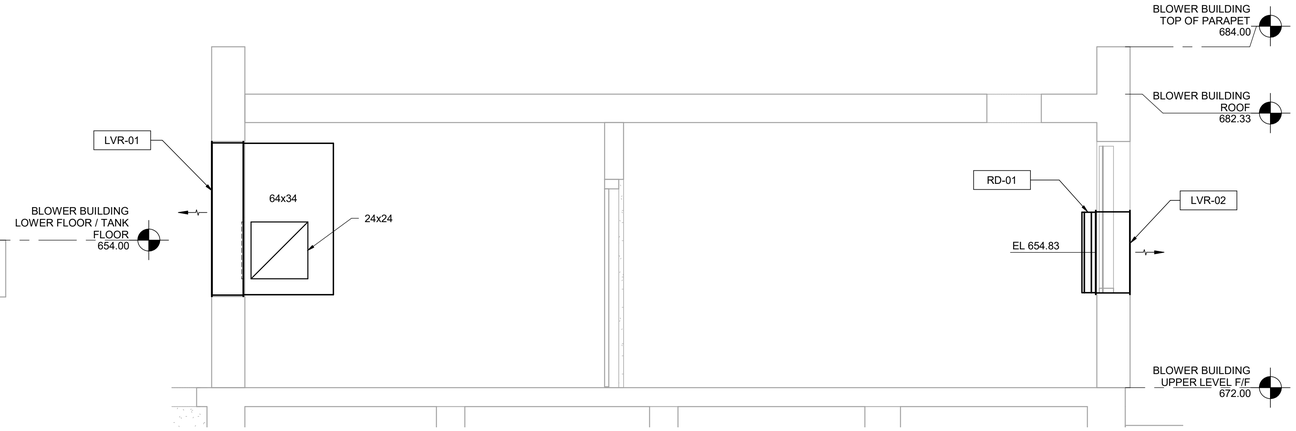
1 H-01 HVAC SECTION NS

3/8" = 1'-0"



2 H-01 HVAC SECTION EW

3/8" = 1'-0"



3 H-01 HVAC LOUVER SECTION

3/8" = 1'-0"

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	CMC
DRAWN BY	LRG
APPROVED BY	CSW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

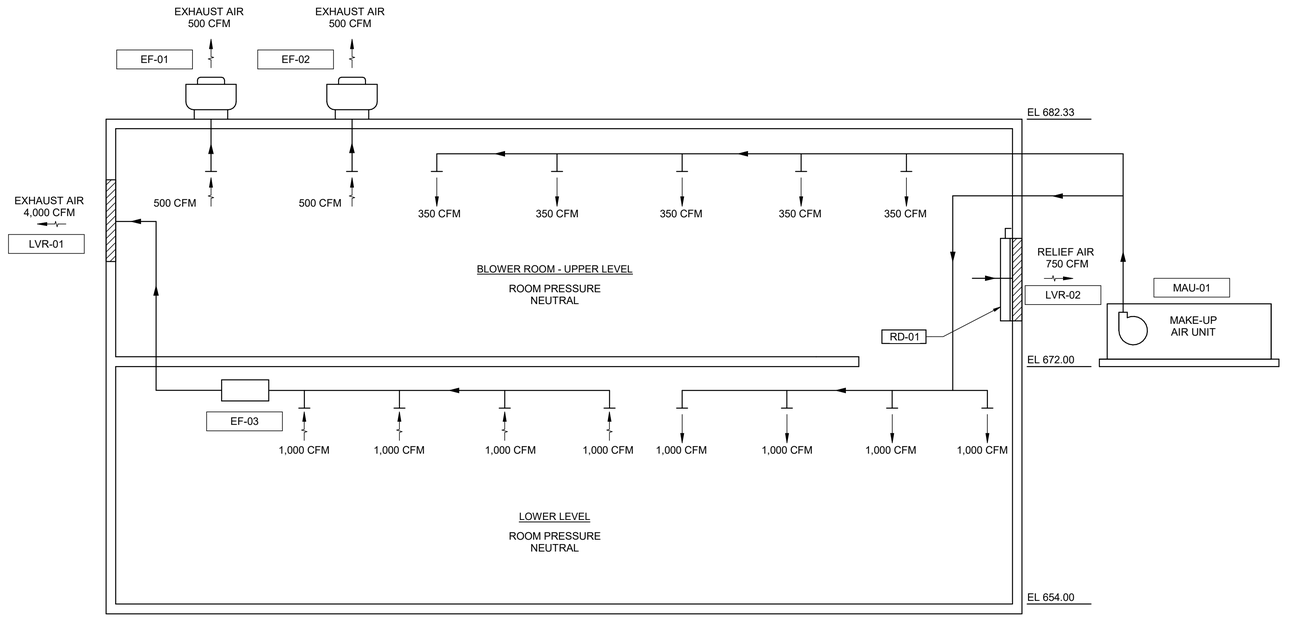
MECHANICAL SECTIONS

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET H-02



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APPROVED BY	CSW
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CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

MECHANICAL AIRFLOW DIAGRAMS

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET H-03

FAN SCHEDULE

MARK	LOCATION	SERVES	TYPE	MOUNT	RECOMMENDED ROOF/WALL OPENING (IN.xIN.)	AIRFLOW (CFM)	ESP (IN WC)	FAN SPEED (RPM)	DRIVE	MOTOR			DISCONNECT BY	STARTER BY	WEIGHT (LBS)	BASIS OF DESIGN		NOTES
										BHP	HP	VOLT/PH/Hz				MANUFACTURER	MODEL	
EF-01	ROOF	UPPER LEVEL	UPBLAST CENTRIFUGAL	ROOF	12.5 x 12.5	500	0.50	1588	DIRECT	0.095	1/10	120/1/60	DIVISION 23	DIVISION 26	48	GREENHECK	CUE-090-VG	1,2,3,4
EF-02	ROOF	UPPER LEVEL	UPBLAST CENTRIFUGAL	ROOF	12.5 x 12.5	500	0.50	1588	DIRECT	0.095	1/10	120/1/60	DIVISION 23	DIVISION 26	48	GREENHECK	CUE-090-VG	1,2,3,4
EF-03	LOWER LEVEL	LOWER LEVEL	INLINE CENTRIFUGAL	HORIZONTAL	-	4,000	0.50	1512	DIRECT	1.15	2	208/1/60	DIVISION 26	DIVISION 26	174	GREENHECK	SQ-160-VG	1,2,4

NOTES:
1. PROVIDE FAN WITH ECM MOTOR WITH DIAL ON MOTOR.
2. PROVIDE FAN WITH GRAVITY BACKDRAFT DAMPER. REFER TO SPECIFICATION SECTION 23 34 00 AND 23 31 00 FOR MATERIALS.
3. PROVIDE FAN WITH ROOF CURB. REFER TO SPECIFICATION SECTION 23 34 00 FOR MATERIALS. ROOF CURB MUST BE 18 INCHES HIGHER THAN TOP OF ROOF INSULATION. COORDINATE DEPTH OF ROOF INSULATION AT LOCATION FAN.
4. REFER TO SPECIFICATION SECTION 23 09 00 FOR SEQUENCE OF OPERATION AND INTERLOCKS.

HEAT PUMP SCHEDULE

MARK	LOCATION	COOLING		EFFICIENCY		COMPRESSOR DATA					ELECTRICAL DATA			DISCONNECT BY	SOUND PWR DBA	OPERATING WEIGHT (LBS)	BASIS OF DESIGN		NOTES
		NOMINAL CAPACITY (MBH)	AMBIENT (°F)	SEER (EER)	COP (HSPF)	TYPE	REFRIG. TYPE	NO OF COMPS	CAP. CTRL RANGE (%)	MAX INDOOR UNITS	MCA	MOCP	VOLT/PH/Hz				MANUFACTURER	MODEL	
HP-01	BLOWER BUILDING	40.5	95	14	(8.2)	INVERTER	R-410	1	-	1	29.1	35	208/1/60	DIVISION 26	57	225	DAIKIN	RZQ42TAVJU	1,2

NOTES:
1. PROVIDE LOW AMBIENT WIND BAFFLE FOR COOLING OPERATION DOWN TO -10F.
2. PROVIDE WIRED REMOTE CONTROLLER.

SPLIT SYSTEM AIR HANDLER UNIT SCHEDULE

MARK	SERVES	TYPE	NOMINAL AIRFLOW (CFM)	MINIMUM OA (CFM)	FANS			COOLING COIL				HEATING		ELECTRICAL			DISCONNECT BY	MATCHING HEAT PUMP	BASIS OF DESIGN		NOTES
					HP (WATTS)	ESP (IWC)	RPM MAX	EAT		TOTAL (MBH)	SEN (MBH)	EAT (DB °F)	CAPACITY (MBH)	MCA	MOCP	VOLTS/PH/Hz			MANUFACTURER	MODEL	
								DB (°F)	WB (°F)												
AC-01	BLOWER BUILDING	CEILING SUSPENDED	830	700	3760	0.5	-	75	67	40.5	28.2	70	40	1.4	15	208/1/60	DIVISION 26	HP-01	DAIKIN	FHQ36MVJU	1,2

NOTES:
1. PROVIDE SINGLE POINT POWER CONNECTION AND CONTROLLER FOR COMPLETE OPERATION AS NOTED ON PLANS AND SPECIFICATIONS.
2. PROVIDE UNIT WITH CONFIGURATION AND COMPONENTS AS SHOWN ON PLANS AND ELEVATIONS.

MAKE-UP AIR UNIT SCHEDULE

MARK	LOCATION	SERVES	CONFIGURATION	HEATING TYPE	SUPPLY		FAN DATA			ELECTRICAL HEATING				FILTERS		ELECTRICAL DATA			DISCONNECT BY	STARTER BY	WEIGHT (LBS.)	BASIS OF DESIGN		NOTES
					AIRFLOW (CFM)	E.S.P. (IN.WG.)	TYPE	FAN RPM	HP	INPUT (KW)	E.A.T. (°F)	L.A.T. (°F)	DELTA T. (°F)	TYPE	THK (IN)	MCA	MOCP	VOLTS/PH/HZ				MANUFACTURER	MODEL	
MAU-01	BLOWER BUILDING	BLOWER BUILDING	HORIZONTAL WITH END DISCHARGE	ELECTRIC	5,750	1.50	PLENUM	910	3	94	5.0	55.0	50.0	MERV 8	1	148.0	-	460/3/60	DIVISION 26	DIVISION 23	1,300	HASTINGS	SBEM-115-6-109	1,2,3,4

NOTES:
1. PROVIDE UNIT WITH MOTORIZED SHUTOFF DAMPERS ON INLET.
2. PROVIDE 316 STAINLESS STEEL PREFABRICATED ROOF CURB. ROOF CURB MUST BE 18 INCHES HIGHER THAN TOP OF ROOF INSULATION. COORDINATE DEPTH OF ROOF INSULATION AT LOCATION EQUIPMENT.
3. PROVIDE INTEGRAL GFCI CONVENIENCE OUTLET.
4. PROVIDE OPTIONS AND ACCESSORIES: AIR FLOW ARRANGEMENT: OUTDOOR AIR ONLY; WEATHERHOOD: BIRDSCREEN; HEAT INLET AIR SENSOR.

LOUVER SCHEDULE

MARK	SERVICE	LOCATION	FLOW RATE (CFM)	VELOCITY (FT/MIN)	PRESS. LOSS (IN WC)	FREE AREA (SF)	WIDTH (IN)	HEIGHT (IN)	BASIS OF DESIGN		NOTES
									MANUFACTURER	MODEL	
LVR-01	EXHAUST AIR - LOWER LEVEL	BLOWER ROOM UPPER LEVEL	4,000	496	0.04	8.08	34	64	GREENHECK	ESD-603	1,2
LVR-02	RELIEF AIR - UPPER LEVEL	BLOWER ROOM UPPER LEVEL	750	182	0.01	4.03	34	34	GREENHECK	ESD-603	1,2,3

NOTES:
1. PROVIDE DRAINABLE LOUVER WITH STAINLESS STEEL BIRDSCREEN.
2. PROVIDE WITH KYNAR 70% (3-COAT) FINISH. COLOR BY ARCHITECT.
3. PROVIDE MATCHING RELIEF DAMPER RD-01. REFER TO DAMPER SCHEDULE FOR MORE INFORMATION.

DAMPER SCHEDULE

MARK	SERVICE	LOCATION	MAX VELOCITY (FT/MIN)	BLADE			AXLE MATERIAL	JAMB SEAL MATERIAL	WIDTH (IN)	HEIGHT (IN)	MATCHING LOUVER	BASIS OF DESIGN	
				THICKNESS (IN.)	MATERIAL	SEAL						MANUFACTURER	MODEL
RD-01	BLOWER BUILDING UPPER LEVEL	BLOWER BUILDING UPPER LEVEL	2,000	0.063	ALUMINUM	TPE	304 SS	EPDM	34	34	LVR-02	GREENHECK	BR-31

DIFFUSER, REGISTER, AND GRILLE SCHEDULE

MARK	DESCRIPTION	FACE TYPE	MATERIAL	FINISH	FRAME TYPE	FACE SIZE	NECK SIZE	BASIS OF DESIGN		NOTES
								MANUFACTURER	MODEL	
SG	SIDEWALL SUPPLY	ADJ DOUBLE DEFLECTION, 3/4" BLADE SPACING	STEEL	ANODIZED	SURFACE MOUNTED	SEE PLANS	SEE PLANS	TITUS	300RS	1,2
EG	SIDEWALL EXHAUST	DOUBLE DEFLECTION, 3/4" BLADE SPACING	STEEL	ANODIZED	SURFACE MOUNTED	SEE PLANS	SEE PLANS	TITUS	350ZRS	1,2

NOTES:
1. FINISH COLOR BY ARCHITECT.
2. PROVIDE OPPOSED BLADE DAMPER.

ISSUE	DATE	DESCRIPTION
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PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	CMC
DRAWN BY	LRG
APPROVED BY	CSW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

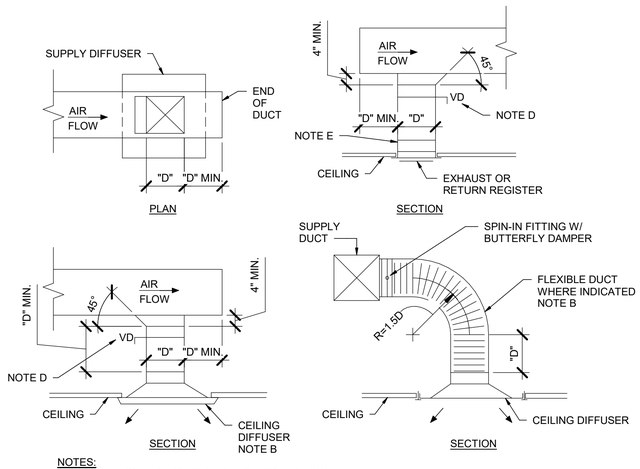
MECHANICAL SCHEDULES

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

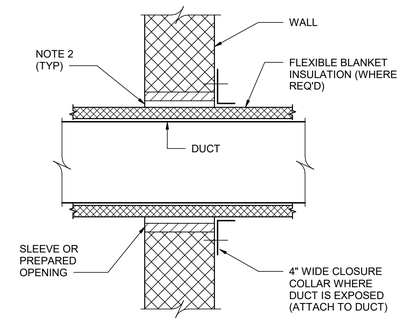
SCALE NONE

SHEET H-04



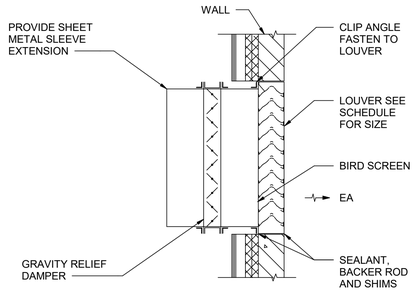
NOTES:
1. "D" IS THROAT DIA OR SIDE DIM. OF SQUARE CONN.
2. MIN. LENGTH OF STRAIGHT DUCT ABOVE CD IS "D".
3. ABOVE DETAILS ARE REPRESENTATIVE OF STANDARD DUCT CONNECTIONS. ONLY THESE DETAILS ARE NOT INTENDED TO SHOW ALL POSSIBLE DUCT CONNECTIONS.
4. BALANCING DAMPERS SHALL BE PROVIDED AT ALL TAKE-OFFS FOR BALANCING. DO NOT BALANCE AIR AT DIFFUSERS AND GRILLES.
5. ATTACH DUCT TO DIFFUSER NECK W/SHEET METAL SCREWS (4 MIN.) AND SEAL WITH CAULKING.

1 - DUCT CONNECTION DETAIL
NOT TO SCALE



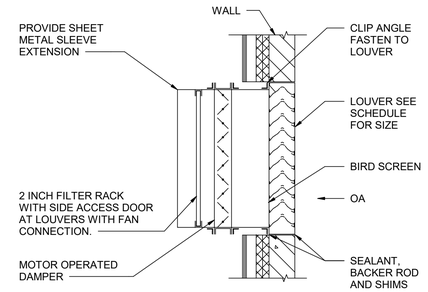
NOTES:
1. THIS DETAIL IS FOR NONFIRE-RATED CONSTRUCTION. DUCT PENETRATIONS IN FIRE-RATED CONSTRUCTION SHALL BE FIRESTOPPED WITH A UL-CLASSIFIED SYSTEM.
2. AT PENETRATIONS THRU INSULATED WALLS PROVIDE PACKING AND SEALANT.

2 - DUCT PENETRATION THRU WALL
NOT TO SCALE



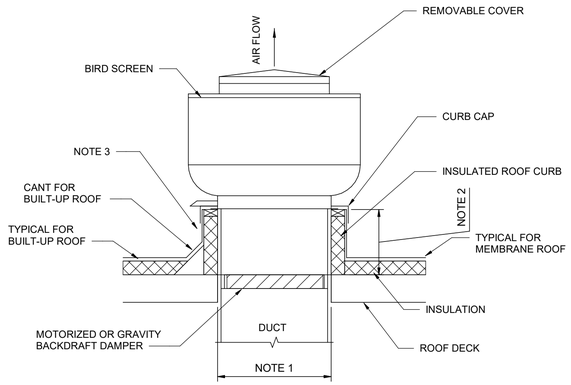
NOTES:
1. SEE ARCHITECTURAL DRAWINGS FOR WALL CONSTRUCTION DETAILS,DIMENSIONS, AND OTHER REQUIREMENTS.
2. MOTOR OPERATED OR GRAVITY BACKDRAFT DAMPER SHALL BE FULL SIZE OF LOUVER UNLESS OTHERWISE INDICATED.
3. PROVIDE REMOVABLE LOUVER WHERE INDICATED ON THE PLANS.

3 - EA LOUVER IN WALL DETAIL
NOT TO SCALE



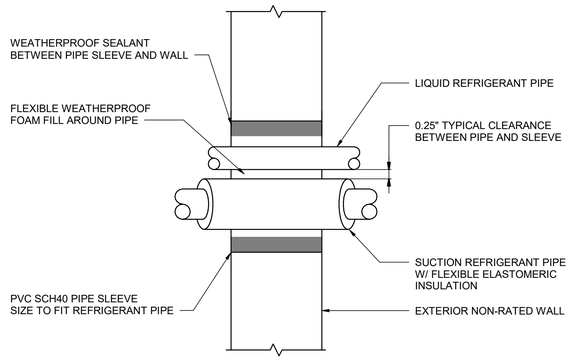
NOTES:
1. SEE ARCHITECTURAL DRAWINGS FOR WALL CONSTRUCTION DETAILS,DIMENSIONS, AND OTHER REQUIREMENTS.
2. MOTOR OPERATED DAMPER SHALL BE FULL SIZE OF LOUVER UNLESS OTHERWISE INDICATED.
3. PROVIDE REMOVABLE LOUVER WHERE INDICATED ON THE PLANS.

4 - OA LOUVER IN WALL DETAIL
NOT TO SCALE



NOTES:
1. COORDINATE MANUFACTURER'S RECOMMENDED ROOF OPENING SIZE WITH STRUCTURAL.
2. REFER TO PLANS FOR ROOF CURB HEIGHT ABOVE INSULATION.
3. REFER TO ARCHITECTURAL DETAILS FOR CURB FLASH AND COUNTER FLASH AS REQUIRED TO PROVIDE A WEATHERPROOF AND WATERPROOF ENCLOSURE. CONTRACTOR TO COORDINATE WORK WITH THE ROOFING CONTRACTOR.
4. INSTALL FAN IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.

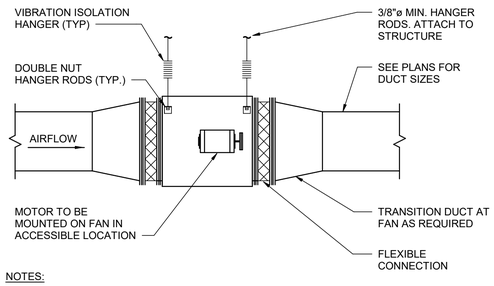
5 - UPBLAST ROOF EXHAUST FAN DETAIL
NOT TO SCALE



ABOVE GROUND WALL PENETRATION ONLY

PVC PIPE SLEEVE SIZE NOT TO EXCEED 6" SCH 40

6 - REFRIGERANT PIPE WALL PENETRATION DETAIL
NOT TO SCALE



NOTES:
1. SEE DRAWINGS FOR SUCTION AND DISCHARGE DUCT SIZES.
2. MOTOR SHOWN ON SIDE. SEE DRAWINGS FOR MOTOR LOCATION. INSTALL FAN SO THAT MOTOR IS ACCESSIBLE.
3. SEE SCHEDULES AND SPECIFICATIONS FOR FAN REQUIREMENTS.
4. TRANSITIONS SHOWN ARE CONCENTRIC. TRANSITIONS MAY ALSO BE FLAT ON TOP OR FLAT ON BOTTOM. SEE DRAWINGS FOR TRANSITION TYPE.

7 - INLINE FAN DETAIL
NOT TO SCALE

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	CMC
DRAWN BY	LRG
APPROVED BY	CSW
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

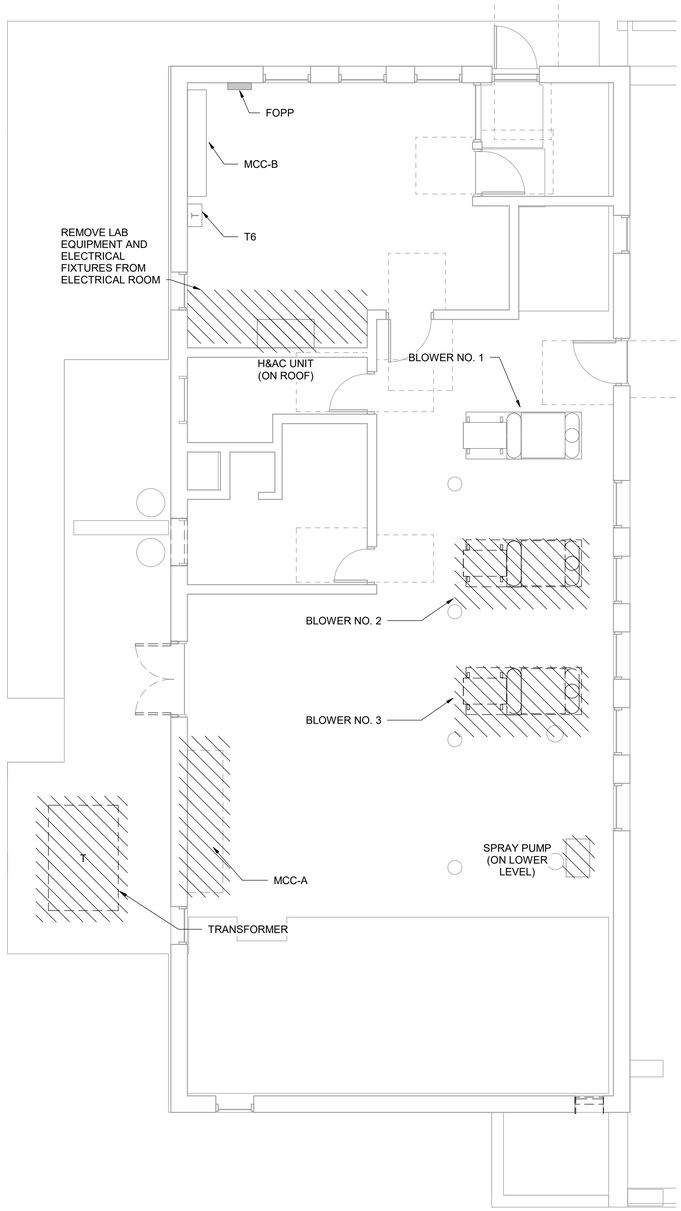
MECHANICAL DETAILS

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET H-05



BLOWER BUILDING UPPER LEVEL F/F

3/16" = 1'-0"

NOTES:

1. REFER TO SHEET DE-02 FOR ADDITIONAL BLOWER BUILDING DEMOLITION DETAILS.
2. REFER TO SHEET E-02 FOR OVER ALL ELECTRICAL SITE PLAN.

PROPOSED SEQUENCE OF CONTRUCTION

1. ALL OUTAGES SHALL BE SUBMITTED IN WRITING AND APPROVED BY THE OWNER.
2. INSTALL TRANSFORMER, SWITCHBOARD, AND BLOWER NO. 1 STARTER. REFER TO SHEETS E-03 AND E-05 FOR DETAILS.
3. PROVIDE TEMPORARY POWER FOR THE BLOWER BUILDING AS NEEDED TO MAINTAIN OPERATION OF THE FACILITIES FOR OUTAGES LASTING LONGER THAN FOUR HOURS.
4. INSTALL NEW FEEDER FROM EXISTING 5KV MAIN SWITCHGEAR TO NEW TRANSFORMER AND CONNECT BLOWER NO. 1 TO NEW STARTER. CONNECT MCC-B TO NEW SWITCHBOARD.
5. DEMOLISH MCC-A, EXISTING TRANSFORMER, AND FEEDERS TO BLOWERS NO. 2 AND NO. 3

DEMOLITION NOTES:

1. DEMOLITION DRAWINGS ARE BASED ON CASUAL FIELD OBSERVATIONS AND EXISITING RECORD DOCUMENTS. REPORT DISCREPANCIES TO ENGINEER BEFORE DISTRUBING EXISITING INSTALLATION.
2. REMOVE EXISTING CONDUIT, WIRE, BOXES, AND FASTENING DEVICES SHOWN, NECESSARY, OR REASONABLY INFERRED FOR REMOVAL AND REPLACEMENT OF ELECTRICAL EQUIPMENT
3. REMOVE ALL WIRING DETERMINED TO BE DISCONNECTED AND ABANDONED TO SOURCE OF SUPPLY, AND REMOVE ALL CONDUIT AND JUNCTION BOXES DETERMINED TO BE EMPTY AND NOT INTENDED FOR REUSE.
4. IDENTIFY AND PROVIDE NEW SUPPORTING MEANS FOR EXISTING ELECTRICAL EQUIPMENT SUCH AS CONDUIT, BOXES, CABLE TRAY, PULL BOXES CONDUIT BODIES AND CONDUIT RACKS AFFECTED BY SCOPE OF DEMOLITION WORK.
5. EXISITING WIRING, CONDUIT, AND EQUIPMENT TO REMAIN AS INSTALLED EXCEPT WHERE REMOVAL IS CALLED FOR IN DRAWINGS OR IS MADE NECESSARY BY THE REMOVAL AND REPLACEMENT OF BLOWERS.
6. WHEREVER IT IS NECESSARY TO WITHDRAW CONDUCTORS FROM EXISTING RACEWAY, NEW CONDUCTORS SHALL BE INSTALLED, UNLESS OTHERWISE NOTED.
7. EXTEND EXISTING INSTALLATIONS USING MATERIALS AND METHODS COMPATIBLE WITH EXISITNG ELECTRICAL INSTALLATIONS, OR AS SPECIFIED. RELOCATE AND REROUTE CONDUIT AND WIRING AS REQUIRED FOR REMOVAL AND REPLACEMENT OF THE BLOWERS.
8. HATCHING INDICATES DEMOLITION.

DEMOLITION HATCHING

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

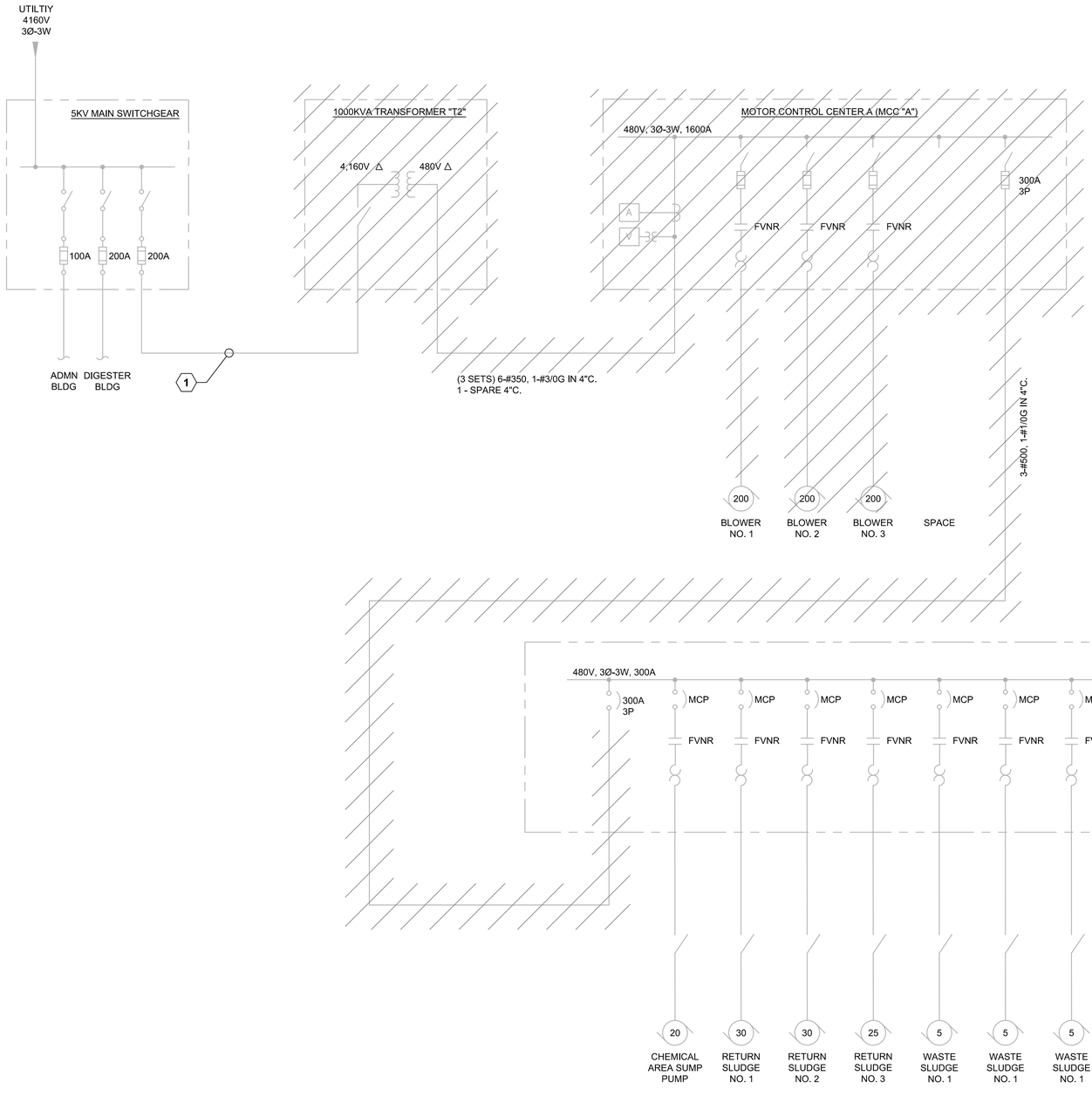
BLOWER BUILDING ELECTICAL DEMOLITION PLAN

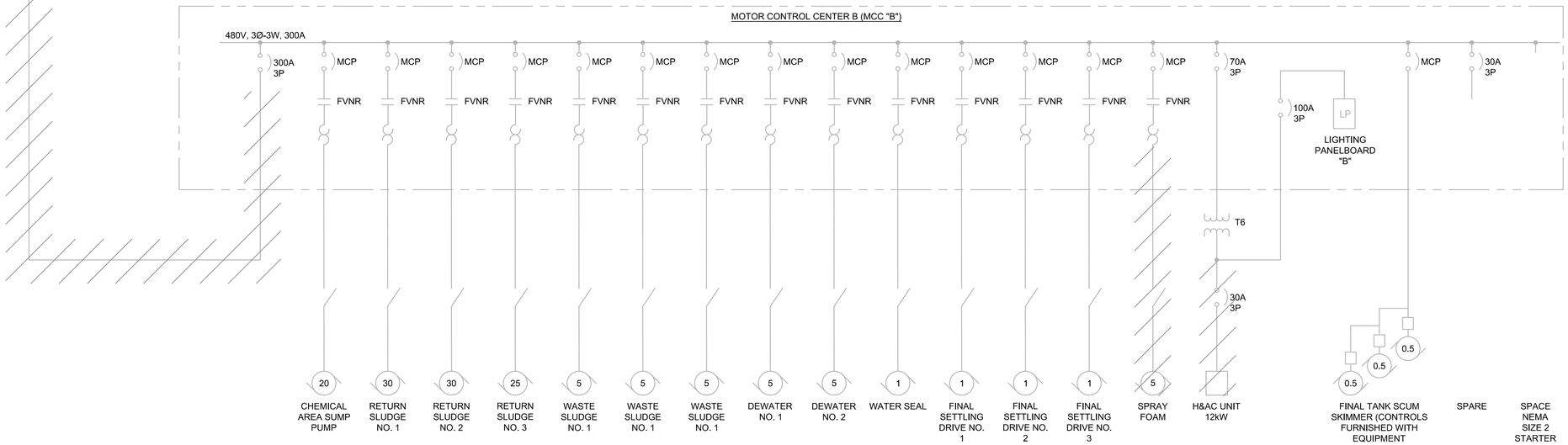
0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET DE-01





NOTES:

1. 5KV MAIN SWITCHGEAR LOCATED IN THE ADMINISTRATION BUILDING. REFER TO SHEET E-02 FOR DETAILS.

KEY NOTES:

1. 3-#4/0 5KV, 1-#2GND IN 3"C. REMOVE AND DISPOSE OF CONDUCTORS, CONDUIT TO REMAIN FOR REUSE.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

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DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

BLOWER BUILDING PARTIAL ONE LINE DIAGRAM DEMOLITION

FILENAME: DE-02.DWG
SCALE: NOT TO SCALE
SHEET: DE-02

C:\pwworking\east01\d0945228\DE-02.dwg, DE-02, 12/8/2020 2:05:24 PM, CCENCI

20A OR 3P / 100AF 80AT — LOW – VOLTAGE CIRCUIT BREAKER (CB). RATINGS AND NO. OF POLES AS SHOWN. WHEN SPECIFIC TYPE IS REQUIRED, X INDICATES TYPE.

TYPES:
MCP – MOTOR CIRCUIT PROTECTOR (RATING PER CONNECTED LOAD)

FUSE, SIZE, AND NUMBER OF FUSES AS NOTED

FUSIBLE SWITCH, CURRENT RATING, FUSE SIZE, AND QUANTITY AS NOTED

NON–FUSED SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED

XX — MOTOR CONTROLLER: XX INDICATES TYPE
SS = SOLID STATE STARTER
VFD = VARIABLE FREQUENCY DRIVE
AT = AUTO TRANSFORMER STARTER
PW = PART WINDING STARTER
Y–Δ = WYE–DELTA STARTER
WR = WOUND ROTOR STARTER
22 = TWO SPEED TWO WINDING
21 = TWO SPEED ONE WINDING
NR = FULL VOLTAGE NON REVERSING STARTER
R = FULL VOLTAGE REVERSING STARTER

TRANSFORMER

Δ 3–PHASE, 3–WIRE DELTA CONNECTION

3–PHASE, 4–WIRE GROUNDED WYE CONNECTION

THERMAL OVERLOAD ELEMENT

OL — THERMAL OVERLOAD RELAY CONTACT

ATS — TRANSFER SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED

ATS – AUTOMATIC
MTS – MANUAL

CPT — CONTROL POWER TRANSFORMER (CPT)

VOLTAGE TRANSFORMER (VT OR PT)

CURRENT TRANSFORMER (CT)

PM — DIGITAL METERING PACKAGE

ETM — ELAPSED TIME METER

GROUND

7 1/2 OR HP — MOTOR WITH DESIGN HORSEPOWER (WHEN INDICATED)

G — GENERATOR

CONTROL PANEL INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

CONTROL PANEL WITH DISCONNECT SWITCH INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

J — JUNCTION OR PULL BOX

TB — TERMINAL BOX

SPD — LOW VOLTAGE SURGE PROTECTIVE DEVICE

PANELBOARD (250V TO 600V)

PANELBOARD (LESS THAN 250V)

ELECTRICAL EQUIPMENT ENCLOSURE: SWITCHBOARD, MOTOR CONTROL CENTER, CONTROL PANEL, OR OTHER EQUIPMENT AS INDICATED

CB — SEPARATELY MOUNTED CIRCUIT BREAKER; SEE ELECTRICAL ONE – LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

SEPARATELY MOUNTED COMBINATION MOTOR STARTER OR CONTROLLER; SEE ELECTRICAL ONE – LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

DISCONNECT OR SAFETY SWITCH, 30A, 3P, NON–FUSED UNLESS OTHERWISE NOTED

SPECIAL–PURPOSE RECEPTACLE AS DEFINED ON PLANS

TELECOMMUNICATIONS OUTLET JUNCTION BOX

X / Y — DUPLEX RECEPTACLE, NEMA 5–20R

SUBSCRIPTS:
X – INDICATES TYPE
GFCI – GROUND FAULT CIRCUIT INTERRUPTER
Y – INDICATES CIRCUIT NUMBER FROM PANELBOARD

GROUND ROD

T — THERMOSTAT – BY MECHANICAL

SD — SMOKE DETECTOR – BY MECHANICAL

DP — DIFFERENTIAL PRESSURE SWITCH – BY MECHANICAL

CONDUIT TURNING UP

CONDUIT TURNING DOWN

HOME RUN TO PANEL, 2 #12, 1 #12G IN 3/4"C UNLESS OTHERWISE NOTED

CIRCUIT RUN BETWEEN DEVICES EXPOSED IN NON–ARCHITECTURALLY FINISHED AREAS; CONCEALED IN ARCHITECTURALLY FINISHED AREAS. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

CONDUIT RUN BETWEEN DEVICES CONCEALED IN NON–ARCHITECTURALLY FINISHED AREAS OR UNDER FLOOR SLAB. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

ELECTRICAL CONNECTION

OR OR — NO ELECTRICAL CONNECTION

SV OR — SOLENOID VALVE

X / Y — CONTROL/RELAY COIL; X INDICATES TYPE, Y INDICATES LOOP NO. WHEN USED

TYPES:
CR – CONTROL RELAY
DP – DEFINITE PURPOSE RELAY
LC – LIGHTING CONTACTOR
M – MOTOR STARTER
PC – PHOTO CELL
TC – TIME CLOCK
TR – TIMING RELAY

NORMALLY OPEN CONTACT (N.O.)

NORMALLY CLOSED CONTACT (N.C.)

NORMALLY OPEN TIME DELAY RELAY CONTACT WITH TIME DELAY ON CLOSING AFTER COIL IS ENERGIZED

NORMALLY CLOSED TIME DELAY RELAY CONTACT WITH TIME DELAY ON OPENING AFTER COIL IS ENERGIZED

NORMALLY OPEN TIME DELAY RELAY CONTACT WITH TIME DELAY ON OPENING AFTER COIL IS DE–ENERGIZED

NORMALLY CLOSED TIME DELAY RELAY CONTACT WITH TIME DELAY ON CLOSING AFTER COIL IS DE–ENERGIZED

NORMALLY OPEN TEMPERATURE SWITCH; CLOSE ON RISING TEMPERATURE

NORMALLY CLOSED TEMPERATURE SWITCH; OPEN ON RISING TEMPERATURE

NORMALLY OPEN FLOW SWITCH; CLOSE ON INCREASING FLOW

NORMALLY CLOSED FLOW SWITCH; OPEN ON INCREASING FLOW

NORMALLY OPEN LEVEL SWITCH, CLOSE ON RISING LEVEL

NORMALLY CLOSED LEVEL SWITCH, OPEN ON RISING LEVEL

NORMALLY OPEN PRESSURE SWITCH, CLOSE ON INCREASING PRESSURE

NORMALLY CLOSED PRESSURE SWITCH, OPEN ON INCREASING PRESSURE

NORMALLY OPEN LIMIT SWITCH, CLOSE ON REACHING LIMIT

NORMALLY CLOSED LIMIT SWITCH, OPEN ON REACHING LIMIT

FIELD WIRING EXTERNAL TO CONTROL PANEL

OFF / HAND / AUTO / XOO / OOX — 3 POSITION SELECTOR SWITCH, MAINTAINED CONTACTS; UNLESS OTHERWISE NOTED, 2–POSITION SIMILAR

NORMALLY OPEN PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

NORMALLY CLOSED PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

X — INDICATING LIGHT, X INDICATES LENS COLOR

X — PUSH TO TEST INDICATING LIGHT, X INDICATES LENS COLOR

LENS COLORS:
R – RED
G – GREEN
B – BLUE
Y – YELLOW
W – WHITE
A – AMBER

X / Y — WALL–MOUNTED LUMINAIRE – LED, HID, COMPACT FLUORESCENT, OR INCANDESCENT

X / Y — CEILING/PENDANT–MOUNTED LED FIXTURE

X / Y — CEILING/PENDANT–MOUNTED LED FIXTURE NORMAL/EMERGENCY

X / Y — AREA OR ROADWAY LIGHT – POLE–MOUNTED

LIGHTING FIXTURE SUBSCRIPTS:
X – INDICATES FIXTURE TYPE PER LIGHTING FIXTURE SCHEDULE
Y – INDICATES CIRCUIT NUMBER FROM PANELBOARD
z – INDICATES CONTROLLING SWITCH (IF REQUIRED)

Y / X — TOGGLE SWITCH

SUBSCRIPTS:
X – INDICATES TYPE
NONE – SINGLE POLE
3 – THREE–WAY
M – MANUAL MOTOR STARTER WITH THERMAL ELEMENT

PC — PHOTOCELL

IC — INSTRUMENT DISCONNECT SWITCH, 120V – LOCKABLE

BUILDING ENTRY INDICATING STATION

XXX / ### — FIELD INSTRUMENT/DEVICE

XXX – TYPES:
AIT – DISSOLVE OXYGEN INDICATOR/TRANSMITTER
BFV – VALVE MOTORIZED ACCUATOR
FIT – FLOW INDICATOR/TRANSMITTER
FE – FLOW ELEMENT
LIT – LEVEL INDICATOR/TRANSMITTER
LE – LEVEL ELEMENT
PIT – PRESSURE INDICATOR/TRANSMITTER

ELECTRICAL ABBREVIATIONS

A	AMPERE
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CP	CONTROL PANEL
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
CU	COPPER WIRE
DC	DIRECT CURRENT
DP	DISTRIBUTION PANEL
EL	ELEVATION
ETM	ELAPSED TIME METER
ETR	EXISTING TO REMAIN
EX	EXISTING
FOPP	FIBER OPTIC PATCH PANEL
GCC	GENERATOR CONNECTION CABINET
GFI	GROUND FAULT INTERRUPTER
GP	GRIT PUMP
G, GND	GROUND
GWP	GROUND WATER PUMP
HCP	HIGH CAPACITY PUMP
HOA	HAND–OFF–AUTOMATIC
HP	HORSEPOWER
IPA	INTEGRATED POWER ASSEMBLY
KVA	KILOVOLT AMPERE
KW	KILOWATT
LA	LIGHTNING ARRESTER
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LGT	LIGHTING OR LIGHT
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MMD	MICROPROCESSOR BASED METERING DEVICE
MOV	MOTOR OPERATED VALVE
MSWB	MAIN SWITCHBOARD
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OL	OVERLOAD
P	POLE
PB	PULL BOX OR PUSH BUTTON
PNL	PANEL OR PANELBOARD
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST
RCVR	RECEIVER
RIO	REMOTE INPUT/OUTPUT
SS	STAINLESS STEEL OR SOLID STATE
SPD	SURGE PROTECTION DEVICE
TR	TIMING RELAY OR TIMER
TWPSH	TWISTED PAIR SHEILDED
TYP	TYPICAL
V	VOLT
W	WATT
WP	WEATHERPROOF
XFMR	TRANSFORMER
XFR	TRANSFER
XMTR	TRANSMITTER
XP	EXPLOSION PROOF
ø	PHASE

GENERAL NOTES:

1. THIS IS A STANDARD ELECTRICAL SYMBOLOGY SHEET. NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT.

2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE–EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.

3. SEE P&ID LEGEND SHEET FOR PROJECT–SPECIFIC EQUIPMENT SYMBOLS, EQUIPMENT ABBREVIATIONS, AND PIPING SYSTEM ABBREVIATIONS.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125549,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

ELECTRICAL SYMBOLS AND ABBREVIATIONS

FILENAME E-01.DWG
SCALE NOT TO SCALE
SHEET E-01

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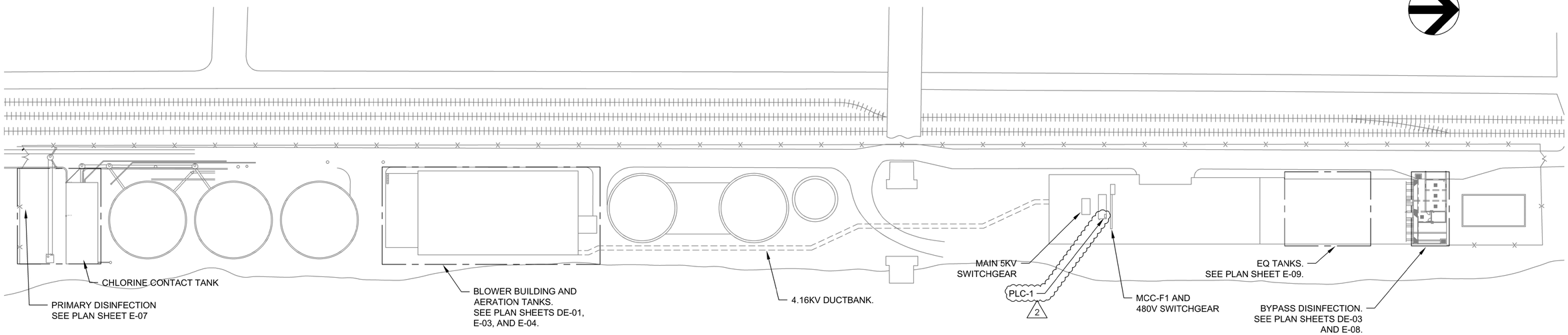
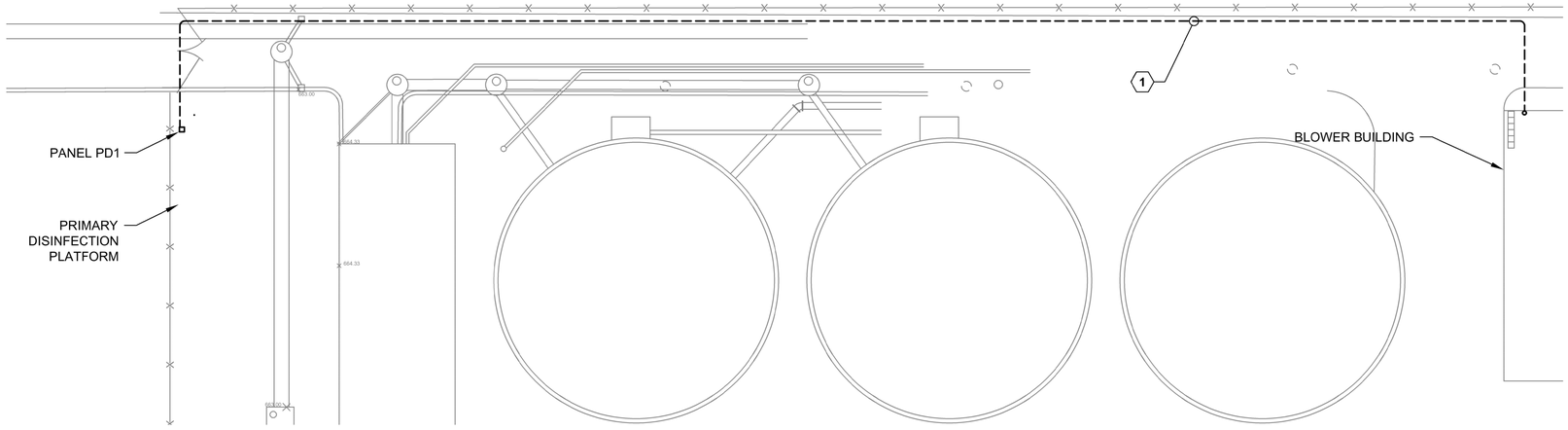


OVERALL SITE ELECTRICAL PLAN

SCALE: 1" = 50' 0"



ENLARGED VIEW ELECTRICAL PLAN

SCALE: 1" = 20' 0"

NOTES:

1. BLOWER BUILDING NEC AREA ELECTRICAL CLASSIFICATION IS 'UNCLASSIFIED'. SPACE IS CONTINUOUSLY VENTILATED AT SIX AIR CHANGES PER HOUR IN ACCORDANCE WITH NFPA 820.

KEY NOTES:

1. PROPOSED LOCATION OF DUCTBANK. REFER TO SHEET E-13 FOR TRENCHING DETAIL. REFER TO SHEET E-05 FOR POWER CABLE AND CONDUIT REQUIREMENTS. DUCT BANK TO INCLUDE 2" CONDUIT FOR FIBER OPTIC CABLE RAN FROM FIBER OPTIC PATCH PANEL LOCATED IN THE BLOWER BUILDING TO PLC-4 ON PAA PLATFORM.

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PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

ELECTRICAL SITE PLAN

FILENAME 00E-02.DWG

SCALE AS SHOWN

SHEET E-02

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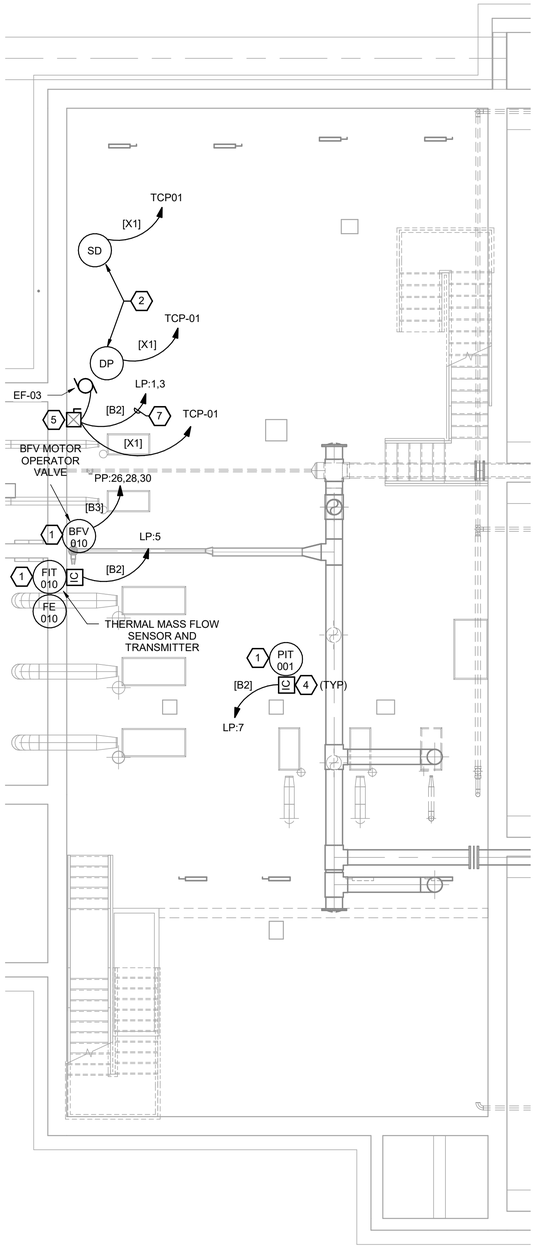
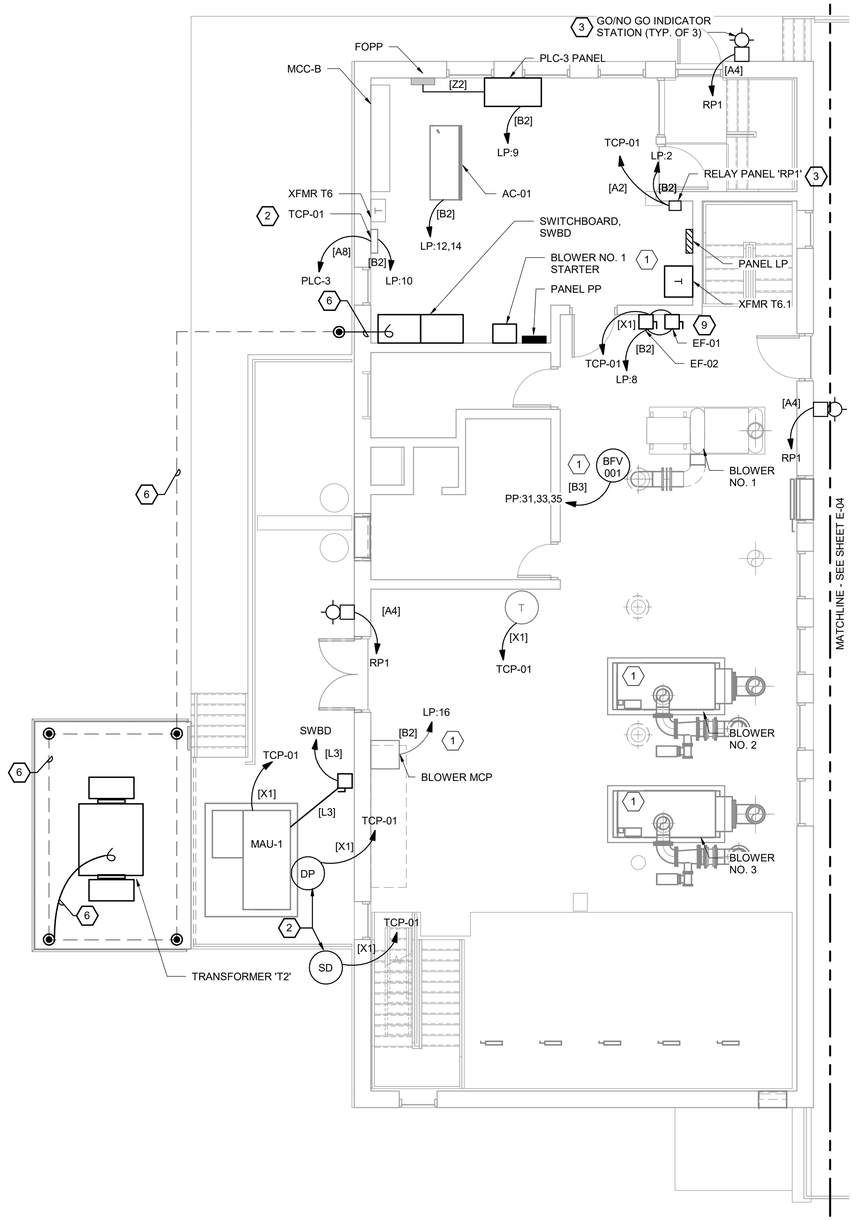


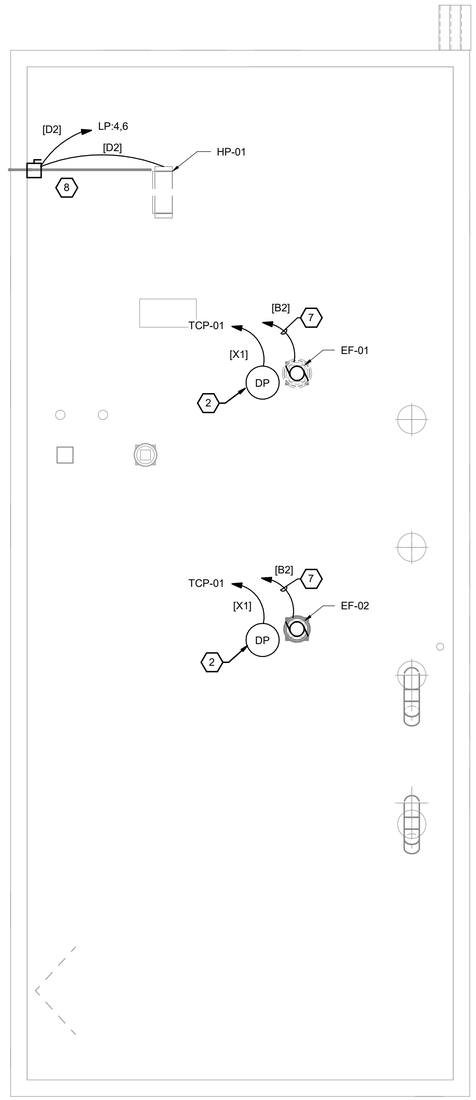
LOWER LEVEL POWER PLAN

3/16" = 1'-0"



MODIFIED BLOWER ROOM POWER PLAN

3/16" = 1'-0"



BLOWER BUILDING ROOF

3/16" = 1'-0"

GENERAL NOTES:

1. REFER TO ONE LINE DIAGRAM ON SHEET E-05 FOR ADDITIONAL CABLE/CONDUIT REQUIREMENTS.
2. REFER TO SHEET E-10 FOR PANELBOARD SCHEDULES.
3. REFER TO SHEET E-12 FOR CIRCUIT CALLOUT SCHEDULE.

KEY NOTES:

1. REFER TO SHEET E-6 AERATION SYSTEM INSTRUMENT RISER DIAGRAM FOR ADDITIONAL CABLE/CONDUIT REQUIREMENTS.
2. PROVIDED AND INSTALLED BY DIVISION 23.
3. REFER TO SHEET E-11 FOR DETAILS.
4. INSTRUMENT DISCONNECT. REFER TO SHEET E-13 FOR DETAILS.
5. EF-03 240V, 2 POLE, 30A COMBINATION STARTER.
6. #4/0 BARE COPPER GROUNDING ELECTRODE CONDUCTOR.
7. HOMERUN THROUGH COMBO STARTER.
8. 240V, 2 POLE, 60A DISCONNECT SWITCH.
9. EF-01 AND EF-02 120V COMBINATION STARTER REFER TO SHEET E-11 FOR CONTROL SCHEMATIC.

ISSUE	DATE	DESCRIPTION
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DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

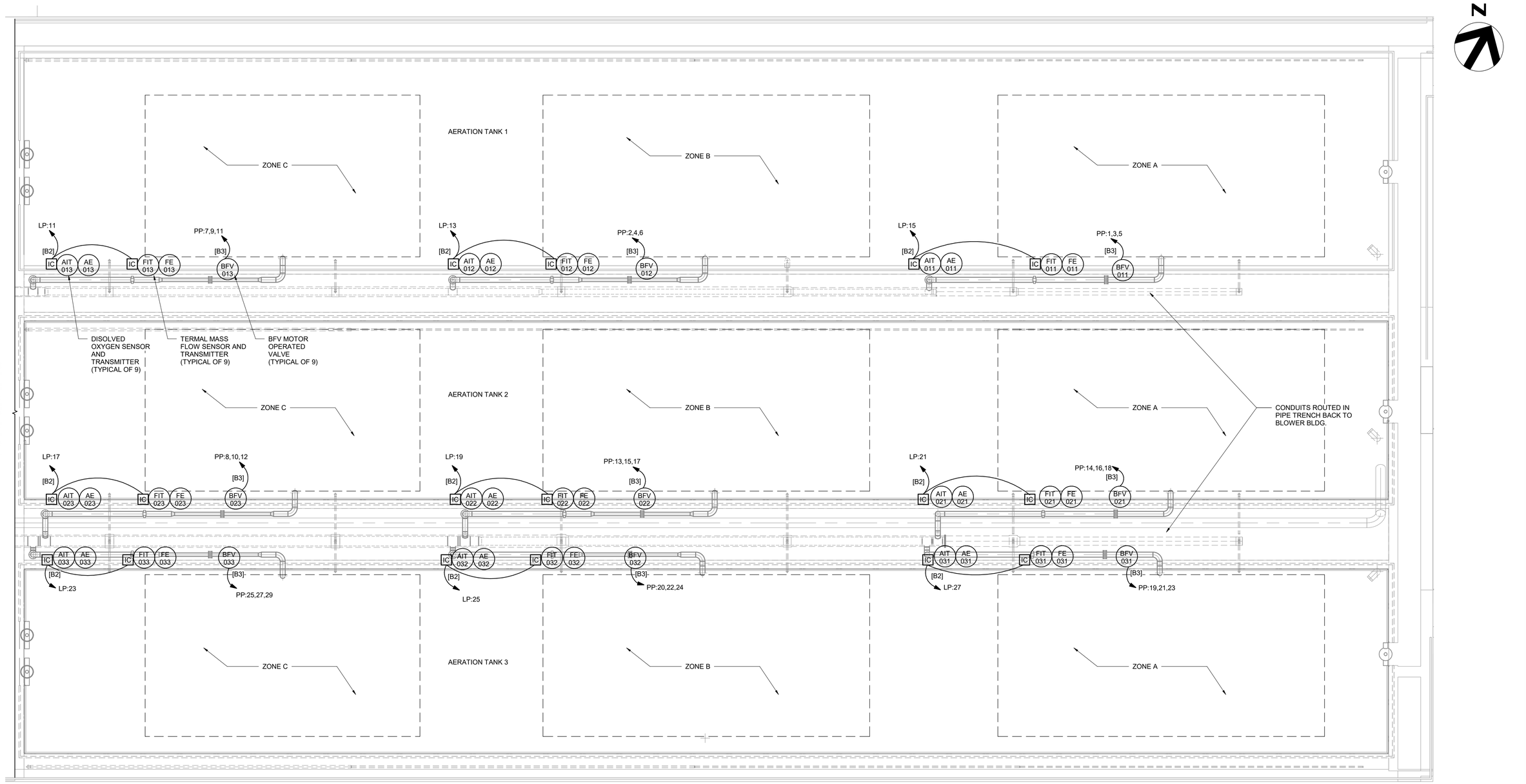
BLOWER BUILDING POWER PLAN

0 1" 2"

FILENAME HDRE_ALL_DISCIPLINES.rte

SCALE NONE

SHEET E-03



AERATION TANK POWER PLAN

3/16" = 1'-0"

GENERAL NOTES:

1. REFER TO SHEET E-06 FOR AERATION SYSTEM INSTRUMENT RISER DIAGRAM FOR ADDITIONAL CABLE/CONDUIT REQUIREMENTS.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125749, 10094459

CITY OF STEUBENVILLE, OHIO

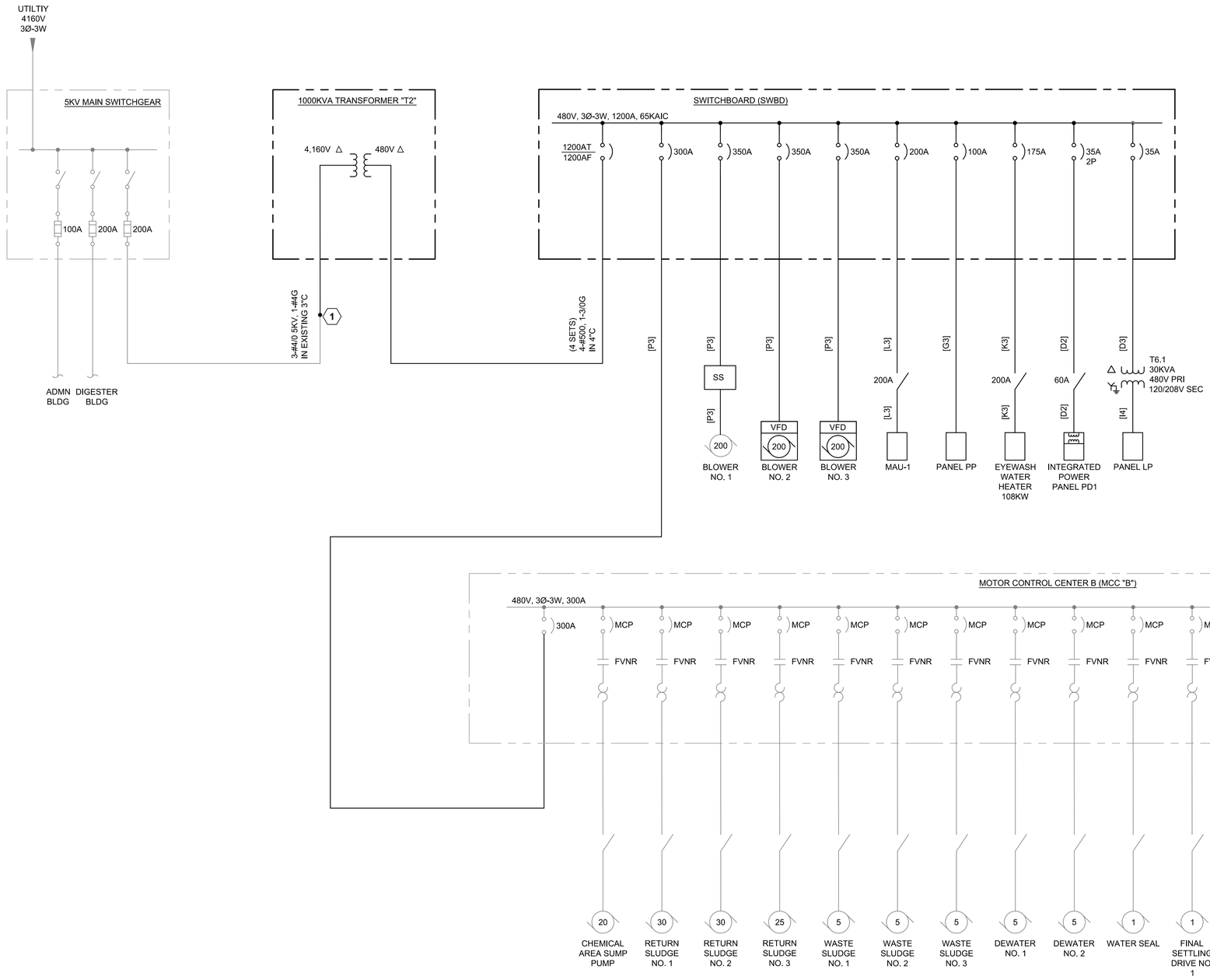
SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

AERATION TANK POWER PLAN

0 1" 2"

FILENAME	HDRE_ALL_DISCIPLINES.rte
SCALE	NONE

SHEET E-04



NOTES:

1. REFER TO SHEET E-10 FOR PANELBOARD SCHEDULES.
2. REFER TO SHEET E-12 FOR CIRCUIT CALLOUT SCHEDULE.

KEY NOTES: ⬡

1. INTERCEPT AND EXTEND 3" CONDUIT TO 'T2'.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

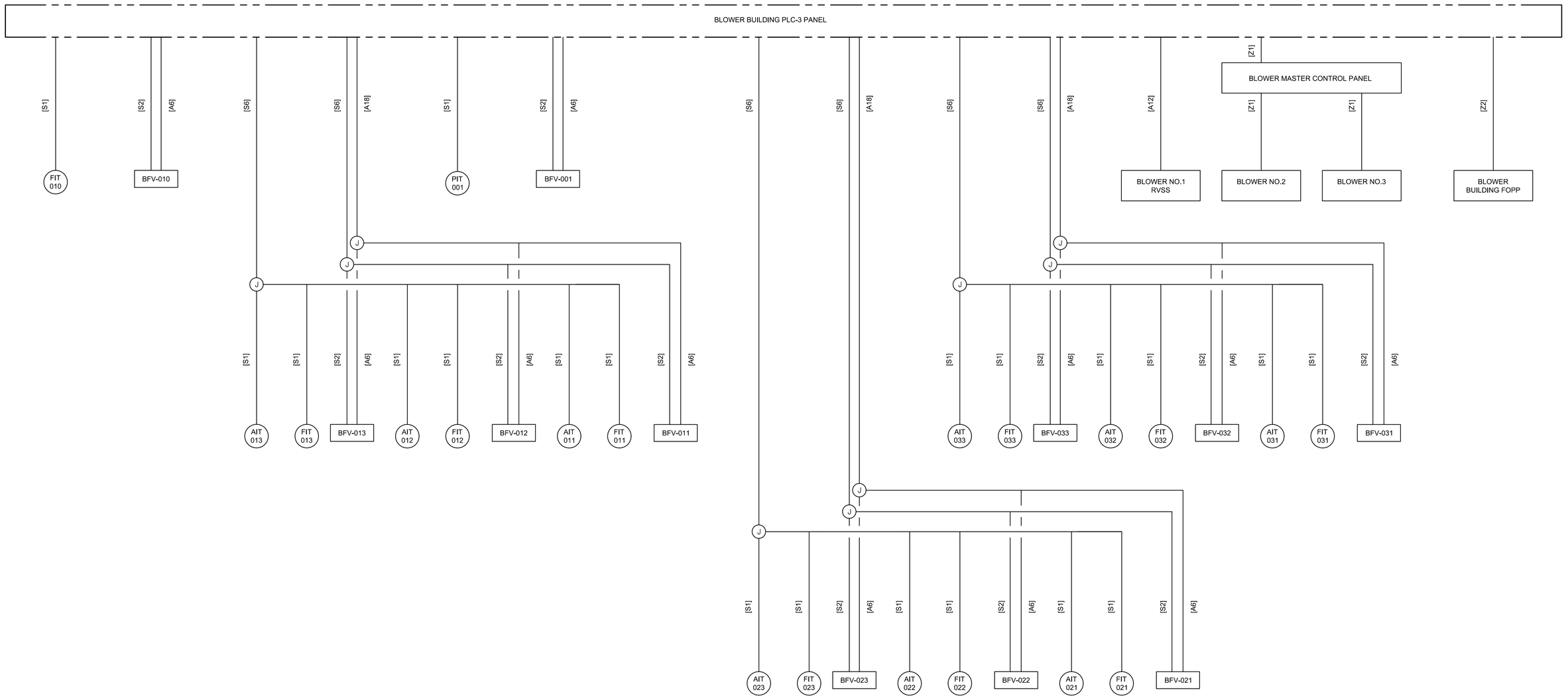
CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

BLOWER BUILDING ONE LINE DIAGRAM

FILENAME E-05.DWG
SCALE NOT TO SCALE
SHEET E-05

C:\pwworking\east01\od945228\E-05.dwg, E-05, 12/8/2020 2:09:03 PM, CCENCI



ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

AERATION SYSTEM INSTRUMENT RISER DIAGRAM

FILENAME	E-06.DWG
SCALE	NOT TO SCALE
SHEET	E-06

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PANELBOARD: PD1 — INTEGRATED PANEL/TRANSFORMER

PRI. VOLTAGE (L-L): 480
SEC. VOLTAGE (L-L): 240
SEC. VOLTAGE (L-N): 120
PHASE / WIRE: 1 / 3+G

TRANSFORMER KVA: 15
PRI. OC DEVICES: MLO
PRI. / SEC. AIC RATINGS (KA): 35 / 10
SERVICE ENTRANCE LABEL: NO

ENCLOSURE: NEMA 4X
MOUNTING: SURFACE
LOCATION: PRIMARY DISINFECTION

CKT #	CB	TYPE	LOAD SERVED	VA	LOAD/ PHASE A	LOAD/ PHASE B	VA	LOAD SERVED	TYPE	CB	CKT #
1	20/1		LIGHTS	500	1600		1100	PUMP 1		20/1	2
3	20/1		RECEPTACLES	500		1600	1100	PUMP 2		20/1	4
5	20/1		PUMP ENCLOSURE HEATER	1500	1650		150	PAA HEAT TRACE	GFCI	20/1	6
7	20/1		EYEWASH HEAT TRACE	500		650	150	WATER PIPE HEAT TRACE	GFCI	20/1	8
9	20/1		PLC-4	500	500		0	SAMPLER REC.		20/1	10
11	20/1		PLC-4	1500		1500	0	SPACE			12
13	15/1		FIT-101, 102	100	100		0	SPACE			14
15	20/1		SPARE	0		0	0	SPACE			16
17	20/1		SPARE	0	0		0	SPACE			18
19	20/1		SPARE	0		0	0	SPACE			20
					3750	2250					

TOTAL CONNECTED LOAD: 6,000 WATTS

PANELBOARD PP — PHASE WIRE 3 3 — MOUNTING SURFACE — LOCATION BLOWER BUILDING

VOLTAGE 480 — MAIN 100A — MAIN BREAKER M.L.O.

CKT #	CB		LOAD SERVED	VA	LOAD PER PHASE A	LOAD PER PHASE B	LOAD PER PHASE C	VA	LOAD SERVED		CB	CKT #
1				942	1884			942				2
3	15/3		BFV-011	942		1884		942	BFV-012		15/3	4
5				942			1884	942				6
7				942	1884			942				8
9	15/3		BFV-013	942		1884		942	BFV-023		15/3	10
11				942			1884	942				12
13				942	1884			942				14
15	15/3		BFV-022	942		1884		942	BFV-021		15/3	16
17				942			1884	942				18
19				942	1884			942				20
21	15/3		BVF-031	942		1884		942	BFV-032		15/3	22
23				942			1884	942				24
25				942	1884			942				26
27	15/3		BFV-033	942		1884		942	BFV-010		15/3	28
29				942			1884	942				30
31				942	942			0				32
33	15/3		BFV-001	942		942		0	SPACE			34
35				942			942	0				36
37				0	0			0				38
39			SPACE	0		0		0	SPACE			40
41				0			0	0				42
					10362	10362	10362					

TOTAL CONNECTED LOAD: 31,086 WATTS

PANELBOARD H2 — PHASE WIRE 3 4 — MOUNTING SURFACE — LOCATION PAA BYPASS

VOLTAGE 120/208V — MAIN 100A — MAIN BREAKER 60A

CKT #	CB		LOAD SERVED	VA	LOAD PER PHASE A	LOAD PER PHASE B	LOAD PER PHASE C	VA	LOAD SERVED		CB	CKT #
1	20/1		LIGHTS	100	1200			1,100	PUMP 1		20/1	2
3	20/1		RECEPTACLES	360		1460		1,100	PUMP 2		20/1	4
5	15/1		LIT-100	100			600	500	EYEWASH HEAT TRACE		20/1	6
7	20/1		PLC-2	500	700			200	VALVES LCP		20/1	8
9	20/1		SPARE			0			SPACE			10
11	20/1		SPARE				0		SPACE			12
13	20/1		SPARE		0				SPACE			14
15			SPACE			0			SPACE			16
17			SPACE				0		SPACE			18
19			SPACE		0				SPACE			20
21			SPACE			0			SPACE			22
23			SPACE				0		SPACE			24
					1900	1460	600					

TOTAL CONNECTED LOAD: 3,960 WATTS

PANELBOARD LP — PHASE WIRE 3 4 — MOUNTING SURFACE — LOCATION BLOWER BUILDING

VOLTAGE 120/208V — MAIN 100A — MAIN BREAKER 100A

CKT #	CB		LOAD SERVED	VA	LOAD PER PHASE A	LOAD PER PHASE B	LOAD PER PHASE C	VA	LOAD SERVED		CB	CKT #
1	20/2		EF-03	1,373	1423			50	RP1 AND GO/NO GO ENTRY LIGHTS		15/1	2
3				1,373		4399		3,026	HP-01		35/2	4
5	15/1		FIT010	100			3126	3,026				6
7	15/1		PIT001	100	500			400	EF-01 & 02		20/1	8
9	20/1		PLC-3 PANEL	500		1000		500	TCP-01		20/1	10
11	15/1		AIT013 & FIT013	200			346	146	AC-1		15/2	12
13	15/1		AIT012 & FIT012	200	346			146				14
15	15/1		AIT011 & FIT011	200		400		200	BLOWER MCP		20/1	16
17	15/1		AIT023 & FIT023	200			200		SPARE		20/1	18
19	15/1		AIT022 & FIT022	200	200				SPARE		20/1	20
21	15/1		AIT021 & FIT021	200		200			SPARE		20/1	22
23	15/1		AIT033 & FIT033	200			200		SPARE		20/1	24
25	15/1		AIT032 & FIT032	200	200				SPACE			26
27	15/1		AIT031 & FIT031	200		200			SPACE			28
29			SPACE				0		SPACE			30
31			SPACE		0				SPACE			32
33			SPACE			0			SPACE			34
35			SPACE				0		SPACE			36
37			SPACE		0				SPACE			38
39			SPACE			0			SPACE			40
41			SPACE				0		SPACE			42
					2669	6199	3872					

TOTAL CONNECTED LOAD: 12,740 WATTS

LIGHTING FIXTURE SCHEDULE

FIXTURE CODE	MANUFACTURER *	MODEL	OPTICS	FIXTURE VOLT	LAMP TYPE	LAMP QTY	LAMP SIZE	DESCRIPTION/REMARKS
L1	HOLOPHANE	EM5-L48-4000LM-LPPFL-MD-MVOLT-40K-80CRI	ACRYLIC LENS	MVOLT	LED	1	24W	LINEAR ENCLOSED AND GASKETED WET LABEL LED FIXTURE
L2	HOLOPHANE	EM5-L48-4000LM-LPPFL-MD-MVOLT-40K-80CRI-BE6WCP	ACRYLIC LENS	MVOLT	LED	1	24W	LINEAR ENCLOSED AND GASKETED WET LABEL LED FIXTURE, EM DRIVER
W1	LITHONIA	WDGE2-LED-P35W-40K-80CRI -VW-MVOLT-SRM-BBW-E20WC-PE	ACRYLIC LENS	MVOLT	LED	1	23W	EXTERIOR WALL PACK WITH INTEGRAL PHOTOCELL

* OR APPROVED EQUAL

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

ELECTRICAL SCHEDULES

FILENAME E-10.DWG
SCALE NOT TO SCALE
SHEET E-10

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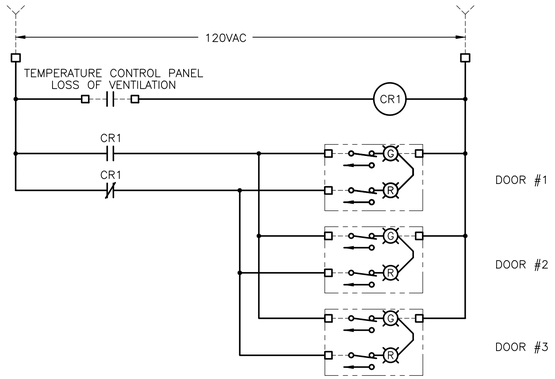
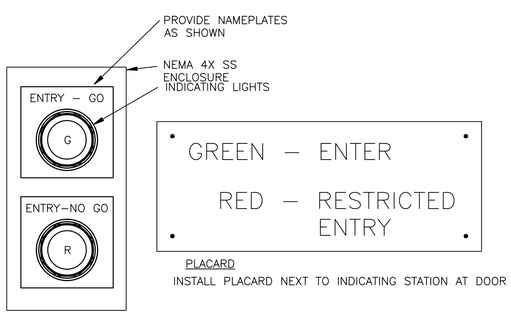
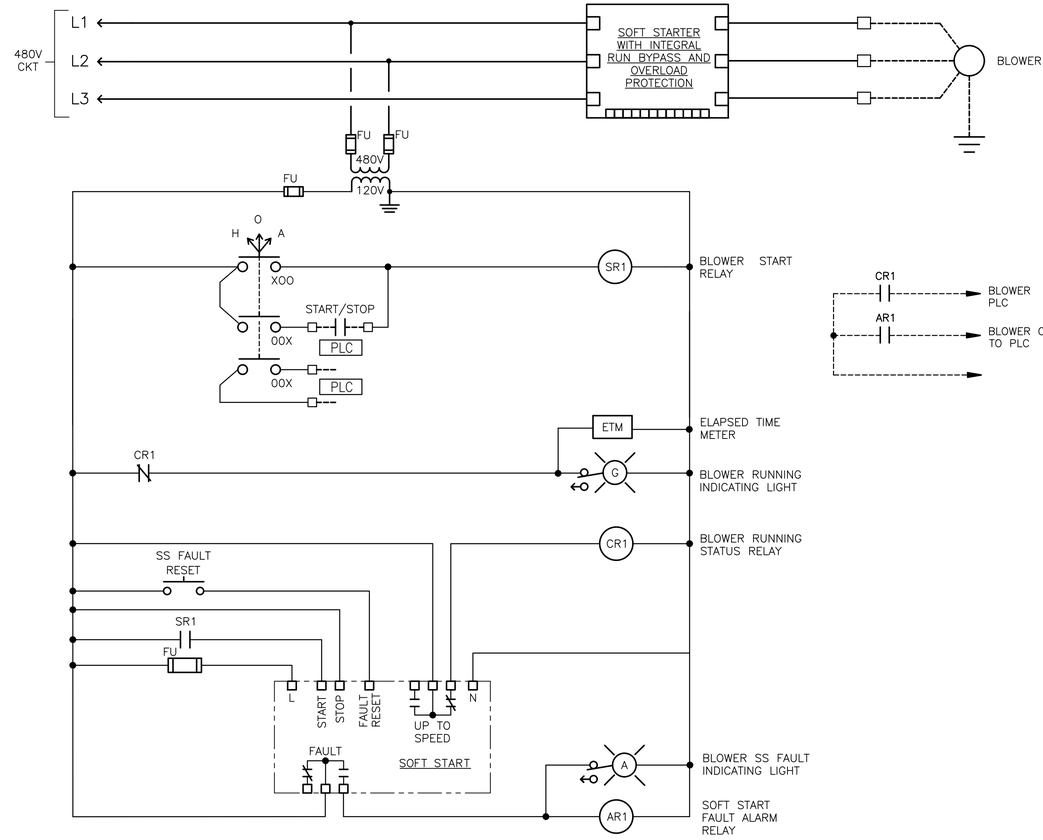


GO / NO GO RELAY PANEL

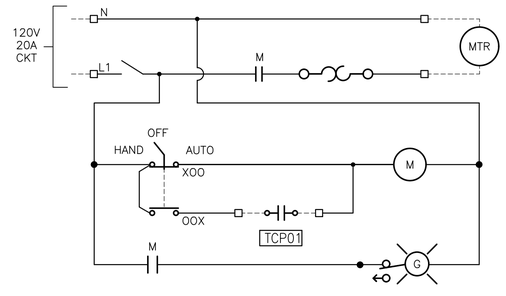


DOOR ENTRY INDICATING STATION

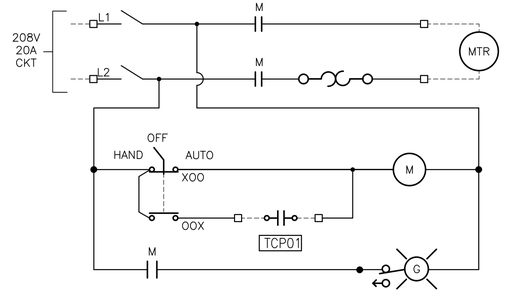
BUILDING ENTRY "GO / NO GO"
INDICATING STATION CONTROL SCHEMATIC



BLOWER NO.1 CONTROL SCHEMATIC



EF–01 AND EF–02 CONTROL SCHEMATIC



EF–03 CONTROL SCHEMATIC

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM
UPGRADE AND PAA DISINFECTION
SYSTEM REPLACEMENT

ELECTRICAL
CONTROL SCHEMATICS

FILENAME E-11.DWG
SCALE NOT TO SCALE
SHEET E-11

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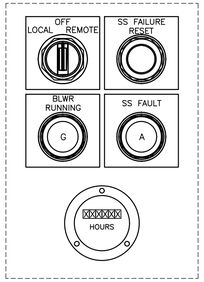
CIRCUIT CALLOUTS

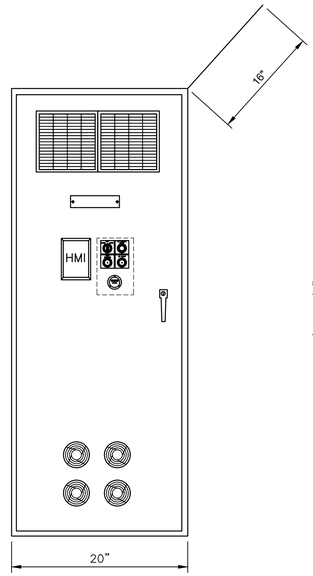
[A2] = [3/4" CONDUIT, 2–#14]
[A3] = [3/4" CONDUIT, 3–#14]
[A4] = [3/4" CONDUIT, 4–#14]
[A5] = [3/4" CONDUIT, 5–#14]
[A6] = [3/4" CONDUIT, 6–#14]
[A8] = [1" CONDUIT, 8–#14]
[A9] = [1" CONDUIT, 9–#14]
[A10] = [1" CONDUIT, 10–#14]
[A12] = [1" CONDUIT, 12–#14]
[A13] = [1" CONDUIT, 13–#14]
[A14] = [1" CONDUIT, 14–#14]
[A16] = [1" CONDUIT, 16–#14]
[A18] = [1 1/4" CONDUIT, 18–#14]
[A20] = [1 1/4" CONDUIT, 20–#14]
[A21] = [1 1/4" CONDUIT, 21–#14]
[A24] = [1 1/4" CONDUIT, 24–#14]
[A48] = [1 1/2" CONDUIT, 48–#14]
[A62] = [2" CONDUIT, 62–#14]
[A122] = [2 1/2" CONDUIT, 122–#14]
[B2] = [3/4" CONDUIT, 2–#12, 1–#12 GROUND]
[B3] = [3/4" CONDUIT, 3–#12, 1–#12 GROUND]
[B4] = [3/4" CONDUIT, 4–#12, 1–#12 GROUND]
[B5] = [3/4" CONDUIT, 5–#12, 1–#12 GROUND]
[B6] = [1" CONDUIT, 6–#12, 1–#12 GROUND]
[B8] = [1" CONDUIT, 8–#12, 1–#12 GROUND]
[B12] = [1" CONDUIT, 12–#12, 1–#12 GROUND]
[B36] = [2" CONDUIT, 36–#12, 1–#12 GROUND]
[C2] = [3/4" CONDUIT, 2–#10, 1–#10 GROUND]
[C3] = [3/4" CONDUIT, 3–#10, 1–#10 GROUND]
[C4] = [3/4" CONDUIT, 4–#10, 1–#10 GROUND]
[C5] = [1" CONDUIT, 5–#10, 1–#10 GROUND]
[C6] = [1.5" CONDUIT, 6–#10, 2–#10 GROUND]
[D2] = [3/4" CONDUIT, 2–#8, 1–#8 GROUND]
[D3] = [1" CONDUIT, 3–#8, 1–#8 GROUND]
[E2] = [1" CONDUIT, 2–#6, 1–#8 GROUND]
[E3] = [1 1/4" CONDUIT, 3–#6, 1–#8 GROUND]
[E4] = [1 1/4" CONDUIT, 4–#6, 1–#8 GROUND]
[F2] = [1" CONDUIT, 2–#4, 1–#8 GROUND]
[F3] = [1 1/4" CONDUIT, 3–#4, 1–#8 GROUND]
[F4] = [1 1/4" CONDUIT, 4–#4, 1–#8 GROUND]
[G3] = [1 1/4" CONDUIT, 3–#3, 1–#8 GROUND]
[G4] = [1 1/2" CONDUIT, 4–#3, 1–#8 GROUND]
[H3] = [1 1/2" CONDUIT, 3–#2, 1–#8 GROUND]
[H4] = [1 1/2" CONDUIT, 4–#2, 1–#8 GROUND]
[I3] = [2" CONDUIT, 3–#1, 1–#6 GROUND]
[I4] = [2" CONDUIT, 4–#1, 1–#6 GROUND]
[J3] = [2" CONDUIT, 3–#1/0, 1–#6 GROUND]
[J4] = [2" CONDUIT, 4–#1/0, 1–#6 GROUND]
[K3] = [2" CONDUIT, 3–#2/0, 1–#4 GROUND]
[L3] = [2 1/2" CONDUIT, 3–#3/0, 1–#4 GROUND]
[L4] = [2 1/2" CONDUIT, 4–#3/0, 1–#4 GROUND]
[M3] = [2 1/2" CONDUIT, 3–#4/0, 1–#2 GROUND]
[M4] = [3" CONDUIT, 4–#4/0, 1–#2 GROUND]
[N4] = [3" CONDUIT, 4–#250 KCM, 1–#2 GROUND]
[P3] = [3" CONDUIT, 3–#350 KCM, 1–#1/0 GROUND]
[P4] = [3 1/2" CONDUIT, 4–#350 KCM, 1–#1/0 GROUND]
[R3] = [3 1/2" CONDUIT, 3–#500 KCM, 1–#1/0 GROUND]
[R4] = [4" CONDUIT, 4–#500 KCM, 1–#1/0 GROUND]
[S1] = [3/4" CONDUIT, 1–2/C #16 SHIELDED CABLE]
[S2] = [3/4" CONDUIT, 2–2/C #16 SHIELDED CABLES]
[S3] = [1" CONDUIT, 3–2/C #16 SHIELDED CABLES]
[S4] = [1" CONDUIT, 4–2/C #16 SHIELDED CABLES]
[S6] = [1" CONDUIT, 6–2/C #16 SHIELDED CABLES]
[S8] = [1 1/4" CONDUIT, 8–2/C #16 SHIELDED CABLES]
[W1] = [3/4" CONDUIT, CABLE SUPPLIED WITH EQUIP.]
[W2] = [1" CONDUIT, CABLE SUPPLIED WITH EQUIP.]
[X1] = [3/4" CONDUIT, WITH PULL CORD]
[X2] = [1" CONDUIT, WITH PULL CORD]
[X5] = [2" CONDUIT, WITH PULL CORD]
[Y1] = [CABLE SUPPLIED WITH EQUIPMENT]
[Z1] = [3/4" CONDUIT, CAT6 CABLE]
[ZZ2] = [1" CONDUIT, FIBER OPTIC CABLE] 2

NOTE:

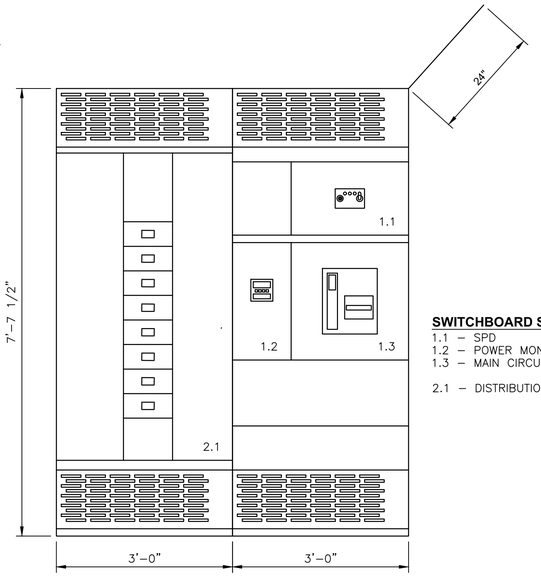
1. THIS IS A TYPICAL CIRCUIT SCHEDULE. ALL CIRCUIT CALLOUTS MAY NOT BE USED.
2. MINIMUM 1" CONDUIT WHEN BURIED.



RVSS PILOT DEVICE LAYOUT



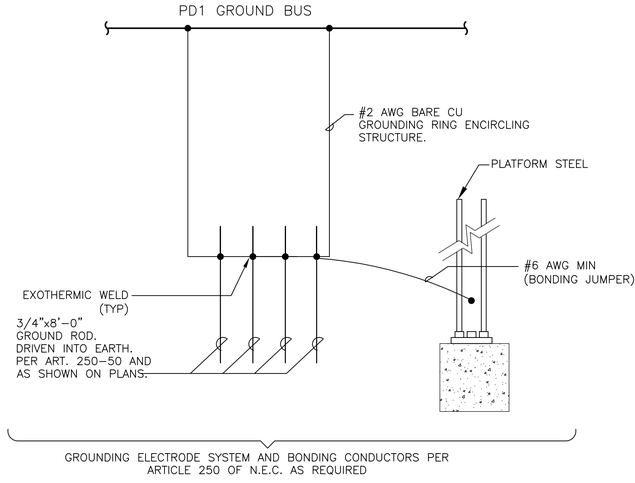
RVSS ELEVATION



SWITCHBOARD ELEVATION

SWITCHBOARD SCHEDULE:
1.1 – SPD
1.2 – POWER MONITOR
1.3 – MAIN CIRCUIT BREAKER

2.1 – DISTRIBUTION SECTION



GROUNDING ELECTRODE SYSTEM

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

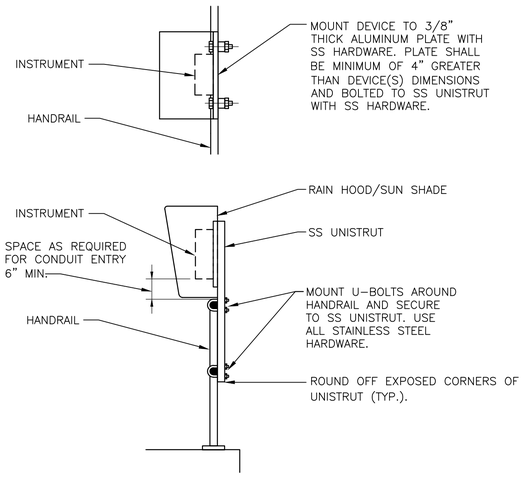
PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

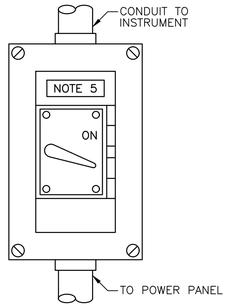
ELECTRICAL DETAILS I

FILENAME E-12.DWG
SCALE NOT TO SCALE
SHEET E-12



HANDRAIL MOUNTED INSTRUMENT

N.T.S.

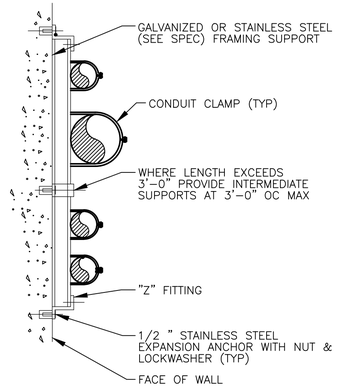


NOTES:

1. SINGLE-PHASE, MANUAL SWITCH REQUIRED FOR EACH AC POWERED FIELD INSTRUMENT.
2. OPERATING HANDLE PAD LOCKABLE IN OFF POSITION.
3. CAST ALUMINUM NEMA 4, WATERPROOF ENCLOSURE.
4. CUTTLER-HAMMER TYPE MS OR EQUAL.
5. NAME PLATE ATTACHED SECURELY, ENGRAVED WITH INSTRUMENT TAG NUMBER AND DESCRIPTION.

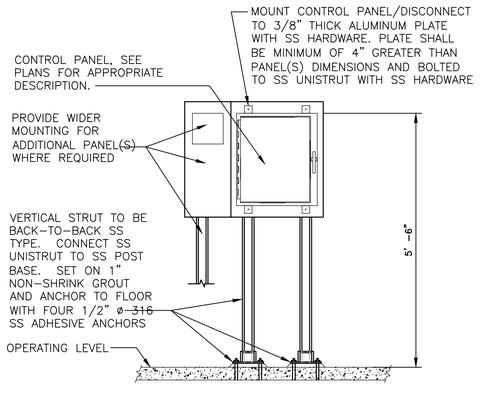
INSTRUMENT 120V POWER DISCONNECT

N.T.S.



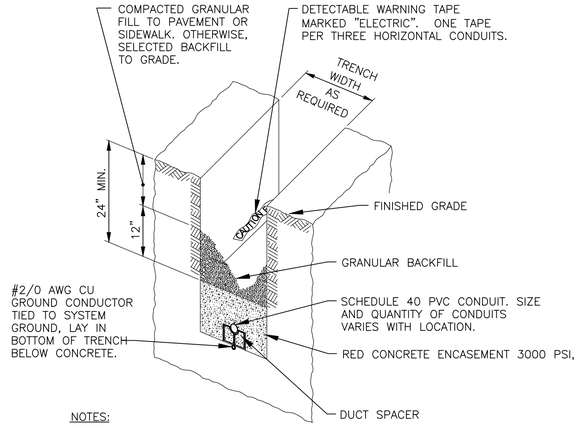
CONDUIT SUPPORT FLUSH MOUNT

N.T.S.



EQUIPMENT RACK DETAIL

N.T.S.

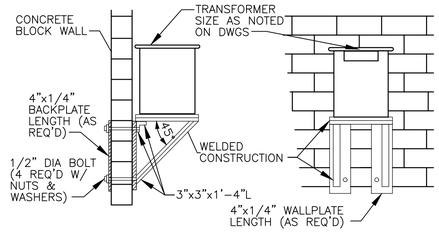


NOTES:

1. PROVIDE PLASTIC DUCT SPACERS AT A MINIMUM OF 8' INTERVALS. SECURE DUCT TO SPACERS AND ANCHOR EACH SPACER.
2. ALL SPARE DUCTS SHALL BE PLUGGED WITH A STANDARD DUCT PLUG FITTING.
3. AT INTERSECTIONS WITH STRUCTURES HOOK #4'S INTO THE FOOTING OR WALL.

TRENCHING DETAIL

N.T.S.



NOTES:

1. MOUNT TRANSFORMER 3'-0"ABOVE FINISHED FLOOR.
2. FIELD FABRICATE ANGLE FRAME TO SUIT TRANSFORMER BASE DIMENSIONS AND MOUNTING HOLES.
3. MAXIMUM WEIGHT 500LBS.
4. ELECTRICAL SAMPLE DETAIL.

WALL MOUNTED TRANSFORMER

N.T.S.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	DDW
DRAWN BY	EAB
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

ELECTRICAL DETAILS II

FILENAME E-13.DWG | SCALE NOT TO SCALE | SHEET E-13

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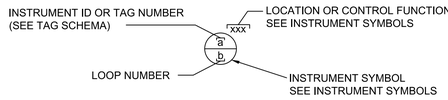
INSTRUMENTATION CALL–OUT



INSTRUMENT SYMBOLS

	PRIMARY LOCATION (ACCESSIBLE) (1)	PRIMARY LOCATION (INACCESSIBLE) (2)	FIELD MOUNTED	AUXILIARY LOCATION (ACCESSIBLE) (1)	AUXILIARY LOCATION (INACCESSIBLE) (2)
INSTRUMENT	a b *	a b *	a b *	a b *	a b *
SHARED DISPLAY SHARED CONTROL	a b *	a b *	a b *	a b *	a b *
COMPUTER FUNCTION	a b *	a b *	a b *	a b *	a b *
PROGRAMMABLE LOGIC CONTROL	a b *	a b *	a b *	a b *	a b *

(1) NORMALLY ACCESSIBLE TO OPERATOR

(2) NORMALLY INACCESSIBLE TO OPERATOR (BEHIND-THE-PANEL)

* LOCATION OR CONTROL FUNCTION - SEE BELOW

A INSTRUMENT IDENTIFICATION/TAG NUMBER (SEE TAG DESIGNATION FOR MORE INFO)

B INSTRUMENT LOOP NUMBER

SINGLE INSTRUMENT OR OTHER COMPONENT HAVING MULTIPLE FUNCTIONS

RELAY INTERLOCK LOGIC - SEE SCHEMATICS OR SPECIFICATIONS FOR MORE INFORMATION

INDICATING LIGHT - FIELD MOUNTED, MAY BE LOCATED ON A CONTROL PANEL

INDICATING LIGHT - PANEL MOUNTED

CR CONTROL RELAY

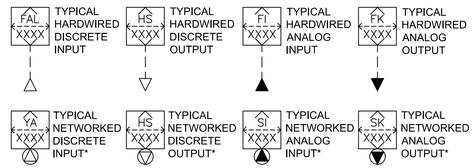
CONTROL SWITCH NOTATION ABBREVIATIONS

XXX

A/H/C	AUTO/HOLD/CLOSE	L/R/O	LOCAL/REMOTE/OFF
A/M	AUTO/MANUAL	L/R	LOCAL/REMOTE
ACK	ACKNOWLEDGE	L/S	LEAD/STANDBY
AS	AIR SUPPLY	O/A/C	OPEN/AUTO/CLOSE
DEV	DEVIATION	O/C	OPEN/CLOSE
ESTOP	EMERGENCY STOP	O/O	ON/OFF
FAIL	FAILURE	O/R/C	OPEN/REMOTE/CLOSE
F/O/R	FORWARD/OFF/REVERSE	O/S/C	OPEN/STOP/CLOSE
F/R	FORWARD/REVERSE	PB	PUSHBUTTON
F/S	FAST/SLOW	P/I/D	PROPORTIONAL/INTEGRAL/ DERIVATIVE
H/A	HAND/AUTO		
H/M/L	HIGH/MID/LOW	RES	RESET
H/O/A	HAND/OFF/AUTO	R/J	RUN/JOG
H/O/R	HAND/OFF/REMOTE	SIL	SILENCE
L/L	LEAD/LAG	SP	SETPOINT
		S/S	START/STOP

INSTRUMENT SYMBOLS – CONT

PLC, REMOTE I/O, OR DCS POINTS



* 2-WIRE NETWORK INTERFACE. SEE SPECIFICATION FOR MORE INFORMATION

INSTRUMENTATION LINE SYMBOLOGY

- NEW WORK (UNSCREENED)
- EXISTING (SCREENED)
- EXISTING TO BE DEMOLISHED
- FUTURE EQUIPMENT (LONG DASH, SHORT DASH)
- MAIN PROCESS LINE
- SECONDARY PROCESS LINE
- AUXILIARY PROCESS LINE
- DIRECTION OF FLOW
- PNEUMATIC SIGNAL
- ELECTRICAL SIGNAL
- HYDRAULIC SIGNAL
- ULTRASONIC
- ELECTRIC PULSE
- SOFTWARE OR DATA LINK
- SIGNAL CONNECTION
- CROSSOVER, NO CONNECTION
- CAPILLARY
- MECHANICAL LINK
- ETHERNET
- FIBER OPTIC
- MODBUS
- VENDOR PROPRIETARY
- CABLE PROVIDED WITH INSTRUMENT

POWER SUPPLIES AND PROTECTIVE DEVICES

- 24VDC — 24VDC POWER SUPPLY, 4–WIRE
- AS — AIR SUPPLY
- 120VAC — 120VAC WITH LOCAL, LOCKABLE DISCONNECT
- LSA — LIGHTNING SURGE ARRESTER
- ISB — INTRINSICALLY SAFE BARRIER

A	PLANT COMPRESSED AIR
IA	INSTRUMENTATION AIR
AC	ELECTRIC SUPPLY
NG	NATURAL GAS
HYD	HYDRAULIC

TAG LEGEND

TYPICAL TAG FORMAT

VAH–2125 ---- INSTRUMENT TAG NUMBER
VAH ---------- FUNCTIONAL IDENTIFICATION
V ------------ FIRST LETTER
AH ---------- SUCCEEDING LETTERS
2125 ---- LOOP NUMBER

	FIRST LETTER		SUCCEEDING LETTER(S)		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		IN AUTO, AUTO
B	BURNER, COMBUSTION		BUTTON		IN REMOTE, REMOTE
C	CONDUCTIVITY			CONTROL	CLOSE, CLOSED
D	DENSITY, SPECIFIC GRAVITY	DIFFERENTIAL		DEVIATION	IN LOCAL, LOCAL
E	VOLTAGE, SOLENOID		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			FAULT
G	GAUGE, FIRE, SMOKE		GLASS, VIEWING DEVICE		STOP, STOPPED
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER		SCAN		
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	READY
L	LEVEL		LIGHT		LOW
M		MOMENTARY			MIDDLE, INTERMEDIATE
N	TORQUE		ISOLATE	ISOLATOR	
O			ORIFICE, RESTRICTION		OPEN, OPENED
P	PRESSURE, VACUUM, PUSH		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			REQUIRED
R	RADIATION		RECORD		RUN, RUNNING
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL, PROBE		
X	INTRUSION	X AXIS			
Y	EVENT, STATE, PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, FINAL CONTROL ELEMENT	

P & ID SYMBOLS

- BALL VALVE
- BUTTERFLY VALVE
- CONE VALVE
- CHECK VALVE
- DOUBLE-DISK CHECK VALVE
- BALL CHECK VALVE
- DIAPHRAGM VALVE
- GATE VALVE
- GLOBE VALVE
- KNIFE GATE VALVE
- NEEDLE VALVE
- PINCH VALVE
- PLUG VALVE
- CONCENTRIC REDUCER
- BLOWER
- MOTOR — CS - CONSTANT SPEED, VS - VARIABLE SPEED
- TS — MOTOR TEMP SWITCHES
- M — MAGNETIC FLOWMETER
- METERING PUMP
- M — MOTORIZED ACTUATOR

ABBREVIATIONS

AI	ANALOG INPUT
AO	ANALOG OUTPUT
CO	CARBON MONOXIDE
COMB	COMBUSTIBLES
CW	CHAIN WHEEL
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DWG	DOWNWARD OPENING GATE
ETM	ELAPSED TIME METER
FOC	FIBER OPTIC CABLE
FOR	FIBER OPTIC REPEATER
FOT	FIBER OPTIC TRANSCEIVER
H2S	HYDROGEN SULFIDE
HMI	HUMAN MACHINE INTERFACE
HW	HAND WHEEL
I/I	SIGNAL SPLITTER
I/O	INPUT/OUTPUT
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LEL	LOWER EXPLOSIVE LIMIT
LO	LOCKED OPEN
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
MOV	MOTOR OPERATED VALVE
MPR	MOTOR PROTECTION RELAY
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
O2	OXYGEN
OIT	OPERATOR INTERFACE TERMINAL
PLC	PROGRAMMABLE LOGIC CONTROLLER
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
REM	REMOTE
RIO	REMOTE INPUT/OUTPUT
RTD	RESISTANCE TEMPERATURE DEVICE
RTU	REMOTE TERMINAL UNIT
RVSS	REDUCED VOLTAGE SOLID STATE STARTER
SS	SUSPENDED SOLIDS (ANALYZER MODIFIER)
SW	SEAL WATER
TC	THERMOCOUPLE
TCJ	THERMOCOUPLE, TYPE J
TSP	TWISTED SHIELDED PAIR
UPS	UNINTERRUPTIBLE POWER SUPPLY
VCP	VENDOR SUPPLIED PANEL
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE

◆ INDICATES VENDOR FURNISHED EQUIPMENT

GENERAL INSTRUMENTATION NOTES

1. THIS IS A STANDARD INSTRUMENTATION SYMBOLOGY AND ABBREVIATIONS SHEET. LISTING OF SYMBOLS AND ABBREVIATIONS DOES NOT IMPLY ALL SYMBOLS AND ABBREVIATIONS HAVE BEEN USED ON THIS PROJECT.
2. SEE PROCESS, MECHANICAL AND PLUMBING LEGEND SHEET FOR MISCELLANEOUS PIPING SYMBOLS.
3. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
4. VALVE SYMBOLS SHOWN HERE ARE APPLICABLE ONLY TO INSTRUMENTATION DIAGRAMS. SEE PROCESS, MECHANICAL AND PLUMBING LEGEND SHEET FOR VALVE SYMBOLS USED ELSEWHERE ON THE SHEETS.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JFZ
DRAWN BY	JFZ
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

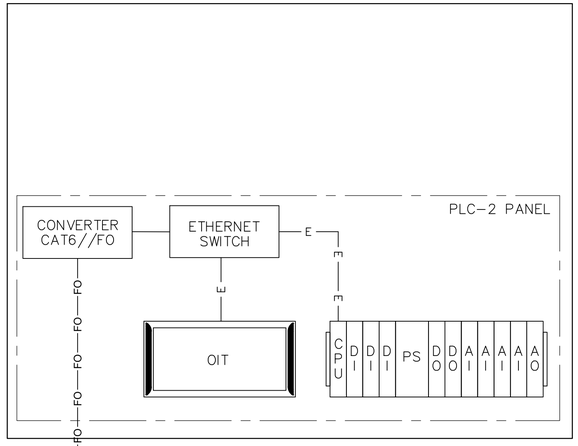
SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

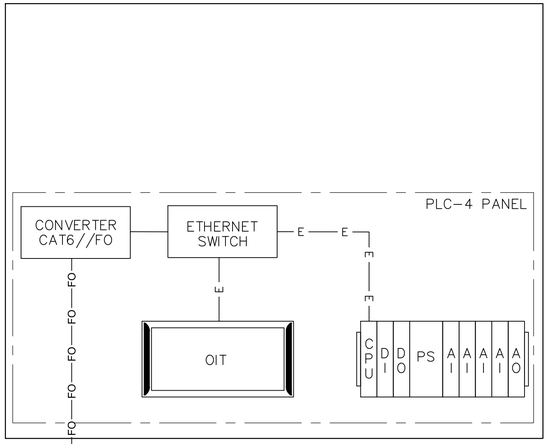
INSTRUMENTATION LEGENDS AND SYMBOLS

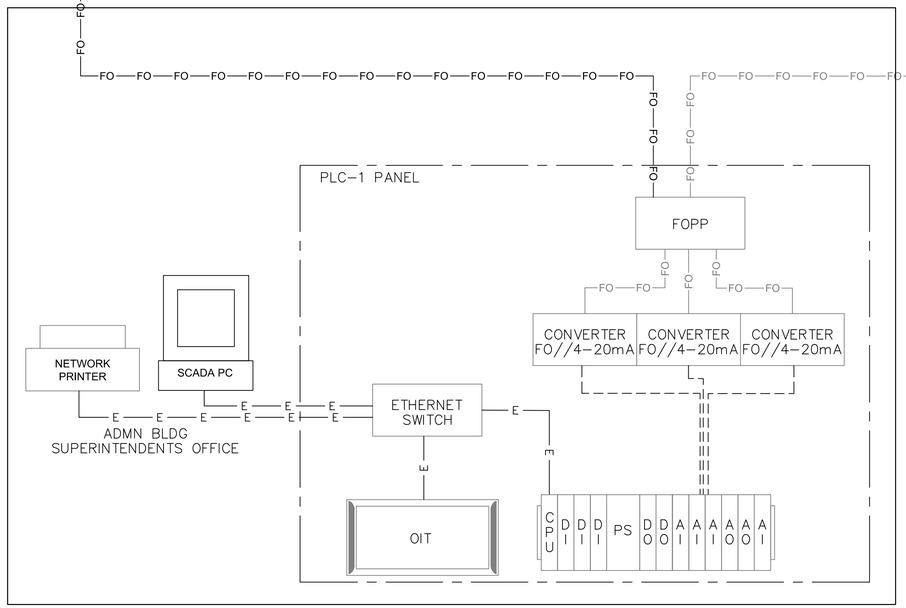
FILENAME	Y-01.DWG
SCALE	NOT TO SCALE
SHEET	Y-01

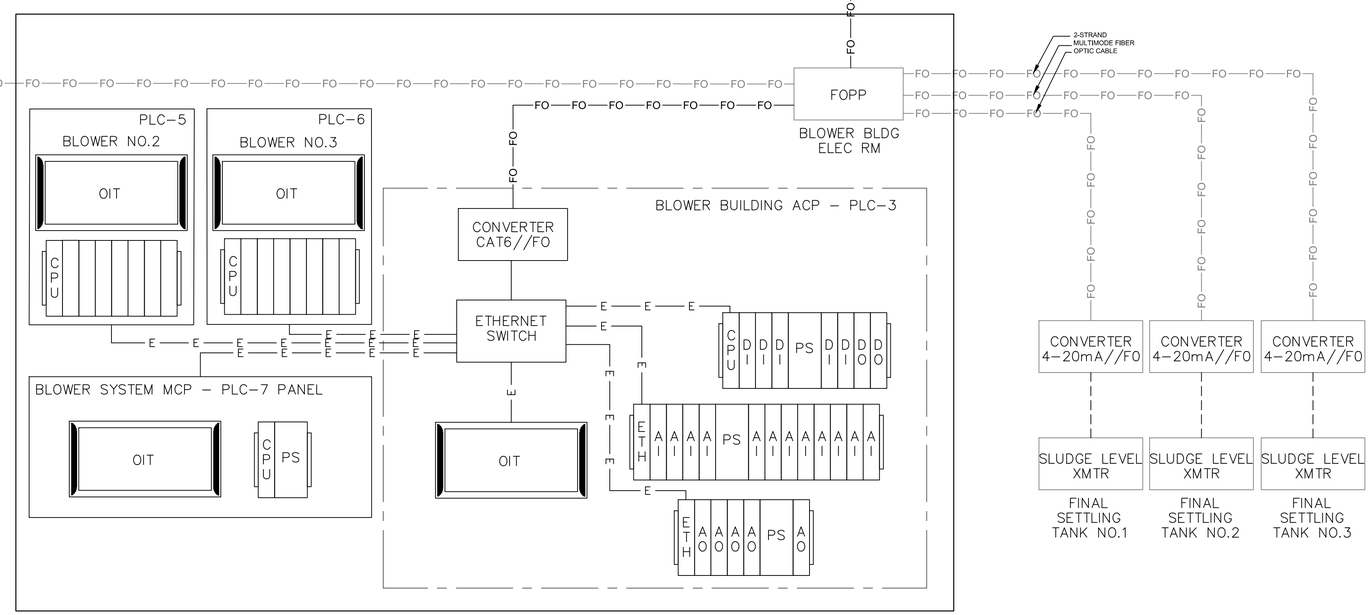
LEGEND:

- E — CAT6A (ETHERNET)
- FO — FO — 12-STRAND MULTIMODE FIBER OPTIC CABLE (UNLESS OTHERWISE SPECIFIED)
- HARDWIRED CONNECTION
- HARDWARE AND EQUIPMENT INSTALLED UNDER THIS CONTRACT
- HARDWARE AND EQUIPMENT INSTALLED UNDER PREVIOUS OR SEPARATE CONTRACT
- CABLES AND CONDUIT INSTALLED UNDER THIS CONTRACT
- CABLES AND CONDUIT INSTALLED UNDER PREVIOUS OR SEPARATE CONTRACT
- BUILDING BOUNDARY
- PANEL BOUNDARY









ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JFZ
DRAWN BY	JFZ
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

INSTRUMENTATION CONTROL NETWORK TOPOLOGY

FILENAME	Y-02.DWG
SCALE	NOT TO SCALE
SHEET	Y-02

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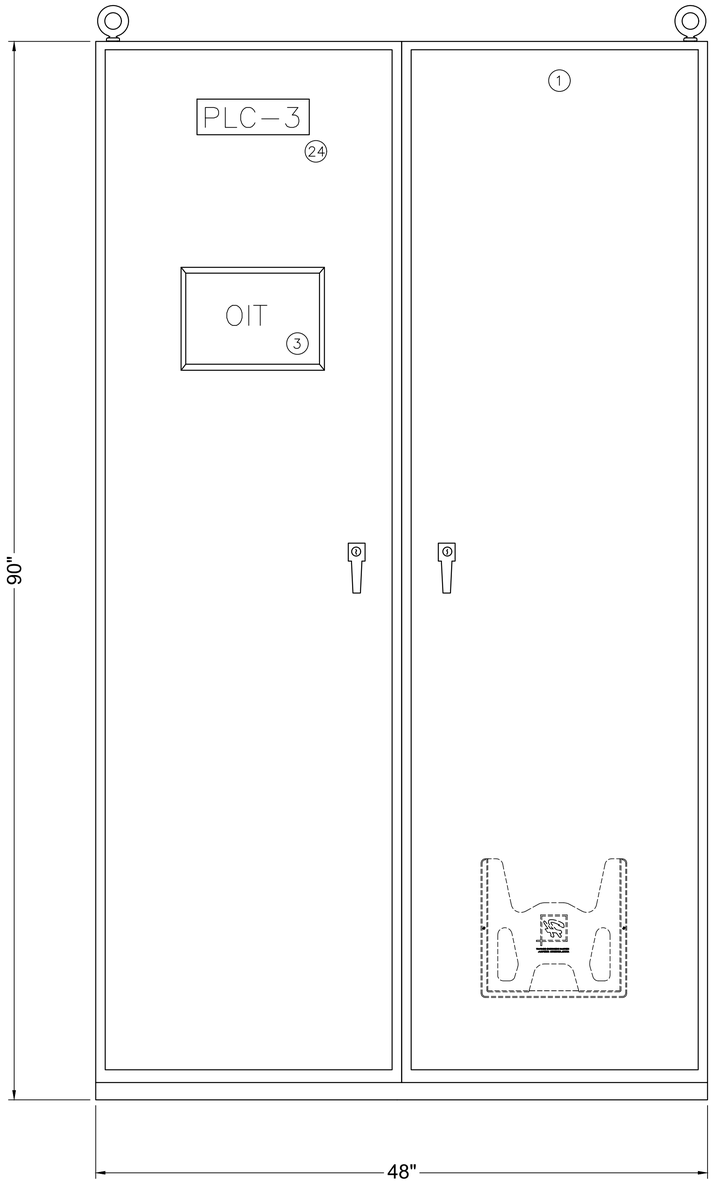
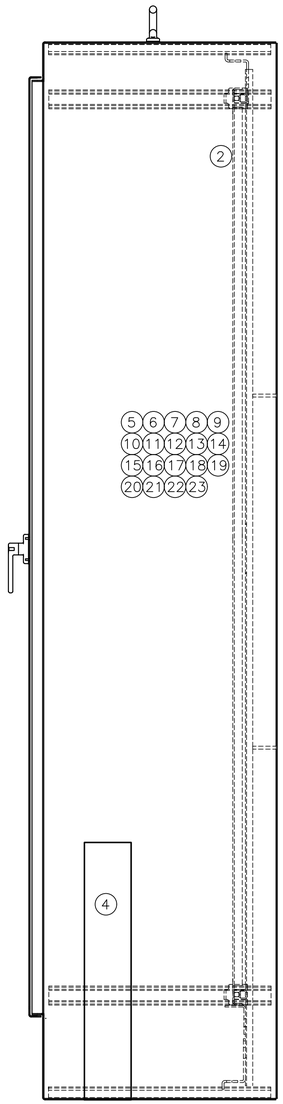




PLC-3 GENERAL LIST OF MATERIALS	
ITEM NO ◯	DESCRIPTION
1	FREE STANDING NEMA 12 INDUSTRIAL ENCLOSURE, 90"X48"X20" MINIMUM
2	FULL BACK PANEL FOR ITEM 1, GLOSS WHITE
3	15" OPERATOR INTERFACE TERMINAL
4	UNINTERRUPTIBLE POWER SUPPLY
5	PROGRAMMABLE LOGIC CONTROLLER
6	DIGITAL INPUT MODULE
7	DIGITAL OUTPUT MODULE
8	ANALOG INPUT MODULE
9	ANALOG OUTPUT MODULE
10	POWER SUPPLY, 24VDC, OUTPUT CURRENT AS REQUIRED PER CONNECTED LOAD
11	10-PORT UNMANAGED ETHERNET SWITCH 10/100BASE T(X)
12	SURGE PROTECTION DEVICE
13	WIRING DUCT, SIZE AND QUANTITY AS REQUIRED, MINIMUM DEPTH 3"
14	120VAC LED LIGHTING PACKAGE WITH MAGNETIC DOOR SWITCH
15	RECEPTACLE, DUPLEX, 120VAC 20A, MOUNTED IN HANDY BOX WITH COVER
16	SINGLE POLE 120VAC CIRCUIT BREAKER
17	FUSES, AS REQUIRED, INCLUDING 5 SPARE FUSES OF EACH RATING
18	LEVER-TYPE FUSE TERMINAL BLOCK
19	DIN RAIL
20	TERMINAL BLOCK, PROVIDE 20% SPARE TERMINALS
21	TERMINAL END CLAMP
22	GROUND BLOCK
23	CORROSION INHIBITOR
24	PHENOLIC PLASTIC, 1/8" THICK ENGRAVED CONDENSED BLOCK BLACK LETTERING ON WHITE BACKGROUND, SQUARE CORNERS, BEVELED FRONT EDGES, 1/2" LETTERING.

PANEL NOTES:

1. THE BOTTOM 12" OF THE PANEL SHALL BE FREE OF ALL DEVICES, INCLUDING TERMINAL STRIPS, TO PROVIDE EASE OF INSTALLATION AND TESTING.
2. CONTRACTOR SHALL SUPPLY THE TYPE AND QUANTITY OF PLC MODULES AND ANCILLARY HARDWARE AS REQUIRED TO ACCOMMODATE ALL I/O, INCLUDING 25% FUTURE CONTROL SYSTEM GROWTH PROVISIONS.
3. CONTRACTOR SHALL SUPPLY THE PLC CHASSIS QUANTITY AND SIZES TO ACCOMMODATE THE REQUIRED QUANTITY OF PLC MODULES REQUIRED, INCLUDING 25% FUTURE CONTROL SYSTEM GROWTH PROVISIONS.
4. PANEL SHALL BE IN ACCORDANCE WITH NEC ARTICLE 409/UL508A.
5. PROVIDED COMPONENTS SHALL BE AS SPECIFIED UNDER DIVISION 40 SPECIFICATIONS.
6. PROVIDE CIRCUIT BREAKER PROTECTED BRANCH CIRCUITS AS REQUIRED BY THE QUANTITY OF I/O MODULES PLUS 25% FUTURE CONTROL SYSTEM GROWTH PROVISIONS.
7. REFERENCE DIVISION 26 AND DIVISION 40 SPECIFICATIONS FOR ADDITIONAL DETAILS AND REQUIREMENTS ON ALL PANEL DEVICES AND HARDWARE.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

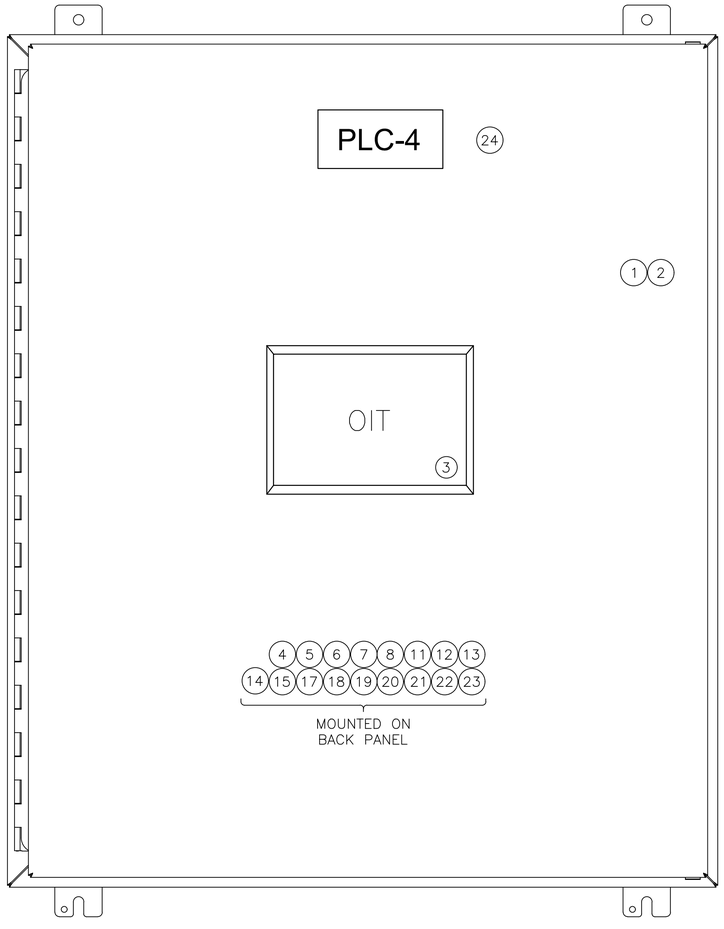
PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JFZ
DRAWN BY	JFZ
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

BLOWER BUILDING PLC PANEL LAYOUT

FILENAME: Y-03.DWG
SCALE: NOT TO SCALE
SHEET: Y-03



PLC–4 GENERAL LIST OF MATERIALS	
ITEM NO ◯	DESCRIPTION
1	WALL MOUNTED NEMA 4X SS INDUSTRIAL ENCLOSURE, 42"X36"X12" MINIMUM
2	FULL BACK PANEL FOR ITEM 1, GLOSS WHITE
3	15" OPERATOR INTERFACE TERMINAL
4	UNINTERRUPTIBLE POWER SUPPLY
5	PROGRAMMABLE LOGIC CONTROLLER
6	DIGITAL INPUT MODULE
7	DIGITAL OUTPUT MODULE
8	ANALOG INPUT MODULE
9	ANALOG OUTPUT MODULE
10	POWER SUPPLY, 24VDC, OUTPUT CURRENT AS REQUIRED PER CONNECTED LOAD
11	8–PORT UNMANAGED ETHERNET SWITCH 10/100BASE T(X)
12	SURGE PROTECTION DEVICE
13	WIRING DUCT, SIZE AND QUANTITY AS REQUIRED, MINIMUM DEPTH 3"
14	120VAC LED LIGHTING PACKAGE WITH MAGNETIC DOOR SWITCH
15	RECEPTACLE, DUPLEX, 120VAC 20A, MOUNTED IN HANDY BOX WITH COVER
16	SINGLE POLE 120VAC CIRCUIT BREAKER
17	FUSES, AS REQUIRED, INCLUDING 5 SPARE FUSES OF EACH RATING
18	LEVER–TYPE FUSE TERMINAL BLOCK
19	DIN RAIL
20	TERMINAL BLOCK, PROVIDE 20% SPARE TERMINALS
21	TERMINAL END CLAMP
22	GROUND BLOCK
23	CORROSION INHIBITOR
24	PHENOLIC PLASTIC, 1/8" THICK ENGRAVED CONDENSED BLOCK BLACK LETTERING ON WHITE BACKGROUND, SQUARE CORNERS, BEVELED FRONT EDGES, 1/2" LETTERING.

PANEL NOTES:

1. CONTRACTOR SHALL SUPPLY THE TYPE AND QUANTITY OF PLC MODULES AND ANCILLARY HARDWARE AS REQUIRED TO ACCOMMODATE ALL I/O, INCLUDING 25% FUTURE CONTROL SYSTEM GROWTH PROVISIONS.
2. CONTRACTOR SHALL SUPPLY THE PLC CHASSIS QUANTITY AND SIZES TO ACCOMMODATE THE REQUIRED QUANTITY OF PLC MODULES REQUIRED, INCLUDING 25% FUTURE CONTROL SYSTEM GROWTH PROVISIONS.
3. PANEL SHALL BE IN ACCORDANCE WITH NEC ARTICLE 409/UL508A.
4. PROVIDED COMPONENTS SHALL BE AS SPECIFIED UNDER DIVISION 40 SPECIFICATIONS.
5. PROVIDE CIRCUIT BREAKER PROTECTED BRANCH CIRCUITS AS REQUIRED BY THE QUANTITY OF I/O MODULES PLUS 25% FUTURE CONTROL SYSTEM GROWTH PROVISIONS.
6. REFERENCE DIVISION 26 AND DIVISION 40 SPECIFICATIONS FOR ADDITIONAL DETAILS AND REQUIREMENTS ON ALL PANEL DEVICES AND HARDWARE.

ISSUE	DATE	DESCRIPTION
2	10/6/20	ADDENDUM 3
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JFZ
DRAWN BY	JFZ
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

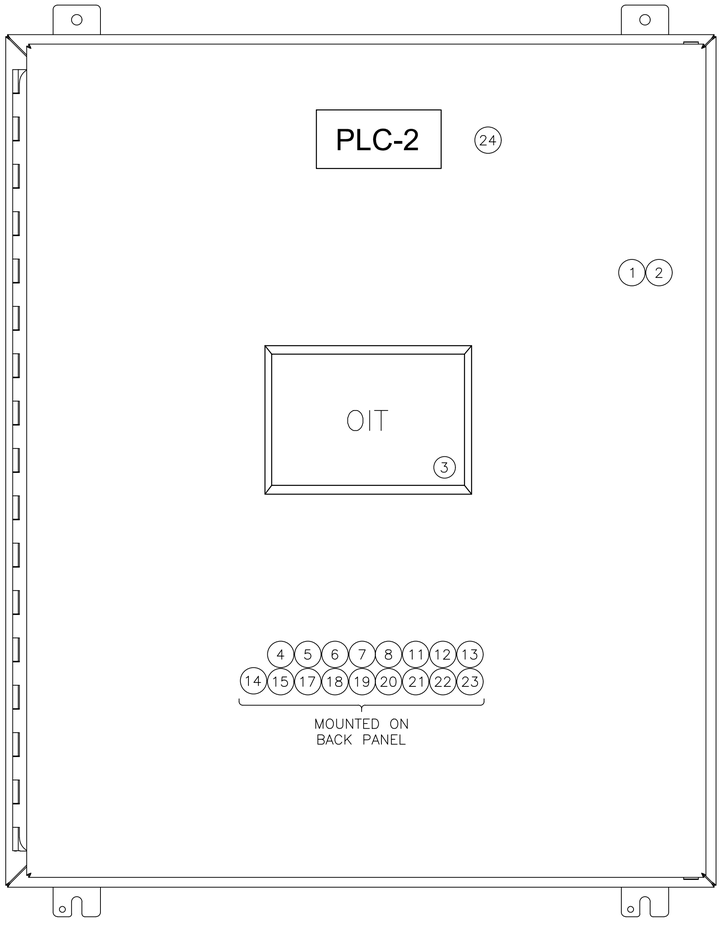
CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

PRIMARY DISINFECTION PLC PANEL LAYOUT

FILENAME	Y-04.DWG
SCALE	NOT TO SCALE

SHEET Y-04



PLC–2 GENERAL LIST OF MATERIALS	
ITEM NO ◯	DESCRIPTION
1	WALL MOUNTED NEMA 12 INDUSTRIAL ENCLOSURE, 42"X36"X12" MINIMUM
2	FULL BACK PANEL FOR ITEM 1, GLOSS WHITE
3	15" OPERATOR INTERFACE TERMINAL
4	UNINTERRUPTIBLE POWER SUPPLY
5	PROGRAMMABLE LOGIC CONTROLLER
6	DIGITAL INPUT MODULE
7	DIGITAL OUTPUT MODULE
8	ANALOG INPUT MODULE
9	ANALOG OUTPUT MODULE
10	POWER SUPPLY, 24VDC, OUTPUT CURRENT AS REQUIRED PER CONNECTED LOAD
11	8–PORT UNMANAGED ETHERNET SWITCH 10/100BASE T(X)
12	SURGE PROTECTION DEVICE
13	WIRING DUCT, SIZE AND QUANTITY AS REQUIRED, MINIMUM DEPTH 3"
14	120VAC LED LIGHTING PACKAGE WITH MAGNETIC DOOR SWITCH
15	RECEPTACLE, DUPLEX, 120VAC 20A, MOUNTED IN HANDY BOX WITH COVER
16	SINGLE POLE 120VAC CIRCUIT BREAKER
17	FUSES, AS REQUIRED, INCLUDING 5 SPARE FUSES OF EACH RATING
18	LEVER–TYPE FUSE TERMINAL BLOCK
19	DIN RAIL
20	TERMINAL BLOCK, PROVIDE 20% SPARE TERMINALS
21	TERMINAL END CLAMP
22	GROUND BLOCK
23	CORROSION INHIBITOR
24	PHENOLIC PLASTIC, 1/8" THICK ENGRAVED CONDENSED BLOCK BLACK LETTERING ON WHITE BACKGROUND, SQUARE CORNERS, BEVELED FRONT EDGES, 1/2" LETTERING.

PANEL NOTES:

1. CONTRACTOR SHALL SUPPLY THE TYPE AND QUANTITY OF PLC MODULES AND ANCILLARY HARDWARE AS REQUIRED TO ACCOMMODATE ALL I/O, INCLUDING 25% FUTURE CONTROL SYSTEM GROWTH PROVISIONS.
2. CONTRACTOR SHALL SUPPLY THE PLC CHASSIS QUANTITY AND SIZES TO ACCOMMODATE THE REQUIRED QUANTITY OF PLC MODULES REQUIRED, INCLUDING 25% FUTURE CONTROL SYSTEM GROWTH PROVISIONS.
3. PANEL SHALL BE IN ACCORDANCE WITH NEC ARTICLE 409/UL508A.
4. PROVIDED COMPONENTS SHALL BE AS SPECIFIED UNDER DIVISION 40 SPECIFICATIONS.
5. PROVIDE CIRCUIT BREAKER PROTECTED BRANCH CIRCUITS AS REQUIRED BY THE QUANTITY OF I/O MODULES PLUS 25% FUTURE CONTROL SYSTEM GROWTH PROVISIONS.
6. REFERENCE DIVISION 26 AND DIVISION 40 SPECIFICATIONS FOR ADDITIONAL DETAILS AND REQUIREMENTS ON ALL PANEL DEVICES AND HARDWARE.

ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

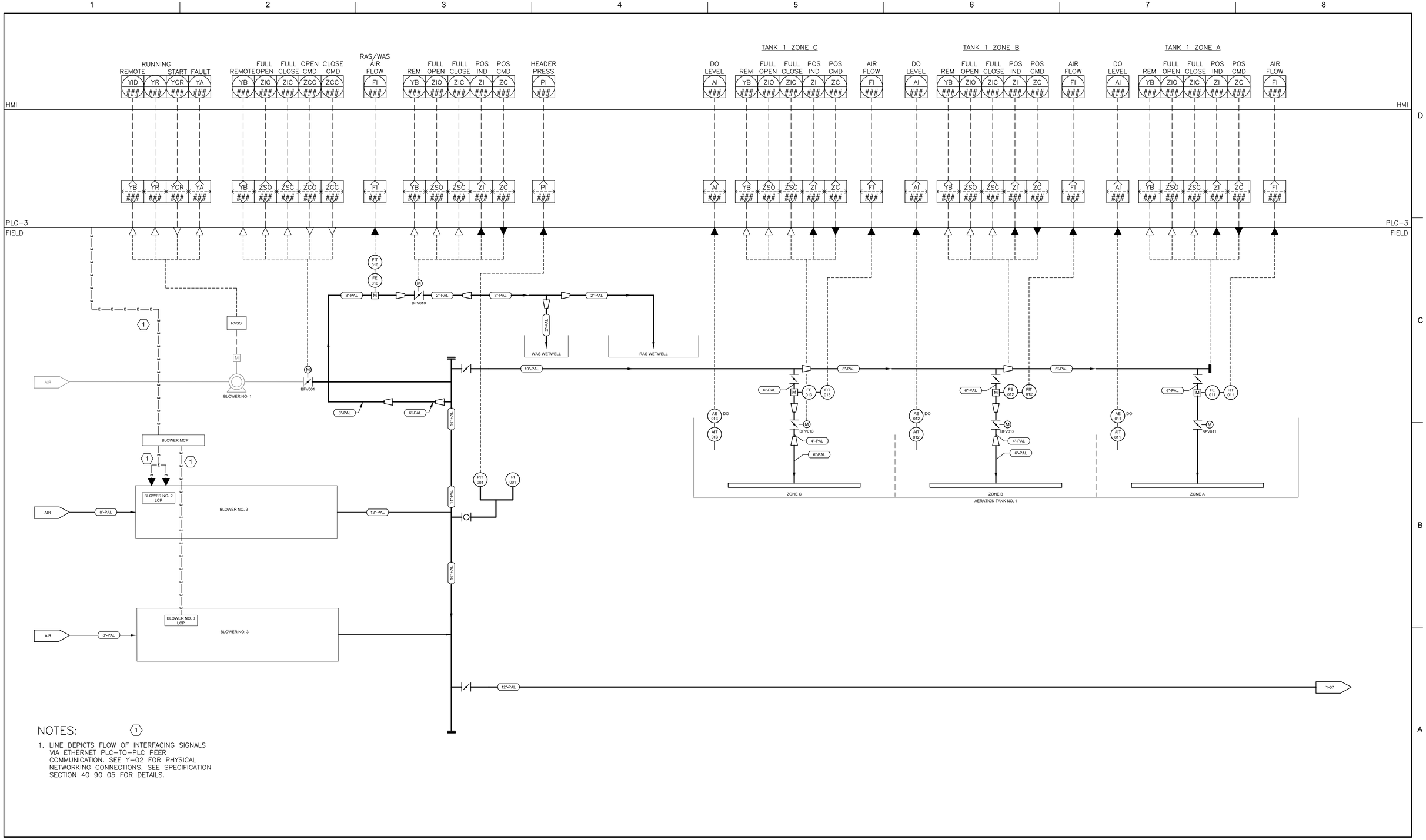
PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JFZ
DRAWN BY	JFZ
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

BYPASS DISINFECTION PLC PANEL LAYOUT

FILENAME: Y-05.DWG
SCALE: NOT TO SCALE
SHEET: Y-05



ISSUE	DATE	DESCRIPTION
0	12/08/20	ISSUED FOR CONSTRUCTION

PROJECT MANAGER	MEREDITH WELLE
DESIGN BY	JFZ
DRAWN BY	JFZ
APPROVED BY	VEM
PROJECT NUMBER	10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

SECONDARY AERATION P & ID

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SHEET	Y-06

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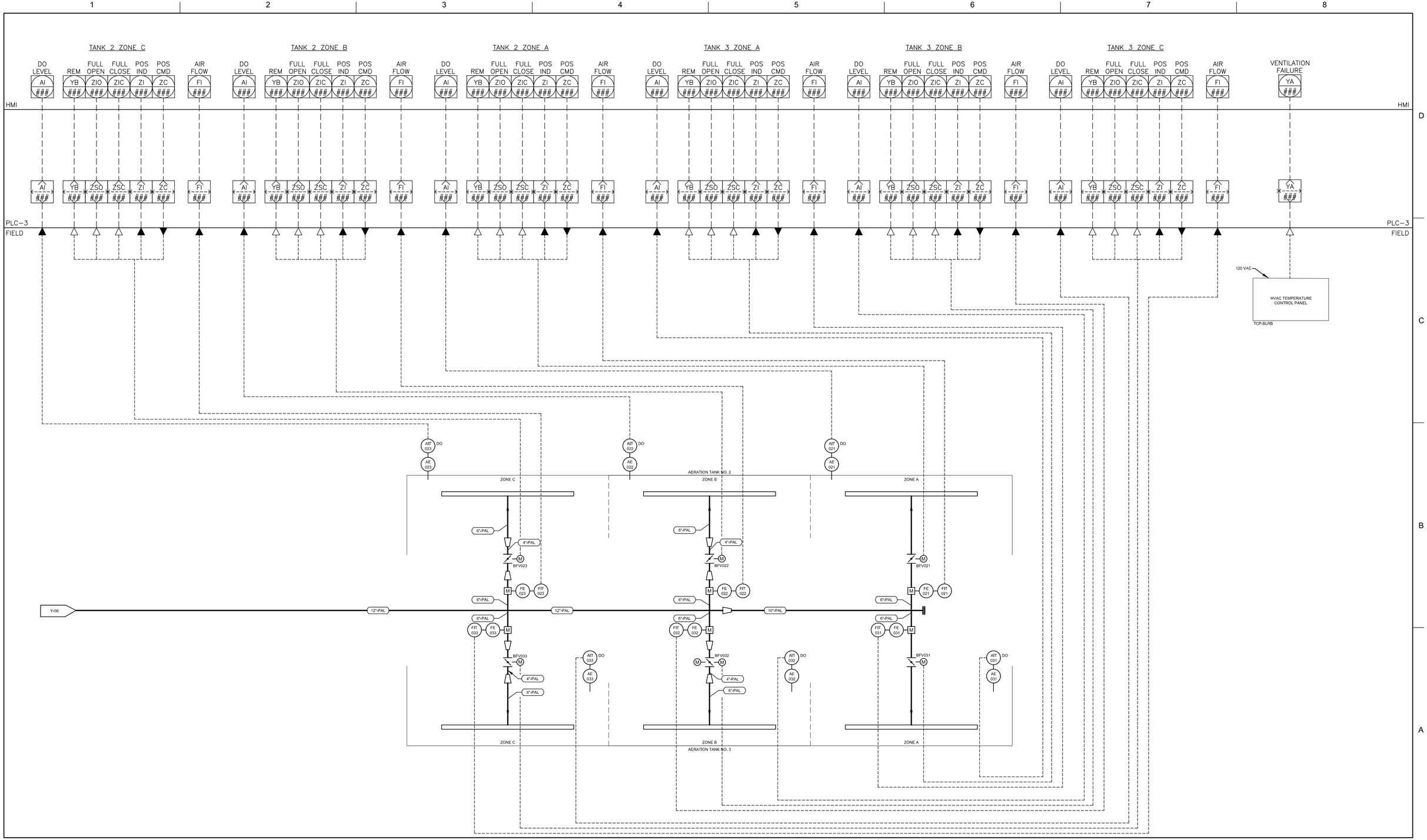

		PROJECT MANAGER	MEREDITH WELLE
		DESIGN BY	JFZ
		DRAWN BY	JFZ
		APPROVED BY	VEM
0	12/08/20	ISSUED FOR CONSTRUCTION	
ISSUE	**DATE**	**DESCRIPTION**	PROJECT NUMBER 10125749,10094459

CITY OF STEUBENVILLE, OHIO

SECONDARY AERATION SYSTEM UPGRADE AND PAA DISINFECTION SYSTEM REPLACEMENT

SECONDARY AERATION P & ID CONT.

FILENAME Y-07.DWG
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Appendix B

Agency Coordination

OHIO HISTORY CONNECTION

In reply refer to
2021-JEF-50656

March 4, 2021

James G. Parker
HDR
9450 W. Bryn Mawr Ave., Suite 400
Rosemont, IL 60018

Dear Mr. Parker,

RE: Secondary Aeration System, 100 Water Street, Steubenville, Jefferson County, Ohio

This is in response to the receipt of correspondence, on February 12, 2021, regarding the proposed improvements to the Waste Water Treatment Plant at the above location in Steubenville, Jefferson County, Ohio. The comments of the Ohio Historic Preservation Office are submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended.

Based on the information submitted, it is my opinion that the proposed undertaking will have no effect on properties listed in or eligible for listing in the National Register of Historic Places. No further coordination is required unless the project changes or archaeological remains are discovered during the course of the project. In such a situation, this office should be contacted as per 36 CFR 800.13.

Please be advised that this is a Section 106 decision. This review decision may not extend to other SHPO programs. If you have any questions, please contact me at (614) 298-2000, or by email at nyoung@ohiohistory.org. Please note the Ohio SHPO now accepts electronic-only submissions for state and/or federal review under Section 106 and ORC 149.53. Please send your submissions to section106@ohiohistory.org. We have also updated our Survey Report Submission Standards.

Sincerely,

Nathan J. Young

Nathan J. Young, Project Reviews Manager
Resource Protection and Review

800 E. 17th Ave., Columbus, OH 43211-2474 • 614.297.2300 • ohiohistory.org

Ohio Department of Natural Resources

MIKE DEWINE, GOVERNOR — MARY MERTZ, DIRECTOR

Office of Real Estate
John Kessler, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6621
Fax: (614) 267-4764

April 6, 2021

Katherine Markowitz
HDR Inc.
One Oxford Centre
301 Grant Street, Suite 1700
Pittsburgh, Pennsylvania 15219

Re: 21-0176; Steubenville Wastewater Treatment Plant Upgrades

Project: The proposed project involves upgrades to the secondary aeration system at the Steubenville Wastewater treatment Plant.

Location: The proposed project is located in Steubenville, Jefferson County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state or federal agency nor relieve the applicant of the obligation to comply with any local, state or federal laws or regulations.

Natural Heritage Database: The Natural Heritage Database has the following record at or within a one-mile radius of the project area:

River darter (*Percina shumardi*), State threatened

The review was performed on the project area you specified in your request as well as an additional one-mile radius. Records searched date from 1980. This information is provided to inform you of features present within your project area and vicinity.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although all types of plant communities have been surveyed, we only maintain records on the highest quality areas.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that best management practices be utilized to minimize erosion and sedimentation.

The project is within the vicinity of records for the little brown bat (*Myotis lucifugus*), a state endangered species. Because presence of state endangered bat species has been established in the area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be acceptable after further consultation with DOW (contact Sarah Stankavich, sarah.stankavich@dnr.state.oh.us).

In addition, the entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally threatened species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these species of bats predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. However, these species are also dependent on the forest structure surrounding roost trees. If trees are present within the project area, and trees must be cut, the DOW recommends cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH $\geq$ 20 if possible. If trees are present within the project area, and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". https://ohiodnr.gov/static/documents/wildlife/wildlife-management/Bat+Survey+Guidelines.pdf

If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31, however, limited summer tree cutting may be acceptable after consultation with DOW (contact Sarah Stankavich, sarah.stankavich@dnr.state.oh.us).

The DOW also recommends that a desktop habitat assessment, followed by a field assessment if needed, is conducted to determine if there are potential hibernaculum(a) present within the project area. Information about how to conduct habitat assessments can be found in the current USFWS "*Range-wide Indiana Bat Survey Guidelines*." If a habitat assessment finds that potential hibernacula are present within 0.25 miles of the project area, please send this information to Sarah Stankavich, sarah.stankavich@dnr.state.oh.us for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

The project is within the range of the following listed mussel species:

State Threatened
black sandshell (*Ligumia recta*)
threehorn wartyback (*Obliquaria reflexa*)

Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size, this project is not likely to impact these species.

The project is within the range of the following listed fish species.
State Endangered
goldeye (*Hiodon alosoides*)
Ohio lamprey (*Ichthyomyzon bdellium*)

State Threatened
American eel (*Anguilla rostrata*)
channel darter (*Percina copelandi*)
paddlefish (*Polyodon spathula*)
river darter (*Percina shumardi*)
Tippecanoe darter (*Etheostoma tippecanoe*)

The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed a perennial stream, this project is not likely to impact these or other aquatic species.

The project is within the range of the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*), a state endangered species and a federal species of concern. Due to the location, and that there is no in-water work proposed in a perennial stream of sufficient size to provide suitable habitat, this project is not likely to impact this species.

The project is within the range of the northern harrier (*Circus hudsonis*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the U.S. Fish & Wildlife Service.

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project. Your local floodplain administrator contact information can be found at the website below.

http://water.ohiodnr.gov/portals/soilwater/pdf/floodplain/Floodplain%20Manager%20Community%20Contact%20List_8_16.pdf

ODNR appreciates the opportunity to provide these comments. Please contact Sarah Tebbe, Environmental Specialist, at Sarah.Tebbe@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator (Acting)

IPaC Information for Planning and Consultation **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Jefferson County, Ohio

Local office

Ohio Ecological Services Field Office

(614) 416-8993
(614) 416-8994

4625 Morse Road, Suite 104
Columbus, OH 43230-8355

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. 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.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat Myotis septentrionalis Wherever found This species only needs to be considered if the following condition applies: • Incidental take of the northern long-eared bat is not prohibited at this location. Federal action agencies may conclude consultation using the streamlined process described at https://www.fws.gov/midwest/endangered/mammals/nleb/s7.html No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

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.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

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 (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
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. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Aug 31
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
Cerulean Warbler *Dendroica cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 27 to Jul 20
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
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

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
Yellow-bellied Sapsucker sphyrapicus varius This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8792	Breeds May 10 to Jul 15

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.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

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.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

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.

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 migratory birds potentially occurring 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 AKN Phenology 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, migrating or present year-round in my project 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 refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. 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.

Facilities

National Wildlife Refuge lands

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 AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.