Appendix A

Hydrologic and Hydraulic Study

BKI BURK-KLEINPETER, INC.

ENGINEERING · PLANNING · ENVIRONMENTAL

25th Street Canal Drainage Improvements Project

March 2023

STATE OF LOUISIANA
DAVID E. BOYD
REG. NO. 35510
REGISTERED
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING
3-3-23

Prepared By: BURK-KLEINPETER, INC.
03/23

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Executive Summary:

The 25th Street Canal Basin extends between the US Highway 90 (West Bank Expressway) to the Northwest, La. Highway 23 (Belle Chasse Highway) to the Northeast, Heebe Canal to the Southwest and Gretna Blvd to the Southeast. The Drainage Area is roughly 323 acres. The existing drainage network, bridges, roads and the majority of the residences are from the 1950's. Please see Appendix D for Photos of the project area. Minor subsequent drainage improvement work has been ongoing. The basin is one of the largest repetitive flood claim areas in all of Louisiana. The drainage system is not a pumped one, but rather, a gravity flow system. The existing drainage network in the 25th Street Canal Basin consists of curb and gutter sewers, drop inlets, catch basins and subsurface drainpipes that outfall directly into the 25th Street Canal and the Heebe Canal. The 25th Street Basin and Canal discharge directly into the Heebe Canal which ties into other major drainage canals. The network of canals is then pumped out by the Western Closure Complex. The repeated flooding events are caused by backflow from the Heebe Canal into the 25th Street Canal and Basin. Flooding also occurs when the outfall pipes into the Heebe Canal backflows into the neighborhood. The basin acts like a spillway for the Heebe Canal during heavy rain events. For construction, all work and staging areas will be within the City of Gretna - Jefferson Parish Right of Way. No temporary roads will be needed as this is an urban environment with access to the site from all directions. Excavated materials will become the property of the contractor. Any fill material will be provided from existing local sources (Bonnet Carre Spillway and sand pits of Mississippi River Batture in Jefferson Parish). No new borrow pits will need to be secured or created.

The 25th Street Canal Improvements Project is the 2nd Phase of the City of Gretna's Resiliency District. The Gretna Resiliency District Phases 1 and 2 are expected to reduce the flood profile risk for over 300 structures that have finished floor elevations lower than the crown of the street. The City has evaluated the cost of individual property measures. Using an average cost of $100,000 to raise a structure, the cost to raise 300 would be greater than $30,000,000. Considering the number of properties, the low-moderate income profile of the area and cost prohibitive nature of elevating slab on grade homes with poor soil conditions, a comprehensive community flood mitigation approach was determined to be more cost effective and feasible. The flood mitigation measures between Gretna Blvd to 33rd Street have been addressed by the Gretna Resiliency District Phase 1, where an additional 20 acre-feet of detention storage has been added to the Gretna City Park detention ponds. Gretna Resiliency District Phase 1 also used several green infrastructure treatments to reduce runoff into the drainage system. In addition, to the creation of the Gretna Resiliency District, the City of Gretna has adopted an aggressive Unified Development Code which requires developers to retain the first 1.25" of runoff from a 10 Year Rain Event while also matching pre – post development runoff rates into the City's drainage system. The City of Gretna has also completed several green and grey drainage infrastructure improvements projects to reduce flooding and improve water quality citywide.

Numerous properties within the 25th Street Canal Neighborhood in the City of Gretna have experienced repetitive losses due to historical flood events. This area of Gretna is one of the most repetitive flood loss area in the state.

The 25th Street Canal Drainage Improvements Project will alleviate the flood recurrence in this area by removing the neighborhood as a backwater storage area for the Heebe Canal, reducing runoff within the neighborhood by means of Green Infrastructure techniques, manifolding the drainage culverts within the neighborhood to flow to the 25th Street Canal as opposed to the Heebe Canal during high water events and widening the 25th Street Canal

to feed the proposed 350 cubic feet per second pump station at the confluence of the Heebe and 25th Street Canals. As can be seen by Figures 5-8 showing inundation reductions, Benefits – Inducements Appendices 2,5,25 & 100, the robust BCR (4.84-6.28) and an economical $15,381,143.13 (Please see Appendix C) project cost as compared to the cost of raising structures, the project will prevent the residents of the 25th Street Canal Neighborhood from flooding repeatedly while also improving the quality of life through Green Infrastructure.

The project benefits a tremendous amount of properties in the project area. For the 2-year rain event 90.6% of the properties saw benefits. For the 5-year rain event, 93.7% of the properties saw benefits. For the 25-year rain event, 98% of the properties saw benefits. For the 100-year rain event, 99.3% of the properties saw benefits. Only a few properties saw minimal inducements. No structures in the study area saw inducements.

The project is in compliance with NFIP, local floodplain ordinances, state stormwater management requirements, DOTD requirements, USACE, levee district, and other federal including 44 CFR 65.3, state, and local laws as applicable.

The project evaluated a no-build and build alternative in its alternative analysis and the preferred alternative is the project as evaluated in this H&H report.

The project does not increase the WSEs by 1ft or greater upstream, downstream or within the project area and benefit area. The H&H has considered all practical future developments within the project area which is a dense urbanized area of the Westbank. The project does not cause any rises greater than 1ft.

The project is in compliance with 44 CFR 9.11.d.4 which states: there shall be no encroachments, including fill, new construction, substantial improvements of structures or facilities, or other development within a designated regulatory floodway that would result in any increase in flood levels within the community during the occurrence of the base flood discharge. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the base floodplain unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

All necessary permits for the project will be secured prior to construction. This will include Section 404 permits, Coastal Use permits, City of Gretna and Jefferson Parish permitting requirements. All federal, state and local permitting requirements will be secured. The project has already received approval from Jefferson Parish and the Corps of Engineers.

Project Description and History

Jefferson Parish and the City of Gretna are seeking funding for drainage improvements to address flood mitigation and increase resiliency within the 25th Street Canal Drainage Basin, which encompasses one of the highest concentrations of both Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties in the State. This project strategically targets severe and continual flooding damages that impact the entire 25th Street Canal Drainage Basin from two sources of flooding: backwater flooding from the Heebe Canal and insufficient stormwater capacity within the drainage basin. The benefitting structures within the project area are in a designated low-moderate income (LMI) census tract (22051025500) with a median family income of $28,751. Please see Appendix D for Photos of the project area.

The 25th Street Canal Drainage Basin has critical flood risk reduction needs and the City of Gretna and Jefferson Parish are proactively confronting the issue with their own resources while trying to leverage FEMA Non-Disaster funding. The proposed project builds upon existing planning efforts, as reflected by its alignment with the Parish's multijurisdictional hazard mitigation plan and the City's first comprehensive plan – both highlighting the need for sustainable and resilient approaches to risk reduction.

BKI was engaged by the City of Gretna to assess the 25th Street drainage area and identify solutions to reduce the risk of flooding for streets and repetitive loss structures.

Site Description

The 25th Street Canal Basin extends between the US Highway 90 (West Bank Expressway) to the Northwest, La. Highway 23 (Belle Chasse Highway) to the Northeast, Heebe Canal to the Southwest and Gretna Blvd to the Southeast. The Drainage Area is roughly 323 acres. The basin is one of the largest repetitive flood claim areas in all of Louisiana. The drainage system is not a pumped one but rather a gravity flow system. Because of the repeated flood damages incurred by roughly 300 structures in this basin, there is a dire need to alleviate this severe flooding condition.

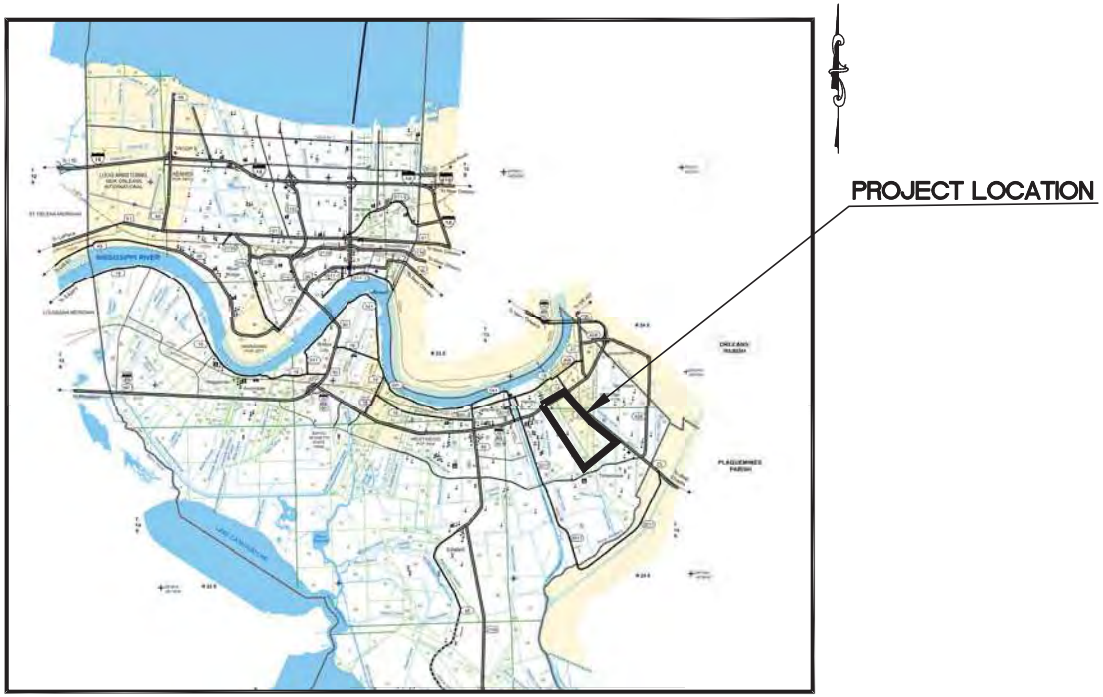
The current Digital Flood Insurance Rate Maps (DFIRM-2018) were based upon a 1-dimensional hydraulic model titled Southeast Louisiana East of Harvey Canal (SELA-EOH) hydraulic model (HEC RAS version 4.0) that the Corps of Engineers created. This model has been accepted by FEMA and is the basis for all the SELA Flood Control Projects as part of the Hurricane Storm Damage Risk Reduction System (HSDRRS) that have been constructed since Hurricane Katrina. For this study and grant application a more refined 2-dimensional hydraulic model was created and refined multiple times with guidance from FEMA. For site location maps and DFIRM map of the project area please see Figures 1A-1E:

1A; Location Map
1B; Project Area Overview Map
1C; Proposed Improvements Map
1D; DFIRM Map
1E Topography Map

Figure 1 A: Location Map

25TH STREET CANAL RESILIENCY PROJECT

GRETNA, LOUISIANA



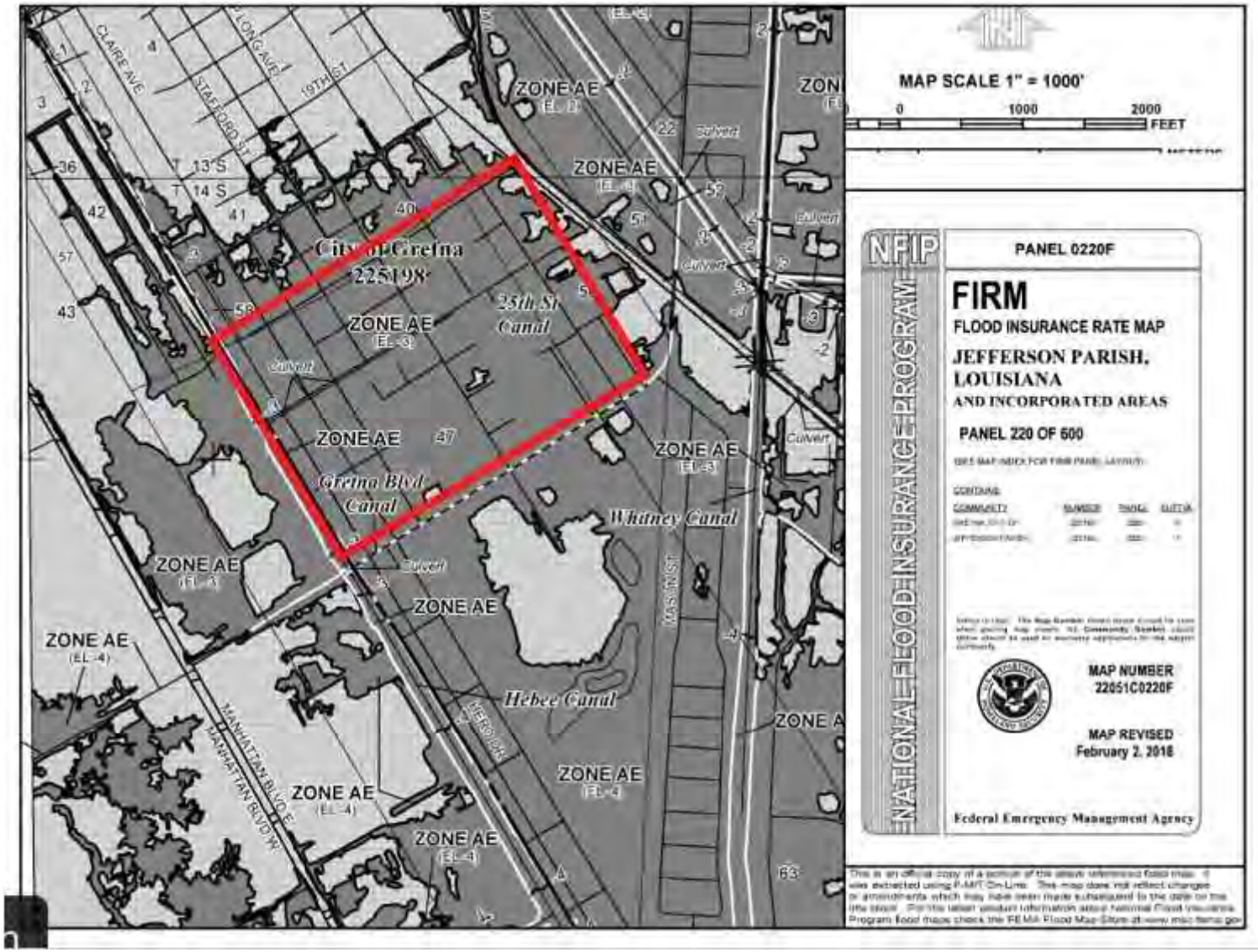
VICINITY MAP
SCALE: NOT TO SCALE

Figure 1B: Project Area Overview

Figure 1C: Proposed Improvements

Pump Station: 29* 53' 43.68" N, 90* 03' 18.95" W

Figure 1D: Dfirm



Project Area - Preliminary FIRM

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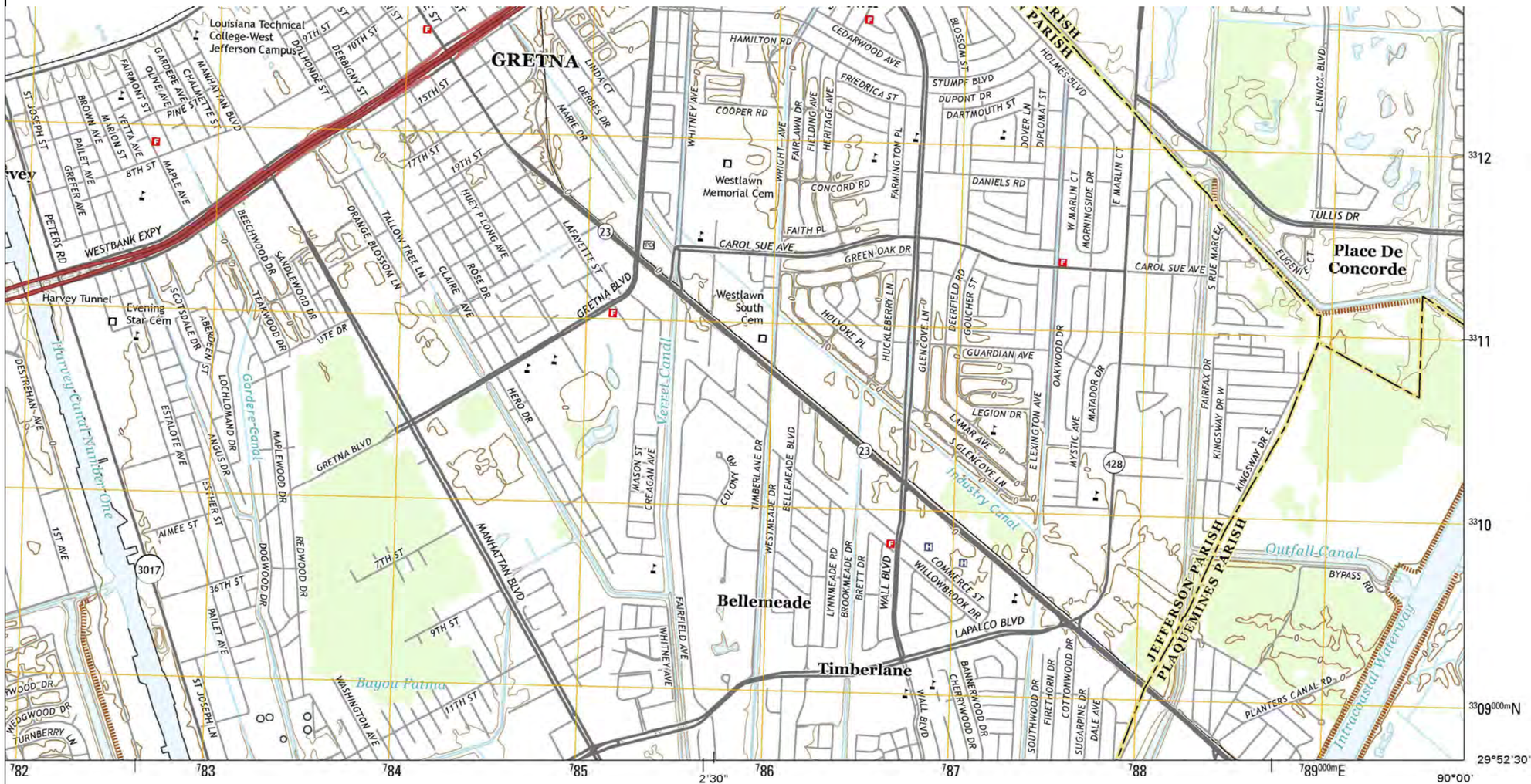
Figure 1E: Topography Map 8

Project Area Topo Map - Gretna, LA



SCALE 1:24 000

1 0.5 0 KILOMETERS 1 2

1000 500 0 METERS 1000 2000

1 0.5 0 MILES 1

1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000 FEET

CONTOUR INTERVAL 5 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the
National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

QUADRANGLE LOCATION

ADJOINING QUADRANGLES

1	2	3
4		5
6	7	8

1 Indian Beach
2 Spanish Fort
3 Little Woods
4 New Orleans West
5 Chalmette
6 Lake Cataouatche East
7 Bertrandville
8 Belle Chasse

ROAD CLASSIFICATION

Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

NEW ORLEANS EAST, LA

2015

Purpose and Need

Numerous properties within the 25th Street Canal Neighborhood in the City of Gretna have experienced repetitive losses due to historical flood events. Figure 2 shows the density and spatial extent of the repetitive losses in the neighborhood. A dense concentration of repetitive losses is shown around 25th Street, and along the Heebe Canal. The flood mitigation measures between Gretna Blvd to 33rd Street have been addressed by the Gretna Resiliency District Phase 1, where an additional 20 acre-feet of detention storage has been added to the Gretna City Park detention ponds. Gretna Resiliency District Phase 1 also used several green infrastructure treatments to reduce runoff into the drainage system.

The 25th Street Canal Drainage Improvements Project seeks to alleviate the flood recurrence, Figure 2, in this area by removing the 25th Street Canal neighborhood as a backwater storage area for the Heebe Canal, reducing runoff within the neighborhood by means of Green Infrastructure techniques, manifolding the drainage culverts within the neighborhood to flow to the 25th Street Canal as opposed to the Heebe Canal during high water events and widening the 25th Street Canal to feed the proposed 350 cubic feet per second pump station at the confluence of the Heebe and 25th Street Canals.

Figure 2 Repetitive Loss Properties along Heebe Canal-25th Street Canal in the city of Gretna

Alternatives Considered

Other Alternatives were examined but deemed to be less effective, not a best management practice and/or not feasible. Some of the rejected alternatives included;

The City evaluated the cost of individual property measures. Assuming a cost of $100,000 to raise a structure the cost to raise 300 structures would greater than $30,000,000. Considering the number of properties, low-moderate income profile of the area and cost prohibitive nature of elevating slab on grade homes with poor soil conditions, a comprehensive community flood mitigation approach was determined to be more cost effective and feasible.

An alternative canal improvement option of changing the entire canal shape from prismatic to a U-shaped canal was looked at. This option was deemed unnecessary because of the canal flow area requirements of the basin. Another reason this alternative was rejected was safety concerns for the residents in the basin. The dangers from falling and into and drowning eliminated this alternative. In addition, the selected design using gabion walls, low flow sidewalks and plantings was deemed a major benefit to the community at a cheaper cost.

A selected alternative was to use salvaged undersized drainage pipes in other parts of the basin where the required culvert size matches the removed or salvaged pipe from another area of the basin.

Design and Assumptions

Model simulations were conducted to demonstrate the performance of this mitigation solution to reduce flood risk at severe repetitive loss properties. The 25 year event formed the basis of the pump and 25th Street Canal conveyance design, considering the cost and strategies in comparison to the projected funding that is available. Please see Appendix 1 for Civil, Mechanical, Electrical and Structural Design Drawings. Please see Appendix 1A for the existing survey for the 25th Street Area. As part of the design; we used various green infrastructure (G.I.) elements to reduce the amount of runoff and pumping capacity while providing an improved quality of life for the residents in the 25th Street Canal Basin. These G.I. elements also provided safety for the neighborhood by eliminating the inherent risk of drowning by using a stepped-prismatic canal section in lieu of a U-shaped canal section.

Hydrologic Methods and Analysis

The hydrologic analysis for this project used the latest National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 Precipitation Frequency Estimates for the 2, 5, 25 & 100 year-24 Hr. values. Please see Figure 3 for the Atlas 14 Rainfall Data. The data can also be downloaded directly from the NOAA website at;

PF Map: Contiguous US (noaa.gov)

For the Hydraulic model these rainfall amounts were placed directly upon the HEC RAS geometry grid.

neral inf rmation
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Precipitation Frequency
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NOAA ATLA 14 POINT PRECIPITATION FREQUENCY ESTIMATES: LA

Data description

Data type: Precipitation depth **Units:** English **Time series type:** Partial duration

Select location

1) Manually:

a) By location (decimal degrees, use "-" for S and W): Latitude: Longitude: Submit

b) By station (list of LA stati ns): Select station

c) By address Search

2) Use map (if ESRI interactive map is not loading, try adding the host: **https://js.arcgis.com/** to the firewall, or contact us at hdsc.questions@noaa.gov):

a) Select location
Move crosshair or double click

b) Click on station icon
Show stations on map

Location information:
Name: Gretna, Louisiana, USA*
Latitude: 29.9003°
Longitude: -90.0552°
El vation: **

* Source: ESRI Maps
** Source: USGS

POINT PRECIPITATION FREQUENCY (PF) ESTIMATES

WIT 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
NOAA Atlas 14, Volume 9, Version 2

PF tabular PF graphical Supplementary information Print page

PD -bas d pr cipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.552** (0.441-0.681)	**0.630** (0.503-0.778)	**0.762** (0.606-0.944)	**0.877** (0.693-1.09)	**1.04** (0.797-1.34)	**1.17** (0.875-1.53)	**1.31** (0.941-1.74)	**1.46** (0.998-1.98)	**1.66** (1.09-2.31)	**1.81** (1.16-2.55)
10-min	**0.808** (0.646-0.998)	**0.922** (0.736-1.14)	**1.12** (0.888-1.38)	**1.28** (1.01-1.60)	**1.53** (1.17-1.96)	**1.72** (1.28-2.23)	**1.92** (1.38-2.55)	**2.13** (1.46-2.90)	**2.42** (1.59-3.38)	**2.65** (1.69-3.74)
15-min	**0.986** (0.788-1.22)	**1.13** (0.898-1.39)	**1.36** (1.08-1.69)	**1.57** (1.24-1.95)	**1.86** (1.42-2.39)	**2.10** (1.56-2.72)	**2.34** (1.68-3.11)	**2.60** (1.78-3.54)	**2.96** (1.94-4.12)	**3.23** (2.06-4.56)
30-min	**1.51** (1.20-1.86)	**1.73** (1.38-2.14)	**2.11** (1.68-2.61)	**2.44** (1.93-3.03)	**2.91** (2.22-3.74)	**3.29** (2.45-4.27)	**3.68** (2.64-4.88)	**4.09** (2.80-5.56)	**4.65** (3.06-6.48)	**5.09** (3.25-7.17)
60-min	**2.03** (1.63-2.51)	**2.33** (1.86-2.87)	**2.86** (2.28-3.54)	**3.35** (2.65-4.17)	**4.11** (3.16-5.34)	**4.75** (3.55-6.22)	**5.44** (3.92-7.28)	**6.19** (4.26-8.48)	**7.27** (4.80-10.2)	**8.15** (5.20-11.5)
2-hr	**2.56** (2.07-3.14)	**2.92** (2.36-3.58)	**3.61** (2.90-4.43)	**4.27** (3.40-5.26)	**5.30** (4.14-6.88)	**6.21** (4.70-8.10)	**7.20** (5.25-9.60)	**8.30** (5.78-11.3)	**9.90** (6.60-13.8)	**11.2** (7.22-15.7)
3-hr	**2.88** (2.34-3.51)	**3.28** (2.65-4.00)	**4.07** (3.28-4.97)	**4.86** (3.89-5.96)	**6.14** (4.84-7.98)	**7.28** (5.56-9.51)	**8.55** (6.28-11.4)	**9.98** (7.00-13.6)	**12.1** (8.12-16.8)	**13.8** (8.96-19.3)
6-hr	**3.44** (2.81-4.15)	**3.93** (3.21-4.74)	**4.92** (4.01-5.96)	**5.93** (4.80-7.21)	**7.59** (6.06-9.82)	**9.08** (7.01-11.8)	**10.8** (7.99-14.3)	**12.7** (8.97-17.2)	**15.5** (10.5-21.4)	**17.8** (11.6-24.6)
12-hr	**4.02** (3.32-4.81)	**4.65** (3.83-5.57)	**5.88** (4.83-7.05)	**7.09** (5.78-8.54)	**9.03** (7.25-11.5)	**10.8** (8.35-13.8)	**12.7** (9.47-16.6)	**14.8** (10.6-19.9)	**17.9** (12.3-24.6)	**20.5** (13.5-28.2)
24-hr	**4.66** (3.88-5.53)	**5.46** (4.54-6.47)	**6.93** (5.74-8.24)	**8.33** (6.86-9.95)	**10.5** (8.47-13.2)	**12.4** (9.69-15.7)	**14.4** (10.9-18.7)	**16.7** (12.0-22.2)	**20.0** (13.8-27.2)	**22.7** (15.1-30.9)
2-day	**5.40** (4.53-6.34)	**6.34** (5.31-7.45)	**8.05** (6.73-9.49)	**9.64** (8.01-11.4)	**12.1** (9.80-15.0)	**14.2** (11.2-17.8)	**16.4** (12.5-21.0)	**18.9** (13.7-24.8)	**22.4** (15.6-30.2)	**25.2** (17.0-34.2)
3-day	**5.86** (4.95-6.85)	**6.87** (5.79-8.03)	**8.70** (7.31-10.2)	**10.4** (8.69-12.3)	**13.0** (10.6-16.1)	**15.3** (12.1-19.0)	**17.7** (13.5-22.6)	**20.3** (14.8-26.6)	**24.1** (16.9-32.4)	**27.2** (18.4-36.7)
4-day	**6.23** (5.28-7.25)	**7.27** (6.15-8.47)	**9.18** (7.74-10.7)	**11.0** (9.19-12.8)	**13.7** (11.2-16.9)	**16.0** (12.8-20.0)	**18.6** (14.2-23.7)	**21.4** (15.7-27.9)	**25.4** (17.8-33.9)	**28.6** (19.5-38.5)
7-day	**7.15** (6.11-8.26)	**8.25** (7.03-9.53)	**10.3** (8.72-11.9)	**12.2** (10.3-14.2)	**15.1** (12.5-18.5)	**17.6** (14.1-21.8)	**20.3** (15.7-25.7)	**23.3** (17.3-30.3)	**27.7** (19.6-36.8)	**31.2** (21.4-41.8)
10-day	**8.02** (6.88-9.22)	**9.17** (7.86-10.6)	**11.3** (9.63-13.0)	**13.2** (11.2-15.3)	**16.3** (13.5-19.8)	**18.9** (15.2-23.2)	**21.7** (16.8-27.3)	**24.7** (18.4-32.0)	**29.1** (20.8-38.6)	**32.7** (22.6-43.7)
20-day	**10.7** (9.26-12.2)	**12.1** (10.5-13.8)	**14.6** (12.5-16.6)	**16.7** (14.4-19.2)	**20.0** (16.7-23.9)	**22.7** (18.4-27.5)	**25.5** (20.0-31.7)	**28.6** (21.4-36.4)	**32.8** (23.6-43.0)	**36.2** (25.2-48.0)
30-day	**13.0** (11.3-14.7)	**14.7** (12.8-16.6)	**17.5** (15.2-19.9)	**19.9** (17.2-22.8)	**23.4** (19.5-27.7)	**26.2** (21.3-31.4)	**29.0** (22.8-35.7)	**32.0** (24.1-40.5)	**36.1** (26.1-47.0)	**39.3** (27.6-51.9)
45-day	**16.0** (14.0-18.0)	**18.0** (15.8-20.3)	**21.4** (18.6-24.2)	**24.2** (20.9-27.4)	**28.0** (23.4-32.7)	**30.9** (25.3-36.7)	**33.9** (26.7-41.3)	**36.9** (27.8-46.2)	**40.8** (29.6-52.7)	**43.8** (30.9-57.6)
60-day	**18.6** (16.3-20.9)	**21.0** (18.4-23.5)	**24.8** (21.7-27.9)	**27.9** (24.3-31.5)	**32.0** (26.8-37.2)	**35.2** (28.8-41.5)	**38.3** (30.2-46.3)	**41.3** (31.3-51.5)	**45.3** (32.9-58.1)	**48.2** (34.1-63.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently alid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Estimates from the table in CSV format: Precipitation frequency estimates Submit

Hydraulic Methods and Analysis

The hydraulic analysis was performed using the best available data and the latest version of the United States Army Corps of Engineers (USACE)-Hydraulic Engineering Center's 2-Dimensional River Analysis Software (HEC RAS 6.3.1).

This latest version of HEC RAS 6.3.1 can be downloaded on the USACE – HEC website at:

HEC-RAS Downloads (army.mil)

Because HEC RAS 6.3.1 is a newly released version od HEC RAS 2D, some hydraulic files may need to be re-linked after they are downloaded. As the Engineer of Record, I am available to assist in the re-linking of hydraulic files. I can be contacted via email at dboyd@bkiusa.com and by phone (504) 975-7735.

The Gretna City Park Improvements (Phase 1) and the 25th Street Basin Green Infrastructure Components (Phase 2) have been included in the new 2-Dimensional hydraulic model titled EOH_HSDRRS (East of Harvey_ Hurricane Storm Damage Risk Reduction System). The Laser Imaging Detection and Ranging Data (Lidar) which is the basis for the hydraulic model grid (15' x 15') was provided directly from the United States Geological Survey department (USGS). The Lidar file is named:

"USGS with Heebe 2023.USGS Approved Terrain_Feet.USGS_Approved_New Sections_With Project.USGSLidar_UpperDeltaPlain2017_Merged_x20y331_332_ft.tif"

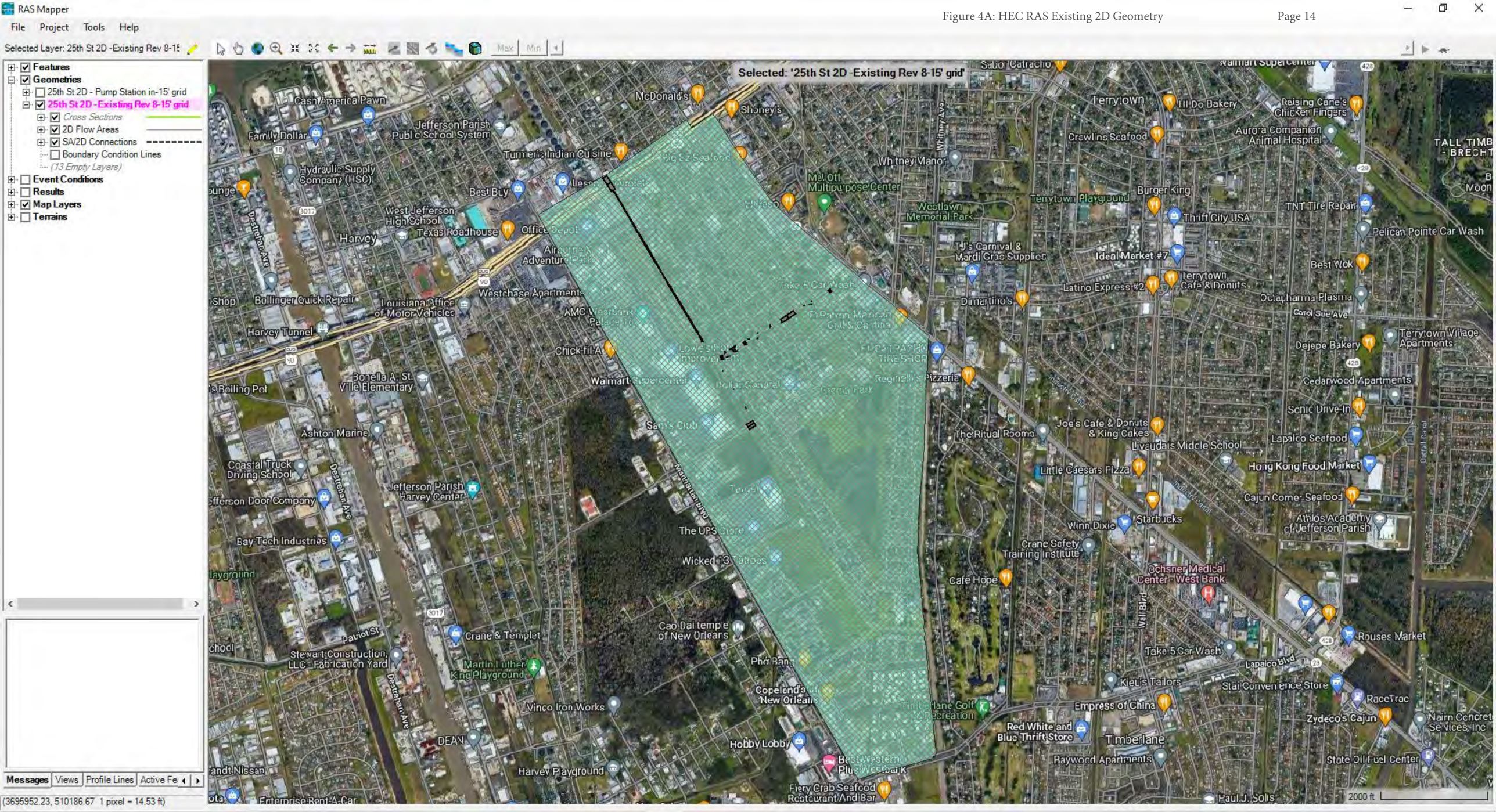
These Lidar-Metadata files and the HEC RAS model files have been included in this submission.

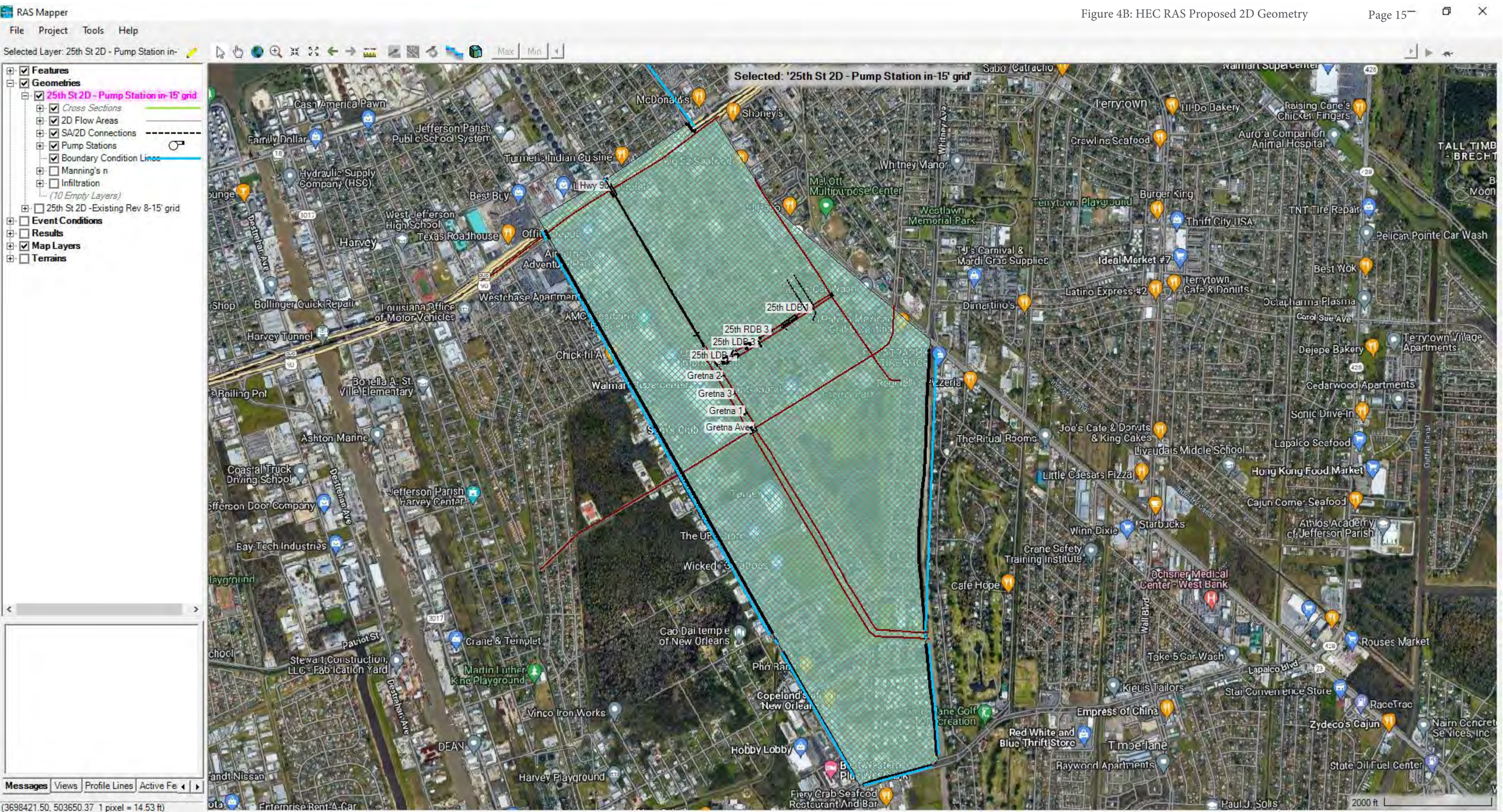
For the HEC RAS modeling the 2, 5, 25 and 100 year rain events were used. The geometric grid was based upon the Lidar file provided by USGS. The limits of the grid were based upon the FEMA approved HEC RAS EOH 1-dimensional DFIRM model. The grid was bordered by Manhattan Blvd to the west, West Bank Expressway (US 90) to the North, Belle Chasse Highway (LA.23) to the east and Verret Canal to the south. The boundaries of this grid were based upon the storage area (47, 42, 68, 43 and 16) outlines from the FEMA 1-D model. The storage areas selected were only those storage areas that are adjacent to the Heebe Canal. The grid captures all the actual runoff and drainage infrastructure that make up the Heebe and 25th Street canals drainage network. Figure 4 shows the 1D geometry that was used as the basis for the 2D grid. Figure 4A show the Existing Conditions 2D Grid and Figure 4B shows the With Project 2D grid.

The Federal Emergency Management Agency's (FEMA) February 15, 2016 revised preliminary Flood Insurance Study for Jefferson Parish, LA included the City of Gretna (community number 225198). As part of FEMA's study, regional hydrologic and hydraulic models were developed to estimate flood risk associated with the 10-, 50-, 100-, and 500-year return period events (FIS number 22051CV000A).

FEMA's flood risk modeling approach included use of the Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS version 3.5) software and the Hydrologic Engineering Center River Analysis System (HEC-RAS version 4.0) software to model the regional hydrology and hydraulics respectively. A schematic of FEMA's HEC-RAS model is shown on Figure 4.

Figure 4. Original Schematic of the FEMA HEC-RAS model. The 25th Canal and Gretna Park segments of the model are highlighted along with the representation of Heebe Canal.


RAS Mapper
File
Project
Tools
Help
Selected Layer: 25th St 2D -Existing Rev 8-15
Features
Geometries
25th St 2D - Pump Station in-15' grid
25th St 2D -Existing Rev 8-15' grid
Cross Sections
2D Flow Areas
SA/2D Connections
Boundary Condition Lines
(13 Empty Layers)
Event Conditions
Results
Map Layers
Terrains
Selected: '25th St 2D -Existing Rev 8-15' grid
Messages
Views
Profile Lines
Active Fe
(3695952.23, 510186.67 1 pixel = 14.53 ft)
2000 ft


RAS Mapper
File
Project
Tools
Help
Selected Layer: 25th St 2D - Pump Station in-
Features
Geometries
25th St 2D - Pump Station in-15' grid
Cross Sections
2D Flow Areas
SA/2D Connections
Pump Stations
Boundary Condition Lines
Manning's n
Infiltration
(10 Empty Layers)
25th St 2D -Existing Rev 8-15' grid
Event Conditions
Results
Map Layers
Terrains
Selected: '25th St 2D - Pump Station in-15' grid'
25th LDB 1
25th RDB 3
25th LDB 3
25th LDB 2
Gretna 2
Gretna 3
Gretna 1
Gretna Ave
Messages
Views
Profile Lines
Active Fe
(3698421.50, 503650.37 1 pixel = 14.53 ft)
2000 ft

After examining existing conditions model results, the following proposed improvements were identified to reduce the risk of flooding to help protect the community, including the severe repetitive loss structures:

1. Flap Gates (Manifold)

Flap Gates: Eliminate backflow from the Heebe Canal into the basin by installing 8 flap gates (6-36", 2-24") on the existing outfall pipes that drain directly from the 25th Street Canal Basin into the Heebe Canal. The flap gates will remain open for gravity drainage up until the Heebe Canal water surface elevation rises above the top of the outfall pipes. When this occurs, the flap gates will close (manifold). When the flap gates are closed backflow from the Heebe is eliminated and the sub-surface runoff from the rain event will flow directly to the 25th Street Canal where it will be pumped out by the proposed 350 cubic feet per second (c.f.s.) pump station located at the confluence of the Heebe Canal and the 25th Street Canal. All flapgates will be installed within the City of Gretna Right of Way.

2. Drainage Pipe Improvements

Drainage Culverts: The existing gravity drainage system was analyzed using LaDOTD's Hydraulic Software HYDR2009 to analyze the runoff and culvert requirements for the basin. The software identified where larger pipes will be needed to route the flows to the 25th Street Canal. All the drainage pipes are outside the existing edge of roadway and within the City of Gretna Right of Way (ROW) so road repair-patching will only be required where new lateral culverts tie into trunk line culverts an no additional ROW will be required. Rebuilt roadway will be necessary along the banks of the 25th Street Canal due to their existing poor condition and further undermining from construction operations. Utility relocations will be required for new drainage pipe, catch basin installation (gas, water and sewer). Before construction operations begin La. One Call and the City of Gretna Public Works will be on site to mark existing utilities. For disruptions in service the residents and businesses will be notified 3 days in advance about the disruption in service and the duration of the disruption.

To further reduce costs, salvaged undersized drainage pipe may be used in other parts of the basin where the required culvert size matches the removed or salvaged pipe from another area of the basin. The drainage pipe improvements consist of 1354' of 15" drainage pipe, 5457' of 30" drainage pipe, 304' of 36" drainage pipe, 28 CB-01, 99 CB-02, 8 CB-06 and 51 CB-07 catch basins. All work will be done within the City of Gretna's Right of Way. All outfalls to the 25th Street Canal will have positive drainage and headwalls that match the newly constructed gabion walls. The drainage pipe improvements will be constructed based upon Jefferson Parish Standard Drawings.

3. 25th Street Canal Improvements

Canal Dredging-Reshaping Green Infrastructure.

Heebe Canal to Hero Drive: The project has a 350 c.f.s. pump station being constructed at the confluence of the Heebe Canal and the 25th Street Canal. Details of the pump station are covered in a subsequent section. The residences are immediately outside the pump station footprint. To feed the pump station a 20' wide x 8' deep x 140' long concrete lined rectangular channel will be required between the pump station and Hero Drive. The invert of this concrete lined channel will be to -13' NAVD88. This channel will be fenced in to ensure public safety.

Hero Drive to Rose Drive Section B) The canal will be reshaped to a more prismatic section. This Canal depth will maintain a 3' depth during non rain events and will remain in bank up to a 7' depth. Reconstructed 11' one - way roads will be adjacent to the canal banks. Five foot pedestrian sidewalks will be constructed adjacent to the reconstructed roadways on both sides of the canal.

Rose Drive to Lafayette Street (Section C) The canal will be reshaped to a more prismatic section. On the south bank (Gretna Blvd. Side) a 5' pedestrian sidewalk will be constructed on the south top of bank. On the north bank (West Bank Expressway Side) a Reconstructed 2 Way Roadway (22' width) will be constructed. The Canal depth will maintain a 3' depth during non - rain events and will remain in bank up to a 7' depth.

Lafayette Street to La. State Highway 23 (Belle Chasse Highway): Along this portion of the project there is no canal. The City has completed the reconstruction of the 2 Way Roadway (22' width).

4. 350 Cubic Feet Per Second Pump Station

The Gretna 25th St. Drainage Pump Station will be located near the intersection of Hero St. and the 25th St. Canal in Gretna, LA. The station will pump internal drainage water from the 25th St. Canal into the Hero Canal. All construction processes will take place within the City of Gretna Right of Ways.

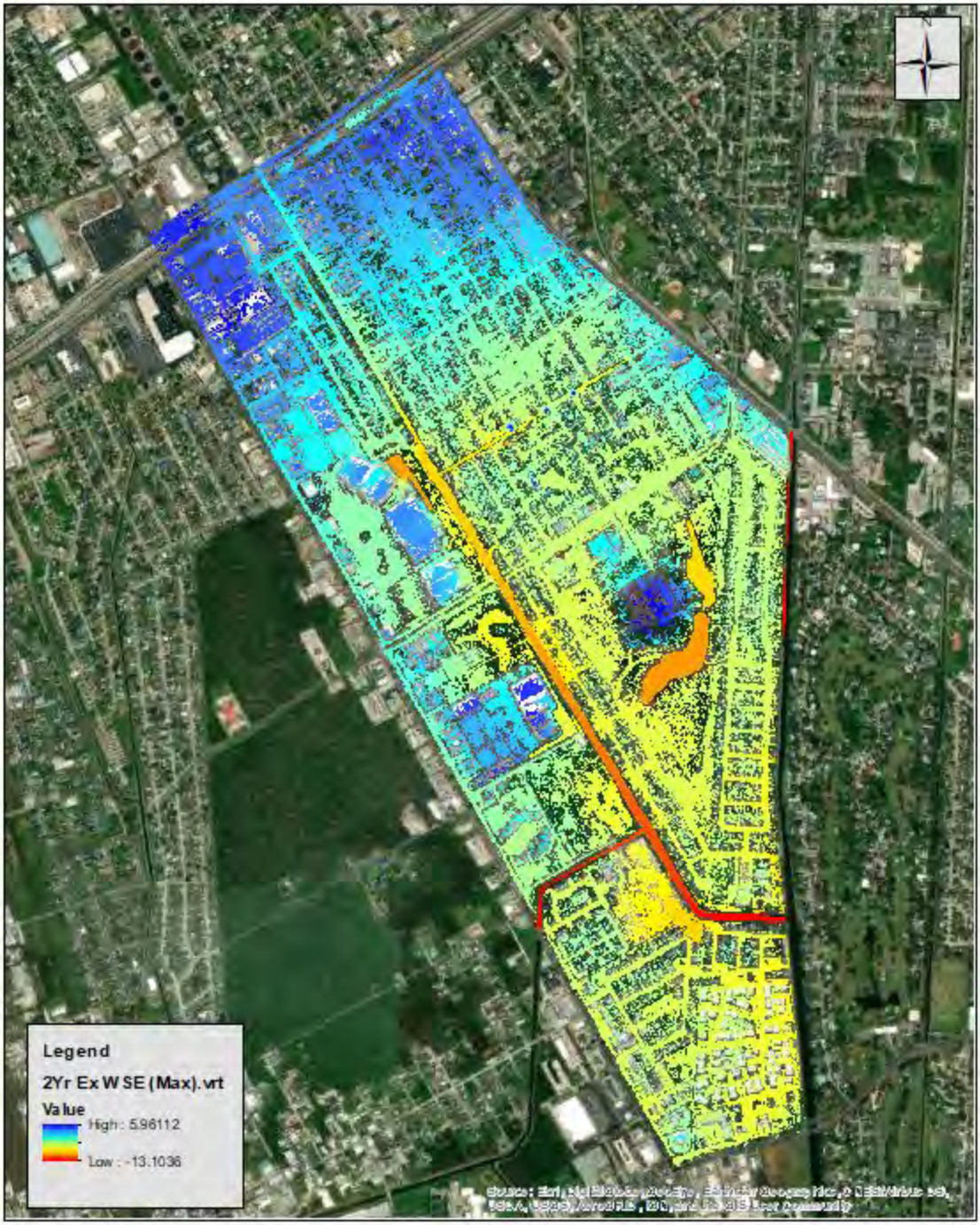
The pumps will be powered by 300 HP, 480-volt electric motors which will be housed in a building enclosure with a platform at elevation 0.00 NAVD 88 (2004.65). All critical equipment will have a minimum elevation of 0.00 NAVD 88 (2004.65). The FIRM elevation at this site is -3.00 ft NAVD 88 (2004.65). Electrical controls and panels will be housed in a climate-controlled concrete block building. Backup power will be provided with a 1000 kW generator that will be capable of running all three pumps. Generator fuel will be natural gas with no provisions for on-site stored fuel. For a more detailed accounting of the pump station components please see Appendix 1B Pump Station Components Design Narrative.

Illustrations

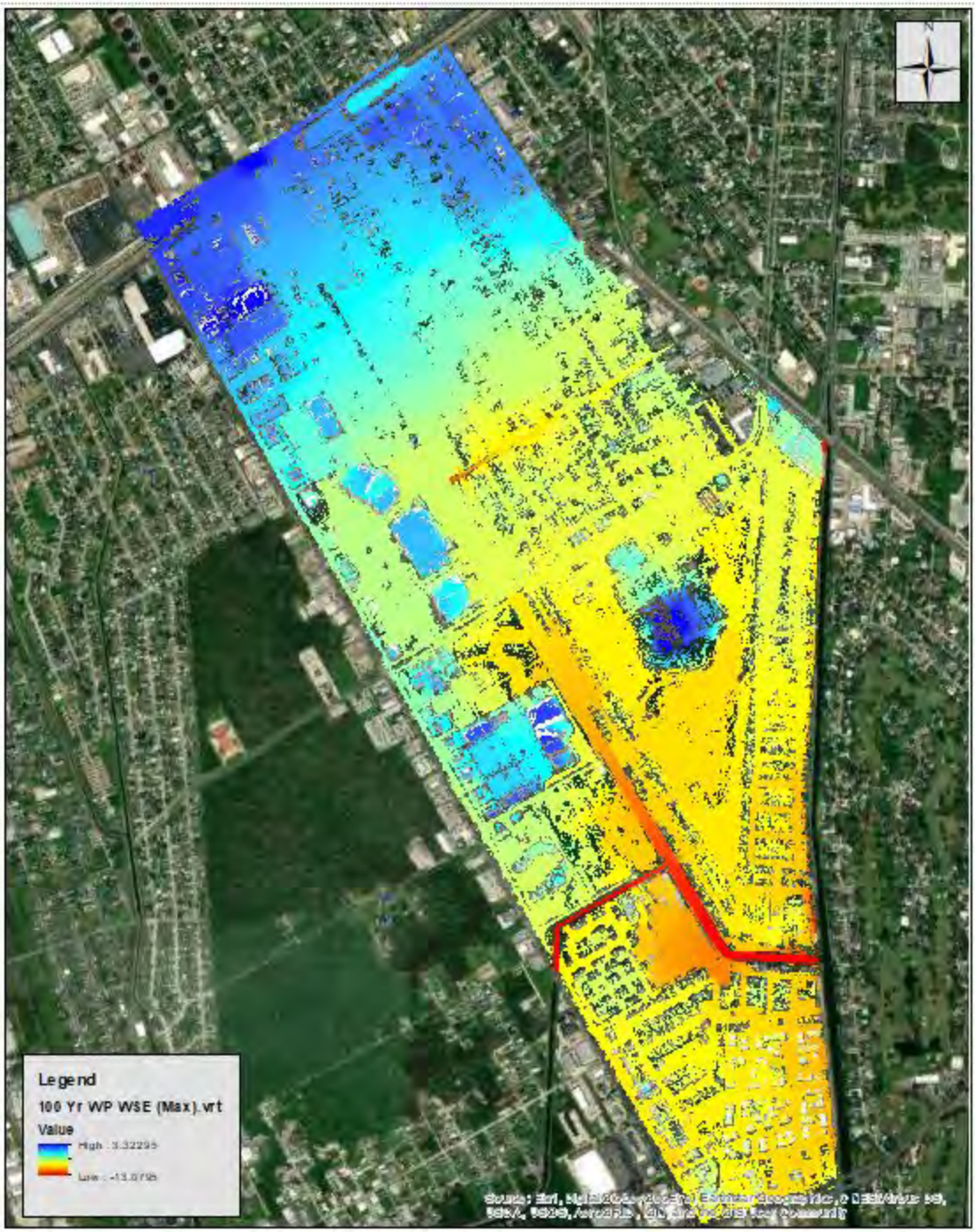
Please see the following Inundation Maps below comparing the Existing Conditions to the With Project conditions for the 2, 5, 25 and 100 year rain events (Figures 5,6,7& 8). For a more detailed illustration of the inundation areas, the inundation depths and the inducements, please utilize HEC RAS Mapper for each of the Hydraulic Plans. Included in the modeling files are the inundation area, depth and inducement layers for each scenario. These Figures are for display only. RAS Mapper allows the user to capture the full extent of Water Surface Elevation reductions and inducements from the With Project Condition. For a tabular listing of the water surface elevation reductions and inducements please see the next section "Results".

Figure 5:

2 Year Max WSE Inundation Grid Comparison



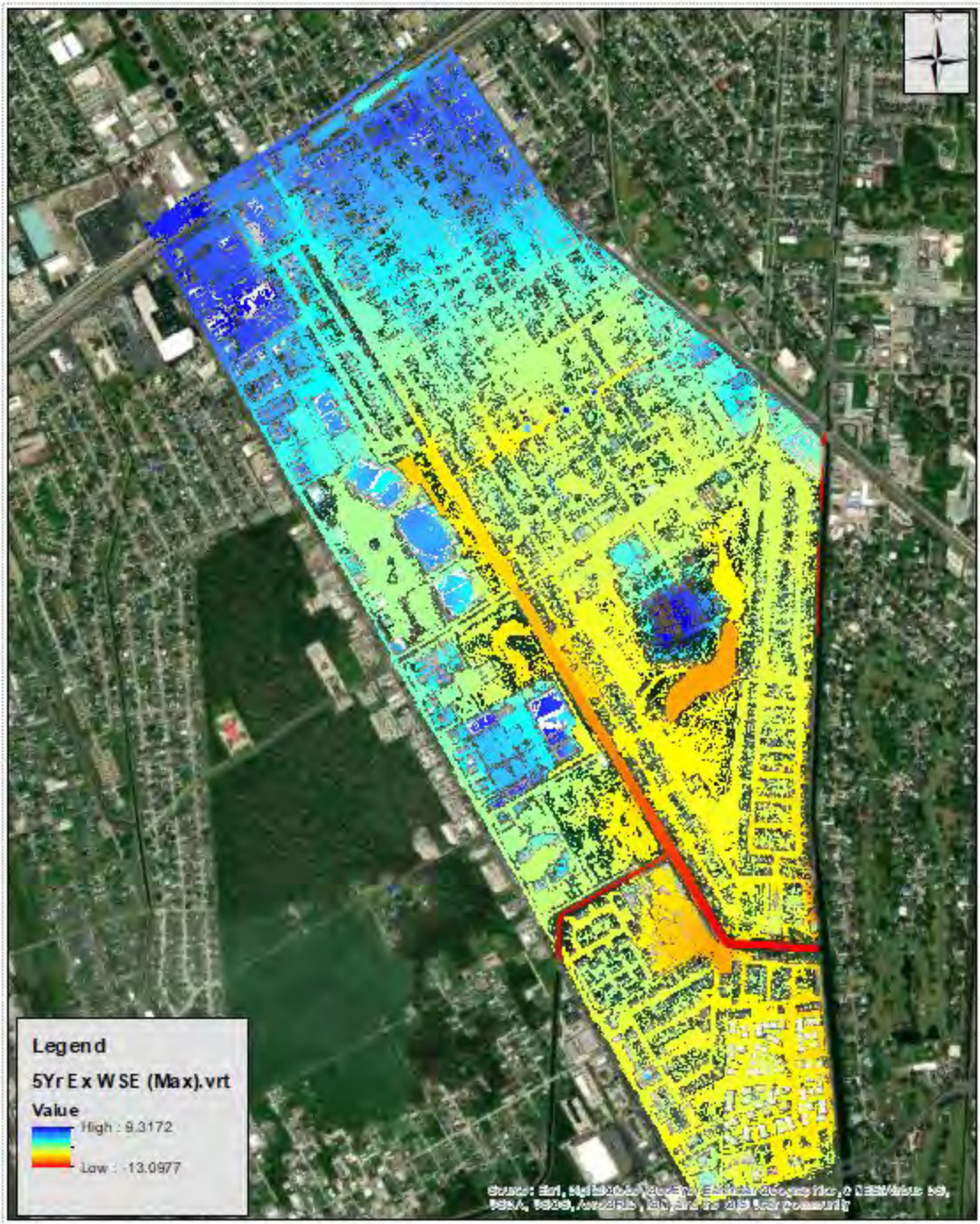
2 Year Existing Max Water Surface Elevations



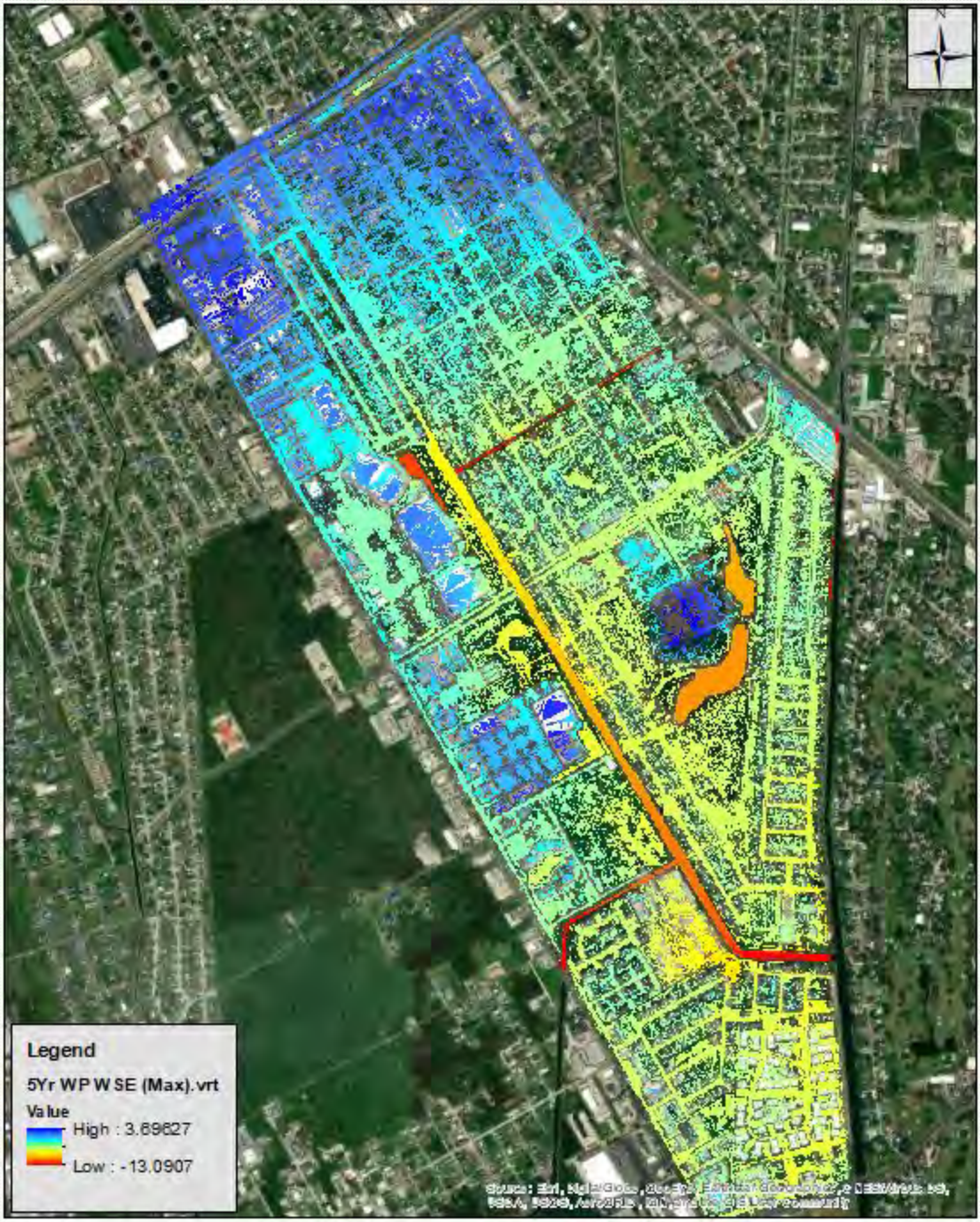
2 Year With Project Max Water Surface Elevations

Figure 6:

5 Year Max WSE Inundation Grid Comparison



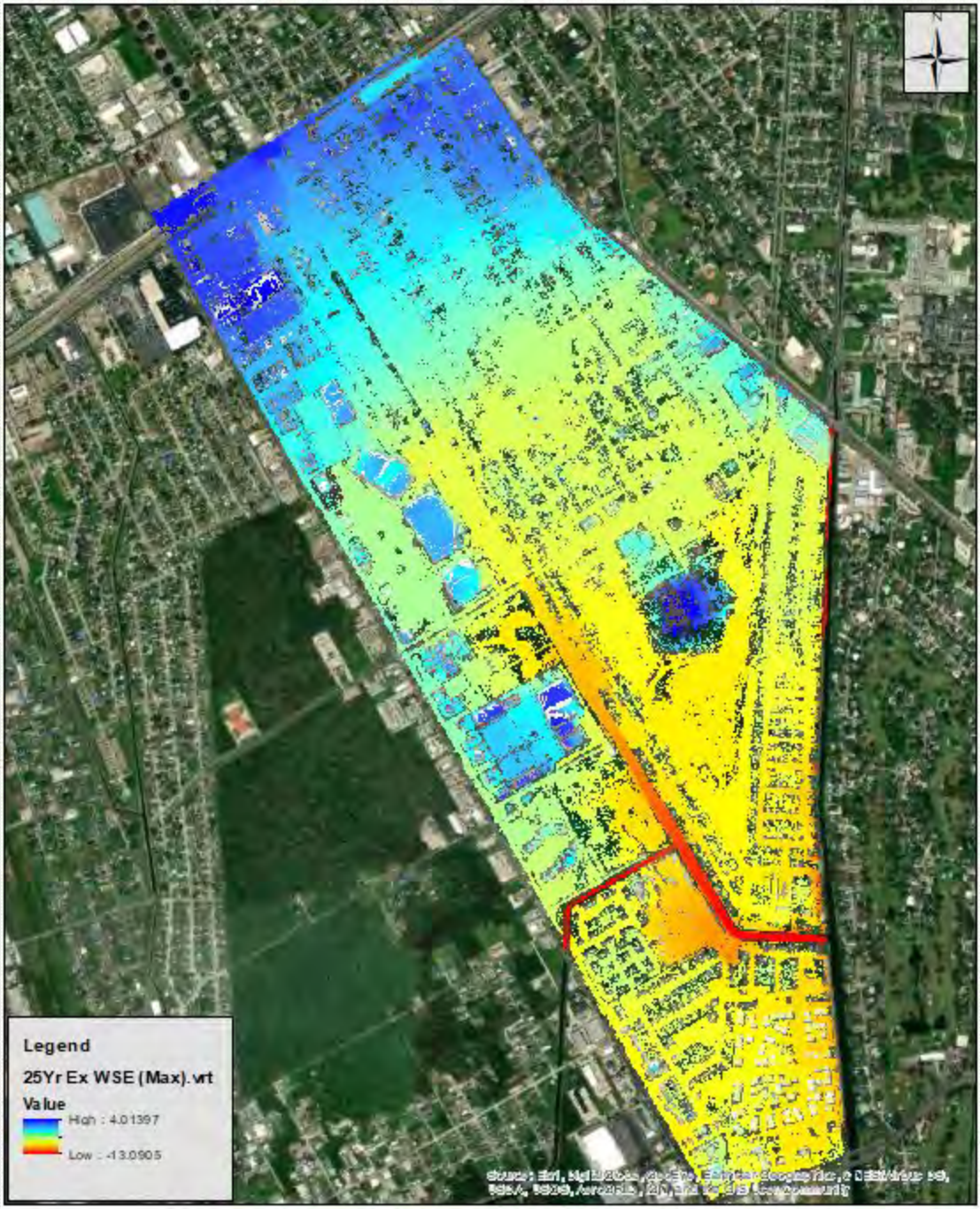
5 Year Existing Max WSE



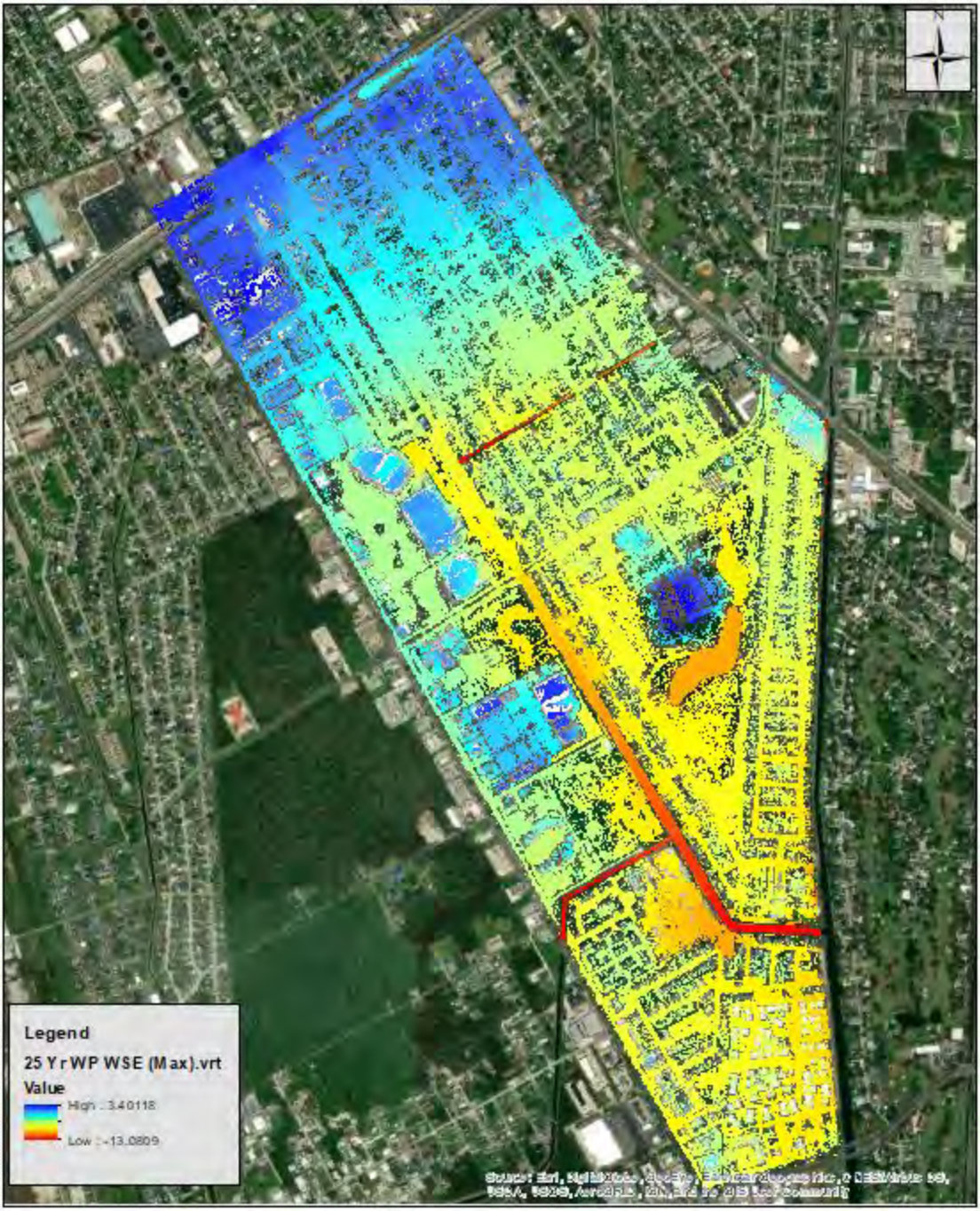
5 Year With Project Max WSE

Figure 7:

25 Year Max WSE Inundation Grid Comparison



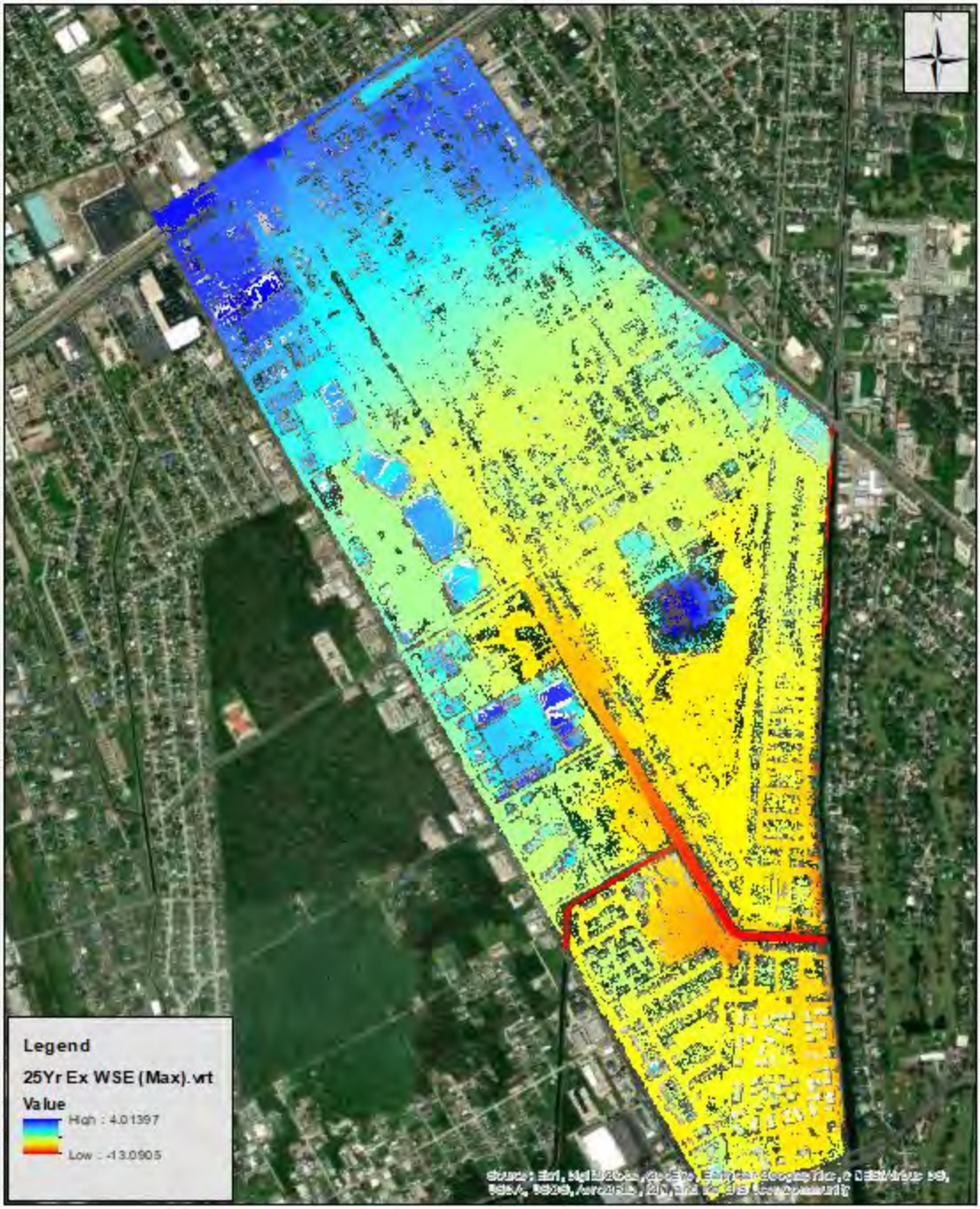
25 Year Existing Max WSE



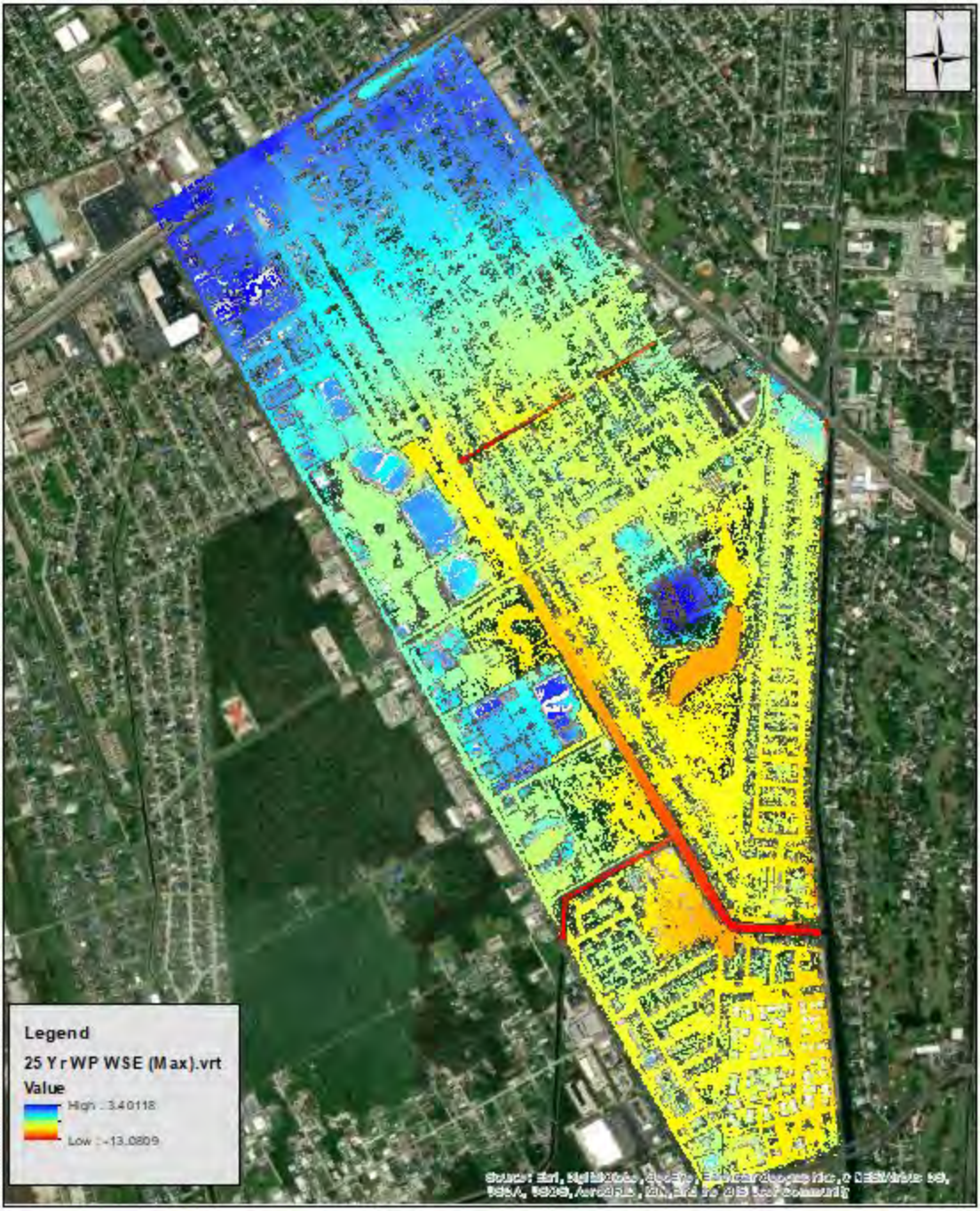
25 Year With Project Max WSE

Figure 8:

100 Year Max WSE Inundation Grid Comparison



25 Year Existing Max WSE



25 Year With Project Max WSE

Results

The first step in calculating the Water Surface Elevation Changes for the 2, 5, 25, and 100 year rain events for the Existing Condition and the With Project Conditions was to calculate the Ground Surface Elevations for each structure.

To do this, ArcGis 10.3.1 was employed to assign a ground elevation for each vertices of every building located in the grid (Lidar). Once the ground surface elevations for each building's vertices were calculate, ArcGis filtered these building ground surface elevations and assigned the lowest building vertex ground surface elevation to each building.

The next step was to use the same building vertices method described above to determine the Maximum Water Surface Elevation for each HEC RAS plan for this study. Maximum water surface elevations for each building in the study area were tallied and assigned to each building.

The detailed results were tabulated and entered into a master spreadsheet detailing the benefits and inducements for the Project Area (25th Street Canal Neighborhood) and the buildings outside of the project but in the study area (Grid). The Appendices listed below detail the addresses, ground surface elevations, Maximum Water Surface Elevations, Maximum Water Surface Elevation Reductions (Benefit) and Maximum Water Surface Increases (Inducements) for each building in the study area.

It was found that the project benefits a tremendous amount of properties in the project area. For the 2-year rain event 90.6% of the properties saw benefits. For the 5-year rain event, 93.7% of the properties saw benefits. For the 25-year rain event, 98% of the properties saw benefits. For the 100-year rain event, 99.3% of the properties saw benefits. Only a few properties saw minimal inducements. No structures in the study area saw inducements. Table1 summarizes the benefits and inducement ranges for all the properties in the project area (25th Street Canal Neighborhood). Table 2 summarizes the inducement ranges for all the properties outside the project area but in the study area (Grid).

For a true picture of the impact this project will have for the 25th Street Canal Neighborhood, please see the Benefit Cost Analysis (BCA). Using the Project Costs and Benefits the Benefit Cost Ratio (BCR) is 4.84 to 1 without social benefits and 6.28 to 1 with social benefits.

Benefit – Inducements Appendices List:

Appendix 2A 2 Year Max WSE Comparison Outside Project Area

Appendix 2B 2 Year Max WSE Comparison Inside Project Area

Appendix 5A 5 Year Max WSE Comparison Outside Project Area

Appendix 5B 5 Year Max WSE Comparison Inside Project Area

Appendix 25A 25 Year Max WSE Comparison Outside Project Area

Appendix 25B 25 Year Max WSE Comparison Inside Project Area

Appendix 100A 100 Year Max WSE Comparison Outside Project Area

Appendix 100B 100 Year Max WSE Comparison Inside Project Area

Table 1: Inside Project Area - 25th Street Canal Neighborhood 1532 Properties				
	Number of Properties Seeing A Water Surface Elevation Reduction (Benefit)	Benefit Range(Inches) - Quantity	Number of Properties Seeing A Water Surface Elevation Increase (Inducement)	Inducement Range (Inches) - Quantity
2 Year Event	1389	0.02" - 38.02"	9 Properties	9 Properties: 0.05" - 0.52"
	90.6% of 1532 Properties			
5 Year Event	1435	0.01" - 23.66"	9 Properties	4 Properties: 1.11" - 1.56"
	93.7% of 1532 Properties			5 Properties: 0.02" - 0.29"
25 Year Event	1502	0.01" - 30.54"	6 Properties	6 Properties: .03" - 0.85"
	98.0% of 1532 Properties			
100 Year Event	1522	0.01" - 12.76"	1 Property	1 Property: 0.15"
	99.3% of 1532 Properties			
** No Structures Inside of the Project Area had inducements.				

Table 2: Study Area: Outside Project Area (Downstream Impacts) 1163 Properties		
	Number of Properties Seeing A Water Surface Elevation Increase (Inducement)	Inducement Range (Inches) - Quantity
2 Year Event	11 Properties	3 Properties: 1.18" - 4.46"
		8 Properties: 0.01" - 0.36"
5 Year Event	7 Properties	2 Properties: 3.45" - 4.64"
		5 Properties: 0.06" - 0.89"
25 Year Event	3 Properties	3 Properties: .01" - 0.79"
100 Year Event	2 Property	2 Property: 0.15" - 0.61"
** No Structures Outside of the Project Area had inducements.		

Conclusions

The 25th Street Canal Improvements Project is the 2nd Phase of the Gretna Resiliency District. The Gretna Resiliency District Phases 1 and 2 are expected to reduce the flood profile risk for over 300 structures that have finished floor elevations lower than the crown of the street. The City has evaluated the cost of individual property measures. Using an average cost of $100,000 to raise a structure, the cost to raise 300 would be greater than $30,000,000. Considering the number of properties, the low-moderate income profile of the area

and cost prohibitive nature of elevating slab on grade homes with poor soil conditions, a comprehensive community flood mitigation approach was determined to be more cost effective and feasible. In addition, to the creation of the Gretna Resiliency District, the City of Gretna has adopted an aggressive Unified Development Code which requires developers to retain the first 1.25" of runoff from a 10-year rain event while also matching pre to post development runoff rates into the City's drainage system. The City of Gretna has also completed several green and grey drainage infrastructure improvements projects to reduce flooding and improve water quality citywide. Please see Appendix D for Photos of the project area.

Over 300 properties within the 25th Street Canal Neighborhood in the City of Gretna have experienced repetitive losses due to historical flood events. This area of Gretna is one of the most repetitive flood loss area in the state.

The 25th Street Canal Drainage Improvements Project will alleviate the flood recurrence in this area by removing the neighborhood as a backwater storage area for the Heebe Canal, reducing runoff within the neighborhood by means of Green Infrastructure techniques, manifolding the drainage culverts within the neighborhood to flow to the 25th Street Canal as opposed to the Heebe Canal during high water events and widening the 25th Street Canal to feed the proposed 350 cubic feet per second pump station at the confluence of the Heebe and 25th Street Canals. As can be seen by Figures 5-8 showing inundation reductions, Benefits – Inducements Appendices 2,5,25 & 100 the robust BCR (4.84-6.28) and an economical $15,381,143.13 (Appendix C Cost Estimate) project cost as compared to the cost of raising structures, the project will prevent the residents of the 25th Street Canal Neighborhood from flooding repeatedly while also improving the quality of life through Green Infrastructure.

Statement Of Compliance

The project is in compliance with NFIP, local floodplain ordinances, state stormwater management requirements, DOTD requirements, USACE, levee district, and other federal including 44 CFR 65.3, state, and local laws as applicable.

The project evaluated a no-build and build alternative in its alternative analysis and the preferred alternative is the project as evaluated in this H&H report.

The project does not increase the WSEs by 1ft or greater upstream, downstream or within the project area and benefit area. The H&H has considered all practical future developments within the project area which is a dense urbanized area of the Westbank. The project does not cause any rises greater than 1ft.

The project is in compliance with 44 CFR 9.11.d.4 which states: there shall be no encroachments, including fill, new construction, substantial improvements of structures or facilities, or other development within a designated regulatory floodway that would result in any increase in flood levels within the community during the occurrence of the base flood discharge. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the base floodplain unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community.

All necessary permits for the project will be secured prior to construction. This will include Section 404 permits, Coastal Use permits. City of Gretna and Jefferson Parish permitting requirements. All federal, state and local permitting requirements will be secured. The project has already received approval from Jefferson Parish and the Corps of Engineers.

The state and federal delegation has issued letters of support for the project. Please see Appendix A for the previously submitted HMA Grant application. Please see Appendix B for the Statewide Flood Control Application.

All pertinent files including GIS Data, spreadsheets etc. can be downloaded from the BKI fileshare site. The link will be emailed to all stakeholders and responsible parties. Because HEC RAS 6.3.1 is a newly released version of HEC RAS 2D, some hydraulic files may need to be re-linked after they are downloaded. As the Engineer of Record, I am available to assist in the re-linking of hydraulic files. I can be contacted via email at dboyd@bkiusa.com and by phone (504) 975-7735.

Prepared By: Burk-Kleinpeter, Inc.
03/2023

Appendix B

8-Step Floodplain Review

EXECUTIVE ORDER 11988/11990

FLOODPLAIN MANAGEMENT/WETLANDS – CHECKLIST (44 CFR Part 9)

APPLICANT:	Jefferson Parish
COUNTY/STATE:	Jefferson Parish, LA
COORDINATES:	29.89701, -90.05643
PROPOSED ACTION:	Jefferson Parish proposes to perform flood risk reduction activities along the 25th Street Canal in Jefferson Parish, Louisiana. Flood risk reduction activities would include installing flap gates, improving drainage pipeline, 25th Street canal improvements, and constructing a new pump station. Six flap gates would be constructed on existing outfall pipes draining into the Heebe Canal. The existing drainage pipeline would be improved to carry water to the 25th Street Canal. Drainage pipeline improvements would occur on: • The eastern bank of the Heebe Canal from 23rd Street south to Gretna Boulevard, • The 25th Street Canal from Heebe Canal east to Belle Chasse Highway, • 23rd Street from Hero Drive to Rose Drive • Hero Drive from Gretna Boulevard to 23rd Street, • Claire Avenue from Gretna Boulevard to 23rd Street, • Rose Drive from Gretna Boulevard to 23rd Street, • White Boulevard from Gretna Boulevard to 27th Street, • Lafayette Street from Gretna Boulevard to 25th Street, • 27th Street from just west of White Boulevard to Lafayette Street. Drainage pipe improvements would consist of replacing existing drainage pipe with larger pipe to support increased flow capacity (i.e., 1,354 feet of 15-inch drainage pipe, 5,457 feet of 30-inch drainage pipe, and 304 feet of 36-inch drainage pipe) and improving four catch basins. Utility relocations will be required for new drainage pipe and catch basin installation (gas, water, and sewer). The 25th Street Canal would be dredged, reshaped, and reconstructed to stabilize canal slopes and expand retention and conveyance capacity. 25th Street would be reconstructed to correct existing poor conditions and repair wear and tear from construction activities. A new pump station would be constructed at the confluence of the 25th Street Canal and the Heebe Canal, adjacent to Hero Street. The pump station would pump water from the 25th Street Canal into the Hero Canal.

APPLICABILITY: Actions which have the potential to affect floodplains/wetlands or their occupants, or which are subject to potential harm by location in floodplains/wetlands.

☒**YES** ☐**NO** The proposed action could potentially adversely affect the floodplain/wetlands.

Remarks:

☒**YES** ☐**NO** The proposed action could potentially be adversely affected by the floodplain/wetlands.

Remarks:

ACTION:

☐ **Review against 500 Year floodplain (for Critical Action)**

☒ **Review against 100 Year floodplain**

☐ **Not Applicable (for actions located in wetland only)**

STEP NO. 1 Determine whether the proposed action is located in the 100-year floodplain (500-year floodplain for critical actions) and/or wetland; (44 CFR §9.7).

The project is located within an "AE" zone, area of 100-yr flooding, per Flood Insurance Rate Map (FIRM) Panel 22051C0220F effective February 2, 2018, and 22071C0241F effective September 30, 2016. Heebe, 25th Street, and Verret Canals are considered undesignated floodways.

According to the National Wetlands Inventory, accessed on May 19, 2023, the project area is not located within wetlands and the project benefit area does not contain wetlands. The National Wetlands Inventory identifies freshwater forested and shrub wetlands adjacent to and west of the project benefit area; however, except for a narrow fringe along Heebe Canal, these wetlands were filled and developed between 1998 and 2003.

STEP NO. 2 Notify the public at the earliest possible time of the intent to carry out an action in a floodplain/wetland, and involve the affected and interested public in the decision-making process; (44 CFR §9.8)

☐ Notice was provided as part of a disaster cumulative notice:

Newspaper: _____

Date: _____

☒ Project Specific Notice (e.g. EA, newspaper, public meeting, etc):

Type of Public Notice: The Parish addressed this information in public involvement meetings on August 22, 2018 (East Bank), October 9, 2018 (West

	Bank), and April 16, 2020 (Virtual) in Jefferson Parish.
Date:	August 22, 2018, October 9, 2018, April 16, 2020

STEP NO. 3 Identify and evaluate practicable alternatives to locating the proposed action in a floodplain/wetland (including alternatives sites, actions and the "no action" option). (44 CFR §9.9)

Alternative Options

☐**YES** ☒**NO** Is there a practicable alternative site location outside of the floodplain/wetland?

If yes, provide the site location:

☐**YES** ☒**NO** Is there a practicable alternative action outside of the floodplain/wetland that will not affect the floodplain/wetland?

If yes, describe the alternative action:

☐**YES** ☒**NO** Is the NO Action alternative the most practicable alternative?

If a practicable alternative exists outside the floodplain/wetland, FEMA must locate the action at the alternative site.

REMARKS: In deciding on this course of action, Jefferson Parish examined several alternative project types. Three alternatives to mitigate these properties were considered: 1. Elevation of structures above the base flood elevation; 2. No Action; and 3. The Proposed Action. Elevation of 300 structures a least 2 feet above base flood elevation was considered but was not deemed the most feasible alternative as this activity would require construction on poor soils and would reduce risk to individual properties at a higher expense per property than the Proposed Action. This alternative would also not provide community-wide flood risk reduction. If no action is taken to mitigate at-risk properties, the area would continue to flood and there would be no benefit realized by the property owners, the Parish, or the National Flood Insurance Program, making this a non-viable option. The Proposed Action is considered to be the most practicable alternative because it would mitigate flood risk to the 25th Street Canal area. Additionally, the project area would benefit from future savings in insurance claims.

STEP NO. 4 Identify the potential direct and indirect impacts associated with the occupancy or modification of floodplains/wetlands and the potential direct and indirect support of floodplain/wetlands development that could result from the proposed action; (44 CFR §9.10)

☒**YES** ☐**NO** Is the proposed action in compliance with the NFIP (see 44 CFR Part 59 seq.)?

☐**N/A** Remarks:

☐**YES** ☒**NO** Does the proposed action increase the risk of flood loss?

☐**YES** ☒**NO** Will the proposed action result in an increased base discharge or increase the flood hazard potential to other properties or structures?

☒**YES** ☐**NO**	Does the proposed action minimize the impact of floods on human health, safety and welfare?
☐**YES** ☒**NO**	Will the proposed action induce future growth and development, which will potentially adversely affect the floodplain/wetland?
☒**YES** ☐**NO**	Does the proposed action involve dredging and/or filling of a floodplain/wetlands?
☐**YES** ☒**NO**	Will the proposed action result in the discharge of pollutants into the floodplain/wetlands?
☒**YES** ☐**NO**	Does the proposed action avoid long and short-term adverse impacts associated with the occupancy and modification of floodplains/wetlands?
	☐**N/A** Remarks:
☐**YES** ☒**NO**	Will the proposed action result in any indirect impacts that will affect the natural values and functions of floodplains/wetlands?
☐**YES** ☒**NO**	Will the proposed action forego an opportunity to restore the natural and beneficial values served by floodplains/wetlands?
	☐**N/A** Remarks:
☒**YES** ☐**NO**	Does the proposed action restore and/or preserve the natural and beneficial values served by floodplains/wetlands?
	☐**N/A** Remarks:
☒**YES** ☐**NO**	Will the proposed action result in an increase to the useful life of a structure or facility?

REMARKS: The Proposed Action would occur within canals that help the management of floodwaters in the floodplain. Mitigation measures stipulated in Clean Water Act permits would minimize impacts on the floodplain. Once complete, the Proposed Action would reduce the risk of flood damage to structures in the 25th Street Canal impact area which would decrease the financial impact on property owners. A Hydrologic and Hydraulic study (H&H) for the Proposed Action was conducted for the Proposed Action. It was found that only 9 properties within the general project area saw minimal increases no greater than 1.56 inches, and no structures saw increased flood levels. It was also found that 11 additional properties outside the general project area saw minimal increases, no greater than 4.64 inches, and no structures saw increased flood levels. The Proposed Action would not increase water surface elevations by 1-foot or more upstream or downstream of the project area or within the project benefit area.

Jefferson Parish must coordinate with the local floodplain administrator, obtain required permits prior to initiating work, and comply with any conditions of the permit to ensure harm to and from the floodplain is minimized. All coordination pertaining to these activities should be retained as part of the project file in accordance with the respective grant program instructions.

For areas identified as in an undesignated floodway: Applicant must coordinate with the local floodplain administrator and obtain required permits prior to initiating work. The H&H demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one foot at any point within the community. Applicant must comply with any conditions of permit and all coordination pertaining to these activities should be retained as part of the project file in accordance with the respective grant program instructions.

STEP NO. 5 Minimize the potential adverse impacts and support to or within floodplains/wetlands to be identified under Step 4, restore and preserve the natural and beneficial values served by floodplains/wetlands; (44 CFR §9.11)

☒**YES** ☐**NO** Were flood hazard reduction techniques applied to the proposed action to minimize the flood impacts if site location is in the 100- or 500-Year floodplain/wetlands?

☐**N/A** Remarks:

☒**YES** ☐**NO** Were avoidance and minimization measures applied to the proposed action to minimize the short and long term impacts on the 100-Year floodplain/wetlands?

If no, identify measures required as a condition of the grant:

☐**N/A** Remarks:

☒**YES** ☐**NO** Were measures implemented to restore and preserve the natural and beneficial values of the floodplain/wetlands.

If no, identify measures required as a condition of the grant:

☐**N/A** Remarks:

☐**YES** ☒**NO** Is new construction or substantial improvement in a floodway, and new construction in a coastal high hazard area proposed?

If YES: Is the activity considered as functionally dependent use or a structure or facility which facilitates an open space use?

☐**YES** ☐**NO**

STEP NO. 6 Reevaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain/wetlands values and second, if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. (44 CFR §9.9)

☒**YES** ☐**NO** The action is still practicable at a floodplain/wetland site in light of the exposure to flood risk and ensuing disruption of natural values;

☒**YES** ☐**NO** The floodplain/wetlands site is the only practicable alternative.

☒**YES** ☐**NO** There is no potential for limiting the action to increase the practicability of previously rejected non-floodplain/wetlands sites and alternative actions.

☒**YES** ☐**NO** Minimization of harm to or within the floodplain/wetlands can be achieved using all practicable means.

☒**YES** ☐**NO** The action in a floodplain/wetland clearly outweighs the requirement of E.O. 11988/11990.

FEMA shall not act in a floodplain/wetland unless it is the only practicable location.

STEP NO. 7 Prepare and provide the public with a finding and public explanation of any final decision that the floodplain/wetland is the only practicable alternative; and (44 CFR §9.12)

☐ Check if the Initial Public Notice serves as the Final Public Notice or a Cumulative Public Notice was published. No condition required.

☐ Check if the condition was added to the REC indicating that "For actions located in the floodplain and/or wetlands, the applicant must issue a final public notice per 44 CFR Part 9.12(e) at least 15 days prior to the start of work. The final notice shall include the following: (1) A statement of why the proposed action must be located in an area affecting or affected by a floodplain or a wetland; (2) A description of all significant facts considered in making this determination; (3) A list of the alternatives considered; (4) A statement indicating whether the action conforms to applicable state and local floodplain protection standards; (5) A statement indicating how the action affects or is affected by the floodplain and/or wetland, and how mitigation is to be achieved; (6) Identification of the responsible official or organization for implementation and monitoring of the proposed action, and from whom further information can be obtained; and (7) A map of the area or a statement that such map is available for public inspection, including the location at which such map may be inspected and a telephone number to call for information."

☒ Project Specific Notice (e.g. EA, newspaper, public meeting, etc):

Type of Public Notice: _____

Date: Pending

EA Notice of Availability will serve as the Final Public Notice.

STEP NO. 8 Review the implementation and post - implementation phases of the proposed action to ensure that the requirements stated in Section 9.11 are fully implemented. Oversight responsibility shall be integrated into existing processes. (44 CFR §9.11)

☒**YES** ☐**NO** Was Grant conditioned on review of implementation and post-implementation phases to insure compliance of EO 11988?

Failure to comply with conditions enumerated in the Record of Environmental Consideration may jeopardize federal funding.

Appendix C

Site Plans

GRETNA 25TH ST. PUMP STATION
FOR THE
CITY OF GRETNA, LOUISIANA

BKI PROJECT NO. 20.044
JULY 2021

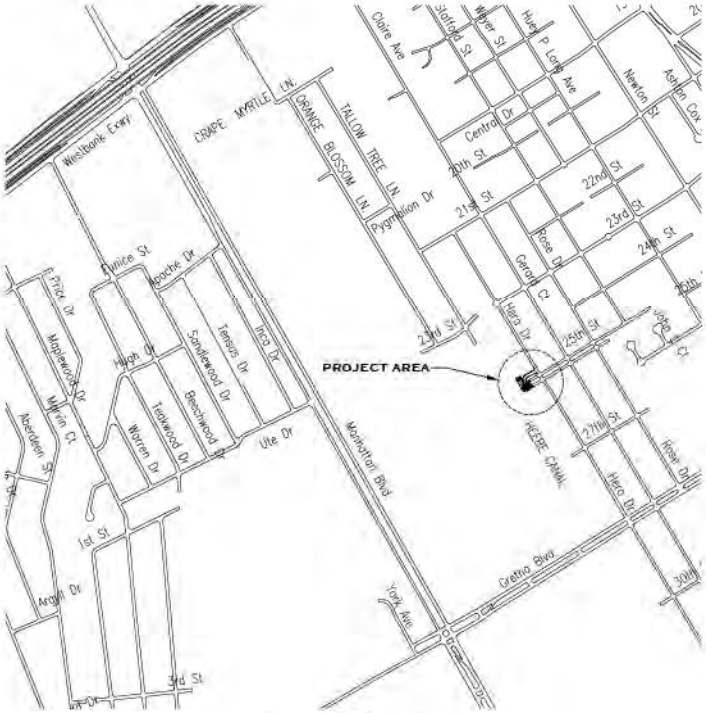
CITY OF GRETNA

MAYOR
BELINDA C. CONSTANT

COUNCIL MEMBERS
WAYNE A. RAU–COUNCILMAN AT–LARGE
RUDY S. SMITH– COUNCILMAN DISTRICT 1
MICHAEL A. HINYUB – COUNCILMAN DISTRICT 2
MARK K. MILLER – COUNCILMAN DISTRICT 3
JACKIE J. BERTHELOT – COUNCILMAN DISTRICT 4

DIRECTOR OF PUBLIC WORKS
DANNY LASYONE

DRAWING INDEX



LOCATION MAP
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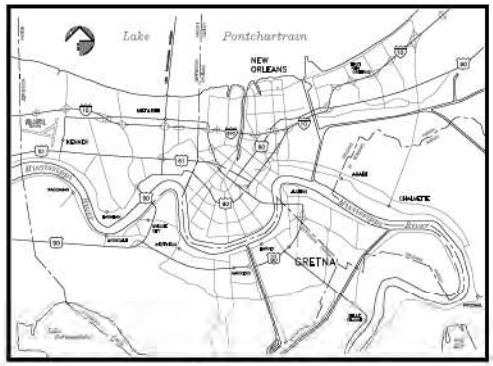


SEE LOCATION MAP

VICINITY MAP
N.T.S.

STATE OF LOUISIANA
HENRY M. PICARD, III
REG. No. 22269
REGISTERED
PROFESSIONAL ENGINEER
IN
CIVIL ENGINEERING

APPROVAL

HENRY M. PICARD III — DATE
SENIOR VICE PRESIDENT, BURK–KLEINPETER, INC.

BELINDA C. CONSTANT, MAYOR — DATE
CITY OF GRETNA, LOUISIANA

DANNY LASYONE, DIRECTOR — DATE
CITY OF GRETNA, DEPARTMENT OF PUBLIC WORKS

LANDSCAPE ARCHITECT: — DATE
Mang Brown & Associates, Inc.

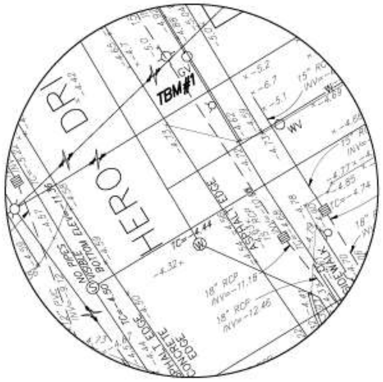
BURK–KLEINPETER, INC. 4176 CANAL STREET NEW ORLEANS, LA.

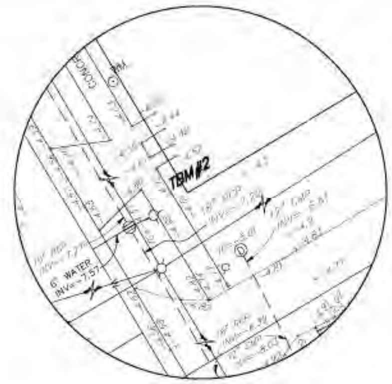
8/16/2021

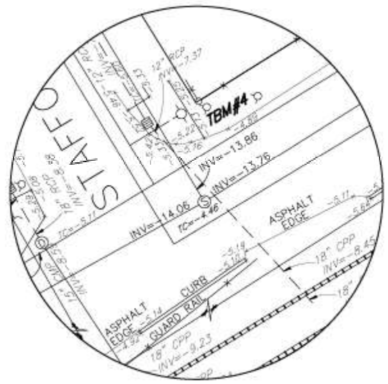
TBMs

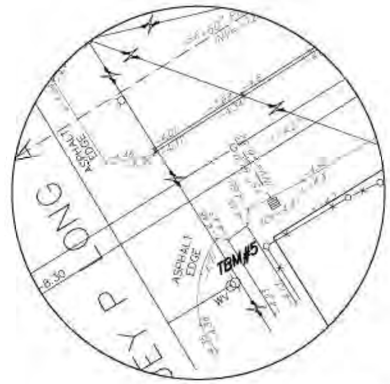
ALL ELEVATIONS ARE IN FEET, NAVD88. BASED ON GPS OBSERVATIONS

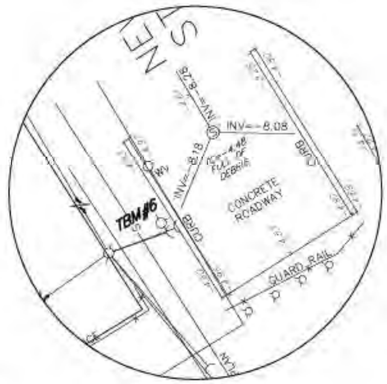
TBM#	DESCRIPTION	ELEVATION (FT)
1	AL ON HYDRANT AT NE CORNER OF 25TH & HERO	-1.77
2	AL ON HYDRANT AT NE CORNER OF 25TH & CLAIRE	-2.68
3	AL ON HYDRANT AT NE CORNER OF 25TH & ROSE	-3.05
4	AL ON HYDRANT AT NE CORNER OF 25TH & STAFFORD	-2.82
5	AL ON HYDRANT AT #2501 HUEY P. LONG	-2.02
6	AL ON HYDRANT AT #2412 NEWTON	-2.51
7	W ON SEWER MANHOLE AT INTERSECTION OF 25TH & LAFAYETTE	-3.38
8	TOP CASTING ON SQUARE DRAIN AT NW CORNER OF 25TH & BELLE CHASSE HWY	-4.15
9	AL ON HYDRANT AT NE CORNER OF 27TH & CLAIRE	-1.57
10	AL ON HYDRANT AT NE CORNER OF GRETNA BLVD & CLAIRE	-2.87
11	AL ON HYDRANT AT NE CORNER OF GRETNA BLVD & ROSE	-2.93
12	AL ON HYDRANT AT NE CORNER OF 27TH & ROSE	-1.95
13	AL ON HYDRANT AT NE CORNER OF 23RD & ROSE	-0.35
14	W ON SEWER MANHOLE AT INTERSECTION OF 23RD & CLAIRE	-3.38
15	AL ON HYDRANT AT NE CORNER OF 23RD & HERO	-0.49
16	AL ON HYDRANT AT NE CORNER OF 27TH & HERO	-1.51
17	AL ON HYDRANT AT NE CORNER OF GRETNA BLVD & HERO	-2.74
18	TENN ON HYDRANT AT NW CORNER OF 27TH & LAFAYETTE	-1.34
19	AL ON HYDRANT AT NW CORNER OF GRETNA BLVD & LAFAYETTE	-3.42
20	AL ON HYDRANT AT #8 WHITE BLVD	-2.20

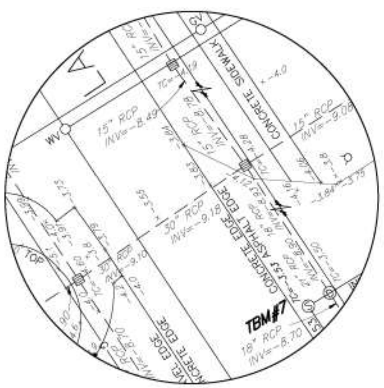


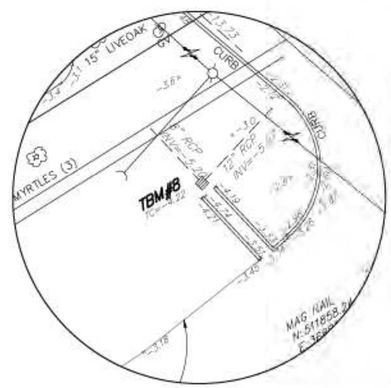












30% REVIEW

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: David F. Boyd, P.E.
LA LICENSE #: LA 35516
DATE: August 2021

C1.0
SHEET NUMBER

BKI BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL

CLIENT PROJECT NUMBER : XXXXXXXX
BKI # : NO.20,044

DESIGNED CMM
CHECKED RAC IV
DETAILED SG
CHECKED RAC IV
DATE August 2021
SHEET 1 OF 2

25th STREET
CANAL DRAINAGE IMPROVEMENTS

GEOMETRIC LAYOUT

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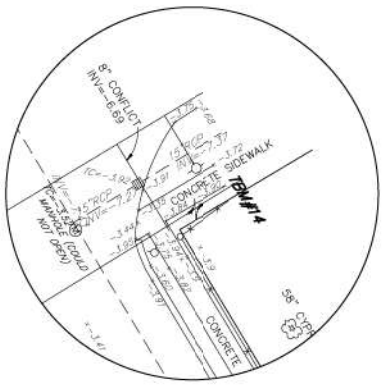
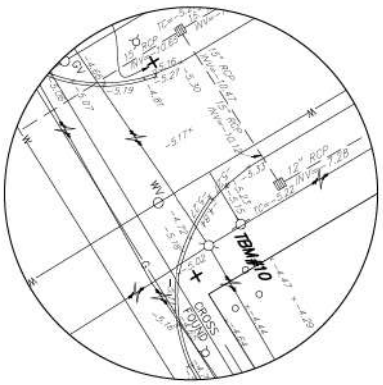
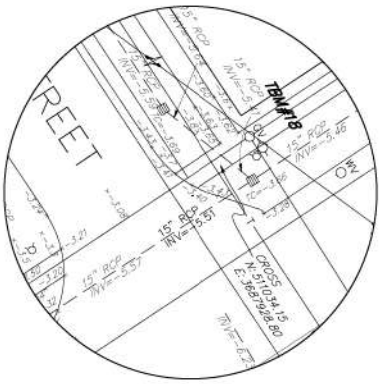
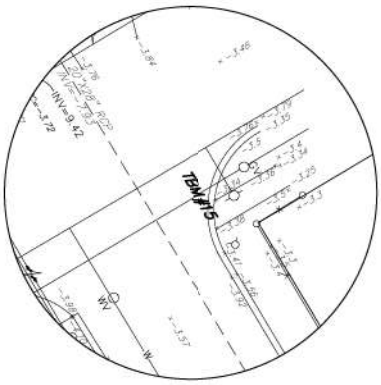
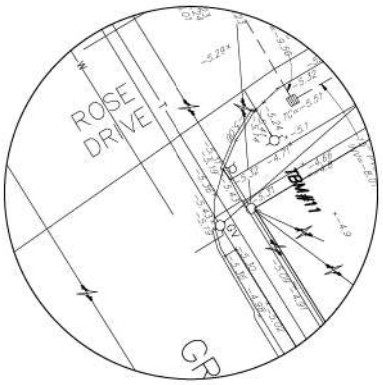
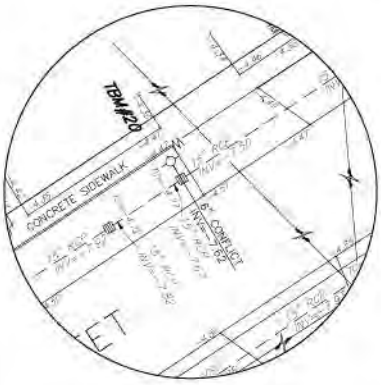


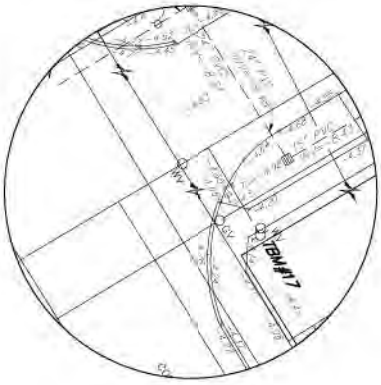


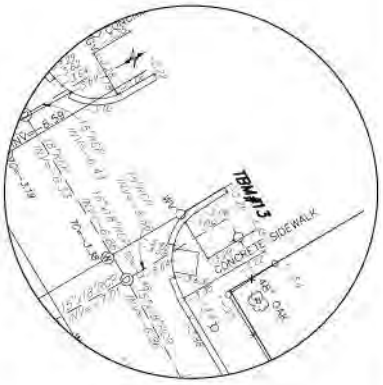












PRELIMINARY
FOR REVIEW ONLY
30% REVIEW
BURK-KLEINPETER, INC.

25th STREET
CANAL DRAINAGE IMPROVEMENTS

GEOMETRIC LAYOUT

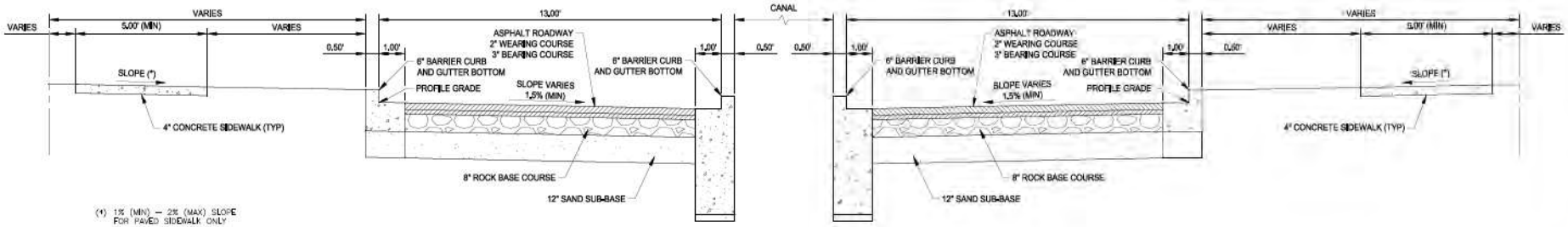
DESIGNED	CMM
CHECKED	RAC IV
DETAILED	SG
CHECKED	RAC IV
DATE	August, 2021
SHEET	2 OF 2

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI@BKI.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20,044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER C1.1



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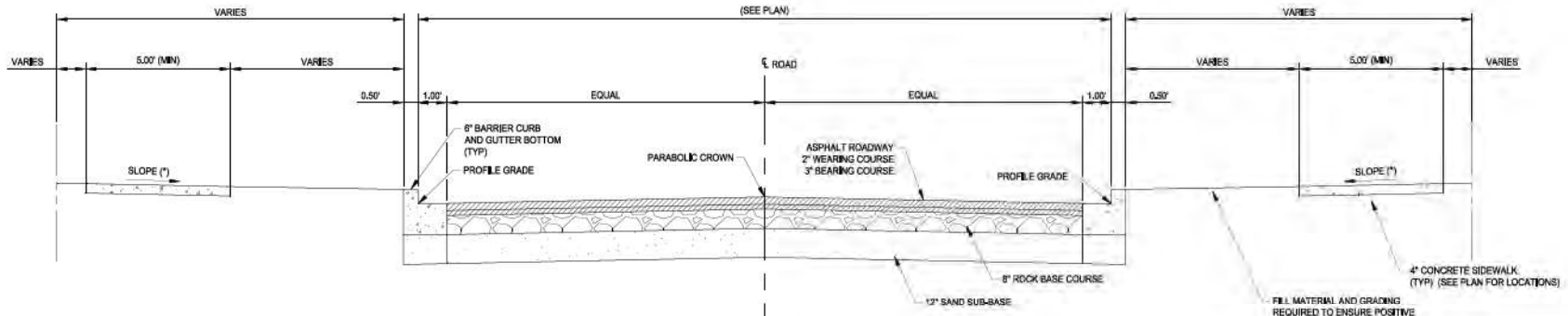
FOR PAVED SIDEWALK ONLY

TYPICAL ASPHALT ROADWAY SECTION (ONE WAY)

NTS



(*) 1% (MIN) – 2% (MAX) SLOPE
FOR PAVED SIDEWALK ONLY

TYPICAL ASPHALT ROADWAY SECTION (TWO WAY)

NTS

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: David B. Boyd, P.E.
LA. LICENSE #: LA 35210
DATE: August, 2021

C2.0

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI #: NO.20J044

CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED	CMM
CHECKED	RAC IV
DETAILED	SG
CHECKED	RAC IV
DATE	August, 2021
SHEET	1 OF 1

25th STREET
CANAL DRAINAGE IMPROVEMENTS

TYPICAL SECTIONS

8/17/2021

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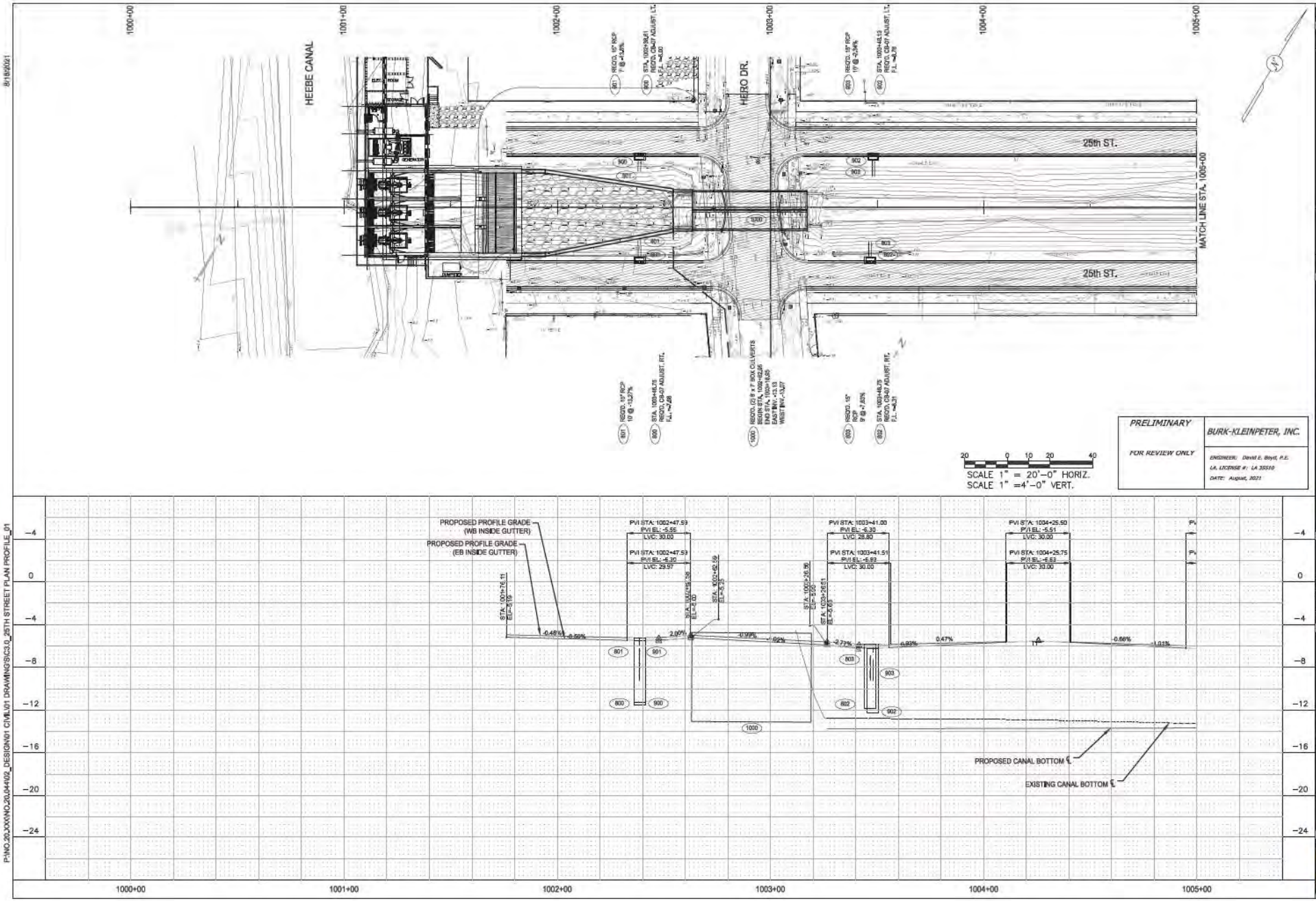

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: David E. Boyd, P.E.
LA. LICENSE #: LA 35510
DATE: August, 2021

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

C3.0 SHEET NUMBER

NO.	DATE	BY

DESIGNED RAC IV
CHECKED RAC IV
DETAILED TL
CHECKED RAC IV
DATE August, 2021
SHEET 1 OF 7

25th STREET
CANAL DRAINAGE IMPROVEMENTS
25th ST. PLAN & PROFILE

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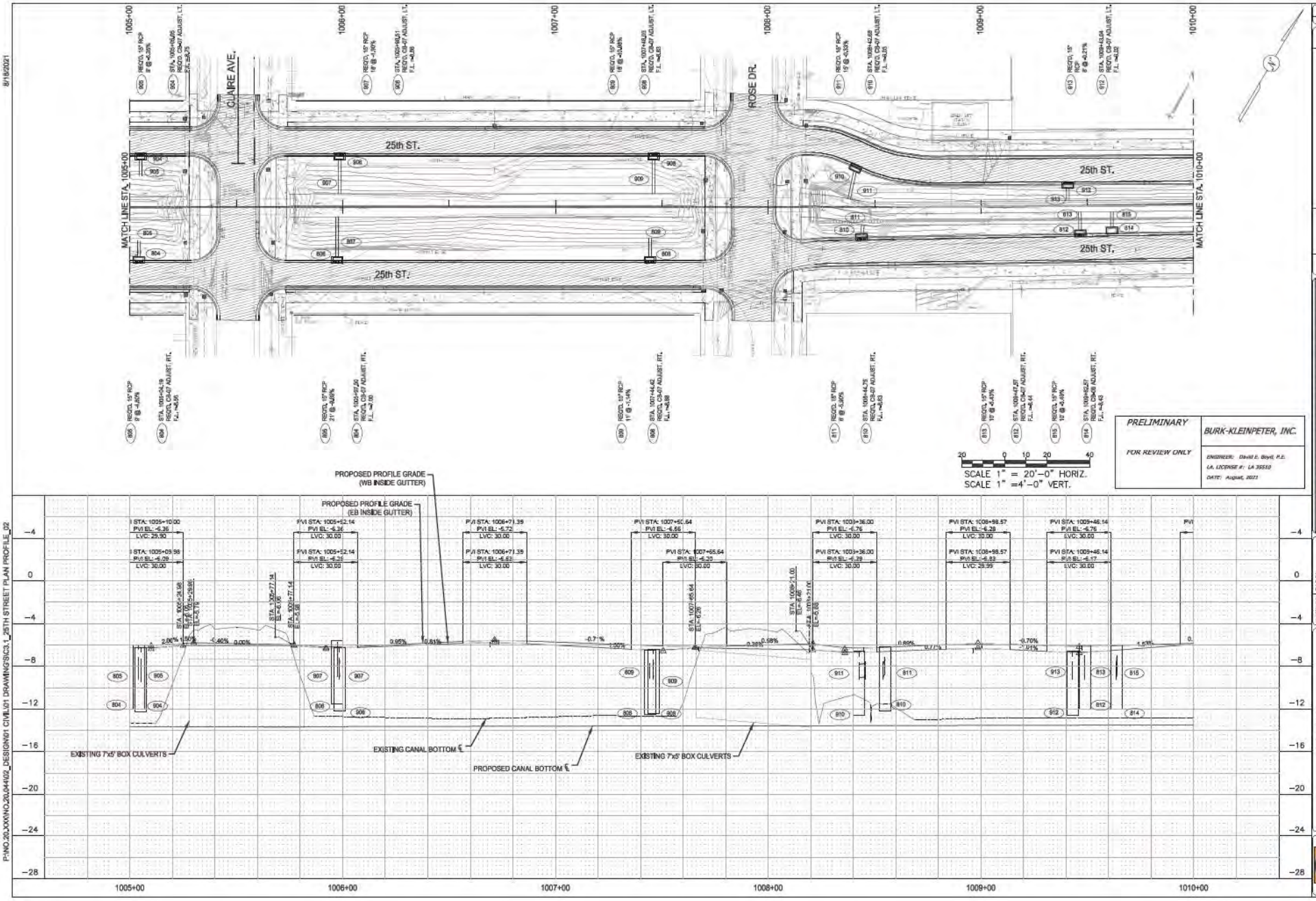
8/18/2021



PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: David E. Boyd, P.E.
LA. LICENSE #: LA 35510
DATE: August, 2021

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI # : NO.20.044

CLIENT PROJECT NUMBER : XXXXXXXX

25th STREET
CANAL DRAINAGE IMPROVEMENTS
25th ST. PLAN & PROFILE

DESIGNED RAC IV
CHECKED RAC IV
DETAILED TL
CHECKED RAC IV
DATE August, 2021
SHEET 2 OF 7

C3.1
SHEET NUMBER

8/18/2021

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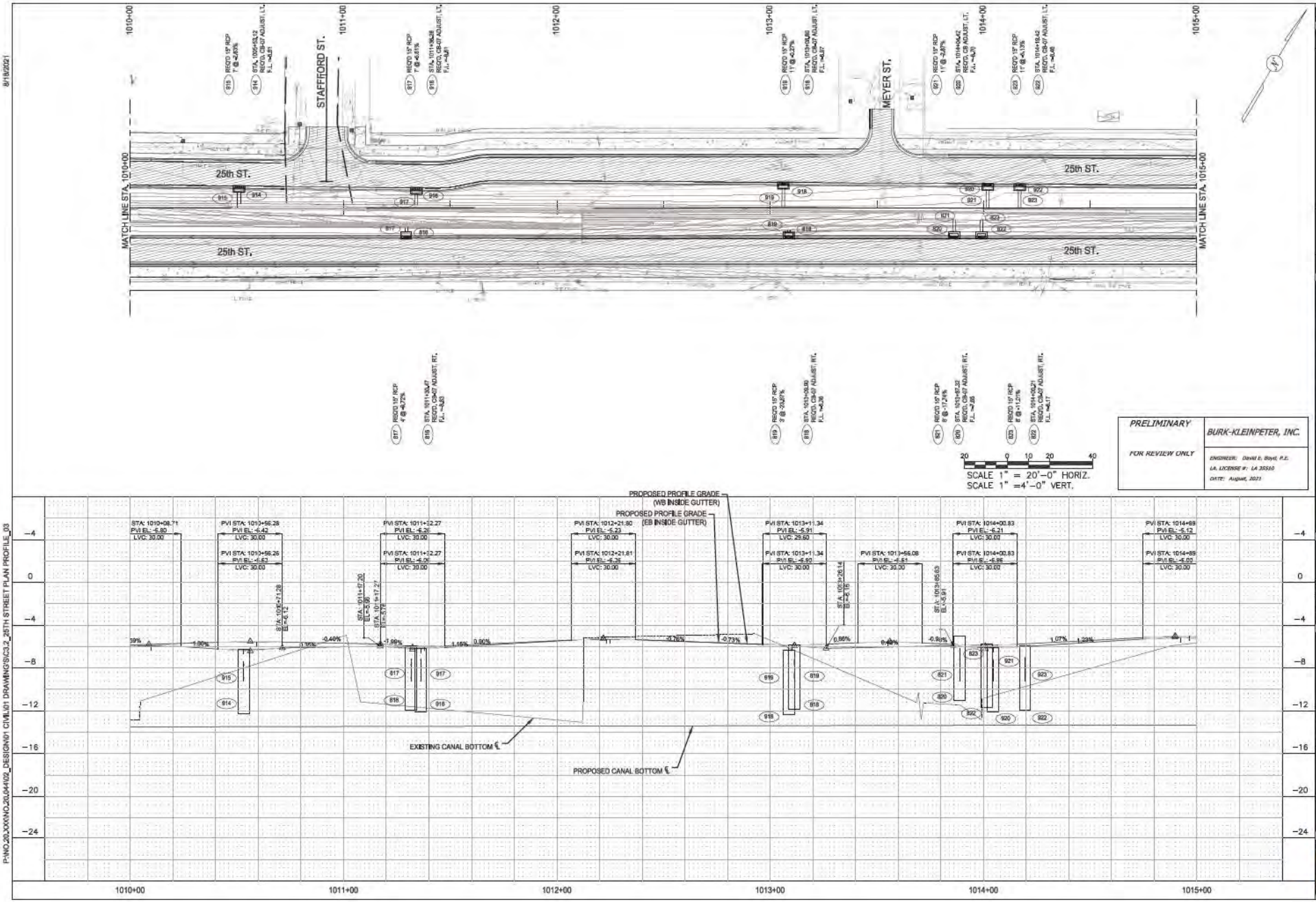
1010+00
1011+00
1012+00
1013+00
1014+00
1015+00
STAFFFORD ST.
MEYER ST.
25th ST.
MATCH LINE STA. 1010+00
MATCH LINE STA. 1015+00
PROPOSED PROFILE GRADE (WB INSIDE GUTTER)
PROPOSED PROFILE GRADE (EB INSIDE GUTTER)
EXISTING CANAL BOTTOM ℄
PROPOSED CANAL BOTTOM ℄
SCALE 1" = 20'-0" HORIZ.
SCALE 1" =4'-0" VERT.
PRELIMINARY
FOR REVIEW ONLY
BURK-KLEINPETER, INC.
ENGINEER: David E. Boyd, P.E.
LA. LICENSE #: LA 35510
DATE: August, 2021
BURK-KLEINPETER, INC.
ENGINEERING
PLANNING
ENVIRONMENTAL
CLIENT PROJECT NUMBER : XXXXXXXX
BKI # : NO.20.044
C3.2
SHEET NUMBER
25th STREET
CANAL DRAINAGE IMPROVEMENTS
25th ST. PLAN & PROFILE
DESIGNED RAC IV
CHECKED RAC IV
DETAILED TL
CHECKED RAC IV
DATE August, 2021
SHEET 3 of 7
8/18/2021
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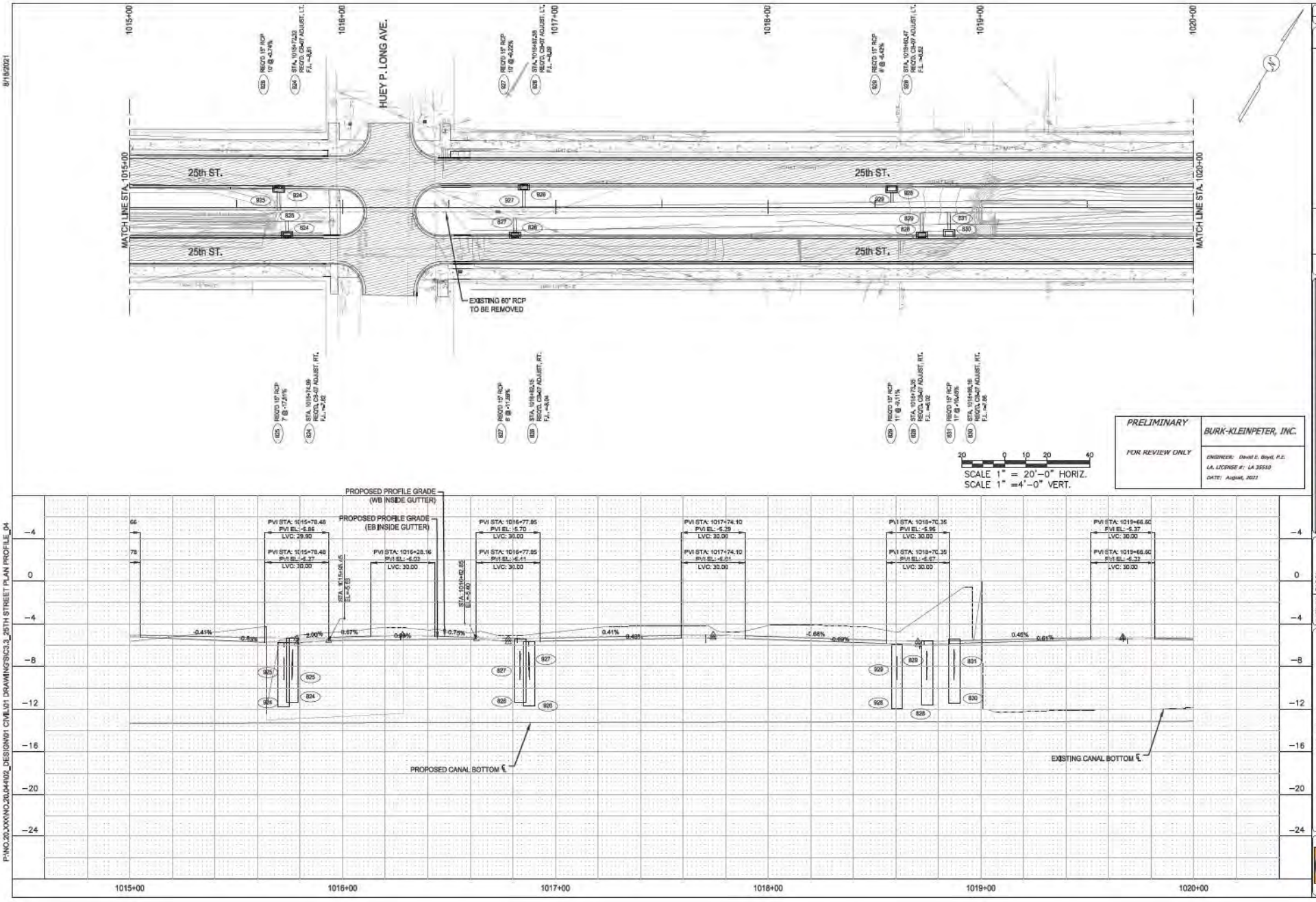

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: David E. Boyd, P.E.
LA. LICENSE #: LA 35510
DATE: August, 2021

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI.COM

BKI # : NO.20.044

CLIENT PROJECT NUMBER : XXXXXXXX

NO.	DATE	REVISIONS

C3.3
SHEET NUMBER

DESIGNED	RAC IV	
CHECKED	RAC IV	
DETAILED	TL	
CHECKED	RAC IV	
DATE	August, 2021	
SHEET	4 OF 7	

25th STREET
CANAL DRAINAGE IMPROVEMENTS
25th ST. PLAN & PROFILE

8/18/2021

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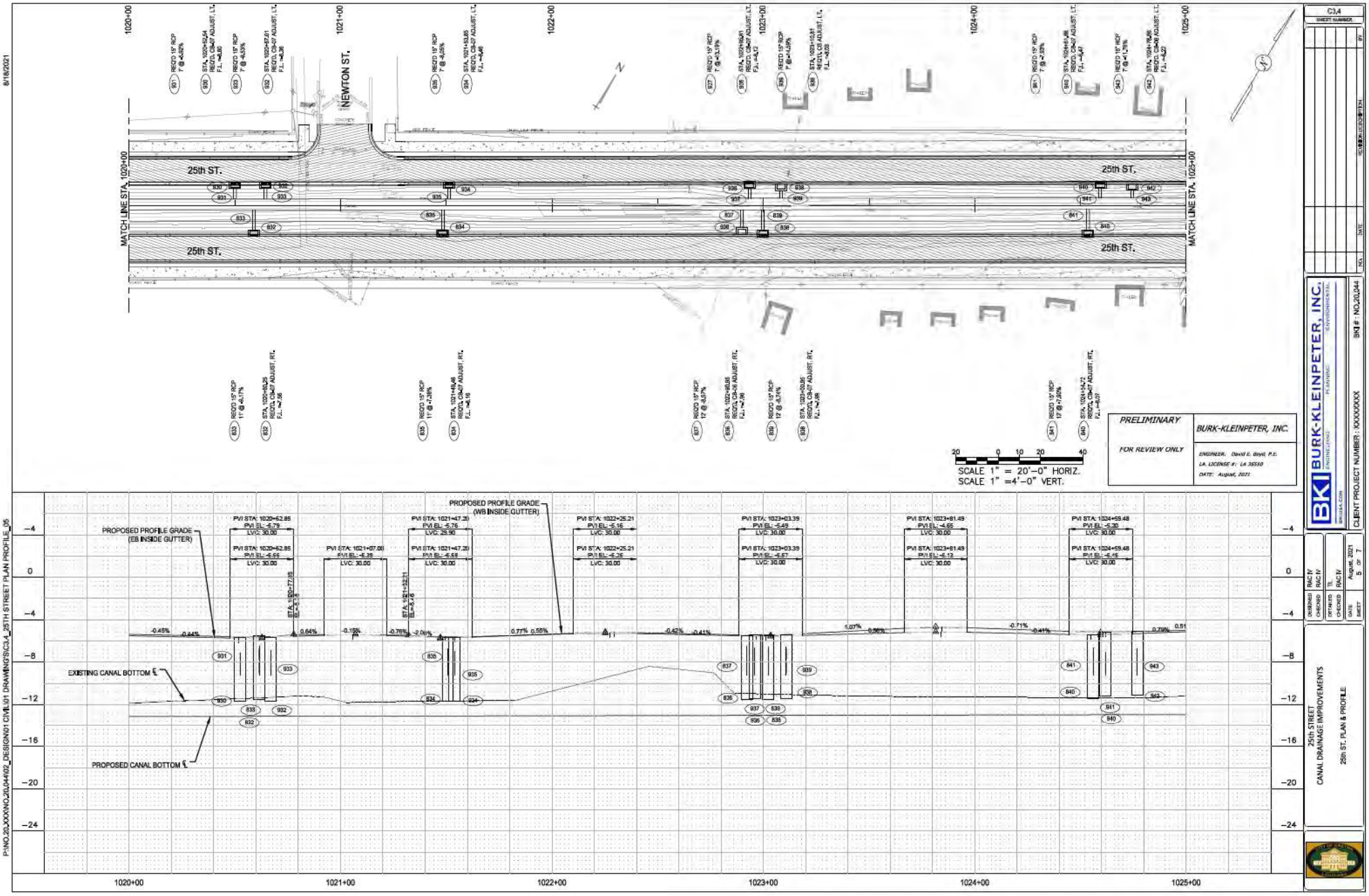

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: David E. Boyd, P.E.
LA. LICENSE #: LA 35510
DATE: August, 2021

BKI #: NO.20J044

CLIENT PROJECT NUMBER: XXXXXXXX

25th STREET
CANAL DRAINAGE IMPROVEMENTS
25th ST. PLAN & PROFILE

DESIGNED: RAC IV
CHECKED: TL
DETAILED: RAC IV
CHECKED: TL
DATE: August, 2021
SHEET: 5 OF 7

C3.4
SHEET NUMBER

8/18/2021

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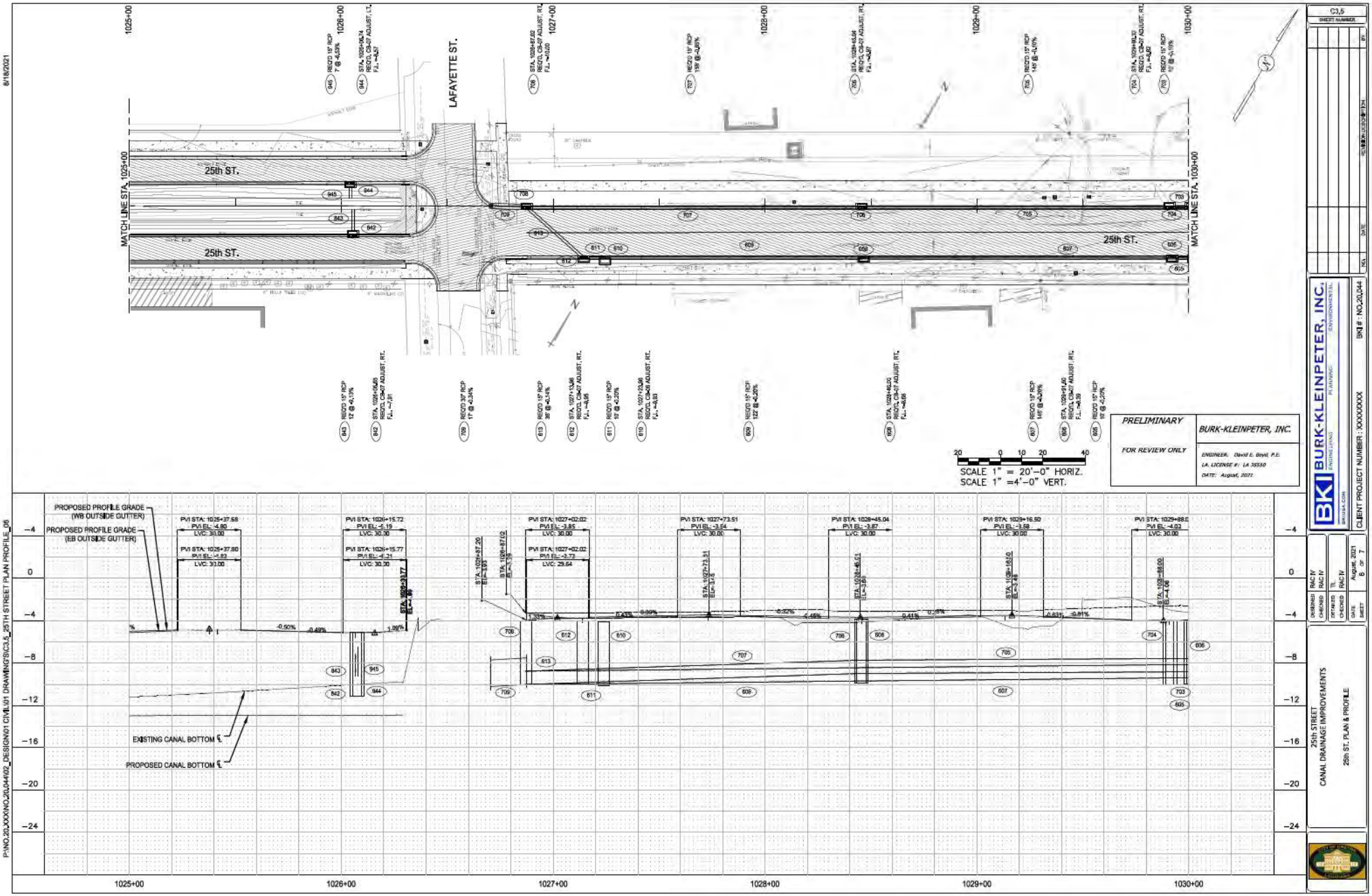

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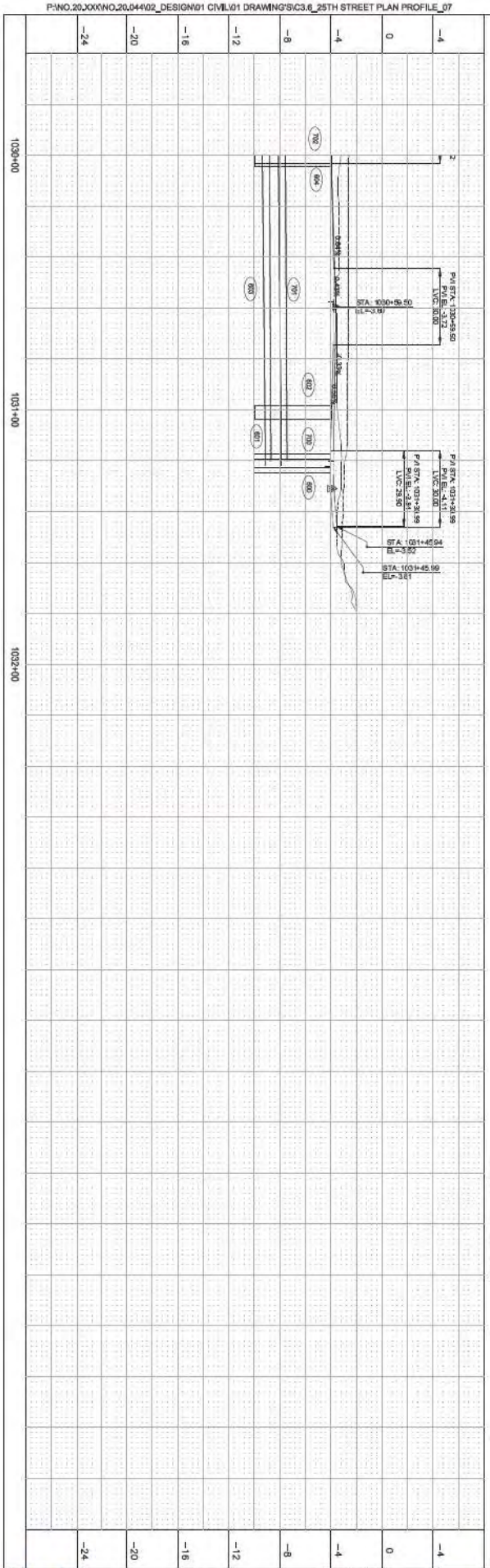
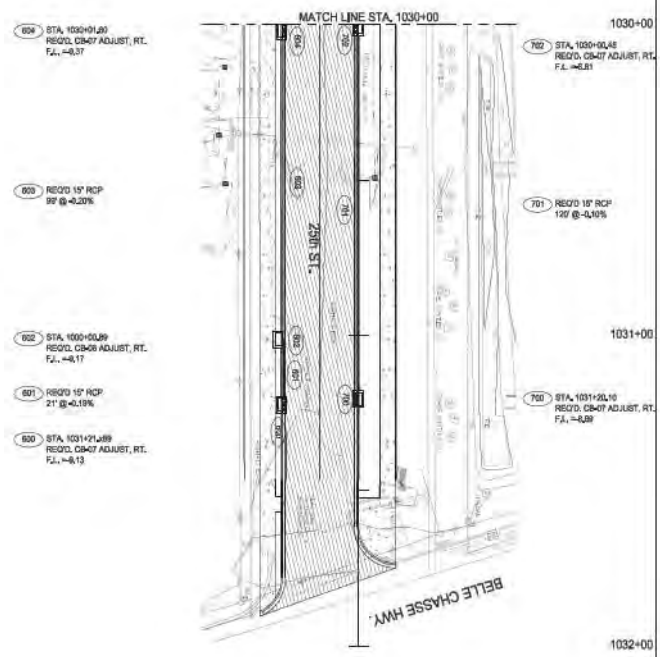
8/18/2021





SCALE 1" = 20'-0" HORIZ.
SCALE 1" = 4'-0" VERT.

PRELIMINARY
FOR REVIEW ONLY

BURK-KLEINPETER, INC.
ENGINEER: David E. Brink, P.E.
LA. LICENSE #: LA 33510
DATE: August, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

25th ST. PLAN & PROFILE

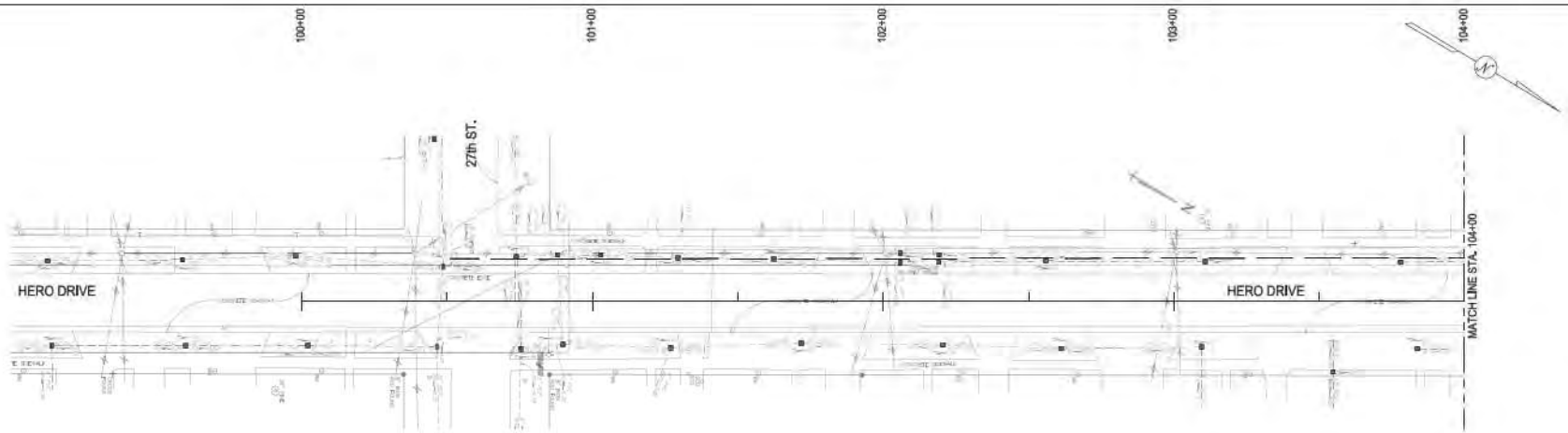
DESIGNED	CMM
CHECKED	RAC IV
DETAILED	SG
CHECKED	RAC IV
DATE	August, 2021
SHEET	7 OF 7

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER C3.6



30% REVIEW

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: David E. Boyd, P.E.
LA. LICENSE #: LA 35510
DATE: August, 2021

C3.7
SHEET NUMBER

NO.	DATE	BY

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI.COM

CLIENT PROJECT NUMBER : XXXXXXXX
BKI # : NO.20.044

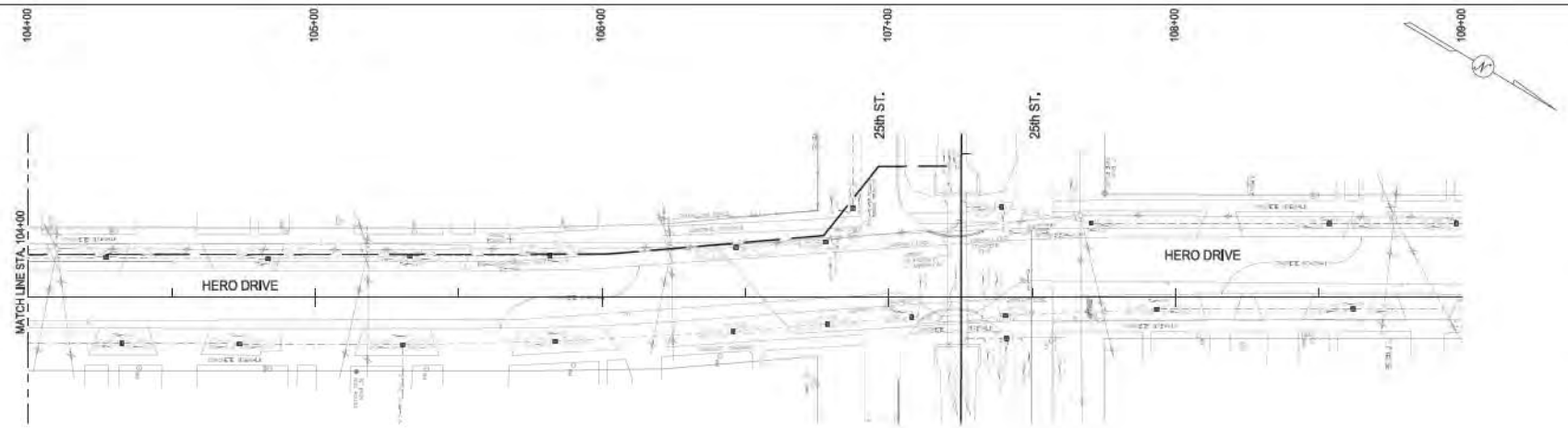
DESIGNED	RAC IV
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE:	August, 2021
SHEET:	1 of 2

25th STREET
CANAL DRAINAGE IMPROVEMENTS
HERO DRIVE PLAN & PROFILE

100+00
101+00
102+00
103+00
104+00

8/16/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\01 CIVIL\01 DRAWING\SIC\C3.7_HERO PLAN PROFILE_01



30% REVIEW

PRELIMINARY	BURK-KLEINPETER, INC.
FOR REVIEW ONLY	ENGINEER: David E. Boyd, P.E. LA. LICENSE #: LA 35510 DATE: August, 2021

104+00
105+00
106+00
107+00
108+00
109+00

C3.8
SHEET NUMBER

NO.	DATE	BY

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI.COM

CLIENT PROJECT NUMBER : XXXXXXXX
BKI # : NO.20.044

DESIGNED	RAC IV
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE:	August, 2021
SHEET:	2 OF 2

25th STREET
CANAL DRAINAGE IMPROVEMENTS
HERO DRIVE PLAN & PROFILE

8/16/2021

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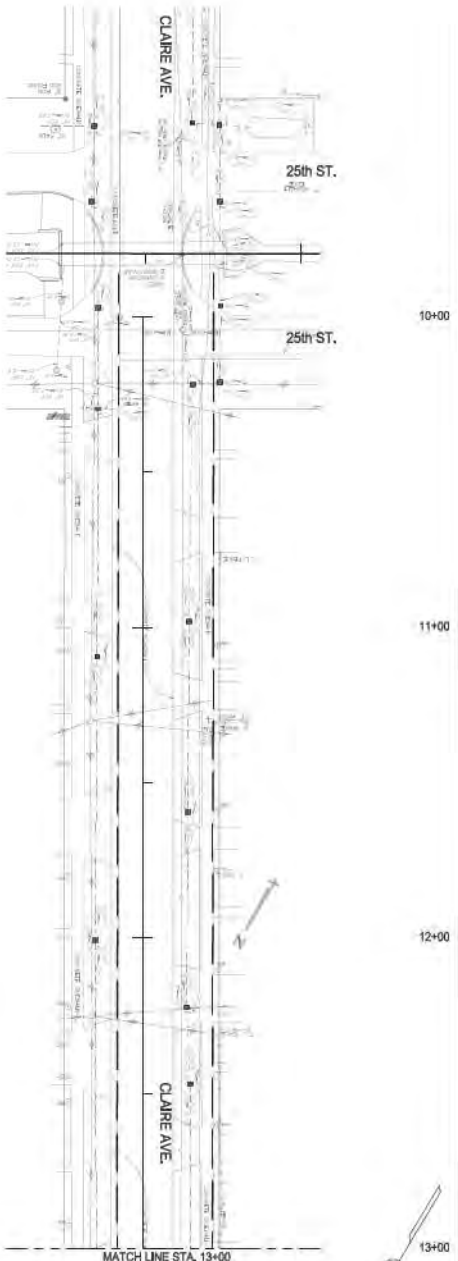


30% REVIEW

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: DAVID D. BRAE, P.E.
LA LICENSE #: LA 33510
DATE: August, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

CLAIRE AVE. PLAN & PROFILE

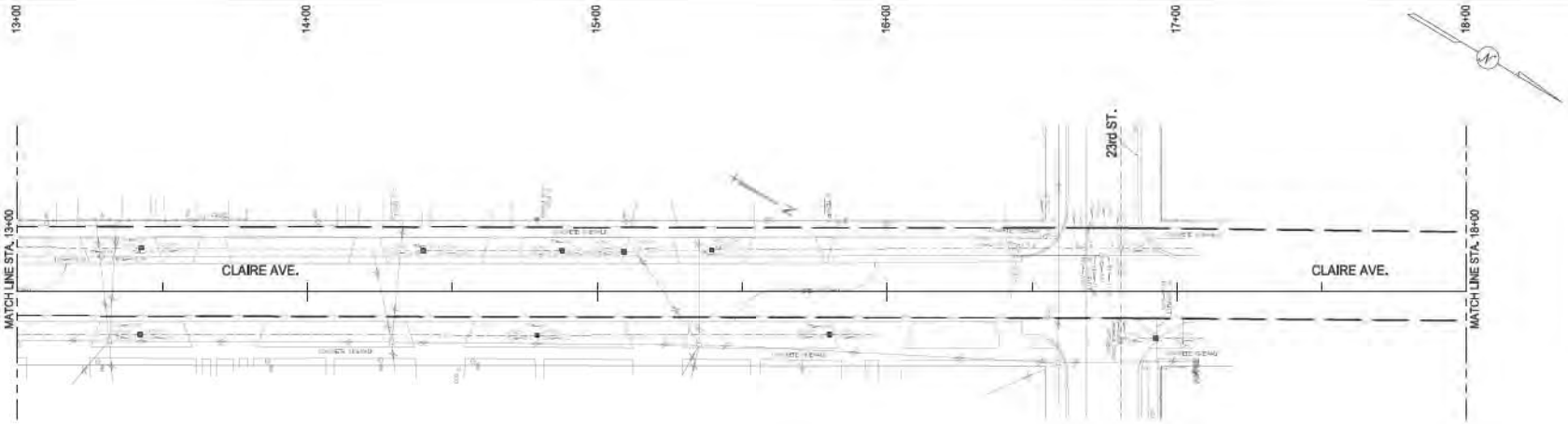
DESIGNED	RAC IV
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE	August, 2021
SHEET	1 OF 4

BK BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER C3.9



30% REVIEW

PRELIMINARY	BURK-KLEINPETER, INC.
FOR REVIEW ONLY	ENGINEER: David E. Boyd, P.E. LA. LICENSE #: LA 35510 DATE: August, 2021

13+00 14+00 15+00 16+00 17+00 18+00

3.10
SHEET NUMBER

NO.	DATE	BY

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

DESIGNED	RAC IV
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE:	August, 2021
SHEET	2 of 4

25th STREET
CANAL DRAINAGE IMPROVEMENTS
CLAIRE AVE. PLAN & PROFILE

8/16/2021

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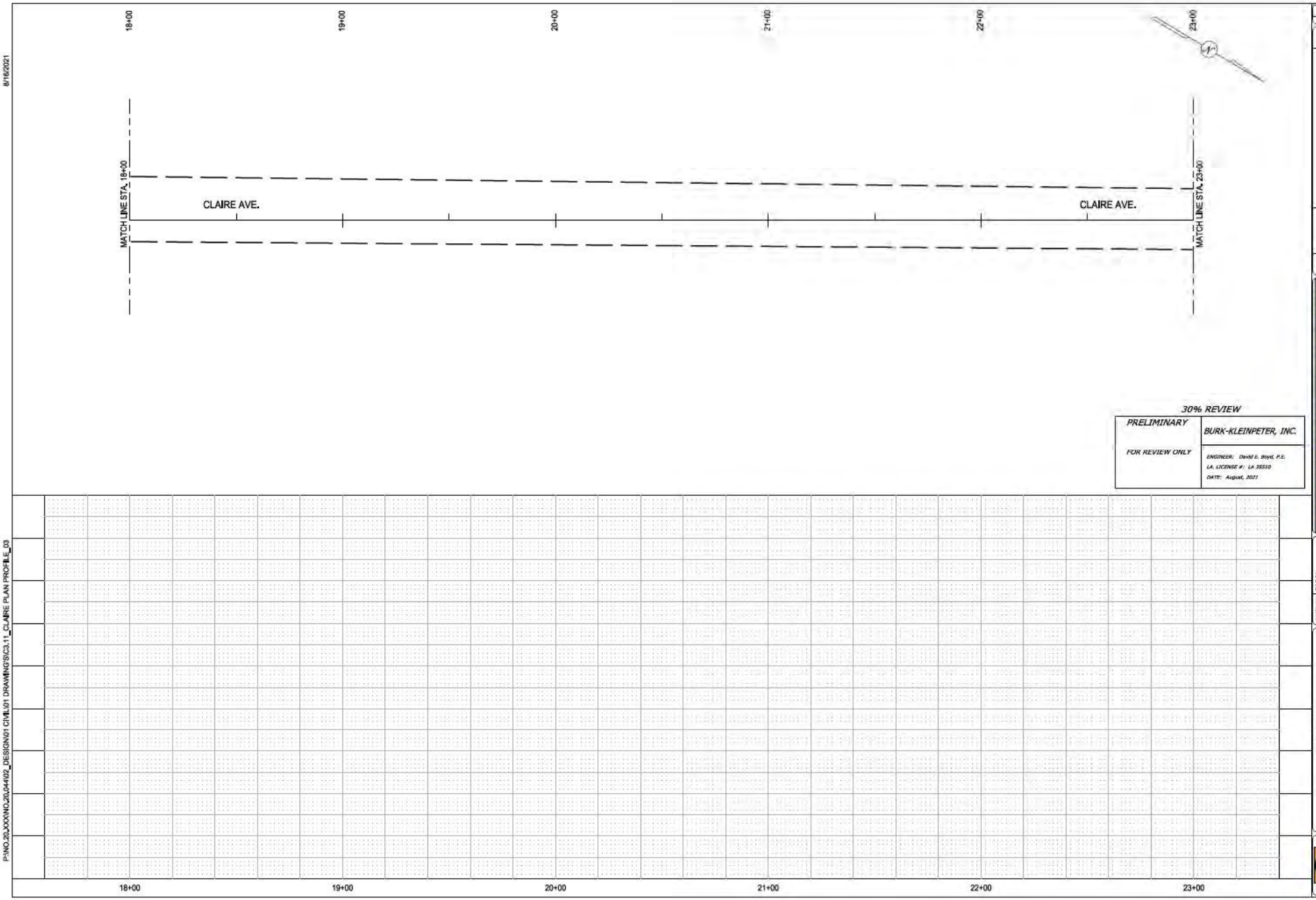

30% REVIEW

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: David E. Boyd, P.E.
LA. LICENSE #: LA 35510
DATE: August, 2021

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI.COM

CLIENT PROJECT NUMBER : XXXXXXXX
BKI # : NO.20J044

NO.	DATE	BY

C3.11

designed RAC IV
CHECKED RAC IV
DETAILED TL
CHECKED RAC IV
DATE August, 2021
SHEET 3 OF 4

25th STREET
CANAL DRAINAGE IMPROVEMENTS
CLAIRE AVE. PLAN & PROFILE

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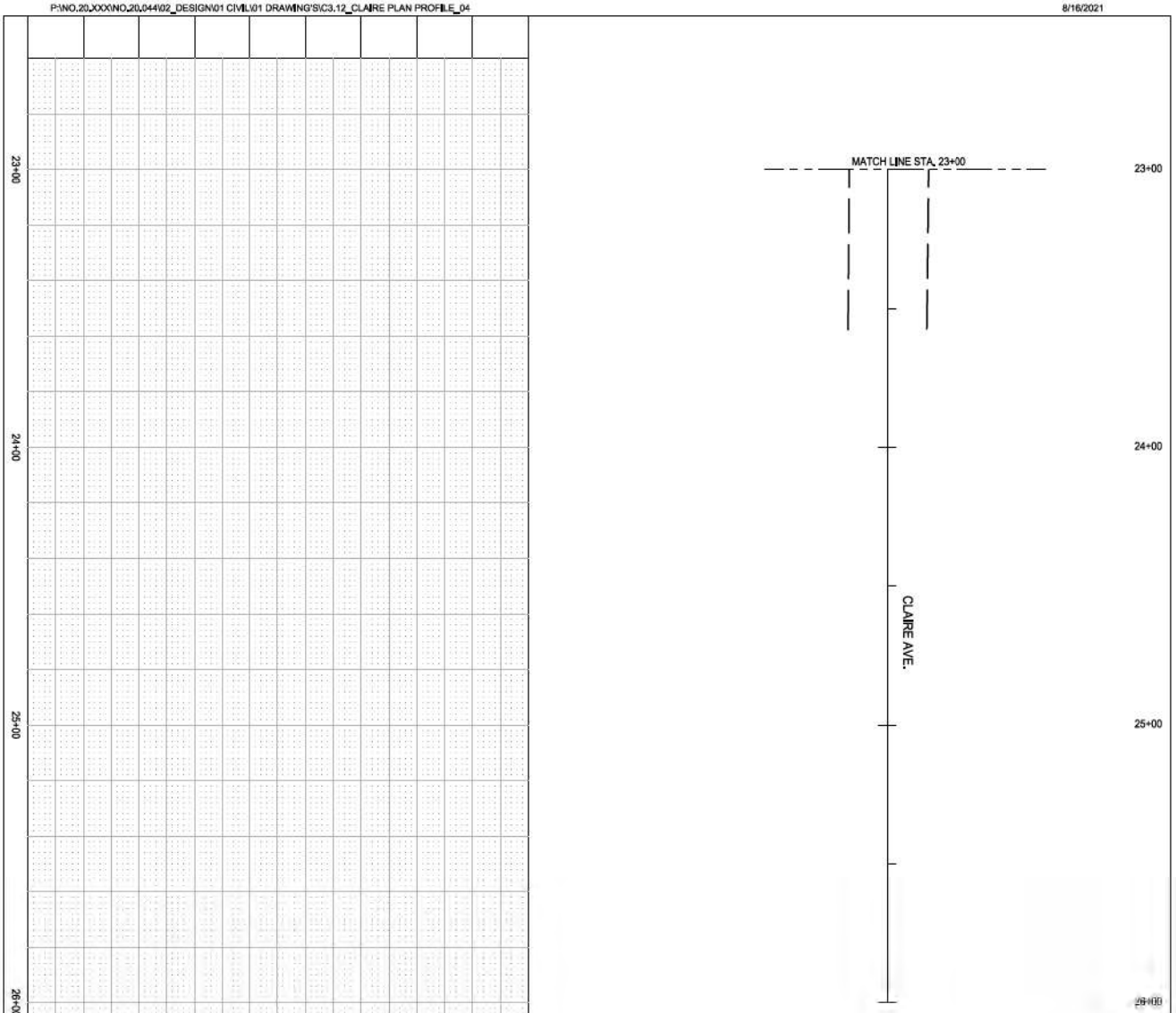
8/16/2021



PRELIMINARY
FOR REVIEW ONLY
30% REVIEW
BURK-KLEINPETER, INC.
ENGINEER: DANIEL BANE, P.E.
LA LICENSE #: LA 35510
DATE: August, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

CLAIRE AVE. PLAN & PROFILE

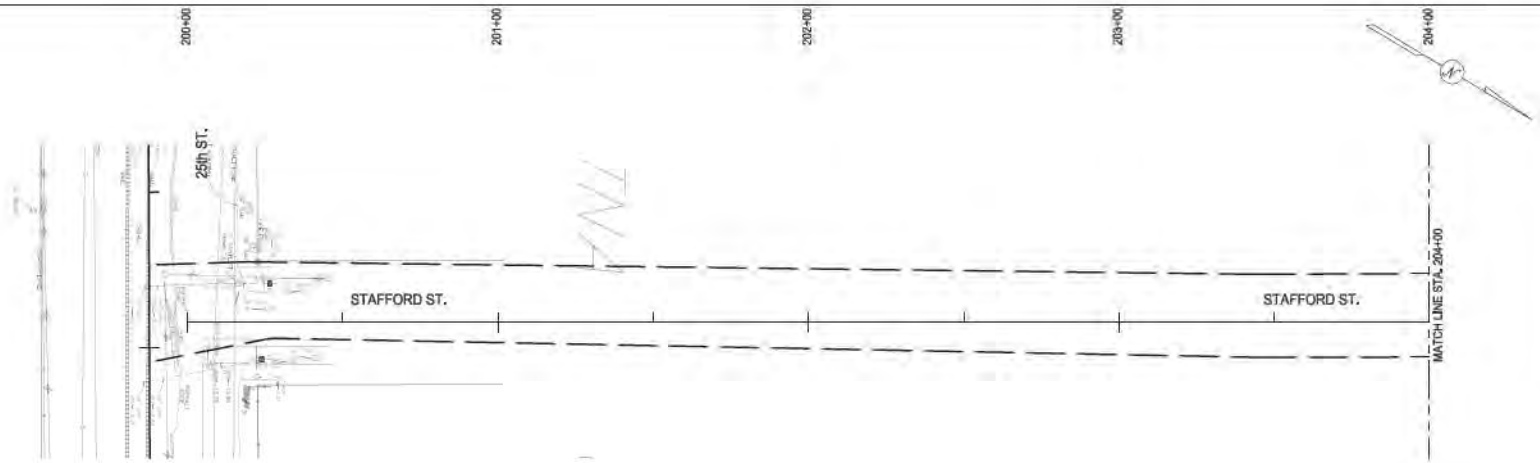
DESIGNED	RAC IV
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE	August, 2021
SHEET	4 OF 4

BK BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	DESCRIPTION	BY

C3.12
SHEET NUMBER



30% REVIEW

PRELIMINARY	BURK-KLEINPETER, INC.
FOR REVIEW ONLY	ENGINEER: David E. Boyd, P.E. LA. LICENSE #: LA 35510 DATE: August, 2021

C3.13
SHEET NUMBER

NO.	DATE	BY

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI.COM

CLIENT PROJECT NUMBER : XXXXXXXX
BKI # : NO.20.044

DESIGNED	RAC IV
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE:	August, 2021
SHEET:	1 of 4

25th STREET
CANAL DRAINAGE IMPROVEMENTS
STAFFORD ST. PLAN & PROFILE

8/16/2021

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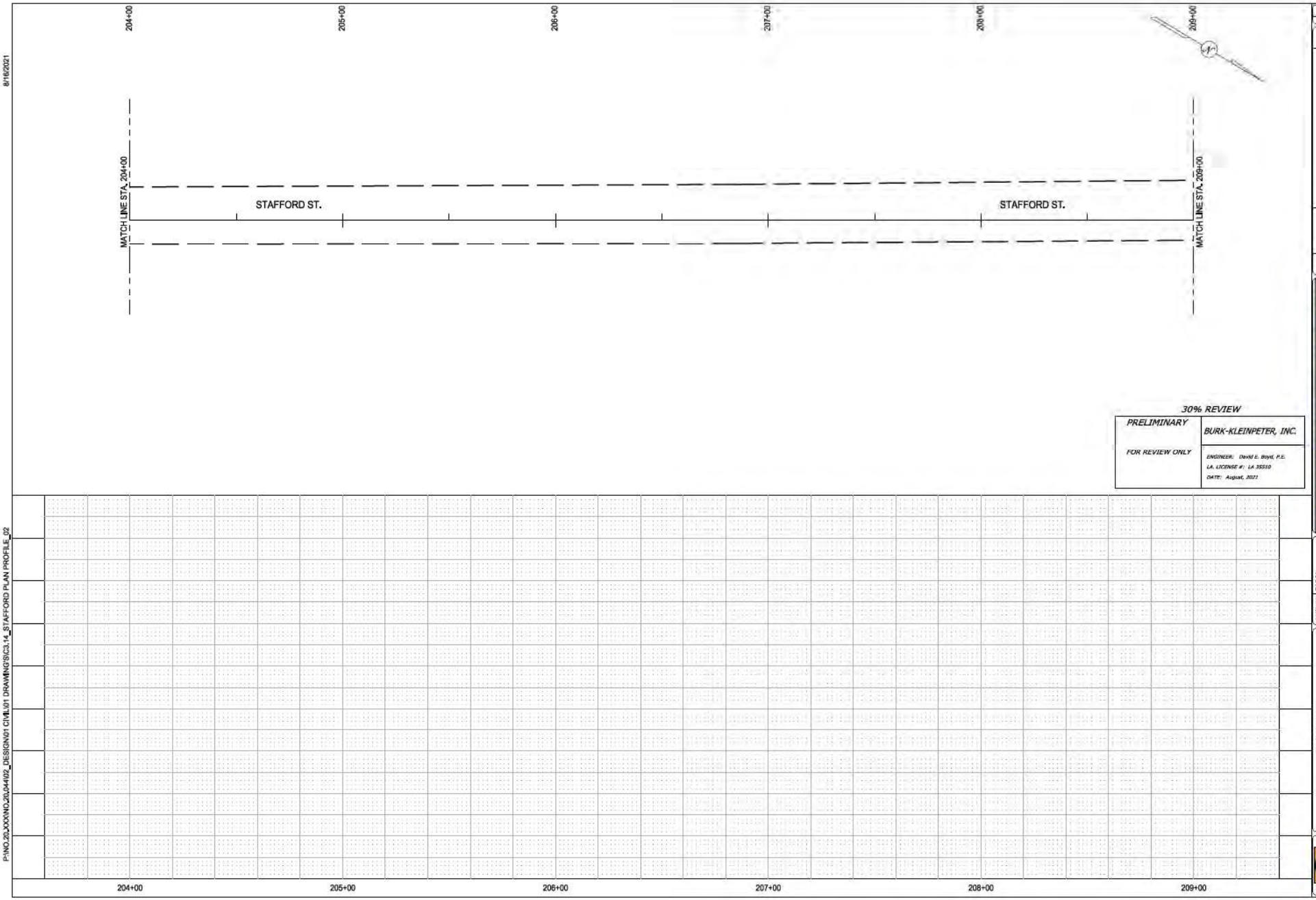
200+00 201+00 202+00 203+00 204+00



30% REVIEW

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: David E. Boyd, P.E.
LA. LICENSE #: LA 35510
DATE: August, 2021

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI.COM

CLIENT PROJECT NUMBER : XXXXXXXX

BKI # : NO.20J044

NO.	DATE	BY

SHEET NUMBER C3.14

designed	RAC IV
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE:	August, 2021
SHEET	2 OF 4

25th STREET
CANAL DRAINAGE IMPROVEMENTS

STAFFORD ST. PLAN & PROFILE

8/16/2021

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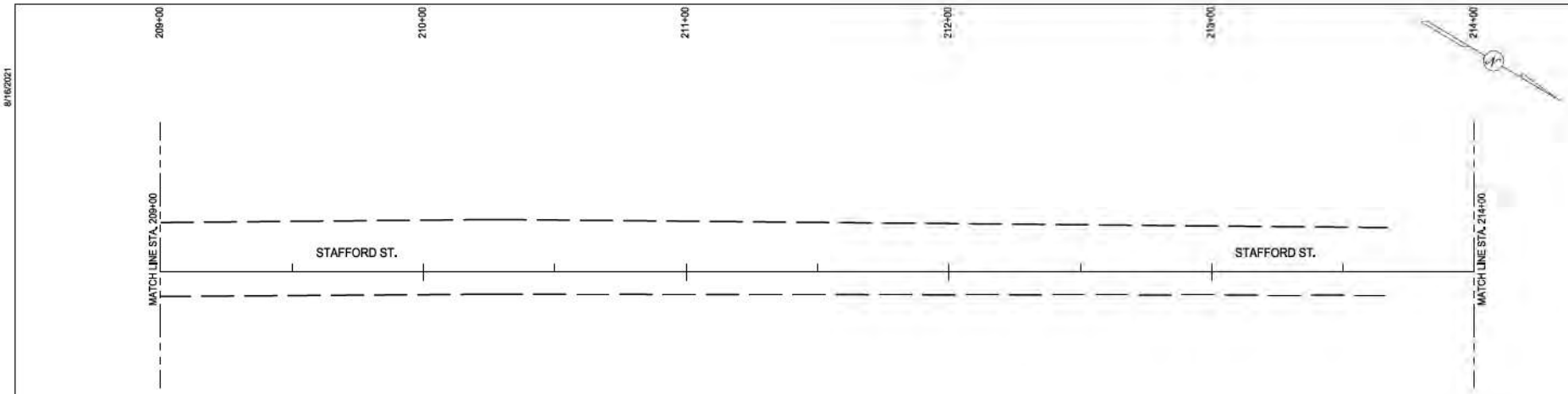


30% REVIEW

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: David E. Boyd, P.E.
LA. LICENSE #: LA 35510
DATE: August, 2021

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20J044

NO.	DATE	BY

SHEET NUMBER C3.15

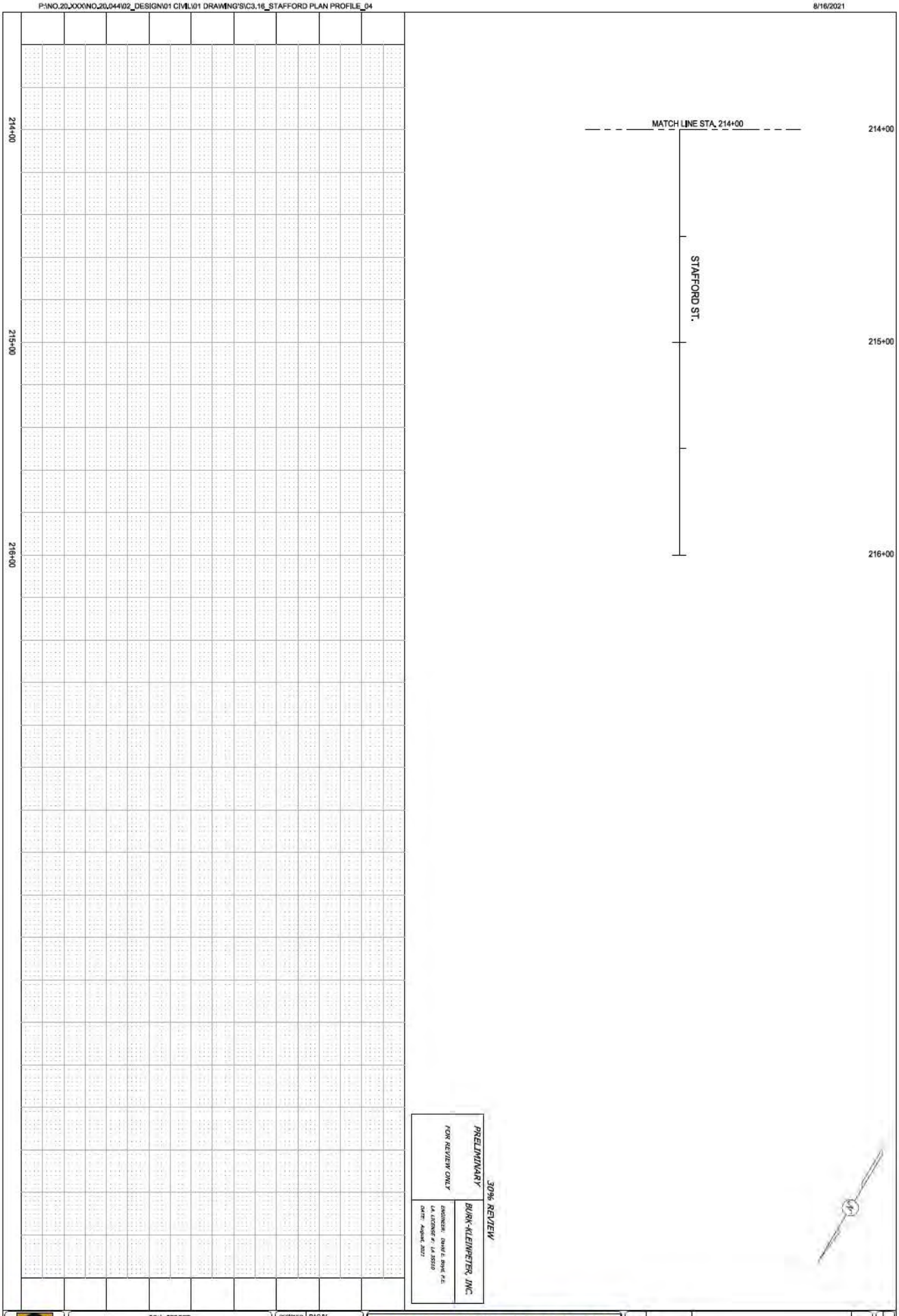
designed	RAC IV
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE:	August, 2021
SHEET	3 OF 4

25th STREET
CANAL DRAINAGE IMPROVEMENTS
STAFFORD ST. PLAN & PROFILE

209+00
210+00
211+00
212+00
213+00
214+00

8/16/2021

P:\NO.20\XXX\NO.20J044\02_DESIGN\01 CIVIL\01 DRAWINGS\C3.15_STAFFORD PLAN PROFILE_03



PRELIMINARY
30% REVIEW
FOR REVIEW ONLY
BURK-KLEINPETER, INC.
ENGINEER: DANIEL R. BANE, P.E.
LA. LICENSE #: LA 33510
DATE: August, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

STAFFORD ST. PLAN & PROFILE

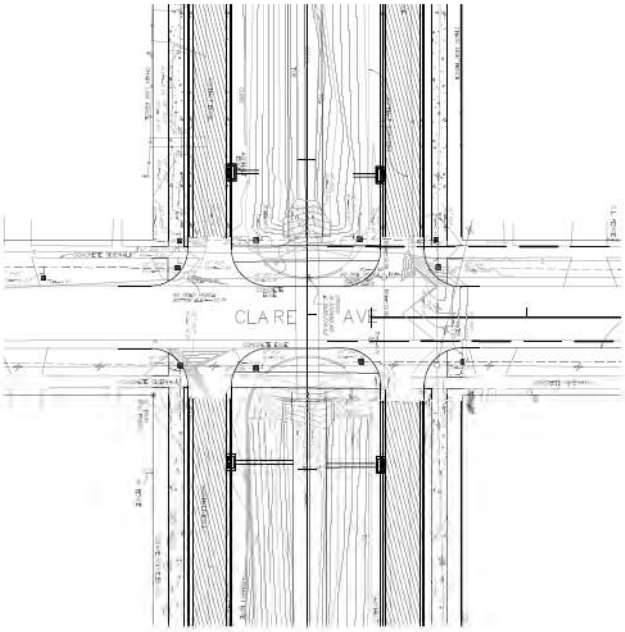
DESIGNED	RAC IV
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE	August, 2021
SHEET	4 OF 4

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER C3.16



PRELIMINARY
FOR REVIEW ONLY
30% REVIEW
BURK-KLEINPETER, INC.

25th STREET
CANAL DRAINAGE IMPROVEMENTS

INTERSECTION DETAIL 25TH & CLAIRE

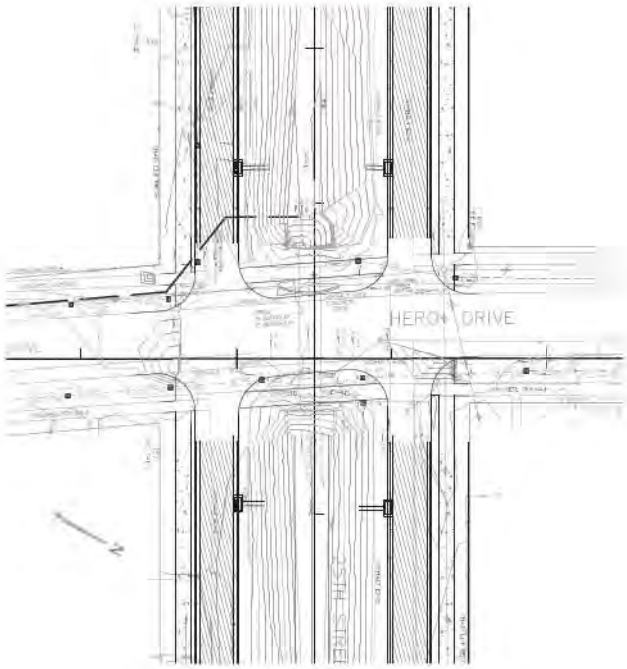
DESIGNED	CMM
CHECKED	RAC IV
DETAILED	SG
CHECKED	RAC IV
DATE	August, 2021
SHEET	2 OF 8

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20,044

NO.	DATE		BY

C4.1



PRELIMINARY
FOR REVIEW ONLY

30% REVIEW

BURK-KLEINPETER, INC.

ENGINEER: Daniel E. Boyd, P.E.
LA LICENSE #: LA 35310
DATE: August, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

INTERSECTION DETAIL 25TH & HERO

DESIGNED	CMM
CHECKED	RAC IV
DETAILED	SG
CHECKED	RAC IV
DATE	August, 2021
SHEET	1 OF 8

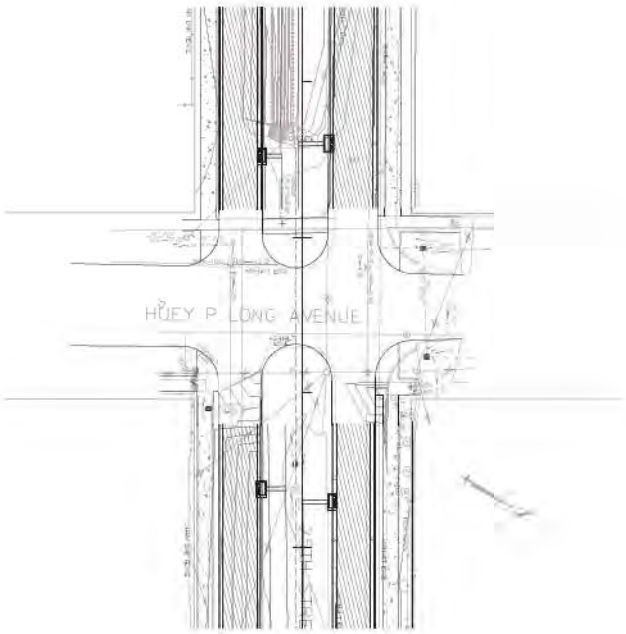
BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX

BKI # : NO,20,044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER C4.0



PRELIMINARY
FOR REVIEW ONLY
30% REVIEW
BURK-KLEINPETER, INC.
ENGINEER: Daniel J. Boyd, P.E.
LA LICENSE #: LA 35310
DATE: August, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

INTERSECTION DETAIL 25TH & HUEY P LONG

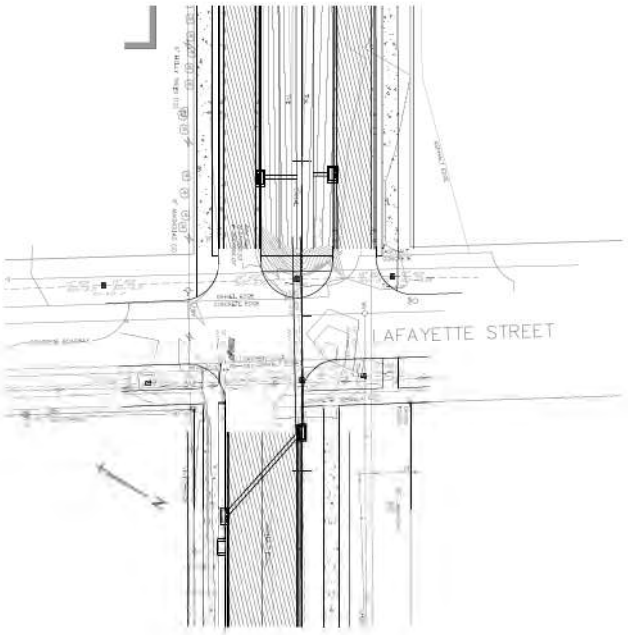
DESIGNED	CMM
CHECKED	RAC IV
DETAILED	SG
CHECKED	RAC IV
DATE	August, 2021
SHEET	8 OF 8

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX
BKI # : NO,20,044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER
C4.0



1026+00

1027+00

PRELIMINARY
FOR REVIEW ONLY
30% REVIEW
BURK-KLEINPETER, INC.

25th STREET
CANAL DRAINAGE IMPROVEMENTS

INTERSECTION DETAIL 25TH & LAFAYETTE

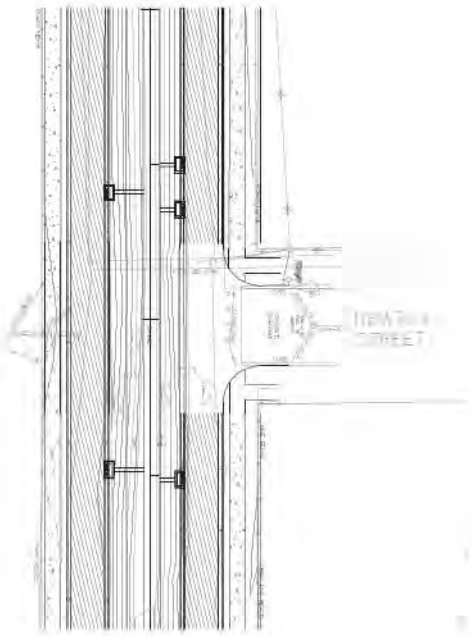
DESIGNED	CMM
CHECKED	RAC IV
DETAILED	SG
CHECKED	RAC IV
DATE	August, 2021
SHEET	8 OF 8

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20,044

NO.	DATE	REVISION DESCRIPTION	BY

C4.1



PRELIMINARY
FOR REVIEW ONLY
30% REVIEW
BURK-KLEINPETER, INC.
ENGINEER: Daniel E. Boyd, P.E.
LA LICENSE #: LA 35310
DATE: August, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

INTERSECTION DETAIL 25TH & NEWTON

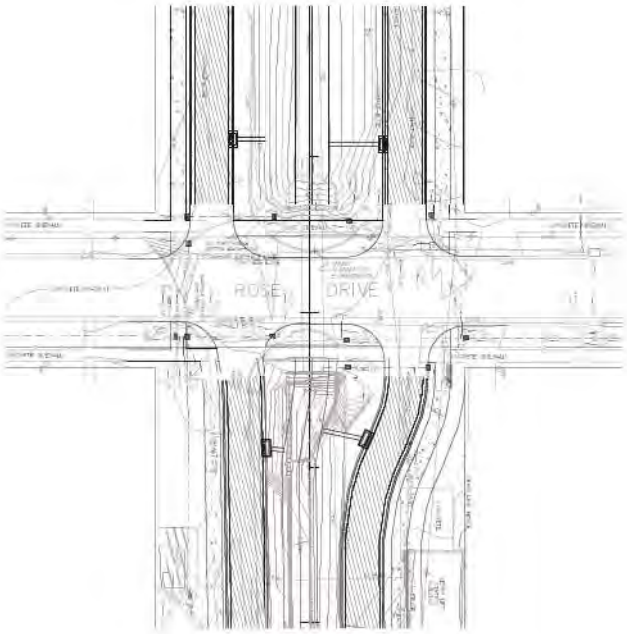
DESIGNED	CMM
CHECKED	RAC IV
DETAILED	SG
CHECKED	RAC IV
DATE	August, 2021
SHEET	7 OF 8

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX
BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER C4.8



1007+00

1008+00

1009+00

"PRELIMINARY"
FOR REVIEW ONLY

30% REVIEW

BURK-KLEINPETER, INC.

DESIGNER: Daniel E. Boyd, P.E.
LA LICENSE #: LA 35310
DATE: August, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

INTERSECTION DETAIL 25TH & ROSE

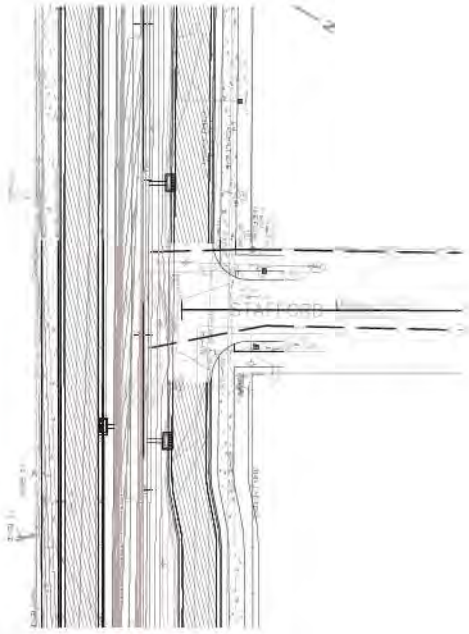
DESIGNED	CMM
CHECKED	RAC IV
DETAILED	SG
CHECKED	RAC IV
DATE	August, 2021
SHEET	3 OF 8

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER C4.2



PRELIMINARY
FOR REVIEW ONLY
30% REVIEW
BURK-KLEINPETER, INC.
ENGINEER: Daniel E. Rives, Jr.
LA LICENSE #: LA 35310
DATE: August, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

INTERSECTION DETAIL 25TH & STAFFORD

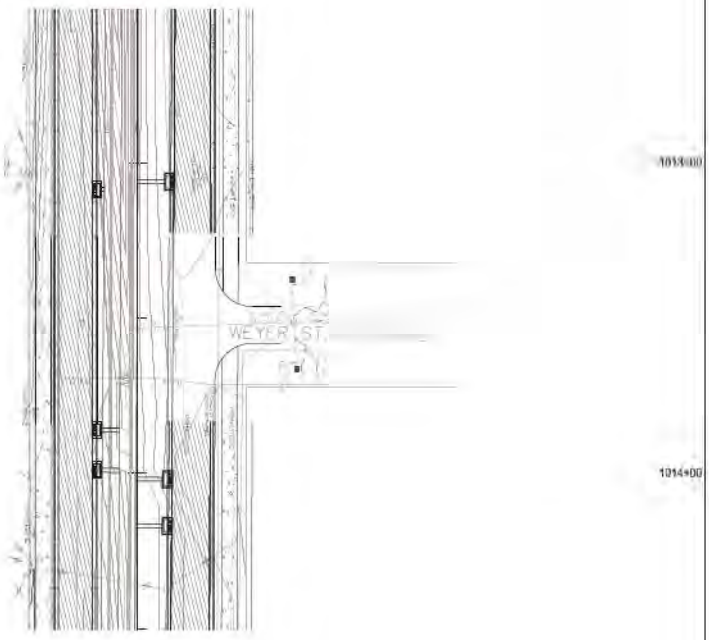
DESIGNED	CMM
CHECKED	RAC IV
DETAILED	BG
CHECKED	RAC IV
DATE	August, 2021
SHEET	4 OF 8

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX
BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER C4.3



PRELIMINARY
FOR REVIEW ONLY
30% REVIEW
BURK-KLEINPETER, INC.
ENGINEER: Daniel A. Rivet, P.E.
LA. LICENSE #: LA 35318
DATE: August, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

INTERSECTION DETAIL 25TH & WEYER

DESIGNED	CMM
CHECKED	RAC IV
DETAILED	SG
CHECKED	RAC IV
DATE	August, 2021
SHEET	5 OF 8

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER C4.5

DRAINAGE SCHEMATIC KEY MAP

SCALE: 1"=200'

FOR INFO ONLY

NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

25th STREET
CANAL DRAINAGE IMPROVEMENTS

DRAINAGE SCHEMATIC KEY MAP

DESIGNED	RP
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE	March 2021
SHEET	1 OF 5

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER 00

SEE SHEET D2

DRAINAGE SCHEMATIC
SCALE: 1"=50'

FOR INFO ONLY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

25th STREET
CANAL DRAINAGE IMPROVEMENTS

DRAINAGE SCHEMATIC

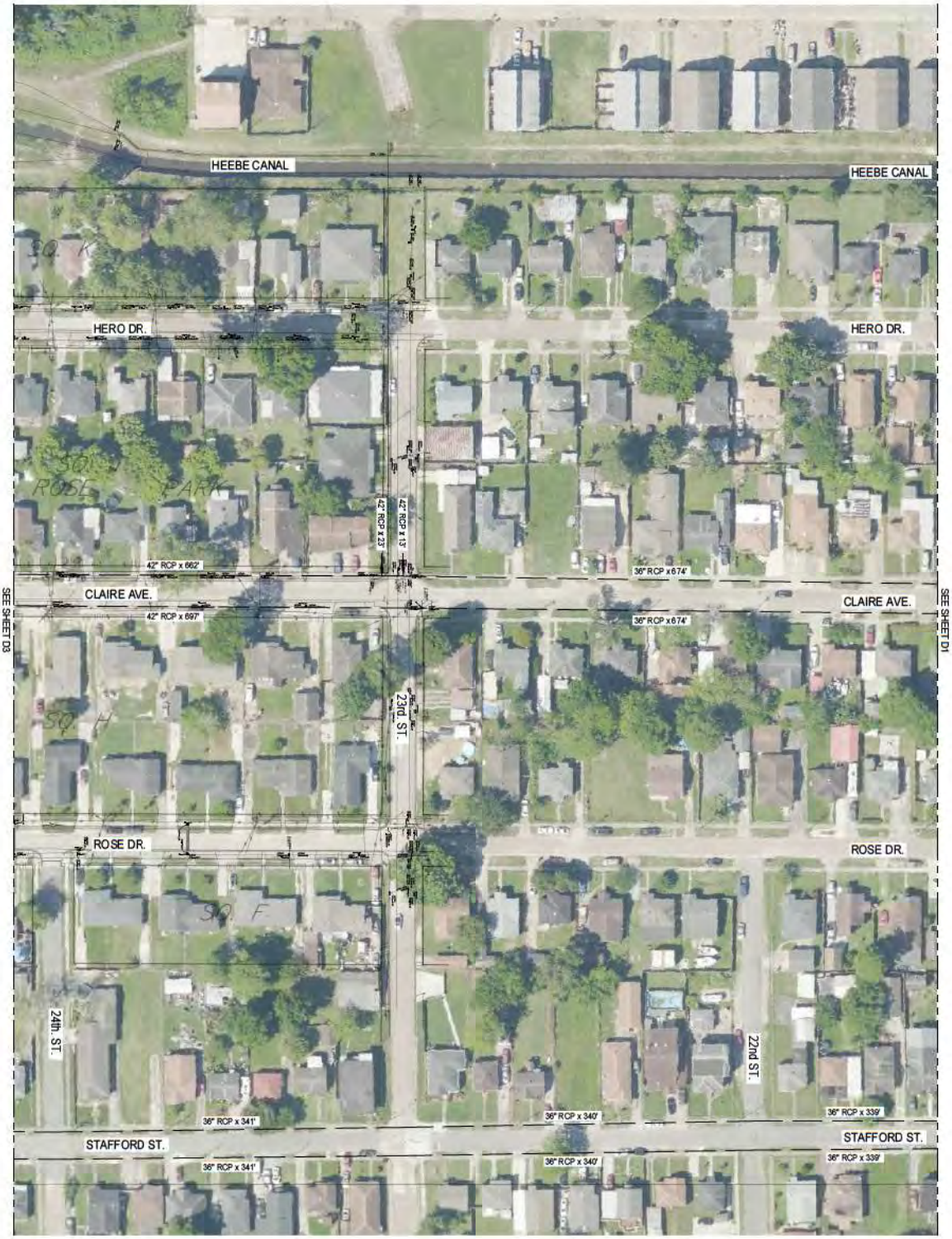
DESIGNED	RP
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE	March 2021
SHEET	2 OF 5

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER D1



DRAINAGE SCHEMATIC
SCALE: 1"=60'

FOR INFO ONLY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

25th STREET
CANAL DRAINAGE IMPROVEMENTS

DRAINAGE SCHEMATIC

DESIGNED	RP
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE	March 2021
SHEET	3 OF 5

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER D2

DRAINAGE SCHEMATIC
SCALE: 1"=50'

FOR INFO ONLY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

25th STREET
CANAL DRAINAGE IMPROVEMENTS

DRAINAGE SCHEMATIC

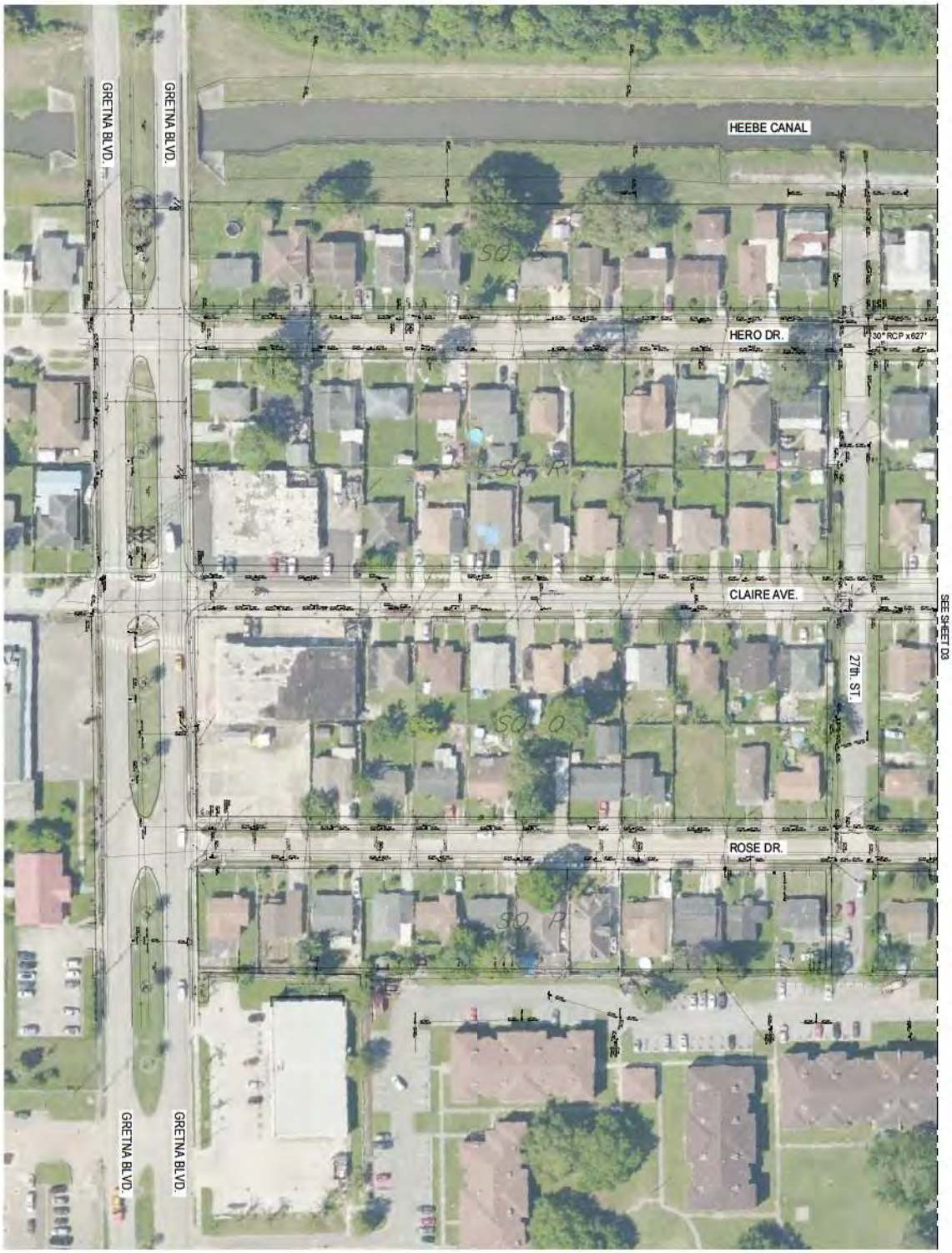
DESIGNED	RP
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE	March 2021
SHEET	4 OF 5

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER 03



DRAINAGE SCHEMATIC
SCALE: 1"=50'

FOR INFO ONLY
NOT TO BE USED FOR CONSTRUCTION, BIDDING, RECORDATION, CONVEYANCE, SALES, OR AS THE BASIS FOR THE ISSUANCE OF A PERMIT.

25th STREET
CANAL DRAINAGE IMPROVEMENTS

DRAINAGE SCHEMATIC

DESIGNED	RP
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE	March 2021
SHEET	5 OF 5

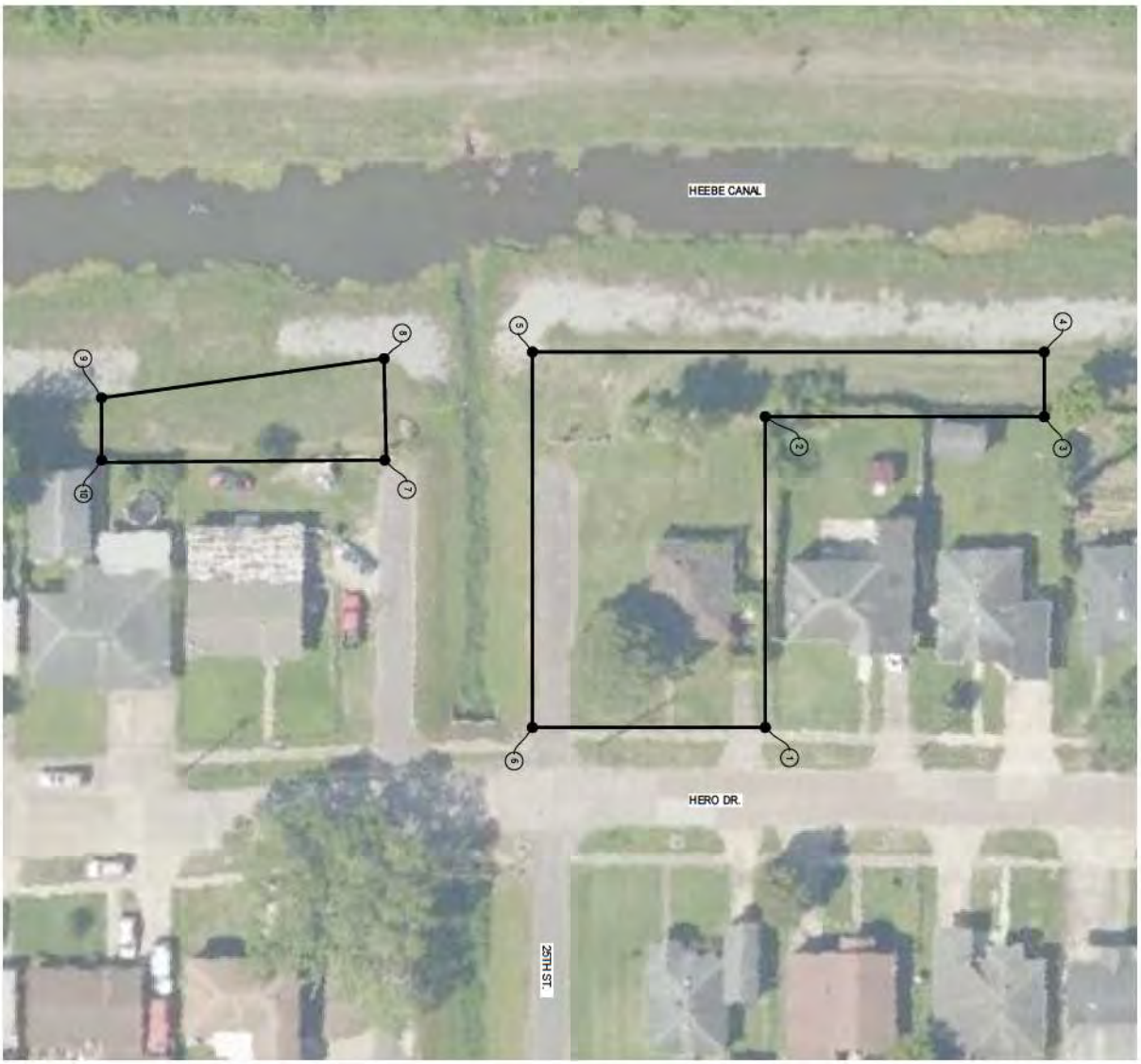
BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER 04

Staging Area Control Points		
Point	Easting	Northing
1	3685487.8720	510436.879
2	3685397.6569	510381.6384
3	3685348.0418	510462.6664
4	3685329.2271	510451.1457
5	3685420.4115	510302.2295
6	3685529.6205	510369.1004
7	3685477.7950	510279.131
8	3685448.6534	510260.3846
9	3685510.3808	510186.2798
10	3685529.1428	510196.7682



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25th STREET
CANAL DRAINAGE IMPROVEMENTS

STAGING AREA

DESIGNED	RP
CHECKED	RAC IV
DETAILED	TL
CHECKED	RAC IV
DATE	March 2021
SHEET	OF

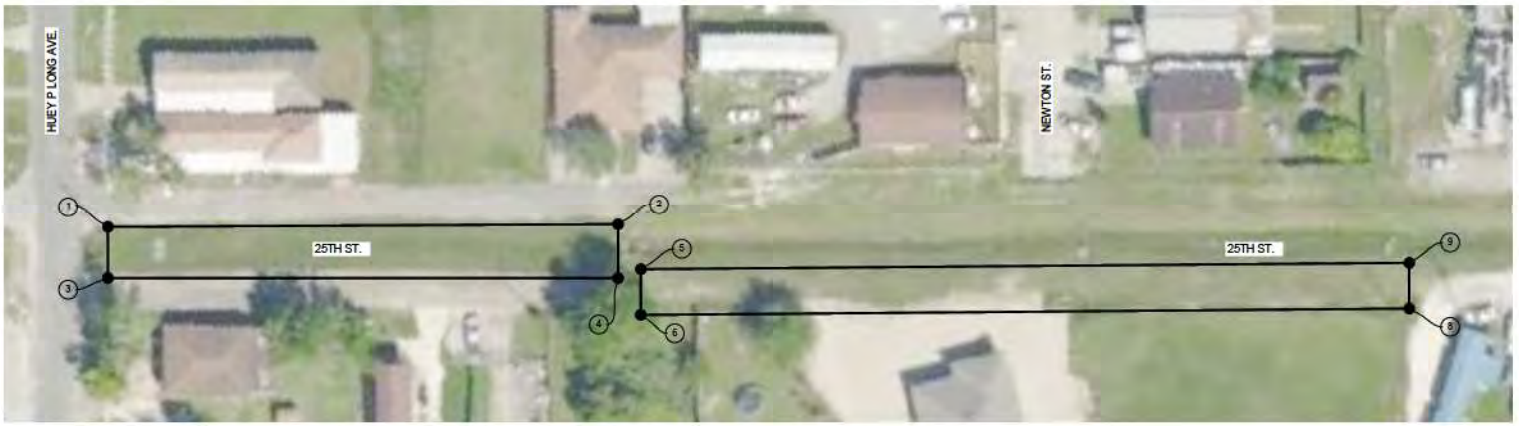
BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20.044

NO.	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER

Staging Area Control Points		
Point	Easting	Northing
1	3686713.8947	511080.7881
2	3686923.8060	511210.9122
5	3686726.9722	511060.4825
4	3686937.3733	511188.9388
5	3686944.8350	511198.3576
6	3686955.9783	511179.3802
7	3687259.3854	511394.5388
8	3687271.2339	511375.1887



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BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX BK1# : NO 20.044

NO.	DATE	REVISION DESCRIPTION

DESIGNED RP
CHECKED RAC IV
DRAWN BY TL
CHECKED RAC IV
DATE March 2021
SHEET OF

25th STREET
CANAL DRAINAGE IMPROVEMENTS
STAGING AREA

3/31/2021

P:\NO.20 XX\NO 20.044\02_DESIGN\01 CIVIL\FOR INFO ONLY\FEMA PLANS\STAGING AREAS

3/29/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\01 CIVIL\01 DRAWINGS\STAGING AREAS

BURK-KLEINPETER, INC.
ENGINEERING SURVEYING PLANNING ENVIRONMENTAL
BKI# : NO.20.044

CLIENT PROJECT NUMBER : XXXXXXXX

25th STREET
CANAL DRAINAGE IMPROVEMENTS

DESIGNED XXX
CHECKED XXX
DETAILED XXX
CHECKED XXX
DATE March 2021
SHEET OF

SHEET NUMBER

NO. DATE REVISION DESCRIPTION BY

7/7/2021

PIPE SCHEDULE

SYSTEM	TYPE OF PIPE MATERIAL & CONSTRUCTION	FITTINGS	OPERATING PRESSURE (PSIG)	TEST PRESSURE (PSIG)/MEDIA	PAINT COLOR CODE	
					FIXED	UTILITY
					LABEL	BACKGROUND
RAW WATER (RW)	WELDED STEEL PIPE (AWWA C200 AND MODIFIED PER SECTION 02570)	WELDED STEEL, AWWA C208, FABRICATED	–	125 PSIG/ WATER	BLUE	BLACK
POTABLE WATER–EXPOSED (PW)	COPPER, ASTM B88, TYPE K, SOFT TEMPERED WHERE BURIED, HARD TEMPERED WHERE EXPOSED	WROUGHT COPPER OR CAST BRONZE, ASME B16.22, SOLDER JOINT, 150 PSI, OR COMPRESSION FITTINGS.	80	125 PSIG/ WATER	xxx	xxx
POTABLE WATER–BURIED (PW)	POLYETHYLENE PIPE AND TUBNG, ASTM D2513, SDR FOR YARD PIPING PER PLUMBING CODE	HEAT FUSION FITTINGS, PE 3406, PE 2306, PE 2406, OR PE 3406 COMPRESSION TYPE OR OTHER APPROVED JOINTS PER PLUMBING CODE	80	125 PSIG/ WATER	xxx	xxx
NATURAL GAS (NG) & LUBE OIL (LO)	STEEL, ASTM A53, SCH. 40, BLACK WELDED	2 ½" & SMALLER, MALLEABLE IRON, ASME B16.3, THREADED, BANDED, BLACK, 150 PSI. 3" & LARGER, STEEL, ASME B16.9, BUTT WELDED	–	125/AIR	xxx	xxx
ENGINE EXHAUST (EE)	STAINLESS STEEL, TYPE 316, ASTM A312, SCHEDULE 10	STAINLESS STEEL, TYPE 316, SCREWED, WELDED SLIP ON FLANGE ASME B16.3, OR SOCKET WELDED FITTINGS SCH. 40S	–	–	xxx	xxx

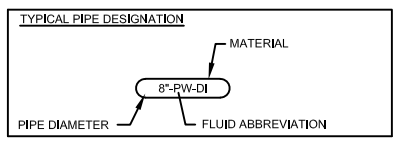
TABLE 1
MAXIMUM SPACING BETWEEN PIPE SUPPORTS (CARBON STEEL)

NOMINAL PIPE SIZE, IN	1	1 1/2	2	2 1/2	3	3 1/2	4	5	6 *	8 *
MAXIMUM SPAN, FT.	7	9	10	11	12	13	14	16	17	19

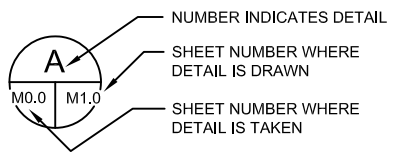
TABLE 2
MAXIMUM SPACING BETWEEN COPPER TUBING SUPPORTS

NOMINAL TUBING SIZE, IN	3/4	1	1 1/2	2	2 1/2	3	4
MAXIMUM SPAN, FT.	5	6	8	9	10	10	12

NOTES:
1. MAX VERTICAL SPACING FOR PIPE SHALL NOT EXCEED 10'-0
2. PROVIDE POLYOLEFIN TUBE SHRINK WRAP AROUND COPPER TUBING AT EVERY CONTACT POINT BETWEEN COPPER TUBING AND STEEL SUPPORT OR SUPPORT ACCESSORIES.
3. MAX SPACING FOR 6 IN & 8 IN PW SHALL BE 7 FEET



DETAIL CROSS REFERENCE



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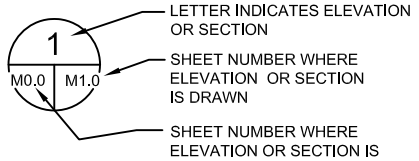

GENERAL NOTES

1. THE LOCATION OF LINES AS SHOWN IS APPROXIMATE AND FOR REFERENCE ONLY. SHOWN LOCATIONS OF SOME LINES HAVE BEEN EXAGGERATED FOR CLARITY OR NOT SHOWN AT ALL. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PROTECT ALL UNDERGROUND UTILITIES. LOCATIONS OF EXISTING UTILITIES ARE COMPILED FROM AS-BUILT PLANS AND CONSTRUCTION DRAWINGS FURNISHED BY HII AND ARE NOT WARRANTED TO BE CORRECT. THE CONTRACTOR SHALL VERIFY ACTUAL LOCATION AND ELEVATION OF ALL UTILITIES IN THE FIELD.
2. ALL MECHANICAL PIPING AND EQUIPMENT AND THE INSTALLATION THEREOF SHALL BE IN STRICT COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE OF LOUISIANA AND LOCAL CODES. INSTALLATION SHALL ALSO BE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS AND TO CURRENT INDUSTRY STANDARDS.
3. THE INSTALLATION CONTRACTOR SHALL BE RESPONSIBLE FOR:
   a. FIELD VERIFICATION ALL DIMENSIONS AND LOCATIONS.
   b. COMPLETE REVIEW OF ALL DRAWINGS.
   c. COORDINATING WITH ALL OTHER TRADES TO AVOID INTERFERENCE.
   d. COORDINATING SUPPLIERS AND SUBCONTRACTOR WORK REQUIREMENTS TO INSURE THAT THE WORK CAN PROCEED EXPEDITIOUSLY SO THAT THE PROJECT IS COMPLETED IN A TIMELY MANNER AND OPERABLE. THE MECHANICAL DRAWINGS FORM ONLY PART OF THE ENTIRE PROJECT WHICH ALSO INCLUDES STRUCTURAL, ELECTRICAL AND INSTRUMENTATION. NO MECHANICAL WORK SHALL PROCEED WITHOUT FIRST COORDINATION WITH ALL OTHER TRADES.
4. DO NOT SCALE DRAWINGS WITHOUT SPECIFIC PERMISSION FROM THE ENGINEER. WRITTEN DIMENSIONS SHALL GOVERN. THE MECHANICAL DRAWINGS ARE INTENDED TO DEFINE THE GENERAL DESIGN AND SCOPE OF THE WORK REQUIRED TO COMPLETE THE PROJECT. IT IS THE INTENT OF THESE DOCUMENTS TO PROVIDE FOR COMPLETE AND FINISHED WORK. ALL MISCELLANEOUS COMPONENTS, PARTS, BOLTING, ANCHORS, ACCESSORIES, MEANS OF INSTALLATION, HOOKUP, TESTING AND OTHER INCIDENTAL ITEMS SHALL BE PROVIDED WHETHER OR NOT SPECIFICALLY NOTED.
5. ALL CONNECTIONS TO EXISTING SERVICE (WATER) SHALL BE PERFORMED IN THE PRESENCE OF THE OWNERS REPRESENTATIVE.
6. ALL PIPE FITTINGS AND VALVES SHALL BE OF THE SAME SIZE OF THE SERVICE PIPE IN WHICH THEY ARE USED, UNLESS OTHERWISE INDICATED, AND SHALL HAVE JOINT ENDS COMPATIBLE WITH THE PIPE ENDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FASTENERS, CONNECTORS, ADAPTERS, ETC. AS REQUIRED TO PROPERLY CONNECT PIPE JOINTS FOR THE SERVICE INTENDED. ALL JOINTS SHALL BE TIGHTLY AND SOLIDLY CONNECTED, AND SHALL PROVIDE A TENSILE JOINT CAPABLE OF WITHSTANDING THE THRUST FORCES GENERATED BY INTERNAL PRESSURE AT BOTH WORKING AND TEST PRESSURES.
7. ALL VALVE AND FLANGED DIMENSIONS SHOWN INCLUDE GASKET.
8. CONTRACTOR IS NOT TO RESTRAIN PIPING FROM MOVEMENT OTHER THAN AS SHOWN ON THE DRAWINGS.
9. NOTIFY CITY DEPARTMENT OF PUBLIC WORKS 48 HOURS PRIOR TO ANY UTILITY TIE-IN.
10. USE REDUCERS FOR CHANGE IN PIPE SIZE.
11. PROVIDE UNIONS AT ALL THREADED, BRAZED OR SOCKET-WELDED VALVES.

GENERAL PLUMBING NOTES

1. ALL PLUMBING EQUIPMENT AND PRODUCTS AND THE INSTALLATION THEREOF SHALL BE IN STRICT COMPLIANCE WITH ALL APPLICABLE FEDERAL AND STATE OF LOUISIANA CODES. INSTALLATION SHALL ALSO BE IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS AND TO CURRENT INDUSTRY STANDARDS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY ALL DIMENSIONS AND LOCATIONS. THE INSTALLER OF PLUMBING SYSTEMS SHALL COORDINATE WITH ALL OTHER TRADES TO AVOID INTERFERENCE. EACH PLUMBING INSTALLER SHALL COMPLETELY REVIEW ALL DRAWINGS AND SPECIFICATIONS. THE PLUMBING DRAWINGS AND SPECIFICATIONS FORM ONLY A PART OF THE ENTIRE PROJECT WHICH ALSO INCLUDES STRUCTURAL/ARCHITECTURAL, INTERIORS, LIGHTING AND ELECTRICAL. NO PLUMBING WORK SHALL PROCEED WITHOUT FIRST COORDINATING WITH ALL OTHER TRADES. THE CONTRACTOR SHALL COORDINATE SUPPLIERS AND SUBCONTRACTORS WORK REQUIREMENTS TO INSURE THAT THE WORK CAN PROCEED EXPEDITIOUSLY AND SO THAT THE PROJECT IS MADE COMPLETE AND OPERABLE.
3. DO NOT SCALE DRAWINGS WITHOUT SPECIFIC PERMISSION FROM THE ENGINEER. WRITTEN DIMENSIONS SHALL GOVERN. THE PLUMBING DRAWINGS AND SPECIFICATIONS ARE INTENDED TO DEFINE THE GENERAL DESIGN AND SCOPE OF THE WORK REQUIRED TO COMPLETE THE PROJECT. IT IS THE INTENT OF THESE DOCUMENTS TO PROVIDE FOR COMPLETE AND FINISHED WORK. ANY OMISSION IN THESE DOCUMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR OF SUCH RESPONSIBILITIES IMPLIED BY THE SCOPE OF THE WORK. ALL MISCELLANEOUS COMPONENTS, PARTS, BOLTING, ANCHORS, ACCESSORIES, MEANS OF INSTALLATION, HOOK-UP, TESTING AND OTHER INCIDENTAL ITEMS SHALL BE PROVIDED WHETHER OR NOT SPECIFICALLY NOTED. IT IS INCUMBENT UPON THE CONTRACTOR TO INSURE THAT ALL OPERATING EQUIPMENT (AND COMPONENTS THEREOF) POWERED BY ELECTRICITY IS PROPERLY PROVIDED WITH ELECTRICAL POWER, SWITCHES AND HOOK-UP.

LEGEND

- CONTROL VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- FOOT VALVE
- REDUCER
- THRU WALL/FLOOR
- PRESSURE RELIEF VALVE
- WELDED/BRAZED FITTING
- SOLVENT FITTING
- FLEXIBLE BRAIDED HOSE
- GAUGE
- FUEL FILTER
- PIPE TURN DOWN
- PIPE TURN UP
- BLIND FLANGE
- CAP

ACRONYMS AND ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
BV	BALL VALVE
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CO	CLEANOUT
CV	CHECK VALVE
D	DRAIN
DF	DIESEL FUEL
FD	FLOOR DRAIN
FLGD	FLANGED
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
PW	POTABLE WATER
SCRD	SCREWED

M0.0
SHEET NUMBER

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BURK-KLEINPETER, INC. ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

BKI # : NO.20.044
CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED	R.P.F.
CHECKED	D.C
DETAILED	B.L
CHECKED	H.M.P.
DATE	July, 2021
SHEET	OF

25th STREET
CANAL DRAINAGE IMPROVEMENTS

MECHANICAL NOTES, LEGENDS

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

CITY OF GRETNA LOUISIANA

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWINGS\M0.0

7/7/2021

REFRIGERANT PIPING (DO NOT RUN ABOVE ELECTRICAL EQUIPMENT)

4 M2.0 M4.4 TYP.

OUTDOOR AC UNIT - MAINTAIN MANF. REC'D CLEARANCES

CONTRACTOR SUPPLIED A36 STEEL WALL BRACKET (HOT DIPPED GALVANIZED)

LIGHTS, TYP.

CONDENSATE DRAIN, END PIPE 2'-0" AFF (DO NOT RUN ABOVE ELECTRICAL EQUIPMENT)

INDOOR AC UNIT - MAINTAIN MANF. REC'D CLEARANCES

BRICK LOUVER

BRICK LOUVER

HVAC PLAN

SCALE : 3/16"=1'-0"

2 M2.0 M3.1

TRANSFORMER

PROPOSED 1-1/2 TON JIB CRANE AND TROLLEY HOIST

ELECTRICAL ROOM SEE HVAC PLAN, SAME SHEET

MONORAIL & HOIST

STORAGE

FIRE EXTINGUISHER

5 M2.0 M2.2

1000 KW GENERATOR

8 M2.0 M4.2

8"Ø PVC W/ PUMP FLOAT SWITCH (1 REQ'D IN EACH PUMP BAY)

PUMP LUBRICATOR (TYP. OF 3)

48" I.D. (1/2" WALL) DISCHARGE PIPE (TYP. OF 3)

FORWARD/REVERSE/E-STOP SCREEN CLEANER LOCAL CONTROL (BAY 1 & 2)

LEVEL SENSOR NO. 2

RIP RAP LINED INTAKE BASIN

INTAKE BAY ACCESS (TYP.)

PUMP BAY NO. 1

LEVEL SENSOR NO. 3

300 HP ELECTRIC MOTOR (TYP.)

LEVEL SENSOR NO. 1

PUMP BAY NO. 2

INTAKE BAY WALL (TYP.)

PUMP STATION ACCESS BRIDGE

PUMP BAY NO. 3

12'-3"

13'-0"

12'-3"

1 M2.0 M3.0

4 M2.0 M4.0

RIGHT ANGLE GEAR (TYP.)

DUMPSTER

MECHANICAL SCREEN CLEANER (TYP.)

FORWARD/REVERSE/E-STOP SCREEN CLEANER LOCAL CONTROL (BAY 3)

SCREEN CLEANER REMOTE PANEL

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

M2.0
SHEET NUMBER

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BURK-KLEINPETER, INC.
ENGINEERING - PLANNING - ENVIRONMENTAL
BKI USA.COM

CLIENT PROJECT NUMBER : XXXXXXXX

BKI # : NO.20.044

DESIGNED	R.P.F.	DETAILED	B.L.
CHECKED	D.C	CHECKED	H.M.P.
DATE	July, 2021	SHEET	OF

25th STREET
CANAL DRAINAGE IMPROVEMENTS

PUMPING STATION PLAN

CITY OF GRETNA LOUISIANA

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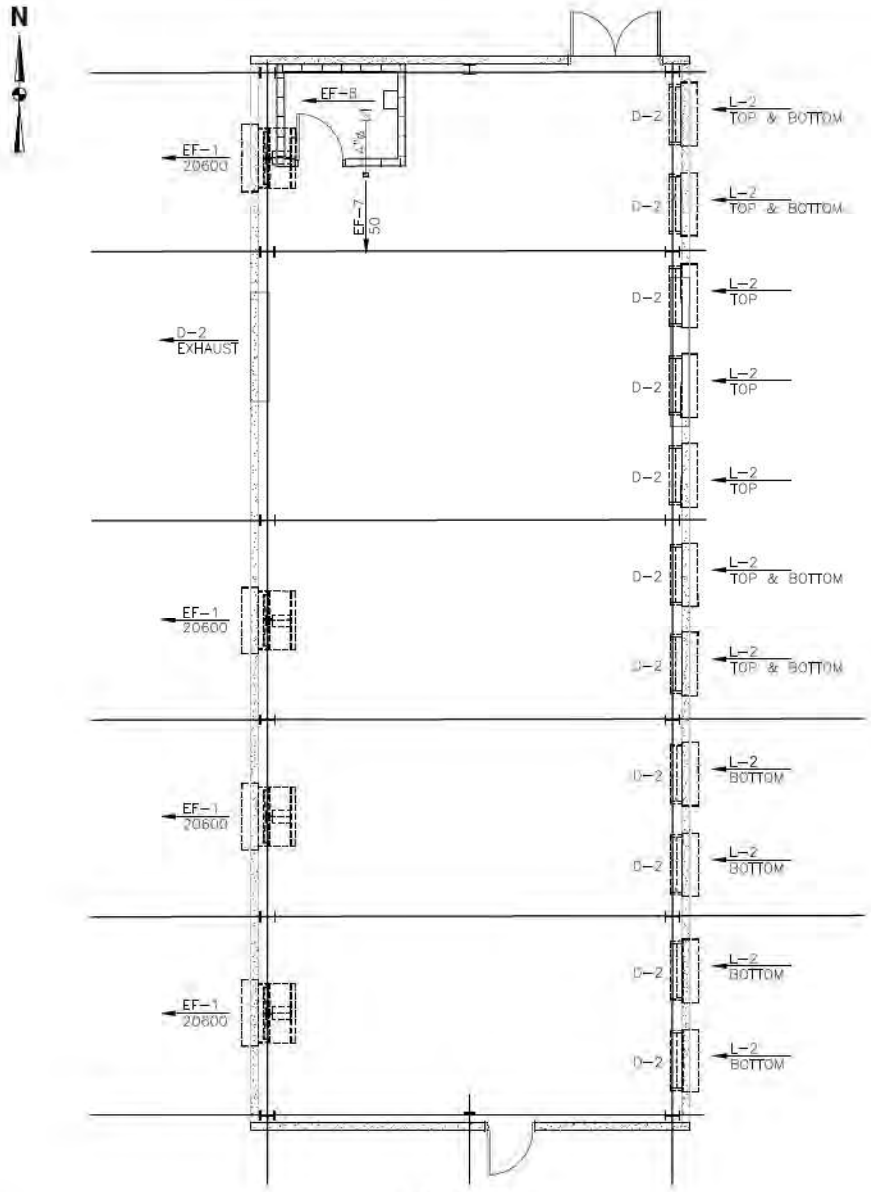

HVAC PLAN

HVAC LEGEND	
L-#@ XX"W	LOUVER-MARK W/H
EF-#@ XXXX	EXHAUST FAN-MARK W/H
T	THERMOSTAT
EUH	ELECTRONIC UNIT HEATER
CFM	CUBIC FEET PER MINUTE
C/L	CENTERLINE
DBA	A-WEIGHTED DECIBELS
ESP	EXTERNAL STATIC PRESSURE
EXIST	EXISTING
EXH	EXHAUST
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
INWC	INCHES WATER COLUMN
HP	HORSEPOWER
KW	KILOWATT
L	LOUVER (STATIONARY)
NC	NOISE CRITERIA
OA	OUTSIDE AIR
PD	PRESSURE DROP
RPM	REVOLUTIONS PER MINUTE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
HOA	HAND OFF/AUTO
NFPA	NATIONAL FIRE PROTECTION AGENCY
IBC	INTERNATIONAL BUILDING CODE
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION

HVAC GENERAL NOTES

1. CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR AND EQUIPMENT FOR A COMPLETE OPERATING SYSTEM. COORDINATE WITH ALL TRADES.
2. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL APPLICABLE STATE, CITY, AND LOCAL CODES, AND THE REQUIREMENT OF NFPA 90A, IBC, CODE.
3. ALL CUTTING AND PATCHING SHALL BE DONE AS REQUIRED.
4. CONTRACTOR SHALL PAY ALL APPLICABLE FEES FOR THE PERMIT AND INSPECTION.
5. DUCT MATERIAL SHALL CONFORM WITH NFPA 90A AND GAUGES SHALL CONFORM TO SMACNA STANDARD.
6. VERIFY EQUIPMENT VOLTAGE AND PHASE WITH ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT.
7. REFER TO SPECIFICATION FOR DETAILS OF ALL MATERIALS AND METHODS.
8. MOUNT THERMOSTATS/ON/OFF 42" AFF.

FAN SCHEDULE

MARK	SERVICE	LOCATION	CFM	ESP INWC	TYPE	DRIVE	SOUND DATA SONES
EF-1 THRU 4	ENGINE ROOM	SIDEWALL	20600	0.5	PANEL	DIRECT	35 DBA
EF-7	TOILETS	CEILING	50	0.1	CENTRIFUGAL	DIRECT	2.5
EF-8	TOILETS	WALL	270		CENTRIFUGAL	DIRECT	

FAN SCHEDULE CONTINUED

	ELECT. DATA H.P./WATTS	ELECT. DATA VOLTAGE	RPM	MODEL NO.	CONTROLS	WEIGHT (LBS.)	REMARKS
EF-1 THRU 4	3 HP	230V/1Ø	695	48A26-DDP	HOA		2,3,6,7,
EF-7	1428 W	120V/1Ø	1070	BROAN HD-659	SWITCH	12.5	1, 4, 5
EF-8	2500 W	208/240		DAYTON 3UG73	DIAL	12.5	4, 5, 8

1. SELECTION BASED ON BROAN OR APPROVED EQUAL.
2. SELECTION BASED ON AEROVENT OR APPROVED EQUAL.
3. PROVIDE THERMAL OVERLOAD PROTECTION. DISCONNECT SWITCH AND BACK DRAFT DAMPER, THERMOSTAT.
4. PROVIDE WITH HEAT, 1300 W MIN.
5. PROVIDE WITH 4" ROUND DUCT, PRESSURE RELIEF DAMPER AND WALL CAP.
6. SOUND PRESSURE AT 5 FT BASED ON A SINGLE DUCTED INSTALLATION.
7. MOTOR OPERATED SHUTTERS REQUIRED. INTERLOCK SHUTTERS WITH ENGINE AND FAN OPERATION. SHUTTERS SHALL BE OPEN WHEN EITHER ENGINES OR FANS ARE ON.
8. SELECTION BASED ON DAYTON OR APPROVED EQUAL.

LOUVER & DAMPER SCHEDULE

MARK	BLADE ORIENTATION	BLADE DEPTH	BLADE ANGLE	% FREE AREA	PD IN. WC	FPM	MFGR	MODEL NO.	SIZE	C/L EL.	REMARKS
L-1	HORIZONTAL	5"	37.5	49.1	0.23	1246	RUSKIN	EME520MD	78"Wx72"H	9'-5"	2, 3, 5
L-2	HORIZONTAL	6"	37.5	68.7	0.24	1221	RUSKIN	EME520MD	54"Wx54"H	4'-6 1/2"	1, 4, 6
D-1	HORIZONTAL	6"									
D-2	HORIZONTAL	6"									

1. FURNISH WITH INSECT SCREEN.
2. FURNISH WITH FRAME TO CONNECT TO RADIATOR DUCT.
3. FURNISH WITH BIRD SCREEN.
4. MOTOR OPERATED SHUTTERS REQUIRED. INTERLOCK SHUTTERS WITH ENGINE OPERATION. SHUTTERS SHALL BE OPEN WHEN ENGINES ARE ON.
5. FURNISH WITH WEATHERHOOD.
6. FURNISH LOUVERS TO BE MIAMI-DADE COUNTY APPROVED.

6' 4' 2' 0 5' 10'
SCALE - 3/16"=1'-0"

PRELIMINARY
FOR REVIEW ONLY

BURK-KLEINPETER, INC.
ENGINEER: Robert Purvis, P.E.
LA LICENSE #: LA 33988
DATE: July, 2021

M2.1
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION

BURK-KLEINPETER, INC.
ENGINEERING ENVIRONMENTAL
PLANNING SURVEYING
BKI# : NO 20044
CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED R.P.F.
CHECKED D.C.
DETAILED B.L.
CHECKED K.M.P.
DATE July, 2021
SHEET OF

25th STREET
CANAL DRAINAGE IMPROVEMENTS
HVAC PLAN

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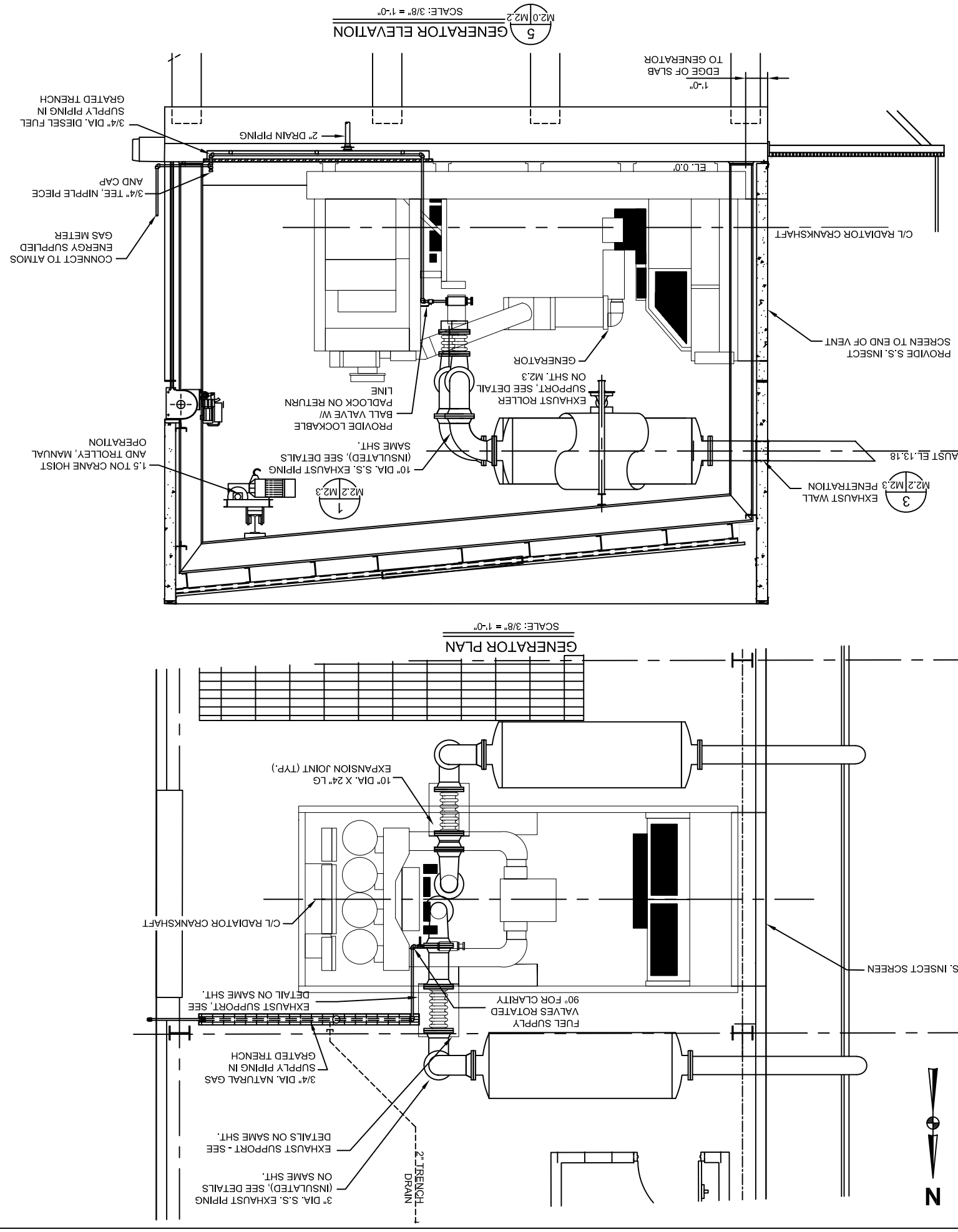
7/9/2021



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BURK-KLEINPETER, INC.

ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

25th STREET
CANAL DRAINAGE IMPROVEMENTS

GENERATOR PLAN, SECTIONS AND DETAILS

DESIGNED	CHECKED	R.P.F.
D.C		
DETAILED	CHECKED	B.L.
H.M.P.		
DATE		
July, 2021		
SHEET	OF	

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKUSA.COM

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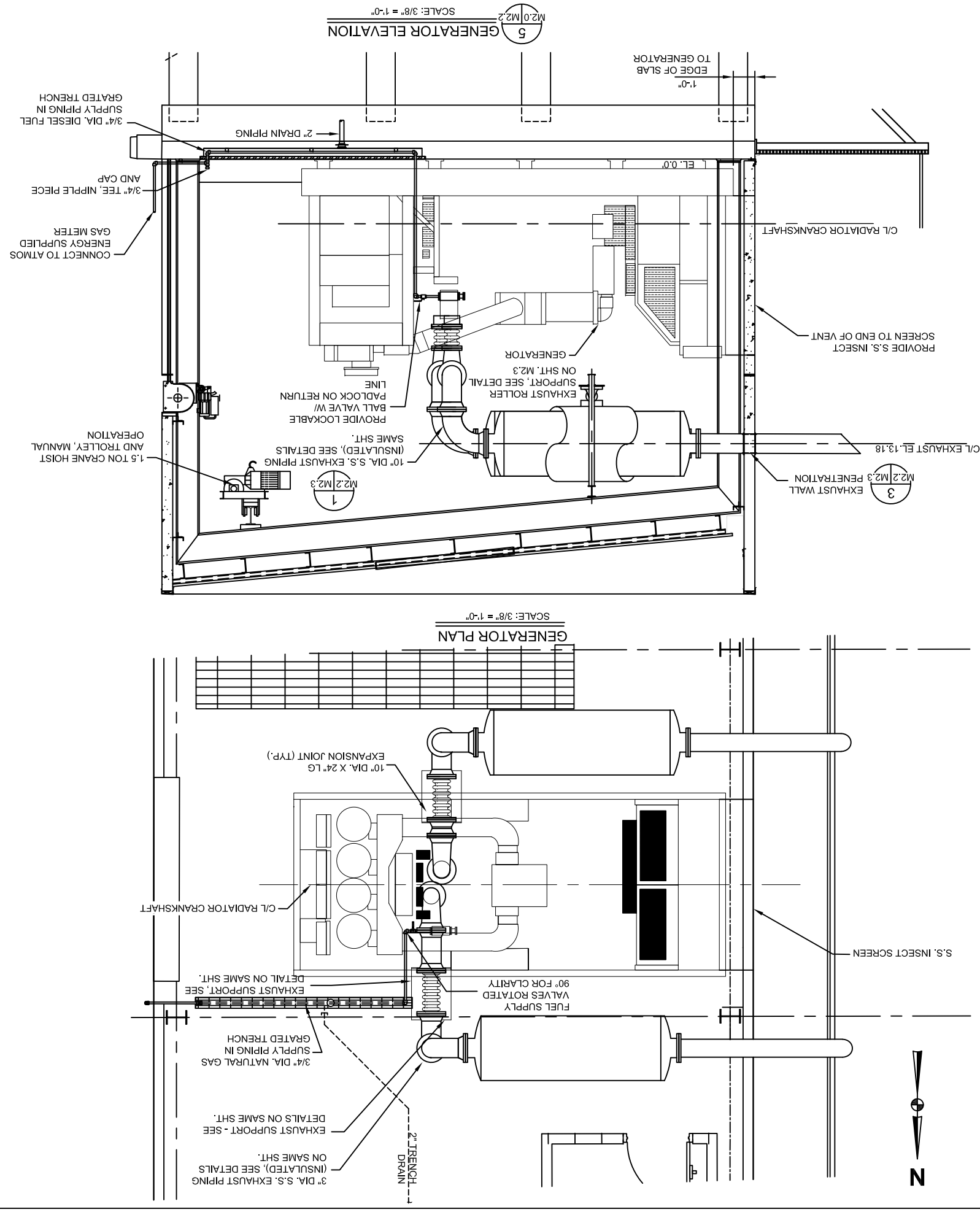
SHEET NUMBER
M2.3

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWINGS\M2.2-2.3 - GENERATOR

7/7/2021



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25th STREET
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GENERATOR PLAN, SECTIONS AND DETAILS

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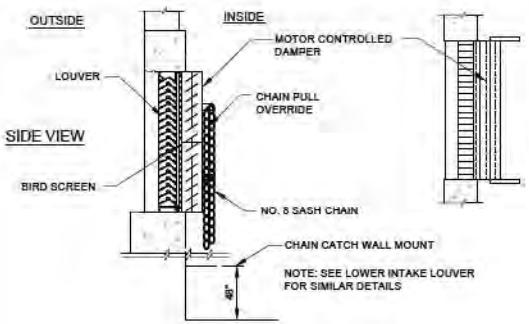
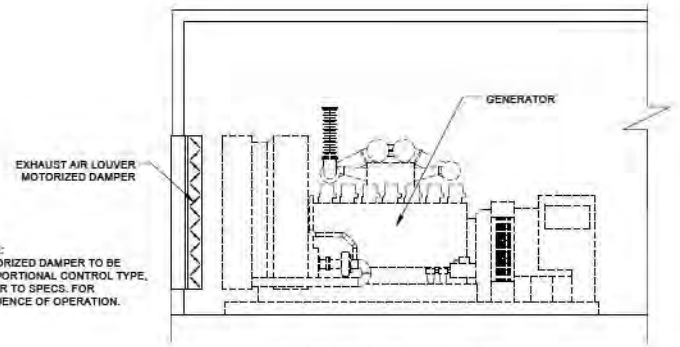
P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWINGS\M2.2-2.3 - GENERATOR

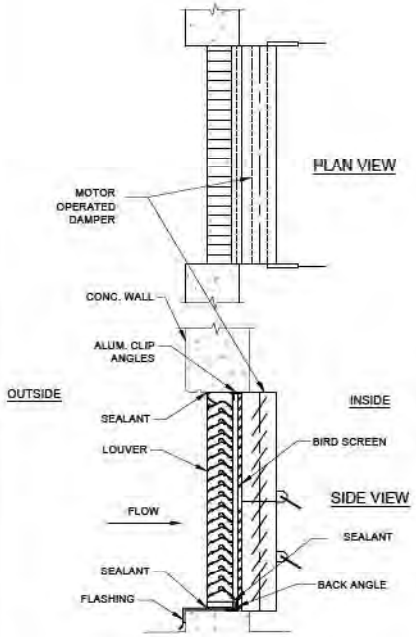
7/8/2021



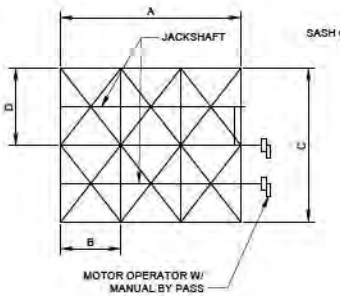
UPPER INTAKE LOUVER DETAIL
N.T.S.



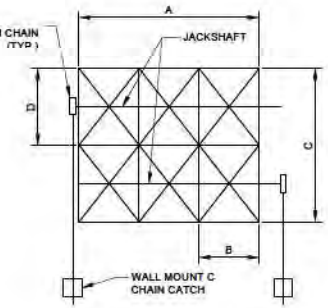
GENERATOR EXHAUST DETAIL
N.T.S.



LOWER INTAKE LOUVER DETAIL
N.T.S.



FRONT VIEW LOWER LOUVER



FRONT VIEW UPPER LOUVER

DIMENSION NOTE:

DIM	A	B	C	D
PUMP				
GENSET				

MOTORIZED DAMPER DETAIL
N.T.S.

M2.4

BURK-KLEINPETER, INC.
ENGINEERING ENVIRONMENTAL
BKI # : NO 20.044
CLIENT PROJECT NUMBER : XXXXXXX

DESIGNED R.P.F.
CHECKED D.C.
DETAILED B.L.
CHECKED K.M.P.
DATE July, 2021
SHEET

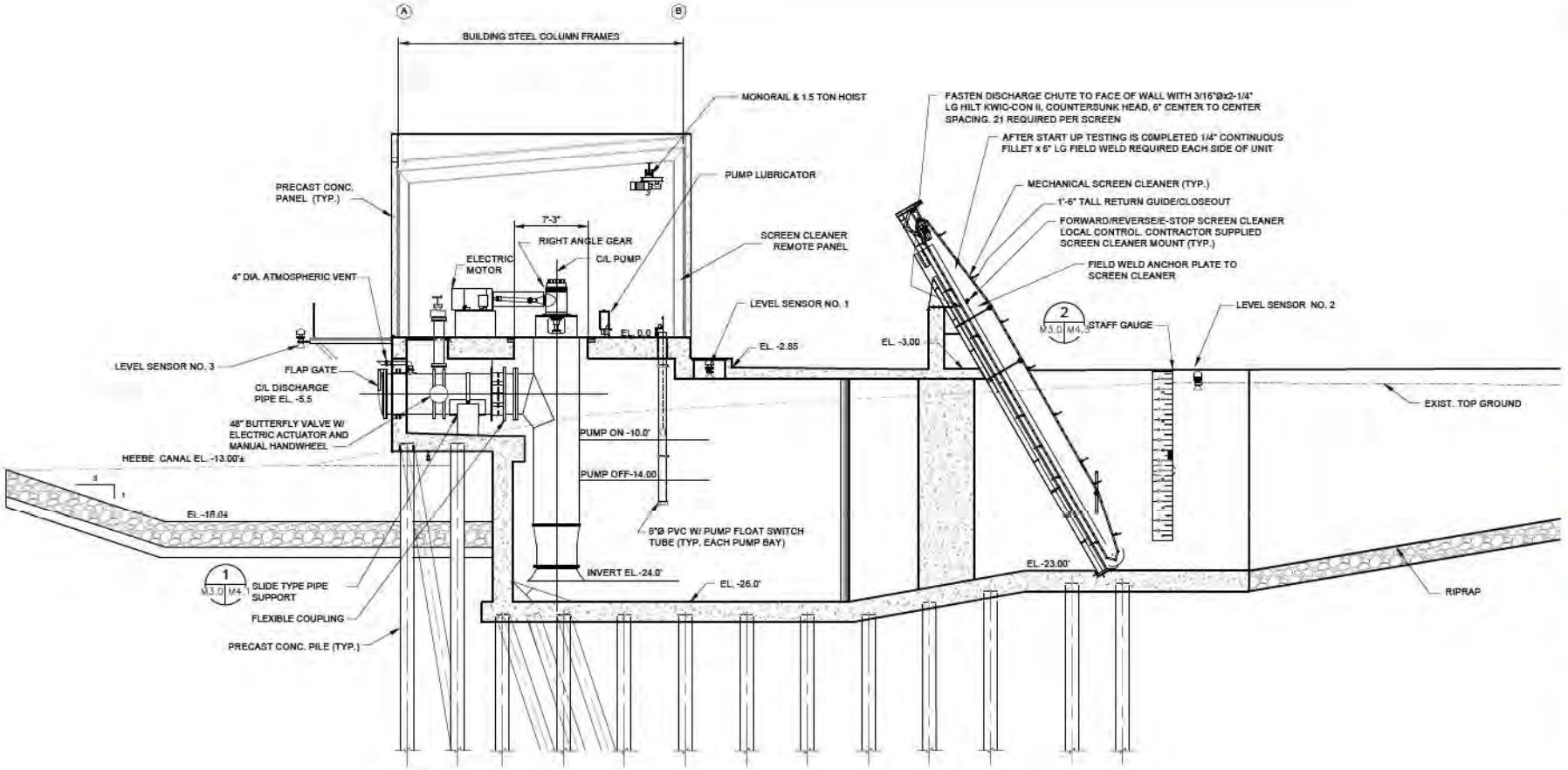
25th STREET
CANAL DRAINAGE IMPROVEMENTS
LOUVER DETAILS

PRELIMINARY
FOR REVIEW ONLY

BURK-KLEINPETER, INC.
ENGINEER: Robert Purdue, P.E.
LA. LICENSE #: LA 33988
DATE: July, 2021

P:\NO 20 XX\NO 20 044\02_DESIGN\02 MECHANICAL\01 DRAWINGS\M2.4 - LOUVER DETAILS

7/7/2021



PUMP LEVELS

DESCRIPTION	EL (FT.)
ALL PUMPS OFF	−14.0
LEAD PUMP ON	−10.0
LAG PUMP #1 ON	−9.5
LAG PUMP #2 ON	−9.0

SECTION 1 (M2.0 | M3.0)

SCALE: 3/16" = 1'-0"

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: Robert Purdue, P.E.
LA. LICENSE #: LA 33988
DATE: July, 2021

M3.0
SHEET NUMBER

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI# NO20.044
CLIENT PROJECT NUMBER: XXXXXXX

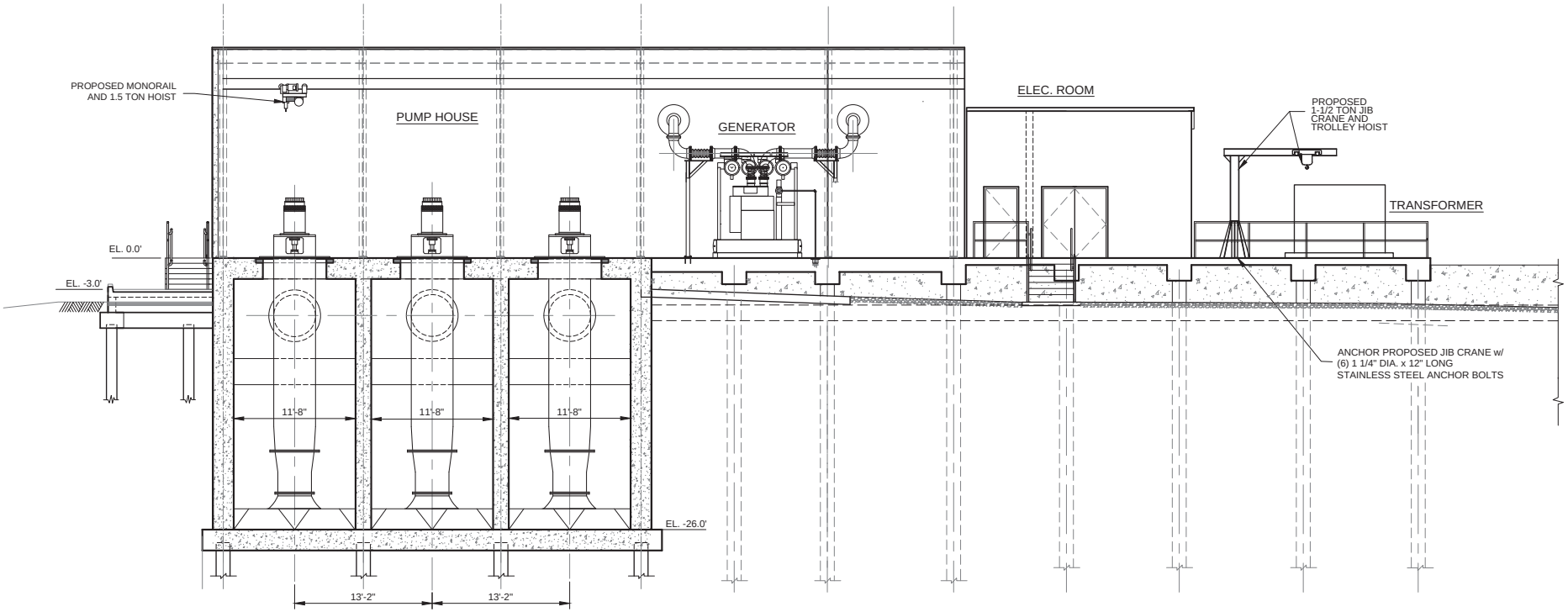
DESIGNED R.P.F.
CHECKED D.C.
DETAILED B.L.
CHECKED H.M.P.
DATE July, 2021
SHEET

25th STREET
CANAL DRAINAGE IMPROVEMENTS

TYPICAL SECTION

7/7/2021

P:\WO 20 XX\WO 20 044\02_DESIGN\02 MECHANICAL\01 DRAWINGS\M03.0-3.1 SECTIONS



SECTION 1
SCALE: 3/16" = 1'-0"
M2.0 M3.1

M3.1
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING
PLANNING
ENVIRONMENTAL
www.bkiweb.com

BKI #: NO.20.044
CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED	R.P.F.		
CHECKED	D.C.		
DETAILED	B.L.		
CHECKED	H.M.P.		
DATE	July, 2021		
SHEET	6		

25th STREET
CANAL DRAINAGE IMPROVEMENTS

TYPICAL SECTION

PRELIMINARY

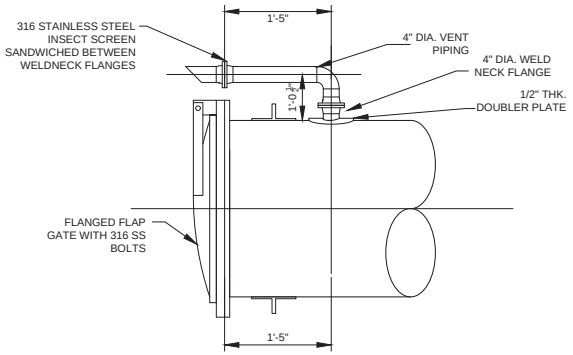
FOR REVIEW ONLY

BURK-KLEINPETER, INC.

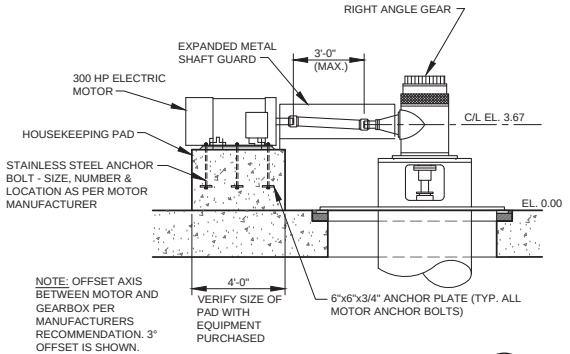
ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

7/7/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWING\SM3.0-3.1 SECTIONS

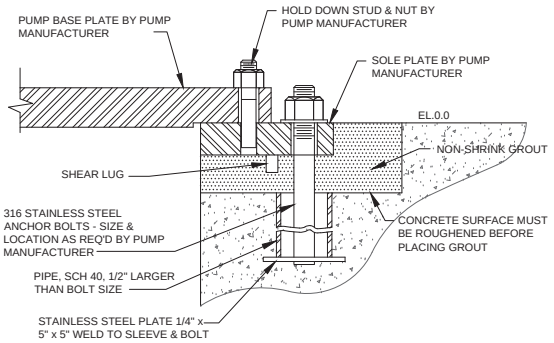


DISCHARGE PIPE VENT DETAIL 5 M4.0
N.T.S.

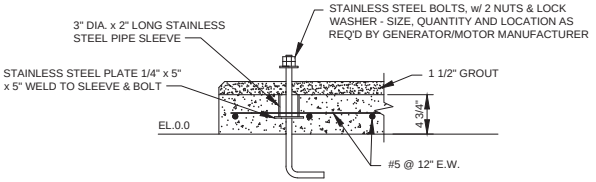


MOTOR AND GEAR DETAIL 4 M4.0
N.T.S.

NOTE:
ALL BOLTED CONNECTIONS SHALL BE MADE WITH TYPE 316 (ASTM A193 Gr B8M) STAINLESS STEEL BOLTS, NUTS AND WASHERS, UNLESS NOTED OTHERWISE.



PUMP ANCHOR BOLT DETAIL 2 M4.0
N.T.S.



GENERATOR ANCHOR BOLT DETAIL 3 M4.0
N.T.S.

PRELIMINARY
FOR REVIEW ONLY

BURK-KLEINPETER, INC.
ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

M4.0
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM
BKI # : NO.20.044
CLIENT PROJECT NUMBER : XXXXXXXX

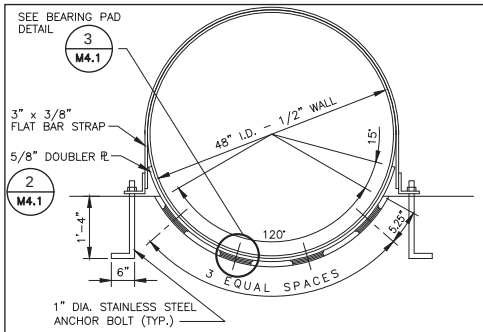
DESIGNED	R.P.F.	
CHECKED	D.C.	
DETAILED	B.L.	
CHECKED	H.M.P.	
DATE	July, 2021	
SHEET	of	

25th STREET
CANAL DRAINAGE IMPROVEMENTS
MECHANICAL DETAILS

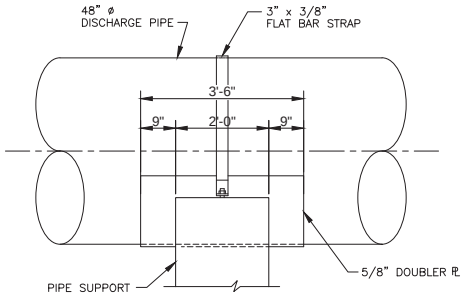
CITY OF GRETNA
LOUISIANA

7/6/2021

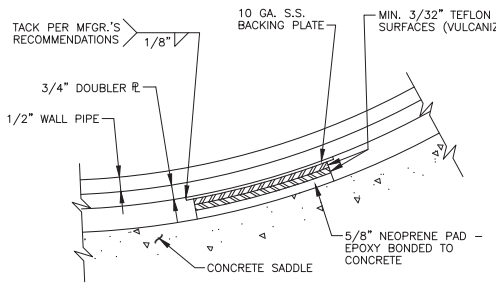
P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWING\SM4.0 - MECHANICAL DETAILS



48" Ø DISCHARGE PIPE BEARING PAD LOCATION DETAIL 1 M4.1
N.T.S.

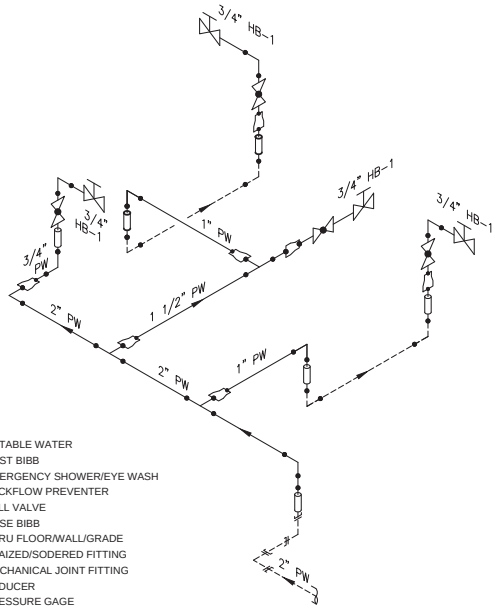


TYPICAL DOUBLER PLATE DETAIL 2 M4.1
N.T.S.



NOTES :
1. AT ANCHOR BENTS, BEARING PADS MAY BE FULL THICKNESS NEOPRENE ONLY.
2. ALL BEARING PADS MUST BE RATED FOR MIN. 400 PSI WORKING LOAD.
3. BEARING PADS TO BE BY FLUOROGOLD, CON–SLIDE, OR EQUAL.
4. CONTRACTOR SHALL SUBMIT CONCRETE PIPE SUPPORT DESIGN FOR APPROVAL

DISCHARGE PIPE BEARING PAD DETAIL 3 M4.1
N.T.S.



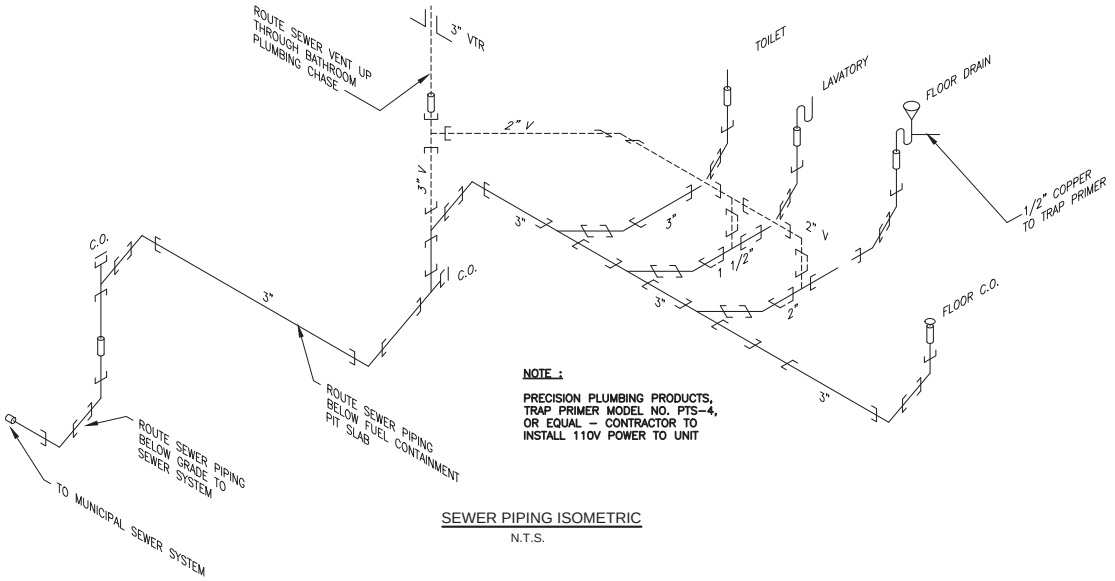
LEGEND

PW	POTABLE WATER
HB	HOST BIBB
EW	EMERGENCY SHOWER/EYE WASH
BFP	BACKFLOW PREVENTER
	BALL VALVE
	HOSE BIBB
	THRU FLOOR/WALL/GRADE
	BRAIZED/SODERED FITTING
	MECHANICAL JOINT FITTING
	REDUCER
	PRESSURE GAGE
	THREAD-O-LET

NOTES:
1. POTABLE WATER SHALL BE INSULATED ABOVE GRADE
2. ABOVE GRADE PIPE SHALL BE TYPE K COPPER
3. BELOW GRADE PIPE SHALL BE PE (NO. 3408, DR 11) OR PVC (AWWA C900)
4. SLEEVE FLOOR AND WALL PENETRATIONS PER DETAILS 7 AND 8 SAME SHEET.

POTABLE WATER ISOMETRIC
N.T.S.

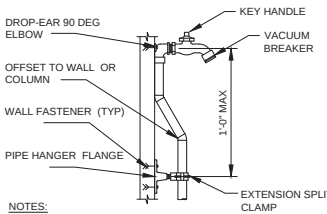
NOTE:
ALL BOLTED CONNECTIONS SHALL BE MADE WITH TYPE 316 (ASTM A193 Gr B8M) STAINLESS STEEL BOLTS, NUTS AND WASHERS, UNLESS NOTED OTHERWISE.



NOTE :
PRECISION PLUMBING PRODUCTS, TRAP PRIMER MODEL NO. PTS–4, OR EQUAL – CONTRACTOR TO INSTALL 110V POWER TO UNIT

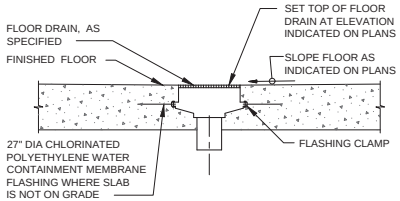
SEWER PIPING ISOMETRIC
N.T.S.

PRELIMINARY	BURK-KLEINPETER, INC.
FOR REVIEW ONLY	ENGINEER: Robert Furlow, P.E. LA. LICENSE #: LA 35966 DATE: July, 2021



NOTES:
1. PROVIDE VACUUM BREAKER ON HOSE FAUCETS
2. SEE PLANS AND SPECIFICATIONS FOR PIPE DIAMETERS.
3. INSULATE AND JACKET PIPING ABOVE GRADE

HOSE FAUCET PIPE MOUNTING 4 M4.1
N.T.S.



FLOOR DRAIN - NEW FLOOR 5 M4.1
N.T.S.

M4.1
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING | PLANNING | ENVIRONMENTAL
BKIUSA.COM
BKI #: NO.20.044
CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED	R.P.F.		
CHECKED	D.C.		
DETAILED	B.L.		
CHECKED	H.M.P.	DATE	July, 2021
		SHEET	OF

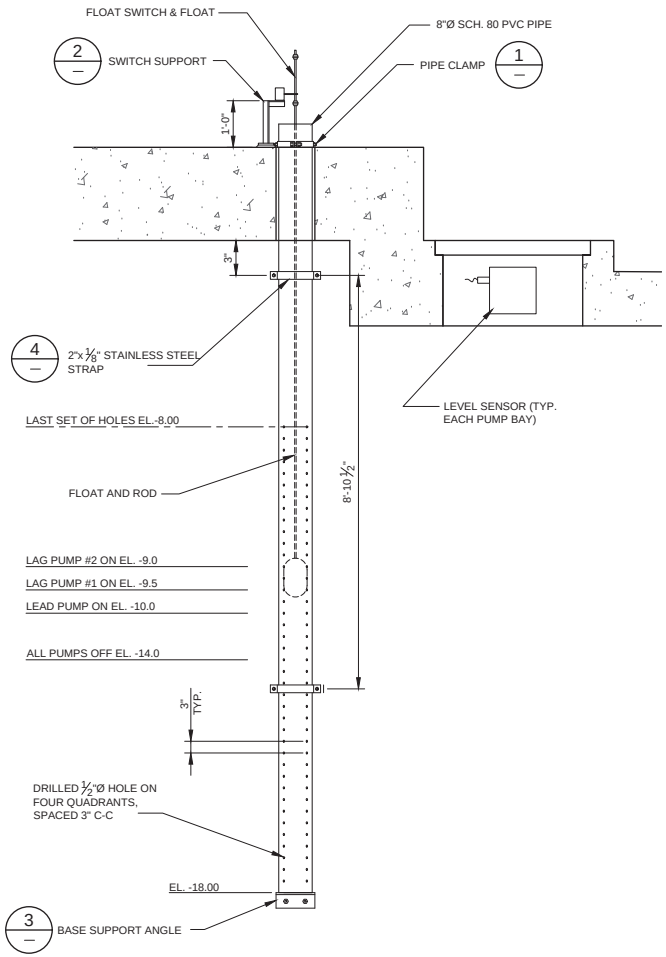
25th STREET
CANAL DRAINAGE IMPROVEMENTS

MISCELLANEOUS PIPING DETAILS

CITY OF HOUMA
TERREBONNE PARISH
LOUISIANA

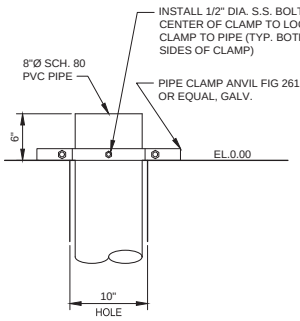
7/6/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWING'S\M4.1 - MISCELLANEOUS PIPING DETAILS



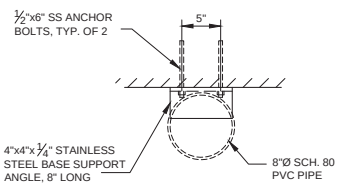
FLOAT SWITCH AND LEVEL SENSING TUBE 2 DETAIL 8 M4.2

SCALE : 3/4"=1'-0"



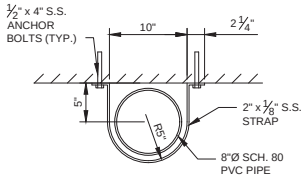
PIPE CLAMP DETAIL 1

SCALE : 1 1/2" = 1'-0"



BASE SUPPORT ANGLE DETAIL 3

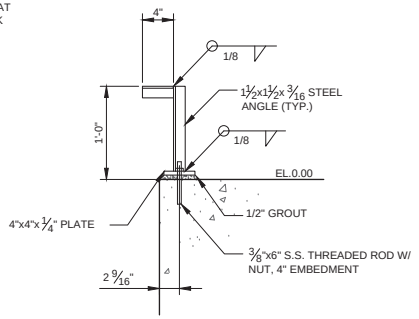
SCALE : 1 1/2" = 1'-0"



STRAP DETAIL 4

(2 REQUIRED PER TUBE)

SCALE : 1 1/2" = 1'-0"



NOTE:
GALV. FOLLOWING FABRICATION

SWITCH SUPPORT DETAIL 2

SCALE : 1 1/2" = 1'-0"

NOTES :

1. PVC PIPE USED IN THE CONSTRUCTION OF LEVEL SENSING TUBES SHALL BE OF ONE PIECE CONSTRUCTION.
2. ALL STAINLESS STEEL SHALL BE 316 STAINLESS STEEL.

6" 0 6" 1' 1'-6"
SCALE: 1 1/2"=1'-0"

1' 0 1' 2' 3'
SCALE: 3/4"=1'-0"

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

M4.2
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

BKI #: NO.20.044

CLIENT PROJECT NUMBER: XXXXXXXX

DESIGNED	R.P.F.	
CHECKED	D.C.	
DETAILED	B.L.	
CHECKED	H.M.P.	
DATE	July, 2021	
SHEET	6	

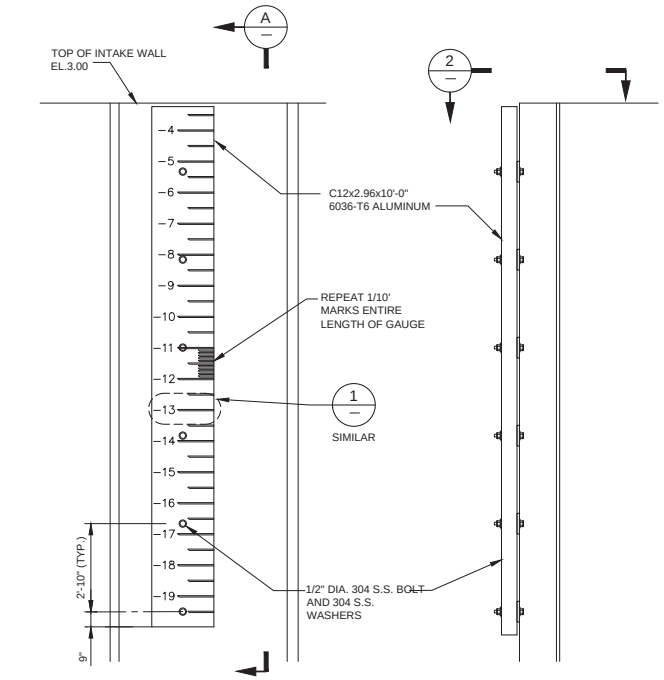
25th STREET
CANAL DRAINAGE IMPROVEMENTS

FLOAT SWITCH DETAILS

CITY OF GRETNA
LOUISIANA

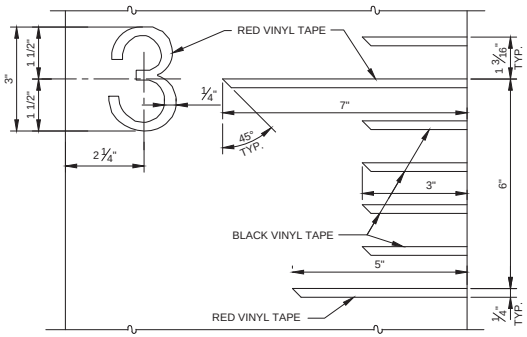
7/6/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWING\SM4.2 - FLOAT SWITCH DETAILS



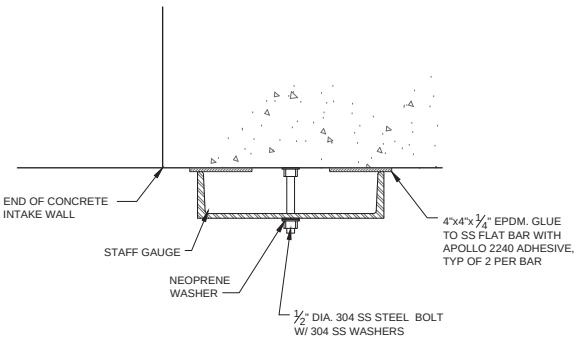
INTAKE BASIN STAFF GAUGE DETAIL 2 (M3.0 | M4.3)
N.T.S.

SECTION A
N.T.S.



NOTE:
VINYL TAPE SHALL BE RATED FOR SUBMERGED SERVICE

DETAIL 1
N.T.S.



SECTION 2
(4 REQUIRED)
SCALE : 1 1/2" = 1'-0"

NOTE :
CONTRACTOR SHALL PROVIDE FINAL SHEET PILE ARRANGEMENT ALONG WITH STAFF GAUGE FABRICATION SUBMITTAL FOR APPROVAL

PRELIMINARY
FOR REVIEW ONLY

BURK-KLEINPETER, INC.
ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

M4.3
SHEET NUMBER

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

BKI # : NO.20.044
CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED R.P.F.
CHECKED D.C.
DETAILED B.L.
CHECKED H.M.P.
DATE July, 2021
SHEET

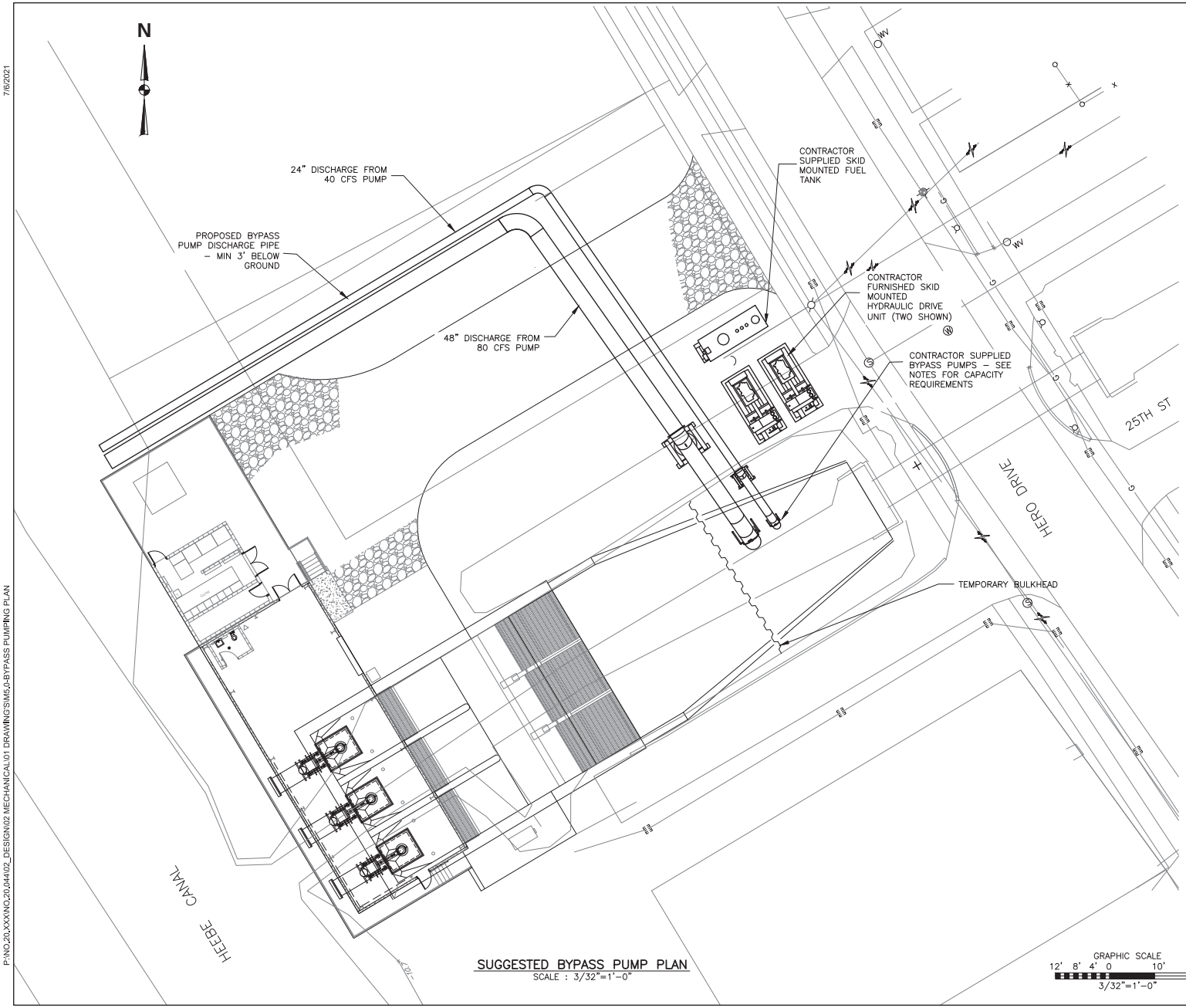
25th STREET
CANAL DRAINAGE IMPROVEMENTS

STAFF GAUGE DETAILS

CITY OF GRETNA LOUISIANA

7/6/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWING\SM4.3 - STAFF GAUGE DETAILS



SUGGESTED BYPASS PUMP PLAN
SCALE : 3/32"=1'-0"

GRAPHIC SCALE
12' 8' 4' 0 10' 20'
3/32"=1'-0"

GENERAL NOTES:
1. SEE SPECIFICATION 02112 – BYPASS PUMPING FOR ADDITIONAL REQUIREMENTS.

BYPASS PUMPING PLAN NOTES:
1. CONTRACTOR SHALL SUBMIT DESIGN CALCULATIONS, PUMP LAYOUT, INSTALLATION DETAILS, BRACING, AND PIPING LAYOUT TO ENGINEER. THESE SHOP DRAWINGS SHALL BE SIGNED AND STAMPED BY A REGISTERED PROFESSIONAL ENGINEER IN LOUISIANA.
2. SEE SECTION 02112–PART 2 FOR REQUIREMENTS INCLUDING, BUT NOT LIMITED TO DISCHARGE PIPE MATERIAL, PUMP TYPE, FUEL SYSTEM, ENGINE TYPE, SYSTEM, CONTROLS AND NOISE LIMITS.
3. PUMP SYSTEM SHALL HAVE THE FOLLOWING MINIMUM CAPACITIES:
   3.1. 120 CFS AT 9.5 FT OF STATIC HEAD

BYPASS PUMPING OPERATION NOTES:
1. THE BY–PASS PUMPING SYSTEM WILL BE REQUIRED TO BE OPERATIONAL WHEN EXISITNG DRAINAGE HAS BEEN BLOCKED AND SHALL END WHEN NEW PUMPS HAVE BEEN COMMISSIONED.
2. BY–PASS PUMPING SHALL OCCUR WHEN DIRECTED BY THE OWNER.
3. THE BY–PASS PUMPING SYSTEM WILL BE REQUIRED TO BE OPERATIONAL 7 DAYS A WEEK, 24 HOURS PER DAY, INCLUDING HOLIDAYS DURING BYPASS OPERATIONS.
4. CONTRACTOR SHALL PROTECT WATER RESOURCES, WETLANDS AND OTHER NATURAL RESOURCES FROM EQUIPMENT SPILLAGE
5. ALL OPERATIONS SHALL BE CONFINED TO THE CITY RIGHT OF WAY.
6. BYPASS PUMPING CAPACITY SHALL MEET OR EXCEED THE CAPACITY OF THE PUMP SPECIFIED.

PRELIMINARY
FOR REVIEW ONLY

BURK-KLEINPETER, INC.
ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

M5.0
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

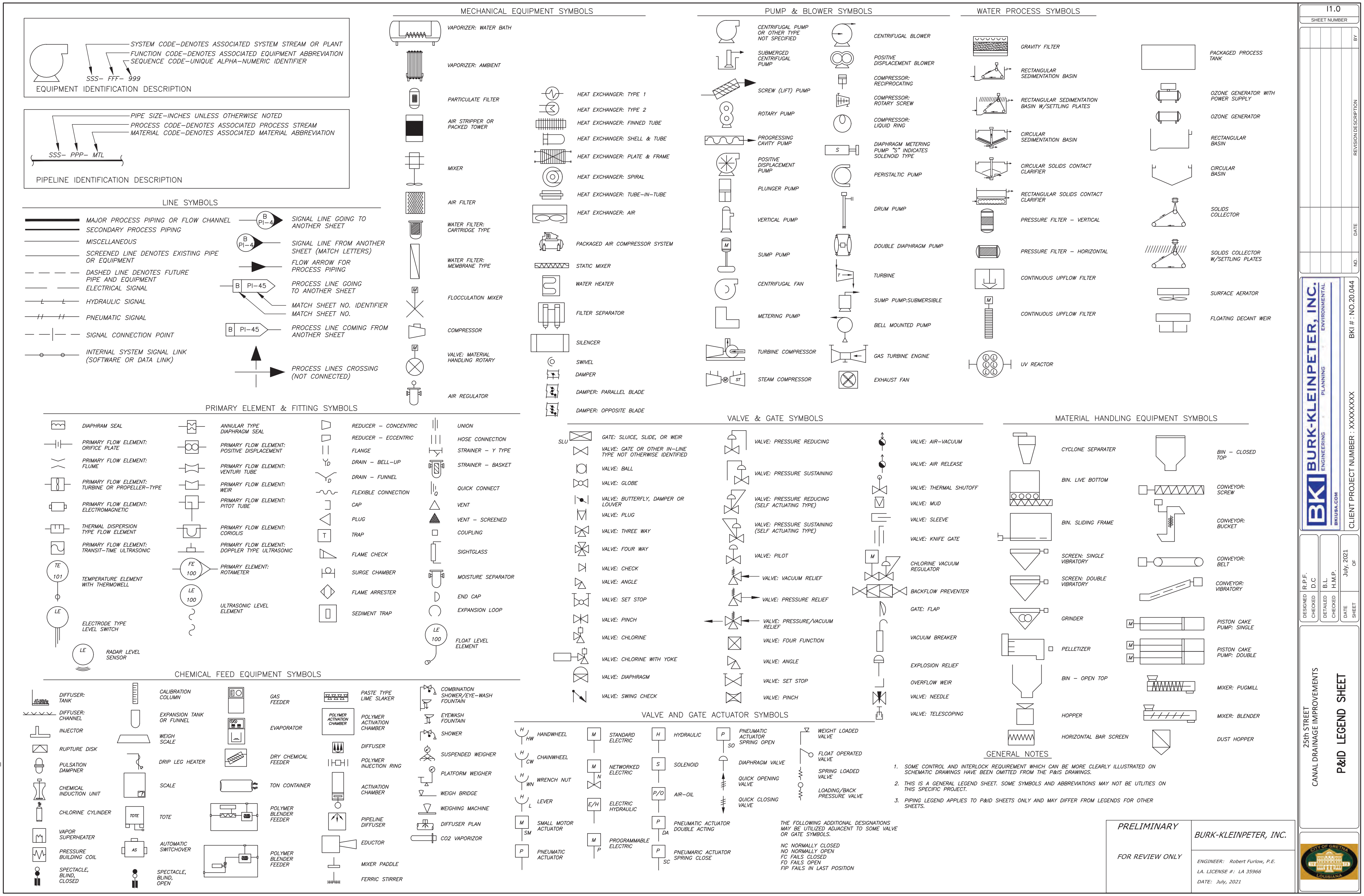
BURK-KLEINPETER, INC. ENGINEERING ENVIRONMENTAL PLANNING
CLIENT PROJECT NUMBER : XXXXXXXX BKI # : NO.20,044

DESIGNED R.P.F.
CHECKED D.C.
DETAILED B.L.
CHECKED H.M.P.
DATE July, 2021
SHEET OF

25th STREET
CANAL DRAINAGE IMPROVEMENTS
SUGGESTED BYPASS PUMPING PLAN

7/6/2021

P:\NO,20,XXX\NO,20,044\02_DESIGN\02 MECHANICAL\01 DRAWINGS\M5,0-BYPASS PUMPING PLAN



7/7/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWING\SIPID1.0-1.3

INSTRUMENT TAG NUMBERS

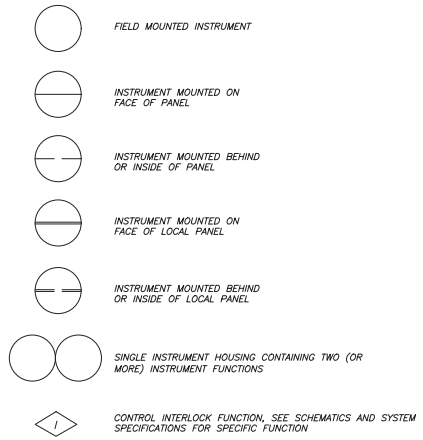
MEANINGS OF IDENTIFICATION LETTERS

LETTER	FIRST LETTER		SECOND LETTER		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	CLOSED
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		EMERGENCY STOP
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME–SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY	MOMENTARY			MIDDLE OR INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		OPEN
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE OR TOTALIZE	INTEGRATE OR TOTALIZE		
R	RADIATION		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, DAMPER, OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE			RELAY OR COMPUTE	
Z	POSITION, DIMENSION			DRIVE, ACTUATOR OR UNCLASSIFIED FINAL CONTROL ELEMENT	

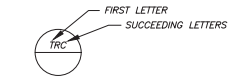
GENERAL NOTES

1. IN GENERAL, THE P&ID SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION, STANDARD PRACTICE ISA–S5.1. SOME MODIFICATIONS, ADDITIONS, AND ALTERATIONS HAVE BEEN MADE AS NEEDED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
2. SOME CONTROL AND INTERLOCK REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATIC DRAWINGS HAVE BEEN OMITTED FROM P&ID DRAWINGS.
3. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT. PIPING AND EQUIPMENT LEGEND APPLIES TO P&ID SHEETS.
4. PIPING LEGEND APPLIED TO P&ID SHEETS ONLY AND MAY DIFFER FROM LEGENDS FOR OTHER SHEETS.

GENERAL INSTRUMENT SYMBOLS



HAND SWITCH DESIGNATIONS



HAND SWITCH DESIGNATIONS

HOA	HAND–OFF–AUTO
LR	LOCAL REMOTE
OC	OPEN–CLOSE
OO	ON–OFF
LOR	LOCAL–OFF–REMOTE
OOA	ON–OFF–AUTO
OCR	OPEN–CLOSE–REMOTE
OOR	ON–OFF–REMOTE
FR	FORWARD–REVERSE

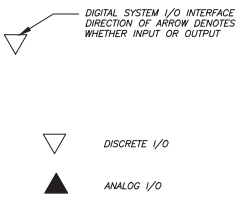
TRANSDUCER & CONVERTER DESIGNATION

E	VOLTAGE
FSK	FREQUENCY SHIFTING KEY
H	HYDRAULIC
I	CURRENT
P	PNEUMATIC PULSE
PD	PULSE DURATION
PF	PULSE FREQUENCY
R	RESISTANCE (ELECTRICAL)
EXAMPLE:	I/P = CURRENT TO PNEUMATIC TRANSDUCER

POWER SUPPLY ABBREVIATIONS

AS	AIR SUPPLY
ES	ELECTRIC SUPPLY
GS	GAS SUPPLY
HS	HYDRAULIC SUPPLY
NS	NITORGEN SUPPLY
SS	STEAM SUPPLY
WA	WATER SUPPLY

DIGITAL SYSTEMS INTERFACE SYMBOLS



INSTRUMENT DESIGNATIONS

CH_4	METHANE
CL_2	CHLORINE RESIDUAL
CO_2	CARBON DIOXIDE
DO	DISSOLVED OXYGEN
MCC	MOTOR CONTROL PANEL
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
O_2	OXYGEN
pH	pH CELL
K	GAIN OR ATTENUATE (INPUT:OUTPUT)
–K	GAIN AND REVERSE
Δ	SUBTRACT (DIFFERENCE)
>	HIGH–SELECT
<	LOW–SELECT

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

I1.1
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

BKI # : NO.20.044

CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED	R.P.F.		
CHECKED	D.C.		
DETAILED	B.L.		
CHECKED	H.M.P.		
DATE	July, 2021		
SHEET	0		

25th STREET
CANAL DRAINAGE IMPROVEMENTS

P&ID LEGEND SHEET

7/7/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWING'S\PID1.0-1.3

SYSTEM CODE ABBREVIATIONS

ACETIC ACID	ACE	FLOCCULATION	FLC	RESIDUALS	RES
ACETYLENE	ACT	GASEOUS OXYGEN	GOX	RETURN ACTIVATED SLUDGE	RAS
ACTIVATED CARBON – GRANULAR	GAC	GASOLINE	GSL	REVERSE OSMOSIS	ROS
AERATION AIR/PROCESS AIR	AIR	GREASE	GRS	SCREENINGS	SCR
AERATION SYSTEM	AER	GRIT	GRT	SECONDARY CLARIFICATION	SCL
AIR WASH	ARW	HELIUM	HEL	SECONDARY SCUM	SSC
ALUMINUM SULFATE	ALS	HYDRAULIC FLUID	HFL	SEPTAGE	SEP
AMMONIUM SULFATE	NSO4	HYDROCHLORIC ACID	HCL	SETTLED WATER	SET
ANHYDROUS AMMONIA	NH3	HYDROFLUOSILIC ACID (FLOURIDE)	HFS	SEWAGE	SEW
ANTI–SEALANT	AS	HYDROGEN	HYD	SEQUENCING BATCH REACTOR	SBR
AQUA AMMONIA	NHOH	HYDROGEN PEROXIDE	PER	SODA ASH	NAC
ARGON	ARG	INCINERATION	INC	SODIUM ALUMINATE	NAL
ASH	ASH	INFLUENT PIPING	INFP	SODIUM BICARBONATE	NBC
BACKWASH	BW	INTAKE	INT	SODIUM BISULFITE	NHS
BALLASTED FLOCCULATION	BAL	LAGOON STORAGE	LAG	SODIUM CHLORIDE	NCL
BIOSOLIDS	BIO	LAND APPLICATION	LAP	SODIUM CHLORITE	NCL2
BIOTOWER	BIT	LIME – HYDRATED	CAH	SODIUM FLOURIDE	NAF
BLENDED SLUDGE	BLS	LIME – QUICKLIME	CAO	SODIUM HEXAMETAPHOSPHATE	NAX
BNR	BNR	LIME STABILIZATION	LIM	SODIUM HYDROXIDE	NAOH
BRINE	BRN	LIQUID OXYGEN	LOX	SODIUM HYPOCHLORITE	NOCL
CALCIUM HYPOCHLORITE	CACL	LP GAS OR PROPANE GAS	LPG	SODIUM SILICOFLOURIDE	NASF
CALCIUM THIOSULFATE	CATS	MAGNESIUM HYDROXIDE	MGOH	STEAM	STM
CARBON DIOXIDE	CO2	MEMBRANE	MEM	STORM SEWER	STS
CARBON SLURRY	CAS	METHANE GAS	MEG	STORM WATER	STW
CHLORINE	CL2	METHANOL	MTH	SULFUR DIOXIDE	SO2
CHLORINE DIOXIDE	CLO2	MIXED LIQUOR	MXL	SULFURIC ACID	HSO4
CLARIFIERS	CLR	NATURAL GAS	NG	SURFACE WASH	SW
COAGULATION	COA	NITROGEN	NIT	TERTIARY TREATMENT	TERT
COMPRESSED AIR – INSTRUMENT	CAI	NITROUS OXIDE	NIO	THICKENED PRIMARY SLUDGE	TPRS
COMPRESSES AIR – SERVICE	CMS	ODOR CONTROL	ODC	THICKENED WASTE ACTIVATED SLUDGE	TWAS
COPPER SULFATE	CUS	OIL	OIL	THICKENING	THCK
CORROSION INHIBITOR	CI	OIL – FUEL	FO	TREATED WATER	TW
DECHLORINATION	DCL	OZONE	OZN	TRICKLING FILTER	TF
DETERGENT	DET	OZONE DESTRUCT	OZD	ULTRAVIOLET	UV
DEWATERING	DWT	PHOSPHATE	PPP	VACUUM	VAC
DIESEL FUEL	FUE	PHOSPHORIC ACID	PO4	WATER, TO WASTE	WW
DIGESTER GAS	DGG	POLYALUMINUM CHLORIDE	PCL	WASTE ACTIVATED SLUDGE	WAS
DIGESTER GAS MIXING	DGM	POLYMER, COAGULANT	POLY	WASTE WASH WATER	WWW
DIGESTER SLUDGE	DGS	POLYMER, FILTER AID	POLF	WATER – CONDENSATE	CDW
DIGESTION – AEROBIC	DGA	POTASSIUM PERMANGENATE	KMN	WATER – COOLING	COLW
DIGESTIONS – ANAEROBIC	DIG	POWDERED ACTIVATED CARBON	PAC	WATER – DISTILLED WATER	DW
DISINFECTION CONTACT BASIN	DCB	PRE–AERATION	PAR	WATER – FIRE	FW
DISSOLVED AIR FLOTATION	DAF	PRESEDIMENTATION	PSD	WATER – IRRIGATION	IRW
DRAINAGE	DRN	PRIMARY CLARIFICATION	PRC	WATER – OZONATED	OZW
EFFLUENT PUMPING	EFP	PRIMARY SCUM	PSC	WATER – SEAL	SWT
ENGINE EXHAUST	EXH	PRIMARY SLUDGE	PRS	WATER – WATER HEATING	HW
EQUALIZATION BASIN	EQB	RAW WASTEWATER PUMPING	WWP	WATER DEIONIZED	DEIW
FERRIC CHLORIDE	FEC	RAW WATER PUMPING	RWP	WATER NON–POTABLE	NPW
FERRIC SULFATE	FES	RAW WATER STORAGE	RWS	WATER PLANT EFFLUENT	PEW
FERROUS CHLORIDE	FRC	RECIRCULATED SLUDGE	RCS	WATER POTABLE	PW
FERROUS SULFATE	FRS	RECLAIMED WATER	RCW	WATER RAW	RW
FILTRATION	FLT	REFRIGERANT	REF	WET WEATHER TREATMENT	WWT
				ZINC ORTHOPHOSPHATE	ZOP

FUNCTION CODE ABBREVIATIONS

ACTIVATION CHAMBER	AC	CRANE	CRN	FLOCCULATOR, HORIZONTAL	FLCH	OZONE POWER SUPPLY UNIT	PSU	SCUM WEIR – ROTATING	SCW	VALVE, GENERAL OR UNSPECIFIED	V
ADJUSTABLE FREQUENCY DRIVE	AFD	CRANE, GANTRY	CRG	FLOCCULATOR, VERTICAL	FLCV	PARTICLE COUNTER	PCN	SEPARATOR, MOISTURE OR CYCLONE	SEP	VALVE, GLOBE	VGL
AERATOR, COARSE BUBBLE DIFFUSED	ACD	CRANE, JIB	CRJ	FLOOR DRAIN	FD	PELLETIZER	PLT	SIGHT GLASS – TALL	SGT	VALVE, INDUSTRIAL BUTTERFLY	VBI
AERATOR, FINE PORE DIFFUSED	AEFD	CRANE, PORTABLE GANTRY	CRP	FLOW SPLITTER	FS	PENSTOCK	PS	SIGHT GAUGE	SG	VALVE, KNIFE GATE	VKG
AERATOR, FLOATING SURFACE	AFS	CRANE, TRAVELLING BRIDGE	CRT	FLUME, PARSHALL	FE	PIPE	PIPE	SILENCER	SIL	VALVE, MATERIAL HANDLING ROTARY	VMR
AERATOR, SURFACE	AES	CYLINDER, CHLORINE	CYL	FOAM SEPARATOR	FMSP	PLATE SETTLER	PSE	SLUDGE COLLECTOR, CIRCULAR	SLC	VALVE, MUD	VMD
AFTERCOOLER	AFC	COVER, FLOATING DIGESTER	DCG	GAS FLARE	GF	POLYMER RING	PIR	SLUDGE COLLECTOR, SEC CLARIFIERS	SCS	VALVE, NEEDLE	VND
AIR DRYER	AD	COVER, GAS HOLDER	DCM	GAS WATER HEATER	GWH	POLYMER INJECTOR RING	INJ	SLUDGE COLLECTOR, SOLIDS CONTACT	SSC	VALVE, PILOT	PTV
AIR FILTER	AF	DEWATERING SCREW	DWS	GATE, FLAP	GFL	PRESSURE BUILDING COIL	PBC	SLUDGE COLLECTOR, STRAIGHT LINE	SLCS	VALVE, PINCH	VPN
AIR RECIEVER OR REGULATOR	AR	DIAPHRAGM SEAL	DPS	GATE, SLIDE	GSD	PULSATION DAMPNER	PD	SOLIDS BLENDER – INLINE	SBL	VALVE, PISTON OPERATED	VPO
AIR SEPARATOR	AS	DIFFUSER, CHANNEL	DIF	GATE, SLUICE	GSC	PUMP, AIR DIAPHRAGM	PAD	STRAINER	STR	VALVE, PLUG	VPG
AIR STRIPPER	AST	DIFFUSER, BANK	DFB	GATE, WEIR	G	PUMP, CENTRIFUGAL	PCL	STRAINER BASKET TYPE	STRB	VALVE, PRESSURE REDUCING	VPR
BACKFLOW PREVENTER	BFP	DIFFUSER, PIPELINE	DIP	GENERATOR, ENGINE (BACKUP POWER)	GEN	PUMP, CENTRIFUGAL DRUM	CTDP	STRAINER Y TYPE	STRY	VALVE, PRESSURE SUSTAINING	VPC
BASIN, AERATION	BSNA	DIFFUSER, TANK	DIR	GRAVITY BELT THICKENER	GBT	PUMP, DIAPHRAGM METERING	PDM	SURGE CHAMBER	SRCH	VALVE, PRESSURE RELIEF	VSP
BASIN, ANOXIC, OXIC	BSNX	DIGESTER, AEROBIC	DGE	GRAVITY THICKENER	GVT	PUMP, HEATING WATER	PHW	TANK, ABOVE GROUND STORAGE	TSA	VALVE, PRESSURE/VACUUM RELIEF	VSPV
BASIN, BNR	BNR	DIGESTER, ANAEROBIC PRIMARY	DGAP	GRINDER PULVERIZER	GRD	PUMP, HORIZONTAL END SUCTION	PHE	TANK, AMMONIA STORAGE	TCN	VALVE, PROCESS	VP
BASIN, CHLORINE CONTACT	BSNC	DIGESTER, ANAEROBIC SECONDARY	DGAS	GRIT BASIN, VORTEX TYPE	GRB	PUMP, HORIZONTAL SPLIT CASE	PSC	TANK, CRYOGENIC STORAGE	TCR	VALVE, RESILIENT SEATED GATE	VGR
BASIN, OXIC	BSND	DISINFECTION UNIT, UV	DSUV	GRIT SCREW CONCENTRATOR	GRV	PUMP, PERISTALTIC	PPS	TANK, DOUBLE WALL	DWT	VALVE, SAFETY	VS
BELT FILTER PRESS	BFPS	DISSOLVED AIR FLOCCULATION THICKENER	DAF	HEAT EXCHANGER	HEX	PUMP, PLUNGER	PPL	TANK, ELEVATED STORAGE	TSE	VALVE, SLEEVE	VSLV
BIN (STORAGE – ALL TYPES)	B	DUST COLLECTOR	DUC	HOIST, CHAINS	HSC	PUMP, PROGRESSING CAVITY	PPC	TANK, EXPANSION	TX	VALVE, SOLENOID	VSL
BIN ACTIVATOR	BA	EDUCTOR	EDC	HOIST, WIRE ROPE	HSE	PUMP, SCREW ENCLOSED	PSE	TANK, FRP CHEMICAL STORAGE	TCF	VALVE, THERMAL SHUTOFF	VTS
BLOWER, CENTRIFUGAL	BLC	ELECTRICAL EQUIPMENT, GENERAL	EQPE	HYDRANT, FIRE	HYDF	PUMP, SCREW OPEN	PSE	TANK, GENERAL OR UNSPECIFIED	TNK	VALVE, THREE WAY	VTM
BLOWER, POSITIVE DISPLACEMENT	BL	EMERGENCY EYE WASH FOUNTAIN	EWSH	HYDRANT, WALL	HYDW	PUMP, SUBMERSIBLE	PCL	TANK, METHANOL	TCP	VALVE, VACUUM BREAKER	VVB
BUILDING SERVICES EQUIPMENT	EQPB	EMERGENCY SHOWER	ESHR	HYDROCYCLONE	HYC	PUMP, SUBMERSIBLE CHOPPER	PCH	TANK, CHLORINE CONTACTOR	TCS	VALVE, V–PORT BALL	VBP
CALIBRATION COLUMN	CCLM	EMERGENCY SHOWER & EYEWASH	EMEW	INJECTOR, CHEMICAL	INJ	PUMP, SUMP	PSP	TANK, FLAT TOP STEEL WATER	TSW	VAPORIZER	VAP
CENTRIFUGE	CFG	EQUIPMENT, BUILDING SERVICED	EQPB	LIME SLAKER	LS	PUMP, GENERAL	P	TRAP, DRIP	TRP	WEIR, CIPOLETTI	WC
CHEMICAL FEEDER	CHF	EQUIPMENT, GENERAL OR UNSPECIFIED	EQPT	MEMBRANE	MFM	PUMP, VERTICAL DIFFUSION VANE	PVD	TRAP, SEDIMENT	TRPS	WEIR, RECTANGULAR	WR
CHLORINE GAS SCRUBBER	CGS	EMERGENCY EYEWASH	EEW	MEMBRANE, MICROFILTRATION	MBMF	PUMP, VERTICAL END SUCTION	PVE	TURBINE	TB	WEIR, V–NOTCH	WV
CLARIFIER, PRIMARY	PCLR	EMERGENCY SHOWER	ES	MEMBRANE, NANOFILTRATION	MBNF	PUMP, VERTICAL WET PIT	PVW	UNINTERRUPTABLE POWER SUPPLY	UPS	WEIR, HORIZONTAL COLLECTOR	WLHC
CLARIFIER, SECONDARY	SCLR	EMERGENCY SHOWER & EYEWASH	ESE	MEMBRANE, REVERSE OSMOSIS	MBRO	RESERVOIR	RSV	VALVE, AWWA BALL	VBM	WELL, VERTICAL	WLV
CLASSIFIER, GRIT	CGR	EVAPORATOR	EV	MEMBRANE, ULTRAFILTRATION	MBUF	RESIDUAL COLLECTION	RCD	VALVE, AWWA BUTTERFLY	VBF		
CLEARWELL	CW	EXPANSION CHAMBER	EXC	MIXER, CARBON	MXC	ROTAMETER	RM	VALVE, AIR/VACUUM RELEASE	VAVR		
COMPRESSOR	CMP	FAN, CENTRIFUGAL	FAN	MIXER, FLOCCULATION	FLM	RUPTURE DISK	RD	VALVE, BACKFLOW PREVENTER	VBFP		
COMPRESSOR, LIQUID RING	CMB	FILTER GAS PARTICULATE	FTSP	MIXER, IN–LINE	MXI	SAMPLER	SAMP	VALVE, CHECK	VCK		
COMPRESSOR, ROTARY SCREW	CMR	FILTER, CARTRIDGE TYPE	FLC	MIXER, PUGMILL	MXPG	SCALE, WEIGHT	SC	VALVE, CONE	VCN		
CONTAINER, PROCESS	CTR	FILTER, UNDERDRAINS OR PRESSURE	FLT	MIXER, RAPID	MXR	SCREEN, INLINE SLUDGE	SCRI	VALVE, DIAPHRAGM OPERATED	VDB		
CONVEYOR, BELT	COB	FILTER, SURFACE WASH EQUIPMENT	FSW	MIXER, STATIC	MXS	SCREEN, MANUAL OR MECH CLEANED BAR	SCRA	VALVE, DOUBLE DISK GATE	VGD		
CONVEYOR, SCREW	COS	FILTER, WASTE	FTW	MIXER, SUBMERSIBLE, PROP OR BLENDER	MXP	SCREEN, STEP	SCRS	VALVE, ECCENTRIC PLUG	VPL		
COVER, ALUMINUM DOME BASIN	CFA	FITTING, MISCELLANEOUS	FTTNG	OVERFLOW ROOF DRAIN	ORD	SCREEN, TRAVELLING WATER	SCT	VALVE, EXPANSION RELIEF	VER		
COVER, FIXED DIGESTER	CFD	FLAME ARRESTER	FAR	OZONE DESTRUCT UNIT	ODU	SCRUBBER	SCU	VALVE, FOUR WAY	VV		
COVER, MEMBRANE	CFL	FLAME CHECK	FC	OZONE GENERATOR	OGEN	SCUM COLLECTOR	SMC	VALVE, GATE	VG		

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: Robert Furlow, P.E.

LA. LICENSE #: LA 35966

DATE: July, 2021

I1.2

SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.

ENGINEERING PLANNING ENVIRONMENTAL

BKIUSA.COM

BKI #: NO.20.044

CLIENT PROJECT NUMBER: XXXXXXXX

DESIGNED	R.P.F.	DATE	July, 2021
CHECKED	D.C.	SHEET	G-2
DETAILED	B.L.		
CHECKED	H.M.P.		

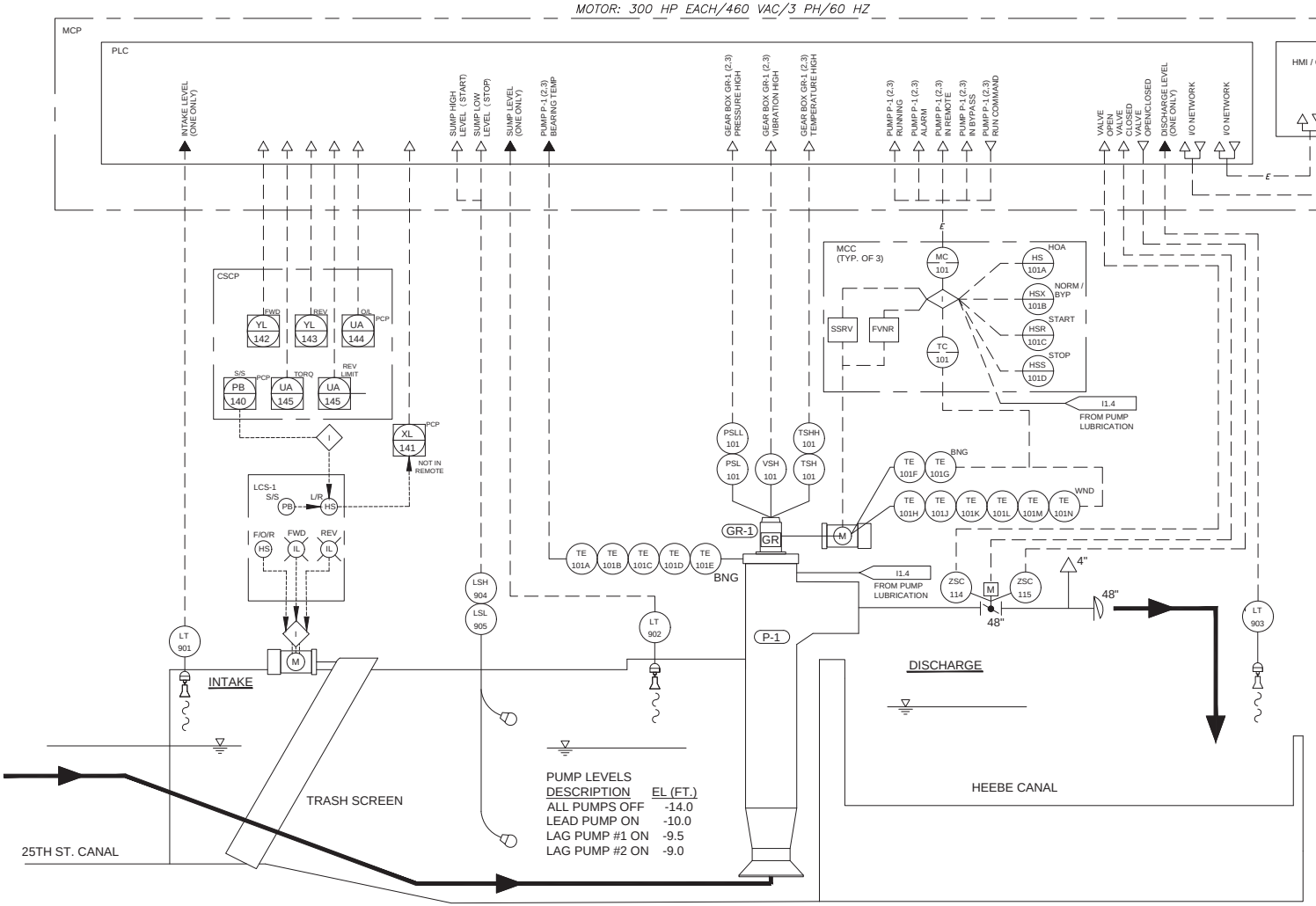
25th STREET CANAL DRAINAGE IMPROVEMENTS

P&ID LEGEND SHEET

CITY OF SLIDELL LOUISIANA

7/7/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWING'S\PID1.0-1.3



NOTES:

1. THIS DRAWING IS TYPICAL FOR PUMPS 1, 2 & 3 UNLESS OTHERWISE NOTED. ONLY EQUIPMENT FOR A SINGLE PUMP IS SHOWN. FIRST DIGIT OF INSTRUMENT NUMBER REPRESENTS PUMP NUMBER, EXAMPLE: 101 SERIES PUMP P-1, 201 SERIES PUMP P-2, ETC.
2. REFER TO MANUFACTURER SPECIFICATIONS FOR A COMPLETE LISTING OF VARIABLES AVAILABLE OVER THE CONTROL NETWORK.
3. IF BEARING TEMPERATURES EXCEED 200F° MAIN MOTOR SHALL SHUT DOWN.
4. IF MOTOR WINDINGS TEMPERATURES EXCEED 302° F MAIN MOTOR WILL SHUT DOWN. ALSO IF MOTOR BEARING TEMPERATURES EXCEED 212° F MAIN MOTOR SHALL SHUT DOWN.
5. IF LUBRICATION OIL EXCEEDS 200°F MAIN MOTOR SHALL SHUT DOWN (NORMAL MODE ONLY).
6. IF VIBRATION HI ALARM OCCURS MAIN MOTOR SHALL SHUT DOWN.
7. ONLY ONE EACH OF LEVEL DEVICES (900 SERIES TAGS) FOR ENTIRE STATION.

PRELIMINARY
FOR REVIEW ONLY

BURK-KLEINPETER, INC.
ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

I1.3
SHEET NUMBER

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM
BKI # : NO.20.044

CLIENT PROJECT NUMBER : XXXXXXXX

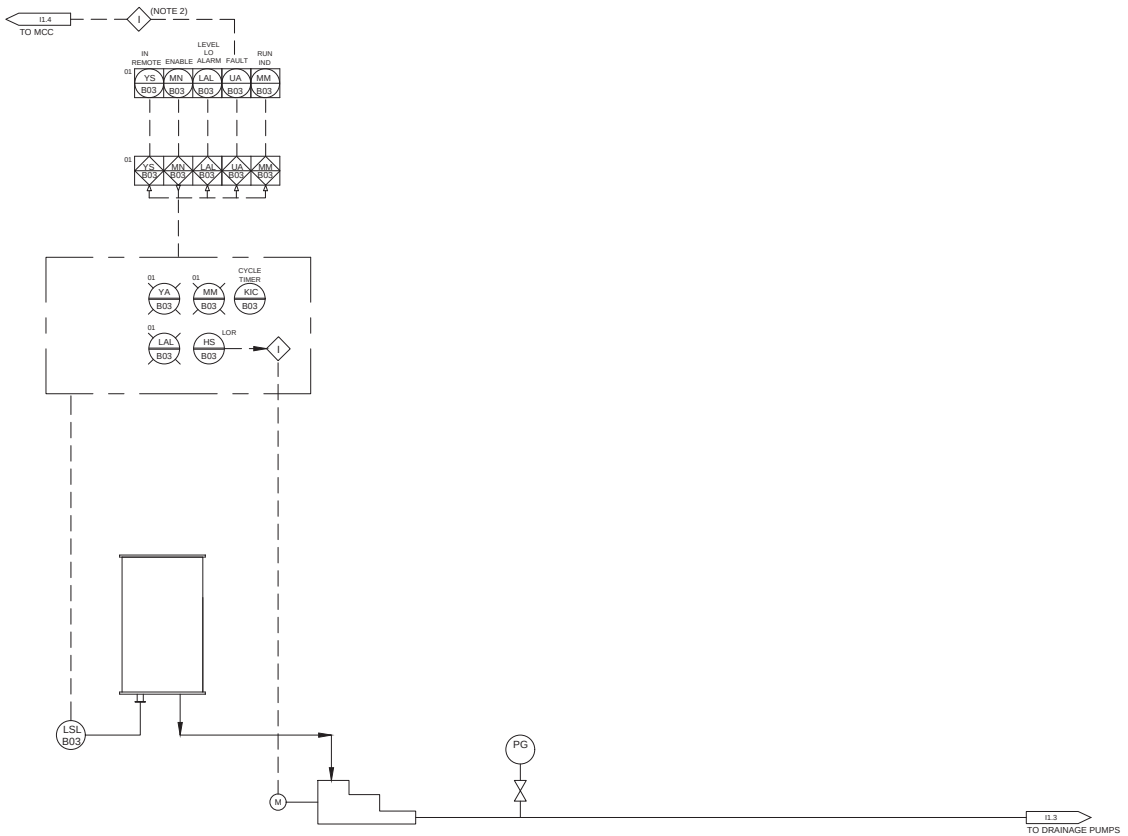
DESIGNED R.P.F.
CHECKED D.C.
DETAILED B.L.
CHECKED H.M.P.
DATE July, 2021
SHEET

25th STREET
CANAL DRAINAGE IMPROVEMENTS

PUMP DRAINAGE SYSTEM P&ID

7/7/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWINGS\PID1.0-1.3



NOTES:

1. THIS DRAWING IS TYPICAL FOR ALL STORM PUMPS 1 THRU 3 COMPARTMENTS. THEREFORE, ONLY EQUIPMENT FOR A SINGLE COMPARTMENT IS SHOWN.
2. IF PUMP BEARING LUBRICATION FAILS TO OPERATE MAIN MOTOR PUMP WILL SHUTDOWN (NORMAL MODE ONLY)

PRELIMINARY

FOR REVIEW ONLY

BURK-KLEINPETER, INC.

ENGINEER: Robert Furlow, P.E.
LA. LICENSE #: LA 35966
DATE: July, 2021

I1.4
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKIUSA.COM

CLIENT PROJECT NUMBER : XXXXXXXX
BKI # : NO.20.044

DESIGNED	R.P.F.	
CHECKED	D.C.	
DETAILED	B.L.	
CHECKED	H.M.P.	
DATE	July, 2021	
SHEET	of	

25th STREET
CANAL DRAINAGE IMPROVEMENTS

PUMP LUBRICATION P&ID

CITY OF HOUMA
LOUISIANA

7/7/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\02 MECHANICAL\01 DRAWINGS\PID1.0-1.3

SYMBOL SCHEDULE

LIGHTING SYMBOLS

CEILING	WALL	DESCRIPTION
		LED LUMINAIRE. LETTER DENOTES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.
		LED LUMINAIRE. LETTER DENOTES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.
		LED LUMINAIRE. LETTER DENOTES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.
		"EXIT" LUMINAIRE. ARROWS ON FACE INDICATE DIRECTION. SEE LUMINAIRE SCHEDULE.
		EMERGENCY BATTERY PACK LUMINAIRE. LETTER DENOTES LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE
F#		POLE MOUNT LUMINAIRE WITH POLE. "F#" = LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.
F#		POLE MOUNT LUMINAIRE WITH POLE. "F#" = LUMINAIRE TYPE. SEE LUMINAIRE SCHEDULE.

POWER SYMBOLS

FLOOR	WALL	CEIL.	DESCRIPTION
			DUPLEX OUTLET.
			QUAD OUTLET.
			SPECIAL OUTLET. LETTER DENOTE RECEPTACLE TYPE

SURFACE	FLUSH	
		BRANCH CIRCUIT PANELBOARD.
		DISTRIBUTION PANELBOARD.

	DISCONNECT SWITCH. FUSED UNLESS OTHERWISE NOTED.
	COMBINATION STARTER/DISCONNECT SWITCH. FUSED UNLESS OTHERWISE NOTED.
	MOTOR, SINGLE-PHASE.
	MOTOR, THREE-PHASE.
J J	JUNCTION BOX.
J	JUNCTION BOX, WALL MOUNTED.
J	JUNCTION BOX WITH WHIP TO EQUIPMENT.
T	TRANSFORMER

REFERENCE SYMBOLS

	DESCRIPTION
1	SPECIFIC NOTE REFERENCE.
1	CALL OUT REFERENCE.
100	FEEDER REFERENCE.
1	REVISION REFERENCE.
A E1 E2	DETAIL REFERENCE: "A" DENOTES DETAIL "E1" DENOTES SHEET NUMBER WHERE DETAIL IS TAKEN "E2" DENOTES SHEET NUMBER WHERE DETAIL IS DRAWN

WIRING SYMBOLS

	DESCRIPTION
	WIRING (IN CONDUIT) CONCEALED IN CEILING OR WALL.
	WIRING (IN CONDUIT) RUN EXPOSED.
	WIRING (IN CONDUIT) CONCEALED IN OR UNDER FLOOR.
UG	WIRING UNDERGROUND (SITE WORK).
OH	WIRING OVERHEAD (SITE WORK).
L:1,3	HOMERUN TO PANELBOARD WITH NOMENCLATURE (LETTERS), CIRCUIT NUMBERS (NUMBERS), NUMBER OF CIRCUITS (NUMBER OF ARROWS), EACH CIRCUIT TO HAVE GROUND.
	CORD WIRE TO EQUIPMENT AND PLUG.
	GROUND CONNECTION
S^a	SINGLE-POLE TOGGLE SWITCH. LETTER DENOTES FIXTURE CONTROLLED.
S^a_2	DOUBLE-POLE TOGGLE SWITCH. LETTER DENOTES FIXTURE CONTROLLED.
S^a_3	THREE-WAY TOGGLE SWITCH. LETTER DENOTES FIXTURE CONTROLLED.
S_M	SWITCH, MOTOR RATED.
S_T	DIGITAL TIMER SWITCH
P	PHOTO CELL.
	CONDUIT TURNED UP.
	CONDUIT TURNED DOWN.
	CONDUIT STUBBED OUT.
	PULL BOX. NEMA CONFIGURATION AS NOTED.
PANEL	PANELBOARD.
	CURRENT TRANSFORMER.
	POTENTIAL TRANSFORMER
	GROUND SYSTEM TEST WELL WITH GROUND ROD CONNECTION
	EXOTHERMIC WELD GROUND ROD CONNECTION
	EXOTHERMIC WELD CONNECTION
	EMERGENCY STOP SWITCH
HS	HAND STATION (HOA, ETC.)

ONE-LINE SYMBOLS

	DESCRIPTION
M	METER ENCLOSURE.
M	METER.
	CIRCUIT BREAKER.
	SWITCH, SINGLE POLE-SINGLE THROW.
	FUSE.
	FUSE.
	FUSED SWITCH.
	FUSED SWITCH.
	RELAY, NORMALLY OPEN.
	RELAY, NORMALLY CLOSED.
	PUSHBUTTON, NORMALLY OPEN.
	PUSHBUTTON, NORMALLY CLOSED.
	DRY TYPE TRANSFORMER.
	FLOAT LEVEL SWITCH, NORMALLY CLOSE (RISING OPEN)
	FLOAT LEVEL SWITCH, NORMALLY OPEN (RISING CLOSE)
	TIME DELAY RELAY CONTACTS N.O. CONTACT, TIME DELAYED CLOSING
	TIME DELAY RELAY CONTACTS N.O. CONTACT, CLOSE ON ENERGIZATION, TIME DELAYED OPEN
TR TS	TIMING RELAY.
CR#	CONTROL RELAY.
AR	ALARM RELAY.
HR	HEATER RELAY.
A	PILOT LIGHT, LETTER INDICATES COLOR G=GREEN R=RED A=AMBER
A	AMP METER - PANEL MOUNT
M1	MOTOR STARTER CONTACTOR
	MOTOR OVERLOAD
	SILICON CONTROL RECTIFIER/DIODE
	GENERATOR

PRELIMINARY

PRELIMINARY	BURK-KLEINPETER, INC.
FOR REVIEW ONLY	ENGINEER: RAY NOLAN, PE LICENSE #: LA 27697 DATE: 06/2021

E1.0
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
www.bkiweb.com

BKI #: NO.20.044
CLIENT PROJECT NUMBER: XXXXXXXX

DESIGNED	J.B.M.	DATE	June, 2021
CHECKED	H.M.P.	SHEET	OF
DETAILED	C.V.		
CHECKED	J.B.M.		

25th STREET
CANAL DRAINAGE IMPROVEMENTS
SYMBOL SCHEDULE

6/27/2021

\\BK-NOLA-FS01\BKNO\PROJ\NO.20.XXX\NO.20.044\02_DESIGN\03 ELECTRICAL\01 DRAWING'S\NO.20.044-E1.0

LUMINAIRE SCHEDULE

TAG	NOTES	DESCRIPTION	CATALOG	VOLTAGE	LAMP
F1	1 5	14" LED HIGH BAY, CLEAR REFLECTOR, SUSPENSION MOUNT WITH 1/2" THREADED HUB	COOPER METALUX UHB LED	UNV	24,000 LUMENS 4000K
F2	1,4 8, 9, 10	YOKE 3.5" SLIPFITTER LED FLOODLIGHT, WIDE DISTRIBUTION, TWISTLOCK PHOTOCONTROL	COOPER LUMARK NFFLD–L	UNV	33,900 LUMENS
F3	1,2	YOKE 3.5" SLIPFITTER LED FLOODLIGHT, WIDE DISTRIBUTION, TWISTLOCK PHOTOCONTROL	COOPER LUMARK NFFLD–L	UNV	33,900 LUMENS
F4	6	2–HEAD LED EMERGENCY LIGHT, SELF–DIAGNOSTICS, REMOTE CAPACITY, WET LOCATION, NEMA 4X	SURE–LITES CLASS SELIN	UNV	309 LUMENS
F5		4', LED VAPORTIGHT INDUSTRIAL, SURFACE MOUNT, GENERAL DISTRIBUTION	COOPER METALUX 4VT3 SERIES	UNV	LED 5.0 4000 LUMENS 4000K
F6	1,3 4,6 10	LED TRAPEZOID, TYPE II DISTRIBUTION, GREY FINISH, BUTTON TYPE PHOTOCONTROL, TAMPER RESISTANT FASTENERS	COOPER McGRAW–EDISON IST SERIES	120	58.2W 1000mA DRIVE 4000K
F7		2'X4' LED, LAY–IN TROFFER, ALUMINUM,	COOPER METALUX 24GR LED SERIES	UNV	LED 5.0 4800 LUMENS 4000K
F7A	7	2'X4' LED LAY–IN TROFFER, ALUMINUM, WITH BATTERY PACK	COOPER METALUX 24GR LED SERIES	UNV	LED 5.0 4800 LUMENS 4000K
EX		POLYCARBONATE EXIT, RED LED, SELF POWERED, WHITE, SELF DIAGNOSTICS, CEILING MOUNTED	SURE–LITES LPX SERIES OR EQUAL	120	INCLUDED

LUMINAIRE SCHEDULE NOTES

1. UL LISTED AND APPROVED FOR WET LOCATIONS.
2. 30' HOT–DIPPED GALVANIZED STEEL ROUND TAPERED POLE. .18 MINIMUM THICKNESS WITH 150 MPH WIND LOAD RATING.
3. EMERGENCY LED COLD TEMPERATURE POWER PACK (UL924 LISTED) –20°C/–4°F STANDARD WITH BACK BOX MATCHING HOUSING FINISH.
4. COORDINATE BUILDING PENETRATIONS WITH EXTERIOR BUILDING SURFACE MATERIALS. PROVIDE MANUFACTURES LISTED PENETRATION SEALS. ALL PENETRATIONS SHALL BE MADE WATERPROOF. COORDINATE WITH OTHER DIVISIONS (1–15) REQUIREMENTS.
5. MOUNT @ ELEVATION 18'.
6. MOUNT @ 8'–0" A.F.F. TO BOTTOM OF FIXTURE.
7. 90 MINUTE EMERGENCY OPERATION PROVISION REQUIRED WITH ACCESSIBLE TEST SWITCH. UNLESS OTHERWISE NOTED PROVIDE 1100 LUMEN BATTERY PACK MANUFACTURED BY BODINE WITH 5 YEAR FULL REPLACEMENT WARRANTY. TEST SWITCH SHALL BE CEILING MOUNTED WITH BACKBOX AND COVER PLATE ADJACENT TO FIXTURE IN INTERIOR APPLICATIONS AND FIXTURE MOUNTED FOR EXTERIOR APPLICATIONS (EXTERIOR FIXTURE TEST SWITCHES SHALL BE WEATHERPROOF). ALL LIGHTING FIXTURES WITH BATTERY PACKS FOR EMERGENCY OPERATION REQUIRE A SEPARATE, NON–SWITCHED, HOT CONDUCTOR FOR OPERATION. DISCONNECTING POWER TO BATTERY PACKS WILL CAUSE THEM TO DISCHARGE.
8. PROVIDE HOT DIP GALVANIZED WALL MOUNTED RIGHT ANGLE PIPE BRACKET. BRACKET SHALL BE MOUNTED ON A FLAT SURFACE OF WALL PANEL.
9. MOUNT @ 20'–0" AFF TO CENTER OF PIPE BRACKET.
10. PROVIDE BLOCKING, BRACING, AND SUPPORTS AS NEEDED ON INTERIOR OF BUILDING TO SUPPORT EXTERIOR WALL MOUNTED LUMINAIRES TO WITHSTAND 150 MPH WIND SPEEDS.

GENERAL NOTES:

1. ALL ELECTRICAL EQUIPMENT AND THE RESULTANT INSTALLATION OF SUCH EQUIPMENT, DEVICES, ETC., SHALL BE IN STRICT COMPLIANCE WITH THE 2014 NATIONAL ELECTRIC CODE (NFPA 70), 2015 LIFE SAFETY CODE (NFPA 101), ALL APPLICABLE STATE AND FEDERAL CODES, AND NATIONAL ELECTRICAL SAFETY CODE (NFPA 70E).
2. CONTRACTOR SHALL TAKE RESPONSIBILITY FOR FIELD VERIFICATION OF ALL DIMENSIONS AND LOCATIONS OF EQUIPMENT, AND SHALL BE RESPONSIBLE FOR COORDINATION WITH THE WORK OF OTHER TRADES NECESSARY TO THE PROJECT.
3. THESE DRAWINGS ARE INTENDED TO OUTLINE THE SCOPE OF WORK REQUIRED TO PROVIDE A COMPLETE AND OPERABLE PROJECT CONCLUSION. ALL MISCELLANEOUS COMPONENTS, PARTS, FASTENERS, SPLICES, AND OTHER INCIDENTAL ITEMS NECESSARY TO PROVIDE A COMPLETED PROJECT SHALL BE PROVIDED WHETHER OR NOT SPECIFICALLY NOTED.
4. CONTRACTOR SHALL NOTIFY OWNER IMMEDIATELY OF ANY CONFLICTS ARISING FROM DISCOVERED CONDITIONS AT ANY PHASE OF THE PROJECT.
5. CONTRACTOR SHALL KEEP A CURRENT SET OF AS–INSTALLED DRAWINGS DOCUMENTING FIELD MODIFICATIONS, CHANGES, EXACT SUBSURFACE UTILITY ROUTINGS, ETC. TO BE TURNED OVER TO OWNER UPON PROJECT COMPLETION.
6. CONTRACTOR SHALL PROVIDE ALL NECESSARY PARTS AND LABOR TO INSTALL ELECTRICAL EQUIPMENT.
7. ALL ELECTRICAL EQUIPMENT SUCH AS SWITCHBOARDS, PANELBOARDS, CONTROL PANELS, DISCONNECTS, ETC. SHALL BE LABELED TO IDENTIFY POTENTIAL ELECTRIC ARC FLASH HAZARDS IN COMPLIANCE WITH THE REQUIREMENTS OF NFPA 70E–2012 "STANDARD FOR ELECTRICAL SAFETY IN THE WORKPLACE" AND ANSI Z535.4.–1998 "PRODUCT SAFETY SIGNS AND LABELS".
8. INSTALL RGS EXPANSION FITTINGS ON ALL RACEWAYS RISING FROM EARTH TO PILE SUPPORTED STRUCTURES
9. ALL STAINLESS STEEL HARDWARE SHALL BE 316 STAINLESS STEEL.

TRANSFORMER SCHEDULE

SIZE		KVA	GROUNDING ELECTRODE CONDUCTOR
KT-2	T-2	30	#6, 3/4" C.

FEEDER SCHEDULE

TYPE THHN/THWN INSUL. COPPER CONDUCTOR AMPACITY BASED ON (75° TEMP. RATING) IN RIGID METAL CONDUIT
DRY INTERIOR LOCATIONS: RGS WITH THREADED FITTINGS UP TO 20' AFF
WET EXTERIOR LOCATIONS: RGS WITH THREADED FERROUS CAST FITTINGS
UNDERGROUND INSTALLATIONS: SCHEDULE 40 PVC
FEEDER DESIGNATION (___1/2 N) DENOTES 1/2 SIZE NEUTRAL

FEEDER DESIGNATION	3PH+G PHASE + GND. CONDUCTORS AND CONDUIT SIZE	FEEDER DESIGNATION	3PH+N+G PHASE + NEUTRAL + GND. CONDUCTORS AND CONDUIT SIZE
20	3#12+#12 GND., 3/4"C	20N	4#12+#12 GND., 3/4"C
30	3#10+#10 GND., 3/4"C	30N	4#10+#10 GND., 3/4"C
50	3#8+#10 GND., 3/4"C	50N	4#8+#10 GND., 3/4"C
65	3#6+#8 GND., 1"C	65N	4#6+#8 GND., 1"C
85	3#4+#8 GND., 1 1/4"C	85N	4#4+#8 GND., 1 1/4"C
100	3#3+#8 GND., 1 1/4"C	100N	4#3+#8 GND., 1 1/4"C
115	3#2+#6 GND., 1 1/4"C	115N	4#2+#6 GND., 1 1/4"C
130	3#1+#6 GND., 1 1/2"C	130N	4#1+#6 GND., 1 1/2"C
150	3#1/0+#6 GND., 1 1/2"C	150N	4#1/0+#6 GND., 2"C
175	3#2/0+#6 GND., 2"C	175N	4#2/0+#6 GND., 2"C
200	3#3/0+#6 GND., 2"C	200N	4#3/0+#6 GND., 2"C
230	3#4/0+#4 GND., 2"C	230N	4#4/0+#4 GND., 2 1/2"C
255	3#250+#4 GND., 2 1/2"C	255N	4#250+#4 GND., 2 1/2"C
285	3#300+#4 GND., 2 1/2"C	285N	4#300+#4 GND., 3"C
310	3#350+#3 GND., 3"C	310N	4#350+#3 GND., 3"C
335	3#400+#3 GND., 3"C	335N	4#400+#3 GND., 3"C
380	3#500+#3 GND., 3"C	380N	4#500+#3 GND., 3 1/2"C
400	2 SETS(3#3/0+#3 GND., 2"C)	400N	2 SETS(4#3/0+#3 GND., 2"C)
420	3#600+#2 GND., 3 1/2"C	420N	4#600+#2 GND., 4"C
460	2 SETS(3#4/0+#2 GND., 2"C)	460N	2 SETS(4#4/0+#2 GND., 2 1/2"C)
510	2 SETS(3#250+#1 GND., 2 1/2"C)	510N	2 SETS(4#250+#1 GND., 2 1/2"C)
570	2 SETS(3#300+#4 GND., 2 1/2"C)	570N	2 SETS(4#300+#4 GND., 3"C)
620	2 SETS(3#350+#1/0 GND., 3"C)	620N	2 SETS(4#350+#1/0 GND., 3"C)
760	2 SETS(3#500+#1/0 GND., 3"C)	760N	2 SETS(4#500+#1/0 GND., 3 1/2"C)

ABBREVIATIONS

A
- A — AMPERE(S)
- AC — ALTERNATING CURRENT
- A/C — AIR CONDITIONING
- AF — AMPERE FRAME
- AFF — ABOVE FINISHED FLOOR
- AFG — ABOVE FINISHED GRADE
- AI — ANALOG INPUT
- AIC — AMPERES INTERRUPTING CAPACITY
- ALUM — ALUMINUM
- AO — ANALOG OUTPUT
- AT — AMPERE TRIP
- AWG — AMERICAN WIRE GAGE

B
- BKBD — BACKBOARD

C
- C — CONDUIT
- CATV — CABLE TELEVISION
- CB — CIRCUIT BREAKER
- CKT — CIRCUIT
- CL — CLASS
- COND — CONDUCTOR(S)
- CPT — CONTROL POWER XFMR
- CT — CURRENT TRANSFORMER
- CU — COPPER
- COMM — COMMUNICATION

D
- DC — DIRECT CURRENT
- DET. — DETECTOR
- DI — DIGITAL INPUT
- DO — DIGITAL OUTPUT

E
- E — EMERGENCY
- E.C. — EMPTY CONDUIT
- EF — EXHAUST FAN
- EL. — ELEVATION
- EM — EMERGENCY
- EP — EXPLOSION PROOF
- ESD — EMERGENCY SHUTDOWN
- EW — EYE WASH STATION
- EWH — ELECTRIC WATER HEATER
- EXIST — EXISTING

F
- FA — FAILSAFE ACTUATOR
- FF — FINISHED FLOOR
- FLA — FULL LOAD AMPS
- FLUOR — FLUORESCENT
- FS — FLOAT SWITCH
- FT. — FOOT; FEET

G
- GALV — GALVANIZED
- GFI — GROUND FAULT INTERRUPTER

H
- HMI — HUMAN INTERFACE
- HOA — HAND/OFF/AUTO
- HP — HORSEPOWER
- HPS — HIGH PRESSURE SODIUM
- HV — HIGH VOLTAGE
- HZ — HERTZ

I
- INCAND — INCANDESCENT

J
- JB — JUNCTION BOX

K
- KCMIL — THOUSAND CIRCULAR MILS
- KVA — KILOVOLT.AMPERES
- KW — KILOWATT

L
- LCP — LOCAL CONTROL PANEL
- LS — LEVEL SENSOR
- LV — LOW VOLTAGE

M
- MCB — MAIN CIRCUIT BREAKER
- MCC — MOTOR CONTROL CENTER
- MH — METAL HALIDE
- MISC — MISCELLANEOUS
- MLO — MAIN LUGS ONLY
- MT — MULTI–TAP
- MTD — MOUNTED
- MTS — MANUAL TRANSFER SWITCH
- MH — MOUNTING HEIGHT

N
- NEC — NATIONAL ELECTRICAL CODE
- N.C. — NORMALLY CLOSED
- N.O. — NORMALLY OPEN
- NIC — NOT IN CONTRACT
- NF — NONFUSED
- NL — NIGHT LIGHT
- NTS — NOT TO SCALE

O
- OC — ON CENTER
- OL — OVERLOAD CONTACT
- OT — OVERTEMP CONTACT

P
- P — POLE
- ø — PHASE
- PLC — PROGRAMMABLE LOGIC CONTROLLER
- PNL — PANEL
- PR — PAIR
- PRI — PRIMARY
- PT — POTENTIAL TRANSFORMER
- PVC — POLYVINYL CHLORIDE
- PWR — POWER

R
- R — RUN CONTACTOR
- REC — RECEPTACLE
- REQ'D. — REQUIRED
- RGS — RIGID GALVANIZED STEEL
- RM — ROOM
- RT — RAINTIGHT
- RTD — RESISTIVE TEMPERATURE DETECTOR

S
- SC — SCREEN CLEANERS
- SCADA — SUPERVISORY CONTROL AND DATA AQUISITION
- SEC — SECONDARY
- SF — SUPPLY FAN
- SHT. — SHEET
- SMK — SMOKE
- SPC — SINGLE POINT CONNECTION
- SS — STAINLESS STEEL
- SUPVR — SUPERVISORY
- SWBD — SWITCHBOARD

T
- TB — TERMINAL BLOCK
- TELE — TELEPHONE
- TR — TIMING RELAY
- TYP — TYPICAL

U
- UG — UNDERGROUND
- U.L. — UNDERWRITER'S LABORATORIES
- UNO — UNLESS NOTED OTHERWISE

V
- V — VOLTS
- VAC — VOLTAGE, ALTERNATING CURRENT
- VDC — VOLTAGE, DIRECT CURRENT

W
- W — WATTS, WIRE, WIDTH
- WP — WEATHERPROOF

X
- XFMR — TRANSFORMER

PRELIMINARY

PRELIMINARY	BURK-KLEINPETER, INC.
FOR REVIEW ONLY	ENGINEER: RAY NOLAN, PE LICENSE #: LA 27697 DATE: 06/2021

E1.1
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING · PLANNING · ENVIRONMENTAL
BKI #: NO.20.044

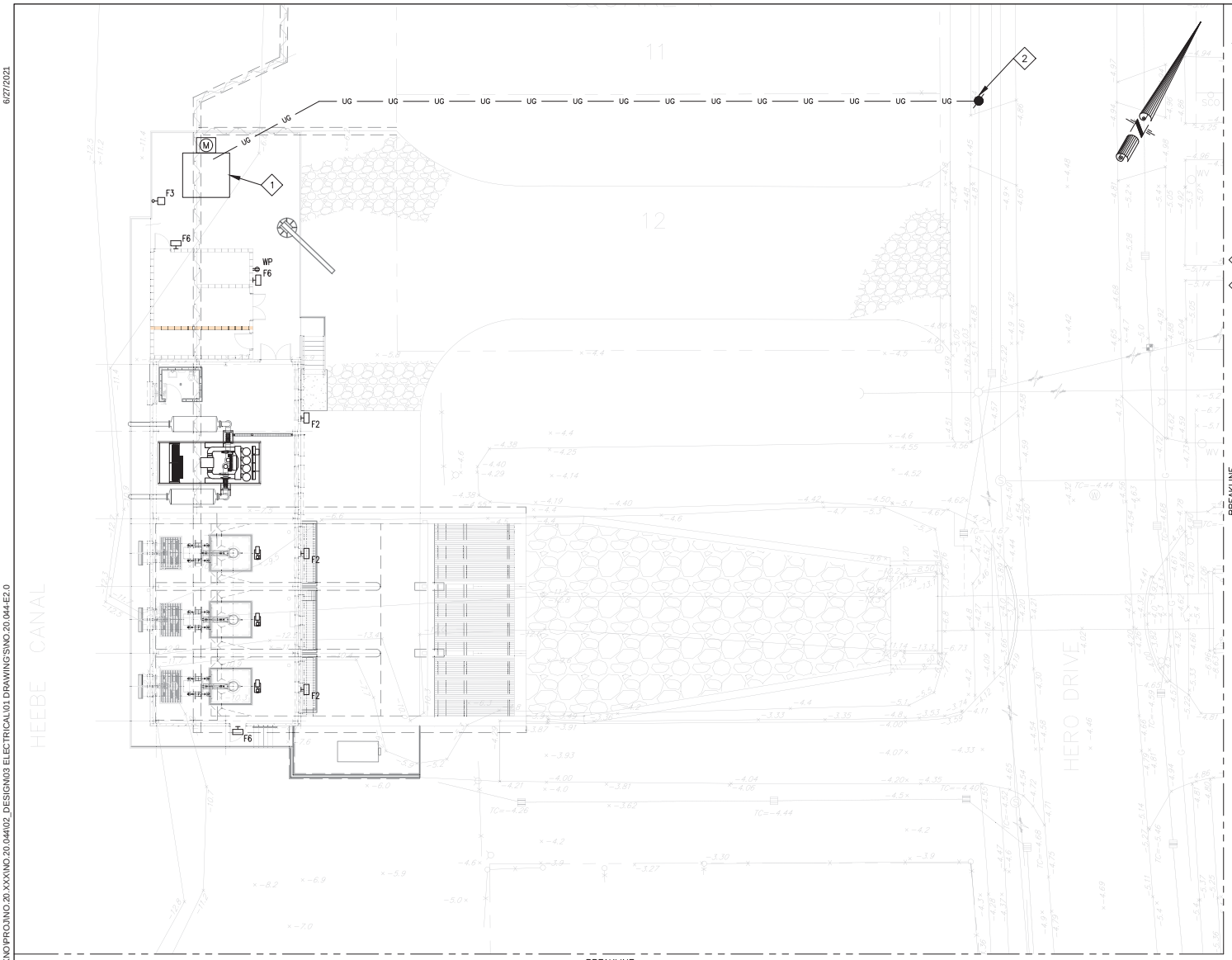
CLIENT PROJECT NUMBER: XXXXXXXX

DESIGNED	J.B.M.	DATE	June, 2021
CHECKED	H.M.P.	SHEET	OF
DETAILED	C.V.		
CHECKED	J.B.M.		

25th STREET
CANAL DRAINAGE IMPROVEMENTS
SCHEDULES & ABBREVIATIONS

6/27/2021

\\BK-NOLA-FS01\BKNO\PROJ\NO.20.XXX\NO.20.04\02_DESIGN\03 ELECTRICAL\01 DRAWING'S\NO.20.044-E1.1



BREAKLINE

ELECTRICAL SITE PLAN & EXTERIOR LIGHTING

SCALE 1" = 10'

E2.0 GENERAL NOTES:

1. NEW OVERHEAD SERVICE AND POLES TO BE FURNISHED AND INSTALLED BY ENTERGY.
2. CONTRACTOR TO COORDINATE AND SCHEDULE ENTERGY SERVICE INSTALLATION WITH CONSTRUCTION SCHEDULE.
3. PLANS ARE INTENDED TO SHOW PROPOSED WORK. REFERENCE CIVIL AND MECHANICAL DRAWINGS FOR LOCATIONS AND DESCRIPTION OF WORK.
4. LIGHTING CIRCUITS SHALL BE MINIMUM 2 #10 + #10 GROUND IN 3/4" RGS.
5. CONTRACTOR SHALL VERIFY LOCATIONS, ORIENTATION, AND PLACEMENT OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGHING IN ELECTRICAL WORK.

E2.0 SPECIFIC NOTES:

1. ENTERGY 3-PHASE PAD-MOUNT TRANSFORMER.
2. NEW ENTERGY UTILITY POLE.

10' 5' 0 10' 20'

1"= 10'-0"

PRELIMINARY

PRELIMINARY	*BURK-KLEINPETER, INC.*
FOR REVIEW ONLY	*ENGINEER: RAY NOLAN, PE* *LICENSE #: LA 27697* *DATE: 06/2021*

E2.0
SHEET NUMBER

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BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
www.bkiusa.com

CLIENT PROJECT NUMBER : XXXXXXXX
BKI #: NO.20.044

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DATE	June, 2021	SHEET	of

25th STREET
CANAL DRAINAGE IMPROVEMENTS
ELECTRICAL SITE PLAN

6/27/2021

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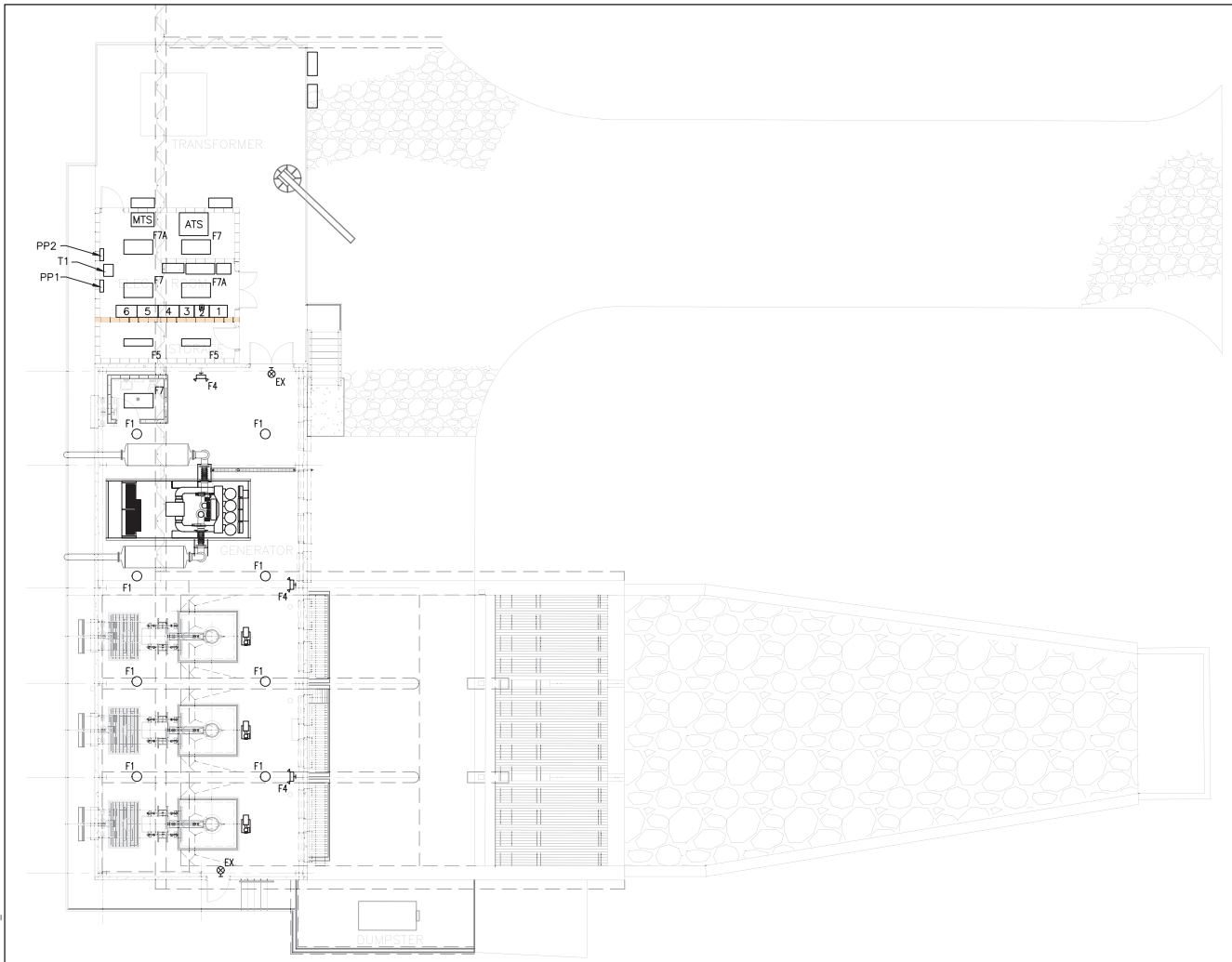

LIGHTING PLAN

SCALE 1/8" = 1'-0"

SHEET E3.0 NOTES:

1. PARTIAL PLANS ARE SHOWN FOR CLARITY AND ARE INTENDED TO SHOW PROPOSED WORK. REFERENCE CIVIL AND MECHANICAL DRAWINGS FOR LOCATIONS AND DESCRIPTION OF WORK.
2. LIGHTING CIRCUITS SHALL BE MINIMUM 2 #10 + #10 GROUND IN 3/4" RGS.
3. CONTRACTOR SHALL VERIFY LOCATIONS, ORIENTATION, AND PLACEMENT OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGHING IN ELECTRICAL WORK.

8' 4' 0 8' 16'

1/8"= 1'-0"

PRELIMINARY

PRELIMINARY	*BURK-KLEINPETER, INC.*
FOR REVIEW ONLY	*ENGINEER: RAY NOLAN, PE* *LICENSE #: LA 27697* *DATE: 06/2021*

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25th STREET
CANAL DRAINAGE IMPROVEMENTS
LIGHTING PLAN

6/27/2021

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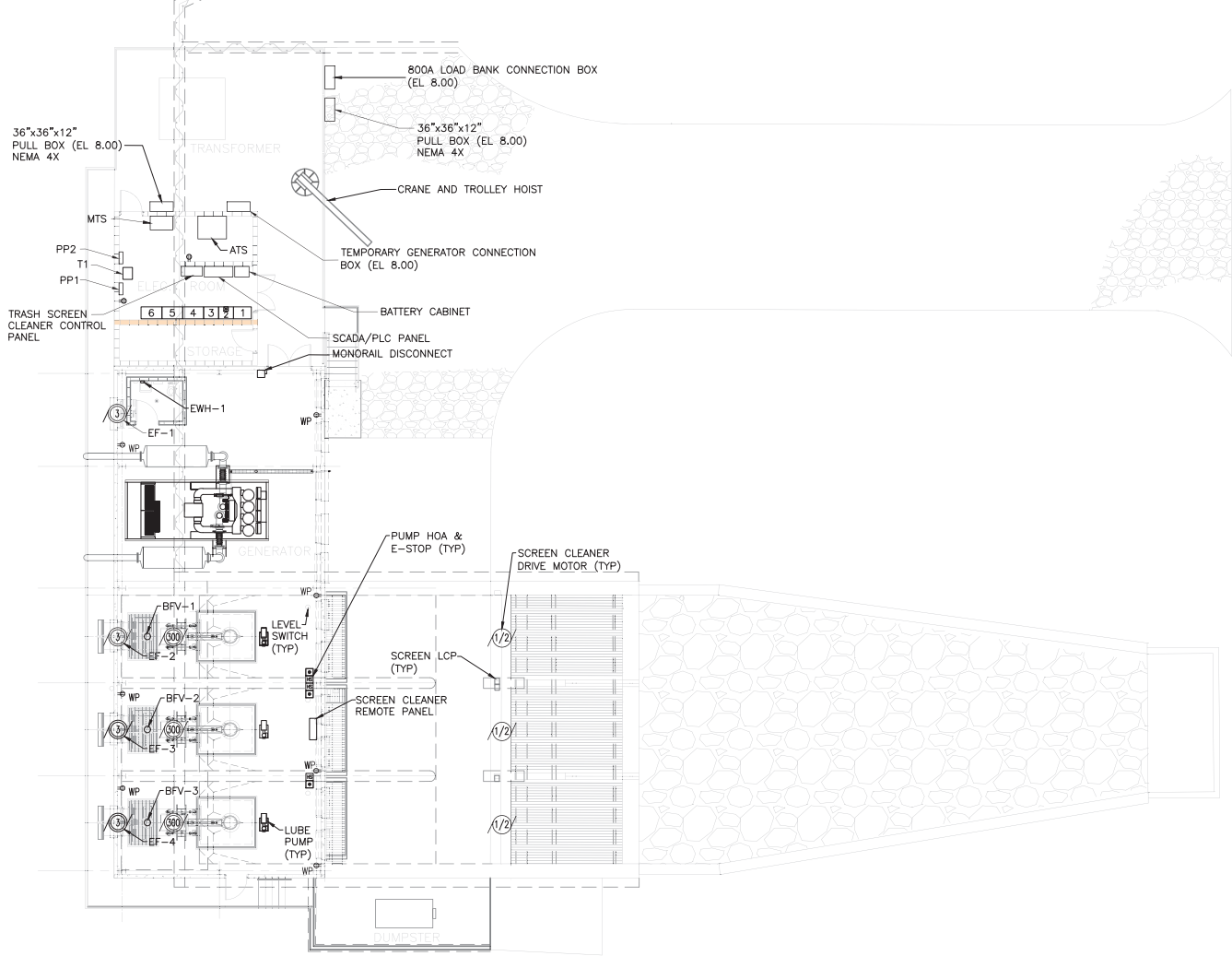

POWER PLAN

SCALE 1/8" = 1'-0"

SHEET E3.1 NOTES:

1. PARTIAL PLANS ARE SHOWN FOR CLARITY AND ARE INTENDED TO SHOW PROPOSED WORK. REFERENCE CIVIL AND MECHANICAL DRAWINGS FOR LOCATIONS AND DESCRIPTION OF WORK.
2. REFERENCE SHEET E7.0 FOR GROUNDING DETAILS.
3. CONTRACTOR SHALL VERIFY LOCATIONS, ORIENTATION, AND PLACEMENT OF MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR PRIOR TO ROUGHING IN ELECTRICAL WORK.
4. FURNISH LIGHTNING PROTECTION SYSTEM PER SPECIFICATION SECTION 16780.
5. ALL EXPOSED METAL OBJECTS, SUCH AS STEEL EMBEDS, ANGLE IRON, GRATING, HANDRAILS, STEEL, ETC., SHALL BE GROUNDED/BONDED, VIA GROUNDING CONDUCTOR, BOLTED CONNECTION, FLEXIBLE BONDING JUMPERS, BONDING STRAPS, EXOTHERMIC WELDS, ETC.

8' 4' 0 8' 16'

1/8"= 1'-0"

PRELIMINARY

PRELIMINARY	BURK-KLEINPETER, INC.
FOR REVIEW ONLY	ENGINEER: RAY NOLAN, PE LICENSE #: LA 27697 DATE: 06/2021

E3.1
SHEET NUMBER

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BURK-KLEINPETER, INC.
ENGINEERING PLANNING ENVIRONMENTAL
BKI # : NO.20.044
CLIENT PROJECT NUMBER : XXXXXXXX

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CHECKED	H.M.P.		
DETAILED	C.V.		
CHECKED	J.B.M.	DATE	June, 2021
		SHEET	E-1

25th STREET
CANAL DRAINAGE IMPROVEMENTS
POWER PLAN

6/26/2021

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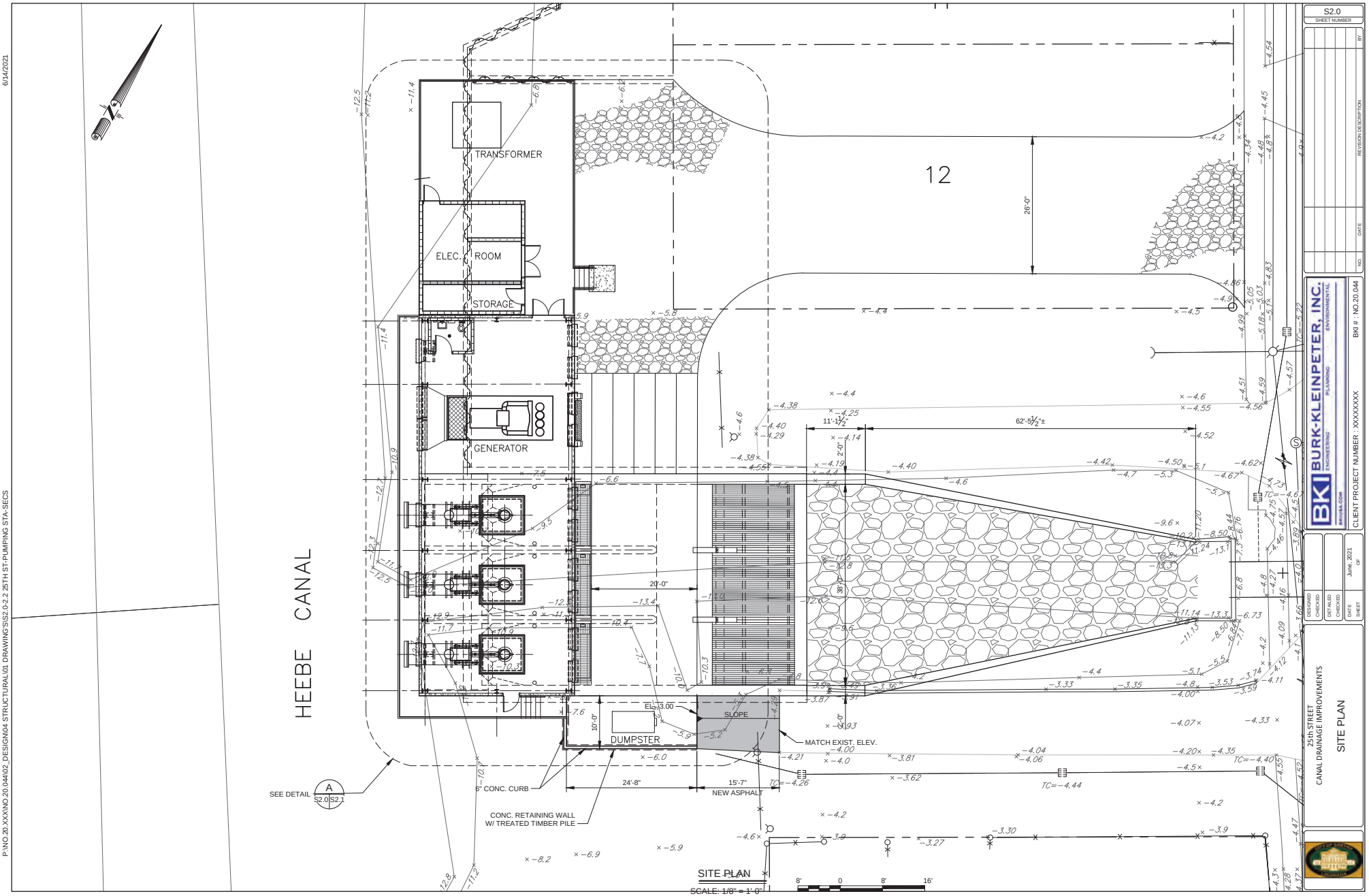

S2.0
SHEET NUMBER

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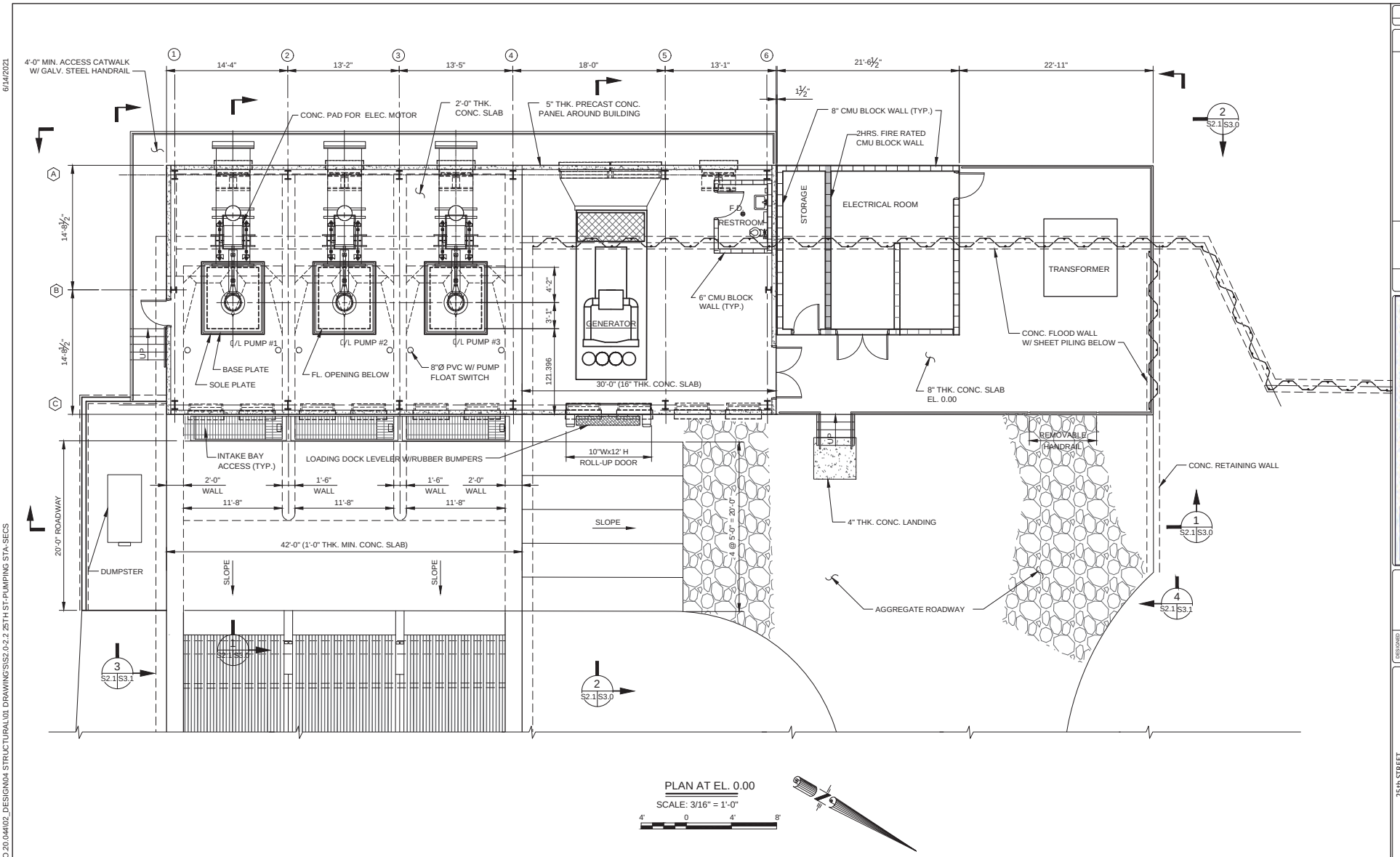
BURK-KLEINPETER, INC.
ENGINEERING
PLANNING
ENVIRONMENTAL
BKI # : NO.20.044
CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED	DETAILED	DATE	June, 2021
CHECKED	CHECKED	SHEET	OF

25th STREET
CANAL DRAINAGE IMPROVEMENTS
SITE PLAN

6/14/2021
P:\NO.20.XXX\NO.20.044\02_DESIGN\04 STRUCTURAL\01 DRAWINGS\S2.0-2.2 25TH ST-PUMPING STA-SECS



S2.1
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING
PLANNING
ENVIRONMENTAL
SURVEYING
www.bkicorp.com

BKI # : NO.20.044

CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED	DRAWN	DATE
CHECKED	DETAILED	June, 2021
	CHECKED	SHEET OF

25th STREET
CANAL DRAINAGE IMPROVEMENTS

PLAN AT EL. 0.00

6/14/2021

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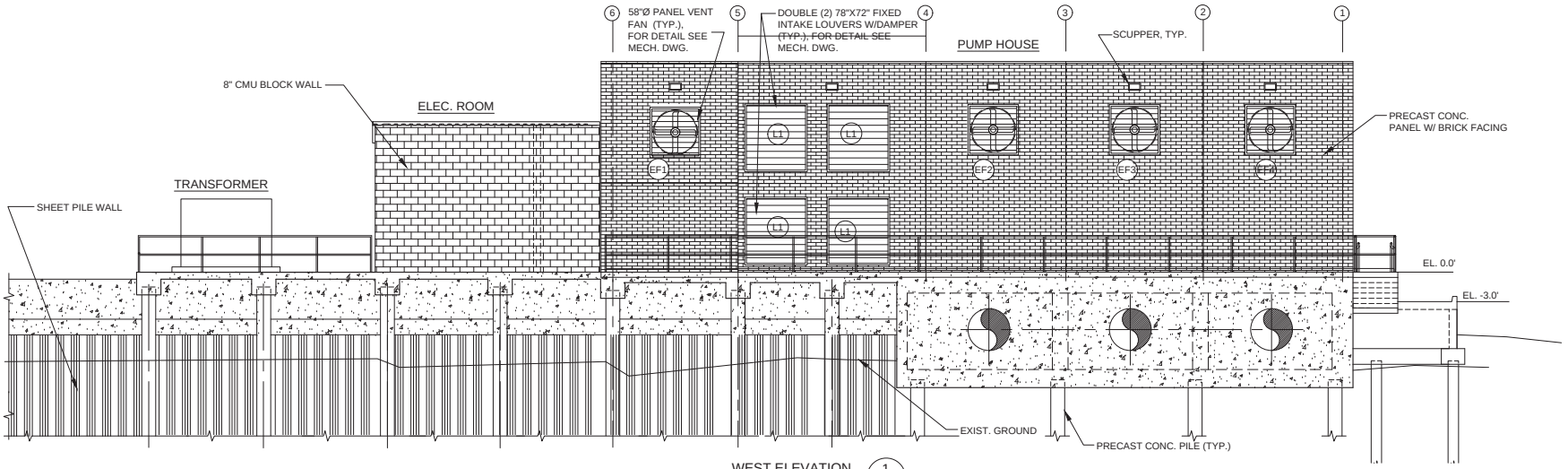
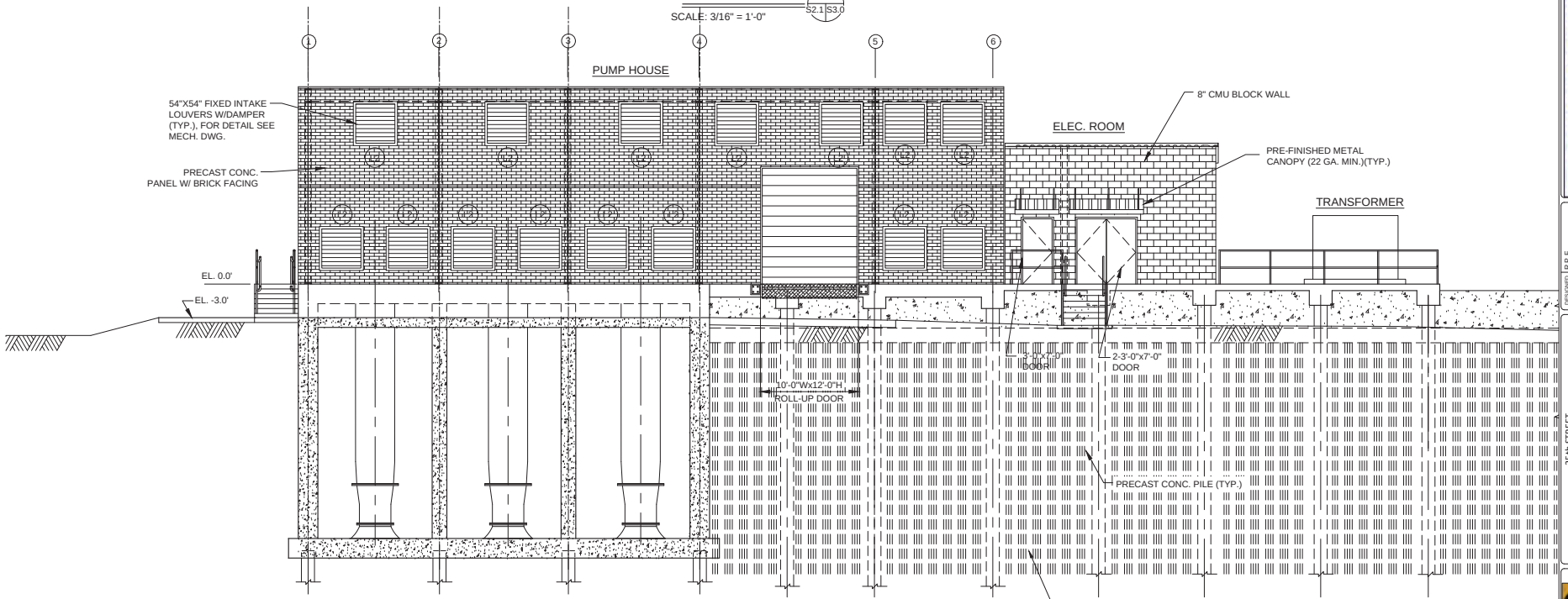


WEST ELEVATION 1 (S2.1, S3.0)

SCALE: 3/16" = 1'-0"



EAST ELEVATION 2 (S2.1, S3.0)

SCALE: 3/16" = 1'-0"

A3.0

SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION
		BY

BURK-KLEINPETER, INC.
ENGINEERING
PLANNING
ENVIRONMENTAL
www.bkie.com

BKI #: NO.20.044

CLIENT PROJECT NUMBER : XXXXXXXX

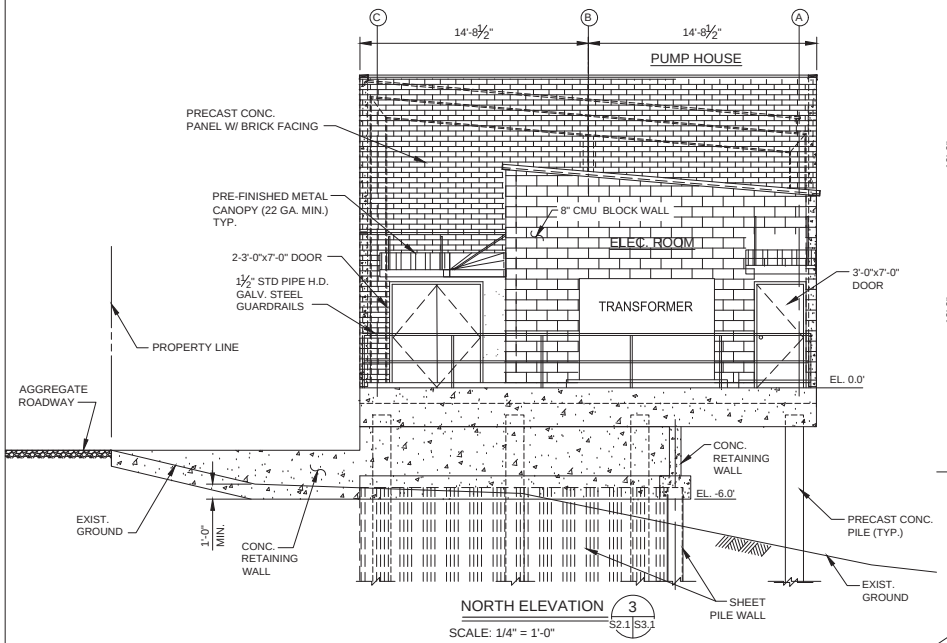
DESIGNED	R.P.F.	
CHECKED	D.C.	
DETAILED	B.L.	
CHECKED	H.M.P.	
DATE	June, 2021	
SHEET	OF	

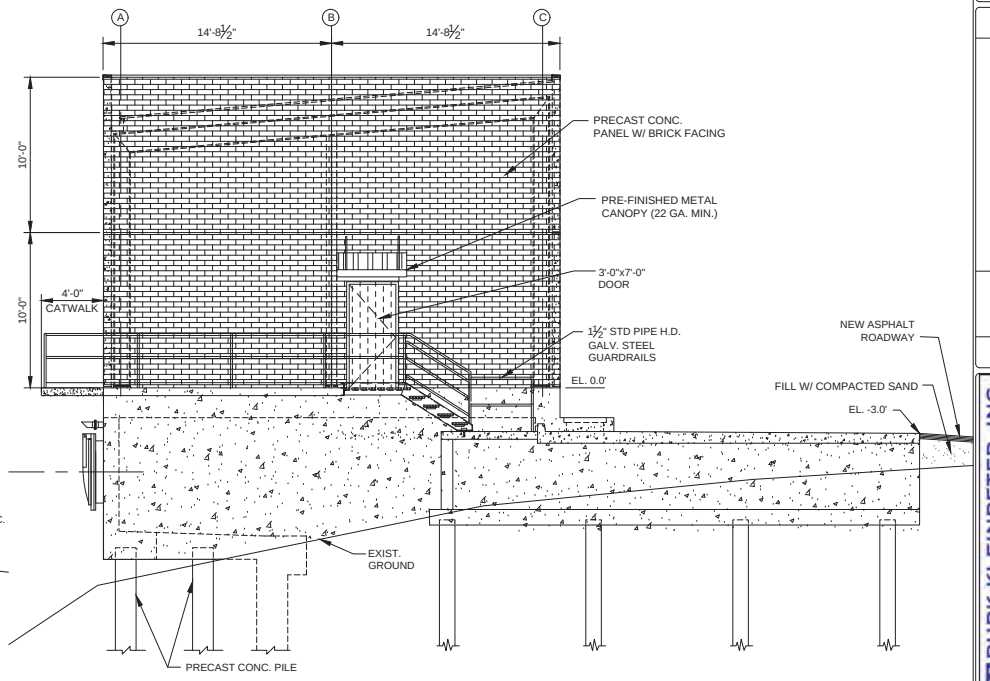
CANAL DRAINAGE IMPROVEMENTS
25th STREET

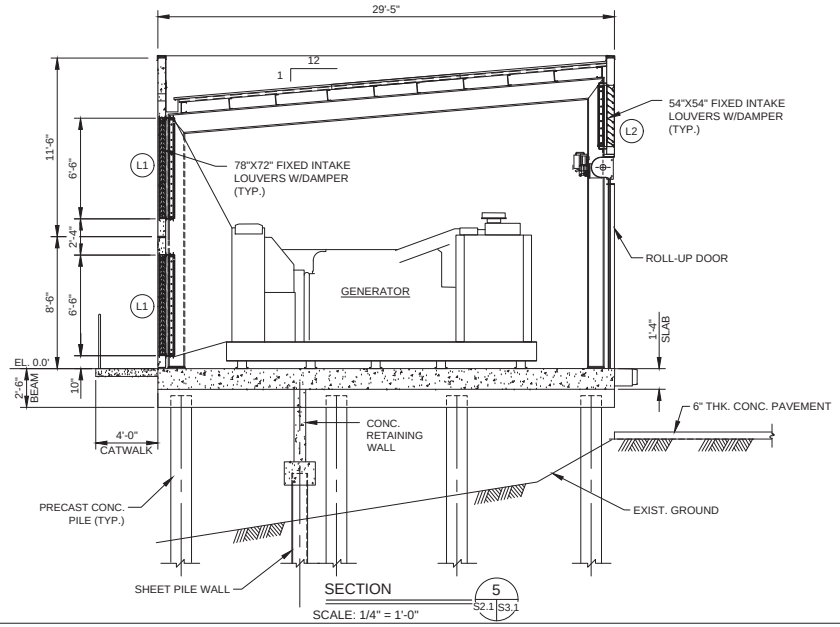
BUILDING ELEVATIONS

6/14/2021

P:\NO.20.XXX\NO.20.044\02_DESIGN\04 STRUCTURAL\01 DRAWINGS\S3.0 25TH ST-PUMPING STA-SECS







A3.1
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING
PLANNING
ENVIRONMENTAL
BKI # : NO.20.044
CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED	R.P.F.		
CHECKED	D.C.		
DETAILED	B.L.		
CHECKED	H.M.P.		
DATE	June, 2021		
SHEET	5 OF		

25th STREET
CANAL DRAINAGE IMPROVEMENTS

BUILDING ELEVATIONS & SECTIONS

6/14/2021

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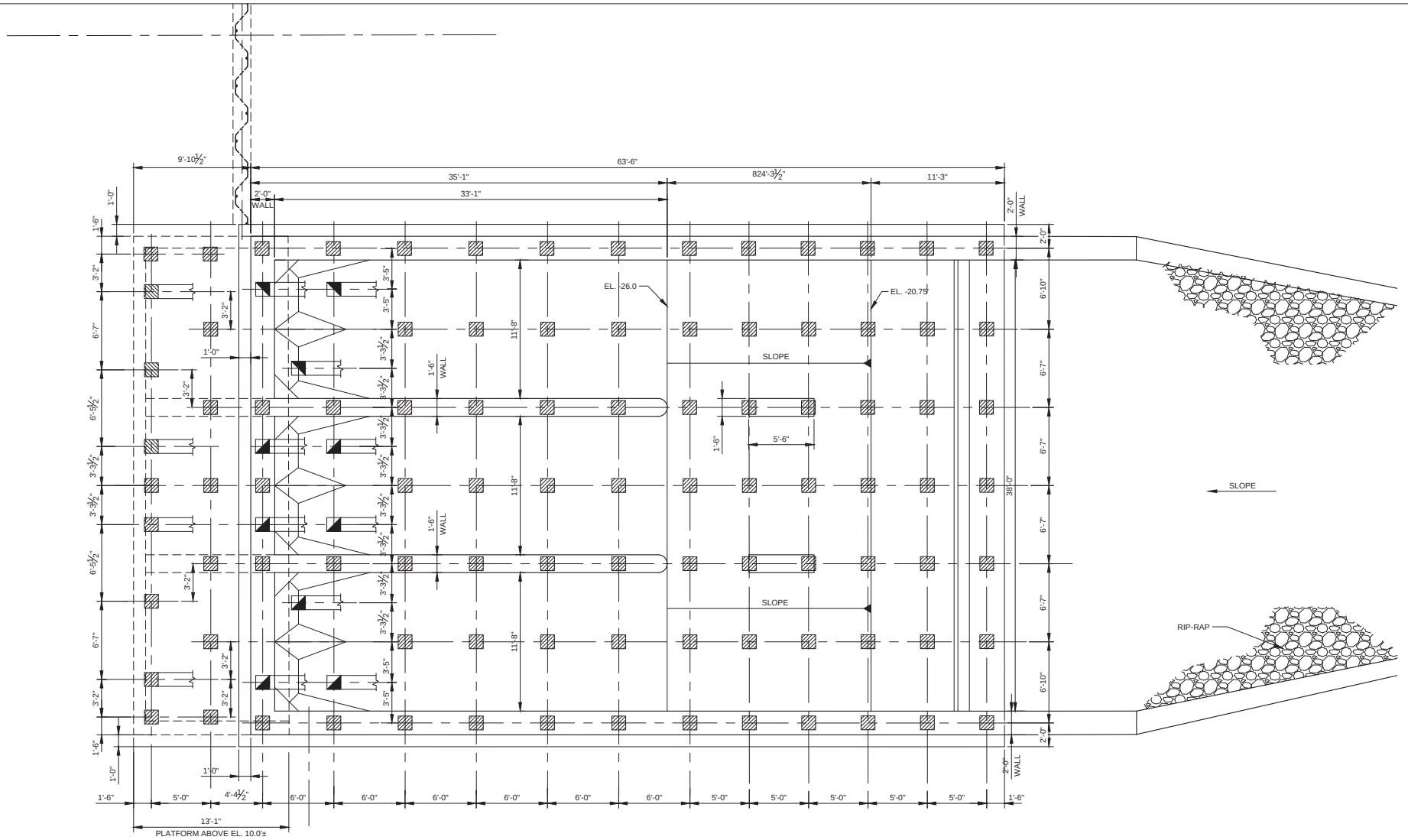

FOUNDATION PLAN AT EL. -26.0

SCALE: 1/4" = 1'-0"

LEGEND:

- 14" SQ. P.C. PILE
- 14" SQ. P.C. 1 ON 6 BATTER PILE
- 14" SQ. P.C. 1 ON 3 BATTER PILE

6/14/2021

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S2.2
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION	BY

BURK-KLEINPETER, INC.
ENGINEERING
PLANNING
ENVIRONMENTAL
www.bkicorp.com

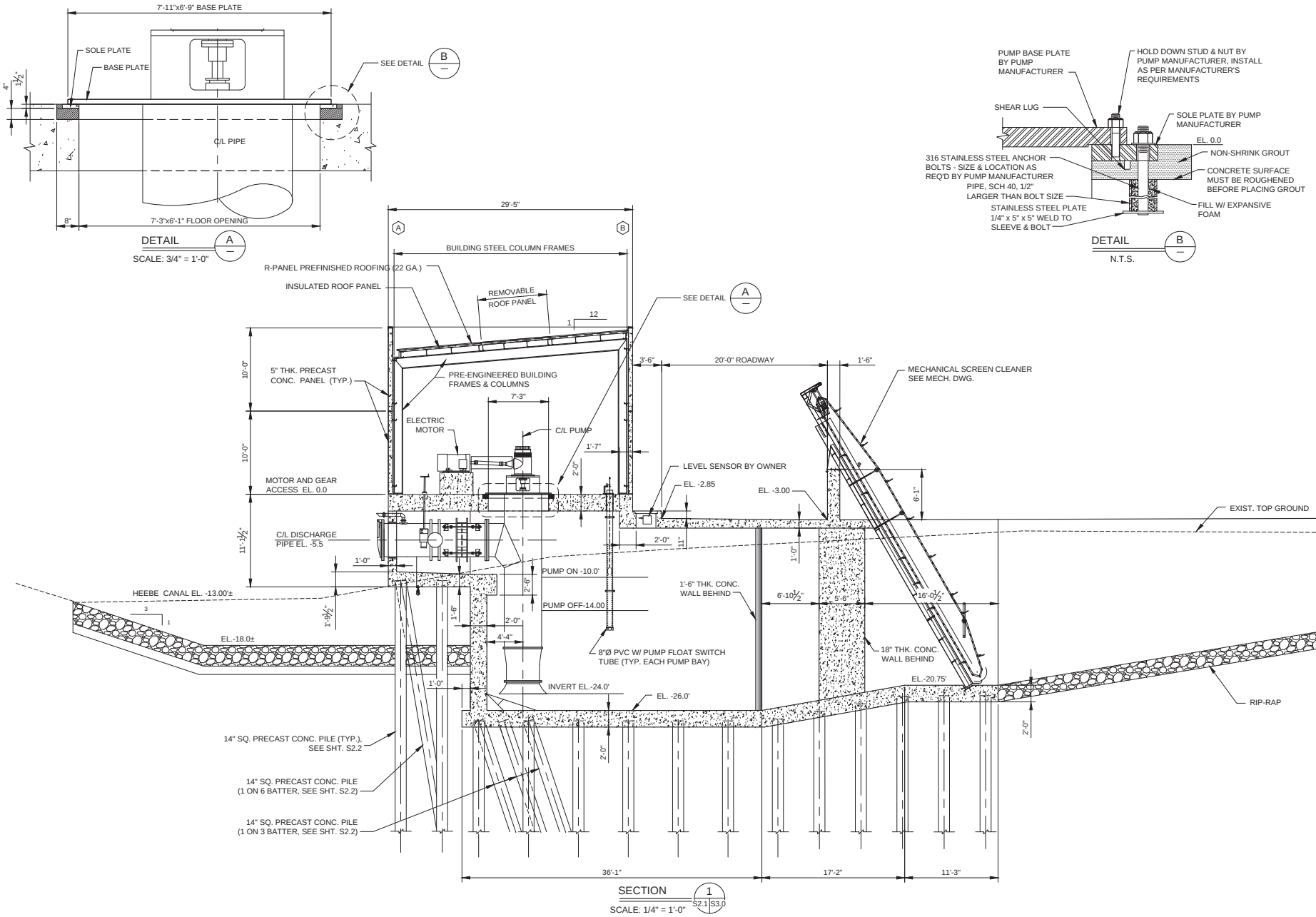
BKI # : NO.20.044

CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED	R.P.F.	
CHECKED	D.C.	
DETAILED	B.L.	
CHECKED	H.M.P.	
DATE:	June, 2021	
SHEET	OF	

25th STREET
CANAL DRAINAGE IMPROVEMENTS

BUILDING ELEVATIONS



S3.1
SHEET NUMBER

NO.	DATE	REVISION DESCRIPTION

BURK-KLEINPETER, INC.
ENGINEERING ENVIRONMENTAL PLANNING
BKI # : NO.20.044
CLIENT PROJECT NUMBER : XXXXXXXX

DESIGNED R.P.F.
CHECKED D.C.
DETAILED B.L.
CHECKED H.M.P.
DATE June, 2021
SHEET

25th STREET
CANAL DRAINAGE IMPROVEMENTS
BUILDING ELEVATIONS & SECTIONS

6/14/2021
P:\NO.20.XXX\NO.20.044\02_DESIGN\04 STRUCTURAL\01 DRAWING'S\S3.0 25TH ST-PUMPING ST A-SECS

Appendix D

Agency Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Louisiana Ecological Services Field Office
200 Dulles Drive
Lafayette, LA 70506
Phone: (337) 291-3100 Fax: (337) 291-3139

In Reply Refer To: July 12, 2023
Project code: 2023-0010210
Project Name: Louisiana JP/Gretna 25th Street FY18 FMA - Community Flood Mitigation Project

Subject: Consistency letter for the project named 'Louisiana JP/Gretna 25th Street FY18 FMA - Community Flood Mitigation Project' for specified threatened and endangered species that may occur in your proposed project location pursuant to the Louisiana Endangered Species Act project review and guidance for other federal trust resources determination key (Louisiana DKey).

Dear Sam Bankston:

The U.S. Fish and Wildlife Service (Service) received on July 12, 2023 your effects determination(s) for the 'Louisiana JP/Gretna 25th Street FY18 FMA - Community Flood Mitigation Project' (the Action) using the Louisiana DKey within the Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based on your answers, and the assistance in the Service's Louisiana DKey, you made the following effect determination(s) for the proposed Action:

Species	Listing Status	Determination
West Indian Manatee (*Trichechus manatus*)	Threatened	NLAA

Consultation with the Service is not complete. The "may affect - not likely to adversely affect" determination(s) becomes effective when the lead Federal action agency or designated non-federal representative uses it to ask the Service to rely on the Louisiana Endangered Species Act project review and guidance for other federal trust resources key to satisfy the agency's consultation requirements for this project.

Please provide this consistency letter to the lead Federal action agency or its designated non-federal representative with a request for its review, and as the agency deems appropriate, to submit for concurrence verification through the IPaC system. The lead Federal action agency or

designated non-federal representative should log into IPaC using their agency email account and click "Search by record locator". They will need to enter the record locator **417-125805313**.

Please Note: If the Federal Action may impact bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) may be required. Please contact Ulgonda Kirkpatrick (phone: 321/972-9089, e-mail: ulgonda_kirkpatrick@fws.gov) with any questions regarding potential impacts to bald or golden eagles.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Louisiana JP/Gretna 25th Street FY18 FMA - Community Flood Mitigation Project

2. Description

The following description was provided for the project 'Louisiana JP/Gretna 25th Street FY18 FMA - Community Flood Mitigation Project':

> Jefferson Parish submitted a Flood Mitigation Assistance (FMA) grant application to FEMA, through the Louisiana Governor's Office of Homeland Security and Emergency Preparedness, requesting funding for the Gretna 25th Street Fiscal Year 18 FMA – Community Flood Mitigation Project. The FMA Grant Program is authorized by Section 1366 of the National Flood Insurance Act of 1968 with the goal of reducing or eliminating claims under the National Flood Insurance Program.
>
> The proposed project entails (1) installing eight flap gates along the Heebe Canal, (2) improving approximately 7,000 feet of drainage pipe and four catch basins, (3) improving the 25th Street Canal by dredging and reshaping the canal and reconstructing 25th Street, and (4) constructing a pump station near the intersection of Hero Street and the 25th Street Canal.
>
> The eight flap gates would include six 36-inch diameter and two 24-inch diameter gates that would be installed on existing outfall pipes that drain directly from the 25th Street Canal basin into the Heebe Canal. They would remain open for gravity drainage except when the Heebe Canal water level rises above the outfall pipes. Closing the flap gates when water levels rise would minimize backflow from the Heebe Canal. Subsurface runoff would flow directly into the 25th Street Canal where it would be pumped to Hebee Canal by the proposed pump station.
>
> Drainage pipes larger than the existing pipes would be installed within City of Gretna rights-of-way to support increased flow capacity and to route water to the 25th Street Canal. In total, 1,354 feet of 15-inch drainage pipe, 5,457 feet of 30-inch drainage pipe, and 304 feet of 36-inch drainage pipe would be installed. Four catch basins would be improved.
>
> The 25th Street Canal would be dredged and reshaped to stabilize the canal slopes and expand retention and conveyance capacity. Dredging and reshaping of the 25th Street Canal would occur from the Heebe Canal to Lafayette Street and include the reconstruction of 25th Street. The canal would be dredged to minus 13 feet NAVD88. The depth of dredging would vary between approximately 1 foot to 5 feet from the existing ground surface. The 25th Street Canal would be replanted with native species.

The proposed pump station would be located near the intersection of Hero Street and the 25th Street Canal to pump water from the 25th Street Canal into Heebe Canal during high-water events. It would have three pumps with a pump capacity of 350 cubic feet per second. The pumps would use electric motors and all electrical equipment would be installed in a climate-controlled concrete block building. A 1,000-kilowatt backup generator, fueled by natural gas piped in from off-site, would be installed as a source of power in case of outages. The maximum depth of ground disturbance for pump station installation would be 30 feet.

To conduct in-water work and construct the pump station, a temporary bypass channel would be installed along the southern side of the 25th Street Canal. Turbidity curtains and a temporary sheet pile wall would be installed within the 25th Street Canal at its confluence with the Heebe Canal for dewatering during the 25th Street Canal reconstruction and pump station construction. Sheet piles would be installed from the northwestern bank of the Heebe Canal using a vibratory hammer. Vibratory monitoring would occur to ensure readings do not exceed a peak particle velocity of 0.25 inches per second. In the unlikely event that in-water work is required, a small flat boat or a crane-supported platform would be used.

All work, including access and staging areas, would occur within City of Gretna rights-of-way. Staging areas would be located adjacent to the Heebe Canal at Hero Drive and along the 25th Street Canal from Long Avenue to just east of Newton Street. Existing roadways would provide access to the project site and staging locations.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@29.9016658,-90.05396081516098,14z

QUALIFICATION INTERVIEW

1. Is the action authorized, funded, or being carried out by a Federal agency?

   Yes

2. Is the action authorized, funded, or being carried out by the:

   b. Federal Emergency Management Agency (FEMA)

3. Please identify your agency or organization type:

   b. Designated non-federal representative

4. Have you determined that the project will have "no effect" on federally listed species? (If unsure select "No")

   No

5. [Hidden Semantic] Does the project intersect the west indian manatee AOI?

   Automatically answered
   Yes

6. (Semantic) Is the project located within the manatee consultation zone, excluding the Mississippi River?

   Automatically answered
   Yes

7. Is the project footprint entirely on land?

   No

8. Is the water depth within the project greater than 2 feet (at mean high tide)?

   Yes

9. Will the project occur during the months of June through November?

   Yes

10. Will the following Standard Manatee Conditions for in-Water Activities be included within the project design?

    Yes

11. [Hidden Semantic] Does the project intersect the pink mucket mussel AOI ?

    Automatically answered
    No

12. [Semantic] Does the project intersect the Northern Long-eared bat AOI?

    Automatically answered
    No

13. (Semantic) Does the project intersect the Louisiana black bear Range?

    Automatically answered
    No

IPAC USER CONTACT INFORMATION

Agency: CDM Smith
Name: Sam Bankston
Address: 620 SW 5th Avenue
Address Line 2: Suite 1115
City: Portland
State: OR
Zip: 97204
Email bankstonse@cdmsmith.com
Phone: 8054235477

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Department of Homeland Security

JOHN BEL EDWARDS
GOVERNOR

ROBERT SHADOIN
SECRETARY

PO BOX 98000 | BATON ROUGE LA | 70898

Date	July 21, 2023
Name	Tiffany Spann-Winfield
Company	FEMA
Street Address	1500 Main Street
City, State Zip	Baton Rouge, La 70802
Project	Louisiana JP/Gretna 25th Street FY18 FMA – Community Flood Mitigation Project
Project ID	
Invoice Number	23072105

Personnel of the Louisiana Wildlife Diversity Program (WDP) have reviewed the preliminary data for the captioned project. After careful review of our database, no impacts to rare, threatened, or endangered species or critical habitats are anticipated for the proposed project. No state wildlife refuges or wildlife management areas are known to occur at the specified site within Louisiana's boundaries.

The Wildlife Diversity Program (WDP) has compiled data on rare, endangered, or otherwise significant plant and animal species, plant communities, and other natural features throughout the state of Louisiana. WDP reports summarize the existing information known at the time of the request regarding the location in question. The quantity and quality of data collected by the WDP are dependent on the research and observations of many individuals. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Louisiana have not been surveyed. This report does not address the occurrence of wetlands at the site in question. WDP reports should not be considered final statements on the biological elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. WDP requires that this office be acknowledged in all reports as the source of all data provided here. If at any time WDP tracked species are encountered within the project area, please contact the WDP Data Manager at 225-763-3554. If you have any questions, or need additional information, please call 337-735-8734.

Sincerely,

for Carolyn Michon

Nicole Lorenz, Program Manager
Wildlife Diversity Program

USDA United States Department of Agriculture

July 13, 2023

Tiffany Spann
Environmental Liaison Officer – FEMA
Region VI – Louisiana Recovery Office
1500 Main Street
Baton Rouge, LA 70802

RE: Scoping Notification/Solicitation of Views
Louisiana JP/Gretna 25th Street FY18 FMA – Community Flood Mitigation Project
Environmental Assessment

Tiffany:

I have reviewed the above referenced project for potential requirements of the Farmland Protection Policy Act (FPPA) and potential impact to Natural Resources Conservation Service projects in the immediate vicinity.

Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

The project map and narrative submitted with your request indicates that the proposed construction areas related to this project are in an urban area and therefore are exempt from the rules and regulations of the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549. Furthermore, we do not predict impacts to NRCS work in the vicinity.

For specific information about the soils found in the project area, please visit our Web Soil Survey at the following location: http://websoilsurvey.nrcs.usda.gov/

Please direct all future correspondence to me at the address shown below.

Respectfully,

Brandon Waltman
Resource Soil Scientist

Attachment

Natural Resources Conservation Service
State Office
3737 Government Street
Alexandria, Louisiana 71302
Voice: (337) 290-4720 Fax: (844) 325-6947

Helping People Help the Land

JOHN BEL EDWARDS
GOVERNOR

THOMAS F. HARRIS
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF COASTAL MANAGEMENT

07/17/2023

FEDERAL EMERGENCY MANAGEMENT AGENCY
1500 MAIN STREET
BATON ROUGE, LA 70802

RE: P20230581, Solicitation of Views
FEDERAL EMERGENCY MANAGEMENT AGENCY
Description: Install eight flap gates along the Heebe Canal, improve approximately 7,000 feet of drainage pipe and four catch basins, improve the 25th Street Canal by dredging and reshaping the canal and reconstructing 25th Street, and construct a pump station near the intersection of Hero Street and the 25th Street Canal.
Location: Lat 29-53-49.61N, Long 90-03-22.77W; 25th Street, Gretna.
Jefferson Parish, LA

Dear Tiffany Spann-Winfield:

You are hereby advised that your application for a Coastal Use Permit (CUP) has been determined to be administratively complete and review by the State for compliance with the Louisiana Coastal Resource Program (LCRP) and consistency with the federal Coastal Zone Management Act (CZMA) has begun. Additionally, it has been determined that your proposed activity is a use of state concern in accordance with Louisiana Revised Statute 49:214.25.

All correspondence and calls regarding this application should reference the Coastal Use Permit Number (P#) indicated above. Please note that all information concerning your application is in our database and is updated throughout the day as changes to the status of the application occur.
Your application can be found on our Webpage.

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 7/12/23	4. Sheet 1 of _____
1. Name of Project Louisiana JP/Gretna 25th Street FY18 FMA - C	5. Federal Agency Involved FEMA	
2. Type of Project Flood mitigation project with infrastructure imp	6. County and State Jefferson Parish, Louisiana	

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 7/12/23	2. Person Completing Form Brandon Waltman
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☐ NO ☑		4. Acres Irrigated | Average Farm Size
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS 7/13/23

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment _____			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly				
B. Total Acres To Be Converted Indirectly, Or To Receive Services				
C. Total Acres In Corridor				
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*				
PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))* — Maximum Points				
1. Area in Nonurban Use — 15				
2. Perimeter in Nonurban Use — 10				
3. Percent Of Corridor Being Farmed — 20				
4. Protection Provided By State And Local Government — 20				
5. Size of Present Farm Unit Compared To Average — 10				
6. Creation Of Nonfarmable Farmland — 25				
7. Availablility Of Farm Support Services — 5				
8. On-Farm Investments — 20				
9. Effects Of Conversion On Farm Support Services — 25				
10. Compatibility With Existing Agricultural Use — 10				
TOTAL CORRIDOR ASSESSMENT POINTS — 160	0	0	0	0
PART VII *(To be completed by Federal Agency)*				
Relative Value Of Farmland (From Part V) — 100	0	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment) — 160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)* — 260	0	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☐

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

Should you have any questions, please check the online database or contact the assigned permit analyst: Emily Eley at (225) 342-7942 or Emily.Eley@la.gov. Be sure to reference the above Coastal Use Permit Number.

Sincerely,

CM

Permit Coordinator

cc: Martin Mayer, COE

FEDERAL EMERGENCY MANAGEMENT AGENCY

Appendix E

Draft Public Notice and FONSI

FEMA PUBLIC NOTICE OF AVAILABILITY FOR THE DRAFT ENVIRONMENTAL ASSESSMENT AND DRAFT FINDING OF NO SIGNIFICANT IMPACT FOR THE PROPOSED GRETNA 25TH STREET CANAL AND HEEBE CANAL IMPROVEMENTS, CITY OF GRETNA, LOUISIANA

Interested parties are hereby notified that the Federal Emergency Management Agency (FEMA) has prepared a draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) in compliance with the National Environmental Policy Act (NEPA). Funding to the City of Gretna for a Non-Disaster Grants project would be provided through the Flood Mitigation Assistance grant program implemented under the authority of Section 1366 of the National Flood Insurance Act of 1968, as amended, and Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, respectfully.

A Draft Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act and both DHS and FEMA's implementing Instructions. The Draft EA also assesses the project's compliance with other applicable environmental laws, including the National Historic Preservation Act; the Endangered Species Act; and Executive Orders 11988 (Floodplain Management), 11990 (Protection of Wetlands), and 12898 (Environmental Justice).

The purpose of the draft EA is to assess the effects on the human and natural environment from improvements to the 25th Street Canal drainage system in the City of Gretna in Jefferson Parish, Louisiana. The proposed action consists of flood risk reduction activities along the Heebe Canal and 25th Street Canal in Jefferson Parish, Louisiana. This includes the construction of flood risk reduction activities that would include installing flap gates, improving drainage pipelines, 25th Street Canal improvements through dredging and reshaping of the canal and reconstructing 25th Street, and constructing a new pump station at the corner of 25th Street and the Heebe Canal. The purpose of the proposed action is to reduce risk of flood hazards to properties in the City of Gretna, Louisiana. The proposed is located is located in Flood Zone AE, a special flood hazard area with 1 percent annual chance of flooding and an unregulated floodway. The 25th Street Canal drainage basin encompasses one of the highest concentrations in the country of both repetitive loss and severe repetitive loss properties as a result of flooding. Floodwaters have repeatedly inundated residences and roadways, impacting access to homes and fire and emergency services. The proposed project would reduce flood risk and property damage by addressing backwater flooding from the Heebe Canal and insufficient stormwater capacity within the drainage system. The specific need of this project is to address the insufficient stormwater drainage capacity in the 25th Street Canal drainage system.

Pursuant to Executive Order 11988 (Floodplain Management) and FEMA's implementing regulations at Title 44 of the Code of Federal Regulations Part 9, FEMA hereby provides interested parties with a notice of its intent to carry out an action affecting a floodplain. The City will host a public meeting at [Location] on [Date] beginning at [Time] to make the community aware of the proposed project.

The purpose of the draft EA is to analyze the potential environmental impacts associated with the Proposed Action Alternatives. The draft EA evaluates a No Action Alternative and the Proposed Action, which would manage and increase available runoff capacity within the Heebe Canal via drainage improvements to provide protection up to the 25-Year storm event. The draft FONSI is FEMA's finding that the Proposed Action would not have a significant effect on the human and natural environment.

The draft EA and draft FONSI are available for review at the following locations: [Location], at [Address] – [Days, Times] and [Location], at [Address] – [Days, Times]. This public notice will run in the journal of record, [Name], for three (3) days on [Days, Dates] and in The [Major Newspaper] for five (5) days on [Days, Dates]. The document can also be downloaded from the City of Gretna's website at [website] or FEMA's website at https://www.fema.gov/emergency-managers/practitioners/environmental-historic/nepa-repository. There will be a 30-day comment period beginning on [Date] and concluding on [Date] at 4 p.m. Written comments may be mailed to: DEPARTMENT OF HOMELAND SECURITY-FEMA EHP – Gretna 25th Street Canal and Heebe Canal Improvements, 1500 MAIN STREET, BATON ROUGE, LOUISIANA, 70802. Comments may be emailed fema-liro-ndg-bric-fema-ehp@fema.dhs.gov. If no substantive comments are received, the draft EA and associated draft FONSI will become final.

U.S. Department of Homeland Security
Federal Emergency Management Agency
Region VI
Louisiana Integration and Recovery Office
1500 Main Street
Baton Rouge, Louisiana 70802

FINDING OF NO SIGNIFICANT IMPACT FOR THE GRETNA 25TH STREET CANAL AND HEEBE CANAL IMPROVEMENTS PROJECT LOCATED IN THE CITY OF GRETNA, JEFFERSON PARISH, LOUISIANA FLOOD MITIGATION ASSISTANCE PROGRAM *FMA-PJ-06-LA-2018-014*

BACKGROUND

The City of Gretna, the Sub-recipient, through the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) (Recipient), has requested federal funding through the Federal Emergency Management Agency's (FEMA) Flood Mitigation Assistance (FMA) grant program to improve the drainage in the upper reaches of the Parish during and after major storm events.

The 25th Street Canal drainage system is a gravity flow system composed of curb and gutter sewers, drop inlets, catch basins, and underground pipes that outfall directly into the 25th Street Canal, which conveys water to the Heebe Canal. The drainage system was constructed in the 1950s and has had minor upgrades and improvements. The project area is subject to two sources of flooding: water overtopping the Heebe Canal and insufficient stormwater capacity within the drainage system. During heavy rain events, backflow from Heebe Canal outfall pipes and inadequate drainage infrastructure has resulted in flooding of local roadways, impacting access to residences, fire services, and emergency services.

The study area has been subject to repetitive, significant flood events causing damage to residential and commercial properties. The purpose of the proposed project is to reduce flood risk, protect residential and commercial properties in the study area, and reduce the FEMA flood damage claims experienced during and after flood events. The project is needed because there is insufficient stormwater drainage capacity in the 25th Street Canal drainage system. Floodwaters have repeatedly inundated residences and roadways, impacting access to homes and fire and emergency services. The 25th Street Canal drainage basin encompasses one of the highest concentrations in the country of both repetitive loss and severe repetitive loss properties as a result of flooding. Repetitive losses have impacted roughly 300 structures in a dense concentration of properties around 25th Street and the Heebe Canal. The proposed project has been designed to protect up to a 25-year storm and provide more targeted protection against a 100-year storm to more than 105 repetitive loss and severe repetitive loss properties.

The alternatives considered include: 1) No Action Alternative, and 2) the Proposed Action, Manage and Increase Available Runoff Capacity Within the Heebe Canal Via Drainage Improvements to Provide Protection Up to the 25-Year Storm Event.

The Proposed Action would implement flood risk reduction activities along the Heebe Canal and 25th Street Canal to reduce risk of flood hazards to properties in the City of Gretna. Components of this project involve installing flap gates, improving drainage pipelines, 25th Street canal improvements through dredging and reshaping of the canal and reconstructing 25th Street, and constructing a new pump station at the corner of 25th Street and the Heebe Canal. A complete description of these alternatives is included in the EA, which is incorporated by reference in this document.

An Environmental Assessment (EA) was prepared in accordance with FEMA Instruction 108-1-1 and the Department of Homeland Security (DHS) Instruction 023-01-001-01, Rev. 1, pursuant to Section 102 of the National Environmental Policy Act of 1969 (NEPA), as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR], Parts 1500-1508). The purpose of the EA was to analyze the potential environmental impacts associated with the proposed work and alternatives, and to determine whether to prepare an Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI).

FINDINGS

FEMA has evaluated the proposed project for significant adverse impacts to physical resources (soils and topography, air quality, climate change), water resources (coastal resources, wetlands and waters of the U.S., hydrology and floodplains, surface waters and water quality), biological resources (threatened and endangered species and critical habitats, vegetation, fish and wildlife), cultural resources, socioeconomic resources (environmental justice, public health and safety, noise, transportation, utilities and public services), and hazardous materials. The results of these evaluations as well as consultations and input from other federal and state agencies are presented in the EA.

CONDITIONS AND MITIGATION MEASURES

The following conditions must be met as part of the implementation of the project. Failure to comply with these conditions may jeopardize federal funds.

- The Sub-recipient is required to obtain and comply with all local, state, and federal permits, approvals, and requirements prior to initiating work on this project.
- All construction equipment would be required to meet current Environmental Protection Agency (EPA) emission standards.
- If fill is stored on site, the contractor would be required to appropriately cover it.
- Vehicle operation times would be kept to a minimum. Area soils must be covered and/or wetted during construction to avoid generating airborne dust (i.e., particulate air emissions).

- To reduce potential short-term effects to air quality from construction-related activities, the contractor would be responsible for using best management practices (BMP) to reduce fugitive dust generation and diesel emissions. Emissions from the burning of fuel by internal combustion engines would temporarily increase the levels of some of the criteria pollutants, including carbon dioxide (CO2), nitrogen dioxide (NO2), Ozone (O3), and particulate matter less than 10 microns in diameter (PM10), and non-criteria pollutants such as Volatile Organic Compounds (VOCs). To reduce these emissions, running times for fuel-burning equipment should be kept to a minimum and engines should be properly maintained.

- If any change to the scope of work is located in wetlands or other areas subject to the jurisdiction of the U. S. Army Corps of Engineers (USACE), the Sub-recipient should contact the USACE directly regarding permitting issues. If a USACE permit is required, part of the application process may involve a water quality certification from the Louisiana Department of Environmental Quality (LDEQ).

- Proper signage is required to clearly identify the adjacent wetland boundaries to avoid potentially adverse impacts from construction vehicles/equipment/supplies that accidentally leave the boundaries of the approved rights-of-way (ROW).

- Any adverse impacts to adjacent wetlands resulting from the construction of this project would jeopardize receipt of federal funding. This includes equipment storage and staging of construction to ensure that wetlands are not adversely impacted per the Clean Water Act (CWA) and Executive Order (EO) 11990.

- All fill would consist of clean uncontaminated fill material and shall be stored and stockpiled within upland locations.

- Any changes or modifications to the proposed project would require a revised wetland jurisdictional determination.

- The Sub-recipient is responsible for coordinating with and obtaining any required permits from the USACE and/or and permits from the State prior to initiating work. The Sub-recipient must obtain a Nationwide permit authorization or individual permit in accordance with Section 404 of the CWA, or provide documentation that one is not required for this project. The Sub-recipient must comply with all conditions of the required permit(s).

- The Sub-recipient is responsible for coordinating with and obtaining any required permit(s) from the Louisiana Department of Natural Resources' (LDNR) Office of Coastal Management (OCM) prior to initiating work. Sub-recipient must comply with all conditions of the required permits. It is recommended that Jefferson Parish contact Emily Eley at LDNR at (225) 342-7942 or Emily.Eley@la.gov.

- To satisfy step 7 of the 8-step process, Jefferson Parish is required to host a public meeting during the Notice of Availability public comment period. This public meeting will discuss the purpose and need for this project, alternatives considered, floodplain impacts, water surface elevation increases, and provide design plans and maps. Jefferson Parish is required to coordinate with the local floodplain manager prior to construction.

- The Sub-recipient is required to coordinate with the local floodplain administrator, obtain required permits prior to initiating work, and comply with any conditions of the permit to ensure harm to and from the floodplain is minimized.

- Obtain permits for construction within the floodplain per Gretna Unified Development Code Article IV, Division 11 section 58-287.

- Per 44 CFR 9.11(d), mitigation or minimization standards must be applied, where possible.

- Per 44 CFR 9.11(d)(4), there shall be no encroachments, including fill, new construction, substantial improvements of structures or facilities, or other development within a designated regulatory floodway that would result in any increase in flood levels within the community during the occurrence of the base flood discharge. Until a regulatory floodway is designated, no new construction, substantial improvements, or other development (including fill) shall be permitted within the base floodplain unless it is demonstrated that the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation (WSE) of the base flood more than one (1) ft. at any point within the community.

- Per 44 CFR 9.11(d)(6), no project should be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the National Flood Insurance Program (NFIP).

- Per 44 CFR 9.11(d)(9), for the replacement of building contents, materials, and equipment, where possible disaster-proofing of the building and/or elimination of such future losses should occur by relocation of those building contents, materials, and equipment outside or above the base floodplain.

- Should the site plans (including drainage design) change, the Sub-recipient must submit changes to the FEMA Environmental and Historic Preservation (EHP) for review and approval prior to the start of construction.

- New construction must be compliant with current codes and standards.

- The Sub-recipient must comply with all local, state, and federal requirements related to sediment control, disposal of solid waste, control and containment of spills, and discharge of surface runoff and/or stormwater from the site.

- Obtain and comply with the Jefferson Parish National Pollutant Discharge Elimination System (NPDES) permit and stormwater pollution prevention plan.

- If the project results in a discharge to waters of the State, submittal of a Louisiana Pollutant Discharge Elimination System (LPDES) application may be necessary.

- All precautions should be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas greater than or equal to one (1) acre. The Sub-recipient must contact the LDEQ Water Permits Division at 225-219-9371 to determine if the proposed project requires a permit.**

- If the project results in a discharge of wastewater to an existing wastewater treatment system, that wastewater treatment system may need to modify its LPDES permit before accepting additional wastewater.

- If the project will include a sanitary wastewater treatment facility, a Sewage Sludge and Biosolids Use or Disposal Permit is required. An application of Notice of Intent will be required if the sludge management practice includes preparing biosolids for land application or preparing sewage sludge to be hauled to a landfill. Additional information: (https://deq.louisiana.gov/page/sewage-biosolids) or by contacting the LDEQ Water Permits Division at 225-219-3590.

- Water softeners generate wastewaters that may require special limitations depending on local water quality considerations. If water system improvements include water softeners, contact LDEQ Water Permits to determine if special water quality-based limitations will be necessary.

- If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at 225-219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents.

- All precautions should be observed to protect the groundwater of the region. BMPs should be implemented to ensure groundwater is protected.

- If the project concerns flood control in residential and business areas that modify infrastructure and/or drainage:

    - Modeling for areas of interest, as well as both upstream and downstream connecting waterways, is preferred to evaluate potential impacts of increased flow on up/downstream flooding, hydrology, and water quality.

    - Receiving channels should be designed and sized with consideration of natural channel design methodologies and principles, as improper design can result in increased velocities and channel degradation (scouring), erosion, bank instability, and water quality degradation.

        - Increased stream velocities can jeopardize residential properties, pipelines, bridges, and other infrastructure, and may cause increased pollutant loads (e.g., sediment, metals, low oxygen levels) to waterways through channel(s) realignment and reestablishment of naturally vegetated banks, meanders, and original lengths and slopes for stabilization.

        - Nature-based solutions should be considered to address these, and storm water issues, before entry to downstream waters.

            - https://watershed.la.gov/nature-based-solutions

            - https://www.epa.gov/green-infrastructure/green-infrastructure-design-and-implementation

- Detention pond design and operating practices, including but not limited to high flow releases, can affect channels as described above.

- Flood control projects should be evaluated in combination with other flood mitigation projects proposed or ongoing in the watershed.

- If the project involves bridge and/or lateral/inline structures (e.g., culverts, weirs, sluice/lift gates):

  - Design to allow water to flow freely at the structure without restrictions during all flow regimes to preserve the natural functions of the stream channels, maintain appropriate channel dimensions, and flow regimes.

    - Consequences of improper design and maintenance can lead to debris build-up against structures restricting flow, leading to decreases in velocity, reaeration, and dissolved oxygen levels

  - The applicant must follow regional/local permitting requirements for sewage and storm water management.

- The proposed project is located in LDEQ water unit LA020601. According to the 2022 Louisiana Water Quality Integrated Report, this water unit is impaired for bacterial contaminants (Enterococcus). Control of nonpoint source pollution from construction should follow (**) above.

- It seems that this project involves new construction in an urban area, that extensive excavation may be needed to complete the project, and historic land use has not been identified in the submittal. It is therefore advised that a site-specific environmental assessment be performed on project areas to address specific environmental concerns, and provide for worker safety.

- If the project will involve the removal or disturbance of any soils which may have contaminant concentrations that exceed the Screening Option Standards established by the LDEQ Risk Evaluation/Corrective Action Program (RECAP) Regulation, these materials may be considered a waste and disposed of at a permitted facility, or might be managed as part of a Solid Waste Beneficial Use or Soil Reuse Plan in accordance with Louisiana Administrative Code (LAC) 33:VII.Chapter 11. Alternately, a site-specific RECAP Evaluation might be conducted and submitted to the LDEQ.

- If any underground storage tanks are encountered during the project, they must be in compliance with the regulations found in LAC 33:XI of the Environmental Regulatory Code. If any contaminated soil or groundwater is encountered, the findings should be reported to LDEQ.

- To ensure continued Endangered Species Act (ESA) compliance, the Sub-recipient must stop work and contact the FEMA EHP if 1) the scope or location of the proposed project is changed significantly, 2) new information reveals that the action may affect listed species or designated critical habitat, 3) the action is modified in a manner that causes effects to

listed species or designated critical habitat, or 4) a new species is listed, or critical habitat designated. Additional consultation as a result of any of the above conditions or if the scope or location of the proposed project is changed, coordination should occur as soon as changes are made, and the FEMA should be notified for further coordination with the U.S. Fish and Wildlife Service (USFWS).

- The Sub-recipient will ensure that the following AST avoidance and minimization measures are implemented during work.

  - To minimize effect on AST habitat:
    - Limit work to deepest part of channels
    - Limit work to areas previously disturbed or lacking snags, submerged logs or other cover used by AST
    - Use floating work platform instead of ground-based equipment
    - Relocate woody debris to streamside instead of removing completely
    - Minimize removal of trees and brush on bank adjacent to waterbodies
    - Avoid the use of concrete or other bank hardening methods

  - To minimize effect on individuals:
    - Limit work to areas unlikely to be occupied by adult or juvenile AST or live AST nests
    - Use floating work platform instead of ground-based equipment
    - If removing snags is necessary, pull up from above water instead of digging out
    - Avoid work on streamside from the water's edge to 200 meters away during times of the year when nesting/hatching are occurring
    - Limit work to deepest part of main channels except during the hottest times of the year

- Per LAC 1-315 B.6, the Sub-recipient is required to protect existing individual trees through project design and implementation. If tree removal is unavoidable, the Sub-recipient is required to plant two new trees for every tree removed.

- Comply with all USFWS "Standard Manatee Conditions for In-Water Activities" (Appendix C).

- If at any time LDWF's Wildlife Diversity Program (WDP) tracked species are encountered within the project area, contact the WDP Data Manager at 225-763-3554.

- If the Federal Action may impact bald or golden eagles, additional coordination with the USFWS under the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250,as amended, 16 U.S.C. 668a-d) may be required. Contact Ulgonda Kirkpatrick at 321-972-9089 or ulgonda_kirkpatrick@fws.gov for any questions regarding potential impacts to bald or golden eagles.

- Extreme care must be taken during the construction process through the appropriate use and maintenance of BMPs.

- If human bone or unmarked grave(s) are present within the project area, compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (Revised Statue [RS] 8:671, et seq.) is required. The Sub-recipient shall notify the law enforcement agency of the jurisdiction where the remains are located within 24 hours of the discovery. The Sub-recipient shall also notify FEMA and the Louisiana Division of Archaeology (LDOA) at 225-342-8170 within 72 hours of the discovery (Louisiana Unmarked Human Burial Sites Preservation Act).

- If during the course of work, archaeological artifacts (prehistoric or historic) are discovered, the Sub-recipient shall stop work in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. The Sub-recipient shall inform their Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) State Applicant Liaison and Hazard Mitigation Assistance contacts at FEMA, who will in turn contact FEMA Historical Preservation (HP) staff. The Sub-recipient will not proceed with work until FEMA HP completes consultation with the State Historic Preservation Office (SHPO), and others as appropriate (Inadvertent Discovery Clause).

- All borrow or fill material must come from pre-existing stockpiles, material reclaimed from maintained roadside ditches (provided the designed width or depth of the ditch is not increased), or commercially procured material from a source existing prior to the event. For any FEMA-funded project requiring the use of a non-commercial source or a commercial source that was not permitted to operate prior to the event (e.g. a new pit, agricultural fields, road ROWs, etc.) in whole or in part, regardless of cost, the Sub-recipient must notify FEMA and the Recipient prior to extracting material. FEMA must review the source for compliance with all applicable federal environmental planning and historic preservation laws and executive orders prior to a sub-recipient or their contractor commencing borrow extraction. Consultation and regulatory permitting may be required. Non-compliance with this requirement may jeopardize receipt of federal funding. Documentation of borrow sources utilized is required at closeout.

- During construction, the contractor would be expected to take all reasonable precautions to control site access. Impacts to public safety and security would be minimized with mitigation measures, including following Occupational Safety and Health Act/Administration (OSHA) regulations.

- The contractor must place fencing around the work area perimeters to prevent access and protect nearby residents from vehicular traffic.

- To minimize worker and public health and safety risks from project construction and closure, all construction and closure work must be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions. Additionally, all activities must be conducted in a safe manner in accordance with the standards specified in OSHA regulations and the USACE safety manual.

- The contractor must post appropriate signage and fencing to minimize potential adverse public safety concerns.

- Project construction activities would be limited to normal working hours, which would not include evening and nighttime hours, and would not be expected to adversely affect residents.

- Mitigation and abatement measures would be required to reduce the noise levels to a range that would be considered acceptable.

- The Sub-recipient must comply with any applicable local noise ordinances.

- Construction noise would be limited to 75 decibels during the hours of 7:00 am to 7:00 pm on weekdays and 9:00 am to 7:00 pm on weekends per Article V of the City of Gretna municipal code.

- Appropriate signage and barriers should be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes (e.g., detours or lanes dedicated for construction equipment egress).

- The contractor should implement traffic control measures, as necessary.

- Unusable equipment, debris and material shall be disposed of in an approved manner and location. In the event significant items (or evidence thereof) are discovered during implementation of the project, the Sub-recipient shall handle, manage, and dispose of petroleum products, hazardous materials and toxic waste in accordance to the requirements and to the satisfaction of the governing local, state and federal agencies.

- All debris would be disposed of at a permitted landfill.

- The construction contractor shall comply with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substance release reporting requirements, if an applicable release should occur.

- If an oil discharge to water occurs, the construction contractor must notify the National Response Center (NRC) at 800-424-8802.

- Any renovation or remodeling must comply with LAC 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions.

- If hazardous materials are unexpectedly encountered in the project area during the proposed construction operations, appropriate measures for the proper assessment, remediation, management and disposal of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would be required to take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area.

- The Louisiana Department of Natural Resources (LDNR) Office of Conservation should be contacted at 225-342-5540 if any unregistered wells of any type are encountered during construction work.

- Louisiana One Call should be contacted at 800-272-3020 at least 48 hours prior to commencing any subsurface operations.
- The Sub-recipient must notify residents and businesses three days in advance of any utility disruptions.
- The Sub-recipient must take any necessary steps to obtain and/or update all necessary approvals and environmental permits regarding this proposed project.
- All coordination pertaining to these activities and Sub-recipient compliance with any conditions should be documented and copies forwarded to correspondence to the GOHSEP and the FEMA as part of the permanent project files.

CONCLUSIONS

Based upon the incorporated EA, and in accordance with Presidential Executive Orders 12898 (Environmental Justice), 11988 (Floodplain Management), and 11990 (Wetland Protection), FEMA has determined that the implementation of the proposed action with the conditions and mitigation measures outlined above and in the EA would not result in significant adverse effects on the quality of the natural and human environment. In addition, the proposed project does not appear to have the potential for significant cumulative effects when combined with past, present, and reasonably foreseeable future actions. As a result of this FONSI, an Environmental Impact Statement (EIS) will not be prepared (FEMA Instruction 108-1-1) and the Preferred Action Alternative as described in the EA may proceed.

APPROVALS

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Dorothy Cook Date
FEMA Region VI
Supervisory Environmental Protection Specialist

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Brianne Schmidtke Date
FEMA Region VI
HMA Branch Chief-Mitigation