100% Design Supplemental Specifications to the JEA Water & Wastewater Standards

for the

5TH STREET WEST 20-INCH FORCE MAIN EXTENSION

JEA Project No. 8004781
MM Project No. 502402368

July 2020

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MOTT MACDONALD

5TH STREET WEST – 20-INCH FORCE MAIN EXTENSION

100% DESIGN SUPPLEMENTAL SPECIFICATIONS

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SUPPLEMENT TO SECTIONS 407.III.2 AND 427.III

REMOVE AND REPLACE JUNCTION MANHOLE

PART 1 – GENERAL

1.01 SUBMITTALS

A. The CONTRACTOR shall submit detailed shop drawings for each individual manhole shown on the Drawings. Each manhole submittal shall show invert elevations, connecting pipe material, pipe outside dimensions, pre-cast pipe opening dimensions and orientation, JEA approved pipe to manhole connectors, joint gaskets, joint outside seal material, applicable interior and exterior coatings, and similar details for approval before placing the order for the specified wastewater manholes. Shop drawings shall be signed and sealed by a Florida Licensed Professional Engineer.

PART 2 – PRODUCTS (NO MODIFICATIONS)

PART 3 – EXECUTION

A. At JEA's discretion, JEA or JEA's Representatives shall be permitted by the manhole MANUFACTURER's to enter its plant fabricating the JEA specified manholes and structures to observe their fabrication and plant QA/QC protocols throughout the fabrication process, handling, loading and securing for site delivery. As an alternative, JEA may require the MANUFACTURER to provide digital, color, high pixel and clarity video of its specified manholes and structures throughout the aforementioned process through delivery preparation. Videos shall be submitted to JEA for its review and comment prior to the products being shipped to the work.

B. Each manhole structure shall not be offloaded from the delivery vehicle, on or offsite, by the MANUFACTURER or CONTRACTOR until JEA, or JEA's Representative has inspected all components for approved submittal compliance, visible conditions and dimensions.

C. The CONTRACTOR shall field verify all dimensions and inverts before cutting the existing gravity sewer for the new manhole connection.

D. When requested by JEA, the MANUFACTURER shall provide a representative to the work to inspect the quality and dimensions of the manhole or structure for submittal compliance, offloading, storage, handling, and installation of its product. The MANUFACTURER's representative shall have a demonstrated knowledge and experience in all phases of the product's fabrication, QA/QC, handling, inspection, installation and responding to CONTRACTOR and JEA staff questions.

END OF SECTION

SECTION 02065

TEMPORARY SANITARY SEWER SERVICE AND BYPASS PUMPING SYSTEM

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. It shall be the CONTRACTOR's responsibility to ensure sanitary sewer service is active to each JEA customer throughout the duration of construction. While the gravity and /or pressure sanitary sewer system is being constructed, inspected, and tested for approval and operation, the CONTRACTOR shall provide a mechanism for continued sanitary sewer service to each JEA customer.

B. Payment of this item is inclusive of the JEA Water and Sewer Standards requirements for the bypass pumping line item in the bid tab, as well as those requirements listed herein. No additional payment will be provided for the temporary or interim sanitary sewer services. All work associated with maintaining sanitary sewer service to each JEA customer shall be incorporated into the pay item for temporary sanitary sewer service and bypass pumping system.

C. Design, furnish, install, operate, maintain, and remove all temporary bypass pumping and piping system(s) necessary for the construction of structures and piping as shown on the Drawings. Temporary, duplex (lead and back-up) bypass pumping system(s) will be required to pump sewage flow from the existing gravity and/or pressure sanitary sewer systems during installation of the proposed new collection pipes and/or pressure piping and manholes to be performed by this work.

D. During work associated with the disconnection and removal of the existing collection sewer pipes, and/or pressure pipe, and manholes delineated on the Drawings and their replacement with the new collection system, manholes, and required piping re-connections, the CONTRACTOR shall have operationally ready an online temporary bypass pumping and piping system. The specified areas in which bypass pumping and piping systems will be allowed are shown on the Drawings.

E. The CONTRACTOR shall be responsible for any and all violation notices, fines and remediation measures as a result of wastewater spillage or discharge associated with bypass pumping and piping activities and/or modifications and removal of existing structures and piping. The CONTRACTOR shall be responsible for all jobsite, motor vehicle and pedestrian traffic, and general public safety and protection during all work.

F. The CONTRACTOR shall provide all trained and experienced labor and supervision for operating and maintaining the pumping and piping systems during the entire bypass pumping operation.

G. The actual duration of bypass pumping and piping times depends on the CONTRACTOR's time required to perform the necessary pipe and structure removals, replacements, testing and connections. The actual bypass times may vary depending on the CONTRACTOR'S plan of work. The CONTRACTOR will not be granted additional monies for bypasses which extend beyond their approved plan of work schedule. The ENGINEER makes no estimations of the time required or need to bypass pump and provide temporary bypass piping.

H. It is the intent for the bypass pumping system to operate and be controlled by a series of wastewater floats to automatically start and stop all pumps, depending on water levels in the manhole(s). The system shall include an autodialer to alert and alarm the CONTRACTOR's and JEA's designated staff by cell phone communication of potential failures and prior to any high-water alarms. The CONTRACTOR shall be responsible to respond to all alert communications and for ensuring proper operation and maintenance of the bypass pumping system.

I. Any required vehicle and/or pedestrian Maintenance of Traffic (MOT)/Temporary Traffic Control (TTC) Plan(s) to conduct the bypass pumping and piping work shall be approved by the City of Jacksonville (COJ) and installed and maintained by the CONTRACTOR. All plans must be approved prior to starting the work.

J. The location and security of the bypass pumps and piping shall be provided by the CONTRACTOR. Secured fencing, at a minimum, shall be provided around each pumping system.

K. Should the existing manhole frame and cover, or top riser sections of the suction and/or discharge sanitary sewer manholes need modification to install said pumping system and piping, the CONTRACTOR shall include this work and protection of the work from the public in its bid. All restoration and repairs after the work is complete shall be performed in accordance with JEA's latest standards.

1.02 RELATED WORK

A. Related work for the pumping and bypass piping systems shall be as in the Drawings, documents, JEA Water and Wastewater Standards Manual of April 2020, as amended, regulatory permit conditions, and direction by JEA.

1.03 SUBMITTALS

A. The CONTRACTOR shall submit a complete plan of work to JEA for approval. The plan shall include the entire approach for maintaining sanitary sewer service and include: cut sheets of products or equipment to be utilized, narrative of temporary sanitary sewer service approach (i.e. location of watertight collection/ pump-out pits/chambers and capacity, pump-out frequency, pump-out equipment, volume of pump-out pits/chambers, etc.), and any other information necessary to address continuity of service.

B. Submit to JEA, detailed plans and descriptions outlining all provisions and precautions to be taken by the CONTRACTOR to establish compliance with this Section. The bypass pumping and piping systems shall be designed by a Florida licensed Professional Engineer with signed and sealed drawings, calculations, and equipment selections shall be submitted for review.

C. The plans shall include, but is not limited to, details of the following for all bypass pumping operations:
   1. Staging areas for pumps.
   2. Sanitary sewer pipe plugging method and types of plugs.
   3. Number, size, material, location, and method of installation of suction piping.

4. Number, size, material, method, of installation and location of installation of discharge piping.
5. Bypass pump sizes, capacity, number of each size to be on site, power requirements, and fuel consumption and onsite storage requirements under full load for a minimum of 3 days.
6. Hydraulic calculations of static lift, friction losses, and flow velocity (pump curves showing each pump's operation range shall be submitted).
7. Downstream discharge piping, valve, and fittings plan.
8. Method of protecting discharge structures from erosion and damage.
9. Thrust and restraint block sizes, mechanical joint restraints and locations.
10. Any sections showing suction and discharge pipe depth, embedment, select fill and special backfill required.
11. Verification that the pumps and all stationary fossil fueled equipment comply with and have been permitted under the City of Jacksonville Ordinance Code for Noise Control, Chapter 368 and are "residential silenced" equipped.
12. Any temporary pipe supports, anchoring, and protective barriers required.
13. Design plans and computation for access to bypass pumping locations indicated on the drawings.
14. Calculations for selection of bypass pumping pipe size(s).
15. Schedule for installation of and maintenance of bypass pumping pipes, valves, and fittings, including any preliminary staging or phasing plans required.
16. Plan indicating selected location of bypass pumping pipes.
17. Details on pump controls and instruments to safely operate and alarm of conditions. Provide sequence of CONTRACTOR's emergency response contacts for the autodialers.
18. An emergency response plan, which must also be reviewed and approved by the CONTRACTOR and submitted to JEA for comment.
19. Plans for the bypass piping system shall include, but not be limited to the following:
    a. Verification of all bypass piping sizes.
    b. Location of bypass pumping system and storage tanks.
    c. Narrative on any vehicle and/or pedestrian MOT/TTC requirements.
    d. Narrative on MOT/TTC to ensure access to businesses and residential property within the project limits and provisions of required temporary private easement arrrangements.
    e. Methods for protecting and securing the piping.

1.04 QUALITY ASSURANCE

A. The design, installation, operation, and maintenance of the temporary pumping and piping systems shall be the CONTRACTOR's responsibility. The CONTRACTOR shall employ the services of a vendor who can demonstrate to JEA that it specializes in the design and operation of temporary raw sewage bypass pumping and piping systems. The vendor shall provide at least five (5) references of projects of a similar size and complexity as this project performed by this firm within the past three (3) years.

B. The proposed bypass systems shall meet the requirements of all codes and regulatory agencies having jurisdiction.

C. The bypass pumping and piping specialty vendor shall have been in business for a minimum of 15 years. They shall have a major service center within 150 miles of the project site, with on-call maintenance and service staff available to respond onsite within 2 hours of notification.

D. The approved bypass pumping specialty contractors are:
   1. Sunbelt Rentals, Inc.
   2. United Rentals
   3. Or Engineer Approved Equal

1.05 SYSTEM DESCRIPTION

A. The bypass pumping and bypass piping systems shall have sufficient capacity as described in this specification. The CONTRACTOR shall provide all pipeline plugs, pipe supports, line stops, pumps of adequate size to handle minimum and peak flows, and suction and discharge piping to ensure that the total flow can be safely diverted around proposed new work.

B. Bypass pumping systems shall be capable of bypassing the flow around the work area and discharge into the identified existing JEA discharge manhole.

C. The bypass operation shall include all necessary controls and instruments to monitor and operate the system in automatic mode, adjust the number of pumps and provide alarms.

D. Bypass pumping system friction and minor losses and the appropriate size and number of pumps shall be determined by the bypass pumping contractor’s Florida licensed Professional Engineer in order to achieve the required flows.

E. The bypass pumping vendor shall provide spill and leak containment onsite diesel fuel storage tank(s) for the pumps. The CONTRACTOR shall provide all fuel required to operate the system. The onsite fuel storage tank(s) shall be sized to store enough fuel for running the entire system (all pumps) for a minimum of 3 days continuously, under full load.

F. It is essential to the operation of the existing sewer system that there will be no interruption in the flow of sewage throughout the duration of the project. The CONTRACTOR shall provide, maintain, and operate all temporary facilities such as dams, plugs, pumping equipment, conduits, all necessary power, and all other labor and equipment necessary to intercept the sewage flow before it reaches the point where it would interfere with the work, carry it past the work and return it to the existing sewer downstream of the work without causing a spill or discharge of the sewage to the environment.

G. The CONTRACTOR shall provide all necessary means to safely convey the sewage past the work area. The CONTRACTOR will not be permitted to stop or impede the sewage flows under any circumstances.

H. The CONTRACTOR shall maintain sewer flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers and that will protect public and private property from damage and flooding.

I. The CONTRACTOR shall protect water resources, wetlands, and other natural resources and coordinate to ensure compliance with permitting and regulatory agencies. The CONTRACTOR shall include this effort its bid.

J. The design of the bypass pumping system for the local, gravity collection system shall handle the following flows. Refer to Exhibit A and Exhibit B.

1. Existing 30-inch Gravity Sewer N-S of Melson Avenue Flowing South
   Bypass 30-inch Gravity Sewer to Manhole at the intersection of 6th Street West and Melson Avenue
   Typical average daily flow conditions of 227 gpm and peak hour flow of 775 gpm. The bypass pumping system shall have a firm capacity of 227 gpm, minimum. At least one stand-by pump shall be provided.
2. Existing 30-inch Gravity Sewer N-S of Melson Avenue Flowing North
   Bypass 30-inch Gravity Sewer to Manhole at the intersection of 3rd Street Circle North and Melson Avenue
   Typical average daily flow conditions of 155 gpm and peak hour flow of 559 gpm. The bypass pumping system shall have a firm capacity of 155 gpm, minimum. At least one stand-by pump shall be provided.
3. Existing 27-inch Gravity Sewer on 5th Street West Flowing East
   Bypass 27-inch Gravity Sewer to downstream Manhole within 5th Street West
   Typical average daily flow conditions of 72 gpm and peak hour flow of 270 gpm. The bypass pumping system shall have a firm capacity of 72 gpm, minimum. At least one stand-by pump shall be provided.

PART 2 – PRODUCTS

2.01 PUMP SYSTEM

A. All pumps used shall be fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in the priming system. The pumps shall be diesel powered. No equipment including pumps shall exceed the noise limit of the City of Jacksonville Ordinance Code for Noise Control, Chapter 368 and shall be “residential silenced” equipped. If necessary, to achieve this sound limitation, sound enclosures shall be provided. Work is within residential streets.

B. Pump shall be capable of handling raw, unscreened, sanitary sewage containing solids and fibrous materials. Pumps shall be non-clog and shall be capable of passing 3-inch solids.

C. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of influent flows.

D. Spare parts for the pumps and piping shall be kept on site as required. Adequate hoisting equipment for each pump and accessories shall be maintained on site.

E. The vendor shall provide the necessary stop/start controls and alarms for each pump. Autodialers shall be used to alert of problems, if a header system is used to manifold the pumps, each pump shall include an autodialer.

F. The total bypass pumping capability shall be a minimum as described above. All units shall be fully operational. Any unit which fails to operate at its rated capacity shall be repaired or replaced immediately. The CONTRACTOR is advised that the JEA has no control over the maximum flows that will occur in its sanitary sewer system.

2.02 PUMP DISCHARGE AND TEMPORARY BYPASS PIPING

A. The pump discharge and temporary bypass piping may be of new or used materials and shall not leak during operation. Under no circumstances will aluminum “irrigation” type piping or solvent cemented PVC pipe be allowed.

B. High density polyethylene (HDPE) pipe used for the pump discharge and temporary bypass piping shall comply with JEA Standard Specification Sections 755 I.6 and II.1.1. Used pipe shall have the nominal pipe diameter, pipe size (iron pipe size-IPS or ductile iron pipe size-DIPS), and dimension ratio (DR) readily visible on each pipe segment, or otherwise readily identifiable. The pipe used for the bypass shall have a DR equivalent or greater pressure rating than the specified test pressure. All pipe used for the bypass piping shall be free of gouges, cuts, scrapes or other physical deformities on the inside and outside barrel of the pipe equivalent to, or greater than, 10 percent in depth of a new pipe segment DR wall thickness.

C. Only flanged joint or HDPE electro or thermal fused joint connections shall be allowed. Mechanically restrained adaptors are PROHIBITED on the discharge side of pumps, discharge header, inline fittings or the force main. Shop-fabricated flexible hose less than 8 feet in length with flanged ends may be used to connect pumps to discharge manifold. If used, flexible hose shall have a minimum pressure rating of 100 psi.

D. Couplings and fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans. Approved manufacturers are Friatec, Central Plastics and Plasson.

E. All bypass piping shall be pressure tested for 4 hours at 100 psi prior to beginning the work.

2.03 SEWER PLUGS

A. Any sewer plugs required for bypass pumping shall be of the compressed air type and shall be capable of and suitably anchored for water heads to final grade.

B. All sewer plugs shall have zero leakage after inflation and throughout their use.

C. The CONTRACTOR shall supply plugs with sufficient supply hose to extend above grade and include an inline pressure gauge to be monitored daily (minimum) to

ensure no leakage in each plug. Each plug shall be securely tethered to prevent a dislodged plug from flowing uncontrolled downstream in any pipe.

2.04 EMERGENCY RESPONSE PLAN

A. The CONTRACTOR's emergency response plan shall have the following minimum components:
   1. 24-hour a day electronic monitoring of the pumping system
   2. A call path or sequence for an emergency an on-call staff response
   3. Requirements of on-site tools and parts
   4. Record keeping requirements

B. The CONTRACTOR shall provide technician(s) capable of maintaining and trouble-shooting the bypass system on-call in case of an emergency on a 24-hour basis to maintain or re-establish pump sets and level of the water. The Technician shall submit incident reports and turn them into JEA within 24 hours of any incident. The technician shall respond and be onsite to an emergency call within 2 hours of notification.

C. The CONTRACTOR, JEA, and JEA Sewer System O&M Staff shall be linked by cell phone 24-hours a day during the course of bypass operations. Any alarms shall initiate a call to the CONTRACTOR and JEA. JEA and CONTRACTOR shall each have a minimum of three (3) individuals listed within the 'calling tree'. If the first contact does not confirm receipt of the alarm call, then the next contact shall be called until the alarm is either confirmed and/or all three (3) contacts are called. JEA's link into the alarm status is only for informational purposes. The CONTRACTOR shall be responsible for all bypass alarm conditions and shall be required to resolve the condition that is causing the alarm to occur.

PART 3 – INSTALLATION

3.01 DESIGN

A. The CONTRACTOR shall employ the services of a Florida licensed Professional Engineer to design the temporary piping, pumping and control systems. The design shall be submitted for approval. The temporary piping, pumping and control system plan and layout shall be approved by JEA before bypassing may begin.

B. Approval of the design shall not relieve the CONTRACTOR from full responsibility for performance of the system.

C. The temporary pumping plan shall include design information on the proposed pumps including operating conditions.

3.02 INSTALLATION

A. System layout shall provide for ready removal and replacement of every pumping unit without affecting the others.

B. No debris of any type shall be allowed in the piping system. Protective barriers and covers shall be installed in this regard. Any debris inadvertently allowed into the system shall be immediately removed.

C. When pumping/bypassing is required, the CONTRACTOR shall supply the necessary pumps, conduits, and other equipment to divert the flow of wastewater around the work to be performed.

D. The CONTRACTOR shall make connections to the existing gravity sewer and or pressure pipe and construct temporary bypass pumping structures only as described in the specifications or as approved by JEA.

E. When working inside manholes, the CONTRACTOR shall exercise caution and comply with OSHA and JEA requirements when any personnel are working in the presence of sewer gases, combustible oxygen-deficient atmospheres, raw sewage, and confined spaces.

F. The CONTRACTOR shall be responsible for furnishing the necessary material, equipment, labor and supervision to set up and operate the pumping and bypass piping systems. The bypass piping and pumping systems shall be fully inspected at least three times a day to ensure that the system is working correctly.

G. The CONTRACTOR shall pressure test the piping for leaks prior to use.

H. All bypass operations shall be properly secured, protected and fenced. The CONTRACTOR shall install temporary barricade around all bypass equipment to restrict access to unauthorized persons. A minimum of new, 4-foot-high, orange safety fence with new, steel T-stakes every 10 feet shall be installed and maintained during the entire bypass.

I. Provide all necessary vehicle and pedestrian MOT/TTC plans in accordance with the COJ.

J. Unless otherwise shown on the project documents and approved by JEA, the by-pass pumping system and piping shall not obstruct access to any properties at existing driveways. The CONTRACTOR shall lay the piping around, under, use hose ramps, or watertight, fabricated pipe ramp boxes at driveways.

3.03 FLOW CONTROL MEASURES

A. The CONTRACTOR shall be responsible and liable for any wastewater spills and overflows resulting from improper installation, operation, maintenance, protection or inadequacy of the bypass system, including reporting to regulatory agencies and paying the resulting fines and penalties.

3.04 REMOVAL AND RESTORATION

A. The CONTRACTOR shall remove all pumping and temporary bypass systems components and restore any modifications to the existing manholes or structures as directed by JEA. Any soil containing raw sewage, grease, oil, or fuel from the by-

pass systems shall be removed from the site and replaced with topsoil and sodded. All pavement grassed and landscaped areas shall be restored to at least pre-construction condition.

B. The sewer plugs and all appurtenances shall be removed and any damaged to the sewers or other pipes repaired.

END OF SECTION 02065

SECTION 02999

MISCELLANEOUS WORK

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. This Section includes subsurface investigative utility locates by the CONTRACTOR. The CONTRACTOR shall furnish all labor, materials, equipment and incidentals to complete the work under this Section.

B. The work to be performed by the CONTRACTOR under this Section includes the subsurface field locating of the existing dual 12-inch force mains in the vicinity of the proposed new sanitary sewer piped connection point west of the intersection of 5th Street West and Melson Avenue, as shown on the Drawings.

C. The ENGINEER's surveyor located a single, existing 12-inch force main discharging into the 5th Street West-Melson Avenue manhole but was unable to locate the second 12-inch force main discharging to said manhole as shown on available JEA furnished documents. The ENGINEER's surveyor conducted GPR scans from the south edge of the 5th Street West pavement to south of the 48-inch RCP, performed vacuum pothole excavations, and manually probed below the sidewalk in an attempt to locate the second force main. Based on limited testing completed by JEA, it appears that both 12-inch force mains discharge to the existing junction manhole at 5th Street West-Melson Avenue. Refer to Exhibit C for the surveyor's test hole and exploration hole reports. Refer to Exhibit D for JEA's as-builts of the force main utility. This pay item is for the CONTRACTOR to perform the necessary field investigations to locate both force mains and confirm the construction can proceed as shown on the Drawings.

D. All work associated with field verifying the location of the existing dual 12-inch force mains will be incorporated into the pay item for 12-inch force main field verification allowance.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 FIELD VERIFICATION OF EXISTING DUAL 12-INCH FORCE MAINS LOCATION

A. The CONTRACTOR shall begin field efforts to locate the dual force mains within 30 days from the receiving the JEA NTP. The CONTRACTOR shall provide written notice to JEA and the ENGINEER prior to beginning the process of the force mains' field verification. The CONTRACTOR shall provide a summary with anticipated level of effort required to perform the work prior to beginning for review by JEA.

B. The actual duration of time to locate the force mains may vary depending on the CONTRACTOR's plan of work. The CONTRACTOR will bill towards the pay item for the 12-inch force main field verification allowance as set in the bid form on a time and materials basis.

C. JEA will not entertain schedule delay claims related to performing the specified work in the vicinity of this intersection due to locating the existing force mains. The ENGINEER makes no estimations of the time required or needed to locate the existing force mains.

D. The CONTRACTOR shall provide the field verified top of pipe elevations and contract document stationing locations of the existing dual 12-inch force mains to the OWNER and ENGINEER a minimum of 90 days before construction within 500 feet of the intersection is scheduled to occur.

E. The CONTRACTOR shall be responsible for any and all jobsite, motor vehicle traffic, pedestrian, and general public safety and protection during all work. The CONTRACTOR is advised that the proposed work is immediately adjacent to the Duval County Public Schools' James Weldon Johnson College Preparatory Middle School Campus.

F. All mobilization, investigative demolition, protected and dewatered excavation, restoration and repairs after the work is completed shall be performed by the CONTRACTOR in accordance with JEA's latest standards, COJ permit requirements, conditions and standards, and regulatory agency requirements.

G. Any required vehicle and/or pedestrian Maintenance of Traffic (MOT)/Temporary Traffic Control (TTC) Plan(s) to conduct the subsurface investigative utility locate work shall be approved by the City of Jacksonville (COJ) and installed and maintained by the CONTRACTOR. All plans must be approved prior to starting the work.

END OF SECTION 02999

Exhibit A

Existing JEA Wastewater Collection System Location and Flow Projections for Temporary Pumping and Bypass

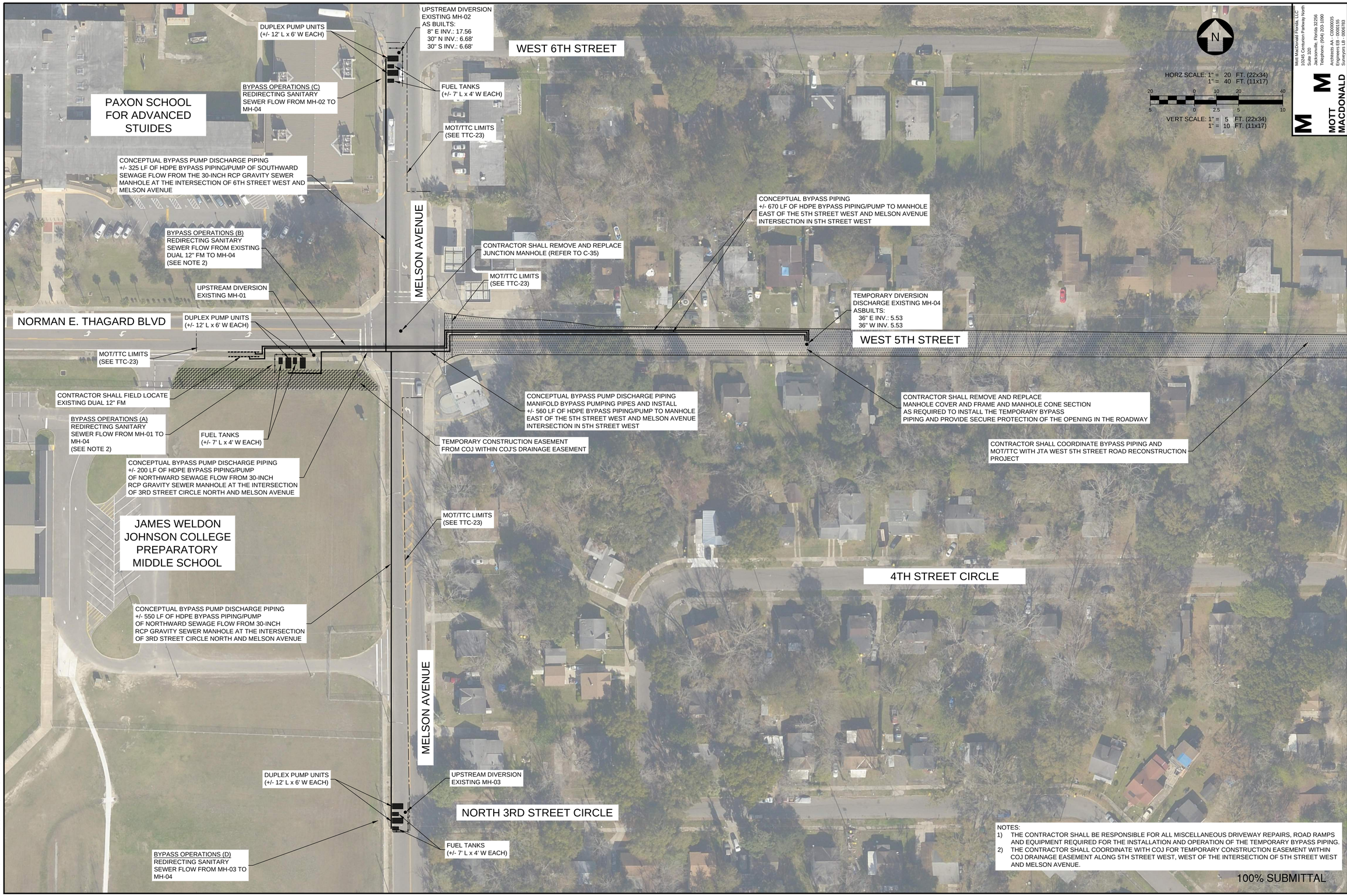
Exhibit A


SFR: 174 ERC
MFR: 0 Units
CII: 54 kGPD
ADF: 103 kGPD
PHF: 270 GPM
SFR: 406 ERC
MFR: 112 Units
CII: 190 kGPD
ADF: 326 kGPD
PHF: 775 GPM
SFR: 497 ERC
MFR: 0 Units
CII: 84 kGPD
ADF: 223 kGPD
PHF: 550 GPM
NORMAN E THAGARD BV
PAXON HIGH AC
ELSON AV
ALFEN ST
9TH ST W
8TH ST W
7TH ST W
6TH ST W
5TH ST W
ST CLAIR ST
COOK ST
SUNSET ST
4TH ST W
4TH STREET CR
3RD STREET CR N
3RD STREET CR S
2ND STREET CR
DENA ST
DETROIT ST
3RD ST W
2ND ST W
125 in
525 ft

Exhibit B

JEA 5th Street West - 20-inch Force Main Extension

Aerial of Temporary Bypass Pumping and Piping Systems



NOTES:
1) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MISCELLANEOUS DRIVEWAY REPAIRS, ROAD RAMPS AND EQUIPMENT REQUIRED FOR THE INSTALLATION AND OPERATION OF THE TEMPORARY BYPASS PIPING.
2) THE CONTRACTOR SHALL COORDINATE WITH COJ FOR TEMPORARY CONSTRUCTION EASEMENT WITHIN COJ DRAINAGE EASEMENT ALONG 5TH STREET WEST, WEST OF THE INTERSECTION OF 5TH STREET WEST AND MELSON AVENUE.

100% SUBMITTAL

Mott MacDonald Florida, LLC
10245 Centurion Parkway North
Suite 320
Jacksonville, Florida 32256
Telephone: (904) 283-1090
Certificate of Authorization:
Engineers EB - 00000155
Surveyors LB - 0006783

MOTT MACDONALD

NO.	BY	DATE	REVISIONS
6.			
5.			
4.			
3.			
2.			
1.			

DESIGN ENGINEER
BRUCE A. NEU
FLORIDA REGISTRATION NO.
51672

DESIGNER:	B. NEU
DRAWN BY:	F. NGUYEN
DATE:	JULY 2020
CHECKED BY:	P. MOURT
DATE:	JULY 2020

JEA Building Community sm

5TH STREET WEST 20" FORCE MAIN EXTENSION
TEMPORARY SEWAGE BYPASS PIPING AND PUMPING - CONCEPTUAL LAYOUT

PROJ. NO. 502402368
DATE: JULY 2020
SCALE: HORIZ. 1" = 20'
VERT. 1" = 5

NO. SHEETS 88
SHEET NO. 6
DRAWING NO. G-6

Xrefs Attached= JEA_SHT22x34_BOR [C:\pwworking\hmm\water_wastewater\mottmac__ngu850B3\d0426985\JEA_SHT22x34_BOR.dwg]
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Exhibit C

DRMP, Inc. VVH and SUE Data for One of Two Existing 12-inch Force Mains on South Side of 5th Street West Near Melson Avenue (Second 12-inch Force Main - Not Located)

Dyer, Riddle, Mills & Precourt, Inc.

DRMP
ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS

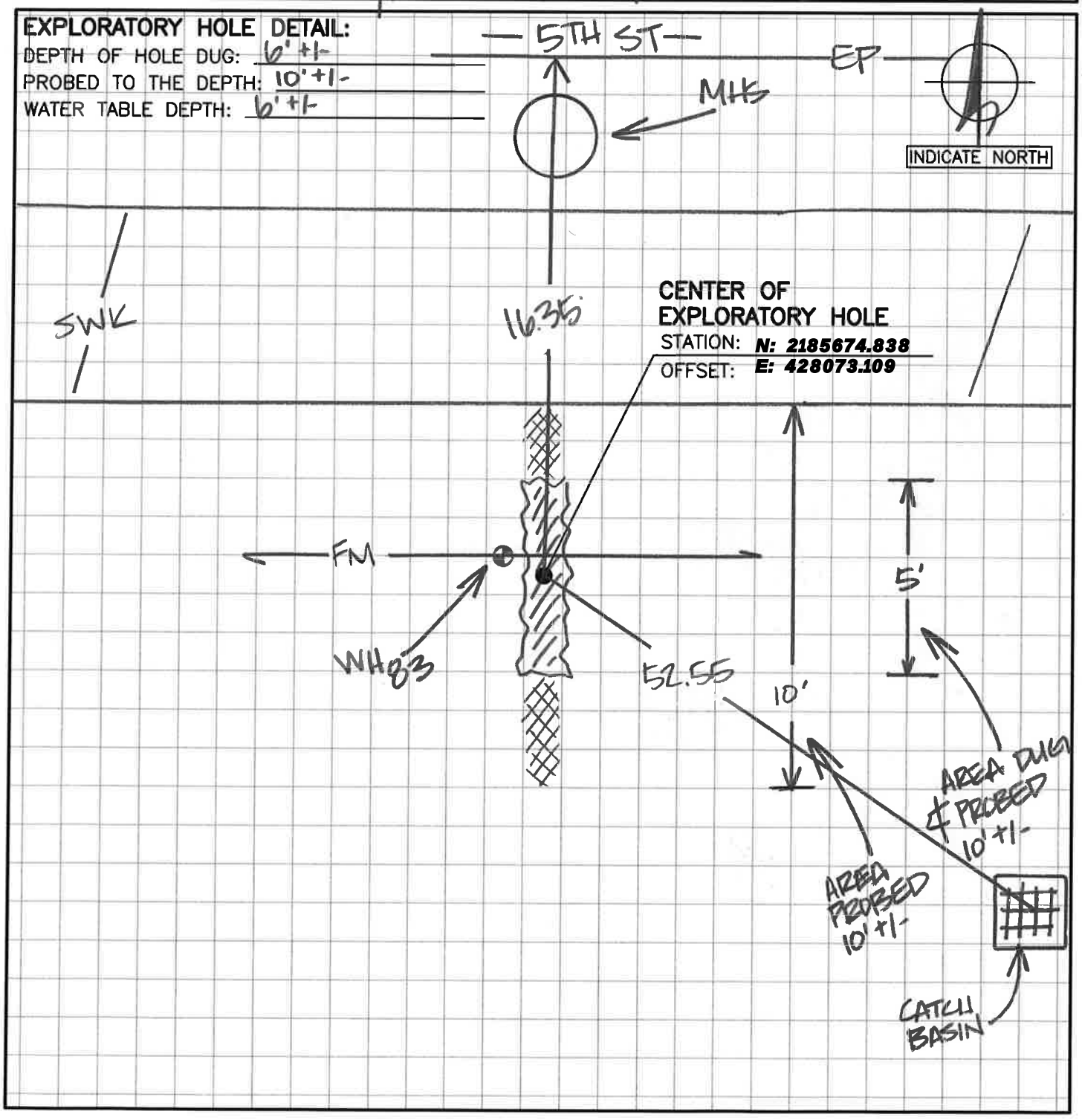
CAMERA 2

MAST ARM EXPLORATORY DETAIL

PROJECT: W 5TH ST	DATE: 11/26/19	CREW: HEITMAN DUNHAM BREIDEN PERRINGTON
CITY/COUNTY: DUVAL	SUNSHINE ONE-CALL #:	F.P.N.#
HOLE# EH6	UTILITY FOUND: (x1) FM 12" PVC *UNABLE TO LOCATE 2ND FM	

INTERSECTION NAME: 5TH ST / NORMAN E THAGARD @ MELSON AVE

EXPLORATORY HOLE DETAIL:
DEPTH OF HOLE DUG: 6' +/-
PROBED TO THE DEPTH: 10' +/-
WATER TABLE DEPTH: 6' +/-



West 5th Street – Jacksonville Electric Authority
DRMP #18-0276.003

EH #6

EH #6

EH #6


McDUFF AVENUE & 5th STREET
ROADWAY IMPROVEMENTS PHASE II
For more information, call
630-CITY (2489)
or visit
www.betterjax.com

Dyer, Riddle, Mills & Precourt, Inc.

DRMP
ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS

MAST ARM EXPLORATORY DETAIL

PROJECT: W 5TH ST | DATE: 12/3/19 | CREW: HEITMAN DUNHAM JASMIN

CITY/COUNTY: DUVAL | SUNSHINE ONE-CALL #: | F.P.N.#

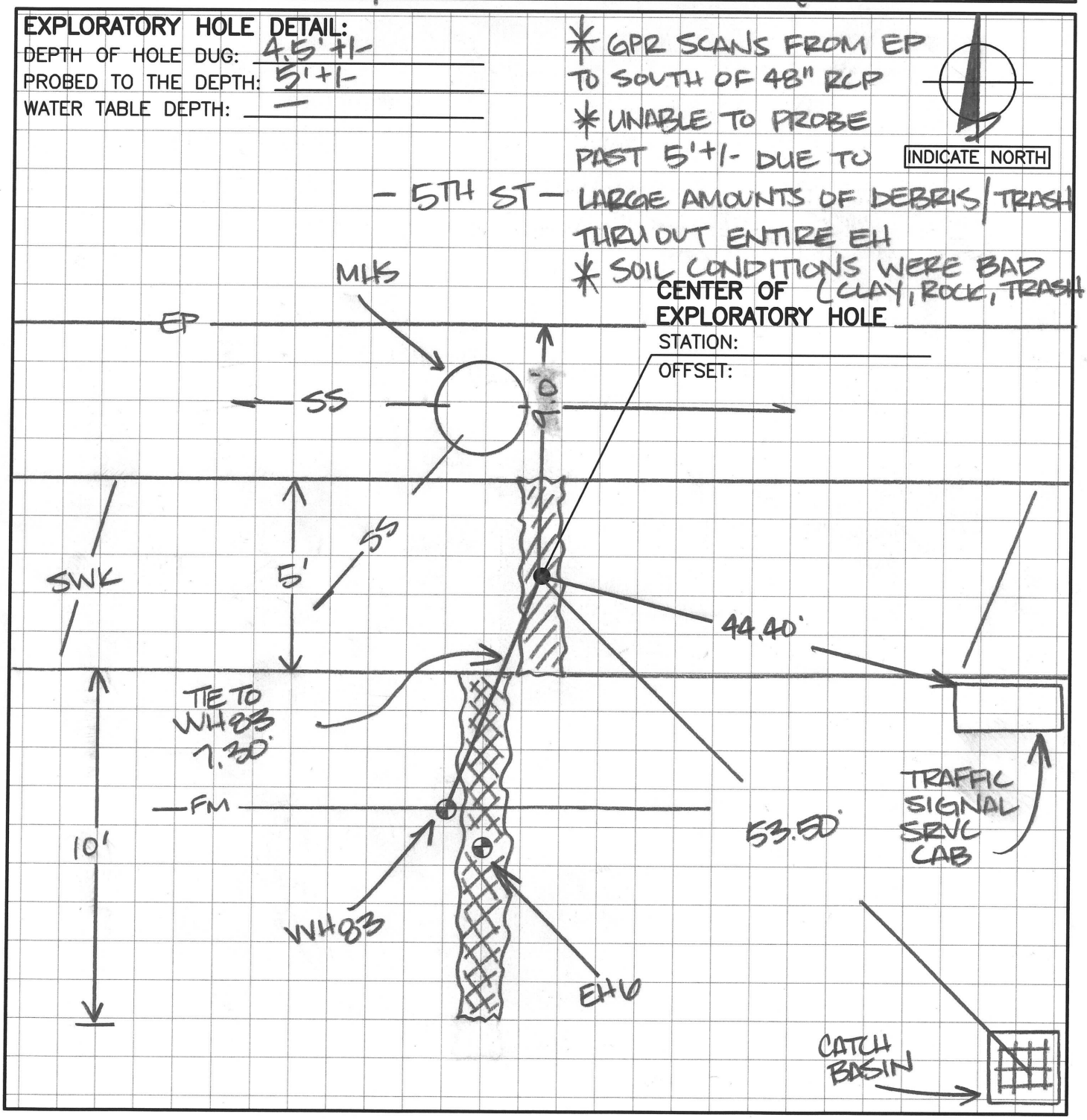
HOLE# EH7 | UTILITY FOUND: UNABLE TO LOCATE 2ND FM

INTERSECTION NAME: 5TH ST | NORMAN E THAGARD BLVD @ MELSON AVE

EXPLORATORY HOLE DETAIL:
DEPTH OF HOLE DUG: 4.5' +/-
PROBED TO THE DEPTH: 5' +/-
WATER TABLE DEPTH: —

* GPR SCANS FROM EP TO SOUTH OF 48" RCP
* UNABLE TO PROBE PAST 5' +/- DUE TO LARGE AMOUNTS OF DEBRIS/TRASH THRU OUT ENTIRE EH
* SOIL CONDITIONS WERE BAD (CLAY, ROCK, TRASH)

INDICATE NORTH




630–CIT
or vis
www.betterj
CAUTION CAUTION CAUTION
CAUTION

EH 7

Dyer, Riddle, Mills & Precourt, Inc.

DRMP
ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS

CAMERA 2

VACUUM EXCAVATION RECORD

PROJECT: W 5TH ST | DATE: 11/26/19 | CREW: HEITMAN DUNHAM BREIDEN PERRINGTON

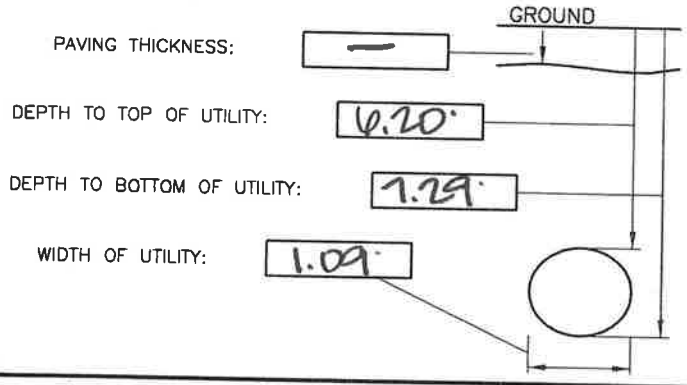
CITY/COUNTY: DUVAL | SUNSHINE ONE-CALL #: | F.P.N.#

HOLE# VVH 83 | UTILITY FOUND: FM 12" PVC (JEA)

GROUND: ASPHALT CONCRETE (DIRT) OTHER

SOIL CONDITION: (HARD) (SOFT) (WET) DRY SAND (DIRT) (CLAY) (ROCKY)

VERTICAL INFORMATION:



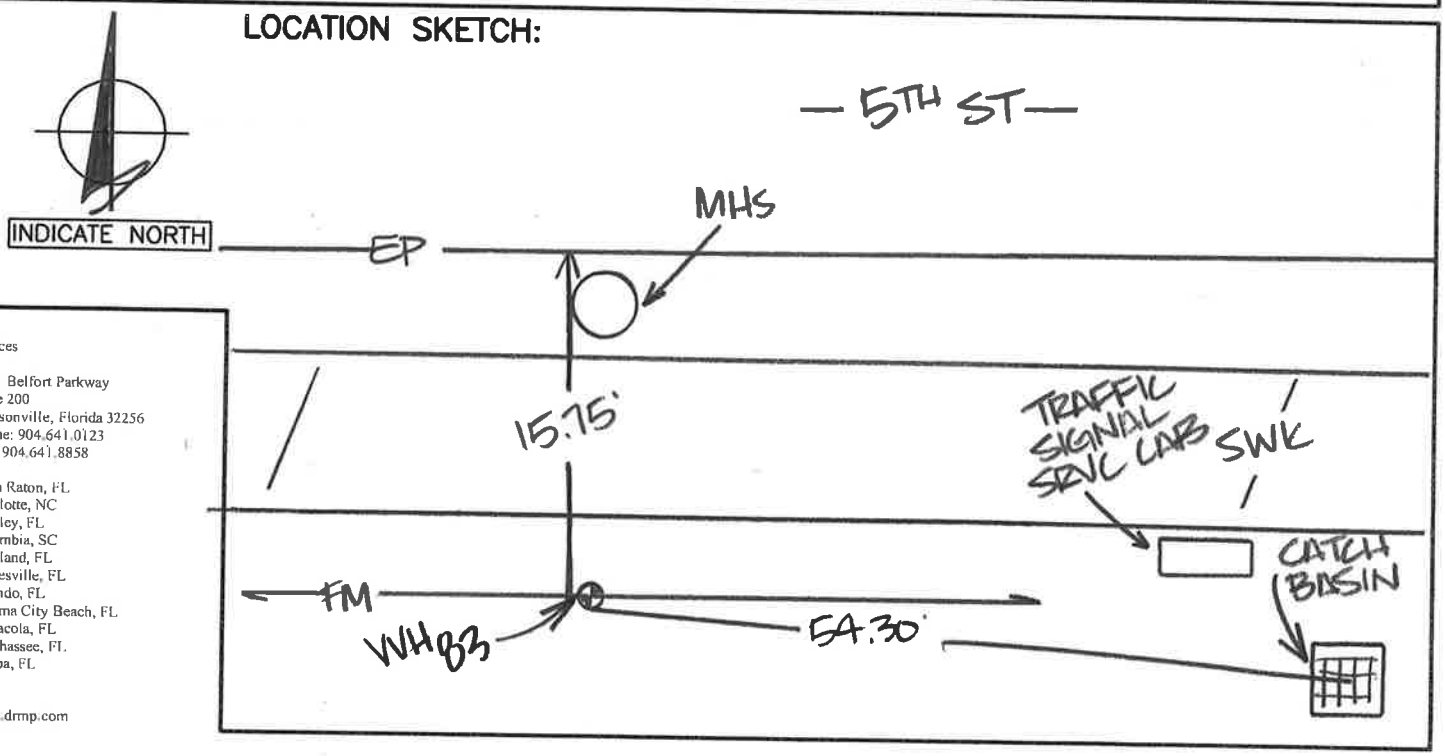
ELEV. AT GRADE:	ELEV. AT TOP:	ELEV. AT BOTTOM:
22.25'	**16.05'**	**14.96'**

Approximate Station	Approx. Offset Distance	Approx. Offset Distance	Utility Direction
N: 2185675.445 E: 428071.610	L	R	

Type of Utility	Material
E - Electrical	1 - Steel
G - Gas	(2) - PVC (Polyvinyl Chloride)
BT - Buried Telephone	3 - DIP (Ductile Iron Pipe)
FOC - Fiber Optic Cable	4 - VCP (Vitrified Clay Pipe)
W - Water	5 - PE (Polyethylene Pipe)
SAN - Sanitary Sewer	6 - AC (Transite)
STM - Starm Sewer	7 - CI (Cast Iran)
CATV - Cable Televisian	8 - DBC (Direct Buried Cable)
(FM) - Farce Main	9 - Cancrete Pipe
RW - Reclaimed Water	10 - Carrugated Metal Pipe
Other _____	11 - Duct
	Other _____

Identified By	Distance Pulled From
20 - Sleeve	(30) - Edge of Pavement
21 - Hub/Lath	31 - Baseline
22 - Nail/Disk*	32 - Right-af-Way
23 - "X" in Concrete	33 - Centerline
24 - Swing Ties	34 - Back af Curb
~~25~~ - SIRC 5/8"**	35 - Survey Hub
Other _____	36 - "X" in Concrete
*Note: 22-Set Nail and Disk Stamped "DRMP REF. PT."	(Other) (E CATCH BASIN)
**Nate: 25-Set Iran R&CAP Stamped "DRMP REF. PT."	This job is: (ENGLISH) or METRIC

LOCATION SKETCH:



Offices

8001 Belfort Parkway
Suite 200
Jacksonville, Florida 32256
Phone: 904.641.0123
Fax: 904.641.8858

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Tampa, FL

www.drmp.com

West 5th Street – Jacksonville Electric Authority
DRMP #18-0276.003

VVH #83

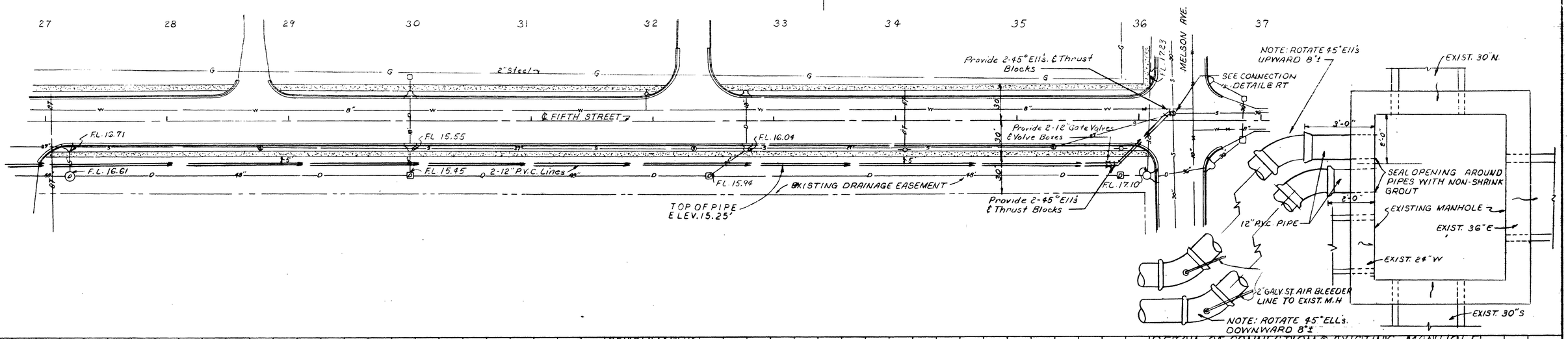
VVH #83

VVH #83


McDUFF AVENUE & 5th STREET
ROADWAY IMPROVEMENTS PHASE II
For more information, call
630-CITY (2489)
or visit
www.betterjax.com

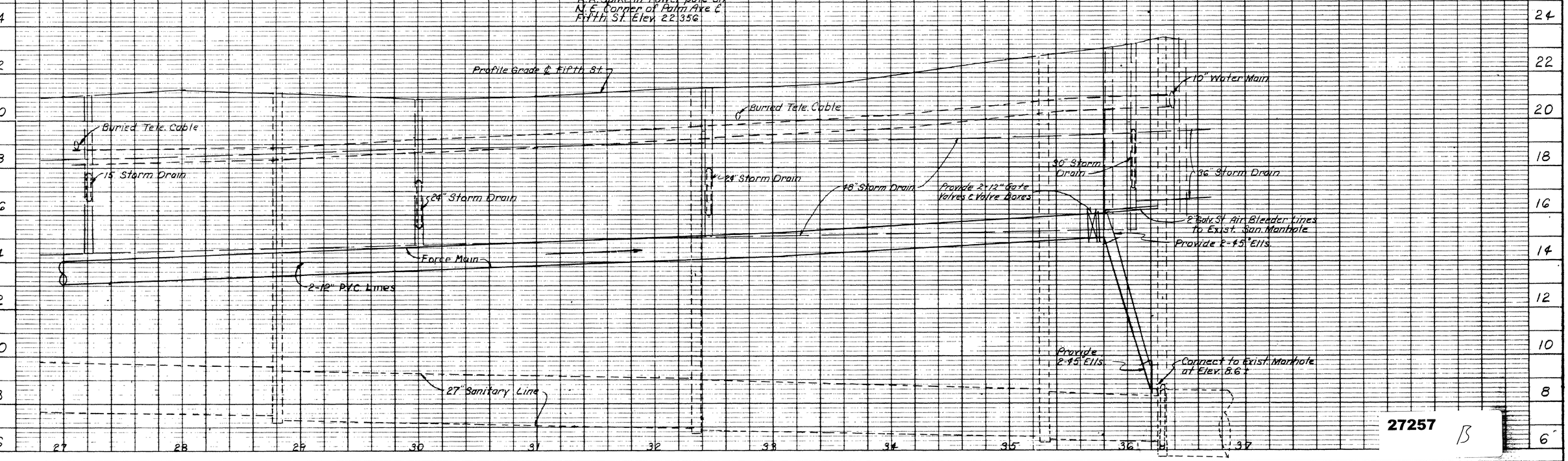
Exhibit D

JEA As-Builts of 5th Street Force Main Extension



DETAIL OF CONNECTION @ EXISTING MANHOLE
SCALE: 1" = 2'-0"

BENCH MARK
B.R. Spike in Power pole on N.E. Corner of Palm Ave. & Fifth St. Elev. 22.356



27257 B

NO.	DESCRIPTION	BY	FIRM	DATE	APPROVAL	DATE
	REVISIONS		SUBMITTAL			
1	As Built	AJC	CE	12/7/76		

SUBMITTED BY: _____
REG. ENGR. NO. _____ DATE _____
CUMMINGS ENGINEERS
APPROVAL RECOMMENDED BY: _____
REG. ENGR. NO. _____ DATE _____

APPROVED BY: _____
REG. ENGR. NO. _____ DATE _____
AUTHORIZED BY _____
REG. ENGR. NO. _____ DATE _____

WESTLAKE-SOUTHERN

SANITARY SEWERAGE FACILITIES
SEWAGE FORCE MAIN PHASE TWO

CUMMINGS ENGINEERS INC.
218 WEST CHURCH STREET
JACKSONVILLE, FLORIDA

DETAILED BY: A.J.T.
CHECKED BY: R.W.B
SCALE 1"=40'H, 1"=2'V
DATE SEPT., 1976

FORCE MAIN EXTENSION ON FIFTH ST.

SEE SHT 23 OF 24 - 5TH & Palm

CONTR. NO. _____
PROJ. NO. 7416-18
SHEET NO. 2 OF 2

Appendix A

Hydrogen Peroxide

Safety Data Sheet

1. Identification

1.1. Product identifier

Trade name	HYPROX(TM)>400-600 HYDROGEN PEROXIDE (US-GHS Haz)
CAS-No.	7722-84-1

1.2. Recommended use of the chemical and restrictions on use

Relevant applications identified	For industrial use
Function	For oxidation

1.3. Details of the supplier of the safety data sheet

Company	Evonik Corporation USA 299 Jefferson Road Parsippany,NJ 07054-0677 USA
Telephone	973-929-8000
Telefax	973-929-8040
Email address	Product-Regulatory-Services@Evonik.com

1.4. 24 HOUR EMERGENCY TELEPHONE NUMBERS:

CHEMTREC - US & CANADA:	800-424-9300
CHEMTREC MEXICO:	01-800-681-9531
CHEMTREC INTERNATIONAL:	+1 703-527-3887 **(collect calls accepted)**
Product Regulatory Services :	973-929-8060

2. Hazards identification

2.1. Classification of the substance or mixture

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

Oxidizing liquids	Category 2	H272
Acute toxicity (Oral)	Category 4	H302
Skin irritation	Category 2	H315
Eye irritation	Category 2A	H319
Specific target organ toxicity - single exposure (Respiratory system)	Category 3	H335
Acute aquatic toxicity	Category 2	H401
Chronic aquatic toxicity	Category 2	H411

2.2. Label elements

Statutory basis	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

hazard-defining component(s) (GHS)

- hydrogen peroxide solution

Symbol(s)

Signal word: Danger

Hazard statement:
H272 - May intensify fire; oxidiser.
H302 - Harmful if swallowed.
H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.
H411 - Toxic to aquatic life with long lasting effects.

Precautionary statement: Prevention:
P210 - Keep away from heat.
P220 - Keep/Store away from clothing/ combustible materials.
P221 - Take any precaution to avoid mixing with combustibles.
P261 - Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 - Wash skin thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/ eye protection/ face protection.

Precautionary statement: Reaction:
P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
P302 + P352 - IF ON SKIN: Wash with plenty of water/ soap.
P304 + P340 + P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P332 + P313 - If skin irritation occurs: Get medical advice/ attention.
P337 + P313 - If eye irritation persists: Get medical advice/ attention.
P362 - Take off contaminated clothing and wash before reuse.
P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391 - Collect spillage.

Precautionary statement: Storage:
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.

Precautionary statement: Disposal:
P501 - Dispose of contents/ container to an approved waste disposal plant.

Supplemental hazard information / Label elements

2.3. Other hazards

None known

3. Composition/information on ingredients

Chemical nature
aqueous solution, clear

• **Hydrogen peroxide**	> 40% - <= 60%
CAS-No. 7722-84-1	

Other information
This material is classified as hazardous under OSHA regulations.
See Section 8 for Exposure Guidelines

4. First aid measures

4.1. Description of first aid measures

General advice
Pay attention to self-protection.
Remove victims from hazardous area. Immediately remove soiled or soaked clothing and remove it to a safe distance. Keep victim warm, in a stabilized position and covered.
Do not leave victims unattended.
If the casualty is unconscious: Place the victim in the recovery position.

Inhalation
Potential for exposure by inhalation if aerosols or mists are generated.
Move victims into fresh air.
With labored breathing: Provide with oxygen. Consult a doctor.
If the casualty is not breathing: Perform mouth-to-mouth resuscitation, notify emergency physician immediately.

Skin contact
Wash off affected area immediately with plenty of water for at least 15 minutes.
If symptoms persist, consult a physician for treatment.

Eye contact
With eye held open, thoroughly rinse immediately with plenty of water for at least 10 minutes.
Consult an ophthalmologist immediately if the symptoms persist.
When dealing with caustic substances, notify emergency physician immediately (key words: burns in eye).

Ingestion
Rinse mouth.
Immediately give large quantities of water to drink.
Obtain medical attention.
When dealing with caustic substances, notify emergency physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms
Irritation of skin and mucous membranes
Causes burns.
daze,
headache, dizziness, somnolence (drowsiness), nausea.
Health injuries may be delayed.

Hazards
Srongly irritating to corrosive.
Harmful in contact with skin and if swallowed.

Vapours may cause drowsiness and dizziness.

4.3. Indication of any immediate medical attention and special treatment needed

The initial focus is only on the local action, characterized by quickly progressing deep tissue damage.
In the eye, caustic/ irritating and harmful liquids cause, depending on the intensity of exposure, various levels of irritation, destruction, and ablation of the epithelium of the conjunctiva and cornea, corneal clouding, edema and ulcerations.
Danger! Possible loss of eyesight!
Superficial irritations and damage up to ulcerations and scarring develop on the skin.
After accidental absorption in the body, the pathology and clinical findings are dependent on the kinetics of the substance (quantity of absorbed substance, the absorption time, and the effectiveness of early elimination measures (first aid)/ excretion - metabolism).
A specific action of the substance is unknown.
In case of substances with high water solubility, irritations up to formation of necrosis in the upper respiratory tract may result after inhalation of caustic/ irritating aerosols and mists.
The initial focus is on the local action: signs of irritation of the respiratory tract such as coughing, burning behind the sternum, tears, burning in the eyes or nose.
There is a risk of pulmonary edema!

---

5. Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media: water spray, Adapt fire-extinguishing measures to surroundings, Foam, dry powder, Carbon dioxide (CO2)

Unsuitable extinguishing media: organic compounds

5.2. Special hazards arising from the substance or mixture

Product is fire-stimulating.
Contact with the following substances may cause inflammation: flammable substances.
The product itself does not burn.Involved in fire, it may decompose yielding oxygen.
Risk of overpressure and burst due to decomposition in confined spaces and pipes.
Release of oxygen may support combustion.Strong oxidizer. Contact with combustible materials may cause a fire.
Contact with incompatible materials (e.g. metals, alkalis, and reducing agents) will cause hazardous decomposition resulting in the release of large quantities of heat, steam, and oxygen gas.
Danger of decomposition under influence of heat.
Lower Explosive Limit: Hydrogen Peroxide vapors >40% by weight (or 26% mol).
This product spontaneously decomposes above 150 degrees celcius. A severe detonation hazard may exist when mixed with organic liquids, e.g. kerosene or gasoline.Hydrogen Peroxide itself is not flammable.
Drying of product on clothing or combustible materials such as paper, fabrics, leather, and wood may cause fire. Mixtures of Hydrogen Peroxide with flammable liquids (solvents) may possess explosive properties. Contamination can cause rapid decomposition, release of oxygen and pressure.

Hydrogen Peroxide in the proximity of an ongoing fire must be diluted with large volumes of water.

5.3. Advice for firefighters

Evacuate personnel to safe areas.
Keep out unprotected persons.
Keep unauthorized persons away.
With large-scale fire, violent decomposition or even explosion is possible.
In the case of fire, cool the containers that are at risk with water or dilute with water (flooding).
or
In case of fire, remove the endangered containers and bring to a safe place, if this can be done safely.
Stay upwind; keep out of low areas.

Containers can build up pressure if exposed to heat (fire). Cool with water spray. As in any fire, wear self-contained, pressure-demand breathing apparatus (MSHA-NIOSH approved or equivalent) and full protective gear.
Use water spray or fog to knock down irritating vapor.
In the case of fire, wear respiratory protective equipment independent of surrounding air and chemical protective suit.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Product causes chemical burns. Evacuate personnel to safe areas. Keep out unprotected persons. Keep unauthorized persons away.

6.2. Environmental precautions

Observe regulations on prevention of water pollution (check, dam up, cover up)., Dam with sand or earth, Do not use: textiles, saw dust, combustible substances., Do not permit to enter into surface water, stretches of water, soil undiluted.

6.3. Methods and material for containment and cleaning up

In case of larger quantities: Collect product in suitable containers (e. g. made of plastic) using appropriate equipment (e. g. liquid pump). Keep away from flammable substances. Keep away from incompatible substances. Rinse away any residue with plenty of water. Dispose of absorbed material in accordance with the regulations. With small amounts: Dilute product with lots of water and rinse away. or Absorb with liquid-binding material, e. g.: diatomaceous earth or universal binder. Pick up mechanically. Collect in suitable containers. Clean contaminated surface thoroughly. Pack and label wastes like the pure substance. Do not detach label from the delivery containers prior to disposal.

Additional advice
Make safe or remove all sources of ignition.
Shut off leak, if possible and safe to do.
Isolate defective containers immediately, if possible and safe to do.
Place defective containers in waste receptacle (waste packaging receptacle) made of plastic (not metal).
Do not seal defective containers or waste receptacles airtight (danger of bursting due to product decomposition).
Never return spilled product into its original container for re-use. (Risk of decomposition.).

Never return spilled product into its original container. Never put spilled material into another container for disposal. Dilute with large amounts of water to a concentration of about 5% Hydrogen Peroxide; hold in diked area or pond until peroxide is completely decomposed or dispose of according to all relevant local, provincial, state, and federal laws and regulations. Ventilate area. Use personal protective equipment as described in section 8. If necessary, contact supplier for recommendations to decompose dilute peroxide (5%).
SPONTANEOUS COMBUSTION HAZARD: Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood, or other combustibles, can cause the material to ignite and result in a fire.

7. Handling and storage

7.1. Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Avoid impurities and heat effect. Ensure there is good room ventilation. Avoid contact with skin, eyes and clothing. Do not inhale vapour, aerosols, mist. Wear personal protective equipment. Immediately change moistened and saturated work clothes. Immediately rinse contaminated or saturated clothing with water. Provide for installation of emergency shower and eye bath. Set up safety and operation procedures. Never return spilled product into its original container for re-use. (Risk of decomposition.).

7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion

Avoid sun rays, heat, heat effect.
Keep away from sources of ignition - No smoking.
Keep away from flammable substances.
Keep away from incompatible substances.

Storage

cool, dry, clean.
well ventilated
Jointless smooth concrete floor.
Recommendation: Acid-proof floor.
Only use containers which are specially permitted for: hydrogen peroxide
and/or
For transport, storage and tank installations only use suitable materials.
Use adequate venting devices on all packages, containers and tanks and check correct operation periodically.
Do not confine product in unvented vessels or between closed valves.
Risk of overpressure and burst due to decomposition in confined spaces and pipes.
Packages, containers and tanks should regularly be checked by visual observation for any sign of abnormality, e.g. corrosion, exert pressure (bulging), temperature increase etc.
Transport and store container in upright position only.
Always close container tightly after removal of product.
Do not keep the container sealed.
Ensure tightness at all times. Avoid leackage.
Avoid residues of the product on the containers.

Suitable materials	stainless steel 304L or 316L passivated
Suitable materials	aluminium 5254 or 1060: min. 99.5 % passivated
Suitable materials	aluminium magnesium alloys, passivated
Suitable materials	polyethylene, polypropylene, polyvinyl chloride (PVC),
Suitable materials	polytetrafluoroethylene
Suitable materials	glass, ceramics.
Unsuitable materials	Iron, Mild steel, Copper, Bronze, brass, Zinc, tin

Keep away from heat. Store in a cool, dry place. Keep container closed when not in use.
Consult NFPA 400 for storage area guidance. Storage and handling designs should be arranged in consultation with a person experienced in these types of assessments.
Do not store together with: combustible material

Further information

Measures for storing in tank installations. These should include at least:
Compatible materials, adequate separation, adequate venting area, venting devices, temperature measurement, earthing (grounding), bund in case of leakage.
Prior to the first filling and operation of a tank installation all parts of the facility including all pipes must be thoroughly cleaned and flushed through.
Metal elements of the installation must first be pickled and passivated sufficiently.

For detailed information on design specifications for the construction of tank- and dosing installations ask the producer for advice.
Regularly verify the availability of water to deal with emergencies (for cooling, tank flooding, fire fighting) and check correct operation periodically.

Advice on common storage
Do not store together with: alkalis, reductants, metallic salts (risk of decomposition).

Do not store together with: inflammable substances (risk of fire).

Do not store together with: organic solvents (risk of explosion).

8. Exposure controls/personal protection

8.1. Control parameters

Other information
Suitable measuring processes are:

OSHA method ID 006

OSHA method VI-6

DNEL/DMEL values

End Use	Worker
Routes of exposure	Inhalation
Possible health damage	Acute - local effects
Value	3 mg/m3
End Use	Worker
Routes of exposure	Inhalation
Possible health damage	Long-term - local effects
Value	1.4 mg/m3
End Use	Consumers
Routes of exposure	Inhalation
Possible health damage	Acute - local effects
Value	1.93 mg/m3
End Use	Consumers
Routes of exposure	Inhalation
Possible health damage	Long-term - local effects
Value	0.21 mg/m3

PNEC values

	Freshwater
Value	0.0126 mg/l
	marine water
Value	0.0126 mg/l
	water - intermittent releases
Value	0.0138 mg/l
	sewage treatment plant
Value	4.66 mg/l
	Fresh water sediment
Value	0.47 mg/kg (dry weight)
	marine water sediment
Value	0.47 mg/kg (dry weight)

	soil
Value	0.0023 mg/kg (dry weight)

8.2. Exposure controls

Engineering measures

Ensure suitable suction/aeration at the work place and with operational machinery.
Provide for installation of emergency shower and eye bath.

Personal protective equipment

Respiratory protection

A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.
If workplace exposure limit is exceeded apply Respiratory protective equipment.
If open handling is unavoidable:
Wear respiratory protection.
If necessary: Provide with fresh air.
If necessary: Local ventilation.
When handling for a short time:
3M recommends the 3M 6003 Organic Vapor/Acid Gas Cartridge, the 3M 6006 Multi-Gas/Vapor Cartridge, and equivalent cartridges or combination versions of these be used for H2O2 for concentrations up to ~ 90ppm.
in the event of prolonged exposure during handling:
wear a self contained respiratory apparatus
Note time limit for wearing respiratory protective equipment.

Hand protection

Glove material	butyl-rubber, for example: Butoject 898, Kächele-Cama Latex GmbH (KCL), Germany
Material thickness	0.7 mm
Break through time	> 480 min
Method	DIN EN 374
Glove material	Natural rubber (NR), for example: Combi-Latex 395, Kächele-Cama Latex GmbH (KCL), Germany
Material thickness	1 mm
Break through time	< 120 min
Method	DIN EN 374
Glove material	Nitrile, for example, Camatril (731), Kächele-Cama Latex GmbH (KCL), Germany
Material thickness	0.33 mm
Break through time	< 30 min
Method	DIN EN 374

The above mentioned hand protection is based on knowledge of the chemistry and anticipated uses of this product but it may not be appropriate for all workplaces. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes prior to use.

Eye protection

Use chemical splash goggles and face shield.

Skin and body protection

Wear protective clothing, acid-proof.
Suitable materials are:
PVC, neoprene, nitrile rubber (NBR), rubber.
Rubber or plastic boots
Where splashing is possible, full chemically resistant protective clothing (e.g. acid suit) and boots are required.

A safety shower and eye wash fountain should be readily available.
To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.

Hygiene measures
Do not inhale vapour, aerosols, mist.
Avoid contact with skin, eyes and clothing.
Ensure there is good room ventilation.
The work-place related airborne concentrations have to be kept below of the indicated exposure limits. If the limits at the workplace are exeeded and/or larger amounts are released (leakage, spilling, etc.) the indicated respiratory protection should be used.
No eating, drinking, smoking, or snuffing tobacco at work.
Wash face and/or hands before break and end of work.
Preventive skin protection
Avoid contaminating clothes with product.
Immediately change moistened and saturated work clothes.
Immediately rinse contaminated or saturated clothing with water.
Any contaminated protective equipment is to be cleaned after use.

Protective measures
Handle in accordance with good industrial hygiene and safety practice.
Wear suitable protective clothing, gloves and eye/face protection.
Avoid protective gloves, clothes and shoes made from the following materials:
Leather
Completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying.
Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

physical state	liquid	
Colour	colourless, clear	
Form	liquid	
Odour	stinging	
Odour Threshold	No data available	
pH	< 2	(20 °C)
Melting point/range	-55.5 °C	
Boiling point/range	> 114 - 125 °C	
Flash point	Not combustible.	
Evaporation rate	No data available	
Flammability (solid, gas)	not flammable	
Lower explosion limit	No data available	
Upper explosion limit	No data available	
Vapour pressure	2.99 hPa	(25 °C)

	tested substance: hydrogen peroxide 100 %
Vapour density	No data available
Relative vapour density	Heavier than air
Relative density	1.2364 (25 °C)
Density	1.241 g/cm3 (20 °C)
Water solubility	miscible
Partition coefficient: n-octanol/water	log Pow: -1.57 Method: (calculated) tested substance: hydrogen peroxide 100 %
Autoignition temperature	No data available
Thermal decomposition	No data available
Viscosity, dynamic	1.90 mPa.s (0 °C)

9.2. Other information

Explosiveness	not explosive	
Oxidizing properties	oxidizing	
Surface tension	ca. 76.65 mN/m	(20 °C)
Metal corrosion	No data available	
Molecular Weight	34.02 g/Mol	
Other information	strong oxidizing agent	

10. Stability and reactivity

10.1. Reactivity
No further information available

10.2. Chemical stability
No further information available

10.3. Possibility of hazardous reactions

Stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Product is a strong oxidizing agent and reactive. Commercial products are stabilised to reduce risk of decomposition due to contamination. Danger of decomposition if exposed to heat When coming in contact with the product, impurities, decomposition catalysts, incompatible substances, combustible substances, may lead to self-accelerated, exothermic decomposition and the formation of oxygen.

Risk of overpressure and burst due to decomposition in confined spaces and pipes.
Release of oxygen may support combustion.

Mixtures with organic materials (e.g. solvents) can display explosive properties.

A severe detonation hazard may exist when mixed with organic liquids, e.g. kerosene or gasoline.

SPONTANEOUS COMBUSTION HAZARD: Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood, or other combustibles, can cause the material to ignite and result in a fire.

10.4. Conditions to avoid
sun rays, heat, heat effect

10.5. Incompatible materials
impurities, decomposition catalysts, metals, metallic salts, alkalis, hydrochloric acid, reducing agents., (Risk of decomposition.).
flammable substances (Danger of fire).
organic solvents (danger of explosion)

10.6. Hazardous decomposition products
decomposition products Under conditions of thermal decomposition:
Steam, Oxygen

Under NFPA 400 - Hazardous Materials Code - 2013 Edition, Hydrogen Peroxide solutions are categorized in Appendix G as follows:
Solutions greater than 8% up to 27.5% are Class 1 Oxidizers.
Solutions greater than 27.5% up to 52% are Class 2 Oxidizers.
Solutions greater than 52% up to 91% are Class 3 Oxidizers.
Stable under normal conditions.

11. Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity

LD50 Rat(female): 801 mg/kg
Method: OECD Test Guideline 401
Test substance: hydrogen peroxide, 60 %

LD50 rat(male): 872 mg/kg
Method: OECD Test Guideline 401
Test substance: hydrogen peroxide, 60 %

Acute dermal toxicity

LD50 Rabbit: > 6500 mg/kg
Method: literature
Test substance: Hydrogen peroxide 70 %

LD50 Rabbit(male/female): > 2000 mg/kg
Method: US-EPA-method
Test substance: hydrogen peroxide, 35 %

Skin irritation

Rabbit / 3 min
strongly corrosive
Method: literature
Test substance: Hydrogen peroxide 70 %

Rabbit / 4 h
irritating
Test substance: hydrogen peroxide, 35 %

Eye irritation

Rabbit
Risk of serious damage to eyes.
Method: literature
Test substance: hydrogen peroxide, 35 %

Rabbit
irritating
Method: OECD Test Guideline 405
Test substance: hydrogen peroxide 10 %
literature

Sensitization

Sensitization test guinea pig: not sensitizing
Method: (Magnusson-Kligman test)
literature

Repeated dose toxicity

Oral Mouse(female) / 90-day
Subsequent observation period: 6 weeks
NOEL: 37 mg/kg
target organ/effect: Changes of parameters of the blood, body weight development negative, Irritative effect:, Gastrointestinal tract
Method: OECD TG 408
Test substance: hydrogen peroxide, 35 %
drinking water analysis

Oral Mouse(male) / 90-day
Subsequent observation period: 6 weeks
NOEL: 26 mg/kg
target organ/effect: Changes of parameters of the blood, body weight development negative, Irritative effect:, Gastrointestinal tract
Method: OECD TG 408
Test substance: hydrogen peroxide, 35 %
drinking water analysis

Assessment of STOT single exposure: No data available

Assessment of STOT repeat exposure: No data available

Risk of aspiration toxicity: No data available

Gentoxicity in vitro	Bacterial reverse mutation assay S. typhimurium / E. coli positive and negative Metabolic activation: with or without literature chromosomal aberration mammalian cells positive Metabolic activation: without Method: OECD TG 473 literature Genetic mutation in mammal cells positive Metabolic activation: without Method: OECD TG 476 literature
Gentoxicity in vivo	Micronucleus test Mouse intraperitoneal (i.p.) negative Method: OECD TG 474 Test substance: hydrogen peroxide, 35 % literature
Carcinogenicity	No data available
carcinogenicity assessment	Clues to possible carcinogenic effects in animal experiments: Up to date there is no evidence of increased tumour risk. Hydrogen peroxide is not a carcinogenic substance according to MAK, IARC, NTP, OSHA, ACGIH.
Toxicity to reproduction	No data available
Human experience	Effect on the skin: Causes caustic burns. With increasing contact length, local erythema or extreme irritation (whitening) up to blistering (caustic burn) can occur. Effect on the eyes: Extreme irritation up to cauterisation. Can cause severe conjunctivitis, cornea damage or irreversible eye damage. Symptoms may occur with delay. Effect when swallowed: Swallowing can lead to bleeding of the mucosa in the mouth, oesophagus and stomach. The rapid releasing of oxygen can cause distension and bleeding of the mucosa in the stomach and lead to severe damage of the internal organs, especially in the event of greater intake of the product. Effect when inhaled: Inhalation of vapour/aerosols can lead to irritation of the respiratory tract and cause inflammation of the respiratory tract and pulmonary oedema. Symptoms may occur with delay.

Toxicology Assessment

Acute effects	Causes severe skin burns and eye damage. Harmful if swallowed. Harmful if inhaled. May cause respiratory irritation.
Sensitization	Due to the data available, the classification criteria for all further toxicological end points are not fulfilled
Repeated dose toxicity	Due to the data available, the classification criteria for all further toxicological end points are not fulfilled

CMR assessment

Mutagenicity	The classification criteria are not met based on the available data.

12. Ecological information

12.1. Toxicity

Toxicity to fish	LC50 semi-static test Pimephales promelas: 16.4 mg/l / 96 h Test substance: hydrogen peroxide 100 %
Toxicity in aquatic invertebrates	EC50 semi-static test Daphnia pulex: 2.4 mg/l / 48 h Test substance: hydrogen peroxide 100 %
Toxicity to algae	NOEC static test Skeletonema costatum: 0.63 mg/l / 72 h End point: growth rate Test substance: hydrogen peroxide 100 %
Toxicity to bacteria	EC50 static test Activated sludge: 466 mg/l / 30 min Test substance: hydrogen peroxide 100 % Method: OECD TG 209 EC50 static test Activated sludge: > 1000 mg/l / 3 h Test substance: hydrogen peroxide 100 % Method: OECD TG 209
chronic toxicity in daphnia	NOEC flow-through test Daphnia magna: 0.63 mg/l / 21 d Test substance: hydrogen peroxide 100 % literature

12.2. Persistence and degradability

photo-decomposition	50 % degradation within approx. 20 hours; medium: air
Biodegradability	Result: Readily biodegradable Test substance: hydrogen peroxide 100 % Semiquantitative measurement of concentration over time.
AOX	The product does not contain any organically bonded halogen.
Further Information	Under ambient conditions quick hydrolysis, Reduction or decomposition occurs. The following substances are formed: oxygen and water.

12.3. Bioaccumulative potential

Bioaccumulation	None. Hydrogen peroxide quickly decomposes to oxygen and water.

12.4. Mobility in soil

Mobility	No data available

12.5. Other adverse effects

Ecotoxicology Assessment

Acute aquatic toxicity	The classification criteria are not met based on the available data.
Chronic aquatic toxicity	Based on the data on file, the substance must be considered aquatoxic (chronic).

13. Disposal considerations

13.1. Waste treatment methods

Product

Disposal according to local authority regulations.

If necessary:
Because of recycling/disposal contact the relevant authorities.
Offer surplus and non-recyclable solutions to a licensed disposal company.**Product**

With small amounts:

May be disposed of as sewage water in accordance with local legal regulations by previously diluting with plenty of water. (drainage systems, sewage treatment plant**Product**

The appropriate regulatory agencies should be contacted prior to disposal.

A possible method of disposal is to dilute with large amounts of water to a concentration of about 5% hydrogen peroxide; hold in diked area or pond until peroxide is completely decomposed or dispose of according to all relevant local, provincial, state, and federal laws and regulations. Use personal protective equipment as described in section 8. Do not contaminate any lakes, streams, ponds, groundwater or soil. If necessary, contact supplier for recommendations to decompose dilute peroxide (5%)

Uncleaned packaging

Rinse empty containers before disposal; recommended cleaning agent: water.
Offer rinsed packaging material to local recycling facilities.
Do not reuse empty containers and dispose of in accordance with the regulations issued by the appropriate local authorities.Dispose of containers that have not been emptied completely and/or cleaned like of substance.

14. Transport information

D.O.T. Road/Rail

14.1.	UN number:	UN 2014
14.2.	UN proper shipping name:	Hydrogen peroxide, aqueous solutions
14.3.	Transport hazard class(es):	5.1 (8)
14.4.	Packing group:	II
14.5.	Environmental hazards (Marine pollutant):	--
14.6.	Special precautions for user:	Yes

RAIL: DOT-SP 14532 allows visual examination without removal of the rupture disc. This special
(CFR) approval applies on tank car shipments only

Air transport ICAO-TI/IATA-DGR

14.1.	UN number:	UN 2014
14.2.	UN proper shipping name:	Hydrogen peroxide, aqueous solution
14.3.	Transport hazard class(es):	5.1
14.4.	Packing group:	--
14.5.	Environmental hazards:	--
14.6.	Special precautions for user:	Yes

IATA-C: Transport prohibited.
IATA-P: Transport prohibited.

Sea transport IMDG-Code/GGVSee (Germany)

14.1.	UN number:	UN 2014
14.2.	UN proper shipping name:	HYDROGEN PEROXIDE, AQUEOUS SOLUTION
14.3.	Transport hazard class(es):	5.1 (8)
14.4.	Packing group:	II
14.5.	Environmental hazards (Marine pollutant):	--
14.6.	Special precautions for user:	Yes
	EmS:	F-H,S-Q

Protect from heat. On deck only. Product-specific regulation s on storing substances separately. "Separated from" permanganates and class 4.1.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:
for transportapproval see regulatory information

15. Regulatory information

US Federal Regulations

OSHA

If listed below, chemical specific standards apply to the product or components:

- None listed

Clean Air Act Section (112)

If listed below, components present at or above the de minimus level are hazardous air pollutants:

- None listed

CERCLA Reportable Quantities

If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:

- None listed

SARA Title III Section 311/312 Hazard Categories

The product meets the criteria only for the listed hazard classes:

- Acute Health Hazard
- Reactivity Hazard

SARA Title III Section 313 Reportable Substances

If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

- None listed

Toxic Substances Control Act (TSCA)

If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:

- None listed

State Regulations

California Proposition 65

A warning under the California Drinking Water Act is required only if listed below:

- None listed

International Chemical Inventory Status

Unless otherwise noted, this product is in compliance with the inventory listing of the countries shown below. For information on listing for countries not shown, contact the Product Regulatory Services Department.

Europe (EINECS/ELINCS)	listed/registered
USA (TSCA)	listed/registered
Canada (DSL)	listed/registered
Australia (AICS)	listed/registered
Japan (MITI)	listed/registered
Korea (TCCL)	listed/registered
Philippines (PICCS)	listed/registered
China	listed/registered
New Zealand	listed/registered

An employer using HMIS/NFPA labeling must through training ensure that its employees are fully aware of the hazards of the chemicals used.

HMIS Ratings

Health :	3
Flammability :	0
Physical Hazard :	1

NFPA Ratings

Health :	3
Flammability :	0
Reactivity :	1

16. Other information

Further information

Further information	Data for the production of the safety data sheet from the studies available and from the literature. Further information about the characteristics of the product can be found in the product code of practice or in the Product-Brochure .
Revision date	05/21/2015

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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Legend

ACC	American Chemistry Council
ACGIH	American Conference of Governmental Industrial Hygenists
ACS	Advisory Committee on Sustainability
ADI	Acceptable Daily Intake
ASTM	American Society for Testing and Materials
ATP	Adaptation to Technical Progress
BCF	Bioconcentration factor
BOD	Biochemical oxygen demand
c.c.	closed cup
CAO	Cargo Aircraft Only
Carc	Carcinogen
CAS	Chemical Abstract Services
CDN	Canada
CEPA	Canadian Environmental Protection Act
CERCLA	Comprehensive Environmental Response – Compensation and Liability Act
CFR	Code of Federal Regulations
CMR	carcinogenic-mutagenic-toxic for reproduction
COD	Chemical oxygen demand
DIN	German Institute for Standardization
DMEL	Derived minimum effect level
DNEL	Derived no effect level
DOT	Department of Transportation
EC50	half maximal effective concentration
EPA	Environmental Protection Agency
ErC50	Reduction of Growth Rate
ERG	Emergency Response Guide Book
FDA	Food and Drug Administration
GHS	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
GLP	Good Laboratory Practice
GMO	Genetic Modified Organism
HCS	Hazard Communication Standard
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
ICAO-TI	International Civil Aviation Organization- Technical Instructions
ICCA	International Council of Chemical Association
ID	Identification number
IMDG	International Maritime Dangerous Goods
IUPAC	International Union of Pure and Applied Chemistry
ISO	International Organization For Standardization
LC50	50 % Lethal Concentration
LD50	50 % Lethal Dose
L(E)C50	LC50 or EC50
LOAEL	Lowest observed adverse effect level
LOEL	Lowest observed effect level
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NOAEL	No observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
o. c.	open cup
OECD	Organisation for Economic Cooperation and Development
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PBT	Persistent, bioaccumulative, toxic
PEC	Predicted effect concentration
PNEC	Predicted no effect concentration
RQ	Reportable Quantity
SDS	Safety Data Sheet
STOT	Specific Target Organ Toxicity
UN	United Nations
vPvB	very persistent, very bioaccumulative

voc	volatile organic compounds
WHMIS	Workplace Hazardous Materials Information System
WHO	World Health Organization

Appendix B

JEA Groundwater Discharge

Permit Application

Industrial Pretreatment

GROUNDWATER DISCHARGE PERMIT APPLICATION

This application should only be used for projects less than six (6) months in total duration. For projects over six (6) months a Non-significant Industrial User (NSIU) discharge permit application should be submitted

SECTION A: GENERAL INFORMATION

A.1 Facility Name (Project Site): Click or tap here to enter text.

A.2. Address of Project: Click or tap here to enter text.

A.3. Authorized Facility Representative Information:

Name: Click or tap here to enter text.

Title: Click or tap here to enter text.

Address: Click or tap here to enter text.

City: Click or tap here to enter text. State: Click or tap here to enter text. Zip: Click or tap here to enter text.

Phone: Click or tap here to enter text. Fax: Click or tap here to enter text.

Email: Click or tap here to enter text.

A.4. CONSULTING FIRM INFORMATION (when applicable):

Name of Firm: Click or tap here to enter text.

Project Representative: Click or tap here to enter text.

Title: Click or tap here to enter text.

Address: Click or tap here to enter text.

City: Click or tap here to enter text. State: Click or tap here to enter text. Zip: Click or tap here to enter text.

Phone: Click or tap here to enter text. Fax: Click or tap here to enter text.

Email:

Section B: PROJECT SITE INFORMATION

1. Nature of Business or Former Business: Click or tap here to enter text.

2. List of all chemicals used at this location: Click or tap here to enter text.

3. Is this request to discharge to the JEA sanitary sewer system associated with a Remedial Action Plan (RAP) to clean up the site? ☐ Yes ☐No

4. What is the total estimated volume to be discharged? Click or tap here to enter text. gallons.

5. What is the estimated maximum flow rate? Click or tap here to enter text. gallons/minute.

6. What is the estimated average flow rate? Click or tap here to enter text. gallons/minute.

7. What is the maximum pump discharge rate? Click or tap here to enter text.

8. What is the frequency of discharge? Click or tap here to enter text. hours / day.

   Click or tap here to enter text. days / month.

   Click or tap here to enter text. months / year.

9. What size of piping will be used to discharge? Click or tap here to enter text.

10. What size flow meter is required? Click or tap here to enter text.

11. What is the estimated date of first discharge? Click or tap here to enter text.
12. What is the estimated date of last discharge? Click or tap here to enter text.

13. Provide a map indicating the proposed connection point with the sanitary sewer include the location address below? (for locations that are within roadways must include approval from authority having jurisdiction) Click or tap here to enter text.

Section B: PROJECT SITE INFORMATION (CONTINUED)

13. Will groundwater be treated prior to discharge?

    ☐Yes; Briefly describe form of pretreatment: Click or tap here to enter text.

    ☐No; Briefly explain reason why: Click or tap here to enter text.

10. List all environmental permits which pertain to the site: Click or tap here to enter text.

11. Include a copy of the most recent groundwater analyses for this site (analyses must be on samples that were collected within the past three months, based on the date of this application). Normally analyses should include any pollutants known or suspected to be of concern on site, as well as for the following metals: Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Molybdenum, Nickel, Silver, Zinc, SGT-HEM, COD, TSS and pH. All parameters must be analyzed using methods approved for a pretreatment program. These methods can be found in 40 CFR Part 136 or Chapter 62-160 F.A.C. identifies additional methods approved by DEP for parameters not found in 40 CFR Part 136.

SECTION C: BILLING INFORMATION

Billing will be based on either an JEA approved meter or the maximum capacity of the discharge pump on a 24-hour discharge.

Name: Click or tap here to enter text.

Title: Click or tap here to enter text.

Address: Click or tap here to enter text.

City: Click or tap here to enter text. State: Click or tap here to enter text. Zip: Click or tap here to enter text.

Contact person regarding billing issues:

Name: Click or tap here to enter text.

Title: Click or tap here to enter text.

Address: Click or tap here to enter text.

City: Click or tap here to enter text. State: Click or tap here to enter text. Zip: Click or tap here to enter text.

Phone: Click or tap here to enter text. Fax: Click or tap here to enter text.

Email: Click or tap here to enter text.

SECTION D: AUTHORIZED REPRESENTATIVE CERTIFICATION STATEMENT

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons

who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility civil penalties for knowing violations.

Click or tap here to enter text.
Name

Click or tap here to enter text.
Title

_____
Signature

_____
Date